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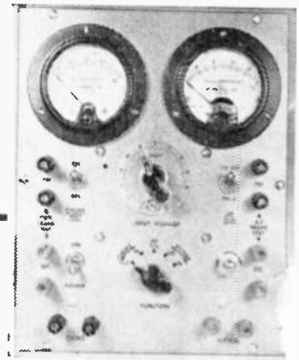

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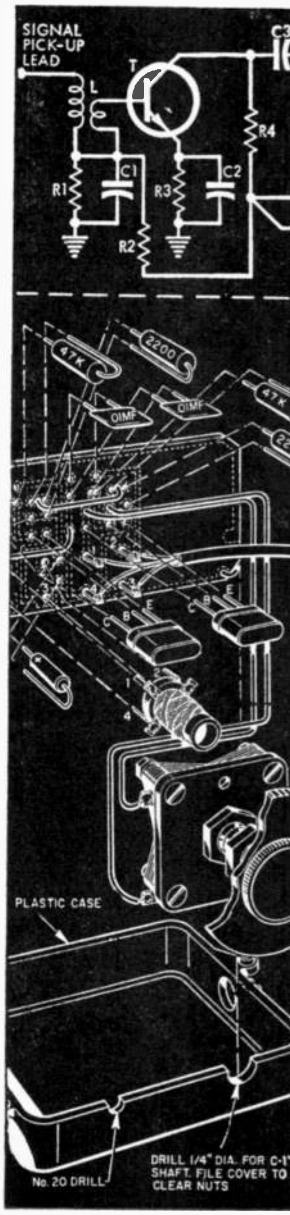

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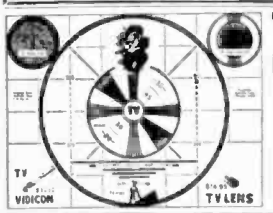

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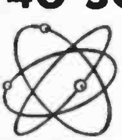

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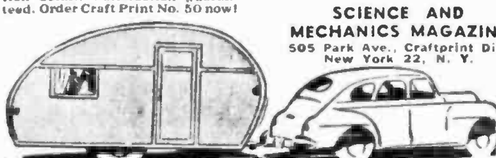

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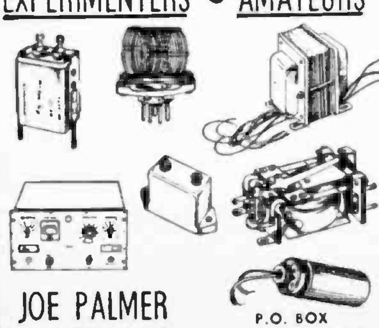

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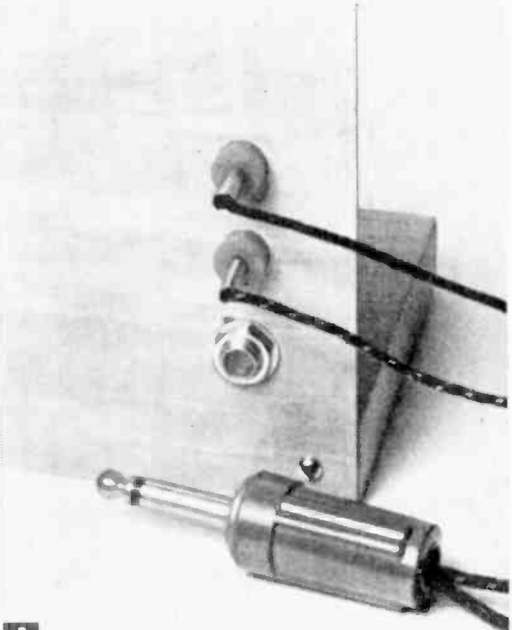


1

Twin installation of jacks gives you instant choice of phones or speaker without the need to remove plugs.

WHEN building a radio, or any other electronic gear where phones may be desirable, it's a good idea to install a pair of phone tip jacks as well as the regular phone jack, or a phone jack besides the regular phone tip jacks.

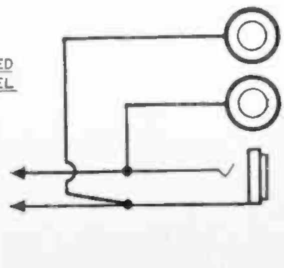
With the simple installation in Fig. 1, you can quickly connect various phones without adding or removing phone plugs, and without need for any adapters.

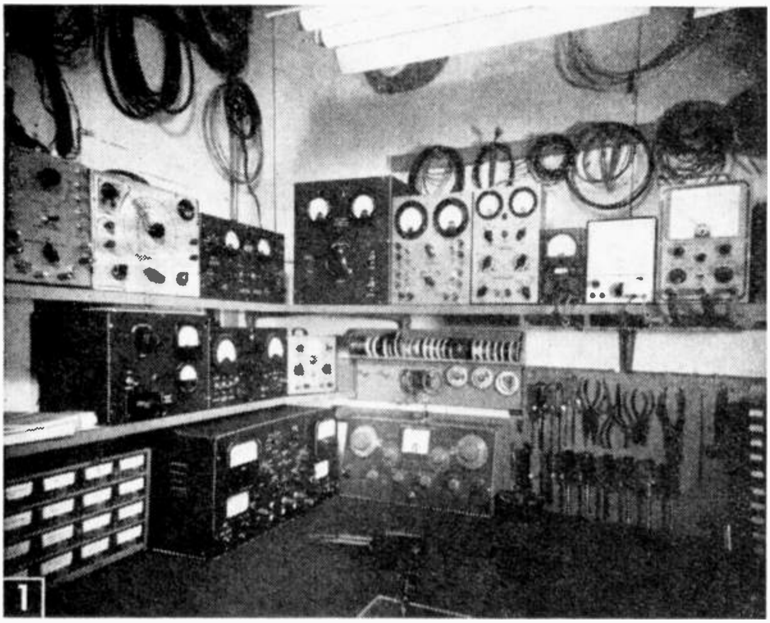
You can locate phone tip jacks immediately above the phone jack or alongside of it, whichever makes the best appearance. The closer the jacks, the easier it is to wire them in parallel as in Fig. 2.

This trick also lets you use two pairs of phones connected in parallel.—ART TRAUFFER.

2

JACKS WIRED IN PARALLEL




1

RADIO-TV EXPERIMENTER

U-shaped shop the author built up over several years—includes more than a dozen pieces of test equipment featured in this and previous issues of RADIO-TV EXPERIMENTER. Left side of shop (Fig. 1), reading from left to right, includes: (top row) resonance meter, RC bridge, transistor power supply, low voltage supply iron-core inductance meter, electronic resistive load, 1000-ohm/volt VOM, VTVM; (center) very high voltage supply, ac power panel, ac-dc voltage standard, wire rack; (bottom) utility power supply, impedance bridge, tool board.

The Complete Electronic Shop

Your guide to the most needed test equipment for the five major fields of work

By W. F. GEPHART

WHAT pieces of test equipment are most important? How much equipment is needed?

There are no simple answers. While some equipment is important and nearly essential in all electronic work, some is "specialist" equipment required primarily for one particular type of work. And some items are not absolutely necessary even for specialty work if you are willing to build temporary test circuits.

Table 1 lists some of the test equipment desirable for each of the five major fields of electronic work. They appear in general order of importance.

Some of the items must be homemade, some are available in kits, and a few are available only in commercial units. All of the equipment listed in the "experimental work" column of Table 1 is shown in Figs. 1 and 2. While the experimental shop pictured is well equipped for experimental work and radio servicing, and fairly well for hi-fi and citizen's band-amateur work, it does not include several essential items for television servicing.

Arrangement of equipment in the shop should be organized. Place measuring units such as VTVMs and VOMs directly in front of the work area for easy reading. Group signal generators (both RF and AF), oscilloscope and the electronic switch together since they are often used together. Group power supplies if you use more than one, but keep them away from the oscilloscope and signal generators to prevent possible hum induction. You can place some seldom-used items which do not require ac power to one side on shelves and bring them to the work area when needed.

Each piece of equipment shown in Figs. 1 and 2 is identified and its use described in the following paragraphs. Some of the items are seldom used, but are extremely handy when needed. In the case of home-built equipment, the numbers following many of the descriptions represent the handbook numbers of this or other issues of RADIO-TV EXPERIMENTER in which the complete construction article for the particular unit appeared (see note below).

These units include five featured in projects elsewhere in this issue. Numbers in parentheses refer to previous issues contain-

NOTE: You can order any of the back issues of RADIO-TV EXPERIMENTER to obtain the complete "how-to" information for building the testing units designated, except No. 595, which is out of print. Order by handbook number from SCIENCE and MECHANICS, 505 Park Ave., New York 22, and enclose $1 for each copy desired to cover handling and mailing costs.

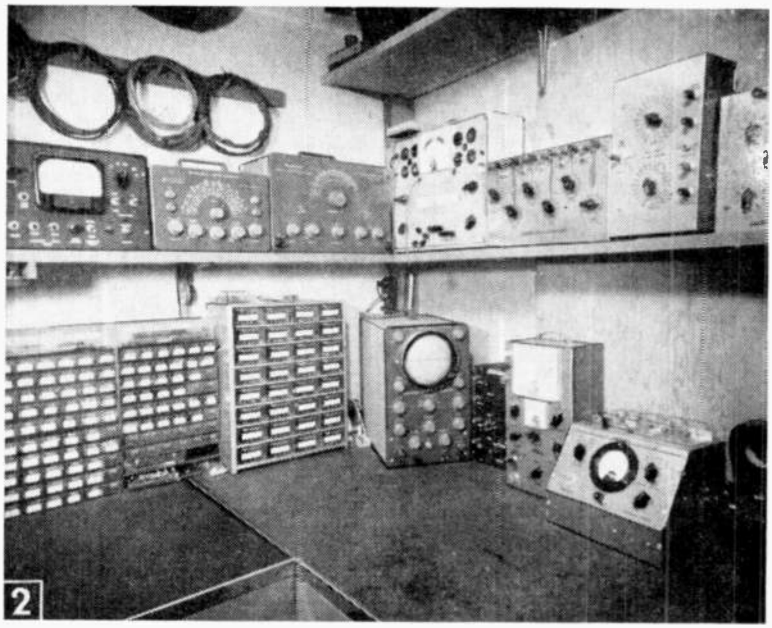


Fig. 2. Right side of shop, left to right: (top) signal tracer, RF generator, AF generator, tube tester, 10% resistance decade, capacity substitution box, 1% resistance decade; (bottom) small parts cabinet, resistor cabinet, oscilloscope, electronic switch and voltage calibrator, transistor tester, battery tester-recharger.

ing construction articles of similar equipment.

Resonance Meter: Used with a VTVM and an RF or AF signal generator to measure resonant frequency of coil-and-condenser combinations. Also measures crystal frequencies and activity, as well as unknown frequencies by the "beat-note" method. #595.

Resistance-Capacity Bridge: Measures resistance and capacity at 10% accuracy. Checks capacitors for leakage, shorts, and power factor. Permits ratio measurement between known and unknown capacity, resistance, or inductance. A commercial kit, it has been modified to include an in-circuit capacity checker. A full description begins on p. 148.

Transistor Power Supply: Furnishes two separate sources of well-filtered dc voltage, 0-30 volts, for powering experimental transistor circuits or servicing transistorized equipment. Dual meters and switching circuits permit separate or simultaneous measurement of voltage and current. For the complete construction story, turn to p. 36.

Very High Voltage Power Supply: Furnishes variable high voltage (1000 to 5000 volts) at low currents for work with CR tubes, Geiger tubes, photo-multipliers, etc.

AC Power Panel: Furnishes variable line voltage (0-140 volts) at 7.5 amperes for testing purposes. Voltmeter and ammeter permit measurement of load drawn. #569.

AC-DC Voltage Standard: Provides 99% accurate ac and dc voltages and currents for calibrating other test equipment. The accurate voltages can also be used in precise testing and experimental work. See p. 53 for complete details on building this project.

Utility Power Supply: Furnishes two sources of filtered, adjustable dc voltage (each 0-400 volts at 150 *ma*), adjustable bias voltage (0-25 volts), four dc and five ac filament voltages. Current and/or voltage of either of both HV sources, and bias voltage can be read on dual meters. Used as voltage source on experimental circuits, or as substitute supply in servicing work. #551.

Low Voltage Supply: Provides adjustable, filtered dc voltage (0-48 volts) at high current (to 8 amperes), for work with auto and aircraft radios, relay circuits, etc.

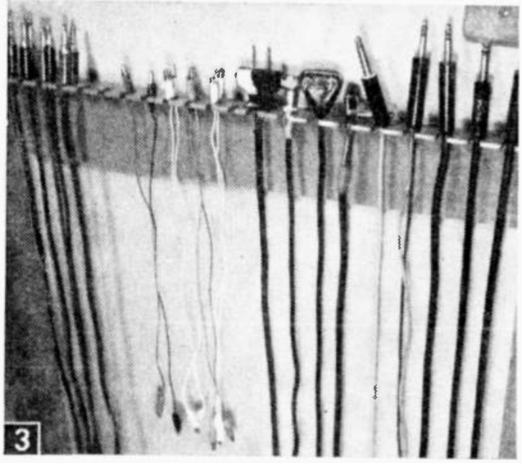
Iron-Core Inductance Meter: Used with a VTVM, this unit measures inductance of iron-core chokes with the desired dc current flowing through them. Also measures the impedance ratios of audio transformers and determines output and saturation points of iron-core components. Primarily used in design work and in utilization of unmarked components. Construction of this meter is fully described in the article beginning on p. 140.

Electronic Resistive Load: Determines power supply output under various loads. Can also be used to determine optimum value of bleeder or dropping resistors.

20,000-ohm/volt Volt-Ohm-Milliammeter: The familiar VOM, a medium-input impedance meter to measure ac or dc current and resistance. Commercial kit.

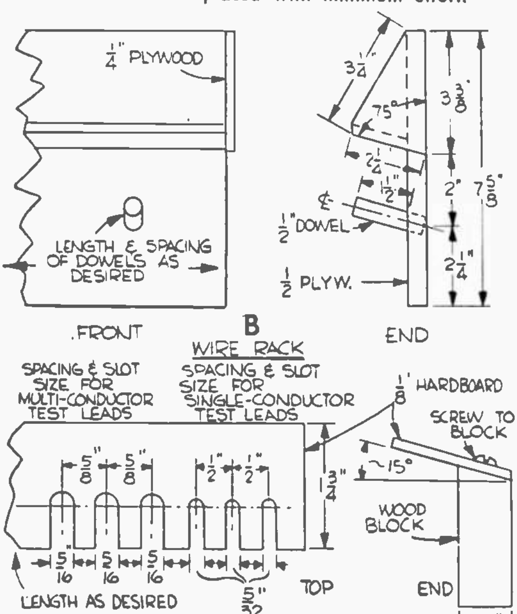
1000-ohm/volt Volt-Ohm-Milliammeter: Another VOM, a low-input impedance meter to measure ac or dc current and resistance. While this is a commercial kit meter, you will find the construction of a similar unit in #576.

Vacuum-Tube Voltmeter: The VTVM, a most important instrument, which measures ac and dc voltages with high input impedance



3

Wall rack holds all types of test leads which can be removed and replaced with minimum effort.



4 A TEST LEAD RACK

and resistance to 1000 megs. Commercial kit.

Signal Tracer: Provides audible and metered means of tracing a signal through equipment to determine troublesome stage. Can also be used as utility amplifier, test, speaker, or speaker tester. Includes an ac-dc VTVM that can be used separately. #551.

RF Signal Generator: Provides AM radio frequency signals for alignment and testing, or for experimental radio control work. Commercial kit.

AF Signal Generator: Provides sine and square wave audio frequency signals for amplifier testing and experimentation. Commercial kit.

Impedance Bridge: Measures inductance, resistance, and capacity over wide range at high accuracy. Also measures dissipation factor and storage factor. Used in design work and for accurate checking of component values. Commercial kit.

Tube Tester: Checks tubes for emission, shorts and leakage. Commercial kit.

10% Resistance Decade: Provides any 10% resistance value from 10 ohms to 10 megohms in 10-ohm steps. Can be used as a substitute resistance in servicing work or test resistance in experimentation. Switches separate decades for multiple usage. #562.

1% Resistance Decade: Provides any 1% resistance from .1 ohm to 10,000 ohms in .1-ohm steps. Used in measuring resistances, designing meter shunts and multipliers. Construction of this type of decade box is featured in a project beginning on p. 110.

Capacitor Substitution Box: Provides two sets of 18 different bypass and four different electrolytic condensers to be used as substitute condensers in servicing or as test condensers in experimentation. Switching two sets in series or parallel provides choice of several hundred capacitance values. #576.

Oscilloscope: Required in TV servicing and vital to hi-fidelity work, this unit provides a means of viewing AF and RF signals. Can also be used to measure voltages, phase relationships, frequencies, etc., in experimental work. Commercial kit, but you can build a similar unit with the aid of the project article, "Large Screen Scopes from Discarded TV Sets," featured in #551.

Electronic Switch, Voltage Calibrator: Used with an oscilloscope, it provides for viewing two separate signals (such as input and output) simultaneously to check equipment performance. Also provides accurate voltages to calibrate a 'scope for voltage measurements. #576 (#582).

Transistor Tester: Measures ac and dc current gain of transistors under various inputs and supply voltages. Also checks leakage. #595 (#569, #576).

Battery Tester-Charger: Tests batteries under load and charges or rejuvenates wet or dry batteries used in test equipment and transistor radios. Construction of this unit is revealed in article starting on p. 134.

Test Leads. In addition to having proper equipment and an organized layout, test leads are a shop problem. Generally, they are not needed until the equipment is actually used, so they can be stored out of the way. For the regularly-used VTVM and/or VOM, however, leads should be plugged into the equipment. After wrestling with leads for years, I solved my problem as in Fig. 6. In this shop, leads can be plugged into either or both units at all times, but be out of the way when not being used.

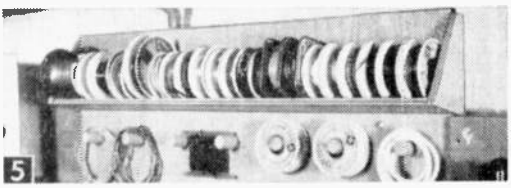
After buying the required number of retractile test leads, attach a flat box to the

TABLE 1—ELECTRONIC TEST EQUIPMENT DESIRABLE FOR:

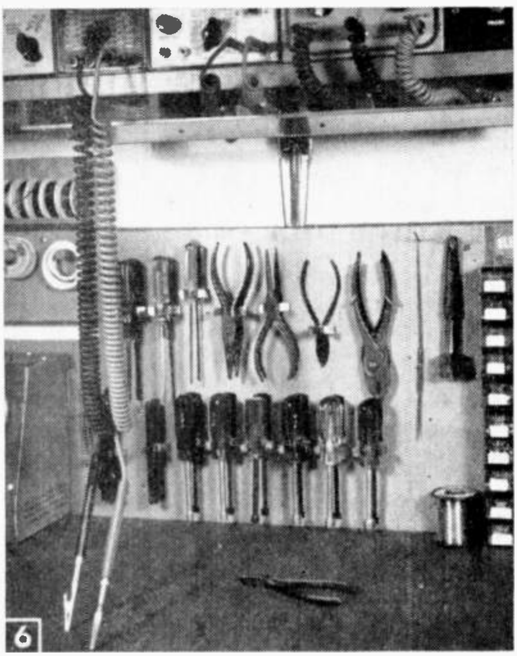
Experimental Work	Radio Servicing	Television Servicing	Hi-Fidelity Work	Citizens' Band and Amateur
VTVM	VTVM	VTVM	VTVM	VTVM
Utility Power Supply	Signal Tracer	Sweep Generator	AF Generator	Field Strength Meter
10% Res. Decade	Tube Tester	Oscilloscope	Oscilloscope	VOM
Cap. Subs. Box	RF Generator	Bar & Dot Gen.	VOM	Oscilloscope
VOM	VOM	Tube Tester (1)	AF Analyzer (2)	Low Voltage Sply (3)
Oscilloscope	R-C Bridge	VOM	Electronic Switch	RF Generator
Trans. Power Supply	Utility Power Supply	R-C Bridge	Tube Tester	Dummy Load
Voltage Standard	Trans. Power Supply	10% Res. Decade	R-C Bridge	Tube Tester
RF Generator	10% Res. Decade	Cap. Subs. Box	Utility Supply (4)	Utility Supply (5)
AF Generator	Cap. Subs. Box	Power Panel	10% Res. Decade (4)	10% Res. Decade (5)
Tube Tester	Transistor Tester	Field Strength Meter	Cap. Subs. Box (4)	Cap. Subs. Box (5)
Transistor Tester	Low Voltage Supply		Transistor Tester (6)	Resonance Meter (5)
Impedance Bridge	Oscilloscope		Trans Power Supply (6)	Impedance Bridge (5)
Electronic Switch	AF Generator		Iron-Core Inductance Meter (4)	Iron-Core Inductance Meter (5)
Power Panel	Power Panel			
Resonance Meter				
Resistive Load				
Iron-Core Inductance Meter				
1% Res. Decade				
Low Voltage Supply				
Very HV Supply				
Signal Tracer				
R-C Bridge				

NOTES

(1)—Mutual conductance type tester.
(2)—To measure distortion, inter-modulation, watts, etc.
(3)—Required if mobile equipment involved.
(4)—Required if experimental amplifier work is done.
(5)—Required if circuit development work is done.
(6)—Required if transistorized equipment is used.



Wire rack holds assorted spools and coils.



Test leads (top) are quickly accessible when stored in flat box built-in under equipment shelf.

bottom of the shelf under the equipment as in Fig. 6. Even when plugged into the equipment, the body of the retractile leads can be stuffed in the box with the prod points sticking out. When ready to take readings, they slip out easily when the prods are pulled.

The simple hanger shown in Figs 3 and 4A will store other leads on a nearby wall. You can slot a piece of hardboard to fit the leads and fasten it to the wall at an angle. The leads will slip in and out of place quickly, without tangling or kinking.

Keeping Wire Straight. If you use many different kinds of wire, especially the color-coded kind, the wire rack in Fig. 5 will be extremely handy. You can build it to dimensions shown in Fig. 4B to handle the usual round or square roll, after determining the proper length to suit your needs and available space.

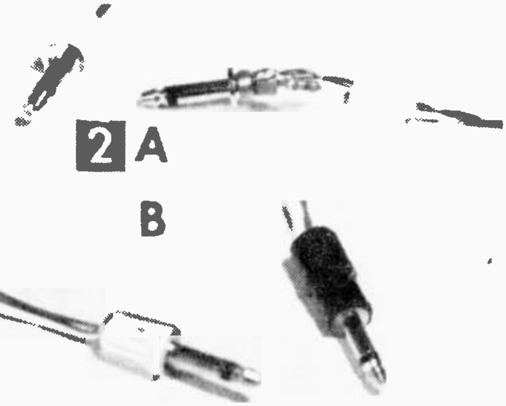
Tool Accessibility. To keep your tools handy, you can easily build a tool board as in Fig. 6. Common utility clips sold in hardware stores hold the tools to the board, which has a painted image for each tool to reveal instantly where to put it instead of dropping it on the bench to get lost in a maze of other loose tools. Such a board should be located within easy reach of your work area.

All equipment shown in Table 1 and described here is obviously not required, but it is all useful and helpful in the various phases of electronic work.

Miniature Patch Cord

For portable recording with transistor equipment

The patch cord connects your portable radio to your portable recorder and allows you to hear what is being recorded.



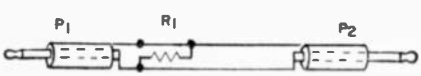
(A) Solder-in the resistor with rosin core solder and (B) tape the cap neatly to the plug.

MATERIALS LIST—MINIATURE PATCH CORD

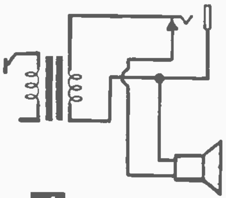
Desig.	Description
R1	5.1 ohm, 1/10 watt miniature carbon resistor (Lafayette RS-250, specify resistance)
P1, P2	subminiature phone plugs (Lafayette MS-281)
2½ ft.	#24 stranded hook-up wire (Lafayette WR-223 is a 100-ft. roll)
Misc.	electrical tape and rosin core solder
	Parts available from Lafayette Radio, 111 Jericho Turnpike, Syosset, L. I., N. Y.

IF YOU own a portable transistor radio and a portable transistor recorder, you'll have much use for this miniaturized patch cord. Requiring practically no storage space, it permits quick and easy connection for recording. Furthermore, you can monitor what you're recording by making a small modification to the portable radio phone jack.

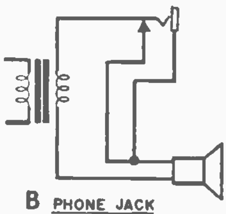
The patch cord circuit is shown in Fig. 3.



3 PATCH CORD CIRCUIT



4 A PORTABLE PHONE JACK CIRCUIT BEFORE MODIFICATION



B PHONE JACK CIRCUIT AFTER MODIFICATION. THIS ARRANGEMENT WITH PATCH CORD DESCRIBED ALLOWS YOU TO HEAR WHAT YOU'RE RECORDING.

The resistor R1 acts as part of a voltage divider in the phone jack circuit of Fig. 4B. Part of the signal energy actually gets to the radio speaker to give you sound monitoring of the material you're recording. There is a small signal voltage drop across the resistor which is connected in series with the speaker voice coil. The radio output to the recorder input appears across the resistor.

The resistor, although small, is still too large to permit the shell of the phone plug to be screwed onto the plug. Push the shell in as close to the plug as you can, and tape it in place. Use several layers of tape to make the neat and rugged assembly shown in Fig. 2. It doesn't matter which plug you use with the radio or the recorder.

Most transistor portable radios have the phone jack connected as shown in Fig. 4A. You can use the patch cord with this circuit, but you won't be able to hear what you're recording unless you change the phone jack circuit on the radio to conform to Fig. 4B. This feature is important since you can tell when you want to start and stop your recorder. The phone jack will operate as it did before the modification, except that some signal will leak to the loudspeaker voice coil when the headphone plug is inserted.—FORREST H. FRANTZ SR.

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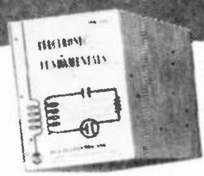

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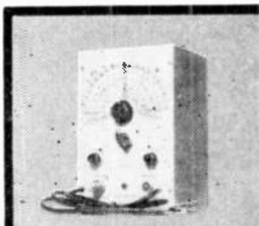

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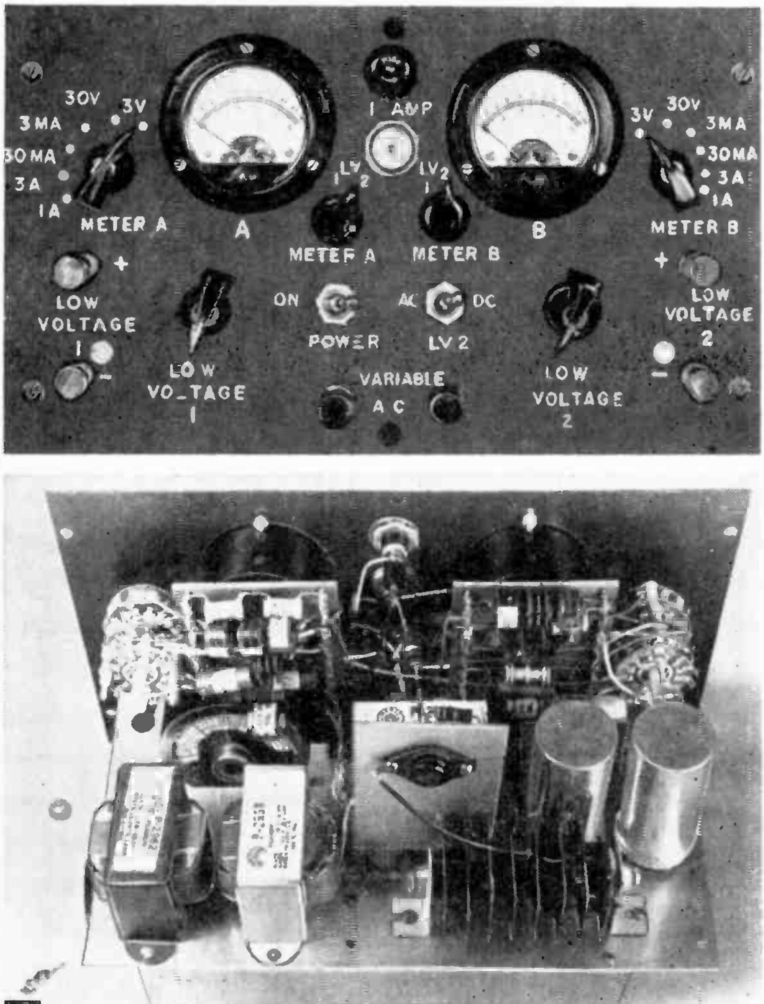
Power Supplies for Transistors

To eliminate the expense (and bother) of using batteries when you are experimenting with transistors, build this ac-supplied variable power supply

By W. F. GEPHART



1

Front and back panel views of dual power supply schematicized in Figs. 6 and 7. Note in back panel view the meter resistor mounting and the "heat sink"-mounting of power transistor (center of photo).

THE design of a variable power supply for conventional (pre-transistor) radio work is relatively simple. Usually, a voltage range of 50-500 *v* (1:10 ratio) and a current range to 200 *ma* (1:200 ratio) will do. A versatile transistor power supply, however, need only furnish between 1.5 and 30 *v* (1:20 ratio)—but with currents up to nearly 1 *amp* (1:1000 ratio), and with an extremely low ripple in order to simulate battery operation. Due to the wider variations required, the high currents involved in power transistors, and the need for good filtering, then, several problems arise.

Figure 4A shows a simple power supply for transistor equipment. While it is fairly suitable for powering low-powered devices, it is not satisfactory for bench or experimental work. Even if R_3 were made variable, the voltage output would still be dependent upon the current being drawn, which causes a voltage drop across R_1 and R_2. This type supply is also unsatisfactory because one side of the line voltage is connected to the output.

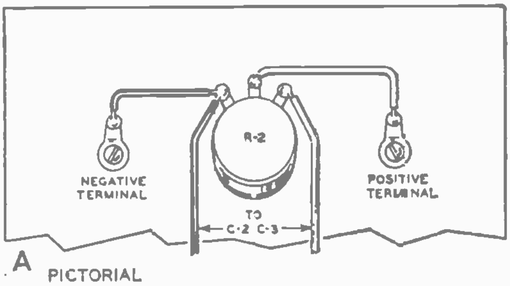
Figure 4B shows a simple bench-type supply. The danger of contact with line voltage is eliminated in this unit by using a transformer, and the lower resistance within the circuit permits greater control of the output voltage with variable resistor R_2. Using a choke (L) instead of a resistance (as in 4A) provides better filtering, but again presents the problem of a varying voltage drop as the current drawn varies. Furthermore, the amount of current that can be drawn is limited by the choke. While chokes capable of handling up to 300 or 400 *ma* are readily available, chokes capable of handling higher currents are bulky, heavy and quite expensive. Also, to minimize bleeder current (and thus minimize voltage drop across the choke with no lead), the resistance R_2 has to be relatively high, yet must be capable of handling full load current, thus presenting problems at high currents. With a value of 2500 ohms, for example, and a full load current of 750 *ma*, R_2 would have to be rated in excess of 1000 watts. This type of bench variable voltage supply can be used, however, up to about 50 *ma* if the components are chosen properly.

Figure 4C shows the circuit to be used for a high-current, well-filtered variable supply. The output is isolated from the line by transformer T_2 and variation in voltage is secured by varying the primary voltage of T_2 with an auto-transformer (T_1). This permits variation on the high-voltage, low-current side, enabling the use of a small auto-transformer. The current-limiting problem introduced by the choke is eliminated by using a power transistor (or two). providing excellent filtering with a small, but relatively constant voltage drop.

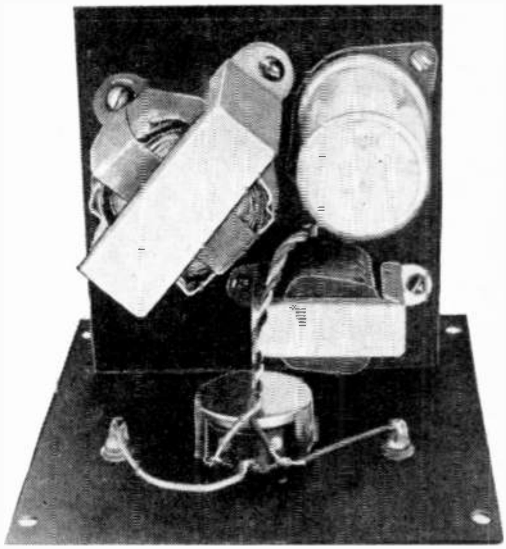
Transistors, like pentode tubes, "saturate" beyond certain bias points. That is, beyond these points, variation in input signal will have no effect on the output. If a transistor is biased beyond a certain point, ripple variations included in the dc input will not be included in the dc output. The same could be done with an ordinary pentode tube, except that ordinary pentodes are not capable of handling the high currents involved. The bias on the transistor is furnished through the resistor-capacitor network of R_1, C_2 and R_2 which provides sufficient filtering for bias purposes. The output current flows through the collector-emitter circuit, and with final filter capacitor C_3, ripple is less than .01%, equal to battery supply for virtually any application.

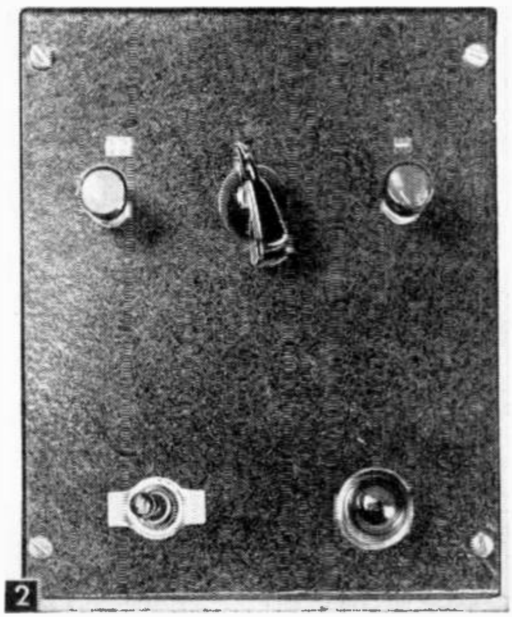
As pointed out, the transistor-filter circuit is only required when current requirements are fairly high, and the circuit in Figure 4B is satisfactory for most low-current applications. If very pure dc is required, the filter section of Fig. 4C (consisting of C_1, C_2, C_3, R_1, R_2, and V) can be used with the circuit of Fig. 4B, substituting it for the choke-capacitor filter (L, C_1 and C_2), and still use an output resistance for voltage variation. Filtering action is even better, since the transistor bias is constant in this case.

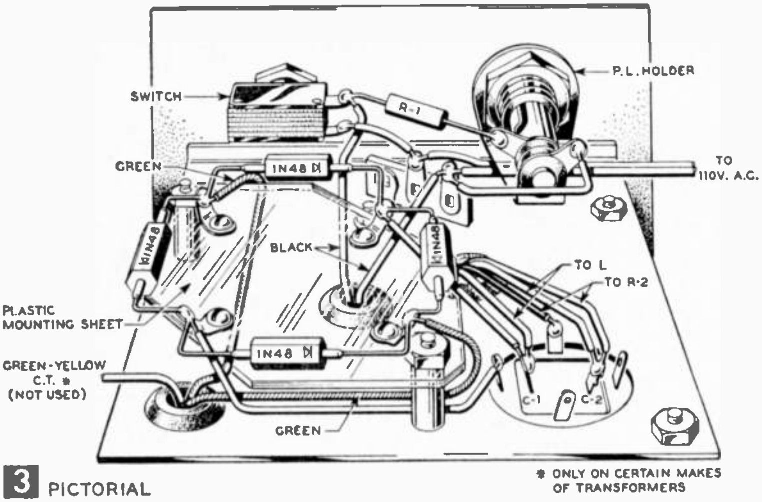
In designing a bench supply, voltage requirements, as well as current requirements, should be considered. Even some low-current circuits use a fairly high (22½ to 30) voltage. Several of the components will involve a voltage drop, and allowance for this should be made when planning the output voltage. In low-current supplies (50 *ma* or less) germanium diodes make excellent rectifiers and have less voltage drop than selenium units. When using chokes, select a happy medium between inductance and resistance, to minimize voltage drop.



Front and back panel views of power supply schematicized in Fig. 4B, is shown above and below. Under-chassis wiring is shown in Fig. 3







3 PICTORIAL

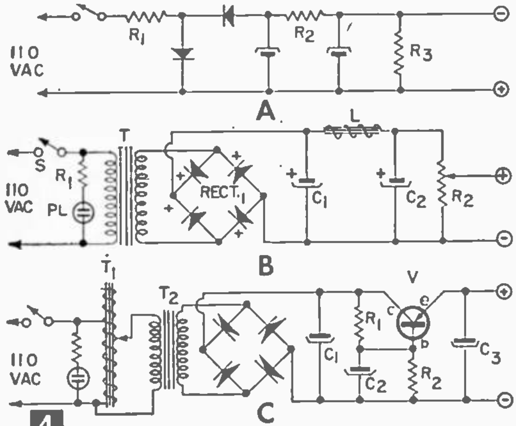
Figures 2, 3, and 5 show the details of a low-current supply using the circuit shown in Fig. 4B. Component values are included in the Materials List, using the nomenclature shown on Fig. 4B. This supply, using the parts listed, will furnish voltage and current as follows:

0-26.5 *v* at no load
0-16.5 *v* at 15 *ma*
0-14.5 *v* at 20 *ma*
0-10.0 *v* at 30 *ma*
0- 5.5 *v* at 50 *ma*

Since even the larger transistor radios draw only 15-20 *ma* at 6-9 *v* this supply will meet most requirements.

The unit shown was placed in a small metal cabinet and equipped with a pilot light, neither of which is necessary, but both of which are recommended (chassis and panel layouts are shown in Fig 5). The diodes were mounted on a piece of plastic raised from the chassis with spacers, although they could have been wired in a bridge circuit using tie points. Some wiring could be eliminated if chassis and cabinet were grounded, but it is recommended that the case be isolated. Due to the varying polarities in transistor equipment, trouble might be encountered if it isn't.

In experimental work, quite often it is necessary to have a separate bias supply, or two isolated supplies for one unit under test. Sometimes, one need requires high current; the other low current; while in other cases, both require low current. Figures 6 and 7 show the complete dual supply, shown in Fig. 1 for bench and experimental work. The unit is made up of one circuit



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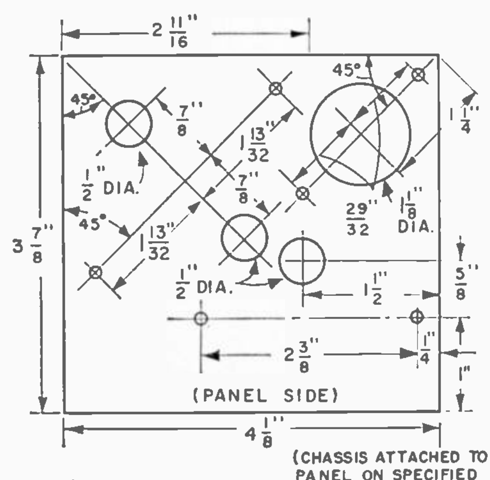
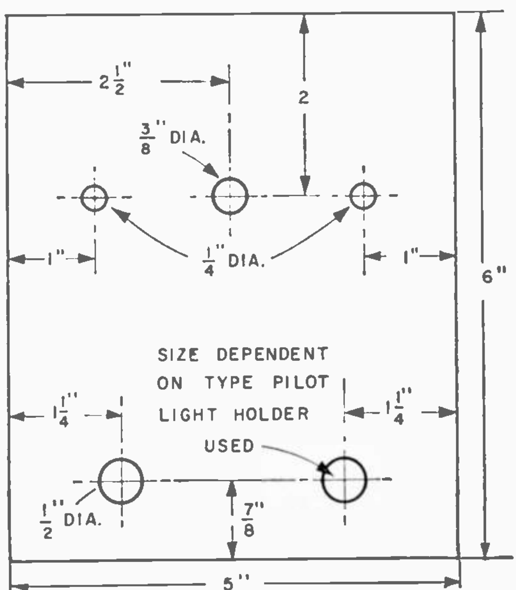


TOP VIEW OF CHASSIS.

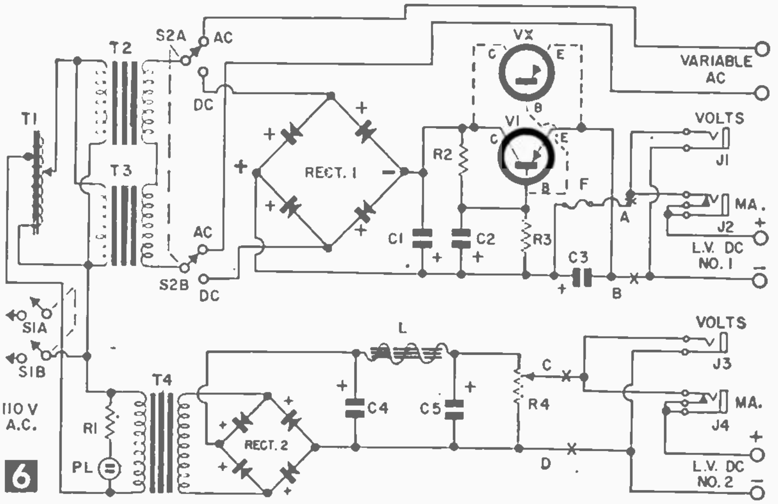
(CHASSIS ATTACHED TO PANEL ON SPECIFIED CABINET)



5 FRONT VIEW OF PANEL

identical with that in Fig. 4B, and one circuit similar to that in Fig. 4C, and has built-in meters and switching circuits. The twin meters can measure voltage *or* current for either supply, or can be switched so that the meters measure voltage *and* current of *either* supply, keeping both circuits isolated from each other.

The schematic for this dual supply is shown in Fig. 6. Meter jacks, instead of meters and related switches, are shown, since the elimination of meters, shunts and switches greatly reduces the cost of the unit. If it is desired to build the complete unit on a "progressive" basis, holes for the meters and switches should be drilled in the panel at the time of construction, the switch holes plugged with hole plugs, and the meter jacks mounted in plastic or Bakelite plates mounted in the meter holes. (In any event, the jacks must be insulated from the chassis.) Then later, if it is desired to add the meter circuits, it can be done without drilling into a panel on which components are mounted and wiring completed.

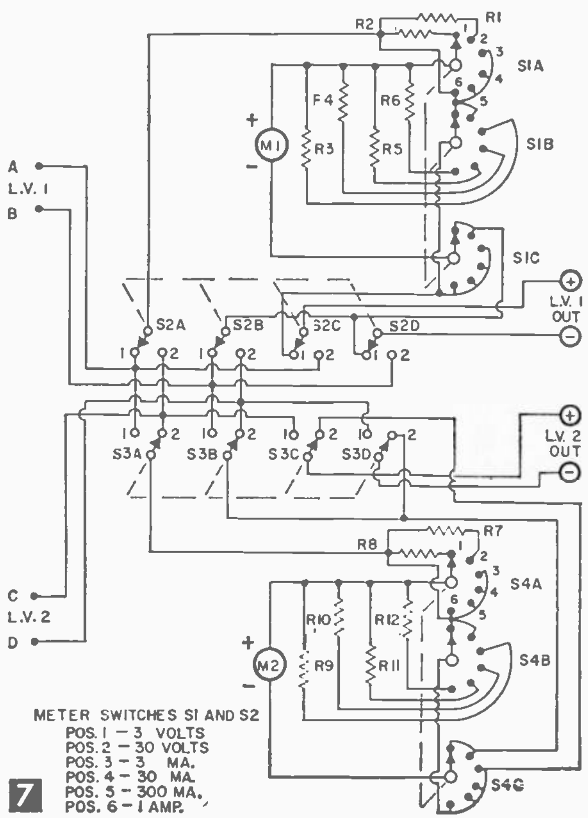


In Fig. 6, a second transistor (Vx) is shown in dotted lines, parallel with V_1. This is required only if the desired output current is to exceed 700 *ma* and if used, should be mounted on a "heat sink" (as is V_1). This "heat sink" (which is common to the collector) should be insulated from the chassis, to keep the chassis and cabinet isolated. Also, if Vx is used, the value of R_3 should be reduced to approximately half of the value given in the Materials List.

In the high-current supply, an auto-transformer, two filament transformers, and a germanium rectifier provide the *dc* voltage. While a high-current selenium rectifier would be somewhat cheaper, the voltage drop would require another filament transformer, and stability would not be as good at low voltages and current.

The high-current supply, using the parts specified, furnishes in excess of 30 *v* (transistor limit) with no load, and slightly over 19 *v* at 700 *ma* (full load). If current in excess of 700 *ma* is desired, the larger rectifier mentioned in the Materials List, as well as the second transistor Vx, should be used. Under those conditions, loads to about 1.1 amperes would be permissible.

In Fig. 6, S_2 switches the transformer output to a set of binding posts, since it was felt that there would sometimes be a need for variable *ac* between 0 and 56 *v*. Fig. 7 shows the dual meter circuits used. The input leads of these circuits are connected to points "A", "B", "C" & "D" in Fig. 6, and the jacks cut out at the points marked "X". The values of the shunt resistors used are not furnished, since they will depend on the meters used. In the unit shown, the meters were surplus 0-500 microammeters, although 0-1 *ma* meters would do just as well.



MATERIALS LIST—TRANSISTOR POWER SUPPLIES

Shown in Figures 2, 3, 4B, and 5

R1	56,000 ohms, ½ watt*
R2	10,000 ohm potentiometer
C1, C2	100-100 mf. 50 volt (Cornell-Dubilier B0085 or Mallory WP202.5)
T	25 volt filament transformer (Merit P-2962)
L	4.5 hy, 50 ma., 200 ohm choke (Merit C-2977)
Rect.	Four 1N48 diodes, bridge-connected
PL	NE-51 neon bulb
	Small cabinet with chassis (Bud C-1796), pilot light holder, binding posts, knob, miscellaneous hardware

Components shown in Figs. 1 and 6

R1	56,000 ohm, ½ watt*
R2	470 ohms, 1 watt
R3	1200 ohms, 1 watt
R4	10,000 ohm potentiometer
C1	500 mf. 50 volt (Cornell-Dubilier 5005)
C2	250 mf. 50 volt (Cornell-Dubilier 2505, Sprague TVA-1312, Mallory TC-50025)
C3	50 mf. 50 volt
T1	Auto-transformer, 0-130 volts @ 1.25 amp. (Superior Type 10, Standard Electric 100BU)
T2, T4	25 volt filament transformer (Merit P-2962)
T3	12.6 volt filament transformer (Merit P-2959)
L	4.5 hy, 50 ma., 200 ohm choke (Merit C-2977)
Rect. 1	70 volt, .7 amp. Germanium Bridge (General Electric 4AJ211AB1AC1) Note: If higher current desired, use 70 VAC 1.4 amp. (General Electric 4AJ211AB1AC2)
Rect. 2	Four 1N48 diodes, bridge-connected
S1	DPST toggle
S2	DPDT toggle
PL	NE-51 neon bulb
J1, J3	Open circuit jacks
J2, J4	Closed circuit jacks
Cabinet	(Bud CC-1092), aluminum for chassis, binding posts, knobs, miscellaneous hardware
	* Not required if included in pilot light holder such as Dialco series 952208 or 95408X.

Components shown in Fig. 7

R1 through R12	See text
M1, M2	See text
S1, S4	3 pole, 6 pos. rotary switch (Centralab 1421, Mallory 1335L) Note: Mallory 3236J can be used if 20° spacing is acceptable
S2, S3	4 pole, 2 position rotary switch (Mallory 3242J)

The most accurate means of determining shunt and dropping resistor values is to use an accurate resistance decade, a variable voltage source, and an accurate voltmeter and milliammeter. In this method, voltage-dropping resistances are selected by taking a known voltage, feeding it into the proposed meter through the decade, and adjusting the decade for the desired reading. Current shunts are determined in a similar manner, by establishing a known current through a load, placing the proposed meter in the circuit (with the decade connected across its terminals), and adjusting the decade for the desired reading.

If equipment is not available, required resistances can be determined by calculations, using the following formulas:

For voltages series resistance:

$$R_s = \frac{E_r}{I_m} - R_m$$

R_s—Series resistance required (ohms)
E_r—Desired full-scale range (volts)
I_m—Full scale range of meter (amperes)
R_m—Internal resistance of meter (ohms)

For current shunt resistances:

$$R_s = \frac{I_m R_m}{I_r - I_m}$$

R_s—Shunt resistance required (ohms)
I_m—Full scale range of meter (amperes)
R_m—Internal resistance of meter (ohms)
I_r—Desired full scale range (amperes)

In the latter formula, at high current values, I_m may be disregarded in the formula as being insignificant.

The meter ranges on the low-current supply (No. 2) need not have as high current ranges as the No. 1 meter. The meter selector switches (S_2 and S_3 in Fig. 7) permit voltage reading from *either* output, but current readings only on the associated circuit. For example, with both S_2 and S_3 on Position 1, meter M_1 will read *either* the voltage *or* current of output 1, and meter M_2 will *only* read voltage of output 1.

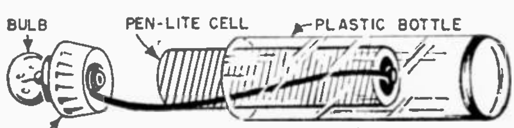
In the unit shown in Fig. 1, the meter resistors were mounted on terminal boards fastened to the meter terminals, saving space and wiring. (A few of the components pictured in Fig. 1 are not exactly those specified in the Materials List.)

Emergency Lite

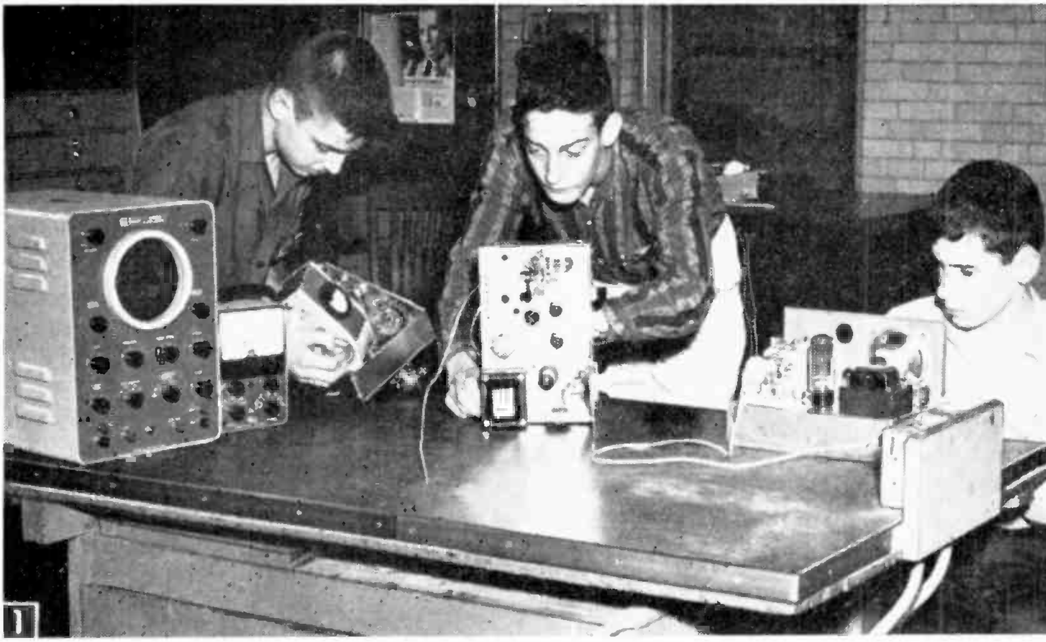
AN investment of about a quarter and five minutes of your time converts a small plastic bottle into a pocket-size emergency light. The bottle doesn't cost you a cent. If you're a transistor experimenter, you can use one of the bottles in which General Electric transistors are packaged (this same kind of bottle is frequently used by pharmacists as a pill box). In addition to the bottle you need only a flashlight bulb and a small pen-lite battery.

To make the emergency lite, ream a hole in the bottle top just large enough to allow the bulb to be screwed into it. Solder a piece of thin insulated wire to the shell of the bulb. I used #28, silk-covered magnet wire. Solder the other end of the wire to the center terminal of the battery. Insert the battery and bottle top, with bulb, into the bottle with the center battery terminal down.

To turn the light On, push the bottle top on tight. To turn it Off, loosen the top slightly.—FORREST H. FRANTZ.



EMERGENCY LITE



Students at work on their transceivers. They have nick-named it "Puddle Jumper" because of their success in contacting stations across the puddle of Lake Michigan.

Puddle Jumper

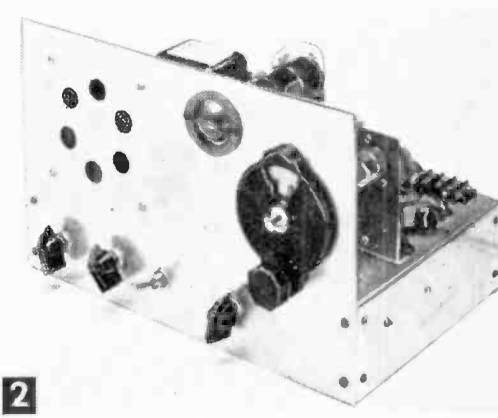
A Two-Meter Amateur Transceiver

Compact and portable, it provides both voice and modulated code communications with a 6- to 15-watt power input and can be built for half the cost of a commercial rig

By WILLIAM BUSHNELL and C. F. ROCKEY, W9SCH/W9EDC

TWO years ago we presented a two-meter amateur station which was designed to be used as an introduction to the construction of serious electronics equipment, and to serve as a practical communications unit as well.

Since this transceiver is a laboratory project in an amateur radio course at New Trier, a Chicago suburban high school, increased

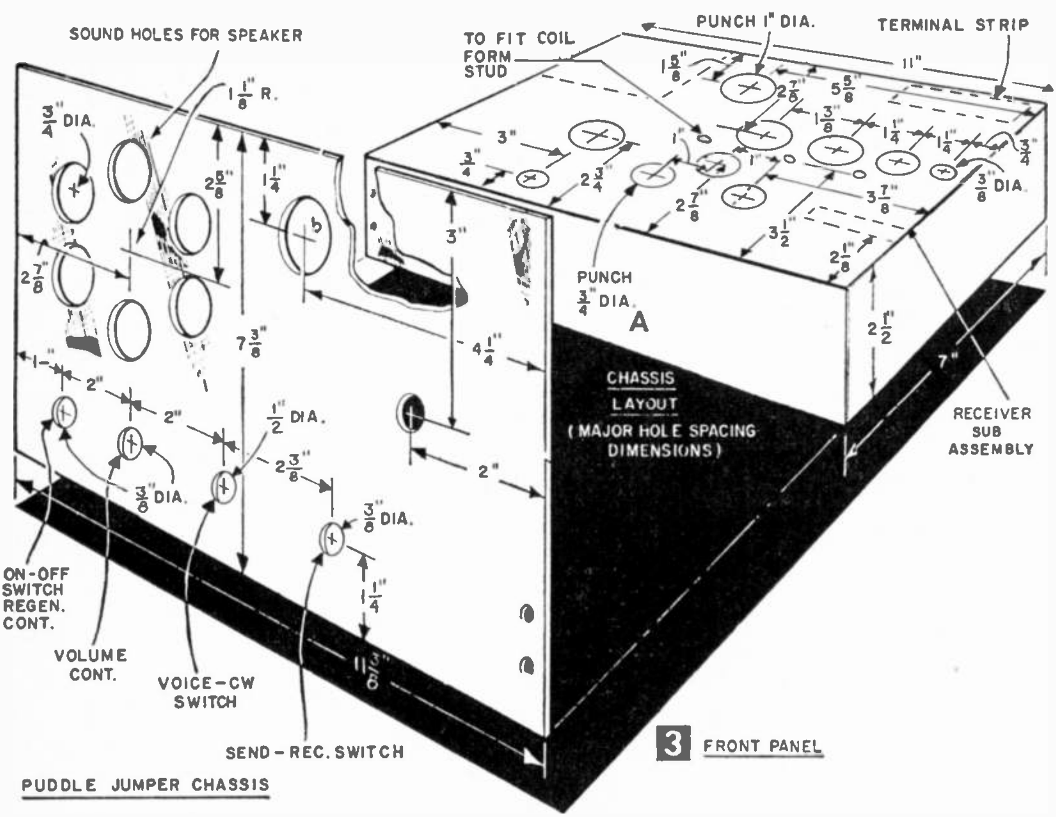


2 The Puddle Jumper introduces you to advanced electronics and can be built simply by following the schematics.

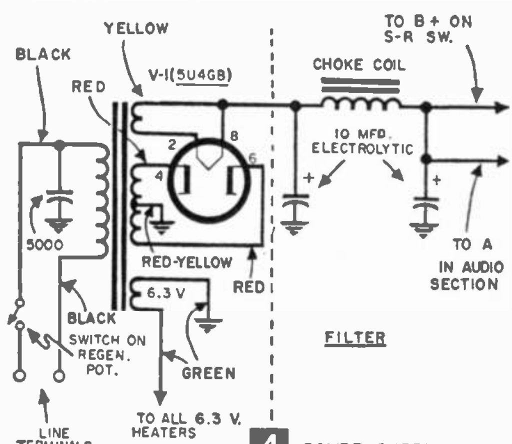
experimentation has resulted in a number of modifications which have produced a vastly improved version of the original station. The students have nicknamed it "Puddle Jumper," and many sets are currently in operation.

Puddle Jumper operates in the 144-148 megacycle band, and can be used by the holder of any class amateur license, but the user must be licensed. It makes a fine beginner's station as well as a handy standby set for the old-timer. Although the set is not suited for citizens band use, it can be an excellent facility for civil defense.

Start Construction by drilling and punching the major holes in the front panel and chassis (Fig. 3 and 3A). Fasten the panel to



3 FRONT PANEL



4 POWER SUPPLY

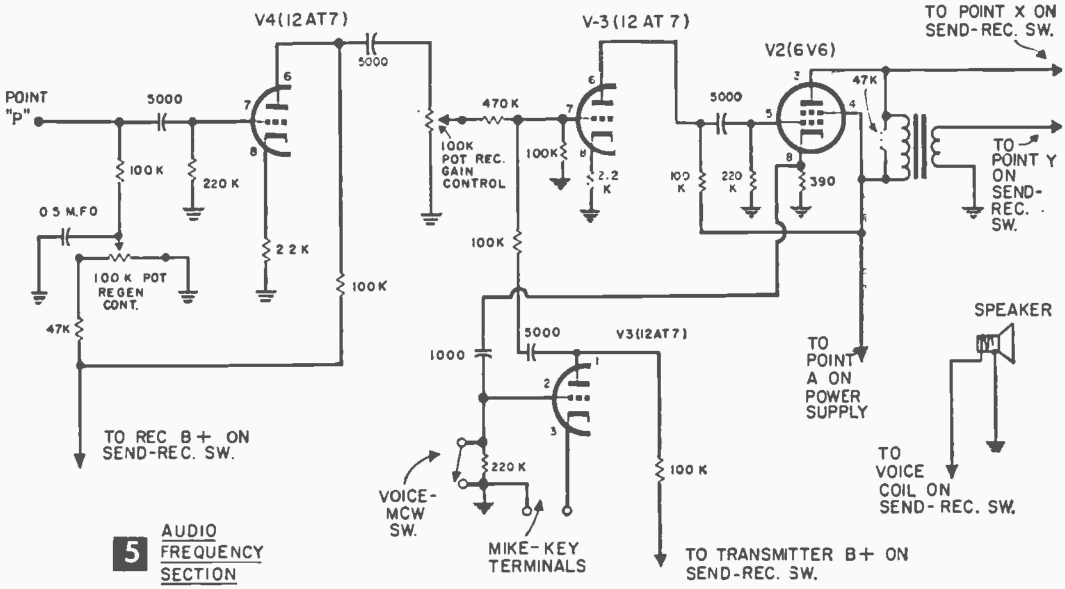
the chassis and drill the holes for potentiometers and switches. Mount the power transformer, 5U4GB rectifier tube socket, and Jones barrier terminal strip. Fasten the regeneration control pot with its on-off power line switch to the panel.

Power Supply Wiring. Connect the transformer leads to the rectifier, then wire-in the 120-volt leads (Fig. 4). The electrolytic filter capacitors are held in place by their integral mounting lugs, and their positive leads terminate on insulated tie lugs.

Install and connect the filter choke coil. Ground one side of the 6.3-volt heater winding, and bring the other side out to one of the unused lugs on the rectifier tube socket. This will facilitate connection to the heaters of the other tubes.

After you've wired and carefully checked the power supply, measure the resistance between the positive connection to the last filter capacitor and ground. There should be more than 10,000 ohms of resistance between these two points. Less resistance indicates a wrong connection cr short-circuit. When this condition has been met, connect the line cord to its terminals on the terminal strip, and insert the 5U4GB rectifier tube in its socket. With plug in socket, and power switch on, the rectifier tube filaments should glow dull red, and a dc voltage of at least 300 volts (more won't hurt) should be observed from the positive terminal of the last filter capacitor to ground.

Audio Frequency Section. When the power supply is operational, remove the rectifier tube and line cord and attach the AF sockets. This section includes one and one-half 12AT7s and the 6V6. The 12AT7 sockets are mounted with 4-40 x ¼-in. round head (*rh*) machine screws and hex nuts. Be sure to put a soldering lug under one of the mounting



5 AUDIO FREQUENCY SECTION

screws for each socket to provide a grounding-point for the circuitry associated with it. Pin No. 9 on each 12AT7 socket, and pin No. 7 on the 6V6 are connected to the ungrounded side of the 6.3-volt heater winding. Ground pins No. 4 and 5 on each 12AT7 socket, as well as the metal tube in the center. On the 6V6 socket, ground pins 1 and 2.

Work backwards from the 6V6 (Fig. 5). Mount the output transformer with 6-32 machine screws and nuts. Ground the common terminal on the output transformer secondary, and leave the other secondary terminal free.

When the 6V6 stage has been wired, connect the loudspeaker from ground through the send-receive switch to the free secondary terminal of the output transformer. Insert the 6V6 and the rectifier tube, plug in the line cord, and turn on the power. Set the send-receive switch to receive position. Both tubes should light or, if the 6V6 is metal, it should get slightly warm. A screwdriver tip touched to the control grid (pin #5) of the 6V6 should produce a characteristic clicky buzz in the loudspeaker.

When the 6V6 stage is operating, disconnect external wiring, remove tubes, and wire the 12AT7 stage that feeds the grid of the 6V6. Use 2- and 4-point insulated tie lugs as needed to support small parts firmly in place. After you've wired and checked this stage, put in tubes, reconnect speaker, and plug into the line. When all tubes are warm, carefully touch a screwdriver tip to the control grid lug (pin #7) of the 12AT7. A much louder clicky buzz should be heard.

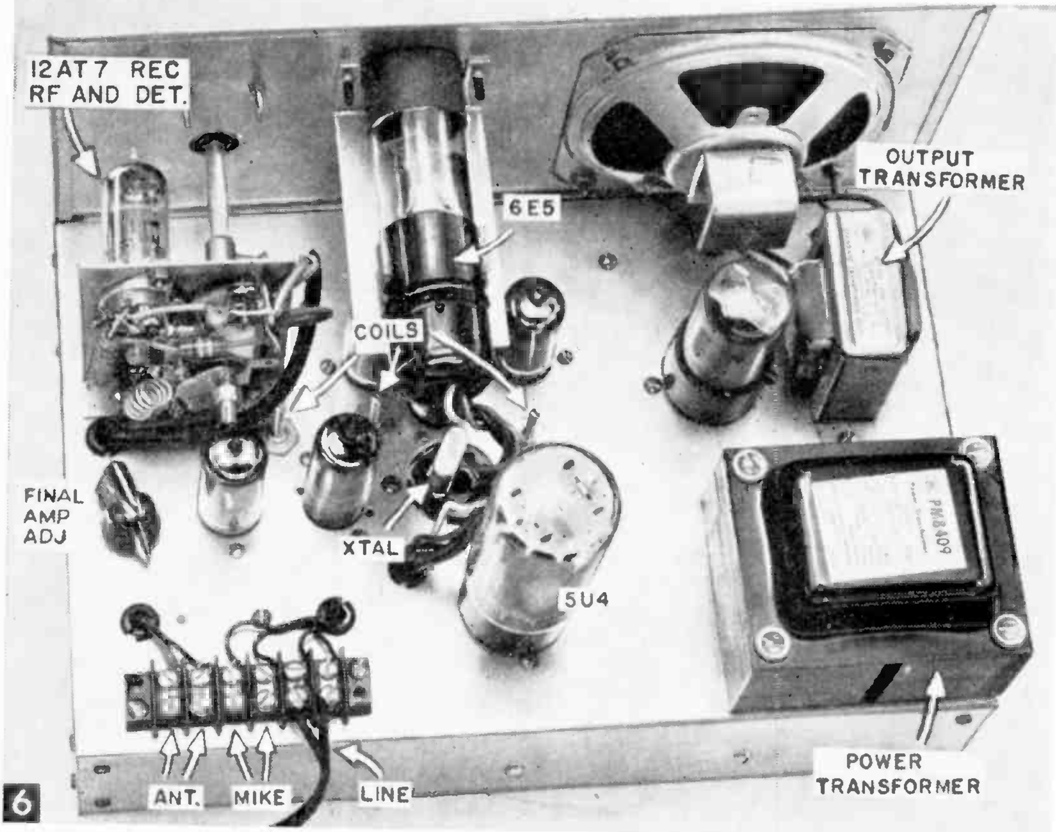
Install the non-shorting type send-receive switch (Fig. 6A and B), the MCW-voice switch, and the volume control potentiometer. Continue wiring by completing the 12AT7 amplifier stage that serves the receiver.

To Test this Stage, set up as previously described, throw the send-receive switch to receive, and check for the characteristic buzz at the grid. Advance the volume control. Because of the relatively high amplification here, it should be possible to hear a faint hiss of tube noise when the volume control is fully advanced.

Finish the audio section by wiring the 12AT7 grounded-grid microphone amplifier stage. This stage contains the MCW-voice switch, a SPST toggle switch, that converts the AF amplifier into an oscillating multivibrator for modulated CW radiotelegraphy. When the switch is open, the circuit acts as a tone generator. When the switch is closed, it becomes the microphone input stage.

Make external connections as previously described, and insert tubes. Connect a wire jumper across the mike-key terminals on the ungrounded secondary terminal of the output transformer to the ungrounded side of the loudspeaker. With the send-receive switch in send position and the toggle switch open, a loud, musical tone should issue from the loudspeaker. The volume control, since it is associated with the receiver only, has no effect upon the intensity of this tone.

Throw the toggle switch into the closed position. The tone should immediately cease. Now remove the jumper from the mike-key terminals and connect a good, single-button, telephone-type microphone in its place (see Materials List). Upon speaking into the microphone, the system should behave as a good, low-power public-address system. *Note: A crystal or dynamic mike will not work in this circuit.*



Top view showing physical layout of components.

The audio system so far constructed may serve as a good, code-practice oscillator for group instruction. Just connect a telegraph key to the mike-key terminals. If the signal is too loud for you, you can soften it by connecting a 100K volume control from pin #7 of the second 12AT7 to ground. Be sure the toggle switch is in the open position, and the send-receive switch is in the send position.

Disconnect temporary jumper lead, and wire speaker permanently into circuit before proceeding with receiver wiring.

The Receiver Section. Connect the 100K regeneration control potentiometer and 47K voltage-dropping resistor, along with the 100K detector plate load resistor (see Fig. 7). These parts are installed beneath the chassis, and secured by means of tie lugs.

Drill and assemble the receiver sub-unit (Figs. 8 and 9). Since this receiver operates at the extremely high frequency of about 145 million *cps*, short and direct leads are very important. This applies directly to grid, plate and bypass-capacitor leads. It is also important, wherever possible, to return all cathode and bypass capacitor leads to the same ground point for each stage.

The 15 mmfd variable tuning capacitor is too large to provide suitable bandspread for convenient operation. It is therefore advisable to carefully remove all but one stationary and one rotary plate. Be careful, when reassembling the variable capacitor, to see that the rotor and stator plates do not scrape or short-circuit against each other. After the receiver is in operation, you can often further improve the bandspread by spreading the capacitor plates cautiously apart and simultaneously readjusting the spacing of the coil.

Wind and install coil L1 (see Fig. 7) carefully and complete as much of the sub-unit wiring as possible before mounting it on the

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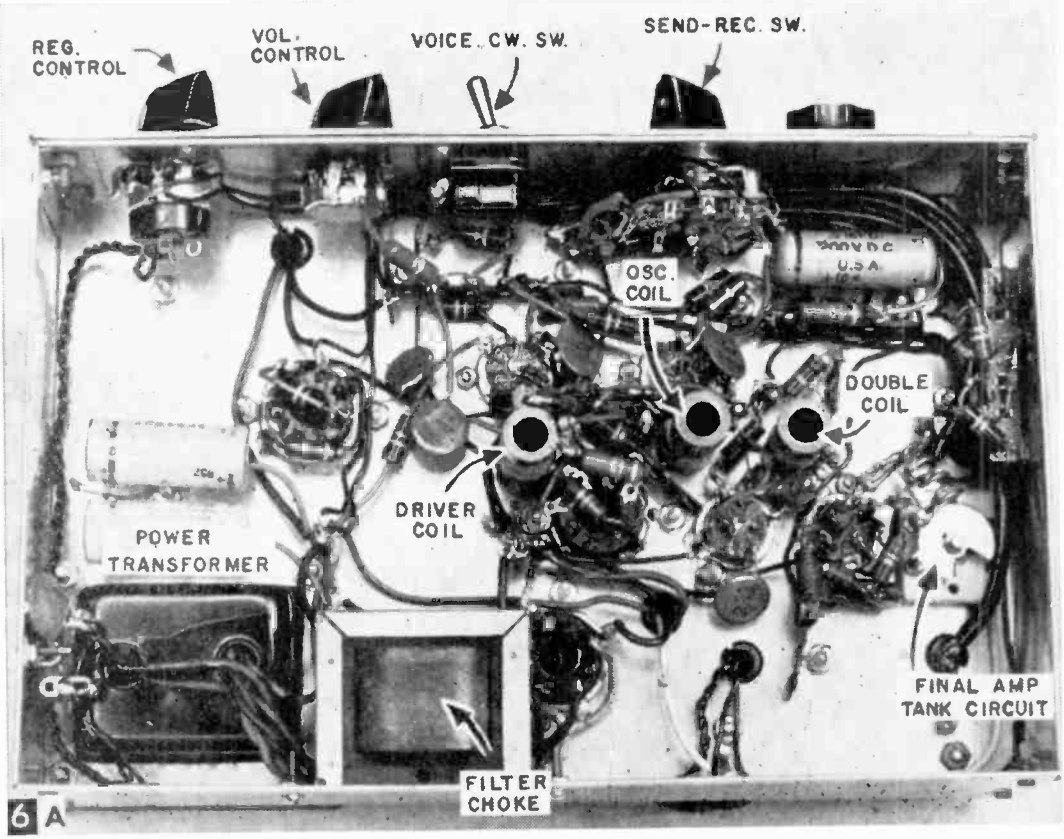
Selecting a Crystal Frequency

The crystal used in this transmitter is of the "overtone" type and oscillates at a frequency of approximately 36 *mc*. We have found adequate the crystals manufactured by Texas Crystal Corp., River Grove, Ill., which sell for about $5.

The crystal frequency in this transmitter is one quarter that of the output frequency, but you must choose your operating frequency in terms of the class license you hold. If you have a novice or technician class license, you have to confine your operations between 145 and 147 *mc*, and choose a crystal frequency between 36.25 and 36.75 *mc*. If you hold a general or extra class license, you can operate anywhere from 144 to 148 *mc*, and choose a crystal frequency from 36.00 to 37.00 *mc*.



6 A

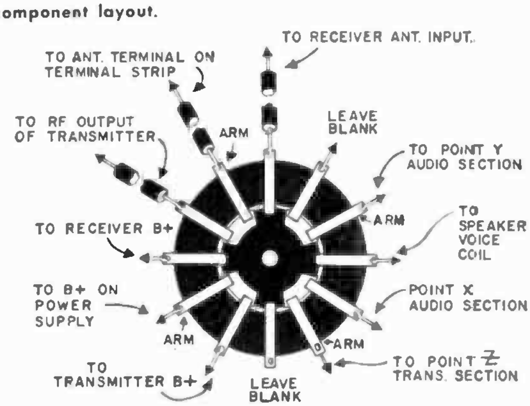
Bottom view of component layout.

chassis with 6-32 machine screws and nuts. Next, connect the heater, dc plate power, and signal output leads to the appropriate points under the chassis (Fig. 6A). Do not connect the antenna coaxial lead until later.

With the receiver wiring completed and checked, insert tubes and apply power. With send-receive switch in receive position, turn the volume control on full. Then slowly advance the regeneration control potentiometer. A smooth, loud hiss should be heard. This hiss indicates the occurrence of superregenerative action, the condition for maximum sensitivity of a receiver of this type. By varying the regeneration control, it should be possible to control smoothly the strength of the hiss. Also, superregeneration should be obtained throughout the capacitance range of the tuning capacitor.

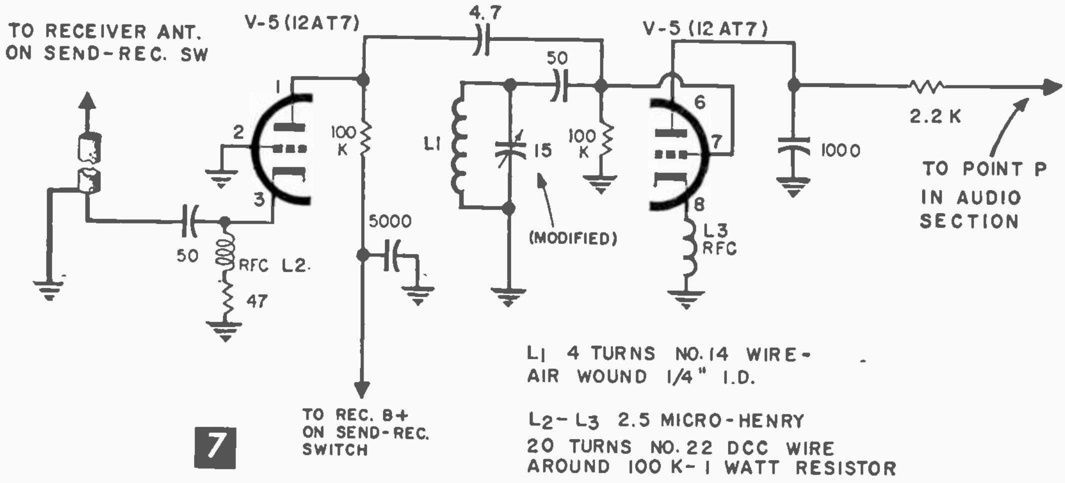
When the receiver superregenerates properly, check the tuning range with a grid-dip meter. It should completely include the two-meter amateur band, from 144 to 148 megacycles/second. A slightly wider tuning range is not unlikely, and can be adjusted by squeezing together or spreading apart the turns of coil L1.

If you live in or near a region of high



6 B BACK VIEW OF SEND-RECEIVE SWITCH

amateur activity, you should be able to hear two-meter amateurs on the air almost any evening by using a good antenna. In addition, police, taxicab dispatchers, and aircraft operating adjacent the amateur band may also often be heard. If you have not as yet installed a good two-meter antenna, a high, clear outdoor TV receiving antenna can be used to test the receiver. Install a knob temporarily on the receiver tuning capacitor shaft to aid in these preliminary tests. To



7

DETECTOR-RF AMPLIFIER ASSEMBLY

use your TV antenna, connect one side of the ribbon line to the antenna input tie point on the sub-unit, the other side to chassis.

The Transmitter. With the receiver in satisfactory working condition, begin the transmitter by wiring the crystal oscillator, and work forward (see Fig. 10). The crystal, which should have an operating frequency of approximately 36 *mc*, plugs into any two alternate pins of the 8-prong crystal socket. Other unused pins of the crystal socket make handy tie-points for various components. The crystal oscillator tube is the triode section of the 6AW8 tube. The only critical portion of this circuit is the coil, and this will cause no trouble if it is wound exactly as described in Fig. 10.

After wiring and checking the crystal oscillator stage, proceed with the frequency doubler, the pentode section of the 6AW8, paying careful attention to the coil. Be especially careful to avoid poor connections and solder-blob shorts between tube socket lugs and chassis. Support all small parts firmly by means of a liberal use of insulated tie lugs, and allow no parts to swing free or trouble is certain to follow. Keep all grid and plate leads short and direct, and return all grounds to the same point on the chassis, insofar as is possible.

With the 6AW8 circuitry complete and checked, wire in the 6CL6 driver stage, following the same precautions as outlined above. Remember, these circuits operate at a high frequency. Long, sloppy leads, or poorly-organized wiring cannot be tolerated. Wind the coil as described in Fig. 10, being careful to get the tap squarely in the electrical center of the coil. Make the RF choke, which connects from B+ to the coil tap by winding 100 turns of No. 26 cotton-covered magnet wire around the body of a 100K (or larger) 1-watt carbon resistor. "Scramble-wind" it, if you like, then dip in clean, clear lacquer to hold the turns in place.

When the 6CL6 driver stage is complete, wire the 12BH7 final amplifier stage. Similar precautions should be followed. Keep the leads in the plate circuit especially short and direct. This is vital. Wind the RF choke coil for this stage also around a 100K (or larger) 1-watt carbon resistor. However, only 25 turns of No. 26 cotton-covered wire are required. Wind these in a smooth layer, then

Choosing an Antenna System

A suitable antenna system is very important to the effectiveness of any amateur station, and this is especially true in the VHF bands. Whereas a simple half-wave dipole in the attic will provide many contacts for the Puddle Jumper, a good, directional "beam" antenna, such as one of those suggested in the Materials List, will vastly improve it.

The height to which you raise your antenna will determine your range of VHF communications, and you should put your antenna just as high above the ground as your pocketbook and local building codes will allow. By using a rotator, you will be able to point the antenna exactly at the station you want to contact. Any of the good TV rotors, will do, since the 2-meter beam is smaller than most TV antennas.

If your physical setup requires a feedline longer than 20 ft., be sure to use the larger RG-8/AU coaxial cable rather than the smaller RG-58/AU. The energy losses in the smaller cable are too great when used for long runs, most of the transmitter power is burned up before it gets to the antenna, and the receiving losses are equally great.

The following table compares the height of the antenna with the range of communications you can expect during day-to-day conditions. Occasionally, during especially fine propagation conditions called "band openings," it is possible to exceed these ranges from five to ten times.

Antenna Height in Feet	Normal Range in Miles
10	6
20	9
30	11
50	14
70	17
100	20

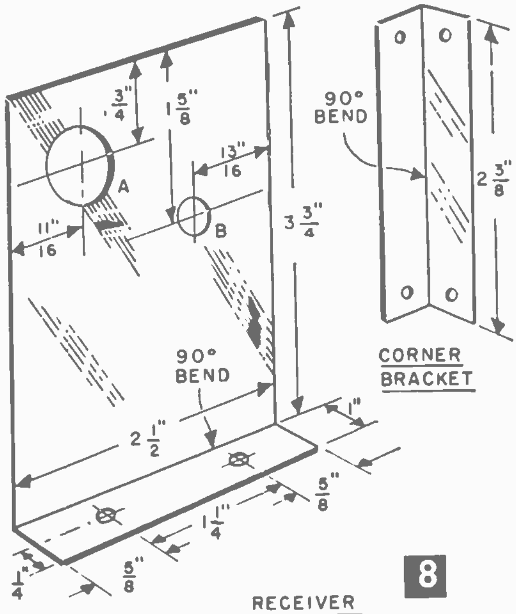
"dope" with clear lacquer to hold in place.

Do not connect the RF choke to the B+ connection (point E on send-receive switch) at this time. Otherwise, complete and check the wiring of all the transmitter RF stages, and insert all tubes in these stages. Do not apply power yet. Instead, get your grid-dip meter and, with this device in the oscillating condition, carefully adjust each of the coils as closely as possible to its proper resonant frequency. These frequencies are:

Crystal oscillator coil, about 40 *mc.*
Doubler coil, 72 *mc.*
Driver coil, 72 *mc.*
Final amplifier tank circuit, 145 *mc.* with capacitor about half-enmeshed.

The coil specifications given in Fig. 10 were found satisfactory in the writer's model. However, it may be necessary to add or subtract a turn or two from any coil. This is because stray circuit capacitances are unpredictable, and are bound to vary in individual cases. Be sure that the tubes are inserted at the time of these tests, as it is the capacitance of the tubes themselves which makes up the primary tuning capacitance of these circuits.

When all circuits have been thus approximately set to resonance, insert the crystal and rectifier tube, set send-receive switch to transmit, and apply power. Using the grid-dip meter in its wavemeter function, tune it

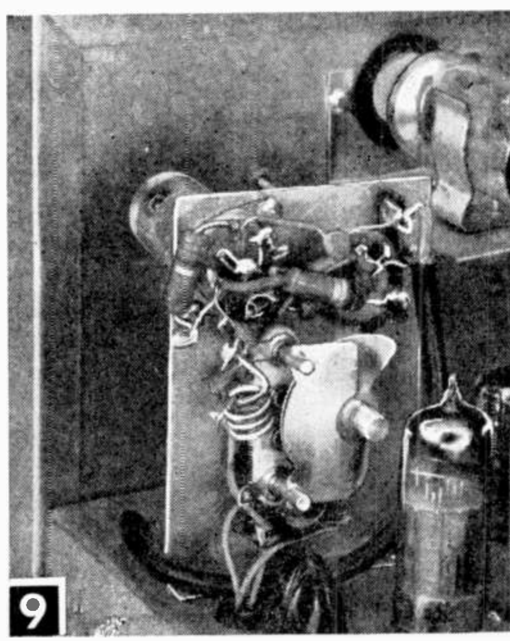


8

RECEIVER SUBASSEMBLY BRACKET

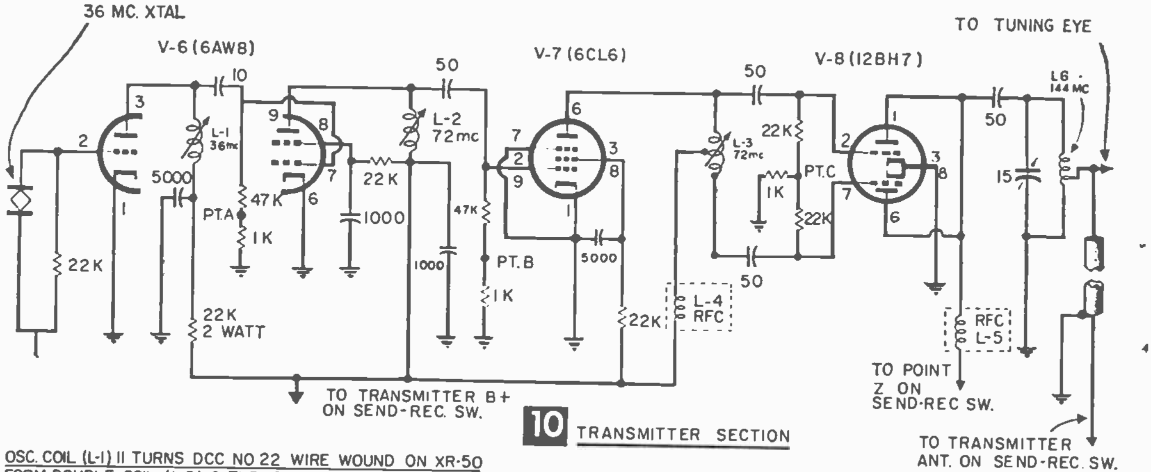
MATERIALS LIST—2-METER STATION

No. Req.	Description
1	5U4GB vacuum tube
1	6AW8A vacuum tube
1	6CL6 vacuum tube
1	6E5 vacuum tube
1	6V6 vacuum tube
3	12AT7 vacuum tube
1	12BH7 vacuum tube
1	47 ohm, 1 watt resistor
4	47K, 1 watt resistors
4	220K, 1 watt resistors
3	2.2K, 1 watt resistors
11	100K, 1 watt resistors
1	470K, 1 watt resistor
1	390 ohm, 1 watt resistor
5	22K, 1 watt resistors
1	22K, 2 watt resistors
3	1K, 1 watt resistors
1	.5 mfd, 200 WVDC paper capacitor
9	5000 mmfd, 600 WV ceramic disk capacitors
5	1000 mmfd, 600 WV ceramic disk capacitors
6	50 mmfd, WV ceramic disk capacitors
1	4.7 mmfd, 600 WV ceramic disk capacitor
1	10 mmfd, 600 WV ceramic disk capacitor
2	10 mfd, 450 WV electrolytic filter capacitor
2	15 mmfd variable capacitors (Bud M-C 1850)
2	100K linear taper potentiometers (one with switch)
1	2½ x 7 x 11" chassis (18 ga. aluminum)
1	7⅜ x 11⅜" front panel (18 ga. aluminum)
1	2½ x 3¾" subassembly (18 ga. aluminum)
1	National type BM dial
1	tuning eye assemble for 6E5 tube (Amphenol 58 MEA 6)
1	4" PM loudspeaker
3	plastic octal tube sockets
6	9-pin miniature sockets, high frequency plastic insulation
1	6-terminal barrier terminal strip (Cinch-Jones)
1	SPST toggle switch
1	4PDT non-shorting wafer switch (Centralab 1409)
1	power transformer (Chicago-Standard PM-8408)
1	filter choke (Chicago-Standard C-1708)
1	output transformer (Chicago-Standard A-3823)
3	National XR-50 coil forms with iron slugs
1	¼ to ¼" brass coupling
1	#48 lamp (for tuning)
1	1N34 crystal diode
1	"Overtone" crystal 36.25-36.75 *mc*, available from Texas Crystal Co., River Grove, Ill. (see box copy)
1	line cord and plug
1	¼ x 3" plastic rod
1	type F-1 carbon microphone (Telephone Engineering Co., Simpson, Pa.)
1	telegraph key (Johnson 114-100)
1	144 *mc* directional antenna (see box copy) (Hy-Gain, type 210, ten element 144 *mc* antenna, Newark Electronics #92-F-482) (Telrex, six element 144 *mc* beam antenna, Allied Radio #92-CZ-273)
3	knobs for ¼" shaft
Misc.	screws, nuts, tie points, #20 plastic insulated hookup wire, rosin core solder



9

Detector-RF amplifier



10 TRANSMITTER SECTION

OSC. COIL (L-1) 11 TURNS DCC NO 22 WIRE WOUND ON XR-50 FORM DOUBLE COIL (L-2) 6 TURNS DCC NO. 22 WIRE WOUND ON XR-50 FORM DRIVER COIL (L-3) 6 TURNS DCC NO 22 WIRE WOUND ON XR-50 FORM CENTER TAPPED. FINAL AMPLIFIER COIL (L-6) 3 TURNS NO.14 TINNED COPPER WIRE TAPPED ONE TURN FROM GROUND END.

L-4 100 TURNS NO 22 WIRE WOUND AROUND A 100K- 1 WATT RESISTOR.

L-5 20 TURNS NO 22 DCC WIRE WOUND AROUND A 100K -1 WATT RESISTOR

to 36 *mc*, and bring it near the crystal oscillator coil. Immediately adjust the crystal oscillator coil slug to maximum output, then back-off by unscrewing the slug upwards for about three whole turns. This is for stability. Then tune the grid-dip meter to 72 *mc*, and adjust the doubler coil slug to maximum output. Connect the negative side of a 10-volt dc voltmeter to point B (Fig. 10), and ground the positive side to chassis. Adjust the doubler coil slug to give maximum voltage reading. The voltage here should be at least 1 volt, but more is desirable.

Then connect the voltmeter to point C and adjust the doubler coil slug until maximum reading is obtained. Again, readings between 1 and 3 volts are acceptable, the higher the better. It is also a good idea to make sure by means of the grid-dip meter that this stage is producing its output on 72 *mc*.

When you are satisfied that this is indeed the case, shut off the power temporarily, and complete the connection between the RF choke coil in the 12BH7 final amplifier plate and point E on the send-receive switch. Then

The Superregenerative Receiver

Perhaps no other type of receiver provides as much VHF reception per tube and dollar invested as the superregenerative. Even though simple to construct, it enables you to realize as much sensitivity with one or two tubes as is ordinarily obtained with seven or more. But such sensitivity is obtained at a price. You must tune carefully for the signals, particularly the weaker ones; they do not roll in at the touch of the dial. In addition, the superregenerative receiver is somewhat susceptible to overloading by strong, local signals, and is not as selective as a good superheterodyne.

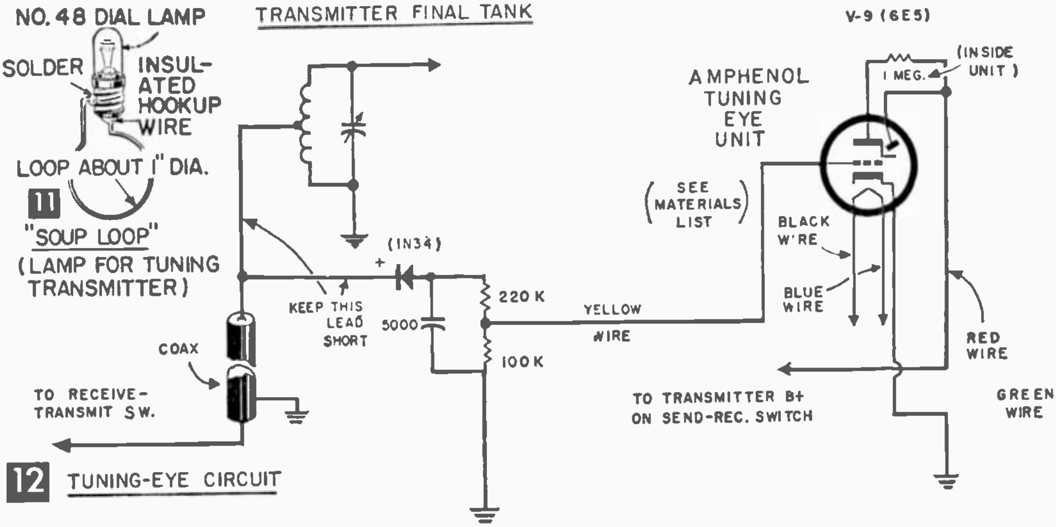
We have employed a superregenerative receiver in this unit simply because a superheterodyne of comparable performance would raise the cost and building complexity beyond that which is reasonable for the purposes of this project. This is a good little receiver, and we have no apologies to offer for its performance.

tune the grid-dip meter to 145 *mc*, and reapply power to the transmitter. A definite indication of strong RF power output on this frequency should be evidenced when the final amplifier tuning capacitor is readjusted. If it is not, shut off power immediately and reexamine wiring. When a definite sign of RF output at 145 *mc* is obtained from the 12BH7 plate circuit, a "soup-loop" (a #48 or #49 pink bead pilot lamp bulb connected to a loop of wire 1 in. in diameter as in Fig. 11) should glow very brightly when coupled to the final amplifier plate coil. If it does, then the RF circuitry is probably in good shape.

Make a final check for stability and freedom from self-oscillation as follows: Hang the soup-loop in the final amplifier plate coil. Adjust all coils and the tuning capacitor for maximum output. Then very briefly pull out the crystal. All output should cease. (Immediately reinsert crystal to avoid damage to tubes or circuitry.) If output does not cease when the crystal is removed, then you will probably have to redress wiring and move parts around until this condition occurs, or trouble with the F.C.C. is imminent.

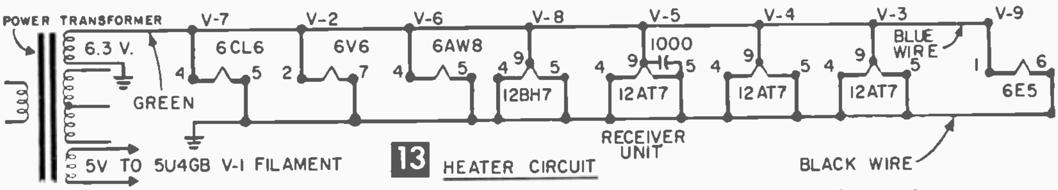
To check the transmitter for modulation, connect a carbon mike to the appropriate terminals, apply power, and switch to transmit position. Hang the soup-loop around the final amplifier plate coil and tune for maximum output. Then talk into the microphone. As you speak, the soup-loop bulb should flicker noticeably. If you have another 2-meter receiver handy, tune in the signal. The speech quality should be clear, crisp, and strong.

Finishing Touches. With both the receiver and transmitter operating satisfactorily, it is time to apply the finishing touches. Pull out all tubes and remove all external connections



11 "SOUP LOOP" (LAMP FOR TUNING TRANSMITTER)

12 TUNING-EYE CIRCUIT



13 HEATER CIRCUIT

to prevent damage. Wire the tuning-eye rectifier circuit, keeping the lead to the final amplifier coil tap short, less than 1 in. long. Connect all coaxial cables from the receiver and transmitter to the send-receive switch, and from the switch to the appropriate terminals upon the Jones terminal strip using type RG-58/AU coaxial cable, and grounding the outer shield. Mount the tuning-eye tube bracket upon the panel, and connect the socket leads appropriately (Figs. 6 and 12). These leads should be brought through a grommeted hole in the chassis floor.

The output from the transmitter is taken from a tap on the final amplifier output coil. This tap should be made one turn from the ground end of the coil. The tuning-eye rectifier circuit also connects to this point. If the tuning-eye tries to open instead of close, when the transmitter is energized, reverse the 1N34 crystal diode.

Mount the National vernier dial on the panel, and couple it to the receiver tuning capacitor through a length of ¼-in. dia. plastic rod and a ¼-in. to ¼-in. shaft coupling. The dial should read zero when the plates of the receiver capacitor are completely enmeshed. Tighten all set screws firmly. Then put knobs on both potentiometer shafts (cutting these to proper length if necessary) and on the send-receive switch shaft. This should complete the assembly.

Connect the power cord and microphone to the proper terminals. Then connect a 2-watt 47-ohm carbon resistor to the antenna terminals. Apply power, and switch into transmit position. Adjust the final amplifier tuning capacitor until the tuning-eye closes. Then speak into the microphone. The shadow within the tuning-eye should flicker noticeably, indicating satisfactory modulation, and a check with a local receiver should reveal good, clean speech quality. Also, after a few minutes, the 47-ohm resistor across the antenna terminals should get noticeably warm, indicating satisfactory power output.

Now, remove the 47-ohm resistor, and connect a 144-*mc* antenna system, preferably a good, high directional "beam" antenna as recommended. Make sure that the outer shield of the coax cable goes to the grounded terminal on the strip. Throw the send-receive switch to receive, and adjust the regeneration control for a smooth hiss. If there are any 2-meter stations operating within your vicinity, you should have no difficulty in hearing them. Throw the switch to transmit, adjust the final amplifier tuning capacitor for maximum closing of the eye, and you're tuned-up and ready to go.

Novice amateurs, learning the code, may wish to operate in the modulated code, MCW mode, which is legal on the 2-meter band. To do this, replace the microphone with a telegraph key and snap the toggle switch to the MCW (open) position. Otherwise, operation is identical to that on voice. The smooth, tone-modulated code signal radiated can be read by any other 2-meter amateur, regardless of the kind of receiver employed.

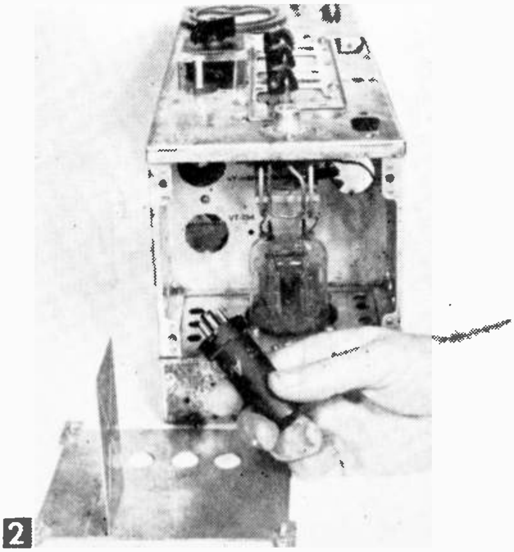
Improved Crystal Control for Amateur Communications

By EDWIN E. STEINBERG, W9QJO

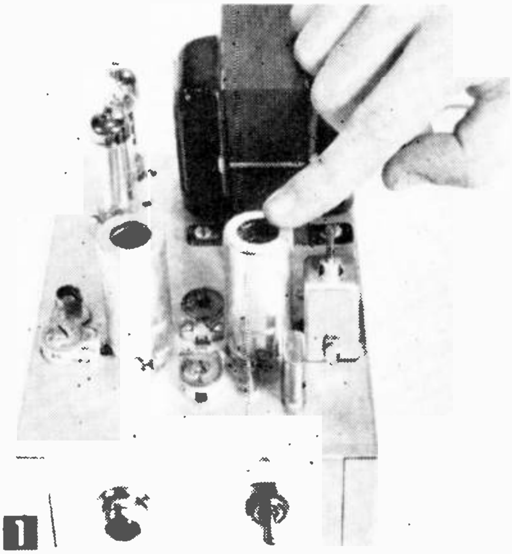
PORTABLE transmitters, net operation, and broadband receiver converters are just a few of the many circuit applications best filled by a crystal-controlled oscillator. This unit and a variable-frequency oscillator (VFO) team harmoniously for use in heterodyne-type transmitter exciters and single-sideband (SSB) generators.

Most crystal oscillator circuits in common use have a somewhat restricted application in choice of tube type and/or mode of operation. The oscillator applications shown in Figs. 1 and 2 feature both excellence of performance and versatility of application.

Circuit Details. The Tri-Tet and modified Pierce circuits are typical of those commonly used. The Tri-Tet (Fig. 3) was originally designed for use with tetrode tubes. While it will work with pentode tube types, it does not use them to their full advantage. Those pentode types with an internal connection between suppressor and cathode are not suitable for the Tri-Tet circuit. In addition, the cathode circuit impedance (L1 and C1) of a Tri-Tet oscillator is common to both the oscillator and amplifier sections of the circuit and prevents good load isolation.



2 New 6AG7 oscillator in modified BC-625 transmitter.



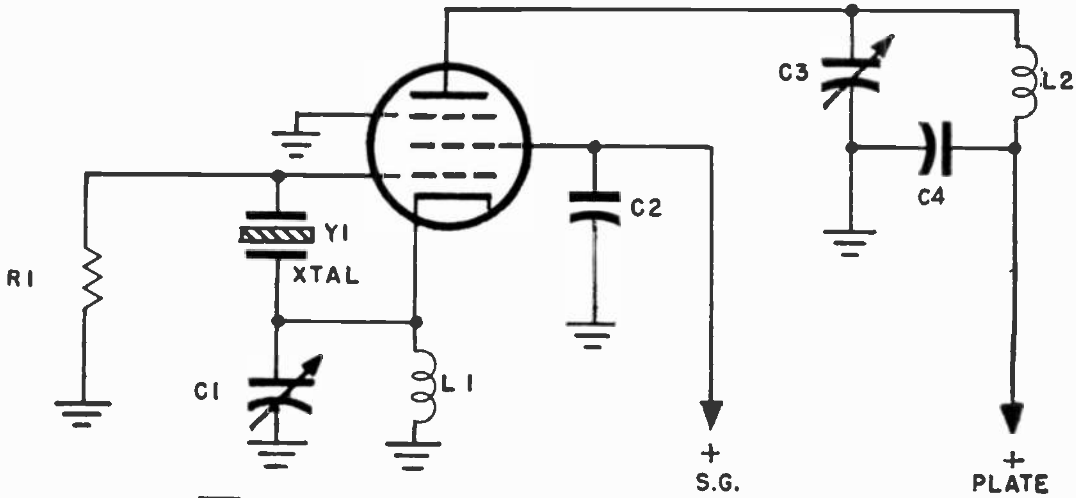
1 VHF receiver converter using the improved oscillator.

The modified Pierce oscillator circuit (Fig. 4) was designed for pentode tube applications. Since the cathode is grounded, any pentode tube-type or pentode-tube section can conceivably be used in an electron-coupled Pierce oscillator. Reasonably good load isolation will be achieved. However, the circuit is not suitable for overtone operation. As in the Tri-Tet applications, both crystal terminals are above ground. This is an added complication if crystal switching is required.

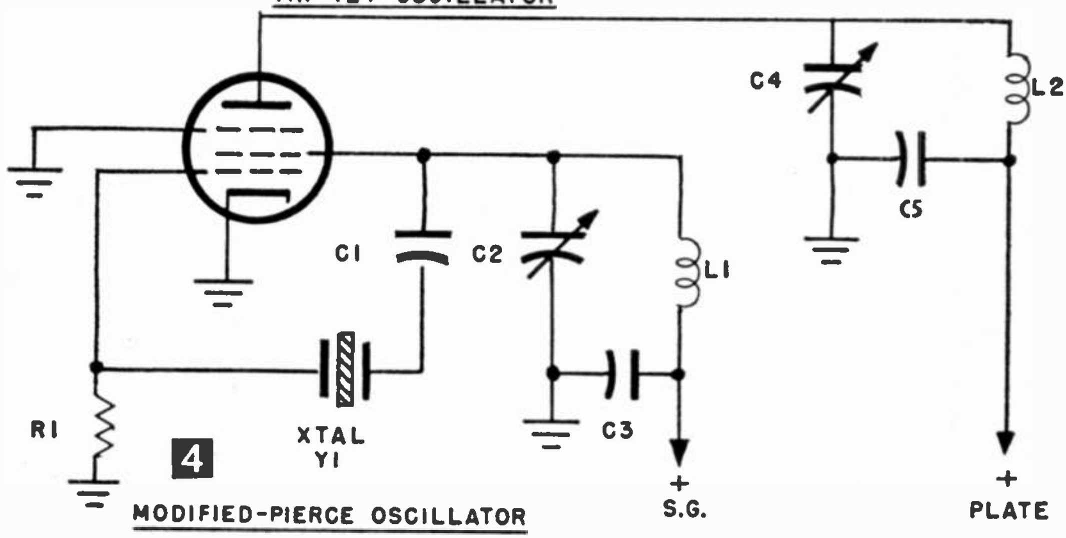
What Circuit Can Best Be Used? While the modified Miller circuit in Fig. 5 was designed for use in a crystal-controlled receiver converter, its basic design can be applied to a wide variety of circuit applications. Tube type and component values need only be chosen for the specific application.

The circuit is an electron-coupled form of Miller oscillator. Similar to the Tri-Tet, it differs in that a grounded-cathode form of Miller oscillator was used rather than a grounded-plate arrangement. It is intended strictly for modern pentode tube types or pentode tube sections. Since the suppressor and cathode are both grounded, many tube types are suitable for this circuit which are not satisfactory for the Tri-Tet.

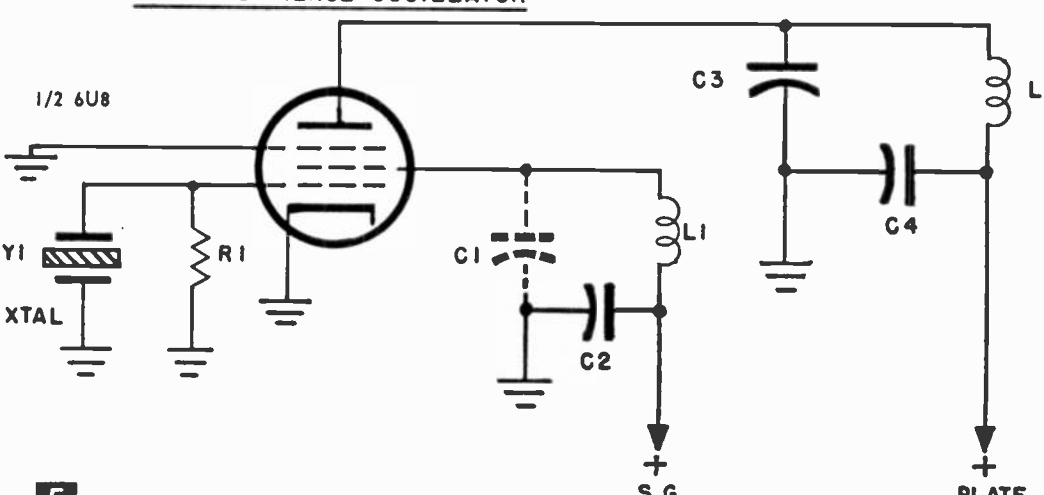
Its basic crystal oscillator section can be employed for either fundamental or overtone



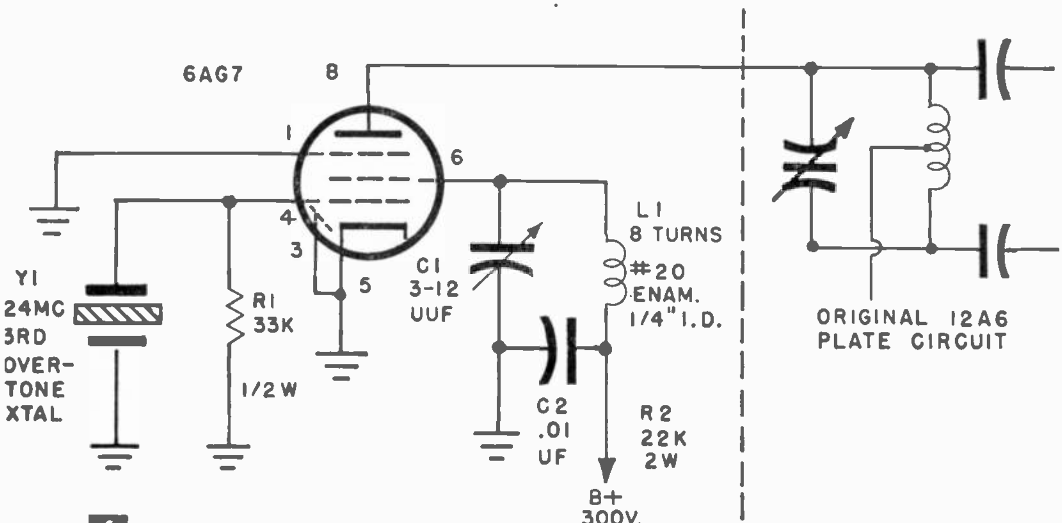
3 TRI-TET OSCILLATOR



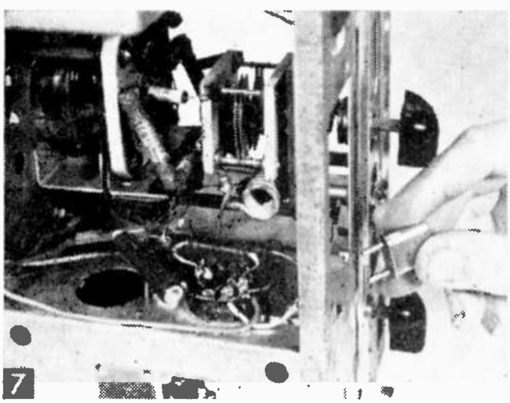
4 MODIFIED-PIERCE OSCILLATOR



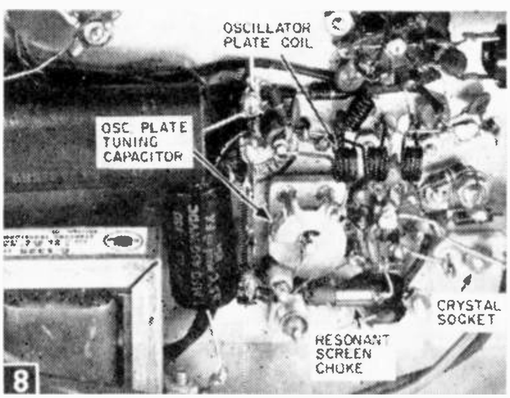
5 MODIFIED-MILLER OSCILLATOR



6 NEW OSCILLATOR CIRCUIT



7 6AG7 transmitter-oscillator construction.



8 Receiver-converter oscillator construction.

mode of operation. The electron-coupled plate section can be used as an amplifier or multiplier. The grounded-cathode circuit, plus shielding provided by the suppressor-grid, ensures excellent load selection. Drift caused by temperature effects is reduced by the use of the minimum required crystal drive for adequate output.

The circuit is currently in use as a fifth-overtone oscillator and doubler, and provides 130 *mc* oscillator injection for a 2-meter broadband receiver converter, as featured in "VHF Converter for Short Wave or Communications Receivers" (Fig. 1), cover story in RADIO-TV EXPERIMENTER No. 595 (available for $1, including mailing and handling charges, SCIENCE and MECHANICS, 505 Park Ave., New York 22).

The circuit is also in use as a third-overtone oscillator (Fig. 2), and doubler using a 6AG7 tube to replace the 12A6 multiplier in a BC-625 transmitter (part of the SCR-522). All the original plate circuit components are used. The tube socket must be completely rewired (Fig. 7). Note that the original 6G6G oscillator circuit is entirely removed.

Construction Suggestions. The usual precautions for layout and lead dress must be observed in the construction of this or any other oscillator (Fig. 8).

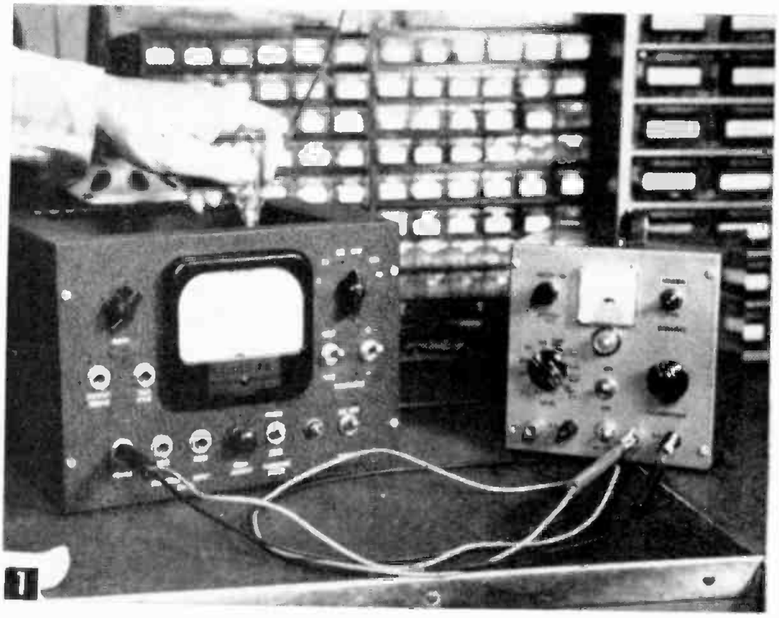
Mechanical stability is required as in Fig. 8 in order to achieve optimum frequency stability. Use of a crystal for frequency control is *not* a cure-all and cannot replace good design and careful construction.

Adjustment and Operation. This oscillator requires no new tricks of adjustment or operation. The screen is tuned somewhat above the desired crystal (fundamental or overtone) frequency. (Crystal drive increases as exact screen circuit resonance is approached.) Tune the plate tank like you would any amplifier or multiplier and let the circuit do the rest.

AC-DC Voltage Standard

Simply built unit provides highly accurate ac or dc voltages or currents for the calibration of test equipment

By W. F. GEPHART



1

Calibrating a VTVM in home-built test equipment with the voltage standard.

A MAJOR problem in the building of certain test equipment resides in the calibration of the finished unit, and the ac-dc voltage standard in Fig. 2 is designed to supply a calibration source with 99% accuracy.

2

Notice on the front panel the peak and rms dual calibrations of the ac voltages.

The unit consists of a simple, regulated dc source of five convenient voltages. It can be built for about $35 using standard parts, and for less than $30 if surplus parts are used.

Calibration Unit Difficulties. In many such units, voltages are furnished by a resistor network as shown in Fig. 3A. The standing current in the network is 10 *ma*, and the voltages are accurate only if virtually no external current is drawn.

Suppose, for example, a device drawing 1 *ma* were connected to the 50-volt tap. This would increase the current being drawn through R1 and R2 to 11 *ma*, causing a voltage drop of 60.5 volts across them. Since the supply voltage is held constant at 105 volts, the voltage at the 50-volt tap would then be 105 minus 60.5 (the drop across R1 and R2), or 44.5 volts.

This problem could be solved by using a variable resistor, instead of the network, as shown in Fig. 3B. Then the resistance could be varied to maintain the desired voltage as the load changed. But some means would have to be devised to know where to set the resistance.

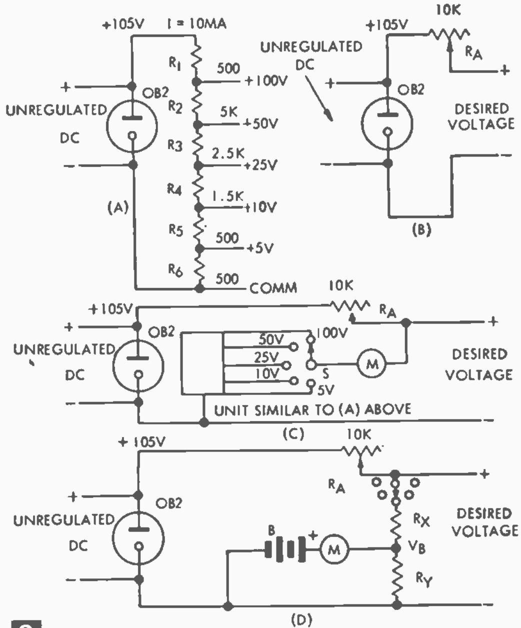
This could be done as shown in Fig. 3C. An accurate unit (under no load conditions), such as in Fig. 3A, would be connected to one side of a meter, and the variable voltage connected to the other side. When the two voltages are equal, no current would flow through the meter, which would then indicate the proper setting of the variable resistance. But this would be expensive.

Mercury batteries could be substituted for the fixed voltage. They are excellent voltage standards since their output voltage does not change appreciably during their useful life. However, getting enough mercury batteries to give the variety and range of voltages desired would also be expensive.

The Solution to the Problem is shown in Fig. 3D. Here, a single mercury battery, with a voltage of Vb is used, and two resistors (Rx and Ry) are connected across the variable voltage. The ratio of these resistors is such that, when one of the desired voltages (such as 100 volts) is placed across them, the voltage drop across Ry is exactly equal to the battery voltage. When Ra is then set at 100 volts, for example, the meter will read zero since the voltages on each side of it are equal.

It can be seen that, by using several sets of such proportioned resistors, the voltage across the bottom one could always be equal to the battery voltage, even with different supply voltages.

In the actual circuit (Fig. 2), two variable resistances (R5 and R6) and several fixed resistors (R7 through R11) are used in place of Ra shown in Fig. 3D. This gives more precise control for the various voltages within the external current capacity of 6 *ma* than a single resistor would. Separate resistors (R12 through R16) are used for Rx for each range,



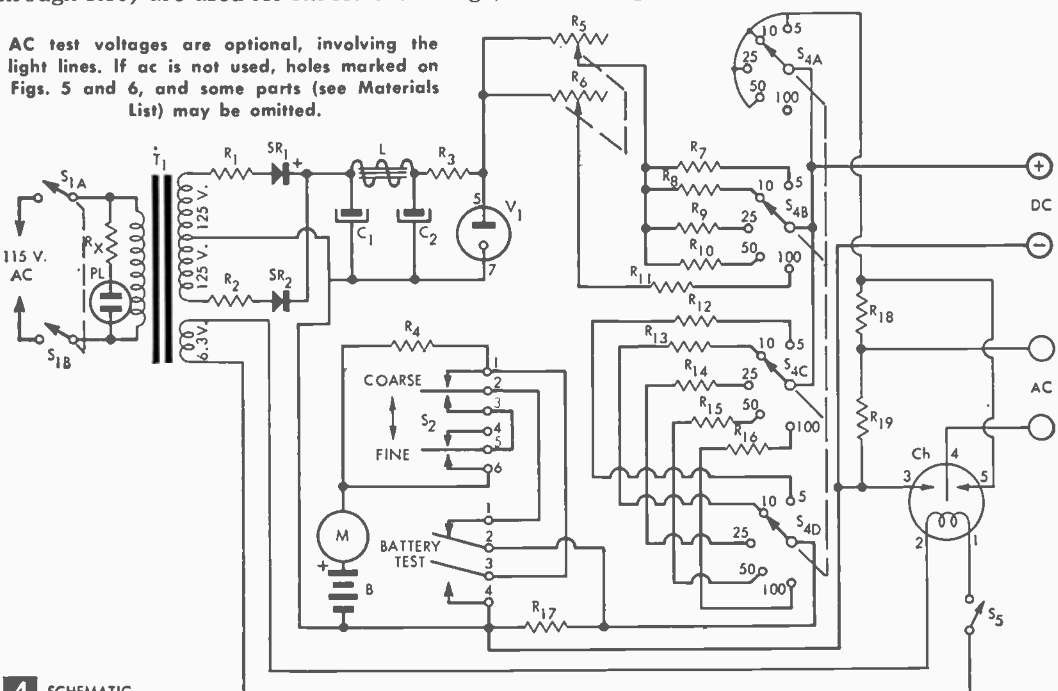
3

each proportioned to a single resistor (R17), which acts as Ry for all ranges.

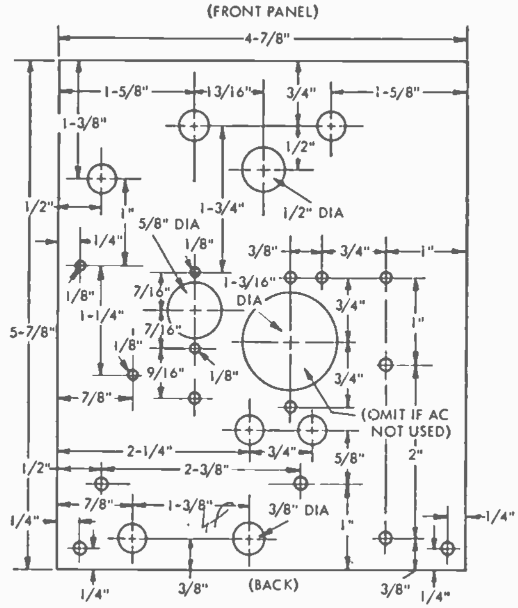
The OB2 regulator tube was selected because ratings show this tube output to be within one volt of rating, which is better than 99% accuracy. Accuracy is also maintained with at least 1% resistors for R12 through R19.

While a zero-center meter was used in this unit, a regular meter can be used if the needle

AC test voltages are optional, involving the light lines. If ac is not used, holes marked on Figs. 5 and 6, and some parts (see Materials List) may be omitted.

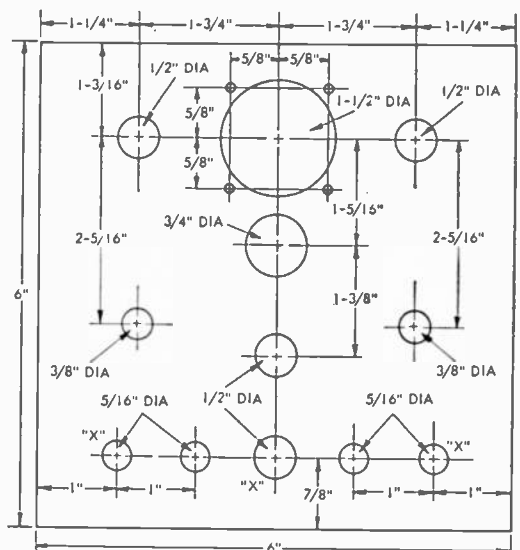


4 SCHEMATIC



ALL GROMMET HOLES 5/16" EXCEPT WHERE MARKED
ALL SCREW HOLES 9/64" EXCEPT WHERE MARKED

5 CHASSIS LAYOUT



OMIT HOLES MARKED "X" IF AC NOT USED

6 FRONT PANEL LAYOUT

is set above the zero mark (with the zero adjustment), and this point marked as the "no-current" or null point. A zero-center meter is preferred, however, because of the off-null voltages involved.

The sensitivity of the meter is of little importance. The average 0-1 *ma* meter will indicate an unbalance of .002 volt. Because of the maximum unbalanced voltages, a "coarse-fine" switch (S2) places a voltage-dropping resistor (R4) in the meter circuit in the

MATERIALS LIST—AC-DC VOLTAGE STANDARD

Desig.	Description
RX	56,000 ohm, ½ watt, 10% carbon resistor (if not included in PL)
R1, R2	27 ohm, ½ watt, 10% carbon resistor
R3	5000 ohm, 5 watt carbon resistor
R4	120,000 ohm, ½ watt, 1% (Aerovox Carbofilm, see text)
R5	15,000 ohm, 4 watt, wirewound potentiometer (IRC-WPK-15000)
R6	500 ohm, 4 watt, wire wound rear section (IRC-WM-500)
R7	10,000 ohm, 1 watt, 5% carbon resistor
R8	9100 ohm, 1 watt, 10% carbon resistor
R9	5600 ohm, 1 watt, 5% carbon resistor
R10	3900 ohm, ½ watt, 5% carbon resistor
R11	1200 ohm, ½ watt, 5% carbon resistor
R12	200 ohm, ½ watt, 1% (Aerovox Carbofilm)
R13	1450 ohm, ½ watt, 1% (200 plus 1250 ohm Aerovox Carbofilm)
R14	5200 ohm, ½ watt, 1% (200 plus 5000 ohm Aerovox Carbofilm)
R15	11,450 ohm, ½ watt, 1% (450 plus 11K Aerovox Carbofilm)
R16	24,000 ohm ½ watt, 1% (Aerovox Carbofilm)
R17	1050 ohm, ½ watt, 1% (500 plus 550 ohm Aerovox Carbofilm)
C1 C2	30 mfd, 150 volt electrolytic capacitors (Sprague 1412)
S1	DPST toggle switch
S2	DP 3 position lever switch (Switchcraft 3037L)
S3	2 ckt. push button (H&H 3392A or Spemco 1158)
S4	4P 5 position rotary switch (Centralab PA-1013)
T1	250 volt, CT 25 ma, power transformer (Stancor PS-8416)
L	12 h, 30 ma choke (Stancor C-2318)
SR1, SR2	65 ma selenium rectifiers
M1	1 ma or less meter (see text)*
B	4.2 volt mercury battery (Mallory TR-133)
V1	0B2 regulator tube
PL	neon 51 bulb and holder
Misc.	6 x 6 x 6-in aluminum cabinet (Bud AU-1039HG), 2 knobs, 2 or 4 binding posts, hardware
	Additional Parts Required if AC Used
R18, R19	50,000 ohm, ½ watt, 1% resistors (Aerovox Carbofilm)
S5	SPST toggle switch
Ch	chopper (see text; typical units are Collins Electronic model IC-252, or Airpax 175)

* miniature tuning meter, 0-20-0 microamp, #R94-L108, available from Radio Shack Corp., 730 Commonwealth Ave., Boston 17, could be used

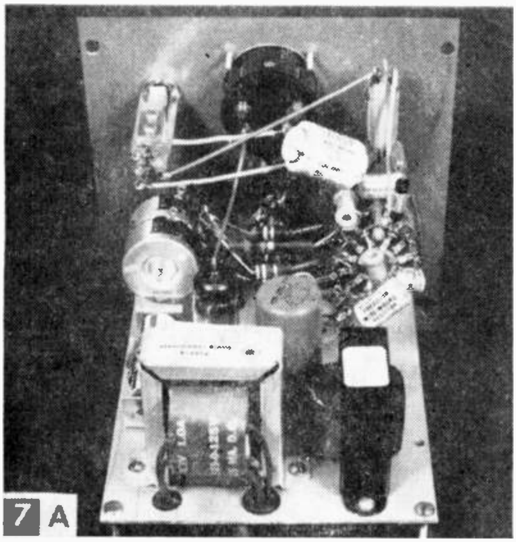
Surplus precision resistors available from "TAB," 111 Liberty St., New York 6, or Rock Distributing Co., 902 Crown Rd., Rochester 10, N. Y.

"coarse" position. With the meter shown, a Calrad (Japanese) 50-0-50 microamp, R4 is 120,000 ohms, which permits a full-scale deflection of 6 volts.

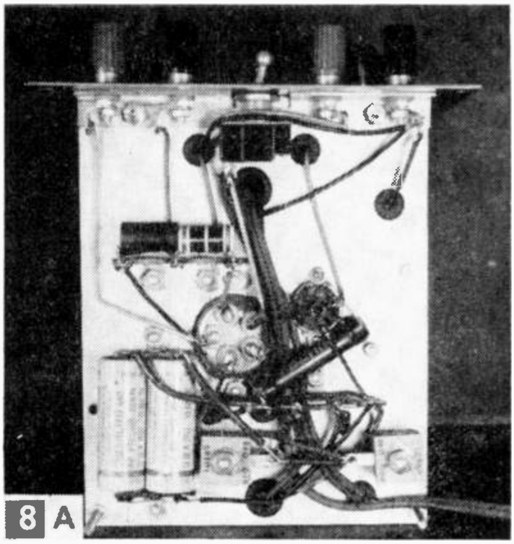
A push-button (S3) connects the battery across the meter through R4 to check battery condition. If the meter does not indicate proper value (36 in this case; representing 4.2 volts on the 6-volt f.s. deflection), the battery should be replaced.

AC Voltages are obtained by changing the precise dc voltages to ac with a chopper. This is a vibrator-like device which reverses the polarity of the dc by coil-energized contacts. Many such units are available in surplus stocks, or may be ordered by parts distributors. Any type with a 6-volt, 60-cycle coil and reasonable contact rating will do. The one used here has a contact rating of 1 *ma* at 1 volt, but works adequately up to about 25 volts. For this reason, only the four lowest voltages are available in ac.

The DC Voltage is split by R18 and R19, giving full-wave ac voltage which is half of the dc. The output is a square wave, which means



7A



8A

that the peak, average, and *rms* (root mean square) values are identical. Since most voltmeters are calibrated for *rms* values, the ac scale is calibrated for two values for each position. One is the peak (or actual) voltage, and the other is the *rms* value, which is .707 of peak. In calibrating most meters, refer to the *rms* value of the calibration. Also keep in mind that the *peak* values are *half* of the *peak-to-peak* values used on some meters and oscilloscopes.

Cabinet and Construction. Since regulator tubes are affected by light, the unit should be enclosed in a cabinet for greatest accuracy. If a minature meter is used, the 6x6x6-in. cabinet will suffice. If a larger meter is used, additional panel space will be required, although the chassis can be the same size.

Fasten the chassis to the front panel by the binding posts (and S5 is ac is used). Wire the power supply first. Due to the close spacing on the chassis, care should be taken in substituting for the parts shown. The knob on switch S4 has been made "double-ended" (when ac is used) by scratching a line at the back of the knob, opposite the regular line, and filling it with white paint.

To Use the Unit, first turn the "Calibration" control (R5-R6) fully counter-clockwise. Connect the device to be checked to the binding posts (ac or dc), and set switch S5 accordingly. Set the "Output" control (S4) to the desired voltage, and turn the unit on. Set "Balance" switch to "Coarse" and adjust "Calibration" control to zero current on the meter. Then reset the "Balance" control to "Fine," and readjust the "Calibration" control. When the meter again indicates zero current, the exact voltage is at the output terminals.

The unit can also be used as a current standard with a few precision resistors. By Ohm's law, exactly 1 *ma* of current will flow through exactly 100,000 ohms when it is connected across exactly 100 volts. By connecting a 0-1 *ma* meter in series with this resistor, you can check the accuracy of the meter, since essentially 1 *ma* of current will flow—"essentially," because the internal resistance of the meter is added to the circuit. But since such meters usually have a resistance of 100 ohms or less, the error is .001% or less.

The chart below shows currents available with various voltages and two accurate, precision resistors.

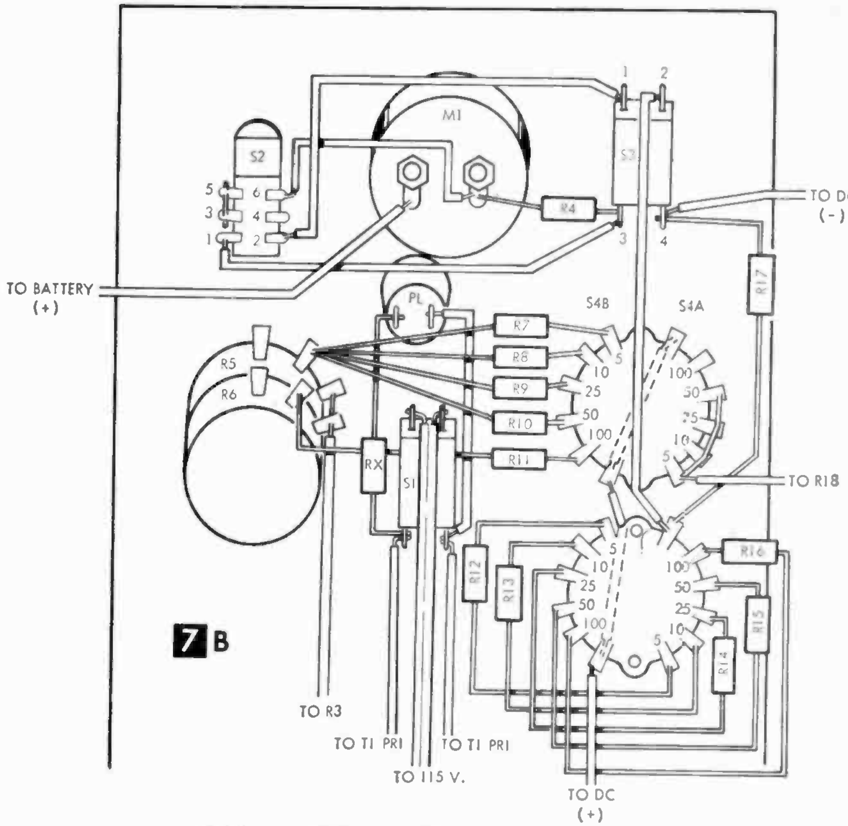
CURRENT WITH EXTERNAL RESISTANCE OF

Voltage	100,000 ohms	20,000 ohms
100	1 milliamp	5 milliamp
50	500 microamp	2.5 milliamp
25	250 microamp	1.25 milliamp
10	100 microamp	500 microamp
5	50 microamp	250 microamp

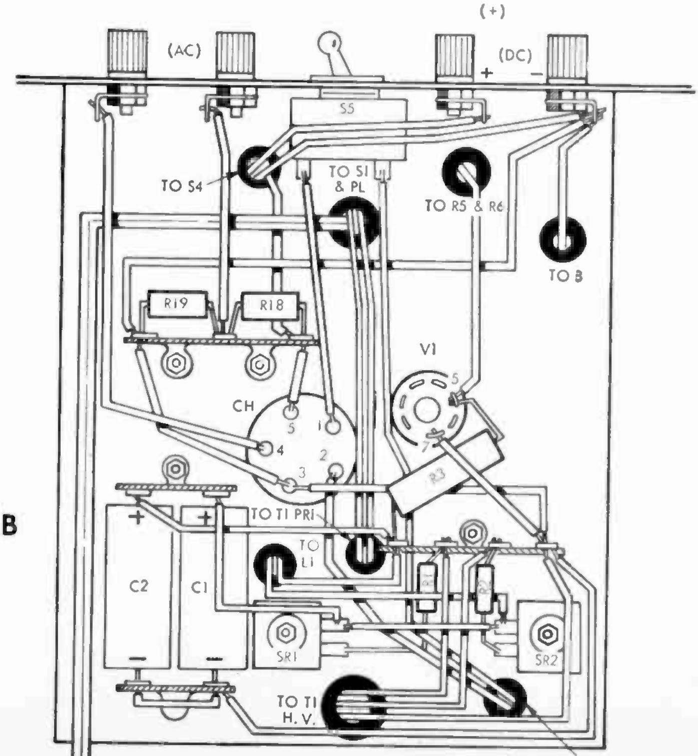
With these two resistors, accurate currents from 5 microamps to 5 *ma* can be obtained, all within the 6 *ma* current limit of the unit.

Determining Meter Movement. This source of accurate current also permits making current shunts for meters, or determining the basic movement of meters.

Assume, for example, that you wanted to make a 0-5 *ma* meter out of a 0-1 *ma* basic movement. Connect the meter in series with the 100,000-ohm precision resistor, and set the unit to 100-volt output. Cut a very short length of resistance wire across the meter terminals, turn the unit on (balancing it to the null), and adjust the length of the wire until the external meter reads 20% full scale. For final accuracy, change to the 20,000-ohm resistor, and make final adjustment of wire length until the external meter reads full scale, or exactly 5 *ma*.


M1
S2
S3
1
2
3
4
5
6
R4
TO DC
(-)
TO BATTERY
(+)
PL
S4B
S4A
R17
R5
R6
R7
R8
R9
R10
R11
RX
S1
TO R18
R12
R13
R14
R15
R16
10
25
50
100
TO R3
TO T1 PRI
TO T1 PRI
TO 115 V.
TO DC
(+)

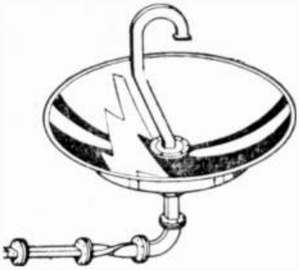
7 B


(AC)
(DC)
+
-
S5
TO S4
TO S1
& PL
TO R5 & R6
TO B
R19
R18
V1
CH
TO T1 PRI
TO L1
R3
C2
C1
SR1
SR2
TO T1
H.V.
TO T1 FIL.
TO 115 V.

8 B

What Is This Thing Called Wavelength?

By C. F. ROCKEY



1

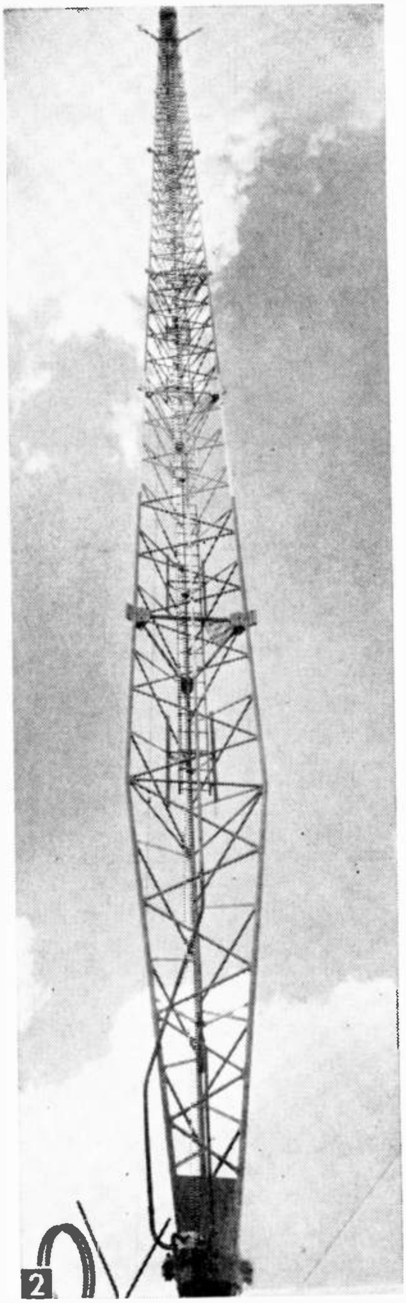
THE idea of the invariable unit of length is a very handy one and applies widely throughout the physical world. Yet its use often brings problems. A mouse can leap 10 times his length with ease; one quarter of an elephant's length is a prodigious jump for Jumbo. Yet both distances are about the same number of inches!

And so it is in radio. Miles of antenna wire are required to radiate the 16-kilocycle signal from one of the U. S. Navy's superpowered stations, while a taxicab transmitter of 160 megacycles gets out well with slightly over a foot of antenna. Most standard broadcast signals radiate from a tower several hundred feet high, while a 1-in. nub of wire radiates equally well on the microwaves.

Why do new radio amateurs often find to their amazement that a given antenna can be too long to radiate well at one frequency, yet be too short to do a good job on another? In other words, a simple measurement in feet or inches seems inadequate in itself when discussing electromagnetic effects. Why is it a fact that a given antenna "100 ft. long" conveys little information in itself to a radio engineer. What measurement of length is significant in this case?

The amount of time for the generator to generate one cycle is easily found by dividing the generator frequency into one, that is 1/f secs. And the distance which the electromagnetic wave generated by this generator will travel during the time of one cycle has been given the special name of one wavelength.

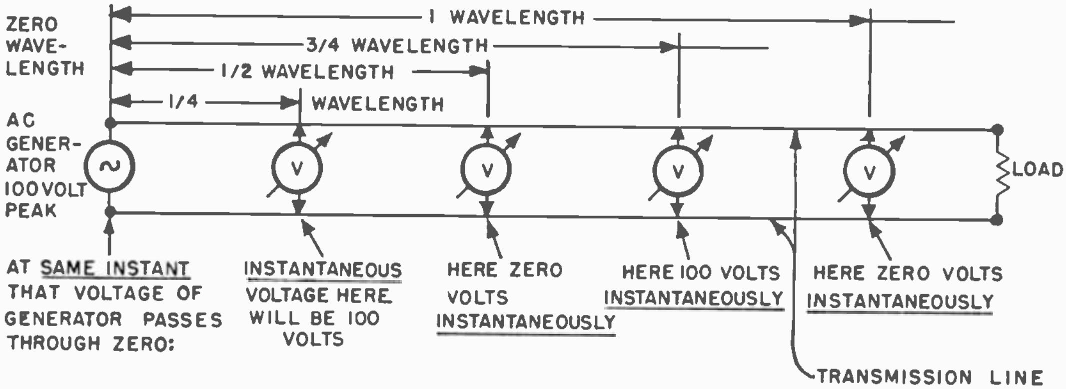
For example, a radio transmitter operating in the center of the standard AM broadcast band at a frequency of one megacycle per second will require one microsecond to complete one cycle. During this time, the wave radiated into space by this transmitter will have moved about 1000 ft., or, to be exact, 982 ft. Thus we say that the wavelength of this transmitter is 982 ft. On the other hand, an FM broadcast station, operating on 100 megacycles would have a wavelength of 9.82, or about 10 ft.

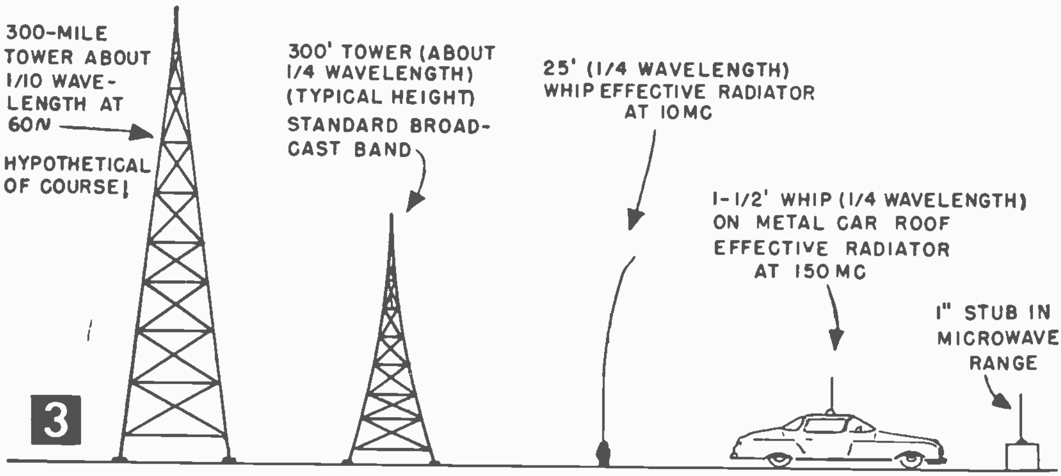


2

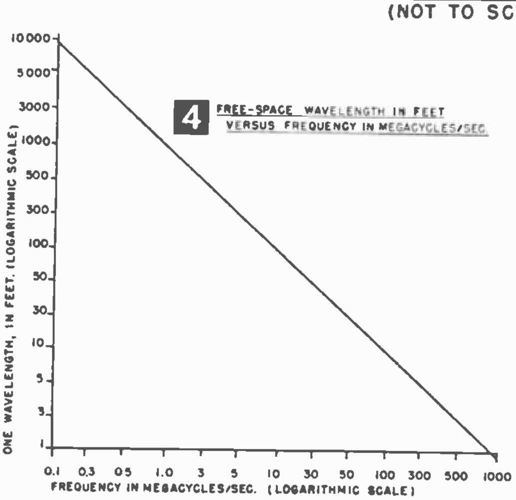
Two extremes in transmitting antennas, each designed for best results at different wavelengths. Towering mast above is that of WBBM, Columbia Broadcasting System radio station in Chicago. At left, above, is sketch of roof-mounted Andrew antenna designed for microwave transmission.

Thus, wavelength is inversely proportional to frequency. The higher the frequency, the





COMPARATIVE HEIGHT OF VERTICAL ANTENNAS AT VARIOUS FREQUENCIES (NOT TO SCALE)



shorter the wavelength (see Fig. 2).

Why Bother to Specify Wavelength? Simply because the wavelength is the only valid unit of size comparison for electromagnetic systems operating at different frequencies that is, antennas, transmission lines, or connecting leads in radio apparatus. An electromagnetic system a certain number of wavelengths in extent behaves in the same manner, regardless of the frequency.

To understand this, we should first recall that it requires time for an electrical disturbance to move through any system. Brief as this interval may be, it is nevertheless both finite and significant. In moving through free space, an electromagnetic wave requires a bit more than five microseconds (millionths of a second) to traverse one mile. This means that such a wave travels slightly less than 1000 ft. during one microsecond. When moving on conducting systems such as antennas and transmission lines, an electrical disturbance may travel somewhat, but not a great deal, less rapidly.

Thus, if a high-frequency ac generator is connected to one end of a conducting system, the *instantaneous voltage* at the far end of the system may be greatly different from the *instantaneous generator voltage* at that same instant (Fig. 3). This effect is entirely different from, and in addition to, any "normal" voltage-drop caused by resistance-losses in the conductor.

What is the magnitude of this instantaneous

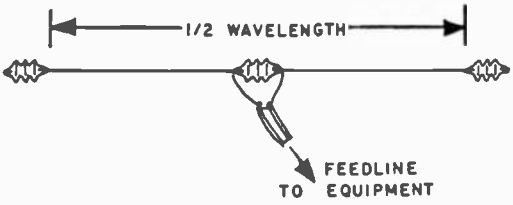


TABLE A
APPROXIMATE LENGTH OF HALF-WAVE ANTENNAS AT DIFFERENT FREQUENCIES

Frequency (mc)	½ Wavelength (ft.)
1.8	260
3.75	125
6.0	78
7.0	67
10	47
14	33.5
21	22
27	17.3
29	16
52	9
100	5
145	3.25

Formula:

$$\text{Half wavelength (ft.)} = \frac{468}{\text{Frequency (mc)}}$$

voltage difference? That depends on the relationship between the time of transmission along the system and the time required for the ac generator to generate one complete cycle (Fig. 3).

Antenna Variations. For instance, a 1-ft. antenna "looks" entirely different to a transmitter at one megacycle from what it would look to one operating at 100 *mc*. Or, a 1-ft. connecting lead, in a standard broadcast transmitter is considered short while a 1-in. lead may well be too long at the FM frequencies. But an antenna, or lead, one wavelength long will appear the same at all frequencies, because the time required for an electrical signal to travel over its length will occupy the time of just one cycle, in every case. Thus the wavelength is the only true electromagnetic unit of length, valid in principle for all frequencies from gamma rays through the lowest power frequencies.

A few examples will further reveal the immense practical value of the wavelength concept. Experiment discloses that an antenna, to radiate at all well, should be at least one-tenth wavelength long at the operating frequency. On the other hand, no connecting lead should probably be more than 1/100th wavelength long. In the standard broadcast band, then, antenna towers may be several hundred feet high as in Fig. 1, while internal transmitter leads may be as long as 10 ft., if necessary, without undue bad effects due to length alone. In the FM broadcast band however, an effective antenna need only be a few feet long. But any leads, in the high frequency circuitry, must be not much over 1 in. long, or trouble will inevitably follow.

We can now see why a completely new set of techniques had to be developed before the microwaves above 1000 megacycles could be put to practical use. These techniques do not use connecting leads of the ordinary sort since they would have to be about 1/100 in. long, in order not to cause trouble by virtue of their length.

Now to explode that old fallacy that "high frequencies currents radiate, while low frequencies do not." This false idea arises primarily from the difficulty of arranging practical antennas at the low end of the radio frequency band, rather than from any inherent difference in high and low frequency electrical energy.

A 60-cycle power plant generator will radiate electromagnetic waves quite effectively if it is connected to a suitable antenna system. Such an antenna might consist of a tower at least 300 miles high!

A piece of wire of this length, strung on telephone poles would not radiate well, because the electromagnetic field would be largely destroyed by close proximity to the earth. Long power lines do not radiate appreciably because of the cancelling effect of the two or three wires carrying current in opposing directions.

On the other hand, it is within the bounds of engineering expediency to build antennas for frequencies from a few kilocycles on up to almost the infrared. Thus the fallacy arose that "low frequencies do not radiate." For the higher frequencies, we now know that an antenna of world-wide radiating range can be installed within the attic of a cottage.

While we have expressed wavelengths in feet, international scientific usage favors the meter as a unit of wavelength. This need not disturb us if we remember that a meter is equal to just slightly over 3 ft.

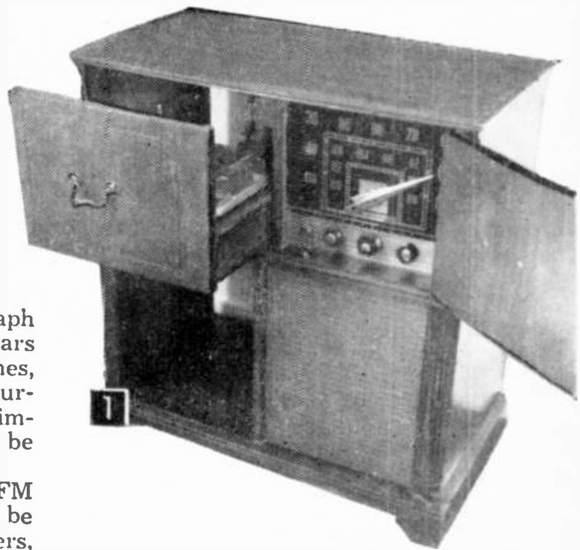
It has become common to employ antennas one-half wavelength long, for practical high frequency radio communication. Such antennas are long enough to radiate well, yet often short enough to install on a reasonably-sized piece of real estate.

But they are of particular interest because such an antenna is self-tuned, that is, it often requires no additional coils or capacitors to make it absorb and radiate maximum power. The wave set-up on such an antenna has a chance to exactly "run down to the end and back" just in time to meet and reinforce the oncoming new pulse. Thus, at the proper frequency, the wave "just fits" the antenna.

Revive That Old Radio-Phono Combo

Five hours' work and $40 worth of parts will transform it into a quality hi-fi system

By FORREST H. FRANTZ Sr.

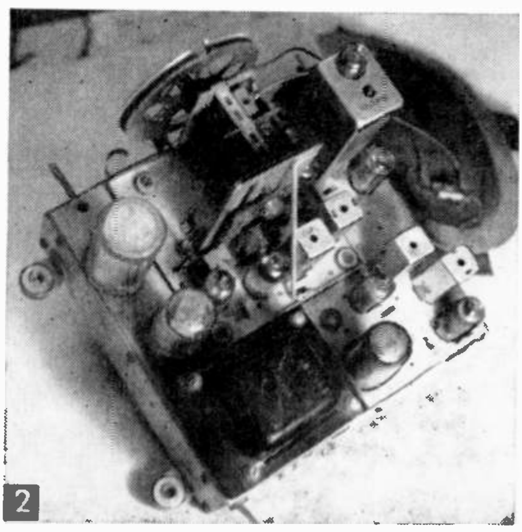


The radio phono herein modified was a 14-year-old Stromberg Carlson that originally cost $200.

MANY floor model radio-phonograph combinations between 7 and 17 years old are still knocking around homes, garages, attics, and basements. Whether currently in use or kept in a corner for some imagined future use, they could turn out to be electronic gold mines.

The radios, most of which have AM and FM bands, are usually in fair shape and will be found to be working. The record changers, however, may be on the blink, and reproduction of the entire unit generally poor. If you don't have one of these old models among your possessions, there's a good chance that you can pick one up for $10 to $20 in a used furniture store.

Don't worry about the condition of the record changer, the loudspeaker, or the tone. If the set works, has a power transformer, AM and FM bands, and a cabinet that can be touched up with a reasonable amount of work, you have a great hi-fi bargain in the making.



Most of these old sets had both AM and FM tuners that are probably still in good shape.

What's Wrong with the Old Models? They were heralded as having "wonderful tone" and cost about $175 to $500. But they had relatively poor amplifier frequency response, and speakers that lacked the frequency response of even less expensive present-day wide-response speakers. Also, the record changers employed certainly don't meet current standards.

You can nonetheless take advantage of the quality, workmanship, and basic material in these older combinations to make an excellent up-to-date combination. The approximate costs are:

new record changer	$25 to $35
new loudspeaker	$12
parts	$ 2 to $10

Total cost of the modification should run between $39 and $57, depending on the age and condition of your combination and your choice of record changer. If you are satisfied with the old record changer, the modification may cost as little as $14!

The modified combination in Fig. 1 is a 14-year-old Stromberg Carlson that sold originally for about $200. It had AM and FM tuners, but the record changer was shot, frequency response of the amplifier was poor, and the speaker wasn't up to present day standards. I plotted frequency response curves, made computations, did some design comparison, and engaged in extensive experimentation to arrive at a general approach to the modification of any older combination which would produce greatly improved performance.

NOTE: *If you have an audio signal generator and an audio VTVM available, you might run a frequency response curve before you proceed with modifications. Then you can observe the effect of each improvement as you make it.*

Chassis Modifications. First, be sure the tubes are in good shape. Although the set plays (and seems to play well), it may contain weak tubes that detract from the performance that can be had. If you don't have your own tube tester, use one of the many "do-it-yourself" testers that can be found in most neighborhood shopping centers, and replace any marginal tubes.

Next, remove the bypass capacitors in the plate circuits of the audio amplifier stages (see Fig. 3). The audio output tube or tubes connect to the output transformer. The plate bypasses may be connected from plate to ground, or across the output transformer primary. There may be a resistor in series with the bypass capacitors. If so, disconnect and remove it, too. The bypass in the first audio stage (or driver stage, if the first audio doesn't drive the output stage directly) is usually connected from plate to ground, and will probably be a mica or ceramic capacitor of relatively small capacity—about .0001 to .001 mfd. The bypass in the output plate circuit will usually be between .002 and .01 mfd. In a push-pull output stage you'll sometimes find a bypass across each side of the output transformer.

Next, temporarily disconnect one side of any bypass capacitor that may be connected across the volume control, the AM tuner output, the FM tuner output, and the record changer input. Then turn the set on and try each of these functions. The tone will seem poor, but that's OK. The reason for this trial is to assure yourself that you haven't disconnected a capacitor that makes any function of the set subject to squeal or to non-operation.

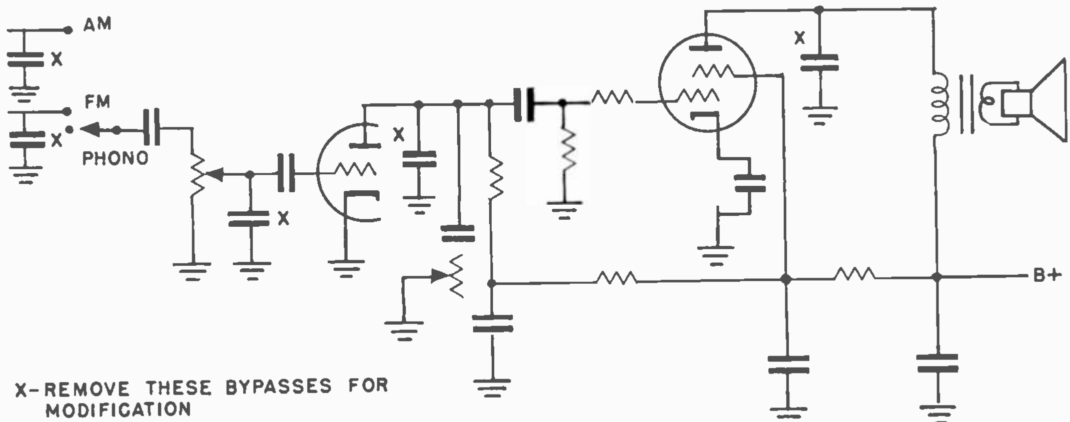
As a final move in this series of bypass disconnections to restore high frequency response, disconnect the tone control capacitor if the capacitor is greater than .002 mfd.

Remove the Audio Coupling Capacitors and replace them with 1-mfd, 600-volt capacitors from driver plate to output stage grids, 1-mfd, 400-volt capacitors between input and driver stages (if the audio amplifier has three stages), and .1-mfd, 400-volt capacitors between the volume control and input tube grid. Replace any other audio coupling capacitors that appear in series with an audio signal coupling path with capacitors of about 10 times the capacity of those previously employed. The old coupling capacitors may be leaky and cause distortion.

By increasing the capacity of the audio coupling capacitors we have extended the low frequency response range, and by removing capacitors which shunted the audio signal path we have extended the high frequency response. Two things may possibly happen as a result of this work:

1. The improved high frequency response may cause the set to "squeal." One remedy for this is to shorten leads from output stage plates to output transformer and dress them away from leads and components of the "earlier" stages. If this doesn't do the job—but it usually will—shield leads to and from the volume control.

2. Sixty-cycle hum, which the amplifier may not have responded to previously because of its limited frequency response, may be audible in the output. This may be due to loss of capacity or leakage in electrolytic filter capacitors, or it may be due to inadequate



3 TYPICAL CIRCUIT BEFORE MODIFICATION

original filtering. Bridge a 20-mfd, 450-volt electrolytic capacitor across each of the filters in the power supply to test for open filter capacitors or inadequate power supply filtering. The original capacitors will have to be disconnected before substitution to locate leaky filter capacitors. Finally, the value of capacitors in decoupling filters in the audio circuit can be increased. The 8-mfd capacitor in the plate decoupling circuit of V1 in Fig. 4, for example, replaced a .1-mfd capacitor.

Before we talk about the loudspeaker, the output transformer, and the feedback circuit, there's one more circuit response improvement measure. The low frequency response will be improved by increasing the capacitance of the cathode bypass capacitor in the output stage. Thus, the bypass in the cathode circuit of V2 in Fig. 4 was increased to 160 mfd, 25 volts.

The Output Circuit and Speaker. If the output transformer couples to a 6- or 8-ohm speaker, it will not have to be replaced. Many of the better old radio-phono combinations already have 6- or 8-ohm speakers, but some of them do not.

The extended range speaker which we shall install is an 8-ohm speaker, so the output transformer will have to match it If the loudspeaker is not marked and you don't have the circuit schematic available, you can get a rough estimate of the loudspeaker voice coil impedance by disconnecting the speaker and checking it with an ohmmeter. If the resistance is greater than 4 ohms, the impedance is probably 6-8 ohms and the existing output transformer can be used.

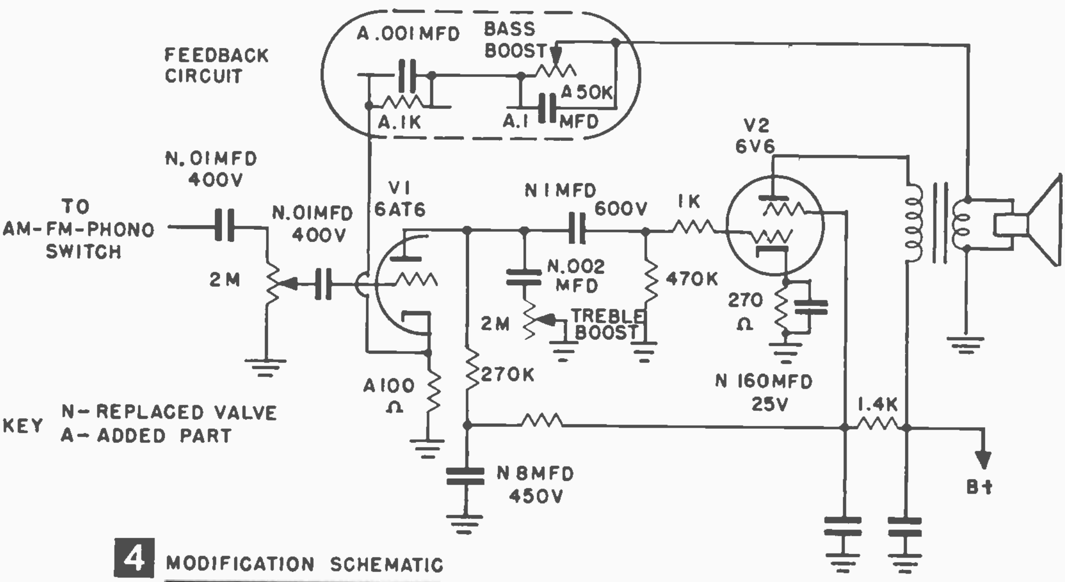
If you have to change transformers, Lafayette TR-13, which costs only $1.45, will work well with a single output tube or a pair of smaller output tubes such as 6V6s in push-pull. If your output tubes are 6L6s, you'll want to use a larger output transformer. Lafayette TR-117 will handle 20 watts (± 1 db from 15 to 100,000 *cps*), and sells for $8.95. This transformer will allow you to use a much better speaker system than we're discussing in this article.

My radio-phono had an 8-ohm speaker, so I utilized the existing output transformer. However, the output transformer was mounted on the loudspeaker. If your transformer is mounted on the loudspeaker, remove it. In most cases there won't be room for the output transformer on the chassis if it isn't located there already. In this case, find a suitable place to mount the output transformer on the chassis platform in the cabinet. If you mount the transformer off the chassis, the interconnections will not be as clean looking, but this is no problem. You may need extra holes or jacks available on the back of the chassis to accommodate the output transformer to the feedback-base boost circuit. I used the cabinet lamp jack (Fig. 6) on my set for the voice coil interconnection.

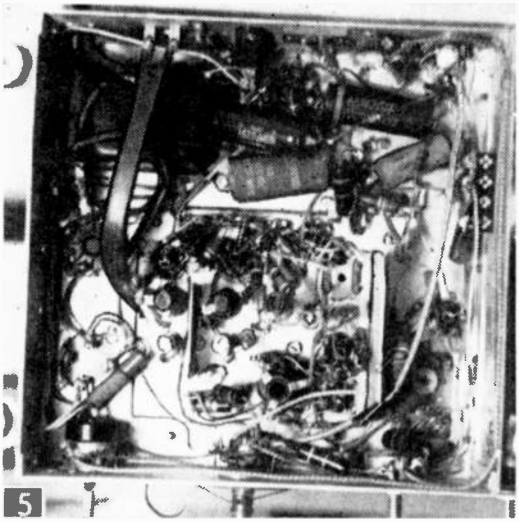
Connect the new loudspeaker, a 12-in. Lafayette SK-183 (frequency response 35-17,500 *cps*, $11.95) to the output transformer secondary.

Feedback and Bass Boost. The feedback and bass boost circuit mounts on the chassis. The simple circuitry flattens and extends the frequency response of the amplifier and permits you to obtain a large amount of bass boost.

If your set has a bypass capacitor on the first audio stage cathode, remove it. In most cases, however, the cathode of the first audio stage will be connected directly to the



4 MODIFICATION SCHEMATIC



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Bottom view of chassis. The larger capacitors required for modification may present some installation problems.

ground. Break this connection and install a 100-ohm, ½-watt carbon cathode bias resistor as shown in Fig. 4.

Next, connect the feedback and bass boost circuit consisting of a 1K, ½-watt resistor shunting a .001-mfd capacitor in series with a 50K control shunted by a .1-mfd capacitor. The capacitor voltage rating is not critical, and a rating of 50 volts or more is satisfactory.

Note that one side of the output transformer-loudspeaker connection is grounded. To determine the ground and cathode feedback return connections, turn the set on and tune to a station. Connect the cathode feedback path and ground path to the loudspeaker as shown in Fig. 4. Volume should decrease and tone should improve. If not, reverse the ground and cathode feedback connections to the speaker-output transformer lines.

The 50K bass boost control may be mounted off chassis (Fig. 7A) on an improvised sheet metal bracket. If the set already has a tone control with a resistance of 50 to 100K, use it. I used the original set tone control (2M in Fig. 4) for treble boost. If the set originally had two tone controls, you won't have to provide an extra tone control mounting position. Otherwise you'll have to improvise. I used a miniature control (Lafayette VC-36) so that I could have an inconspicuous knob to the left of the original knob group (Fig. 1).

Record Changer. You can choose any record changer that will fit in your available space. I've listed two possibilities in the materials list. I recommend a new record changer for several reasons. First of all, old record changers usually are victims of wear and poor care. Second, some of the much older record changers have only one speed—78 *rpm*—which is obsolete. Third, the cartridge on these changers is also inadequate for 33⅓-*rpm* records. Finally, older changers will not play stereo records.

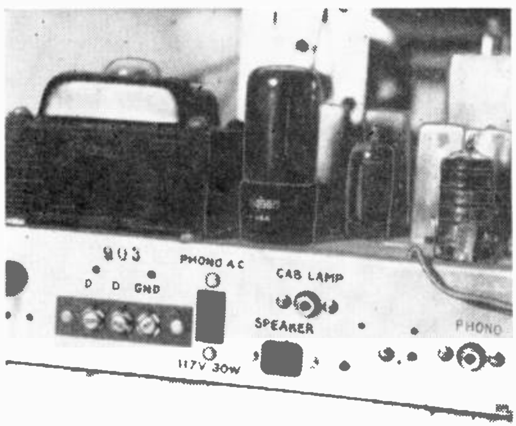
When you buy your record changer, buy the required mounting board with it. Remove the old mounting board from the record changer platform. Lay the new mounting board on the platform and lay the record changer on it as shown in Fig. 8. Use a ruler to determine the amount of trim required on the front of the new mounting board. You can also determine the required side trim at this point. Be sure to consider all possibile interferences with record changer operation before you start trimming the base. The back may not have to be trimmed because there's usually extra space in the back of the cabinet.

After you've trimmed the new base to fit on the platform, stain it to match the cabinet finish. Install the base.

Next, connect the pick-up leads from the stereo pick-up in parallel by installing the two shunt wires. This permits you to play monaural or stereo records through the amplifier. Finally, if the shields on the pick-up leads are not grounded to the metal record changer frame, provide a connection for this purpose.

Installation in Cabinet. Drill an extra hole in the front of the cabinet for the bass boost control if you need it.

If the combination originally had a speaker smaller than 12 in., the speaker mounting board will have to be removed and the speaker hole enlarged. Remove the grill cloth if it is attached to the speaker mounting board be-



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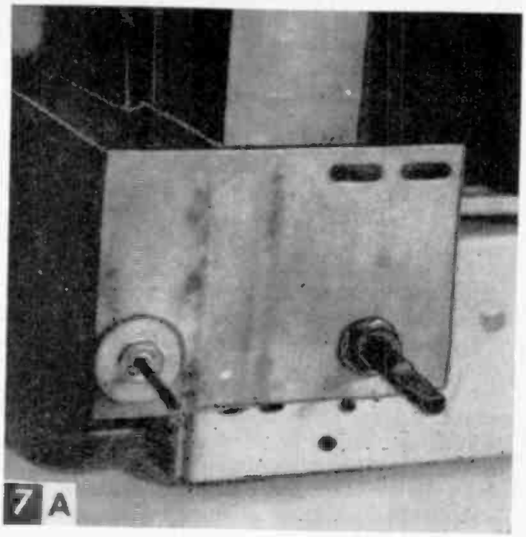
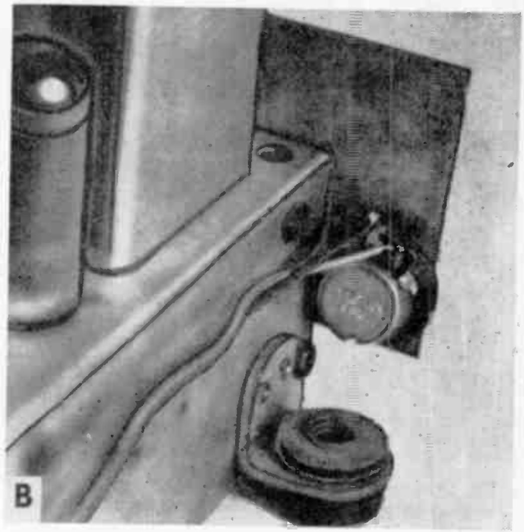
No changes were required with respect to connectors, except that the cabinet lamp jack was disconnected from the filament supply and was used for the feedback connection from the output transformer. This provision is unnecessary if the transformer mounts on the chassis.



Front view showing bass boost control mounting.



Back view of bass boost control with connections

MATERIALS LIST—RADIO-PHONO MODIFICATION
Record changer (Lafayette PK-605W, $22.35)
Mounting board (Lafayette PK-608W, $1.05)
Loudspeaker (Lafayette SK-183, $11.95)
available at Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.
OR
Record changer (Webcor type 1041-51, Allied 89RX-712, $30.83)
Mounting board (Webcor type A-1938T, Allied 89RX-640, $1.96)
available at Allied Radio Corp., 100 N. Western Ave., Chicago 80, Ill.
Remaining parts, capacitors, and resistors as required for your specific modifications are available from either Lafayette or Allied.

fore starting the enlargement process. A 10-in. dia. hole is required to mount a 12-in. speaker.

Install the chassis, record changer drawer, and loudspeaker in the cabinet, and replace the knobs. The chassis and record changer mounting arrangements are the same as before, but the speaker mounting arrangements may be inadequate. Use round head wood screws long enough to bite into the speaker mounting board, but short enough not to go all the way through.

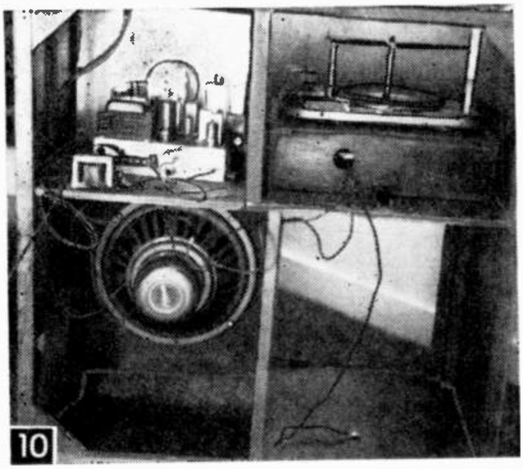
The output transformer, if you must resort to off-chassis mounting, can be mounted behind the chassis as shown in Fig. 9, and fastened with wood screws. The frame of the output transformer should be grounded with a jumper to the chassis. Or, if you used a shielded lead for the feedback circuit as I did, connect a lead from the shield to the transformer frame.

If you notice hum, you may be able to reduce it by reversing the record changer power plug to the chassis with gain up and the turntable running.

Use either one of the record player plugs and leave the other disconnected (Fig. 10).

Arrangement for determining record changer mounting board trim.

Interconnection wiring. Output transformer is mounted in the cabinet adjacent the chassis.



The modified chassis, new loudspeaker, and new record changer. Only one of the record changer plugs is used (see text).

It's a good idea to tape up the unused plug.

Variations. The more elaborate older sets may contain more than two audio stages. In this case, the feedback may be too great. Simply insert a series resistor in the feedback circuit. The resistance value will have to be determined experimentally. A ½-watt carbon resistor of the required resistance is adequate.

Some of the older sets have complicated tone and equalizing circuits. Generally speaking, they do not contribute much after incorporation of the modifications described. Proceed with caution if you don't fully understand these circuits and what they do.

In a few rare cases, you may encounter a volume control after the first audio stage. If so, place the feedback on the cathode of the tube immediately following the volume control. The volume control should not be within the feedback loop.

If the volume control has a compensation tap on it, simply disconnect the components which are connected to the tap. A resistor and capacitor are usually involved.

A few of the older sets had direct coupled output stages. In most cases, it is easier to leave these stages as they are. The same applies to transformer coupled output stages. A better interstage coupling transformer may be desirable. Because of the special nature of this consideration, it's one that you should take up with your parts supplier.

General Information. In some cases you'll find the schematic or more so a tube placement diagram fastened to the back of the cabinet. You'll find these very helpful.

Schematics, tube placement, and alignment information can be found in serviceman circuit manuals such as those published by Howard W. Sams and John F. Rider. I proceeded without this kind of information, but original circuit data will generally prove helpful.

Roundword Puzzle

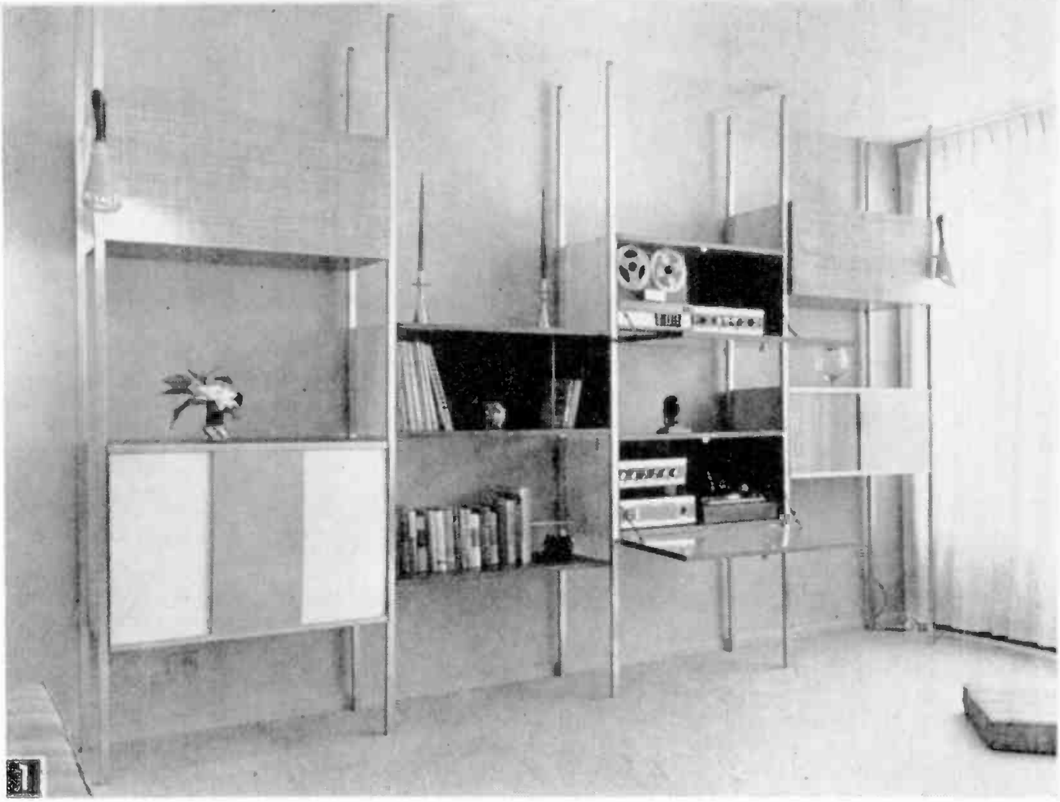
The words in this puzzle are all tied together in succession—that is, the last letter of one word is the first letter of the next—so some of them read from right to left. (Solution on p. 196, but don't peek unless you have to!)

By JOHN A. COMSTOCK

1						2					3
10							11			12	
	18								19		
		26						27			
		25	31				32				4
9				35		36			20		
						37		28		13	
	17			34			33		21		
			30					29			5
		24		23					22		
	16		15							14	
8								7			6

CLUES

1. Type of indicator with doubled windings.
2. Circuit which amplifies before and after detection.
3. Rare gas used in discharge tubes.
4. Gas group of which number 3 is a member.
5. Induced current.
6. CRT coil component.
7. Changes frequency response.
8. Superhet alignment technique.
9. Electromagnetic radiation rays.
10. Unit of light wave measure.
11. Single closed circuit or cell in a network.
12. Type of circuit found in auto radios.
13. Unit of elastance—reciprocal of capacitance.
14. Tank circuit effect.
15. Connector.
16. Square-wave voltage.
17. Famed American electronics inventor.
18. Used in electronic math.
19. Atom with temporary loss of electron.
20. Ham operator's 30.
21. Meter needle sometimes makes one.
22. Action employed in speakers.
23. Type of triode transistor.
24. Type of band associated with FM.
25. Watt-hour (abbr.)
26. Antenna tuning bar.
27. Minimum signal or current.
28. Effective radiated power (abbr.).
29. Time required for a cycle.
30. Type of connection.
31. Screw found in some knobs.
32. Word following.
33. Sticky insulation.
34. Unit sounding like Indian expression.
35. Electrical opening.
36. Amplifier used at gatherings (abbr.)
37. Type of crystal cut for use between 500 kc and 10 mc.



Modern stereo installation uses Allied Radio Knight Kit 40-watt amplifier (center) to drive two KN-800A coax speakers in extreme upper corners. Plans for this low-cost installation appear in the article beginning on p. 70.

Lowdown on HI-FI SPEAKERS

Straight talk from an expert about choosing the right speaker, frequency response, impedance matching, connecting extension speakers, stereo phasing

By LOU DEZETTEL
Engineer, Allied Radio Corp.

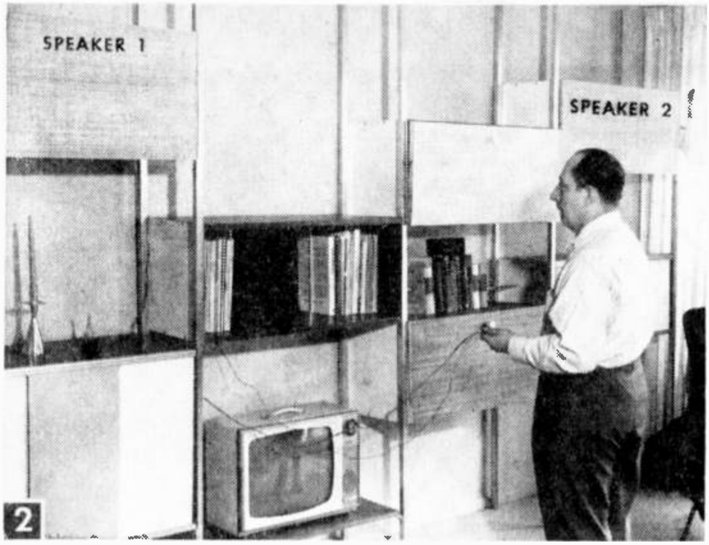
TO DESERVE the label "hi-fi" your sound installation must be capable of reproducing music with the closest possible resemblance (or fidelity) to the original sound.

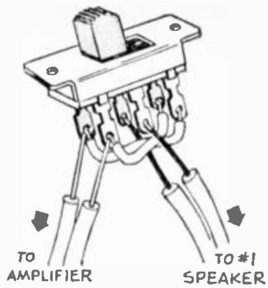
To hear music properly, we need to listen at a higher volume than what we might use for background music or for ordinary radio listening. Without this volume, the ear cannot hear the balance of sound as it was originally played. Thus, the weakest link in the home hi-fi is usually the speaker system. To get true quality results, you must choose the right speakers and make sure they are properly installed.

Let's talk about three general kinds of loudspeakers—radio, public address, and hi-fi. Radio speakers usually are inexpensive and small, 6-in. diameter or less; you find them in car radios, table radios, and most TV sets. Though the speaker may sound fairly good, frequency response is usually poor, and it gets worse when you feed it with increased volume. Efficiency is good, but power handling capacity is low. The radio speaker should never be used as a main source in the true hi-fi system.

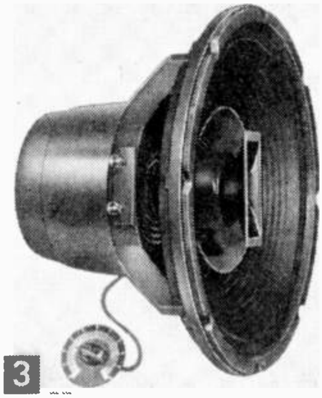
Public Address Speakers are distinctly different. Larger in size, they are built to handle considerable amounts of sound power, but at a sacrifice of hi-fi frequency response. Designed for halls and auditoriums, quality is usually poor at low (bass) frequencies.

The *true hi-fi loudspeaker* is a separate breed. It is built bigger and huskier to do a better job on the bass notes. If you have plenty of space, the 15-in. size is best. If your space is limited, 8-in. speakers can be used. The 12-in. size is most popular and comes in many price brackets. Remember that increasing speaker size improves the response of only the *low end* of the musical scale.





S&M consultant Erving Edell uses comparison method to judge by ear whether speakers are in phase. Switch in his hand permits instant reverse of one pair of speaker connections. When base sound appears to come from center of room, speakers are in phase.



Knight KN-800A 12-in. speaker illustrates coaxial construction. The center funnel shape is the tweeter, surrounded by a mid-range cone. (Photo by Allied Radio, Chicago)

A hi-fi speaker must have a wide frequency response. It must reproduce all musical notes from 15 cycles up to about 15,000 cycles per second (c.p.s.) with about equal efficiency. Because a single speaker cone can't handle the job a good speaker has two or more sound generating parts. The horn-like speaker mounted in the center (Fig. 3) is called a tweeter and reproduces the higher frequencies. Around the tweeter is another cone that helps to reproduce the mid-range tones. Inside the back cover of the speaker is an electrical circuit called a *crossover network*, that divides the incoming frequencies into two ranges. Thus single speakers may be called two-way or three-way coaxial speakers. You can also select and install separate woofers (large single-cone speakers) and tweeters in almost limitless combinations.

About Baffles. A speaker is only as good as its baffle. The bulky floor-type baffle usually is best, if you have the room. With about 5 cu. ft. of inside space, the baffle includes a port opening in front besides the regular speaker opening. This permits lower frequencies to come out in phase with the main sound and reinforces the bass notes. That's why the trade calls this enclosure the "reflex" baffle.

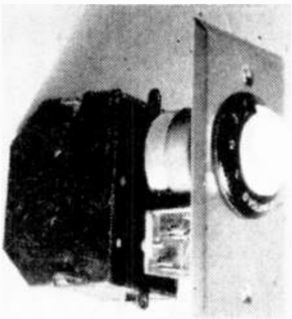
If you lack room space, the next best answer is a smaller baffle (Fig. 5) installed on a shelf. Generally these units have no reflex feature and are airtight on all sides and back. Hence they are called *infinite baffles*. The smaller baffle can do a good job on low frequencies, provided that you install a *high compliance* speaker; a speaker designed so that the cone moves back and forth a greater distance. High compliance construction results in lower power handling efficiency, so this kind of a speaker must be driven by a higher power amplifier; not less than 20 watts per speaker or 40 watts on stereo should be considered.

Wiring Speakers. Two basic rules are important. First, the output tap on your amplifier must match the speaker impedance; second, when two speakers are used, they must be in phase.

Impedance matching is easy. The impedance in ohms is usually marked on the speaker frame. Connect directly to the amplifier tap marked for that impedance. All good hi-fi amplifiers have taps for 4-, 8-, and 16-ohm speakers. Generally you can use any good two-conductor cord for wiring speaker connections. Common lamp cord, usually 18-gauge wire, is adequate for runs of up to 50 ft. For shorter runs, smaller 20-gauge wire may be suitable and more decorative. Expensive shielded cable of the type used for microphones offers no advantage in wiring speakers. Because the speaker wire carries very low voltages, there is absolutely no fire hazard.

You can run your speaker lines along baseboard and through walls just like telephone wire. Just connect the two wires at one end of the speaker cord to the speaker terminals. At the other end connect one wire to the terminal marked "C" (Common) and the other to the screw marked 8- or 16-ohm depending on the rating of your speaker.

Ohm's Law Applies. The 4-ohm terminal



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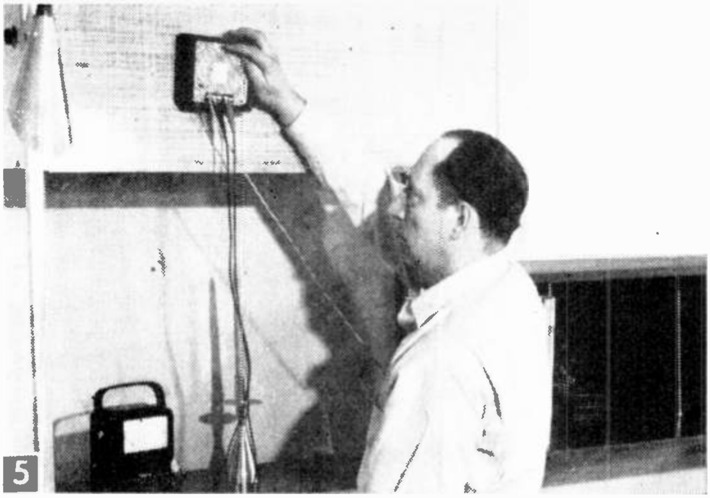
L-pad assembly for controlling volume of remote speakers can be mounted in standard wall box.



5

RCA Phase Checker gives technician overall reading on complete installation. Sound-powered receptor units in front of each speaker feed output to VOM which indicates volume on 50-microamp or ¼-volt dc scale.

screw is intended for connecting more than one speaker to the same amplifier channel. A little arithmetic is required. According to Ohm's Law, two 8-ohm resistors connected in parallel are equal to one 4-ohm resistor. Thus you can connect two 8-ohm speakers in parallel to the 4-ohm screw, or two 16-ohm speakers in parallel to the 8-ohm terminal. Just remember that a parallel connection is like plugging two lamps into one cube tap.

Speakers connected in parallel can be spread out with a single channel system to give your sound sort of a spatial effect, or one could be used as an extension in another room. Though it adds a feeling of depth, parallel connection is inferior to double speaker operation from a stereo amplifier where you have two separate output channels with speakers connected independently to each.

Impedance matching is a much-confused question. A hi-fi system is similar to an automobile. When you are cruising at low speed, you may be using only 20 *hp*. But if you want to get maximum performance on a race track, you have to use the right combination of gears, transmission, and engine to get top power. The same reasoning applies to amplifiers. Running extension speakers at low volume, you can connect a 16-ohm speaker to the terminals of a 4-ohm speaker and probably will not be able to hear a loss of quality. You can even wire quite a number of extension speakers in parallel without regard to impedance match and they will operate fairly well at low volume. Lower impedance speakers in such a system will draw more current and produce more volume; higher impedance speakers will produce less sound. These sound levels can be adjusted by L-pads. But turn the volume up, and the amplifier will be called on to put out more power. Unless the speaker system impedance matches that of the output line, your system distortion will increase.

Phasing. Whenever two speakers are operated together in the same room, whether used for monophonic or stereo, they must work in phase. This means that the cones of the speakers are pushing or pulling in the same direction at the same instant. If the speakers are out of phase, you lose power and bass tones. The remedy is to reverse connections to the terminals of one of the two speakers.

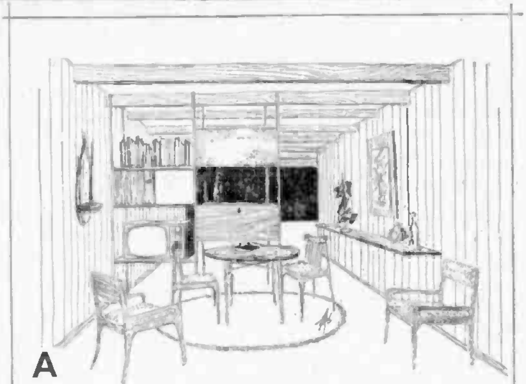
How can you tell when speakers are in phase? The hi-fi technician uses an instrument such as the RCA phase checker (Fig. 5), which feeds into a sensitive voltmeter. You can also phase by ear. You will need to install a DPDT switch (Fig. 2) in one of the speaker lines. Then turn on your tuner or put a monophonic record on your player. Run the volume up high, stand half way between the two speakers, and throw the switch back and forth. If the low notes seem to come from the space between the two speakers, they are in phase. If sound seems to come from each of the speakers separately, they are out of phase.

Hi-Fi Extensions. As long as you've spent the money for a hi-fi system, why not pipe some of that good music to other rooms. Connect your extension speakers from a monophonic system in parallel. On a stereo system, connect to the center channel output terminals. Most modern amplifiers have this built-in circuit, which mixes some of the signal from both stereo channels. Generally, it is used to fill the "hole in the middle" when left and right stereo speakers are far apart.

If your stereo amp lacks a center channel, you can install an extension speaker either by tapping one of the speakers or by connecting a second monophonic amplifier through two isolating resistors so it picks off some of each of the channels.

Frequently it is necessary to control the extension speaker at a remote point. Controls called l-pads are manufactured by *Switchcraft*, *Vidaire*, and *Audiotex*. Select one with an impedance rating matching that of your speaker. Usually the lowest wattage ratings listed in the electronic catalogs are ample for home hi-fi use.

Stereo speakers are mounted in the two baffles at the top left and right. Installation has extra space for future additions, is easy to move, and does not mar walls, ceiling or rug. Room divider (A) is alternate design.



Modular Home Entertainment Center

With pre-cut material, an apartment dweller can assemble this ultra-modern hi-fi wall, using only a drill, 6-ft. rule, and screwdriver

By BOB SRODON

Designer, Masonite Corporation

THE trouble with most hi-fi cabinet designs has been that you had to have a complete power workshop to build the project. And, though it has been done, it sometimes is hard to fit a full size table saw, sander, and jointer into a modern apartment or ranch house.

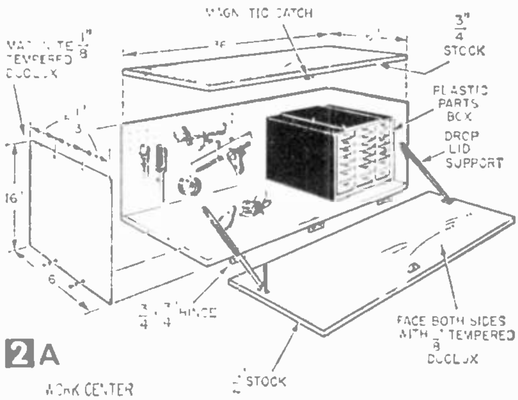
This up-to-the-minute design that has the styling and eye appeal of $500 custom installations has been worked out jointly by hi-fi experts of Allied Radio Corp. and Masonite Corp. You can put the unit together with common hand tools, and it is a beautiful addition to any home or apartment. To ease the strain on the pocketbook, you can start out with one section and add the rest later.

Every part of the entertainment center has been tested and proven in working installations. Working only with the plans, a 6-ft. rule, a ¼-in. electric drill, and screwdriver, the author and a helper were able to erect the unit shown (Fig. 1) in one busy 5-hour work spree. Wood and *Masonite* parts can be ordered from local lumber yards cut to exact size or, if you prefer to do your own, can be sawn on a new portable power table saw that was also tested on the project (Fig. 5).

This is a modular design; parts are interchangeable and dimensions are proportional to one another. The basic 1x3-ft. module is a rectangular shape that pleases the eye and fits well with not only contemporary modern, but with most other styles of furniture, too. The complete four-section stereo unit (Fig. 1) fits in a 12x15 ft. living room. In a smaller room, the end sections can be used separately on opposite walls. In long rectangular rooms, or duplex living rooms, the room divider design (Fig. 1A) makes an effective separation of living areas.

The basic design (Fig. 1) houses a tape deck, pre-amp, amplifier, tuner, turntable, TV set, stereo speakers, plus 200 LP records and a tape library. There is ample room for at least a hundred books and a tool-work desk gives you a space for light hobby work and for assembly and testing of electronic kits.

Start Your Installation by making a list of all your hi-fi equipment. Use a soft pencil and wrapping paper to draw up full size front view patterns of the equipment enclosures. Check to be sure that you have ample space for all control knobs, wiring, and connections. The next step is to order the aluminum poles. Manufactured especially for this project by Midland Metal Products, the 10-ft.-long, 1-in.-square aluminum poles are treated with a scratch and stain resistant brass satin finish that will not oxidize. The poles can be purchased (see Materials List) in the standard 10-ft. lengths, or in 7- and 8-ft. lengths. The ceiling adjuster will take care of a 2-in. ceiling slope, so if your ceiling happens to be 9 ft. 3 in. high, plan to saw 10 in. off the 10-ft. pole. Be sure to measure at each point on the ceiling where the poles will be installed. There is no need to allow for a carpet coaster if you have a soft nap rug. The installation shown in Fig. 1 was moved several times after initial setup, and though the poles had been in place for months, the hollow square pole section did not damage the rug. On wood, hard rugs, or linoleum floors, use rubber or felt pads



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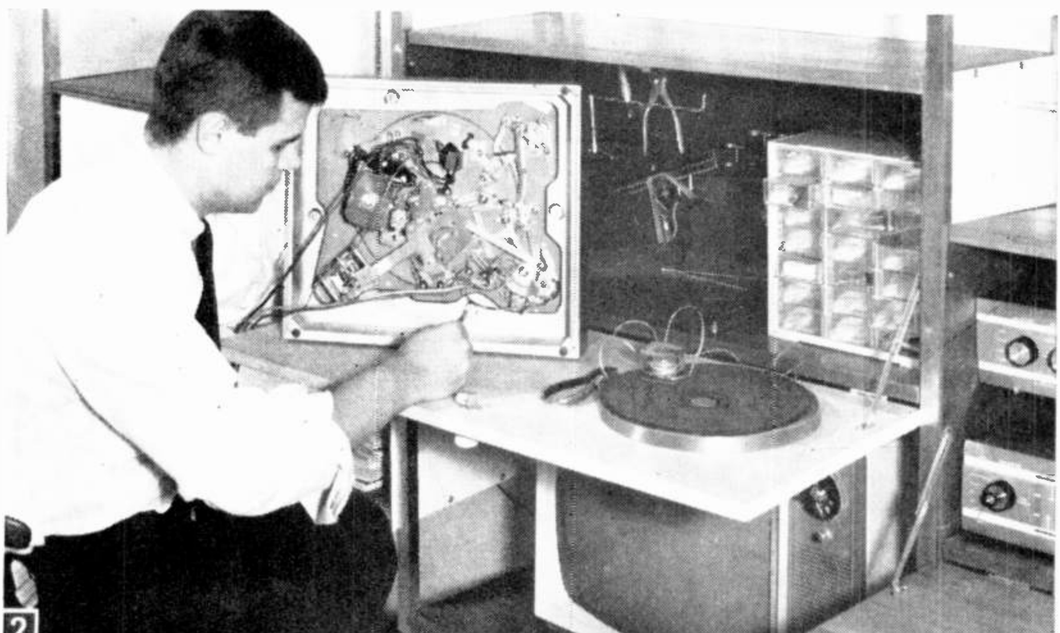


2

Author Srodon installed work center cabinet 29 inches above floor for convenience in assembling kits and servicing equipment. Ham station could be enclosed in similar module.

Peg board shelf brackets support tuner and amplifier. Bracket spring action cushions tubes against vibration. Hi-fi components shown are Allied Radio Knight-Kits.

plated wood screws and chrome plated countersunk washers located on 6-in. centers as in Fig. 4. It would be best to use clamps and square wood blocks to guarantee square accurate corners. Next fasten the peg board to the cabinet backs with the same size screws and washers. Rather than risk poor fitting holes, it is best to buy the right size of screwhole drill.

Next add the speaker face, drop lid doors, and sliding doors. Detailed information on these steps is provided in Masonite Project Plan AE-382 (see Materials List).

As soon as one cabinet is finished, you can start the pole assembly. It is important to locate the poles dead vertical to the floor. Use a large carpenter's square or the edge of a square carton to check. Now for an example, let's install the storage section on the far left side (Fig. 1). The cabinet fastens to the four poles from the inside with self-tapping sheet metal screws. Measuring carefully, drill holes in each pole exactly the same height up from the floor. Use a center punch or sharp under each pole.

Obtain the ⅛-in. Masonite tempered Duolux and Pegboard at your local lumber yard. You can order the panels cut to exact size, if your dealer is equipped with panel-cutting equipment. Be sure to explain that you want dead square, clean cut pieces. If the lumber yard is not set up with the proper equipment, order the pieces ⅛ in. oversize to allow for edging with a sanding block.

For the tops and bottoms of each cabinet (Fig. 4), you will need ¾-in. wood. Finished pine will serve the purpose, or you may be able to purchase the stock in veneered hardwood grains. Another source would be salvaged hardwood from discarded furniture, often available in used furniture shops.

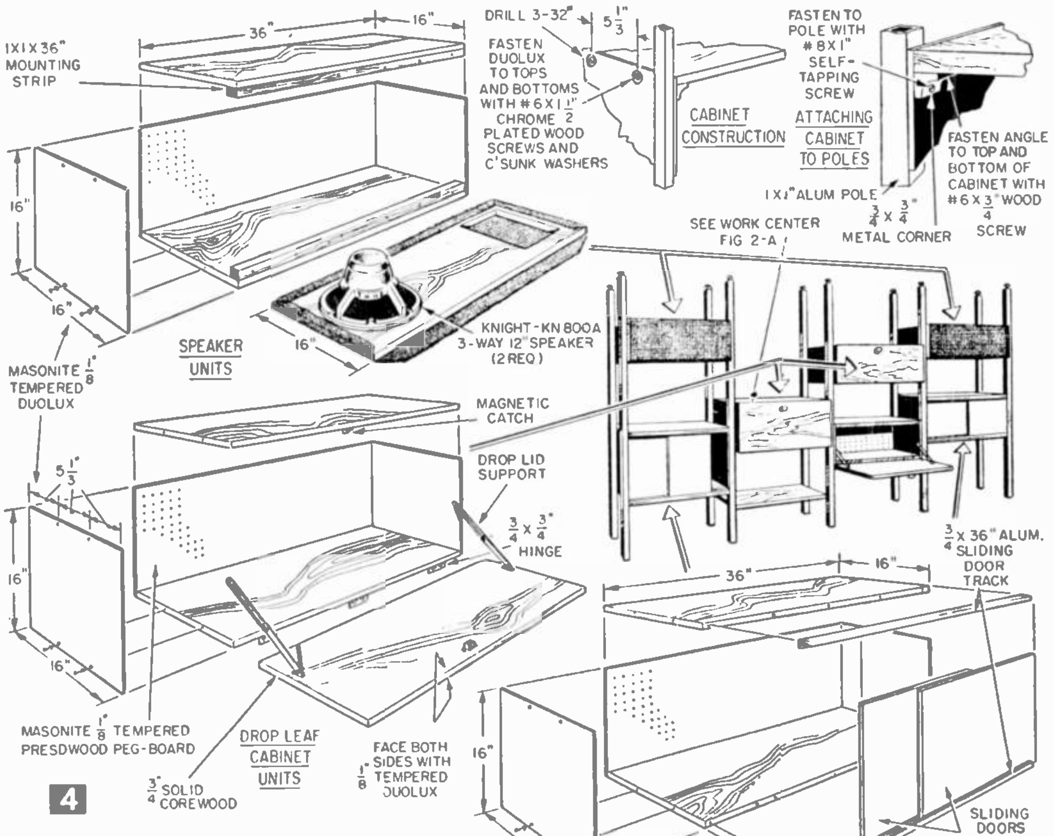
Assemble the Cabinets by screwing the side panels to the top and bottom pieces with #6x1½-in. chrome

MATERIALS LIST—HOME ENTERTAINMENT CENTER

NOTE: This list applies to the four-section unit as shown. Plans can be altered to fit larger and smaller rooms. You can design your own units based on one, two, or three sections, ordering fewer parts as required. But it is recommended that you *do not* change the basic unit sizes, because this may affect the balance and eye appeal of the design.

Amt. Req'd.	Size and Description	Use
10	1"-square etched aluminum poles. Anodized and guaranteed not to fade or discolor. Available in natural aluminum or brass finish in 7, 8, or 10-ft lengths with 2" manual adjustment and pads for floor and ceiling. $5.20 per pole, plus shipping, from Midland Metal Products, Vicksburg, Mich. Minimum order, 4 poles	vertical support
	Alternate—Aluminum poles as above in same size and finish with pads, but with built-in spring loaded tension device which eliminates hand tightening. $7.25 each. Minimum order, 4 poles	vertical supports
4	36" sliding door tracks, ¾ x ⅞" with ¼" slot. L. A. Darling Co. or equal. Cost $1.50 at hardware stores and lumber yards.	panel slides
60	1 x 1" metal corners, Stanley #996½ or equal	cabinet supports
9	¾ x ¾" cabinet hinges with screws	panel hinges
6	8" drop lid supports	panel mtg.
3	magnetic catches	drop panels
154	#6 x 1½" chrome plated slotted wood screws with #6 chrome plated countersunk washers	side to top and bottom fastenings
60	1" #8 self-tapping chrome plated screws	fastening cabinets to poles
12 pcs.	⅛ x 16 x 16" Masonite tempered Duolux	side panels
6 pcs.	⅛ x 16 x 24" Masonite tempered Duolux	side panels for large cabinets
2 pcs.	¼ x 18½ x 23½" Masonite tempered Duolux	sliding doors
1	⅛ x 24 x 36" Masonite tempered Presdwood pegboard	back panel for large cabinet
2 pcs.	¼ x 15½ x 18½" Masonite tempered Duolux	sliding doors for small cabinet
6 pcs.	⅛ x 16 x 36" Masonite tempered Duolux	for facing cabinet doors
15 pcs.	¾ x 16 x 36" solid wood stock	shelves, tops, bottoms of cabinets
2 pcs.	¾ x 16 x 36" solid wood stock	speaker baffle plates
2	1 x 1 x 36" wood mtg. strips	attaching baffle plates to speaker cabinet
1¼ yds.	speaker cloth	
2	swivel mtg. decorator lamps, spun metal similar to type shown in photos, available by special arrangement, Roto Electric Co., 1914 N. Milwaukee, Chicago 47. $4.95 post paid	lamps
Misc.	knobs, Pegboard shelf brackets, for Hi-Fi components, Pegboard fittings for tool rack, sealer, wood stain, laquer or enamel	

NOTE: For free plans, write Masonite Home Planning Service, 29 North Wacker Drive, Chicago 6. For latest information on sound installations write Hi-Fi Department, Allied Radio, 100 N. Western, Chicago 80.



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NOTE: LARGER UNIT AT RIGHT REQUIRES 16" VERTICAL DIMENS. CHANGE TO 24", 15 1/2" HIGH DOORS TO 23 1/2"

pointed tool to mark the hole and drill dead center on the 1-in. aluminum. Now install metal corners (see Materials List) *on the inside* of the cabinet, feeding the 1-in. #8 size sheet metal screws through the corners and Masonite and into the aluminum. The screws will cut their own thread, and provided that you stick to the right size drill, will hold cabinet weight up to a hundred pounds or more.

To make installation easier, especially if you are working alone, you may want to make temporary cabinet holding spacers of scrap 1 x 2-in. stock. Cut to exact length, they will help you locate the cabinets in the right spot while you install the screws.

Finish colors are a matter of individual choice and matching to decor and furniture already in your room. You can finish the Masonite door panels in bright accent colors, using enamel or lacquer and proper primer or undercoat. Follow your paint dealer's recommendations. To prevent warpage from uneven moisture absorption, always finish both sides of a Masonite panel with the same kind of paint or lacquer. Speaker extension lines and connections between the hi-fi units can be run through the aluminum poles. Power lines should not be installed in the poles unless you pay particular attention to shorting hazards such as sharp corners and tight bends. If you wire your ac lines within the poles, use the best grade of cable, with grommets and strain reliefs at point of entry.

Manufacturer of new 8-in. portable table saw is American Machine and Tool Co., and price including motor is under $50. Saw produces close cuts on panels.

5

Once you see—and *hear*—a sound movie with commentary, music, or lip sync voices of your family and friends, silents forever after seem dull.

SOUND MOVIES

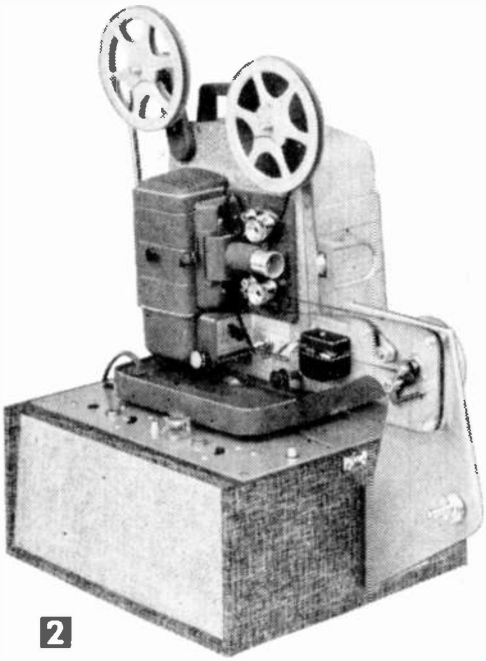
NOW you can convert your 8-*mm* silent movies to sound, right at home, with an easy-to-use $75 attachment that provides all the features of sound projectors costing $250 or more.

The sound is recorded on a stripe of magnetic oxide along the edge of the 8-*mm* film. The system works in the same way as a tape recorder; the film passes over a recording head that converts speech or music to a magnetic recording. You can shoot your movies with pre-striped film, or the stripe can be added to movies already developed and edited, making sound movies out of your old silents. And best of all, the cost is only one quarter that of 16-*mm* sound.

The sound attachment (Fig. 1) has been tested on dozens of different projectors, some of them over 20 years old, and will produce quality results with all but a few very early makes. The chassis bracket is designed so that it can be used equally well with both basic styles of projectors—those with reel arms at the front (Fig. 2) and those with arms arranged overhead front and back (Fig. 3).

No Sync Problems. Because the sound track is right on the film, there is no problem in synchronization. You can record and play back at any projection speed that gives you the right screen action. All of the mechanical parts usually built into an expensive 8-*mm* sound projector are mounted on the chassis bracket (Fig. 5). The film passes through the projector aperture gate, then feeds downward past a roller and over the record-playback head. Next it is pulled between a capstan and pressure roller. The purpose is to pull the film through at uniform speed and to isolate the recording-playback section from the normal intermittent action of the movie projector.

Next, the film passes over a tension roller, feeds back up to the projector's takeup sprocket, then goes on to the takeup reel. Threading is easy—no more difficult than the threading of any sound projector. A youngster can do it rapidly after trying it a few times.



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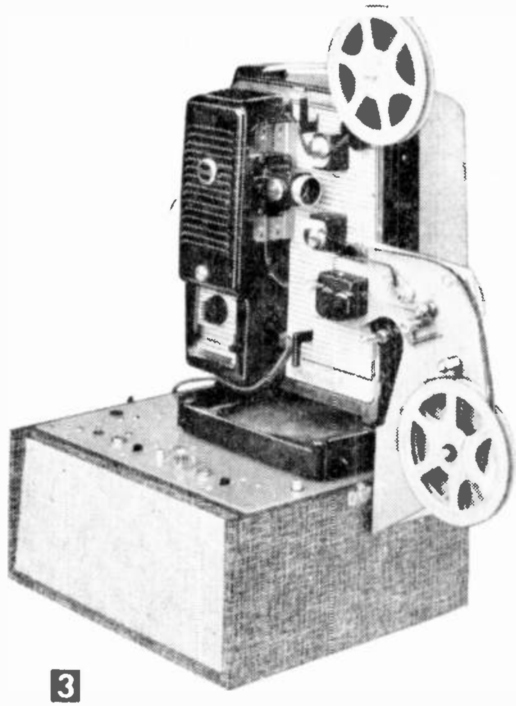


3

The S&M Cine-Sync attachment fits both basic types of projectors, whether reels are above the projector (left) or are placed in front of the lens (right). No mechanical alteration of your projector is required to use the kit.

from your silent projector

Astounding attachment fits any 8-*mm* projector, records and plays full-sync sound on magnetic stripe

By LOWELL WILKINS

Inventor of the Fairchild Sound Camera

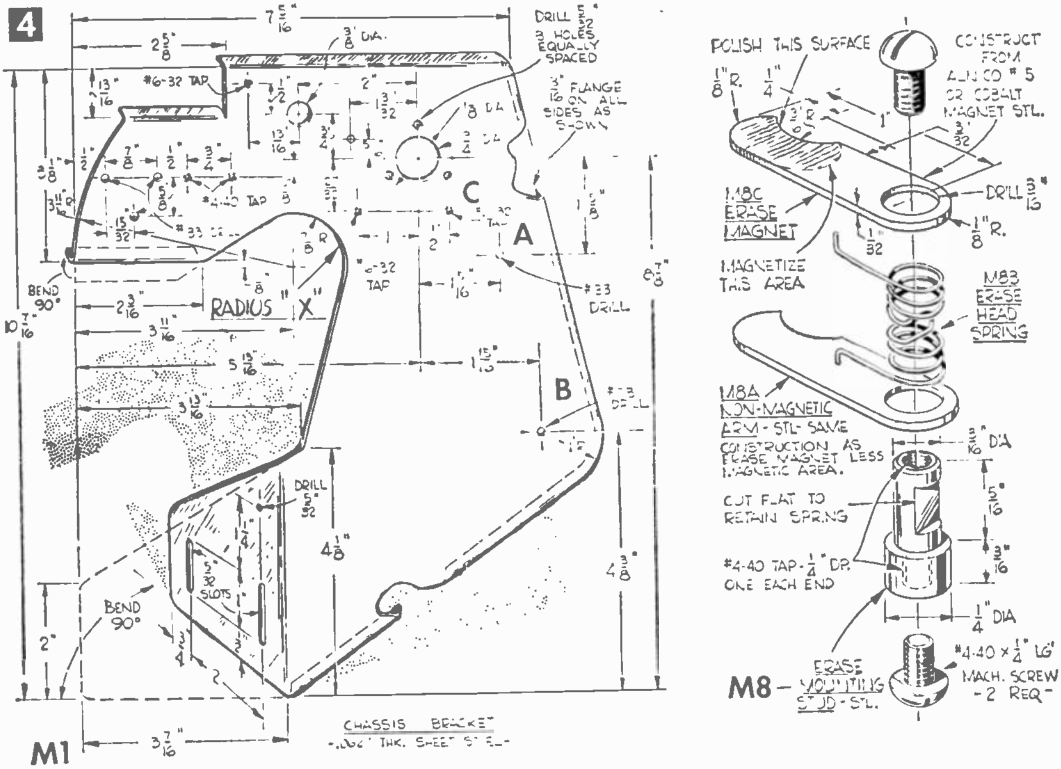
and LEO O'ROURKE

Electronics Engineer

The record head is connected to the amplifier case and all controls and jacks are conveniently located on the top panel. For storage, the chassis bracket can be unscrewed from the side of the amplifier case and placed within the cover (Fig. 6). Inside the case is a 5-watt printed circuit amplifier, and a 4-in. speaker. Jacks feed out to the microphone, record head, phono input, and external speaker.

You can build the complete unit, machining the parts and wiring your own amplifier, or you can buy a Cine-Sync kit ($74.95, S&M Kit Division—see Materials List). To machine your own parts, you will need a metal-working lathe capable of good accuracies. The most critical parts are the recording head, which must be properly aligned with the film track, and the flywheel assembly, which must be mounted in bearings to permit free turning.

4



The Assembly Instructions that follow apply whether you make your own parts or use the kit. To simplify assembly, lay all parts out on a table and use masking tape or tags to identify each item according to Figs. 4, 5. The record-playback head is pre-aligned; its magnetic gap is precisely lined up with the film track. Do not tamper with the head other than to mount it to the main chassis bracket (Part #M1) with 4-40 x ⅛-in. round head (*rh*) machine screws, feeding through from the rear. Mount the flywheel bearing retainer (Part #M2) with three 6-32 x ⅜-in. *rh* machine screws.

Insert ⅝-in. od internal retaining ring M2A in groove of flywheel bearing retainer M2. Insert two ball bearings (M2B, M2C) in the flywheel bearing retainer. Place retaining ring M2D on capstan shaft M2E in groove provided. Insert capstan shaft through the bearings from the front of the chassis panel and slide the flywheel (M2F) onto the shaft from the rear. Place grommet M2G on capstan shaft back of the flywheel, and secure in place with 8-32 x ⅜-in. machine screw. Purpose of the grommet is to act as a slip clutch, which allows the capstan to turn before the flywheel builds up to full operating speed.

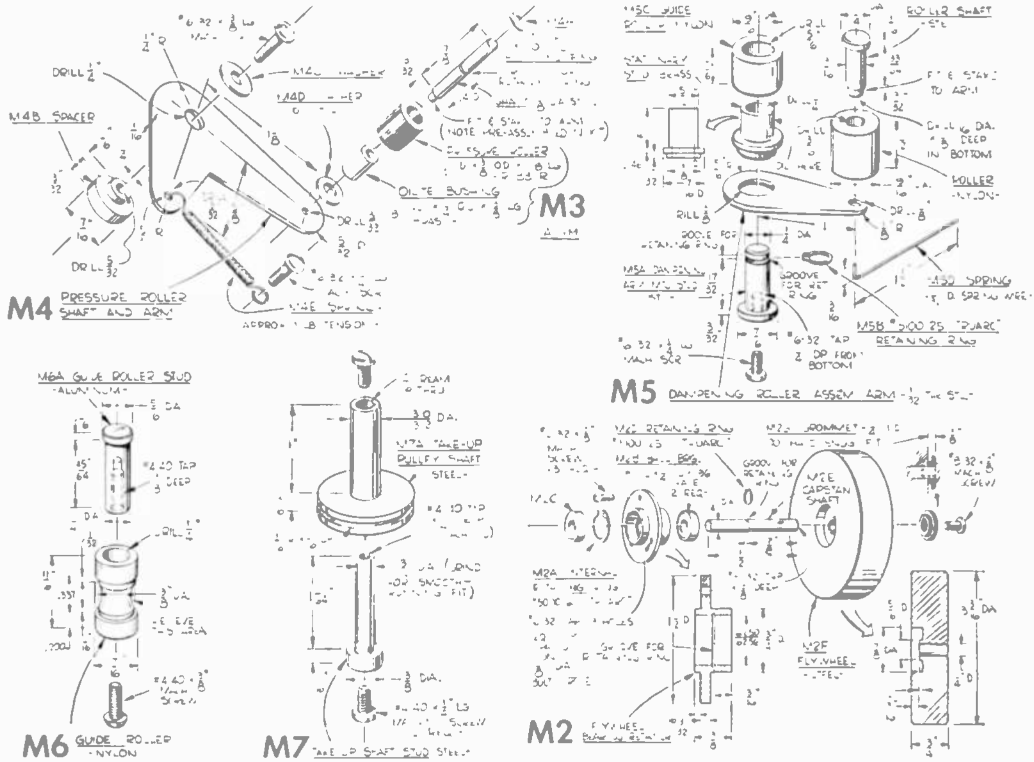
Place Steel Washer M4D on the shaft of pressure roller shaft and arm M4. Next, oil the bearing of the pressure roller assembly M3 lightly and place on M4. Press the retaining ring, M4A, into the ring groove that keeps the roller in place.

Place washer M4C over a 6-32 x ⅜-in. pan head screw. Pass the screw through the hole in the pressure roller arm, then through pressure roller spacer M4B, with small end of spacer up, and screw into the tapped holes in the chassis panel. Attach spring M4E to the pressure roller arm and let it hang.

Mount the dampening arm mounting stud M5A to the chassis with a 6-32 x ¼-in. pan head screw from the rear. The brass bushing of the sound dampening arm assembly must be lightly oiled. Then lower it over the mounting stud, add nylon dampening guide roller M5C, and press on retaining ring M5B to fasten the assembly. Insert spring M5D in the hole in the bottom of the dampening arm from the rear of the chassis, feeding through the ⅜-in. chassis hole.

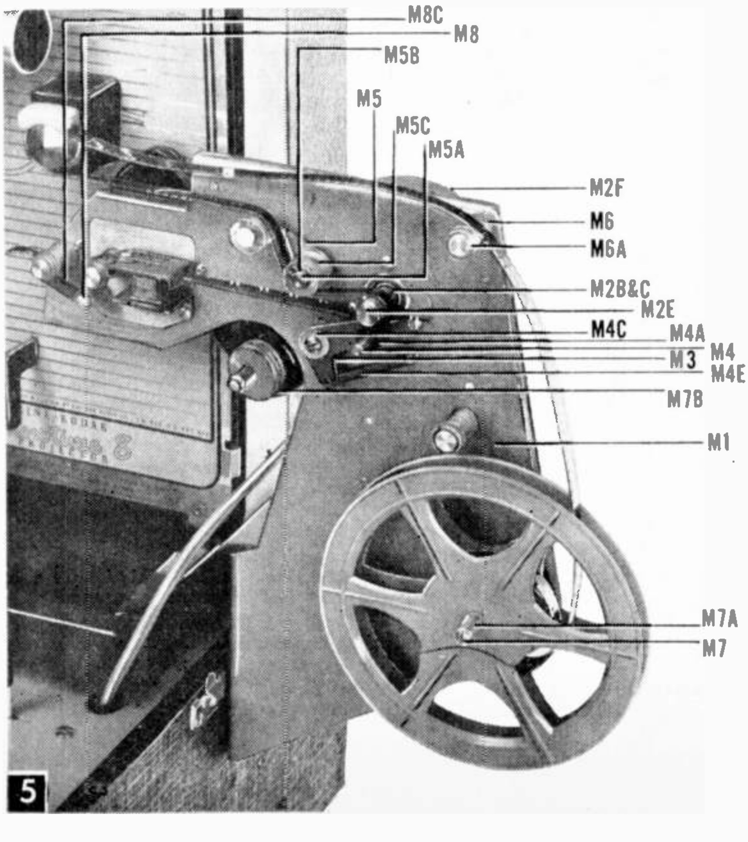
Lock the Spring in place with a 6-32 x ⅛-in. pan head machine screw. The dampening arm guide roller and shaft are supplied as preassembled kit parts.

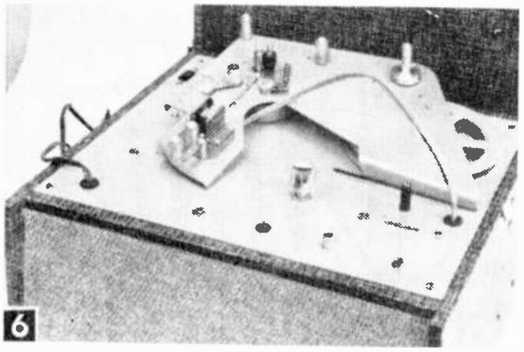
Install three guide rollers (M6) and guide roller shafts (M6A) as shown in Fig. 5. Install each roller by fastening the shaft from the back of the panel with a 4-40 x ⅜-in. pan head machine screw. No washer is required,



Parts List, Chassis Bracket Assembly

Part No.	Size and Description
M1	chassis bracket
M2	fly wheel bearing retainer
M2A	internal retaining ring ⅝" od Truarc #5000-62
M2B, C	ball bearings. New Departure—#77R4, ⅝ od x ¼ id x .196"
M2D	#5100—Truarc retaining ring
M2E	capstan shaft
M2F	fly wheel
M2G	grommet, ¼" id to fit ⅜" hole, 1/16" panel
M3	pressure roller assembly
M4	pressure roller shaft and arm
M4A	#5100-12 Truarc retaining ring
M4B	pressure roller spacer
M4C	pressure roller washer
M4D	⅛ id x ¼ od x .035" steel washer
M4E	spring
M5	dampening roller assembly arm
M5A	dampening arm mtg. stud
M5B	#5100—25 Truarc retaining ring
M5C	dampening guide roller
M5D	dampening arm spring
M6	guide roller
M6A	guide roller stud
M7	takeup shaft stud
M7A	takeup pulley shaft
M7B	takeup projector pulley
M7C	15" takeup spring
M8	erase mounting stud
M8A	non-magnetic arm
M8B	erase head spring
M8C	erase magnet





The chassis bracket unscrews from the side of the case and the L-shaped base angle drops into the slot in the top of the panel plate. The entire mechanical chassis assembly fits inside carrying case cover.

because these nylon rollers create no surface friction.

A fourth M6 and M6A roller assembly will be needed at point A (Fig. 4) if your projector (Fig. 2) has the takeup arm at the upper rear. Projectors with both reel arms in front require an auxiliary belt-driven takeup shaft at point B (Fig. 3). Fit takeup shaft stud M7 to chassis panel with a 4-40 x 1/4-in. pan head machine screw. Oil the takeup pulley shaft M7A, place it over the stud, and retain with a 4-40 x 3/16-in. pan head machine screw.

Attach erase magnet mounting stud M8 to chassis with a 4-40 x 1/4 in. pan head machine screw. Place the non-magnetic pressure arm M8A over the mounting stud and put the spring M8B over the stud. Then put the magnetic erase M8C (erase head magnet with red stripe) over the spring. Retain with a 4-40 x 1/8-in. pan-head machine screw.

Install a 6-32 machine screw in hole C in the chassis bracket to hold the other end of the pressure roller spring. The pressure roller arm spring should not be fastened in place until you are ready to use the unit and should be detached when not in use to keep the rubber roller from flattening.

Wiring the Amplifier. The 5-watt record-playback and PA amplifier is designed to be wired on a 4 x 8½-in. printed circuit board that fastens to the top panel of the amplifier case (Fig. 6). You can obtain the amplifier completely wired or order a ready-to-wire kit complete with pre-punched panel, printed circuit board, and all parts. If desired, the advanced electronic hobbyist can order such parts as the circuit board, recording head, function switch, oscillator coil, and transformers separately. All other parts are stock electronic items.

Start construction by laying out all parts on your work table. Identify each resistor by color code value. You will need a small pencil-type soldering iron, a diagonal pliers, and a long nose pliers. Wire the bottom deck function switch connections first, including two 6-in. leads which feed out to the mike jack. *These mike leads must be shielded single-strand cable.* Also connect the head lead. This must be stranded *twin conductor shielded cable*, the kind used for stereo pickup cartridges. For forward arm projectors, you will need a head lead 16 in. long; upward arm projectors require an 8-in. lead cable.

Mount the function switch on the printed circuit chassis. Then mount the output transformer, electrolytic capacitors, tube sockets, volume control, and oscillator coil.

EDITOR'S NOTE . . . about the author

Lowell Wilkins, president of Cinemagnetics, Inc., has been working in the field of photography and sound recording for 25 years. After 10 years of research he announced in 1950 the first self-contained magnetic recording 16-mm camera, the Cinefonic. Priced at $2000, the camera was widely accepted by newsreel cameramen and TV stations. Compact assembly made truly candid newsreel coverage possible for the first time.

In 1958, Wilkins developed the revolutionary Fairchild 8-mm sound camera ($249). Thousands of these units are now used by amateur movie makers, and in audio visual sales and training programs.

Since 16-mm movies require four times the film area, 8-mm sound movies can now be made for one-fourth the former cost. Wilkins predicts further cost reduction. He has perfected 8-mm and 16-mm combination camera-projector units that use a common mechanism and lens for shooting and projection.

The project described in this article was developed specially for the Kits Division of SCIENCE and MECHANICS. Dimensions of the film stripe and the film gate-to-head distance are according to SMPTE standard; thus, films recorded with this attachment are interchangeable with those made with commercial 8-mm magnetic cameras and sound recording projectors.

Author Wilkins also has invented a process for applying magnetic sound striping to Kodachrome and Kodachrome II film *before* processing. His laboratory is the only one in the United States currently offering this service.

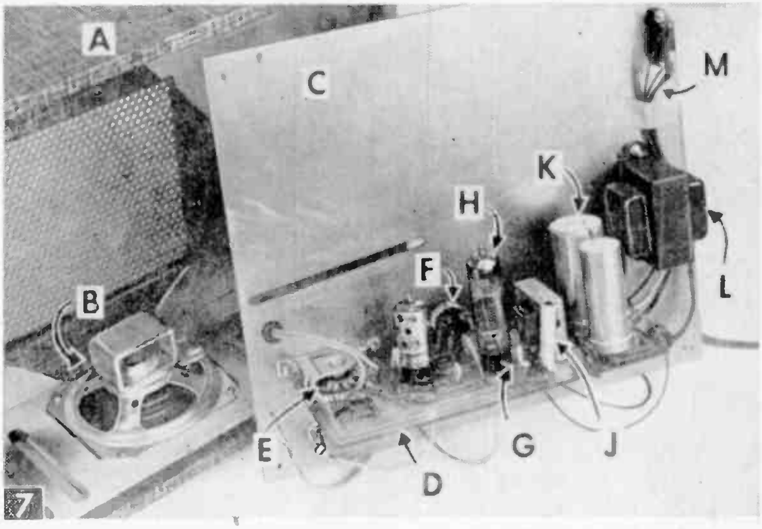
Wilkins Cinemagnetics laboratory offers other services: pre-striping of any unexposed 8- or 16-mm film; striping of customer's film after exposure; reduction printing (16 *mm* to 8 *mm*); striping of existing sound films, and the re-recording of duplicate films. His lab also supplies rental 8-*mm* sound films—educational, sport, entertainment and cartoon.

. . . Bill McHugh

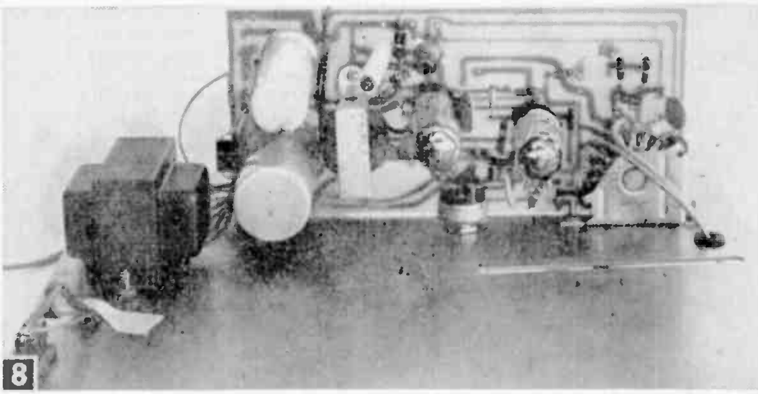
Parts supplied in the kit are printed circuit components designed to fit marked holes in the circuit board. Next, mount all resistors and capacitors. The technique is easy. Use a long nose pliers to grip the lead of the part; bend it to fit into the proper holes and feed through. Then bend the leads over at a right angle. Cut so a bend about 1/16 in. long remains on the circuit side of the board.

After all parts are mounted, solder each lead to the printed circuit board. Avoid overheating the joints . . . too much heat can cause the p-c wiring to strip from the base. Then fasten the board to the panel by means of the nuts on the volume control shank and with two 6-32 x 1/4-in. pan-head screws and nuts. Mount the power transformer on the panel; insert grommets for line cord and record head cable and to hold the neon indicator lamp. Mount the phono jack, mike jack, external speaker output jack, and the ac outlet for the projector. The record head cable terminates in two miniature clips that connect to the head. Solder cautiously to avoid flowing solder into the spring contacts. Tie in the speaker, and wiring of the amplifier is complete.

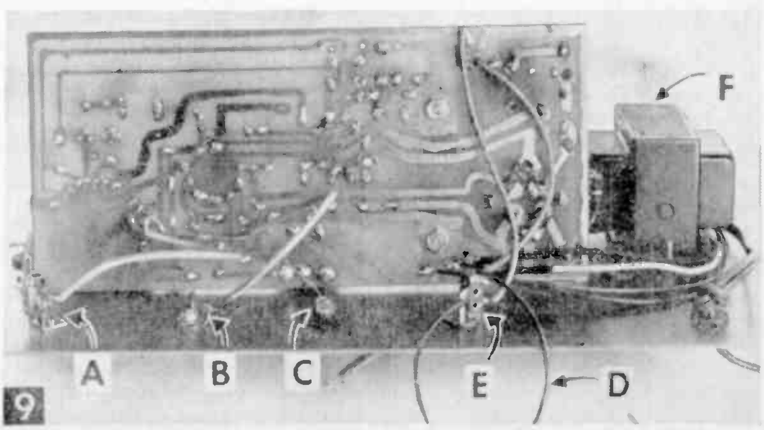
Amplifier Test. After checking your wiring, test the amplifier with ac power. Turn volume control wide open with your switch in playback position. A plain hiss should be heard. If you hear a loud hum or no sound at all, recheck connections.



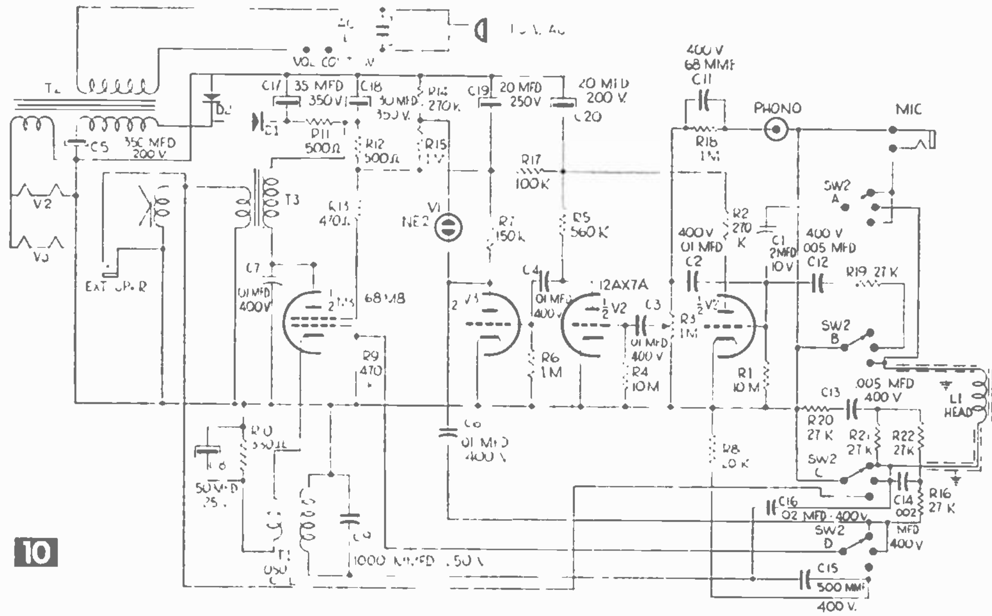
Inside view shows all electronic parts mounted on the printed circuit board except the transformer and ac receptacle. Parts shown are as follows: (A) case; (B) 4-ohm speaker; (C) panel plate; (D) circuit board; (E) mode switch; (F) volume control; (G) oscillator coil; (H) 6BM8 tube; (J) output transformer; (K) filter capacitor; (L) power transformer; (M) ac outlet, and (N) head lead.



Looking down at top side of printed circuit board. Wire the function switch first, then all other parts. The board is fastened to the panel plate at the last.



Bottom view of printed circuit board shows how this design makes wiring easy. Connections to the board are as follows: (A) mike input; (B) phono input; (C) volume indicating lamp; (D) internal speaker; (E) external speaker, and (F) power transformer.



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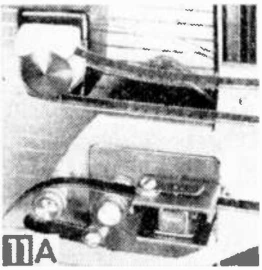
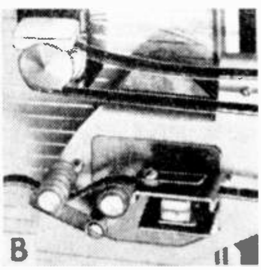




Here's how you thread the film for normal playback (top). The magnetic stripe passes right over the record head gap. To erase (bottom), you feed the film under the magnetic erase arm.

MATERIALS LIST—CINE-SYNC SOUND ADAPTER

Part No.	Size and Description
T-1	oscillator coil Cinemagnetics #C01
T-2	power transformer. Cinemagnetics PT 2 #6.3 fil, 115 v
T-3	output transformer, Cinemagnetics OT3
SW-2	3 position, 4 pole rotary switch Cinemagnetics #SW-2
D1, D2	silicon rectifier, 400 PIV
	Resistors
1 ea.	½ watt carbon resistors R1 10 meg; R2 270K; R4 10 meg; R5 560K; R6 1 meg; R7 150K; R8 20K; R9 470K; R10 330; R13 470; R14 270K; R15 1 meg; R16 27K; R17 100K; R18 1 meg; R19 27K; R20 27K; R21 27K; R22 27K
1 ea.	2 watt carbon resistors R11, 500 ohms; R12 500 ohms
1 ea.	R3 1 meg audio taper volume control with printed circuit connections with ac power switch and support lugs
	Capacitors
C17, 18, 19, 20	4 section electrolytic 35 mfd 350; C18 30 mfd 350v; C19 20 mfd 250v; C20 20 mfd 200v
C5	350 mfd 200v
C8	single section electrolytic—50 mfd 25v
1 ea.	disc type ceramic capacitors, C1 .2 mfd-10 v; C2 .01 mfd; C3 .01 mfd; C4 .01 mfd; C6 .01 mfd; C7 .01 mfd; C9 1000 mmf; (C10 omit) C11 68 mmf; C12 .005 mf; C13 .005 mfd; C14 .002 mf; C15 500 mmf; C16 .02 mfd
V1	Ne 2 neon lamp or equal
V2	12AX7A tube
V3	6BM8 Amperex ECL-82
1 ea.	phono jack for phone input Switchcraft #3501 FP
2 ea.	midget phone jacks, single circuit for mike input and speaker output
1 ea.	Cinch Jones #2R2 a-c power outlet
1	L1 Cinemagnetics record-playback head 700 ohm impedance at 1000 cycles 85,000 ohms at 85 kc
1	printed circuit panel, Cinemagnetics #PC-1 $2.00
1	top panel, 10¹¹/₁₆ x 12⁷/₁₆ x ¹/₁₆" CRS
2 ea.	9 pin printed circuit tube sockets, above chassis type
3 ft.	two conductor twin shielded stereo phono cable
Misc.	tube shields for 12AX7, ac power cord, grommets, hook up wire, single shielded microphone cable, high impedance crystal mike

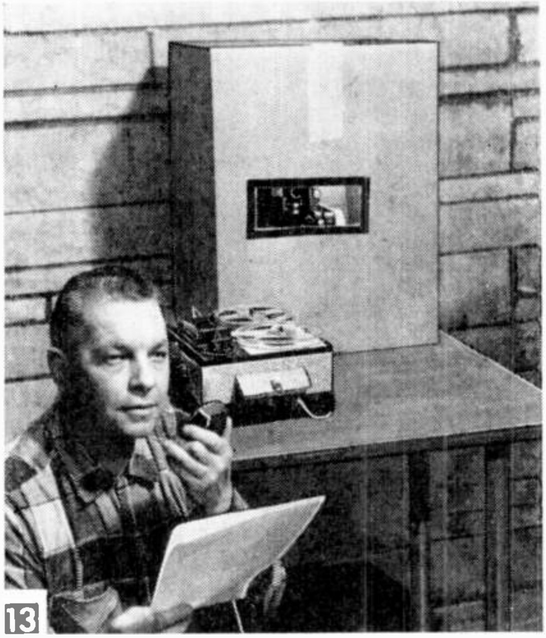
Next plug in the record head and touch the "hot" lead of the head with your finger. You should immediately hear a loud hum. Plug in the mike. The unit should operate as a PA system. You should be able to hear your own voice loud and clear. But keep the mike away from the speaker or a feedback squeal will result. The neon indicator should glow on speech with volume *up* and record switch *on*.

Mount the Chassis Bracket on the side of the amplifier case following Fig. 2 or Fig. 3, depending on which type of projector you have. Projectors with reels in front above and below (Fig. 3) generally are built higher and will require that you mount the adapter plate near the top of the amplifier case.

With your projector on top of the amplifier case, hold the chassis bracket so that radius X (Fig. 4-M1) is over the lower reel arm of the

12.

Above, a gadget borrowed from Hollywood, is the clap board. Made of scrap lumber, it is used to establish the starting point of tape and sound.



13

Right, Ed Oswald, Cinemagnetics methods engineer, records travelogue description while he watches the movie. Projector is in sound blimp.

projector. This arm should not touch the chassis bracket. Mark the hole positions and screw the chassis bracket to the amplifier case.

Some projectors of this type (Fig. 3) were manufactured with a wooden base that you may have to remove if it interferes with the chassis bracket. Projectors with both reels on top (Fig. 2) will require that the bracket be mounted so the loop between aperture and gate will not interfere with any other parts.

Next connect your record head. Insert the head cable through the hole in the back of the chassis bracket. Fasten the clips on the lead wires to the two pins in back of the sound head. The shield of the cable must be grounded under one of the screws that mount the head to the mechanism plate.

Now thread a roll of striped 8-*mm* test film into the projector. Move the projector until the film feeds from the film gate to the record head in a straight line. Put two marks on a length of film *exactly* $8^3\!/_8$ *in. apart*. This distance, the spacing from *aperture center* to the *gap* in the record head, is an SMPTE standard and must be maintained whenever you project, or your recordings will be off sync. Make a strip of paper this long and use it to set the spacing whenever you project or record. To record, remember that you must thread under the roller (Fig. 11B), which simultaneously erases the film. On play, the film must be threaded over the roller. *NOTE: Mis-threading will completely erase a precious, irreplaceable recording.*

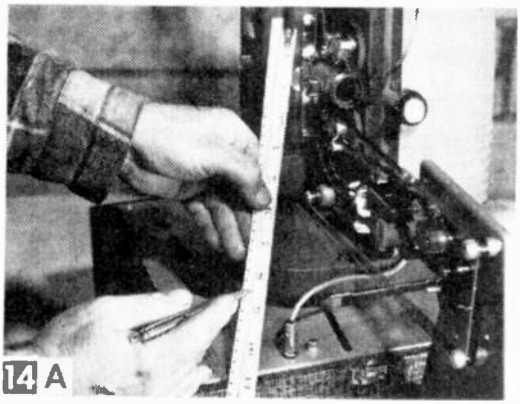
A few projectors have small metal arms intended to prevent improper threading. You may find it necessary to remove these arms or get them out of the way by twisting.

Turn the projector on, with volume halfway up. Immediately you should hear sound coming from the speaker. Try recording with a piece of striped film. Turn the switch to record, and thread under the roller. To get quality sound, it is important that you use just enough volume and not so much that you over-drive the record head. Talk into the mike and turn volume control until the neon indicator just starts to flash on sharp peaks . . it should not glow continuously. Practice recording with several voices until you master the technique . . . later on you will be able to add sound effects and music.

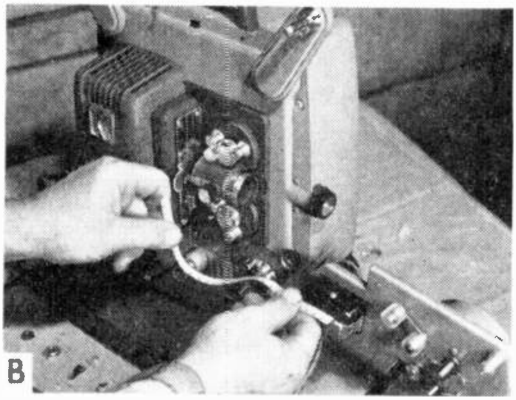
Striping Your Film. The magnetic stripe can be applied to 8-*mm* color or black and white film at any step in the movie-making process: before shooting, after development, or after splicing. Usually the most economical approach is to order film pre-striped, which you can do at most large camera-equipment stores.

If you shoot vacation trips or family events with your 8-*mm* camera, you may find that you discard a lot of footage when you edit your final movie. If your ratio of cuttings to finished film is 3 to 1 or more, you'll save by editing first, then taking your film to a photo dealer for striping.

Splicing Technique. If your edited 8-*mm* film is spliced with ordinary overlap splices (Figs. 14 A and B), you'll find that every time the splice passes under the playback head you get a "wow." If music is recorded at that place, the sound is objectionable. If the track is blank at the splice, there is no effect. If the leading edge feeds into the head (Fig. 14A), the effect is worse than if the overlap is underneath (B). The answer is to splice without overlap (Fig. 14C). *Quick Splice* tapes,



14 A



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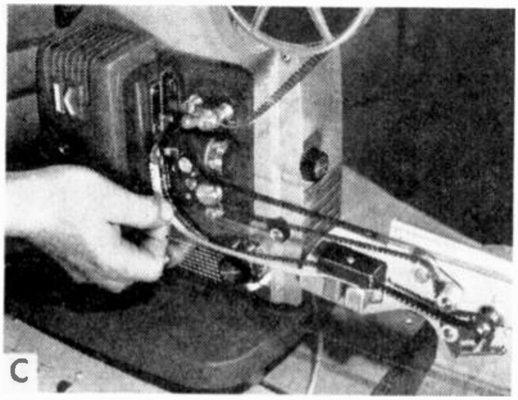


C

The length of film between sound head and film gate must be exactly 8⅜ in. (A). Cut a strip of leader stock exactly this length and use it as a gauge to check the spacing between projector and adapter (B). Whenever you thread your projector, check this spacing and the amount of slack in the film (C).

available in camera stores, are the answer, not only for sound film, but silent as well. As you edit, there is no delay in waiting for cement to dry; the splices consist of perforated tabs of *Mylar* plastic. The material is only 0.0015 in. thick, and as it passes through the projector, there is no effect on picture or sound, provided that you trim away the edge along the sound track.

Sound Recording is a well-refined technique in Hollywood studios. About 75% of the sound you hear in a professional movie has been added after the scenes were photographed. About 10% is prepared before photography, with only 15% sync-recorded on the actual set. This consists mostly of close-up scenes where you see the movement of the actor's lips and hear what he is saying at the same instant.

Lip-Sync Recording. The easiest way is to record sound at the same time the scene is taken. This can be done with a *Fairchild* 8-*mm* sound camera. These cameras are available for sale or rental ($5 to $10 per day) from the larger photo dealers. The second method is to use a tape recorder. You can record what was said while the scene was shot, then re-record the lines from a script, or you can add the taped sound in sync with the movie.

A clap-board (Fig. 12) is essential. Make it by hinging two 8-in. pieces of 1 x 2 lumber and fastening them to a piece of Masonite. Write the *scene* and *take* numbers on the board with chalk or grease pencil. Then, when you are all set to shoot, start the camera and the tape recorder. Have a helper hold the board in front of the camera, slap the boards together sharply, and say, "Scene 1, Take 1."

After the film is developed, it will be easy to recognize the single frame at which the boards came together. Then, by spotting that frame of film in the projector gate and placing the sound "clap" over the sound head in the tape recorder, you will be able to start projector and recorder simultaneously. If you have reasonably good equipment, the two units should stay in sync long enough for a short scene. If the two mechanisms do not accelerate at the same rate, simply note whether sound or picture is leading and make adjustments in the starting position of the tape over the record head until the sound is in sync.

If your projector has a variable speed control, you can "ride" this control to maintain sync. Or if not, you can slow down either the tape recorder or the projector by applying pressure to the tape capstan, or drive sprocket. A rheostat can be added to some 8-*mm* projectors to give you variable speed.

Non-Sync Recording. Often we watch a movie and hardly realize that the sound is not lip-synchronized.

Take a scene where a cowboy is galloping down the road and yelling, "Hi-O Silver."

It would be impossible to record clear voice over the sound of the horse. The sound cameraman may make a cueing record at the time of the take. The star, back in the sound studio, watches the scene on a projector and records the words at the right place. The sound of the horse might be simulated by pounding small wooden blocks in a box of gravel. Thus, the realism of your movie is limited only by your imagination. Use your tape recorder to experiment with sound effects. Keep a notebook on how you get the best results for certain sounds.

Narrative Recording. Another type of non-sync recording is typical of most travel movies. Recording is limited to vocal description and musical background. All you need is the adapter microphone and either a disk record player or tape recorder. Splice your film into the desired sequences first. Then prepare a script. Jot down the number of each scene, what it is, and roughly what you want to say. Also indicate the places where music will be added.

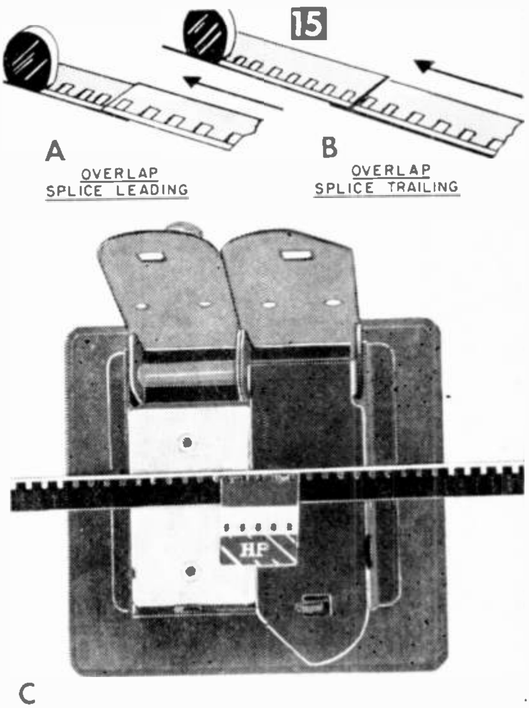
Be sure to preview your music before recording. Choose fairly fast passages, because they record well. Feed the output of the record player or tape recorder into the phono-input of the Cine-Sync amplifier. Set the Cine-Sync volume control at the proper setting for the mike. Then play a bit of the music and turn the volume of the record player up until the neon tube begins to flash. Then back off the record player volume until the neon indicator no longer flashes. Volume (and also fade-in and fade-out effects) must be controlled at the record player or tape recorder, because the adapter has only one control.

In shooting scenes to which sound will be added later, allow enough footage for sound track to describe them. In most cases, you'll find this time is longer than what you might shoot for a silent movie. Narration can eliminate the need for some scenes.

"Blimping" Your Projector. Since most 8-*mm* projector motors are noisy, the amateur producer may need a sound "blimp" to keep projector noise from being recorded.

A blimp (Fig. 13) can be easily made by obtaining a cardboard carton large enough to cover projector, adapter, and reels. Line the inside of the carton with foam plastic, rubber, or insulating material. On a line with the projection lens, cut a hole large enough for the light beam. Cement or tape two pieces of 1/16-in. Plexiglas on each side of the hole. To use the blimp, set all your projector and adapter controls beforehand. Use a 10-ft. length of lamp cord to run out a control switch so you can turn the projector on and off independently of the amplifier unit. The amplifier cord in the adapter is plugged directly into the wall so the tubes will not cool down while the projector is turned off.

Mike Notes. When recording with the Cine-Sync adapter, keep the mike as far away from the projector as possible. You can add up to 25 ft. of extension cable to the mike



Three kinds of splices. When the edge of an overlap splice leads into the record head (A) you'll get a "wow" if sound is recorded at that point. An overlap splice with joint trailing is better (B), but a butt joint made with Mylar tape splices (C) is best. This type of splice requires that you trim the splicing plastic so it does not cover the sound track.

lead. When recording, avoid holding the mike so close to your lips that you pick up the sharp hissing and popping sounds found in some words. Move the mike out too far, and you pick up unwanted sounds. Do not record close to sound-reflective walls or windows.

Remote Speakers. Did you ever notice that the sound in most movie theaters comes from behind the screen? A 4-ohm extension speaker placed under your projection screen will aid realism and quality to any sound recording. More than one remote speaker can be added. Two or more will give your movies a feeling of depth.

MATERIALS LIST—CINE-SYNC SOUND ADAPTER

Amt. Req.	Size and Description
1	Cine-Sync 8-mm sound adapter kit. (A-8) including complete parts for chassis bracket; 5-watt ready-to-wire amplifier; record-play head; microphone; carrying case, and instructions. Postpaid. $69.95
1	Cine-Sync 8-mm sound adapter kit (A-8W), including complete parts for chassis bracket; 5-watt, pre-wired amplifier; record-play head; carrying case; microphone, and instructions. Postpaid. $74.95

Send all orders to: Kits Div., SCIENCE and MECHANICS, Dept. 871. 505 Park Ave., New York 22, N. Y. Add $2 postage for all orders outside the U.S.A.

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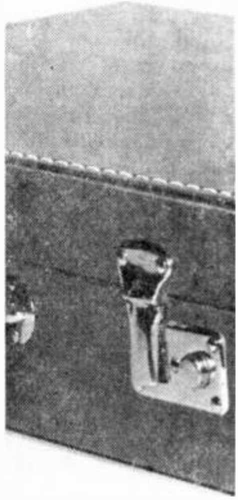


A

The Little SCREAMER

Here's a portable burglar alarm that protects your brief case, luggage, photo equipment, tape recorder, or tool chest

By TOMMY THOMAS

THE moment a thief starts to pick up a valuable suitcase, an inexpensive mercury switch triggers a battery-operated alarm and makes him let go in a hurry!

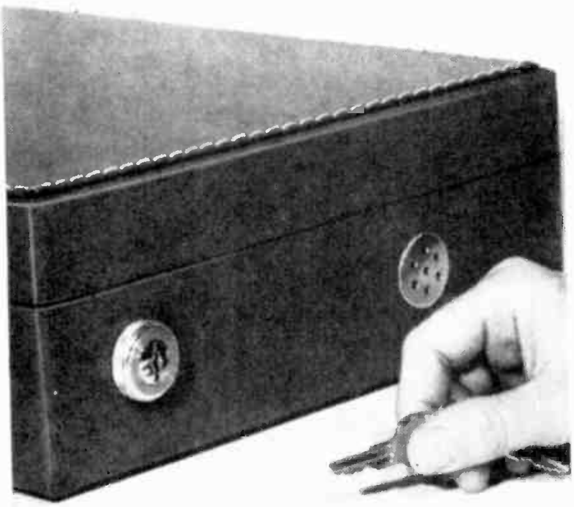
The idea could be adapted to dozens of unusual applications. You could install the switch and alarm to protect the contents of an automobile compartment that has no lock. Or it could protect surveyor's equipment and tools or contractor's material that often is left unwatched. It could guard merchandise on public display, be the basis of a novel party gadget, or protect your clothes and wallet while you go swimming at the beach.

The alarm requires no ac power, so it can be quickly rigged with a hinge and string to keep intruders out of summer cottages, tents, trailers, and boats.

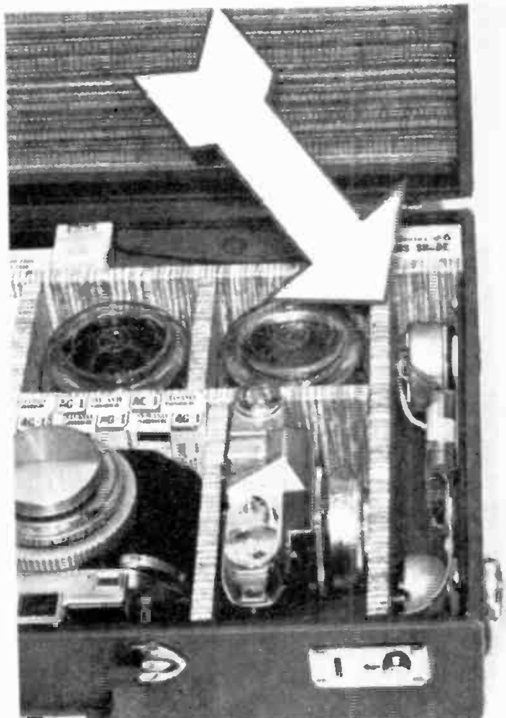
It is essential that you keep the alarm installation a secret. In the photo case (Fig. 2A) a piece of thin board covers the entire assembly. Cemented above the board are a number of film boxes so there is no inside evidence of anything unusual. To complete the camouflage, paint both the keyhole assembly and sound vent cover to match the case covering. A screened vent lets out maximum sound.

A second design (Fig. 3) requires that the fire alarm buzzer be reversed in its original case. Chisel a hole and solder the alarm in place. This also makes a necessary electrical connection. For peace of mind with this alarm idea, get in the habit of glancing at your switch before you yourself pick up the case. Even if you are the owner it could be embarrassing if the alarm went off.

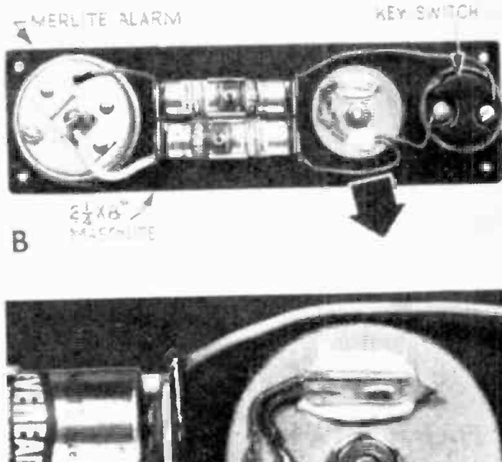
Assembled as in Fig. 2B, the unit occupies less than 2½ x 8 x 2-in. of space. Length of



Turn the key and the alarm is activated. The perforated metal insert is an electronic vent plug.



2 A



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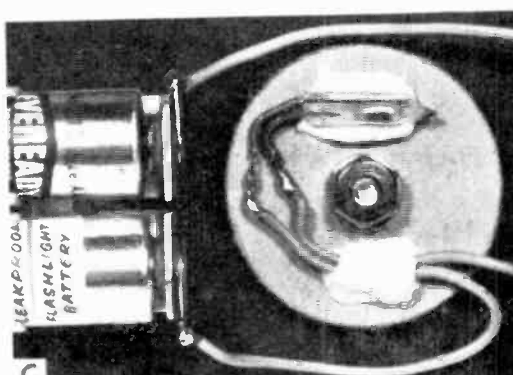


C

This camera case installation is under a lid that looks like a film box. 2B shows complete installation seen from inside of case. 2C shows epoxy adhesive holding mercury to switch and leads. Also use it to fasten buzzer to masonite.

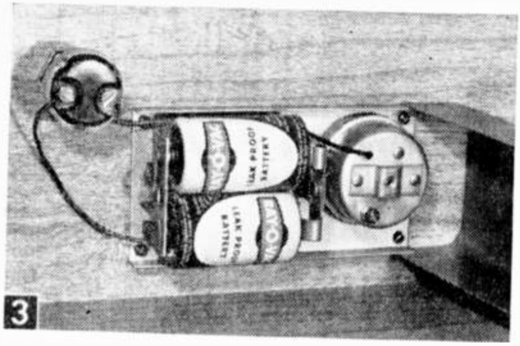
the wires is not critical, so you could scatter-mount the parts to make the installation even more space-saving.

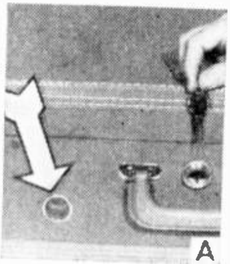
Key parts (see Materials List) are often available locally, with one exception, the *Merlite* fire alarm buzzer. A number of other low voltage bells and buzzers were tested, but they just aren't loud enough to be heard on a crowded train or on a busy street. The Merlite alarm really screams enough to scare any thief.

Start planning your installation by taking note of the operating position of the mercury switch. This switch is gravity sensitive, so its mounting angle will depend on the style of case. It must be located so that it will be *off* when the case is flat. When the case is picked up, the switch angle will change, causing the mercury to flow in the switch to the contacts and turn the circuit on. In most mercury

MATERIALS LIST—LITTLE SCREAMER

Amt. Req.	Size and Description
1	Merlite fire alarm unit ($4.95. Merlite Industries, 114 E. 32nd St., New York 16. N. Y.)
1	micro-miniature mercury switch (Burstein-Applebee, 1012 Magee St., Kansas City 6, Missouri, #17A994) trigger
1	heavy duty lock switch with two keys (LaFayette, 111 Jericho Turnpike, Syosset, L. I., N. Y. #SW-75) shut-off switch
1	4-position slide switch (Lafayette #SW-74) optional switch
1	battery holder, Keystone #140
2	penlight batteries, Size AA
1	vent plug. punched holes, snap-in for 1" holes (General Cement #H334F) sound vent
1 ea.	1/8-in.-thick Masonite, 2 1/4 x 8" rectangle and 1 1/2" circle (exact size not important)
Misc.	epoxy adhesive (heavy-consistency type), screws, nuts and washers, hookup wire, black electrical tape





For a larger case, you can use the entire Merlite fire alarm case. Cut a hole in the case and solder the buzzer in backwards so it faces out.

switches, the contact wires are of different lengths. For greatest sensitivity of mercury movement, plan to mount the switch with the shorter wire on the down side.

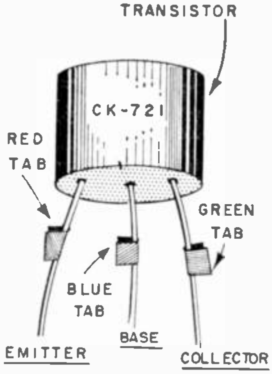
Mount the mercury switch on a 1½-in. disc of *Masonite*. One good method is to imbed it in a gob of epoxy cement. Wiring can also be anchored down in the same way (Fig. 2C). Then fasten the disc to the case or panel with a wood screw or machine screw and nut. By rotating the disc, you can set the alarm for any trip angle desired.

Action of the brief case alarm (Fig. 1) depends on the fact that normally the thief will grab the case by the handle. If the case was picked up upside-down, the alarm would be rendered useless. This probably would never happen, but on other types of cases, you could beat this problem by installing more than one mercury switch in the circuit. Mount them in facing angles and wire in parallel, so the equipment will be protected no matter how the case is picked up.

The lock switch (Fig. 1) is unusual in that the key can be removed in both *on* and *off* positions. Any SPST switch will serve as well, but it must be quiet acting and inconspicuous. You might conceal a slide or miniature switch somewhere on the outside of the case where it isn't likely to be seen. On a tape recorder, the ideal place would be underneath when the tape unit is laid flat. Protecting feet usually keep such cases from touching ground so there would be plenty of room beneath for a switch handle. Four position slide switches are available (see Materials List) that would make it very hard for someone to discover the safe setting even if they know about the switch.

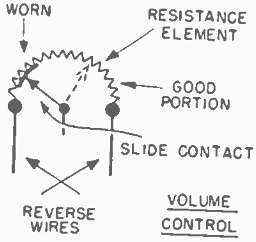
Color-Code Transistor Leads

• Accidentally connecting the leads of a transistor to the wrong terminals in a circuit may ruin it. Prevent this costly mistake by color-coding each wire lead with a small tab of colored plastic gift-wrapping tape. Use red (hot) tape for the emitter, blue for the base, and green (cold) for the collector.—J. A. C.



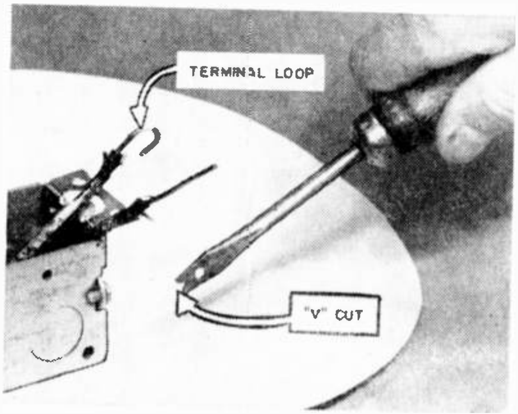
Salvaging Worn Radio-TV Control

• When a volume, tone, or other radio-TV variable resistance control becomes worn and gives spotty operation that can't be eliminated with control cleaner, try reversing the two outer wire connections (see sketch). This will put the operating range of the control on the least-used portion that is still serviceable and salvage the control for further satisfactory use.—JOHN A. COMSTOCK.



Electrician's Screwdriver

• Rework that spare screwdriver to make a more versatile tool that will still do a passable job of driving screws. Drill a small hole in it to use when shaping wire or forming termi-



nal loops on electrical installations. Then file a "V" in the blade edge to pull small nails and brads as when removing weather stripping, etc. The "V" is also a big help when stripping wire.—BIL TOMAN.

1

This Hallicrafters S-120 world-range receiver is a good example of the kind of equipment a DXer enjoys using.

SHORT WAVE...
Electronics' Fastest-Growing Hobby

By C. M. STANBURY II

WITHIN 10 years, short wave has progressed from a second-rate communications medium into a versatile and popular pastime. Before 1950, SW receivers were a novelty item, usually stocked only by dealers in amateur radio equipment; today they can be found in any large appliance store, and most smaller ones, as well.

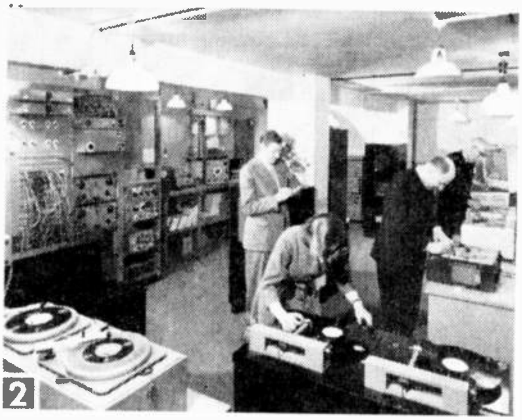
Why? First, short wave is, or can be, far more than a hobby. It represents a firsthand carrier of news from almost any part of the Earth—not to mention outer space, which is just now opening up for the listener. With the American public becoming more and more international-minded, SW is a gold mine of information.

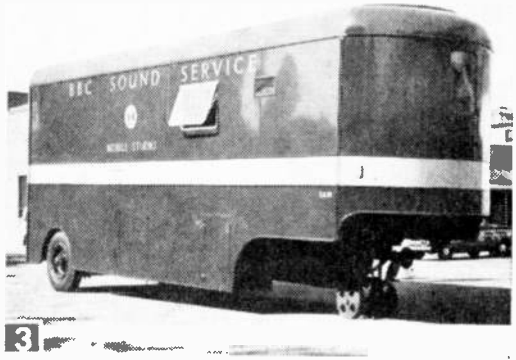
Competition is another important feature, in digging for rare signals like those of Vostok II (DX) or, perhaps, the folk music of every nationality. If you are interested in a foreign language, this is your chance to hear it and practice your understanding of it.

The possibilities are virtually endless. But in order to take advantage of them, you must know exactly what short wave is, and how it sounds and behaves: so let's start from there.

Technically, Short Wave simply refers to those frequencies between 3000 and 30,000 *kc* (3-30 *mc*). To understand where this lies in the radio spectrum, remember that the standard AM broadcast band runs from 535 to 1605 *kc*, the lower edge of TV channel 2 is 54 *mc*, and the FM broadcast band covers 88-108 *mc*.

SW signals often circle the globe, because of the ionosphere—a region of gases ionized by ultraviolet radiation from the Sun and extending from 50 to 200 miles up. The iono-


2 Most SW programs are taped in advance, but . . .



3 . . . the BBC does have occasional live news coverage.

sphere reflects (or, more precisely, refracts) radio signals; but the lower layers also absorb (and thus weaken) radio signals. Most distant signals below SW are completely absorbed, while signals above it usually pass right through into outer space: maybe they watch U.S. TV on Mars!

When someone mentions short wave, what do you think of—Voice of America, BBC, or Radio Moscow? Well, international broadcasters are the primary interest of many SWLs (short wave listeners), but there are literally thousands of other stations between 3 and 30 *mc*. Some, like radioteletype (resembling high speed Morse code), telephoto, and telemetering (except when it comes from outer space), represent just so much noise to the average listener. Other non-broadcast stations, however, including aeronautical, marine, and amateur, can provide many hours of fascinating listening.

International Broadcasters, ubiquitous and super-powered, are likely to be the first SW stations you will find. In addition to those mentioned above, they include such names as Radio Brazzaville in the French Congo, Portugal's Voice of the West, Radio Habana Cuba, Radio Peking, and many others listed in WHITE'S RADIO LOG (p. 194). All of these transmit programs in English beamed to North America, and because they use many frequencies at once they can nearly always be heard even on the simplest of receivers.

While many such stations operate solely for the purpose of propaganda or to promote a particular nation's tourist trade, they do present another source of news—a way to find out what other peoples or governments are thinking and saying about us. Then, too, much of the world's popular and folk music—the African drum beat, chants of the Near East, Oriental rhythms—can be heard via these powerful transmitters.

DX Refers to distant, difficult, and/or rare reception. It is an exciting sport and the key to successful short wave listening, for when the station that is "impossible" to hear *is* heard, stations that were previously difficult turn into easy and enjoyable listening. SWLs who DX are no longer limited to those super-powered jobs.

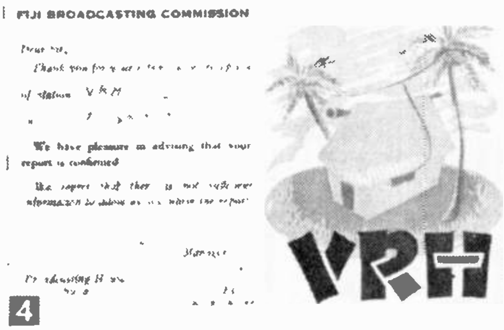
There are a number of factors which may make a particular SW station difficult to hear. First, absorption does not always stop at 3000 *kc*, but during the day affects frequencies up to 9 *mc*, and at night to about 6 *mc*. Upper short wave channels are also subject to "skipping": that is, they sometimes pass through the ionosphere like TV and FM signals using channels above 30 *mc*.

A final major factor is interference (QRM). Most short wave broadcast stations operate within nine narrow bands (see Table A), and 75% of all international activity is limited at present to four of these: 19, 25, 31, and 49 meters. This means that several stations must use the same frequency; for example, to log VTN2, Tarawa, Gilbert, and Ellis Islands, on 6050 *kc* during the early morning (EST) hours when absorption drops to a minimum is almost impossible, because HCJB, Quito, Ecuador, also uses the channel at that time.

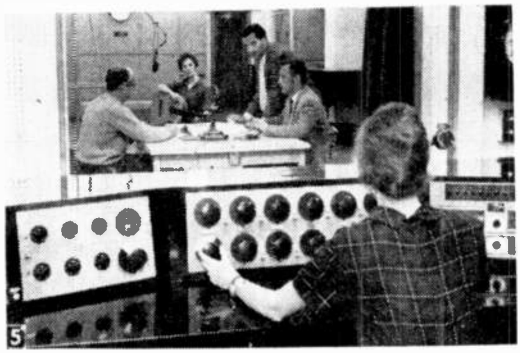
Other less important considerations are low power, short schedules (on the air only a few hours each day), static on lower frequencies during warm, humid summer months, and ignition noise on the upper frequencies from passing autos, trucks, and buses.

If You Decide to DX, you are not limited to short wave by any means. You may try for DX on any frequency range: the AM broadcast band, FM, or even on TV channels. Those interested in DX as a game often prefer non-SW stations, because of the greater challenge: imagine hearing London or Nicaragua right next to a local station!

You should keep a log containing the date, time, frequency, program description, and an account of reception conditions, for each new station heard. Most DXers then try to verify



QSL card from Fiji; best heard at present on 4755 *kc* (VRH5).



The British Broadcasting Corp. on the air. BBC is one of the most widely heard short wave broadcasters.

what they have logged. This is done by sending a report consisting of the data from your log book to the station, along with a request for confirmation—a QSL, as it's called by SWLs (Fig. 4).

Broadcasters can usually be addressed simply by name (Radio Centro, Radio Australia), city, and country. Always include return postage; if stamps of the particular country are not available, International Reply Coupons can be purchased for 15¢ at any post office. In addition to proving DX feats, QSLs provide the souvenirs that every world traveler likes to have to show the folks back home.

Equipment. It is possible, of course, to DX on any receiver and to listen to short wave on any radio that tunes between 3 and 30 *mc*, but once the listener really knows he's interested he'll want equipment that will give the best return for his efforts. Following is a list of features, approximately in the order of their importance, by which you should judge a receiver:

- COVERAGE. The receiver should tune all frequencies between 535 *kc* and 30 *mc*. It will do this by means of a band switch and at least one tuning knob. The dial should be divided into at least four bands: otherwise you will probably lose selectivity and/or good calibration.
- SELECTIVITY. This is the ability to separate stations on frequencies in close proximity; with bands so crowded today, this is extremely important. A top receiver will separate stations of equal strength only 5 *kc* apart.
- CALIBRATION. Good calibration means the ability to find exactly any desired frequency. This is best accomplished by the use of two dials. One, for main tuning, is placed at the top of a small desired segment of the spectrum, say 31 meters; the other is a fine scale known as bandspread, adjusted carefully until the right spot is hit.
- SENSITIVITY. How well a receiver pulls in those weak signals depends upon its amplification circuits. A quality superheterodyne receiver will apply at least one stage of amplification to the original frequency, convert it to an intermediate frequency (IF), and follow this up with two stages of IF amplification.

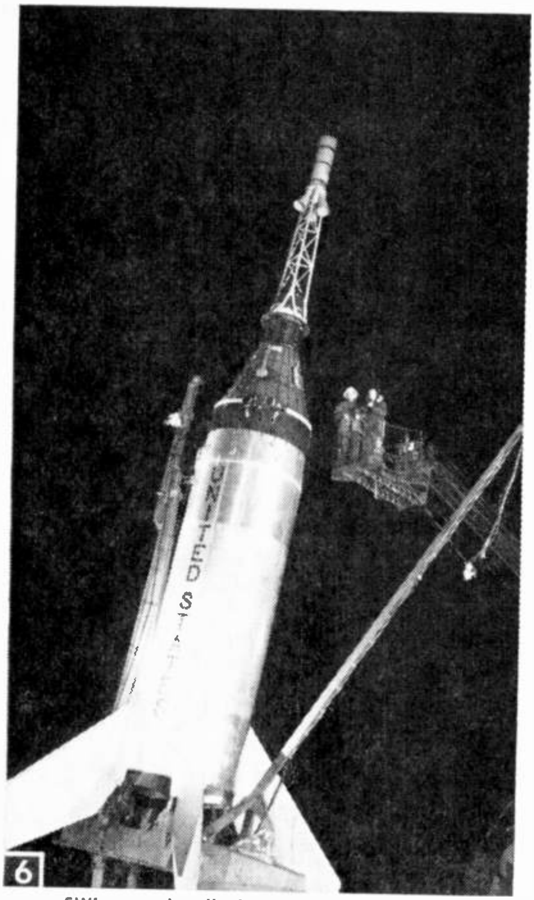
After these there are some useful, non-essential features:

- NOISE LIMITER. This is primarily effective against ignition noise.
- BFO. This is needed for most Morse code signals.

TABLE A—SWBC FREQUENCY-TIME CHART

Meters	Freq. (kc)	Latin America	Europe-Africa	Asia	So. Pacific
90	3200-3400	Evening, 0600	Sunset, 2400-0200 (Africa only)	0500-sunrise	0400-sunrise
60	4750-5060	Evening, 0600	Sunset, 2400-0200 (Africa only)	0500-sunrise	0400-sunrise
49	5950-6200	Evening, 0600	Late afternoon-0200	0330-sunrise	0230-sunrise
41	7100-7300	None	Late afternoon-0200	0330-sunrise	None
31	9500-9750	Evening	1400-0200	Night	0100-1000
25	11700-11975	Late afternoon, evening	1400-0200	Night	0100-1100
19	15100-15450	0800-2400	1200-2000	Night if open	Night if open
16	17700-17900	Day	Day	Day	Day
13	21450-21750	Day	Day	Day	Day
11	25600-26100	....Seldom Used at Present............................			

Stations may be heard at hours other than those listed. Times are EST, except sunrise and sunset, which refer to listener's area.



6

SWLs occasionally log signals from space.

• AUTOMATIC VOLUME CONTROL. This saves wear and tear on the ears, keeps the neighbors happy.

How many of these features you wind up with, even of the major ones, depends on your budget. Assuming you buy a nationally known brand, you will get exactly what you pay for. One thing is sure: No amount of fancy gear can help a lazy or disinterested listener, while an eager and skillful operator can go a long way on comparatively little.

Certain accessories can be added to your receiver at any time. The most important of these include:

• Q MULTIPLIER. This increases selectivity via the IF circuits.

• CRYSTAL CALIBRATOR. If fitted with a 100-*kc* crystal, this will place a strong, steady reference signal every 100 *kc*. A crystal of any value may be substituted if other reference frequencies are desired.

Finally, you must have an antenna. It doesn't have to be elaborate: just make it as long and as high as possible.

How to Listen. Now you know what short wave is, what DX means, and what equipment is available. How do you make use of your information?

When a listener first discovers SW and/or DX, he should tune all the frequencies he can, and learn which parts of the world can be received on each band, and when. After this basic training, he is likely to become interested in specific projects—monitoring an unusual propaganda campaign, logging and QSLing a certain country, or bagging a particularly rare station. To tackle these challenges, a regular procedure must be followed.

First, find the right frequency. This can be done by using as guides stations heard regularly and whose frequencies are known. For example, if your target had been Radio Katanga, which used 11875 *kc* before its destruction on December 6, 1961, you would have checked WHITE'S RADIO LOG and found powerful XEHH in Mexico City, operating just 5 *kc* higher at 11880. Knowing that the best time for Africa on 25 meters starts at 1400 EST (see Table A), you would have checked the channel and kept checking it until all other African signals were gone.

Did You Hear It? The answer to that depends on you, your receiver, and how long you stayed at it—days, weeks, or even months. If you were fortunate enough to be using a first-class receiver, the channel was clear at least part of the time. With a less expensive model, you might have expected severe "sideband" QRM from XEHH, which you would have to listen through, using the following method:

Listen for the slightest trace of a signal beneath XEHH: then concentrate on it. After a while, what XEHH is saying will go in one ear and out the other—a real advantage when DXing. At the same time, you will be able to understand portions of the buried station's programming, and pick out its identification. In this case, maybe it turned out to be "Radio Katanga," an announcement which sounds about the same in Flemish, French, or English. (Fortunately, this is true of most identifications, especially after a little practice listening to the appropriate language. The article which follows this one, "Breaking the Short Wave Language Barrier," deals with this subject in detail.)

Utilities. Between short wave broadcast bands are the utilities, including aeronautical and marine services. Monitoring these requires a different approach. Unlike broadcasters, whose very existence depends upon a large number of listeners, utilities are not interested in being heard by the general public, and information on frequencies and schedules is much harder to come by: it is almost never announced over the air.

Identification of land stations is by location only, and you will have to listen a while to determine which service is which. There are many military stations with only tactical calls (Kilroy, Streamer, Creampuff One), and these are virtually impossible to identify.

Despite such obstacles, the utilities offer exciting, firsthand radio. Some SWLs were able to monitor John Glenn as he circled the Earth (15016 *kc*); many have heard rescue operations on the high seas.

In addition, numerous countries and islands not represented on the SW broadcast bands have either a marine or aeronautical station for you to log and verify. Utilities will often QSL, provided a prepared card is enclosed with your report for the operator to sign and mail back to you. Such locations are likely to be sparsely populated, and a report simply addressed, for example, to Officer in Charge, Seawell Aeradio, Bridgetown, Barbados, would probably be delivered.

The 20 Best Utility Channels are listed in Table B, along with some details on each. They can be found by trial and error, but are much more easily located with the aid of a crystal calibrator. Unlike broadcasting stations, utilities will often *work together* on the same frequency, and if conditions are right you should have no trouble making 20 or more loggings in one hour.

On these same channels you can hear the mobile stations—ships or aircraft, whichever the particular spot on the dial serves. Aircraft identify by airline and flight number, such as "Eastern 101" (Pan American flights, however, identify as "Clipper"); reports can be addressed to the most convenient office on the plane's route. American addresses are best, as U. S. stamps can then be used for return postage.

TABLE B—THE 20 TOP UTILITY CHANNELS

Freq. (kc)	Use
1755	Royal Canadian Mounted Police
2009	Marine telephone, Calif. south to Galapagos
2034½	Marine telephone, Caribbean and Bahamas
2182	Marine, international calling and distress
2670	Coast Guard calling and distress frequency
2716	U. S. Navy
2760	Cuban navy
2966	Aeronautical, Caribbean
8879½	Aeronautical, South Atlantic
8887½	Aeronautical, South Pacific (no aircraft)
8888	Aeronautical, North Atlantic
8913½	Aeronautical, fringes of North Atlantic
8930½	Aeronautical, Near East
8956	Aeronautical, East Africa
9018	Cuban air force
10021	Aeronautical, Central America
13284½	Aeronautical, North Atlantic
13304½	Aeronautical, Far East
13314½	Aeronautical, western South America
15016	U. S. Air Force
19995	Soviet space vehicles

Unfortunately, addresses for ships must be obtained from expensive reference volumes which become out-of-date all too quickly. Even when the address is known, the percentage of return on ships is very low.

One word of caution: *Do not repeat contents of messages*. To prove your reception (as program description does for broadcast reception), include the station called or contacted and, for a mobile, its position.

Now, to get you started, we've provided a pair of SWL/DX projects, neither too hard nor too easy, designed to test your qualifications as a listener.

Project No. 1: Iran, historically better known as Persia, the world's second oldest country. Today, because of its wealth of black gold, Iran is under threat of Communist subversion. In fact, Russia operates a clandestine, revolutionary radio station (approximately 11695 *kc* at 1200-1250 and 1330-1420 EST) just north of Iran's border, possibly at Tashkent.

Meanwhile, Radio Iran uses 7100 (give or take a couple *kc*) from approximately 2040 EST on for programs in Persian, and is readily spotted by the cry of a jackal transmitted before sign-off. Despite amateur QRM, Radio Iran is often heard at this time in the U. S.

Even rarer Persian DX is Radio Tabriz, a regional station not far from the Russian border, using 6175 *kc* (where there's plenty of QRM) starting around 2055. Radio Tabriz can be distinguished by its long periods of uninterrupted Near East music, and identifications which seldom come on the hour or half-hour. East coast broadcast band DXers fortunate enough to own top grade receivers should also watch for this one on 638 *kc*.

Project No. 2: 4VGM, Haiti's Magloire Broadcasting Circuit. When Paul Magloire was dictator of this Caribbean republic (from 1949 through 1956), M.B.C. was a top international broadcaster, with transmitters on 31, 49, and 60 meters, plus the broadcast band.

Today the giant has been laid low, and only operates on 1475 *kc*. The fact that many U. S. stations are using 1470 and 1480, and that two Central American transmitters—YNAG Radio Cosiguina, Chimendega, Nicaragua, and TIHCJ Radio Regional, San Carlos, Costa Rica—are on 1475 itself, makes this a tough one. But fortunately 4VGM appears on 2950 *kc* (multiple of the intended frequency). During the hours of darkness it can be heard throughout North America until sign-off at 2300.

M.B.C. programs are entirely in French, and consist mostly of Haitian music, which is quite distinctive. Reports should be addressed to M. Franck Cl. Magloire, who now owns 4VGM, and the address in Port-au-Prince is 38, Rue Americaine.

Good hunting.

Bothered by Foreign Lingo?

Here's How to Break the Short Wave Language Barrier

By DONALD N. JENSEN

PERHAPS the most frustrating problem encountered by the radio listener when he begins tuning the short wave bands is that presented by the language barrier.

While a number of the large international broadcasters devote a portion of their transmissions to English language programs, countless other radio voices seldom or never use the King's English. Since many of these stations behind the linguistic curtain are low-powered local outfits, they are tempting game for the DX listener. For the average person who speaks no "foreign language," however, logging these stations may seem to present insurmountable difficulties.

But this need not be the case. A very little study time and a few "tricks of the trade" can soon have you logging and verifying non-English-speaking stations. The two problems involved are (1) identifying the station you are listening to, and (2) obtaining sufficient data on the programs you hear so that you can write a reception report to the station and get that rare *QSL* card.

Identifying the Station. Let's say you are listening to a station in the 60-meter band. It is difficult to know the exact frequency, but you believe your dial is tuned to about 4940 kilocycles. You have been listening to a program of enjoyable music for 10 minutes or so, when a man begins to announce. He could be speaking Martian for all you know . . . it's all "Greek" to you.

After a few minutes of careful listening to this garble of sounds you begin to pick out an occasional word if you can call it that, for these words are meaningless to you. The announcer pauses and then continues. What was that? You catch what sounds like, "eesee ahbeedjohn." Ah, you begin to see a bit of light through a chink in the language barrier. You remember that "eesee" is actually

6-LANGUAGE TRANSLATION CHART

English	French	German
This is . . .	Ici (ee-see)	Hier ist (heer ist)
Radio station	Radiodiffusion (rahdyo-deefeez-yohn)	Rundfunk (roond-foonk) Kurtzwellensender (kurts-welen-zendair)
Transmitter	Emetteur (aim-et-tour)	Sender (zend-air)
Short wave	Onde courte (awnd-koor)	Kurzwelle (kurts-vel-ah)
Kilocycle	Kilocycle (keelo-seekl)	Kiloherz (keelo-hairtz)
Frequency	Frequence (Fray-kawns)	Frequenz (fray-kwents)
Wave length	Longueur d'onde (lawn-gyour dond)	Wellen lange (velen-lahn-gah)
Frequency band	Bande de frequence (bahnd d-fray-kawns)	Frequenzband (fray-kwents-bahnd)
Program	Programme (praw-grahm)	Programm (pro-grahm)
Listener	Auditeur (oh-dit-tour)	Horer (huhr-air)

the French word *ici*, meaning "this is."

"This is ahbeedjohn," the man said. That must be the French pronunciation of the word Abidjan, the capital city of the Ivory Coast, a French-speaking country on the tropical west coast of Africa. A quick check of your reference log shows that the short wave station at Abidjan does indeed transmit on 4940 kilocycles at this time. By golly, you've logged a new station and never once was an English word spoken.

Logging Data for Reports. Late in the evening, you've just tuned in a station that announces as "rahdyo-defuze-ora Venezuela." That's easy! It is YVKB, Radiodifusora Venezuela broadcasting in Spanish from Caracas. This business of careful listening and learning key words in several languages seems to be the ticket. You understand they have a fine *QSL* card, so you get pencil and paper to make some notes about program content for a reception report.

But what is the program about? You only know a few key words in Spanish. How can you get enough data on the program to convince the station's officials that you actually heard them?

Well, just listen again, carefully. What did he say? It sounded like "Khrushchev." You'd recognize that in any language! Then he mentioned "Kennedy," and now, "Katanga" and "Castro." He must be reading a news report. Names in the news sound much the same in many languages and stand out like a beacon in a foreign broadcast.

The announcer continues talking. He says something like "prograhm-ah day mew-sikah day ahmerika lah-tina." Latin American music, eh? Sure enough, the orchestra is beginning to play a cha-cha. Make a note of that for your report. It is followed by a tango; "El Choclo," you believe, is its title. Now they are playing that old favorite, "La Paloma." Note that, too. You seem to be getting quite a lot of detailed information for your reception report.

Thus, the fact that you speak only English need not be a handicap when you tune the short wave dial. But you don't have to stop here. Perhaps your interest is only whetted. You may make the plunge and actually try to learn one or more foreign language. Night school courses, books, and records are all available. Many short wave stations, themselves, offer language courses by radio from English to Hungarian, Russian to Spanish.

If you don't have the time or inclination to study, you may spend several sessions just listening to foreign broadcasts of the Voice of America or the British Broadcasting Corp. (B.B.C.). Before long you'll find you will begin to recognize the various languages by sound even though you cannot actually understand them. In time you will be able to recognize "by ear" the difference between such similarly sounding languages as Spanish and Portuguese, Arabic, and German, and many others.

So, listen carefully and you, too, can break through the language barrier.

(Pronounce as Given in Parentheses)

Portuguese	Russian	Spanish
Aqui (ah-key)	Goverit (go-vuh-reet)	Aqui (ah-key)
Radiodifusao (rah-dyoh-defuze-sow)	Radyo (stantsiya) (rahdyo-stahn-tsee-yah)	Radiodifusora (rah-dyoh-defuze-ora) Estacion (ehs-tah-thyon)
Transmisora (trans-mees-ora)	Peredacik (pear-eh-dah-chek)	Transmisora (trans-mees-ora)
Onda curta (on-dah kur-tah)	Korotkaja volna (koh-roht-ka-yah wolna)	Onda corta. (on-dah kor-tah)
Kilociclo (keelo-seek-lo)	Kilogercov (keelo-gair-kof)	Kilociclo (keelo-seek-lo)
Frequencia (free-kwen-seeah)	Castota (kahs-toe-tah)	Frecuencia (free-kwen-seeah)
Longura de onda (loan-gyour-ah day on-dah)	Dlina volni (dleen-ah wohl-nee)	Longitud de onda (loan-jeet-youd day on-dah)
Banda de frequencia (bahndah day free-kwen-seeah)	Dicpazon castoti (deah-pa-shown kans-toe-tee)	Banda de frecuencia (bahndah day free-kwen-seeah
Programa (pro-grahm-ah)	Programa (pruh-grah-muh)	Programa (pro-grahm-ah)
Radio ouvinte (rahdyo aw-veen-tay)	Prijomnij ljubitelj (prae-yohm-nee lyoub-bit-elyee)	Radio Oyente (rahdyo aw-yen-tay)

Salt Water Powers Radio

Battery made of scrap metal and a pill vial runs for months!

By ROBERT E. KELLAND

The longer the antenna, the better the reception. Yet the test model worked all stations with a bench light reflector used as an antenna.

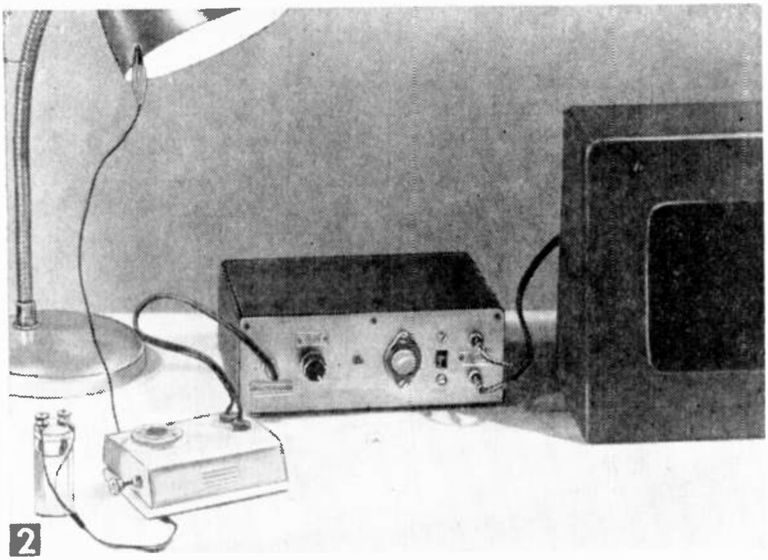
THE salt-water cell powering this transistor radio has all the advantages of a dry cell, costs only pennies to make, and lasts for months. The complete radio receiver, with battery but less earphones, can be built for $3 or less.

As shown in the photos, the battery delivers about three-tenths of a volt. The radio consumes only 12 microamps while running, and in actual tests ran three days continuously without any detectable dip in volume. Originally designed as an emergency receiver for Civil Defense use, the battery-radio combination offers reliability and unlimited use, because very little of the metal electrodes is consumed. As the battery ages, the plates corrode slightly, but all you need to do is clean them and replace the salt water.

Start Building the Battery by cutting the copper and aluminum electrodes from 24-gauge sheet metal. The 7/16 x 1½-in. size is recommended for the 4-dram vial shown (Fig. 4), but plate size has no bearing on voltage produced. Larger electrodes would produce more amperage, and experimenters may want to try metallic foils. Make the binding posts from two 8-32 x ¾-in. brass screws. Use a vise and fine hacksaw to cut off the heads of the screws, then saw slots about ¼ in. deep. Insert the electrodes in these slots. If the fit is loose, pinch the slots together in a vise and force the electrode in.

The glass vial is available at any drug store for a few cents. Get the type that has a close fitting plastic top. A plastic vial could be used as well, but the glass has a cleaner appearance. Drill two 9/64-in. holes in the cap spaced about ½ in. apart on a diameter line. In the center of the cap, you can drill or pin-punch a tiny hole to allow gas generated by the chemical action of the cell to escape. The vent hole should be very small so that the surface tension of the water will prevent leakage. If you use a power drill, make the holes as quickly as possible to avoid melting the plastic.

Now screw the two electrodes into the underside of the cap until the screws extend through about ¼ in. and add washers and binding nuts. The fit should be tight and



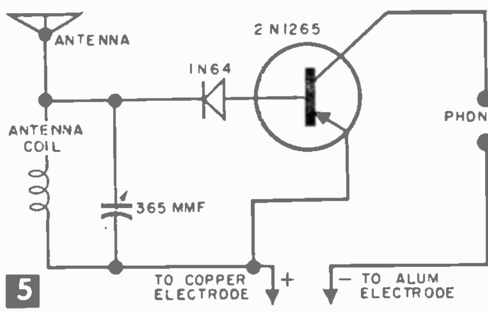
2

S&M lab staff connected radio to author Art Trauffer's battery-operated transistor amplifier (Radio-TV Experimenter #576). Music on AM stations in Chicago area came through with crystal clear tone and very little static.

waterproof. To test the battery, fill the vial about three-quarters full with clean water and add a pinch of salt. Check output with a VOM. Though it may not seem like a large current, you'll find it adequate to operate may low current projects. Provided that resistance of the circuit is kept high, the battery will be suprisingly constant.

The Transistor Radio uses a minimum of parts and can be assembled in half an hour. The author used a 2N1265 transistor and an IN64 diode, but you can substitute other general purpose units (See Materials List). Editor's Note: *The assembly shown in the photos was tested in a basement lab, with the antenna lead clipped to the reflector of a lamp. After tuning the ferrite coil, reception was crisp on all Chicago-area stations. The radio ran constantly for 85 hours. An amplifier was connected to the earphone jacks and music came through surprising clear and free of background noise.*

Drill the holes for the tuning capacitor, antenna coil, and headphone jacks and mount as in Fig. 4. The miniature capacitors must be kept clean and handled carefully to avoid damaging the plates. You can use a socket for the transistor or simply solder it into the circuit as shown. Make sure you use a heat sink to dissipate soldering heat. Hold the iron to the joints only long enough to make a good connection, otherwise the parts may be ruined.



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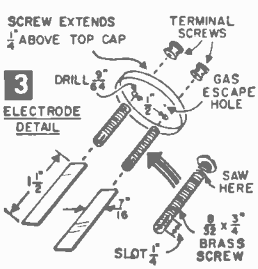

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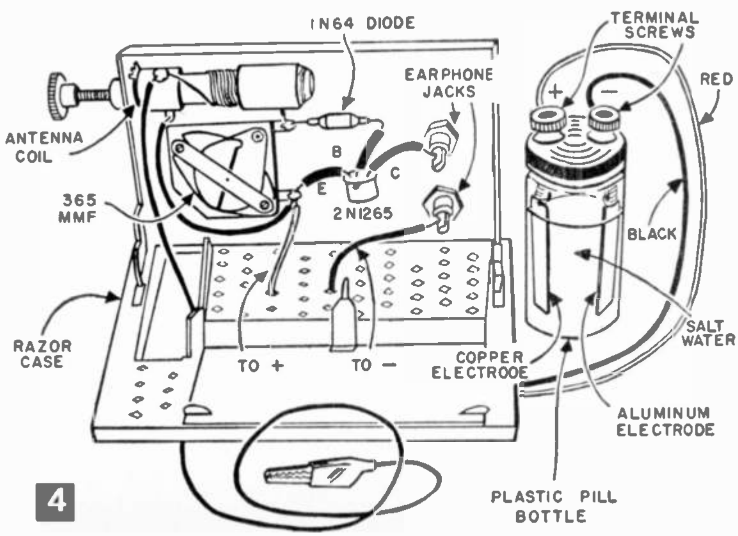
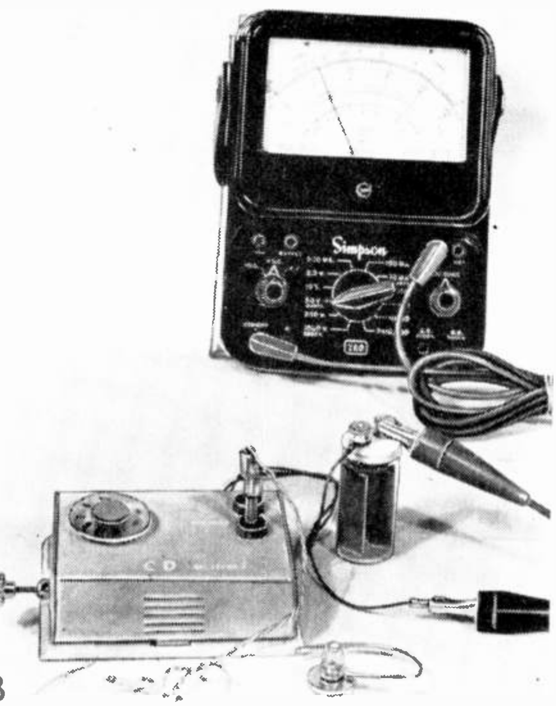


4

6A

VOM shows 0.3 volts across battery terminals. Microammeter in series with battery and radio read 12 ua. Author Kelland rates battery at 0.1-ma output for 100 hours. Original battery continued to power radio after nine months with same electrodes.



B

MATERIALS LIST—SALT WATER POWERED RADIO

SALT WATER BATTERY

Amt. Req.	Size and Description
1	glass vial with tight fitting cover. 1" dia. x 2 1/8" high (available drug stores)
2	8-32 x 3/4" brass screws for binding posts
1 pc.	7/16 x 1 1/2" 24 ga. copper
1 pc.	7/16 x 1 1/2" 24 ga. aluminum
2	8-32 knurled binding post knuts (salvage from old battery)
	TRANSISTOR RADIO
1	PNP transistor, any general purpose type such as 2N1265, CK 722 etc. Lafayette #SP-171 ($.49)*
1	diode, general purpose type such as IN 34A, IN64 etc. Lafayette #ST-148 ($.19)
1	antenna coil, Superex Vari-Loopstick or equal, Lafayette #MS 287 ($.88)
1	miniature variable capacitor, 365 mmf with dial Lafayette MS 445 ($.59)
1	plastic box, utility type or Gillette Razor case. Lafayette MS 160 ($.20)
1	high impedance earphone, 2000 ohm or more Lafayette #AR-50 ($1.39)
Misc.	small alligator clip, phone jacks, hookup wire

* Lafayette Nos. refer to catalog of Lafayette Radio Electronics, 111 Jericho Turnpike, Syosset L. I., New York.

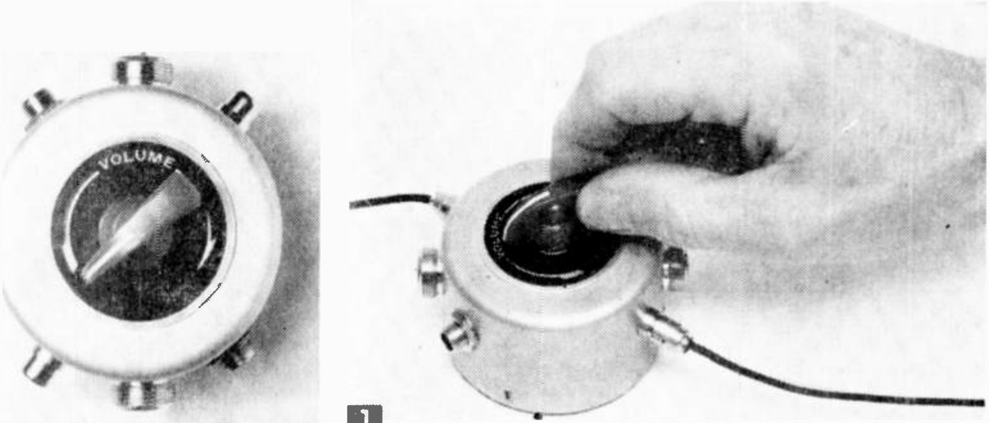
Feed the battery and antenna wires through holes in the top of the back of the box. Color code the battery leads red, positive (to copper); and black, negative (to aluminum), and attach a small alligator clip to the antenna lead wire so it can easily be hooked to various antennas you may want to try.

Test the radio by connecting the battery and plugging in a high-impedance (2000 ohms or more) earphone or headset. Be sure battery polarity is correct. If you connect backwards, you won't harm the transistor, and may actually get reception, but it will be far lower in volume. Clip the antenna lead to any suitable ungrounded metal object such as a bare spot on a telephone dial, a bed spring or a metal clothesline and tune for a station. If your connections are correct and all components working properly, you should be getting plenty of earphone volume on one salt-water cell. Adjust the antenna coil by setting the tuning condenser to a known station, then turn the knob on the ferrite core until the volume is at a peak.

Once the ferrite core is set for a certain antenna, the set should require no further adjustment. An on-off switch is not provided because the battery circuit breaks when you pull one of the phone plugs. Leaving the radio on will run the battery down after a few days, but the effect is not permanent. Clean the metal plates, replace the salt water and the battery is as good as new.

Solder Spool Carries Flux Can

• Attach a cork to the lid of your can of soldering paste and set your spool of solder down over the plug as a means for keeping the can of flux handy. It will always go wherever the spool of solder goes and will also serve as a base to keep the spool from tipping over and rolling off the bench.—J. A. C.



1

This control enables you to control output volume from the microphone position. For the photo, cables were shortened for sake of clarity. In practice, this control could be used on 50-ft. P.A. system lines in an auditorium.

2

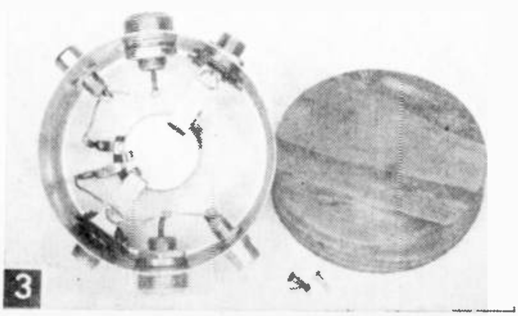
Remote Volume Control

for mike, earphones, and speakers

A HALF-MEG volume control mounted in a shielded box with a set of jacks and plugs gives you a handy versatile unit for audio and experimental work. Depending on your ability to shop for parts, the unit should cost only $3 or less.

The control is ideal for use between the mike and amplifier, and it's especially handy when audio howl breaks out. You can connect it between a crystal phono pickup and an amplifier that has no gain control, or you can use it between the output of an FM or AM tuner and a pair of earphones. If you listen to a radio or TV set with earphones, use the control to regulate volume from your easy chair.

If you use floor stand or table stand mikes, mount the control box right onto the upright with a Paine pipe clamp and wood screws. These pipe straps are available in plumbing stores or at Sears Roebuck.



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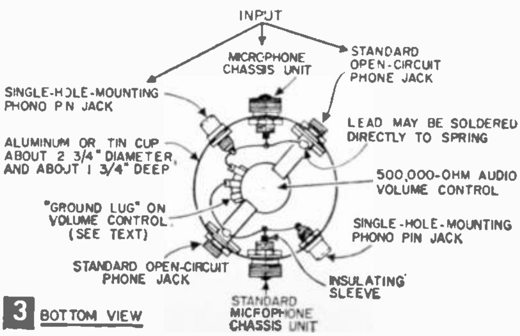


3 BOTTOM VIEW

MATERIALS LIST—REMOTE VOLUME CONTROL

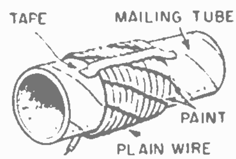
Amt. Req.	Size and Description
1	500,000-ohm volume control, audio taper Centralab B-60, C2 or equal
2	standard microphone chassis units Amphenol 75-PC1M or equal
2	standard single-open-circuit phone jacks, Switchcraft 11, or equal
2	single-hole phono-pin jacks, Switchcraft 3501FP or equal
1	knob with pointer to fit volume control shaft
1	round panel-mounting dial plate
1	aluminum or tin cup about 2¾" in diameter
1	4 x 4 x ½" plywood
3	roundhead woodscrews ¼" long
Misc.	copper hook-up wire, spaghetti

The author used a 2¾in.-diameter round aluminum cup trimmed off to a depth of 1¾-in. You may be able to find a suitable metal can with a friction lid, which would eliminate the plywood disk shown in Fig. 3. Cement a disk of felt or "non-skid" carpet base rubber to the back of the cup.

The easiest way to make the holes in the aluminum case is to start with the point of a sharp knife blade and then enlarge up to size with a rat tail file. Use lock washers, usually supplied with the parts, to prevent the volume control and jacks from turning in their holes. Bend the ground lug on the volume control around the solder to a large lug that fits over the shaft of the control. This automatically connects the ground lug of the control to the metal cup and to the chassis side of the jacks (Fig. 3). Be sure to use insulated wire on the mike chassis leads to prevent shorts.

When wiring is complete, cement a piece of aluminum foil over the wood disk. Just as a microphone line must be shielded, the entire assembly of volume control and plugs must also be shielded to prevent ac hum pickup. —Art Trauffer.

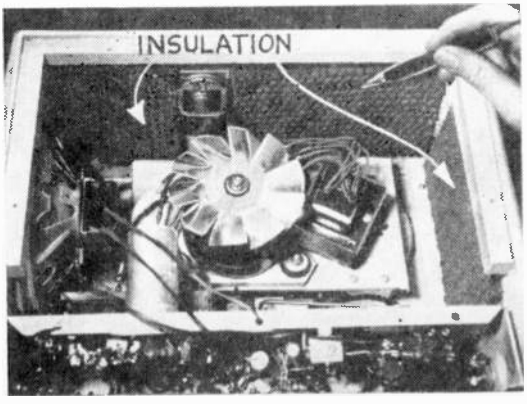
Color-Coding Wires



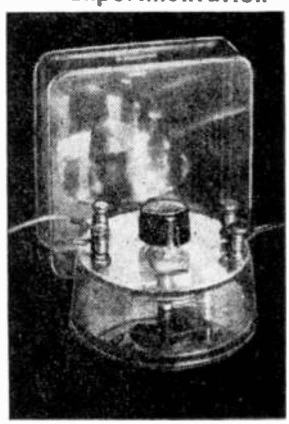
• When you need some color-coded wires for a circuit and only plain-colored wires are on hand, color-code your own. To do this, wrap lengths of the wire around a mailing tube, broom handle or other suitable form, and paint diagonal lines across the coil with different-colored paints. Apply the paint sparingly with a cotton swab or piece of cotton on the end of a match. Use tape to hold the coil in place until the paint dries.—John A. Comstock.

Tape Recorder Improvement

• To improve the frequency response of your tape recorder and eliminate medium and high frequency reverberations, tack or cement sound-absorbing material to the inside of the case. Use regular fiber-glass insulation or thin strips of sponge rubber. The acoustic insulation damps out the speaker's back wave and also absorbs motor rumble noise.—John A. Comstock.

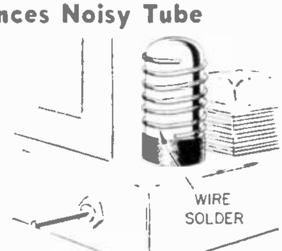


Kitchenware for UHF Experimentation



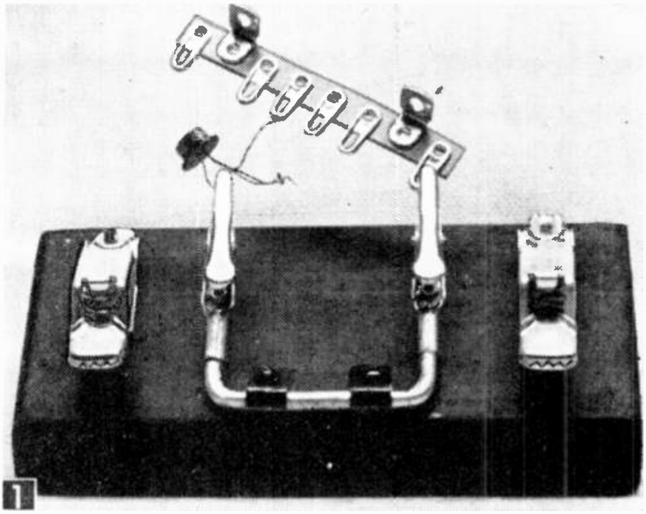
• Plastic food containers make good looking low-loss chassis and cabinets for various ultra-high-frequency assemblies. Many of these containers are made of Styron, a member of the polystyrene family and a very good insulator. Containers are cheaper than sheet polystyrene, and come already formed. Photo shows two styles which are especially handy. The round one is an experimental FM crystal set using a germanium diode, which slope-detects close-by FM stations.—A. T.

Solder Silences Noisy Tube



• When a tube in a radio, TV, audio amplifier or other electronic device becomes microphonic and produces an undesirable howl or ringing sound from the speaker, don't throw the tube away. Wrap the glass envelope with several turns of wire solder or heavy uninsulated copper wire. The added weight and support will often damp out the vibrations that set the tube elements oscillating.—John A. Comstock.

Build a Better THIRD HAND



1

In operations such as soldering transistors to tie points, the clips not only replace long-nosed pliers to hold the leads but also will divert heat from the iron away from the transistors.

OUT of wood and wire scrap and some inexpensive clips, you can fashion a helping hand far superior to the usual stunt of nailing two spring-type wooden clothespins to a board or your workbench.

It's more convenient, useful, and versatile and has a far more workmanlike appearance. Especially good for soldering applications (Fig. 1), you can move it at will to work with very light or heavy gauge wire, then fold it flat for quick storage when the job is finished.

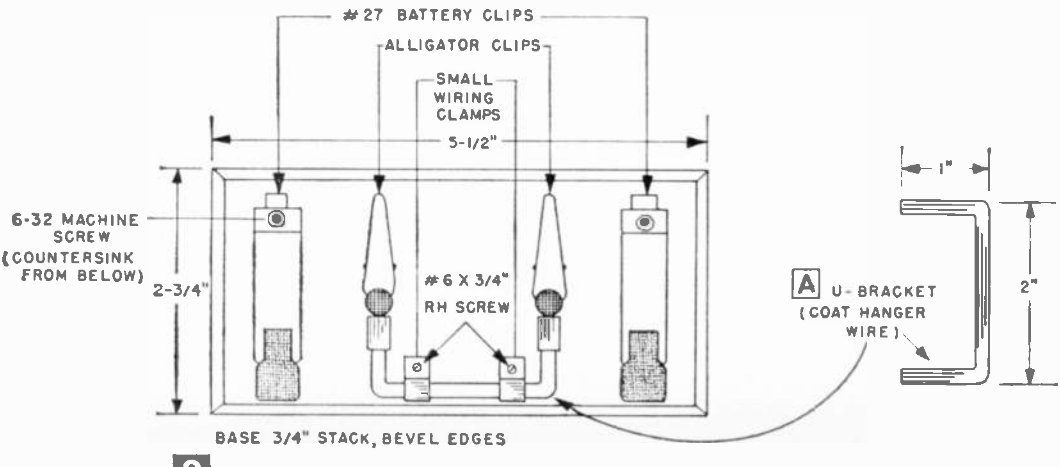
To build my "third hand," I began by cutting a piece of ¾-in. scrap stock to the dimensions in Fig. 2, beveling all edges and then sanding the piece smooth. This became a base for two different pairs of clips.

I installed two *Mueller* #27 battery clips on the base, attaching one near each end as in Fig. 2 with the help of a #6-32 machine screw countersunk from below. These serve to hold splices in larger wire or to tin the ends of stranded wire.

Next, I formed a U-shaped bracket as in Fig. 2A from a scrap of #4 wire, but you can just as easily cut it out of a wire coat hanger. Solder a Mueller series 60 alligator clip on each end of the bracket, then center the bracket between the battery clips and well to the front of the base as in Fig. 2A. Secure it in place with two small wiring clamps of the single-hole, hookover type and tighten the clamps just enough for the bracket to be moved up and down and remain in any desired position.

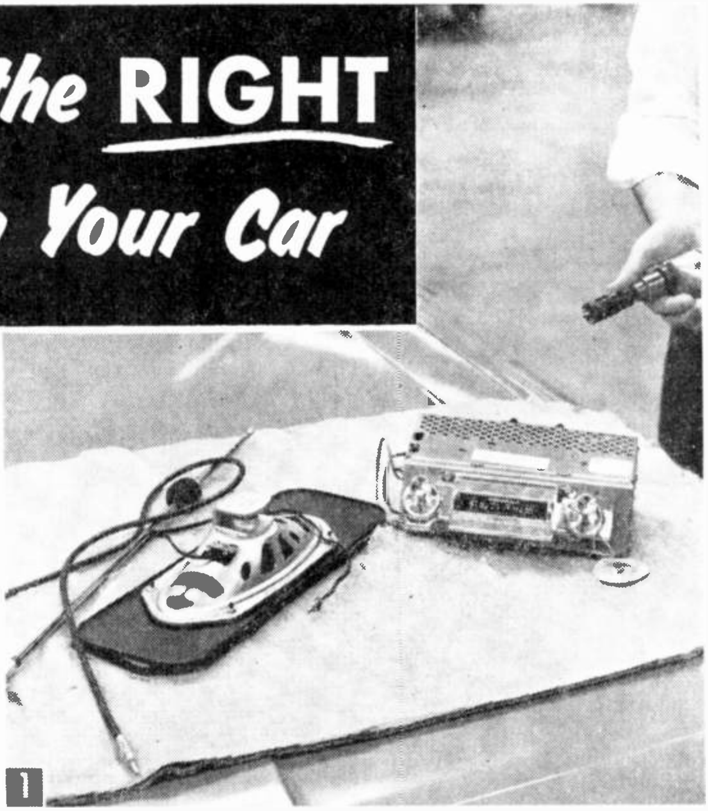
The alligator clips are ideal when working with small wire or for holding small parts which persist in jumping all over the bench.

All four clips are available at mail order electronic houses for about 40¢ and the wiring clamps can be had at hardware or variety stores for a few pennies.—HOWARD S. PYLE.



2 TOP VIEW OF "THIRD HAND"

Putting the RIGHT Radio in Your Car



1

The average car radio installation can be completed in three hours or less. On the hood are an antenna, radio and speaker with adapter panel supplied in a typical kit.

How to buy it, install it, and get trouble-free performance . . . . and save money doing it!

By LOTHAR STERN

IT DOESN'T matter whether you drive a new sports car with a small dash panel or a 10-year-old family sedan.

You can do a radio installation job yourself that will turn out like a professional job. You'll save money by choosing the best buy in a radio that fits your need exactly. And by following a few simple tips from "pros," you'll enjoy clear, noise-free reception with repair bills kept to a minimum.

The radio makers offer you a choice of two basically different kinds of car radios, the custom type (Fig. 2) made specially to fit dash cutouts of a certain make and year of car, and the universal type (Fig. 3), a radio so dimensioned that it can be used on any car, new or old.

Custom Radios are easiest to install because all the holes and cutouts are already in the car. All you do is follow the detailed instructions packed with the radio. They even tell you which cables may have to be disconnected to get into the radio compartment. If your car is less than three years old, you'll have no problem in finding a custom set in radio stores, automobile accessory stores, or in mail order catalogs. But if your car is less youthful, you may have trouble buying the radio, since most makers stop production as soon as the hardware is outdated by new dashboard designs. Still, there's no need to rule out custom fitted-in-the-dash installations.

Several radio manufacturers make universal receivers with dimensions to fit practically any car, while other firms market special trim-plate kits to adapt universal receivers to various dashboards. Chances are that if your car is new enough to deserve a good radio, there's either a custom model or a universal type with a trim-plate kit (Fig. 3).

Sports Car and Import "bug" owners may not have enough room on the dash for instruments, let alone a radio. If that's your problem, you'll probably settle for an under-dash installation (Fig. 4). This isn't apologetic. The under-dash installation has a lot to recommend it on *any* car, and it should even be considered for cars where custom radios are readily obtainable.

When you trade in a car, the radio adds little resale value. With dash variations so widely prevalent, it would be pure luck if a custom radio for one car fitted the dash of another. With a custom radio you have to resign yourself to the loss of your radio investment when you get around to upgrading your transportation. But with the under-dash installation, you can quickly install the radio rig without mutilating the dash. And you can remove it just as fast and reuse it in any other car you buy.

Another good reason for under-dash radios is that service costs on the radio itself are a lot lower. It takes much less time to get the chassis out of the car and onto the radio service bench. And if you like to tinker with radios yourself, you'll appreciate that pull-out feature.

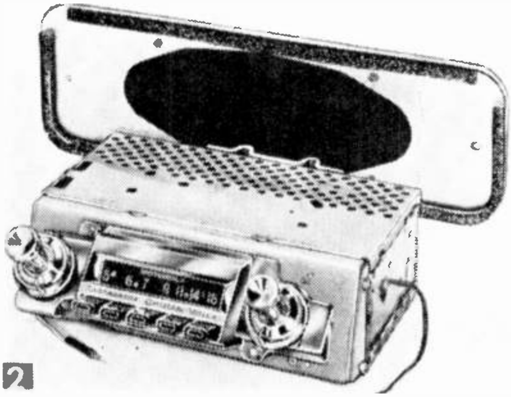
Operating Features. Fundamental to the radio hookup is your car's battery voltage. When you buy a custom receiver, it automatically is right for your car's electrical system. With the universal radios, you'll have to check to see whether you have 6 or 12 volt, negative or positive ground wiring in the car. Remember this if you plan to salvage a radio and switch it over to another car.

Station pushbuttons are important for safety, especially if you drive expressways and need traffic forecasts. Manual tuning is not only annoying, but can cause an accident in crowded traffic. The added cost of $10 to $15 for buttons is well worth it unless you are mainly a rural driver.

The Tube vs. Transistor argument wouldn't have come up five years ago. Up to that time the vacuum tube was the only amplifying device available, and a mechanical vibrator was necessary to deliver the stepped up d-c power to the tubes. When transistors became practical, you had the first big improvement in car radios in 20 years, and the vibrator's death note was sounded. Consisting of a set of metal contacts opening and closing fast, much like an ignition distributor, the vibrator had a higher rate of failure than any other part in the radio.

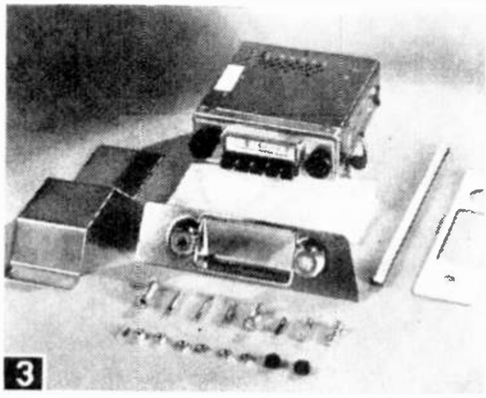
Other transistor advantages: no heat producing power-wasting filaments, more circuit efficiency, and better reliability. But they are more expensive than tubes, though the extra cost is offset by reduced battery drain and longer life. This year, most car radios use transistors to replace the audio driver and output tubes, while using tubes for the *r.f.* and *i.f.* sections.

Several manufacturers are even offering completely transistorized car radios, and though they cost more than the hybrid sets, they do give you instant warmup, low current drain, compactness, and high reliability. It's likely these



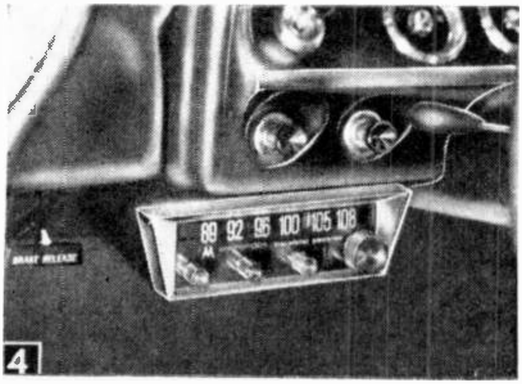
2

Above, Typical custom radio designed to fit dash cutouts of 1961 Chevrolet.



3

Right, Universal-type radios along with adapter kits (Cortrol shown) can be used to make good looking in-dash installations in recent model cars.



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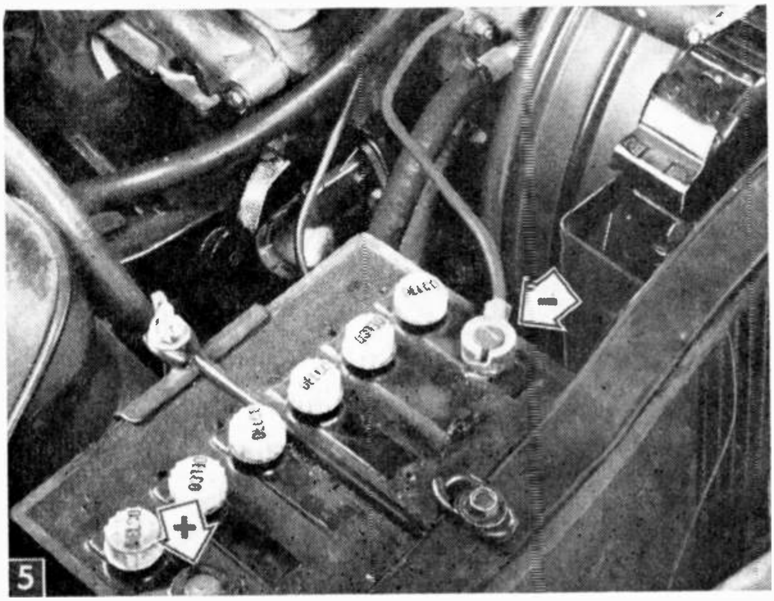
Below, right, A compact transistor set mounted under dash is the answer for small import and sports cars where space is limited.



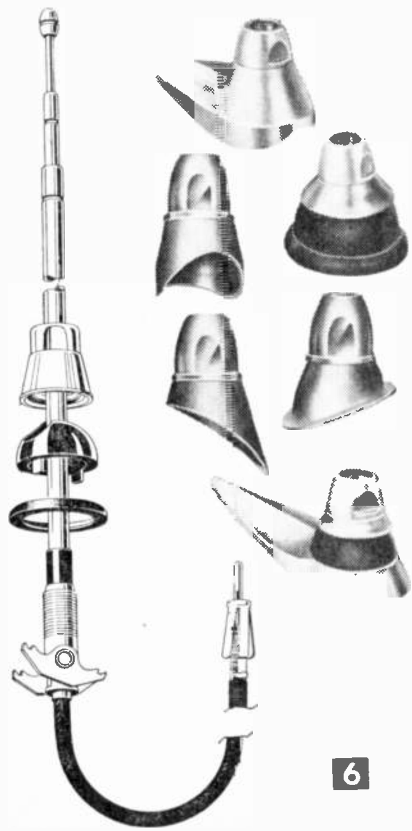
If a strap connects from the negative battery pole to the car frame, your wiring system is negative ground. If it connects from the positive pole, the car is wired positive ground.

sets will run for many years with no repair expenses.

Loudspeakers are easy to install in all recent-vintage American cars, since dash cutouts covered with metal grille are built in. Most custom and universal radios come with separate speakers that either fit the dash cutouts directly, or with an adapter board.

Many import cars have no dash provision for mounting speakers, so some universal-type radios come with built-in speakers. Such receivers can be used with any kind of car, but audio quality usually suffers. With a dash mounted speaker, the dash acts as a baffle to improve sound quality and distribution.

The difference can easily be heard by listening to both kinds of installations. If your radio has a built-in speaker, an additional extension speaker mounted on the dash or rear deck will make a big improvement.



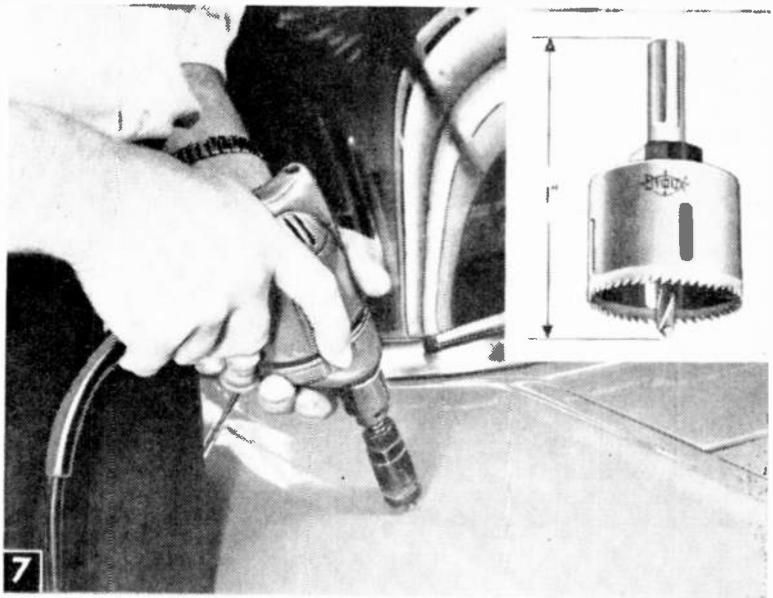
You can order your antenna with any one of many bases that fit the curves of a wide variety of cowls and fenders.

The Antenna is a vital part of the receiving circuit in your car. Physically, there are few obvious differences among various brands. Unless you confine your driving to large cities where maximum range is not needed, avoid the so-called "economy" antennas which may be considerably shorter than the 54-58-in. fully extended length required for full signal pickup. Mechanical strength, rain proofing, and installation ease are factors you can check in the manufacturer's literature. Your antenna need not be identical in appearance to the kind used by the car manufacturer. But if you have a late model car, you could request that your dealer order an antenna duplicating the appearance of factory-installed equipment. It's a matter of style and does not affect the radio performance.

Installation Instructions. Start with the antenna. It's the most painful part of the job because you'll be drilling a hole in the car body. With a little caution there's no real chance of an error.

Most car antennas mount in a single 1-in. hole in the fender or top cowl of the car. Buy the right antenna and the entire job shouldn't take more than a half hour. Even if the hole you cut (Fig. 7) isn't perfect,

With the special hole sawing attachment, it takes only seconds to drill the antenna hole through the fender.



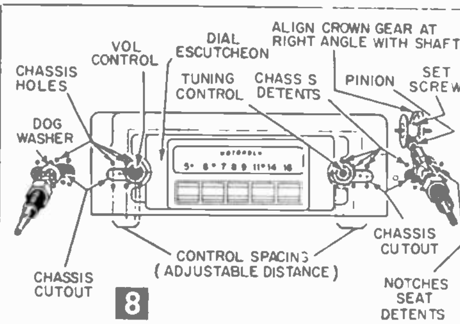
7

it won't matter because the antenna mount will cover many sins.

Take a look at factory-installed antennas on cars of the same vintage to determine just where to mount the antenna. That's to make sure you won't run into trouble drilling the hole. Use a ¼-in. electric drill with a 1-in. step up bit designed for metal. Or start with small drills and enlarge the hole with a metal reamer. Even better if you don't mind spending a few dollars or borrowing the tool is to use a circular hole saw (Fig. 7). For any method, be sure to centerpunch the hole before starting the drill.

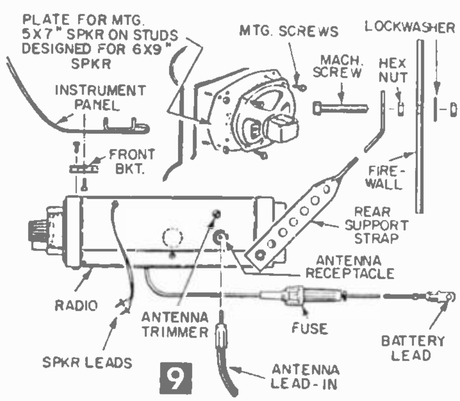
On some cars, the antenna connecting lead feeds in through the engine compartment. Others are arranged so the lead-in enters the car on the dash side of the firewall between the fender and the side kick pad. This means you temporarily remove the kick pad, and fish the lead through under the floor mat to the radio location.

The Radio Installation requires that you consider the layout of other accessories in the car. Custom radio installations are simplified by step-by-step instructions. If you are a timid do-it-yourselfer and a preliminary look at the dash indicates difficulties, then write the manufacturer for a manual before you



8

A unique feature of one make of universal receiver permits shifting the control shaft locations to match most existing panel cutouts.



9

Exploded view, under-dash installation.

buy the radio. Usually these instructions are sent free and help you to appraise the job.

Some domestic cars have speaker wells designed for a certain size speaker frame. If you select a certain radio, the speaker may be the wrong size. However, this won't be a problem since the dealer can supply an adapter board, or he may be willing to exchange the speaker for one that fits.

Whether in-dash or under-dash installation is easiest depends on the make of your car. On domestic cars with straight dash panels, universal radios often can be used without any modification. Some receivers are supplied with an optional matching trim-plate to fit most cars. One set (Fig. 8) has adjustable shaft centers which permit shifting controls to left or right for an exact match of the control cutouts on the dash. The head of the radio fits most openings and the trim plate lends a custom appearance. A typical installation (Fig. 9) shows how the radio is held in place by control mounting nuts in front, and a strap (included in kit) fastened to the firewall. Before you drill any holes through your firewall, check the opposite side to prevent damage to parts mounted there.

On some domestic cars, the dash panel is curved so much that the rectangular trim plate of the radio does not fit. Or the radio cover plate may cover a large gaping cutout rather than individual holes for radio controls and dial. Either way, the universal radio will require a custom-type trim kit made by such companies as Cartrol, Porter Dietsch or Metra, if an under-dash installation is desired.

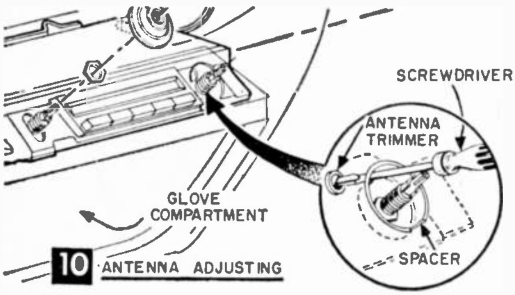
To save expense use the simpler under-dash installation (Fig. 4). You'll have to drill two small holes in the lip of the dashboard and another one in the firewall of the car. The radio shown is one of several makes that will fit a large percentage of sport and import model cars.

Only Three Electrical Connections are required. The antenna has a pin plug already connected to the end of the lead-in wire. Simply plug it into the receptacle on the receiver. Push the two speaker wire leads into the lugs on the speaker. Then fasten the radio's "A" lead to the accessory side of the ignition switch or to any other line from the battery.

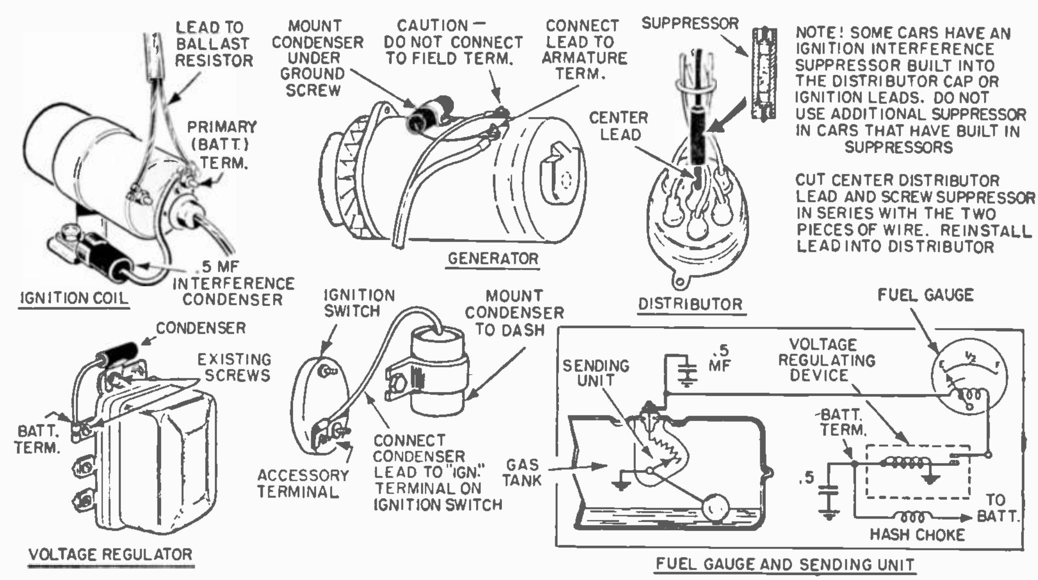
Radio adjustment is simple, but often overlooked even in commercially installed sets. Every car radio has an adjustment screw labeled *Antenna Trimmer*. The trimmer tunes the antenna to match the receiver input so that you get maximum signal transfer.

On some receivers such as the 500 XA (Motorola), a knurled knob extends through the receiver housing. On others, a hole in the housing permits screwdriver access. Extend the antenna to its full length, tune the receiver off-station near the high end of the band, 1400 KC on the dial, and adjust the trimmer for maximum noise volume. Failure to make this adjustment causes weak reception, increased interference, and poor performance.

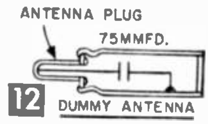
Solving Interference Problems. Because most cars on the road are equipped with radios, the manufacturers now take measures to reduce interference. Despite built-in interference suppressors in the distributor cap, special resistor spark plugs, and resistance wire or by-pass capacitors at various critical points, interference often mars performance of even the best radios. Proper counter measures will reduce or completely eliminate the trouble.



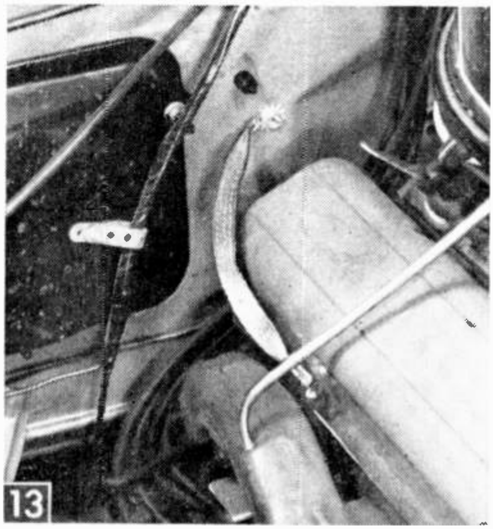
10 ANTENNA ADJUSTING



11 SUPPRESSOR RESISTORS AND CONDENSERS



Radio interference is caused mostly by arcing or sparking within the car's electrical system. Distributor rotors and voltage regulators are the worst offenders. The problem is to track the trouble and neutralize it. Some of the interference that plagues any AM radio is caused by atmospheric conditions, power lines, or other external sources. For these there is no remedy. Only the increase in noise when the engine is running over what you hear with motor dead can be reduced.



Metallic straps are available in various lengths for grounding parts in the engine compartment.

One simple remedy, if the manufacturer has not already used resistance wire leading to the distributor, is to cut the lead and add a distributor resistor (Fig. 11). Or you can replace the entire distributor lead and replace it with one made of resistance wire.

If the interference persists, give the spark plugs the same treatment. If you need new plugs anyhow, replace them with special type resistor spark plugs.

If these remedies are not entirely effective, sleuthing is in order. You'll need to find out whether the trouble is actually caused within the car or if it is coming in through the antenna. Unplug the antenna and replace it with a homemade dummy antenna consisting of a 75 *mmfd* mica or ceramic capacitor wired to an antenna plug (Fig. 12).

If interference drops, you know it is radiated from an outside source, and your wiring is not at fault. But if it remains the same, try wiring in .5 or 1.0 mfd. by-pass capacitors at one or more points (Fig. 11). Often a single capacitor will do the trick.

First try mounting the capacitor at the accessory terminal of the ignition switch. Then try the accessory terminal battery of the ignition coil. If neither location reduces the noise, move the capacitor to the voltage regulator's battery terminal and finally to the armature terminal of the generator. Generator noise is usually a high-pitched whine varying with engine speed. If a capacitor at one place reduces the noise partially, it should be left in place and others added elsewhere.

Noise entering the radio through the ignition wiring usually can be identified since it does not change in volume when the volume control of the radio is varied. For this, use a 100 mfd. capacitor at the battery terminal of the ignition coil.

More Countermeasures. In rare cases, one or more faulty grounds on the car will cause trouble. For example an antenna may be mounted on a fender which does not have perfect electrical contact with the body. Or the engine itself may not be well grounded to the frame. Special copper-braid grounding straps are available (Fig. 12). Best locations are found by trial and error.

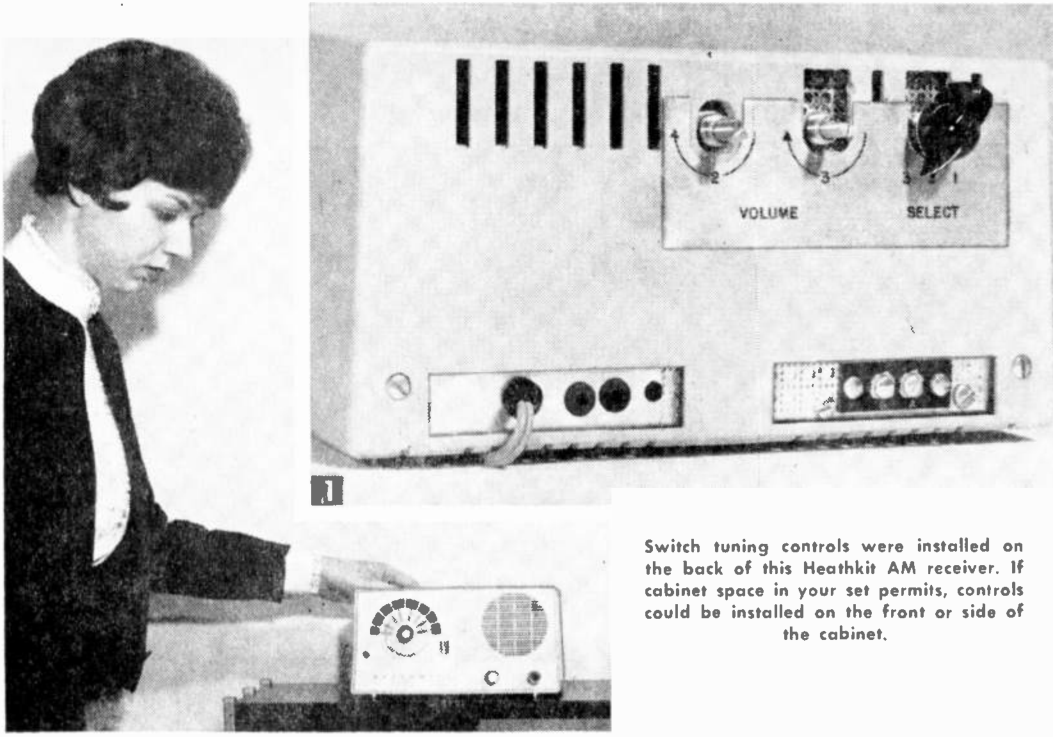
Other accessories can produce noise. Most radios require little if any interference reduction. But in some cases, you'll have a real headache. It may take hours to find the trouble, but take comfort in the fact that it will probably take an experienced technician just as long to do the job, and you are saving money.

Fuel Gage Problems. Some fuel gage sending units produce noise whenever the car bounces causing the float mechanism to change position. Check by pushing up and down on the rear bumper to move the mechanism. Remedy is installing a 0.5 mfd capacitor on the sending mechanism usually located on the floor of the car trunk. This will also cure certain noise heard when the engine is off but your key is turned in the ignition switch.

If you get noise by jarring the dash panel, the trouble may be arcing in the fuel gage regulator contacts. Again, use a 0.5 mfd capacitor from the regulator's battery connection to ground.

The temperature gage can be a noisemaker too. The sending unit is on the engine block. Disconnect for a moment to confirm your suspicion, and remedy with the 0.5 mfd capacitor connected from the wire to ground. Any set of electrical contacts including those in your stop and turn signals can produce noise, usually a popping sound. The capacitor is the remedy.

Sparking of electrical contacts is certainly a common cause of intermittent popping noise. But in older cars, you can sometimes apply the capacitor remedies and the noise may not be cured. Check electrical connections that are supposed to be solid and are not. Loose or corroded lugs and terminal screws, and even worn lamp sockets can cause the noise.



Switch tuning controls were installed on the back of this Heathkit AM receiver. If cabinet space in your set permits, controls could be installed on the front or side of the cabinet.

Add Switch Tuning To Your Radio

By JOHN E. TURNER

MATERIALS LIST—SWITCH TUNED AM RECEIVER

Amt. Req.	Description	Use
1	single-gang switch, Mallory, 4-pole, 3-position, type 3243J (BA 12A366)*	switching
2	ceramic trimmer, 8-50 uuf, Erie type N750 (BA 15B666)	antenna circuit
2	ceramic trimmer, 5-25 uuf, Erie type NPO (BA 15B644)	oscillator circuit
4	disc ceramic, Erie type ED (values to be determined by test) (BA 15B121)	shunting capacitors
2	midget volume control, 1 meg (BA 18B710)	level control
1	bakelite sheet, 6 x 6 x 1/16 (BA 11A179)	component board
4	fahnestock connector, type 10 (BA 12A1090)	test setup
1	aluminum sheet, perforated, Reynolds item 33	mounting bracket
misc.	machine screws, washers, nuts, hookup wire, solder	
	Estimated cost for all components and materials: $6.85.	
	* BA Nos. refer to catalog of Burstein-Applebee Co. 1012-14 McGee Street, Kansas City 6, Mo.	

ONE of the most useful extras ever built into home radios was the push button tuner. Just a few years ago, it was offered on many expensive sets, but manufacturers competing for a price market have eliminated the push button. It is now found only on car radios—where driver ease in tuning stations is considered a safety necessity.

The average listener tunes to only two or three stations regularly. But when he wants a certain station, he often needs to tune quickly so as not to miss an important news broadcast, the morning weather, or a traffic report. Maybe you have a clock radio and like to wake up to music? That usually means that if you want a certain station to come on automatically in the morning, you have to pre-set the volume and tuning the night before.

Why shouldn't the radio listener have the same advantage as the TV viewer who can change channels by merely rotating a switch? This AM receiver modification does the trick and has the added feature of individual pre-set volume controls for each station, compensating for differences in station output.

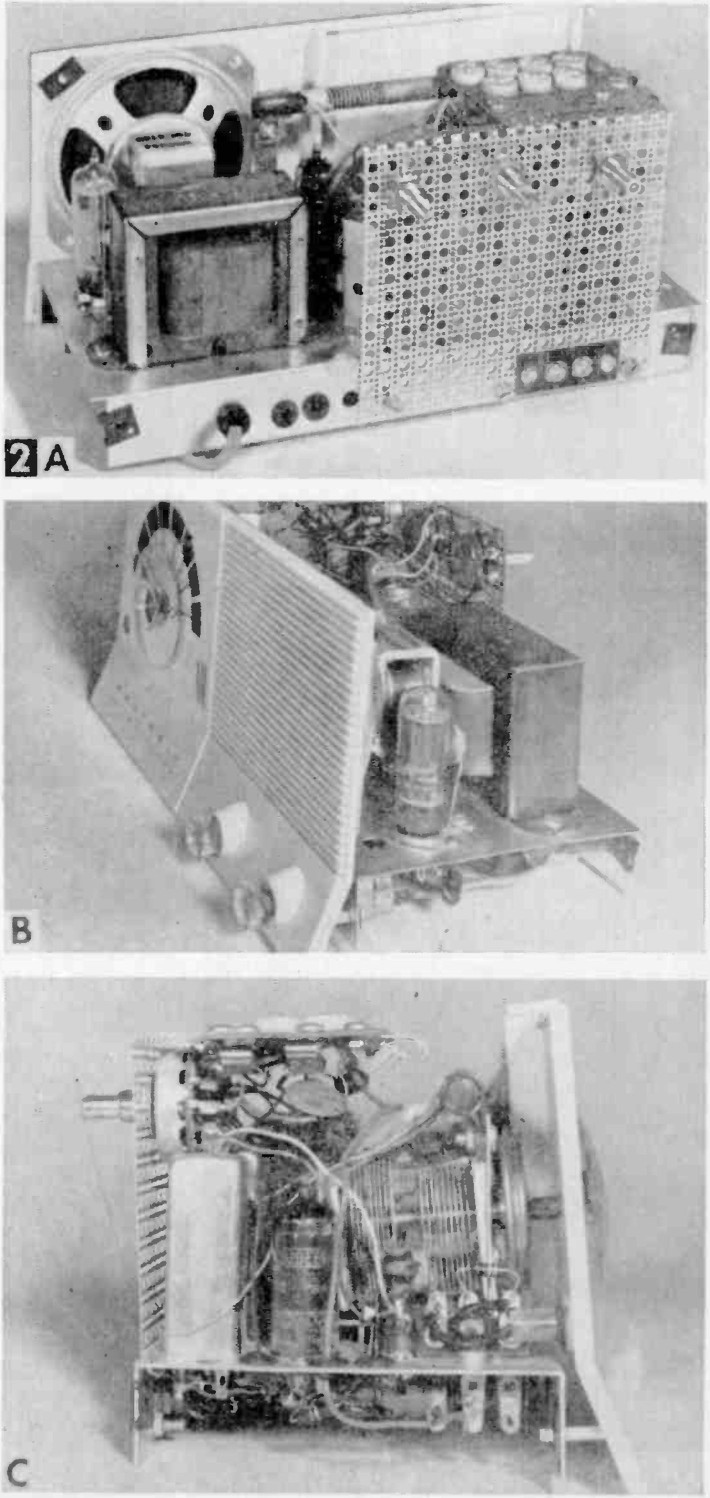
Small and Convenient. Though push-button auto radio tuners are available from electronic suppliers and surplus dealers, these mechanisms are bulky and will require a special housing. The modification in Fig. 1 is small enough to fit in the existing cabinet of most small receivers. Extra controls are shown on the rear so as not to affect the styling of the radio itself. You may prefer to mount the controls in a more convenient location, consistent with mechanical and electronic considerations.

The most expensive part you will need is a four-pole three-position rotary switch. If you want to add more stations, buy a switch with more positions. Also, you will need trimmer capacitors and an assortment of fixed capacitors in values up to 300 *mmf* in 20-30 *mmf* steps, several pots, and hardware. Mount the switch and level controls on an aluminum bracket attached to the rear of the chassis with 6-32 screws and nuts. Exact dimensions are not given because they will vary with the individual set.

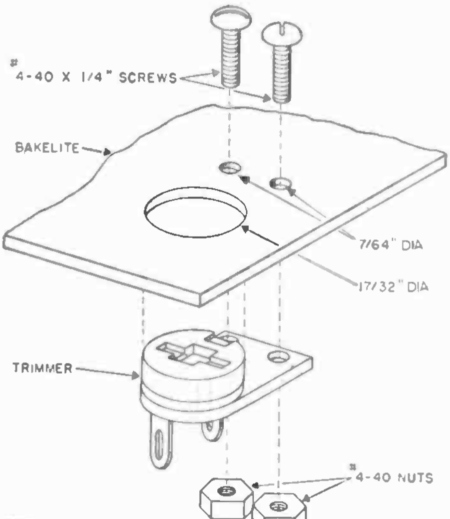
Locate the rotary switch as close as possible to the converter, oscillator coil, and variable capacitor. It is very important to keep leads between the antenna and oscillator circuits, converter, and rotary switch as short as you can to minimize RF losses and oscillator detuning. If leads are too long, you may find it impossible to tune stations above 1450 *kc*.

The accessory tuning circuits are designed around pairs of trimmer capacitors mounted on a board for convenience. You may mount some spares for adding more tuned stations later on. With this particular set, a 3-25 *mmf* trimmer worked out well for the oscillator circuit with an 8-50 *mmf* trimmer for the antenna section. These values are not critical, but have given good results.

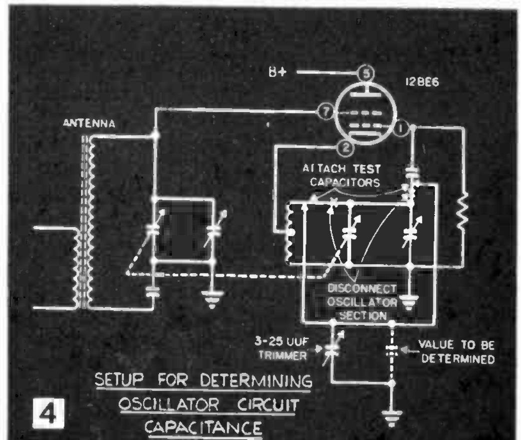
Install Two Pairs of Fahnestock clips on the board. Wire one set across the oscillator trimmer and



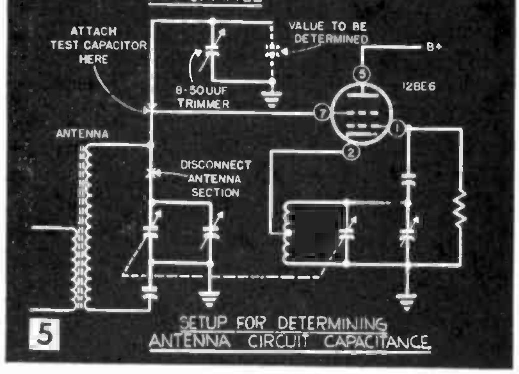
Top, Rear view shows components mounted on perforated metal bracket. Center, Right side of chassis shows level controls wired parallel with volume control. Bottom, Note that rotary switch must be located as close as possible to converter and variable capacitor.



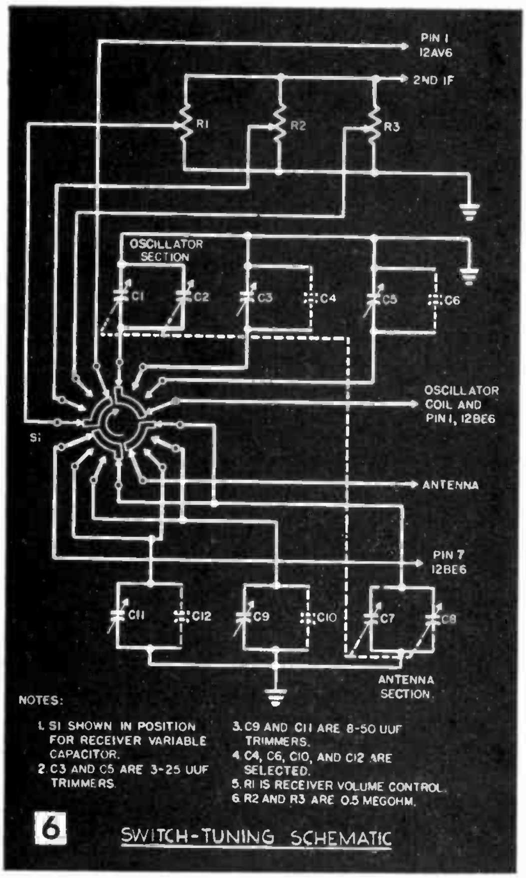
3 TRIMMER MOUNTING DETAIL



4 SETUP FOR DETERMINING OSCILLATOR CIRCUIT CAPACITANCE



5 SETUP FOR DETERMINING ANTENNA CIRCUIT CAPACITANCE

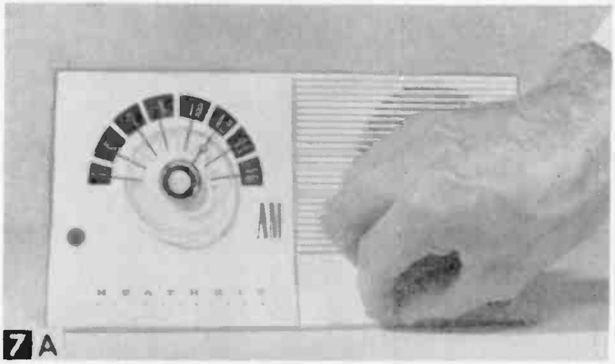


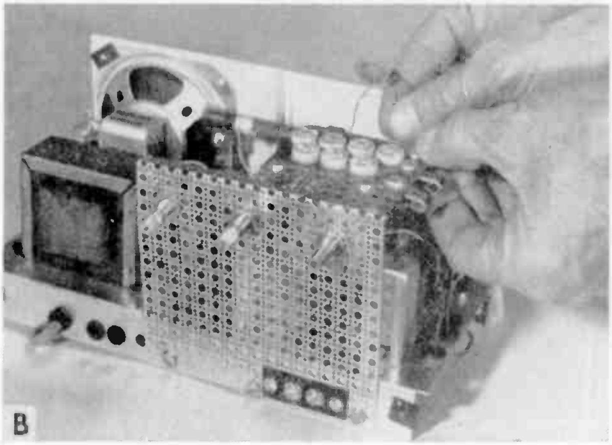
6 SWITCH-TUNING SCHEMATIC

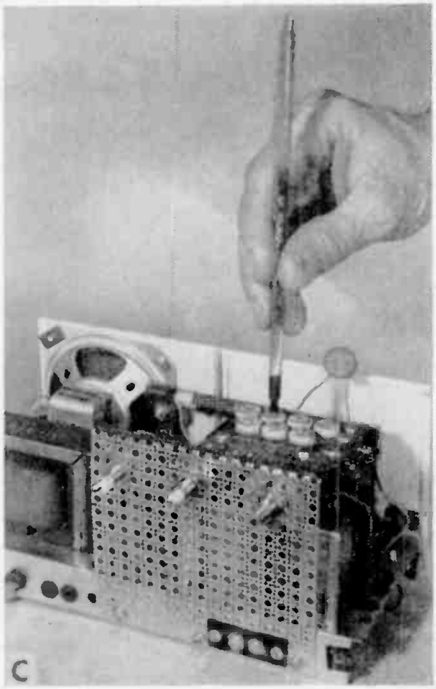
the other set parallel to the corresponding antenna trimmer. These clips are used in the test setups to determine the values of shunting fixed capacitors. A schematic diagram (Fig. 6) represents the RF circuitry up through the converter in a typical AM receiver. You may need to make a few alterations to adapt the arrangement to your set. Essentially, two additional sets of capacitors are set up in parallel with the antenna section of the original variable capacitor, and two capacitors are in parallel with the oscillator section. Two circuits have to be switched for the antenna section, and a single for the oscillator.

Wire the level controls in parallel. The circuit between the tap and pin 1 of the detector is switched simultaneously with the corresponding RF circuit. Two ½-megohm pots in parallel with a 1-meg control in the receiver produced satisfactory results on the model shown. Input loading of the detector was not adversely affected by any combination of pots with values varying from ½ to 1 megohm. The ends of the shafts may be slotted for screwdriver adjustment, or you can install knobs.

Finishing Up. To determine the fixed capacitor values for shunting the trimmers, use the test setups shown in Fig. 4 and Fig. 5. It is best to select the value of the oscillator capacitor first. Simply disable the oscillator section of the variable and connect the antenna section to the circuit you are testing. Rotate the dial to the station you want to tune, insert a test capacitor in the Fahnestock







Top left, First test step is to disable one section of variable capacitor, and substitute one of the trimmers. Bottom left, insert test capacitor in Fahnestock clip. Above, Tune station by adjusting trimmer.

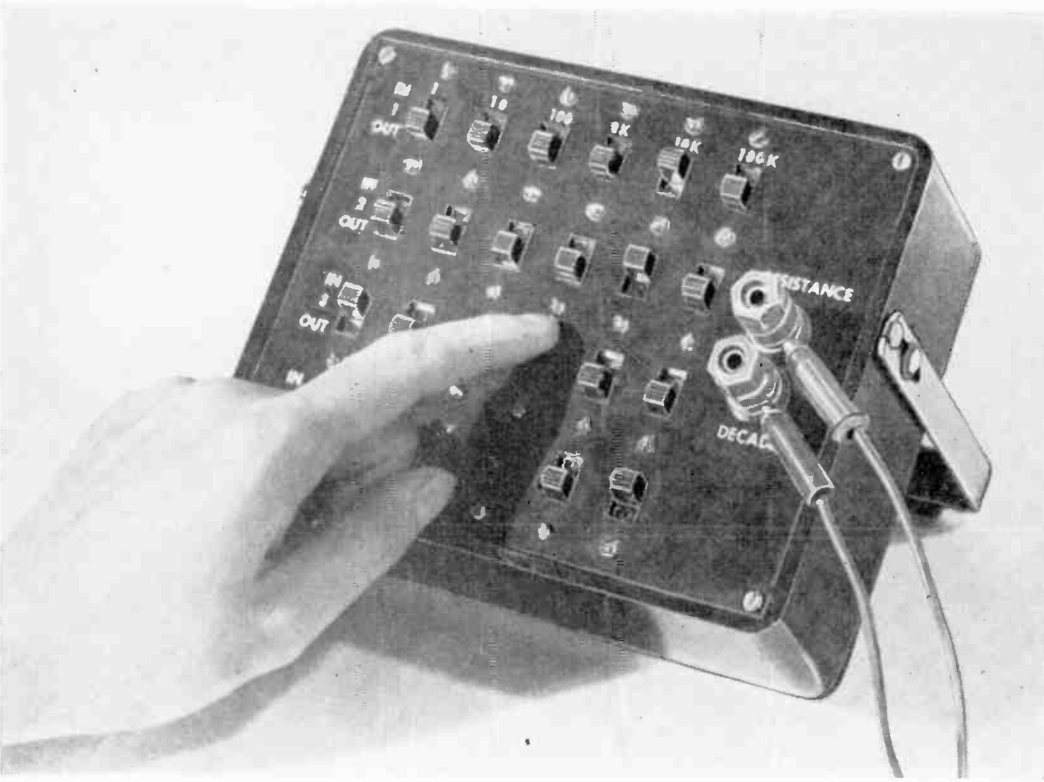
clips, and adjust the trimmer for maximum response. The trimmers listed had enough range to tune between 1450 and 1600 *kc* without adding fixed shunting capacity. As examples of other points on the dial, a 27 *mmf* capacitor in parallel with the 3-25 *mmf* trimmer for the local oscillator, combined with the 8-50 *mmf* trimmer for the antenna section tuned in a local station at 890 *kc*. The bottom of the dial required a 300-*mmf* capacitor in parallel with the 3-25 *mmf* trimmer to pull in a station at 600 *kc*. To tune a station at 890 *kc* the antenna circuit in the model resonated above the oscillator circuit, which is opposite to the usual condition. As long as the IF is 455 *kc*., it seems to make little difference which circuit resonates above the other.

After selecting the oscillator capacitor values, reconnect the oscillator section of the variable, disable the antenna section, and follow the same method to determine the values of antenna capacitance.

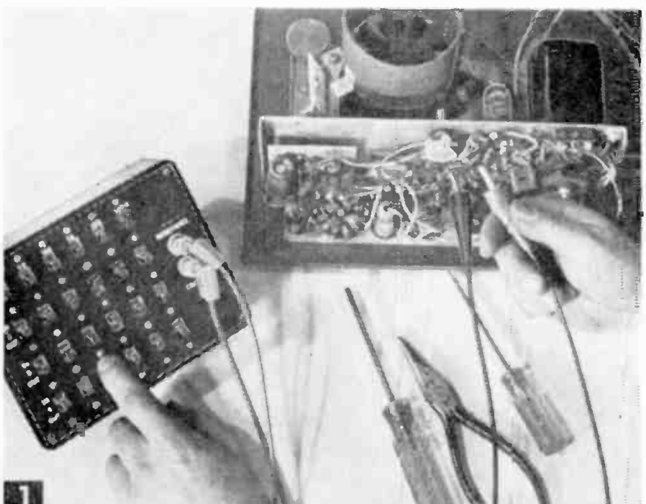
With wiring and alignment completed, drill holes in the rear of the cabinet for the controls. A plate with markings adds a final touch. One feature of this design is that in addition to semi-automatic tuning for three stations at all times, one switch position is still continuously variable. You have not interfered with the basic design of the receiver but have extended its usefulness. You can change the pre-selected stations at any time, and in the event of a CD emergency, the instant tuning feature would prove very useful.

Improving Crystal Performance

• Crystals that are sluggish in operation or fail to oscillate at all, can often be restored to duty by careful cleaning. First remove the crystal slab from the case, gently wash it in water and household detergent, then rinse. Hold the clean, dry crystal on the end of a strip of paper when replacing it in the case to prevent leaving oily deposits on the slab by handling it with your fingers.—Len Buckwalter.



Low Cost DECADE BOX



1

At the flip of a finger, you get any value of resistance you want at 1% accuracy. Service of TV sets, radios and audio equipment is simplified . . . because you know the exact value of the part needed to get the circuit working.

New design uses 10¢ slide switches and performs like its $80 cousins—but is handier and has an extra decade

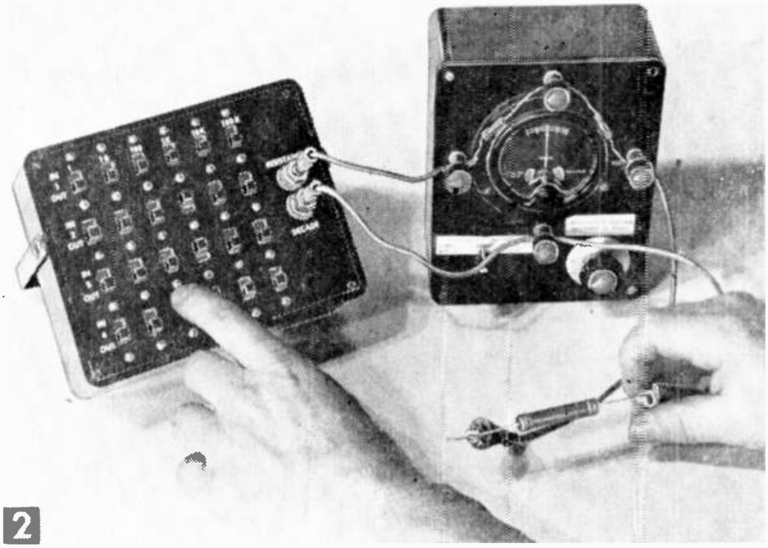
By BRICE WARD

NOW you can own a precision decade box for little more than the price of a good substitution box. Cost has been pared to the bone by using a novel switching arrangement that allows the number of precision resistors to be reduced and eliminates high cost rotary switches. The box gives resistance values from 0 to 1,111,110 ohms in 1-ohm steps, at 1% accuracy, with a switching layout that's fast to use.

Construction is easy. First lay out the switch mounting holes, Fig. 6. Carefully disassemble one slide switch if you are working from scratch, and—using the shell as a template—lay out the thumb-button holes. Drill the mounting holes for 4-40 screws and drill a starter hole in the corner of each thumb-button cut-out. Cut these holes out with a coping saw or jigsaw and smooth up with a file. Lay out and drill the binding post holes. (Kits are supplied with pre-drilled panels).

The switches should be checked with an ohmmeter to insure that they are in the *off* position (open), then mounted with the thumb-buttons at the IN position. Mount the switches, allowing the tabs to overlap, and secure them with screws and nuts.

Connect the resistors directly across each switch starting with the 1-ohm resistor at the top right of Fig. 4. Connect a piece of wire from the red binding post to the top contact of S_1 and solder it to



2

Using the decade box as the known "leg" of a home-made Wheatstone bridge, you can check resistors for exact value.

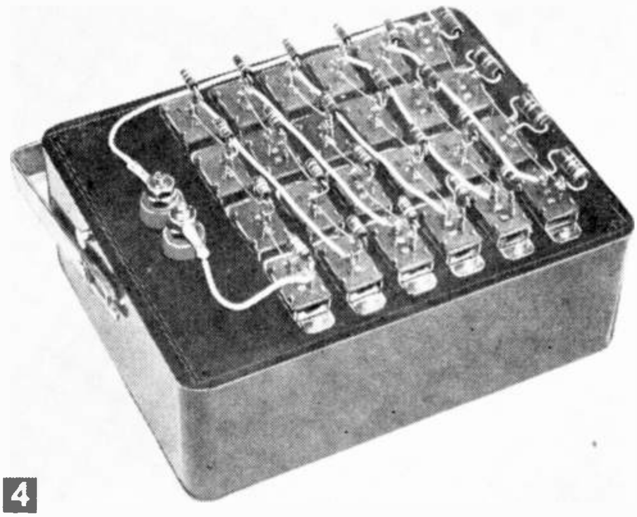
MATERIALS LIST—DECADE BOX

Amt. Req.	Size and Description
1	plastic case, Davies type 260, 6 13/16 x 5 9/32 x 5/32" or equivalent
1	cover for above 6 1/2 x 5", Allied #86P289
24	SPST slide switches, Carling 560A, Allied #34B422
4	resistors, 10, 20, 30.1 and 40.2 ohms 1/2 watt, 1%, IRC Type DCC, Allied #1MM492
16	resistors, 100, 200, 301, 402, 1000, 2000, 3010, 4020, 10K, 20K, 30.1K, 40.2K, 100K, 200K, 301K and 402K ohms, 1/2 watt, 1% IRC Type DCC, Allied #1MM493, or equal
5	resistors, 1, 1, 2, 3, and 3 ohms (1 and 3 in series for 4 ohms), 1 watt, 1% Dalohm FS-1B, or equal, Allied #2MM904
1	red binding post, H. H. Smith Type 220R, Allied #41H330
1	black binding post, Allied #41H335

NOTE: By special arrangement with manufacturers all of the above items are available as a complete kit with instructions. Send $14.95 for Kit A-11 to Kits Div., SCIENCE and MECHANICS, Dept. 872, 505 Park Ave., New York 22, N. Y. This unit may also be purchased completely assembled and tested for $18.95. Resistors supplied in kits will be 1% military or equal spec. types.

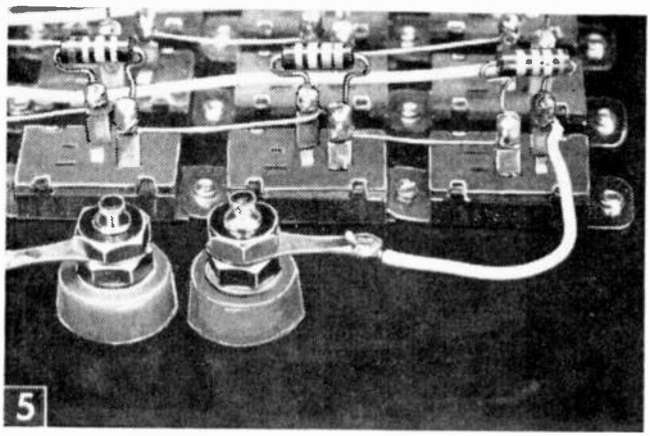
3

You can also use the box with a standard VOM. The VOM acts as a comparator telling you whether the unknown resistor is more or less than the value set on the box.



4

Above, Parts shown on this test model of the box are standard 10% commercial resistors. S&M Kits are supplied with 1% military type resistors. Below, How the assembly goes together. Be sure to use high quality solder and a clean hot iron. Cold joints can cause error.



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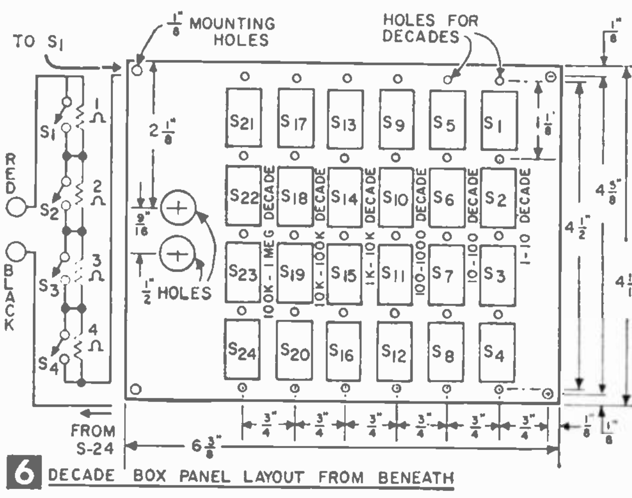
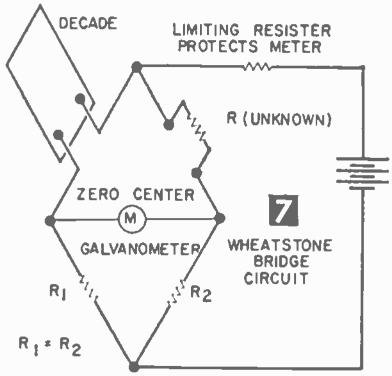


6 DECADE BOX PANEL LAYOUT FROM BENEATH



7

Wheatstone bridge circuit can be built for $5, and has dozens of uses in the electronic lab. Principle is that when currents in each arm of the "diamond" are equal, the zero center galvanometer in the middle will read zero. R1 and R2 must be of equal value and for accuracy should be in the same range as unknown resistor Rx.

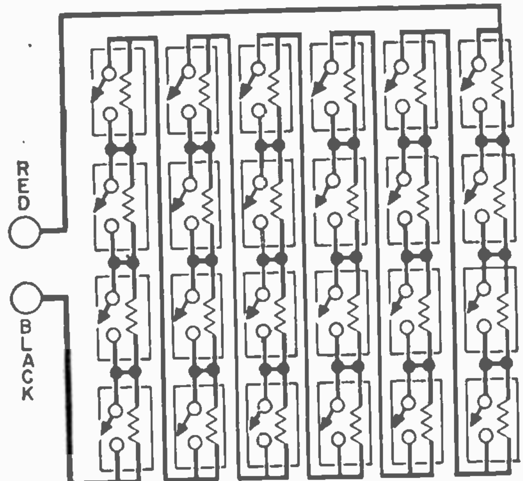
one resistor (1-ohm) lead. Put a jumper between the bottom contact of S_1 and the top contact of S_2 and solder both of these with proper resistor leads. Continue in this way to the bottom, then run a jumper from the bottom contact of S_4 to the top contact of S_5. Wire the remainder of the decades in the same way. The bottom of S_{24} is connected back to the black binding post.

Counting with the box is simple. First place all switches in the OUT position. An ohmmeter should read zero when placed across the terminals. Now placing switch 1 to IN gives 1 ohm. Switching 1 OUT and 2 IN, gives 2 ohms. Two OUT and 3 IN gives 3 ohms and so forth. When 4 is reached, leave it in and put 1 back IN to get 5 ohms. Following this procedure makes it possible to switch swiftly in 1-ohm steps.

The same counting method is used on all decades, and counting down can be done by simply reversing this procedure.

To use the decade as one leg of a Wheatstone bridge (Fig. 7), get a rough determination of the resistance by switching the top switch of each decade in and out. If the meter deflects to one side of zero with 10K in and to the other side with 100K in, you can be sure the unknown resistance is between the two. Start at 10K then and count up. When the needle moves to the opposite side of zero, reduce the resistance by 10K and move to the 1K decade and repeat the procedure. This way you can determine the resistance of the unknown to within 1 ohm. Using the reactance formulas and a 1000-cycle oscillator in place of the battery, you can also determine capacity and inductance values. Charts will be needed here. Also, by computing the values and using a high sensitivity null detector for which several circuits have been published, you can determine capacitor and inductor values with 1 to 2% accuracy.

Setting a desired amount of resistance when using the decade as a substitution box is no problem. For example, to set 571.1K ohms, first throw all switches to the OUT position. Then set 400 and 100K in the 100K row to IN. On the 10K decade set 40K and 30K. Set 1K on the 1K row, and 100 on the 100 ohm row. After a little practice, you'll find this method beats using a potentiometer in bread-boarding circuits. Without measuring with an ohmmeter, you know immediately what your best resistance value is for the circuit under test.



8 DECADE BOX SCHEMATIC-VIEW FROM BENEATH

"Go home, get some sleep, don't worry. Everything will be all right."

Electronic Toy Telephones

For youngsters who can't afford to pay monthly rates

By HOMER L. DAVIDSON

SINCE the volume on most toy telephones is quite low, youngsters have to talk exceptionally loud in order to use them. This is not one of the best ways to keep peace in the household. By making a set of these transistor telephones, however, your ordinarily quiet and understanding children will not have to yell anywhere near as hard, and the household sound level will be much more comfortable—theoretically.

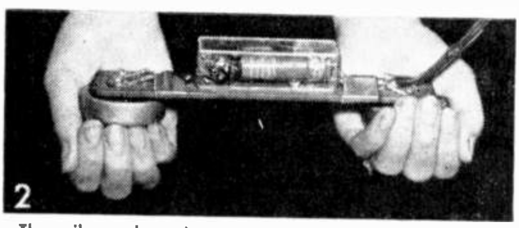
These handsets are built from regular receiver units which can be purchased for less than $1 a pair (see Materials List). The remaining parts are readily available, and two complete units can be quickly built for less than $7.

1

Children will be able to talk for hours on these toy telephones without running up your monthly bill.

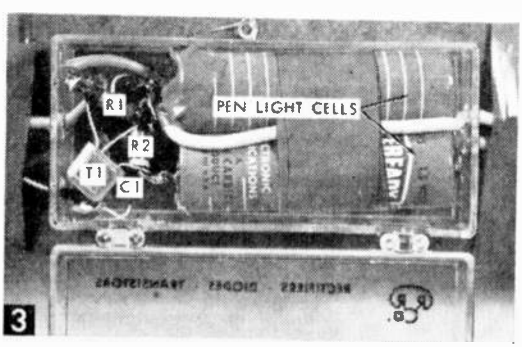
One receiving unit is used as a mike and the other as a receiver (Fig. 2). The mike receiver is capacity-coupled to the base of a low-priced audio transistor such as a 2N107, CK722, or ET3.

Resistor R1 furnishes the bias voltage for transistor T1, and two penlight cells supply the collector voltage. These cells are wired in series to a flat, 3-wire cable which, when connected by means of plug and jack to the other unit, turns the units on. If the volume is too loud, it can be decreased by increasing the resistance of R2 and R3 (see Fig. 7).



2

The mike and receiver mount on one side of the Masonite board, and the amplification box mounts on the other side.



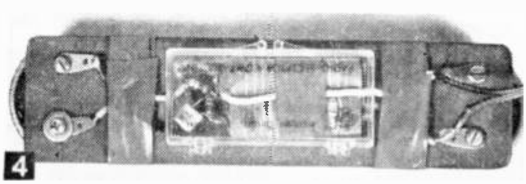
3

Internal assembly of parts.

House the Components in a small plastic box as in Fig. 3. Tape the two penlight cells together, and place them in one end of the box. Solder transistor T1, capacitor C1, and resistors R1, R2 together, and place them in the remaining area of the box.

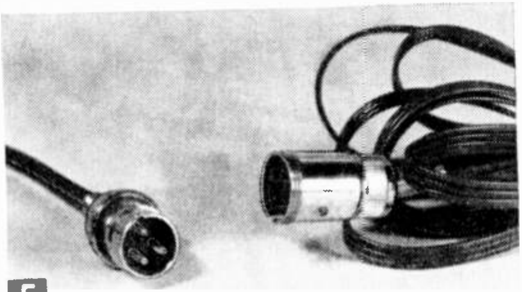
Use spaghetti and plastic tape to insulate the parts from shorting against one another. Also, in order to mount the plastic box to the handle, you will have to make some mounting holes in the box with the tip of your soldering iron. Complete the wiring by soldering the transistor circuit in series with the penlight cells.

Mount Each Mike and Receiver on a tempered piece of *Masonite* 2x6 in., which can usually be found in a scrap pile. In back of



4

The amplification box should be bolted to the board, and the external wires taped. None of the parts or sizes is critical.



5

Three-wire rotator cable and male and female connectors join the handsets together to activate them.

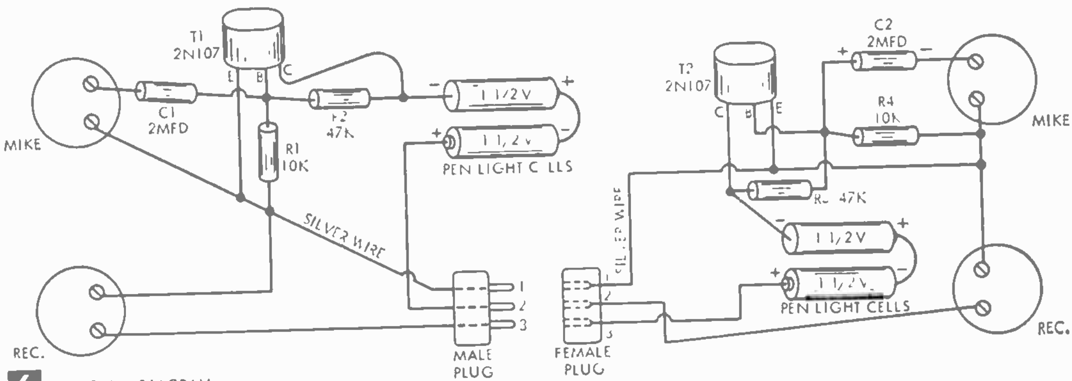
MATERIALS LIST—TOY TELEPHONES

Desig.	Description
C1	2 mfd. 6-volt miniature electrolytic capacitor
C2	2 mfd. 6-volt miniature electrolytic capacitor
R1	10K, 1/2 watt carbon resistor
R2	47K, 1/2 watt carbon resistor (see schematic)
R3	47K, 1/2 watt carbon resistor (see schematic)
R4	10K, 1/2 watt carbon resistor
T1	2N107, CK722 or ET3 transistor
T2	2N107, CK722, or ET3 transistor
4	penlight cells (Eveready 1015)
2	plastic cases (Lafayette MS157)
Misc.	3 prong male and female connectors, scrap pieces of Masonite for handles, nuts and bolts, 30 ft. or more of 3-wire rotator cable. The above parts can be purchased from Lafayette Radio, 111 Jericho Turnpike, Syosset, N. Y.
4	receiver phono units (AS568) available from Olson Electronics, 260 S. Forge St., Akron 8, Ohio; or Burstein-Applebee Co., 1012 McGee St., Kansas City, Mo.

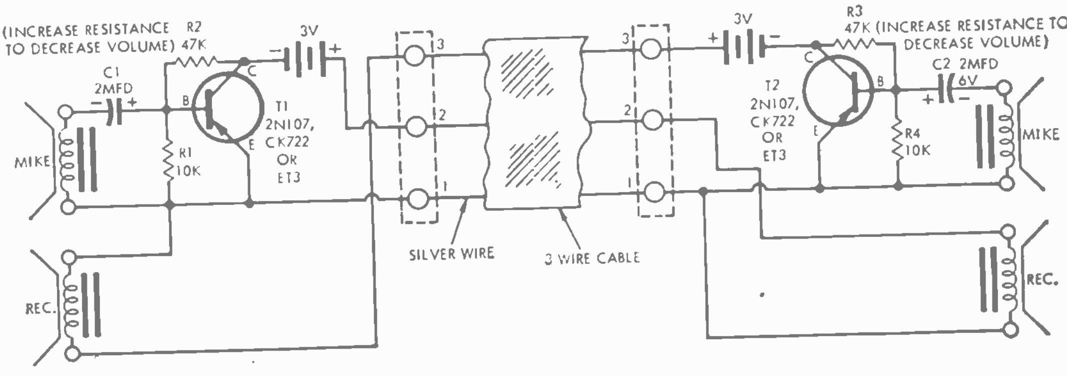
each receiving unit, you'll find two hookup screws with which to fasten the receiving unit to the Masonite handle. If they are not long enough, select a pair of longer screws and hold them in place by means of wire eyelets and washers.

Bolt the plastic box to the opposite side of the receiving units, and be sure to place the flat heads inside the box so that the batteries will fit snugly on top of them. Complete the wiring by connecting the amplification box to the receiver units, and then recheck the wiring with the schematic in Fig. 7. There is nothing more discouraging than to try out a newly built unit that does not work the first time.

Since there is no on-and-off switch, or a talk-and-receive switch like that found on an intercom unit, simply plug the female and male connectors together, and the electronic telephones are ready to use. The current drain is very low, and the batteries will last for a long time. Even though the phones are primarily designed for kiddies, they can be used by anyone who wants to talk room to room, floor to floor, or house to house.

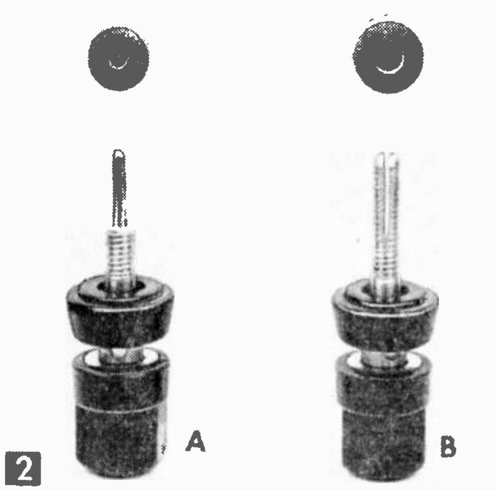


6 PICTORIAL DIAGRAM



7 SCHEMATIC

Typical 25¢ binding post designed to take the five types of connectors shown below it. Connectors are (left to right): wire lead, phone-cord-tip, spade lug, alligator clip, and banana plug.

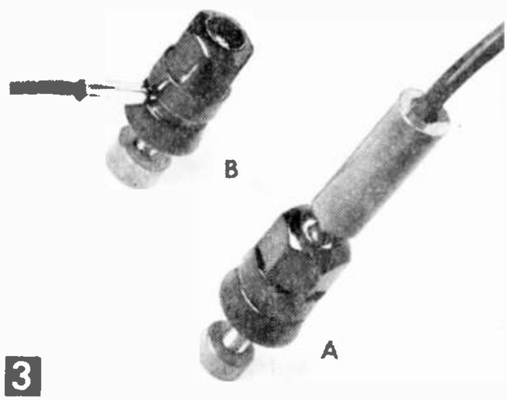


How to make two types of adapters by making simple alterations on the brass threaded shanks of the posts For post A, remove the loose hardware that comes with it and file the end of the threaded shank to the same diameter as the end of a phone-cord-tip. This allows the five-way post to be plugged into a standard phone-tip-jack. For post B, saw a lengthwise slot in the threaded shank of the post with a narrow-blade, fine-tooth hacksaw. Then file off a few threads so the shank makes a snug fit in a standard banana jack.

Universal Adapters for Quick Connections

WITH these simple adapters, various types of leads and connectors can be instantly connected to phone-tip-jacks and banana jacks.

The adapters are made of five-way binding posts with their threaded shanks altered to fit the jacks. The binding posts plug into the jacks and various types of leads and connectors are then fastened to the posts. It's wise to make two of each type of adapter because the jacks are almost always used in pairs.—ART TRAUFFER.



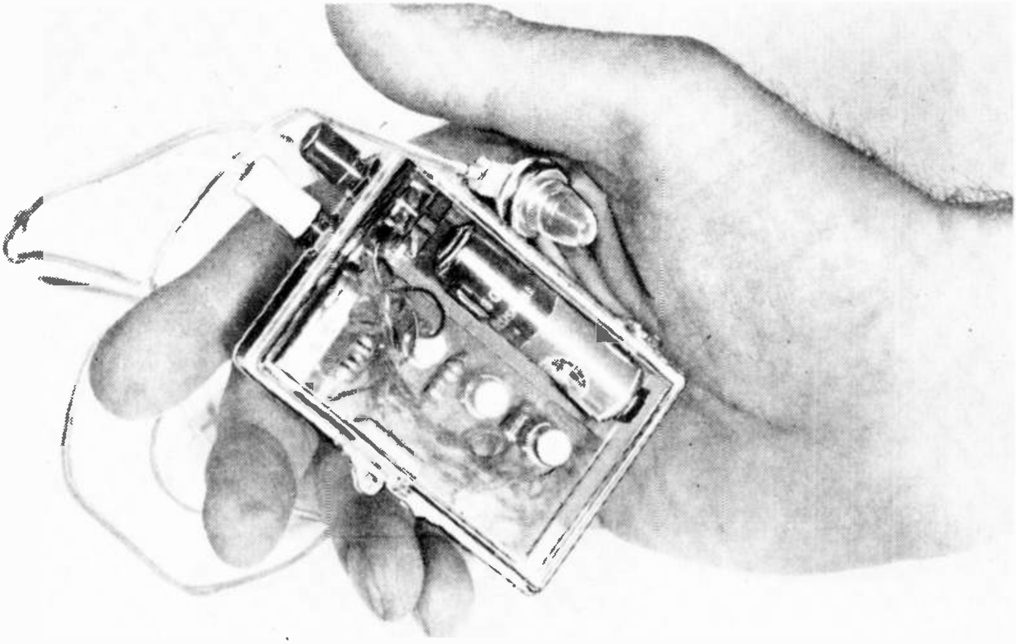
Two of several possible connections using these adapters: (A) An adapter allows a banana plug to be connected to a standard phone-tip-jack. (B) An adapter allows a phone-cord-tip to be connected to a standard banana jack. Wires, spade lugs, and alligator clips also may be connected to either jack.

Test for Capacitor Ground Lead

• To determine which lead of an unmarked paper capacitor is the "ground" or outer-foil lead, try this kink. Connect the capacitor across the input of an operating audio amplifier, touch your finger to the lead connected to chassis-ground and note the hum output of the amplifier. Reverse the capacitor and again touch the lead connected to the chassis-ground, and note the hum from the speaker. The lead giving the least hum output is the ground lead of the capacitor.

Keeping Tube Numbers Readable

• After tubes used in experimental circuits have been handled for some time, the type numbers on the glass envelope wear away and are almost impossible to read. To prevent this and keep numbers readable indefinitely, apply clear fingernail polish to the numerals when tubes are new. If the numbers on older tubes are illegible, apply ammonia with a piece of cotton and let it dry to bring numbers out clearly.—JOHN A. COMSTOCK.



1

Weighing only three ounces, the hearing aid fits comfortably in a shirt pocket. Amplification is 42 db or more, adequate for 75% of all cases of partial deafness.

Pocket-Size Hearing Aid

A low-cost answer for 15 million Americans who are hard of hearing

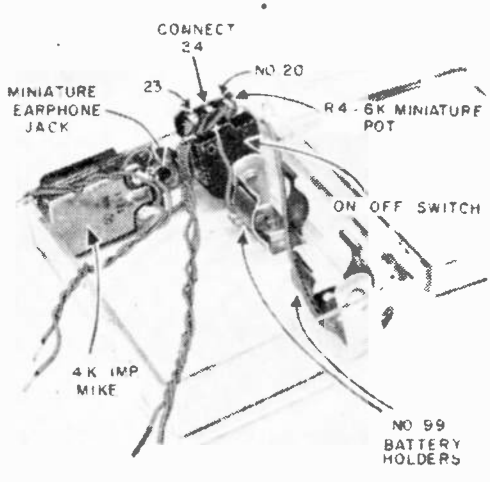
By MORT FRIEDMAN

Sidco Electronics

THREE transistors mounted on a printed circuit board provide a minimum of 42 decibels of gain in this new hearing aid design, yet the case is smaller than a king-size cigarette pack.

Based on 8 hours of use per day, the circuit, powered by a 10¢ pen light flashlight cell will operate for three days or more—a cost of only a third of a cent per hour. The hearing aid case has a switch for turning power *off* when not in use and a control that lets you adjust the volume to a comfortable sound level.

The microphone fits inside the case and has a frequency response of 300 to 4,000 cycles, providing satisfactory tone response for all but the most discriminating music lover. Such persons, if they are afflicted with poor hearing, are advised to use recently intro-



2

duced stereo earphones coupled directly into hi-fi output lines.

The Tiny Amplifier has uses other than the remedy of partial deafness. With the microphone mounted on a probe, the unit will do a fine job as a doctor's or mechanic's electronic stethoscope. You can hear the local sounds of defective parts within an engine or even pinpoint a water leak in a wall. Hunters have used hearing aids of similar amplification to detect the faint sounds of game at a distance, and a similar technique (mike in waterproof bag) has been used by fishermen to locate distant sounds of fish splashes.

The hearing aid can be built with stock electronic parts or by ordering a special SCIENCE and MECHANICS Kit (see Materials List). The case supplied with the kit is a high-

The Use of Hearing Aids

Many doctors use this kind of tuning fork to compare the sensitivity to sound of each ear.

By MARVIN B. WOLF, M. D.
and
MILTON J. SNEIDER, M. D.

THE human ear is a complex organ. From the outer ear to the auditory nerve, every section of the ear must be in good condition, or a loss of hearing may result. Thus, there are many causes of total or partial deafness.

Injury or infection of any part of the outer, middle, or inner ear can cause deafness. Damage to the outer ear, usually from accidents or insect and animal bites, will reduce the ability of the outer ear to catch the sound waves. Damage or perforation of the ear drum by accident or infection will affect the vibratory movements of the drum and thus reduce hearing. Injury to the three small bones in the middle ear will interfere with the transmission of vibratory movements of the ear drum to the inner fluid in the cochlea and thus cause a loss of hearing. Injury to the auditory nerve, or damage to the nerve by poisons or toxins, as well as inflammation by germ infection, will reduce the transmission of nerve impulses to the hearing center of the brain.

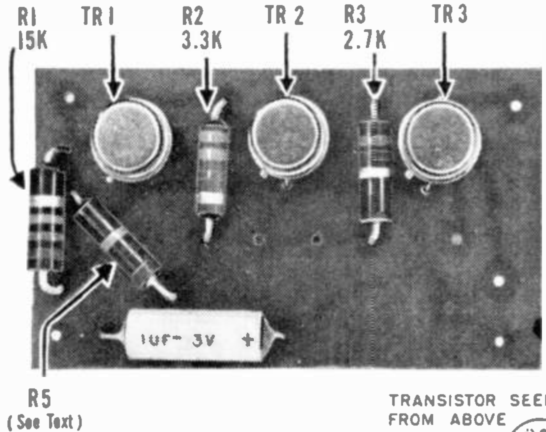
Physicians use an electronic instrument called an audiometer to measure the exact amount of hearing loss in both ears. As a general rule anyone with a hearing loss of 35 *db* or more (standard unit expressing relative power of sound) in the speech frequency in both ears is a suitable subject for a hearing aid. If hearing loss in the speech frequencies (*cps*) is 80 *db* or more, the patient usually will not benefit from artificial aid.

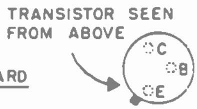
If you normally listen to the telephone with your left ear, use the hearing aid on the right side.

When impairment is moderate and the person is able to satisfactorily use an ordinary telephone, the hearing aid should be prescribed for the ear not used in telephoning. The aid should always be fitted to the better hearing ear.

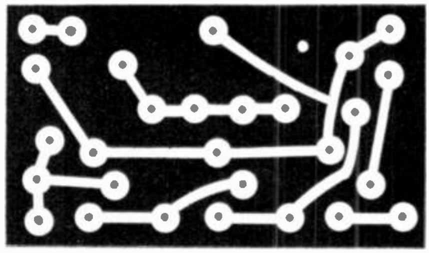
Air-conduction hearing aids (of the type shown in this article) should always be used in preference to bone-conduction aids, even in cases where tests show hearing for bone is better than air. The air-type aid is normally more efficient, especially in amplifying the higher frequencies. Thus, the sound is more natural, and the amplifier requires less power.

Bone-conduction aids are used in cases with perforation of the ear drums and suppuration, provided loss does not exceed 60 *db* in the speech frequency range.

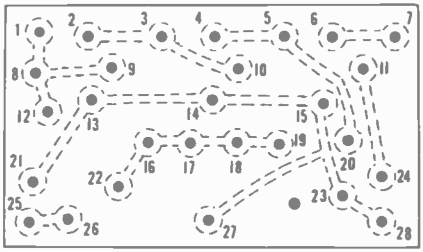




3 A PRINTED CIRCUIT BOARD



B PRINTED CIRCUIT (BOTTOM)

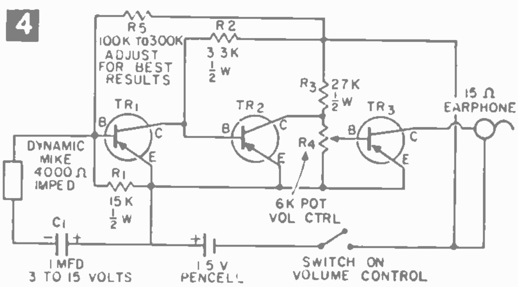


C PRINTED CIRCUIT (TOP VIEW)

TABLE A

Part No.	PC Hole No.
R1 (15K brown, green, orange)	8, 21
R2 (3.3K orange, orange, red)	3, 16
R3 (2.7K red, purple, red)	5, 19
R4 (6K pot)	24 to center lug 23, 20. See Fig. 2
R5 (100-300K) see text	12, 22
C1 1-*mfd*, 3-volt	plus to 27 neg to 26
TR1	C to 2 B to 9 E to 13
TR2	C to 4 B to 10 E to 14
TR3	C to 6 B to 11 E to 15
Mike Leads	1, 25
Earphone jack tip lead	7
Earphone jack outer lead	18
Switch leads	17, Neg Bat. Clip
+ Battery lead	28

4



impact colored plastic and comes pre-drilled. If you decide to use your own parts, the first step is to drill the holes (Fig. 5). The microphone requires only one ¼-in. hole, but it is very essential that you mount it on a small piece of sponge rubber so that the mike does not press directly against the case at any point. The reason for this is that it would cause the mike to pick up surface noise.

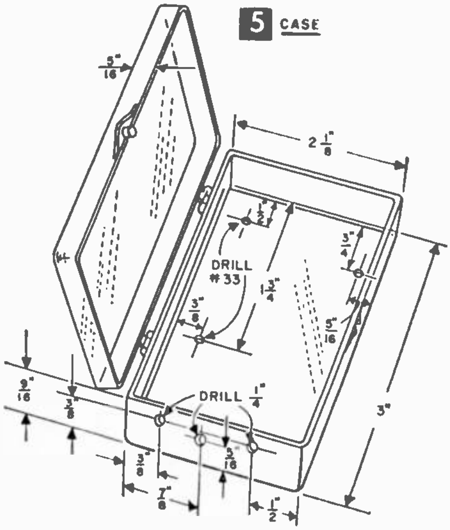
Strip ¼-in. insulation from nine 3½-in. lengths of insulated 24- or 26-gauge light, flexible, plastic-covered hook-up wire. Be sure to use a high quality printed circuit solder and a low wattage (25-40 watt) soldering iron to avoid overheating parts and printed circuit board. Solder two wires to the mike lugs; solder two lead wires to the earphone jack, three leads to the volume control lugs, and two leads to the switch on the back of the volume control.

MATERIALS LIST—MINIATURE HEARING AID

Amt. or No.	Size and Description
R1	15K, ½ watt 10% carbon resistor
R2	3.3K, ½ watt 10% carbon resistor
R3	2.7K, ½ watt 10% carbon resistor
R4	6K miniature volume control, audio taper CTS #KX1214 or equal (*$.95) with on-off switch
R5	100 to 300K ½ watt 10% carbon resistor (Select value for best volume and tone. See text)
C1	1-*mfd*, 3-volt sub miniature electrolytic capacitor
TR1, TR2, TR3	transistors, PNP audio type, Sylvania #2N1265 or equal (*$1.77)
1	4000-ohm miniature hearing aid microphone Knowles #1321 (*$11.95)
1	15-ohm single midget earset; response 500-4000 cps
2	Keystone #99 Space Saver Battery holders
1	Eveready #915 penlight flashlight cell, or equal
1	1½ x 2³⁄₁₆" printed circuit board, HR3 (*$1.95)
1	miniature earphone jack
1	plastic case, ⅞ x 2⅛ x 3 in.
Misc.	3-4-40 mtg. screws and bolts, microphone cable (optional, see text) printed circuit solder, knob

NOTE: By special arrangement with manufacturers all of the above items are available as a complete kit with instructions. Send $24.95 for Kit A9 to Kits Div., SCIENCE and MECHANICS, Dept. 873, 505 Park Ave., New York 22, N. Y. This unit may also be purchased completely assembled and tested for $34.95.

* The above parts are available separately from Sidco Sales, 4749 N. Rockwell, Chicago 25, Ill., postpaid.



Now install the miniature volume control and the earphone jack in the case. Cut a ½ x ⅝-in. piece of ⅛-in.-thick sponge rubber. Use a sharp knife or razor to cut a 3/16-in.-diameter hole in the center. Use rubber cement to glue the sponge rubber washer to the microphone and the other side of the case. Mount the battery holders (Fig. 2) with two 4-40 x 3/16-in. pan head machine screws.

Optional Note: If you want to use the mike at a remote point, run a shielded cable out through a hole in case instead of the installation shown.

Assemble and Wire the printed circuit board in the sequence of Table A. The final steps are connections of mike, earphone, switch, and battery. Install the battery. Polarity must be correct; if you accidentally install the battery backward, though, no damage will result. The unit will just not work. Plug in the earphone, turn on the volume control, and you should hear good amplification of sounds in the room. If there is no sound, check all connections and soldered joints to find the mistake. Too hot a soldering iron can cause cracking or a rise of the thin layer of copper on the printed circuit board. The effect is the same as a broken wire. Find the break and overlay with a thin layer of solder.

Resistor R5, due to sensitivity variation in transistors, is not specified in the circuit. Kit parts are delivered tested and matched. If you are building your own, use a ½-meg volume control and a 0-50 milliameter to run this test. Complete all wiring except R5. Insert the volume control across terminals 12 and 22 and wire milliameter in series with battery. Adjust for maximum volume and clarity, at a current of 15 to 20 mils on the meter with the built-in volume control R6 set on full. The lower the reading on the milliameter, the longer the battery life. Read the setting on the volume control with an ohmmeter and use this value for resistor R5.

"Usually my husband can get it working again with a little kick."

The Companion

A number of old 45-*rpm* records can be used to house a small radio that serves as a mate to the record changer of a young rock 'n' roller

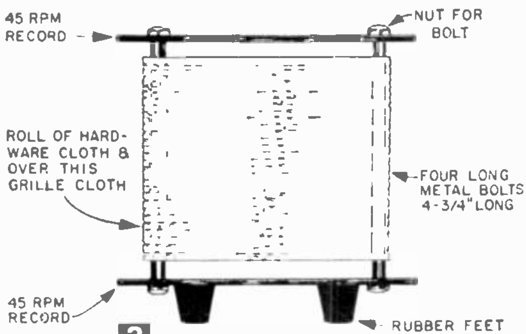
By HOMER L. DAVIDSON


1

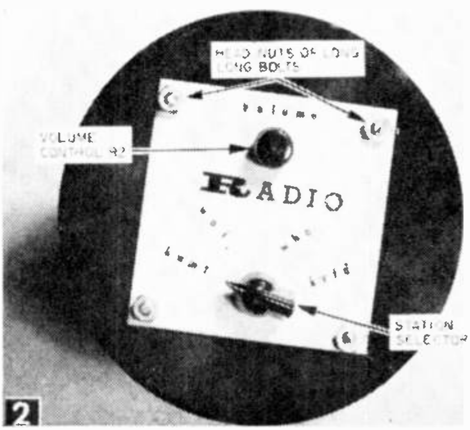
DESIGNED for the young teenager who wants to hear all of those up-to-the-minute records is this little one-tube radio, the Companion. It combines good performance with a snappy-looking cabinet built up from a stack of last year's worn out and overplayed records. Of course, it can also serve as an extra radio in order not to tie up Mother's kitchen radio and her favorite programs. Who knows—maybe Dad needs an extra radio to hear the ball games.

The Companion will pull in your local stations with just a small insulated wire strung around the room. By hooking a large outdoor antenna to it, you will be able to hear stations within a radius of 1000 miles.

How It Works. The circuit of the small radio is very simple to follow. The 12AT7 tube employs one triode section as a regenerative detector and the second triode as an audio amplifier stage. A ferrite antenna coil in the grid circuit tunes with a 365-mfd variable capacitor, and a .0015-mfd capacitor couples the antenna to the antenna coil. This capacitor is very important for two reasons. It isolates the 117-vac line from a grounded antenna wire, providing the ac plug is plugged in the socket right. Also, if the antenna wire is hooked directly to the antenna coil, it will



3 CABINET ASSEMBLY



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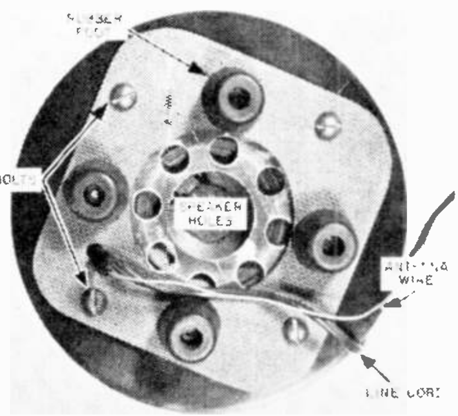
Station letters rather than numbers can be pasted on for dial convenience.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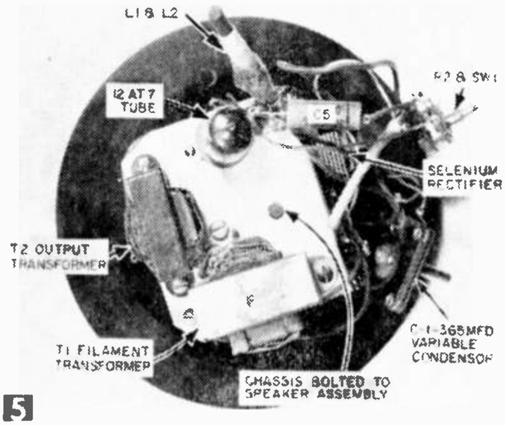
Bottom view showing mounting of speaker.



5 **Interior view showing placement of parts and wiring.**

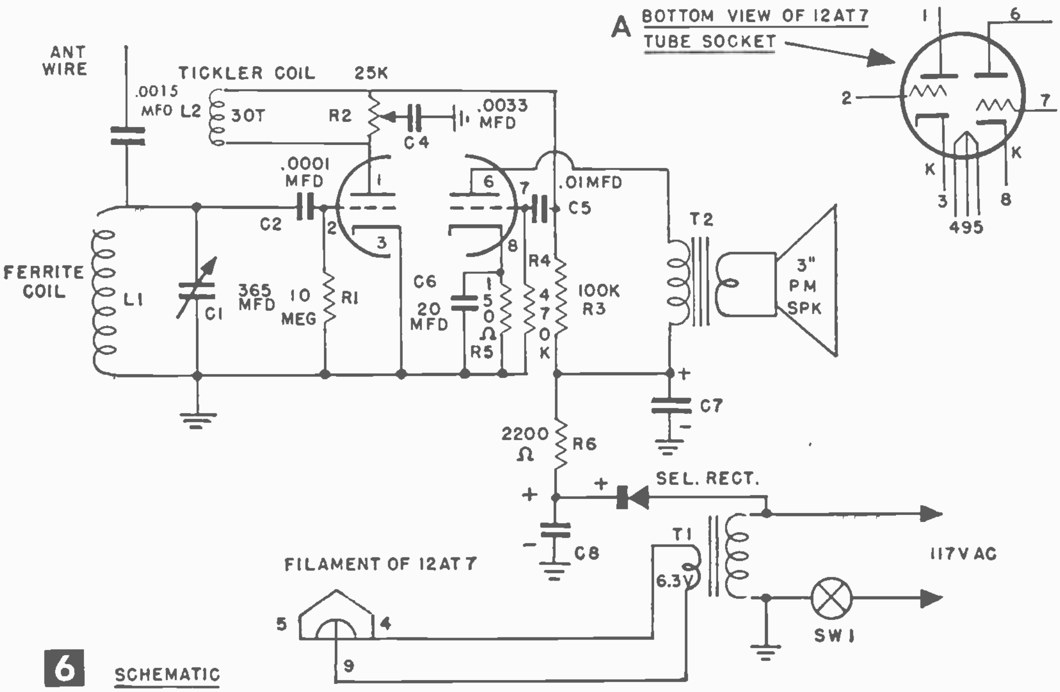
load down the circuit and only local stations will be available for selection.

The antenna coil is modified by adding a small tickler winding L2. Close wind approximately 30 turns of #28 enameled wire on the middle of the antenna coil. First place a layer of cellulose tape over L1 winding, looping the end to hold the beginning of coil L2. Leave the L2 coil ends about 3 in. long so they can be wired directly to the circuit. The size of the wire is not too critical. After the second winding is wound on the antenna coil, fasten it securely with cellulose tape.

Regenerative detection takes place between C2 and R1 and the first triode section of the 12AT7 tube. The tickler winding hooks directly to the plate of pin #1. Feedback is controlled by R2, and this was found to be the smoothest type of regeneration control. A .01-*mfd* audio capacitor couples the rectified signal to the second grid of the tube. R5 and capacitor C6 biases and filters the cathode voltage for the output stage. The plate circuit, pin #6, has an output transformer in the circuit to match the plate impedance of the audio stage. A 3-in. speaker is used here because of its small size and good volume.

The dc power supply consists of a small 65-*ma* selenium rectifier and resistor-capacitor network, and no 60-cycle hum is noted in the output of the small speaker. A small 6.3-volt power transformer is used as a step-down filament voltage source. In some cases a 10-watt resistor could be used here but, with a few more cents, better voltage regulation, less heat disintegration, and longer tube life can be had with a step-down transformer.

Wiring and Parts Mounting. Before wiring the parts into the circuit, mount them on the small metal chassis. For the speaker, I used a small 3-in. *Quam* permanent magnet type, since two small-tapped screw holes are provided in the rear of the PM assembly. Of course, another type of speaker could be used if the small chassis were made to bend down over the two speaker mounting holes. Make the small chassis out of aluminum and bend in an L shape as shown in Fig. 5. Drill all the holes, including those for the tube and variable capacitor, which can be reamed to suit their type mounting. A small drill can be employed, drilling a lot of small holes in



6 SCHEMATIC

MATERIALS LIST—THE COMPANION

Desig.	Description
C1	365 mfd variable tuning capacitor (Lafayette MS-214)
C2	.0001 mfd ceramic capacitor
C3	.0015 mfd ceramic capacitor
C4	.0033 mfd ceramic capacitor
C5	.01 mfd ceramic capacitor
C6	20 mfd. 25 WVDC electrolytic capacitor
C7	40 mfd. 150 WVDC electrolytic capacitor
C8	50 mfd. 150 WVDC electrolytic capacitor
R1	10 meg. ½ watt carbon resistor
R2	25K pot. linear taper (IRC Q11-120) with SPST switch (IRC 76-1)
R3	100K. ½ watt carbon resistor
R4	470K. ½ watt carbon resistor
R5	150 ohm. ½ watt carbon resistor
R6	2200 ohm. ½ watt carbon resistor
L1	ferrite antenna coil (Lafayette MS-11)
L2	30 turns of #28 enamel wire wound over L1
T1	6.3-volt step down ac transformer (Stancor P6134)
T2	output transformer. 5000 ohms primary impedance, 3.2 ohms secondary impedance (Stancor A3877)
V1	12AT7 electron tube
1	3-in. PM speaker (Quam)
Misc.	old 45 *rpm* records. metallic strip. cardboard, chassis, nuts and bolts, hookup wire, grille cloth

a circle and punching out the small disk. Then take a round file or rattail file and smooth the edges.

Don't mount the antenna coil until last, as it is very easily broken off. Wire small capacitors and resistors into the circuit underneath the chassis, using the schematic (Fig. 6) as a guide. The antenna tuning condenser should have long leads soldered to them and wired to coil L1. Do this before mounting the antenna coil. Place insulator spaghetti on all bare wires. After the chassis has been wired, place it into position upon the speaker assembly and fasten securely with two small bolts.

Tuning Up. It is always advisable to check over the wiring three times before the unit is fired up. If an ohmmeter is handy, check the resistance between C7 and ground to make certain that there is no short in the small power supply. The resistance should be above 5000 ohms. Visably inspect the wiring around the speaker terminals to see that they are not pushed down against the metal frame.

At this point the small record radio is ready to be tried out. Simply plug the ac cord into the socket and turn on the switch. A small rush should be heard from the small speaker. Fasten a 20-ft. piece of wire to the antenna terminal and turn the tuning condenser. You should be able to hear local stations. Advance the regeneration control and a squeal should be heard about halfway through its rotation. If not, reverse the two tickler coil leads. This will create correct feedback to coil L1 from the plate circuit. When the squeal is heard, turn the regeneration control down a small amount. The station should now be audible. A few tries will make one an expert in operating the regeneration control. It is surprising how many stations will come in with loud speaker volume. Adjust the ferrite coil for complete band coverage by pushing it up and down.

Cabinet Construction. The cabinet for the small radio is very unique since the major part of it is constructed from old 45-*rpm* records. Drill holes around the center hole of the record so that the sound from the speaker will pass through (Fig. 4).

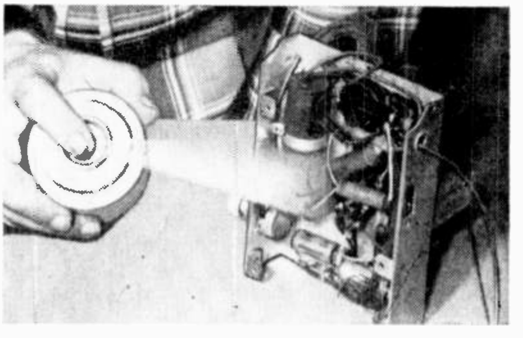
Fasten a *Masonite* board here to hold the four small legs. Four long bolts with aluminum spacers hold the records and cardboard spacers together. The cardboard spacers are the same size as the aluminum tape or binding material. This material can be bought at most hardware and dime stores. The aluminum spacers should also be of the same width as cardboard spacers. The records that are mounted in the center will have to have their centers cut out so the radio will set down inside.

Before you assemble the records to the cabinet, they should be cleaned and then finished with a clear spray or varnish, such as *Krylon*. Attach the small radio chassis to the bottom assembly before mounting the records and cardboard spacers. Mount the top record last, and attach the two small knobs.

Station letters were applied to the tuning dial instead of numbers. These can be taken from the daily newspaper and glued on the dial. Spray on a coat of Krylon or varnish, and the radio is ready to use.

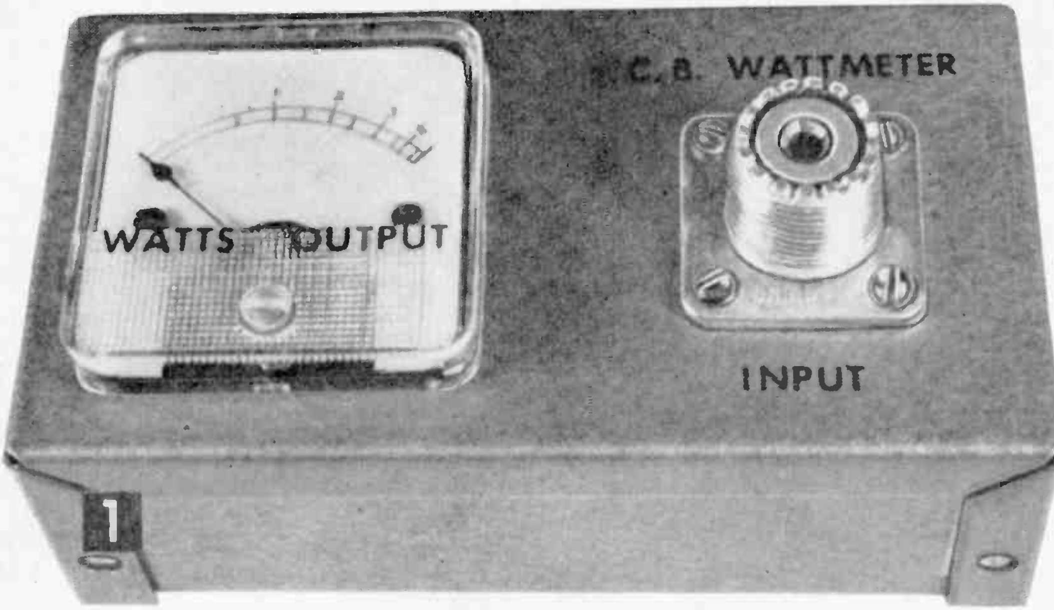
Fire Extinguisher Chases Radio Bugs

• The chilling effect of a carbon dioxide fire extinguisher will help you locate a defective part in a radio circuit that plays erratically. Often a set works fine for a few minutes after you turn it on, and then suddenly misbe-

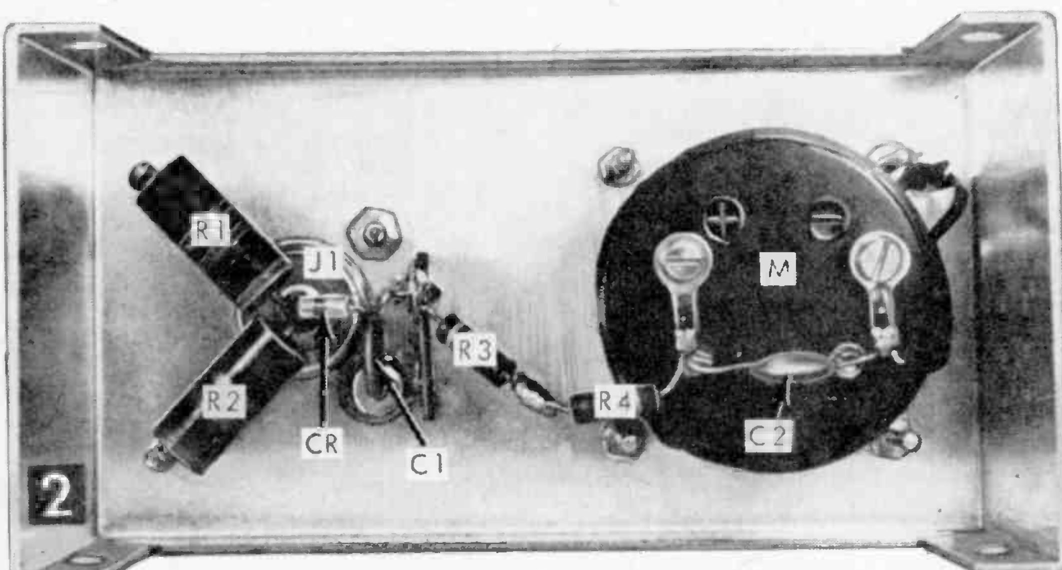


haves or goes dead. The trouble may be a part that expands with heat after current has been flowing through for a few moments. Spray suspicious parts with CO_2 gas one at a time. The intense cold will contract a defective component so it can work normally.

You can also use Charg-A-Can Freon #12 with a suitable adapter (sold by refrigeration supply houses). However do not use carbon tetrachloride fire extinguishers since the fumes are highly toxic.—T. A. Blanchard.



This compact wattmeter gives a direct reading of transmitter output when connected in place of the antenna.



Interior view of wattmeter showing placement of components.

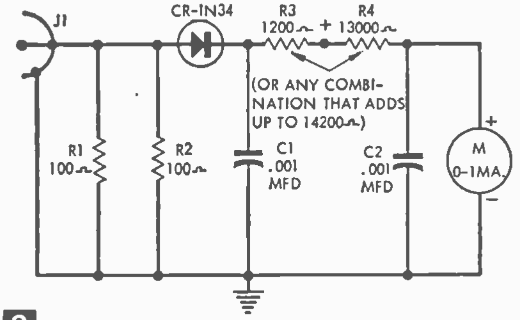
A Citizens Band Wattmeter

To determine the efficiency and performance of low power transmitters

By JOE A. ROLF, K5JOK

IF YOU have ever wanted to know how efficiently your low power transmitter is operating, this handy Citizens Band wattmeter will prove a valuable accessory. It is easily constructed at a cost of less than $15. By connecting the wattmeter in place of the antenna, your transmitter can be adjusted for maximum output into an impedance of the correct value.

Briefly, let's discuss the advantage of using



3 SCHEMATIC

CALIBRATION CHART	
Watts Output	Meter Reading
4.0	1.0 ma
3.5	.93
3.0	.86
2.5	.79
2.0	.72
1.5	.61
1.0	.50
.5	.35

a wattmeter. Class D service presently is limited to an input of 5 watts to the transmitter's final stage of amplification, and it is extremely important that the transmitter be as efficient as possible in converting this power into RF energy. For consistent range, it is equally important that this efficiency be maintained.

Commercially built vacuum tube transceivers are designed to operate at about 50% to 80% efficiency. This means that only 2.5 to 4 watts of RF power is available at the antenna terminals. While there is not much you can do about improving the efficiency that a manufacturer has designed into his

MATERIALS LIST—CB WATTMETER

Desig.	Description
C1	.001 mfd. 600-volt ceramic disk capacitor
C2	.001 mfd. 600-volt ceramic disk capacitor
CR	1N34 diode
J1	coax chassis jack (Amphenol 83-1R) or equivalent
M	0-1 ma meter (Calrad CMO-32-2) or equivalent
R1	100 ohm, 2 watt, 5% composition resistor
R2	100 ohm, 2 watt, 5% composition resistor
R3	1200 ohm, 1/2 watt, 5% composition resistor
R4	13000 ohm, 1/2 watt, 5% composition resistor
	Note: R3 and R4 may be any combination of values which equals 14200 ohms
Misc.	1½ x 2¼ x 4¼" Minibox (Bud CU-2116A), 1 single terminal tie strip, 2 small soldering lugs, 4 mounting screws, wire, and 1 connector to transmitter output consisting of short length of RG 58/U coaxial cable, 1 Amphenol 83-1SP connector or equivalent, and plug to match transmitter output

unit, you can periodically make checks on this efficiency to ensure that it is maintained.

For instance, if you establish with a wattmeter that your transmitter is capable of 4 watts output, and a subsequent check reveals an output of only 3 watts, you know immediately that something has happened. Perhaps tubes are beginning to age, or the unit is no longer tuned properly. Reduction in efficiency, nonetheless, can be quickly determined with the use of a wattmeter, and without removing the transceiver from its cabinet.

The circuit shown in Fig. 3 is basically a dummy load 50-ohm antenna (resistors R1 and R2), and a simple RF voltmeter. When power from the output of the transmitter is applied to the 50-ohm load, the meter indicates the developed voltage. Since the power and resultant voltage are directly related, the meter can be calibrated in watts to show the transmitter output.

Construct the Wattmeter from Figs. 1 and 2. Mount the components in a 1½ x 2¼ x 4¼-in. Minibox. It is important to keep the leads of the load resistors, R1 and R2, and the diode, CR, as short as possible.

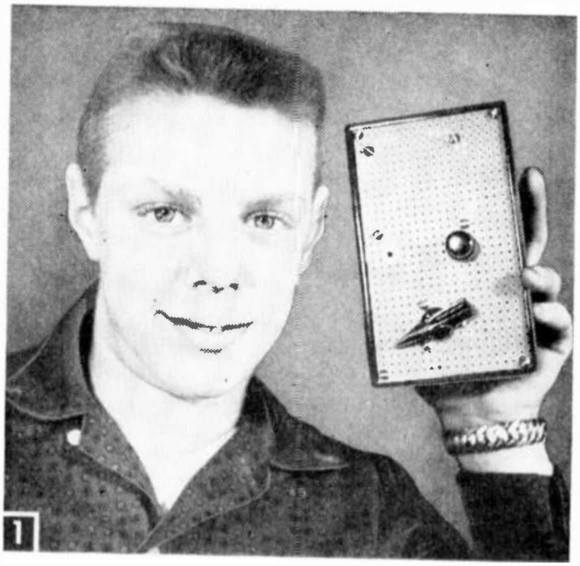
For accuracy, all resistors should be at least 5% tolerance. R3 and R4 are ½-watt 5% resistors with a total resistance of 14200 ohms. Any combination of available values totaling 14200 ohms can be substituted here. If available, 1% resistors will greatly improve the accuracy of 5% to 7% that can be expected from 5% values. Connect the wattmeter to the transmitter by means of a short piece of RG-58/U coaxial cable and proper fittings.

Calibrate the Meter with the aid of the calibration chart. If you wish, clip the chart out and paste it to the back of the Minibox. If you do this, it is a good idea to give the chart a coat of clear fingernail polish or other clear plastic coating for protection.

Tracing Radio Interference

• Radio interference can often be traced to motor-driven electrical apparatus. Determine which one through a systematic method of elimination; that is, pull the switch on one appliance at a time and note whether the disturbing radio noise disappears. When the source has been located, you can decide upon the method of silencing. If the interference is a steady buzzing sound, a noise filter should be installed in the circuit. An intermittent noise would indicate the presence of static electrically caused by the movements or rotation of some part of the machine, within or against another. This type of interference can be silenced by grounding the machine frame to motor frame with a length of copper wire. Be sure to scrape clean the spaces where the wire will make contact at each end and fasten securely with bolts.—Ken Hadenfeldt.

Here's the transistor portable you've been waiting for. It operates on ordinary pen-lite cells, drives a loudspeaker with plenty of volume, has phone jack output for private listening, automatic volume control for smooth volume, and plenty of sensitivity. No outside antenna is required—and it can also be used as a tuner for a larger amplifier



1

Small, but powerful, that's the transistorized superhet for which step-by-step building instructions are given in this article.

Three-Transistor Superhet Portable

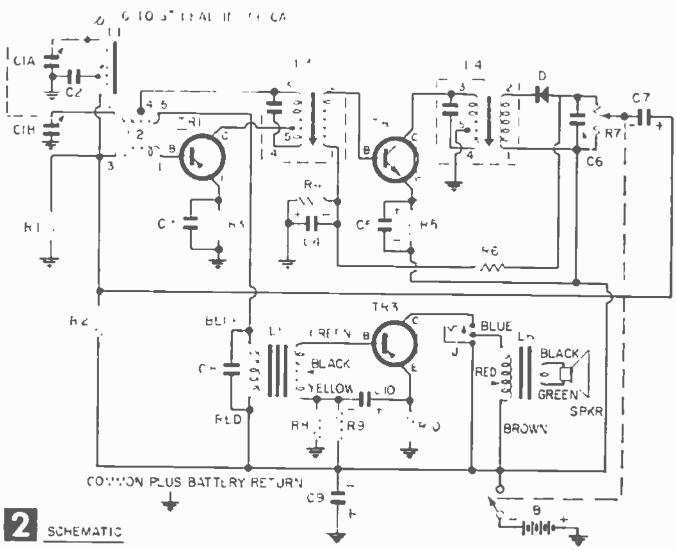
By FORREST H. FRANTZ, SR.

THE circuit diagram of this three-transistor superhet is shown in Fig. 2. The transistor TR1, RCA 2N412, does triple duty. The RF signal (550 to 1500 *kc*) which it receives from the antenna loop L1 and antenna tuning capacitor C1A is amplified and mixed with the oscillator signal. The oscillator signal, also generated by TR1, is always 455 *kc* above the received RF signal.

The oscillator tuning capacitor C1B is ganged to the antenna tuning capacitor so that oscillator and antenna tuning track. The signal through L3 is amplified by the IF amplifier transistor TR2. This transistor is a high-gain, high-frequency GE 2N168A. Diode D detects the signal after it passes through L4. Capacitor C6 filters out the RF signal components so that the signal across volume control R7 is audio frequency (AF). The signal is then passed through R6 and the audio is filtered out so that a *dc* bias proportional to the strength of the received signal is provided to control the gain of the IF amplifier TR2. The stronger the signal, the lower the gain of TR2. Thus, fading is minimized for reasonably strong signals. This is the automatic volume control (AVC).

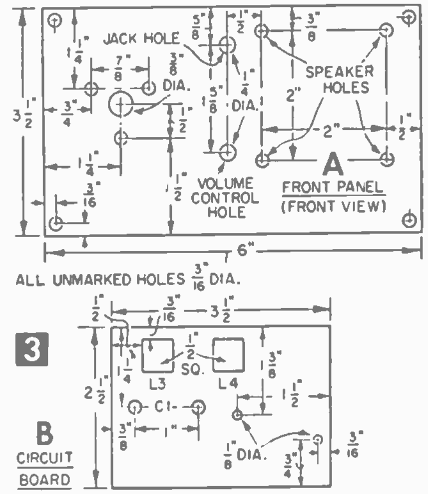
The slider on volume control R7 picks off the audio signal for audio amplification. Transistor TR1 performs its third job as the first audio amplifier. It's possible to use the same transistor for the mixing oscillator and audio amplifier functions, since the frequencies are widely separated. The amplified audio output of TR1 appears across transformer L5 and is transferred to the audio output stage TR3 which amplifies the audio signal for speaker or headphone output.

This receiver has several outstanding features that make exceptional performance possible with only three transistors. The advantage of making TR1 do several jobs, for instance, is apparent. Further, the antenna loop L1 is the Miller 2003 high-Q loop which has a Q of 500 and this



2 SCHEMATIC

unusually high Q builds up the signal and allows the tuning capacitor to select the desired station with considerable discrimination against interfering signals before the transistors even begin to go to work.



The audio output stage TR3 is transformer coupled to TR1—and two transformer-coupled audio stages have almost as much gain as three! Actually, a considerable amount of the available audio gain of TR1 is not exploited since the emitter bias resistor R3 of TR1 is not bypassed by a large capacitor. A large capacitor would increase the gain but would degrade the fidelity and create a tendency for the receiver to go into regeneration.

Preparing Parts for Assembly. First, cut out and prepare the front panel and the circuit board (Fig. 3). Cut the tuning capacitor (C1) shaft to a length of ½ in., the volume control (R7) shaft to a length of ¼ in. Remove the antenna loop from its mounting by cutting off the ends of the fiber retainer with tin snips; fasten the output transformer (L6) on the loudspeaker (see Fig. 5) by bending the transformer mounting lugs to fit around the magnet frame. A few drops of Pliobond or a similar cement placed under the transformer prior to mounting will steady it against the magnet frame.

Next, solder the connection lugs of the battery holder for series connection as shown in Fig. 4. Use rosin core solder only! Mark the battery end polarities to avoid making mistakes in connections or inserting batteries. Rotate the battery lugs with a pair of pliers and simply solder them together to make connections, and then fill with solder the surfaces of the eyelets which will contact the batteries.

Figure 5 shows the parts and wiring on the back of the front panel. Mount the loudspeaker (SPKR), volume control (R7) and the phone jack (J), and complete wiring as shown. Be cautious in soldering; too much heat can damage the volume control. The same precaution applies to the other components, especially transistors, in subsequent soldering.

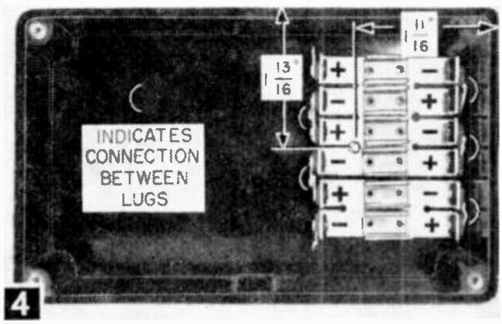
The Wiring Board. Top and bottom views of the assembled wiring board are shown in Fig. 6. Fasten L3 and L4 by inserting them in the holes and bending the mounting lugs against the back of the board.

Next, you will mount C1, L1 and L2. (Be careful not to let the screws which hold C1 pass through far enough to touch the plates of the capacitor; use washers or spacers if necessary.) Fasten L1 and L2 with Duco cement, give the cement time to set, then fasten L5 and T1 to the board.

The next step is to solder B of TR1 to terminal 1 on L2, C to terminal 5 of L3, pass E through the circuit board, and fasten TR1 against the case of L3 with a rubber band.

The remaining components are fastened to the circuit board as the wiring progresses. Be sure to connect the frame of C1 and the cases of L3 and L4 to the common plus battery return (designated by the "ground" symbol in Fig. 2). When circuit board wiring is completed, connect a lead 6 in. long to the common return for later connection to the plus terminal of the 9-v battery. The other lead from the circuit board is a 6 to 8 in. length of wire connected to C1A. The other end of this lead hangs free inside of the case after final assembly. This lead is essentially a short antenna which gives the set additional pick-up.

Final Assembly. There are five lead ends extending from the front panel (Fig. 5). The lead from the switch will connect to the minus terminal of the battery. The other four leads connect to the circuit board. The circuit board is joined to



Battery-holder mounting in case, and connections.

the front panel by the tuning capacitor's (C1) three mounting screws. Place fiber washers or cardboard spacers 1/16-in. thick between C1 and the front panel when you join panel and circuit board.

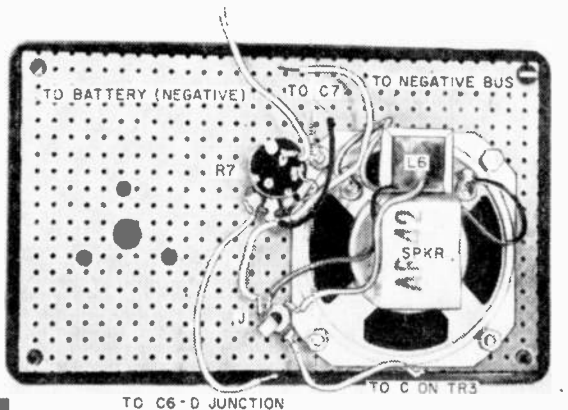
Check for clearance between the circuit board components and the panel components. Particular items to watch are interference of TR2 with J, C9 with S on R7 and L6 with SPKR. Place the assembly in the cabinet to check fit and make any necessary adjustments in parts placement.

The leads from the front panel connect as follows: 1) The lead from the junction of R7, S and J connects to the circuit board minus line. 2) The lead from J connects to C of T3. 3) The lead from the "hi" terminal of R7 connects to the junction of D, C6, and R6. 4) The center terminal lead of R7 connects to the minus terminal of C7.

With these connections completed, adjust the slug of L2 flush with or just slightly below the coil form viewed from the back of the assembly. There are two trimmers on C1 which were intentionally eliminated from Fig. 2 to avoid confusion. These trimmers in parallel with C1A and C1B are provided to align the antenna and oscillator circuits respectively for proper high-frequency tracking. Open the antenna trimmer till the trimmer tension is nearly released (minimum trimmer capacity). Turn the oscillator trimmer full closed (maximum trimmer capacity), and then back the screw off ½ turn. Place the knobs on C1 and R7. (You can provide a calibrated dial made of paper and covered with plastic for C1 later if you wish). With S off, connect the leads from the assembly to the battery to complete wiring and assembly. These leads should be about 6 in. long to allow easy removal of the assembly from the case. To prevent the screws which hold the battery holders in place from scratching furniture, fasten rubber grommets to the back of the case with Pliobond cement.

Tune-Up. If you have a milliammeter, connect it across the terminals of switch S. The meter should read between 6 and 15 *ma* if all is well. Don't worry if the set motorboats when you make this measurement. If the current exceeds 15 *ma*, look for a short or an incorrect connection. If the current is less than 6 *ma*, the trouble is probably low battery voltage or an incorrect connection.

Assuming all is well at this point—or that you don't have a meter to make this measurement—

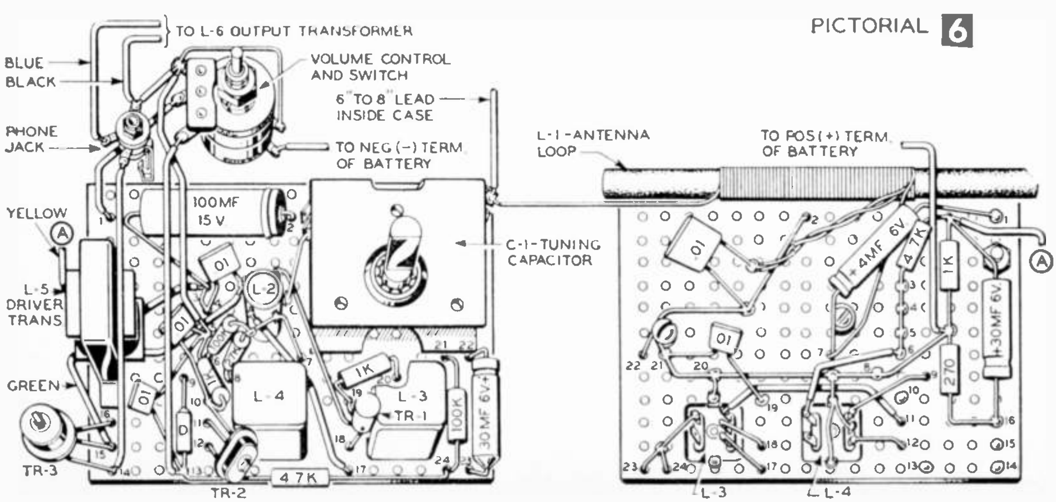


5

Back of front-panel view, showing connections.

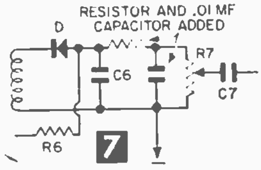
turn the set on and turn the volume control about ⅞ths up (clockwise). Maximum volume does not occur at the full clockwise position of the volume control. This is a normal characteristic of the reflex circuit. (The term reflex is applied to a receiver which uses one transistor or tube to amplify both RF or IF and AF signals). With the volume control turned approximately ⅞ths full clockwise, rotate the tuning dial slowly. If you're in a metropolitan area or within about 10 or 15 miles of a large station, you'll probably pick up a signal even though the set is not accurately aligned. But if you don't pick a station up, there's no cause for alarm because the IF transformers (L3 and L4) may be way out of adjustment. If you pick up a station you can feel reasonably sure the wiring is correct. If you can't pick up a station, the presence of noise of any kind from the speaker indicates that at least part of the audio is working properly. In either case; you're ready to try alignment.

PICTORIAL 6



TOP VIEW OF PERFORATED BAKELITE MOUNTING BOARD

BOTTOM VIEW OF PERFORATED BAKELITE MOUNTING BOARD



7

MATERIALS LIST—THREE-TRANSISTOR PORTABLE SUPERHET

Desig.	Description
R10	270 ohms
R3, R5, R8	1K
R6, R9	4.7K
R1	27K
R2, R4	100K
(all resistors, ½ watt, ±20%)	
R7-S	5K miniature volume control with switch (Lafayette VC-27)
C2, C3, C5, C6, C8	.01 mfd subminiature square capacitor (Lafayette C-612)
C7	4 mfd, 6v ultraminiature electrolytic capacitor (Lafayette CF-101)
C4, C10	30 mfd, 6v ultraminiature electrolytic capacitor (Lafayette CF-104)
C9	100 mfd, 15v ultraminiature electrolytic capacitor (Lafayette CF-126)
C1	2-gang tuning capacitor, A-123 mmfd, B-78 mmfd (Lafayette MS-261)
L1	miniature antenna loop (Miller 2003)
L2	transistor oscillator coil (Lafayette MS-265)
L3	1st IF transformer, 455 kc (Lafayette MS-268)
L4	output IF transformer, 455 kc (Lafayette MS-269)
L5	transistor driver transformer 10K:500 ohms (Lafayette TR-96)
L6	transistor output transformer 500:3.2 ohms (Lafayette TR-95)
TR1	transistor (RCA 2N412)
TR2	transistor (GE 2N168A)
TR3	transistor (GE 2N241A)
D	diode (Raytheon 1N66)
B	9v battery—6 penlite cells in series (RCA VSC74)
J	miniature phone jack (Lafayette MS-282)
SPKR	2½" PM speaker, 3.2 ohm (Lafayette SK-65)
1	2-cell battery holder (Lafayette MS-138)
1	4-cell battery holder (Lafayette MS-170)
1	miniature perforated board for front panel (Lafayette MS-305)
1	miniature perforated board for chassis (Lafayette MS-304)
1	miniature knob (Lafayette MS-185)
1	pointer knob (Lafayette KN-40)
1	2 x 3¾ x 6¼" Bakelite case (Lafayette MS-216)
	For earphone listening, use a 2K earphone (Lafayette MS-268)

Parts available from Lafayette Radio, 165-08 Liberty Ave., Jamaica 33, New York.

The steps in the alignment procedure are: 1) Adjust the IF transformers. 2) Adjust the tuning capacitor trimmers at the high frequency end of the broadcast band. 3) Adjust the oscillator coil slug at the low frequency end of the band. 4) Repeat step 2. A signal source is required to carry out the alignment procedure. This source may be an RF signal generator or it may be an ordinary broadcast receiver if you don't have, or can't borrow a signal generator.

To adjust the IF transformers, connect the high side of the signal source through a .01 *mfd* capacitor to the stator of C1A (the antenna terminal), and the low side to set ground. With the signal source tuned to 455 *kc*., adjust the slugs of L3 and L4 for maximum output. Keep the signal from the source so weak that you can barely hear it (to minimize AVC action). Adjust the volume control to the point where the signal is loudest. The slugs of L3 and L4 are accessible through the holes in their bottoms. Use a small screwdriver, preferably one with very little metal in it such as a radio-TV serviceman's alignment tool.

After IF alignment is completed, disconnect the signal source.

You should easily be able to complete the remainder of the alignment procedure with broadcast station signals. Tune in a weak station between 1300 and 1450 *kc*. Increase the antenna trimmer capacity. If this increases the speaker output, adjust this trimmer for maximum speaker output. If the volume decreases, repeat the procedure.

Next, tune the receiver to a station between 550 and 650 *kc*. Detune C1 slightly to one side and adjust the slug of L2 for maximum output. If this output is greater than the previous output, repeat the process till the most sensitive point is found.

If the output is less than the previous output, detune C1 in the other direction and adjust L2 till the point of maximum output is found.

Finally, repeat the alignment procedure at the high-frequency end of the band. This is necessary since the adjustment of L2 has some influence on the high frequency end of the band, too. Capacitor C1 may be tracked across the broadcast band by bending the outer plates of C1A, but the process is tedious and not always worth the effort.

You may experience oscillation at high volume control settings, but this oscillation will occur beyond the actual maximum volume point and is therefore harmless. But if you wish to eliminate it, add a resistor and .01 *mfd* capacitor in the volume control circuit as shown in Fig. 7. The resistance value should be determined experimentally. It will be between 500 ohms and 1K in most cases.

This three-transistor portable may be used as an amplifier tuner by connecting a 10K resistor from C of TR3 to the negative voltage line. This resistor provides dc return for the collector of TR1 when a plug is inserted in the jack. If the amplifier to be used with the tuner does not have a capacitor in series with the input, provide one of about 0.1 *mfd* capacity. The connection of the 10K resistance will have negligible effect on the loudspeaker or headphone performance of the set. The Lafayette MS-281 plug fits the jack and should be used in making the amplifier connection cable.

The receiver may be equipped with a calibrated dial to simplify station finding. The calibrations may be painted on the panel face or many be placed on paper with India ink. A sheet of celluloid or clear plastic placed over the dial scale will protect it.

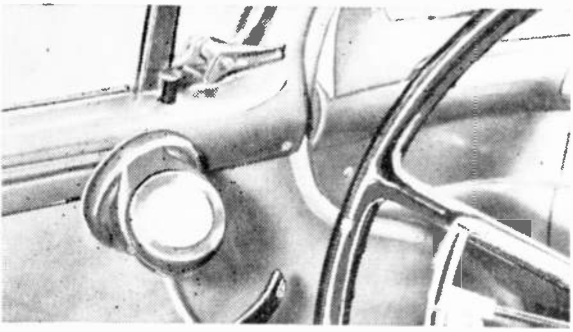
Both the scale and its plastic protector can be held in place by the three screws which fasten the variable capacitor.

The tone and volume of the set can be improved by placing a thin sheet of cardboard between the back of the panel and the components.

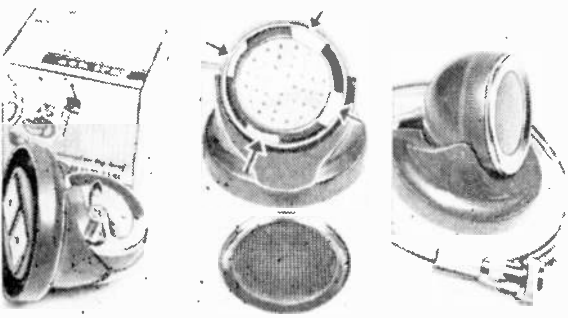
Mobile Mike Mounts Anywhere

A 98¢ magnetic ash tray makes the base

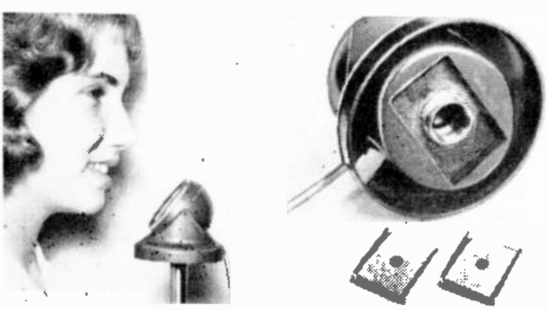
By ART TRAUFFER



Use a layer of thin tape over the magnet surfaces to keep from marring metal surfaces. Location of the mike improves CB transmission.



The mobile ash trays (left) come in various colors. Shock mount the mike (center) with four small pieces of powder puff plastic foam. Completed unit (right) shows slot cut in rear of base to clear cable.

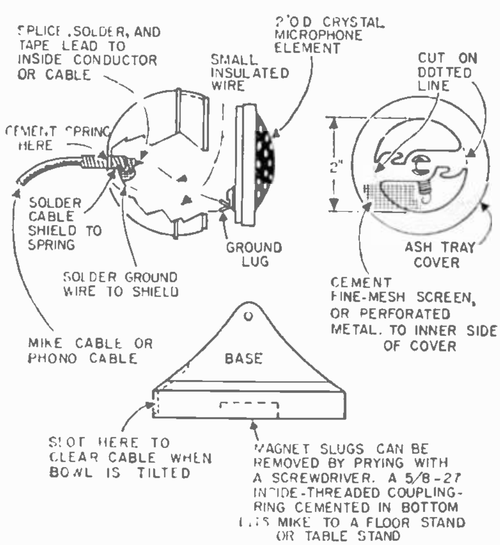


To mount the mike on a table or floor stand, remove the magnets and install a ⅝"-27 inside threaded cable connector coupling ring.

THE unusual feature of this mike is that you can instantly mount it at any point on a metal surface. If you are on the air with a mobile ham station or a Citizens Band transceiver, the mobile mike will free your hands for driving and be located at optimum distance for good transmission.

If you use a tape recorder in car, office, or shop, you'll find you can hang your mike on any nearby steel object. The magnets will adhere to a cabinet, a pipe, a drafting lamp, or to the steel variety of venetian blind.

If you should be in the rare place where there is no iron or steel, you can still hang the mike by using a keeper plate made of a small scrap of sheet iron or steel. The plate can be taped, nailed, or cemented to a wall, or can be concealed behind thin paper, glass, or veneer.



Solder the mike to the cable first. Then slip the spring over the cable and feed through the hole in back of the bowl from the inside. Use sponge rubber or foam to shock mount the mike. Wire the cable connector last.

MATERIALS LIST—MOBILE MIKE

Amt. Req.	Size and Description
1	mobile magnetic ash tray (Sears, Roebuck Stores, 98¢)
1	2" diameter crystal mike element or phono cable (Lafayette Radio PA-27, $1.49)
	lengths of light-weight mike cable (Belden #8411)
1	Amphenol 75-MC1F mike cable connector, or equal
4"	22 or 24 ga. flexible, insulated wire (for connecting mike element to cable)
1"	3/16" O.D. spring (cut from dime store curtain spring)
2"	square of fine-mesh screen, or perforated metal
Opt.	coupling-ring having ⅝"-27 inside threads, removed from mike cable connector

Dry Battery Tester-Charger

A single unit to test and charge flashlight, transistor radio and other small batteries

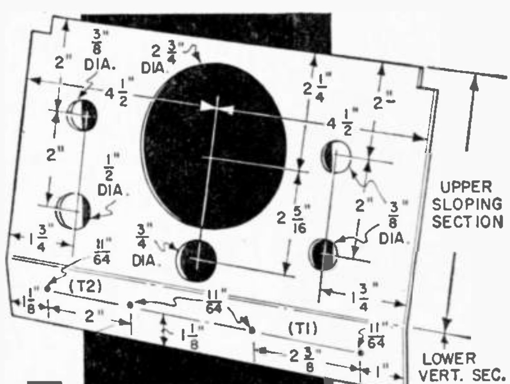
By W. F. GEPHART

1 Overall view of charger. Battery clip arrangement may be varied to meet individual needs.

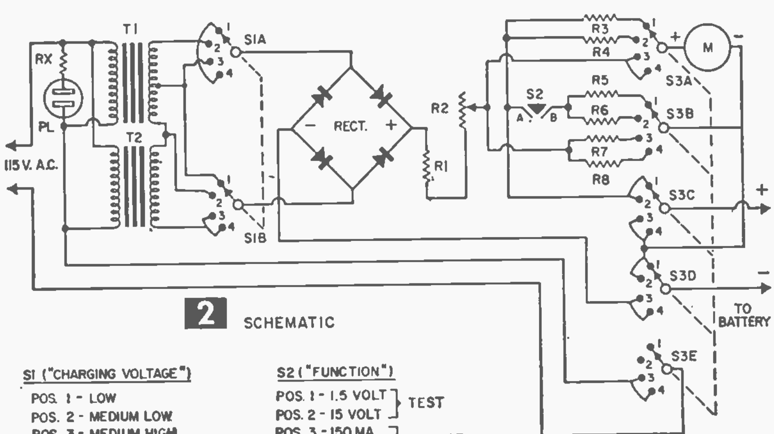
RECHARGING or boosting small dry batteries can be worthwhile if you have several flashlights, battery radios or other battery-powered equipment. Properly used, a charger can triple or quadruple the lift of batteries, making the investment in a charger worthwhile. The unit shown in Fig. 1 also includes a tester to show when "recharging" is desirable. (Since dry batteries are essentially primary cells in which a chemical reaction takes place, true recharging is not possible. However, rejuvenation, which will extend the life of the cells, *is* possible. We'll call this recharging.)

Recharging must be done before the battery is completely exhausted. New batteries usually read about 1.5 *v* per cell (without load) on the average meter. Under normal load (about 25 *ma* for a battery made up of penlight cells, and about 150 *ma* for the larger flashlight batteries) the voltage of a fresh cell should not drop more than 10%. Thus, a type "D" flashlight battery in top condition ought to test at 1.5 *v* or better without load, and not less than 1.35 *v* with a 150 *ma* load. When it drops below these levels, it should be recharged. Recharging is not too effective when the voltage (with or without load) is below two-thirds of the new-condition voltage.

Bear in mind, too, that the battery must be placed in service promptly after recharging. The shelf life of recharged batteries is short (probably due to the limited chemical action that takes



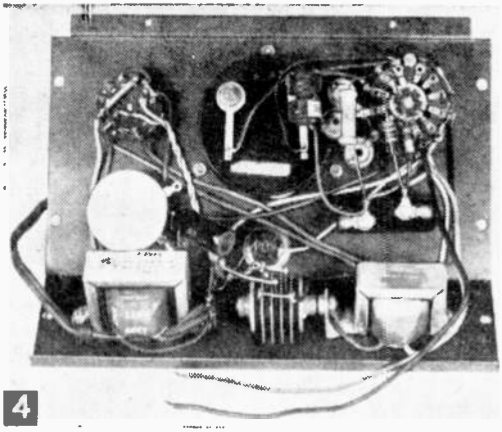
3 PANEL LAYOUT (FRONT SIDE)



2 SCHEMATIC

S1 ("CHARGING VOLTAGE")
- POS. 1 - LOW
- POS. 2 - MEDIUM LOW
- POS. 3 - MEDIUM HIGH
- POS. 4 - HIGH

S2 ("FUNCTION")
- POS. 1 - 1.5 VOLT } TEST
- POS. 2 - 15 VOLT } TEST
- POS. 3 - 150 MA. } CHARGE
- POS. 4 - 15 MA. } CHARGE



4

Inside view of unit. All parts are mounted on back of front panel.

MATERIALS LIST—BATTERY CHARGER

Desig.	Description
Rx	56K, ½ watt (required only if not included in PL)
R1	20 ohm, 1 watt
R2	200 ohm, 4 watt potentiometer (Mallory M200PK)
R3	1500 ohm 1% precision (see text)
R4	15K 1% precision (see text)
R5	10 ohm, ½ watt
R6	330 ohm, ½ watt
R7	.66 ohm 1% precision (see text)
R8	7.14 ohm 1% precision (see text)
S1	two-pole, 4-position rotary switch (Mallory 3226J)
S2	SPST push button, normally open
S3	five-pole, 4-position rotary switch (Mallory 1335L)
T1	6.3v CT 1 amp filament transformer (Merit P-2944)
T2	6.3v ½ amp filament transformer (Merit P-2964)
Rect.	bridge-connected selenium rectifier: a-c input—15 v maximum, at 200 ma (Federal 1016)
PL	pilot light holder for NE-51 lamp (Dialco Series 95408X and 942208 have built-in resistor Rx)
M	0-1 milliammeter
	Steel cabinet, 6½ x 7¼ x 9" (Bud C-1585), NE-51 lamp, 3 knobs, 2 binding posts, battery holders as desired, line cord, miscellaneous hardware

place). Even so, the drop in voltage after charging is the greatest in the first 24 hours.

No one seems quite sure what actually happens in dry battery recharging, and some experimenters claim the best results with *ac* charging voltages, some with *dc*, and some with a combination. This unit uses unfiltered, fluctuating *dc*, which seems to give the best results in the shortest time. Filtered *dc* (secured by placing a large capacitor across rectifier output) seems to give about the same results, but requires a charging time of 12-20 hours.

Here are some results with unfiltered *dc* and an hour's charging time:

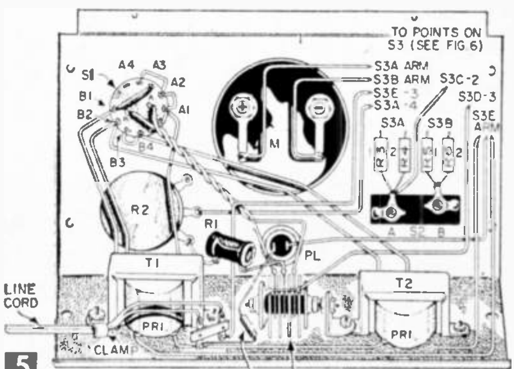
Type Battery & Service		Before Charge	Immediately After Charge	2-5 Days Later*
Two "D" Cells	No Load	1.35 v	1.52 v	1.40 v
(Flashlight)	Load	1.20 v	1.37 v	1.35 v
Three "D" Cells	No Load	1.33 v	1.40 v	1.35 v
(Strobelight)	Load	1.15 v	1.33 v	1.30 v
Two "C" Cells	No Load	1.35 v	1.60 v	1.45 v
(Flashlight)	Load	1.15 v	1.50 v	1.35 v
9 v Transistor#	No Load	7.5 v	8.7 v	8.0 v
(Radio)	Load	2.0 v	7.2 v	6.0 v

* shelf life time; not in service
# charged at 9 ma; all others charged at 100 ma

We see that particularly in the case of the transistor battery, recharging is not too effective when the battery nears exhaustion. The charging rate must be fairly low, with a range of 5-30 *ma* recommended for batteries made up of penlight cells, and a range of 50-200 *ma* for the larger cells, such as "C", "D", and "A" cells.

Schematic Fig. 2 shows that switch S_3 controls the function of the unit. On Positions 1 and 2, used for testing, proper meter multipliers are switched into the circuit for reading the battery voltages, and load resistors are cut in by pressing switch S_2. When switch S_3 is on Positions 3 and 4, *ac* power is on, and the *dc* output is fed through the meter (with proper current shunts) to the battery, with terminal polarity reversed. The proper charging voltage and current is selected by switch S_1 and rheostat R_2. Two filament transformers, with their secondaries wired in series through S_1, provide *ac* input voltages to the rectifier of 3.15, 6.3, 9.45, and 12.6, which are sufficient for all batteries up to 9 volts. Resistor R_1 is a limiting resistor to prevent the current from reaching excessive levels.

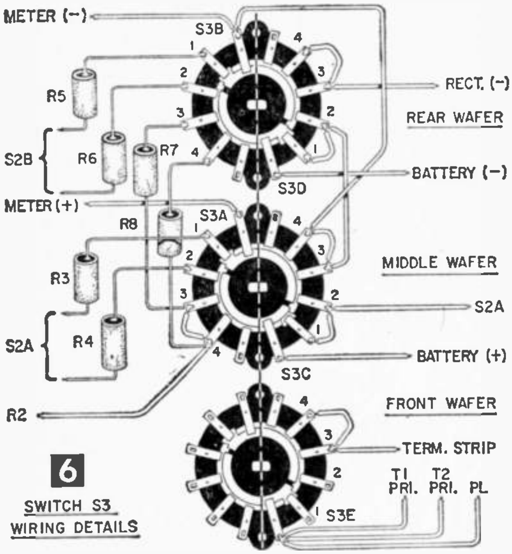
All parts (except battery holders and terminals) are mounted on the front panel of a small sloping-front cabinet, as shown in



5 PICTORIAL

Figs. 4 and 5. The layout for the panel is shown in Fig. 3, except for the meter mounting screw holes, which should be drilled to fit the meter being used.

The values shown for resistors R_3, R_4, R_7 and R_8 are applicable only to a 0-1 *ma* meter with an internal resistance of 100 ohms. This is a standard 1000 ohms/volt movement, but values for other meter movements can be calculated with the formulas at top of the next page for the ranges shown on Fig. 2:



6 SWITCH S3 WIRING DETAILS

$$R3 = \frac{15 - (Im \times Rm)}{Im} \qquad R4 = \frac{15}{Im}$$

$$R7 = \frac{Im \times Rm}{.014} \qquad R8 = \frac{Im \times Rm}{.150}$$

Im is the full scale deflection of meter in amperes, Rm is the internal resistance of meter in ohms.

Wire the primaries of the transformers and pilot light first. Then check polarity of the secondary leads of the transformers so that series wiring will give 12.6 *v*. If the polarity is incorrect, the two secondaries will buck each other, and give no output voltage when wired in series. Complete the wiring.

The selection of the number and types of battery holders mounted on the cabinet will depend on individual needs. Two binding posts, wired in parallel with the battery holders, are also provided. Several sets of leads, using the most often needed battery plugs can then be used with the binding posts for those batteries that do not fit in the holders.

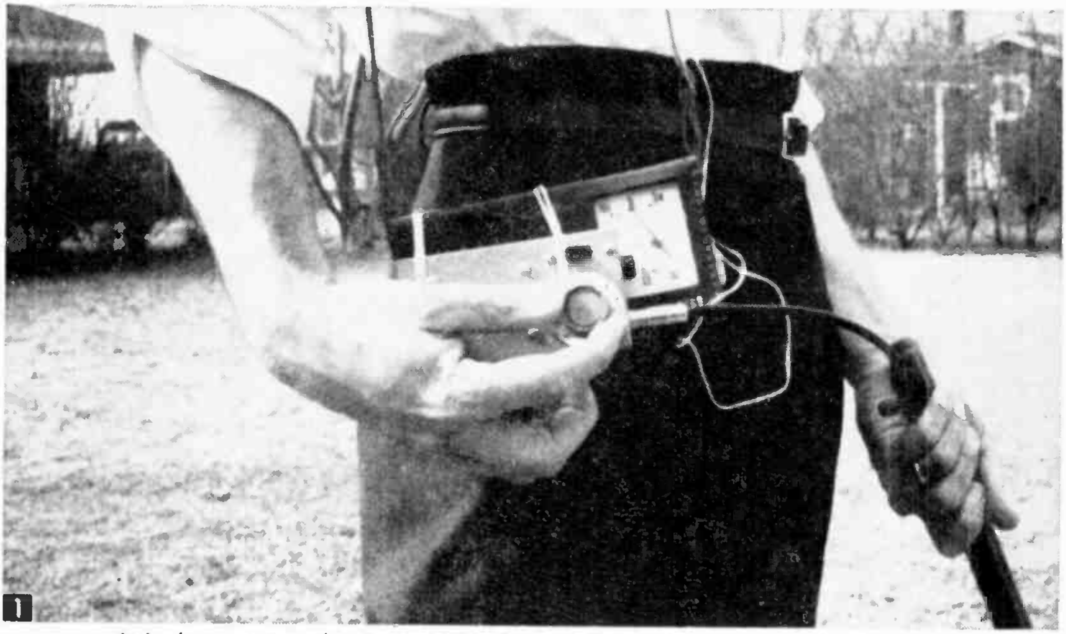
To use the unit, plug it in, turn S_1 to "Low", R_2 to full counterclockwise position, and S_3 to "15V Test." Put the batteries in the proper holder (or attach to leads), and switch S_3 to the appropriate scale and read the no-load voltage. Then press S_2 to read the voltage under load. Resistor R_5 provides a 150 *ma* load with 1.5 *v*, and R_6 provides a load of about 14 *ma* at 4.5 *v*, 18 *ma* at 6 *v*, and 27 *ma* at 9 *v*. Next, switch S_3 to the desired charging current range, and set the charging rate by adjusting S_1 and R_3.

Generally, charging for an hour or two at the rates mentioned above will be effective. The rate may be increased, but under no conditions should the battery be permitted to get warm. Longer charging times can be used, with varying effectiveness, depending on the charging rate and battery condition, but the unit should be watched. Sometimes excessive charging, either in current rate or time, seems to break the cell down, and the current rises, increasing the damage.

Piggy-Back Metal Locator

A one-transistor project for finding loose gold and other buried treasures

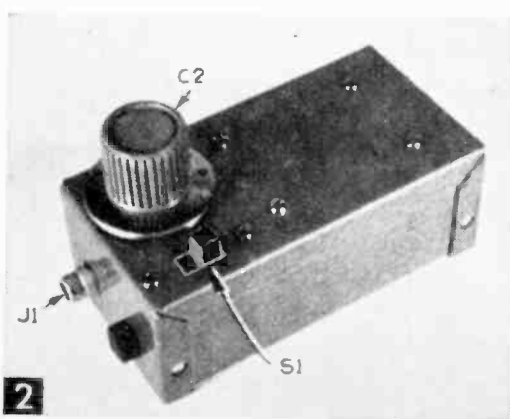
By JOE A. ROLF, K5JOK



A simple generator and probe combine with a portable transistor radio to make this locator.

EVEN the novice builder should be able to complete this simple transistorized metal locator in a few hours, yet it is sensitive enough to detect metal objects buried under 6 in. of earth—coupled with any inexpensive transistorized portable radio. The cost of the entire project will be less than $8.

Basically, all metal locators consist of three elements: an RF generator with a sensing probe, a reference oscillator, and a detector-amplifier system. In operation, the frequency of the generator is changed when the probe is brought near a metal object and moves away from the frequency of the reference oscillator. This change in frequency between the two signal sources is detected and indicated by the detection-amplifier portion of the circuit.

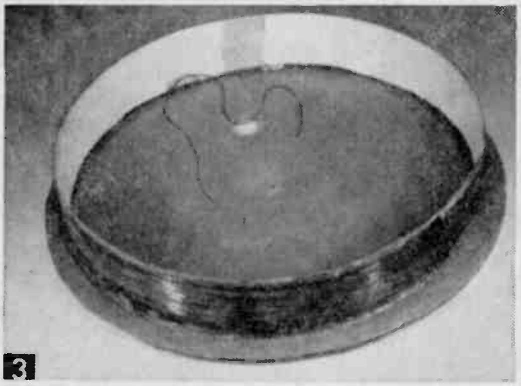


The entire generator fits into a handy Bud Minibox.

From this explanation, it can be seen that even a simple metal locator stands a good chance of becoming an awesome piece of circuitry—that is, until you stop and realize that a transistorized radio already contains most of what you need. If a local radio station is used as the reference oscillator, and the receiver as the detector-amplifier section, the generator and probe is all that you need in order to build a fairly good metal locator.

Construct the Probe Assembly First. This portion, which consists of L2 and a connecting cable, will determine the overall sensitivity of the completed unit. In fact, you may want to experiment by designing your own probe.

Wrap a layer of wax paper around a 7-in. cylinder and tape in place at the edges. Next, cut a strip of heavy cardboard, or poster pa-



3 Wind the sensing coil of the probe on a cardboard form and place it in a 9-in. cake pan.

4 Make a bracket for the handle and attach it to the cake pan.

per into a 1¼-in. strip and tape over the wax paper to make a 7-in. dia. coil form for L2. When secured, close-wind 40 turns of #26 enameled wire on the form, starting about ¼ in. from one edge. As turns are added, secure them with small pieces of tape. Tape the beginning and end leads in place, leaving them about 6 in. long, and give the completed coil several coats of Q-dope. When the coil has dried sufficiently, the wax paper will allow the form to be slipped off the cylinder easily. Glue the completed coil to a 7¾-in. cardboard disk as shown in Fig. 3.

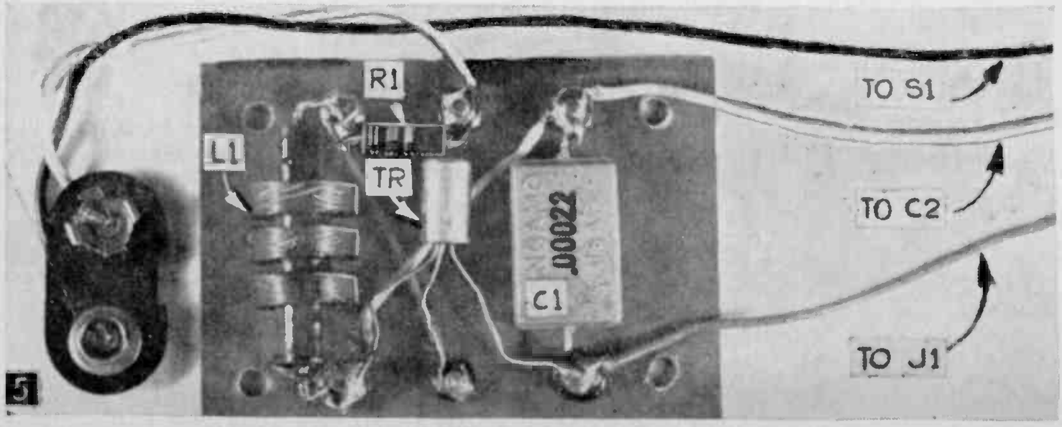
Mount the disk inside a 9-in. aluminum cake pan, and secure it by means of the washer and screw which mount the handle bracket shown in Fig. 4. Next, attach a 4-ft. broom or other handle to the probe.

The Cable, which connects the probe to the RF generator, is a 3½-ft. piece of RG-59/U 72-ohm coax. It connects to the leads of L2 at one end, and plugs into the generator at the other by means of a phono plug. This cable forms part of the capacity of the probe and should not be longer than 4 ft. at the maximum. Tape the cable to the handle of the probe to prevent it from becoming tangled in operation.

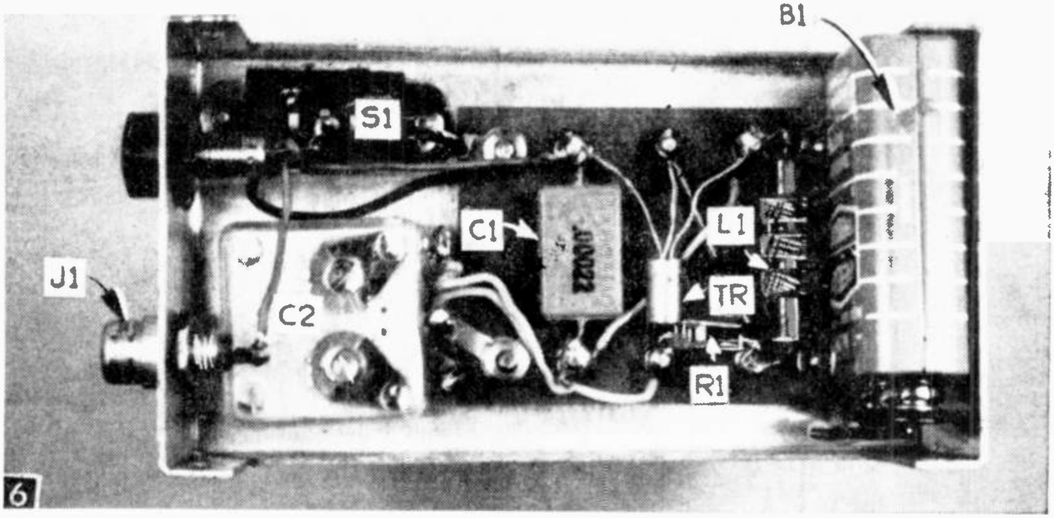
Construct the Generator with the help of Figs. 5 and 6. Mount the transistor, L1, R1, and C2 on a Bakelite terminal board as shown in Fig. 5. Then bolt the board to the bottom of the box. The terminals are 2—56 x ¼-in. screws secured to the board.

Mount the tuning capacitor C2 and the on-off switch S1 side by side, and J1 to the end plate of the box. Note particularly the pin jack next to J1. This jack can be omitted, but was included as a possible means of coupling to the receiver when needed. It is not necessary to make a direct circuit connection to this jack, as sufficient coupling will be obtained by placing the lead from J1 nearby. The battery B1 fits snugly at the opposite end of the Minibox.

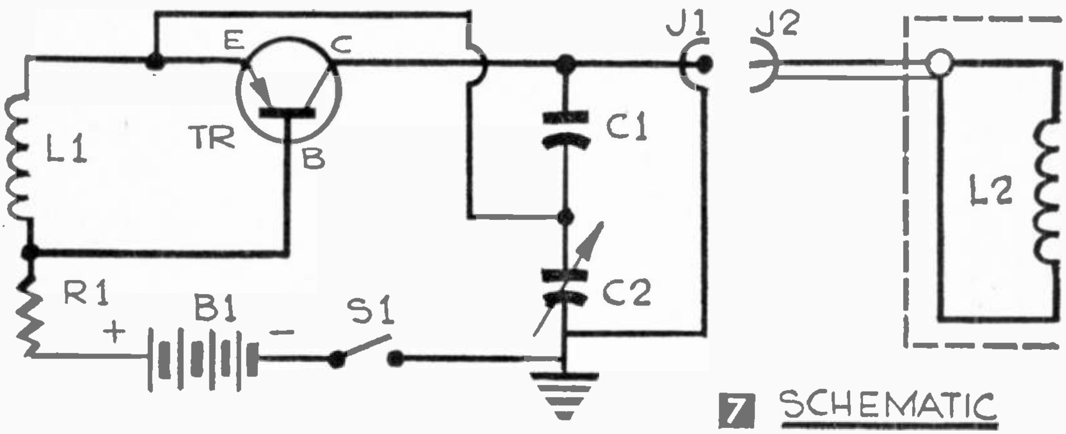
Testing the Unit. When wiring is completed, plug the probe into J1 and turn the unit on. The circuit can be checked by tuning the transistor radio to a moderately strong station at the low end of the broadcast band and rotating C1 slowly back and forth. A whistle will be heard when the oscillator is tuned across the station, indicating that the unit is functioning properly.



5 Mount the parts on the Bakelite board before putting it into the cabinet.



Internal view showing components and wiring.



7 SCHEMATIC

MATERIALS LIST—METAL LOCATOR

Desig.	Description
B1	9-v. transistor battery (Eveready #216) or equivalent
C1	220-mmf mica or ceramic capacitor
C2	365-mmf variable capacitor, miniature transistor type (Argonne) or equivalent
J1	female phono chassis jack (Switchcraft 3501-FP) or equivalent
J2	male phono plug (Switchcraft 3502) or equivalent
L1	1-mh RF choke (National R-50 1 mh) or equivalent
L2	40 turns #26 enamel wire closewound on 7-in. form as described in text
R1	1000 ohm, 1/2 watt carbon resistor
S1	SPST slide switch
TR	2N412 RCA transistor, or equivalent
4-5 ft.	RG-59/U coaxial cable
1	phone tip jack
1	CU-2116 Bud Minibox, or equivalent
1	bakelite board, 1/8 x 1 5/8 x 2 1/4 in.
Misc.	2/56 x 1/4-in. screws, scrap aluminum, knob, 9-in. cake pan, small battery clip with leads

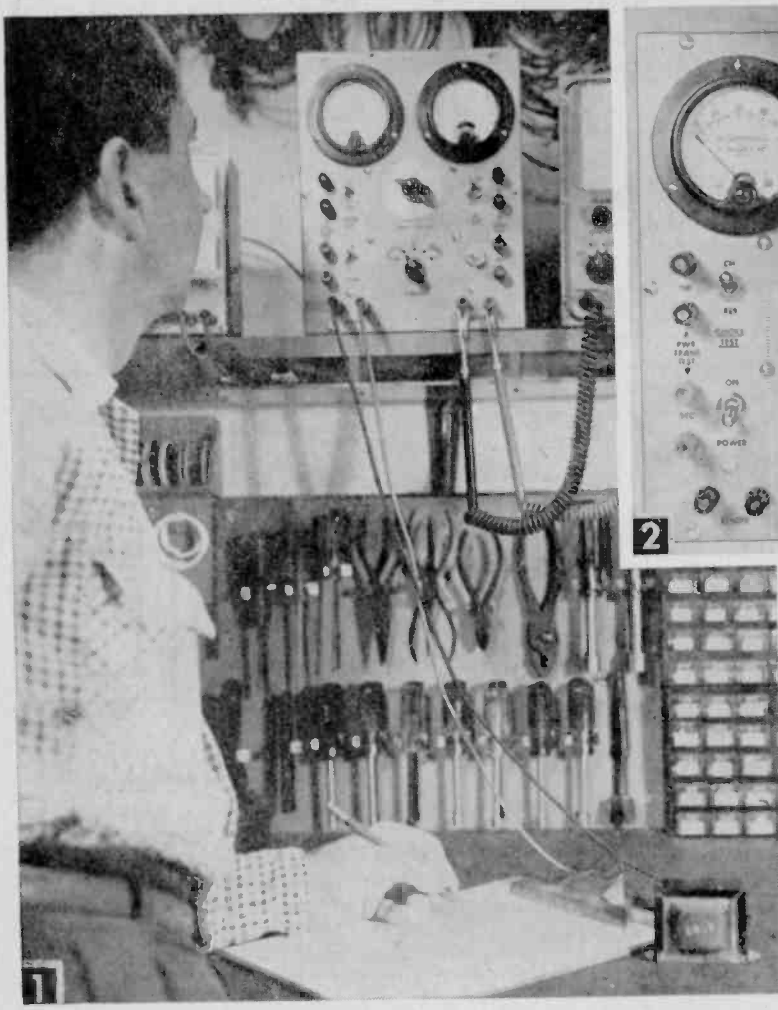
The generator can be attached piggy-back to the transistorized receiver by means of two heavy rubber-bands. Tune the receiver to a station at the low end of the broadcast band, as when testing, and rotate C1 back and forth until the generator signal is zeroed with the station's frequency. This will be evident when the whistle disappears, but reappears when C1 is moved either way.

Next, slowly move the probe back and forth over a fairly large metal object. You will note that the whistle will reappear as the probe approaches the metal. A little practice in tuning the oscillator and moving the probe will be necessary for the best results. In some cases, sensitivity will be improved if the antenna jack of the receiver is connected to the pin jack with a short piece of insulated wire.

The depth at which objects can be detected with this locator is determined by the type of earth and the size of the object. Large metal objects can be detected at greater depths than smaller objects. Greater depths will be possible in dry sandy earth than in heavy moist earth. With practice, however, it is actually possible to get an idea of how deep and how large the object is that you've located—a good thing to know in case you care to dig it up!

Iron-Core Choke and Transformer Meter

Home-built unit will measure inductance, saturation currents, and impedance ratios accurately



Front view of unit which, with VTVM, will make various iron core component measurements.

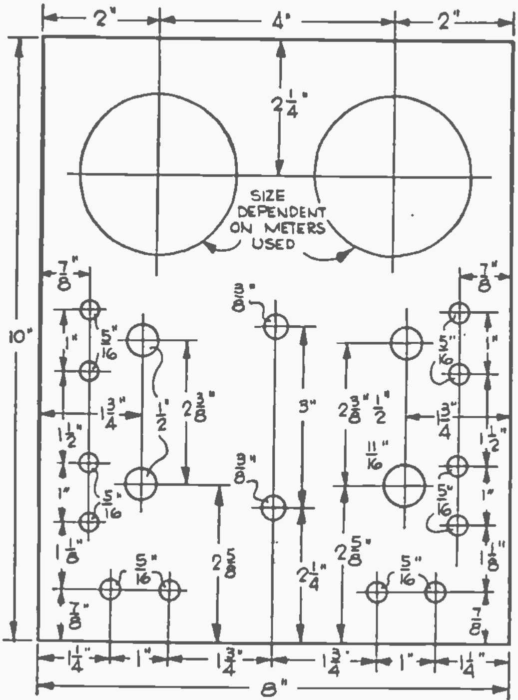
Testing a filter choke by recording the voltage at various currents and plotting an inductance curve.

By W. F. GEPHART

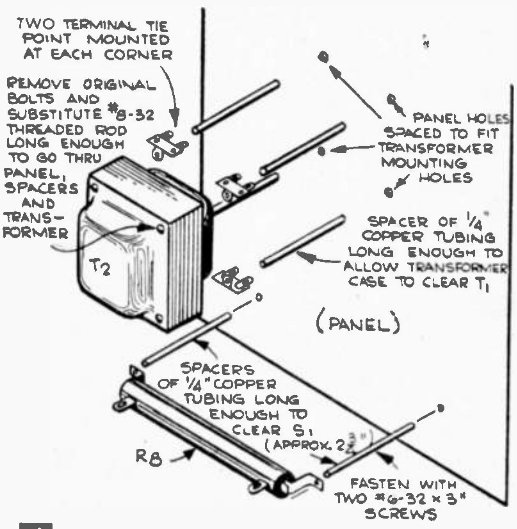
IRON core chokes and transformers, used in practically all types of electronic equipment, present some real problems to the designer and serviceman, which can be solved by the meter in Fig. 2. When current is flowing through a choke or a transformer, inductance and impedance are somewhat difficult to measure. Furthermore, manufacturing tolerances are broad in most cases, and actual values are often appreciably different than labeled values.

In power supply filter design, it is important to know the inductance of filter chokes at the current to be drawn, and also to know the exact inductance of chokes and reactors when designing low frequency resonant circuits. One circuit in the unit will permit the measurement of inductance at various currents.

Another problem frequently encountered is the measurement of AF transformer impedances. The primary impedance depends on the load impedance across the secondary; and printed ratings, when available, usually refer to a specific primary or secondary impedance. Junk box or unlabeled transformers can be



3 PANEL LAYOUT



4 T2 AND R8 MOUNTING DETAIL

used for various purposes if their impedance ratio can be determined. A second circuit in the unit permits this measurement.

The unit also provides a circuit for testing power transformers and other transformers that might be used as power transformers. In transistor circuits for instance, small audio or surplus transformers are often used as power transformers.

Although the transformer meter is designed to be used with an external VTVM, an internal VTVM can be wired-in easily enough. The unit in Fig. 2 includes internal milliammeters, but can be built to use external ones. The extra functions are by-products of the components required for the inductance-measuring circuit, and require few additional parts.

Construction. The most expensive part of the unit is the variable autotransformer, which is used for all its functions. Most of the remaining parts can be found in a junk box. Meters used in this model are surplus, but low-cost moving vane meters can be used, since a high degree of meter accuracy is not required.

Build the unit according to the panel layouts (Figs. 3 and 4), the schematic (Fig. 5), and the pictorial wiring diagrams (Figs. 6, 7, and 8). The power transformer mounts on studs behind the panel. This eliminates the need for a chassis and related wire holes and grommets. All other parts are panel-mounted or connected between tie points.

NOTE: In making tests, the unit being tested should be isolated from other equipment, since the voltage on the power transformer binding posts is connected directly to the ac line.

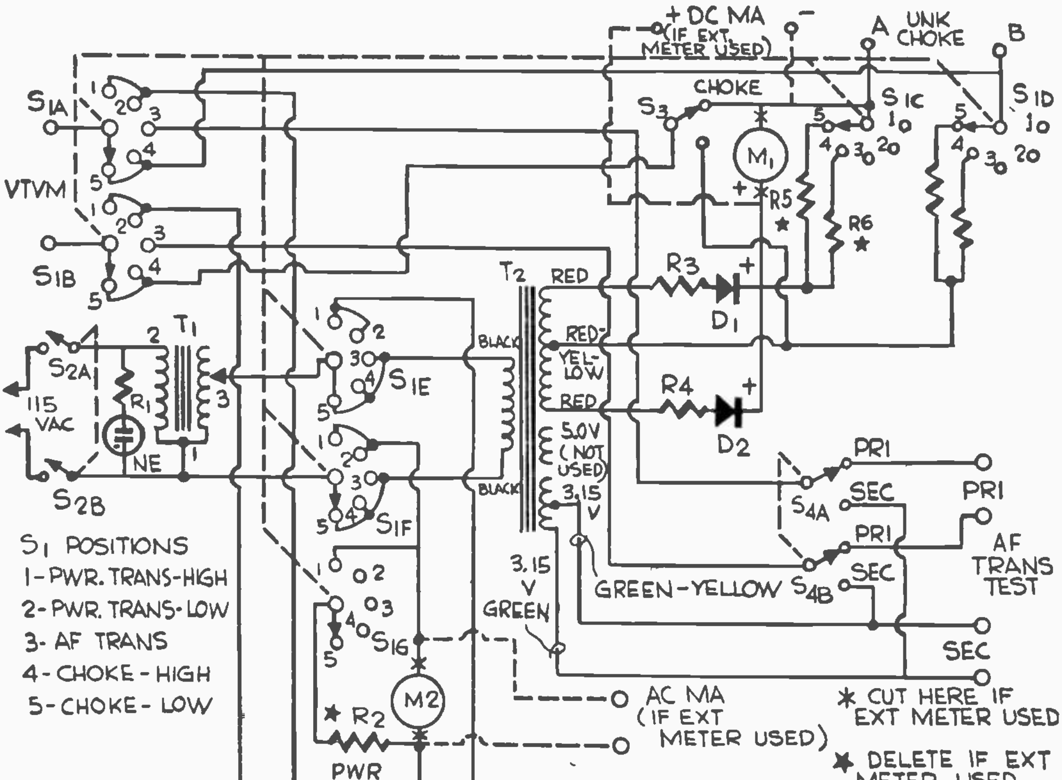
Inductance-Measuring. The simplified inductance-measuring circuit, with the actual circuit as related to the unit (Fig. 9), consists of a variable, unfiltered dc voltage source, a milliammeter, and a load resistor. The choke being measured is connected across the voltage output in series with the resistor and milliammeter. The exact voltage available is unimportant; any amount sufficient to cause readable current to flow through the resistance of the choke and resistor will do. Any power transformer furnishing around 250-350 volts dc at the maximum current to be tested will work.

To make the test, measure the ac voltages across the choke and across the resistor with an ac VTVM. (This voltage is the ac component of the fluctuating, unfiltered dc from the power supply.) The inductance of the choke at the particular dc current indicated can then be calculated by the following formula:

$$L = \frac{E_L \times R}{E_R \times 2\pi - f}$$

E_L—voltage across choke
E_R—voltage across resistance
R—resistor ohms
f—120 cycles
π—3.1416

The accuracy of this formula requires that the resistor have a resistance 3-6 times the dc resistance of the choke. It must also be large enough in ohms to provide easily-readable voltage drops, and large enough in wattage to carry the maximum current to be used in the test. For these reasons, two resistors were provided, as shown in Figs. 5 and 9.



5 SCHEMATIC

The high current range (up to 200 *ma*) uses a 1000-ohm resistor, and is primarily used for filter chokes where the dc resistance is usually 350 ohms or less. The low current range (up to 20 *ma*) has a 30,000-ohm resistor, for use with audio reactors, whose resistance may go as high as 1000 ohms. While this ratio is in excess of that mentioned above, the high value is needed to get readable voltage readings at low currents.

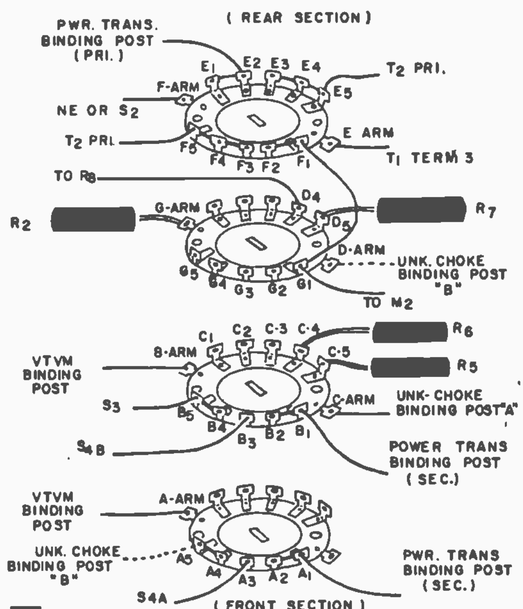
With these two ranges, meter M1 and related shunts, R5 and R6, were chosen to give full scale readings at 20 and 200 *ma*. Other ranges (0-15 and 0-150 *ma*, 0-25 and 0-250 *ma*, etc.) may be used if other meters or shunts are available.

Since the resistance values are fixed, and the value of $2\pi f$ (for 120 cycles) is 753.98, the formula can be simplified to:

$$L = \frac{E_L}{E_R} \times K \qquad K = \frac{\text{Resistance of R}}{753.98}$$

To determine the value for K for each range, use the actual measured value of the resistor instead of the marked value. Final results will depend on:

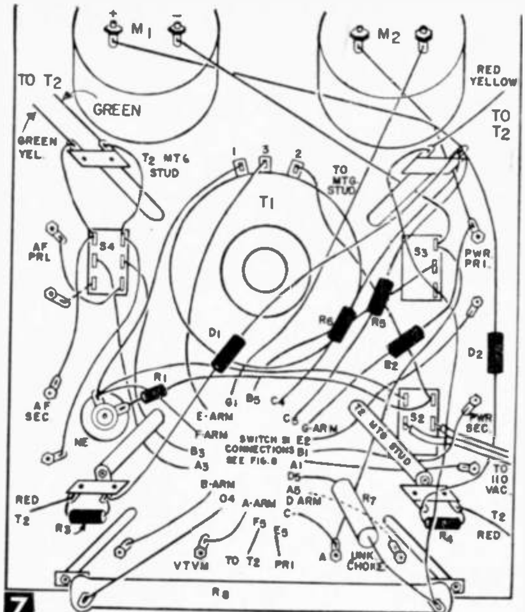
1. The accuracy of the resistance measurement used in determining K.
2. The linearity of the VTVM used, particularly when switching from one range to another.



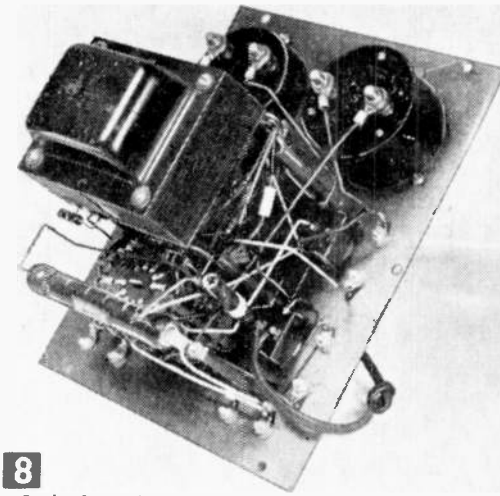
6 SWITCH 1 WIRING DETAIL

3. The accuracy of the readings taken and the calculations made.

The results of these tests may be substan-



7 WIRING (T2 OMITTED FOR CLARITY)



8 Back-of-panel view showing chassis-less construction.

tially different than the values marked on chokes. Figure 12 shows the results of a test on a standard production run filter choke, showing the measured inductance (at rated current) about 10% under the rated value. However, in view of manufacturing tolerances, stated by one company to be "from −15% to +50%," these results seem to be in line, and are probably more accurate than marked value.

Impedance-Measuring. The simplified impedance-measuring circuit and actual circuit, is shown in Fig. 11. Connect 1 volt ac across the secondary, which is set by T1, and read on the VTVM when S4 is on "Sec" ("1v STD" on panel). Throw the switch to "Pri" and read the voltage across the primary. The square of this voltage reading is the impedance ratio of the transformer, and the impedance required across one winding to match a certain impedance in the other winding may be determined by the following formula.

$$Z_p = (V)^2 \times Z_s \text{ or } Z_s = \frac{Z_p}{(V)^2}$$

Z_p—primary impedance
Z_s—secondary impedance
V —voltage reading across primary with 1.0 volt ac across secondary

For example, with 1 volt across the secondary of an unmarked output transformer, suppose you get a reading of 38 volts across the primary. This squared equals 1444. If this transformer uses a 3.5-ohm speaker, use the formula for Z_p above, and multiply 1444 times 3.5. This equals 5054, which would indicate a proper primary impedance around 5000 ohms. Readings made this way may not equal marked values, since manufacturing tolerances, except for some hi-fidelity transformers, are high.

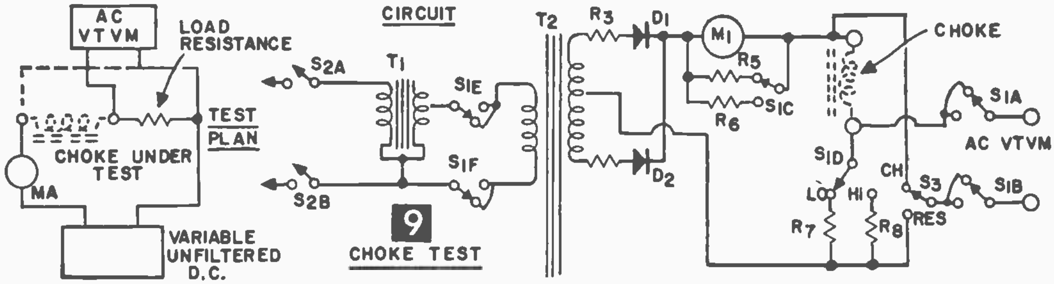
Variable AC Voltages. The third circuit in the unit is shown in simplified form in Fig. 10. This merely supplies a metered, variable ac voltage for transformer checks, which can be used in several ways.

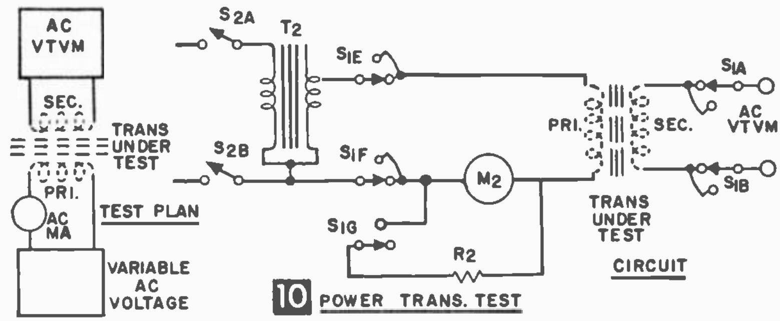
Often audio transformers can be used as power transformers for low current transistorized devices. For example, take an output transformer with a 5000-ohm, 50-*ma* primary and several secondary taps, such as 4, 8, 16, and 500 ohms. By rather involved calculations, the standing primary current could be determined if connected across the ac line, and the output voltage from the secondary taps.

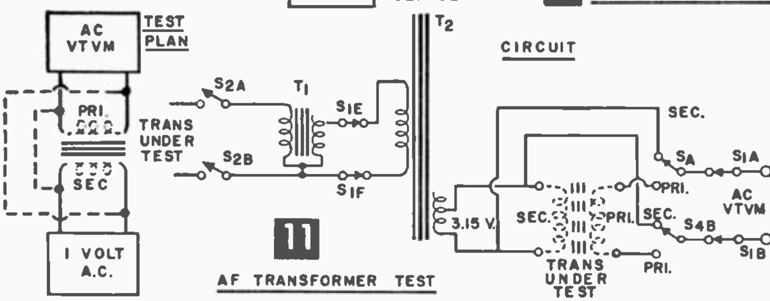
It is much easier, however, to connect the primary to the ac line through the variable transformer, connect the VTVM to the secondary, and read the output voltage. As the input voltage is increased toward the line voltage, you can also read the no-load primary current to make sure that it does not exceed rated value.

In this test, the scale on the autotransformer dial shows the approximate input voltage as it is increased. In hybrid equipment, you can sometimes secure transistor power voltages by connecting an audio transformer to filament windings of the regular power transformer in order to get odd ac voltages.

The surplus market includes many 400-cycle transformers that overheat if used at rated voltage on 60-cycle current. However, they may be used at lower voltages when the iron core does not become saturated. To determine the permissible input voltages for these units, connect one winding to the variable input voltage terminals, and gradually increase the voltage, watching the current

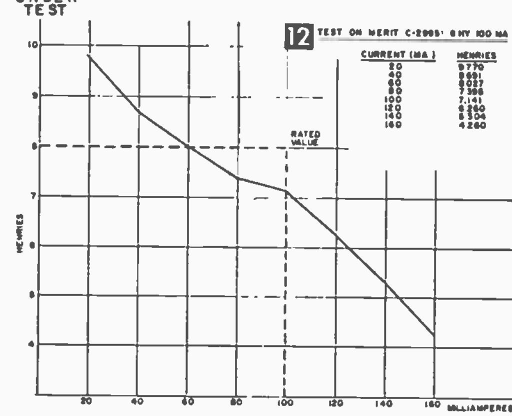






MATERIALS LIST—CHOKE METER

Desig.	Description
D1, D2	1N2484 diodes (or Sarkes-Tarzian F-6)
M1	dc milliammeter (see text)
M2	0-20 ac milliammeter (see text)
PL	NE-51 lamp
R1	56K, 1/2-watt carbon resistor (if not included in PL holder)
R2	see text
R3, R4	27-ohm, 1-watt carbon resistors
R5, R6	see text
R7	30K, 5-watt wire wound resistor
R8	1000-ohm, 50-watt wire wound resistor
S1	8 pole, 5 position rotary switch (Mallory 1345L)
S2	DPST toggle switch
S3	SPDT toggle switch
S4	DPDT toggle switch
T1	variable autotransformer 0-135 volts, 1.5 amps (Ohmite VT-2)
T2	power transformer (see text)
Misc.	12 binding posts, 2 knobs, 7 x 8 x 10-in. cabinet (Bud CU-880), tie points, hardware

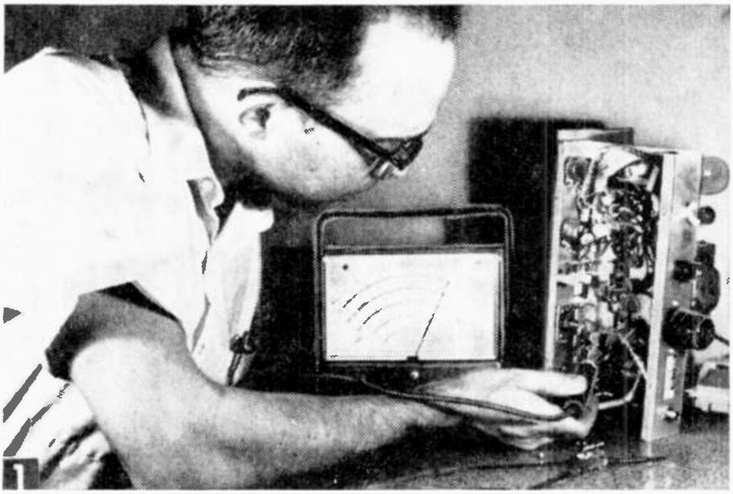


being drawn. When the current levels off and stops increasing (as the voltage is increased) the core is saturated, and the maximum 60-cycle voltage is being applied.

In this test (and in the choke test), where current ratings are unknown, watch for heating of the unit being checked. Generally speaking, an iron-core unit can be operated at any current that does not cause excessive heating. If the windings, after five minutes' operation, are only warm (as opposed to hot) to the touch, the current is probably within operating range. In cased units, remove the cover, and feel the actual windings for this "touch" test.

A dual-range ac milliammeter is best for this latter test, and the unit shown uses a 0-50 ac milliammeter M2 with a shunt R2 to give a 0-100 *ma* scale. If both low (0-20 *ma*) and high (0-100 *ma*) currents are to be read, two ranges are desirable because of the nonlinearity of ac scales, and the crowding at the lower end.

Get a Third More from Your Meter for $1.50



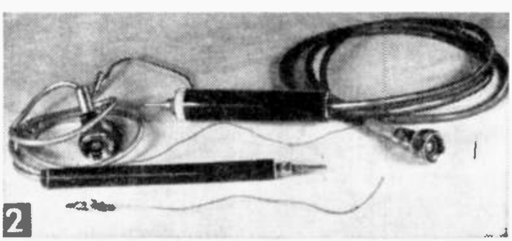
Experimenter's most commonly used checking instrument, the vacuum-tube voltmeter, is even more useful when used with an RF crystal probe.

By JOE A. ROLF, K5JOK

FEW experimenters would be without a VOM or VTVM for long, yet how many ever use these instruments to full advantage? The accessory probe in Fig. 2 costing as little as $1.50 will add a third range to your meter and enable it to do some rather amazing things.

This time-proven RF crystal probe can be easily constructed or purchased at your local supply house. Here is a brief description of its circuit, as well as information on how to build your own probe:

The two most widely used circuits are shown in Fig. 3. In Fig 3A, the .01 *mfd* capacitor is a dc isolating capacitor that permits only ac to appear across the IN34 diode which rectifies the signal so that only positive peaks are present at the resistor. The 5-megohm resistor in series with the 10-megohm internal resistance of the VTVM forms a voltage divider and .707 of the peak voltage (RMS value) appears across the VTVM input. Distributed capacity of the cable and filtering action of the resistor provide pulse smoothing and the RMS voltage from the probe can be read on the VTVM dc scales.



Two crystal probes constructed by the author. They will measure impedance, resonance, and stage gain, as well as troubleshoot receivers and transmitters.

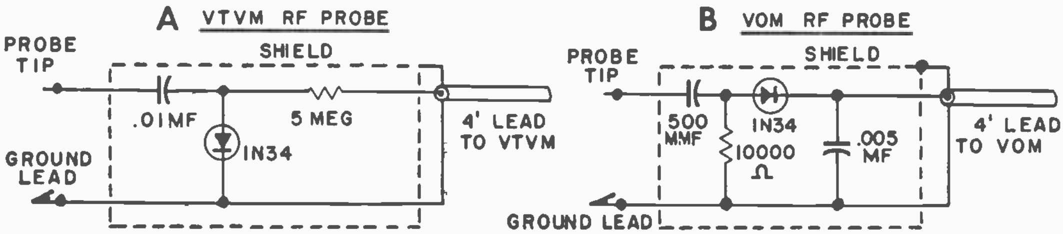
This circuit, designed for use with a VTVM, is the most practical and useful of the two shown. RF voltages of up to 20 volts at frequencies up to 200 *mc* can be measured with 10% accuracy. This probe features low input capacity (3.5 *mmfd*), plus high ac input resistance. Input resistances will range from .25 megohm at 500 *kc* to about 25,000 ohms at 100 mc. This means that when used in RF circuits, there is a minimum of loading or detuning.

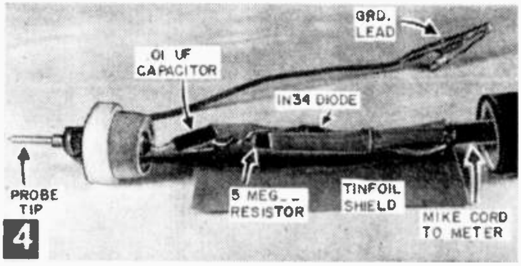
The circuit in Fig. 3B is used with VOMs of 5,000 to 20,000 ohms-per-volt sensitivity. As in the preceding description, the 500 *mmfd* capacitor is for dc blocking, but the 1N34 diode in this probe allows positive peaks to charge the .005 *mfd* capacitor, which in turn discharges through the VOM to give a current reading.

The circuit has two serious disadvantages. It must be calibrated to read voltage and its input resistance is quite low as compared to the VTVM probe. It is still a very handy VOM probe, however, since it will indicate the presence of an irregular voltage of almost any waveshape and will show changes in the amplitude of such a voltage.

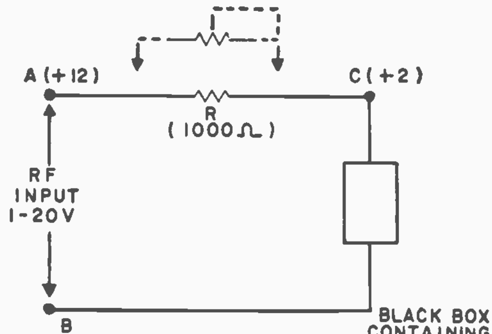
Housing for the Probes. Each unit in Fig. 2 was built for less than $1.50 each. One was constructed and slipped inside a piece of ½-in. ID bakelite tubing; the other, using the circuit in Fig. 3A, was housed in an empty plastic "Bioket" throat lozenge bottle. Interior of this probe is shown in Fig. 4. Either circuit can be housed in a metal container to

3 MOST POPULAR CIRCUITS





4 Home-built probe as it appears with housing removed.



5 CIRCUIT FOR MEASURING IMP.

simplify shielding, but there is increased danger of shorting the components when used in tight places.

The main construction considerations are insulation of components from one another and shielding. With the smaller probe, the author slipped a large piece of insulated tubing over the probe components, then inserted everything into a length of shielding from RG/8U coax. Components of the larger probe were insulated and wrapped in a piece of tinfoil as in Fig. 4. With careful construction, a home-built probe will be as effective as the commercial version at a fraction of the cost.

Now let us examine a few applications in which the RF crystal probe can be used. In the following examples, the procedures outlined are for use with a VTVM and probe, or with the VTVM ac probe at audio frequencies. Where a relative reading is required, or where small ratios or differences in percentage are involved, a VOM with probe can be used with fair accuracy. Remember, however, that the low input resistance of the VOM will result in circuit loading which must be taken into account.

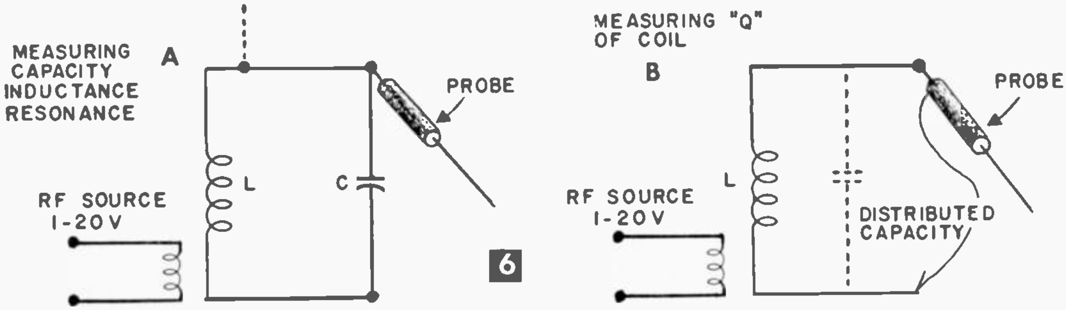
Measuring Impedance. Figure 5 shows a simple, but very useful method of measuring impedance. The impedance to be determined is shown as a "black box," since it can be any type of circuit having impedance . . . an antenna, transformer, choke, or even the input of an amplifier. A resistor, usually 1K, 10K, or 100K, is connected in series with the unknown impedance across an ac source capable of delivering 1-20 volts.

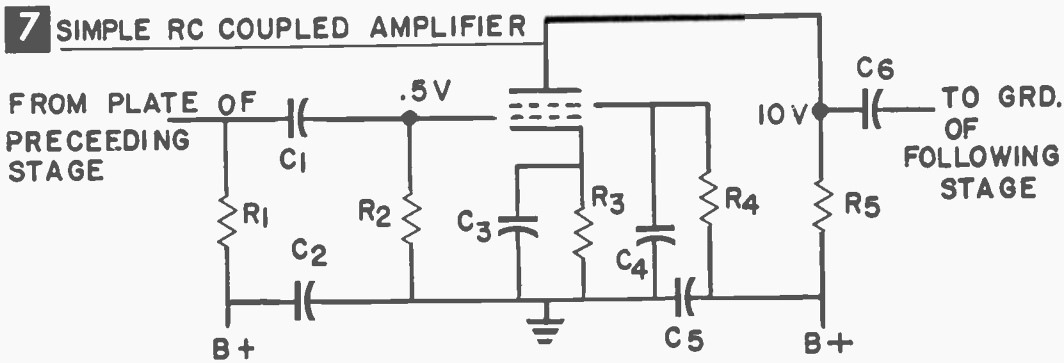
Assume that the ac input is a 1 *mc* signal and that voltage measured between points A and B with the probe is 12 volts. Next measure the voltage between points C and B. It will be 2 volts. These readings indicate a 2-volt drop across the unknown impedance, and 10-volt drop across the 1000-ohm series resistor. Voltage drop across the resistor is five times the voltage drop across the unknown impedance. Therefore, the unknown impedance must be one-fifth the resistance of the 1,000-ohm resistor, or 200 ohms, at 1 *mc*. To vary this circuit, you can insert a variable resistor in place of R and adjust it for an equal voltage drop with the "black box." The resistance of R is then equal to the impedance of the box.

Resonance, Capacity, Inductance. By measuring the voltage across a tuned circuit, you can determine the resonant frequency of the circuit, since voltage is greatest at resonance. In Fig. 6A a variable RF source with from 1-20 volts output is coupled to the circuit by a small link. When the generator is tuned to the resonant frequency of the circuit, there will be a large increase in voltage.

Assume, though, you have a tuned circuit which is resonant somewhere near 50 *mc*, but an RF generator that will tune only to 30 *mc*. The resonant frequency of the circuit can still be determined by tuning the generator from 20 to 30 *mc*. The generator's second harmonic (40 to 60 *mc*) will give sufficient indication when resonance is reached.

With the above method, it follows that unknown capacity and inductance can also be determined. If a 10-*mmfd* capacitor and an unknown inductance resonate at 50 *mc*, it is





a simple matter to calculate the unknown inductance, or vice versa.

A modification of this particular circuit is the field strength meter. If the tuned circuit is shielded and a short antenna is attached at point A, the circuit plus the probe and meter compromise a simple but effective field strength meter for antenna measurements and transmitter adjustment.

Determining "Q". An RF probe and RF generator can be used as in Fig. 6B to determine the "Q" of a coil or tuned circuit. This method is not as accurate as could be desired, but is quick and easy, and will give a good approximation. Couple a 1- to 20-volt RF source to the coil under test, with the probe measuring voltage across the inductance. Tune the generator until maximum voltage reading indicates the resonant frequency of the inductance with distributed capacity. Then tune the generator down in frequency until the voltage drops to 71% of its maximum value.

Note the difference in frequency and tune the generator above the resonant point until the voltage again is 71% of the maximum value. Add this frequency difference to the one previously noted and divide the sum into the resonant frequency. The resulting quotient is the "Q" of the coil.

Measuring Amplifier Gain. The actual gain of an amplifier, a valuable piece of information for design and service work, can be determined with an RF crystal probe. Figure 7 shows a simple RC coupled amplifier. Suppose that the probe shows .5 volt RF present across the grid input resistor R2, and 10 volts RF across the load resistor R5. Output of this particular amplifier is 20 times the input, meaning that the stage has a voltage gain of 20.

In service work, this figure can be compared with the manufacturer's service information to determine how well the amplifier is functioning. In design, this figure can be used for comparison with other circuits, or to determine overall gain of several stages.

Troubleshooting. Condition of the bypass capacitors in Fig. 7 can be checked by measuring the RF voltage across them with the RF probe. If you place the probe across C3, and find that RF is present between R3 and ground, there is evidence that C3 is either open or too small, since the purpose of this capacitor is to bypass all RF to ground. You can similarly check C1, C2, C4, C5, and C6.

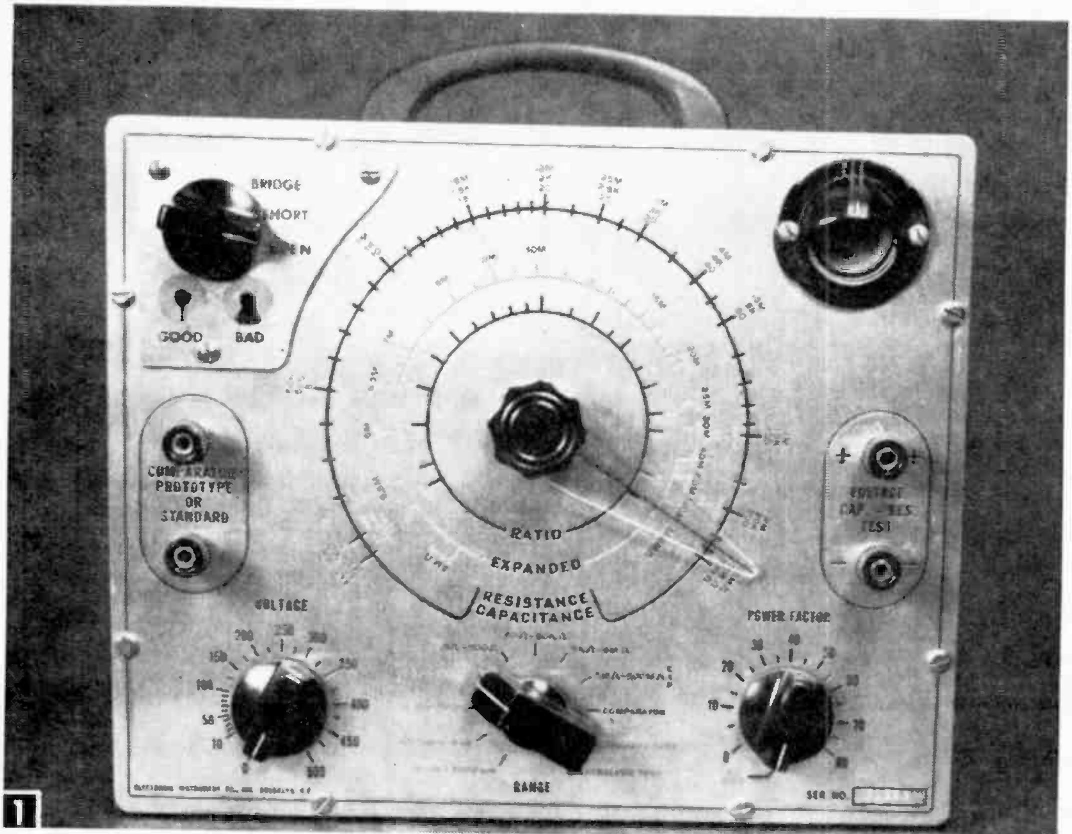
Measurement of RF voltages in receiver converter stages, or in the oscillator-driver stages of transmitters, can be helpful both in troubleshooting and tuning. To determine if an oscillator is functioning, connect the ground lead of the probe to the chassis and bring the tip near the oscillator circuit. The probe will detect any RF present, and the stage can be tuned for maximum performance without circuit detuning.

Only the most common applications of the RF crystal probe have been covered. In any case, you can see that addition of such a probe to your meter is a good investment in that it extends the meter's usefulness far beyond its normal range.

In-the-Circuit Testing for RC Bridges

A simple modification to increase the versatility of your condenser checker

By W. F. GEPHART



Only visible change on a modified Eico 950 RC checker is the small aluminum plate and switch at upper left on panel.

MANY shops and experimenters have tuning-eye condenser checkers which can have greatly increased utility with a few simple changes in their circuits (Figs. 1 and 2).

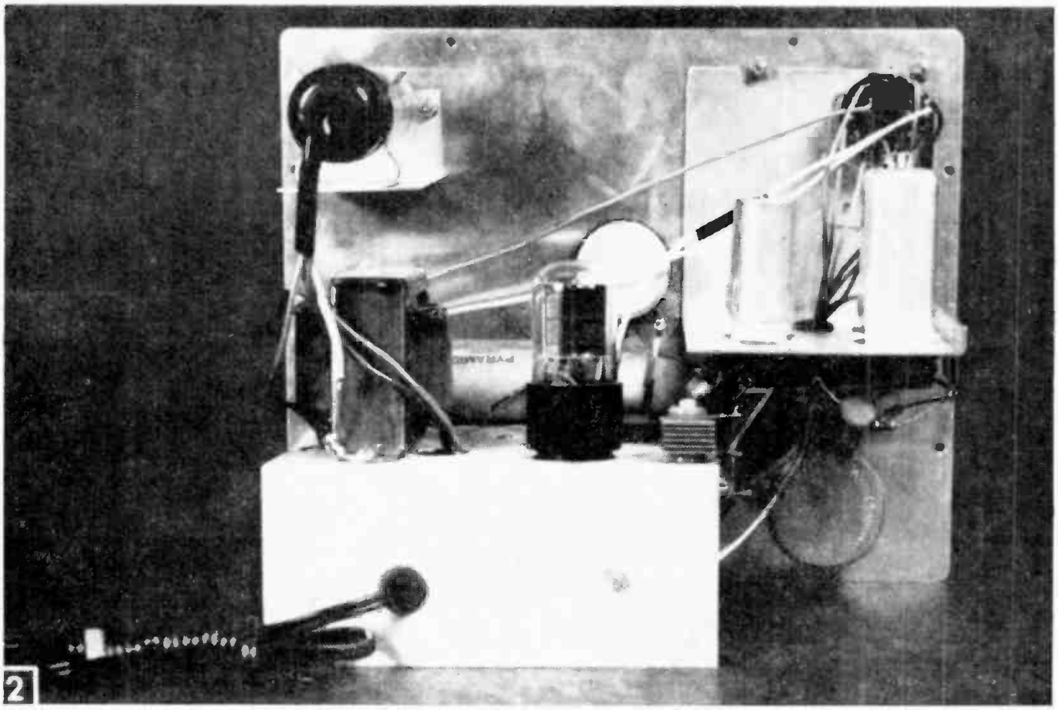
Such units as the Heathkit C-3 and Eico 950 provide an accurate means of measuring capacitance, leakage, and shorted condensers *out of the circuit*. Due to resistance that may be in parallel with the condenser, however, other units such as the Heathkit CT-1 or Eico 955 are required to check condensers *in the circuit*.

Changes you can make will enable the regular checkers to do the in-circuit testing and still retain their original advantages of versatility and accuracy for the out-of-circuit measurements.

Short and Open Tests. The in-circuit test principles are shown in Fig. 3.

In the short test, the grid of the eye tube is connected to a voltage divider with high voltage across it, while the condenser under test is connected between grid and ground. If the condenser is good, there will be a voltage drop between grid and ground (across the condenser), causing the eye to close. If it's shorted, the grid is at ground potential and the eye will open.

In the open test, connect a high frequency signal to the grid through the condenser under test. If the condenser is good, it will



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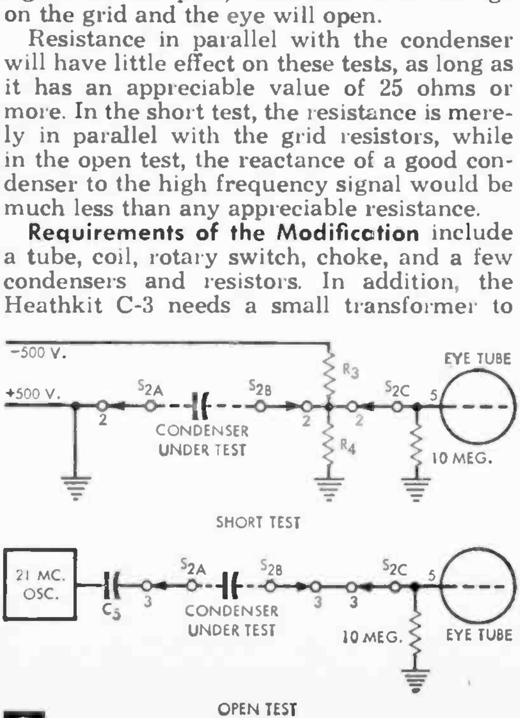
A look behind the panel of same checker discloses that most parts required for the modification are mounted on an aluminum angle in upper right corner.

pass the signal and place an RF voltage on the grid, causing the eye to close. If it's open, the signal will not pass, there will be no voltage on the grid and the eye will open.

Resistance in parallel with the condenser will have little effect on these tests, as long as it has an appreciable value of 25 ohms or more. In the short test, the resistance is merely in parallel with the grid resistors, while in the open test, the reactance of a good condenser to the high frequency signal would be much less than any appreciable resistance.

Requirements of the Modification include a tube, coil, rotary switch, choke, and a few condensers and resistors. In addition, the Heathkit C-3 needs a small transformer to



3 TEST PRINCIPLES

provide filament voltage without overloading the existing transformer windings.

The schematic in Fig. 4 indicates connections for both the Heathkit C-3 and Eico 950. The same circuit may also be used with such testers as the Knight 503, Cornell-Dubilier BF-60, Pace C-20, etc., by referring to points of connection of the three-position switch. Essentially, these switch connections are:

Arm of A section: common capacity binding post.

Terminal 1 of A section: wires that went to the above.

Arm of B section: positive capacity binding post.

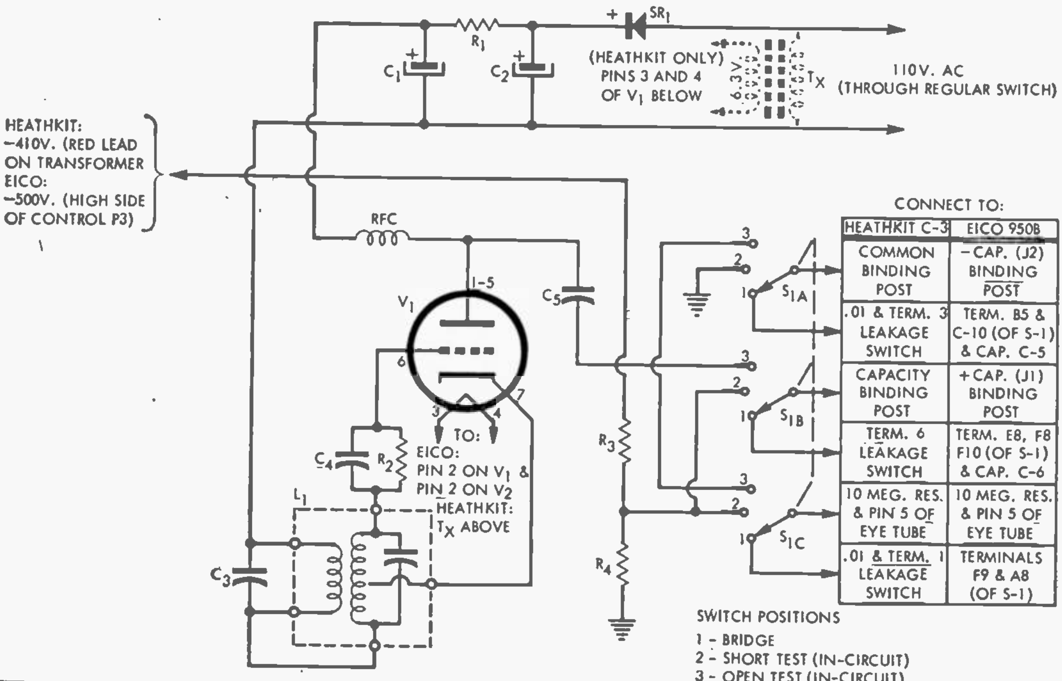
Terminal 1 of B section: wires that went to the above.

Arm of C section: grid pin of eye tube.

Terminal 1 of C section: wires that went to the above.

Mounting the New Parts. In the Eico 950, the switch was mounted in the upper left corner of the panel, as in Fig. 1. You can make an aluminum plate to cover the lettering on the panel, and place decals on the plate for the new lettering. A small aluminum chassis mounts on the back of the panel as in Fig. 2 to hold the tube and coil. The switch holds it in place.

Modifying the Heathkit C-3 is more difficult in that drilling must be done on the original chassis. You can mount the switch between the eye tube and the power factor control. Mount the tube and coil on the original chas-



4 MODIFICATION SCHEMATIC

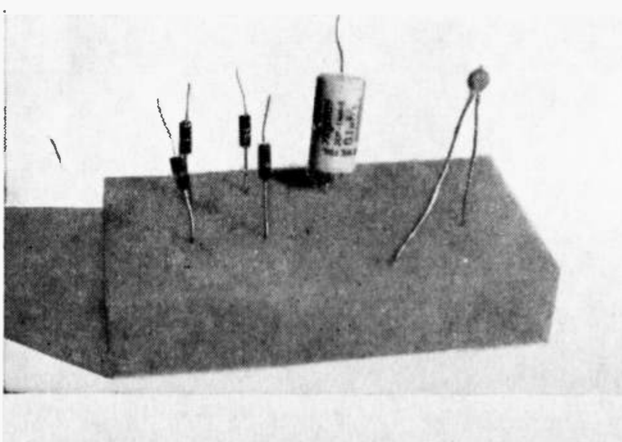
MATERIALS LIST—IN-CIRCUIT MODIFICATION

Desig.	Size and Description
R1	2000-ohm, 1-watt wirewound resistor
R2	1-megohm, ½-watt resistor
R3	.47-megohm, ½-watt resistor
R4	10K, ½-watt resistor
C1, C2	20 mfd, 150-volt electrolytic capacitors
C3	7.5-mmfd ceramic disk capacitor
C4	200-mmfd ceramic disk capacitor
C5	.01-mfd, 200-volt capacitor
L1	21.8-mc converter IF transformer (Miller #6185)
RFC	2.5-mh RF choke
SR1	65-ma. selenium rectifier
S1	3-pole, 3-position rotary switch (Mallory 3234J)
V1	6C4 tube
	Part below required for Heathkit C-3 and other units where original transformer filament winding is insufficient for additional tube:
Tx	6.3-volt, .5-amp filament transformer (Merit P-2964)

sis in a front-to-back line between the eye tube and main control. The small filament transformer can be installed in a vacant space under the chassis, in back.

Operation. Hold the test prods across the condenser being tested, by plugging them into the regular CAP terminals. Set the new switch to "short," and then to "open." If the eye tube shadow opens in either case, the condenser is bad—either shorted or open, depending on the position of the switch.

To measure capacity, leakage, or resistance as originally provided for by the bridge, set the new switch at "bridge." When making this test, the condenser being checked should be disconnected from the equipment.



Parts Holder

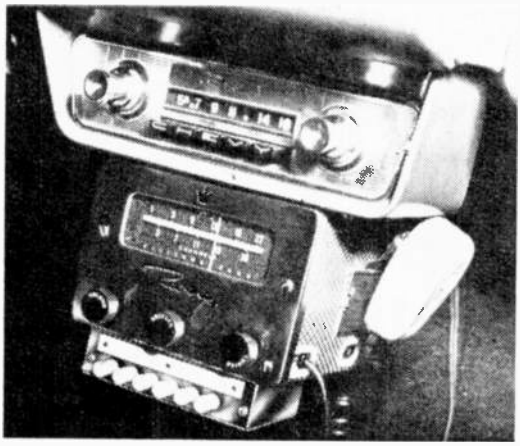
• A work bench can become a cluttered mess during the course of a construction project. As a result small parts become misplaced and frequently become hidden under schematics and tools. To avoid lost time, stick resistors, capacitors, and other small parts in plastic foam. This precaution will also prevent small parts from being pushed off the bench accidentally during the conduct of a construction effort. Plastic foam is also useful for parts storage.—F. H. FRANTZ.

LOOKING OVER NEW PRODUCTS

Superhet CB Transceiver

An improved version of the HE-15 series citizens band transceivers is the Model HE-15B with eight crystal-controlled transmitting channels accessible by removing a small front plate. Unit has 5 watts input, 3-way function switch, planetary vernier tuning, variable noise limiter, indicators for power "on" and RF power, connections for 115-volt ac line and 6- or 12-volt dc external power supply.

Receiver is tunable over entire 23-channel band. The transceiver measures 10¼ x 5½ x 6⅜ in. and tubes include 2 6AU8A/6E8A, 6AL5, 6V6, 12AX7, and 6AW8. Priced at $59.50.—Lafayette Radio Electronics Corp., Dept. RTE, 111 Jericho Turnpike, Syosset, N. Y.

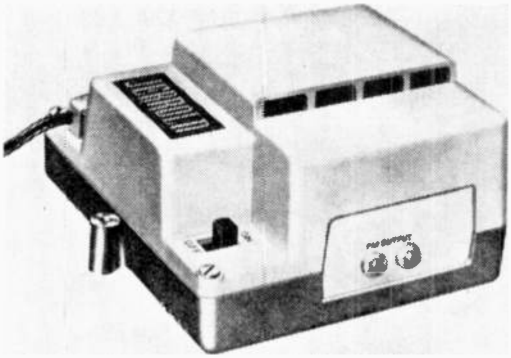


CB Crystal Switcher

This new crystal switcher increases available transmitting channels on citizens band transceivers. The Model CS-6 switcher has quick pushbutton selection, with a plastic "channel identification" plate above the buttons so that user can identify each channel by marking in the number with a crayon. Plate can be wiped clean and remarked if crystal is changed.

Unit attaches to either fixed or mobile Regency transceiver, includes case with satin nickel-plate finish and measures 6¼ in. wide, 3 in. deep and 1¼ in. high. Priced at $19.95 net, without crystals.—Regency Electronics Inc., Dept. RTE, 7900 Pendleton Pike, Indianapolis 26, Ind.

FM Range Extender

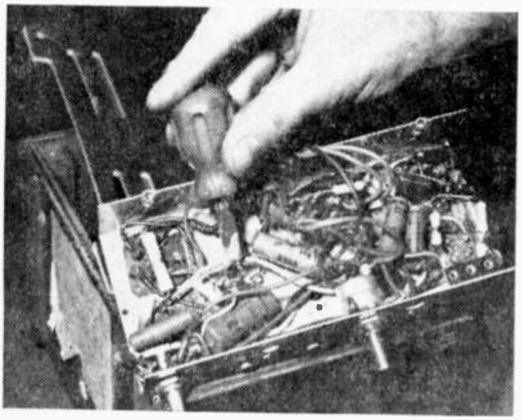


Primary reception area of FM tuners and FM radios is said to be doubled by this new FM antenna amplifier, to improve the new multiplex reception and add characteristics of high fidelity sound to inexpensive tuners. Offering a high gain of 20 *db* minimum over the entire FM band, the Model FMX one-tube antenna amplifier eliminates background noise and signal drift.

The unit is intended for home installation anywhere between antenna and tuner—in attic, closet, or on any wall or flat surface where a 117-volt 60-cycle outlet is available. It is designed for all-day continuous operation on current similar to that used by a clock.

Weighing slightly more than 2 lbs., the amplifier uses the new 6DJ8 frame grid tube and has a shut-off switch for disconnection when not in use for a long period. Priced at $29.95.—Jerrold Electronics Corp., Dept. RTE, 15th and Lehigh Ave., Philadelphia 32, Pa.

LOOKING OVER NEW PRODUCTS



Epoxy Compound Cold Solder

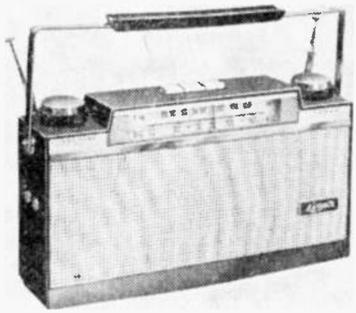
A silver conductive epoxy compound solder that cures in four hours has been developed for use at low temperature on components which are sensitive to heat. Anchor *Shurbond 102* bonds firmly to metallic or non-metallic surfaces, has claimed shear strength of 3200 *psi* and volume resistivity approaching that of metals.

Since no flux is used, there is no contamination or residue problem. Available in paste form with liquid hardener, it offers new bonding possibilities with dissimilar metals in applications where conventional soldering or brazing have proved ineffective.—Anchor Alloys, Dept. RTE, 968 Meeker Ave., Brooklyn 22, N. Y.

Portable FM-AM Radio

Powered by four C-type cells, this nine-transistor, portable FM-AM radio features pushbutton controls for "off," FM, and AM, a high-ratio slide rule dial, 3 x 5-in. speaker, earphone, and built-in handle. Two 22-in. collapsible telescopic antennas are used for FM, built-in ferrite loop for AM.

In addition to the nine transistors, the circuit includes four diodes and a varistor. Unit is sized at 9⅞ x 5¾ x 2½ in., and priced at $49.95.—Lafayette Radio Electronics Corp., Dept. RTE, 111 Jericho Turnpike, Syosset, N. Y.

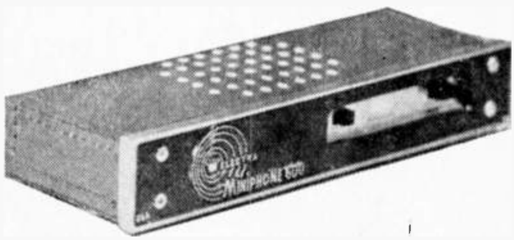


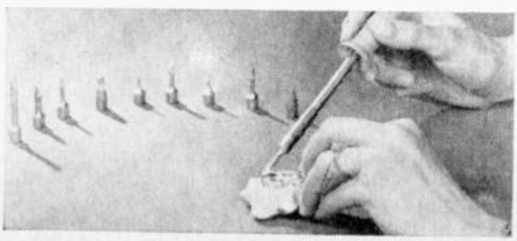
No-License 2-Way Radio

New desk model *Miniphone 600* makes it possible to transmit and receive messages between your office or switchboard and any number of men carrying *Miniphone 400* shirt pocket walkie-talkies up to three miles away, and without FCC licenses.

Fully transistorized units operate on single low-cost battery, have crystal-control transmitter and superhet receiver, automatic noise limiters, and unbreakable metal cases.

The "600" uses a plug-in antenna which can be placed inside to obtain greater range. The "400" may be used with a snap-on flexible antenna for pocket paging or with a built-in telescoping antenna for longer range. The units are priced at $99.50 for the "600" and $89.75 for the "400," which is only 1 in. thick and weighs but 10 oz.—Electra International Co., Dept. RTE, 1346 Foothill Blvd., La Canada, Calif.



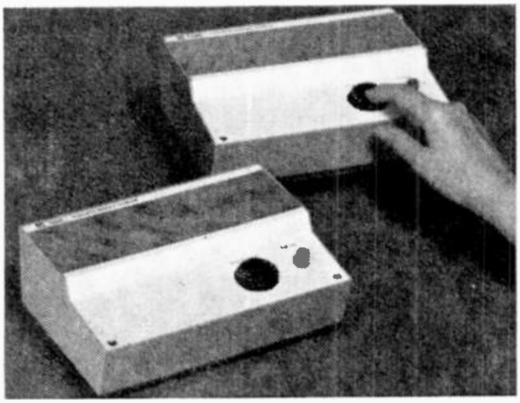


20-Tip Soldering Iron

Originally developed for electronic equipment manufacturers, the versatile *Penline-120* is now available to home craftsmen through major dealers. Its 40-watt heater assembly is featured as ready for use with 20 different, interchangeable tips.—General Electric Co., Dept. RTE, Schenectady 5, N. Y.

LOOKING OVER NEW PRODUCTS

Transistor Wireless Intercom



Completely transistorized and portable, this wireless intercom draws no more electric power per station than an electric clock. Operating from any ac outlet or dc power source, it serves as a two-way communicator in home, factory, office, or between nearby buildings on the same power line. It can also be used as an electronic baby sitter by setting the press-to-talk button on "lock." To prevent missed calls, the volume control cannot be turned below an audible level.

Due to the low power and a "squelch" circuit, this new *Knight-Kit* needs no on-off switch, has no hum, and is virtually heat-free. Each unit is a "master," housed in an egg-shell white or oxford gray moulded plastic case, 3 x 8¼ x 5¾ in. Additional units may be added to the system.

The two-unit kit (#83Y991) is priced at $45.90, including all parts, construction manual, wire, and solder. Single-unit kits (#83Y992), to expand the system, are offered at $22.95—Allied Radio Corp., Dept. RTE, 100 N. Western Ave., Chicago 80, Ill.

Noise Eliminator

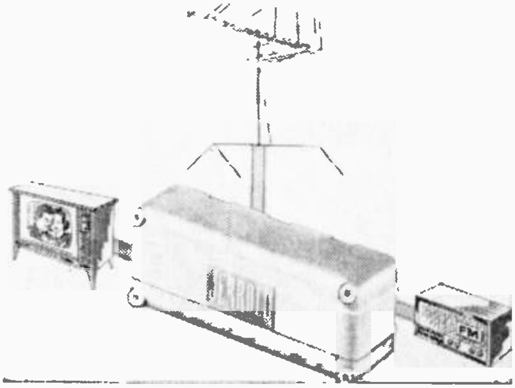
Planned as a noise eliminator for all superhet transceivers or receivers, the "Squelcher" effectively reduces noise from ignition systems and other sources, and quiets the receiver when no signal is being received. The Model HE-55 is especially designed to increase sensitivity of mobile transceivers when operating in traffic. Circuit is considered hum-free and uses two tubes: 6AL5 and 12AX7.

The blue-gray perforated case has a satin aluminum faceplate and weighs 1¼ lbs. Unit is furnished with instructions for installation and operation, plus cable, for $10.95.—Lafayette Radio Electronics Corp., Dept. RTE, 111 Jericho Turnpike, Syosset, N. Y.

TV-FM Antenna Splitter

Simultaneous reception for television and an FM receiver from a common antenna, without interference or loss of signal to either set, is offered by the Model TX-FM antenna splitter.

This small band pass filter in an unbreakable housing, separates FM from television frequencies, and filters the FM frequencies (88 to 108 *mc*) through to the FM set. The unit is intended for use with an ordinary broad band VHF television antenna and designed to provide a high degree of signal isolation. Price $5.95.—Jerrold Electronics Corp., Dept. RTE, 15th and Lehigh Ave., Philadelphia 32, Pa.



WHITE'S RADIO LOG

An up-to-date broadcasting directory
AM, FM, TV and Short Wave Stations

Vol. 39 No. 2

QUICK REFERENCE INDEX

U. S. and Canadian AM Stations by Frequency

U.S. stations listed alphabetically by states within groups, Canadian stations precede U.S.

Abbreviations: Kc., frequency in kilocycles; W.P., watt power; d—operates daytime only. Wave length is given in meters

Kc. Wave Length	W.P.
540—555.5	
CBT Grand Falls, N.F.	10000
CBK Regina, Sask.	50000
KVIP Redding, Calif.	5000d
KFMB San Diego, Calif.	5000
WGTD Cypress Gardens, Florida	50000d
WDAK Columbus, Ga.	5000
KBRV Soda Springs, Idaho	500d
KWMT Ft. Dodge, Iowa	5000d
WDMV Pocomoke City, Md.	500d
WBIC Islip, N.Y.	250d
WETC Wendell-Zebulon, N.C.	250d
WARD Canonsburg, Pa.	250d
WYNN Florence, S.C.	250d
WDXN Clarksville, Tenn.	1000d
WRIC Richlands, Va.	1000d
550—545.1	
CFNB Fredericton, N.B.	50000
CFBR Sudbury, Dnt.	1000d
CHLN Three Rivers, Que.	10000
CKPG Prince George, B.C.	250
KENI Anchorage, Alaska	5000
KDY Phoenix, Ariz.	5000
KAFY Bakersfield, Calif.	1000
KRAI Craig, Colo.	1000
WAYR Orange Park, Fla.	1000d
WGGA Gainesville, Ga.	5000
KMVI Wailuku, Hawaii	1000
KFRM Concordia, Kansas	5000d
WCBI Columbus, Miss.	1000
KSD St. Louis, Mo.	5000
KDPR Butte, Mont.	1000
WGR Buffalo, N.Y.	5000
WDBM Statesville, N.C.	500d
KFYR Bismarck, N.Dak.	5000
WKRC Cincinnati, Ohio	5000
KDAC Corvallis, Dreg.	5000
WHLM Bloomsburg, Pa.	1000
WPAB Ponce, P.R.	5000
WXTR Pawtucket, R.I.	1000
KCRS Midland, Tex.	5000
KTSA San Antonio, Tex.	5000
WDEV Waterbury, Vt.	5000
WSVA Harrisonburg, Va.	5000
KARI Blaine, Wash.	500d
WSAU Wausau, Wis.	5000
560—535.4	
CJDC Dawson Creek, B.C.	1000
CJKL Kirkland Lake, Dnt.	5000
CFDS Owen Sound, Ont.	5000
WODF Dothan, Ala.	5000d
KYUM Yuma, Ariz.	1000
KSFO San Fran., Calif.	5000
KLZ Denver, Colo.	5000
WQAM Miami, Fla.	5000
WIND Chicago, Ill.	5000
WMIK Middlesboro, Ky.	500d
WGAN Portland, Maine	5000
WHYN Springfield, Mass.	1000
WQTE Monroe, Mich.	500d
WEBC Duluth, Minn.	5000
KWTD Springfield, Mo.	5000
KMDN Great Falls, Mont.	5000
WGAI Elizabeth City, N.C.	1000
WFIL Philadelphia, Pa.	5000
WIS Columbia, S.C.	5000
WHBQ Memphis, ~enn.	5000
KFDM Beaumont, Tex.	5000
KPQ Wenatchee, Wash.	5000
WJLS Beckley, W Va.	5000
570—526.0	
CKEK Cranbrook, B.C.	1000
CKCQ Quesnel, B.C.	1000
CFCB Corner Brook, N.F.	1000
CJEM Edmundston N.B.	1000
WAAX Gadsden, Ala.	5000
KCND Alturas, Calif.	5000
KLAC Los Angeles, Calif.	5000
WGMS Washington, D.C.	5000
WACL Waycross, Ga.	5000
WKYB Paducah, Ky.	1000
WVMI Biloxi, Miss.	1000d
KGRT Las Cruces, N.Mex.	5000d
WMCA New York, N.Y.	5000
WSYR Syracuse, N.Y.	5000
WWNC Asheville, N.C.	5000
WLLE Raleigh, N.C.	500d
WKBN Youngstown, Dhio	5000
WNAX Yankton, S.Dak.	5000
WFAA Dallas, Tex.	5000
WBAP Ft. Worth, Tex.	5000
KLUB Salt Lake City, Utah	5000
KVI Seattle, Wash.	5000
WMAM Marinette, Wis.	5000
580—516.9	
CJFX Antigonish, N.S.	5000
CFRA Dttawa, Ont.	50000
CKEY Toronto, Ont.	5000
CKPR Ft. William, Ont.	5000
CKUA Edmonton, Alta.	10000d
CKY Winnipeg, Man.	50000
WABT Tuskegee, Ala.	500d
KTAN Tucson, Ariz.	5000
KMJ Fresno, Calif.	5000
KUBC Montrose, Colo.	5000
WDBD Orlando, Fla.	5000
WGAC Augusta, Ga.	5000
KFXD Nampa, Idaho	5000
WILL Urbana, Ill.	5000d
KSAC Manhattan, Kans.	5000
WIBW Topeka, Kans.	5000
KALB Alexandria, La.	5000
WTAG Worcester, Mass.	5000
WELD Tupelo, Miss.	1000
WAGR Lumberton, N.C.	500
KWIN Ashland, Oreg.	1000
WHP Harrisburg, Pa.	5000
WKAQ San Juan, P.R.	5000
KOBH Hot Springs, S.Dak.	500d
WRKH Rockwood, Tenn.	1000d
KDAV Lubbock, Tex.	500d
WLES Lawrenceville, Va.	500d
WCHS Charleston, W.Va.	5000
WKTY LaCrosse, Wis.	5000
590—508.2	
CFAR FlinFlon, Man.	1000
CKRS Jonquiere, Que.	1000
VDCM St. Johns, N.F.	10000
KHAR Anchorage, Alaska	5000
WRAG Carrollton, Ala.	1000d
KBHS Hot Springs, Ark.	5000d
KFXM San Bernardino, Cal.	1000
KCSJ Pueblo, Colo.	1000
WDLP Panama City, Fla.	1000
WPLD Atlanta, Ga.	5000
KGMB Honolulu, Hawaii	5000
KID Idaho Falls, Idaho	5000
WBBY Wood River, Ill.	500d
WVLK Lexington, Ky.	5000
WEEI Boston, Mass.	5000
WKZD Kalamazoo, Mich.	5000
WDW Dmaha, Nebr.	5000
WRDW Albany, N.Y.	5000
WGTM Wilson, N.C.	5000
KUGN Eugene, Dreg.	5000
WARM Scranton, Pa.	5000
WMBS Uniontown, Pa.	1000
KTBC Austin, Tex.	5000
KSUB Cedar City, Utah	1000
WLVA Lynchburg, Va.	1000
KHQ Spokane, Wash.	5000
600—499.7	
CFCF Montreal, Que.	5000
CFCH North Bay, Dnt.	10000
CFQC Saskatoon, Sask.	5000
CJDR Vancouver, B.C.	10000
CKCL Truro, N.S.	1000
WIRB Enterprise, Ala.	1000
KCLS Flagstaff, Ariz.	5000
KVCV Redding, Calif.	1000
KDGO San Diego, Calif.	5000
KZIX Ft. Collins, Colo.	1000d
WICC Bridgeport, Conn.	5000
WPDQ Jacksonville, Fla.	5000
WMT Cedar Rapids, Iowa	5000
WWOM New Orleans, La.	1000d
WFST Caribou, Maine	5000d
WCAO Baltimore, Md.	5000
WLST Escanaba, Mich.	1000d
WTAC Flint, Mich.	1000
KGEZ Kalispell, Mont.	2000
WCVP Murphy, N.C.	1000d
WSJS Winston-Salem, N.C.	5000
KSJB Jamestown, N.D.	5000
WFRM Coudersport, Pa.	1000d
WAEL Mayaguez, P.R.	1000
WREC Memphis, Tenn.	5000
KRDD El Paso, Tex.	5000
KERB Kermit, Tex.	1000d
KTBB Tyler, Tex.	1000
610—491.5	
CHNC New Carlisle, Que.	5000
CJAT Trail, B.C.	1000
CKKL Thompson, Man.	1000
CKTB St. Catharines, Ont.	10000
WSGN Birmingham, Ala.	5000
KFAR Fairbanks, Alaska	5000
KAVL Lancaster, Calif.	1000
KFRC San Francisco, Calif.	5000
WCKR Miami, Fla.	5000
WDEB Pensacola, Fla.	500d
WCEH Hawkinsville, Ga.	500d
WRUS Russellville, Ky.	500d
KDAL Duluth, Minn.	5000
WDAF Kansas City, Mo.	5000
KDJM Havre, Mont.	1000
WGIR Manchester, N.H.	5000
KGGM Albuquerque, N.Mex.	5000
WAYS Charlotte, N.C.	5000
WTVN Columbus, Dhio	5000
WIP Philadelphia, Pa.	5000
KILT Houston, Tex.	5000
KVNU Logan, Utah	5000
WSLS Roanoke, Va.	5000
WHPL Winchester, Va.	500d
KEPR Kennewick, Wash.	5000
620—483.6	
CFCL Timmins, Ont.	10000
CKCK Regina, Sask.	5000
KTAR Phoenix, Ariz.	5000
KNGS Hanford, Calif.	1000
KWSD Mt. Shasta, Calif.	1000d
KSTR Grand Junction, Colo.	5000d
WSUN St. Petersburg, Fla.	5000
WTRP LaGrange, Ga.	1000d
KWAL Wallace, Idaho	1000
KMNS Sioux City, Iowa	1000
WTMT Louisville, Ky.	500d
WLBZ Bangor, Maine	5000
WJDX Jackson, Miss.	5000
WVNJ Newark, N.J.	5000
WHEN Syracuse, N.Y.	5000
WDNC Durham, N.C.	5000
KGW Portland, Dreg.	5000
WHJB Greensburg, Pa.	1000
WCAY Cayce, S.C.	500d
WATE Knoxville, Tenn.	5000
KWFT Wichita Falls, Tex.	5000
WCAX Burlington, Vt.	5000
WWNR Beckley, W.Va.	1000
WTMJ Milwaukee, Wis.	5000
630—475.9	
CFCO Chatham, Ont.	1000
CKAR Huntsville, Ont.	1000
CHLT Sherbrooke, Que.	5000
CFCY Charlottetown, P.E.I.	5000
CJET Smith Falls, Dnt.	1000
CKRC Winnipeg, Man.	5000
CKOV Kelowna, B.C.	1000
CKYL Peace River, Alta.	1000
WAVU Albertville, Ala.	1000d
WJDB Thomasville, Ala.	1000d
KJND Juneau, Alaska	1000
KVMA Magnolia, Ark.	1000d
KIDD Monterey, Calif.	1000
KHDW Denver, Colo.	5000
WMAL Washington, D.C.	5000
WSAV Savannah, Ga.	5000
WNEG Toccoa, Ga.	500d
KIDO Boise, Idaho	5000

Kc.	Wave Length	W.P.
WLAP	Lexington, Ky.	5000
KTIB	Thibodaux, La.	500d
WJMS	Ironwood, Mich.	1000
KOWB	So. St. Paul, Minn.	5000
KXOK	St. Louis, Mo.	5000
KGVW	Belgrade, Mont.	1000d
KOH	Reno, Nev.	5000
KLEA	Lovington, N.Mex.	500d
WIRC	Hickory, N.C.	1000d
WMFO	Wilmington, N.C.	1000
KWRO	Coquille, Oreg.	5000d
WEJL	Scranton, Pa.	500d
WKYN	San Juan, P.R.	1000
WPRO	Providence, R.I.	5000
KGFX	Pierre, S.Dak.	250
KMAC	San Antonio, Tex.	5000
KSXX	Salt Lake City, Utah	1000d
KGDN	Edmunds, Wash.	5000d
KZUN	Opportunity, Wash.	500d

640—468.5

CBN	St. John's, N.F.	10000
KFI	Los Angeles, Calif.	50000
WOI	Ames, Iowa	5000
WHLO	Akron, Ohio	1000
WNAO	Norman, Okla.	1000d

650—461.3

KORL	Honolulu, Hawaii	10000
WSM	Nashville, Tenn.	50000
KIKK	Pasadena, Texas	250d

660—454.3

KMEO	Omaha, Nebr.	500d
WNBC	New York, N.Y.	50000
WESC	Greenville, S.C.	10000d
KSKY	Dallas, Tex.	1000

670—447.5

WMAQ	Chicago, Ill.	50000

680—440.9

CHFA	Edmonton, Alta.	5000d
CHLO	St. Thomas, Ont.	1000
CJOB	Winnipeg, Man.	10000
CKGB	Timmins, Ont.	10000
KNBC	San Fran., Calif.	50000
WPIN	St. Petersburg, Fla.	1000d
WCTT	Corbin, Ky.	1000
WCBM	Baltimore, Md.	10000
WNAC	Boston, Mass.	50000
WDBC	Escanaba, Mich.	1000
KFEQ	St. Joseph, Mo.	5000
WINR	Binghamton, N.Y.	1000
WRVM	Rochester, N.Y.	250d
WPTF	Raleigh, N.C.	50000
WISR	Butler, Pa.	250d
WAPA	San Juan, P.Rico.	10000
WMPS	Memphis, Tenn.	10000
KENS	San Antonio, Tex.	50000
KOMW	Omak, Wash.	1000d
WCAW	Charleston, W.Va.	250

690—434.5

CBU	Vancouver, B.C.	10000
CBF	Montreal, Que.	50000
WVOK	Birmingham, Ala.	50000d
KVNA	Flagstaff, Ariz.	1000
KEVT	Tucson, Ariz.	250d
KBBA	Benton, Ark.	250d
XETRA	Los Angeles, Calif.	50000
KAPI	Pueblo, Colo.	250d
WADS	Ansonia, Conn.	500d
WAPE	Jacksonville, Fla.	25000d
KULA	Honolulu, Hawaii	10000
KBLI	Blackfoot, Idaho	1000d
KGGF	Coffeyville, Kans.	10000
WTIX	New Orleans, La.	5000
KTCR	Minneapolis, Minn.	500d
KSTL	St. Louis, Mo.	1000d
KTCI	Terrytown, Nebr.	1000d
KRCO	Prineville, Oreg.	1000d
WXUR	Media, Pa.	500
KUSD	Vermillion, S.Dak.	1000d
KHEY	El Paso, Tex.	10000
KPET	Lamesa, Tex.	250
KZEY	Tyler, Tex.	250d
WCYB	Bristol, Va.	10000d
WNNT	Warsaw, Va.	250d
WELO	Fisher, W.Va.	500d

700—428.3

WLW	Cincinnati, Ohio	50000

710—422.3

CJSP	Leamington, Ont.	1000d
CFRG	Gravelbourg, Sask.	5000d
CKVM	Ville Marie, Que.	1000
WKRG	Mobile, Ala.	1000
KMPC	Los Angeles, Calif.	50000
KBTR	Denver, Colo.	5000
WGBS	Miami, Fla.	50000
WROM	Rome, Ga.	1000d
KEEL	Shreveport, La.	50000
WHB	Kansas City, Mo.	10000
WOR	New York, N.Y.	50000
DZRH	Manila, P.I.	10000
WKJB	Mayaguez, P.Rico	1000
WTPR	Paris, Tenn.	250d

KGNC	Amarillo, Tex.	10000
KURV	Edinburg, Tex.	250
KIRO	Seattle, Wash.	50000
WOSM	Superior, Wis.	5000

720—416.4

WGN	Chicago, Ill.	50000

730—410.7

CJNR	Blind River, Ont.	1000
CKAC	Montreal, Que.	50000
CKDM	Dauphin, Man.	10000
CKLG	No. Vancouver, B.C.	10000
WJMW	Athens, Ala.	1000
KFQD	Anchorage, Alaska	10000
KSUD	W. Memphis, Ark.	250d
WKTG	Thomasville, Ga.	1000d
KLOE	Goodland, Kans.	1000d
WFMW	Madisonville, Ky.	250d
WMTC	Van Cleve, Ky.	1000d
KTRY	Bastrop, La.	250d
WARB	Covington, La.	250d
WMMS	Bath, Maine	1000d
WACE	Chicopee, Mass.	5000d
KWRE	Warrenton, Mo.	1000d
KWOA	Worthington, Minn.	1000d
KURL	Billings, Mont.	500d
KVOD	Albuquerque, N.Mex.	1000d
WDOS	Oneonta, N.Y.	1000d
WFMC	Goldsboro, N.C.	1000d
WOHS	Shelby, N.C.	1000d
WMGS	Bowling Green, Ohio	1000d
KBOY	Medford, Oreg.	1000d
WNAK	Nanticoke, Pa.	1000d
WPIT	Pittsburgh, Pa.	5000d
WPAL	Charleston, S.C.	1000d
WLIL	Lenoir, Tenn.	1000d
KRZY	Grand Prairie, Tex.	500d
KSVN	Ogden, Utah	1000d
WPIK	Alexandria, Va.	1000d
WMNA	Gretna, Va.	1000d
KULE	Ephrata, Wash.	1000d
WXMT	Merrill, Wis.	1000d

740—405.2

CBXA	Edmonton, Alta.	50000
CBL	Toronto, Ont.	50000
WBAM	Montgomery, Ala.	50000d
KUEQ	Phoenix, Ariz.	1000d
KBIG	Avalon, Calif.	10000d
KCBS	San Francisco, Calif.	50000
KSSS	Colo. Springs, Colo.	1000
KVFC	Cortez, Colo.	1000d
WKIS	Orlando, Fla.	5000
KYME	Boise, Idaho	500d
WVLN	Olney, Ill.	250d
KBOE	Oskaloosa, Iowa	250d
WNOP	Newport, Ky.	1000d
WFRB	Frostburg, Md.	250d
WTAO	Cambridge, Mass.	250d
KPBM	Carlsbad, N.Mex.	1000d
WGSM	Huntington, N.Y.	1000d
WMBL	Morehead City, N.C.	1000d
WPAQ	Mount Airy, N.C.	10000d
KRMG	Tulsa, Okla.	50000
WVCH	Chester, Pa.	1000d
WIAC	San Juan, P.Rico	10000
WBAW	Barnwell, S.C.	1000d
WIRJ	Humboldt, Tenn.	250d
WJIG	Tullahoma, Tenn.	250d
KTRH	Houston, Tex.	50000
KCMC	Texarkana, Tex.	1000
WBCI	Williamsburg, Va.	500d

750—399.8

WSB	Atlanta, Ga.	50000
WBMD	Baltimore, Md.	1000d
KMMJ	Grand Island, Neb.	10000d
WHEB	Portsmouth, N.H.	1000d
KSEO	Durant, Okla.	250d
KXL	Portland, Oreg.	50000
WPDX	Clarksburg, W.Va.	1000d

760—394.5

KGU	Honolulu, Hawaii	10000
WJR	Detroit, Mich.	50000
WCPS	Tarboro, N.C.	1000d

770—389.4

KUOM	Minneapolis, Minn.	5000d
WCAL	Northfield, Minn.	5000d
WEW	St. Louis, Mo.	1000d
KOB	Albuquerque, N.Mex.	50000
WABC	New York, N.Y.	50000
KXA	Seattle, Wash.	1000d

780—384.4

WBBM	Chicago, Ill.	50000
WJAG	Norfolk, Neb.	1000d
WCKB	Dunn, N.C.	1000d
WBBO	Forest City, N.C.	1000d
KSPI	Stillwater, Okla.	250d
WAVA	Arlington, Va.	1000d

790—379.5

CKMR	Newcastle, N.B.	1000
CHB	Halifax, N.S.	10000
CKSO	Sudbury, Ont.	10000
WTUG	Tuscaloosa, Ala.	500d
KCEE	Tucson, Ariz.	5000d
KOSY	Texarkana, Ark.	1000
KOAN	Eureka, Calif.	5000d
KABC	Los Angeles, Calif.	5000
WLBE	Leesburg, Fla.	5000
WFUN	Miami Beach, Fla.	5000
WPFA	Pensacola, Fla.	1000d
WQXI	Atlanta, Ga.	5000
WGRA	Cairo, Ga.	1000d
KEST	Boise, Idaho	1000d
WRMS	Beardstown, Ill.	500d
KXXX	Colby, Kans.	5000d
WAKY	Louisville, Ky.	5000
WRUM	Rumford, Me.	1000d
WSGW	Saginaw, Mich.	5000
WSJC	Magee, Miss.	1000d
KGHL	Billings, Mont.	5000
WWNY	Watertown, N.Y.	1000
WLSV	Wellsville, N.Y.	1000d
WTNC	Thomasville, N.C.	1000d
KFGO	Fargo, N.Dak.	5000
KWIL	Albany, Oreg.	1000
WAEB	Allentown, Pa.	500
WPIC	Sharon, Pa.	1000d
WEAN	Providence, R.I.	5000
WWBD	Bamberg, S.C.	1000d
WETB	Johnson City, Tenn.	1000d
WMC	Memphis, Tenn.	5000
KTHT	Houston, Tex.	5000
KFYO	Lubbock, Tex.	5000
KUTA	Blanding, Utah	1000d
WSIG	Mount Jackson, Va.	1000d
WTAR	Norfolk, Va.	5000
KGMI	Bellingham, Wash.	5000
KNEW	Spokane, Wash.	5000
WEAQ	Eau Claire, Wis.	5000

800—374.8

CHAB	Moose Jaw, Sask.	10000
CKOK	Penticton, B.C.	10000
CFOB	Ft. Frances, Ont.	1000
CJLX	Ft. William, Ont.	5000
CJBQ	Belleville, Ont.	1000
CKLW	Windsor, Ont.	50000
CHRC	Quebec, Que.	10000
CJAD	Montreal, Que.	10000
VOWR	St. Johns, N.F.	1000
WHOS	Decatur, Ala.	1000d
WMGY	Montgomery, Ala.	1000d
KINY	Juneau, Alaska	5000
KAGH	Crossett, Ark.	250d
KVOM	Morrilton, Ark.	250d
KUZZ	Bakersfield, Calif.	250d
KDAD	Weed, Calif.	1000d
KBRN	Brighton, Colo.	500d
WLAD	Danbury, Conn.	250d
WSUZ	Palatka, Fla.	1000d
WJAT	Swainsboro, Ga.	1000d
KXIC	Iowa City, Iowa	1000d
WBOK	New Orleans, La.	1000d
WCCM	Lawrence, Mass.	1000d
KREI	Farmington, Mo.	1000d
KDBM	Dillon, Mont.	1000d
WKDN	Camden, N.J.	1000d
KJEM	Okla City, Okla.	250d
KPDQ	Portland, Oreg.	1000d
WCHA	Chambersburg, Pa.	1000d
WDSC	Dillon, S.C.	1000d
WEAB	Greer, S.C.	250d
WOEH	Sweetwater, Tenn.	1000d
KDDD	Dumas, Tex.	250d
KBUH	Brigham City, Utah	250d
WSVS	Crewe, Va.	5000d
WKEE	Huntington, W.Va.	1000d
WDUX	Waupaca, Wis.	1000d

810—370.2

CFAX	Victoria, B.C.	1000d
KGO	San Francisco, Calif.	50000
WABW	Annapolis, Md.	250d
KCMO	Kansas City, Mo.	50000
WGY	Schenectady, N.Y.	50000
WKBC	N.Wilkesboro, N.C.	1000d
WCEC	Rocky Mount, N.C.	1000d
WEDO	McKeesport, Pa.	1000d
WKVM	San Juan, P.R.	25000

820—365.6

WAIT	Chicago, Ill.	5000d
WIKY	Evansville, Ind.	250d
WOSU	Columbus, Ohio	5000d
WFAA	Dallas, Tex.	50000
WBAP	Ft. Worth, Tex.	50000

830—361.2

KIKI	Honolulu, Hawaii	250
WCCO	Minneapolis, Minn.	50000
KBOA	Kennett, Mo.	1000d
WNYC	New York, N.Y.	1000

840—356.9

WTUF	Mobile, Ala.	1000d
WRYM	New Britain, Conn.	1000d
WHAS	Louisville, Ky.	50000
WVPO	Stroudsburg, Pa.	250d

850—352.7

CKVL	Verdun, Que.	50000
CKRD	Red Deer, Alta.	10000
WYDE	Birmingham, Ala.	10000
KICY	Nome, Alaska	5000
KOA	Denver, Colo.	50000
WRUF	Gainesville, Fla.	5000
WEAT	W. Palm Beach, Fla.	1000
KIMO	Hilo, Hawaii	1000
WHDH	Boston, Mass.	50000
WKBZ	Muskegon, Mich.	1000
KFUO	St. Louis, Mo.	5000d
WKIX	Raleigh, N.C.	10000
WJW	Cleveland, Ohio	10000
WJAC	Johnstown, Pa.	250
WEEU	Reading, Pa.	1000
WABA	Aquadilla, P.R.	500
WRAP	Norfolk, Va.	5000
KTAC	Tacoma, Wash.	1000

860—348.6

CHAK	Inuvik, N.W.T.	1000
CJBC	Toronto, Ont.	50000
WHRT	Hartselle, Ala.	250d
WAMI	Opp, Ala.	1000d
KIFN	Phoenix, Ariz.	1000d
KOSE	Osceola, Ark.	1000d
KWRF	Warren, Ark.	250d
KTRB	Modesto, Calif.	10000
WOWW	Naugatuck, Conn.	250d
WAZE	Clearwater, Fla.	500d
WKKO	Cocoa, Fla.	1000d
WERO	Atlanta, Ga.	1000
WDMG	Douglas, Ga.	5000d
WMRI	Marion, Ind.	250d
KWPC	Muscatine, Iowa	250d
KOAM	Pittsburg, Kans.	10000
WSON	Henderson, Ky.	500d
WAYE	Dundalk, Md.	500d
WSBS	Gt. Barrington, Mass.	250d
KNUJ	New Ulm, Minn.	1000d
WMAG	Forest, Miss.	500d
KARS	Belen, N. Mex.	250d
WFMO	Fairmont, N.C.	1000d
KMFR	Medford, Oreg.	1000d
WAMO	Pittsburgh, Pa.	1000d
WTEL	Philadelphia, Pa.	250d
WLBG	Laurens, S.C.	1000d
WIVK	Knoxville, Tenn.	1000d
WMTS	Murfreesboro, Tenn.	250d
KFST	Ft. Stockton, Tex.	250d
KPAN	Hereford, Tex.	250d
KSFA	Nacogdoches, Tex.	1000d
KONO	San Antonio, Tex.	5000
KWHO	Salt Lake City, Utah	1000d
WEVA	Emporia, Va.	1000d
WOAY	Oak Hill, W.Va.	10000d
WFOX	Milwaukee, Wis.	250d

870—344.6

KIEV	Glendale, Calif.	250d
KAIM	Kaimuki, Hawaii	5000
WWL	New Orleans, La.	50000
WKAR	E. Lansing, Mich.	5000d
WHCU	Ithaca, N.Y.	1000d
WGTL	Kannapolis, N.C.	1000d
WHOA	San Juan, P.R.	5000
KJIM	Ft. Worth, Tex.	250d
WFLO	Farmville, Va.	1000d

880—340.7

WCBS	New York, N.Y.	50000
WRRZ	Clinton, N.C.	1000d
WRFD	Worthington, Ohio	5000d

890—336.9

WLS	Chicago, Ill.	50000
WHNC	Henderson, N.C.	1000d
KBYE	Okla. City, Okla.	1000d

900—333.1

CKTS	Sherbrooke, Que.	1000
CHML	Hamilton, Ont.	5000
CHNO	Sudbury, Ont.	10000
CJBR	Rimouski, Que.	10000
CKJL	St. Jerome, Que.	1000
CJVI	Victoria, B.C.	10000
CKBI	Prince Albert, Sask.	10000
WATV	Birmingham, Ala.	1000d
WGOK	Mobile, Ala.	1000d
WOZK	Ozark, Ala.	1000d
KPRB	Fairbanks, Alaska	10000
KHOZ	Harrison, Ark.	1000d
KBIF	Fresno, Calif.	1000d
KGRB	West Covina, Calif.	250d
WJWL	Georgetown, Del.	1000d
WSWN	Belle Glade, Fla.	1000d
WMOP	Ocala, Fla.	1000d
WCGA	Calhoun, Ga.	1000d
WCRY	Macon, Ga.	250d
WEAS	Savannah, Ga.	5000d
KTEE	Idaho Falls, Ida.	1000d
KSIR	Wichita, Kan.	250d
WKYW	Louisville, Ky.	1000d
WLSI	Pikeville, Ky.	5000d
KREH	Oakdale, La.	250d
WCME	Brunswick, Maine	1000d
WATC	Gaylord, Mich.	1000d
KTIS	Minneapolis, Minn.	1000d
WDDT	Greenville, Miss.	1000d
KFAL	Fulton, Mo.	1000d
KJSK	Columbus, Nebr.	1000d
WOTW	Nashua, N.H.	1000d
WBRV	Boonville, N.Y.	1000d
WSPN	Saratoga Sprgs., N.Y.	250d
WAYN	Rockingham, N.C.	1000d
WIAM	Williamston, N.C.	1000d
KFNW	Fargo, N.Dak.	1000d
WCNS	Canton, Ohio	500d
WFRO	Fremont, Ohio	500d
WCPA	Clearfield, Pa.	1000d
WFLN	Philadelphia, Pa.	1000d
WKXV	Knoxville, Tenn.	1000d
WCOR	Lebanon, Tenn.	500d
KALT	Atlanta, Tex.	1000d

Kc.	Wave Length	W.P.
KMCO	Conroe, Tex.	500d
KFLD	Floydada, Tex.	250d
KCLW	Hamilton, Tex.	250d
WODY	Bassett, Va.	500d
WAFC	Staunton, Va.	1000d
KUEN	Wenatchee, Wash.	1000d
WATK	Antigo, Wis.	250d

910—329.5

CJDV	Drumheller, Alta.	5000
CKLY	Lindsay, Ont.	1000
CBO	Ottawa, Ont.	5000
CFJC	Kamloops, B.C.	10000
CHRL	Roberval, Que.	1000
WDVC	Dadeville, Ala.	500d
KPHO	Phoenix, Ariz.	5000
KLCN	Blytheville, Ark.	5000d
KAMD	Camden, Ark.	1000
KDED	El Cajon, Calif.	1000
KEWB	Oakland, Calif.	5000
KDXR	Oxnard, Calif.	1000d
KPOF	nr. Denver, Colo.	5000
WHAY	New Britain, Conn.	5000
WPLA	Plant City, Fla.	1000d
WGAF	Valdosta, Ga.	5000
KBGN	Caldwell, Ida.	1000d
WAKO	Lawrenceville, Ill.	500d
WSUI	Iowa City, Iowa	5000
WLCS	Baton Rouge, La.	1000
WABI	Bangor, Maine	5000
WFDF	Flint, Mich.	5000
WCOC	Meridian, Miss.	5000
KOYN	Billings, Mont.	1000d
KYSS	Missoula, Mont.	1000d
KBIM	Roswell, N.Mex.	5000d
WLAS	Jacksonville, N.C.	5000d
KCJB	Minot, N.Dak.	1000
WPFB	Middletown, Ohio	1000
KGLC	Miami, Okla.	1000
KURY	Brookings, Oreg.	1000d
WAVL	Apollo, Pa.	1000d
WGBI	Scranton, Pa.	1000
WSBA	York, Pa.	5000
WPRP	Ponce, P.R.	5000
WNCG	North Charleston, S.C.	500d
WORD	Spartanburg, S.C.	5000d
WJCW	Johnson City, Tenn.	5000
WEPG	S. Pittsburgh, Tenn.	500d
KNAF	Fredericksburg, Tex.	1000d
KRIO	McAllen, Tex.	5000
KRRV	Sherman, Tex.	1000
KALL	Salt Lake City, Utah	5000
WWRJ	White River Junction, Vermont	1000d
WRNL	Richmond, Va.	5000
WHYE	Roanoke, Va.	1000d
KORD	Pasco, Wash.	1000d
KUDY	Seattle, Wash.	1000
KISN	Vancouver, Wash.	1000
WHSM	Hayward, Wis.	5000d
WDOR	Sturgeon Bay, Wis.	1000d

920—325.9

CJCH	Halifax, N.S.	10000
CJCJ	Woodstock, N.B.	1000
CKCY	Sault St. Marie, Ont.	10000
CKNX	Wingham, Ont.	2500
WCTA	Adalusia, Ala.	5000
WWWR	Russellville, Ala.	1000d
KARK	Little Rock, Ark.	5000
KDES	Palm Springs, Calif.	1000d
KVEC	San Luis Obispo, Cal.	1000
KREX	Grd. Junction, Colo.	5000
KLMR	Lamar, Colo.	1000
WMEG	Eau Gallie, Fla.	1000d
WGST	Atlanta, Ga.	5000
KAHU	Waipahu, Hawaii	1000
WGNU	Granite City, Ill.	500d
WMOK	Metropolis, Ill.	1000d
WBAA	W. Lafayette, Ind.	5000
KFNF	Shenandoah, Iowa	1000
WTCW	Whitesburg, Ky.	1000d
WBOX	Bogalusa, La.	1000d
KTOC	Jonesboro, La.	1000d
WPTX	Lexington Pk., Md.	500d
WMPL	Hancock, Mich.	1000d
KOHL	Faribault, Minn.	1000
KWAD	Wadena, Minn.	1000
KRAM	Las Vegas, Nev.	1000
KOLO	Reno, Nev.	1000
KQEO	Albuquerque, N.Mex.	1000
WTTM	Trenton, N.J.	1000
WKRT	Cortland, N.Y.	1000
WGHQ	Kingston, N.Y.	5000d
WIRD	Lake Placid, N.Y.	1000
WBBB	Burlington, N.C.	5000d
WMNI	Columbus, Ohio	500
KGAL	Lebanon, Oreg.	1000
WKVA	Lewistown, Pa.	1000
WJAR	Providence, R.I.	5000
WTND	Orangeburg, S.C.	1000d
KEZU	Rapid City, S.Dak.	1000d
WLIV	Livingston, Tenn.	1000d
KELP	El Paso, Tex.	1000
KECK	Odessa, Tex.	1000
KTLW	Texas City, Tex.	1000d
KITN	Olympia, Wash.	1000d
KXLY	Spokane, Wash.	5000
WMMN	Fairmont, W.Va.	5000
WOKY	Milwaukee, Wis.	1000

930—322.4

CFBC	Saint John, N.B.	10000
CJCA	Edmonton, Alta.	10000
CJON	St. John's, N.F.	10000
WETO	Gadsden, Ala.	1000d
KTKN	Ketchikan, Alaska	1000
KAPR	Douglas, Ariz.	1000d
KFGT	Flagstaff, Ariz.	1000
KHJ	Los Angeles, Calif.	5000
KMET	Paradise, Calif.	500d
KIUP	Durango, Colo.	5000
WKSB	Milford, Del.	500d
WHAN	Haines City, Fla.	1000
WJAX	Jacksonville, Fla.	5000
WKXY	Sarasota, Fla.	1000
WMGR	Bainbridge, Ga.	5000
WGTA	Summerville, Ga.	5000
KSEI	Pocatello, Idaho	5000
WTAD	Quincy, Ill.	5000
WKCT	Bowling Green, Ky.	1000
WFMD	Frederick, Md.	5000
WREB	Holyoke, Mass.	500d
WBCK	Battle Creek, Mich.	5000
KKIN	Aitkin, Minn.	1000d
WSLI	Jackson, Miss.	5000
KWOC	Poplar Bluff, Mo.	1000
KOFI	Kalispell, Mont.	5000d
KOGA	Ogallala, Nebr.	500d
WWNH	Rochester, N.H.	5000d
WPAT	Paterson, N.J.	5000
WBEN	Buffalo, N.Y.	5000
WIZR	Johnstown, N.Y.	1000d
WSOC	Charlotte, N.C.	5000
WITN	Washington, N.C.	5000
WEOL	Elyria, Ohio	1000
WKY	Oklahoma City, Okla.	5000
KAGI	Grants Pass, Oreg.	5000
WCNR	Bloomsburg, Pa.	1000d
KSDN	Aberdeen, S.D.	1000
WSEV	Sevierville, Tenn.	5000d
KDET	Center, Tex.	1000d
KITE	San Antonio, Tex.	5000
KENY	Bellingham-Ferndale Wash.	1000d
WSAZ	Huntington, W.Va.	5000
KROE	Sheridan, Wyo.	1000d
WLBL	Auburndale, Wis.	5000d

940—319.0

CBM	Montreal, Que.	50000
CJGX	Yorkton, Sask.	10000
CJIB	Vernon, B.C.	1000
KOBY	Tucson, Ariz.	250
KFRE	Fresno, Calif.	50000
WINZ	Miami, Fla.	50000
WMAZ	Macon, Ga.	50000
WMIX	Mt. Vernon, Ill.	5000d
KIOA	Des Moines, Iowa	10000
WYLD	New Orleans, La.	1000
WMEW	Baltimore, Md.	1000d
WJOR	South Haven, Mich.	1000d
KSWM	Aurora, Mo.	500d
KVSH	Valentine, Nebr.	5000d
WFNC	Fayetteville, N.C.	10000
KGRL	Bend, Oreg.	1000d
WESA	Charleroi, Pa.	250d
WGRP	Greenville, Pa.	1000d
WIPR	San Juan, P.R.	10000
KIXZ	Amarillo, Tex.	5000
KTON	Belton, Tex.	1000d
KATQ	Texarkana, Tex.	1000d

950—315.6

CKNB	Campbellton, N.B.	1000
CKBB	Barrie, Ont.	10000
WRMA	Montgomery, Ala.	1000d
KXJK	Forrest City, Ark.	5000d
KFSA	Ft. Smith, Ark.	1000
KAHI	Auburn, Calif.	1000d
KIMN	Denver, Colo	5000
WNUE	Ft. Walton Sch., Fla.	1000d
WLOF	Orlando, Fla.	5000
WGTA	Summerville, Ga.	5000d
WGOV	Valdosta, Ga.	5000
KBOI	Boise, Idaho	5000
KLER	Orofino, Idaho	1000d
WAAF	Chicago, Ill.	1000
WXLW	Indianapolis, Ind.	5000d
KOEL	Delwein, Iowa	1000
KJRG	Newton, Kans.	500d
WBVL	Barbourville, Ky.	1000d
WAGM	Presque Isle, Maine	5000
WORL	Boston, Mass.	5000d
WWJ	Detroit, Mich.	5000
KRSI	St. Louis Park, Minn.	1000d
WBKH	Hattiesburg, Miss.	5000d
KLIK	Jefferson City, Mo.	5000d
KLHS	Lordsburg, N. Mex.	1000d
WBBF	Rochester, N.Y.	1000
WIBX	Utica, N.Y.	5000
WPET	Greensboro, N.C.	5000d
KYES	Roseburg, Oreg.	1000d
WNCC	Barnesboro, Pa.	500d
WPEN	Philadelphia, Pa.	5000
WSPA	Spartanburg, S.C.	5000
KWAT	Watertown, S.Dak.	1000
WAGG	Franklin, Tenn.	1000d
KDSX	Denison, Tex.	500
KPRC	Houston, Tex.	50000
KSEL	Lubbock, Tex.	5000
WXGI	Richmond, Va.	5000d
KJR	Seattle, Wash.	5000
WERL	Eagle River, Wis.	1000d
WKAZ	Charleston, W.Va.	5000
WKTS	Sheboygan, Wis.	500d

960—312.3

CFAC	Calgary, Alta.	10000
CHNS	Halifax, N.S.	10000
CKWS	Kingston, Ont.	5000
WBRC	Birmingham, Ala.	5000
WMOZ	Mobile, Ala.	1000
WCVQ	Kodiak, Alaska	250
KOOL	Phoenix, Ariz.	5000
KAVR	Apple Valley, Calif.	5000d
KNEZ	Lompoc, Calif.	500d
KABL	Oakland, Calif.	1000
WELI	New Haven, Conn.	5000
WGRO	Lake City, Fla.	500d
WJCM	Sebring, Fla.	1000d
WJAZ	Albany, Ga.	5000d
WRFC	Athens, Ga.	5000
KSRA	Salmon, Idaho	1000d
WDLM	E. Moline, Ill.	1000d
WSBT	South Bend, Ind.	5000
KMA	Shenandoah, Iowa	5000
WPRT	Prestonsburg, Ky.	5000d
KROF	Abbeville, La.	1000d
WBOC	Salisbury, Md.	5000
WFGM	Fitchburg, Mass.	1000
WHAK	Rogers City, Mich.	5000d
KLTF	Little Falls, Minn.	500d
WABG	Greenwood, Miss.	1000
KFVS	Cape Girardeau, Mo.	5000
KNEB	Scottsbluff, Nebr.	1000
KWYK	Farmington, N.Mex.	1000d
WEAV	Plattsburg, N.Y.	5000
WAAK	Dallas, N.C.	1000d
WFTC	Kinston, N.C.	5000
WWST	Wooster, Ohio	1000d
KGWA	Enid, Okla.	1000
KLAD	Klamath Falls, Oreg.	5000d
WHYL	Carlisle, Pa.	5000d
WADP	Kane, Pa.	1000d
WATS	Sayre, Pa.	1000d
WBEU	Beaufort, S.C.	1000d
WBMC	McMinnville, Tenn.	500d
KIMP	Mt. Pleasant, Tex.	1000d
KGKL	San Angelo, Tex.	5000
KOVO	Provo, Utah	5000
WDBJ	Roanoke, Va.	5000
KALE	Richland, Wash.	1000
WTCH	Shawano, Wis.	1000

970—309.1

CKCH	Hull, Que.	5000
WERH	Hamilton, Ala.	5000d
WTBF	Troy, Ala.	5000
KNEA	Jonesboro, Ark.	1000d
KBIS	Bakersfield, Calif.	1000
KCHV	Coachella, Calif.	5000
KBEE	Modesto, Calif.	1000
KFEL	Pueblo, Colo.	1000d
WFLA	Tampa, Fla.	5000
WIIN	Atlanta, Ga.	5000d
WVOP	Vidalia, Ga.	5000d
KHBC	Hilo, Hawaii	1000
KAYT	Rupert, Idaho	1000d
WMAY	Springfield, Ill.	1000
WAVE	Louisville, Ky.	5000
KSYL	Alexandria, La.	1000
WCSH	Portland, Maine	5000
WAMD	Aberdeen, Md.	500
WESO	Southbridge, Mass.	1000d
WJAN	Ishpeming, Mich.	5000d
WKHM	Jackson, Mich.	1000
KQAQ	Austin, Minn.	5000d
KOOK	Billings, Mont.	5000
KJLT	No. Platte, Nebr.	5000d
KVEG	Las Vegas, Nev.	500d
WJRZ	Newark, N.J.	5000
WEBR	Buffalo, N.Y.	5000
WCHN	Norwich, N.Y.	500d
WRCS	Ahoskie, N.C.	1000d
WWIT	Canton, N.C.	1000d
WDAY	Fargo, N.Dak.	5000
WREO	Ashtabula, Ohio	5000
WATH	Athens, Ohio	1000d
KAKC	Tulsa, Okla.	1000
KOIN	Portland, Oreg.	5000
WWSW	Pittsburgh, Pa.	5000
WJMX	Florence, S.C.	5000
KASE	Austin, Tex.	1000d
KNOK	Ft. Worth, Tex.	1000d
WIVI	Christiansted, V.I.	1000
WYPR	Danville, Va.	1000d
WRWV	Waynesboro, Va.	500d
KREM	Spokane, Wash.	5000
WWYO	Pineville, W.Va.	1000d
WHA	Madison, Wis.	5000d
WIGL	Superior, Wis.	500d

980—305.9

CKNW	New Westminster, Brit. Columbia	10000
CFPL	London, Ont.	10000
CKGM	Montreal, Que.	10000
CBV	Quebec, Que.	5000
CHEX	Peterboro, Ont.	5000
CKRM	Regina, Sask.	10000
WKLF	Clanton, Ala.	1000d
WXLL	Big Delta, Alaska	100
KINS	Eureka, Calif.	5000
KEAP	Fresno, Calif.	500d
KFWB	Los Angeles, Calif.	5000
KGLN	GlenwoodSprgs., Colo.	1000d
WSUB	Groton, Conn.	1000d
WRC	Washington, D.C.	5000
WDVH	Gainesville, Fla.	5000d
WTOT	Marianna, Fla.	1000d
WBOP	Pensacola, Fla.	1000d
WLOD	Pompano Beach, Fla.	1000d
WKLY	Hartwell, Ga.	1000d
WPGA	Perry, Ga.	500d
WRIP	Rossville, Ga.	500d
KUPI	Idaho Falls, Idaho	1000d
KSGM	Chester, Ill.	500
WITY	Danville, Ill.	1000
KOKA	Shreveport, La.	5000d
WCAP	Lowell, Mass.	1000d
WDMC	Otsego, Mich.	500
WPBC	Minneapolis, Minn.	1000d
WAPF	McComb, Miss.	1000d
KMBC	Kansas City, Mo.	5000
KLYQ	Hamilton, Mont.	1000d
KVLV	Fallon, Nev.	5000d
KVER	Clovis, N.Mex.	1000
KMIN	Grants, N. Mex.	1000d
WTRY	Troy, N.Y.	5000
WKLM	Wilmington, N.C.	5000d
WAAA	Win.-Salem, N.C.	1000d
WONE	Dayton, Ohio	5000
WILK	Wilkes-Barre, Pa.	5000
WRBI	Winnsboro, S.C.	500d
KDSJ	Deadwood, S.Dak.	1000
WSIX	Nashville, Tenn.	5000
KFRD	Rosenberg, Tex.	1000d
KSVC	Richfield, Utah	5000
WFHG	Bristol, Va.	5000
WMEK	Chase City, Va.	500d
KUTI	Yakima, Wash.	5000d
WHAW	Weston, W.Va.	1000d
WCUB	Manitowoc, Wis.	1000d
WPRE	Prairie du Chien, Wis.	1000

990—302.8

CBW	Winnipeg, Man.	50000
CBY	Corner Brook, Nfld.	1000
WEIS	Center, Ala.	250
WWWF	Fayette, Ala.	1000d
WTCB	Flomaton, Ala.	500d
KTKT	Tucson, Ariz.	10000
KKIS	Pittsburg, Calif.	5000
KGUO	Santa Barbara, Calif.	1000d
KLIR	Denver, Colo.	1000d
WBZY	Torrington, Conn.	1000d
WFAB	Miami, Fla.	5000
WHOO	Orlando, Fla.	10000
WDWD	Dawson, Ga.	1000d
WGML	Hinesville, Ga.	250d
KTRG	Honolulu, Hawaii	5000
WCAZ	Carthage, Ill.	1000d
WITZ	Jasper, Ind.	1000d
KAYL	Storm Lake, Iowa	250d
KRSL	Russell, Kans.	250d
WJMR	New Orleans, La.	250d
KRIH	Rayville, La.	250d
WCRM	Clare, Mich.	250d
WABO	Waynesboro, Miss.	250d
KRMO	Monett, Mo.	250d
KSVP	Artesia, N.Mex.	1000
WEEB	Southern Pines, N.C.	5000d
WJEH	Gallipolis, Ohio	1000d
WTIG	Massillon, Ohio	250d
KABY	Albany, Oreg.	250d
WIBG	Philadelphia, Pa.	50000
WVSC	Somerset, Pa.	250d
WPRA	Mayaguez, P.R.	10000
WLKW	Providence, R.I.	50000
WAKN	Aiken, S.C.	1000d
WNOX	Knoxville, Tenn.	10000
KWAM	Memphis, Tenn.	1000d
KTRM	Beaumont, Tex.	1000
KAML	Kenedy, Tex.	250d
KNIN	Wichita Falls, Tex.	10000
KDYL	Tooele, Utah	1000d
WNRV	Narrows, Va.	1000d
WANT	Richmond, Va.	1000d
WKLJ	Sparta, Wis.	250

1000—299.8

CKBW	Bridgewater, N.S.	10000
WCFL	Chicago, Ill.	50000
KTOK	Okla. City, Okla.	5000
KSTA	Coleman, Tex.	250d
KGRI	Henderson, Tex.	250d
WHWB	Rutland, Vt.	1000d
WBNB	Charlotte Amalie, Virgin Islands	1000
KOMO	Seattle, Wash.	50000

1010—296.9

CBX	Calgary, Alta.	50000d
CFRB	Toronto, Ont.	50000
KCAC	Phoenix, Ariz.	500d
KVNC	Winslow, Ariz.	1000
KLRA	Little Rock, Ark.	10000
KCHJ	Delano, Calif.	5000
KCMJ	Palm Sprgs., Calif.	1000
KSAY	San Fran., Calif.	10000d
WCNU	Crestview, Fla.	1000d
WZRO	Jacksonville Beach, Florida	2500d
WINQ	Tampa, Fla.	50000d
WGUN	Decatur, Ga.	50000d
KATN	Boise, Idaho	1000d
WCSI	Columbus, Ind.	500d
KSMN	Mason City, Iowa	1000d
KIND	Independence, Kans.	250d
KDLA	DeRidder, La.	1000d
WSID	Baltimore, Md.	1000d
WMRT	Lansing, Mich.	500d
WMOX	Meridian, Miss.	10000
KCHI	Chillicothe, Mo.	250d
KXEN	Festus, Mo.	50000d
KRVN	Lexington, Nebr.	25000d
WCNL	Newport, N.H.	250d
WINS	New York, N.Y.	50000
WABZ	Albemarle, N.C.	1000d
WELS	Kinston, N.C.	1000d
WIOI	New Boston, Ohio	1000d
KEEV	Portland, Oreg.	1000d

Kc.	Wave Length	W.P.
WITT	Lewisburg, Pa.	250d
WHIN	Gallatin, Tenn.	1000d
WORM	Savannah, Tenn.	250d
KBUY	Amarillo, Tex.	5000
KODA	Houston, Tex.	1000d
KAWA	Marlin, Tex.	1000d
WELK	Charlottesville, Va	1000d
WMEV	Marion, Va.	1000d
WPMH	Portsmouth, Va.	5000d
WCST	Berkeley Sprgs., W.Va.	250d
WSPT,	Stevens Pt., Wis.	1000d

1020—293.9

KGBS	Los Angeles, Calif.	50000
WCIL	Carbondale, Ill.	1000d
WPEO	Peoria, Ill.	1000d
KDKA	Pittsburgh, Pa.	50000

1030—291.1

WBZ	Boston, Mass.	50000
WBZA	Springfield, Mass.	1000
KCTA	Corpus Christi, Tex.	50000d

1040—288.3

KHVH	Honolulu, Hawaii	5000
WHO	Des Moines, Iowa	50000
KIXL	Dallas, Tex.	1000d

1050—285.5

CFGP	Grande Prairie, Alta.	10000
CKSB	St. Boniface, Man.	10000
CJIC	Sault Ste. Marie, Ont.	10000
CHUM	Toronto, Ont.	5000
WRFS	Alexander City, Ala.	1000d
WCRI	Scottsboro, Ala.	250d
KVWM	Show Low, Ariz.	250d
KVLC	Little Rock, Ark.	1000d
KOFY	San Mateo, Calif.	1000d
KWSO	Wasco, Calif.	1000d
KLMO	Longmont, Colo.	250d
WJSB	Crestview, Fla.	1000d
WIVY	Jacksonville, Fla.	1000d
WHBO	Tampa, Fla.	250d
WRMF	Titusville, Fla.	500d
WAUG	Augusta, Ga.	5000d
WBIE	Marietta, Ga.	500d
WMNZ	Montezuma, Ga.	250d
WDZ	Decatur, Ill.	1000d
KNCO	Garden City, Kans.	1000d
WNES	Central City, Ky.	500d
KLPL	Lake Providence, La.	250d
KCIJ	Shreveport, La.	250d
KVPI	Villa Platte, La.	250d
WQMR	Silver Sprg., Md.	1000d
WPAG	Ann Arbor, Mich.	1000d
KLOH	Pipestone, Minn.	1000d
WACR	Columbus, Miss.	1000d
KMIS	Portageville, Mo.	250d
KSIS	Sedalia, Mo.	1000d
KLVC	Las Vegas, Nev.	500d
WBNC	Conway, N.H.	1000d
WSEN	Baldwinsville, N.Y.	250d
WSTS	Massena, N.Y.	1000d
WHN	New York, N.Y.	50000
WBTL	Farmville, N.C.	250d
WFSC	Franklin, N.C.	1000d
WLON	Lincolnton, N.C.	1000d
WWGP	Sanford, N.C.	1000d
KCCO	Lawton, Okla.	250d
KFMJ	Tulsa, Okla.	1000d
KUBE	Pendleton, Oreg.	1000d
KEED	Springfield, Oreg.	1000d
WBUT	Butler, Pa.	1000d
WLYC	Williamsport, Pa.	1000d
WSMT	Sparta, Tenn.	1000d
KLEN	Killeen, Tex.	250d
KWLD	Liberty, Tex.	250d
KPLA	Plainview, Tex.	1000d
KCAS	Slaton, Tex.	250d
WGAT	Gate City, Va.	250d
WBRG	Lynchburg, Va.	1000d
WCMS	Norfolk, Va.	1000d
KNBX	Kirkland, Wash.	1000d
WCEF	Parkersburg, W.Va.	1000d
WECL	Eau Claire, Wis.	1000d
WLIP	Kenosha, Wis.	250d
KWIV	Douglas, Wyo.	250d

1060—282.8

CFCN	Calgary, Alta.	10000
CJLR	Quebec, Que.	10000
KUPD	Tempe, Ariz.	500
KPAY	Chico, Calif.	10000
WNOE	New Orleans, La.	50000
WHFB	Benton Harbor, Mich.	1000d
WMAP	Monroe, N.C.	250d
WHOF	Canton, Ohio	1000d
WRCV	Philadelphia, Pa	50000

1070—280.2

CBA	Sackville, N.B.	50000
CHOK	Sarnia, Ont.	5000
WAPI	Birmingham, Ala.	50000
KNX	Los Angeles, Calif.	50000
WVCG	Coral Gables, Fla.	10000
WIBC	Indianapolis, Ind.	50000
KIRL	Wichita, Kans.	10000
KHMO	Hannibal, Mo.	5000
WHPE	High Point, N.C.	1000d
WMIA	Arecibo, P.R.	500

WFLI	Lookout Mtn., Tenn.	10000
WDIA	Memphis, Tenn.	50000
KOPY	Alice, Tex.	1000
WKOW	Madison, Wis.	10000

1080—277.6

CHED	Edmonton, Alta.	10000
KSCO	Santa Cruz, Calif.	10000
WTIC	Hartford, Conn.	50000
WKLO	Louisville, Ky.	5000
WOAP	Owosso, Mich.	250d
WUFO	Amherst, N.Y.	1000
WEWO	Laurinburg, N.C.	1000d
KWJJ	Portland, Oreg.	10000
WYRE	Pittsburgh, Pa.	1000d
KRLD	Dallas, Tex.	50000

1090—275.1

CHEC	Lethbridge, Alta.	5000
CHIC	Brampton, Ont.	250
CHRS	St. Jean, Que.	1000
KTHS	Little Rock, Ark.	50000
WCRA	Effingham, Ill.	250d
KHAI	Honolulu, Hawaii	5000
KNWS	Waterloo, Iowa	1000d
WBAL	Baltimore, Md.	50000
WILD	Boston, Mass.	1000d
WMUS	Muskegon, Mich.	1000d
WAJS	San German P.R.	250
KING	Seattle, Wash.	50000

1100—272.6

KFAX	San Francisco, Calif.	50000
WLBB	Carrollton, Ga.	250d
WHLI	Hempstead, N.Y.	10000d
KYW	Cleveland, Ohio	50000
WGPA	Bethlehem, Pa.	250d

1110—270.1

CFML	Cornwall, Ont.	1000
CFTJ	Galt, Ont.	250
WALT	Tampa, Fla.	50000d
KIPA	Hilo, Hawaii	1000
WMBI	Chicago, Ill.	5000d
KFAB	Omaha, Nebr.	50000
WBT	Charlotte, N.C.	50000
KBND	Bend, Oreg.	5000
WNAR	Norristown, Pa.	500d
WVJP	Caguas, P.R.	250
WHIM	Providence, R.I.	1000d

1120—267.7

WUST	Bethesda, Md.	250d
KMOX	St. Louis, Mo.	50000
WWOL	Buffalo, N.Y.	1000d
KCLE	Cleburne, Tex.	250d

1130—265.3

CKWX	Vancouver, B.C.	50000
KROU	Dinuba, Calif.	1000
KSDO	San Diego, Calif.	5000
KLEI	Kailua, Hawaii	1000
KWKH	Shreveport, La.	50000
WCAR	Detroit, Mich.	50000
WDGY	Minneapolis, Minn.	50000
WNEW	New York, N.Y.	50000

1140—263.0

CFTK	Terrace, B.C.	1000
CKXL	Calgary, Alta.	10000
CBI	Sydney, N.S.	5000
KRAK	Sacramento, Calif.	50000
WMIE	Miami, Fla.	10000
KGEM	Boise, Idaho	10000
WSIV	Pekin, Ill.	1000d
KLPR	Oklahoma City, Okla.	1000d
WITA	San Juan, P.R.	500
KSOO	Sioux Falls, S.Dak.	10000
KORC	Mineral Wells, Tex.	250d
WRVA	Richmond, Va.	50000

1150—260.7

CKSA	Lloydminister, Alta.	10000
CHSJ	Saint John, N.B.	10000
CKOC	Hamilton, Ont.	10000
CKX	Brandon, Man.	10000
CKTR	Three Rivers, Que.	10000
WBCA	Bay Minette, Ala.	1000d
WGEA	Geneva, Ala.	1000d
WJRD	Tuscaloosa, Ala.	5000
KCKY	Coolidge, Ariz.	1000
KXLR	No. Little Rock, Ark.	5000
KFSG	Los Angeles, Calif.	2500
KRKD	Los Angeles, Calif.	5000
KJAX	Santa Rosa, Calif.	5000
KGMC	Englewood, Colo.	1000d
WCNX	Middletown, Conn.	500d
WDEL	Wilmington, Del.	5000
WNDB	Daytona Bch., Fla.	1000
WTMP	Tampa, Fla.	5000d
WFPM	Fort Valley, Ga.	1000d
WJEM	Valdosta, Ga.	1000d
WGGH	Marion, Ill.	5000d
WJRL	Rockford, Ill.	500d
KWKY	Des Moines, Iowa	1000
KSAL	Salina, Kans.	5000
WMST	Mt. Sterling, Ky.	500d
WLOC	Mumfordville, Ky.	1000d
WJBO	Baton Rouge, La.	5000
WGHM	Skowhegan, Maine	5000d
WHMC	Gaithersburg, Md.	1000
WCOP	Boston, Mass.	5000
WCEN	Mt. Pleasant, Mich.	1000
KASM	Albany, Minn.	1000d
WXTN	Lexington, Miss.	500d
KRMS	Osage Beach, Mo.	1000d
KSEN	Shelby, Mont.	1000
KDEF	Albuquerque, N.Mex.	1000
WRUN	Utica, N.Y.	5000
WBAG	Burlington, N.C.	1000d
WGBR	Goldsboro, N.C.	5000
WCUE	Cuyahoga Falls, Ohio	1000d
WIMA	Lima, Ohio	1000
KNED	McAlester, Okla.	1000
KAGO	Klamath Falls, Oreg.	5000
WHUN	Huntingdon, Pa.	5000d
WYNS	Lehighton, Pa.	1000d
WKPA	New Kensington, Pa.	1000d
WORA	Mayaquez, P.R.	1000
WDIX	Orangeburg, S.C.	5000
WTYC	Rock Hill, S.C.	1000d
WSNW	Seneca Township, South Carolina	1000d
KIMM	Rapid City, S.Dak.	5000d
WAPO	Chattanooga, Tenn.	5000
WCRK	Morristown, Tenn.	1000
WTAW	Bryan, Tex.	1000d
KCCT	Corpus Christi, Tex.	1000d
KIZZ	El Paso, Tex.	1000d
KVIL	Highland Park, Tex.	1000d
KJBC	Midland, Tex.	1000d
KPNG	Port Neches, Tex.	500d
KOLJ	Quanah, Tex.	500d
KBER	San Antonio, Tex.	1000d
KOFE	Pullman, Wash.	1000d
KAYO	Seattle, Wash.	5000
KKEY	Vancouver, Wash.	1000d
WABH	Deerfield, Va.	1000d
WELC	Welch, W.Va.	1000d
WAXX	Chippewa Falls, Wis.	5000d
WISN	Milwaukee, Wis.	5000

1160—258.5

WJJD	Chicago, Ill.	50000
KSL	Salt Lake City, Utah	50000

1170—256.3

CFNS	Saskatoon, Sask.	1000
WCOV	Montgomery, Ala.	10000
KCBQ	San Diego, Calif	50000
KLOK	San Jose, Calif.	10000
KOHO	Honolulu, Hawaii	1000
WLBH	Mattoon, Ill.	250d
KSTT	Davenport, Iowa	1000
KVOO	Tulsa, Okla.	50000
WLEO	Ponce, P.R.	250
KPUG	Bellingham, Wash.	1000
WWVA	Wheeling, W.Va.	50000

1180—254.1

WLDS	Jacksonville, Ill.	1000d
WHAM	Rochester, N.Y.	50000

1190—252.0

KZON	Tolleson, Ariz.	250
KEZY	Anaheim, Calif.	1000
KNBA	Vallejo, Calif.	250d
WOWO	Ft. Wayne, Ind.	50000
WANN	Annapolis, Md.	10000d
WKOX	Fram'gham, Mass.	1000d
WLIB	New York, N.Y.	1000d
KEX	Portland, Oreg.	50000
KLIF	Dallas, Tex.	50000

1200—249.9

WOAI	San Antonio, Tex.	50000

1210—247.8

WCNT	Centralia, Ill.	1000d
WKNX	Saginaw, Mich.	10000d
WADE	Wadesboro, N.C.	1000d
WAVI	Dayton, Ohio	250d
WCAU	Philadelphia, Pa.	50000

1220—245.8

CJOC	Lethbridge, Alta.	10000
CKDA	Victoria, B.C.	10000
CJRL	Kenora, Ont.	1000
CKCW	Moncton, N.B.	10000
CJSS	Cornwall, Ont.	10000
CKSM	Shawinigan, Quebec	1000
WEZB	Birmingham, Ala.	1000d
WPRN	Butler, Ala.	1000d
WABF	Fairhope, Ala.	1000
KVSA	McGehee, Ark.	1000d
KLIP	Fowler, Calif.	250d
KIBE	Palo Alto, Calif.	1000d
KKAR	Pomona, Calif.	250d
KFSC	Denver, Colo.	1000d
WDEE	Hamden, Conn.	1000d
WQTY	Arlington, Fla.	1000d
WKBX	Kissimmee, Fla.	1000d
WMET	Miami, Fla.	250d
WSAF	Sarasota, Fla.	1000d
WCLB	Camilla, Ga.	1000d
WPLK	Rockmart, Ga.	500d
WSFT	Thomaston, Ga.	250d
WLPO	LaSalle, Ill.	1000d
WKRS	Waukegan, Ill.	1000d
WSLM	Salem, Ind.	1000d
KJAN	Atlantic, Iowa	250d
KOUR	Independence, Iowa	250d
KOFO	Ottawa, Kans.	250d
WFKN	Franklin, Ky.	250d
KBCL	Shreveport, La.	250d
WLBI	Denham Springs, La.	250d
WSME	Sanford, Maine	1000d
WBCH	Hastings, Mich.	250d
WAVN	Stillwater, Minn.	1000d
WMDC	Hazlehurst, Miss.	250d
KBHM	Branson, Mo.	1000d
KLPW	Union, Mo.	1000d
WKBK	Keene, N.H.	1000d
WGNY	Newburgh, N.Y.	5000d
WSOQ	N. Syracuse, N.Y.	1000d
WKMT	Kings Mtn., N.C.	1000d
WREV	Reidsville, N.C.	1000d
WENC	Whiteville, N.C.	1000d
KEYD	Oakes, N.Dak.	1000d
WGAR	Cleveland, Ohio	50000
WERT	Van Wert, Ohio	250d
KGYN	Guymon, Okla.	1000d
KBLY	Goldbeach, Oreg.	1000d
KAPT	Salem, Ore.	1000
WJUN	Mexico, Pa.	1000d
WRIB	Providence, R.I.	1000d
WALD	Walterboro, S.C.	1000d
WFWL	Camden, Tenn.	250d
WCPH	Etowah, Tenn.	1000d
WHEY	Millington, Tenn.	250d
KVLL	Livingston, Tex.	250d
KZEE	Weatherford, Tex.	250d
WLSD	Big Stone Gap, Va.	1000d
WFAX	Falls Church, Va.	5000d
KASY	Auburn, Wash.	250d
KOZI	Chelan, Wash.	1000d
WRNE	Wis. Rapids, Wis.	500d

1230—243.8

CFCW	Camrose, Alta.	10000
CHFC	Churchill, Man.	250
CFKL	Schefferville, Que.	250
CFGR	Gravelbourg, Sask.	250
CFHR	Hay River, Nwt.	100
CFYT	Dawson City, Yukon T.	100
CFPA	Port Arthur, Ont.	1000
CKLD	Thetford Mines, Que.	250
CKMP	Midland, Ont.	250
VOAR	St. John's, Nfld.	100
CKVD	Val D'Or, Que.	1000
WAUD	Auburn, Ala.	1000
WJBB	Haleyville, Ala.	1000
WBHP	Huntsville, Ala.	1000
WOLS	Florence, Ala.	1000
WNUZ	Talladega, Ala.	250
WTBC	Tuscaloosa, Ala.	250
KIFW	Sitka, Alaska	250
KSUN	Bisbee, Ariz.	250
KAAA	Kingman, Ariz.	250
KRIZ	Phoenix, Ariz.	250
KATO	Safford, Ariz.	250
KCON	Conway, Ark.	250
KFPW	Ft. Smith, Ark.	1000
KBTM	Jonesboro, Ark.	250
KGEE	Bakersfield, Calif.	500
KWTC	Barstow, Calif.	1000
KIBS	Bishop, Calif.	1000
KXO	El Centro, Calif.	250
KDAC	Ft. Bragg, Calif.	250
KGFJ	Los Angeles, Calif.	250
KPRL	Paso Robles, Calif.	1000
KRDG	Redding, Calif.	250
KWG	Stockton, Calif.	250
KEXO	Grand Junc., Colo.	250
KBRR	Leadville, Colo.	250
KDZA	Pueblo, Colo.	250
KGEK	Sterling, Colo.	250
WINF	Manchester, Conn.	1000
WGGG	Gainesville, Fla.	1000
WONN	Lakeland, Fla.	250
WMAF	Madison, Fla.	1000
WSBB	New Smyrna Bch., Florida	1000
WNVY	Pensacola, Fla.	250
WCNH	Quincy, Fla.	1000
WJNO	W. Palm Beach, Fla.	250
WBIA	Augusta, Ga.	1000d
WBLJ	Dalton, Ga.	1000
WXLI	Dublin, Ga.	250d
WFOM	Marietta, Ga.	1000
WSOK	Savannah, Ga.	250
WAYX	Waycross, Ga.	1000
KBAR	Burley, Idaho	250
KORT	Grangeville, Idaho	250
KRXK	Rexburg, Idaho	1000
WJBC	Bloomington, Ill.	1000
WQUA	Moline, Ill.	1000
WHCO	Sparta, Ill.	250
WJOB	Hammond, Ind.	1000d
WSAL	Logansport, Ind.	1000
WTCJ	Tell City, Ind.	250
WBOW	Terre Haute, Ind.	1000d
KFJB	Marshalltown, Iowa	1000
WHIR	Danville, Ky.	1000d
WHOP	Hopkinsville, Ky.	1000
WMLF	Pineville, Ky.	1000d
KLIC	Monroe, La.	250
WJBW	New Orleans, La.	1000
KSLO	Opelousas, La.	250
WQDY	Calais, Maine	250
WITH	Baltimore, Md.	1000
WCUM	Cumberland, Md.	1000
WMNB	No. Adams, Mass.	250
WESX	Salem, Mass.	1000
WNEB	Worcester, Mass.	1000
WJEF	Grand Rapids, Mich.	1000
WIKB	Iron River, Mich.	1000
WMPC	Lapeer, Mich.	250
WSOO	Slt. Ste. Marie, Mich.	1000
WSTR	Sturgis, Mich.	1000d
WKLK	Cloquet, Minn.	1000
KGHS	Internat'l Falls, Minn.	100
KYSM	Mankato, Minn.	250
KMRS	Morris, Minn.	250
KTRF	Thief Riv. Flls., Minn.	250
KWNO	Winona, Minn.	1000
WCMA	Corinth, Miss.	1000
WHSY	Hattiesburg, Miss.	1000
WSSO	Starkville, Miss.	250

Kc. Wave Length		W.P.
WAZF	Yazoo City, Miss.	250
KODE	Joplin, Mo.	1000
KLWT	Lebanon, Mo.	250
KNCM	Moberly, Mo.	1000
KANA	Anaconda, Mont.	250
KBMN	Bozeman, Mont.	1000d
KXLO	Lewistown, Mont.	1000
KLCB	Libby, Mont.	250
KTNC	Falls City, Nebr.	100
KHAS	Hastings, Nebr.	250
KELY	Ely, Nev.	250
KLAS	Las Vegas, Nev.	250
KDOT	Reno, Nev.	250
WMOU	Berlin, N.H.	250
WTSV	Claremont, N.H.	1000
WCMC	Wildwood, N.J.	100
KALG	Alamogordo, N.Mex.	250
KOTS	Deming, N.Mex.	250
KYVA	Gallup, N.Mex.	250
KFUN	Las Vegas, N.Mex.	250
KRSY	Roswell, N.Mex.	250
WNIA	Cheektowaga, N.Y.	500
WENY	Elmira, N.Y.	1000
WHUC	Hudson, N.Y.	250
WLFH	Little Falls, N.Y.	250
WFAS	White Plains, N.Y.	250
WSKY	Asheville, N.C.	1000
WFAI	Fayetteville, N.C.	1000d
WMFR	High Point, N.C.	1000
WISP	Kinston, N.C.	1000d
WNNC	Newton, N.C.	250
WCBT	Roanoke Rap., N.C.	250
KDIX	Dickinson, N.Dak.	250
WCPO	Cincinnati, Ohio	250
WCOL	Columbus, Ohio	250
WIRO	Ironton, Ohio	250
WTOL	Toledo, Ohio	1000d
KADA	N. of Ada, Okla.	250
WBBZ	Ponca City, Okla.	250
KIAL	Astoria, Oreg.	250
KRNS	Burns, Oreg.	250
KOOS	Coos Bay, Oreg.	250
KGRO	Gresham, Oreg.	250
KYJC	Medford, Oreg.	1000
KQIK	Lakeview, Oreg.	250
KTDO	Toledo, Oreg.	250
WBVP	Beaver Falls, Pa.	1000
WEEX	Easton, Pa.	250
WKBO	Harrisburg, Pa.	1000
WCRO	Johnstown, Pa.	1000
WBPZ	Lock Haven, Pa.	250
WTIV	Titusville, Pa.	1000
WNIK	Arecibo, P.R.	250
WERI	Westerly, R.I.	1000
WAIM	Anderson, S.C.	1000
WNOK	Columbia, S.C.	1000d
WOLS	Florence, S.C.	1000
KISD	Sioux Falls, S.Dak.	1000d
WAKI	McMinnville, Tenn.	1000
KSIX	Corpus Christi, Tex.	250
KDLK	Del Rio, Tex.	250
KNUZ	Houston, Tex.	1000
KERV	Kerrville, Tex.	250
KLVT	Levelland, Tex.	250
KEEE	Nacogdoches, Tex.	250
KOSA	Odessa, Tex.	250
KHHH	Pampa, Tex.	250
KSEY	Seymour, Tex.	1000
KSST	Sulphur Sprgs., Tex.	250
KWTX	Waco, Tex.	250
KMUR	Murray, Utah	250
KOAL	Price, Utah	250
WJOY	Burlington, Vt.	1000
WBBI	Abingdon, Va.	1000d
WCFV	Clifton Forge, Va.	1000
WFVA	Fredericksburg, Va.	1000
WNOR	Norfolk, Va.	1000
KWYZ	Everett, Wash.	1000
KLYK	Spokane, Wash.	250
KREW	Sunnyside, Wash.	1000
WLOG	Logan, W.Va.	1000
WTAP	Parkersburg, W.Va.	1000
WHBY	Appleton, Wis.	250
WCLO	Janesville, Wis.	1000
WHVF	Wausau, Wis.	250
KVOC	Casper, Wyo.	1000

1240—241.8

CFLM	La Tuque, Que.	1000
CFNW	Norman Wells, Northwest Terr.	100
CFPR	Prince Rupert, B.C.	250
CFWH	Whitehorse, Y.T.	250
CJAV	Port Alberni, B.C.	250
CJCS	Stratford, Ont.	1000
CJRW	Summerside, P.E.I.	250
CKBS	St. Hyacinthe, Que.	250
CKCQ-1	Williams Lake, B.C.	250
CKLS	LaSarre, Que.	250
WEBJ	Brewton, Ala.	250
WULA	Eufaula, Ala.	250
WOWL	Florence, Ala.	1000
WARF	Jasper, Ala.	1000
KVRD	Cottonwood, Ariz.	250
KZOW	So. of Globe, Ariz.	1000
KOFA	Yuma, Ariz.	250
KVRC	Arkadelphia, Ark.	250
KWAK	Stuttgart, Ark.	250
KPLY	Crescent City, Calif.	250
KMBY	Monterey, Calif.	1000
KPPC	Pasadena, Calif.	100
KLOA	Ridgecrest, Calif.	250
KROY	Sacramento, Calif.	1000
KRNO	San Bernardino, California	1000d
KSON	San Diego, Calif.	250
KSMA	Santa Maria, Calif.	250
KSUE	Susanville, Calif.	1000
KRDO	Colo. Sprgs., Colo.	250
KDGO	Durango, Colo.	250
KSLV	Monte Vista, Colo.	1000
KCRT	Trinidad, Colo.	250
WWCO	Waterbury, Conn.	1000
WBGC	Chipley, Fla.	250
WLCO	Eustis, Fla.	250
WINK	Fort Myers, Fla.	250
WMMB	Melbourne, Fla.	1000
WFOY	St. Augustine, Fla.	1000
WBHB	Fitzgerald, Ga.	250
WDUN	Gainesville, Ga.	1000
WLAG	LaGrange, Ga.	1000
WBML	Macon, Ga.	1000
WWNS	Statesboro, Ga.	1000
WPAX	Thomasville, Ga.	250
WTWA	Thomson, Ga.	250
KLEI	Kailua, Hawaii	250
KVNI	Coeur d'Alene, Idaho	250
KFLT	Mountain Home, Idaho	250
KWIK	Pocatello, Idaho	250
WCRW	Chicago, Ill.	1000
WEDC	Chicago, Ill	1000d
WSBC	Chicago, Ill.	1000
WEBQ	Harrisburg, Ill.	250
WTAX	Springfield, Ill.	1000
WSDR	Sterling, Ill.	100
WHBU	Anderson, Ind.	250
KDEC	Decorah, Iowa	250
KWLC	Decorah, Iowa	250
KBIZ	Ottumwa, Iowa	1000
KICD	Spencer, Iowa	1000
KIUL	Garden City, Kans.	1000
KAKE	Wichita, Kans.	250
WINN	Louisville, Ky.	250
WFTM	Maysville, Ky.	1000
WPKE	Pikeville, Ky.	250
WSFC	Somerset, Ky.	250
KASO	Minden, La.	250
KANE	New Iberia, La.	250
WCOU	Lewiston, Maine	1000
WCEM	Cambridge, Md.	250
WJEJ	Hagerstown, Md.	1000
WHAI	Greenfield, Mass.	250
WOCB	W. Yarmouth, Mass.	1000
WATT	Cadillac, Mich.	250
WCBY	Cheboygan, Mich.	250
WJPD	Ishpeming, Mich.	1000
WJIM	Lansing, Mich.	1000d
WMFG	Hibbing, Minn.	1000
WJON	St. Cloud, Minn.	1000
WMPA	Aberdeen, Miss.	250
WGRM	Greenwood, Miss.	250
WGCM	Gulfport, Miss.	250
WMIS	Natchez, Miss.	250
KFMO	Flat River, Mo.	250
KWOS	Jefferson City, Mo.	1000d
KODE	Joplin, Mo.	1000d
KNEM	Nevada, Mo.	250
KBMY	Billings, Mont.	1000
KLTZ	Glasgow, Mont.	250
KBLL	Helena, Mont.	250
KFOR	Lincoln, Nebr.	1000
KODY	North Platte, Nebr.	1000
KELK	Elko, Nev.	1000
WSNJ	Bridgeton, N.J.	250
KAVE	Carlsbad, N.Mex.	250
KCLV	Clovis, N.Mex.	1000
WGBB	Freeport, N.Y.	250
WGVA	Geneva, N.Y.	1000d
WJTM	Jamestown, N.Y.	1000
WVOS	Liberty, N.Y.	250
WNBZ	Saranac Lake, N.Y.	1000
WSNY	Schenectady, N.Y.	1000d
WATN	Watertown, N.Y.	250
WPNF	Brevard, N.C.	250
WIST	Charlotte, N.C.	1000
WCNC	Elizabeth City, N.C.	250
WJNC	Jacksonville, N.C.	1000
WRAL	Raleigh, N.C.	1000
KDLR	Devils Lake, N.Dak.	250
WBBW	Youngstown, Ohio	1000
WHIZ	Zanesville, Ohio	250
KVSO	Ardmore, Okla.	250
KBEK	Elk City, Okla.	250
KBEL	Idabel, Okla.	250
KOKL	Okmulgee, Okla.	250
KFLY	Corvallis, Oreg.	1000d
KKID	Pendleton, Oreg.	1000
KPRB	Redmond, Oreg.	250
WRTA	Altoona, Pa.	1000
WHUM	Reading, Pa.	250
WKOK	Sunbury, Pa.	250
WBAX	Wilkes-Barre, Pa.	250
WALO	Humacao, P.R.	1000
WWON	Woonsocket, R.I.	1000
WKDK	Newberry, S.C.	250
WDXY	Sumter, S.C.	250
WBEJ	Elizabethton, Tenn.	1000
WEKR	Fayetteville, Tenn.	1000
WBIR	Knoxville, Tenn.	1000
WKDA	Nashville, Tenn.	1000
WENK	Union City, Tenn.	1000
KVLF	Alpine, Tex.	1000
KEAN	Brownwood, Tex.	1000
KORA	Bryan, Tex.	250
KOCA	Kilgore, Tex.	250
KSOX	Raymondville, Tex.	250
KCKG	Snora, Tex.	250
KXOX	Sweetwater, Tex.	250
WSKI	Montpelier, Vt.	1000
WSSV	Petersburg, Va.	1000
WROV	Roanoke, Va.	250
WTON	Staunton, Va.	1000
KXLE	Ellensburgh, Wash.	250
KGY	Olympia, Wash.	1000
WKOY	Bluefield, W.Va.	250
WTIP	Charleston, W.Va.	1000
WDNE	Elkins, W.Va.	1000
WOMT	Manitowoc, Wis.	250
WIBU	Poynette, Wis.	250
WOBT	Rhinelander, Wis.	1000
WJMC	Rice Lake, Wis.	1000
KFBC	Cheyenne, Wyo.	1000
KLUK	Evanston, Wyo.	1000
KASL	Newcastle, Wyo.	250
KRAL	Rawlins, Wyo.	1000
KTHE	Thermopolis, Wyo.	1000

1250—239.9

CHWO	Oakville, Ont.	1000
CKBL	Matane, Que.	5000
CKOM	Saskatoon, Sask.	10000
WZOB	Ft. Payne, Ala.	1000d
WETU	Wetumpka, Ala.	5000d
KAKA	Wickenburg, Ariz.	500d
KWCX	Willcox, Ariz.	1000d
KFAY	Fayetteville, Ark.	1000d
KAJI	Little Rock, Ark.	1000
KHOT	Madera, Calif.	500d
KTMS	Santa Barbara, Calif.	1000
KDHI	Twenty-Nine Palms, California	1000d
KMSL	Ukiah, Calif.	500d
KICM	Golden, Colo.	1000d
WNER	Live Oak, Fla.	1000d
WRIM	Pahokee, Fla.	500d
WDAE	Tampa, Fla.	5000
WYTH	Madison, Ga.	1000d
WIZZ	Streator, Ill.	500d
WGL	Ft. Wayne, Ind.	1000
WRAY	Princeton, Ind.	1000d
KCFI	Cedar Falls, Iowa	500d
KFKU	Lawrence, Kans.	5000
WREN	Topeka, Kans.	5000
WNVL	Nicholasville, Ky.	500
WLCK	Scottsville, Ky.	500d
WGUY	Bangor, Maine	5000d
WARE	Ware, Mass.	1000
WWBC	Bay City, Mich.	1000d
KOTE	Fergus Falls, Minn.	1000
KCUE	Red Wing, Minn.	1000d
WHNY	McComb, Miss.	5000
KHTN	Houston, Mo.	500d
WKBR	Manchester, N.H.	5000
WMTR	Morristown, N.J.	5000d
WIPS	Ticonderoga, N.Y.	1000d
WFAG	Farmville, N.C.	500d
WBRM	Marion, N.C.	1000d
WCHO	Washington Court House, Ohio	500d
KQEN	Roseburg, Oreg.	5000d
WLEM	Emporium, Pa.	1000d
WPEL	Montrose, Pa.	1000d
WRYT	Pittsburgh, Pa.	5000
WNOW	York, Pa.	1000d
WTMA	Charleston, S.C.	5000
WCKM	Winnsboro, S.C.	500d
WKBL	Covington, Tenn.	1000d
WNTT	Tazewell, Tenn.	500d
KFTV	Paris, Tex.	500d
KPAC	Port Arthur, Tex.	5000
KUKA	San Antonio, Tex.	500d
KTFO	Seminole, Tex.	1000d
KANN	Ogden, Utah	1000d
KVEL	Vernal, Utah	5000d
WDVA	Danville, Va.	5000
WYSR	Franklin, Va.	1000d
WNRG	Grundy, Va.	1000d
KWSC	Pullman, Wash.	5000
KTW	Seattle, Wash.	1000
WEMP	Milwaukee, Wis.	5000

1260—238.0

CFRN	Edmonton, Alta.	50000
DYBU	Cebu, P.I.	1000
WCRT	Birmingham, Ala.	5000d
KPIN	Casa Grande, Ariz.	1000d
KCCB	Corning, Ark.	500d
KBHC	Nashville, Ark.	500d
KGIL	San Fernando, Calif.	5000
KYA	San Francisco, Calif.	5000
WMMM	Westport, Conn.	1000d
WNRK	Newark, Del.	500d
WWDC	Washington, D.C.	5000
WFTW	Fort Walton Beach, Florida	1000d
WAME	Miami, Fla.	5000d
WWPF	Palatka, Fla.	1000
WHAB	Baxley, Ga.	5000d
WBBK	Blakely, Ga.	1000d
WTJH	East Point, Ga.	5000d
KIFI	Idaho Falls, Idaho	5000
KWEI	Weiser, Ida.	1000d
WIBV	Belleville, Ill.	1000d
WFBM	Indianapolis, Ind.	5000
KFGQ	Boone, Iowa	250d
KWHK	Hutchinson, Kans.	1000
WXOK	Baton Rouge, La.	1000d
WEZE	Boston, Mass.	5000
WALM	Albion, Mich.	1000
WJBL	Holland, Mich.	5000d
KROX	Crookston, Minn.	1000
KDUZ	Hutchinson, Minn.	1000d
WGVM	Greenville, Miss.	5000d
WNSL	Laurel, Miss.	5000d
KGBX	Springfield, Mo.	5000
KIMB	Kimball, Nebr.	1000d
WBUD	Trenton, N.J.	5000
KVSF	Santa Fe, N.Mex.	1000
WBNR	Beacon, N.Y.	1000d
WNDR	Syracuse, N.Y.	5000
WGWR	Asheboro, N.C.	1000d
WCDJ	Edenton, N.C.	1000d
WDOK	Cleveland, Ohio	5000
WNXT	Portsmouth, Ohio	5000
KWSH	Wewoka-Seminole, Oklahoma	1000
KMCM	McMinnville, Oreg.	1000
WWYN	Erie, Pa.	5000
WPHB	Philipsburg, Pa.	5000d
WISO	Ponce, P.R.	1000
WMUU	Greenville, S.C.	5000d
WJOT	Lake City, S.C.	1000d
KWYR	Winner, S.Dak.	5000d
WNOO	Chattanooga, Tenn.	1000d
WMCH	Church Hill, Tenn.	1000d
WDKN	Dickson, Tenn.	1000d
WCLC	Jamestown, Tenn.	1000d
KSPL	Diboll, Tex.	1000d
KPSO	Falfurrias, Tex.	500d
KWFR	San Angelo, Tex.	1000d
KTUE	Tulia, Tex.	1000d
KTAE	Taylor, Tex.	1000d
WCHV	Charlottesville, Va.	5000
WBCR	Christiansburg, Va.	1000d
KWIQ	Moses Lake, Wash.	1000d
WVVW	Grafton, W.Va.	500d
WWIS	Black River Falls, Wis.	1000d
WEKZ	Monroe, Wis.	1000d
KPOW	Powell, Wyo.	5000

1270—236.1

CHAT	Medicine Hat, Alta.	10000
CHWK	Chilliwack, B.C.	10000
CJCB	Sydney, N.S.	5000
CFGT	St. Joseph d'Alma, Quebec	1000
WGSV	Guntersville, Ala.	1000d
WAIP	Prichard, Ala.	1000d
KBYR	Anchorage, Alaska	1000
KDJI	Holbrook, Ariz.	1000d
KADL	Pine Bluff, Ark.	5000d
KCOK	Tulare, Calif.	1000
WNOG	Naples, Fla.	500d
WHIY	Orlando, Fla.	5000d
WTAL	Tallahassee, Fla.	5000
WKRW	Cartersville, Ga.	500d
WGBA	Columbus, Ga.	5000d
WJJC	Commerce, Ga.	1000d
KNDI	Honolulu, Hawaii	5000
KTFI	Twin Falls, Idaho	5000
WEIC	Charleston, Ill.	1000d
WHBF	Rock Island, Ill.	5000
WCMR	Elkhart, Ind.	5000
WWCA	Gary, Ind.	1000
WORX	Madison, Ind.	1000d
KSCB	Liberal, Kans.	1000
WAIN	Columbia, Ky.	1000d
WFUL	Fulton, Ky.	1000d
KVCL	Winnfield, La.	1000d
WSPR	Springfield, Mass.	5000
WXYZ	Detroit, Mich.	5000
KWEB	Rochester, Minn.	500d
WVOM	Ioka, Miss.	1000d
WLSM	Louisville, Miss.	1000d
KUSN	St. Joseph, Mo.	1000d
KBUB	Sparks, Nev.	1000d
WTSN	Dover, N.H.	5000
WDVL	Vineland, N.J.	500d
KRAC	Alamogordo, N.Mex.	1000d
WHLD	Niagara Falls, N.Y.	5000d
WDLA	Walton, N.Y.	1000d
WCGC	Belmont, N.C.	1000
WMPM	Smithfield, N.C.	5000d
KBOM	Mandan, N.Dak.	1000
WILE	Cambridge, Ohio	1000d
KWPR	Claremore, Okla.	500d
KAJO	Grants Pass, Oreg.	5000d
WLBR	Lebanon, Pa.	1000
WBHC	Hampton, S.C.	1000d
KNWC	Sioux Falls, S.Dak.	1000
WLIK	Newport, Tenn.	5000d
KIOX	Bay City, Tex.	1000
KHEM	Big Spring, Tex.	1000d
KEPS	Eagle Pass, Tex.	1000d
KFJZ	Fort Worth, Tex.	5000
WTID	Newport News, Va.	1000d
WHEO	Stuart, Va.	1000d
KCVL	Colville, Wash.	1000d
KBAM	Longview, Wash.	5000d
WKYR	Keyser, W.Va.	5000d
WRJC	Mauston, Wis.	500d

1280—234.2

CHIQ	Hamilton, Ont.	5000
CJMS	Montreal, Que.	10000
CKCV	Quebec, Que.	10000
CJSL	Estevan, Sask.	1000
WPID	Piedmont, Ala.	1000d
WNPT	Tuscaloosa, Ala.	5000
KHEP	Phoenix, Ariz.	1000d
KNBY	Newport, Ark.	1000d
KFOX	Long Beach, Calif.	1000
KCJH	San Luis Obispo, Cal.	500d
KJOY	Stockton, Calif.	1000
KTLN	Denver, Colo.	5000
WSUX	Seaford, Del.	1000d
WDSP	DeFuniak Springs, Florida	5000d
WQIK	Jacksonville, Fla.	5000d
WIPC	Lake Wales, Fla.	1000d
WYND	Sarasota, Fla.	500d
WIBB	Macon, Ga.	5000d
WMRO	Aurora, Ill.	1000d
WGBF	Evansville, Ind.	5000
KCOB	Newton, Iowa	1000d
KSOK	Arkansas City, Kans.	1000
WCPM	Cumberland, Ky.	1000d
WDSU	New Orleans, La.	5000

Kc. Wave Length W.P.

KWCL Oak Grove, La. 500d
WEIM Fitchburg, Mass. 5000
WFYC Alma, Mich. 1000d
WTCN Minneapolis, Minn. 5000
KVOX Moorhead, Minn. 1000
KDKO Clinton, Mo. 1000d
KYRO Potosi, Mo. 500d
KCNI Broken Bow, Nebr. 1000d
KTOO Henderson, Nev. 5000d
WHBI Newark, N.J. 2500
KRZE Farmington, N.Mex. 5000d
WADO New York, N.Y. 5000
WROC Rochester, N.Y. 5000d
WSAT Salisbury, N.C. 1000
WYAL Scotland Neck, N.C. 5000d
WONW Defiance, Ohio 1000
WLMJ Jackson, Ohio 1000d
KLCO Poteau, Okla. 1000d
KERG Eugene, Oreg. 5000
WBRX Berwick, Pa. 500d
WHVR Hanover, Pa. 5000
WKST New Castle, Pa. 1000
WCMN Arecibo, P.R. 1000
WANS Anderson, S.C. 5000
WJAY Mullins, S.C. 1000d
WMCP Columbia, Tenn. 1000d
WDNT Dayton, Tenn. 1000d
KNIT Abilene, Tex. 500d
KWHI Brenham, Tex. 1000d
KLUE Longview, Tex. 1000d
KRAN Morton, Tex. 500
KNAK Salt Lake City, Utah 5000
WKDE Altavista, Va. 500d
WYVE Wytheville, Va. 1000d
KUDY Spokane, Wash. 5000d
KIT Yakima, Wash. 5000
WVAR Richwood, W.Va. 1000d
WNAM Neenah, Wis. 1000

1290—232.4

CFAM Altona, Man. 10000
CKSL London, Ont. 5000
WTHG Jackson, Ala. 1000d
WSHF Sheffield, Ala. 1000d
WMLS Sylacauga, Ala. 1000d
KEOS Flagstaff, Ariz. 1000
KCUB Tucson, Ariz. 1000
KDMS El Dorado, Ark. 5000d
KUOA Siloam Sprgs., Ark. 5000d
KHSL Chico, Calif. 5000
KPER Gilroy, Calif. 5000d
KMEN San Bernardino, California 5000
KACL Santa Barbara, Calif. 5000d
WCCC Hartford, Conn. 500d
WTUX Wilmington, Del. 1000d
WTMC Ocala, Fla. 5000
WSCM Panama City Beach, Florida 500d
WIRK W. Palm Bch., Fla. 5000
WDEC Americus, Ga. 1000d
WCHK Canton, Ga. 1000d
WTOC Savannah, Ga. 5000
KSNN Pocatello, Idaho 1000d
WIRL Peoria, Ill. 5000
KPRT Pratt, Kansas 5000
WCBL Benton, Ky. 5000d
KJEF Jennings, La. 1000d
WHGR Houghton Lake, Mich. 5000
WNIL Niles, Mich. 500d
WOIA Saline, Mich. 500d
KBMO Benson, Minn. 500d
WBLE Batesville, Miss. 1000d
KALM Thayer, Mo. 1000d
KGVO Missoula, Mont. 5000
KOIL Omaha, Nebr. 5000
WKNE Keene, N.H. 5000
KSRC Socorro, N.M. 1000d
WGLI Babylon, N.Y. 1000
WNBF Binghamton, N.Y. 5000
WHKY Hickory, N.C. 5000
WEYE Sanford, N.C. 1000d
WOMP Bellaire, Ohio 1000d
WHIO Dayton, Ohio 5000
KUMA Pendleton, Oreg. 5000
KLIQ Portland, Oreg. 5000d
WFBG Altoona, Pa. 5000
WICE Providence, R.I. 5000
WFIG Sumter, S.C. 1000
WATO Oak Ridge, Tenn. 1000
KBLT Big Lake, Tex. 1000d
KIVY Crockett, Tex. 500d
KRGV Weslaco, Tex. 5000
KTRN Wichita Falls, Tex. 5000
WPVA Colonial Hgts., Va. 5000d
WAGE Leesburg, Va. 1000d
WKWS Rocky Mount, Va. 1000d
WVOW Logan, W.Va. 5000
KAPY Port Angeles, Wash. 1000d
WMIL Milwaukee, Wis. 1000d
WCOW Sparta, Wis. 5000d
KOWB Laramie, Wyo. 5000

1300—230.6

CBAF Moncton, N.B. 5000
CJME Regina, Sask. 1000
WBSA Boaz, Ala. 500d
WTLS Tallassee, Ala. 1000d
KWCB Searcy, Ark. 1000d
KROP Brawley, Calif. 1000
KYNO Fresno, Calif. 5000
KWKW Pasadena, Calif. 1000
KKCN Ukiah, Calif. 5000d
KVOR Colo. Sprgs., Colo. 1000

Kc. Wave Length W.P.

WAVZ New Haven, Conn. 1000
WRKT Cocoa Beach, Fla. 500d
WFFG Marathon, Fla. 500d
WSOL Tampa, Fla. 5000d
WMTM Moultrie, Ga. 5000d
WNEA Newman, Ga. 500
WIMO Winder, Ga. 1000d
KOZE Lewiston, Idaho 5000
WTAQ LaGrange, Ill. 1000
WFRX W. Frankfort, Ill. 1000d
WHLT Huntington, Ind. 500d
WMFT Terre Haute, Ind. 500d
KGLO Mason City, Iowa 5000
WBLG Lexington, Ky. 1000
WIBR Baton Rouge, La. 1000
KANB Shreveport, La. 1000d
WFBR Baltimore, Md. 5000
WJDA Quincy, Mass. 1000d
WOOD Grand Rapids, Mich. 5000
WRBC Jackson, Miss. 5000
KMMO Marshall, Mo. 1000d
KBRL McCook, Nebr. 1000d
KPTL Carson City, Nev. 5000
WAAT Trenton, N.J. 250d
WOSC Fulton, N.Y. 1000d
WEEE Rensselaer, N.Y. 5000d
WGOL Goldsboro, N.C. 1000d
WLNC Laurensburg, N.C. 500
WSYD Mt. Airy, N.C. 5000
WERE Cleveland, Ohio 5000
WMVO Mt. Vernon, Ohio 500
KOME Tulsa, Okla. 5000
KDOV Medford, Oreg. 5000d
KACI The Dalles, Oreg. 1000d
WWCH Clarion, Pa. 500d
WTHT Hazleton, Pa. 1000d
WTIL Mayaguez, P.R. 1000
WCKI Greer, S.C. 1000d
WKSC Kershaw, S.C. 500d
KOLY Mobridge, S.Dak. 1000d
WMTN Morristown, Tenn. 5000d
WMAK Nashville, Tenn. 5000
KVET Austin, Tex. 1000
KTFY Brownfield, Tex. 1000d
KGNS Laredo, Tex. 500d
KKAS Silsbee, Tex. 500d
KSTU Logan, Utah 1000
KOL Seattle, Wash. 5000
WCLG Morgantown, W.Va. 1000d
WKLC St. Albans, W.Va. 1000d

1310—228.9

CKOY Ottawa, Ont. 50000
CFGM Richmond Hill, Ont. 10000
WHEP Foley, Ala. 1000d
CHGB St. Anne-de-la-Pocatiere, Quebec 5000d
WJAM Marion, Ala. 5000d
KBUZ Mesa, Ariz. 5000
KBOK Malvern, Ark. 1000d
KIOT Barstow, Calif. 500d
KPOD Crescent City, Calif. 1000d
KDIA Oakland, Calif. 1000
KTKR Taft, Calif. 500d
KFKA Greeley, Colo. 1000
WICH Norwich, Conn. 5000
WOOO Deland, Fla. 5000d
WAUC Wauchula, Fla. 500d
WBRO Waynesboro, Ga. 1000d
WBMK West Point, Ga. 1000d
KLIX Twin Falls, Idaho 5000
WISH Indianapolis, Ind. 5000
KDLS Perry, Iowa 500d
KOKX Keokuk, Iowa 1000
WTTL Madisonville, Ky. 500d
WDOC Prestonsburg, Ky. 5000d
KIKS Sulphur, La. 500d
KUZN W. Monroe, La. 1000d
WLOB Portland, Maine 1000d
WORC Worcester, Mass. 5000
WKMH Dearborn, Mich. 5000
WCCW Traverse City, Mich. 1000d
KRBI St. Peter, Minn. 1000d
WXXX Hattiesburg, Miss. 1000d
KFSB Joplin, Mo. 5000
KFBB Great Falls, Mont. 5000
KGMT Fairbury, Nebr. 500d
WJLK Asbury Park, N.J. 250
WCAM Camden, N.J. 250
KARA Albuquerque, N.M. 1000d
WVIP Mt. Kisco, N.Y. 5000d
WTLB Utica, N.Y. 1000
WISE Asheville, N.C. 5000
WKTC Charlotte, N.C. 1000
WTIK Durham, N.C. 1000
KNOX Grand Forks, N.Dak. 5000
WFAH Alliance, Ohio 1000d
KNPT Newport, Oreg. 5000
WBFD Bedford, Pa. 5000d
WGSA Ephrata, Pa. 5000d
WNAE Warren, Pa. 5000d
WDKD Kingstree, S.C. 5000d
WDDD Chattanooga, Tenn. 5000
WDXI Jackson, Tenn. 5000
WBNT Oneida, Tenn. 1000d
KZIP Amarillo, Tex. 1000d
WRR Dallas, Tex. 5000
KDYL Odessa, Tex. 1000d
KUBO San Antonio, Tex. 5000d
WEEL Fairfax, Va. 1000
WGH Newport News, Va. 5000
KARY Prosser, Wash. 1000d
WIBA Madison, Wis. 5000

1320—227.1

CHQM Vancouver, B.C. 10000
CKEC New Glasgow, N.S. 5000

Kc. Wave Length W.P.

CJSO Sorel, P.Q. 1000
CKKW Kitchener, Ont. 1000
WAGF Dothan, Ala. 1000
WENN Birmingham, Ala. 5000d
KBLU Yuma, Ariz. 500d
KWHN Fort Smith, Ark. 5000
KRLW Walnut Ridge, Ark. 1000d
KHSJ Hemet, Calif. 500d
KLAN Lemoore, Calif. 1000d
KUDE Oceanside, Calif. 500
KCRA Sacramento, Calif. 5000
KAVI Rocky Ford, Colo. 1000d
WATR Waterbury, Conn. 5000
WGMA Hollywood, Fla. 1000d
WZOK Jacksonville, Fla. 5000
WAMR Venice, Fla. 500d
WHIE Griffin, Ga. 5000d
WKAN Kankakee, Ill. 1000
KNIA Knoxville, Iowa 500d
KMAQ Maquoketa, Iowa 500d
KLWN Lawrence, Kans. 500d
WBRT Bardstown, Ky. 1000d
WNGO Mayfield, Ky. 1000d
KHAL Homer, La. 1000d
WICO Salisbury, Md. 1000d
WARA Attleboro, Mass. 1000
WILS Lansing, Mich. 5000
WDMJ Marquette, Mich. 1000
WRJW Picayune, Miss. 5000d
KXLW Clayton, Mo. 1000d
KOLT Scottsbluff, Nebr. 5000
WWHG Hornell, N.Y. 5000d
WQSR Solvay, N.Y. 500d
WAGY Forest City, N.C. 1000
WCOG Greensboro, N.C. 5000
WEEW Washington, N.C. 500d
KQDY Minot, N.Dak. 1000d
WHOK Lancaster, Ohio 1000d
KWOE Clinton, Okla. 1000d
KATR Eugene, Ore. 1000d
WKAP Allentown, Pa. 5000
WGET Gettysburg, Pa. 1000
WJAS Pittsburgh, Pa. 5000
WSCR Scranton, Pa. 1000
WRIO Rio Piedras, P.R. 5000
WOIC Columbia, S.C. 1000
KELO Sioux Falls, S.Dak. 5000
WKIN Kingsport, Tenn. 5000d
WMSR Manchester, Tenn. 1000d
KVMC Colo. City, Tex. 1000d
KXYZ Houston, Tex. 5000
KCPX Salt Lake City, Utah 5000
WDMS Lynchburg, Va. 1000
WEET Richmond, Va. 1000d
KXRO Aberdeen, Wash. 1000
KHIT Walla Walla, Wash. 1000d
WQMN Superior, Wis. 1000d
WFHR Wisconsin Rapids, Wis. 5000

1330—225.4

WROS Scottsboro, Ala. 1000d
KMOP Tucson, Ariz. 500d
KVEE Conway, Ark. 500d
KFAC Los Angeles, Calif. 5000
KLBS Los Banos, Calif. 500d
KAHR Redding, Calif. 5000d
WARN Ft. Pierce, Fla. 1000
WYSE Lakeland, Fla. 1000d
WEBY Milton, Fla. 5000d
WMEN Tallahassee, Fla. 5000d
WMLT Dublin, Ga. 5000d
WEAW Evanston, Ill. 5000d
WRAM Monmouth, Ill. 1000d
WRRR Rockford, Ill. 1000d
WJPS Evansville, Ind. 5000
KWWL Waterloo, Iowa 5000
KFH Wichita, Kans. 5000
WYGO Corbin, Ky. 5000d
WMOR Morehead, Ky. 1000d
KVOL Lafayette, La. 1000
WASA Harve deGrace, Md. 1000d
WCRB Waltham, Mass. 5000
WTRX Flint, Mich. 5000
WLOL Minneapolis, Minn. 5000
WJPR Greenville, Miss. 1000
WDAL Meridian, Miss. 1000d
KUKU Willow Springs, Mo. 1000d
KGAK Gallup, N.Mex. 5000
WEVD New York, N.Y. 5000
WPOW New York, N.Y. 5000
WEBO Owego, N.Y. 1000d
WHAZ Troy, N.Y. 1000
WHOT Campbell, Ohio 500
WFIN Findlay, Ohio 1000d
WKOV Wellston, Ohio 500d
KPOJ Portland, Oreg. 5000
WBLF Bellefonte, Pa. 500
WICU Erie, Pa. 5000
WLAT Conway, S.C. 5000d
WFBC Greenville, S.C. 5000
WAEW Crossville, Tenn. 1000d
WTRO Dyersburg, Tenn. 500d
KMIL Cameron, Tex. 500d
KSWA Graham, Tex. 500d
KINE Kingsville, Tex. 1000d
KVKM Monahans, Tex. 5000
KDOK Tyler, Tex. 1000d
WBTM Danville, Va. 5000
WRAA Luray, Va. 1000d
WESR Tasley, Va. 1000d
KFKF Bellevue, Wash. 5000d
KCFA Spokane, Wash. 5000d
WETZ New Martinsville, W.Va. 1000d
WHBL Sheboygan, Wis. 1000
KOVE Lander, Wyo. 1000

Kc. Wave Length W.P.

1340—223.7

CFGB Goose Bay, Nfld. 1000
CJAF Cabano, Que. 250
CFSL Weyburn, Sask. 1000
CFYK Yellow Knife, N.W.T. 250
CHAD Amos, Que. 250
CJLS Yarmouth, N.S. 250
CHRD Drummondville, Que. 250
CJQC Quebec, Que. 250
CKAR-1 Parry Sound, Ont. 250
CKOX Woodstock, Ont. 250
WKUL Cullman, Ala. 250
WJOI Florence, Ala. 250
WGWC Selma, Ala. 250
WFEB Sylacauga, Ala. 250
KIBH Seward, Alaska 250
KIKO Miami, Ariz. 250
KNOG Nogales, Ariz. 250
KPGE Page, Ariz. 250
KENT Prescott, Ariz. 250
KBTA Batesville, Ark. 1000
KAAB Hot Springs, Ark. 500
KBRS Springdale, Ark. 250
KENL Arcata, Calif. 250
KMAK Fresno, Calif. 250
KDOL Mojave, Calif. 100
KSFE Needles, Calif. 250
KATY San Luis Obispo, California 1000
KIST Santa Barbara, Calif. 1000
KOMY Watsonville, Calif. 1000
KDEN Denver, Colo. 250
KWSL Grand Junction, Colo. 250
KVRH Salida, Colo. 250
WNHC New Haven, Conn. 1000
WOOK Washington, D.C. 250
WSLG Clermont, Fla. 250
WTAN Clearwater, Fla. 250
WROD Daytona Bch., Fla. 1000
WDSR Lake City, Fla. 1000
WTYS Marianna, Fla. 1000
WQXT Palm Beach, Fla. 250
WSEB Sebring, Fla. 250
WNSM Valparaiso-Niceville, Fla. 250
WAKE Atlanta, Ga. 1000
WGAU Athens, Ga. 1000
WBBQ Augusta, Ga. 1000
WGAA Cedartown, Ga. 1000
WOKS Columbus, Ga. 1000
WBBT Lyons, Ga. 250
WTIF Tifton, Ga. 1000
KWLW Wampa, Idaho 1000
KPST Preston, Idaho 250
KSKI Sun Valley, Idaho 1000
WSOY Decatur, Ill. 1000
WJPF Herrin, Ill. 250
WJOL Joliet, Ill. 250
WBIW Bedford, Ind. 1000
WTRC Elkhart, Ind. 1000
WLBC Muncie, Ind. 1000
KROS Clinton, Iowa 250
KLIL Estherville, Iowa 100
KCKN Kansas City, Kans. 250
KSEK Pittsburg, Kans. 250
WCMI Ashland, Ky. 250
WBGN Bowling Green, Ky. 250
WNBS Murray, Ky. 250
WEKY Richmond, Ky. 250
KVOB Bastrop, La. 250
KRMD Shreveport, La. 250
WFAU Augusta, Maine 1000
WHOU Houlton, Maine 1000
WGAW Gardner, Mass. 1000
WNBH New Bedford, Mass. 1000
WBRK Pittsfield, Mass. 1000
WLEW Bad Axe, Mich. 250
WLAV Grand Rap., Mich. 1000
WCSR Hillsdale, Mich. 1000
WMTE Manistee, Mich. 1000
WAGN Menominee, Mich. 250
WMBN Petoskey, Mich. 1000
WEXL Royal Oak, Mich. 250
KDLM Detroit Lakes, Minn. 1000
WEVE Eveleth, Minn. 1000
KROC Rochester, Minn. 1000
KWLM Willmar, Minn. 1000
WJMB Brookhaven, Miss. 250
WAML Laurel, Miss. 250
KXEO Mexico, Mo. 250
KLID Poplar Bluff, Mo. 250
KSMO Salem, Mo. 250
KICK Springfield, Mo. 250
KCAP Helena, Mont. 250
KPRK Livingston, Mont. 250
KATL Miles City, Mont. 1000
KQTE Missoula, Mont. 1000
KHUB Fremont, Nebr. 500
KGFW Kearney, Nebr. 1000
KSID Sidney, Nebr. 1000
KORK Las Vegas, Nev. 250
KBET Reno, Nev. 1000
WDCR Hanover, N.H. 1000
WMID Atlantic City, N.J. 1000
KNDE Aztec, N.Mex. 1000
KRRR Ruidoso, N.Mex. 250
KKIT Taos, N.Mex. 250
KSIL Silver City, N.Mex. 1000
WMBO Auburn, N.Y. 1000
WENT Gloversville, N.Y. 1000
WXYJ Jamestown, N.Y. 250
WUSJ Lockport, N.Y. 250
WMSA Massena, N.Y. 1000
WALL Middletown, N.Y. 1000
WIRY Plattsburgh, N.Y. 1000
WJRI Lenoir, N.C. 1000
WTSB Lumberton, N.C. 1000

Kc.	Wave Length	W.P.
WOXF	Oxford, N.C.	1000
WOOW	Greenville, N.C.	1000
WGNI	Wilmington, N.C.	1000
WAIR	Winston-Salem, N.C.	250
KGPC	Grafton, N.Dak.	1000
WNCO	Ashland, Ohio	250
WOUB	Athens, Ohio	250
WIZE	Springfield, Ohio	250
WSTV	Steubenville, Ohio	1000
KIHN	Hugo, Okla.	250
KOCY	Okla. City, Okla.	250
KTOW	Sand Springs, Okla.	250
KWVR	Enterprise, Oreg.	250
KIHR	Hood River, Oreg.	250
KFIR	North Bend, Oreg.	1000
WCVI	Connellsville, Pa.	250
WSAJ	Grove City, Pa.	100
WKRZ	Oil City, Pa.	1000
WHAT	Philadelphia, Pa.	1000
WRAW	Reading, Pa.	1000
WTRN	Tyrone, Pa.	250
WBRE	Wilkes-Barre, Pa.	1000
WWPA	Williamsport, Pa.	250
WGRF	Aguadilla, P.R.	250
WOKE	Charleston, S.C.	1000
WRHI	Rock Hill, S.C.	1000
WSSC	Sumter, S.C.	1000
KIJV	Huron, S.D.	250
KRSD	Rapid City, S.Dak.	1000
WBAC	Cleveland, Tenn.	250
WKRM	Columbia, Tenn.	1000
WGRV	Greeneville, Tenn.	250
WKGN	Knoxville, Tenn.	1000
WHHM	Memphis, Tenn.	250
WCDT	Winchester, Tenn.	1000
KWKC	Abilene, Tex.	250
KTSL	Burnett, Tex.	250
KAND	Corsicana, Tex.	250
KSET	El Paso, Tex.	250
KDUB	Lubbock, Tex.	250
KRBA	Lufkin, Tex.	250
KPDN	Pampa, Tex.	250
KOLE	Port Arthur, Tex.	250
KTED	San Angelo, Tex.	250
KVIC	N. of Victoria, Tex.	250
WTWN	St. Johnsbury, Vt.	1000
WSTA	Charlotte Amalie, V.I.	250
WKEY	Covington, Va.	1000
WHAP	Hopewell, Va.	1000
WJMA	Orange, Va.	1000
KAGT	Anacortes, Wash.	250
KPKW	Pasco, Wash.	250
KAPA	Raymond, Wash.	250
KMEL	Wenatchee, Wash.	250
WHAR	Clarksburg, W.Va.	250
WEPM	Martinsburg, W.Va.	250
WMON	Montgomery, W.Va.	250
WDVE	Welch, W.Va.	1000
WLDY	Ladysmith, Wis.	1000
WRIT	Milwaukee, Wis.	250
KYCN	Wheatland, Wyo.	250
KWOR	Worland, Wyo.	250

1350—222.1

CHOV	Pembroke, Ont.	1000
CJLM	Joliette, Que.	1000
CKLB	Oshawa, Ont.	10000
CKEN	Kentville, N.S.	1000
WELB	Elba, Ala.	1000d
WGAD	Gadsden, Ala.	5000
KLYD	Bakersfield, Calif.	1000d
KCKC	San Bernardino, Calif.	500
KSRO	Santa Rosa, Calif.	5000
KGHF	Pueblo, Colo.	5000
WNLK	Norwalk, Conn.	500
WINY	Putnam, Conn.	1000d
WEZY	Cocoa, Fla.	1000
WDCF	Dade City, Fla.	1000d
WBSG	Blackshear, Ga.	500d
WRWH	Cleveland, Ga.	1000d
WRPB	Warner Robins, Ga.	5000d
KRLC	Lewiston, Idaho	5000
WAAP	Peoria, Ill.	1000
WJBD	Salem, Ill.	500d
WIDU	Kokomo, Ind.	5000
KRNT	Des Moines, Iowa	5000
KMAN	Manhattan, Kans.	500d
WLOU	Louisville, Ky.	5000d
WSMB	New Orleans, La.	5000
WDEA	Ellsworth, Me.	1000d
WHMI	Howell, Mich.	500
KDIO	Ortonville, Minn.	1000d
WCMP	Pine City, Minn.	1000d
WKOZ	Kosciusko, Miss.	5000d
KCHR	Charleston, Mo.	1000d
KBRX	O'Neill, Nebr.	1000d
WLNH	Laconia, N.H.	5000d
WHWH	Princeton, N.J.	5000
KABQ	Albuquerque, N.M.	5000
WCBA	Corning, N.Y.	1000d
WRNY	Rome, N.Y.	500d
WBMT	Black Mountain, N.C.	500d
WHIP	Mooresville, N.C.	1000d
WLLY	Wilson, N.C.	1000d
KQDI	Bismarck, N.D.	500d
WADC	Akron, Ohio	5000
WCHI	Chillicothe, Ohio	500d
KRHD	Duncan, Okla.	250
KTLQ	Tahlequah, Okla.	1000d
KRVC	Ashland, Oreg.	1000d
KLOO	Corvallis, Oreg.	1000d
WORK	York, Pa.	5000
WDAR	Darlington, S.C.	1000d
WGSW	Greenwood, S.C.	1000d
WRKM	Carthage, Tenn.	500d
KCAR	Clarksville, Tex.	500d
KTXJ	Jasper, Tex.	1000d
KCOR	San Antonio, Tex.	5000
WBLT	Bedford, Va.	1000d
WFLS	Fredericksburg, Va.	500d
WNVA	Norton, Va.	5000d
WAVY	Portsmouth, Va.	5000
WPDR	Portage, Wis.	1000d

1360—220.4

WWWB	Jasper, Ala.	1000d
WLIQ	Mobile, Ala.	5000d
WMFC	Monroeville, Ala.	1000d
WELR	Roanoke, Ala.	1000d
KRUX	Glendale, Ariz.	5000
KLYR	Clarksville, Ark.	500d
KFFA	Helena, Ark.	1000
KFIV	Modesto, Calif.	1000
KRCK	Ridgecrest, Calif.	1000d
KGB	San Diego, Calif.	5000
WDRC	Hartford, Conn.	5000
WOBS	Jacksonville, Fla.	5000d
WKAT	Miami Beach, Fla.	5000
WSFR	Sanford, Fla.	500d
WINT	Winter Haven, Fla.	1000d
WAZA	Bainbridge, Ga.	1000d
WLAW	Lawrenceville, Ga.	1000d
WMAC	Metter, Ga.	500d
WLBK	DeKalb, Ill.	1000d
WVMC	Mt. Carmel, Ill.	500d
WGFA	Watseka, Ill.	1000d
KXGI	Ft. Madison, Iowa	1000d
KSCJ	Sioux City, Iowa	5000
KBTO	El Dorado, Kans.	500d
WFLW	Monticello, Ky.	1000d
KDBC	Mansfield, La.	1000d
KVIM	New Iberia, La.	1000d
KTLD	Tallulah, La.	500d
WEBB	Dundalk, Md.	5000d
WLYN	Lynn, Mass.	1000d
WWRO	Caro, Mich.	5000
WKMI	Kalamazoo, Mich.	5000
KLRS	Mountain Grove, Mo.	1000d
KWRV	McCook, Nebr.	1000d
WNNJ	Newton, N.J.	1000d
WWBZ	Vineland, N.J.	1000
WKOP	Binghamton, N.Y.	5000
WMNS	Olean, N.Y.	1000d
WCHL	Chapel Hill, N.C.	1000d
KEYZ	Williston, N.D.	5000
WSAI	Cincinnati, Ohio	5000
WWOW	Conneaut, Ohio	500d
KUIK	Hillsboro, Oreg.	1000d
WPQR	McKeesport, Pa.	5000
WPPA	Pottsville, Pa.	1000
WELP	Easley, S.C.	1000d
WLCM	Lancaster, S.C.	1000d
WNAH	Nashville, Tenn.	1000d
KRAY	Amarillo, Tex.	500d
KACT	Andrews, Tex.	1000d
KWBA	Baytown, Tex.	1000
KRYS	Corpus Christi, Tex.	1000
KXOL	Ft. Worth, Tex.	5000
WBOB	Galax, Va.	1000d
WHBG	Harrisonburg, Va.	5000d
KFDR	Grand Coulee, Wash.	1000d
KMO	Tacoma, Wash.	5000
WHJC	Matewan, W.Va.	1000d
WMOV	Ravenswood, W.Va.	1000d
WBAY	Green Bay, Wis.	5000
WISV	Viroqua, Wis.	500d
WMNE	Menomonie, Wis.	1000d
KVRS	Rock Springs, Wyo.	1000

1370—218.8

WBYE	Calera, Ala.	1000d
CFLV	Valleyfield, P.Q.	1000
KTPA	Prescott, Ark.	500d
KBUC	Corona, Calif.	1000
KEEN	San Jose, Calif.	5000
KGEN	Tulare, Calif.	1000d
WKMK	Blountstown, Fla.	500d
WKOS	Ocala, Fla.	5000d
WCOA	Pensacola, Fla.	5000
WAXE	Vero Beach, Fla.	1000d
WBGR	Jesup, Ga.	5000
WFDR	Manchester, Ga.	1000d
WKLE	Washington, Ga.	1000d
WPRC	Lincoln, Ill.	1000d
WTTS	Bloomington, Ind.	5000
WGRY	Gary, Ind.	1000d
KDTH	Dubuque, Iowa	5000
KGNO	Dodge City, Kans.	5000
KALN	Iola, Kans.	500d
WGOH	Grayson, Ky.	5000d
WTKY	Tompkinsville, Ky.	1000d
KAPB	Marksville, La.	1000d
WMHI	Braddocks Hts., Md.	500d
WKIK	Leonardtown, Md.	1000d
WGHN	Grand Haven, Mich.	500d
KSUM	Fairmont, Minn.	1000
WDOB	Canton, Miss.	1000d
KWRT	Boonville, Mo.	1000d
KCRV	Caruthersville, Mo.	1000d
KXLF	Butte, Mont.	5000
KAWL	York, Nebr.	500d
WFEA	Manchester, N.H.	5000
WALK	Patchogue, N.Y.	500d
WSAY	Rochester, N.Y.	5000
WLTC	Gastonia, N.C.	1000d
WTAB	Tabor City, N.C.	5000d
KFJM	Grand Forks, N.D.	1000d
WSPD	Toledo, Ohio	5000
KAST	Astoria, Oreg.	1000
WOTR	Corry, Pa.	1000
WPAZ	Pottstown, Pa.	1000d
WKMC	Roaring Sprgs., Pa.	1000d
WIVV	Vieques, P.R.	1000
WKFD	Wickford, R.I.	500d
WDEF	Chattanooga, Tenn.	5000
WDXE	Lawrenceburg, Tenn.	1000d
WRGS	Rogersville, Tenn.	1000d
KOKE	Austin, Tex.	1000d
KFRO	Longview, Tex.	1000
KUKO	Post, Tex.	500d
KSOP	Salt Lake City, Utah	1000d
WBTN	Bennington, Vt.	1000d
WHEE	Martinsville, Va.	5000d
WJWS	South Hill, Va.	5000d
KPOR	Quincy, Wash.	1000d
WMOO	Moundsville, W.Va.	1000d
WCCN	Neillsville, Wis.	5000d
KVWO	Cheyenne, Wyo.	1000

1380—217.3

CFDA	Victoriaville, Que.	1000
CKPC	Brantford, Ont.	10000
CKLC	Kingston, Ont.	5000
WRAB	Arab, Ala.	1000d
WGYV	Greenville, Ala.	1000d
KDXE	N. Little Rock, Ark.	1000d
KBVM	Lancaster, Calif.	1000d
KGMS	Sacramento, Calif.	1000
KSBW	Salinas, Calif.	5000
KFLJ	Walsenburg, Colo.	1000d
WAMS	Wilmington, Del.	5000
WLIZ	Lake Worth, Fla.	500d
WQXQ	Ormond Bch., Fla.	1000d
WLCY	St. Petersburg, Fla.	5000
WAOK	Atlanta, Ga.	5000
WSIZ	Ocilla, Ga.	5000d
KPOI	Honolulu, Hawaii	5000
WBEL	South Beloit, Ill.	5000
WITE	Brazil, Ind.	500d
WKJG	Ft. Wayne, Ind.	5000
KCIM	Carroll, Iowa	1000
KHAK	Cedar Rapids, Iowa	1000
KCII	Washington, Iowa	500d
WMTA	Central City, Ky.	500d
WWKY	Winchester, Ky.	1000d
WYNK	Baton Rouge, La.	500d
WKTJ	Farmington, Me.	1000d
WTTH	Port Huron, Mich.	1000
WPLB	Greenville, Mich.	500d
KLIZ	Brainerd, Minn.	1000d
KAGE	Winona, Minn.	1000
WDLT	Indianola, Miss.	500d
KUDL	Kansas City, Mo.	1000d
KWK	St. Louis, Mo.	5000
KUVR	Holdredge, Nebr.	500
WBBX	Portsmouth, N.H.	1000
WAWZ	Zarephath, N.J.	5000
WBNX	New York, N.Y.	5000
WLOS	Asheville, N.C.	5000
WTOB	Winston-Salem, N.C.	5000
WWIZ	Lorain, Ohio	500d
WPKO	Waverly, Ohio	1000d
KSWO	Lawton, Okla.	1000
KMUS	Muskogee, Okla.	1000
KBCH	Ocean Lake, Oreg.	1000d
KSRV	Ontario, Oreg.	5000
WACB	Kittanning, Pa.	1000d
WMLP	Milton, Pa.	1000d
WAYZ	Waynesboro, Pa.	1000d
WNRI	Woonsocket, R.I.	1000d
WAGS	Bishopville, S.C.	1000d
WGUS	N. Augusta, S.C.	1000d
KOTA	Rapid City, S.Dak.	5000
WYSH	Clinton, Tenn.	1000d
WGMM	Millington, Tenn.	500d
KJET	Beaumont, Tex.	1000
KBWD	Brownwood, Tex.	1000
KCRM	Crane, Tex.	1000d
KTSM	El Paso, Tex.	1000
KMUL	Muleshoe, Tex.	1000d
KBOP	Pleasanton, Tex.	1000d
WSYB	Rutland, Vt.	5000
WMBG	Richmond, Va.	5000
KRKO	Everett, Wash.	5000
KPEG	Spokane, Wash.	5000d
WBEL	Beloit, Wis.	5000

1390—215.7

CKLN	Nelson, B.C.	1000
WHMA	Anniston, Ala.	5000
KDQN	DeQueen, Ark.	500d
KAMO	Rogers, Ark.	1000d
KGER	Long Beach, Calif.	5000
KCEY	Turlock, Calif.	5000
KFML	Denver, Colo.	1000d
WAVP	Avon Park, Fla.	1000d
WPUP	Gainesville, Fla.	5000d
WGES	Chicago, Ill.	5000
WFIW	Fairfield, Ill.	1000
WJCD	Seymour, Ind.	1000d
KCLN	Clinton, Iowa	1000d
KCBC	Des Moines, Iowa	1000
KNCK	Concordia, Kans.	500d
WANY	Albany, Ky.	1000d
WKIC	Hazard, Ky.	5000d
KFRA	Franklin, La.	500d
KNOE	Monroe, La.	5000
WEGP	Presque Isle, Me.	5000d
WCAT	Orange, Mass.	1000d
WPLM	Plymouth, Mass.	5000
WCER	Charlotte, Mich.	1000d
KAOH	Duluth, Minn.	500
KRFO	Owatonna, Minn.	500d
WROA	Gulfport, Miss.	1000d
WQIC	Meridian, Miss.	5000d
KJPW	Waynesville, Mo.	1000d
KENN	Farmington, N.Mex.	5000
KHOB	Hobbs, N.Mex.	5000d
WEOK	Poughkeepsie, N.Y.	5000d
WRIV	Riverhead, N.Y.	1000d
WFBL	Syracuse, N.Y.	5000
WKRK	Murphy, N.C.	1000d
WEED	Rocky Mount, N.C.	5000
WADA	Shelby, N.C.	500d
WJRM	Troy, N.C.	500d
KLPM	Minot, N.Dak.	5000
WOHP	Bellefontaine, Ohio	500d
WMPO	Middleport-Pomroy, Ohio	1000d
WFMJ	Youngstown, Ohio	5000
KCRC	Enid, Okla.	1000
KSLM	Salem, Oreg.	5000
WLAN	Lancaster, Pa.	1000
WRSC	State College, Pa.	500d
WISA	Isabella, P.R.	1000
WHPB	Belton, S.C.	500d
WCSC	Charleston, S.C.	5000
KJAM	Madison, S.D.	5000d
WTJS	Jackson, Tenn.	5000
KULP	El Campo, Tex.	500d
KBEC	Waxahachie, Tex.	500d
KLGN	Logan, Utah	1000
WEAM	Arlington, Va.	5000
WWOD	Lynchburg, Va.	5000
KLDQ	Yakima, Wash.	1000

1400—214.2

CKBC	Bathurst, N.B.	250
CKDH	Amherst, N.S.	250
CJFP	Riviere-du-Loup, Que.	1000
CKRN	Rouyn, Que.	250
CKSW	Swift Current, Sask.	1000
WMSL	Decatur, Ala.	250
WXAL	Demopolis, Ala.	250
WFPA	Ft. Payne, Ala.	250
WJLD	Homewood, Ala.	1000
WJHO	Opelika, Ala.	1000
KSEW	Sitka, Alaska	250
KCLF	Clifton, Ariz.	250
KXIV	Phoenix, Ariz.	250
KTUC	Tucson, Ariz.	250
KVOY	Yuma, Ariz.	250
KELD	El Dorado, Ark.	1000
KCLA	Pine Bluff, Ark.	1000
KWYN	Wynne, Ark.	1000
KRE	Berkeley, Calif.	1000
KREO	Indio, Calif.	250
KQMS	Redding, Calif.	250
KSLY	San Luis Obispo, Cal.	250
KSPA	Santa Paula, Calif.	250
KHOE	Truckee, Calif.	1000
KUKI	Ukiah, Calif.	1000
KONG	Visalia, Calif.	250
KRLN	Canon City, Colo.	250
KDTA	Delta, Colo.	250
KFTM	Ft. Morgan, Colo.	250
KBZZ	La Junta, Colo.	250
WSTC	Stamford, Conn.	1000
WILI	Willimantic, Conn.	1000
WFTL	Ft. Lauderdale, Fla.	250
WIRA	Ft. Pierce, Fla.	250
WRHC	Jacksonville, Fla.	250
WPRY	Perry, Fla.	250
WTRR	Sanford, Fla.	1000
WZRH	Zephyr Hills, Fla.	250
WCQS	Alma, Ga.	1000
WSGC	Elberton, Ga.	1000
WNEX	Macon, Ga.	1000
WMGA	Moultrie, Ga.	1000
WCOH	Newnan, Ga.	1000
WGSA	Savannah, Ga.	1000
KART	Jerome, Idaho	250
KRPL	Moscow, Idaho	250
KSPT	Sandpoint, Idaho	250
WDWS	Champaign, Ill.	1000
WGIL	Galesburg, Ill.	1000
WROZ	Evansville, Ind.	1000
WBAT	Marion, Ind.	500
KCOG	Centerville, Iowa	100
KVFD	Fort Dodge, Iowa	250
KVOE	Emporia, Kans.	250
KAYS	Hays, Kans.	250
WCYN	Cynthiana, Ky.	250
WIEL	Elizabethtown, Ky.	1000
WFTG	London, Ky.	250
WFPR	Hammond, La.	250
KADK	Lake Charles, La.	250
WRDO	Augusta, Maine	250
WIDE	Biddeford, Maine	1000
WWIN	Baltimore, Md.	250
WALE	Fall River, Mass.	5000
WLLH	Lowell, Mass.	500
WHMP	Northampton, Mass.	1000
WELL	Battle Creek, Mich.	250
WJLB	Detroit, Mich.	250
WHDF	Houghton, Mich.	250
WMAB	Munising, Mich.	250
WSAM	Saginaw, Mich.	250
WSJM	St. Joseph, Mich.	250
WTCM	Traverse City, Mich.	250
KEYL	Long Prairie, Minn.	250
KMHL	Marshall, Minn.	250
WMIN	Mpls.-St. Paul, Minn.	1000
WHLB	Virginia, Minn.	1000
WBIP	Booneville, Miss.	250
WNAG	Grenada, Miss.	250
WFOR	Hattiesburg, Miss.	250
WJQS	Jackson, Miss.	250
WMBC	Macon, Miss.	250
KFRU	Columbia, Mo.	1000
KJCF	Festus, Mo.	250
KSIM	Sikeston, Mo.	250
KTTS	Springfield, Mo.	1000
KXGN	Glendive, Mont.	250
KARR	Great Falls, Mont.	1000
KCOW	Alliance, Nebr.	250
KLIN	Lincoln, Nebr.	250

Kc.	Wave Length	W.P.
KBMI	Henderson, Nev.	250
KWNA	Winnemucca, Nev.	1000
WTSL	Hanover, N.H.	1000
KTRC	Santa Fe, N.Mex.	250
KCHS	Truth or Consequences, New Mexico	250
KTNM	Tucumcari, N.Mex.	250
WOND	Pleasantville, N.J.	1000
WABY	Albany, N.Y.	1000
WYSL	Buffalo, N.Y.	250
WSLB	Ogdensburg, N.Y.	1000
WBMA	Beaufort, N.C.	250
WGBG	Greensboro, N.C.	1000
WSIC	Statesville, N.C.	1000
WLSE	Wallace, N.C.	250
WHCC	Waynesville, N.C.	1000
WCNF	Weldon, N.C.	250
KEYJ	Jamestown, N.Dak.	1000
WMAN	Mansfield, Ohio	250
WPAY	Portsmouth, Ohio	1000
KWON	Bartlesville, Okla.	250
KTMC	McAlester, Okla.	250
KNOR	Norman, Okla.	250
KNND	Cottage Grove, Oreg.	250
WEST	Easton, Pa.	250
WJET	Erie, Pa.	250
WHGB	Harrisburg, Pa.	250
WKBI	St. Marys, Pa.	1000
WICK	Scranton, Pa.	250
WRAK	Williamsport, Pa.	1000
WCOS	Columbia, S.C.	1000
WGTN	Georgetown, S.C.	250
WZOO	Spartanburg, S.C.	250
WJZM	Clarksville, Tenn.	1000
WHUB	Cookeville, Tenn.	1000
WLSB	Copper Hill, Tenn.	250
WGAP	Maryville, Tenn.	1000
WHAL	Shelbyville, Tenn.	1000
KRUN	Ballinger, Tex.	250
KBYG	Big Spring, Tex.	250
KUNO	Corpus Christi, Tex.	250
KILE	nr. Galveston, Tex.	250
KGVL	Greenville, Tex.	250
KEBE	Jacksonville, Tex.	250
KIUN	Pecos, Tex.	1000
KEYE	Perryton, Tex.	250
KVOP	Plainview, Tex.	250
KDWT	Stamford, Tex.	250
KTEM	Temple, Tex.	250
KTFS	Texarkana, Tex.	250
KVOU	Uvalde, Tex.	250
KIXX	Provo, Utah	250
WDOT	Burlington, Vt.	250
WINA	Charlottesville, Va.	1000
WHHV	Hillsville, Va.	250
WHIH	Portsmouth, Va.	250
WHLF	So. Boston, Va.	1000
WINC	Winchester, Va.	1000
KEDO	Longview, Wash.	250
KRSC	Othello, Wash.	250
KTNT	Tacoma, Wash.	1000
WBOY	Clarkesburg, W.Va.	1000
WRON	Ronceverte, W.Va.	1000
WSPZ	Spencer, W.Va.	1000
WKWK	Wheeling, W.Va.	250
WBTH	Williamson, W.Va.	1000
WATW	Ashland, Wis.	1000
WBIZ	Eau Claire, Wis.	1000
WDUZ	Green Bay, Wis.	250
WRJN	Racine, Wis.	250
WRDB	Reedsburg, Wis.	250
WRIG	Wausau, Wis.	250
KATI	Caspar, Wyo.	1000
KODI	Cody, Wyo.	1000

1410—212.6

CFUN	Vancouver, B.C.	10000
CHLP	Montreal, Que.	10000
WALA	Mobile, Ala.	5000
WRCK	Tuscumbia, Ala.	500d
KTCS	Fort Smith, Ark.	1000
KERN	Bakersfield, Calif.	1000
KRML	Carmel, Calif.	500d
KKOK	Lompoc, Calif.	500d
KMYC	Marysville, Calif.	5000
KCAL	Redlands, Calif.	1000d
KCOL	Ft. Collins, Colo.	1000
WPOP	Hartford, Conn.	5000
WDOV	Dover, Del.	5000d
WMYR	Fort Myers, Fla.	5000
WBIL	Leesburg, Fla.	1000d
WRFB	Tallahassee, Fla.	5000d
WRIX	Griffin, Ga.	100[illegible]
WSNE	Cummings, Ga.	10[illegible]
WDAX	McRae, Ga.	1000d
WLAQ	Rome, Ga.	1000
WRMN	Elgin, Ill.	1000d
WTIM	Taylorville, Ill.	1000d
WAZY	Lafayette, Ind.	1000d
KGRN	Grinnell, Iowa	500d
KLEM	LeMars, Iowa	1000d
KCLO	Leavenworth, Kans.	5000d
KWBB	Wichita, Kans.	5000
WLBJ	Bowling Green, Ky.	5000
WHLN	Harlan, Ky.	5000d
KDBS	Alexandria, La.	1000d
WDDW	Halfway, Md.	1000d
WOKW	Brockton, Mass.	1000d
WGRD	Grand Rap., Mich.	1000d
KLFD	Litchfield, Minn.	500d
WDSK	Cleveland, Miss.	1000d
WBKN	Newton, Miss.	500d
WHTG	Eatontown, N.J.	500d
WDOE	Dunkirk, N.Y.	500
WELM	Elmira, N.Y.	1000

Kc. Wave Length W.P.

WSET	Glen Falls, N.Y.	1000d
WOTT	Watertown, N.Y.	5000
WEGO	Concord, N.C.	1000d
WSRC	Durham, N.C.	1000d
WING	Dayton, Ohio	5000
KPAM	Portland, Oreg.	5000d
WLSH	Lansford, Pa.	5000d
KQV	Pittsburgh, Pa.	5000
WPCC	Clinton, S.C.	1000d
WYMB	Manning, S.C.	1000d
WCMT	Martin, Tenn.	1000d
KBUD	Athens, Tex.	1000d
KBAN	Bowie, Tex.	500d
KVLB	Cleveland, Tex.	500
KXIT	Dalhart, Tex.	500d
KADO	Marshall, Tex.	500
KRIG	Odessa, Tex.	1000
KBAL	San Saba, Tex.	500d
KNAL	Victoria, Tex.	500
WRIS	Roanoke, Va.	5000d
WKBH	LaCrosse, Wis.	5000
KWYO	Sheridan, Wyo.	1000

1420—211.1

CKPT	Peterborough, Ont.	1000
CJMT	Chicoutimi, Que.	1000
WACT	Tuscaloosa, Ala.	5000d
KHFH	Sierra Vista, Ariz.	1000d
KPOC	Pocahontas, Ark.	1000d
KSTN	Stockton, Calif.	5000
WLIS	Old Saybrook, Conn.	500d
WBRD	Bradenton, Fla.	1000
WDBF	Delray Beach, Fla.	5000d
WETH	St. Augustine, Fla.	1000d
WRFB	Tallahassee, Fla.	5000d
WAVO	Avondale Estates, Ga.	1000d
WRBL	Columbus, Ga.	5000
WPEH	Louisville, Ga.	1000d
WLET	Toccoa, Ga.	5000d
WINI	Murphysboro, Ill.	500d
WIMS	Michigan City, Ind.	5000d
WOC	Davenport, Iowa	5000
KJCK	Junction City, Kans.	1000d
WTCR	Ashland, Ky.	5000d
WHBN	Harrodsburg, Ky.	1000d
WVJS	Owensboro, Ky.	5000
KPEL	Lafayette, La.	1000
WOKW	Brockton, Mass.	1000d
WBSM	New Bedford, Mass.	5000
WBEC	Pittsfield, Mass.	1000
WAMM	Flint, Mich.	1000d
WKPR	Kalamazoo, Mich.	1000d
KTOE	Mankato, Minn.	5000
WSUH	Oxford, Miss.	1000d
WQBC	Vicksburg, Miss.	1000
KBTN	Neosho, Mo.	500d
KOOO	Omaha, Nebr.	1000d
KSYX	Santa Rosa, N.Mex.	1000d
WALY	Herkimer, N.Y.	1000d
WACK	Newark, N.Y.	500
WLNA	Peekskill, N.Y.	1000d
WMYN	Mayodan, N.C.	500
WGAS	S. Gastonia, N.C.	500d
WVOT	Wilson, N.C.	1000
WHK	Cleveland, Ohio	5000
KTJS	Hobart, Okla.	1000d
KYNG	Coos Bay, Oreg.	1000d
WCOJ	Coatesville, Pa.	5000
WCED	DuBois, Pa.	5000
WEUC	Ponce, P.R.	1000
WCRE	Cheraw, S.C.	1000d
KABR	Aberdeen, S.D.	1000d
WEMB	Erwin, Tenn.	5000d
WKSR	Pulaski, Tenn.	1000
KFYN	Bonham, Tex.	250d
KTRE	Lufkin, Tex.	1000
KGNB	New Braunfels, Tex.	1000d
KPEP	San Angelo, Tex.	1000d
WWSR	St. Albans, Vt.	1000d
WDDY	Gloucester, Va.	1000d
WKCW	Warrenton, Va.	5000d
KITI	Chehalis, Wash.	1000d
KUJ	Walla Walla, Wash.	5000
WPLY	Plymouth, Wis.	500d

1430—209.7

CKFH	Toronto, Ont.	10000
WFHK	Pell City, Ala.	1000d
KHBM	Monticello, Ark.	1000d
KAMP	El Centro, Calif.	1000d
KARM	Fresno, Calif.	5000
KALI	Pasadena, Calif.	5000
KOSI	Aurora, Colo.	5000
WSDB	Homestead, Fla.	500d
WLAK	Lakeland, Fla.	5000
WPCF	Panama City, Fla.	5000
WGFS	Covington, Ga.	1000d
WRCD	Dalton, Ga.	1000d
WWGS	Tifton, Ga.	5000
WCMY	Ottawa, Ill.	500d
WIRE	Indianapolis, Ind.	5000
KASI	Ames, Iowa	1000d
KMRC	Morgan City, La.	500d
WNAV	Annapolis, Md.	5000
WHIL	Medford, Mass.	5000d
WION	Ionia, Mich.	5000d
WBRB	Mt. Clemens, Mich.	500d
WLAU	Laurel, Miss.	5000d
KADL	Carrollton, Mo.	500d
WIL	St. Louis, Mo.	5000
KRGI	Grand Island, Nebr.	1000
WNJR	Newark, N.J.	5000
KGFL	Roswell, N.M.	5000d
WENE	Endicott, N.Y.	5000
WMNC	Morganton, N.C.	5000d
WDJS	Mt. Olive, N.C.	1000d
WRXO	Roxboro, N.C.	1000d

Kc. Wave Length W.P.

WFOB	Fostoria, Ohio	1000
WCLT	Newark, Ohio	500d
KALV	Alva, Okla.	500
KELI	Tulsa, Okla.	5000
KGAY	Salem, Oreg.	5000d
WVAM	Altoona, Pa.	1000
WFRA	Franklin, Pa.	500d
WNEL	Caguas, P.R.	1000
WBLR	Batesburg, S.C.	5000d
WATP	Marion, S.C.	1000d
KBRK	Brookings, S. Dak.	1000d
WFCT	Fountain City, Tenn.	1000d
WENO	Madison, Tenn.	5000d
WHER	Memphis, Tenn.	1000
KSTB	Breckenridge, Tex.	1000d
KEES	Gladewater, Tex.	1000d
KCOH	Houston, Tex.	1000d
KLO	Ogden, Utah	5000
WIVE	Ashland, Va.	1000d
WDIC	Clincho, Va.	1000d
KBRC	Mt. Vernon, Wash.	5000
WEIR	Weirton, W.Va.	1000
WBEV	Beaver Dam, Wis.	1000d

1440—208.2

CFCP	Courtenay, B.C.	1000
WHHY	Montgomery, Ala.	5000
KWBY	Scottsdale, Ariz.	5000d
KHOG	Fayetteville, Ark.	1000d
KOKY	Little Rock, Ark.	5000d
KVON	Napa, Calif.	500
KPRO	Riverside, Calif.	1000
KCOY	Santa Maria, Calif.	1000
WBIS	Bristol, Conn.	500d
WABR	Winter Park, Fla.	5000
WWCC	Bremen, Ga.	1000d
WGIG	Brunswick, Ga.	5000
WRAJ	Anna, Ill.	500d
WIOK	Normal, Ill.	1000
WPRS	Paris, Ill.	1000d
WGEM	Quincy, Ill.	1000
WROK	Rockford, Ill.	5000
WPGW	Portland, Ind.	500d
KCHE	Cherokee, Iowa	500d
KEWI	Topeka, Kans.	5000
WKLX	Paris, Ky.	1000d
WEZJ	Williamsburg, Ky.	1000d
KMLB	Monroe, La.	5000
WJAB	Westbrook, Me.	5000d
WAAB	Worcester, Mass.	5000
WBCM	Bay City, Mich.	1000
WDOW	Dowagiac, Mich.	500d
WCHB	Inkster, Mich.	1000d
KEVE	Golden Valley, Minn.	5000
WHHT	Lucedale, Miss.	1000d
WSEL	Pontotoc, Miss.	1000d
WMVB	Millville, N.J.	1000d
WBAB	Babylon, N.Y.	1000d
WJJL	Niagara Falls, N.Y.	1000d
WSGO	Oswego, N.Y.	1000d
WBLA	Elizabethtown, N.C.	1000d
WBUY	Lexington, N.C.	5000d
KILD	Grand Forks, N.D.	1000
WHHH	Warren, Ohio	5000
KMED	Medford, Oreg.	5000
KODL	The Dalles, Oreg.	1000
WCDL	Carbondale, Pa.	5000d
WNPV	Lansdale, Pa.	500d
WGCB	Red Lion, Pa.	1000d
WQOK	Greenville, S.C.	5000
WZYX	Cowan, Tenn.	1000d
WHDM	McKenzie, Tenn.	500d
KFDA	Amarillo, Tex.	5000
KEYS	Corpus Christi, Tex.	1000
KDNT	Denton, Tex.	5000
KETX	Livingston, Tex.	5000d
WKLV	Blackstone, Va.	5000d
WHIS	Bluefield, W.Va.	5000
WAJR	Morgantown, W.Va.	5000
WJPG	Green Bay, Wis.	5000

1450—206.8

CFBM	Brochet, Man.	100
CBG	Gander, Nfld.	250
CFAB	Windsor, N.S.	250
CFJR	Brockville, Ont.	1000
CHEF	Granby, P.Q.	1000
WDNG	Anniston, Ala.	1000
WYAM	Bessemer, Ala.	1000
WDIG	Dothan, Ala.	1000
WFIX	Huntsville, Ala.	250
WLAY	Muscle Shoals City, Alabama	1000
KLAM	Cordova, Alaska	250
KAWT	Douglas, Ariz.	250
KNOT	Prescott, Ariz.	250
KOLD	Tucson, Ariz.	250
KENA	Mena, Ark.	250
KYOR	Blythe, Calif.	250
KOWN	Escondido, Calif.	250
KPAL	Palm Springs, Calif.	250
KTIP	Porterville, Calif.	250
KSAN	San Francisco, Calif.	250
KVML	Sonora, Calif.	250
KVEN	Ventura, Calif.	1000
KAGR	Yuba City, Calif.	100
KGIW	Alamosa, Colo.	250
KYOU	Greeley, Colo.	1000
WNAB	Bridgeport, Conn.	250
WILM	Wilmington, Del.	250
WOL	Washington, D.C.	250
WWJB	Brooksville, Fla.	250
WMFJ	Daytona Beach, Fla.	1000
WSKP	Miami, Fla.	250
WBSR	Pensacola, Fla.	1000
WSPB	Sarasota, Fla.	1000
WSTU	Stuart, Fla.	250

Kc. Wave Length W.P.

WTNT	Tallahassee, Fla.	1000
WGPC	Albany, Ga.	250
WBHF	Cartersville, Ga.	1000
WCON	Cornelia, Ga.	250
WKEU	Griffin, Ga.	1000
WMVG	Milledgeville, Ga.	1000
WBYG	Savannah, Ga.	1000
WVLD	Valdosta, Ga.	1000
KEOK	Payette, Idaho	250
KEEP	Twin Falls, Idaho	250
WHFC	Cicero, Ill.	1000
WKEI	Kewanee, Ill.	100
WCVS	Springfield, Ill.	1000
WANE	Ft. Wayne, Ind.	250
WXVW	Jeffersonville, Ind.	250
WASK	Lafayette, Ind.	250
WAOV	Vincennes, Ind.	250
KPIG	Cedar Rapids, Iowa	250
KWBW	Hutchinson, Kans.	250
WTCO	Campbellsville, Ky.	250
WWXL	Manchester, Ky.	1000
WPAD	Paducah, Ky.	1000
KSIG	Crowley, La.	1000
KNOC	Natchitoches, La.	1000
WNPS	New Orleans, La.	250
WRKD	Rockland, Maine	250
WKTQ	South Paris, Maine	250
WTBO	Cumberland, Md.	250
WMAS	Springfield, Mass.	1000
WATZ	Alpena Township, Michigan	1000
WHTC	Holland, Mich.	1000
WMIQ	Iron Mtn., Mich.	250
WIBM	Jackson, Mich.	1000
WKLA	Ludington, Mich.	250
WHLS	Port Huron, Mich.	250
KATE	Albert Lea, Minn.	250
KBUN	Bemidji, Minn.	1000
KBMW	Breckenridge, Minn.	250
WELY	Ely, Minn.	1000
KFAM	St. Cloud, Minn.	1000
WROX	Clarksdale, Miss.	250
WCJU	Columbia, Miss.	250
WJXN	Jackson, Miss.	250
WOKK	Meridian, Miss.	1000
WNAT	Natchez, Miss.	250
WROB	West Point, Miss.	250
WMBH	Joplin, Mo.	250
KIRX	Kirksville, Mo.	250
KOKO	Warrensburg, Mo.	250
KWPM	West Plains, Mo.	1000
KXXL	Bozeman, Mont.	1000
KUDI	Great Falls, Mont.	1000
KXLL	Missoula, Mont.	250
KRBN	Red Lodge, Mont.	1000
KVCK	Wolf Point, Mont.	1000
KWBE	Beatrice, Nebr.	250
KCSR	Chadron, Nebr.	250
KONE	Reno, Nev.	250
WKXL	Concord, N.H.	1000
WEMJ	Laconia, N.H.	250
WFPG	Atlantic City, N.J.	1000
WCTC	New Brunswick, N.J.	250
KLOS	Albuquerque, N.Mex.	250
KLMX	Clayton, N.Mex.	250
KOBE	Las Cruces, N.Mex.	250
KENM	Portales, N.Mex.	250
WCLI	Corning, N.Y.	1000
WWSC	Glen Falls, N.Y.	1000
WHDL	Olean, N.Y.	1000
WKIP	Poughkeepsie, N.Y.	250
WKAL	Rome, N.Y.	250
WATA	Boone, N.C.	250
WGNC	Gastonia, N.C.	1000
WHVH	Henderson, N.C.	1000
WHKP	Hendersonville, N.C.	1000
WHIT	New Bern, N.C.	250
KGCA	Rugby, N.Dak.	250
WJER	Dover, Ohio	250
WMOH	Hamilton, Ohio	250
WLEC	Sandusky, Ohio	1000
KWHW	Altus, Okla.	250
KGFF	Shawnee, Okla.	1000
KSIW	Woodward, Okla.	1000
KDRE	Eugene, Oreg.	1000
KFLW	Klamath Falls, Oreg.	250
KLBM	La Grande, Oreg.	1000
KBPS	Portland, Oreg.	250
WLEU	Erie, Pa.	250
WDAD	Indiana, Pa.	250
WPAM	Pottsville, Pa.	250
WMPT	So. Williamsport, Pa.	250
WMAJ	State College, Pa.	250
WJPA	Washington, Pa.	250
WWRI	W. Warwick, R.I.	1000
WQSN	Charleston, S.C.	1000
WCRS	Greenwood, S.C.	1000
WMYB	Myrtle Beach, S.C.	1000
WHSC	Hartsville, S.C.	1000
KBFS	Belle Fourche, S.Dak.	250
KYNT	Yankton, S.Dak.	250
WLAR	Athens, Tenn.	250
WMOC	Chattanooga, Tenn.	250
WDSG	Dyersburg, Tenn.	250
WSMG	Greeneville, Tenn.	250
WLAF	LaFollette, Tenn.	100
WGNS	Murfreesboro, Tenn.	1000
KRIC	Beaumont, Tex.	250
KBEN	Carrizo Sprgs., Tex.	250
KCTI	Gonzales, Tex.	250
KMBL	Junction, Tex.	250
KCYL	Lampasas, Tex.	250
KMHT	Marshall, Tex.	1000
KAMY	McCamey, Tex.	250
KNET	Palestine, Tex.	250
KSNY	Snyder, Tex.	1000
KURA	Moab, Utah	250
KEYY	Provo, Utah	250

Kc.	Wave Length	W.P.
KDXU	St. George, Utah	250
WSNO	Barre, Vt.	1000
WTSA	Brattleboro, Vt.	1000
WFTR	Front Royal, Va.	250
WENZ	Highland Springs, Va.	250
WREL	Lexington, Va.	250
WMVA	Martinsville, Va.	1000
KBKW	Aberdeen, Wash.	1000
KCLX	Colfax, Wash.	1000
KONP	Port Angeles, Wash.	250
KAYE	Puyallup, Wash.	1000
WPAR	Parkersburg, W.Va.	250
KFIZ	Fond du Lac, Wis.	250
WDLB	Marshfield, Wis.	1000
WPFP	Park Falls, Wis.	1000
WRCO	Richland Center, Wis.	1000
KBBS	Buffalo, Wyo.	250
KVOW	Riverton, Wyo.	250
1460—205.4		
CJOY	Guelph, Ont.	10000
CKRB	Ville St. Georges, Quebec	10000
CJNB	N. Battleford, Sask.	10000
WFMH	Cullman, Ala.	5000d
WPNX	Phenix City, Ala.	5000
KZOT	Marianna, Ark.	500
KCCL	Paris, Ark.	500d
KTYM	Inglewood, Calif.	5000d
KDON	Salinas, Calif.	5000
KVRE	Santa Rosa, Calif.	1000d
KYSN	Colo. Sprgs., Colo.	1000
WBAR	Bartow, Fla.	1000d
WZEP	DeFuniak Springs, Florida	1000d
WMBR	Jacksonville, Fla.	5000
WDMF	Buford, Ga.	1000d
WROY	Carmi, Ill.	1000d
WIXN	Dixon, Ill.	1000d
WKAM	Goshen, Ind.	1000d
WOCH	North Vernon, Ind.	1000d
KSO	Des Moines, Iowa	5000
KCRB	Chanute, Kans.	1000d
WRVK	Mt. Vernon, Ky.	500d
WAIL	Baton Rouge, La.	5000
KBSF	Springhill, La.	1000d
WEMD	Easton, Md.	500d
WBET	Brockton, Mass.	5000
WBRN	Big Rapids, Mich.	1000d
WPON	Pontiac, Mich.	1000
KDMA	Montevideo, Minn.	1000
WELZ	Belzoni, Miss.	1000d
KADY	St. Charles, Mo.	5000d
KRNY	Kearney, Nebr.	5000d
KENO	Las Vegas, Nev.	1000
WOKO	Albany, N.Y.	5000
WVOX	New Rochelle, N.Y.	500d
WHEC	Rochester, N.Y.	5000
WFVG	Fuquay Sprgs., N.C.	1000d
WRKB	Kannapolis, N.C.	500d
WMMH	Marshall, N.C.	500d
WBNS	Columbus, Ohio	5000
WPVL	Painesville, Ohio	500d
KELR	El Reno, Okla.	500
KROW	Dallas, Oreg.	5000
WMBA	Ambridge, Pa.	500d
WCMB	Harrisburg, Pa.	5000
WBCU	Union, S.C.	1000
WGOG	Walhalla, S.C.	500d
WJAK	Jackson, Tenn.	5000d
WEEN	Lafayette, Tenn.	1000d
KBRZ	Freeport, Tex.	500d
KLLL	Lubbock, Tex.	1000d
WACO	Waco, Tex.	1000
WPRW	Manassas, Va.	500d
WRAD	Radford, Va.	5000
WLPM	Suffolk, Va.	1000
KCDI	Kirkland, Wash.	5000d
KIMA	Yakima, Wash.	5000
WBUC	Buckhannon, W.Va.	1000d
WRAC	Racine, Wis.	500d
WTMB	Tomah, Wis.	1000d
1470—204.0		
CHOW	Welland, Ontario	1000
CFOX	Pointe Claire, Que.	5000
WBLO	Evergreen, Ala.	1000d
KZNG	Hot Springs, Ark.	1000d
KBMX	Coalinga, Calif.	500d
KUTY	Palmdale, Calif.	5000
KXOA	Sacramento, Calif.	5000
WMMW	Meriden, Conn.	1000d
WPOM	Pompano Beach, Fla.	5000
WRBB	Tarpon Sprgs., Fla.	5000d
WAAG	Adel, Ga.	1000d
WDOL	Athens, Ga.	1000d
WCLA	Claxton, Ga.	1000
WRGA	Rome, Ga.	5000
WMPP	Chicago Heights, Ill.	1000d
WMBD	Peoria, Ill.	5000
WHUT	Anderson, Ind.	1000d
KTRI	Sioux City, Iowa	5000
KWVY	Waverly, Iowa	1000d
KARE	Atchison, Kans.	1000
KLIB	Liberal, Kans.	500d
WSAC	Fort Knox, Ky.	1000d
KPLC	Lake Charles, La.	5000
WLAM	Lewiston, Maine	5000
WJDY	Salisbury, Md.	5000d
WTTR	Westminster, Md.	1000d
WSRO	Marlborough, Mass.	1000d
WNBP	Newburyport, Mass.	500d
WKMF	Flint, Mich.	5000
WKLZ	Kalamazoo, Mich.	500d
KANO	Anoka, Minn.	500d
WCHJ	Brookhaven, Miss.	1000d
WNAU	New Albany, Miss.	500d
KGHM	Brookfield, Mo.	500d
KTCB	Malden, Mo.	1000d
WTKO	Ithaca, N.Y.	1000d
WPDM	Potsdam, N.Y.	1000d
WBIG	Greensboro, N.C.	5000
WPNC	Plymouth, N.C.	1000d
WTOE	Spruce Pine, N.C.	1000d
WOHO	Toledo, Ohio	1000
KVLH	Pauls Valley, Okla.	250d
KVIN	Vinita, Okla.	500d
KRAF	Reedsport, Oreg.	5000d
WSAN	Allentown, Pa.	5000
WFAR	Farrell, Pa.	1000d
WWML	Portage, Pa.	500d
WQXL	Columbia, S.C.	5000d
WEAG	Alcoa, Tenn.	1000d
WVOL	Berry Hill, Tenn.	5000
KRBC	Abilene, Tex.	5000
KWRD	Henderson, Tex.	500d
KCNY	San Marcos, Tex.	250d
KELA	Centralia, Wash.	5000
KSEM	Moses Lake, Wash.	5000
WWHY	Huntington, W.Va.	5000d
WJBT	Wheeling, W.Va.	500d
WBKV	West Bend, Wis.	1000d
KTWO	Casper, Wyo.	5000
1480—202.6		
WARI	Abbeville, Ala.	1000
WBTS	Bridgeport, Ala.	1000d
WIXI	Irondale, Ala.	5000d
WABB	Mobile, Ala.	5000
KHAT	Phoenix, Ariz.	500
KGLU	Safford, Ariz.	1000
KTCN	Berryville, Ark.	1000
KWUN	Concord, Calif.	500d
KRED	Eureka, Calif.	5000
KYOS	Merced, Calif.	5000
KWIZ	Santa Ana, Calif.	5000
KSEE	Santa Maria, Calif.	1000
KTUX	Pueblo, Colo.	1000d
WSOR	Windsor, Conn.	500d
WAPG	Arcadia, Fla.	1000d
WTHR	Panama Beach, Fla.	500d
WXIV	Windemere, Fla.	1000d
WYZE	Atlanta, Ga.	5000d
WRDW	Augusta, Ga.	5000
WGSB	Geneva, Ill.	1000
WJBM	Jerseyville, Ill.	500d
WTHI	Terre Haute, Ind.	1000
WRSW	Warsaw, Ind.	500
KLEE	Ottumwa, Iowa	500d
KBEA	Mission, Kans.	1000d
KLEO	Wichita, Kans.	5000
WKOA	Hopkinsville, Ky.	1000d
WNKY	Neon, Ky.	1000d
WTLO	Somerset, Ky.	1000d
KANV	Jonesville, La.	500d
KJOE	Shreveport, La.	1000d
WSAR	Fall River, Mass.	5000
WMAX	Grand Rapids, Michigan	1000d
WIOS	Tawas City, Mich.	1000d
KAUS	Austin, Minn.	1000
KGCX	Sidney, Mont.	5000
KLMS	Lincoln, Nebr.	1000
KWEW	Hobbs, N. Mex.	5000
WLEA	Hornell, N.Y.	1000d
WHOM	New York, N.Y.	5000
WREM	Remsen, N.Y.	5000d
WWOK	Charlotte, N.C.	1000d
WYRN	Louisburg, N.C.	500d
WMSJ	Sylva, N.C.	5000d
WHBC	Canton, Ohio	5000
WCIN	Cincinnati, Ohio	5000
WTRA	Latrobe, Pa.	500d
WDAS	Philadelphia, Pa.	5000
WISL	Shamokin, Pa.	1000
WSHP	Shippensburg, Pa.	500d
KSDR	Waterton, S.D.	1000d
WJFC	Jefferson City, Tenn.	500
WLOK	Memphis, Tenn.	5000d
KBOX	Dallas, Tex.	5000
KLVL	Pasadena, Tex.	1000
KAPE	San Antonio, Tex.	500d
KONI	Spanish Fork, Utah	1000d
WCFR	Springfield, Vt.	1000d
WBBL	Richmond, Va.	5000
WLEE	Richmond, Va.	5000
WBLU	Salem, Va.	5000d
KFHA	Lakewood, Wash.	1000d
KVAN	Vancouver, Wash.	1000d
WISM	Madison, Wis.	5000
KRAE	Cheyenne, Wyo.	1000d
1490—201.2		
CFMR	Fort Simpson NWT.	250
CFRC	Kingston, Ont.	100
CKCR	Kitchener, Ont.	1000
CKBM	Montmagny, Que.	1000
WANA	Anniston, Ala.	250
WAJF	Decatur, Ala.	1000
WRLD	Lanett, Ala.	250
WHBB	Selma, Ala.	250
KYCA	Prescott, Ariz.	1000
KAIR	Tucson, Ariz.	250
KXAR	Hope, Ark.	250
KTLO	Mtn. Home, Ark.	250
KDRS	Paragould, Ark.	250
KOTN	Pine Bluff, Ark.	250
KXRJ	Russellville, Ark.	250
KWAC	Bakersfield, Calif.	250
KPAS	Banning, Calif.	250
KBLA	Burbank, Calif.	250
KICO	Calexico, Calif.	250
KOWL	Lake Tahoe, Calif.	250
KTOB	Petaluma, Calif.	250
KBLF	Red Bluff, Calif.	1000
KDB	Santa Barbara, Calif.	250
KSYC	Yreka, Calif.	1000
KBOL	Boulder, Colo.	1000
KGUC	Gunnison, Colo.	250
KCMS	Manitou Sprgs., Colo.	100
KOLR	Sterling, Colo.	250
WTOR	Torrington, Conn.	250
WTRL	Bradenton, Fla.	250
WJBS	DeLand, Fla.	250
WMBM	Miami Beach, Fla.	250
WSRA	Milton, Fla.	250
WRGR	Starke, Fla.	250
WTTB	Vero Beach, Fla.	250
WSIR	Winter Haven, Fla.	250
WMOG	Brunswick, Ga.	250
WMJM	Cordele, Ga.	1000
WMRE	Monroe, Ga.	250
WSFB	Quitman, Ga.	250
WSNT	Sandersville, Ga.	250
WSYL	Sylvania, Ga.	250
KTOH	Lihue, Hawaii	250
KCID	Caldwell, Idaho	1000
WKRO	Cairo, Ill.	250
WDAN	Danville, Ill.	1000
WBBR	East St. Louis, Ill.	500
WOPA	Oak Park, Ill.	1000
WZOE	Princeton, Ind.	100
WKBV	Richmond, Ind.	1000
WNDU	South Bend, Ind.	250
KBUR	Burlington, Iowa	1000
WDBQ	Dubuque, Iowa	250
KRIB	Mason City, Iowa	250
KKAN	Phillipsburg, Kans.	250
KTOP	Topeka, Kans.	250
WFKY	Frankfort, Ky.	250
WKAY	Glasgow, Ky.	1000
WOMI	Owensboro, Ky.	1000
WSIP	Paintsville, Ky.	1000
WIKC	Bogalusa, La.	1000
KEUN	Eunice, La.	250
KCIL	Houma, La.	1000
KRUS	Ruston, La.	250
WPOR	Portland, Maine	1000
WTVL	Waterville, Maine	1000
WARK	Hagerstown, Md.	1000
WHAV	Haverhill, Mass.	250
WMRC	Milford, Mass.	250
WTXL	W. Springfield, Mass.	1000
WABJ	Adrian, Mich.	1000
WBFC	Fremont, Mich.	250
WMDN	Midland, Mich.	1000
WCBQ	Whitehall, Mich.	1000
KXRA	Alexandria, Minn.	250
KOZY	Grand Rapids, Minn.	250
KLGR	Redwd. Falls, Minn.	1000
WLOX	Biloxi, Miss.	1000
WCLD	Cleveland, Miss.	250
WHOC	Philadelphia, Miss.	250
WTUP	Tupelo, Miss.	250
WVIM	Vicksburg, Miss.	250
KDMO	Carthage, Mo.	250
KTTR	Rolla, Mo.	1000
KDRO	Sedalia, Mo.	250
KBOW	Butte, Mont.	1000
KBON	Omaha, Nebr.	1000
WEMJ	Laconia, N.H.	1000
WLDB	Atlantic City, N.J.	250
KRSN	Los Alamos, N.Mex.	250
KRTN	Raton, N.Mex.	250
WCSS	Amsterdam, N.Y.	250
WBTA	Batavia, N.Y.	250
WKNY	Kingston, N.Y.	1000
WICY	Malone, N.Y.	1000
WDLC	Port Jervis, N.Y.	250
WOLF	Syracuse, N.Y.	250
WSSB	Durham, N.C.	250
WFLB	Fayetteville, N.C.	250
WLOE	Leaksville, N.C.	250
WRNB	New Bern, N.C.	1000
WRMT	Rocky Mount, N.C.	250
WSTP	Salisbury, N.C.	250
WSVM	Valdese, N.C.	250
KNDC	Hettinger, N.Dak.	250
KOVC	Valley City, N.Dak.	250
WBEX	Chillicothe, Ohio	1000
WJMO	Cleveland Hghts., Ohio	250
WOHI	E. Liverpool, Ohio	250
WMOA	Marietta, Ohio	1000
WMRN	Marion, Ohio	1000
KWRW	Guthrie, Okla.	100
KBIX	Muskogee, Okla.	250
KBKR	Baker, Oreg.	250
KRNR	Roseburg, Oreg.	250
KBZY	Salem, Oreg.	1000
WESB	Bradford, Pa.	250
WAZL	Hazleton, Pa.	1000
WARD	Johnstown, Pa.	250
WGAL	Lancaster, Pa.	1000
WBCB	Levittown, Pa.	1000
WMRF	Lewiston, Pa.	1000
WMGW	Meadville, Pa.	250
WNBT	Wellsboro, Pa.	250
WMDD	Fajardo, P.R.	250
WSIB	Beaufort, S.C.	100
WGCD	Chester, S.C.	250
WMRB	Greenville, S.C.	1000
KORN	Mitchell, S.Dak.	250
WOPI	Bristol, Tenn.	1000
WDXB	Chattanooga, Tenn.	1000
WROL	Fountain City, Tenn.	250
WJJM	Lewisburg, Tenn.	1000
WDXL	Lexington, Tenn.	1000
KNOW	Austin, Tex.	250
KIBL	Beeville, Tex.	250
KBST	Big Spring, Tex.	250
KHUZ	Borger, Tex.	250
KNEL	Brady, Tex.	250
KSAM	Huntsville, Tex.	250
KVOZ	Laredo, Tex.	250
KZZN	Littlefield, Tex.	250
KPLT	Paris, Tex.	250
KGKB	Tyler, Tex.	250
KVWC	Vernon, Tex.	250
KVOG	Ogden, Utah	1000
WKVT	Brattleboro, Vt.	250
WIKE	Newport, Vt.	1000
WCVA	Culpeper, Va.	250
WVEC	Hampton, Va.	250
WAYB	Waynesboro, Va.	250
KBRO	Bremerton, Wash.	1000
KLDG	Kelso, Wash.	250
KENE	Toppenish, Wash.	250
KTEL	Walla Walla, Wash.	250
WTGR	Charleston, W.Va.	250
WTCS	Fairmont, W.Va.	250
WLOH	Princeton, W.Va.	250
WGEZ	Beloit, Wis.	250
WLCX	LaCrosse, Wis.	1000
WIGM	Medford, Wis.	1000
WOSH	Oshkosh, Wis.	250
KIML	Gillette, Wyo.	250
KLME	Laramie, Wyo.	100
KRTR	Thermopolis, Wyo.	250
KGOS	Torrington, Wyo.	1000
1500—199.9		
CHUC	Port Hope, Ont.	1000
KXRX	San Jose, Calif.	5000
WTOP	Washington, D.C.	50000
WKIZ	Key West, Fla.	250
WJBK	Detroit, Mich.	10000
KSTP	St. Paul, Minn.	50000
KPIR	Eugene, Ore.	10000d
WMNT	Manati, P.R.	250
KTXO	Sherman, Tex.	250
KANI	Wharton, Tex.	500
1510—199.1		
CKOT	Tillsonburg, Ont.	1000d
KASK	Ontario, Calif.	1000
KIRV	Fresno, Calif.	500
KTIM	San Rafael, Calif.	1000d
KMOR	Littleton, Colo.	1000
WNLC	New London, Conn.	5000
WKAI	Macomb, Ill.	250d
WMEX	Boston, Mass.	5000
WLKM	Three Rivers, Mich.	500
KANS	Independence, Mo.	1000d
WRAN	Dover, N.J.	1000
WLAC	Nashville, Tenn.	50000
KCTX	Childress, Tex.	250d
KSTV	Stephenville, Tex.	250d
KGA	Spokane, Wash.	50000
WAUX	Waukesha, Wis.	10000d
1520—197.4		
KGHT	Hollister, Calif.	500
KACY	Port Hueneme, Calif.	10000
WHOW	Clinton, Ill.	5000d
WSVL	Shelbyville, Ind.	250
KSIB	Creston, Iowa	1000d
WRSL	Stanford, Ky.	500d
KXKW	Lafayette, La.	500
WKBW	Buffalo, N.Y.	50000
WFYI	Mineola, N.Y.	1000d
KOMA	Okla. City, Okla.	50000
KGON	Oregon City, Oreg.	10000
WWWW	Rio Piedras, P.R.	250
1530—196.1		
KFBK	Sacramento, Calif.	50000
KMAM	Butler, Mo.	250
WENG	Englewood, Fla.	1000
WCKY	Cincinnati, Ohio	50000
KGBT	Harlingen, Tex.	50000
WQVA	Quantico, Va.	250
1540—195.0		
ZNS	Nassau, B.W.I.	10000
KPOL	Los Angeles, Calif.	50000
WSMI	Litchfield, Ill.	1000d
WBNL	Boonville, Ind.	250d
WLOI	LaPorte, Ind.	250d
KXEL	Waterloo, Iowa	50000
KNEX	McPherson, Kans.	250d
KLKC	Parsons, Kans.	250d
WDON	Wheaton, Md.	1000
WPTR	Albany, N.Y.	50000
WIFM	Elkin, N.C.	250d
WABQ	Cleveland, Ohio	1000d
WJMJ	Philadelphia, Pa.	50000d
WPTS	Pittston, Pa.	1000d
WPME	Punxsutawney, Pa.	1000d
WADK	Newport, R.I.	1000d
KCUL	Ft. Worth, Tex.	50000d
KGBC	Galveston, Tex.	1000
KBVU	Bellevue, Wash.	1000
WTKM	Hartford, Wis.	500d
1550—193.5		
CBE	Windsor, Ont.	10000
WBHM	Birmingham, Ala.	50000d
WAAY	Huntsville, Ala.	5000
WMOE	Mobile, Ala.	50000d
KFIF	Tucson, Ariz.	50000d
KKHI	San Fran., Calif.	10000
KDAB	Arvada, Colo.	10000d
WRIZ	Coral Gables, Fla.	10000d
WORT	New Smyrna Bch., Fla.	250

Kc.	Wave Length	W.P.
WZST	Tampa, Fla.	10000d
WSMA	Smyrna, Ga.	10000d
WJIL	Jacksonville, Ill.	1000d
WCTW	New Castle, Ind.	250
KEDD	Dodge City, Kans.	1000d
WIRV	Irvine, Ky.	1000d
WMSK	Morganfield, Ky.	250d
WYNE	Baton Rouge, La.	5000d
KREB	Shreveport, La.	10000
WSHN	Fremont, Mich.	1000d
KBLR	Bolivar, Mo.	250
KGMO	Cape Girardeau, Mo.	5000d
KKJO	St. Joseph, Mo.	5000
WCGR	Canandaigua, N.Y.	250
WBAZ	Kingston, N.Y.	500d
WBVM	Utica, N.Y.	1000
WTYN	Tryon, N.C.	1000d
WPEG	Winston-Salem, N.C.	1000d
KUTT	Fargo, N.D.	5000d
WDLR	Delaware, Ohio	500d
KMAD	Madill, Okla.	250
WLOA	Braddock, Pa.	1000d
WTTC	Towanda, Pa.	500d
WKFE	Yauco, P.R.	250
WBSC	Bennetsville, S.C.	10000
WTHB	N. Augusta, S.C.	1000d
KVPH	Canyon, Tex.	1000
KWBC	Navasota, Tex.	250d
WTPI	Cookville, Tenn.	250d
WKPT	Kingsport, Tenn.	10000d
WKBA	Vinton, Va.	1000d
WBOF	Virginia Beach, Va.	5000d
WXVA	Charlestown, W.Va.	500d
KOQT	Bellingham, Wash.	1000d

1560—192.3

Kc.	Wave Length	W.P.
CFRS	Simcoe, Ont.	250d
KPMC	Bakersfield, Calif.	10000
KIQS	Willows, Calif.	250d
WBYS	Canton, Ill.	250d
KSWI	Council Bluffs, Iowa	1000d
WDXR	Paducah, Ky.	1000
KQYX	Joplin, Mo.	250
WQXR	New York, N.Y.	50000
WTNS	Coshocton, Ohio	1000d
WTOD	Toledo, Ohio	5000d
KWCO	Chickasha, Okla.	1000
WRSJ	Bayamon, P.R.	5000
KCAD	Abilene, Tex.	500d
KHBR	Hillsboro, Tex.	250d
KGUL	Port Lavaca, Tex.	500d
KHOK	Hoquiam, Wash.	1000d

1570—191.1

Kc.	Wave Length	W.P.
CHUB	Nanaimo, B.C.	10000
CFRY	Portage la Prairie, Manitoba	250d
CFOR	Orillia, Ont.	10000
WCRL	Oneonta, Ala.	250d
WRWJ	Selma, Ala.	1000d
KBRI	Brinkley, Ark.	250d
KBJT	Fordyce, Ark.	250d
KRKC	King City, Calif.	250d
KCVR	Lodi, Calif.	1000d
KACE	Riverside, Calif.	1000d
KLOV	Loveland, Colo.	250d
WTWB	Auburndale, Fla.	5000d
WPAP	Fernandina Beach, Florida	1000d
WOKC	Okeechobee, Fla.	1000
WJOE	Ward Ridge, Fla.	250
WMES	Ashburn, Ga.	1000d
WGHC	Clayton, Ga.	1000d
WEAD	College Park, Ga.	1000d
WGSR	Millen, Ga.	250d
WOKZ	Alton, Ill.	1000d
WFRL	Freeport, Ill.	5000d
WBEE	Harvey, Ill.	1000d
WTAY	Robinson, Ill.	250d
WILO	Frankfort, Ind.	250d
WAWK	Kendallville, Ind.	250d
WOWI	New Albany, Ind.	1000d
KMOD	Fairfield, Iowa	250d
KJFJ	Webster City, Iowa	250d
KNDY	Marysville, Kans.	250d
KWSK	Pratt, Kans.	250d
WKKS	Vanceburg, Ky.	250d
WABL	Amite, La.	500d
KLLA	Leesville, La.	1000
KMAR	Winnsboro, La.	1000
WAQE	Towson, Md.	5000d
WPEP	Taunton, Mass.	1000d
WMLO	Beverly, Mass.	500d
WDEW	Westfield, Mass.	1000d
WMRP	Flint, Mich.	1000d
WFUR	Grand Rapids, Michigan	1000d
KUXL	Golden Valley, Minn.	500d
WONA	Winona, Miss.	1000d
KLEX	Lexington, Mo.	250d
WAFS	Amsterdam, N.Y.	1000
WFLR	Dundee, N.Y.	1000d
WBUZ	Fredonia, N.Y.	250d
WAPC	Riverhead, N.Y.	1000d
WTLK	Taylorsville, N.C.	500
WNCA	Siler City, N.C.	1000d
WCLW	Mansfield, Ohio	1000
WPTW	Piqua, Ohio	250d
KTAT	Frederick, Okla.	250d
KOLS	Pryor, Okla.	1000d
KGGG	Forest Grove, Oreg.	1000d
KOHU	Hermiston, Oreg.	1000d
WBUX	Doylestown, Pa.	1000d
WSHH	Latrobe, Pa.	1000d
WFGN	Gaffney, S.C.	250d
WJES	Johnston, S.C.	250
WLSC	Loris, S.C.	1000d
WHLP	Centerville, Tenn.	1000d
WCLE	Cleveland, Tenn.	1000d
WTRB	Ripley, Tenn.	1000d
KZOL	Farwell, Tex.	250d
KVLG	La Grange, Tex.	250d
KTER	Terrell, Tex.	250d
KWIC	Salt Lake City, Utah	5000
WSWV	Pennington Gap, Va.	1000d
WYTI	Rocky Mount, Va.	1000d
WEER	Warrenton, W.Va.	500d
WAPL	Appleton, Wis.	1000d

1580—189.2

Kc.	Wave Length	W.P.
CBJ	Chicoutimi, Que.	10000
WJHB	Talladega, Ala.	1000d
KYND	Tempe, Ariz.	10000d
KPCA	Marked Tree, Ark.	250d
KFDF	Van Buren, Ark.	1000d
KPON	Anderson, Calif.	1000d
KWIP	Merced, Calif.	500d
KDAY	Santa Monica, Cal.	50000d
KHUM	Santa Rosa, Calif.	500d
KPIK	Colorado Sprgs., Colo.	5000d
WWIL	Ft. Lauderdale, Fla.	10000
WGRC	Green Cove Springs, Florida	500d
WMDF	Mount Dora, Fla.	1000d
WCLS	Columbus, Ga.	1000d
WPFE	Eastman, Ga.	500d
WLBA	Gainesville, Ga.	5000d
WKIG	Glenville, Ga.	1000d
WKKD	Aurora, Ill.	250d
WDQN	DuQuoin, Ill.	250d
WBBA	Pittsfield, Ill.	250d
WKID	Urbana, Ill.	250d
WCNB	Connersville, Ind.	250d
WJVA	South Bend, Ind.	1000d
WAMW	Washington, Ind.	250d
KCHA	Charles City, Iowa	500d
KWNT	Davenport, Iowa	500d
KDSN	Denison, Iowa	500d
WAXU	Georgetown, Ky.	10000d
WMTL	Leitchfield, Ky.	250d
WPKY	Princeton, Ky.	250d
KLUV	Haynesville, La.	250d
KLOU	Lake Charles, La.	1000
WPGC	Bradbury Hgts., Md.	10000
WOWE	Allegan, Mich.	250d
WJUD	St. Johns, Mich.	1000d
KDOM	Windom, Minn.	250d
WAMY	Amory, Miss.	5000d
WGLC	Centreville, Miss.	250d
WESY	Leland, Miss.	1000
WPMP	Pascagoula-Moss Point, Mississippi	1000d
KCGM	Columbia, Mo.	250d
KESM	Eldorado Springs, Mo.	250d
KNIM	Maryville, Mo.	250d
WNJH	Hammonton, N.J.	250d
WCRV	Washington, N.J.	500d
KRAZ	Albuquerque, N.Mex.	1000d
WPAC	Patchogue, N.Y.	10000d
WZKY	Albemarle, N.C.	250d
WPYB	Benson, N.C.	500d
WVKO	Columbus, Ohio	1000d
KLTR	Blackwell, Okla.	250d
WCOY	Columbia, Pa.	500d
WEND	Ebensburg, Pa.	1000d
WANB	Waynesburg, Pa.	250d
WORG	Orangeburg, S.C.	1000d
WYCL	York, S.C.	250d
WSKT	Colonial Village, Tenn.	250d
WLIJ	Shelbyville, Tenn.	1000d
WSKT	South Knoxville, Tenn.	250
KGAF	Gainesville, Tex.	250d
KIRT	Mission, Tex.	1000d
KTLU	Rusk, Tex.	500d
KWED	Seguin, Tex.	1000d
KBYP	Shamrock, Tex.	250d
WBGO	Waco, Tex.	1000
WILA	Danville, Va.	1000d
WPUV	Pulaski, Va.	5000d
WTTN	Watertown, Wis.	1000d

1590—188.7

Kc.	Wave Length	W.P.
WATM	Atmore, Ala.	5000d
WVNA	Tuscumbia, Ala.	5000d
KPBA	Pine Bluff, Ark.	1000d
KLIV	San Jose, Calif.	5000
KUDU	Ventura, Calif.	1000
KCIN	Victorville, Calif.	500d
WBRY	Waterbury, Conn.	5000
WOWY	Clewiston, Fla.	500d
WILZ	St. Petersburg Beach, Florida	1000d
WELE	S. Daytona Bch., Fla.	1000d
WALG	Albany, Ga.	1000
WLFA	Lafayette, Ga.	5000d
WTGA	Thomaston, Ga.	500d
WNMP	Evanston, Ill.	1000d
WAIK	Galesburg, Ill.	5000d
WGEE	Indianapolis, Ind.	5000d
WPCO	Mt. Vernon, Ind.	500d
KWBG	Boone, Iowa	1000
KVGB	Great Bend, Kans.	5000
WLBN	Lebanon, Ky.	1000d
KEVL	White Castle, La.	1000d
WETT	Ocean City, Md.	1000
WTVB	Coldwater, Mich.	5000
WDOG	Marine City, Mich.	1000d
WMIC	St. Helen, Mich.	500d
KRAD	E. Grand Forks, Minn.	1000d
WOKJ	Jackson, Miss.	5000d
KDEX	Dexter, Mo.	1000d
KPRS	Kansas City, Mo.	1000d
KCLU	Rolla, Mo.	1000d
WSMN	Nashua, N.H.	5000
WERA	Plainfield, N.J.	500d
WAUB	Auburn, N.Y.	500d
WEHH	Elmira Heights-Horseheads, N.Y.	500d
WGGO	Salamanca, N.Y.	5000d
WVOE	Chadburn, N.C.	1000
WGTC	Greenville, N.C.	5000d
WNOS	High Point, N.C.	1000d
WAKR	Akron, Ohio	5000
WSRW	Hillsboro, Ohio	500d
KHEN	Henryetta, Okla.	500d
KTIL	Tillamook, Oreg.	1000
WZUM	Carnegie, Pa.	1000d
WCBG	Chambersburg, Pa.	5000d
WEEZ	Chester, Pa.	1000
WXRF	Guayama, P.R.	1000
WYNG	Warwick, R.I.	1000d
WABV	Abbeville, S.C.	1000d
WACA	Camden, S.C.	1000d
KCCR	Pierre, S.Dak.	1000d
WJSO	Jonesboro, Tenn.	5000d
WDBL	Springfield, Tenn.	1000d
KGAS	Carthage, Tex.	1000d
KERC	Eastland, Tex.	500d
KINT	El Paso, Tex.	1000d
KYOK	Houston, Tex.	5000
KCBD	Lubbock, Tex.	1000
KBUS	Mexia, Tex.	500d
KTOD	Sinton, Tex.	1000
WRLA	Luray, Va.	500d
WRGM	Richmond, Va.	5000d
KETO	Seattle, Wash.	5000d
WIXK	New Richmond, Wis.	5000d
WSWW	Platteville, Wis.	5000
WTRW	Two Rivers, Wis.	1000d
WAWA	West Allis, Wis.	1000d
KCHY	Cheyenne, Wyo.	1000d

1600—187.5

Kc.	Wave Length	W.P.
CHVC	Niagara Falls, Ont.	10000
WEUP	Huntsville, Ala.	5000d
WAPX	Montgomery, Ala.	1000
KXEW	Tucson, Ariz.	1000
KGST	Fresno, Calif.	1000d
KWOW	Pomona, Calif.	1000
KHER	Santa Maria, Calif.	500d
KUBA	Yuba City, Calif.	5000
KLAK	Lakewood, Colo.	5000
WKEN	Dover, Del.	500d
WKTX	Atlantic Beach, Fla.	1000d
WKWF	Key West, Fla.	500
WHEW	Riviera Beach, Fla.	1000
WOKB	Winter Garden, Fla.	1000d
WGKA	Atlanta, Ga.	1000d
WNGA	Nashville, Ga.	1000d
WCGO	Chicago Hgts., Ill.	1000d
WMCW	Harvard, Ill.	500d
WBTO	Linton, Ind.	500d
WARU	Peru, Ind.	1000d
KLGA	Algona, Iowa	5000d
KCRG	Cedar Rapids, Iowa	5000
KMDO	Ft. Scott, Kans.	500d
WSTL	Eminence, Ky.	500d
KFNV	Ferriday, La.	1000d
KLVI	Vivian, La.	500d
WINX	Rockville, Md.	1000
WBOS	Brookline, Mass.	5000
WTYM	East Longmeadow, Mass.	5000d
WHRV	Ann Arbor, Mich.	1000
WTRU	Muskegon, Mich.	5000
WKDL	Clarksdale, Miss.	1000d
WFFF	Columbia, Miss.	500d
KATZ	St. Louis, Mo.	5000
KTTN	Trenton, Mo.	500d
KNCY	Nebraska City, Nebr.	500d
KRFS	Superior, Nebr.	500d
WMCR	Oneida, N.Y.	1000d
WLNG	Sag Harbor, N.Y.	500
WXKW	Troy, N.Y.	500d
WWRL	Woodside, N.Y.	50000
WGIV	Charlotte, N.C.	1000
WIDU	Fayetteville, N.C.	1000d
WFRC	Reidsville, N.C.	1000
WKSK	W. Jefferson, N.C.	1000d
KDAK	Carrington, N.Dak.	500d
WBLY	Springfield, Ohio	1000d
WTTF	Tiffin, Ohio	500d
KUSH	Cushing, Okla.	1000d
KASH	Eugene, Oreg.	1000
KSTH	St. Helens, Oreg.	1000d
WHOL	Allentown, Pa.	500d
WEZN	Elizabethtown, Pa.	500d
WFIS	Fountain Inn, S.C.	1000d
WHBT	Harriman, Tenn.	5000d
WKBJ	Milan, Tenn.	1000d
KBBB	Borger, Tex.	500d
KBOR	Brownsville, Tex.	1000
KWEL	Midland, Tex.	1000
KCFH	Cuero, Tex.	500d
KMAE	McKinney, Tex.	1000d
KOGT	Orange, Tex.	1000
KBBC	Centerville, Utah	1000d
WHLL	Wheeling, W.Va.	5000d
WCWC	Ripon, Wis.	5000d

U. S. and Canadian AM Stations by Location

Abbreviations: C.L., call letters; Kc., frequency in kilocycles; N.A., network affiliation—A: American Broadcasting Co.; C: Columbia Broadcasting System, Inc.; M: Mutual Broadcasting System; N: National Broadcasting Co., Inc.

Location	C.L.	Kc.	N.A.
Abbeville, Ala.	WARI	1480	
Abbeville, La.	KROF	960	
Abbeville, S.C.	WABV	1590	
Aberdeen, Md.	WAMD	970	
Aberdeen, Miss.	WMPA	1240	
Aberdeen, S.Dak.	KABR	1420	
	KSDN	930	A
Aberdeen, Wash.	KBKW	1450	
	KXRO	1320	
Abilene, Tex.	KRBC	1470	A
	KCAD	1560	
	KNIT	1280	
	KWKC	1340	M
Abingdon, Va.	WBBI	1230	
Ada, Okla.	KADA	1230	A
Adel, Ga.	WAAG	1470	
Adrian, Mich.	WABJ	1490	A
Aguadilla, P.R.	WABA	850	
	WGRF	1340	
Ahoskie, N.C.	WRCS	970	
Aiken, S.C.	WAKN	990	
Aitkin, Minn.	KKIN	1000	D
Akron, Ohio	WAKR	1590	A
	WADC	1350	C
	WCUE	1150	M
	WHLO	640	M
Alamogordo, N.M.	KALG	1230	M
	KRAC	1270	
Alamosa, Colo.	KGIW	1450	M
Albany, Ga.	WALG	1590	A
	WGPC	1450	C
	WJAZ	960	
Albany, Ky.	WANY	1390	
Albany, Minn.	KASM	1150	
Albany, N.Y.	WABY	1400	
	WOKO	1460	M
	WPTR	1540	A
	WROW	590	C
Albany, Oreg.	KWIL	790	M
	KABY	990	
Albemarle, N.C.	WABZ	1010	
	WZKY	1580	
Albert Lea, Minn.	KATE	1450	A
Albertville, Ala.	WAVU	630	
Albion, Mich.	WALM	1260	
Albuquerque, N.M.	KABQ	1350	
	KDEF	1150	A
	KGGM	610	C
	KOB	770	N
	KQEO	920	M
	KARA	1310	
	KVOD	730	
	KLOS	1450	
	KRAZ	1580	A
Alcoa, Tenn.	WEAG	1470	
Alexander City, Ala.	WRFS	1050	
Alexandria, La.	KALB	580	A
	KDBS	1410	
	KSYL	970	N
Alexandria, Minn.	KXRA	1490	A
Alexandria, Va.	WPIK	730	M
Algona, Iowa	KLGA	1600	
Alice, Tex.	KOPY	1070	
Allegan, Mich.	WOWE	1580	
Allentown, Pa.	WHOL	1600	
	WAEB	790	
	WKAP	1320	
	WSAN	1470	N
Alliance, Nebr.	KCOW	1400	
Alliance, Ohio	WFAH	1310	
Alma, Ga.	WCQS	1400	
Alma, Mich.	WFYC	1280	
Alpena Township, Mich.	WATZ	1450	
Alpine, Tex.	KVLF	1240	M
Altavista, Va.	WKDE	1280	
Alton, Ill.	WOKZ	1570	
Altona, Man.	CFAM	1290	
Altoona, Pa.	WFBG	1290	N
	WRTA	1240	A

Location	C.L.	Kc.	N.A.
	WVAM	1430	C
Alturas, Calif.	KCNO	570	
Altus, Okla.	KWHW	1450	
Alva, Okla.	KALV	1430	
Amarillo, Tex.	KBUY	1010	M
	KFDA	1440	A
	KGNC	710	N
	KIXZ	940	C
	KRAY	1360	
	KZIP	1310	
Ambridge, Pa.	WMBA	1460	
Americus, Ga.	WDEC	1290	
Ames, Iowa	KSAI	1430	
	WOI	640	
Amherst, N.S.	CKDH	1400	
Amherst, N.Y.	WUFO	1080	
Amite, La.	WABL	1570	
Amory, Miss.	WAMY	1580	
Amos, Que.	CHAD	1340	
Amsterdam, N.Y.	WAFS	1570	
	WCSS	1490	
Anaconda, Mont.	KANA	1230	
Anacortes, Wash.	KAGT	1340	
Anaheim, Calif.	KEZY	1190	
Anchorage, Alaska	KBYR	1270	
	KFQD	730	C-A
	KENI	550	A-M-N
Andalusia, Ala.	WCTA	920	
Anderson, Calif.	KPON	1580	
Anderson, Ind.	WHUT	1470	M
	WHBU	1240	C
Anderson, S.C.	WAIM	1230	C
	WANS	1280	M
Andrews, Tex.	KACT	1360	
Annapolis, Md.	WANN	1190	
	WABW	810	
	WNAV	1430	
Ann Arbor, Mich.	WHRV	1600	M
	WPAG	1050	
Anna, Ill.	WRAJ	1440	
Anniston, Ala.	WANA	1490	
	WDNG	1450	A
	WHMA	1390	
Anoka, Minn.	KANO	1470	
Ansonia, Conn.	WADS	690	M
Antigo, Wis.	WATK	900	
Antigonish, N.S.	CJFX	580	
Apollo, Pa.	WAVL	910	
Apple Valley, Cal.	KAVR	960	
Appleton, Wis.	WAPL	1570	
	WHBY	1230	M
Arab, Ala.	WRAB	1380	
Arcadia, Fla.	WAPG	1480	
Arcata, Calif.	KENL	1340	
Ardmore, Okla.	KVSO	1240	A
Arecibo, P.R.	WCMN	1280	
	WMIA	1070	
	WNIK	1230	
Arkadelphia, Ark.	KVRC	1240	M
Arkan. City, Kans.	KSOK	1280	
Arlington, Fla.	WQTY	1220	
Arlington, Va.	WAVA	780	
	WEAM	1390	
Artesia, N.M.	KSVP	990	M
Arvada, Colo.	KDAB	1550	
Ashburn, Ga.	WMES	1570	
Asbury Park, N.J.	WJLK	1310	
Asheboro, N.C.	WGWR	1260	
Asheville, N.C.	WISE	1310	
	WLOS	1380	N-M-A
	WSKY	1230	
	WWNC	570	C
Ashland, Ky.	WCMI	1340	C
	WTCR	1420	
Ashland, Ohio	WNCO	1340	
Ashland, Oreg.	KWIN	1400	M
	KRVC	1350	
Ashland, Va.	WIVE	1430	
Ashland, Wis.	WATW	1400	
Ashtabula, Ohio	WREO	970	
Astoria, Oreg.	KAST	1370	M
	KIAL	1230	
Atchison, Kans.	KARE	1470	
Athens, Ga.	WGAU	1340	C
	WDOL	1470	
	WRFC	960	
Athens, Ohio	WATH	970	
	WOUB	1340	
Athens, Tenn.	WLAR	1450	M
Athens, Tex.	KBUD	1410	
Atlanta, Ga.	WPLO	590	C
	WAKE	1340	
	WAOK	1380	
	WERD	860	
	WGKA	1600	
	WGST	920	A
	WIIN	970	
	WQXI	790	
	WSB	750	N
	WYZE	1480	C
Atlanta, Tex.	KALT	900	
Atlantic, Iowa	KJAN	1220	
Atlantic Beach, Fla.	WKTX	1600	
Atlantic City, N.J.	WFPG	1450	C
	WLDB	1490	A-M
	WMID	1340	A
Atmore, Ala.	WATM	1590	
Attleboro, Mass.	WARA	1320	
Auburn, Ala.	WAUD	1230	A
Auburn, Calif.	KAHI	950	
Auburn, N.Y.	WMBO	1340	M
	WAUB	1590	
Auburn, Wash.	KASY	1220	
Auburndale, Fla.	WTWB	1570	
Auburndale, Wis.	WLBL	930	
Augusta, Ga.	WAUG	1050	
	WBBQ	1340	M
	WBIA	1230	N
	WGAC	580	A
	WRDW	1480	C
Augusta, Maine	WRDO	1400	N
	WFAU	1340	M
Aurora, Colo.	KOSI	1430	M
Aurora, Ill.	WMRO	1280	
	WKKD	1580	
Aurora, Mo.	KSWM	940	
Austin, Minn.	KAUS	1480	M
	KQAQ	970	
Austin, Tex.	KNOW	1490	A
	KASE	970	
	KTBC	590	C
	KOKE	1370	
	KVET	1300	M
Avalon, Calif.	KBIG	740	
Avon Park, Fla.	WAVP	1390	
Avondale Estates, Ga.	WAVO	1420	
Aztec, N. Mex.	KNDE	1340	
Babylon, N.Y.	WBAB	1440	M
	WGLI	1290	
Bad Axe, Mich.	WLEW	1340	
Bainbridge, Ga.	WMGR	930	
	WAZA	1360	
Baker, Oreg.	KBKR	1490	
Bakersfield, Calif.	KAFY	550	M
	KBIS	970	
	KERN	1410	C
	KGEE	1230	
	KUZZ	800	
	KLYD	1350	
	KWAC	1490	
	KPMC	1560	A
Bellingham, Wash.	KPUG	1170	M
Baldwinsville, N.Y.	WSEN	1050	
Ballinger, Tex.	KRUN	1400	
Baltimore, Md.	WBAL	1090	N
	WMEW	940	
	WBMD	750	
	WCAO	600	
	WCBM	680	C
	WFBR	1300	
	WITH	1230	M
	WSID	1010	
	WWIN	1400	A-M
Bamberg, S.C.	WWBD	790	
Bangor, Maine	WABI	910	A-M
	WGUY	1250	C
	WLBZ	620	N
Banning, Calif.	KPAS	1490	
Barboursville, Ky.	WBVL	950	
Bardstown, Ky.	WBRT	1320	
Barnesboro, Pa.	WNCC	950	
Barnwell, S.C.	WBAW	740	
Barre, Vt.	WSNO	1450	
Barrie, Ont.	CKBB	950	
Barstow, Calif.	KWTC	1230	A
	KIOT	1310	
Bartlesville, Okla.	KWON	1400	M
Bartow, Fla.	WBAR	1460	
Bassett, Va.	WODY	900	
Bastrop, La.	KTRY	730	
	KVOB	1340	
Batavia, N.Y.	WBTA	1490	M
Batesburg, S.C.	WBLR	1430	
Batesville, Ark.	KBTA	1340	
Batesville, Miss.	WBLE	1290	
Bath, Maine	WMMS	730	
Bathurst, N.B.	CKBC	1400	
Baton Rouge, La.	WAIL	1460	M
	WYNE	1550	
	WYNK	1380	
	WIBR	1300	
	WJBO	1150	N
	WLCS	910	
	WXOK	1260	
Battle Creek, Mich.	WBCK	930	
	WELL	1400	A
Baxley, Ga.	WHAB	1260	
Bay City, Mich.	WBCM	1440	A
	WWBC	1250	
Bay City, Tex.	KIOX	1270	M
Bay Minette, Ala.	WBCA	1150	
Bayamon, P.R.	WRSJ	1560	
Baytown, Tex.	KWBA	1360	
Beacon, N.Y.	WBNR	1260	
Beardstown, Ill.	WRMS	790	
Beatrice, Nebr.	KWBE	1450	
Beaufort, N.C.	WBMA	1400	
Beaufort, S.C.	WBEU	960	
	WSIB	1490	
Beaumont, Tex.	KFDM	560	A
	KRIC	1450	
	KTRM	990	
Beaver Dam, Wis.	WBEV	1430	
Beaver Falls, Pa.	WBVP	1230	
Beckley, W. Va.	WJLS	560	C
	WWNR	620	
Bedford, Ind.	WBIW	1340	
Bedford, Pa.	WBFD	1310	
Bedford, Va.	WBLT	1350	
Beeville, Tex.	KIBL	1490	
Belen, N.Mex.	KARS	860	
Belgrade, Mont.	KGVW	630	
Bellaire, Ohio	WOMP	1290	M
Bellefontaine, Ohio	WOHP	1390	
Bellefonte, Pa.	WBLF	1330	
Bell Fourche, S.Dak.	KBFS	1450	
Belle Glade, Fla.	WSWN	900	
Belleville, Ont.	CJBQ	800	
Belleville, Ill.	WIBV	1260	
Bellevue, Wash.	KFKF	1330	
	KBVU	1540	
Bellingham, Wash.	KPUG	1170	M
	KGMI	790	A
	KOQT	1550	
Bellingham-Ferndale, Wash.	KENY	930	
Belmont, N.C.	WCGC	1270	M-A
Beloit, Wis.	WGEZ	1490	M
Belton, S.C.	WHPB	1390	
Belton, Tex.	KTON	940	
Belzoni, Miss.	WELZ	1460	
Bemidji, Minn.	KBUN	1450	M
Bend, Oreg.	KBND	1110	A
	KGRL	940	
Bennetsville, S.C.	WBSC	1550	M
Bennington, Vt.	WBTN	1370	
Benson, Minn.	KBMO	1290	
Benson, N.C.	WPYB	1580	
Benton, Ark.	KBBA	690	
Benton, Ky.	WCBL	1290	
Benton Harbor, Mich.	WHFB	1060	
Berkeley, Calif.	KRE	1400	
Berkeley Springs, W.Va.	WCST	1010	
Berlin, N.H.	WMOU	1230	
Berry Hill, Tenn.	WVOL	1470	
Berryville, Ark.	KTCN	1480	
Berwick, Pa.	WBRX	1280	
Bessemer, Ala.	WYAM	1450	
Bethesda, Md.	WUST	1120	
Bethlehem, Pa.	WGPA	1100	
Beverly, Mass.	WMLO	1570	
Biddeford Maine	WIDE	1400	M
Big Delta, Alaska	WXLL	980	
Big Lake, Tex.	KBLT	1290	
Big Rapids, Mich.	WBRN	1460	
Big Sprg., Tex.	KBST	1490	A
	KHEM	1270	
	KBYG	1400	M
Big Stone Gap, Va.	WLSD	1220	
Biloxi, Miss.	WLOX	1490	M
	WVMI	570	
Billings, Mont.	KBMY	1240	M
	KGHL	790	N
	KDOK	970	C
	KOYN	910	
	KURL	730	
Binghamton, N.Y.	WINR	680	N
	WKOP	1360	M
	WNBF	1290	C
Birmingham, Ala.	WAPI	1070	N
	WBHM	1550	
	WBRC	960	A
	WCRT	1260	A
	WEZB	1220	
	WENN	1320	M
	WATV	900	C
	WSGN	610	
	WYDE	850	
	WVOK	690	
Bisbee, Ariz.	KSUN	1230	A
Bishop, Calif.	KIBS	1230	A
Bishopville, S.C.	WAGS	1380	
Bismarck, N.Dak.	KFYR	550	N
	KQDI	1350	
Bismarck-Mandan, N.Dak.	KBOM	1270	
Black Mountain, N.C.	WBMT	1350	
Black River Falls, Wis.	WWIS	1260	
Blackfoot, Idaho	KBLI	690	
Blackshear, Ga.	WBSG	1350	
Blackstone, Va.	WKLV	1440	
Blackwell, Okla.	KLTR	1580	
Blaine, Wash.	KARI	550	
Blakely, Ga.	WBBK	1260	
Blanding, Utah	KUTA	790	
Blind River, Ont.	CJNR	730	
Bloomington, Ill.	WJBC	1230	A
Bloomington, Ind.	WTTS	1370	A
Bloomsburg, Pa.	WCNR	930	
	WHLM	550	
Blountstown, Fla.	WKMK	1370	
Bluefield, W.Va.	WHIS	1440	N
	WKOY	1240	M
Blythe, Calif.	KYOR	1450	A
Blytheville, Ark.	KLCN	910	
Boaz, Ala.	WBSA	1300	
Bogalusa, La.	WIKC	1490	N
	WBOX	920	
Boise, Idaho	KATN	1010	
	KBOI	950	C
	KEST	790	
	KGEM	1140	M
	KIDO	630	N
	KYME	740	
Bolivar, Mo.	KBLR	1550	
Bonham, Tex.	KFYN	1420	
Boone, Iowa	KFGQ	1260	
	KWBG	1590	
Boone, N.C.	WATA	1450	
Boonville, Ind.	WBNL	1540	
Boonville, Mo.	KWRT	1370	
Booneville, Miss.	WBIP	1400	A
Boonville, N.Y.	WBRV	900	
Borger, Tex.	KHUZ	1490	M
	KBBB	1600	
Boston, Mass.	WBZ	1030	
	WCOP	1150	
	WILD	1090	
	WNAC	680	
	WEZE	1260	N
	WEEI	590	C
	WHDH	850	
	WMEX	1510	
	WORL	950	M
Boulder, Colo.	KBOL	1490	
Bowie, Tex.	KBAN	1410	
Bowling Green, Ky.	WKCT	930	A
	WBGN	1340	
	WLBJ	1410	M
Bowl. Green, Ohio	WMGS	730	
Bozeman, Mont.	KXXL	1450	N
	KBMN	1230	
Bradbury Hgts., Md.	WPGC	1580	
Braddock, Pa.	WLDA	1550	
Braddocks Heights, Md.	WMHI	1370	
Bradenton, Fla.	WTRL	1490	
	WBRD	1420	
Bradford, Pa.	WESB	1490	M
Brady, Tex.	KNEL	1490	
Brainerd, Minn.	KLIZ	1380	
Brampton, Ont.	CHIC	1090	
Brandon, Man.	CKX	1150	
Branson, Mo.	KBHM	1220	
Brantford, Ont.	CKPC	1380	
Brattleboro, Vt.	WTSA	1450	N
	WKVT	1490	
Brawley, Calif.	KROP	1300	A
Brazil, Ind.	WITE	1380	
Breckenridge, Minn.	KBMW	1450	
Breckenridge, Tex.	KSTB	1430	
Bremen, Ga.	WWCC	1440	
Bremerton, Wash.	KBRO	1490	
Brenham, Tex.	KWHI	1280	
Brevard, N.C.	WPNF	1240	M-N
Brewton, Ala.	WEBJ	1240	M
Bridgeport, Ala.	WBTS	1480	
Bridgeport, Conn.	WICC	600	M
	WNAB	1450	A-M
Bridgeton, N.J.	WSNJ	1240	M
Bridgewater, N.S.	CKBW	1000	
Brigham City, Utah	KBUH	800	
Brighton, Colo.	KBRN	800	
Brinkley, Ark.	KBRI	1570	
Bristol, Conn.	WBIS	1440	
Bristol, Tenn.	WOPI	1490	N
Bristol, Va.	WCYB	690	A
	WFHG	980	M
Brockton, Mass.	WBET	1460	
	WOKW	1410	
Brockville, Ont.	CFJR	1450	
Broken Bow, Nebr.	KCNI	1280	
Brookfield, Mo.	KGHM	1470	
Brookhaven, Miss.	WCHJ	1470	
	WJMB	1340	M
Brookings, Oreg.	KURY	910	
Brookings, S.Dak.	KBRK	1430	
Brookline, Mass.	WBOS	1600	
Brooksville, Fla.	WWJB	1450	
Brownfield, Tex.	KTFY	1300	
Brownsville, Tex.	KBOR	1600	A
Brownwood, Tex.	KBWD	1380	M
	KEAN	1240	
Brunswick, Ga.	WGIG	1440	A
	WMOG	1490	
Brunswick, Maine	WCME	900	
Bryan, Tex.	KORA	1240	M
	WTAW	1150	
Buckhannon, W.Va.	WBUC	1460	
Buffalo, N.Y.	WBEN	930	C
	WYSL	1400	
	WEBR	970	M
	WGR	550	N
	WKBW	1520	N
	WWOL	1120	A
Buffalo, Wyo.	KBBS	1450	
Buford, Ga.	WDMF	1460	
Burbank, Calif.	KBLA	1490	
Burley, Idaho	KBAR	1230	A-M
Burlington, Iowa	KBUR	1490	A
Burlington, N.C.	WBBB	920	M
	WBAG	1150	
Burlington, Vt.	WCAX	620	N
	WDOT	1400	
	WJOY	1230	A
Burnett, Tex.	KTSL	1340	
Burns, Oreg.	KRNS	1230	
Butler, Ala.	WPRN	1220	
Butler, Mo.	KMAM	1530	
Butler, Pa.	WBUT	1050	
	WISR	680	
Butte, Mont.	KBOW	1490	C
	KOPR	550	M
	KXLF	1370	N
Cabano, Que.	CJAF	1340	
Cadillac, Mich.	WATT	1240	M
Caguas, P.R.	WNEL	1430	
	WVJP	1110	
Cairo, Ga.	WGRA	790	
Cairo, Ill.	WKRO	1490	
Calais, Maine	WQDY	1230	N
Caldwell, Idaho	KCID	1490	
	KBGN	910	
Calera, Ala.	WBYE	1370	
Calexico, Calif.	KICO	1490	A
Calgary, Alta.	CFAC	960	
	CBX	1010	
	CFCN	1060	
	CKXL	1140	
Calhoun, Ga.	WCGA	900	
Cambridge, Md.	WCEM	1240	
Cambridge, Mass.	WTAO	740	A
Cambridge, Ohio	WILE	1270	
Camden, Ark.	KAMD	910	
Camden, N.J.	WCAM	1310	
	WKDN	800	
Camden, S. C.	WACA	1590	
Camden, Tenn.	WFWL	1220	
Cameron, Tex.	KMIL	1330	
Camilla, Ga.	WCLB	1220	
Campbell, Ohio	WHOT	1330	
Campbellsville, Ky.	WTCO	1450	
Campbellton, N.B.	CKNB	950	
Camrose, Alta.	CFCW	1230	
Canandaigua, N.Y.	WCGR	1550	
Canon City, Colo.	KRLN	1400	M
Canonsburg, Pa.	WARO	540	
Canton, Ga.	WCHK	1290	
Canton, Ill.	WBYS	1560	
Canton, Miss.	WDDB	1370	

Location	C.L.	Kc.	N.A.
Canton, N.C.	WWIT	970	
Canton, Ohio	WCNS	900	M
	WHDF	1060	
	WHBC	1480	A
Canyon, Tex.	KVPH	1550	
Cape Girardeau, Mo.	KFVS	960	
	KGMO	1550	
Carbondale, Ill.	WCIL	1020	
Carbondale, Pa.	WCDL	1440	
Caribou, Maine	WFST	600	
Carlisle, Pa.	WHYL	960	
Carlsbad, N.Mex.	KAVE	1240	C
	KPBM	740	
Carmel, Calif.	KRML	1410	
Carmi, Ill.	WROY	1460	
Carnegie, Pa.	WZUM	1590	
Caro, Mich.	WWRO	1360	
Carrington, N.Dak.	KDAK	1600	
Carrizo Springs, Tex.	KBEN	1450	
Carroll, Iowa	KCIM	1380	
Carrollton, Ala.	WRAG	590	
Carrollton, Ga.	WLBB	1100	
Carrollton, Mo.	KAOL	1430	
Carson City, Nev.	KPTL	1300	
Cartersville, Ga.	WBHF	1450	M
	WKRW	1270	
Carthage, Ill.	WCAZ	990	
Carthage, Mo.	KDMO	1490	
Carthage, Tenn.	WRKM	1350	
Carthage, Tex.	KGAS	1590	
Caruthersville, Mo.	KCRV	1370	
Casa Grande, Ariz.	KPIN	1260	
Casper, Wyo.	KTWO	1470	C
	KATI	1400	
	KVOC	1230	A-M
Cayce, S.C.	WCAY	620	C
Cedar City, Utah	KSUB	590	C
Cedar Falls, Iowa	KCFI	1250	
Cedar Rapids, Iowa	KCRG	1600	A
	KHAK	1360	
	KPIG	1450	
	WMT	600	C
Cedartown, Ga.	WGAA	1340	
Center, Ala.	WEIS	990	
Center, Tex.	KDET	930	
Centerville, Iowa	KCOG	1400	
Centerville, Tenn.	WHLP	1570	
Centerville, Utah	KBBC	1600	
Central City, Ky.	WNES	1050	
	WMTA	1380	
Centralia, Ill.	WCNT	1210	
Centralia & Chehalis, Wash.	KELA	1470	
Centreville, Miss.	WGLC	1580	
Chadburn, N.C.	WVOE	1590	
Chadron, Nebr.	KCSR	1450	
Chambersburg, Pa.	WCHA	800	
	WCBG	1590	
Champaign, Ill.	WDWS	1400	C
Chanute, Kans.	KCRB	1460	
Chapel Hill, N.C.	WCHL	1360	
Charleroi, Pa.	WESA	940	
Charles City, Iowa	KCHA	1580	
Charleston, Ill.	WEIC	1270	
Charleston, Mo.	KCHR	1350	
Charleston, S.C.	WCSC	1390	C
	WOKE	1340	A-M
	WPAL	730	
	WQSN	1450	
	WTMA	1250	N
Charleston, W.Va.	WCAW	680	
	WCHS	580	C
	WTGR	1490	A
	WKAZ	950	N
	WTIP	1240	M
	WXVA	1550	
Charlotte, Mich.	WCER	1390	
Charlotte, N.C.	WBT	1100	C
	WAYS	610	M
	WGIV	1600	
	WKTC	1310	
	WSOC	930	M
	WIST	1240	N
	WWDK	1480	
Charlotte Amalie, V.I.	WSTA	1340	
	WBNB	1000	
Charlottesville, Va.	WCHV	1260	A
	WELK	1010	
	WINA	1400	M
Charlottetown, P.E.I.	CFCY	630	
Chase City, Va.	WMEK	980	
Chatham, Ont.	CFCO	630	
Chattanooga, Tenn.	WMOC	1450	M
	WAPO	1150	A-M
	WDEF	1370	N
	WDOD	1310	C
	WDXB	1490	
	WNOO	1260	
Cheboygan, Mich.	WCBY	1240	
Cheektowaga, N.Y.	WNIA	1230	
Chehalis, Wash.	KITI	1420	
Chelan, Wash.	KOZI	1220	
Cheraw, S.C.	WCRE	1420	
Cherokee, Iowa	KCHE	1440	
Chester, Ill.	KSGM	980	
Chester, Pa.	WEEZ	1590	
	WVCH	740	
Chester, S.C.	WGCD	1490	
Cheyenne, Wyo.	KFBC	1240	A
	KCHY	1590	
	KRAE	1480	
	KVWO	1370	M
Chicago, Ill.	WAAF	950	
	WAIT	820	M
	WBBM	780	C
	WCFL	1000	
	WCRW	1240	
	WEDC	1240	
	WGES	1390	
	WGN	720	M
	WIND	560	
	WJJD	1160	
	WLS	890	A
	WMAQ	670	N
	WMBI	1110	
	WSBC	1240	
Chicago Hgts., Ill.	WMPP	1470	
	WCGO	1600	
Chickasha, Okla.	KWCO	1560	
Chico, Calif.	KHSL	1290	C
	KPAY	1060	
Chicopee, Mass.	WACE	730	
Chicoutimi, Que.	CBJ	1580	
	CJMT	1420	
Childress, Tex.	KCTX	1510	
Chillicothe, Mo.	KCHI	1010	
Chillicothe, Ohio	WBEX	1490	A
	WCHI	1350	
Chilliwack, B.C.	CHWK	1270	
Chipley, Fla.	WBGC	1240	
Chippewa Falls, Wis.	WAXX	1150	
Christiansburg, Va.	WBCR	1260	
Christiansted, V.I.	WIVI	970	
Church Hill, Tenn.	WMCH	1260	
Churchill, Man.	CHFC	1230	
Cicero, Ill.	WHFC	1450	
Cincinnati, Ohio	WCKY	1530	M
	WCIN	1480	
	WCPO	1230	
	WKRC	550	C
	WLW	700	N-A
	WSAI	1360	
Clanton, Ala.	WKLF	980	
Clare, Mich.	WCRM	990	
Claremont, N.H.	WTSV	1230	
Claremore, Okla.	KWPR	1270	
Clarion, Pa.	WWCH	1300	
Clarksburg, W.Va.	WBOY	1400	N
	WHAR	1340	M
	WPDX	750	
Clarksdale, Miss.	WROX	1450	M
	WKDL	1600	
Clarksville, Ark.	KLYR	1360	
Clarksville, Tenn.	WJZM	1400	M
	WDXN	540	
Clarksville, Tex.	KCAR	1350	
Claxton, Ga.	WCLA	1470	
Clayton, Ga.	WGHC	1570	
Clayton, Mo.	KXLW	1320	
	KFUO	850	
Clayton, N.Mex.	KLMX	1450	
Clearfield, Pa.	WCPA	900	
Clearwater, Fla.	WTAN	1340	
	WAZE	860	
Cleburne, Tex.	KCLE	1120	
Clermont, Fla.	WSLG	1340	
Cleveland, Ga.	WRWH	1350	
Cleveland, Miss.	WCLD	1490	
	WDSK	1410	
Cleveland, Ohio	KYW	1100	
	WDOK	1260	M
	WERE	1300	
	WGAR	1220	C
	WHK	1420	
	WABQ	1540	
	WJW	850	N
Cleveland, Tenn.	WBAC	1340	M
	WCLE	1570	
Cleveland, Tex.	KVLB	1410	
Cleve. Hgts., Ohio	WJMO	1490	A
Clewiston, Fla.	WOWY	1590	
Clifton, Ariz.	KCLF	1400	A
Clifton Forge, Va.	WCFV	1230	M
Clincho, Va.	WDIC	1430	
Clinton, Ill.	WHOW	1520	
Clinton, Iowa	KCLN	1390	
	KROS	1340	M
Clinton, Mo.	KDKD	1280	
Clinton, N.C.	WRRZ	880	A
Clinton, Okla.	KWOE	1320	
Clinton, S.C.	WPCC	1410	
Clinton, Tenn.	WYSH	1380	
Cloquet, Minn.	WKLK	1230	
Clovis, N.Mex.	KCLV	1240	
	KVER	980	
Coachella, Calif.	KCHV	970	
Coalinga, Calif.	KBMX	1470	
Coatesville, Pa.	WCOJ	1420	
Cocoa, Fla.	WKKO	860	
	WEZY	1350	
Cocoa Beach, Fla.	WRKT	1300	
Cody, Wyo.	KODI	1400	A
Coeur d'Alene, Ida.	KVNI	1240	M
Coffeyville, Kans.	KGGF	690	A
Colby, Kans.	KXXX	790	
Coldwater, Mich.	WTVB	1590	
Coleman, Tex.	KSTA	1000	
Colfax, Wash.	KCLX	1450	
College Park, Ga.	WEAD	1570	
Colonial Heights, Va.	WPVA	1290	
Colonial Village, Tenn.	WSKT	1580	
Colorado City, Tex.	KVMC	1320	
Colo. Sprgs., Colo.	KRDO	1240	
	KPIK	1580	
	KVOR	1300	C
	KSSS	740	
	KYSN	1460	M
Columbia, Ky.	WAIN	1270	
Columbia, Miss.	WCJU	1450	M
Columbia, Mo.	KFRU	1400	A
	KCGM	1580	
Columbia, Pa.	WCOY	1580	
Columbia, S.C.	WCDS	1400	A
	WIS	560	N
	WDIC	1320	C
	WNOK	1230	M
	WQXL	1470	
Columbia, Tenn.	WMCP	1280	
	WKRM	1340	
Columbus, Ga.	WDAK	540	N
	WRBL	1420	C
	WGBA	1270	M
	WCLS	1580	
	WOKS	1340	
Columbus, Ind.	WCSI	1010	
Columbus, Miss.	WACR	1050	
	WCBI	550	M
Columbus, Nebr.	KJSK	900	
Columbus, Ohio	WBNS	1460	C
	WCOL	1230	A
	WMNI	920	A
	WOSU	820	
	WTVN	610	
	WVKO	1580	
Colville, Wash.	KCVL	1270	
Commerce, Ga.	WJJC	1270	
Concord, Calif.	KWUN	1480	
Concord, N.H.	WKXL	1450	C
Concord, N.C.	WEGO	1410	
Concordia, Kans.	KNCK	1390	
	KFRM	550	A
Conneaut, Ohio	WWOW	1360	
Connellsville, Pa.	WCVI	1340	
Connersville, Ind.	WCNB	1580	
Conroe, Tex.	KMCO	900	
Conway, Ark.	KCON	1230	
	KVEE	1330	
Conway, N.H.	WBNC	1050	
Conway, S.C.	WLAT	1330	M
Cookeville, Tenn.	WHUB	1400	C
	WTPI	1550	
Coolidge, Ariz.	KCKY	1150	C
Coos Bay, Oreg.	KOOS	1230	M
	KYNG	1420	
Copper Hill, Tenn.	WLSB	1400	
Coquille, Oreg.	KWRO	630	
Coral Gables, Fla.	WRIZ	1550	
	WVCG	1070	
Corbin, Ky.	WCTT	680	M
	WYGO	1330	
Cordele, Ga.	WMJM	1490	M
Cordova, Alaska	KLAM	1450	
Corinth, Miss.	WCMA	1230	
Cornelia, Ga.	WCON	1450	
Corner Brook, Nfld.	CBY	790	
	CFCB	570	
Corning, Ark.	KCCB	1260	
Corning, N.Y.	WCBA	1350	
	WCLI	1450	A
Cornwall, Ont.	CJSS	1220	
	CFML	1110	
Corona, Calif.	KBUC	1370	
Corpus Christi, Tex.	KCTA	1030	M
	KCCT	1150	
	KEYS	1440	
	KRYS	1360	N
	KSIX	1230	A-M
	KUNO	1400	
Corry, Pa.	WOTR	1370	
Corsicana, Tex.	KAND	1340	
Cortez, Colo.	KVFC	740	
Cortland, N.Y.	WKRT	920	
Corvallis, Oreg.	KOAC	550	
	KFLY	1240	
	KLOO	1350	
Coshocton, Ohio	WTNS	1560	
Cottage Grove, Ore.	KNND	1400	
Cottonwood, Ariz.	KVRD	1240	
Coudersport, Pa.	WFRM	600	
Council Bluffs, Iowa	KSWI	1560	M-A
Courtenay, B.C.	CFCP	1440	
Covington, Ga.	WGFS	1430	
Covington, La.	WARB	730	
Covington, Tenn.	WKBL	1250	
Covington, Va.	WKEY	1340	A
Cowan, Tenn.	WZYX	1440	
Craig, Colo.	KRAI	550	
Cranbrook, B.C.	CKEK	570	
Crane, Tex.	KCRR	1380	
Crescent City, Calif.	KPLY	1240	
	KPOD	1310	
Creston, Iowa	KSIB	1520	
Crestview, Fla.	WCNU	1010	
	WJSB	1050	
Crewe, Va.	WSVS	800	
Crockett, Tex.	KIVY	1290	
Crookston, Minn.	KROX	1260	
Crossett, Ark.	KAGH	800	
Crossville, Tenn.	WAEW	1330	
Crowley, La.	KSIG	1450	M
Cuero, Tex.	KCFH	1600	
Cullman, Ala.	WFMH	1460	
	WKUL	1340	
Culpeper, Va.	WCVA	1490	M
Cumberland, Ky.	WCPM	1280	
Cumberland, Md.	WCUM	1230	C
	WTBO	1450	
Cummings, Ga.	WSNE	1410	
Cushing, Okla.	KUSH	1600	
Cuyahoga Falls, Ohio	WCVE	1150	
Cypress Gardens, Fla.	WGTO	540	
Cynthiana, Ky.	WCYN	1400	
Dade City, Fla.	WDCF	1350	
Dadeville, Ala.	WDVC	910	
Dalhart, Tex.	KXIT	1410	
Dallas, N.C.	WAAK	960	
Dallas, Oreg.	KROW	1460	
Dallas, Tex.	KRLD	1080	C
	KIXL	1040	
	KSKY	660	
	KLIF	1190	
	WFAA	570	A
	WFAA	820	N
	KBOX	1480	
	WRR	1310	M
The Dalles, Oreg.	KACI	1300	
	KODL	1440	A
Dalton, Ga.	WBLJ	1230	M
	WRCD	1430	
Danbury, Conn.	WLAD	800	
Danville, Ill.	WDAN	1490	C
	WITY	980	
Danville, Ky.	WHIR	1230	M
Danville, Va.	WBTM	1330	A
	WYPR	970	
	WDVA	1250	M
	WILA	1580	
Darlington, S.C.	WDAR	1350	
Dauphin, Man.	CKDM	730	
Davenport, Iowa	WOC	1420	N
	KWNT	1580	
	KSTT	1170	M
Dawson, Ga.	WDWD	990	
Dawson, Yukon T.	CFYT	1230	
Dawson Creek, B.C.	CJDC	560	
Dayton, Ohio	WHIO	1290	C
	WING	1410	
	WONE	980	
	WAVI	1210	
Dayton, Tenn.	WDNT	1280	
Daytona Beach, Fla.	WNDB	1150	M-A
	WMFJ	1450	
	WROD	1340	
Deadwood, S.Dak.	KDSJ	980	
Dearborn, Mich.	WKMH	1310	M
Decatur, Ala.	WHOS	800	
	WAJF	1490	
	WMSL	1400	M
Decatur, Ga.	WGUN	1010	A
Decatur, Ill.	WDZ	1050	
	WSOY	1340	C
Decorah, Iowa	KDEC	1240	
	KWLC	1240	
Deerfield, Va.	WABH	1150	
Defiance, Ohio	WONW	1280	
De Funiak Springs, Fla.	WDSP	1280	
	WZEP	1460	
De Kalb, Ill.	WLBK	1360	
De Land, Fla.	WJBS	1490	
	WOOO	1310	
Delano, Calif.	KCHJ	1010	
Delaware, Ohio	WDLE	1550	
Delray, Bch., Fla.	WOBF	1420	
Del Rio, Tex.	KOLK	1230	
Delta, Colo.	KDTA	1400	
Deming, N.Mex.	KOTS	1230	
Demopolis, Ala.	WXAL	1400	M
Denham Sprgs., La.	WLBI	1220	
Denison, Iowa	KDSN	1580	
Denison, Tex.	KDSX	950	
Denton, Tex.	KDNT	1440	
Denver, Colo.	KDEN	1340	
	KFML	1390	
	KHOW	630	A
	KIMN	950	A
	KLIR	990	
	KLZ	560	C
	KBTR	710	
	KOA	850	N
	KPOF	910	
	KFSC	1220	
	KTLN	1280	
De Queen, Ark.	KDQN	1390	
DeRidder, La.	KDLA	1010	
Des Moines, Iowa	KCBC	1390	A
	KIOA	940	M
	KRNT	1350	C
	KSO	1460	
	KWKY	1150	M
	WHO	1040	N
Detroit, Mich.	WCAR	1130	
	WJBK	1500	
	WJLB	1400	
	WJR	760	
	WWJ	950	N
	WXYZ	1270	A
Detroit Lakes, Minn.	KDLM	1340	
Devils Lake, N.Dak.	KDLR	1240	M
Dexter, Mo.	KDEX	1590	
Diboll, Tex.	KSPL	1260	
Dickinson, N.Dak.	KDIX	1230	
Dickson, Tenn.	WDKN	1260	
Dillon, Mont.	KDBM	800	
Dillon, S.C.	WDSC	800	A
Dinuba, Calif.	KRDU	1130	
Dixon, Ill.	WIXN	1460	
Dodge City, Kans.	KGNO	1370	M
	KEDD	1550	
Dothan, Ala.	WAGF	1320	
	WDIG	1450	M
	WOOF	560	
Douglas, Ariz.	KAWT	1450	M
	KAPR	930	
Douglas, Ga.	WDMG	860	
Douglas, Wyo.	KWIV	1050	
Dover, Del.	WDOV	1410	M
	WKEN	1600	A
Dover, N.H.	WTSN	1270	
Dover, N.J.	WRAN	1510	
Dover, Ohio	WJER	1450	
Dowagiac, Mich.	WDOW	1440	
Doylestown, Pa.	WBUX	1570	

Location	C.L.	Kc.	N.A.
Drumheller, Alta.	CJDV	910	
Drummondville, Que.	CHRD	1340	
Dublin, Ga.	WMLT	1330	
	WXLI	1230	
Du Bois, Pa.	WCED	1420	C
Dubuque, Iowa	KDTH	1370	A
	WDBQ	1490	M
Duluth, Minn.	KDAL	610	C
	WEBC	560	
	KAOH	1390	
Dumas, Tex.	KDDD	800	
Duncan, Okla.	KRHD	1350	M
Dundalk, Md.	WAYE	860	
	WEBB	1360	
Dundee, N.Y.	WFLR	1570	
Dunkirk, N.Y.	WDOE	1410	
Dunn, N.C.	WCKB	780	
Du Quoin, Ill.	WDQN	1580	
Durango, Colo.	KIUP	930	
	KDGO	1240	
Durant, Okla.	KSFO	750	
Durham, N.C.	WDNC	620	C
	WSRC	1410	
	WSSB	1490	
	WTIK	1310	A
Dyersburg, Tenn.	WDSG	1450	
	WTRO	1330	
Eagle Pass, Tex.	KEPS	1270	
Eagle River, Wis.	WERL	950	
Easley, S.C.	WELP	1360	
E. Grand Forks, Minn.	KRAD	1590	
Eastland, Tex.	KERC	1590	
E. Lansing, Mich.	WKAR	870	
E. Liverpool, Ohio	WOHI	1490	A
East Longmeadow, Mass.	WTYM	1600	
Eastman, Ga.	WPFE	1580	
E. Moline, Ill.	WDLM	960	
E. Point, Ga.	WTJH	1260	
E. St. Louis, Ill.	WBBR	1490	A
Easton, Md.	WEMD	1460	
Easton, Pa.	WEEX	1230	
	WEST	1400	N
Eatontown, N.J.	WHTG	1410	
Eau Claire, Wis.	WEAQ	790	N
	WBIZ	1400	M
	WECL	1050	
Eau Gallie, Fla.	WMEG	920	
Ebensburg, Pa.	WEND	1580	
Edenton, N.C.	WCDJ	1260	
Edinburg, Tex.	KURV	710	
Edmonds, Wash.	KGDN	630	
Edmonton, Alta.	CBXA	740	
	CFRN	1260	
	CHEO	1080	
	CHFA	680	
	CJCA	930	
	CKUA	580	
Edmundston, N.C.	CJEM	570	
Effingham, Ill.	WCRA	1090	
Elba, Ala.	WELB	1350	
Elberton, Ga.	WSGC	1400	
El Cajon, Calif.	KDEO	910	A
El Campo, Tex.	KULP	1390	
El Centro, Calif.	KXO	1230	M
	KAMP	1430	
El Dorado, Ark.	KDMS	1290	
	KELO	1400	A
Eldorado, Kans.	KBTO	1360	
Eldorado Springs, Mo.	KESM	1580	
Elgin, Ill.	WRMN	1410	
Elizabeth City, N.C.	WCNC	1240	
	WGAI	560	M
Elizabethton, Tenn.	WBEJ	1240	
Elizabethtown, Ky.	WIEL	1400	
Elizabethtown, N.C.	WBLA	1440	
Elizabethtown, Pa.	WEZN	1600	
Elk City, Okla.	KBEK	1240	A
Elkhart, Ind.	WTRC	1340	N
	WCMR	1270	
Elkin, N.C.	WIFM	1540	
Elkins, W.Va.	WDNE	1240	
Elko, Nev.	KELK	1240	M
Ellensburg, Wash.	KXLE	1240	
Ellsworth, Me.	WDEA	1350	
Elmira, N.Y.	WELM	1410	A-C
	WENY	1230	N
Elmira Heights-Horseheads, N.Y.	WEHH	1590	M
El Paso, Tex.	KROD	600	C
	KELP	920	
	KHEY	690	
	KINT	1590	
	KIZZ	1150	
	KSET	1340	M
	KTSM	1380	N
El Reno, Okla.	KELR	1460	
Ely, Minn.	WELY	1450	M
Ely, Nev.	KELY	1230	
Elyria, Ohio	WEOL	930	
Eminence, Ky.	WSTL	1600	
Emporia, Kans.	KVOE	1400	
Emporia, Va.	WEVA	860	
Emporium, Pa.	WLEM	1250	
Endicott, N.Y.	WENE	1430	A
Englewood, Colo.	KGMC	1150	
Englewood, Fla.	WENG	1530	
Enid, Okla.	KCRC	1390	A
	KGWA	960	M
Enterprise, Ala.	WIRB	600	
Enterprise, Oreg.	KWVR	1340	
Ephrata, Pa.	WGSA	1310	
Ephrata, Wash.	KULF	790	
Erie, Pa.	WWYN	1260	A
	WICU	1330	N
	WJET	1400	M
	WLEU	1450	
Erwin, Tenn.	WEMB	1420	
Escanaba, Mich.	WDBC	680	M
	WLST	600	A
Escondido, Calif.	KOWN	1450	
Estevan, Sask.	CJSL	1280	
Estherville, Iowa	KLIL	1340	
Etowah, Tenn.	WCPH	1220	
Eufaula, Ala.	WULA	1240	M
Eugene, Oreg.	KORE	1450	M
	KPIR	1500	
	KASH	1600	A
	KATR	1320	
	KERG	1280	C
	KUGN	590	N
Eunice, La.	KEUN	1490	M
Eureka, Calif.	KINS	980	C
	KDAN	790	
	KRED	1480	M
Eustis, Fla.	WLCO	1240	
Evanston, Ill.	WEAW	1330	
	WNMP	1590	
Evanston, Wyo.	KLUK	1240	
Evansville, Ind.	WROZ	1400	C
	WGBF	1280	N
	WIKY	820	
	WJPS	1330	A
Eveleth, Minn.	WEVE	1340	M
Everett, Wash.	KRKO	1380	
	KWYZ	1230	
Evergreen, Ala.	WBLO	1470	
Fairbanks, Alaska	KFAR	610	A-M-N
	KFRB	900	C-A
Fairbury, Nebr.	KGMT	1310	
Fairfax, Va.	WEEL	1310	
Fairfield, Ill.	WFIW	1390	
Fairfield, Iowa	KMCD	1570	
Fairhope, Ala.	WABF	1220	
Fairmont, Minn	KSUM	1370	M
Fairmont, N.C.	WFMO	860	
Fairmont, W.Va.	WMMN	920	C
	WTCS	1490	A
Fajardo, P.R.	WMDD	1490	
Falfurrias, Tex.	KPSO	1260	
Fall River, Mass.	WALE	1400	M
	WSAR	1480	A
Falls Church, Va.	WFAX	1220	
Falls City, Nebr.	KTNC	1230	
Fargo, N.Dak.	WDAY	970	N
	KFNW	900	
	KUTT	1550	
	KFGO	790	A
Faribault, Minn.	KDHL	920	
Farmington, Me.	WKTJ	1380	
Farmington, Mo.	KREI	800	
Farmington, N.M.	KENN	1390	
	KWYK	960	
	KRZE	1280	
Farmville, N.C.	WBTL	1050	
	WFAG	1250	
Farmville, Va.	WFLO	870	
Farrell, Pa.	WFAR	1470	
Farwell, Tex.	KZOL	1570	
Fayette, Ala.	WWWF	990	
Fayetteville, Ark.	KHOG	1440	
	KFAY	1250	M
Fayetteville, N C.	WFAI	1230	C
	WFNC	940	M
	WFLB	1490	A
	WIDU	1600	
Fayetteville, Tenn.	WEKR	1240	M
Fergus Falls, Minn.	KOTE	1250	M
Fernandina Beach, Fla.	WPAP	1570	
Ferriday, La.	KFNV	1600	
Festus, Mo.	KJCF	1400	
	KXEN	1010	
Findlay, Ohio	WFIN	1330	
Fisher, W.Va.	WELD	690	A
Fitchburg, Mass.	WEIM	1280	M
	WFGM	960	
Fitzgerald, Ga.	WBHB	1240	M
Flagstaff, Ariz.	KCLS	600	N
	KFGT	1000	
	KVNA	690	A
	KEOS	1290	
Flat River, Mo.	KFMO	1240	M
Flin Flon, Man.	CFAR	590	
Flint, Mich.	WFDF	910	N
	WTRX	1330	A
	WAMM	1420	
	WMRP	1570	
	WKMF	1470	M
	WTAC	600	A
Flomaton, Ala.	WTCB	990	
Florence, Ala.	WJOI	1340	M
	WOLS	1230	
	WOWL	1240	A
Florence, S.C.	WJMX	970	A
	WYNN	540	
Floydada, Tex.	KFLD	900	
Foley, Ala.	WHEP	1310	
Fond du Lac, Wis.	KFIZ	1450	M
Fordyce, Ark.	KBJT	1570	
Forest, Miss.	WMAG	860	
Forest City, N.C.	WBBO	780	
	WAGY	1320	
Forest Grove, Oreg.	KGGG	1570	
Forrest City, Ark.	KXJK	950	
Ft. Bragg, Calif.	KDAC	1230	
Ft. Collins, Colo.	KCOL	1410	A
	KZIX	600	
Ft. Dodge, Iowa	KVFD	1400	M
	KWMT	540	A
Ft. Frances, Ont.	CFOB	800	
Ft. Knox, Ky.	WSAC	1470	
Ft. Lauderdale, Fla.	WFTL	1400	
	WWIL	1580	
Ft. Madison, Iowa	KXGI	1360	
Ft. Morgan, Colo.	KFTM	1400	
Ft. Myers, Fla.	WINK	1240	C
	WMYR	1410	
Ft. Payne, Ala.	WFPA	1400	
	WZOB	1250	
Ft. Pierce, Fla.	WARN	1330	
	WIRA	1400	
Ft. Scott, Kans.	KMDO	1600	
Ft. Simpson, NWT.	CFMR	1490	
Ft. Smith, Ark.	KFPW	1230	C
	KFSA	950	A
	KTCS	1410	M
	KWHN	1320	
Ft. Stockton, Tex.	KFST	860	
Ft. Valley, Ga.	WFPM	1150	
Ft. Walton Beach, Fla.	WNUE	950	
	WFTW	1260	
Ft. Wayne, Ind.	WGL	1250	A
	WOWO	1190	
	WANE	1450	C
	WKJG	1380	N
Ft. William, Ont.	CKPR	580	
	CJLX	800	
Ft. Worth, Tex.	KJIM	870	
	KCUL	1540	
	KFJZ	1270	
	KNOK	970	
	WBAP	570	A
	WBAP	820	N
	KXOL	1360	
Fostoria, Ohio	WFOB	1430	
Fountain City, Tenn.	WFCT	1430	
	WROL	1490	
Fountain Inn, S.C.	WFIS	1600	
Fowler, Calif.	KLIP	1220	
Framingham, Mass.	WKOX	1190	
Frankfort, Ind.	WILO	1570	
Frankfort, Ky.	WFKY	1490	M
Franklin, Ky.	WFKN	1220	
Franklin, La.	KFRA	1390	
Franklin, N.C.	WFSC	1050	
Franklin, Pa.	WFRA	1430	
Franklin, Tenn.	WAGG	950	
Franklin, Va.	WYSR	1250	
Frederick, Md.	WFMD	930	C
Frederick, Okla.	KTAT	1570	
Fredericksburg, Tex.	KNAF	910	M
Fredericksburg, Va.	WFVA	1230	A
	WFLS	1350	
Fredericton, N.B.	CFNB	550	
Fredonia, N.Y.	WBUZ	1570	
Freeport, Ill.	WFRL	1570	
Freeport, N.Y.	WGBB	1240	
Freeport, Tex.	KBRZ	1460	
Fremont, Mich.	WBFC	1490	
	WSHN	1550	
Fremont, Nebr.	KHUB	1340	
Fremont, Ohio	WFRO	900	
Fresno, Calif.	KARM	1430	A
	KBIF	900	
	KIRV	1510	
	KEAP	980	
	KFRE	940	C
	KGST	1600	
	KMAK	1340	
	KMJ	580	N
	KYNO	1300	
Front Royal, Va.	WFTR	1450	M
Frostburg, Md.	WFRB	740	
Fulton, Ky.	WFUL	1270	
Fulton, Mo.	KFAL	900	
Fulton, N.Y.	WOSC	1300	
Fuquay Sprgs., N.C.	WFVG	1460	
Gadsden, Ala.	WGAD	1350	A
	WETO	930	M
	WAAX	570	
Gaffney, S.C.	WFGN	1570	
Gainesville, Fla.	WDVH	980	
	WGGG	1230	M
	WRUF	850	N
Gainesville, Ga.	WGGA	550	C
	WDUN	1240	A
	WLBA	1580	
Gainesville, Tex.	KGAF	1580	
Gaithersburg, Md.	WHMC	1150	
Galax, Va.	WBOB	1360	M
Galesburg, Ill.	WGIL	1400	
	WAIK	1590	A
Gallatin, Tenn.	WHIN	1010	
Gallipolis, Ohio	WJEH	990	
Gallup, N. Mex.	KGAK	1330	A
	KYVA	1230	
Galt Ont.	CKGR	1110	
Galveston, Tex.	KILE	1400	
	KGBC	1540	
Gander, Nfld.	CBG	1450	
Garden City, Kans.	KNCO	1050	
	KIUL	1240	M
Gardner, Mass.	WGAW	1340	
Gary, Ind.	WWCA	1270	
	WGRY	1370	
Gastonia, N.C.	WGNC	1450	A
	WLTC	1370	
Gate City, Va.	WGAT	1050	
Gaylord, Mich.	WATC	900	
Geneva, Ala.	WGEA	1150	
Geneva, Ill.	WGSB	1480	
Geneva, N.Y.	WGVA	1240	A
Georgetown, Del.	WJWL	900	
Georgetown, Ky.	WAXU	1580	
Georgetown, S.C.	WGTN	1400	M
Gettysburg, Pa.	WGET	1320	M
Gillette, Wyo.	KIML	1490	
Gilroy, Calif.	KPER	1290	
Gladewater, Tex.	KEES	1430	
Glasgow, Ky.	WKAY	1490	
Glasgow, Mont.	KLTZ	1240	
Glendale, Ariz.	KRUX	1360	
Glendale, Calif.	KIEV	870	
Glendive, Mont.	KXGN	1400	
Glens Falls, N.Y.	WSET	1410	
	WWSC	1450	A
Glenville, Ga.	WKIG	1580	
Glenwood Sprgs., Colo.	KGLN	980	M
Globe, Ariz.	KZOW	1240	A
Gloucester, Va.	WDDY	1420	
Gloversville-Johnston, N.Y.	WENT	1340	C
Gold Beach, Oreg.	KBLY	1220	
Golden, Colo.	KICM	1250	
Golden Valley, Minn.	KEVE	1440	M
	KUXL	1570	
Goldsboro, N.C.	WFMC	730	
	WGBR	1150	A
	WGOL	1300	
Gonzales, Tex.	KCTI	1450	
Goodland, Kans.	KLOE	730	M
Goose Bay, Nfld.	CFGB	1340	
Goshen, Ind.	WKAM	1460	
Grafton, N.D.	KGPC	1340	
Grafton, W.Va.	WVVW	1260	
Graham, Tex.	KSWA	1330	
Granby, Que.	CHEF	1450	
Grand Coulee, Wash.	KFDR	1360	
Grande Prairie, Alta.	CFGP	1050	
Grand Falls, Nfld.	CBT	540	
Grand Forks, N.D.	KFJM	1370	
	KILO	1440	C
	KNOX	1310	M
Grand Haven, Mich.	WGHN	1370	
Grand Island, Nebr.	KMMJ	750	A
	KRGI	1430	
Grand Junction, Colo.	KREX	920	C
	KEXO	1230	A
	KSTR	620	
	KWSL	1340	
Grand Prairie, Tex.	KRZY	730	
Grand Rapids, Mich.	WJEF	1230	C
	WFUR	1570	
	WGRD	1410	
	WLAV	1340	A
	WMAX	1480	M
	WOOD	1300	N
Grand Rapids, Minn.	KOZY	1490	M
Grangeville, Idaho	KORT	1230	
Granite City, Ill.	WGNU	920	
Grants, N.Mex.	KMIN	980	
Grants Pass, Oreg.	KAGI	930	M
	KAJO	1270	
Gravelbourg, Sask.	CFGR	1230	
	CFRG	710	
Grayson, Ky.	WGOH	1370	
Gt. Barrington, Mass.	WSBS	860	
Gt. Bend, Kans.	KVGB	1590	N
Gt. Falls, Mont.	KFBB	1310	C
	KUDI	1450	
	KMON	560	M
	KARR	1400	N
Greeley, Colo.	KFKA	1310	
	KYOU	1450	
Green Bay, Wis.	WBAY	1360	C
	WJPG	1440	M
	WDUZ	1400	A
Green Cove Springs, Fla.	WGRC	1580	
Greeneville, Tenn.	WGRV	1340	
	WSMG	1450	
Greenfield, Mass.	WHAI	1240	M
Greensboro, N.C.	WBIG	1470	C
	WCOG	1320	
	WGBG	1400	A
	WPET	950	
Greensburg, Pa.	WHJB	620	
Greenville, Ala.	WGYV	1380	
Greenville, Mich.	WPLB	1380	
Greenville, Miss.	WJPR	1330	
	WDDT	900	
	WGVM	1260	
Greenville, Pa.	WGRP	940	
Greenville, N.C.	WGTC	1590	M
	WOOW	1340	
Greenville, S.C.	WESC	660	
	WFBC	1330	N
	WMRB	1490	C-M
	WMUU	1260	
	WQOK	1440	C
Greenville, Tex.	KGVL	1400	
Greenwood, Miss.	WABG	960	A
	WGRM	1240	N
Greenwood, S.C.	WCRS	1450	N
	WGSW	1350	
Greer, S.C.	WEAB	800	
Grenada, Miss.	WCKI	1300	A
	WNAG	1400	M

Location	C.L.	Kc.	N.A.
Gresham, Oreg.	KGRO	1230	
Gretna, Va.	WMNA	730	
Griffin, Ga.	WKEU	1450	M
	WHIE	1320	
	WRIX	1410	
Grinnell, Iowa	KGRN	1410	
Groton, Conn.	WSUB	980	
Grove City, Pa.	WSAJ	1340	
Grundy, Va.	WNRG	1250	
Guayama, P.R.	WXRF	1590	
Guelph, Ont.	CJOY	1460	
Gulfport, Miss.	WROA	1390	
	WGCM	1240	A
Gunnison, Colo.	KGUC	1490	
Guntersville, Ala.	WGSV	1270	
Guthrie, Okla.	KWRW	1490	
Guymon, Okla.	KGYN	1220	
Hagerstown, Md.	WARK	1490	C
	WJEJ	1240	A-M
Haines City, Fla.	WHAN	930	
Haleyville, Ala.	WJBB	1230	M
Halfway, Md.	WDDW	1410	
Halifax, N.S.	CBH	790	
	CHNS	960	
	CJCH	920	
Hamden, Conn.	WDEE	1220	
Hamilton, Ala.	WERH	970	
Hamilton, Mont.	KYLQ	980	
Hamilton, Ohio	WMOH	1450	
Hamilton, Ont.	CHIQ	1280	
	CHML	900	
	CKOC	1150	
Hamilton, Tex.	KCLW	900	
Hamlet, N.C.	WKDX	1400	
Hammond, Ind.	WJOB	1230	
Hammond, La.	WFPR	1400	
Hammonton, N.J.	WNJH	1580	
Hampton, S.C.	WBHC	1270	
Hampton, Va.	WVEC	1490	
Hancock, Mich.	WMPL	920	
Hanford, Calif.	KNGS	620	
Hannibal, Mo.	KHMO	1070	
Hanover, N.H.	WTSL	1400	
	WDCR	1340	
Hanover, Pa.	WHVR	1280	
Harlan, Ky.	WHLN	1410	
Harlingen, Tex.	KGBT	1530	
Harriman, Tenn.	WHBT	1600	
Harrisburg, Ill.	WEBQ	1240	
Harrisburg, Pa.	WHGB	1400	A
	WCMB	1460	M
	WHP	580	C
	WKBO	1230	N
Harrison, Ark.	KHOZ	900	
Harrisonburg, Va.	WHBG	1360	
	WSVA	550	N
Harrodsburg, Ky.	WHBN	1420	
Hartford, Conn.	WDRC	1360	C
	WCCC	1290	M
	WPOP	1410	M-A
	WTIC	1080	N
Hartford, Wis.	WTKM	1540	
Hartselle, Ala.	WHRT	860	
Hartsville, S.C.	WHSC	1450	M
Hartwell, Ga.	WKLY	980	
Harvard, Ill.	WMCW	1600	
Harvey, Ill.	WBEE	1570	
Hastings, Mich.	WBCH	1220	
Hastings, Nebr.	KHAS	1230	
Hattiesburg, Miss.	WBKH	950	
	WFOR	1400	N
	WHSY	1230	A
	WXXX	1310	
Haverhill, Mass.	WHAV	1490	
Havre, Mont.	KOJM	610	M
Havre de Grace, Md.			
	WASA	1330	
Hawkinsville, Ga.	WCEH	610	
Haynesville, La.	KLUV	1580	
Hays, Kans.	KAYS	1400	
Hayward, Wis.	WHSM	910	
Hazard, Ky.	WKIC	1390	M
Hazlehurst, Miss.	WMDC	1220	
Hazleton, Pa.	WAZL	1490	N-M
	WTHT	1300	
Helena, Ark.	KFFA	1360	M
Helena, Mont.	KCAP	1340	M
	KBLL	1240	N
Hemet, Calif.	KHSJ	1320	
Hempstead, N.Y.	WHLI	1100	
Henderson, Ky.	WSON	860	
Henderson, Nev.	KBMI	1400	
	KTOO	1280	
Henderson, N.C.	WHNC	890	M
	WHVH	1450	
Henderson, Tex.	KGRI	1000	
	KWRD	1470	
Hendersonville, N.C.			
	WHKP	1450	A
Henryetta, Okla.	KHEN	1590	
Hereford, Tex.	KPAN	860	
Herkimer, N.Y.	WALY	1420	
Hermiston, Oreg.	KOHU	1570	
Herrin, Ill.	WJPF	1340	M
Hettinger, N.Dak.	KNDC	1490	
Hibbing, Minn.	WMFG	1240	N
Hickory, N.C.	WHKY	1290	A
	WIRC	630	
Highland Park, Tex.	KVIL	1150	
Highland Springs, Va.			
	WENZ	1450	
High Point, N.C.	WMFR	1230	A
	WNOS	1590	
	WHPE	1070	
Hillsboro, Ohio	WSRW	1590	
Hillsboro, Oreg.	KUIK	1360	
Hillsboro, Tex.	KHBR	1560	
Hillsdale, Mich.	WCSR	1340	
Hillsville, Va.	WHHV	1400	
Hilo, Hawaii	KHBC	970	C
	KIPA	1110	
	KIMO	850	M
Hinesville, Ga.	KGML	990	
Hobart, Okla.	KTJS	1420	
Hobbs, N.Mex.	KWEW	1480	M
	KHOB	1390	
Holbrook, Ariz.	KDJI	1270	
Holdredge, Nebr.	KUVR	1380	
Holland, Mich.	WHTC	1450	
	WJBL	1260	
Hollister, Calif.	KGHT	1520	
Hollywood, Fla.	WGMA	1320	
Holyoke, Mass.	WREB	930	
Homer, La.	KHAL	1320	
Homestead, Fla.	WSDB	1430	
Homewood, Ala.	WJLD	1400	
Honolulu, Hawaii	KGMB	590	C
	KHAI	1090	
	KPOI	1380	
	KIKI	830	
	KGU	760	N
	KHVH	1040	
	KORL	650	M
	KNDI	1270	
	KOHO	1170	
	KTRG	990	
	KULA	690	A
Hood River, Oreg.	KIHR	1340	
Hope, Ark.	KXAR	1490	
Hopewell, Va.	WHAP	1340	
Hopkinsville, Ky.	WHOP	1230	C
	WKOA	1480	
Hoquiam, Wash.	KHOK	1560	
Hornell, N.Y.	WWHG	1320	
	WLEA	1480	M
Hot Springs, Ark.	KAAB	1340	A
	KBHS	590	
	KZNG	1470	M
Hot Springs,			
S. Dak.	KOBH	580	
Houghton, Mich.	WHDF	1400	
Houghton Lake, Mich.			
	WHGR	1290	
Houlton, Maine	WHOU	1340	
Houma, La.	KCIL	1490	N
Houston, Miss.	WCPC	1320	
Houston, Mo.	KHTN	1250	
Houston, Tex.	KCOH	1430	
	KILT	610	
	KNUZ	1230	
	KODA	1010	
	KPRC	950	N
	KTHT	790	
	KTRH	740	C
	KXYZ	1320	A
	KYOK	1590	
Howell, Mich.	WHMI	1350	
Hudson, N.Y.	WHUC	1230	
Hugo, Okla.	KIHN	1340	
Hull, Que.	CKCH	970	
Humacao, P.R.	WALO	1240	
Humboldt, Tenn.	WIRJ	740	
Huntingdon, Pa.	WHUN	1150	
Huntington, Ind.	WHLT	1300	
Huntington, N.Y.	WGSM	740	
Huntington, W.Va.			
	WKEE	800	M-A
	WSAZ	930	N
	WWHY	1470	M
Huntsville, Ala.	WBHP	1230	M
	WEUP	1600	
	WFIX	1450	
	WAAY	1550	A
Huntsville, Ont.	CKAR	630	
Huntsville, Tex.	KSAM	1490	
Huron, S.Dak.	KIJV	1340	
Hutchinson, Kans.	KWBW	1450	N
	KWHK	1260	
Hutchinson, Minn.	KDUZ	1260	
Idabel, Okla.	KBEL	1240	
Idaho Falls, Idaho	KID	590	C
	KIFI	1260	A-M
	KTEE	900	
Independence, Ia.	KUPI	980	
	KOUR	1220	
Independence, Kans.			
	KIND	1010	M
Independence, Mo.	KANS	1510	
Indiana, Pa.	WDAD	1450	C
Indianapolis, Ind.			
	WFBM	1260	A
	WGEE	1590	
	WIBC	1070	
	WIRE	1430	N
	WISH	1310	C
	WXLW	950	M
Indianola, Miss.	WDLT	1380	
Indio, Calif.	KREO	1400	A
Inglewood, Calif.	KTYM	1460	
Inkster, Mich.	WCHB	1440	
International Falls, Minn.			
	KGHS	1230	
Invrik, N.W.T.	CHAK	860	
Iola, Kansas	KALN	1370	
Ionia, Mich.	WION	1430	
Iowa City, Iowa	KXIC	800	
	WSUI	910	
Iron Mtn., Mich.	WMIQ	1450	A
Iron River, Mich.	WIKB	1230	M
Irondale, Ala.	WIXI	1480	
Ironton, Ohio	WIRO	1230	M
Ironwood, Mich.	WJMS	630	M
Irvine, Ky.	WIRV	1550	
Isabella, P.R.	WISA	1390	
Ishpeming, Mich.	WJPD	1240	
	WJAN	970	
Islip, N.Y.	WBIC	540	
Ithaca, N.Y.	WHCU	870	C
	WTKO	1470	A
Iuka, Miss.	WVOM	1270	
Jackson, Ala.	WTHG	1290	M
Jackson, Mich.	WIBM	1450	A
	WKHM	970	M
Jackson, Miss.	WJDX	620	N
	WJQS	1400	M
	WJXN	1450	
	WOKJ	1590	
	WRBC	1300	M
	WSLI	930	
Jackson, Ohio	WLMJ	1280	
Jackson, Tenn.	WDXI	1310	
	WJAK	1460	
	WTJS	1390	A
Jacksonville, Fla.	WJAX	930	N
	WAPE	690	
	WZOK	1320	A-M
	WIVY	1050	
	WMBR	1460	C
	WOBS	1360	
	WPDQ	600	
	WQIK	1280	
	WRHC	1400	
Jacksonville, Ill.	WJIL	1550	
	WLDS	1180	
Jacksonville, N.C.	WJNC	1240	M
	WLAS	910	
Jacksonville, Tex.	KEBE	1400	
Jacksonville Bch., Fla.			
	WZRO	1010	
Jamestown, N.Dak.	KEYJ	1400	M
	KSJB	600	C
Jamestown, N.Y.	WJTN	1240	A
	WXYJ	1340	M
Jamestown, Tenn.	WCLC	1260	
Janesville, Wis.	WCLO	1230	M
Jasper, Ala.	WWWB	1360	
	WARF	1240	
Jasper, Ind.	WITZ	990	
Jasper, Tex.	KTXJ	1350	
Jefferson City, Mo.	KLIK	950	
	KWOS	1240	M
Jefferson City, Tenn.			
	WJFC	1480	
Jeffersonville, Ind.	WXVW	250	
Jennings, La.	KJEF	1290	
Jerome, Idaho	KART	1400	
Jerseyville, Ill.	WJBM	1480	
Jesup, Ga.	WBGR	1370	
Johnson City, Tenn.			
	WJCW	910	C
	WETB	790	M
Johnston, S.C.	WJES	250	
Johnstown, N.Y.	WIZR	930	
Johnstown, Pa.	WJAC	850	
	WARO	1490	C
	WCRO	1230	M
Joliet, Ill.	WJOL	1340	
Joliette, Que.	CJLM	1350	
Jonesboro, Ark.	KBTM	1230	M
	KNEA	970	
Jonesboro, La.	KTOC	920	
Jonesboro, Tenn.	WJSO	1590	
Jonesville, La.	KANV	1480	
Jonquiere, Que.	CKRS	590	
Joplin, Mo.	WMBH	1450	M
	KQYX	1560	
	KFSB	1310	
	KDDE	1230	C
Junction, Tex.	KMBL	1450	
June. City, Kans.	KJCK	1420	
Juneau, Alaska	KINY	800	C-A
	KJNO	630	A-M-N
Kailua, Hawaii	KLEI	1130	
Kaimuki, Hawaii	KAIM	870	
Kalamazoo, Mich.	WKPR	1420	
	WKZO	590	C
	WKLZ	1470	M
	WKMI	1360	
Kalispell, Mont.	KGEZ	600	M
	KOFI	930	
Kamloops, B.C.	CFJC	910	
Kane, Pa.	WADP	960	
Kankakee, Ill.	WKAN	1320	
Kannapolis, N.C.	WGTL	870	
	WRKB	1460	
Kans. City, Kans.	KCKN	1340	
Kansas City, Mo.	KCMO	810	C
	KMBC	980	A
	KPRS	1590	
	KUDL	1380	
	WDAF	610	N
	WHB	710	
Kearney, Nebr.	KGFW	1340	M
	KRNY	1460	
Keene, N.H.	WKNE	1290	N
	WKBK	1220	
Kelowna, B.C.	CKOV	630	
Kelso, Wash.	KLOG	1490	
Kendallville, Ind.	WAWK	1570	
Kenedy, Tex.	KAML	990	
Kennett, Mo.	KBOA	830	
Kennewick-Pasco-Richland,			
Wash.	KEPR	610	C
Kenora, Ont.	CJRL	1220	
Kenosha, Wis.	WLIP	1050	
Kentville, N.S.	CKEN	1350	
Keokuk, Iowa	KOKX	1310	
Kermit, Tex.	KERB	600	
Kerrville, Tex.	KERV	1230	
Kershaw, S.C.	WKSC	1300	
Ketchikan, Alaska	KTKN	930	C-A
Kewanee, Ill.	WKEI	1450	
Keyser, W.Va.	WKYR	1270	M
Key West, Fla.	WKWF	1600	A-M
	WKIZ	1500	
Kilgore, Tex.	KOCA	1240	
Killeen, Tex.	KLEN	1050	M
Kimball, Nebr.	KIMB	1260	
King City, Calif.	KRKC	1570	
Kingman, Ariz.	KAAA	1230	A
Kings Mountain, N.C.			
	WKMT	1220	
Kingsport, Tenn.	WKIN	1320	
	WKPT	1550	N
Kingston, N.Y.	WBAZ	1550	M
	WGHQ	920	
	WKNY	1490	C
Kingston, Ont.	CFRC	1490	
	CKLC	1380	
	CKWS	960	
Kingstree, S.C.	WDKD	1310	
Kingsville, Tex.	KINE	1330	
Kinston, N.C.	WELS	1010	
	WFTC	960	A
	WISP	1230	M
Kirkland, Wash.	KCDI	1460	
	KNBX	1050	
Kirkland Lake, Ont.	CJKL	560	
Kirksville, Mo.	KIRX	1450	A
Kissimmee, Fla.	WKBX	1220	
Kitchener, Ont.	CKCR	1490	
	CKKW	1320	
Kittanning, Pa.	WACB	1380	
Klamath Falls, Oreg.			
	KAGO	1150	M
	KFLW	1450	A-C
	KLAD	960	
Knoxville, Iowa	KNIA	1320	
Knoxville, Tenn.	WBIR	1240	A
	WIVK	860	
	WATE	620	N
	WKGN	1340	M
	WKXV	900	M
	WNOX	990	C
Kodiak, Alaska	WCVQ	960	
Kokomo, Ind.	WIOU	1350	C
Kosciusko, Miss.	WKOZ	1350	A
Laconia, N.H.	WLNH	1350	
	WEMJ	1490	
LaCrosse, Wis.	WKBH	1410	N
	WLCX	1490	
	WKTY	580	A
Ladysmith, Wis.	WLDY	1340	
Lafayette, Ga.	WLFA	1590	
Lafayette, Ind.	WASK	1450	M
	WAZY	1410	
	WBAA	920	
Lafayette, La.	KPEL	1420	A
	KVOL	1330	N
	KXKW	1520	
Lafayette, Tenn.	WEEN	1460	
LaFollette, Tenn.	WLAF	1450	
LaGrande, Oreg.	KLBM	1450	
LaGrange, Ga.	WLAG	1240	M
	WTRP	620	
LaGrange, Ill.	WTAQ	1300	
LaGrange, Tex.	KVLG	1570	
LaJunta, Colo.	KBZZ	1400	M
Lake Charles, La.	KLOU	1580	
	KPLC	1470	N
	KAOK	1400	M
Lake City, Fla.	WDSR	1340	
	WGRO	960	
Lake City, S.C.	WJOT	1260	
Lakeland, Fla.	WLAK	1430	N
	WONN	1230	M
	WYSE	1330	
Lake Placid, N.Y.	WIRD	920	
Lake Providence, La.	KLPL	1050	
Lake Tahoe, Calif.	KOWL	1490	
Lakeview, Oreg.	KQIK	1230	
Lake Wales, Fla.	WIPC	1280	
Lakewood, Colo.	KLAK	1600	
Lakewood, Wash.	KFHA	1480	
Lake Worth, Fla.	WLIZ	1380	
Lamar, Colo.	KLMR	920	M
Lamesa, Tex.	KPET	690	
Lampasas, Tex.	KCYL	1450	
Lancaster, Calif.	KAVL	610	
	KBVM	1380	
Lancaster, Ohio	WHOK	1320	
Lancaster, Pa.	WGAL	1490	N
	WLAN	1390	A-M
Lancaster, S.C.	WLCM	1360	
Lander, Wyo.	KOVE	1330	M
Lanett, Ala.	WRLD	1490	A
Lansdale, Pa.	WNPV	1440	
Lansford, Pa.	WLSH	1410	
Lansing, Mich.	WILS	1320	
	WJIM	1240	A-N
	WMRT	1010	
Lapeer, Mich.	WMPC	1230	
LaPorte, Ind.	WLOI	1540	
Laramie, Wyo.	KLME	1490	
	KOWB	1290	M
Laredo, Tex.	KGNS	1300	
	KVOZ	1490	M
LaSalle, Ill.	WLPO	1220	
LaSarre, Que.	CKLS	1240	
LasCruces, N.Mex.	KOBE	1450	
	KGRT	570	
Las Vegas, Nev.	KENO	1460	A
	KLAS	1230	C
	KORK	1340	M
	KRAM	920	
	KLUC	1050	
	KVEG	970	
Las Vegas, N.Mex.	KFUN	1230	A
Latrobe, Pa.	WSHH	1570	M
	WTRA	1480	
LaTuque, Que.	CFLM	1240	
Laurel, Miss.	WAML	1340	N

Location	C.L.	Kc.	N.A.
	WLAU	1600	A
	WNSL	1260	
Laurens, S.C.	WLBG	860	
Laurinburg, N.C.	WEWO	1060	
	WLCW	1300	
Lawrence, Kans.	KFKU	1250	
	KLWN	1320	
Lawrence, Mass.	WCCM	800	M
Lawrenceburg, Tenn.	WDXE	1370	
Lawrenceville, Ga.	WLAW	1360	
Lawrenceville, Ill.	WAKO	910	
Lawrenceville, Va.	WLES	580	
Lawton, Okla.	KSWO	1380	A
	KCCO	1050	
Leadville, Colo.	KBRR	1230	
Leaksville, N.C.	WLOE	1490	M
Leamington, Ont.	CJSP	710	
Leavenworth, Kans.	KCLO	1410	
Lebanon, Ky.	WLBN	1590	
Lebanon, Mo.	KLWT	1230	
Lebanon, Oreg.	KGAL	920	
Lebanon, Pa.	WLBR	1270	
Lebanon, Tenn.	WCOR	900	
Leesburg, Fla.	WLBE	790	M
	WBIL	1410	
Leesburg, Va.	WAGE	1290	
Leesville, La.	KLLA	1570	
Lehighton, Pa.	WYNS	1150	
Leitchfield, Ky.	WMTL	1580	
Leland, Miss.	WESY	1580	
LeMars, Iowa	KLEM	1410	
Lemoore, Calif.	KLAN	1320	
Lenoir, N.C.	WJRI	1340	M
Lenoir, Tenn.	WLIL	730	
Leonardtown, Md.	WKIK	1370	
Lethbridge, Alta.	CJOC	1220	
	CHEC	1090	
Levelland, Tex.	KLVT	1230	
Levittown, Pa.	WBCB	1490	
Lewisburg, Pa.	WITT	1010	
Lewisburg, Tenn.	WJJM	1490	M
Lewiston, Idaho	KRLC	1350	M
	KOZE	1300	
Lewiston, Maine	WCOU	1240	M
	WLAM	1470	A
Lewistown, Mont.	KXLO	1230	M
Lewistown, Pa.	WKVA	920	A
	WMRF	1490	N
Lexington, Ky.	WLAP	630	M
	WBLG	1300	A
	WVLK	590	C
Lexington, Miss.	WXTN	1150	
Lexington, Mo.	KLEX	1570	
Lexington, Nebr.	KRVN	1010	
Lexington, N.C.	WBUY	1440	
Lexington, Tenn.	WDXL	1490	
Lexington, Va.	WREL	1450	N
Lexington Pk., Md.	WPTX	920	
Libby, Mont.	KLCB	1230	M
	KLIB	1470	
Liberal, Kans.	KSCB	1270	
Liberty, N.Y.	WVOS	1240	
Liberty, Tex.	KWLD	1050	
Lihue, Hawaii	KTOH	1490	
Lima, Ohio	WIMA	1150	A
Lincoln, Ill.	WPRC	1370	
Lincoln, Nebr.	KFOR	1240	A
	KLIN	1400	
	KLMS	1480	
Lincolnton, N.C.	WLON	1050	
Lindsay, Ont.	CKLY	910	
Linton, Ind.	WBTO	1600	
Litchfield, Ill.	WSMI	1540	
Litchfield, Minn.	KLFD	1410	
Little Falls, Minn.	KLTF	960	
Little Falls, N.Y.	WLFH	1230	
Littlefield, Tex.	KZZN	1490	
Little Rock, Ark.	KARK	920	N
	KAJI	1250	M
	KLRA	1010	A
	KOKY	1440	
	KTHS	1090	C-M
	KVLC	1050	
Littleton, Colo.	KMOR	1510	
Live Oak, Fla.	WNER	1250	
Livingston, Mont.	KPRK	1340	M
Livingston, Tenn.	WLIV	920	
Livingston, Tex.	KETX	1440	
	KVLL	1220	
Lloydminster, Alta.	CKSA	1150	
Lock Haven, Pa.	WBPZ	1230	M
Lockport, N.Y.	WUSJ	1340	
Lodi, Calif.	KCVR	1570	
Logan, Utah	KVNU	610	M
	KSTU	1300	
	KLGN	1390	
Logan, W.Va.	WLOG	1230	M
	WVOW	1290	
Logansport, Ind.	WSAL	1230	M
Lompoc, Calif.	KKOK	1410	
	KNEZ	960	
London, Ky.	WFTG	1400	
London, Ont.	CFPL	980	
	CKSL	1290	
Long Beach, Calif.	KFOX	1280	
	KGER	1390	
Longmont, Colo.	KLMO	1050	
Long Prairie, Minn.	KEYL	1400	
Longview, Tex.	KFRO	1370	A
	KLUE	1280	
Longview, Wash.	KEDO	1400	A
	KBAM	1270	
Lookout Mtn., Tenn.	WFLI	1070	
Lorain, Ohio	WWIZ	1380	A
Lordsburg, N.Mex.	KLHS	950	
Loris, S.C.	WLSC	1570	
Los Alamos, N.Mex.	KRSN	1490	A

Location	C.L.	Kc.	N.A.
Los Angeles, Calif.	KABC	790	A
	KFI	640	N
	KHJ	930	M
	KFSG	1150	
	KFWB	980	
	KGFJ	1230	
	KFAC	1330	
	KLAC	570	
	KMPC	710	
	KNX	1070	C
	KPOL	1540	
	KGBS	1020	
	XETRA	690	
	KRKD	1150	
Los Banos, Calif.	KLBS	1330	
Louisburg, N.C.	WYRN	1480	
Louisville, Ga.	WPEH	1420	
Louisville, Ky.	WAVE	970	N
	WAKY	790	M
	WHAS	840	C
	WKLO	1080	A
	WINN	1240	
	WKYW	900	C
	WLOU	1350	
	WTMT	620	A-M
Louisville, Miss.	WLSM	1270	
Loveland, Colo.	KLOV	1570	
Lovington, N.Mex.	KLEA	630	
Lowell, Mass.	WCAP	980	
	WLLH	1400	
Lubbock, Tex.	KCBD	1590	M-N
	KDAV	580	
	KDUB	1340	
	KFYO	790	C
	KLLL	1460	M
	KSEL	950	A
Lucedale, Miss.	WHHT	1440	
Ludington, Mich.	WKLA	1450	A
Lufkin, Tex.	KRBA	1340	A
	KTRE	1420	M
Lumberton, N.C.	WAGR	580	
	WTSB	1340	M
Luray, Va.	WRLA	1590	
	WRAA	1330	
Lynchburg, Va.	WLVA	590	A
	WDMS	1320	
	WWOD	1390	M
	WBRG	1050	
Lynn, Mass.	WLYN	1360	
Lyons, Ga.	WBBT	1340	
Macomb, Ill.	WKAI	1510	
Macon, Ga.	WBML	1240	
	WCRY	900	
	WIBB	1280	
	WMAZ	940	C
	WNEX	1400	A-M
Macon, Miss.	WMBC	1400	
Madera, Calif.	KHOT	1250	
Madill, Okla.	KMAD	1550	
Madison, Fla.	WMAF	1230	
Madison, Ga.	WYTH	1250	
Madison, Ind.	WORX	1270	
Madison, S.D.	KJAM	1390	
Madison, Tenn.	WENO	1430	
Madison, Wis.	WHA	970	
	WIBA	1310	N
	WISM	1480	A-M
	WKOW	1070	C
Madisonville, Ky.	WFMW	730	
	WTTL	1310	
Magee, Miss.	WSJC	790	
Magnolia, Ark.	KVMA	630	M
Malden, Mo.	KTCB	1470	
Malone, N.Y.	WICY	1490	M
Malvern, Ark.	KBOK	1310	
Manassas, Va.	WPRW	1460	
Manati, P.R.	WMNT	1500	
Manchester, Conn.	WINF	1230	C
Manchester, Ga.	WFDR	1370	
Manchester, Ky.	WWXL	1450	
Manchester, N.H.	WFEA	1370	M
	WGIR	610	C
	WKBR	1250	
Manchester, Tenn.	WMSR	1320	
Manhattan, Kans.	KSAC	580	
	KMAN	1350	
Manistee, Mich	WMTE	1340	
Manitou Springs, Colo.	KCMS	1490	
Manitowoc, Wis.	WCUB	980	
	WOMT	1240	M
Mankato, Minn.	KYSM	1230	N
	KTOE	1420	A
Manning, S.C.	WYMB	1410	
Mansfield, La.	KDBC	1360	
Mansfield, Ohio	WMAN	1400	A
	WCLW	1570	
Maquoketa, Iowa	KMAQ	1320	
Marathon, Fla.	WEFG	1300	
Marianna, Ark.	KZOT	1460	
Marianna, Fla.	WTYS	1340	M
	WTOT	980	
Marietta, Ga.	WFOM	1230	
	WBIE	1050	
Marietta, Ohio	WMOA	1490	A
Marine City, Mich.	WDOG	1590	
Marinette, Wis.	WMAM	570	N
Marion, Ala.	WJAM	1310	
Marion, Ill.	WGGH	1150	
Marion, Ind.	WBAT	1400	A
	WMRI	860	
Marion, N.C.	WBRM	1250	
Marion, Ohio	WMRN	1490	A
Marion, S.C.	WATP	1430	
Marion, Va.	WMEV	1010	A
Marked Tree, Ark.	KPCA	1580	
Marksville, La.	KAPB	1370	

Location	C.L.	Kc.	N.A.
Marlborough, Mass.	WSRO	1470	
Marlin, Tex.	KAWA	1010	
Marquette, Mich.	WDMJ	1320	M
Marshall, Minn.	KMHL	1400	A
Marshall, Mo.	KMMO	1300	
Marshall, N.C.	WMMH	1460	
Marshall, Tex.	KMHT	1450	
	KADO	1410	
Marshalltown, Iowa	KFJB	1230	
Marshfield, Wis.	WDLB	1450	
Martin, Tenn.	WCMT	1410	
Martinsburg, W.Va.	WEPM	1340	
Martinsville, Va.	WHEE	1370	
	WMVA	1450	N
Marysville, Calif.	KMYC	1410	M
Marysville, Kans.	KNDY	1570	
Maryville, Mo.	KNIM	1580	
Maryville, Tenn.	WGAP	1400	
Mason City, Iowa	KGLO	1300	C
	KRIB	1490	
	KSMN	1010	
Massena, N.Y.	WMSA	1340	A
	WSTS	1050	
Massillon, Ohio	WTIG	990	
Matane, Que.	CKBL	1250	
Matawan, W.Va.	WHJC	1360	
Mattoon, Ill.	WLBH	1170	
Mauston, Wis.	WRJC	1270	
Mayaguez, P.R.	WAEL	600	
	WKJB	710	
	WORA	1150	
	WPRA	990	
	WTIL	1300	
Mayfield, Ky.	WNGO	1320	
Mayodan, N.C.	WMYN	1420	
Maysville, Ky.	WFTM	1240	M
McAlester, Okla.	KTMC	1400	
	KNED	1150	
McAllen, Tex.	KRIO	910	M
McCamey, Tex.	KAMY	1450	
McComb, Miss.	WHNY	1250	A
	WAPF	980	
McCook, Nebr.	KBRL	1300	M
	KWRV	1360	
McGehee, Ark.	KVSA	1220	
McKeesport, Pa.	WEDO	810	C
	WPQR	1360	M
McKenzie, Tenn.	WHDM	1440	
McKinney, Tex.	KMAE	1600	
McMinnville, Oreg.	KMCM	1260	
McMinnville, Tenn.	WBMC	960	
	WAKI	1230	M
McPherson, Kans.	KNEX	1540	
McRae, Ga.	WDAX	1410	
Meadville, Pa.	WMGW	1490	
Medford, Mass.	WHIL	1430	
Medford, Oreg.	KMED	1440	A
	KMFR	860	
	KDOV	1300	
	KBOY	730	
	KYJC	1230	A-C
Medford, Wis.	WIGM	1490	M
Medicine Hat, Alta.	CHAT	1270	
Media, Pa.	WXUR	690	
Melbourne, Fla.	WMMB	1240	M
Memphis, Tenn.	WHBQ	560	M
	WHER	1430	
	WMC	790	N
	WDIA	1070	
	WMPS	680	
	WHHM	1340	A
	WLOK	1480	
	WREC	600	C
	KWAM	990	
Mena, Ark.	KENA	1450	
Menominee, Mich.	WAGN	1340	A
Menomonie, Wis.	WMNE	1360	
Merced, Calif.	KYOS	1480	M
	KWIP	1580	
Meriden, Conn.	WMMW	1470	
Meridian, Miss.	WCOC	910	C
	WDAL	1330	M
	WMOX	1010	
	WOKK	1450	A
	WQIC	1390	
Merrill, Wis.	WXMT	730	
Mesa, Ariz.	KBUZ	1510	
Metropolis, Ill.	WMOK	920	
Metter, Ga.	WMAC	1360	
Mexia, Tex.	KBUS	1590	
Mexico, Mo.	KXEO	1340	M
Mexico, Pa.	WJUN	1220	
Miami, Ariz.	KIKO	1340	
Miami, Fla.	WGBS	710	C
	WCKR	610	N
	WFAB	990	
	WMBM	1220	
	WAME	1260	A
	WMIE	1140	
	WQAM	560	
	WSKP	1450	
	WINZ	940	M
Miami, Okla.	KGLC	910	
Miami Beach, Fla.	WMBM	1490	
	WKAT	1360	C
	WFUN	790	
Michigan City, Ind.	WIMS	1420	
Middleport-Pomroy, Ohio	WMPO	1390	
Middlesboro, Ky.	WMIK	560	
Middletown, Conn.	WCNX	1150	
Middletown, N.Y.	WALL	1340	
Middletown, Ohio	WPFB	910	
Midland, Mich.	WMDN	1490	
Midland, Ont.	CKMP	1230	
Midland, Tex.	KCRS	550	A
	KJBC	1150	

Location	C.L.	Kc.	N.A.
	KWEL	1600	
Milan, Tenn.	WKBJ	1600	
Miles City, Mont.	KATL	1340	M
Milford, Del.	WKSB	930	
Milford, Mass.	WMRC	1490	
Milledgeville, Ga.	WMVG	1450	M
Millen, Ga.	WGSR	1570	
Millington, Tenn.	WHEY	1220	
	WGMM	1380	
Millville, N.J.	WMVB	1440	
Milton, Fla.	WEBY	1330	M
	WSRA	1490	
Milton, Pa.	WMLP	1570	
	WARC	1380	
Milwaukee, Wis.	WEMP	1250	
	WFOX	860	M
	WRIT	1340	
	WISN	1150	A
	WMIL	1290	
	WOKY	920	
	WTMJ	620	N
Minden, La.	KASO	1240	
Mineral Wells, Tex.	KORC	1140	
Mineola, N.Y.	WFYI	1520	
Minneapolis, Minn.	WCCO	830	C
	WLOL	1330	
	WMIN	1400	
	WDGY	1130	
	WPBC	980	
	WTCN	1280	A
	KTCR	690	
	KTIS	900	
	KUOM	770	
Minot, N.Dak.	KLPM	1390	M
	KQDY	1320	
	KCJB	910	C
Mission, Kans.	KBEA	1480	
Mission, Tex.	KIRT	1580	
Missoula, Mont.	KGVO	1290	C
	KXLL	1450	N
	KQTE	1340	M
	KYSS	910	
Mitchell, S.Dak.	KORN	1490	M
Moab, Utah	KURA	1450	
Moberly, Mo.	KNCM	1230	
Mobile, Ala.	WALA	1410	N
	WMOE	1550	
	WABB	1480	A
	WGOK	900	
	WTUF	840	
	WKRG	710	C
	WLIQ	1360	
	WMOZ	960	
Mobridge, S.Dak.	KOLY	1300	
Modesto, Calif.	KTRB	860	
	KBEE	970	A
	KFIV	1360	A
Mojave, Calif.	KDOL	1340	
Moline, Ill.	WQUA	1230	A
Monahans, Tex.	KVKM	1330	M
Moncton, N. B.	CBAF	1330	
	CKCW	1220	
Monett, Mo.	KRMO	990	
Monmouth, Ill.	WRAM	1330	
Monroe, Ga.	WMRE	1490	
Monroe, La.	KMLB	1440	A-N
	KLIC	1230	M
	KNOE	1390	
Monroe, Mich.	WQTE	560	
Monroe, N.C.	WMAP	1060	
Monroe, Wis.	WEKZ	1260	
Monroeville, Ala.	WMFC	1360	
Monterey, Calif.	KIDD	630	
	KMBY	1240	C
Montevideo, Minn.	KDMA	1460	A
Monte Vista, Colo.	KSLV	1240	
Montezuma, Ga.	WMNZ	1050	
Montgomery, Ala.	WBAM	740	
	WCOV	1170	C
	WAPX	1600	N
	WHHY	1440	N
	WMGY	800	M
	WRMA	950	
Montgomery, W.Va.	WMON	1340	M
Monticello, Ark.	KHBM	1430	
Monticello, Ky.	WFLW	1360	
Montmagny, Que.	CKBM	1490	
Montpelier-Barre, Vt.	WSKI	1240	A
Montreal, Que.	CBF	690	
	CBM	940	N
	CFCF	600	A
	CHLP	1410	
	CJAD	800	
	CJMS	1280	
	CKAC	730	C
	CKGM	980	
Montrose, Colo.	KUBC	580	
Montrose, Pa.	WPEL	1250	
Mooresville, N.C.	WHIP	1350	
Moorhead, Minn.	KVOX	1280	M
Moosejaw, Sask.	CHAB	800	
Morehead, Ky.	WMOR	1330	
Morehead City, N.C.	WMBL	740	
Morgan City, La.	KMRC	1430	M
Morganfield, Ky.	WMSK	1550	
Morganton, N.C.	WMNC	1430	
Morgantown, W.Va.	WAJR	1440	N
	WCLG	1300	
Morrilton, Ark.	KVOM	800	
Morris, Minn.	KMRS	1230	
Morristown, N.J.	WMTR	1250	
Morristown, Tenn.	WCRK	1150	M
	WMTN	1300	
Morton, Tex.	KRAN	1280	

Location	C.L.	Kc.	N.A.
Moscow, Idaho	KRPL	1400	
Moses Lake, Wash.	KSEM	1470	
	KWIQ	1260	
Moultrie, Ga.	WMGA	1400	A
	WMTM	1300	
Moundsville, W.Va.	WMOD	1370	
Mountain Grove, Mo.	KLRS	1360	
Mountain Home, Ark.	KTLO	1490	
Mt. Airy, N.C.	WPAQ	740	
	WSYD	1300	M
Mt. Carmel, Ill.	WVMC	1360	
Mt. Clemens, Mich.			
	WBRB	1430	
Mt. Dora, Fla.	WMDF	1580	
Mt. Jackson, Va.	WSIG	790	
Mt. Kisco, N.Y.	WVIP	1310	
Mt. Olive, N.C.	WDJS	1430	
Mt. Pleasant, Mich.	WCEN	1150	
Mt. Pleasant, Tex.	KIMP	960	
Mt. Shasta, Calif.	KWSD	620	
Mt. Sterling, Ky.	WMST	1150	
Mt. Vernon, Ill.	WMIX	940	
Mt. Vernon, Ind.	WPCO	1590	
Mt. Vernon, Ky.	WRVK	1460	
Mt. Vernon, Ohio	WMVO	1300	
Mt. Vernon, Wash.	KBRC	1430	
Muleshoe, Tex.	KMUL	1380	
Mullins, S.C.	WJAY	1280	
Muncie, Ind.	WLBC	1340	C
Munfordville, Ky.	WLOC	1150	
Munising, Mich.	WMAB	1400	
Murfreesboro, Tenn.	WGNS	1450	
	WMTS	860	
Murphy, N.C.	WCVP	600	
	WKRK	1390	
Murphysboro, Ill.	WINI	1420	
Murray, Ky.	WNBS	1340	
Murray, Utah	KMUR	1230	
Muscatine, Iowa	KWPC	860	
Muscle Shoals City, Alabama	WLAY	1450	
Muskegon, Mich.	WKBZ	850	A
	WTRU	1600	
	WMUS	1090	
Muskogee, Okla.	KBIX	1490	A
	KMUS	1380	
Myrtle Beach, S.C.	WMYB	1450	
Nacogdoches, Tex.	KEEE	1230	A
	KSFA	860	
Nampa, Idaho	KFXD	580	
	KWLW	1340	
Nanaimo, B.C.	CHUB	1570	
Nanticoke, Pa.	WNAK	730	
Napa, Calif.	KVON	1440	
Naples, Fla.	WNOG	1270	
Narrows, Va.	WNRV	990	
Nashua, N.H.	WOTW	900	
	WSMN	1590	
Nashville, Ark.	KBHC	1260	
Nashville, Ga.	WNGA	1600	
Nashville, Tenn.	WKDA	1240	
	WLAC	1510	C
	WMAK	1300	
	WNAH	1360	M
	WSIX	980	A
	WSM	650	N
Natchez, Miss.	WMIS	1240	N
	WNAT	1450	M
Natchitoches, La.	KNOC	1450	M
Naugatuck, Conn.	WOWW	860	
Navasota, Tex.	KWBC	1550	
Nebraska City, Nebr.			
	KNCY	1600	
Needles, Calif.	KSFE	1340	
Neenah, Wis.	WNAM	1280	
Neillsville, Wis.	WCCN	1370	
Nelson, B.C.	CKLN	1390	
Neon, Ky.	WNKY	1480	
Neosho, Mo.	KBTN	1420	
Nevada, Mo.	KNEM	1240	
New Albany, Ind.	WOWI	1570	
New Albany, Miss.	WNAU	1470	
Newark, Del.	WWRK	1260	
Newark, N.J.	WJRZ	970	
	WHBI	1280	
	WNJR	1430	
	WVNJ	620	
Newark, N.Y.	WACK	1420	
Newark, Ohio	WCLT	1430	
New Bedford, Mass.	WBSM	1420	
	WNBH	1340	M
New Bern, N.C.	WHIT	1450	M
	WRNB	1490	
Newberry, S.C.	WKDK	1240	
New Boston, Ohio	WIOI	1010	
New Braunfels, Tex.	KGNB	1420	
New Britain, Conn.	WHAY	910	A
	WRYM	840	
New Brunswick, N.J.	WCTC	1450	
Newburgh, N.Y.	WGNY	1220	
Newburyport, Mass.	WNBP	1470	
New Carlisle, Que.	CHNC	610	
New Castle, Ind.	WCTW	1550	
Newcastle, N.B.	CKMR	790	
New Castle, Pa.	WKST	1280	A
Newcastle, Wyo.	KASL	1240	
New Glasgow, N.S.	CKEC	1320	
New Haven, Conn.	WAVZ	1300	
	WELI	960	
	WNHC	1340	A
New Iberia, La.	KANE	1240	
	KVIM	1360	
New Kensington, Pa.	WKPA	1150	
New London, Conn.	WNLC	1510	M
New Martinsville, W.Va.			

Location	C.L.	Kc.	N.A.
	WETZ	1330	M
Newnan, Ga.	WCOH	1400	M
	WNEA	1300	
New Orleans, La.	WDSU	1280	N
	WJBW	1230	
	WJMR	990	M
	WBOK	800	
	WNOE	1060	
	WSMB	1350	A
	WNPS	1450	
	WTIX	690	
	WWL	870	C
	WWOM	600	
	WYLD	940	M
Newport, Ark.	KNBY	1280	
Newport, Ky.	WNOP	740	
Newport, N.H.	WCNL	1010	
Newport, Oreg.	KNPT	1310	
Newport, R.I.	WADK	1540	
Newport, Tenn.	WLIK	1270	
Newport, Vt.	WIKE	1490	
Newport News, Va.	WGH	1310	A
	WTID	1270	
New Richmond, Wis.			
	WIXK	1590	
New Rochelle, N.Y.	WVOX	1460	
New Smyrna Beach, Fla.			
	WSBB	1230	M
	WORT	1550	
Newton, Iowa	KCOB	1280	
Newton, Kans.	KJRG	950	
Newton, Miss.	WBKN	1410	
Newton, N.J.	WNNJ	1360	
Newton, N.C.	WNNC	1230	
New Ulm, Minn.	KNUJ	860	
New Westminster, B.C.			
	CKNW	980	
New York, N.Y.	WABC	770	A
	WBNX	1380	
	WCBS	880	C
	WEVD	1330	
	WHOM	1480	
	WINS	1010	M
	WLIB	1190	
	WMCA	570	
	WHN	1050	
	WNEW	1130	
	WNYC	830	
	WOR	710	
	WADO	1280	
	WPOW	1330	
	WQXR	1560	
	WNBC	660	N
Niagara Falls, N.Y.	WHLD	1270	
	WJJL	1440	M
Niagara Falls, Ont.	CHVC	1600	
Nicholasville, Ky.	WNVL	1250	
Niles, Mich.	WNIL	1290	
Nogales, Ariz.	KNOG	1340	A
Nome, Alaska	KICY	850	
Norfolk, Nebr.	WJAG	780	
Norfolk, Va.	WTAR	790	C
	WCMS	1050	
	WNOR	1230	
	WRAP	850	
Normal, Ill.	WIOK	1440	
Norman, Okla.	WNAD	640	
	KNOR	1400	
Norman Wells, North-west Territory	CFNW	1240	
Norristown, Pa.	WNAR	1110	
N. Adams, Mass.	WMNB	1230	
N. Augusta, S.C.	WGUS	1380	
	WTHB	1550	
N. Battleford, Sask.	CJNB	1460	
North Bay, Ont.	CFCH	600	
North Bend, Oreg.	KFIR	1340	C
North Charleston, S.C.			
	WNCG	910	
Northfield, Minn.	WCAL	770	
Northampton, Mass.			
	WHMP	1400	M
N. Little Rock, Ark.	KDXE	1380	A
	KXLR	1150	
North Platte, Nebr.	KJLT	970	
	KODY	1240	N
No. Syracuse, N.Y.	WSOQ	1220	M
No. Vancouver, B.C.	CKLG	730	
N. Vernon, Ind.	WOCH	1460	
No. Wilkesboro, N.C.	WKBC	810	
Norton, Va.	WNVA	1350	M
Norwalk, Conn.	WNLK	1350	
Norwich, Conn.	WICH	1310	
Norwich, N.Y.	WCHN	970	
Oakdale, La.	KREH	900	
Oakes, N.Dak.	KEYD	1220	
Oak Grove, La.	KWCL	1280	
Oak Hill, W.Va.	WOAY	860	
Oakland, Calif.	KEWB	910	
	KABL	960	
	KDIA	1310	
Oak Park, Ill.	WOPA	1490	
Oak Ridge, Tenn.	WATO	1290	M
Oakville, Ont.	CHWO	1250	
Ocala, Fla.	WMOP	900	
	WTMC	1290	N
	WKOS	1370	
Ocean City, Md.	WETT	1590	
Oceanlake, Oreg.	KBCH	1380	
Oceanside, Calif.	KUDE	1320	
Ocilla, Ga.	WSIZ	1380	
Odessa, Tex.	KECK	920	
	KOSA	1230	C
	KOYL	1310	
	KRIG	1410	M
Oelwein, Iowa	KOEL	950	
Ogallala, Nebr.	KOGA	930	

Location	C.L.	Kc.	N.A.
Ogden, Utah	KLO	1430	M
	KANN	1250	
	KSVN	730	
	KVOG	1490	
Ogdensburg, N.Y.	WSLB	1400	M
Oil City, Pa.	WKRZ	1340	
Okeechobee, Fla.	WOKC	1570	
Okla. City, Okla.	KBYE	890	A
	KLPR	1140	
	KOCY	1340	
	KOMA	1520	
	KTOK	1000	A-M
	KJEM	800	
	WKY	930	
Okmulgee, Okla.	KOKL	1240	
Old Saybrook, Conn.	WLIS	1420	
Olean, N.Y.	WMNS	1360	
	WHDL	1450	A
Olney, Ill.	WVLN	740	
Olympia, Wash.	KGY	1240	M
	KITN	920	
Omaha, Nebr.	KBON	1490	
	KFAB	1110	N
	KOIL	1290	
	KOOO	1420	
	KMEO	660	M
	WOW	590	C
Omak, Wash.	KOMW	680	
Oneida, N.Y.	WMCR	1600	
Oneida, Tenn.	WBNT	1310	
O'Neill, Nebr.	KBRX	1350	
Oneonta, Ala.	WCRL	1570	
Oneonta, N.Y.	WDOS	730	
Ontario, Calif.	KASK	1510	
Ontario, Oreg.	KSRV	1380	
Opelika, Ala.	WPHO	1400	M
Opelousas, La.	KSLO	1230	A
Opp, Ala.	WAMI	860	
Opportunity, Wash.	KZUN	630	
Orange, Mass.	WCAT	1390	
Orange, Tex.	KOGT	1600	
Orange, Va.	WJMA	1340	
Orangeburg, S.C.	WDIX	1150	A
	WORG	1580	
	WTND	920	
Orange Park, Fla.	WAYR	550	
Oregon City, Oreg.	KGON	1520	M
Orillia, Ont.	CFOR	1570	
Orlando, Fla.	WDBO	580	C
	WHOO	990	M
	WHIY	1270	
	WLOF	950	
	WKIS	740	N
Ormond Bch., Fla.	WQXQ	1380	
Orofino, Idaho	KLER	950	
Ortonville, Minn.	KDIO	1350	
Osage Bch., Mo.	KRMS	1150	
Osceola, Ark.	KOSE	860	
Oshawa, Ont.	CKLB	1350	
Oshkosh, Wis.	WOSH	1490	A
Oskaloosa, Iowa	KBOE	740	
Oswego, N.Y.	WSGO	1440	
Othello, Wash.	KRSC	1400	
Otsego, Mich.	WDMC	980	
Ottawa, Ill.	WCMY	1430	
Ottawa, Kans.	KOFO	1220	
Ottawa, Ont.	CBO	910	
	CFRA	580	
	CKOY	1310	
Ottumwa, Iowa	KBIZ	1240	A
	KLEE	1480	
Owatonna, Minn.	KRFO	1390	
Owego, N.Y.	WEBO	1330	
Owensboro, Ky.	WOMI	1490	M
	WVJS	1420	A
Owen Sound, Ont.	CFOS	560	
Owosso, Mich.	WOAP	1080	
Oxford, Miss.	WSUH	1420	
Oxford, N.C.	WOXF	1340	
Oxnard, Calif.	KOXR	910	
Ozark, Ala.	WOZK	900	
Paducah, Ky.	WKYB	570	M
	WDXR	1560	N
	WPAD	1450	C
Page, Ariz.	KPGE	1340	
Pahokee, Fla.	WRIM	1250	
Painesville, Ohio	WPVL	1460	
Paintsville, Ky.	WSIP	1490	M
Palatka, Fla.	WWPF	1260	
	WSUZ	800	
Palestine, Tex.	KNET	1450	
Palm Bch., Fla.	WQXT	1340	A
Palm Sprgs., Calif.	KCMJ	1010	C
	KDES	920	
	KPAL	1450	
Palmdale, Calif.	KUTY	1470	
Palo Alto, Calif.	KIBE	1220	
Pampa, Tex.	KPDN	1340	M
	KHHH	1230	
Panama City, Fla.	WDLP	590	
	WPCF	1430	A
Panama City Beach, Fla.	WTHR	1480	
	WSCM	1290	
Paradise, Calif.	KMET	930	
Paragould, Ark.	KDRS	1490	
Paris, Ark.	KCCL	1460	
Paris, Ill.	WPRS	1440	
Paris, Ky.	WKLX	1440	
Paris, Tenn.	WTPR	710	
Paris, Tex.	KPLT	1490	A
	KFTV	1250	
Parkersburg, W.Va.	WCEF	1050	
	WPAR	1450	C
	WTAP	1230	A-M
Park Falls, Wis.	WPFP	1450	
Parry Sound, Ont.	CKAR-1	1340	

Location	C.L.	Kc.	N.A.
Parsons, Kans.	KLKC	1540	
Pasadena, Calif.	KALI	1430	
	KPPC	1240	
	KWKW	1300	
Pasadena, Tex.	KLVL	1480	
	KIKK	650	
Pascagoula-Moss Point, Miss.			
	WPMP	1580	A
Pasco, Wash.	KORD	910	
	KPKW	1340	
Paso Robles, Calif.	KPRL	1230	M
Patchogue, L.I., N.Y.			
	WALK	1370	
	WPAC	1580	
Paterson, N.J.	WPAT	930	
Pauls Valley, Okla.	KVLH	1470	
Pawtucket, R.I.	WXTR	550	A
Payette, Idaho	KEOK	1450	
Peace River, Alta.	CKYL	630	
Pecos, Tex.	KIUN	1400	M
Peekskill, N.Y.	WLNA	1420	
Pekin, Ill.	WSIV	1140	
Pell City, Ala.	WFHK	1430	
Pembroke, Ont.	CHOV	1350	
Pendleton, Oreg.	KKID	1240	A
	KUBE	1050	
	KUMA	1290	A
Pennington Gap, Va.			
	WSWV	1570	
Pensacola, Fla.	WBOP	980	
	WDEB	610	C
	WBSR	1450	
	WNVY	1230	A
	WCOA	1370	N
	WPFA	790	
Penticton, B.C.	CKOK	800	
Peoria, Ill.	WAAP	1350	N
	WMBD	1470	C
	WIRL	1290	
	WPEO	1020	M
Perry, Fla.	WPRY	1400	
Perry, Ga.	WPGA	980	
Perry, Iowa	KDLS	1310	
Perryton, Tex.	KEYE	1400	M
Peru, Ind.	WARU	1600	
Petaluma, Calif.	KTOB	1490	
Peterborough, Ont.	CHEX	980	
	CKPT	1420	
Petersburg, Va.	WSSV	1240	M
Petoskey, Mich.	WMBN	1340	
Phenix City, Ala.	WPNX	1460	A
Philadelphia, Miss.	WHOC	1490	
Philadelphia, Pa.	WCAU	1210	C
	WDAS	1480	
	WFIL	560	A
	WFLN	900	
	WHAT	1340	
	WIBG	990	
	WIP	610	
	WJMJ	1540	
	WPEN	950	M
	WRCV	1060	N
	WTEL	860	
Philipsburg, Pa.	WPHB	1260	
Phillipsburg, Kans.	KKAN	1490	
Phoenix, Ariz.	KIFN	860	
	KXIV	1400	
	KHAT	1480	
	KHEP	1280	
	KCAC	1010	
	KOY	550	A
	KOOL	960	C
	KPHO	910	A
	KUEQ	740	
	KRIZ	1230	
	KTAR	620	N
Picayune, Miss.	WRJW	1320	
Piedmont, Ala.	WPID	1280	
Pierre, S.Dak.	KGFX	630	
	KCCR	1590	
Pikeville, Ky.	WLSI	900	
	WPKE	1240	M
Pine Bluff, Ark.	KCLA	1400	
	KADL	1270	
	KOTN	1490	M
	KPBA	1590	
Pine City, Minn.	WCMP	1350	
Pineville, Ky.	WMLF	1230	
Pineville, W.Va.	WWYO	970	
Pipestone, Minn.	KLOH	1050	
Piqua, Ohio	WPTW	1570	
Pittsburg, Calif.	KKIS	990	
Pittsburg, Kans.	KOAM	860	N
	KSEK	1340	
Pittsburgh, Pa.	KDKA	1020	
	KQV	1410	A
	WAMO	860	
	WJAS	1320	N
	WPIT	730	
	WRYT	1250	
	WYRE	1080	M
	WWSW	970	
Pittsfield, Ill.	WBBA	1580	
Pittsfield, Mass.	WBEC	1420	A
	WBRK	1340	M
Pittston, Pa.	WPTS	1540	
Plainfield, N.J.	WERA	1590	
Plainview, Tex.	KVOP	1400	M
	KPLA	1050	
Plant City, Fla.	WPLA	910	
Platteville, Wis.	WSWW	1590	
Plattsburg, N.Y.	WEAV	960	A-N
	WIRY	1340	M
Pleasanton, Tex.	KBOP	1380	
Pleasantville, N.J.	WOND	1400	
Plymouth, Mass.	WPLM	1390	
Plymouth, N.C.	WPNC	1470	
Plymouth, Wis.	WPLY	1420	

Location	C.L.	Kc.	N.A.
Pocahontas, Ark.	KPOC	1420	
Pocatello, Idaho	KSEI	930	N
	KWIK	1240	M
	KSNN	1290	
Pocomoke City, Md.	WDMV	540	
Pointe Claire, Que.	CFOX	1470	
Pomona, Calif.	KWOW	1600	
	KKAR	1220	
Pompano Beach, Fla.	WLOD	980	
	WPOM	1470	A
Ponca City, Okla.	WBBZ	1230	M
Ponce, P.R.	WPRP	910	
	WEUC	1420	
	WPAB	550	
	WLEO	1170	
	WISO	1260	
Pontiac, Mich.	WPON	1460	
Pontotoc, Miss.	WSEL	1440	
Poplar Bluff, Mo.	KWOC	930	
	KLID	1340	
Portage, Pa.	WWML	1470	
Portage, Wis.	WPDR	1350	
Portage la Prairie, Man.	CFRY	1570	
Portageville, Mo.	KMIS	1050	
Port Alberni, B.C.	CJAV	1240	
Portales, N.Mex.	KENM	1450	
Port Angeles, Wash.	KAPY	1000	D
	KONP	1450	
Port Arthur, Ont.	CFPA	1230	
Port Arthur, Tex.	KOLE	1340	
	KPAC	1250	M
Porterville, Calif.	KTIP	1450	A
Port Hope, Ont.	CHUC	1500	
Port Hueneme, Calif.	KACY	1520	
Port Huron, Mich.	WHLS	1450	
	WTTH	1380	A
Port Jervis, N.Y.	WDLC	1490	
Port Lavaca, Tex.	KGUL	1560	
Portland, Ind.	WPGW	1440	
Portland, Maine	WCSH	970	N
	WGAN	560	C
	WLOB	1310	
	WPOR	1490	A-M
Portland, Oreg.	KBPS	1450	
	KBEV	1010	
	KLIQ	1290	
	KEX	1190	
	KGW	620	N
	KOIN	970	C
	KPAM	1410	
	KPDQ	800	
	KPOJ	1330	
	KWJJ	1080	A
	KXL	750	
Port Neches, Tex.	KPNG	1150	
Portsmouth, N.H.	WBBX	1380	
	WHEB	750	
Portsmouth, Ohio	WPAY	1400	C
	WNXT	1260	A
Portsmouth, Va.	WHIH	1400	A-M
	WPMH	1010	
	WAVY	1350	N
Post, Tex.	KUKO	1370	
Poteau, Okla.	KLCO	1280	
Potosi, Mo.	KYRO	1280	
Potsdam, N.Y.	WPDM	1470	
Pottstown, Pa.	WPAZ	1370	
Pottsville, Pa.	WPAM	1450	
	WPPA	1360	M
Poughkeepsie, N.Y.	WEOK	1390	
	WKIP	1450	A
Powell, Wyo.	KPOW	1260	A-M
Poynette, Wis.	WIBU	1240	
Prairie du Chien, Wis.	WPRE	980	
Pratt, Kans.	KWSK	1570	
	KPRT	1290	
Prescott, Ariz.	KYCA	1490	N
	KENT	1340	
	KNOT	1450	A
Prescott, Ark.	KTPA	1370	
Presque Isle, Me.	WAGM	950	
	WEGP	1390	
Preston, Idaho	KPST	1340	
Prestonsburg, Ky.	WPRT	960	
	WDOC	1310	
Price, Utah	KOAL	1230	M
Prichard, Ala.	WAIP	1270	
Prince Albert, Sask.	CKBI	900	
Prince George, B.C.	CKPG	550	
Prince Rupert, B.C.	CFPR	1240	
Princeton, Ind.	WRAY	1250	
Princeton, Ky.	WPKY	1580	
Princeton, N.J.	WHWH	1350	
Princeton, W.Va.	WLOH	1490	A
Prineville, Oreg.	KRCO	690	
Prosser, Wash.	KARY	1310	
Providence, R.I.	WEAN	790	C
	WHIM	1110	
	WICE	1290	
	WJAR	920	N
	WLKW	990	
	WPRO	630	
	WRIB	1220	M
Provo, Utah	KIXX	1400	A
	KEYY	1450	
	KOVO	960	M
Pryor, Okla.	KOLS	1570	
Pueblo, Colo.	KDZA	1230	
	KAPI	690	
	KFEL	970	
	KGHF	1350	A-M
	KCSJ	590	
	KTUX	1480	
Pulaski, Tenn.	WKSR	1420	A
Pulaski, Va.	WPUV	1580	
Pullman, Wash.	KWSC	1250	
	KOFE	1150	
Punxsutawney, Pa.	WPME	1540	
Putnam, Conn.	WINY	1350	
Puyallup, Wash.	KAYE	1450	
Quanah, Tex.	KOLJ	1150	
Quantico, Va.	WQVA	1530	
Quebec, Que.	CBV	980	
	CHRC	800	
	CJLR	1060	
	CJQC	1340	
	CKCV	1280	
Quesnel, B.C.	CKCQ	570	
Quincy, Fla.	WCNH	1230	M
Quincy, Ill.	WGEM	1440	A
	WTAD	930	C
Quincy, Mass.	WJDA	1300	
Quincy, Wash.	KPOR	1370	
Quitman, Ga.	WSFB	1490	
Racine, Wis.	WRAC	1460	
	WRJN	1400	A
Radford, Va.	WRAD	1460	
Raleigh, N.C.	WKIX	850	A
	WPTF	680	N
	WLLE	570	
	WRAL	1240	
Rapid City, S.Dak.	KOTA	1380	C
	KIMM	1150	
	KRSD	1340	
	KEZU	920	
Raton, N.Mex.	KRTN	1490	A
Ravenswood, W.Va.	WMOV	1360	
Rawlins, Wyo.	KRAL	1240	A-M
Raymond, Wash.	KAPA	1340	
Raymondville, Tex.	KSOX	1240	
Rayville, La.	KRIH	990	
Reading, Pa.	WEEU	850	A
	WHUM	1240	C
	WRAW	1340	N
Redding, Calif.	KRDG	1230	M
	KAHR	1330	
	KQMS	1400	
	KVCV	600	C
	KVIP	540	
Red Bluff, Calif.	KBLF	1490	
Red Deer, Alta.	CKRD	850	
Redlands, Calif.	KCAL	1410	
Red Lion, Pa.	WGCB	1440	
Red Lodge, Mont.	KRBN	1450	
Redmond, Oreg.	KPRB	1240	
Red Wing, Minn.	KCUE	1250	
Redwood Falls, Minn.	KLGR	1490	
Reedsburg, Wis.	WRDB	1400	
Reedsport, Oreg.	KRAF	1470	
Regina, Sask.	CBK	540	
	CJME	1300	
	CKCK	620	
	CKRM	980	
Reidsville, N.C.	WFRC	1600	A
	WREV	1220	
Remsen, N.Y.	WREM	1480	
Reno, Nev.	KOH	630	N
	KBET	1340	M
	KOLO	920	C
	KONE	1450	
	KDOT	1230	
Rensselaer, N.Y.	WEEE	1300	
Rexburg, Idaho	KRXK	1230	
Rhinelander, Wis.	WOBT	1240	
Rice Lake, Wis.	WJMC	1240	M
Richfield, Utah	KSVC	980	
Richland, Wash.	KALE	960	
Richland, Wis.	WRCO	1450	
Richlands, Va.	WRIC	540	
Richmond, Ind.	WKBV	1490	A
Richmond, Ky.	WEKY	1340	M
Richmond, Va.	WANT	990	
	WBBL	1480	
	WRGM	1590	
	WLEE	1480	M
	WEET	1320	
	WMBG	1380	A
	WRNL	910	C
	WRVA	1140	N
	WXGI	950	
Richmond Hill, Ont.	CJRH	1310	
Richwood, W.Va.	WVAR	1280	
Ridgecrest, Calif.	KRCK	1360	
	KLOA	1240	
Rimouski, Que.	CJBR	900	
Rio Piedras, P.R.	WRIO	1320	
	WWWW	1520	
Ripley, Tenn.	WTRB	1570	
Ripon, Wis.	WCWC	1600	
Riverhead, N.Y.	WRIV	1390	
	WAPC	1570	
Riverside, Calif.	KPRO	1440	
	KACE	1570	
Riverton, Wyo.	KVOW	1450	M
Riviera Beach, Fla.	WHEW	1600	
Riviere du Loup, Que.	CJFP	1400	
Roanoke, Ala.	WELR	1360	
Roanoke, Va.	WDBJ	960	C
	WRIS	1410	M
	WHYE	910	
	WROV	1240	A
	WSLS	610	N
Roanoke Rapids, N.C.	WCBT	1230	M
Roaring Sprgs., Pa.	WKMC	1370	
Roberval, Que.	CHRL	910	
Robinson, Ill.	WTAY	1570	
Rochester, Minn.	KROC	1340	N
	KWEB	1270	
Rochester, N.H.	WWNH	930	
Rochester, N.Y.	WBBF	950	M
	WHAM	1180	N
	WHEC	1460	C
	WRVM	680	
	WSAY	1370	
	WROC	1280	N
Rockford, Ill.	WROK	1440	A
	WJRL	1150	
	WRRR	1330	
Rock Hill, S.C.	WRHI	1340	M
	WTYC	1150	
Rockingham, N.C.	WAYN	900	
Rock Island, Ill.	WHBF	1270	C
Rockland, Maine	WRKD	1450	A
Rockmart, Ga.	WPLK	1220	
Rock Springs, Wyo.	KVRS	1360	A-M
Rockville, Md.	WINX	1600	
Rockwood, Tenn.	WRKH	580	
Rocky Ford, Colo.	KAVI	1320	
Rocky Mount, N.C.	WCEC	810	
	WEED	1390	A
	WRMT	1490	
	WKWS	1290	
Rocky Mount, Va.	WYTI	1570	
Rogers, Ark.	KAMD	1390	
Rogers City, Mich.	WHAK	960	
Rogersville, Tenn.	WRGS	1370	
Rolla, Mo.	KCLU	1590	
	KTTR	1490	
Rome, Ga.	WLAQ	1410	A
	WRGA	1470	C
	WROM	710	
Rome, N.Y.	WKAL	1450	A
	WRNY	1350	
Ronceverte, W.Va.	WRON	1400	
Roseburg, Oreg.	KRNR	1490	C
	KRXL	1250	
	KYES	950	
Rosenberg, Tex.	KFRD	980	
Rossville, Ga.	WRIP	980	
Roswell, N.Mex.	KRSY	1230	
	KGFL	1430	M
	KBIM	910	
Rouyn, Que.	CKRN	1400	
Roxboro, N.C.	WRXO	1430	
Royal Oak, Mich.	WEXL	1340	
Rugby, N. Dak.	KGCA	1450	
Ruidoso, N.Mex.	KRRR	1340	
Rumford, Me.	WRUM	790	
Rupert, Idaho	KAYT	970	
Rushton, La.	KRUS	1490	
Rusk, Texas	KTLU	1580	
Russell, Kans.	KRSL	990	
Russellville, Ala.	WWWR	920	
Russellville, Ark.	KXRJ	1490	
Russellville, Ky.	WRUS	610	
Rutland, Vt.	WHWB	1000	
	WSYB	1380	M
Sackville, N.B.	CBA	1070	
Sacramento, Calif.	KCRA	1320	N
	KFBK	1530	A
	KGMS	1380	M
	KRAK	1140	M
	KROY	1240	C
	KXOA	1470	
Safford, Ariz.	KGLU	1480	A
	KATO	1230	
Sag Harbor, N.Y.	WLNG	1600	
Saginaw, Mich.	WKNX	1210	
	WSAM	1400	N
	WSGW	790	C
St. Albans, Vt.	WWSR	1420	
St. Albans, W.Va.	WKLC	1300	
St. Anne-de-la-Pocatiere, Que.	CHGB	1310	
St. Augustine, Fla.	WFOY	1240	C
	WETH	1420	
St. Boniface, Man.	CKSB	1050	
St. Catherines, Ont.	CKTB	610	
St. Charles, Mo.	KADY	1460	
St. Cloud, Minn.	KFAM	1450	N
	WJON	1240	
St. George, Utah	KDXU	1450	
St. Helen, Mich.	WMIC	1590	
St. Helens, Oreg.	KOHI	1600	
St. Hyacinthe, Que.	CKBS	1240	
St. Jean, Que.	CHRS	1090	
St. Jerome, Que.	CKJL	900	
Saint John, N.B.	CFBC	930	
	CHSJ	1150	
St. Johns, Mich.	WJUD	1580	
St. John's, Nfld.	CBN	640	
	CJON	930	
	VOAR	1230	
	VOCM	590	
	VOWR	800	
St. Johnsbury, Vt.	WTWN	1340	
St. Joseph, Mich.	WSJM	1400	
St. Joseph, Mo.	KFEQ	680	
	KKJO	1550	M
	KUSN	1270	
St. Joseph d'Alma, Que.	CFGT	1270	
St. Louis, Mo.	KATZ	1600	
	KFUO	850	
	KMOX	1120	C
	KSD	550	N
	KSTL	690	
	KWK	1380	
	KXOK	630	
	WEW	770	M
	WIL	1430	A
St. Louis Park, Minn.	KRSI	950	
St. Mary's, Pa.	WKBI	1400	
St. Paul, Minn.	KSTP	1500	N
	KDWB	630	M
St. Peter, Minn.	KRBI	1310	
St. Petersburg, Fla.	WPIN	680	
	WSUN	620	A
	WLCY	1380	M
St Petersburg Beach, Fla.	WILZ	1590	
St. Thomas, Ont.	CHLO	680	
Salamanca, N.Y.	WGGO	1590	
Salem, Ill.	WJBD	1350	
Salem, Ind.	WSLM	1220	
Salem, Mass.	WESX	1230	M
Salem, Mo.	KSMO	1340	
Salem, Oreg.	KSLM	1390	A
	KAPT	1220	
	KBZY	1490	N
	KGAY	1430	
Salem, Va.	WBLU	1480	
Salida, Colo.	KVRH	1340	M
Salina, Kans.	KSAL	1150	M
Salinas, Calif.	KDDN	1460	
	KSBW	1380	M
Saline, Mich.	WOIA	1290	
Salisbury, Md.	WBOC	960	
	WICO	1320	A
	WJDY	1470	
Salisbury, N.C.	WSTP	1490	M
	WSAT	1280	A
Salmon, Idaho	KSRA	960	
Salt Lake City, Utah	KALL	910	A
	KCPX	1320	N
	KLUB	570	M
	KNAK	1280	
	KSL	1160	C
	KSOP	1370	
	KSXX	630	
	KWHO	860	
	KWIC	1570	
San Angelo, Tex.	KTEO	1340	
	KGKL	960	A
	KPEP	1420	
	KWFR	1260	
San Antonio, Tex.	KAPE	1480	
	KCDR	1350	
	KENS	680	C
	KBER	1150	
	KITE	930	
	KUKA	1250	
	KUBO	1310	
	KMAC	630	A
	KONO	860	
	KTSA	550	
	WOAI	1200	N
San Bernardino, Calif.	KCKC	1350	
	KFXM	590	
	KRNO	1240	
	KMEN	1290	M
Sandersville, Ga.	WSNT	1490	
San Diego, Calif.	KCBQ	1170	
	KFMB	540	C
	KOGO	600	N
	KGB	1360	A
	KSON	1240	
	KSDO	1130	
Sandpoint, Idaho	KSPT	1400	
Sand Spring, Okla.	KTOW	1340	
Sandusky, Ohio	WLEC	1450	M
San Fernando, Calif.	KGIL	1260	
Sanford, Fla.	WTRR	1400	
	WSFR	1360	
Sanford, Me.	WSME	1220	
Sanford, N.C.	WEYE	1290	
	WWGP	1050	
San Francisco, Calif.	KFRC	610	M
	KCBS	740	C
	KFAX	1100	
	KGO	810	A
	KNBC	680	N
	KKHI	1550	M
	KSAY	1010	
	KSAN	1450	
	KSFO	560	
	KYA	1260	
San German, P.R.	WRJS	1090	
San Jose, Calif.	KLOK	1170	
	KLIV	1590	M
	KEEN	1370	
	KXRX	1500	
San Juan, P.R.	WAPA	680	M
	WHOA	870	
	WIAC	740	
	WIPR	940	
	WKAQ	580	C
	WKVM	810	
	WKYN	630	
	WITA	1140	
San Luis Obispo, Calif.	KATY	1340	
	KCJH	1280	
	KSLY	1400	
	KVEC	920	M
San Marcos, Tex.	KCNY	1470	
San Mateo, Calif.	KOFY	1050	
San Rafael, Calif.	KTIM	1510	
San Saba, Tex.	KBAL	1410	
Santa Ana, Calif.	KWIZ	1480	
Santa Barbara, Cal.	KDB	1490	
	KGUD	990	
	KIST	1340	N
	KTMS	1250	A-M
	KACL	1290	
Santa Cruz, Calif.	KSCO	1080	
Santa Fe, N.Mex.	KTRC	1400	A
	KVSF	1260	C
Santa Maria, Cal.	KCOY	1400	
	KHER	1600	
	KSMA	1240	

Location	C.L.	Kc.	N.A.
	KSEE	1480	
Santa Monica, Cal.	KDAY	1580	
Santa Paula, Calif.	KSPA	1400	
Santa Rosa, Calif.	KSRO	1350	
	KHUM	1580	
	KVRE	1460	
	KJAX	1150	
Santa Rosa, N.Mex.	KSYX	1420	
Saranac Lake, N.Y.	WNBZ	1240	A
Sarasota, Fla.	WKXY	930	
	WSAF	1220	
	WSPB	1450	C
	WYND	1280	
Saratoga Springs, N.Y.	WSPN	900	
Sarnia, Ont.	CHOK	1070	
Saskatoon, Sask.	CFQC	600	
	CFNS	1170	
	CKOM	1250	
Sault Ste. Marie, Michigan	WSOO	1230	
Sault Ste. Marie, Ontario	CJIC	1050	
	CKCY	920	
Savannah, Ga.	WBYG	1450	M
	WEAS	900	
	WSAV	630	N
	WSGA	1400	
	WTOC	1290	C
	WSOK	1230	A
Savannah, Tenn.	WORM	1010	
Sayre, Pa.	WATS	960	
Schefferville, Que.	CFKL	1230	
Schenectady, N.Y.	WGY	810	N
	WSNY	1240	
Scotland Neck, N.C.	WYAL	1280	
Scottsbluff, Nebr.	KNEB	960	A-M
	KOLT	1320	C
Scottsboro, Ala.	WCRI	1050	
	WROS	1330	
Scottsdale, Ariz.	KWBY	1440	
Scottsville, Ky.	WLCK	1250	
Scranton, Pa.	WARM	590	A
	WEJL	630	
	WGBI	910	C
	WICK	1400	
	WSCR	1320	N
Seaford, Del.	WSUX	1280	
Searcy, Ark.	KWCB	1300	
Seaside, Oreg.	KSRG	730	
Seattle, Wash.	KAYO	1150	M
	KUDY	910	
	KING	1090	A
	KIRO	710	C
	KJR	950	
	KOL	1300	
	KOMO	1000	N
	KETO	1590	
	KTW	1250	
	KVI	570	
	KXA	770	
Sebring, Fla.	WJCM	960	
	WSEB	1340	
Sedalia, Mo.	KDRO	1490	
	KSIS	1050	
Seguin, Tex.	KWED	1580	
Selma, Ala.	WGWC	1340	C
	WHBB	1490	
	WRWJ	1570	
Seminole, Tex.	KTFO	1250	
Seneca Township, S.C.	WSNW	1150	
Sevierville, Tenn.	WSEV	930	
Seward, Alaska	KIBH	1340	C-A
Seymour, Ind.	WJCD	1390	
Seymour, Tex.	KSEY	1230	
Shamokin, Pa.	WISL	1480	
Shamrock, Tex.	KBYP	1580	
Sharon, Pa.	WPIC	790	
Shawano, Wis.	WTCH	960	
Shawinigan, Que.	CKSM	1220	
Shawnee, Okla.	KGFF	1450	M
Sheboygan, Wis.	WHBL	1330	A
	WKTS	950	
Sheffield, Ala.	WSHF	1290	
Shelby, Mont.	KSEN	1150	M
Shelby, N.C.	WOHS	730	M
	WADA	1390	
Shelbyville, Ind.	WSVL	1520	
Shelbyville, Tenn.	WHAL	1400	
	WLIJ	1580	
Shenandoah, Iowa	KFNF	920	
	KMA	960	A
Sherbrooke, Que.	CHLT	630	
	CKTS	900	
Sheridan, Wyo.	KWYO	1410	M
	KROE	930	
Sherman, Tex.	KRRV	910	M
	KTXO	1500	
Shippensburg, Pa.	WSHP	1480	
Show Low, Ariz.	KVWM	1050	
Shreveport, La.	KANB	1300	
	KBCL	1220	
	KCIJ	1050	C
	KEEL	710	
	KREB	1550	M
	KJOE	1480	M
	KOKA	980	
	KRMD	1340	A
	KWKH	1130	C
Sidney, Mont.	KGCX	1480	M
Sidney, Nebr.	KSID	1340	A
Sierra Vista, Ariz.	KHFH	1420	A
Sikeston, Mo.	KSIM	1400	
Siler City, N.C.	WNCA	1570	

Location	C.L.	Kc.	N.A.
Siloam Sprgs., Ark.	KUOA	1290	M
Silsbee, Tex.	KKAS	1300	
Silver City, N.Mex.	KSIL	1340	C
Silver Sprgs., Md.	WQMR	1050	
Simcoe, Ont.	CFRS	1560	
Sinton, Tex.	KTOD	1590	
Sioux City, Iowa	KSCJ	1360	A
	KMNS	620	M
	KTRI	1470	
Sioux Falls, S.Dak.	KISD	1230	
	KELO	1320	
	KNWC	1270	
	KSOO	1140	A
Sitka, Alaska	KIFW	1230	C-A
	KSEW	1400	
Skowhegan, Maine	WGHM	1150	
Slaton, Tex.	KCAS	1050	
Smithfield, N.C.	WMPM	1270	
Smiths Falls, Ont.	CJET	630	
Smyrna, Ga.	WSMA	1550	
Snyder, Tex.	KSNY	1450	M
Socorro, N.Mex.	KSRC	1290	
Soda Sprgs., Idaho	KBRV	540	
Solvay, N.Y.	WQSR	1320	
Somerset, Ky.	WSFC	1240	M
	WTLO	1480	
Somerset, Pa.	WVSC	990	
Sonora, Calif.	KVML	1450	
Sonora, Tex.	KCKG	1240	
Sorel, P.Q.	CJSO	1320	
South Beloit, Ill.	WBEL	1380	
So. Bend, Ind.	WNDU	1490	A
	WJVA	1580	M
	WSBT	960	C
Southbridge, Mass.	WESO	970	
So. Boston, Va.	WHLF	1400	A
Southern Pines, N.C.	WEEB	990	
South Daytona Beach, Florida	WELE	1590	
So. Gastonia, N.C.	WGAS	1420	
So. Haven, Mich.	WJOR	940	
So. Knoxville, Tenn.	WSKT	1580	
So. Paris, Me.	WKTQ	1450	
So. Pittsburg, Tenn.	WEPG	910	
So. St. Paul, Minn.	KDWB	630	M
So. Williamsport, Pa.	WMPT	1450	
Spanish Fork, Utah	KONI	1480	
Sparks, Nev.	KBUB	1270	
Sparta, Ill.	WHCO	1230	
Sparta, Tenn.	WSMT	1050	
Sparta, Wis.	WKLJ	990	
	WCOW	1290	
Spartanburg, S.C.	WZDO	1400	M
	WORD	910	N
	WSPA	950	C
Spencer, Iowa	KICD	1240	
Spencer, W.Va.	WSPZ	1400	
Spokane, Wash.	KGA	1510	A
	KLYK	1230	
	KPEG	1380	
	KHQ	590	N
	KNEW	790	M
	KREM	970	
	KXLY	920	C
	KCFA	1330	
Springdale, Ark.	KBRS	1340	A
Springfield, Ill.	WCVS	1450	A-M
	WMAY	970	N
	WTAX	1240	C
Springfield, Mass.	WBZA	1030	
	WHYN	560	C
	WMAS	1450	M
	WSPR	1270	
Springfield, Mo.	KGBX	1260	N
	KICK	1340	
	KTTS	1400	C
	KWTO	560	A
Springfield, Ohio	WIZE	1340	A
	WBLY	1600	
Springfield, Oreg.	KEED	1050	
Springfield, Tenn.	WDBL	1590	
Springfield, Vt.	WCFR	1480	
Springhill, La.	KBSF	1460	
Spruce Pine, N.C.	WTOE	1470	
Stamford, Conn.	WSTC	1400	A
Stamford, Tex.	KDWT	1400	
Stanford, Ky.	WRSL	1520	
Starke, Fla.	WRGR	1490	
Starkville, Miss.	WSSO	1230	
State College, Pa.	WMAJ	1450	N
	WRSC	1390	
Statesboro, Ga.	WWNS	1240	
Statesville, N.C.	WSIC	1400	
	WDBM	550	
Staunton, Va.	WTON	1240	A
	WAFC	900	
Stephenville, Tex.	KSTV	1510	
Sterling, Colo.	KGEK	1230	
	KOLR	1490	
Sterling, Ill.	WSDR	1240	
Steubenville, Ohio	WSTV	1340	M
Stevens Point, Wis.	WSPT	1010	
Stillwater, Minn.	WAVN	1220	
Stillwater, Okla.	KSPI	780	
Stockton, Calif.	KJOY	1280	
	KSTN	1420	
	KWG	1230	A
Storm Lake, Iowa	KAYL	990	
Stratford, Ont.	CJCS	1240	
Streator, Ill.	WIZZ	1250	
Stroudsburg, Pa.	WVPO	840	
Stuart, Fla.	WSTU	1450	M
Stuart, Va.	WHEO	1270	
Sturgeon Bay, Wis.	WDOR	910	
Sturgis, Mich.	WSTR	1230	
Stuttgart, Ark.	KWAK	1240	M
Sudbury, Ont.	CKSO	790	

Location	C.L.	Kc.	N.A.
	CFBR	550	
	CHNO	900	
Suffolk, Va.	WLPM	1460	A
Sulphur, La.	KIKS	1310	
Sulphur Sprgs., Tex.	KSST	1230	
Summerside, P.E.I.	CJRW	1240	
Summerville, Ga.	WGTA	930	
Sumter, S.C.	WFIG	1290	M
	WDXY	1240	
	WSSC	1340	A
Sunbury, Pa.	WKOK	1240	C
Sunnyside, Wash.	KREW	1230	
Sun Valley, Ida.	KSKI	1340	
Superior, Nebr.	KRFS	1600	
Superior, Wis.	WDSM	710	N
	WIGL	970	
	WQMN	1320	
Susanville, Calif.	KSUE	1240	
Swainsboro, Ga.	WJAT	800	
Sweetwater, Tenn.	WDEH	800	
Sweetwater, Tex.	KXOX	1240	
Swift Current, Sask.	CKSW	1400	
Sydney, N.S.	CBI	1140	
	CJCB	1270	
Sylacauga, Ala.	WFEB	1340	M
	WMLS	1290	
Sylva, N.C.	WMSJ	1480	
Sylvania, Ga.	WSYL	1490	
Syracuse, N.Y.	WHEN	620	C
	WFBL	1390	M
	WNDR	1260	
	WOLF	1490	A
	WSYR	570	N
Tabor City, N.C.	WTAB	1370	
Tacoma, Wash.	KMO	1360	
	KTAC	850	
	KTNT	1400	
	KVI	570	M
Taft, Calif.	KTKR	1310	
Tahlequah, Okla.	KTLQ	1350	
Talladega, Ala.	WJHB	1580	
	WNUZ	1230	M
Tallahassee, Fla.	WMEN	1330	
	WRFB	1410	
	WTAL	1270	M
	WTNT	1450	C
Tallassee, Ala.	WTLS	1300	
Tallulah, La.	KTLD	1360	
Tampa, Fla.	WALT	1110	
	WDAE	1250	C
	WZST	1550	
	WFLA	970	N
	WHBO	1050	M
	WINQ	1010	
	WTMP	1150	
	WSOL	1300	
Taos, N. Mex.	KKIT	1340	
Tarboro, N.C.	WCPS	760	
Tarpon Sprgs., Fla.	WRBB	1470	
Tasley, Va.	WESR	1330	
Taunton, Mass.	WPEP	1570	
Tawas City, Mich.	WIOS	1480	
Taylor, Tex.	KTAE	1260	
Taylorsville, N.C.	WTLK	1570	
Taylorville, Ill.	WTIM	1410	
Tazewell, Tenn.	WNTT	1250	
Tell City, Ind.	WTCJ	1230	
Tempe, Ariz.	KUPD	1060	
	KYND	1580	
Temple, Tex.	KTEM	1400	
Terrace, B.C.	CFTK	1140	
Terre Haute, Ind.	WBOW	1230	N
	WMFT	1300	A
	WTHI	1480	C
Terrell, Tex.	KTER	1570	
Terrytown, Nebr.	KTCI	690	
Texarkana, Ark.	KOSY	790	M
Texarkana, Tex.	KCMC	740	A
	KATQ	940	
	KTFS	1400	
Texas City, Tex.	KTLW	920	
Thayer, Mo.	KALM	1290	
The Dalles, Oreg.	KODL	1440	
	KRMW	1300	
Thermopolis, Wyo.	KRTR	1490	M
	KTHE	1240	
Thief River Falls, Minn.	KTRF	1230	
Thetford Mines, Que.	CKLD	1230	
Thibodaux, La.	KTIB	630	
Thomaston, Ga.	WSFT	1220	
	WTGA	1590	
Thomasville, Ala.	WJDB	630	
Thomasville, Ga.	WPAX	1240	
	WKTG	730	
Thomasville, N.C.	WTNC	790	
Thomson, Ga.	WTWA	1240	M
Three Rivers, Mich.	WLKM	1510	
Three Rivers, Que.	CHLN	550	
	CKTR	1150	
Ticonderoga, N.Y.	WIPS	1250	
Tiffin, Ohio	WTTF	1600	M
Tifton, Ga.	WTIF	1340	
	WWGS	1430	
Tillamook, Oreg.	KTIL	1590	
Tillsonburg, Ont.	CKOT	1510	
Timmins, Ont.	CFCL	620	
	CKGB	680	
Titusville, Fla.	WRMF	1060	
Titusville, Pa.	WTIV	1230	
Toccoa, Ga.	WLET	1420	M
	WNES	630	
Toledo, Ohio	WOHO	1470	M
	WSPD	1370	N
	WTOD	1560	C
	WTOL	1230	A
Toledo, Oreg.	KTDO	1230	

Location	C.L.	Kc.	N.A.
Tolleson, Ariz.	KZON	1190	
Tomah, Wis.	WTMB	1460	
Tompkinsville, Ky.	WTKY	1370	
Tooele, Utah	KDYL	990	
Topeka, Kans.	WIBW	580	C
	KEWI	1440	
	WREN	1250	A
	KTOP	1490	M
Toppenish, Wash.	KENE	1490	
Toronto, Ont.	CBL	740	N
	CFRB	1010	C
	CHUM	1050	M
	CJBC	860	
	CKEY	580	M
	CKFH	1430	
Torrington, Conn.	WBZY	990	
	WTOR	1490	M
Torrington, Wyo.	KGOS	1490	
Towanda, Pa.	WTTC	1550	
Towson, Md.	WAQE	1570	
Trail, B.C.	CJAT	610	
Traverse City, Mich.	WTCM	1400	
	WCCW	1310	
Trenton, Mo.	KTTN	1600	
Trenton, N.J.	WAAT	1300	
	WBUD	1260	
	WTTM	920	M
Trinidad, Colo.	KCRT	1240	M
Troy, Ala.	WTBF	970	M
Troy, N.Y.	WHAZ	1330	
	WTRY	980	
Troy, N.C.	WXKW	1000	
	WJRM	1390	
Truckee, Calif.	KHOE	1400	
Truro, N.S.	CKCL	600	
Truth or Consequences, New Mexico	KCHS	1400	
Tryon, N.C.	WTYN	1550	M
Tucson, Ariz.	KTUC	1400	A
	KXEW	1600	
	KAIR	1490	
	KCEE	790	
	KTAN	580	A
	KCUB	1290	M
	KEVT	690	
	KOBY	940	
	KMOP	1330	
	KFIF	1550	
	KTKT	990	
	KOLD	1450	C
Tucumcari, N.Mex.	KTNM	1400	M
Tulare, Calif.	KCOK	1270	M
	KGEN	1370	
Tulia, Tex.	KTUE	1260	
Tullahoma, Tenn.	WJIG	740	
Tulsa, Okla.	KAKC	970	
	KOME	1300	
	KRMG	740	C
	KELI	1430	C
	KVOO	1170	N
	KFMJ	1050	
Tupelo, Miss.	WELO	580	M
	WTUP	1490	A
Turlock, Calif.	KCEY	1390	
Tuscaloosa, Ala.	WJRD	1150	
	WACT	1420	
	WNPT	1280	A
	WTUG	790	
	WTBC	1230	M
Tuscumbia, Ala.	WVNA	1590	
	WRCK	1410	
Tuskegee, Ala.	WABT	580	
Twenty-Nine Palms, Calif.	KDHI	1250	
Twin Falls, Idaho	KTFI	1270	N
	KLIX	1310	M
	KEEP	1450	
Two Rivers, Wis.	WTRW	1590	
Tyler, Tex.	KDOK	1330	
	KGJB	1490	M
	KTBB	600	A
	KZEY	690	
Tyrone, Pa.	WTRN	1340	
Ukiah, Calif.	KUKI	1400	
	KMSL	1250	
	KKCN	1300	
Union, Mo.	KLPW	1220	
Union, S.C.	WBCU	1460	
Union City, Tenn.	WENK	1240	
Uniontown, Pa.	WMBS	590	C
Urbana, Ill.	WILL	580	
	WKID	1580	
Utica, N.Y.	WIBX	950	C
	WBVM	1550	
	WRUN	1150	
	WTLB	1310	A
Uvalde, Tex.	KVOU	1400	
Val D'Or, Que.	CKVD	1230	
Valdese, N.C.	WSUM	1490	
Valdosta, Ga.	WGOV	950	M
	WGAF	910	A
	WJEM	1150	
	WVLD	1450	
Valentine, Nebr.	KVSH	940	
Vallejo, Calif.	KNBA	1190	
Valley City, N.Dak.	KOVC	1490	M
Valleyfield, P.R.	CFLV	1370	
Valparaiso-Niceville, Fla.	WNSM	1340	
Van Buren, Ark.	KFDF	1580	
Van Cleve, Ky.	WMTC	730	
Van Wert, Ohio	WERT	1220	
Vanceburg, Ky.	WKKS	1570	
Vancouver, B.C.	CBU	690	
	CFUN	1410	
	CHQM	1320	
	CJOR	600	
	CKWX	1130	M

Location	C.L.	Kc.	N.A.
Vancouver, Wash.	KKEY	1150	
	KVAN	1480	
	KISN	910	
Venice, Fla.	WAMR	1320	
Ventura, Calif.	KVEN	1450	M
	KUDU	1590	
Verdun, Que.	CKVL	850	
Vermillion, S.Dak.	KUSD	690	
Vernal, Utah	KVEL	1250	
Vernon, B.C.	CJIB	940	
Vernon, Tex.	KVWC	1490	
Vero Beach, Fla.	WAXE	1370	
	WTTB	1490	A
Vicksburg, Miss.	WQBC	1420	M
	WVIM	1490	
Victoria, B.C.	CJVI	900	
	CFAX	810	
	CKDA	1220	
Victoria, Tex.	KNAL	1410	
	KVIC	1340	M
Victoriaville, Que.	CFDA	1380	
Victorville, Calif.	KCIN	1590	
Vidalia, Ga.	WVOP	970	
Vieques, P.R.	WIVV	1370	
Ville Marie, Que.	CKVM	710	
Ville Platte, La.	KVPI	1050	
Ville St. Georges, Que.			
	CKRB	1460	
Vincennes, Ind.	WAOV	1450	M
Vineland, N.J.	WWBZ	1360	
	WDVL	1270	
Vinita, Okla.	KVIN	1470	
Vinton, Va.	WKBA	1550	
Virginia, Minn.	WHLB	1400	N
Virginia Bch., Va.	WBOF	1550	
Virouqua, Wis.	WISV	1360	
Visalia, Calif.	KONG	1400	
Vivian, La.	KLVI	1600	
Waco, Tex.	WACO	1580	A
	KWTX	1230	M
Wadena, Minn.	KWAD	920	M
Wadesboro, N.C.	WADE	1210	
Wailuku, Hawaii	KMVI	550	N
Waipahu, Hawaii	KAHU	920	
Walhalla, S.C.	WGOG	1460	
Wallace, Idaho	KWAL	620	M
Wallace, N.C.	WLSE	1400	
Walla Walla, Wash.			
	KHIT	1320	
	KUJ	1420	M
	KTEL	1490	A
Walnut Ridge, Ark.	KRLW	1320	
Walsenburg, Colo.	KFLJ	1380	
Walterboro, S.C.	WALD	1220	A
Waltham, Mass.	WCRB	1330	
Walton, N.Y.	WDLA	1270	
Ward Ridge, Fla.	WJOE	1570	
Ware, Mass.	WARE	1250	M
Warner Robbins, Ga.			
	WRPB	1350	A
Warren, Ark.	KWRF	860	
Warren, Ohio	WHHH	1440	
Warren, Pa.	WNAE	1310	
Warrensburg, Mo.	KOKO	1450	
Warrenton, Mo.	KWRE	730	
Warrenton, Va.	WEER	1570	
	WKCW	1420	
Warsaw, Ind.	WRSW	1480	
Warsaw, Va.	WNNT	690	
Warwick-E.Greenwich, R.I.			
	WYNG	1590	
Wasco, Calif.	KWSO	1050	
Washington, D.C.	WGMS	570	
	WMAL	630	A
	WOL	1450	M
	WOOK	1340	
	WWDC	1260	
	WRC	980	N
	WTOP	1500	C
Washington, Ga.	WKLE	1370	
Washington, Ind.	WAMW	1580	
Washington, Iowa	KCII	1380	
Washington, N.J.	WCRV	1580	
	WITN	930	A
Washington, N.C.	WEEW	1320	
Washington, Pa.	WJPA	1450	M
Washington Court House, Ohio	WCHO	1250	
Waterbury, Conn.	WATR	1320	A
	WBRY	1590	C
	WWCO	1240	M
Waterbury, Vt.	WDEV	550	M
Waterloo, Iowa	KXEL	1540	A
	KNWS	1090	
	KWWL	1330	M
Watertown, N.Y.	WATN	1240	
	WOTT	1410	
	WWNY	790	C
Watertown, S.Dak.	KSDR	1480	
	KWAT	950	M
Watertown, Wis.	WTTN	1580	
Waterville, Me.	WTVL	1490	A
Watseka, Ill.	WGFA	1360	
Watsonville, Calif.	KOMY	1340	
Wauchula, Fla.	WAUC	1310	
Waukegan, Ill.	WKRS	1220	
Waukesha, Wis.	WAUX	1510	
Waupaca, Wis.	WDUX	800	A
Wausau, Wis.	WRIG	1400	N
	WSAU	550	A
	WHVF	1230	
Waverly, Iowa	KWVY	1470	
Waverly, Ohio	WPKO	1380	
Waxahachie, Tex.	KBEC	1390	
Waycross, Ga.	WACL	570	
	WAYX	1230	M
Waynesboro, Ga.	WBRO	1310	
Waynesboro, Miss.	WABO	990	
Waynesboro, Pa.	WAYZ	1380	
Waynesboro, Va.	WAYB	1490	M
	WRWV	970	
Waynesburg, Pa.	WANB	1580	
Waynesville, Mo.	KJPW	1390	
Waynesville, N.C.	WHCC	1400	
Weatherford, Tex.	KZEE	1220	
Webster City, Iowa	KJFJ	1570	
Weed, Calif.	KDAD	800	
Weirton, W.Va.	WEIR	1430	N
Weiser, Idaho	KWEI	1260	
Welch, W.Va.	WELC	1150	
	WOVE	1340	M
Weldon, N.C.	WCNF	1400	
Welland, Ontario	CHOW	1470	
Wellsboro, Pa.	WNBT	1490	M
Wellston, Ohio	WKOV	1330	
Wellsville, N.Y.	WLSV	790	
Wenatchee, Wash.	KPQ	560	A
	KUEN	900	
	KMEL	1340	M
Wendell-Zebulon, N.C.			
	WETC	540	
Weslaco, Tex.	KRGV	1290	N
West Allis, Wis.	WAWA	1590	
W. Bend, Wis.	WBKV	1470	
Westbrook, Me.	WJAB	1440	
West Covina, Calif.	KGRB	900	
W. Frankfort, Ill.	WFRX	1300	
West Jefferson, N.C.			
	WKSK	1600	
W. Memphis, Ark.	KSUD	730	
W. Monroe, La.	KUZN	1310	
W. Palm Beach, Fla.			
	WEAT	850	M
	WJNO	1230	C
	WIRK	1290	M
West Plains, Mo.	KWPM	1450	
West Point, Ga.	WBMK	1310	
West Point, Miss.	WROB	1450	M
Westport, Conn.	WMMM	1260	M
W. Springfield, Mass.			
	WTXL	1490	A
W. Yarmouth, Mass.			
	WOCB	1240	M
Westerly, R.I.	WERI	1230	M
Westfield, Mass.	WDEW	1570	
Westminster, Md.	WTTR	1470	
Weston, W.Va.	WHAW	980	M
W. Warwick, R.I.	WWRI	1450	
Wetumpka, Ala.	WETU	1250	
Wewoka-Seminole, Okla.			
	KWSH	1260	A
Weyburn, Sask.	CFSL	1340	
Wharton, Tex.	KANI	1500	
Wheatland, Wyo.	KYCN	1340	
Wheaton, Md.	WOON	1540	
Wheeling, W.Va.	WHLL	1600	
	WJBT	1470	
	WKWK	1400	A
	WWVA	1170	C
White Castle, La.	KEVL	1590	
White Plains, N.Y.	WFAS	1230	
White River Junc., Vt.			
	WWRJ	910	
Whitehall, Mich.	WCBP	1490	
Whitehorse, Y.T.	CFWH	1240	
Whitesburg, Ky.	WTCW	920	
Whiteville, N.C.	WENC	1220	
Wichita, Kans.	KAKE	1240	M
	KLEO	1480	M
	KIRL	1070	N
	KFH	1330	C
	KSIR	900	
	KWBB	1410	
Wichita Falls, Tex.	KNIN	990	M
	KTRN	1290	
	KWFT	620	C
Wickenburg, Ariz.	KAKA	1250	
Wickford, R.I.	WKFD	1370	
Wildwood, N.J.	WCMC	1230	M
Wilkes-Barre, Pa.	WBAX	1240	M
	WBRE	1340	N
	WILK	980	A
Willcox, Ariz.	KWCX	1250	
Williamsburg, Ky.	WEZJ	1440	
Williamsburg, Va.	WBCI	740	
Williams Lake, B.C.			
	CKCQ-1	1240	
Williamson, W.Va.	WBTH	1400	M
Williamsport, Pa.	WLYC	1050	
	WRAK	1400	N
	WWPA	1340	C
Williamston, N.C.	WIAM	900	
Willimantic, Conn.	WILI	1400	M
Williston, N.D.	KEYZ	1360	
Willmar, Minn.	KWLM	1340	A
Willow Springs, Mo.	KUKU	1330	
Willows, Calif.	KIQS	1560	
Wilmington, Del.	WAMS	1380	M
	WDEL	1150	N
	WILM	1450	A
	WTUX	1290	
Wilmington, N.C.	WMFD	630	A
	WKLM	980	
	WGNI	1340	M
Wilson, N.C.	WGTM	590	C
	WLLY	1350	
	WVOT	1420	M
Winchester, Ky.	WWKY	1380	
Winchester, Tenn.	WCDT	1340	
Winchester, Va.	WINC	1400	A
	WHPL	610	
Windemere, Fla.	WXIV	1480	
Winder, Ga.	WIMO	1300	
Windom, Minn.	KDOM	1580	
Windsor, Conn.	WSOR	1480	
Windsor, N.S.	CFAB	1450	
Windsor, Ont.	CBE	1550	
	CKLW	800	M
Wingham, Ont.	CKNX	920	
Winnemucca, Nev.	KWNA	1400	
Winnfield, La.	KVCL	1270	
Winner, S.Dak.	KWYR	1260	
Winnipeg, Man.	CBW	990	
	CKRC	630	
	CKY	580	
	CJOB	680	
Winnsboro, La.	KMAR	1570	
Winnsboro, S.C.	WCKM	1250	
	WRBI	980	
Winona, Minn.	KWNO	1230	A
	KAGE	1380	
Winona, Miss.	WONA	1570	
Winslow, Ariz.	KVNC	1010	A
Winston-Salem, N.C.			
	WAAA	980	
	WAIR	1340	
	WPEG	1550	
	WSJS	600	N
	WTOB	1380	M-C
Winter Garden, Fla.	WOKB	1600	
Winter Haven, Fla.	WSIR	1490	M
	WINT	1360	
Winter Park, Fla.	WABR	1440	M
Wisconsin Rapids, Wis.			
	WFHR	1320	M
	WRNE	1220	
Wolf Pt., Mont.	KVCK	1450	M
Wood River, Ill.	WBBY	590	M
Woodside, N.Y.	WWRL	1600	
Woodstock, N.B.	CJCJ	920	
Woodstock, Ont.	CKOX	1340	
Woodward, Okla.	KSIW	1450	
Woonsocket, R.I.	WNRI	1380	
	WWON	1240	
Wooster, Ohio	WWST	960	
Worcester, Mass.			
	WAAB	1440	M-N-A
	WNEB	1230	
	WORC	1310	
	WTAG	580	C
Worland, Wyo.	KWOR	1340	M
Worthington, Minn.	KWOA	730	
Worthington, Ohio	WRFO	880	
Wynne, Ark.	KWYN	1400	
Wytheville, Va.	WYVE	1280	
Yakima, Wash.	KIT	1280	
	KIMA	1460	C
	KUTI	980	
	KYAK	1390	M
Yankton, S.D.	KYNT	1450	
	WNAX	570	C
Yarmouth, N.S.	CJLS	1340	
Yauco, P.R.	WKFE	1550	
Yazoo City, Miss.	WAZF	1230	
Yellowknife, N.W.T.			
	CFYK	1340	
York, Nebr.	KAWL	1370	
York, Pa.	WNOW	1250	M
	WORK	1350	N
	WSBA	910	A
York, S.C.	WYCL	1580	
Yorkton, Sask.	CJGX	940	
Youngstown, Ohio	WBBW	1240	M
	WFMJ	1390	N
	WKBN	570	C
Yreka, Calif.	KSYC	1490	
Yuba City, Calif.	KUBA	1600	
	KAGR	1450	
Yuma, Ariz.	KOFA	1240	
	KBLU	1320	
	KVOY	1400	A
	KYUM	560	N
Zanesville, Ohio	WHIZ	1240	N
Zarephath, N.J.	WAWZ	1380	
Zephyr Hills, Fla.	WZRH	1400	

U. S. AM Stations by Call Letters

C.L.	Location	Kc.
KAAA	Kingman, Ariz.	1230
KAAB	Hot Springs, Ark.	1340
KABC	Los Angeles, Calif.	790
KABL	Oakland, Calif.	960
KABQ	Albuquerque, N.M.	1350
KABR	Aberdeen, S.Dak.	1420
KABY	Albany, Oreg.	990
KACE	Riverside, Calif.	1570
KACI	The Dalles, Oreg.	1300
KACT	Andrews, Tex.	1360
KACY	Port Hueneme, Calif.	1520
KADA	Ada, Okla.	1230
KADL	Pine Bluff, Ark.	1270
KADO	Marshall, Tex.	1410
KADY	St. Charles, Mo.	1460
KAFP	Petaluma, Calif.	1490
KAFY	Bakersfield, Calif.	550
KAGE	Winona, Minn.	1380
KAGH	Crossett, Ark.	800
KAGI	Grants Pass, Oreg.	930
KAGO	Klamath Falls, Oreg.	1150
KAGR	Yuba City, Calif.	1450
KAGT	Anacortes, Wash.	1340
KAHI	Auburn, Calif.	950
KAHU	Waipahu, Hawaii	920
KAHR	Redding, Calif.	1330
KAIM	Kaimuki, Hawaii	870
KAIR	Tucson, Ariz.	1490
KAJI	Little Rock, Ark.	1250
KAJO	Grants Pass, Oreg.	1270
KAKA	Wickenburg, Ariz.	1250
KAKC	Tulsa, Okla.	970
KAKE	Wichita, Kan.	1240
KALB	Alexandria, La.	580
KALE	Richland, Wash.	960
KALG	Alamogordo, N.Mex.	1230
KALI	Pasadena, Calif.	1430
KALL	Salt Lake City, Utah	910
KALM	Thayer, Mo.	1290
KALN	Iola, Kan.	1370
KALT	Atlanta, Tex.	900
KALV	Alva, Okla.	1430
KAMD	Camden, Ark.	910
KAML	Kenedy, Tex.	990
KAMO	Rogers, Ark.	1390
KAMP	El Centro, Calif.	1430
KAMY	McCamey, Tex.	1450
KANA	Anaconda, Mont.	1230
KANB	Shreveport, La.	1300
KAND	Corsicana, Tex.	1340
KANE	New Iberia, La.	1240
KANI	Wharton, Tex.	1500
KANN	Ogden, Utah	1250
KANO	Anoka, Minn.	1470
KANS	Independence, Mo.	1510
KAOH	Duluth, Minn.	1390
KAOK	Lake Charles, La.	1400
KAOL	Carrollton, Mo.	1430
KAPA	Raymond, Wash.	1340
KAPB	Marksville, La.	1370
KAPE	San Antonio, Tex.	1480
KAPI	Pueblo, Colo.	690
KAPR	Douglas, Ariz.	930
KAPT	Salem, Ore.	1220
KAPY	Port Angeles, Wash.	1290
KARA	Albuquerque, N.M.	1310
KARE	Atchison, Kan.	1470
KARI	Blaine, Wash.	550
KARK	Little Rock, Ark.	920
KARM	Fresno, Calif.	1430
KARR	Great Falls, Mont.	1400
KARS	Belen, N.M.	860
KART	Jerome, Idaho	1400
KARY	Prosser, Wash.	1310
KASE	Austin, Tex.	970
KASH	Eugene, Ore.	1600
KASI	Ames, Iowa	1430
KASK	Ontario, Calif.	1510
KASL	Newcastle, Wyo.	1240
KASM	Albany, Minn.	1150
KASO	Minden, La.	1240
KAST	Astoria, Ore.	1370
KASY	Auburn, Wash.	1220
KATE	Albert Lea, Minn.	1450
KATI	Casper, Wyo.	1400
KATL	Miles City, Mont.	1340
KATN	Boise, Idaho	1010
KATO	Safford, Ariz.	1230
KATQ	Texarkana, Tex.	940
KATR	Eugene, Ore.	1320
KATY	San Luis Obispo, Cal.	1340
KATZ	St. Louis, Mo.	1600
KAUS	Austin, Minn.	1480
KAVE	Carlsbad, N.Mex.	1240
KAVI	Rocky Ford, Colo.	1320
KAVL	Lancaster, Calif.	610
KAVR	Apple Valley, Calif.	960
KAWA	Marlin, Tex.	1010
KAWL	York, Neb.	1370
KAWT	Douglas, Ariz.	1450
KAYE	Puyallup, Wash.	1450
KAYG	Lakewood, Wash.	1480
KAYL	Storm Lake, Iowa	990
KAYO	Seattle, Wash.	1150
KAYS	Hays, Kans.	1400
KAYT	Rupert, Idaho	970
KBAL	San Saba, Tex.	1410
KBAM	Longview, Wash.	1270
KBAN	Bowie, Tex.	1410
KBAR	Burley, Idaho	1230
KBBA	Benton, Ark.	690
KBBB	Borger, Tex.	1600
KBBC	Centerville, Utah	1600
KBBR	North Bend, Oreg.	1340
KBBS	Buffalo, Wyo.	1450
KBCH	Oceanlake, Oreg.	1380
KBCL	Shreveport, La.	1220
KBEA	Mission, Kans.	1480
KBEC	Waxahachie, Tex.	1390
KBEE	Modesto, Calif.	970
KBEK	Elk City, Okla.	1240
KBEL	Idabel, Okla.	1240
KBEN	Carrizo Sprgs., Tex.	1450
KBER	San Antonio, Tex.	1150
KBET	Reno, Nev.	1340
KBEV	Portland, Oreg.	1010
KBFS	Belle Fourche, S.Dak.	1450
KBGN	Caldwell, Idaho	910
KBHC	Nashville, Ark.	1260
KBHM	Branson, Mo.	1220
KBHS	Hot Springs, Ark.	590
KBIF	Fresno, Calif.	900
KBIG	Avalon, Calif.	740

C.L.	Location	Kc.
KBIM	Roswell, N.Mex.	910
KBIS	Bakersfield, Calif.	970
KBIX	Muskogee, Okla.	1490
KBIZ	Ottumwa, Iowa	1240
KBJT	Fordyce, Ark.	1570
KBKR	Baker, Oreg.	1490
KBKW	Aberdeen, Wash.	1450
KBLA	Burbank, Calif.	1490
KBLF	Red Bluff, Calif.	1490
KBLI	Blackfoot, Idaho	690
KBLR	Bolivar, Mo.	1550
KBLT	Big Lake, Tex.	1290
KBLU	Yuma, Ariz.	1320
KBLY	Gold Beach, Oreg.	1220
KBMI	Henderson, Nev.	1400
KBMN	Bozeman, Mont.	1230
KBMO	Benson, Minn.	1290
KBMW	Breckinrdg., Minn.	1450
KBMX	Coalinga, Calif.	1470
KBMY	Billings, Mont.	1240
KBND	Bend, Oreg.	1110
KBOA	Kennett, Mo.	830
KBOE	Oskaloosa, Iowa	740
KBOI	Boise, Idaho	950
KBOK	Malvern, Ark.	1310
KBOL	Boulder, Colo.	1490
KBOM	Bismark-Mandan, N. Dak.	1270
KBON	Omaha, Nebr.	1490
KBOP	Pleasanton, Tex.	1380
KBOR	Brownsville, Tex.	1600
KBOW	Butte, Mont.	1490
KBOX	Dallas, Tex.	1480
KBOY	Medford, Oreg.	730
KBPS	Portland, Oreg.	1450
KBRC	Mt. Vernon, Wash.	1430
KBRI	Brinkley, Ark.	1570
KBRK	Brookings, S.Dak.	1430
KBRL	McCook, Nebr.	1300
KBRN	Brighton, Colo.	800
KBRO	Bremerton, Wash.	1490
KBRR	Leadville, Colo.	1230
KBRS	Springdale, Ark.	1340
KBRV	Soda Sprgs., Ida.	540
KBRX	O'Neill, Nebr.	1350
KBRZ	Freeport, Texas	1460
KBSF	Springhill, La.	1460
KBST	Big Spring, Tex.	1490
KBTA	Batesville, Ark.	1340
KBTM	Jonesboro, Ark.	1230
KBTN	Neosho, Mo.	1420
KBTO	El Dorado, Kans.	1360
KBTR	Denver, Colo.	710
KBUC	Corona, Calif.	1370
KBUD	Athens, Tex.	1410
KBUH	Brigham City, Utah	800
KBUN	Bemidji, Minn.	1450
KBUR	Burlington, Iowa	1490
KBUS	Mexia, Tex.	1590
KBUY	Amarillo, Tex.	1010
KBUZ	Mesa, Ariz.	1310
KBVM	Lancaster, Calif.	1380
KBVU	Bellevue, Wash.	1540
KBWD	Brownwood, Tex.	1380
KBYE	Okla. City, Okla.	890
KBYG	Big Spring, Tex.	1400
KBYP	Shamrock, Tex.	1580
KBYR	Anchorage, Alaska	1270
KBZY	Salem, Oreg.	1490
KBZZ	LaJunta, Colo.	1400
KCAC	Phoenix, Ariz.	1010
KCAD	Abilene, Tex.	1560
KCAL	Redlands, Calif.	1410
KCAP	Helena, Mont.	1340
KCAR	Clarksville, Tex.	1350
KCAS	Slaton, Tex.	1050
KCBC	Des Moines, Iowa	1390
KCBD	Lubbock, Tex.	1590
KCBQ	San Diego, Calif.	1170
KCBS	San Fran., Calif.	740
KCCL	Paris, Ark.	1460
KCCO	Lawton, Okla.	1050
KCCR	Pierre, S.Dak.	1590
KCCT	Corpus Christi, Tex.	1150
KCDI	Kirkland, Wash	
KCEE	Tucson, Ariz.	790
KCEY	Turlock, Calif.	1390
KCFA	Spokane, Wash.	1330
KCFH	Cuero, Tex.	1600
KCFI	Cedar Falls, Iowa	1250
KCGM	Columbia, Mo.	1580
KCHA	Charles City, Iowa	1580
KCHE	Cherokee, Iowa	1440
KCHI	Chillicothe, Mo.	1010
KCHJ	Delano, Calif.	1010
KCHR	Charleston, Mo.	1350
KCHS	Truth or Consequences, New Mexico	1400
KCHV	Coachella, Calif.	970
KCHY	Cheyenne, Wyo.	1590
KCID	Caldwell, Idaho	1490
KCII	Washington, Iowa	1380
KCIJ	Shreveport, La.	1050
KCIL	Houma, La.	1490
KCIM	Carroll, Iowa	1380
KCIN	Victorville, Calif.	1590
KCJB	Minot, N.Dak.	910
KCJH	San Luis Obispo, Cal.	1280
KCKC	San Bernardino, Cal.	1350
KCKG	Sonora, Tex	1240
KCKN	Kansas City, Kans.	1340
KCKY	Coolidge, Ariz.	1150
KCLA	Pine Bluff, Ark.	1400
KCLE	Cleburne, Tex.	1120
KCLF	Clifton, Ariz.	1400

C.L.	Location	Kc.
KCLN	Clinton, Iowa	1390
KCLO	Leavenworth, Kans.	1410
KCLS	Flagstaff, Ariz.	600
KCLU	Rolla, Mo.	1590
KCLV	Clovis, N.Mex.	1240
KCLW	Hamilton, Tex.	900
KCLX	Colfax, Wash.	1450
KCMC	Texarkana, Tex.	1230
KCMJ	Palm Sprgs., Calif.	1010
KCMO	Kansas City, Mo.	810
KCMS	Manitou Sprgs., Colo.	1490
KCNI	Broken Bow, Nebr.	1280
KCNO	Alturas, Calif.	570
KCNY	San Marcos, Tex.	1470
KCOB	Newton, Iowa	1280
KCOG	Centerville, Iowa	1400
KCOH	Houston, Tex.	1430
KCOK	Tulare, Calif.	1270
KCOL	Ft. Collins, Colo.	1410
KCON	Conway, Ark.	1230
KCOR	San Antonio, Tex.	1350
KCOW	Alliance, Nebr.	1400
KCOY	Santa Maria, Calif.	1400
KCPX	Salt Lake City, Utah	1320
KCRA	Sacramento, Calif.	1320
KCRB	Chanute, Kans.	1460
KCRC	Enid, Okla.	1390
KCRG	Cedar Rapids, Iowa	1600
KCRM	Crane, Tex.	1380
KCRS	Midland, Tex.	550
KCRT	Trinidad, Colo.	1240
KCRV	Caruthersville, Mo.	1370
KCSJ	Pueblo, Colo.	590
KCSR	Chadron, Nebr.	1450
KCTA	Corpus Christi, Tex.	1030
KCTI	Gonzales, Tex.	1450
KCTX	Childress, Tex.	1510
KCUB	Tucson, Ariz.	1290
KCUE	Red Wing, Minn.	1250
KCUL	Fort Worth, Tex.	1540
KCVL	Colville, Wash.	1270
KCVR	Lodi, Calif.	1570
KCYL	Lampasas, Tex.	1450
KDAB	Arvada, Colo.	1550
KDAC	Ft. Bragg, Calif.	1230
KDAD	Weed, Calif.	800
KDAK	Carrington, N.D.	1600
KDAL	Duluth, Minn.	610
KDAN	Eureka, Calif.	790
KDAV	Lubbock, Tex.	580
KDAY	Santa Monica, Calif.	1580
KDB	Santa Barbara, Calif.	1490
KDBC	Mansfield, La.	1360
KDBM	Dillon, Mont.	800
KDBS	Alexandria, La.	1410
KDDD	Dumas, Tex.	800
KDEC	Decorah, Iowa	1240
KDEF	Albuquerque, N.Mex.	1150
KDEN	Denver, Colo.	1340
KDEO	El Cajon, Calif.	910
KDES	Palm Sprgs., Calif.	920
KDET	Center, Tex.	930
KDEX	Dexter, Mo.	1590
KDGO	Durango, Colo.	1240
KDHI	Twenty-nine Palms, California	1250
KDHL	Faribault, Minn.	920
KDIA	Oakland, Calif.	1310
KDIO	Ortonville, Minn.	1350
KDIX	Dickinson, N.Dak.	1230
KDJI	Holbrook, Ariz.	1270
KDKA	Pittsburgh, Pa.	1020
KDKD	Clinton, Mo.	1280
KDLA	DeRidder, La.	1010
KDLK	Del Rio, Tex.	1230
KDLM	Detroit Lakes, Minn.	1340
KDLR	Devils Lake, N.Dak.	1240
KDLS	Perry, Iowa	1310
KDMA	Montevideo, Minn.	1450
KDMO	Carthage, Mo.	1490
KDMS	El Dorado, Ark.	1290
KDNT	Denton, Tex.	1440
KDOK	Tyler, Tex.	1330
KDOL	Mojave, Calif.	1340
KDOM	Windom, Minn.	1580
KDON	Salinas, Calif.	1460
KDOT	Reno, Nev.	1230
KDOV	Medford, Oreg.	1300
KDQN	DeQueen, Ark.	1390
KDRO	Sedalia, Mo.	1490
KDRS	Paragould, Ark.	1490
KDSJ	Deadwood, S.Dak.	980
KDSN	Denison, Iowa	1580
KDSX	Denison, Tex.	950
KDTA	Delta, Colo.	1400
KDTH	Dubuque, Iowa	1370
KDUB	Lubbock, Tex.	1340
KDUZ	Hutchinson, Minn.	1260
KDWB	St. Paul, Minn.	630
KDWT	Stamford, Tex.	1200
KDXE	No. Little Rock, Ark.	1380
KDXU	St. George, Utah	1450
KDYL	Tooele, Utah	990
KDZA	Pueblo, Colo.	1230
KEAN	Brownwood, Tex.	1240
KEAP	Fresno, Calif.	980
KEBE	Jacksonville, Tex.	1400
KECK	Odessa, Tex.	920
KEDD	Dodge City, Kans.	1550
KEDO	Longview, Wash.	1400
KEED	Springfield, Oreg.	1050
KEEE	Nacogdoches, Tex.	1230
KEEL	Shreveport, La.	710
KEEN	San Jose, Calif.	1370
KEEP	Twin Falls, Idaho	1450
KEES	Gladewater, Tex.	1430
KEKO	Kailua, Hawaii	1130
KELA	Centralia, Wash.	1470

C.L.	Location	Kc.
KELD	El Dorado, Ark.	1400
KELI	Tulsa, Okla.	1430
KELK	Elko, Nev.	1240
KELO	Sioux Falls, S.Dak.	1320
KELP	El Paso, Tex.	920
KELR	El Reno, Okla.	1460
KELY	Ely, Nev.	1230
KENA	Mena, Ark.	1450
KENE	Toppenish, Wash.	1490
KENI	Anchorage, Alaska	550
KENL	Arcata, Calif.	1340
KENM	Portales, N.Mex.	1450
KENN	Farmington, N.M.	1390
KENO	Las Vegas, Nev.	1460
KENS	San Antonio, Tex.	680
KENY	Bellingham-Ferndale, Wash.	930
KEOK	Payette, Idaho	1450
KEOS	Flagstaff, Ariz.	1290
KEPR	Kennewick, Wash.	610
KEPS	Eagle Pass, Tex.	1270
KERB	Kermit, Tex.	600
KERC	Eastland, Tex.	1590
KERG	Eugene, Oreg.	1280
KERN	Bakersfield, Calif.	1410
KERV	Kerrville, Tex.	1230
KESM	Eldorado Springs, Mo.	1580
KEST	Boise, Idaho	790
KETO	Seattle, Wash.	1590
KETX	Livingston, Tex.	1440
KEUN	Eunice, La.	1490
KEVE	Minneapolis, Minn.	1440
KEVL	White Castle, La.	1590
KEVT	Tucson, Ariz.	690
KEWB	Oakland, Calif.	910
KEWI	Topeka, Kans.	1440
KEX	Portland, Oreg.	1190
KEXO	Grand Junc., Colo.	1230
KEYD	Oakes, N.Dak.	1220
KEYE	Perryton, Tex.	1400
KEYJ	Jamestown, N.Dak.	1400
KEYL	Long Prairie, Minn.	1400
KEYS	Corpus Christi, Tex.	1440
KEYY	Provo, Utah	1450
KEYZ	Williston, N.Dak.	1360
KEZU	Rapid City, S.Dak.	920
KEZY	Anaheim, Calif.	1190
KFAB	Omaha, Nebr.	1110
KFAC	Los Angeles, Calif.	1330
KFAL	Fulton, Mo.	900
KFAM	St. Cloud, Minn.	1450
KFAR	Fairbanks, Alaska	610
KFAX	San Francisco, Calif.	1100
KFAY	Fayetteville, Ark.	1250
KFBB	Great Falls, Mont.	1310
KFBC	Cheyenne, Wyo.	1240
KFBK	Sacramento, Calif.	1530
KFDA	Amarillo, Tex.	1440
KFDF	Van Buren, Ark.	1580
KFDM	Beaumont, Tex.	560
KFDR	Grand Coulee, Wash.	1360
KFEL	Pueblo, Colo.	970
KFEQ	St. Joseph, Mo.	680
KFFA	Helena, Ark.	1360
KFGO	Fargo, N.D.	790
KFGQ	Boone, Iowa	1260
KFH	Wichita, Kans.	1330
KFI	Los Angeles, Calif.	640
KFIF	Tucson, Ariz.	1550
KFIV	Modesto, Calif.	1360
KFIZ	Fond du Lac, Wis.	1450
KFJB	Marshalltown, Iowa	1230
KFJM	Grand Forks, N.Dak	1370
KFJZ	Ft. Worth, Tex.	1270
KFKA	Greeley, Colo.	1310
KFKF	Bellevue, Wash.	1330
KFKU	Lawrence, Kans.	1250
KFLD	Floydada, Tex.	900
KFLJ	Walsenburg, Colo.	1380
KFLT	Mountain Home, Ida.	1240
KFLW	Klamath Falls, Oreg.	1450
KFLY	Corvallis, Oreg.	1240
KFMB	San Diego, Calif.	540
KFMJ	Tulsa, Okla.	1050
KFML	Denver, Colo.	1390
KFMO	Flat River, Mo.	1240
KFNF	Shenandoah, Iowa	920
KFNV	Ferriday, La.	1600
KFNW	Fargo, N.Dak.	900
KFOR	Lincoln, Nebr.	1240
KFOX	Long Beach, Calif.	1280
KFPW	Ft. Smith, Ark.	1230
KFQD	Anchorage, Alaska	730
KFRA	Franklin, La.	1390
KFRB	Fairbanks, Alaska	900
KFRC	San Francisco, Calif.	610
KFRD	Rosenberg, Tex.	980
KFRE	Fresno, Calif.	940
KFRM	Kansas City, Mo.	550
KFRO	Longview, Tex.	1370
KFRU	Columbia, Mo.	1400
KFSA	Ft. Smith, Ark.	950
KFSB	Joplin, Mo.	1310
KFSC	Denver, Colo.	1220
KFSD	San Diego, Calif.	600
KFSG	Los Angeles, Calif.	1150
KFST	Ft. Stockton, Tex.	860
KFTM	Ft. Morgan, Colo.	1400
KFTV	Paris, Tex.	1250
KFUN	Las Vegas, N.Mex.	1230
KFUO	St. Louis, Mo.	850
KFVS	Cape Girardeau, Mo.	960
KFWB	Los Angeles, Calif.	980
KFXD	Nampa, Idaho	580
KFXM	San Bernardino, Calif.	590
KFYN	Bonham, Tex.	1420
KFYO	Lubbock, Tex.	790
KFYR	Bismarck, N.Dak.	550

C.L.	Location	Kc.
KGA	Spokane, Wash.	1510
KGAF	Gainesville, Tex.	1580
KGAK	Gallup, N.Mex.	1330
KGAL	Lebanon, Oreg.	920
KGAS	Carthage, Tex.	1590
KGAY	Salem, Oreg.	1430
KGB	San Diego, Calif.	1360
KGBC	Galveston, Tex.	1540
KGBS	Los Angeles, Calif.	1020
KGBT	Harlingen, Tex.	1530
KGBX	Springfield, Mo.	1260
KGCA	Rugby, N.D.	1450
KGCX	Sidney, Mont.	1480
KGDN	Edmonds, Wash.	630
KGEE	Bakersfield, Calif.	1230
KGEK	Sterling, Colo.	1230
KGEM	Boise, Idaho	1140
KGEN	Tulare, Calif.	1370
KGER	Long Beach, Calif.	1390
KGEZ	Kalispell, Mont.	600
KGFF	Shawnee, Okla.	1450
KGFJ	Los Angeles, Calif.	1230
KGFL	Roswell, N.Mex.	1400
KGFW	Kearney, Nebr.	1340
KGFX	Pierre, S.Dak.	630
KGGF	Coffeyville, Kans.	690
KGGG	Forest Grove, Oreg.	1570
KGGM	Albuquerque, N.Mex.	610
KGHF	Pueblo, Colo.	1350
KGHL	Billings, Mont.	790
KGHM	Brookfield, Mo.	1470
KGHS	International Falls, Minn.	1230
KGHT	Hollister, Calif.	1520
KGIL	San Fernando, Calif.	1260
KGIW	Alamosa, Colo.	1450
KGKB	Tyler, Tex.	1490
KGKL	San Angelo, Tex.	960
KGLC	Miami, Okla.	910
KGLN	Glenwood Sprgs., Colo.	980
KGLO	Mason City, Iowa	1300
KGLU	Safford, Ariz.	1480
KGMB	Honolulu, Hawaii	590
KGMC	Englewood, Colo.	1150
KGMI	Bellingham, Wash.	790
KGMO	Cape Girardeau, Mo.	1220
KGMS	Sacramento, Calif.	1380
KGMT	Fairbury, Nebr.	1310
KGNB	New Braunfels, Tex.	1420
KGNC	Amarillo, Tex.	710
KGNO	Dodge City, Kans.	1370
KGNS	Laredo, Tex.	1390
KGO	San Francisco, Calif.	810
KGON	Oregon City, Oreg.	1520
KGOS	Torrington, Wyo.	1490
KGPC	Grafton, N.Dak.	1340
KGRI	Henderson, Tex.	1000
KGRL	Bend, Oreg.	940
KGRN	Grinnell, Iowa	1410
KGRO	Gresham, Oreg.	1230
KGRT	Las Cruces, N.Mex.	570
KGST	Fresno, Calif.	1600
KGU	Honolulu, Hawaii	760
KGUC	Gunnison, Colo.	1490
KGUD	Santa Barbara, Calif.	990
KGUL	Port Lavaca, Tex.	1560
KGVL	Greenville, Tex.	1400
KGVO	Missoula, Mont.	1290
KGVW	Belgrade, Mont.	630
KGW	Portland, Oreg.	620
KGWA	Enid, Okla.	960
KGY	Olympia, Wash.	1240
KGYN	Guymon, Okla.	1220
KAHI	Honolulu, Hawaii	1090
KHAK	Cedar Rapids, Iowa	1360
KHAL	Homer, La.	1300
KHAR	Anchorage, Alaska	590
KHAS	Hastings, Nebr.	1230
KHAT	Phoenix, Ariz.	1480
KHBC	Hilo, Hawaii	970
KHBM	Monticello, Ark.	1430
KHBR	Hillsboro, Tex.	1560
KHEM	Big Springs, Tex.	1270
KHEN	Henryetta, Okla.	1590
KHEP	Phoenix, Ariz.	1280
KHER	Santa Maria, Calif.	1600
KHEY	El Paso, Tex.	690
KHFH	Fry, Ariz.	1420
KHHH	Pampa, Tex.	1230
KHIT	Walla Walla, Wash.	1320
KHJ	Los Angeles, Calif.	930
KHMO	Hannibal, Mo.	1070
KHOB	Hobbs, N.Mex.	1390
KHOE	Truckee, Calif.	1400
KHOG	Fayetteville, Ark.	1440
KHOK	Hoquiam, Wash.	1560
KHOT	Madera, Calif.	1250
KHOW	Denver, Colo.	630
KHOZ	Harrison, Ark.	900
KHQ	Spokane, Wash.	590
KHSJ	Hemet, Calif.	1320
KHSL	Chico, Calif.	1290
KHTN	Hooston, Mo.	1250
KHUB	Fremont, Nebr.	1340
KHUM	Santa Rosa, Calif.	1580
KHUZ	Borger, Tex.	1490
KHVH	Honolulu, Hawaii	1040
KIAL	Astoria, Ore.	1230
KIBE	Palo Alto, Calif.	1220
KIBH	Seward, Alaska	1340
KIBL	Beeville, Tex.	1490
KIBS	Bishop, Calif.	1230
KICD	Spencer, Iowa	1240
KICK	Springfield, Mo.	1340
KICM	Golden, Colo.	1250
KICO	Calexico, Calif.	1490
KICY	Nome, Alaska	850

C.L.	Location	Kc.
KID	Idaho Falls, Idaho	590
KIDO	Monterey, Calif.	630
KIDO	Boise, Idaho	630
KIEV	Glendale, Calif.	870
KIFI	Idaho Falls, Idaho	1260
KIFN	Phoenix, Ariz.	860
KIFW	Sitka, Alaska	1230
KIHN	Hugo, Okla.	1340
KIHR	Hood River, Oreg.	1340
KIJV	Huron, S.Dak.	1340
KIKI	Honolulu, Hawaii	830
KIKK	Pasadena, Tex.	650
KIKO	Miami, Ariz.	1340
KIKS	Sulphur, La.	1310
KILE	Galveston, Tex.	1400
KILO	Grand Forks, S.Dak.	1440
KILT	Houston, Tex.	610
KIMA	Yakima, Wash.	1460
KIMB	Kimball, Nebr.	1260
KIMM	Rapid City, S.D.	1150
KIML	Gillette, Wyo.	1490
KIMN	Denver, Colo.	950
KIMO	Hilo, Hawaii	850
KIMP	Mt. Pleasant, Tex.	960
KIND	Independence, Kans.	1010
KINE	Kingsville, Tex.	1330
KING	Seattle, Wash.	1090
KINS	Eureka, Calif.	980
KINT	El Paso, Tex.	1590
KINY	Juneau, Alaska	800
KIOA	Des Moines, Iowa	940
KIOT	Barstow, Calif.	1310
KIOX	Bay City, Tex.	1270
KIPA	Hilo, Hawaii	1110
KIQS	Willows, Calif.	1560
KIRL	Wichita, Kans.	1070
KIRO	Seattle, Wash.	710
KIRT	Mission, Tex.	1580
KIRX	Kirksville, Mo.	1450
KISO	Sioux Falls, S.Dak.	1230
KISN	Vancouver, Wash.	910
KIST	Santa Barbara, Calif.	1340
KIT	Yakima, Wash.	1280
KITE	San Antonio, Tex.	930
KITI	Chehalis, Wash.	1420
KITN	Olympia, Wash.	920
KIUL	Garden City, Kans.	1240
KIUN	Pecos, Tex.	1400
KIUP	Durango, Colo.	930
KIVY	Crockett, Tex.	1290
KIXL	Dallas, Tex.	1040
KIXX	Provo, Utah	1400
KIXZ	Amarillo, Tex.	940
KIZZ	El Paso, Tex.	1150
KJAM	Madison, S.Dak.	1390
KJAN	Atlantic, Iowa	1220
KJAX	Santa Rosa, Calif.	1150
KJBC	Midland, Tex.	1150
KJCF	Festus, Mo.	1400
KJCK	Junction City, Kans.	1420
KJEF	Jennings, La.	1290
KJEM	Oklahoma City, Okla.	800
KJET	Beaumont, Tex.	1380
KJFJ	Webster City, Iowa	1570
KJIM	Ft. Worth, Tex.	870
KJLT	North Platte, Nebr.	970
KJNO	Juneau, Alaska	630
KJOE	Shreveport, La.	1480
KJOY	Stockton, Calif.	1280
KJPW	Waynesville, Mo.	1390
KJR	Seattle, Wash.	950
KJRG	Newton, Kans.	950
KJSK	Columbus, Nebr.	900
KKAN	Phillipsburg, Kans.	1490
KKAR	Pomona, Calif.	1220
KKAS	Silsbee, Tex.	1300
KKCN	Ukiah, Calif.	1300
KKEY	Vancouver, Wash.	1150
KKHI	San Francisco, Calif.	1550
KKID	Pendleton, Oreg.	1240
KKIN	Aitkin, Minn.	930
KKIS	Pittsburg, Calif.	990
KKIT	Taos, N.Mex.	1340
KKJO	St. Joseph, Mo.	1550
KKOK	Lompoc, Calif.	1410
KLAC	Los Angeles, Calif.	570
KLAD	Klamath Falls, Oreg.	960
KLAK	Lakewood, Colo.	1600
KLAM	Cordova, Alaska	1450
KLAN	Lemoore, Calif.	1320
KLAS	Las Vegas, Nev.	1230
KLBM	La Grande, Oreg.	1450
KLBS	Los Banos, Calif.	1330
KLCB	Libby, Mont.	1230
KLCN	Blytheville, Ark.	910
KLCO	Poteau, Okla.	1280
KLEA	Lovington, N.Mex.	630
KLEE	Ottumwa, Iowa	1480
KLEI	Kailua, Hawaii	1240
KLEM	LeMars, Iowa	1410
KLEN	Killeen, Tex.	1050
KLEO	Wichita, Kans.	1480
KLER	Orofino, Idaho	950
KLEX	Lexington, Mo.	1570
KLFO	Litchfield, Minn.	1410
KLGA	Algona, Iowa	1600
KLGN	Logan, Utah	1390
KLGR	Redwood Falls, Minn.	1490
KLHS	Lordsburg, N.M.	950
KLIB	Liberal, Kans.	1470
KLIC	Monroe, La.	1230
KLID	Poplar Bluff, Mo.	1340
KLIF	Dallas, Tex.	1190
KLIK	Jefferson City, Mo.	950
KLIL	Estherville, Iowa	1340
KLIN	Lincoln, Nebr.	1400
KLIP	Fowler, Calif.	1220
KLIQ	Portland, Oreg.	1290
KLIR	Denver, Colo.	990
KLIX	Twin Falls, Idaho	1310
KLIZ	Brainerd, Minn.	1380
KLKC	Parsons, Kans.	1540
KLLA	Leesville, La.	1570
KLLL	Lubbock, Tex.	1460
KLME	Laramie, Wyo.	1490
KLMO	Longmont, Colo.	1050
KLMR	Lamar, Colo.	920
KLMS	Lincoln, Nebr.	1480
KLMX	Clayton, N.Mex.	1450
KLO	Ogden, Utah	1430
KLOA	Ridgecrest, Calif	1240
KLOE	Goodland, Kans.	730
KLOG	Kelso, Wash.	1490
KLOH	Pipestone, Minn.	1050
KLOK	San Jose, Calif.	1170
KLOO	Corvallis, Oreg.	1350
KLOQ	Yakima, Wash.	1390
KLOS	Albuquerque, N.Mex.	1450
KLOU	Lake Charles, La.	1580
KLOW	Loveland, Colo.	1570
KLPL	Lake Providence, La.	1050
KLPM	Minot, N.Dak.	1390
KLPR	Okla. City, Okla.	1140
KLPW	Union, Mo.	1220
KLRA	Little Rock, Ark.	1010
KLRS	Mountain Grove, Mo.	1360
KLTF	Little Falls, Minn.	960
KLTR	Blackwell, Okla.	1580
KLTZ	Glasgow, Mont.	1240
KLUB	Salt Lake City, Utah	570
KLUC	Las Vegas, Nev.	1050
KLUE	Longview, Tex.	1280
KLUK	Evanston, Wyo.	1240
KLUV	Haynesville, La.	1580
KLVL	Pasadena, Tex.	1480
KLVT	Levelland, Tex.	1230
KLWN	Lawrence, Kans.	1320
KLWT	Lebanon, Mo.	1230
KLYD	Bakersfield, Calif.	1350
KLYQ	Hamilton, Mont.	980
KLYK	Spokane, Wash.	1230
KLYR	Clarksville, Ark.	1360
KLZ	Denver, Colo.	560
KMA	Shenandoah, Iowa	960
KMAC	San Antonio, Tex.	630
KMAD	Madill, Okla.	1550
KMAE	McKinney, Tex.	1600
KMAK	Fresno, Calif.	1340
KMAM	Butler, Mo.	1530
KMAN	Manhattan, Kans.	1350
KMAQ	Maquoketa, Iowa	1320
KMAR	Winnsboro, La.	1570
KMBC	Kansas City, Mo.	980
KMBL	Junction, Tex.	1450
KMBO	Tucson, Ariz.	940
KMBY	Monterey, Calif.	1240
KMCD	Fairfield, Iowa	1570
KMCM	McMinnville, Oreg.	1260
KMCO	Conroe, Tex.	900
KMDO	Ft. Scott, Kans.	1600
KMEO	Medford, Oreg.	1440
KMEN	San Bernardino, California	1290
KMEO	Omaha, Nebr.	660
KMET	Paradise, Calif.	930
KMFR	Medford, Ore.	860
KMHT	Marshall, Tex.	1450
KMIL	Cameron, Tex.	1330
KMIN	Grants, N.M.	980
KMIS	Portageville, Mo.	1050
KMJ	Fresno, Calif.	580
KMLB	Monroe, La.	1440
KMMJ	Grand Island, Nebr.	750
KMNS	Sioux City, Iowa	620
KMO	Tacoma, Wash.	1360
KMON	Great Falls, Mont.	560
KMOP	Tucson, Ariz.	1330
KMOR	Littleton, Colo.	1510
KMOX	St. Louis, Mo.	1120
KMPC	Los Angeles, Calif.	710
KMRC	Morgan City, La.	1430
KMRS	Morris, Minn.	1230
KMSL	Ukiah, Calif.	1250
KMUL	Muleshoe, Tex.	1380
KMUR	Murray, Utah	1230
KMUS	Muskogee, Okla.	1380
KMVI	Wailuku, Hawaii	550
KMYC	Marysville, Calif.	1410
KMYT	Clayton, Mo.	1320
KNAF	Fredericksburg, Tex.	910
KNAK	Salt Lake City, Utah	1280
KNAL	Victoria, Tex.	1410
KNBA	Vallejo, Calif.	1190
KNBC	San Francisco, Calif.	680
KNBE	Kanab, Utah	1240
KNBX	Kirkland, Wash.	1050
KNBY	Newport, Ark.	1280
KNCK	Concordia, Kans.	1390
KNCM	Moberly, Mo.	1230
KNCO	Garden City, Kans.	1050
KNCY	Nebraska City, Nebr.	1600
KNOC	Hettinger, N.Dak.	1490
KNOE	Aztec, N.Mex.	1340
KNOI	Honolulu, Hawaii	1270
KNOY	Marysville, Kans.	1570
KNEA	Jonesboro, Ark.	970
KNEB	Scottsbluff, Nebr.	960
KNEO	McAlester, Okla.	1150
KNEL	Brady, Tex.	1490
KNEM	Nevada, Mo.	1240
KNET	Palestine, Tex.	1450
KNEW	Spokane, Wash.	790
KNEX	McPherson, Kans.	1540
KNEZ	Lompoc, Calif.	960
KNGS	Hanford, Calif.	620
KNIA	Knoxville, Iowa	1320
KNIM	Maryville, Mo.	1580
KNIN	Wichita Falls, Tex.	990
KNIT	Abilene, Tex.	1280
KNND	Cottage Grove, Oreg.	1400
KNOC	Natchitoches, La.	1450
KNOE	Monroe, La.	1390
KNOG	Nogales, Ariz.	1340
KNOK	Ft. Worth, Tex.	970
KNOR	Norman, Okla.	1400
KNOT	Prescott, Ariz.	1450
KNOW	Austin, Tex.	1490
KNOX	Grand Forks, N.Dak.	1310
KNPT	Newport, Ore.	1310
KNUJ	New Ulm, Minn.	860
KNUZ	Houston, Tex.	1230
KNWC	Sioux Falls, S.D.	1270
KNWS	Waterloo, Iowa	1090
KNX	Los Angeles, Calif.	1070
KOA	Denver, Colo.	850
KOAC	Corvallis, Oreg.	550
KOAL	Price, Utah	1230
KOAM	Pittsburg, Kans.	860
KOB	Albuquerque, N.Mex.	770
KOBE	Las Cruces, N.Mex.	1450
KOBH	Hot Springs, S.Dak.	580
KOCA	Kilgore, Tex.	1240
KOCY	Oklahoma City, Okla.	1340
KODA	Houston, Tex.	1010
KODE	Joplin, Mo.	1230
KODI	Cody, Wyo.	1400
KODL	The Dalles, Oreg.	1440
KOOY	North Platte, Nebr.	1240
KOEL	Oelwein, Iowa	950
KOFA	Yuma, Ariz.	1240
KOFE	Pullman, Wash.	1150
KOFI	Kalispell, Mont.	930
KOFO	Ottawa, Kans.	1220
KOFY	San Mateo, Calif.	1050
KOGA	Ogallala, Nebr.	930
KOGT	Orange, Tex.	1600
KOH	Reno, Nev.	630
KOHO	Honolulu, Hawaii	1170
KOHU	Hermiston, Oreg.	1570
KOIL	Omaha, Nebr.	1290
KOIN	Portland, Oreg.	970
KOJM	Havre, Mont.	610
KOKA	Shreveport, La.	980
KOKE	Austin, Tex.	1370
KOKL	Okmulgee, Okla.	1240
KOKO	Warrensburg, Mo.	1450
KOKX	Keokuk, Iowa	1310
KOKY	Little Rock, Ark.	1440
KOL	Seattle, Wash.	1300
KOLO	Tucson, Ariz.	1450
KOLE	Port Arthur, Tex.	1340
KOLJ	Quanah, Tex.	1150
KOLO	Reno, Nev.	920
KOLR	Sterling, Colo.	1490
KOLS	Pryor, Okla.	1570
KOLT	Scottsbluff, Nebr.	1320
KOLY	Mobridge, S.Dak.	1300
KOMA	Okla. City, Okla.	1520
KOME	Tulsa, Okla.	1300
KOMO	Seattle, Wash.	1000
KOMW	Omak, Wash.	680
KOMY	Watsonville, Calif.	1340
KONE	Reno, Nev.	1450
KONG	Visalia, Calif.	1400
KONI	Spanish Fork, Utah	1480
KONO	San Antonio, Tex.	860
KONP	Port Angeles, Wash.	1450
KOOK	Billings, Mont.	970
KOOL	Phoenix, Ariz.	960
KOOO	Omaha, Nebr.	1420
KOOS	Coos Bay, Oreg.	1230
KOPR	Butte, Mont.	550
KOPY	Alice, Tex.	1070
KOQT	Bellingham, Wash.	1550
KORA	Bryan, Tex.	1240
KORC	Mineral Wells, Tex.	1140
KORO	Pasco, Wash.	910
KORE	Eugene, Oreg.	1450
KORK	Las Vegas, Nev.	1340
KORN	Mitchell, S.Dak.	1490
KORT	Grangeville, Idaho	1230
KOSA	Odessa, Tex.	1230
KOSE	Osceola, Ark.	860
KOSI	Aurora, Colo.	1430
KOSY	Texarkana, Ark.	790
KOTA	Rapid City, S.Dak.	1380
KOTE	Fergus Falls, Minn.	1250
KOTN	Pine Bluff, Ark.	1490
KOTS	Deming, N.M.	1230
KOUR	Independence, Iowa	1220
KOVC	Valley City, N.Dak.	1490
KOVE	Lander, Wyo.	1330
KOVO	Provo, Utah	960
KOWB	Laramie, Wyo.	1290
KOWL	Bijou, Calif.	1490
KOWN	Escondido, Calif.	1450
KOXR	Oxnard, Calif.	910
KOY	Phoenix, Ariz.	550
KOYL	Odessa, Tex.	1310
KOYN	Billings, Mont.	910
KOZE	Lewiston, Idaho	1300
KOZI	Chelan, Wash.	1220
KOZY	Grand Rapids, Minn.	1490
KPAC	Port Arthur, Tex.	1250
KPAK	Minden, La.	1240
KPAL	Palm Springs, Calif.	1450
KPAM	Portland, Oreg.	1410
KPAN	Hereford, Tex.	860
KPAP	Redding, Calif.	1270
KPAS	Banning, Calif.	1490
KPAY	Chico, Calif.	1060
KPBA	Pine Bluff, Ark.	1590
KPBM	Carlsbad, N.Mex.	740
KPCA	Marked Tree, Ark.	1580
KPDN	Pampa, Tex.	1340
KPDQ	Portland, Oreg.	800
KPEG	Spokane, Wash.	1380
KPEL	Lafayette, La.	1420
KPEP	San Angelo, Tex.	1420
KPER	Gilroy, Calif.	1290
KPET	Lamesa, Tex.	690
KPGE	Page, Ariz.	1340
KPHO	Phoenix, Ariz.	910
KPIG	Cedar Rapids, Iowa	1450
KPIK	Colorado Sprgs., Colo.	1580
KPIN	Casa Grande, Ariz.	1260
KPIR	Eugene, Wash.	1500
KPKW	Pasco, Wash.	1340
KPLA	Plainview, Tex.	1050
KPLC	Lake Charles, La.	1470
KPLT	Paris, Tex.	1490
KPLW	Union, Mo.	1220
KPLY	Crescent City, Calif.	1240
KPMC	Bakersfield, Calif.	1560
KPNG	Port Neches, Tex.	1150
KPOC	Pocahontas, Ark.	1420
KPOD	Crescent City, Calif.	1310
KPOF	Denver, Colo.	910
KPOI	Honolulu, Hawaii	1380
KPOJ	Portland, Oreg.	1330
KPOK	Scottsdale, Ariz.	1440
KPOL	Los Angeles, Calif.	1540
KPON	Anderson, Calif.	1580
KPOR	Quincy, Wash.	1370
KPOW	Powell, Wyo.	1260
KPPC	Pasadena, Calif.	1240
KPQ	Wenatchee, Wash.	560
KPRB	Redmond, Oreg.	1240
KPRC	Houston, Tex.	950
KPRK	Livingston, Mont.	1340
KPRL	Paso Robles, Calif.	1230
KPRO	Riverside, Calif.	1440
KPRS	Kansas City, Mo.	1590
KPRT	Pratt, Kans.	1290
KPSO	Falfurrias, Tex.	1260
KPST	Preston, Idaho	1340
KPTL	Carson City, Nev.	1300
KPUG	Bellingham, Wash.	1170
KQAQ	Austin, Minn.	970
KQDF	Spokane, Wash.	1280
KQOI	Bismarck, N.D.	1350
KQDY	Minot, N.Dak.	1320
KQEN	Roseburg, Oreg.	1250
KQEO	Albuquerque, N.Mex.	920
KQIK	Lakeview, Oreg.	1230
KQMS	Redding, Calif.	1400
KQTE	Missoula, Mont.	1340
KQV	Pittsburgh, Pa.	1410
KQYX	Joplin, Mo.	1560
KRAC	Alamogordo, N.M.	1270
KRAD	E. Grand Forks, Minn.	1590
KRAE	Cheyenne, Wyo.	1480
KRAI	Craig, Colo.	550
KRAK	Stockton, Calif.	1140
KRAL	Rawlins, Wyo.	1240
KRAM	Las Vegas, Nev.	920
KRAN	Morton, Tex.	1280
KRAY	Amarillo, Tex.	1360
KRAZ	Albuquerque, N.Mex.	1580
KRBA	Lufkin, Tex.	1340
KRBC	Abilene, Tex.	1470
KRBI	St. Peter, Minn.	1310
KRBN	Red Lodge, Mont.	1450
KRCK	Ridgecrest, Calif.	1360
KRCO	Prineville, Oreg.	690
KROG	Redding, Calif.	1230
KROO	Colo. Springs, Colo.	1240
KROP	Reedsport, Oreg.	1470
KROU	Olnuba, Calif.	1240
KRE	Berkeley, Calif.	1400
KREB	Shreveport, La.	1550
KREO	Eureka, Calif.	1480
KREH	Oakdale, La.	900
KREI	Farmington, Mo.	800
KREM	Spokane, Wash.	970
KREO	Indio, Calif.	1400
KREW	Sunnyside, Wash.	1230
KREX	Grand Junc., Colo.	920
KRFO	Owatonna, Minn.	1390
KRFS	Superior, Nebr.	1600
KRGI	Grand Island, Neb.	1430
KRGV	Weslaco, Tex.	1290
KRHO	Duncan, Okla.	1350
KRIB	Mason City, Iowa	1490
KRIC	Beaumont, Tex.	1450
KRIG	Odessa, Tex.	1410
KRIH	Rayville, La.	990
KRIO	McAllen, Tex.	910
KRIZ	Phoenix, Ariz.	1230
KRKC	King City, Calif.	1570
KRKD	Los Angeles, Calif.	1150
KRKO	Everett, Wash.	1380
KRLC	Lewiston, Idaho	1350
KRLD	Dallas, Tex.	1080
KRLN	Canon City, Colo.	1400
KRLW	Walnut Ridge, Ark.	1320
KRMD	Shreveport, La.	1340
KRMG	Tulsa, Okla.	740
KRML	Carmel, Calif.	1410
KRMO	Monett, Mo.	990
KRMS	Osage Beach, Mo.	1150
KRNO	San Bernardino, Calif.	1240
KRNR	Roseburg, Oreg.	1490
KRNS	Burns, Oreg.	1230
KRNT	Des Moines, Iowa	1350
KRNY	Kearney, Nebr.	1460
KROC	Rochester, Minn.	1340
KROD	El Paso, Tex.	600
KROE	Sheridan, Wyo.	930

C.L.	Location	Kc.
KROF	Abbeville, La.	960
KROP	Brawley, Calif.	1300
KROS	Clinton, Iowa	1340
KROW	Dallas, Ore.	1460
KROX	Crookston, Minn.	1260
KROY	Sacramento, Calif.	1240
KRPL	Moscow, Idaho	1400
KRRR	Ruidoso, N.Mex.	1340
KRRV	Sherman, Tex.	910
KRSC	Othello, Wash.	1400
KRSD	Rapid City, S.Dak.	1340
KRSI	St. Louis Park, Minn.	950
KRSL	Russell, Kans.	990
KRSN	Los Alamos, N.Mex.	1490
KRSY	Roswell, N.Mex.	1230
KRTN	Raton, N.Mex.	1490
KRTR	Thermopolis, Wyo.	1490
KRUN	Ballinger, Tex.	1400
KRUS	Ruston, La.	1490
KRUX	Glendale, Ariz.	1360
KRVC	Ashland, Oreg.	1350
KRVN	Lexington, Nebr.	1010
KRXK	Rexburg, Idaho	1230
KRYS	Corpus Christi, Tex.	1360
KRZE	Farmington, N.M.	1280
KRZY	Grand Prairie, Tex.	730
KSAC	Manhattan, Kans.	580
KSAL	Salina, Kans.	1150
KSAM	Huntsville, Tex.	1490
KSAN	San Francisco, Calif.	1450
KSAY	San Francisco, Calif.	1010
KSBW	Salinas, Calif.	1380
KSCB	Liberal, Kans.	600
KSCJ	Sioux City, Iowa	1360
KSCO	Santa Cruz, Calif.	1080
KSD	St. Louis, Mo.	550
KSDN	Aberdeen, S.Dak.	930
KSDO	San Diego, Calif.	1130
KSDR	Waterton, S.Dak.	1480
KSEE	Santa Maria, Calif.	1480
KSEI	Pocatello, Idaho	930
KSEK	Pittsburg, Kans.	1340
KSEL	Lubbock, Tex.	950
KSEM	Moses Lake, Wash.	1470
KSEN	Shelby, Mont.	1150
KSEO	Durant, Okla.	750
KSET	El Paso, Tex.	1340
KSEW	Sitka, Alaska	1400
KSEY	Seymour, Tex.	1230
KSFA	Nacogdoches, Tex.	860
KSFE	Needles, Calif.	1340
KSFO	San Francisco, Calif.	560
KSGM	Chester, Ill.	980
KSIB	Creston, Iowa	1520
KSID	Sidney, Nebr.	1340
KSIG	Crowley, La.	1450
KSIL	Silver City, N.Mex.	1340
KSIM	Sikeston, Mo.	1400
KSIR	Wichita, Kans.	900
KSIS	Sedalia, Mo.	1050
KSIW	Woodward, Okla.	1450
KSIX	Corpus Christi, Tex.	1230
KSJB	Jamestown, N.Dak.	600
KSKI	Sun Valley, Idaho	1340
KSKY	Dallas, Tex.	660
KSL	Salt Lake City, Utah	1160
KSLM	Salem, Oreg.	1390
KSLO	Opelousas, La.	1230
KSLV	Monte Vista, Colo.	1240
KSMA	Santa Maria, Calif.	1240
KSMN	Mason City, Iowa	1010
KSMO	Salem, Mo.	1340
KSNB	Santa Barbara, Calif.	1290
KSNN	Pocatello, Ida.	1290
KSNY	Snyder, Tex.	1450
KSO	Des Moines, Iowa	1460
KSOK	Arkansas City, Kans.	1280
KSON	San Diego, Calif.	1240
KSOO	Sioux Falls, S.Dak.	1140
KSOP	Salt Lake City, Utah	1370
KSOX	Raymondville, Tex.	1240
KSPA	Santa Paula, Calif.	1400
KSPI	Stillwater, Okla.	780
KSPL	Diboll, Tex.	1260
KSPT	Sandpoint, Idaho	1400
KSRA	Salmon, Idaho	960
KSRC	Socorro, N.Mex.	1290
KSRO	Santa Rosa, Calif.	1350
KSRV	Ontario, Oreg.	1380
KSSS	Colorado Springs, Colo.	740
KSST	Sulphur Springs, Tex.	1230
KSTA	Coleman, Tex.	1000
KSTB	Breckenridge, Tex.	1430
KSTL	St. Louis, Mo.	690
KSTH	St. Helen's, Oreg.	1600
KSTN	Stockton, Calif.	1420
KSTP	St. Paul, Minn.	1500
KSTR	Grand Junction, Colo.	620
KSTT	Davenport, Iowa	1170
KSTV	Stephenville, Tex.	1510
KSUB	Cedar City, Utah	590
KSUD	W. Memphis, Ark.	730
KSUE	Susanville, Calif.	1240
KSUM	Fairmont, Minn.	1370
KSUN	Bisbee, Ariz.	1230
KSVC	Richfield, Utah	980
KSVN	Ogden, Utah	730
KSVP	Artesia, N.Mex.	990
KSWA	Graham, Tex.	1330
KSWC	Tucson, Ariz.	1550
KSWI	Council Bluffs, Iowa	1560
KSWM	Aurora, Mo.	940
KSWO	Lawton, Okla.	1380
KSXX	Salt Lake City, Utah	630
KSYC	Yreka, Calif.	1490
KSYL	Alexandria, La.	970
KSYX	Santa Rosa, N.Mex.	1420
KTAC	Tacoma, Wash.	850
KTAE	Taylor, Tex.	1260
KTAN	Tucson, Ariz.	580
KTAR	Phoenix, Ariz.	620
KTAT	Frederick, Okla.	1570
KTBB	Tyler, Tex.	600
KTBC	Austin, Tex.	590
KTCB	Malden, Mo.	1470
KTCI	Terrytown, Nebr.	690
KTCN	Berryville, Ark.	1480
KTCR	Minneapolis, Minn.	690
KTCS	Fort Smith, Ark.	1410
KTDO	Toledo, Oreg.	1230
KTEE	Idaho Falls, Idaho	900
KTEL	Walla Walla, Wash.	1490
KTEM	Temple, Tex.	1400
KTEO	San Angelo, Tex.	1340
KTER	Terrell, Tex.	1570
KTFI	Twin Falls, Idaho	1270
KTFO	Seminole, Tenn.	1250
KTFS	Texarkana, Tex.	1400
KTFY	Brownfield, Tex.	1300
KTHE	Thermopolis, Wyo.	1240
KTHS	Little Rock, Ark.	1090
KTHT	Houston, Tex.	790
KTIB	Thibodaux, La.	630
KTIL	Tillamook, Oreg.	1590
KTIM	San Rafael, Calif.	1510
KTIP	Porterville, Calif.	1450
KTIS	Minneapolis, Minn.	900
KTJS	Hobart, Okla.	1420
KTKN	Ketchikan, Alaska	930
KTKR	Taft, Calif.	1310
KTKT	Tucson, Ariz.	990
KTLD	Tullulah, La.	1360
KTLN	Denver, Colo.	1280
KTLO	Mtn. Home, Ark.	1490
KTLQ	Tahlequah, Okla.	1350
KTLU	Rusk, Tex.	1580
KTLW	Texas City, Tex.	920
KTMC	McAlester, Okla.	1400
KTMS	Santa Barbara, Calif.	1250
KTNC	Falls City, Nebr.	1230
KTNM	Tucumcari, N.Mex.	1400
KTNT	Tacoma, Wash.	1400
KTOC	Jonesboro, La.	920
KTOD	Sinton, Tex.	1590
KTOE	Mankato, Minn.	1420
KTOH	Lihue, Hawaii	1490
KTOK	Oklahoma City, Okla.	1000
KTON	Belton, Tex.	940
KTOO	Henderson, Nev.	1280
KTOP	Topeka, Kans.	1490
KTOW	Sand Spring, Okla.	1340
KTPA	Prescott, Ark.	1370
KTRB	Modesto, Calif.	860
KTRC	Santa Fe, N.Mex.	1400
KTRE	Lufkin, Tex.	1420
KTRF	Thief River Falls, Minn.	1230
KTRG	Honolulu, Hawaii	990
KTRH	Houston, Tex.	740
KTRI	Sioux City, Iowa	1470
KTRM	Beaumont, Tex.	990
KTRN	Wichita Falls, Tex.	1290
KTRY	Bastrop, La.	730
KTSA	San Antonio, Tex.	550
KTSL	Burnett, Tex.	1340
KTSM	El Paso, Tex.	1380
KTTN	Trenton, Mo.	1600
KTTR	Rolla, Mo.	1490
KTTS	Springfield, Mo.	1400
KTUC	Tucson, Ariz.	1400
KTUE	Tulia, Tex.	1260
KTUX	Pueblo, Colo.	1480
KTW	Seattle, Wash.	1250
KTWO	Casper, Wyo.	1470
KTXJ	Jasper, Tex.	1350
KTXO	Sherman, Tex.	1500
KTYM	Inglewood, Calif.	1460
KUAM	Agana, Guam	610
KUBA	Yuba City, Calif.	1600
KUBC	Montrose, Colo.	580
KUBE	Pendleton, Oreg.	1050
KUDE	Oceanside, Calif.	1320
KUOI	Great Falls, Mont.	1450
KUOL	Kansas City, Mo.	1380
KUDU	Ventura, Calif.	1590
KUDY	Seattle, Wash.	910
KUEN	Wenatchee, Wash.	900
KUEQ	Phoenix, Ariz.	740
KUGN	Eugene, Oreg.	590
KUIK	Hillsboro, Oreg.	1360
KUJ	Walla Walla, Wash.	1420
KUKA	San Antonio, Tex.	1250
KUKI	Ukiah, Calif.	1400
KUKO	Post, Tex.	1370
KUKU	Willow Springs, Mo.	1330
KULA	Honolulu, Hawaii	690
KULE	Ephrata, Wash.	730
KULP	El Campo, Tex.	1390
KUMA	Pendleton, Oreg.	1290
KUNO	Corpus Christi, Tex.	1400
KUOA	Siloam Springs, Ark.	1290
KUOM	Minneapolis, Minn.	770
KUPD	Tempe, Ariz.	1060
KUPI	Idaho Falls, Idaho	980
KURA	Moab, Utah	1450
KURL	Billings, Mont.	730
KURV	Edinburg, Tex.	710
KURY	Brookings, Oreg.	910
KUSD	Vermillion, S.Dak.	690
KUSH	Cushing, Okla.	1600
KUSN	St. Joseph, Mo.	1270
KUTA	Blanding, Utah	790
KUTI	Yakima, Wash.	980
KUTT	Fargo, N.Dak.	1550
KUTY	Palmdale, Calif.	1470
KUVR	Holdredge, Nebr.	1380
KUXL	Golden Valley, Minn.	
KUZN	W. Monroe, La.	1310
KUZZ	Bakersfield, Calif.	800
KVAN	Vancouver, Wash.	1480
KVCK	Wolf Point, Nebr.	1450
KVCL	Winnfield, La.	1270
KVCV	Redding, Calif.	600
KVEC	San Luis Obispo, Calif.	920
KVEE	Conway, Ark.	1330
KVEG	Las Vegas, Nev.	970
KVEL	Vernal, Utah	1250
KVEN	Ventura, Calif.	1450
KVER	Clovis, N.Mex.	980
KVET	Austin, Tex.	1300
KVFC	Cortez, Colo.	740
KVFD	Ft. Dodge, Iowa	1400
KVGB	Great Bend, Kans.	1590
KVI	Seattle, Wash.	570
KVIC	Victoria, Tex.	1340
KVIL	Highland Park, Tex.	1150
KVIM	New Iberia, La.	1360
KVIN	Vinita, Okla.	1470
KVIP	Redding, Calif.	540
KVKM	Monahans, Tex.	1330
KVLB	Cleveland, Tex.	1410
KVLC	Little Rock, Ark.	1050
KVLF	Alpine, Tex.	1240
KVLG	LaGrange, Tex.	1570
KVLH	Pauls Valley, Okla.	1470
KVLL	Livingston, Tex.	1220
KVMA	Magnolia, Ark.	630
KVMC	Colorado City, Tex.	1320
KVML	Sonora, Calif.	1450
KVNA	Flagstaff, Ariz.	690
KVNC	Winslow, Ariz.	1010
KVNI	Coeur d'Alene, Idaho	1240
KVNU	Logan, Utah	610
KVOB	Bastrop, La.	1340
KVOC	Casper, Wyo.	1230
KVOD	Albuquerque, N.M.	730
KVOE	Emporia, Kans.	1400
KVOG	Ogden, Utah	1490
KVOL	Lafayette, La.	1330
KVOM	Morrilton, Ark.	800
KVON	Napa, Calif.	1440
KVOO	Tulsa, Okla.	1170
KVOP	Plainview, Tex.	1400
KVOR	Colo. Springs, Colo.	1300
KVOU	Uvalde, Tex.	1400
KVOW	Riverton, Wyo.	1450
KVOX	Moorhead, Minn.	1280
KVOY	Yuma, Ariz.	1400
KVOZ	Laredo, Tex.	1490
KVPH	Canyon, Tex.	1550
KVPI	Ville Platte, La.	1050
KVRC	Arkadelphia, Ark.	1240
KVRD	Cottonwood, Ariz.	1240
KVRE	Santa Rosa, Calif.	1460
KVRH	Salida, Colo.	1340
KVRS	Rock Springs, Wyo.	1360
KVSA	McGehee, Ark.	1220
KVSF	Santa Fe, N.Mex.	1260
KVSH	Valentine, Nebr.	940
KVSO	Ardmore, Okla.	1240
KVWC	Vernon, Tex.	1490
KVWM	Show Low, Ariz.	1050
KVWO	Cheyenne, Wyo.	1370
KWAC	Bakersfield, Calif.	1490
KWAD	Wadena, Minn.	920
KWAK	Stuttgart, Ark.	1240
KWAL	Wallace, Idaho	620
KWAM	Memphis, Tenn.	990
KWAT	Watertown, S.Dak.	950
KWBA	Baytown, Tex.	1360
KWBB	Wichita, Kans.	1410
KWBC	Navasota, Tex.	1550
KWBE	Beatrice, Nebr.	1450
KWBG	Boone, Iowa	1590
KWBW	Hutchinson, Kans.	1450
KWCB	Searcy, Ark.	1300
KWCL	Oak Grove, La.	1280
KWCO	Chickasha, Okla.	1560
KWEB	Rochester, Minn.	1270
KWED	Seguin, Tex.	1580
KWEI	Weiser, Idaho	1260
KWEL	Midland, Tex.	1600
KWEW	Hobbs, N.Mex.	1480
KWFR	San Angelo, Tex.	1260
KWFT	Wichita Falls, Tex.	620
KWG	Stockton, Calif.	1230
KWHI	Brenham, Tex.	1280
KWHK	Hutchinson, Kans.	1260
KWHN	Fort Smith, Ark.	1320
KWHO	Salt Lake City, Utah	860
KWHW	Altus, Okla.	1450
KWIC	Salt Lake City, Utah	1570
KWIK	Pocatello, Idaho	1240
KWIL	Albany, Oreg.	790
KWIN	Ashland, Oreg.	580
KWIP	Merced, Calif.	1580
KWIQ	Moses Lake, Wash.	1260
KWIV	Douglas, Wyo.	1050
KWIZ	Santa Ana, Calif.	1480
KWJJ	Portland, Oreg.	1080
KWK	St. Louis, Mo.	1380
KWKC	Abilene, Tex.	1340
KWKH	Shreveport, La.	1130
KWKW	Pasadena, Calif.	1300
KWKY	Des Moines, Iowa	1150
KWLC	Decorah, Iowa	1240
KWLD	Liberty, Tex.	1050
KWLM	Willmar, Minn.	1340
KWLW	Nampa, Idaho	1340
KWMT	Ft. Dodge, Iowa	540
KWNA	Winnemucca, Nev.	1400
KWNO	Winona, Minn.	1230
KWNT	Davenport, Iowa	1580
KWOA	Worthington, Minn.	730
KWOC	Poplar Bluff, Mo.	930
KWOE	Clinton, Okla.	1320
KWON	Bartlesville, Okla.	1400
KWOR	Worland, Wyo.	1340
KWOS	Jefferson City, Mo.	1240
KWOW	Pomona, Calif.	1600
KWPC	Muscatine, Iowa	860
KWPM	West Plains, Mo.	1450
KWPR	Claremore, Okla.	1270
KWRA	Idaho Falls, Idaho	1400
KWRD	Henderson, Tex.	1470
KWRE	Warrenton, Mo.	730
KWRF	Warren, Ark.	860
KWRO	Coquille, Oreg.	630
KWRT	Boonville, Mo.	1370
KWRV	McCook, Nebr.	1360
KWRW	Guthrie, Okla.	1490
KWSC	Pullman, Wash.	1250
KWSD	Mt. Shasta, Calif.	620
KWSH	Wewoka-Seminole, Oklahoma	1260
KWSK	Pratt, Kans.	1570
KWSL	Grand Junction, Colo.	1340
KWSO	Wasco, Calif.	1050
KWTC	Barstow, Calif.	1230
KWTO	Springfield, Mo.	560
KWTX	Waco, Tex.	1230
KWVN	Concord, Calif.	1480
KWVR	Enterprise, Oreg.	1340
KWVY	Waverly, Iowa	1470
KWWL	Waterloo, Iowa	1330
KWYK	Farmington, N.Mex.	960
KWYN	Wynne, Ark.	1400
KWYO	Sheridan, Wyo.	1410
KWYR	Winner, S.Dak.	1260
KWYZ	Everett, Wash.	1230
KXA	Seattle, Wash.	770
KXAR	Hope, Ark.	1490
KXEL	Waterloo, Iowa	1540
KXEN	St. Louis, Mo.	1010
KXEO	Mexico, Mo.	1340
KXEW	Tucson, Ariz.	1600
KXGI	Ft. Madison, Iowa	1360
KXGN	Glendive, Mont.	1400
KXIC	Iowa City, Iowa	800
KXIT	Dalhart, Tex.	1410
KXIV	Phoenix, Ariz.	1400
KXJK	Forrest City, Ark.	950
KXKW	Lafayette, La.	1520
KXL	Portland, Oreg.	750
KXLE	Ellensburg, Wash.	1240
KXLF	Butte, Mont.	1370
KXLJ	Helena, Mont.	1240
KXLL	Missoula, Mont.	1450
KXLO	Lewiston, Mont.	1230
KXLR	Little Rock, Ark.	1150
KXLW	Clayton, Mo.	1320
KXLY	Spokane, Wash.	920
KXO	El Centro, Calif.	1230
KXOA	Sacramento, Calif.	1470
KXOK	St. Louis, Mo.	630
KXOL	Ft. Worth, Tex.	1360
KXOX	Sweetwater, Tex.	1240
KXRA	Alexandria, Minn.	1490
KXRJ	Russellville, Ark.	1490
KXRO	Aberdeen, Wash.	1320
KXRX	San Jose, Calif.	1500
KXXL	Bozeman, Mont.	1450
KXXX	Colby, Kans.	790
KXYZ	Houston, Tex.	1320
KYA	San Francisco, Calif.	1260
KYCA	Prescott, Ariz.	1490
KYCN	Wheatland, Wyo.	1340
KYES	Roseburg, Oreg.	950
KYJC	Medford, Oreg.	1230
KYME	Boise, Idaho	740
KYND	Tempe, Ariz.	1580
KYNG	Coos Bay, Oreg.	1420
KYNO	Fresno, Calif.	1300
KYNT	Yankton, S.Dak.	1450
KYOK	Houston, Tex.	1590
KYOR	Blythe, Calif.	1450
KYOS	Merced, Calif.	1480
KYOU	Greeley, Colo.	1450
KYRO	Potosi, Mo.	1280
KYSM	Mankato, Minn.	1230
KYSN	Colorado Sprgs., Colo.	1460
KYSS	Missoula, Mont.	910
KYUM	Yuma, Ariz.	560
KYVA	Gallup, N.Mex.	1230
KYW	Cleveland, Ohio	1100
KZEE	Weatherford, Tex.	1220
KZEY	Tyler, Tex.	690
KZIP	Amarillo, Tex.	1310
KZIX	Fort Collins, Colo.	600
KZNG	Hot Springs, Ark.	1470
KZOK	Prescott, Ariz.	1340
KZOL	Farwell, Tex.	1570
KZON	Tolleson, Ariz.	1190
KZOT	Marianna, Ark.	1460
KZOW	Globe, Ariz.	1240
KZUN	Opportunity, Wash.	630
KZZN	Littlefield, Tex.	1490
WAAA	Winston-Salem, N.C.	980
WAAB	Worcester, Mass.	1440
WAAF	Chicago, Ill.	950
WAAG	Adel, Ga.	1470
WAAK	Dallas, N.C.	960
WAAP	Peoria, Ill.	1350
WAAT	Trenton, N.J.	1300
WAAX	Gadsden, Ala.	570
WAAY	Huntsville, Ala.	1550
WABA	Aguadilla, P.Rico	850
WABB	Mobile, Ala.	1480
WABC	New York, N.Y.	770

C.L.	Location	Kc.
WABF	Fairhope, Ala.	1220
WABG	Greenwood, Miss.	960
WABH	Deerfield, Va.	1150
WABI	Bangor, Maine	910
WABJ	Adrian, Mich.	1490
WABL	Amite, La.	1570
WABO	Waynesboro, Miss.	990
WABQ	Cleveland, Ohio	1540
WABR	Winter Park, Fla.	1440
WABT	Tuskegee, Ala.	580
WABV	Abbeville, S.C.	1590
WABW	Annapolis, Md.	810
WABY	Albany, N.Y.	1400
WABZ	Albemarle, N.C.	1010
WACA	Camden, S.C.	1590
WACB	Kittanning, Pa.	1380
WACE	Chicopee, Mass.	730
WACK	Newark, N.Y.	1420
WACL	Waycross, Ga.	570
WACO	Waco, Tex.	1460
WACR	Columbus, Miss.	1050
WACT	Tuscaloosa, Ala.	1420
WADA	Shelby, N.C.	1390
WADC	Akron, Ohio	1350
WADE	Wadesboro, N.C.	1210
WADK	Newport, R.I.	1540
WADO	New York, N.Y.	1280
WADP	Kane, Pa.	960
WADS	Ansonia, Conn.	690
WAEB	Allentown, Pa.	790
WAEL	Mayaguez, P.Rico	600
WAFC	Staunton, Va.	900
WAFS	Amsterdam, N.Y.	1570
WAGE	Leesburg, Va.	1290
WAGF	Dothan, Ala.	1320
WAGG	Franklin, Tenn.	950
WAGM	Presque Isle, Maine	950
WAGN	Menominee, Mich.	1340
WAGR	Lumberton, N.C.	580
WAGS	Bishopville, S.C.	1380
WAGY	Forest City, N.C.	1320
WAIK	Galesburg, Ill.	1590
WAIL	Baton Rouge, La.	1460
WAIM	Anderson, S.C.	1230
WAIN	Columbia, Ky.	1270
WAIP	Prichard, Ala.	1270
WAIR	Winston-Salem, N.C.	1340
WAIT	Chicago, Ill.	820
WAJF	Decatur, Ala.	1490
WAJR	Morgantown, W.Va.	1440
WAKE	Atlanta, Ga.	1340
WAKI	McMinnville, Tenn.	1230
WAKN	Aiken, S.C.	990
WAKO	Lawrenceville, Ill.	910
WAKR	Akron, Ohio	1590
WAKY	Louisville, Ky.	790
WALA	Mobile, Ala.	1410
WALD	Walterboro, S.C.	1220
WALE	Fall River, Mass.	1400
WALG	Albany, Ga.	1590
WALK	Patchogue, N.Y.	1370
WALL	Middletown, N.Y.	1340
WALM	Albion, Mich.	1260
WALO	Humacao, P.R.	1240
WALT	Tampa, Fla.	1110
WALY	Herkimer, N.Y.	1420
WAMD	Aberdeen, Md.	970
WAME	Miami, Fla.	1260
WAMI	Opp, Ala.	860
WAML	Laurel, Miss.	1340
WAMM	Flint, Mich.	1420
WAMO	Homestead, Pa.	860
WAMR	Venice, Fla.	1320
WAMS	Wilmington, Del.	1380
WAMW	Washington, Ind.	1580
WAMY	Amory, Miss.	1580
WANA	Anniston, Ala.	1490
WANB	Waynesburg, Pa.	1580
WAND	Canton, Ohio	900
WANE	Ft. Wayne, Ind.	1450
WANN	Annapolis, Md.	1190
WANS	Anderson, S.C.	1280
WANT	Richmond, Va.	990
WANY	Albany, Ky.	1390
WAOK	Atlanta, Ga.	1380
WAOV	Vincennes, Ind.	1450
WAPA	San Juan, P.R.	680
WAPC	Riverhead, N.Y.	1570
WAPE	Jacksonville, Fla.	690
WAPF	McComb, Miss.	980
WAPG	Arcadia, Fla.	1480
WAPI	Birmingham, Ala.	1070
WAPL	Appleton, Wis.	1570
WAPO	Chattanooga, Tenn.	1150
WAPX	Montgomery, Ala.	1600
WAQE	Towson, Md.	1570
WARA	Attleboro, Mass.	1320
WARB	Covington, La.	730
WARD	Johnstown, Pa.	1490
WARE	Ware, Mass.	1250
WARF	Jasper, Ala.	1240
WARI	Abbeville, Ala.	1480
WARK	Hagerstown, Md.	1490
WARL	Arlington, Va.	780
WARM	Scranton, Pa.	590
WARN	Ft. Pierce, Fla.	1330
WARO	Canonsburg, Pa.	540
WARU	Peru, Ind.	1600
WASA	Havre de Grace, Md.	1330
WASK	Lafayette, Ind.	1450
WATA	Boone, N.C.	1450
WATC	Gaylord, Mich.	900
WATE	Knoxville, Tenn.	620
WATH	Athens, Ohio	970
WATK	Antigo, Wis.	900
WATM	Atmore, Ala.	1590
WATN	Watertown, N.Y.	1240
WATO	Oak Ridge, Tenn.	1290
WATP	Marion, S.C.	1430
WATR	Waterbury, Conn.	1320
WATS	Sayre, Pa.	960
WATT	Cadillac, Mich.	1240
WATV	Birmingham, Ala.	900
WATW	Ashland, Wis.	1400
WATZ	Alpena, Mich.	1450
WAUB	Auburn, N.Y.	1590
WAUC	Wauchula, Fla.	1310
WAUD	Auburn, Ala.	1230
WAUG	Augusta, Ga.	1050
WAUX	Waukesha, Wis.	1510
WAVE	Louisville, Ky.	970
WAVI	Dayton, Ohio	1210
WAVL	Apollo, Pa.	910
WAVN	Stillwater, Minn.	1220
WAVO	Avondale Estates, Ga.	1420
WAVP	Avon Park, Fla.	1390
WAVU	Albertville, Ala.	630
WAVY	Portsmouth, Va.	1350
WAVZ	New Haven, Conn.	1300
WAWA	West Allis, Wis.	1590
WAWK	Kendallville, Ind.	1570
WAWZ	Zarephath, N.J.	1380
WAXE	Vero Beach, Fla.	1370
WAXU	Georgetown, Ky.	1580
WAXX	Chippewa Falls, Wis.	1150
WAYB	Waynesboro, Va.	1490
WAYE	Dundalk, Md.	860
WAYN	Rockingham, N.C.	900
WAYR	Orange Park, Fla.	550
WAYS	Charlotte, N.C.	610
WAYX	Waycross, Ga.	1230
WAYZ	Waynesboro, Pa.	1380
WAZA	Bainbridge, Ga.	1360
WAZE	Clearwater, Fla.	860
WAZF	Yazoo City, Miss.	1230
WAZL	Hazelton, Pa.	1490
WAZY	Lafayette, Ind.	1410
WBAA	West Lafayette, Ind.	920
WBAB	Babylon, N.Y.	1440
WBAC	Cleveland, Tenn.	1340
WBAG	Burlington, N.C.	1150
WBAL	Baltimore, Md.	1090
WBAM	Montgomery, Ala.	740
WBAP	Ft. Worth, Tex.	570, 820
WBAR	Bartow, Fla.	1460
WBAT	Marion, Ind.	1400
WBAW	Barnwell, S.C.	740
WBAX	Wilkes-Barre, Pa.	1240
WBAY	Green Bay, Wis.	1360
WBAZ	Kingston, N.Y.	1550
WBBA	Pittsfield, Ill.	1580
WBBB	Burlington, N.C.	920
WBBF	Rochester, N.Y.	950
WBBI	Abingdon, Va.	1230
WBBK	Blakely, Ga.	1260
WBBL	Richmond, Va.	1480
WBBM	Chicago, Ill.	780
WBBO	Forest City, N.C.	780
WBBQ	Augusta, Ga.	1340
WBBR	E. St. Louis, Ill.	1490
WBBT	Lyons, Ga.	1340
WBBW	Youngstown, Ohio	1240
WBBX	Portsmouth, N.H.	1380
WBBY	Wood River, Ill.	590
WBBZ	Ponca City, Okla.	1230
WBCA	Bay Minette, Ala.	1150
WBCB	Levittown, Pa.	1490
WBCH	Hastings, Mich.	1220
WBCI	Williamsburg, Va.	740
WBCK	Battle Creek, Mich.	930
WBCM	Bay City, Mich.	1440
WBCR	Christiansburg, Va.	1260
WBCU	Union, S.C.	1460
WBEC	Pittsfield, Mass.	1420
WBEE	Harvey, Ill.	1570
WBEJ	Elizabethton, Tenn.	1240
WBEL	South Beloit, Ill.	1380
WBEN	Buffalo, N.Y.	930
WBET	Brockton, Mass.	1460
WBEU	Beaufort, S.C.	960
WBEV	Beaver Dam, Wis.	1430
WBEX	Chillicothe, Ohio	1490
WBFC	Fremont, Mich.	1490
WBFD	Bedford, Pa.	1310
WBGC	Chipley, Fla.	1240
WBGN	Bowling Green, Ky.	1340
WBGR	Jesup, Ga.	1370
WBHB	Fitzgerald, Ga.	1240
WBHC	Hampton, S.C.	1270
WBHF	Cartersville, Ga.	1450
WBHM	Birmingham, Ala.	1550
WBHP	Huntsville, Ala.	1230
WBIA	Augusta, Ga.	1230
WBIC	Islip, N.Y.	540
WBIE	Marietta, Ga.	1050
WBIG	Greensboro, N.C.	1470
WBIL	Leesburg, Fla.	1410
WBIP	Booneville, Miss.	1400
WBIR	Knoxville, Tenn.	1240
WBIS	Bristol, Conn.	1440
WBIW	Bedford, Ind.	1340
WBIZ	Eau Claire, Wis.	1400
WBKH	Hattiesburg, Miss.	950
WBKN	Newton, Miss.	1410
WBKV	West Bend, Wis.	1470
WBLA	Elizabethtown, N.C.	1440
WBLE	Batesville, Miss.	1290
WBLF	Bellefonte, Pa.	1330
WBLG	Lexington, Ky.	1300
WBLJ	Dalton, Ga.	1230
WBLO	Evergreen, Ala.	1470
WBLR	Batesburg, S.C.	1430
WBLT	Bedford, Va.	1350
WBLU	Salem, Va.	1480
WBLY	Springfield, Ohio	1600
WBMA	Beaufort, N.C.	1400
WBMC	McMinnville, Tenn.	960
WBMD	Baltimore, Md.	750
WBMK	West Point, Ga.	1310
WBML	Macon, Ga.	1240
WBMT	Black Mountain, N.C.	1350
WBNB	Charlotte Amalie, Virgin Islands	1000
WBNC	Conway, N.H.	1050
WBNL	Boonville, Ind.	1540
WBNR	Beacon, N.Y.	1260
WBNS	Columbus, Ohio	1460
WBNT	Oneida, Tenn.	1310
WBNX	New York, N.Y.	1380
WBOB	Galax, Va.	1360
WBOC	Salisbury, Md.	960
WBOF	Virginia Beach, Va.	1550
WBOK	New Orleans, La.	800
WBOP	Pensacola, Fla.	980
WBOS	Brookline, Mass.	1600
WBOW	Terre Haute, Ind.	1230
WBOY	Clarksburg, W.Va.	1400
WBPZ	Lock Haven, Pa.	1230
WBRB	Mt. Clemens, Mich.	1430
WBRC	Birmingham, Ala.	960
WBRD	Bradenton, Fla.	1420
WBRE	Wilkes-Barre, Pa.	1340
WBRG	Lynchburg, Va.	1050
WBRK	Pittsfield, Mass.	1340
WBRM	Marion, N.C.	1250
WBRN	Big Rapids, Mich.	1460
WBRO	Waynesboro, Ga.	1310
WBRT	Bardstown, Ky.	1320
WBRV	Boonville, N.Y.	900
WBRX	Berwick, Pa.	1280
WBRY	Waterbury, Conn.	1590
WBSA	Boaz, Ala.	1300
WBSC	Bennetsville, S.C.	1550
WBSG	Blackshear, Ga.	1350
WBSM	New Bedford, Mass.	1420
WBT	Charlotte, N.C.	1110
WBTA	Batavia, N.Y.	1490
WBTH	Williamson, W.Va.	1400
WBTL	Farmville, N.C.	1050
WBTM	Danville, Va.	1330
WBTN	Bennington, Vt.	1370
WBTO	Linton, Ind.	1600
WBTS	Bridgeport, Ala.	1480
WBUC	Buckhannon, W.Va.	1460
WBUD	Trenton, N.J.	1260
WBUT	Butler, Pa.	1050
WBUX	Doylestown, Pa.	1570
WBUY	Lexington, N.C.	1440
WBUZ	Fredonia, N.Y.	1570
WBVL	Barbourville, Ky.	950
WBVM	Utica, N.Y.	1550
WBVP	Beaver Falls, Pa.	1230
WBYE	Calera, Ala.	1370
WBYG	Savannah, Ga.	1450
WBYS	Canton, Ill.	1560
WBZ	Boston, Mass.	1030
WBZA	Springfield, Mass.	1030
WBZY	Torrington, Conn.	990
WCAL	Northfield, Minn.	770
WCAM	Camden, N.J.	1310
WCAO	Baltimore, Md.	600
WCAP	Lowell, Mass.	980
WCAR	Detroit, Mich.	1130
WCAT	Orange, Mass.	1390
WCAU	Philadelphia, Pa.	1210
WCAW	Charleston, W.Va.	680
WCAX	Burlington, Vt.	620
WCAY	Cayce, S.C.	620
WCAZ	Carthage, Ill.	990
WCBA	Corning, N.Y.	1350
WCBG	Chambersburg, Pa.	1590
WCBI	Columbus, Miss.	550
WCBL	Benton, Ky.	1290
WCBM	Baltimore, Md.	680
WCBS	New York, N.Y.	880
WCBT	Roanoke Rapids, N.C.	1230
WCBY	Cheboygan, Mich.	1240
WCCC	Hartford, Conn.	1290
WCCM	Lawrence, Mass.	800
WCCN	Neillsville, Wis.	1370
WCCO	Minneapolis, Minn.	830
WCCW	Traverse City, Mich.	1310
WCDL	Carbondale, Pa.	1440
WCDJ	Edenton, N.C.	1260
WCDT	Winchester, Tenn.	1340
WCEC	Rocky Mount, N.C.	810
WCED	DuBois, Pa.	1420
WCEF	Parksburg, W.Va.	1050
WCEH	Hawkinsville, Ga.	610
WCEM	Cambridge, Md.	1240
WCEN	Mt. Pleasant, Mich.	1150
WCER	Charlotte, Mich.	1390
WCFL	Chicago, Ill.	1000
WCFR	Springfield, Vt.	1480
WCFV	Clifton Forge, Va.	1230
WCGA	Calhoun, Ga.	900
WCGC	Belmont, N.C.	1270
WCGO	Chicago Hghts., Ill.	1600
WCGR	Canandaigua, N.Y.	1550
WCHA	Chambersburg, Pa.	800
WCHB	Inkster, Mich.	1440
WCHI	Chillicothe, Ohio	1350
WCHJ	Brookhaven, Miss.	1470
WCHK	Canton, Ga.	1290
WCHO	Washington Court House, Ohio	1250
WCHL	Chapel Hill, N.C.	1360
WCHN	Norwich, N.Y.	970
WCHS	Charleston, W.Va.	580
WCHV	Charlottesville, Va.	1260
WCIL	Carbondale, Ill.	1020
WCIN	Cincinnati, Ohio	1480
WCJU	Columbia, Miss.	1450
WCKB	Dunn, N.C.	780
WCKI	Greer, S.C.	1300
WCKM	Winnsboro, S.C.	1250
WCKR	Miami, Fla.	610
WCKY	Cincinnati, Ohio	1530
WCLA	Claxton, Ga.	1470
WCLB	Camilla, Ga.	1220
WCLC	Jamestown, Tenn.	1260
WCLD	Cleveland, Miss.	1490
WCLE	Cleveland, Tenn.	1570
WCLG	Morgantown, W.Va.	1300
WCLI	Corning, N.Y.	1450
WCLO	Janesville, Wis.	1230
WCLS	Columbus, Ga.	1580
WCLT	Newark, Ohio	1430
WCLW	Mansfield, Ohio	1570
WCMA	Corinth, Miss.	1230
WCMB	Harrisburg, Pa.	1460
WCMC	Wildwood, N.J.	1230
WCME	Brunswick, Maine	900
WCMI	Ashland, Ky.	1340
WCMN	Arecibo, P.R.	1280
WCMP	Pine City, Minn.	1350
WCMR	Elkhart, Ind.	1270
WCMS	Norfolk, Va.	1050
WCMT	Martin, Tenn.	1410
WCMY	Ottawa, Ill.	1430
WCNB	Connersville, Ind.	1580
WCNC	Elizabeth City, N.C.	1240
WCNF	Weldon, N.C.	1400
WCNH	Quincy, Fla.	1230
WCNL	Newport, N. H.	1010
WCNR	Bloomsburg, Pa.	930
WCNT	Centralia, Ill.	1210
WCNU	Crestview, Fla.	1010
WCNX	Middletown, Conn.	1150
WCOA	Pensacola, Fla.	1370
WCOC	Meridian, Miss.	910
WCOG	Greensboro, N.C.	1320
WCOH	Newnan, Ga.	1400
WCOJ	Coatesville, Pa.	1420
WCOL	Columbus, Ohio	1230
WCON	Cornelia, Ga.	1450
WCOP	Boston, Mass.	1150
WCOR	Lebanon, Tenn.	900
WCOS	Columbia, S.C.	1400
WCOU	Lewiston, Maine	1240
WCOV	Montgomery, Ala.	1170
WCOW	Sparta, Wis.	1290
WCOY	Columbia, Pa.	1580
WCPA	Clearfield, Pa.	900
WCPC	Houston, Miss.	1320
WCPH	Etowah, Tenn.	1220
WCPM	Cumberland, Ky.	1280
WCPO	Cincinnati, Ohio	1230
WCPS	Tarboro, N.C.	760
WCQS	Alma, Ga.	1400
WCRA	Effingham, Ill.	1090
WCRB	Waltham, Mass.	1330
WCRE	Cheraw, S.C.	1420
WCRI	Scottsboro, Ala.	1050
WCRK	Morristown, Tenn.	1150
WCRL	Oneonta, Ala.	1570
WCRM	Clare, Mich.	990
WCRO	Johnstown, Pa.	1230
WCRR	Corinth, Miss.	1330
WCRS	Greenwood, S.C.	1450
WCRT	Birmingham, Ala.	1260
WCRV	Washington, N.J.	1580
WCRW	Chicago, Ill.	1240
WCRY	Macon, Ga.	900
WCSC	Charleston, S.C.	1390
WCSH	Portland, Maine	970
WCSI	Columbus, Ind.	1010
WCSR	Hillsdale, Mich.	1340
WCSS	Amsterdam, N.Y.	1490
WCST	Berkeley Springs, W.Va.	1010
WCTA	Andalusia, Ala.	920
WCTC	New Brunswick, N.J.	1450
WCTT	Corbin, Ky.	680
WCTW	New Castle, Ind.	1550
WCUB	Manitowoc, Wis.	980
WCUE	Cuyahoga Falls, Ohio	1150
WCUM	Cumberland, Md.	1230
WCVA	Culpeper, Va.	1490
WCVI	Connellsville, Pa.	1340
WCVP	Murphy, N.C.	600
WCVQ	Kodiak, Alaska	960
WCVS	Springfield, Ill.	1450
WCWC	Ripon, Wis.	1600
WCYB	Bristol, Va.	690
WCYN	Cynthiana, Ky.	1400
WDAD	Indiana, Pa.	1450
WDAE	Tampa, Fla.	1250
WDAF	Kansas City, Mo.	610
WDAK	Columbus, Ga.	540
WDAL	Meridian, Miss.	1330
WDAN	Danville, Ill.	1490
WDAR	Darlington, S.C.	1350
WDAS	Philadelphia, Pa.	1480
WDAX	McRae, Ga.	1410
WDAY	Fargo, N. Dak.	970
WDBC	Escanaba, Mich.	680
WDBF	Delray Beach, Fla.	1420
WDBJ	Roanoke, Va.	960
WDBL	Springfield, Tenn.	1590
WDBM	Statesville, N.C.	550
WDBO	Orlando, Fla.	580
WDBQ	Dubuque, Iowa	1490
WDCF	Dade City, Fla.	1350
WDCR	Hanover, N.H.	1340
WDDT	Greenville, Miss.	900
WDDW	Halfway, Md.	1410
WDDY	Gloucester, Va.	1420
WDEA	Ellsworth, Me.	1350
WDEB	Pensacola, Fla.	610

C.L.	Location	Kc.
WDEC	Americus, Ga.	1290
WDEE	Hamden, Conn.	1220
WDEF	Chattanooga, Tenn.	1370
WDEH	Sweetwater, Tenn.	800
WDEL	Wilmington, Del.	1150
WDEV	Waterbury, Vt.	550
WDEW	Westfield, Mass.	1570
WDGY	Minneapolis, Minn.	1130
WDIA	Memphis, Tenn.	1070
WDIG	Dothan, Ala.	1450
WDIX	Orangeburg, S.C.	1150
WDJS	Mt. Olive, N.C.	1430
WDKD	Kingstree, S.C.	1310
WDKN	Dickson, Tenn.	1260
WDLA	Walton, N.Y.	1270
WDLB	Marshfield, Wis.	1450
WDLC	Port Jervis, N.Y.	1490
WDLR	Delaware, Ohio	1550
WDLM	E. Moline, Ill.	960
WDLT	Indianola, Miss.	1380
WDLP	Panama City, Fla.	590
WDMC	Otsego, Mich.	980
WDMF	Buford, Ga.	1460
WDMG	Douglas, Ga.	860
WDMJ	Marquette, Mich.	1320
WDMS	Lynchburg, Va.	1320
WDMV	Pocomoke City, Md.	540
WDNC	Durham, N.C.	620
WDNE	Elkins, W.Va.	1240
WDNG	Anniston, Ala.	1450
WDNT	Dayton, Tenn.	1280
WDOB	Canton, Miss.	1370
WDOC	Prestonsburg, Ky.	1310
WDOD	Chattanooga, Tenn.	1310
WDOE	Dunkirk, N.Y.	1410
WDOG	Marine City, Mich.	1590
WDOK	Cleveland, Ohio	1260
WDOL	Athens, Ga.	1470
WDON	Wheaton, Md.	1540
WDOR	Sturgeon Bay, Wis.	910
WDOS	Oneonta, N.Y.	730
WDOT	Burlington, Va.	1400
WDOV	Dover, Del.	1410
WDOW	Dowagiac, Mich.	1440
WDQN	DuQuoin, Ill.	1580
WDRC	Hartford, Conn.	1360
WDSC	Dillon, S.C.	800
WDSG	Dyersburg, Tenn.	1450
WDSK	Cleveland, Miss.	1410
WDSM	Superior, Wis.	710
WDSP	DeFuniak Springs, Florida	1280
WDSR	Lake City, Fla.	1340
WDSU	New Orleans, La.	1280
WDUN	Gainesville, Ga.	1240
WDUX	Waupaca, Wis.	800
WDUZ	Green Bay, Wis.	1400
WDVA	Danville, Va.	1250
WDVH	Gainesville, Fla.	980
WDVL	Vineland, N.J.	1270
WDWD	Dawson, Ga.	990
WDWS	Champaign, Ill.	1400
WDXB	Chattanooga, Tenn.	1490
WDXE	Lawrenceburg, Tenn.	1370
WDXI	Jackson, Tenn.	1310
WDXL	Lexington, Tenn.	1490
WDXN	Clarksville, Tenn.	540
WDXR	Paducah, Ky.	1560
WDXY	Sumter, S.C.	1240
WDZ	Decatur, Ill.	1050
WEAB	Greer, S.C.	800
WEAG	Alcoa, Tenn.	1470
WEAM	Arlington, Va.	1390
WEAN	Providence, R.I.	790
WEAQ	Eau Claire, Wis.	790
WEAS	College Park, Ga.	1570
WEAT	W. Palm Beach, Fla.	850
WEAV	Plattsburg, N.Y.	960
WEAW	Evanston, Ill.	1330
WEBB	Baltimore, Md.	1360
WEBC	Duluth, Minn.	560
WEBJ	Brewton, Ala.	1240
WEBO	Owego, N.Y.	1330
WEBQ	Harrisburg, Ill.	1240
WEBR	Buffalo, N.Y.	970
WEBY	Milton, Fla.	1330
WECL	Eau Claire, Wis.	1050
WEDC	Chicago, Ill.	1240
WEDO	McKeesport, Pa.	810
WEEB	Southern Pines, N.C.	990
WEED	Rocky Mount, N.C.	1390
WEEE	Rensselaer, N.Y.	1300
WEEI	Boston, Mass.	590
WEEL	Fairfax, Va.	1310
WEEN	Lafayette, Tenn.	1460
WEER	Warrenton, Va.	1570
WEET	Richmond, Va.	1320
WEEU	Reading, Pa.	850
WEEW	Washington, N.C.	1320
WEEX	Easton, Pa.	1230
WEEZ	Chester, Pa.	1590
WEGO	Concord, N.C.	1410
WEGP	Presque Isle, Maine	1390
WEHH	Elmira Heights-Horseheads, N. Y.	1590
WEIC	Charleston, Ill.	1270
WEIM	Fitchburg, Mass.	1280
WEIR	Weirton, W.Va.	1430
WEIS	Center, Ala.	990
WEJL	Scranton, Pa.	630
WEKR	Fayetteville, Tenn.	1240
WEKY	Richmond, Ky.	1340
WEKZ	Monroe, Wis.	1260
WELB	Elba, Ala.	1350
WELC	Welch, W.Va.	1150
WELD	Fisher, W.Va.	690

C.L.	Location	Kc.
WELE	S. Daytona, Fla.	1590
WELI	New Haven, Conn.	960
WELK	Charlottesville, Va.	1010
WELL	Battle Creek, Mich.	1400
WELM	Elmira, N.Y.	1410
WELO	Tupelo, Miss.	580
WELP	Easley, S.C.	1360
WELR	Roanoke, Ala.	1360
WELS	Kinston, N.C.	1010
WELY	Ely, Minn.	1450
WELZ	Belzoni, Miss.	1460
WEMB	Erwin, Tenn.	1420
WEMD	Easton, Md.	1460
WEMJ	Laconia, N.H.	1490
WEMP	Milwaukee, Wis.	1250
WENA	Bayamon, P.R.	1560
WENC	Whiteville, N.C.	1220
WEND	Edensburg, Pa.	1580
WENE	Endicott, N.Y.	1430
WENK	Union City, Tenn.	1240
WENN	Birmingham, Ala.	1320
WENO	Madison, Tenn.	1430
WENT	Gloversville, N.Y.	1340
WENY	Elmira, N.Y.	1230
WEOK	Poughkeepsie, N.Y.	1390
WEOL	Elyria, Ohio	930
WEPG	S. Pittsburgh, Tenn.	910
WEPM	Martinsburg, W.Va.	1340
WERA	Plainfield, N.J.	1590
WERD	Atlanta, Ga.	860
WERE	Cleveland, Ohio	1300
WERH	Hamilton, Ala.	970
WERI	Westerly, R.I.	1230
WERL	Eagle River, Wis.	950
WERT	Van Wert, Ohio	1220
WESA	Charleroi, Pa.	940
WESB	Bradford, Pa.	1490
WESC	Greenville, S.C.	660
WESN	N. Augusta, S.C.	1550
WESO	Southbridge, Mass.	970
WESR	Tasley, Va.	1330
WEST	Easton, Pa.	1400
WESX	Salem, Mass.	1230
WESY	Leland, Miss.	1580
WETB	Johnson City, Tenn.	790
WETC	Wendell-Zebulon, N.C.	540
WETH	St. Augustine, Fla.	1420
WETO	Gadsden, Ala.	930
WETT	Ocean City, Md.	1590
WETU	Wetumpka, Ala.	1250
WETZ	New Martinsville, West Virginia	1330
WEUC	Ponce, P.R.	1420
WEUP	Huntsville, Ala.	1600
WEVA	Emporia, Va.	860
WEVD	New York, N.Y.	1330
WEVE	Eveleth, Minn.	1340
WEW	St. Louis, Mo.	770
WEWO	Laurinburg, N.C.	1080
WEXL	Royal Oak, Mich.	1340
WEYE	Sanford, N.C.	1290
WEZB	Birmingham, Ala.	1220
WEZE	Boston, Mass.	1260
WEZJ	Williamsburg, Ky.	1440
WEZN	Elizabethtown, Pa.	1600
WEZY	Cocoa, Fla.	1350
WFAA	Dallas, Tex.	570, 820
WFAB	Miami, Fla.	990
WFAG	Farmville, N.C.	1250
WFAH	Alliance, Ohio	1310
WFAI	Fayetteville, N.C.	1230
WFAR	Farrell, Pa.	1470
WFAS	White Plains, N.Y.	1230
WFAU	Augusta, Me.	1340
WFAX	Falls Church, Va.	1220
WFBC	Greenville, S.C.	1330
WFBG	Altoona, Pa.	1290
WFBL	Syracuse, N.Y.	1390
WFBM	Indianapolis, Ind.	1260
WFBR	Baltimore, Md.	1300
WFCT	Fountain City, Tenn.	1430
WFDF	Flint, Mich.	910
WFDR	Manchester, Ga.	1370
WFEA	Manchester, N.Y.	1370
WFEB	Sylacauga, Ala.	1340
WFEC	Miami, Fla.	1220
WFFF	Columbia, Miss.	1600
WFFG	Marathon, Fla.	1300
WFGM	Fitchburg, Mass.	960
WFGN	Gaffney, S.C.	1570
WFHG	Bristol, Va.	980
WFHK	Pell City, Ala.	1430
WFHR	Wis. Rapids, Wis.	1320
WFIG	Sumter, S.C.	1290
WFIL	Philadelphia, Pa.	560
WFIN	Findlay, Ohio	1330
WFIS	Fountain Inn, S.C.	1600
WFIW	Fairfield, Ill.	1390
WFKN	Franklin, Ky.	1220
WFKY	Frankfort, Ky.	1490
WFLA	Tampa, Fla.	970
WFLB	Fayetteville, N.C.	1490
WFLI	Lookout Mtn., Tenn.	1070
WFLN	Philadelphia, Pa.	900
WFLO	Farmville, Va.	870
WFLR	Dundee, N.Y.	1570
WFLS	Fredericksburg, Va.	1350
WFLW	Monticello, Ky.	1360
WFMC	Goldsboro, N.C.	730
WFMD	Frederick, Md.	930
WFMH	Cullman, Ala.	1460
WFMJ	Youngstown, Ohio	1390
WFMO	Fairmont, N.C.	860
WFMW	Madisonville, Ky.	730
WFNC	Fayetteville, N.C.	1390
WFOB	Fostoria, Ohio	1430
WFOM	Marietta, Ga.	1230
WFOR	Hattiesburg, Miss.	1400
WFOX	Milwaukee, Wis.	860

C.L.	Location	Kc.
WFOY	St. Augustine, Fla.	1240
WFPA	Fort Payne, Ala.	1400
WFPG	Atlantic City, N.J.	1450
WFPM	Fort Valley, Ga.	1150
WFPR	Hammond, La.	1400
WFRA	Franklin, Pa.	1430
WFRB	Frostburg, Md.	740
WFRC	Reidsville, N.C.	1600
WFRL	Freeport, Ill.	1570
WFRM	Coudersport, Pa.	600
WFRO	Fremont, Ohio	900
WFRX	West Frankfort, Ill.	1300
WFSC	Franklin, N.C.	1050
WFST	Caribou, Maine	600
WFTC	Kinston, N.C.	960
WFTG	London, Ky.	1400
WFTL	Ft. Lauderdale, Fla.	1400
WFTM	Maysville, Ky.	1240
WFTR	Front Royal, Va.	1450
WFTW	Ft. Walton Beach, Florida	1260
WFUL	Fulton, Ky.	1270
WFUN	Huntsville, Ala.	1450
WFUR	Grand Rapids, Mich.	1570
WFVA	Fredericksburg, Va.	1230
WFVG	Fuquay Sprgs., N.C.	1460
WFWL	Camden, Tenn.	1220
WFYC	Alma, Mich.	1280
WFYI	Mineola, N.Y.	1520
WGAA	Cedartown, Ga.	1340
WGAC	Augusta, Ga.	580
WGAD	Gadsden, Ala.	1350
WGAF	Valdosta, Ga.	910
WGAI	Elizabeth City, N.C.	560
WGAL	Lancaster, Pa.	1490
WGAN	Portland, Maine	560
WGAP	Maryville, Tenn.	1400
WGAR	Cleveland, Ohio	1220
WGAS	S. Gastonia, N.C.	1420
WGAT	Gate City, Va.	1050
WGAU	Athens, Ga.	1340
WGAW	Gardner, Mass.	1340
WGBA	Columbus, Ga.	1270
WGBB	Freeport, N.Y.	1240
WGBF	Evansville, Ind.	1280
WGBG	Greensboro, N.C.	1400
WGBI	Scranton, Pa.	910
WGBR	Goldsboro, N. C.	1150
WGBS	Miami, Fla.	710
WGCB	Red Lion, Pa.	1440
WGCD	Chester, S.C.	1490
WGCM	Gulfport, Miss.	1240
WGEA	Geneva, Ala.	1150
WGEE	Indianapolis, Ind.	1590
WGEM	Quincy, Ill.	1440
WGES	Chicago, Ill.	1390
WGET	Gettysburg, Pa.	1320
WGEZ	Beloit, Wis.	1490
WGFA	Watseka, Ill.	1360
WGFS	Covington, Ga.	1430
WGGA	Gainesville, Ga.	550
WGGG	Gainesville, Fla.	1230
WGGH	Marion, Ill.	1150
WGGO	Salamanca, N.Y.	1590
WGH	Newport News, Va.	1310
WGHC	Clayton, Ga.	1570
WGHM	Skowegan, Maine	1150
WGHN	Grd. Haven, Mich.	1370
WGHO	Kingston, N.Y.	920
WGIG	Brunswick, Ga.	1440
WGIL	Galesburg, Ill.	1400
WGIR	Manchester, N.H.	610
WGIV	Charlotte, N.C.	1600
WGKA	Atlanta, Ga.	1600
WGL	Fort Wayne, Ind.	1250
WGLC	Centreville, Miss.	1580
WGLI	Babylon, N.Y.	1290
WGMA	Hollywood, Fla.	1320
WGML	Hinesville, Ga.	990
WGMM	Millington, Tenn.	1380
WGMS	Washington, D.C.	570
WGN	Chicago, Ill.	720
WGNC	Gastonia, N.C.	1450
WGNI	Wilmington, N.C.	1450
WGNS	Murfreesboro, Tenn.	1450
WGNO	Granite City, Ill.	920
WGNY	Newburgh, N.Y.	1220
WGOG	Walhalla, S.C.	1460
WGOH	Grayson, Ky.	1370
WGOK	Mobile, Ala.	900
WGOL	Goldsboro, N.C.	1300
WGOV	Valdosta, Ga.	950
WGPA	Bethlehem, Pa.	1100
WGPC	Albany, Ga.	1450
WGR	Buffalo, N.Y.	550
WGRA	Cairo, Ga.	790
WGRC	Green Cove Springs, Florida	1580
WGRD	Grand Rapids, Mich.	1410
WGRF	Aguadella, P.R.	1340
WGRM	Greenwood, Miss.	1240
WGRO	Lake City, Fla.	960
WGRP	Greenville, Pa.	940
WGRV	Greeneville, Tenn.	1340
WGRY	Gary, Ind.	1370
WGSA	Ephrata, Pa.	1310
WGSB	Geneva, Ill.	1480
WGSM	Huntington, N.Y.	740
WGSR	Millen, Ga.	1570
WGST	Atlanta, Ga.	920
WGSV	Guntersville, Ala.	1270
WGSW	Greenwood, S.C.	1350
WGTA	Summerville, Ga.	930
WGTC	Greenville, N.C.	1590
WGTL	Kannapolis, N.C.	870
WGTM	Wilson, N.C.	590
WGTN	Georgetown, S.C.	1400
WGTO	Cypress Gardens, Fla.	540
WGUN	Decatur, Ga.	1010

C.L.	Location	Kc.
WGUS	North Augusta, S.C.	1380
WGUY	Bangor, Maine	1250
WGVA	Geneva, N.Y.	1240
WGVM	Greenville, Miss.	1260
WGWC	Selma, Ala.	1340
WGWR	Asheboro, N.C.	1260
WGY	Schenectady, N.Y.	810
WGYV	Greenville, Ala.	1380
WHA	Madison, Wis.	970
WHAB	Baxley, Ga.	1260
WHAI	Greenfield, Mass.	1240
WHAK	Rogers City, Mich.	960
WHAL	Shelbyville, Tenn.	1400
WHAM	Rochester, N.Y.	1180
WHAN	Haines City, Fla.	930
WHAP	Hopewell, Va.	1340
WHAR	Clarksburg, W.Va.	1340
WHAS	Louisville, Ky.	840
WHAT	Philadelphia, Pa.	1340
WHAV	Haverhill, Mass.	1490
WHAW	Weston, W.Va.	980
WHAY	New Britain, Conn.	910
WHAZ	Troy, N.Y.	1330
WHB	Kansas City, Mo.	710
WHBB	Selma, Ala.	1490
WHBC	Canton, Ohio	1480
WHBF	Rock Island, Ill.	1270
WHBG	Harrisonburg, Va.	1360
WHBI	Newark, N.J.	1280
WHBL	Sheboygan, Wis.	1330
WHBN	Harrodsburg, Ky.	1420
WHBO	Tampa, Fla.	1050
WHBQ	Memphis, Tenn.	560
WHBT	Harriman, Tenn.	1600
WHBU	Anderson, Ind.	1240
WHBY	Appleton, Wis.	1230
WHCC	Waynesville, N.C.	1400
WHCO	Sparta, Ill.	1230
WHCU	Ithaca, N.Y.	870
WHDF	Houghton, Mich.	1400
WHDH	Boston, Mass.	850
WHDL	Olean, N.Y.	1450
WHDM	McKenzie, Tenn.	1440
WHEB	Portsmouth, N.H.	750
WHEC	Rochester, N.Y.	1460
WHEE	Martinsville, Va.	1370
WHEN	Syracuse, N.Y.	620
WHEO	Stuart, Va.	1270
WHEP	Foley, Ala.	1310
WHER	Memphis, Tenn.	1430
WHEW	Riviera Beach, Fla.	1600
WHEY	Millington, Tenn.	1220
WHFB	Benton Harbor, Mich.	1060
WHFC	Cicero, Ill.	1450
WHGB	Harrisburg, Pa.	1400
WHGR	Houghton L., Mich.	1290
WHHH	Warren, Ohio	1440
WHHT	Lucedale, Miss.	1440
WHHV	Hillsville, Va.	1400
WHHY	Montgomery, Ala.	1440
WHHM	Memphis, Tenn.	1340
WHIE	Griffin, Ga.	1320
WHIH	Portsmouth, Va.	1400
WHIL	Medford, Mass.	1430
WHIM	E. Providence, R.I.	1110
WHIN	Gallatin, Tenn.	1010
WHIO	Dayton, Ohio	1290
WHIP	Mooresville, N.C.	1350
WHIR	Danville, Ky.	1230
WHIS	Bluefield, W.Va.	1440
WHIT	New Bern, N.C.	1450
WHIY	Orlando, Fla.	1270
WHIZ	Zanesville, Ohio	1240
WHJB	Greensburg, Pa.	620
WHJC	Matawan, W.Va.	1360
WHK	Cleveland, Ohio	1420
WHKP	Hendersonville, N.C.	1450
WHKY	Hickory, N.C.	1290
WHLB	Virginia, Minn.	1400
WHLD	Niagara Falls, N.Y.	1270
WHLF	South Boston, Va.	1400
WHLI	Hempstead, N.Y.	1100
WHLL	Wheeling, W.Va.	1600
WHLM	Bloomsburg, Pa.	550
WHLN	Harlan, Ky.	1410
WHLO	Akron, Ohio	640
WHLP	Centerville, Tenn.	1570
WHLS	Port Huron, Mich.	1450
WHLT	Huntington, Ind.	1300
WHMA	Anniston, Ala.	1390
WHMC	Gaithersburg, Md.	1150
WHMI	Howell, Mich.	1350
WHMP	Northampton, Mass.	1400
WHN	New York, N.Y.	1050
WHNC	Henderson, N.C.	890
WHNY	McComb, Miss.	1250
WHO	Des Moines, Iowa	1040
WHOA	San Juan, P.R.	870
WHOC	Philadelphia, Miss.	1490
WHOF	Canton, Ohio	1060
WHOK	Lancaster, Ohio	1320
WHOL	Allentown, Pa.	600
WHOM	New York, N.Y.	1480
WHOO	Orlando, Fla.	990
WHOP	Hopkinsville, Ky.	1230
WHOS	Decatur, Ala.	800
WHOT	Campbell, Ohio	1330
WHOU	Houlton, Maine	1340
WHOW	Clinton, Ill.	1520
WHP	Harrisburg, Pa.	580
WHPB	Belton, S.C.	1390
WHPE	High Point, N.C.	1070
WHRT	Hartselle, Ala.	860
WHRV	Ann Arbor, Mich.	1600
WHSC	Hartsville, S.C.	1450
WHSM	Hayward, Wis.	910
WHSY	Hattiesburg, Miss.	1230
WHTC	Holland, Mich.	1450

C.L.	Location	Kc.
WHTG	Eatontown, N.J.	1410
WHUB	Cookeville, Tenn.	1400
WHUC	Hudson, N.Y.	1230
WHUM	Reading, Pa.	1240
WHUN	Huntington, Pa.	1150
WHUT	Anderson, Ind.	1470
WHVF	Wausau, Wis.	1230
WHVH	Henderson, N.C.	1450
WHVR	Hanover, Pa.	1280
WHWB	Rutland, Vt.	1000
WHWH	Princeton, N.J.	1350
WHYE	Roanoke, Va.	910
WHYL	Carlisle, Pa.	960
WHYN	Springfield, Mass.	560
WIAC	San Juan, P.R.	740
WIAM	Williamston, N.C.	900
WIBA	Madison, Wis.	1310
WIBB	Macon, Ga.	1280
WIBC	Indianapolis, Ind.	1070
WIBG	Philadelphia, Pa.	990
WIBM	Jackson, Mich.	1450
WIBR	Baton Rouge, La.	1300
WIBU	Poynette, Wis.	1240
WIBV	Belleville, Ill.	1260
WIBW	Topeka, Kans.	580
WIBX	Utica, N.Y.	950
WICC	Bridgeport, Conn.	600
WICE	Providence, R.I.	1290
WICH	Norwich, Conn.	1310
WICK	Scranton, Pa.	1400
WICO	Salisbury, Md.	1320
WICU	Erie, Pa.	1330
WICY	Malone, N.Y.	1490
WIDE	Biddeford, Maine	1400
WIDU	Fayetteville, N.C.	1600
WIEL	Elizabethtown, Ky.	1400
WIFM	Elkin, N.C.	1540
WIGL	Superior, Wis.	970
WIGM	Medford, Wis.	1490
WIIN	Atlanta, Ga.	970
WIKB	Iron River, Mich.	1230
WIKC	Bogalusa, La.	1490
WIKE	Newport, Vt.	1490
WIKY	Evansville, Ind.	820
WIL	St. Louis, Mo.	1430
WILA	Danville, Va.	1580
WILD	Boston, Mass.	1090
WILE	Cambridge, Ohio	1270
WILI	Willimantic, Conn.	1400
WILK	Wilkes-Barre, Pa.	980
WILL	Urbana, Ill.	580
WILM	Wilmington, Del.	1450
WILO	Frankfort, Ind.	1570
WILS	Lansing, Mich.	1320
WILZ	St. Petersburg Beach, Florida	1590
WIMA	Lima, Ohio	1150
WIMO	Winder, Ga.	1300
WIMS	Michigan City, Ind.	1420
WINA	Charlottesville, Va.	1400
WINC	Winchester, Va.	1400
WIND	Chicago, Ill.	560
WINF	Manchester, Conn.	1230
WING	Dayton, Ohio	1410
WINI	Murphysboro, Ill.	1420
WINK	Fort Myers, Fla.	1240
WINN	Louisville, Ky.	1240
WINQ	Tampa, Fla.	1010
WINR	Binghamton, N.Y.	680
WINS	New York, N.Y.	1010
WINT	Winter Haven, Fla.	1360
WINX	Rockville, Md.	1600
WINY	Putnam, Conn.	1350
WINZ	Miami, Fla.	940
WIOI	New Boston, Ohio	1010
WIOK	Normal, Ill.	1440
WION	Ionia, Mich.	1430
WIOS	Tawas City, Mich.	1480
WIOU	Kokomo, Ind.	1350
WIP	Philadelphia, Pa.	610
WIPC	Lake Wales, Fla.	1280
WIPR	San Juan, P.R.	940
WIPS	Ticonderoga, N.Y.	1250
WIRA	Fort Pierce, Fla.	1400
WIRB	Enterprise, Ala.	600
WIRC	Hickory, N.C.	630
WIRD	Lake Placid, N.Y.	920
WIRE	Indianapolis, Ind.	1430
WIRJ	Humboldt, Tenn.	740
WIRK	W. Palm Beach, Fla.	1290
WIRL	Peoria, Ill.	1290
WIRO	Ironton, Ohio	1230
WIRV	Irvine, Ky.	1550
WIRY	Plattsburg, N.Y.	1340
WIS	Columbia, S.C.	560
WISA	Isabella, P.R.	1390
WISE	Asheville, N.C.	1310
WISH	Indianapolis, Ind.	1310
WISL	Shamokin, Pa.	1480
WISM	Madison, Wis.	1480
WISN	Milwaukee, Wis.	1150
WISO	Ponce, P.R.	1260
WISP	Kinston, N.C.	1230
WISR	Butler, Pa.	680
WIST	Charlotte, N.C.	1240
WISV	Virouqua, Wis.	1360
WITA	San Juan, P.R.	1140
WITE	Brazil, Ind.	1380
WITH	Baltimore, Md.	1230
WITT	Lewisburg, Pa.	1010
WITW	Washington, N.C.	930
WITY	Danville, Ill.	980
WITZ	Jasper, Ind.	990
WIVE	Ashland, Va.	1430
WIVI	Christiansted, V.I.	970
WIVK	Knoxville, Tenn.	860
WIVV	Vieques, P.R.	1370
WIVY	Jacksonville, Fla.	1050
WIXK	New Richmond, Wis.	1590
WIXN	Dixon, Ill.	1460
WIZE	Springfield, Ohio	1340
WIZR	Johnstown, N.Y.	930
WIZZ	Streator, Ill.	1250
WJAB	Westbrook, Me.	1440
WJAC	Johnstown, Pa.	850
WJAG	Norfolk, Nebr.	780
WJAK	Jackson, Tenn.	1460
WJAM	Marion, Ala.	1310
WJAN	Ishpeming, Mich.	970
WJAR	Providence, R.I.	920
WJAS	Pittsburgh, Pa.	1320
WJAT	Swainsboro, Ga.	800
WJAX	Jacksonville, Fla.	930
WJAY	Mullins, S.C.	1280
WJAZ	Albany, Ga.	960
WJBB	Haleyville, Ala.	1230
WJBC	Bloomington, Ill.	1230
WJBD	Salem, Ill.	1350
WJBK	Detroit, Mich.	1500
WJBL	Holland, Mich.	1260
WJBM	Jerseyville, Ill.	1480
WJBO	Baton Rouge, La.	1150
WJBS	DeLand, Fla.	1490
WJBT	Wheeling, W.Va.	1470
WJBW	New Orleans, La.	1230
WJCD	Seymour, Ind.	1390
WJCM	Sebring, Fla.	960
WJCW	Johnson City, Tenn.	910
WJDA	Quincy, Mass.	1300
WJDB	Thomasville, Ala.	630
WJDX	Jackson, Miss.	620
WJDY	Salisbury, Md.	1470
WJEF	Grand Rapids, Mich.	1230
WJEH	Gallipolis, Ohio	990
WJEJ	Hagerstown, Md.	1240
WJEM	Valdosta, Ga.	1150
WJER	Dover, Ohio	1450
WJES	Johnston, S.C.	1570
WJET	Erie, Pa.	1400
WJFC	Jefferson City, Tenn.	1480
WJHB	Talladega, Ala.	1580
WJHO	Opelika, Ala.	1400
WJIG	Tullahoma, Tenn.	740
WJIL	Jacksonville, Ill.	1550
WJIM	Lansing, Mich.	1240
WJIV	Savannah, Ga.	900
WJJC	Commerce, Ga.	1270
WJJD	Chicago, Ill.	1160
WJJL	Niagara Falls, N.Y.	1440
WJJM	Lewisburg, Tenn.	1490
WJLB	Detroit, Mich.	1400
WJLD	Homewood, Ala.	1400
WJLK	Asbury Park, N.J.	1310
WJLS	Beckley, W.Va.	560
WJMA	Orange, Va.	1340
WJMB	Brookhaven, Miss.	1340
WJMC	Rice Lake, Wis.	1240
WJMJ	Philadelphia, Pa.	1540
WJMO	Cleveland Hgts., Ohio	1490
WJMR	New Orleans, La.	990
WJMS	Ironwood, Mich.	630
WJMW	Athens, Ala.	730
WJMX	Florence, S.C.	970
WJNC	Jacksonville, N.C.	1240
WJNO	W. Palm Beach, Fla.	1230
WJOB	Hammond, Ind.	1230
WJOE	Ward Ridge, Fla.	1570
WJOI	Florence, Ala.	1340
WJOL	Joliet, Ill.	1340
WJON	St. Cloud, Minn.	1240
WJOR	South Haven, Mich.	940
WJOT	Lake City, S.C.	1260
WJOY	Burlington, Vt.	1230
WJPA	Washington, Pa.	1450
WJPD	Ishpeming, Mich.	1240
WJPF	Herrin, Ill.	1340
WJPG	Green Bay, Wis.	1440
WJPR	Greenville, Miss.	1330
WJPS	Evansville, Ind.	1330
WJQS	Jackson, Miss.	1400
WJR	Detroit, Mich.	760
WJRD	Tuscaloosa, Ala.	1150
WJRI	Lenoir, N.C.	1340
WJRL	Rockford, Ill.	1150
WJRM	Troy, N.C.	1390
WJRZ	Newark, N.J.	970
WJSB	Crestview, Fla.	1050
WJSO	Jonesboro, Tenn.	1590
WJTN	Jamestown, N.Y.	1240
WJUD	St. Johns, Mich.	1580
WJUN	Mexico, Pa.	1220
WJVA	South Bend, Ind.	1580
WJW	Cleveland, Ohio	850
WJWL	Georgetown, Del.	900
WJWS	South Hill, Va.	1370
WJXN	Jackson, Miss.	1450
WJZM	Clarksville, Tenn.	1400
WKAI	Macomb, Ill.	1510
WKAL	Rome, N.Y.	1450
WKAM	Goshen, Ind.	1460
WKAN	Kankakee, Ill.	1320
WKAP	Allentown, Pa.	1320
WKAQ	San Juan, P.R.	580
WKAR	East Lansing, Mich.	870
WKAT	Miami Beach, Fla.	1360
WKAY	Glasgow, Ky.	1490
WKAZ	Charleston, W.Va.	950
WKBC	N. Wilkesboro, N.C.	810
WKBH	La Crosse, Wis.	1410
WKBI	St. Mary's, Pa.	1400
WKBJ	Milan, Tenn.	1600
WKBK	Keene, N.H.	1220
WKBL	Covington, Tenn.	1250
WKBN	Youngstown, Ohio	570
WKBD	Harrisburg, Pa.	1230
WKBR	Manchester, N.H.	1250
WKBV	Richmond, Ind.	1490
WKBW	Buffalo, N.Y.	1520
WKBX	Kissimmee, Fla.	1220
WKBZ	Muskegon, Mich.	850
WKCT	Bowling Green, Ky.	930
WKCW	Warrenton, Va.	1420
WKDA	Nashville, Tenn.	1240
WKDE	Altavista, Va.	1280
WKDK	Newberry, S.C.	1240
WKDL	Clarksdale, Miss.	1600
WKDN	Camden, N.J.	800
WKDX	Hamlet, N.C.	1400
WKEE	Huntington, W. Va.	800
WKEI	Kewanee, Ill.	1450
WKEN	Dover, Del.	1600
WKEU	Griffin, Ga.	1450
WKEY	Covington, Va.	1340
WKFD	Wickford, R.I.	1370
WKGN	Knoxville, Tenn.	1340
WKHM	Jackson, Mich.	970
WKIC	Hazard, Ky.	1390
WKID	Urbana, Ill.	1580
WKIG	Glenville, Ga.	1580
WKIK	Leonardtown, Md.	1370
WKIN	Kingsport, Tenn.	1320
WKIP	Poughkeepsie, N.Y.	1450
WKIS	Orlando, Fla.	740
WKIX	Raleigh, N.C.	850
WKIZ	Key West, Fla.	1500
WKJB	Mayaguez, P.R.	710
WKJG	Fort Wayne, Ind.	1380
WKKD	Aurora, Ill.	1580
WKKO	Cocoa, Fla.	860
WKKS	Vanceburg, Ky.	1570
WKLA	Ludington, Mich.	1450
WKLC	St. Albans, W.Va.	1300
WKLE	Washington, Ga.	1370
WKLF	Clanton, Ala.	980
WKLJ	Sparta, Wis.	990
WKLK	Cloquet, Minn.	1230
WKLM	Wilmington, N.C.	980
WKLO	Louisville, Ky.	1080
WKLV	Blackstone, Va.	1440
WKLX	Paris, Ky.	1440
WKLY	Hartwell, Ga.	980
WKLZ	Kalamazoo, Mich.	1470
WKMC	Roaring Sprgs., Pa.	1370
WKMF	Flint, Mich.	1470
WKMH	Dearborn, Mich.	1310
WKMI	Kalamazoo, Mich.	1360
WKMK	Blountstown, Fla.	1370
WKMT	Kings Mtn., N.C.	1220
WKNE	Keene, N.H.	1290
WKNX	Saginaw, Mich.	1210
WKNY	Kingston, N.Y.	1490
WKOA	Hopkinsville, Ky.	1480
WKOK	Sunbury, Pa.	1240
WKOP	Binghamton, N.Y.	1360
WKOS	Ocala, Fla.	1370
WKOV	Wellston, Ohio	1330
WKOW	Madison, Wis.	1070
WKDX	Framingham, Mass.	1190
WKOY	Bluefield, W.Va.	1240
WKOZ	Kosciusko, Miss.	1350
WKPA	New Kensington, Pa.	1150
WKPR	Kalamazoo, Mich.	1420
WKPT	Kingsport, Tenn.	1400
WKRC	Cincinnati, Ohio	550
WKRG	Mobile, Ala.	710
WKRK	Murphy, N.C.	1390
WKRM	Columbia, Tenn.	1340
WKRO	Cairo, Ill.	1490
WKRS	Waukegan, Ill.	1220
WKRT	Cortland, N.Y.	920
WKRW	Cartersville, Ga.	
WKRZ	Oil City, Pa.	1340
WKSB	Milford, Del.	930
WKSC	Kershaw, S.C.	1300
WKSK	W. Jefferson, N.C.	1600
WKSR	Pulaski, Tenn.	1420
WKST	New Castle, Pa.	1280
WKTC	Charlotte, N.C.	1310
WKTG	Thomasville, Ga.	730
WKTJ	Farmington, Maine	1380
WKTL	Sheboygan, Wis.	950
WKTQ	South Paris, Maine	1450
WKTK	Atlantic Beach, Fla.	1600
WKTY	LaCrosse, Wis.	580
WKUL	Cullman, Ala.	1340
WKVA	Lewistown, Pa.	920
WKVM	San Juan, P.R.	810
WKVT	Brattleboro, Vt.	1490
WKWF	Key West, Fla.	1600
WKWK	Wheeling, W.Va.	1400
WKWS	Rocky Mount, Va.	1290
WKXL	Concord, N.H.	1450
WKXV	Knoxville, Tenn.	900
WKXY	Sarasota, Fla.	930
WKY	Oklahoma City, Okla.	930
WKYB	Paducah, Ky.	570
WKYN	Rio Piedras, P.R.	630
WKYR	Keyser, W.Va.	1270
WKYW	Louisville, Ky.	900
WKZD	Kalamazoo, Mich.	590
WLAC	Nashville, Tenn.	1510
WLAD	Danbury, Conn.	800
WLAF	LaFollette, Tenn.	1450
WLAG	La Grange, Ga.	1240
WLAK	Lakeland, Fla.	1430
WLAM	Lewiston, Maine	1470
WLAN	Lancaster, Pa.	1390
WLAP	Lexington, Ky.	630
WLAQ	Rome, Ga.	1410
WLAR	Athens, Tenn.	1450
WLAS	Jacksonville, N.C.	910
WLAT	Conway, S.C.	1330
WLAU	Laurel, Miss.	1600
WLAV	Grand Rapids, Mich.	1340
WLAW	Lawrenceville, Ga.	1360
WLAY	Muscle Shoals, Ala.	1450
WLBA	Gainesville, Ga.	1580
WLBB	Carrollton, Ga.	1100
WLBC	Muncie, Ind.	1340
WLBE	Leesburg, Fla.	790
WLBG	Laurens, S.C.	860
WLBH	Mattoon, Ill.	1170
WLBI	Denham Springs, La.	1220
WLBJ	Bowling Green, Ky.	1410
WLBK	DeKalb, Ill.	1360
WLBL	Stevens Point, Wis.	930
WLBN	Lebanon, Ky.	1590
WLBR	Lebanon, Pa.	1270
WLBZ	Bangor, Maine	620
WLCK	Scottsville, Ky.	1250
WLCM	Lancaster, S.C.	1360
WLCN	Laurensburg, N.C.	1300
WLCO	Eustis, Fla.	1240
WLCS	Baton Rouge, La.	910
WLCX	LaCrosse, Wis.	1490
WLCY	St. Petersburg, Fla.	1380
WLDB	Atlantic City, N.J.	1490
WLDS	Jacksonville, Ill.	1180
WLDY	Ladysmith, Wis.	1340
WLEA	Hornell, N.Y.	1480
WLEC	Sandusky, Ohio	1450
WLEE	Richmond, Va.	1480
WLEM	Emporium, Pa.	1240
WLEO	Ponce, P.R.	1170
WLGS	Lawrenceville, Va.	580
WLET	Toccoa, Ga.	1420
WLEU	Erie, Pa.	1450
WLEW	Bad Axe, Mich.	1340
WLFA	Lafayette, Ga.	1590
WLFH	Little Falls, N.Y.	1230
WLIB	New York, N.Y.	1190
WLIJ	Shelbyville, Tenn.	1580
WLIK	Newport, Tenn.	1270
WLIL	Lenoir, Tenn.	730
WLIP	Kenosha, Wis.	1050
WLIQ	Mobile, Ala.	1360
WLIS	Old Saybrook, Conn.	1420
WLIV	Livingston, Tenn.	920
WLIZ	Lake Worth, Fla.	1380
WLKM	Three Rivers, Mich.	1510
WLKW	Providence, R.I.	990
WLLE	Raleigh, N.C.	570
WLLH	Lowell, Mass.	1400
WLLY	Wilson, N.C.	1350
WLMJ	Jackson, Ohio	1280
WLNA	Peekskill, N.Y.	1420
WLNG	Sag Harbor, N.Y.	1600
WLNH	Laconia, N.H.	1350
WLOA	Braddock, Pa.	1550
WLOB	Portland, Maine	1310
WLOC	Munfordville, Ky.	1150
WLOD	Pompano Beach, Fla.	980
WLDE	Leaksville, N.C.	1490
WLOF	Orlando, Fla.	950
WLOG	Logan, W.Va.	1230
WLOH	Princeton, W.Va.	1490
WLOI	LaPorte, Ind.	1540
WLOK	Memphis, Tenn.	1480
WLOL	Minneapolis, Minn.	1330
WLON	Lincolnton, N.C.	1050
WLOS	Asheville, N.C.	1380
WLOU	Louisville, Ky.	1350
WLOX	Biloxi, Miss.	1490
WLPM	Suffolk, Va.	1460
WLPO	LaSalle, Ill.	1220
WLPS	Lehighton, Pa.	1150
WLS	Chicago, Ill.	890
WLSB	Copper Hill, Tenn.	1400
WLSC	Loris, S.C.	1570
WLSD	Big Stone Gap, Va.	1220
WLSE	Wallace, N.C.	1400
WLSH	Lansford, Pa.	1410
WLSI	Pikeville, Ky.	900
WLSM	Louisville, Miss.	1270
WLST	Escanaba, Mich.	600
WLSV	Wellsville, N.Y.	790
WLTC	Gastonia, N.C.	1370
WLVA	Lynchburg, Va.	590
WLW	Cincinnati, Ohio	700
WLYC	Williamsport, Pa.	1050
WLYN	Lynn, Mass.	1360
WMAB	Munising, Mich.	1400
WMAC	Netter, Ga.	1360
WMAF	Madison, Fla.	1230
WMAG	Forest, Miss.	860
WMAJ	State College, Pa.	1450
WMAK	Nashville, Tenn.	1300
WMAL	Washington, D.C.	630
WMAM	Marinette, Wis.	570
WMAN	Mansfield, Ohio	1400
WMAP	Monroe, N.C.	1060
WMAQ	Chicago, Ill.	670
WMAS	Springfield, Mass.	1450
WMAX	Grand Rapids, Mich.	1480
WMAY	Springfield, Ill.	970
WMAZ	Macon, Ga.	940
WMBA	Ambridge, Pa.	1460
WMBC	Macon, Miss.	1400
WMBD	Peoria, Ill.	1470
WMBG	Richmond, Va.	1380
WMBH	Joplin, Mo.	1450
WMBI	Chicago, Ill.	1110
WMBL	Morehead City, N.C.	740
WMBM	Miami Beach, Fla.	1490
WMBN	Petoskey, Mich.	1340
WMBO	Auburn, N.Y.	1340
WMBR	Jacksonville, Fla.	1460
WMBS	Uniontown, Pa.	590
WMC	Memphis, Tenn.	790

C.L.	Location	Kc.
WMCA	New York, N.Y.	570
WMCH	Church Hill, Tenn.	1260
WMCP	Columbia, Tenn.	1280
WMCR	Oneida, N.Y.	1600
WMCW	Harvard, Ill.	1600
WMDC	Hazlehurst, Miss.	1220
WMDD	Fajardo, P.R.	1490
WMDF	Mount Dora, Fla.	1580
WMDN	Midland, Mich.	1490
WMEG	Eau Gallie, Fla.	920
WMEK	Chase City, Va.	980
WMEN	Tallahassee, Fla.	1330
WMEV	Marion, Va.	1010
WMEW	Baltimore, Md.	940
WMEX	Boston, Mass.	1510
WMFC	Monroeville, Ala.	1360
WMFD	Wilmington, N.C.	630
WMFG	Hibbing, Minn.	1240
WMFJ	Daytona Beach, Fla.	1450
WMFR	High Point, N.C.	1230
WMFT	Terre Haute, Ind.	1300
WMGA	Moultrie, Ga.	1400
WMGR	Bainbridge, Ga.	930
WMGS	Bowling Green, Ohio	730
WMGW	Meadville, Pa.	1490
WMGY	Montgomery, Ala.	800
WMID	Atlantic City, N.J.	1340
WMIE	Miami, Fla.	1140
WMIK	Middlesboro, Ky.	560
WMIL	Milwaukee, Wis.	1290
WMIN	Mpls.-St. Paul, Minn.	1400
WMIQ	Iron Mountain, Mich.	1450
WMIS	Natchez, Miss.	1240
WMIX	Mt. Vernon, Ill.	940
WMJM	Cordele, Ga.	1490
WMLF	Pineville, Ky.	1230
WMLO	Beverly, Mass.	1570
WMLS	Sylacauga, Ala.	1290
WMLT	Dublin, Ga.	1330
WMMB	Melbourne, Fla.	1240
WMMH	Marshall, N.C.	1460
WMMM	Westport, Conn.	1260
WMMN	Fairmont, W.Va.	920
WMMS	Bath, Maine	730
WMMW	Meriden, Conn.	1470
WMNA	Gretna, Va.	730
WMNB	No. Adams, Mass.	1230
WMNC	Morganton, N.C.	1430
WMNE	Menomonie, Wis.	1360
WMNI	Columbus, Ohio	920
WMNS	Olean, N.Y.	1360
WMNT	Manati, P.R.	1500
WMNZ	Montezuma, Ga.	1050
WMOA	Marietta, Ohio	1490
WMOC	Chattanooga, Tenn.	1450
WMOD	Moundsville, W.Va.	1370
WMOE	Mobile, Ala.	1550
WMOG	Brunswick, Ga.	1490
WMOH	Hamilton, Ohio	1450
WMOK	Metropolis, Ill.	920
WMON	Montgomery, W.Va.	1340
WMOP	Ocala, Fla.	900
WMOR	Morehead, Ky.	1330
WMOU	Berlin, N.H.	1230
WMOV	Ravenswood, W.Va.	1360
WMOX	Meridian, Miss.	1240
WNJH	Hammonton, N.J.	1580
WMOZ	Mobile, Ala.	960
WMPA	Aberdeen, Miss.	1240
WMPC	Lapeer, Mich.	1230
WMPL	Hancock, Mich.	920
WMPM	Smithfield, N.C.	1270
WMPO	Middleport-Pomroy, Ohio	1390
WMPP	Chicago Heights, Ill.	1470
WMPS	Memphis, Tenn.	680
WMPT	So. Williamsport, Pa.	1450
WMRB	Greenville, S.C.	1490
WMRC	Milford, Mass.	1490
WMRE	Monroe, Ga.	1490
WMRF	Lewistown, Pa.	1490
WMRI	Marion, Ind.	860
WMRN	Marion, Ohio	1490
WMRO	Aurora, Ill.	1280
WMRP	Flint, Mich.	1570
WMAT	Lansing, Mich.	1010
WMSA	Massena, N.Y.	1340
WMSJ	Sylva, N.C.	1480
WMSK	Morganfield, Ky.	1550
WMSL	Decatur, Ala.	1400
WMSR	Manchester, Tenn.	1320
WMST	Mt. Sterling, Ky.	1150
WMT	Cedar Rapids, Iowa	600
WMTA	Central City, Ky.	1380
WMTC	Vancleve, Ky.	730
WMTE	Manistee, Mich.	1340
WMTL	Leitchfield, Ky.	1580
WMTM	Moultrie, Ga.	1300
WMTN	Morristown, Tenn.	1300
WMTR	Morristown, N.J.	1250
WMTS	Murfreesboro, Tenn.	860
WMUS	Muskegon, Mich.	1090
WMUU	Greenville, S.C.	1260
WMVA	Martinsville, Va.	1450
WMVB	Millville, N.J.	1440
WMVG	Milledgeville, Ga.	1450
WMVO	Mt. Vernon, Ohio	1300
WMYB	Myrtle Beach, S.C.	1450
WMYN	Mayodan, N.C.	1420
WMYR	Ft. Myers, Fla.	1410
WNAB	Bridgeport, Conn.	1450
WNAC	Boston, Mass.	680
WNAD	Norman, Okla.	640
WNAE	Warren, Pa.	1310
WNAG	Grenada, Miss.	1400
WNAH	Nashville, Tenn.	1360

C.L.	Location	Kc.
WNAK	Nanticoke, Pa.	730
WNAM	Neenah, Wis.	1280
WNAR	Norristown, Pa.	1110
WNAT	Natchez, Miss.	1450
WNAU	New Albany, Miss.	1470
WNAV	Annapolis, Md.	1430
WNAX	Yankton, S.Dak.	570
WNBC	New York, N.Y.	660
WNBF	Binghamton, N.Y.	1290
WNBH	New Bedford, Mass.	1340
WNBP	Newburyport, Mass.	1470
WNBS	Murray, Ky.	1340
WNBT	Wellsboro, Pa.	1490
WNBZ	Saranac Lake, N.Y.	1240
WNCA	Siler City, N.C.	1570
WNCC	Barnesboro, Pa.	950
WNCG	N. Charleston, S.C.	910
WNCO	Ashland, Ohio	1340
WNDB	Daytona Beach, Fla.	1150
WNDR	Syracuse, N.Y.	1260
WNDU	South Bend, Ind.	1490
WNEB	Worcester, Mass.	1230
WNEG	Taccoa, Ga.	630
WNER	Live Oak, Fla.	1250
WNES	Central City, Ky.	1050
WNEW	New York, N.Y.	1130
WNEX	Macon, Ga.	1400
WNGA	Nashville, Ga.	1600
WNGO	Mayfield, Ky.	1320
WNHC	New Haven, Conn.	1340
WNIA	Cheektowaga, N.Y.	1230
WNIK	Arecibo, P.R.	1230
WNIL	Niles, Mich.	1290
WNJR	Newark, N.J.	1430
WNKY	Neon, Ky.	1480
WNLC	New London, Conn.	1510
WNLK	Norwalk, Conn.	1350
WNMP	Evanston, Ill.	1590
WNNC	Newton, N.C.	1230
WNNJ	Newton, N.J.	1360
WNNT	Warsaw, Va.	690
WNOE	New Orleans, La.	1060
WNOG	Naples, Fla.	1270
WNOK	Columbia, S.C.	1230
WNOO	Chattanooga, Tenn.	1260
WNOP	Newport, Ky.	740
WNOR	Norfolk, Va.	1230
WNOS	High Point, N.C.	1590
WNOW	York, Pa.	1250
WNOX	Knoxville, Tenn.	990
WNPS	New Orleans, La.	1450
WNPT	Tuscaloosa, Ala.	1280
WNPV	Lansdale, Pa.	1440
WNRG	Grundy, Va.	1250
WNRK	Newark, Del.	1260
WNRI	Woonsocket, R.I.	1380
WNRV	Narrows, Va.	990
WNSL	Laurel, Miss.	1260
WNSM	Valparaiso-Niceville, Florida	1340
WNTT	Tazewell, Tenn.	1250
WNUE	Ft. Walton Beach, Fla.	950
WNUZ	Talladega, Ala.	1230
WNVA	Norton, Va.	1350
WNVL	Nicholasville, Ky.	1250
WNVY	Pensacola, Fla.	1230
WNXT	Portsmouth, Ohio	1260
WNYC	New York, N.Y.	830
WOAI	San Antonio, Tex.	1200
WOAP	Owosso, Mich.	1080
WOAY	Oak Hill, W.Va.	860
WOBS	Jacksonville, Fla.	1360
WOBT	Rhinelander, Wis.	1240
WOC	Davenport, Iowa	1420
WOCB	W. Yarmouth, Mass.	1240
WOCH	North Vernon, Ind.	1460
WOCK	Okeechobee, Fla.	1570
WODY	Bassett, Va.	900
WOHI	E. Liverpool, Ohio	1490
WOHO	Toledo, Ohio	1470
WOHP	Bellefontaine, Ohio	1390
WOHS	Shelby, N.C.	730
WOI	Ames, Iowa	640
WOIA	Saline, Mich.	1290
WOIC	Columbia, S.C.	1320
WOKB	Winter Garden, Fla	1600
WOKE	Charleston, S.C.	1340
WOKK	Meridian, Miss.	1450
WOKJ	Jackson, Miss.	1590
WOKO	Albany, N.Y.	1460
WOKS	Columbus, Ga.	1340
WOKW	Brockton, Mass.	1410
WOKY	Milwaukee, Wis.	920
WOKZ	Alton, Ill.	1570
WOL	Washington, D.C.	1450
WOLF	Syracuse, N.Y.	1490
WOLS	Florence, Ala.	1230
WOMI	Owensboro, Ky.	1490
WOMP	Bellaire, Ohio	1290
WOMT	Manitowoc, Wis.	1240
WONA	Winona, Miss.	1570
WONO	Pleasantville, N.J.	1400
WONE	Dayton, Ohio	980
WONN	Lakeland, Fla.	1230
WONW	Defiance, Ohio	1280
WOOD	Grand Rapids, Mich.	1300
WOOF	Dothan, Ala.	560
WOOK	Washington, D.C.	1340
WOOO	Deland, Fla.	1310
WOOW	Greenville, N.C.	1340
WOPA	Oak Park, Ill.	1490
WOPI	Bristol, Tenn.	1490
WOR	New York, N.Y.	710
WORA	Mayaguez, P.R.	760
WORC	Worcester, Mass.	1310
WORD	Spartanburg, S.C.	910
WORG	Orangeburg, S.C.	1580
WORK	York, Pa.	1350
WORL	Boston, Mass.	950

C.L.	Location	Kc.
WORM	Savannah, Tenn.	1010
WORT	New Smyrna Beach, Florida	1550
WORX	Madison, Ind.	1270
WOSC	Fulton, N.Y.	1300
WOSH	Oshkosh, Wis.	1490
WOSU	Columbus, Ohio	820
WOTR	Corry, Pa.	1370
WOTT	Watertown, N.Y.	1410
WOTW	Nashua, N.H.	900
WOUB	Athens, Ohio	1340
WOVE	Welch, W.Va.	1340
WOW	Omaha, Nebr.	590
WOWE	Allegan, Mich.	1580
WOWI	New Albany, Ind.	1570
WOWL	Florence, Ala.	1240
WOWO	Ft. Wayne, Ind.	1190
WOWW	Naugatuck, Conn.	860
WOWY	Clewiston, Fla.	500d
WOXF	Oxford, N.C.	1340
WOZK	Ozark, Ala.	900
WPAB	Ponce, P.R.	550
WPAC	Patchogue, N.Y.	1580
WPAD	Paducah, Ky.	1450
WPAG	Ann Arbor, Mich.	1050
WPAL	Charleston, S.C.	730
WPAM	Pottsville, Pa.	1450
WPAP	Fernandina Beach, Florida	1570
WPAQ	Mount Airy, N.C.	740
WPAR	Parkersburg, W.Va.	1450
WPAT	Paterson, N.J.	930
WPAX	Thomasville, Ga.	1240
WPAY	Portsmouth, Ohio	1400
WPAZ	Pottstown, Pa.	1370
WPBC	Minneapolis, Minn.	980
WPCC	Clinton, S.C.	1400
WPCF	Panama City, Fla.	1430
WPCO	Mt. Vernon, Ind.	1590
WPDM	Potsdam, N.Y.	1470
WPDQ	Jacksonville, Fla.	600
WPDR	Portage, Wis.	1350
WPDX	Clarksburg, W.Va.	750
WPEG	Winston-Salem, N.C.	1550
WPEH	Louisville, Ga.	1420
WPEL	Montrose, Pa.	1250
WPEN	Philadelphia, Pa.	950
WPEO	Peoria, Ill.	1020
WPEP	Taunton, Mass.	1570
WPET	Greensboro, N.C.	950
WPFA	Pensacola, Fla.	790
WPFB	Middletown, Ohio	910
WPFE	Eastman, Ga.	1580
WPFP	Park Falls, Wis.	1450
WPGA	Perry, Ga.	980
WPGC	Bradbury Hghts., Md.	1580
WPGW	Portland, Ind.	1440
WPHB	Philipsburg, Pa.	1260
WPIC	Sharon, Pa.	790
WPID	Piedmont, Ala.	1280
WPIK	Alexandria, Va.	730
WPIN	St. Petersburg, Fla.	680
WPIT	Pittsburgh, Pa.	730
WPKE	Pikeville, Ky.	1240
WPKO	Waverly, Ohio	1380
WPKY	Princeton, Ky.	1580
WPLA	Plant City, Fla.	910
WPLB	Greenville, Mich.	1380
WPLK	Rockmart, Ga.	1220
WPLM	Plymouth, Mass.	1390
WPLO	Atlanta, Ga.	590
WPLY	Plymouth, Wis.	1420
WPME	Punxsutawney, Pa.	1540
WPMH	Portsmouth, Va.	1010
WPMP	Pascagoula, Miss.	1580
WPNC	Plymouth, N.C.	1470
WPNF	Brevard, N.C.	1240
WPNX	Phenix City, Ala.	1460
WPOM	Pompano Beach, Fla.	1470
WPON	Pontiac, Mich.	1460
WPOP	Hartford, Conn.	1410
WPOR	Portland, Maine	1490
WPOW	New York, N.Y.	1330
WPPA	Pottsville, Pa.	1360
WPQR	McKeesport, Pa.	1360
WPRA	Mayaguez, P.R.	990
WPRC	Lincoln, Ill.	1370
WPRE	Prairie Du Chien, Wis.	980
WPRN	Butler, Ala.	1220
WPRO	Providence, R.I.	630
WPRP	Ponce, P.R.	910
WPRS	Paris, Ill.	1440
WPRT	Prestonsburg, Ky.	960
WPRW	Manassas, Va.	1460
WPRY	Perry, Fla.	1400
WPTF	Raleigh, N.C.	680
WPTR	Albany, N.Y.	1540
WPTS	Pittston, Pa.	1540
WPTW	Piqua, Ohio	1570
WPTX	Lexington Pk., Md.	920
WPUP	Gainesville, Fla.	1390
WPUV	Pulaski, Va.	1580
WPVA	Colonial Hghts., Va.	1290
WPVL	Painesville, Ohio	1460
WPYB	Benson, N.C.	1580
WQAM	Miami, Fla.	560
WQBC	Vicksburg, Miss.	1420
WQOY	Calais, Maine	1230
WQIC	Meridian, Miss.	1390
WQIK	Jacksonville, Fla.	1280
WQMN	Superior, Wis.	1320
WQMR	Silver Spring, Md.	1050
WQOK	Greenville, S.C.	1440
WQSN	Charleston, S.C.	1450
WQSR	Solvay, N.Y.	1320
WQTE	Monroe, Mich.	560
WQTY	Arlington, Fla.	1220
WQUA	Moline, Ill.	1230

C.L.	Location	Kc.
WQVA	Quantico, Va.	1250
WQXI	Atlanta, Ga.	790
WQXL	Columbia, S.C.	1320
WQXQ	Ormond Bch., Fla.	1380
WQXR	New York, N.Y.	1560
WQXT	Palm Beach, Fla.	1340
WRAA	Luray, Va.	1330
WRAB	Arab, Ala.	1380
WRAC	Racine, Wis.	1460
WRAD	Radford, Va.	1460
WRAG	Carrollton, Ala.	590
WRAJ	Anna, Ill.	1440
WRAK	Williamsport, Pa.	1400
WRAL	Raleigh, N.C.	1240
WRAM	Monmouth, Ill.	1330
WRAN	Dover, N.J.	1510
WRAP	Norfolk, Va.	850
WRAW	Reading, Pa.	1340
WRAY	Princeton, Ind.	1250
WRBB	Tarpon Springs, Fla.	1470
WRBC	Jackson, Miss.	1300
WRBL	Columbus, Ga.	1420
WRC	Washington, D.C.	980
WRCD	Dalton, Ga.	1430
WRCK	Tuscumbia, Ala.	1410
WRCO	Richland, Wis.	1450
WRCS	Ahoskie, N.C.	970
WRCV	Philadelphia, Pa.	1060
WRDB	Reedsburg, Wis.	1400
WRDO	Augusta, Maine	1400
WRDW	Augusta, Ga.	1480
WREB	Holyoke, Mass.	930
WREC	Memphis, Tenn.	600
WREL	Lexington, Va.	1450
WREM	Remsen, N.Y.	1480
WREN	Topeka, Kans.	1250
WREO	Ashtabula, Ohio	970
WREV	Reidsville, N.C.	1220
WRFB	Tallahassee, Fla.	1410
WRFC	Athens, Ga.	960
WRFD	Worthington, Ohio	880
WRFS	Alexander City, Ala.	1050
WRGA	Rome, Ga.	1470
WRGM	Richmond, Va.	1590
WRGR	Starke, Fla.	1490
WRGS	Rogersville, Tenn.	1370
WRHC	Jacksonville, Fla.	1400
WRHI	Rock Hill, S.C.	1340
WRIB	Providence, R.I.	1220
WRIC	Richlands, Va.	540
WRIG	Wausau, Wis.	1400
WRIM	Pahokee, Fla.	1250
WRIO	Rio Piedras, P.R.	1320
WRIP	Rossville, Ga.	980
WRIS	Roanoke, Va.	1410
WRIT	Milwaukee, Wis.	1340
WRIV	Riverhead, N.Y.	1390
WRIX	Griffin, Ga.	1410
WRIZ	Coral Gables, Fla.	1550
WRJC	Mauston, Wis.	1270
WRJN	Racine, Wis.	1400
WRJS	San German, P.R.	1090
WRJW	Picayune, Miss.	1320
WRKB	Kannapolis, N.C.	1460
WRKD	Rockland, Maine	1450
WRKH	Rockwood, Tenn.	580
WRKM	Carthage, Tenn.	1350
WRKT	Cocoa Beach, Fla.	1300
WRLA	Luray, Va.	1590
WRLD	Lanitt, Ala.	1490
WRMA	Montgomery, Ala.	950
WRMF	Titusville, Fla.	1050
WRMN	Elgin, Ill.	1410
WRMS	Beardstown, Ill.	790
WRMT	Rocky Mount, N.C.	1490
WRNB	New Bern, N.C.	1490
WRNE	Wis. Rapids, Wis.	1220
WRNL	Richmond, Va.	910
WRNY	Rome, N.Y.	1350
WROA	Gulfport, Miss.	1390
WROB	West Point, Miss.	1450
WROC	Rochester, N.Y.	1280
WROO	Daytona Beach, Fla.	1340
WROK	Rockford, Ill.	1440
WROL	Fountain City, Tenn.	1490
WROM	Rome, Ga.	710
WRON	Ronceverte, W.Va.	1400
WROS	Scottsboro, Ala.	1330
WROV	Roanoke, Va.	1240
WROW	Albany, N.Y.	590
WROX	Clarksdale, Miss.	1450
WROY	Carmi, Ill.	1460
WROZ	Evansville, Ind.	1400
WRPB	Warner Robbins, Ga.	1350
WRR	Dallas, Tex.	1310
WRRR	Rockford, Ill.	1330
WRRZ	Clinton, N.C.	880
WRSA	Saratoga Sprgs., N.Y.	1280
WRSC	State College, Pa.	1390
WRSL	Stanford, Ky.	1520
WRSW	Warsaw, Ind.	1480
WRTA	Altoona, Pa.	1240
WRUF	Gainesville, Fla.	850
WRUM	Rumford, Maine	790
WRUN	Utica, N.Y.	1150
WRUS	Russellville, Ky.	610
WRVA	Richmond, Va.	1140
WRVK	Mt. Vernon, Ky.	1460
WRVM	Rochester, N.Y.	680
WRWD	Augusta, Ga.	1480
WRWH	Cleveland, Ga.	1380
WRWJ	Selma, Ala.	1570
WRWV	Waynesboro, Va.	970
WRXO	Roxboro, N.C.	1430
WRYM	New Britain, Conn.	840
WRYT	Pittsburgh, Pa.	1250
WSAC	Fort Knox, Ky.	1470
WSAF	Sarasota, Fla.	1220

C.L.	Location	Kc.
WSAI	Cincinnati, Ohio	1360
WSAJ	Grove City, Pa.	1340
WSAL	Logansport, Ind.	1230
WSAM	Saginaw, Mich.	1400
WSAN	Allentown, Pa.	1470
WSAR	Fall River, Mass.	1480
WSAT	nr. Salisbury, N.C.	1280
WSAU	Wausau, Wis.	550
WSAV	Savannah, Ga.	630
WSAY	Rochester, N.Y.	1370
WSAZ	Huntington, W.Va.	930
WSB	Atlanta, Ga.	750
WSBA	York, Pa.	910
WSBB	New Smyrna Beach, Florida	1230
WSBC	Chicago, Ill.	1240
WSBS	Gt. Barrington, Mass.	860
WSBT	South Bend, Ind.	960
WSCM	Panama City Beach, Florida	1290
WSCR	Scranton, Pa.	1320
WSDB	Homestead, Fla.	1430
WSDR	Sterling, Ill.	1240
WSEB	Sebring, Fla.	1340
WSEL	Pontotoc, Miss.	1440
WSEN	Baldwinsville, N.Y.	1050
WSET	Glen Falls, N.Y.	1410
WSEV	Sevierville, Tenn.	930
WSFB	Quitman, Ga.	1490
WSFC	Somerset, Ky.	1240
WSFR	Sanford, Fla.	1360
WSFT	Thomaston, Ga.	1220
WSGA	Savannah, Ga.	1400
WSGC	Elberton, Ga.	1400
WSGN	Birmingham, Ala.	610
WSGO	Oswego, N.Y.	1440
WSGW	Saginaw, Mich.	790
WSHF	Sheffield, Ala.	1290
WSHH	Latrobe, Pa.	1570
WSHN	Fremont, Mich.	1550
WSHP	Shippenburg, Pa.	1480
WSIB	Beaufort, S.C.	1490
WSIC	Statesville, N.C.	1400
WSID	Baltimore, Md.	1010
WSIG	Mount Jackson, Va.	790
WSIP	Paintsville, Ky.	1490
WSIR	Winter Haven, Fla.	1490
WSIV	Pekin, Ill.	1140
WSIX	Nashville, Tenn.	980
WSJC	Magee, Miss.	1280
WSJM	St. Joseph, Mich.	1400
WSJS	Winston-Salem, N.C.	600
WSKI	Montpelier-Barre, Vt.	1240
WSKP	Miami, Fla.	1450
WSKT	Colonial Village, Tennessee	1580
WSKY	Asheville, N.C.	1230
WSLB	Ogdensburg, N.Y.	1400
WSLG	Clermont, Fla.	1340
WSLI	Jackson, Miss.	930
WSLM	Salem, Ind.	1220
WSLS	Roanoke, Va.	610
WSM	Nashville, Tenn.	650
WSMA	Smyrna, Ga.	1550
WSMB	New Orleans, La.	1350
WSME	Sanford, Maine	1220
WSMG	Greenville, Tenn.	1450
WSMI	Litchfield, Ill.	1540
WSMN	Nashua, N.H.	1590
WSMT	Sparta, Tenn.	1050
WSNE	Cummings, Ga.	1410
WSNJ	nr. Bridgeton, N.J.	1240
WSNO	Barre, Vt.	1450
WSNT	Sandersville, Ga.	1490
WSNW	Seneca Twnshp., S.C.	1150
WSNY	Schenectady, N.Y.	1240
WSOC	Charlotte, N.C.	930
WSOK	Savannah, Ga.	1230
WSOL	Tampa, Fla.	1300
WSON	Henderson, Ky.	860
WSOO	Slt. Ste. Marie, Mich.	1230
WSOQ	No. Syracuse, N.Y.	1220
WSOR	Windsor, Conn.	1480
WSOY	Decatur, Ill.	1340
WSPA	Spartanburg, S.C.	950
WSPB	Sarasota, Fla.	1450
WSPD	Toledo, Ohio	1370
WSPN	Saratoga Sprgs., N.Y.	900
WSPR	Springfield, Mass.	1270
WSPT	Stevens Pt., Wis.	1010
WSPZ	Spencer, W.Va.	1400
WSRA	Milton, Fla.	1490
WSRC	Durham, N.C.	1410
WSRO	Marlborough, Mass.	1470
WSRW	Hillsboro, Ohio	1590
WSSB	Durham, N.C.	1490
WSSC	Sumter, S.C.	1340
WSSO	Starkville, Miss.	1230
WSSV	Petersburg, Va.	1240
WSTC	Stamford, Conn.	1400
WSTK	Woodstock, Va.	1230
WSTL	Eminence, Ky.	1600
WSTP	Salisbury, N.C.	1490
WSTR	Sturgis, Mich.	1230
WSTS	Massena, N.Y.	1050
WSTU	Suart, Fla.	1450
WSTV	Steubenville, Ohio	1340
WSUB	Groton, Conn.	980
WSUH	Oxford, Miss.	1420
WSUI	Iowa City, Iowa	910
WSUN	St. Petersburg, Fla.	620
WSUX	Seaford, Del.	1280
WSUZ	Palatka, Fla.	800
WSVA	Harrisonburg, Va.	550
WSVL	Shelbyville, Ind.	1520
WSVN	Valdese, N.C.	1490
WSVS	Crewe, Va.	800
WSWN	Belle Glade, Fla.	900
WSWV	Pennington Gap, Va.	1570
WSWW	Platteville, Wis.	1590
WSYB	Rutland, Vt.	1380
WSYD	Mt. Airy, N.C.	1300
WSYL	Sylvania, Ga.	1490
WSYR	Syracuse, N.Y.	570
WTAB	Tabor City, N.C.	1370
WTAC	Flint, Mich.	600
WTAD	Quincy, Ill.	930
WTAG	Worcester, Mass.	580
WTAL	Tallahassee, Fla.	1270
WTAN	Clearwater, Fla.	1340
WTAO	Cambridge, Mass.	740
WTAP	Parkersburg, W.Va.	1230
WTAQ	LaGrange, Ill.	1300
WTAR	Norfolk, Va.	790
WTAW	Bryan, Tex.	1150
WTAX	Springfield, Ill.	1240
WTAY	Robinson, Ill.	1570
WTBC	Tuscaloosa, Ala.	1230
WTBF	Troy, Ala.	970
WTBO	Cumberland, Md.	1450
WTCB	Flomaton, Ala.	990
WTCH	Shawano, Wis.	960
WTCJ	Tell City, Ind.	1230
WTCM	Traverse City, Mich.	1400
WTCN	Minneapolis, Minn.	1280
WTCO	Campbellsville, Ky.	1450
WTCR	Ashland, Ky.	1420
WTCS	Fairmont, W.Va.	1490
WTCW	Whitesburg, Ky.	920
WTGA	Thomaston, Ga.	1590
WTEL	Philadelphia, Pa.	860
WTGR	Charleston, W.Va.	1490
WTHG	Jackson, Ala.	1290
WTHI	Terre Haute, Ind.	1480
WTHR	Panama City Fla.	1480
WTHT	Hazleton, Pa.	1300
WTIC	Hartford, Conn.	1080
WTID	Newport News, Va.	1270
WTIF	Tifton, Ga.	1340
WTIG	Massillon, Ohio	900
WTIK	Durham, N.C.	1310
WTIL	Mayaguez, P.R.	1300
WTIM	Taylorville, Ill.	1410
WTIP	Charleston, W.Va.	1240
WTIX	New Orleans, La.	690
WTJH	East Point, Ga.	1260
WTJS	Jackson, Tenn.	1390
WTKM	Hartford, Wis.	1540
WTKO	Ithaca, N.Y.	1470
WTKY	Tompkinsville, Ky.	1370
WTLB	Utica, N.Y.	1310
WTLK	Taylorsville, N.C.	1570
WTLO	Somerset, Ky.	1480
WTLS	Tallasee, Ala.	1300
WTMA	Charleston, S.C.	1250
WTMB	Tomah, Wis.	1390
WTMC	Ocala, Fla.	1290
WTMJ	Milwaukee, Wis.	620
WTMP	Tampa, Fla.	1150
WTMT	Louisville, Ky.	620
WTNC	Thomasville, N.C.	790
WTND	Orangeburg, S.C.	920
WTNS	Coshocton, Ohio	1560
WTNT	Tallahassee, Fla.	1450
WTOB	Winston-Salem, N.C.	1380
WTOC	Savannah, Ga.	1290
WTOD	Toledo, Ohio	1560
WTOE	Spruce Pine, N.C.	1470
WTOJ	Tomah, Wis.	1460
WTOL	Toledo, Ohio	1230
WTON	Staunton, Va.	1240
WTOP	Washington, D.C.	1500
WTOR	Torrington, Conn.	1490
WTOT	Marianna, Fla.	980
WTPI	Cookville, Tenn.	1550
WTPR	Paris, Tenn.	710
WTRA	Latrobe, Pa.	1480
WTRB	Ripley, Tenn.	1570
WTRC	Elkhart, Ind.	1340
WTRL	Bradenton, Fla.	1490
WTRN	Tyrone, Pa.	1340
WTRO	Dyersburg, Tenn.	1330
WTRP	LaGrange, Ga.	620
WTRR	Sanford, Fla.	1400
WTRU	Muskegon, Mich.	1600
WTRW	Two Rivers, Wis.	1590
WTRX	Flint, Mich.	1330
WTRY	Troy, N.Y.	980
WTSA	Brattleboro, Vt.	1450
WTSB	Lumberton, N.C.	1340
WTSL	Hanover-Lebanon, New Hampshire	1400
WTSN	Dover, N.H.	1270
WTSV	Claremont, N.H.	1230
WTTB	Vero Beach, Fla.	1490
WTTC	Towanda, Pa.	1550
WTTF	Tiffin, Ohio	1600
WTTH	Port Huron, Mich.	1380
WTTL	Madisonville, Ky.	1310
WTTM	Trenton, N.J.	920
WTTN	Watertown, Wis.	1580
WTTR	Westminster, Md.	1470
WTTS	Bloomington, Ind.	1370
WTUF	Mobile, Ala.	840
WTUG	Tuscaloosa, Ala.	790
WTUP	Tupelo, Miss.	1490
WTUX	Wilmington, Del.	1290
WTVB	Coldwater, Mich.	1590
WTVL	Waterville, Maine	1490
WTVN	Columbus, Ohio	610
WTWA	Thomson, Ga.	1240
WTWB	Auburndale, Fla.	1570
WTWN	St. Johnsbury, Vt.	1340
WTXL	W. Spgfd., Mass.	1490
WTYC	Rock Hill, S.C.	1150
WTYM	East Longmeadow, Mass.	1600
WTYN	Tryon, N.C.	1550
WTYS	Marianna, Fla.	1340
WUFD	Amherst, N.Y.	1080
WULA	Eufaula, Ala.	1240
WUNE	Baton Rouge, La.	1550
WUSJ	Lockport, N.Y.	1340
WUST	Bethesda, Md.	1120
WVAM	Altoona, Pa.	1430
WVAR	Richwood, W.Va.	1280
WVCG	Coral Gables, Fla.	1070
WVCH	Chester, Pa.	740
WVEC	Hampton, Va.	1490
WVIM	Vicksburg, Miss.	1490
WVIP	Mt. Kisco, N.Y.	1310
WVJP	Caguas, P.R.	1110
WVJS	Owensboro, Ky.	1420
WVKO	Columbus, Ohio	1580
WVLD	Valdosta, Ga.	1450
WVLK	Lexington, Ky.	590
WVLN	Olney, Ill.	740
WVMC	Mt. Carmel, Ill.	1360
WVMI	Biloxi, Miss.	570
WVNA	Tuscumbia, Ala.	1590
WVNJ	Newark, N.J.	620
WVOE	Chadburn, N.C.	1590
WVOK	Birmingham, Ala.	690
WVOL	Berry Hill, Tenn.	1470
WVOM	Iuka, Miss.	1270
WVOP	Vidalia, Ga.	970
WVOS	Liberty, N.Y.	1240
WVOT	Wilson, N.C.	1420
WVOX	New Rochelle, N.Y.	1460
WVPO	Stroudsburg, Pa.	840
WVSC	Somerset, Pa.	990
WVVW	Grafton, W.Va.	1260
WWBC	Bay City, Mich.	1250
WWBD	Bamberg, S.C.	790
WWBZ	Vineland, N.J.	1360
WWCA	Gary, Ind.	1270
WWCC	Bremen, Ga.	1440
WWCH	Clarion, Pa.	1300
WWCO	Waterbury, Conn.	1240
WWDC	Washington, D.C.	1260
WWGP	Sanford, N.C.	1050
WWGS	Tifton, Ga.	1430
WWHG	Hornell, N.Y.	1320
WWHY	Huntington, W.Va.	1470
WWIL	Ft. Lauderdale, Fla.	1580
WWIN	Baltimore, Md.	1400
WWIS	Black River Falls, Wis.	1260
WWIT	Canton, N.C.	970
WWIZ	Lorain, Ohio	1380
WWJ	Detroit, Mich.	950
WWJB	Brooksville, Fla.	1450
WWKY	Winchester, Ky.	1380
WWL	New Orleans, La.	870
WWML	Portage, Wis.	1470
WWNC	Asheville, N.C.	570
WWNH	Rochester, N.H.	930
WWNR	Beckley, W.Va.	620
WWNS	Statesboro, Ga.	1240
WWNY	Watertown, N.Y.	790
WWOD	Lynchburg, Va.	1390
WWOK	Charlotte, N.C.	1480
WWOL	Buffalo, N.Y.	1120
WWOM	New Orleans, La.	600
WWON	Woonsocket, R.I.	1240
WWOW	Conneaut, Ohio	1360
WWPA	Williamsport, Pa.	1340
WWPF	Palatka, Fla.	1260
WWRI	W. Warwick, R.I.	1450
WWRJ	White River Junc., Vt.	910
WWRL	Woodside, N.Y.	1600
WWRO	Caro, Mich.	1360
WWSC	Glens Falls, N.Y.	1450
WWSR	St. Albans, Vt.	1420
WWST	Wooster, Ohio	960
WWSW	Pittsburgh, Pa.	970
WWVA	Wheeling, W.Va.	1170
WWWB	Jasper, Ala.	1360
WWWF	Fayette, Ala.	990
WWWR	Russellville, Ala.	920
WWWW	Rio Piedras, P.R.	1520
WWXL	Manchester, Ky.	1450
WWYN	Erie, Pa.	1260
WWYO	Pineville, W.Va.	970
WXAL	Demopolis, Ala.	1400
WXGI	Richmond, Va.	950
WXIG	Windemere, Fla.	1480
WXLI	Dublin, Ga.	1230
WXLL	Big Delta, Alaska	980
WXLW	Indianapolis, Ind.	950
WXMT	Merrill, Wis.	730
WXOK	Baton Rouge, La.	1260
WXRF	Guayama, P.R.	1590
WXTN	Lexington, Miss.	1150
WXTR	Pawtucket, R.I.	550
WXVA	Charleston, W.Va.	1550
WXVW	Jeffersonville, Ind.	1450
WXXX	Hattiesburg, Miss.	1310
WXYJ	Jamestown, N.Y.	1340
WXYZ	Detroit, Mich.	1270
WYAL	Scotland Neck, N.C.	1280
WYAM	Bessemer, Ala.	1450
WYCL	York, S.C.	1580
WYDE	Birmingham, Ala.	850
WYGO	Corbin, Ky.	1330
WYLD	New Orleans, La.	940
WYMB	Manning, S.C.	1410
WYND	Sarasota, Fla.	1280
WYNG	Warwick-East Greenwich, R.I.	1590
WYNK	Baton Rouge, La.	1380
WYNN	Florence, S.C.	540
WYPR	Danville, Va.	970
WYRE	Pittsburgh, Pa.	1080
WYRN	Louisburg, N.C.	1480
WYSE	Lakeland, Fla.	1330
WYSH	Clinton, Tenn.	1380
WYSL	Buffalo, N.Y.	1400
WYSR	Franklin, Va.	1250
WYTH	Madison, Ga.	1250
WYTI	Rocky Mount, Va.	1570
WYVE	Wytheville, Va.	1280
WYZE	Atlanta, Ga.	1480
WZEP	DeFuniak Sprgs., Fla.	1460
WZKY	Albemarle, N.C.	1580
WZOB	Ft. Payne, Ala.	1250
WZOE	Princeton, Ill.	1490
WZOK	Jacksonville, Fla.	1320
WZOO	Spartanburg, S.C.	1400
WZRH	Zephyr Hills, Fla.	1400
WZRO	Jacksonville Beach, Florida	1010
WZST	Tampa, Fla.	1550
WZYX	Cowan, Tenn.	1440
XETRA	Los Angeles, Calif.	690

Canadian AM Stations By Call Letters

C.L.	Location	Kc.
CBA	Sackville, N.B.	1070
CBAF	Moncton, N.B.	1300
CBE	Windsor, Ont.	1550
CBF	Montreal, Que.	690
CBG	Gander, Nfld.	1450
CBH	Halifax, N.S.	790
CBI	Sydney, N.S.	1140
CBJ	Chicoutimi, Que.	1580
CBK	Regina, Sask.	540
CBL	Toronto, Ont.	740
CBM	Montreal, Que.	940
CBN	St. John's, Nfld.	640
CBO	Ottawa, Ont.	910
CBT	Grand Falls, Nfld.	990
CBU	Vancouver, B.C.	690
CBV	Quebec, Que.	980
CBW	Winnipeg, Man.	990
CBX	Edmonton, Alta.	1010
CBXA	Edmonton, Alta.	740
CBY	Corner Brook, Nfld.	990
CFAB	Windsor, N.S.	1450
CFAC	Calgary, Alta.	960
CFAM	Altona, Man.	1290
CFAR	Flin Flon, Man.	590
CFAX	Victoria, B.C.	810
CFBC	Saint John, N.B.	930
CFBM	Brochet, Man.	1450
CFBR	Sudbury, Ont.	550
CFCB	Corner Book, Nfld.	570
CFCF	Montreal, Que.	600
CFCH	North Bay, Ont.	600
CFCL	Timmins, Ont.	620
CFCN	Calgary, Alta.	1060
CFCO	Chatham, Ont.	630
CFCP	Courtenay, B.C.	1440
CFCW	Camrose, Alta.	1230
CFCY	Charlottetown, P.E.I.	630
CFDA	Victoriaville, Que.	1380
CFGB	Goose Bay, Nfld.	1340
CFGM	Richmond Hill, Ont.	1310
CFGP	Grande Prairie, Alta.	1050
CFGR	Gravelbourg, Sask.	1230
CFGT	St. Joseph d'Alma, Que.	1270
CFJC	Kamloops, B.C.	910
CFJR	Brockville, Ont.	1450
CFKL	Schefferville, Que.	1230
CFLM	LaTuque, Que.	1240
CFML	Cornwall, Ont.	1110
CFNB	Fredericton, N.B.	550
CFNS	Saskatoon, Sask.	1170
CFNW	Norman Wells, Northwest Territory	1240
CFOB	Fort Frances, Ont.	800
CFOR	Orillia, Ont.	1570
CFOS	Owen Sound, Ont.	560
CFOX	Pointe Claire, Que.	1470
CFPA	Port Arthur, Ont.	1230
CFPL	London, Ont.	980
CFPR	Prince Rupert, B.C.	1240
CFQC	Saskatoon, Sask.	600
CFRA	Ottawa, Ont.	560
CFRB	Toronto, Ont.	1010
CFRC	Kingston, Ont.	1490
CFRG	Gravelbourg, Sask.	710
CFRN	Edmonton, Alta.	1260
CFRS	Simcoe, Ont.	1560
CFRY	Portage la Prairie, Man.	1570
CFSL	Weyburn, Sask.	1340
CFTK	Terrace, B.C.	1140
CFUN	Vancouver, B.C.	1410
CFWH	Whitehorse, Yukon T.	1240
CFYK	Yellowknife, N.W.T.	1340

C.L.	Location	Kc.
CFYT	Dawson, Yukon T.	1230
CHAB	Moose Jaw, Sask.	800
CHAD	Amos, Que.	1340
CHAT	Medicine Hat, Alta.	1270
CHEC	Lethbridge, Alta.	1090
CHED	Edmonton, Alta.	1080
CHEF	Granby, Que.	1450
CHEX	Peterborough, Ont.	980
CHFA	Edmonton, Alta.	680
CHFC	Churchill, Man.	1230
CHGB	St. Anne de la Pocatiere, Que.	1350
CHIC	Brampton, Ont.	1090
CHIQ	Hamilton, Ont.	1280
CHLN	Three Rivers, Que.	550
CHLO	St. Thomas, Ont.	680
CHLP	Montreal, Que.	1410
CHLT	Sherbrooke, Que.	630
CHML	Hamilton, Ont.	900
CHNC	New Carlisle, Que.	610
CHNO	Sudbury, Ont.	900
CHNS	Halifax, N.S.	960
CHOK	Sarnia, Ont.	1070
CHOV	Pembroke, Ont.	1350
CHOW	Welland, Ontario	1470
CHQM	Vancouver, BC.	1320
CHRC	Quebec, Que.	800
CHRD	Drummondville, Que.	1340
CHRL	Roberval, Que.	910
CHRS	St. Jean, Que.	1090
CHSJ	Saint John, N.B.	1150
CHUB	Nanaimo, B.C.	1570
CHUC	Port Hope, Ont.	1500
CHUM	Toronto, Ont.	1050
CHVC	Niagara Falls, Ont.	1600
CHWK	Chilliwack, B.C.	1270
CHWO	Oakville, Ont.	1250
CJAD	Montreal, Que.	800
CJAF	Cabano, Que.	1340
CJAT	Trail, B.C.	610
CJAV	Port Alberni, B.C.	1240
CJBC	Toronto, Ont.	860
CJBQ	Belleville, Ont.	800
CJBR	Rimouski, Que.	900
CJCA	Edmonton, Alta.	930
CJCB	Sydney, N.S.	1270
CJCH	Halifax, N.S.	920
CJCJ	Woodstock, N.B.	920
CJCS	Stratford, Ont.	1240
CJDC	Dawson Creek, B.C.	560
CJEM	Edmundston, N.B.	570
CJET	Smiths Falls, Ont.	630
CJFP	Riviere du Loup, Que.	1400
CJFX	Antigonish, N.S.	580
CJGX	Yorkton, Sask.	940
CJIB	Vernon, B.C.	940
CJIC	Sault Ste. Marie, Ont.	1050
CJKL	Kirkland Lake, Ont.	560
CJLM	Joliette, Que.	1350
CJLR	Quebec, Que.	1060
CJLS	Yarmouth, N. S.	1340
CJLX	Ft. Williams, Ont.	800
CJME	Regina, Sask.	1300
CJMS	Montreal, Que.	1280
CJMT	Chicoutimi, Que.	1420
CJNB	N. Battleford, Sask.	1460
CJNR	Blind River, Ont.	730
CJOB	Winnipeg, Man.	680
CJOC	Lethbridge, Alta.	1220
CJON	St. John's, Nfld.	930
CJOR	Vancouver, B.C.	600
CJOY	Guelph, Ont.	1460
CJQC	Quebec, Que.	1340
CJRH	Richmond Hill, Ont.	1310
CJRL	Kenora, Ont.	1220
CJRW	Summerside, P.E.I.	1240
CJSO	Sorel, Que.	1320
CJSP	Leamington, Ont.	710
CJSS	Cornwall, Ont.	1220
CJVI	Victoria, B.C.	900
CKAC	Montreal, Que.	730
CKAR	Huntsville, Ont.	590
CKAR-I	Parry Sound, Ont.	1340
CKBB	Barrie, Ont.	950
CKBC	Bathurst, N.B.	1400
CKBI	Prince Albert, Sask.	900
CKBL	Matane, Que.	1250
CKBM	Montmagny, Que.	1490
CKBS	St. Hyacinthe, Que.	1240
CKBW	Bridgewater, N.S.	1000
CKCH	Hull, Que.	970
CKCK	Regina, Sask.	620
CKCL	Truro, N.S.	600
CKCQ	Quesnel, B.C.	570
CKCQ-I	Williams Lake, B.C.	1240
CKCR	Kitchener, Ont.	1490
CKCV	Quebec, Que.	1280
CKCW	Moncton, N.B.	1220
CKCY	Sault Ste. Marie, Ont.	920
CKDA	Victoria, B.C.	1220
CKDH	Amherst, N.S.	1400
CKDM	Dauphin, Man.	730
CKEC	New Glasgow, N.S.	1320
CKEK	Cranbrook, B.C.	570
CKEN	Kentville, N.S.	1350
CKEY	Toronto, Ont.	580
CKFH	Toronto, Ont.	1430
CKGB	Timmins, Ont.	680
CKGM	Montreal, Que.	980
CKGR	Galt, Ont.	1110
CKJL	St. Jerome, Que.	900
CKKW	Kitchener, Ont.	1320
CKLB	Oshawa, Ont.	1350
CKLC	Kingston, Ont.	1380
CKLO	Thetford Mines, Que.	1230
CKLG	N. Vancouver, B.C.	730
CKLN	Nelson, B.C.	1390
CKLS	LaSarre, Que.	1240
CKLW	Windsor, Ont.	800
CKLY	Lindsay, Ont.	910
CKMP	Midland, Ont.	1230
CKMR	Newcastle, N.B.	790
CKNB	Campbellton, N.B.	950
CKNW	New Westminster, British Columbia	980
CKNX	Wingham, Ont.	920
CKOC	Hamilton, Ont.	1150
CKOK	Penticton, B.C.	800
CKOM	Saskatoon, Sask.	1250
CKOT	Tillsonburg, Ont.	1510
CKOV	Kelowna, B.C.	630
CKOX	Woodstock, Ont.	1340
CKOY	Ottawa, Ont.	1310
CKPC	Brantford, Ont.	1380
CKPG	Prince George, B.C.	550
CKPR	Fort William, Ont.	580
CKPT	Peterborough, Ont.	1420
CKRB	Ville St. Georges, Que.	1460
CKRC	Winnipeg, Man.	630
CKRD	Red Deer, Alta.	850
CKRM	Regina, Sask.	980
CKRN	Rouyn, Que.	1400
CKRS	Jonquiere, Que.	590
CKSA	Lloydminster, Alta.	1150
CKSB	St. Boniface, Man.	1050
CKSL	London, Ont.	1290
CKSM	Shawinigan, Quebec	1220
CKSO	Sudbury, Ont.	790
CKSW	Swift Current, Sask.	1400
CKTB	St. Catharines, Ont.	610
CKTR	Three Rivers, Que.	1150
CKTS	Sherbrooke, Que.	900
CKUA	Edmonton, Alta.	580
CKVD	Val d'Or, Que.	1230
CKVL	Verdun, Que.	850
CKVM	Ville Marie, Que.	710
CKWS	Kingston, Ont.	960
CKWX	Vancouver, B.C.	1130
CKX	Brandon, Man.	1150
CKXL	Calgary, Alta.	1140
CKY	Winnipeg, Man.	580
CKYL	Peace River, Alta.	630
VOAR	St. John's, Nfld.	1230
VOCM	St. John's, Nfld.	590
VOWR	St. John's, Nfld.	800

Mexican and Cuban AM Stations

Mexican stations audible in the Southwest; the more powerful Cuban stations

Mexico

BAJA CALIFORNIA

Location	C.L.	Kc.	W.P.
Cuervos	XEDY	1460	1000
El Saugal	XEDX	1010	500
Ensenada	XEPF	1400	250
	XEXK	920	250
Mexicali	XED	1050	5000
	XEAA	1340	250
	XEAO	910	250
	XECL	990	5000
	XEGE	1150	1000
Tijuana	XEC	1310	250
	XETRA	690	50000
	XEAU	1470	5000
	XEAZ	1270	500
	XEBG	1550	1000
	XEGM	950	2500
	XEMO	860	5000
	XEXX	1420	2000

CHIHUAHUA

Location	C.L.	Kc.	W.P.
Chihuahua	XEM	1390	500
	XEBU	620	1000
	XEBW	1280	1000
	XEFI	580	1000
	XERA	1490	250
Ciudad Camargo	XEHA	580	1000
Ciudad Delicias	XEBN	1240	250
	XEJK	1340	250
Ciudad Juarez	XEF	1420	250
	XEJ	970	5000
	XEP	1300	500
	XEFV	1240	250
	XELO	800	150000
	XEWG	1490	250
	XEYC	1460	1000
Hidalgo	XEJS	1150	500
N. Casas Grandes	XETX	1010	250

COAHUILA

Location	C.L.	Kc.	W.P.
Ciudad Acuna	XEKD	1010	1000
Monclova	XEMF	1260	250
Piedras Negras	XEMJ	920	1000
	XEMU	580	5000
Sabinas	XEBX	610	5000
Saltillo	XESJ	1250	500
	XESG	1510	1000
Torreon	XEBP	1310	5000
Villa Acuna	XEDH	1340	250
	XERF	1570	250000

DISTRITO FEDERAL

Location	C.L.	Kc.	W.P.
Mexico City	XEL	1260	5000
	XEN	690	20000
	XEQ	940	150000
	XEW	900	250000
	XEX	730	500000
	XEFR	1530	5000
	XEJP	1150	10000
	XELA	830	10000
	XELZ	1440	5000
	XEMX	1380	5000
	XENK	620	5000
	XEOY	1000	50000
	XEPH	590	5000
	XEQK	1350	1000
	XEQR	1030	10000
	XERC	790	1000
	XERCN	1110	50000
	XERH	1500	50000
	XERPM	660	10000
	XESM	1470	10000
	XEUN	860	5000

DURANGO

Location	C.L.	Kc.	W.P.
Durango	XEDU	860	1000

NUEVO LEON

Location	C.L.	Kc.	W.P.
Linares	XER	1260	250
Monterrey	XEG	1050	150000
	XENL	860	5000
	XEH	1420	1000
	XET	990	5000
	XEAR	1480	1000
	XEAW	1280	1000
	XEFB	630	5000
	XEMR	1370	500
	XEOK	920	500

SAN LUIS POTOSI

Location	C.L.	Kc.	W.P.
San Luis Potosi	XEWA	540	150000

SONORA

Location	C.L.	Kc.	W.P.
Agua Prieta	XEAQ	1490	250
	XEFH	1310	1000
Cananea	XEFQ	980	500
Ciudad Obregon	XEOX	1430	1000
Hermosillo	XEBH	920	5000
	XEDL	1250	500
	XEDM	1580	50000
	XEHQ	590	500
Magdalena	XEDJ	1450	100
Naco	XETM	1350	1000
Nogales	XEHF	1370	5000
San Luis	XECB	1450	250
Santa Ana	XEAB	1400	250

TAMAULIPAS

Location	C.L.	Kc.	W.P.
Matamoros	XEO	970	1000
	XEAM	1310	250
	XEMT	1340	250
Nuevo Laredo	XEAS	1410	250
	XEBK	1340	100
	XEDF	790	1000
	XEFE	790	1000
	XERG	1090	2500
	XEXO	1370	50000
Reynosa	XEOR	1390	1000
	XERT	590	5000
Rio Bravo	XEFD	1170	1000
Tampico	XEFW	810	50000

Cuba

Location	C.L.	Kc.	W.P.
Camaguey	CMJB	880	1000
	CMJL	920	5000
	CMJN	960	1000
	CMJE	680	1000
	CMFA	1110	1000
	CMJR	1030	1000
	CMJC	1000	1000
	CMJF	1340	1000
Camajuani	CMHD	890	1000
Ciego de Avila	CMJY	760	1000
	CMJT	700	1000
	CMSS	800	1000
	CMJV	900	1000
Cienfuegos	CMHN	680	1000
Consulacion Del Sur		880	1000
Cruces	CMAK	1210	1000
Guantanamo	CMKS	1070	1000
Habana	CMW	590	2500
	CMCY	550	15000
	CMQ	630	25000
	CMCU	660	1000
	CMBC	690	50000
	CMCD	760	10000
	CMCH	790	10000
	CMBZ	830	5000
	CMBL	860	15000
	CMCF	910	10000
	CMBF	950	5000
	CMCK	980	5000
	CMBQ	1010	5000
	CMCX	1060	10000
	CMCA	730	10000
	CMCB	1330	1000
Holguin	CMKJ	730	5000
	CMKP	670	1000
Holguin Orte	CMKM	560	5000
	CMKV	800	1000
	CMKD	970	1000
	CMDC	770	1000
Marianao	CMZ	1560	5000
Neuvitas	CMJO	1300	1000
Pinar del Rio	CMAB	740	5000
	CMAF	680	1000
	CMAN	840	1000
	CMAQ	920	1000
Sagua La Grande	CMHA	1280	1000
Santa Clara	CMHI	570	10000
	CMHG	670	1000
	CMHC	1410	1000
	CMHQ	640	15000
	CMHW	810	1000
	CMHO	1310	1000
	CMHM	1130	1000
Sancti Spiritus	CMHT	990	1000
Santiago	CMDA	1320	1000
	CMKC	770	1000
	CMDB	680	1000
	CMKL	800	2000
	CMKW	1000	2000
	CMKR	1090	1000
	CMKU	630	2000
	CMDL	1150	1000
	CMKN	930	1000
	CMKB	1170	1000
Victoria de las Tunas	CMDQ	840	1000
	CMKT	1520	1000

U. S. FM Stations by States

Abbreviations: Mc., megacycles; asterisk (*) indicates educational station

ALABAMA

Location	C.L.	Mc.
Albertville	WAVU-FM	105.1
Alexander City	WRFS-FM	106.1
Andalusia	WCTA-FM	98.1
Anniston	WHMA-FM	100.5
Athens	WJOF	104.3
Birmingham	WAPI-FM	99.5
	WBRC-FM	106.9
	WSFM	93.7
Clanton	WKLF-FM	100.9
Cullman	WFMH-FM	101.1
Decatur	WHOS-FM	102.1
Homewood	WJLN	104.7
Huntsville	WAHR	99.1
	WNDA	92.9
Mobile	WKRG-FM	99.9
Montgomery	WAJM	103.3
	WFMI	98.9
Sylacauga	WMLS-FM	98.3
Tuscumbia	WVNA	100.3
Tuscaloosa	WTBO-FM	95.7
	WUOA	*91.7

ALASKA

Location	C.L.	Mc.
Anchorage	KNIK	105.5
	KBYR-FM	102.1

ARIZONA

Location	C.L.	Mc.
Globe	KWJB-FM	100.3
Mesa	KBUZ-FM	104.7
Phoenix	KELE	95.5

Location	C.L.	Mc.
	KFCA	*88.5
	KOOL-FM	94.5
	KITH	101.3
	KOY-FM	92.5
	KPHO-FM	96.9
	KTAR-FM	98.7
	KYEW	93.3
Tempe	KUPD-FM	97.9
Tucson	KFMM	99.5

ARKANSAS

Location	C.L.	Mc.
Blytheville	KLCN-FM	96.1
Ft. Smith	KFPW-FM	94.9
Jonesboro	KBTM-FM	101.9
	KASU	91.9
Little Rock	KARK	103.7
Mammoth Springs	KAMS	103.9
Osceola	KOSE-FM	98.1
Pine Bluff	KOTN-FM	92.3
Siloam Springs	KUOA-FM	105.7

CALIFORNIA

Location	C.L.	Mc.
Alameda	KJAZ	92.7
Anaheim	KEZY-FM	95.9
Arcata	KTOO	*90.5
Atherton	KPEN	101.3
Auburn	KAFI	101.1
Avalon	KBIQ	104.3
Bakersfield	KERN-FM	94.1
	KQXR	101.5
Berkeley	KPFA	94.1
	KPFB	*89.3
	KRE-FM	102.9
Bijou	KHUR	99.9
Claremont	KSPC	*88.9
Coachella	KCHV-FM	93.7
El Cajon	KUFM	93.3
Eureka	KIEM	96.3
Fresno	KARM-FM	101.9
	KCIB-FM	94.5
	KMJ-FM	97.9
	KRFM	93.7
	KXQR	102.7
Garden Grove	KGGK	94.3
Glendale	KFMU	97.1
	KUTE	101.9
Hayward	KBBM	101.7
Inglewood	KTYM-FM	103.9
LaSierra	KSOA	*89.7
Lodi	KCVR-FM	97.7
Long Beach	KFOX-FM	102.3
	KLON	*88.1
	KNOB	97.9
Los Altos	KPGM	97.7
Los Angeles	KABC-FM	95.5
	KBBI	107.5
	KBCA	105.1
	KBMS	105.9
	KCBH	98.7
	KFAC-FM	92.3
	KFMU	
	KGLA	*103.5
	KHJ	101.1
	KMLA	100.3
	KNX-FM	93.1
	KPFK	*90.7
	KPOL-FM	93.9
	KRHM	94.7
	KRKD-FM	96.3
	KLAC-FM	102.7
	KUSC	*91.5
	KXLU	*88.7
	KHOF	99.5
Marysville	KMYC-FM	99.9
Modesto	KBEE-FM	103.3
	KTRB-FM	104.1
Monterey	KHFR	96.9
Mountain View	KFJC	*88.5
Newport Beach	KNBB	103.1
Oakland	KAFE	98.1
Oceanside	KUOE	102.1
Ontario	KASK-FM	93.5
Oxnard	KAAR	104.7
Palm Springs	KPSR	92.1
Pasadena	KPCS	89.3
Redondo Beach	KAPP	93.5
Redlands	KCHL FM	96.7
Ridgecrest	KLOA-FM	105.5
Riverside	KPLI	99.1
	KACE-FM	92.7
	KOUO	97.5
Sacramento	KCRA-FM	96.1
	KFBK-FM	96.9
	KEBR	100.5
	KHIQ	105.1
	KJML	95.3
	KRAK-FM	92.9
	KSFM	96.9
	KXRQ	98.5
	KXOA-FM	107.9
Salinas	KSBW-FM	102.5
San Bernardino	KVCR	*91.9
	KFMW	99.9
	KEBS	*89.5
San Diego	KOGO-FM	94.1
	KFMB-FM	100.7
	KFMX-FM	96.5
	KGB-FM	101.5
	KITT	105.3
	KJLM	98.1
	KLRO	94.9
	KPRI	106.5
	KSDS	*88.3
San Fernando	KVFM	94.3
San Francisco	KALW	*91.7
	KBAY-FM	104.5
	KBCO	105.3
	KCBS-FM	98.9
	KDFC	102.1
	KEAR	97.3
	KFRC-FM	106.1
	KGO-FM	103.7
	KNBC-FM	99.7
	KHIP	106.9
	KRON-FM	96.5
	KSFR	94.9
	KQBY-FM	95.7
	KYA-FM	93.3
San Jose	KSJO-FM	92.3
	KRPM	98.5
San Luis Obispo	KATY-FM	96.1
San Rafael	KTIM	100.9
San Mateo	KCSM	*90.9
Santa Ana	KWIZ-FM	96.7
	KFIL	106.3
Santa Barbara	KRCW	97.5
	KDB-FM	93.7
	KMUZ	103.3
Santa Clara	KSCU	*90.1
Santa Cruz	KSCO-FM	99.1
Santa Maria	KEYM	99.1
	KSMA-FM	102.5
Santa Monica	KCRW	*89.9
	KSRF	103.1
Sierra Madre	KMAX	107.1
Stockton	KCVN	*91.3
	KSTN-FM	107.3
	KWG-FM	105.7
Turlock	KHOM	92.9
Ventura-Oxnard	KVEN-FM	100.7
Visalia	KONG-FM	92.9
Walnut Creek	KWME-FM	92.1
West Covina	KDWC	98.3
Woodland	KATT	95.3

COLORADO

Location	C.L.	Mc.
Boulder	KRNW	97.3
Colorado Springs	KRCC	*91.3
	KFMH	96.5
	KSHS	*90.5
	KVOR-FM	92.9
Cortez	KZFM	94.1
Denver	KFML-FM	98.5
	KDEN-FM	99.5
	KLIR-FM	100.3
	KOA-FM	103.5
	KTGM	105.1
Grand Junction	KREX-FM	92.3
Manitou Springs	KCMS-FM	102.7

CONNECTICUT

Location	C.L.	Mc.
Bridgeport	WJZZ	99.9
Brookfield	WGHF	95.1
Danbury	WLAD-FM	98.3
Hartford	WHCN	105.9
	WDRC-FM	102.9
	WCCC-FM	106.9
	WFNQ	93.7
	WRTC-FM	*89.3
	WTIC-FM	96.5
Manchester	WINF-FM	107.9
Meriden	WBMI	95.7
Middletown	WESU	88.1
New Haven	WNHC-FM	99.1
	WYBC-FM	94.3
Stamford	WSTC-FM	96.7
Storrs	WHUS	*90.5
Waterbury	WATR-FM	92.5

DELAWARE

Location	C.L.	Mc.
Dover	WDOV-FM	94.7
Wilmington	WDEL-FM	93.7
	WJBR	99.5

D. C.

Location	C.L.	Mc.
Washington	WASH-FM	97.1
	WAMU-FM	*88.5
	WFAN	100.3
	WGAY	99.5
	WGMS-FM	103.5
	WGTB	*90.1
	WMAL-FM	107.3
	WOL-FM	98.7
	WRC-FM	93.9
	WTOP-FM	96.3
	WWDC-FM	101.1

FLORIDA

Location	C.L.	Mc.
Coral Gables	WVCG-FM	105.1
Daytona Beach	WNDB-FM	94.5
Fort Lauderdale	WWIL-FM	103.5
	WFLM	105.9
	WMFP	100.7
Fort Pierce	WARN	98.7
Gainesville	WRUF-FM	*104.1
Jacksonville	WJAX-FM	95.1
	WZOK-FM	96.9
	WMBR-FM	96.1
Miami	WKAT-FM	93.3
	WCKR-FM	97.3
	WGBS-FM	96.3
	WTHS	*91.7
	WWPB-FM	101.5
Miami Beach	WKAT-FM	93.1
	WAEZ-FM	94.9
	WMBM-FM	93.9
Ocala	WMOP-FM	93.7
Orlando	WDBO-FM	92.3
	WHOO-FM	96.5
	WKIS-FM	100.3
Palm Beach	WQXT-FM	97.9
Pensacola	WPEX-FM	94.1
St. Petersburg	WGNB	101.5
	WTCX	99.5
Sarasota	WYAK	102.5
Tallahassee	WFSU-FM	*91.5
Tampa	WDAE-FM	100.7
	WFLA-FM	93.3
	WPKM	104.7
	WTUN	*88.9
Winter Park	WPRK	*91.5

GEORGIA

Location	C.L.	Mc.
Athens	WGAU-FM	102.5
Atlanta	WABE	*90.1
	WPLO-FM	103.3
	WGKA-FM	92.9
	WSB-FM	98.5
Augusta	WAUG-FM	105.7
	WBBQ-FM	103.7
Columbus	WRBL-FM	93.3
Gainesville	WDUN-FM	103.9
Lagrange	WLAG-FM	104.1
Macon	WMAZ-FM	99.1
Marietta	WBIE-FM	101.5
	WKLS	96.1
Newnan	WCOH-FM	96.7
Savannah	WTOC-FM	97.3
Swainsboro	WJAT-FM	101.7
Toccoa	WLET-FM	106.1

HAWAII

Location	C.L.	Mc.
Honolulu	KAIM-FM	95.5
	KVOK	*88.1
	KUOH	*90.5

IDAHO

Location	C.L.	Mc.
Boise	KBOI-FM	97.9
Lewiston	KOZE-FM	96.7

ILLINOIS

Location	C.L.	Mc.
Alton	WOKZ-FM	100.3
Anna	WRAJ-FM	92.7
Arlington Heights	WNWC	92.7
Aurora	WKKO-FM	95.9
Bloomington	WJBC-FM	101.5
Carbondale	WSIU	*91.9
Carmi	WROY-FM	97.3
Champaign	WDWS-FM	97.5
Chicago	WBBM-FM	96.3
	WBEZ	*91.5
	WCLM	101.9
	WDHF	95.5
	WEBH	93.9
	WEFM	99.5
	WEHS	97.9
	WENR-FM	94.7
	WFMF	100.3
	WFMQ	107.5
	WFMT	98.7
	WKFM	103.5
	WMAQ-FM	101.1
	WMBI-FM	*90.1
	WNIB	97.1
	WSBC-FM	93.1
	WJJO-FM	104.3
Decatur	WSOY-FM	102.9
DeKalb	WNIC	*91.1
E. St. Louis	WBBR	101.1
Effingham	WSEI	95.7
	WELG	103.9
	WRMN-FM	94.3
Elgin	WEPS	*88.1
Elmwood Park	WXFM	105.9
Evanston	WEAW	105.1
	WNUR	*89.3
Galesburg	WYKC-FM	*88.1
Glen Ellyn	WELF-FM	107.1
Harrisburg	WEBQ-FM	99.9
Highland Park	WNSH-FM	103.1
Jacksonville	WLDS-FM	100.5
	WAJP	93.5
Joliet	WJOL-FM	96.7
Kankakee	WKAK-FM	99.9
Kewanee	WKSO	*91.9
Litchfield	WSMI-FM	106.1
Macomb	WWKS	*91.3
Mattoon	WLBH-FM	96.9
Morris	WRMI-FM	104.7
Mt. Carmel	WSAB	94.9
	WVMC-FM	101.1
Mt. Vernon	WMIX-FM	94.1
Oak Park	WDPA-FM	102.7
Olney	WVLN-FM	92.9
Paris	WPRS-FM	98.3
Park Forest	WRHS	*88.1
Park Ridge	WMTH	*88.5
Peoria	WMBO-FM	92.5
Quincy	WGEM-FM	105.1
	WTAD-FM	99.5
Rockford	WROK-FM	97.5
Rock Island	WHBF-FM	98.9
Springfield	WTAX-FM	103.7
Taylorville	WGGM	95.0
Urbana	WILL-FM	*90.9
Wheaton	WETN-FM	*88.1
Winnetka	WNTH	*88.1

INDIANA

Location	C.L.	Mc.
Anderson	WAFM	97.9
Bloomington	WFIU	*103.7
	WTTV-FM	92.3
Columbus	WCSI-FM	98.3
Connersville	WCNB-FM	100.3
Crawfordsville	WBBS-FM	106.3
Elkhart	WCMR-FM	95.1
	WTRC-FM	100.7
Evansville	WIKY-FM	104.1
	WEVC	*91.5
	WPSR	90.7
Franklin	WFCI	*89.3
Fort Wayne	WPTH	95.1
Gary	WGVE	*88.1
Goshen	WGCS	91.1
Greencastle	WGRE	*91.7
Hammond	WYCA	92.3
Hartford City	WHCI	*91.9
Huntington	WVSH	*91.9
Indianapolis	WAJC	*104.5
	WISH-FM	107.9
	WAIV	105.7
	WFBM-FM	94.7
	WFMS	95.5
	WIAN	*90.1
	WIBC-FM	93.1
Jasper	WITZ-FM	104.7
Madison	WORX-FM	96.7
Marion	WMRI-FM	106.9
	WBST	*90.7
Muncie	WMUN	104.1
	WWHI	*91.5
New Albany	WNAS	*88.1
New Castle	WCTW-FM	102.5
	WYSN	*91.1
Princeton	WRAY-FM	98.1
Richmond	WGLM	96.1
Salem	WSLM-FM	98.9
Seymour	WJOO	93.7
South Bend	WETL	*91.9
Terre Haute	WTHI-FM	99.9
	WVTS	100.7
Wabash	WSKS	*91.3
Warsaw	WRSW-FM	107.3
Washington	WFML	106.5
West Lafayette	WBAA-FM	99.1

IOWA

Location	C.L.	Mc.
Ames	WOI-FM	*90.1
Boone	KFGQ	*99.3
Cedar Falls	KTCF	*88.1
Cedar Rapids	KHAK-FM	98.1
Clinton	KROS-FM	96.1
Davenport	WOC-FM	103.7
Des Moines	KOPS	*88.1
	KOMI	97.3
	KSO	98.5
	WHO-FM	100.3
Iowa City	KSUI	*91.7
Muscatine	KWPC-FM	99.7
Sioux City	KDVR	97.9
Storm Lake	KAYL-FM	101.5
Waverly	KWAR	89.1

KANSAS

Location	C.L.	Mc.
Emporia	KSTE	*88.7
Kansas City	KCJC	98.1
Lawrence	KANU	*91.5
Manhattan	KSOB-FM	*88.1
Newton	KJRG-FM	92.1
Ottawa	KTJO-FM	*88.1
Parsons	KPPS-FM	*91.1
Salina	KAFM	99.9
Topeka	KTDP-FM	100.3
Wichita	KFH-FM	100.3
	KMUW	*89.1
	KCBM-FM	107.3

KENTUCKY

Location	C.L.	Mc.
Ashland	WCMI-FM	93.7
Central City	WNES-FM	101.9
Fulton	WFUL-FM	104.9
Glasgow	WGGC	95.1
Hazard	WKIC-FM	96.5
Henderson	WSON-FM	99.5
Hopkinsville	WRLX	98.7
	WKOF	100.3
Lexington	WBKY	*91.3
	WLAP-FM	94.5
Louisville	WFPK	*91.9
	WFPL	*89.3
Madisonville	WFMW-FM	93.9
	WNGO-FM	94.7
Owensboro	WOMI-FM	92.5
	WVJS-FM	96.1
Paducah	WPAD-FM	96.9
	WKYB-FM	93.3

LOUISIANA

Location	C.L.	Mc.
Alexandria	KALB-FM	96.9
Baton Rouge	WJBO-FM	98.1
Monroe	KMLB-FM	104.1
New Orleans	WBEH	89.3
	WDSU-FM	105.3
	WRCM	97.1
	WMMT	95.7
Shreveport	KRMD-FM	101.1
	KBCL-FM	96.5
	KWKH-FM	94.5

MAINE

Location	C.L.	Mc.
Augusta	WFAU-FM	101.3
Bangor	WABI-FM	97.1
Brunswick	WBOR	*91.1
Caribou	WFST-FM	97.7
Lewiston	WCOU-FM	93.9
	WRJR	91.5
Poland Springs	WMTW-FM	94.9
Portland	WLOB-FM	97.9

MARYLAND

Location	C.L.	Mc.
Annapolis	WNAV-FM	99.1
	WANN-FM	107.9
	WXTC	107.9
	WAQE-FM	101.9
Baltimore	WBJC	*88.1
	WCAO-FM	102.7
	WCBM-FM	106.5
	WFMM-FM	93.1
	WRBS	95.1
	WSID	92.3
	WBAL-FM	97.9
	WITH-FM	104.3
	WSID-FM	92.3
Bethesda	WJMD	106.3
	WHFS-FM	102.5
Bradbury Heights	WPGC	95.5
Cumberland	WCUM-FM	102.9
Frederick	WFMD-FM	99.9
Hagerstown	WJEJ-FM	104.7
	WARK-FM	106.9
Havre de Grace	WASA-FM	103.7
Oakland	WBUZ	95.5
Tacoma Park	WGTS-FM	*91.9
Waldorf	WSMD	104.1
Westminster	WTTR-FM	100.7

MASSACHUSETTS

Location	C.L.	Mc.
Amherst	WAMF	*88.1
	WFCR	*88.5
	WMUA	*91.1
Boston	WBUR	*90.9
	WBCN	104.1
	WBZ-FM	106.7
	WCOP-FM	100.7
	WEEI-FM	103.3
	WERS	*88.9
	WHDH-FM	94.5
	WRKO-FM	98.5
	WXHR	96.9
Brockton	WBET-FM	97.7
Brookline	WBOS-FM	92.9
Cambridge	WGBH-FM	*89.7
	WHRB-FM	95.3
	WTBS	88.1
Fitchburg	WFGM-FM	104.7
Framingham	WKOX-FM	105.7
Greenfield	WHAI-FM	98.3
Haverhill	WHAV-FM	92.5
Lawrence	WGHJ	93.7
Lowell	WLLH-FM	99.5
Lynn	WUPI-FM	105.3
Medford	WISK	107.9
New Bedford	WBSM-FM	97.3
	WNBH-FM	98.1
Plymouth	WPLM-FM	99.1
S. Hadley	WMHC	*88.5
Springfield	WHYN-FM	93.1
	WEDK	*91.7
	WSCB	*88.9
	WMAS-FM	94.7
Waltham	WCRB-FM	102.5
W. Yarmouth	WOCB-FM	94.3
Williamstown	WCFM	*90.1
Winchester	WHSR-FM	*91.9
Worcester	WAAB	107.3
	WTAG-FM	96.1

MICHIGAN

Location	C.L.	Mc.
Ann Arbor	WUOM	*91.7
Bay City	WBCM-FM	96.1
	WNEM-FM	102.5
Benton Hrbr.	WHFB-FM	99.9
Birmingham	WHFI	94.7
Coldwater	WTVB-FM	98.3
Dearborn	WKMH-FM	100.3
Detroit	WDET-FM	*101.9
	WBFG-FM	98.7
	WCHD	105.9
	WDTM	106.7
	WABX	99.5
	WDTR	*90.9
	WGPM	107.5
	WJBK-FM	93.1
	WMUZ	103.5
	WMZK	97.9
	WJR-FM	96.3
	WOMC-FM	104.3
	WQRS-FM	105.1
	WRMK-FM	98.7
	WWJ-FM	97.1
	WXYZ-FM	101.1
E. Lansing	WKAR-FM	*90.5
	WSWM	99.1
Flint	WFBE	*95.1
Grand Rapids	WFUR-FM	102.9
	WJEF-FM	93.7
	WLAV-FM	96.9
	WMAX-FM	101.3
	WOOD-FM	105.7 (s)
	WVGA-FM	104.1
	WXTO-FM	97.9
	WKLW-FM	95.7
Highland Pk.	WHPR	*88.1
Holland	WJBL-FM	94.5
Houghton Lake	WJGG	98.5
Interlochen	WGYA	*103.1
Jackson	WBBC	94.1
Kalamazoo	WMCR	*102.1
Lansing	WJIM-FM	97.5
	WMRT-FM	100.7
Midland	WQDC-FM	99.7
Mount Clemens	WBRB-FM	102.7

Location	C.L.	Mc.
Oak Park	WLDM	95.5
Royal Oak	WOAK	*89.3
	WOMC	104.3
Saginaw	WSAM-FM	98.1
Sturgis	WSTR-FM	103.1

MINNESOTA

Location	C.L.	Mc.
Brainerd	KLIZ-FM	95.7
Mankato	KYSM-FM	103.5
Minneapolis	KTIS-FM	*98.5
	KWFM	97.1
	WLOL-FM	99.5
	WPBC-FM	101.3
	WAYL	96.1
St. Cloud	KFAM-FM	104.7
St. Paul	KNOF	95.3
Worthington	KWOA-FM	94.9

MISSISSIPPI

Location	C.L.	Mc.
Jackson	WJDX-FM	102.9
Laurel	WNSL-FM	100.3
Meridian	WMMI	*88.1

MISSOURI

Location	C.L.	Mc.
Clayton	KFUO-FM	99.1
Joplin	WMBH-FM	96.1
	KSYN	92.5
Kansas City	KCMO-FM	94.9
	KBEY	104.3
	KTSR	*90.1
	KDAF-FM	102.1
	KCMK	93.3
	KCUR-FM	89.3
	KXTR	96.5
Kennett	KBOA-FM	98.9
Poplar Bluff	KWOC-FM	94.5
St. Louis	KCFM	93.7
	KADI	96.5
	WAMV-FM	101.1
	WIL-FM	92.3
	KSLH	*91.5
	KSTL-FM	98.1
	KWIX	102.5
	KRFD	106.9
Springfield	KTTS-FM	94.7
West Plains	KWPM-FM	93.9

NEBRASKA

Location	C.L.	Mc.
Kearney-Holdrege		
	KRNY-FM	98.9
Lincoln	KFMQ	95.3
Omaha	KQAL-FM	94.3
	KFAB-FM	99.9
	WOW-FM	92.3
	KICN	96.1
Scottsbluff	KNEW-FM	94.1

NEVADA

Location	C.L.	Mc.
Las Vegas	KORK-FM	97.1
Reno	KNEV	95.5

NEW HAMPSHIRE

Location	C.L.	Mc.
Berlin	WMOU-FM	103.7
Claremont	WTSV-FM	106.1
Manchester	WKBR-FM	95.7
Mt. Washington	WMTW-FM	94.9
Nashua	WOTW-FM	106.3

NEW JERSEY

Location	C.L.	Mc.
Asbury Park	WJLK-FM	94.3
Bridgeton	WSNJ-FM	107.7
Camden	WKDN-FM	106.9
Dover	WOHA-FM	105.5
E. Orange	WFMU	*91.1
Eatontown	WHTG-FM	105.3
Hackettstown	WNTI	*91.9
Long Branch	WRLB	107.1
Millville	WMVB-FM	97.3
Newark	WJRZ-FM	94.7
	WVNJ-FM	100.3
	WBGO	*88.3
New Brunswk.	WCTC-FM	98.3
Paterson	WPAT-FM	93.1
Princeton	WPRB	103.9
Red Bank	WFHA-FM	106.3
South Orange	WSOU	*89.5
Trenton	WTOA	97.5
Wildwood	WCMC-FM	100.7
Zarephath	WAWZ-FM	99.1

NEW MEXICO

Location	C.L.	Mc.
Albuquerque	KANW	*89.1
	KHFM	96.3
(s) Aztec	KNDE-FM	94.9
Los Alamos	KRSN-FM	98.5
Mountain Park	KMFM	97.9
Roswell	KBIM-FM	97.1

NEW YORK

Location	C.L.	Mc.
Albany	WAMC	*90.3
Auburn	WMBO-FM	96.1
Babylon	WTFM	103.5
	WBAB-FM	102.3
Binghamton	WNBF-FM	98.1
	WKOP-FM	95.3
Brooklyn	WNYE	*91.5
Buffalo	WBEN-FM	106.5
	WBFO	*88.7
	WEBR	94.5
	WGR-FM	96.9
	WBUF	92.9
	KWOL-FM	104.1
	WIFE-FM	103.3
Central Square	WCSQ	*89.3
Cherry Valley	WJIV	101.9
Corning	WCLI-FM	106.1
Cortland	WKRT-FM	99.9
DeRuyter	WOIV	105.1
Elmira	WECW	*88.1
Floral Park	WSHS	*90.3
Garden City	WLIR	92.7
Hempstead	WHLI-FM	98.3
	WVHC	*88.7
Hornell	WWHG-FM	105.3
Ithaca	WHCU-FM	97.3
	WICB	*91.7
	WEIV	103.7
	WVBR-FM	101.7
Jamestown	WJTN-FM	93.3
Kenmore	WYSL-FM	103.3
Mt. Kisco	WRNW	107.1
New Rochelle	WVOX-FM	93.5
New York	WABC-FM	95.5
	WBAI	99.5
	WBFM	101.9
	WCBS-FM	101.1
	WEVD-FM	97.9
	WFUV	*90.7
	WHOM-FM	92.3
	WKCR-FM	*89.9
	WNCN	104.3
	WNEW-FM	102.7
	WNYC-FM	93.9
	WNYE	91.5
	WOR-FM	98.7
	WQXR-FM	96.3
	WNBC-FM	97.1
	WRFM	105.1
	WRVR	106.7
Niagara Falls	WHLD-FM	98.5
Olean	WHDL-FM	95.7
Plattsburgh	WEAV-FM	99.9
Patchogue	WALK-FM	97.5
	WPAC-FM	106.1
Peekskill	WLNA-FM	100.7
Poughkeepsie	WKIP-FM	104.7
	WEOK-FM	101.5
Rochester	WHFM	98.9
	WBBF-FM	100.1
	WCMF	96.5
	WIRQ	*90.9
	WROC-FM	97.9
Schenectady	WGFM	99.5
South Bristol	WMIV	95.1
Springville	WSPE	*88.1
Syracuse	WAER	*88.1
	WDDS-FM	93.1
	WONO	100.9
	WSYR-FM	94.5
Troy	WFLY	92.3
	WRPI	*91.5
Utica	WRUN-FM	105.7
Wethersfield	WBIV	105.7
White Plains	WFAS-FM	103.9

NORTH CAROLINA

Location	C.L.	Mc.
Albemarle	WABZ-FM	100.9
Asheboro	WGWR-FM	92.3
Asheville	WLOS-FM	104.3
Burlington	WBBB-FM	101.1
	WFNS-FM	93.9
Burlington-Graham		
	WBAG-FM	92.9
Chapel Hill	WUNC	*91.5
Charlotte	WSOC-FM	103.5
	WYFM	104.7
Clingman's Pk.	WMIT	106.9
Durham	WDNC-FM	105.1
Elkin	WIFM-FM	100.9
Fayetteville	WFNC-FM	98.1
Forest City	WBBO-FM	93.3
	WAGY-FM	105.3
Gastonia	WGNC-FM	101.9
Goldsboro	WEQR	96.9
Greensboro	WMDE	98.7
Greenville	WWWS	*91.3
Henderson	WHNC-FM	92.5
	WHKP-FM	102.5
Hendersonville	WHKP-FM	102.5
Hickory	WHKY-FM	102.9
High Point	WHPE-FM	95.5
	WHPS	*89.3
	WMFR-FM	99.5
	WNOS-FM	100.3
Laurinburg	WEWO-FM	96.5
Leaksville	WLOE-FM	94.5
Lexington	WBUY-FM	94.3
Lumberton	WTSB-FM	95.7
Raleigh	WKIX-FM	96.1
	WPTF-FM	94.7
	WRAL-FM	101.5
Reidsville	WREV-FM	102.1
Rocky Mount	WEED-FM	92.1
	WFMA	100.7
Roxboro	WRXO-FM	96.7
Salisbury	WSTP-FM	106.5
Sanford	WWGP-FM	105.5
Shelby	WOHS-FM	96.1
Statesville	WFMX	105.7
Tarboro	WCPS-FM	104.3
Thomasville	WTNC-FM	98.3
Wilmington	WPRV	93.9
Wilson	WVOT-FM	106.1
Winston-Salem	WAIR-FM	93.1
	WYFS	107.5
	WFDD-FM	*88.1
	WSJS-FM	104.1

OHIO

Location	C.L.	Mc.
Akron	WAKR-FM	97.5
	WAPS	*89.1
	WCUE-FM	96.5
Alliance	WFAH-FM	101.7
Ashland	WNCO-FM	101.3
Ashtabula	WREO-FM	103.7
Athens	WOUB-FM	*91.5
Barberton	WDBN	94.9
Bellaire	WOMP-FM	100.5
Berea	WBWC	*88.3
Bowling Green	WBGU	*88.1
Canton	WHBC-FM	94.1
	WCNO	106.9
	WTOF-FM	98.1
Celina	WMER-FM	94.3
Chillicothe	WBEX-FM	93.3
Cincinnati	WCPO-FM	105.1
	WAEF-FM	104.3
	WGUC	*90.9
	WAKW-FM	93.3
	WKRC-FM	101.9
	WSAI-FM	102.7
Cleveland	KYW-FM	105.7
	WXEN-FM	106.6
	WBOE	*90.3
	WCRF	103.3
	WDGO	95.5
	WDOK-FM	102.1
	WERE-FM	98.5
	WGAR-FM	99.5
	WHK-FM	100.7
	WJW-FM	104.1
	WNOB	107.9
Cleveland Hts.	WCUY-FM	92.5
Columbus	WCBE	*90.5
	WBNS-FM	97.1
	WCOL-FM	92.3
	WOSU-FM	*89.7
	WTVN-FM	96.3
	WVKO	94.7
Dayton	WHIO-FM	99.1
	WONE	104.7
Delaware	WSLN	*91.1
East Liverpool	WOHI-FM	104.3
Eaton	WCTM	92.9
Elyria	WEOL-FM	107.3
Findlay	WFIN-FM	100.5
Fostoria	WFOB	96.7
Fremont	WFRO-FM	99.3
Gallipolis	WJEH-FM	101.5
Granville	WDUB-FM	91.3
Hamilton	WQMS	96.7
	WHOH	103.5
Kent	WKSU-FM	*88.1
Lancaster	WHOK-FM	95.5
Lima	WIMA-FM	102.1
Marietta	WCMO	*89.3
Marion	WMRN-FM	106.9
Miamisburg	WFCJ	93.9
Middletown	WPFB-FM	105.9
Mt. Vernon	WMVO-FM	93.7
New Concord	WMCO-FM	*91.9
Newark	WCLT-FM	100.3
Oxford	WMUB	*88.5
	WOXR	97.7
Piqua	WPTW-FM	95.7
Port Clinton	WRWR-FM	94.5
Portsmouth	WPAY-FM	104.1
Salem	WSOM-FM	105.1
Sandusky	WLEC-FM	102.7
Springfield	WBLY-FM	103.9
	WEEC-FM	100.7
Steubenville	WSTV-FM	103.5
Toledo	WSPD-FM	101.5
	WMHE	92.5
	WTDS	*91.3
	WTOL-FM	104.7
	WTRT	99.9
Westerville	WOBN	*91.5
Wooster	WWST-FM	104.5
Yellow Springs	WYSO	*91.5
Youngstown	WKBN-FM	98.9
	WBBW-FM	93.3
	WRED	101.1
Zanesville	WHIZ-FM	102.5

OKLAHOMA

Location	C.L.	Mc.
Durant	KSEO-FM	107.3
Norman	WNAD-FM	*90.9
Oklahoma City	KOKH	*88.9
	KIOO	100.5
	KEFM	94.7
	KYFM	98.9
Shawnee	KBGC	*89.9
Stillwater	KOSU-FM	*91.7
	KSPI-FM	93.9
Tulsa	KWGS	*90.5
	KIHI	95.5
	KOCW	97.5
	KOGM-FM	92.9

OREGON

Location	C.L.	Mc.
Eugene	KRVM	*91.9
	KEED-FM	93.1
	KFMY	97.9
	KUGN-FM	99.1
	KWAX	*91.1
Grants Pass	KGPO	96.9
Medford	KBOY-FM	95.3
Oretech	KTEC	*88.1
Portland	KOAP-FM	92.3
	KGMG	95.5
	KOIN-FM	101.1
	KPDQ-FM	105.3
	KPFM	97.1
	KPDJ-FM	98.7
	KQFM	100.3
	KRRC	*89.3

PENNSYLVANIA

Location	C.L.	Mc.
Allentown	WFMZ	100.7
	WAEB-FM	104.1
Altoona	WVAM-FM	100.1
	WFBG-FM	98.1
Beaver Falls	WBVP-FM	106.7
Bethlehem	WGPA-FM	95.1
Bloomsburg	WHLM-FM	106.5
Boyertown	WBYC-FM	107.5
Braddock	WLOA-FM	96.9
Butler	WBUT-FM	97.7
Carlisle	WHYL-FM	102.3
Chambersburg	WCHA-FM	95.1
Dubois	WCED-FM	102.1
Easton	WEST-FM	107.9
	WEEX-FM	99.9
Erie	WWYN-FM	99.9
Glenside	WIFI	92.5
Harrisburg	WHP-FM	97.3
	WMSP	94.9
Havertown	WHHS	*89.3
Hazleton	WAZL-FM	97.9
Jenkintown	WIBF	103.9
Johnstown	WARD-FM	92.1
	WJAC-FM	95.5
Lancaster	WGAL-FM	101.3
	WDAC	94.5
	WLAN-FM	96.9
Lebanon	WLBR-FM	100.1
Meadville	WMGW-FM	100.3
Montrose	WPEL-FM	96.5
Oil City	WDJR	98.5
Palmyra	WJWR	92.1
Philadelphia	WCAU-FM	98.1
	WPBS-FM	105.3
	WDAS-FM	105.3
	WFIL-FM	102.1
	WFLN	95.7
	WHAT-FM	96.5
	WHYY	*90.9
	WIFI	92.5
	WIBG-FM	94.1
	WIP-FM	93.3
	WPEN-FM	102.9
	WPWT	*91.7
	WQAL	106.1
	WRTI-FM	*90.1
	WXPN	*88.9
Pittsburgh	KDKA-FM	92.9
	WAZZ	105.9
	WRYT-FM	96.1
	WDUQ	*91.5
	WINE	107.9
	WILY	105.9
	WJAS-FM	99.7
	WKJF	93.7
	WPIT-FM	101.5
	WWSW-FM	94.5
Pottsville	WPPA-FM	101.9
Red Lion	WGCB-FM	96.1
Scranton	WGBI-FM	101.3
	WUSV	*88.9
Sharon	WPIC-FM	102.9
State College	WDFM	*91.1
Sunbury	WKOK-FM	94.1
Towanda	WTTC-FM	92.7
Tyrone	WGMR-FM	101.1
Warren	WRRN	92.3
Washington	WJPA-FM	104.3
Waynesboro	WAYZ-FM	101.5
Wilkes-Barre	WBRE-FM	98.5
	WYZZ	103.3
Williamsport	WLYC-FM	105.1
	WRAK-FM	100.3
York	WNOW-FM	105.7

RHODE ISLAND

Location	C.L.	Mc.
Cranston	WLOV	99.9
Providence	WPJB-FM	105.1
	WICE-FM	107.7
	WPFM	95.5
	WPRO-FM	92.3
	WXCN	101.5
Woonsocket	WWON-FM	106.3

SOUTH CAROLINA

Location	C.L.	Mc.
Anderson	WCAC	101.1
Charleston	WCSC-FM	96.9
	WTMA-FM	95.1
Clemson	WSBF-FM	*88.1
Columbia	WCOS-FM	97.9
	WNOK-FM	104.7
	WUSC-FM	*89.9
Dillon	WDSC-FM	92.9
Greenville	WESC-FM	92.5
	WFBC-FM	93.7
	WMVU-FM	94.5
Laurens-Clinton	WLBG-FM	100.5
Rock Hill	WRHI-FM	98.3
Seneca	WSNW-FM	98.1
Spartanburg	WSPA-FM	98.9
Sumter	WFIG-FM	101.3

TENNESSEE

Location	C.L.	Mc.
Bristol	WOPI-FM	96.9
Chattanooga	WDOD-FM	96.5
	WLON	106.5
Cleveland	WCLE-FM	100.7
Collegedale	WSMC-FM	*88.1
Franklin	WFLT-FM	100.1
Gallatin	WFMG	104.5
Greeneville	WGRV-FM	94.9
Jackson	WTJS-FM	104.1
Johnson City	WJCW-FM	100.7
Kingsport	WKPT-FM	98.5
Knoxville	WBIR-FM	93.3
	WKCS	*91.1
	WUOT	*91.9
Memphis	WMC-FM	99.7
	WMPS-FM	97.1
	WDIA-FM	102.7
Nashville	WFMB	105.9
	WSIX-FM	97.5
Sevierville	WSEV-FM	102.1

TEXAS

Location	C.L.	Mc.
Abilene	KACC-FM	*91.1
	KFMN	99.3
Alvin	KAJC-FM	102.1
Amarillo	KGNC-FM	93.1
Austin	KHFI	98.3
	KAZZ	95.5
	KTBC-FM	93.7
	KUT-FM	*90.7
Beaumont	KHCB-FM	105.7
	KRIC-FM	97.5
Brownwood	KHPC	88.1
Cleburne	KCLE-FM	94.9
Corpus Christi	KMFM	95.5
Dallas	KIXL-FM	104.5
	KNER	*88.1
	KRLD-FM	92.5
	KLIF-FM	98.7
	WFAA-FM	97.9
	WRR-FM	101.1
	KVTT	*91.7
	KQRO	102.9
Denton	KDNT-FM	106.3
DiBoll	KSPL-FM	95.5
Dumas	KDDD-FM	95.3
El Paso	KVOF-FM	*88.5
	KHMS	94.7
Ft. Worth	WBAP-FM	96.3
	KXFM	99.5
	KFJZ-FM	97.1
Gainesville	KGAF-FM	94.5
Harlingen	KELT	94.5
Highland Pk.	KUIL-FM	103.7
Hillsboro	KHBR-FM	102.3
Houston	KHGM	102.9
	KHUL	95.7
	KFMK	97.9
	KODA-FM	99.1
	KARO	94.5
	KOST	100.3
	KQUE	102.9
	KRBE	104.1
	KXYZ-FM	96.5
	KTRH-FM	101.1
	KUHF	*91.3
Lubbock	KRKH-FM	93.7
	KBFM	96.3
	KTXT-FM	*91.9
Marshall	KMHT-FM	97.3
Midland	KNFM	92.3
Mt. Pleasant	KIMP-FM	96.1
Odessa	KQIP	96.7
	KWMO	99.1
Pampa	KBMF-FM	100.3
Plainview	KHBL	*88.1
Port Arthur	KFMP	93.3
San Antonio	KISS	99.5
	KEEZ	97.3
	KAKI-FM	98.1
	KITY	92.9
Sinton	KTOD-FM	101.3
Texarkana	KTAL-FM	98.1
Tyler	KSLT	93.1
Waco	KEFC	95.5
	WACO	99.9

UTAH

Location	C.L.	Mc.
Ephraim	KEPH	*88.9
Logan	KUSU-FM	*88.1
Provo	KBYU-FM	*88.9
Salt Lake City	KCPX-FM	98.7
	KLUB-FM	97.1
	KSL-FM	100.3

VIRGINIA

Location	C.L.	Mc.
Arlington	WAVA-FM	105.1
	WCCV-FM	97.5
Charlottesville	WINA-FM	95.3
	WTJU	91.3
Crewe	WSVS-FM	104.7
Farmville	WFLO-FM	95.7
Fredericksburg	WFVA-FM	101.5
Gretna	WMNA-FM	103.3
Harrisonburg	WEMC	*91.7
	WSVA-FM	100.7
Lynchburg	WWOD-FM	100.1
Manassas	WPRW-FM	106.7
Marion	WMEV-FM	93.9
Martinsville	WMVA-FM	96.3
Newport News	WGH-FM	97.3
Norfolk	WMTI	*91.5
	WRVC	102.5
	WTAR-FM	95.7
	WYFI-FM	99.7
Portsmouth	WAVY-FM	96.9
Richmond	WCOD	98.1
	WRFK	91.1
	WRVA-FM	94.5
	WRNL-FM	102.1
Roanoke	WDBJ-FM	94.9
	WLRJ	92.3
	WROV-FM	103.7
	WSLS-FM	99.1
South Boston	WHLF-FM	97.5
South Norfolk	WFOS	*90.5
Staunton	WSGM-FM	93.5
Williamsburg	WCWM	89.1
Winchester	WRFL	92.5
Woodbridge	WXRA	105.9

WASHINGTON

Location	C.L.	Mc.
Bellingham	KGMI-FM	92.9
Cheney	KEWC-FM	*89.9
Edmonds	KGFM	*105.3
Lynden	KLYN-FM	106.5
Opportunity	KZUN-FM	96.1
Seattle	KING-FM	98.1
	KETO-FM	101.5
	KGMJ	95.7
	KIRO-FM	100.7
	KISW	99.9
	KLSN	96.5
	KMCS	98.9
	KOL-FM	94.1
	KUOW	94.9
Spokane	KREM-FM	92.9
	KXLY-FM	99.9
	KHQ-FM	98.1
Tacoma	KCPS	90.9
	KLAY-FM	106.3
	KTNT-FM	97.3
	KTOY	*91.7
	KTWR	103.9
Yakima	KNDX-FM	106.3

WEST VIRGINIA

Location	C.L.	Mc.
Beckley	WBKW	99.5
Charleston	WKAZ-FM	97.5
	WKNA	98.5
Huntington	WKEE-FM	100.5
	WMUL	*88.1
Martinsburg	WEPM-FM	94.3
Morgantown	WAJR-FM	99.3
Oak Hill	WOAY-FM	94.1
Wheeling	WKWK-FM	97.3
	WWVA-FM	98.7

WISCONSIN

Location	C.L.	Mc.
Appleton	WLFM	*91.1
Chilton	WHKW	*89.3
Colfax	WHWC	*88.3
Delafield	WHAD	*90.7
Eau Claire	WIAL	94.1
Fort Atkinson	WFAW	107.3
Green Bay	WBAY-FM	101.1
Greenfield Twp.	WWCF	94.9
Highland	WHHI	91.3
Highland Twp.	WHSA	*89.9
Janesville	WCLO-FM	99.9
La Crosse	WHLA	*90.3
Madison	WHA-FM	*88.7
	WIBA-FM	101.5
	WISM-FM	98.1
	WMFM	104.1
	WRVB-FM	102.5
Merrill	WLIN	100.7
Milwaukee	WFMR	96.5
	WMIL-FM	95.7
	WISN-FM	97.3
	WRIT-FM	102.9
	WMKE	102.1
	WQFM	93.3
	WTMJ-FM	94.1
Monroe	WEKZ-FM	93.7
Racine	WRJN-FM	100.7
Rice Lake	WJMC-FM	96.3
Sparta	WCOW-FM	97.1
Stevens Point	WSPT-FM	97.9
Watertown	WTTN-FM	104.7
Waukesha	WAUX-FM	106.1
Wausau	WHRM	*91.9
Wauwatosa	WTOS	103.7
West Bend	WBKV-FM	92.5
Wisc. Rapids	WFHR-FM	103.3

WYOMING

Location	C.L.	Mc.
Cheyenne	KVOW-FM	106.3

U. S. FM Stations by Call Letters

Abbreviation: (s)—broadcasts stereo

C.L.	Location
KAAR	Oxnard, Calif.
KABC-FM	Los Angeles, Calif.
KACE-FM	Riverside, Calif.
KAOI	St. Louis, Mo.
KAFE	Oakland, Calif.
KAFI	Auburn, Calif.
KAFM	Salina, Kans.
KAIM-FM	Honolulu, Hawaii
KAJC-FM	Alvin, Tex.
KAJS	Newport Beach, Calif.
KAKC	Tulsa, Okla.
KAKI	San Antonio, Tex.
KALB-FM	Alexandria, La.
KALH	Denver, Colo.
KALW	San Francisco, Calif.
KAMS	Mammoth Spring, Ark.
KANG	St. Louis, Mo.
KANT-FM	Lancaster, Calif.
KANU	Lawrence, Kans. (s)
KANW	Albuquerque, N.Mex.
KAPP	Redondo Beach, Calif.
KARK	Little Rock, Ark.
KARM-FM	Fresno, Calif.
KARO	Houston, Tex.
KASK-FM	Ontario, Calif.
KASU	Jonesboro, Ark.
KATT	Woodland, Calif.
KATY-FM	San Luis Obispo, Calif.
KAZZ	Austin, Tex.
KBAY	San Francisco, Calif.
KBBI	Los Angeles, Calif.
KBBL	Wichita, Kans.
KBBM	Hayward, Calif.
KBBW	San Diego, Calif.
KBCA	Los Angeles, Calif.
KBCL-FM	Shreveport, La.
KBCO	San Francisco, Calif.
KBEE-FM	Modesto, Calif.
KBEY	Kansas City, Mo.
KBFI	Boise, Idaho
KBFM	Lubbock, Tex.
KBIM-FM	Roswell, N.Mex.
KBIQ	Los Angeles, Calif.
KBMF	Pampa, Tex.
KBMS	Los Angeles, Calif.
KBOA-FM	Kennett, Mo.
KBOI-FM	Boise, Idaho
KBOY-FM	Medford, Oreg.
KBTM-FM	Jonesboro, Ark.
KBUZ-FM	Mesa, Ariz.
KBYR-FM	Anchorage, Alaska (s)
KBYU-FM	Provo, Utah
KCAL-FM	Redlands, Calif.
KCBH	Beverly Hills, Calif. (s)
KCBS-FM	San Francisco, Calif.
KCFM	St. Louis, Mo. (s)
KCHV-FM	Coachella, Calif.
KCIB-FM	Fresno, Calif.
KCJC	Kansas City, Kans.
KCLE-FM	Cleburne, Tex.
KCMB-FM	Wichita, Kans.
KCMI	Los Angeles, Calif.
KCMK	Kansas City, Mo.
KCMO-FM	Kansas City, Mo. (s)
KCMS-FM	Manitou Springs, Colo.
KCOM	Omaha, Nebr.
KCPA-FM	Dallas, Tex.
KCPS	Tacoma, Wash.
KCPX-FM	Salt Lake City, Utah
KCRA-FM	Sacramento, Calif.
KCRW	Santa Monica, Calif.
KCSM	San Mateo, Calif.
KCUI	Pella, Ia.
KCUR-FM	Kansas City, Mo.
KCVN	Stockton, Calif.
KCVR-FM	Lodi, Calif.
KDB-FM	Santa Barbara, Calif.
KDDD-FM	Dumas, Tex.
KDEF-FM	Albuquerque, N.Mex.
KDEN-FM	Denver, Colo.
KDFC	San Francisco, Calif.
KDKA-FM	Pittsburgh, Pa.
KDMC	Corpus Christi, Tex.
KDMI	Des Moines, Iowa (s)
KDNT-FM	Denton, Tex.
KDPS	Des Moines, Iowa
KDUO	Riverside, Calif. (s)
KDVR	Sioux City, Ia.
KDWC	West Covina, Calif.
KEAR	San Francisco, Calif.
KEAX	National City, Calif.
KEBJ	Phoenix, Ariz.
KEBR	Sacramento, Calif.
KEBS	San Diego, Calif.
KEED-FM	Springfield-Eugene, Oregon
KEEN-FM	San Jose, Calif.
KEEZ	San Antonio, Tex.
KEFC	Waco, Tex.
KEFM	Oklahoma City, Okla.
KEFW	Honolulu, Hawaii
KELE	Phoenix, Ariz.
KELT	Harlingen, Tex.
KEMO	St. Louis, Mo.
KERN-FM	Bakersfield, Calif.
KETO-FM	Seattle, Wash. (s)
KEYM	Santa Maria, Calif. (s)
KEZE	Anaheim, Calif.
KFAB-FM	Omaha, Nebr.
KFAC-FM	Los Angeles, Calif.
KFAM-FM	St. Cloud, Minn.
KFBK-FM	Sacramento, Calif.
KFCA	Phoenix, Ariz.
KFGQ-FM	Boone, Iowa
KFH-FM	Wichita, Kans.
KFIL	Santa Ana, Calif.
KFJC	Mountainview, Calif.

C.L. Location

KFJZ Fort Worth, Tex.
KFMB-FM San Diego, Calif.
KFMC Portland, Oreg.
KFMH Colorado Springs, Colo.
KFMK Houston,Tex.(s)
KFML-FM Denver, Colo.
KFMM Tucson, Ariz.
KFMN Abilene, Tex.
KFMP Port Arthur, Tex.(s)
KFMQ Lincoln, Nebr.
KFMU Los Angeles, Calif.(s)
KFMV Minneapolis, Minn
KFMW San Bernardino, Calif.
KFMX San Diego, Calif.
KFMY Eugene, Oreg.(s)
KFNB Oklahoma City, Okla.
KFOX-FM Long Beach, Calif.
KFRC-FM San Francisco, Calif.
KFUO-FM Clayton, Mo.
KGAF-FM Gainesville, Tex.
KGB-FM San Diego, Calif.(s)
KGBN-FM Caldwell, Idaho
KGFM Edmonds, Wash.
KGGK Garden Grove, Calif.(s)
KGLA Los Angeles, Calif.
KGMG Portland, Oreg.(s)
KGMI Bellingham, Wash.
KGNC-FM Amarillo, Tex.
KGO-FM San Francisco, Calif.
KGPO Grants Pass, Oreg.
KGUD-FM Santa Barbara, Calif.
KHAK-FM Cedar Rapids, Iowa
KHBL Plainview, Tex.
KHBR-FM Hillsboro, Tex.
KHCB Houston, Tex.
KHFI Austin, Tex.
KHFM Albuquerque, N.Mex.
KHFR-FM Monterey, Calif.
KHGM Beaumont, Tex.(s)
KHIP San Francisco, Calif.
KHIQ Sacramento, Calif.
KHJ-FM Los Angeles, Calif.
KHMS El Paso, Tex.
KHOF Los Angeles, Calif.
KHOM-FM Turlock, Calif.
KHPC Brownwood, Tex.
KHQ-FM Spokane, Wash.
KHSC Arcata, Calif.
KHUL Houston, Tex.
KHVR Bijou, Calif.
KHYI Fremont, Calif.
KICN Omaha, Nebr.
KIEM Eureka, Calif.
KIHI Tulsa, Okla.
KIMP-FM Mt. Pleasant, Tex.
KING-FM Seattle, Wash.
KIOO Oklahoma, Okla.
KIRO-FM Seattle, Wash.
KISA Kansas City, Mo.
KISS San Antonio, Tex.
KISW Seattle, Wash.(s)
KITH Phoenix, Ariz.
KITT San Diego, Calif.
KITY San Antonio, Tex.
KIXL-FM Dallas, Tex.(s)
KJAZ Alameda, Calif.
KJEM-FM Okla. City, Okla.
KJLM San Diego, Calif.
KJML Sacramento, Calif.
KJPO Fresno, Calif.
KJRG Newton, Kans.
KJSB Houston, Tex.
KLAC-FM Los Angeles, Calif.
KLAY-FM Tacoma, Wash.
KLCN-FM Blytheville, Ark.
KLFM Beverly Hills, Calif.
KLIR-FM Denver, Colo.
KLIZ-FM Brainerd, Minn.
KLOA-FM Ridgecrest, Calif.
KLON Long Beach, Calif.
KLRO San Diego, Calif.
KLSN Seattle, Wash.(s)
KLUB-FM Salt Lake City, Utah
KLYD-FM Bakersfield, Calif.
KLYN-FM Lynden, Wash.
KMAK-FM Fresno, Calif.
KMAX Sierra Madre, Calif.
KMCP Portland, Oreg.
KMCS Seattle, Wash.
KMER Fresno, Calif.
KMFM Tularosa, N. Mex.
KMHT Marshall, Tex.
KMJ-FM Fresno, Calif.
KMLA Los Angeles, Calif.(s)
KMLB-FM Monroe, La.
KMMK Little Rock, Ark.
KMOX-FM St. Louis, Mo.
KMUW Wichita, Kans.
KMYC-FM Marysville, Calif.
KMUZ Santa Barbara, Calif.(s)
KNBC-FM San Francisco, Calif.
KNOE-FM Aztec, N.Mex.
KNDX Yakima, Wash.
KNEB-FM Scottsbluff, Nebr.
KNER Dallas, Tex.
KNEV Reno, Nev.
KNEW-FM Scottsbluff, Nebr.
KNFM Midland, Tex.
KNIK-FM Anchorage, Alaska
KNOB Long Beach, Calif.
KNOF St. Paul, Minn.
KNX-FM Los Angeles, Calif.
KOA-FM Denver, Colo
KOAP-FM Portland, Ore.
KOCW Tulsa, Okla.

C.L. Location

KODA-FM Houston, Tex.
KOGM-FM Tulsa, Okla.
KOGO San Diego, Calif.
KOIN-FM Portland, Oreg.
KOKH Oklahoma City, Okla.
KOL-FM Seattle, Wash.
KONG-FM Visalia, Calif.(s)
KOOL-FM Phoenix, Ariz.
KORK Las Vegas, Nev.
KOSE-FM Osceola, Ark.
KOST Dallas, Tex.
KOSU-FM Stillwater, Okla.
KOTN-FM Pine Bluff, Ark.
KOY-FM Phoenix, Ariz.
KOZE-FM Lewiston, Idaho
KPAT Albuquerque, N Mex.
KPCS Pasadena, Calif.
KPDQ-FM Portland, Ore.
KPEN Atherton, Calif.(s)
KPFA Berkeley, Calif.
KPFB Berkeley, Calif.
KPFK Los Angeles, Calif.
KPFM Portland, Oreg.(s)
KPGM Los Altos, Calif.
KPLR-FM St. Louis, Mo.
KPOI-FM Honolulu, Hawaii
KPOJ-FM Portland, Oreg.
KPOL-FM Los Angeles, Calif.
KPPS-FM Parsons, Kans.
KPRI San Diego, Calif.(s)
KPRN Seattle, Wash.
KPSD Dallas, Tex.
KPSR Palm Springs, Calif.
KQAL-FM Omaha, Nebr.(s)
KQBY-FM San Francisco, Calif.
KQFM Portland, Oreg.
KQIP Odessa, Tex.
KQRO Dallas, Tex.
KQUE Houston, Tex.
KQXR Bakersfield, Calif.
KRAK-FM Stockton, Calif.
KRAM-FM Las Vegas, Nev.
KRBE Houston, Tex.(s)
KRCC Colorado Springs, Colo.
KRCW Santa Barbara, Calif.
KRE-FM Berkeley, Calif.
KREM-FM Spokane, Wash.
KREX-FM Grand Junction, Colo.
KRFM Fresno, Calif.
KRHM Los Angeles, Calif.(s)
KRIC-FM Beaumont, Tex.
KRKD-FM Los Angeles, Calif.
KRKH-FM Lubbock, Tex.
KRKY Denver, Colo.
KRLD-FM Dallas, Tex.
KRMD-FM Shreveport, La.
KRNW Boulder, Colo.
KRNY-FM Kearney-Holdrege, Nebraska
KRON-FM San Francisco, Calif.
KROS-FM Clinton, Iowa
KROW Santa Barbara, Calif.
KROY-FM Sacramento, Calif.
KRPM San Jose, Calif.
KRRC San Jose, Calif.
KRSN-FM Los Alamos, N.Mex.
KRVM Eugene, Oreg.
KSCO Santa Cruz, Calif.
KSBW-FM Salinas, Calif.
KSDA La Sierra, Calif.
KSDB-FM Manhattan, Kans.
KSDS San Diego, Calif.
KSEA San Diego, Calif.
KSEO-FM Durant, Okla.
KSFM Dallas, Tex.(s)
KSFR San Francisco, Calif.
KSFV San Fernando, Calif.
KSFX San Francisco, Calif.
KSHE Crestwood, Mo.
KSHS Colorado Springs, Colo.
KSJO-FM San Jose, Calif.(s)
KSL-FM Salt Lake City, Utah
KSLA Seattle, Wash.(s)
KSLH St. Louis, Mo.
KSLT Tyler, Tex.
KSMA-FM Santa Maria, Calif.
KSO-FM Des Moines, Iowa
KSPC Claremont, Calif.
KSPI-FM Stillwater, Okla.
KSPL-FM Diboll, Tex.
KSRF Santa Monica, Calif.
KSTE Emporia, Kans.
KSTL-FM St. Louis, Mo.
KSTN-FM Stockton, Calif.
KSUI Iowa City, Iowa
KSWI-FM Omaha, Nebr.
KSYN Joplin, Mo.
KTAL Texarkana, Tex.
KTAP Tucson, Ariz.
KTAR-FM Phoenix, Ariz.
KTBC-FM Austin, Tex.(s)
KTCF Cedar Falls, Iowa
KTEC Oretech, Oreg.
KTGM Denver, Colo.
KTIM San Rafael, Calif.
KTIS-FM Minneapolis, Minn.
KTJO-FM Ottawa, Kans.
KTNT-FM Tacoma, Wash.
KTOD Mt. Pleasant, Tex.
KTOP-FM Topeka, Kans.
KTOY Tacoma, Wash.
KTRB-FM Modesto, Calif.
KTRH-FM Houston, Tex.
KTSR Kansas City, Mo.
KTTS-FM Springfield, Mo.
KTWR Tacoma, Wash.
KTXT-FM Lubbock, Tex.
KTYM-FM Inglewood, Calif.
KUDE-FM Oceanside, Calif.

C.L. Location

KUDU-FM Ventura-Oxnard, Calif.
KUER Salt Lake City, Utah
KUFM El Cajon, Calif.
KUFY Redwood City, Calif.
KUGN-FM Eugene, Oreg.
KUHF Houston, Tex.
KUMD-FM Duluth, Minn.
KUOA-FM Siloam Springs, Ark.
KUOH Honolulu, Hawaii
KUOW Seattle, Wash.
KUPD-FM Tempe, Ariz.
KUSC Los Angeles, Calif.
KUT-FM Austin, Tex.
KUTE Glendale, Calif.
KVCR San Bernardino, Calif.
KVEC-FM San Luis Obispo, Calif.
KVEN-FM Ventura, Calif.
KVFM San Hernando, Calif.
KVIL Highland Pk., Tex.
KVOF-FM El Paso, Tex.
KVOK Honolulu, Hawaii
KVOP-FM Plainview, Tex.
KVOR-FM Colorado Springs, Colo.
KVSC Logan, Utah
KVTT Dallas, Tex.
KWAR Waverly, Iowa
KWAX Eugene, Oreg.
KWFM Minneapolis, Minn.(s)
KWG-FM Stockton, Calif.
KWGS Tulsa, Okla.
KWIX St. Louis, Mo.
KWIZ-FM Santa Ana, Calif.
KWJB-FM Globe, Ariz.
KWKH-FM Shreveport, La.
KWME Walnut Creek, Calif.(s)
KWMO Odessa, Tex.
KWOA-FM Worthington, Minn.
KWOC-FM Poplar Bluff, Mo.
KWPC-FM Muscatine, Iowa
KWPM-FM West Plains, Mo.
KXFM Fort Worth, Tex.
KXJK-FM Forrest City, Ark.
KXLU Los Angeles, Calif.
KXOA Sacramento, Calif.
KXQR Fresno, Calif.(s)
KXRQ Sacramento, Calif.
KXTR Kansas City, Mo.
KXYZ-FM Houston, Tex.
KYA-FM San Francisco, Calif.
KYEW Phoenix, Ariz.
KYFM Oklahoma City, Okla.
KYSM-FM Mankato, Minn.
KYW-FM Cleveland, Ohio
KZAM Seattle, Wash.
KZFM Cortez, Colo.
KZOM Oklahoma City, Okla.
KZUN-FM Opportunity, Wash
WAAB-FM Worcester, Mass.
WAAM-FM Parkersburg, W.Va.
WABC-FM New York, N.Y.
WABE Atlanta, Ga.
WABI-FM Bangor, Maine
WABQ Cleveland, Ohio
WABX Detroit, Mich.
WABZ-FM Albemarle, N.C.
WACO Waco, Tex.
WAEB-FM Cincinnati, Ohio
WAEF Syracuse, N.Y.
WAER Syracuse, N.Y.
WAEZ Miami Beach, Fla.
WAHR-FM Miami Beach, Fla.
WAIC San Juan, P.R.
WAIR-FM Winston-Salem, N.C.
WAIV Indianapolis, Ind.
WAJC Indianapolis, Ind.
WAJM Montgomery, Ala.
WAJP Joliet, Ill.
WAJR-FM Morgantown, W.Va.
WAKR-FM Akron, Ohio
WAKW-FM Cincinnati, Ohio
WALK-FM Patchogue, N.Y.
WAMC Albany, N.Y.
WAMF Amherst, Mass.
WAMU-FM Washington, D.C.
WAPI-FM Birmingham, Ala.
WAPS Akron, Ohio
WAQE-FM Towson, Md.(s)
WARD-FM Johnstown, Pa.
WARK-FM Hagerstown, Md.
WARL-FM Arlington, Va.
WARN-FM Fort Pierce, Fla.
WASA-FM Havre De Grace, Md.
WASH Washington, D.C.(s)
WATR-FM Waterbury, Conn.
WAUG-FM Augusta, Ga.
WAUX-FM Waukesha, Wis.
WAVI-FM Dayton, Ohio
WAVQ Atlanta, Ga.
WAVU-FM Albertville, Ala.
WAVY-FM Portsmouth, Va.
WAWZ-FM Zarephath, N.J.
WAYL Minneapolis, Minn.(s)
WAYZ-FM Waynesboro, Pa.
WAZL-FM Hazelton, Pa.
WAZZ Pittsburgh, Pa.
WBAA-FM W. Lafayette, Ind.
WBAB-FM Babylon, N.Y.
WBAI New York, N.Y.
WBAP-FM Ft. Worth, Tex.
WBAY-FM Green Bay, Wis.
WBBB-FM Burlington, N.C.(s)
WBBC Jackson, Mich.
WBBF-FM Rochester, N.Y.
WBBM-FM Chicago, Ill.
WBBO-FM Forest City, N.C.
WBBQ-FM Augusta, Ga.
WBBR-FM E. St. Louis, Ill.
WBBS Crawfordsville, Ind.
WBBW-FM Youngstown, Ohio

C.L. Location

WBCB-FM Levittown-Fairless Hills, Pa.
WBCI-FM Williamsburg, Va.
WBCM-FM Bay City, Mich.
WBCN Boston, Mass.
WBEN-FM Buffalo, N.Y.
WBET-FM Brockton, Mass.
WBEX-FM Chillicothe, Ohio
WBEZ Chicago, Ill.
WBFG Detroit, Mich.
WBFM New York, N.Y.
WBFO Buffalo, N.Y.
WBGO Newark, N.J.
WBGU Bowling Green, Ohio
WBIE-FM Marietta, Ga.
WBIR-FM Knoxville, Tenn.
WBIV Wethersfield, N.Y.
WBJC Baltimore, Md.
WBKV-FM West Bend, Wis.
WBKW Beckley, W.Va.
WBKY Lexington, Ky.
WBLY-FM Springfield, Ohio
WBMI Meridan, Conn.
WBNS-FM Columbus, Ohio (s)
WBOE Cleveland, Ohio
WBOR Brunswick, Maine
WBOS-FM Brookline, Mass.
WBRB-FM Mt. Clements, Mich.
WBRC Birmingham, Ala.
WBRE-FM Wilkes-Barre, Pa.
WBSM-FM New Bedford, Mass.
WBST Muncie, Ind.
WBUF Buffalo, N.Y.
WBUR Boston, Mass.
WBUT-FM Butler, Pa.
WBUY-FM Lexington, N.C.
WBVA Woodbridge, Va.
WBVP-FM Beaver Falls, Pa.
WBWC Berea, Ohio
WBZ-FM Boston, Mass.
WCAC Anderson, S.C.
WCAO-FM Baltimore, Md.
WCAU-FM Philadelphia, Pa.
WCBC-FM Anderson, Ind.
WCBE Columbus, Ohio
WCBM-FM Baltimore, Md.
WCBS-FM New York, N.Y.
WCCC-FM Hartford, Conn.
WCCV-FM Charlottesville, Va.
WCED-FM Dubois, Pa.
WCFM Williamstown, Mass.
WCHA-FM Chambersburg, Pa.
WCHD Detroit, Mich.
WCKR-FM Miami, Fla.
WCLE-FM Cleveland, Tenn.
WCLI-FM Corning, N.Y.
WCLM Chicago, Ill.
WCLO-FM Janesville, Wis.
WCLT-FM Newark, Ohio
WCMC-FM Wildwood, N.J.
WCME-FM Brunswick, Maine
WCMF-FM Rochester, N.Y.(s)
WCMI-FM Ashland, Ky.
WCMO Marietta, Ohio
WCMR-FM Elkhart, Ind.
WCNB-FM Connersville, Ind.
WCNO Canton, Ohio(s)
WCOO Richmond, Va.
WCOH-FM Newnan, Ga.
WCOL-FM Columbus, Ohio
WCOP-FM Boston, Mass.
WCOS-FM Columbia, S.C.
WCOU-FM Lewiston, Maine
WCOW-FM Sparta, Wis.
WCPO-FM Cincinnati, Ohio
WCPS-FM Tarbor, N.C.
WCRB-FM Waltham, Mass.(s)
WCRF-FM Cleveland, Ohio
WCRT-FM Birmingham, Ala.
WCSC-FM Charleston, S.C.
WCSI-FM Columbus, Ind.
WCSQ Central Square, N.Y.
WCTA-FM Andalusia, Ala.
WCTC-FM New Brunswick, N.J.
WCTM Eaton, Ohio
WCTW-FM New Castle, Ind.
WCUE-FM Akron, Ohio
WCUM-FM Cumberland, Md.
WCUY-FM Cleveland Hts., Ohio
WCWM Williamsburg, Va.
WDAC Lancaster, Pa.
WDAE-FM Tampa, Fla.
WDAS-FM Philadelphia, Pa.
WDBJ-FM Roanoke, Va.
WDBO-FM Orlando, Fla.
WDBQ-FM Dubuque, Iowa
WDDE Hamden, Conn.
WDDS-FM Syracuse, N.Y.
WDEL-FM Wilmington, Del.
WDET-FM Detroit, Mich.
WDFM State College, Pa.
WDGO Cleveland, Ohio(s)
WDHA-FM Dover, N.J.(s)
WDHF Chicago, Ill.
WDIA-FM Memphis, Tenn.
WDJK Atlanta, Ga.
WDJR Oil City, Pa.
WDMB-FM Statesville, N.C.
WDNC-FM Durham, N.C.
WDOC-FM Prestonsburg, Ky.
WDOD-FM Chattanooga, Tenn.
WDOK-FM Cleveland, Ohio
WDOV-FM Dover, Del.
WDRC-FM Hartford, Conn.
WDSC-FM Dillon, S.C.
WDSU-FM New Orleans, La.
WDTM Detroit, Mich.(s)
WDTR Detroit, Mich.
WDUB Granville, Ohio

C.L.	Location
WDUN-FM	Gainesville, Ga.
WDUQ	Pittsburgh, Pa.
WDUZ-FM	Green Bay, Wis.
WDWS-FM	Champaign, Ill.
WEAV-FM	Plattsburgh, N.Y.
WEAW-FM	Evanston, Ill.
WEBH	Chicago, Ill.
WEBQ-FM	Harrisburg, Ill.
WEBR-FM	Buffalo, N.Y.
WECW	Elmira, N.Y.
WEDK	Springfield, Mass.
WEEC	Springfield, Ohio
WEED-FM	Rocky Mount, N.C.
WEEI-FM	Boston, Mass.
WEEP-FM	Pittsburgh, Pa.
WEEX-FM	Easton, Pa.
WEFA	Waukegan, Ill.
WEFM	Chicago, Ill. (s)
WEGO-FM	Concord, N.C.
WEHS	Chicago, Ill.
WEIV	Ithaca, N.Y.
WEKZ-FM	Monroe, Wis.
WELF	Glen Ellyn, Ill.
WELG	Elgin, Ill.
WEMC	Harrisonburg, Va.
WEMP-FM	Milwaukee, Wis.
WENR-FM	Chicago, Ill.
WEOK-FM	Poughkeepsie, N.Y.
WEOL-FM	Elyria, Ohio
WEPM-FM	Martinsburg, W.Va.
WEPS	Elgin, Ill.
WEQR	Goldsboro, N.C.
WERC-FM	Erie, Pa.
WERE-FM	Cleveland, Ohio
WERI-FM	Westerly, R.I.
WERS	Boston, Mass.
WESC-FM	Greenville, S.C.
WEST-FM	Easton, Pa.
WETL	South Bend, Ind.
WETN	Wheaton, Ill.
WEVC	Evansville, Ind
WEVD-FM	New York, N.Y.
WEWO-FM	Laurinburg, N.C.
WFAA-FM	Dallas, Tex.
WFAH-FM	Alliance, Ohio
WFAN	Washington, D.C.
WFAS-FM	White Plains, N.Y.
WFAU-FM	Augusta, Maine
WFAW	Fort Atkinson, Wis.
WFBC-FM	Greenville, S.C.
WFBE	Flint, Mich.
WFBG-FM	Altoona, Pa.
WFBM-FM	Indianapolis, Ind.
WFBS-FM	Winston-Salem, N.C.
WFCI	Franklin, Ind.
WFCJ	Miamisburg, Ohio
WFCR	Amherst, Mass.
WFDS-FM	Baltimore, Md.
WFFM	Cincinnati, Ohio
WFGM-FM	Fitchburg, Mass.
WFHA-FM	Red Bank, N.J.
WFHR-FM	Wisconsin Rapids, Wis.
WFID	Rio Piedras, P.R.
WFIG	Sumter, S.C.
WFIL-FM	Philadelphia, Pa.
WFIN-FM	Findlay, Ohio (s)
WFIU	Bloomington, Ind.
WFLA-FM	Tampa, Fla.
WFLM	Ft. Lauderdale, Fla. (s)
WFLN-FM	Philadelphia, Pa. (s)
WFLO	Farmville, Va.
WFLT-FM	Franklin, Tenn.
WFLY	Troy, N.Y.
WFMA	Rocky Mount, N.C.
WFMB	Nashville, Tenn.
WFMD-FM	Frederick, Md.
WFME	Detroit, Mich.
WFMF	Chicago, Ill.
WFMG	Gallatin, Tenn.
WFMH-FM	Cullman, Ala.
WFMI	Montgomery, Ala.
WFML	Washington, Ind.
WFMM-FM	Baltimore, Md.
WFMQ	Chicago, Ill. (s)
WFMS	Indianapolis, Ind.
WFMT	Chicago, Ill. (s)
WFMU	East Orange, N.J.
WFMW-FM	Madisonville, Ky.
WFMX	Statesville, N.C.
WFMZ	Allentown, Pa.
WFNC-FM	Fayetteville, N.C.
WFNQ	Hartford, Conn.
WFNS-FM	Burlington, N.C.
WFOB-FM	Fostoria, Ohio
WFOL	Hamilton, Ohio
WFOS	South Norfolk, Va.
WFPK	Louisville, Ky.
WFPL	Louisville, Ky.
WFQM	San Juan, P.R.
WFRO-FM	Fremont, Ohio
WFST-FM	Caribou, Maine
WFSU-FM	Tallahassee, Fla.
WFUL-FM	Fulton, Ky.
WFUR-FM	Grand Rapids, Mich.
WFUV	New York, N.Y.
WFVA-FM	Fredericksburg, Va.
WGAL-FM	Lancaster, Pa.
WGAR-FM	Cleveland, Ohio
WGAU-FM	Athens, Ga.
WGAY	Silver Spring, Md.
WGBH-FM	Cambridge, Mass.
WGBI-FM	Scranton, Pa.
WGBS-FM	Miami, Fla.
WGCB-FM	Red Lion, Pa.
WGCS	Goshen, Ind.
WGEM-FM	Quincy, Ill. (s)
WGFM	Schenectady, N.Y. (s)
WGGC	Glasgow, Ky.
WGGM	Taylorville, Ill.
WGH-FM	Newport News, Va.
WGHF	Newton, Conn.
WGHJ	Lawrence, Mass.
WGKA-FM	Atlanta, Ga.
WGLM	Richmond, Ind.
WGMR	Tyrone, Pa.
WGMS-FM	Washington, D.C.
WGNB	St. Petersburg, Fla.
WGNC-FM	Gastonia, N.C.
WGPA-FM	Bethlehem, Ga.
WGPM	Detroit, Mich.
WGPS	Greensboro, N.C.
WGR-FM	Buffalo, N.Y.
WGRE	Greencastle, Ind.
WGRV-FM	Greenville, Tenn.
WGTB-FM	Washington, D.C.
WGTS-FM	Takoma Park, Md.
WGUC	Cincinnati, Ohio
WGVE	Gary, Ind.
WGWR-FM	Asheboro, N.C.
WGYA	Interlochen, Mich.
WHA-FM	Madison, Wis.
WHAD	Delafield, Wis.
WHAI-FM	Greenfield, Mass.
WHAT-FM	Philadelphia, Pa.
WHAV-FM	Haverhill, Mass.
WHBC-FM	Canton, Ohio
WHBF-FM	Rock Island, Ill. (s)
WHCI	Hartford City, Ind.
WHCN	Hartford, Conn.
WHCU-FM	Ithaca, N.Y.
WHDH-FM	Boston, Mass.
WHDL-FM	Allegheny, N.Y.
WHEN-FM	Syracuse, N.Y.
WHFB-FM	Benton Harbor, Mich.
WHFI	West Paterson, N. J.
WHFM	Rochester, N.Y.
WHFS	Bethesda, Md. (s)
WHHI	Highland, Wis.
WHHS	Havertown, Pa.
WHIM-FM	Providence, R.I.
WHIO-FM	Dayton, Ohio
WHIZ-FM	Zanesville, Ohio
WHK-FM	Cleveland, Ohio
WHKP-FM	Hendersonville, N.C.
WHKW	Chilton, Wis.
WHKY-FM	Hickory, N.C.
WHLA	Holmen, Wis.
WHLD-FM	Niagara Falls, N. Y.
WHLI-FM	Hempstead, N.Y.
WHLM-FM	Bloomsburg, Pa.
WHMA-FM	Anniston, Ala.
WHNC-FM	Henderson, N.C.
WHO-FM	Des Moines, Iowa
WHOH	Hamilton, Ohio
WHOK-FM	Lancaster, Ohio
WHOM-FM	New York, N.Y.
WHOO-FM	Orlando, Fla. (s)
WHOS-FM	Decatur, Ala.
WHP-FM	Harrisburg, Pa.
WHPE-FM	High Point, N.C.
WHPR	Highland Park, Mich.
WHPS	High Point, N.C.
WHRB-FM	Cambridge, Mass.
WHRM	Wausau, Wis.
WHSA	Highland Twp., Wis.
WHSR-FM	Winchester, Mass.
WHTG-FM	Eatontown, N.J.
WHUS	Storrs, Conn.
WHWC	Colfax, Wis.
WHYL-FM	Carlisle, Pa.
WHYN-FM	Springfield, Mass.
WHYY	Philadelphia, Pa.
WIAL	Eau Claire, Wis.
WIAN	Indianapolis, Ind.
WIBA-FM	Madison, Wis.
WIBC-FM	Indianapolis, Ind.
WIBG-FM	Philadelphia, Pa.
WICB	Ithaca, N.Y.
WIFE	Buffalo, N.Y.
WIFI	Glenside, Pa.
WIFM-FM	Elkin, N.C.
WIKY-FM	Evansville, Ind.
WIL-FM	St. Louis, Mo.
WILL-FM	Urbana, Ill.
WIMA-FM	Lima, Ohio
WINA-FM	Charlottesville, Va.
WINE-FM	Kenmore, N.Y.
WINF-FM	Manchester, Conn.
WINZ-FM	Miami, Fla.
WIP-FM	Philadelphia, Pa.
WIPR-FM	San Juan, P.R.
WIRA-FM	Ft. Pierce, Fla.
WIRQ	Rochester, N.Y.
WISH-FM	Indianapolis, Ind. (s)
WISK	Medford, Mass.
WISN-FM	Milwaukee, Wis.
WISZ-FM	Madison, Wis.
WITA-FM	San Juan, P.R.
WITH-FM	Baltimore, Md.
WITZ-FM	Jasper, Ind.
WIUS	Christiansted, V.I.
WJAC-FM	Johnstown, Pa. (s)
WJAS-FM	Pittsburgh, Pa.
WJAX-FM	Jacksonville, Fla.
WJBC-FM	Bloomington, Ill.
WJBK-FM	Detroit, Mich.
WJBL-FM	Holland, Mich.
WJBO-FM	Baton Rouge, La.
WJBR	Wilmington, Del. (s)
WJCD-FM	Seymour, Ind.
WJDX-FM	Jackson, Miss.
WJEF-FM	Grand Rpds., Mich. (s)
WJEH-FM	Gallipolis, Ohio
WJEJ-FM	Hagerstown, Md.
WJGG	Houghton, Mich.
WJHL-FM	Johnson City, Tenn.
WJIM-FM	Lansing, Mich.
WJIV	Cherry Valley, N.Y.
WJJD-FM	Chicago, Ill.
WJLK-FM	Asbury Park, N.J.
WJLN	Birmingham, Ala.
WJMC-FM	Rice Lake, Wis.
WJDF	Athens, Ala.
WJOL-FM	Joliet, Ill.
WJR-FM	Detroit, Mich.
WJRZ	Newark, N.J.
WJTN-FM	Jamestown, N.K.
WJW-FM	Cleveland, Ohio
WJWR	Palmyra, Pa.
WJZZ	Bridgeport, Conn.
WKAK	Kankakee, Ill.
WKAQ-FM	San Juan, P.R.
WKAR-FM	E. Lansing, Mich.
WKAT-FM	Miami, Fla.
WKAY-FM	Glasgow, Ky.
WKAZ-FM	Charleston, W.Va.
WKBC-FM	Winston-Salem, N.C.
WKBN-FM	Youngstown, Ohio
WKBR-FM	Manchester, N.H.
WKBV-FM	Richmond, Ind.
WKCQ	Berlin, N.H.
WKCR-FM	New York, N.Y.
WKCS	Knoxville, Tenn.
WKDN-FM	Camden, N.J.
WKEE-FM	Huntington, W.Va.
WKFM	Chicago, Ill. (s)
WKIC-FM	Hazard, Ky.
WKIP-FM	Poughkeepsie, N.Y.
WKIS-FM	Orlando, Fla.
WKIX-FM	Raleigh, N.C.
WJKF	Pittsburgh, Pa. (s)
WKLF-FM	Clanton, Ala.
WKLS	Marietta, Ga.
WKLW-FM	Grand Rapids, Mich.
WKMH-FM	Dearborn, Mich.
WKNA	Charleston, W.Va. (s)
WKOF	Hopkinsville, Ky.
WKOK-FM	Sunbury, Pa.
WKOP-FM	Binghamton, N.Y.
WKOX-FM	Framingham, Mass.
WKPT-FM	Kingsport, Tenn
WKRC-FM	Cincinnati, Ohio
WKRG-FM	Mobile, Ala.
WKRT-FM	Cortland, N.Y.
WKSD	Kewanee, Ill.
WKSU-FM	Kent, Ohio
WKTM-FM	Mayfield, Ky.
WKWK-FM	Wheeling, W.Va.
WKYB-FM	Paducah, Ky.
WLAD-FM	Danbury, Conn.
WLAG-FM	LaGrange, Ga.
WLAN-FM	Lancaster, Pa.
WLAP-FM	Lexington, Ky.
WLAV-FM	Grand Rapids, Mich.
WLBG-FM	Laurens-Clinton, S.C.
WLBH-FM	Mattoon, Ill.
WLBR-FM	Lebanon, Pa.
WLDM	Oak Park, Mich. (s)
WLDS-FM	Jacksonville, Ill.
WLEC-FM	Sandusky, Ohio
WLET-FM	Toccoa, Ga.
WLFM	Appleton, Wis.
WLIN	Merrill, Wis.
WLIR	Hicksville, N.Y. (s)
WLLH-FM	Lowell, Mass.
WLNA-FM	Peekskill, N.Y.
WLOA-FM	Braddock, Pa. (s)
WLOB-FM	Portland, Maine
WLOE-FM	Leaksville, N.C.
WLOL-FM	Minneapolis, Minn.
WLOM	Chattanooga, Tenn.
WLOS-FM	Asheville, N.C.
WLOV	Cranston, R.I.
WLRJ	Roanoke, Va.
WLVL	Louisville, Ky.
WLYC-FM	Williamsport, Pa.
WMAL-FM	Washington, D.C.
WMAM-FM	Marinette, Wis.
WMAQ-FM	Chicago, Ill.
WMAS-FM	Springfield, Mass.
WMAX-FM	Grand Rapids, Mich.
WMAZ-FM	Macon, Ga.
WMBD-FM	Peoria, Ill.
WMBI-FM	Chicago, Ill.
WMBM	Miami Beach, Fla.
WMBO-FM	Auburn, N.Y.
WMBR-FM	Jacksonville, Fla.
WMCF	Memphis, Tenn.
WMCO	New Concord, Ohio
WMCR	Kalamazoo, Mich.
WMDE	Greensboro, N.C. (s)
WMER	Celina, Ohio
WMEV-FM	Marion, Va.
WMFM	Madison, Wis.
WMFP	Ft. Lauderdale, Fla.
WMFR-FM	High Point, N.C.
WMGW-FM	Meadville, Pa.
WMHC	South Hadley, Mass.
WMHE	Toledo, Ohio
WMIL-FM	Milwaukee, Wis.
WMIT	Marion, N.C.
WMIV	S. Bristol, N.Y.
WMIX-FM	Mt. Vernon, Ill.
WMLS-FM	Sylacauga, Ala.
WMLW	Milwaukee, Wis.
WMNA-FM	Gretna, Va.
WMPS-FM	Memphis, Tenn.
WMRI-FM	Marion, Ind.
WMRN-FM	Marion, Ohio
WMRO-FM	Aurora, Ill.
WMRT	Lansing, Mich.
WMSP	Harrisburg, Pa.
WMTH	Park Ridge, Ill.
WMTI	Norfolk, Va.
WMTW-FM	Mt. Washington, N.H.
WMUA	Amherst, Mass.
WMUB	Oxford, Ohio
WMUL	Huntington, W.Va.
WMUN	Muncie, Ind.
WMUU-FM	Greenville, S.C.
WMUZ	Detroit, Mich.
WMVA-FM	Martinsville, Va. (s)
WMVB-FM	Millville, N.J.
WMVO-FM	Mount Vernon, Ohio
WMZK	Detroit, Mich.
WNAD-FM	Norman, Okla.
WNAS	New Albany, Ind.
WNAV-FM	Annapolis, Md
WNBC-FM	New York, N.Y.
WNBF-FM	Binghamton, N.Y.
WNBH-FM	New Bedford, Mass.
WNCN	New York, N.Y.
WNCO-FM	Ashland, Ohio
WNDA	Huntsville, Ala.
WNBD-FM	Daytona Beach, Fla.
WNEM-FM	Bay City, Mich.
WNES-FM	Central City, Ky.
WNEW-FM	New York, N.Y.
WNEX-FM	Macon, Ga.
WNGO-FM	Mayfield, Ky.
WNHC-FM	New Haven, Conn.
WNIB	Chicago, Ill.
WNIC	DeKalb, Ill.
WNNJ-FM	Newton, N.J.
WNOB	Cleveland, Ohio (s)
WNOK-FM	High Point, N.C.
WNOS-FM	High Point, N.C.
WNOW-FM	York, Pa.
WNSH	Highland Park, Ill.
WNSL-FM	Laurel, Miss.
WNTH	Winnetka, Ill.
WNTI	Hackettstown, N.J.
WNUR	Evanston, Ill.
WNWC-FM	Arlington Hts., Ill.
WNYC-FM	New York, N.Y.
WNYE	New York, N.Y.
WOAK	Royal Oak, Mich.
WOAY-FM	Oak Hill, W.Va.
WOBN	Westerville, Ohio
WOC-FM	Davenport, Iowa
WOCB-FM	W. Yarmouth, Mass.
WOHS-FM	Shelby, N.C.
WOI-FM	Ames, Iowa
WOIO	Cincinnati, Ohio
WOIV	De Ruyter, N.Y.
WDKZ-FM	Alton, Ill.
WOL-FM	Washington, D.C.
WOMC	Royal Oak, Mich. (s)
WOMI-FM	Owensboro, Ky.
WOMP-FM	Bellaire, Dhio
WONO	Syracuse, N.Y.
WOOO-FM	Grand Rapids, Mich.
WOPA-FM	Oak Park, Ill.
WOPI-FM	Bristol, Tenn.
WOR-FM	New York, N.Y.
WORA-FM	Mayaguez, P.R.
WORX-FM	Madison, Ind.
WOSC-FM	Fulton, N.Y.
WOSJ-FM	Atlantic City, N.J.
WOSU-FM	Columbus, Ohio
WOTW-FM	Nashua, N.H.
WOUB-FM	Athens, Ohio
WOW-FM	Omaha, Nebr.
WOXR	Oxford, Ohio
WPAC-FM	Patchogue, N.Y.
WPAD-FM	Paducah, Ky.
WPAT-FM	Paterson, N.J.
WPAY-FM	Portsmouth, Ohio (s)
WPBC-FM	Minneapolis, Minn.
WPBS	Philadelphia, Pa.
WPCA-FM	Philadelphia, Pa.
WPEL-FM	Montrose, Pa.
WPEN-FM	Philadelphia, Pa.
WPEX-FM	Pensacola, Fla. (s)
WPFB-FM	Middletown, Ohio (s)
WPFM	Providence, R.I. (s)
WPGO-FM	Bradbury Hts., Md.
WPGI	Pittsburgh, Pa.
WPIC-FM	Sharon, Pa.
WPIT-FM	Pittsburgh, Pa.
WPJB-FM	Providence, R.I.
WPKM	Tampa, Fla.
WPLM-FM	Plymouth, Mass.
WPLO-FM	Atlanta, Ga.
WPPA-FM	Pottsville, Pa.
WPRB	Princeton, N.J.
WPRK	Winter Park, Fla.
WPRM	San Juan, P.R.
WPRO-FM	Providence, R.I.
WPRS-FM	Paris, Ill.
WPRW-FM	Manassas, Va.
WPSR	Evansville, Ind.
WPTF-FM	Raleigh, N.C.
WPTH	Fort Wayne, Ind.
WPTW-FM	Piqua, Ohio
WPWT	Philadelphia, Pa.
WQAL	Philadelphia, Pa.
WQDC-FM	Midland, Mich.
WQFM	Milwaukee, Wis.
WQMS	Hamilton, Ohio
WQRS-FM	Detroit, Mich.
WQXI-FM	Atlanta, Ga.
WQXR-FM	New York, N.Y. (s)
WQXT-FM	Palm Beach, Fla.
WRAJ-FM	Anna, Ill.
WRAK-FM	Williamsport, Pa.
WRAL-FM	Raleigh, N.C.
WRAY-FM	Princeton, Ind.
WRBL-FM	Columbus, Ga.
WRBS	Baltimore, Md.
WRC-FM	Washington, D.C.
WRCM	New Orleans, La.
WRED	Youngstown, Ohio

C.L.	Location
WREO-FM	Ashtabula, Ohio
WREV-FM	Reidsville, N.C.
WRFD-FM	Worthington-Columbus, Ohio
WRFK	Richmond, Va.
WRFL	Winchester, Va.
WRFM	Woodside, N.Y.
WRFS-FM	Alexander City, Ala.
WRHS	Park Forest, Ill.
WRIT-FM	Milwaukee, Wis.
WRJN-FM	Racine, Wis.
WRJR	Lewiston, Maine
WRKO-FM	Boston, Mass.
WRLB	Long Branch, N.J.(s)
WRLX	Hopkinsville, Ky.
WRLD-FM	Lanett, Ala.
WRMI-FM	Morris, Ill.
WRNJ	Atlantic City, N.J.
WRNL-FM	Richmond, Va.
WRNW	Mount Kisco, N.Y.
WROC-FM	Rochester, N.Y.
WROK-FM	Rockford, Ill.
WROW-FM	Albany, N.Y.
WROY-FM	Carmi, Ill.
WRPI	Troy, N.Y.
WRPN-FM	Ripon, Wis.
WRR-FM	Dallas, Tex.
WRRN	Warren, Pa.
WRSW-FM	Warsaw, Ind.
WRTC-FM	Hartford, Conn.
WRTI-FM	Philadelphia, Pa.
WRUF-FM	Gainesville, Fla.
WRUN-FM	Utica, N.Y.
WRVA-FM	Richmond, Va.
WRVB-FM	Madison, Wis.
WRVC	Norfolk, Va.
WRVP	New York, N.Y.
WRWR	Port Clinton, Ohio
WRXO-FM	Roxboro, N.C.
WRYT	Pittsburgh, Pa.
WSAB	Mt. Carmel, Ill.
WSAI-FM	Cincinnati, Ohio
WSAM-FM	Saginaw, Mich.
WSB-FM	Atlanta, Ga.
WSBC-FM	Chicago, Ill.(s)
WSBF-FM	Clemson, S.C.
WSCB	Springfield, Mass.

C.L.	Location
WSEI	Effingham, Ill.
WSEV-FM	Sevierville, Tenn.
WSFM	Birmingham, Ala.(s)
WSHS	Floral Park, N.Y.
WSID	Baltimore, Md.
WSIU	Carbondale, Ill.
WSJG	Hallandale, Fla.
WSJS-FM	Winston-Salem, N.C.
WSKS	Wabash, Ind.
WSIX-FM	Nashville, Tenn.
WSLM-FM	Salem, Ind.
WSLN	Delaware, Ohio
WSLS-FM	Roanoke, Va.
WSMC-FM	Collegedale, Tenn.
WSMD-FM	Waldorf, Md.
WSMI-FM	Litchfield, Ill.
WSNJ-FM	Brigeton, N.J.
WSNW-FM	Seneca, S.C.
WSOC-FM	Charlotte, N.C.
WSOM	Salem, Ohio
WSON-FM	Henderson, Ky
WSOU	S. Orange, N.J.
WSOY-FM	Decatur, Ill.
WSPA-FM	Spartanburg, S.C.(s)
WSPD-FM	Toledo, Ohio
WSPE	Springville, N.Y.
WSPT-FM	Stevens Point, Wis.
WSRW-FM	Hillsboro, Ohio
WSTC-FM	Stamford, Conn.
WSTP-FM	Salisbury, N.C.
WSTR-FM	Sturgis, Mich.
WSTV-FM	Steubenville, Ohio
WSVA-FM	Harrisonburg, Va.
WSVS-FM	Crewe, Va.
WSWM	East Lansing, Mich.(s)
WSYR-FM	Syracuse, N.Y.(s)
WTAO-FM	Quincy, Ill.
WTAG-FM	Worcester, Mass.
WTAR	Norfolk, Va.(s)
WTAX-FM	Springfield, Ill.
WTBC-FM	Tuscaloosa, Ala.
WTBO-FM	Cumberland, Md.
WTBS	Cambridge, Mass.
WTCX	St. Petersburg, Fla.
WTOS	Toledo, Ohio
WTFM	Babylon, N.Y.

C.L.	Location
WTHI-FM	Terre Haute, Ind.
WTHS	Miami, Fla.
WTIC-FM	Hartford, Conn.
WTJS-FM	Jackson, Tenn.
WTJU	Charlottesville, Va.
WTMA-FM	Charleston, S.C.
WTMJ-FM	Milwaukee, Wis.
WTNC-FM	Thomasville, N.C.
WTOA	Trenton, N.J.
WTOC-FM	Savannah, Ga.
WTOF	Canton, Ohio
WTOL-FM	Toledo, Ohio
WTOP-FM	Washington, D.C.
WTOS	Wauwatosa, Wis.
WTRC-FM	Elkhart, Ind.
WTRT	Toledo, Ohio
WTSB-FM	Lumberton, N.C.
WTSV-FM	Claremont, N.H.
WTTC-FM	Towanda, Pa.
WTTR-FM	Westminster, Md.
WTTV-FM	Bloomington, Ind.
WTUN	Tampa, Fla.
WTVB-FM	Coldwater, Mich.
WTVN-FM	Columbus, Ohio
WUCB-FM	Chicago, Ill.
WULX-FM	Richmond, Ind.
WUNC	Chapel Hill, N.C.
WUOA	Tuscaloosa, Ala.
WUOM	Ann Arbor, Mich.
WUOT	Knoxville, Tenn.
WUPI	Lynn, Mass.
WUSC-FM	Columbia, S.C.
WUST-FM	Bethesda, Md.
WUSV	Scranton, Pa.
WVAM-FM	Altoona, Pa.
WVBR-FM	Ithaca, N.Y.
WVCG-FM	Coral Gables, Fla.
WVEC-FM	Hampton, Va.
WVGR-FM	Grand Rapids, Mich.
WVHC	Hempstead, N.Y.
WVJS-FM	Owensboro, Ky.
WVKC-FM	Galesburg, Ill.
WVKO-FM	Columbus, Ohio
WVLN-FM	Olney, Ill.
WVMC-FM	Mt. Carmel, Ill.
WVNA-FM	Tuscumbia, Ala.

C.L.	Location
WVNJ-FM	Newark, N.J.
WVOT-FM	Wilson, N.C.
WVOX-FM	New Rochelle, N.Y.
WVSH	Huntington, Ind.
WVST	St. Petersburg, Fla.
WVTS	Terre Haute, Ind.
WWCF	Greenfield, Wis.
WWCO-FM	Waterbury, Conn.
WWDC-FM	Washington, D.C.
WWGP-FM	Sanford, N.C.
WWHG-FM	Hornell, N.Y.
WWHI	Muncie, Ind.
WWIL-FM	Ft. Lauderdale, Fla.
WWJ-FM	Detroit, Mich.
WWKS	Macomb, Ill.
WWMT	New Orleans, La.
WWOD-FM	Lynchburg, Va.
WWOL-FM	Buffalo, N.Y.
WWON-FM	Woonsocket, R.I.
WWPB	Miami, Fla.
WWST-FM	Wooster, Ohio
WWSW-FM	Pittsburgh, Pa.
WWTV-FM	Cadillac, Mich.
WWVA-FM	Wheeling, W.Va.
WWWS	Greenville, N.C.
WWYN	Erie, Pa.
WXCN	Providence, R.I.
WXFM	Elmwood Park, Ill.
WXHR	Cambridge, Mass.
WXPN	Philadelphia, Pa.
WXTC	Annapolis, Md.
WXTO-FM	Grand Rapids, Mich.
WXUR-FM	Media, Pa.
WXYZ-FM	Detroit, Mich.
WYAK	Sarasota, Fla.(s)
WYBC-FM	New Haven, Conn.
WYCA	Hammond, Ind.
WYCE	Warwick, R.I.
WYCR	York-Hanover, Pa.
WYFI	Norfolk, Va.(s)
WYFM	Charlotte, N.C.
WYFS	Winston-Salem, N.C.
WYSO	Yellow Springs, Ohio
WYZZ	Wilkes-Barre, Pa.
WZFM	Jacksonville, Fla.
WZIP-FM	Cincinnati, Ohio

Canadian FM Stations by Location

Location	C.L.	Mc.
Brampton, Ont.	CHIC-FM	102.1
Brantford, Ont.	CKPC-FM	92.1
Cornwall, Ont.	CJSS-FM	104.5
Edmonton, Alta.	CFRN-FM	100.3
	CJCA-FM	99.5
	CKUA-FM	98.1
Ft. William, Ont.	CKPR-FM	94.3
Halifax, N.S.	CHNS-FM	96.1
Kingston, Ont.	CFRC-FM	91.9
	CKLC-FM	99.5
	CKWS-FM	96.3
Kitchener, Ont.	CKCR-FM	96.7
Lethbridge, Alta.	CHEC-FM	100.9
London, Ont.	CFPL-FM	95.9
Montreal, Que.	CBF-FM	95.1
	CBM-FM	100.7
	CFCF-FM	106.5
Oshawa, Ont.	CKLB-FM	93.5
Ottawa, Ont.	CBO-FM	103.3
	CFMO-FM	93.9
Quebec, Que.	CHRC-FM	98.1
Rimouski, Que.	CJBR-FM	101.5
St. Catharines, Ont.	CKTB-FM	97.7
Sherbrooke, Que.	CHLT-FM	102.7
Timmins, Ont.	CKGB-FM	94.5
Toronto, Ont.	CBC-FM	99.1
	CFRB-FM	99.9
	CHFI-FM	98.1
	CJRT-FM	91.1
Vancouver, B.C.	CBU-FM	105.7
	CHQM-FM	103.5
Verdun, Que.	CKVL-FM	96.9
Victoria, B.C.	CKDA-FM	98.5
Windsor, Ont.	CKLW-FM	93.9
Winnipeg, Man.	CJOB-FM	97.5

Canadian FM Stations by Call Letters

C.L.	Location
CBC-FM	Toronto, Ont.
CBF-FM	Montreal, Que.
CBM-FM	Montreal, Que.
CBO-FM	Ottawa, Ont.
CBU-FM	Vancouver, B.C.
CFCF-FM	Montreal, Que.
CFPL-FM	London, Ont.
CFRA-FM	Ottawa, Ont.
CFRB-FM	Toronto, Ont.
CFRC-FM	Kingston, Ont.
CFRN-FM	Edmonton, Alta.
CHEC-FM	Lethbridge, Alta.
CHFI-FM	Toronto, Ont.
CHLT-FM	Sherbrooke, Que.
CHNS-FM	Halifax, N.S.
CHRC-FM	Quebec, Que.
CJBR-FM	Rimouski, Que.
CJCA-FM	Edmonton, Alta.
CJCB-FM	Sydney, N.S.
CJOB-FM	Winnipeg, Man.
CJRT-FM	Toronto, Ont.
CJSS-FM	Cornwall, Ont.
CKCR-FM	Kitchener, Ont.
CKDA-FM	Victoria, B.C.
CKGB-FM	Timmins, Ont.
CKLB-FM	Oshawa, Ont.
CKLC-FM	Kingston, Ont.
CKLW-FM	Windsor, Ont.
CKPC-FM	Brantford, Ont.
CKPR-FM	Ft. William, Ont.
CKSF-FM	Cornwall, Ont.
CKTB-FM	St. Catharines, Ont.
CKUA-FM	Edmonton, Alta.
CKVL-FM	Verdun, Que.
CKWS-FM	Kingston, Ont.

U. S. Television Stations

Territories and possessions follow states. Chan., channel number; asterisk (*) indicates educational station.

Location	C.L.	Chan.
ALABAMA		
Andalusia	WDIQ	*2
Birmingham	WAPI-TV	13
	WBIQ	*10
	WBRC-TV	6
Decatur	WMSL-TV	23
Dothan	WTVY	4
Florence	WOWL	15
Huntsville	WAFG-TV	31
Mobile	WALA-TV	10
	WKRG-TV	5
Montgomery	WCOV-TV	20
	WSFA-TV	12
Munford	WCIQ	*7
Selma	WSLA	8
ALASKA		
Anchorage	KENI-TV	2
	KTVA	11
Fairbanks	KFAR-TV	2
	KTVF	11
Juneau	KINY-TV	8
ARIZONA		
Douglas	KCDA	3
Phoenix	KOOL-TV	10
	KAET	*8
	KPHO-TV	5
	KTVK	3
	KTAR-TV	12
Tucson	KGUN-TV	9
	KOLD-TV	13
	KVOA-TV	4
	KUAT	*6
Yuma	KIVA	11
ARKANSAS		
El Dorado	KTVE	10
Ft. Smith	KFSA-TV	5
Hot Springs	KFOY-TV	9
Little Rock	KARK-TV	4
	KTHV	11
	KATV	7
Texarkana	KCMC-TV	6
CALIFORNIA		
Bakersfield	KBAK-TV	29
	KERO-TV	10
	KLYD-TV	17
Chico	KHSL-TV	12
El Centro	XEM-TV	3
Eureka	KIEM-TV	3
	KVIQ-TV	6
Fresno	KFRE-TV	30
	KAIL	53
	KJEO	47
	KMJ-TV	24
Hanford	KDAS-TV	21
Los Angeles	KABC-TV	7
	KCOP	13
	KHJ-TV	9
	KNXT	2
	KRCA	4
	KTLA	5
	KTTV	11
Oakland	KTVU	2
Redding	KVIP-TV	7
Sacramento	KXTV	10
	KCRA-TV	3
	KVUE	40
	KVIE	*6
Salinas	KSBW-TV	8
San Bernardino	KCHU-TV	18
San Diego	KFMB-TV	8
	KOGO-TV	10
(Tijuana, Mex.)	XETV	6
San Francisco	KGO-TV	7
	KPIX	5
	KQED	*9
	KRON-TV	4
	KEZE-TV	20
San Jose	KNTV	11
San Luis Obispo	KSBY-TV	6
Santa Barbara	KEY-T	3
Stockton	KOVR	13
Vista	KICV-TV	12
COLORADO		
Colorado Springs	KKTV	11
	KRDO-TV	13
Denver	KBTV	9
	KLZ-TV	7
	KOA-TV	4
	KRMA-TV	*6
	KTVR	2
Grand Junction	KREX-TV	5
Montrose	KREY-TV	10
Pueblo	KCSJ-TV	5
CONNECTICUT		
Bridgeport	WICC-TV	43
Hartford	WTIC-TV	3
	WHCT-TV	18
New Britain	WHNB-TV	30
New Haven	WNHC-TV	8
Waterbury	WATR-TV	53
DIST. OF COLUMBIA		
Washington	WETA-TV	26
	WMAL-TV	7
	WRC-TV	4
	WTOP-TV	9
	WTTG	5
FLORIDA		
Daytona Beach	WESH-TV	2
Fort Pierce-Vero Beach	WTVI	19
Fort Myers	WINK-TV	11
Gainesville	WUFT	*5
Jacksonville	WFGA-TV	12
	WJCT	*7
	WJXT	4
Miami	WCKT	7
	WLBW-TV	10
	WTHS-TV	*2
	WTVJ	4
Orlando	WDBO-TV	6
	WLOF-TV	9
Palm Beach	WPTV	5
Panama City	WJDM-TV	7
Pensacola	WEAR-TV	3

Location	C.L.	Chan.
St. Petersburg	WSUN-TV	38
Tallahassee	WFSU-TV	•11
Tampa	WFLA-TV	8
	WEDU	•3
	WTVT	13
W. Palm Beach	WEAT-TV	12

GEORGIA

Location	C.L.	Chan.
Albany	WALB-TV	10
Athens	WGTV	•8
Atlanta	WAGA-TV	5
	WSB-TV	2
	WETV	•30
	WLW-A	11
Augusta	WJBF	6
	WRDW-TV	12
Columbus	WRBL-TV	3
	WTVM	9
Macon	WMAZ-TV	13
Savannah	WSAV-TV	3
	WEGA-TV	•9
	WTOC-TV	11
Thomasville	WCTV	6
Waycross	WEGS-TV	•8

HAWAII

Location	C.L.	Chan.
Hilo	KHBC-TV	9
	KHJK	13
Honolulu	KGMB-TV	9
	KONA	2
	KHVH-TV	4
Wailuku	KMAU	3
	KALA	7
	KMVI-TV	12

IDAHO

Location	C.L.	Chan.
Boise	KBOI-TV	2
	KTVB	7
Idaho Falls	KID-TV	3
	KIFI-TV	8
Lewiston	KLEW-TV	3
Nampa	KCIX-TV	6
Twin Falls	KLIX-TV	11

ILLINOIS

Location	C.L.	Chan.
Carbondale	WSIU-TV	•8
Champaign	WCIA	3
	WCHU	33
Chicago	WBBM-TV	2
	WBKB	7
	WGN-TV	9
	WNBQ	5
	WTTW	•11
Danville	WICD	24
Decatur	WTVP	17
Harrisburg	WSIL-TV	3
La Salle	WEEQ-TV	35
Peoria	WEEK-TV	43
	WMBD	31
	WTVH	19
Quincy	WGEM-TV	10
Rockford	WREX-TV	13
	WTVO	39
Rock Island	WHBF-TV	4
Springfield	WICS	20
Urbana	WILL-TV	•12

INDIANA

Location	C.L.	Chan.
Bloomington	WTTV	4
Elkhart	WSJV-TV	28
Evansville	WFIE-TV	14
	WEHT	50
	WTVW	7
Ft. Wayne	WANE-TV	15
	WKJG-TV	33
	WPTA	21
Indianapolis	WFBM-TV	6
	WLWI	13
	WISH-TV	8
Lafayette	WFAM-TV	18
Muncie	WLBC-TV	49
South Bend	WNDU-TV	16
	WSBT-TV	22
Terre Haute	WTHI-TV	10

IOWA

Location	C.L.	Chan.
Ames	WOI-TV	5
Cedar Rapids	KCRG-TV	9
	WMT-TV	2
Davenport	WOC-TV	6
Des Moines	KRNT-TV	8
	KDPS-TV	•11
	WHO-TV	13
Fort Dodge	KQTV	21
Mason City	KGLO-TV	3
Ottumwa	KTVO	3
Sioux City	KTIV	4
	KVTV	9
Waterloo	KWWL-TV	7

KANSAS

Location	C.L.	Chan.
Ensign	KTVC	6
Garden City	KGLD	11
Goodland	KWHT-TV	10
Great Bend	KCKT	2
Hays	KAYS-TV	7
Hutchinson	KTVH	12
Pittsburg	KOAM-TV	7
Topeka	WIBW-TV	13
Wichita	KAKE-TV	10
	KARD-TV	3

KENTUCKY

Location	C.L.	Chan.
Lexington	WLEX-TV	18
	WKYT	27
Louisville	WAVE-TV	3
	WFPK-TV	•15
	WHAS-TV	11
	WQXL-TV	41
Paducah	WPSD-TV	6

LOUISIANA

Location	C.L.	Chan.
Alexandria	KALB-TV	5
Baton Rouge	WAFB-TV	9
	WBRZ	2
Lafayette	KLFY-TV	10
Lake Charles	KPLC-TV	7
	KTAG-TV	25
Monroe	KNOE-TV	8
	KLSE	•13
New Orleans	WDSU-TV	6
	WVUE	13
	WWL-TV	4
	WYES	•8
Shreveport	KSLA-TV	12
	KTBS-TV	3

MAINE

Location	C.L.	Chan.
Augusta	WCBB	10
Bangor	WABI-TV	5
	WLBZ-TV	2
Poland Spring	WMTW-TV	8
Portland	WCSH-TV	6
	WGAN-TV	13
Presque Isle	WAGM-TV	8

MARYLAND

Location	C.L.	Chan.
Baltimore	WJZ-TV	13
	WBAL-TV	11
	WMAR-TV	2
Salisbury	WBOC-TV	16

MASSACHUSETTS

Location	C.L.	Chan.
Adams	WCDC	19
Boston	WBZ-TV	4
	WGBH-TV	•2
	WHDH-TV	5
	WNAC-TV	7
Greenfield	WRLP	32
Springfield	WHYN-TV	40
	WWLP	22
Worcester	WWOR-TV	14

MICHIGAN

Location	C.L.	Chan.
Bay City	WNEM-TV	5
Cadillac	WWTV	13
Cheboygan	WTOM-TV	4
Detroit	WJBK-TV	2
	WTVS	•56
	WWJ-TV	4
	WXYZ-TV	7
(Windsor, Ont.)	CKLW-TV	9
Flint	WJRT	12
Grand Rapids	WOOD-TV	8
Kalamazoo	WKZO-TV	3
Lansing	WJIM-TV	6
Marquette	WLUC-TV	6
Onondaga	WILX-TV/WMSB	10
Saginaw	WKNX-TV	57
Traverse City	WPBN-TV	7

MINNESOTA

Location	C.L.	Chan.
Alexandria	KCMT	7
Austin	KMMT	6
Duluth	KDAL-TV	3
	WDSM-TV	6
Mankato	KEYC-TV	12
Minneapolis	KMSP	9
	WCCO-TV	4
	WTCN-TV	11
Rochester	KROC-TV	10
St. Paul	KSTP-TV	5
	KTCA-TV	•2

MISSISSIPPI

Location	C.L.	Chan.
Columbus	WCBI-TV	4
Greenwood	WABG-TV	6
Jackson	WJTV	12
	WLBT	3
Laurel	WDAM-TV	7
Meridian	WTOK-TV	11
	WCOC-TV	30
Tupelo	WTWV	9

MISSOURI

Location	C.L.	Chan.
Cape Girardeau	KFVS-TV	12
Columbia	KOMU-TV	8
Hannibal	KHQA-TV	7
Jefferson City	KRCG-TV	13
Joplin	KODE-TV	12
Kansas City	KCMO-TV	5
	KCSD-TV	•19
	KMBC-TV	9
	WDAF-TV	4
Kirksville	KTVO	3
Poplar Bluff, Mo.	KPOB-TV	15
St. Joseph	KFEQ-TV	2
St. Louis	KETC	•9
	KMOX-TV	4
	KSD-TV	5
	KTVI	2
	KPLR-TV	11
Sedalia	KMOS-TV	6
Springfield	KTTS-TV	10
	KYTV	3

MONTANA

Location	C.L.	Chan.
Billings	KOOK-TV	2
	KGHL-TV	8
Butte	KXLF-TV	4
Glendive	KXGN-TV	5
Great Falls	KFBB-TV	5
	KRTV	3
Helena	KBLL-TV	12
Kalispell	KULR	9
Missoula	KMSO-TV	13

NEBRASKA

Location	C.L.	Chan.
Grand Island	KGIN-TV	11
Hastings	KHAS-TV	5
Hay Springs	KDUH-TV	4
Hayes Center	KHPL-TV	6
Kearney	KHOL-TV	13
Lincoln	KOLN-TV	10
	KUON-TV	•12
McCook	KOMC	8
North Platte	KNOP	2
Omaha	KMTV	3
	KETV	7
	WOW-TV	6
Scottsbluff	KSTF	10

NEVADA

Location	C.L.	Chan.
Henderson	KLRJ-TV	2
Las Vegas	KLAS-TV	8
	KSHO-TV	13
Reno	KOLO-TV	8

NEW HAMPSHIRE

Location	C.L.	Chan.
Durham	WENH-TV	•11
Manchester	WMUR-TV	9

NEW JERSEY

Location	C.L.	Chan.
Newark	WNDT-TV	13

NEW MEXICO

Location	C.L.	Chan.
Albuquerque	KGGM-TV	13
	KNME-TV	•5
	KOAT-TV	7
	KOB-TV	4
Carlsbad	KAVE-TV	6
Clovis	KVER-TV	12
Roswell	KSWS-TV	8

NEW YORK

Location	C.L.	Chan.
Albany	WTEN	10
	WAST	13
	WTRI	35
	WCDA	41
Binghamton	WINR-TV	40
	WNBF-TV	12
Buffalo	WBEN-TV	4
	WNED-TV	•17
	WGR-TV	2
	WKBW-TV	7
Carthage	WCNY-TV	7
Elmira	WSYE-TV	18
New York	WABC-TV	7
	WUHF-TV	31
	WNEW-TV	5
	WCBS-TV	2
	WOR-TV	9
	WPIX	11
	WNBC-TV	4
Plattsburg	WPTZ-TV	5
Rochester	WHEC-TV	10
	WROC-TV	5
	WVET-TV	10
Schenectady	WRGB	6
Syracuse	WHEN-TV	8
	WSYR-TV	3
Utica	WKTV	2

NORTH CAROLINA

Location	C.L.	Chan.
Asheville	WISE-TV	62
	WLOS-TV	13
Chapel Hill	WUNC-TV	•4
Charlotte	WBTV	3
	WSOC-TV	9
Durham	WTVD	11
Greensboro	WFMY-TV	2
Greenville	WNCT	9
Raleigh	WRAL-TV	5
Washington	WITN	7
Wilmington	WECT	6
Winston-Salem	WSJS-TV	12

NORTH DAKOTA

Location	C.L.	Chan.
Bismarck	KXMB-TV	12
	KFYR-TV	5
Dickinson	KDIX-TV	2
Fargo	WDAY-TV	6
	KXGO-TV	11
Grand Forks	KNOX-TV	10
Minot	KXMC-TV	13
	KMOT	10
Pembina, N.D.	KCND-TV	12
Valley City	KXJB-TV	4
Williston	KUMV-TV	8

OHIO

Location	C.L.	Chan.
Akron	WAKR-TV	49
Cincinnati	WCET	•48
	WCPO-TV	9
	WKRC-TV	12
	WLW-T	5
	WCIN-TV	54
Cleveland	KYW-TV	3
	WEWS	5
	WJW-TV	8
Columbus	WBNS-TV	10
	WLW-C	4
	WOSU-TV	•34
	WTVN-TV	6
Dayton	WHIO-TV	7
	WLW-D	2
Lima	WIMA-TV	35
Oxford	WMUB-TV	14
Steubenville	WSTV-TV	9
Toledo	WSPD-TV	13
	WGTE-TV	•30
	WTOL-TV	11
Youngstown	WFMJ-TV	21
	WKBN-TV	27
	WKST-TV	33
Zanesville	WHIZ-TV	18

OKLAHOMA

Location	C.L.	Chan.
Ada	KTEN	10
Ardmore	KXII	12
Enid	KOCO-TV	5
Lawton	KSWO-TV	7
Oklahoma City	KETA	•13
	KOKH-TV	25
	KWTV	9
	WKY-TV	4
Tulsa	KOTV	6
	KOED-TV	•11
	KTUL-TV	8
	KVOO-TV	2

OREGON

Location	C.L.	Chan.
Coos Bay	KCBY-TV	11
Corvallis	KOAC-TV	•7
Eugene	KVAL-TV	13
	KEZI-TV	9
Klamath	KOTI	2
Medford	KBES-TV	5
	KMED-TV	10
Portland	KGW-TV	8
	KOAP-TV	•10
	KATU-TV	2
	KOIN-TV	6
	KPTV	12
Roseburg	KPIC	4

PENNSYLVANIA

Location	C.L.	Chan.
Altoona	WFBG-TV	10
Erie	WICU	12
	WSEE-TV	35
Harrisburg	WHP-TV	21
	WTPA	27
Johnstown	WARD-TV	56
	WJAC-TV	6
Lancaster	WGAL-TV	8
Lebanon	WLVH-TV	15
Lockhaven	WBPZ-TV	32
New Castle	WKST-TV	33
Philadelphia	WCAU-TV	10
	WFIL-TV	6
	WHYY-TV	•35
	WPCA-TV	17
	WRCV-TV	3
Pittsburgh	KDKA-TV	2
	WIIC	11
	WQED	•13
	WTAE	4
Scranton	WNEP-TV	16
	WDAU-TV	22
Wilkes-Barre	WBRE-TV	28
York	WSBA-TV	43

RHODE ISLAND

Location	C.L.	Chan.
Providence	WJAR-TV	10
	WPRO-TV	12

SOUTH CAROLINA

Location	C.L.	Chan.
Anderson	WAIM-TV	40
Charleston	WCSC-TV	5
	WUSN-TV	2
Clemson	WSBF-FM	•88.1
Columbia	WIS-TV	10
	WCCA-TV	25
	WNOK-TV	67
Florence	WBTW	8
Greenville	WFBC-TV	4
Spartanburg	WSPA-TV	7

SOUTH DAKOTA

Location	C.L.	Chan.
Aberdeen	KXAB-TV	9
Deadwood	KDSJ-TV	5
Florence	KDLO-TV	3
Mitchell	KORN-TV	5
Rapid City	KOTA-TV	3
	KRSD-TV	7
Reliance	KPLO-TV	6
Sioux Falls	KELO-TV	11
	KSOO-TV	13
Vermilion	KUSD-TV	•2

TENNESSEE

Location	C.L.	Chan.
Chattanooga	WDEF-TV	12
	WRGP-TV	3
	WTVC	9
Jackson	WDXI-TV	7
Johnson City	WJHL-TV	11
Knoxville	WATE-TV	6
	WBIR-TV	10

Location	C.L.	Chan.
	WTVK	26
Memphis	WHBQ-TV	13
	WKNO	*10
	WMCT	5
	WREC-TV	3
Nashville	WLAC-TV	5
	WSIX-TV	8
	WSM-TV	4

TEXAS

Location	C.L.	Chan.
Abilene	KRBC-TV	9
Alpine	KULF-TV	12
Amarillo	KFDA-TV	10
	KGNC-TV	4
	KVII	7
Austin	KTBC-TV	7
Beaumont	KFDM-TV	6
Big Spring	KEDY-TV	4
Bryan	KBTX-TV	3
Corpus Christi	KRIS-TV	6
	KZTV	10
Dallas	KRLD-TV	4
	KERA-TV	*13
	WFAA-TV	8
El Paso	KELP-TV	13
	KROD-TV	4
	KTSM-TV	9
(Ciudad Juarez, Mex.)	XEJ-TV	5
Ft. Worth	KTVT	11
	WBAP-TV	5
Harlingen	KGBT-TV	4
Houston	KPRC-TV	2
	KHOU-TV	11
	KTRK-TV	13
	KUHT	*8
Laredo	KGNS-TV	8
Lubbock	KCBD-TV	11
	KDUB-TV	13
Lufkin	KTRE-TV	9
Midland	KMID-TV	2
	KDCD-TV	18
Monahans	KVKM-TV	9
Odessa	KOSA-TV	7
Port Arthur-Beaumont	KPAC-TV	4
Richardson	KRET-TV	*23
San Angelo	KCTV	8
	KACB-TV	3
San Antonio	KUAL-TV	41
	KENS-TV	5
	KLRN	*9
	KONO-TV	12
	WOAI-TV	4
Sweetwater	KPAR-TV	12
Temple	KCEN-TV	6
Texarkana	KTAL-TV	6
Tyler	KLTV	7
Waco	KWTX-TV	10
Weslaco	KRGV-TV	5
Wichita Falls	KFDX-TV	3
	KSYD-TV	6

UTAH

Location	C.L.	Chan.
Ogden	KVOG-TV	9
	KWCS-TV	*18
Provo	KLOR-TV	11
Salt Lake City	KSL-TV	5
	KCPX-TV	4
	KUED	*7
	KUTV	2

VERMONT

Location	C.L.	Chan.
Burlington	WCAX-TV	3

VIRGINIA

Location	C.L.	Chan.
Bristol	WCYB-TV	5
Hampton	WVEC-TV	13
Harrisonburg	WSVA-TV	3
Lynchburg	WLVA-TV	13
Norfolk	WHRO-TV	15
	WTAR-TV	3
Petersburg	WXEX-TV	8
Portsmouth	WAVY-TV	10
Richmond	WRVA-TV	12
	WTVR	6
Roanoke	WDBJ-TV	7
	WSLS-TV	10

WASHINGTON

Location	C.L.	Chan.
Bellingham	KVOS-TV	12
Pasco	KEPR-TV	19
Richland	KNDD-TV	25
Seattle	KCTS-TV	*9
	KING-TV	5
	KIRO-TV	7
	KOMO-TV	4
Spokane	KHQ-TV	6
	KREM-TV	2
	KXLY-TV	4
Tacoma	KTNT-TV	11
	KPEC-TV	*56
	KTPS	*62
	KTVW	13
Yakima	KIMA-TV	29
	KNDO-TV	23

WEST VIRGINIA

Location	C.L.	Chan.
Bluefield	WHIS-TV	6
Charleston	WCHS-TV	8
Clarksburg	WBOY-TV	12
Fairmont	WJPB-TV	5
Huntington	WHTN-TV	13
	WSAZ-TV	3
Oak Hill	WOAY-TV	4
Parkersburg	WTAP-TV	15
Wheeling	WTRF-TV	7

WISCONSIN

Location	C.L.	Chan.
Eau Claire	WEAU-TV	13
Green Bay	WBAY-TV	2
	WFRV	5
	WLUK-TV	11
La Crosse	WKBT	8
Madison	WHA-TV	*21
	WISC-TV	3
	WKOW-TV	27
	WMTV	33
Marinette	WMBV-TV	11
Milwaukee	WISN-TV	12
	WITI-TV	6
	WMVS-TV	*10
	WTMJ-TV	4
	WXIX	18
Wausau	WSAU-TV	7

WYOMING

Location	C.L.	Chan.
Casper	KTWO-TV	2
Cheyenne	KFBC-TV	5
Riverton	KWRB-TV	10

PUERTO RICO

Location	C.L.	Chan.
Aguadilla	WOLE-TV	12
Caguas	WKBM-TV	11
Mayaguez	WORA-TV	5
	WIPM-TV	*3
Ponce	WRIK-TV	7
	WSUR-TV	9
San Juan	WAPA-TV	4
	WIPR-TV	6
	WKAQ-TV	2

Canadian Television Stations

ALBERTA

Location	C.L.	Chan.
Burmis	CJLH-TV-3	3
Calgary	CHCT-TV	2
	CFCN-TV	8
Drumheller	CFCN-TV-1	8
	CBXT-TV	5
Edmonton	CFRN-TV	3
Lethbridge	CJLH-TV	7
Lloydminster	CHSA-TV	2
Medicine Hat	CHAT-TV	6
Pivot	CHAT-TV	4
Red Deer	CHCA-TV	6
	CHCA-TV-2	10

BRITISH COLUMBIA

Location	C.L.	Chan.
Ashcroft	CFCR-TV-2	10
Burnaby	CHAN-TV	8
Crescent Valley	CHMS-TV	5
Dawson Creek	CJDC-TV	5
Enderby	CHBC-TV-8	5
Kamloops	CFCR-TV	4
Kelowna	CHBC-TV	2
	CHGP-TV-1	72
	CABC-TV-4	
Keremeos	CHBC-TV-9	5
Lumby	CHBC-TV-4	5
Nelson	CBUAT-TV-7	9
Oliver	CHBC-TV-3	8
Peachland	CHBC-TV-10	5
Penticton	CHBC-TV-2	13
Prince George	CKPG-TV	3
Saddle Mountain	CHHC-TV-1	4
Salmon Arm	CHBC-TV-6	5
Trail	CBUAT	11
Vancouver	CBUT	2
Vernon	CHBC-TV-3	7
Victoria	CHEK-TV	6

LABRADOR

Location	C.L.	Chan.
Goose Bay	CFLA-TV	8

MANITOBA

Location	C.L.	Chan.
Baldy Mountain	CKOS-TV-1	8
Brandon	CKX-TV	5
Winnipeg	CBWT	3
	CBWFT	6
	CJAY-TV	7

NEW BRUNSWICK

Location	C.L.	Chan.
Campbellton	CRCD-TV	7
Moncton	CKAM-TV	2
	CBAFT	11
Saint John	CHSJ-TV	4
Upsalquitch Lake	CKAM	12

NEWFOUNDLAND

Location	C.L.	Chan.
Argentia	CJOX-TV	10
Corner Brook	CBYT	5
	CHEK-TV	6
Grand Falls	CJCN-TV	4
St. John's	CJON-TV	6
Stephenville	CFSN-TV	8

NOVA SCOTIA

Location	C.L.	Chan.
Antigonish	CFXU-TV	9
Halifax	CBHT	3
	CJCH-TV	5
Inverness	CJCB-TV-1	6
Liverpool	CBHT-1	12
New Glasgow	CFCY-TV-1	7
Shelburne	CBHT-2	8
Sydney	CJCB-TV	4
Yarmouth	CBHT-3	11

ONTARIO

Location	C.L.	Chan.
Barrie	CKVR-TV	11
Cornwall	CJSS-TV	8
Elk Lake	CFCL-TV-2	2
Elliot Lake	CKSO-TV-1	3
Hamilton	CHCH-TV	11
Kapuskasing	CFCL-TV-1	3
Kenora	CBWAT	8
Kingston	CKWS-TV	11
Kitchener	CKCO-TV	13
London	CFPL-TV	10
North Bay	CKGN-TV	10
Parry Sound	CKVR-TV-1	11
Pembroke	CHOV-TV	5
Peterborough	CHEX-TV	12
Ottawa	CBOFT	9
	CBOT	4
	CJOH-TV	13
Port Arthur	CKPR-TV-1	2
Sault Ste. Marie	CJIC-TV	2
Sioux Lookout	CHSL-TV	9
Sturgeon Falls	CBFST	7
Sudbury	CKSO-TV	5
Timmins	CFCL-TV	2
Toronto	CBLT	6
	CFTO-TV	9
Windsor	CKLW-TV	9
Wingham	CKNX-TV	8

PRINCE EDWARD ISLAND

Location	C.L.	Chan.
Charlottetown	CFCY-TV	13

QUEBEC

Location	C.L.	Chan.
Carleton	CHAU-TV	5
	CJAO-TV-1	80
	CHSM-TV	7
Clermont	CFCV-TV-1	75
Estcourt	CJES-TV-1	70
Jonquiere	CKRS-TV	12
Matane	CKBL-TV	9
Montreal	CBFT	2
	CFCF-TV	12
	CFTM-TV	10
	CBMT	6
New Carlisle	CHAU-TV	5
Quebec	CFCM-TV	4
	CKMI-TV	5
Rimouski	CJBR-TV	3
Riviere du-Loup	CKRT-TV	7
Rouyn	CKRN-TV	4
Sherbrooke	CHLT-TV	7
Three Rivers	CKTM-TV	13

SASKATCHEWAN

Location	C.L.	Chan.
Carlyle Lake	CKDS-TV-2	7
East End	CJFB-TV	2
Moose Jaw	CHAB-TV	4
Nipawin	CKBI-TV-4	2
Prince Albert	CKBI-TV-1	2
Regina	CKCK-TV	2
Saskatoon	CFQC-TV	8
Swift Current	CFJB-TV	5
Val Marie	CJFB	2
Wanganui	CKBI-TV-2	7
Yorkton	CKOS-TV	7

World-Wide Short-Wave Stations

Most international broadcasting is done within frequency limits agreed upon at international conventions. These frequency ranges are listed here, at the right, expressed both in frequency and by meter bands (wave-length).

Reception in the various bands varies according to the time of day and season of the year. Reception in the 60, 49 and 41 meter bands is best at night during the winter months. Reception in the 31 and 25 M. bands is best at night, but all year. Reception in the 19, 16, 13 and 11 M. bands is best during the day, also at night during the summer in the 16 and 19 M. bands. This listing includes only SWBC often heard in the U.S. and Canada, exclusive of those in the continental U.S.

Abbr.: AIR—All India Radio; RAI—Radiotelevisione Italiana; RTF—Radiodiffusion Television Francaise; VOA—Voice of America; RFE—Radio Free Europe. •denotes stations beaming evening (U.S. time) broadcasts to the U.S., †morning or afternoon broadcasts, V—varies.

METER BANDS

4750 to 5060 kc/s (60 meter band)
5950 to 6200 kc/s (49 meter band)
7100 to 7300 kc/s (41 meter band)
9500 to 9775 kc/s (31 meter band)
11700 to 11975 kc/s (25 meter band)
15100 to 15450 kc/s (19 meter band)
17700 to 17900 kc/s (16 meter band)
21450 to 21750 kc/s (13 meter band)
25600 to 26100 kc/s (11 meter band.

Kcs.	Call and Location
4630	HCGB1, Quito, Ecu.
4725	Rangoon, Burma
4765	HJEF, Cali, Col.
4770	ELWA, Monrovia, Lib.
4770	YVMW, Punto Fiji, Ven.
4780	YVLA, Valencia, Ven.
4790	YVQN, Puerto La Cruz, Ven.
4805	ZYS8, Manaus, Braz.
4810	YVMG, Maracaibo, Ven.
4830	YVOA, San Cristobal, Ven.
4835	HJKE, Bogota, Col.
4840v	Lourenco Marques, Moz.
4840	YVOI, Valera, Ven.
4845	HJGF, Bucaramanga, Col.
4850	YVMS, Barquisimeto, Ven.
4870	Cotonou, Dahomey Rep.
4880	YVKF, Caracas, Ven.
4895	Daker, Senegal
4895	ZYR22, Manaus, Braz.
4900	YUKE, Caracas, Ven.
4900v	HJAC, Barranquilla, Col.
4905	HRQN3, Puerto Cortes, Hon.
4910	HCIMI, Quito, Ecua.
4910	Conakry, Guinea
4915	Accra, Ghana
4920	VLM4, Brisbane, Aus.
4920	YVKR, Caracas, Ven.
4935	HJLF, Ibague, Col.
4940	HCXZ1, Guayaquil, Ecu.

Kcs.	Call and Location
4940	Abidjan, Ivory Coast
4940	YVMO, Barquisimeto, Ven.
4945	HJCW, Bogota, Col.
4945	Paradys, So. Afr.
4950	Dakar, Senegal
4950	YVMM, Coro, Ven.
4960	YVQA, Cumana, Ven.
4970	YVLK, Caracas, Ven.
4972	Yaounde, Cameroon
4990	Lagos, Nigeria
4990	YVMQ, Barquisimeto, Ven.
4995	CR6RZ, Luanda, Angola
5010	HCRCX, Quito, Ecu.
5010	St. Georges, Windward Isl.
5020	HJFW, Manizales, Col.
5020	Niamey, Niger Rep.
5030	YVKM, Caracas, Ven.
5040	YVMA, Maracaibo, Ven.
5050	YVKD, Caracas, Ven.
5075	HJGC Bogota, Col.
5875	Tegucigalpa, Hond.
5952	TGNA, Guatemala, Guat.
5954	TIQ, Puerto Limon, C. R.
5960	HJCF, Bogota, Col.
5980v	TGAR, Guatemala, Guat.
5980	4VB7, Port au Prince, Haiti
5985	Hilversum, Neth.
5990	TGJA, Guatemala
5990	Habana, Cuba
5995	Fort-de-France, Mart.
6000	Radio Americas
6005	RIAS, Berlin, Ger.
6010	XEOL, Mexico City, Mexico
6015	PRA8, Recife, Braz.
6015v	Habana, Cuba
6020	Hilversum, Neth.
6020	Khabarovsk, USSR
6025	Kuala Lumpur, Malaya
6025	Lisbon, Port.
6030	Baghdad, Iraq
6035	Rangoon, Burma
6035	HRTL, Tegucigalpa, Hond.
6037	TIFC, San Jose, C. R.
6040	HJLB, Ibague, Col.
6040	VOA, Munich, Germany
6045	HOU31, David, Pan.
6050	HCJB, Quito, Ecua.
6050	BBC, London, Eng.
6055	HJEX, Cali, Col.
6055	JOZ2, Tokyo, Japan
6060	RAI, Caltanissetta, It.
6060	YDF, Djakarta, Indonesia
6065	XEXG, Leon, Mex.
6065	Horby, Sweden
6070	Sofia, Bulgaria
6070	BBC, London, Eng.
6075	Osterloog, Ger.
6080	ZL7, Wellington, N.Z.
6080	Trans World Radio, Monaco
6082	OAX4Z, Lima, Peru
6085	Munich, Ger.
6090	VLI6, Sydney, Aus.
6090	Luxembourg, Lux.
6090	XECMT, C. El Mante, Mex.
6090	HI2U, Santo Domingo, D.R.
6095	ZYB7, Sao Paulo, Braz.
6100	Belgrade, Yugo.
6105	XEQM, Merida, Mex.
6105	Cologne, Ger.
6110	BBC, London, Eng.
6115	ZYC7, Rio de Jan., Braz.
6120	LRX1, Buenos Aires
6120	4VEH, Cap Haitien, Haiti
6120	BBC, Limassol, Cyprus
6130	Port Moresby, New Guinea
6135	HRMF, La Ceiba, Hond.
6135	Papeete, Tahiti
6140	VLW6, Perth, Aus.
6145	RTF, Allouis, France
6145v	PAL9, Rio de Jan., Braz.
6150	BBC, London, Eng.
6155	Wien, Austria
6155	FEN, Tokyo, Japan
6160	HJKJ, Bogota, Col.
6160	Algiers, Algeria
6160	Saigon, S. Vietnam
6165	HER3, Bern, Switz. ●
6170	BBC, Limassol, Cyprus
6170	Singapore, Sing.
6170	VOA, Tangiers, Morocco
6175	RTF, Allouis, France
6175	Cayenne, Fr. Guiana
6185	Lisbon, Port.
6185	HJCT, Bogota, Col.
6195	HJEZ, Cali, Col.
6195	BBC, London, Eng.
6195	Pyongyang, N. Korea
6195	Andorra, Andorra
6200	4VHW, Port-au-Prince, Haiti
6305	Andorra, Andorra
7095v	Tehran, Iran
7105	Madrid, Spain
7110	VOA, Colombo, Ceylon
7110	BBC, London, England
7115	Rabat, Morocco
7120	BBC, London, England
7125	Warsaw, Poland
7135	Taipeh, Taiwan
7145	Bamako, Mali
7150	Moscow, U.S.S.R.
7155	VOA, Tangiers, Mor.
7160	RTF, Paris, France
7165	RFE, Germ.

Kcs.	Call and Location
7170	Algiers, Alg.
7180	Baghdad, Iraq
7180	Moscow, U.S.S.R.
7185	BBC, London, Eng.
7185	Paradys, So. Africa
7193	Bucharest, Roumania
7200	R. Malaya, Sing.
7205	VOA, Salonika, Gr.
7210	Dakar, Mali Fed.
7215	Trans World Radio, Monaco
7220	VLD7, Melbourne, Aus.
7220	Budapest, Hung.
7230	BBC, London, Eng.
7240	RTF, Paris, France
7250	BBC, London, Eng.
7255	Sofia, Bulg.
7265	Saigon, Vietnam
7270	Motola, Sweden
7275	RAI, Rome, It.
7285	Ankara, Turk.
7290	Singapore
7290	Moscow, U.S.S.R.
7290	RAI, Rome, It.
7295	Makassar, Celebes
7295	RFE, Ger.
7340	Moscow, U.S.S.R.
7398v	Damascus, U.A.R.
7480	Peking, China
7650	YNMS, Leon, Nic.
8016	Beirut, Lebanon
9009	Tel Aviv, Israel
9360	COBC, Habana, Cuba
9360v	Madrid, Spain ●
9380v	Madrid, Spain
9410	BBC, London, Eng.
9440	CP38, La Paz, Bol.
9480	Peking, China
9485	HI3U, Santo Domingo, D.R.
9500	XEWW, Mexico City, Mex.
9500	Magadan, U.S.S.R.
9500	Moscow, U.S.S.R.
9505	PRB22, Sao Paulo, Braz.
9505	Rabat, Mor.
9505	HOLA, Colon, Pan.
9505	NHK, Tokyo, Japan
9505	Belgrade, Yugoslavia
9510	London, England
9515	RAI, Caltanissetta, It.
9515	XEWW, Mexico, DF, Mex.
9520	VOA, Tangier, Mor.
9520	Copenhagen, Den. ●
9520	Port Moresby, New Guinea
9520	OAX8E, Iquitos, Peru
9525	NHK, Tokyo, Japan
9525	Warsaw, Poland
9530	AIR, Delhi, India
9530	VOA, Courier, Rhodes
9530	YVMZ, Maracaibo, Ven.
9535	VOA, Manila, P.I.
9535	HER4, Bern, Switz. ●
9540	ZL2, Wellington, N.Z.
9540	Warsaw, Poland
9540	Khabarovsk, U.S.S.R.
9545	ZYS43, Curitiba, Braz.
9545	HED5, Bern, Switz.
9550	Prague, Czecho. ●
9555	BBC, London, Eng.
9555	YSS, San Salvador, E. S.
9555	XETT, Mexico City, Mex.
9560	RTF, Paris, France
9560	Colombo, Ceylon
9563	OAX4R, Lima, Peru
9565	ZYK3, Recife, Braz.
9565	Radio Liberty, Ger.
9570	RAI, Rome, Italy
9575	ZYZ27, Rio de Jan., Braz.
9580	VLA9, Melbourne, Aus.
9580	BBC, London, Eng.
9585	ZYR56, Sao Paulo, Braz.
9585	RTF, Allouis, France
9585	Djakarta, Indonesia
9590	Hilversum, Neth.
9590	ELWA, Monrovia, Liberia
9595	JOZ3, Tokyo, Japan
9600	Tashkent, U.S.S.R.
9600	BBC, London, Eng.
9600	XEYU, Mexico, DF, Mexico
9600	CE960v, Santiago, Chile
9605	Cologne, Ger.
9605v	Athens, Greece
9610	VLX9, Perth, Aus.
9610	ZYC8, Rio de Jan., Braz.
9610	Oslo, Norway ●
9610	OAX8C, Iquitos, Peru
9615	VOA, Tangier, Morocco
9620	ZYR96, Sao Paulo, Braz.
9620	Moscow, U.S.S.R.
9620	Saigon, Vietnam
9625	BBC, London, Eng.
9625	OAX8K, Iquitos, Peru
9630v	CR6RL, Luanda, Ang.
9635	ZYR83, Aparecida, Braz.
9640	BBC, London, Eng.
9640	Cologne, Germany ●
9640	Accra, Ghana
9640	HOK5, Seoul, Korea
9645	TIFC, San Jose, C.R.
9645	HVJ, Vatican City
9650	BBC, Limassol, Cyprus
9650	Moscow, U.S.S.R.
9650	Amman, Jordan
9655	Radio Free Europe, Ger.
9660	LRX, Buenos Aires, Arg.
9660	VLQ9, Brisbane, Aus.
9660	Radio Liberty, Ger.
9660	Moscow, U.S.S.R.

Kcs.	Call and Location
9667	Hargeisa, Somalia
9667	TGNA, Guatemala, Guat. ●
9670	COCQ, Havana, Cuba
9675	BBC, London, Eng.
9675	NHK, Tokyo, Japan
9680	VLH9, Melbourne, Aus.
9680	XEQQ, Mexico City, Mex.
9680	Lisbon, Port.
9685	Havana, Cuba
9690	LRA32, Buenos Aires, Arg. ●
9690	BBC, London, Eng.
9690	BBC, Singapore
9700	Sofia, Bulgaria ●
9700	Leopoldville, Congo Rep.
9700	CE970, Santiago, Chile
9705	Kabul, Afghan.
9710	BBC, London, Eng.
9710	RAI, Rome, It.
9720	Moscow, U.S.S.R.
9725	Europe
9725	BBC, London, England
9730	Brazzaville, Congo Rep.
9730	Leipzig, E. Ger.
9730	DZH7, Manila, P.I.
9735	Cologne, Germany
9735	HI2T, Santo Domingo, D.R.
9740	Lisbon, Port.
9740	Khabarovsk, U.S.S.R.
9740v	LR57, Buenos Aires, Arg.
9745	Brussels, Belg.
9745	HCJB, Quito, Ecua. ●
9755	ZYW23, Goiania, Braz.
9755	RTF, Paris, France
9760	Habana, Cuba
9760	BBC, London, Eng.
9770	Brazzaville, Congo Rep.
9770	4VEH, Cap Haitien, Haiti
9772	Dario, Egypt
9785	Peking, China
9795	Cairo, U.A.R. ●
9800	Peking, China
9815	St. Georges, Windward Isl.
9825	BBC, London, Eng. ●
9833	Budapest, Hung. ●
9840	Hanoi, N. Vietnam
9865	Djakarta, Indonesia
9915	BBC, London, Eng.
9920	Peking, China
9940	Peking, China
9973	Peking, China
10530	Alma Ata, U.S.S.R.
10910	Ulan Bator, Outer Mongolia
11290	Peking, China
11600	Peking, China
11672	Karachi, Pakistan
11695v	Tashkent, U.S.S.R.
11700	TGQB, Quetzaltenango, Gua.
11705	NHK, Tokyo, Japan
11705	Horby, Sweden
11710	VLB11, Melbourne, Aus. †
11710	AIR, Delhi, India
11710	Djakarta, Indonesia
11720	BBC, Limassol, Cyprus
11720	Brussels, Belgium
11725	Brazzaville, Congo Rep.
11725	VOA, Colombo, Ceylon
11725	Prague, Czecho.
11730	Hilversum, Neth. ●
11730	LRO35, Buenos Aries, Arg.
11735	Rabat, Morocco
11735	Khabarovsk, U.S.S.R. ●
11740	VLC11, Melbourne, Aus.
11740	HVJ, Vatican State
11740	CE1174, Santiago, Chile
11740	Peking, China
11745	RFE, Europe
11745	Cairo, Egypt
11750	BBC, London, Eng.
11750	BBC, Singapore
11750	FEN, Tokyo, Japan
11755	RFE, Europe
11755	Hilversum, Neth. ●
11755	Leopoldville, Congo Rep.
11760	VLB11, Melbourne, Aus.
11760	Lourenco Marques, Moz.
11765	ZYB8, Sao Paulo, Braz.
11765	CP39, La Paz, Bolivia
11765	Naven, E. Germany
11770	BBC, London, Eng.
11770	VOA, Munich, Germany
11775	ZYZ28, Rio de Jan., Braz.
11780	ZL3, Wellington, N. Z.
11780	NHK, Tokyo, Japan
11785	Djakarta, Indon.
11785	VOA, Melolos, P.I.
11795	Cologne, Ger ●
11795	Djakarta, Indon.
11800	Accra, Ghana
11800v	Warsaw, Poland
11805v	RAI, Rome, It.
11810	VLC11, Melbourne, Aus. †
11810	Bucharest, Rom. ●
11815	Paradys, S. Africa
11820	Peking, China
11820	BBC, London, Eng.
11820	XEBR, Hermosillo, Mex.
11820	Abidjan, Ivory Coast
11825	ELWA, Monrovia, Lib.
11825	Papeete, Tahiti
11830	Algiers, Algeria
11830	VOA, Colombo, Ceylon
11830	Montevideo, Uru.
11830	Peking, China
11840	VOA, Tangier, Mor.
11840	Lisbon, Port. ●
11840	Hanoi, N. Vietnam

Kcs.	Call and Location
11845	RFT, Allouis, France
11845	Karachi, Pak.
11850	Sofia, Bulg.
11850	Brussels, Belgium
11850	Khabarovsk, U.S.S.R.
11850v	ZPA3, Asuncion, Paraguay
11855	Radio Free Europe, Ger.
11855	DZH8, Manila, P.I.
11855v	Omdurman, Sudan
11860	BBC, London, Eng.
11860	Moscow, U.S.S.R.
11865	PRA8, Recife, Braz.
11865	HER5, Bern, Switz. ●
11870	Moscow, U.S.S.R.
11875	Habana, Cuba
11875	NHK, Tokyo, Japan
11875	ZYN32, Salvador, Braz.
11880	XEHH, Mexico City, Mex.
11885	Karachi, Pak.
11885	Radio Free Europe, Ger.
11890	BBC, London, England
11895	Dakar, Mali Fed.
11895	Radio Free Europe
11895	VOA, Poro, Phil.
11900	CE1190, Valparaiso, Chile
11905	RAI, Rome, Italy ●
11910	Budapest, Hung. ●
11910	Bangkok, Thai.
11915	HCJB, Quito Ecua. ●
11915	Cairo, Egypt
11920	DXF2, Manila, P.I.
11920	AIR, Delhi, India
11925	ZYR78, Sao Paulo, Braz.
11925	HLK6, Seoul, Korea †
11925	Warsaw, Pol.
11925	Tashkent, U.S.S.R.
11930	BBC, London, Eng.
11935	Radio Liberty, Ger.
11940	ZPA5, Encarnation, Par.
11940	AFRTS, Munich, Ger.
11945	Peking, China
11945	BBC, London, Eng.
11945	Cologne, Germany ●
11950	Jidda, Saudi Arab.
11950	Hilversum, Neth.
11950	Saigon, S. Vietnam
11955	BBC, London, Eng.
11955	BBC, Singapore
11960	CE1196, Santiago, Ch.
11960	Conakry, Guinea
11965	Radio Liberty, Ger.
11975	Peking, China
11975	ELWA, Monrovia, Liberia
11980	Moscow, U.S.S.R.
11990	Prague, Czecho.
12030	Moscow, U.S.S.R.
12055	Peking, China
12080	Lisbon, Port.
12095	BBC, London, Eng.
15060	Peking, China
15070	BBC, London, Eng.
15080	Melbourne, Australia
15085	St. Georges, Windward Isl. BWI
15085	Paradys, So. Africa
15095	Peking, China
15105	AIR, Delhi, India
15110	XERR, Mexico, D. F., Mex.
15115	HCJB, Quito, Ecuador ●
15115	Peking, China
15120	Colombo, Ceylon
15120	RAI, Rome, Italy
15120	Warsaw, Poland †
15120	HVJ, Vatican City
15125	Seoul, Korea ●
15125	Lisbon, Portugal ●
15130	RTF, Allouis, France
15130	VOA, Melolos, P. I.
15135	PRB23, Sao Paulo, Braz.
15135	NHK, Tokyo, Japan
15135	Radio Free Europe, Port.
15140	Peking, China
15140	BBC, London, Eng.
15145	ZYK33, Recife, Brazil
15145	Radio Free Europe, Port.
15150	Peking, China
15153	OAX4T, Lima, Peru
15155	ZYB9, Sao Paulo, Brazil
15155	ELWA, Monrovia, Libe.
15155	Horby, Sweden
15155	VOA, Melolos, P. I.
15160	RTF, Allouis, France
15160	XEWW, Mexico City, Mex.
15160	Ankara, Turkey
15165	ZYN7, Fortaleza, Braz.
15165	Copenhagen, Denmark
15165	Damascus, Syria
15170	Tromso, Norway
15170	Radio Free Europe, Port.
15175	Oslo, Norway ●
15180	Melbourne, Australia
15185	VOA, Poro, P. I.
15185	Radio Free Europe, Port.
15190	Brazzaville, Congo Rep.
15190	Helsinki, Finland †
15190	Moscow, USSR
15195	Radio Free Europe, Ger.
15205	XESC, Mexico City, Mex.
15210	VOA, Melolos, P. I.
15210	ZPA7, Asuncion, Paraguay
15215	Radio Free Europe, Port.
15215	VOA, Okinawa
15220	Hilversum, Neth. †
15225	Taipei, Taiwan, China

Kcs.	Call and Location
15230	VOA, Colombo, Ceylon
15230	BBC, London, Eng.
15235	NHK, Tokyo, Japan
15240	VLB15, Melbourne, Aus.
15240	Horby, Sweden
15240	Moscow, USSR
15240	Belgrade, Yugoslavia
15245	ZYE21, Belem, Brazil
15245	Leopoldville, Congo Rep.
15250	VOA, Melolos, P. I.
15250	Bucharest, Rumania ●
15255	Radio Free Europe, Port.
15260	FEN, Tokyo, Japan
15265	Colombo, Ceylon
15265	VOA, Munich, Ger.
15275	Cologne, Germany
15275	Warsaw, Poland ● †
15280	ZL4, Wellington, N.Z.
15285	Prague, Czecho.
15290	VOA, Tangiers, Mor.
15290v	Habana, Cuba
15295	PRL8, Rio de Jan., Brazil
15295	NHK, Tokyo, Japan
15295	Cologne, Germany
15300	BBC, London, Eng. †
15300	DZH9, Manila, P.I.
15300	Bucharest, Roumania
15300v	Loureneo, Marques, Moz.
15305	Radio Liberty, Ger.
15310	AIR, Delhi, India
15315	VLC15, Melbourne, Aus.
15315	HEU6, Bern, Switz. ●
15325	ZYR228, Sao Paulo, Braz.
15330	VOA, Munich, Germany
15530	VOA, Tangiers, Mor.
15335	VOA, Poro, P. I.
15340	Radio Liberty, Germany
15340v	Habana, Cuba
15345	Taipei, Taiwan, China
15345	Rabat, Morocco
15350	Luxembourg, Lux.
15355	Radio Free Europe, Port.
15370	ZYC9, Rio de Jan., Braz.
15370	Radio Liberty, Germany
15375	BBC, London, Eng.
15385	DZF3, Manila, P.I.
15385	CXA60, Montevideo, Urug.
15385	Lisbon, Port.
15385	VOA, Tangiers, Mor.
15390	NHK, Tokyo, Japan
15395	Radio Liberty, Germany
15400	RAI, Rome, Italy
15405	Cologne, Germany
15425	Hilversum, Neth.
15440	VOA, Munich, Germany
15460v	PZC, Paramariob, Surinam
15465	Paramaribo, Surinam
15475	Cairo, UAR
15555	Peking, China
17705	Luanda, Angola
17725	ZYR232, San Jose Dos Campos, Brazil
17740	Peking, China
17745	Accra, Ghana
17780	BBC, London, England
17790	BBC, London, Eng.
17845	Brussels, Belgium
17865	Brussels, Belgium
17875	Habana, Cuba
17880	Lisbon, Portugal
17890	HCJB, Quito, Ecuador
17895	Lisbon, Port.
17900	Cairo, Egypt
21620	Habana, Cuba

Canadian Short-Wave— Domestic and International

*Transmitter at Sackville, New Brunswick

Kc.	C.L.	Location
5970	CBNX	St. John's, Nfld.
5970	CKNA	Montreal, Que.*
5990	CHAY	Montreal, Que.*
6005	CFCX	Montreal, Que.
6010	CJCX	Sydney, N.S.
6030	CFVP	Calgary, Alta.
6060	CKRZ	Montreal, Que.*
6070	CFRX	Toronto, Ont.
6080	CKFX	Vancouver, B.C.
6090	CBFW	Montreal, Que.
6090	CKOB	Montreal, Que.*
6130	CHNX	Halifax, N.S.
6160	CBUX	Vancouver, B.C.
6160	CHAC	Montreal, Que.*
9520	CBFR	Montreal, Que.
9585	CKLP	Montreal, Que.*
9610	CBFX	Montreal, Que.
9610	CHLS	Montreal, Que.*
9630	CBFO	Montreal, Que.
9630	CKLO	Montreal, Que.*
9710	CHLR	Montreal, Que.*
9740	CHFO	Montreal, Que.*
11705	CBFY	Montreal, Que.
11705	CKXA	Montreal, Que.*
11720	CBFL	Montreal, Que.
11720	CHOL	Montreal, Que.*
11760	CBFA	Montreal, Que.
11760	CKRA	Montreal, Que.*
11900	CKEX	Montreal, Que.*
11945	CKEX	Montreal, Que.*
15090	CKLX	Montreal, Que.*
15105	CKUS	Montreal, Que.*
15190	CBFZ	Montreal, Que.
15190	CKCX	Montreal, Que.*
15255	CKSR	Montreal, Que.*
15275	CKBR	Montreal, Que.*
15320	CKCS	Montreal, Que.*
17710	CHSB	Montreal, Que.*
17735	CHRX	Montreal, Que.*
17820	CKNC	Montreal, Que.*
17865	CHYS	Montreal, Que.*
21600	CKRP	Montreal, Que.*
21710	CHLA	Montreal, Que.*

Solution to Roundword Puzzle on page 66

B	I	F	I	L	A	R	E	F	L	E	X
A	N	G	S	T	R	O	M	E	S	H	E
M	N	O	M	O	G	R	A	P	H	Y	N
M	O	H	A	I	R	P	I	N	O	B	O
A	S	W	A	L	L	E	N	O	L	R	N
G	I	O	T	G	A	P	E	D	E	I	O
N	D	R	L	R	T	A	X	E	N	D	B
I	E	R	E	E	P	A	T	R	D	A	L
K	T	A	D	O	I	R	E	P	I	R	E
C	A	N	P	N	O	T	S	I	P	A	D
O	G	U	L	E	E	H	W	Y	L	F	D
R	E	Z	I	L	A	U	Q	E	K	O	Y