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July 1983

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COMMON POINT®

A MONTHLY NEWSLETTER FOR BROADCASTERS

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SCA — A Summary

(Courtesy NRBA)

On April 7th, the FCC, in a unanimous vote, authorized commercial/non-commercial FM radio stations to transmit data, paging signals and other specially targeted signals on subchannels.

The FCC's vote overturns previous rules restricting FM radio station use of subchannels to "services of a broadcast nature," such as providing "background music" in supermarkets, department stores and shopping malls.

The Commission made the following changes affecting multiplex subcarrier operations:

(1) Licensees will no longer be required to file FCC Form No. 318 to obtain an authorization to transmit subsidiary communications by multiplex subcarriers.

(2) Licensees may use multiplex subcarriers to transmit enhancements to the main channel programming including receiver control signals & quadraphonic programs; specialized broadcast programming for the public (foreign language, radio reading services, etc.); subscription program services (functional music, commodity market data, etc.); private communications services; and common carrier services such as paging.

(cont. on page 12)

COMMISSION PULLING PLUG ON AM STEREO?

The allocation of some 500-1200 additional Class A FM frequencies to the broadcast band by the Federal Communication Commission has possibly thrown water, the last required to cool any burning desire by AM broadcasters to compete in the stereo world.

There will be AM stereo, at least for a short time, but the growing concensus is this will be confined to major markets and gradually disappear as interest wanes. The anger and frustration was initially so intense, some AM broadcasters refused to even talk about it, but now many are saying they've given up on the idea.

Where does the blame lie, or is it a case of blame? Perhaps it was just an idea that was not meant to be.

Should the NRBA, the NAB or the SBE been asked to decide on a common system? These organizations could have suggested a system but it would be based on concensus of their numbers.

Should the FCC been asked to decide? They were asked, and they almost did decide, but backed away at the last minute electing to go with the "American System - Let the best man win."

Should the manufacturers been asked to decide? Not a chance with all that money to be made. From the first, the manufacturers have played "King of the Hill." Harris, Magnavox and Motorola, all with the corporate muscle to withstand a long siege are determined to win. At least one was so sure of their system they encouraged broadcasters to make downpayments to hold their place in line.

The Motoral system got a big boast with the Delco endorsement and after Chris Payne "jumped ship" at the NAB to head the Motorola charge, it looked like things were starting to happen, however, very few stations have rushed to support Motorola.

The Kahn system is still in the race. They were first with their system and first with their receiver, and that

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COMMON POINT READINGS

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Editor's Notebook

JULY ..Vacation time and yet one of the busiest times for Radio Engineers with all those out-of-doors projects that have to be completed before the temperature starts its decline in the fall..just 10 short weeks away.

With the football and basketball season just around the corner..now is the time to check out that remote equipment. If yours has seen better days..take a look at the MAXITEL (page 13). Electronic Industries will allow $100.00 trade-in toward a new MAXITEL for any July orders.

CONGRATULATIONS TO WSBW..Last May some screwball cut down the tower and the WSBW antenna up at Sturgeon Bay, Wisconsin. Jack and Nancy Davison had worked too many years to get their station to be stopped. Within the week a new tower, antenna, STL dish, transmission line and sundry other parts for repair were on site and WSBW was back on the air in 19 days. Again..congratulations.

Ye Olde Editor

HANDY TIP FROM ED..To put that satelitte dish right on the money..call 201-827-8444 for the RCA SATCOM station position. A prerecorded tape will tell when the sattelite will be in the center of the box.

RADAR REPORT..If you're considering a weather radar..I talked with a station earlier who has the new SI-TEX Radar..and it works great..especially knowing by the color code just how intense on-coming storms are. They plan to set up a four foot square plotting board with the local map to scale for the operator on duty. Makes it easy to pick up storm cells 60 miles out and establish actual direction. Also..a report from Minnesota where a station used their radar in sponsored reports to gross $20,000.00 plus. Yes..television does have weather radar but they can't reach people in cars and hard ties to network many times slows their reporting.

*****

GLOBAL SPECIALTIES CORPORATION

6002 1 GHz FREQUENCY COUNTER

- Switchable low pass 60 kHz filter
- 5 Hz to 1 GHz frequency range
- Easy-touch, push-button controls
- Measures period 100 ns to 200 ms
- Three selectable resolutions in each mode
- Easy-to-read, 8½-digit LED display

Bull's-Eye! High Frequency, Low Price! Now, you can afford frequency measurement from 5 Hz to 1 GHz with Global's New 6002 Frequency Counter. It's our alternative to high-priced GHz counters and others that "miss the mark" by not meeting your high frequency needs. At only $575.00, the 6002 is right on target for ALL of your frequency requirements.

And we aimed to give you more. The 6002 provides the added convenience of period measurement from 100 ns to 200 ms. For "bull's-eye" accuracy, a 10 MHz crystal oven oscillator timebase assures ±0.5 ppm (10-40°C), ±1 ppm/year stability.

The 6002 also scores high on quality, performance, and features. Two AC-coupled, BNC connectors are mounted on the front panel for added flexibility. The A input accepts signals from 5 Hz to 100 MHz with 10 Hz, 1.0 Hz and 0.1 Hz resolutions and an input impedance of 1 MΩ @ 20 pF. A switchable low pass filter provides a 6 db/octave roll-off at 60 kHz to facilitate audio and ultrasonic measurements. The 6002 even lets you engage a x100 multiplication mode to speed up the measurement and display of low frequencies (5 Hz to 10 kHz).

The B input accepts signals from 80 MHz to 1 GHz with a 50Ω @ 10 pF input impedance and 1 kHz, 100 Hz and 10 Hz resolutions. Choose from three resolutions in the A input, B input and Period modes. Simply depress the push-button control and LED indicators confirm your selection.

A clean front panel and easily accessible push-button controls allow "marksmanship" operating efficiency. The easy-to-read, 8½-digit, 0.43-inch display features leading zero blanking and a contrast enhancement filter to ensure that you never miss a reading. LED indicators for "Gate Open," "Oven Ready" and "Overflow" provide additional user convenience, and a flip-up leg allows added flexibility for benchtop use.

Now, frequency measurement doesn't have to be a "shot in the dark" routine. The 6002 delivers the highly-accurate readings you need for audio, communications, data processing, RF design, digital design and quality control.

With Global Specialties new 6002 Frequency Counter you get the frequency range you need, the performance you demand, and the quality you expect...at a price you can afford.

$575.00

SPECIFICATIONS

A INPUT:
RESPONSE 5 Hz to 100 MHz
IMPEDANCE 1 MΩ @ 20 pF
SENSITIVITY 5 Hz to 1 MHz - 10 mVRMS
1 MHz to 50 MHz - 25 mVRMS
50 MHz to 100 MHz - 50 mVRMS
MAX. INPUT VOLTAGE
5 Hz to 160 Hz - 280 VRMS
160 Hz to 15 kHz - 120 VRMS
16 kHz to 470 kHz - 14 VRMS
470 kHz to 100 MHz - 7 VRMS

B INPUT:
RESPONSE 80 MHz to 1 GHz
IMPEDANCE 50Ω @ 10 pF
SENSITIVITY 80 MHz to 100 MHz - 100 mVRMS
100 MHz to 400 MHz - 50 mVRMS
400 MHz to 900 MHz - 25 mVRMS
900 MHz to 1000 MHz - 50 mVRMS

REFERENCE: TIMEBASE 10 MHz crystal oven oscillator
TEMP. STABILITY ±0.5 ppm over 10-40°C range
TIME STABILITY ±1 ppm/year

MODES:
FREQUENCY - A Input 5 Hz to 100 MHz (10 Hz, 1.0 Hz, 0.1 Hz resolutions); B Input 80 MHz to 1 GHz (1.0 kHz, 100 Hz, 10 Hz resolutions)
PERIOD - A Input 100ns to 200ms (10ns, 1ns, 0.1ns resolutions)
MULTIPLICATION - A Input 5 Hz to 10 kHz x100 multiplication

ACCURACY: ± timebase error x frequency ± trigger error ±1 L.S.D.

$$\text{Trigger Error} = \frac{\text{peak-to-peak noise voltage at input}}{\text{Signal Slope V/S}}$$

CONTROLS: Standby/On; Resolution; Lo Pass Filter; Mode
DISPLAY: 8½-digit, 0.43-inch high LED display; decimal point, dependent upon mode selection; leading zero blanking; discrete "Gate," "Oven," "OFL" and "Lo Pass Filter" LEDs
POWER: 115 VAC ±10%, 60 Hz (230 VAC ±10%, 50/60 Hz optional); Standby power 5 VA maximum
DIMENSIONS: 13x10x7 inches (HXWXD) (76x254x178 mm)
WEIGHT: 3.5 lbs. (1.4 kg)
OPERATING TEMP: 0-40°C
INCLUDES: Instruction Manual
STOCK NO: 05-6002
PRICE: $575.00

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Shepler Says. .

by John Q. Shepler
Technical Consultant

Compression & Irritation

The big audio wars of the late 60's and early 70's saw AM powerhouse rockers going at each others with multiple compressors and graphic equalizers. The goal was more loudness and dense, aggressive signal.

Today, the main battle field has moved to the FM band. High energy formats and heavy modulation have simply changed frequencies. However, processing for today's winning formats is a lot more sophisticated than what was acceptable 10 years ago. Now you have to create a commanding signal, but do it without detracting from the basic integrity of the music.

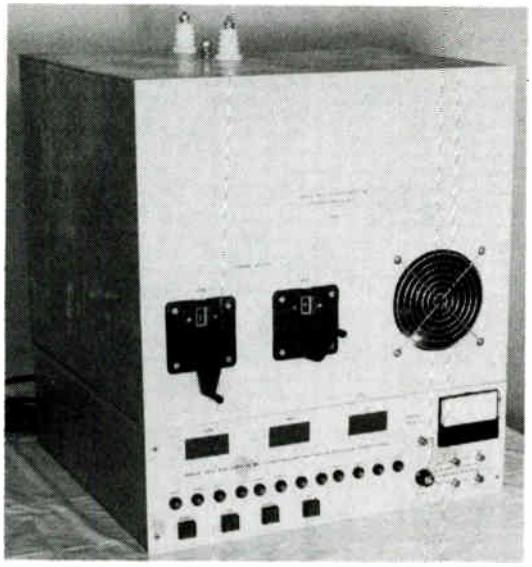
The person tuning in your station this morning has been spoiled by two decades of accelerating technology. Now, every youngster has his eye on a digital stereo receiver, three-way speakers, and a quartz drive turntable. In a few years, he will have the $300 it takes to buy this equipment. Unless, of course, dad pops for it this Christmas. How many stations have audio that can compete with a brand new disc on such a system?

Engineers and programmers are faced with a real dilemma. How do you add punch to your signal without punching out the music? The first temptation is always to crank up the compression. Since compression is usually implemented as wide-band gain reduction with fairly short time constants, the average modulation, and thus, loudness, does increase. What also happens is a corresponding decrease in the clarity and depth of the music. Too often, the end result is a blank brick wall of sound.

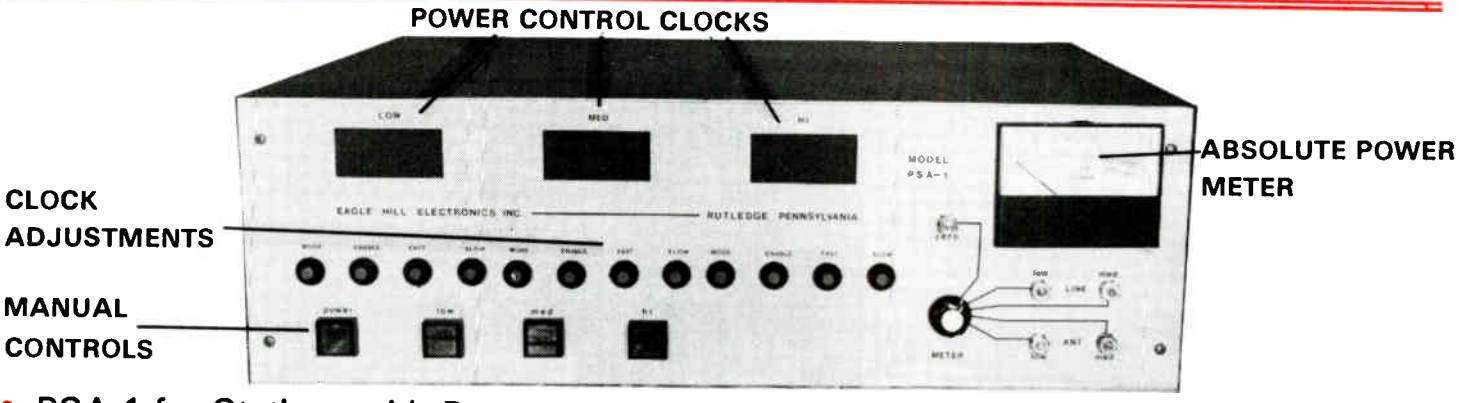
A compressed signal may well reach out and grab listeners as they tune across your station. Long term listening is another matter. The natural dynamics of the music are most-

(cont. on page 14)

THE EAGLE HILL PRE-SUNRISE ADAPTOR



- Normal Transmitter Readings — No Internal Changes Needed
- Normal Monitor Readings Plus FCC Required Readings for Absolute Power
- Operate With Authorized Power As Low As One Watt
- FCC Authorized And Field Proven For Over A Year
- Adds Up To 150 Hours AAA Time Each Year



- PSA-1 for Stations with Power up to 1000 Watts **$3995**
- PSA-5 for Stations with Power up to 5000 Watts **$4495**

The Eagle Hill PSA Adaptor has two time clocks for pre-sunrise and daytime power but is designed for a third clock for post-sunset power which can be added if approved by the Federal Communications Commission.

EAGLE HILL ELECTRONICS, INC.

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AIR HANDLING FOR THE FM-30

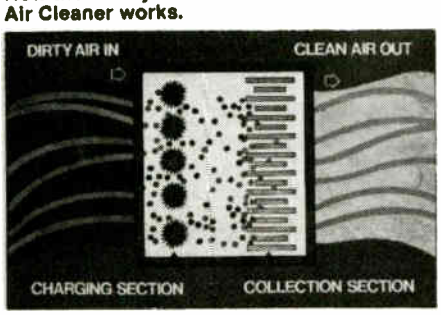
by David L. Metz

In 1981 KFMH-FM rebuilt its transmitting plant. This total renovation afforded us the chance to eliminate past mistakes and do it right this time.

The primary problem with the old system was that it took in air directly from the outside for cooling at the outside temperature. This resulted in condensation inside the transmitter. The moisture mixing with the dirt that accumulated formed leakage paths and lead to arcing on one occasion. Note that the problem always developed in places that were difficult to clean.

The new system has all of the transmitters installed in an air-tite soundproofed room. They present no load to the building heating or air conditioning systems. All outside air entering the room passes through a Honeywell electrostatic air cleaner. The electrostatic cleaner does a far better job than the usual home furnace filters. A duct distributes the in-

How the Honeywell Electronic Air Cleaner works.



The principle is called "electrostatic precipitation." Millions of airborne dirt, dust and pollen particles in the air returning through the duct work must pass through the Honeywell Clean Air Machine. Most of the large particles are caught on the pre-filter screen. The smaller particles proceed through the screen to the first section of the cell where they receive an intensive electrical charge. Continuing through the cell to the collecting section, these charged particles are attracted and held like a magnet by a series of electrically charged plates. Thus the electronically cleaned air is circulated back to your household.

(Reprinted from Honeywell brochure)

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AM STEREO
(cont. from page 1)

brings us to the crux of the problem, the bottle neck that is killing AM Stereo.

Broadcasters through a group decision cannot pick one stereo system. The legal entaglements (restraint of trade, etc.) could be enormous if they chose a system that denied a manufacturer access to the market because his receiver wouldn't work.

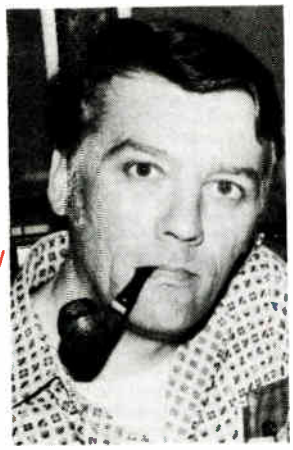
Sansui is reported ready to market a receiver this Fall that will receive all four systems, but what about price? Will the consumer market consider an AM Stereo receiver when they already have an AM/FM Stereo receiver at half the price?

It was a government decision to lower the speed limit on our turnpikes. It was a government decision that opened up the UHF-TV channels. Should it not be government decison on AM Stereo?

*****

A boyhood friend of the developer of Life Savers invested $1,500.00 in the business and thirteen years later cashed in his stock for $3,300,000.00.
- Mueller Clipper

Crosstalk...



by ED DUELLMAN

The balloon went up...the boys and girls in the Bureau finally decided to act on Docket 80-90. Will wonders never cease???? After the AM stereo fiasco, I didn't think they had it in them. Is there going to be a mad rush by everyone to up-grade their Class A FM's, by future broadcasters who can't wait to get rich in this lucrative business? No, I think not. There will be up-grading; the new FM channels will be put on the air and we will probably survive.

The big question is what impact will all those new FM's have on AM stereo? Now that's opening a can of worms!!! Just what I intended to do. AM stereo will probably keep trudging along just as it is until it sinks in the mud like quad did. We could have had AM stereo if it hadn't been for the red tape on the east coast. The feds did a real good job of passing the buck on to someone who wasn't apparently able to handle it. The broadcasters sat around waiting for the receiver manufacturers to build them a radio and the manufacturers waited for the broadcasters to get their act together. So, look what we have... no AM stereo to speak of and new FM's coming on the air. Maybe we can wait long enough and Japan will set a standard for us. Face it boys, we blew it!

We as broadcasters did not do much to inspire the receiver manufacturers with our rush to put AM stereo signals on the air. One other question: What happened to all our organizations that we belong to and pay dues to that are suppose to help us maintain our standards and set new ones? Where the hell were you? You

(cont. on page 13)

AIR HANDLING
(cont. from page 6)

coming filtered air evenly through the transmitter room in order to eliminate hot spots.

Exhaust air from the transmitter is ducted to a roof mounted ½ horse power exhaust fan. This fan normally runs all off the time. However whenever the room temperature drops below 65 degrees, the heat thermostat shuts off the roof fan and opens a motor operated damper on the side of the exhaust stack. This allows hot air from the transmitter to mix with the incoming cold air and temper it to maintain the room temperature. A second motorized damper on the outside air inlet closes part way restricting the inflow of cold air and encouraging mixing in the room.

In practice during the coldest part of the winter, the temperature in the transmitter room never falls below 55 degrees. In summer the temperature is only a few degrees above outside.

The result of this system is that the transmitter runs cooler because it is cleaner. Dirt build up in the tube fins and power supply is greatly reduced. Since dirt holds heat and restricts air flow, a clean transmitter runs cooler. With the transmitter internal temperature constant, thermal stressing of components is reduced. It all adds up to more stable, dependable operation.

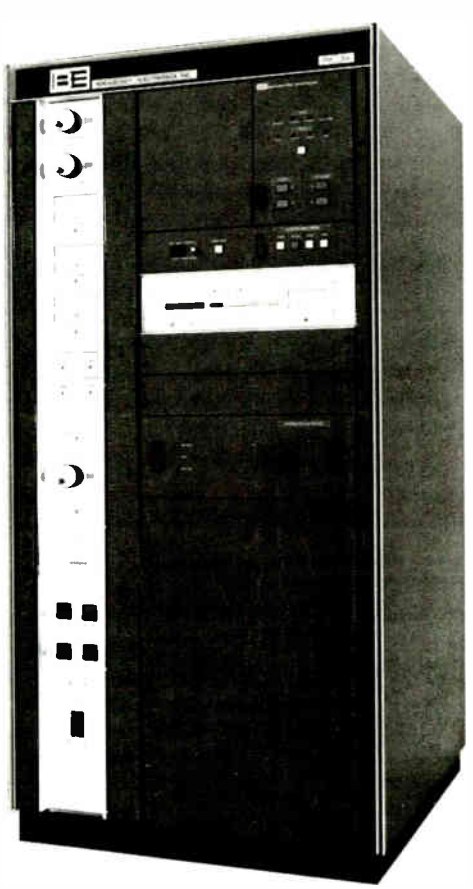
If the roof exhaust fan fails for any reason the powerful blower in the FM-30 will continue to provide enough air flow to cool the transmitter. The dampers are set so that the transmitter will always have air in case any part of the system fails. Plus the transmitter and its room are warm in the winter. No more frost on the inside and piles of dead bugs like the old one. *****

BE FM-3.5A, One Tube 3500 Watt FM Transmitter

FEATURES

- One-tube transmitter
- *Folded half-wave output cavity—no plate blocking capacitor or sliding contacts
- Broadband input matching network
- Solid state broadband IPA
- Advanced digital control system
- Optional microprocessor diagnostics
- Synthesized BE FX-30 exciter
- Automatic Power Control with Proportional VSWR Foldback
- Extensive metering, 10 meters

*Patented



TOTALLY NEW DESIGN — Through innovative engineering developments BE has introduced a totally new 3500 watt FM broadcast transmitter. The single tube model FM-3.5A incorporates a unique patented folded half-wave cavity power amplifier, digitally programmed FX-30 ultra linear exciter and a second generation digital control system. A new automatic power control system (APC), a simplified input circuit, and a computer optimized coaxial cavity set new standards of dependability. With the FM-3.5A, Broadcast Electronics has produced a transmitter for optimum reliability and superb FM performance.

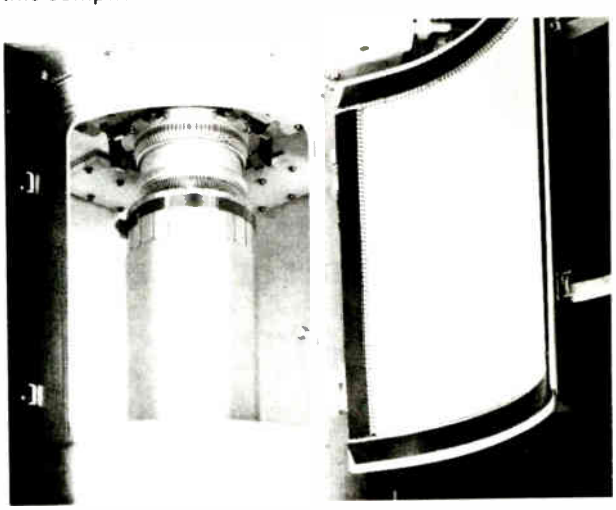
The entire 3500 watt transmitter is contained in a single low profile cabinet only 5'10" high (177.8 cm) with easy access to all components. Only 8.5 sq. feet ($0.8m^2$) of floor space is needed. The air filter is replaceable while the transmitter is operating.

SINGLE TUBE DESIGN — Achieving the utmost in reliability was the design philosophy behind the FM-3.5A. The one tube design provides a transmitter that can remain on the air despite adverse conditions such as lightning, output mismatch or operator error. Unlike solid state devices, an output tube can repeatedly withstand overloads without damage. In the FM-3.5A the ruggedness of a single tube output stage is enhanced with a highly reliable PA cavity and automatic protective circuitry.

Another advantage of this single tube design is its optimal bandpass characteristics which make it transparent for stereo modulation while it minimizes susceptance to intermodulation at multiple transmitter sites.

The totally new FM-3.5A transmitter uses a single Eimac 4CX3500A tetrode to provide over 3500 watts of RF power on any frequency between 87.5 and 108MHz. The 4CX3500A has lower operating and replacement cost than other tetrodes with similar power capability. It operates in a grounded cathode configuration, being grid-driven by a solid state broadband IPA.

Installation and removal of the power tube, from the rear of the transmitter, is a quick, simple procedure in this compact BE transmitter.



Computer optimized coaxial cavity employs BE's patented folded half wave tank circuit which eliminates the plate blocking capacitor and all sliding contacts in the output circuit.

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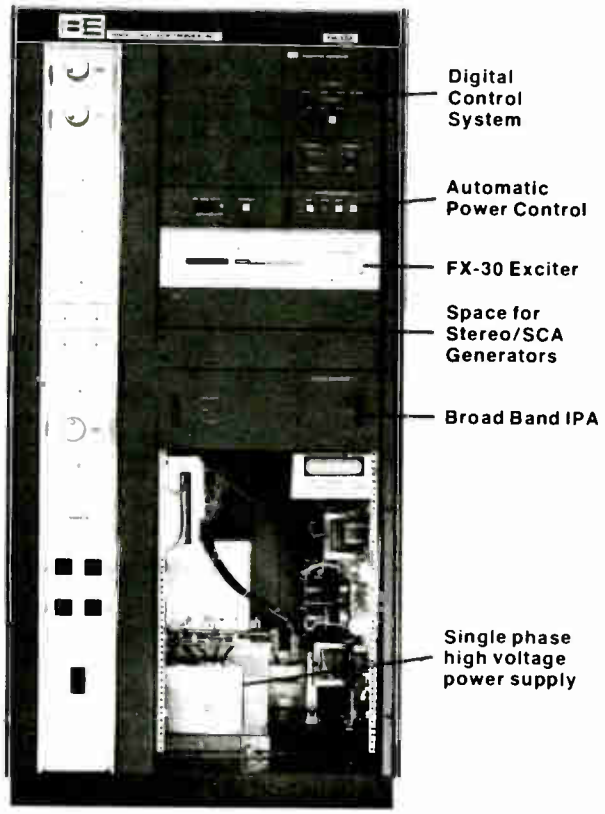
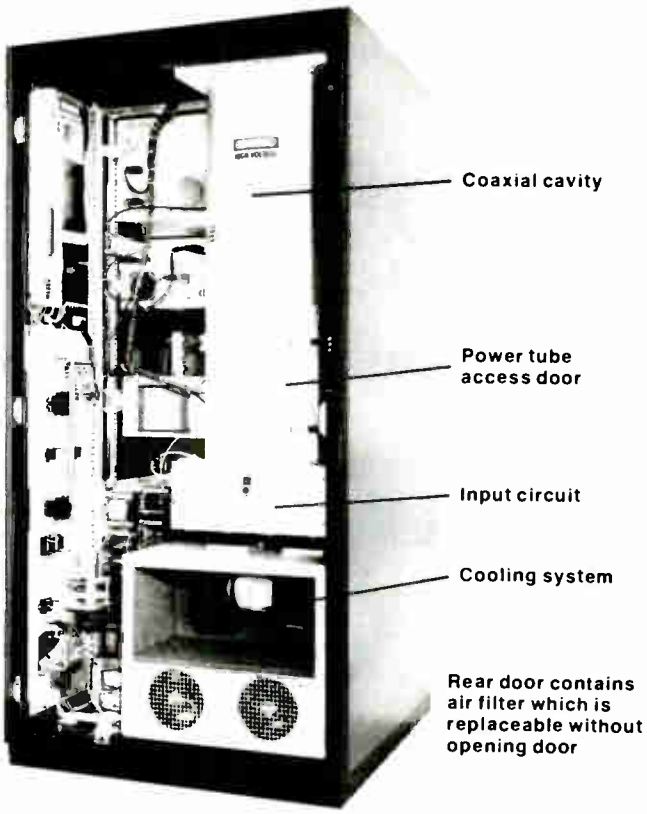


Front view Model FM-3.5A Transmitter.



Rear view Model FM-3.5A Transmitter.

INNOVATIVE POWER AMPLIFIER — 's new computer-optimized coaxial cavity employs a patented folded half-wave tank circuit. This unique design eliminates the high voltage blocking capacitors, high current shorting planes, and sliding contacts of conventional cavities. The result is exceptional reliability with lower maintenance costs.

Welded coaxial construction improves efficiency and reduces leakage radiation. A patented second harmonic suppressor is integral in this cavity, minimizing the generation of harmonic energy at the source. This yields higher PA efficiency without wasting fundamental frequency power. A separate low pass filter with directional couplers is located within the transmitter to insure compliance with FCC and DOC regulations and CCIR recommendations.

All PA adjustments have smooth-operating front panel controls with counters. A grounded bellows tunes the output while a grounded loop couples the antenna. Improved immunity to lightning is accomplished in the FM-3.5A transmitter in this manner.

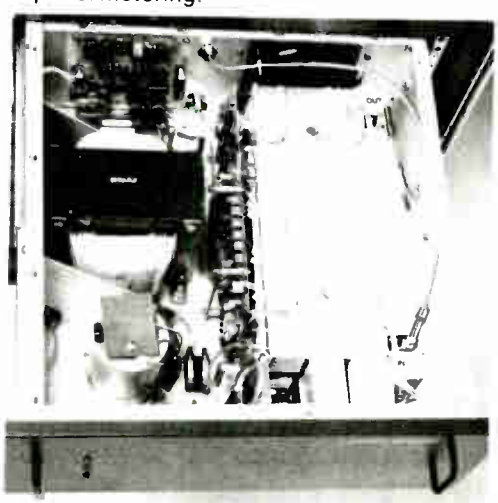
SIMPLIFIED INPUT CIRCUIT — A new PA input circuit matches the impedance between the IPA and the power tube grid over the entire FM band. This broadband printed circuit assembly maximizes bandwidth and stability, while eliminating the input loading control. A single grid tuning control is adjusted for maximum output. The entire transmitter can be retuned to a different frequency in a short time; no extra frequency determining components are required.

SOLID STATE IPA — A high efficiency solid state IPA assembly in the FM-3.5A is contained in a slide-out drawer for convenience in maintenance.

The broadband amplifier and regulator modules are easily removed—no de-soldering is necessary.

Both RF output transistors are automatically protected against output mismatch. The self-contained IPA unit can be operated directly into an antenna as a 250 watt transmitter during emergencies. The IPA power supply operates from 97 to 133 VAC, or 194 to 266 VAC.

Operational aids for the IPA include three front panel status indicators and availability of buffered rear panel metering.



Slide out solid state IPA assembly includes power supply and can be used as a 250 watt transmitter.

INDUSTRIES INC.
- Oshkosh, WI 54901

414-235-8930

SCA
(cont. from page 1)

(3) Stations offering common carrier type services via multiplex common carrier either directly or by leasing the subcarrier must comply with all common carrier authorization procedures.

(4) Logging of subcarrier "programs" is no longer required.

(5) Subcarriers within the band 20 to 99 kHz may be used for FM stations transmitting monaural programming and within the band 53 to 99 kHz when transmitting multichannel sound programming.

(6) Noncommercial educational FM stations may use or lease their subcarrier facilities for commercial type services, however in doing so, they must ensure that existing or potential radio reading services are not diminished in quality or quantity.

(7) Subsidiary communications services may be transmitted during periods when there is no main channel program service. However, stations must have the required transmitter operator on duty and transmit the required hourly station identification on the main channel.

(8) Subcarriers may be angle modulated (frequency or phase) amplitude modulated (DSB, SSB, etc.), or frequency shift keyed.

(9) Peak total modulation may not exceed 100% referenced to 75 kHz deviation. However, the FCC will consider raising the peak modulation limit for subcarrier operation in a Second Report and Order if additional technical information shows that existing service will not be degraded.

(10) Stations using subcarriers above 75 kHz or using other than frequency modulation of subcarriers will not be required to have type approved modulation monitors for such operations. However, stations must have appropriate measuring equipment to determine the level of subcarrier injection and modulation. (Existing type approved monitors may not be adequate for the extended baseband or types of subcarrier modulation.)

(11) The RMS sum of all subcarriers above 75 kHz used for subsidiary communications may not modulate the main carrier by more than 10%. Total subsidiary communications subcarriers may not modulate the main carrier by more than 20% during multichannel sound programming or 30% during monaural or "silent" programming.

CROSSTALK
(cont. from page 8)

made some rumblings but never got your motor started. How about all you record and tape manufacturers -do you want the AM broadcasters to keep on promoting your product in mono? You don't record them that way. Where was your input to help select a system? Here we sit, some of the big guys put on the AM system they thought was the best and some put them all on the air and gave it a try. Where did it get them? I'll tell you, a few kilo-bucks less in their cash box, that's where.

Judging by the reports that I got back from the consumer electronic show, not many manufacturers are too interested in AM stereo. Sansui had their TU-S77AMX AM/FM stereo on display in a glass case with a sign that said something to the effect "hands off"...that receiver must really get around. Personally I don't think the four system receiver is the answer to the AM stereo dilemma. For my money the Delco test didn't buy Motorola much. If Delco uses the Motorola system for the receivers or any single system, I don't think it will sell. If they go with a two or four system receiver, it would sort of send all their testing down the drain.

If the consumer electronic manufacturers are interested in AM stereo they didn't show it. Oh yes, they have talked to the semi-conductor manufacturers about their decoder chips, but where are the radios??? The big push seems to be on high quality FM stereo radios, cassette decks, speakers and other accessories. The dealers don't seem to be enthused - at least not the ones I talked to. I don't hear the consumers asking where is AM stereo. Maybe our P.R. needs some work. What I do hear is the broadcasters saying we will wait and see. We are not seeing much, are we? I don't blame you guys for waiting, I wouldn't lay out the bucks for AM stereo transmitting equipment yet. If I were to take the plunge, I probably would buy Harris for reasons of my own, but who could listen? Anyone within ear shot of the studio monitor and myself, that's who. I have a decoder for the Harris system and if I get permisssion from Harris, I'll publish a how to do it so you can join me in listening if you

(cont. on page 14)

SHEPLER SAYS
(cont. from page 4)

ly intact when you play back a record. Even music that has been heavily "sweetened" at the recording studio still has a lot of sparkle and liveliness.

Heavy gain riding destroys this flavor. Your processor may not audibly breathe, but it is altering the dynamics of the music just the same. The result is a sound that is intrusive and hard to take. Noticeable distortion from misadjusted clippers, bad styli, or overloaded tapes is about the only futher damage you can do.

I sympathize with the programmers whose jobs are on the line and the engineers who are frustrated with all the hype and paranoia associated with audio processing. It's tough to make objective sound decisions, especially in the heat of a ratings battle. Nonetheless, I am convinced that a cool, analytical approach is the only one that will work.

You need to train yourself to be able to rigorously compare your station to others in terms of loudness, frequency response, density, separation, etc. It's not just a matter of tweaking the knobs. First, create a signal that sounds terrific. Then crank in just enough mixture of gain reduction and clipping to put your head above the crowd. That should be plenty.

*****

CROSSTALK
(cont. from page 13)

have a station in your area using that system.

Now I have vented my spleen on this AM stereo business and have tossed the ball in your court. Let's get some input from you, the broadcasters, on where this mess is going to go or where you will put it. In the meantime, I have my Shep Fields records, FM radio, and a cassette deck to entertain me. I suppose I will get all sorts of flak on my ramblings...but that's the way I feel about the subject. Besides, this is my typewriter. Maybe I'll get a pat on the back from Harris, a new package of literature from Motorola and the wrath of Kahn.

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PERSONS' POST SCRIPTS

by Mark Persons

Shop air is great. By shop air, I mean a 100 PSI air compressor and an air storage tank. Compressed air has many uses. The most obvious is to clean electronic equipment. Attach a hand operated valve to the end of a flexible air line and have at it. Normally a high pressure air blast is enough to clean any chassis, circuit board, or capstan motor. In stubborn cases, use a paint brush to mechanically loosen dirt and then the air to blow it away. There is an air line running to the outside of our shop building that I use when cleaning particularly dirty equipment. This keeps dirt out of the shop. In fact, almost every chassis with tubes is cleaned outside. (Tubes are those ancient evacuated devices that were used to keep equipment warm.)

Use the air compressor to fill a portable air tank that can be taken to a job to do many miscellaneous cleaning chores on site. Compressed air can be used to encourage your bar-b-q coals when they are a little slow in starting too.

The newest addition to my shop is a Pace Solder Extractor. It is a soldering iron with a hollow tip. After heating a connection, I step on a pedal to vacuum solder from the connection. Here again, shop air is used. The pedal portion of the desoldering system uses air pressure to produce a vacuum apparently with a venturi. It's slick, relatively inexpensive, and works. It works so well that a desoldered IC will fall off a circuit board without encouragement. For those who don't have shop air, Pace makes motor driven vacuum pumps too.

Bryce McBride C.E. of KWBE/KMAZ Beatrice, Nebraska wrote me recently to say, "Beware of tower maintenance people who climb to replace light bulbs and don't report rust or other problems." He pointed out that climbers should inspect every tower they are on and should report trouble in its early stages before it becomes serious. Towers with tubular legs should be checked to see if the water drain holes, in the bottom of each leg, are clean. Usually these holes are at the bottom of each section, but sometimes the sections are constructed in such a way that water can fall from the top to bottom of the tower inside each leg. In that case, just check the water drain holes in the bottom section of the tower. Check also to see if the drain holes are in the bottom of EACH section. A tower man recently told me of working on a tower where some of the sections were erected upside down. The drain holes were in the top of each section letting water in, but not out. He wound up taking the tower down and putting it back up right at great expense to the owner. Water can build up inside a tower leg if the drain hole is plugged. The result is a tower leg that may rust from the inside out. Water may also freeze during the winter with spectacular results. High strength steel legs can split and burst open from the force of ice, seriously weakening a tower. If the damage is not too severe, tower crews can weld a splint over the affeted area to renew its strength. The splint can be made of angle iron or a larger pipe section that has been split into two halves. Remember, the weld should be protected by cold galvanizing or some other rust inhibitor to prevent further problems.

Tower climbers should also check for loose or missing bolts, a cracked light lens, bullet holes in wiring, cracked insulators, and anything else they can see. Remember, if your tower falls and your insurance company feels you have not maintained it properly, they may not pay.

Engineering consultant, Bob Jones, related a story to me recently about some field intensity measurements he was doing for a station years ago. It seems Bob became lost and had to inquire of two local men where he was and how he was to get back to the radial he wanted to measure. The two locals disagreed and their difference turned into a shouting match. Bob said he left before they came to blows. The two were so engrossed in the argument that they didn't even notice Bob leaving. Bob says as far as he knows, the two locals are still there fighting it out.

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