

CHANGES IN DESIGN—In order to make improvements in design and to effect economies in manufacture, RCA reserves the right to change the design of its products at any time, and in accordance with its sole judgment, while adhering in good faith to the intent of the information contained herein.

PRICE
FIVE DOLLARS

RCA
TELEVISION
STATION
APPLICATION
DATA
FOR TRANSMITTER,
ANTENNA AND
REMOTE CONTROL
EQUIPMENT

Foreword

The filing information contained in this manual provides the television equipment engineering data required to complete FCC Form 301-A and Sections V-C of Forms 340 and 301. The information has been condensed and presented in tabular form to provide a quick reference for the specific filing data required.

If additional information is desired, consult RCA broadcast and television equipment catalogs. They contain complete descriptions and specifications for all major items of equipment.

RCA manufactures a complete line of broadcast equipment for television stations. In addition, RCA offers custom built equipment to meet special requirements.

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TELEVISION BROADCAST
ENGINEERING DATA

Name of applicant

1. Purpose of authorization applied for: (Indicate by check mark)

(If application is for a new station or for any of the changes numbered B through D, complete all paragraphs of this form; if change E is of a character which will change coverage or increase the overall height of the antenna structure more than 20 feet, answer all paragraphs, otherwise complete only paragraphs 2 and 7 and the appropriate other paragraphs; for changes F through I, complete only paragraph 2 and the appropriate other paragraphs; for change J, complete only paragraphs 2, 5 and 15(b).)

- A. Construct a new station
- B. Change effective radiated power or antenna height above average terrain
- C. Change transmitter location
- D. Change frequency
- E. Change antenna system
- F. Construct or change auxiliary antenna system
- G. Change transmitter
- H. Install auxiliary or alternate main transmitter
- I. Other changes (specify)
- J. Change studio location

2. Facilities requested

Frequency _____ Mc.		Channel No. _____
Effective Radiated Power (visual) In dbk: In kw:	Effective Radiated Power (aural) In dbk: In kw:	Antenna height above average terrain _____ feet

3. Station location (principal community)

State	City or town
-------	--------------

4. Transmitter location

State	County
City or town	Street Address (or other identification)

5. Main studio location

State	County
City or town	Street address

6. Transmitters

Visual		
Make	Type No.	Rated power
<i>VH7 See Pg 6</i>		In dbk: In kw:
Aural		
Make	Type No.	Rated power
<i>VH7 See Pg 13</i>		In dbk: In kw:

(If the above transmitter has not been accepted for licensing by the F.C.C., attach as Exhibit No. _____ a complete showing of transmitter details. Showing should include schematic diagram and full details of frequency control. If changes are to be made in licensed transmitter include schematic diagram and give full details of change.)

(a) Describe in Exhibit No. _____ means which will be used for determining and maintaining power output of the transmitters to the values specified in this application.

(b) Multiplexer: *VH7 See Pg 7* Type No. _____
 Rated input power _____ dbk
VH7 See Pg 14
 Rated loss: Visual _____ db Aural _____ db

7. (a) Antenna structure

In the proposed construction in the immediate vicinity of any other radio station or will the proposed transmitting antenna be supported by the antenna structure of any other radio station? If "Yes", attach as Exhibit No. _____ complete engineering data showing details and effect upon other station.

Submit as Exhibit No. _____ a vertical plan sketch for the proposed total structure (including supporting building if any) giving heights above ground in feet for all significant features.

Overall height in feet above ground. (Without obstruction lighting)	Overall height in feet above mean sea level. (Without obstruction lighting)
<i>VH7 See Pgs 8 through 11</i>	

Overall height in feet above ground. (With obstruction lighting)	Overall height in feet above mean sea level. (With obstruction lighting)
<i>VH7 See Pgs 15 through 27</i>	

Height of antenna radiation center in feet above mean sea level. _____ feet

Geographical coordinates of antenna (to nearest second)
 North latitude _____ West longitude _____

How were coordinates determined?

Indicate by check mark the zone in which structure is located. 1 2 3

(b) Antenna data

Visual		
Make	Type No.	
<i>VH7 See Pgs 8 through 11</i>		
Number of sections	Rated input power in dbk	Power gain in db
Aural (if separate)		
Make	Type No.	
<i>VH7 See Pgs 15 through 27</i>		
Number of sections	Rated input power in dbk	Power gain in db

If directional antenna is proposed, give full details including horizontal and vertical plane radiation patterns, as Exhibit No. _____

Is electrical or mechanical beam tilting proposed? If so, describe fully in exhibit no. including horizontal and pertinent vertical radiation patterns. Yes No

Will antenna be altered to provide null fill-in? Yes No
If yes, describe fully in Exhibit No. _____

8. Transmission line proposed to supply power to the antenna from the transmitter

(a) Visual			(b) Aural (if separate)		
Make	Type	Rated input power in dbk	Make	Type No.	Rated input power in dbk
<i>See Pgs 28 through 37</i>					
Size (nominal inside transverse dimensions)	Length in feet	Power loss in db for this length	Size (nominal inside transverse dimension) in inches	Length in feet	Power loss in db for this length

9. Proposed operation

(a) Visual				(b) Aural			
Transmitter power output (after vestigial side-band filter, if used)		Multiplexer loss in db:	Input to transmission line in dbk	Transmitter power output		Multiplexer loss in db:	Input to transmission line in dbk
In dbk:				In dbk:		<i>VH7 See Pg 7</i>	
In kw:				In kw:		<i>VH7 See Pg 14</i>	
Transmission line power loss in db:	Antenna input power in dbk:	Antenna power gain in db:	Effective radiated power in dbk:	Transmission line power loss in db:	Antenna input power in dbk:	Antenna power gain in db:	Effective radiated power in dbk:
<i>See Pgs 28 through 37</i>	<i>VH7 See Pgs 8-12</i>	<i>VH7 See Pgs 15-27</i>	<i>See Pgs 28 through 37</i>	<i>See Pgs 28 through 37</i>	<i>VH7 See Pgs 8-12</i>	<i>VH7 See Pgs 15-27</i>	<i>VH7 See Pgs 15-27</i>

10. Modulation monitors

(a) Visual monitor or monitoring equipment	
Make	Type No.
(b) Aural monitor	
Make	Type No.
11. If the above monitors or monitoring equipment have not been approved by the F.C.C., include as Exhibit No. _____ a brief technical description of each.	
12. Will the studios, cameras, microphones, and other equipment proposed for transmission of programs be designed for compliance with the Commission's Rules. Yes <input type="checkbox"/> No <input type="checkbox"/>	

13. (a) Attach as Exhibit No. _____ a map(s) (topographic where obtainable, such as U. S. Geological Survey quadrangles) for the area within 15 miles of the proposed transmitter location and show drawn thereon the following data

- Proposed transmitter location—accurately plotted;
- Transmitter location and call letters of all known radio stations (except amateur) and the location of known commercial and government receiving stations within 2 miles of the proposed transmitter location;
- Character of the area within 2 miles of proposed transmitter location, suitably designated as to residential, business, industrial, and rural nature;
- At least eight radials each extending to a distance of ten or more miles from the proposed transmitter location, one or more of which must extend through the principal city to be served.
- If the proposed transmitter location is outside the boundaries of the principal community proposed to be served, the topography of the intervening area must be clearly shown.

(b) Attach as Exhibit No. _____ profile graphs with reasonably large scales for the radials in (a) (4) above. Each graph shall show the elevation of the antenna radiation center. Identify each graph by its bearing from the proposed transmitter location. Direction of true north shall be zero azimuth, with angles measured clockwise. Show source of topographical data on each.

14. From the profile graphs in 13(b), for the eight mile distance between two and ten miles from the proposed transmitter location and in accordance with the procedure prescribed in the Commission's Rules, supply the following tabulation of data

Radial bearing (degrees true)	Average elevation of radial (2-10 mi.) in feet above mean sea level	Height in feet of antenna radiation center above average elevation of radial (2-10 mi.)	Effective radiated power in radial direction	Predicted distance in miles to the Grade A contour	Predicted distance in miles to the Grade B contour
0	_____ feet	_____ feet	_____ dbk	_____ mi.	_____ mi.
45	_____	_____	_____	_____	_____
90	_____	_____	_____	_____	_____
135	_____	_____	_____	_____	_____
180	_____	_____	_____	_____	_____
225	_____	_____	_____	_____	_____
270	_____	_____	_____	_____	_____
315	_____	_____	_____	_____	_____
(*)	_____	_____	_____	_____	_____
Average _____					

*Radial over principal community if not included above. Do not include in average.
Antenna height above average terrain _____ feet (Must be identical with Paragraph 2)

VHF TV Transmitters

POWER RATINGS

Type	Channels	Rated Visual Power ¹		Rated Aural Power ²	
		kW	dBk	kW	dBk
TT-15FL	2-6	15.0	11.76	3.75	5.74
TT-25FL	2-6	25.0	13.98	5.5	7.40
TT-30FL	2-6	30.0	14.77	7.5	8.75
TT-50FL	2-6	50.0	16.99	11.0	10.40
TT-17FH	7-13	17.5	12.43	3.875	5.88
TT-25FH	7-13	25.0	13.98	5.5	7.40
TT-35FH	7-13	35.0	15.44	7.75	8.89
TT-50FH	7-13	50.0	16.99	11.0	10.41
TT-75FH	7-13	75.0	18.75	16.5	12.17
TT-100FH	7-13	100.0	20.0	22.0	13.42

NOTES:

When any of the above transmitters are used with RCA TFC-1 Frequency Central Equipments, (PC) should be added to the type number.

¹ Measured at output of sideband filter or filterplexer.

² Measured at input of aural/visual combiner.

VHF MONITORS

Description	Make	Type
Visual Demodulator	Telemet	4501
	or Tektronix	1450
Visual Waveform Monitor	Tektronix	1480
Aural Modulation Monitor	TFT	701 or 702
	or Belar	TVM-1
TV Frequency Monitor	TFT	701
	or Belar	TVM-2

VHF TV Transmitters

HYBRID DIPLEXER POWER RATINGS

MI-No.	Channel	TV Power Rating (20% aural)		Rated Visual Loss ¹ dB	Rated Aural Loss dB
		kW	dBk		
MI-561532	2-6	50.0	16.99	.017	.017
MI-561533	7-13	37.5	15.74	.017	.017
MI-561536A	2-6	12.5	10.97	.025	.025
MI-561557A	7-13	11.25	10.51	.025	.025

BRIDGE DIPLEXER POWER RATINGS

MI-No.	Channel	TV Power Rating (20% aural)		Rated Visual Loss dB	Rated Aural Loss dB
		kW	dBk		
MI-19390	2-6	12.5	10.97	0.004	0.004
MI-19390	7-13	12.5	10.97	0.004	0.004
MI-19391	2-6	50.0	16.99	0.004	0.004
MI-19394	7-13	50.0	16.99	0.004	0.004

FILTERPLEXER POWER RATINGS

MI-No.	Channel	TV Power Rating (20% aural)		Rated Visual Loss ¹ dB	Rated Aural Loss dB
		kW	dBk		
MI-561702	7-13	50.0	16.99	0.20	0.46

¹ Visual losses included in transmitter peak power ratings.

NOTCH DIPLEXER POWER RATINGS

MI-No.	Channel	TV Power Rating (20% aural)		Rated Visual Loss ¹ dB	Rated Aural Loss dB
		kW	dBk		
MI-561747	2-6	50.0	16.02	0.09	0.50
MI-561703	7-13	50.0	16.99	0.09	0.55

¹ Visual losses included in transmitter peak power ratings.

VHF TV Antennas

SUPERTURNSTILE ANTENNA DATA

Type	No. of Sections	H ₂ in feet ¹	H ₃ in feet ²	H ₄ in feet ³	Channel	dB Gain	Power Gain	TV Power Rating (20% aural)	
								kW	dBk
TF-2CH	2	13.8	7.6	16.8	7	3.22	2.1	16	12.04
					8	3.22	2.1		
					9	3.42	2.2		
					10	3.42	2.2		
					11	3.42	2.2		
					12	3.62	2.3		
					13	3.80	2.4		
TF-2CM	2	26.8	14.0	31.1	4	2.79	1.9	21	13.22
					5	3.22	2.1		
					6	3.42	2.2		
TF-2GL	2	32.0	16.5	37.5	2	2.79	1.9	25	13.98
					3	3.22	2.1		
TF-3EL	3	50.0	26.0	55.5	2	4.62	2.9	34.4	15.36
					3	4.91	3.1		
TF-3EM	3	41.8	22.0	46.1	4	4.62	2.9	34.4	15.36
					5	4.91	3.1		
					6	5.18	3.3		
TF-4BL	4	66.0	33.5	71.5	2	6.02	4.0	45.8	16.60
					3	6.12	4.1		
TF-4BM	4	54.8	28.0	59.1	4	6.02	4.0	45.8	16.60
					5	6.23	4.2		
					6	6.43	4.4		
TF-5CL	5	83.0	42.0	88.5	2	6.90	4.9	50.0	16.99
					3	7.08	5.1		
TF-5CM	5	68.8	35.0	73.1	4	6.90	4.9	50.0	16.99
					5	7.24	5.3		
					6	7.32	5.4		
TF-6AL	6	101.0	51.5	106.5	2	7.71	5.9	50.0	16.99
					3	7.85	6.1		
TF-6BM	6	82.8	42.0	87.1	4	7.78	6.0	50.0	16.99
					5	8.06	6.4		
					6	8.13	6.5		
TF-6AH	6	37.3	19.3	40.3	7	7.92	6.2	48.1	16.82
					8	7.99	6.3		
					9	8.26	6.7		
					10	8.26	6.7		
					11	8.33	6.8		
					12	8.33	6.8		
					13	8.39	6.9		
TF-12AL*	12	202.0	121.9	207.5	2	10.57	11.4	50.0	16.99
			(101.5)		3	10.61	11.5		
TF-12AM*	12	166.8	100.8	171.1	4	10.72	11.8	50.0	16.99
			(84.0)		5	10.79	12.0		
			6		10.83	12.1			
TF-12AH*	12	72.9	44.3	75.9	7	10.61	11.5	50.0	16.99
			(37.3)		8	10.68	11.7		
			9		10.83	12.1			
			10		10.93	12.4			
			11		10.83	12.1			
			12		10.72	11.8			
			13		10.68	11.7			
TF-12BH	12	72.9	37.3	75.9	7	9.82	9.6	50.0	16.99
					8	9.82	9.6		
					9	10.0	10.0		
					10	10.21	10.5		
					11	10.21	10.5		
					12	9.91	9.8		
					13	9.91	9.8		

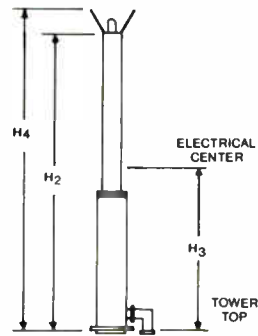
¹ H₂ Height of antenna above tower top (without obstruction lighting).

³ H₄ Height of antenna above tower top including obstruction lighting.

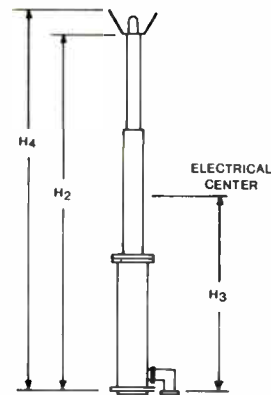
² H₃ Height of radiation center above tower top.

*Gain and H₃ figures are for 70/30 power division. Gain figures are 4% higher for 50/50 split and H₃ shown in parenthesis.

VHF TV Antennas



TWO SECTION
TW-9 & TW-12



THREE SECTION
TW-15 & TW-18

TRAVELING WAVE ANTENNA DATA

The following data is applicable to Traveling Wave Antennas equipped for slot covers, de-icers (Suffix H) or radomes (Suffix R).

Type	No. of Sections ¹	H ₂ in feet ¹	H ₁ in feet ²	H ₄ in feet ³	Channel	dB Gain	Power Gain ⁴	TV Power Rating (20% auro) dBk	
TW-9A7	Use Antenna Length in Feet (H ₂)	76.0	40.0	79.0	7	9.73	9.4	50.0	16.99
TW-9A8		73.0	38.0	76.0	8	9.54	9.0	50.0	16.99
TW-9A9		69.0	36.0	72.0	9	9.54	9.0	50.0	16.99
TW-9A10		68.0	35.5	71.0	10	9.54	9.0	50.0	16.99
TW-9A11		66.0	35.0	69.0	11	9.54	9.0	50.0	16.99
TW-9A12		66.0	34.5	69.0	12	9.54	9.0	50.0	16.99
TW-9A13		62.0	31.5	65.0	13	9.54	9.0	50.0	16.99
TW-12A7		95.0	49.0	98.0	7	10.79	12.0	50.0	16.99
TW-12A8		92.0	47.5	95.0	8	10.79	12.0	50.0	16.99
TW-12A9		88.0	46.0	91.0	9	10.79	12.0	50.0	16.99
TW-12A10		83.0	45.0	86.0	10	10.79	12.0	50.0	16.99
TW-12A11		82.0	43.0	85.0	11	10.79	12.0	50.0	16.99
TW-12A12		80.0	42.0	83.0	12	10.79	12.0	50.0	16.99
TW-12A13	78.0	40.5	81.0	13	10.79	12.0	50.0	16.99	
TW-15A7	116.0	60.0	119.0	7	11.76	15.0	50.0	16.99	
TW-15A8	115.0	59.0	118.0	8	11.98	15.8	50.0	16.99	
TW-15A9	106.0	56.5	109.0	9	11.76	15.0	50.0	16.99	
TW-15A10	105.0	55.0	108.0	10	11.76	15.0	50.0	16.99	
TW-15A11	109.0	56.5	112.0	11	11.98	15.8	50.0	16.99	
TW-15A12	100.0	50.5	103.0	12	11.76	15.0	50.0	16.99	
TW-15A13	98.0	50.5	101.0	13	11.76	15.0	50.0	16.99	
TW-18A7	137.5	70.0	140.5	7	12.55	18.0	50.0	16.99	
TW-18A8	133.0	68.0	136.0	8	12.55	18.0	50.0	16.99	
TW-18A9	126.0	64.5	129.0	9	12.55	18.0	50.0	16.99	
TW-18A10	123.0	63.0	126.0	10	12.55	18.0	50.0	16.99	
TW-18A11	120.0	62.5	123.0	11	12.55	18.0	50.0	16.99	
TW-18A12	117.0	60.0 ⁵	120.0	12	12.55	18.0	50.0	16.99	
TW-18A13	113.0	58.0	116.0	13	12.55	18.0	50.0	16.99	

¹ H₂ Height in feet of antenna above tower top (without obstruction lighting).

² H₁ Height in feet of radiation center above tower top.

³ H₄ Height in feet of antenna above tower top including obstruction lighting.

⁴ Standard gain. Other gains available.

⁵ For TW-18A12R use 60.5.

VHF TV Antennas

BUTTERFLY PANEL ANTENNAS

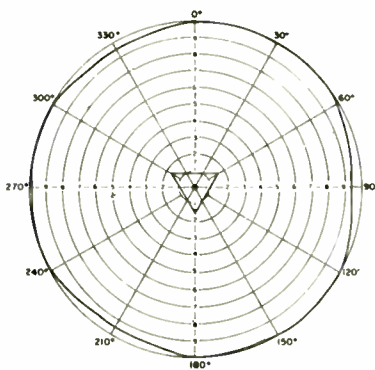
The RCA Butterfly Panel Antenna meets a wide range of requirements for both omnidirectional and directional VHF broadcast applications.

Panels can be side-mounted three- or four-around on an existing tower or top-mounted on a mast section.

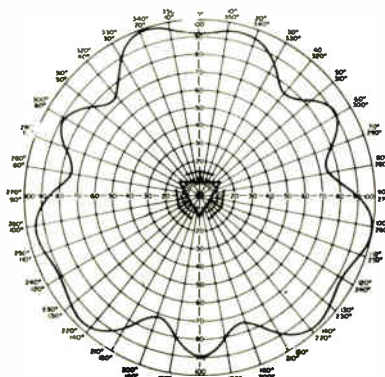
The basic panel consists of a pair of batwings mounted "backward" against a reflector and ordinarily fed with a single transmission line. Four different panel sizes cover

the entire VHF range of Channels 2 through 13. Weather protection is provided with radomes over the vertical risers of the batwings. The omni-directional patterns "A" and "B" were obtained for mid and high band channels respectively by model measurements on a simulated 7½ ft. triangular tower. The cardioid pattern "C" with 10 dB of suppression is achieved by power division to the three panels comprising each layer of the antenna.

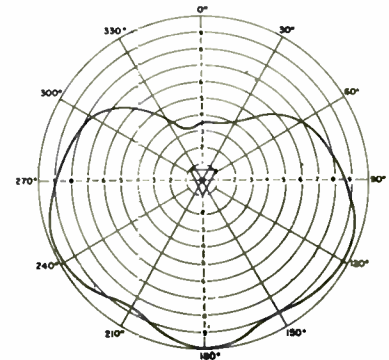
Specific performance requirements such as horizontal directivity, beam tilt, null fill, power gain, diplexing of two VHF channels as well as special power handling capabilities can be supplied.



"A"



"B"



"C"

Typical horizontal radiation patterns.

CIRCULARLY POLARIZED ANTENNAS

(Specifications and data for individual applications of these antennas are available from RCA on request.)

PANEL ANTENNA, TYPE TBJ

The RCA TBJ antenna is a side-mounting circularly polarized antenna for use on VHF Channels 7 through 13. The antenna is ideal for highband omni or directional application on triangular towers. The basic radiator consists of a panel and two crossed dipoles, each with a single feed point.

TETRA COIL, TYPE TCL

The RCA Tetra Coil antenna is a top-mounting circularly polarized antenna for use on VHF Channels 7 through 13. The antenna is supplied with a circularly polarized power gain of 16, providing an economical means to achieve 316 kW horizontally polarized ERP when using a 50 kW transmitter. Vertical pattern beam tilt and null fill are supplied as standard to provide a more uniform signal especially desirable for antennas within metropolitan areas. The omnidirectional horizontal pattern is circular within ± 1.5 dB or better, for both polarizations; axial

ration is 2.5 dB or better. The steel support pole consists of three pipe sections and is designed for flange mount at the tower top.

QUATREFOIL, TYPE TBK

The RCA Quatrefoil antenna is a side-mounting circularly polarized panel antenna for VHF Channels 2 through 6. The antenna is offered in two standard configurations. A three-bay version (TBK-3A) is supplied with a circularly polarized power gain of 3. A six-bay antenna (TBK-6A) achieves a circularly polarized power gain of 5.8 with approximately ten percent first null-fill supplied as standard. The omnidirectional version, which consists of three panel radiators per layer side-mounted on a triangular tower, offers the low and mid-band broadcasters excellent operating performance and the flexibility of simple field conversion from horizontal polarization. Directional horizontal patterns are available on a custom basis.

CIRCULARLY POLARIZED ANTENNA Fan Vee, Type TFV-7A

The RCA Fan-Vee antenna is a top-mounting circularly polarized antenna for VHF Channels 2 through 6. The standard antenna is a seven-layer configuration with a gain of 6.

Each layer consists of one Superturnstile antenna bay for radiation of the horizontally polarized field, and four double V-shaped dipoles for radiation of the vertically polarized field.

A branch type feed system provides excellent pattern stability over the depression angles necessary for good coverage. It also provides a capability for standby operation of either the four-layer upper section or the three-layer lower section, each of which is designed to accept up to 30 kW input power.

TABLE 1. ELECTRICAL DATA

Antenna Type	Channel	Power ¹ Gain	Gain ¹ dBk	Circularity within ±dB	Axial Ratio dB	Antenna ² Max VSWR	TV Power Rating ³ kW	TV Power Rating ³ dBK
TFV-7A2	2	6.0/3.0	7.78/4.77	1.5	3.0	1.10	60	17.78
TFV-7A3	3	6.0/3.0	7.78/4.77	1.5	3.0	1.10	60	17.78
TFV-7A4	4	6.0/3.0	7.78/4.77	1.5	3.0	1.10	60	17.78
TFV-7A5	5	6.0/3.0	7.78/4.77	1.5	3.0	1.10	60	17.78
TFV-7A6	6	6.0/3.0	7.78/4.77	1.5	3.0	1.10	60	17.78

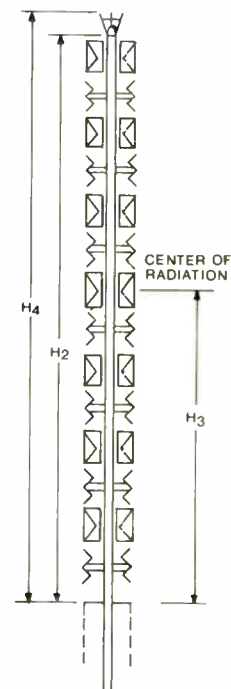
¹ Circular/each polarization. ² Across entire channel. ³ Based on 20% aural power.

TABLE 2. MECHANICAL DATA

Type Antenna	H ₂	H ₃	H ₄
TFV-7A2	138.4	74.2	142.9
TFV-7A3	125.9	67.4	130.4
TFV-7A4	115.9	61.7	119.4
TFV-7A5	101.8	54.6	105.3
TFV-7A6	94.8	50.8	98.3

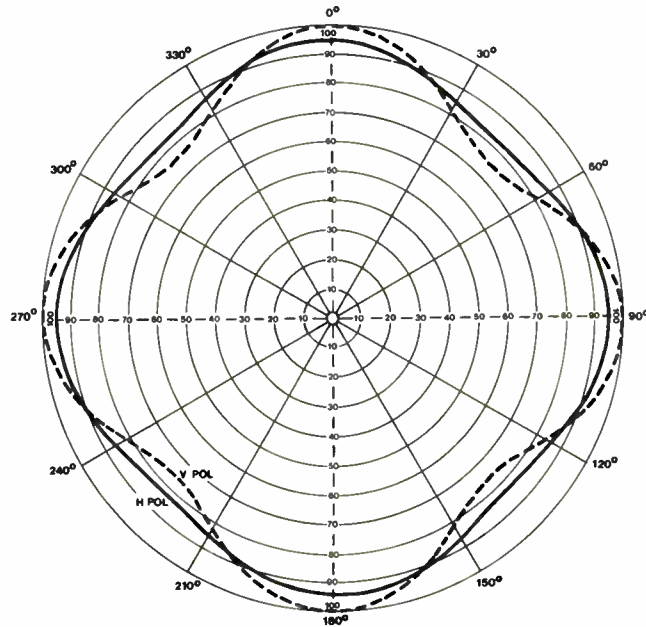
DEFINITIONS OF MECHANICAL SYMBOLS

Symbol	Units	Definition
H ₂	Feet	Height of pole only above tower top.
H ₃	Feet	Height of Electrical Center of Horizontally Polarized Radiation above tower top.
H ₄	Feet	Height of antenna above tower top including lightning protector.

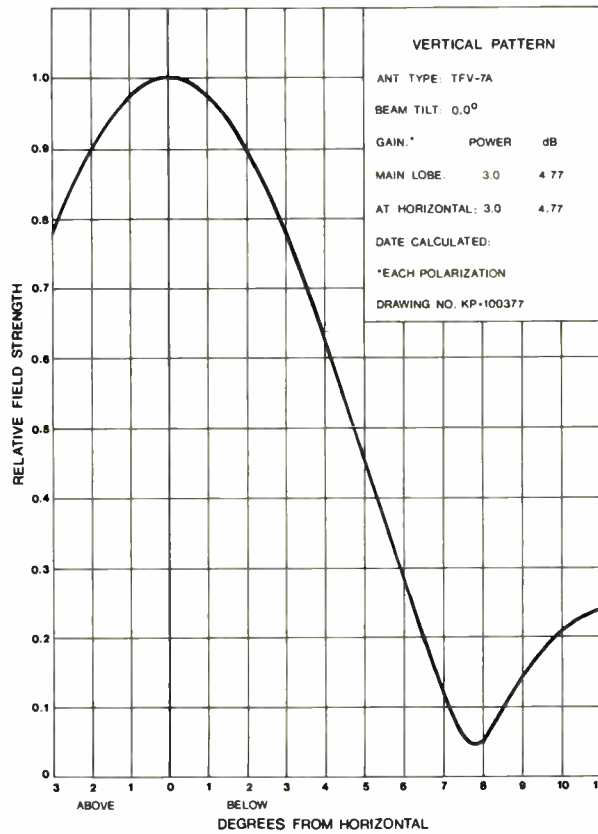


VHF TV Antennas

FAN VEE, TYPE TFV-7A



Horizontal radiation pattern, Type TFV-7A
circularly polarized antenna



Vertical radiation pattern, Type TFV-7A
circularly polarized antenna

UHF TV Transmitters

POWER RATINGS

Type	Channels	Rated Visual Output (Measured at Notch Diplexer Output)		Rated Aural Output (Measured at Notch Diplexer Input)	
		kW	dBk	kW	dBk
TTU-30D	14-69	30.0	14.77	6.6	8.21
TTU-55C	14-69	55.0	17.40	12.2	10.86
TTU-60D	14-69	60.0	17.78	13.2	11.21
TTU-110C	14-69	110.0	20.41	24.0	13.80
TTU-165D	14-69	165.0	22.16	26.3	14.20
TTU-220D	14-69	220.0	23.42	24.4	13.86

UHF MONITORS

Description	Make	Type
Visual Demodulator	Telemet or Tektronix	4501 1450
Visual Waveform Monitor	Tektronix	1480
Aural Modulation Monitor	TFT or Belar	701 or 702 TVM-1
TV Frequency Monitor	TFT or Belar	701 TVM-3

UHF TV Transmitters

NOTCH DIPLEXER POWER RATINGS

MI-No.	Used with Transmitter Type	TV Power Rating (20% Aural)		Rated Visual Loss ¹ dB	Rated Aural Loss dB
		kW	dBk		
MI-561791 (Hybrid)	TTU-30D	30	14.8	.27 (94% Eff)	.46 (90% Eff)
	TTU-55C	55	17.4	.27 (94% Eff)	.46 (90% Eff)
	TTU-60D (Ch. 14-69)	60	17.8	.27 (94% Eff)	.46 (90% Eff)
MI-561792 (WR-1500 Waveguide)	TTU-110C (Ch. 14-42)	120	20.79	.23 (95% Eff)	.46 (90% Eff)
MI-561793 (WR-1150 Waveguide)	TTU-110C (Ch. 43-69)	120	20.79	.23 (95% Eff)	.46 (90% Eff)

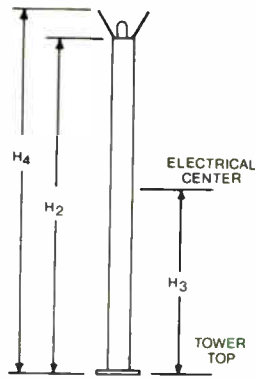
¹Visual Losses Included in Transmitter Peak Ratings.

FILTERPLEXER POWER RATINGS

MI-No.	Used with Transmitter Type	TV Power Rating (20% Aural)		Rated Visual Loss ¹ dB	Rated Aural Loss dB
		kW	dBk		
MI-561543 (Hybrid)	TTU-30 TTU-55 TTU-60 (Ch. 14-69)	60.0	17.78	0.46	0.46
MI-561550 (WR-1500 Waveguide)	TTU-55 TTU-60 (Ch. 14-42)	60.0	17.78	0.27	0.36
MI-561551 (WR-1150 Waveguide)	TTU-55 TTU-60 (Ch. 43-69)	60.0	17.78	0.32	0.46
MI-561552 (WR-1500 Waveguide)	TTU-110 TTU-60/60 (Ch. 14-42)	120.0	20.79	0.27	0.36
MI-561553 (WR-1150 Waveguide)	TTU-110 (Ch. 43-69)	110.0	20.41	0.32	0.46
MI-561553 (WR-1150 Waveguide)	TTU-60/60 (Ch. 43-61)	120.0	20.79	0.32	0.46

¹Visual Losses Included in Transmitter Peak Ratings.

UHF TV Antennas



MECHANICAL SPECIFICATIONS

- H₂ Height in feet of antenna (only) above tower top.
- H₃ Height in feet of radiation center above tower top.
- H₄ Height in feet of antenna above tower top including lightning protector.

PYLON ANTENNA DATA Omnidirectional Patterns

Channel	Type	No. of Sections	TV Power Rating (See Power Chart, Page 16)	Electrical Beam Tilt degrees	Major Lobe Power	Gain dB	Horizontal Power	Gain dB
14-57	TFU-6D	↑ Use Antenna Length in Feet (H ₂) See Pages 17, 18, 19 & 20 ↓	3 1/8" Harness	0.0	6	7.78	6.00	7.78
14-83	TFU-6J		4 1/8" Harness	2.0	6	7.78	5.00	7.00
14-30	TFU-24DL		3 1/8" Harness	0	24	13.80	—	—
			0.25	23.2	13.65	22.8	13.57	
			0.5	22.1	13.44	19.5	12.90	
			0.75	20.5	13.11	14.2	11.52	
			1.0	18.7	12.71	10.0	10.0	
31-50	TFU-24DM		3 1/8" Harness	0	24	13.80	—	—
			0.25	23.2	13.65	22.8	13.57	
			0.5	22.1	13.44	19.5	12.90	
			0.75	20.5	13.11	14.2	11.52	
			1.0	18.7	12.71	10.0	10.0	
14-69	TFU-24J	5" Harness	0	24	13.80	—	—	
14-69	TFU-30J	6 1/8" Harness**	0	30	14.77	—	—	
		0.25	28.5	14.54	27.3	14.36		
		0.5	27.0	14.31	22.5	13.52		
		0.75	25.5	14.06	16.5	12.17		
		1.0	22.5	13.52	8.9	9.49		
14-69	TFU-36J	6 1/8" Harness**	0	36.0	15.56	—	—	
		0.25	34.7	15.40	32.5	15.11		
		0.5	31.6	15.00	24.0	13.80		
		0.75	27.5	14.39	13.8	11.39		
		1.0	24.5	13.89	5.7	7.55		
14-69	TFU-42J	6 1/8" Harness**	0	42.0	16.23	—	—	
		0.25	40.5	16.07	37.3	15.72		
		0.5	36.0	15.56	26.0	14.15		
		0.75	36.0	15.56	16.2	12.10		
		1.0	36.0	15.56	6.6	8.20		
14-69	TFU-45J	6 1/8" Harness**	0	45.0	16.53	—	—	
		0.25	41.5	16.18	37.5	15.74		
		0.5	39.0	15.91	25.6	14.08		
		0.75	39.0	15.91	14.5	11.61		
		1.0	39.0	15.91	4.5	6.53		
14-69	TFU,25G TFU-25GA*		Channel 14-56: 8 3/4" Harness; Channel 57-69: 7 1/2" Harness	All	25	13.98	Varies with beam tilt See Catalog TT.9200A	
14-69	TFU-28G		Ch 14-40 9 3/8" Harness;	All	28	14.47	Varies with beam tilt See Catalog TT.9200A	
14-69	TFU-40K		Ch 41-56 8 3/8" Harness;	All	40	16.02	Varies with beam tilt See Catalog TT.9200A	
14-69	TFU-46K		Ch 57-69 7 1/2" Harness	All	46	16.62		

*Use 6 1/8" Harness power rating for Channels 14-70. All other data same as TFU-25G.

**Standard Harness listed, higher power available.

UHF TV Antennas

PEAK TV INPUT POWER RATING

(Based on black level visual power and 20 percent aural power for 40°C ambient temp.)

A N T E N N A F E E D T Y P E S																						
" H A R N E S S " F E E D												" T E E " F E E D										
Ch. No.	3 1/8"		4 1/8"		5"		6 1/8"		7 1/2"		8-3/16"		9-3/16"		6 1/8"		CUSTOM		8-3/16"		9-3/16"	
	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk
14	19	12.79	39	15.91	60	17.78	80	19.03	N/A		136	21.34	157	21.96	80	19.03	N/A		110	20.41	110	20.41
15	18	12.55	38	15.80	59	17.71	79	18.98	N/A		134	21.27	155	21.90	79	18.98	N/A		110	20.41	110	20.41
16	18	12.55	38	15.80	58	17.63	78	18.92	N/A		133	21.24	154	21.88	78	18.92	N/A		110	20.41	110	20.41
17	18	12.55	38	15.80	58	17.63	77	18.86	N/A		133	21.24	153	21.85	77	18.86	N/A		110	20.41	110	20.41
18	18	12.55	37	15.68	57	17.56	77	18.86	N/A		132	21.21	152	21.82	77	18.86	N/A		110	20.41	110	20.41
19	18	12.55	37	15.68	57	17.56	76	18.81	N/A		131	21.17	150	21.76	76	18.81	N/A		110	20.41	110	20.41
20	18	12.55	37	15.68	56	17.48	75	18.75	N/A		130	21.14	149	21.73	75	18.75	N/A		110	20.41	110	20.41
21	18	12.55	37	15.68	56	17.48	75	18.75	N/A		129	21.11	148	21.70	75	18.75	N/A		110	20.41	110	20.41
22	18	12.55	36	15.56	55	17.40	74	18.69	N/A		128	21.07	147	21.67	74	18.69	N/A		110	20.41	110	20.41
23	18	12.55	36	15.56	55	17.40	74	18.69	N/A		127	21.04	146	21.64	74	18.69	N/A		110	20.41	110	20.41
24	18	12.55	36	15.56	54	17.32	73	18.63	N/A		126	21.00	145	21.61	73	18.63	N/A		110	20.41	110	20.41
25	18	12.55	36	15.56	54	17.32	72	18.57	N/A		125	20.97	144	21.58	72	18.57	N/A		110	20.41	110	20.41
26	18	12.55	35	15.44	54	17.32	72	18.57	N/A		125	20.97	143	21.55	72	18.57	N/A		110	20.41	110	20.41
27	18	12.55	35	15.44	53	17.24	71	18.51	N/A		124	20.93	142	21.52	71	18.51	N/A		110	20.41	110	20.41
28	18	12.55	35	15.44	53	17.24	71	18.51	N/A		123	20.90	141	21.49	71	18.51	N/A		110	20.41	110	20.41
29	17	12.30	35	15.44	52	17.16	70	18.45	N/A		122	20.86	141	21.49	70	18.45	N/A		110	20.41	110	20.41
30	17	12.30	34	15.31	52	17.16	70	18.45	N/A		121	20.83	140	21.46	70	18.45	N/A		110	20.41	110	20.41
31	17	12.30	34	15.31	51	17.08	69	18.39	N/A		120	20.79	139	21.43	69	18.39	N/A		110	20.41	N/A	N/A
32	17	12.30	34	15.31	51	17.08	69	18.39	N/A		120	20.79	138	21.40	69	18.39	N/A		110	20.41	N/A	N/A
33	17	12.30	34	15.31	50	16.99	68	18.33	N/A		119	20.76	137	21.37	68	18.33	N/A		110	20.41	N/A	N/A
34	17	12.30	33	15.19	50	16.99	68	18.33	N/A		118	20.72	136	21.34	68	18.33	N/A		110	20.41	N/A	N/A
35	17	12.30	33	15.19	50	16.99	68	18.33	N/A		118	20.72	136	21.34	68	18.33	N/A		110	20.41	N/A	N/A
36	17	12.30	33	15.19	49	16.90	67	18.26	N/A		117	20.68	135	21.30	67	18.26	N/A		110	20.41	N/A	N/A
37	17	12.30	33	15.19	49	16.90	67	18.26	N/A		116	20.64	134	21.27	67	18.26	N/A		110	20.41	N/A	N/A
38	17	12.30	33	15.19	48	16.81	66	18.20	N/A		116	20.64	133	21.24	66	18.20	N/A		110	20.41	N/A	N/A
39	16	12.04	32	15.05	48	16.81	66	18.20	N/A		115	20.61	133	21.24	66	18.20	N/A		110	20.41	N/A	N/A
40	16	12.04	32	15.05	48	16.81	66	18.20	N/A		114	20.57	132	21.21	66	18.20	N/A		110	20.41	N/A	N/A
41	16	12.04	32	15.05	47	16.72	65	18.13	N/A		113	20.53	N/A	N/A	65	18.13	83	19.19	N/A	N/A	N/A	N/A
42	16	12.04	31	14.91	47	16.72	65	18.13	N/A		113	20.53	N/A	N/A	65	18.13	82	19.14	N/A	N/A	N/A	N/A
43	16	12.04	31	14.91	46	16.63	64	18.06	N/A		112	20.49	N/A	N/A	64	18.06	82	19.14	N/A	N/A	N/A	N/A
44	16	12.04	31	14.91	46	16.63	64	18.06	N/A		112	20.49	N/A	N/A	64	18.06	81	19.08	N/A	N/A	N/A	N/A
45	16	12.04	31	14.91	46	16.63	64	18.06	N/A		111	20.45	N/A	N/A	64	18.06	81	19.08	N/A	N/A	N/A	N/A
46	16	12.04	30	14.77	45	16.53	63	17.99	N/A		110	20.41	N/A	N/A	63	17.99	80	19.03	N/A	N/A	N/A	N/A
47	16	12.04	30	14.77	45	16.53	63	17.99	N/A		110	20.41	N/A	N/A	63	17.99	80	19.03	N/A	N/A	N/A	N/A
48	16	12.04	30	14.77	45	16.53	63	17.99	N/A		109	20.37	N/A	N/A	63	17.99	80	19.03	N/A	N/A	N/A	N/A
49	16	12.04	30	14.77	44	16.43	62	17.92	N/A		109	20.37	N/A	N/A	62	17.92	79	18.98	N/A	N/A	N/A	N/A
50	15	11.76	30	14.77	44	16.43	62	17.92	N/A		108	20.33	N/A	N/A	62	17.92	79	18.98	N/A	N/A	N/A	N/A
51	15	11.76	29	14.62	44	16.43	62	17.92	N/A		107	20.29	N/A	N/A	62	17.92	79	18.98	N/A	N/A	N/A	N/A
52	15	11.76	29	14.62	44	16.43	61	17.85	N/A		106	20.25	N/A	N/A	61	17.85	78	18.92	N/A	N/A	N/A	N/A
53	15	11.76	29	14.62	43	16.33	61	17.85	N/A		106	20.25	N/A	N/A	61	17.85	78	18.92	N/A	N/A	N/A	N/A
54	15	11.76	29	14.62	43	16.33	61	17.85	N/A		105	20.21	N/A	N/A	61	17.85	78	18.92	N/A	N/A	N/A	N/A
55	15	11.76	28	14.47	43	16.33	60	17.78	N/A		105	20.21	N/A	N/A	60	17.78	77	18.86	N/A	N/A	N/A	N/A
56	15	11.76	28	14.47	42	16.23	60	17.78	N/A		104	20.17	N/A	N/A	60	17.78	77	18.86	N/A	N/A	N/A	N/A
57	15	11.76	28	14.47	42	16.23	60	17.78	93	19.68	N/A	N/A	N/A	60	17.78	76	18.81	N/A	N/A	N/A	N/A	
58	15	11.76	28	14.47	41	16.13	59	17.71	93	19.68	N/A	N/A	N/A	59	17.71	76	18.81	N/A	N/A	N/A	N/A	
59	15	11.76	27	14.31	41	16.13	59	17.71	92	19.64	N/A	N/A	N/A	59	17.71	76	18.81	N/A	N/A	N/A	N/A	
60	15	11.76	27	14.31	41	16.13	59	17.71	92	19.64	N/A	N/A	N/A	59	17.71	75	18.75	N/A	N/A	N/A	N/A	
61	15	11.76	27	14.31	41	16.13	59	17.71	91	19.59	N/A	N/A	N/A	59	17.71	75	18.75	N/A	N/A	N/A	N/A	
62	14	11.46	27	14.31	40	16.02	58	17.63	91	19.59	N/A	N/A	N/A	58	17.63	74	18.69	N/A	N/A	N/A	N/A	
63	14	11.46	26	14.15	40	16.02	58	17.63	90	19.54	N/A	N/A	N/A	58	17.63	N/A	N/A	N/A	N/A	N/A	N/A	
64	14	11.46	26	14.15	40	16.02	58	17.63	90	19.54	N/A	N/A	N/A	58	17.63	N/A	N/A	N/A	N/A	N/A	N/A	
65	14	11.46	26	14.15	39	15.91	57	17.56	90	19.54	N/A	N/A	N/A	57	17.56	N/A	N/A	N/A	N/A	N/A	N/A	
66	14	11.46	26	14.15	39	15.91	57	17.56	89	19.49	N/A	N/A	N/A	57	17.56	N/A	N/A	N/A	N/A	N/A	N/A	
67	14	11.46	25	13.98	39	15.91	57	17.56	89	19.49	N/A	N/A	N/A	57	17.56	N/A	N/A	N/A	N/A	N/A	N/A	
68	14	11.46	25	13.98	38	15.80	57	17.56	89	19.49	N/A	N/A	N/A	57	17.56	N/A	N/A	N/A	N/A	N/A	N/A	
69	14	11.46	25	13.98	38	15.80	56	17.48	88	19.44	N/A	N/A	N/A	56	17.48	N/A	N/A	N/A	N/A	N/A	N/A	
70	14	11.46	25	13.98	38	15.80	56	17.48	88	19.44	N/A	N/A	N/A	56	17.48	N/A	N/A	N/A	N/A	N/A	N/A	N/A

NOTE: The input-power rating of a UHF-Pylon antenna is a function of the antenna's inner-conductor diameter. There are two type of feed system: "Harness" and "Tee". The harness type is used in the center-fed antenna types while the tee-type serves the end-fed antenna.

N/A = Not Applicable

UHF TV Antennas

PYLON ANTENNA DATA Omnidirectional Patterns

Channel	Type TFU-6D ¹		Type TFU-6J		H ₄	Type TFU-24DL			Type TFU-24DM		Channel
	H ₂	H ₃	H ₂	H ₃		H ₂	H ₃	H ₄	H ₂	H ₃	
14	15.6		16.9	8.5		52.9					14
15	15.4		16.7	8.4		42.3					15
16	15.2		16.5	8.3		51.7					16
17	15.0		16.3	8.2		51.1					17
18	14.8		16.2	8.1		50.5					18
19	14.7		16.0	8.0		49.9					19
20	14.5		15.8	7.9		49.3					20
21	14.3		15.6	7.8		48.8					21
22	14.2		15.5	7.8		48.3					22
23	14.0		15.3	7.7		47.7					23
24	13.9		15.2	7.6		47.2					24
25	13.7		15.0	7.5		46.7					25
26	13.6		14.9	7.4		46.2					26
27	13.4		14.7	7.4		45.7					27
28	13.3		14.6	7.3		45.3					28
29	13.2		14.4	7.2		44.8					29
30	13.0		14.3	7.2		44.3					30
31	12.9		14.2	7.1					43.6		31
32	12.8		14.0	7.0					43.1		32
33	12.6		13.9	7.0					42.7		33
34	12.5		13.8	6.9					42.3		34
35	12.4		13.7	6.9					41.9		35
36	12.3		13.6	6.8					41.5		36
37	12.2		13.5	6.8					41.1		37
38	12.1		13.4	6.7					40.7		38
39	11.9		13.2	6.6					40.3		39
40	11.8		13.1	6.6					40.0		40
41	11.7		13.0	6.5					39.6		41
42	11.6		12.9	6.5					39.3		42
43	11.5		12.8	6.4					38.9		43
44	11.4		12.7	6.4					38.6		44
45	11.3		12.6	6.3					38.2		45
46	11.2		12.5	6.3					37.9		46
47	11.1		12.4	6.2					37.6		47
48	11.0		12.3	6.2					37.3		48
49	10.9		12.2	6.1					36.9		49
50	10.8		12.1	6.1					36.6		50
51	10.8		12.0	6.0							51
52	10.7		11.9	6.0							52
53	10.6		11.8	5.9							53
54	10.5		11.7	5.9							54
55	10.4		11.6	5.8							55
56	10.3		11.5	5.8							56
57	10.3		11.4	5.7							57
58			11.3	5.7							58
59			11.3	5.7							59
60			11.2	5.6							60
61			11.1	5.6							61
62			11.0	5.5							62
63			10.9	5.5							63
64			10.8	5.4							64
65			10.8	5.4							65
66			10.7	5.4							66
67			10.6	5.3							67
68			10.5	5.3							68
69			10.5	5.3							69

$$H_3 = H_2 \times \frac{1}{2}$$

$$H_3 = H_2 \times \frac{1}{2}$$

$$H_4 = H_2 + 4.0$$

$$H_4 = H_2 + 4.0$$

$$H_3 = H_2 \times \frac{1}{2}$$

$$H_4 = H_2 + 4.0$$

¹ No provisions are made for mounting obstruction lighting.

H₂ — Height in feet of antenna (only) above tower top.

H_a — Height in feet of radiation center above tower top.

H₁ — Height in feet of antenna above tower top including lightning protector.

UHF TV Antennas

PYLON ANTENNA DATA Omnidirectional Patterns

Channel	Type TFU-24J			Type TFU-25G/GA			Type TFU-28G 0° through 0.75° Beam Tilt			Channel
	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	
14	46.4	23.2		69.1			78.4			14
15	45.8	22.9		68.2			77.5			15
16	45.3	22.7		67.4			76.5			16
17	44.7	22.4		66.6			75.6			17
18	44.2	22.1		65.8			74.7			18
19	43.7	21.9		65.0			73.9			19
20	43.2	21.6		64.3			73.0			20
21	42.7	21.4		63.6			72.2			21
22	42.3	21.2		62.9			70.9			22
23	41.8	20.9		62.2			70.1			23
24	41.3	20.7		61.5			69.4			24
25	40.9	20.5		60.8			68.6			25
26	40.5	20.3		60.2			67.9			26
27	40.0	20.0		59.5			67.2			27
28	39.6	19.8		58.9			66.5			28
29	39.2	19.6		58.3			65.8			29
30	38.8	19.4		57.7			65.1			30
31	38.4	19.2		57.1			64.4			31
32	38.1	19.1		56.5			63.8			32
33	37.7	18.9		56.0			63.2			33
34	37.3	18.7		55.4			62.5			34
35	37.0	18.5		54.9			61.9			35
36	36.6	18.3		54.3			61.3			36
37	36.3	18.2		53.8			60.8			37
38	35.9	18.0		53.3			60.2			38
39	35.6	17.8		52.8			59.6			39
40	35.3	17.7		52.3			59.1			40
41	35.0	17.5		51.8			58.5			41
42	34.7	17.4		51.4			58.0			42
43	34.4	17.2		50.9			57.5			43
44	34.1	17.1		50.5			57.0			44
45	33.8	16.9		50.0			56.5			45
46	33.5	16.8		49.6			56.0			46
47	33.2	16.6		49.1			55.5			47
48	32.9	16.5		48.7			55.0			48
49	32.6	16.3		48.3			54.6			49
50	32.4	16.2		47.9			54.1			50
51	32.1	16.1		47.5			53.7			51
52	31.8	15.9		47.1			53.2			52
53	31.6	15.8		46.7			52.8			53
54	31.3	15.7		46.3			52.4			54
55	31.1	15.6		46.0			51.9			55
56	30.8	15.4		45.6			51.5			56
57	30.6	15.3		45.2			51.1			57
58	30.4	15.2		44.9			50.7			58
59	30.1	15.1		44.5			50.3			59
60	29.9	15.0		44.2			49.9			60
61	29.7	14.9		43.8			49.5			61
62	29.5	14.8		43.5			49.2			62
63	29.2	14.6		43.2			48.8			63
64	29.0	14.5		42.9			48.4			64
65	28.8	14.4		42.5			48.1			65
66	28.6	14.3		42.2			47.7			66
67	28.4	14.2		41.9			47.4			67
68	28.2	14.1		41.6			47.0			68
69	28.0	14.0		41.3			46.7			69

H₄ = H₂ + 4.0

H₃ = H₂ × 1/2

H₄ = H₂ + 4.0

H₃ = H₂ × 1/2

H₄ = H₂ + 4.0

H₂ — Height in feet of antenna (only) above tower top.

H₃ — Height in feet of radiation center above tower top.

H₄ — Height in feet of antenna above tower top including lightning protector.

UHF TV Antennas

PYLON ANTENNA DATA Omnidirectional Patterns

Channel	Type TFU-30J			Type TFU-36J			Type TFU-42J			Channel
	0° through H ₂	0.75° H ₃	Beam Tilt H ₄	0° through H ₂	0.75° H ₃	Beam Tilt H ₄	0° through H ₂	1° H ₃	Beam Tilt H ₄	
14	56.3			66.7			77.1			14
15	55.6			65.9			76.1			15
16	54.9			65.1			75.2			16
17	54.3			64.3			74.3			17
18	53.6			63.5			73.4			18
19	53.0			62.8			72.6			19
20	52.4			62.1			71.7			20
21	51.8			61.4			70.9			21
22	51.2			60.7			70.1			22
23	50.6			60.0			69.3			23
24	50.1			59.3			68.6			24
25	49.5			58.7			67.8			25
26	49.0			58.0			67.1			26
27	48.5			57.4			66.4			27
28	48.0			56.8			65.7			28
29	47.5			56.2			65.0			29
30	47.0			55.6			64.3			30
31	46.5			55.1			63.6			31
32	46.0			55.1			63.0			32
33	45.6			54.0			62.4			33
34	45.1			53.4			61.7			34
35	44.7			52.9			61.1			35
36	44.2			52.4			60.5			36
37	43.8			51.9			60.0			37
38	43.4			51.4			59.4			38
39	43.0			50.9			58.8			39
40	42.6			50.5			58.3			40
41	42.2			50.0			57.7			41
42	41.8			49.5			57.2			42
43	41.5			49.1			56.7			43
44	41.1			48.6			56.2			44
45	40.7			48.2			55.7			45
46	40.4			47.8			55.2			46
47	40.0			47.4			54.9			47
48	39.7			47.0			54.4			48
49	39.3			46.6			54.0			49
50	39.0			46.2			53.5			50
51	39.0			46.0			53.1			51
52	38.7			45.6			52.6			52
53	38.4			45.2			52.2			53
54	38.1			44.9			51.8			54
55	37.8			44.5			51.3			55
56	37.5			44.1			50.9			56
57	37.2			43.8			50.5			57
58	36.9			43.4			50.1			58
59	36.6			43.1			49.7			59
60	36.3			42.8			49.3			60
61	36.0			42.4			48.9			61
62	35.8			42.1			48.6			62
63	35.5			41.8			48.2			63
64	35.2			41.5			47.8			64
65	35.0			41.2			47.5			65
66	34.7			40.9			47.1			66
67	34.5			40.6			46.8			67
68	34.2			40.3			46.4			68
69	34.0			40.0			46.1			69

H₂ — Height in feet of antenna (only) above tower top.

H₃ — Height in feet of radiation center above tower top.

H₄ — Height in feet of antenna above tower top including lightning protector.

UHF TV Antennas

PYLON ANTENNA DATA Omnidirectional Patterns

Channel	Type TFU-45J 0° through 1° Beam Tilt			Type TFU-40/46K			Type TFU-50J			Channel
	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	
14	83.3			123.7			94.5			14
15	82.3			122.1			93.4			15
16	81.3			120.6			92.2			16
17	80.3			119.2			91.1			17
18	79.4			117.8			90.1			18
19	78.4			116.4			89.0			19
20	77.5			115.0			88.0			20
21	76.6			113.7			87.0			21
22	75.8			112.4			86.0			22
23	74.9			111.1			85.1			23
24	74.1			109.9			84.1			24
25	73.3			108.7			83.2			25
26	72.5			107.5			82.3			26
27	71.7			106.4			81.4			27
28	70.9			105.2			80.6			28
29	70.2			104.1			79.7			29
30	69.5			103.1			78.9			30
31	68.8			102.0			78.1			31
32	68.1			101.0			77.3			32
33	67.4			99.9			76.6			33
34	66.7			98.9			75.8			34
35	66.1			98.0			75.1			35
36	65.4			97.0			74.3			36
37	64.8			96.1			73.6			37
38	64.2			95.2			72.9			38
39	63.6			94.3			72.3			39
40	63.0			93.4			71.6			40
41	62.4			92.5			70.9			41
42	61.8			91.6			70.3			42
43	61.2			90.8			69.6			43
44	60.7			90.0			69.0			44
45	60.2			89.2			68.4			45
46	59.6			88.4			67.8			46
47	59.3			87.6			67.2			47
48	58.8			86.9			66.7			48
49	58.3			86.1			66.1			49
50	57.8			85.4			65.5			50
51	57.3			84.6			65.0			51
52	56.8			83.9			64.4			52
53	56.4			83.2			63.9			53
54	55.9			82.5			63.4			54
55	55.4			81.9			62.9			55
56	55.0			81.2			62.4			56
57	54.5			80.5			61.9			57
58	54.1			79.9			61.4			58
59	53.7			79.3			60.9			59
60	53.3			78.6			60.4			60
61	52.9			78.0			60.0			61
62	52.5			77.4			59.5			62
63	52.1			76.8			59.1			63
64	51.7			76.3			58.6			64
65	51.3			75.7			58.2			65
66	50.9			75.1			57.8			66
67	50.5			74.6			57.3			67
68	50.1			74.0			56.9			68
69	49.8			73.5			56.5			69

H₂ — Height in feet of antenna (only) above tower top.

H₃ — Height in feet of radiation center above tower top.

H₄ — Height in feet of antenna above tower top including lightning protector.

UHF TV Antennas

PYLON ANTENNA DATA Directional Patterns

<i>Channel</i>	<i>Type</i>	<i>Pattern</i>	<i>TV Power Rating (See Power Chart, Page 16)</i>
14-30	TFU-30JDA	Skull	4 1/8" Harness
14-30	TFU-36JDA	Skull	4 1/8" Harness
14-30	TFU-30JDAS	Skull	6/8/9" Tee
14-50	TFU-30JDAS	Skull	6/8" Tee
51-69	TFU-30JDAS	Skull	6" Tee
14-30	TFU-28DAS	Skull	6/8/9" Tee
20-52	TFU-28DAS	Skull	6/8" Tee
14-36	TFU-30JDA	Peanut	5" Harness
37-50	TFU-30JDA	Peanut	4 1/8" Harness
51-69	TFU-30JDA	Peanut	3 1/8" Harness
14-25	TFU-30JDAS	Peanut	6/8/9" Tee
14-50	TFU-30JDAS	Peanut	6/8" Tee
51-69	TFU-30JDAS	Peanut	6" Tee
14-25	TFU-28DAS	Peanut	6/8/9" Tee
26-50	TFU-28DAS	Peanut	6/8" Tee
14-22	TFU-30JDA	Trilobe	6 1/8" Harness
14-50	TFU-30JDA	Trilobe	5" Harness
30-62	TFU-30JDA	Trilobe	4 1/8" Harness
14-35	TFU-30JDAS	Trilobe	6/8/9" Tee
22-62	TFU-30JDAS	Trilobe	6/8" Tee
14-35	TFU-28DAS	Trilobe	6/8/9" Tee
22-62	TFU-28DAS	Trilobe	6/8" Tee

UHF TV Antennas

PYLON ANTENNA DATA Skull Patterns

Channel	Type TFU-30JDA			Type TFU-36-JDA			Type TFU-30JDAS			Type TFU-28DAS		
	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄
14	57.1			67.5			58.2			68.6		
15	56.4			66.7			57.5			67.7		
16	55.7			65.9			56.8			66.9		
17	55.1			65.1			56.1			66.1		
18	54.4			64.3			55.4			65.3		
19	53.8			63.6			54.8			64.5		
20	53.2			62.9			54.1			63.8		
21	52.6			62.2			53.5			63.1		
22	52.0			61.5			52.9			62.4		
23	51.5			60.8			52.3			61.7		
24	50.9			60.1			51.7			61.0		
25	50.4			59.5			51.2			60.3		
26	49.8			58.8			50.6			59.7		
27	49.3			58.2			50.1			59.0		
28	48.8			57.6			49.6			58.4		
29	48.3			57.0			49.0			57.8		
30	47.8			56.4			48.5			57.2		
31							48.0			56.6		
32							47.6			56.0		
33							47.1			55.5		
34							46.6			54.9		
35							46.2			54.4		
36							45.7			53.8		
37							45.3			53.3		
38							44.8			52.8		
39							44.4			52.3		
40							44.0			51.8		
41							43.6			51.3		
42							43.2			50.9		
43							42.8			50.4		
44							42.4			50.0		
45							42.0			49.5		
46							41.7			49.1		
47							41.3			48.6		
48							41.0			48.2		
49							40.6			47.8		
50							40.3			47.4		
51							39.9			47.0		
52							39.6			46.6		
53							39.3					
54							38.9					
55							38.6					
56							38.3					
57							38.0					
58							37.7					
59							37.4					
60							37.1					
61							36.8					
62							36.5					
63							36.3					
64							36.0					
65							35.7					
66							35.5					
67							35.2					
68							34.9					
69							34.7					

H₂ — Height in feet of antenna (only) above tower top.

H₃ — Height in feet of radiation center above tower top.

H₄ — Height in feet of antenna above tower top including lightning protector.

UHF TV Antennas

PYLON ANTENNA DATA Peanut Patterns

Channel	Type TFU-30JDA			Type TFU-30JDAS			Type TFU-28DAS		
	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄
14	57.1			58.7			69.1		
15	56.4			58.0			68.2		
16	55.7			57.3			67.4		
17	55.1			56.6			66.6		
18	54.4			55.9			65.8		
19	53.8			55.3			65.0		
20	53.2			54.6			64.3		
21	52.6			54.0			63.5		
22	51.5			52.8			62.1		
23	52.0			53.4			62.8		
24	50.9			52.2			61.4		
25	50.4			51.6			60.8		
26	49.8			51.1			60.1		
27	49.3			50.5			59.5		
28	48.8			50.0			58.8		
29	48.3			49.5			58.2		
30	47.8			49.0			57.6		
31	47.3			48.5			57.0		
32	46.9			48.0			56.4		
33	46.4			47.5			55.9		
34	46.0			47.0			55.3		
35	45.5			46.6			54.8		
36	45.1			46.1			54.2		
37	44.7			45.7			53.7		
38	44.2			45.2			53.2		
39	43.8			44.8			52.7		
40	43.4			44.4			52.2		
41	43.6			44.0			51.7		
42	42.7			43.6			51.3		
43	42.3			43.2			50.8		
44	41.9			42.8			50.3		
45	41.6			42.4			49.9		
46	41.2			42.0			49.4		
47	40.8			41.7			49.0		
48	40.5			41.3			48.6		
49	40.2			41.0			48.2		
50	39.8			40.6			47.8		
51	39.5			40.3					
52	39.2			39.9					
53	38.9			39.6					
54	38.6			39.3					
55	38.3			39.0					
56	38.0			38.6					
57	37.7			38.3					
58	37.4			38.0					
59	37.1			37.7					
60	36.8			37.4					
61	36.5			37.2					
62	36.3			36.9					
63	36.0			36.6					
64	35.7			36.3					
65	35.5			36.0					
66	35.2			35.8					
67	35.0			35.5					
68	34.7			35.2					
69	34.5			35.0					

H₂—Height in feet of antenna (only) above tower top.

H₃—Height in feet of radiation center above tower top.

H₄—Height in feet of antenna above tower top including lightning protector.

UHF TV Antennas

PYLON ANTENNA DATA Trilobe Patterns

Channel	Type TFU-30JDA			Type TFU-30JDAS			Type TFU-28DAS		
	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄	H ₂	H ₃	H ₄
14	57.1			58.7			69.1		
15	56.4			58.0			68.2		
16	55.7			57.3			67.4		
17	55.1			56.6			66.6		
18	54.4			55.9			65.8		
19	53.8			55.3			65.0		
20	53.2			54.6			64.3		
21	52.6			54.0			63.5		
22	51.5			52.8			62.1		
23	52.0			53.4			62.8		
24	50.9			52.2			61.4		
25	50.4			51.6			60.8		
26	49.8			51.1			60.1		
27	49.3			50.5			59.5		
28	48.8			50.0			58.8		
29	48.3			49.5			58.2		
30	47.8			49.0			57.6		
31	47.3			48.5			57.0		
32	46.9			48.0			56.4		
33	46.4			47.5			55.9		
34	46.0			47.0			55.3		
35	45.5			46.6			54.8		
36	45.1			46.1			54.2		
37	44.7			45.7			53.7		
38	44.2			45.2			53.2		
39	43.8			44.8			52.7		
40	43.4			44.4			52.2		
41	43.6			44.0			51.7		
42	42.7			43.6			51.3		
43	42.3			43.2			50.8		
44	41.9			42.8			50.3		
45	41.6			42.4			49.9		
46	41.2			42.0			49.4		
47	40.8			41.7			49.0		
48	40.5			41.3			48.6		
49	40.2			41.0			48.2		
50	39.8			40.6			47.8		
51	39.5			40.3			47.3		
52	39.2			39.9			47.0		
53	38.9			39.6			46.6		
54	38.6			39.3			46.2		
55	38.3			39.0			45.8		
56	38.0			38.6			45.4		
57	37.7			38.3			45.1		
58	37.4			38.0			44.7		
59	37.1			37.7			44.4		
60	36.8			37.4			44.0		
61	36.5			37.2			43.7		
62	36.3			36.9			43.3		
63				36.6					
64				36.3					
65				36.0					
66				35.8					
67				35.5					
68				35.2					
69				35.0					

$$H_3 = 0.5H_2$$

$$H_4 = H_2 + 4.0$$

$$H_3 = 0.5H_2$$

$$H_4 = H_2 + 4.0$$

$$H_3 = 0.5H_2$$

$$H_4 = H_2 + 4.0$$

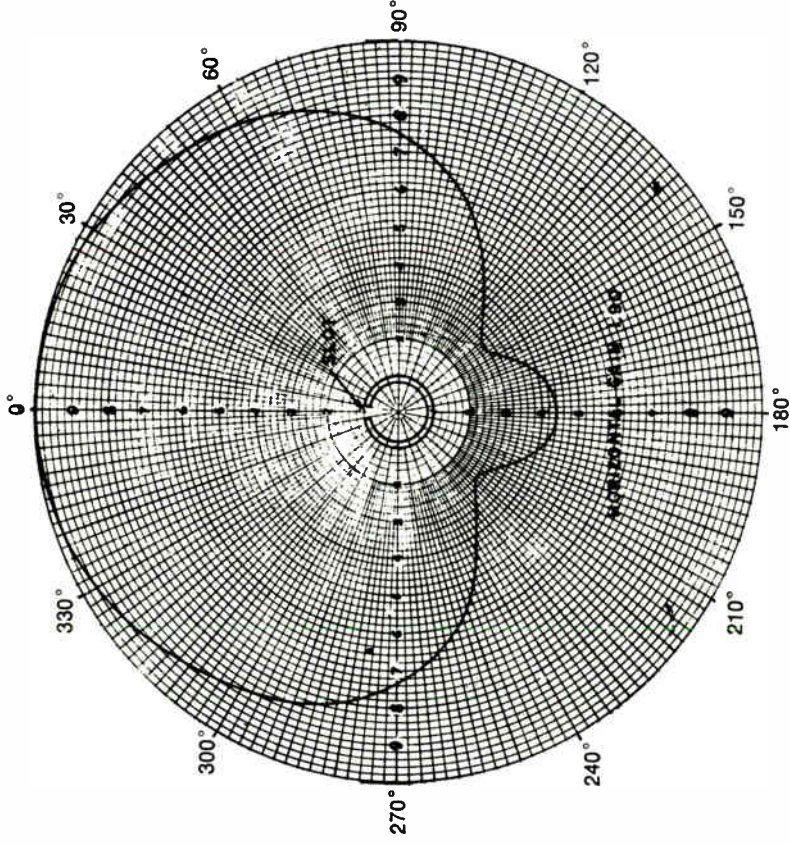
H₂ — Height in feet of antenna (only) above tower top.

H₃ — Height in feet of radiation center above tower top.

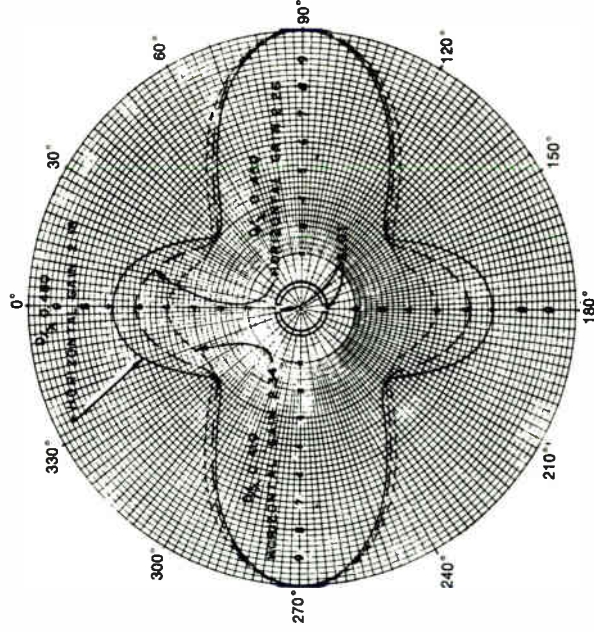
H₄ — Height in feet of antenna above tower top including lightning protector.

UHF TV Antennas

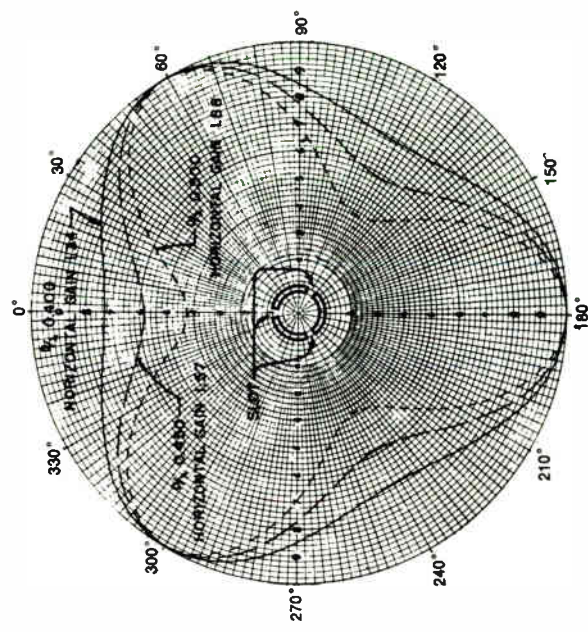
PYLON ANTENNA DATA
Skull Directional Patterns, Types TFU-30JDA, -30JDAS, -36JDA, -28DAS



Peanut Directional Pattern
Type TFU-30JDA, -30JDAS, -28DAS



Trilobe Directional Pattern
Type TFU-30JDA, -30JDAS, -28DAS



λ = Mid-channel wavelength
 D = Pole outer diameter
 Note: Gain and pattern vary with D/ λ ratio.

UHF TV Antennas

POLYGON, ZEE AND VEE-ZEE PANEL ANTENNAS

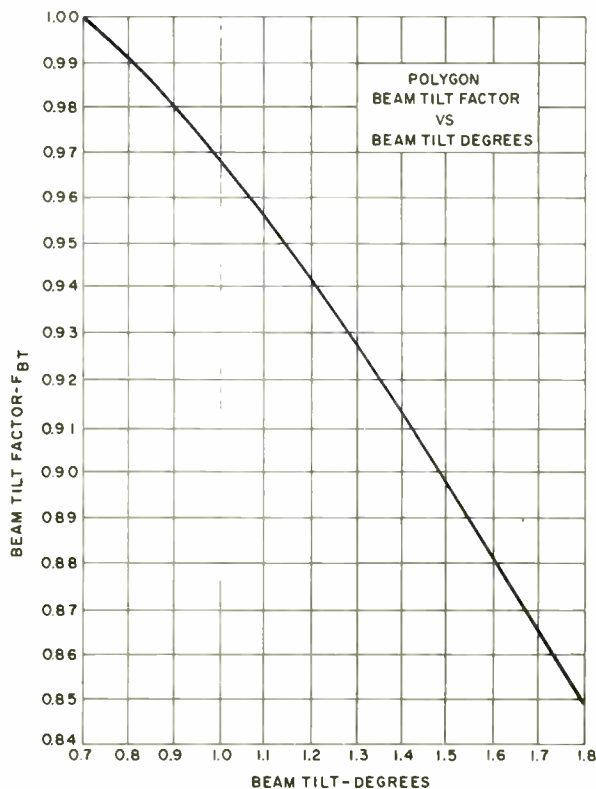
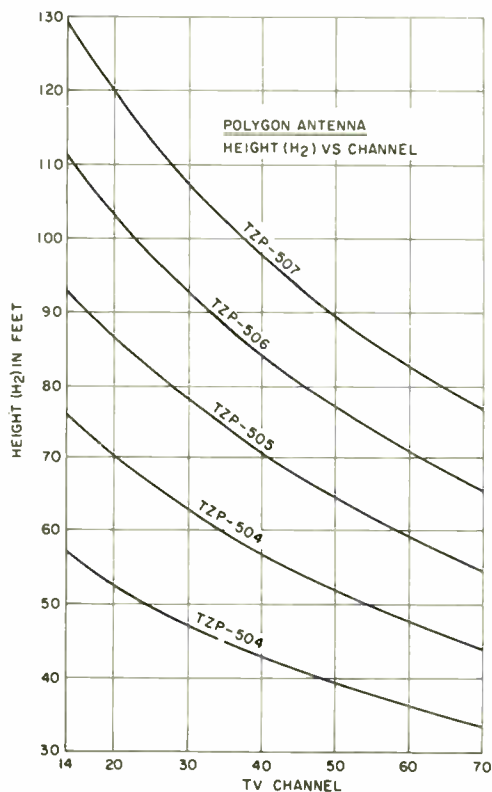
RCA Polygon, Zee and Vee-Zee Panel Antennas are available to meet a wide range of requirements. The Polygon Antenna is for top or stacked mounting. The Zee and Vee-Zee Antennas may be top, stacked, or side mounted. The Vee-Zee Antenna is especially designed for tangential fire from the three corners of a triangular tower and the Zee Panel Antenna is

generally mounted four around and fires radially. While the panels that are used in these antennas are standardized, each antenna is individually designed for a particular gain, beam tilt, null fill, horizontal pattern and power input capability. Customers should contact RCA representatives for quotations and specifications on UHF Polygon, Zee and Vee-Zee Panel Antennas.

UHF POLYGON ANTENNA DATA

Type Number	Channel Range	Gain RMS		TV Power Ratings kW	H ₂	H ₃	H ₄
		Power	dB				
TZP-503	14-44	20.0	13.01	60	↑ See Curves ↓	↑ H ₃ ↓	↑ H ₄ ↓
	45-69	19.8	12.96	60			
TZP-504	14-44	27.0	14.31	60			
	45-69	26.7	14.26	60			
TZP-505	14-44	34.0	15.31	100			
	45-69	33.6	15.26	100			
TZP-506	14-44	40.7	16.09	100			
	45-69	40.1	16.03	100			
TZP-507	14-44	46.9	16.71	100			
	45-69	46.2	16.64	100			

NOTE: The Polygon Antenna can be furnished for omni-directional as well as a variety of directional applications.



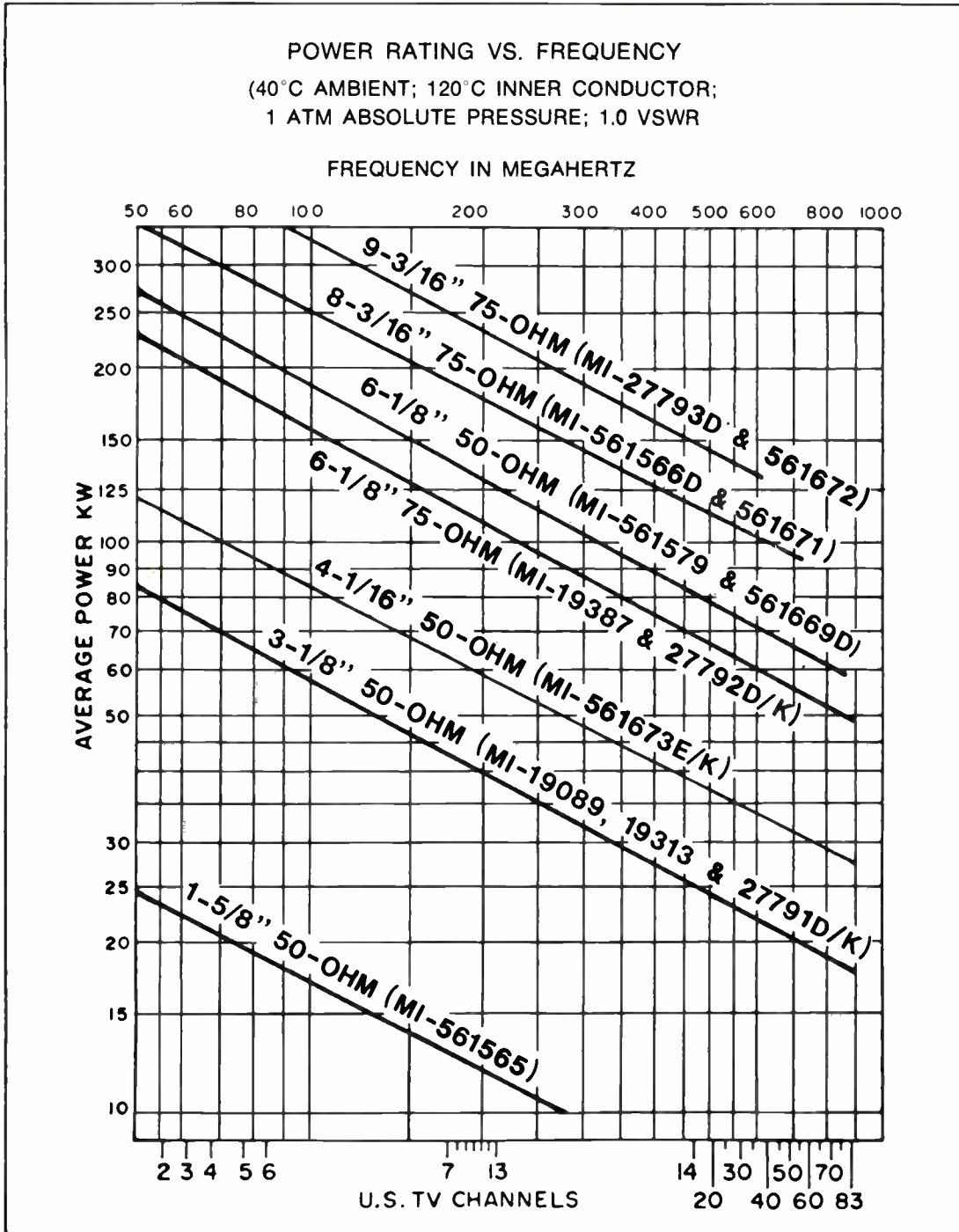
UHF TV Antennas

VEE ZEE ANTENNA DATA

3-LAYER			4-LAYER			5-LAYER			6-LAYER		
Ch.	Peak Power kW	H ₂ (Ft)	Ch.	Peak Power kW	H ₂ (Ft)	Ch.	Peak Power kW	H ₂ (Ft)	Ch.	Peak Power kW	H ₂ (Ft)
14	↑	57.7	14	↑	77.0	14	↑	96.3	14	↑	115.5
15	↑	57.0	15	↑	76.0	15	↑	95.0	15	↑	114.0
16	↑	56.2	16	↑	75.0	16	↑	93.7	16	↑	112.5
17	↑	55.5	17	↑	74.0	17	↑	92.6	17	↑	111.1
18	↑	54.9	18	↑	73.1	18	↑	91.4	18	↑	109.7
19	↑	54.2	19	↑	72.3	19	↑	90.3	19	↑	108.4
20	↑	53.6	20	↑	71.4	20	↑	89.3	20	↑	107.1
21	↑	52.9	21	↑	70.6	21	↑	88.2	21	↑	105.9
22	59	52.4	22	59	69.8	22	99	87.2	22	99	104.7
23	↑	51.8	23	↑	69.0	23	↑	86.2	23	↑	103.5
24	↑	51.2	24	↑	68.2	24	↑	85.3	24	↑	102.3
25	↑	50.6	25	↑	67.5	25	↑	84.3	25	↑	101.2
26	↑	50.1	26	↑	66.7	26	↑	83.4	26	↑	100.1
27	↑	49.5	27	↑	66.0	27	↑	82.4	27	↑	98.9
28	↑	48.9	28	↑	65.2	28	↑	81.5	28	↑	97.7
29	↑	48.4	29	↑	64.4	29	↑	80.5	29	↑	96.6
30	↑	47.8	30	↑	63.7	30	↑	79.6	30	↑	95.5
31	↑	47.3	31	↑	63.0	31	↑	78.7	31	↑	94.4
32	↑	46.8	32	↑	62.3	32	↑	77.9	32	↑	93.4
33	↑	46.3	33	↑	61.6	33	↑	77.0	33	↑	92.4
34	↑	45.8	34	↑	61.0	34	↑	76.2	34	↑	91.4
35	↑	45.3	35	↑	60.4	35	↑	75.4	35	↑	90.5
36	↑	44.8	36	↑	59.7	36	↑	74.6	36	↑	89.5
37	54	44.4	37	54	59.1	37	90	73.9	37	90	88.6
38	↑	43.9	38	↑	58.5	38	↑	73.1	38	↑	87.7
39	↑	43.5	39	↑	57.9	39	↑	72.4	39	↑	86.8
40	↑	43.1	40	↑	57.4	40	↑	71.7	40	↑	86.0
41	↑	42.7	41	↑	56.8	41	↑	71.0	41	↑	85.1
42	↑	42.3	42	↑	56.3	42	↑	70.3	42	↑	84.3
43	↑	41.9	43	↑	55.7	43	↑	69.6	43	↑	83.5
44	↑	41.5	44	↑	55.2	44	↑	68.9	44	↑	82.7
45	↑	41.1	45	↑	54.7	45	↑	68.3	45	↑	81.9
46	↑	40.7	46	↑	54.2	46	↑	67.7	46	↑	81.2
47	↑	40.3	47	↑	53.7	47	↑	67.0	47	↑	80.4
48	↑	40.0	48	↑	53.2	48	↑	66.4	48	↑	79.7
49	↑	39.6	49	↑	52.7	49	↑	65.8	49	↑	78.9
50	↑	39.2	50	↑	52.2	50	↑	65.2	50	↑	78.2
51	↑	38.9	51	↑	51.7	51	↑	64.6	51	↑	77.4
52	50	38.5	52	50	51.2	52	84	64.0	52	84	76.7
53	↑	38.2	53	↑	50.8	53	↑	63.4	53	↑	76.0
54	↑	37.8	54	↑	50.3	54	↑	62.8	54	↑	75.3
55	↑	37.5	55	↑	49.9	55	↑	62.3	55	↑	74.7
56	↑	37.2	56	↑	49.4	56	↑	61.7	56	↑	74.0
57	↑	36.8	57	↑	49.0	57	↑	61.2	57	↑	73.4
58	↑	36.5	58	↑	48.6	58	↑	60.7	58	↑	72.7
59	↑	36.2	59	↑	48.2	59	↑	60.2	59	↑	72.1
60	↑	35.9	60	↑	47.8	60	↑	59.7	60	↑	71.5
61	↑	35.6	61	↑	47.4	61	↑	59.2	61	↑	70.9
62	↑	35.3	62	↑	47.0	62	↑	58.7	62	↑	70.3
63	↑	35.1	63	↑	46.6	63	↑	58.2	63	↑	69.8
64	48	34.8	64	48	46.3	64	80	57.7	64	80	69.2
65	↑	34.5	65	↑	45.9	65	↑	57.3	65	↑	68.6
66	↑	34.2	66	↑	45.5	66	↑	56.8	66	↑	68.0
67	↑	33.9	67	↑	45.1	67	↑	56.3	67	↑	67.4
68	↑	33.6	68	↑	44.7	68	↑	55.8	68	↑	66.8
69	↑	33.3	69	↑	44.3	69	↑	55.3	69	↑	66.2

TV Transmission Line

RIGID COAXIAL LINE SPECIFICATIONS



3/8" 50-ohm MI-27791D, MI-27791K, MI-19089 Efficiency (%)

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
2	0.072	96.7	93.6	90.5	87.5	84.7	81.9	79.2	76.6	74.1	71.7
3	0.076	96.6	93.2	90.0	87.0	83.9	81.0	78.2	75.5	72.9	70.3
4	0.080	96.4	92.9	89.5	86.3	83.2	80.2	77.3	74.5	71.7	69.2
5	0.086	96.1	92.4	88.9	85.4	82.1	78.9	75.9	72.8	69.8	67.4
6	0.089	96.0	92.1	88.4	84.9	81.5	78.2	75.1	72.0	69.2	66.4
7	0.130	94.2	88.7	83.6	78.7	74.1	69.9	65.8	62.0	58.3	54.9
8	0.132	94.1	88.5	83.4	78.4	73.8	69.5	65.3	61.5	57.9	54.4
9	0.134	94.0	88.3	83.1	78.1	73.4	69.2	64.9	61.0	57.3	53.8
10	0.136	94.0	88.1	82.9	77.8	73.1	68.8	64.5	60.6	56.8	53.4
11	0.138	93.8	88.1	82.6	77.6	72.8	68.3	64.1	60.2	56.4	52.9
12	0.141	93.7	87.8	82.3	77.1	72.3	67.7	63.5	59.5	55.8	52.2
13	0.143	93.6	87.7	82.1	76.8	71.9	67.4	63.1	59.1	55.3	51.6
14	0.223	90.2	81.4	73.5	66.3	59.8	54.0	48.7	44.0	39.6	35.7
15	0.225	90.2	81.3	73.3	66.1	59.6	53.7	48.4	43.7	39.3	35.5
16	0.227	90.1	81.1	73.1	65.8	59.3	53.4	48.1	43.3	39.0	35.1
17	0.229	90.0	81.0	72.9	65.6	59.0	53.1	47.8	43.0	38.6	34.8
18	0.231	89.9	80.8	72.7	65.3	58.8	52.8	47.5	42.7	38.4	34.5
19	0.233	89.8	80.7	72.5	65.1	58.5	52.5	47.2	42.4	38.0	34.2
20	0.234	89.8	80.6	72.4	65.0	58.3	52.4	47.0	42.2	37.9	33.9
21	0.235	89.7	80.5	72.3	64.9	58.2	52.2	46.9	42.1	37.8	33.8
22	0.237	89.7	80.4	72.1	64.6	57.9	52.0	46.6	41.8	37.4	33.5
23	0.239	89.6	80.2	71.9	64.4	57.7	51.7	46.3	41.5	37.0	33.2
24	0.240	89.5	80.2	71.8	64.3	57.5	51.5	46.1	41.3	36.9	33.0
25	0.242	89.5	80.0	71.6	64.0	57.3	51.2	45.8	41.0	36.7	32.8
26	0.243	89.4	80.0	71.5	63.9	57.2	51.1	45.7	40.9	36.4	32.7
27	0.245	89.3	79.8	71.3	63.7	56.9	50.8	45.4	40.6	36.2	32.3
28	0.247	89.3	79.7	71.1	63.5	56.6	50.5	45.1	40.3	36.0	32.0
29	0.249	89.2	79.5	70.9	63.2	56.4	50.3	44.8	40.0	35.7	31.8
30	0.250	89.1	79.4	70.8	63.1	56.2	50.1	44.7	39.8	35.5	31.5
31	0.252	89.0	79.3	70.6	62.9	56.0	49.8	44.4	39.5	35.1	31.3
32	0.254	89.0	79.1	70.4	62.6	55.7	49.6	44.1	39.2	34.9	31.1
33	0.255	88.9	79.1	70.3	62.5	55.6	49.4	43.9	39.1	34.8	30.9
34	0.256	88.9	79.0	70.2	62.4	55.5	49.3	43.8	38.9	34.5	30.8
35	0.257	88.8	78.9	70.1	62.3	55.3	49.2	43.7	38.8	34.4	30.5
36	0.258	88.8	78.9	70.0	62.2	55.2	49.0	43.5	38.7	34.3	30.4

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
37	0.260	88.7	78.7	69.8	61.9	55.0	48.8	43.3	38.4	33.9	30.2
38	0.262	88.6	78.6	69.6	61.8	54.7	48.5	43.0	38.1	33.7	29.9
39	0.264	88.6	78.4	69.4	61.5	54.5	48.2	42.7	37.8	33.5	29.7
40	0.265	88.5	78.3	69.3	61.4	54.3	48.1	42.6	37.7	33.2	29.4
41	0.266	88.5	78.3	69.3	61.3	54.2	48.0	42.4	37.5	33.1	29.3
42	0.267	88.4	78.2	69.2	61.2	54.1	47.8	42.3	37.4	33.0	29.2
43	0.269	88.3	78.0	69.0	60.9	53.8	47.6	42.0	37.1	32.8	28.9
44	0.270	88.3	78.0	68.9	60.8	53.7	47.4	41.9	37.0	32.7	28.8
45	0.272	88.2	77.8	68.7	60.6	53.5	47.2	41.6	36.7	32.3	28.6
46	0.274	88.1	77.7	68.5	60.4	53.2	46.9	41.3	36.4	32.1	28.3
47	0.275	88.0	77.6	68.4	60.3	53.1	46.8	41.2	36.3	32.0	28.2
48	0.276	88.1	77.6	68.3	60.1	53.0	46.6	41.1	36.2	31.8	28.0
49	0.278	88.0	77.4	68.1	59.9	52.7	46.4	40.8	35.9	31.5	27.7
50	0.279	87.9	77.3	68.0	59.8	52.6	46.3	40.7	35.8	31.4	27.6
51	0.281	87.9	77.2	67.8	59.6	52.4	46.0	40.4	35.5	31.2	27.4
52	0.282	87.8	77.1	67.7	59.5	52.2	45.9	40.3	35.4	31.1	27.2
53	0.283	87.8	77.1	67.6	59.4	52.1	45.7	40.2	35.3	30.9	27.1
54	0.284	87.7	77.0	67.5	59.3	52.0	45.6	40.0	35.1	30.8	27.0
55	0.285	87.6	76.9	67.5	59.2	51.9	45.5	39.9	35.0	30.6	26.9
56	0.286	87.7	76.8	67.4	59.1	51.8	45.4	40.0	34.9	30.5	26.8
57	0.287	87.6	76.8	67.3	58.9	51.6	45.2	39.6	34.7	30.4	26.6
58	0.290	87.5	76.6	67.0	58.6	51.3	44.9	39.3	34.4	30.0	26.3
59	0.292	87.4	76.4	66.8	58.4	51.1	44.6	39.0	34.1	29.8	26.1
60	0.294	87.3	76.3	66.6	58.2	50.8	44.4	38.8	33.9	29.6	25.8
61	0.295	87.3	76.2	66.5	58.1	50.7	44.3	38.6	33.7	29.4	25.7
62	0.297	87.2	76.1	66.3	57.9	50.5	44.0	38.4	33.5	29.1	25.5
63	0.298	87.2	76.0	66.3	57.8	50.3	43.9	38.3	33.4	29.0	25.3
64	0.299	87.1	75.9	66.2	57.7	50.2	43.8	38.1	33.2	28.9	25.2
65	0.300	87.1	75.9	66.1	57.5	50.1	43.7	38.0	33.1	28.8	25.1
66	0.301	87.1	75.8	66.0	57.4	50.0	43.5	37.9	33.0	28.7	25.0
67	0.302	87.0	75.7	65.9	57.3	49.9	43.4	37.8	32.9	28.6	24.9
68	0.2025	87.0	75.7	65.8	57.3	49.8	43.4	37.7	32.8	28.5	24.8
69	0.303	87.0	75.6	65.8	57.2	49.8	43.3	37.7	32.7	28.5	24.8

TV Transmission Line

4 1/8" 50-ohm MI-561673E, MI-561673K Efficiency (%)

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
2	0.050	97.7	95.5	93.4	91.3	89.2	87.2	85.2	83.3	81.4	79.5
3	0.052	97.6	95.3	93.0	90.8	88.7	86.5	84.5	82.5	80.5	78.6
4	0.055	97.5	95.1	92.7	90.4	88.2	86.0	83.8	81.7	79.7	77.7
5	0.059	97.3	94.7	92.2	89.8	87.4	85.0	82.8	80.6	78.4	76.3
6	0.061	97.2	94.5	91.9	89.4	86.9	84.5	82.2	79.9	77.7	75.5
FM	0.066	97.0	94.1	91.3	88.6	86.0	83.4	81.0	78.6	76.2	74.0
7	0.089	96.0	92.2	88.5	84.9	81.6	78.3	75.2	72.2	69.3	66.5
8	0.090	95.9	92.0	88.3	84.7	81.3	78.0	74.8	71.8	68.8	66.0
9	0.092	95.9	91.9	88.1	84.5	81.0	77.6	74.4	71.4	68.4	65.6
10	0.093	95.8	91.8	87.9	84.3	80.7	77.3	74.1	71.0	68.0	65.2
11	0.094	95.7	91.7	87.8	84.0	80.4	77.0	73.7	70.6	67.6	64.7
12	0.096	95.7	91.5	87.6	83.8	80.2	76.7	73.4	70.2	67.2	64.3
13	0.097	95.6	91.4	87.4	83.6	79.9	76.4	73.1	69.9	66.8	63.9
14	0.146	93.5	87.4	81.7	76.4	71.4	66.8	62.4	58.4	54.6	51.0
15	0.147	93.4	87.3	81.6	76.3	71.3	66.6	62.2	58.2	54.3	50.8
16	0.148	93.4	87.3	81.5	76.1	71.1	66.4	62.0	58.0	54.1	50.6
17	0.149	93.4	87.2	81.4	76.0	71.0	66.3	61.9	57.8	53.9	50.4
18	0.150	93.3	87.1	81.3	75.9	70.8	66.1	61.7	57.6	53.7	50.1
19	0.151	93.3	87.0	81.2	75.7	70.7	65.9	61.5	57.4	53.5	49.9
20	0.152	93.3	87.0	81.1	75.6	70.5	65.7	61.3	57.2	53.3	49.7
21	0.153	93.2	86.9	81.0	75.5	70.4	65.6	61.1	57.0	53.1	49.5
22	0.154	93.2	86.8	80.9	75.4	70.2	65.4	61.0	56.8	52.9	49.3
23	0.154	93.1	86.7	80.8	75.2	70.1	65.3	60.8	56.6	52.7	49.1
24	0.155	93.1	86.7	80.7	75.1	69.9	65.1	60.6	56.4	52.5	48.9
25	0.156	93.1	86.6	80.6	75.0	69.8	64.9	60.4	56.2	52.3	48.7
26	0.157	93.0	86.5	80.5	74.9	69.6	64.8	60.3	56.1	52.1	48.5
27	0.158	93.0	86.5	80.4	74.7	69.5	64.6	60.1	55.9	51.9	48.3
28	0.159	92.9	86.4	80.3	74.6	69.4	64.5	59.9	55.7	51.8	48.1
29	0.160	92.9	86.3	80.2	74.5	69.2	64.3	59.7	55.5	51.6	47.9
30	0.161	92.9	86.2	80.1	74.4	69.1	64.2	59.6	55.3	51.4	47.7
31	0.161	92.8	86.2	80.0	74.3	68.9	64.0	59.4	55.2	51.2	47.5
32	0.162	92.8	86.1	79.9	74.2	68.8	63.9	59.3	55.0	51.0	47.3
33	0.163	92.8	86.0	79.8	74.0	68.7	63.7	59.1	54.8	50.8	47.2
34	0.164	92.7	86.0	79.7	73.9	68.5	63.6	58.9	54.6	50.7	47.0
35	0.165	92.7	85.9	79.6	73.8	68.4	63.4	58.8	54.5	50.5	46.8

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
36	0.166	92.7	85.8	79.5	73.7	68.3	63.3	58.6	54.3	50.3	46.6
37	0.167	92.6	85.8	79.4	73.6	68.1	63.1	58.5	54.1	50.1	46.4
38	0.167	92.6	85.7	79.4	73.5	68.0	63.0	58.3	54.0	50.0	46.3
39	0.168	92.5	85.6	79.3	73.4	67.9	62.8	58.1	53.8	49.8	46.1
40	0.169	92.5	85.6	79.2	73.2	67.8	62.7	58.0	53.6	49.6	45.9
41	0.170	92.5	85.5	79.1	73.1	67.6	62.5	57.8	53.5	49.5	45.7
42	0.171	92.4	85.5	79.0	73.0	67.5	62.4	57.7	53.3	49.3	45.6
43	0.172	92.4	85.4	78.9	72.9	67.4	62.3	57.5	53.2	49.1	45.4
44	0.172	92.4	85.3	78.8	72.8	67.2	62.1	56.4	53.0	49.0	45.2
45	0.173	92.3	85.3	78.7	72.7	67.1	62.0	57.2	52.8	48.8	45.1
46	0.174	92.3	85.2	78.6	72.6	67.0	61.8	57.1	52.7	48.6	44.9
47	0.175	92.3	85.1	78.6	72.5	66.9	61.7	56.9	52.5	48.5	44.7
48	0.176	92.2	85.1	78.5	72.4	66.8	61.6	56.8	52.4	48.3	44.6
49	0.176	92.2	85.0	78.4	72.3	66.6	61.4	56.6	52.2	48.2	44.4
50	0.177	92.2	84.9	78.3	72.2	66.5	61.3	56.5	52.1	48.0	44.2
51	0.178	92.1	84.9	78.2	72.1	66.4	61.2	56.4	51.9	47.8	44.1
52	0.179	92.1	84.8	78.1	72.0	66.3	61.0	56.2	51.8	47.7	43.9
53	0.179	92.1	84.8	78.0	71.9	66.2	60.9	56.1	51.6	47.5	43.8
54	0.180	92.0	84.7	78.0	71.8	66.0	60.8	55.9	51.5	47.4	43.6
55	0.181	92.0	84.6	77.9	71.6	65.9	60.6	55.8	51.3	47.2	43.5
56	0.182	92.0	84.6	77.8	71.5	65.8	60.5	55.7	51.2	47.1	43.3
57	0.183	91.9	84.5	77.7	71.4	65.7	60.4	55.5	51.0	46.9	43.1
58	0.183	91.9	84.5	77.6	71.3	65.6	60.3	55.4	50.9	46.8	43.0
59	0.184	91.9	84.4	77.5	71.2	65.5	60.1	55.3	50.8	46.6	42.8
60	0.185	91.8	84.3	77.5	71.1	65.3	60.0	55.1	50.6	46.5	42.7
61	0.186	91.8	84.3	77.4	71.0	65.2	59.9	55.0	50.5	46.3	42.5
62	0.186	91.8	84.2	77.3	71.0	65.1	59.8	54.8	50.3	46.2	42.4
63	0.187	91.7	84.2	77.2	70.9	65.0	59.6	54.7	50.2	46.1	42.3
64	0.188	91.7	84.1	77.1	70.8	64.9	59.5	54.6	50.1	45.9	42.1
65	0.189	91.7	84.1	77.1	70.7	64.8	59.4	54.5	49.9	45.8	42.0
66	0.189	91.7	84.0	77.0	70.6	64.7	59.3	54.3	49.8	45.6	41.8
67	0.190	91.6	83.9	76.9	70.5	64.6	59.2	54.2	49.7	45.5	41.7
68	0.191	91.6	83.9	76.8	70.4	64.5	59.0	54.1	49.5	45.4	41.5
69	0.191	91.6	83.8	76.8	70.3	64.3	58.9	53.9	49.4	45.2	41.4

TV Transmission Line

6 1/8" 75-ohm MI-27792D Efficiency (%)

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
2	0.0339	98.5	96.9	95.4	94.1	92.5	91.1	89.6	88.3	86.8	85.5
3	0.0355	98.4	96.8	95.2	93.7	92.1	90.7	89.2	87.7	86.3	84.8
4	0.0372	98.3	96.6	95.0	93.4	91.8	90.2	88.7	87.2	85.7	84.2
5	0.040	98.2	96.4	94.6	92.9	91.2	89.5	87.9	86.3	84.6	83.1
6	0.0417	98.1	96.2	94.4	92.6	90.8	89.1	87.4	85.8	84.0	82.4
7	0.0615	97.1	94.5	91.8	89.4	86.7	84.4	82.0	79.7	77.4	75.1
8	0.0625	97.1	94.4	91.7	89.1	86.6	84.1	81.7	79.4	77.0	74.9
9	0.0635	97.0	94.3	91.6	88.9	86.4	83.9	81.5	79.1	76.8	74.6
10	0.0645	97.1	94.2	91.5	88.8	86.2	83.7	81.2	78.9	76.5	74.3
11	0.0655	97.0	94.1	91.4	88.6	86.0	83.5	81.0	78.6	76.4	73.9
12	0.0665	97.0	94.1	91.2	88.5	85.8	83.2	80.7	78.3	75.8	73.6
13	0.0675	96.9	94.0	91.1	88.3	85.6	83.0	80.4	78.0	75.5	73.2
14	0.105	95.3	90.8	86.5	82.4	78.5	74.8	71.3	67.9	64.6	61.6
15	0.106	95.2	90.7	86.4	82.3	78.4	74.6	71.1	67.7	64.4	61.4
16	0.107	95.2	90.6	86.3	82.1	78.2	74.4	70.8	67.4	64.1	61.1
17	0.1075	95.2	90.6	86.2	82.0	78.1	74.3	70.7	67.3	64.0	60.9
18	0.108	95.2	90.5	86.1	82.0	78.0	74.2	70.6	67.2	64.0	60.8
19	0.109	95.1	90.5	86.0	81.8	77.8	74.0	70.4	66.9	63.6	60.5
20	0.1095	95.1	90.4	86.0	81.7	77.7	73.9	70.3	66.8	63.5	60.3
21	0.110	95.1	90.4	85.9	81.7	77.6	73.8	70.2	66.7	63.3	60.2
22	0.111	95.0	90.3	85.8	81.5	77.5	73.6	70.0	66.4	63.0	60.0
23	0.112	95.0	90.2	85.7	81.4	77.3	73.4	69.7	66.2	62.8	59.7
24	0.113	94.9	90.1	85.5	81.2	77.1	73.2	69.5	65.9	62.5	59.4
25	0.1135	94.9	90.1	85.5	81.1	77.0	73.1	69.4	65.8	62.4	59.3
26	0.1140	94.9	90.0	85.4	81.1	76.9	73.0	69.3	65.7	62.4	59.1
27	0.1145	94.9	90.0	85.4	81.0	76.8	72.9	69.1	65.6	62.2	58.9
28	0.115	94.8	90.0	85.3	80.9	76.7	72.8	69.0	65.5	62.0	58.8
29	0.116	94.8	89.9	85.2	80.8	76.6	72.6	68.8	65.2	61.7	58.6
30	0.117	94.8	90.0	85.1	80.6	76.4	72.4	68.6	65.0	61.6	58.3
31	0.1175	94.7	89.7	85.0	80.5	76.3	72.3	68.5	64.9	61.4	58.2
32	0.118	94.7	89.7	85.0	80.5	76.2	72.2	68.4	64.7	61.2	58.0
33	0.1185	94.7	89.7	84.9	80.4	76.1	72.1	68.3	64.6	61.1	57.9
34	0.119	94.7	89.6	84.8	80.3	76.0	72.0	68.2	64.5	60.9	57.8
35	0.120	94.6	89.5	84.7	80.2	75.9	71.8	67.9	64.3	60.8	57.7
36	0.1205	94.6	89.5	84.7	80.1	75.8	71.7	67.8	64.2	60.7	57.4

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
37	0.121	84.6	89.5	84.6	80.0	75.7	71.6	67.7	64.0	60.5	57.3
38	0.1215	94.6	89.4	84.5	79.9	75.6	71.5	67.6	63.9	60.3	57.1
39	0.122	94.5	89.4	84.5	80.0	75.5	71.4	67.5	63.8	60.3	57.0
40	0.123	94.5	89.3	84.4	79.7	75.3	71.2	67.3	63.6	60.0	56.8
41	0.1235	94.5	89.2	84.3	79.6	75.2	71.0	67.1	63.4	59.9	56.5
42	0.124	94.5	89.2	84.3	79.6	75.2	71.0	67.1	63.3	59.7	56.5
43	0.1245	94.4	89.2	84.2	79.5	75.1	70.9	66.9	63.2	59.7	56.4
44	0.125	94.4	89.1	84.1	79.4	75.0	70.8	66.8	63.1	59.5	56.2
45	0.126	94.4	89.0	84.0	79.3	74.8	70.5	66.6	62.9	59.3	55.9
46	0.1265	94.3	89.0	84.0	79.2	74.7	70.0	66.5	62.7	59.1	55.8
47	0.127	94.3	89.0	83.9	79.1	74.6	70.4	66.4	62.6	59.1	55.6
48	0.128	94.3	88.9	83.8	79.0	74.0	70.2	66.2	62.4	58.8	55.3
49	0.129	94.2	88.8	83.7	78.9	74.3	70.0	66.0	62.2	58.5	55.2
50	0.130	94.2	88.7	83.6	78.7	74.1	69.8	65.8	61.9	58.3	54.9
51	0.1305	94.2	88.7	83.5	78.6	74.0	69.7	65.7	61.8	58.2	54.7
52	0.131	94.1	88.6	83.4	78.6	74.0	69.6	65.6	61.7	58.0	54.7
53	0.132	94.1	88.5	83.3	78.4	73.8	69.4	65.3	61.5	57.9	54.4
54	0.1325	94.1	88.5	83.3	78.3	73.7	69.3	65.2	61.4	57.7	54.3
55	0.133	94.1	88.5	83.2	78.3	73.6	69.3	65.1	61.3	57.6	54.1
56	0.1335	94.0	88.4	83.2	78.1	73.5	69.1	65.0	61.2	57.4	54.0
57	0.134	94.0	88.4	83.1	78.1	73.5	69.1	64.9	61.0	57.4	54.0
58	0.1345	94.0	88.3	83.0	78.0	73.4	69.0	64.8	60.9	57.3	53.8
59	0.135	94.0	88.3	83.0	78.0	73.3	68.9	64.7	60.8	57.1	53.7
60	0.136	93.9	88.2	82.9	77.8	73.1	68.7	64.5	60.6	56.8	53.4
61	0.1365	93.9	88.2	82.8	77.8	73.0	68.6	64.4	60.5	56.8	53.2
62	0.137	93.9	88.1	82.8	77.7	72.9	68.5	64.3	60.4	56.8	53.1
63	0.1375	93.9	88.1	82.7	77.6	72.9	68.4	64.2	60.3	56.5	53.1
64	0.138	93.8	88.1	82.6	77.6	72.8	68.3	64.1	60.2	56.4	52.9
65	0.1385	93.8	88.0	82.6	77.5	72.7	68.2	64.0	60.0	56.2	52.8
66	0.139	93.8	88.0	82.5	77.4	72.6	68.1	63.9	60.0	56.2	52.7
67	0.140	93.8	87.9	82.4	77.3	72.4	67.9	63.7	59.7	55.9	52.4
68	0.141	93.7	87.8	82.3	77.1	72.3	67.7	63.5	59.5	55.8	52.3
69	0.1415	93.7	87.8	82.2	77.1	72.2	67.6	63.4	59.4	55.6	52.1

TV Transmission Line

6 1/8" 75-ohm MI-19387 Efficiency (%)

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
14	0.102	95.4	91.0	86.9	82.9	79.1	75.4	72.0	68.7	65.6	62.5
15	0.102	95.4	91.0	86.8	82.9	79.1	75.4	72.0	68.7	65.6	62.5
16	0.103	95.4	91.0	86.7	82.7	78.9	75.2	71.8	68.4	65.2	62.2
17	0.104	95.3	90.9	86.6	82.6	78.7	75.0	71.5	68.2	64.9	61.9
18	0.105	95.3	90.8	86.5	82.4	78.5	74.8	71.3	67.9	64.6	61.6
19	0.106	95.2	90.7	86.4	82.3	78.4	74.6	71.1	67.7	64.4	61.4
20	0.107	95.2	90.6	86.3	82.1	78.2	74.4	70.8	67.4	64.1	61.1
21	0.108	95.2	90.5	86.1	82.0	78.0	74.2	70.6	67.2	64.0	60.8
22	0.109	95.1	90.5	86.0	81.8	77.8	74.0	70.4	66.9	63.6	60.5
23	0.110	95.1	90.4	85.9	81.7	77.6	73.8	70.2	66.7	63.3	60.2
24	0.111	95.0	90.3	85.8	81.5	77.5	73.6	70.0	66.4	63.0	60.0
25	0.112	95.0	90.2	85.7	81.4	77.3	73.4	69.7	66.2	62.8	59.7
26	0.113	94.9	90.1	85.5	81.2	77.1	73.2	69.5	66.0	62.5	59.4
27	0.113	94.9	90.1	85.5	81.2	77.1	73.2	69.5	66.0	62.5	59.4
28	0.114	94.9	90.0	85.4	81.1	76.9	73.0	69.3	65.7	62.4	59.1
29	0.116	94.8	89.9	85.2	80.8	76.6	72.6	68.8	65.2	61.7	58.6
30	0.117	94.8	90.0	85.1	80.6	76.4	72.4	68.6	65.0	61.6	58.3
31	0.118	94.7	89.7	85.0	80.5	76.2	72.2	68.4	64.7	61.3	58.0
32	0.119	94.7	89.6	84.8	80.3	76.0	72.0	68.2	64.5	60.9	57.7
33	0.119	94.7	89.6	84.8	80.3	76.0	72.0	68.2	64.5	60.9	57.7
34	0.120	94.6	89.5	84.7	80.2	75.9	71.8	67.9	64.3	60.8	57.6
35	0.121	94.6	89.5	84.6	80.0	75.7	71.6	67.7	64.0	60.5	57.3
36	0.122	94.5	89.4	84.5	80.0	75.5	71.4	67.5	63.8	60.3	57.0
37	0.123	94.5	89.3	84.4	79.7	75.3	71.2	67.3	63.6	60.0	56.7
38	0.124	94.5	89.2	84.3	79.6	75.2	71.0	67.1	63.3	59.7	56.5
39	0.125	94.4	89.1	84.1	79.4	75.0	70.8	66.8	63.1	59.5	56.2
40	0.127	94.3	89.0	83.9	79.1	74.6	70.4	66.4	62.6	59.1	55.6
41	0.128	94.3	88.9	83.8	79.0	74.0	70.2	66.2	62.4	58.8	55.5
42	0.129	94.2	88.8	83.7	78.9	74.3	70.0	66.0	62.2	58.5	55.2

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
43	0.130	94.2	88.7	83.6	78.7	74.1	69.8	65.8	61.9	58.3	54.9
44	0.131	94.1	88.6	83.4	78.6	74.0	69.6	65.6	61.7	58.0	54.7
45	0.132	94.1	88.5	83.3	78.4	73.8	69.4	65.3	61.5	57.9	54.4
46	0.133	94.1	88.5	83.2	78.3	73.6	69.3	65.1	61.3	57.6	54.1
47	0.134	94.0	88.4	83.1	78.1	73.5	69.1	64.9	61.0	57.4	54.0
48	0.135	94.0	88.3	83.0	78.0	73.3	68.9	64.7	60.8	57.1	53.7
49	0.136	93.9	88.2	82.9	77.8	73.1	68.7	64.5	60.6	56.8	53.4
50	0.137	93.9	88.1	82.8	77.7	72.9	68.5	64.3	60.4	56.7	53.1
51	0.138	93.8	88.1	82.6	77.6	72.8	68.3	64.1	60.2	56.4	52.9
52	0.140	93.8	87.9	82.4	77.3	72.4	67.9	63.7	59.7	55.9	52.4
53	0.141	93.7	87.8	82.3	77.1	72.3	67.7	63.5	59.5	55.8	52.2
54	0.143	93.6	87.7	82.1	76.8	71.9	67.4	63.1	59.1	55.3	51.6
55	0.144	93.6	87.6	82.0	76.7	71.8	67.2	62.9	58.8	55.0	51.5
56	0.145	93.5	87.5	81.9	76.6	71.6	67.0	62.7	58.6	54.9	51.2
57	0.147	93.5	87.3	81.6	76.3	71.3	66.6	62.3	58.2	54.4	50.8
58	0.148	93.4	87.3	81.5	76.1	71.1	66.4	62.1	58.0	54.1	50.5
59	0.150	93.3	87.1	81.3	75.9	70.8	66.1	61.7	57.5	53.7	50.1
60	0.151	93.3	87.0	81.7	75.7	70.6	65.9	61.5	57.3	53.4	49.8
61	0.153	93.2	86.9	80.0	75.4	70.3	65.5	61.1	56.9	52.9	49.4
62	0.155	93.1	86.7	80.7	75.2	70.0	65.2	60.7	56.5	52.5	49.0
63	0.157	93.0	86.5	80.5	74.9	69.7	64.8	60.3	56.1	52.1	48.5
64	0.159	92.9	86.4	80.3	74.6	69.3	64.5	59.9	55.7	51.6	48.0
65	0.161	92.9	86.2	80.1	74.3	69.0	64.1	59.5	55.3	51.2	47.6
66	0.162	92.8	86.1	80.0	74.2	68.9	63.9	59.3	55.1	51.1	47.4
67	0.164	92.7	86.0	79.7	73.9	68.6	63.6	58.9	54.7	50.6	47.0
68	0.165	92.7	85.9	79.6	73.8	68.4	63.4	58.8	54.5	50.4	46.7
69	0.167	92.6	85.7	79.4	73.5	68.1	63.0	58.4	54.1	50.1	46.3

TV Transmission Line

6 1/8" 50-ohm, MI-561669D, MI-561579 Efficiency (%)

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
2	0.039	98.2	96.4	94.7	93.0	91.4	89.7	88.1	86.5	85.0	83.5
3	0.041	98.1	96.3	94.5	92.7	90.9	89.2	87.5	85.9	84.3	82.7
4	0.043	98.0	96.1	94.2	92.4	90.5	88.7	87.0	85.3	83.6	82.0
5	0.046	97.9	95.8	93.8	91.8	89.9	88.0	86.2	84.3	82.6	80.8
6	0.048	97.8	95.7	93.6	91.5	89.5	87.6	85.7	83.8	82.0	80.2
FM	0.051	97.7	95.4	93.1	91.0	88.8	86.7	84.7	82.7	80.8	78.9
7	0.069	96.9	93.8	90.9	88.0	85.3	82.6	80.0	77.5	75.1	72.7
8	0.070	96.8	93.7	90.7	87.8	85.0	82.3	79.7	77.2	74.7	72.3
9	0.071	96.8	93.6	90.6	87.7	84.8	82.1	79.4	76.8	74.4	71.9
10	0.073	96.7	93.5	90.5	87.5	84.6	81.8	79.1	76.5	74.0	71.6
11	0.074	96.7	93.4	90.3	87.3	84.4	81.6	78.8	76.2	73.7	71.2
12	0.075	96.6	93.3	90.2	87.1	84.2	81.2	78.6	75.9	73.3	70.9
13	0.076	96.6	93.2	90.0	87.0	84.0	81.1	78.3	75.6	73.0	70.5
14	0.113	94.9	90.1	85.5	81.2	77.1	73.2	69.4	65.9	62.6	59.4
15	0.114	94.9	90.0	85.5	81.1	76.9	73.0	69.3	65.8	62.4	59.2
16	0.115	94.9	90.0	85.4	81.0	76.8	72.9	69.1	65.6	62.2	59.0
17	0.115	94.8	89.9	85.3	80.9	76.7	72.7	69.0	65.4	62.0	58.8
18	0.116	94.8	89.9	85.2	80.8	76.6	72.6	68.8	65.2	61.8	58.6
19	0.117	94.8	89.8	85.1	80.7	76.4	72.5	68.7	65.1	61.7	58.4
20	0.117	94.7	89.8	85.0	80.6	76.3	72.3	68.5	64.9	61.5	58.3
21	0.118	94.7	89.7	85.0	80.5	76.2	72.2	68.4	64.7	61.3	58.1
22	0.119	94.7	89.6	84.9	80.4	76.1	72.0	68.2	64.6	61.1	57.9
23	0.119	94.7	89.6	84.8	80.3	76.0	71.9	68.1	64.4	61.0	57.7
24	0.120	94.6	89.5	84.7	80.2	75.8	71.8	67.9	64.3	60.8	57.5
25	0.121	94.6	89.5	84.6	80.1	75.7	71.6	67.8	64.1	60.6	57.4
26	0.121	94.6	89.4	84.6	80.0	75.6	71.5	67.6	63.9	60.5	57.2
27	0.122	94.5	89.4	84.5	79.9	75.5	71.4	67.5	63.8	60.3	57.0
28	0.123	94.5	89.3	84.4	79.8	75.4	71.2	67.3	63.6	60.1	56.8
29	0.123	94.5	89.3	84.3	79.7	75.3	71.1	67.2	63.5	60.0	56.7
30	0.124	94.4	89.2	84.3	79.6	75.2	71.0	67.0	63.3	59.8	56.5
31	0.125	94.4	89.2	84.2	79.5	75.0	70.9	66.9	63.2	59.6	56.3
32	0.125	94.4	89.1	84.1	79.4	74.9	70.7	66.8	63.0	59.5	56.1
33	0.126	94.4	89.0	84.0	79.3	74.8	70.6	66.6	62.9	59.3	56.0
34	0.127	94.3	89.0	84.0	79.2	74.7	70.5	66.5	62.7	59.2	55.8
35	0.127	94.3	88.9	83.9	79.1	74.6	70.4	66.3	62.6	59.0	55.7

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)									
		200 (60.96)	400 (121.9)	600 (182.9)	800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)
36	0.128	94.3	88.9	83.8	79.0	74.5	70.2	66.2	62.4	58.9	55.5
37	0.129	94.3	88.8	83.7	78.9	74.4	70.1	66.1	62.3	58.7	55.3
38	0.129	94.2	88.8	83.7	78.8	74.3	70.0	65.9	62.1	58.5	55.2
39	0.130	94.2	88.7	83.6	78.7	74.2	69.9	65.8	62.0	58.4	55.0
40	0.130	94.2	88.7	83.5	78.6	74.1	69.7	65.7	61.8	58.2	54.8
41	0.131	94.1	88.6	83.4	78.6	74.0	69.6	65.5	61.7	58.1	54.7
42	0.132	94.1	88.6	83.4	78.5	73.8	69.5	65.4	61.6	57.9	54.5
43	0.132	94.1	88.5	83.3	78.4	73.7	69.4	65.3	61.4	57.8	54.4
44	0.133	94.1	88.5	83.2	78.3	73.6	69.3	65.2	61.3	57.7	54.2
45	0.133	94.0	88.4	83.2	78.2	73.5	69.2	65.0	61.2	57.5	54.1
46	0.134	94.0	88.4	83.1	78.1	73.4	69.0	64.9	61.0	57.4	53.9
47	0.135	94.0	88.3	83.0	78.0	73.3	68.9	64.8	60.9	57.2	53.8
48	0.135	94.0	88.3	83.0	77.9	73.2	68.8	64.7	60.7	57.1	53.6
49	0.136	93.9	88.2	82.9	77.9	73.1	68.7	64.5	60.6	56.9	53.5
50	0.136	93.9	88.2	82.8	77.8	73.0	68.6	64.4	60.5	56.8	53.3
51	0.137	93.9	88.1	82.7	77.7	72.9	68.5	64.3	60.3	56.7	53.2
52	0.138	93.9	88.1	82.7	77.6	72.8	68.4	64.2	60.2	56.5	53.0
53	0.138	93.8	88.0	82.6	77.5	72.7	68.2	64.0	60.1	56.4	52.9
54	0.139	93.8	88.0	82.5	77.4	72.6	68.1	63.9	60.0	56.2	52.8
55	0.139	93.8	87.9	82.5	77.3	72.5	68.0	63.8	59.8	56.1	52.6
56	0.140	93.8	87.9	82.4	77.3	72.4	67.9	63.7	59.7	56.0	52.5
57	0.141	93.7	87.9	82.3	77.2	72.3	67.8	63.6	59.6	55.8	52.3
58	0.141	93.7	87.8	82.3	77.1	72.2	67.7	63.4	59.4	55.7	52.2
59	0.142	93.7	87.8	82.2	77.0	72.2	67.6	63.3	59.3	55.6	52.1
60	0.142	93.7	87.7	82.2	76.9	72.1	67.5	63.2	59.2	55.4	51.9
61	0.143	93.6	87.7	82.1	76.9	72.0	67.4	63.1	59.1	55.3	51.8
62	0.143	93.6	87.6	82.0	76.8	71.9	67.3	63.0	58.9	55.2	51.7
63	0.144	93.6	87.6	82.0	76.7	71.8	67.2	62.9	58.8	55.1	51.5
64	0.145	93.6	87.5	81.9	76.6	71.7	67.1	62.7	58.7	54.9	51.4
65	0.145	93.5	87.5	81.8	76.5	71.6	67.0	62.6	58.6	54.8	51.3
66	0.146	93.5	87.4	81.8	76.5	71.5	66.9	62.5	58.5	54.7	51.1
67	0.146	93.5	87.4	81.7	76.4	71.4	66.8	62.4	58.3	54.5	51.0
68	0.147	93.5	87.4	81.6	76.3	71.3	66.7	62.3	58.2	54.4	50.9
69	0.147	93.4	87.3	81.6	76.2	71.2	66.6	62.2	58.1	54.3	50.7

TV Transmission Line

TV Transmission Line

8³/₁₆" 75-ohm, MI-561566D, MI-561671 Efficiency (%)

Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)								Channel	Loss dB/100' (30.48 m)	Total Length in Feet (Meters)							
		800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)	2200 (670.6)			800 (243.8)	1000 (304.8)	1200 (365.8)	1400 (426.7)	1600 (487.7)	1800 (548.7)	2000 (609.6)	2200 (670.6)
7	0.0484	91.5	89.4	87.5	85.5	83.7	81.8	80.0	78.2	32	0.0875	85.1	81.7	78.5	75.4	72.4	69.6	66.8	64.2
8	0.0492	91.3	89.3	87.3	85.3	83.4	81.5	79.7	77.9	33	0.0880	85.0	81.7	78.4	75.3	72.3	69.4	66.7	64.0
9	0.0500	91.2	89.1	87.1	85.1	83.2	81.3	79.4	77.6	34	0.0884	85.0	81.6	78.3	75.2	72.2	69.3	66.5	63.9
10	0.0508	91.1	89.0	86.9	84.9	82.9	81.0	79.1	77.3	35	0.0889	84.9	81.5	78.2	75.1	72.1	69.2	66.4	63.7
11	0.0516	90.9	88.8	86.7	84.7	82.7	80.7	78.8	77.0	36	0.0893	84.8	81.4	78.1	75.0	72.0	69.1	66.3	63.6
12	0.0524	90.8	88.6	86.5	84.5	82.5	80.5	78.6	76.7	37	0.0898	84.8	81.3	78.0	74.9	71.8	68.9	66.1	63.5
13	0.0531	90.7	88.5	86.3	84.3	82.2	80.2	78.3	76.4	38	0.0902	84.7	81.2	77.9	74.8	71.7	68.8	66.0	63.3
14	0.0789	86.5	83.4	80.4	77.5	74.8	72.1	69.5	67.0	39	0.0906	84.6	81.2	77.8	74.7	71.6	68.7	65.9	63.2
15	0.0794	86.4	83.3	80.3	77.4	74.6	72.0	69.4	66.9	40	0.0911	84.6	81.1	77.7	74.6	71.5	68.6	65.7	63.0
16	0.0799	86.3	83.2	80.2	77.3	74.5	71.8	69.2	66.7	41	0.0915	84.5	81.0	77.7	74.5	71.4	68.4	65.6	62.9
17	0.0804	86.2	83.1	80.1	77.2	74.4	71.7	69.0	66.5	42	0.0920	84.4	80.9	77.6	74.3	71.3	68.3	65.5	62.8
18	0.0809	86.2	83.0	80.0	77.0	74.2	71.5	68.9	66.4	43	0.0924	84.4	80.8	77.5	74.2	71.2	68.2	65.3	62.6
19	0.0814	86.1	82.9	79.9	76.9	74.1	71.4	68.7	66.2	44	0.0928	84.3	80.8	77.4	74.1	71.0	68.1	65.2	62.5
20	0.0819	86.0	82.8	79.7	76.8	74.0	71.2	68.6	66.0	45	0.0932	84.2	80.7	77.3	74.0	70.9	67.9	65.1	62.4
21	0.0824	85.9	82.7	79.6	76.7	73.8	71.1	68.4	65.9	46	0.0937	84.2	80.6	77.2	73.9	70.8	67.8	65.0	62.2
22	0.0829	85.8	82.6	79.5	76.6	73.7	70.9	68.3	65.7	47	0.0941	84.1	80.5	77.1	73.8	70.7	67.7	64.8	62.1
23	0.0833	85.8	82.5	79.4	76.4	73.6	70.8	68.1	65.6	48	0.0945	84.0	80.4	77.0	73.7	70.6	67.6	64.7	62.0
24	0.0838	85.7	82.4	79.3	76.3	73.4	70.7	68.0	65.4	49	0.0949	84.0	80.4	76.9	73.6	70.5	67.5	64.6	61.8
25	0.0843	85.6	82.4	79.2	76.2	73.3	70.5	67.8	65.2	50	0.0954	83.9	80.3	76.8	73.5	70.4	67.4	64.5	61.7
26	0.0848	85.5	82.3	79.1	76.1	73.2	70.4	67.7	65.1	51	0.0958	83.8	80.2	76.8	73.4	70.3	67.2	64.3	61.6
27	0.0852	85.5	82.2	79.0	76.0	73.1	70.2	67.5	64.9	52	0.0962	83.8	80.1	76.7	73.3	70.2	67.1	64.2	61.4
28	0.0857	85.4	82.1	78.9	75.9	72.9	70.1	67.4	64.8	53	0.0966	83.7	80.1	76.6	73.2	70.1	67.0	64.1	61.3
29	0.0862	85.3	82.0	78.8	75.8	72.8	70.0	67.3	64.6	54	0.0970	83.6	80.0	76.5	73.1	70.0	66.9	64.0	61.2
30	0.0866	85.3	81.9	78.7	75.6	72.7	69.8	67.1	64.5	55	0.0974	83.6	79.9	76.4	73.1	69.8	66.8	63.9	61.1
31	0.0871	85.2	81.8	78.6	75.5	72.6	69.7	67.0	64.3	56	0.0978	83.5	79.8	76.3	73.0	69.7	66.7	63.7	60.9

TV Transmission Line

9³/₁₆" 75-ohm, MI-27793D, MI-561672 Efficiency (%)

3¹/₈" 51.5-ohm, MI-19313 Efficiency (%)

Channel	Loss dB/100'	Total Length in Feet							
		800	1000	1200	1400	1600	1800	2000	2200
7	0.0419	92.6	90.8	89.1	87.4	85.7	84.1	82.4	80.9
8	0.0426	92.5	90.7	88.9	87.2	85.5	83.8	82.2	80.6
9	0.0433	92.3	90.5	88.7	87.0	85.3	83.6	81.9	80.3
10	0.0440	92.2	90.4	88.6	86.8	85.0	83.3	81.7	80.0
11	0.0447	92.1	90.2	88.4	86.6	84.8	83.1	81.4	79.8
12	0.0453	92.0	90.1	88.2	86.4	84.6	82.9	81.2	79.5
13	0.0460	91.9	90.0	88.1	86.2	84.4	82.7	80.9	79.2
14	0.0682	88.2	85.5	82.8	80.3	77.8	75.4	73.1	70.8
15	0.0686	88.1	85.4	82.7	80.2	77.7	75.3	72.9	70.6
16	0.0690	88.1	85.3	82.6	80.0	77.5	75.1	72.8	70.5
17	0.0695	88.0	85.2	82.5	79.9	77.4	75.0	72.6	70.3
18	0.0699	87.9	85.1	82.4	79.8	77.3	74.9	72.5	70.2
19	0.0703	87.9	85.1	82.3	79.7	77.2	74.7	72.3	70.0
20	0.0707	87.8	85.0	82.2	79.6	77.1	74.6	72.2	69.9
21	0.0712	87.7	84.9	82.2	79.5	76.9	74.5	72.1	69.7
22	0.0716	87.6	84.8	82.1	79.4	76.8	74.3	71.9	69.6
23	0.0720	87.6	84.7	82.0	79.3	76.7	74.2	71.8	69.4
24	0.0724	87.5	84.6	81.9	79.2	76.6	74.1	71.6	69.3
25	0.0728	87.4	84.6	81.8	79.1	76.5	74.0	71.5	69.2
26	0.0732	87.4	84.5	81.7	79.0	76.4	73.8	71.4	69.0
27	0.0736	87.3	84.4	81.6	78.9	76.2	73.7	71.2	68.9
28	0.0740	87.3	84.3	81.5	78.8	76.1	73.6	71.1	68.7
29	0.0744	87.2	84.3	81.4	78.7	76.0	73.5	71.0	68.6
30	0.0748	87.1	84.2	81.3	78.6	75.9	73.3	70.9	68.5
31	0.0752	87.1	84.1	81.2	78.5	75.8	73.2	70.7	68.3
32	0.0756	87.0	84.0	81.1	78.4	75.7	73.1	70.6	68.2
33	0.0760	86.9	83.9	81.1	78.3	75.6	73.0	70.5	68.0
34	0.0764	86.9	83.9	81.0	78.2	75.5	72.9	70.3	67.9
35	0.0768	86.8	83.8	80.9	78.1	75.4	72.7	70.2	67.8
36	0.0772	86.8	83.7	80.8	78.0	75.3	72.6	70.1	67.6
37	0.0775	86.7	83.6	80.7	77.9	75.2	72.5	70.0	67.5
38	0.0779	86.6	83.6	80.6	77.8	75.0	72.4	69.8	67.4
39	0.0783	86.6	83.5	80.5	77.7	74.9	72.3	69.7	67.3
40	0.0787	86.5	83.4	80.5	77.6	74.8	72.2	69.6	67.1

Channel	Loss dB/100'	Total Length in Feet									
		200	400	600	800	1000	1200	1400	1600	1800	2000
2	.0723	96.7	93.6	90.5	87.5	84.7	81.9	79.2	76.6	74.1	72.0
3	.0762	96.6	93.2	90.0	87.0	83.9	81.0	78.2	75.5	72.9	70.3
4	.080	96.4	92.9	89.5	86.3	83.2	80.2	77.3	74.5	71.7	69.2
5	.086	96.1	92.4	88.9	85.4	82.1	78.9	75.9	72.8	69.8	67.4
6	.089	96.0	92.1	88.4	84.9	81.5	78.2	75.1	72.0	69.2	66.4
7	.130	94.2	88.7	83.6	78.7	74.1	69.9	65.8	62.0	58.3	54.9
8	.132	94.1	88.5	83.4	78.4	73.8	69.5	65.3	61.5	57.9	54.4
9	.134	94.0	88.3	83.1	78.1	73.4	69.2	64.9	61.0	57.3	53.8
10	.136	94.0	88.1	82.9	77.8	73.1	68.8	64.5	60.6	56.8	53.4
11	.138	93.8	88.1	82.6	77.6	72.8	68.3	64.1	60.2	56.4	52.9
12	.141	93.7	87.8	82.3	77.1	72.3	67.7	63.5	59.5	55.8	52.2
13	.143	93.6	87.7	82.1	76.8	71.9	67.4	63.1	59.1	55.3	51.6

Waveguide TV Transmission Line

WR 1150 WAVEGUIDE, EFFICIENCY (%)

Channel	dB Loss Per 100 Ft.	Length in Feet							
		800	1000	1200	1400	1600	1800	2000	2200
44	0.1348	78.0	73.3	68.9	64.7	60.8	57.2	53.7	50.5
45	0.1325	78.3	73.7	69.3	65.2	61.4	57.7	54.3	51.1
46	0.1304	78.7	74.1	69.8	65.7	61.9	58.3	54.9	51.7
47	0.1284	78.9	74.4	70.1	66.1	62.3	58.7	55.4	52.2
48	0.1265	79.2	74.7	70.5	66.5	62.8	59.2	55.8	52.7
49	0.1247	79.5	75.0	70.9	66.9	63.2	59.6	56.3	53.2
50	0.1230	79.7	75.3	71.2	67.3	63.6	60.1	56.7	53.6
51	0.1215	79.9	75.6	71.5	67.6	63.9	60.4	57.2	54.0
52	0.1200	80.2	75.9	71.8	67.9	64.3	60.8	57.5	54.4
53	0.1186	80.4	76.1	72.1	68.2	64.6	61.2	57.9	54.8
54	0.1173	80.6	76.3	72.3	68.5	64.9	61.5	58.3	55.2
55	0.1161	80.7	76.5	72.6	68.8	65.2	61.8	58.6	55.5
56	0.1149	80.9	76.8	72.8	69.0	65.5	62.1	58.9	55.9
57	0.1138	81.1	76.9	73.0	69.3	65.8	62.4	59.2	56.2
58	0.1127	81.2	77.1	73.2	69.5	66.0	62.7	59.5	56.5
59	0.1117	81.4	77.3	73.4	69.8	66.3	62.9	59.8	56.8
60	0.1108	81.5	77.5	73.6	70.0	66.5	63.2	60.0	57.1
61	0.1099	81.7	77.6	73.8	70.2	66.7	63.4	60.3	57.3
62	0.1090	81.8	77.8	74.0	70.4	66.9	63.6	60.5	57.6
63	0.1082	81.9	77.9	74.2	70.6	67.1	63.9	60.8	57.8
64	0.1074	82.0	78.1	74.3	70.7	67.3	64.1	61.0	58.0
65	0.1067	82.2	78.2	74.5	70.9	67.5	64.3	61.2	58.3
66	0.1059	82.3	78.4	74.6	71.1	67.7	64.5	61.4	58.5
67	0.1053	82.4	78.5	74.8	71.2	67.9	64.6	61.6	58.7
68	0.1046	82.5	78.6	74.9	71.4	68.0	64.8	61.8	58.0
69	0.1040	82.6	78.7	75.0	71.5	68.2	65.0	61.9	59.1

Waveguide TV Transmission Line

WR 1500 WAVEGUIDE, EFFICIENCY (%)

Channel	dB Loss Per 100 Ft.	Length in Feet							
		800	1000	1200	1400	1600	1800	2000	2200
14	0.1034	82.7	78.8	75.2	71.7	68.3	65.2	62.1	59.2
15	0.1001	83.2	79.4	75.8	72.4	69.2	66.1	63.1	60.2
16	0.0971	83.8	80.0	76.5	73.1	69.9	66.9	63.9	61.1
17	0.0945	84.0	80.5	77.0	73.7	70.6	67.6	64.7	62.0
18	0.0921	84.4	80.0	77.5	74.3	71.2	68.3	65.4	62.7
19	0.0899	84.7	81.3	78.0	74.8	71.8	68.9	66.1	63.4
20	0.0880	85.0	81.7	78.4	75.3	72.3	69.4	66.7	64.0
21	0.0862	85.3	82.0	78.8	75.7	72.8	70.0	67.2	64.6
22	0.0846	85.6	82.3	79.2	76.1	73.2	70.4	67.7	65.2
23	0.0831	85.8	82.6	79.5	76.5	73.6	70.9	68.2	65.7
24	0.0817	86.0	82.9	79.8	76.9	74.0	71.3	68.7	66.1
25	0.0804	86.2	83.1	80.1	77.2	74.4	71.7	69.1	66.5
26	0.0792	86.4	83.3	80.3	77.5	74.7	72.0	69.4	67.0
27	0.0781	86.6	83.5	80.6	77.7	75.0	72.3	69.8	67.3
28	0.0771	86.8	83.7	80.8	78.0	75.3	72.7	70.1	67.7
29	0.0761	86.9	83.9	81.0	78.2	75.6	72.9	70.4	68.0
30	0.0752	87.1	84.1	81.2	78.5	75.8	73.2	70.7	68.3
31	0.0744	87.2	84.3	81.4	78.7	76.0	73.5	71.0	68.6
32	0.0736	87.3	84.4	81.6	78.9	76.3	73.7	71.3	68.9
33	0.0728	87.4	84.6	81.8	79.1	76.5	73.9	71.5	69.1
34	0.0721	87.6	84.7	81.9	79.3	76.7	74.2	71.7	69.4
35	0.0715	87.7	84.8	82.1	79.4	76.8	74.4	71.9	69.6
36	0.0709	87.8	84.9	82.2	79.6	77.0	74.5	72.2	69.8
37	0.0703	87.9	85.1	82.3	79.7	77.2	74.7	72.3	70.0
38	0.0697	87.9	85.2	82.5	79.9	77.3	74.9	72.5	70.2
39	0.0692	88.0	85.3	82.6	80.0	77.5	75.1	72.7	70.4
40	0.0687	88.1	85.4	82.7	80.1	77.6	75.2	72.9	70.6
41	0.0683	88.2	85.5	82.8	80.2	77.8	75.4	73.0	70.8
42	0.0678	88.3	85.5	82.9	80.4	77.9	75.5	73.2	70.9
43	0.0674	88.3	85.6	83.0	80.5	78.0	75.6	73.3	71.1
44	0.0670	88.4	85.7	83.1	80.6	78.1	75.7	73.4	71.2
45	0.0667	88.4	85.8	83.2	80.7	78.2	75.9	73.6	71.3
46	0.0663	88.5	85.8	83.3	80.8	78.3	76.0	73.7	71.5
47	0.0660	88.6	85.9	83.3	80.8	78.4	76.1	73.8	71.6

Remote Control

SAMPLE FCC APPLICATION FORM

FCC FORM 301-A
MARCH 1977

APPROVED BY GAO
B-180227 (R0214)

SECTION I

UNITED STATES OF AMERICA
FEDERAL COMMUNICATIONS COMMISSION

APPLICATION FOR AUTHORITY TO OPERATE A
BROADCAST STATION BY REMOTE CONTROL OR TO
MAKE CHANGES IN A REMOTE CONTROL AUTHORIZATION

INSTRUCTIONS

A. This form is to be used only by the licensees or permittees of Standard, FM (commercial and non-commercial) and Television (commercial and non-commercial) Broadcast Stations. This form consists of this Section I and the following sections: Section II, Standard Broadcast Station Directional Antenna Information; Section III, Television Broadcast Station Information.

B. Use separate application form for each type of broadcast station.

C. Prepare three copies of this form and all exhibits, and forward all copies to the Federal Communications Commission, Washington, D. C. 20554.

D. Number exhibits serially in the space provided in the body of the form and list each exhibit in the space provided on page 2.

E. This application must be executed by applicant, if an individual; by a partner of applicant, if a partnership; by an officer of applicant, if a corporation or association; or by attorney of applicant only under conditions shown in Section 1.513, Practice and Procedure, in which event satisfactory evidence of disability of applicant or his absence from the Continental United States and authority of attorney to act must be submitted with application.

F. Before filling out this application, the applicant should familiarize himself with the provisions of Part 73 of the Commission's Rules and Regulations dealing with remote control of the particular type of broadcast station for which this application is being filed.

G. BE SURE ALL NECESSARY INFORMATION IS FURNISHED AND ALL PARAGRAPHS ARE FULLY ANSWERED. IF ANY PORTIONS OF THE APPLICATION ARE NOT APPLICABLE, SPECIFICALLY SO STATE. DEFECTIVE OR INCOMPLETE APPLICATIONS MAY BE RETURNED WITHOUT CONSIDERATION.

(THIS SPACE FOR COMMISSION USE ONLY)

1. Name of licensee or permittee:

2. Mailing address:

Street

City State ZIP Code

3. Identification of existing station:

Call Sign (if unassigned, state file number)

Station location (community of license)

City State

4. Facilities proposed to be operated by remote control:

NOTE: Only facilities for which station holds an outstanding authorization or for which an application is pending may be specified. (Check all appropriate boxes)

(a) STANDARD BROADCAST TRANSMITTER(S):

<input type="checkbox"/> Main Non-DA	<input type="checkbox"/> Auxiliary Non-DA
<input type="checkbox"/> Main DA-D	<input type="checkbox"/> Auxiliary DA-D
<input type="checkbox"/> Main DA-N	<input type="checkbox"/> Auxiliary DA-N
<input type="checkbox"/> Main DA-CH	<input type="checkbox"/> Auxiliary DA-CH
<input type="checkbox"/> Alternate Main	<input type="checkbox"/> Other (Specify): _____

(b) FM BROADCAST TRANSMITTER(S):

Main Alternate Main Auxiliary

Other (Specify): _____

(c) TELEVISION BROADCAST TRANSMITTER(S):

Main Alternate Main Auxiliary

Auxiliary Transmitter and Auxiliary Antenna (Check this box only where auxiliary facilities are authorized for location at other than main transmitter site.)

Other (Specify): _____

5. Request is hereby made for authority to establish a remote control point as follows (this is the point from which the transmitter is controlled):

a. _____ (Street address (or other identification)) (City) (State) (ZIP Code)

b. Airline distance between transmitter and remote control point: _____ miles.

c. Is proposed remote control point located at the main studio? YES NO

If answered "No" submit as Exhibit No. _____ giving reasons for its separate location.

(All previous editions of this form are cancelled.)

THE APPLICANT certifies that remote control operation will be in accordance with the Commission's Rules and Regulations.

THE APPLICANT hereby waives any claim to the use of any particular frequency or of the ether as against the regulatory power of the United States because of the previous use of the same, whether by license or otherwise, and requests an authorization in accordance with this application. (See Section 304 of the Communications Act of 1934.)

THE APPLICANT represents that this application is not filed for the purpose of impeding, obstructing, or delaying determination on any other application with which it may be in conflict.

THE APPLICANT acknowledges that all the statements made in this application and attached exhibits are considered material representations and that all the exhibits are a material part hereof and are incorporated herein as if set out in full in the application.

CERTIFICATION

I certify that the statements in this application are true, complete, and correct to the best of my knowledge and belief, and are made in good faith.

Signed and dated this _____ day of _____, 19 _____

WILLFUL FALSE STATEMENTS MADE ON THIS FORM ARE PUNISHABLE BY FINE AND IMPRISONMENT. U. S. CODE, TITLE 18, SECTION 1001.

(Name of Applicant)

By _____
(Signature)

Title _____

If applicant is represented by legal counsel, state name and post office address:

FCC NOTICE TO INDIVIDUALS REQUIRED BY THE PRIVACY ACT

The solicitation of personal information requested in this application is authorized by the Communications Act of 1934, as amended. The principal purpose(s) for which the information will be used is to determine if the benefit requested is consistent with the public interest, convenience, and necessity. The staff, consisting variously of attorneys, accountants, engineers, and application examiners, will use the information to evaluate and render a judgement as to whether to grant or to deny the application. If all the information requested is not provided, the application may be returned without action having been taken upon it or its processing may be delayed while a request is made to provide the missing information. Additionally, failure on the part of a licensee to submit a renewal application when due may result in a monetary forfeiture being issued against such licensee. Therefore, extreme care should be exercised in making certain that *all* necessary information is provided.

THE FOREGOING NOTICE IS REQUIRED BY THE PRIVACY ACT OF 1974, P. L. 93-579, DECEMBER 31, 1974, 5 U.S.C. 552a (e)(3).

EXHIBITS furnished as required by this form:

EXHIBITS	PARA. NO. OF FORM	NAME OF OFFICER OR EMPLOYEE (1) BY WHOM OR (2) UNDER WHOSE DIRECTION EXHIBIT WAS PREPARED (SHOW WHICH)	OFFICIAL TITLE

I certify that I represent the applicant in the capacity indicated below and that I have examined the statement of technical information and that it is true to the best of my knowledge and belief.

Date _____ Signature _____ Telephone _____
(check appropriate box below) (include Area Code)

- | | |
|---|--|
| <input type="checkbox"/> Technical Director | <input type="checkbox"/> Consulting Engineer |
| <input type="checkbox"/> Registered Professional Engineer | <input type="checkbox"/> Chief Operator |

1. Purpose of Application (Check appropriate box):

- | | |
|---|--|
| <input type="checkbox"/> Initial remote control authorization
<input type="checkbox"/> Add additional remote control point(s)
<input type="checkbox"/> Change remote control point(s) | <input type="checkbox"/> Modify remote control system
<input type="checkbox"/> Add additional transmitter(s)
<input type="checkbox"/> Other (Specify): _____ |
|---|--|

2. Furnish as Exhibit No. _____ responses and/or exhibits, as appropriate, for each of the items listed below, together with such block or schematic diagrams as may be necessary or desirable to fully disclose all aspects of proposed remote control system.

- (a) State the number and purpose of each *control* and *telemetry* function that will be provided at the control point.
- (b) Describe the method by which *control* functions will be transmitted from the control point to the television transmitter(s).
- (c) Describe the method by which *telemetry* data required by the Rules for logging purposes will be transmitted from the transmitter to the control point.

NOTE: I. If transmission of telemetry and alerting signals via a subcarrier on the aural carrier is proposed, state subcarrier frequency and make and type of subcarrier generating equipment. Also describe the means to be employed by which the level of subcarrier injection will be controlled and monitored (See Section 73.682(a)(23) of the Rules.)

II. If transmission of control or telemetry signals via microwave is proposed, state function and call sign of microwave station.

- (d) Describe the fail-safe features of the remote control system which will insure that loss of either the required *control* or *telemetry* functions will place the transmitter in a non-radiating condition.
- (e) Describe measures proposed to prevent tampering or activation of transmitting and control equipment by unauthorized persons at transmitter site and remote control point.
- (f) Furnish a description, including make and type, of all major components of monitoring equipment proposed to be employed for off-the-air monitoring at the remote control point, such as visual and aural radio frequency amplifiers, visual demodulator, aural modulation monitor, vertical interval test signal encoder and decoder, and apparatus for observing the transmitted visual waveform. For any composite component whose performance is critical to the accurate functioning of the monitoring system, test data shall be furnished to demonstrate its adequacy.
- (g) Describe the method by which characteristics of transmitted visual signals, e.g. sync, blanking, setup, black and white levels will be adjusted and maintained.
- (h) Describe the method for determining at the remote control point that tower obstruction lighting, if required, is functioning properly.
- (i) Describe the facilities maintained at the remote control point to permit compliance with the Emergency Action Notification Procedures of Section 73.932 of the Rules.
- (j) Describe the method by which aural modulation will be adjusted and maintained.

REMARKS:

Remote Control

FCC Form 301-A Section III

Exhibit No. 1

FILING INFORMATION FOR MOSELEY DCS-2A DIGITAL CONTROL SYSTEM AND DRS-1 DIGITAL REMOTE SYSTEM

In response to Paragraph 2, (a) through (j), attach as Exhibit No. 1 the following:

"2(a). State the number and purpose of each control and telemetry function that will be provided at the control point."

Note: Although specific assignments of control and telemetry functions will depend on the specific transmitter equipment, the following is furnished as a guide. Part A is a list of suggested functions for a *single transmitter*, and Part B for a *dual transmitter*.

A. Single transmitter control and telemetry functions.

Function	Control	Telemetry
1.	Transmitter on/off	Visual PA Filament
2.	Plate on/off	Visual PA Plate Voltage
3.	Overload Reset	Visual PA Plate Current
4.	---	Aural PA Plate Current
5.	---	Aural PA Plate Voltage
6.	Visual Excitation Raise/Lower	Visual Output Power
7.	Video Level Raise/Lower	Visual Output Power
8.	Sync Gain Raise/Lower	Visual Output Power
9.	Aural Excitation Raise/Lower	Aural Output Power
10.	EBS on/off	Aural Output Power
11.	---	Visual VSWR
12.	---	Aural VSWR
13.	Tower Lights on/off	Tower Lights
14.-30.	Spare	Spare

B. Dual transmitter control and telemetry functions.

Function	Control	Telemetry
1.	Transmitter A/B on	A Visual PA Filament Voltage
2.	---	B Visual PA Filament Voltage
3.	Plate Voltage A/B on	A Visual PA Plate Voltage
4.	---	B Visual PA Plate Voltage
5.	Plate Voltage A/B off	A Aural PA Plate Voltage
6.	---	B Aural PA Plate Voltage
7.	Transmitter A/B off	A Visual PA Plate Current
8.	---	B Visual PA Plate Current
9.	Overload Reset A/B	A Aural PA Plate Current
10.	---	B Aural PA Plate Current
11.	Aural Excitation Raise/Lower	Total Aural Power
12.	---	A Aural Power
13.	---	B Aural Power
14.	Aural Power Balance Raise/Lower	Aural Reject Power
15.	---	Aural VSWR

(cont'd next page)

FILING INFORMATION (Continued)

Function	Control	Telemetry
16.	Visual Excitation Raise/Lower	Total Visual Power
17.	A Video Level Raise/Lower	Visual Reject Power
18.	---	A Visual Power
19.	B Video Level Raise/Lower	Visual Reject Power
20.	---	B Visual Power
21.	Combined Video Level Raise/Lower	Total Visual Power
22.	A Sync Level Raise/Lower	Visual Reject Power
23.	B Sync Level Raise/Lower	Visual Reject Power
24.	Combined Sync Gain Raise/Lower	Total Visual Power
25.	---	Visual VSWR
26.	Mode: A/B Parallel/EBS	Total Aural Power
27.	Mode: A Air—B Test B Air—A Test	Total Aural Power
28.	Exciter Switchover Manual/Auto	---
29.	Exciter A/B	---
30.	Tower Lights on/off	Tower Lights

"2(b). Describe the method by which control functions will be transmitted from the control point to the television transmitter(s)."

(See Figure 1a or 1b)

With the Model DCS-2A or DRS-1, control is accomplished via commands manually initiated by the operator through activation of the Control Terminal situated at the studio or remote control point. Each channel of the system has the capability of performing two command functions, Raise and Lower. Channel selection, Raise and Lower, and fail-safe information (control and telemetry) is generated in the Control Terminal in the form of a digital word. The digital word is transmitted in a serial form by a two-level FSK system. This FSK signal is detected at the transmitter site and the reconstructed digital word is fed to the Remote Terminal of the DCS-2A, or DRS-1, for decoding and actual activation of the selected command. For assurance of activation of the selected command, a parity check is incorporated. After satisfying the parity requirements, the selected relay is energized. A signal derived from the selected relay is used to generate a digital word to give positive indication to the operator that the desired control command has taken place.

For the DCS-2A only, automatic switching is provided in the receiving modem for selection of main and alternate interconnecting circuits.

Note 1: For wire line transmission of control tones, add the following:

A two-way, communications grade leased telephone line will be used to interconnect the Studio Control Unit, and the Transmitter Control Unit. The leased telephone line will have the minimum characteristics of Bell Telephone Interstate Tariff 260, Series 3002, unconditioned.

Note 2: For STL microwave audio subcarrier transmission of control tones, add the following:

The control data in the form of FSK tones will be transmitted from the Studio Control Unit at the studio control point, to the Transmitter Control Unit at the transmitter site, by means of an audio channel diplexed on the STL Microwave System. This diplexing will be achieved by frequency modulating an RF subcarrier at MHz with the audio tones, and superimposing this modulated subcarrier upon the video signal for simultaneous transmission. The subcarrier will be demodulated at the transmitter site, and routed to the Transmitter Control Unit.

"2(c). Describe the method by which telemetry data required by the Rules will be transmitted to the control point." (See Figure 1a and 1b)

Metering or telemetry return is accomplished by presenting to the remote control system a DC sample voltage representative of the parameter to be monitored. This DC sample voltage is converted to a "digital word". Telemetry information is returned from the transmitter site to the remote control point in a manner identical to that used for command information. (See 2(b) for description of channel selection procedure.) This digital word is properly conditioned for transmission over the interconnecting circuit by the modem. The parameter is displayed on a 4-digit (3½ digit for the DRS-1) readout in the Control Terminal at the studio or remote control point. Individual calibration potentiometers enable correct calibration of each parameter.

Remote Control

FILING INFORMATION (Continued)

For the DCS-2A only, automatic switching is provided in the receiving modem for selection of main and alternate interconnecting circuits.

Note 3: For wire line transmission of FSK telemetry, add the following:

The FSK telemetry tones will be transmitted from the transmitter site to the studio control point by means of the same two-way, communications grade wire line described in 2(b) above.

Note 4: For transmission of telemetry by means of a subcarrier on the aural transmitter, add the following:

The FSK telemetry tones are applied to the input of a subcarrier generator, where they are frequency modulated on a 39 kHz subcarrier. This subcarrier is then applied to the audio input of the aural transmitter along with the TV aural program material. The amplitude of the 39 kHz subcarrier will be adjusted, by means of an output level control incorporated in the subcarrier generator, to produce a deviation of the TV aural carrier not exceeding 10% (± 2.5 kHz). The subcarrier deviation will be monitored by means of a calibrated voltage output from the aural modulation monitor located at the studio control point.

Note 5: Recovery of the telemetry information at the studio control point may be accomplished by the use of a type TMR-2 Multiplex Receiver (VHF only) or a type SCD-2 Subcarrier Detector in conjunction with a VHF or UHF aural modulation monitor with an SCA output. In either case, the 39 kHz subcarrier is demodulated and the FSK data tones are fed to the studio control unit. The applicable equipment should be identified and shown in block diagram form (see Figure 1b).

"2(d). Describe the fail-safe features of the remote control system which will insure that loss of either the required control or telemetry functions will place the transmitter in a non-radiating condition."

Control Fail-Safe. Transmitted with every command "digital word" generated in the Control Terminal is a fail-safe code. The Remote Terminal situated at the TV transmitter site continuously monitors the "digital word" for the fail-safe code. The absence of this code establishes a fail-safe condition. In the case of the "control link", a fail-safe condition for more than 20 seconds opens a relay which has its contacts in series with the controlled transmitter interlock circuits, causing the transmitter to be placed in a non-radiating condition.

Telemetry Fail-Safe. Telemetry fail-safe is accomplished through the use of the Model FSU-1 Fail-Safe Unit. The purpose of this fail-safe unit is twofold. The first is to observe the presence of the DC sample voltages. These DC sample voltages, four in number, represent the parameters required to be logged by Paragraph 73.671(a). Should any of the DC sample voltages fail (have no output), the FSU-1 Fail-Safe Unit is initiated. The second purpose of telemetry fail-safe involves verification that the telemetry information is present at the remote control point. Presence of the metering signal is determined by a telemetry fail-safe detector in the Control Terminal of the DCS-2A or DRS-1. Should telemetry information not be present, an additional telemetry fail-safe code is relayed to the transmitter site with the other control information. Should either the DC sample voltages fail, or the telemetry information not arrive at the remote control point, the Model FSU-1 Fail-Safe Unit is activated to start a one-hour integrated circuit timer. At the end of this one-hour time period, the fail-safe output from the FSU-1 operates a relay connected to an interface panel containing a latching circuit which opens the transmitter interlock circuit. This circuit can only be reset by actuating a reset button at the transmitter site.

"2(e). Describe measures proposed to prevent tampering or activation of transmitting and control equipment by unauthorized persons."

(The security measures and devices employed at the transmitter site and at the studio should be described, including security fences, locks, and alarm systems.) Any alarm which may be initiated by a contact closure may be reported to the studio by means of the remote control status system. A contact closure to any of the status inputs to the remote control terminal of the system will illuminate a lamp at the Studio Control Unit associated with that channel, as well as providing drive to external relays for an audible alarm. The status signals are transmitted to the Studio Control Unit as a digital word in the same manner as the telemetry information.

"2(f). Furnish a description, including make and type, of all major components of monitoring equipment proposed to be employed for off-the-air monitoring at the remote control point, such as visual and aural radio frequency amplifiers, visual demodulator, aural modulation monitor, vertical interval test signal encoder and decoder, and apparatus for observing the transmitted visual waveform. For any composite component whose performance is critical to the accurate functioning of the monitoring system, test data shall be furnished to demonstrate its adequacy."

Remote Control

FILING INFORMATION (Continued)

(See Figure 2)

"2(g). Describe the method by which the daily frequency checks required by Section 73.690(c) of the Rules will be made."

A Type visual and aural frequency and aural modulation monitor will be in operation at the studio control point.

"2(h). Describe the method for determining at the remote control point that tower obstruction lighting, if required, is functioning properly."

The tower lighting system may be monitored by an automatic device which will sample AC current to detect a tower light failure and report via the DCS-2A or DRS-1 status system to the studio control point. (Alternatively, the AC current may be monitored on each leg of the tower lighting circuits by means of the TLK-1 Tower Light Monitor Kit, and sample voltages proportional to these currents connected to telemetry inputs of the remote control system to provide control point meter indication of individual lighting level circuit current.)

"2(i). Describe the facilities maintained at the remote control point to permit compliance with the Emergency Action Notification Procedures of Section 73.932 of the Rules."

(Applicant should describe the equipment capable of receiving the Emergency Action Notifications and Terminations transmitted by the Primary EBS station for the local area.)

"2(j). Describe the method by which aural modulation will be adjusted and maintained."

(Applicant should describe the method indicated in the instruction book for the type of modulation monitor in use.)
(See 2c, Note 4.)

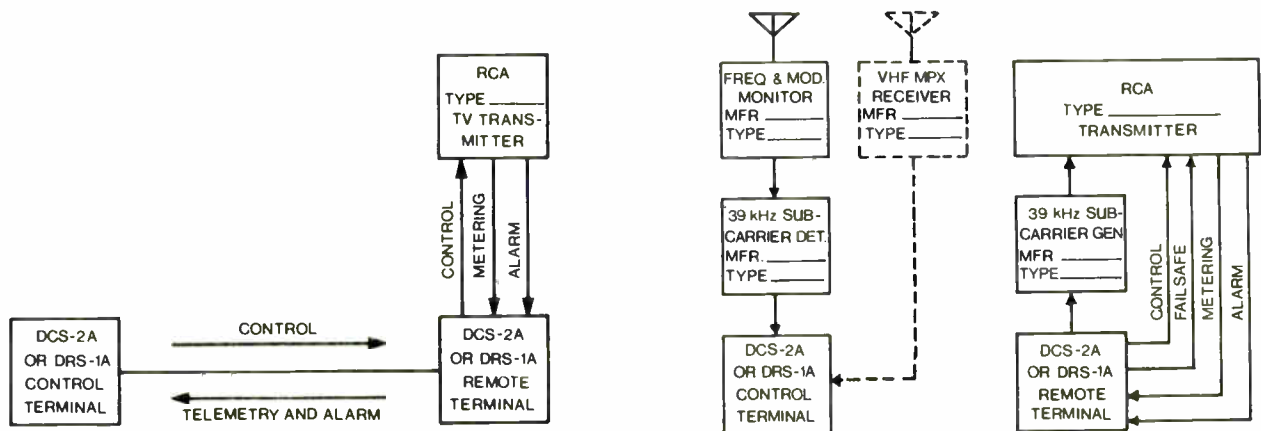


Figure 1a

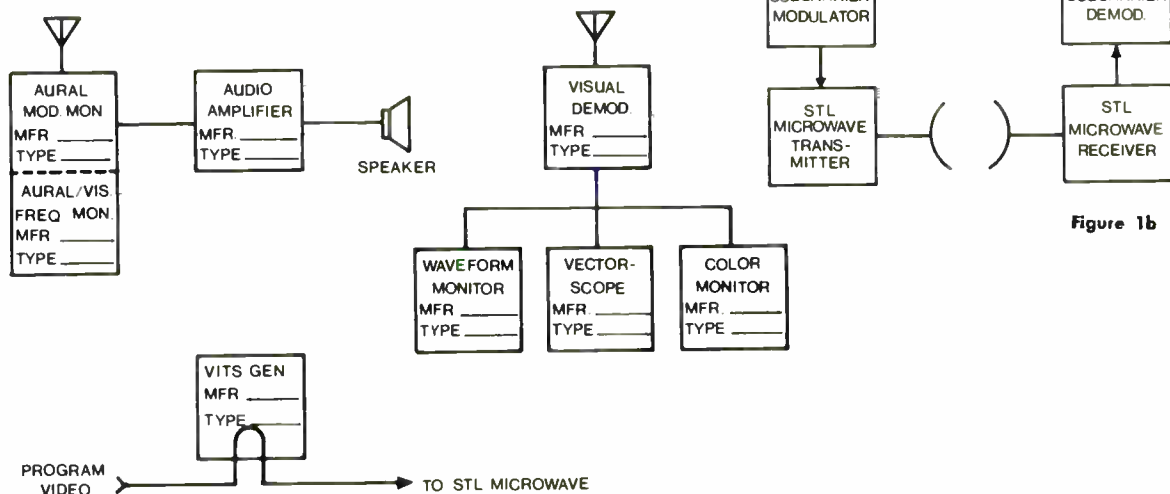
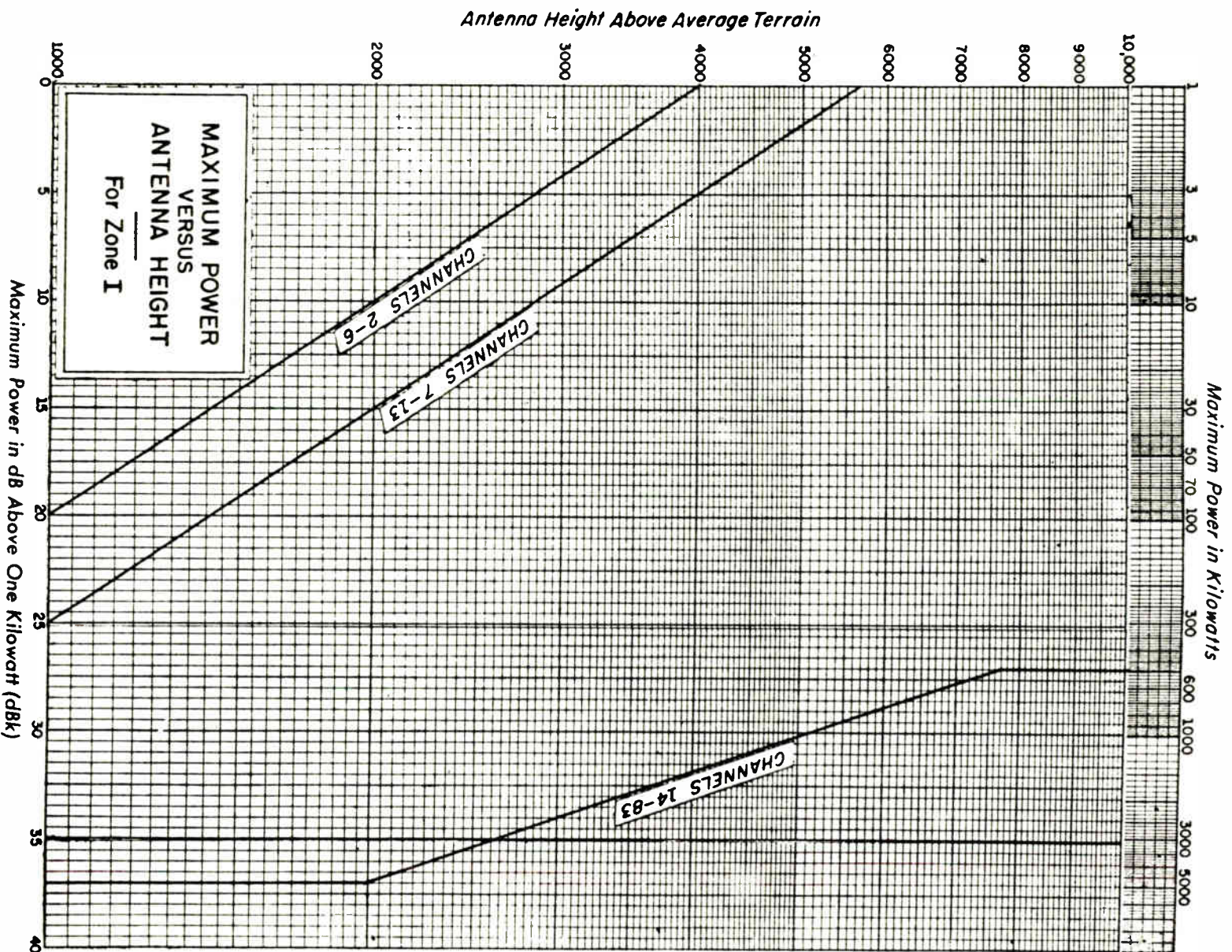


Figure 1b

Figure 2

Reference Data

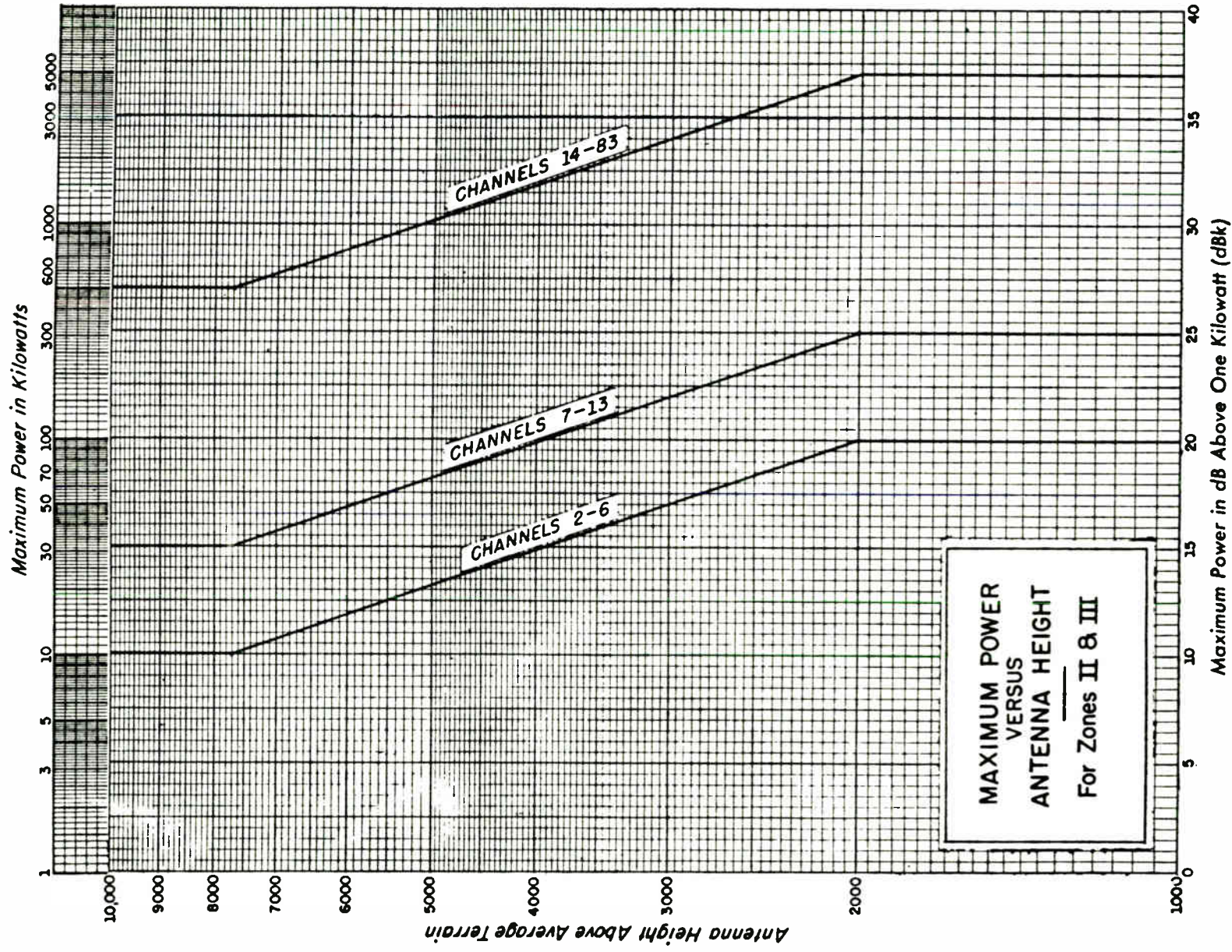


FCC § 73.699, FIGURE 3

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(Ed. 8/76)

Reference Data



MAXIMUM POWER
VERSUS
ANTENNA HEIGHT
For Zones II & III

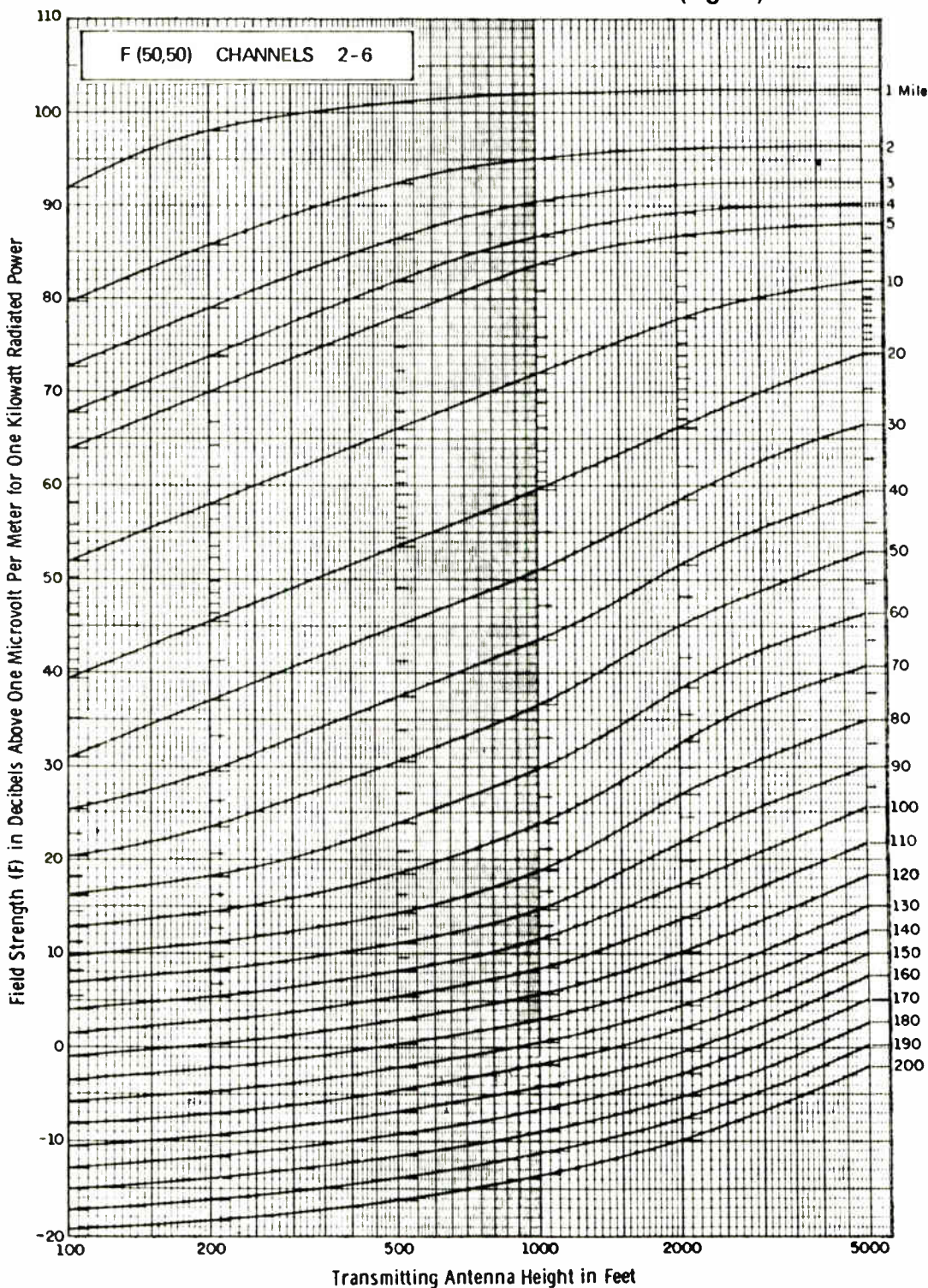
FCC § 73.699, FIGURE 4

289

(Ed. 8/76)

Reference Data

VHF-TV FIELD STRENGTH CHART (Fig. 9)

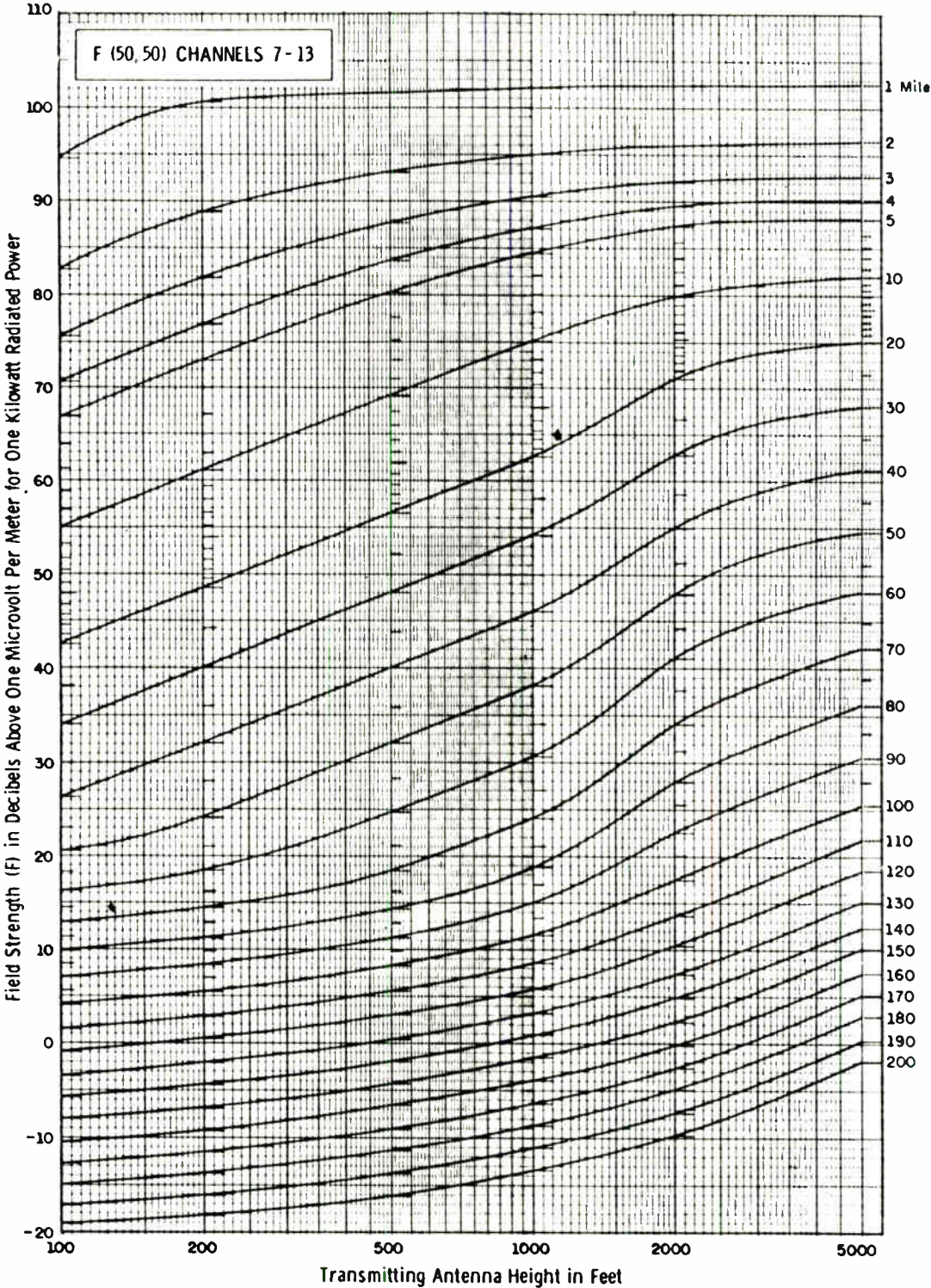


FCC FIELD STRENGTHS FOR SERVICE CONTOURS

SERVICE	CH 2-6	74 dBu	68 dBu	47 dBu
City Grade	5010 $\mu\text{V}/\text{m}$			
Grade A	2510 $\mu\text{V}/\text{m}$			
Grade B	224 $\mu\text{V}/\text{m}$			

TELEVISION CHANNELS 2-6
ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT
OF THE POTENTIAL RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT
OF THE TIME AT A RECEIVING ANTENNA HEIGHT OF 30 FEET

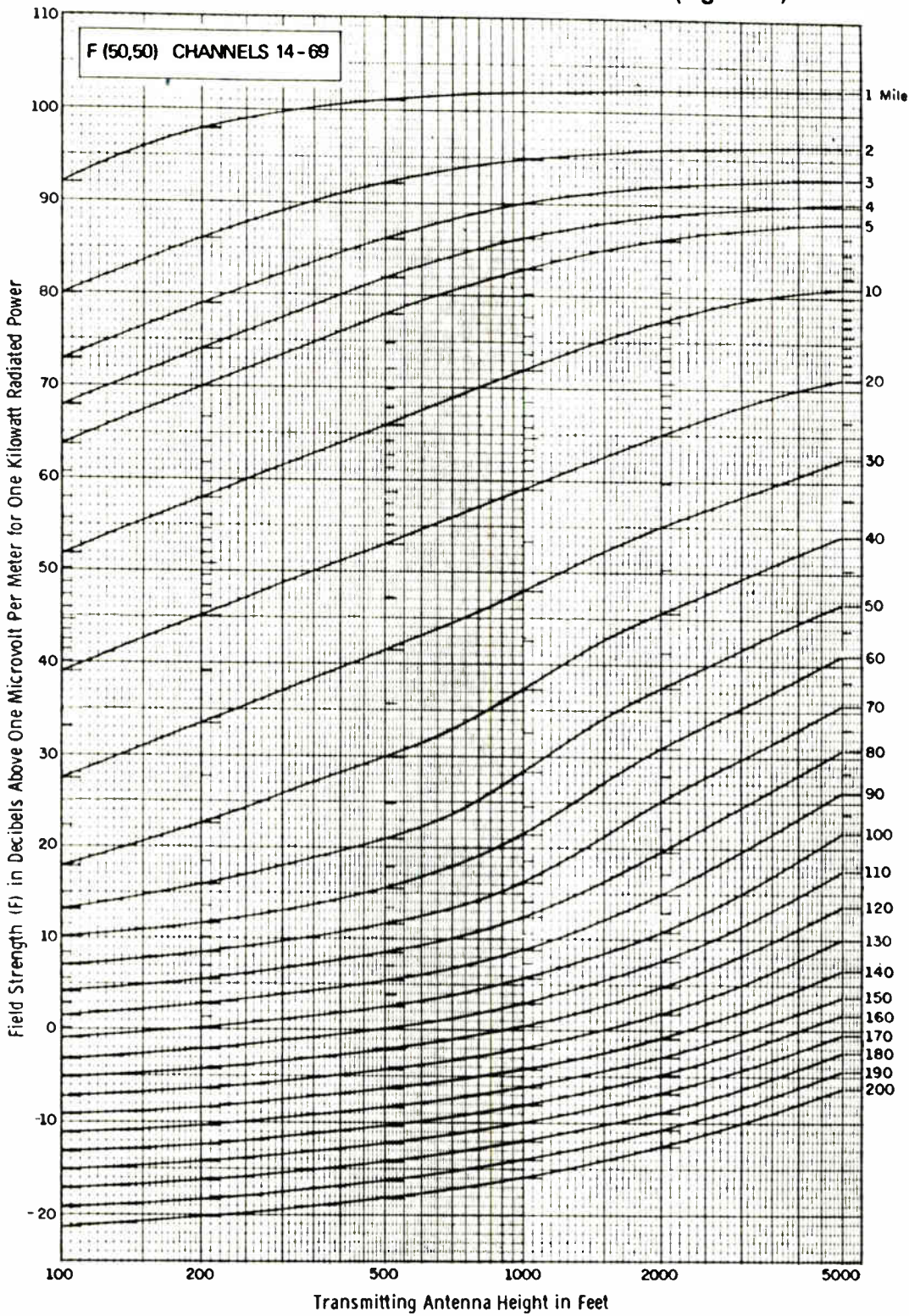
VHF-TV FIELD STRENGTH CHART (Fig. 10)



TELEVISION CHANNELS 7 - 13
 ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT
 OF THE POTENTIAL RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT
 OF THE TIME AT A RECEIVING ANTENNA HEIGHT OF 30 FEET

Reference Data

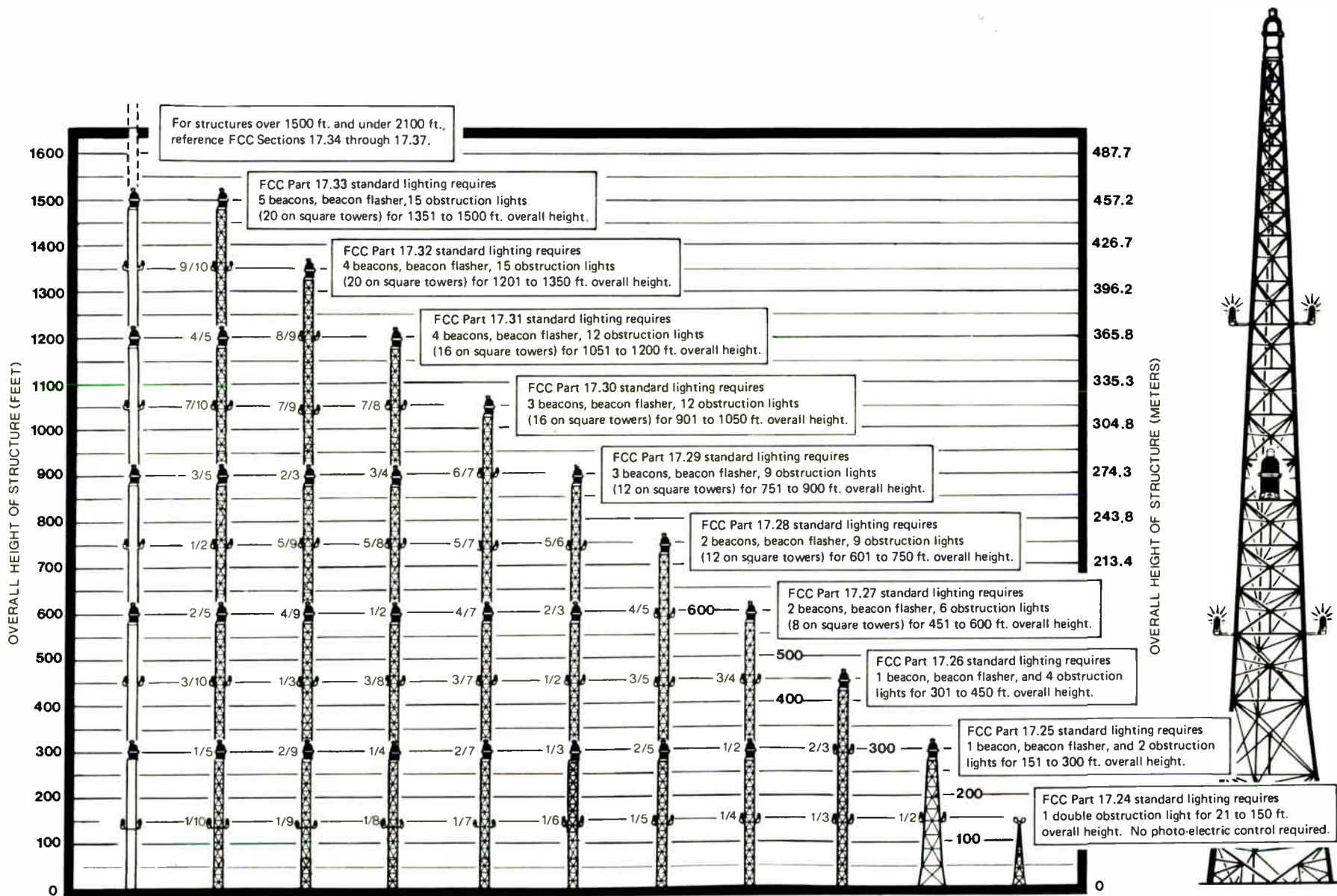
UHF-TV FIELD STRENGTH CHART (Fig. 10b)



FCC FIELD STRENGTHS FOR SERVICE CONTOURS

CH 14-83		
SERVICE	10,000 μ Vm	80 dBu
City Grade	5010 μ Vm	74 dBu
Grade A	1585 μ Vm	64 dBu
Grade B		

TELEVISION CHANNELS 14-69
 ESTIMATED FIELD STRENGTH EXCEEDED AT 50 PERCENT
 OF THE POTENTIAL RECEIVER LOCATIONS FOR AT LEAST 50 PERCENT
 OF THE TIME AT A RECEIVING ANTENNA HEIGHT OF 30 FEET



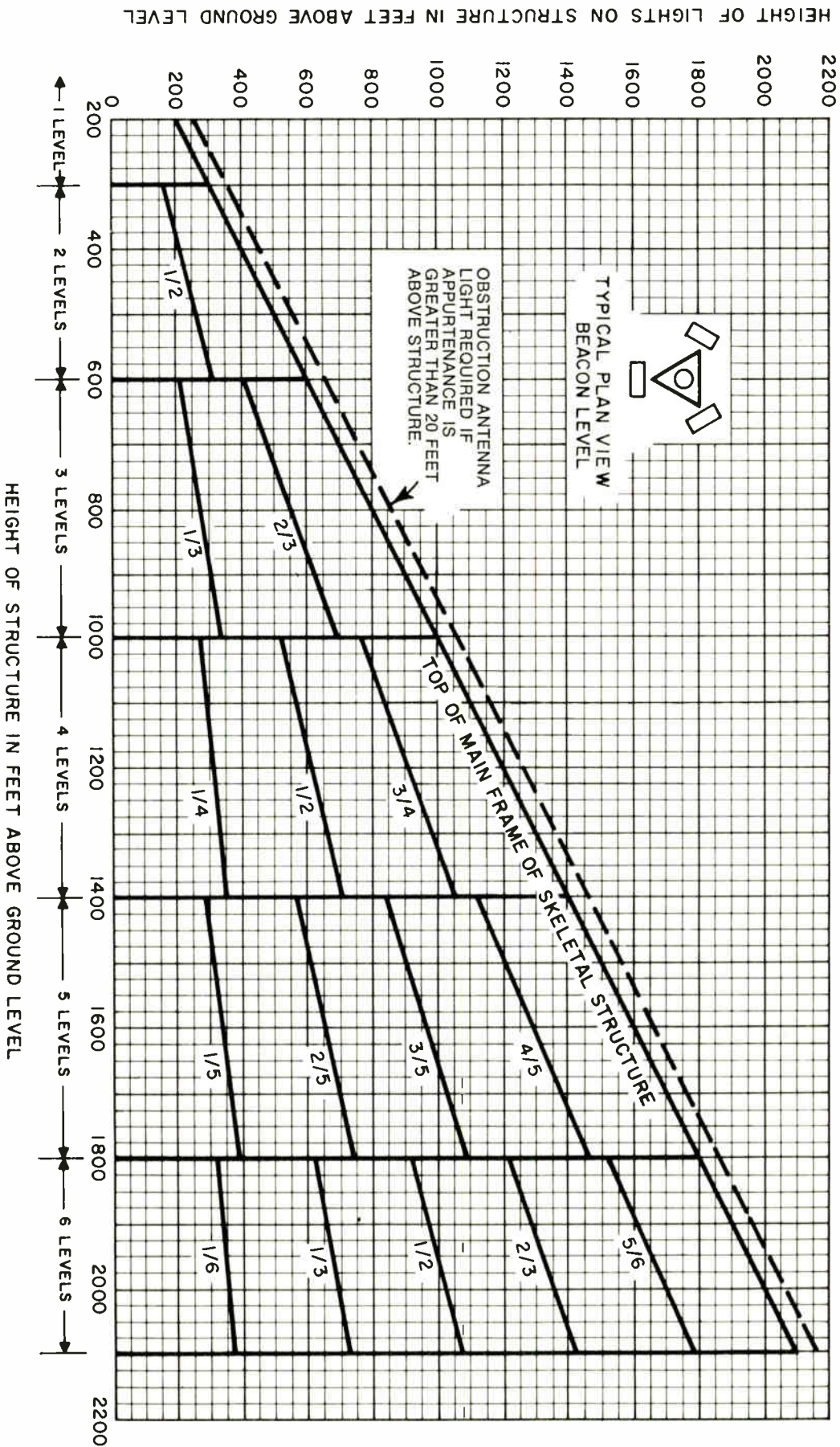
FCC "STANDARD" TOWER LIGHTING SPECIFICATION

Reference Data

The FAA standards for marking and lighting obstructions to air navigation Circular AC70/7460-1C are effective as of December 1973. For additional requirements, consult FCC Form 715 and FCC Rules, Part 17.

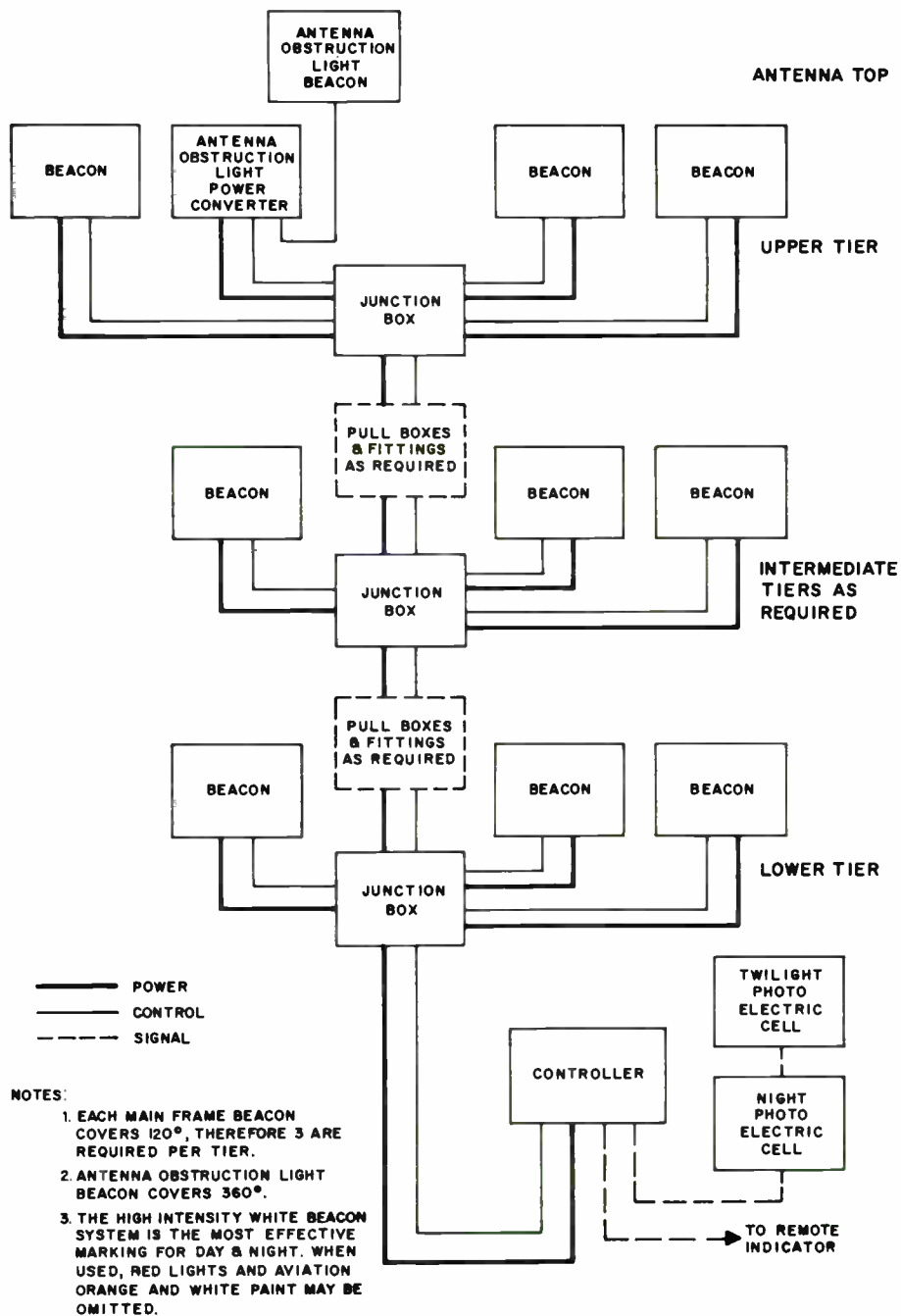
FCC and FAA studies of specific sites may establish lighting requirements that are not "standard" as described in this chart. The construction permit issued by the FCC will clearly state the lighting requirements for that structure. Material to be supplied for tower lighting should be carefully reviewed to verify compliance with the construction permit.

FAA
 HIGH INTENSITY WHITE OBSTRUCTION LIGHTING
 STANDARDS FOR SKELETAL STRUCTURES PER AC 70/7460-1E



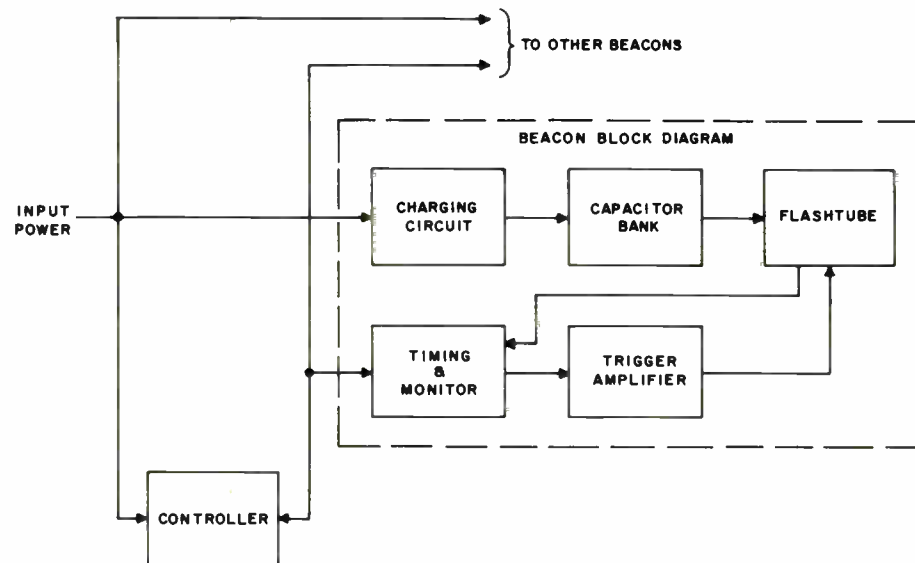
NOTE:
 THE HIGH INTENSITY WHITE BEACON SYSTEM
 IS THE MOST EFFECTIVE MARKING FOR BOTH
 DAY & NIGHT. WHEN USED, RED LIGHTS AND
 AVIATION ORANGE AND WHITE PAINT MAY BE
 OMITTED.

TYPICAL WIRING/LAYOUT DIAGRAM



OBSTRUCTION LIGHTING BLOCK DIAGRAMS

TYPICAL BEACON BLOCK DIAGRAM



1. The charging circuit receives primary input power, transforms and rectifies it to a high voltage, and applies it to the capacitor bank.
2. The capacitor bank accepts energy slowly between flashes, stores it, and then discharges it rapidly into the flashtube.
3. The xenon gas filled quartz flashtube is among the most reliable and efficient electrical to light energy conversion devices and produces a brilliant short duration white flash.
4. The timing and monitor circuits receive synchronizing and intensity level signals from, and transmit flash confirmation signals to, a master system controller located at ground level.
5. The trigger amplifier, upon command, produces a high voltage pulse which, when applied to the flashtube causes the xenon gas to ionize, thus permitting the capacitor bank to discharge its energy through the flashtube and produce the brilliant flash of light.
6. The controller provides flash rate and intensity level signals to all beacons. It also receives the individual beacon monitor signals and then provides local indication of system status. Remote system status indicators are also available.

Reference Data

Conversion Table, kW vs. dBk

kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk
0.5	-3.01	8.2	9.14	15.9	12.01	23.6	13.73	31.3	14.96	39.0	15.91	46.7	16.69
0.6	-2.22	8.3	9.19	16.0	12.04	23.7	13.75	31.4	14.97	39.1	15.92	46.8	16.70
0.7	-1.55	8.4	9.24	16.1	12.07	23.8	13.77	31.5	14.98	39.2	15.93	46.9	16.71
0.8	-0.97	8.5	9.29	16.2	12.10	23.9	13.78	31.6	15.00	39.3	15.94	47.0	16.72
0.9	-0.46	8.6	9.34	16.3	12.12	24.0	13.80	31.7	15.01	39.4	15.95	47.1	16.73
1.0	0.00	8.7	9.40	16.4	12.15	24.1	13.82	31.8	15.02	39.5	15.97	47.2	16.74
1.1	0.41	8.8	9.44	16.5	12.17	24.2	13.84	31.9	15.04	39.6	15.98	47.3	16.75
1.2	0.79	8.9	9.49	16.6	12.20	24.3	13.86	32.0	15.05	39.7	15.99	47.4	16.76
1.3	1.14	9.0	9.54	16.7	12.23	24.4	13.87	32.1	15.07	39.8	16.00	47.5	16.77
1.4	1.46	9.1	9.59	16.8	12.25	24.5	13.89	32.2	15.08	39.9	16.01	47.6	16.78
1.5	1.76	9.2	9.64	16.9	12.28	24.6	13.91	32.3	15.09	40.0	16.02	47.7	16.79
1.6	2.04	9.3	9.68	17.0	12.30	24.7	13.93	32.4	15.11	40.1	16.03	47.8	16.79
1.7	2.30	9.4	9.73	17.1	12.33	24.8	13.94	32.5	15.12	40.2	16.04	47.9	16.80
1.8	2.55	9.5	9.78	17.2	12.36	24.9	13.96	32.6	15.13	40.3	16.05	48.0	16.81
1.9	2.79	9.6	9.82	17.3	12.38	25.0	13.98	32.7	15.15	40.4	16.06	48.1	16.82
2.0	3.01	9.7	9.87	17.4	12.41	25.1	14.00	32.8	15.16	40.5	16.07	48.2	16.83
2.1	3.22	9.8	9.91	17.5	12.43	25.2	14.01	32.9	15.17	40.6	16.09	48.3	16.84
2.2	3.42	9.9	9.96	17.6	12.46	25.3	14.03	33.0	15.19	40.7	16.10	48.4	16.85
2.3	3.62	10.0	10.00	17.7	12.48	25.4	14.05	33.1	15.20	40.8	16.11	48.5	16.86
2.4	3.80	10.1	10.04	17.8	12.50	25.5	14.07	33.2	15.21	40.9	16.12	48.6	16.87
2.5	3.98	10.2	10.09	17.9	12.53	25.6	14.08	33.3	15.22	41.0	16.13	48.7	16.88
2.6	4.15	10.3	10.13	18.0	12.55	25.7	14.10	33.4	15.24	41.1	16.14	48.8	16.88
2.7	4.31	10.4	10.17	18.1	12.58	25.8	14.12	33.5	15.25	41.2	16.15	48.9	16.89
2.8	4.47	10.5	10.21	18.2	12.60	25.9	14.13	33.6	15.26	41.3	16.16	49.0	16.90
2.9	4.62	10.6	10.25	18.3	12.62	26.0	14.15	33.7	15.28	41.4	16.17	49.1	16.91
3.0	4.77	10.7	10.29	18.4	12.65	26.1	14.17	33.8	15.29	41.5	16.18	49.2	16.92
3.1	4.91	10.8	10.33	18.5	12.67	26.2	14.18	33.9	15.30	41.6	16.19	49.3	16.93
3.2	5.05	10.9	10.37	18.6	12.70	26.3	14.20	34.0	15.31	41.7	16.20	49.4	16.94
3.3	5.19	11.0	10.41	18.7	12.72	26.4	14.22	34.1	15.33	41.8	16.21	49.5	16.95
3.4	5.31	11.1	10.45	18.8	12.74	26.5	14.23	34.2	15.34	41.9	16.22	49.6	16.95
3.5	5.44	11.2	10.49	18.9	12.76	26.6	14.25	34.3	15.35	42.0	16.23	49.7	16.96
3.6	5.56	11.3	10.53	19.0	12.79	26.7	14.27	34.4	15.37	42.1	16.24	49.8	16.97
3.7	5.68	11.4	10.57	19.1	12.81	26.8	14.28	34.5	15.38	42.2	16.25	49.9	16.98
3.8	5.80	11.5	10.61	19.2	12.83	26.9	14.30	34.6	15.39	42.3	16.26	50.0	16.99
3.9	5.91	11.6	10.64	19.3	12.86	27.0	14.31	34.7	15.40	42.4	16.27	50.1	17.00
4.0	6.02	11.7	10.68	19.4	12.88	27.1	14.33	34.8	15.42	42.5	16.28	50.2	17.01
4.1	6.13	11.8	10.72	19.5	12.90	27.2	14.35	34.9	15.43	42.6	16.29	50.3	17.02
4.2	6.23	11.9	10.76	19.6	12.92	27.3	14.36	35.0	15.44	42.7	16.30	50.4	17.02
4.3	6.33	12.0	10.79	19.7	12.94	27.4	14.38	35.1	15.45	42.8	16.31	50.5	17.03
4.4	6.43	12.1	10.83	19.8	12.97	27.5	14.39	35.2	15.47	42.9	16.32	50.6	17.04
4.5	6.53	12.2	10.86	19.9	12.99	27.6	14.41	35.3	15.48	43.0	16.33	50.7	17.05
4.6	6.63	12.3	10.90	20.0	13.01	27.7	14.42	35.4	15.49	43.1	16.34	50.8	17.06
4.7	6.72	12.4	10.93	20.1	13.03	27.8	14.44	35.5	15.50	43.2	16.35	50.9	17.07
4.8	6.81	12.5	10.97	20.2	13.05	27.9	14.46	35.6	15.51	43.3	16.36	51.0	17.08
4.9	6.90	12.6	11.00	20.3	13.07	28.0	14.47	35.7	15.53	43.4	16.37	51.1	17.08
5.0	6.99	12.7	11.04	20.4	13.10	28.1	14.49	35.8	15.54	43.5	16.38	51.2	17.09
5.1	7.08	12.8	11.07	20.5	13.12	28.2	14.50	35.9	15.55	43.6	16.39	51.3	17.10
5.2	7.16	12.9	11.11	20.6	13.14	28.3	14.52	36.0	15.56	43.7	16.40	51.4	17.11
5.3	7.24	13.0	11.14	20.7	13.16	28.4	14.53	36.1	15.58	43.8	16.41	51.5	17.12
5.4	7.32	13.1	11.17	20.8	13.18	28.5	14.55	36.2	15.59	43.9	16.42	51.6	17.13
5.5	7.40	13.2	11.21	20.9	13.20	28.6	14.56	36.3	15.60	44.0	16.43	51.7	17.13
5.6	7.48	13.3	11.24	21.0	13.22	28.7	14.58	36.4	15.61	44.1	16.44	51.8	17.14
5.7	7.56	13.4	11.27	21.1	13.24	28.8	14.59	36.5	15.62	44.2	16.45	51.9	17.15
5.8	7.63	13.5	11.30	21.2	13.26	28.9	14.61	36.6	15.63	44.3	16.46	52.0	17.16
5.9	7.71	13.6	11.34	21.3	13.28	29.0	14.62	36.7	15.65	44.4	16.47	52.1	17.17
6.0	7.78	13.7	11.37	21.4	13.30	29.1	14.64	36.8	15.66	44.5	16.48	52.2	17.18
6.1	7.85	13.8	11.40	21.5	13.32	29.2	14.65	36.9	15.67	44.6	16.49	52.3	17.19
6.2	7.92	13.9	11.43	21.6	13.34	29.3	14.67	37.0	15.68	44.7	16.50	52.4	17.19
6.3	7.99	14.0	11.46	21.7	13.36	29.4	14.68	37.1	15.69	44.8	16.51	52.5	17.20
6.4	8.06	14.1	11.49	21.8	13.38	29.5	14.70	37.2	15.71	44.9	16.52	52.6	17.21
6.5	8.13	14.2	11.52	21.9	13.40	29.6	14.71	37.3	15.72	45.0	16.53	52.7	17.22
6.6	8.20	14.3	11.55	22.0	13.42	29.7	14.73	37.4	15.73	45.1	16.54	52.8	17.23
6.7	8.26	14.4	11.58	22.1	13.44	29.8	14.74	37.5	15.74	45.2	16.55	52.9	17.23
6.8	8.33	14.5	11.61	22.2	13.46	29.9	14.76	37.6	15.75	45.3	16.56	53.0	17.24
6.9	8.39	14.6	11.64	22.3	13.48	30.0	14.77	37.7	15.76	45.4	16.57	53.1	17.25
7.0	8.45	14.7	11.67	22.4	13.50	30.1	14.79	37.8	15.77	45.5	16.58	53.2	17.26
7.1	8.51	14.8	11.70	22.5	13.52	30.2	14.80	37.9	15.79	45.6	16.59	53.3	17.27
7.2	8.57	14.9	11.73	22.6	13.54	30.3	14.81	38.0	15.80	45.7	16.60	53.4	17.28
7.3	8.63	15.0	11.76	22.7	13.56	30.4	14.83	38.1	15.81	45.8	16.61	53.5	17.28
7.4	8.69	15.1	11.79	22.8	13.58	30.5	14.84	38.2	15.82	45.9	16.62	53.6	17.29
7.5	8.75	15.2	11.82	22.9	13.60	30.6	14.86	38.3	15.83	46.0	16.63	53.7	17.30
7.6	8.81	15.3	11.85	23.0	13.62	30.7	14.87	38.4	15.84	46.1	16.64	53.8	17.31
7.7	8.86	15.4	11.88	23.1	13.64	30.8	14.89	38.5	15.85	46.2	16.65	53.9	17.32
7.8	8.92	15.5	11.90	23.2	13.65	30.9	14.90	38.6	15.87	46.3	16.66	54.0	17.32
7.9	8.98	15.6	11.93	23.3	13.67	31.0	14.91	38.7	15.88	46.4	16.67	54.1	17.33
8.0	9.03	15.7	11.96	23.4	13.69	31.1	14.93	38.8	15.89	46.5	16.67	54.2	17.34
8.1	9.08	15.8	11.99	23.5	13.71	31.2	14.94	38.9	15.90	46.6	16.68	54.3	17.35

Reference Data

Conversion Table, kW vs. dBk

kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk	kW	dBk
54.4	17.36	62.3	17.94	70.1	18.46	77.9	18.92	85.6	19.32	93.3	19.70	300	24.77
54.5	17.36	62.4	17.94	70.2	18.46	78.0	18.92	85.7	19.33	93.4	19.70	316	25.00
54.6	17.37	62.5	17.95	70.3	18.47	78.1	18.93	85.8	19.33	93.5	19.71	320	25.05
54.7	17.38	62.6	17.96	70.4	18.48	78.2	18.93	85.9	19.34	93.6	19.71	340	25.31
54.8	17.39	62.7	17.97	70.5	18.48	78.3	18.94	86.0	19.34	93.7	19.72	360	25.56
54.9	17.40	62.8	17.97	70.6	18.49	78.4	18.94	86.1	19.35	93.8	19.72	380	25.80
55.0	17.40	62.9	17.99	70.7	18.49	78.5	18.95	86.2	19.36	93.9	19.73	400	26.02
55.1	17.41	63.0	17.99	70.8	18.50	78.6	18.95	86.3	19.36	94.0	19.73	420	26.23
55.2	17.42	63.1	18.00	70.9	18.51	78.7	18.96	86.4	19.37	94.1	19.74	440	26.43
55.3	17.43	63.2	18.01	71.0	18.51	78.8	18.97	86.5	19.37	94.2	19.74	460	26.63
55.4	17.44	63.3	18.01	71.1	18.52	78.9	18.97	86.6	19.38	94.3	19.75	480	26.81
55.5	17.44	63.4	18.02	71.2	18.52	79.0	18.98	86.7	19.38	94.4	19.75	500	26.99
55.6	17.45	63.5	18.03	71.3	18.53	79.1	18.98	86.8	19.39	94.5	19.75	520	27.16
55.7	17.46	63.6	18.03	71.4	18.54	79.2	18.99	86.9	19.39	94.6	19.76	540	27.32
55.8	17.47	63.7	18.04	71.5	18.54	79.3	18.99	87.0	19.40	94.7	19.76	560	27.48
55.9	17.47	63.8	18.05	71.6	18.55	79.4	19.00	87.1	19.40	94.8	19.77	580	27.63
56.0	17.48	63.9	18.06	71.7	18.56	79.5	19.00	87.2	19.41	94.9	19.77	600	27.78
56.1	17.49	64.0	18.06	71.8	18.56	79.6	19.01	87.3	19.41	95.0	19.78	620	27.92
56.2	17.50	64.1	18.07	71.9	18.57	79.7	19.01	87.4	19.42	95.1	19.78	640	28.06
56.3	17.51	64.2	18.08	72.0	18.57	79.8	19.02	87.5	19.42	95.2	19.79	660	28.19
56.4	17.51	64.3	18.08	72.1	18.58	79.9	19.03	87.6	19.43	95.3	19.79	680	28.32
56.5	17.52	64.4	18.09	72.2	18.59	80.0	19.03	87.7	19.43	95.4	19.80	700	28.45
56.6	17.53	64.5	18.10	72.3	18.59	80.1	19.04	87.8	19.43	95.5	19.80	720	28.57
56.7	17.54	64.6	18.10	72.4	18.60	80.2	19.04	87.9	19.44	95.6	19.80	740	28.69
56.8	17.54	64.7	18.11	72.5	18.60	80.3	19.05	88.0	19.44	95.7	19.81	760	28.81
56.9	17.55	64.8	18.12	72.6	18.61	80.4	19.05	88.1	19.45	95.8	19.81	780	28.92
57.0	17.56	64.9	18.12	72.7	18.62	80.5	19.06	88.2	19.45	95.9	19.82	800	29.03
57.1	17.57	65.0	18.13	72.8	18.62	80.6	19.06	88.3	19.46	96.0	19.82	820	29.14
57.2	17.57	65.1	18.14	72.9	18.63	80.7	19.07	88.4	19.46	96.1	19.83	840	29.24
57.3	17.58	65.2	18.14	73.0	18.63	80.8	19.07	88.5	19.47	96.2	19.83	860	29.34
57.4	17.59	65.3	18.15	73.1	18.64	80.9	19.08	88.6	19.47	96.3	19.84	880	29.44
57.5	17.60	65.4	18.16	73.2	18.65	81.0	19.08	88.7	19.48	96.4	19.84	900	29.54
57.6	17.60	65.5	18.16	73.3	18.65	81.1	19.09	88.8	19.48	96.5	19.85	920	29.64
57.7	17.61	65.6	18.17	73.4	18.66	81.2	19.10	88.9	19.49	96.6	19.85	940	29.73
57.8	17.62	65.7	18.18	73.5	18.66	81.3	19.10	89.0	19.49	96.7	19.85	960	29.82
57.9	17.63	65.8	18.18	73.6	18.67	81.4	19.11	89.1	19.50	96.8	19.86	980	29.91
58.0	17.63	65.9	18.19	73.7	18.67	81.5	19.11	89.2	19.50	96.9	19.86	1000	30.00
58.1	17.64	66.0	18.20	73.8	18.68	81.6	19.12	89.3	19.51	97.0	19.87	1100	30.41
58.2	17.65	66.1	18.20	73.9	18.69	81.7	19.12	89.4	19.51	97.1	19.87	1200	30.79
58.3	17.66	66.2	18.21	74.0	18.69	81.8	19.13	89.5	19.52	97.2	19.88	1300	31.14
58.4	17.66	66.3	18.22	74.1	18.70	81.9	19.13	89.6	19.52	97.3	19.88	1400	31.46
58.5	17.67	66.4	18.22	74.2	18.70	82.0	19.14	89.7	19.53	97.4	19.89	1500	31.76
58.6	17.68	66.5	18.23	74.3	18.71	82.1	19.14	89.8	19.53	97.5	19.89	1600	32.04
58.7	17.69	66.6	18.23	74.4	18.72	82.2	19.15	89.9	19.54	97.6	19.89	1700	32.30
58.8	17.69	66.7	18.24	74.5	18.72	82.3	19.15	90.0	19.54	97.7	19.90	1800	32.55
58.9	17.70	66.8	18.25	74.6	18.73	82.4	19.16	90.1	19.55	97.8	19.90	1900	32.79
59.0	17.71	66.9	18.25	74.7	18.73	82.5	19.16	90.2	19.55	97.9	19.91	2000	33.01
59.1	17.72	67.0	18.26	74.8	18.74	82.6	19.17	90.3	19.56	98.0	19.91	2100	33.22
59.2	17.72	67.1	18.27	74.9	18.74	82.7	19.18	90.4	19.56	98.1	19.92	2200	33.42
59.3	17.73	67.2	18.27	75.0	18.75	82.8	19.18	90.5	19.57	98.2	19.92	2300	33.62
59.4	17.74	67.3	18.28	75.1	18.76	82.9	19.19	90.6	19.57	98.3	19.93	2400	33.80
59.5	17.75	67.4	18.29	75.2	18.76	83.0	19.19	90.7	19.58	98.4	19.93	2500	33.98
59.6	17.75	67.5	18.29	75.3	18.77	83.1	19.20	90.8	19.58	98.5	19.93	2600	34.15
59.7	17.76	67.6	18.30	75.4	18.77	83.2	19.20	90.9	19.59	98.6	19.94	2700	34.31
59.8	17.77	67.7	18.31	75.5	18.78	83.3	19.21	91.0	19.59	98.7	19.94	2800	34.47
59.9	17.77	67.8	18.31	75.6	18.79	83.4	19.21	91.1	19.60	98.8	19.95	2900	34.62
60.0	17.78	67.9	18.32	75.7	18.79	83.5	19.22	91.2	19.60	98.9	19.95	3000	34.77
60.1	17.79	68.0	18.33	75.8	18.80	83.6	19.22	91.3	19.60	99.0	19.96	3100	34.91
60.2	17.80	68.1	18.33	75.9	18.80	83.7	19.23	91.4	19.61	99.1	19.96	3200	35.05
60.3	17.80	68.2	18.34	76.0	18.81	83.8	19.23	91.5	19.61	99.2	19.97	3300	35.19
60.4	17.81	68.3	18.34	76.1	18.81	83.9	19.24	91.6	19.62	99.3	19.97	3400	35.31
60.5	17.82	68.4	18.35	76.2	18.82	84.0	19.24	91.7	19.62	99.4	19.97	3500	35.44
60.6	17.82	68.5	18.36	76.3	18.83	84.1	19.25	91.8	19.63	99.5	19.98	3600	35.56
60.7	17.83	68.6	18.36	76.4	18.83	84.2	19.25	91.9	19.63	99.6	19.98	3700	35.68
60.8	17.84	68.7	18.37	76.5	18.84	84.3	19.26	92.0	19.64	99.7	19.99	3800	35.80
60.9	17.85	68.8	18.38	76.6	18.84	84.4	19.26	92.1	19.64	99.8	19.99	3900	35.91
61.0	17.85	68.9	18.38	76.7	18.85	84.5	19.27	92.2	19.65	99.9	20.00	4000	36.02
61.1	17.86	69.0	18.39	76.8	18.85	84.6	19.27	92.3	19.65	100	20.00	4100	36.13
61.2	17.87	69.1	18.39	76.9	18.86	84.7	19.28	92.4	19.66	120	20.79	4200	36.23
61.3	17.87	69.2	18.40	77.0	18.86	84.8	19.28	92.5	19.66	140	21.46	4300	36.33
61.4	17.88	69.3	18.41	77.1	18.87	84.9	19.29	92.6	19.67	160	22.04	4400	36.43
61.5	17.89	69.4	18.41	77.2	18.88	85.0	19.29	92.7	19.67	180	22.55	4500	36.53
61.6	17.90	69.5	18.42	77.3	18.88	85.1	19.30	92.8	19.68	200	23.01	4600	36.63
61.8	17.90	69.6	18.43	77.4	18.89	85.2	19.30	92.9	19.68	220	23.42	4700	36.72
61.9	17.91	69.7	18.43	77.5	18.89	85.3	19.31	93.0	19.68	240	23.80	4800	36.81
62.0	17.92	69.8	18.44	77.6	18.90	85.4	19.31	93.1	19.69	260	24.15	4900	36.90
62.1	17.92	69.9	18.44	77.7	18.90	85.5	19.32	93.2	19.69	280	24.47	5000	36.99
62.2	17.93	70.0	18.45	77.8	18.91								

DISTANCE IN MILES TO RECEIVING LOCATION AND DEPRESSION ANGLES FOR VARIOUS ANTENNA HEIGHTS

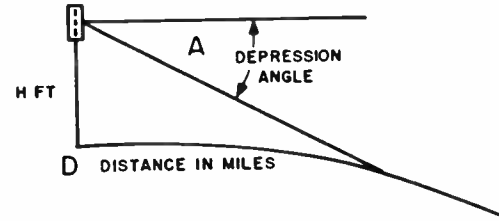
H—Height in feet to Electrical center of antenna

$$D_h \text{—Distance to horizon} = \sqrt{2H}$$

(4/3 earth radius)

$$A_h \text{—Depression angle to horizon} = \frac{.0216H}{D_h}$$

The relationship $D = \frac{.0109 H}{A}$ gives approximate distances to intercept at various depression angles.



Height H in Feet	D_h	A_h	Depression Angle																			
			0.5°	1°	1.5°	2°	2.5°	3°	3.5°	4°	4.5°	5°	6°	7°	8°	9°	10°	11°	12°	13°	14°	15°
200	20.0	.216	4.6	2.21	1.45	1.07	0.86	0.71	0.61	0.54	0.48	0.43	0.36	0.31	0.27	0.24	0.22	0.20	0.18	0.17	0.15	0.14
300	24.5	.268	7.2	3.35	2.18	1.64	1.30	1.07	0.92	0.80	0.71	0.64	0.55	0.46	0.41	0.37	0.33	0.30	0.27	0.25	0.23	0.21
400	28.3	.304	9.9	4.49	2.90	2.18	1.75	1.42	1.24	1.06	0.94	0.86	0.73	0.62	0.54	0.49	0.46	0.40	0.36	0.33	0.31	0.29
500	31.6	.343	12.6	5.60	3.65	2.72	2.16	1.82	1.55	1.36	1.21	1.09	0.92	0.78	0.68	0.61	0.55	0.50	0.45	0.42	0.39	0.36
600	34.6	.375	16.0	6.81	4.8	3.61	2.64	2.15	1.86	1.63	1.42	1.31	1.09	0.92	0.81	0.73	0.65	0.59	0.54	0.50	0.46	0.43
700	37.4	.405	19.9	7.98	5.2	3.87	3.08	2.54	2.16	1.90	1.68	1.50	1.25	1.06	0.94	0.83	0.74	0.68	0.62	0.57	0.53	0.50
800	40.0	.435	24.2	9.2	5.9	4.49	3.52	2.89	2.50	2.17	1.90	1.75	1.45	1.22	1.05	0.97	0.86	0.78	0.72	0.67	0.61	0.58
900	42.4	.452	29.5	10.5	6.7	5.05	3.98	3.28	2.80	2.45	2.13	1.96	1.62	1.36	1.19	1.09	0.97	0.88	0.81	0.75	0.69	0.65
1000	45.0	.487	36.2	11.6	7.4	5.51	4.39	3.65	3.10	2.70	2.39	2.15	1.79	1.52	1.32	1.18	1.08	0.98	0.90	0.83	0.77	0.72
1200	49.0	.530	—	14.1	9.0	6.75	5.32	4.39	3.77	3.19	2.85	2.61	2.15	1.81	1.59	1.44	1.29	1.18	1.08	1.00	0.92	0.87
1400	53.0	.577	—	16.7	10.4	7.66	6.12	5.13	4.33	3.77	3.35	3.00	2.48	2.11	1.85	1.63	1.45	1.36	1.24	1.15	1.06	1.00
1600	56.6	.620	—	19.4	12.0	9.10	7.10	5.85	5.02	4.35	3.80	3.40	2.84	2.40	2.13	1.91	1.72	1.55	1.44	1.32	1.23	1.16
1800	60.0	.650	—	22.3	13.6	10.25	8.00	6.60	5.65	4.90	4.30	3.90	3.19	2.69	2.39	2.15	1.94	1.75	1.62	1.48	1.38	1.30
2000	63.2	.683	—	25.4	15.4	11.25	8.89	7.30	6.25	5.45	4.80	4.30	3.60	3.04	2.68	2.38	2.13	2.00	1.83	1.70	1.56	1.46
5000	100.0	1.080	—	—	42.9	29.5	22.80	18.75	15.85	13.75	12.10	10.90	9.01	7.75	6.73	6.00	5.40	4.90	4.50	4.15	3.84	3.60

Television Channels, Frequencies
and Wavelengths

Channel	MHz	Visual Carrier, MHz	Wavelengths in inches	Channel	MHz	Visual Carrier, MHz	Wavelengths in inches
2	54-60	55.25	214.0	43	644-650	645.25	18.2
3	60-66	61.25	193.0	44	650-656	651.25	18.1
4	66-72	67.25	176.0	45	656-662	657.25	17.9
5	76-82	77.25	153.0	46	662-668	663.25	17.7
6	82-88	83.25	142.0	47	668-674	669.25	17.6
7	174-180	175.25	67.4	48	674-680	675.25	17.4
8	180-186	181.25	65.2	49	680-686	681.25	17.3
9	186-192	187.25	63.0	50	686-692	687.25	17.1
10	192-198	193.25	61.2	51	692-698	693.25	17.0
11	198-204	199.25	59.3	52	698-704	699.25	16.8
12	204-210	205.25	57.6	53	704-710	705.25	16.7
13	210-216	211.25	55.9	54	710-716	711.25	16.5
14	470-476	471.25	25.0	55	716-722	717.25	16.4
15	476-482	477.25	24.7	56	722-728	723.25	16.3
16	482-488	483.25	24.4	57	728-734	729.25	16.1
17	488-494	489.25	24.1	58	734-740	735.25	16.0
18	494-500	495.25	23.8	59	740-746	741.25	15.9
19	500-506	501.25	23.5	60	746-752	747.25	15.7
20	506-512	507.25	23.2	61	752-758	753.25	15.6
21	512-518	513.25	22.9	62	758-764	759.25	15.5
22	518-524	519.25	22.7	63	764-770	765.25	15.4
23	524-530	525.25	22.4	64	770-776	771.25	15.3
24	530-536	531.25	22.2	65	776-782	777.25	15.1
25	536-542	537.25	21.9	66	782-788	783.25	15.0
26	542-548	543.25	21.7	67	788-794	789.25	14.9
27	548-554	549.25	21.4	68	794-800	795.25	14.8
28	554-560	555.25	21.2	69	800-806	801.25	14.7
29	560-566	561.25	21.0	70	806-812	807.25	14.6
30	566-572	567.25	20.8	71	812-818	813.25	14.5
31	572-578	573.25	20.5	72	818-824	819.25	14.4
32	578-584	579.25	20.3	73	824-830	825.25	14.3
33	584-590	585.25	20.1	74	830-836	831.25	14.1
34	590-596	591.25	19.9	75	836-842	837.25	14.0
35	596-602	597.25	19.7	76	842-848	843.25	13.9
36	602-608	603.25	19.5	77	848-854	849.25	12.8
37	608-614	609.25	19.3	78	854-860	855.25	13.8
38	614-620	615.25	19.1	79	860-866	861.25	13.7
39	620-626	621.25	18.9	80	866-872	867.25	13.6
40	626-632	627.25	18.8	81	872-878	873.25	13.5
41	632-638	633.25	18.6	82	878-884	879.25	13.4
42	638-644	639.25	18.4	83	884-890	885.25	13.3

NOTES

Regional Offices

ATLANTA, GA. 30341
RCA Building
3395 N.E. Expressway
404-455-3400

AUSTIN, TEX. 78731
3409 Executive Center Drive
Suite 213
512-345-2224/5

BIRMINGHAM, AL 35215
2244 Center Point Road
Suite 203
205-854-3096

BOSTON AREA:
Wellesley, Mass. 02181
40 Willam Street
Wellesley Office Park
617-237-6050

CAMDEN, N. J. 08102
Front & Cooper Streets
Bldg. 2-2
609-338-3000

CHARLOTTE, NC 28209
5200 Park Road
Suite 125
704-525-4870

CHICAGO AREA:
120 West Eastman Street
Suite 303
Arlington Heights, IL 60004
312-255-2202

CINCINNATI, OH. 45231
11430 Hamilton Avenue
513-825-1550

DALLAS, TEX. 75247
8700 Stemmons Freeway
214-638-6820

DENVER, COLO. 80211
2695 Alcott Street
Suite 231-S
303-433-8484

DETROIT AREA:
Southfield, Mich. 48075
24333 Southfield Rd.
Suite 209
313-569-5880

HOLLYWOOD, CALIF. 90028
Suite 531
6363 Sunset Blvd.
213-468-4084

INDIANAPOLIS, IND. 46205
2511 East 46th Street
Suite Q-1
317-546-4003

KANSAS CITY AREA:
Overland Park, Kans. 66207
5750 West 95th Street
Suite 111
913-642-3185, 6, 7

MINNEAPOLIS, MINN 55416
4601 Excelsior Blvd.
Suite 305
612-920-6395

NEW YORK, N. Y. 10036
3rd Floor
1133 Ave. of the Americas
212-598-5900

WISCONSIN
Grafton, WI 53024
Grafton State Bank Building
Suite 403
101 Falls Road
414-377-8430

PITTSBURGH AREA:
McMurray, Pa. 15317
761 N. Washington Road
Nationwide Office Bldg.
412-941-5570

SAN FRANCISCO AREA:
Burlingame, Calif. 94010
Suite 305
330 Primrose Road
415-343-2741

SEATTLE, WASH. 98109
1818 Westlake Avenue, North
Suite 222
206-285-2375

ST. LOUIS AREA:
St. Charles, Mo. 63301
Noah's Ark
Suite 340
314-946-7755

SYRACUSE, NY 13203
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Room 200
315-478-4195

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1901 N. Moore Street
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