



Dielectric
COMMUNICATIONS

Engineering Excellence Since 1942

TV Antenna System Planning Guide

Dielectric Communications:

Advancing
the frontier
in broadcast
communications
for over half
a century.

Full System Solutions

Since our inception in 1942, we have considered ourselves a solutions oriented engineering company, priding ourselves on our depth of scientific experience and knowledge. Clients approach us with broadcast needs and we deliver full system solutions, jointly tasking with client engineering staff to design the most technologically advanced systems in the world. We are the only company who designs and manufactures the full broadcast system from the transmitter output to the tower top.

Our offerings include RF systems, switching and patching components, monitoring systems, transmission line and waveguide, antenna systems, towers, lighting, installation and maintenance services.

DTV Specialists

Dielectric leads the world in the design and manufacture of complete DTV broadcast antenna systems. Of the original 35 stations on air November 1, 1998, 28 were Dielectric systems. Dielectric is at the forefront of DTV product development and has installed more DTV systems than all other manufacturers combined. We are involved in all aspects of DTV implementation. This includes working directly with the broadcast consultant for FCC filing data, designing and manufacturing the equipment, installation services and performing the final system check once the equipment is installed in the field. Dielectric works with the broadcaster every step of the DTV process, ensuring a comprehensive and precisely engineered broadcast package.

Call Us

This fourth edition of our television planning guide details the systems and components we produce. Call us about your requirements or any of our broadcast products at 1-866-DIELECTRIC (1-866-343-5328).



Specifications subject to change without notice.

Global Presence

Dielectric products are represented in 90 countries around the world. With the rapid expansion of communications, Dielectric is positioned to service the broadcast needs of small and large stations, DTV and NTSC, FM and specialty RF systems, complete systems and components.



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Peru
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Saudi Arabia
Singapore
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Spain
Sri Lanka
Sweden
Switzerland
Syria
Taiwan
Thailand
Togo
Uganda
United States
Venezuela
Vietnam
Yemen
Zambia
Zimbabwe

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Top Mounted Antenna Systems—UHF

TFU Series GTH



- Single or adjacent channel top mount performance
- Excellent frequency response across channel(s) of operation
- Low VSWR
- Full polycarbonate radome standard¹
- Higher power versions available
- Elliptical and circular polarization options available
- Available in 8 to 36 bay configurations 8.5 to 30.0 (9.29dB to 14.77dB) RMS Gain

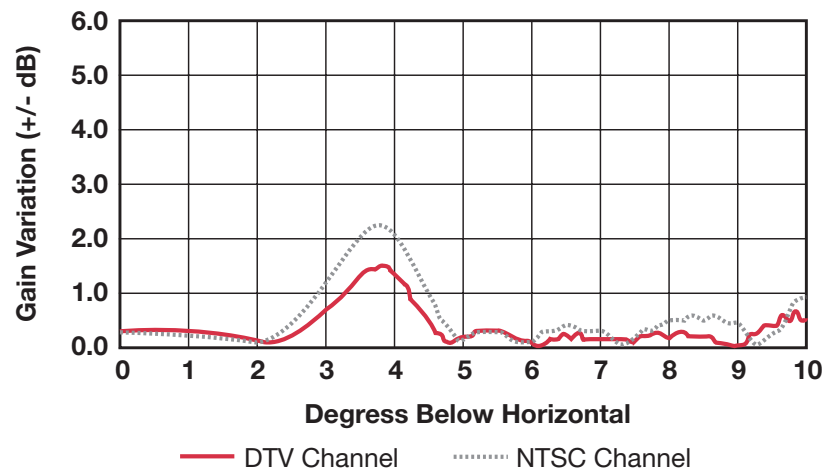
Dielectric's GTH Series UHF Slot Antennas provide excellent DTV/NTSC performance. The TFU-GTH is "electrically center fed". This design feature provides superior frequency response across a single or both channels. VSWR is 1.08:1 across one channel or 1.1:1 or less across two adjacent channels.

The Dielectric GTH Series Antenna is fully enclosed in a maintenance free, non-pressurized radome impregnated with international orange color.

TFU-10GTH*	9.0 (9.54dB) RMS Gain
TFU-18GTH*	16.0 (12.04dB) RMS Gain
TFU-24GTH*	21.5 (13.32dB) RMS Gain
TFU-30GTH*	27.0 (14.31dB) RMS Gain
TFU-36GTH*	30.0 (14.77dB) RMS Gain

*Gains given apply to single channel operation only. For adjacent channel operation contact factory for specifications.

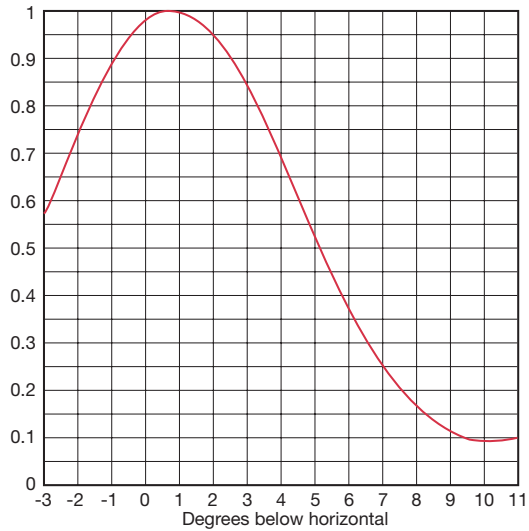
Gain Variation of Adjacent Channel Antenna



¹Slot covers and deicers optional.

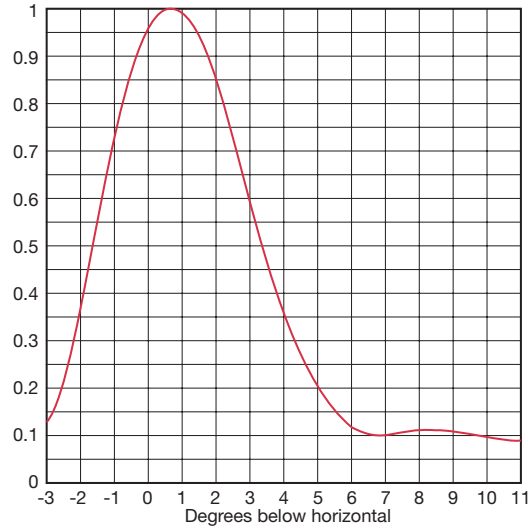
Top Mounted Antenna Systems—UHF

TFU-10GTH-R



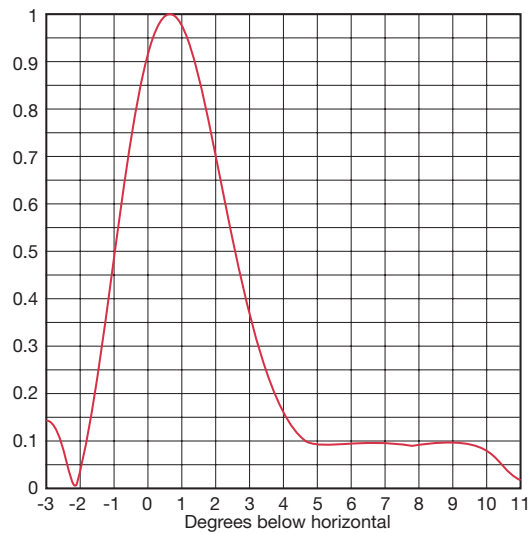
- 9.0 (9.54dB) RMS Gain

TFU-18GTH-R



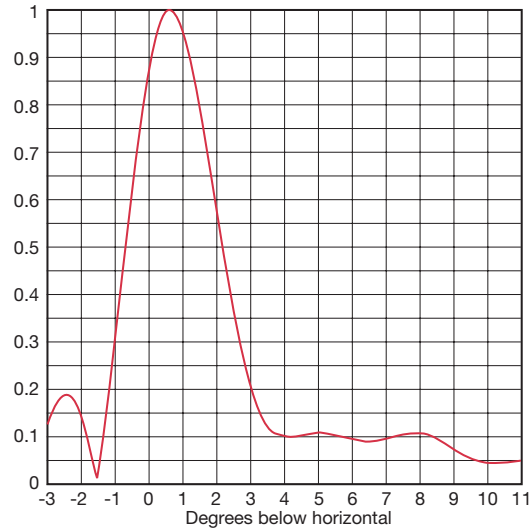
- 16.0 (12.04dB) RMS Gain

TFU-24GTH-R



- 21.5 (13.32dB) RMS Gain

TFU-30GTH-R

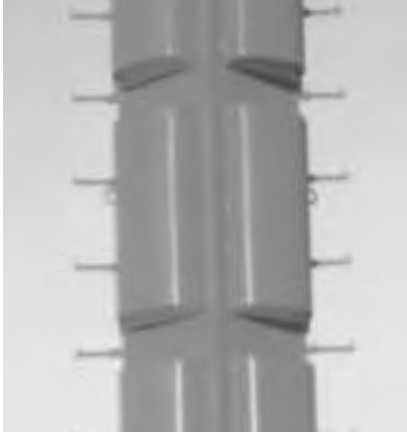


- 27.0 (14.31dB) RMS Gain

Gain figures are for single channel operations. Contact factory for gain figures for dual channel operation.

Top Mounted Antenna Systems—UHF

TU Broadband (Delta) Series

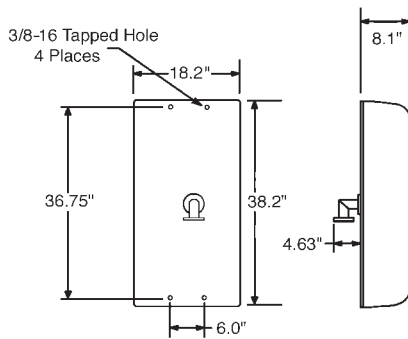


Shown with panel radome (standard)

- Wide impedance bandwidth: 470-806 MHz
- Stainless steel elements and panel for maximum reliability and structural stability
- Segmented non-pressurized radome for easy on-tower service
- Available with full cylindrical radome
- Wide selection of azimuth patterns
- Custom azimuth patterns can be designed to meet specific protection/coverage requirements
- Low ice sensitivity
- Standard configurations of one to five around
- Custom beam tilt and null fill available
- Designed for digital and/or analog service

The Dielectric TU Series Panel Antenna consists of an array of panels typically mounted in a four around configuration and supplied with a support structure for tower top mounting. The number of panels per layer and the number of layers are variables used to determine the azimuthal and elevation patterns.

Standard Deltawing



PANEL SPECIFICATION

NOTE: Due to a continuous program of improvement, specifications are subject to change without notice.

The TU Series Panel Antenna has wideband impedance bandwidth and is **ideal for multiplexing** several UHF channels. Each antenna is fully assembled, and is tested at the factory prior to shipping.

Custom designed antennas meeting special requirements such as specific azimuthal pattern, different gains and custom power input requirements are available upon request.



Shown with full radome (optional)

Single Panel Specifications

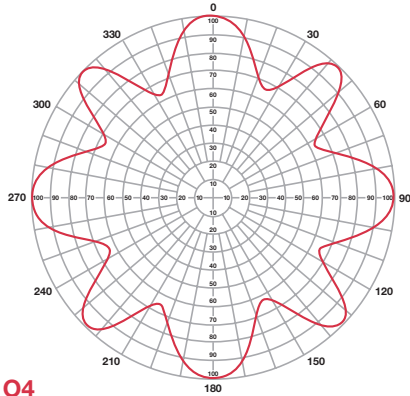
Frequency Range	470-806 MHz
VSWR, 470-860 MHz	1.1:1 Max.
Impedance	50 ohm
Survival Wind Speed	185 mi/h
Panel Weight	40 lb

Average Power Rating

Channel	Panel Input Connector Size	
	7/8"	1-5/8"
14	2.0 kW	6.5 kW
41	1.7 kW	5.6 kW
69	1.5 kW	5.0 kW

Top Mounted Antenna Systems—UHF

TU Series - Deltawing



O4
Directivity=1.4

Electrical Specifications

No. of Layers	RMS Gain*	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	4.8	6.7	40	6-1/8
4	9.4	13.2	60	6-1/8
6	14.0	19.6	110	8-3/16 EHT
8	17.1	23.9	110	8-3/16 EHT
10	21.6	30.2	110	8-3/16 EHT
12	24.2	33.9	110	8-3/16 EHT
14	28.6	40.0	110	8-3/16 EHT
16	32.5	45.5	110	8-3/16 EHT

Mechanical Specifications

Height H ₂ (ft)	Moment Arm D ₁	CfAc (ft ²)	Weight (lb)
8.9	4.5	46	1400
16.5	8.3	83	2700
24.1	12.1	120	4000
31.7	15.9	164	5400
39.3	19.7	214	6800
46.9	23.5	267	8200
54.5	27.3	323	10000
62.1	31.1	384	11800

* at channel 41

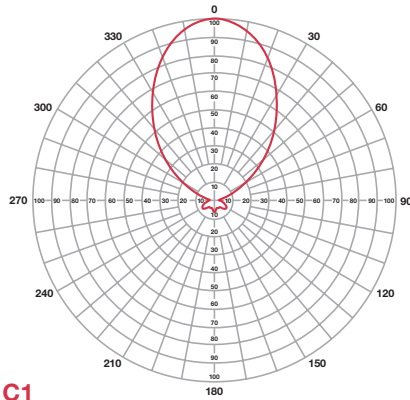
Electrical Specifications

No. of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	28.8	10	3-1/8
4	56.4	20	4-1/16
6	84.0	30	4-1/16
8	102.6	40	6-1/8
10	129.6	50	6-1/8
12	145.2	60	6-1/8
14	171.6	60	6-1/8
16	195.0	60	6-1/8

Mechanical Specifications

Height H ₂ (ft)	Moment Arm D ₁	CfAc (ft ²)	Weight (lb)
8.9	4.5	37	1100
16.5	8.3	66	2100
24.1	12.1	99	3100
31.7	15.9	138	4200
39.3	19.7	180	5300
46.9	23.5	225	6400
54.5	27.3	276	7900
62.1	31.1	331	9400

* at channel 41



C1
Directivity=6.0

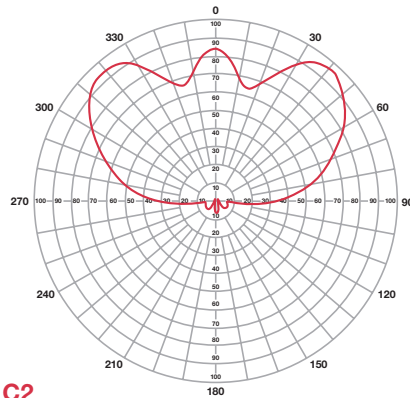
Electrical Specifications

No. of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	14.4	20	4-1/16
4	28.2	40	6-1/8
6	42.0	60	6-1/8
8	51.3	80	7-3/16 EHT
10	64.8	100	8-3/16 EHT
12	72.6	110	8-3/16 EHT
14	85.8	110	8-3/16 EHT
16	97.5	110	8-3/16 EHT

Mechanical Specifications

Height H ₂ (ft)	Moment Arm D ₁	CfAc (ft ²)	Weight (lb)
8.9	4.5	42	1200
16.5	8.3	76	2300
24.1	12.1	111	3400
31.7	15.9	152	4600
39.3	19.7	201	5800
46.9	23.5	246	7000
54.5	27.3	303	8600
62.1	31.1	359	10200

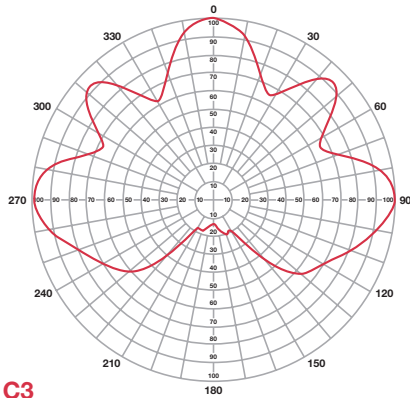
* at channel 41



C2
Directivity=3.0

Top Mounted Antenna Systems—UHF

TU Series - Deltawing



C3
Directivity=2.0

Electrical Specifications

No. of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	9.6	30	4-1/16
4	18.8	60	6-1/8
6	28.0	90	8-3/16
8	34.2	110	8-3/16 EHT
10	43.2	110	8-3/16 EHT
12	48.4	110	8-3/16 EHT
14	57.2	110	8-3/16 EHT
16	65.0	110	8-3/16 EHT

Mechanical Specifications

Height H ₂ (ft)	Moment Arm D ₁	CfAc (ft ²)	Weight (lb)
8.9	4.5	46	1300
16.5	8.3	83	2500
24.1	12.1	120	3700
31.7	15.9	164	5000
39.3	19.7	214	6300
46.9	23.5	267	7600
54.5	27.3	323	9300
62.1	31.1	384	11000

* at channel 41

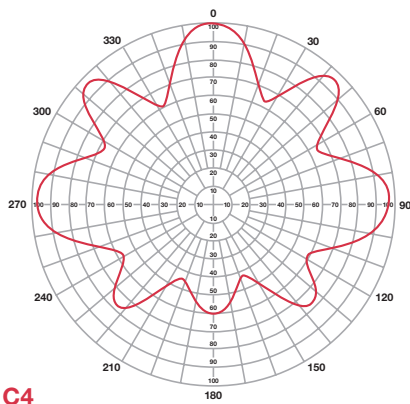
Electrical Specifications

No. of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	8.2	35	6-1/8
4	16.0	60	6-1/8
6	23.8	105	8-3/16 EHT
8	29.1	110	8-3/16 EHT
10	36.7	110	8-3/16 EHT
12	41.1	110	8-3/16 EHT
14	48.6	110	8-3/16 EHT
16	55.3	110	8-3/16 EHT

Mechanical Specifications

Height H ₂ (ft)	Moment Arm D ₁	CfAc (ft ²)	Weight (lb)
8.9	4.5	46	1400
16.5	8.3	83	2700
24.1	12.1	120	4000
31.7	15.9	164	5400
39.3	19.7	214	6800
46.9	23.5	267	8200
54.5	27.3	323	10000
62.1	31.1	384	11800

* at channel 41



C4
Directivity=1.7

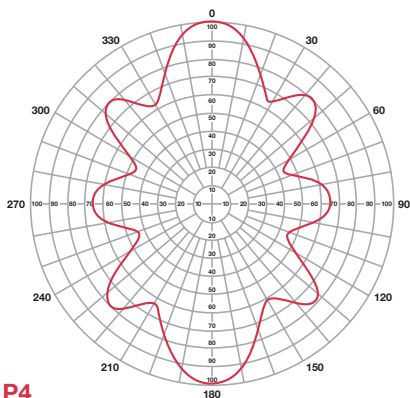
Electrical Specifications

No. of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	9.6	30	4-1/16
4	18.8	60	6-1/8
6	28.0	90	8-3/16
8	34.2	110	8-3/16 EHT
10	43.4	110	8-3/16 EHT
12	48.4	110	8-3/16 EHT
14	57.2	110	8-3/16 EHT
16	65.0	110	8-3/16 EHT

Mechanical Specifications

Height H ₂ (ft)	Moment Arm D ₁	CfAc (ft ²)	Weight (lb)
8.9	4.5	46	1400
16.5	8.3	83	2700
24.1	12.1	120	4000
31.7	15.9	164	5400
39.3	19.7	214	6800
46.9	23.5	267	8200
54.5	27.3	323	10000
62.1	31.1	384	11800

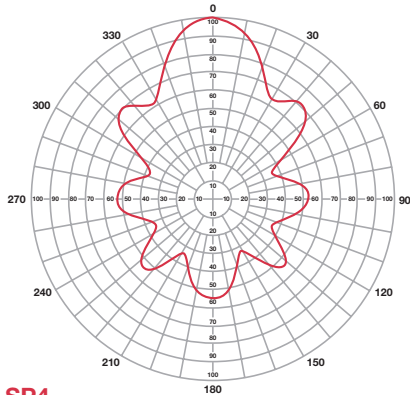
* at channel 41



P4
Directivity=2.0

Top Mounted Antenna Systems—UHF

TU Series - Deltawing



SP4
Directivity=3.0

Electrical Specifications

Mechanical Specifications

No. of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)	Height H ₂ (ft)	Moment Arm D ₁	CfAc (ft ²)	Weight (lb)
2	14.9	20	4-1/16	8.9	4.5	46	1400
4	29.1	40	6-1/8	16.5	8.3	83	2700
6	43.4	60	6-1/8	24.1	12.1	120	4000
8	53.0	80	7-3/16 EHT	31.7	15.9	164	5400
10	67.0	100	8-3/16 EHT	39.3	19.7	214	6800
12	75.0	110	8-3/16 EHT	46.9	23.5	267	8200
14	88.7	110	8-3/16 EHT	54.5	27.3	323	10000
16	100.8	110	8-3/16 EHT	62.1	31.1	384	11800

* at channel 41

TU Series Notes

The data shown is for top mounted antennas with standard panel placement. Custom designs are available on request. Indicated power ratings are for standard TU arrays configured for maximum power rating with 1-5/8" EIA panel inputs and the listed array input connections. Ratings are based upon combining two channels into the antennas; contact factory to verify ratings with more than two channels combined. TU designs with lower power ratings are available. Custom array designs with higher power ratings are also possible.

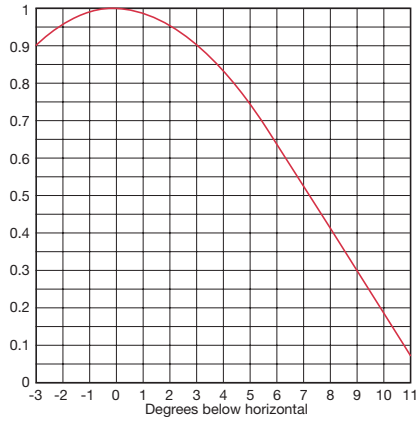
Mechanical data shown is for top mounted antennas including tower section, lighting protector, beacon (optional), panels, power dividers, and feedlines.

Top mounted antenna is supplied with adapter section and flange mount for bolting to tower top plate. Wind areas are based on TIA/EIA-222-F specification and include force coefficient. Height with lightning protector, H₄=H₂+4 ft.

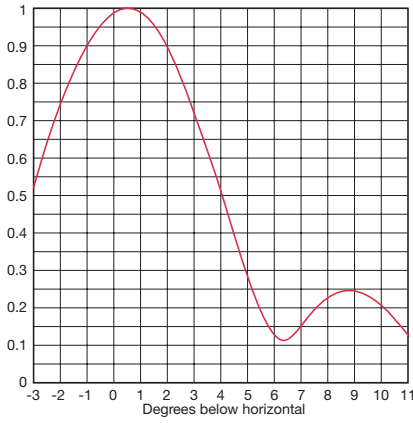
Side mount antennas do not include lightning protector. Weight for side mount antennas are reduced also; contact the factory for details.

Top Mounted Antenna Systems—UHF

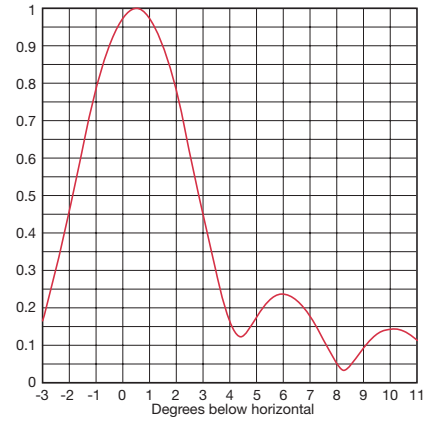
TU Series - Deltawing, Deltastar and Deltalite



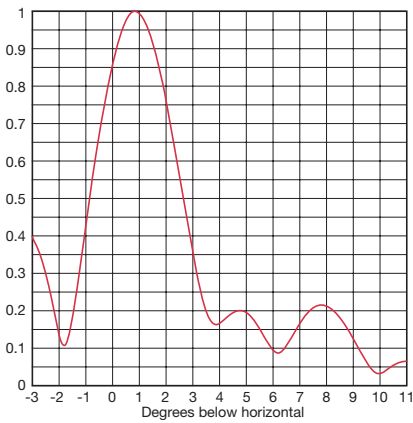
2 Layer



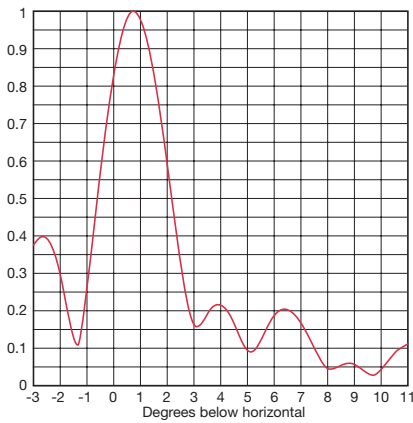
4 Layer



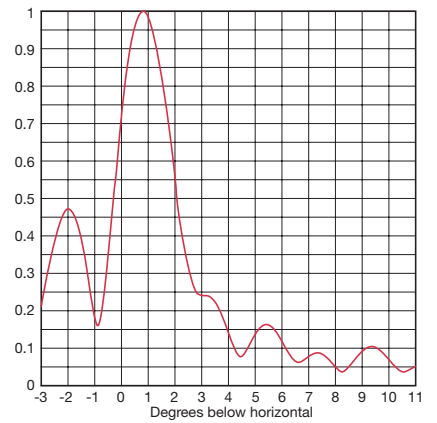
6 Layer



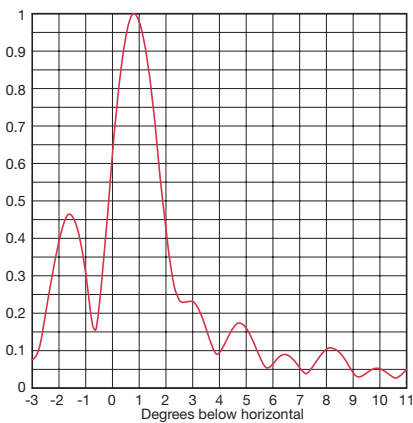
8 Layer



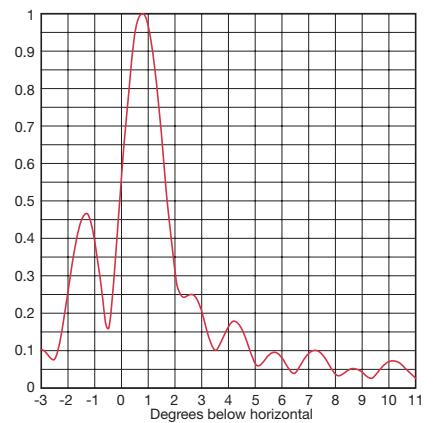
10 Layer



12 Layer



14 Layer



16 Layer

Top Mounted Antenna Systems—UHF

TU Series - Deltalite™



Deltalite

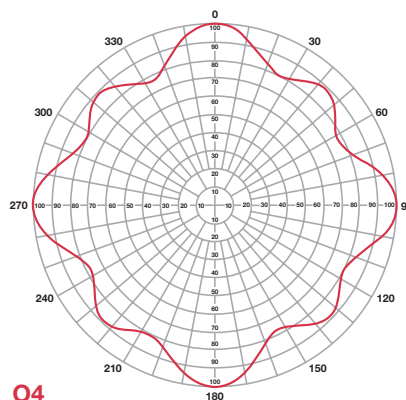
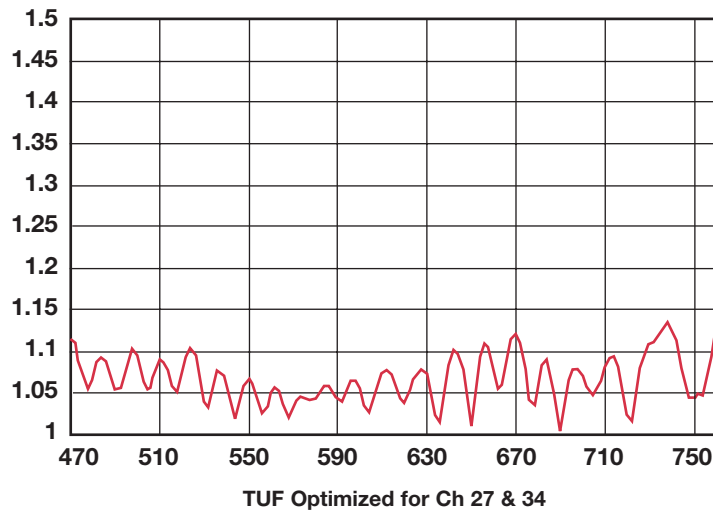
- Wide impedance bandwidth: 470-806 MHz
- Stainless steel elements and panel for top reliability
- Excellent omni azimuth pattern circularity
- Designed for combined digital and analog signals
- High power handling, up to 100 kW average
- Custom beam tilt and null filling available
- Full cylindrical radome for minimum windloading

The TU Series Deltalite panel antenna combines the broadband characteristics of a panel antenna with the low windload characteristics of a pylon antenna.

TU Series antennas feature sectionalized non-pressurized Fiberglass radomes for easy on tower service. The 30.5" O.D. fully cylindrical radome allows for reduced windload over standard panel antenna arrays. The full radome also reduces ice sensitivity over that of conventional panel style antennas.

Permanent, external, steel pole steps accommodate beacon light servicing.

Measured Antenna Input VSWR



Top Mounted Antenna Systems—UHF

Electrical Specifications

Model	Bays	RMS Gain Ratio (dB)			Input (in)	Max. Avg. Power (kW)			Max. Peak Power kW	Rad. Center Above Antenna Base ft
		Ch 14	Ch 40	Ch 69		Ch 14	Ch 40	Ch 69		
TUF-O4-4/16H-1-T	4	6.7 (8.26)	8.6 (9.34)	10.0 (10.00)	6-1/8	30	27	24	1000	9
TUF-O4-6/24H-1-T	6	9.8 (9.91)	12.5 (10.97)	14.6 (11.64)	6-1/8	45	41	36	1500	12
TUF-O4-8/32H-1-T	8	13.2 (11.21)	16.9 (12.28)	19.7 (12.94)	6-1/8	60	54	48	2000	16
TUF-O4-10/40H-1-T	10	17.9 (12.53)	21.2 (13.26)	24.8 (13.94)	6-1/8	60	54	48	2000	20
TUF-O4-12/48H-1-T	12	22.6 (13.54)	25.6 (14.08)	29.9 (14.76)	6-1/8	71	62	61	3000	24
TUF-O4-14/56H-1-T	14	24.8 (13.94)	30.0 (14.77)	35.0 (15.44)	6-1/8	71	62	61	3000	28
TUF-O4-16/64H-1-T	16	26.9 (14.30)	34.3 (15.35)	40.1 (16.03)	6-1/8	71	62	54	4000	31

NOTES:

- RMS gain data is relative to a half-wave dipole. Values given are nominal and assume standard harness configurations. Gain will vary depending on specific feed system, null fill and beam tilt.
- Interpolate to estimate gain for other channels. First null fill of 20% is standard. Beam tilt .75 degrees is assumed. Other values of tilt and fill are available upon request.
- Power ratings are nominal @ 40°C and assume pressurization with dry air or nitrogen to 5 psi minimum. Power ratings may vary depending on specific feed system design and local conditions.
- Antenna components and feed harnesses are optimized for channels of interest.

Mechanical Specifications

Model	Length with 4 ft. Lightning Rods H ₄ (ft)	Loads @ EIA-222-C		Loads @ TIA-EIA-222-F		Weight (lbs)
		Shear (lbs)	50/33.3 PSF Moment (lb-ft)	Area CfAc (ft ²)	Moment Arm D ₁ (ft)	
TUF-O4-4/16H-1	20.5	1600	14000	34	8.9	2500
TUF-O4-6/24H-1	28.1	2300	28000	46	12.6	4000
TUF-O4-8/32H-1	35.7	3000	48000	58	16.4	5100
TUF-O4-10/40H-1	43.3	3600	72000	70	20.2	6500
TUF-O4-12/48H-1	50.9	4300	102000	82	24.0	8000
TUF-O4-14/56H-1	58.5	5000	132000	94	27.8	9200
TUF-O4-16/64H-1	66.1	5700	162000	106	31.6	10500

NOTES:

- TUF antennas must be pressurized with dry air or nitrogen.
- Loads provided assume TIA/EIA-222-F with no ice and no strakes.
- Design conditions: 80 mi/h basic wind speed, 1200 ft. tower height, 42.6 psf.
- CfAc is calculated using Cf=.59 from TIA/EIA-222-F, Table 1. Contact a qualified structural consultant to determine if this is applicable for your installation.
- Windloads will vary depending on conditions at installation location.
- Sidemount loads exclude mounting brackets.

Top Mounted Antenna Systems—UHF

TU Series - Deltastar

- Five around configuration for excellent omnidirectional pattern characteristics
- Very high input power ratings, up to 180 kW average
- Full cylindrical radome for minimal windloading
- Stainless steel elements and panel for maximum reliability
- Ideal master antenna for combined analog and digital signals
- Typical VSWR under 1.05:1 per channel and under 1.1:1 across 20 channel bandwidth
- Ideal for stacked configurations
- Custom beam tilt and null fill available

The TU Series Deltastar antenna from Dielectric is a versatile and reliable antenna solution allowing for broadcast of multiple stations from one antenna. The TU Series antennas are ideal for community master antenna facilities. Deltastar antennas provide broadband impedance characteristics ideal for digital broadcast formats, but are also an excellent choice for analog formats. UHF Deltastar antennas feature a rugged, field proven design for a worry-free long life. Capable of supporting antennas above, Dielectric Deltastar antennas are available in stackable configurations. The Deltastar antenna is constructed to operate in severe environments subject to high winds and heavy ice loading.

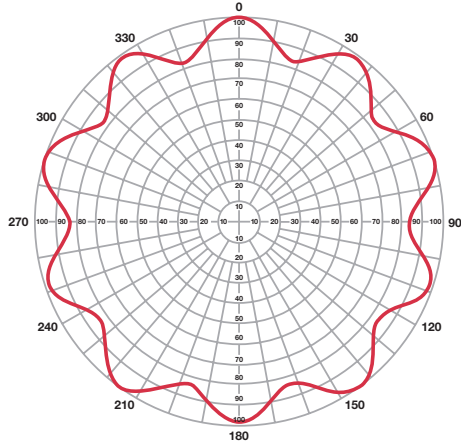
Refer to page 10 for elevation patterns.



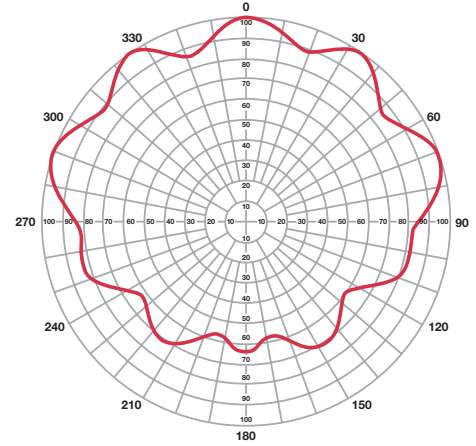
Contact factory for electrical and mechanical specifications.

Top Mounted Antenna Systems—UHF

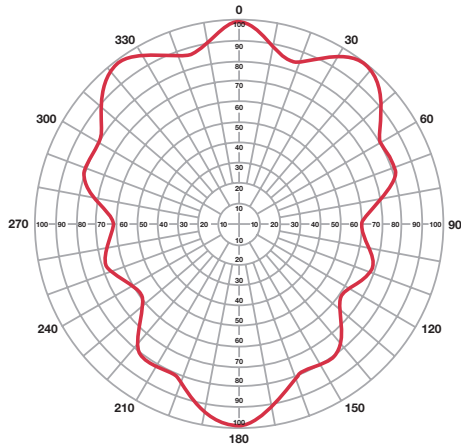
TU Series - Deltastar



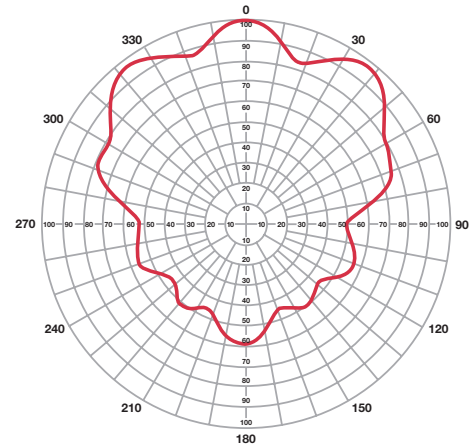
O5



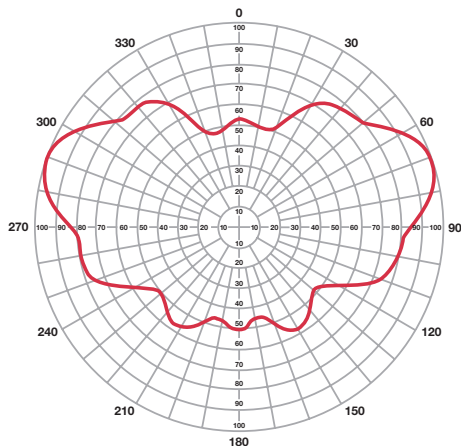
C5
Directivity=1.5



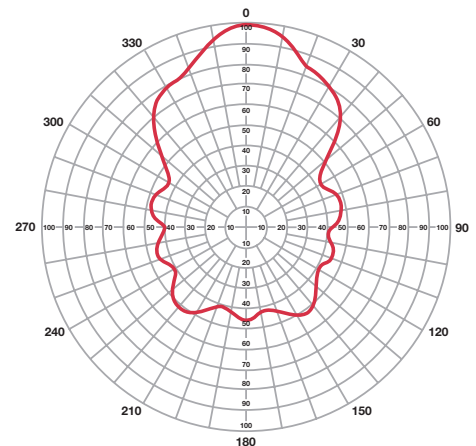
P5
Directivity=1.5



S5
Directivity=2.1



BP5
Directivity=2.1



NS5
Directivity=3.0

Top Mounted Antenna Systems—VHF

VHF

Suited for those stations allocated VHF DTV Channels, Dielectric's product line includes a wide array of VHF antenna products. Dielectric has a wide variety of top mounted and side mounted antenna models to choose from in both horizontal and circular polarization. The TW and THV Series pylon antennas, TUV Series dualband arrays, TH Series panel arrays, TF Series superturnstile arrays and the new TLS-V low power VHF arrays are discussed in more detail throughout this catalog. For circularly polarized applications contact factory.

TW Series



- Excellent circularity
- Proven pylon design with low windload
- Can be structurally designed for stacking
- Full polycarbonate radome standard*
- High power handling
- Ideal for NTSC or DTV transmission
- Elevation gains from 7 (8.45dB) to 15 (11.76dB)

This horizontally polarized traveling wave antenna for Channels 7 to 13 uses the reliable technology Dielectric is known for in a very aperture efficient, low windload design. The TW antenna is designed for omnidirectional applications.

This antenna comes with a full radome. The very strong polycarbonate radome is impregnated with international orange or white and does not require any painting during its lifetime. Non-radomed versions are available upon request. Both radomed or non-radomed versions can be ordered with pressurized pole. Since only the pole is pressurized and not the radome, the antenna is easily accessible for inspection. Pole pressurization is not required for normal operation of the antenna.

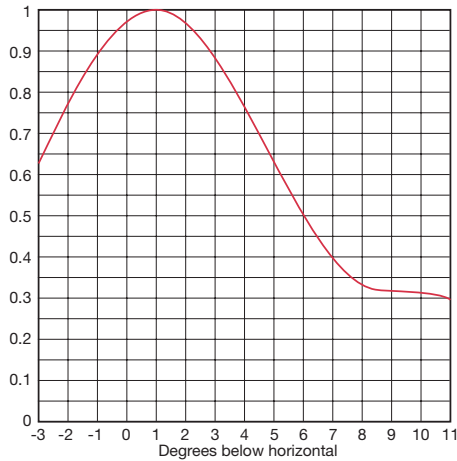
Other available options are bury mount and side mounting on a tower.

*Slot covers and deicers optional.

Top Mounted Antenna Systems—VHF

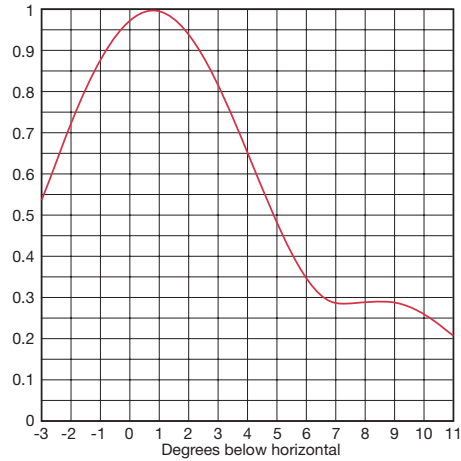
TW Series

TW-7B



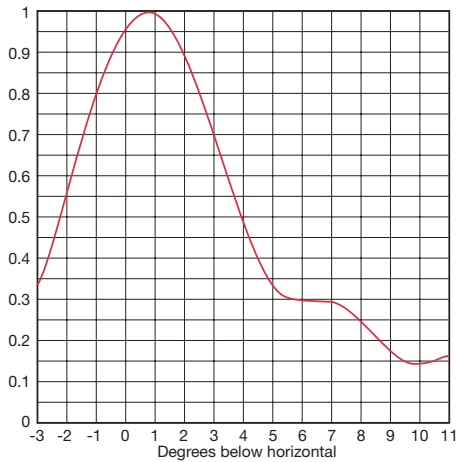
- 7.0 (8.45dB) RMS Gain

TW-9B



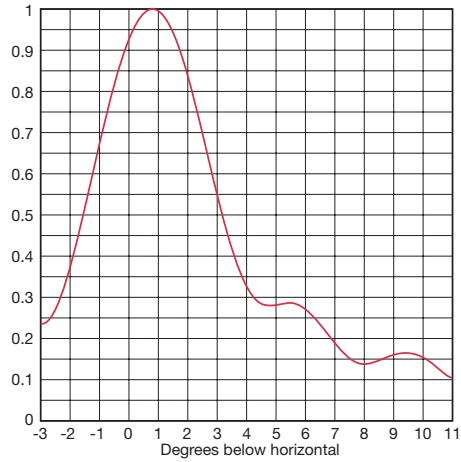
- 9.0 (9.54dB) RMS Gain

TW-12B



- 12.0 (10.79dB) RMS Gain

TW-15B



- 15.0 (11.76dB) RMS Gain

Electrical Specifications

Polarization:	Horizontal
Beam Tilt:	.5° to 1.0° typical
Azimuth Pattern Circularity:	+/- 0.8dB
Max TV Peak Power:	80kW
Vertical Pattern Gains:	7 (8.45dB), 9 (9.54dB), 12 (10.79dB), 15 (11.76dB)
Inputs Available:	3-1/8 in., 4-1/16 in., 6-1/8 in. 50 ohms or 6-1/8 in. 75 ohms
Input VSWR:	NTSC 1.05:1 at PIX + .5 MHz, 1.08:1 maximum DTV 1.08:1 Channel

Top Mounted Antenna Systems—VHF

Typical Mechanical Characteristics*

	Channel	Freq MHz	H2 ft	H3 ft	D1 ft	R1 lbs	Moment ft-lbs	CaAc ft ²	Natural Freq. Hz	Weight lbs
TW-7Bx-R	7	177	50.9	27.4	26.4	2890	76290	52.8	1.04	8100
	8	183	49.5	26.5	25.8	2820	72680	51.5	1.11	7900
	9	189	48.1	25.7	25.2	2750	69250	50.2	1.17	7700
	10	195	46.9	25.1	24.6	2680	66010	49.0	1.23	7500
	11	201	45.7	24.2	24.1	2620	63170	47.9	1.29	7300
	12	207	44.6	23.5	23.6	2570	60700	46.9	1.36	7200
	13	213	43.6	23.0	23.2	2510	58120	45.9	1.42	7000
TW-7Bx slot covers	7	177	50.9	27.4	27.4	2070	56770	37.7	1.04	8000
	8	183	49.5	26.5	26.7	2020	53980	36.8	1.11	7800
	9	189	48.1	25.7	26.1	1970	51340	36.0	1.17	7600
	10	195	46.9	25.1	25.4	1930	49110	35.2	1.23	7500
	11	201	45.7	24.2	24.9	1890	47000	34.4	1.29	7300
	12	207	44.6	23.5	24.3	1850	44990	33.7	1.36	7200
	13	213	43.6	23.0	23.8	1810	43080	33.1	1.42	7000
TW-9Bx-R	7	177	59.2	31.5	30.8	3760	115630	68.6	1.02	12600
	8	183	57.5	30.5	30.0	3650	109480	66.7	1.08	12200
	9	189	55.9	29.6	29.3	3560	104250	65.0	1.14	11900
	10	195	54.5	28.9	28.6	3470	99300	63.3	1.20	11600
	11	201	53.1	27.9	28.0	3380	94600	61.8	1.27	11300
	12	207	51.8	27.1	27.4	3300	90410	60.3	1.33	11000
	13	213	50.5	26.4	26.8	3230	86690	58.9	1.40	10800
TW-9Bx slot covers	7	177	59.2	31.5	32.2	2790	89940	50.9	1.02	12500
	8	183	57.5	30.5	31.4	2710	85080	49.6	1.08	12200
	9	189	55.9	29.6	30.6	2650	81110	48.3	1.14	11800
	10	195	54.5	28.9	29.9	2580	77060	47.1	1.20	11500
	11	201	53.1	27.9	29.2	2520	73510	46.0	1.27	11300
	12	207	51.8	27.1	28.5	2460	70150	45.0	1.33	11000
	13	213	50.5	26.4	27.9	2410	67240	44.0	1.40	10700
TW-12Bx-R	7	177	75.9	39.9	38.2	3310	126550	87.1	0.62	16000
	8	183	73.6	38.6	37.2	3220	119890	84.6	0.66	15600
	9	189	71.5	37.4	36.3	3130	113610	82.3	0.70	15100
	10	195	69.6	36.5	35.4	3470	122900	80.1	0.74	14700
	11	201	67.7	35.2	34.6	3380	116910	78.1	0.78	14300
	12	207	66.0	34.2	33.8	3290	111240	76.1	0.82	14000
	13	213	64.4	33.4	33.1	3220	106500	74.3	0.86	13600
TW-12Bx slot covers	7	177	75.9	39.9	40.6	2780	112760	64.3	0.62	15900
	8	183	73.6	38.6	39.4	2710	106900	62.5	0.66	15500
	9	189	71.5	37.4	38.4	2630	101000	60.9	0.70	15100
	10	195	69.6	36.5	37.4	2560	95800	59.3	0.74	14700
	11	201	67.7	35.2	36.5	2500	91250	57.8	0.78	14300
	12	207	66.0	34.2	35.6	2440	86950	56.4	0.82	13900
	13	213	64.4	33.4	34.8	2380	82860	55.1	0.86	13600

- x = Channel number
- R = Radomed
- H2 = Antenna height without lightning protector
- H4 = Height with lightning protector (H4=H2+4 feet)
- H3 = Center of radiation
- CaAc = Force Coefficient Projected Area (4 foot lightning protector and beacon included)
- D1 = Moment Arm

Formula for Projected Area according to EIA-222C: $A = 1.11 \times (\text{CaAc}-1)$
 Antenna designed in accordance with AISC specifications for design of structural steel for building as prescribed by TIA/EIA-222-F.
 TW7 and TW9 based on 90 mi/h basic wind speed
 TW12 based on 80 mi/h windspeed
 TW-12Bx-R Ch 7, 8, 9 based on 75 mi/h basic wind speed

*Contact factory for application specific mechanical details.

Top Mounted Antenna Systems—VHF

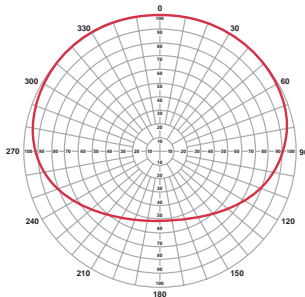
THV Series



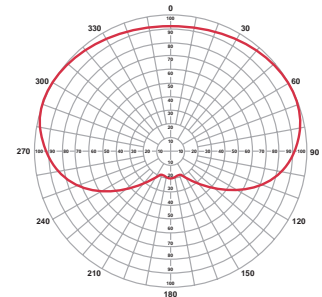
- Highband VHF directional antenna
- Top or side mounting options
- Low windload/economical design
- Available with custom azimuth patterns
- Elevation gains from 6.0 (7.78dB) to 12.0 (10.79dB) typical
- Peak gains to 22.8 (13.58dB)
- Full polycarbonate radome standard
- High input power handling
- Ideal for NTSC and DTV applications

The horizontally polarized THV antenna is designed for directional VHF applications (Channels 7-13) in both top and side-mounted configurations. The THV utilizes the simplicity and reliability of pylon technology. This antenna combines high power handling, pattern diversity (elevation and azimuth), and Dielectric's conservative design approach to produce a superior product for single frequency high band operations.

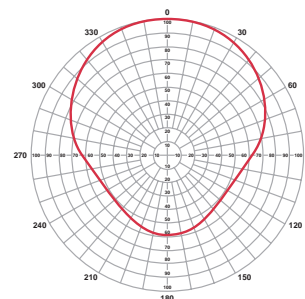
The THV azimuth pattern can be custom designed to fit a variety of applications, catering to facilities proposing maximization for DTV, those with protection requirements or those wishing to focus the energy towards the market of interest.



C140
Directivity=1.4



C170
Directivity=1.7

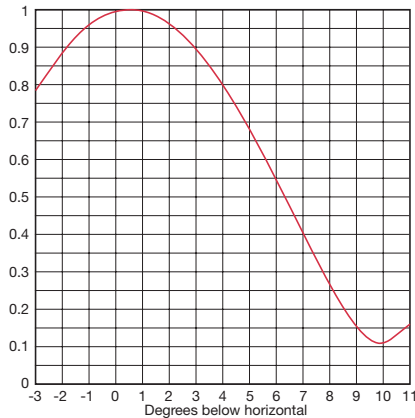


S190
Directivity=1.9

Top Mounted Antenna Systems—VHF

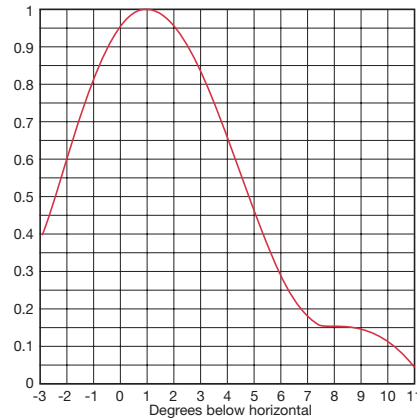
THV Series

THV-6A



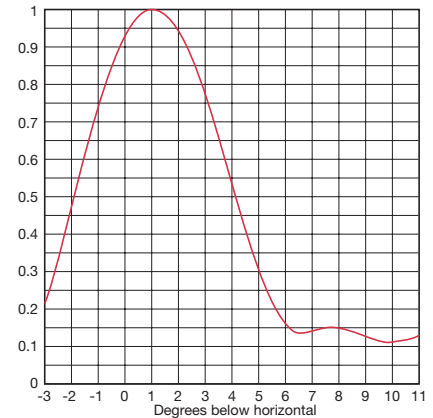
• 6.0 (7.78dB) RMS Gain

THV-10A



• 10.0 (10.00dB) RMS Gain

THV-12A



• 12.0 (10.79dB) RMS Gain

THV Series - Mechanical Specifications -Typical

Cardioid Pattern

NOTE: Typical loads for Cardioid Pattern

x = Channel number

R = Radomed

H2 - Overall height without lightning protection

H3 - Centerline of radiation

H4 - Overall height with lightning protection

Top Mount

	Channel	H4 (ft)	H2 (ft)	H3 (ft)	W (lbs)	RS-222-C		TIA/EIA-222-F		Limits
						A (ft ²)	D1 (ft)	CaAc (ft ²)	D1 (ft)	
THV-6Ax-R	7	48.0	44.0	24.2	7900	58	23.9	55	24.3	120 psf or 135 mi/h bws
	8	46.6	42.6	23.4	7660	57	23.2	54	23.6	
	9	45.3	41.3	22.6	7440	55	22.5	52	22.9	
	10	44.1	40.1	21.9	7230	53	21.8	51	22.3	
	11	42.9	38.9	21.3	7030	52	21.2	49	21.7	
	12	41.9	37.9	20.7	6850	51	20.7	48	21.1	
THV-10Ax-R	7	65.7	61.7	30.8	10870	87	31.8	82	32.0	50 psf or 90 mi/h bws
	8	63.8	59.8	29.9	10550	84	30.9	79	31.1	
	9	62.0	58.0	29.0	10240	81	30.0	77	30.2	
	10	60.3	56.3	28.1	9960	79	29.1	75	29.3	
	11	58.7	54.7	27.4	9690	77	28.3	73	28.5	
	12	57.2	53.2	26.6	9430	75	27.6	71	27.8	
THV-12Ax-R	7	76.8	72.8	36.4	15400	116	37.3	108	37.4	50 psf or 90 mi/h bws
	8	74.5	70.5	35.3	14930	112	36.1	105	36.3	
	9	72.4	68.4	34.2	14490	109	35.0	102	35.2	
	10	70.4	66.4	33.2	14080	105	34.0	99	34.2	
	11	68.5	64.5	32.3	13690	103	33.1	96	33.3	
	12	66.7	62.7	31.4	13330	100	32.2	93	32.4	
	13	65.1	61.1	30.5	12280	97	31.4	91	31.6	

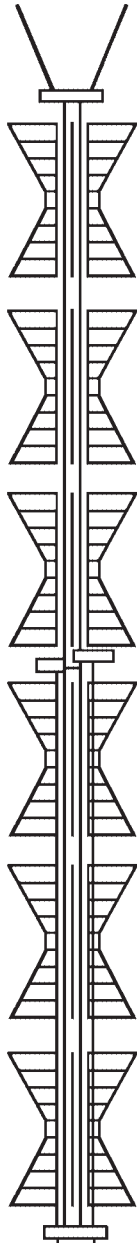
Contact factory for application specific mechanical details.

Top Mounted Antenna Systems—VHF

TF-DC Series Dual Channel Superturnstile

- Dual channel NTSC/DTV, DTV/DTV or NTSC/NTSC operation
- Top mount circularity
- Common aperture for multiple signals
- Proven superturnstile design

Dielectric's proven TF Series VHF Superturnstile antenna solves the problem for dual channel VHF assignments. Both the NTSC and the DTV channel can be combined into a single top mounted antenna. High levels of isolation between the inputs are provided by a hybrid combiner/splitter and dual feedline system as shown below. Models with 2 to 12 bays are available depending upon ERP requirements. Consult the factory for details on your specific application.



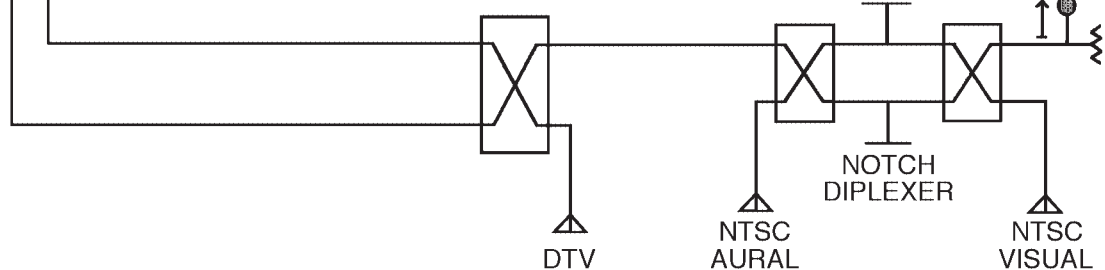
Mechanical Specifications - Typical

		Ch. 2-3	Ch. 4-6	Ch. 7-13
Height with Lightning Protector	H ₄ (ft)	105.0	86.8	41.3
Height less Lightning Protector	H ₂ (ft)	101.0	82.8	37.3
Height of Center of Radiation	H ₃ (ft)	51.5	42.0	19.3
Aerodynamic Area (Above tower top)	CaAc (ft ²)	207	147	64
Moment Arm (Above tower top)	D ₁ (ft)	45.0	37.3	18.4
Aerodynamic Area (Below tower top)	CaAc (ft ²)	29	22	10
Moment Arm (Below tower top)	D ₃ (ft)	10.3	8.1	5.3
Bury Length	D ₂ (ft)	20.0	16.4	10.0
Weight	W (ton)	11.0	7.6	1.8
Deicer Power (NTSC)	230/460 V (3 ø)	18kW	12kW	4.8kW

Note: Structural design to TIA/EIA-222-F code with 80 mi/h basic wind speed.

Contact factory for application specific mechanical details.

HYBRID SPLITTER



Top Mounted Antenna Systems—UHF&VHF Common Aperture Arrays

TUV Series - Dualband™ TUV-H

VSWR

NTSC

Pix + .5 MHz	1.05:1
Color	1.08:1
Aural	1.10:1
Channel	1.10:1
DTV	1.08:1

TUV-H

Mechanical Specifications

H ₂	52.8 ft (16.1m)
D ₁	23.3 ft (8.3m)
CaAc	87.4 ft ² (8.12 m ²)

The Award Winning TUV-H



Refer to TFU-GTH for UHF elevation patterns (pg. 4)

Azimuth patterns vary significantly based on your custom requirements.

DIGITALTV
EDITORS' PICK OF SHOW nab01
The Advancement for The 21st and
Success of Tomorrow's Broadcast

Dielectric
TUV Series Dualband
UHF/VHF Antenna



- Combines both VHF and UHF signals into common antenna
- TUV-H for highband VHF channels 7-13
- Omni-directional or directional UHF patterns available
- Similar windload/weight to current top mounted VHF antenna
- Full ERP for both VHF and UHF service
- Proven pylon design
- Ideal for NTSC/DTV, DTV/DTV, or NTSC/NTSC transmissions

The Dualband Series antenna features the latest in state of the art design allowing for the transmission of highband VHF and UHF signals from a common aperture. This antenna is ideal for the highband VHF broadcaster who has been allocated a UHF DTV channel yet has no additional tower capacity.

This antenna will also allow the broadcaster to revert to VHF DTV service in the future with no antenna modifications.

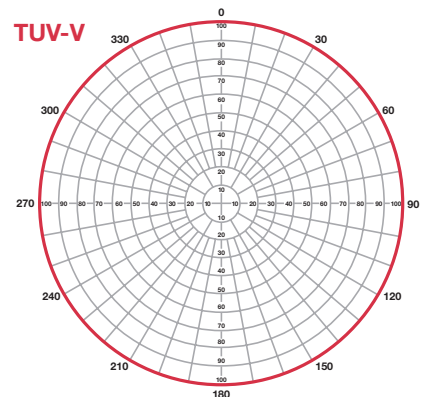
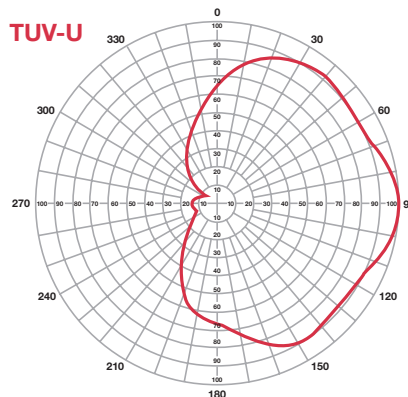
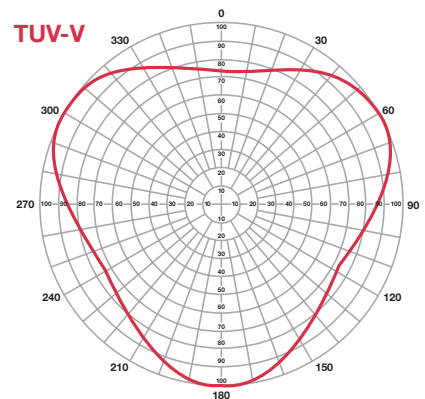
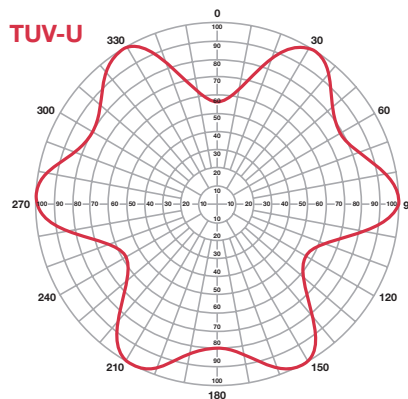
Typical

Electrical Specifications

	RMS Gain Main Lobe	Power Rating	ERP
N13	10.0 (10.0 dB)	50 kW	316 kW
D39	20.0 (13.01 dB)	60 kW	1000 kW

Note: Other patterns available

Pattern performance not independent of channel



Top Mounted Antenna Systems—UHF&VHF Common Aperture Arrays

TUV Series - Dualband™ TUV-M and TUV-L

VSWR (for H, M & L)

NTSC

Pix + .5 MHz	1.05:1
Color	1.08:1
Aural	1.10:1
Channel	1.10:1
DTV	1.08:1



- Combines both VHF and UHF signals into common antenna
- TUV-M for midband VHF (ch. 4-6)
- TUV-L for lowband VHF (ch. 2-3)
- Omni-directional or directional UHF patterns available
- Similar windload/weight to current top mounted VHF antenna
- Full ERP for both VHF and UHF service
- Ideal for NTSC/DTV, DTV/DTV, or NTSC/NTSC transmissions

The Dualband™ Series antenna features the latest in state of the art design allowing for the transmission of lowband VHF (Channels 2 & 3) or midband (Channels 4-6) and UHF signals from a common aperture.

The TUV-L and TUV-M antennas are compliments to the award winning¹ TUV-H antenna introduced in 2001. The TUV-L and TUV-M antennas are ideal for the lowband and midband VHF broadcaster who has been allocated a UHF DTV channel yet has no additional tower capacity.

The Dualband™ antenna can be used in conjunction with Dielectric's Shared Line Tees and EHT™ transmission line. Through the use of this combination of products, not only can you minimize the loading at the tower top, but also eliminate the need for a second transmission line run.

This antenna will also allow the broadcaster to revert to VHF DTV service in the future with no antenna modifications.

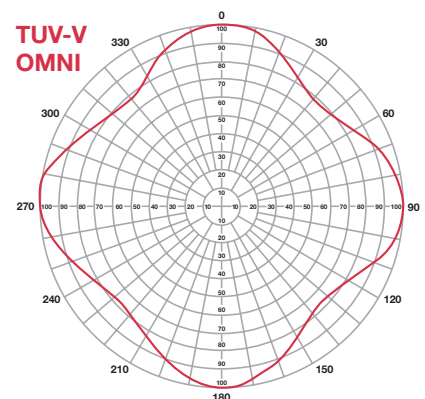
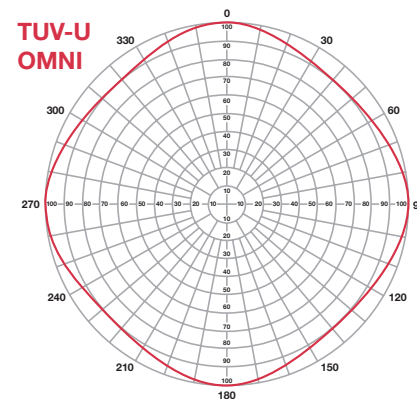
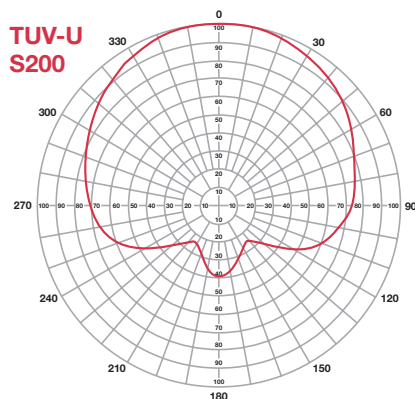
Typical Electrical Specifications

	RMS Gain Main Lobe	Power Rating	ERP
N3	4.0 (6.02dB)	30 kW	100 kW
N6	6.0 (7.78dB)	30 kW	100 kW
D39	20.0 (13.01dB)	60 kW	1000 kW

Note: Other patterns available

Pattern performance not independent of channel

¹TV Technology's Star 2001 and Digital Television's Pick of the Show 2001.



Top Mounted Antenna Systems—UHF&VHF Common Aperture Arrays

Broadband Stacked Arrays



- Combine multiple signals into common stacked arrays
- Top mount performance for both NTSC and DTV services
- Excellent amplitude and phase response for DTV
- Superior circularity
- High power handling and bandwidth capacity

Dielectric is the leader in stacked antenna technology with over 100 stacked arrays on the air today. Dielectric's stacked antennas are unique in that they are a true cantilevered system providing top mounted performance characteristics for both DTV and NTSC services.

Top mounted antennas are the only solution for truly omnidirectional DTV performance. The stacked systems shown can be used on new towers or within existing apertures (with no or limited tower modifications). All stacked systems are custom designs tailored to individual station specifications.

Stacked broadband arrays allow for maximum aperture efficiency by combining multiple services into a common aperture. Stacked arrays have been designed to accommodate up to eight full power television broadcasts from a common array.

UHF/UHF Stacked Arrays



- DTV gain up to 28.0 (14.47dB) typical
- NTSC gain up to 30.0 (14.47dB) typical
- True linear stack for optimum performance
- Maximizes DTV "line of sight"

Top Mounted Antenna Systems—UHF/VHF

UHF/VHF (Low-Mid Band) Stacked Arrays



- Direct mechanical replacement for existing TF-6
- Lower windload than existing TF-6
- True linear stack design optimizing circularity for both services

Electrical Specifications

Ch. 2-3 Design	NTSC		DTV						
Channels	2	3	14-16	17-23	24-28	29-35	36-40	41-49	50-69
RMS Gain (Power ratio) ¹	2.9	3.1	17.5	19.0	21.5	23.0	25.0	27.0	27.0
Power Rating (kW) ²	50	50	72	68	67	65	63	60	46

Ch. 4-6 Design	NTSC			DTV						
Channels	4	5	6	14-18	19-27	28-36	37-45	46-55	56-64	65-69
RMS Gain (Power ratio) ¹	2.9	3.1	3.3	14.5	16.0	17.5	19.0	21.5	23.0	25.0
Power Rating (kW) ²	50	50	50	72	67	65	61	59	47	46

¹ DTV-UHF gains are maximum available.

² Note: NTSC power ratings are based on peak visual power + 20% aural; DTV power ratings are based on average power.

	NTSC	DTV
Polarization	Horizontal	Horizontal
Circularity	± 2dB	± 1dB
Input Size	3-1/8"	6-1/8"

UHF/VHF (High Band) Stacked Arrays



- Direct mechanical replacement for existing TW-15A
- Arrays can be on top or bottom of stack depending on future DTV channel preference.
- True linear stack design optimizing circularity for both services

Electrical Specifications

Ch. 7 Design	NTSC		DTV				
Channels	7		14-16	17-23	24-28	29-35	47-69
RMS Gain (Power ratio) ¹	9.0		21.5	23.0	25.0	27.0	30.0
Power Rating (kW) ²	60		71	68	67	61	48

Ch. 13 Design	NTSC		DTV					
Channels	13		14-18	19-26	27-33	34-40	41-48	49-69
RMS Gain (Power ratio) ¹	9.0		17.5	19.0	21.5	23.0	25.0	27.0
Power Rating (kW) ²	60		71	68	65	63	61	48

¹ DTV-UHF gains are maximum available. NTSC gain is 9.0 for channel 7-13 designs. For VHF channels between 7 & 13, DTV gain for a given channel may be approximated by interpolation.

² Note: NTSC power ratings are based on peak visual power + 20% aural; DTV power ratings are based on average power.

	NTSC	DTV
Polarization	Horizontal	Horizontal
Circularity	± 0.8dB	± 1.5dB
Input Size	4-1/16"	6-1/8"

Top Mounted Antenna Systems—UHF/VHF

UHF/VHF-CP (Low-Mid Band) Stacked Arrays



- DTV option for existing Ch. 2-6 installations
- NTSC upgrade to circular polarization
- True linear stack design optimizing circularity for both services

Electrical Specifications

	NTSC			DTV				
Channels	2-6	14-16	17-23	24-28	29-35	36-40	41-49	50-69
RMS Gain ¹	2.2	17.5	19.0	21.5	23.0	25.0	27.0	27.0
Power Rating (kW) ²	70	72	68	67	65	63	60	46

¹ DTV-UHF gains are maximum available.

² Note: NTSC power ratings are based on peak visual power + 20% aural; DTV power ratings are based on average power.

	NTSC	DTV
Polarization	Circular	Horizontal
Circularity (HPOL)	± 1.5dB	± 1dB
(VPOL)	± 2.0 dB	N/A
Axial Ratio	3 dB	N/A
Input Size	4-1/16"	6-1/8"

UHF/VHF-CP (High Band) Stacked Arrays



- DTV option for existing Ch. 7-13 installations
- NTSC upgrade to circular polarization
- Future reversion to VHF DTV
- True linear stack design optimizing circularity for both services

Electrical Specifications

TCL-12A#	NTSC							
Channels	7	8	9	10	11	12	13	
RMS Gain (HPOL)	4.6	4.7	4.9	5.0	5.2	5.3	5.5	
Power Rating (kW) ²	70	70	70	70	70	70	70	

TFU-##GBH-R	DTV						
Channels	14-21	22-29	30-36	37-44	45-52	53-69	
RMS Gain ¹	17.5	19.0	21.5	23.0	25.0	27.0	
Power Rating (kW) ²	69	67	65	62	60	48	

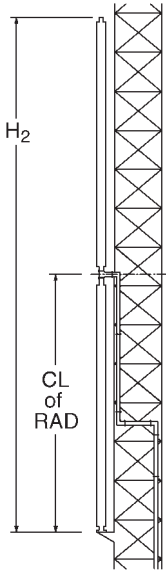
¹ DTV gains are maximum available.

² Note: NTSC power ratings are based on peak visual power + 20% aural; DTV power ratings are based on average power.

	NTSC	DTV
Polarization	Circular	Horizontal
Circularity	± 1dB	± 2dB
Axial Ratio	2.5dB	N/A
Input Size	6-1/8"	6-1/8"

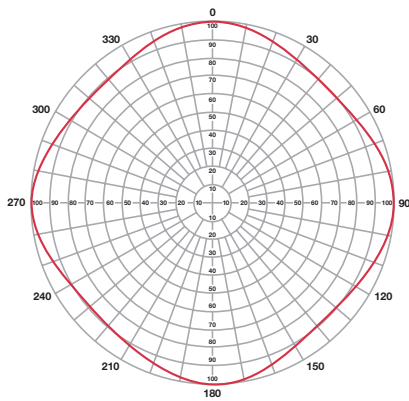
Side Mounted Antenna Systems—UHF

TFU-DSC Series

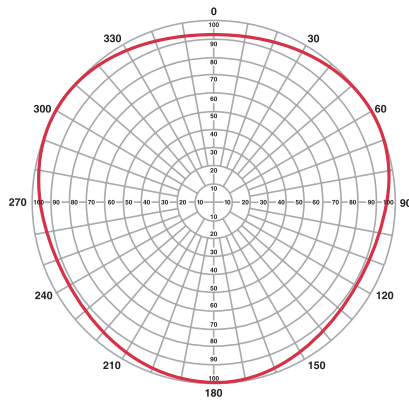


- Single or adjacent channel operation available
- Center fed for excellent DTV frequency response
- Available in 8-36 layer configurations
- Available in dual adjacent channel configurations
- Low gain variation across channel (s) of operation
- Low VSWR <1.08:1
- High power input
- Elliptical and circular polarization options available
- Other patterns and higher power ratings available

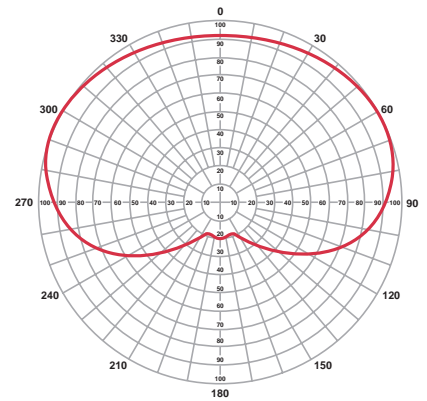
Dielectric's DTV DSC Series Antennas provide superior side mounted performance. The DCS series array is designed for high power DTV applications at ERP levels up to 1 MW. This antenna exhibits extremely low load characteristics for the high power broadcaster.



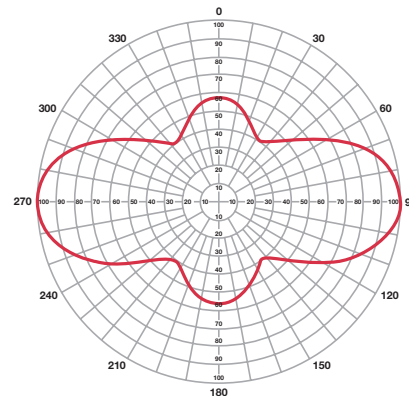
O4



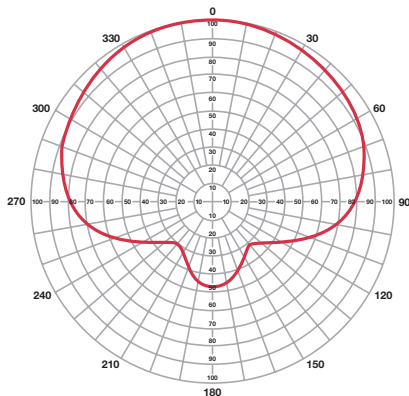
O3



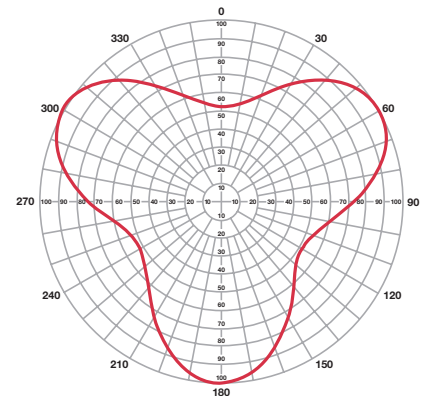
C170
Directivity=1.7



P230
Directivity=2.3



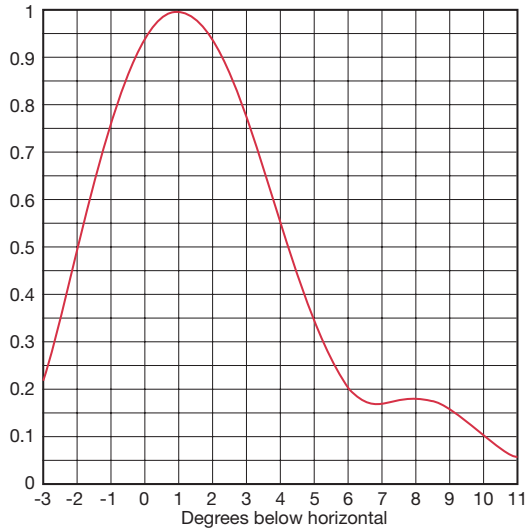
S180
Directivity=1.8



T170
Directivity=1.7

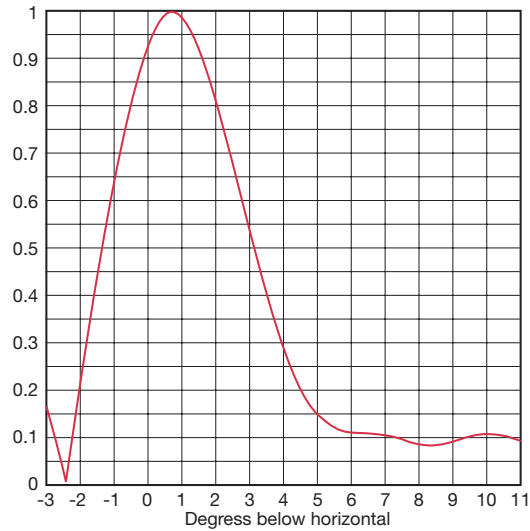
Side Mounted Antenna Systems—UHF

TFU-10DSC-R



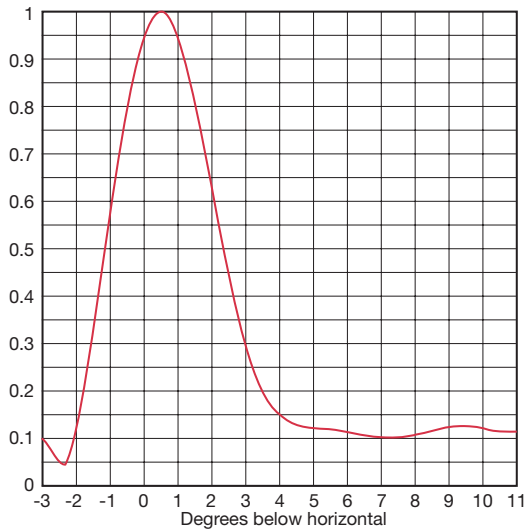
- 9.5 (9.78dB) RMS Gain

TFU-18DSC-R



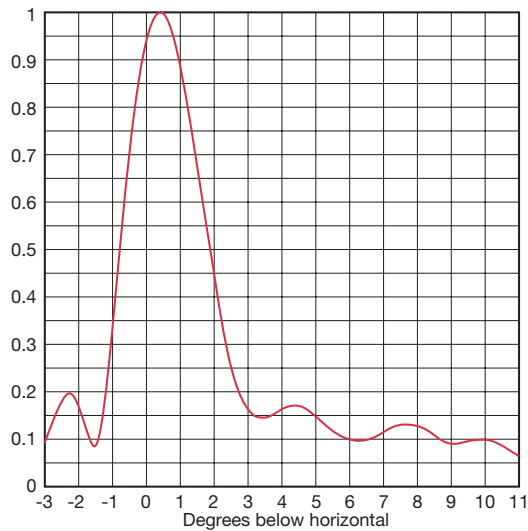
- 15.0 (11.76dB) RMS Gain

TFU-24DSC-R



- 19.5 (12.90dB) RMS Gain

TFU-30DSC-R



- 25.5 (14.07dB) RMS Gain

Gain figures are for single channel operations. Contact factory for gain figures for dual channel operation.

Side Mounted Antenna Systems—UHF

TFU-DSB



- VSWR: <math><1.10:1.0</math> across 6 MHz channel
- Beam Tilt: 1.0 degree standard, custom available
- Input: 3-1/8" EIA for 8 and 16 bay configuration
4-1/16" EIA for 24 bay configuration

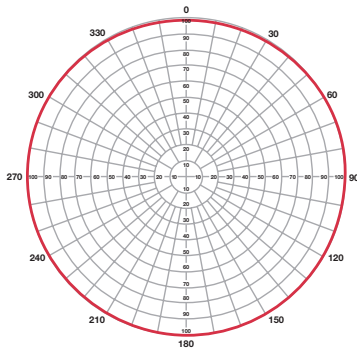
Dielectric's DSB series antenna is an economical, mid to high power DTV array offering numerous standard elevation and azimuth pattern combinations.

Specifications

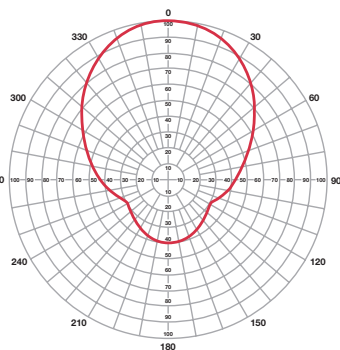
Maximum Input Power Rating DTV (Average)

Antenna	Standard (S)			
	Ch. 14	Ch. 30	Ch. 51	Ch. 69
TFU-8DSB	10	10	10	10
TFU-12DSB	12	12	12	12
TFU-16DSB	13.6	12.3	11.1	10.1
TFU-24DSB	16.2	14.6	13.2	12.1
TFU-32DSB	-	-	-	-

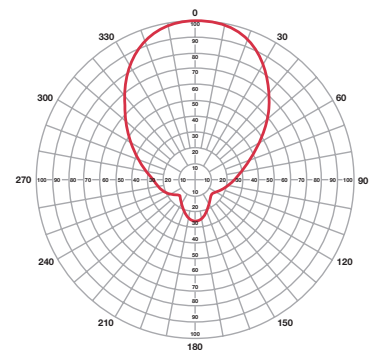
Antenna	Custom (C)			
	Ch. 14	Ch. 30	Ch. 51	Ch. 69
TFU-8DSB	-	-	-	-
TFU-12DSB	-	-	-	-
TFU-16DSB	18.8	18.8	18.8	16.7
TFU-24DSB	21.8	21.8	21.8	19.9
TFU-32DSB	25	25	25	25



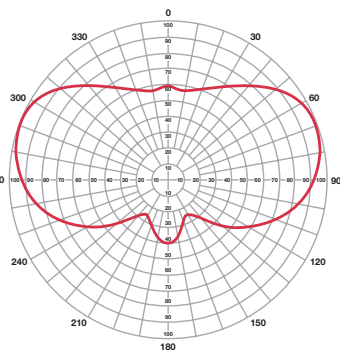
DSB-A



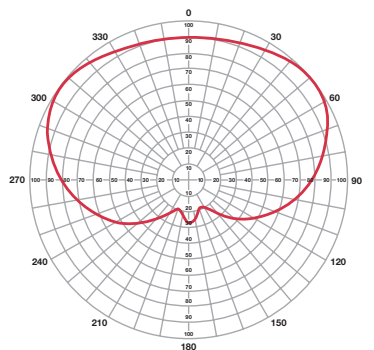
DSB-D
Directivity=2.9



DSB-E
Directivity=3.9



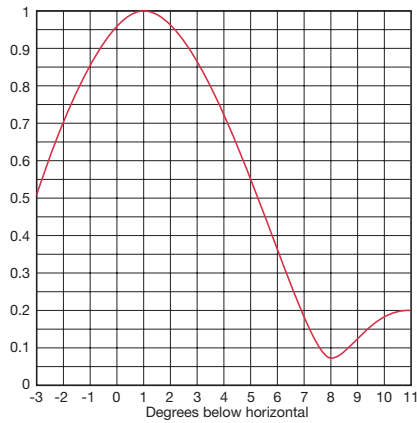
DSB-J
Directivity=2.0



DSB-M
Directivity=1.9

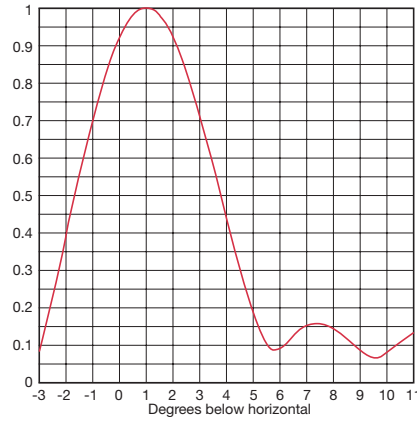
Side Mounted Antenna Systems—UHF

TFU-8DSB



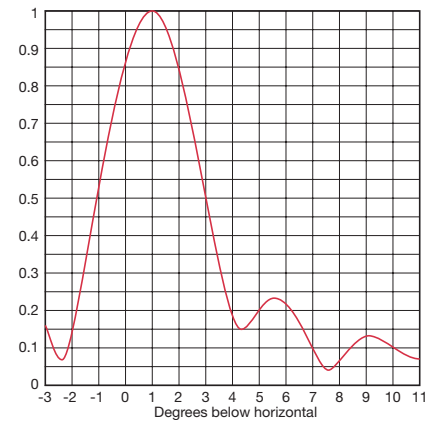
- 8.0 (9.03dB) RMS Gain

TFU-12DSB



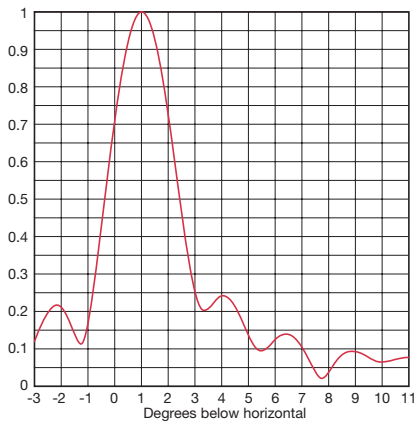
- 12.0 (10.79dB) RMS Gain

TFU-16DSB



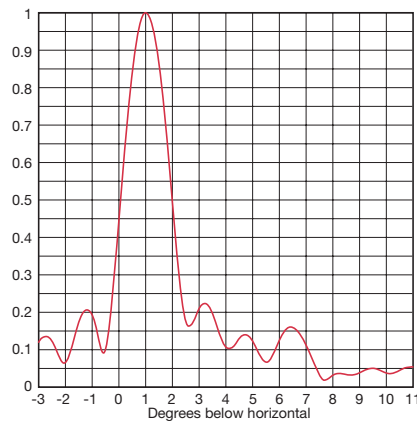
- 16.0 (12.04dB) RMS Gain

TFU-24DSB



- 24.0 (13.80dB) RMS Gain

TFU-32DSB



- 32.0 (15.05dB) RMS Gain

Gain figures are for single channel operations. Contact factory for gain figures for dual channel operation.

Side Mounted Antenna Systems—UHF

Multi-channel Slot Arrays TFU-TC Series - Three Channel Pylon Antenna



- Low weight and windload
- Excellent frequency response
- Ideal for NTSC/NTSC, NTSC/DTV or DTV/DTV service
- Custom patterns available
- Proven pylon design
- Full non-pressurized polycarbonate radome standard
- Custom elevation and azimuth patterns available

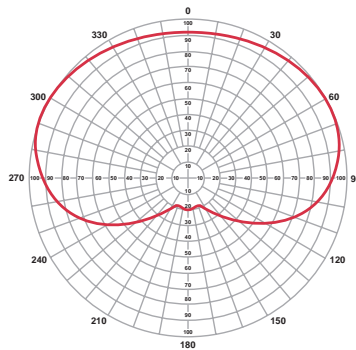
The TFU-TC (three channel) series antenna is an 18 MHz wide pylon antenna that exhibits all the advantages typically associated with a pylon antenna. The TFU-TC is designed for side mount operation on any two non-adjacent UHF channels within a given 18 MHz bandwidth. This antenna is the ideal solution for the broadcaster with loading restrictions who would like to replace the NTSC antenna, or simply have a standby NTSC antenna in addition to implementing DTV service.

Typical Electrical Specifications

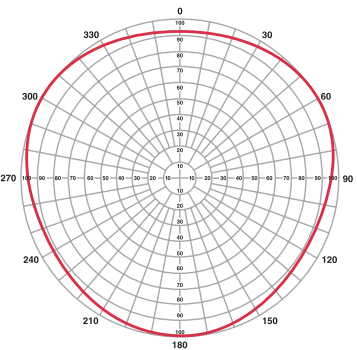
RMS Gain 22.0 to 30.0 (13.42 to 14.77dB)

Peak Power 85 kW

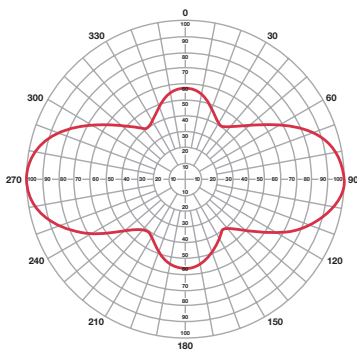
Consult factory for mechanical specifications.



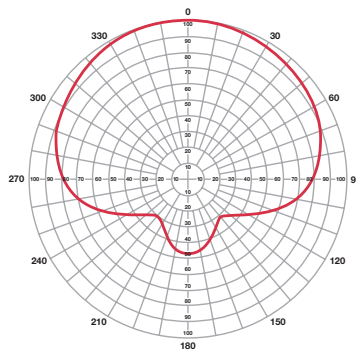
C170
Directivity=1.7



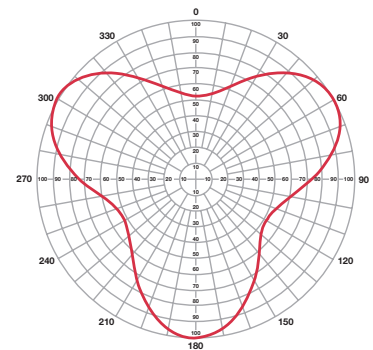
O3



P230
Directivity=2.3



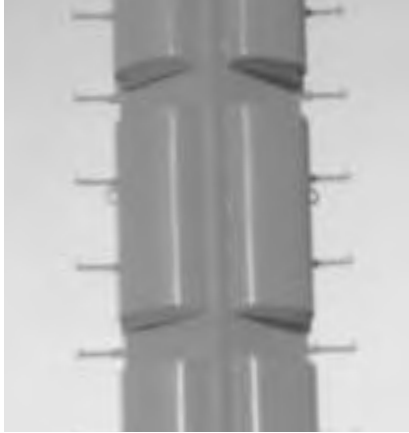
S180
Directivity=1.8



T170
Directivity=1.7

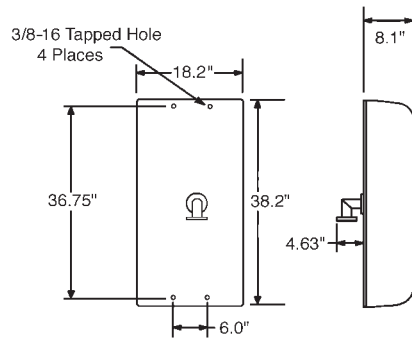
Side Mounted Antenna Systems—UHF

TU Broadband (Delta) Series



Shown with panel radomes (standard)

Standard Deltawing



PANEL SPECIFICATION

NOTE: Due to a continuous program of improvement, specifications are subject to change without notice.

- Wide impedance bandwidth: 470-806 MHz
- Stainless steel elements and panel for maximum reliability and structural stability
- Segmented non-pressurized radome for easy on-tower service
- Available with full cylindrical radome
- Wide selection of azimuth patterns
- Custom azimuth patterns can be designed to meet specific protection/coverage requirements
- Low ice sensitivity
- Standard configurations of one to five around
- Custom beam tilt and null fill available
- Designed for digital and or analog service

The Dielectric TU Series Panel Antenna consists of an array of panels typically mounted in a four around configuration and supplied with a support structure for tower top mounting. The number of panels per layer and the number of layers are variables used to determine the azimuthal and elevation patterns.

The TU Series Panel Antenna has wideband impedance bandwidth and is **ideal for multiplexing** several UHF channels. Each antenna is fully assembled, and is tested at the factory prior to shipping.

Custom designed antennas meeting special requirements such as specific azimuthal pattern, different gains and custom power input requirements are available upon request.

See pages 6-14 for additional information.

Side Mounted Antenna Systems—UHF

TLP Series



- Low cost
- Lightweight/low windload
- Slot cover radomes
- Custom patterns available

Dielectric's TLP antenna is an economical side mounted low power UHF antenna capable of generating significant ERP levels with minimal cost. Ideal for both the NTSC and DTV broadcaster.

Maximum Input Power Rating

DTV (Average)/NTSC (Peak)*

Antenna	Standard (S)		Custom (C)		Special (SP)	
	Ch. 14	Ch. 69	Ch. 14	Ch. 69	Ch. 14	Ch. 69
TLP-8	5.0/8.6	5.0/6.4	—	—	—	—
TLP-12	5.0/8.6	5.0/6.4	—	—	—	—
TLP-16	4.0/6.1	3.0/4.5	8.0/13.0	7.0/9.7	8.0/24.0	8.0/24.0
TLP-24	4.9/7.0	3.7/5.3	8.8/15.0	7.9/11.3	11.6/35.0	11.6/24.0
TLP-32	7.0/10.0	5.2/7.5	12.5/21.4	11.2/16.1	11.6/35.0	11.6/24.0

Input: 1-5/8" EIA on Standard, 3-1/8" EIA on Custom and Special

VSWR: 1.1:1 Maximum over channel

*NTSC: Peak Sync + 10% aural

Antenna Type	Azimuth Pattern	Peak Power Gain Ratio ¹	Gain dB	Height (ft)	Weight (lb)	RS-222-C spec A ft	EIA-222-F spec Ca ft
TLP- 8A	TLP- A	8.0	9.0		80 to 140	3.7 to 7.0	6.6 to 12.5
TLP-8B	TLP-B	13.6	11.3	10.5	60 to 90	4.1 to 7.0	7.9 to 13.4
TLP-8D	TLP-D	23.2	13.7	to	70 to 130	8.2 to 19.7	11.5 to 27.7
TLP-8E	TLP-E	31.2	14.9		80 to 160	11.3 to 28.2	15.9 to 39.7
TLP-8J	TLP-J	16.0	12.0	18.8	80 to 150	9.2 to 22.8	12.9 to 32.1
TLP-8M	TLP-M	15.2	11.8		80 to 160	11.1 to 27.7	15.5 to 38.9
TLP-12A	TLP-A	12.0	10.8		110 to 180	5.4 to 10.1	9.6 to 18.1
TLP-12B	TLP-B	20.4	13.1	15.4	80 to 120	6.0 to 10.2	11.6 to 19.7
TLP-12D	TLP-D	34.8	15.4	to	100 to 180	12.2 to 29.2	17.1 to 41.1
TLP-12E	TLP-E	46.8	16.7		110 to 220	16.8 to 42.1	23.6 to 59.1
TLP-12J	TLP-J	24.0	13.8	27.1	110 to 210	13.7 to 34.0	19.2 to 47.8
TLP-12M	TLP-M	22.8	13.6		110 to 220	16.5 to 41.2	23.1 to 57.9
TLP-16A	TLP-A	16.0	12.0		230 to 340	13.2 to 19.8	23.7 to 35.5
TLP-16B	TLP-B	27.2	14.3	22.2	190 to 250	14.1 to 19.8	26.3 to 37.4
TLP-16D	TLP-D	46.4	16.7	to	220 to 330	22.3 to 45.2	33.6 to 65.9
TLP-16E	TLP-E	62.4	18.0		240 to 380	28.5 to 62.3	42.2 to 89.9
TLP-16J	TLP-J	32.0	15.1	38.6	230 to 370	24.3 to 51.5	36.4 to 74.8
TLP-16M	TLP-M	30.4	14.8		240 to 380	28.0 to 61.2	41.6 to 88.3
TLP-24A	TLP-A	23.0	13.6		340 to 500	19.8 to 29.8	35.6 to 53.4
TLP-24B	TLP-B	39.1	15.9	33.8	270 to 370	21.1 to 29.8	39.5 to 56.2
TLP-24D	TLP-D	66.7	18.2	to	320 to 490	33.5 to 67.8	50.5 to 98.9
TLP-24E	TLP-E	89.7	19.5		340 to 560	42.7 to 93.5	63.5 to 135.0
TLP-24J	TLP-J	46.0	16.6	58.4	340 to 540	36.5 to 77.3	54.7 to 112.3
TLP-24M	TLP-M	43.7	16.4		340 to 560	42.0 to 91.8	62.4 to 132.6
TLP-32A	TLP-A	31.0	14.9		470 to 680	26.5 to 39.7	47.5 to 71.2
TLP-32B	TLP-B	52.7	17.2	45.5	380 to 500	28.2 to 39.7	52.7 to 74.9
TLP-32D	TLP-D	89.9	19.5	to	440 to 660	44.7 to 90.4	67.4 to 131.9
TLP-32E	TLP-E	120.9	20.8		470 to 760	57.0 to 124.7	84.6 to 180.0
TLP-32J	TLP-J	62.0	17.9	78.1	460 to 740	48.6 to 103.1	72.9 to 149.8
TLP-32M	TLP-M	58.9	17.7		470 to 760	56.0 to 122.4	83.3 to 176.8

¹ Contact factory for gains of elliptically or circularly polarized versions.

² Windload at 50/33 lb/ft² per EIA RS-222-C

Side Mounted Antenna Systems—UHF

Antenna Specifications

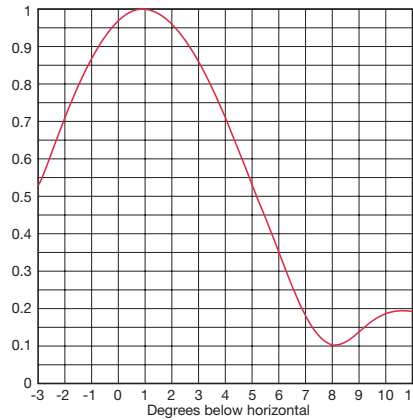
The tables reflect minimum values for channel 69 and maximum for channel 14. Height, weight or windload may be interpolated to find the approximate values for a particular channel as follows:

$$\frac{(14\text{-channel}) (\text{Max.} - \text{Min})}{55} + \text{Max.}$$

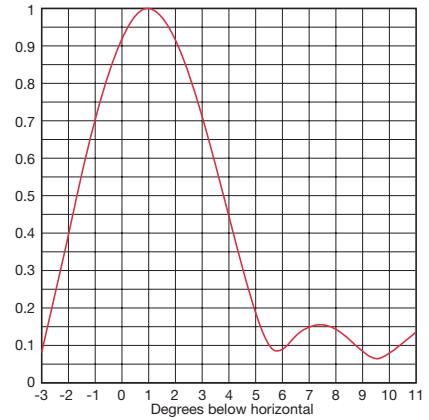
Center of Radiation is one half the height: (C/R = 0.5 Height).

Peak power gain ratio relative to half wave dipole.

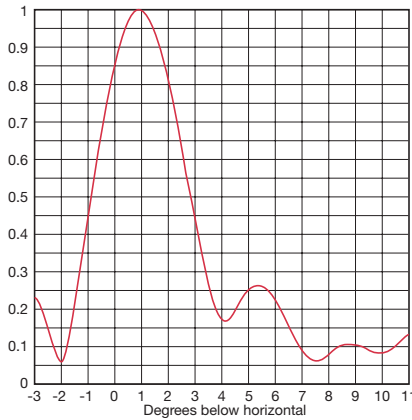
TLP-8



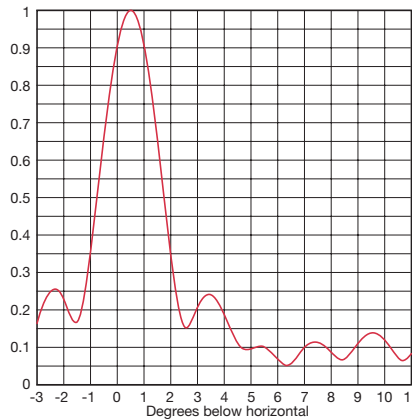
TLP-12



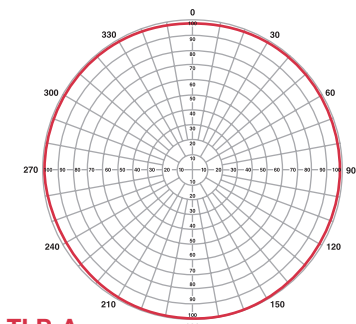
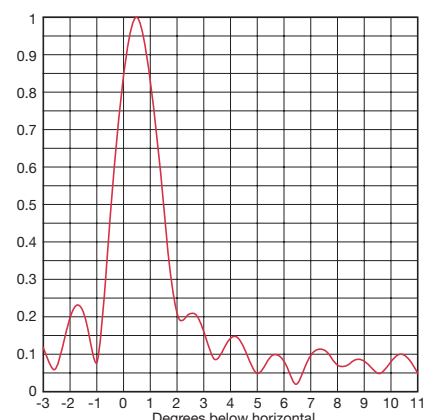
TLP-16



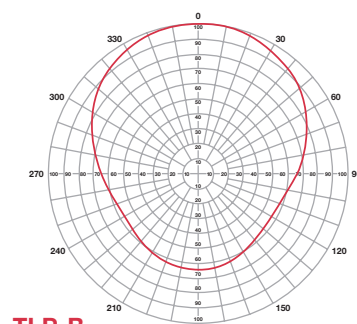
TLP-24



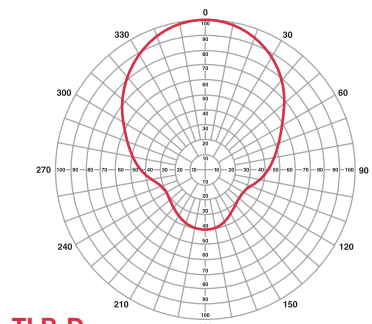
TLP-32



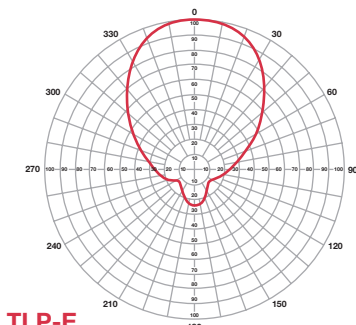
TLP-A



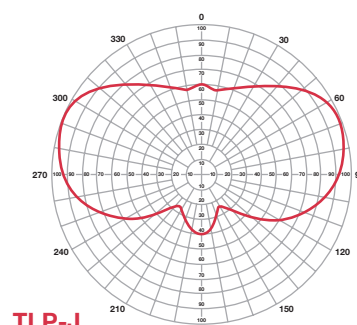
TLP-B
Directivity=1.7



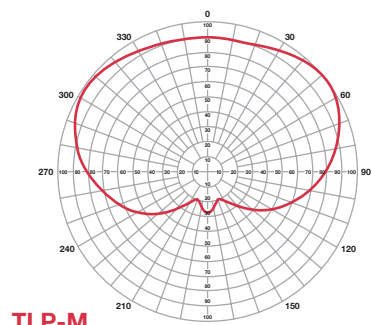
TLP-D
Directivity=2.9



TLP-E
Directivity=3.9



TLP-J
Directivity=2.0



TLP-M
Directivity=1.9

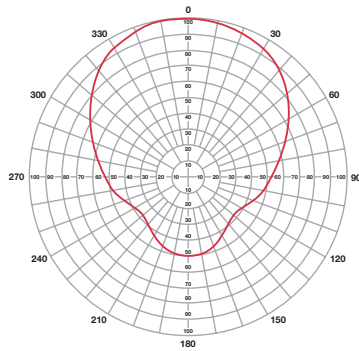
Side Mounted Antenna Systems—UHF

TLS Series

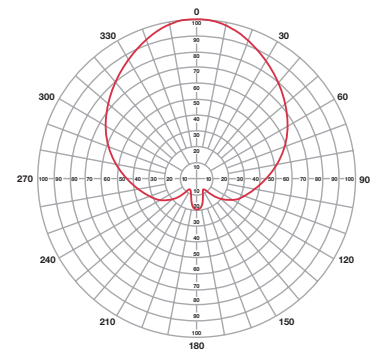


- Economical solution
- Available in 4 to 16 bay configurations
- Input power to 2 kW peak
- 10 channel nominal bandwidth
- Quick delivery
- Several azimuth patterns available
- Analog or digital service

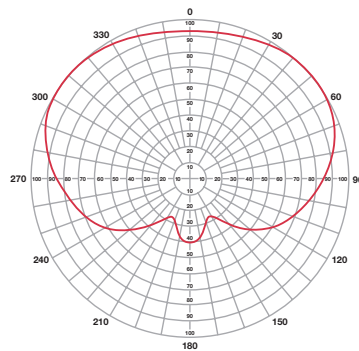
The TLS Series antenna is designed for economical low power UHF broadcasting. This antenna is designed for quick compliance with FCC deadlines, gap filling, translator/repeater markets and standby facilities. The TLS can be used for both NTSC and DTV service. The TLS Series antenna is designed for side mounting on an existing structure.



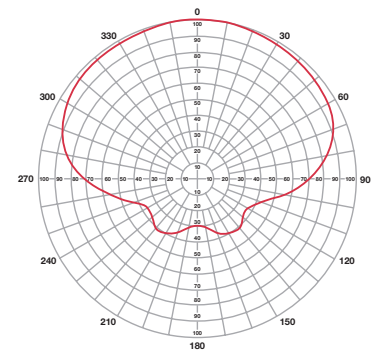
TLS-P
Directivity=2.3



TLS-Q
Directivity=3.1



TLS-R
Directivity=1.7



TLS-S
Directivity=1.9

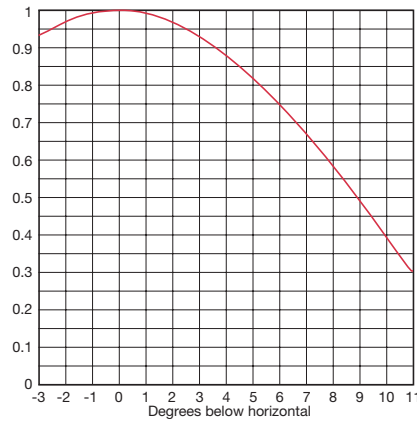
Specifications

Input size: 7/8" EIA
 VSWR: 1.1:1.0 Channel
 1.2:1.0 over 10 Channels
 Electrical Beam Tilt: 1.0
 Degrees

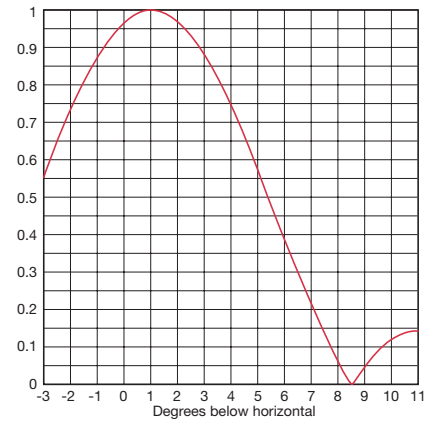
Side Mounted Antenna Systems—UHF

TLS Series

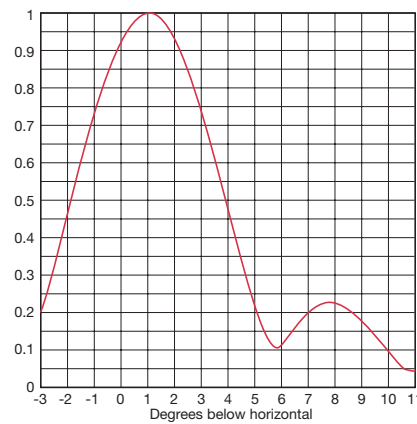
TLS-4



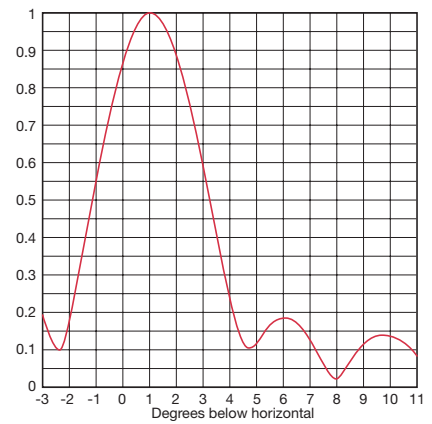
TLS-8



TLS-12



TLS-16



Antenna	Peak Power Rating	Peak Gain	Antenna	Peak Power Rating	Peak Gain
TLS-4P	1 kW	9.2 (9.64dB)	TLS-12P	2 kW	27.6 (14.41dB)
TLS-4Q	1 kW	12.4 (10.93dB)	TLS-12Q	2 kW	37.2 (15.71dB)
TLS-4R	1 kW	6.8 (8.33dB)	TLS-12R	2 kW	20.4 (13.10dB)
TLS-4S	1 kW	7.6 (8.81dB)	TLS-12S	2 kW	22.8 (13.58dB)
TLS-8P	2 kW	18.4 (12.65dB)	TLS-16P	2 kW	36.8 (15.66dB)
TLS-8Q	2 kW	24.8 (13.94dB)	TLS-16Q	2 kW	49.6 (16.95dB)
TLS-8R	2 kW	13.6 (11.34dB)	TLS-16R	2 kW	27.2 (14.35dB)
TLS-8S	2 kW	15.2 (11.82dB)	TLS-16S	2 kW	30.4 (14.83dB)

Side Mounted Antenna Systems—UHF

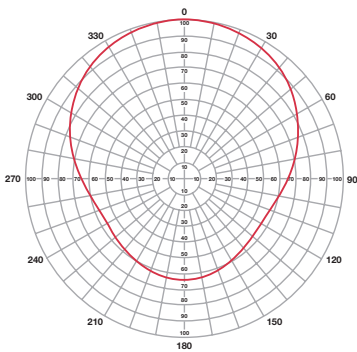
DL Series



- 2kW peak input power maximum
- VSWR<1.10:1.0 across 6MHz channel
- Omnioid azimuth pattern
- One degree electrical beam tilt
- 13.6 to 20.4 (11.3 to 13.1dB) peak gain
- Non-pressurized slot covered design
- Lightweight, low windload design
- Includes standard mounting interface for use with customer provided mounts

Dielectric's DL Series antenna is an extremely economical UHF pylon antenna designed for low power NTSC or DTV UHF applications in which ERP levels of 40kW or less are required. This antenna uses pylon technology proven in the TLP antenna series at a fraction of the cost. The DL antenna is a single section antenna of eight or twelve radiating slots with an omnioid pattern. This antenna is ideal for the translator and repeater markets as well as certain low power applications.

The DL antenna is designed and manufactured by Dielectric at the Raymond, Maine facility. Prior to shipment, the antenna will be fully assembled, phase/amplitude and impedance tested.



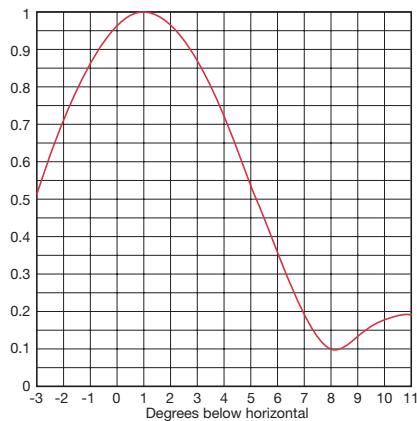
DL-B
Directivity=1.7

This table reflects minimum values for Channel 69 and maximum values for Channel 14. Height, weight and windload may be interpolated for a particular channel using the following equation:

$$\frac{(14\text{-channel})(\text{Max-Min})}{55} + \text{Max}$$

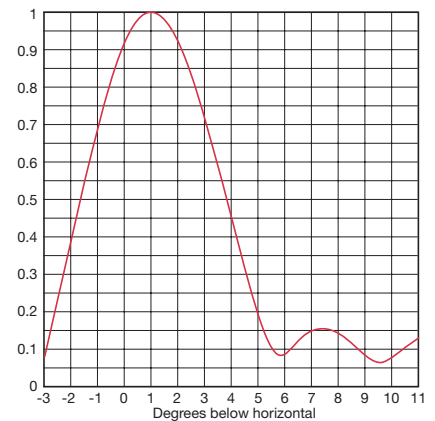
Center of radiation is one half the height. Power gain in relation to a half-wave dipole.

DL-8



• 8.0 (9.03dB) RMS Gain

DL-12



• 12.0 (10.79dB) RMS Gain

Model	Gain Power	Gain dB	Height ft(m)	Weight lb(kg)	Windload ^{1,2} lb(kg)
DL-8	13.6	11.3	10.5 to 17.8 (3.2 to 5.4)	45 to 70 (20.4 to 31.7)	180 to 300 (81.6 to 136.0)
DL-12	20.4	13.1	15.8 to 26.7 (4.8 to 8.1)	68 to 105 (30.9 to 47.7)	270 to 450 (122.7 to 204.5)

¹ EIA-222-C @50/33 lb/ft²

² For TIA/EIA-222-F specification add 6 ft² to 10 ft² to aerodynamic areas (windload).

Side Mounted Antenna Systems—VHF

VHF

Dielectric's product line includes a wide array of VHF antenna products in both top mounted and side mounted versions and both horizontally and circularly polarized. The THV Series pylon, TH Series broadband VHF panel antenna and TLS-V Stripline Series antennas are discussed in more detail below. For information on additional models or specific applications contact factory.

TH Series - Deltawing



Shown with standard feed point radomes

- Field-proven design for top reliability
- Excellent horizontal pattern control capabilities
- High input power capability
- Wide impedance bandwidth for multiplex operation
- Rugged corrosion-resistant radiator with simple feed
- Branch feed—ideal for analog or digital transmission
- Available in one to twelve bay arrays
- Full slot radome available for high icing environments

Dielectric's TH Series Deltawing VHF TV Antennas feature a rugged, field-proven design for worry-free long life. They offer the flexibility of side mounting on existing towers and provide unlimited pattern control for directional applications.

The TH Deltawing uses a pair of batwing shaped radiating elements in a panel configuration designed for minimum weight and windloading. The design optimizes impedance and radiation performance. The Deltawing design allows for wrap-around mounting to existing structures or the installation on custom designed support splines. Typically used in one to six around configurations, the azimuth pattern characteristics are unlimited.

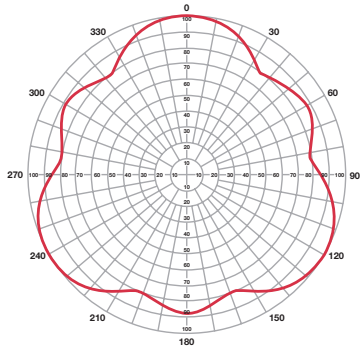
In addition, the impedance bandwidth of the Deltawing element allows for the combining or multiplexing of multiple frequencies into a common array.

The Deltawing antenna is designed and constructed to operate in severe environments. Radiating elements and ground screens are fabricated of structural steel and are hot-dip galvanized. Feed point radomes are standard and protect the feed point area from ice buildup to minimize VSWR degradation during icing conditions. For severe icing conditions, full slot radomes are available.

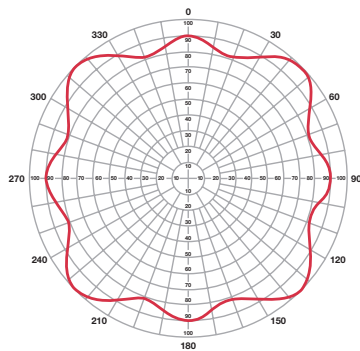
Contact factory for mechanical specifications.

Side Mounted Antenna Systems—VHF

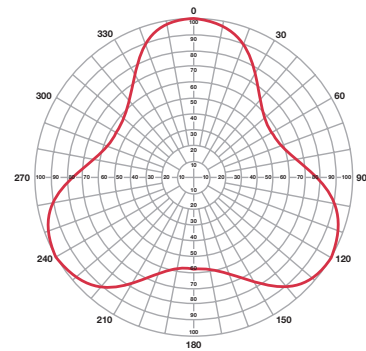
TH Series - Deltawing



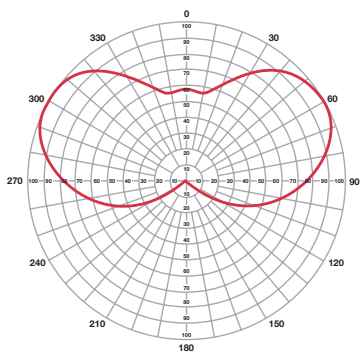
THB-O3
Directivity=1.3



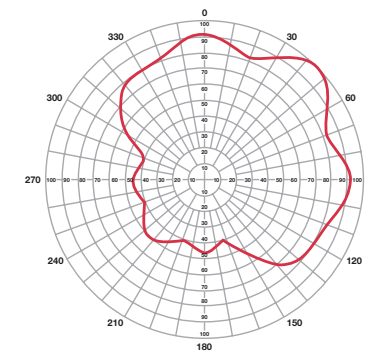
THA-O4
Directivity=1.3



THA-T160
Directivity=1.6

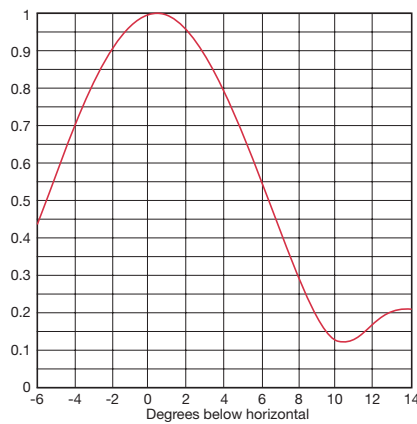


THA-MC2
Directivity=2.5

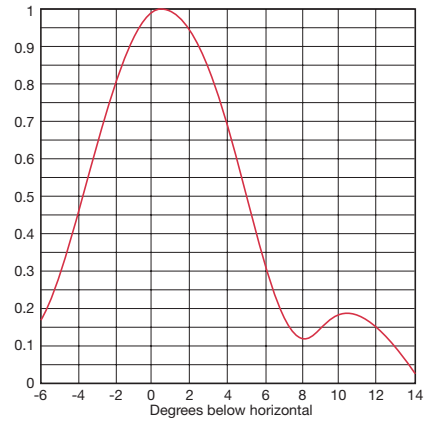


THA-S4
Directivity=1.9

THA-6



THA-8



Side Mounted Antenna Systems—VHF

TH Series - Deltawing VHF Antenna Elevation Gain

Bays	Band	F (MHz)	0% Null Fill 0° tilt		15% Null Fill .75° tilt		Bays	Band	F (MHz)	0% Null Fill 0° tilt		15% Null Fill .75° tilt	
1	L	Ch 2	1.2	0.64	—	—	2	H	Ch 10	2.2	3.45	—	—
2	L	54-60	2.2	3.40	—	—	3	H	192-198	3.3	5.22	3.1	4.94
3	L		3.2	5.11	3.4	5.29	4	H		4.4	6.46	4.2	6.24
4	L		4.3	6.32	4.1	6.11	5	H		5.5	7.43	5.2	7.19
5	L		5.3	7.28	5.1	7.04	6	H		6.6	8.22	6.3	7.97
6	L		6.5	8.13	6.1	7.82	8	H		8.8	9.47	8.4	9.25
1	L	Ch 3	1.2	0.64	—	—	10	H		11.0	10.43	10.5	10.23
2	L	60-66	2.3	3.54	—	—	12	H		13.2	11.22	12.7	11.03
3	L		3.4	5.28	3.2	5.01	2	H	Ch 11	2.3	3.56	—	—
4	L		4.5	6.52	4.3	6.29	3	H	198-204	3.4	5.34	3.2	5.05
5	L		5.6	7.48	5.3	7.23	4	H		4.6	6.60	4.3	6.36
6	L		6.7	8.26	6.3	8.01	5	H		5.7	7.57	5.4	7.32
1	M	Ch 4	1.2	0.64	—	—	6	H		6.9	8.36	6.5	8.11
2	M	66-72	2.2	3.40	—	—	8	H		9.2	9.61	8.7	9.39
3	M		3.2	5.11	3.0	4.83	10	H		11.4	10.58	10.9	10.38
4	M		4.3	6.32	4.1	6.11	12	H		13.7	11.38	13.1	11.18
5	M		5.4	7.28	5.1	7.05	2	H	Ch 12	2.3	3.63	—	—
6	M		6.4	8.06	6.1	7.82	3	H	204-210	3.5	5.42	3.3	5.13
1	M	Ch 5	1.2	0.64	—	—	4	H		4.7	6.68	4.4	6.45
2	M	76-82	2.3	3.58	—	—	5	H		5.8	7.66	5.5	7.41
3	M		3.4	5.33	3.2	5.07	6	H		7.0	8.46	6.6	8.20
4	M		4.5	6.57	4.3	6.34	8	H		9.4	9.71	8.9	9.49
5	M		5.7	7.53	5.4	7.28	10	H		11.7	10.69	11.2	10.48
6	M		6.8	8.31	6.4	8.07	12	H		14.1	11.48	13.4	11.28
1	M	Ch 6	1.2	0.64	—	—	2	H	Ch 13	2.3	3.69	—	—
2	M	82-88	2.3	3.58	—	—	3	H	210-216	3.5	5.48	3.3	5.20
3	M		3.4	5.34	3.2	5.07	4	H		4.7	6.76	4.5	6.51
4	M		4.6	6.58	4.3	6.35	5	H		5.9	7.73	5.6	7.47
5	M		5.7	7.54	5.4	7.30	6	H		7.1	8.53	6.7	8.27
6	M		6.8	8.33	6.4	8.08	8	H		9.5	9.78	9.0	9.56
2	H	Ch 7	2.1	3.21	—	—	10	H		11.9	10.76	11.4	10.55
3	H	174-180	3.1	4.95	2.9	4.68	12	H		14.3	11.55	13.7	11.35
4	H		4.5	6.53	3.9	5.96	2	H	Ch E11	2.4	3.71	—	—
5	H		5.2	7.15	4.9	6.91	3	H	216-223	3.6	5.52	3.3	5.24
6	H		6.2	7.92	5.9	7.69	4	H		4.8	6.79	4.4	6.46
8	H		8.3	9.18	7.9	8.96	5	H		6.0	7.77	5.6	7.51
10	H		10.3	10.14	9.9	9.94	6	H		7.2	8.57	6.8	8.31
12	H		12.4	10.93	11.9	10.74	8	H		9.6	9.83	9.1	9.60
2	H	Ch 8	2.1	3.32	—	—	10	H		12.0	10.81	11.5	10.60
3	H	180-186	3.2	5.07	3.0	4.79	12	H		14.5	11.60	13.8	11.40
4	H		4.3	6.31	4.1	6.08	2	H	Ch E12	2.4	3.77	—	—
5	H		5.3	7.27	5.1	7.03	3	H	223-230	3.6	5.57	3.4	5.29
6	H		6.4	8.06	6.1	7.82	4	H		4.8	6.84	4.6	6.61
8	H		8.5	9.31	8.1	9.09	5	H		6.1	7.83	5.7	7.57
10	H		10.7	10.28	10.2	10.07	6	H		7.3	8.63	6.9	8.37
12	H		12.8	11.07	12.2	10.87	8	H		9.8	9.89	9.3	9.66
2	H	Ch 9	2.2	3.40	—	—	10	H		12.2	10.87	11.6	10.66
3	H	186-192	3.3	5.17	3.1	4.89	12	H		14.7	11.66	14.0	11.46
4	H		4.4	6.42	4.2	6.19							
5	H		5.5	7.39	5.2	7.15							
6	H		6.6	8.19	6.2	7.94							
8	H		8.8	9.44	8.3	9.22							
10	H		11.0	10.41	10.5	10.20							
12	H		13.2	11.20	12.6	11.00							

Side Mounted Antenna Systems—VHF

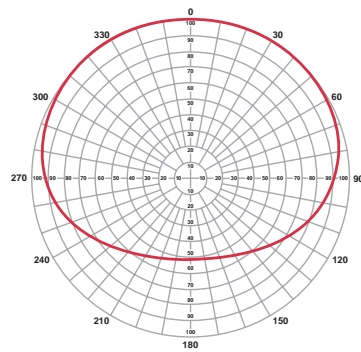
THV Series



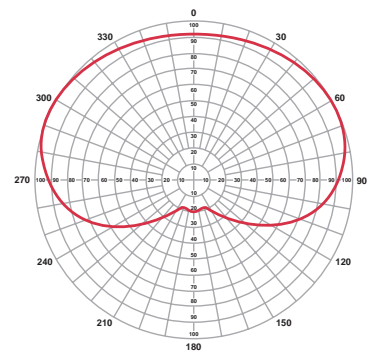
- High band VHF directional antenna
- Top or side mounting options
- Low windload/economical design
- Available with custom azimuth patterns
- Elevation gains from 6.0 (7.78dB) to 12.0 (10.79dB) typical
- Peak gains to 22.8 (13.58dB)
- Full polycarbonate radome standard
- High input power handling
- Ideal for NTSC and DTV applications

The THV antenna is designed for directional high-band VHF applications in both top and side-mounted configurations. The THV utilizes the simplicity and reliability of pylon technology. This antenna combines high power handling, pattern diversity (elevation and azimuth), and Dielectric's conservative design approach to produce a superior product for single frequency high band operations.

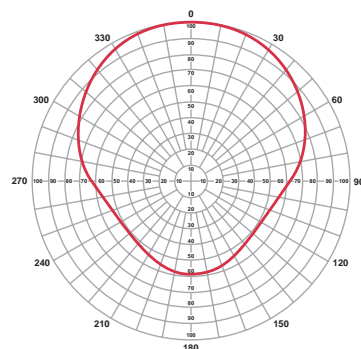
The THV azimuth pattern can be custom designed to fit a variety of applications, catering to facilities proposing maximization for DTV, those with protection requirements or those wishing to focus the energy towards the market of interest.



C140
Directivity=1.4



C170
Directivity=1.7

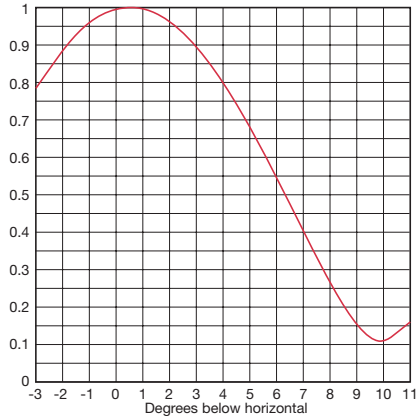


S190
Directivity=1.9

Side Mounted Antenna Systems—VHF

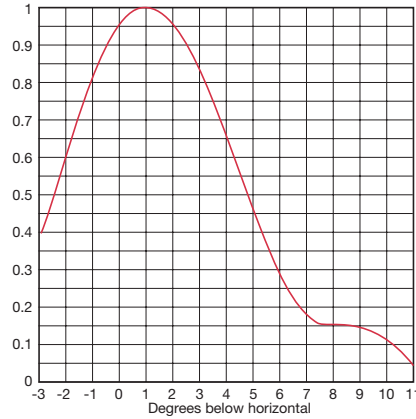
THV Series

THV-6A



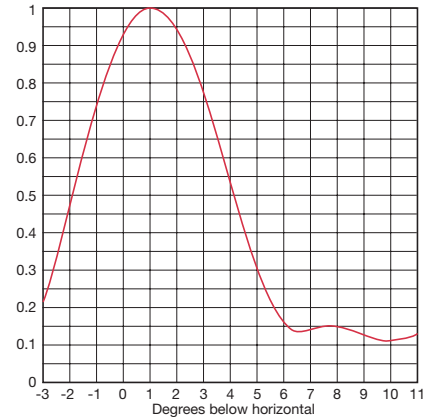
- 6.0 (7.78dB) RMS Gain

THV-10A



- 10.0 (10.00dB) RMS Gain

THV-12A



- 12.0 (10.79dB) RMS Gain

Mechanical Specifications - Typical

Cardioid Pattern

	Channel	H2 (ft)	RS-222-C		TIA/EIA-222-F	
			H3 (ft)	W (lbs)	A (ft ²)	CaAc (ft ²)
THV-6Ax-R	7	44.0	24.2	1600	56	102
	8	42.6	23.4	1550	54	99
	9	41.3	22.6	1510	52	96
	10	40.1	21.9	1470	51	93
	11	38.9	21.3	1440	49	90
	12	37.9	20.7	1400	48	88
	13	36.8	20.1	1370	47	85
THV-10Ax-R	7	61.7	30.8	2180	84	154
	8	59.8	29.9	2110	81	149
	9	58.0	29.0	2060	79	144
	10	56.3	28.1	2000	77	140
	11	54.7	27.4	1950	74	136
	12	53.2	26.6	1900	72	132
	13	51.8	25.9	1860	70	129
THV-12Ax-R	7	72.8	36.4	2530	100	183
	8	70.5	35.3	2460	97	177
	9	68.4	34.2	2390	94	171
	10	66.4	33.2	2330	91	166
	11	64.5	32.3	2270	88	161
	12	62.7	31.4	2210	86	157
	13	61.1	30.5	2160	83	157

H2 - Overall height without lightning protection

H3 - Centerline of radiation

NOTE: Typical loads for Cardioid Pattern

x = Channel number

R = Radomed

Consult factory for application specific mechanical details.

Side Mounted Antenna Systems—VHF

TLS-V Series



- Economical alternative to panel antenna
- Extremely low weight and windload
- Available in 4, 8 and 12 bay configurations
- Input power to 15 kW peak
- Includes standard mounting brackets
- Quick delivery
- Radome and feedpoint ice shield optional

The TLS-V Series antenna is designed as a low cost, low windload alternative for the VHF broadcaster. This antenna is designed for quick compliance with FCC deadlines, gap filling, translator/repeater markets and standby facilities. The TLS-V can be used for either NTSC or DTV service.

The TLS Series antenna designed for side mounting on an existing structure.

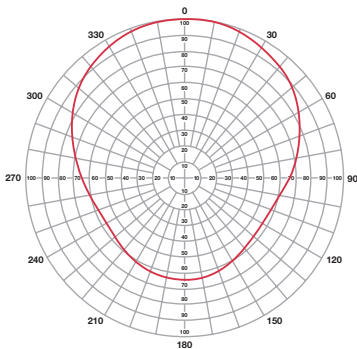
Specifications

Input size: 1-5/8" EIA

VSWR: 1.10:1.0 Channel

Electrical Beam Tilt: 1.0 Degrees

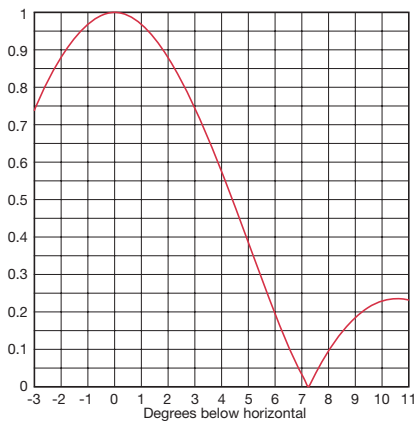
Typical



TLS-VS170
Directivity=1.7

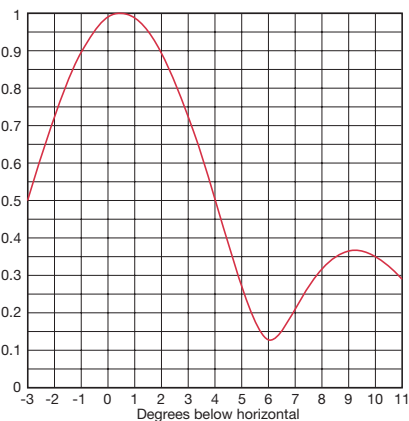
Antenna	Peak Power Handling	RMS Gain	Peak Gain
TLS-V4	5 kW	4.0 (6.02dB)	6.8 (8.33dB) to 12.4 (10.93dB)
TLS-V8	Up to 10 kW	8.0 (9.03dB)	13.6 (11.34dB) to 24.8 (13.94dB)
TLS-V12	Up to 15 kW	12.0 (10.79dB)	20.4 (13.10dB) to 37.2 (15.71dB)

TLS-V4



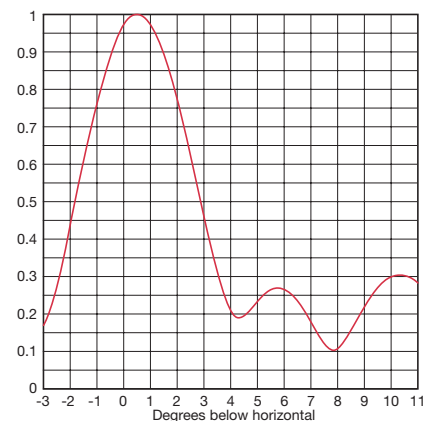
- 4.0 (6.02dB) RMS Gain

TLS-V8



- 8.0 (9.03dB) RMS Gain

TLS-V12



- 12.0 (10.79dB) RMS Gain



EHTLine™

- Enhanced power handling
- Lower tower windloading
- Proven connector and inner support designs
- Available in all line sizes and impedances

Dielectric advances the state of the art in coaxial transmission lines again! A revolutionary design and unique manufacturing process allows the inner conductor of our new EHTLine to run cooler than standard line at the same input power. The average power ratings of this new line are up to 45% higher than standard coaxial line. This allows the use of a smaller EHTLine, lowering the windload on the tower. EHTLine is also available in digiTLine®.

digiTLine® Broadband Coax

- Multiple channel operation
- NTSC or DTV on any channel
- Patented design
- Various line sizes, types and impedances

Dielectric's patented digiTLine® is the only rigid transmission line designed specifically for the broadcaster who requires wide-band operation. It is ideally suited for multi-channel installations. Low input VSWR's over the entire UHF band are typical even for runs up to 2000 feet. DigiTLine® utilizes the same high conductivity, copper inner and outer conductors as all other Dielectric transmission line, ensuring low loss and high efficiency.

Ultimate™ Transmission Line

- Available in digiTLine®, EHT and EHT digiTLine®
- Patented design
- Available in 3 1/8" - 9 3/16" sizes

Dielectric offers the Ultimate™ series of transmission line, a transmission line resulting from the culmination of 60 years of transmission line design and development. This line utilizes connector technology of the field proven "high-power" connector pioneered by Dielectric in the 70's for use by the scientific community and the added features of the digiTLine® connector.

The nose of the Ultimate™ connector is divided into narrow fingers each spring loaded by an internal beryllium copper spring. Narrower fingers allow for an increase in the number of contact fingers for a given line size on the order of 100%. This results in greater contact area with the copper inner conductor and a relatively low insertion force resulting in less friction. Also, the additional number of fingers allows the connector to better conform to slight diameter variations in the inner conductor while maintaining superior contact.

The Ultimate™ connector is single ended. One end is constructed as described above and the other end is designed to hard solder into the copper inner conductor tube. This effectively eliminates one contact area in a given transmission line joint. Ultimate™ Transmission Line is available in 3 1/8" to 9 3/16" sizes.

Transmission Line—Flexible

FLEXLine™



New Dielectric FLEXLine™ air dielectric coaxial cable is available in sizes for every broadcast application from low power FM through high power TV. Now you have an alternative to rigid transmission line for installations on crowded towers, broadband applications, or any other situation in which flexible transmission line is advantageous. Consult Dielectric for assistance in selecting the optimum line for your application.

Sizes to 6-1/8

FLEXLine™ air dielectric coaxial cable comes in standard sizes of 7/8", 1-5/8", 2-1/4", 3-1/8", 4-1/8", 5", and 6-1/8", covering AM, FM and many TV applications. Whether your requirements are for flexible cable or rigid transmission line, Dielectric has the product to suit your needs.

Precision-fitted Connectors

Each connector is attached using a precision-engineered flaring tool and gauges, no snip-flaring and hammering. This provides superior VSWR performance, which eliminates risk of connector burnout due to hot spots.

Single Source Solution

With FLEXLine™ air dielectric coaxial cable, Dielectric can now satisfy all your needs for transmission line. Rely on Dielectric as your single source solution.

Warranty

FLEXLine™ is warranted for 10 years if purchased with a complete Dielectric package including antenna and RF system.

Planning Software

Using DASP™ (Dielectric Antenna System Planner) Software frequency specific details on power handling and attenuation are generated for your review.



RF Systems—Shared Line Tee Combiners and Splitters

Shared Line Tees

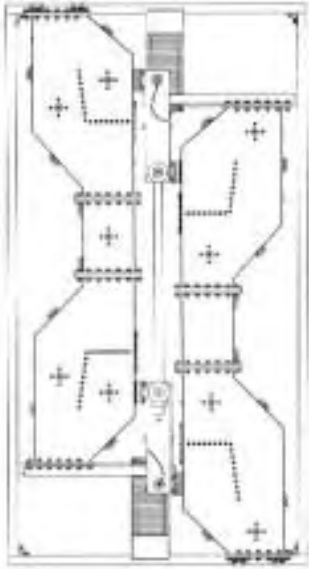
- Single feedline for two stations
- Available in UHF/UHF, or UHF/VHF, and VHF/VHF configuration
- Completely isolated operation
- Very low windload
- Minimal group delay, loss and VSWR
- High power capacity

Dielectric's dual channel shared line tee tower top splitter and/or combiner allows two stations to share a common feedline up the tower and then feed separate antennas. High levels of isolation between the inputs are achieved using the tees. By avoiding narrowband filters the impedance, group delay, and insertion loss variations across the channel are minimized and sensitivity to the elements is virtually eliminated. Our unique in-line coaxial filters have the added benefit of an extremely low windload; essentially that of the coax line itself.



RF Systems—Sharp Tuned Mask Filters

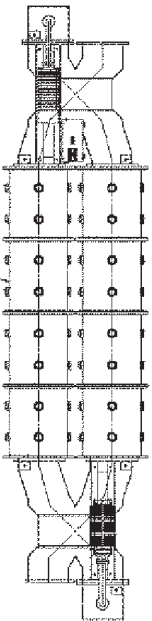
VHF Sharp Tuned DTV Mask Filter



- Models for low, mid and high band UHF
- High efficiency mask filter
- Excellent adjacent channel rejection
- Applications to 20 kW average
- Low loss, constant impedance design
- Pseudo-elliptic response
- Temperature stable resonators

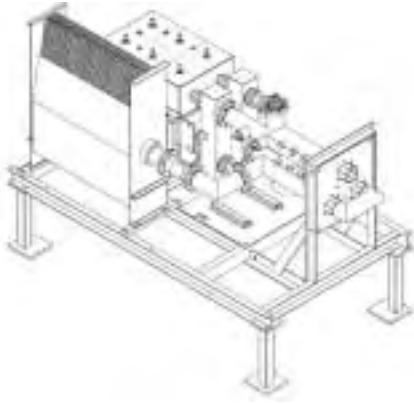
These constant impedance mask filters are designed to provide high levels of adjacent channel rejection in single channel installations and assist the transmitter in complying with the FCC DTV mask beginning at the channel edge. The filters utilize copper resonators in an aluminum case with highly stable Invar tuning rods. The filters pseudo-elliptic response, with two rejection poles on each side of the pass-band, is designed to rigorous OEM specifications. It provides the capability of higher transmitter power and efficiency while ensuring an excellent out-of-band DTV mask. A floor mount frame is provided standard which can be ceiling mounted if desired. The sharp tuned filter is normally supplied as part of a complete RF system from the transmitter OEM including switchless combiners, harmonic filters, output switches and station loads.

UHF Sharp Tuned DTV Mask Filter



RF Systems—Unitized UHF Low Power

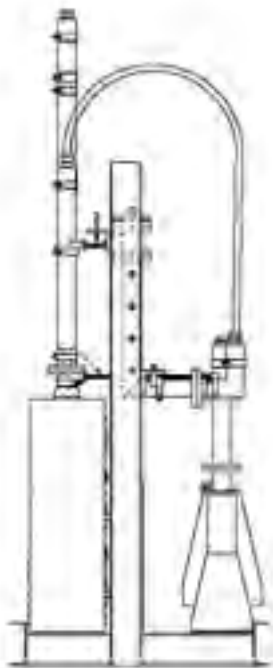
Unitized UHF Low Power Constant Impedance System



- Complete frame mounted system includes filter, patch panel, directional couplers and station load
- Constant impedance DTV mask filter
- Applications to 6.0 kW average power
- New mounting frame system allows for floor or ceiling mount
- Available with optional coaxial switch

This unitized coaxial UHF DTV RF system for applications to 6.0 kW average power includes a constant impedance mask filter, three port patch panel with interlocks, directional couplers and air cooled station load in a floor standing aluminum frame. All that is necessary to be on the air is to position the RF system near the transmitter either on the floor or above it and bring the input and output lines to it. A six section elliptic function bandpass filter with coaxial cavities and Invar tuning rods provides the necessary temperature stable mask filtering. Filter rejection characteristics are as specified by the transmitter manufacturer or to our typical specification. An optional motorized coaxial switch can be substituted for the manual patch panel if desired.

Unitized UHF Low Power Reflective System

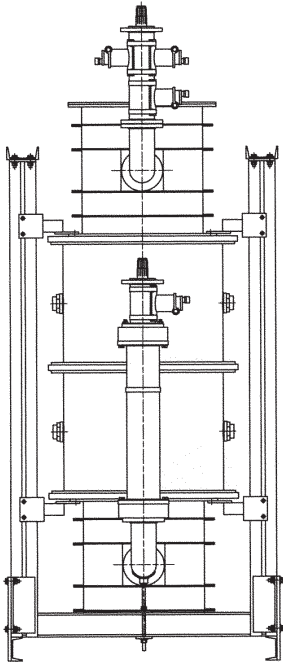


- Complete frame-mounted system includes mask filter, harmonic filter, directional couplers and test load
- Applications to 2.5 kW average max. power

This unitized UHF low power reflective system for applications up to 2.5 kW average power includes a reflective mask filter, a harmonic filter, output directional couplers and an air-cooled test load. The free-standing frame allows for easy, floor-based installation. The six section elliptic function reflective filter with coaxial cavities and Invar tuning rods provides the necessary temperature-stable mask filtering. Filter rejection characteristics are as specified by the transmitter manufacturer or to our typical specification.

RF Systems—Reflective Medium Power

UHF DTV Reflective Mask Filter

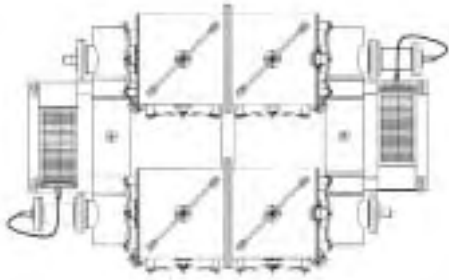


- Solid state DTV transmitter mask filter
- Applications to 25 kW average
- Six section pseudo-elliptic response
- Temperature stable invar cavities
- Excellent out-of-band rejection
- Unique rectangular/circular cavity combination

Dielectric's UHF reflective mask filters are designed to provide cost effective highly stable solutions for solid state DTV transmitter mask compliance. The filters utilize a unique combination of two single mode rectangular and two dual mode circular waveguide cavities to provide a six section pseudo-elliptic response with excellent out-of-band rejection. An additional coaxial harmonic filter can be included to provide rejection up to the fourth harmonic at some channels. Integrated EIA coaxial inputs and outputs are provided in 3-1/8" to 15 kW and 4-1/16" to 25 kW average power levels. The units come mounted on an aluminum frame that allows for either vertical free standing on the floor or horizontal ceiling mounting from rods.

RF Systems—Triple Mode

UHF Triple Mode Constant Impedance DTV Mask Filter

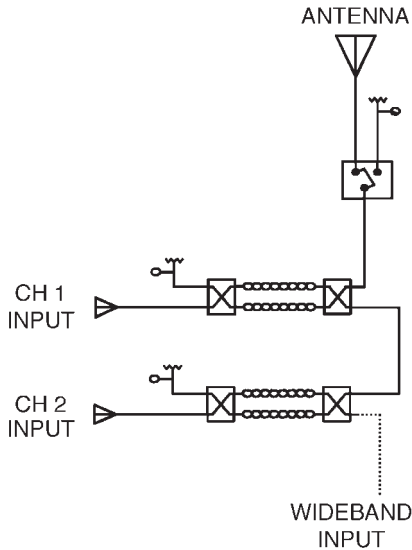


- Extremely compact design
- Applications to 25 kW average
- Six section pseudo-elliptic response
- Temperature compensated aluminum waveguide cavities
- Unitized for ceiling or floor mount

This unique low loss triple mode constant impedance UHF DTV mask filter provides an economical answer for medium power DTV transmitters up to 25 kW. The two square aluminum waveguide cavities each support three independent resonances thus only two cavities are required for a six section filter, making it significantly smaller than competitive designs. Thermal drift is extremely low due to the use of cavity compensators which react to changes in the cavity length. This approach is much more stable than temperature sensors and/or complicated mechanical linkages, and does not require cooling fans. The filters are available with either 3-1/8" or 4-1/16" EIA coaxial inputs and outputs. The units come mounted on a standardized steel frame that allows for either floor or ceiling mounting. They can also be integrated with other components in a complete RF system for 1, 2, 3 or 4 cabinets with output switching/patching and station loads.

Complete RF Systems

Multi-Channel Combiner Systems



- Configurations for most channel combinations
- Adjacent channel NTSC/DTV combiners
- Combines UHF + UHF, VHF + VHF or UHF + VHF
- Coax and/or waveguide designs
- Starpoint and constant impedance types
- Tower top splitters

Dielectric's expertise doesn't end at the transmission line input. We are uniquely qualified to provide the entire RF package including multi-channel combiners and transmitter RF systems. Our multi-station combiner systems utilize state-of-the-art filter designs and only the highest quality materials and construction to ensure totally independent operation of each station. Configurations are tailored to optimize critical performance factors such as group delay, insertion loss, isolation and VSWR based on your unique system requirements.

Transmitter RF Systems

- Combining, switching, and filtering
- Waveguide and/or coax
- VHF or UHF
- Solid state or tube transmitters
- Designed to meet FCC mask

There is a difference in transmitter RF systems. Specify a Dielectric RF System with your DTV transmitter to ensure optimum performance. Dielectric provides custom designed and configured RF systems to virtually all transmitter suppliers. Various combinations of "MagicT" combines switches, harmonic filters, constant impedance FCC mask filter, etc. are available depending upon on the number of output devices and the desired system redundancy.

Ten Year Warranty

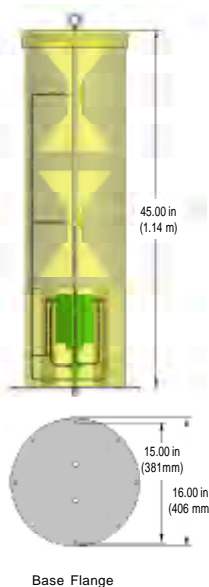
Dielectric extends our standard five year warranty to ten years with the purchase (either direct or through a transmitter OEM) of an entire Dielectric Antenna RF System including antenna, transmission line, and transmitter RF system.*

*For more details and terms of this warranty, contact the factory.

TFU-UT Bowtie Slot Turnstile Antenna



- Omnidirectional
- 470-860 MHz Bandwidth
- VSWR < 1.1:1 Nominal
- Gain 5 dBd
- Horizontally Polarized
- Average Power Rating
 - 1kW into 7/16 DIN Input
 - 500 W into Type N Input
- Durable aluminum construction with protective radome
 - No internal mast
 - Turnstile performance with 50% fewer feedlines and 50% fewer radiators
- Combines two channels using dual inputs

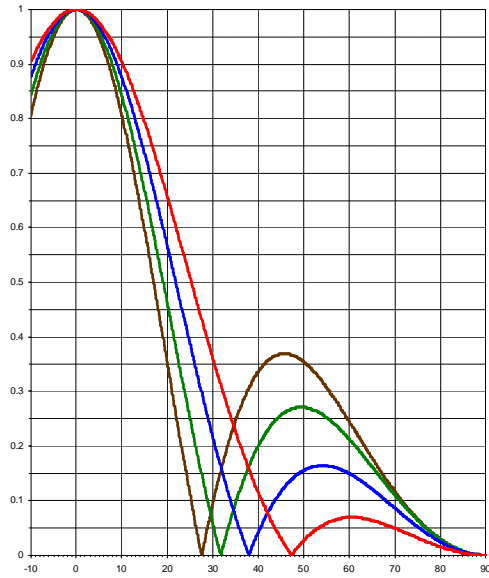


Dimensions

Dielectric's patented TFU-UT Turnstile antenna is a low power economical broadband UHF omnidirectional antenna. The TFU-UT features a simple feed system and durable construction. The lighter weight, cross bow tie configuration combines structural integrity with a low-windload design. The need for an internal mast and the extra mounting-clamping hardware associated with the mast and separate radiators has been eliminated.

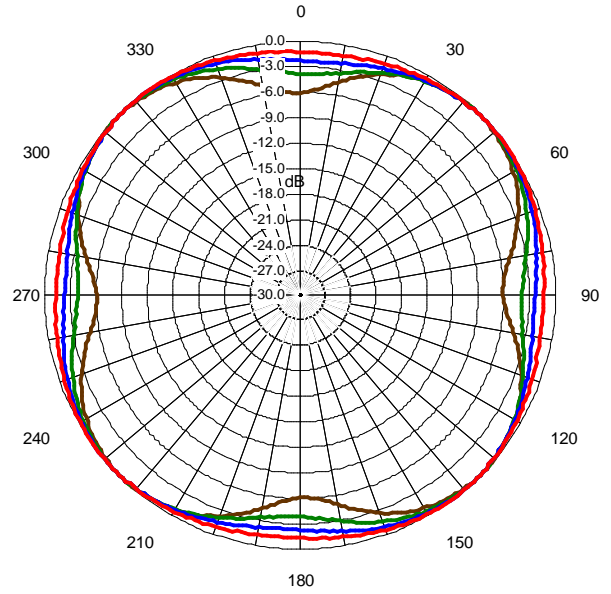
Each bow tie represents two batwings in a turnstile configuration design, thereby eliminating one half of the feedlines needed to feed the radiators. The antenna design allows for dual inputs that have been developed for single channel or for the simultaneous broadcast of two or more channels without the need for a combiner.

Patent # 6,762,730



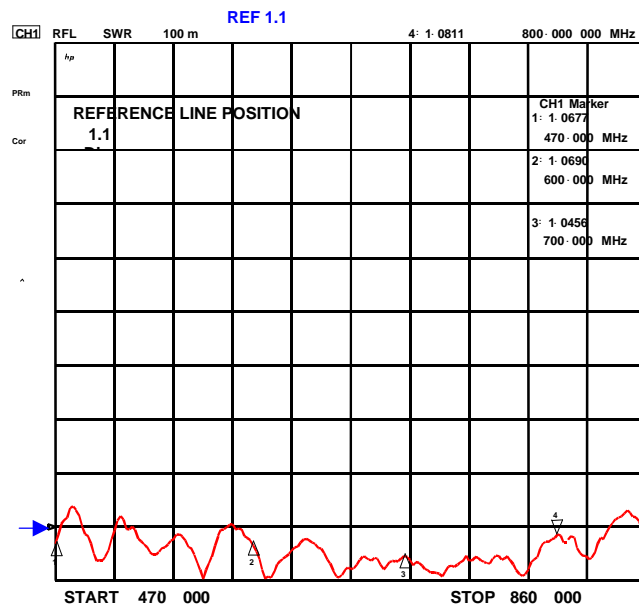
Elevation Pattern

500 MHz, 600 MHz, 700 MHz, 800 MHz



Azimuth Pattern

500 MHz, 600 MHz, 700 MHz, 800 MHz



Measured VSWR

Mechanical Specifications

Model	Height m(ft)	Weight kg(lbs)	$C_f A_c$ m ² (ft ²) TIA/EIA-222-F ($C_f = .59$)
TFU-UT	1.14 (3.74)	25 (55)	0.22 (2.4)