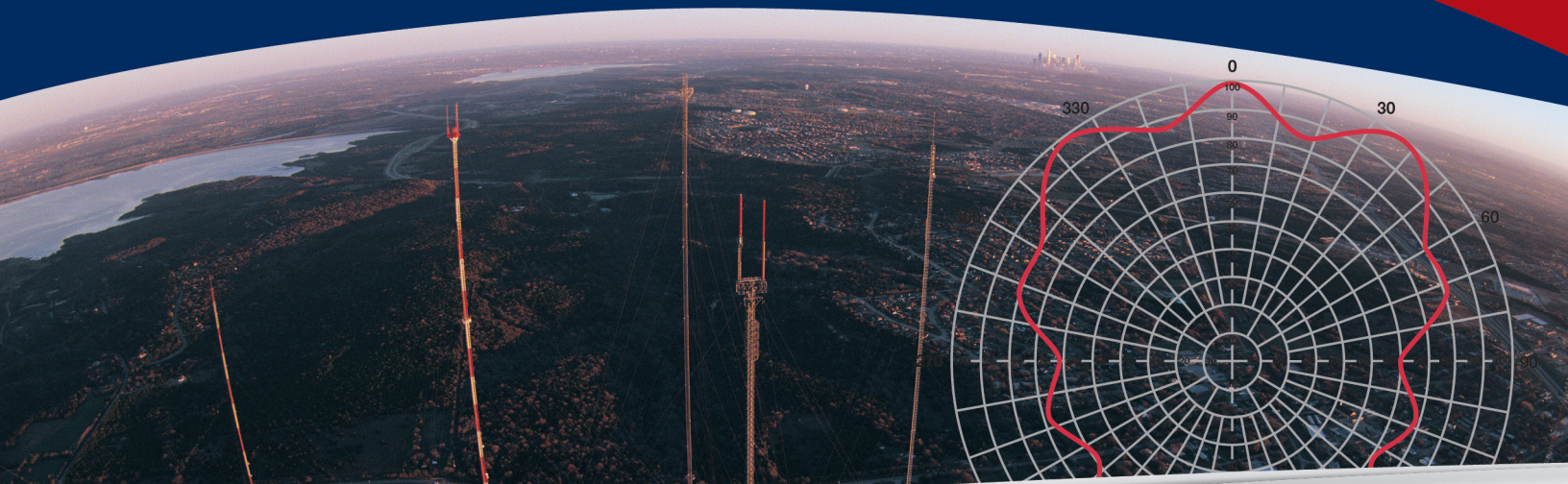
Dielectric®



TV Antenna System Planning Guide

Engineering Excellence since 1942

Advancing the frontier in broadcast communications for over seven decades.

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 design technologically advanced systems. We design and manufacture full broadcast systems from the transmitter output to the tower top.

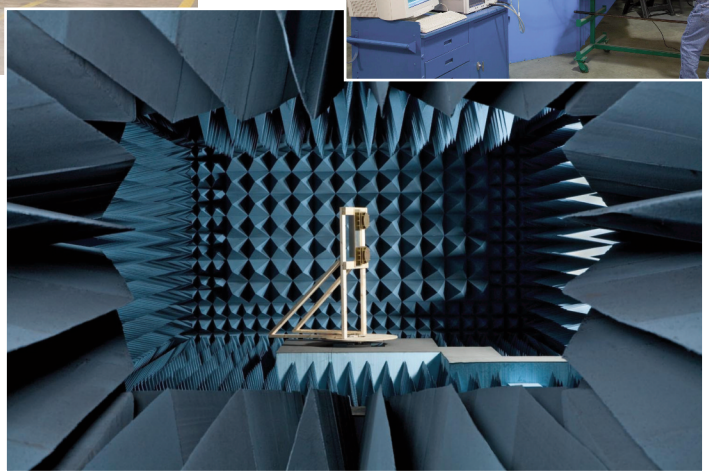
A Culture of innovation spanning over seven decades.

Dielectric's leadership in passive RF technologies is reflected in the expertise we offer and the recognition we've received: over 100 patents, 2 emmys for technical innovation, 4 NAB Pick hits, to name a few.

Dielectric offers the customized support services and planning tools you need to build your television antenna from configuring a new antenna system, to acquiring knowledgeable insights into specific technical issues, Dielectric resources provide easy access to the assistance you needed. This includes customized support services, as well as planning tools to guide in the design.

Call Us

This fifth 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 1-800-341-9678.

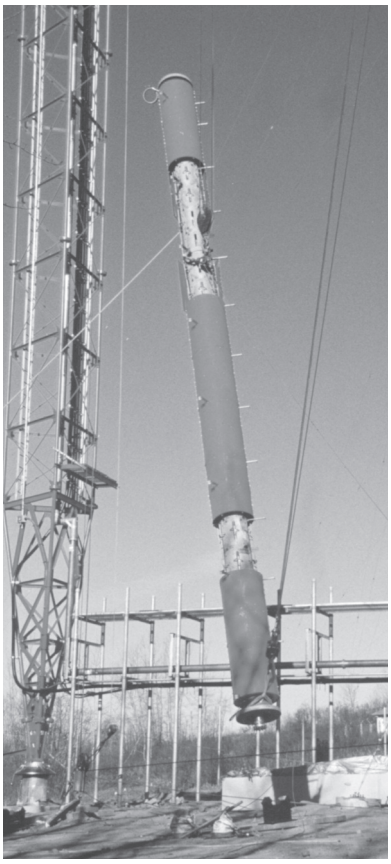


Products contained in this catalog may be covered by one or more of the following patents: 6,917,264; 6,903,624; 6,887,093; 6,882,224; 6,870,443; 6,867,743; 6,816,040; 6,703,984; 6,703,911; 6,677,916; 6,650,300; 6,650,209; 6,617,940; 6,538,529; 6,373,444; 6,320,555; 5,999,145; 5,861,858; 5,455,548; 5,418,545; 5,401,173; 5,167,510; 4,988,961; 4,951,013; 4,899,165; 4,723,307; 4,654,962; 4,602,227. Additional patents are pending.

Specifications subject to change without notice.

Table of Contents

TFU Series GTH



- Single or adjacent channel top mount performance
- Excellent frequency response across channel(s) of operation
- Low VSWR
- Full polycarbonate radome standard[1]
- 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.

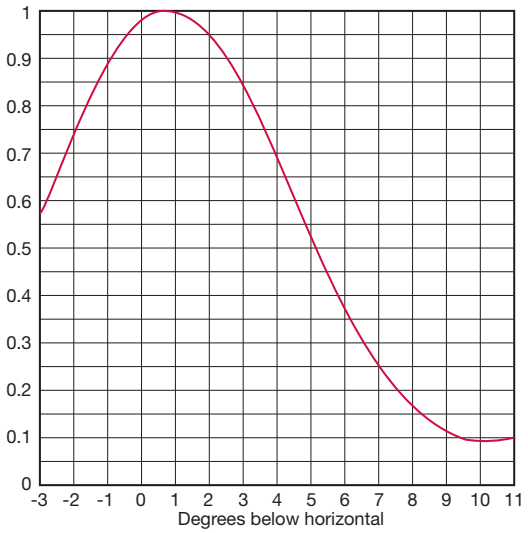
TFU-10GTH*	9.0 (9.54dB) RMS Gain
TFU-18GTH*	16.0 (12.04dB) RMS Gain
TFU-24GTH*	21.5 (13.32dB) RMS Gain
TFU-30GTH*	27.0 (14.31dB) RMS Gain
TFU-36GTH*	30.0 (14.77dB) RMS Gain

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

Contact factory for options on broader band solutions.

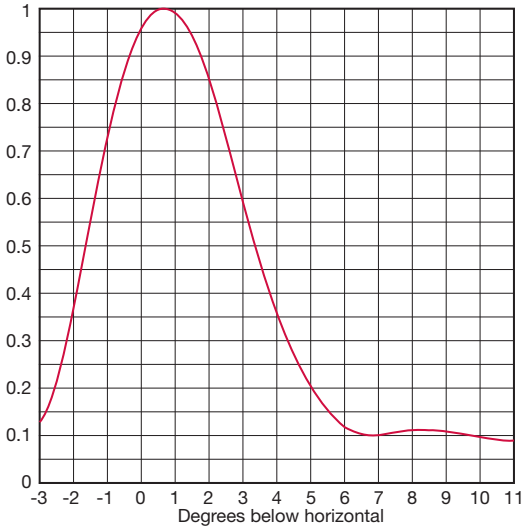
[1]Slot covers and deicers optional.

TFU-10GTH-R



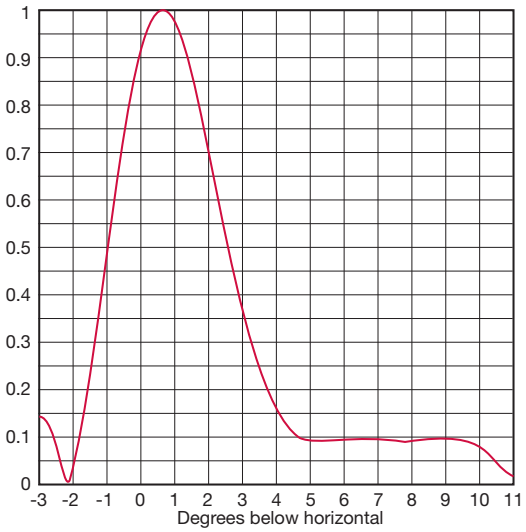
9.0 (9.54dB) RMS Gain

TFU-18GTH-R



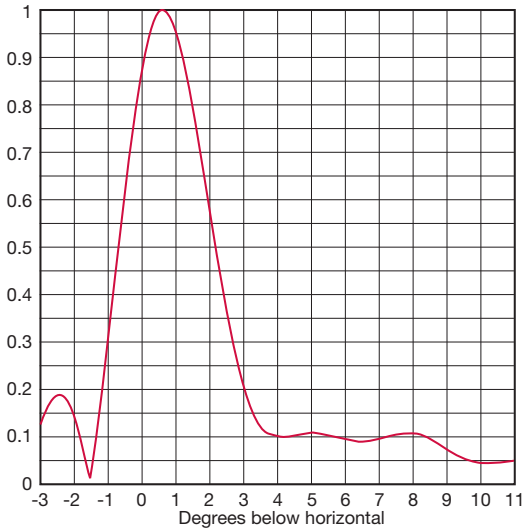
16.0 (12.04dB) RMS Gain

TFU-24GTH-R



21.5 (13.32dB) RMS Gain

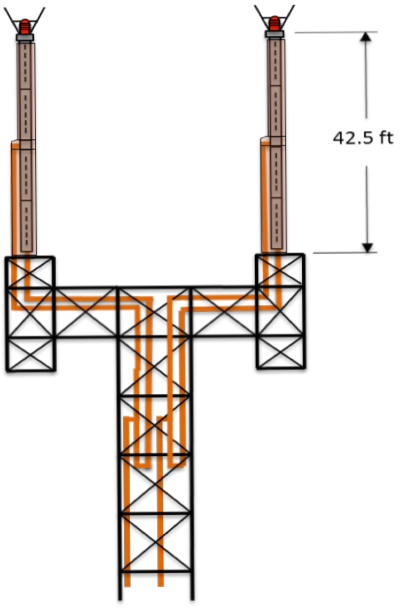
TFU-30GTH-R



27.0 (14.31dB) RMS Gain

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

TFU-GTH-BB



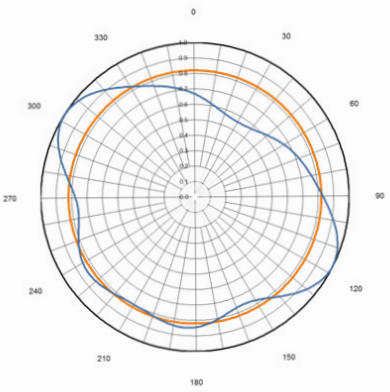
The Broadband Pylon Series antenna is designed as a medium bandwidth alternative to high power multi-channel panel broadcast antenna systems.

Key Features

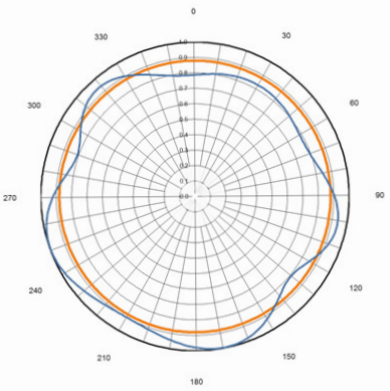
- Broadband
- A low windload alternative to large panel antenna systems
- Dual 8" input
- Input powers up to 240 kW
- Elliptically polarized
- Top mount or side mount design
- Omni-directional

Specifications

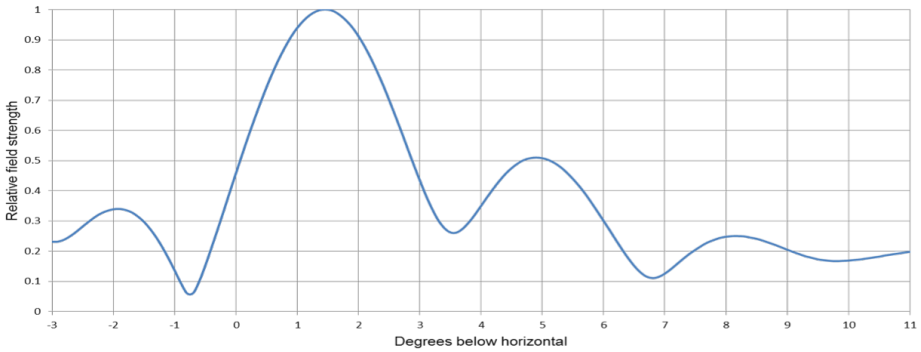
- Polarization: Elliptical
- Beam Tilt Standard: 1.5 degrees
- Input Size: Dual 8"
- VSWR: < 1.15:1
- Max Input Power: 120 kW per input
- RMS Gain: 13 / 11.2 dBd
- H_4 (ft) includes lightning arrester: 46.5
- H_2 (ft): 42.5
- D_1 (ft): 20.4
- Windload 222-G EPA: 70.5 Ft^2
- Weight (lbs): 8,440



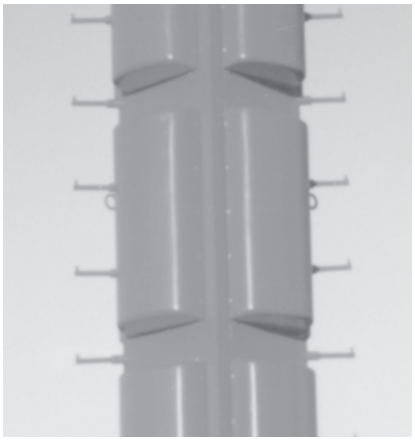
Azimuth—VPOL



Azimuth—HPOL



TU Broadband (Delta) Series



Shown with panel radome (standard)

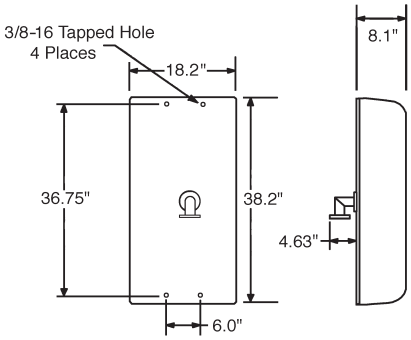
- Wide impedance bandwidth: 470-860 MHz
- Stainless steel elements and panel for maximum reliability and structural stability
- Segmented non-pressurized radome for easy on-tower service
- Available with full cylindrical radome
- Custom azimuth patterns can be designed to meet specific protection/coverage 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.

Standard Deltawing



PANEL SPECIFICATION

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

Shown with full radome (optional)

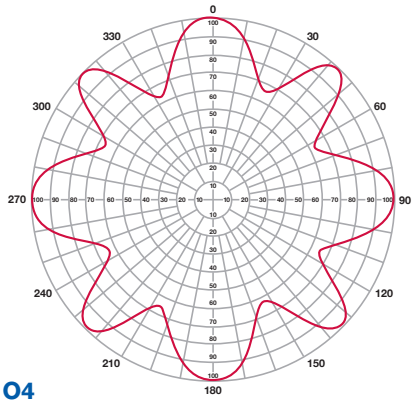
Single Panel Specifications

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

Average Power Rating

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

TU Series - Deltawing



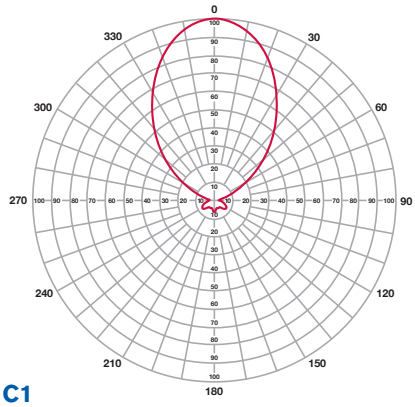
O4
Directivity=1.4

Electrical Specifications

Mechanical Specifications

No. of Layers	RMS Gain*	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)	Height H_2 (ft)	Moment Arm D_1	CfAc (ft^2)	Weight (lb)
2	4.8	6.7	40	6-1/8	8.9	4.5	46	1400
4	9.4	13.2	60	6-1/8	16.5	8.3	83	2700
6	14.0	19.6	110	8-3/16 EHT	24.1	12.1	120	4000
8	17.1	23.9	110	8-3/16 EHT	31.7	15.9	164	5400
10	21.6	30.2	110	8-3/16 EHT	39.3	19.7	214	6800
12	24.2	33.9	110	8-3/16 EHT	46.9	23.5	267	8200
14	28.6	40.0	110	8-3/16 EHT	54.5	27.3	323	10000
16	32.5	45.5	110	8-3/16 EHT	62.1	31.1	384	11800

** at channel 41*



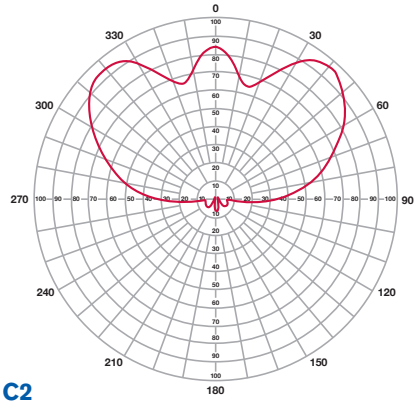
C1
Directivity=6.0

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	28.8	10	3-1/8	8.9	4.5	37	1100
4	56.4	20	4-1/16	16.5	8.3	66	2100
6	84.0	30	4-1/16	24.1	12.1	99	3100
8	102.6	40	6-1/8	31.7	15.9	138	4200
10	129.6	50	6-1/8	39.3	19.7	180	5300
12	145.2	60	6-1/8	46.9	23.5	225	6400
14	171.6	60	6-1/8	54.5	27.3	276	7900
16	195.0	60	6-1/8	62.1	31.1	331	9400

** at channel 41*



C2
Directivity=3.0

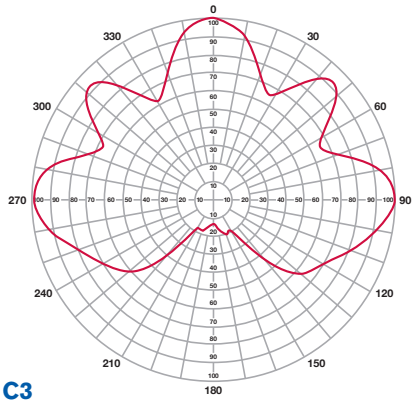
Electrical Specifications

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	14.4	20	4-1/16	8.9	4.5	42	1200
4	28.2	40	6-1/8	16.5	8.3	76	2300
6	42.0	60	6-1/8	24.1	12.1	111	3400
8	51.3	80	7-3/16 EHT	31.7	15.9	152	4600
10	64.8	100	8-3/16 EHT	39.3	19.7	201	5800
12	72.6	110	8-3/16 EHT	46.9	23.5	246	7000
14	85.8	110	8-3/16 EHT	54.5	27.3	303	8600
16	97.5	110	8-3/16 EHT	62.1	31.1	359	10200

** at channel 41*
*** Enhanced Heat Transfer (EHT)*

TU Series - Deltawing



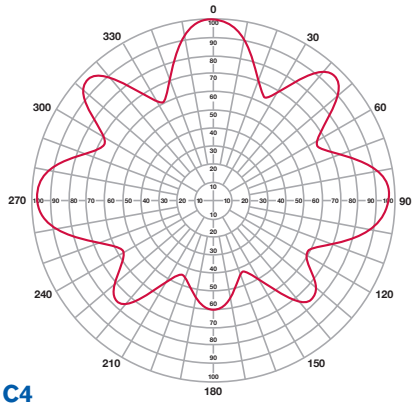
C3
Directivity=2.0

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	9.6	30	4-1/16	8.9	4.5	46	1300
4	18.8	60	6-1/8	16.5	8.3	83	2500
6	28.0	90	8-3/16	24.1	12.1	120	3700
8	34.2	110	8-3/16 EHT	31.7	15.9	164	5000
10	43.2	110	8-3/16 EHT	39.3	19.7	214	6300
12	48.4	110	8-3/16 EHT	46.9	23.5	267	7600
14	57.2	110	8-3/16 EHT	54.5	27.3	323	9300
16	65.0	110	8-3/16 EHT	62.1	31.1	384	11000

** at channel 41*



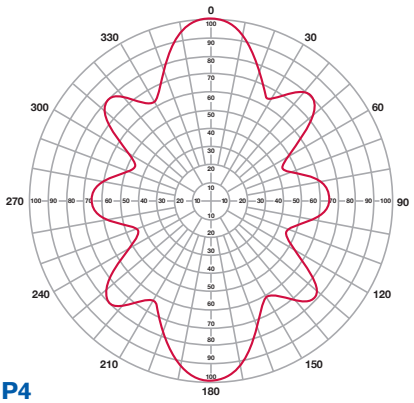
C4
Directivity=1.7

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	8.2	35	6-1/8	8.9	4.5	46	1400
4	16.0	60	6-1/8	16.5	8.3	83	2700
6	23.8	105	8-3/16 EHT	24.1	12.1	120	4000
8	29.1	110	8-3/16 EHT	31.7	15.9	164	5400
10	36.7	110	8-3/16 EHT	39.3	19.7	214	6800
12	41.1	110	8-3/16 EHT	46.9	23.5	267	8200
14	48.6	110	8-3/16 EHT	54.5	27.3	323	10000
16	55.3	110	8-3/16 EHT	62.1	31.1	384	11800

** at channel 41*



P4
Directivity=2.0

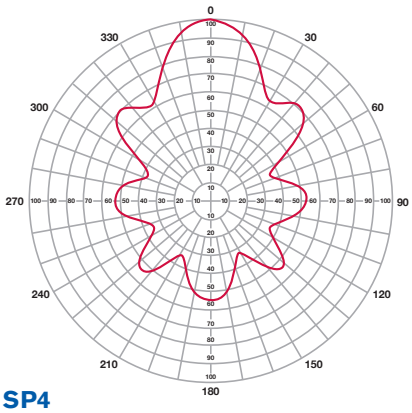
Electrical Specifications

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	9.6	30	4-1/16	8.9	4.5	46	1400
4	18.8	60	6-1/8	16.5	8.3	83	2700
6	28.0	90	8-3/16	24.1	12.1	120	4000
8	34.2	110	8-3/16 EHT	31.7	15.9	164	5400
10	43.4	110	8-3/16 EHT	39.3	19.7	214	6800
12	48.4	110	8-3/16 EHT	46.9	23.5	267	8200
14	57.2	110	8-3/16 EHT	54.5	27.3	323	10000
16	65.0	110	8-3/16 EHT	62.1	31.1	384	11800

** at channel 41*
*** Enhanced Heat Transfer (EHT)*

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

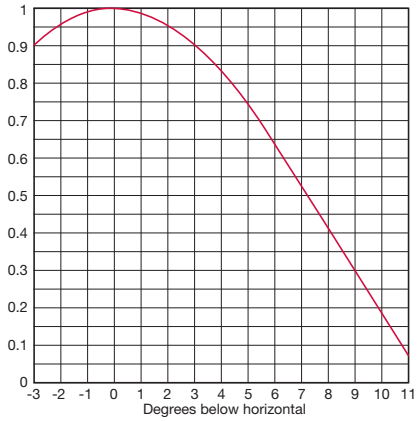
The data shown is for top mounted antennas with standard panel placement. Custom designs are available on request. Indicated power ratings are for standard TU arrays configured for maximum power rating with 1-5/8" EIA panel inputs and the listed array input connections. Ratings are based upon combining two channels into the antennas; contact the 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, $H_4=H_2+4$ ft.

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

TU Series - Deltawing, Deltastar and Deltalite™



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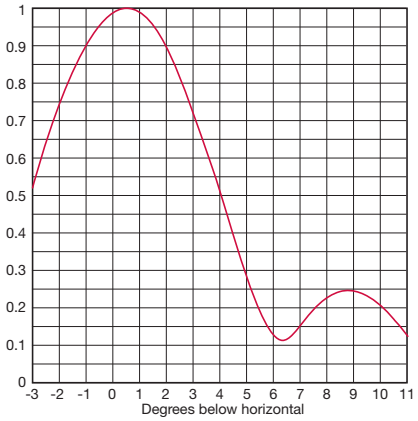

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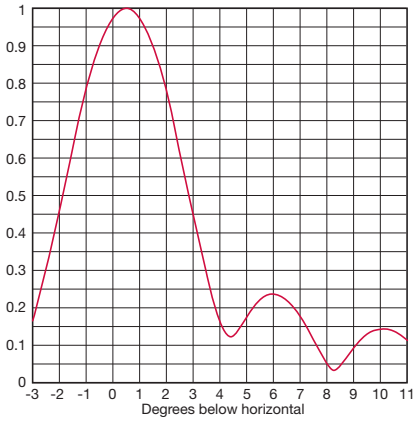

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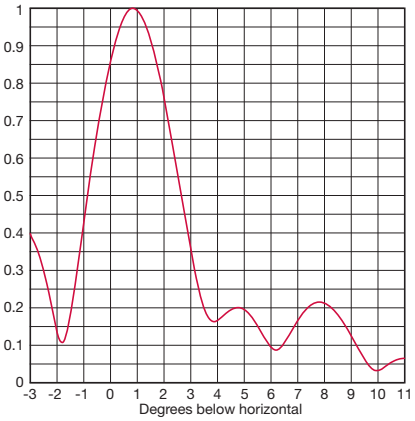

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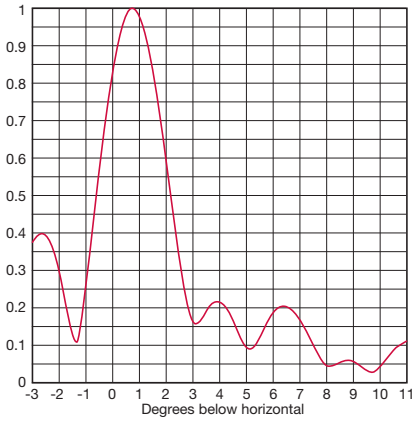

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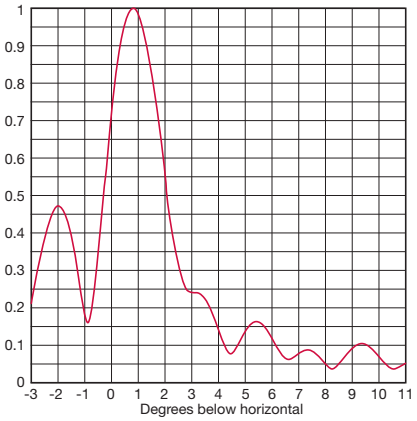

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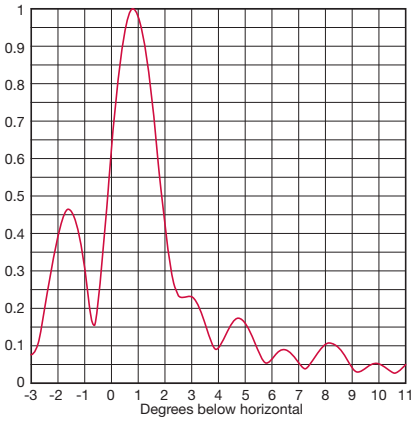

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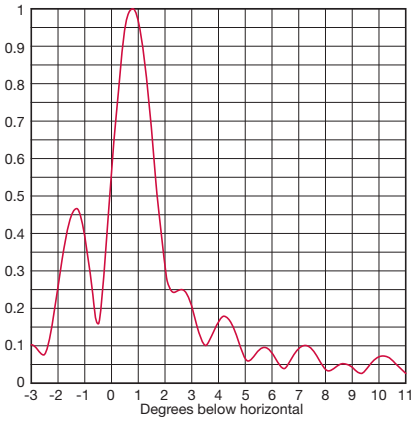


16 Layer

TU Series - Deltalite™

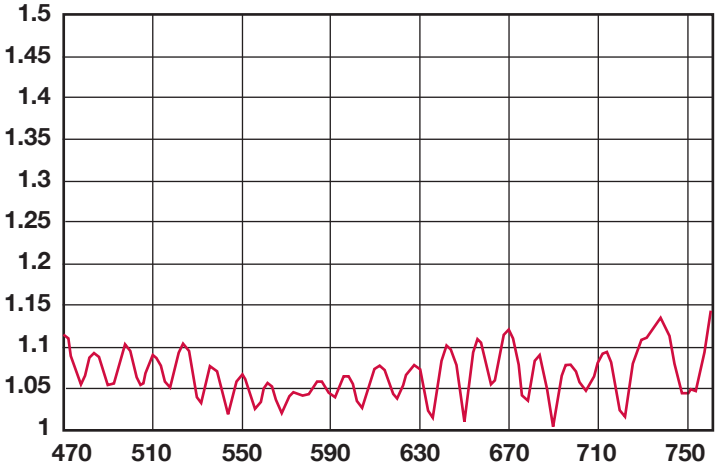
Deltalite™

- Horizontal polarization
- Wide impedance bandwidth: 470-860 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

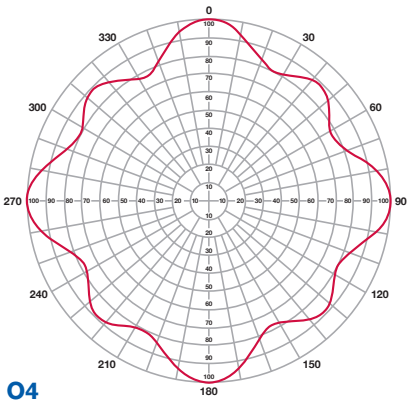
The TU Series Deltalite panel antenna combines the broadband characteristics of a panel antenna with the low windload characteristics of a pylon antenna.

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



TUF Optimized for Ch 27 & 34



O4

Electrical Specifications

Model	Bays	RMS Gain Ratio (dB)			Input (in)	Max. Avg. Power (kW)			Max. Peak Power	Rad. Center Above Antenna Base
		Ch 14	Ch 40	Ch 69		Ch 14	Ch 40	Ch 69	kW	ft
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:
1 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.
2 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.
3 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.
4 Antenna components and feed harnesses are optimized for channels of interest.

Mechanical Specifications

Model	Length with 4 ft. Lightning Rods	Loads @ EIA-222-C	50/33.3 PSF	Loads @ TIA-EIA-222-F		Weight (lbs)
		Shear	Moment	Area CfAc	Moment Arm	
	H_4 (ft)	(lbs)	(lb-ft)	(ft^2)	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

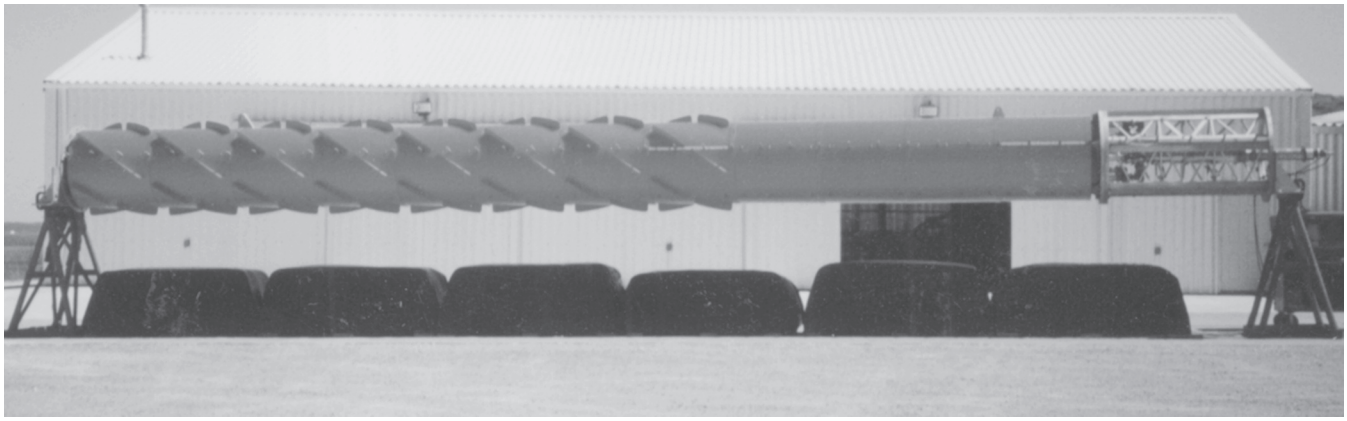
NOTES:
1 TUF antennas must be pressurized with dry air or nitrogen.
2 Loads provided assume TIA/EIA-222-F with no ice and no strakes.
3 Design conditions: 80 mi/h basic wind speed, 1200 ft. tower height, 42.6 psf.
4 CfAc is calculated using Cf=.59 from TIA/EIA-222-F, Table 1. Contact a qualified structural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

TU Series - Deltastar

- Horizontal polarization
- 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

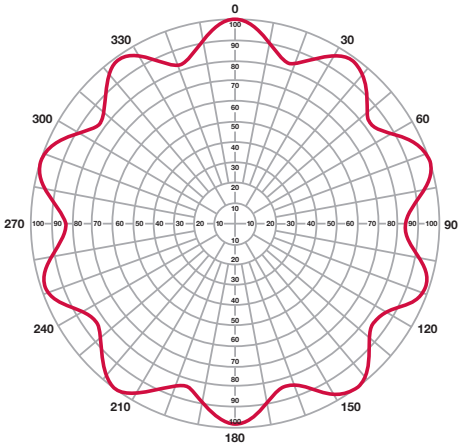
The TU Series Deltastar antenna from Dielectric is a versatile and reliable antenna solution allowing for broadcast of multiple stations from one antenna. The TU Series antennas are ideal for community master antenna facilities. Deltastar antennas provide broadband impedance characteristics ideal for 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 various environments subject to high winds and ice loading.

Refer to page 10 for elevation patterns.

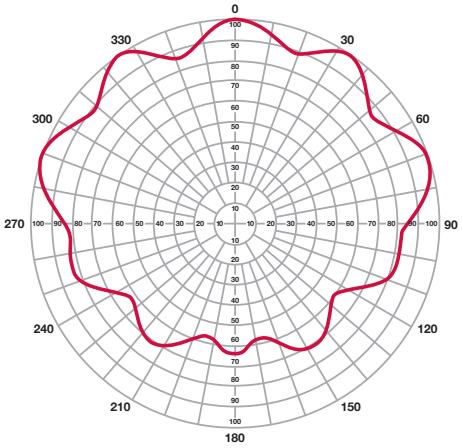


Contact factory for electrical and mechanical specifications.

TU Series - Deltastar



O5



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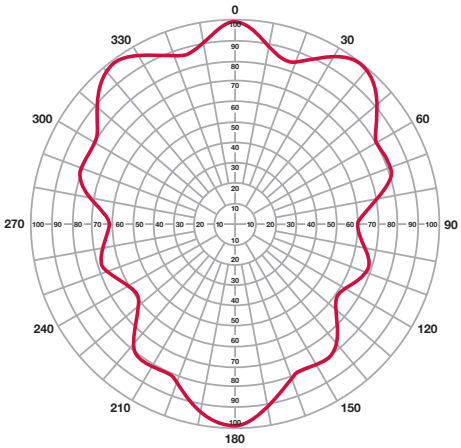

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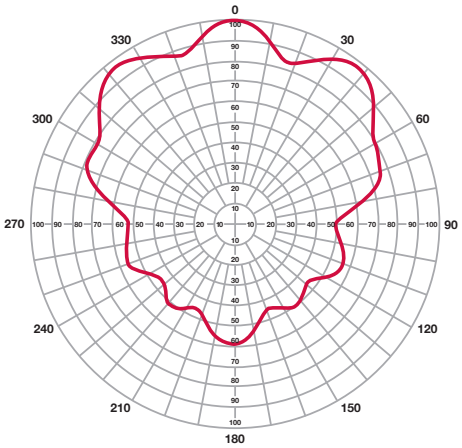

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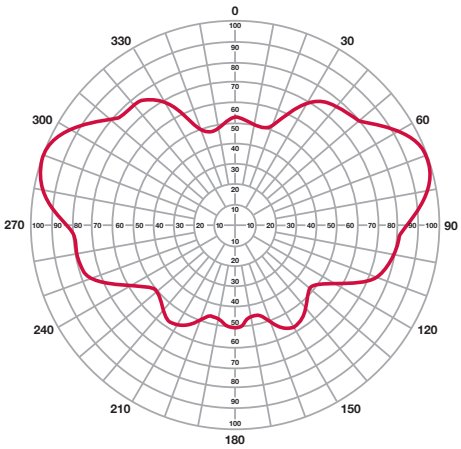
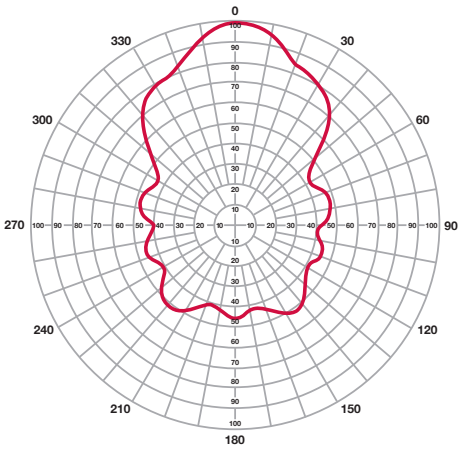


BP5
Directivity=2.1

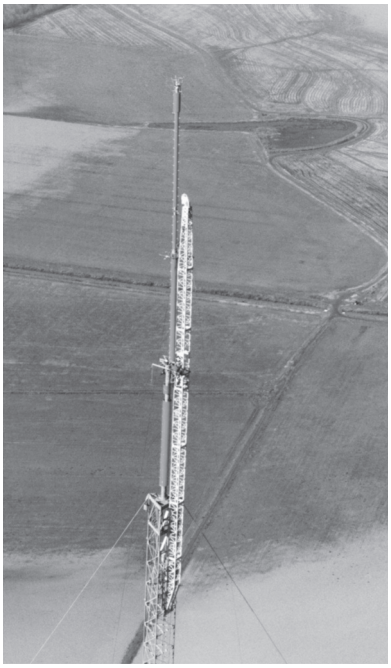


NS5
Directivity=3.0

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.

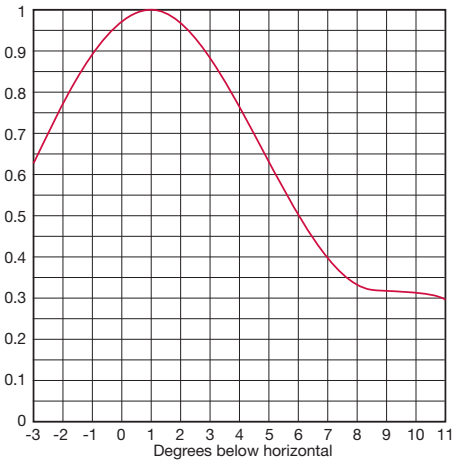
This antenna comes with a full radome. The strong polycarbonate radome is impregnated with international orange or white and does not require any painting during its lifetime. Non-radomed versions are available upon request. Both radomed or non-radomed versions can be ordered with pressurized pole. Since 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.

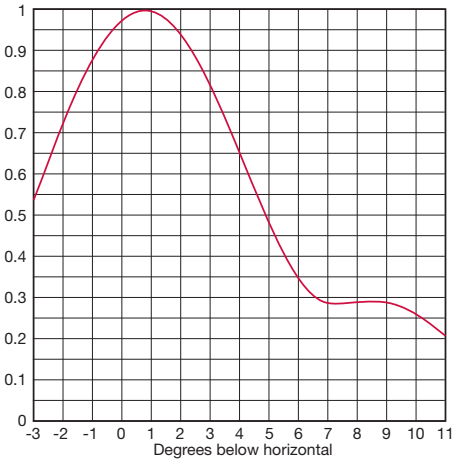
TW Series

TW-7B



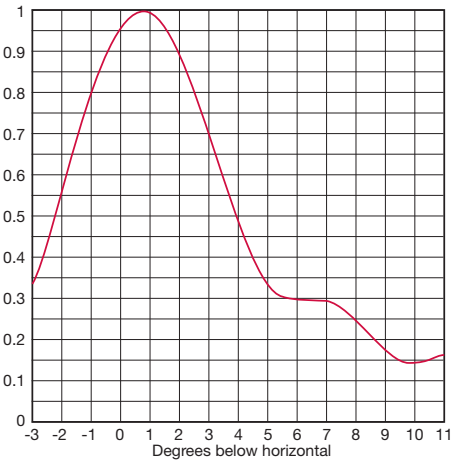
7.0 (8.45dB) RMS Gain

TW-9B



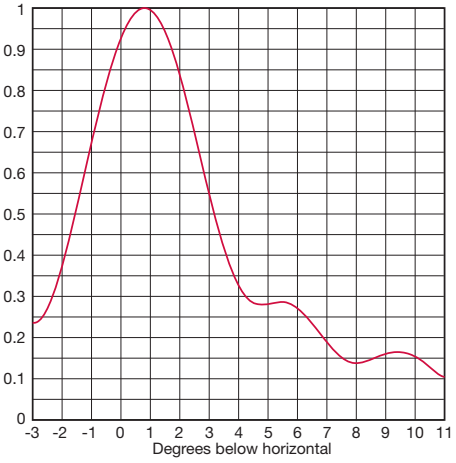
9.0 (9.54dB) RMS Gain

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

Typical Mechanical Characteristics*

	Channel	Freq MHz	H2 ft	H3 ft	D1 ft	R1 lbs	Moment ft-lbs	CaAc ft²	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 x (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

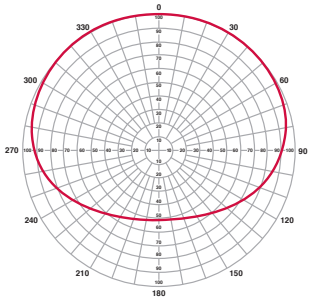
*Contact factory for application specific mechanical details.

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
- Available with CPOL or EPOL

The 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.



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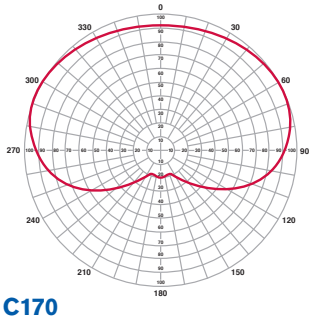

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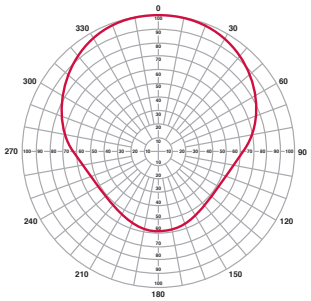
Directivity=1.7

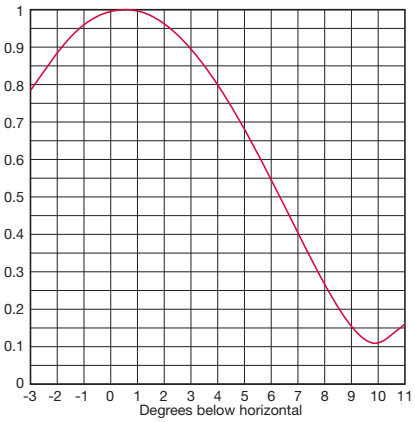


S190
Directivity=1.9

Contact factory for omni directional options.

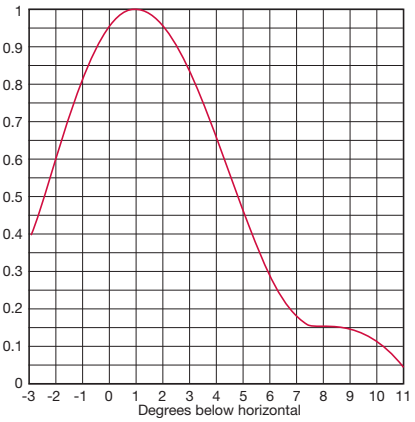
THV Series

THV-6A



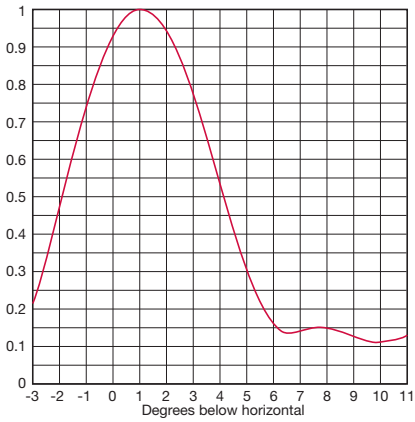
6.0 (7.78dB) RMS Gain

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 A (ft^2)	RS-222-C D1 (ft)	TIA/EIA-222-F CaAc (ft^2)	TIA/EIA-222-F D1 (ft)	Limits
THV-6Ax-R	7	48.0	44.0	24.2	7900	58	23.9	55	24.3	120 psf
	8	46.6	42.6	23.4	7660	57	23.2	54	23.6	or
	9	45.3	41.3	22.6	7440	55	22.5	52	22.9	135 mi/h
	10	44.1	40.1	21.9	7230	53	21.8	51	22.3	bws
	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	
	13	40.8	36.8	20.1	6670	49	20.1	47	20.5	
THV-10Ax-R	7	65.7	61.7	30.8	10870	87	31.8	82	32.0	50 psf
	8	63.8	59.8	29.9	10550	84	30.9	79	31.1	or
	9	62.0	58.0	29.0	10240	81	30.0	77	30.2	90 mi/h
	10	60.3	56.3	28.1	9960	79	29.1	75	29.3	bws
	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	
	13	55.8	51.8	25.9	9190	73	26.9	69	27.1	
THV-12Ax-R	7	76.8	72.8	36.4	15400	116	37.3	108	37.4	50 psf
	8	74.5	70.5	35.3	14930	112	36.1	105	36.3	or
	9	72.4	68.4	34.2	14490	109	35.0	102	35.2	90 mi/h
	10	70.4	66.4	33.2	14080	105	34.0	99	34.2	bws
	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.

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.

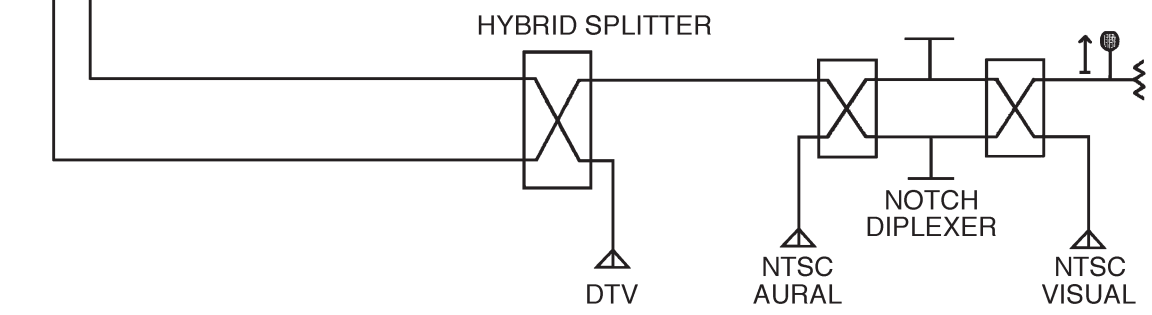
Mechanical Specifications - Typical

		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.

Contact factory for broader band solutions.



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

Contact factory.

The Award Winning TUV-H

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

Azimuth patterns vary significantly based on your custom requirements.

- 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 award winning 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.

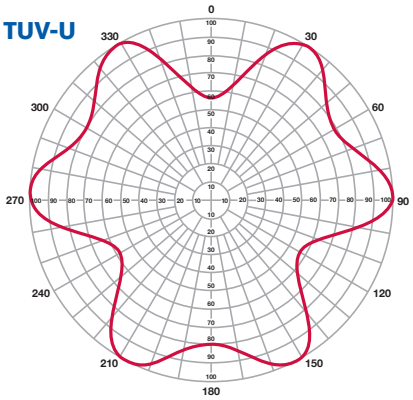
Typical
Electrical Specifications

	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

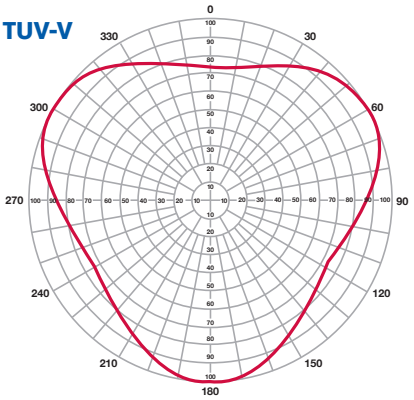
Note: Other patterns available

Pattern performance not independent of channel

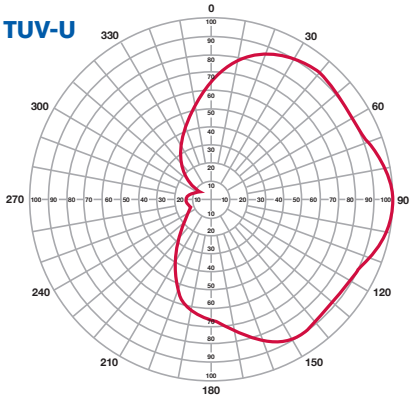
TUV-U



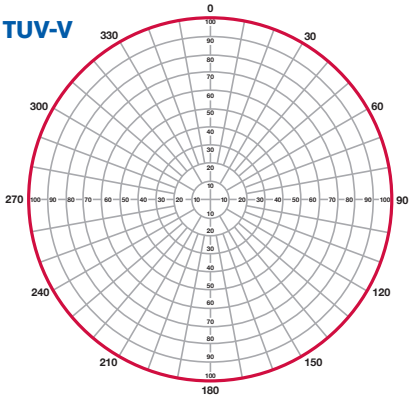
TUV-V



TUV-U



TUV-V

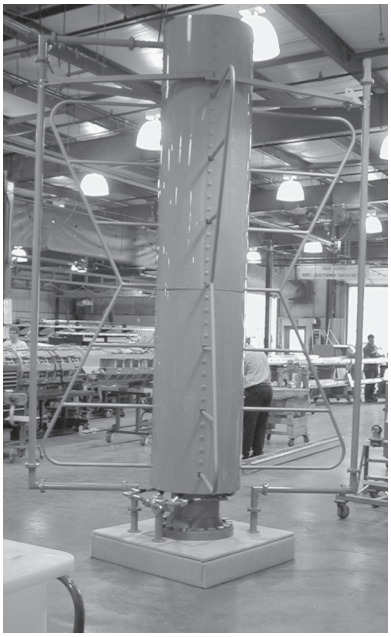


TUV Series - Dualband™ TUV-M and TUV-L

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 winning[1] 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

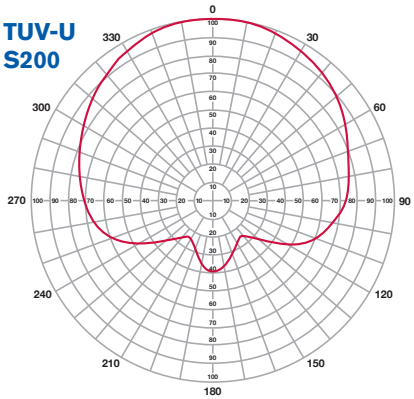
	RMS Gain Main Lobe	Power Rating	ERP
N3	4.0 (6.02dB)	30 kW	100 kW
N6	6.0 (7.78dB)	30 kW	100 kW
D39	20.0 (13.01dB)	60 kW	1000 kW

Note: Other patterns available

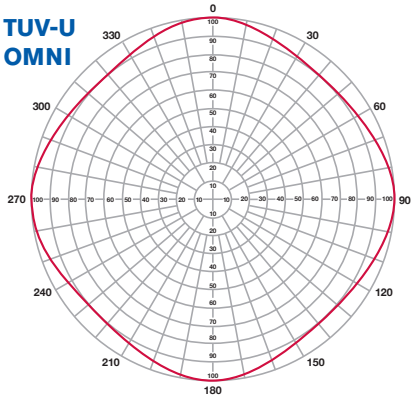
Pattern performance not independent of channel

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

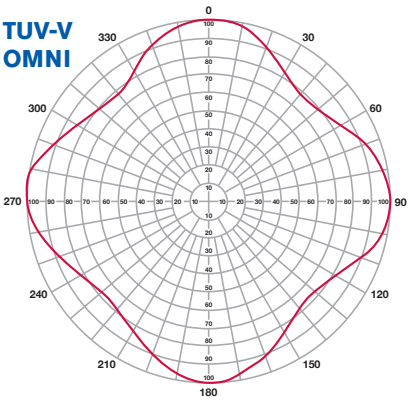
TUV-U S200



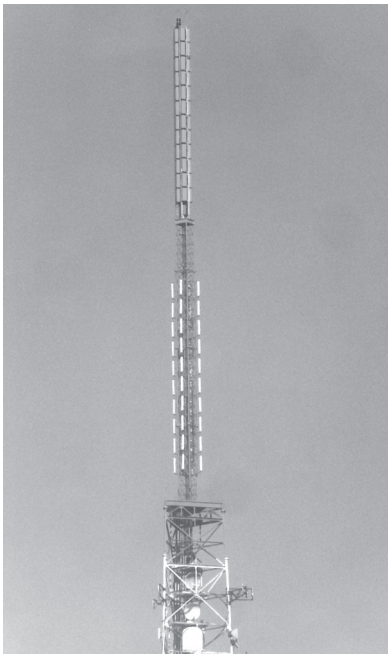
TUV-U OMNI



TUV-V OMNI



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 a 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"

Dielectric is a 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/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"

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

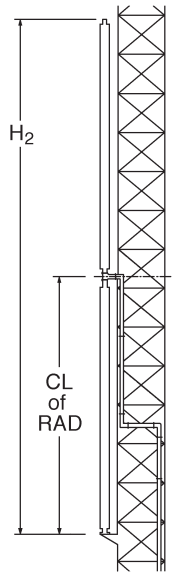
TFU-##GBH-R	DTV					
Channels	14-21	22-29	30-36	37-44	45-52	53-69
RMS Gain[1]	17.5	19.0	21.5	23.0	25.0	27.0
Power Rating (kW)[2]	69	67	65	62	60	48

[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.

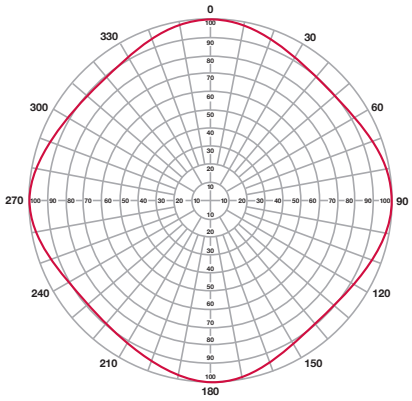
	NTSC	DTV
Polarization	Circular	Horizontal
Circularity	± 1dB	± 2dB
Axial Ratio	2.5dB	N/A
Input Size	6-1/8"	6-1/8"

TFU-DSC Series

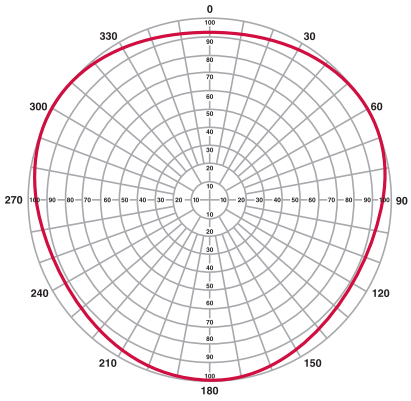


- Single or adjacent channel operation available
- Center fed for excellent DTV frequency response
- Available in 8-36 layer configurations
- Low gain variation across channel (s) of operation
- Low VSWR <1.08:1
- High power input
- Elliptical and circular polarization options available
- Other patterns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

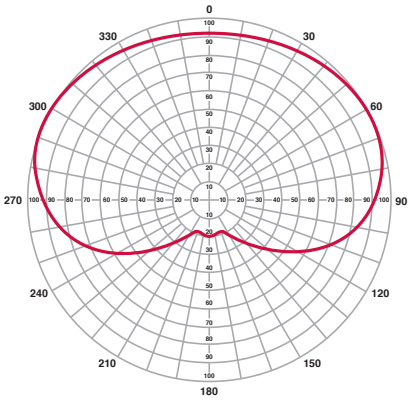
Dielectric's DTV DSC Series Antennas provide superior side mounted performance. The DCS series array is designed for high power DTV applications at ERP levels up to 1 MW. This antenna exhibits extremely low load characteristics for the high power broadcaster.



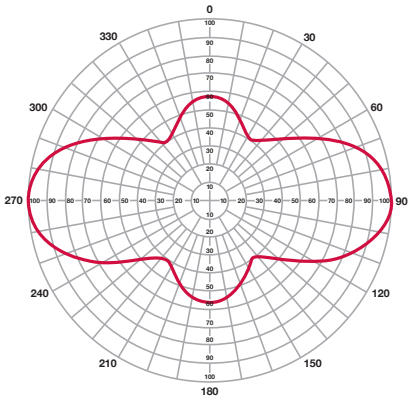
O4



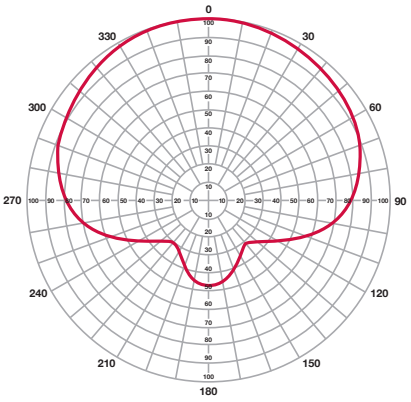
O3



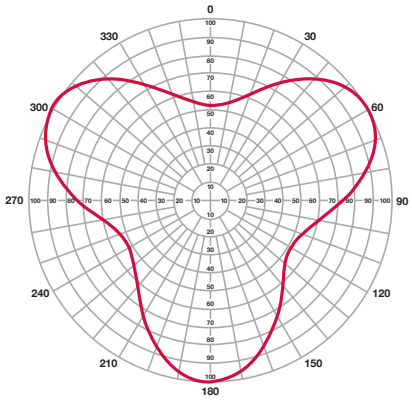
C170
Directivity=1.7



P230
Directivity=2.3

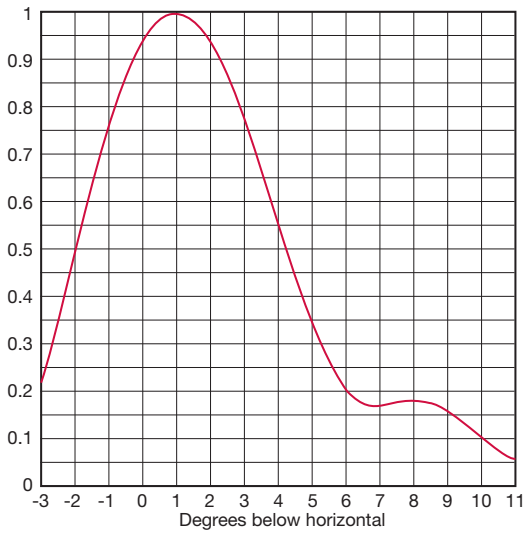


S180
Directivity=1.8



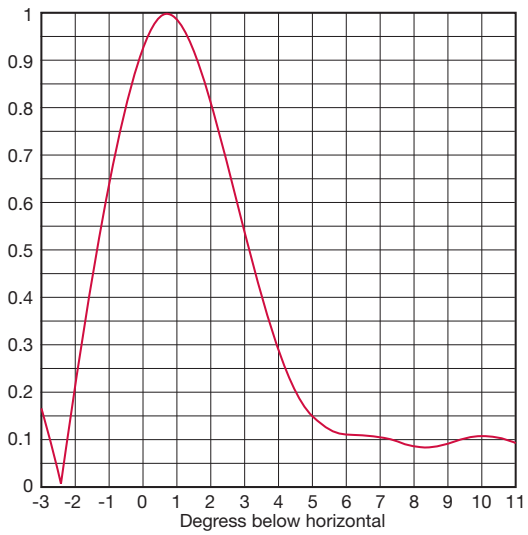
T170
Directivity=1.7

TFU-10DSC-R



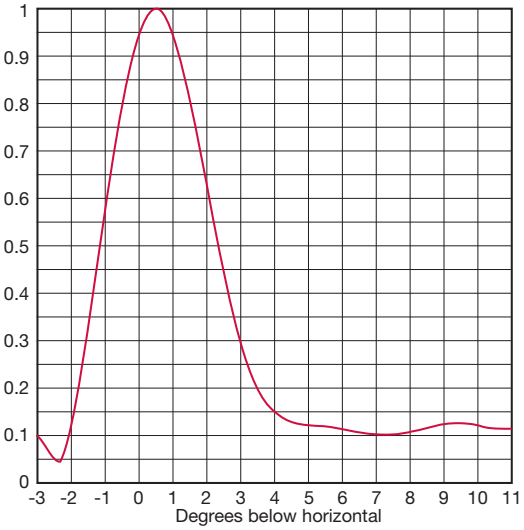
9.5 (9.78dB) RMS Gain

TFU-18DSC-R



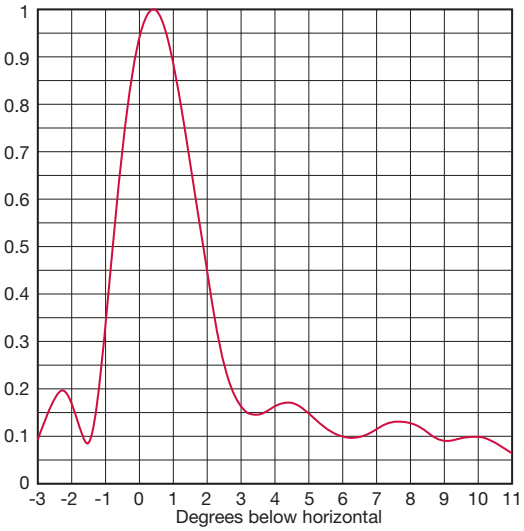
15.0 (11.76dB) RMS Gain

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.

TFU-DSB

- Available in single and dual channel configurations
- VSWR: <1.10:1.0 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

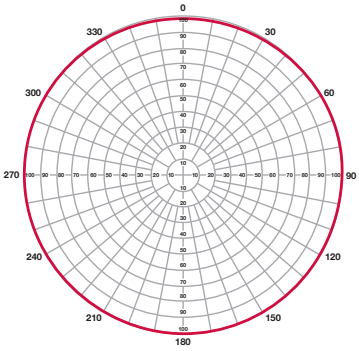
Dielectric's DSB series antenna is an economical, mid to high power DTV array offering numerous standard elevation and azimuth pattern combinations.

Specifications

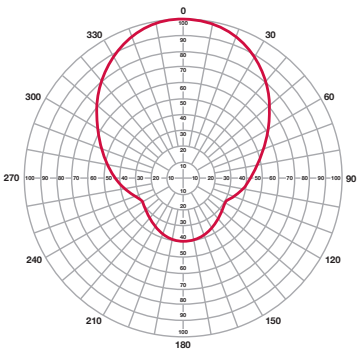
Maximum Input Power Rating DTV (Average)

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	-	-	-	-

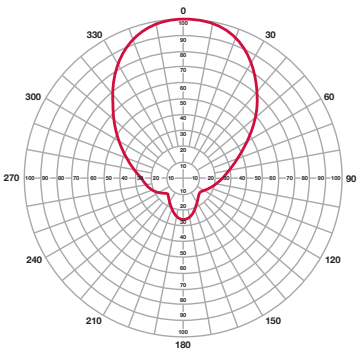
Antenna	Custom (C) Ch. 14	Ch. 30	Ch. 51	Ch. 69
TFU-8DSB	-	-	-	-
TFU-12DSB	-	-	-	-
TFU-16DSB	18.8	18.8	18.8	16.7
TFU-24DSB	21.8	21.8	21.8	19.9
TFU-32DSB	25	25	25	25



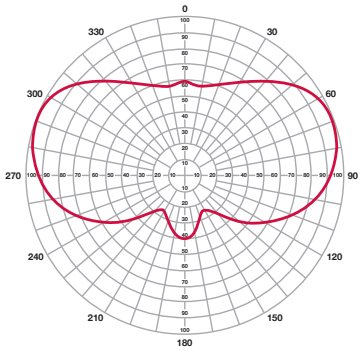
DSB-A



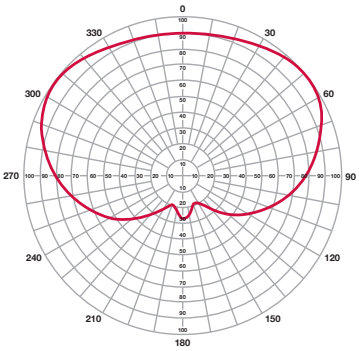
DSB-D, Directivity=2.9



DSB-E, Directivity=3.9

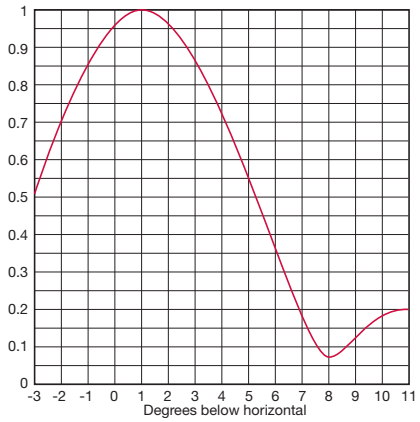


DSB-J, Directivity=2.0



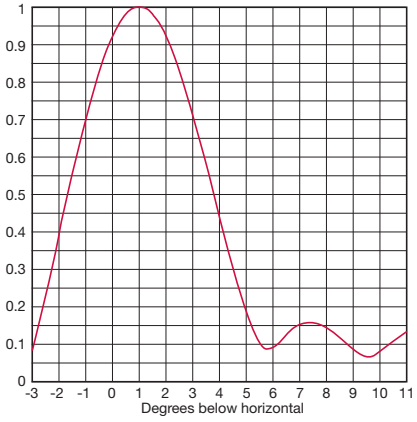
DSB-M, Directivity=1.9

TFU-8DSB



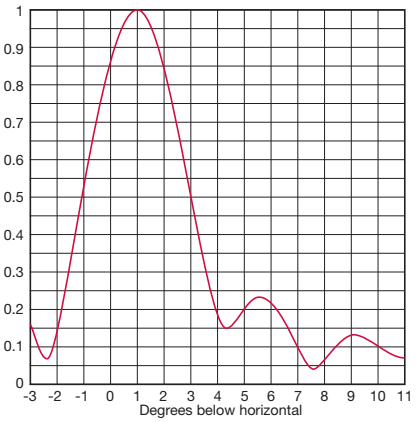
8.0 (9.03dB) RMS Gain

TFU-12DSB



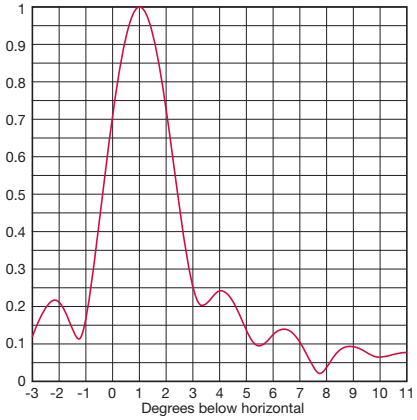
12.0 (10.79dB) RMS Gain

TFU-16DSB



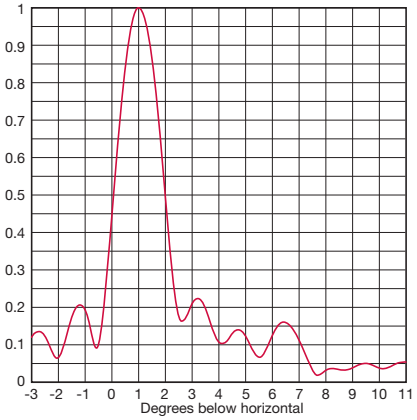
16.0 (12.04dB) RMS Gain

TFU-24DSB



24.0 (13.80dB) RMS Gain

TFU-32DSB



32.0 (15.05dB) RMS Gain

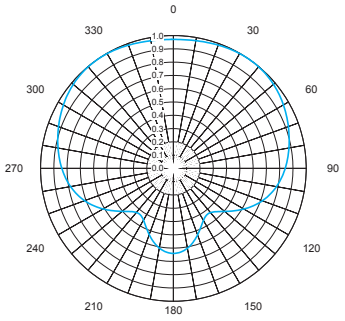
Gain figures are for single channel operations. Contact factory for gain figures for dual channel operation.

TFU-WB Series

The TFU-WB Series antenna is designed as a broadband, low-cost, low-windload alternative to UHF panel antennas.

Key Features

- Broadband: Channels 14-51
- Economical alternative to panel antennas
- Low weight and 75% less windload than panels
- Input powers up to 60 kW
- Includes standard mounting brackets
- Quick delivery
- Available in HPOL or EPOL
- Designed for side mounting on existing structures
- ATSC 3.0 & DVB-T2 ready
- 8, 16 and 24 bays
- Cardioid azimuth pattern

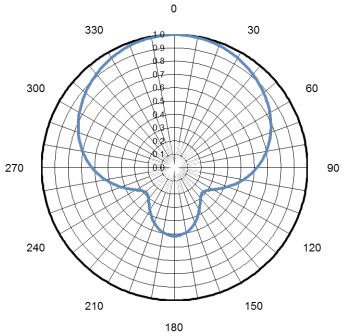


AZ Gain = 1.6

C-160

Specifications

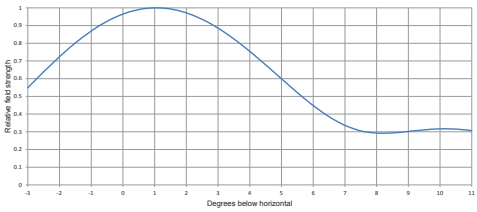
- Polarization: Horizontal or Elliptical
- Beam Tilt Standards:
  - 1 degree for 8 bay
  - 0.5 degree for 16 and 24 bay
- Input Size: 4 1/16" EIA (others available)
- Max VSWR (470-698 mHz): < 1.15:1
- Input Power: 20 kW per 8 bay section
- Azimuth Gain: 1.6 or 2.3
- Weight: 410 lbs per 8 bay section
- Windload: 27.4 Ft^2 per 8 bay section



AZ Gain = 2.3

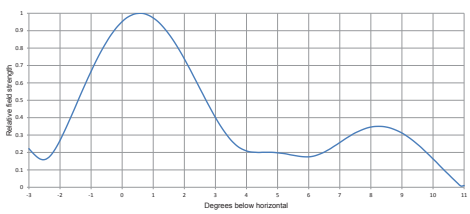
S-230

TFU-WB-8



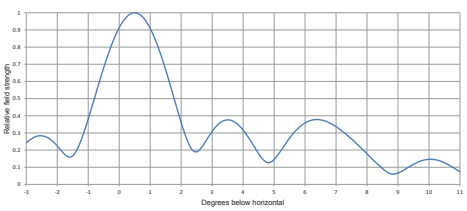
RMS Gain: 8 ▪ Peak Gain: 12.8 / 18.4

TFU-WB-16



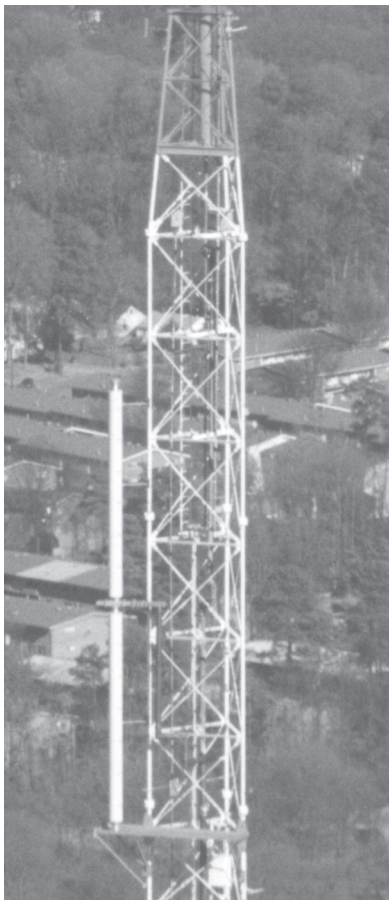
RMS Gain: 14.5 ▪ Peak Gain: 23.2 / 33.4

TFU-WB-24



RMS Gain: 21.6 ▪ Peak Gain: 34.6 / 49.7

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



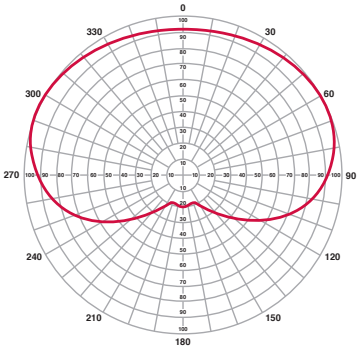
- Low weight and windload
- Excellent frequency response
- Ideal for NTSC/NTSC, NTSC/DTV or DTV/DTV service
- Custom patterns available
- Proven pylon design
- Full non-pressurized polycarbonate radome standard
- Custom elevation and azimuth patterns available

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.

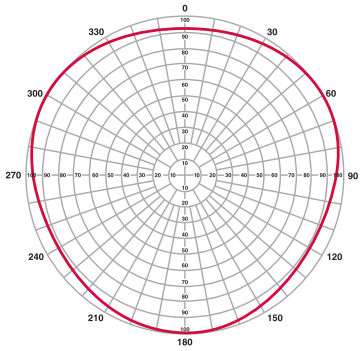
Typical Electrical Specifications

RMS Gain	22.0 to 30.0 (13.42 to 14.77dB)
Peak Power	85 kW

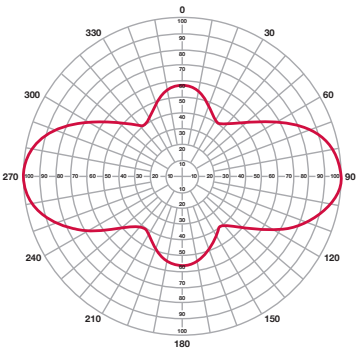
Consult factory for mechanical specifications.



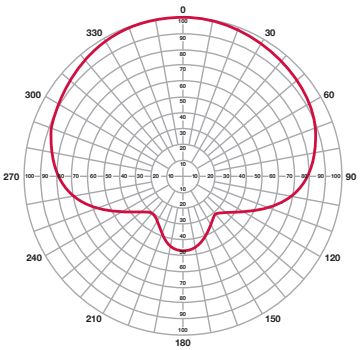
C170
Directivity=1.7



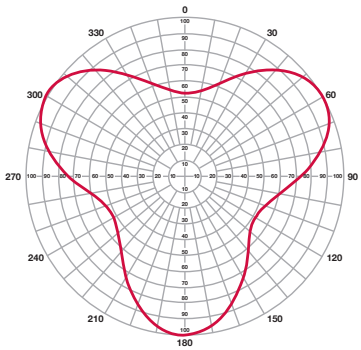
O3



P230
Directivity=2.3

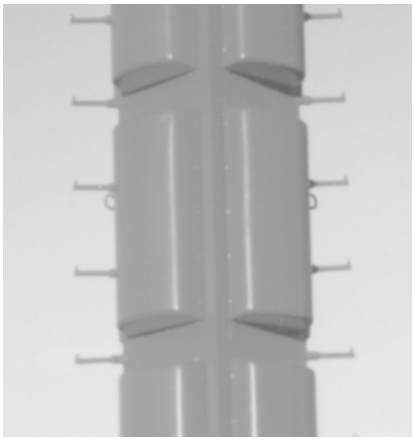


S180
Directivity=1.8



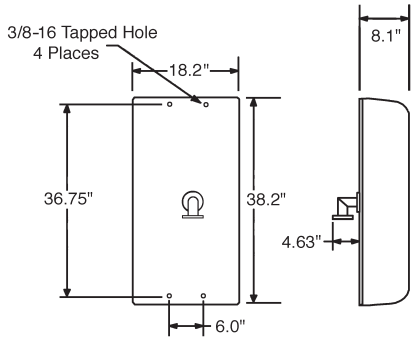
T170
Directivity=1.7

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.

- Horizontal polarization
- Wide impedance bandwidth: 470-860 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. 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.

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.

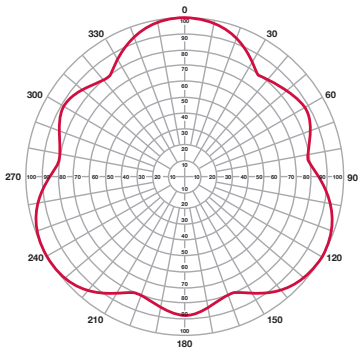
The TH Deltawing uses a pair of batwing shaped radiating elements in a panel configuration designed for minimum weight and windloading. The design optimizes impedance and radiation performance. The Deltawing design allows for wrap-around mounting to existing structures or the installation on custom designed 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.

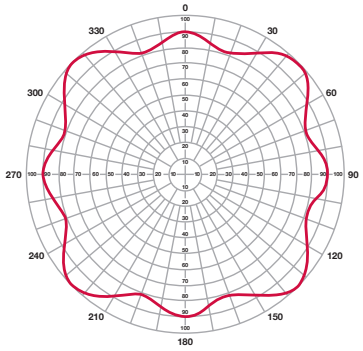
The Deltawing antenna is designed and constructed to operate in severe environments. Radiating elements and ground screens are fabricated of structural steel and are hot-dip galvanized. Feed point radomes are standard and protect the feed point area from ice buildup to minimize VSWR degradation during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

Contact factory for mechanical specifications.

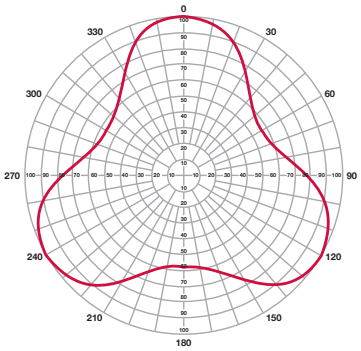
TH Series - Deltawing



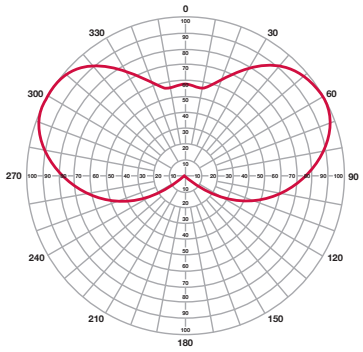
THB-O3
Directivity=1.3



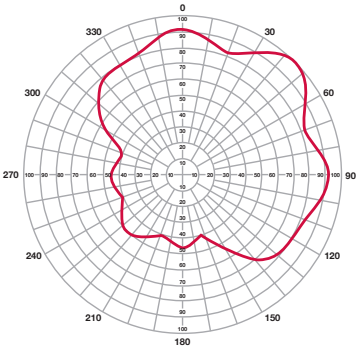
THA-O4
Directivity=1.3



THA-T160
Directivity=1.6

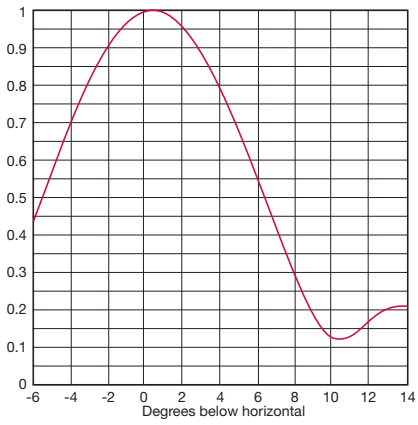


THA-MC2
Directivity=2.5

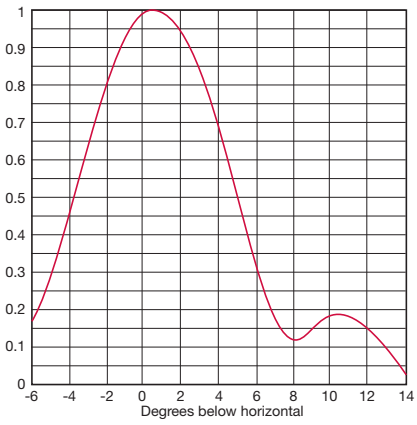


THA-S4
Directivity=1.9

THA-6



THA-8



TH Series - Deltawing VHF Antenna Elevation Gain

Bays	Band	F (MHz)	0% Null Fill 0˚ tilt		15% Null Fill .75˚ tilt	
1	L	Ch 2	1.2	0.64	—	—
2	L	54-60	2.2	3.40	—	—
3	L		3.2	5.11	3.4	5.29
4	L		4.3	6.32	4.1	6.11
5	L		5.3	7.28	5.1	7.04
6	L		6.5	8.13	6.1	7.82
1	L	Ch 3	1.2	0.64	—	—
2	L	60-66	2.3	3.54	—	—
3	L		3.4	5.28	3.2	5.01
4	L		4.5	6.52	4.3	6.29
5	L		5.6	7.48	5.3	7.23
6	L		6.7	8.26	6.3	8.01
1	M	Ch 4	1.2	0.64	—	—
2	M	66-72	2.2	3.40	—	—
3	M		3.2	5.11	3.0	4.83
4	M		4.3	6.32	4.1	6.11
5	M		5.4	7.28	5.1	7.05
6	M		6.4	8.06	6.1	7.82
1	M	Ch 5	1.2	0.64	—	—
2	M	76-82	2.3	3.58	—	—
3	M		3.4	5.33	3.2	5.07
4	M		4.5	6.57	4.3	6.34
5	M		5.7	7.53	5.4	7.28
6	M		6.8	8.31	6.4	8.07
1	M	Ch 6	1.2	0.64	—	—
2	M	82-88	2.3	3.58	—	—
3	M		3.4	5.34	3.2	5.07
4	M		4.6	6.58	4.3	6.35
5	M		5.7	7.54	5.4	7.30
6	M		6.8	8.33	6.4	8.08
2	H	Ch 7	2.1	3.21	—	—
3	H	174-180	3.1	4.95	2.9	4.68
4	H		4.5	6.53	3.9	5.96
5	H		5.2	7.15	4.9	6.91
6	H		6.2	7.92	5.9	7.69
8	H		8.3	9.18	7.9	8.96
10	H		10.3	10.14	9.9	9.94
12	H		12.4	10.93	11.9	10.74
2	H	Ch 8	2.1	3.32	—	—
3	H	180-186	3.2	5.07	3.0	4.79
4	H		4.3	6.31	4.1	6.08
5	H		5.3	7.27	5.1	7.03
6	H		6.4	8.06	6.1	7.82
8	H		8.5	9.31	8.1	9.09
10	H		10.7	10.28	10.2	10.07
12	H		12.8	11.07	12.2	10.87
2	H	Ch 9	2.2	3.40	—	—
3	H	186-192	3.3	5.17	3.1	4.89
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

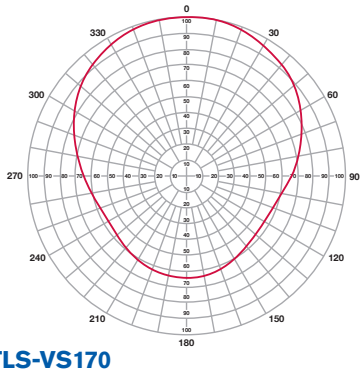
Bays	Band	F (MHz)	0% Null Fill 0˚ tilt		15% Null Fill .75˚ tilt	
2	H	Ch 10	2.2	3.45	—	—
3	H	192-198	3.3	5.22	3.1	4.94
4	H		4.4	6.46	4.2	6.24
5	H		5.5	7.43	5.2	7.19
6	H		6.6	8.22	6.3	7.97
8	H		8.8	9.47	8.4	9.25
10	H		11.0	10.43	10.5	10.23
12	H		13.2	11.22	12.7	11.03
2	H	Ch 11	2.3	3.56	—	—
3	H	198-204	3.4	5.34	3.2	5.05
4	H		4.6	6.60	4.3	6.36
5	H		5.7	7.57	5.4	7.32
6	H		6.9	8.36	6.5	8.11
8	H		9.2	9.61	8.7	9.39
10	H		11.4	10.58	10.9	10.38
12	H		13.7	11.38	13.1	11.18
2	H	Ch 12	2.3	3.63	—	—
3	H	204-210	3.5	5.42	3.3	5.13
4	H		4.7	6.68	4.4	6.45
5	H		5.8	7.66	5.5	7.41
6	H		7.0	8.46	6.6	8.20
8	H		9.4	9.71	8.9	9.49
10	H		11.7	10.69	11.2	10.48
12	H		14.1	11.48	13.4	11.28
2	H	Ch 13	2.3	3.69	—	—
3	H	210-216	3.5	5.48	3.3	5.20
4	H		4.7	6.76	4.5	6.51
5	H		5.9	7.73	5.6	7.47
6	H		7.1	8.53	6.7	8.27
8	H		9.5	9.78	9.0	9.56
10	H		11.9	10.76	11.4	10.55
12	H		14.3	11.55	13.7	11.35
2	H	Ch E11	2.4	3.71	—	—
3	H	216-223	3.6	5.52	3.3	5.24
4	H		4.8	6.79	4.4	6.46
5	H		6.0	7.77	5.6	7.51
6	H		7.2	8.57	6.8	8.31
8	H		9.6	9.83	9.1	9.60
10	H		12.0	10.81	11.5	10.60
12	H		14.5	11.60	13.8	11.40
2	H	Ch E12	2.4	3.77	—	—
3	H	223-230	3.6	5.57	3.4	5.29
4	H		4.8	6.84	4.6	6.61
5	H		6.1	7.83	5.7	7.57
6	H		7.3	8.63	6.9	8.37
8	H		9.8	9.89	9.3	9.66
10	H		12.2	10.87	11.6	10.66
12	H		14.7	11.66	14.0	11.46

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
- Available in CPOL or EPOL

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.



TLS-VS170
Directivity=1.7

Specifications

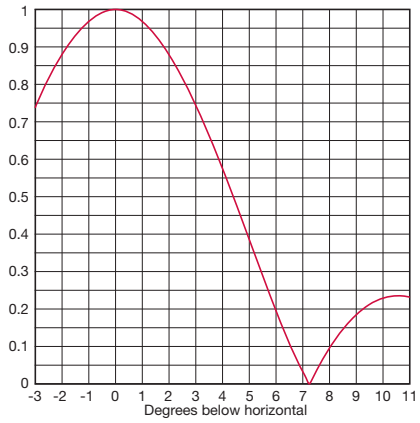
Input size: 1-5/8" EIA

VSWR: 1.10:1.0 Channel

Electrical Beam Tilt: 1.0 Degrees Typical

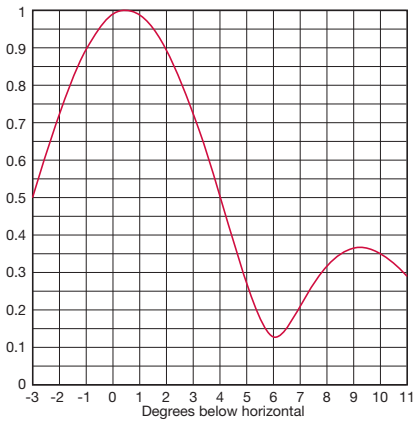
Antenna	Peak Power Handling	RMS Gain	Peak Gain
TLS-V4	5 kW	4.0 (6.02dB)	6.8 (8.33dB) to 12.4 (10.93dB)
TLS-V8	Up to 10 kW	8.0 (9.03dB)	13.6 (11.34dB) to 24.8 (13.94dB)
TLS-V12	Up to 15 kW	12.0 (10.79dB)	20.4 (13.10dB) to 37.2 (15.71dB)

TLS-V4



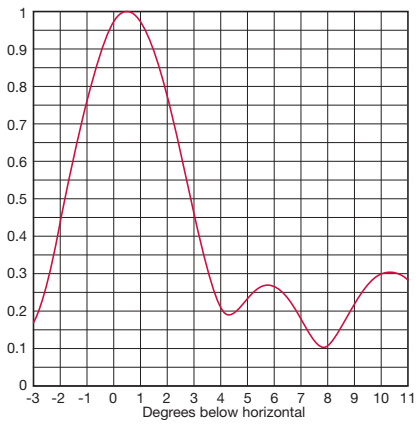
4.0 (6.02dB) RMS Gain

TLS-V8



8.0 (9.03dB) RMS Gain

TLS-V12



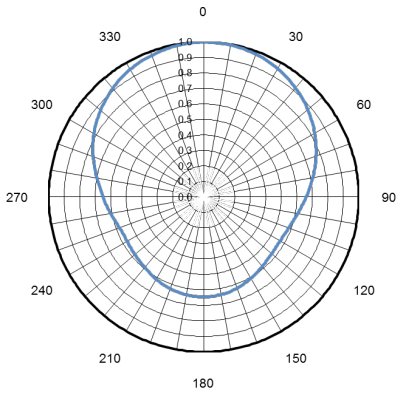
12.0 (10.79dB) RMS Gain

TLSV-BB Series

The TLSV-BB Series antenna is designed as a broadband, low-cost, low-windload alternative for the high band VHF broadcaster.

Key Features

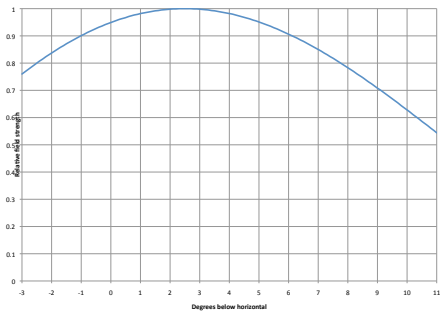
- Broadband: Channels 7-13
- Economical alternative to panel antennas
- Low weight and 75% less windload than panels
- Input powers up to 22.5 kW avg.
- Includes standard mounting brackets
- Quick delivery
- Available in HPOL or EPOL
- Designed for side mounting on existing structures
- Stripline slot design
- 4, 8 and 12 bays
- Omnioid Azimuth Pattern



Specifications

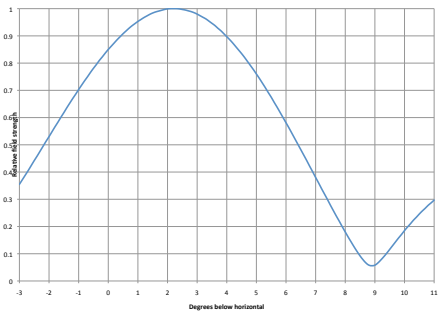
- Polarization: Horizontal or Elliptical
- Beam Tilt: 2 Degrees Standard
- Input Size: 1 5/8" EIA (per 4 section module)
- VSWR (Max 174-213 MHz): < 1.25:1
- Input Power: 7.5 kW avg. per 4 Bay Section
- Azimuth Directivity: 1.7

TLSV4-BB



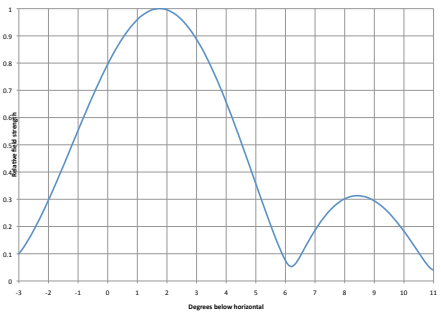
RMS Gain: 4 ▪ Peak Gain: 6.8

TLSV8-BB



RMS Gain: 7.9 ▪ Peak Gain: 13.4

TLSV12-BB



RMS Gain: 10.7 ▪ Peak Gain: 18.2

TLSV-BB Series (continued)

Typical Mechanical Characteristics*

	Channel	Height (ft)	CaAc (ft²)	Weight (lbs)
TLVS-V4 slot cover	7	23.3	25.4	465
	8	22.6	24.6	450
	9	21.9	23.9	435
	10	21.3	23.2	420
	11	20.7	22.5	405
	12	20.1	21.9	390
	13	19.6	21.3	375
TLVS-V4-R	7	23.3	33.6	560
	8	22.6	32.6	525
	9	21.9	31.6	505
	10	21.3	30.7	490
	11	20.7	29.8	465
	12	20.1	29.0	445
	13	19.6	28.2	425
TLVS-V4-V	7	23.3	33.6	580
	8	22.6	32.6	545
	9	21.9	31.6	525
	10	21.3	30.7	510
	11	20.7	29.8	485
	12	20.1	29.0	465
	13	19.6	28.2	445

x = Channel number
R = Radomed
V = with VPol
CaAc = Force Coefficient Projected Area (4 foot lightning protector and beacon included)

TIA/EIA-222-F, Excludes mounts

*Contact factory for application-specific mechanical details.

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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Yemen
Zambia
Zimbabwe

Specifications subject to change without notice.