Dielectric®

TV Antenna System Planning Guide

Trusted for Decades. Ready for Tomorrow.

BROADCAST COMMUNICATIONS PRODUCTS & SYSTEMS SINCE 1942

Since we helped pioneer broadcasting in 1942, Dielectric has been a leading innovator, with more than 100 patents in RF transmission technology, and continues to be the world's most trusted manufacturer and supplier of antennas and RF systems for TV and radio networks.

Dielectric is the undisputed leader for high-power North American systems, and led the transition to digital TV in the Americas. We continue to gain low-power market share in Asia, South America, and other regions through our Powerlite™ series. Virtually everyone who has received TV and FM broadcasts over the air, at home or while traveling, has enjoyed that content courtesy of a Dielectric system.

Our manufacturing operation today focuses on seven key areas of expertise:

- **HIGH-POWER TV SYSTEMS**
- **LOW-POWER TV SYSTEMS**
- **TRANSMISSION LINE & COMPONENTS**
- **RADIO ANTENNAS & COMPONENTS**
- **RF SYSTEMS (FILTERS & COMBINERS)**
- **MONITORING & MAINTENANCE**
- **HIGH-POWER SCIENTIFIC RF COMPONENTS & SYSTEMS**

All seven areas share common standards, using only the highest quality materials and engineering to develop robust, long-lasting systems that are built to endure in the most challenging outdoor conditions.

Our support services include consultation from pre-sales through installation and commissioning.

TRUSTED FOR DECADES. READY FOR TOMORROW.

Dielectric blends decades of experience with a forward-looking embrace of software-defined planning and design. We employ many of today's brightest RF engineering minds, who are helping us drive unforeseen innovation into the convergence of RF and IP technologies, beginning with our new RFHAWKEYE® monitoring system, which will change the way broadcasters monitor, manage and troubleshoot antenna and RF systems for generations to come.

Whatever new technologies emerge, there's a good chance they'll start here at Dielectric world headquarters in Maine, USA. We look forward to meeting your customized needs for the future.

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; 7,084,822; 7,081,860; 7,061,441; 7,034,545; 7,012,574; 6,972,731; 6,972,648; 6,961,027; 6,914,579; 6,441,796; 7,102,589

Additional patents are pending.

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Specifications subject to change without notice.

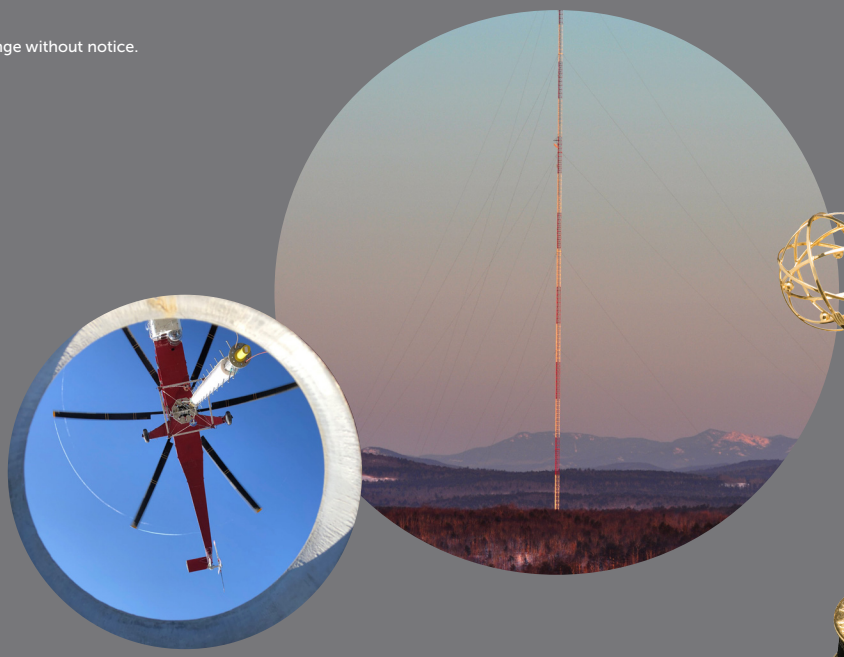


PHOTO BY SEACOMM ERECTORS

Dielectric has received two Emmy awards for technical innovation.

TFU SERIES ETT

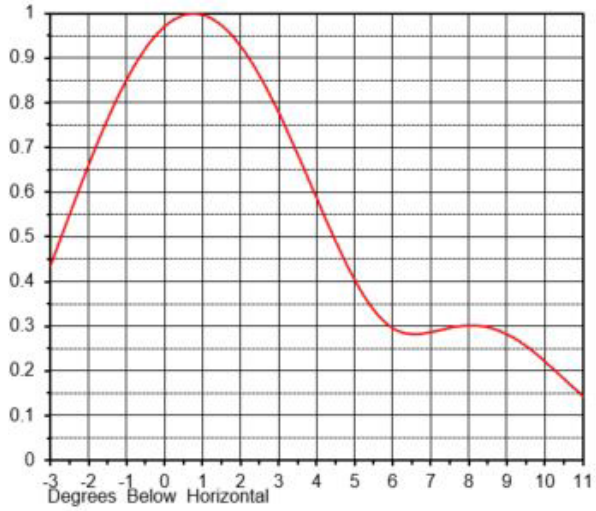
Our ETT Series UHF Slot Antennas provide excellent analog and digital performance. They feature very high null fill for NextGen TV, providing superior power density in one or two channels.

- Low VSWR: 1.08:1 across one channel, or ≤1.1:1 across two adjacent channels
- Fully enclosed in a non-pressurized, maintenance-free, polycarbonate radome impregnated with international orange or white color. (Slot cover options also available.)
- Higher power versions available
- Elliptical and circular polarization options available
- Available in 8-36 bay configurations, 8.5-34.0 (9.29-15.31 dB) RMS gain

TFU-10ETT*	9.8 (9.91 dB) RMS Gain
TFU-18ETT*	17.6 (12.44 dB) RMS Gain
TFU-24ETT*	22.0 (13.42 dB) RMS Gain
TFU-30ETT*	25.0 (13.98 dB) RMS Gain
TFU-36ETT*	31.4 (14.96 dB) RMS Gain

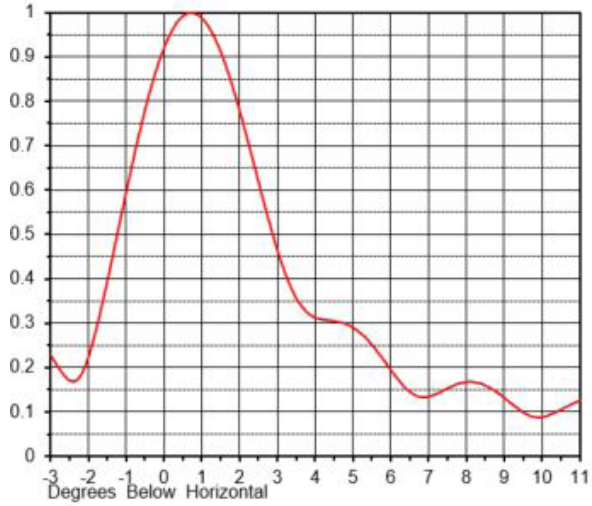
*Gains apply to single-channel operation only. Please contact factory for adjacent-channel operation specifications.

TFU-10ETT-R



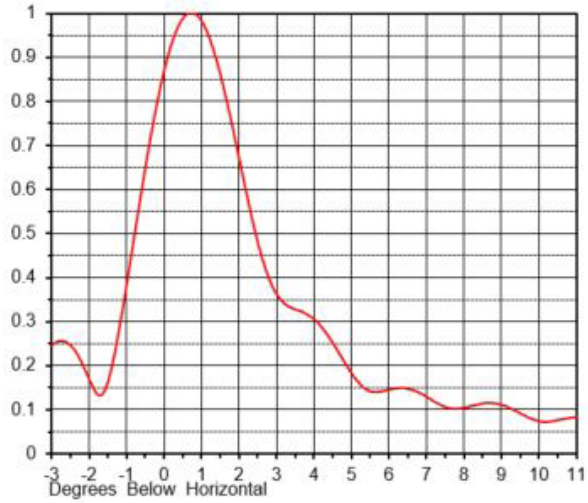
RMS GAIN 9.8 (9.91 dB)

TFU-18ETT-R



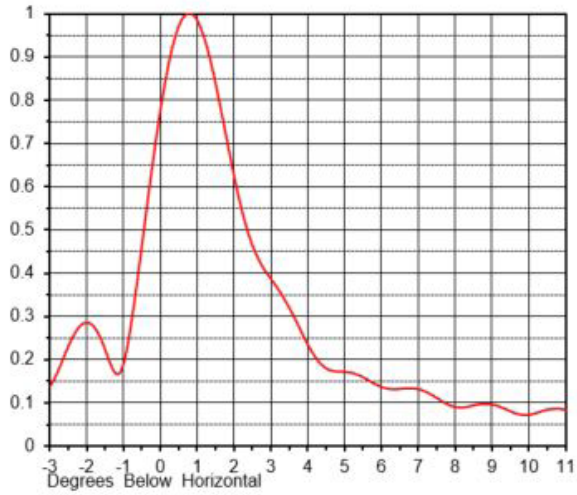
RMS GAIN 17.6 (12.44 dB)

TFU-24ETT-R



RMS GAIN 22.0 (13.42 dB)

TFU-30ETT-R



RMS GAIN 25.0 (13.98 dB)

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

Shown with panel radome (standard)

TU BROADBAND (DELTAWING) SERIES

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.

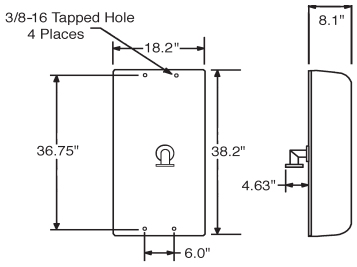
The TU Series Panel Antenna has wideband impedance bandwidth and is ideal for multiplexing several UHF channels. Each antenna is fully assembled, and is tested at the factory prior to shipping.

- Wide impedance bandwidth: 470-860 MHz
- Stainless steel panel for maximum reliability and structural stability
- Segmented non-pressurized radome for easy on-tower service
- Available with full cylindrical radome or individual panel 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
- Available in horizontal, elliptical, or full circular polarization

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

Also available in side-mounted versions.

STANDARD DELTAWING



PANEL SPECIFICATION

Shown will full radome (optional)

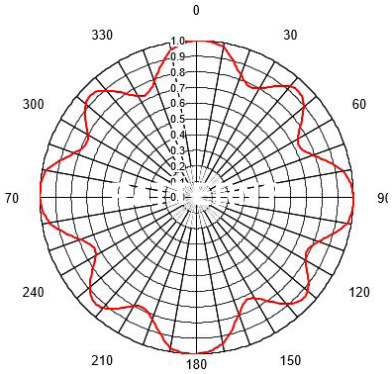
Single Panel Specifications

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



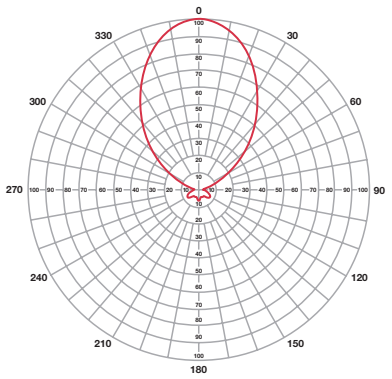
04 DIRECTIVITY = 1.4

Electrical Specifications

# 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	80	7 3/16
8	17.1	23.9	80	7 3/16
10	21.6	30.2	80	7 3/16
12	24.2	33.9	80	7 3/16
14	28.6	40.0	80	7 3/16
16	32.5	45.5	80	7 3/16

Mechanical Specifications

Height H_2 (ft)	Moment Arm D_1	CfAc (ft^2)	Weight (lb)
8.9	4.5	46	1,400
16.5	8.3	83	2,700
24.1	12.1	120	4,000
31.7	15.9	164	5,400
39.3	19.7	214	6,800
46.9	23.5	267	8,200
54.5	27.3	323	10,000
62.1	31.1	384	11,800



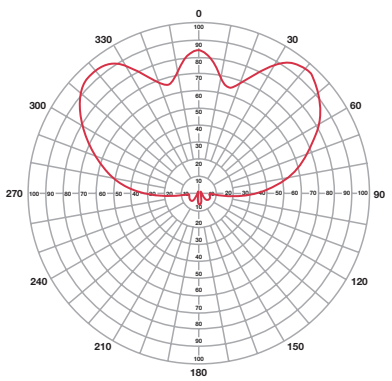
C1 DIRECTIVITY = 6.0

Electrical Specifications

# 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	1,100
16.5	8.3	66	2,100
24.1	12.1	99	3,100
31.7	15.9	138	4,200
39.3	19.7	180	5,300
46.9	23.5	225	6,400
54.5	27.3	276	7,900
62.1	31.1	331	9,400



C2 DIRECTIVITY = 3.0

Electrical Specifications

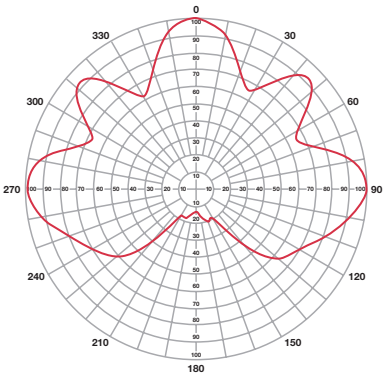
# of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	14.4	20	4 1/16
4	28.2	40	6 1/8
6	42.0	60	6 1/8
8	51.3	80	7 3/16 EHT**
10	64.8	80	7 3/16 EHT**
12	72.6	80	7 3/16 EHT**
14	85.8	80	7 3/16 EHT**
16	97.5	80	7 3/16 EHT**

Mechanical Specifications

Height H_2 (ft)	Moment Arm D_1	CfAc (ft^2)	Weight (lb)
8.9	4.5	42	1,200
16.5	8.3	76	2,300
24.1	12.1	111	3,400
31.7	15.9	152	4,600
39.3	19.7	201	5,800
46.9	23.5	246	7,000
54.5	27.3	303	8,600
62.1	31.1	359	10,200

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

TU SERIES - DELTAWING



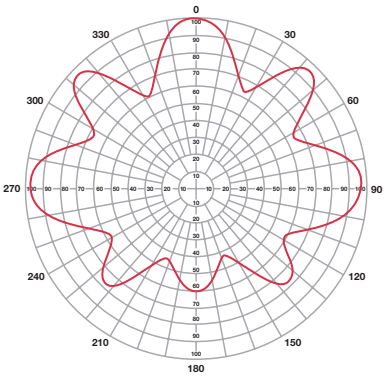
C3 DIRECTIVITY = 2.0

Electrical Specifications

# 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	80	8 3/16
8	34.2	80	7 3/16 EHT**
10	43.2	80	7 3/16 EHT**
12	48.4	80	7 3/16 EHT**
14	57.2	80	7 3/16 EHT**
16	65.0	80	7 3/16 EHT**

Mechanical Specifications

Height H_2 (ft)	Moment Arm D_1	CfAc (ft^2)	Weight (lb)
8.9	4.5	46	1,300
16.5	8.3	83	2,500
24.1	12.1	120	3,700
31.7	15.9	164	5,000
39.3	19.7	214	6,300
46.9	23.5	267	7,600
54.5	27.3	323	9,300
62.1	31.1	384	11,000



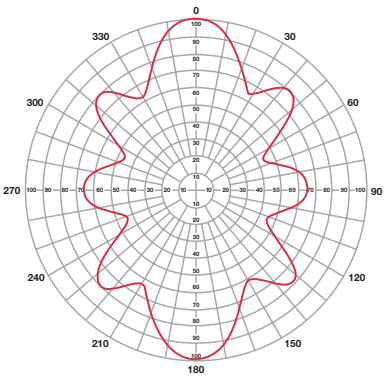
C4 DIRECTIVITY = 1.7

Electrical Specifications

# 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	80	7 3/16 EHT**
8	29.1	80	7 3/16 EHT**
10	36.7	80	7 3/16 EHT**
12	41.1	80	7 3/16 EHT**
14	48.6	80	7 3/16 EHT**
16	55.3	80	7 3/16 EHT**

Mechanical Specifications

Height H_2 (ft)	Moment Arm D_1	CfAc (ft^2)	Weight (lb)
8.9	4.5	46	1,400
16.5	8.3	83	2,700
24.1	12.1	120	4,000
31.7	15.9	164	5,400
39.3	19.7	214	6,800
46.9	23.5	267	8,200
54.5	27.3	323	10,000
62.1	31.1	384	11,800



P4 DIRECTIVITY = 2.0

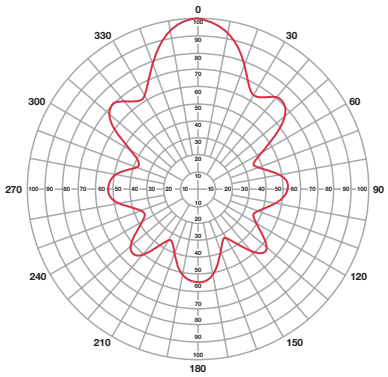
Electrical Specifications

# 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	80	7 3/16 EHT**
8	34.2	80	7 3/16 EHT**
10	43.4	80	7 3/16 EHT**
12	48.4	80	7 3/16 EHT**
14	57.2	80	7 3/16 EHT**
16	65.0	80	7 3/16 EHT**

Mechanical Specifications

Height H_2 (ft)	Moment Arm D_1	CfAc (ft^2)	Weight (lb)
8.9	4.5	46	1,400
16.5	8.3	83	2,700
24.1	12.1	120	4,000
31.7	15.9	164	5,400
39.3	19.7	214	6,800
46.9	23.5	267	8,200
54.5	27.3	323	10,000
62.1	31.1	384	11,800

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



SP4 DIRECTIVITY = 3.0

TU SERIES - DELTAWING

Electrical Specifications

# of Layers	Peak Gain*	Max Avg Power (kW)	EIA Input Connector (in)
2	14.9	20	4 1/16
4	29.1	40	6 1/8
6	43.4	60	6 1/8
8	53.0	80	7 3/16 EHT**
10	67.0	80	7 3/16 EHT**
12	75.0	80	7 3/16 EHT**
14	88.7	80	7 3/16 EHT**
16	100.8	80	7 3/16 EHT**

Mechanical Specifications

Height H_2 (ft)	Moment Arm D_1	CfAc (ft^2)	Weight (lb)
8.9	4.5	46	1,400
16.5	8.3	83	2,700
24.1	12.1	120	4,000
31.7	15.9	164	5,400
39.3	19.7	214	6,800
46.9	23.5	267	8,200
54.5	27.3	323	10,000
62.1	31.1	384	11,800

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

TU SERIES NOTES

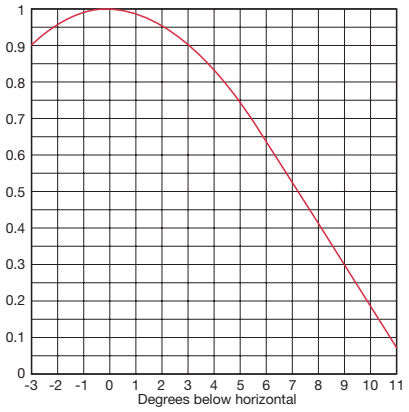
The data shown is for top-mounted antennas with standard panel placement and panel radomes. Custom designs are available on request. Indicated power ratings are for standard TU arrays configured for maximum power rating with 1 5/8" EIA panel inputs and the listed array input connections. Ratings are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

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

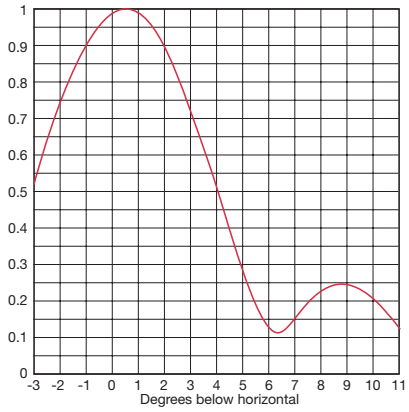
Top-mounted antenna is supplied with adapter section and flange-mount for bolting to tower top plate. Wind areas are based on TIA/EIA-222-F specification and include force coefficient. Height with lightning protector, $H_4 = H_2 + 4$ ft.

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

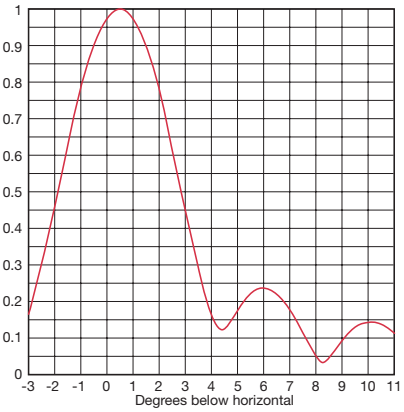
TU SERIES - DELTAWING



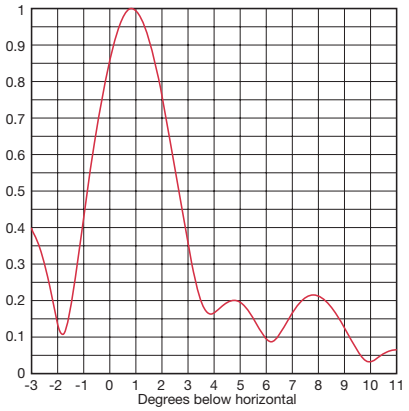
2 LAYER



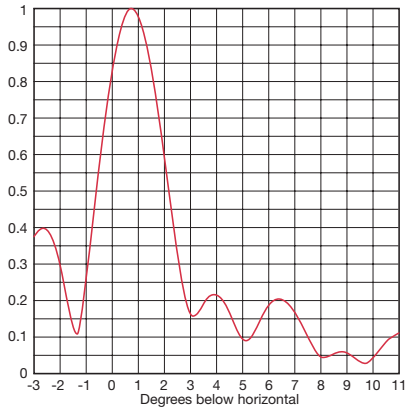
4 LAYER



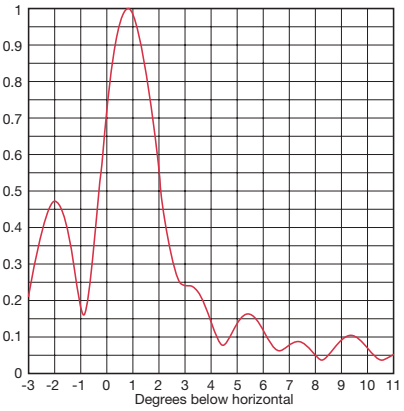
6 LAYER



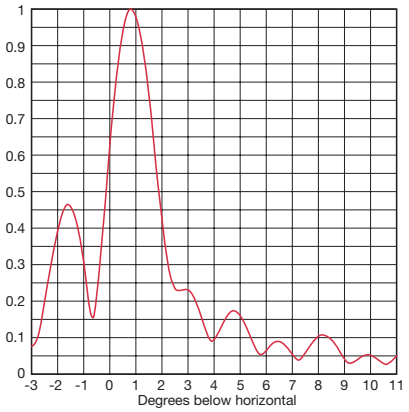
8 LAYER



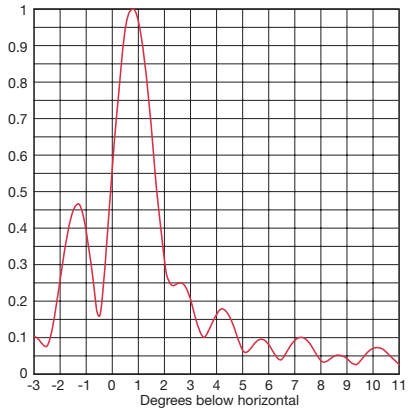
10 LAYER



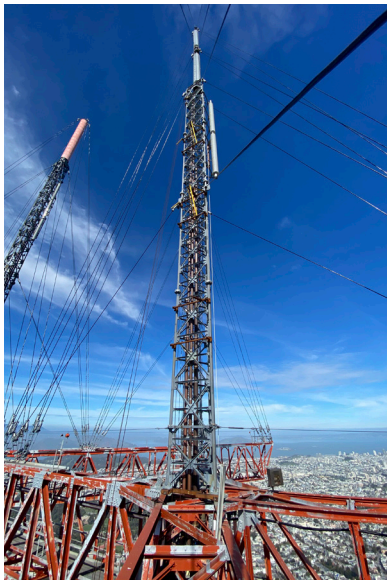
12 LAYER



14 LAYER



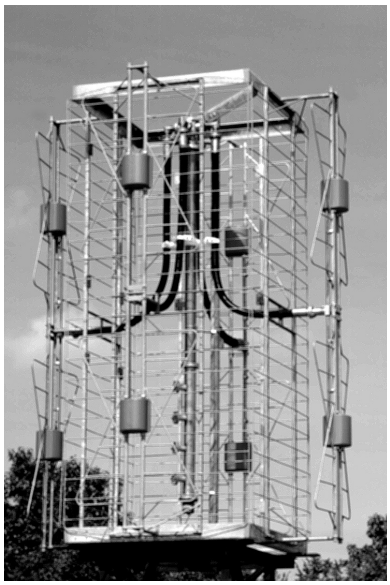
16 LAYER



VHF

Dielectric has a full portfolio of VHF arrays in both top- and side-mounted versions. These arrays consist of horizontal, elliptical, and full circularly polarized options:

- THV series pylon array
- TH and DCBR series panel arrays
- TLS-V side-mount array
- The new DCR-Q ring-style array



Shown with standard feed point radomes.

TH SERIES - DELTAWING

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, and allows for wrap-around mounting to existing structures, or 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.

- Field-proven design for superior 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 1- to 12-bay arrays

Contact factory for mechanical specifications.

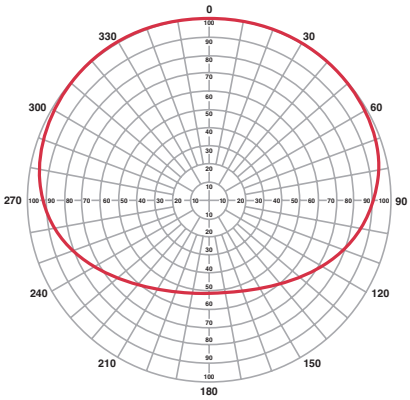
THV SERIES

The THV antenna is designed for omnidirectional and 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.

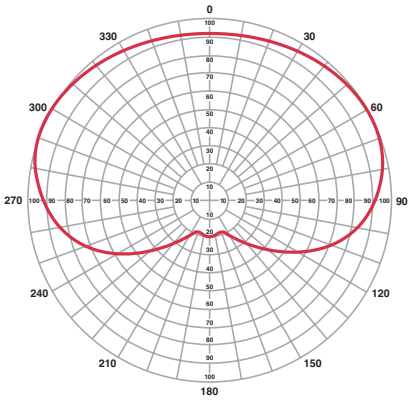
The THV azimuth pattern can be custom designed to fit a variety of applications, catering to facilities proposing maximization for DTV, those with protection requirements or those wishing to focus the energy towards the market of interest.

- Low windload/economical design
- Available with custom azimuth patterns
- Elevation gains from 4.0 (6.02 dB) to 13.0 (11.14 dB)
- Peak gains to 24.7 (13.2 dB)
- Full polycarbonate radome standard
- High input power handling
- Ideal for analog and digital applications
- Available with VPOL, EPOL or CPOL

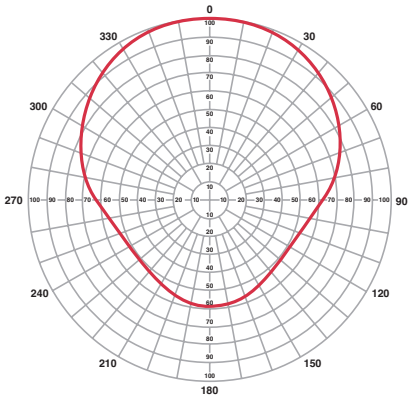
Contact factory for omnidirectional options.



C140 DIRECTIVITY = 1.4



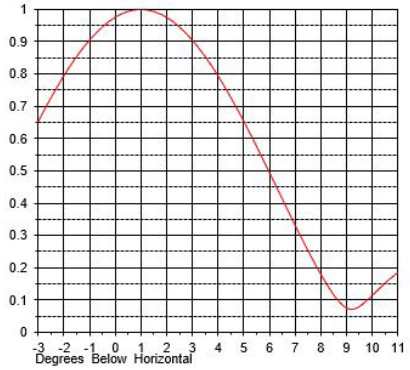
C170 DIRECTIVITY = 1.7



S190 DIRECTIVITY = 1.9

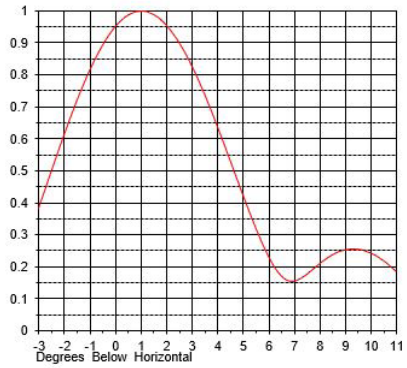
THV SERIES

THV-7A



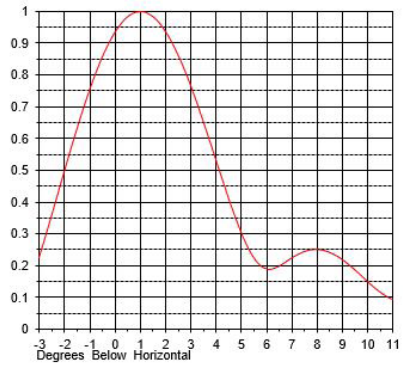
RMS GAIN 7.0 (8.45 dB)

THV-9A



RMS GAIN 9.0 (9.54 dB)

THV-11A



RMS GAIN 11.0 (10.41 dB)

THV SERIES—TYPICAL MECHANICAL SPECIFICATIONS

THV-XAX-R 04, 2" SLOT, 3" HARNESS, NO VP

G-Code

BWS	90 mph
S.C.	II
E.C.	C
T.C.	1

F-Code

BWS	70

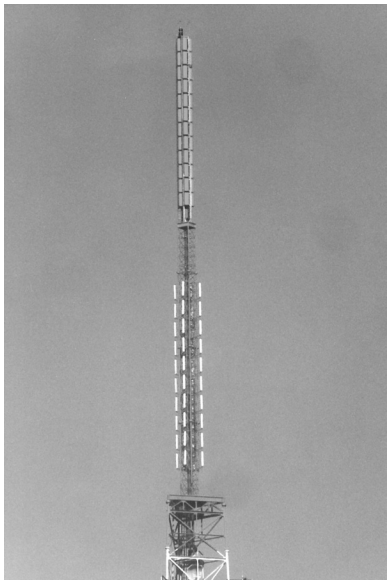
	Channel	H4 (ft)	H2 (ft)	H3 (ft)	W (lbs)	EPA	D1	CaAc	D1
THV-7Ax	7	48	44	22	5,000	68.5	23.2	67.9	23.4
	8	46.6	42.6	21.3	4,850	66.5	22.5	65.9	22.7
	9	45.3	41.3	20.65	4,700	64.4	21.8	63.9	22.0
	10	44.1	40.1	20.05	4,600	62.6	21.2	62.2	21.4
	11	42.9	38.9	19.45	4,450	60.9	20.6	60.5	20.8
	12	41.9	37.9	18.95	4,350	59.4	20.1	59.0	20.3
	13	40.8	36.8	18.4	4,250	57.8	19.6	57.4	19.8
THV-9Ax	7	60.1	56.1	28.1	7,900	86.4	29.2	85.5	29.4
	8	58.4	54.4	27.2	6,100	83.9	28.4	83.1	28.6
	9	56.8	52.8	26.4	5,900	81.5	27.6	80.8	27.8
	10	55.3	51.3	25.6	5,750	79.2	26.8	78.5	27.0
	11	53.8	49.8	24.9	5,600	77.0	26.1	76.3	26.2
	12	52.5	48.5	24.2	5,450	75.1	25.4	74.4	25.6
	13	51.2	47.2	23.6	5,350	73.2	24.8	72.6	25.0
THV-11A	7	71.2	67.2	33.6	11,600	102.8	34.8	101.7	34.9
	8	69.1	65.1	32.6	11,250	99.7	33.7	98.6	33.9
	9	67.2	63.2	31.6	10,950	96.9	32.8	95.9	33.0
	10	65.3	61.3	30.7	8,550	94.0	31.8	93.0	32.0
	11	63.6	59.6	29.8	8,350	91.5	31.0	90.6	31.1
	12	62.0	58.0	29.0	8,150	89.2	30.2	88.3	30.4
	13	60.4	56.4	28.2	7,900	86.8	29.4	85.9	29.6

*Contact factory for application-specific mechanical details.

TOP-MOUNTED ANTENNA SYSTEMS—STACKED ARRAYS

With over 100 stacked antennas manufactured, Dielectric is a leader in this technology. Our stacked antennas are unique in that they are a true cantilevered system providing top-mounted performance characteristics for both analog and digital services.

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



BROADBAND STACKED ARRAYS

Broadband stacked 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.

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

UHF/VHF STACKED ARRAYS

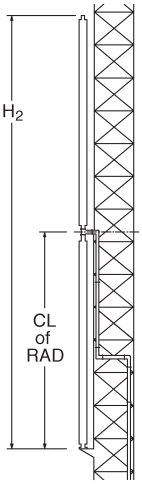
UHF/VHF stacked arrays allow for maximum aperture efficiency by combining multiple services into a common aperture. Stacked arrays have been designed to accommodate up to eight full power television broadcasts from a common array.

- Digital gain up to 28.0 (14.47 dB) typical
- Analog gain up to 30.0 (14.77 dB) typical
- True linear stack for optimum performance
- Maximizes DTV “line of sight”

Contact factory for stacked array designs.

SAFETY TIE-OFFS

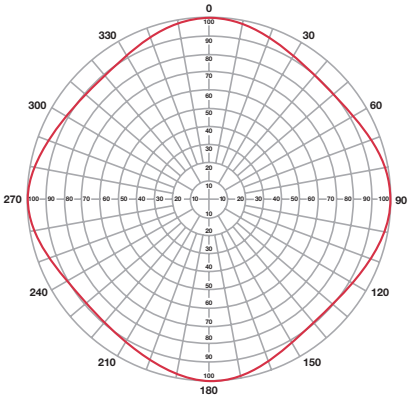
Easy tie-off for riggers can be incorporated in any Dielectric antenna. The new 2020 design, which we developed in collaboration with Tuf-Tug, incorporates an easy tie-off for safety while installing or inspecting a Cable Safe Climb system for any future work on the antenna, lighting, or dampener.



TFU-DSC SERIES

Dielectric's Digital Side-mount, Center-fed (DSC) Series Antennas provide superior side-mounted performance. The DSC 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.

- Single, adjacent channel, or tri-channel operation available
- Center-fed for excellent digital 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



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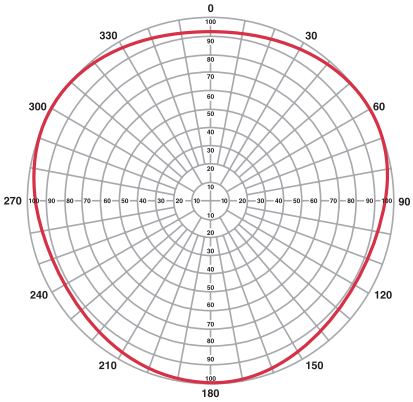

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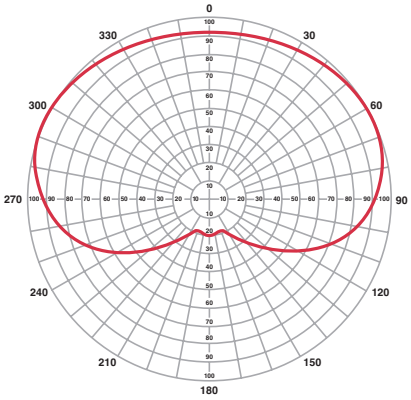
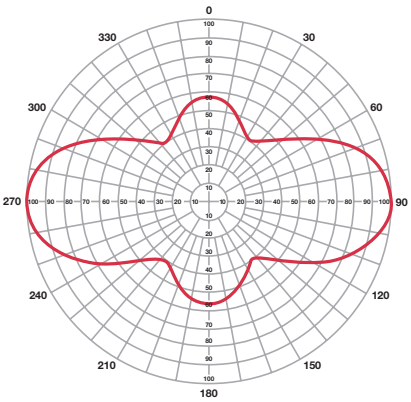
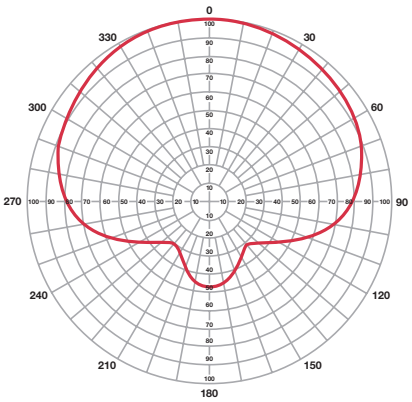


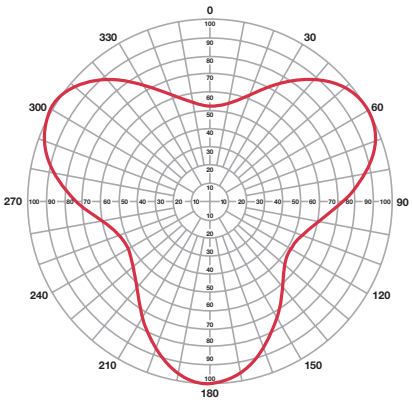
C170 DIRECTIVITY = 1.7



P230 DIRECTIVITY = 2.3

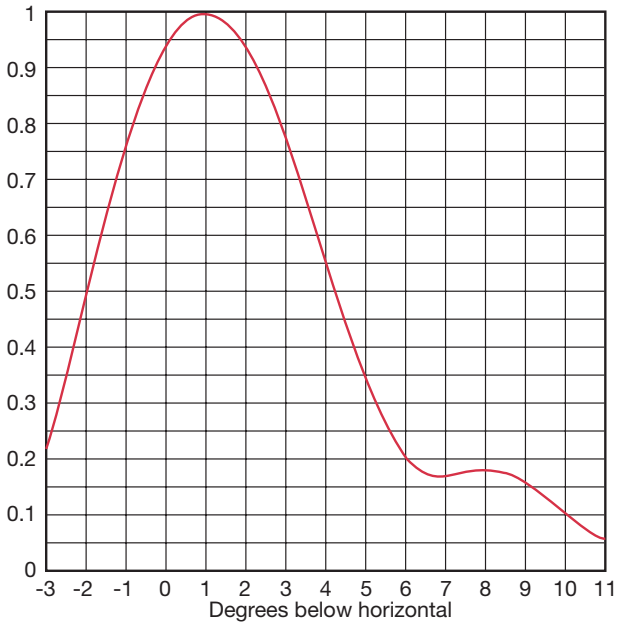


S180 DIRECTIVITY = 1.8



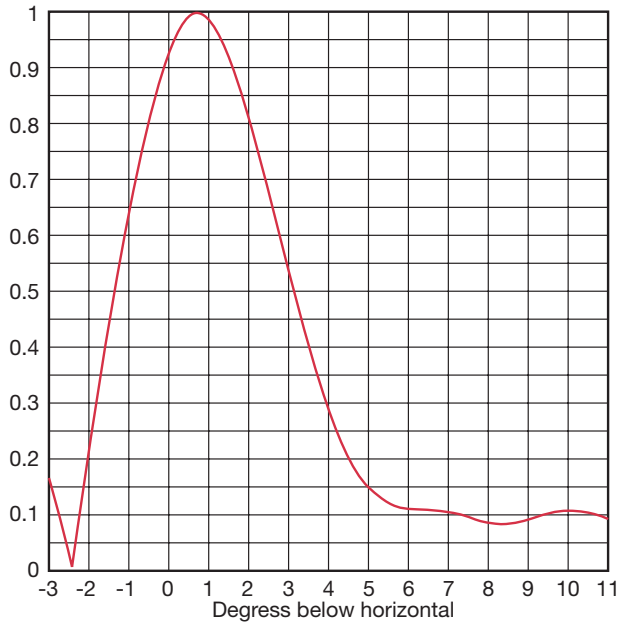
T170 DIRECTIVITY = 1.7

TFU-10DSC-R



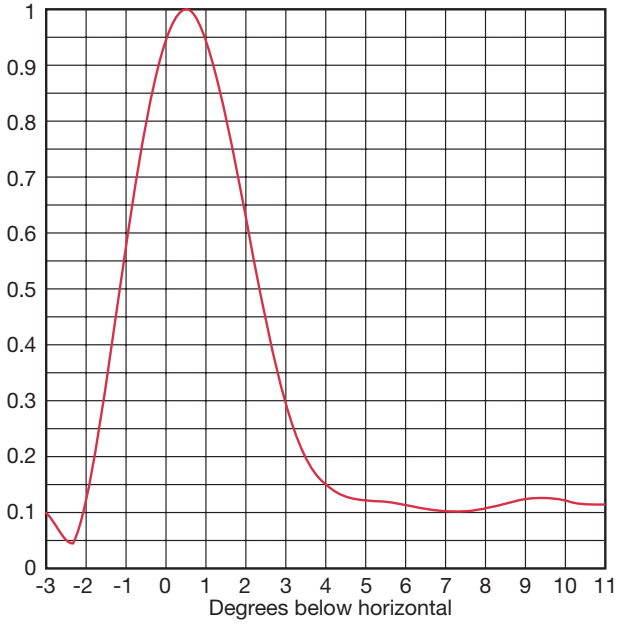
RMS GAIN 9.5 (9.78 dB)

TFU-18DSC-R



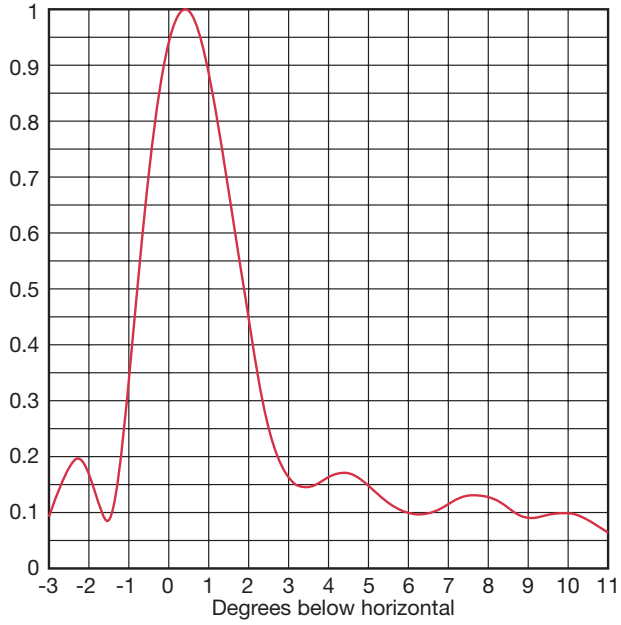
RMS GAIN 15.0 (11.76 dB)

TFU-24DSC-R



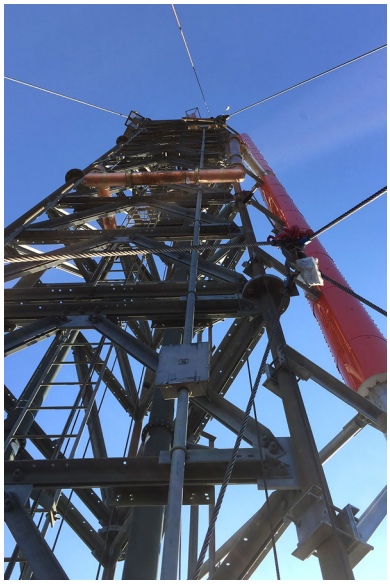
RMS GAIN 19.5 (12.90 dB)

TFU-30DSC-R



RMS GAIN 25.5 (14.07 dB)

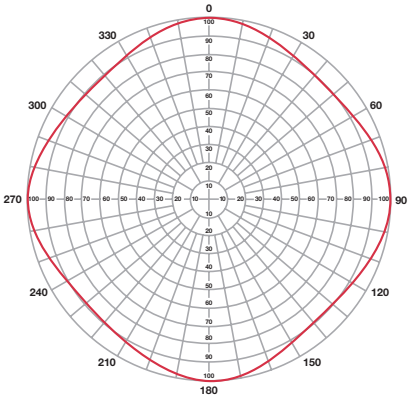
Gain figures are for single-channel operation. Contact factory for gain figures for dual-channel operation.



TFU-EST

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

- Omnidirectional and directional applications
- Horizontal, elliptical, and full circular polarization
- Very high null fill for close-in coverage
- Available in single and dual channel configurations
- VSWR: < 1.10:1.0 across 6 MHz channel
- Beam Tilt: .75 degree standard, custom available
- Available with RMS gains of 14 (11.41 dB) to 29.5 (14.70 dB)



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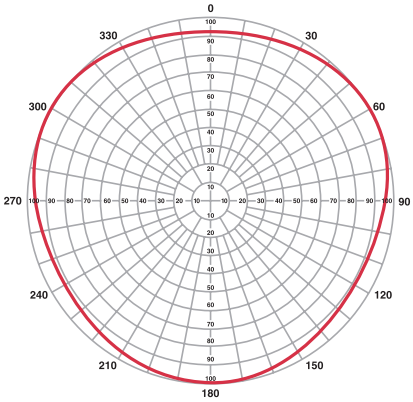

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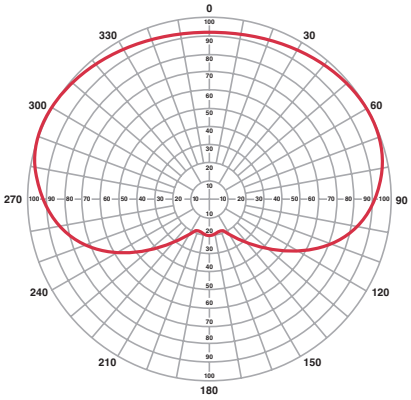
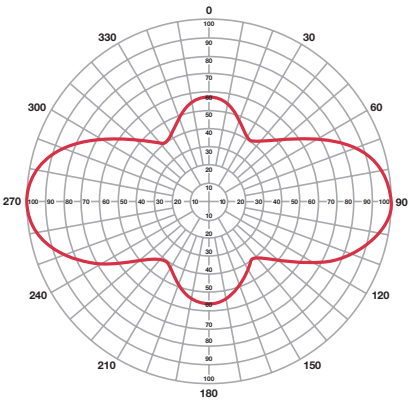
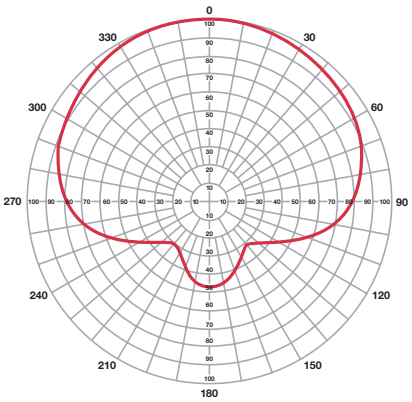


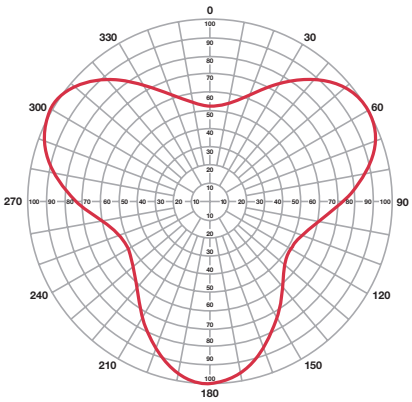
C170 DIRECTIVITY = 1.7



P230 DIRECTIVITY = 2.3

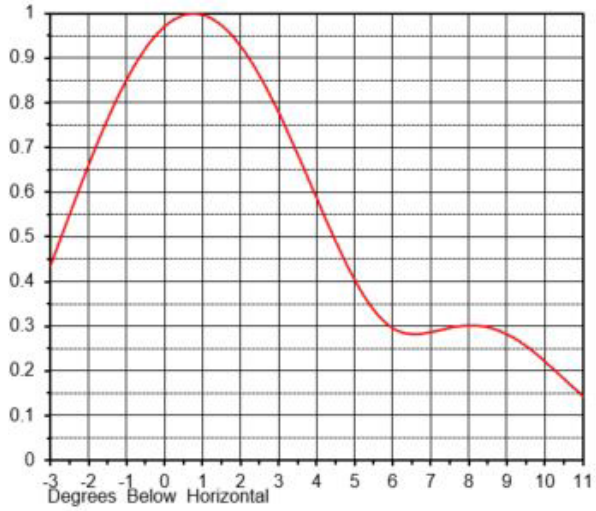


S180 DIRECTIVITY = 1.8



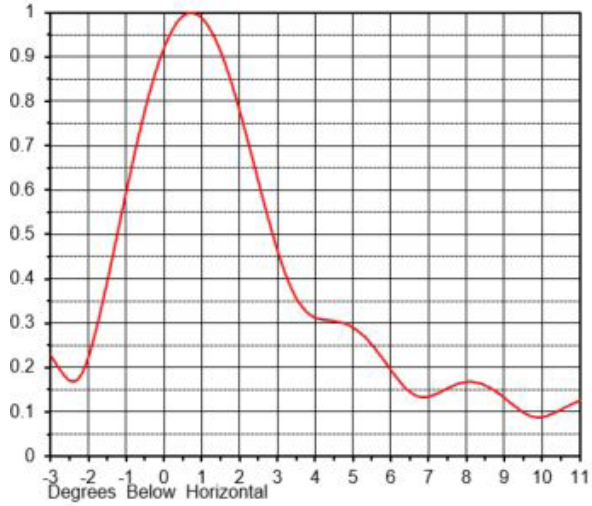
T170 DIRECTIVITY = 1.7

TFU-14EST-R



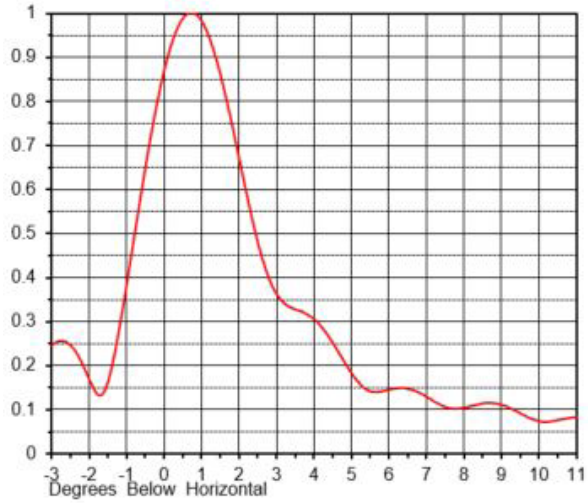
RMS GAIN 9.8 (9.91 dB)

TFU-18EST-R



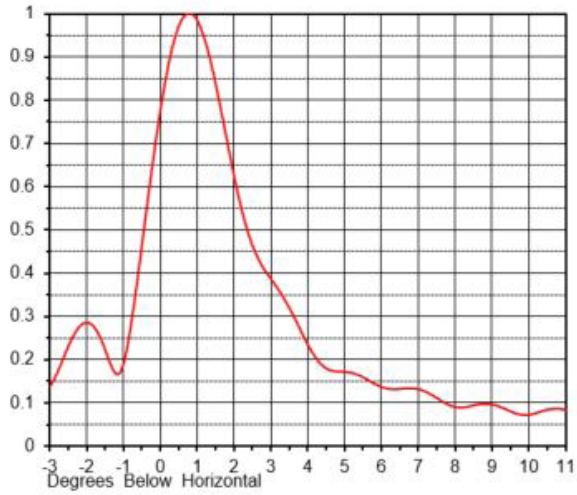
RMS GAIN 17.6 (12.44 dB)

TFU-24EST-R



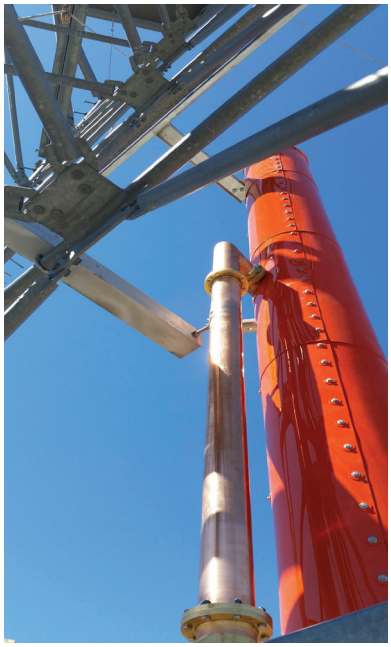
RMS GAIN 22.0 (13.42 dB)

TFU-30EST-R



RMS GAIN 25.0 (13.98 dB)

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



TFU-WB SERIES

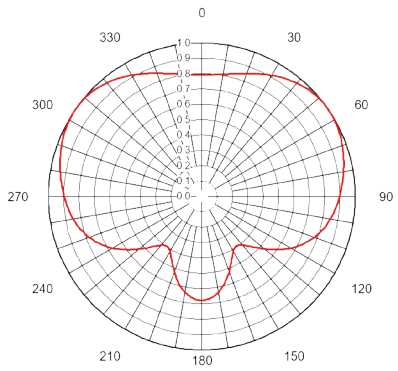
The TFU-WB Series antenna is designed as a broadband, low-cost, low-windload alternative to UHF panel antennas.

Dielectric Advantages

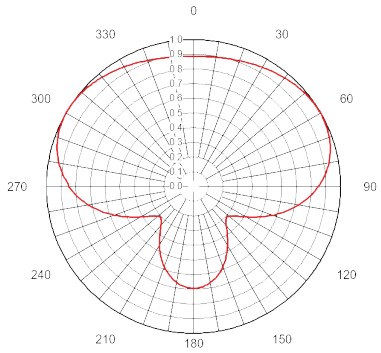
- Broadband: Channels 14-51
- Economical alternative to panel antennas
- Low weight and 75% less windload than panels
- Input powers up to 60 kW
- Includes standard mounting brackets
- Quick delivery
- Available in HPOL or EPOL
- Designed for side mounting on existing structures
- ATSC 3.0 & DVB-T2 ready
- 4, 8, 16 and 24 bays
- Cardioid azimuth pattern

Specifications

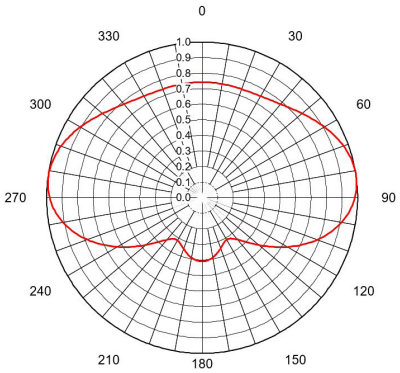
- Polarization: Horizontal or Elliptical
- Beam Tilt Standards:
  - 1 degree for 4, 8, 16 and 24 bay
- Input Size: 4 1/16" EIA (others available)
- Max VSWR (470-698 mHz): < 1.15:1
- Input Power: 30 kW per 8 bay section
- Azimuth Gain: see sheet 3
- Weight: 410 lbs per 8 bay section
- Windload: 27.4 ft2 per 8 bay section



C160 1.58 (1.99 dB)

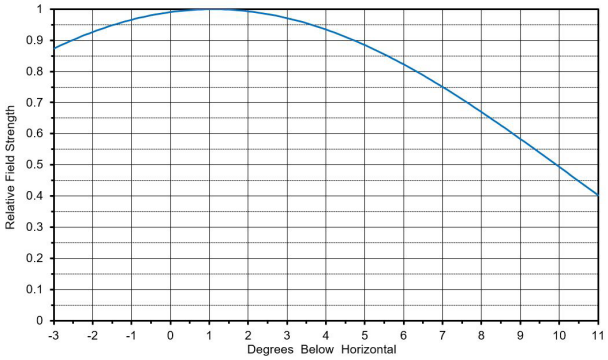


C170 1.66 (1.99 dB)



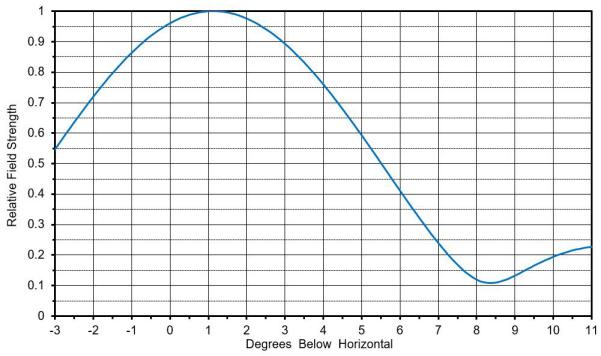
C190 1.87 (2.71 dB)

TFU-WB-4 LAYER



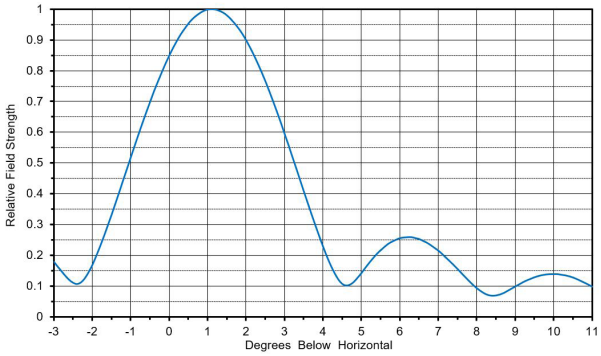
RMS GAIN **4.0**

TFU-WB-8 LAYER



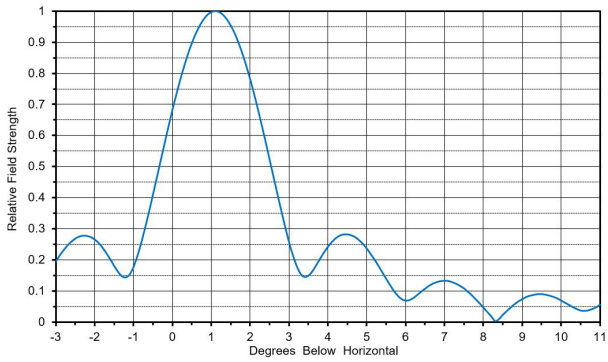
RMS GAIN **8.5**

TFU-WB-16 LAYER

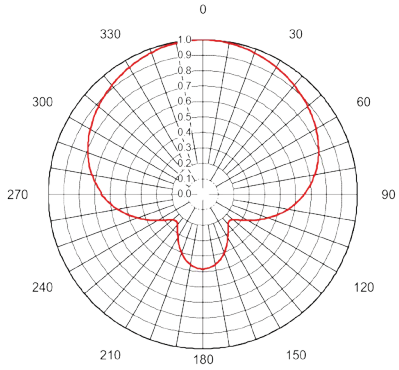


RMS GAIN **17.0**

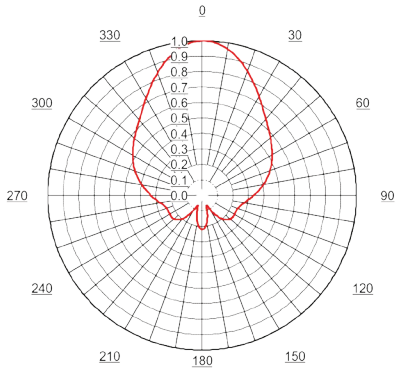
TFU-WB-24 LAYER



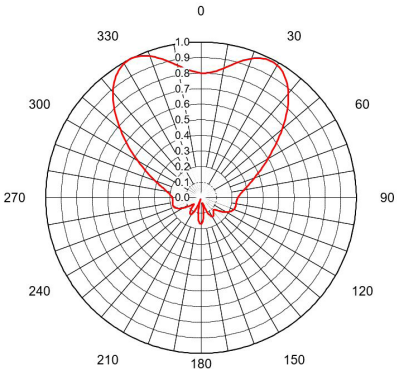
RMS GAIN **25.0**



S230 2.09 (3.19 dB)

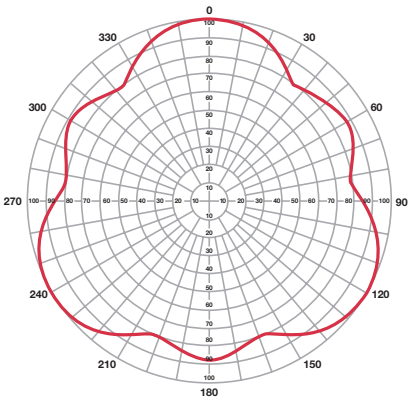


S380 3.97 (5.99 dB)

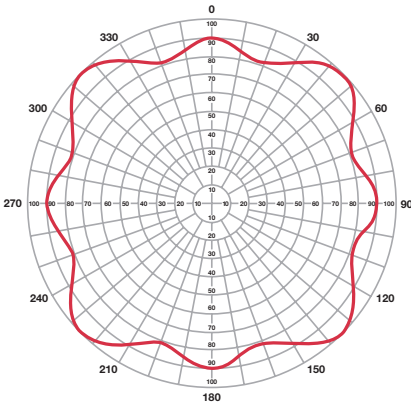


DUCKFOOT 3.74 (5.73 dB)

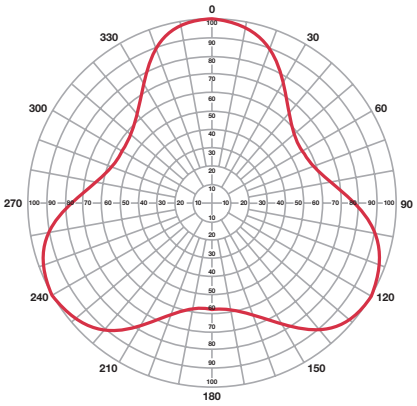
TH SERIES - DELTAWING



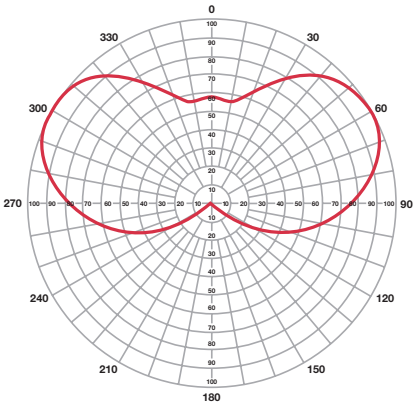
THB-03 DIRECTIVITY = 1.3



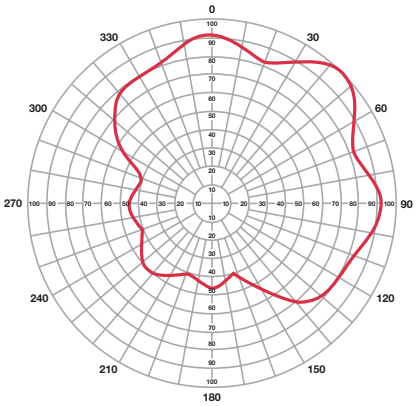
THA-04 DIRECTIVITY = 1.3



THA-T160 DIRECTIVITY = 1.6

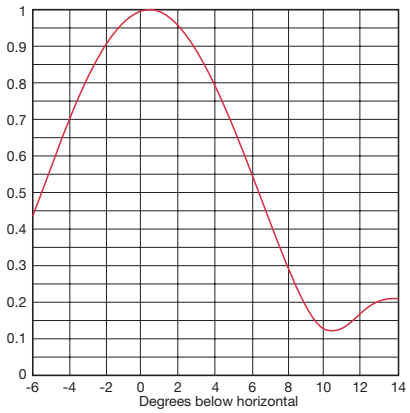


THA-MC2 DIRECTIVITY = 2.5

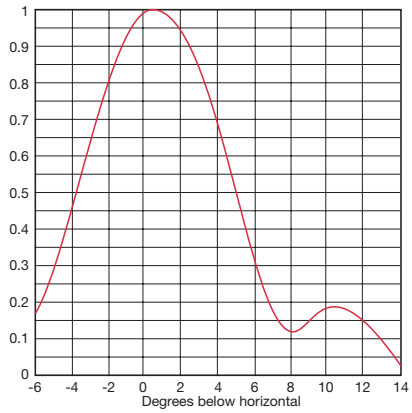


THA-S4 DIRECTIVITY = 1.9

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		1.2	0.64	—	—
2	L		2.2	3.40	—	—
3	L	Ch 2	3.2	5.11	3.4	5.29
4	L	54-60	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		1.2	0.64	—	—
2	L		2.3	3.54	—	—
3	L	Ch 3	3.4	5.28	3.2	5.01
4	L	60-66	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		1.2	0.64	—	—
2	M		2.2	3.40	—	—
3	M	Ch 4	3.2	5.11	3.0	4.83
4	M	66-72	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		1.2	0.64	—	—
2	M		2.3	3.58	—	—
3	M	Ch 5	3.4	5.33	3.2	5.07
4	M	76-82	4.6	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		1.2	0.64	—	—
2	M		2.3	3.58	—	—
3	M	Ch 6	3.4	5.34	3.2	5.07
4	M	82-88	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	8.07
2	H		2.1	3.21	—	—
3	H		3.1	4.95	2.9	4.68
4	H		4.5	6.53	3.9	5.96
5	H	Ch 7	5.2	7.15	4.9	6.91
6	H	174-180	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		2.1	3.32	—	—
3	H		3.2	5.07	3.0	4.79
4	H		4.3	6.31	4.1	6.08
5	H	Ch 8	5.3	7.27	5.1	7.03
6	H	180-186	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		2.2	3.40	—	—
3	H		3.3	5.17	3.1	4.89
4	H		4.4	6.42	4.2	6.19
5	H	Ch 9	5.5	7.39	5.2	7.15
6	H	186-192	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

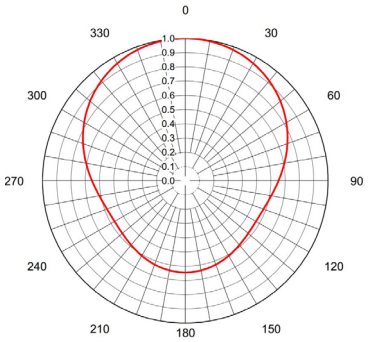
Bays	Band	F (MHz)	0% Null Fill 0° tilt		15% Null Fill .75° tilt	
2	H		2.2	3.45	—	—
3	H		3.3	5.22	3.1	4.94
4	H		4.4	6.46	4.2	6.24
5	H	Ch 10	5.5	7.43	5.2	7.19
6	H	192-198	6.6	8.22	6.3	7.97
8	H		8.8	9.47	8.4	9.25
10	H		11.0	10.43	10.5	10.23
12	H		13.2	11.22	12.7	11.03
2	H		2.3	3,56	—	—
3	H		3.4	5.34	3.2	5.05
4	H		4.6	6.60	4.3	6.36
5	H	Ch 11	5.7	7.57	5.4	7.32
6	H	198-204	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		2.3	3.63	—	—
3	H		3.5	5.42	3.3	5.13
4	H		4.7	6.68	4.4	6.45
5	H	Ch 12	5.8	7.66	5.5	7.41
6	H	204-210	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		2.3	3.69	—	—
3	H		3.5	5.48	3.3	5.20
4	H		4.7	6.76	4.5	6.51
5	H	Ch 13	5.9	7.73	5.6	7.47
6	H	210-216	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		2.4	3.71	—	—
3	H		3.6	5.52	3.3	5.24
4	H		4.8	6.79	4.4	6.46
5	H	Ch E11	6.0	7.77	5.6	7.51
6	H	216-223	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		2.4	3.77	—	—
3	H		3.6	5.57	3.4	5.29
4	H		4.8	6.84	4.6	6.61
5	H	Ch E12	6.1	7.83	5.7	7.57
6	H	223-230	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

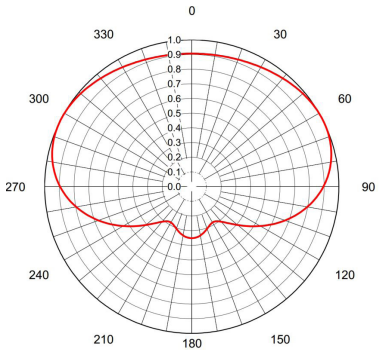
The TLS-V Series antenna is a low-cost, low-windload alternative to side-mount on an existing structure. It is designed for the VHF broadcaster requiring quick compliance with FCC deadlines, gap filling, SFN, translator/repeater markets and standby facilities. The TLS-V can be used for either analog or digital service.

Specifications

- Input Size: 1 5/8" EIA
- VSWR 1.10:1.0 Channel
- Multiple Electrical Beam Tilts available
- Available in a broadband version
- Economical alternative to panel antennas
- Extremely low weight and windload
- Available in 2-, 4-, 8- and 12-bay configurations
- Includes standard mounting brackets
- Quick delivery
- Radome and slot cover options
- Avalable in HPOL, CPOL and EPOL
- Cardioid and Omnioid Azimuth patterns



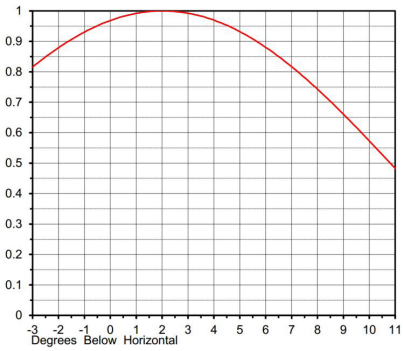
TLS-V-B
AZ GAIN: 1.6



TLS-V-M
AZ GAIN: 1.6

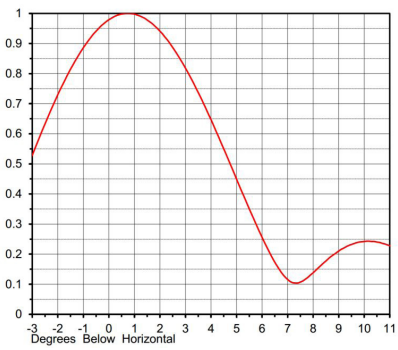
Antenna	Average Power Input Rating	RMS Gain
TLS-V2	3.5 kW	2.0 (2.94 dB)
TLS-V4	7.5 kW	4.2 (6.18 dB)
TLS-V8	Up to 15 kW	8.3 (9.21 db)
TLS-V12	Up to 22.5 kW	12.5 (10.98 db)

TLS-V4



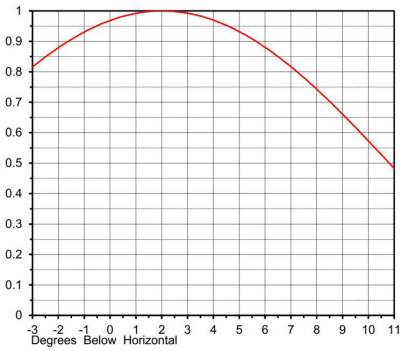
RMS GAIN: 4.2 (6.18 dB)

TLS-V8



RMS GAIN: 8.3 (9.21 dB)

TLS-V12



RMS GAIN: 12.5 (10.98 dB)

TLS-V-BB SERIES

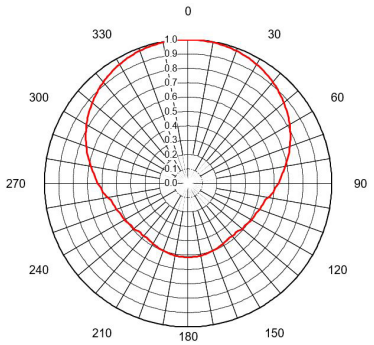
The TLSV-BB Series antenna is designed as a broadband, low-cost, low-windload alternative for the high-band VHF broadcaster.

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, CPOL and EPOL
- Designed for side-mounting on existing structures
- Stripline slot design
- Available in 2-, 4-, 8- and 12-bay configurations
- Cardioid and Omnioid Azimuth Pattern

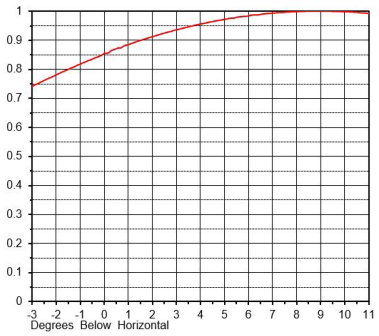
Specifications

- Polarization: Horizontal or Elliptical
- Beam Tilt: 2 Degrees Standard
- Input Size: 1 $^{5}/_{8}$" EIA (per section)
- VSWR (Max 174-213 MHz): < 1.25:1
- Input Power: 7.5 kW avg. per section (3.5 kW avg. for TLS-V2)



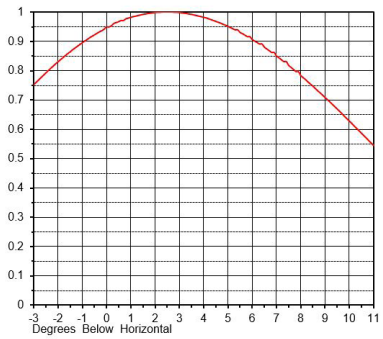
TLS-V-B-BB
AZ GAIN: 2.0

TLS-V2-BB

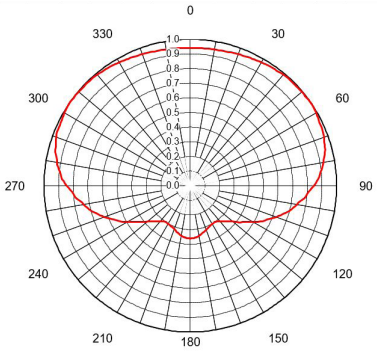


RMS GAIN: 2.0 (2.94 dB)

TLS-V4-BB

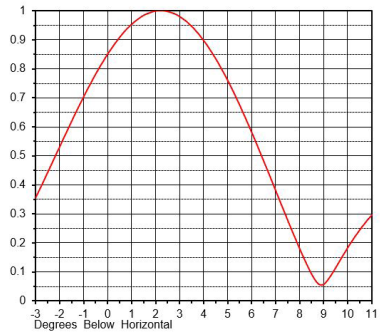


RMS GAIN: 4.1 (6.10 dB)



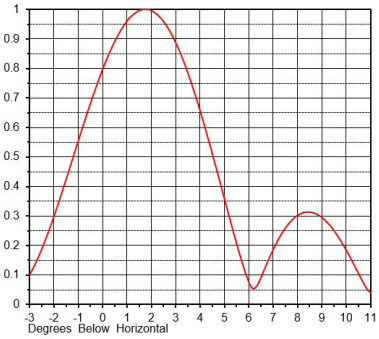
TLS-V-M-BB
AZ GAIN: 1.6

TLS-V8-BB



RMS GAIN: 7.9 (8.98 dB)

TLS-V12-BB



RMS GAIN: 10.7 (10.29 dB)

TLS-V-BB SERIES (CONTINUED)

TYPICAL MECHANICAL CHARACTERISTICS*

R = Radomed
V = with VPOL

CaAc = Force Coefficient Projected Area (4 foot lighting protector and beacon included)

	Channel	Height (ft)	CaAc (ft^2)	Weight (lbs)
TLS-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
TLS-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
TLS-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	465
	13	19.6	28.2	445

Note: Contact factory for application-specific mechanical details.

DCR-Q VHF

The DCR-Q was designed specifically for the Band I, Band II VHF markets (Channels 2-6). Based on the DCR-M Quadropole design, this side-mounted stainless steel array is designed for both omnidirectional and directional applications.

The DCR-Q VHF provides an economical solution for circularly VHF Polarized broadcast with much less loading than traditional panel arrays.

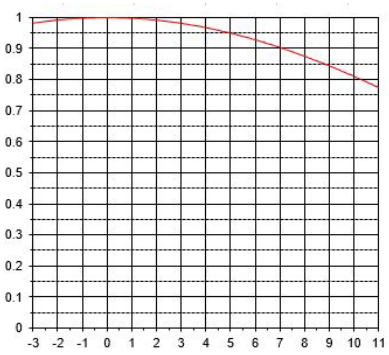
Specifications

- Full Circular Polarization
- Omnidirectional and directional applications
- 1/2 wavelength bay spacing typical, which minimizes downward radiation
- Stainless steel element construction
- Low ice sensitivity
- Low weight and windload

Electrical Specifications

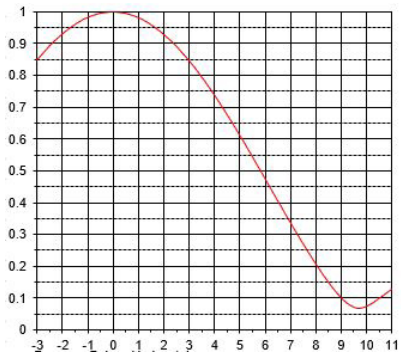
Antenna Type	# of Bays	Power Gain	dB	Power Rating kW
DCR-Q4 VHF	4	1.3	1.14	60
DCR-Q8 VHF	8	2.4	3.80	60
DCR-Q12 VHF	12	3.6	5.56	60

DCR-Q4 VHF

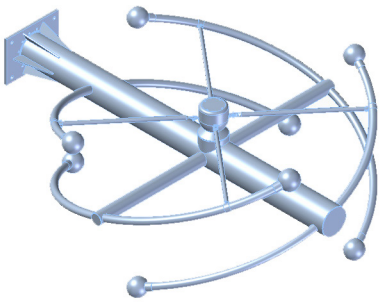


DCR-Q8 VHF

DCR-Q12 VHF



*VSWR over single 6MHz channel 1.15:1.0



Mechanical Specifications

Channel	# of Bays	λ (in)	H2 (ft)	EPA (ft²)	W (lbs)
4	4	171.056	42.8	27.5	960
	8		99.8	57.1	1920
	12		156.8	86.7	2880

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Specifications subject to change without notice.

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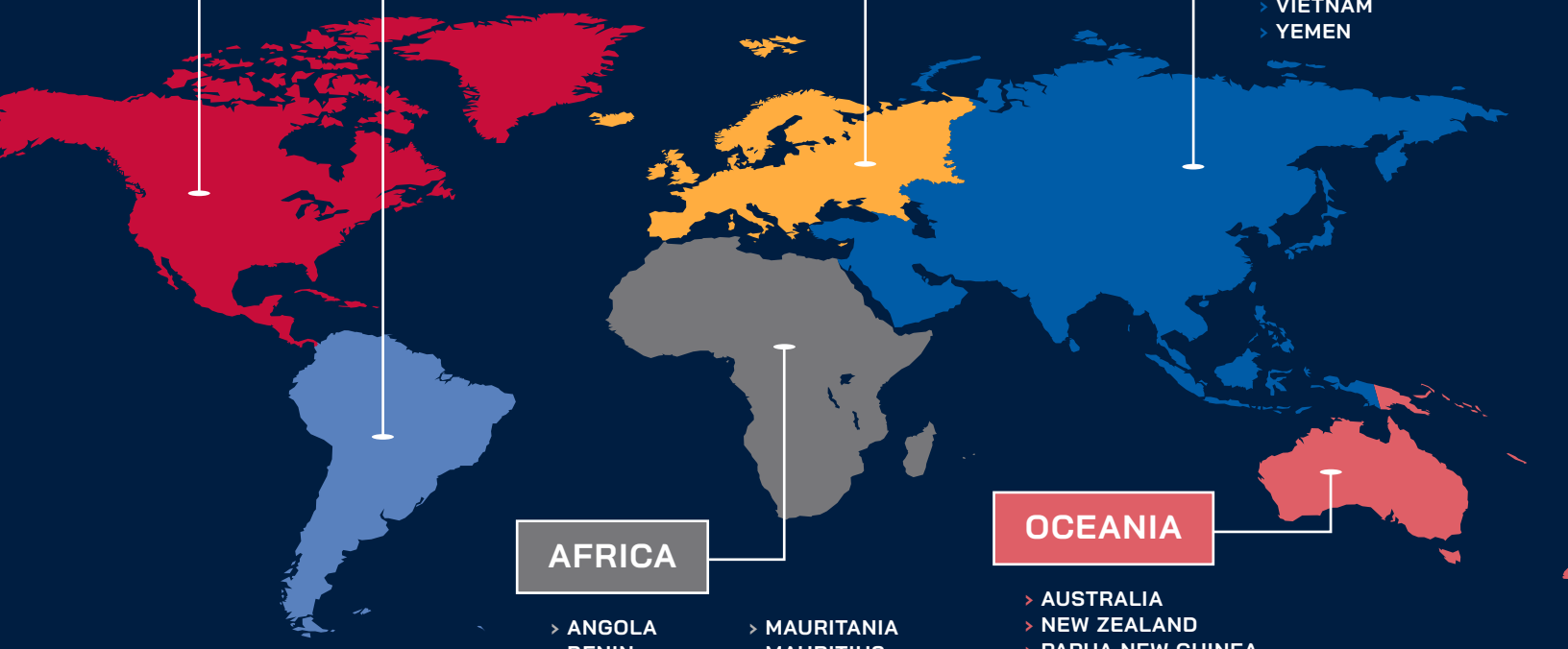

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- LIBERIA
- MADAGASCAR
- MALI
- MAURITANIA
- MAURITIUS
- MOROCCO
- NIGERIA
- SAO TOME
- SOUTH AFRICA
- TOGO
- UGANDA
- ZAMBIA
- ZIMBABWE

OCEANIA

- AUSTRALIA
- NEW ZEALAND
- PAPUA NEW GUINEA

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