CHA TD 2.0

TACTICAL DIPOLE / PORTABLE HF WIRE SYSTEM

Broadband terminated architecture for rapid, repeatable field deployment

ONE KIT. MULTIPLE FIELD GEOMETRIES.

Broadband HF operation without rebuilding the antenna for each frequency change.

The TD 2.0 combines two radiator wires, separate counterpoise wires and terminating units in a modular field system. Select the documented geometry for the site and operating task.



Manufacturer reference image; supply package varies by order.

1.8-54 MHz	25 ft / 7.62 m	1 / ~15 min
PUBLISHED OPERATING RANGE	PREFERRED SUPPORT HEIGHT	OPERATOR / SETUP

01 ELECTRICAL & PHYSICAL DATA

Power / mode	500 W SSB; 250 W CW; 100 W digital. Observe the lowest limit of the complete installed system.
Frequency / tuning	1.8-54.0 MHz. A tuner is usually not required in the documented terminated configurations; verify the installed match.
Radiator / RF return	2 x 60 ft (18.29 m) radiator wires; 2 x 25 ft (7.62 m) counterpoise wires.
RF interface	SO-239 female socket at the transformer; supplied coax uses PL-259 plugs.
Published weight	4.2 lb (1.91 kg). Packed/shipping mass and dimensions depend on the supplied package.
Length / SWR	Guide-stated length range: 55-120 ft (16.76-36.58 m), configuration dependent. Typical SWR below 2:1; frequency and installation dependent.

Primary basis: current User Guide, rev 23 JUL 2026, pp. 3, 7, 9-19. The operating range is not a guarantee of efficiency, propagation, coverage or match on every frequency.

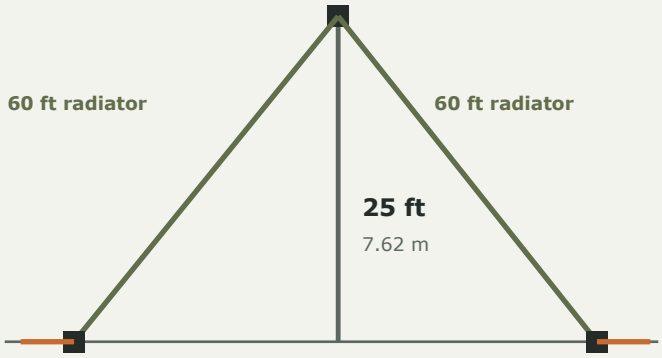
CURRENT USER GUIDE / 260723 **CURRENT PRODUCT PAGE**

DEPLOYMENT GEOMETRIES

Preserve radiator, termination and counterpoise positions. Schematics are not to scale.

02 TERMINATED SLOPING V / INVERTED V

SIDE VIEW / TRANSFORMER AT APEX



Terminating units at the low wire ends.
25 ft counterpoise beyond each resistor;
lay on the ground as documented.

PLAN VIEW / 90-DEGREE EXAMPLE



50-180 degree opening permitted.
90 degrees is a general starting point.
180 degrees forms an inverted V.

The opening is measured in plan, not the vertical apex angle.

03 FIELD INSTALLATION / TERMINATED V ONLY

Highest point	Suspend the matching transformer at the apex. Both radiator wires slope down from this elevated feed point.
Lowest points	Locate a terminating resistor unit at each low radiator end. Extend the separate counterpoise wires beyond the terminating units on the ground.
Opening angle	Set the plan opening to the selected configuration. The 90-degree sloping V and 180-degree inverted V have different modeled patterns.
Safety / RF checks	Keep wires and suspension lines clear of power lines. Assess RF exposure and public access; check connections, strain relief and installed match before transmitting.
Gain comparison	Page 5 compares every current NEC-4.2 TD 2.0 / HPD gain sample. Standard and HPD use different radiator lengths but the same 25 ft return-wire length.

SUPPLY & SYSTEM INTEGRATION

Standard TD 2.0 package reference | Optional HPD expansion shown separately.

04 SUPPLY SCHEDULE & OPTIONAL EXPANSION

Radiating system	1 matching transformer; 2 x 60 ft radiators; 2 x 25 ft counterpoise wires; 2 terminating resistor units with integrated wire storage.
Field hardware	4 tent stakes; suspension/attachment hardware; throw bag; one 50 ft and two short mini-paracord lines; separate line winder.
Feed line / transport	Current product listing includes 50 ft RG-58 with PL-259 plugs and integrated RFI choke, plus a duffel bag/backpack. Supplied equipment follows the ordered package.
Required station items	Compatible radio, approved support/suspension point and any adapters required by the radio. Check the installed match and radio requirements; a tuner may be needed for an installed mismatch.
Optional HPD wires	Two 108 ft (32.92 m) wires with winders enable guide-defined longer-radiator or longer-counterpoise options. They are not part of the standard 60 ft radiator reference plotted here.
Military deployment scope	Terminated inverted V or terminated sloping V only. The matching transformer is always at the highest point; both terminating resistor units are at the lowest radiator ends, with counterpoise wires extending beyond them.

05 NEC MODEL BOUNDARIES

Page 5 compares 24 NEC-4.2 gain samples. Pages 6-10 retain the existing band patterns. Pages 11-14 add new 1.600 MHz models, each checked against a finer mesh. The new frequency is outside the guide's 1.8-54 MHz range; it does not establish installed match or extend the product rating.

Modeled geometry	Standard: 2 x 60 ft radiator legs. HPD: 2 x 108 ft radiator legs. Both: 25 ft apex, 1 ft endpoints and 2 x 25 ft terminated return legs. Plan opening: 180 or 90 degrees as labeled.
Electrical boundary	Ideal 9:1 antenna-terminal reference; each modeled return leg has a terminal 309.09-ohm series load. This numerical load is not a separate hardware specification.
Limits / exclusions	Transformer and coax losses are excluded. Thermal behavior, installed efficiency and field correlation are not established. New 1.600 MHz cases: relative permittivity 13, conductivity 0.005 S/m, GN2 ground. Older case metadata does not state ground properties.

Operating limits: 500 W SSB, 250 W CW and 100 W digital; observe the lowest limit in the complete system. Package contents and packed mass/dimensions depend on the ordered configuration. No MIL-STD, IP, NSN or export-classification qualification is asserted.

CHA HPD / OPTIONAL EXPANSION

High Performance Dipole wire set for the CHA TD 2.0

EXPAND THE WIRE SYSTEM. KEEP THE TD 2.0 CORE.

Two 108 ft (32.92 m) tinned-copper, Kevlar-reinforced, PTFE-insulated wires with winders. An optional expansion, not a standalone antenna and not included in the standard TD 2.0 kit.



Official CHA HPD product image

06 TWO DOCUMENTED WAYS TO USE ONE HPD SET

Longer radiators	Replace both standard 60 ft radiator legs with the two 108 ft HPD wires. Retain both 25 ft counterpoise wires and both terminating units for the terminated arrangements illustrated in the library.
Longer counterpoises	Keep both standard 60 ft radiator legs. Use the two 108 ft HPD wires as the counterpoise/return wires, following the current manual configuration table. This is a different electrical geometry.
One set / one role	One HPD set supplies two wires. It does not provide four 108 ft wires for simultaneous long-radiator and long-counterpoise deployment. Confirm the selected layout and all required parts.
Deployment planning	Allow additional clear space, suitable support and safe wire routing. The standard kit's published footprint is not an HPD installation envelope. HPD does not raise the system power rating.

07 READ THE CORRECT MODEL FOR THE SELECTED WIRES

The HPD plots on pages 9-10 and 13-14 use **108 ft radiator legs with 25 ft return legs**. They show 80 m, 40 m and new 1.600 MHz inverted-V and 90-degree sloping-V cases. They do not represent the long-counterpoise option.

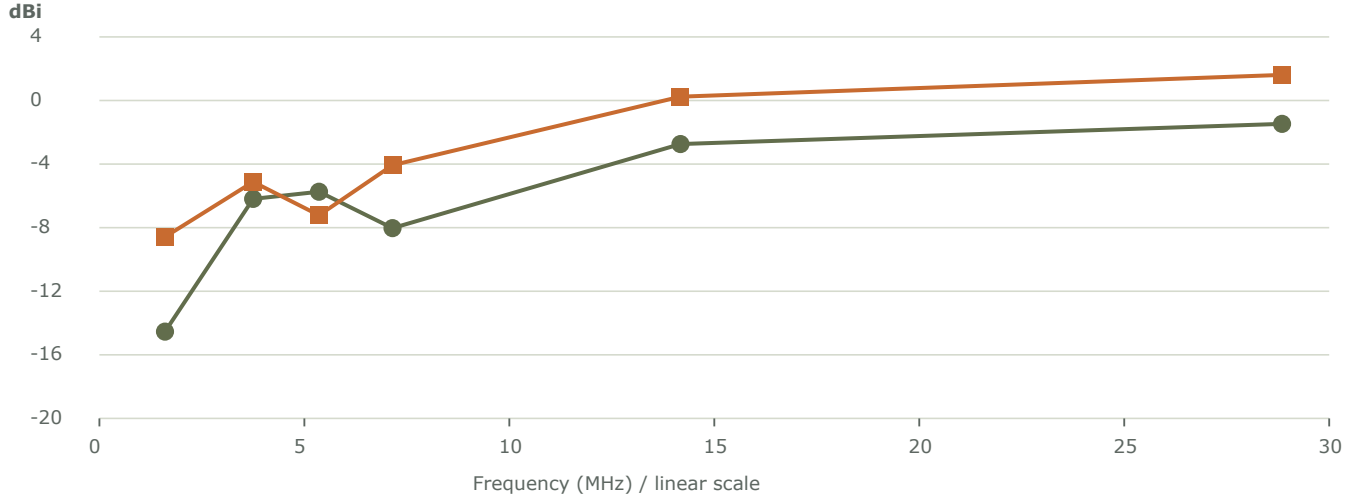
The new gain comparison on page 5 uses all current band samples, including the actual 108 ft HPD radiator cases. No long-counterpoise gain dataset is present in this release. Do not transfer a long-counterpoise gain claim to these plots.

MODELED GAIN / NEC-4.2

All 24 current TD 2.0 / HPD samples | Absolute peak gain in dBi

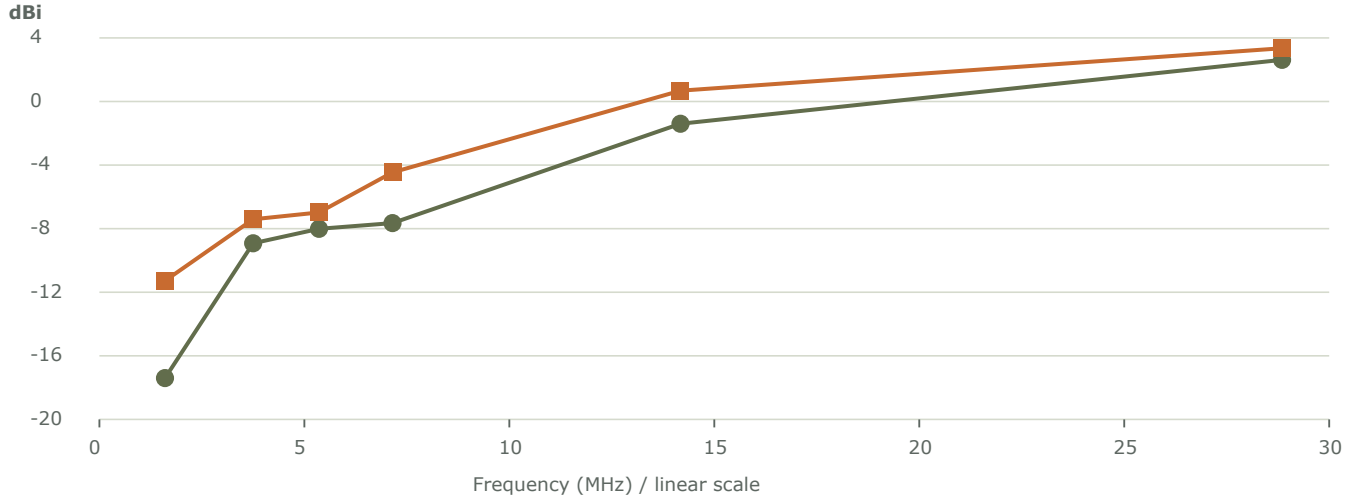
● **STANDARD: 60 ft radiator legs** ■ **HPD: 108 ft radiator legs**

TERMINATED INVERTED V / 180-DEGREE OPENING



Band / MHz	1.600 MHz	3.750 MHz	5.357 MHz	7.150 MHz	14.175 MHz	28.850 MHz
Standard / dBi	-14.54	-6.19	-5.74	-8.03	-2.74	-1.47
HPD / dBi	-8.58	-5.12	-7.22	-4.07	+0.24	+1.61

TERMINATED SLOPING V / 90-DEGREE OPENING



Band / MHz	1.600 MHz	3.750 MHz	5.357 MHz	7.150 MHz	14.175 MHz	28.850 MHz
Standard / dBi	-17.40	-8.92	-8.01	-7.65	-1.40	+2.62
HPD / dBi	-11.28	-7.41	-6.98	-4.46	+0.68	+3.35

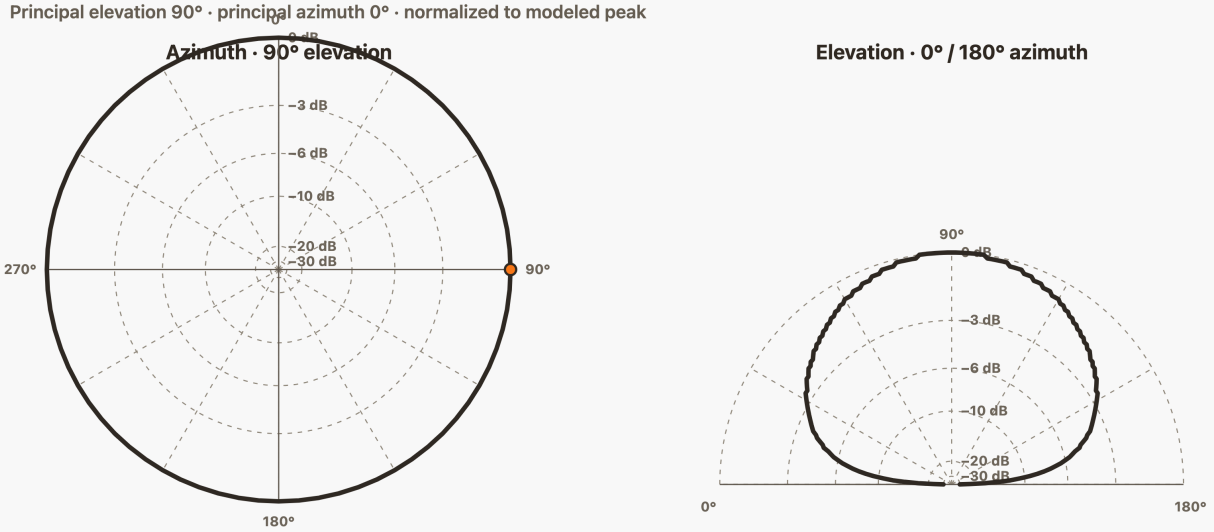
1.600 MHz is outside the documented 1.8-54 MHz range. Markers are simulated samples; connecting lines are visual guides, not a continuous simulated sweep. Peak direction may change. Both systems: 25 ft apex, 1 ft endpoints, 25 ft return legs, ideal 9:1 terminal reference. Transformer/coax losses excluded; not measured installed performance. No long-counterpoise cases in this dataset.
SOURCE: CURRENT TD2 NEC LIBRARY / 29 OCT 2026

INVERTED V / STANDARD WIRES

80 m / 3.750 MHz and 40 m / 7.150 MHz | 180-degree plan opening

CHA TD 2.0 terminated inverted V, 60-foot radiator legs · 80m

Principal elevation 90° · principal azimuth 0° · normalized to modeled peak



Frequency: 3.750 MHz Peak NEC gain: -6.19 dBi F/S: 0.0 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

CHAMELEON ANTENNA · ENGINEERING EDUCATION

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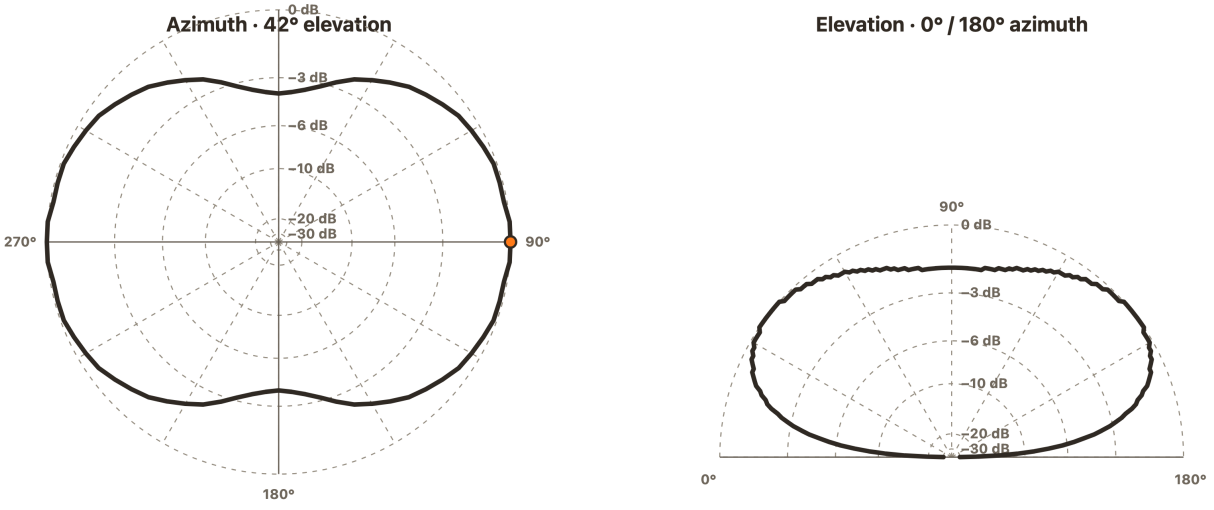
CHA TD 2.0 terminated inverted V, 60-foot radiator legs · 40m

Principal elevation 42° · principal azimuth 0° · normalized to modeled peak



Frequency: 7.150 MHz Peak NEC gain: -8.03 dBi F/S: 3.9 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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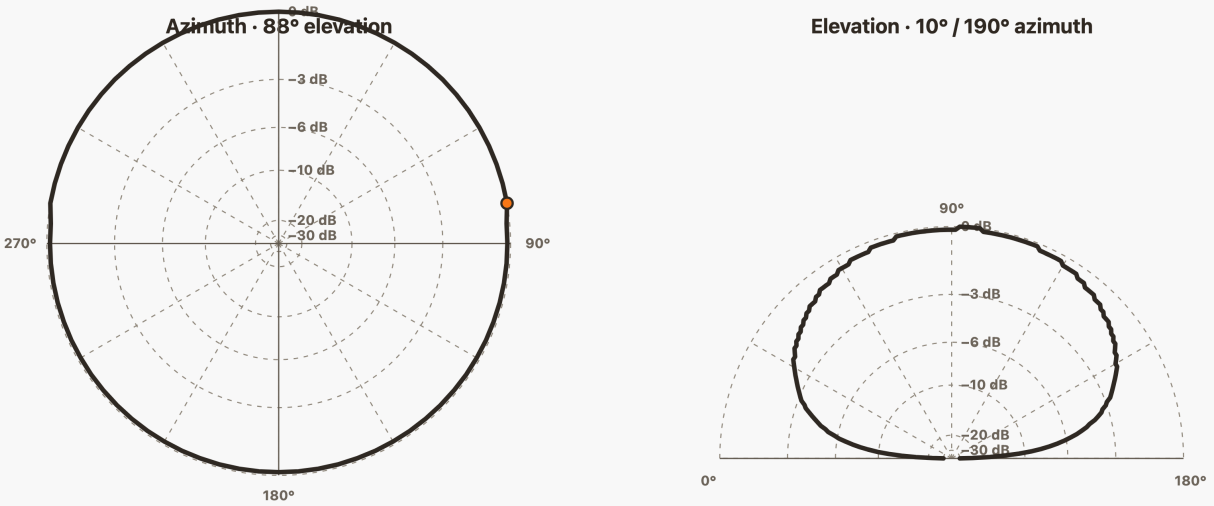
Existing NEC curves/data preserved; HPD title sizing fitted. Model assumptions and limits: page 3.

SLOPING V / STANDARD WIRES

80 m / 3.750 MHz and 40 m / 7.150 MHz | 90-degree plan opening

CHA TD 2.0 terminated sloping V, 90-degree opening, 60-foot radiator legs · 80m

Principal elevation 88° · principal azimuth 10° · normalized to modeled peak



Frequency: 3.750 MHz Peak NEC gain: -8.92 dBi F/S: 0.0 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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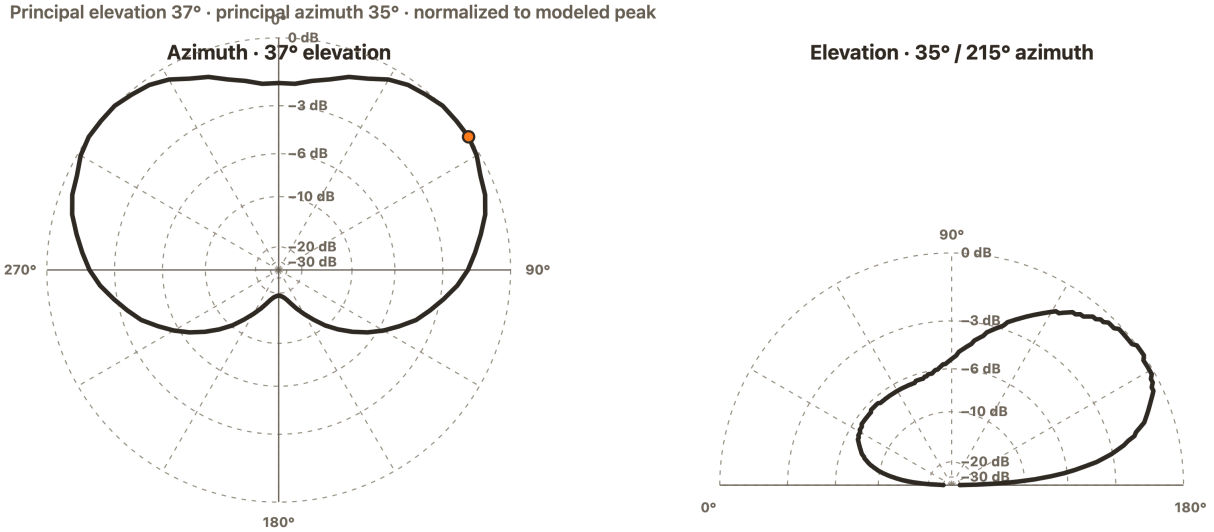
CHA TD 2.0 terminated sloping V, 90-degree opening, 60-foot radiator legs · 40m

Principal elevation 37° · principal azimuth 35° · normalized to modeled peak



Frequency: 7.150 MHz Peak NEC gain: -7.65 dBi F/S: 0.2 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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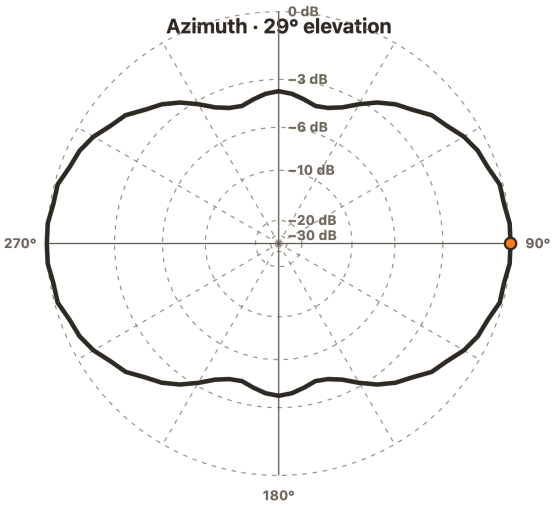
Existing NEC curves/data preserved; HPD title sizing fitted. Model assumptions and limits: page 3.

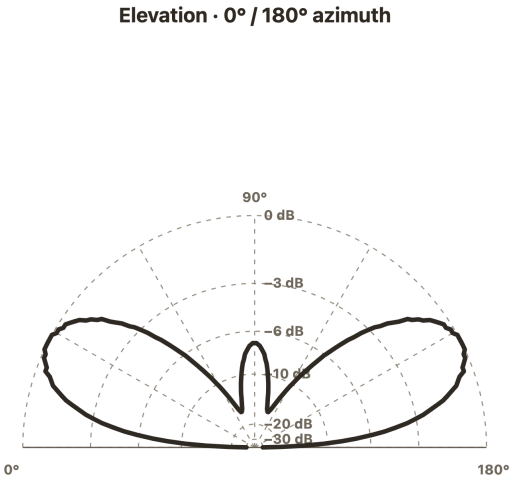
20 m / GEOMETRY COMPARISON

14.175 MHz | Inverted V above; 90-degree sloping V below | Standard 60 ft legs

CHA TD 2.0 terminated inverted V, 60-foot radiator legs · 20m

Principal elevation 29° · principal azimuth 0° · normalized to modeled peak





Frequency: 14.175 MHz Peak NEC gain: -2.74 dBi F/S: 3.6 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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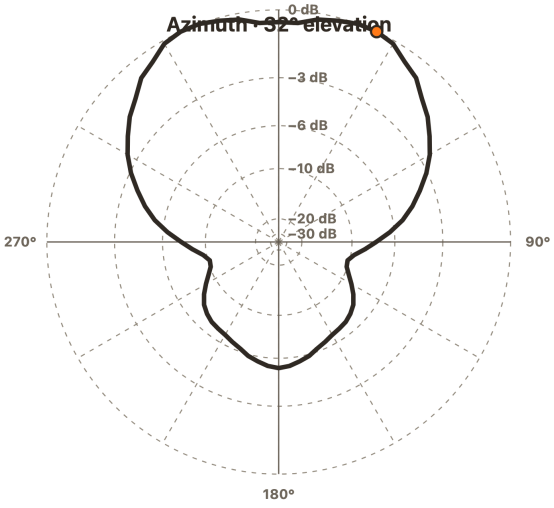
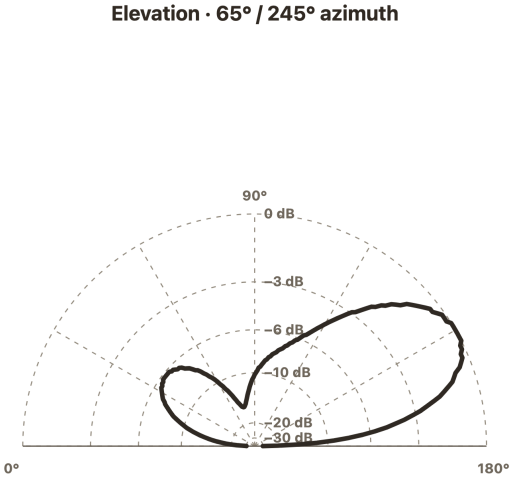
CHA TD 2.0 terminated sloping V, 90-degree opening, 60-foot radiator legs · 20m

Principal elevation 32° · principal azimuth 65° · normalized to modeled peak





Frequency: 14.175 MHz Peak NEC gain: -1.40 dBi F/S: 3.1 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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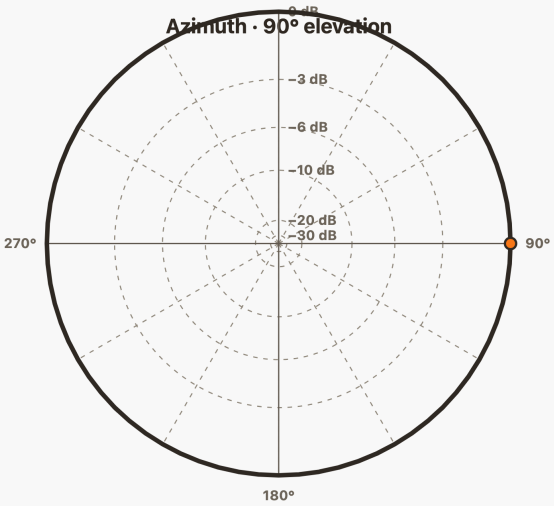
Existing NEC curves/data preserved; HPD title sizing fitted. Model assumptions and limits: page 3.

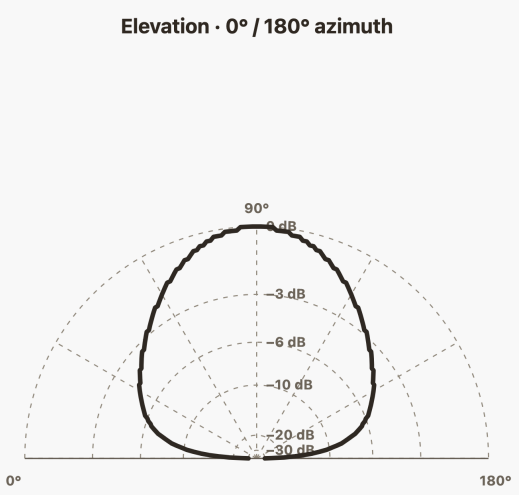
INVERTED V / HPD WIRES

80 m / 3.750 MHz and 40 m / 7.150 MHz | 108 ft radiator legs; 25 ft returns

CHA TD 2.0 with CHA HPD 108-foot radiator legs, terminated inverted V · 80m

Principal elevation 90° · principal azimuth 0° · normalized to modeled peak





Frequency: 3.750 MHz Peak NEC gain: -5.12 dBi F/S: 0.0 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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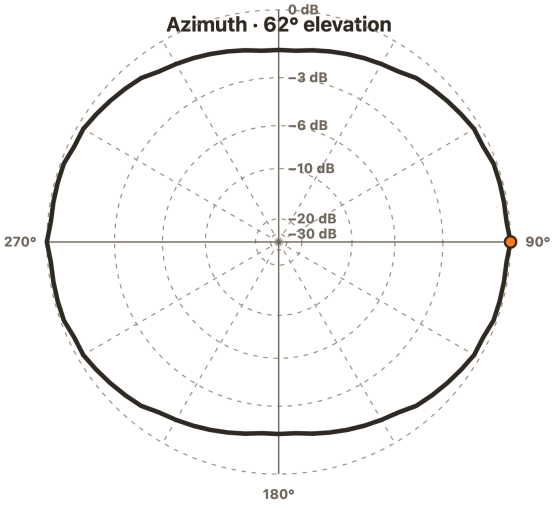
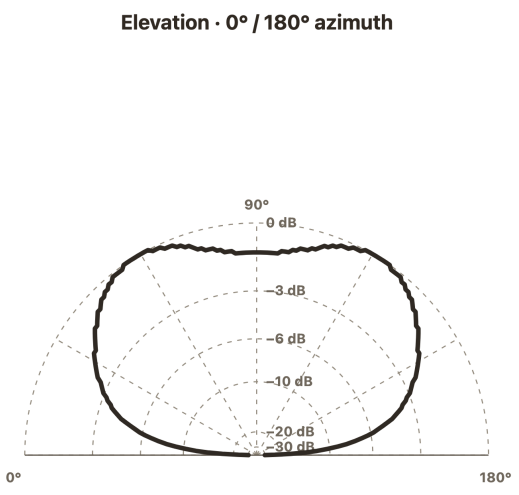
CHA TD 2.0 with CHA HPD 108-foot radiator legs, terminated inverted V · 40m

Principal elevation 62° · principal azimuth 0° · normalized to modeled peak





Frequency: 7.150 MHz Peak NEC gain: -4.07 dBi F/S: 1.6 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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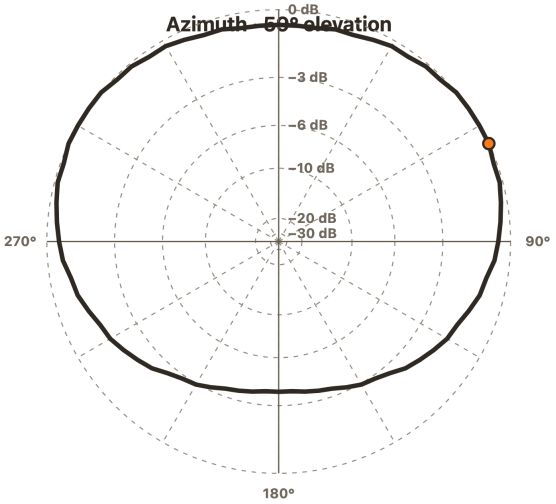
Existing NEC curves/data preserved; HPD title sizing fitted. Model assumptions and limits: page 3.

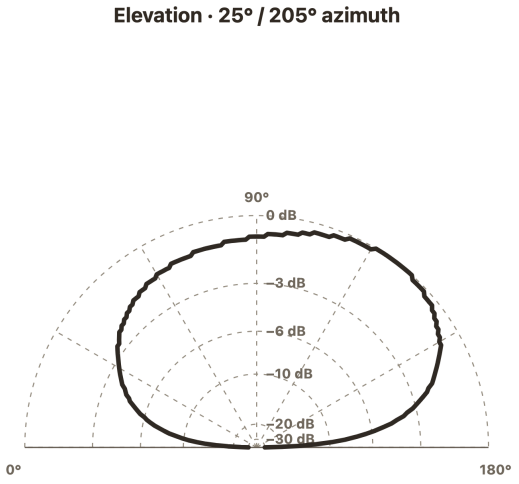
SLOPING V / HPD WIRES

80 m / 3.750 MHz and 40 m / 7.150 MHz | 108 ft radiator legs; 25 ft returns

CHA TD 2.0 with CHA HPD 108-foot radiator legs, terminated 90-degree sloping V · 80m

Principal elevation 59° · principal azimuth 25° · normalized to modeled peak





Frequency: 3.750 MHz Peak NEC gain: -7.41 dBi F/S: 0.4 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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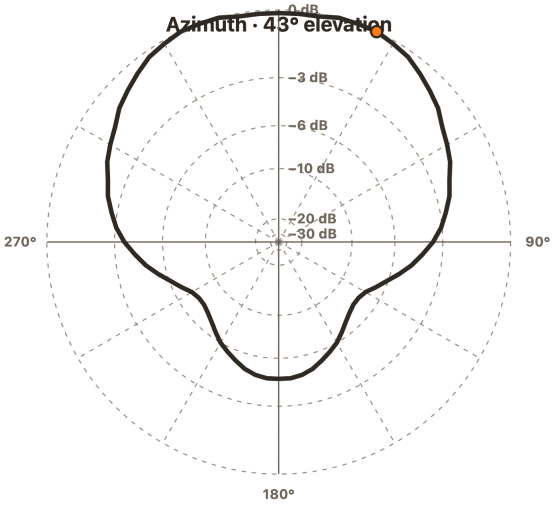
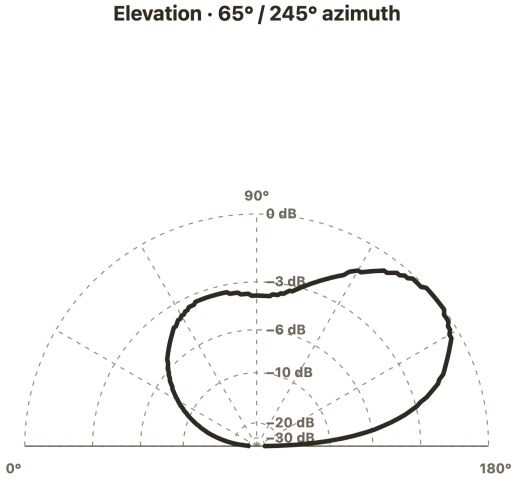
CHA TD 2.0 with CHA HPD 108-foot radiator legs, terminated 90-degree sloping V · 40m

Principal elevation 43° · principal azimuth 65° · normalized to modeled peak





Frequency: 7.150 MHz Peak NEC gain: -4.46 dBi F/S: 1.8 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

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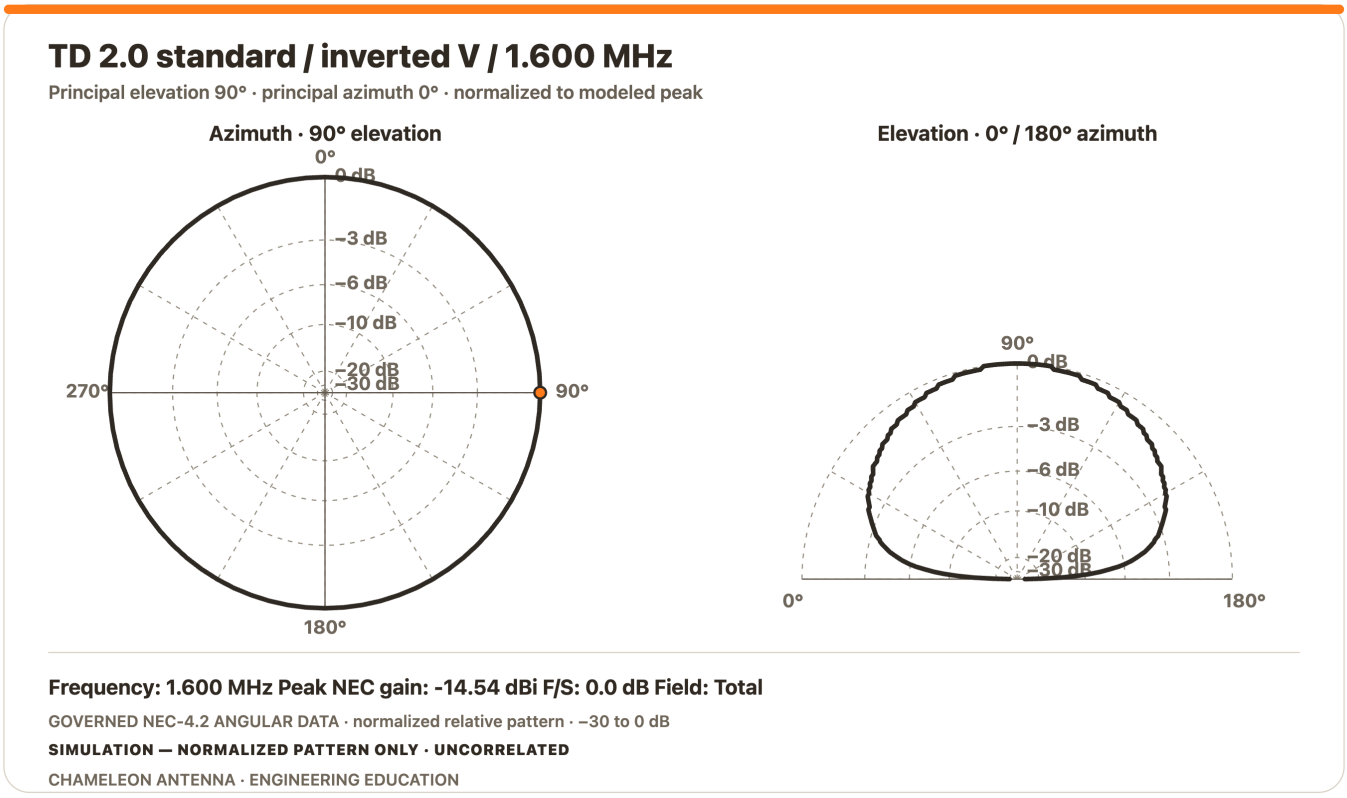
Existing NEC curves/data preserved; HPD title sizing fitted. Model assumptions and limits: page 3.

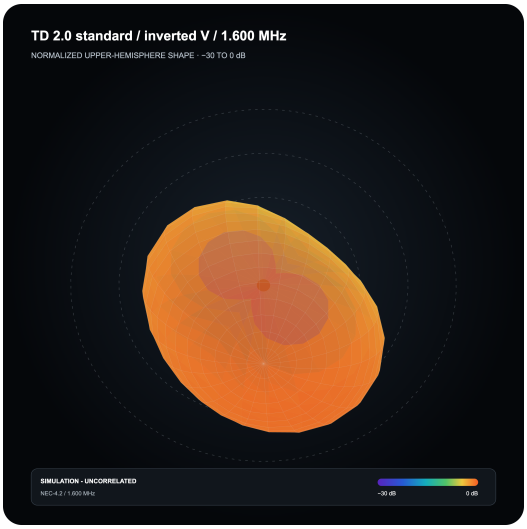
1.600 MHz / STANDARD WIRES

TD 2.0 standard / inverted V

PEAK NEC GAIN -14.54 dBi

25 ft transformer apex / 1 ft low terminations / two 25 ft return wires. 60 ft radiator legs; 180-degree plan opening.





3D reference view
Normalized pattern shape. Open the interactive library to rotate this exact model.

Numerical check
Finer-mesh control passed: peak-gain change 0.05 dB; impedance change 1.03%.

Modeling boundary: 1.600 MHz is outside the documented 1.8-54 MHz range. Ground and modeled termination losses are included. Ideal conductors; transformer/coax losses and nearby structures are excluded. This is not measured performance, SWR, efficiency or a communications-range claim.

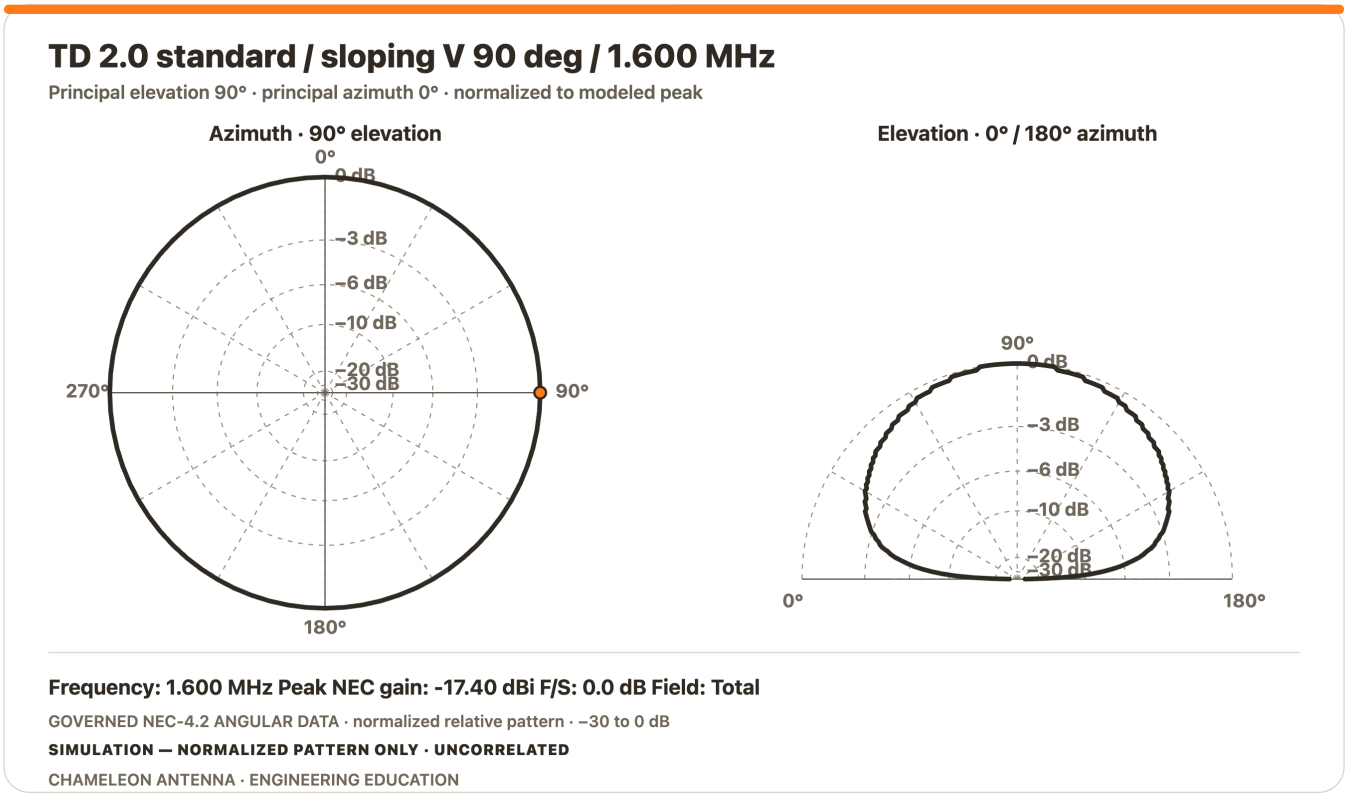
OPEN 2D + INTERACTIVE 3D LIBRARY

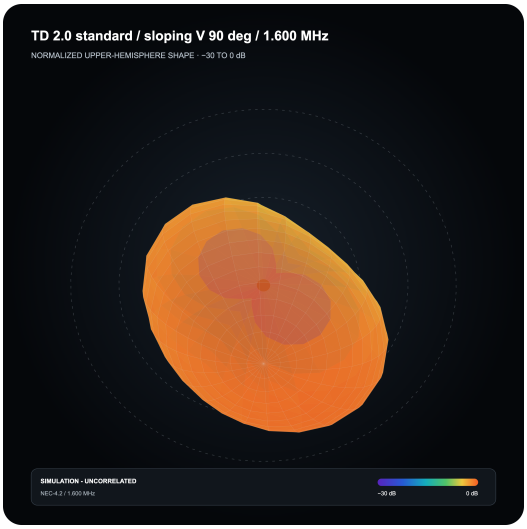
1.600 MHz / STANDARD WIRES

TD 2.0 standard / sloping V 90 deg

PEAK NEC GAIN -17.40 dBi

25 ft transformer apex / 1 ft low terminations / two 25 ft return wires. 60 ft radiator legs; 90-degree plan opening.





3D reference view
Normalized pattern shape. Open the interactive library to rotate this exact model.

Numerical check
Finer-mesh control passed: peak-gain change 0.04 dB; impedance change 0.84%.

Modeling boundary: 1.600 MHz is outside the documented 1.8-54 MHz range. Ground and modeled termination losses are included. Ideal conductors; transformer/coax losses and nearby structures are excluded. This is not measured performance, SWR, efficiency or a communications-range claim.

OPEN 2D + INTERACTIVE 3D LIBRARY

1.600 MHz / HPD WIRES

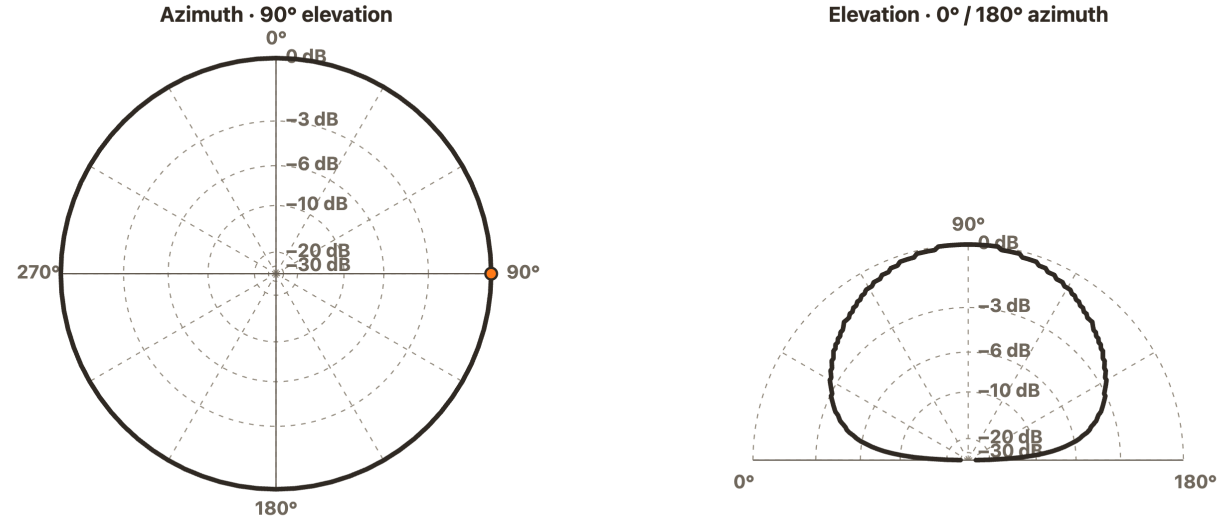
TD 2.0 + HPD / inverted V

PEAK NEC GAIN -8.58 dBi

25 ft transformer apex / 1 ft low terminations / two 25 ft return wires. 108 ft radiator legs; 180-degree plan opening.

TD 2.0 + HPD / inverted V / 1.600 MHz

Principal elevation 90° · principal azimuth 0° · normalized to modeled peak

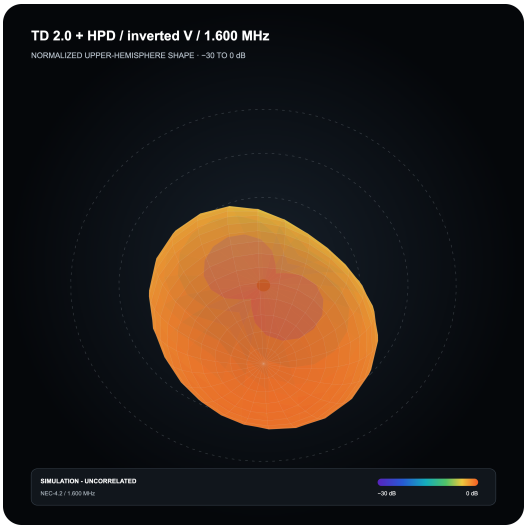


Frequency: 1.600 MHz Peak NEC gain: -8.58 dBi F/S: 0.0 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

CHAMELEON ANTENNA · ENGINEERING EDUCATION



3D reference view
Normalized pattern shape. Open the interactive library to rotate this exact model.

Numerical check
Finer-mesh control passed: peak-gain change 0.04 dB; impedance change 1.05%.

Modeling boundary: 1.600 MHz is outside the documented 1.8-54 MHz range. Ground and modeled termination losses are included. Ideal conductors; transformer/coax losses and nearby structures are excluded. This is not measured performance, SWR, efficiency or a communications-range claim.

OPEN 2D + INTERACTIVE 3D LIBRARY

1.600 MHz / HPD WIRES

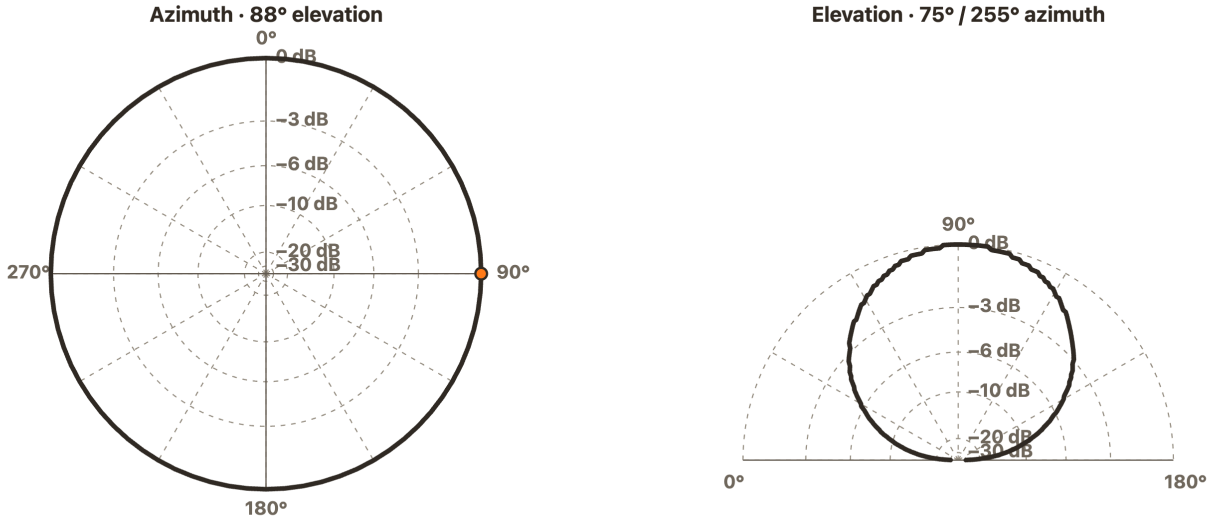
TD 2.0 + HPD / sloping V 90 deg

PEAK NEC GAIN -11.28 dBi

25 ft transformer apex / 1 ft low terminations / two 25 ft return wires. 108 ft radiator legs; 90-degree plan opening.

TD 2.0 + HPD / sloping V 90 deg / 1.600 MHz

Principal elevation 88° · principal azimuth 75° · normalized to modeled peak

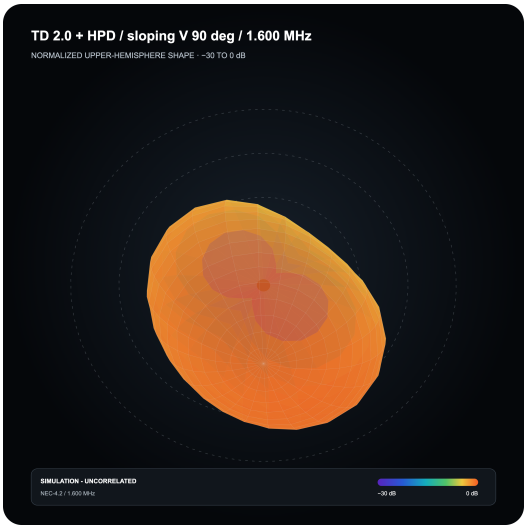


Frequency: 1.600 MHz Peak NEC gain: -11.28 dBi F/S: 0.0 dB Field: Total

GOVERNED NEC-4.2 ANGULAR DATA · normalized relative pattern · −30 to 0 dB

SIMULATION — NORMALIZED PATTERN ONLY · UNCORRELATED

CHAMELEON ANTENNA · ENGINEERING EDUCATION



3D reference view
Normalized pattern shape. Open the interactive library to rotate this exact model.

Numerical check
Finer-mesh control passed: peak-gain change 0.04 dB; impedance change 0.86%.

Modeling boundary: 1.600 MHz is outside the documented 1.8-54 MHz range. Ground and modeled termination losses are included. Ideal conductors; transformer/coax losses and nearby structures are excluded. This is not measured performance, SWR, efficiency or a communications-range claim.

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