174-230MHz TV Panel Arrays

Product Description

This series of panel antennas has been designed for three sided arrays and provides a customized horizontally polarized coverage for single or multistation use in Band III. Model 658 has a nominal gain of 10dBd.

Construction from thick walled tube and solid steel bar gives a heavy duty panel which is designed for operation in very harsh environments. This design also ensures ideal hot dip galvanizing for optimum corrosion protection. Colours are available for aviation visibility and even further corrosion protection.
The coaxial feed system can be fully pressurized and features twin 'O' ring seals on the feed point insulators. The panels are tolerant of light icing (radomes are available for use under heavy icing conditions down to -40 degrees C) and has a very low VSWR (typically less than 1.05:1) over the entire 174 - 230MHz band depending on the system configuration.
These panels are ideal array elements for triangular mast with a 1.2m face and can provide omnidirectional patterns with less than ±1dB variation. By varying the number and positions of panels and feed amplitude/phase, patterns can be customized to optimize coverage over a given service area. The use of three panels around the structure offers significant cost and wind load reduction over four sided arrangements.

Features

- Suitable for multiple channel use
- Three sided array design - lower cost
- Cyclone rated
- Rugged galvanized steel construction for maximum corrosion protection
- Low wind load
- Pressurizable coaxial feed
- Horizontal polarization
- Array design allows a variety of standard horizontal radiation patterns as well as customised patterns, contact RFS for details
- Medium power, unpressurized version available
- Temperature range -40 to +60 degrees C available

Antenna Specifications

Frequency Range, MHz	174 - 230
Operating Frequency Ranges, MHz	174 - 202, 202 - 230
Polarization	Horizontal
Number of Channels	Multichannel
Nominal Gain (Mid-band), dBd	10.0
Half Power Beamwidth Azimuth, degrees	77
Return Loss, dB	23
Input Connector	7-16 DIN; 7/8" EIA Flange
Power Rating, kW	3; 4
Impedance, ohms	50 unbalanced
Weight, kg (lb)	75 (166)
Mounting (Standard), mm (in)	4 x 12mm (1/2) bolts
Effective Area Front (full antenna), sq m (sq ft)	0.80 (8.61)
Effective Area Side (full antenna), sq m (sq ft)	1.10 (11.83)
Design Wind Speed (max), km/h (mph)	240 (150)
Pressurization Operational, kPa (psi)	10 - 35 (1.5 - 5) 7/8" EIA Version
Pressurization Test, kPa (psi)	100 (15) 7/8" EIA Version
Material - Insulators	PTFE
Material - Radiators	Hot Dipped Galvanised steel
Material - Reflecting Screen	Hot Dipped Galvanised steel

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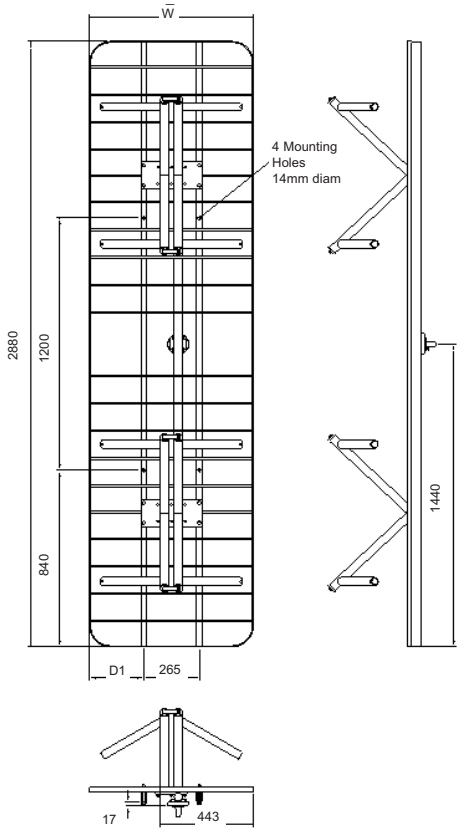
Antenna Array Specifications

Number of bays	1			2			3		
Panels per bay	1	2	3	1	2	3	1	2	3
Vertical Spacing between Bays (m)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
HRP Directivity (dBd)	6.3	3.3	1.5	6.3	3.3	1.5	6.3	3.3	1.5
VRP Directivity (dBd)	4.0	4.0	4.0	7.0	7.0	7.0	8.8	8.8	8.8
Gain (dbd)	10.3	7.3	5.5	13.4	10.4	8.6	15.1	12.1	10.3
Gain (times)	10.8	5.4	3.6	21.7	10.8	7.2	32.4	16.2	10.7
Weight (kg)	75	185	265	210	370	530	315	555	795
Weight (lbs)	165	408	584	463	816	1169	695	1224	1753
Antenna Aperture L (m)	3.4	3.4	3.4	6.8	6.8	6.8	10.2	10.2	10.2
Antenna Aperture L (ft)	11.2	11.2	11.2	22.3	22.3	22.3	33.5	33.5	33.5
Effective area (m2)	1.1	1.9	3.0	2.2	3.8	6.0	3.3	5.7	9.0
Effective area (ft2)	11.8	20.5	32.3	23.7	40.9	64.6	35.5	61.4	96.9
Windload @ 50m/s (kN)	1.7	2.9	4.6	3.4	5.8	9.2	5.0	8.7	13.8
Windload @ 50m/s (lbs)	378	654	1032	757	1307	2064	1135	1961	3096

Number of bays	4			6			8		
Panels per bay	1	2	3	1	2	3	1	2	3
Vertical Spacing between Bays (m)	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2	3.2
HRP Directivity (dBd)	6.3	3.3	1.5	6.3	3.3	1.5	6.3	3.3	1.5
VRP Directivity (dBd)	9.7	9.7	9.7	11.4	11.4	11.4	12.6	12.6	12.6
Gain (dbd)	16.0	13.0	11.2	17.7	14.7	12.9	18.9	15.9	14.1
Gain (times)	39.9	20.0	13.2	59.0	29.5	19.6	78.2	39.1	25.9
Weight (kg)	420	740	1060	630	1110	1590	840	1480	2120
Weight (lbs)	926	1632	2337	1389	2448	3506	1852	3263	4675
Antenna Aperture L (m)	13.6	13.6	13.6	20.4	20.4	20.4	27.2	27.2	27.2
Antenna Aperture L (ft)	44.6	44.6	44.6	66.9	66.9	66.9	89.2	89.2	89.2
Effective area (m2)	4.4	7.6	12.0	6.6	11.4	18.0	8.8	15.2	24.0
Effective area (ft2)	47.4	81.8	129.2	71.0	122.7	193.8	94.7	163.6	258.3
Windload @ 50m/s (kN)	6.7	11.6	18.4	10.1	17.4	27.5	13.5	23.3	36.7
Windload @ 50m/s (lbs)	1513	2614	4127	2270	3921	6191	3027	5228	8255

Note: Tower sections and interface steelwork antenna system to tower is not included in load calculations.

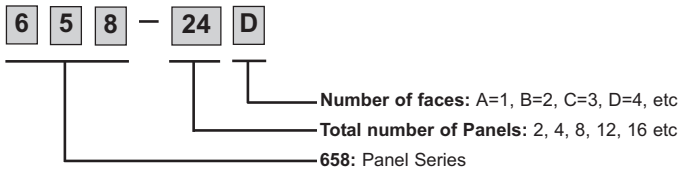
Antenna Panel Dimensionss



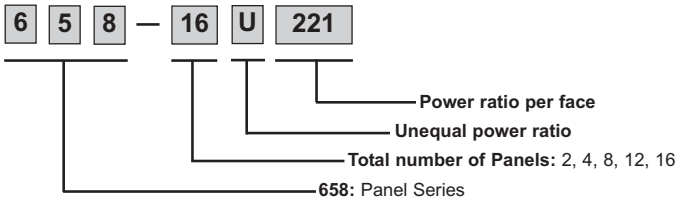
	W	D1
174-202 MHz PANEL	900	305
202-230 MHz PANEL	780	245

Nomenclature

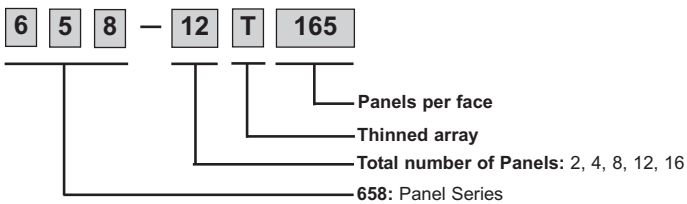
Equal Split



Unequal Split



Thinned array



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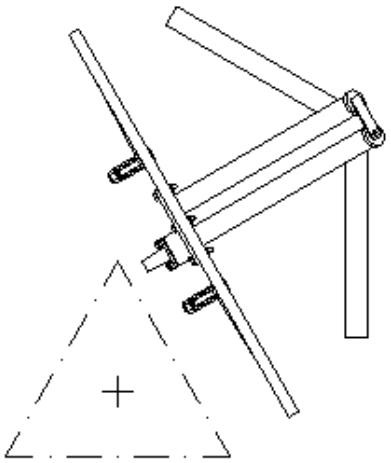
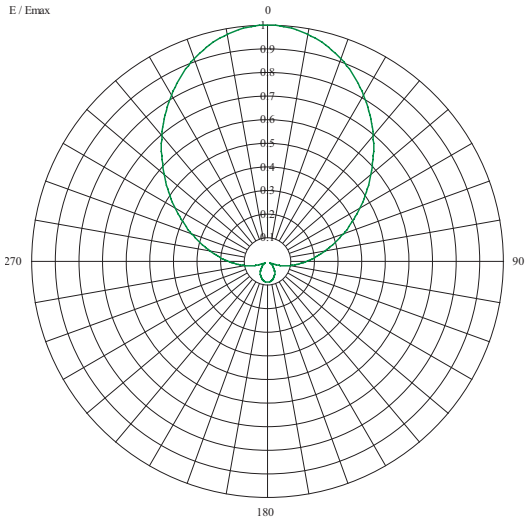
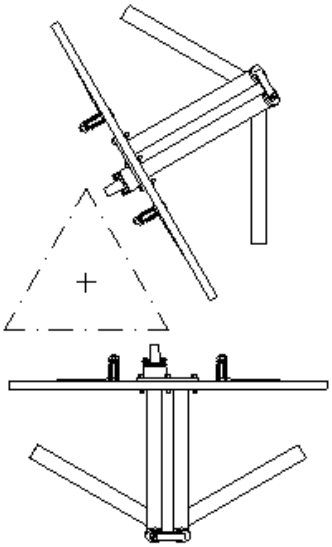
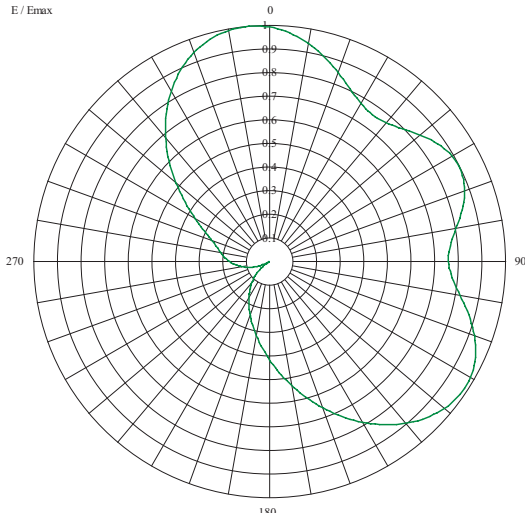
Horizontal patterns



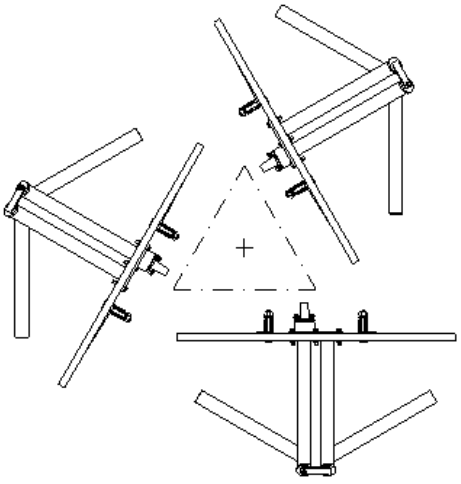


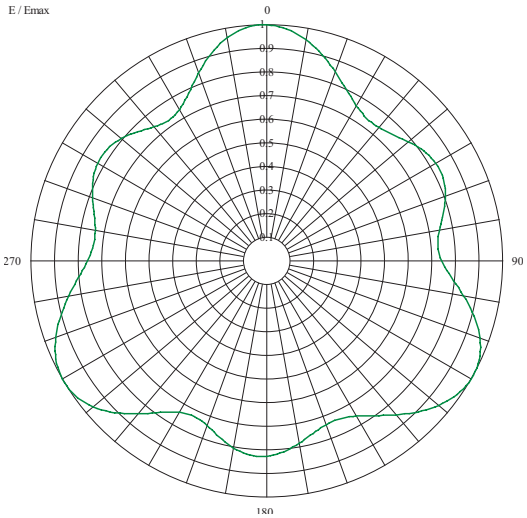
HRP 658-A 202MHz 6.32dBd





HRP 658-B 202MHz 3.31dBd





HRP 658-C 202MHz 1.53dBd

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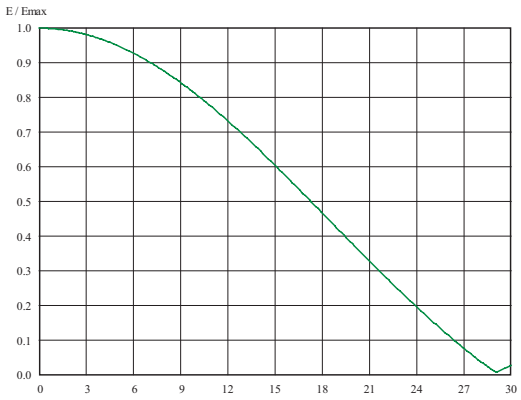
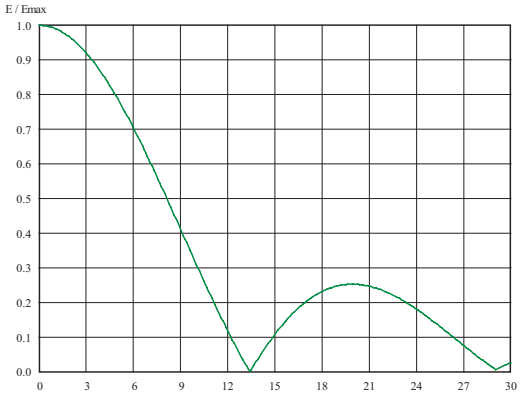
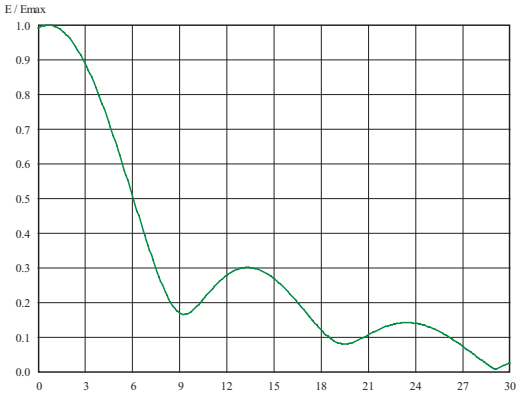
Vertical patterns



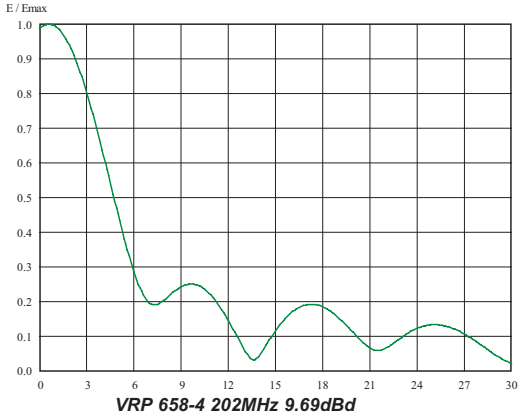
VRP 658-1 202MHz 4.01dBd



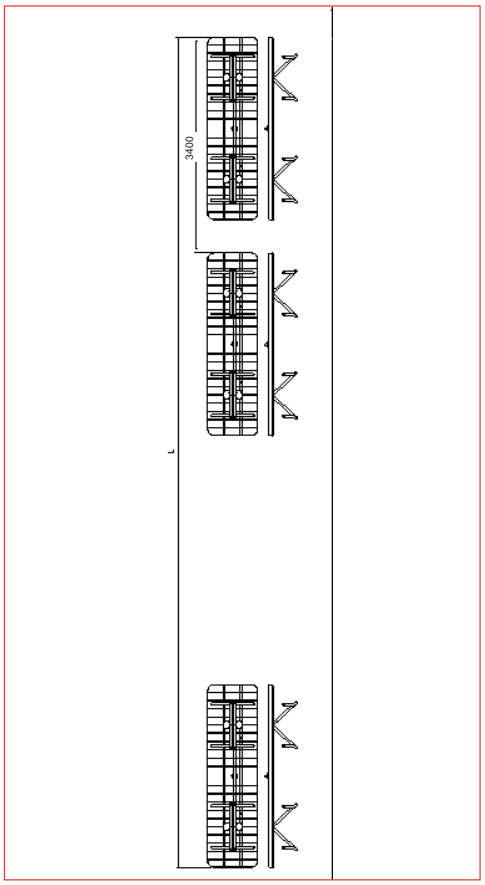
VRP 658-2 202MHz 7.04dBd

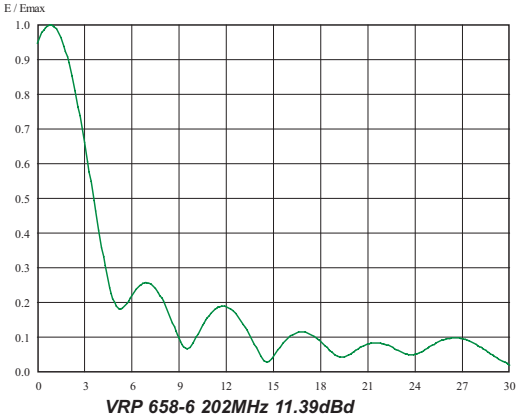


VRP 658-3 202MHz 8.51dBd

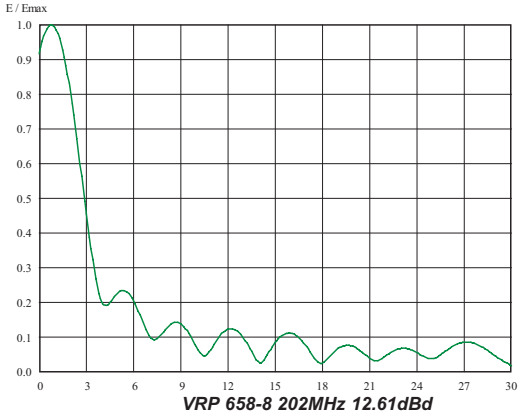


VRP 658-4 202MHz 9.69dBd





VRP 658-6 202MHz 11.39dBd



VRP 658-8 202MHz 12.61dBd