4G/5G LTE MiMo Transit Antenna Range

TRNM[G]-7-60-NJ

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- Standard four hole rail fixing
- 2x2 MiMo 4G/5G LTE / WiFi 2.4/5.0
- Optional Integrated GPS / GNSS / Beidou antenna

The TRNM[G] MiMo antenna series is designed specifically for use on trains, trams and buses underground or overground. Incorporating two elements operating wideband across all frequencies from 698MHz to 6000MHz the TRNM[G] range is versatile and future-proof.

The TRNM[G] series supports 2x2 MiMo across 4G/ 5G LTE frequencies from 698MHz to 6000MHz all in one housing. Alternatively the main elements can be used for 2.4/5.0 GHz WLAN.

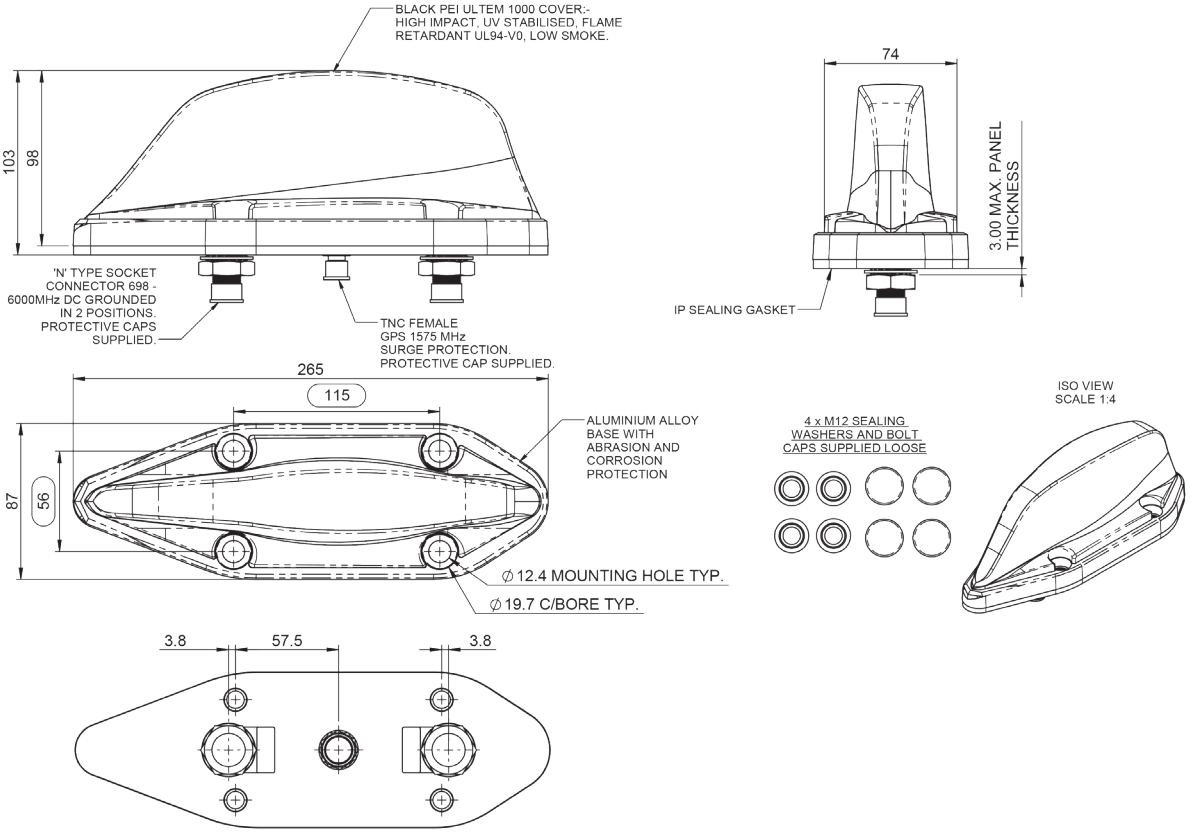
The TRNM[G] has two DC grounded radiating elements, in versions with a GPS module it is protected by a gas discharge surge arrestor.

Housed in a high impact, flame retardant Ultem housing, the TRNM[G] series is weatherproof ensuring that the antenna's performance is never compromised.

The TRNM[G] antenna meets stringent industry standards including EN50155, EN45545-2 (HL 1-3), EN50124-1 (40 KA / 100 MS) and is ingress protected to IP69k when properly installed.

Technical Drawing

TRNMG-7-60-NJ Shown



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TRNM[G]-7-60-NJ

PANORAMA ANTENNAS

Product Data

Part No.			
		TRNM-7-60-NJ	TRNMG-7-60-NJ
Electrical Data			
Frequency Range (MHz)		2x 698-960 / 1427-6000 MHz	
Polarisation		Vertical	
Typical VSWR*		< 2.5:1	
Correlation Co-Efficient*		<0.1	
Typical Isolation*		>15dB	
Pattern		Omni-directional	
Impedance		50Ω	
Max Input Power (W)		60	
GPS Data			
Frequency Range (MHz)		-	1559-1612
Impedance		-	50Ω
LNA Gain		-	26dB ± 3
Polarisation		-	Rigth Hand Circular
Operating Voltage		-	3-5V DC
Current (Typical)		-	17mA
Mechanical Data			
Dimensions (mm)	Height (n/inc pad)	98 (3.86”)	
	Width	87 (3.42”)	
	Length	265 (10.4”)	
Environmental Specification			
Operating Temp (°C)		-40° / +85°C (-40° / +185°F)	
Radome Material		Ultem 1000	
Radome Flame Retardance Rating		V0 (UL 94)	
Base Material		Cast Aluminium (corrosion protected & powder coated)	
Ingress Protection		IP67 (Report No. 98883) or IP69K when installed in accordance with SW3 - 988 (Report No. 103439)	
Approvals Data			
Regulatory Approvals		EN50155:2021 (Dry heat & Cooling, Damp Heat, Salt Mist), EN61373:2010 / EN50155:2021 (Shock & Vibration), EN45545:2020- HL3 (flammability), EN50124-1:2017 (40 KA 100 MS)	
Mounting Data			
Fixing		4 × mounting holes to suit M12 bolts	
Termination Data			
Termination	Comms	2x N (female) - DC grounded	
	GPS	-	TNC (female) - surge protected

* Across >90% of relevant bands when measured on a 600 x 600mm (2’ x 2’) ground plane with 1m (3’) of low loss cable

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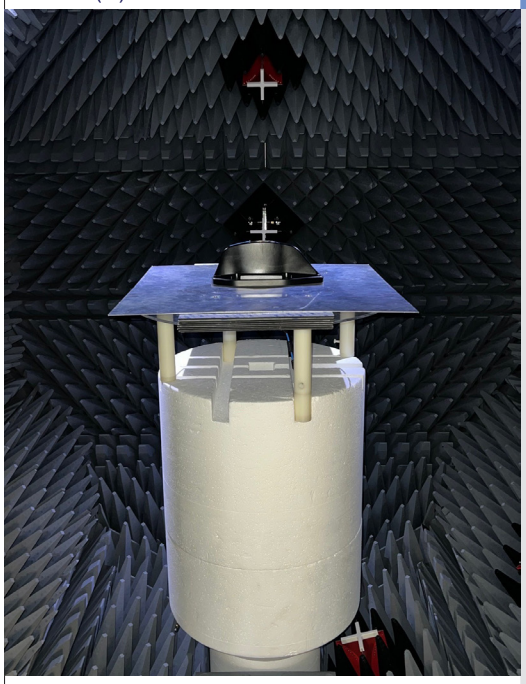
Electrical Data
Ground Plane - Cell

Measurement Conditions

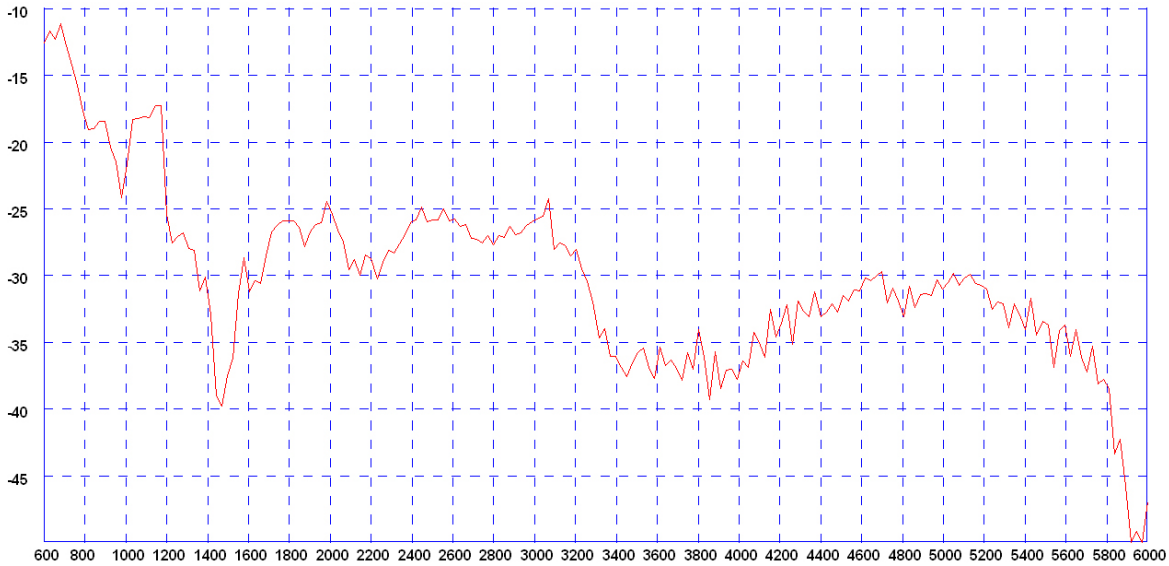
Measured on a 600 x 600mm (2' x 2') ground plane with 1m (3')of low loss cable



4G/5G Antennas

Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
617-698	71, 105	Cell A	5.7	89
		Cell B	6.2	89
699-798	12,13, 14 17,28	Cell A	5.7	72
		Cell B	6.2	92
807- 862	5,19,20,26,27	Cell A	6.7	80
		Cell B	6.2	80
880-960	8	Cell A	7.0	96
		Cell B	6.7	75
1427-1518	11, 21, 74,75,76	Cell A	6.3	94
		Cell B	6.8	91
1710-1920	2,3,4,9,25,35,39,66	Cell A	7.1	83
		Cell B	7.5	90
1920-2170	1,23	Cell A	7.5	91
		Cell B	8.4	96
2300-2400	30,40	Cell A	6.7	95
		Cell B	8.0	93
2496-2690	7,38,41	Cell A	7.4	94
		Cell B	6.8	88
3300-4200	22,42,43,48,77,78	Cell A	7.5	72
		Cell B	7.2	77
4400-5000	79	Cell A	8.3	76
		Cell B	8.7	73

Typical Isolation *



* Isolation measured on a 600 x 600mm (2' x 2') ground plane with 1m (3')of low loss cable

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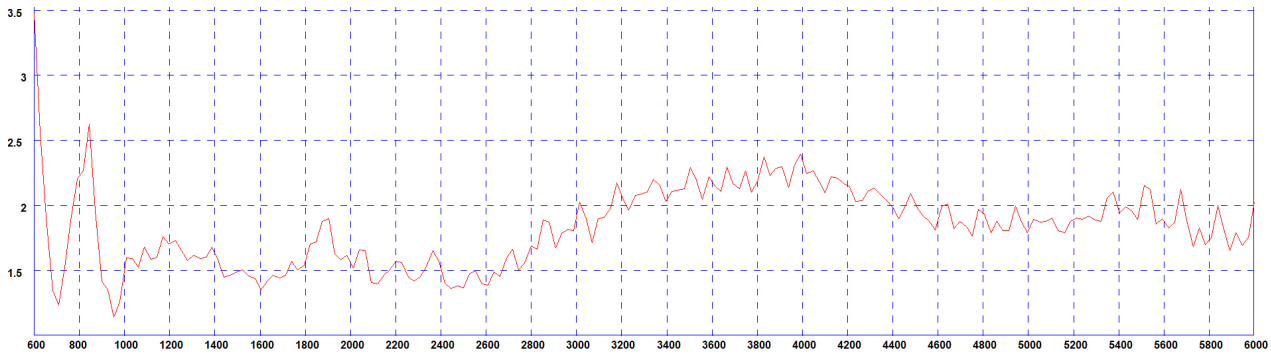
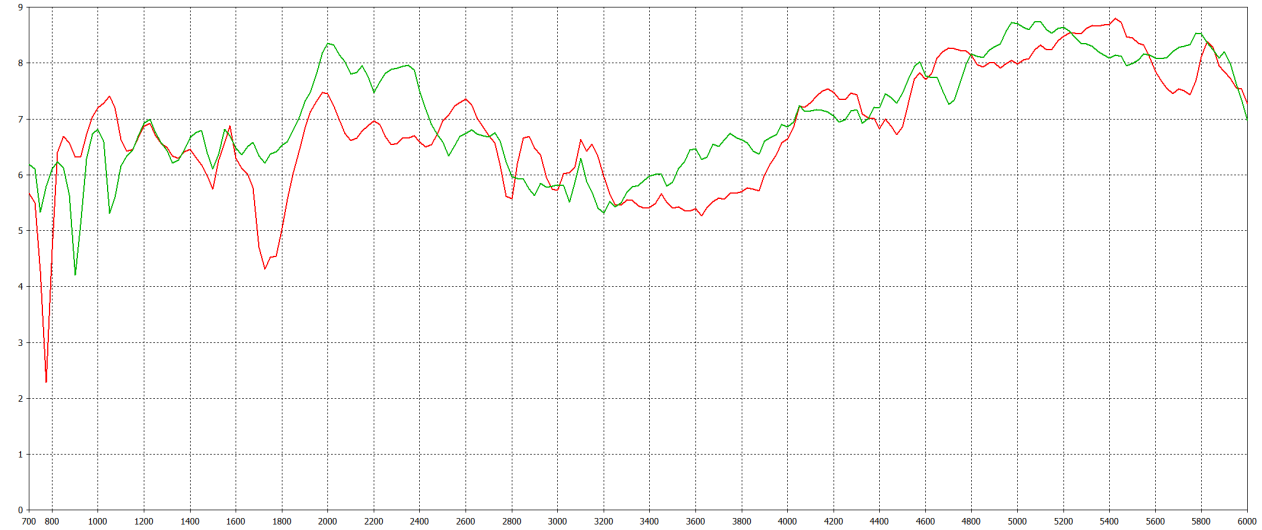
Typical VSWR*



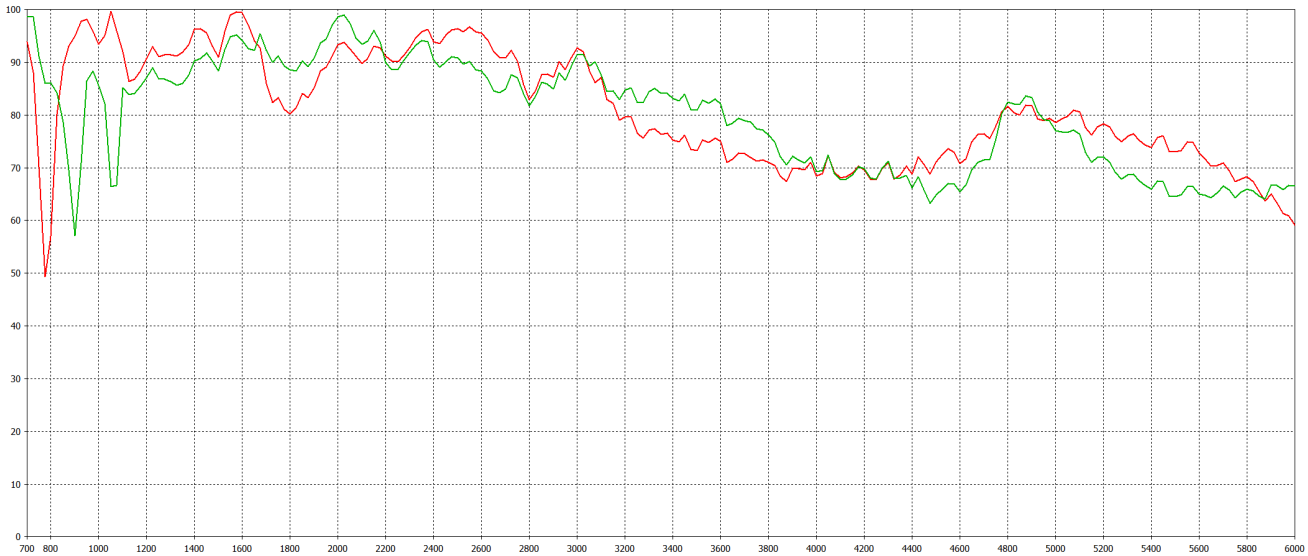
* VSWR measured on a 600 x 600mm (2' x 2') ground plane with 1m (3')of low loss cable

Typical Swept Peak Gain *



* Peak Gain measured on a 600 x 600mm (2' x 2') ground plane without cable

Typical Efficiency*



* Efficiency measured on a 600 x 600mm (2' x 2') ground plane without cable

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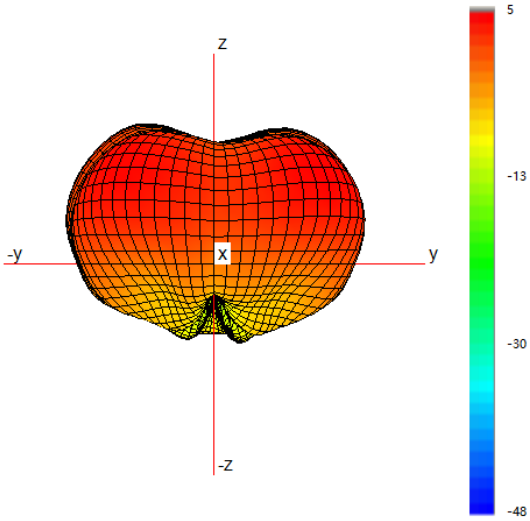
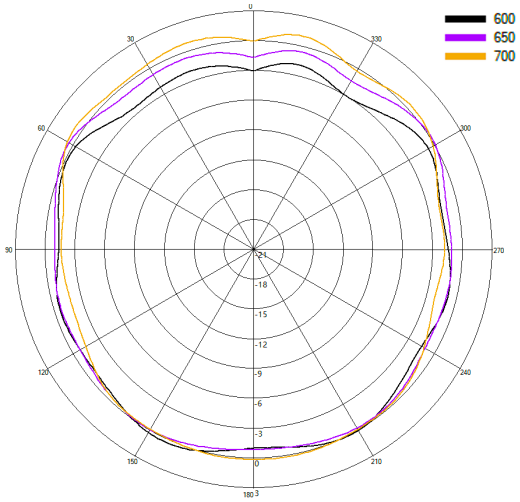
3D Pattern Data - Cell A - Ground Plane

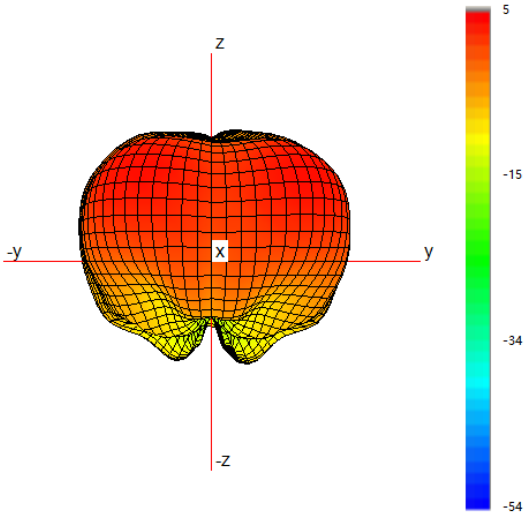
Typical 3D Pattern- Cell A - 650 MHz



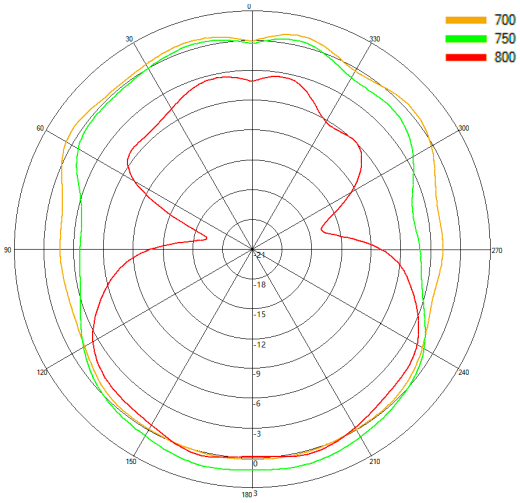
Typical H Plane- Cell A - Patterns- 600-700MHz



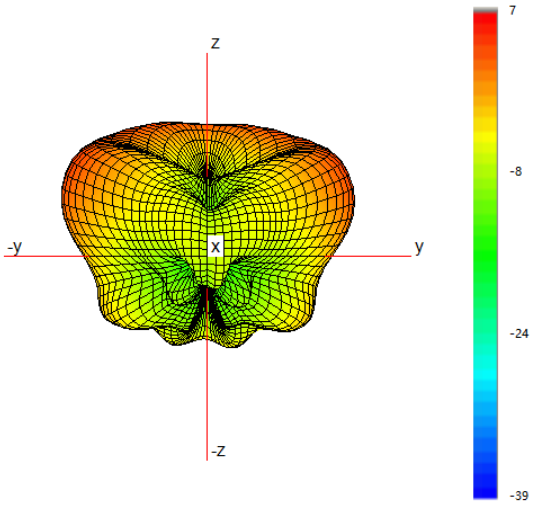
Typical 3D Pattern- Cell A - 750 MHz



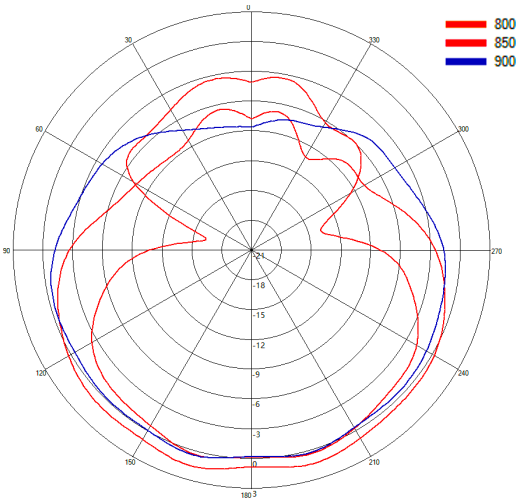
Typical H Plane- Cell A - Patterns- 700-800MHz



Typical 3D Pattern- Cell A - 850 MHz



Typical H Plane- Cell A - Patterns- 800-900MHz



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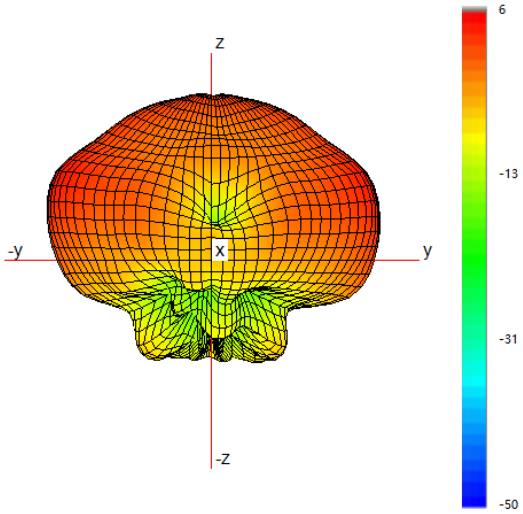
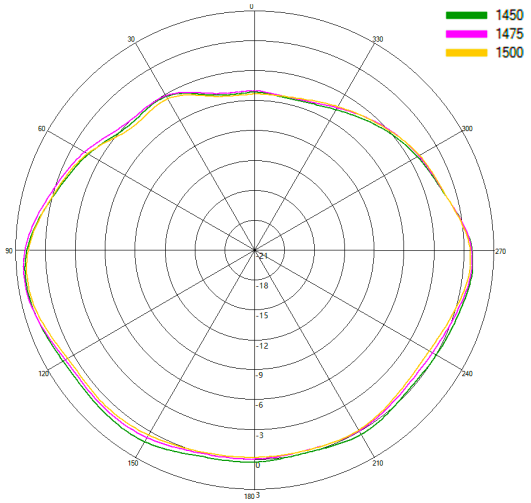
3D Pattern Data - Cell A - Ground Plane

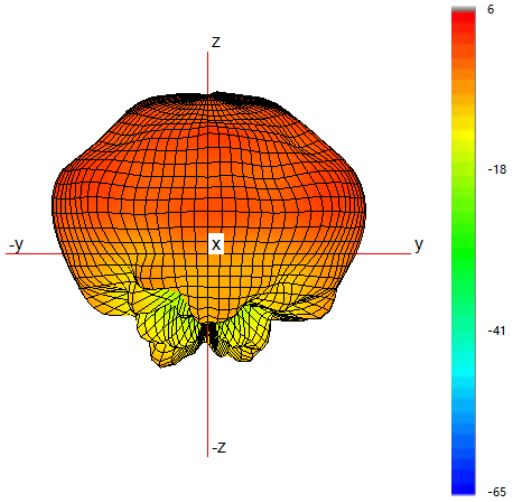
Typical 3D Pattern- Cell A - 1475 MHz



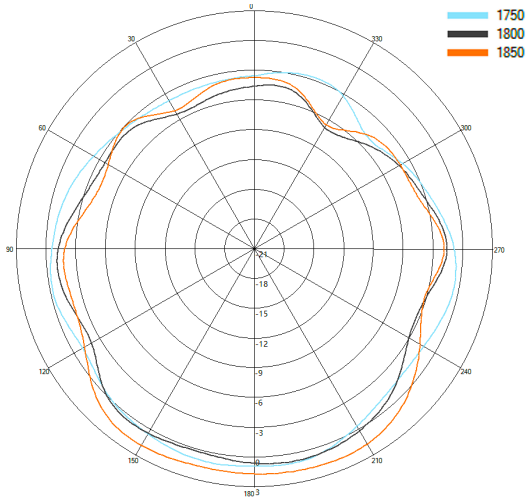
Typical H Plane- Cell A - Patterns- 1450-1500 MHz



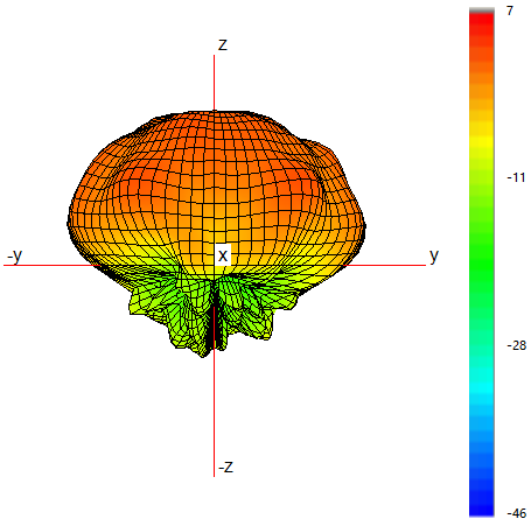
Typical 3D Pattern- Cell A - 1800 MHz



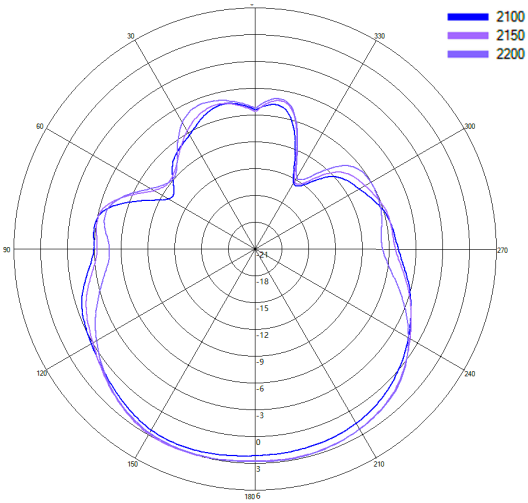
Typical H Plane- Cell A - Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell A - 2150 MHz



Typical H Plane- Cell A - Patterns- 2100-2200 MHz



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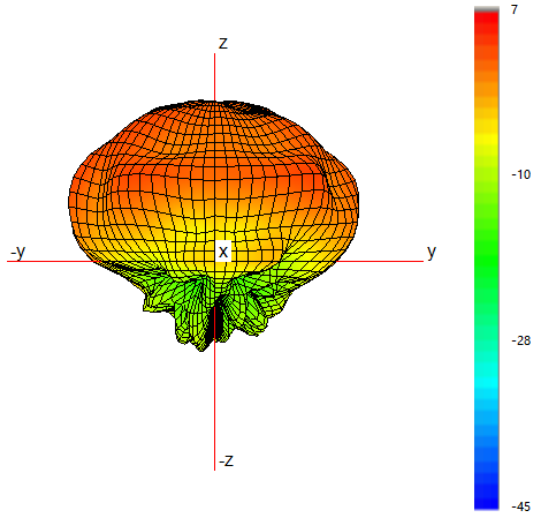
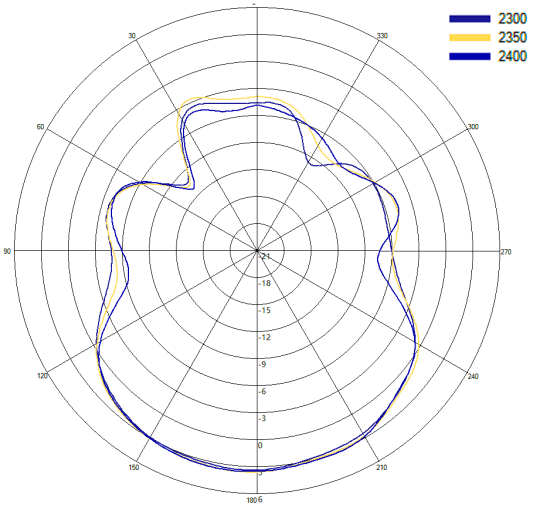
3D Pattern Data - Cell A - Ground Plane

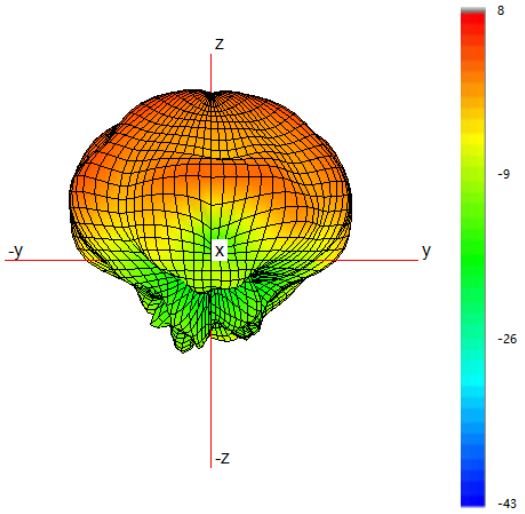
Typical 3D Pattern- Cell A - 2350 MHz



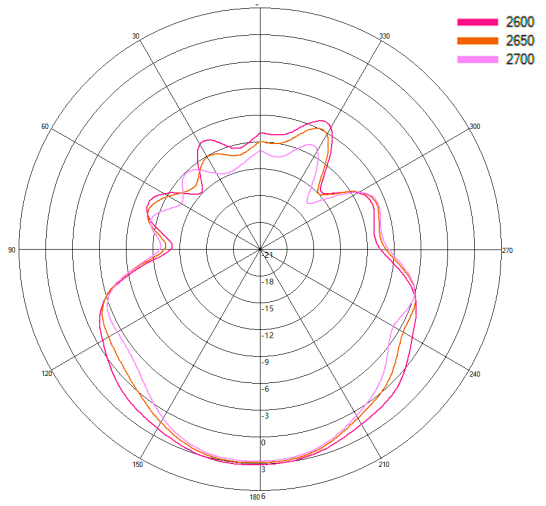
Typical H Plane- Cell A - Patterns- 2300-2400 MHz



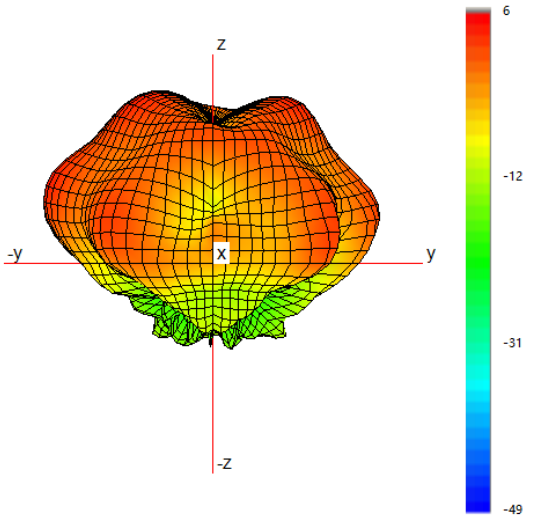
Typical 3D Pattern- Cell A - 2650 MHz



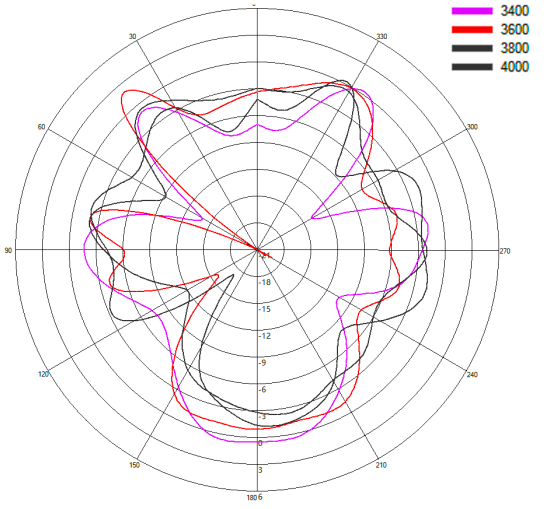
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz



Typical H Plane- Cell A - Patterns- 3400-4000 MHz



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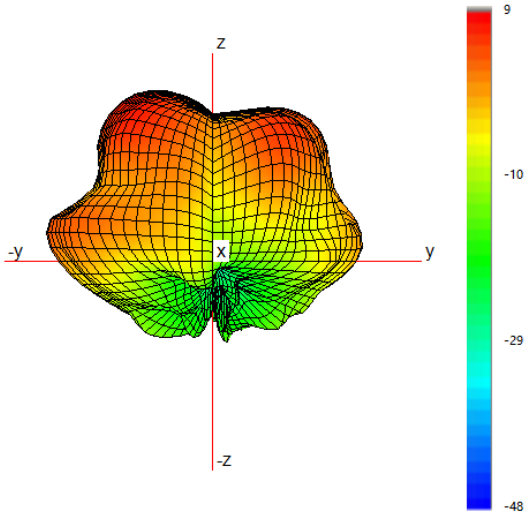
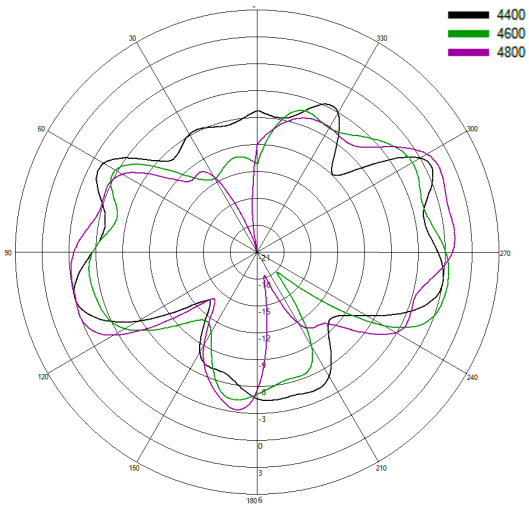
3D Pattern Data -
Cell A - Ground Plane

Typical 3D Pattern- Cell A - 4700 MHz



Typical H Plane- Cell A - Patterns- 4400-4800 MHz



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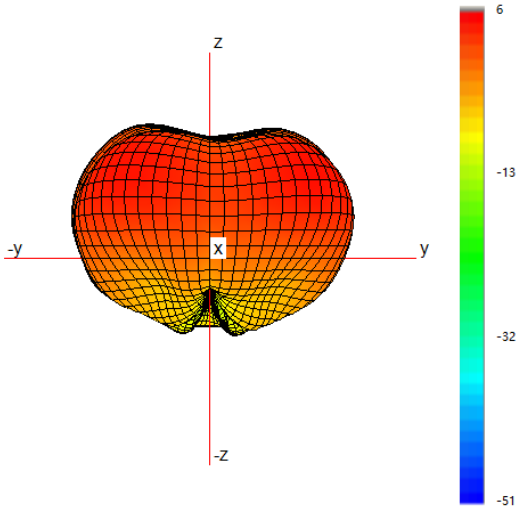
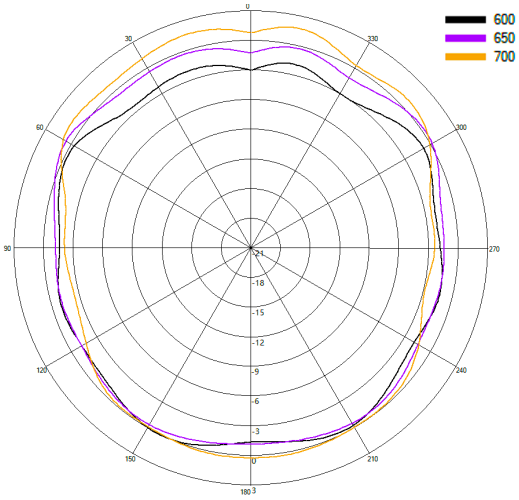
3D Pattern Data - Cell B - Ground Plane

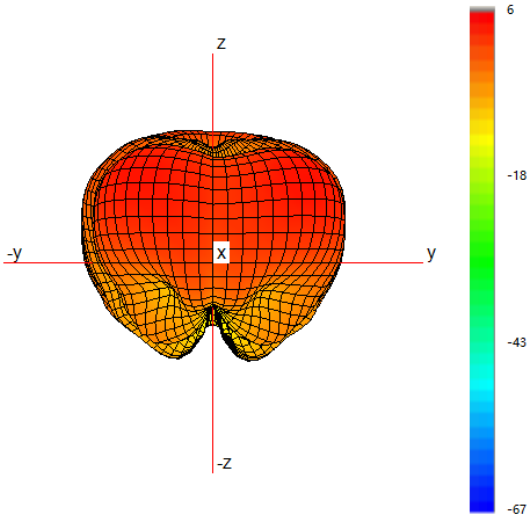
Typical 3D Pattern- Cell B - 650 MHz



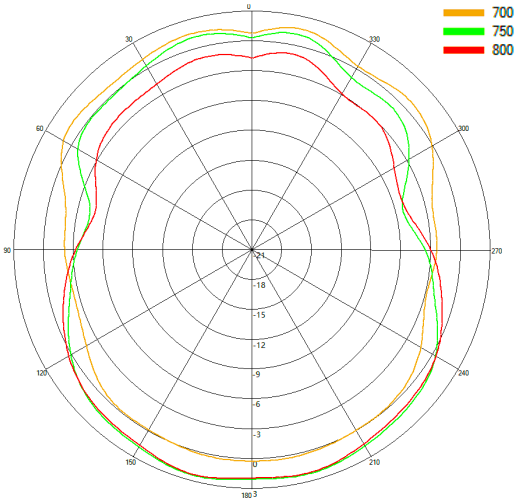
Typical H Plane- Cell B - Patterns- 600-700MHz



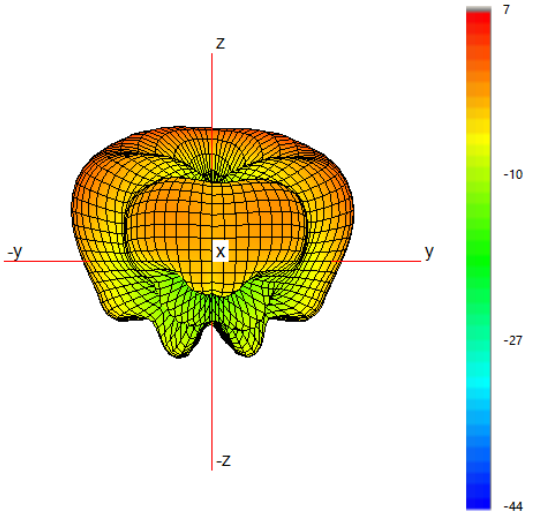
Typical 3D Pattern- Cell B - 750 MHz



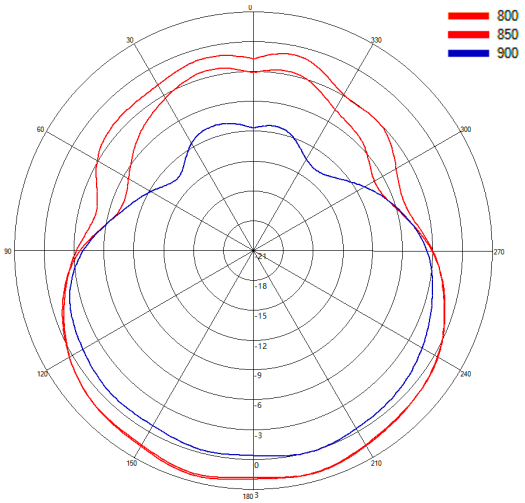
Typical H Plane- Cell B - Patterns- 700-800MHz



Typical 3D Pattern- Cell B - 850 MHz



Typical H Plane- Cell B - Patterns- 800-900MHz



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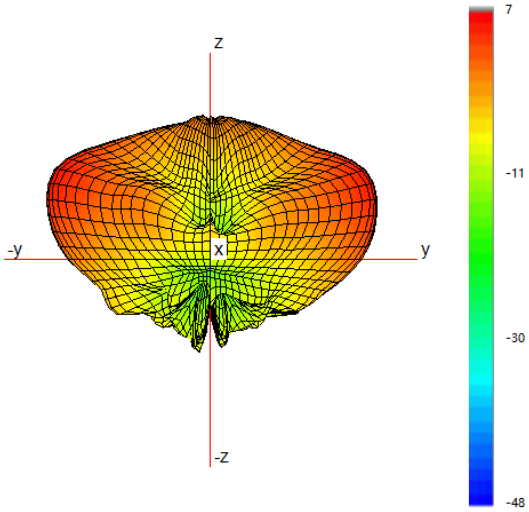
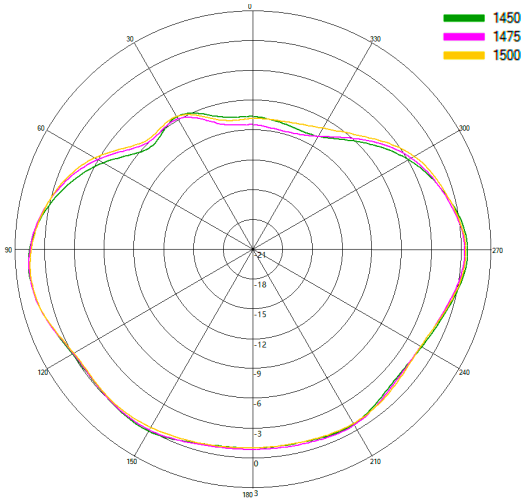
3D Pattern Data - Cell B - Ground Plane

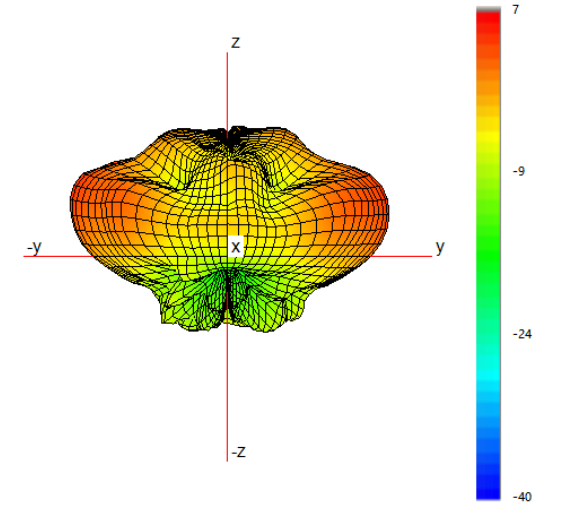
Typical 3D Pattern- Cell B - 1475 MHz



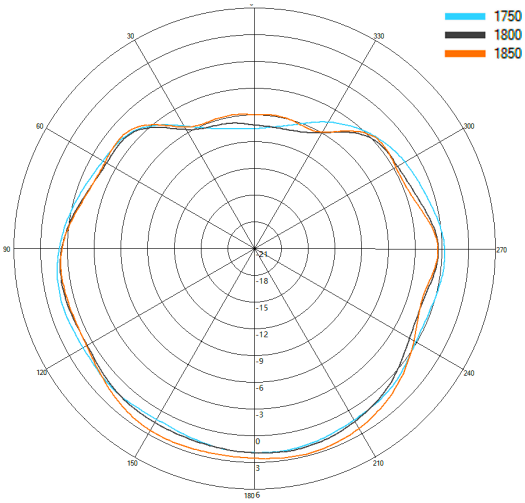
Typical H Plane- Cell B - Patterns- 1450-1500 MHz



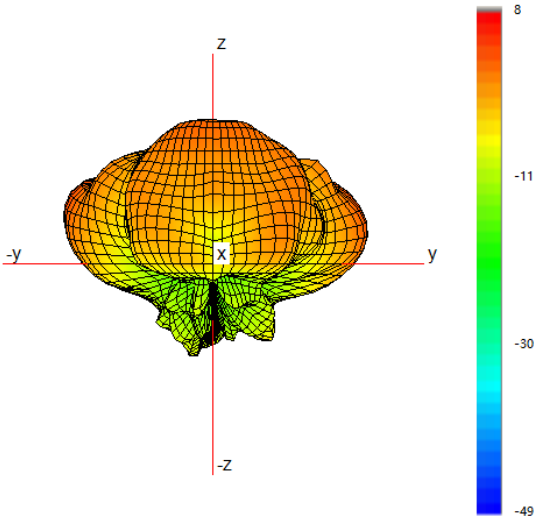
Typical 3D Pattern- Cell B - 1800 MHz



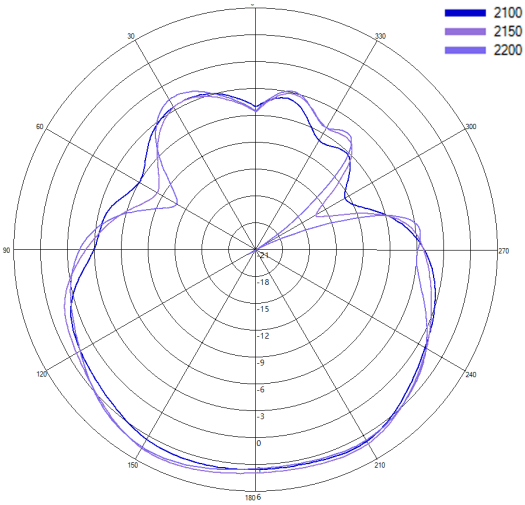
Typical H Plane- Cell B - Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell B - 2150 MHz



Typical H Plane- Cell B - Patterns- 2100-2200 MHz



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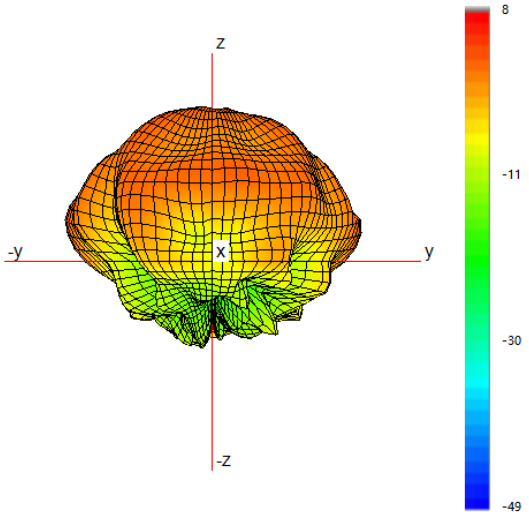
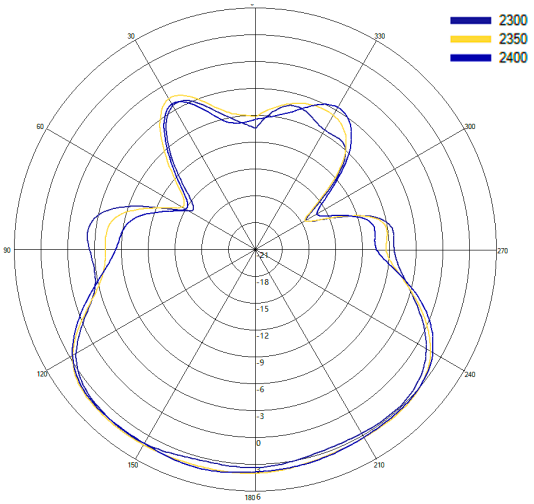
3D Pattern Data - Cell B - Ground Plane

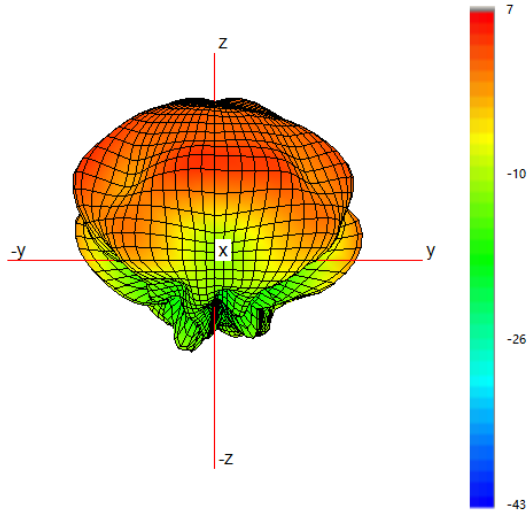
Typical 3D Pattern- Cell B - 2350 MHz



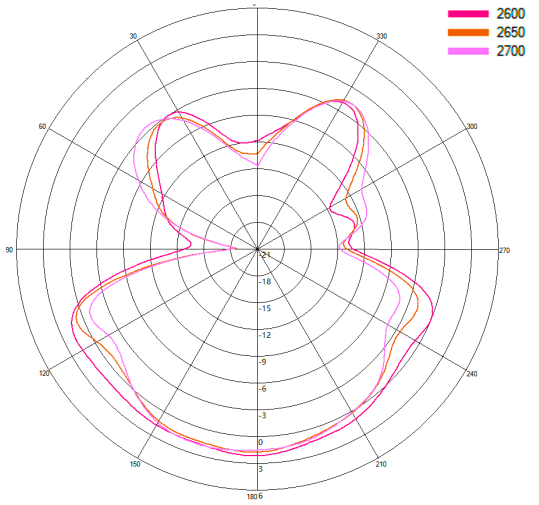
Typical H Plane- Cell B - Patterns- 2300-2400 MHz



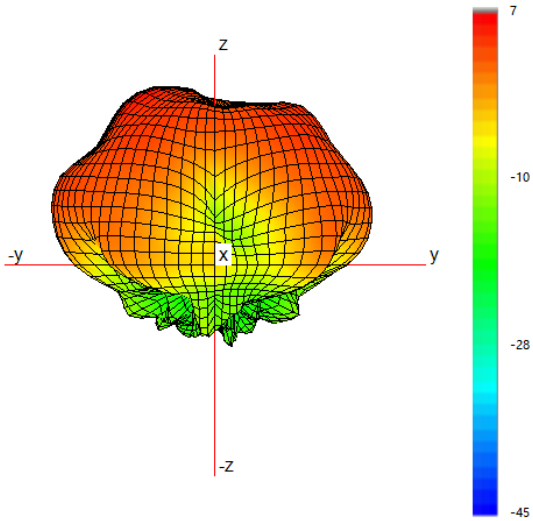
Typical 3D Pattern- Cell B - 2650 MHz



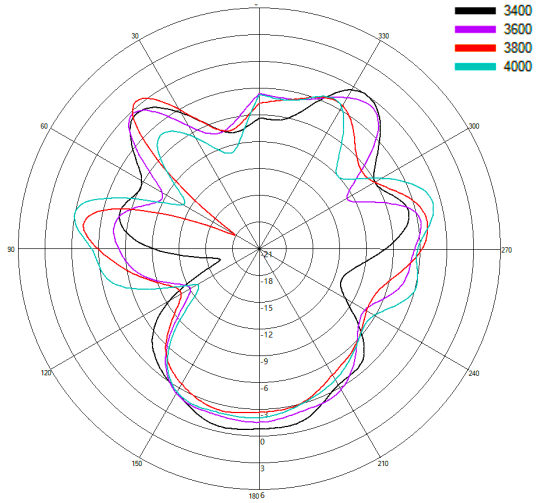
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell B - 3600 MHz



Typical H Plane- Cell B - Patterns- 3400-4000 MHz



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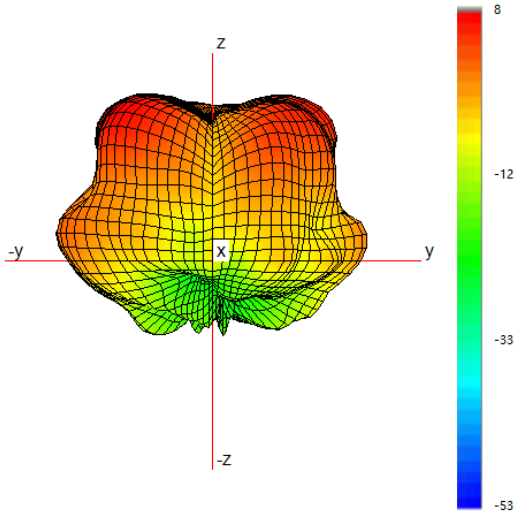
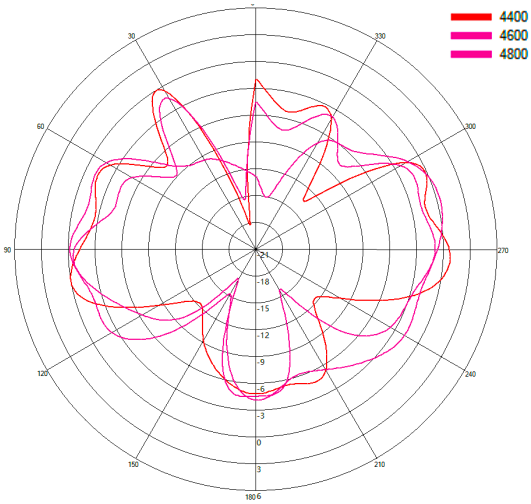
3D Pattern Data -
Cell B - Ground Plane

Typical 3D Pattern- Cell B - 4700 MHz



Typical H Plane- Cell B - Patterns- 4400-4800 MHz



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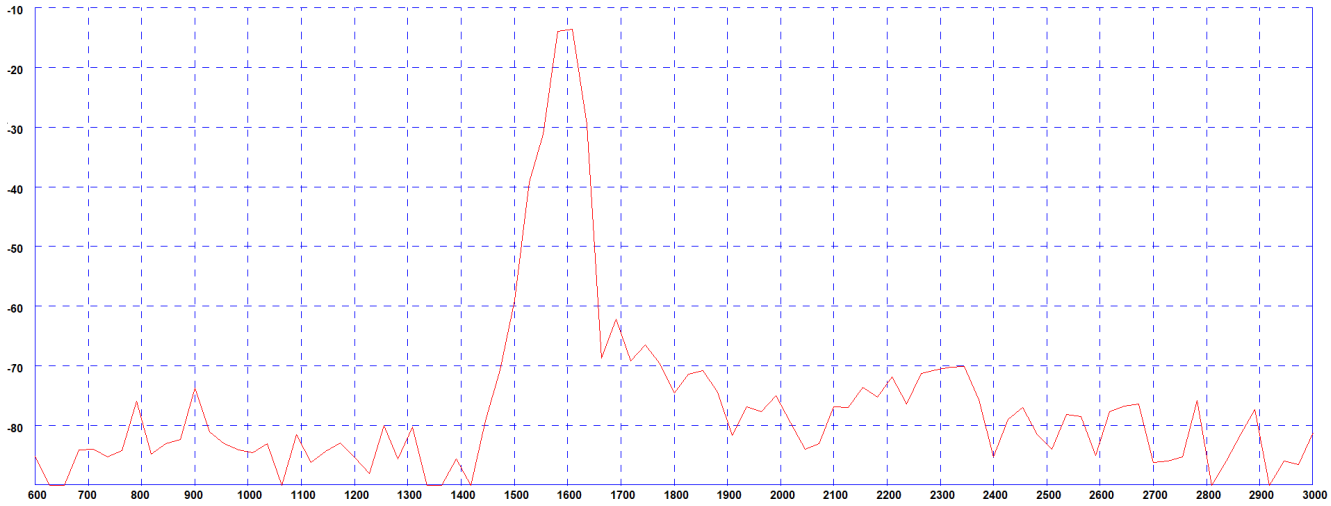
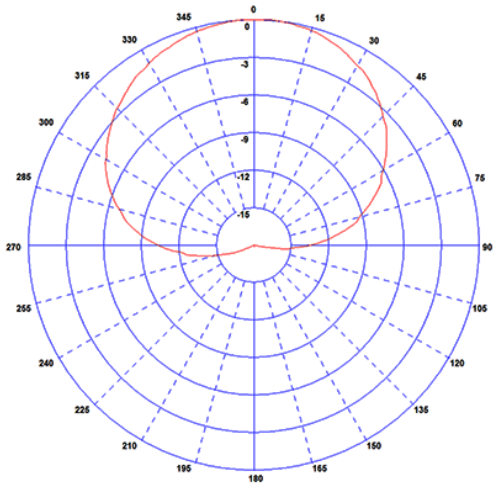
Electrical Data- L1
GPS/GNSS

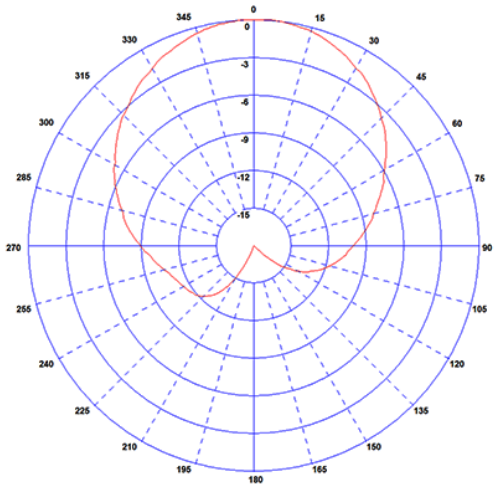
Swept Peak Gain GPS/GNSS



Typical E Plane Pattern - GPS/GNSS 1575 MHz



Typical E Plane Pattern - GPS/GNSS 1602 MHz



GPS/GNSS Measurements taken on 190x190mm (7.4" x 7.4") ground plane excluding cable loss

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