

Internal MiMo Multi-Function Antenna

BAT[G]M-7-60[-24-58]



Internal MiMo 4G/5G Antenna with optional GPS/GNSS & WiFi

- Mount on/under dashboard or other non-metallic surface
- 2x2 MiMo 4G/5G function
- Optional SiSo or 2x2 MiMo WiFi
- Optional GPS/GNSS 26dB gain LNA
- Suitable for M2 & M3 Category Vehicles

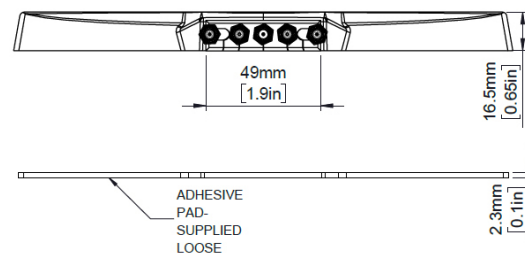
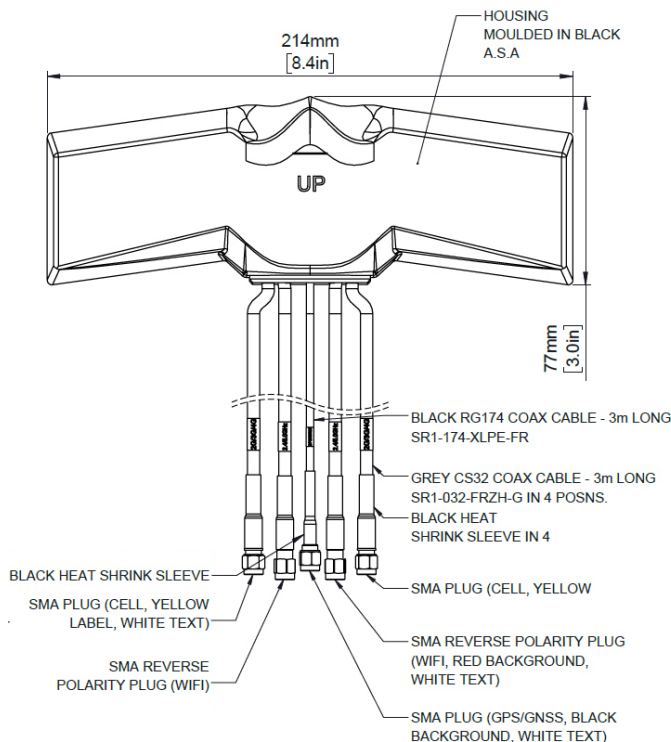
The Panorama BAT[X]M-7-60 product line is range of internal discrete/cover 'all in one' antennas with 2x2 MiMo 4G / 5G (including Band 71), with option of GPS/GNSS, and dual band SiSo or 2x2 MiMo WiFi 2.4/5.0-6GHz.

The 4G/5G antennas cover 617-960/1427-6000MHz and provide isolation and low correlation coefficient values for effective MiMo function. The optional GPS/GNSS antenna features a 26dB gain LNA with advanced filtering.

The antenna is designed to be mounted on or under a vehicle dashboard but can be mounted on any non-conductive surface. The BATGM is supplied with low loss cables which are flame retardant and meet the requirements of UN ECE 118 and EN45545-2.

Technical Drawing

BATGM-7-60-24-58 Shown



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BAT[G]M-7-60[-24-58]

Product Data

Part No.		BATGM-7-60-24-58	BATGM-7-60-S24-58	BATGM-7-60	BATM-7-60
Electrical Data					
Frequency Range (MHz)	Elements 1&2	617-960/1427-6000			
	Elements 4(&5)	2396-2485/ 5150-5925MHz			-
Typical VSWR*	Elements 1&2	<3:1			
	Element 4 (&5)	<3:1			-
Typical Isolation*	Elements 1&2	<7dB			
	Elements 4&5	<15dB			-
Pattern	Omnidirectional				
Impedance	50 Ohms				
Max input power (W)	5				
GPS/GNSS Data					
Frequency Range (MHz)	1559-1612MHz				-
LNA Peak Gain	26dB				-
Typical Out of Band Rejection	>40dB (+/- 100MHz f)				-
Notch filter Rejection @787MHz	23dBm				-
Power Requirement	3-5VDC <20ma				-
Mechanical Data					
Dimensions (mm)	Length	214 (8.4")			
	Width	77 (3")			
	Height	16.5 (0.65")			
Operating Temp (°C)	-30° / +70°C (-30° / 158°F)				
Material	ASA				
Colour	Black				
Mounting Data					
Fixing	Adhesive pad				
Cable Data		Elements 1&2 (Cell)	Element 3 (GPS) [if present]	Elements 4&5 (WiFi) [if present]	
Cable Type	CS32 (UN ECE 118 & EN45545-2)		FR RG174 (UN ECE 118 & EN45545-2)	CS32 (UN ECE 118 & EN45545-2)	
Diameter (mm)	5 (0.2")		2.8 (0.1")	5 (0.2")	
Length (m)	3 (10')		3 (10')	3 (10')	
Termination	BATGM-7-60-24-58	2x SMA (m)	1x SMA (m)	2x Reverse Polarity SMA Plug	
	BATGM-7-60-S24-58	2x SMA (m)	1x SMA (m)	1x Reverse Polarity SMA Plug	
	BATGM-7-60	2x SMA (m)	1x SMA (m)	-	
	BATM-7-60	2x SMA (m)	-	-	

*Typical Isolation and VSWR measured with 0.5m(1.6') of CS32 cable in free space on pserpex sheet.

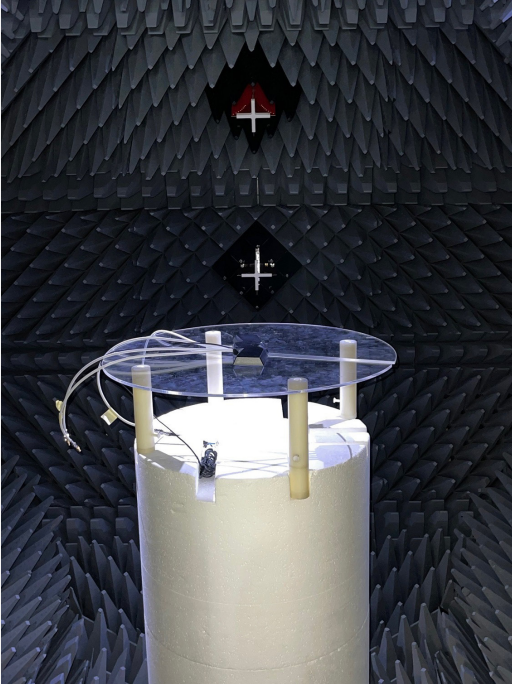
Internal MiMo Multi-Function Antenna

BAT[G]M-7-60[-24-58]

Electrical Data Cell

Measurement Conditions

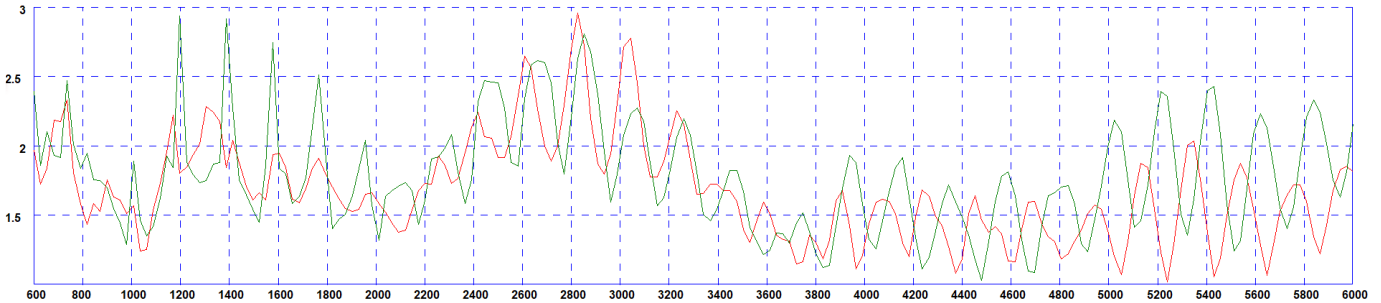
BATGM-7-60-24-58 measured in free space with 0.5m (1.6') CS32 Cable



4G/5G Antennas

Frequency Range (MHz)	LTE / NR Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
617-698	71	Cell A	3.4	66
		Cell B	3.0	68
699-798	12,13, 14 17,28	Cell A	2.4	61
		Cell B	2.7	58
807- 862	5,19,20,26,27	Cell A	3.6	67
		Cell B	3.6	66
880-960	8	Cell A	3.4	71
		Cell B	4.1	68
1427-1518	11, 21, 74,75,76	Cell A	3.7	70
		Cell B	3.7	70
1710-1920	2,3,4,9,25,35,39,66	Cell A	4.6	69
		Cell B	5.6	69
1920-2170	1,2,3	Cell A	6.5	72
		Cell B	5.8	71
2300-2400	30,40	Cell A	7.1	69
		Cell B	5.7	68
2496-2690	7,38,41	Cell A	6.9	66
		Cell B	7.5	66
3300-4200	22,42,43,48,77,78,79	Cell A	8.0	68
		Cell B	8.6	69
4400-5000	79	Cell A	9.4	68
		Cell B	9.0	63

Typical VSWR



*VSWR measured in free space with 0.5m (1.6') CS32 cable

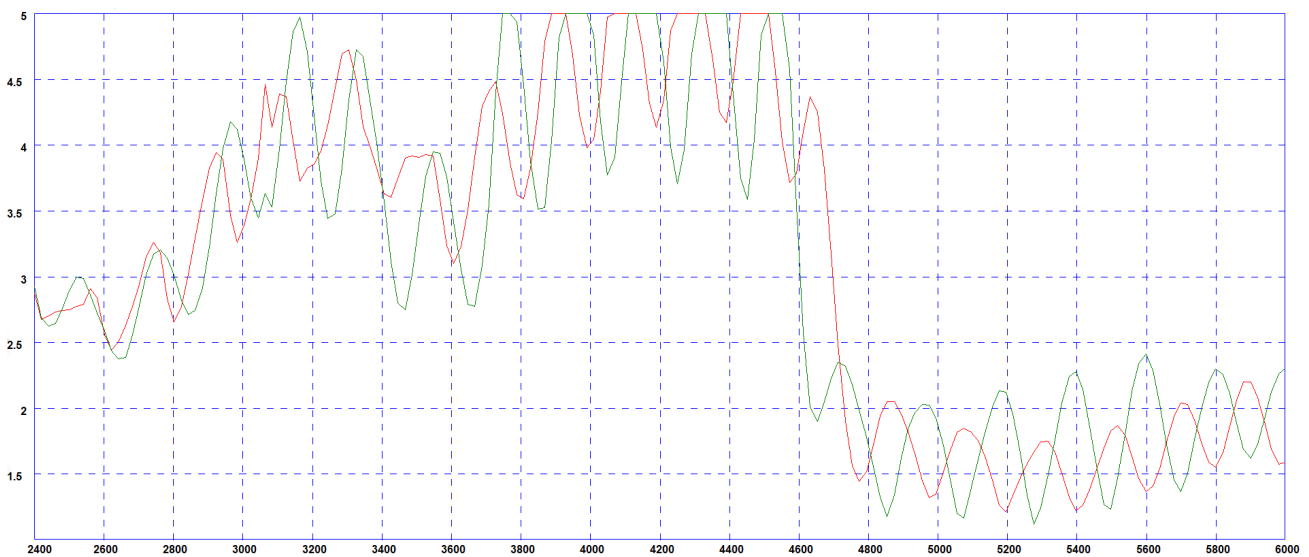
Internal MiMo Multi-Function Antenna

BAT[G]M-7-60[-24-58]

Electrical Data
WiFi

Measurement Conditions	WiFi Antennas				
BATGM-7-60-24-58 measured in free space with 0.5m (1.6') CS32 Cable	Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	2396-2485	2.4GHz	WiFi 1	5.0	48
			WiFi 2	3.5	52
	5150-5250	UNII-1	WiFi 1	3.8	61
			WiFi 2	5.7	53
	5250-5350	UNII-2A	WiFi 1	4.3	58
			WiFi 2	5.7	54
	5350-5470	UNII-2C	WiFi 1	4.2	60
			WiFi 2	5.4	53
	5470-5725	UNII-2C	WiFi 1	5.2	56
			WiFi 2	5.1	52
	5725-5850	UNII-3	WiFi 1	5.4	58
			WiFi 2	4.6	52
	5850-5925	UNII-4	WiFi 1	4.5	53
			WiFi 2	4.6	55

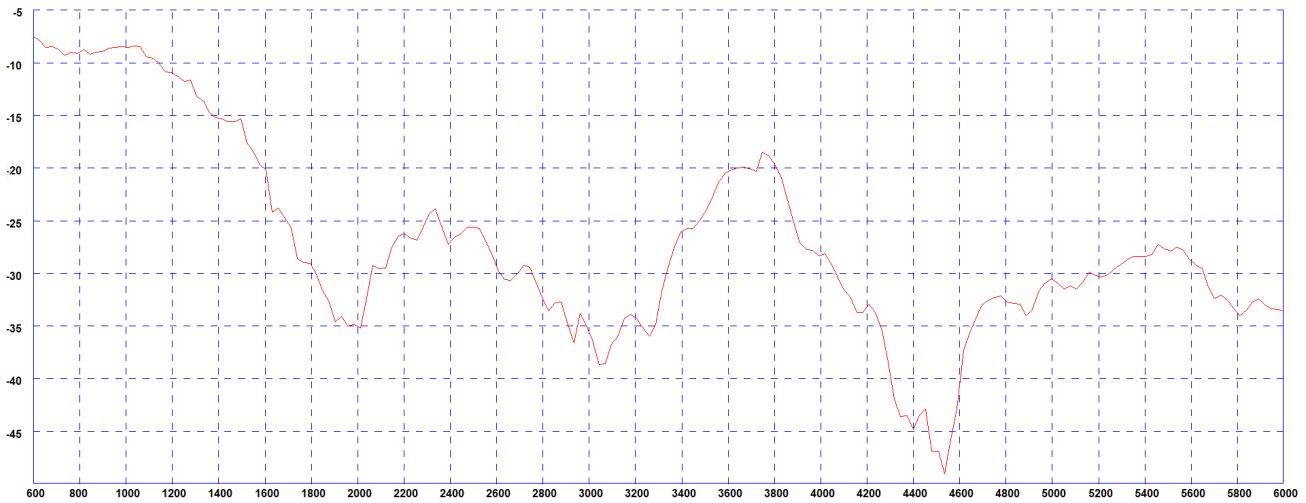
Typical VSWR



*VSWR measured in free space with 0.5m (1.6') CS32 cable

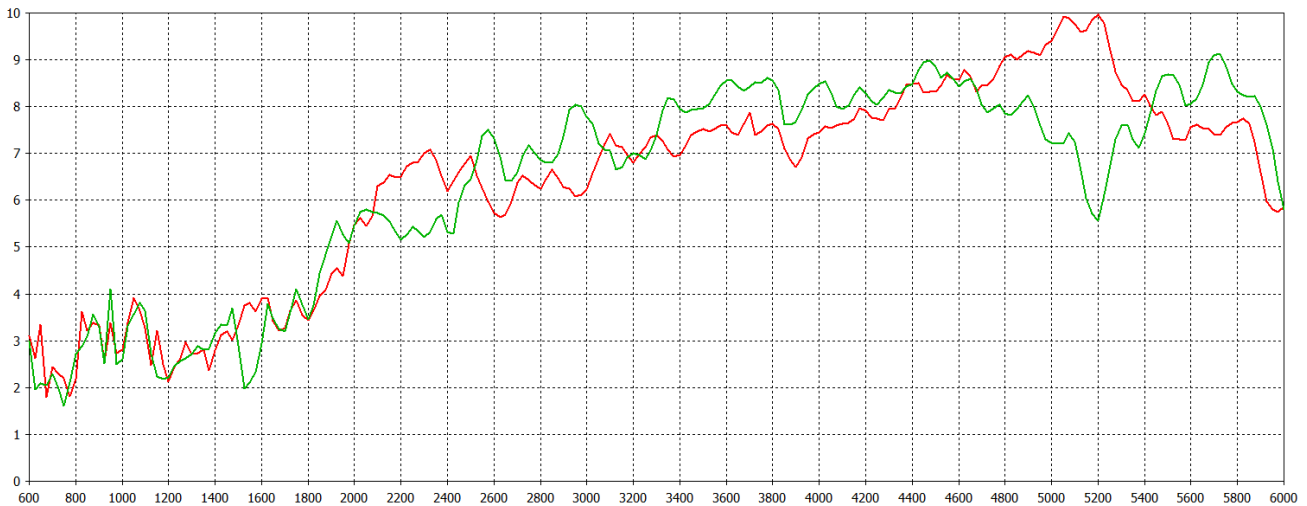
Electrical Data
Cell

Typical Isolation*



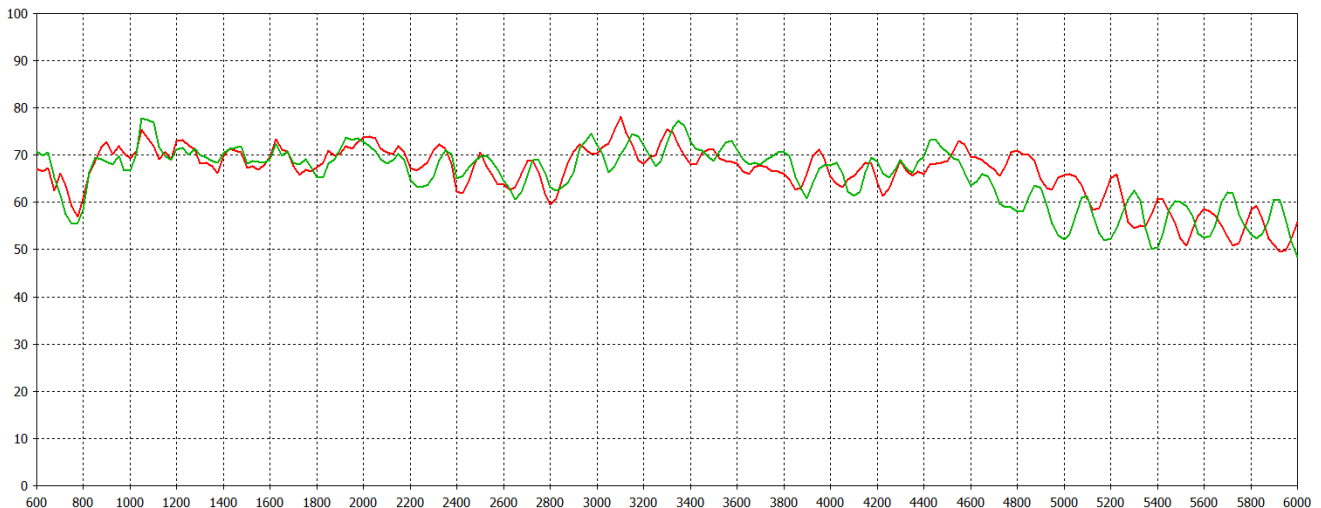
*Isolation measured in free space with 0.5m (1.6') CS32 cable

Typical Swept Peak Gain*



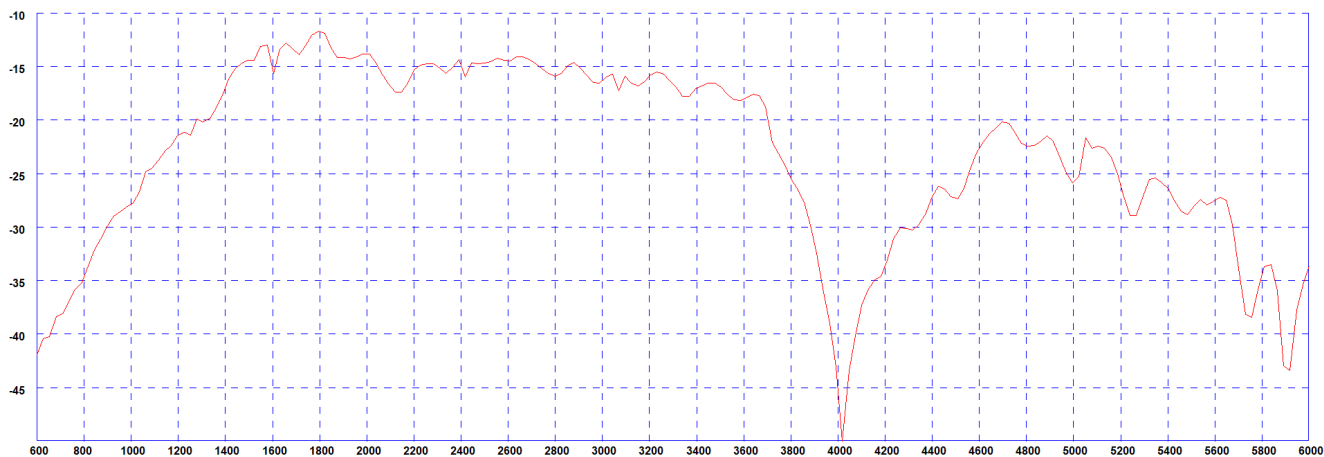
*Swept Peak Gain measured in free space with 0.5m (1.6') CS32 cable

Typical Efficiency*



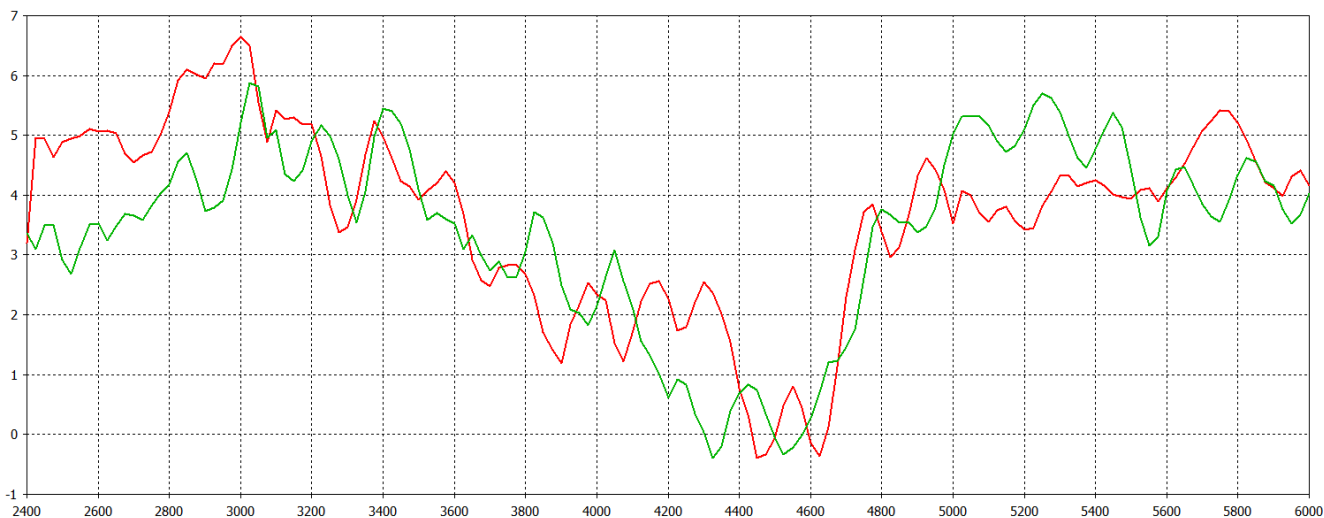
*Efficiency measured in free space with 0.5m (1.6') CS32 cable

Typical Isolation*



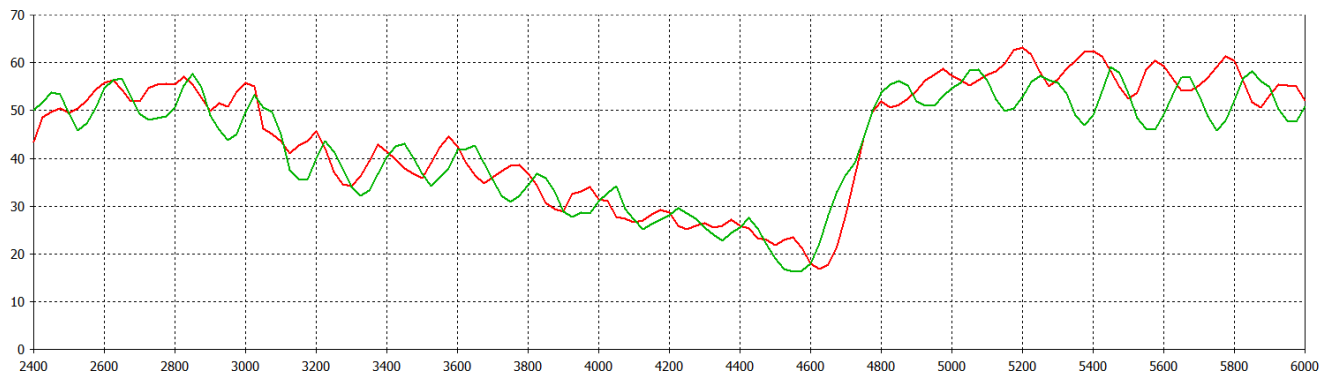
*Isolation measured in free space with 0.5m (1.6') CS32 cable

Typical Swept Peak Gain*



*Swept Peak Gain measured in free space with 0.5m (1.6') CS32 cable

Typical Efficiency*



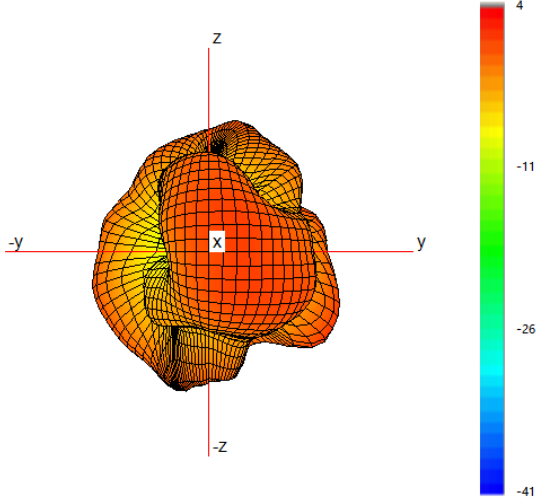
*Efficiency measured in free space with 0.5m (1.6') CS32 cable

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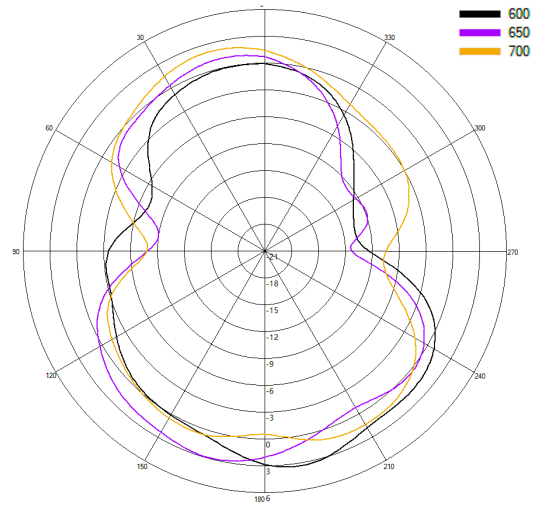
BAT[G]M-7-60[-24-58]

3D Patterns Cell A

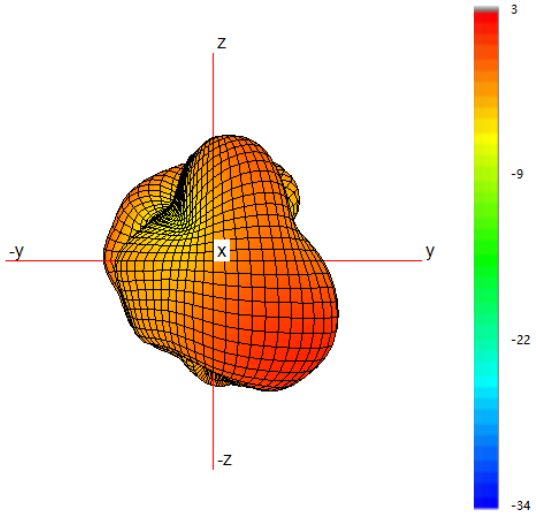
Typical 3D Pattern- Cell A - 650 MHz



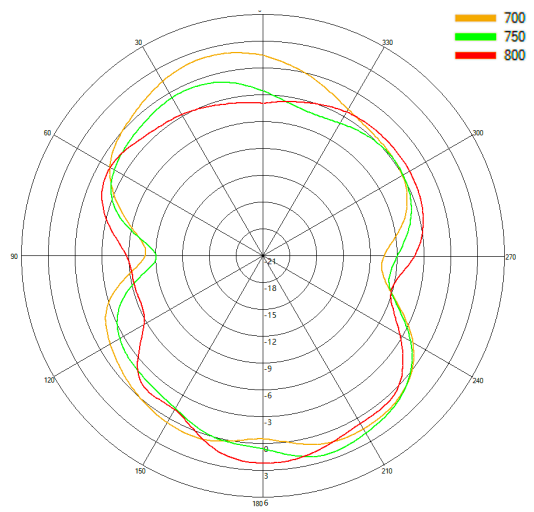
Typical H Plane- Cell A - Patterns- 600-700 MHz



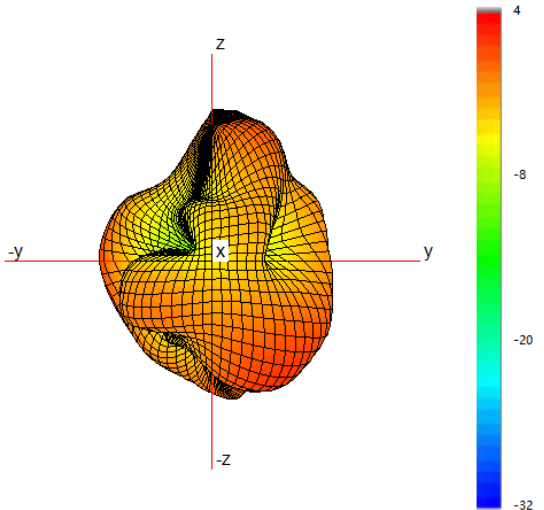
Typical 3D Pattern- Cell A - 750 MHz



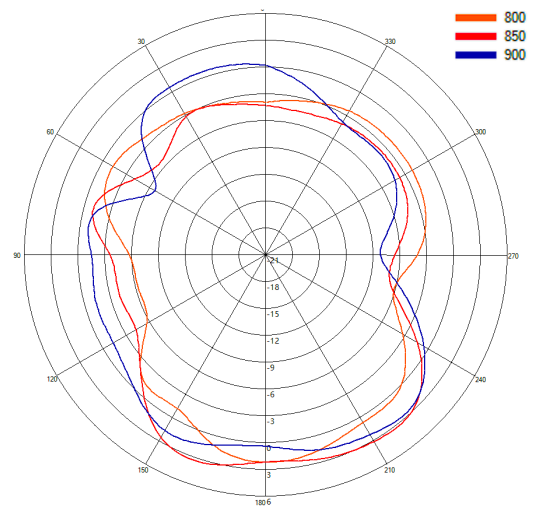
Typical H Plane- Cell A - Patterns- 700-800 MHz



Typical 3D Pattern- Cell A - 850 MHz

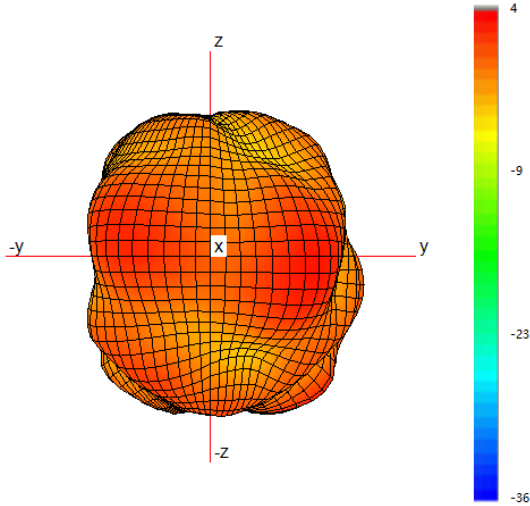


Typical H Plane- Cell A- Patterns- 800-900 MHz

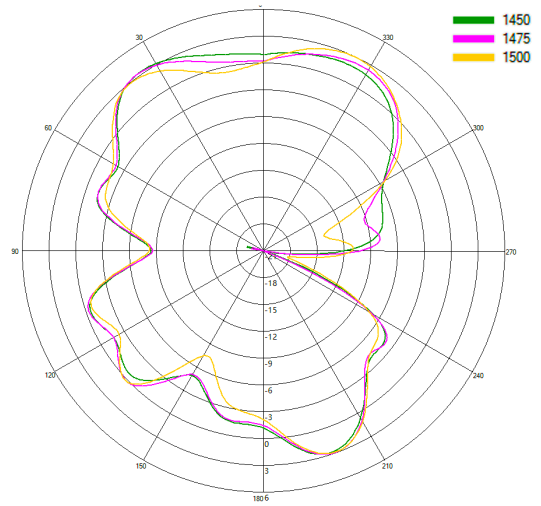


3D Patterns Cell A

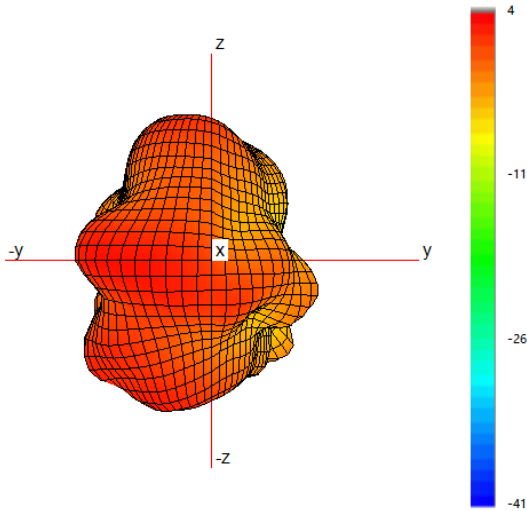
Typical 3D Pattern- Cell A - 1475 MHz



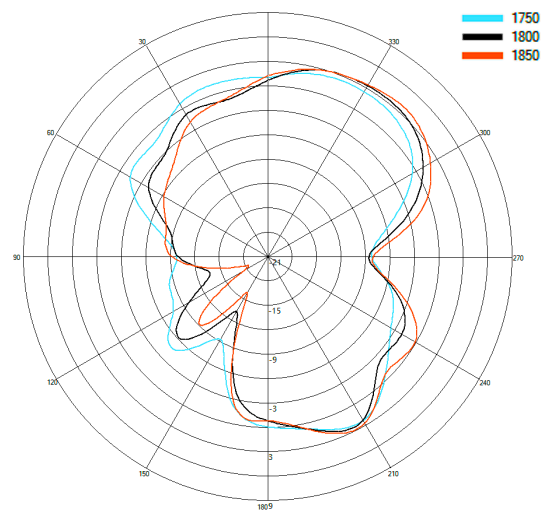
Typical H Plane- Cell A- Patterns- 1450-1500 MHz



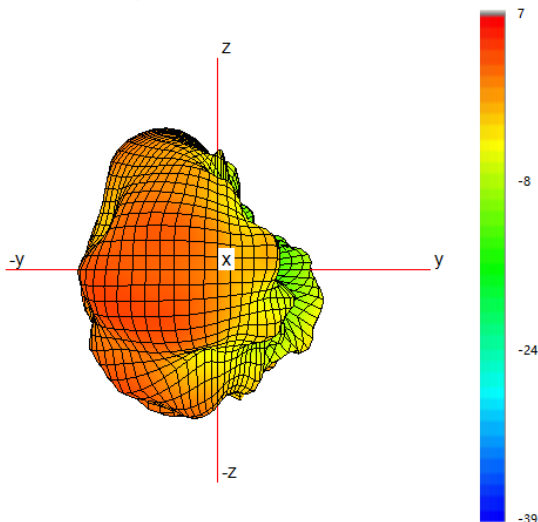
Typical 3D Pattern- Cell A - 1800 MHz



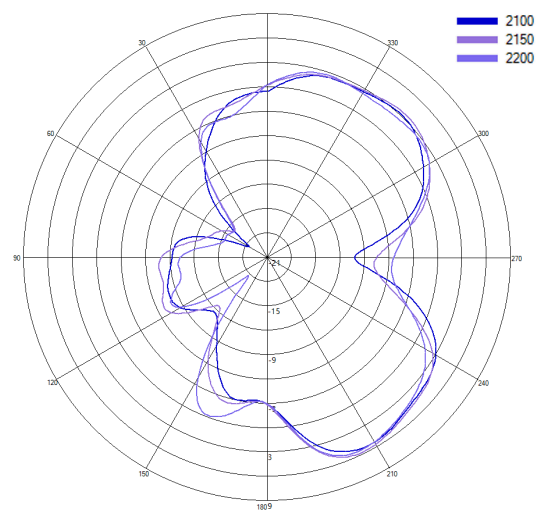
Typical H Plane- Cell A- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell A - 2150 MHz



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

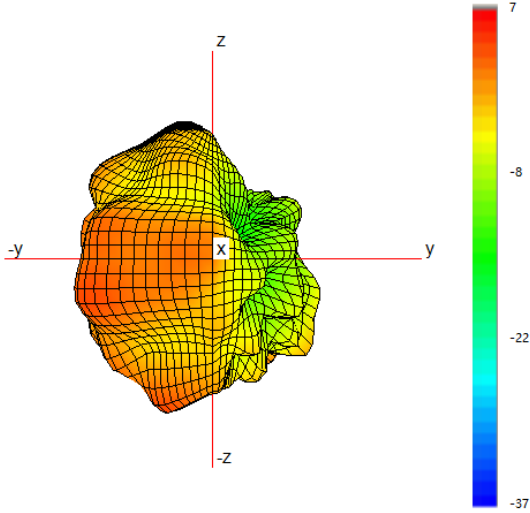


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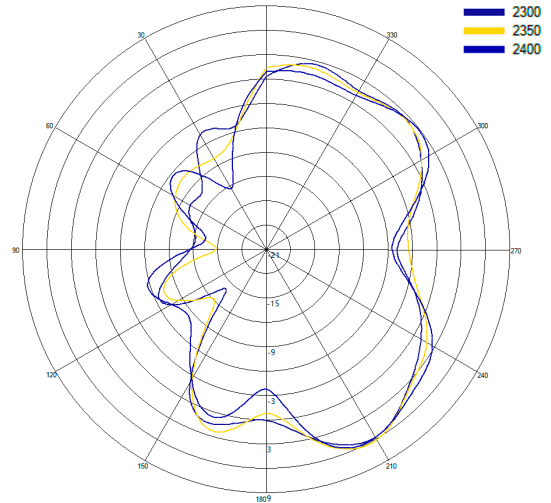
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3D Patterns Cell A

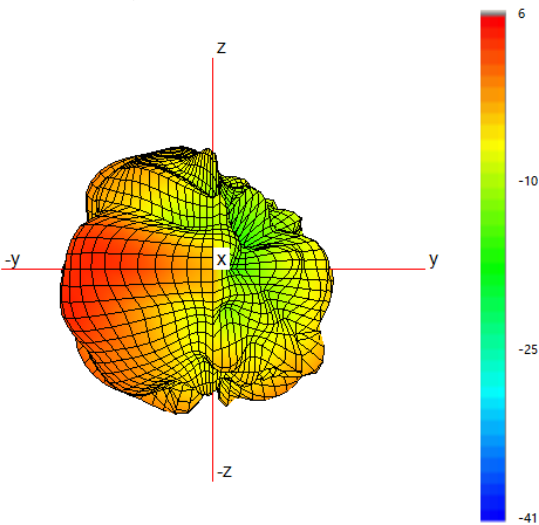
Typical 3D Pattern- Cell A - 2350 MHz



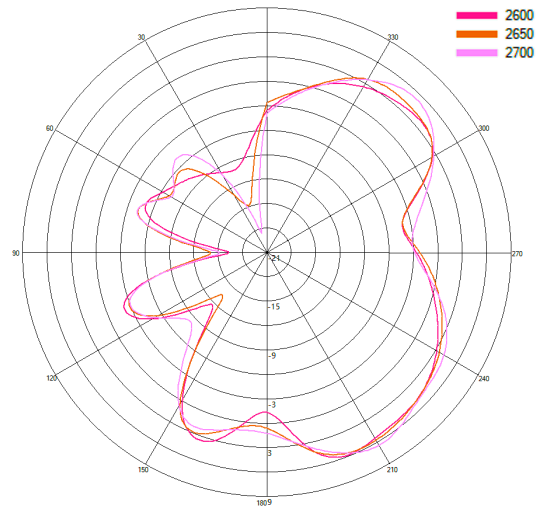
Typical H Plane- Cell A - Patterns- 2300-2400 MHz



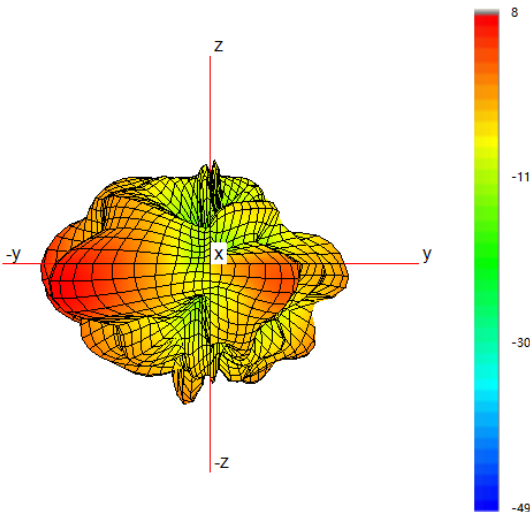
Typical 3D Pattern- Cell A - 2650 MHz



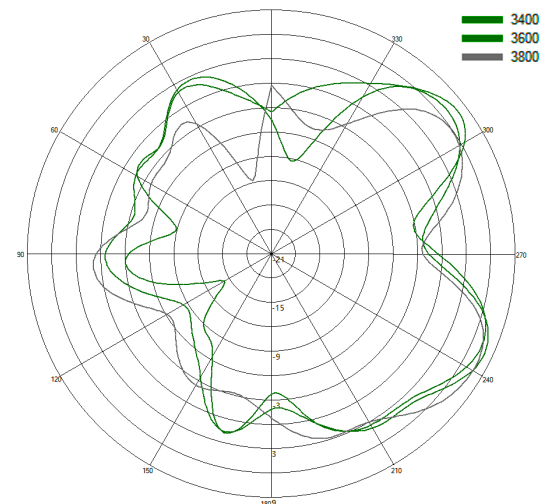
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz

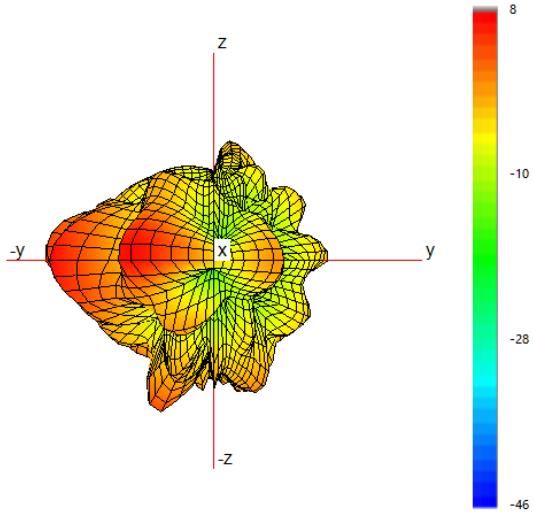


Typical H Plane- Cell A - Patterns- 3400-3800 MHz

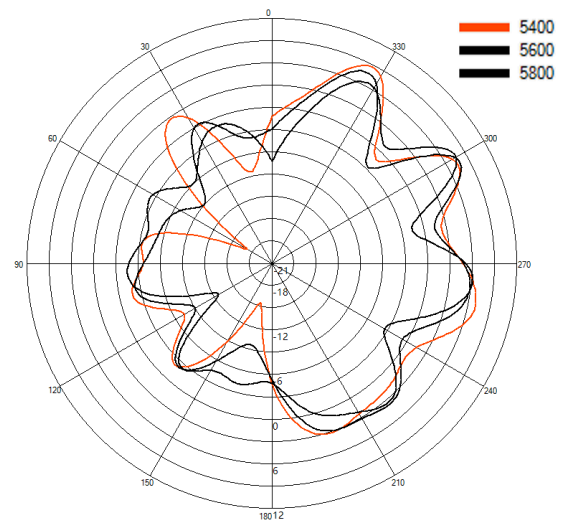


3D Patterns Cell A

Typical 3D Pattern- Cell A - 5600 MHz

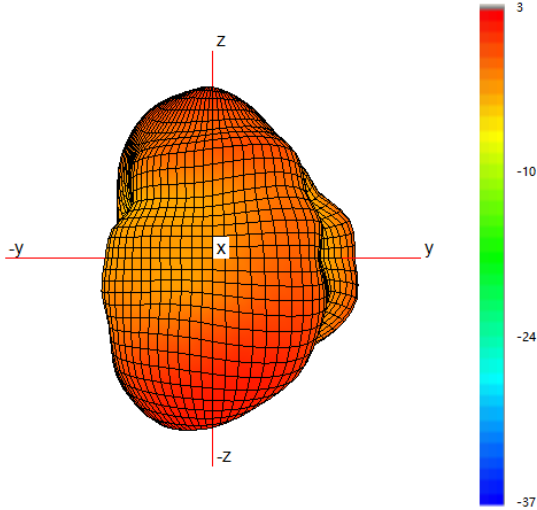


Typical H Plane- Cell A- Patterns- 5400-5800 MHz

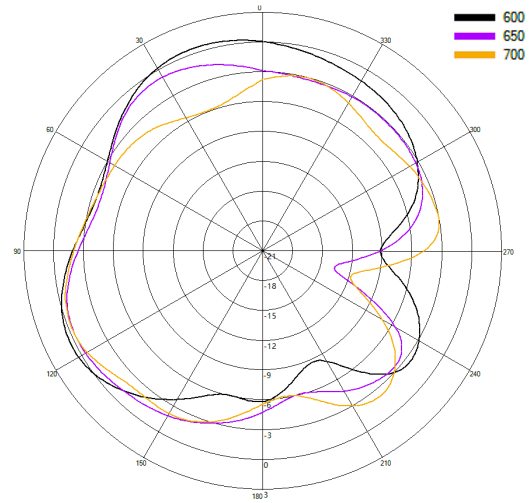


3D Patterns Cell B

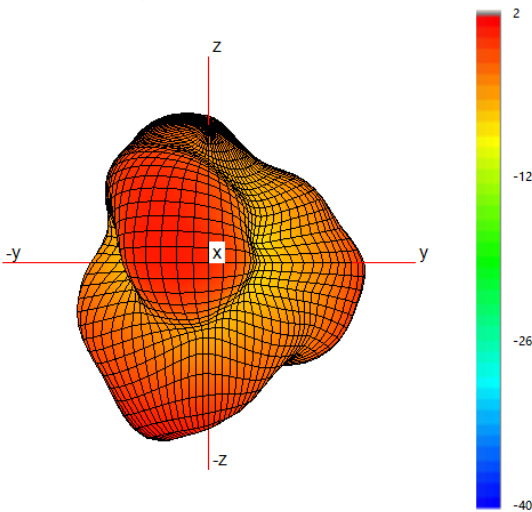
Typical 3D Pattern- Cell B - 650 MHz



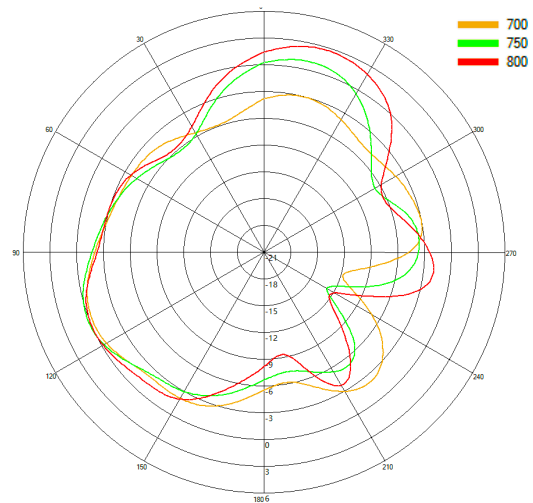
Typical H Plane- Cell B - Patterns- 600-700 MHz



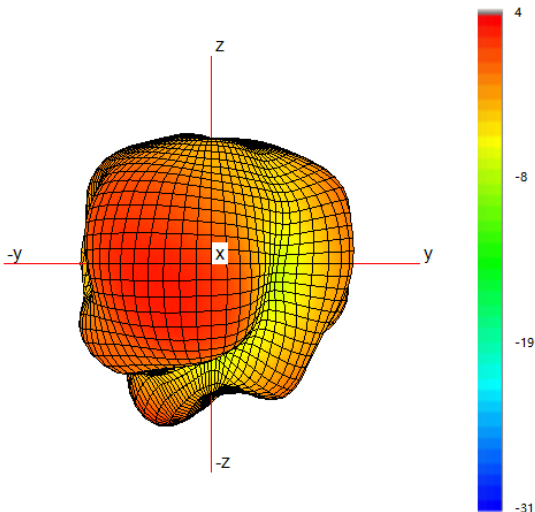
Typical 3D Pattern- Cell B - 750 MHz



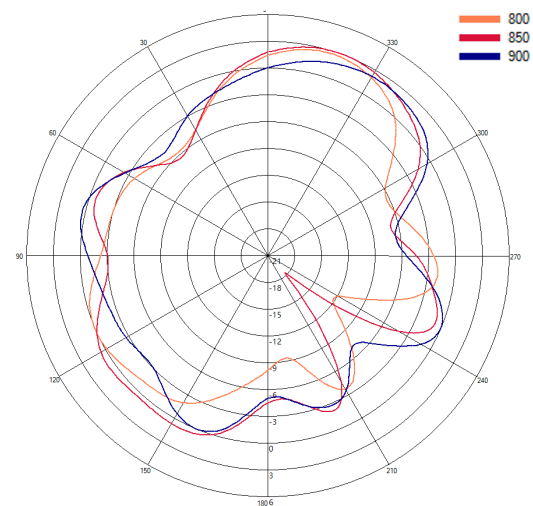
Typical H Plane- Cell B - Patterns- 700-800 MHz



Typical 3D Pattern- Cell B - 850 MHz

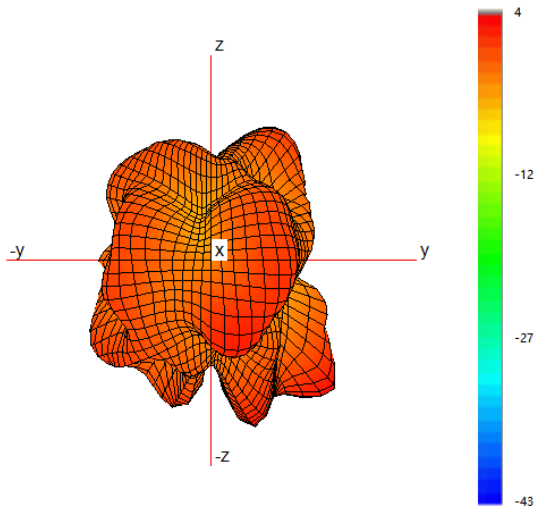


Typical H Plane- Cell B - Patterns- 800-900 MHz

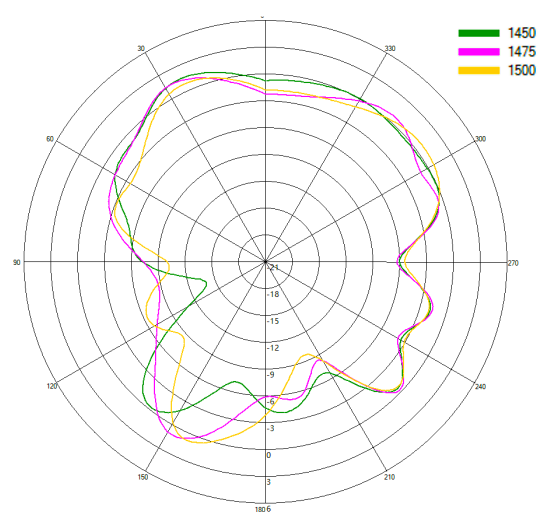


3D Patterns Cell B

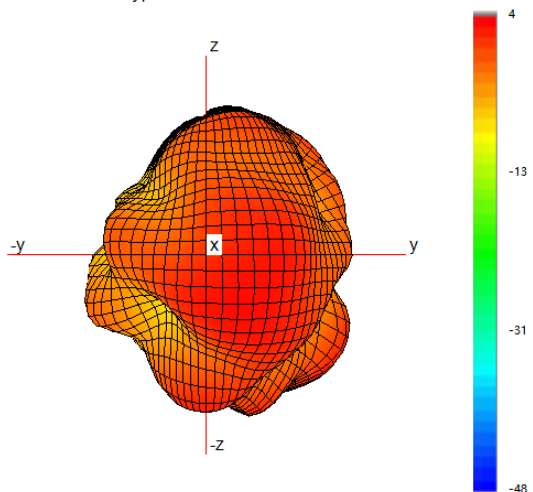
Typical 3D Pattern- Cell B - 1475 MHz



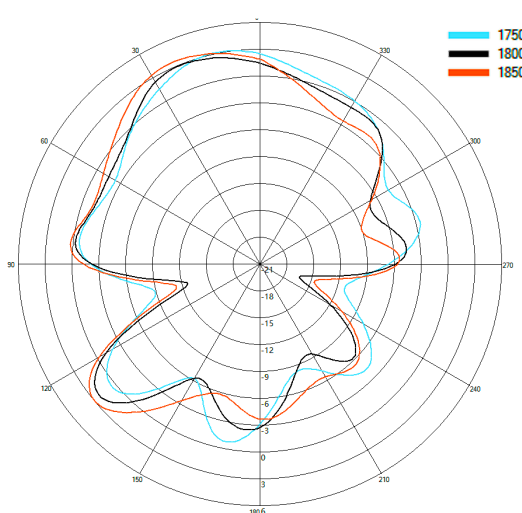
Typical H Plane- Cell B - Patterns- 1450-1500 MHz



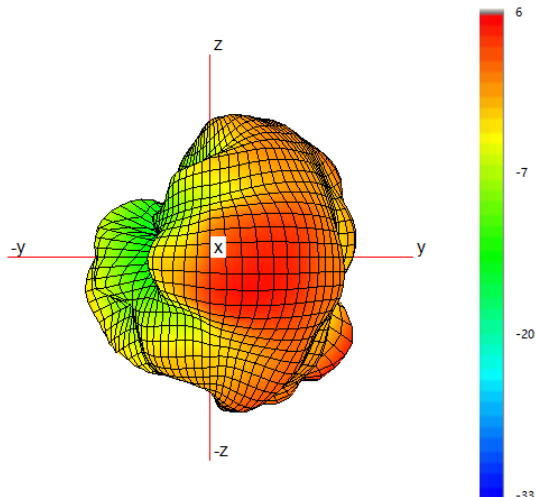
Typical 3D Pattern- Cell B - 1800 MHz



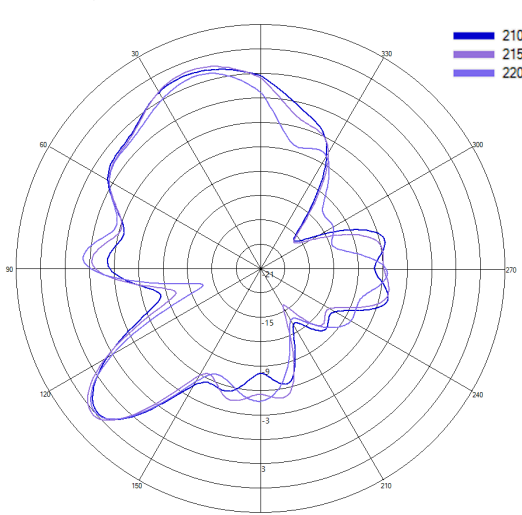
Typical H Plane- Cell B - Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell B - 2150 MHz

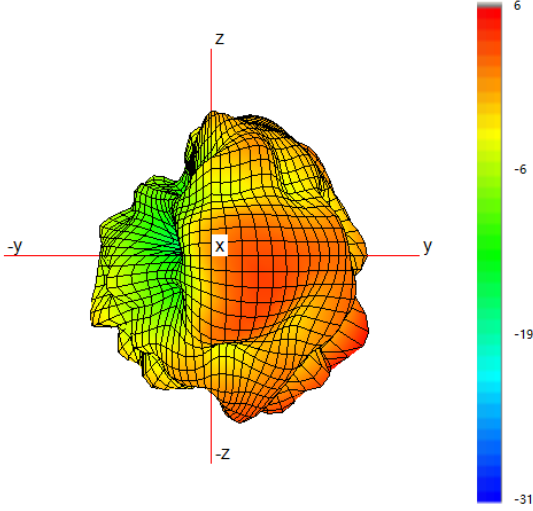


Typical H Plane- Cell B - Patterns- 2100-2200 MHz

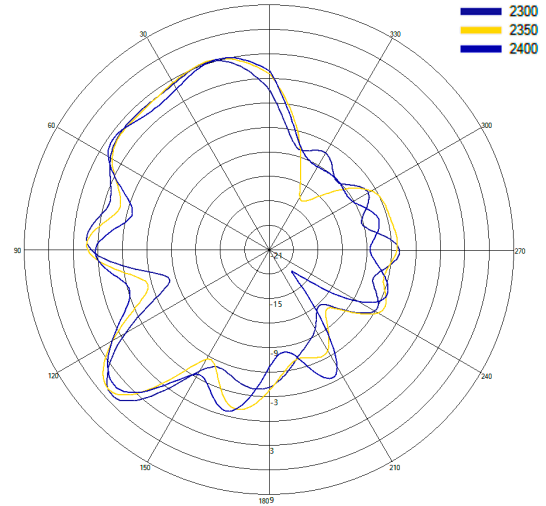


3D Patterns Cell B

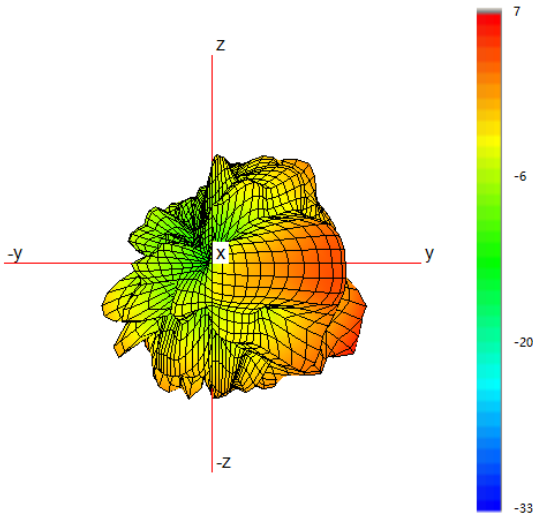
Typical 3D Pattern- Cell B - 2350 MHz



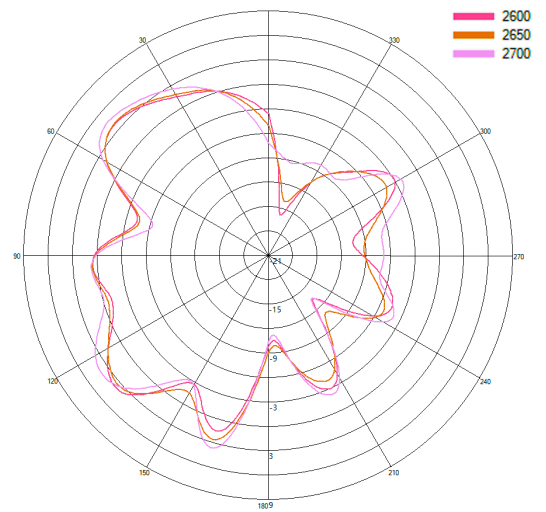
Typical H Plane- Cell B - Patterns- 2300-2400 MHz



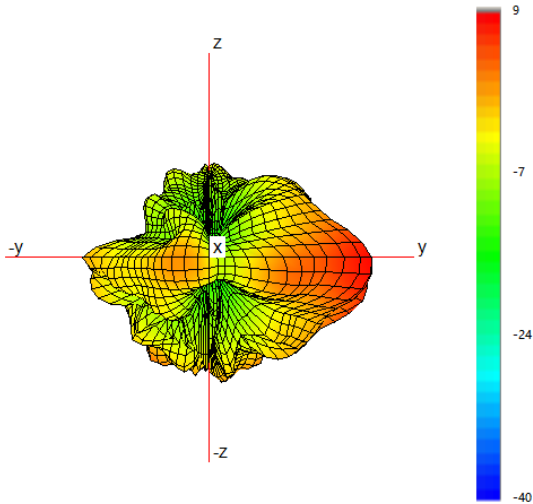
Typical 3D Pattern- Cell B - 2650 MHz



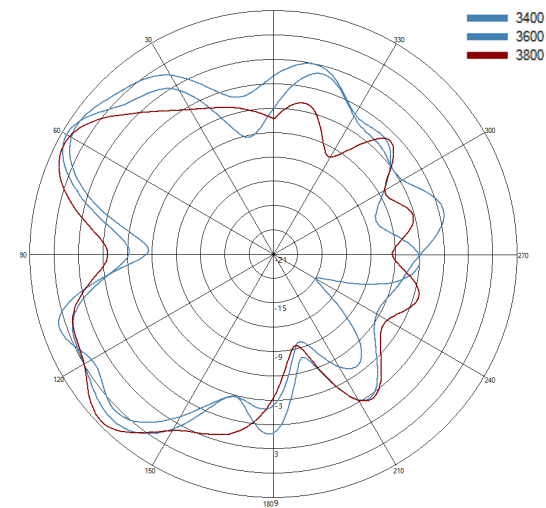
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



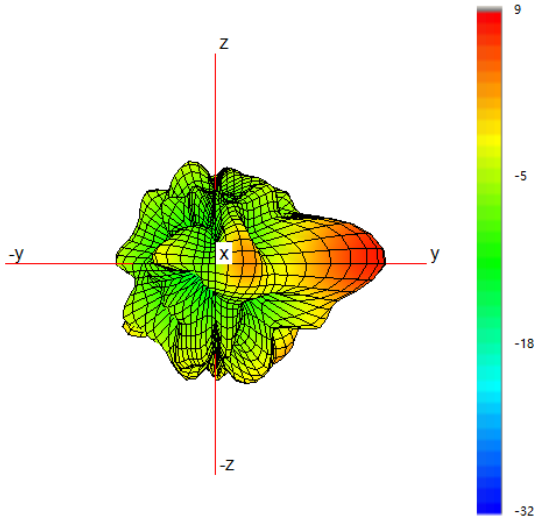
Typical 3D Pattern- Cell B - 3600 MHz



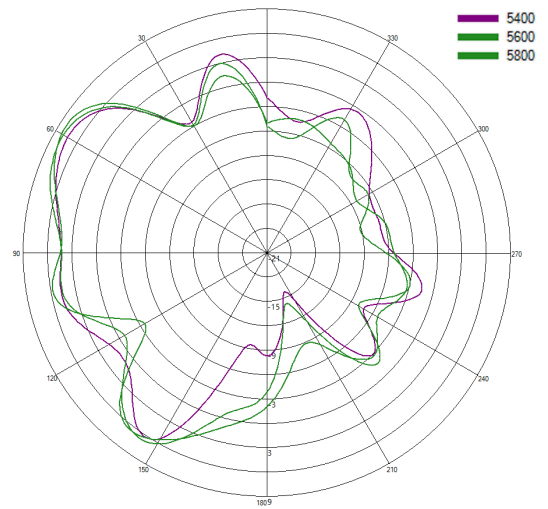
Typical H Plane- Cell B - Patterns- 3400-3800 MHz



Typical 3D Pattern- Cell B - 5600 MHz



Typical H Plane- Cell B - Patterns- 5400-5800 MHz

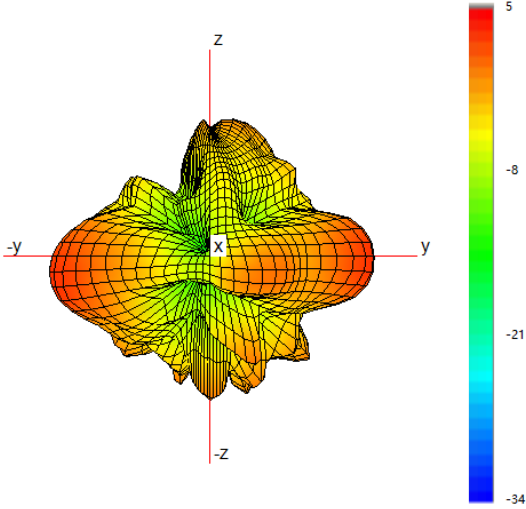


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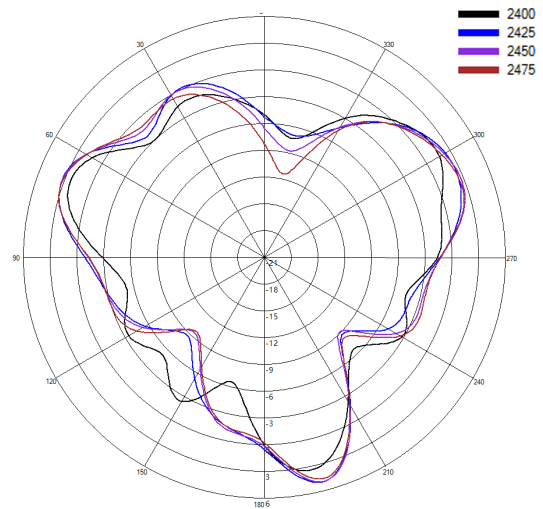
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3D Patterns WiFi 1

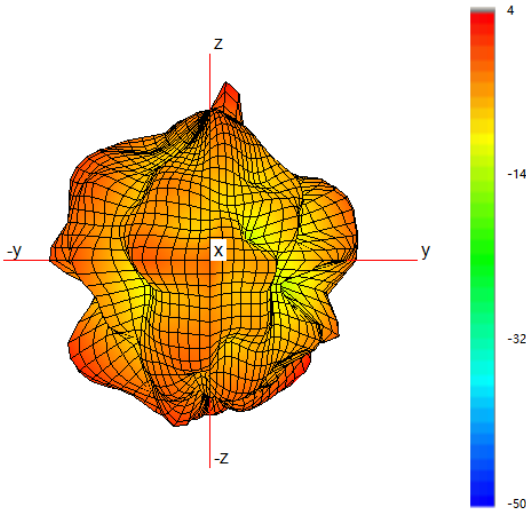
Typical 3D Pattern- WiFi 1 - 2450 MHz



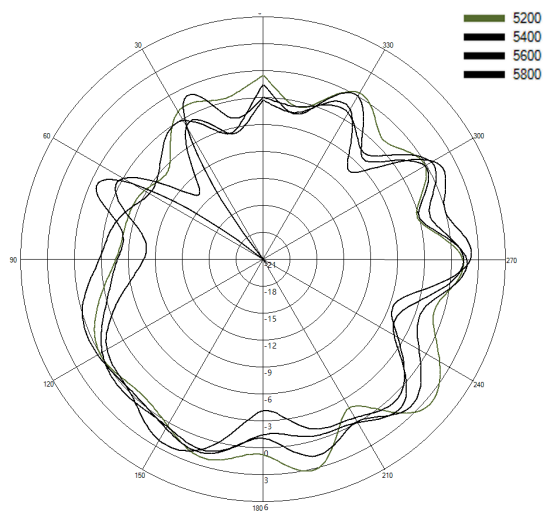
Typical H Plane- WiFi 1 - Patterns- 2400-2475 MHz



Typical 3D Pattern- WiFi 1 - 5500 MHz



Typical H Plane- WiFi 1 - Patterns- 5200-5800 MHz

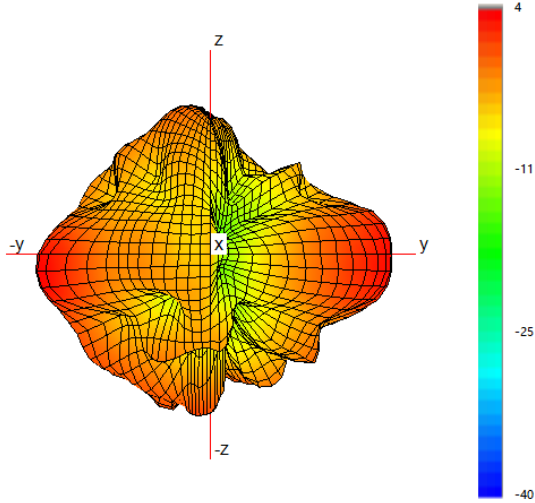


Internal MiMo Multi-Function Antenna

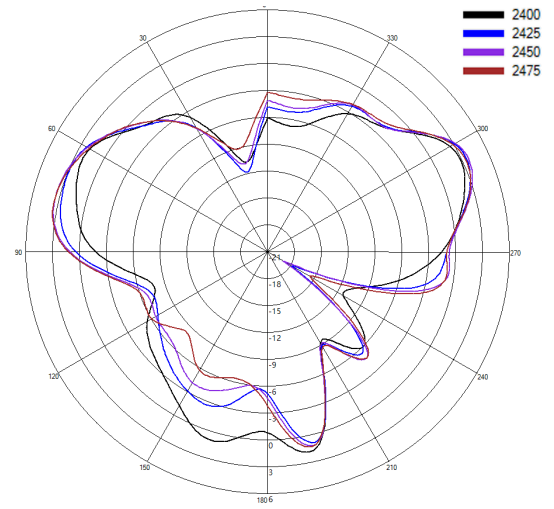
BAT[G]M-7-60[-24-58]

3D Patterns WiFi 2

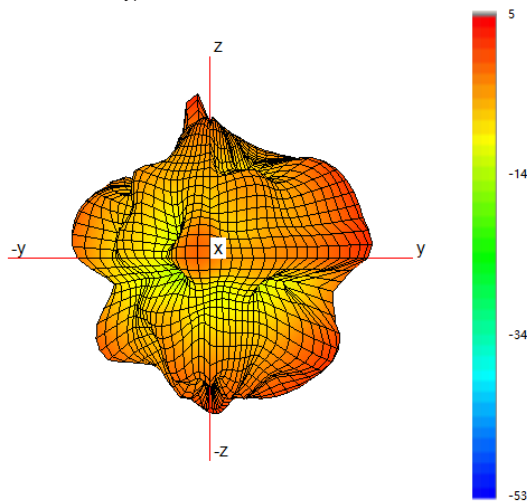
Typical 3D Pattern- WiFi 2 - 2450 MHz



Typical H Plane- WiFi 2 - Patterns- 2400-2475 MHz



Typical 3D Pattern- WiFi 2 - 5500 MHz



Typical H Plane- WiFi 2 - Patterns- 5200-5800 MHz

