

# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

PANORAMA ANTENNAS



Adhesive or screw mount to any non-conductive surface

Mount on or under vehicle dashboard or parcel shelf

Suitable for mobility or enterprise/branch applications

4x4 MiMo 617-960/1427-6000MHz

Up to 4x4 MiMo WiFi 6e (optional)

GPS/GNSS L1 or L1/L5 (optional)

The Panorama BAT[X]M4 range is a discrete or covert 4x4 MiMo antenna solution for 4G / 5G with the option of GPS/GNSS, and 2x2, 3x3 or 4x4 dual band 2.4/5.0-7.2GHz WiFi 6e.

The 4G/5G antenna elements cover 617-960/1427-6000MHz to provide a robust communications link to ensure high data rates even in challenging network coverage areas.

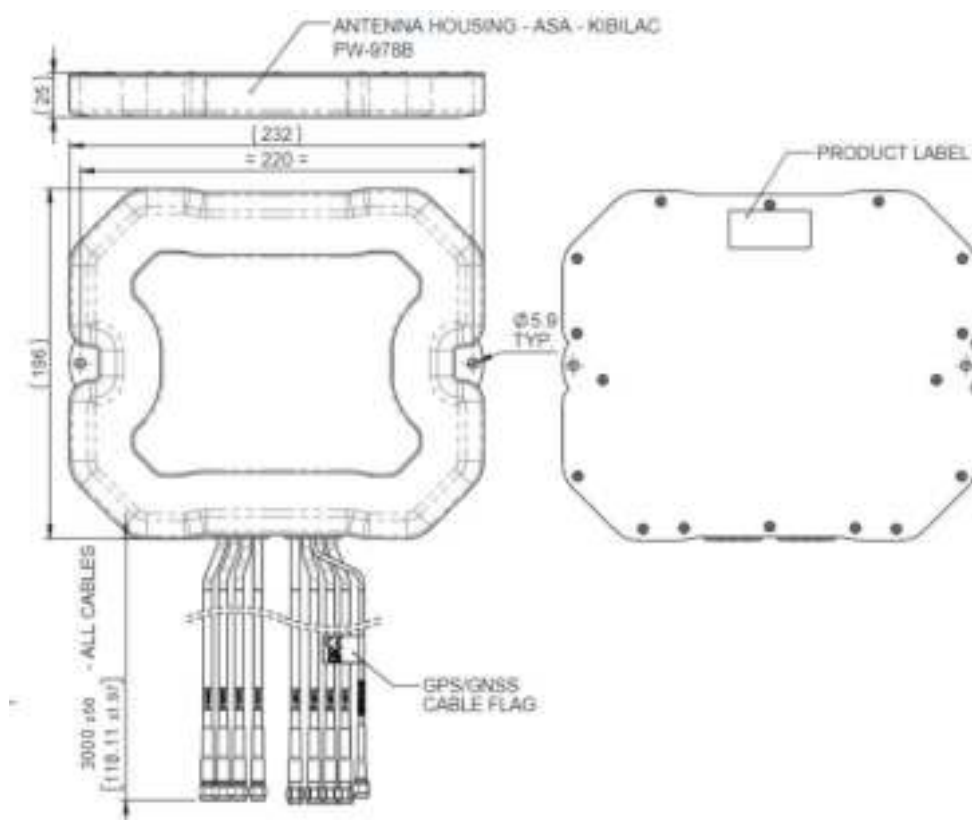
The antenna can include a GPS/GNSS module with advanced filtering for either L1/E1/G1/B1 only or dual band L1/E1/G1/B1 with L5/E5a

The antenna is IP55 rated and designed to be mounted on or under a vehicle dashboard or parcel shelf but can be mounted on any nonconductive surface. Versions without GPS can be mounted vertically to a wall or panel.

The BAT range is supplied with integrated low loss flame retardant cables which meet the requirements of UN ECE R118 and EN45545-2

## Technical Drawing

BATGM4-6-60-Q Shown



# 4x4 MiMo 4G/5G Adhesive

## Mount Antenna

BAT[X]M4-6-60-[X]

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### Product Data

Part No.		BATGM4-6-60-Q	BATGM4-6-60-T	BATGM4-6-60-D	BATGM4-6-60
Electrical Data					
Frequency Range (MHz)	Cell /LTE	4x 617-960 / 1427-6000			
	WiFi	4x 2396-7125	3x 2396-7125	2x 2396-7125	-
	GPS/GNSS	1x 1559-1612			
Typical VSWR*	Cell Elements	<2.5:1			
	WiFi Elements	< 2:1			
Isolation (dB)**	Cell Elements	≥ 7 (617-960MHz) / ≥ 12 (1427-1518MHz) / ≥ 12 (1710-2700MHz) / ≥ 20 (3300-6000MHz)			
	Wifi Elerments	>20			
Pattern		Omni-directional			
Impedance		50Ω			
Max Input Power (W)		5			
GPS/GNSS Data					
Frequency Range (MHz)		1559-1612			
Impedance		50Ω			
LNA Gain		26dB			
Voltage / Current		3-5v 17ma Typical			
Polarisation		Right Hand Circular			
Mechanical Data					
Dimensions (mm)	Height	25 (1")			
	Width	232 (13.78")			
	Length	196 (9.1")			
Environmental Specification					
Operating Temp (°C)		-40° / +80°C ( -40° / +176°F )			
Radome Material		ASA			
Radome Material Approvals		HB (UL 94) / UL746C F1			
Ingress Protection		IP55			
Mounting Data					
Fixing		Adhesive Pad / 2 × mounting holes to suit 5.5mm / No12 screws			
Cable Data	4G/5G Cables	WiFi Cables	GPS/GNSS Cable		
Cable Type		C32 (UN ECE R118)		FR RG174 (UN ECE R118)	
Cable Diameter (mm)		5 (0.2")		2.8 (0.1")	
Cable Length (m)		3m (9.8')			
Termination	4G/5G	4x SMA Plug (m)			
	WiFi	4x Rev Pol SMA	3x Rev Pol SMA	2x Rev Pol SMA	-
	GPS/GNSS	1x SMA Plug (m)			

\*Measured in free space with 0.5m (20") of CS32 cable \*\*Worst case isolation measured with 0.5m (1.5') CS32 cable

# 4x4 MiMo 4G/5G Adhesive Mount Antenna

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## Product Data

### Part No.

BATG5M4-6-60-Q

BATG5M4-6-60-T

BATG5M4-6-60-D

BATG5M4-6-60

### Electrical Data

Frequency Range (MHz)	Cell /LTE	4x 617-960 / 1427-6000			
	WiFi	4x 2396-7125	3x 2396-7125	2x 2396-7125	-
	GPS/GNSS	1x 1164-1189 / 1559-1612			
Typical VSWR*	Cell Elements	< 2.5:1			
	WiFi Elements	< 2:1			
Isolation**	Cell Elements	≥ 7 (617-960MHz) / ≥ 12 (1427-1518MHz) / ≥ 12 (1710-2700MHz) / ≥ 20 (3300-6000MHz)			
	WiFi Elements	>20			
Pattern	Omni-directional				
Impedance	50Ω				
Max Input Power (W)	5				

### GPS/GNSS Data

Frequency Range (MHz)	1559-1612 / 1164-1189				
Impedance	50Ω				
LNA Gain	30dB / 26dB				
Voltage / Current	3-5v 36ma Typical				
Polarisation	Right Hand Circular				

### Mechanical Data

Dimensions (mm)	Height	25 (1")			
	Width	232 (13.78")			
	Length	196 (9.1")			

### Environmental Specification

Operating Temp (°C)	-40° / +80°C ( -40° / +176°F )				
Radome Material	ASA				
Radome Material Approvals	HB (UL 94) / UL746C F1				
Ingress Protection	IP55				

### Mounting Data

Fixing		Adhesive Pad / 2 × mounting holes to suit 5.5mm / No12 screws			
Cable Data	4G/5G Cables	WiFi Cables		GPS/GNSS Cable	
Cable Type	C32 (UN ECE R118)		FR RG174 (UN ECE R118)		
Cable Diameter (mm)	5 (0.2")		2.8 (0.1")		
Cable Length (m)			3m (9.8')		
Termination	4G/5G	4x SMA Plug (m)			
	WiFi	4x Rev Pol SMA	3x Rev Pol SMA	2x Rev Pol SMA	-
	GPS/GNSS	1x SMA Plug (m)			

\*Measured in free space with 0.5m (20") of CS32 cable \*\*Worst case isolation measured with 0.5m (1.5') CS32 cable

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## Mount Antenna

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### Product Data

Part No.					
		BATM4-6-60-Q	BATM4-6-60-T	BATM4-6-60-D	BATM4-6-60
Electrical Data					
Frequency Range (MHz)	Cell /LTE	4x 617-960 / 1427-6000			
	WiFi	4x 2396-7125	3x 2396-7125	2x 2396-7125	-
Typical VSWR*	Cell Elements	< 2.5:1			
	WiFi Elements	<2:1			
Isolation**	Cell Elements	≥ 7 (617-960MHz) / ≥ 12 (1427-1518MHz) / ≥ 12 (1710-2700MHz) / ≥ 20 (3300-6000MHz)			
	Wifi Elements	>20			
Pattern		Omni-directional			
Impedance		50Ω			
Max Input Power (W)		5			
Mechanical Data					
Dimensions (mm)	Height	25 (1")			
	Width	232 (13.78")			
	Length	196 (9.1")			
Environmental Specification					
Operating Temp (°C)		-40° / +80°C ( -40° / +176°F )			
Radome Material		ASA			
Radome Material Approvals		HB (UL 94) / UL746C F1			
Ingress Protection		IP55			
Mounting Data					
Fixing		Adhesive Pad / 2 × mounting holes to suit 5.5mm / No12 screws			
Cable Data		4G/5G Cables		WiFi Cables	
Cable Type		C32 (UN ECE R118)			
Cable Diameter (mm)		5 (0.2")			
Cable Length (m)		3m (9.8')			
Termination	4G/5G	4x SMA Plug (m)			
	WiFi	4x Rev Pol SMA	3x Rev Pol SMA	2x Rev Pol SMA	-

\*Measured in free space with 0.5m (20") of CS32 cable \*\*Worst case isolation measured with 0.5m (1.5') CS32 cable


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## Mount Antenna

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### Electrical Data- Cell

Measurement Conditions	4G/5G Antennas				
BATGM4-6-60-D measured in free space with 0.5m (20") CS32 Pigtails	Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	617-698	71	Cell A	2.4	62
			Cell B	3.1	55
			Cell C	2.5	48
			Cell D	2.4	62
	699-798	12,13, 14 17,28	Cell A	2.7	60
			Cell B	2.5	55
			Cell C	3.2	60
			Cell D	2.7	60
	807- 862	5,19,20,26,27	Cell A	3.2	62
			Cell B	2.7	57
			Cell C	3.4	61
			Cell D	3.2	62
	880-960	8	Cell A	3.5	62
			Cell B	2.7	56
			Cell C	2.8	58
			Cell D	3.5	62
	1427-1518	11, 21, 74,75,76	Cell A	4.0	61
			Cell B	3.4	62
			Cell C	5.6	67
			Cell D	4.0	61
	1710-1920	2,3,4,9,25,35, 39,66	Cell A	4.8	69
			Cell B	3.8	61
			Cell C	5.5	65
			Cell D	4.8	69
	1920-2170	1,23	Cell A	5.7	73
			Cell B	5.8	68
			Cell C	6.6	72
			Cell D	5.7	73
	2300-2400	30,40	Cell A	5.3	71
			Cell B	5.0	63
			Cell C	7.3	76
			Cell D	5.3	71
	2496-2690	7,38,41	Cell A	6.7	74
			Cell B	5.0	62
			Cell C	5.3	75
			Cell D	6.7	74
	3300-4200	22,42,43,48,77, 78,79	Cell A	7.8	78
			Cell B	7.3	74
			Cell C	7.2	73
			Cell D	7.8	78
	4400-5000	79	Cell A	7.0	73
			Cell B	7.3	70
			Cell C	6.9	73
			Cell D	7.0	73


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### Electrical Data - WiFi

Measurement Conditions	WiFi Antennas				
BATGM4-6-60-D measured in free space with 0.5m (20") CS32 Pigtails	Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	2396-2485	2.5GHz	WiFi 1	4.9	67
			WiFi 2	5.9	72
	5150-5250	UNII-1	WiFi 1	6.5	72
			WiFi 2	6.4	72
	5250-5350	UNII-2A	WiFi 1	6.2	72
			WiFi 2	6.8	72
	5470-5725	UNII-2B	WiFi 1	5.7	69
			WiFi 2	6.7	68
	5725-5900	UNII-3	WiFi 1	5.8	69
			WiFi 2	7.0	66
	5845-5885	UNII-4	WiFi 1	5.4	68
			WiFi 2	6.8	64
	5935-6415	UNII-5	WiFi 1	5.5	65
			WiFi 2	7.6	66
	6435-6515	UNII-6	WiFi 1	5.4	61
			WiFi 2	6.7	65
	6535-6875	UNII-7	WiFi 1	5.1	60
			WiFi 2	7.1	66
	6875-7125	UNII-8	WiFi 1	4.3	59
			WiFi 2	7.0	67

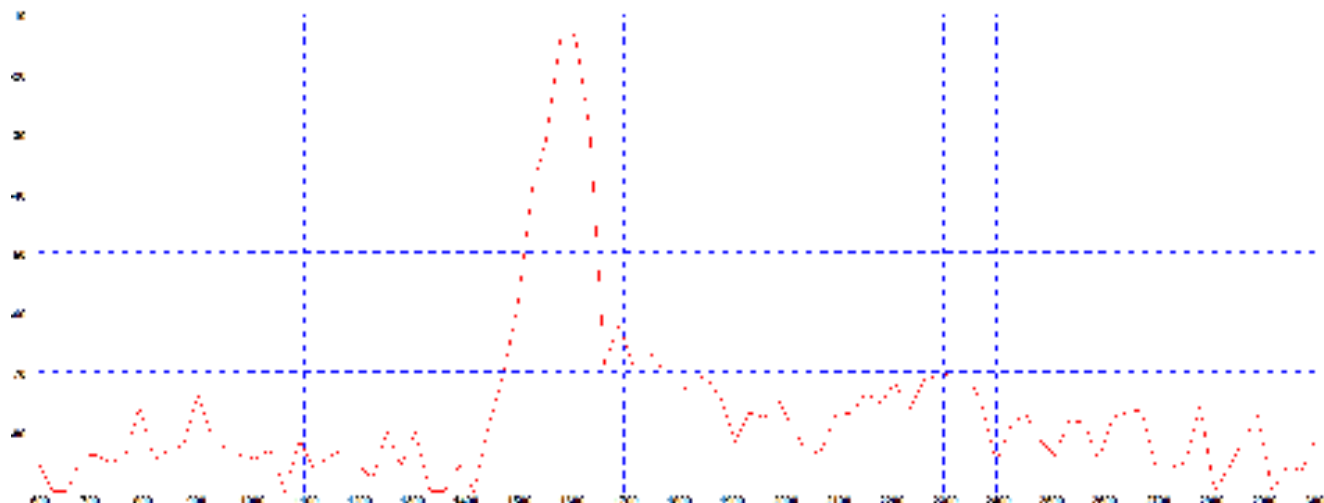
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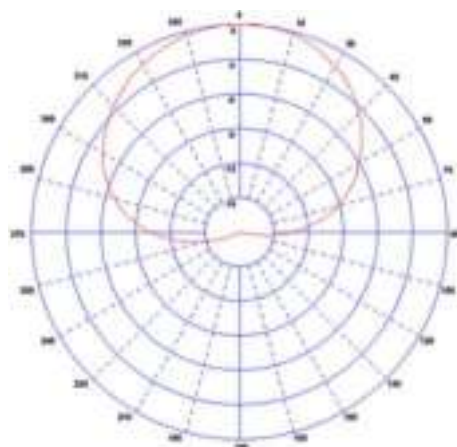
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## Electrical Data- L1 GPS/GNSS

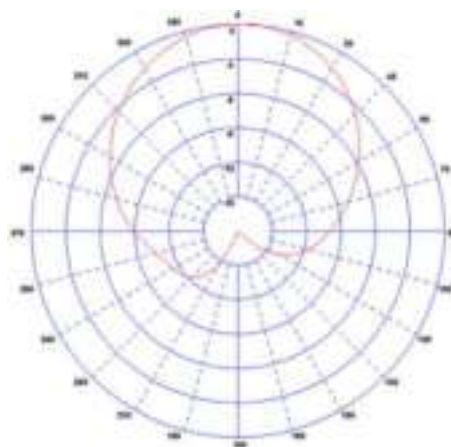
Swept Peak Gain GPS/GNSS



Typical E Plane Pattern - GPS/GNSS 1575 MHz



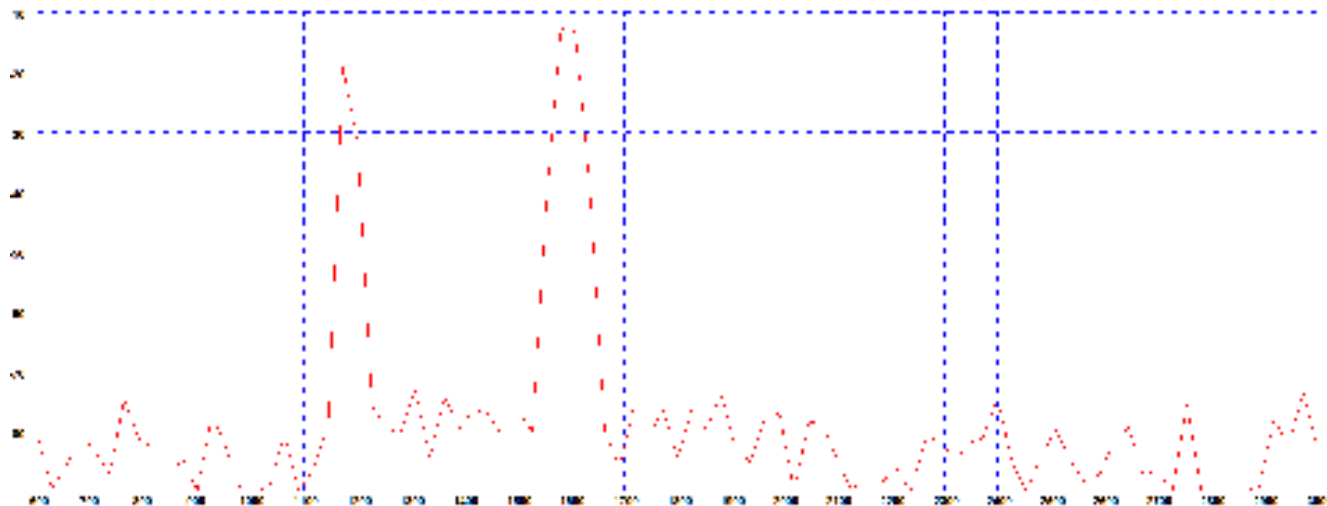
Typical E Plane Pattern - GPS/GNSS 1602 MHz



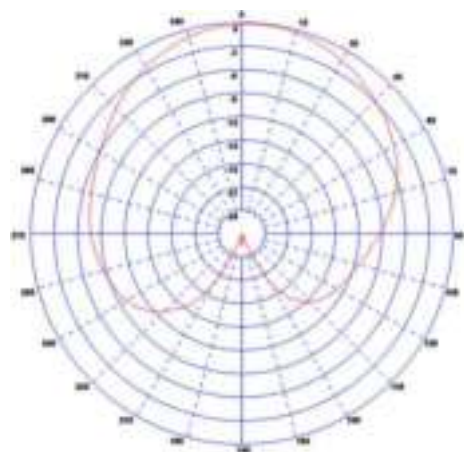
GPS/GNSS Measurements taken on 190x190mm (7.4" x 7.4") ground plane excluding cable loss



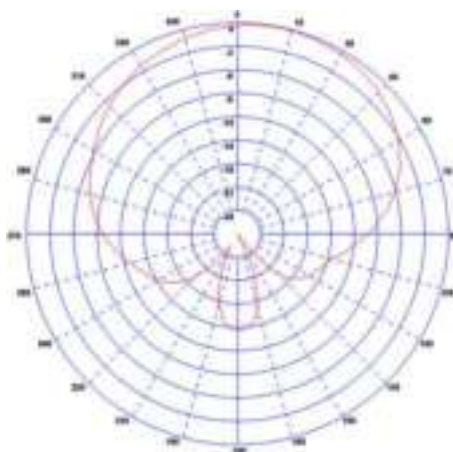
Swept Peak Gain GPS/GNSS



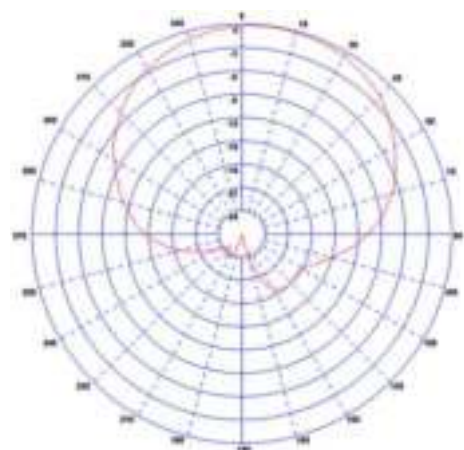
Typical E Plane Pattern - GPS/GNSS 1575 MHz



Typical E Plane Pattern - GPS/GNSS 1602 MHz



Typical E Plane Pattern - GPS/GNSS 1176 MHz



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



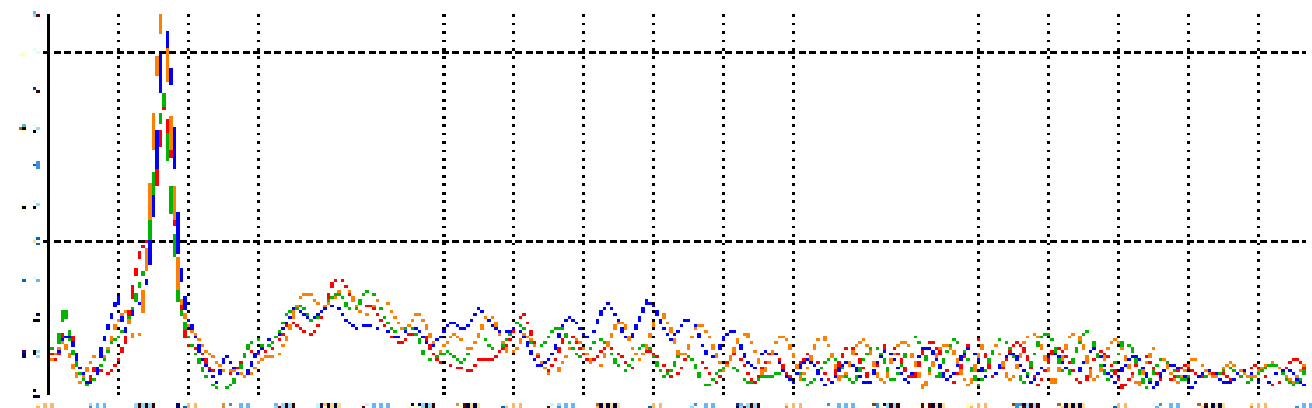
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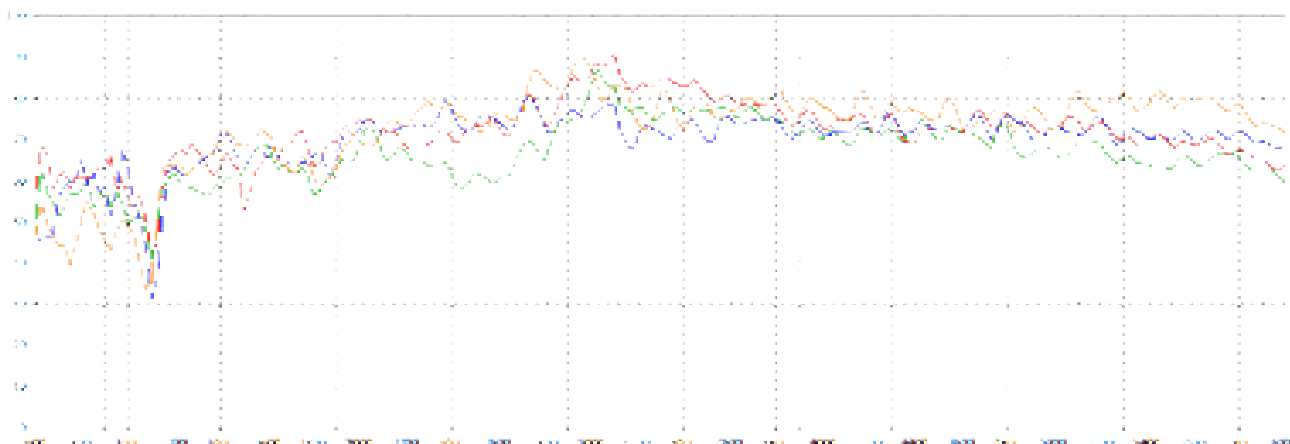
## Electrical Data- Cell

Typical VSWR \*



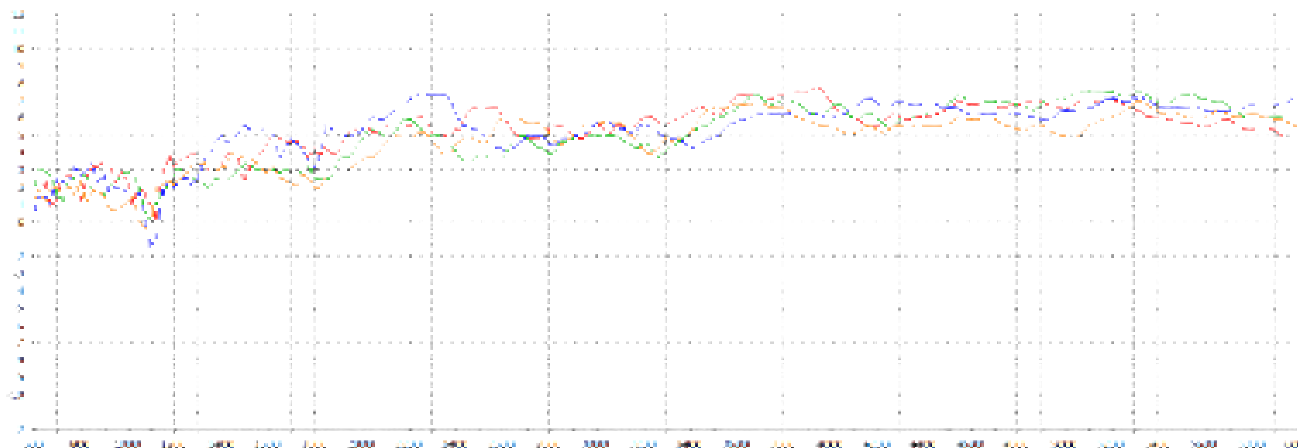
\* BATGM4-6-60-D VSWR measured with 0.5m (1.5') of CS32 cable

Typical Efficiency\*



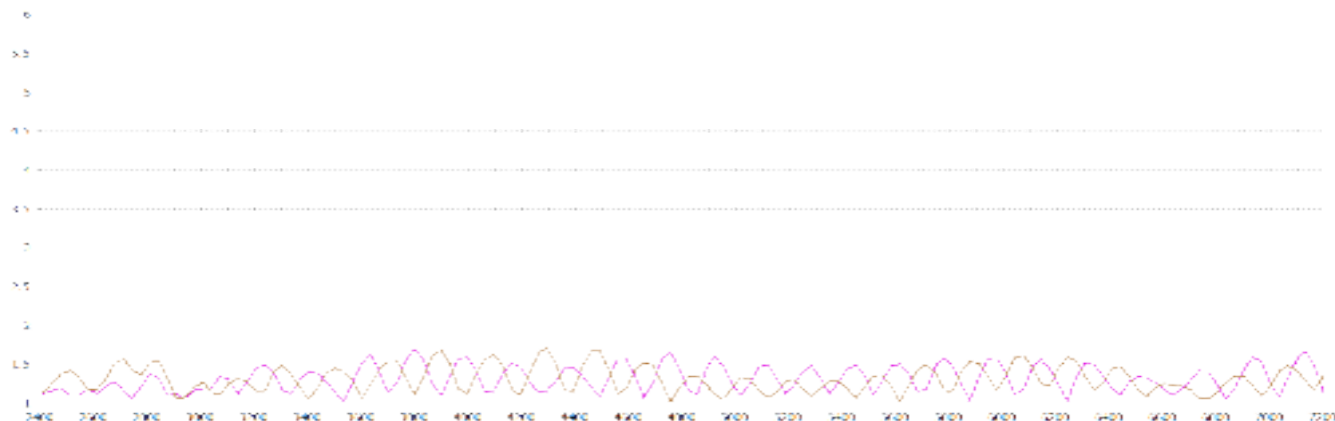
\* BATGM4-6-60-D Efficiency measured with 0.5m (1.5') of CS32 cable

Typical Swept Peak Gain\*



\* BATGM4-6-60-D Swept peak gain measured with 0.5m (1.5') of CS32 cable

Typical VSWR \*



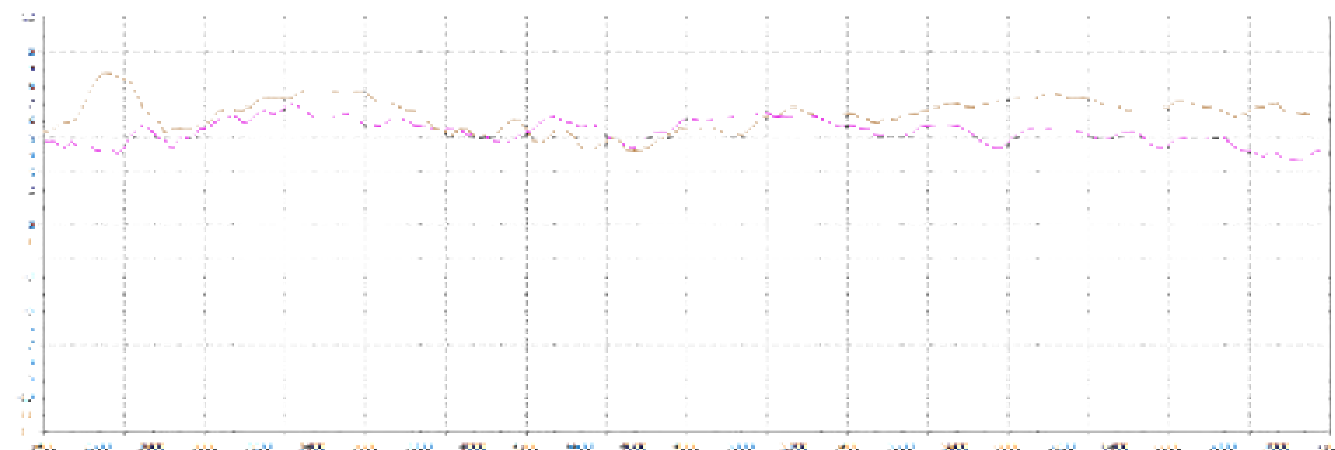
\* BATGM4-6-60-D VSWR measured with 0.5m (1.5') of CS32 cable

Typical Efficiency\*



\* BATGM4-6-60-D Efficiency measured with 0.5m (1.5') of CS32 cable

Typical Swept Peak Gain\*



\* BATGM4-6-60-D Swept peak gain measured with 0.5m (1.5') of CS32 cable

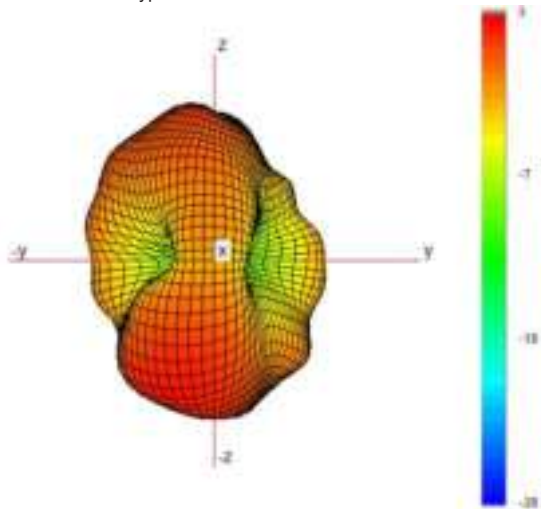
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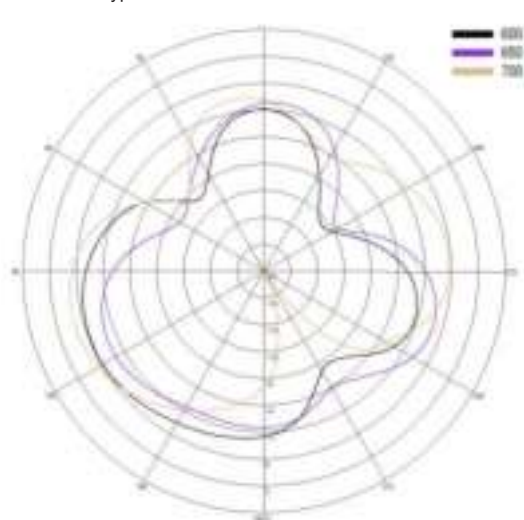
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## 3D Patterns -Cell A

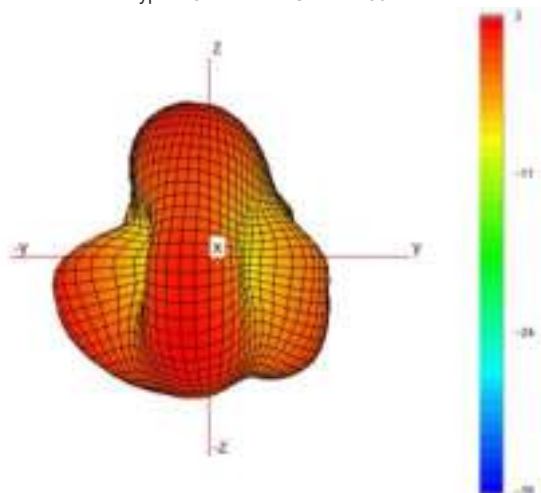
Typical 3D Pattern- Cell A - 650 MHz



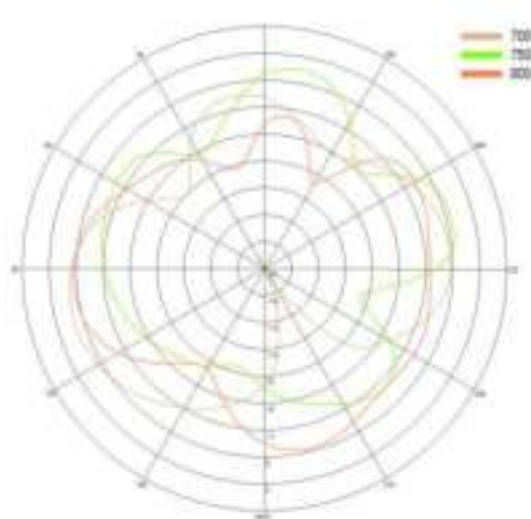
Typical H Plane- Cell A - Patterns- 600-700MHz



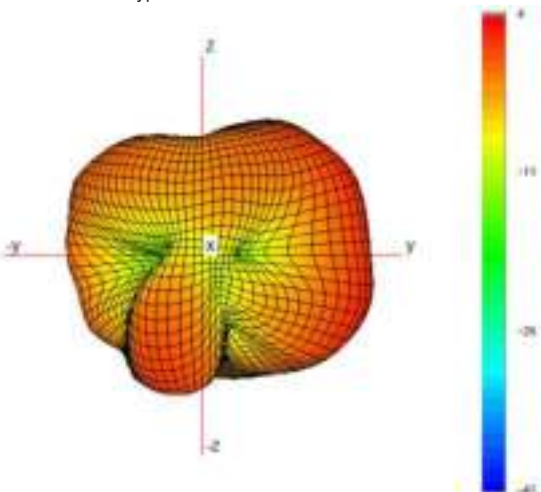
Typical 3D Pattern- Cell A - 750 MHz



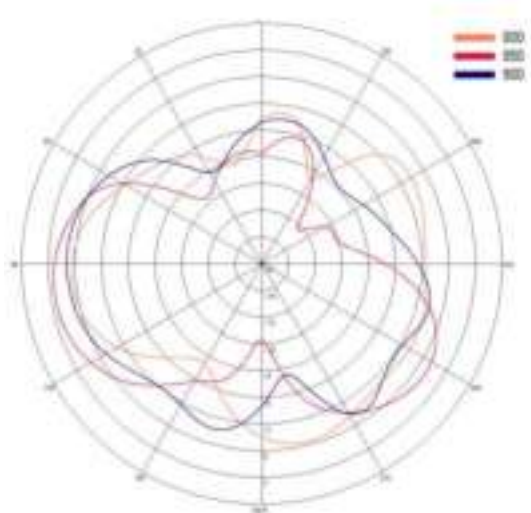
Typical H Plane- Cell A - Patterns- 700-800MHz



Typical 3D Pattern- Cell A - 850 MHz



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



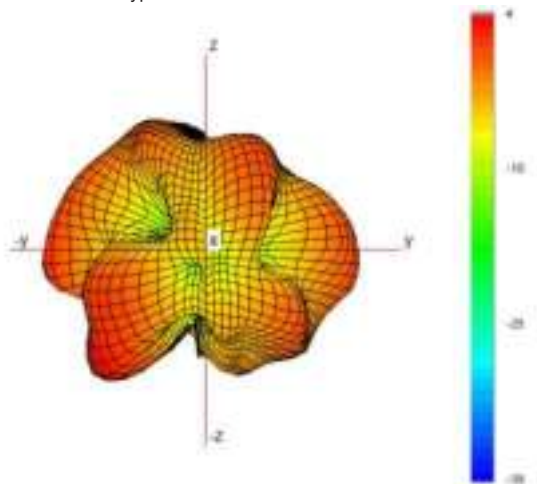
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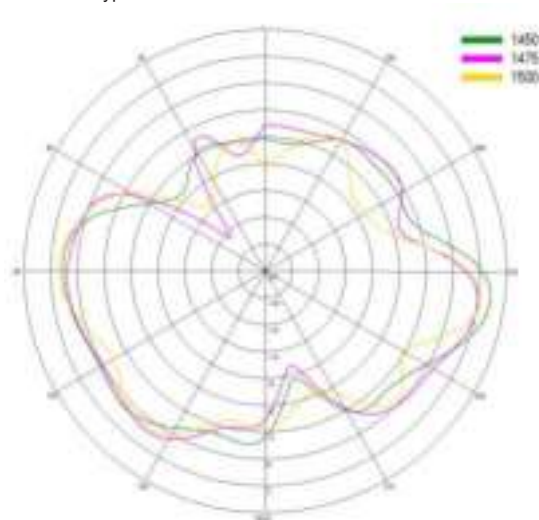
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## 3D Patterns Cell A

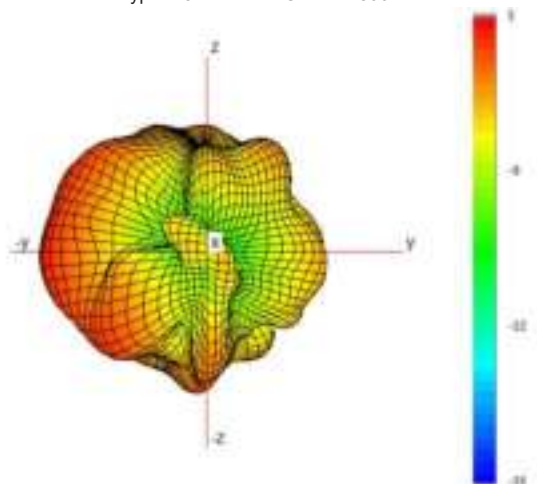
Typical 3D Pattern- Cell A - 1475 MHz



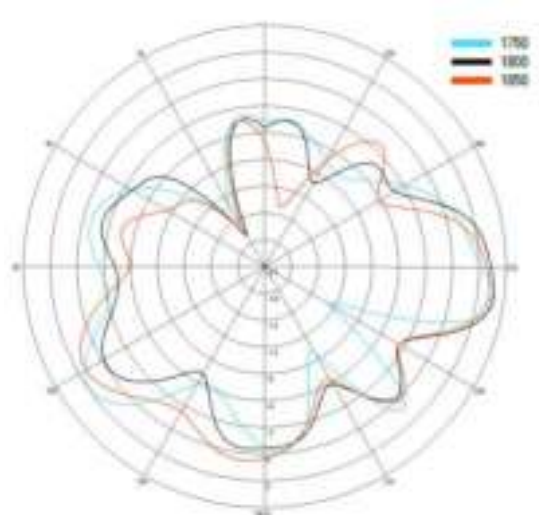
Typical H Plane- Cell A- Patterns- 1450-1500 MHz



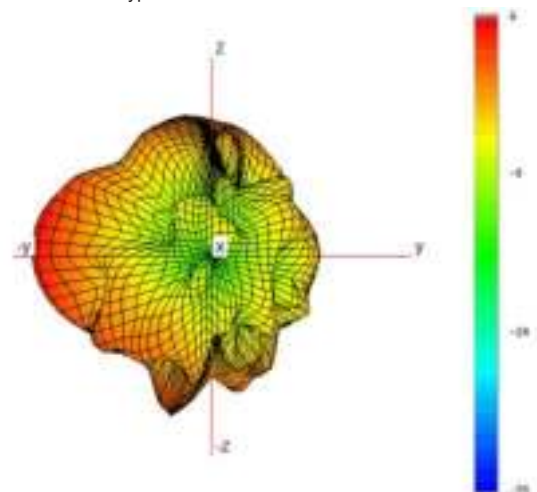
Typical 3D Pattern- Cell A - 1800 MHz



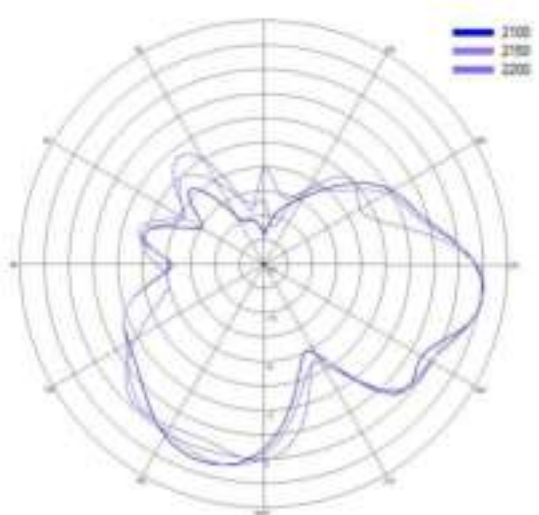
Typical H Plane- Cell A- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell A - 2150 MHz



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





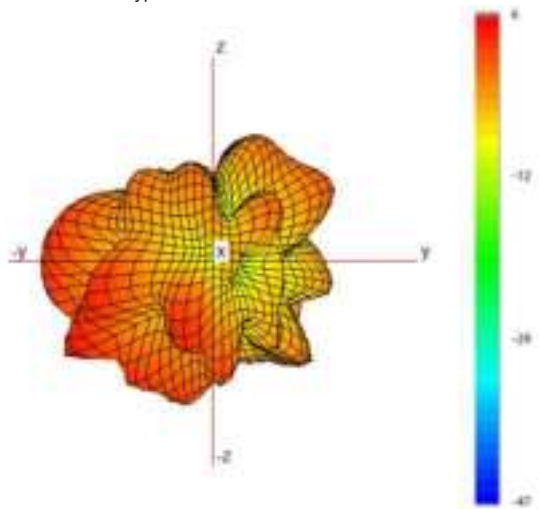
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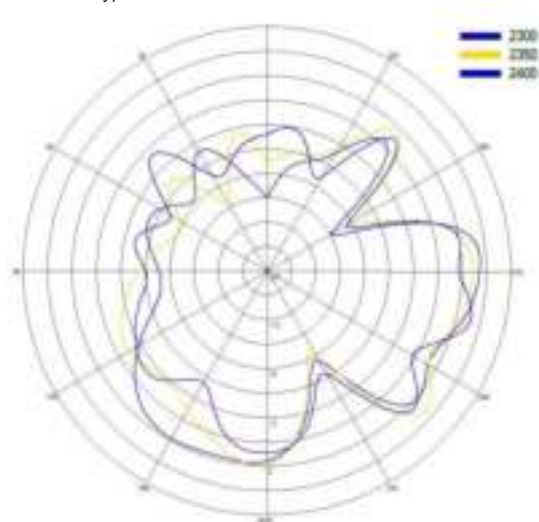
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## 3D Patterns -Cell A

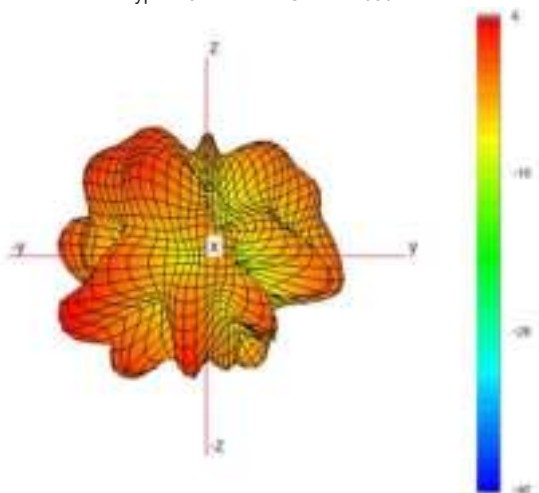
Typical 3D Pattern- Cell A - 2350 MHz



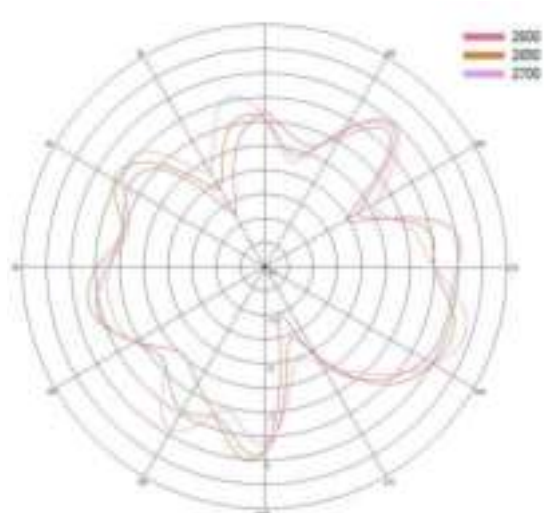
Typical H Plane- Cell A - Patterns- 2300-2400 MHz



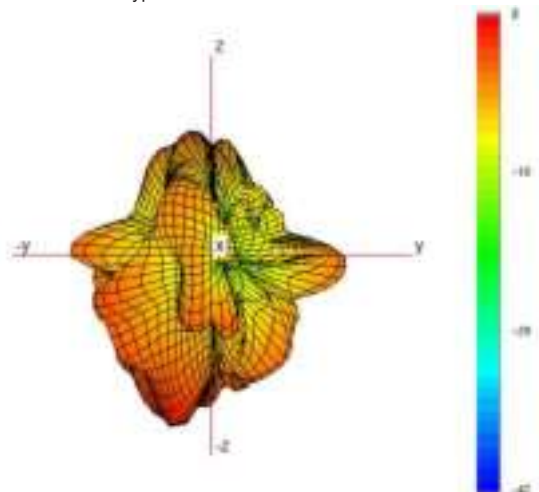
Typical 3D Pattern- Cell A - 2650 MHz



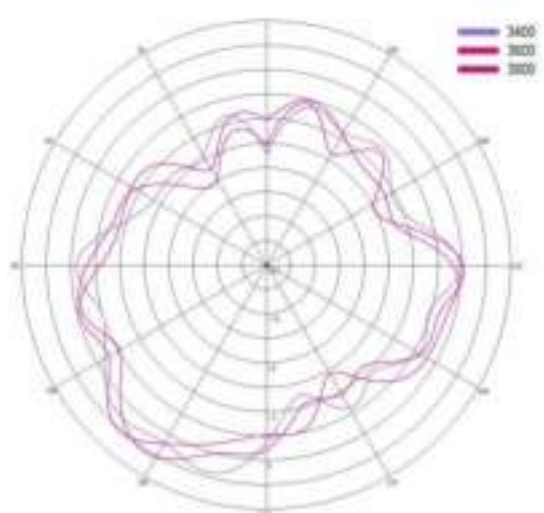
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz



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



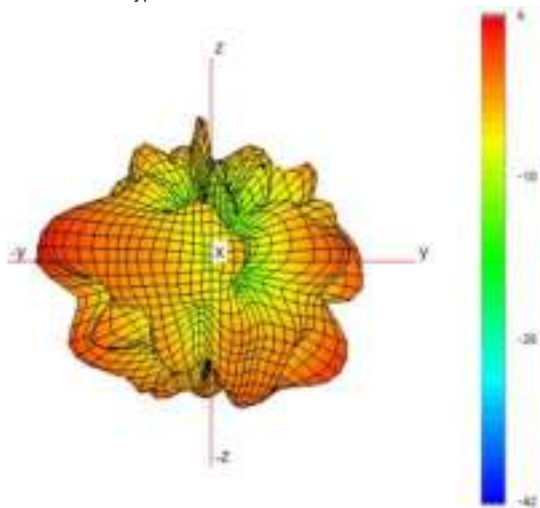
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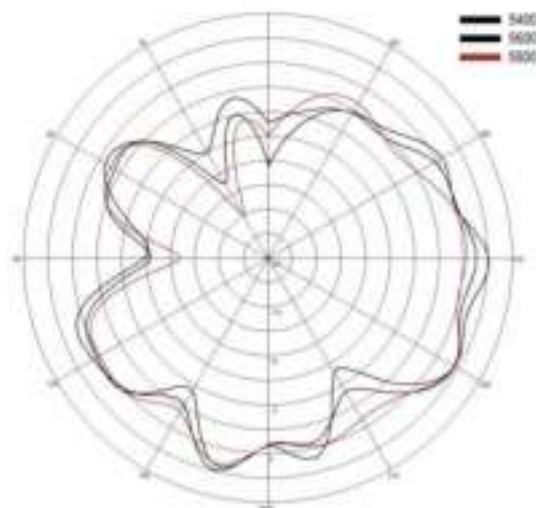
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## 3D Patterns Cell A

Typical 3D Pattern- Cell A - 5600 MHz



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



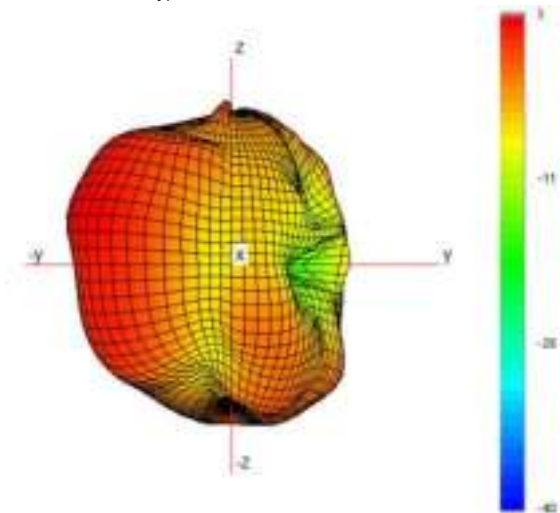
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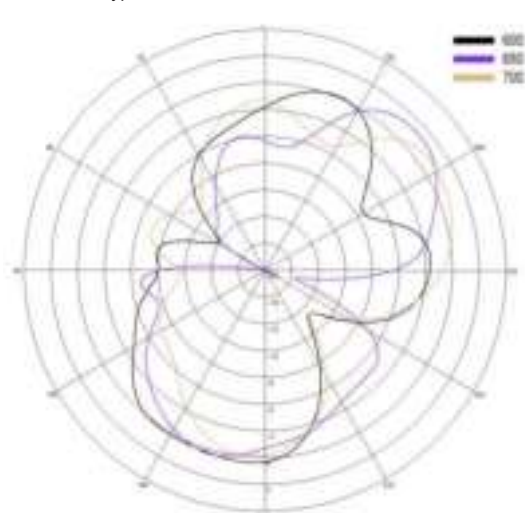
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## 3D Patterns -Cell B

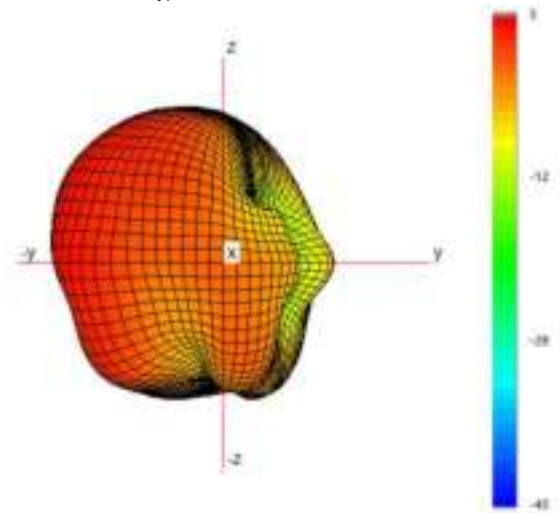
Typical 3D Pattern- Cell B - 650 MHz



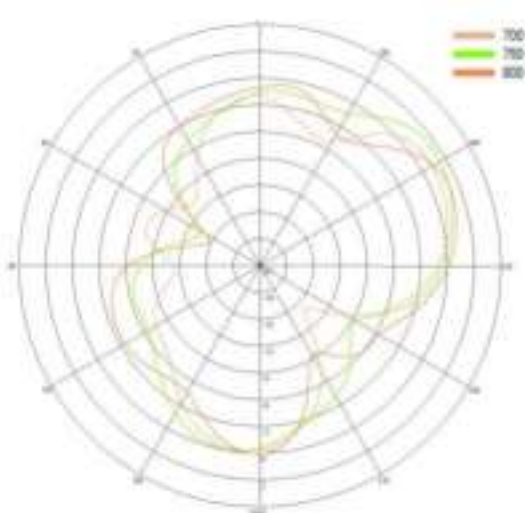
Typical H Plane- Cell B - Patterns- 600-700MHz



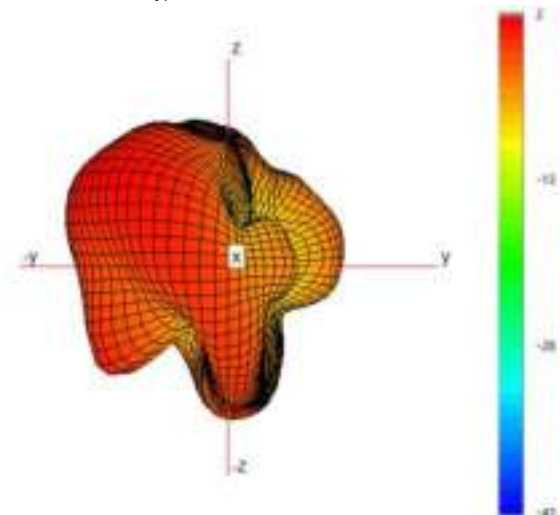
Typical 3D Pattern- Cell B - 750 MHz



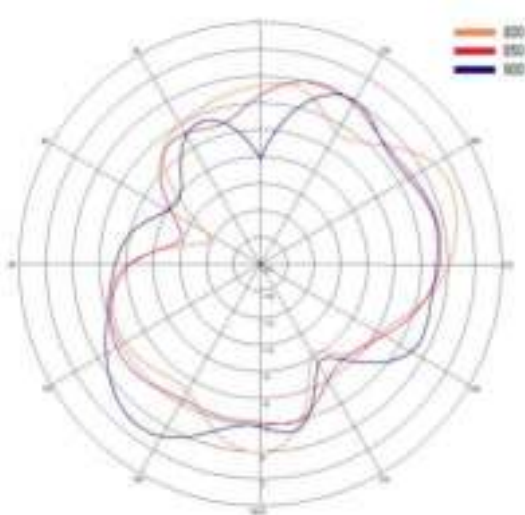
Typical H Plane- Cell B - Patterns- 700-800MHz



Typical 3D Pattern- Cell B - 850 MHz



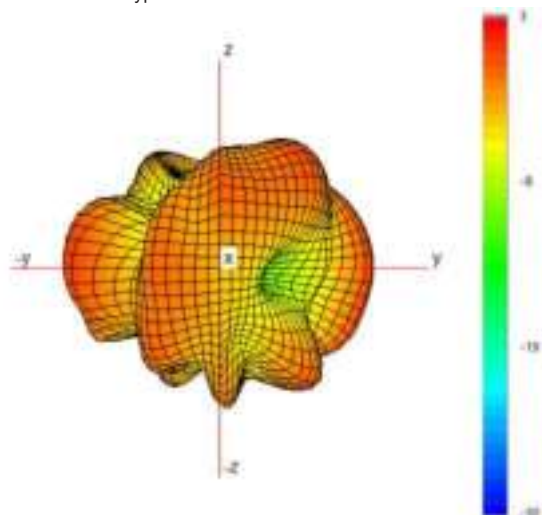
Typical H Plane- Cell B - Patterns- 800-900MHz



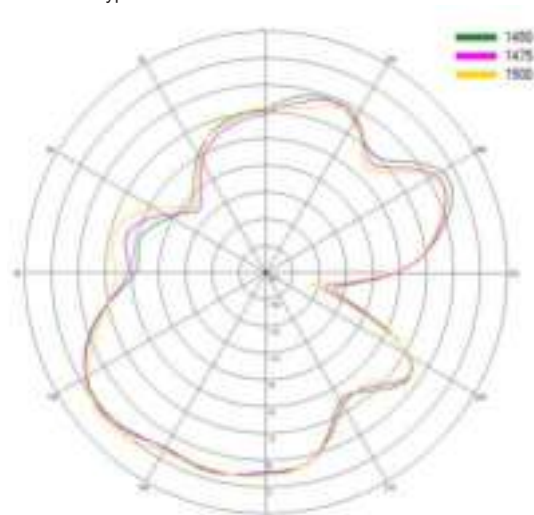


### 3D Patterns Cell B

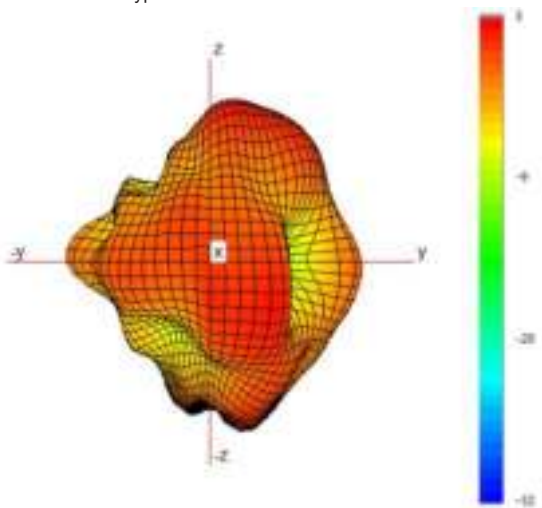
Typical 3D Pattern- Cell B - 1475 MHz



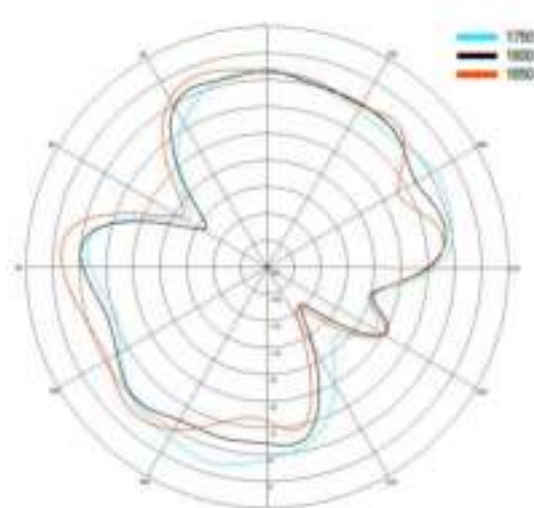
Typical H Plane- Cell B- Patterns- 1450-1500 MHz



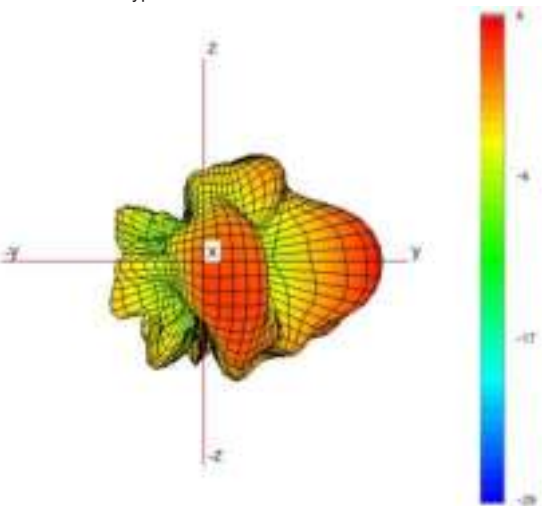
Typical 3D Pattern- Cell B - 1800 MHz



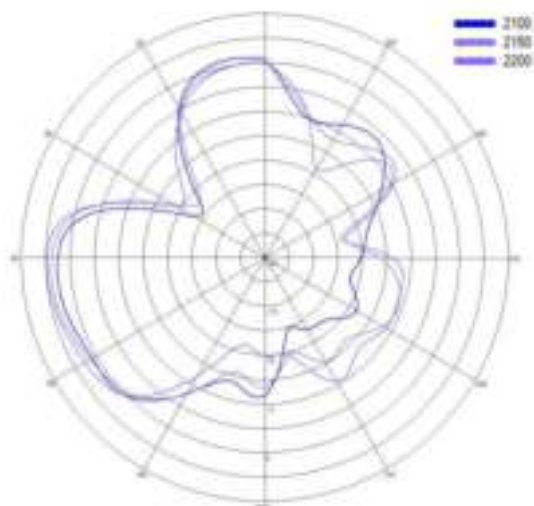
Typical H Plane- Cell B- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell B - 2150 MHz



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



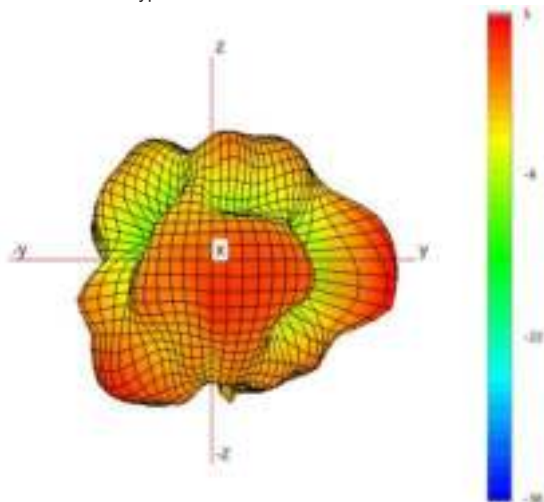
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

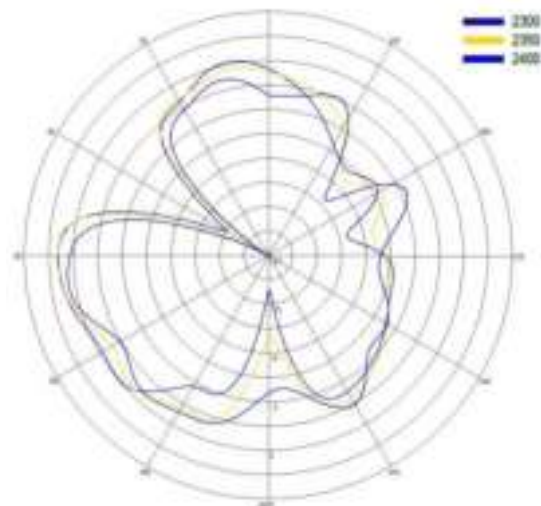
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## 3D Patterns -Cell B

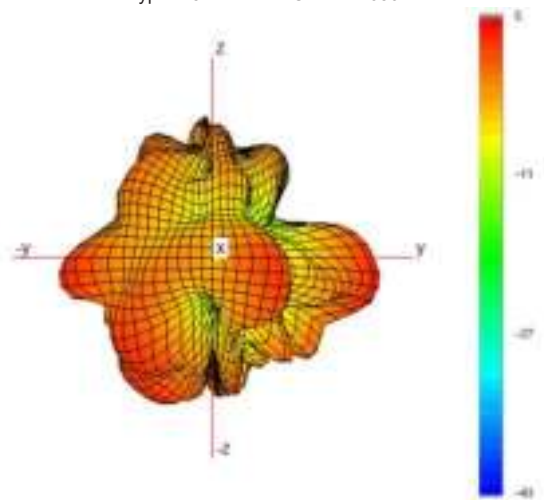
Typical 3D Pattern- Cell B - 2350 MHz



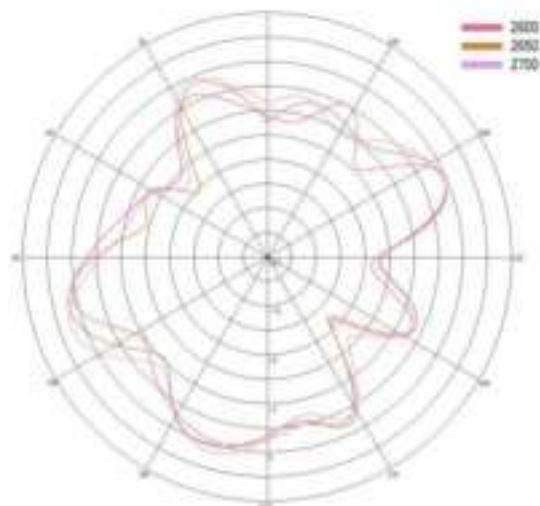
Typical H Plane- Cell B - Patterns- 2300-2400 MHz



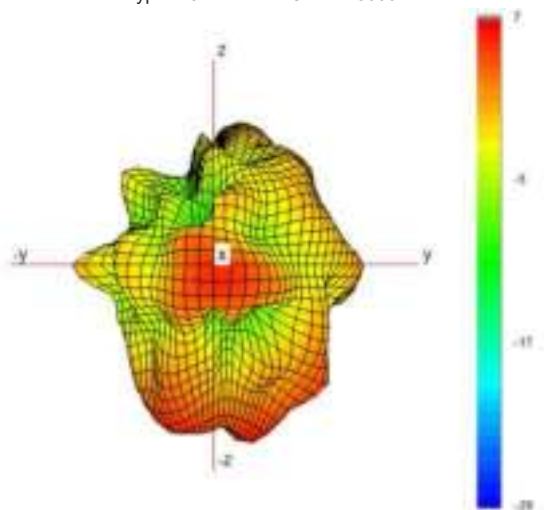
Typical 3D Pattern- Cell B - 2650 MHz



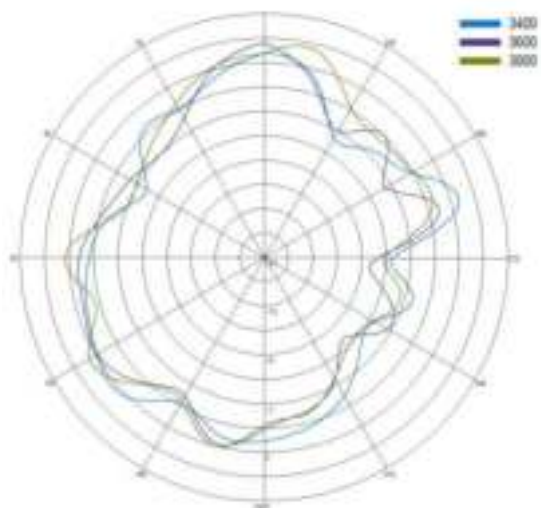
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell B - 3600 MHz



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



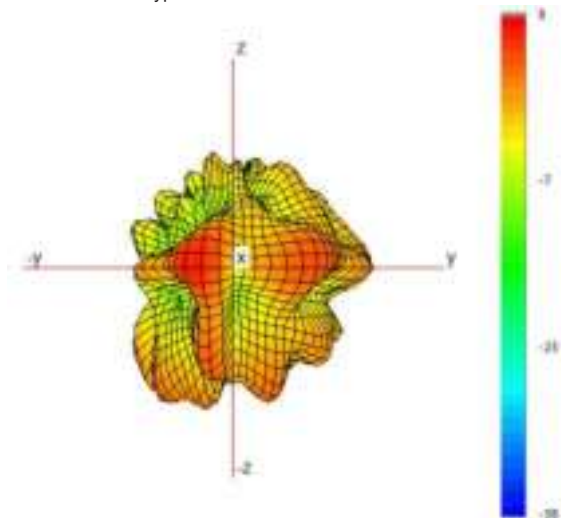
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

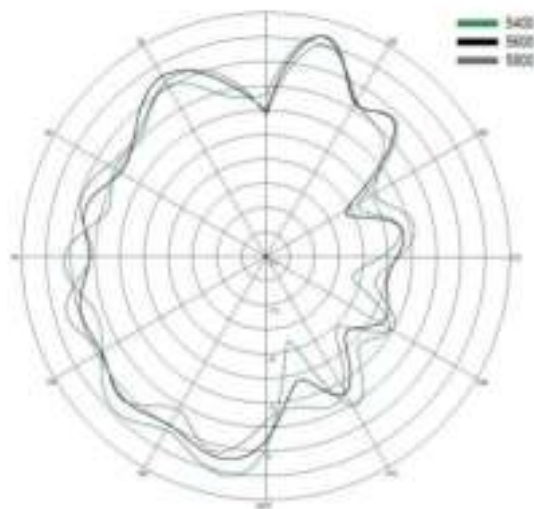
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## 3D Patterns Cell B

Typical 3D Pattern- Cell B - 5600 MHz



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





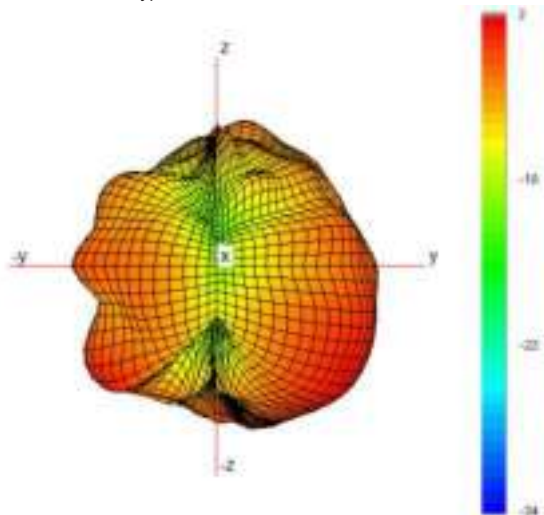
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

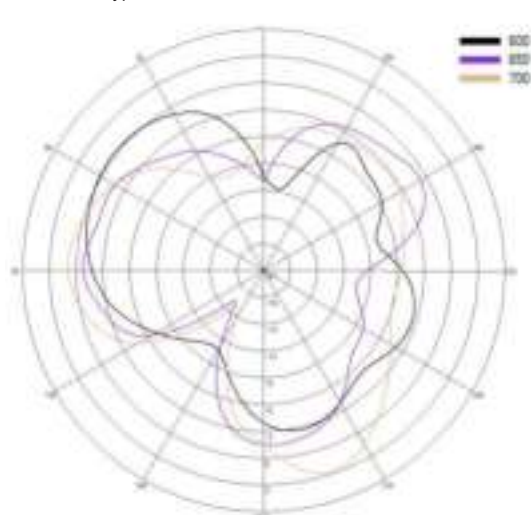
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## 3D Patterns -Cell C

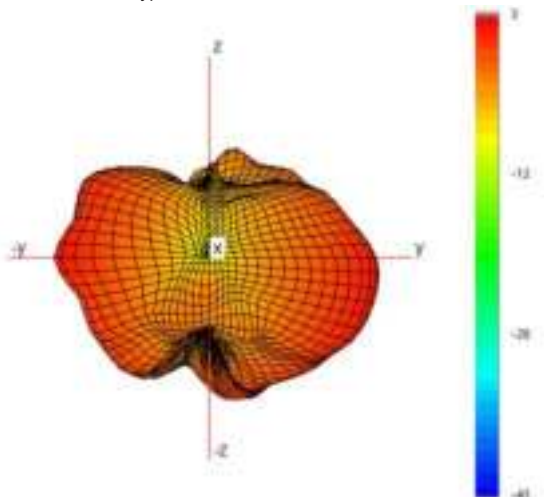
Typical 3D Pattern- Cell C - 650 MHz



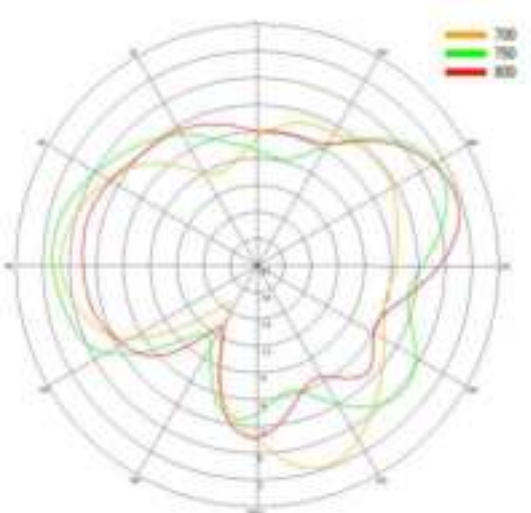
Typical H Plane- Cell C - Patterns- 600-700MHz



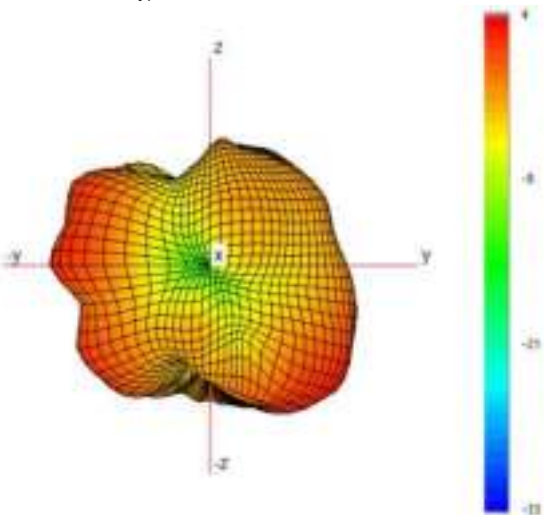
Typical 3D Pattern- Cell C - 750 MHz



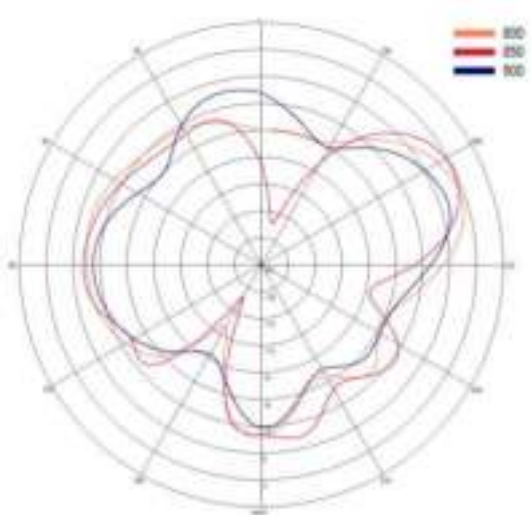
Typical H Plane- Cell C - Patterns- 700-800MHz



Typical 3D Pattern- Cell C - 850 MHz

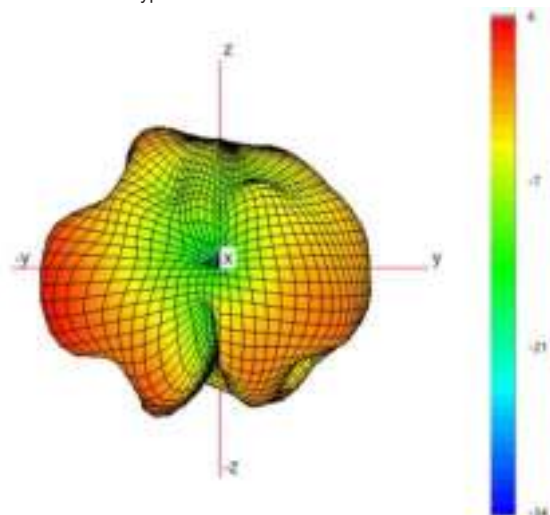


Typical H Plane- Cell C - Patterns- 800-900MHz

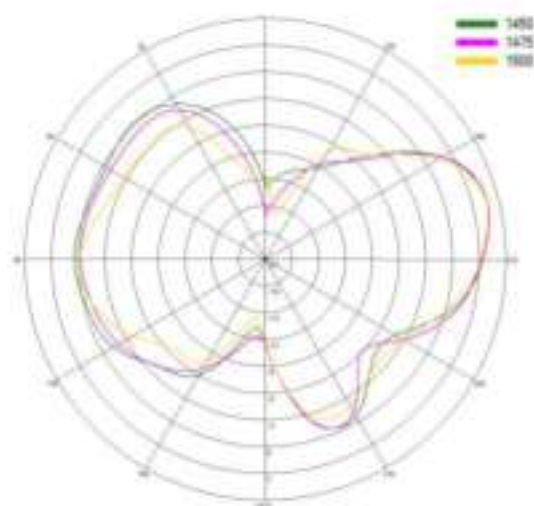


### 3D Patterns Cell C

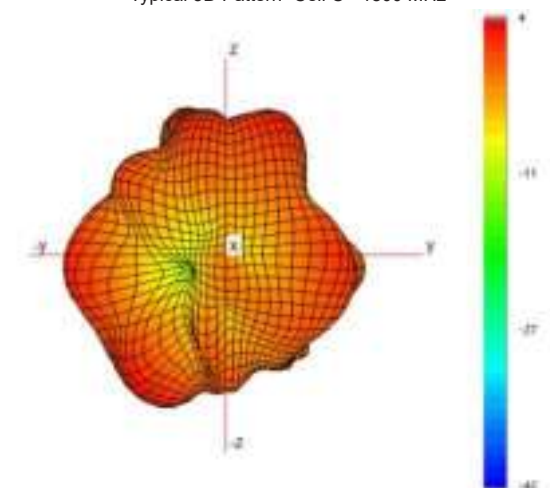
Typical 3D Pattern- Cell C - 1475 MHz



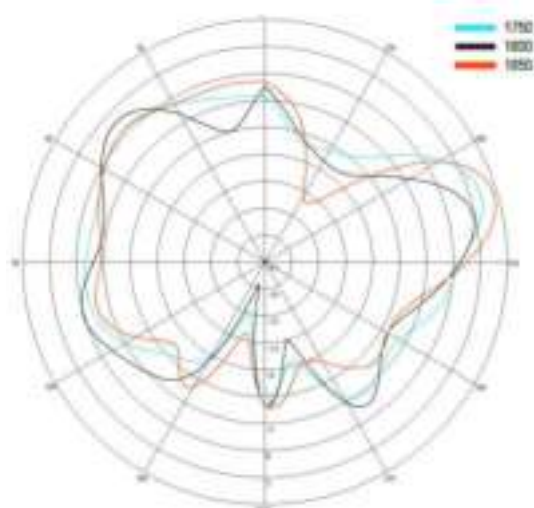
Typical H Plane- Cell C- Patterns- 1450-1500 MHz



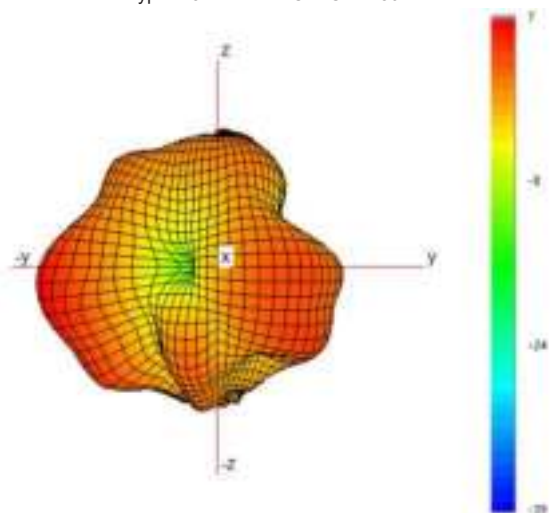
Typical 3D Pattern- Cell C - 1800 MHz



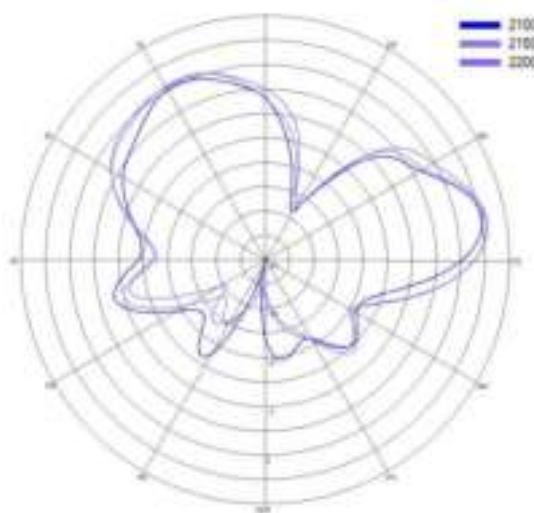
Typical H Plane- Cell C- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell C - 2150 MHz



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



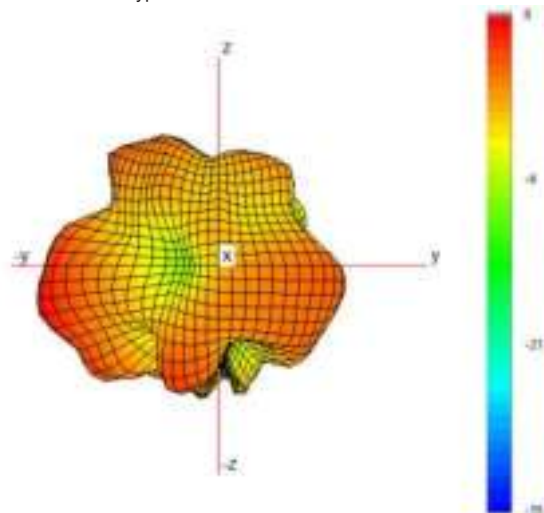
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

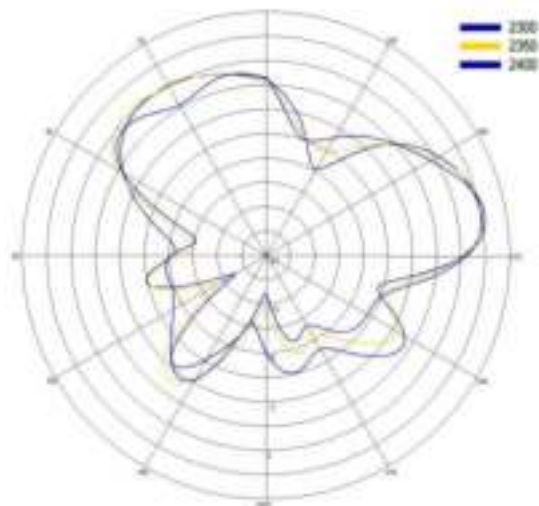
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## 3D Patterns -Cell C

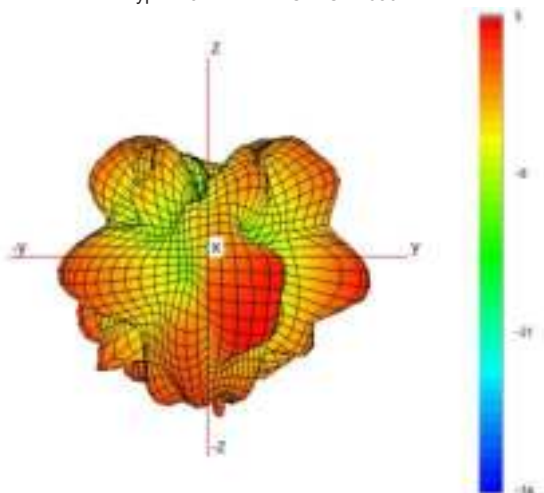
Typical 3D Pattern- Cell C - 2350 MHz



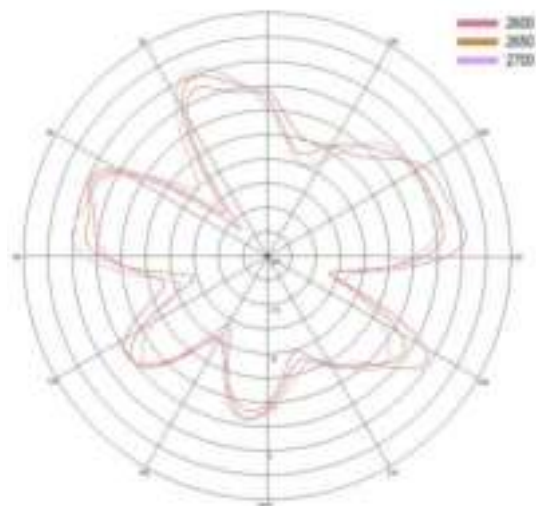
Typical H Plane- Cell C - Patterns- 2300-2400 MHz



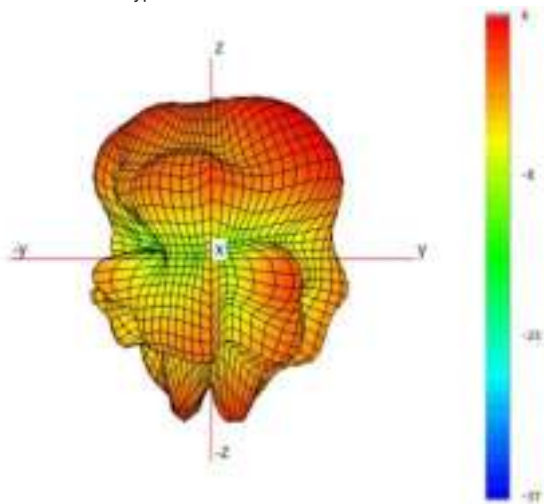
Typical 3D Pattern- Cell C - 2650 MHz



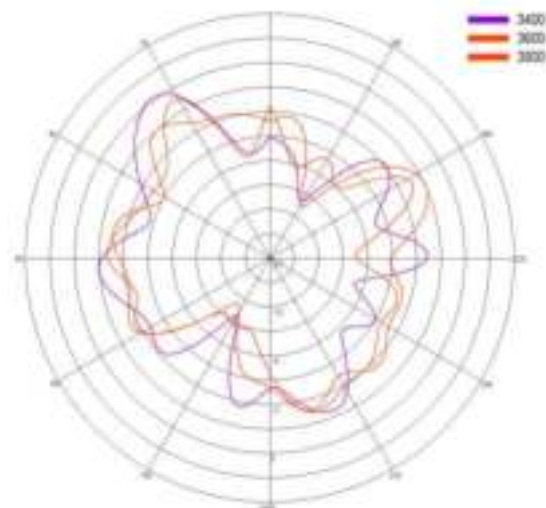
Typical H Plane- Cell C - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell C - 3600 MHz



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





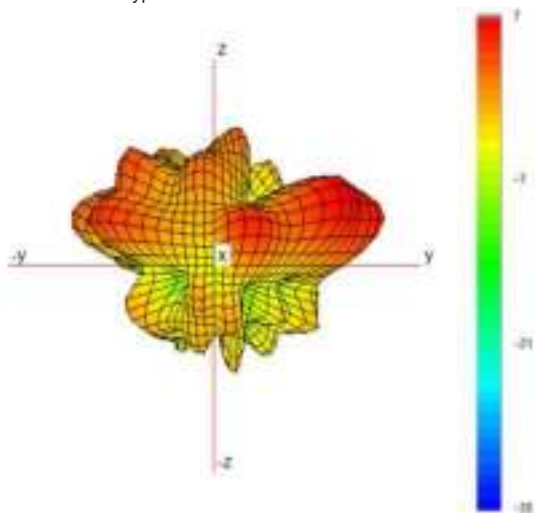
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

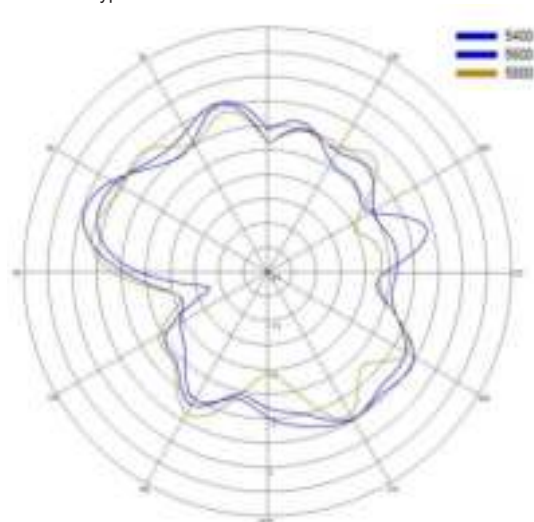
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## 3D Patterns Cell C

Typical 3D Pattern- Cell C - 5600 MHz



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





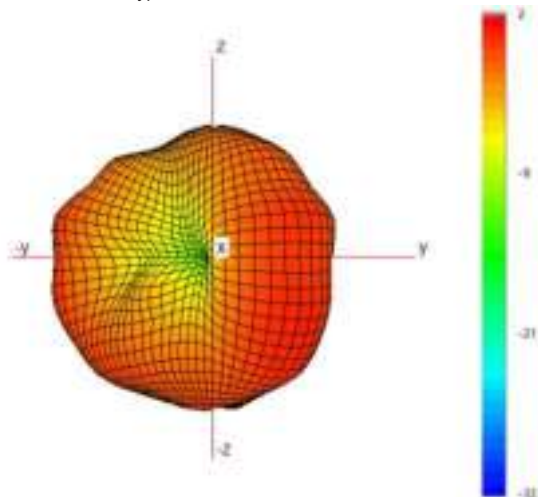
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

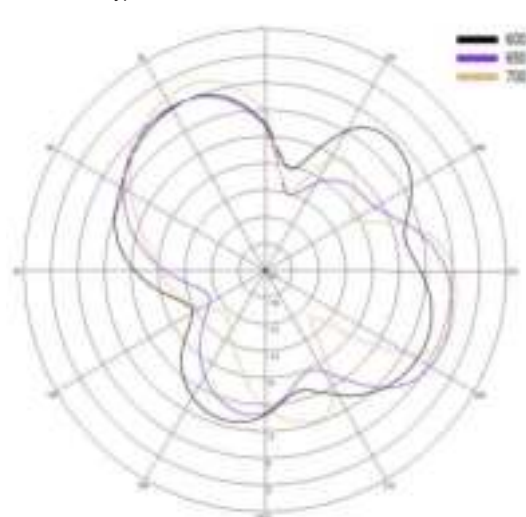
PANORAMA ANTENNAS

## 3D Patterns -Cell D

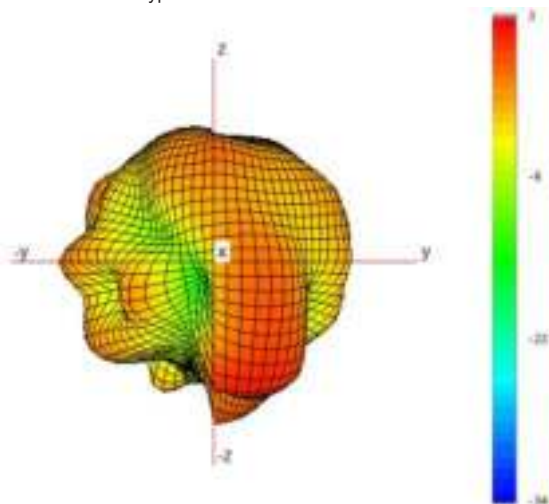
Typical 3D Pattern- Cell D - 650 MHz



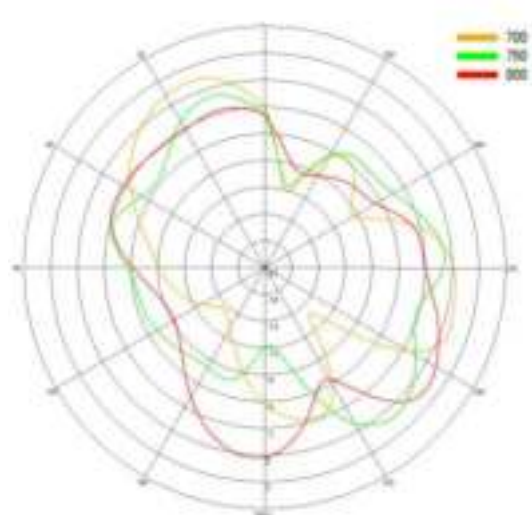
Typical H Plane- Cell D - Patterns- 600-700MHz



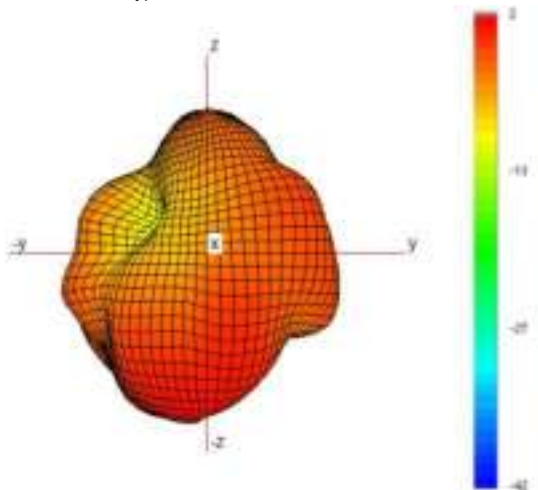
Typical 3D Pattern- Cell D - 750 MHz



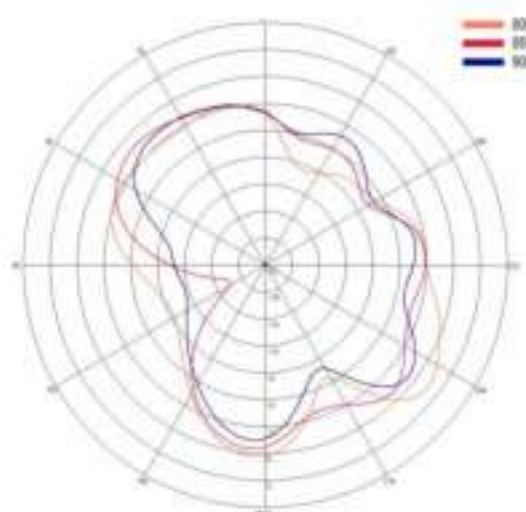
Typical H Plane- Cell D - Patterns- 700-800MHz



Typical 3D Pattern- Cell D - 850 MHz



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



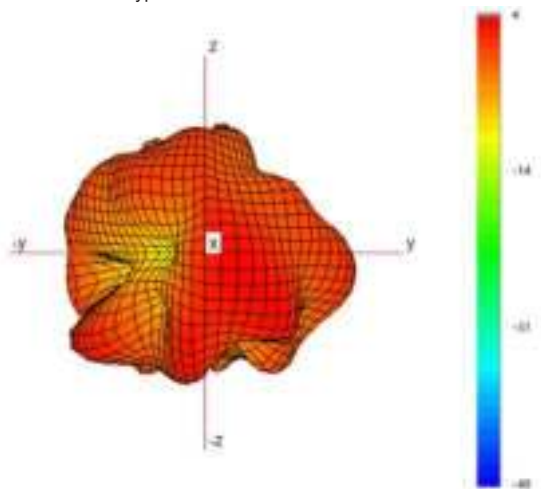
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

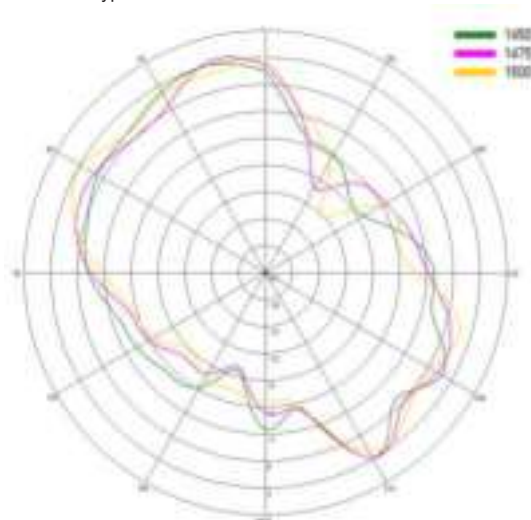
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## 3D Patterns Cell D

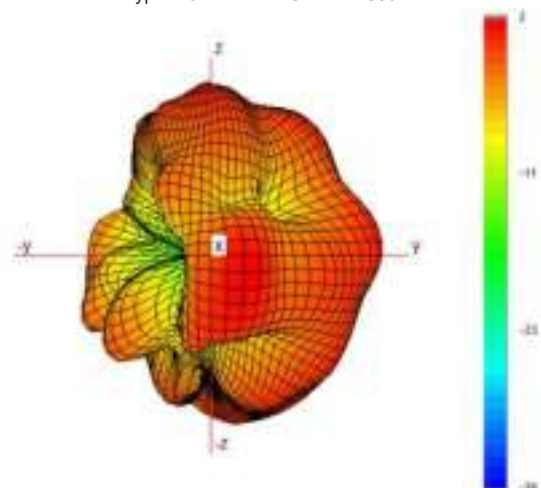
Typical 3D Pattern- Cell D - 1475 MHz



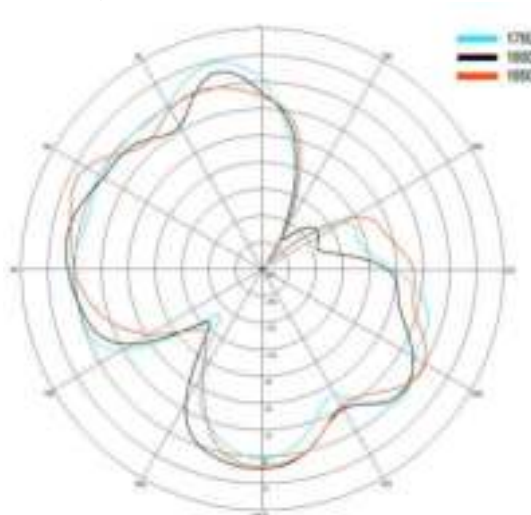
Typical H Plane- Cell D- Patterns- 1450-1500 MHz



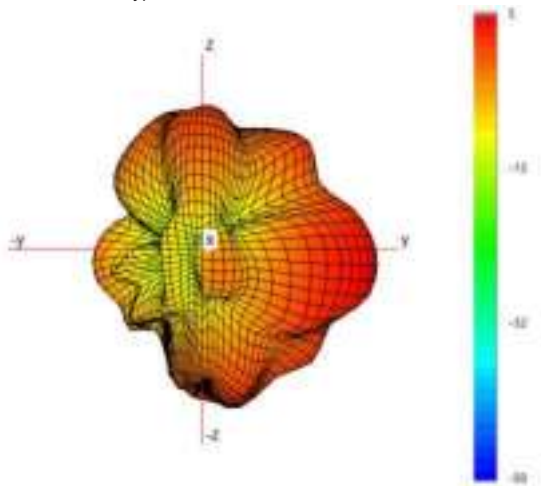
Typical 3D Pattern- Cell D - 1800 MHz



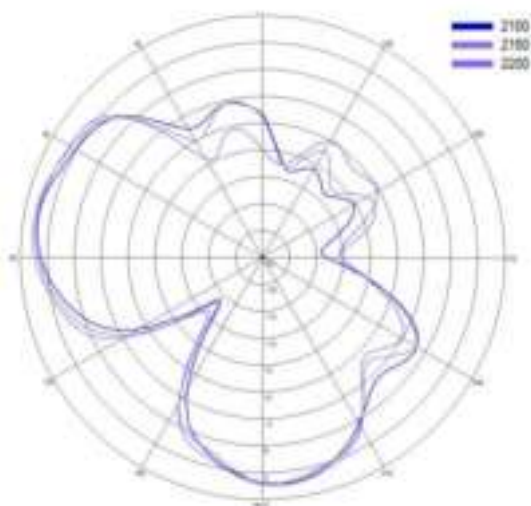
Typical H Plane- Cell D- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell D - 2150 MHz



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



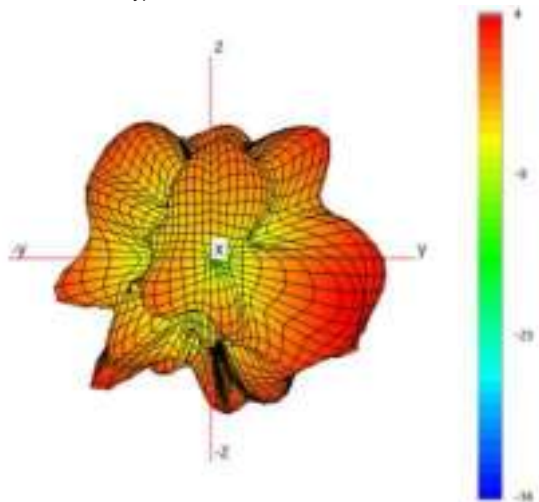
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

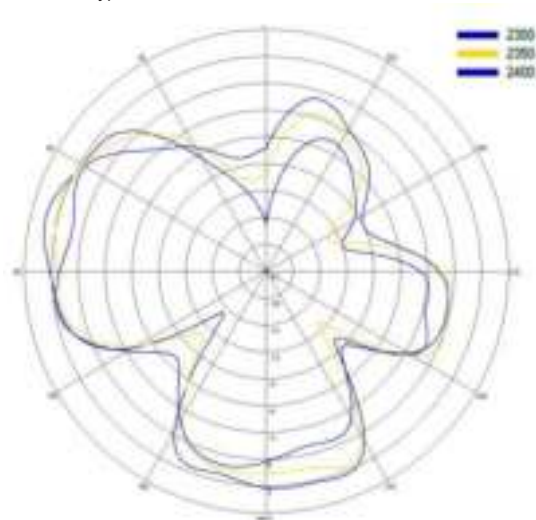
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## 3D Patterns -Cell D

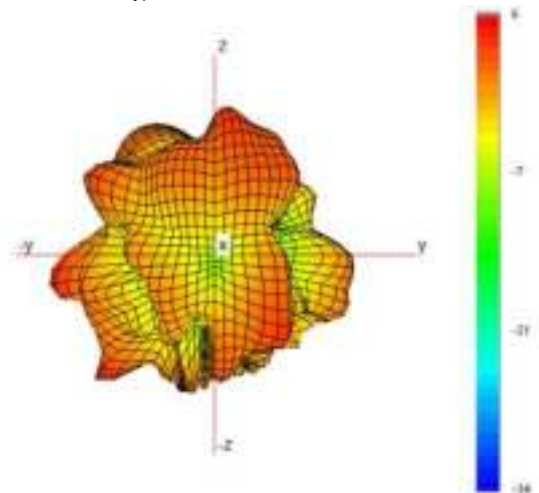
Typical 3D Pattern- Cell D - 2350 MHz



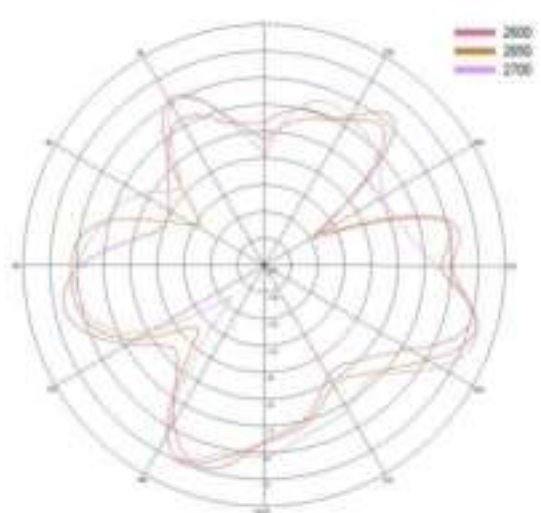
Typical H Plane- Cell D - Patterns- 2300-2400 MHz



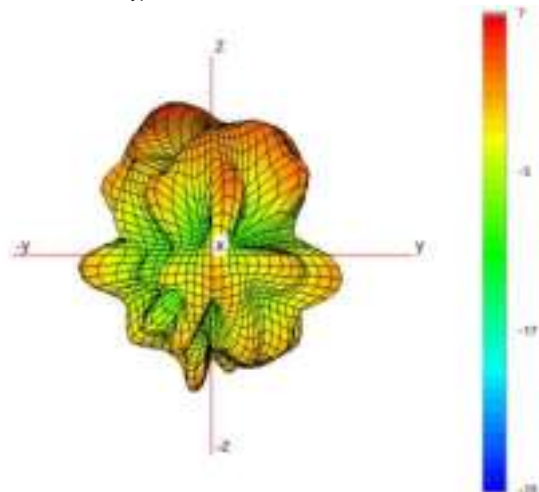
Typical 3D Pattern- Cell D - 2650 MHz



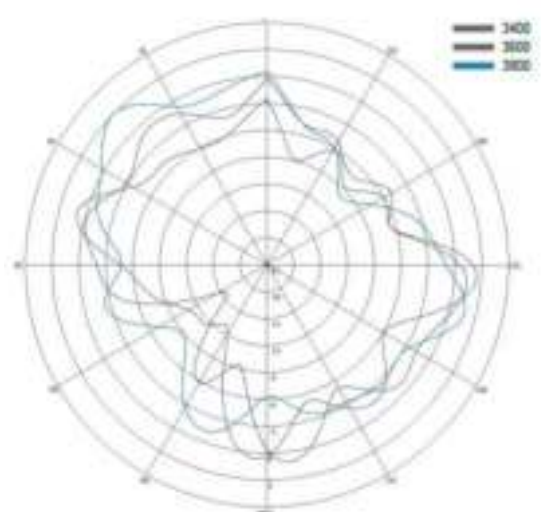
Typical H Plane- Cell D - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell D - 3600 MHz



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



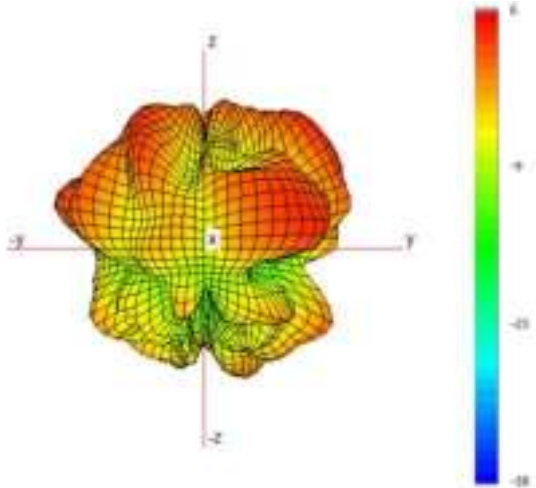


# 4x4 MiMo 4G/5G Adhesive Mount Antenna

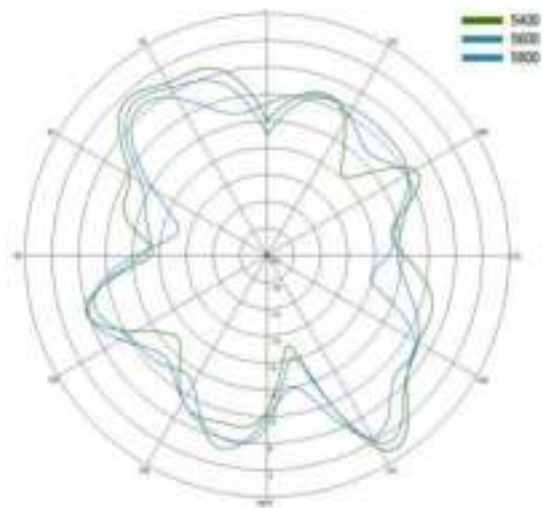
BAT[X]M4-6-60-[X]

## 3D Patterns Cell D

Typical 3D Pattern- Cell D - 5600 MHz



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



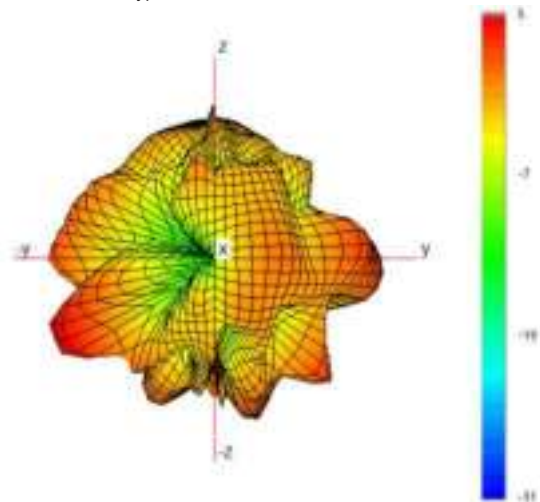
# 4x4 MiMo 4G/5G Adhesive Mount Antenna

BAT[X]M4-6-60-[X]

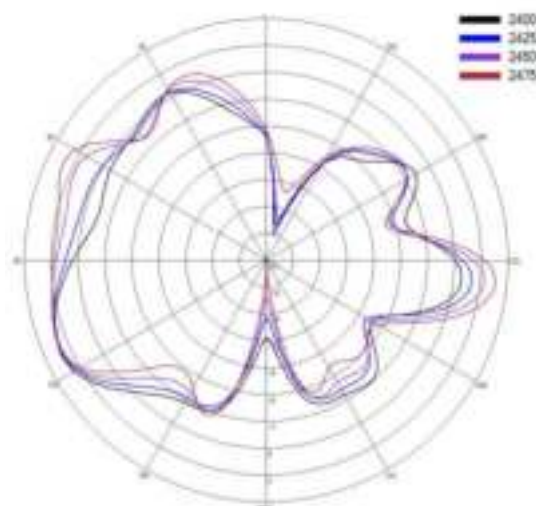
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## WiFi Patterns -WiFi -1

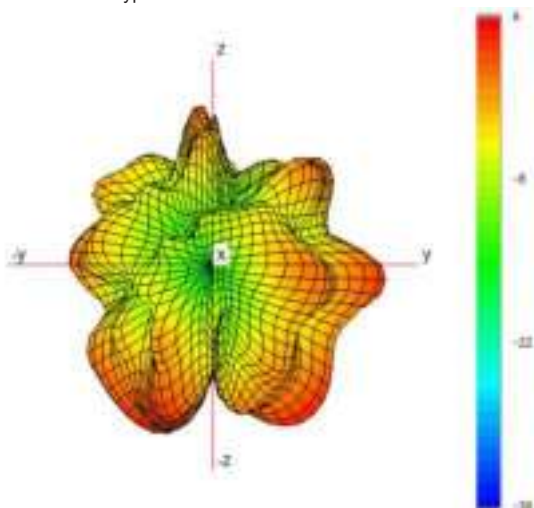
Typical 3D Pattern- WiFi - 1 - 2450 MHz



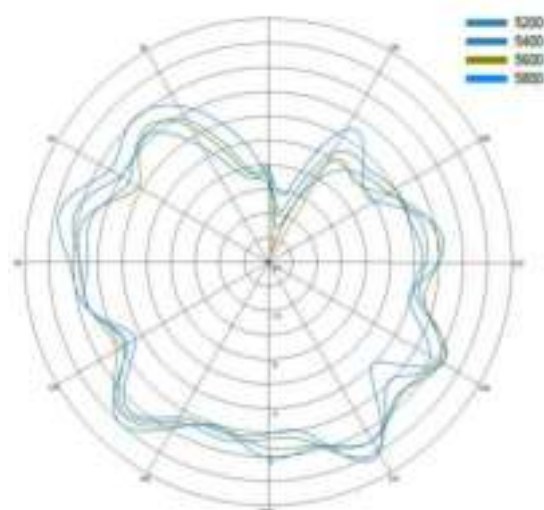
Typical H Plane- WiFi - 1 - Patterns- 2400-2475MHz



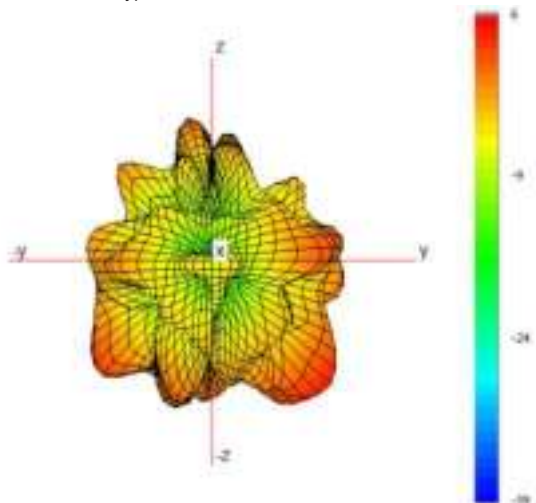
Typical 3D Pattern- WiFi - 1 - 5500 MHz



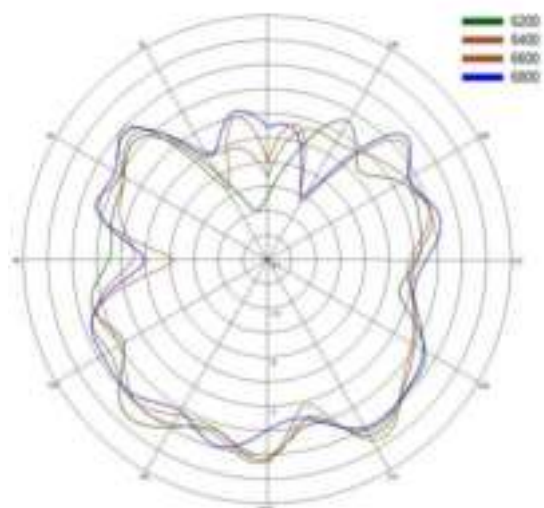
Typical H Plane- WiFi - 1 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 1 - 6500 MHz

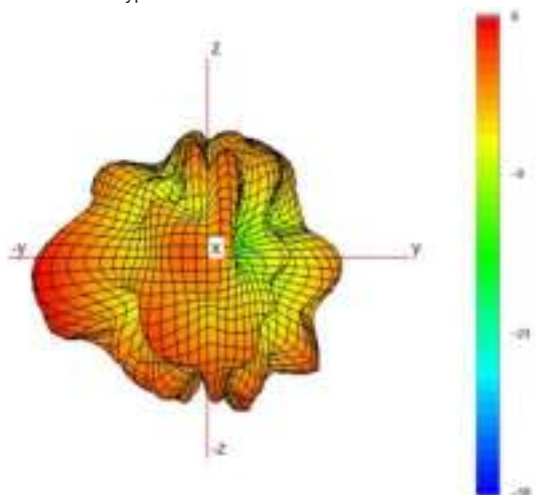


Typical H Plane- WiFi - 1 - Patterns- 6200-6800MHz

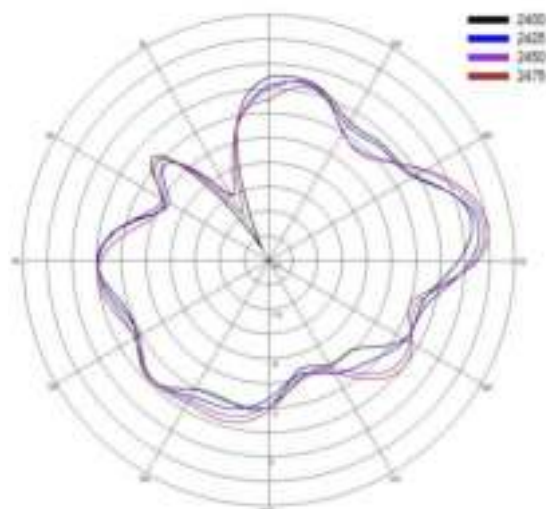


### WiFi Patterns -WiFi -2

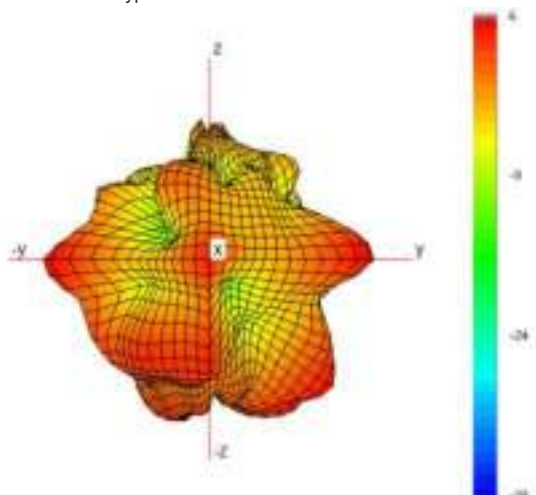
Typical 3D Pattern- WiFi - 2 - 2450 MHz



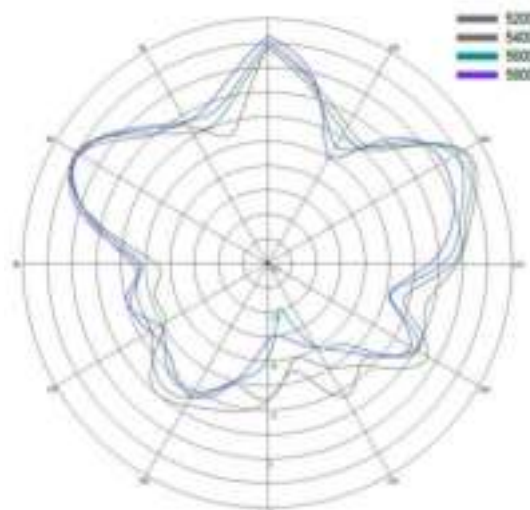
Typical H Plane- WiFi - 2 - Patterns- 2400-2475MHz



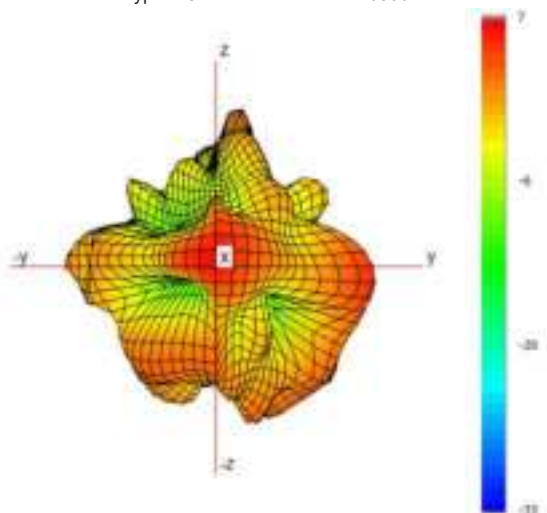
Typical 3D Pattern- WiFi - 2 - 5500 MHz



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



Typical 3D Pattern- WiFi - 2 - 6500 MHz



Typical H Plane- WiFi - 2 - Patterns- 6200-6800MHz

