

Clam® 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42 -



- Low Profile Magnetic / Adhesive IOT Antenna
- 4x4 MiMo 698-960/1427-4200MHz
- Up to 4x4 MiMo WiFi 6e (Optional)
- GPS/GNSS L1/L5 or L1 only 30dB / 26dB LNA (Optional)
- Meets IK10 and IP65

The L[X]A[X]MM4-7-42 MiMo antenna is designed to be a no drill installation solution for IOT applications. The robust low profile housing contains 4x 4G LTE / 5G NR elements covering 698-960/1427-4200MHz. Versions of the product also contain up to 4x optional WiFi elements supporting WiFi 6e 2.4/5.150-7.125GHz and optional L1 only or L1/L5 GPS/GNSS.

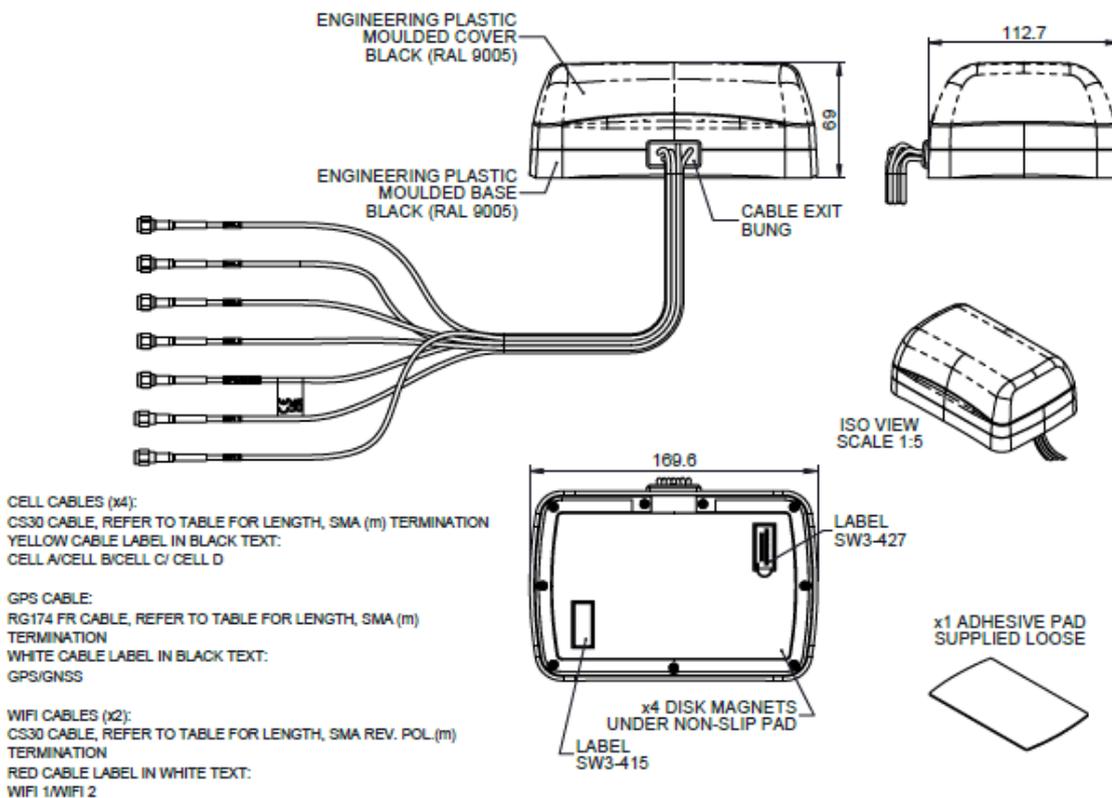
The housing is constructed from robust, flame retardant, impact resistant plastic. The subtle, curved design makes the product harder to vandalise and the IK10 rating ensures that the product is suitable for use in tough environments and devices located in public areas. The housing is UV stable and approved to IP65 for ingress protection.

The product is supplied with integrated low loss flame retardant cables approved to UN ECE R118 and fitted connectors offer plug and play connectivity for a huge range of devices.

The L[X]A[X]MM4-7-42 can be installed on conductive or non-conductive panels without significant detriment to performance although magnetic mounting requires an appropriate surface.

Technical Drawing

LGADMM4-7-42 Shown



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L[X]A[X]MM4-7-42

PANORAMA ANTENNAS

Product Data

Part No.		LGADMM4-7-42	LGAMM4-7-42
Electrical Data			
Frequency Range (MHz)	Cell /LTE	4x 698-960 / 1427-4200	
	WiFi	2x 2396-7125	-
	GPS/GNSS	1x 1559-1612	
Typical VSWR*	Cell Elements	<2.5:1	
	WiFi Elements	< 2:1	-
Isolation**	Cell Elements	≥6dB (698-960MHz) / ≥12dB (1427-4200MHz)	
	Wifi Elements	>25dB (2.4-7.125GHz)	-
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	68.7 (2.7")	
	Width	112.7 (4.43")	
	Length	169.6 (6.7")	
Environmental Specification			
Operating Temp (°C)	-40° / +85°C (-40° / +185°F)		
Radome Material	Lexan EXL 9330		
Radome Approvals	V0 (UL 94) / UL 746C (F1)		
Ingress Protection	IP65		
Vandal Resistance	IK10		
Mounting Data			
Fixing	Magnetic or 3M VHB Adhesive pad		
Termination Data			
Cable Type	Cellular & WiFi	CS30 (Compliant to UN ECE R118)	
	GPS/GNSS	FR RG174 (Compliant to UN ECE R118)	
Cable Diameter (mm)	2.8 (0.1")		
Cable Length (m)	2m (6'6")		
Termination	4G/5G	4x SMA Plug (m)	
	WiFi	2x Reverse Polarity SMA Plug	-
	GPS/GNSS	1x SMA Plug (m)	

*Across 90% of relevant bands when measured in free space with 0.5m (20") of CS30 cable **Worst case isolation measured for LGADM4-7-42 in free space with 0.5m (1.5') CS30 cable

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PANORAMA  ANTENNAS

Product Data

Part No.

LPAMM4-7-42

Electrical Data

Frequency Range (MHz)	Cell /LTE	4x 698-960 / 1427-4200
Typical VSWR*	Cell Elements	<2.5:1
Isolation**	Cell Elements	≥6dB (698-960MHz) / ≥12dB (1427-4200MHz)
Pattern		Omni-directional
Impedance		50Ω
Max Input Power (W)		5

Mechanical Data

Dimensions (mm)	Height	68.7 (2.7")
	Width	112.7 (4.43")
	Length	169.6 (6.7")

Environmental Specification

Operating Temp (°C)	-40° / +85°C (-40° / +185°F)
Radome Material	Lexan EXL 9330
Radome Approvals	V0 (UL 94) / UL 746C (F1)
Ingress Protection	IP65
Vandal Resistance	IK10

Mounting Data

Fixing	Magnetic or 3M VHB Adhesive pad
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Termination Data

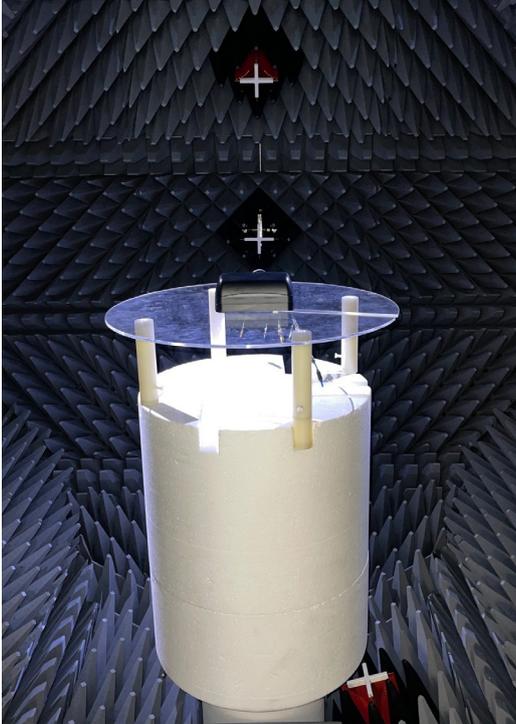
Cable Type	CS30 (Compliant to UN ECE R118)
Cable Diameter (mm)	2.8 (0.1")
Cable Length (m)	2m (6'6")
Termination	4G/5G 4x SMA Plug (m)

*Across 90% of relevant bands when measured in free space with 0.5m (20") of CS30 cable **Worst case isolation measured for LGADMM4-7-42 in free space with 0.5m (1.5') CS30 cable

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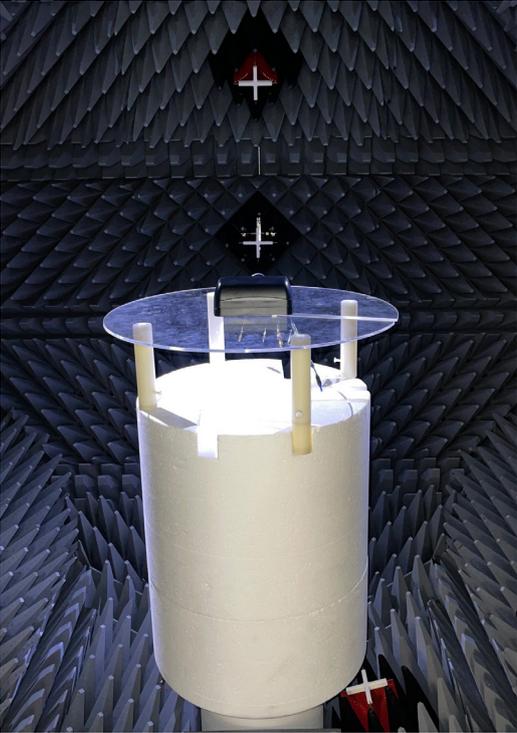
Electrical Data- Cell-
Free space

Measurement Conditions	4G/5G Antennas				
LGADMM4-7-42 measured in free space with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	699-798	12,13, 14 17,28	Cell A	1.4	48
			Cell B	2.0	51
			Cell C	0.8	45
			Cell D	1.5	45
	807- 862	5,19,20,26,27	Cell A	2.8	48
			Cell B	1.6	55
			Cell C	1.2	52
			Cell D	1.5	50
	880-960	8	Cell A	2.8	54
			Cell B	2.1	59
			Cell C	1.5	55
			Cell D	1.2	56
	1427-1518	11, 21, 74,75,76	Cell A	1.3	32
			Cell B	1.4	29
			Cell C	1.6	45
			Cell D	1.4	39
	1710-1920	2,3,4,9,25,35,39,66	Cell A	3.3	52
			Cell B	2.1	45
			Cell C	3.1	47
			Cell D	1.6	46
	1920-2170	1,23	Cell A	2.6	52
			Cell B	2.5	47
			Cell C	3.1	47
			Cell D	2.2	44
	2300-2400	30,40	Cell A	3.9	47
			Cell B	3.9	50
			Cell C	2.4	49
			Cell D	1.6	47
2496-2690	7,38,41	Cell A	5.3	45	
		Cell B	4.5	48	
		Cell C	3.0	49	
		Cell D	4.4	50	
3300-4200	22,42,43,48,77,78	Cell A	5.1	54	
		Cell B	4.6	53	
		Cell C	4.7	52	
		Cell D	3.8	49	

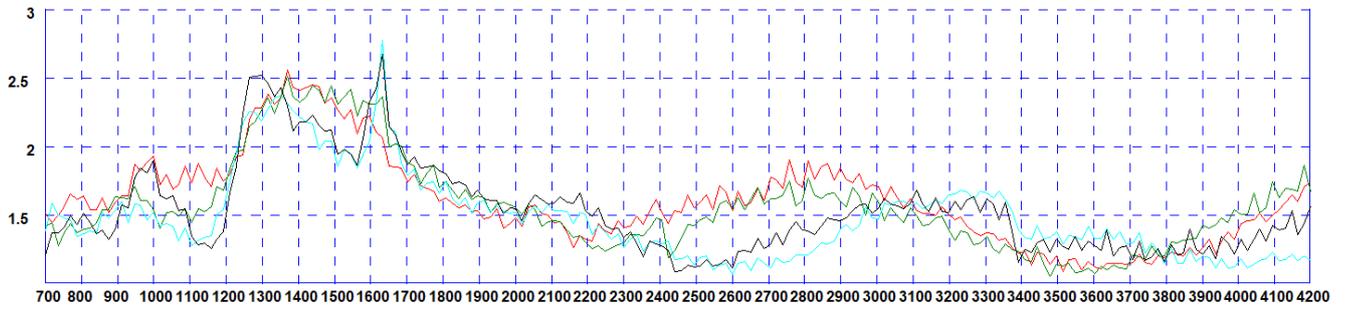
Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42 -

Electrical Data -
WiFi-Free Space

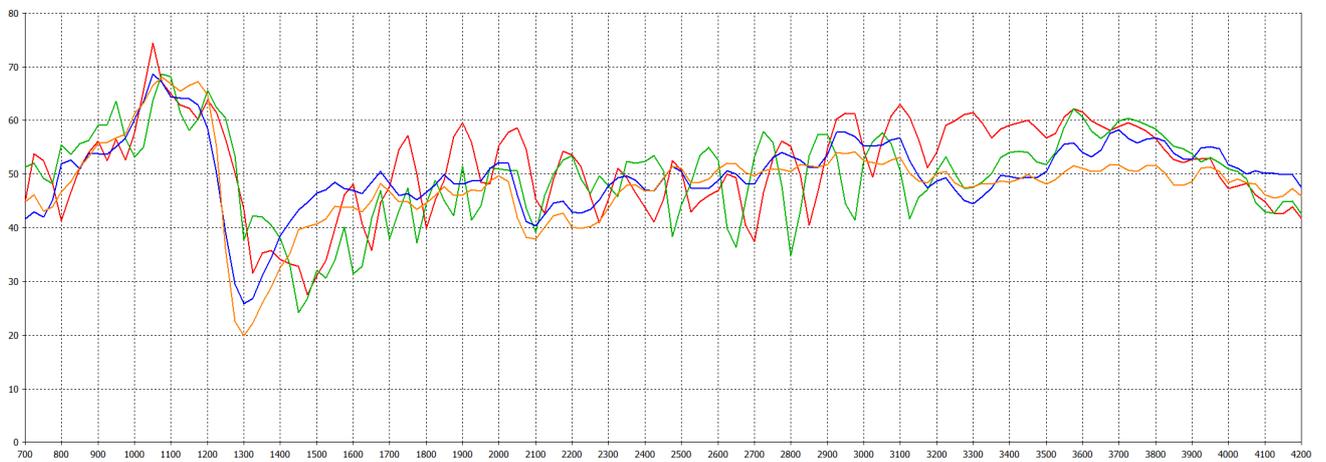
Measurement Conditions	WiFi Antennas				
LGADMM4-7-42 measured in free space with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	2396-2485	2.4GHz	WiFi 1	5.9	64
			WiFi 2	5.4	66
	5150-5250	UNII-1	WiFi 1	4.7	56
			WiFi 2	4.7	57
	5250-5350	UNII-2A	WiFi 1	4.4	53
			WiFi 2	4.0	52
	5350-5470	UNII-2B	WiFi 1	4.3	51
			WiFi 2	4.0	52
	5470-5725	UNII-2C	WiFi 1	4.3	49
			WiFi 2	4.7	50
	5725-5850	UNII-3	WiFi 1	4.2	51
			WiFi 2	4.8	52
	5850-5925	UNII-4	WiFi 1	4.3	51
			WiFi 2	4.7	51
	5925-6425	UNII-5	WiFi 1	4.8	55
			WiFi 2	5.0	55
6425-6525	UNII-6	WiFi 1	4.5	54	
		WiFi 2	4.7	54	
6525-6875	UNII-7	WiFi 1	4.4	47	
		WiFi 2	4.7	48	
6875-7125	UNII-8	WiFi 1	3.5	42	
		WiFi 2	3.9	43	

Typical VSWR*



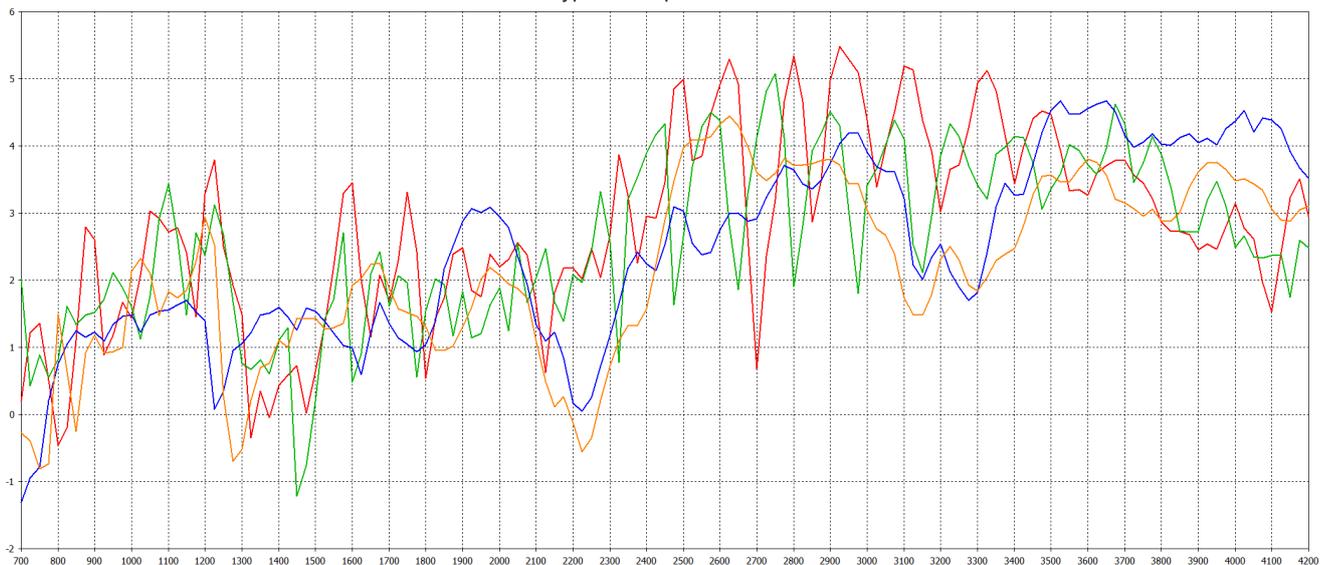
*VSWR measured in free space with 0.5m (1.6') of CS30 cable

Typical Efficiency*



*Efficiency measured in free space with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain*



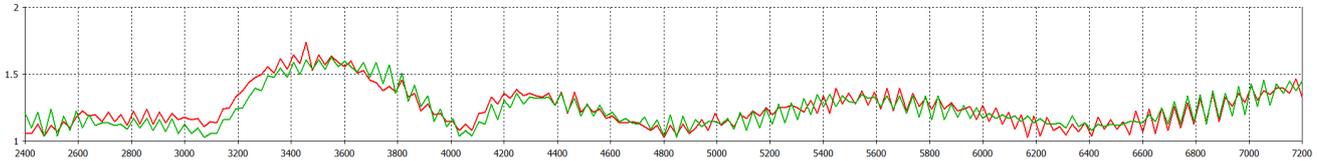
* Swept peak gain measured in free space with 0.5m (1.6') of CS30 cable

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Electrical Data -
WiFi-Free Space

Typical VSWR*



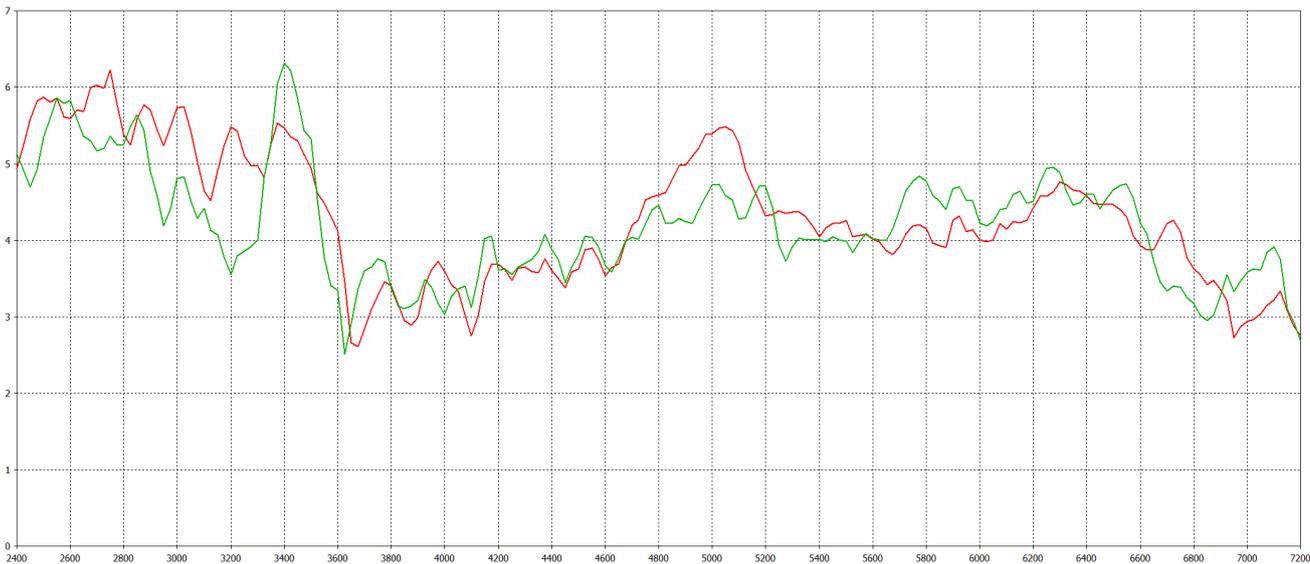
*VSWR measured in free space with 0.5m (1.6') of CS30 cable

Typical Efficiency*



*Efficiency measured in free space with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain*



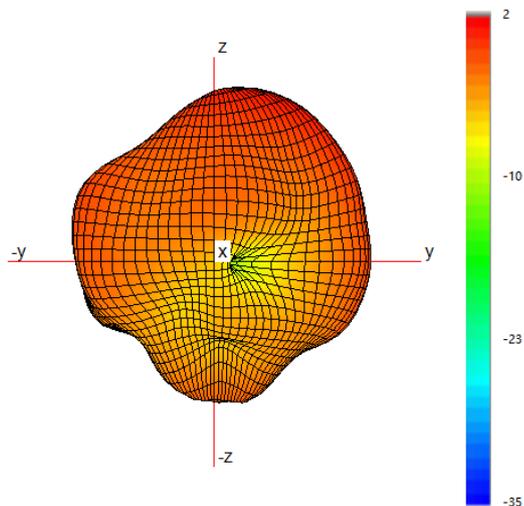
* Swept peak gain measured in free space with 0.5m (1.6') of CS30 cable

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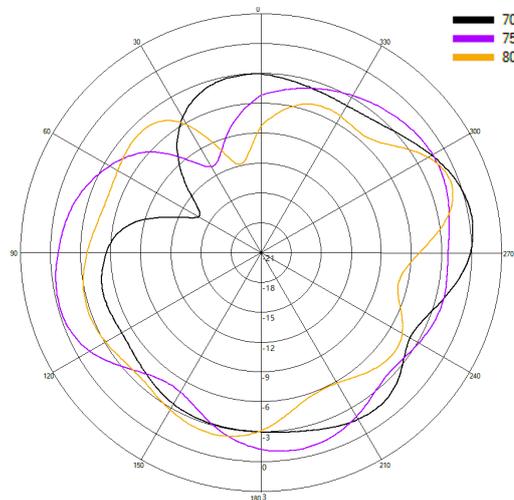
L[X]A[X]MM4-7-42

3D Pattern Data in
Free Space Cell A

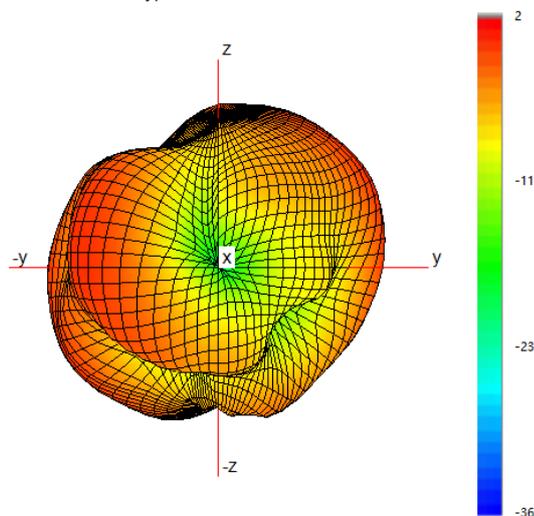
Typical 3D Pattern- Cell A - 750 MHz



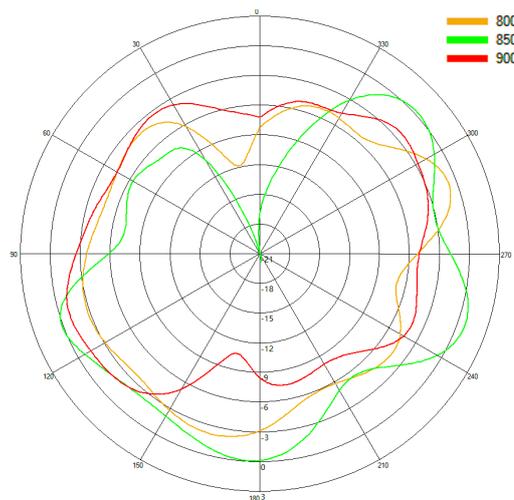
Typical H Plane- Cell A - Patterns- 700-800MHz



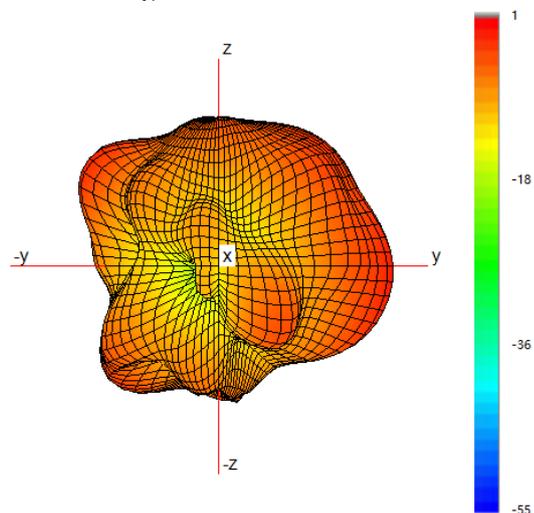
Typical 3D Pattern- Cell A - 850 MHz



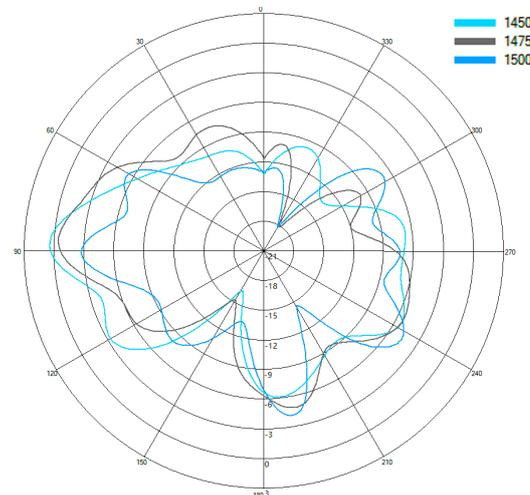
Typical H Plane- Cell A - Patterns- 800-900MHz



Typical 3D Pattern- Cell A - 1475 MHz



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

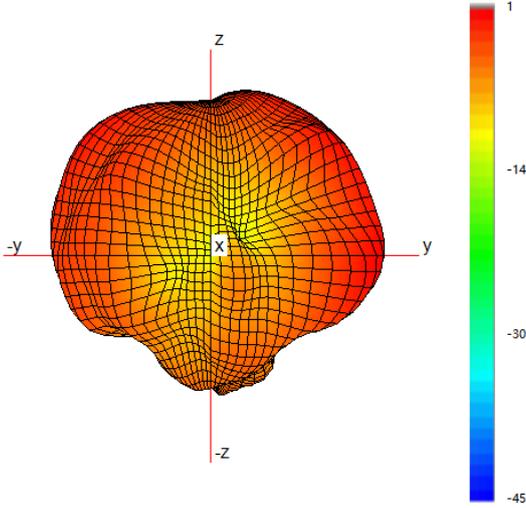


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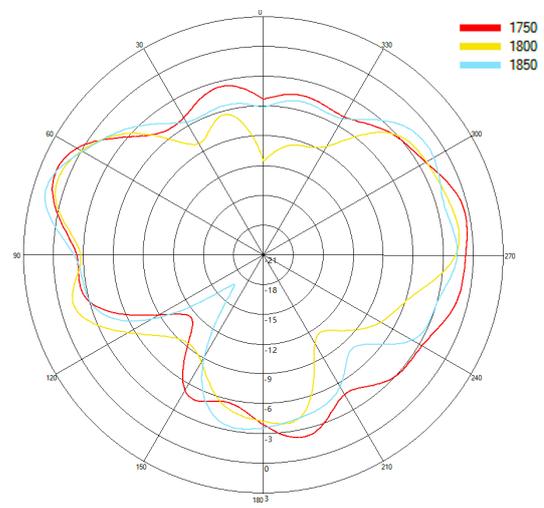
L[X]A[X]MM4-7-42 -

3D Pattern Data in
Free Space Cell A

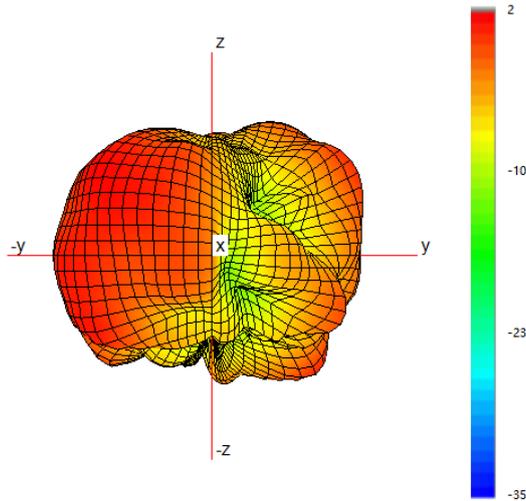
Typical 3D Pattern- Cell A - 1800 MHz



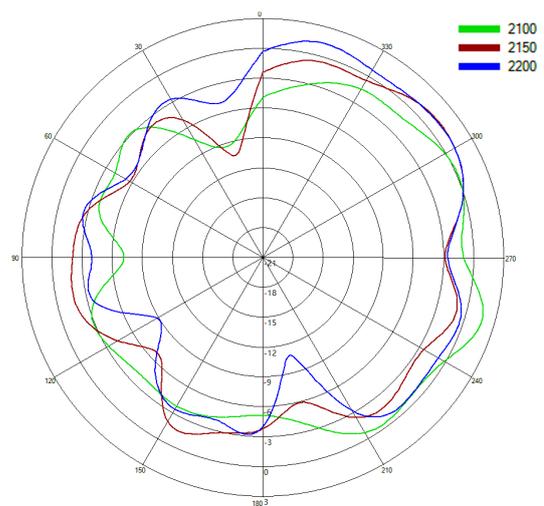
Typical H Plane- Cell A- Patterns- 1750-1850 MHz



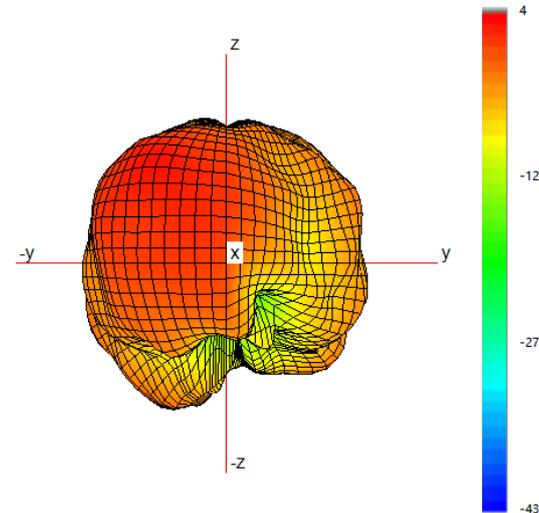
Typical 3D Pattern- Cell A - 2150 MHz



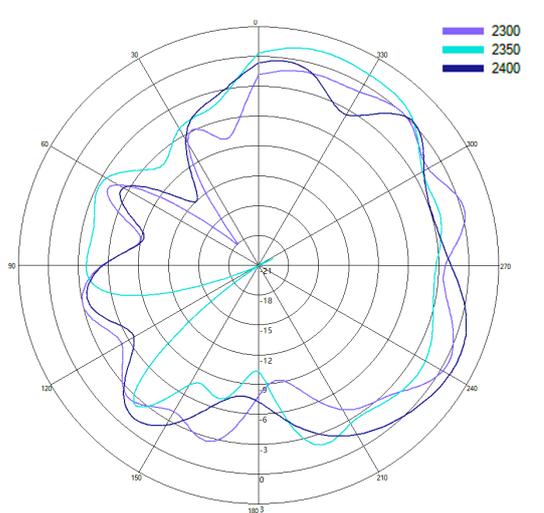
Typical H Plane- Cell A- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell A - 2350 MHz



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

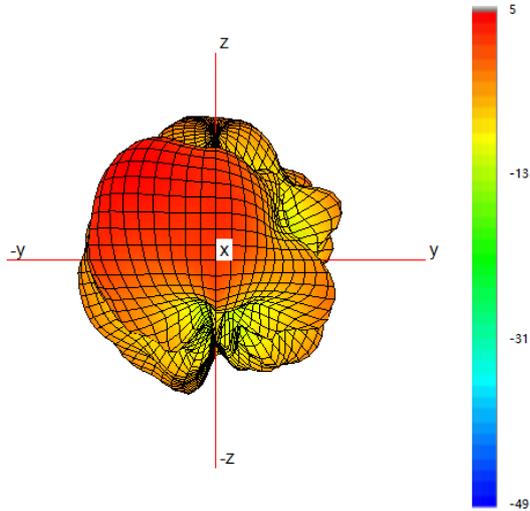


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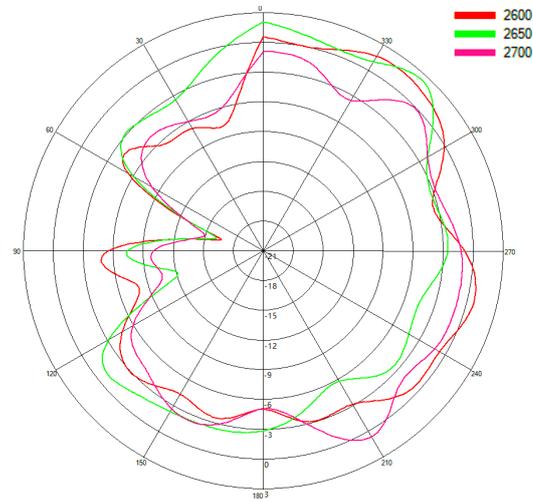
L[X]A[X]MM4-7-42

3D Pattern Data in
Free Space Cell A

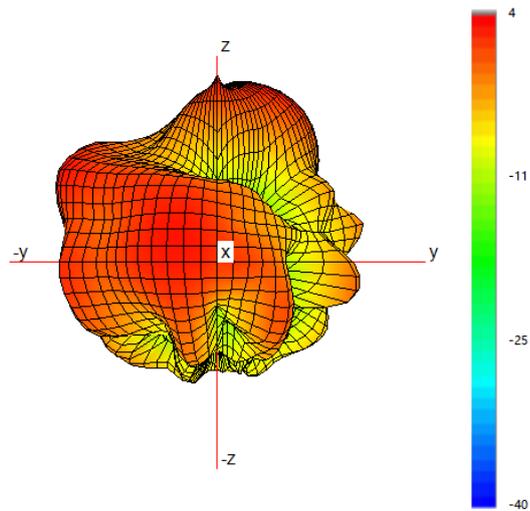
Typical 3D Pattern- Cell A - 2650 MHz



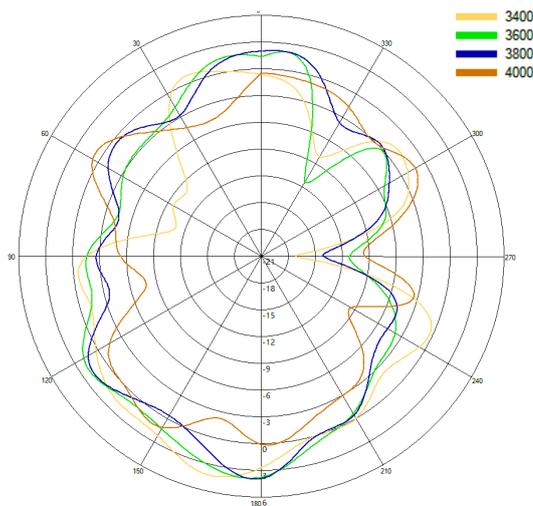
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz



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

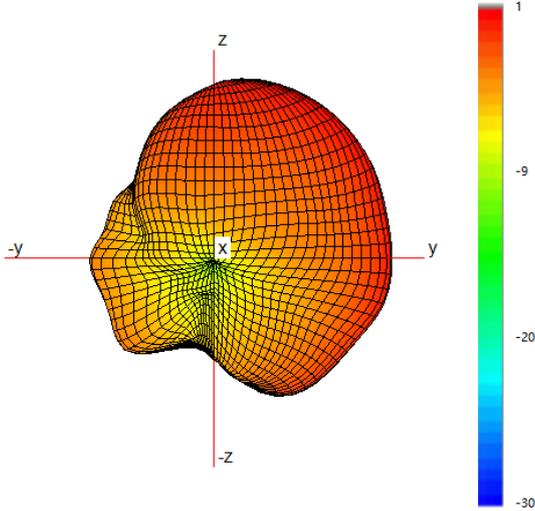


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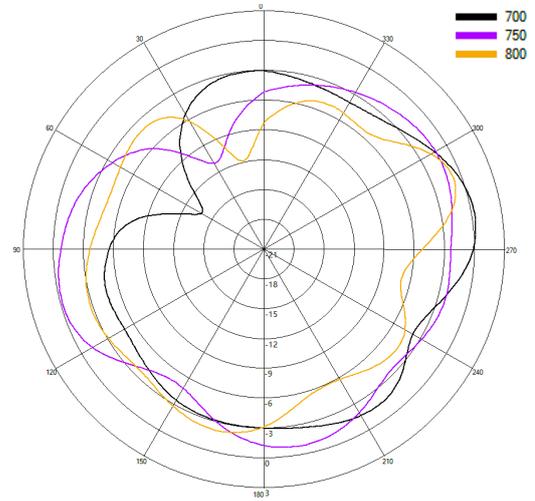
L[X]A[X]MM4-7-42 -

3D Pattern Data in
Free Space Cell B

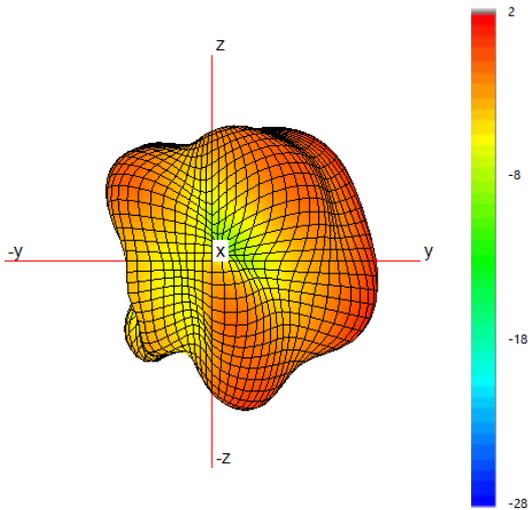
Typical 3D Pattern- Cell B - 750 MHz



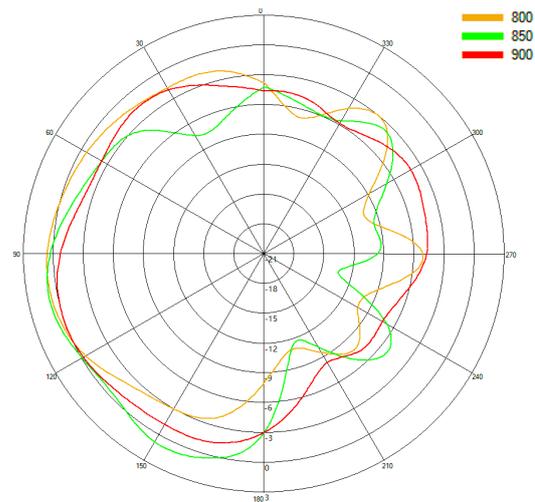
Typical H Plane- Cell B - Patterns- 700-800MHz



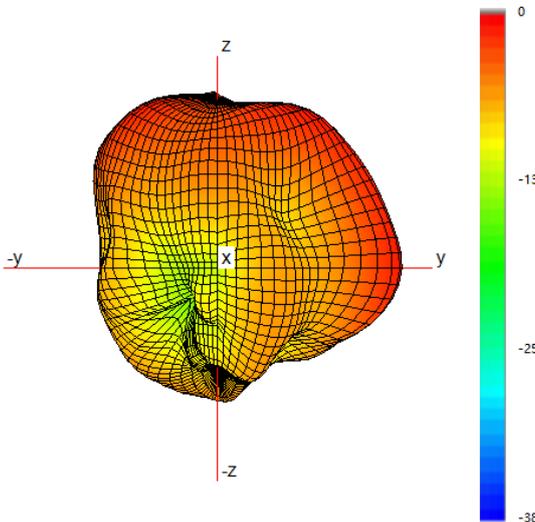
Typical 3D Pattern- Cell B - 850 MHz



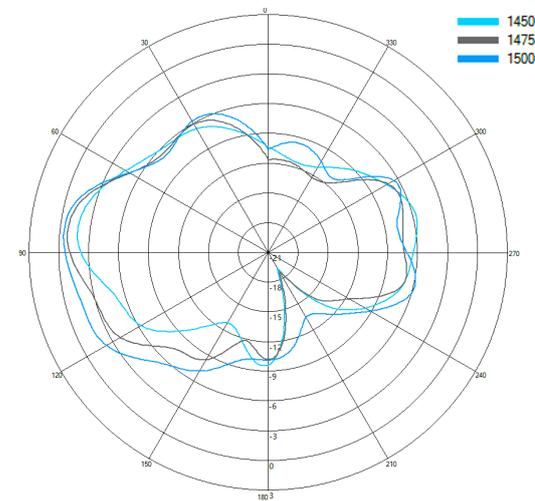
Typical H Plane- Cell B - Patterns- 800-900MHz



Typical 3D Pattern- Cell B - 1475 MHz

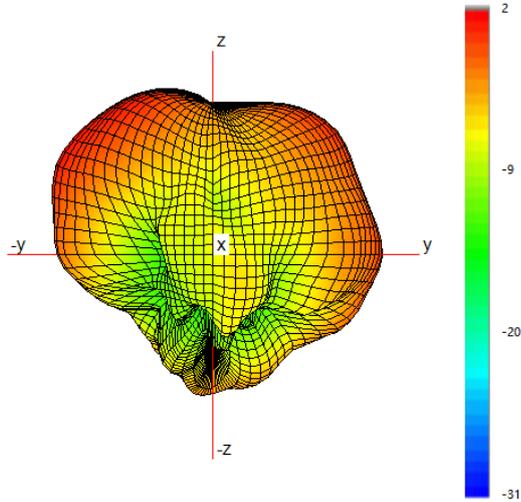


Typical H Plane- Cell B- Patterns- 1450-1500 MHz

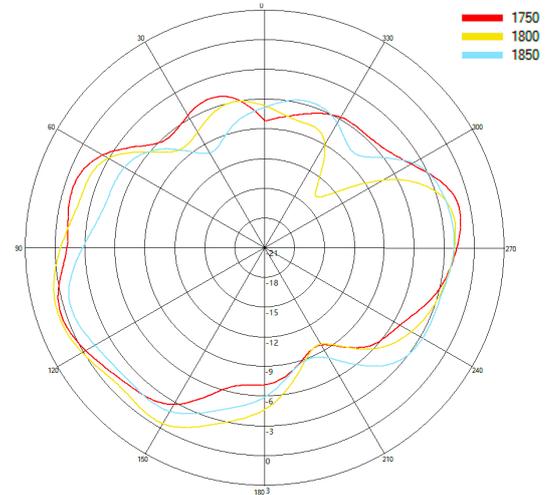


3D Pattern Data in
Free Space Cell B

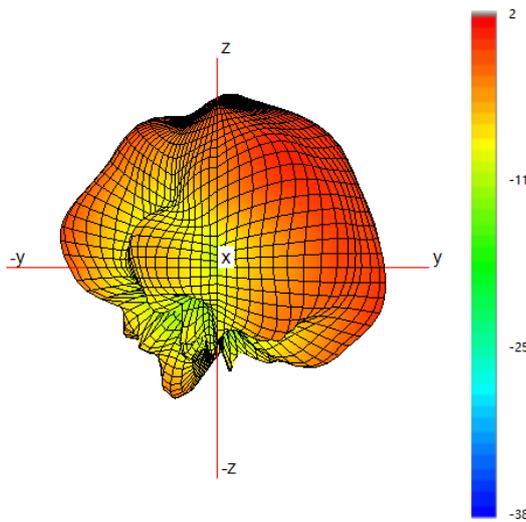
Typical 3D Pattern- Cell B - 1800 MHz



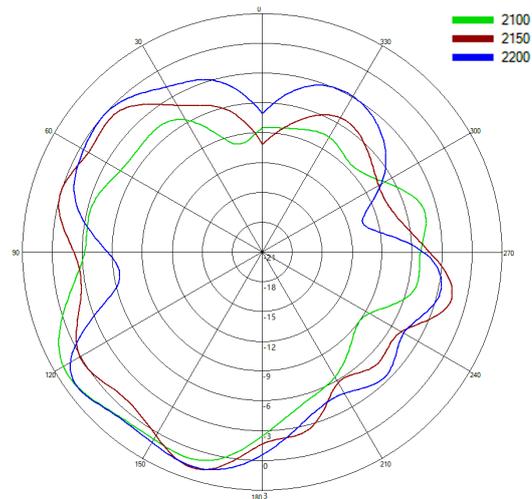
Typical H Plane- Cell B- Patterns- 1750-1850 MHz



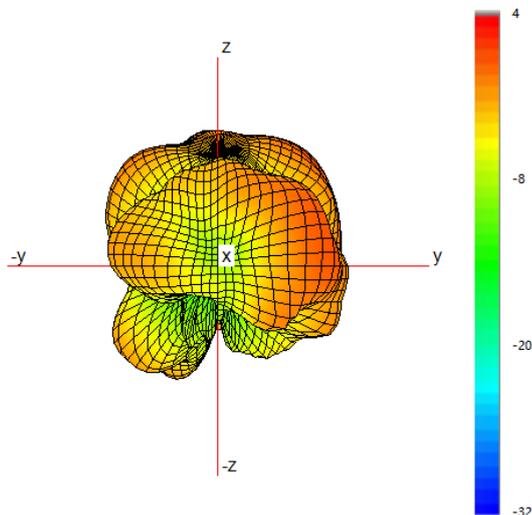
Typical 3D Pattern- Cell B - 2150 MHz



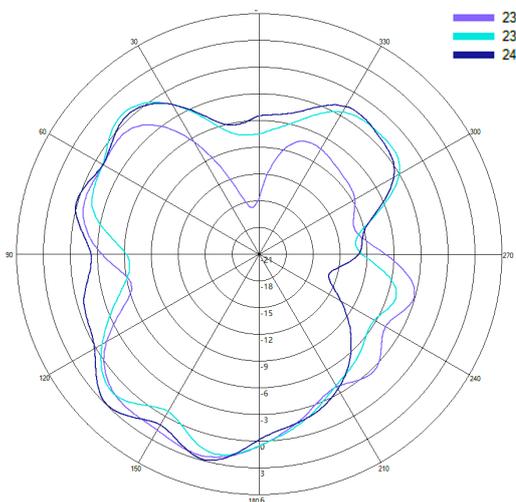
Typical H Plane- Cell B- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell B - 2350 MHz



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

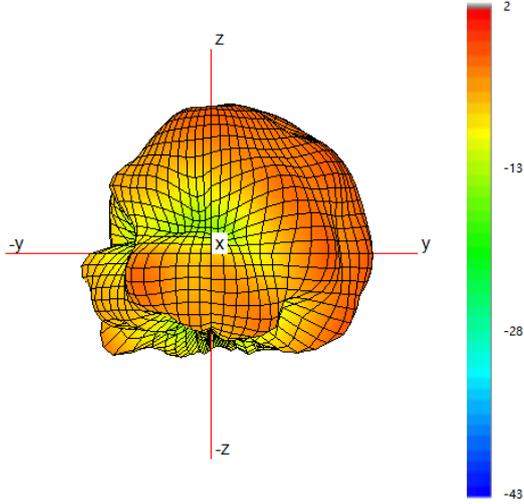


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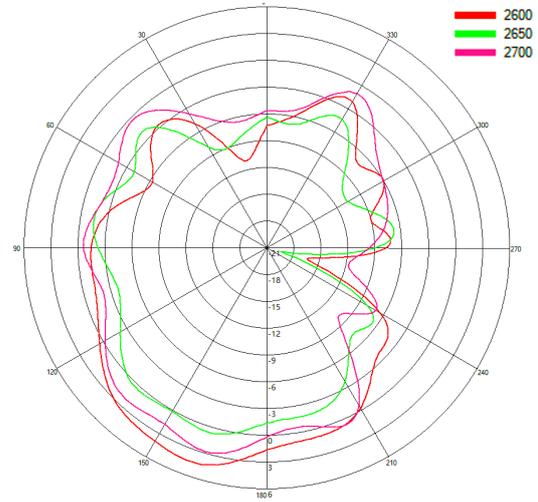
L[X]A[X]MM4-7-42 -

3D Pattern Data in
Free Space Cell B

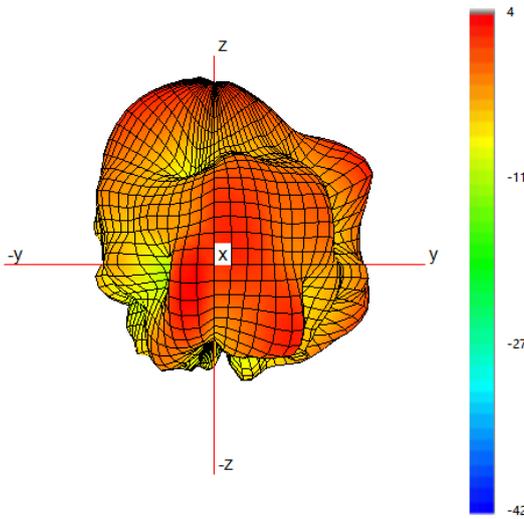
Typical 3D Pattern- Cell B - 2650 MHz



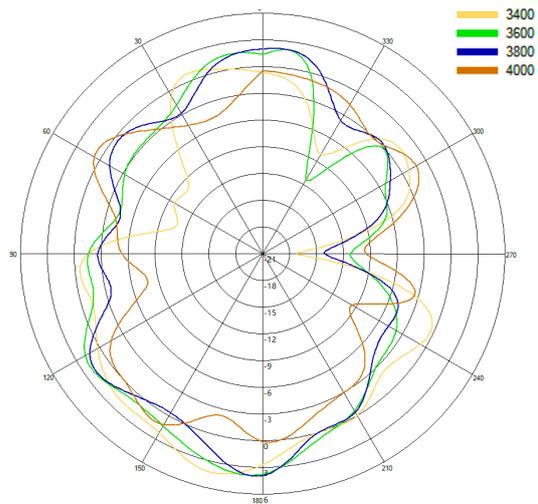
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell B - 3600 MHz



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

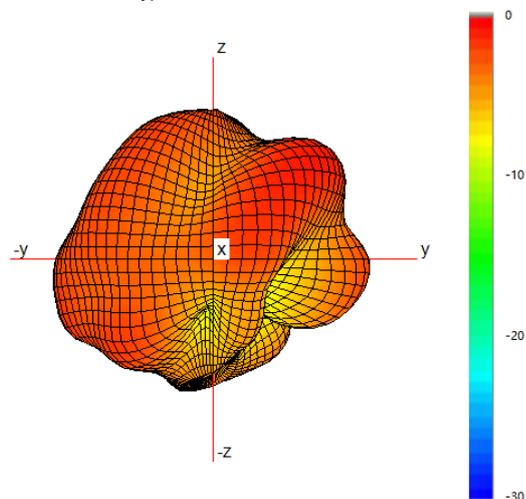


Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

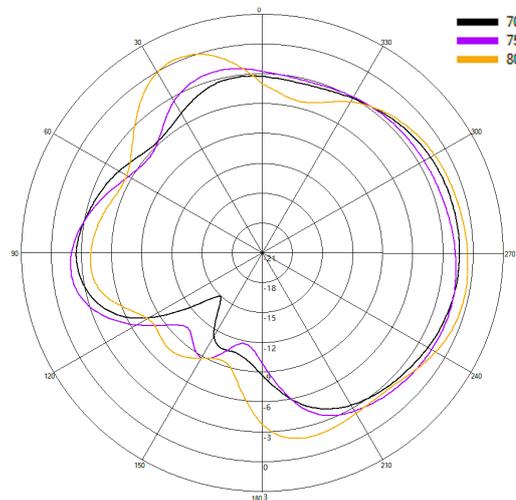
L[X]A[X]MM4-7-42

3D Pattern Data in
Free Space Cell C

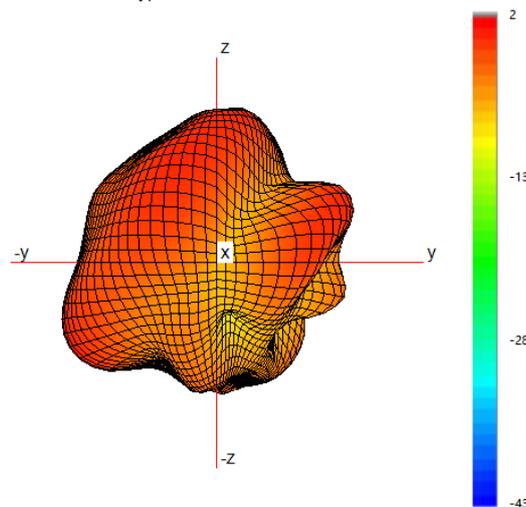
Typical 3D Pattern- Cell C - 750 MHz



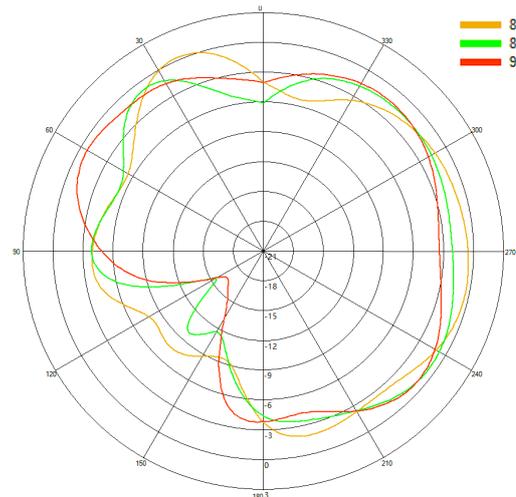
Typical H Plane- Cell C - Patterns- 700-800MHz



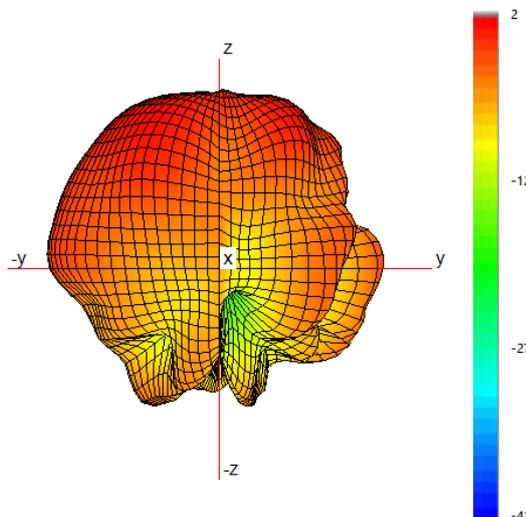
Typical 3D Pattern- Cell C - 850 MHz



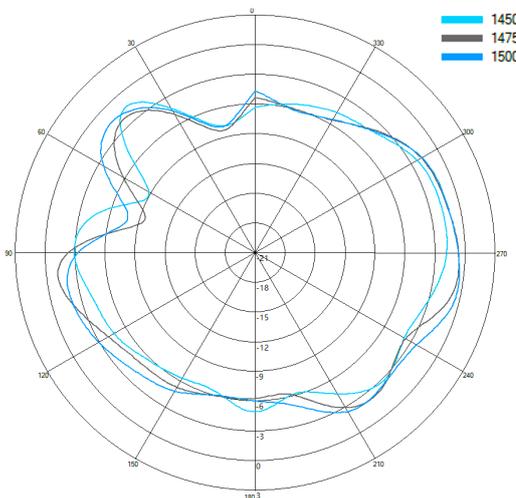
Typical H Plane- Cell C - Patterns- 800-900MHz



Typical 3D Pattern- Cell C - 1475 MHz



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

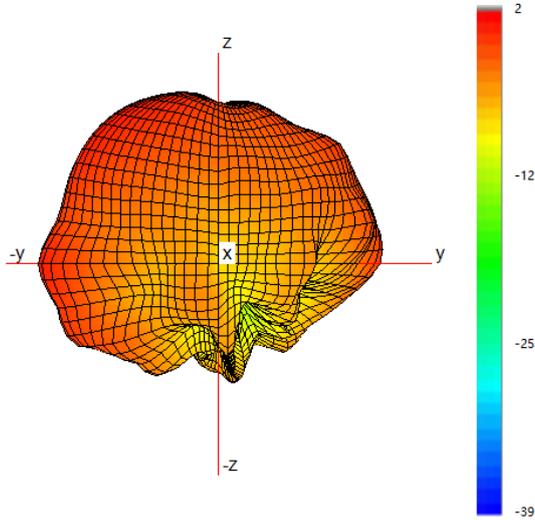


Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

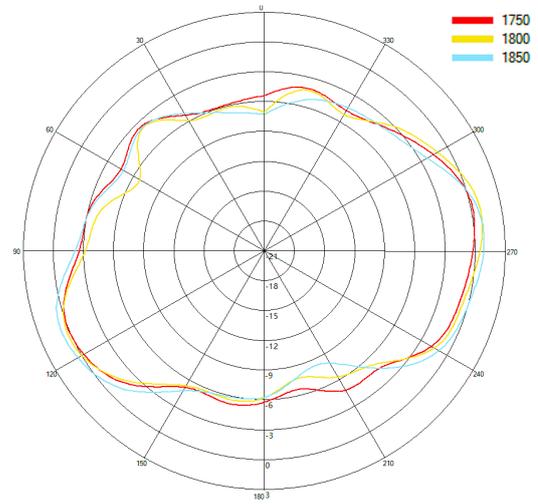
L[X]A[X]MM4-7-42 -

3D Pattern Data in
Free Space Cell C

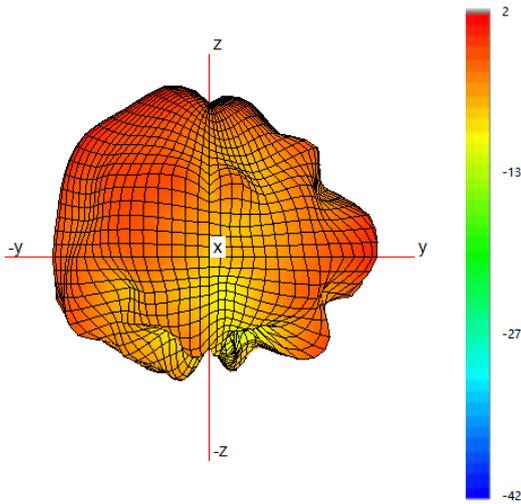
Typical 3D Pattern- Cell C - 1800 MHz



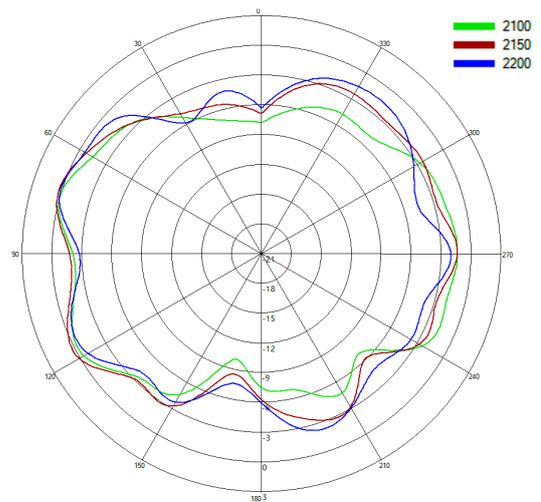
Typical H Plane- Cell C- Patterns- 1750-1850 MHz



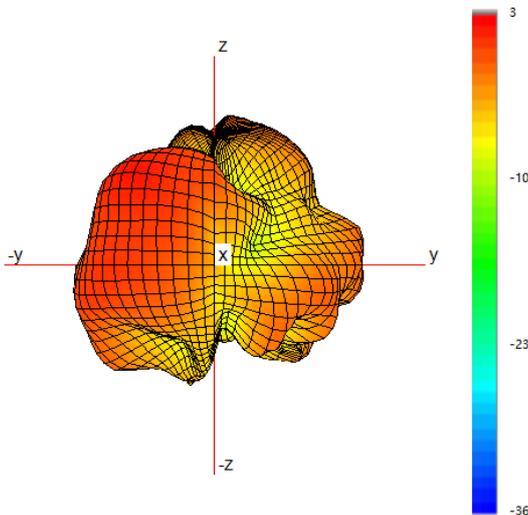
Typical 3D Pattern- Cell C - 2150 MHz



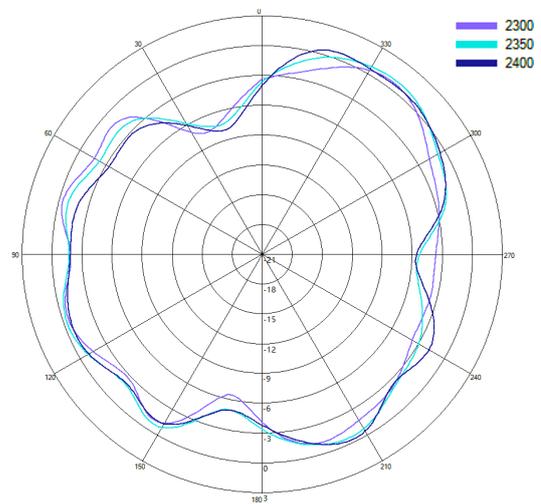
Typical H Plane- Cell C- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell C - 2350 MHz

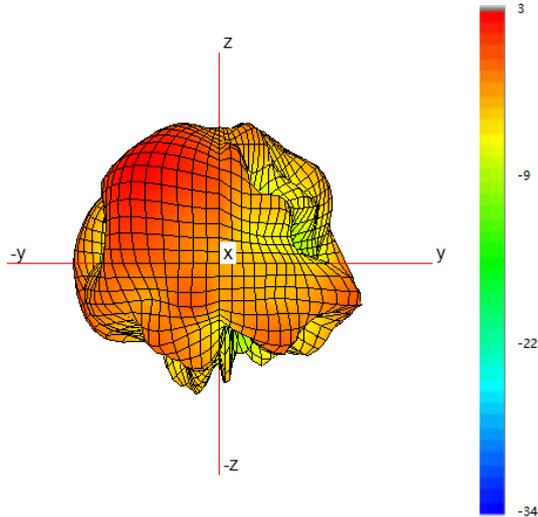


Typical H Plane- Cell C - Patterns- 2300-2400 MHz

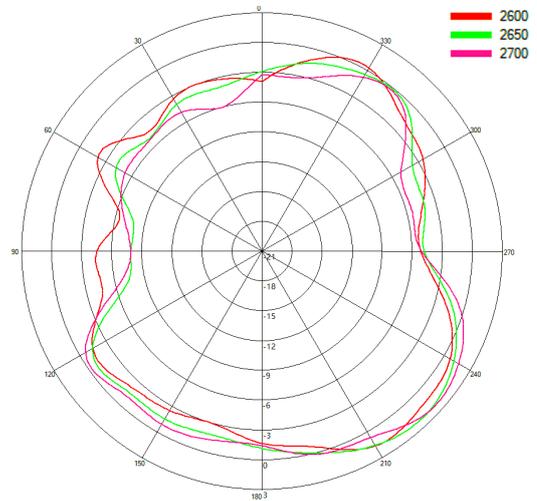


3D Pattern Data in
Free Space Cell C

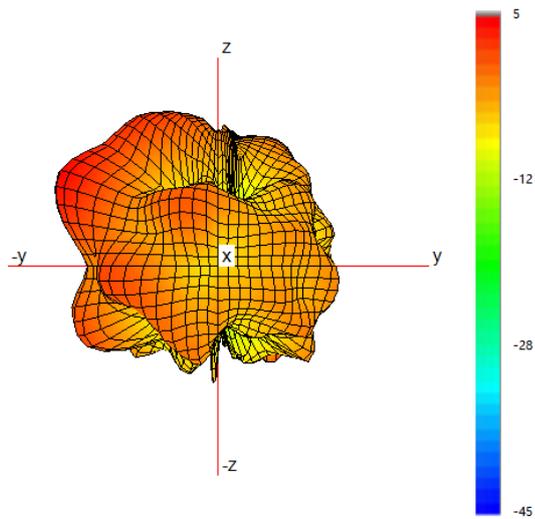
Typical 3D Pattern- Cell C - 2650 MHz



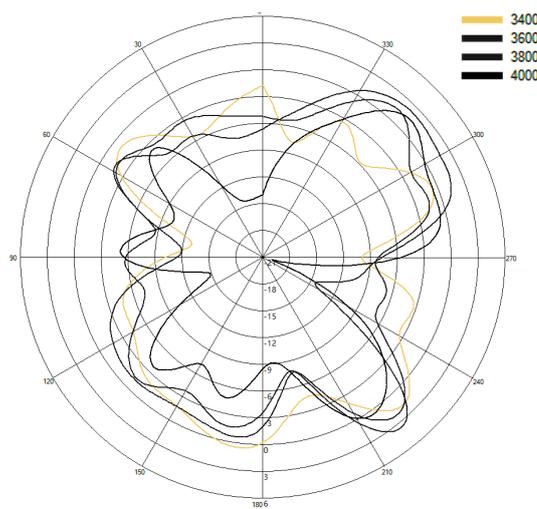
Typical H Plane- Cell C - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell C - 3600 MHz



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

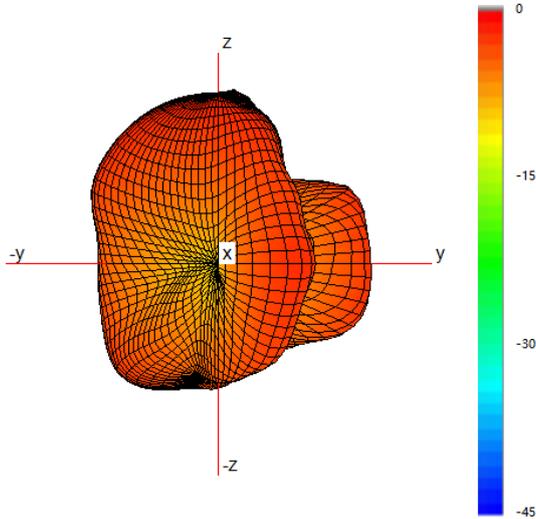


Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

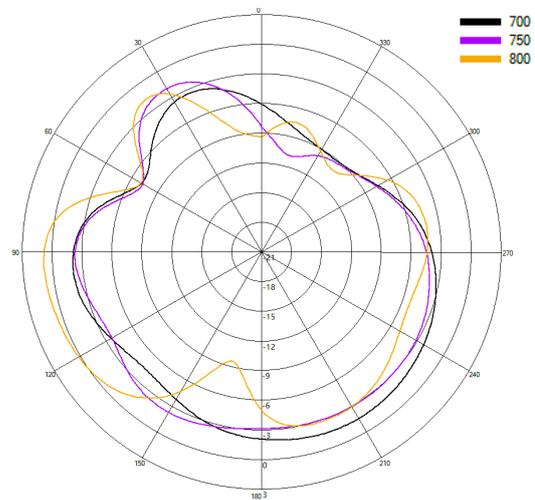
L[X]A[X]MM4-7-42 -

3D Pattern Data in
Free Space Cell D

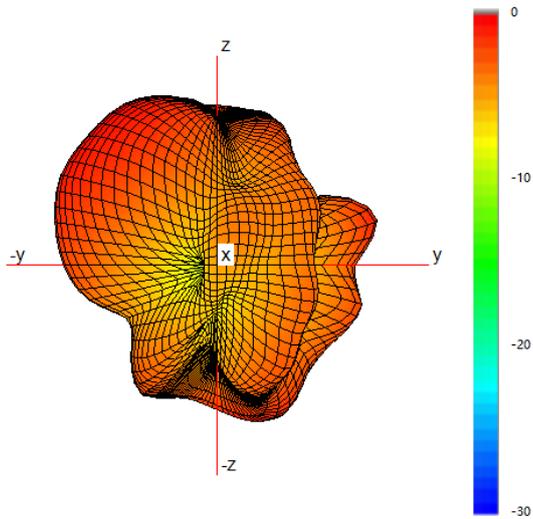
Typical 3D Pattern- Cell D - 750 MHz



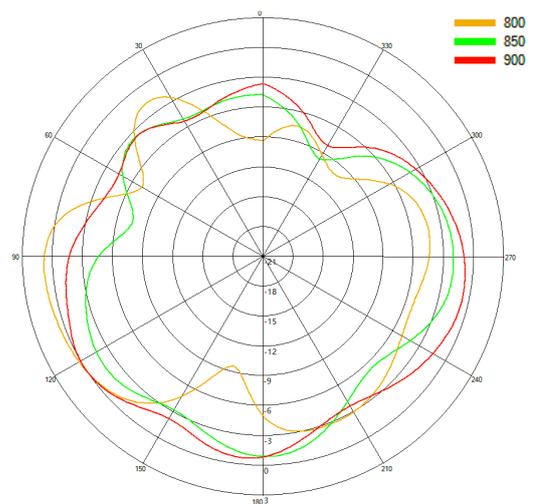
Typical H Plane- Cell D - Patterns- 700-800MHz



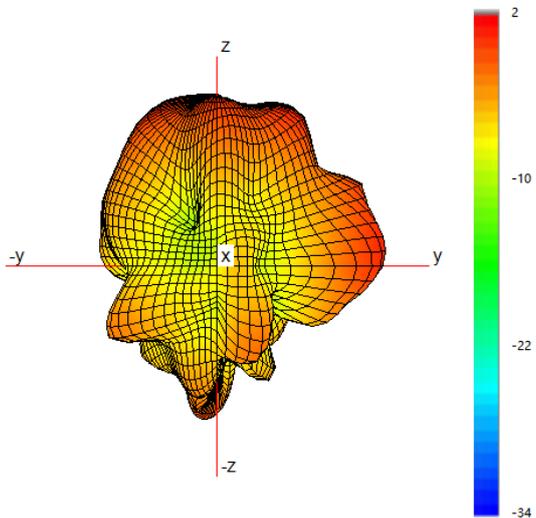
Typical 3D Pattern- Cell D - 850 MHz



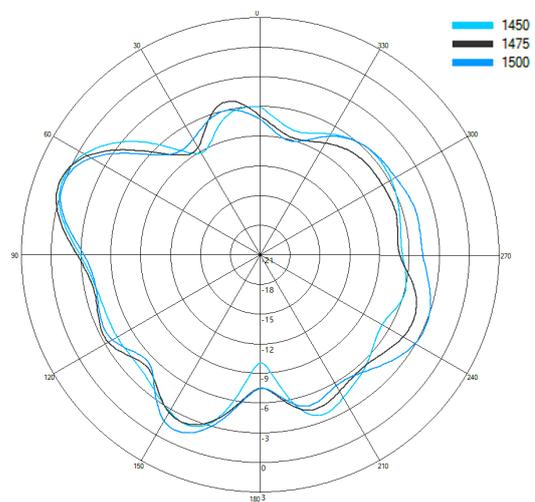
Typical H Plane- Cell D - Patterns- 800-900MHz



Typical 3D Pattern- Cell D - 1475 MHz



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

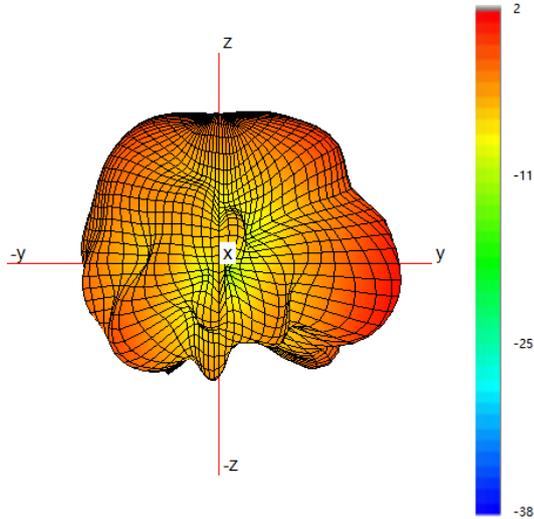


Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

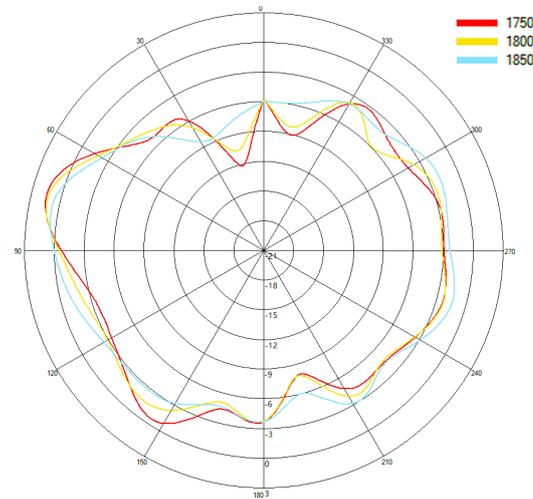
L[X]A[X]MM4-7-42

3D Pattern Data in
Free Space Cell D

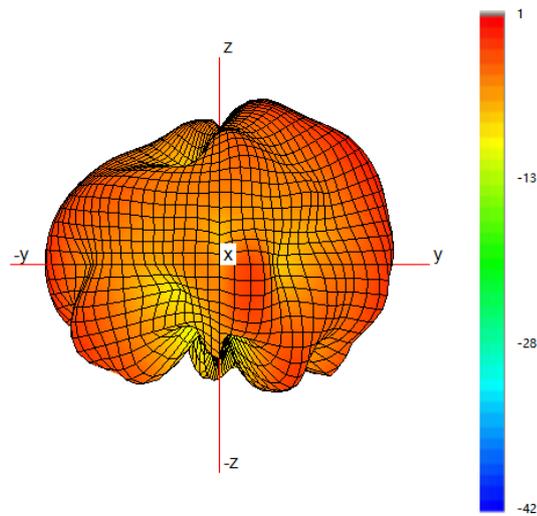
Typical 3D Pattern- Cell D - 1800 MHz



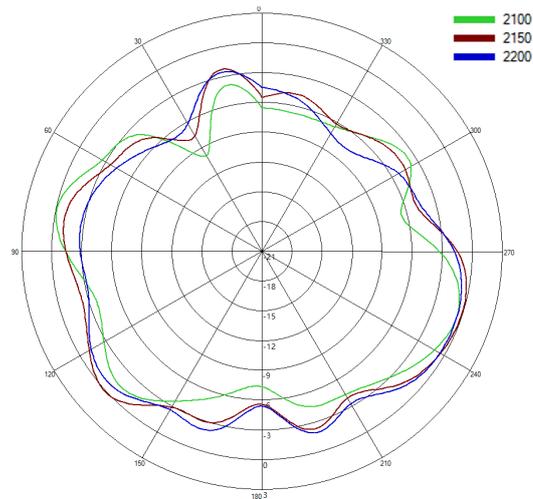
Typical H Plane- Cell D- Patterns- 1750-1850 MHz



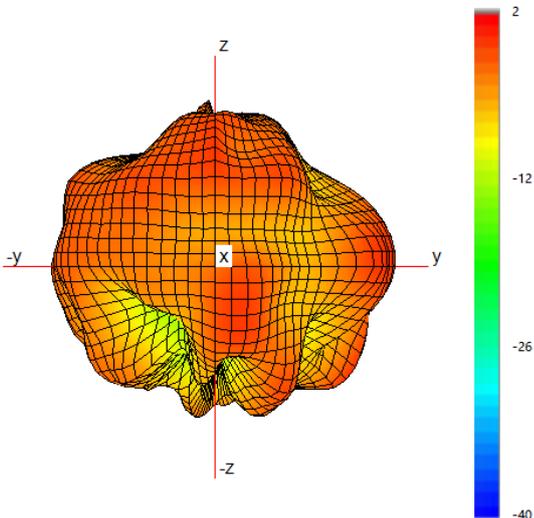
Typical 3D Pattern- Cell D - 2150 MHz



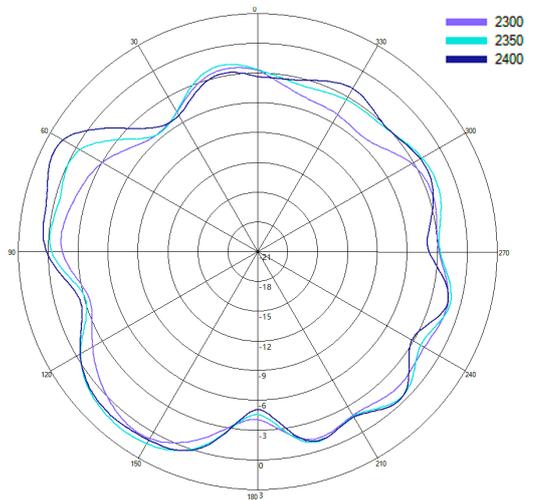
Typical H Plane- Cell D- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell D - 2350 MHz



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

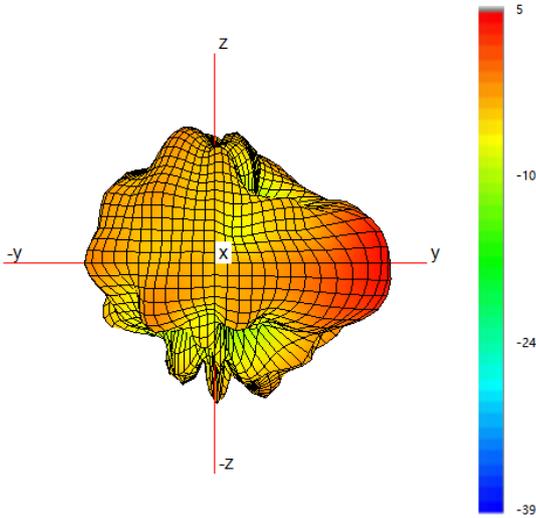


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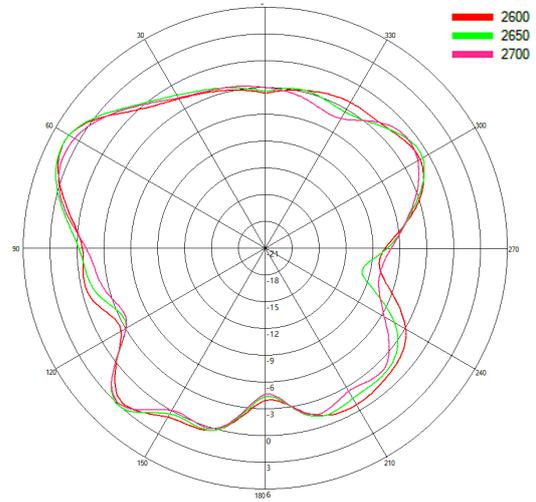
L[X]A[X]MM4-7-42 -

3D Pattern Data in
Free Space Cell D

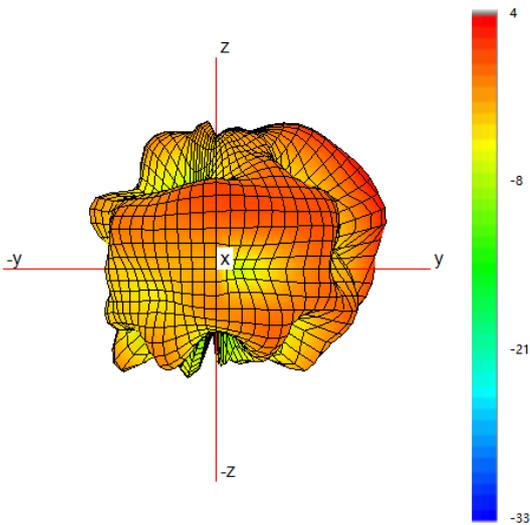
Typical 3D Pattern- Cell D - 2650 MHz



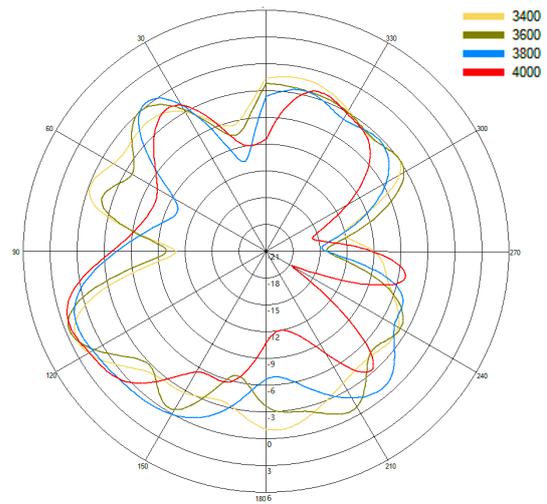
Typical H Plane- Cell D - Patterns- 2600-2700 MHz



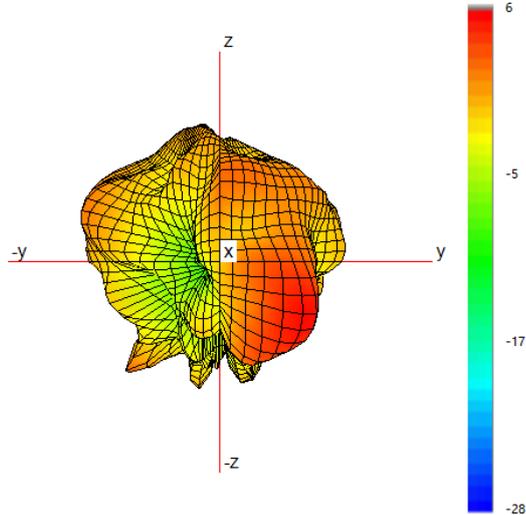
Typical 3D Pattern- Cell D - 3600 MHz



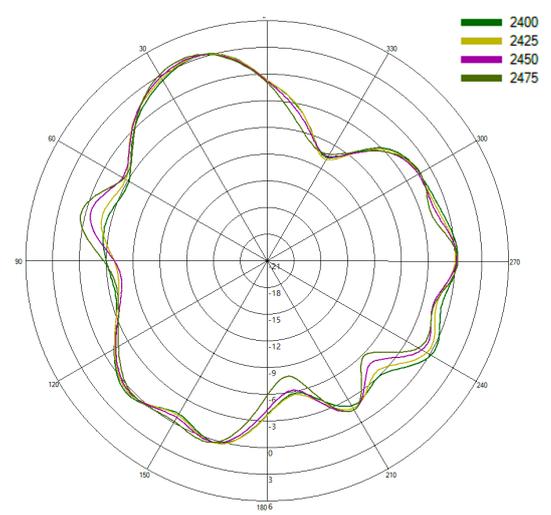
Typical H Plane- Cell D - Patterns- 3400-4000 MHz



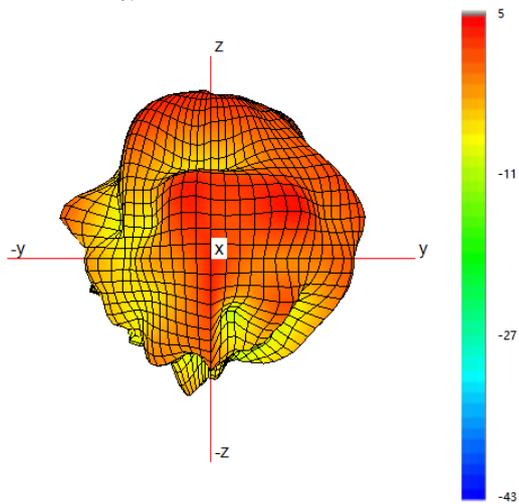
Typical 3D Pattern- WiFi - 1 - 2450 MHz



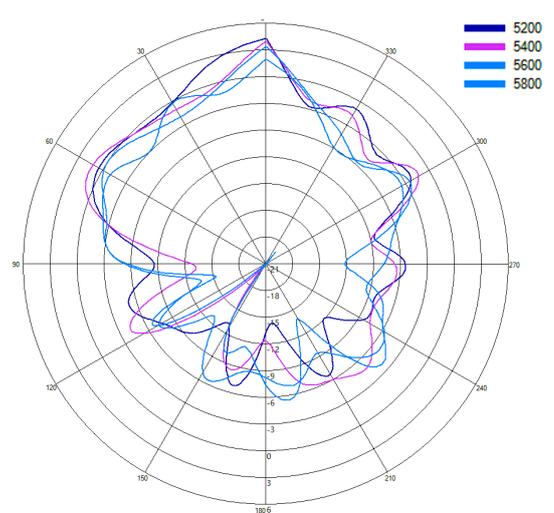
Typical H Plane- WiFi - 1 - Patterns- 2400-2475MHz



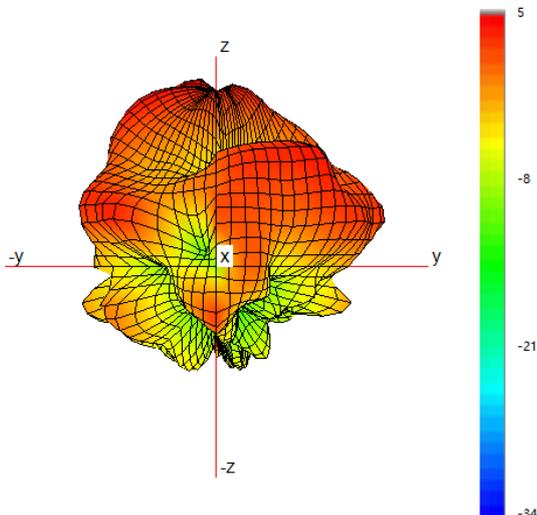
Typical 3D Pattern- WiFi - 1 - 5500 MHz



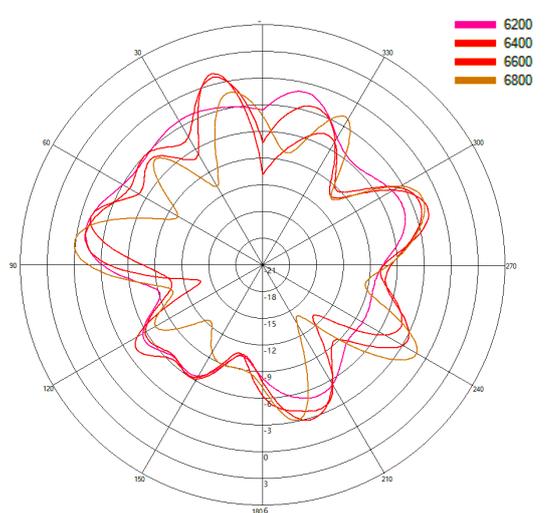
Typical H Plane- WiFi - 1 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 1 - 6500 MHz



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

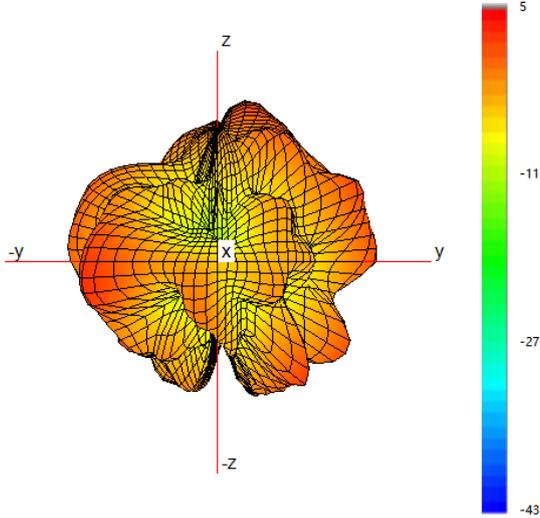


Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

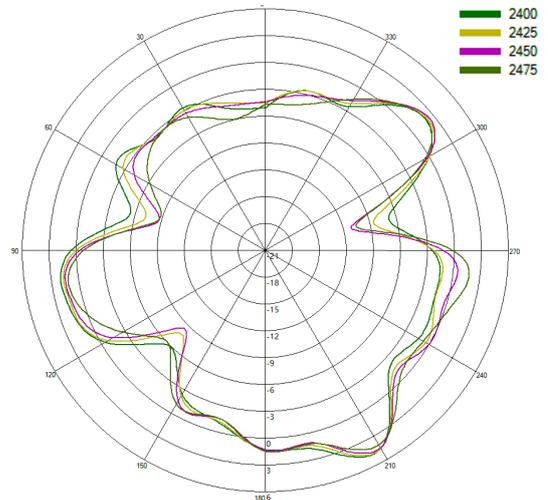
L[X]A[X]MM4-7-42 -

WiFi Pattern-Data in
Free Space -WiFi-2

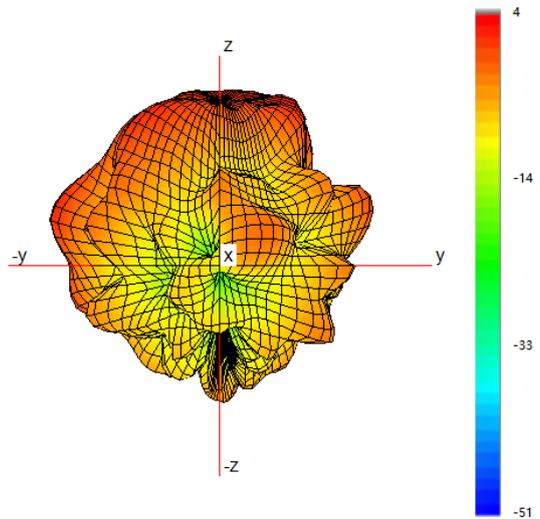
Typical 3D Pattern- WiFi - 2 - 2450 MHz



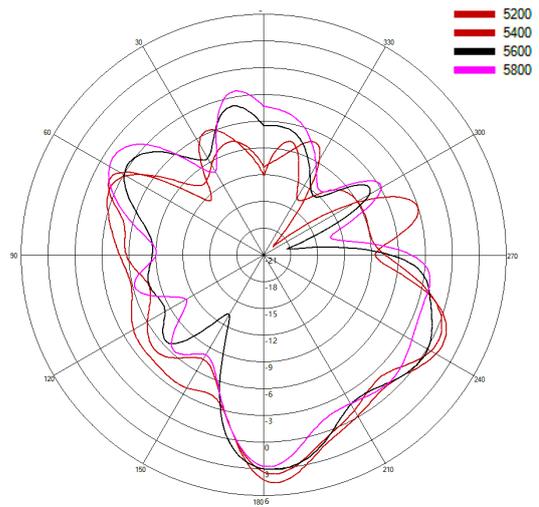
Typical H Plane- WiFi - 2 - Patterns- 2400-2475MHz



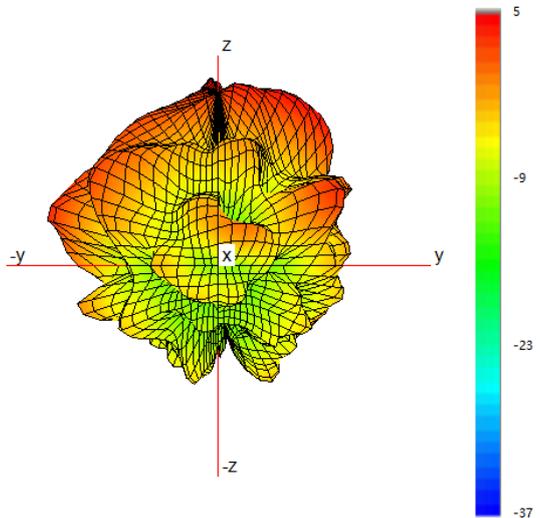
Typical 3D Pattern- WiFi - 2 - 5500 MHz



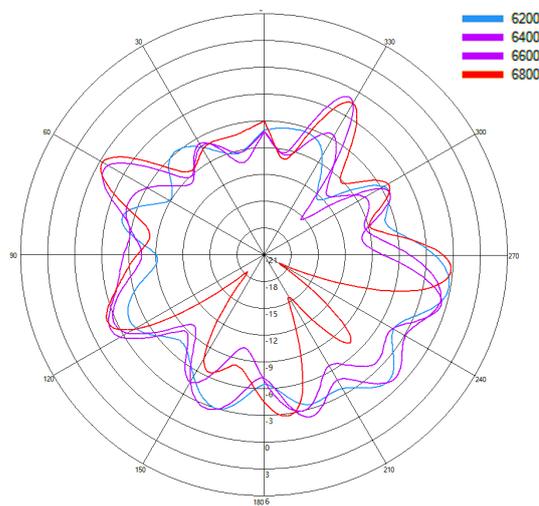
Typical H Plane- WiFi - 2 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 2 - 6500 MHz



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



Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42

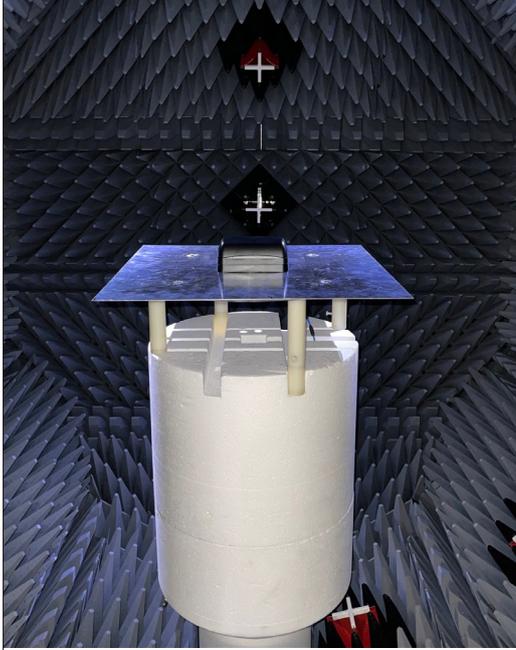
PANORAMA  ANTENNAS

Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42 -

PANORAMA ANTENNAS

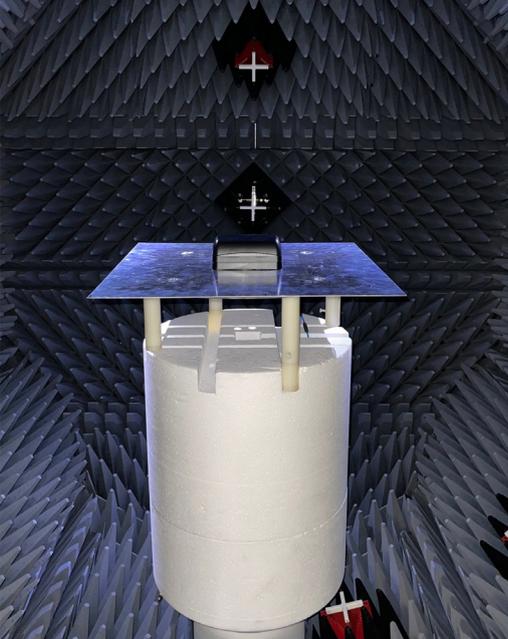
Electrical Data Cell on
Ground Plane

Measurement Conditions	4G/5G Antennas				
LGADMM4-7-42 measured on 600x600mm (1.9'x1.9') ground plane with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	699-798	12,13, 14 17,28	Cell A	2.6	36
			Cell B	2.9	35
			Cell C	3.5	40
			Cell D	3.4	38
	807- 862	5,19,20,26,27	Cell A	2.9	42
			Cell B	4.1	41
			Cell C	3.6	49
			Cell D	4.1	47
	880-960	8	Cell A	3.0	45
			Cell B	3.7	46
			Cell C	4.2	62
			Cell D	4.5	55
	1427-1518	11, 21, 74,75,76	Cell A	4.1	30
			Cell B	3.6	30
			Cell C	2.6	43
			Cell D	2.4	40
	1710-1920	2,3,4,9,25,35,39,66	Cell A	4.9	51
			Cell B	5.1	52
			Cell C	4.4	45
			Cell D	4.2	44
1920-2170	1,23	Cell A	5.6	50	
		Cell B	5.6	51	
		Cell C	4.4	45	
		Cell D	4.3	43	
2300-2400	30,40	Cell A	5.8	43	
		Cell B	5.7	45	
		Cell C	3.6	45	
		Cell D	4.4	46	
2496-2690	7,38,41	Cell A	7.3	42	
		Cell B	7.5	42	
		Cell C	3.9	49	
		Cell D	5.7	49	
3300-4200	22,42,43,48,77,78	Cell A	7.0	56	
		Cell B	7.5	55	
		Cell C	7.6	52	
		Cell D	6.0	49	

Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42

Electrical Data WiFi on
Ground Plane

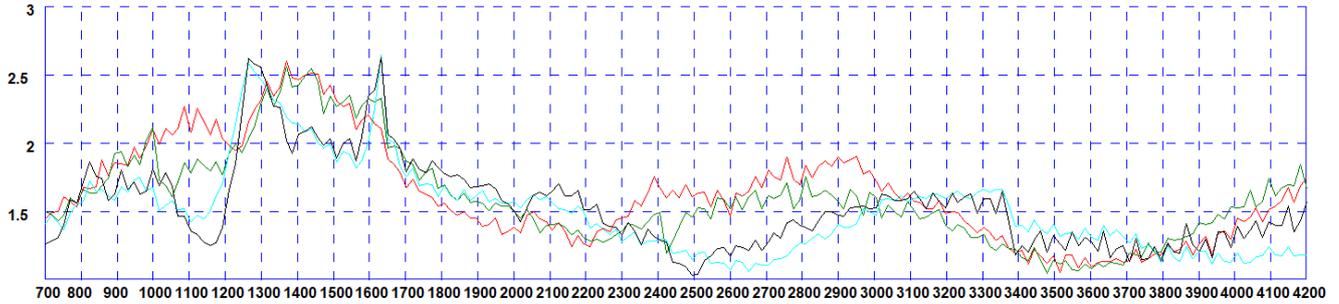
Measurement Conditions	WiFi Antennas				
LGADMM4-7-42 measured on 600x600mm (1.9'x1.9') ground plane with 0.5m (1.6') CS30 Cable	Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
	2396-2485	2.4GHz	WiFi 1	6.7	64
			WiFi 2	6.5	63
	5150-5250	UNII-1	WiFi 1	6.5	61
			WiFi 2	6.0	60
	5250-5350	UNII-2A	WiFi 1	6.1	56
			WiFi 2	5.8	57
	5350-5470	UNII-2B	WiFi 1	5.5	54
			WiFi 2	5.7	56
	5470-5725	UNII-2C	WiFi 1	6.6	50
			WiFi 2	6.0	52
	5725-5850	UNII-3	WiFi 1	6.7	52
			WiFi 2	5.5	54
	5850-5925	UNII-4	WiFi 1	5.5	52
			WiFi 2	5.2	54
	5925-6425	UNII-5	WiFi 1	6.9	53
			WiFi 2	6.7	55
6425-6525	UNII-6	WiFi 1	5.5	52	
		WiFi 2	6.5	54	
6525-6875	UNII-7	WiFi 1	5.5	48	
		WiFi 2	5.6	47	
6875-7125	UNII-8	WiFi 1	4.7	45	
		WiFi 2	4.8	44	

Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42 -

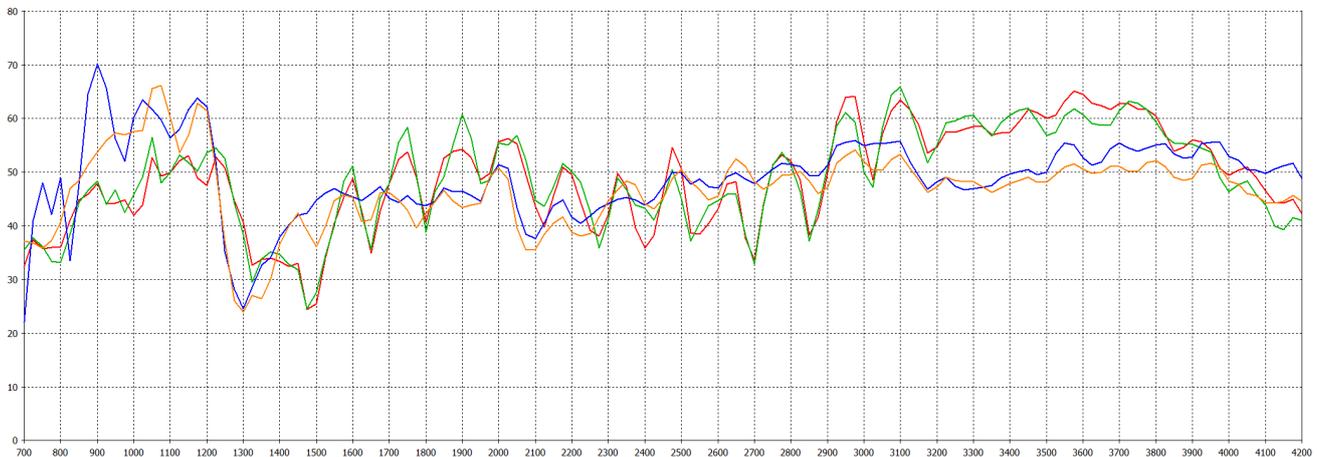
Electrical Data Cell on Ground Plane

Typical VSWR*



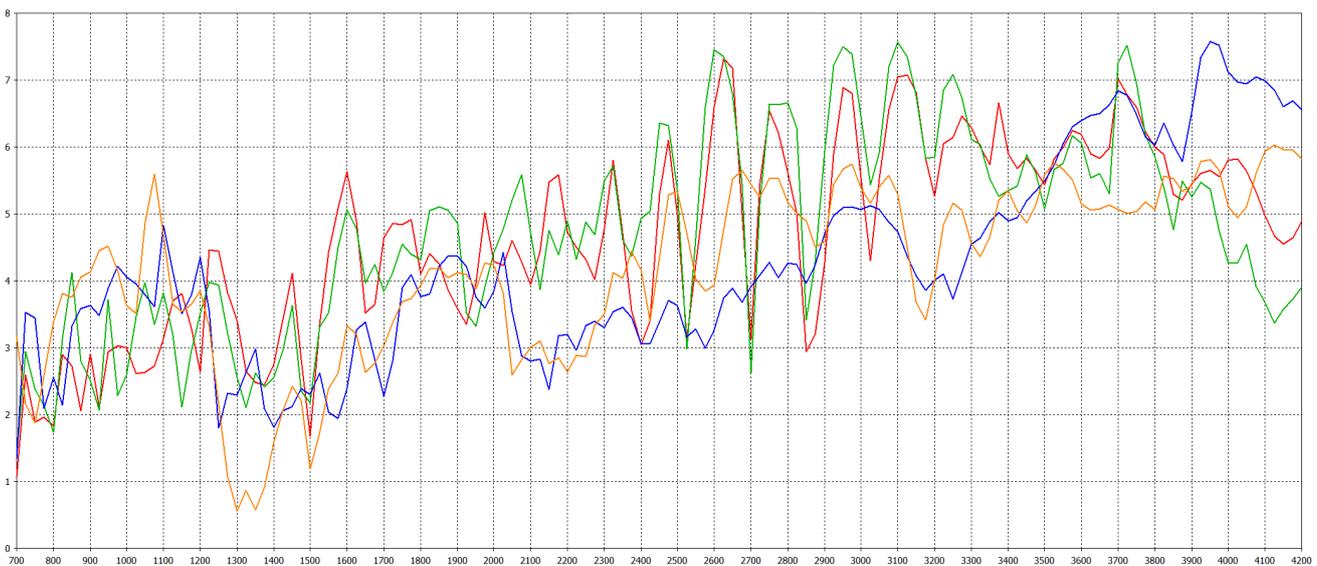
*VSWR measured on 600x600mm (2'x2') ground plane with 0.5m (1.6') of CS30 cable

Typical Efficiency*



*Efficiency measured on 600x600mm (2'x2') ground plane with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain*



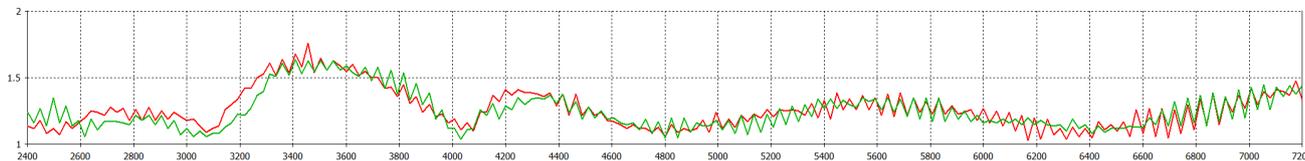
* Swept peak gain measured on 600x600mm (2'x2') ground plane with 0.5m (1.6') of CS30 cable

Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42

Electrical Data WiFi on
Ground Plane

Typical VSWR*



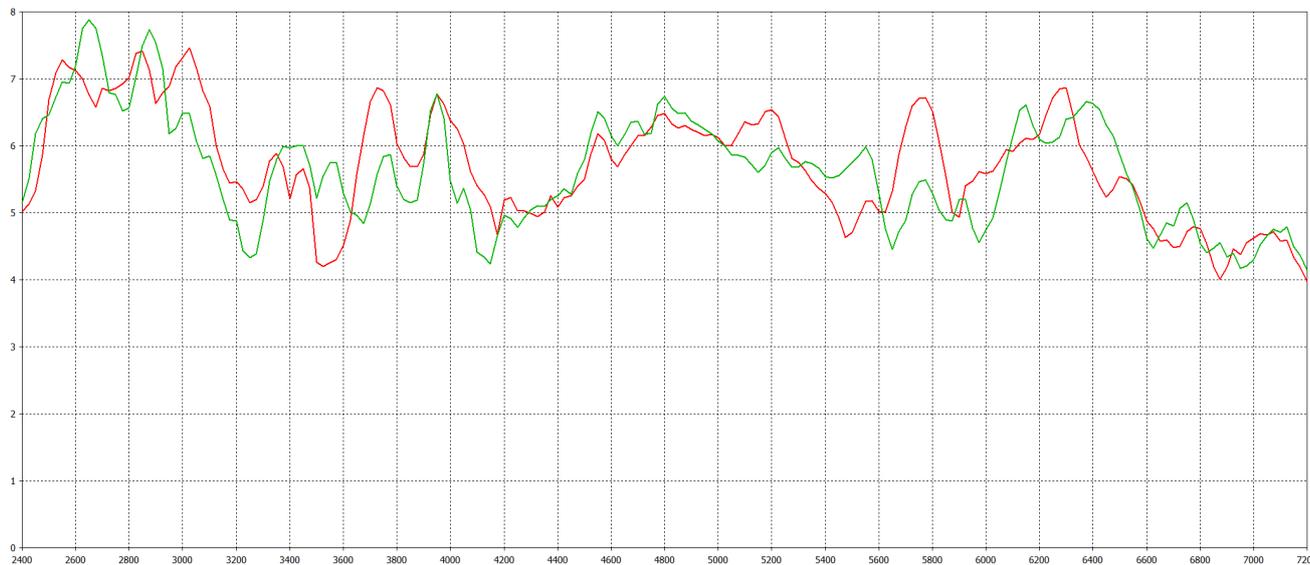
*VSWR measured on 600x600mm (2'x2') ground plane with 0.5m (1.6') of CS30 cable

Typical Efficiency*



*Efficiency measured on 600x600mm (2'x2') ground plane with 0.5m (1.6') of CS30 cable

Typical Swept Peak Gain*



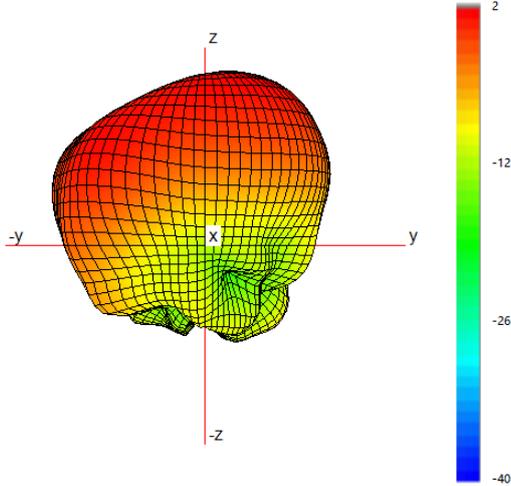
* Swept peak gain measured on 600x600mm (2'x2') ground plane with 0.5m (1.6') of CS30 cable

Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

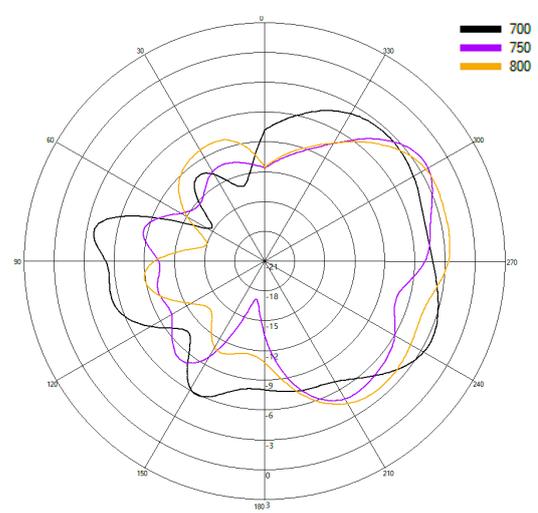
L[X]A[X]MM4-7-42 -

3D Pattern Data on
Ground Plane Cell A

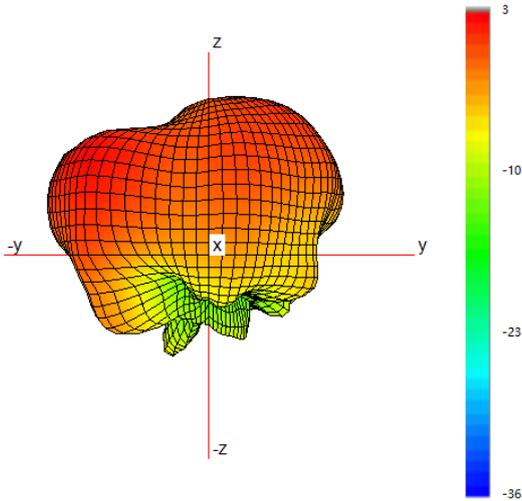
Typical 3D Pattern- Cell A - 750 MHz



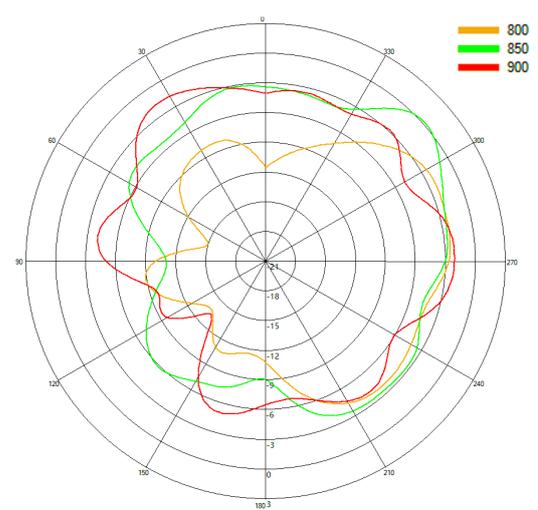
Typical H Plane- Cell A - Patterns- 700-800MHz



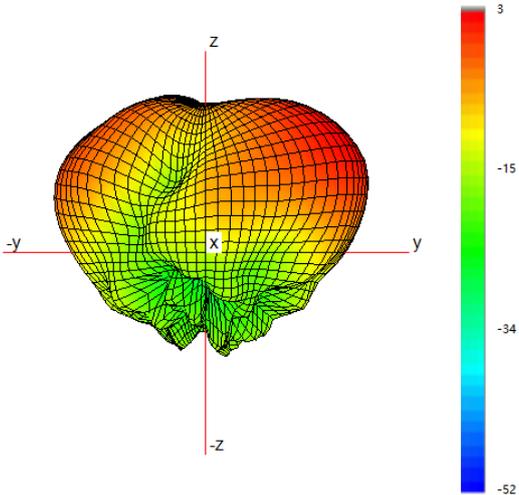
Typical 3D Pattern- Cell A - 850 MHz



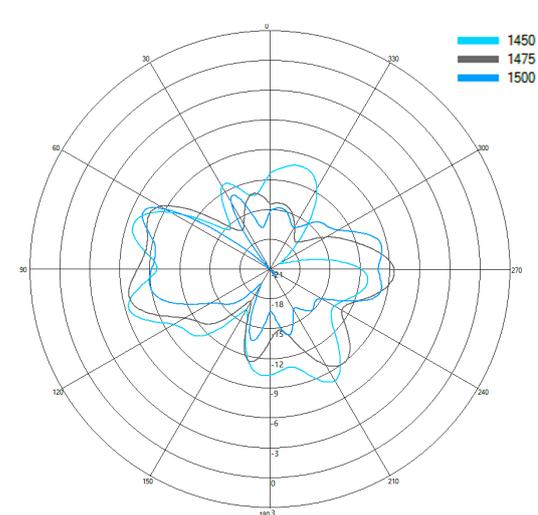
Typical H Plane- Cell A - Patterns- 800-900MHz



Typical 3D Pattern- Cell A - 1475 MHz

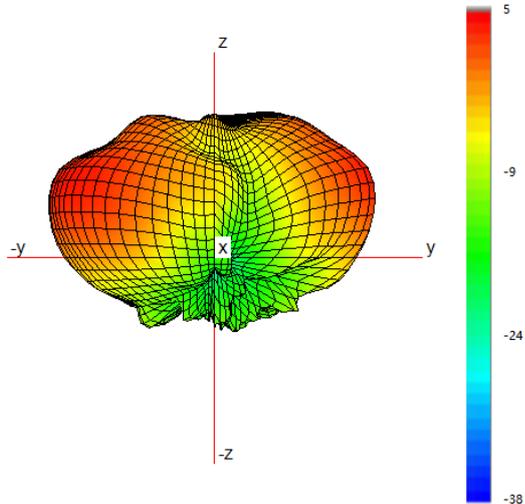


Typical H Plane- Cell A - Patterns- 1450-1500 MHz

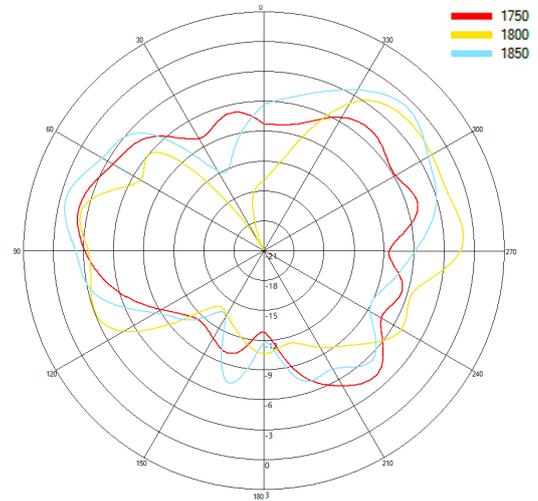


3D Pattern Data on
Ground Plane Cell A

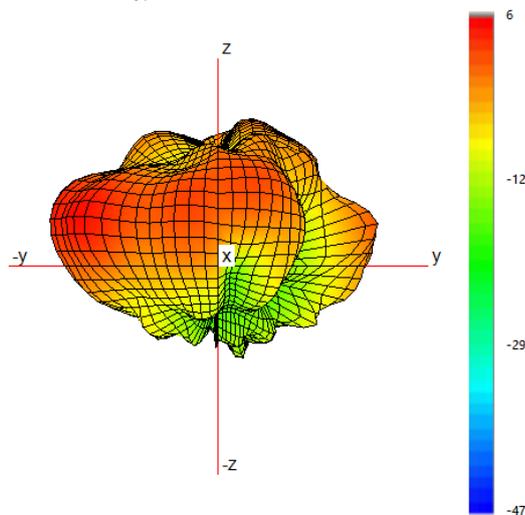
Typical 3D Pattern- Cell A - 1800 MHz



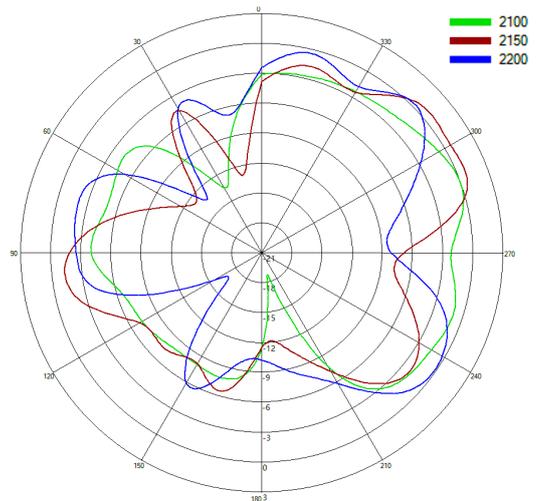
Typical H Plane- Cell A- Patterns- 1750-1850 MHz



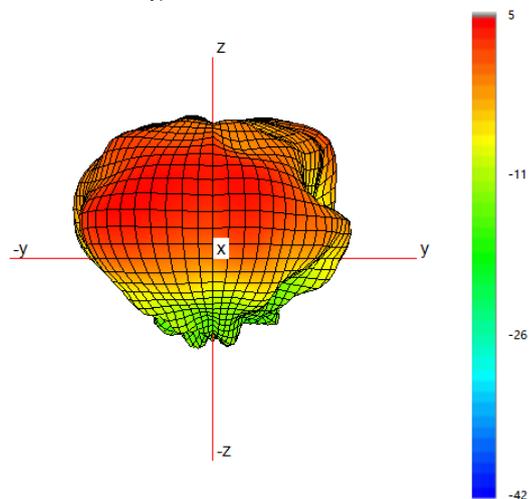
Typical 3D Pattern- Cell A - 2150 MHz



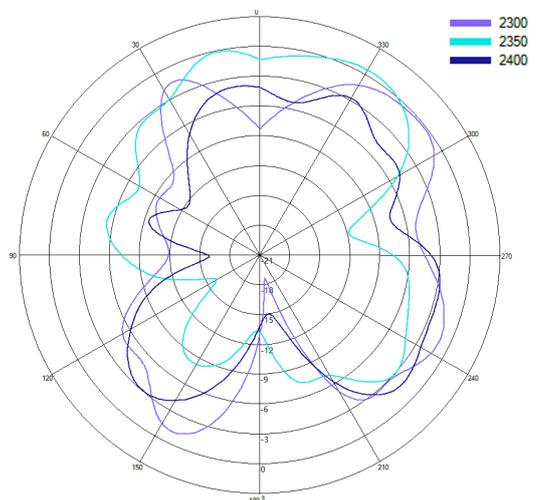
Typical H Plane- Cell A- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell A - 2350 MHz



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

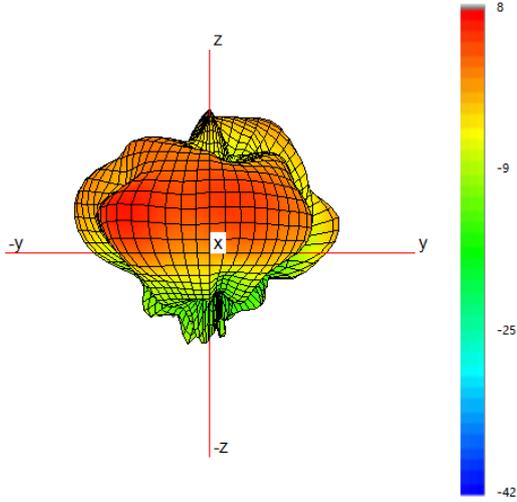


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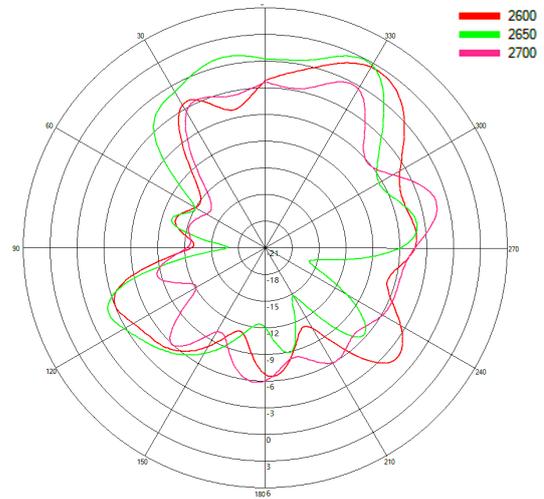
L[X]A[X]MM4-7-42 -

3D Pattern Data on Ground Plane Cell A

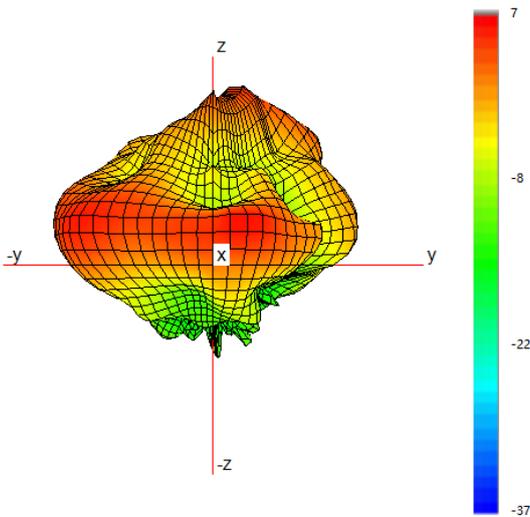
Typical 3D Pattern- Cell A - 2650 MHz



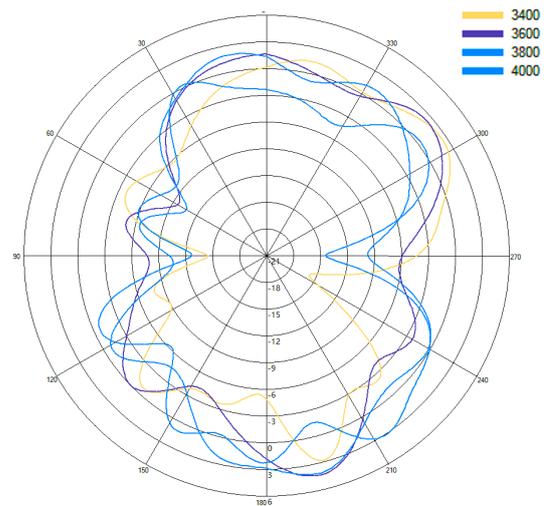
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz

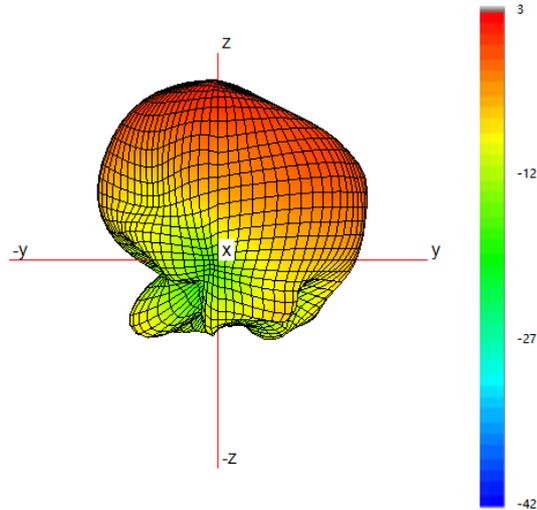


Typical H Plane- Cell A - Patterns- 3400-4000 MHz

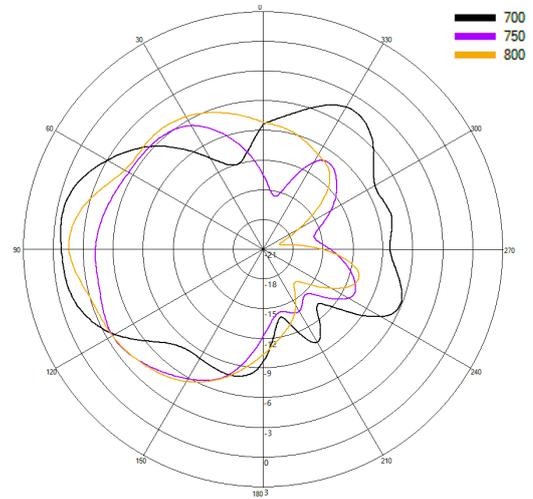


3D Pattern Data on
Ground Plane Cell B

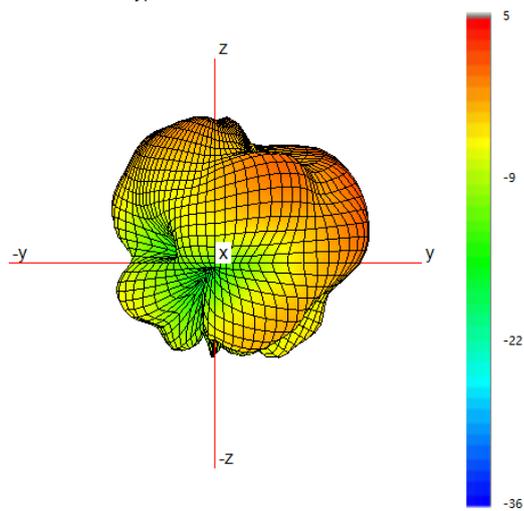
Typical 3D Pattern- Cell B - 750 MHz



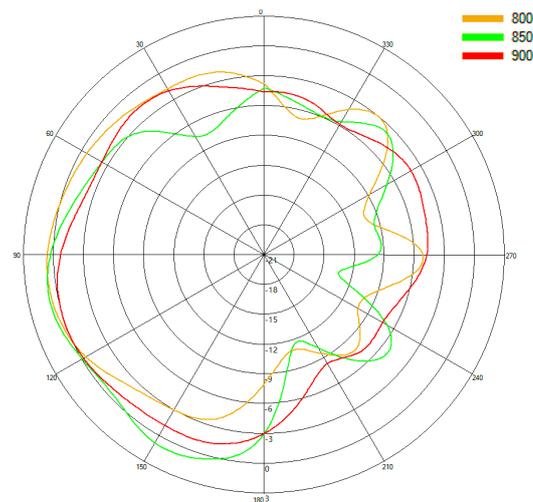
Typical H Plane- Cell B - Patterns- 700-800MHz



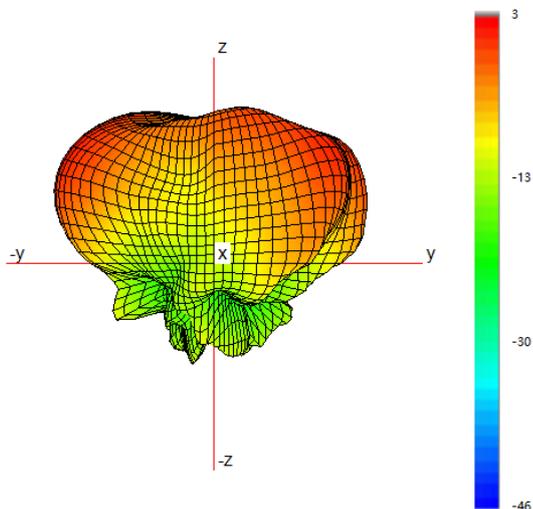
Typical 3D Pattern- Cell B - 850 MHz



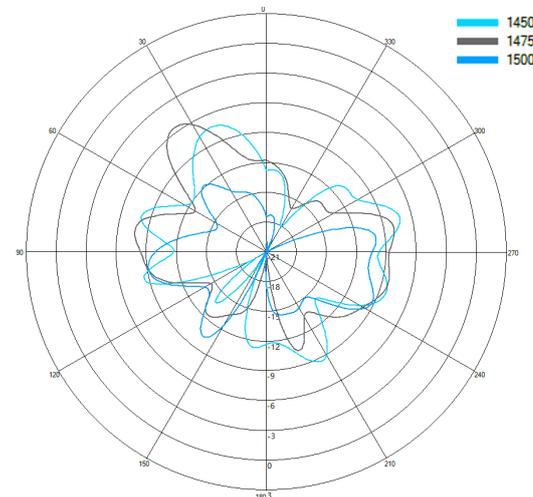
Typical H Plane- Cell B - Patterns- 800-900MHz



Typical 3D Pattern- Cell B - 1475 MHz



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

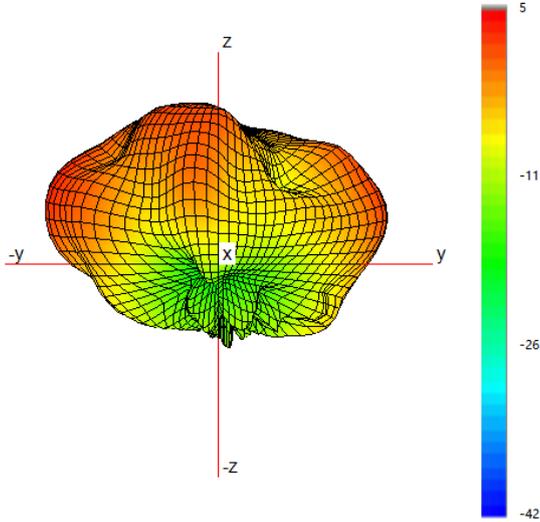


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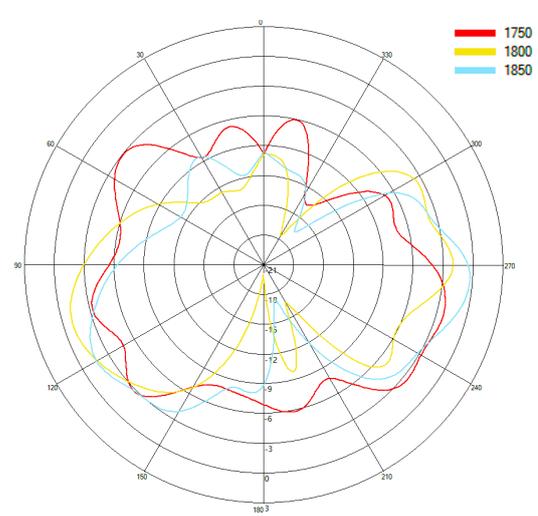
L[X]A[X]MM4-7-42 -

3D Pattern Data on Ground Plane Cell B

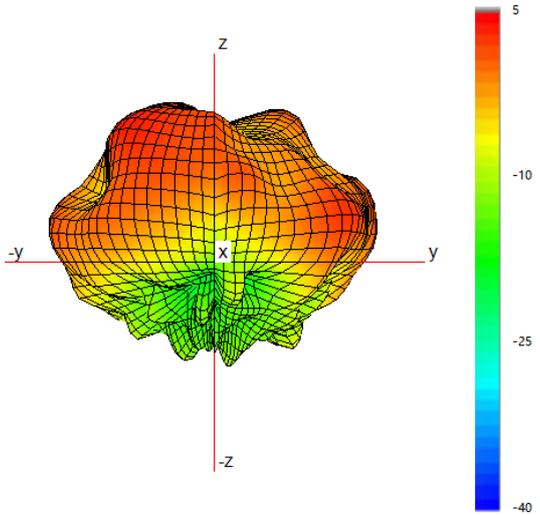
Typical 3D Pattern- Cell B - 1800 MHz



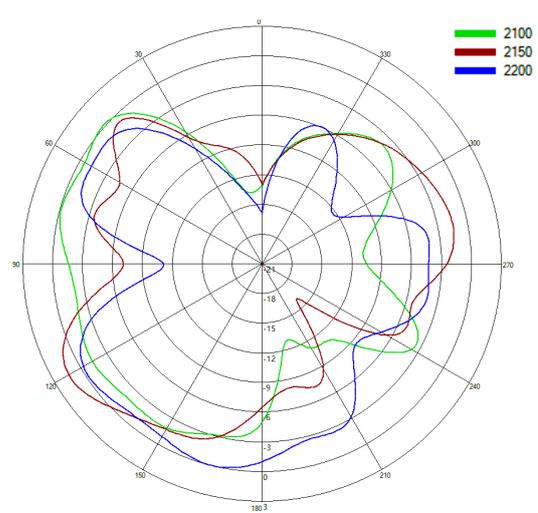
Typical H Plane- Cell B- Patterns- 1750-1850 MHz



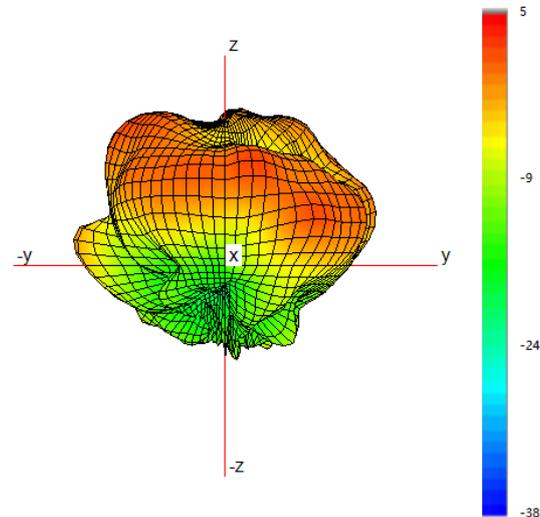
Typical 3D Pattern- Cell B - 2150 MHz



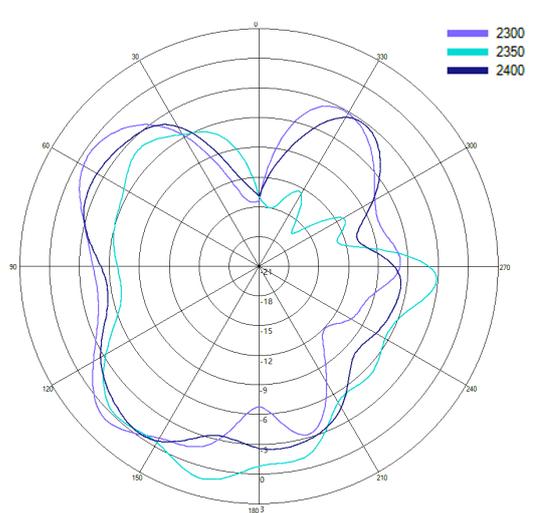
Typical H Plane- Cell B- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell B - 2350 MHz

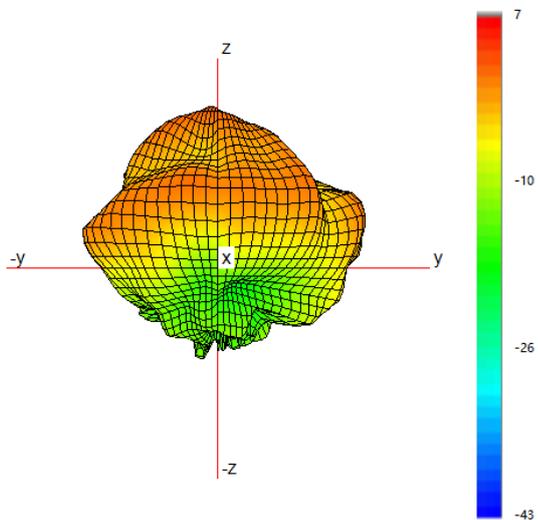


Typical H Plane- Cell B - Patterns- 2300-2400 MHz

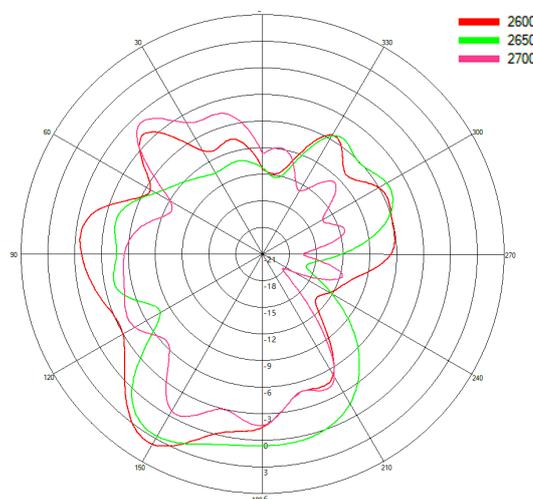


3D Pattern Data on
Ground Plane Cell B

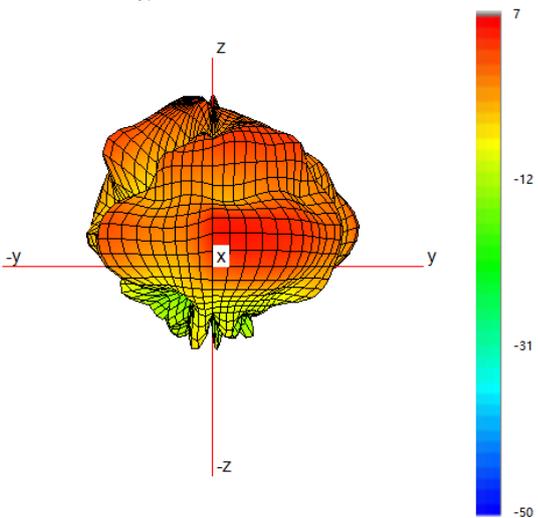
Typical 3D Pattern- Cell B - 2650 MHz



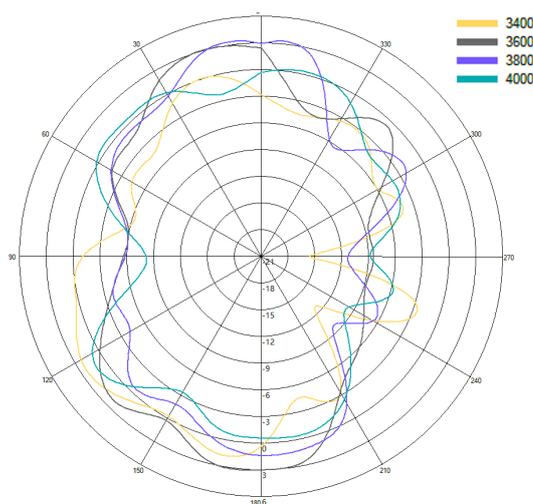
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell B - 3600 MHz



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

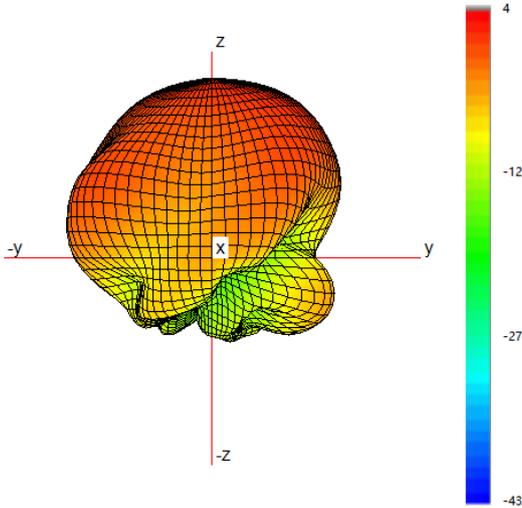


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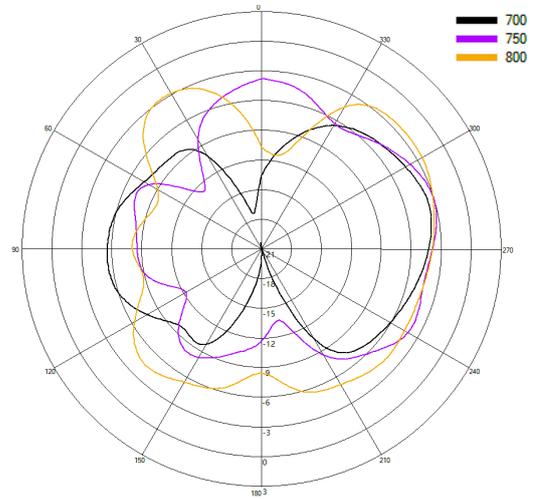
L[X]A[X]MM4-7-42 -

3D Pattern Data on Ground Plane Cell C

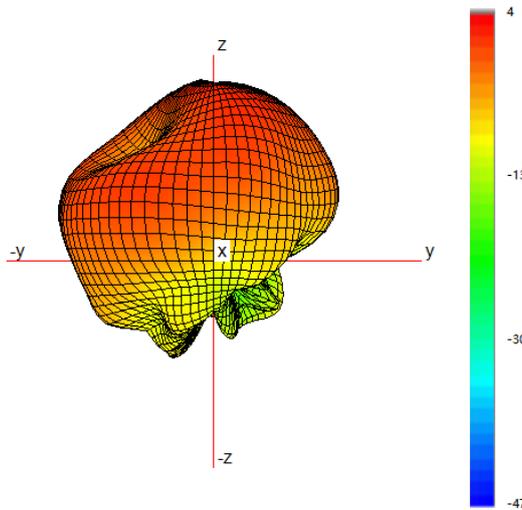
Typical 3D Pattern- Cell C - 750 MHz



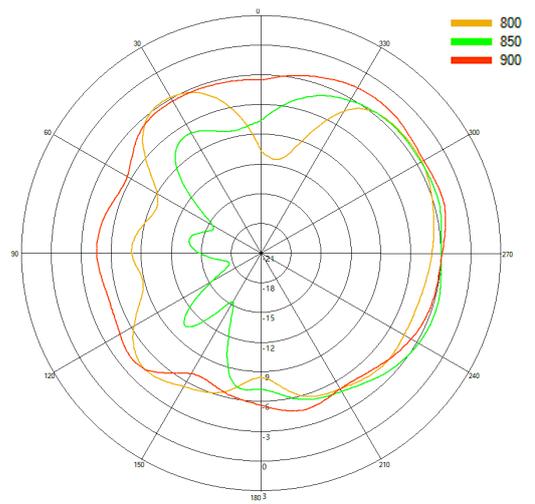
Typical H Plane- Cell C - Patterns- 700-800MHz



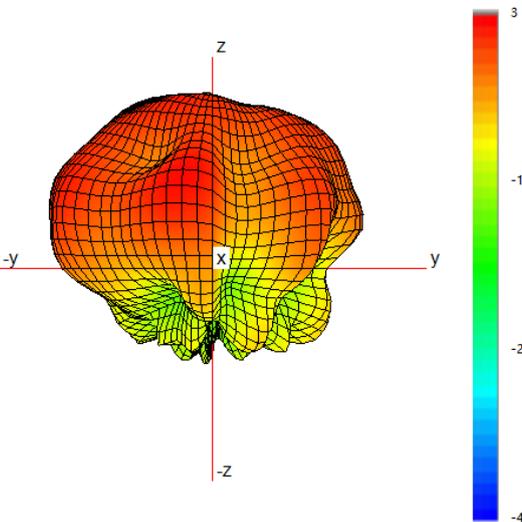
Typical 3D Pattern- Cell C - 850 MHz



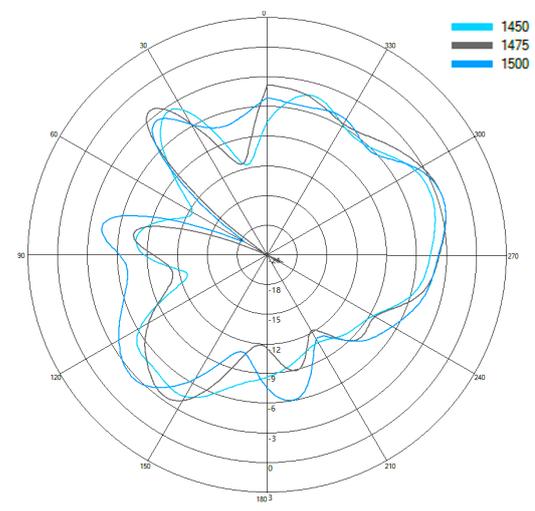
Typical H Plane- Cell C - Patterns- 800-900MHz



Typical 3D Pattern- Cell C - 1475 MHz

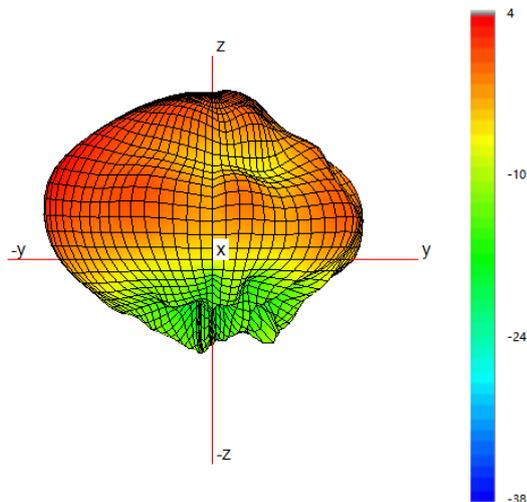


Typical H Plane- Cell C- Patterns- 1450-1500 MHz

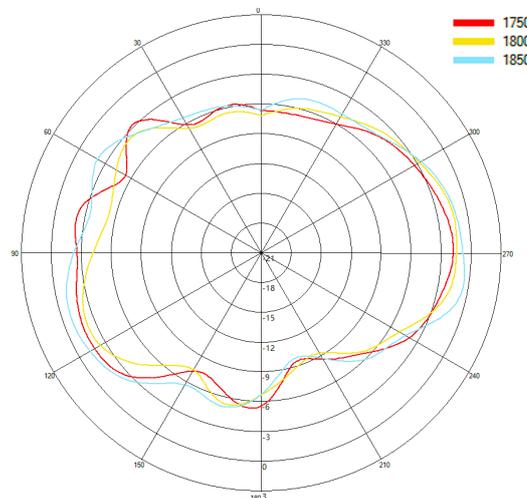


3D Pattern Data on
Ground Plane Cell C

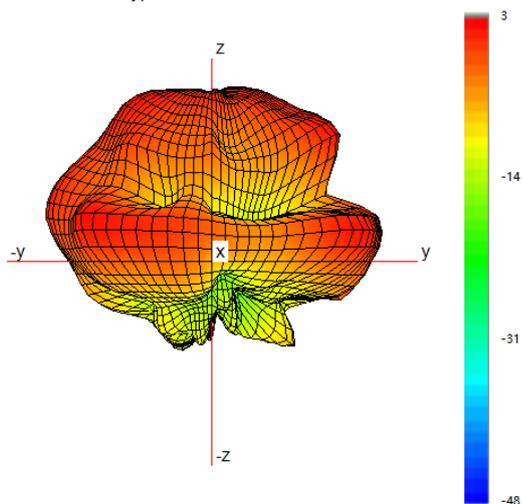
Typical 3D Pattern- Cell C - 1800 MHz



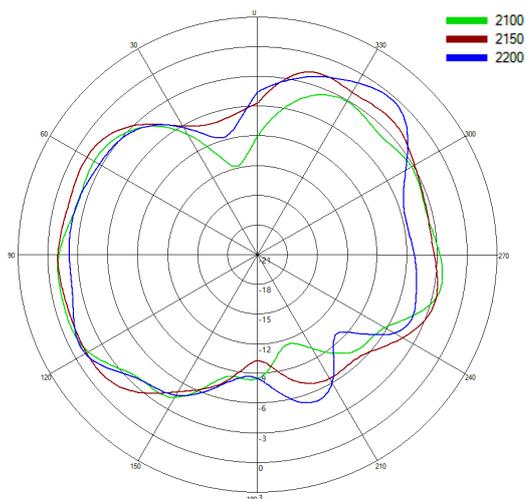
Typical H Plane- Cell C- Patterns- 1750-1850 MHz



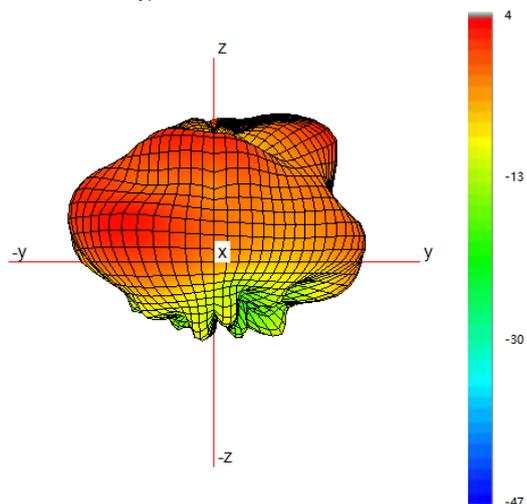
Typical 3D Pattern- Cell C - 2150 MHz



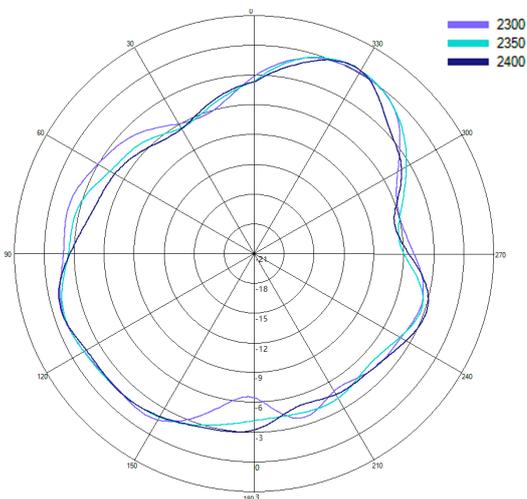
Typical H Plane- Cell C- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell C - 2350 MHz



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

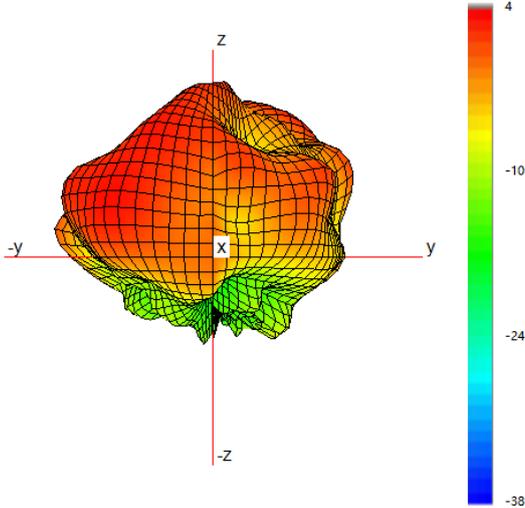


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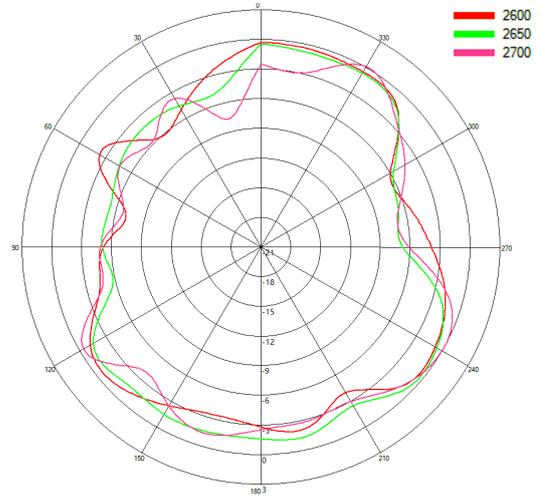
L[X]A[X]MM4-7-42 -

3D Pattern Data on Ground Plane Cell C

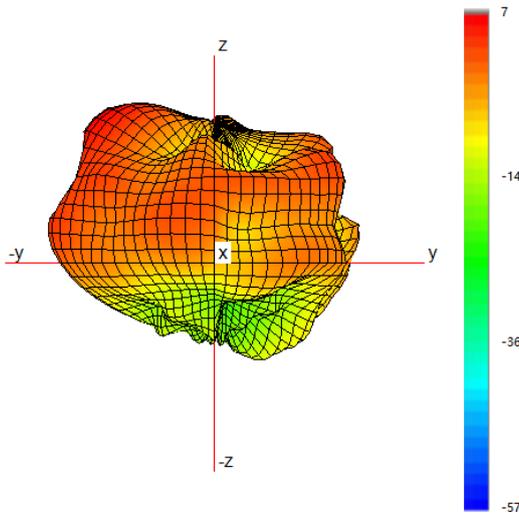
Typical 3D Pattern- Cell C - 2650 MHz



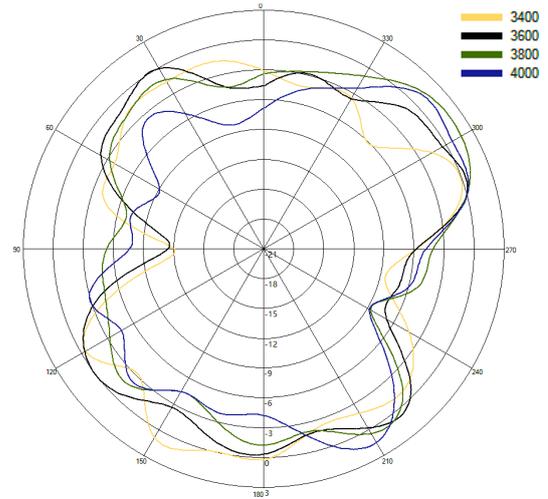
Typical H Plane- Cell C - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell C - 3600 MHz

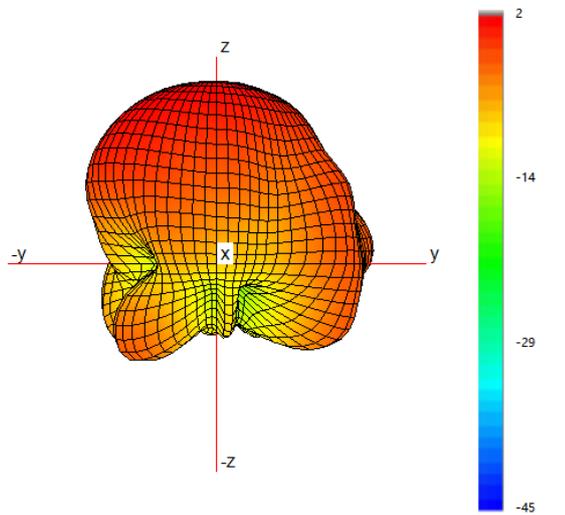


Typical H Plane- Cell C - Patterns- 3400-4000 MHz

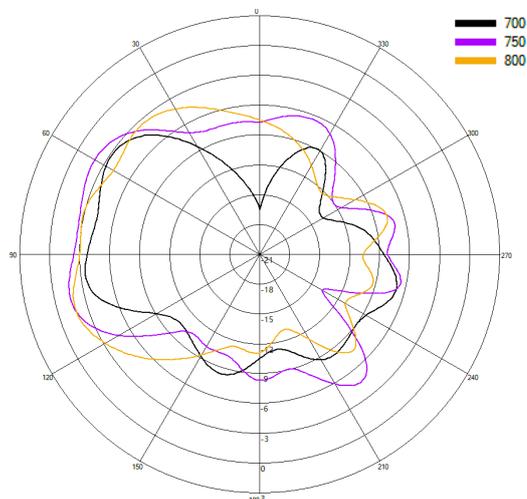


3D Pattern Data on
Ground Plane Cell D

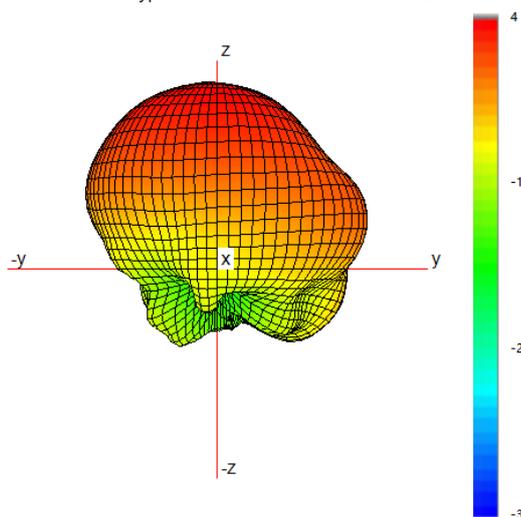
Typical 3D Pattern- Cell D - 750 MHz



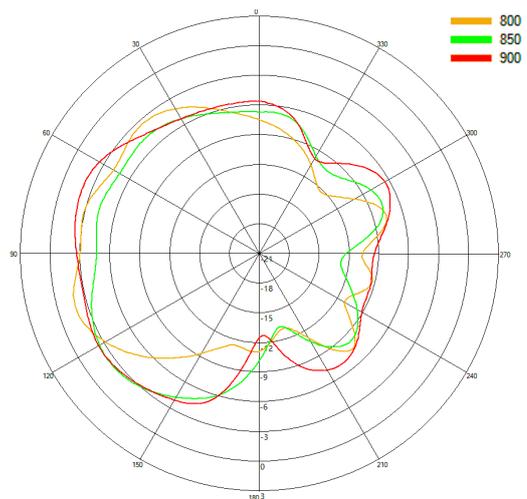
Typical H Plane- Cell D - Patterns- 700-800MHz



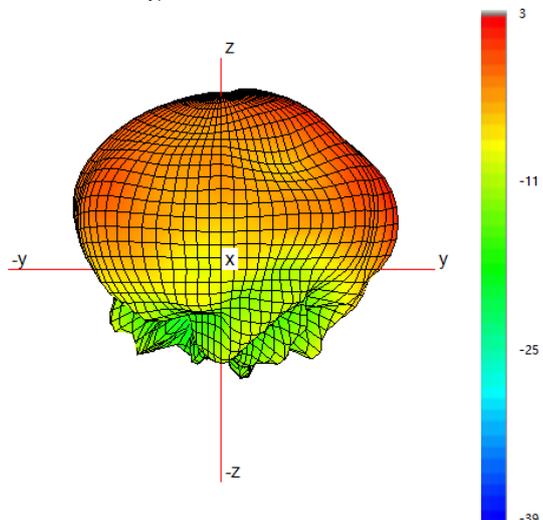
Typical 3D Pattern- Cell D - 850 MHz



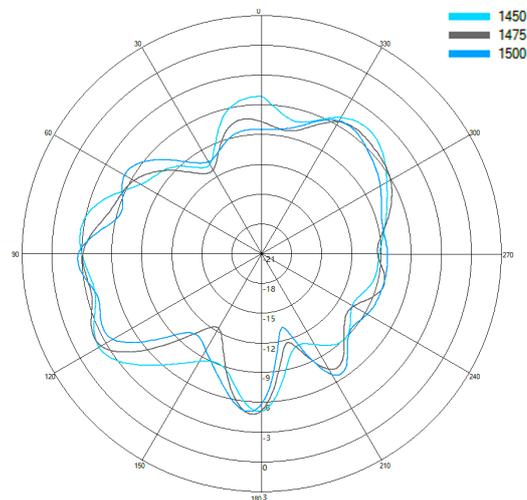
Typical H Plane- Cell D - Patterns- 800-900MHz



Typical 3D Pattern- Cell D - 1475 MHz



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

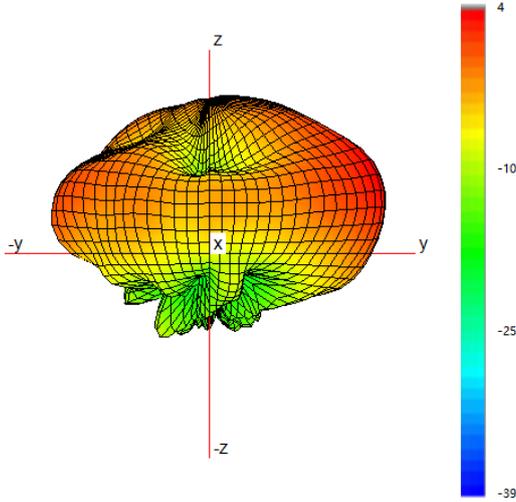


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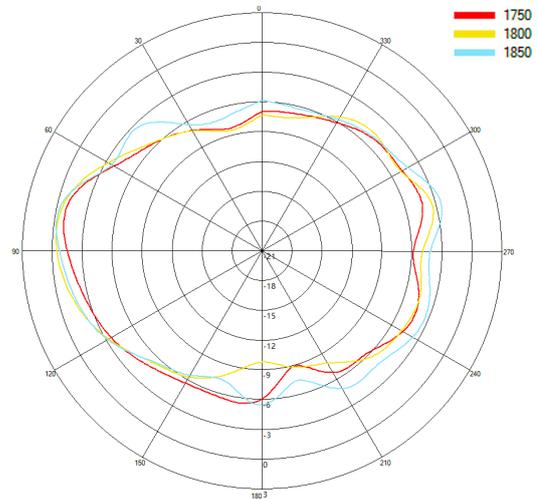
L[X]A[X]MM4-7-42 -

3D Pattern Data on Ground Plane Cell D

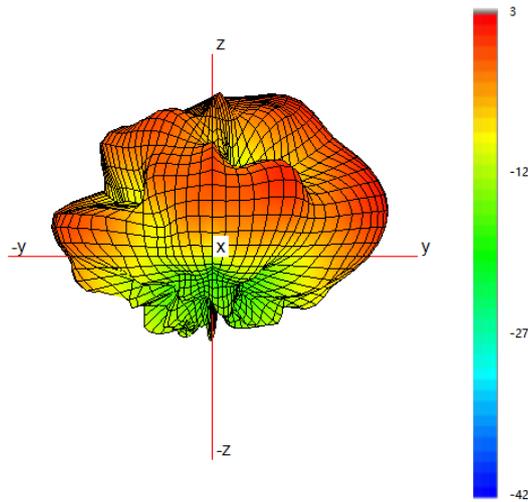
Typical 3D Pattern- Cell D - 1800 MHz



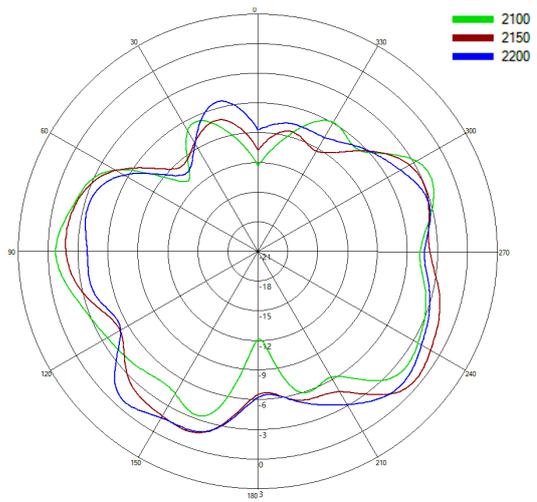
Typical H Plane- Cell D- Patterns- 1750-1850 MHz



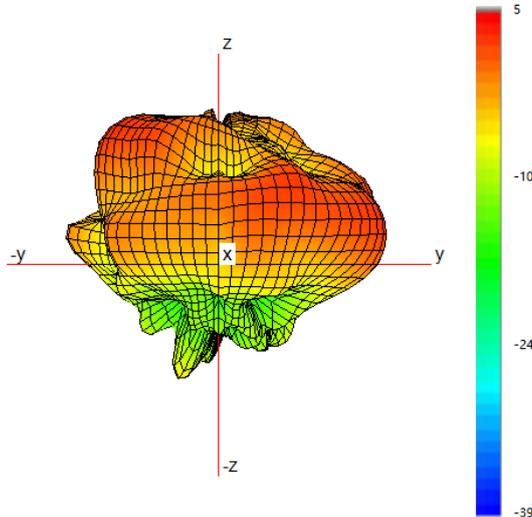
Typical 3D Pattern- Cell D - 2150 MHz



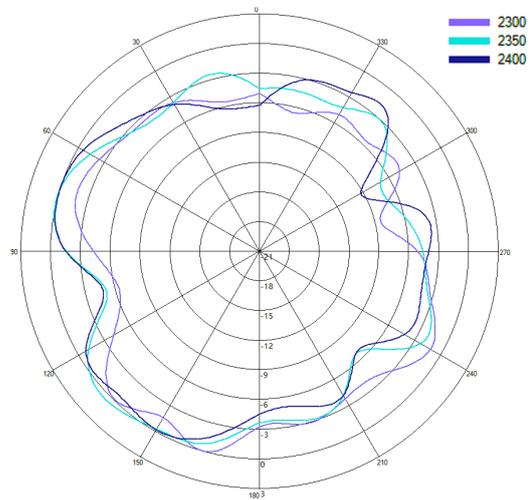
Typical H Plane- Cell D- Patterns- 2100-2200 MHz



Typical 3D Pattern- Cell D - 2350 MHz



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

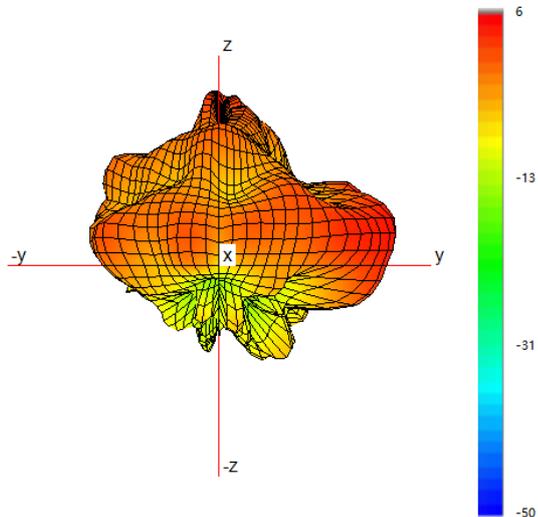


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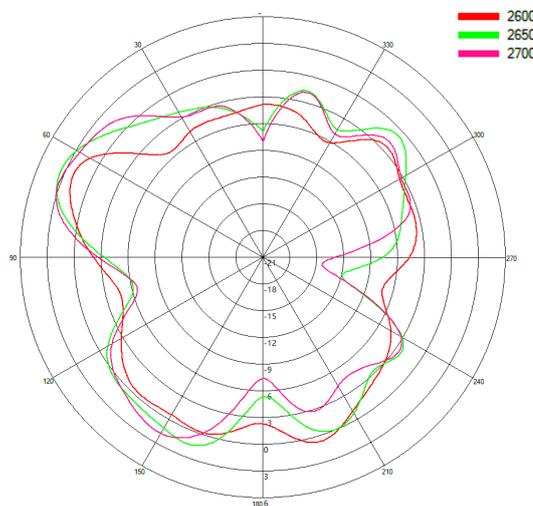
L[X]A[X]MM4-7-42

3D Pattern Data on Ground Plane Cell D

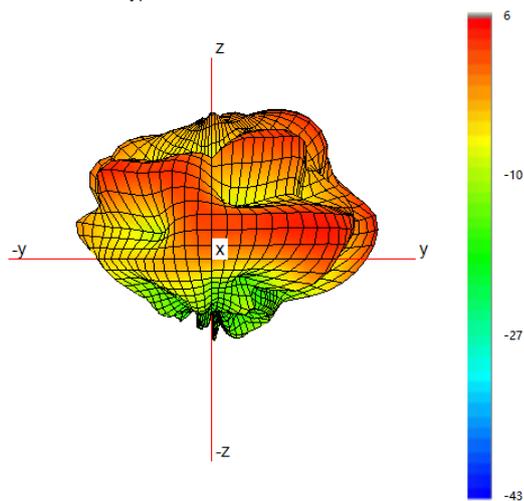
Typical 3D Pattern- Cell D - 2650 MHz



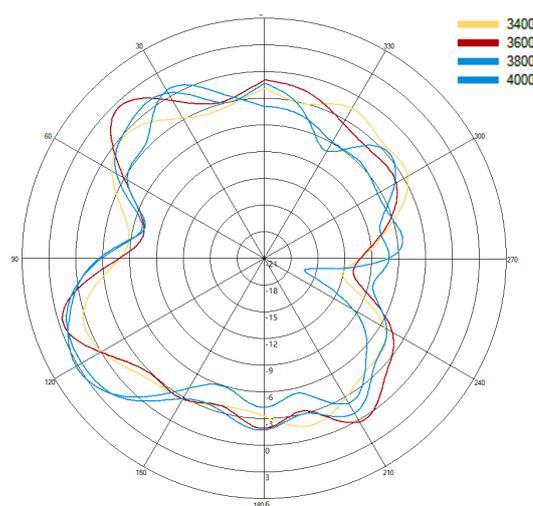
Typical H Plane- Cell D - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell D - 3600 MHz



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

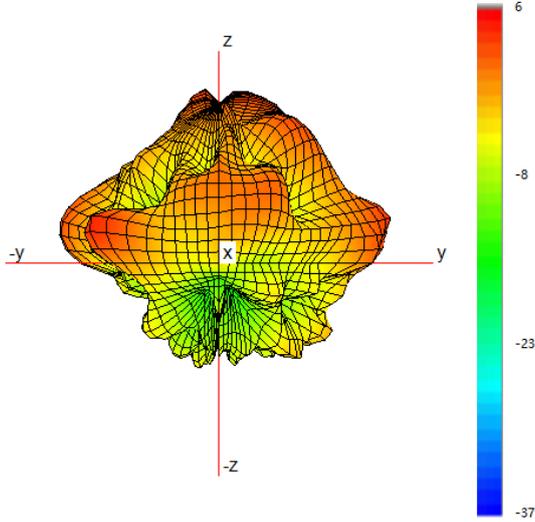


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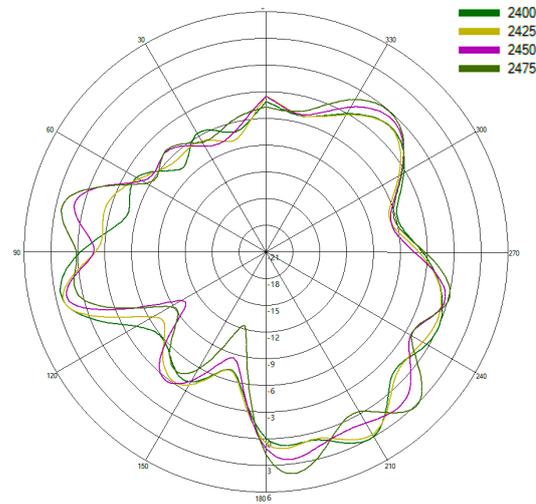
L[X]A[X]MM4-7-42 -

WiFi Pattern-Data on Ground Plane -WiFi -1

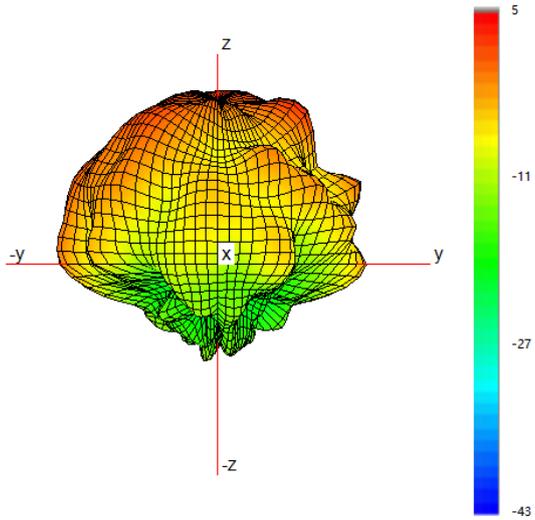
Typical 3D Pattern- WiFi - 1 - 2450 MHz



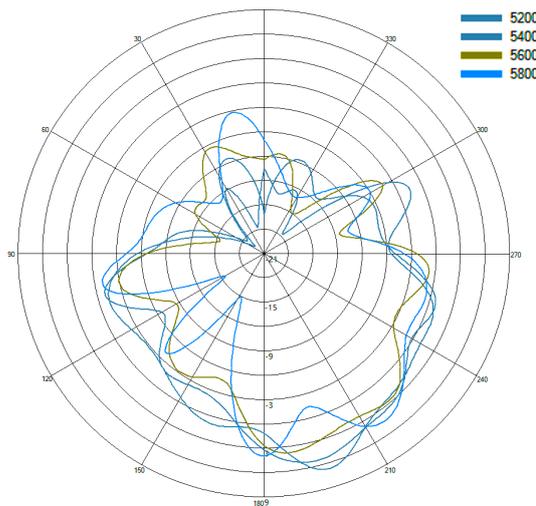
Typical H Plane- WiFi - 1 - Patterns- 2400-2475MHz



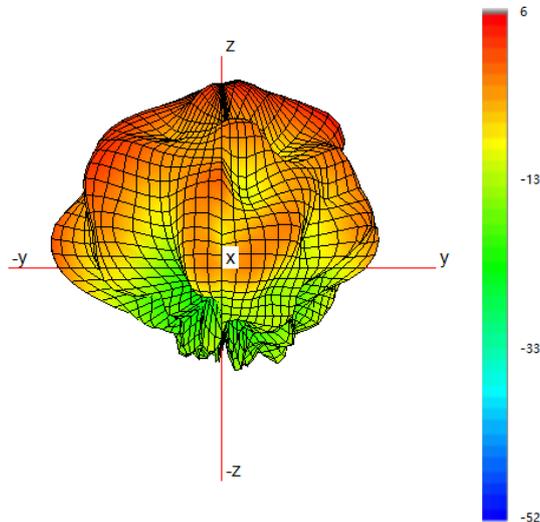
Typical 3D Pattern- WiFi - 1 - 5500 MHz



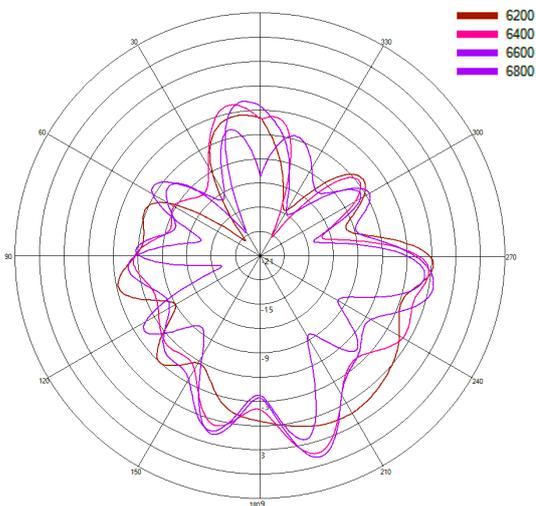
Typical H Plane- WiFi - 1 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 1 - 6500 MHz



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

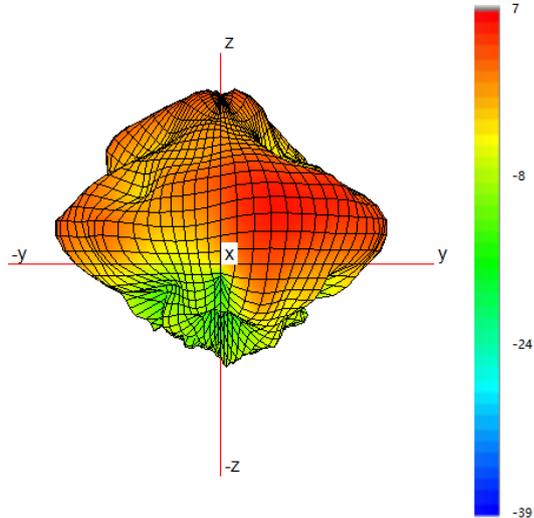


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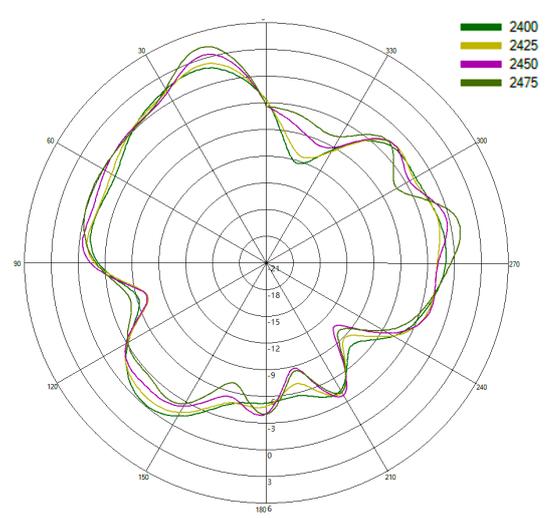
L[X]A[X]MM4-7-42

WiFi Pattern-Data on
Ground Plane -WiFi -2

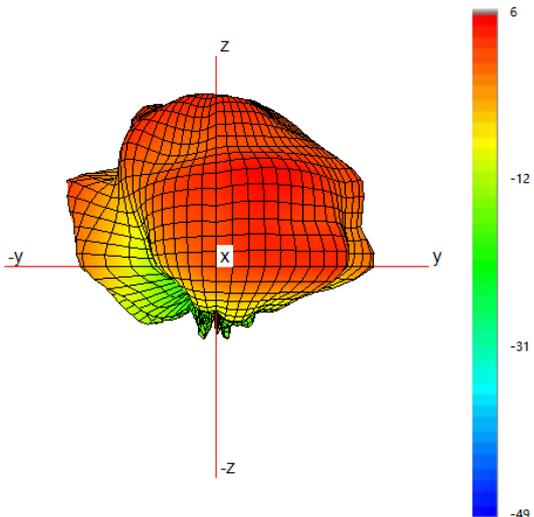
Typical 3D Pattern- WiFi - 2 - 2450 MHz



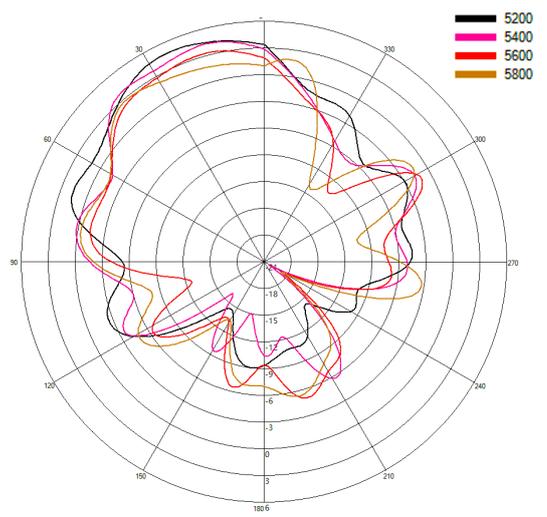
Typical H Plane- WiFi - 2 - Patterns- 2400-2475MHz



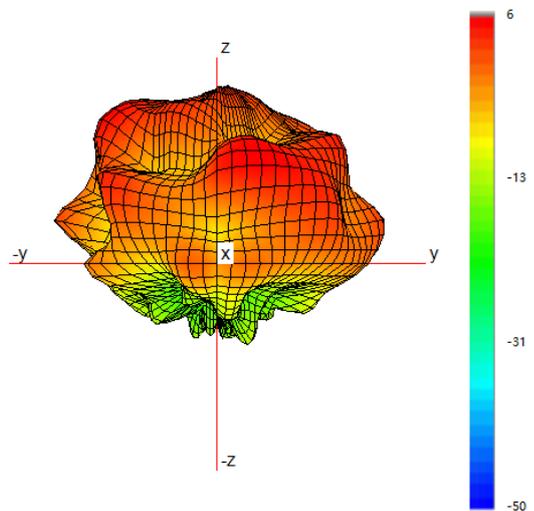
Typical 3D Pattern- WiFi - 2 - 5500 MHz



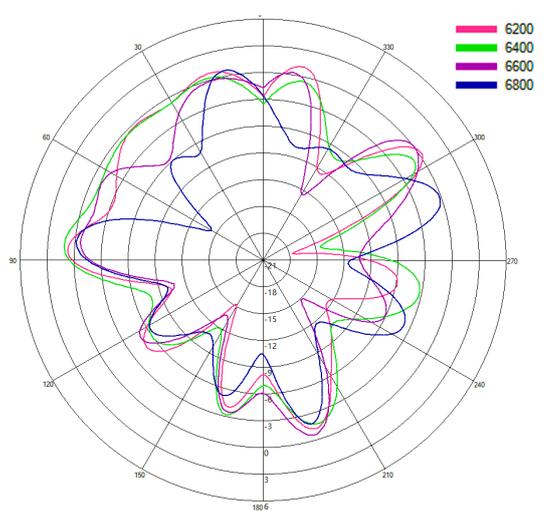
Typical H Plane- WiFi - 2 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 2 - 6500 MHz



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

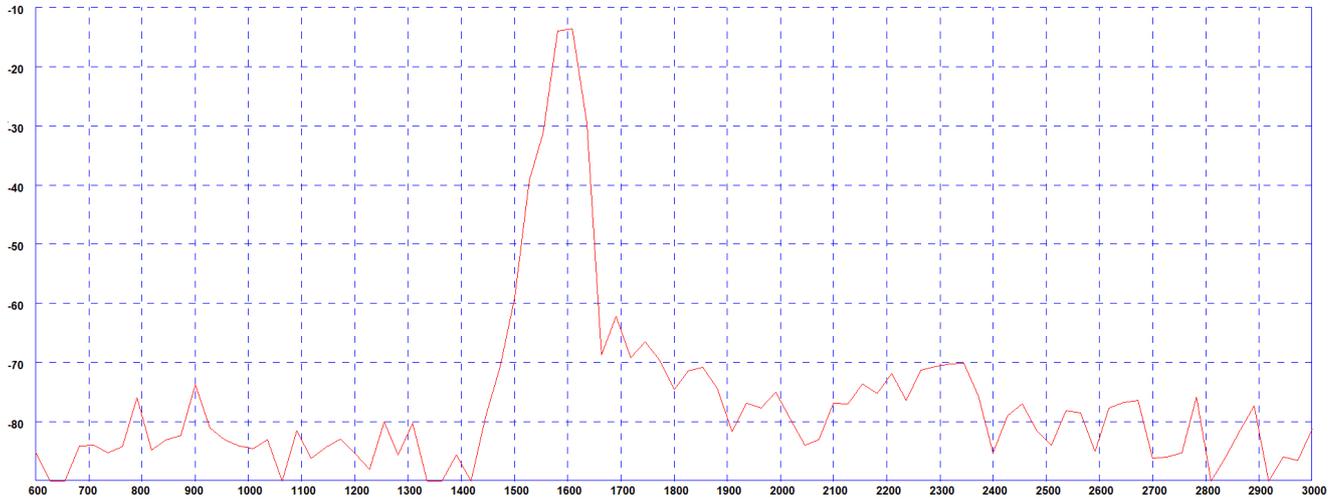


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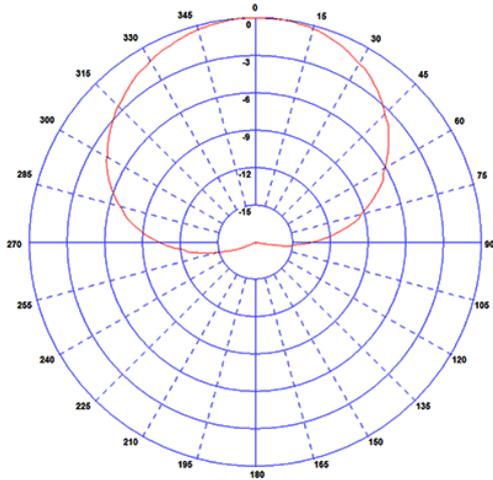
L[X]A[X]MM4-7-42 -

Electrical Data- L1 GPS/GNSS

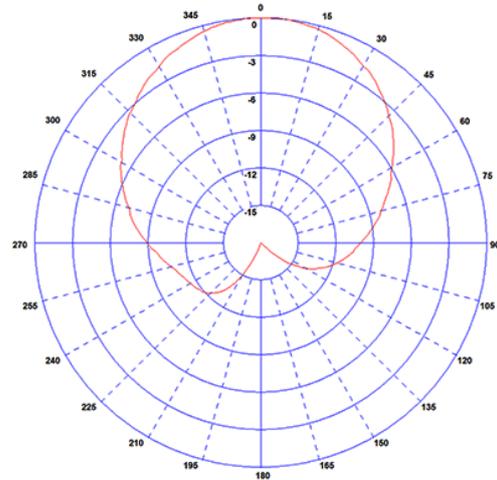
Swept Gain GPS/GNSS



Typical E Plane Pattern - GPS/GNSS 1575 MHz



Typical E Plane Pattern - GPS/GNSS 1602 MHz

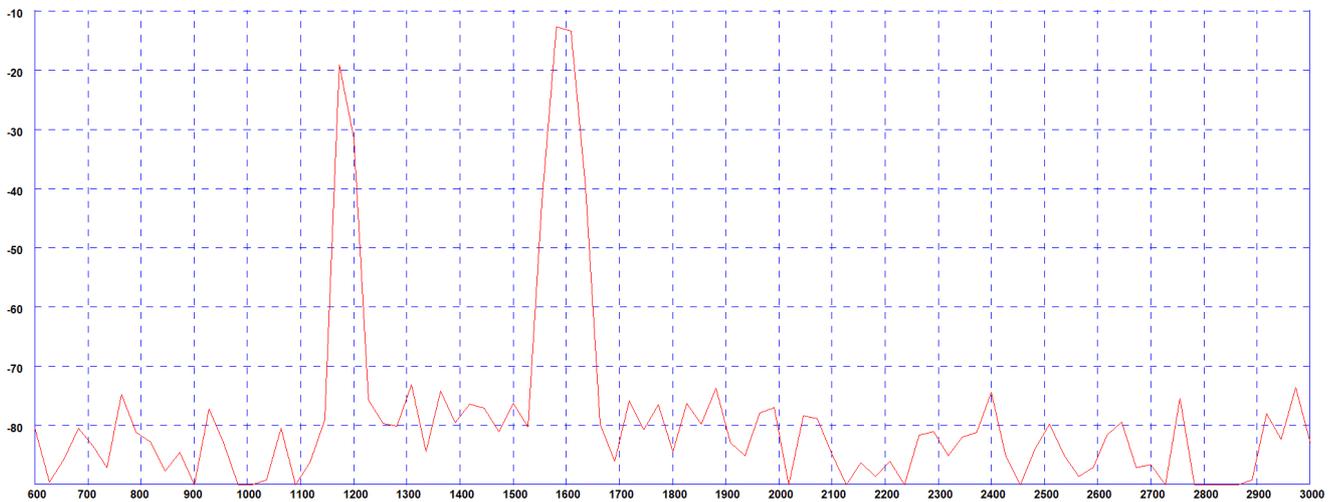


GPS/GNSS Measurements taken on 190x190mm (7.4" x 7.4") ground plane excluding cable loss

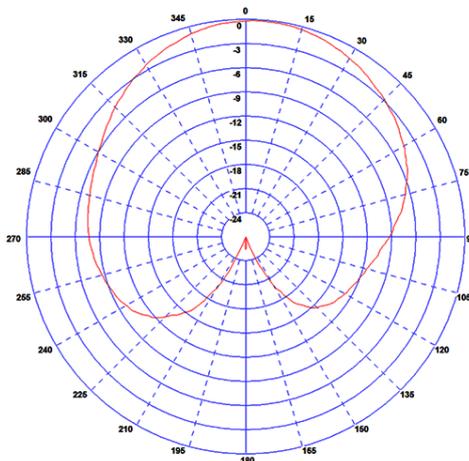
Clam[®] 4X4 MiMo 4G/5G Magnetic / Adhesive IOT Antenna

L[X]A[X]MM4-7-42

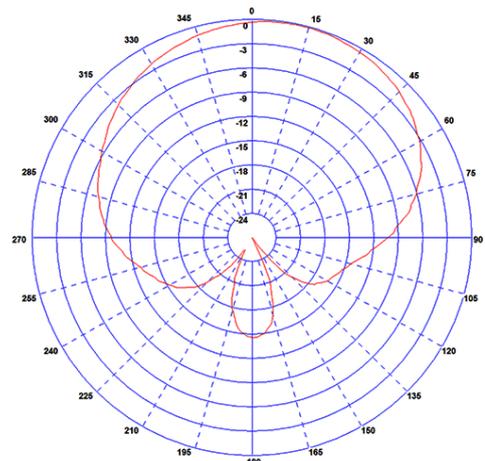
Swept Peak Gain GPS/GNSS



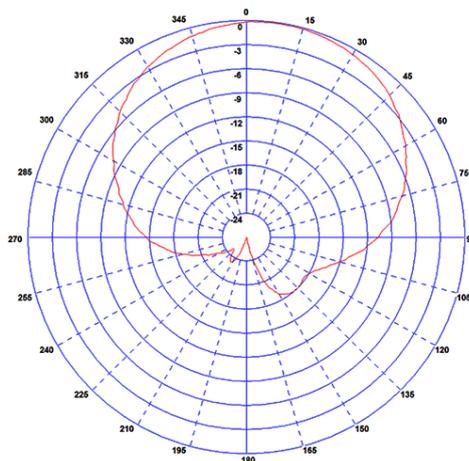
Typical E Plane Pattern - GPS/GNSS 1575 MHz



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