

4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

PANORAMA ANTENNAS

Product Data

Part No.

6001535

6001536

Electrical Data

	GPS/GNSS Element		1559-1612- Patch Antenna
Frequency Range (MHz)	4G/5G Elements	4x 617-960, 1427-6000 - PIFA Antennas	
	WiFi Elements	4x 2396-2485 / 5150-7125 - PIFA Antennas	
Peak gain: Isotropic (dBi)*	4G/5G Elements	617-960MHz	3.9
		1427-4200MHz	6.4
		4200-6000MHz	6.7
	WiFi Elements	2.4GHz	4.3
		5.150-7.125 GHz	7.2
Typical VSWR*	4G/5G Elements	≤2.5:1	
	WiFi Elements	≤3:1	
Typical worst case isolation (dB)**	4G/5G Elements	617-960MHz	≥ 7
		1427-6000MHz	≥16
	WiFi Elements	2.4-7.2GHz	≥17
Typical Efficiency***	4G/5G Elements	617-960MHz	63%
		1427-4200MHz	65%
		4200-6000MHz	55%
	WiFi Elements	2.4GHz	53%
		5.150-7.125 GHz	50%
Correlation Co-efficient	4G/5G Elements	<0.2	
Pattern		Omni-directional	
Impedance		50Ω	

GPS/GNSS Data

Frequency Range (MHz)	1559-1612 / 1164-1189
Gain: LNA	30dB / 26dB
Out of band rejection	>48dB
Rejection @ 787MHz	>50dB
Typical Noise Figure	-2.6dB
Operating Voltage (Nominal)	3-5V DC (fed via coax)
Current	Typical 36mA

Mechanical Data

Dimensions (mm) - Installed	Total Height	82 (3.2")
	Length	253 (9.96")
	Width	142 (5.56")
Operating Temp (°C)	-40° / +80°C (-40° / 176°F)	
Colour	Black	White
Ingress Protection	IP69K	

Mounting Info

Fixing	Bolt Mount
Hole Size (mm)	19 (3/4")

Extension Cable Data

Cellular Cables	Type	CS32 (UN ECE R 118 Compliant)
	Length	4000 (13.12")
	Termination	4x SMA Plug (m)
GPS Cables	Type	FR CS29 (UN ECE R 118 Compliant)
	Length	4000 (13.12")
	Termination	1x SMA Plug (m)
WiFi Cables	Type	CS32 (UN ECE R 118 Compliant)
	Length	4000 (13.12")
	Termination	4x SMA Rev Pol

*VSWR value across ≥95% of relevant bands measured for each element in free space without extension cables †Peak gain measured in free space without extension cables

** Isolation stated as worst case value for elements of the same type measured in free space without extension cables

***Typical efficiency given as average value across all elements measured in free space without extension cables

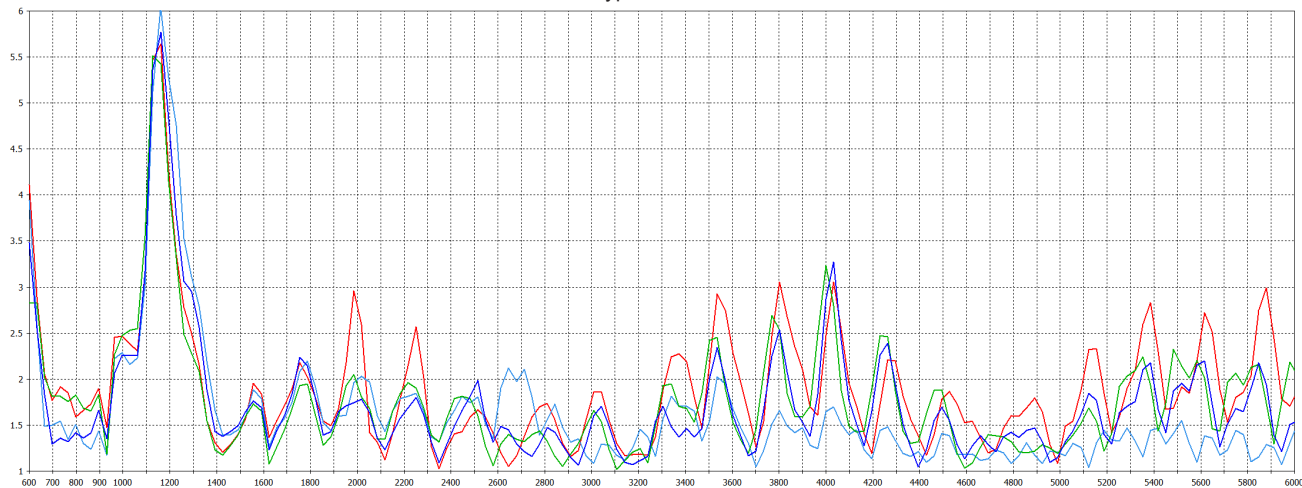
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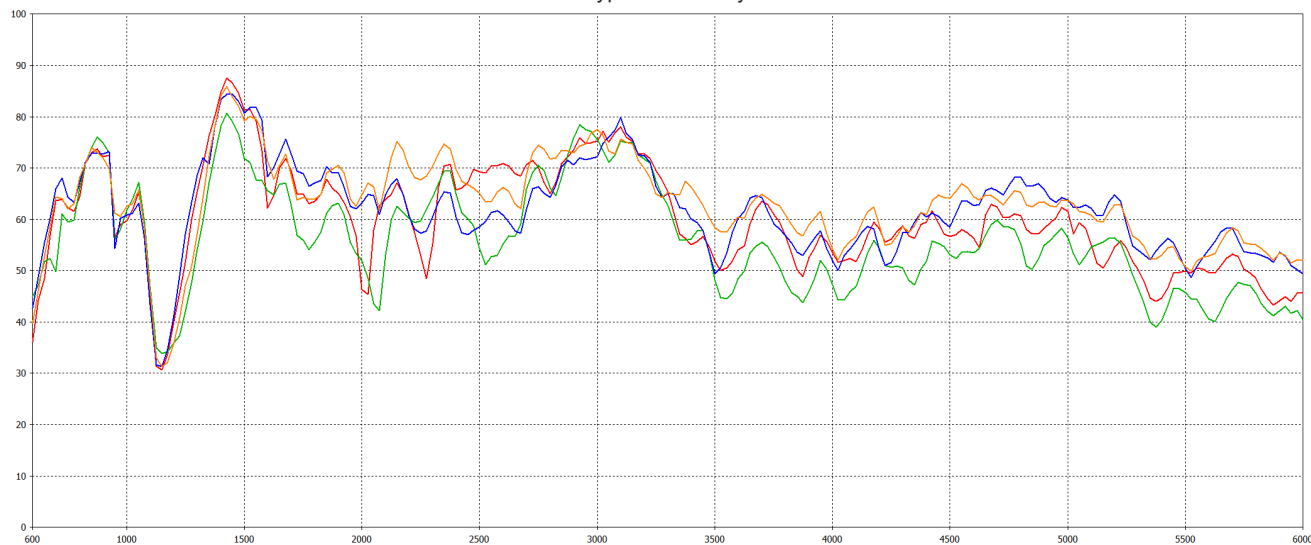
Electrical Data Free
Space - Cell

Typical VSWR*



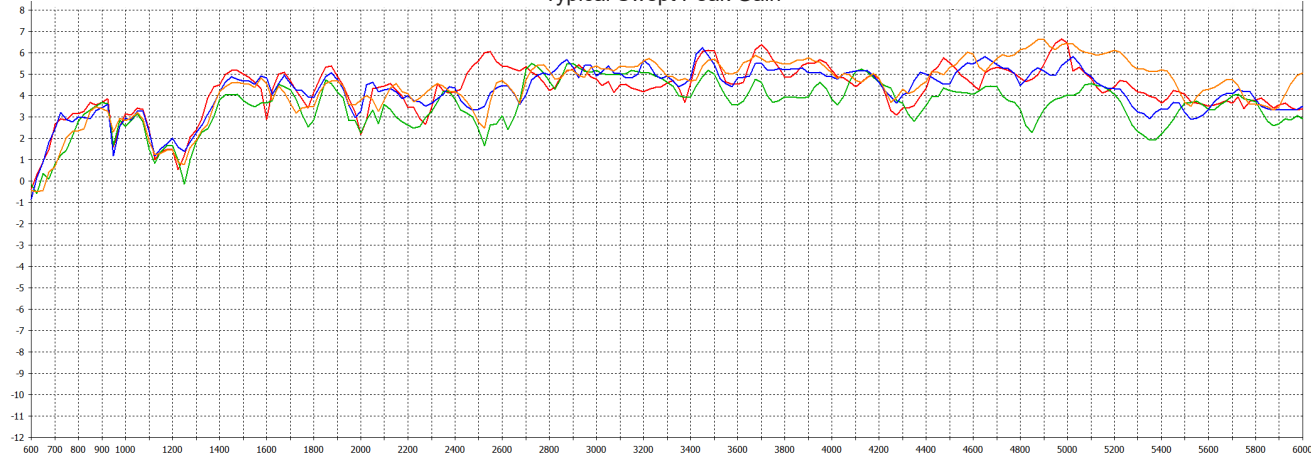
*VSWR measured in free space without additional cable

Typical Efficiency*



*Efficiency measured in free space without additional cable

Typical Swept Peak Gain*



*Peak Gain measured in free space without additional cable

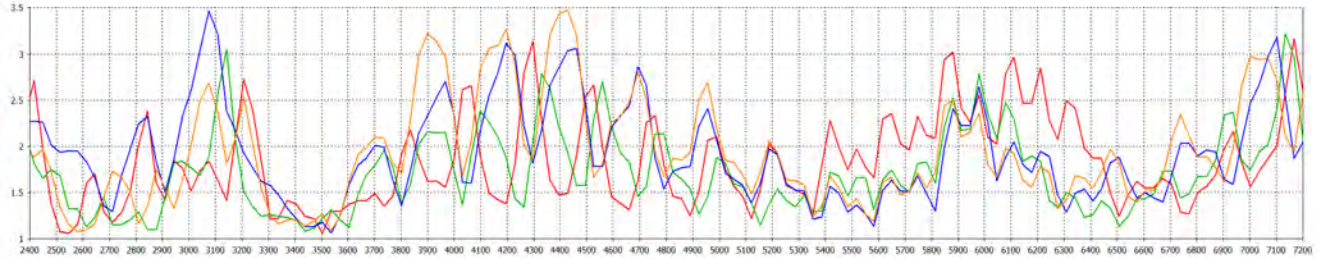
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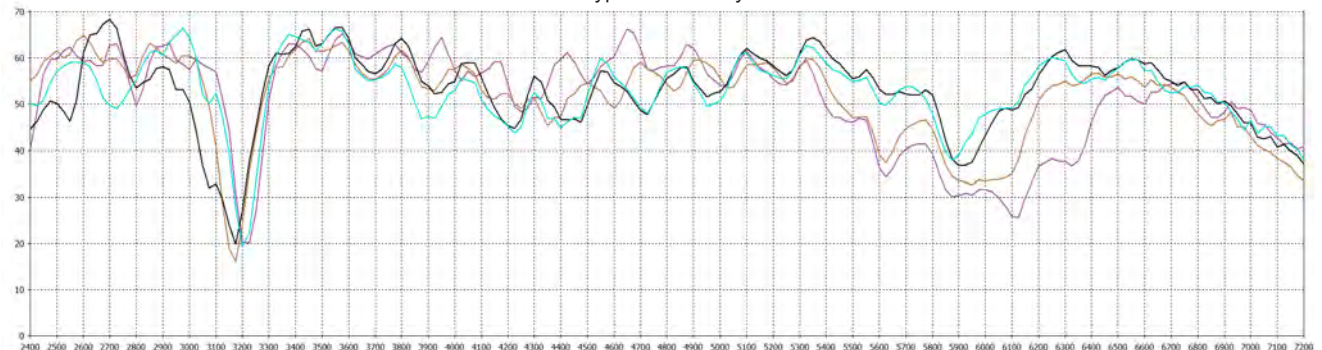
Electrical Data Free
Space - WiFi

Typical VSWR*



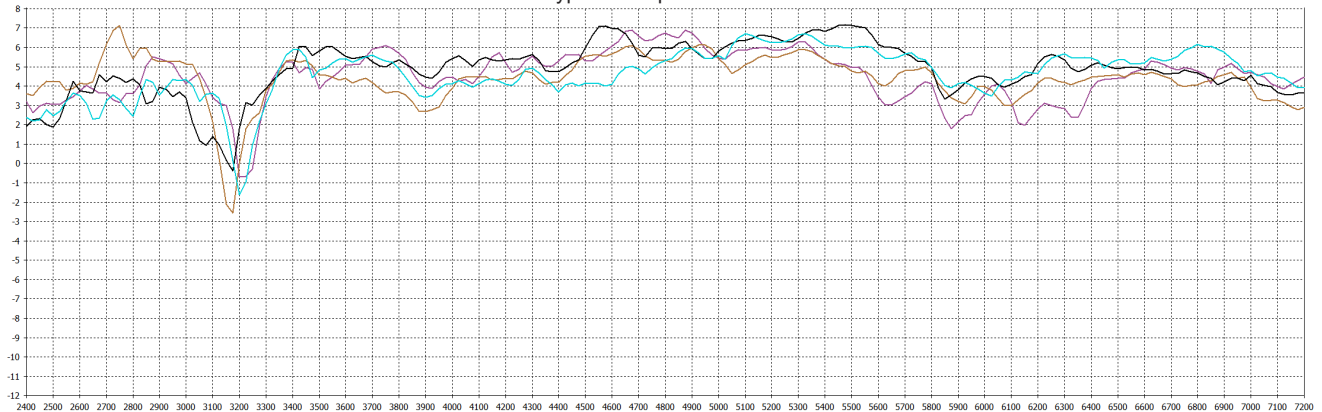
*VSWR measured in free space without additional cable

Typical Efficiency*



*Efficiency measured in free space without additional cable

Typical Swept Peak Gain*



*Peak Gain measured in free space without additional cable

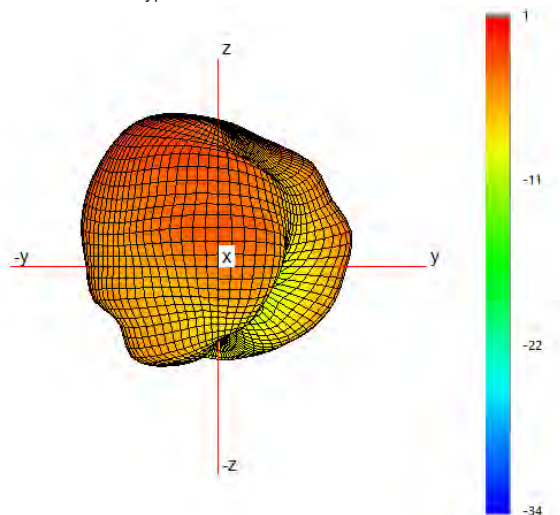
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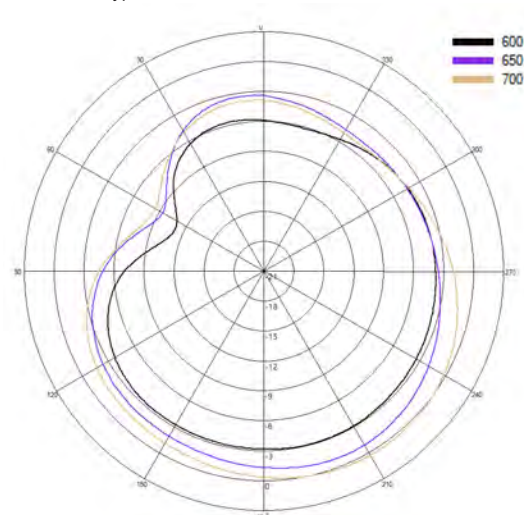
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3D Pattern Data in
Free Space Cell A

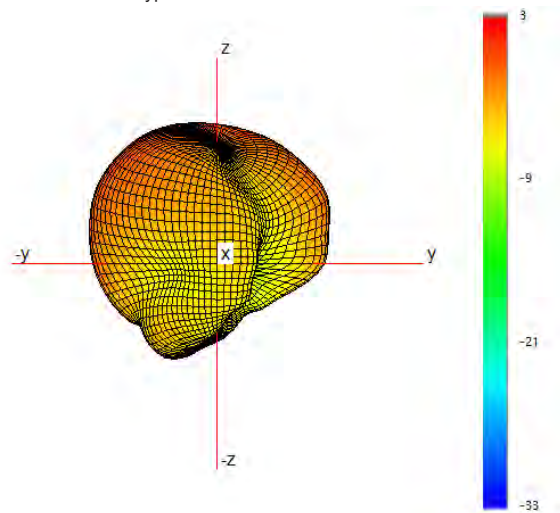
Typical 3D Pattern- Cell A - 650 MHz



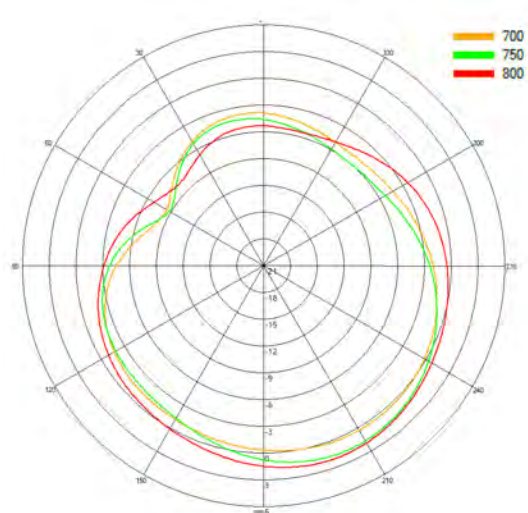
Typical H Plane- Cell A - Patterns- 600-700MHz



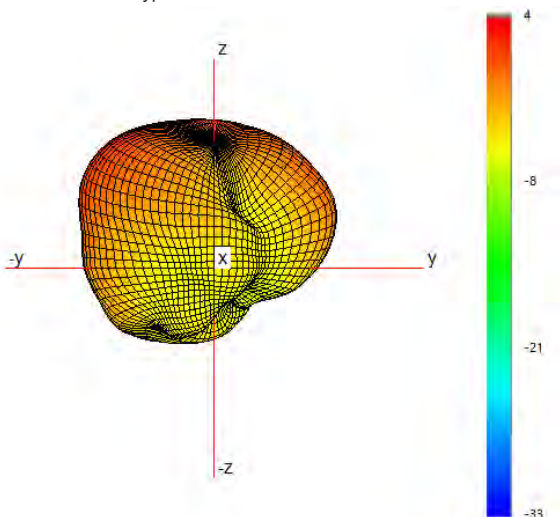
Typical 3D Pattern- Cell A - 750 MHz



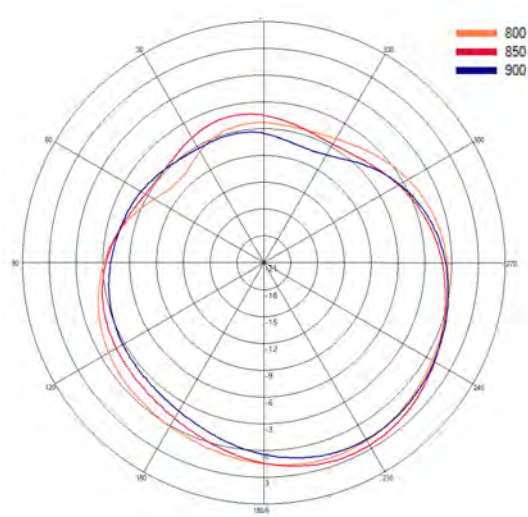
Typical H Plane- Cell A - Patterns- 700-800MHz



Typical 3D Pattern- Cell A - 850 MHz



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



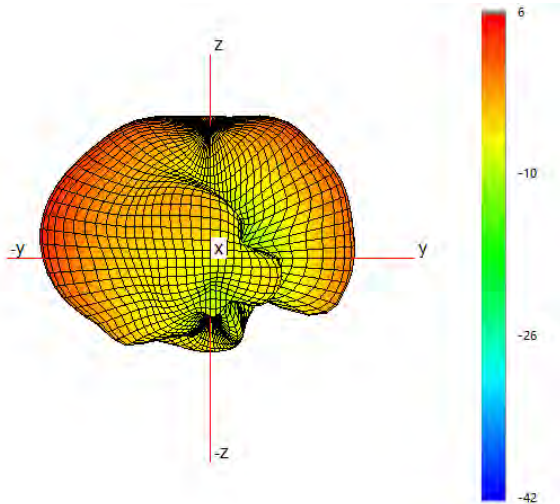
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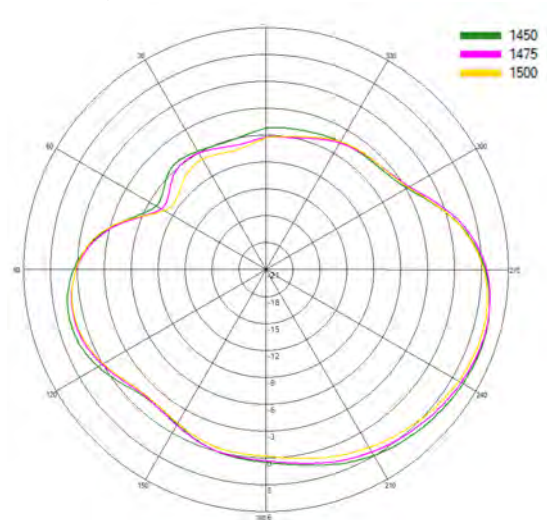
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3D Pattern Data in
Free Space Cell A

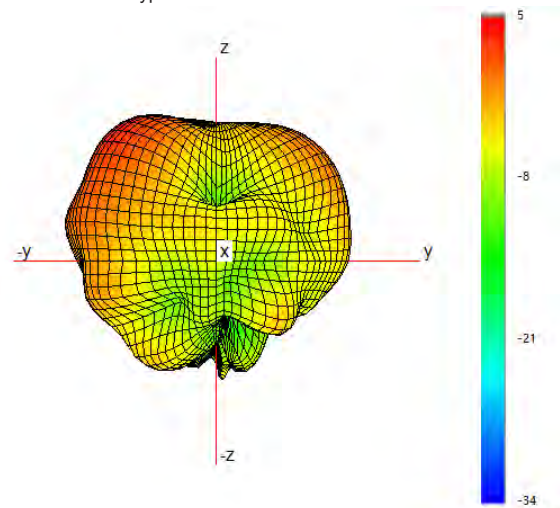
Typical 3D Pattern- Cell A - 1475 MHz



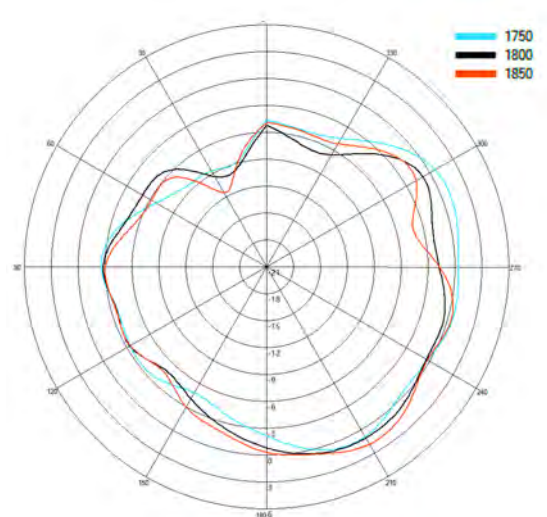
Typical H Plane- Cell A- Patterns- 1450-1500 MHz



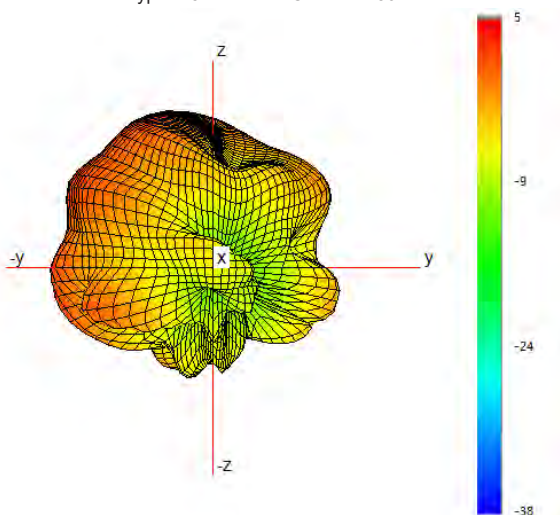
Typical 3D Pattern- Cell A - 1800 MHz



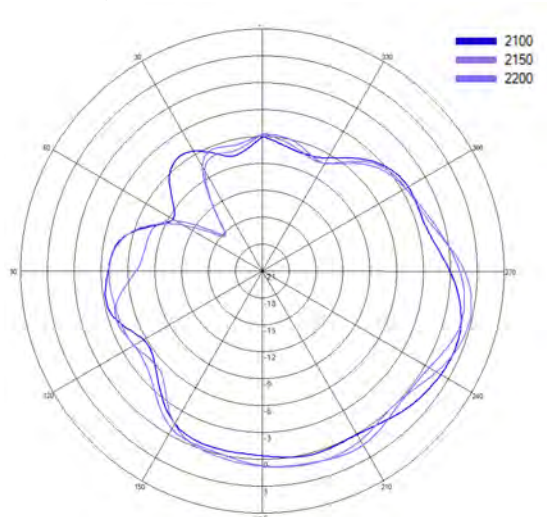
Typical H Plane- Cell A- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell A - 2150 MHz



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



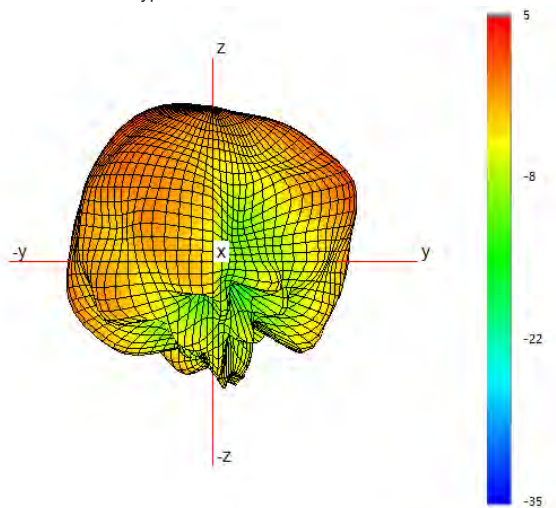
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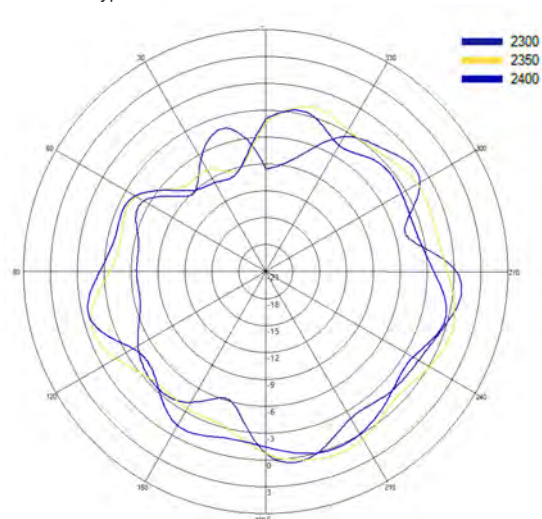
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3D Pattern Data in
Free Space Cell A

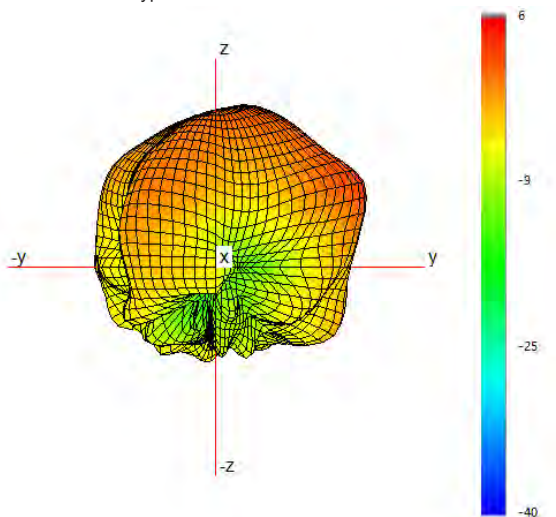
Typical 3D Pattern- Cell A - 2350 MHz



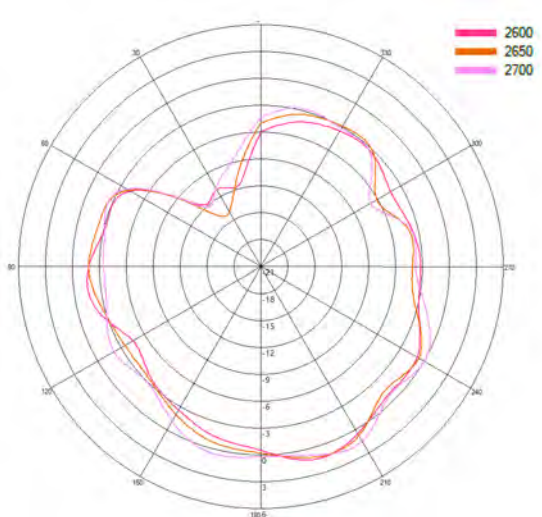
Typical H Plane- Cell A - Patterns- 2300-2400 MHz



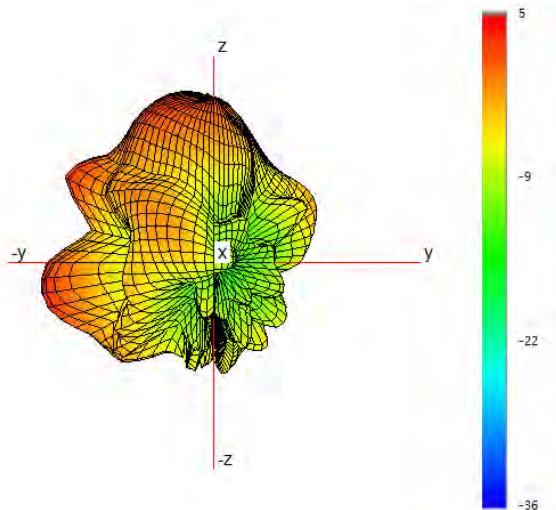
Typical 3D Pattern- Cell A - 2650 MHz



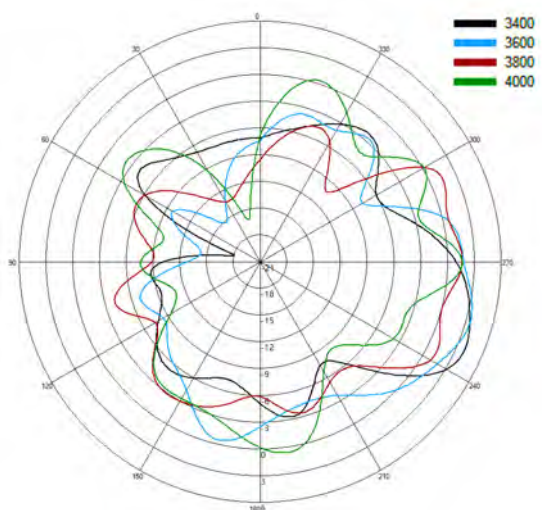
Typical H Plane- Cell A - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell A - 3600 MHz



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



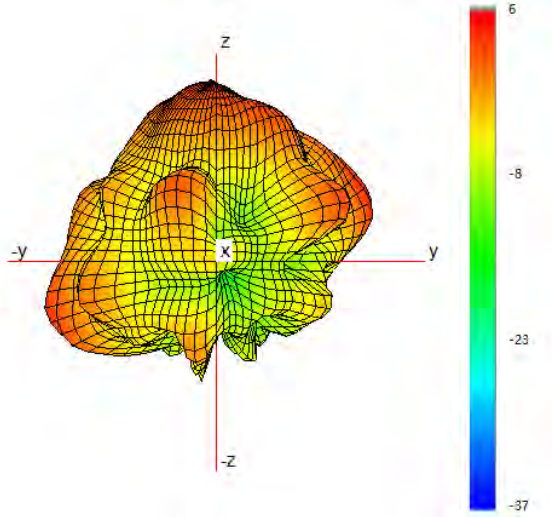
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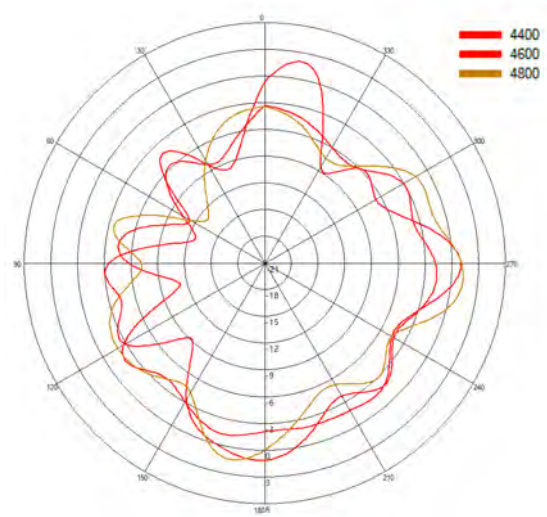
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3D Pattern Data in
Free Space Cell A

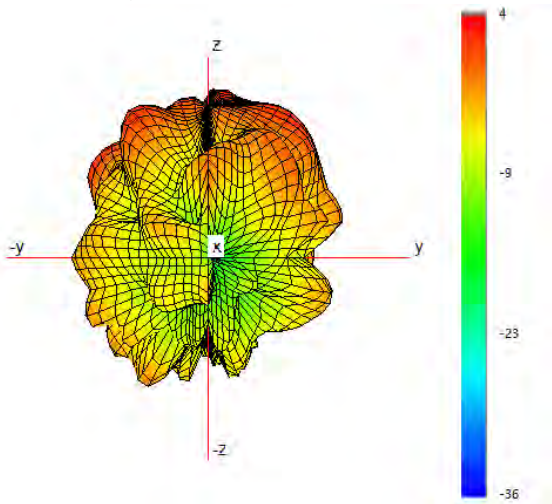
Typical 3D Pattern- Cell A - 4700 MHz



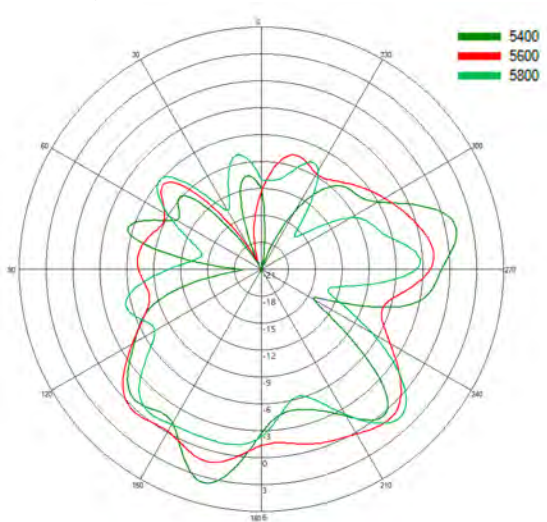
Typical H Plane- Cell A - Patterns- 4400-4800 MHz



Typical 3D Pattern- Cell A - 5600 MHz



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



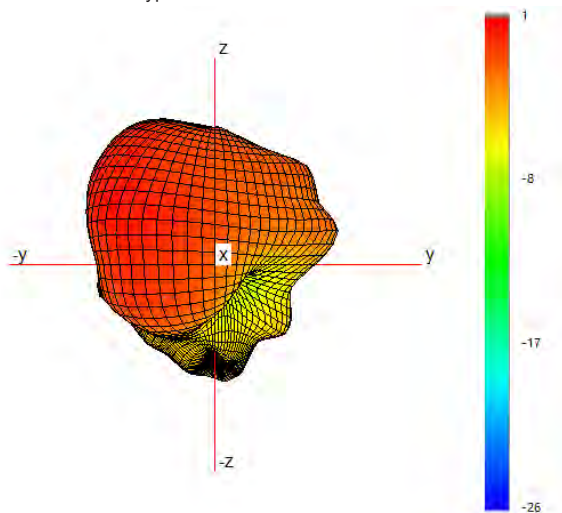
4x4 MiMo 4G/5G Sharkfin Antenna

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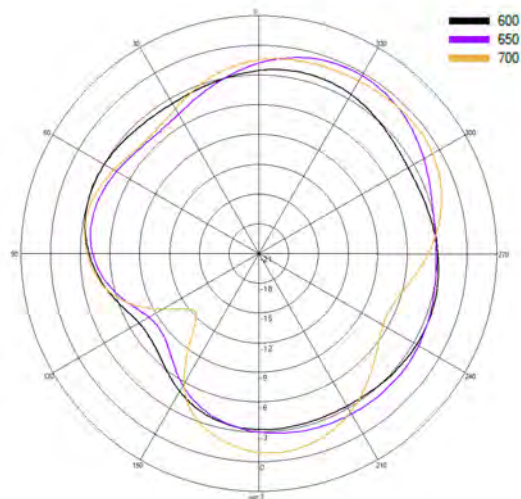
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3D Pattern Data in
Free Space Cell B

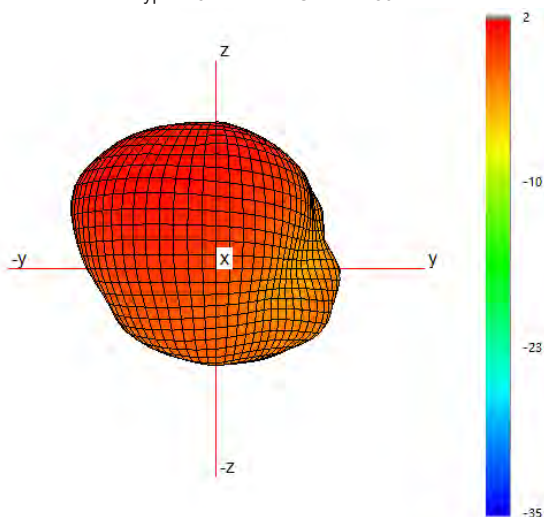
Typical 3D Pattern- Cell B - 650 MHz



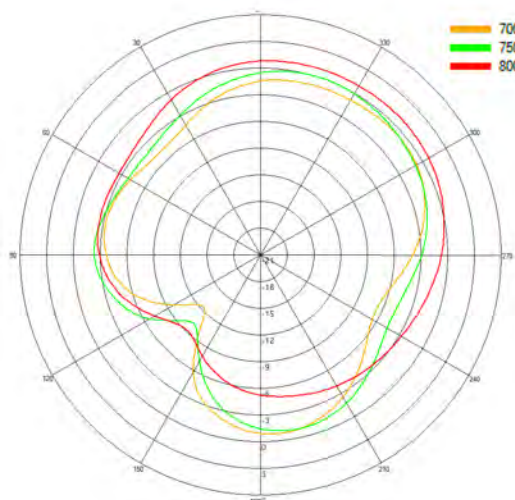
Typical H Plane- Cell B - Patterns- 600-700MHz



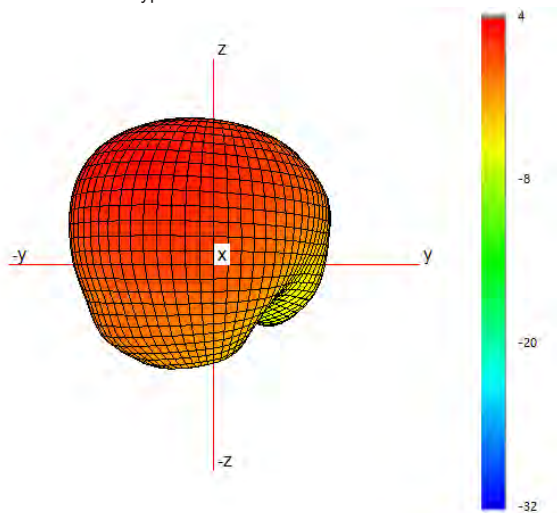
Typical 3D Pattern- Cell B - 750 MHz



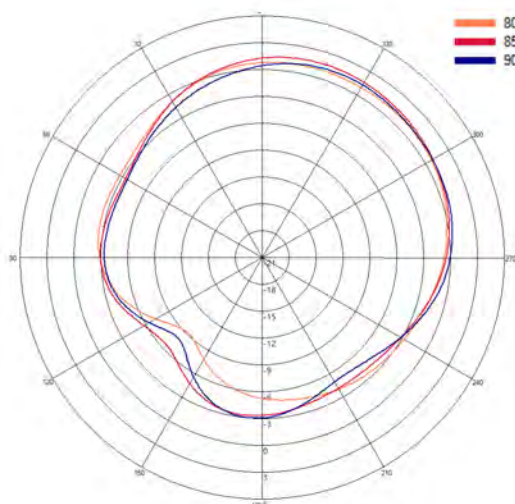
Typical H Plane- Cell B - Patterns- 700-800MHz



Typical 3D Pattern- Cell B - 850 MHz



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



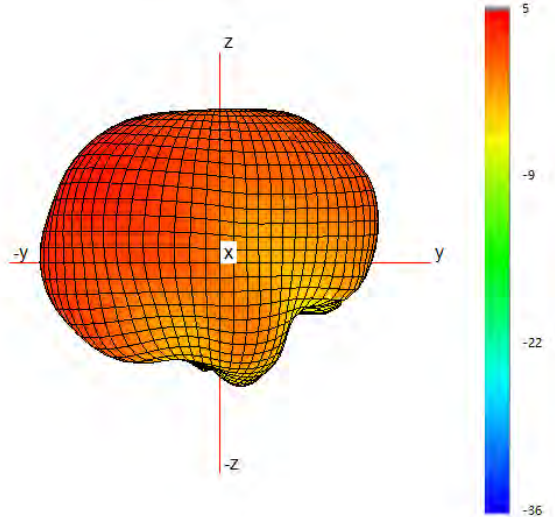
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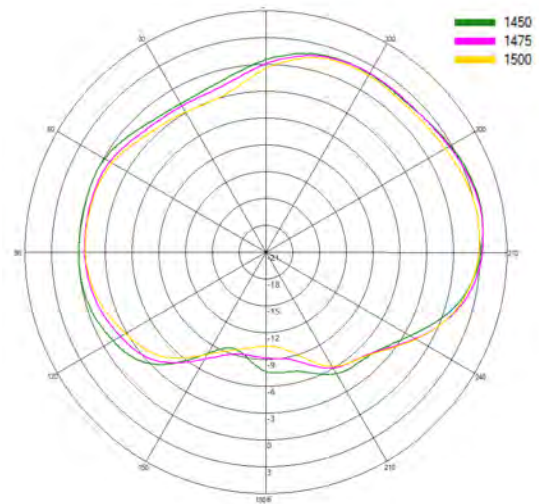
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3D Pattern Data in
Free Space Cell B

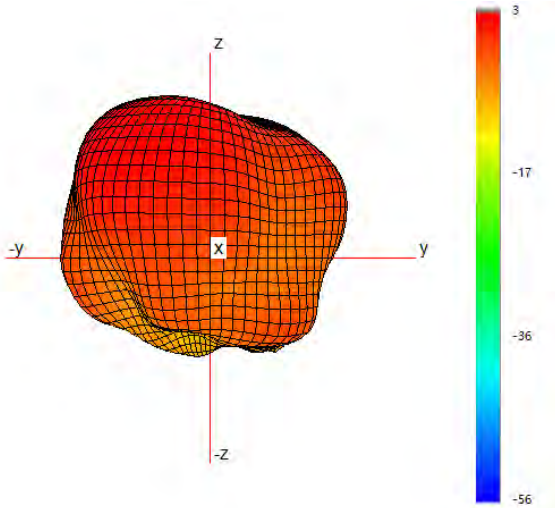
Typical 3D Pattern- Cell B - 1475 MHz



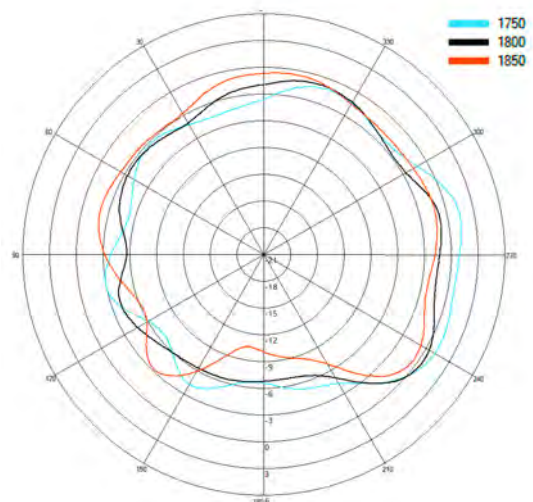
Typical H Plane- Cell B- Patterns- 1450-1500 MHz



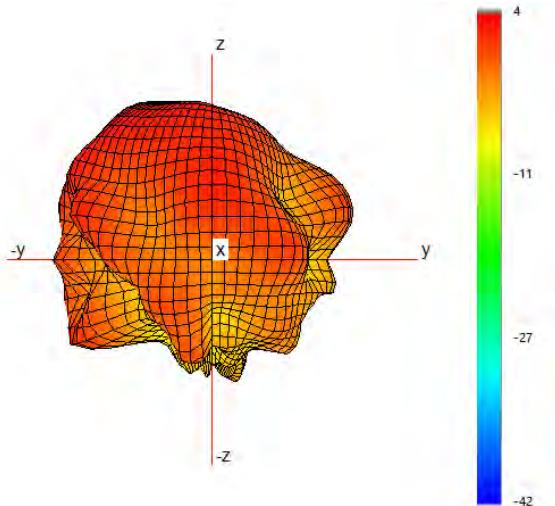
Typical 3D Pattern- Cell B - 1800 MHz



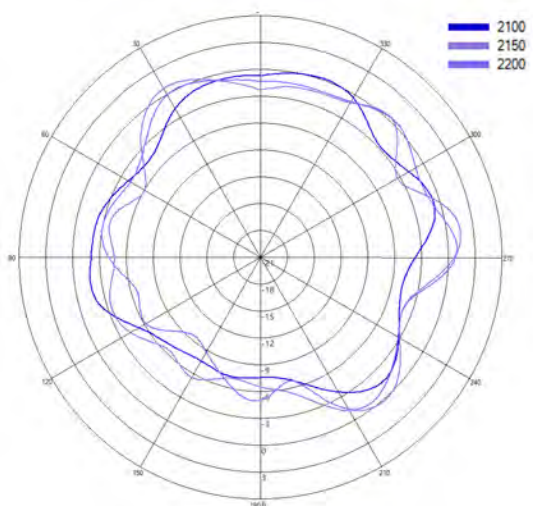
Typical H Plane- Cell B- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell B - 2150 MHz



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



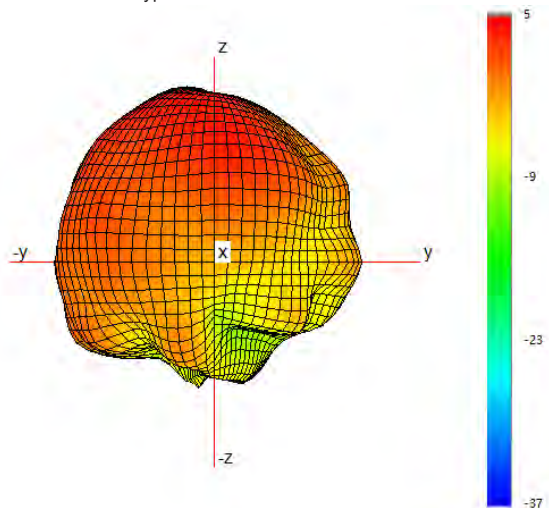
4x4 MiMo 4G/5G Sharkfin Antenna

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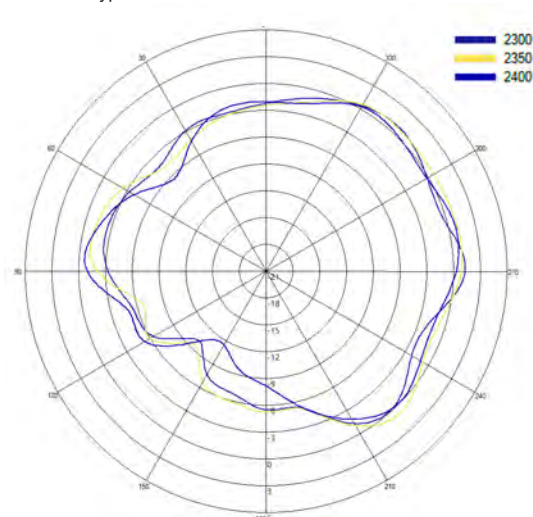
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3D Pattern Data in
Free Space Cell B

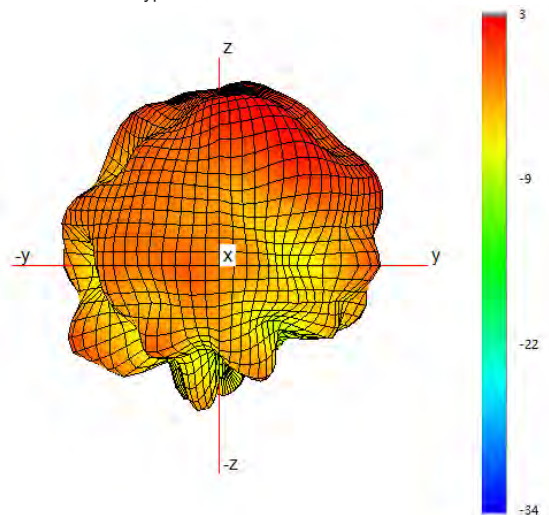
Typical 3D Pattern- Cell B - 2350 MHz



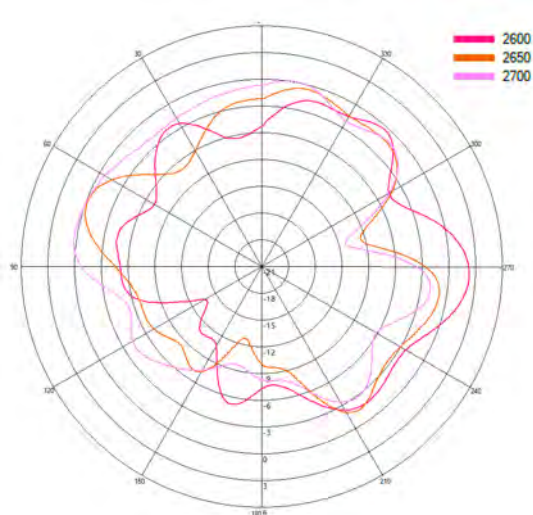
Typical H Plane- Cell B - Patterns- 2300-2400 MHz



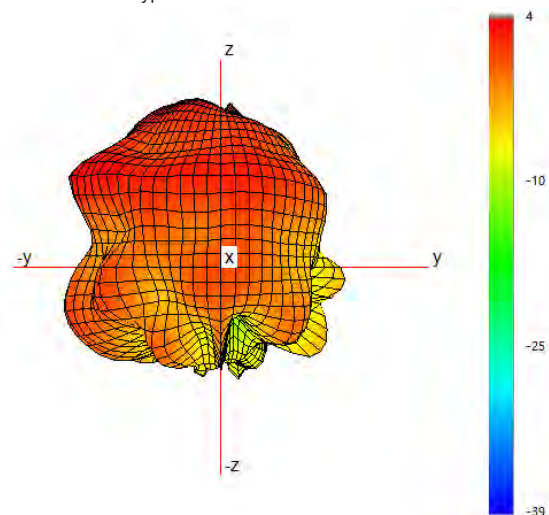
Typical 3D Pattern- Cell B - 2650 MHz



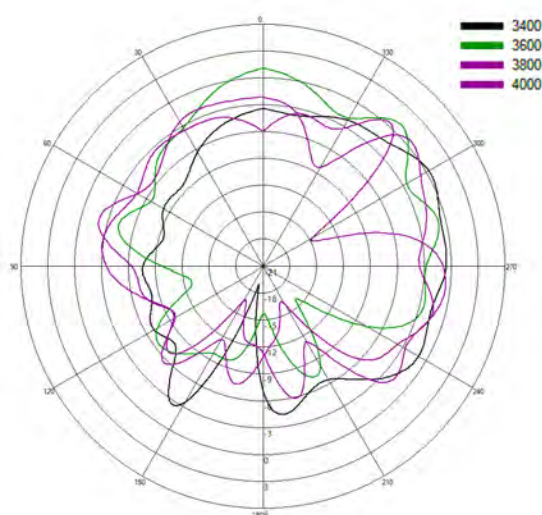
Typical H Plane- Cell B - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell B - 3600 MHz



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



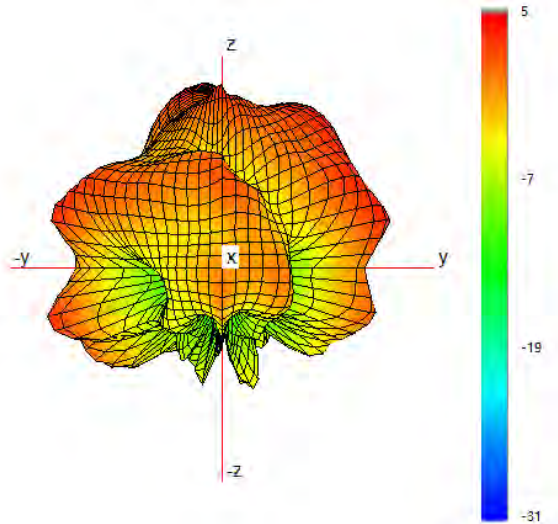
4x4 MiMo 4G/5G Sharkfin Antenna

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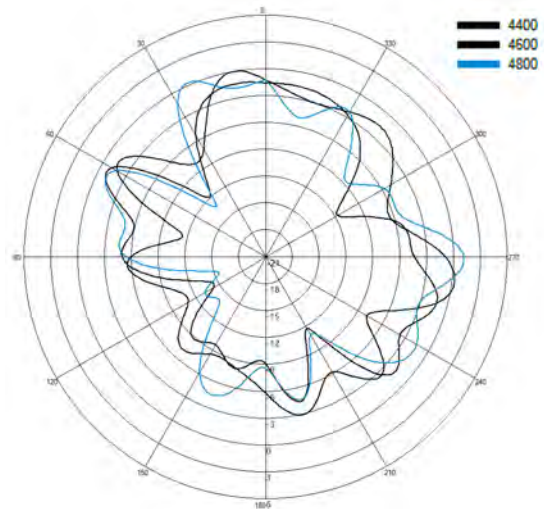
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3D Pattern Data in
Free Space Cell B

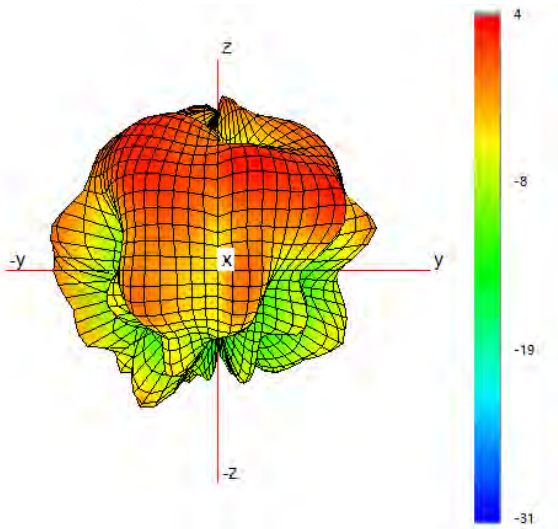
Typical 3D Pattern- Cell B - 4700 MHz



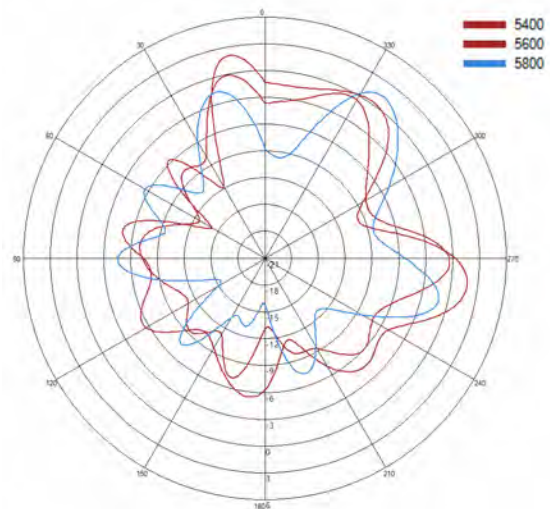
Typical H Plane- Cell B - Patterns- 4400-4800 MHz



Typical 3D Pattern- Cell B - 5600 MHz



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



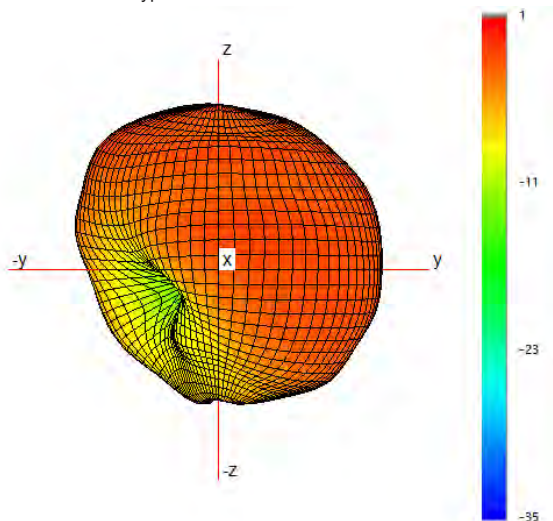
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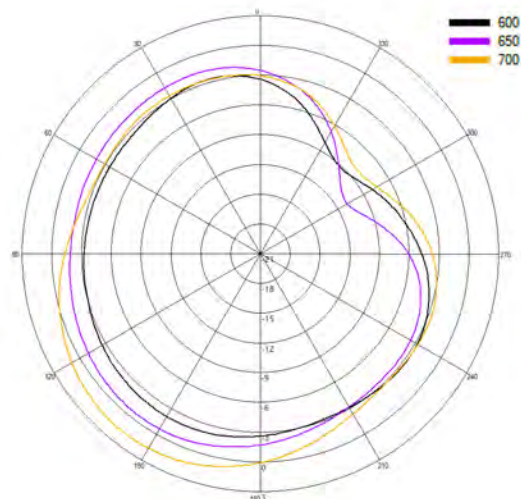
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3D Pattern Data in
Free Space Cell C

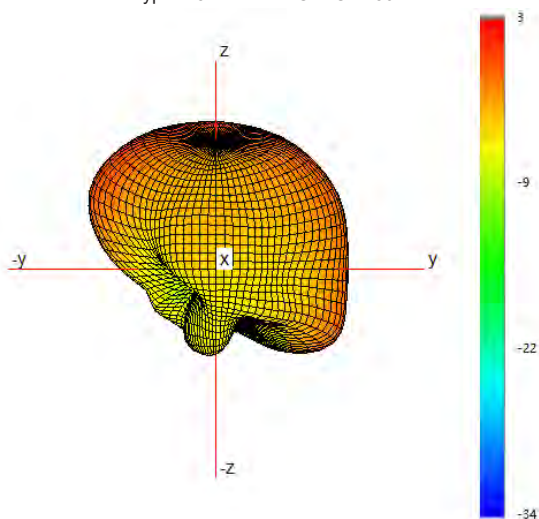
Typical 3D Pattern- Cell C - 650 MHz



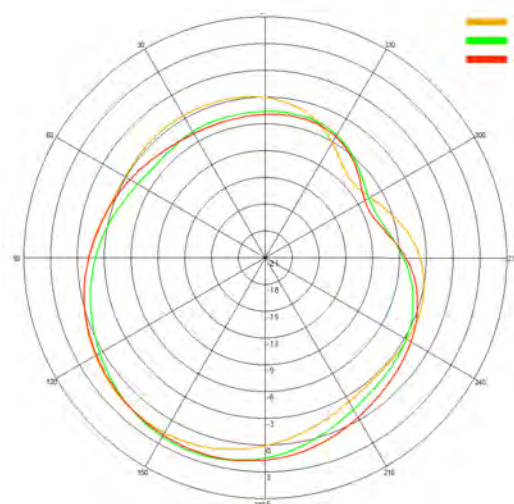
Typical H Plane- Cell C - Patterns- 600-700MHz



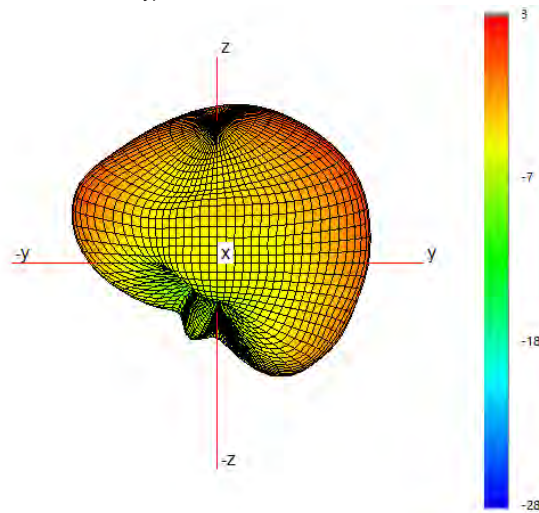
Typical 3D Pattern- Cell C - 750 MHz



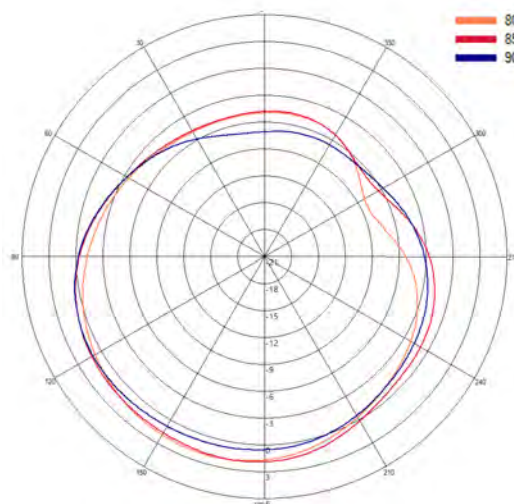
Typical H Plane- Cell C - Patterns- 700-800MHz



Typical 3D Pattern- Cell C - 850 MHz



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



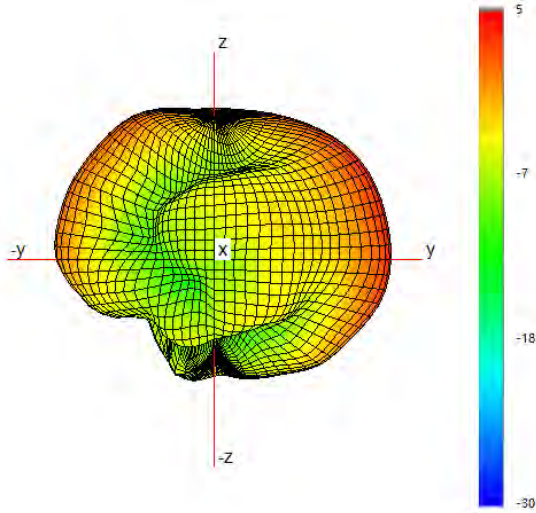
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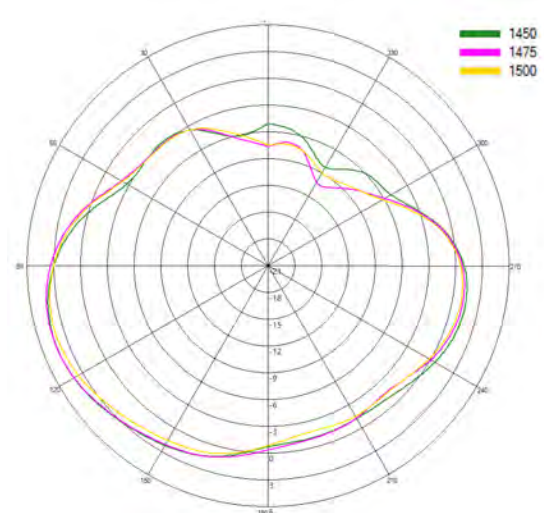
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3D Pattern Data in
Free Space Cell C

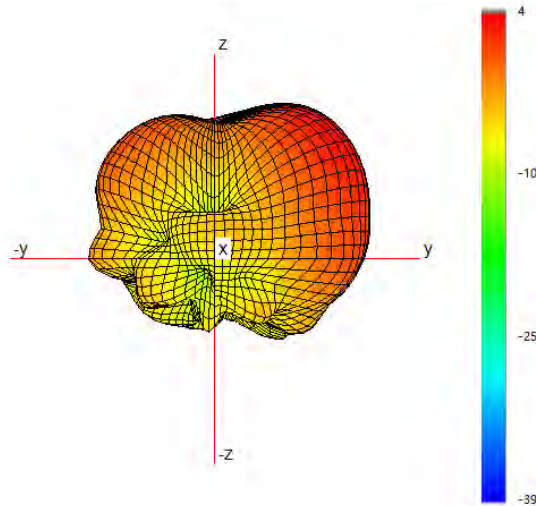
Typical 3D Pattern- Cell C - 1475 MHz



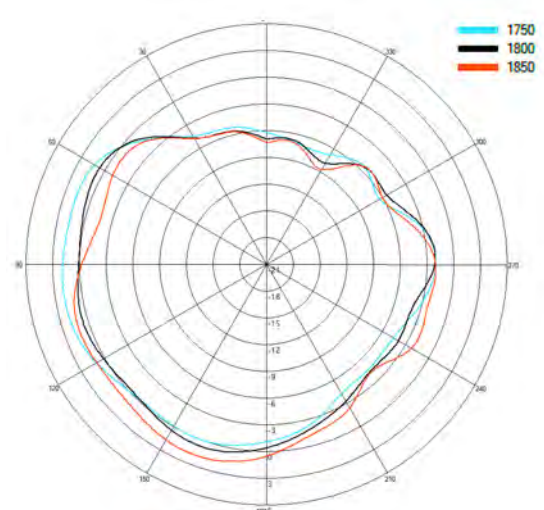
Typical H Plane- Cell C- Patterns- 1450-1500 MHz



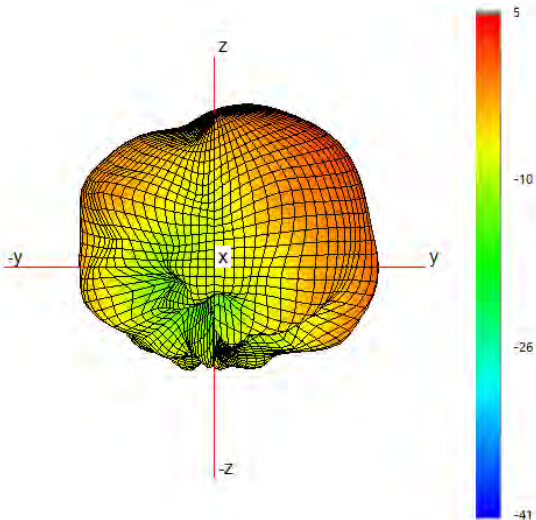
Typical 3D Pattern- Cell C - 1800 MHz



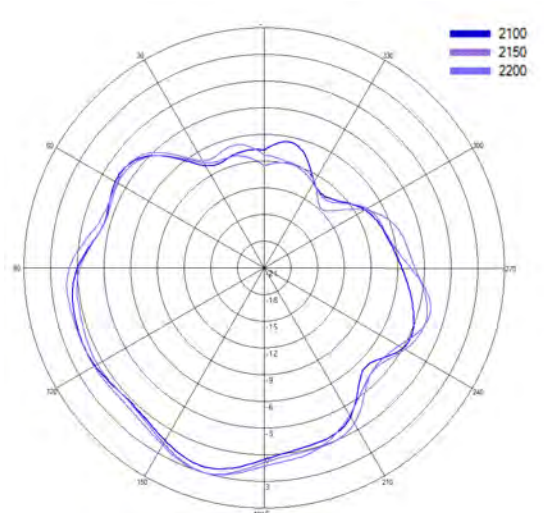
Typical H Plane- Cell C- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell C - 2150 MHz



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



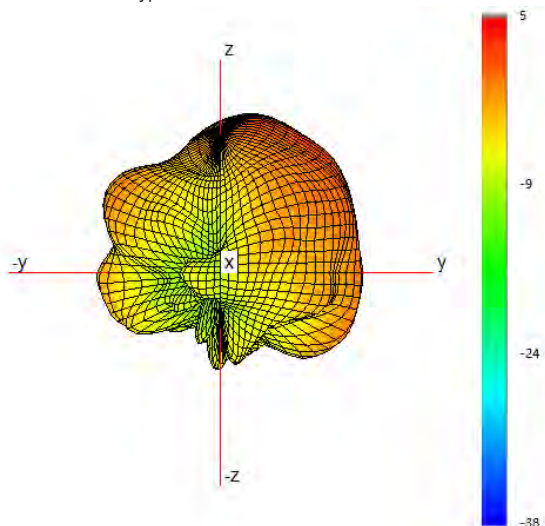
4x4 MiMo 4G/5G Sharkfin Antenna

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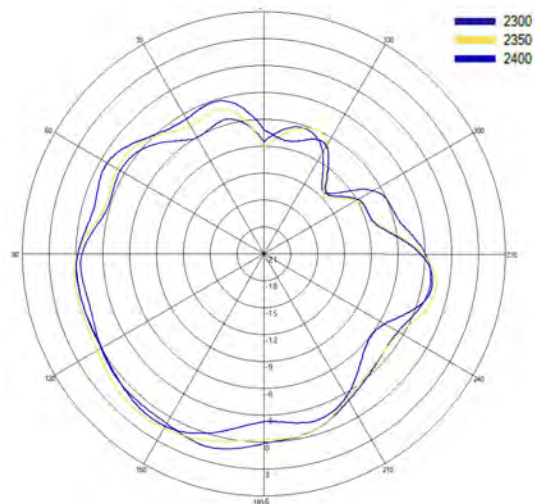
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3D Pattern Data in
Free Space Cell C

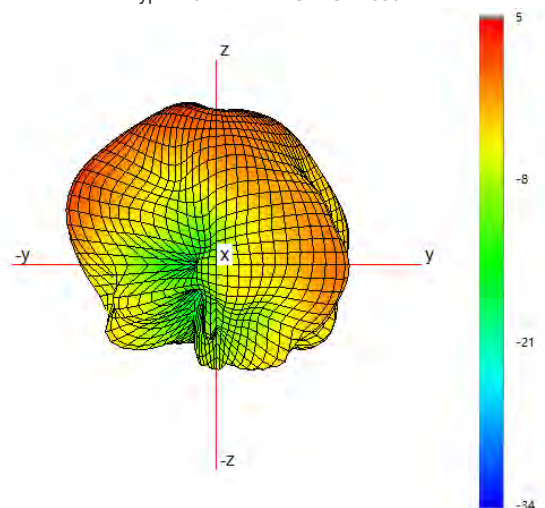
Typical 3D Pattern- Cell C - 2350 MHz



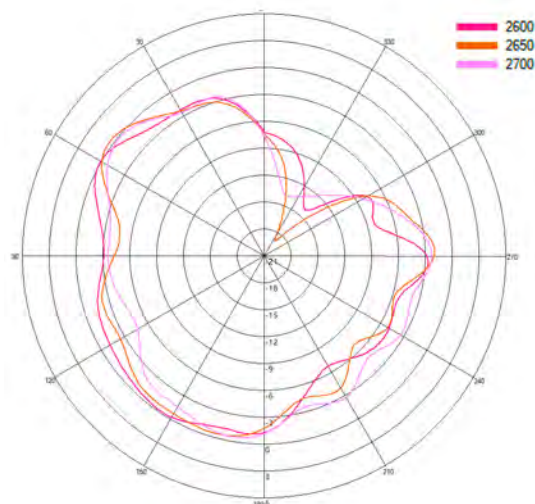
Typical H Plane- Cell C - Patterns- 2300-2400 MHz



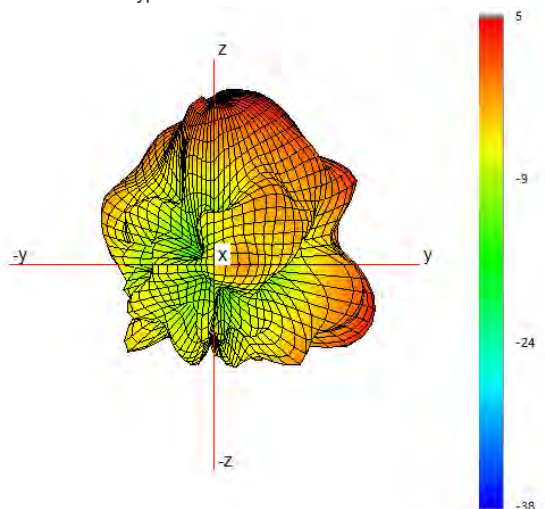
Typical 3D Pattern- Cell C - 2650 MHz



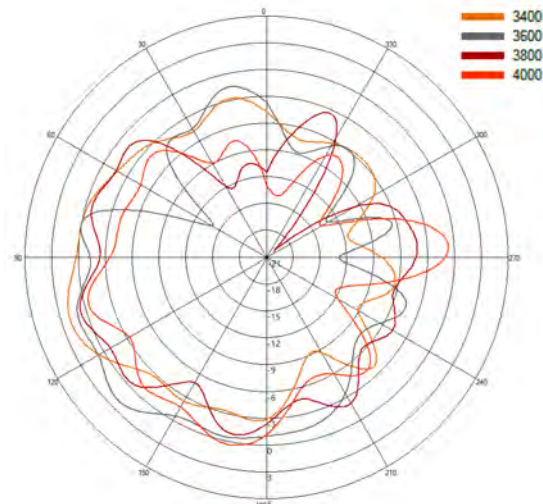
Typical H Plane- Cell C - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell C - 3600 MHz



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



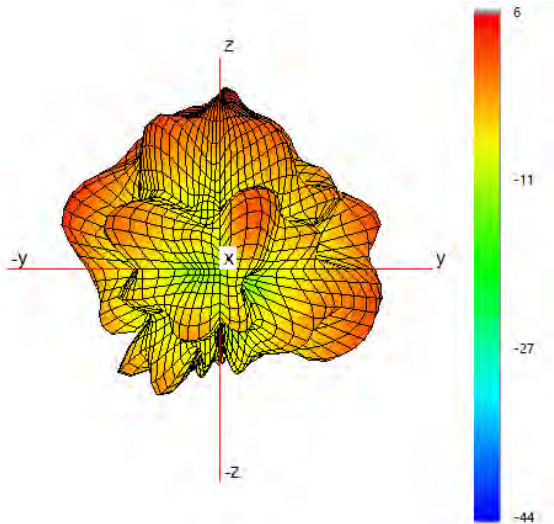
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

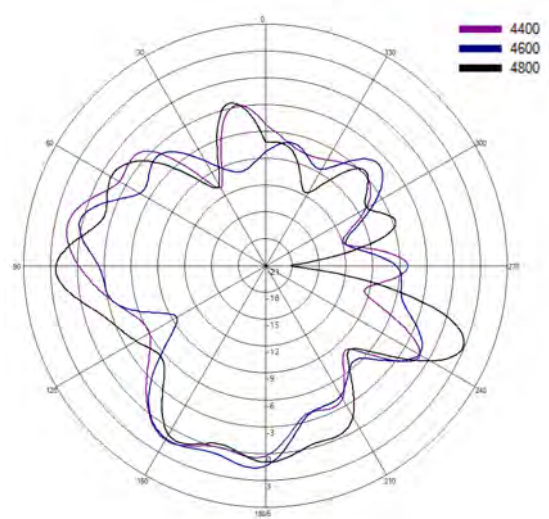
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3D Pattern Data in
Free Space Cell C

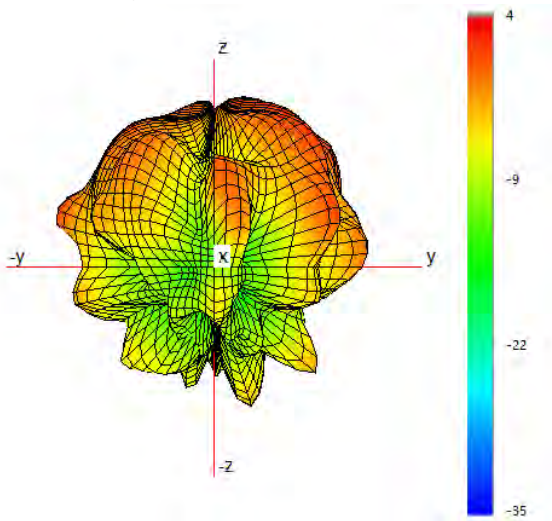
Typical 3D Pattern- Cell C - 4700 MHz



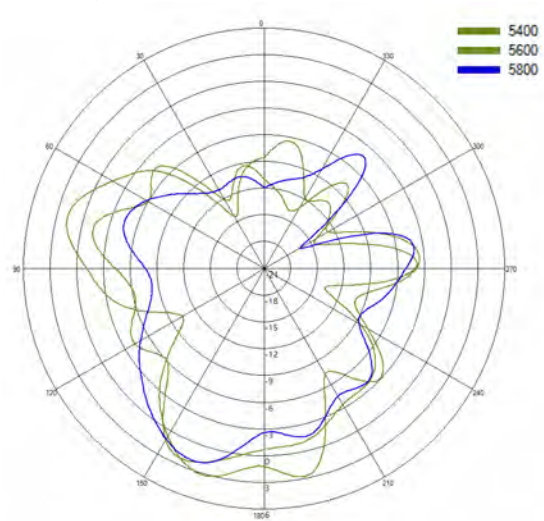
Typical H Plane- Cell C - Patterns- 4400-4800 MHz



Typical 3D Pattern- Cell C - 5600 MHz



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



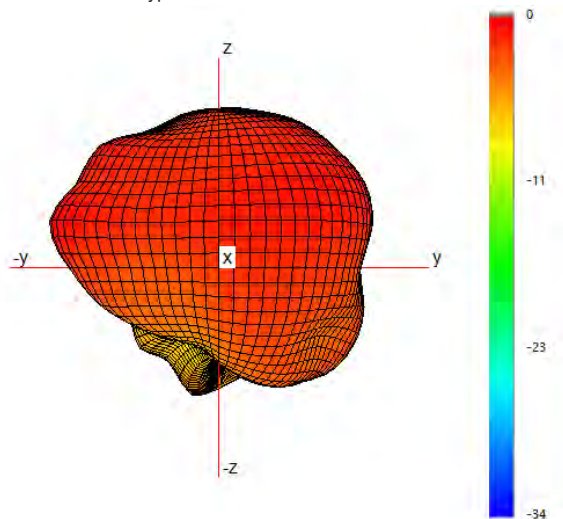
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

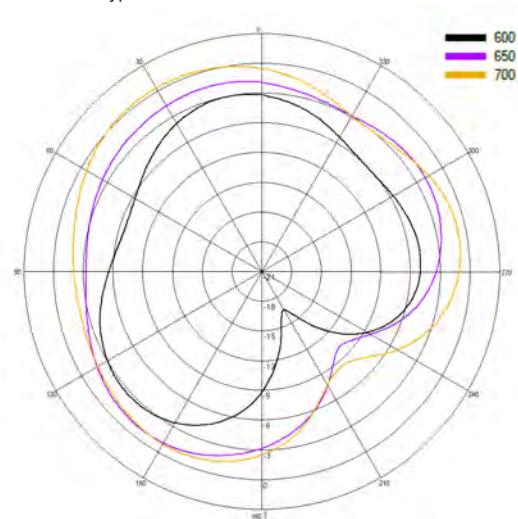
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3D Pattern Data in
Free Space Cell D

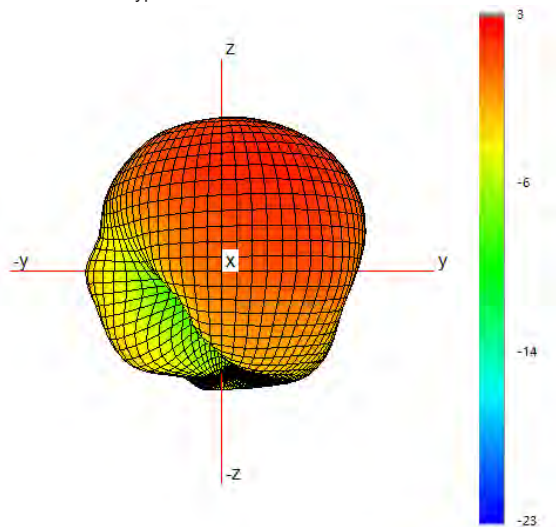
Typical 3D Pattern- Cell D - 650 MHz



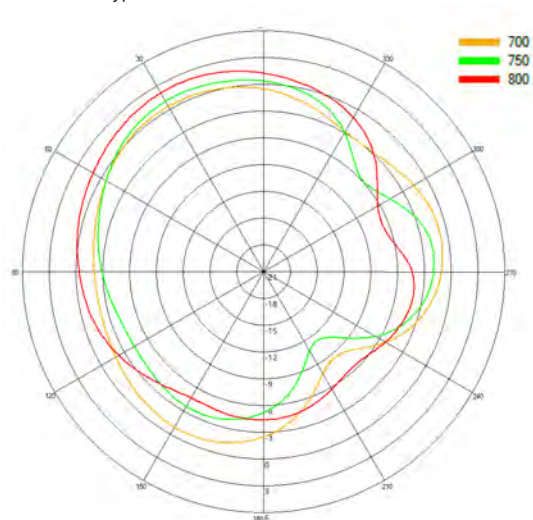
Typical H Plane- Cell D - Patterns- 600-700MHz



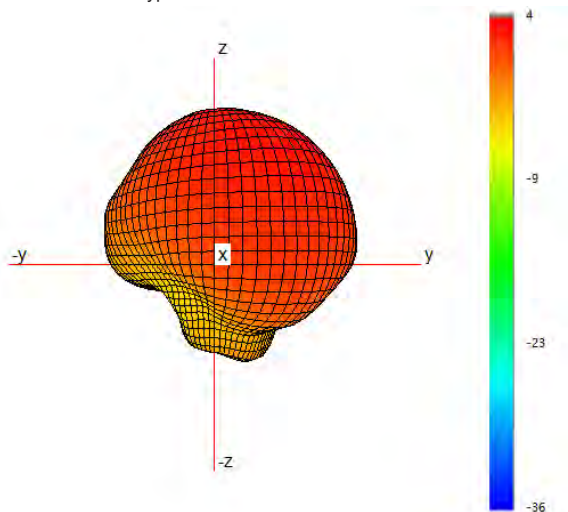
Typical 3D Pattern- Cell D - 750 MHz



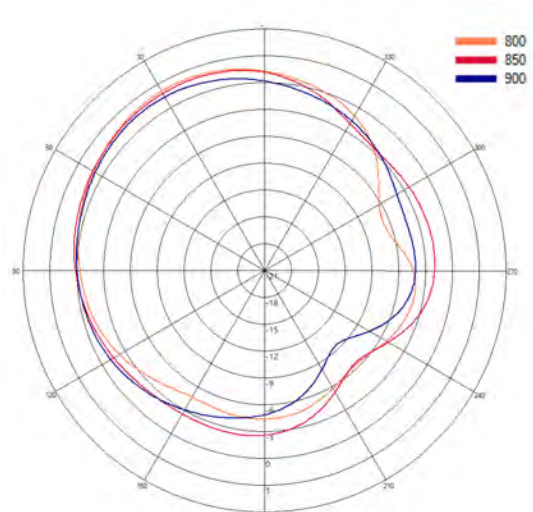
Typical H Plane- Cell D - Patterns- 700-800MHz



Typical 3D Pattern- Cell D - 850 MHz



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



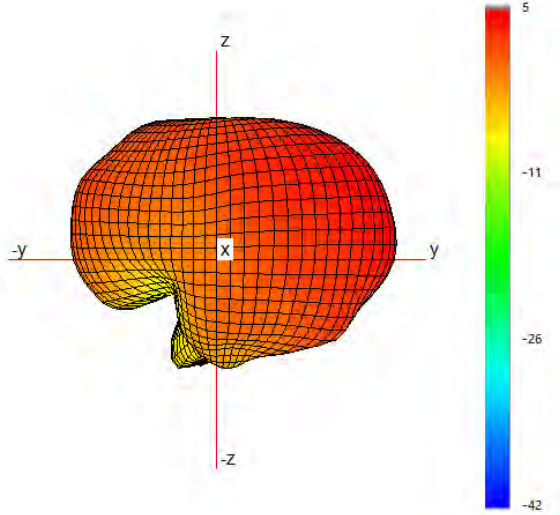
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

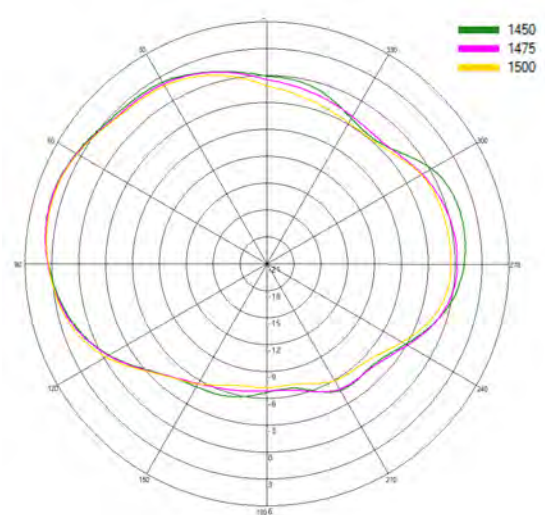
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3D Pattern Data in
Free Space Cell D

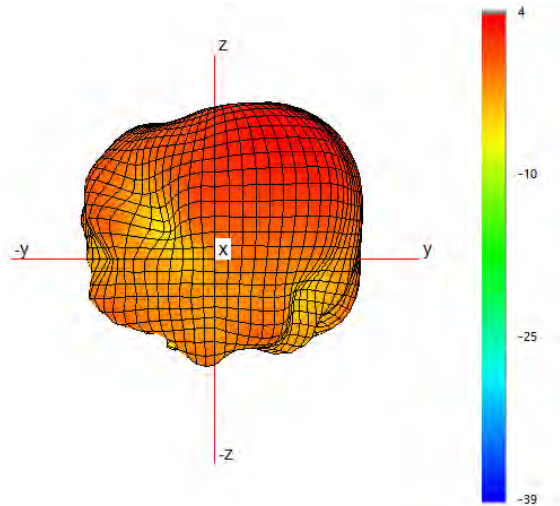
Typical 3D Pattern- Cell D - 1475 MHz



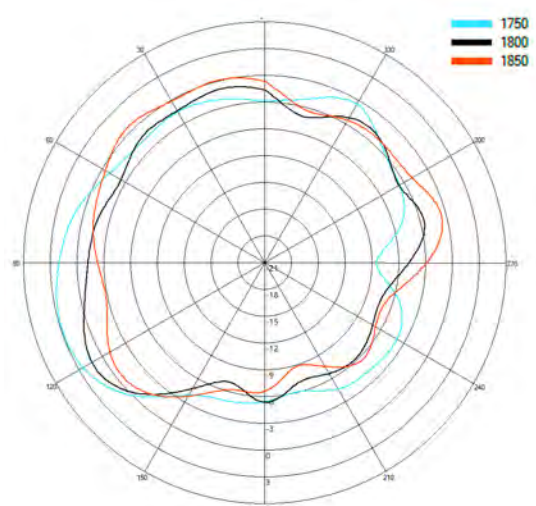
Typical H Plane- Cell D- Patterns- 1450-1500 MHz



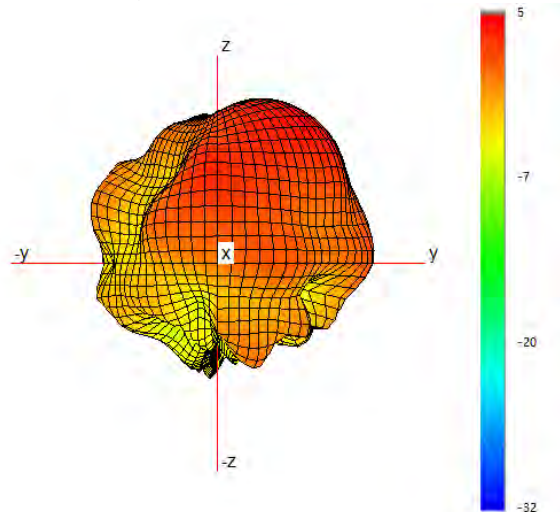
Typical 3D Pattern- Cell D - 1800 MHz



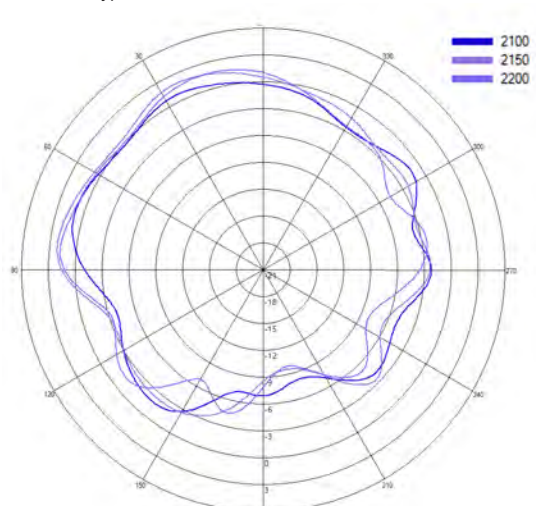
Typical H Plane- Cell D- Patterns- 1750-1850 MHz



Typical 3D Pattern- Cell D - 2150 MHz



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



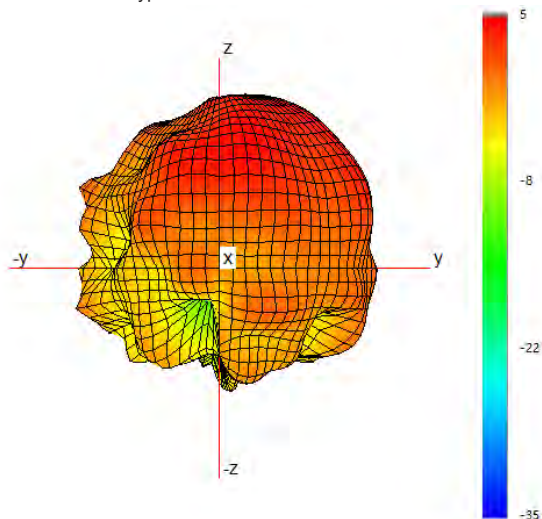
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

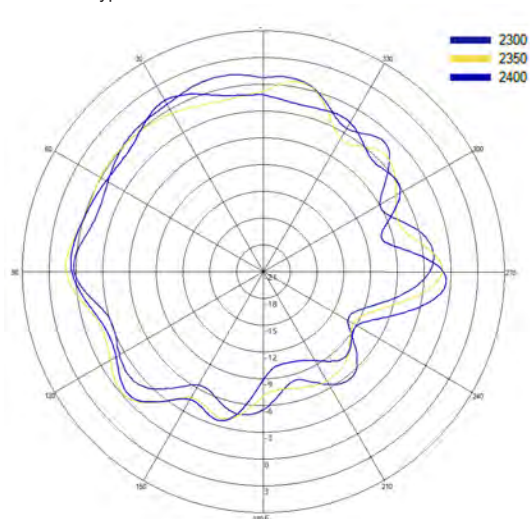
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3D Pattern Data in
Free Space Cell D

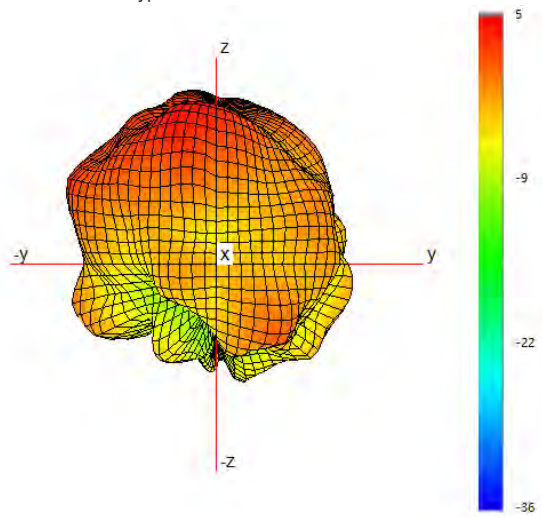
Typical 3D Pattern- Cell D - 2350 MHz



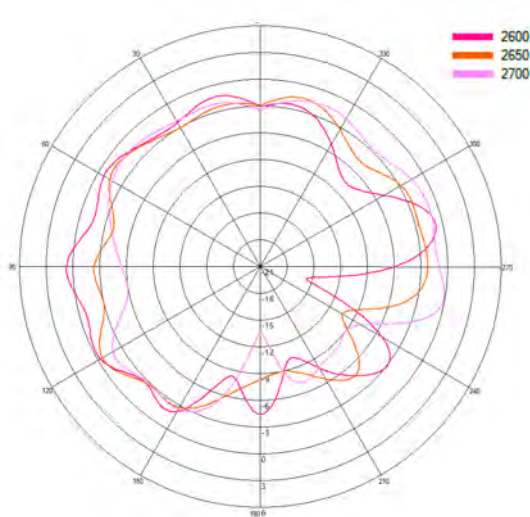
Typical H Plane- Cell D - Patterns- 2300-2400 MHz



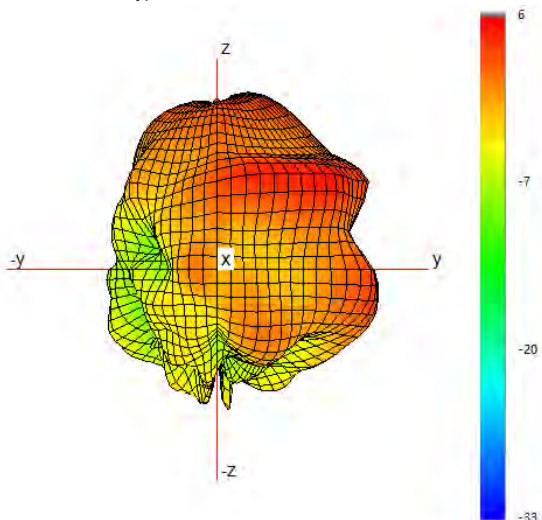
Typical 3D Pattern- Cell D - 2650 MHz



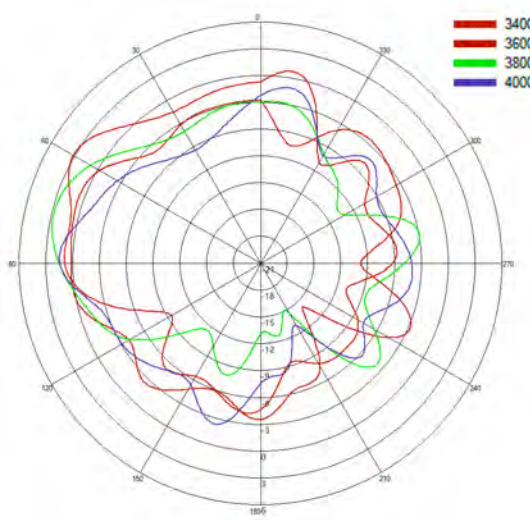
Typical H Plane- Cell D - Patterns- 2600-2700 MHz



Typical 3D Pattern- Cell D - 3600 MHz



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



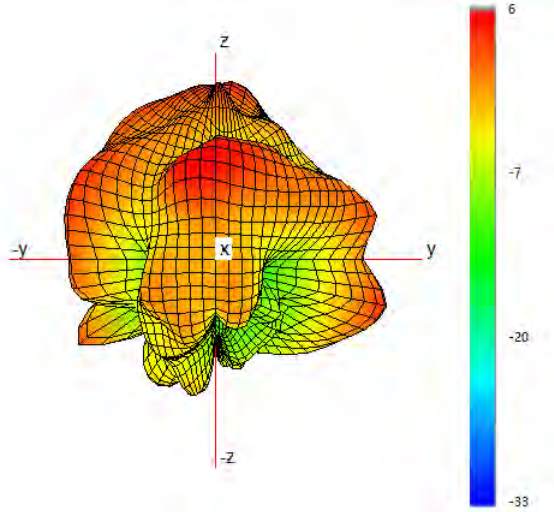
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

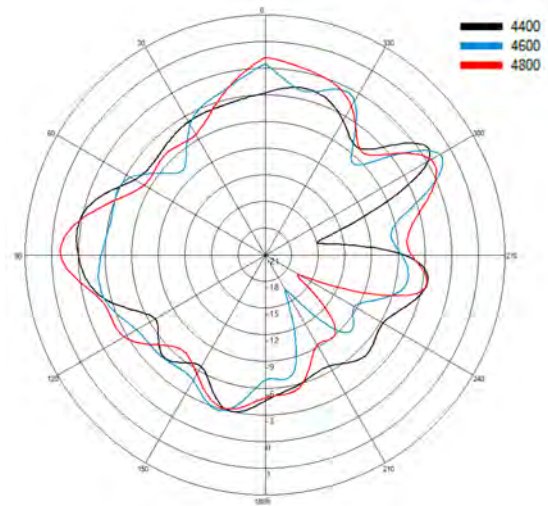
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3D Pattern Data in
Free Space Cell D

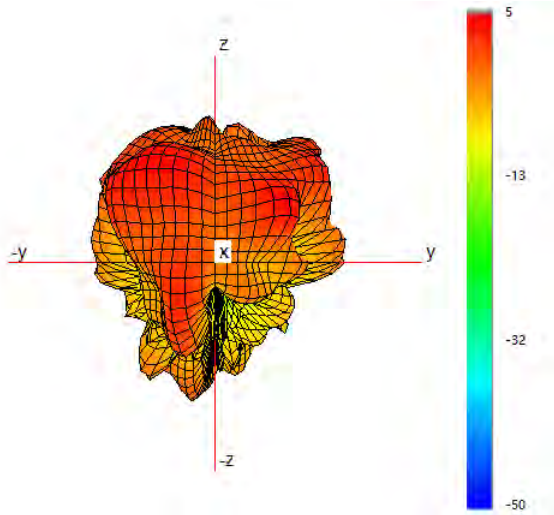
Typical 3D Pattern- Cell D - 4700 MHz



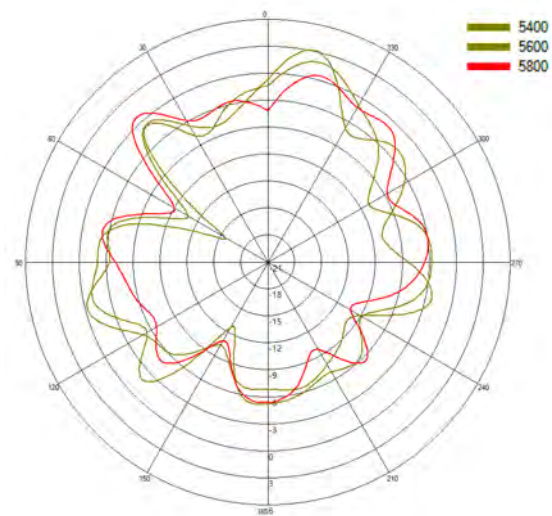
Typical H Plane- Cell D - Patterns- 4400-4800 MHz



Typical 3D Pattern- Cell D - 5600 MHz



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



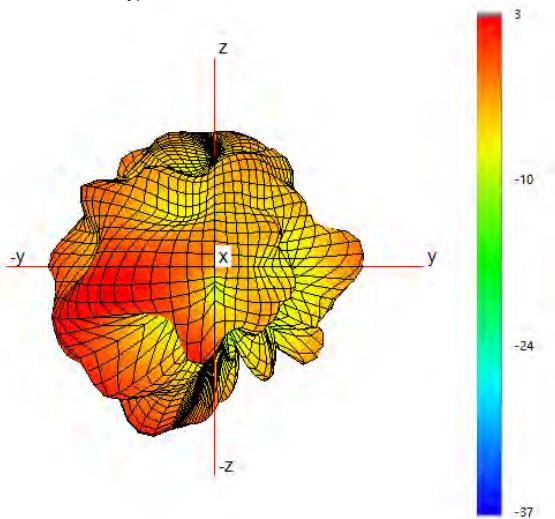
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

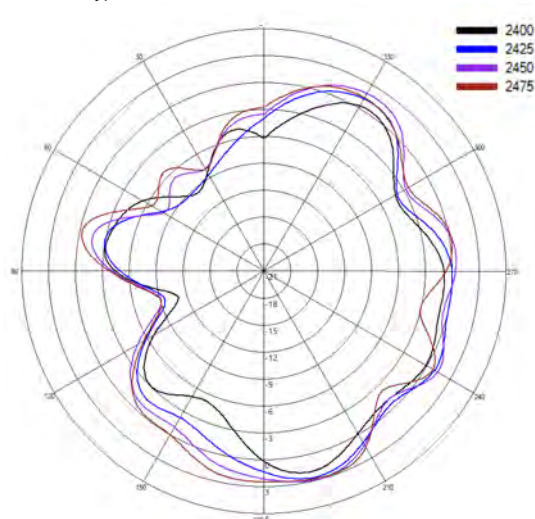
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3D Pattern Data in
Free Space WiFi - 1

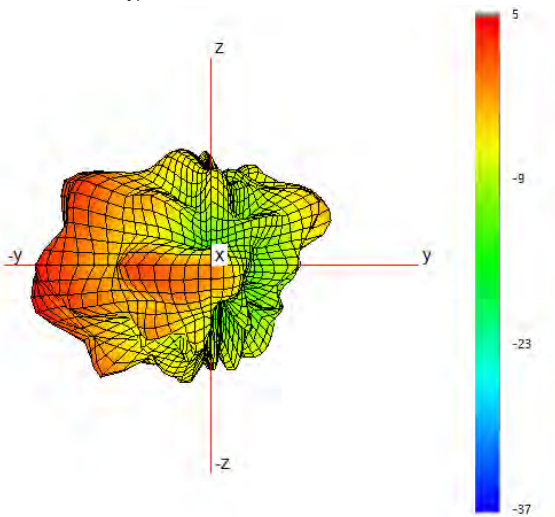
Typical 3D Pattern- WiFi - 1 - 2450 MHz



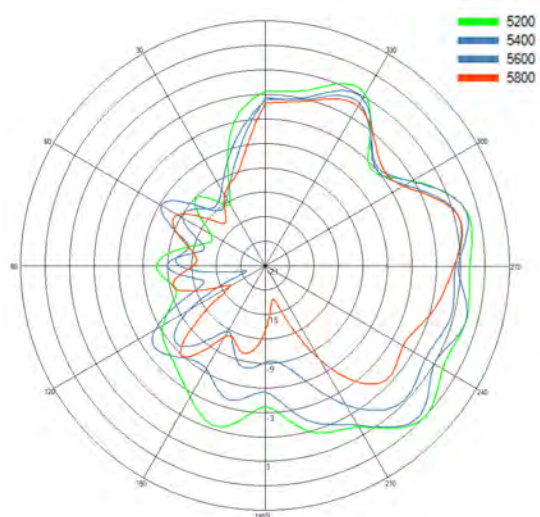
Typical H Plane- WiFi - 1 - Patterns- 2400-2475MHz



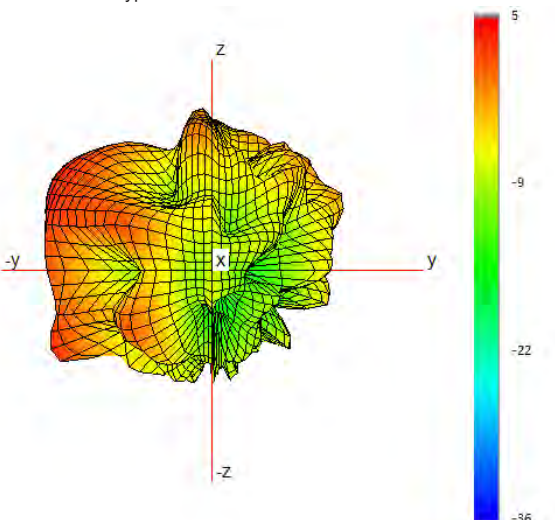
Typical 3D Pattern- WiFi - 1 - 5500 MHz



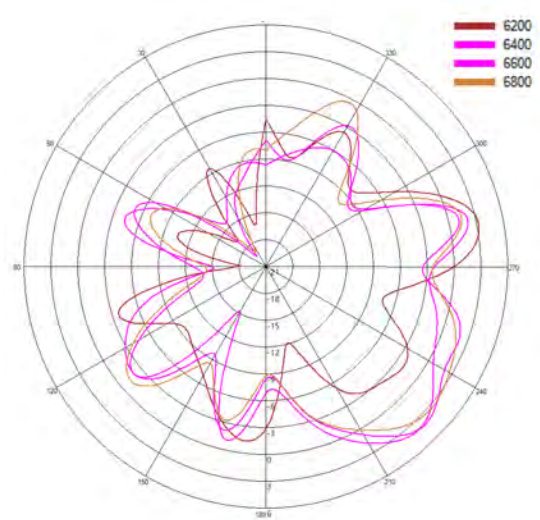
Typical H Plane- WiFi - 1 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 1 - 6500 MHz



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



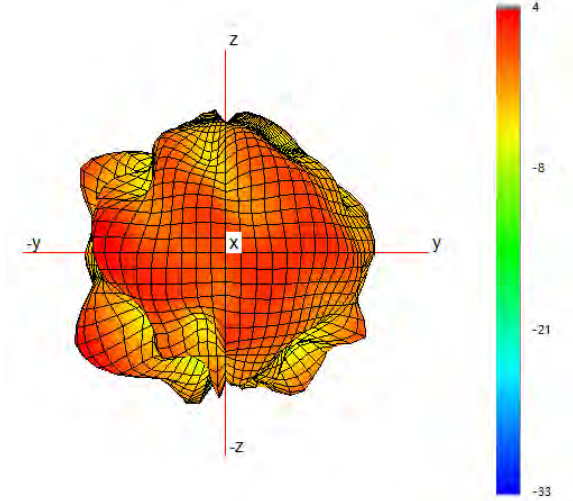
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

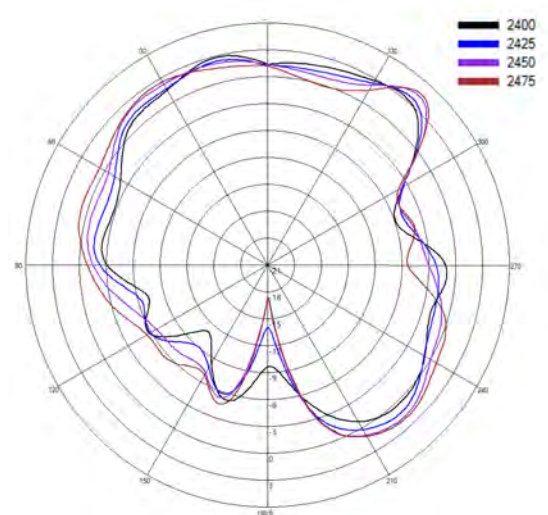
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3D Pattern Data in
Free Space WIFI - 2

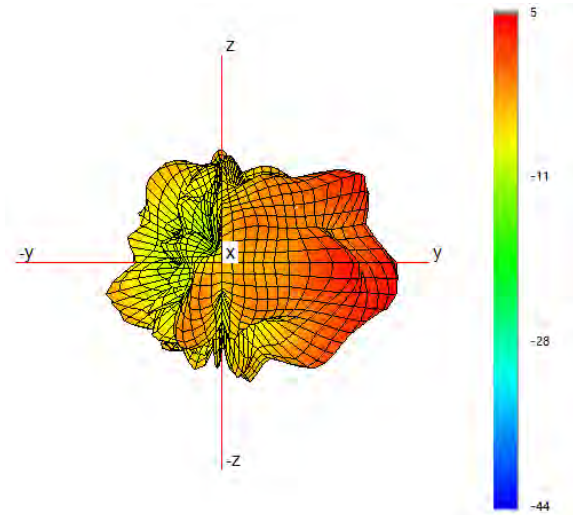
Typical 3D Pattern- WiFi - 2 - 2450 MHz



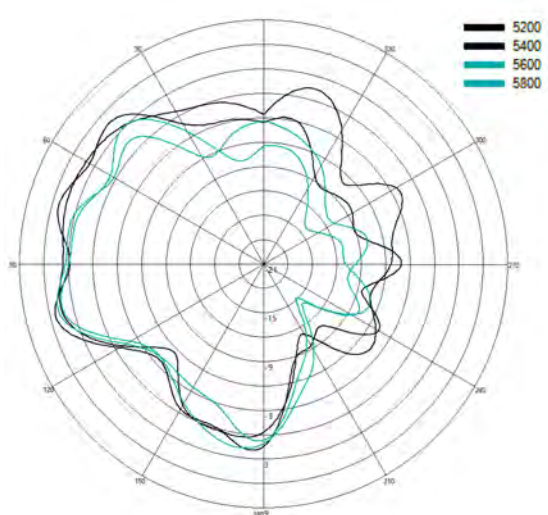
Typical H Plane- WiFi - 2 - Patterns- 2400-2475MHz



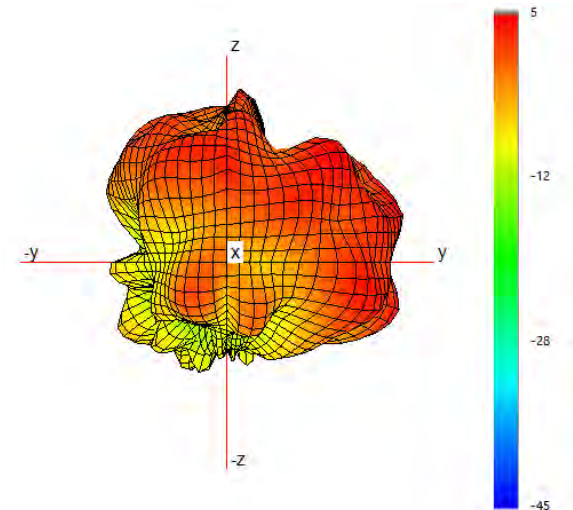
Typical 3D Pattern- WiFi - 2 - 5500 MHz



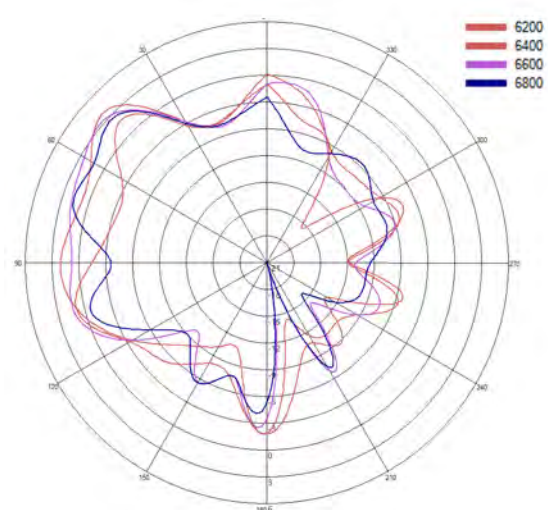
Typical H Plane- WiFi - 2 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 2 - 6500 MHz



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



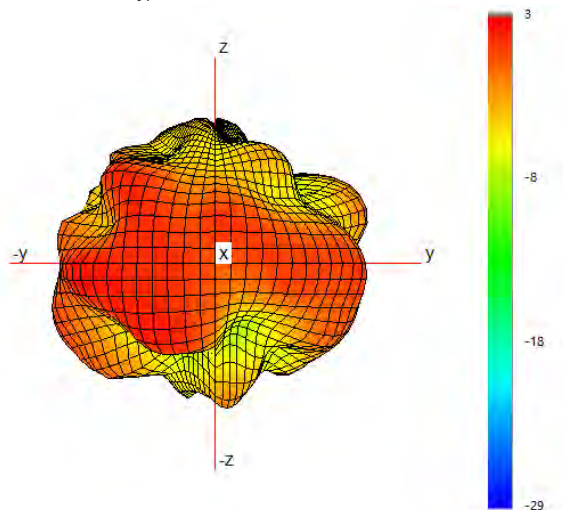
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

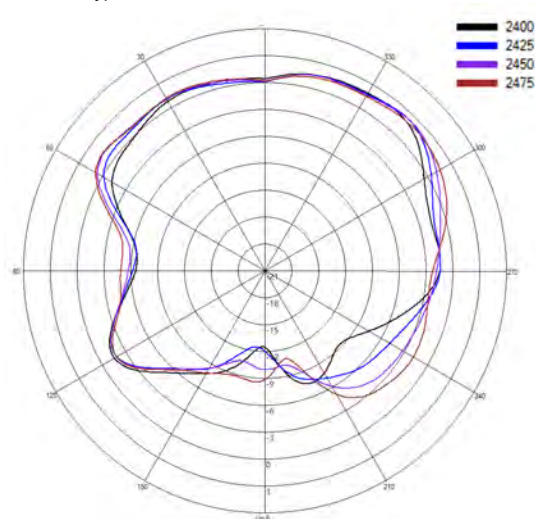
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3D Pattern Data in
Free Space WiFi - 3

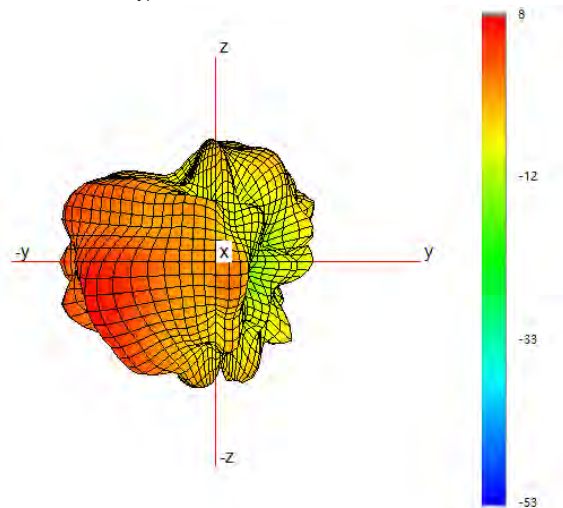
Typical 3D Pattern- WiFi - 3 - 2450 MHz



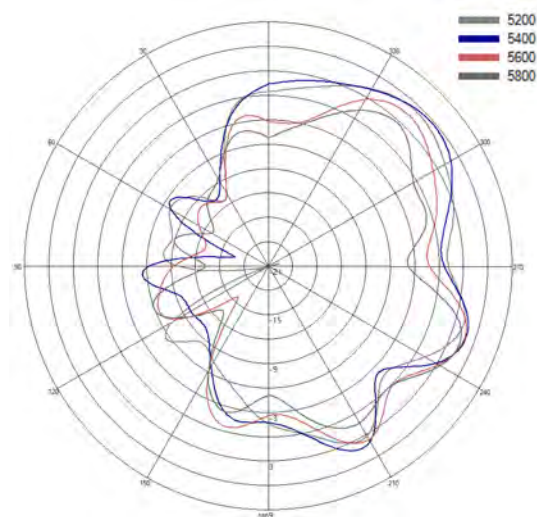
Typical H Plane- WiFi - 3 - Patterns- 2400-2475MHz



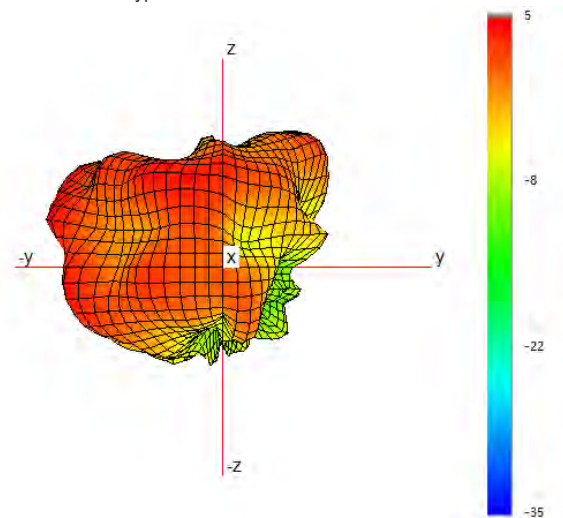
Typical 3D Pattern- WiFi - 3 - 5500 MHz



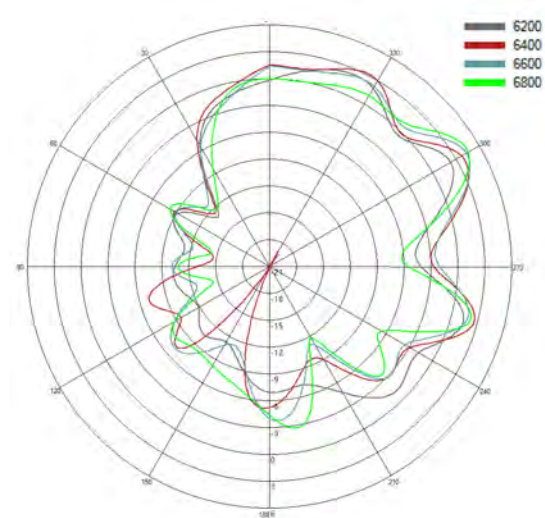
Typical H Plane- WiFi - 3 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 3 - 6500 MHz



Typical H Plane- WiFi - 3 - Patterns- 6200-6800MHz



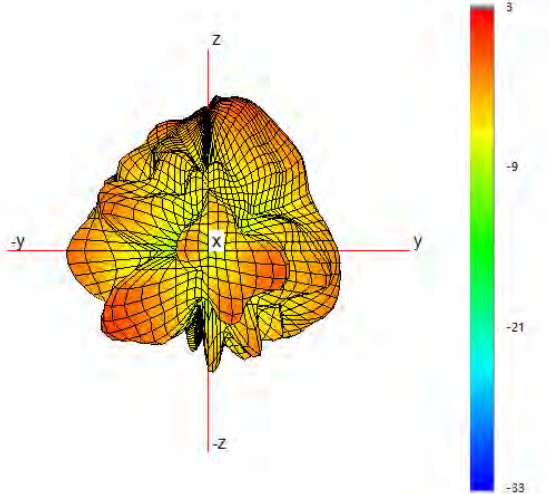
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

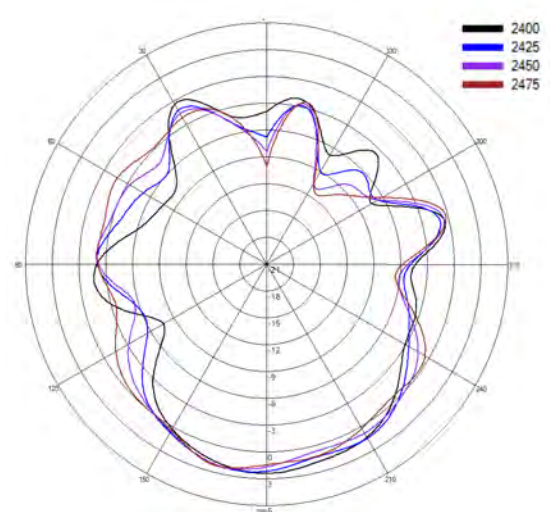
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3D Pattern Data in
Free Space WIFI - 4

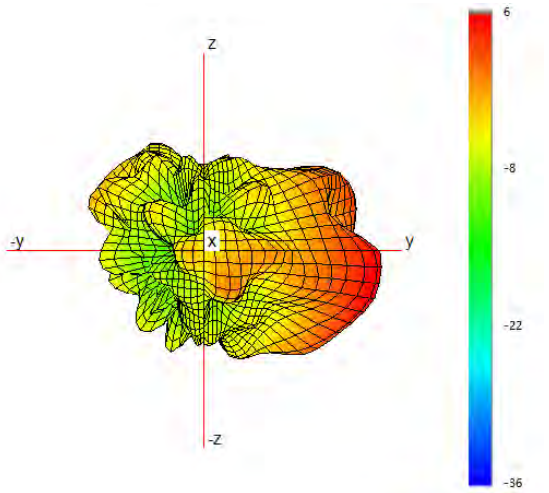
Typical 3D Pattern- WiFi - 4 - 2450 MHz



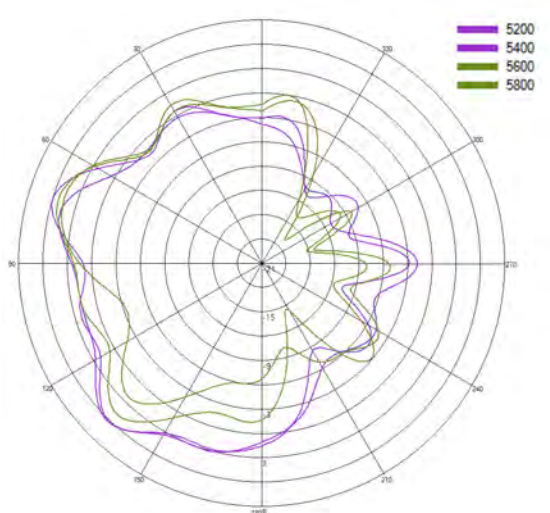
Typical H Plane- WiFi - 4 - Patterns- 2400-2475MHz



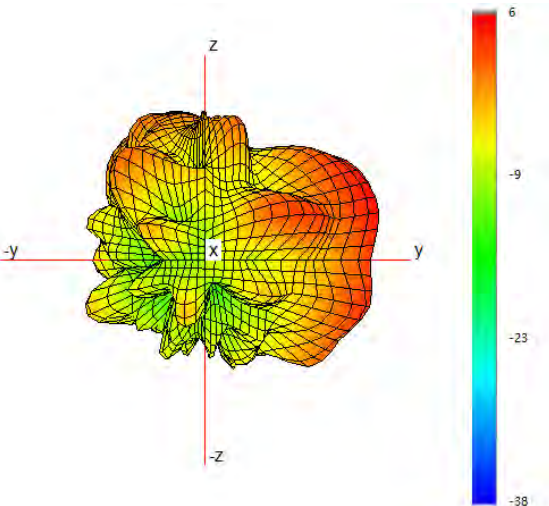
Typical 3D Pattern- WiFi - 4 - 5500 MHz



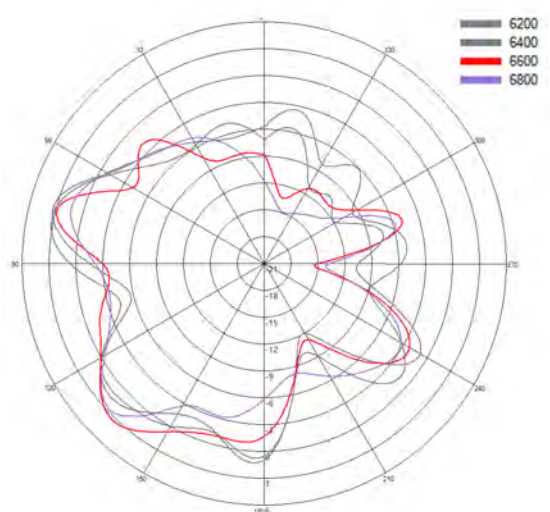
Typical H Plane- WiFi - 4 - Patterns- 5200-5800MHz



Typical 3D Pattern- WiFi - 4 - 6500 MHz



Typical H Plane- WiFi - 4 - Patterns- 6200-6800MHz



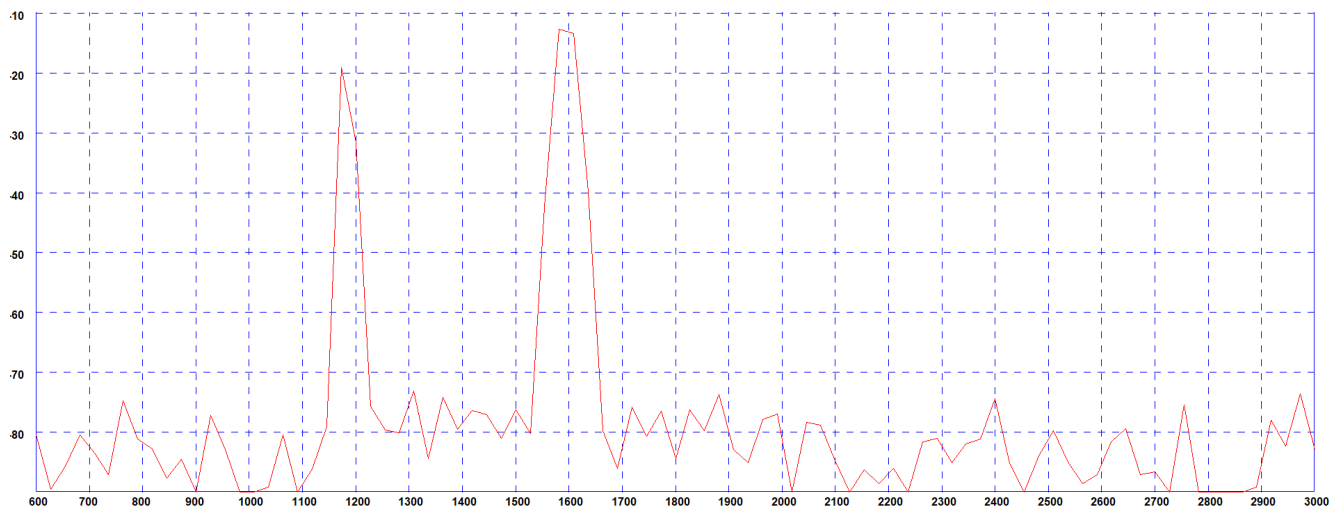
4x4 MiMo 4G/5G Sharkfin Antenna

6001535/6001536

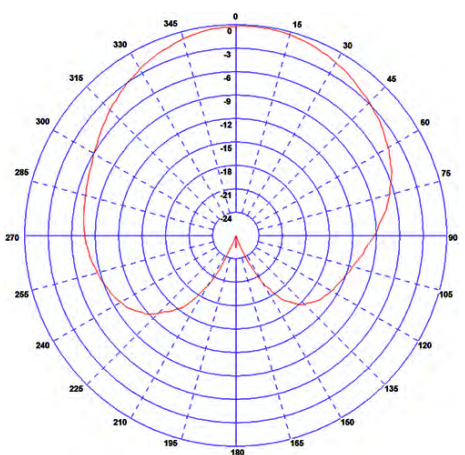
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Electrical Data- L1 GPS/GNSS

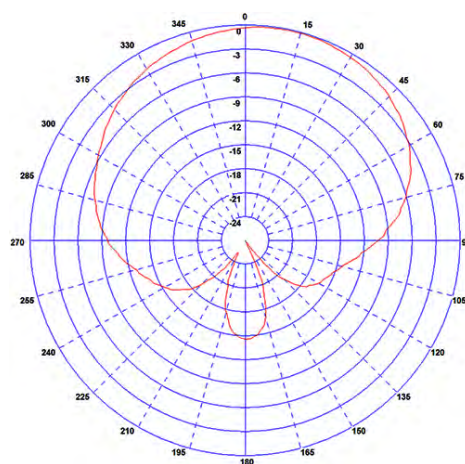
Swept Peak Gain GPS/GNSS



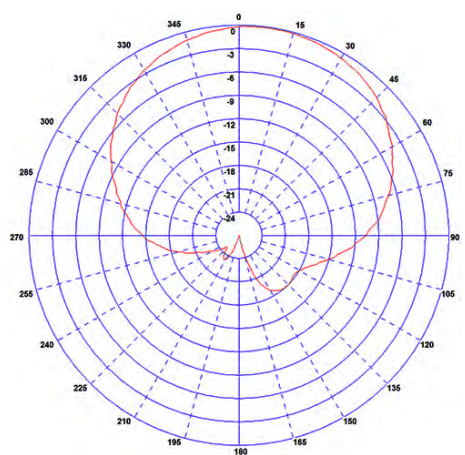
Typical E Plane Pattern - GPS/GNSS 1575 MHz



Typical E Plane Pattern - GPS/GNSS 1602 MHz



Typical E Plane Pattern - GPS/GNSS 1176 MHz



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