Ultra Low Profile MiMo Antenna WIFI/5G

L[X]M[X]-24-72-[X]

- 2x2, 3x3 or 4x4 MiMo antenna
- Covers WiFi, 4G and 5G frequencies from 2.3-7.2GHz
- Optional amplified GPS/GNSS version
- Ultra low profile
- Meets IP69K and IK10

The L[X]M[X]-24-72-[X] range has been designed to provide an optimised antenna solution for applications requiring 2x2, 3x3 or 4x4 MiMo capability. The compact, robust, low-profile housing contains four elements covering WiFi 6e, 4G and 5G frequencies from 2396-7125MHz with optimised isolation and low correlation co-efficient.

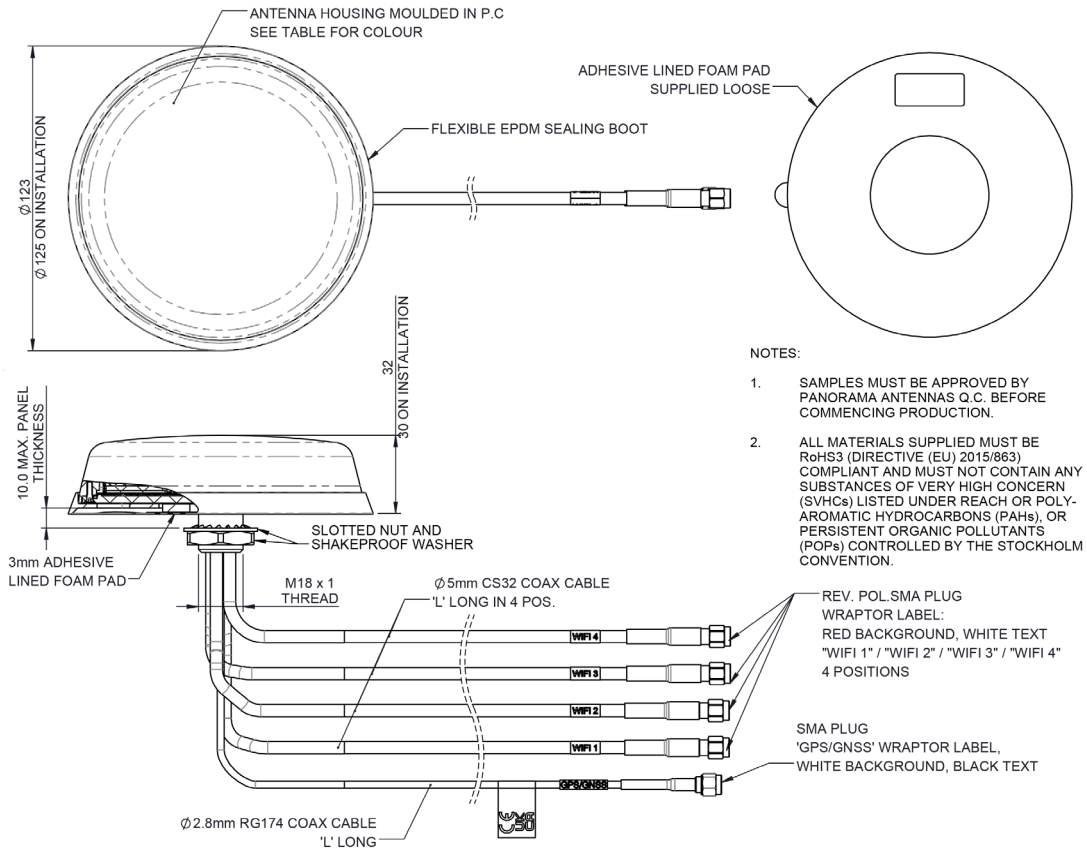
Versions of the antenna are available with an integrated amplified GPS/GNSS module for applications requiring this functionality.

The antenna can be fitted on a conductive or non-conductive panel for device mounted, fixed site or vehicle applications.

The antenna is supplied with integrated flame retardant CS32 cables (Compliant to UN ECE R 118 and EN45545-2) and a halogen free flame retardant radome which is ingress protected to IP69K and vandal resistant to IK10 when correctly installed. It has approvals to both EN45545-2 and EN50155 for use in rolling stock, light rail and trackside applications.

Technical Drawing

LGM4-24-72-5RPSP Shown



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PANORAMA ANTENNAS

Product Data

Part No.		LGM4-24-72-5RPSP	LGM4-24-72-5SP	LGM4W-24-72-5RPSP	LGM4W-24-72-5SP
Frequency Range	Ports 1-4	4x 2396-7125MHz			
Typical VSWR* (all elements)		< 2:1			
Typical Isolation* (worst case)		> 10dB			
Pattern		Omni-directional			
Nominal Impedance		50Ω			
Max Input Power		10W			
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	Diameter	123mm (4.84")			
	Height	32mm (1.26")			
Operating Temp		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330			
Colour		Black		White	
IP Rating		IP69K**			
Relative Humidity		95%			
Vandal Protection		IK10			
Approvals Data					
Regulatory Approvals		EN50155:2021 (Dry heat & Cooling, Damp Heat), EN61373:2010 / EN50155:2021 (Shock & Vibration), EN45545:2020- HL3 (flammability)			
Mounting Data					
Fixing		Panel Mount - 18mm (3/4")			
Cable Data					
Comms Cables	Cable Type	CS32 - Flame Retardant to UN ECE R 118 / EN45545-2			
	Diameter	5mm (0.2")			
	Length	5m (16.4')			
	Termination	4x Rev Pol SMA	4x SMA Plug	4x Rev Pol SMA	4x SMA Plug
GPS/GNSS Cable	Cable Type	RG174 - Flame Retardant to UN ECE R 118 / EN45545-2			
	Diameter	2.8mm (0.1")			
	Length	5m (16.4')			
	Termination	1x SMA Plug			

* Typical Isolation and VSWR stated as measured with 0.5m (1.5') of cable in free space.

** When mounted to a sealed panel / enclosure with fitted boot in accordance with installation instructions.

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Ultra Low Profile MiMo Antenna WIFI/5G

L[X]M[X]-24-72-[X]

PANORAMA ANTENNAS

Product Data

Part No.		LGM3-24-72-5RPSP	LGM3-24-72-5SP	LGM3W-24-72-5RPSP	LGM3W-24-72-5SP
Frequency Range	Ports 1-4	3x 2396-7125MHz			
Typical VSWR* (all elements)		< 2:1			
Typical Isolation* (worst case)		> 10dB			
Pattern		Omni-directional			
Nominal Impedance		50Ω			
Max Input Power		10W			
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	Diameter	123mm (4.84”)			
	Height	32mm (1.26”)			
Operating Temp		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330			
Colour		Black		White	
IP Rating		IP69K**			
Relative Humidity		95%			
Vandal Protection		IK10			
Approvals Data					
Regulatory Approvals		EN50155:2021 (Dry heat & Cooling, Damp Heat), EN61373:2010 / EN50155:2021 (Shock & Vibration), EN45545:2020- HL3 (flammability)			
Mounting Data					
Fixing		Panel Mount - 18mm (3/4”)			
Cable Data					
Comms Cables	Cable Type	CS32 - Flame Retardant to UN ECE R 118 / EN45545-2			
	Diameter	5mm (0.2”)			
	Length	5m (16.4’)			
	Termination	3x Rev Pol SMA	3x SMA Plug	3x Rev Pol SMA	3x SMA Plug
GPS/GNSS Cable	Cable Type	RG174 - Flame Retardant to UN ECE R 118 / EN45545-2			
	Diameter	2.8mm (0.1”)			
	Length	5m (16.4’)			
	Termination	1x SMA Plug			

* Typical Isolation and VSWR stated as measured with 0.5m (1.5’) of cable in free space.

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L[X]M[X]-24-72-[X]

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Product Data

Part No.	LGM2-24-72-5RPSP	LGM2-24-72-5SP	LGM2W-24-72-5RPSP	LGM2W-24-72-5SP
Frequency Range Ports 1-4	2x 2396-7125MHz			
Typical VSWR* (all elements)	< 2:1			
Typical Isolation* (worst case)	> 10dB			
Pattern	Omni-directional			
Nominal Impedance	50Ω			
Max Input Power	10W			
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 Diameter	123mm (4.84")			
Dimensions Height	32mm (1.26")			
Operating Temp	-40° / +80°C (-40° / 176°F)			
Material	LEXAN EXL9330			
Colour	Black		White	
IP Rating	IP69K**			
Relative Humidity	95%			
Vandal Protection	IK10			
Approvals Data				
Regulatory Approvals	EN50155:2021 (Dry heat & Cooling, Damp Heat), EN61373:2010 / EN50155:2021 (Shock & Vibration), EN45545:2020- HL3 (flammability)			
Mounting Data				
Fixing	Panel Mount - 18mm (3/4")			
Cable Data				
Comms Cables Cable Type	CS32 - Flame Retardant to UN ECE R 118 / EN45545-2			
Comms Cables Diameter	5mm(0.2")			
Comms Cables Length	5m(16.4')			
Comms Cables Termination	2x Rev Pol SMA	2x SMA Plug	2x Rev Pol SMA	2x SMA Plug
GPS/GNSS Cable Cable Type	RG174 - Flame Retardant to UN ECE R 118 / EN45545-2			
GPS/GNSS Cable Diameter	2.8mm(0.1")			
GPS/GNSS Cable Length	5m(16.4')			
GPS/GNSS Cable Termination	1x SMA Plug			

* Typical Isolation and VSWR stated as measured with 0.5m (1.5') of cable in free space.

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Product Data

Part No.		LPM4-24-72-5RPSP	LPM4-24-72-5SP	LPM4W-24-72-5RPSP	LPM4W-24-72-5SP
Frequency Range	Ports 1-4	4x 2396-7125MHz			
Typical VSWR* (all elements)		< 2:1			
Typical Isolation* (worst case)		> 10dB			
Pattern		Omni-directional			
Nominal Impedance		50Ω			
Max Input Power		10W			
Mechanical Data					
Dimensions	Diameter	123mm (4.84")			
	Height	32mm (1.26")			
Operating Temp		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330			
Colour		Black		White	
IP Rating		IP69K**			
Relative Humidity		95%			
Vandal Protection		IK10			
Approvals Data					
Regulatory Approvals		EN50155:2021 (Dry heat & Cooling, Damp Heat), EN61373:2010 / EN50155:2021 (Shock & Vibration), EN45545:2020- HL3 (flammability)			
Mounting Data					
Fixing		Panel Mount - 18mm (3/4")			
Cable Data					
Comms Cables	Cable Type	CS32 - Flame Retardant to UN ECE R 118 / EN45545-2			
	Diameter	5mm (0.2")			
	Length	5m (16.4')			
	Termination	4x Rev Pol SMA	4x SMA Plug	4x Rev Pol SMA	4x SMA Plug

* Typical Isolation and VSWR stated as measured with 0.5m (1.5') of cable in free space.

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Part No.		LPM3-24-72-5RPSP	LPM3-24-72-5SP	LPM3W-24-72-5RPSP	LPM3W-24-72-5SP
Frequency Range	Ports 1-4	3x 2396-7125MHz			
Typical VSWR* (all elements)		< 2:1			
Typical Isolation* (worst case)		> 10dB			
Pattern		Omni-directional			
Nominal Impedance		50Ω			
Max Input Power		10W			
Mechanical Data					
Dimensions	Diameter	123mm (4.84")			
	Height	32mm (1.26")			
Operating Temp		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330			
Colour		Black		White	
IP Rating		IP69K**			
Relative Humidity		95%			
Vandal Protection		IK10			
Approvals Data					
Regulatory Approvals		EN50155:2021 (Dry heat & Cooling, Damp Heat), EN61373:2010 / EN50155:2021 (Shock & Vibration), EN45545:2020- HL3 (flammability)			
Mounting Data					
Fixing		Panel Mount - 18mm (3/4")			
Cable Data					
Comms Cables	Cable Type	CS32 - Flame Retardant to UN ECE R 118 / EN45545-2			
	Diameter	5mm (0.2")			
	Length	5m (16.4')			
	Termination	3x Rev Pol SMA	3x SMA Plug	3x Rev Pol SMA	3x SMA Plug

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Product Data

Part No.		LPM2-24-72-5RPSP	LPM2-24-72-5SP	LPM2W-24-72-5RPSP	LPM2W-24-72-5SP
Frequency Range	Ports 1-4	2x 2396-7125MHz			
Typical VSWR* (all elements)		< 2:1			
Typical Isolation* (worst case)		> 10dB			
Pattern		Omni-directional			
Nominal Impedance		50Ω			
Max Input Power		10W			
Mechanical Data					
Dimensions	Diameter	123mm (4.84")			
	Height	32mm (1.26")			
Operating Temp		-40° / +80°C (-40° / 176°F)			
Material		LEXAN EXL9330			
Colour		Black		White	
IP Rating		IP69K**			
Relative Humidity		95%			
Vandal Protection		IK10			
Approvals Data					
Regulatory Data		EN50155:2021 (Dry heat & Cooling, Damp Heat), EN61373:2010 / EN50155:2021 (Shock & Vibration), EN45545:2020- HL3 (flammability)			
Mounting Data					
Fixing		Panel Mount - 18mm (3/4")			
Cable Data					
Comms Cables	Cable Type	CS32 - Flame Retardant to UN ECE R 118 / EN45545-2			
	Diameter	5mm (0.2")			
	Length	5m (16.4')			
	Termination	2x Rev Pol SMA	2x SMA Plug	2x Rev Pol SMA	2x SMA Plug

* Typical Isolation and VSWR stated as measured with 0.5m (1.5') of cable in free space.

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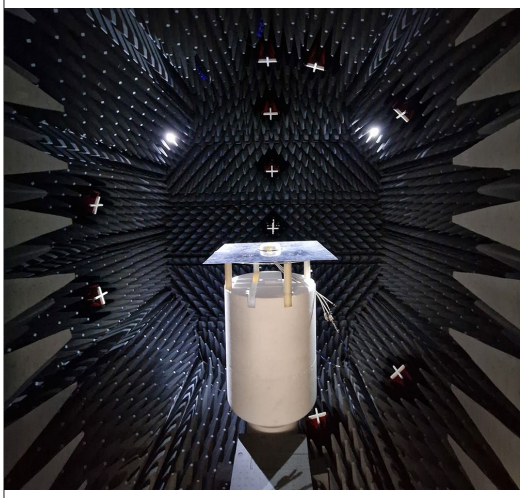
Measurement Conditions

On 600x600mm (2' x 2') ground plane with 0.5m (1.5') C32 cables



Ports 1-4 WiFi Bands

Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
2396-2485	2.4GHz	Port 1	5.2	79
		Port 2	5.5	76
		Port 3	5.6	78
		Port 4	5.4	76
5150-5250	UNII-1	Port 1	9.8	82
		Port 2	9.3	75
		Port 3	8.9	80
		Port 4	9.5	77
5250-5350	UNII-2A	Port 1	9.5	76
		Port 2	8.4	78
		Port 3	9.4	80
		Port 4	9.8	79
5350-5470	UNII-2B	Port 1	8.4	75
		Port 2	9.1	76
		Port 3	9.1	81
		Port 4	9.2	78
5470-5725	UNII-2C	Port 1	8.4	75
		Port 2	9.1	76
		Port 3	9.1	81
		Port 4	9.2	78
5725-5850	UNII-3	Port 1	9.0	81
		Port 2	8.8	75
		Port 3	9.6	83
		Port 4	9.3	81
5850-5925	UNII-4	Port 1	9.0	81
		Port 2	9.1	81
		Port 3	10.1	83
		Port 4	9.5	81
5925-6425	UNII-5	Port 1	9.7	82
		Port 2	9.2	77
		Port 3	10.1	84
		Port 4	9.5	81
6425-6525	UNII-6	Port 1	9.4	81
		Port 2	9.0	74
		Port 3	10.1	80
		Port 4	9.5	75
6525-6875	UNII-7	Port 1	9.5	81
		Port 2	9.1	75
		Port 3	10.3	82
		Port 4	9.6	77
6875-7125	UNII-8	Port 1	9.7	83
		Port 2	9.4	75
		Port 3	10.0	83
		Port 4	9.0	79

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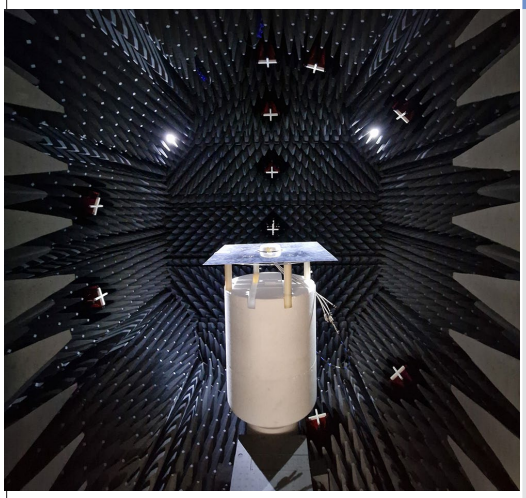
Electrical Data on Ground Plane

Measurement Conditions

On 600x600mm (2' x 2'') ground plane with 0.5m (1.5') C32 cables



Ports 1-4 Cellular Bands

Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
2300-2400	30,40	Port 1	4.7	80
		Port 2	5.0	76
		Port 3	5.6	77
		Port 4	5.4	76
2496-2690	7,38,41	Port 1	6.1	78
		Port 2	5.5	75
		Port 3	6.0	79
		Port 4	5.6	74
3300-4200	22,42,43,48,77, 78	Port 1	8.2	76
		Port 2	8.3	73
		Port 3	7.9	76
		Port 4	8.3	76
4400-5000	79	Port 1	10.0	83
		Port 2	9.6	70
		Port 3	9.5	82
		Port 4	9.7	83
5925-7125	96, 102,104	Port 1	9.7	82
		Port 2	9.4	76
		Port 3	10.3	83
		Port 4	9.6	79

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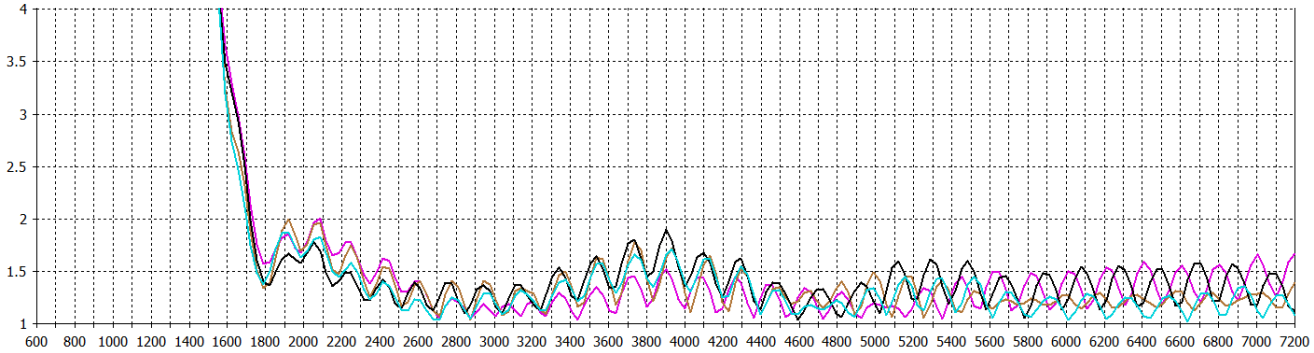
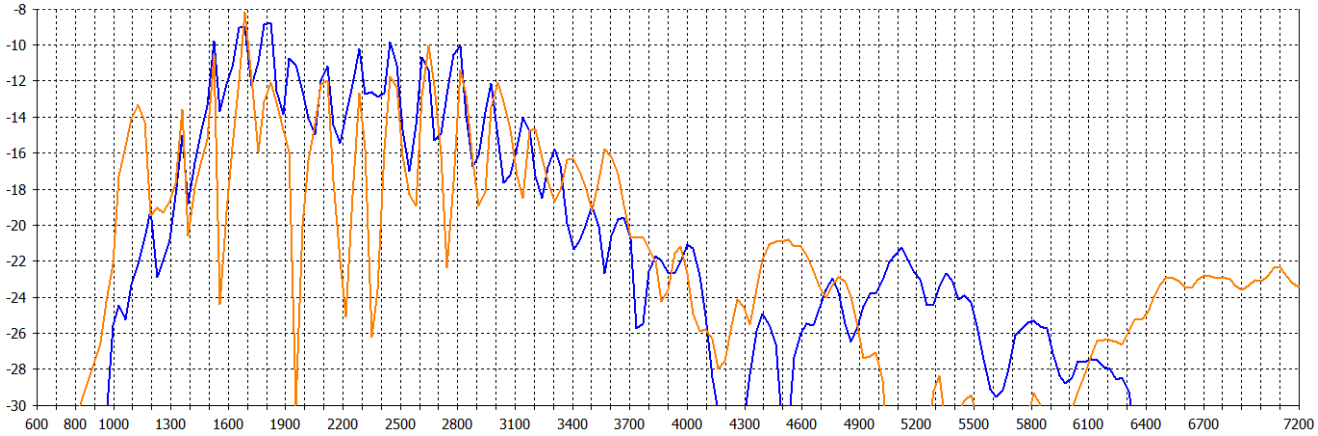
Electrical Data on Ground Plane

Typical VSWR - Elements 1-4

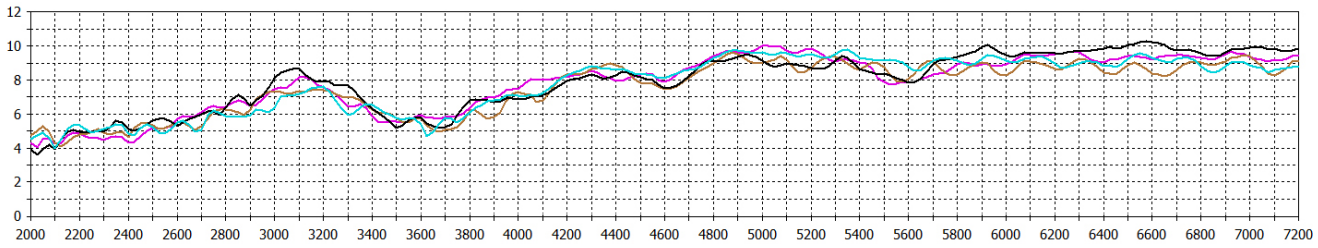


Typical Isolation*

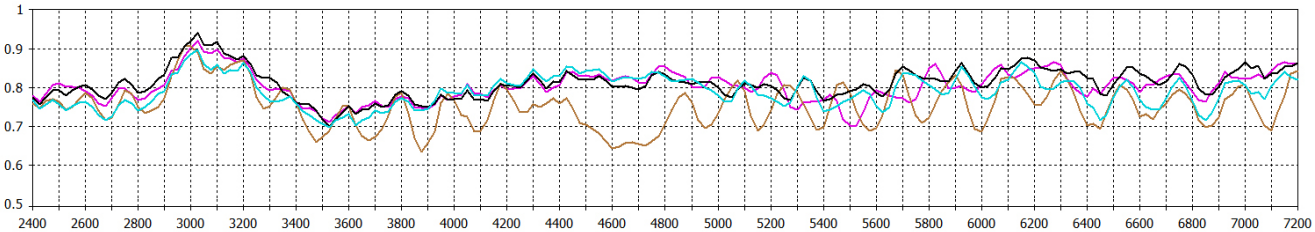


*Orange plot = opposite elements Blue plot = adjacent elements

Typical Swept Peak Gain - Elements 1-4



Typical Efficiency - Elements 1-4



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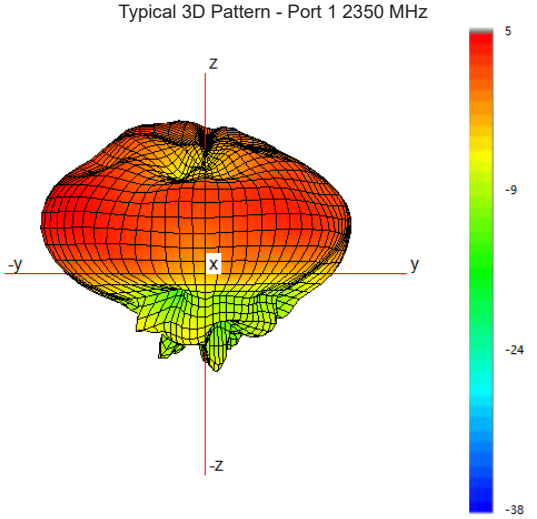
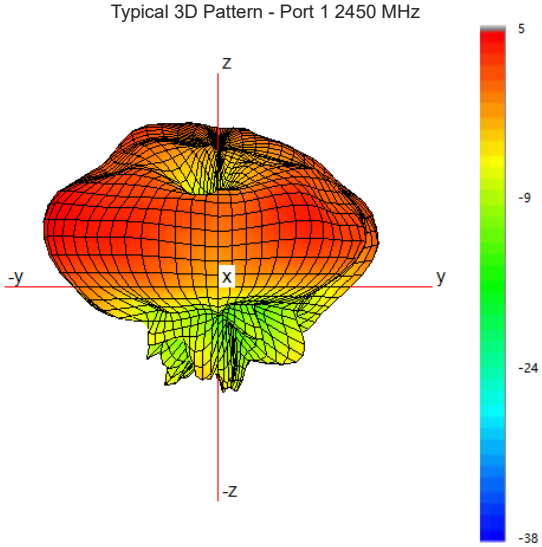
3D Pattern Data on Ground Plane Port 1

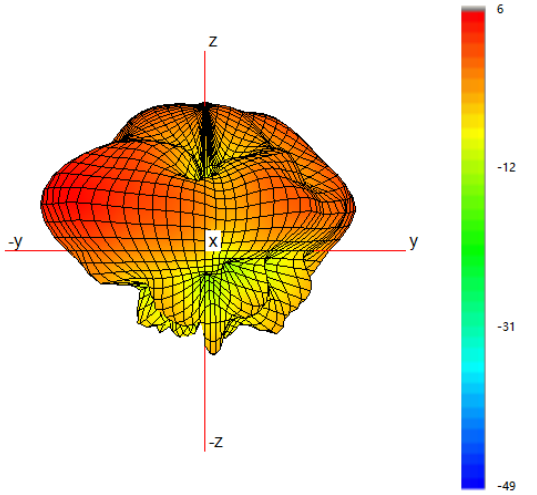
Typical 3D Pattern - Port 1 2350 MHz



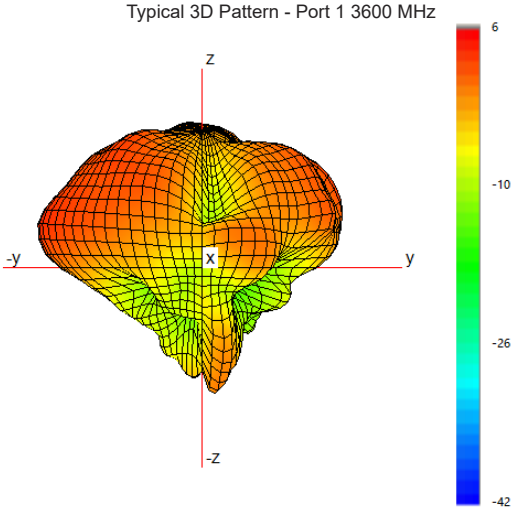
Typical 3D Pattern - Port 1 2450 MHz



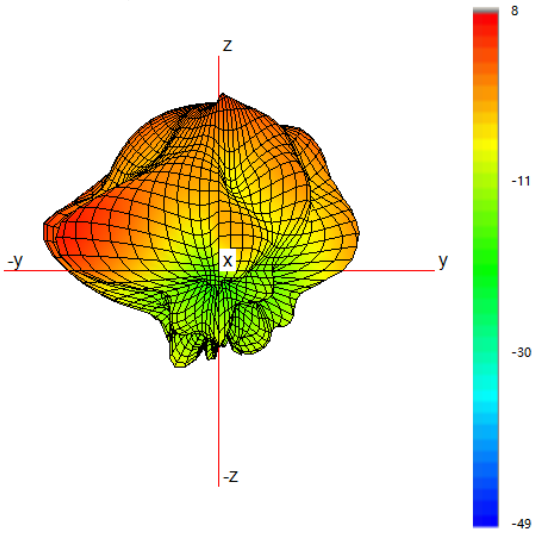
Typical 3D Pattern - Port 1 2650 MHz



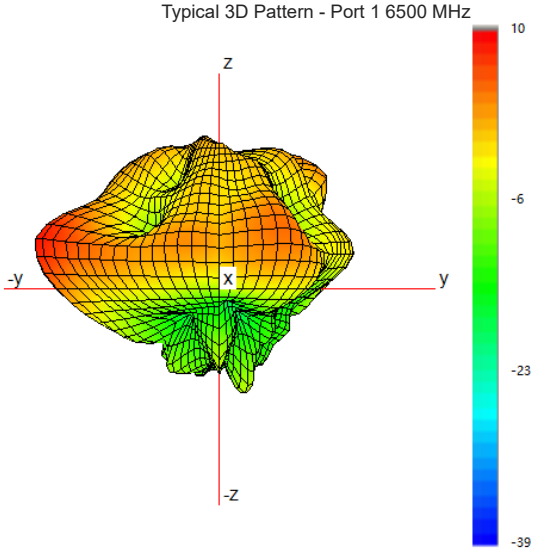
Typical 3D Pattern - Port 1 3600 MHz



Typical 3D Pattern - Port 1 5500 MHz



Typical 3D Pattern - Port 1 6500 MHz



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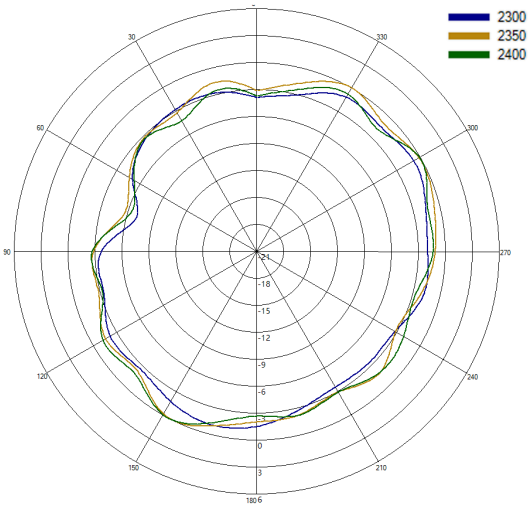
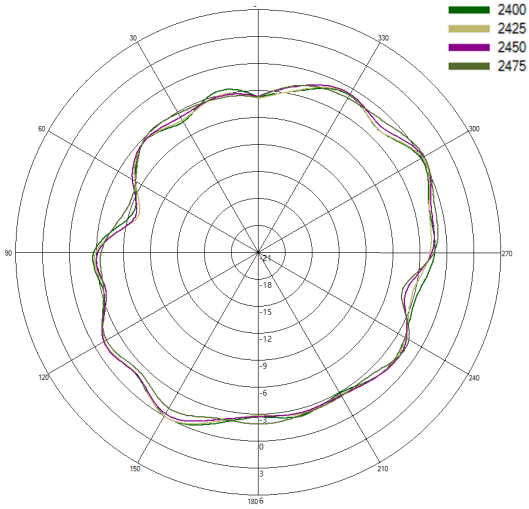
2D Pattern Data on Ground Plane Port 1 H Plane

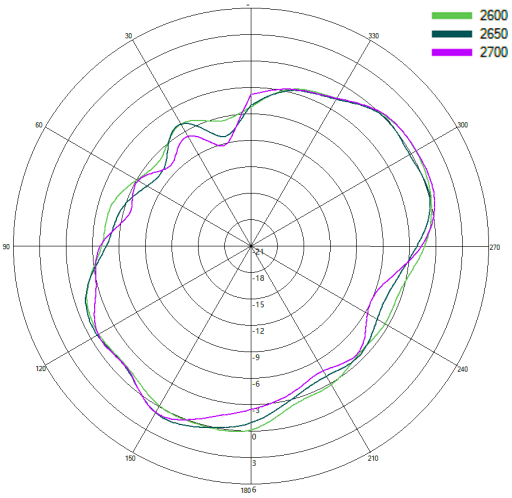
Typical H Plane Pattern - Port 1 2300-2400 MHz



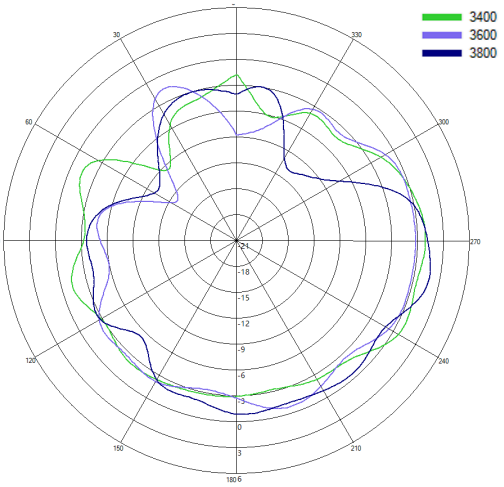
Typical H Plane Pattern - Port 1 2400-2475 MHz



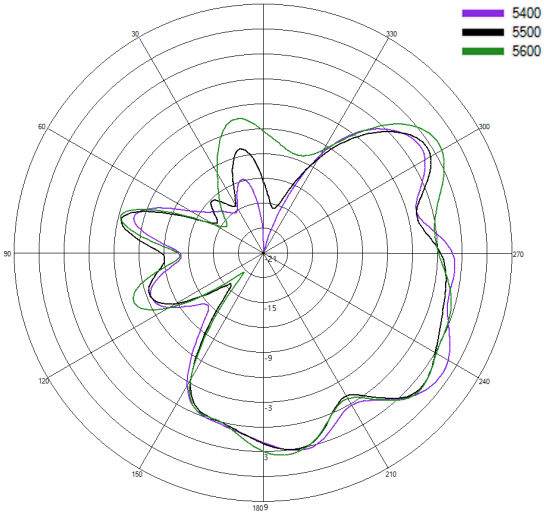
Typical H Plane Pattern - Port 1 2600-2700 MHz



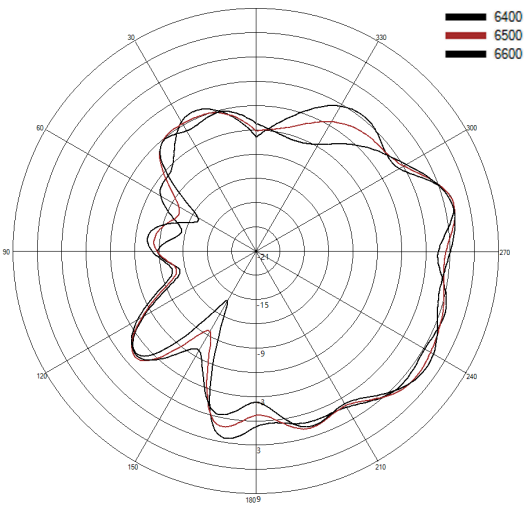
Typical H Plane Pattern - Port 1 3400-3800 MHz



Typical H Plane Pattern - Port 1 5400-5600 MHz



Typical H Plane Pattern - Port 1 6400-6600 MHz



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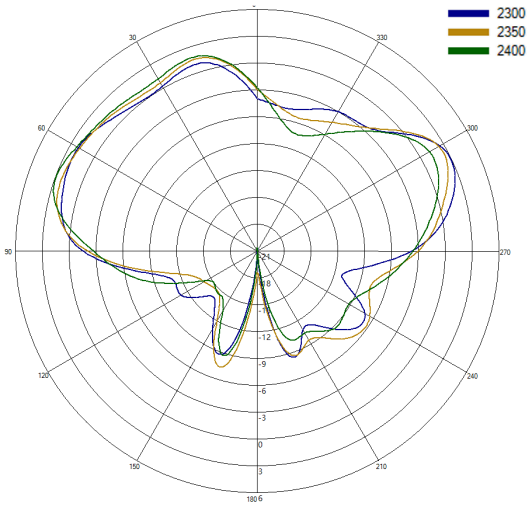
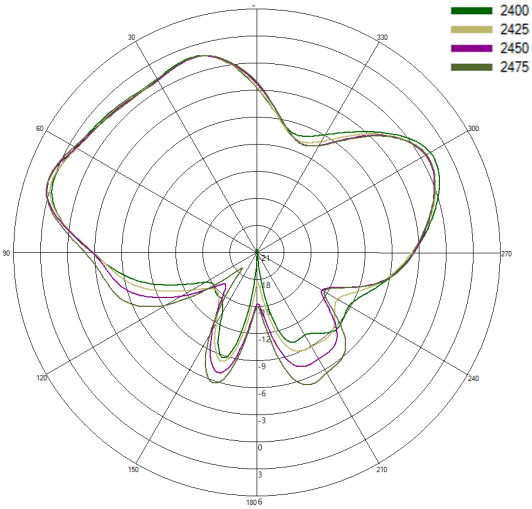
2D Pattern Data on Ground Plane Port 1 E Plane

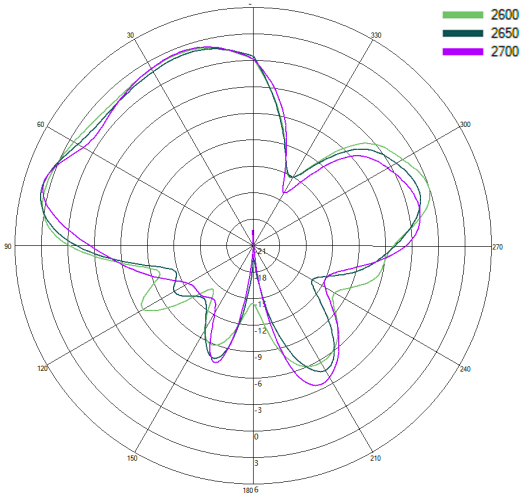
Typical E Plane Pattern - Port 1 2300-2400 MHz



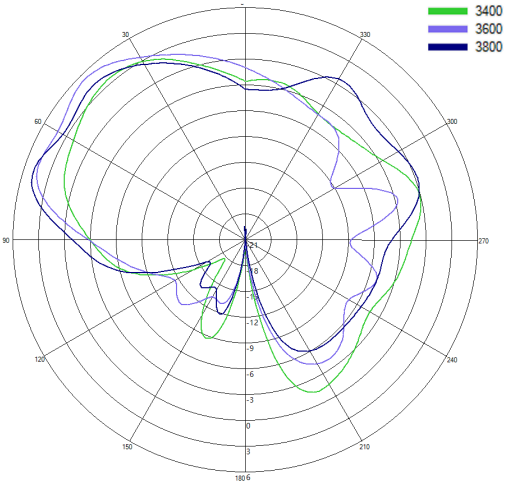
Typical E Plane Pattern - Port 1 2400-2475 MHz



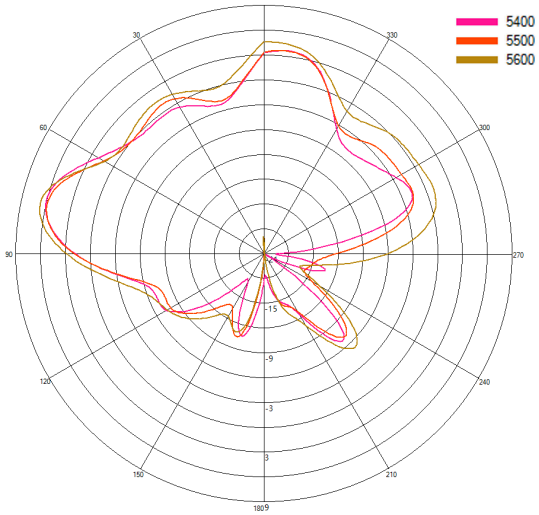
Typical E Plane Pattern - Port 1 2600-2700 MHz



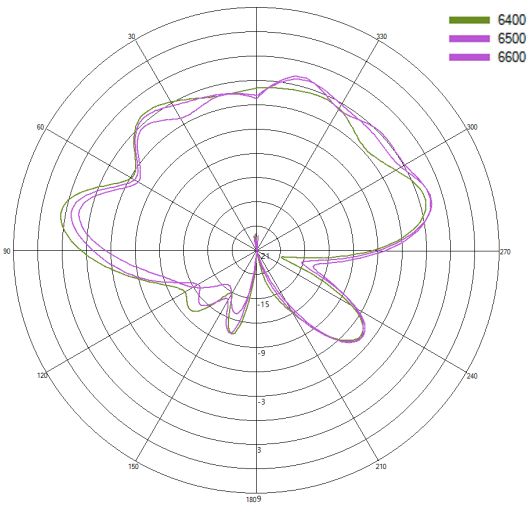
Typical E Plane Pattern - Port 1 3400-3800 MHz



Typical E Plane Pattern - Port 1 5400-5600 MHz



Typical E Plane Pattern - Port 1 6400-6600 MHz



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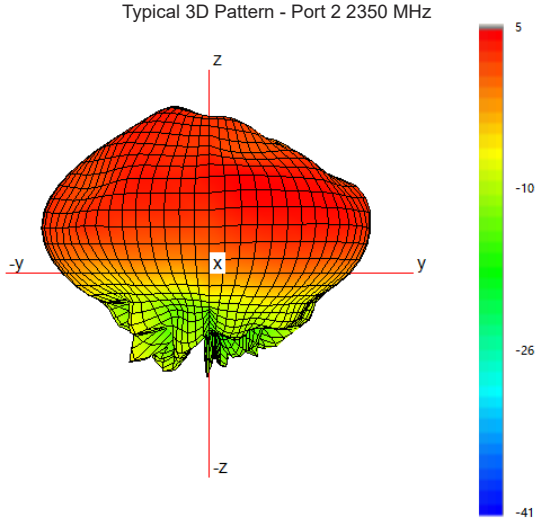
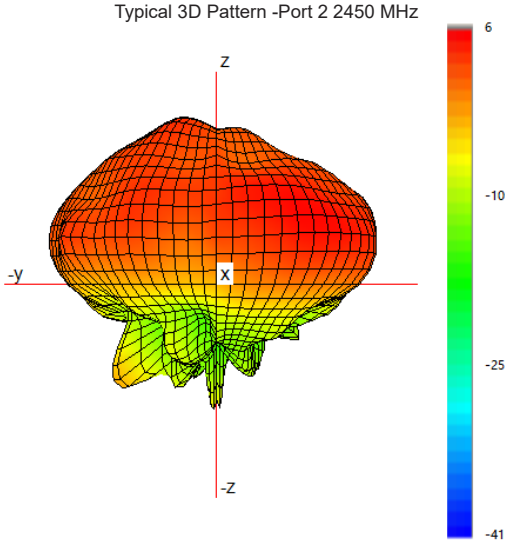
3D Pattern Data on Ground Plane Port 2

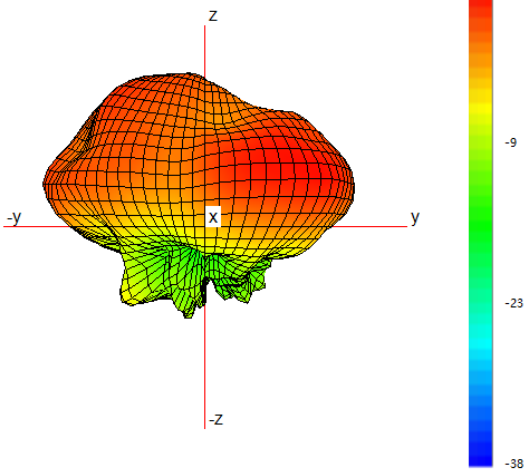
Typical 3D Pattern - Port 2 2350 MHz



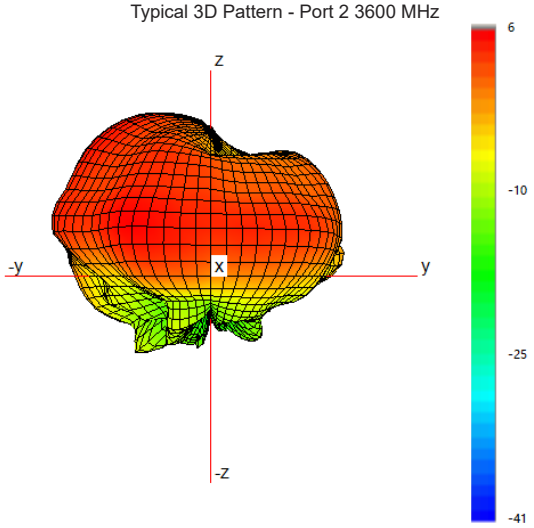
Typical 3D Pattern -Port 2 2450 MHz



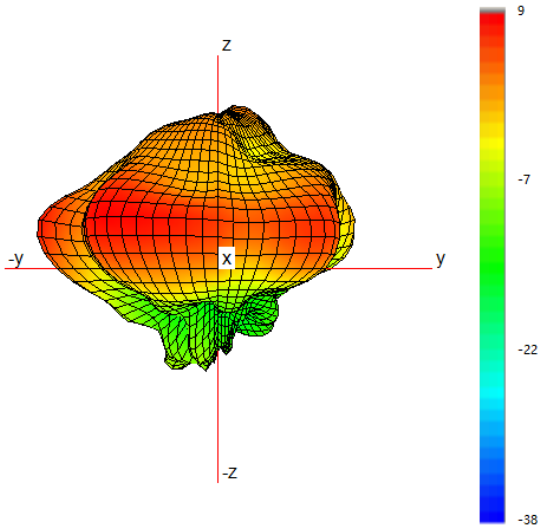
Typical 3D Pattern - Port 2 2650 MHz



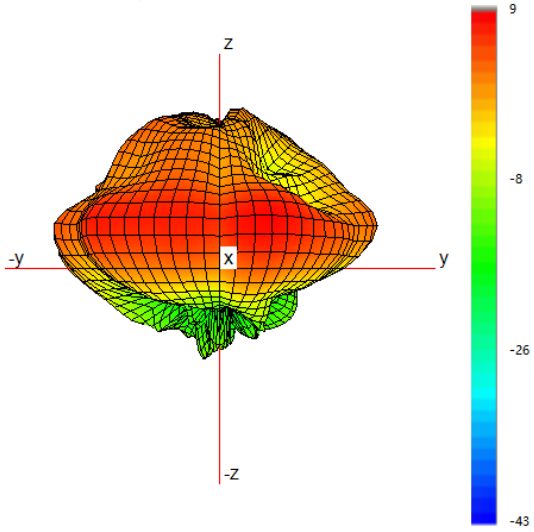
Typical 3D Pattern - Port 2 3600 MHz



Typical 3D Pattern - Port 2 5500 MHz



Typical 3D Pattern - Port 2 6500 MHz



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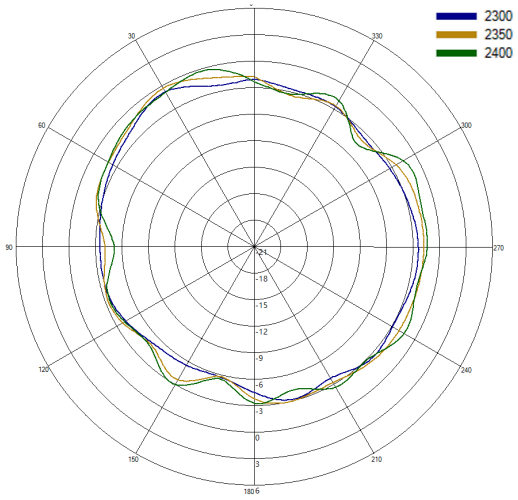
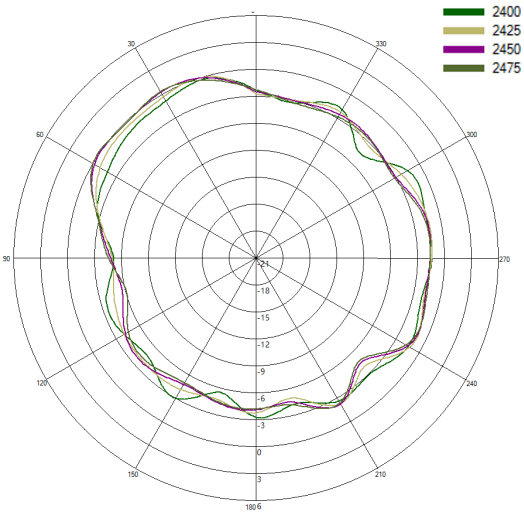
2D Pattern Data on Ground Plane Port 2 H Plane

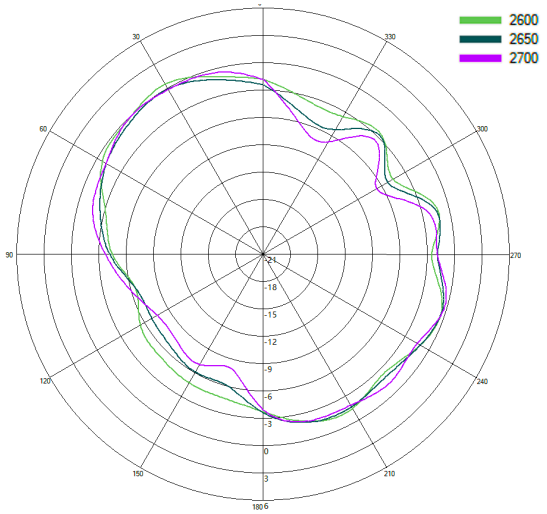
Typical H Plane Pattern - Port 2 2300-2400 MHz



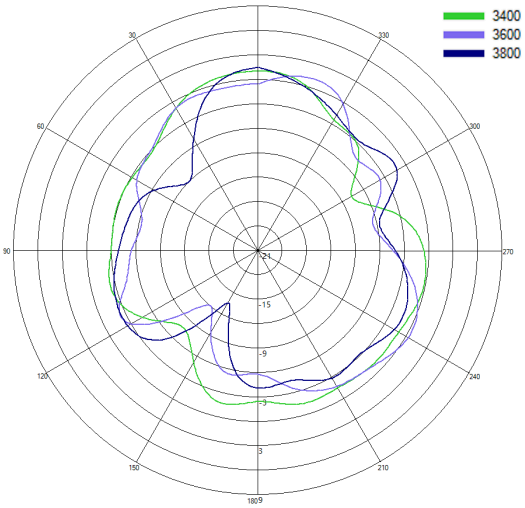
Typical H Plane Pattern - Port 2 2400-2475 MHz



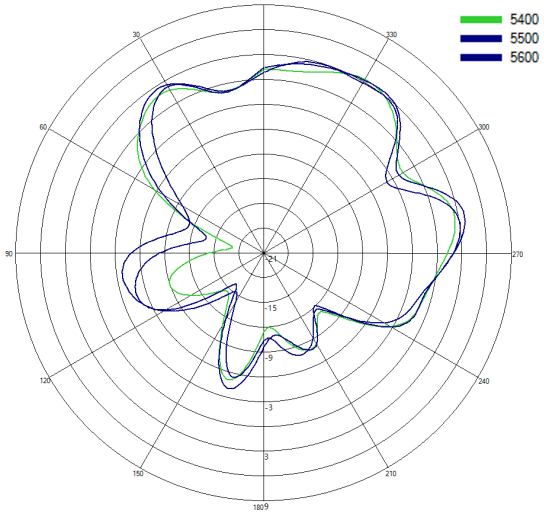
Typical H Plane Pattern - Port 2 2600-2700 MHz



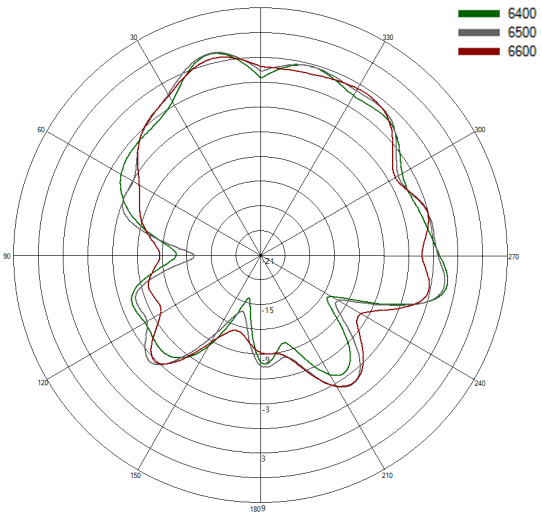
Typical H Plane Pattern - Port 2 3400-3800 MHz



Typical H Plane Pattern - Port 2 5400-5600 MHz



Typical H Plane Pattern - Port 2 6400-6600 MHz



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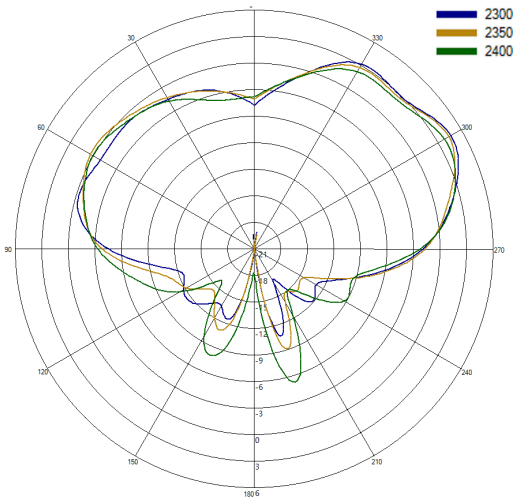
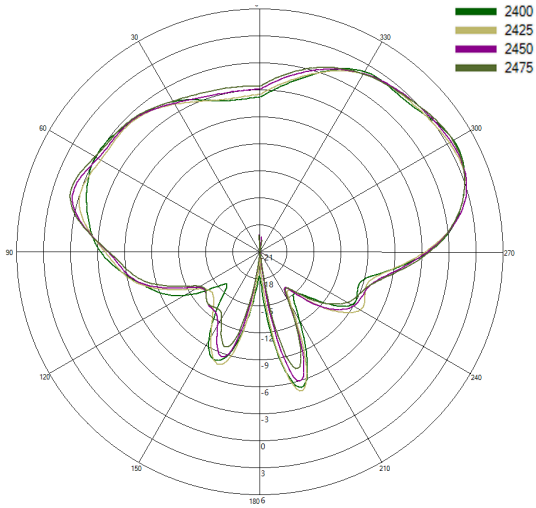
2D Pattern Data on Ground Plane Port 2 E Plane

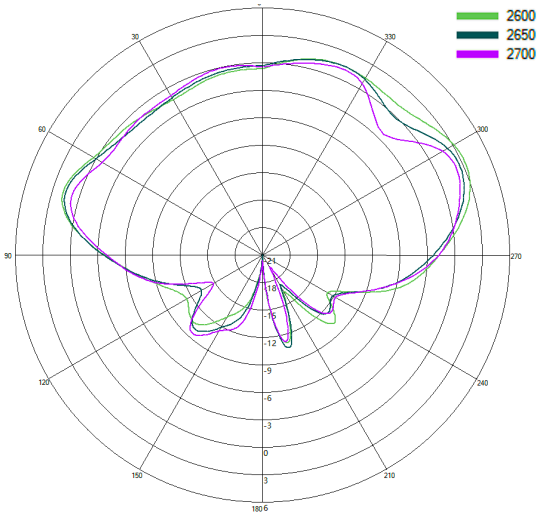
Typical E Plane Pattern - Port 2 2300-2400 MHz



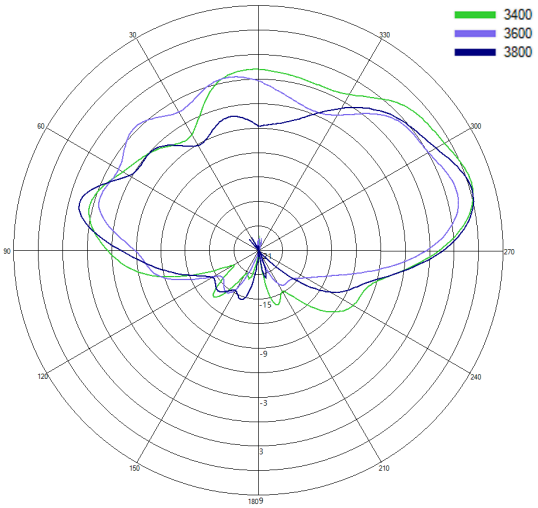
Typical E Plane Pattern - Port 2 2400-2475 MHz



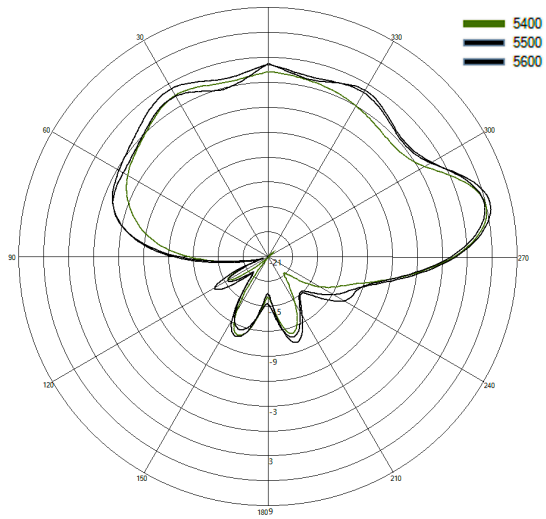
Typical E Plane Pattern - Port 2 2600-2700 MHz



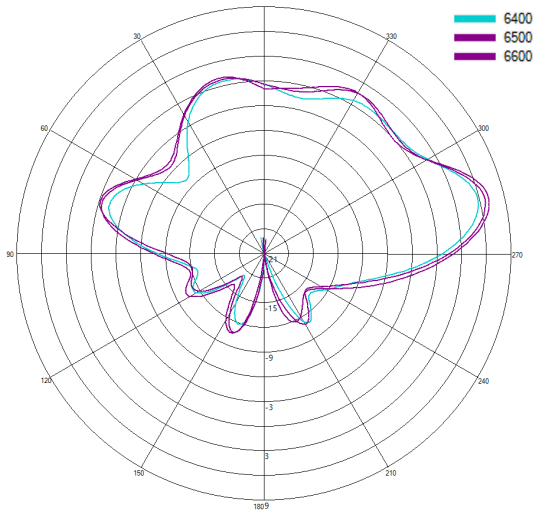
Typical E Plane Pattern - Port 2 3400-3800 MHz



Typical E Plane Pattern - Port 2 5400-5600 MHz



Typical E Plane Pattern - Port 2 6400-6600 MHz



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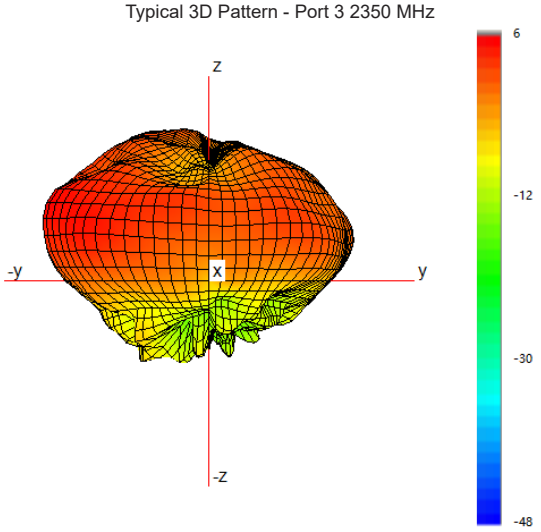
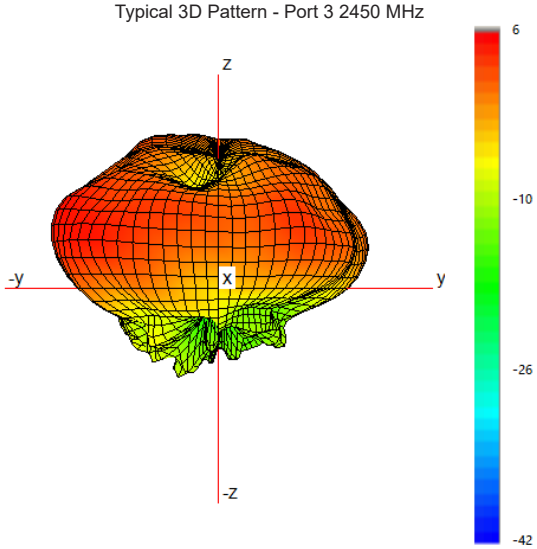
3D Pattern Data on Ground Plane Port 3

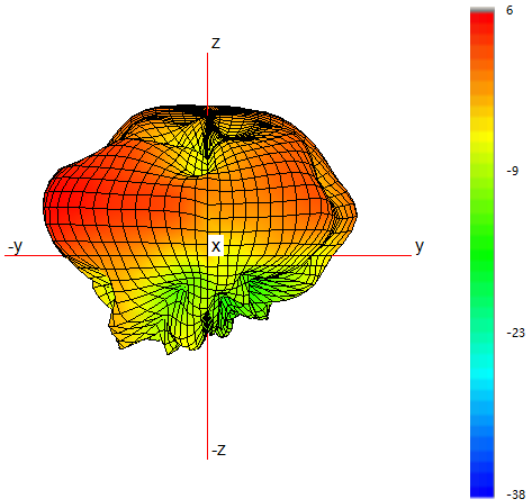
Typical 3D Pattern - Port 3 2350 MHz



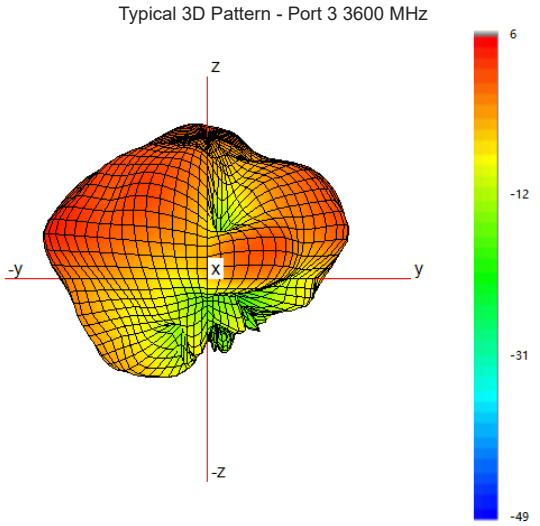
Typical 3D Pattern - Port 3 2450 MHz



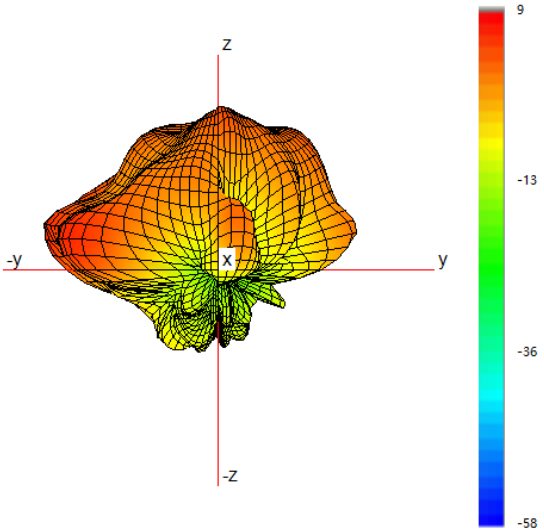
Typical 3D Pattern - Port 3 2650 MHz



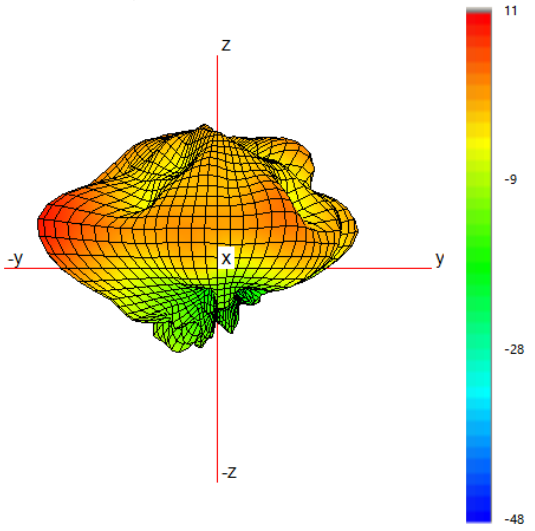
Typical 3D Pattern - Port 3 3600 MHz



Typical 3D Pattern - Port 3 5500 MHz



Typical 3D Pattern - Port 3 6500 MHz



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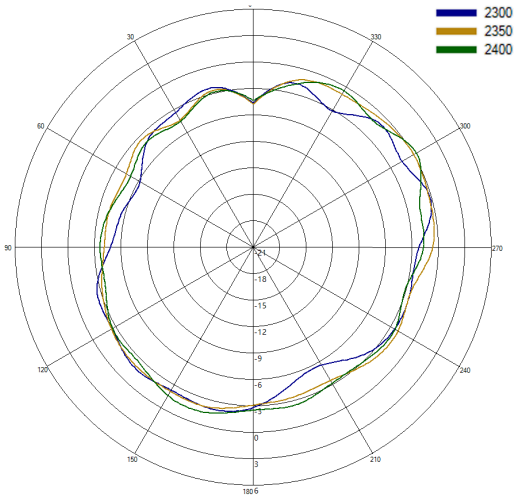
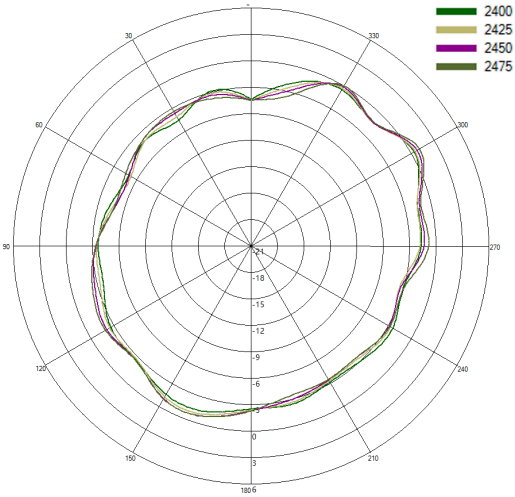
2D Pattern Data on Ground Plane Port 3 H Plane

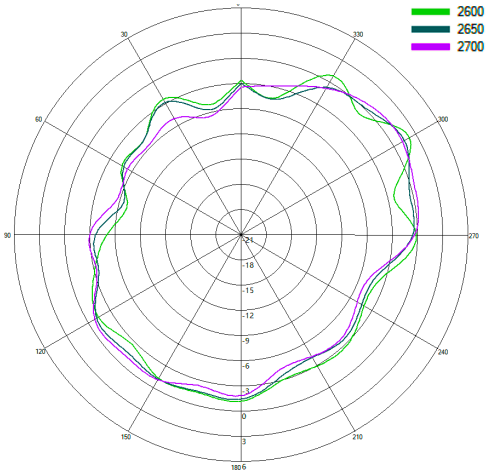
Typical H Plane Pattern - Port 3 2300-2400 MHz



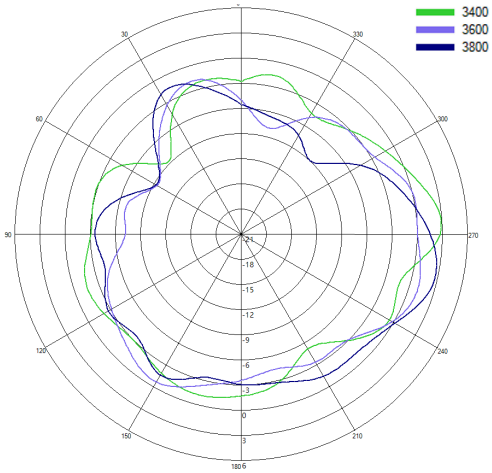
Typical H Plane Pattern - Port 3 2400-2475 MHz



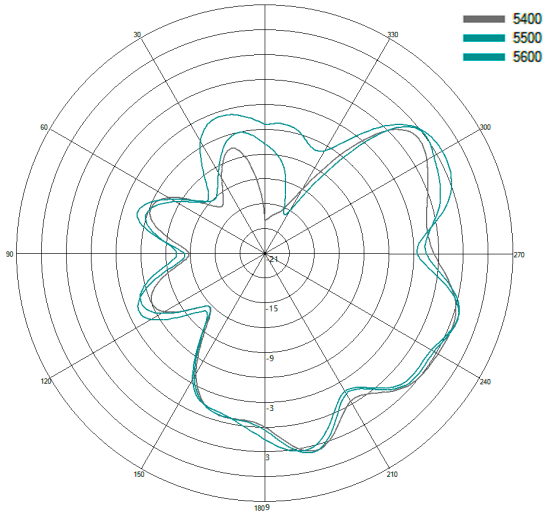
Typical H Plane Pattern - Port 3 2600-2700 MHz



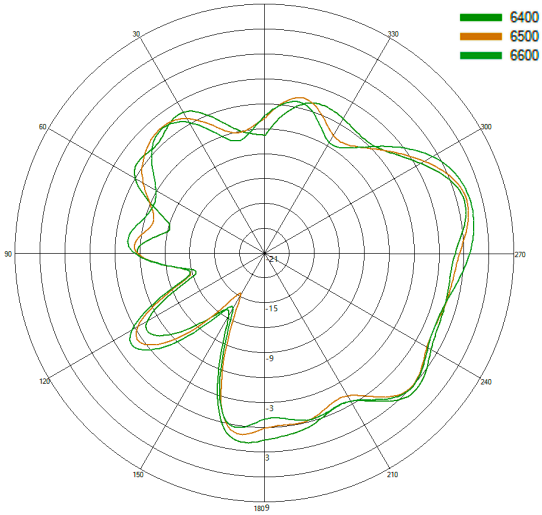
Typical H Plane Pattern - Port 3 3400-3800 MHz



Typical H Plane Pattern - Port 3 5400-5600 MHz



Typical H Plane Pattern - Port 3 6400-6600 MHz



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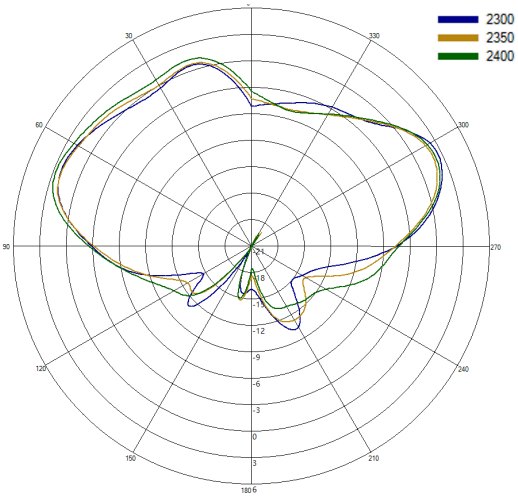
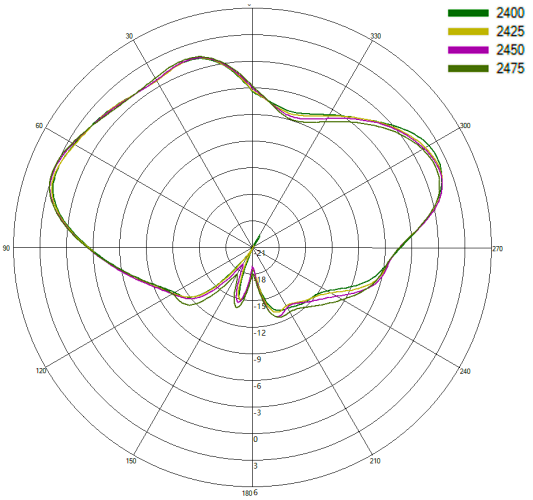
2D Pattern Data on Ground Plane Port 3 E Plane

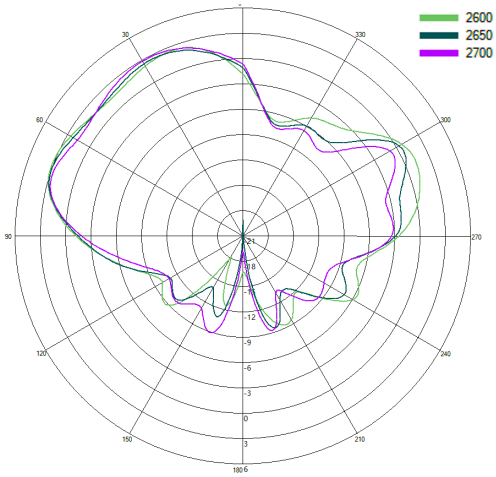
Typical E Plane Pattern - Port 3 2300-2400 MHz



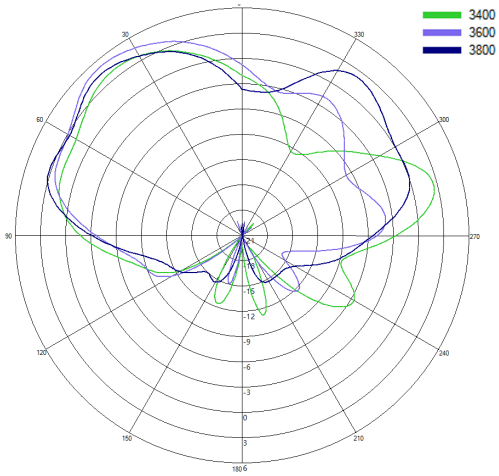
Typical E Plane Pattern - Port 3 2400-2475 MHz



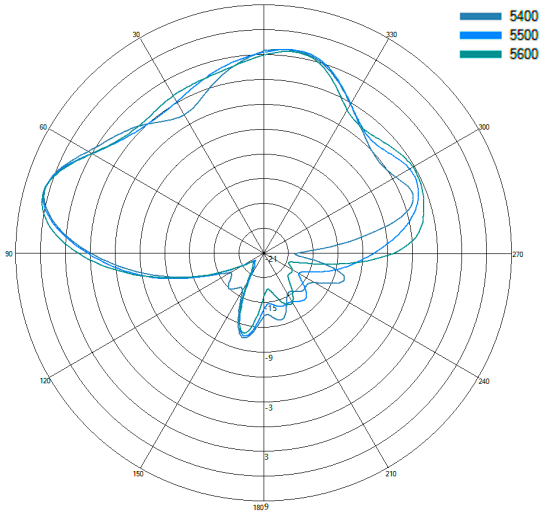
Typical E Plane Pattern - Port 3 2600-2700 MHz



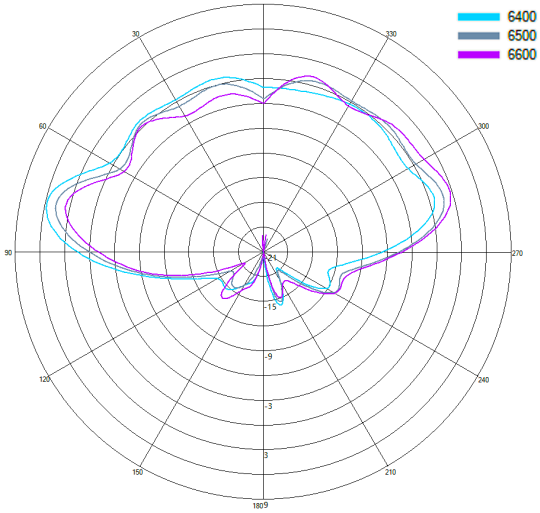
Typical E Plane Pattern - Port 3 3400-3800 MHz



Typical E Plane Pattern - Port 3 5400-5600 MHz



Typical E Plane Pattern - Port 3 6400-6600 MHz



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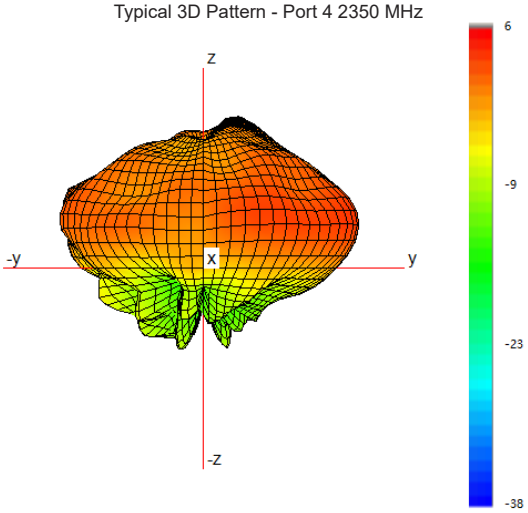
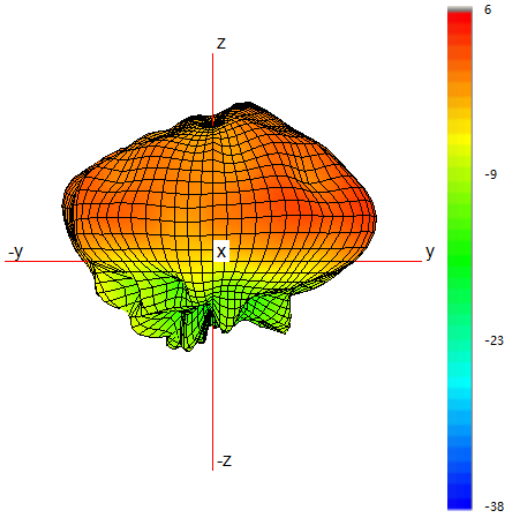
3D Pattern Data on Ground Plane Port 4

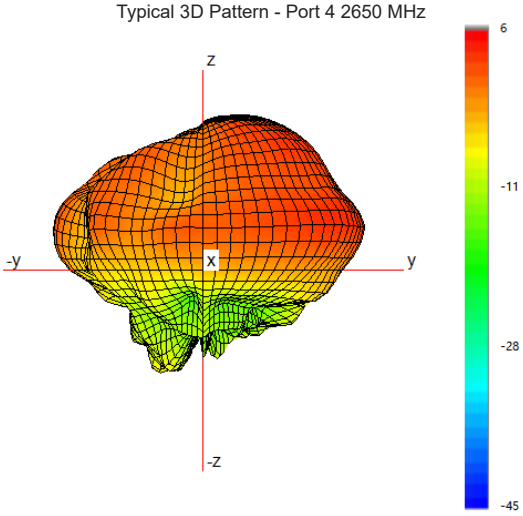
Typical 3D Pattern - Port 4 2350 MHz



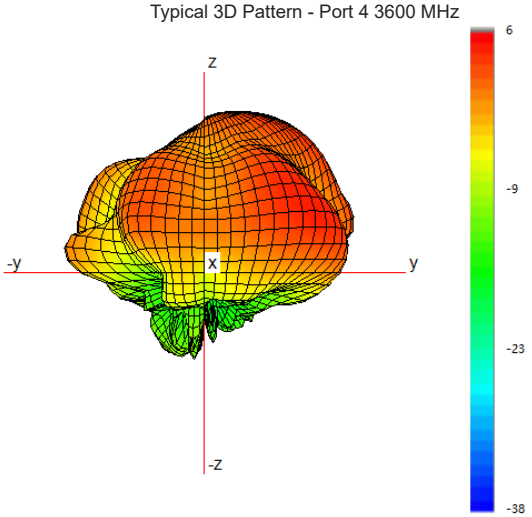
Typical 3D Pattern - Port 4 2450 MHz



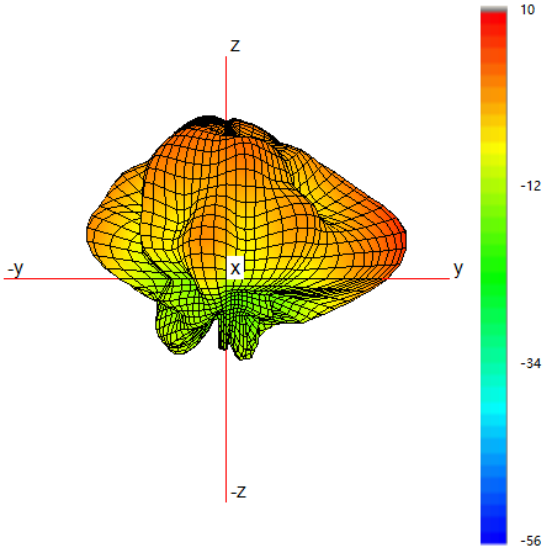
Typical 3D Pattern - Port 4 2650 MHz



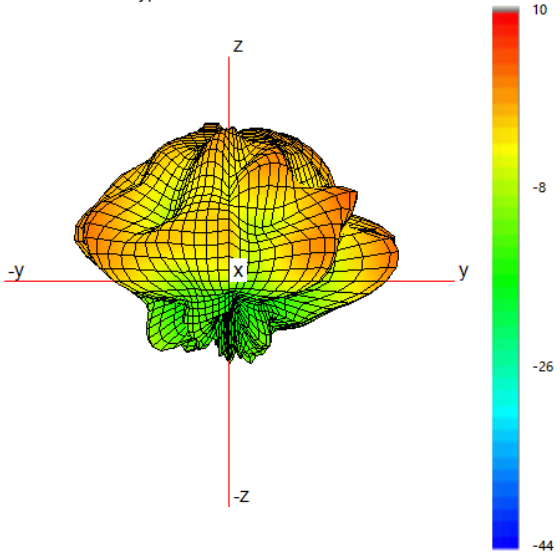
Typical 3D Pattern - Port 4 3600 MHz



Typical 3D Pattern - Port 4 5500 MHz



Typical 3D Pattern - Port 4 6500 MHz



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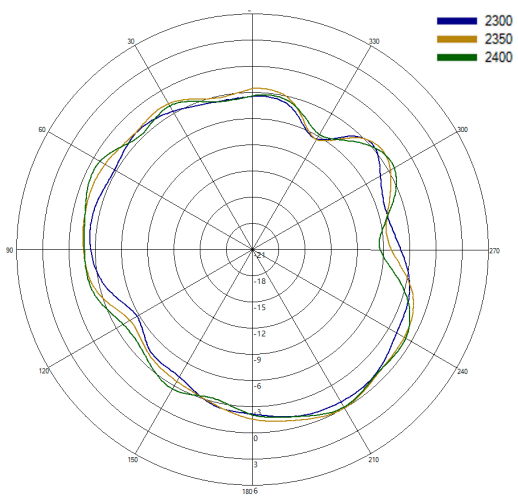
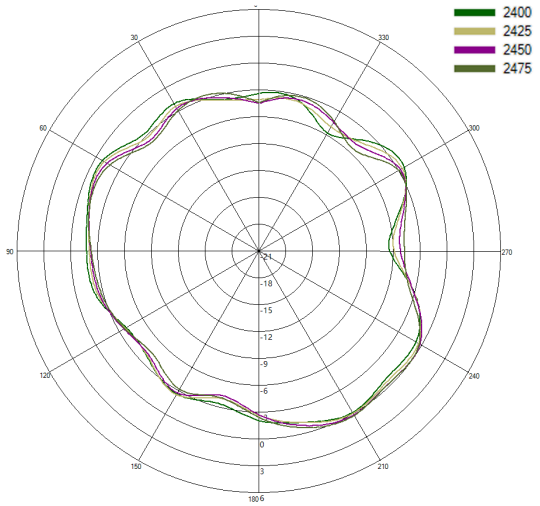
2D Pattern Data on Ground Plane Port 4 H Plane

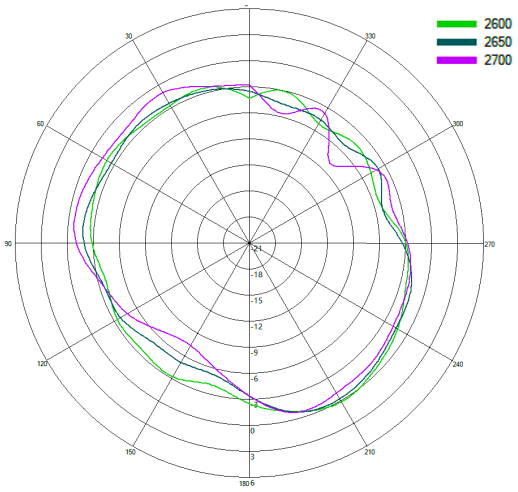
Typical H Plane Pattern - Port 4 2300-2400 MHz



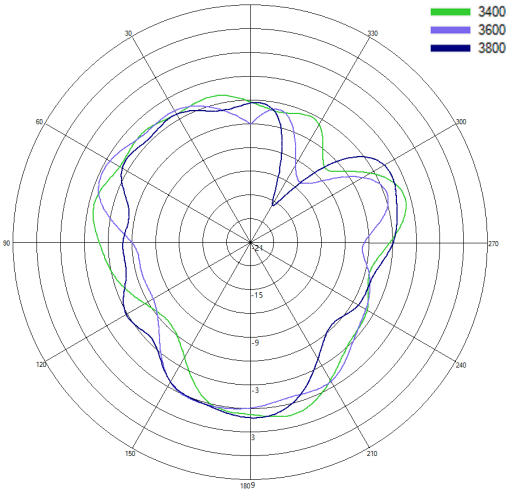
Typical H Plane Pattern - Port 4 2400-2475 MHz



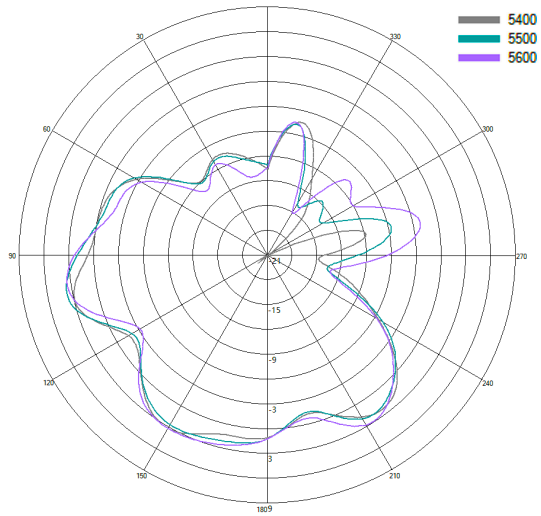
Typical H Plane Pattern - Port 4 2600-2700 MHz



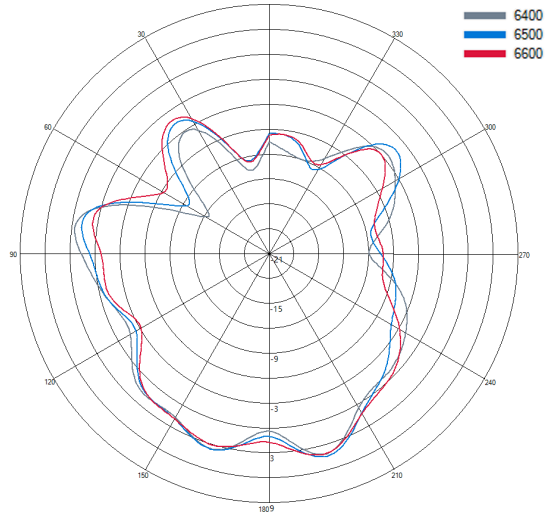
Typical H Plane Pattern - Port 4 3400-3800 MHz



Typical H Plane Pattern - Port 4 5400-5600 MHz



Typical H Plane Pattern - Port 4 6400-6600 MHz



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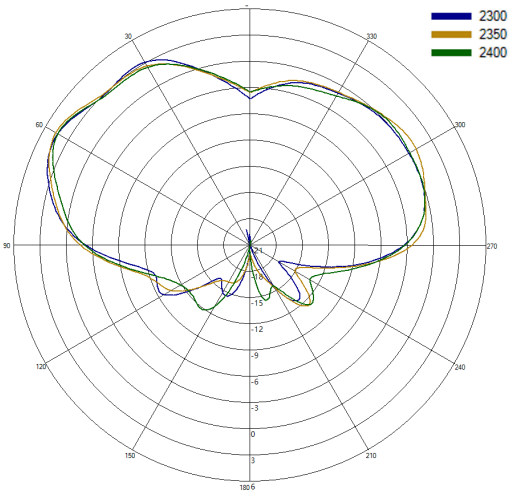
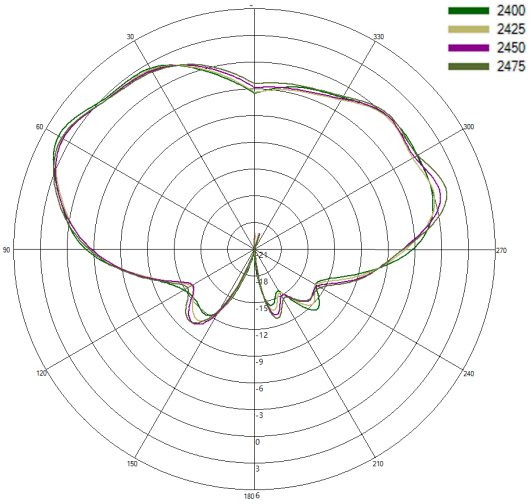
2D Pattern Data on Ground Plane Port 4 E Plane

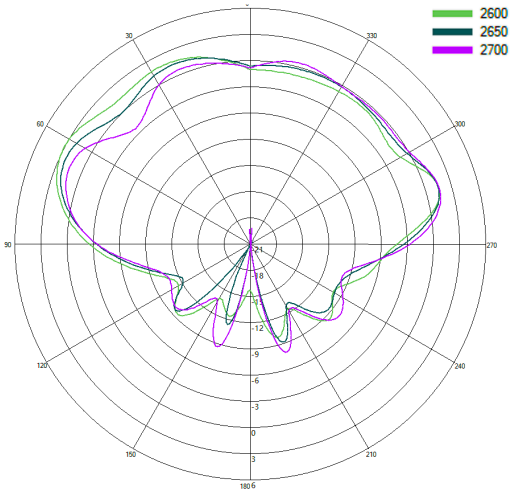
Typical E Plane Pattern - Port 4 2300-2400 MHz



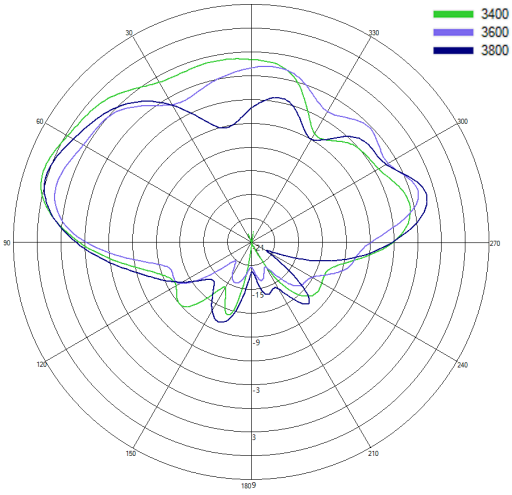
Typical E Plane Pattern - Port 4 2400-2475 MHz



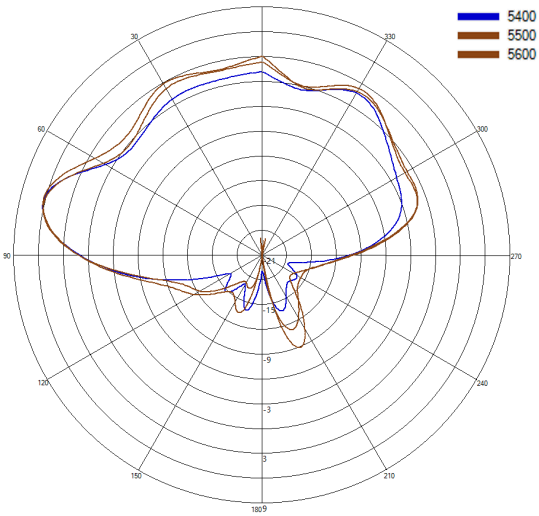
Typical E Plane Pattern - Port 4 2600-2700 MHz



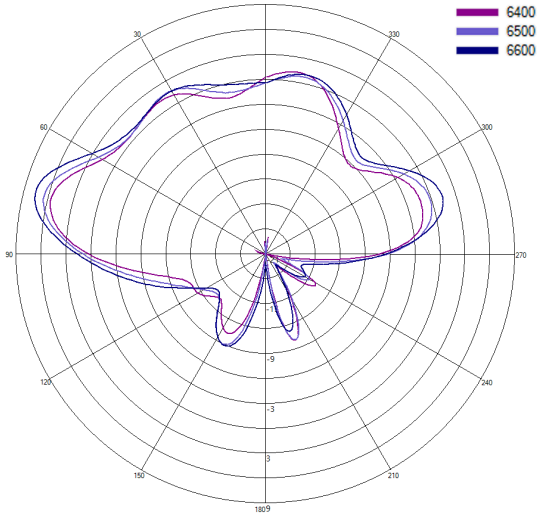
Typical E Plane Pattern - Port 4 3400-3800 MHz



Typical E Plane Pattern - Port 4 5400-5600 MHz



Typical E Plane Pattern - Port 4 6400-6600 MHz



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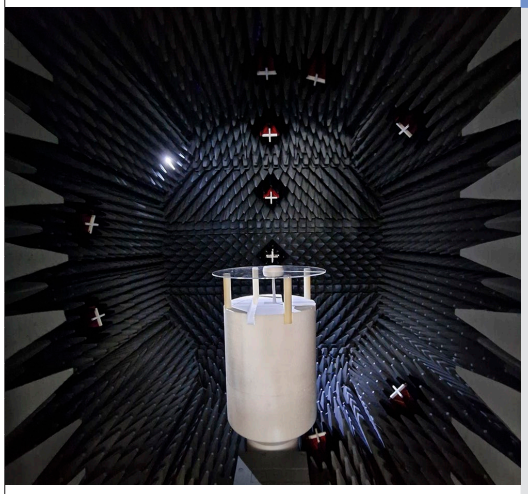
Electrical Data Free Space

Measurement Conditions

In free space with 0.5m (1.5') C32 cables



Ports 1-4 WiFi Bands

Frequency Range (MHz)	WiFi Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
2396-2485	2.4GHz	Port 1	3.4	77
		Port 2	3.1	74
		Port 3	3.1	74
		Port 4	3.4	74
5150-5250	UNII-1	Port 1	4.8	72
		Port 2	6.0	70
		Port 3	6.5	71
		Port 4	6.3	67
5250-5350	UNII-2A	Port 1	5.1	70
		Port 2	5.4	71
		Port 3	6.9	71
		Port 4	6.8	72
5350-5470	UNII-2B	Port 1	5.4	67
		Port 2	6.1	68
		Port 3	7.1	70
		Port 4	7.1	73
5470-5725	UNII-2C	Port 1	5.4	67
		Port 2	6.1	68
		Port 3	7.1	70
		Port 4	7.1	73
5725-5850	UNII-3	Port 1	5.8	66
		Port 2	5.6	66
		Port 3	6.8	70
		Port 4	7.1	72
5850-5925	UNII-4	Port 1	5.9	65
		Port 2	5.6	71
		Port 3	6.3	71
		Port 4	6.9	69
5925-6425	UNII-5	Port 1	5.9	62
		Port 2	6.3	67
		Port 3	6.9	72
		Port 4	6.9	70
6425-6525	UNII-6	Port 1	5.4	65
		Port 2	6.3	67
		Port 3	6.5	71
		Port 4	6.5	66
6525-6875	UNII-7	Port 1	5.9	70
		Port 2	6.8	67
		Port 3	6.7	72
		Port 4	6.6	67
6875-7125	UNII-8	Port 1	5.8	73
		Port 2	5.9	67
		Port 3	6.8	69
		Port 4	6.2	64

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Measurement Conditions

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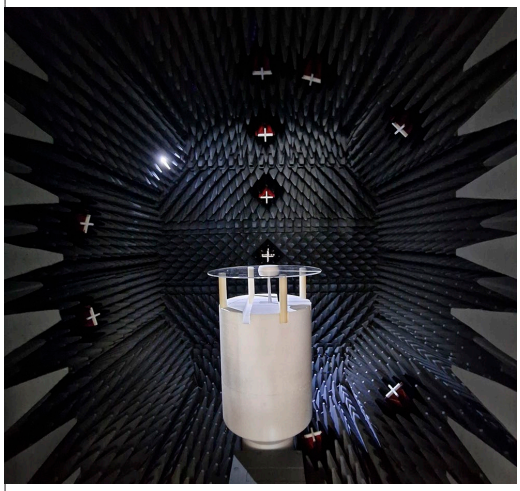

Ports 1-4 Cellular Bands

Frequency Range (MHz)	LTE Bands	Antenna Element	Peak Gain (dBi)	Efficiency (%)
2300-2400	30,40	Port 1	2.5	74
		Port 2	3.1	73
		Port 3	2.6	73
		Port 4	2.9	72
2496-2690	7,38,41	Port 1	3.7	78
		Port 2	3.6	74
		Port 3	3.7	76
		Port 4	3.7	73
3300-4200	22,42,43,48,77, 78	Port 1	5.3	77
		Port 2	5.9	77
		Port 3	5.2	77
		Port 4	4.7	75
4400-5000	79	Port 1	5.8	80
		Port 2	5.9	70
		Port 3	5.9	78
		Port 4	6.1	75
5925-7125	96, 102,104	Port 1	5.9	67
		Port 2	6.8	67
		Port 3	6.9	71
		Port 4	6.9	68

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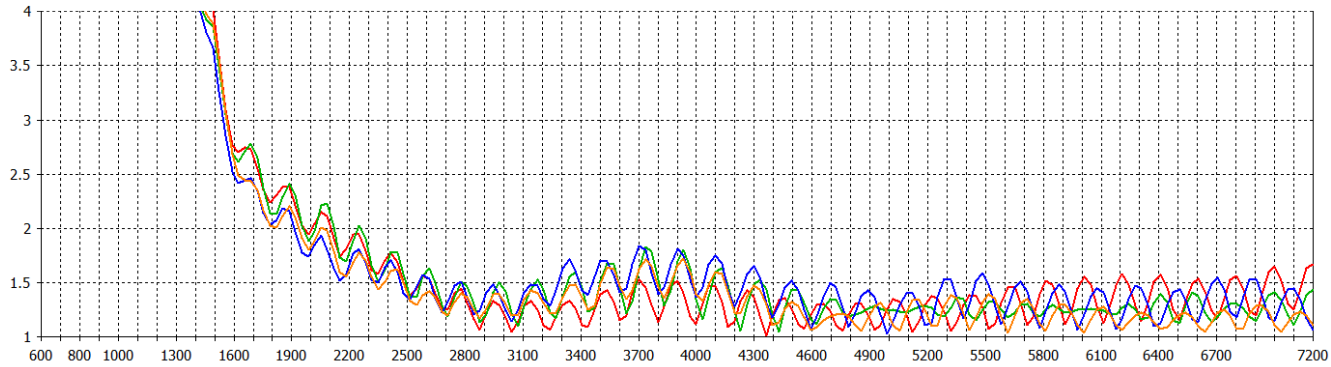
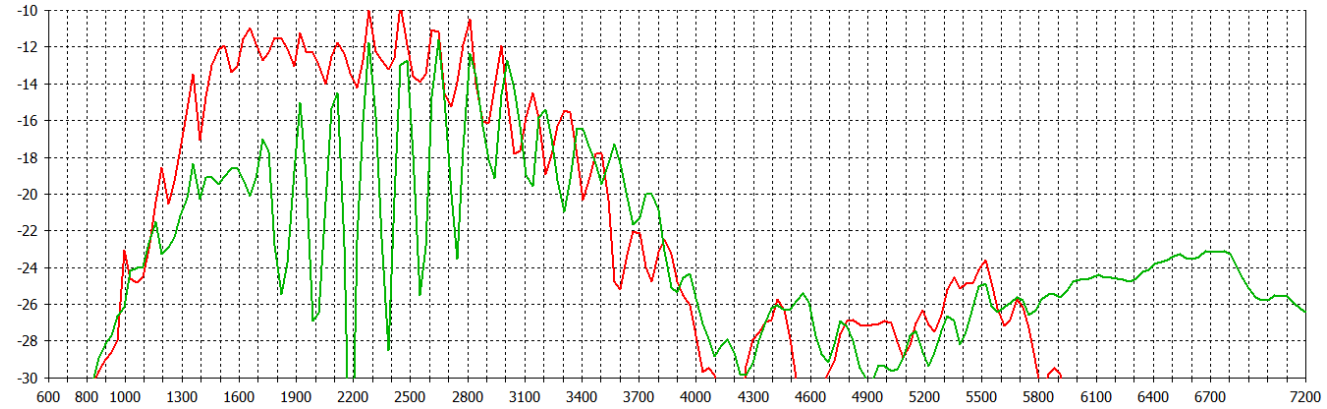
Electrical Data Free Space

Typical VSWR - Elements 1-4

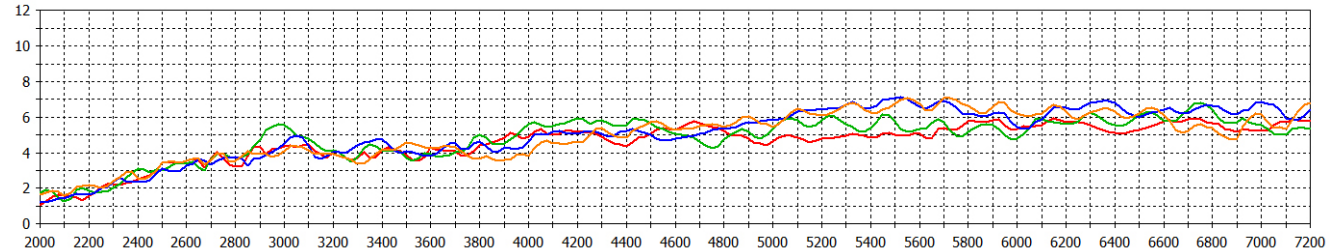


Typical Isolation*

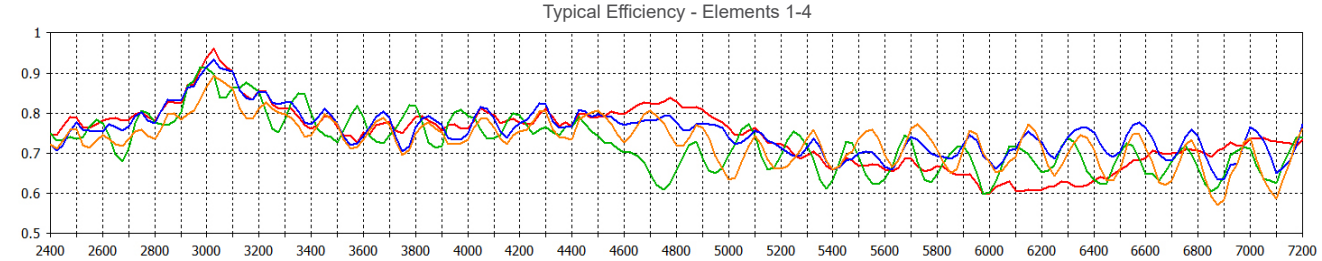


*Green plot = opposite elements Red plot = adjacent elements

Typical Swept Peak Gain - Elements 1-4



Typical Efficiency - Elements 1-4



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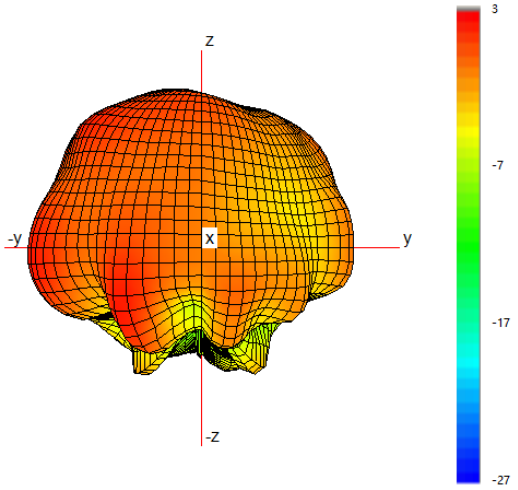
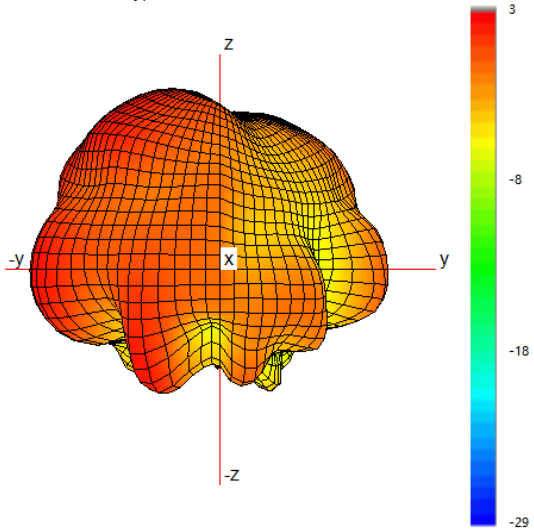
3D Pattern Data in Free Space Port 1

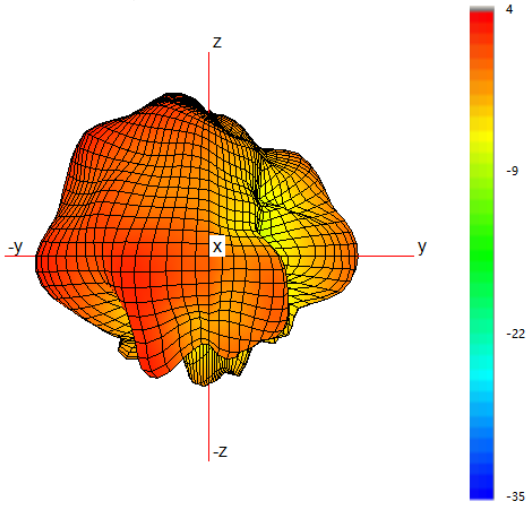
Typical 3D Pattern - Port 1 2350 MHz



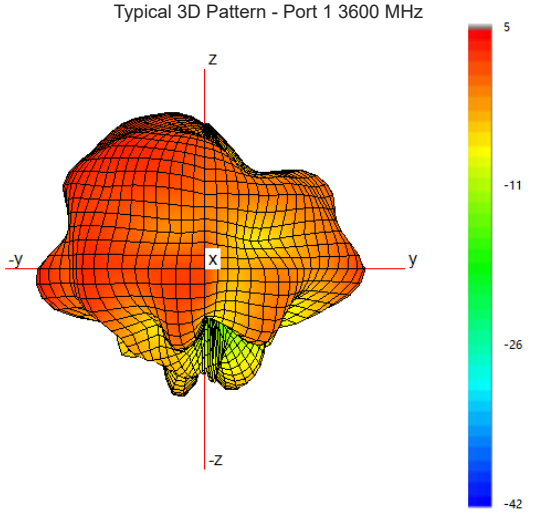
Typical 3D Pattern - Port 1 2450 MHz



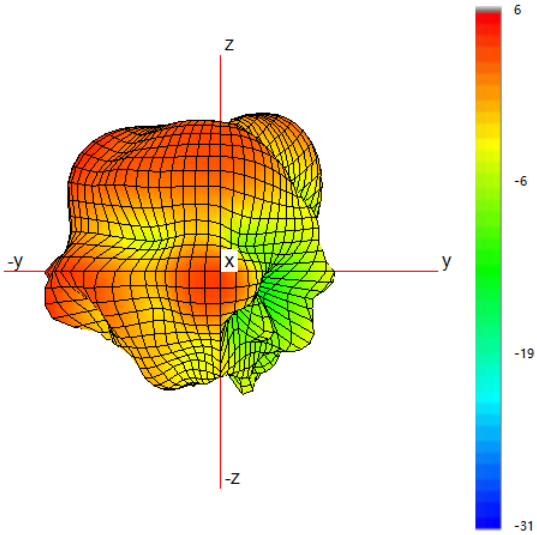
Typical 3D Pattern - Port 1 2650 MHz



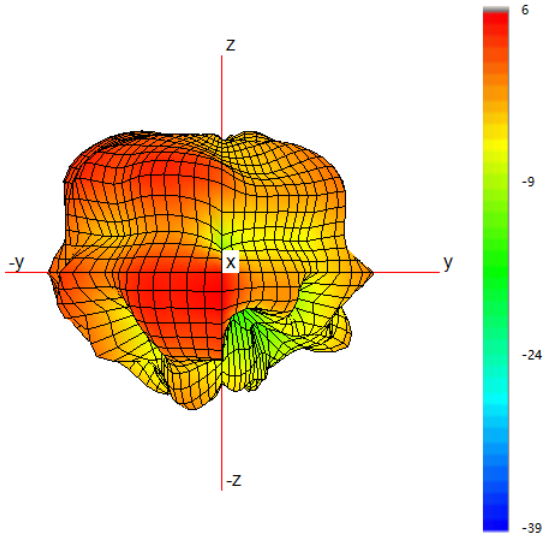
Typical 3D Pattern - Port 1 3600 MHz



Typical 3D Pattern - Port 1 5500 MHz



Typical 3D Pattern - Port 1 6500 MHz



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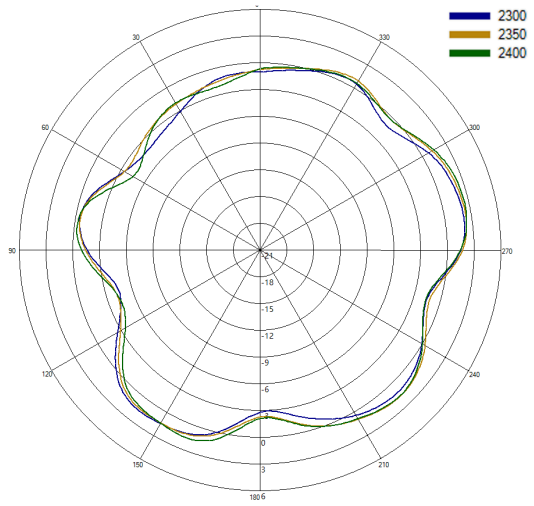
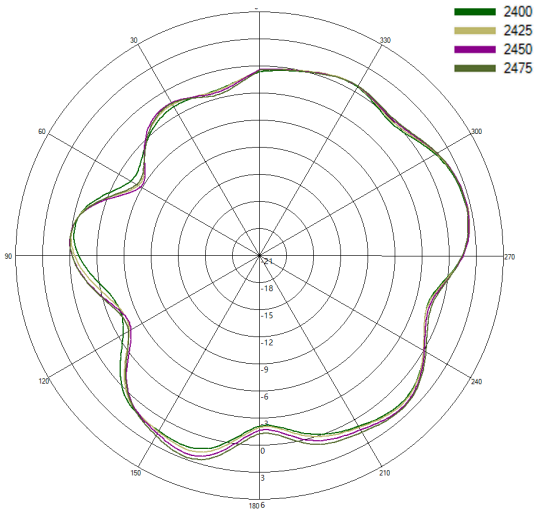
2D Pattern Data in Free Space Port 1 H Plane

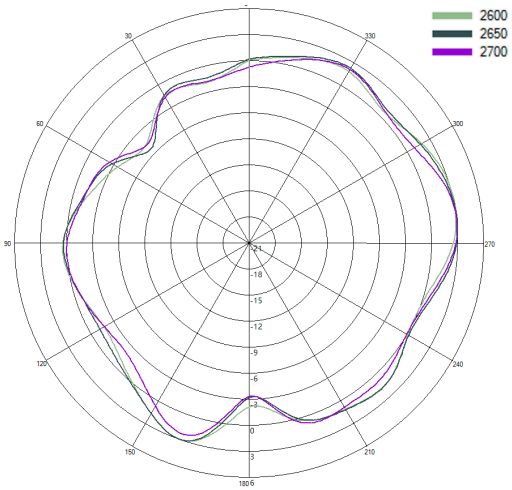
Typical H Plane Pattern - Port 1 2300-2400 MHz



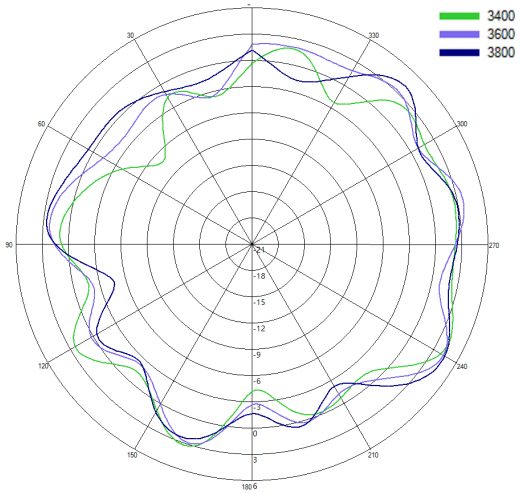
Typical H Plane Pattern - Port 1 2400-2475 MHz



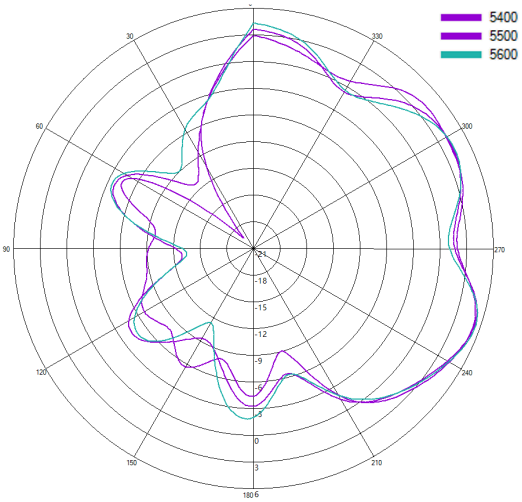
Typical H Plane Pattern - Port 1 2600-2700 MHz



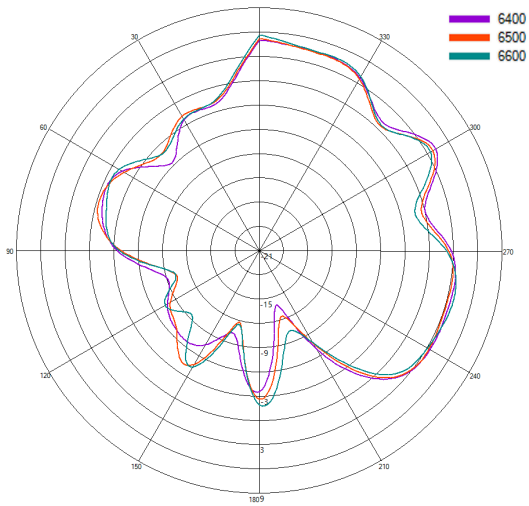
Typical H Plane Pattern - Port 1 3400-3800 MHz



Typical H Plane Pattern - Port 1 5400-5600 MHz



Typical H Plane Pattern - Port 1 6400-6600 MHz



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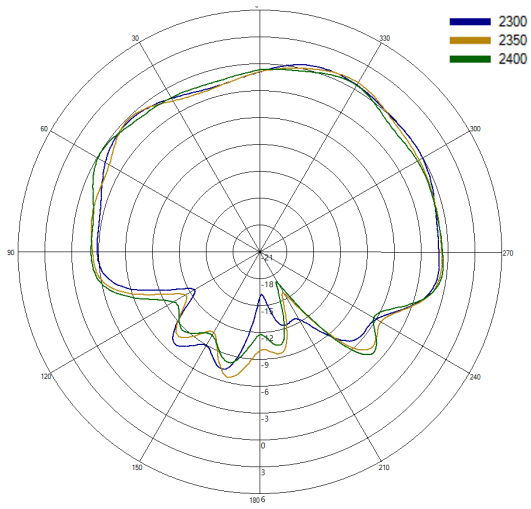
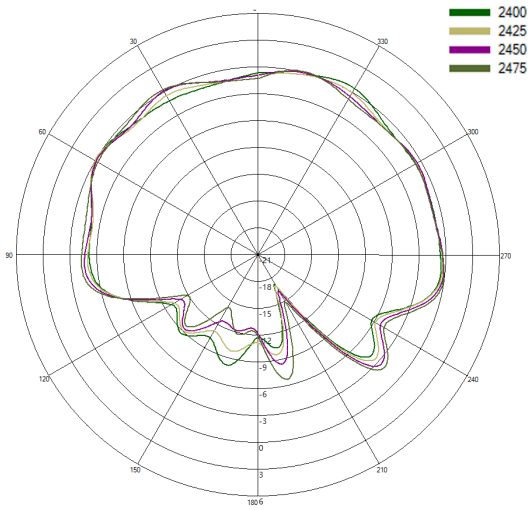
2D Pattern Data in Free Space Port 1 E Plane

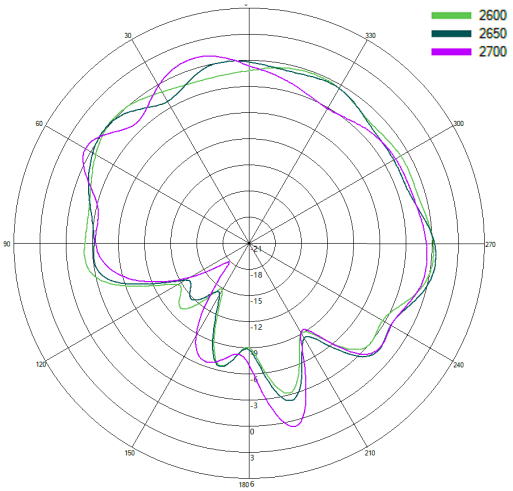
Typical E Plane Pattern - Port 1 2300-2400 MHz



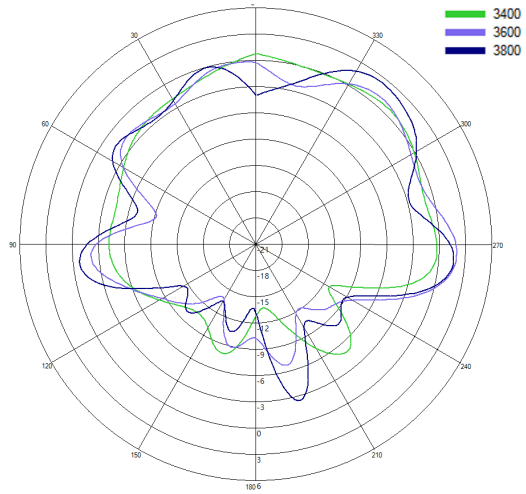
Typical E Plane Pattern - Port 1 2400-2475 MHz



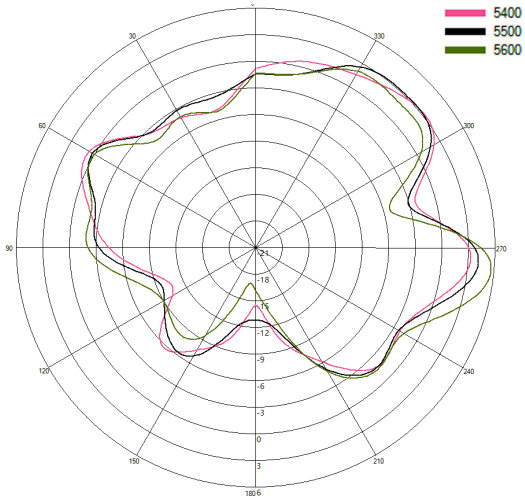
Typical E Plane Pattern - Port 1 2600-2700 MHz



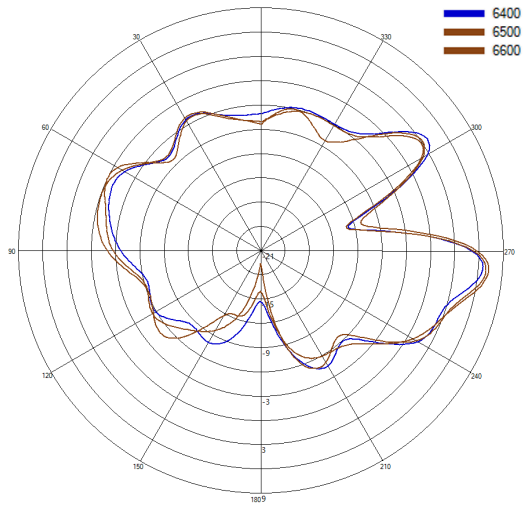
Typical E Plane Pattern - Port 1 3400-3800 MHz



Typical E Plane Pattern - Port 1 5400-5600 MHz



Typical E Plane Pattern - Port 1 6400-6600 MHz



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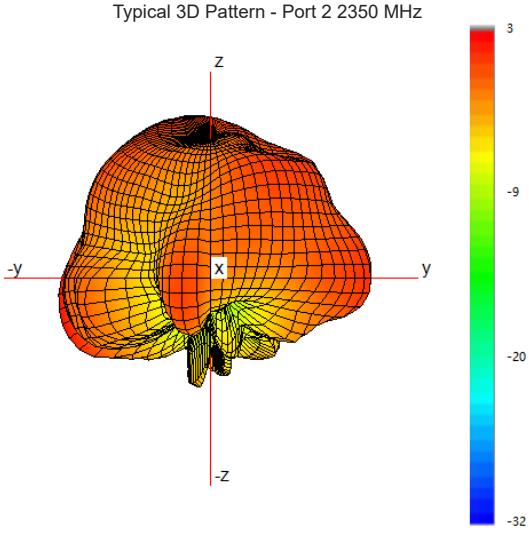
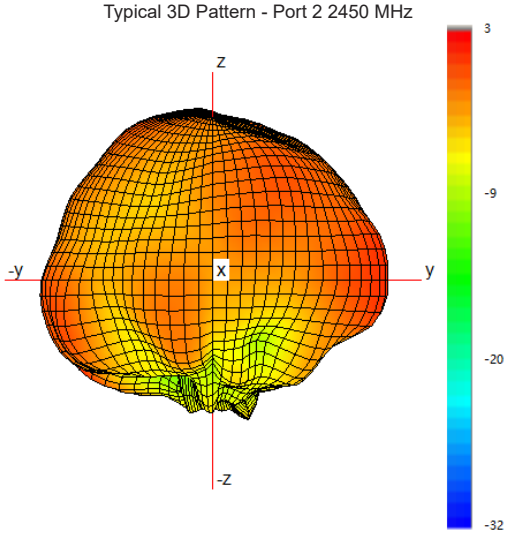
3D Pattern Data in Free Space Port 2

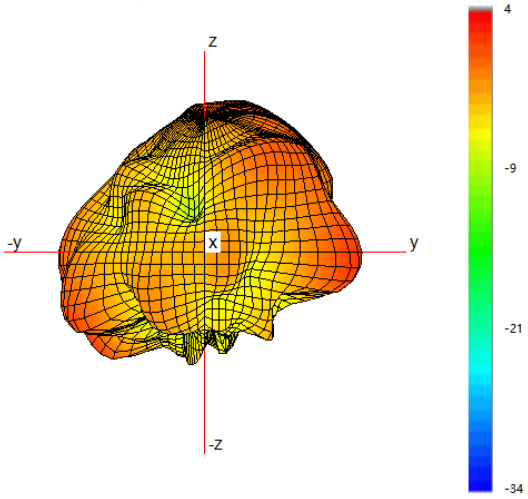
Typical 3D Pattern - Port 2 2350 MHz



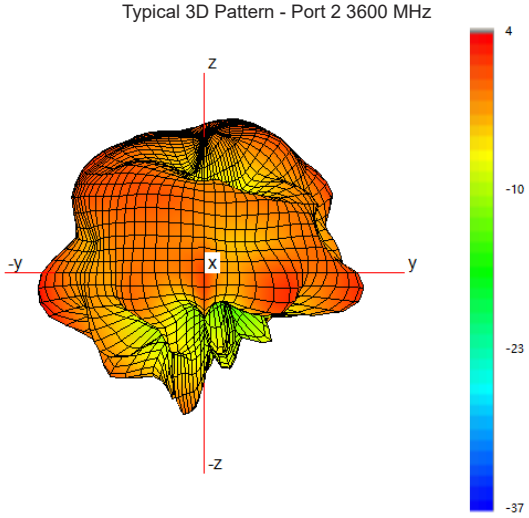
Typical 3D Pattern - Port 2 2450 MHz



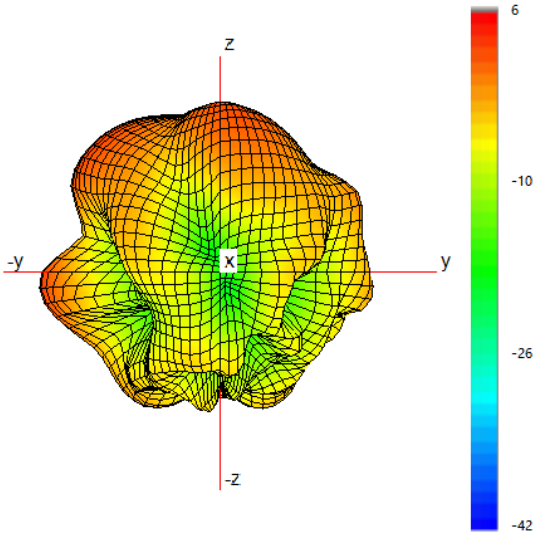
Typical 3D Pattern - Port 2 2650 MHz



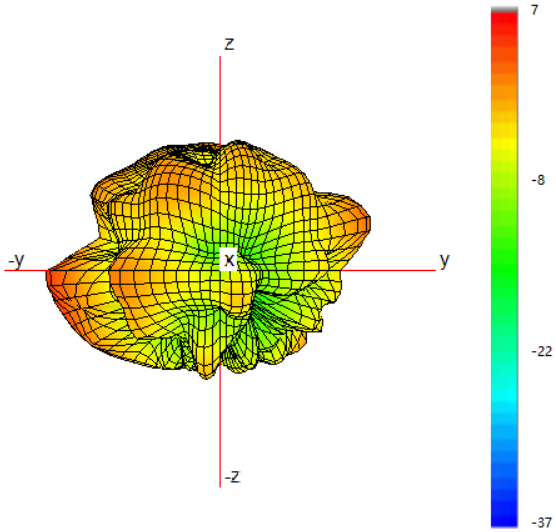
Typical 3D Pattern - Port 2 3600 MHz



Typical 3D Pattern - Port 2 5500 MHz



Typical 3D Pattern - Port 2 6500 MHz



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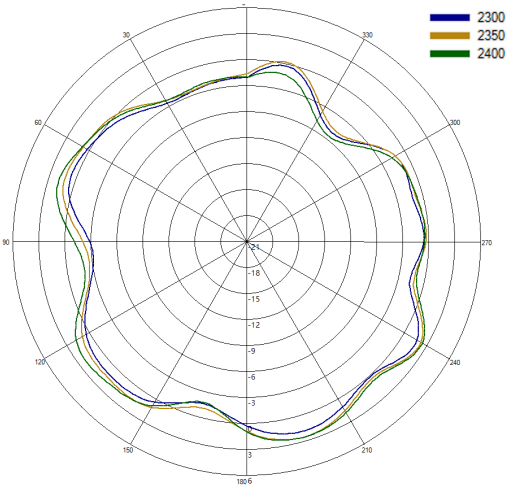
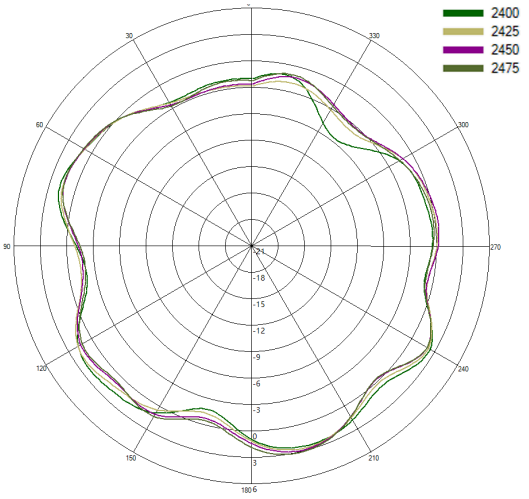
2D Pattern Data in Free Space Port 2 H Plane

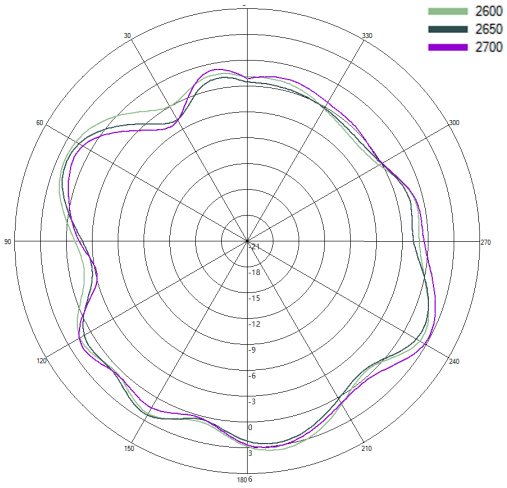
Typical H Plane Pattern - Port 2 2300-2400 MHz



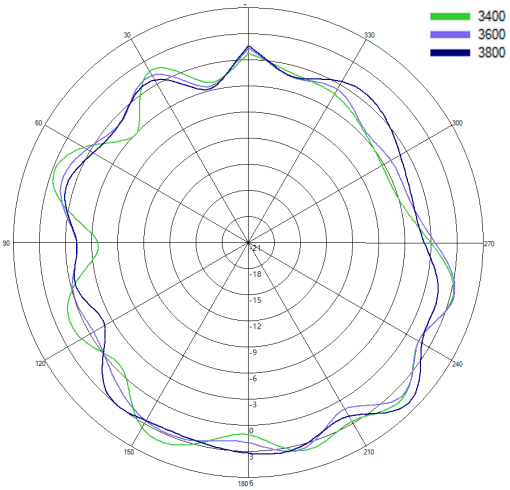
Typical H Plane Pattern - Port 2 2400-2475 MHz



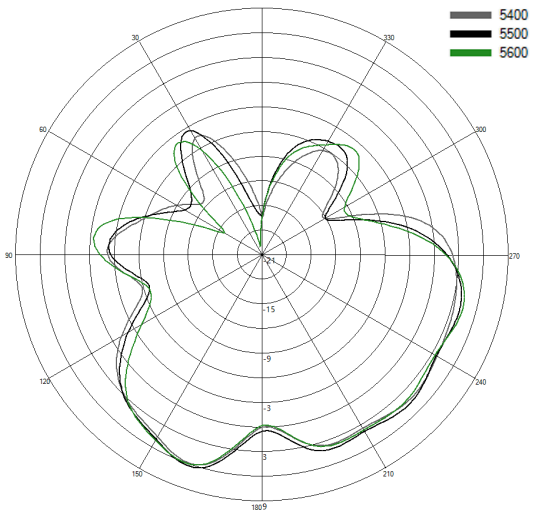
Typical H Plane Pattern - Port 2 2600-2700 MHz



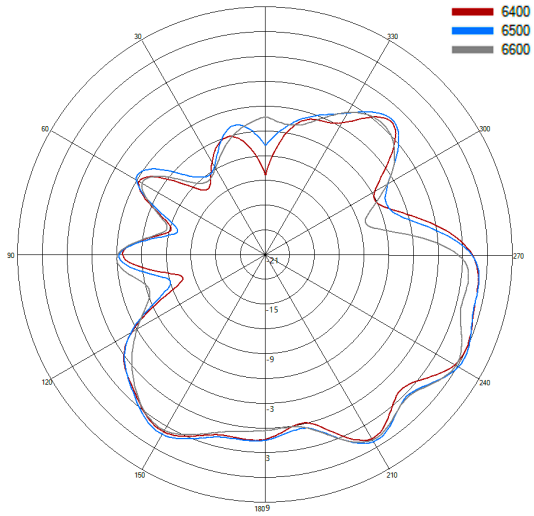
Typical H Plane Pattern - Port 2 3400-3800 MHz



Typical H Plane Pattern - Port 2 5400-5600 MHz



Typical H Plane Pattern - Port 2 6400-6600 MHz



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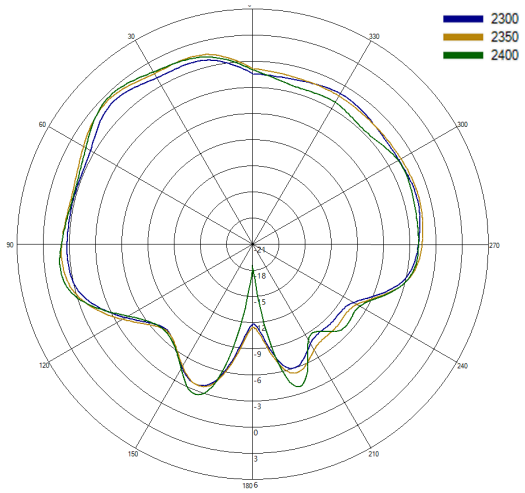
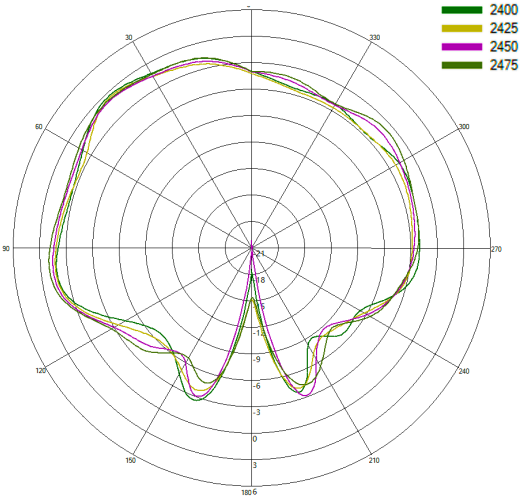
2D Pattern Data in Free Space Port 2 E Plane

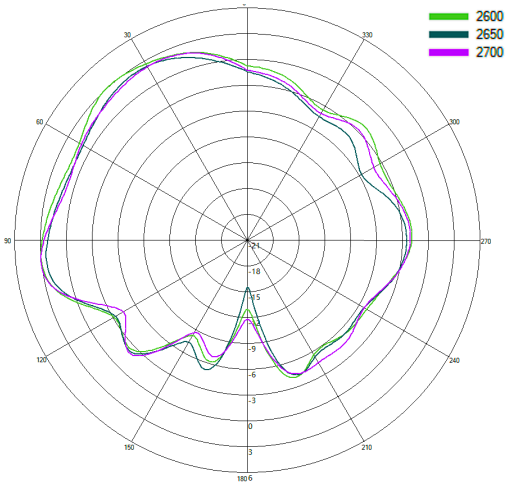
Typical E Plane Pattern - Port 2 2300-2400 MHz



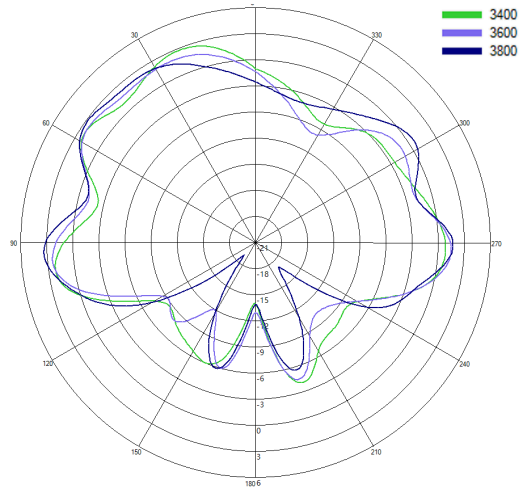
Typical E Plane Pattern - Port 2 2400-2475 MHz



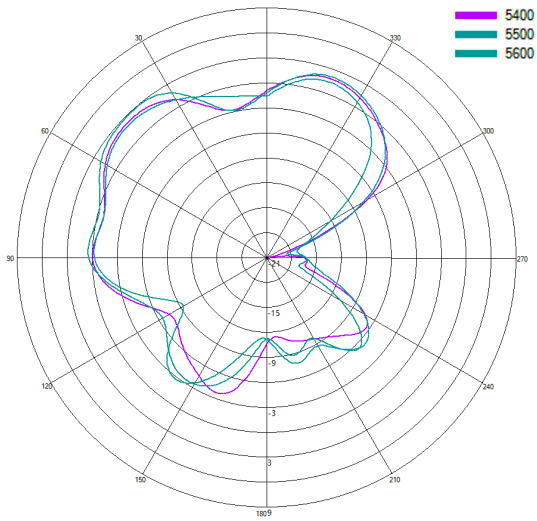
Typical E Plane Pattern - Port 2 2600-2700 MHz



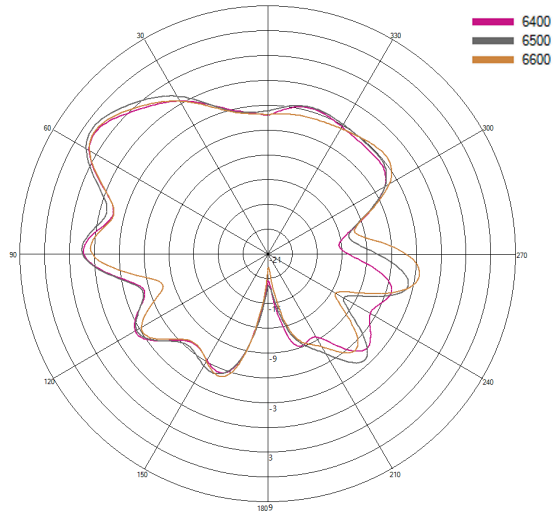
Typical E Plane Pattern - Port 2 3400-3800 MHz



Typical E Plane Pattern - Port 2 5400-5600 MHz



Typical E Plane Pattern - Port 2 6400-6600 MHz



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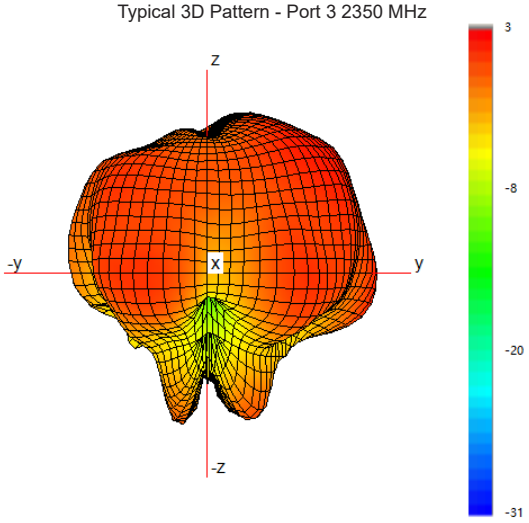
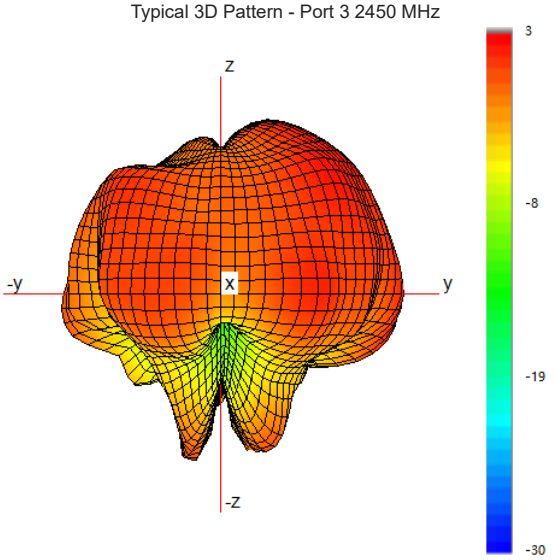
3D Pattern Data in Free Space Port 3

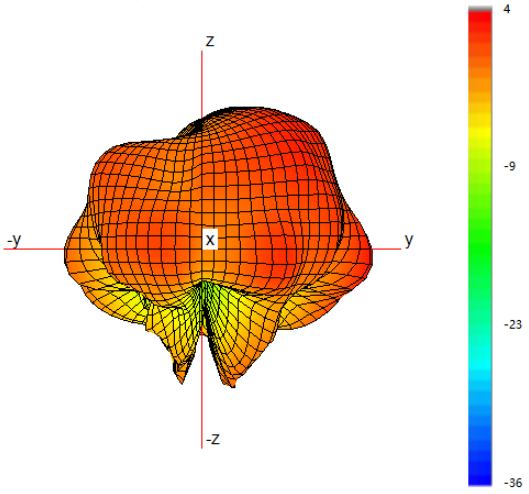
Typical 3D Pattern - Port 3 2350 MHz



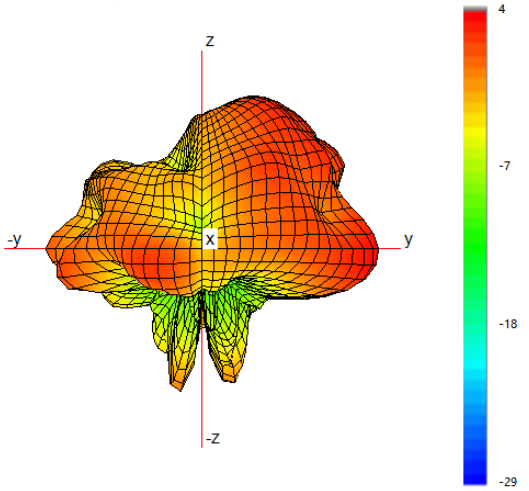
Typical 3D Pattern - Port 3 2450 MHz



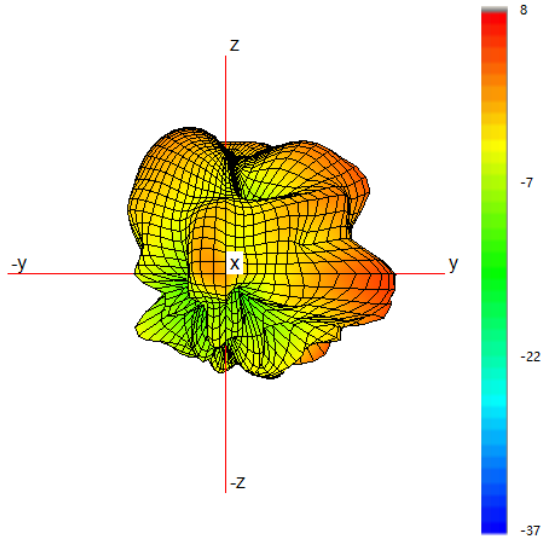
Typical 3D Pattern - Port 3 2650 MHz



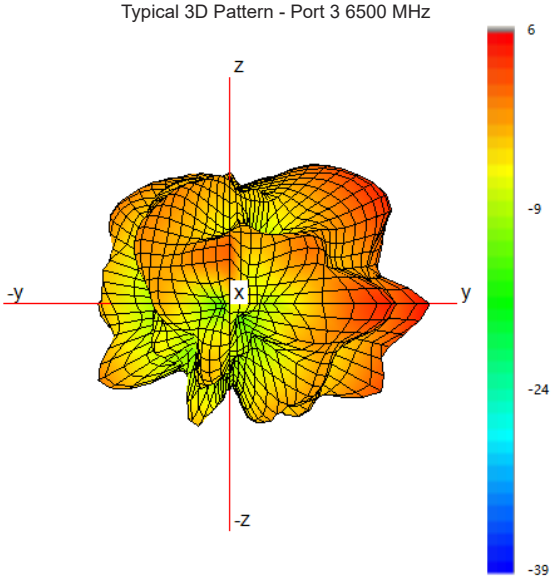
Typical 3D Pattern - Port 3 3600 MHz



Typical 3D Pattern - Port 3 5500 MHz



Typical 3D Pattern - Port 3 6500 MHz



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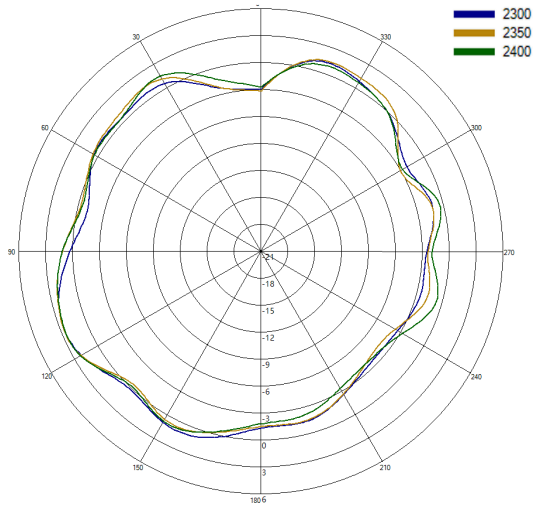
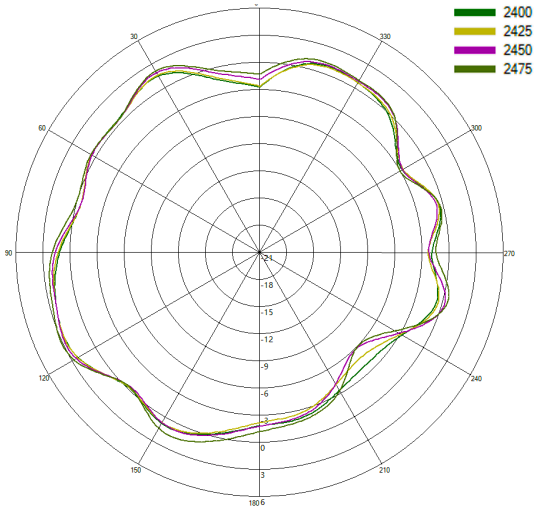
2D Pattern Data in Free Space Port 3 H Plane

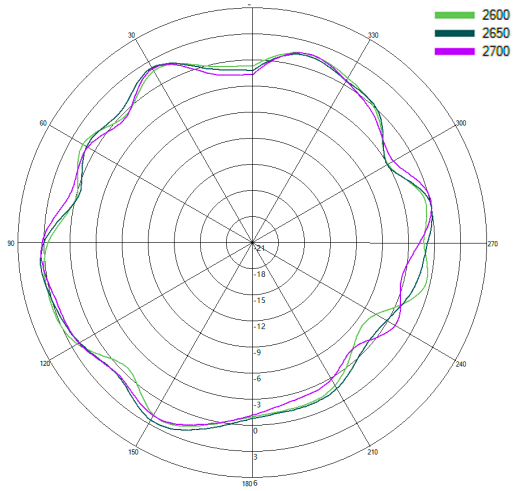
Typical H Plane Pattern - Port 3 2300-2400 MHz



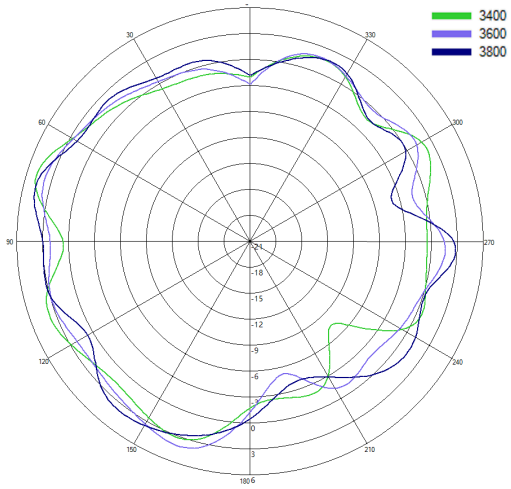
Typical H Plane Pattern - Port 3 2400-2475 MHz



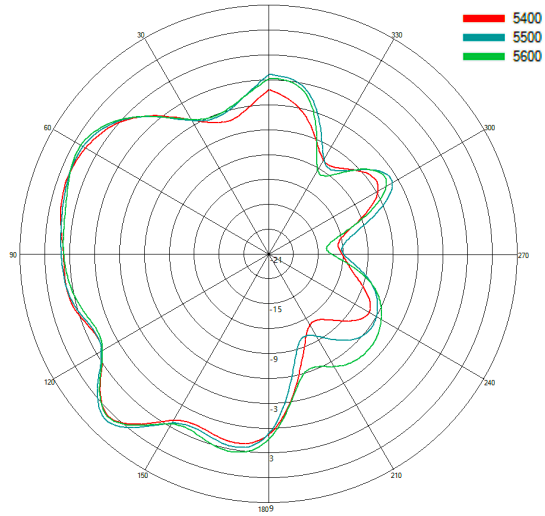
Typical H Plane Pattern - Port 3 2600-2700 MHz



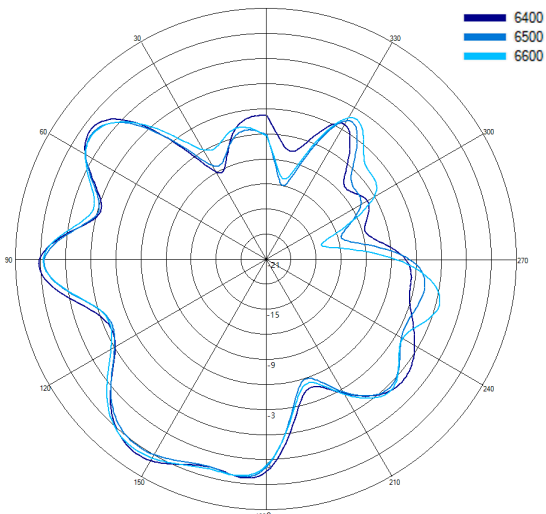
Typical H Plane Pattern - Port 3 3400-3800 MHz



Typical H Plane Pattern - Port 3 5400-5600 MHz



Typical H Plane Pattern - Port 3 6400-6600 MHz



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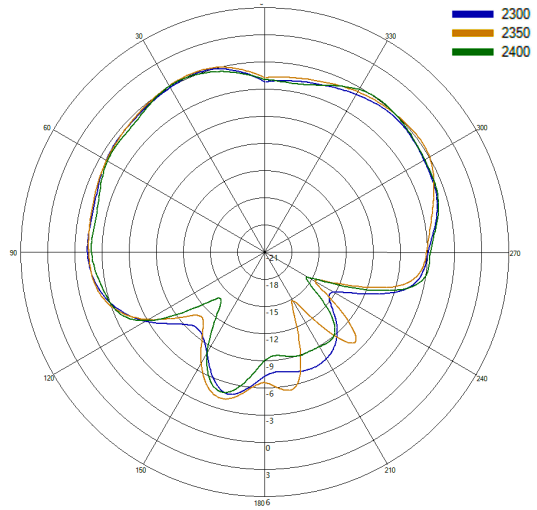
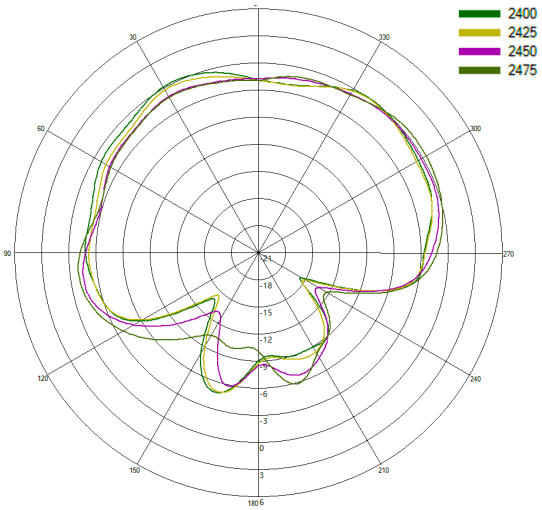
2D Pattern Data in Free Space Port 3 E Plane

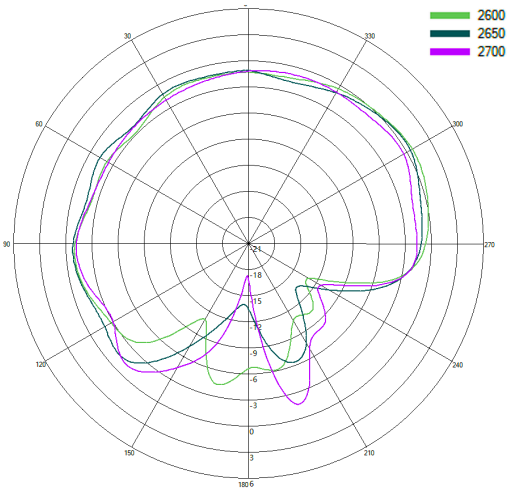
Typical E Plane Pattern - Port 3 2300-2400 MHz



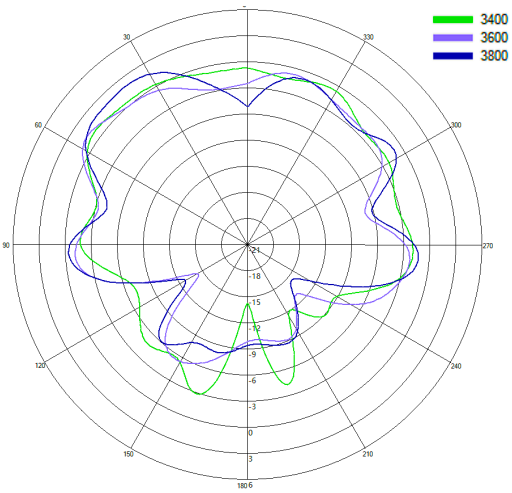
Typical E Plane Pattern - Port 3 2400-2475 MHz



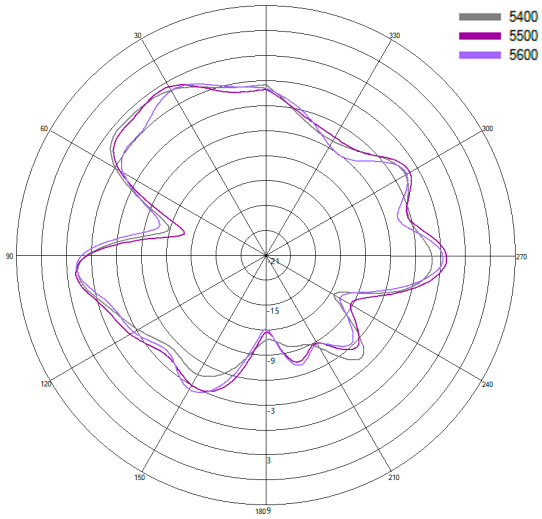
Typical E Plane Pattern - Port 3 2600-2700 MHz



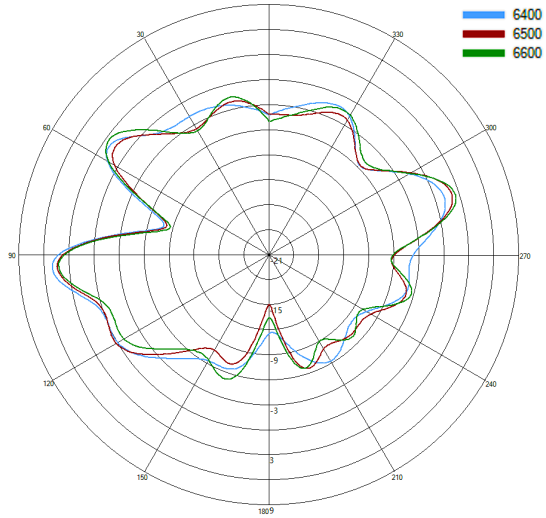
Typical E Plane Pattern - Port 3 3400-3800 MHz



Typical E Plane Pattern - Port 3 5400-5600 MHz



Typical E Plane Pattern - Port 3 6400-6600 MHz



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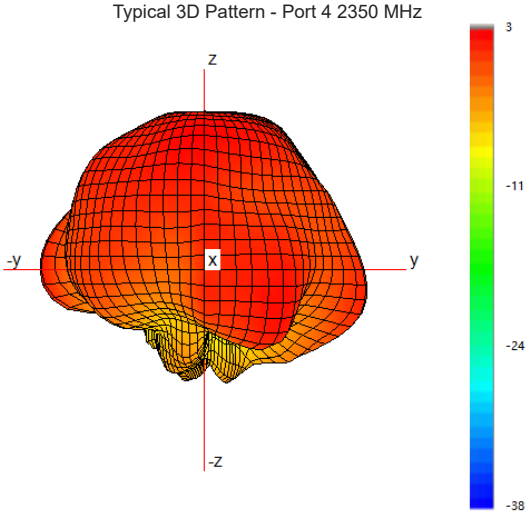
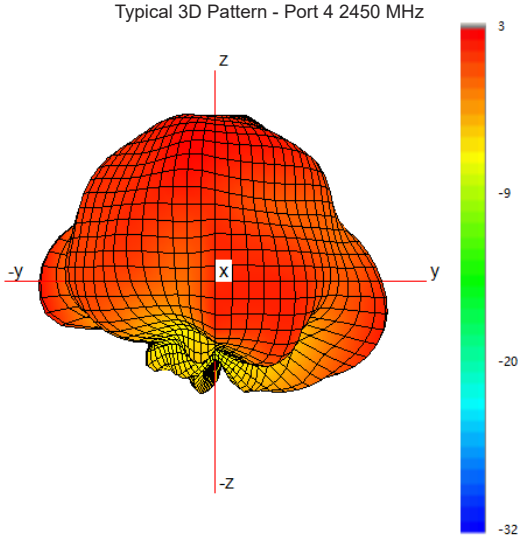
3D Pattern Data in Free Space Port 4

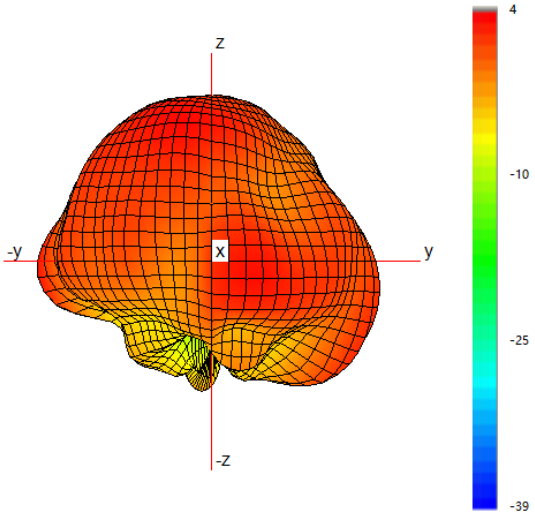
Typical 3D Pattern - Port 4 2350 MHz



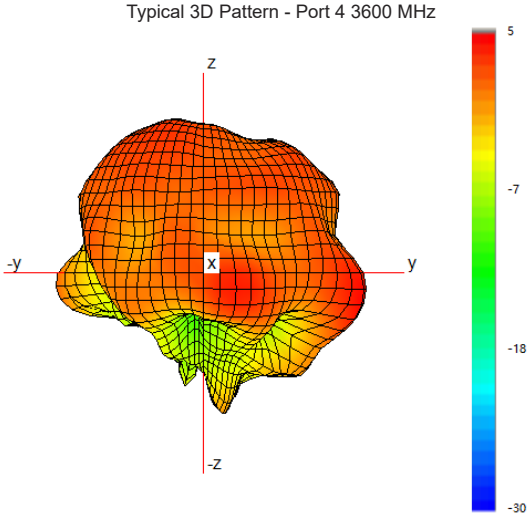
Typical 3D Pattern - Port 4 2450 MHz



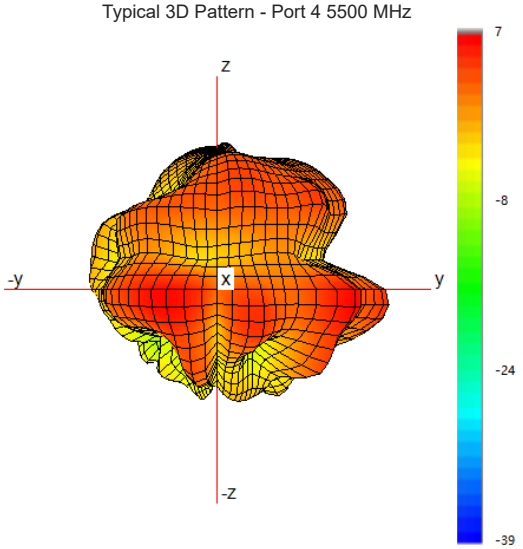
Typical 3D Pattern - Port 4 2650 MHz



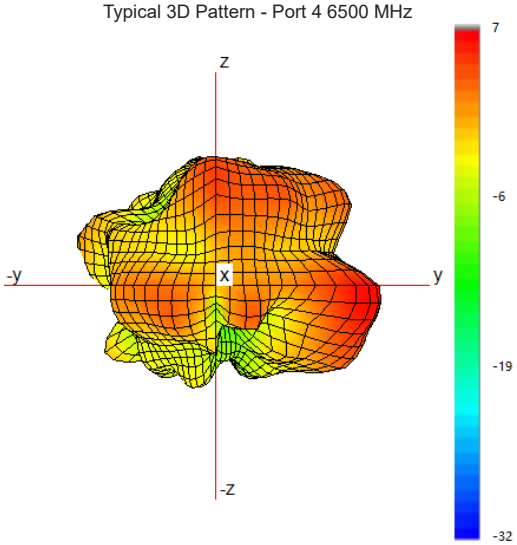
Typical 3D Pattern - Port 4 3600 MHz



Typical 3D Pattern - Port 4 5500 MHz



Typical 3D Pattern - Port 4 6500 MHz



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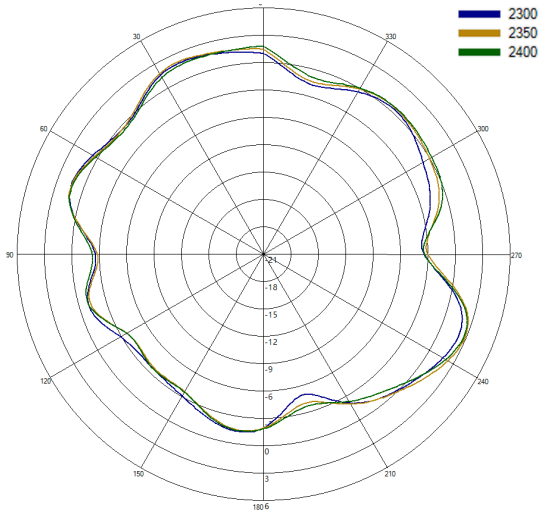
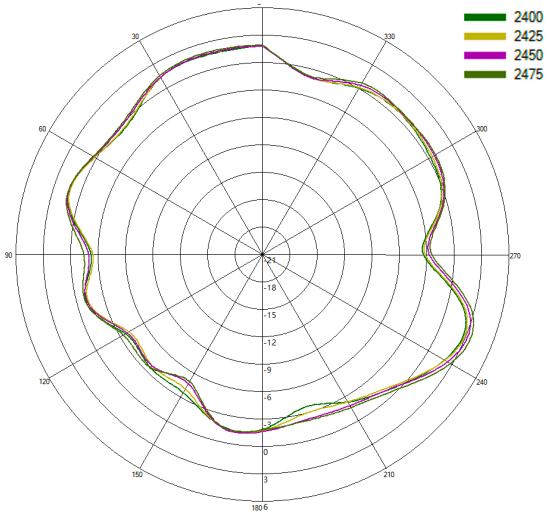
2D Pattern Data in Free Space Port 4 H Plane

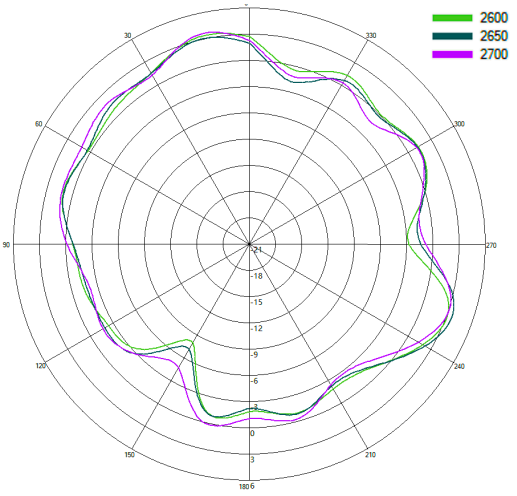
Typical H Plane Pattern - Port 4 2300-2400 MHz



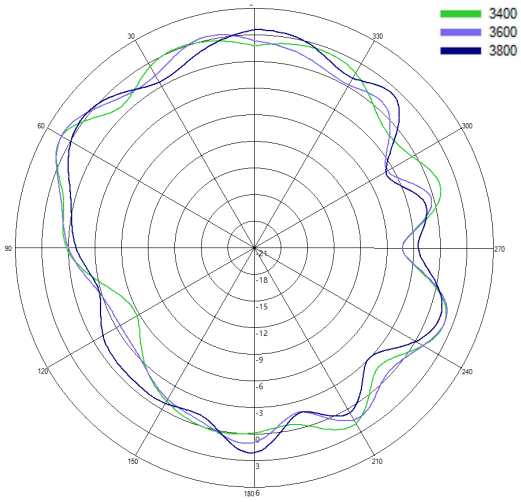
Typical H Plane Pattern - Port 4 2400-2475 MHz



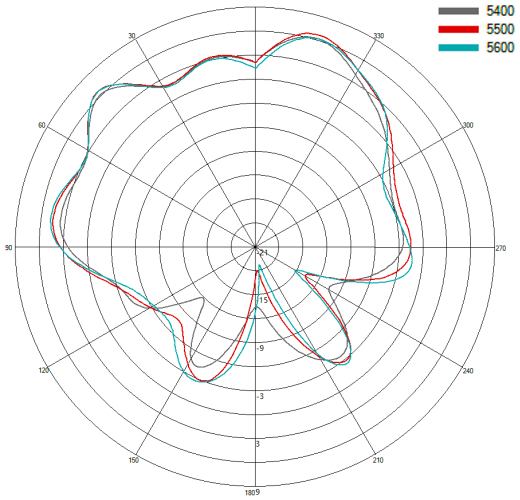
Typical H Plane Pattern - Port 4 2600-2700 MHz



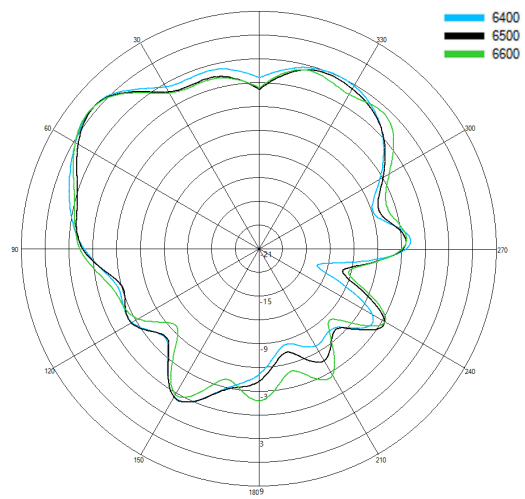
Typical H Plane Pattern - Port 4 3400-3800 MHz



Typical H Plane Pattern - Port 4 5400-5600 MHz



Typical H Plane Pattern - Port 4 6400-6600 MHz



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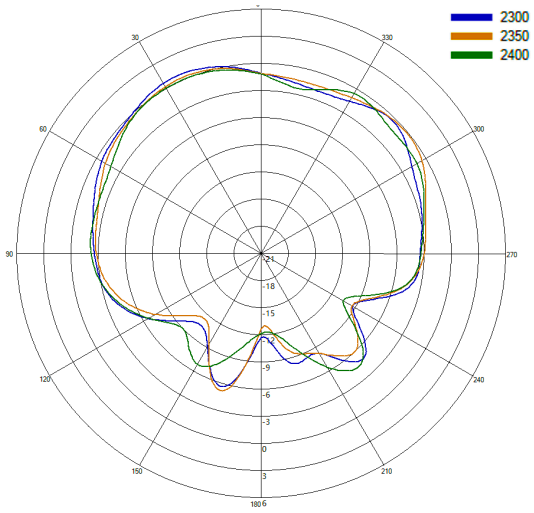
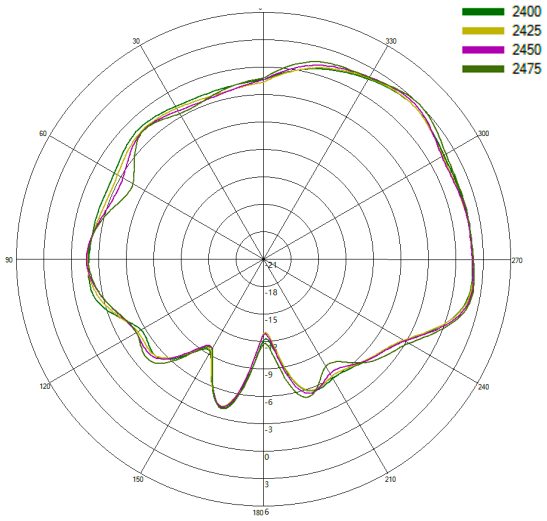
2D Pattern Data in Free Space Port 4 E Plane

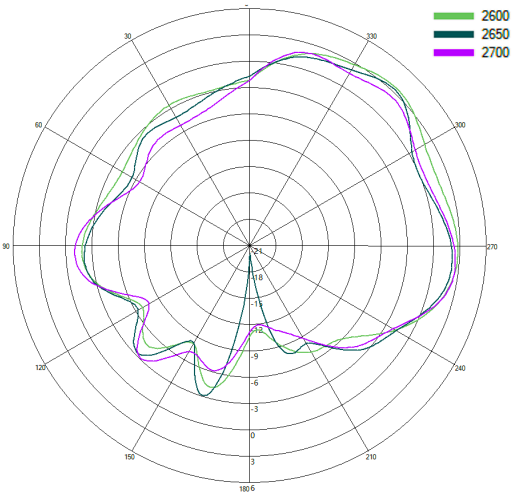
Typical E Plane Pattern - Port 4 2300-2400 MHz



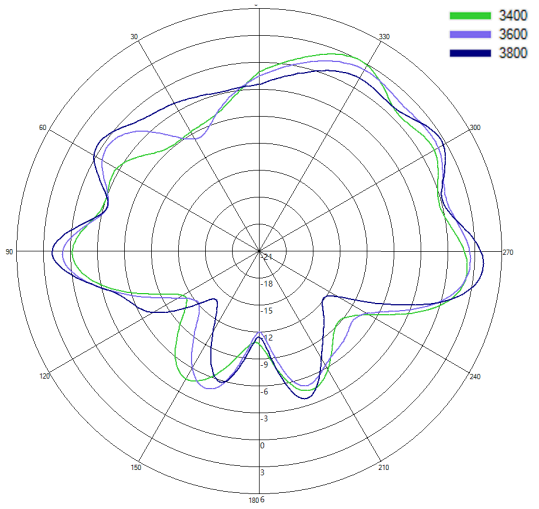
Typical E Plane Pattern - Port 4 2400-2475 MHz



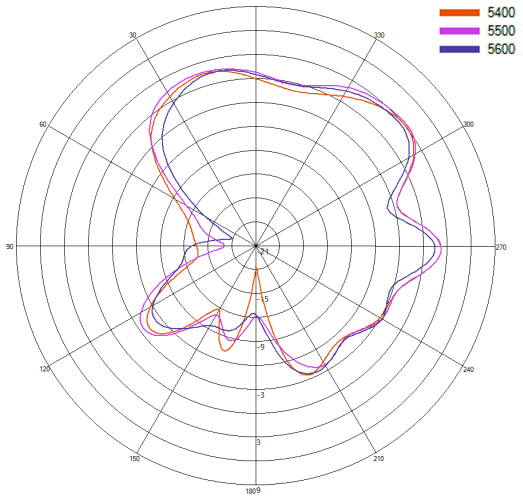
Typical E Plane Pattern - Port 4 2600-2700 MHz



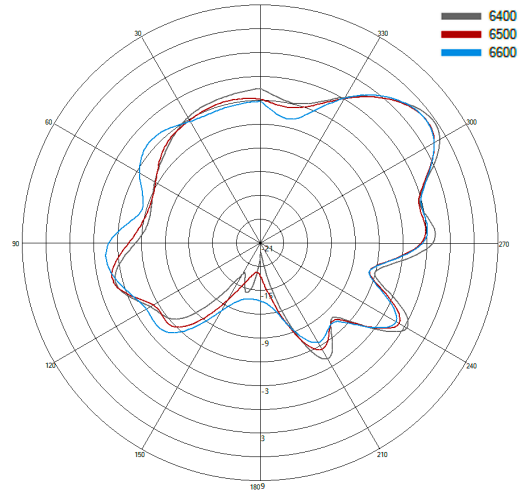
Typical E Plane Pattern - Port 4 3400-3800 MHz



Typical E Plane Pattern - Port 4 5400-5600 MHz



Typical E Plane Pattern - Port 4 6400-6600 MHz



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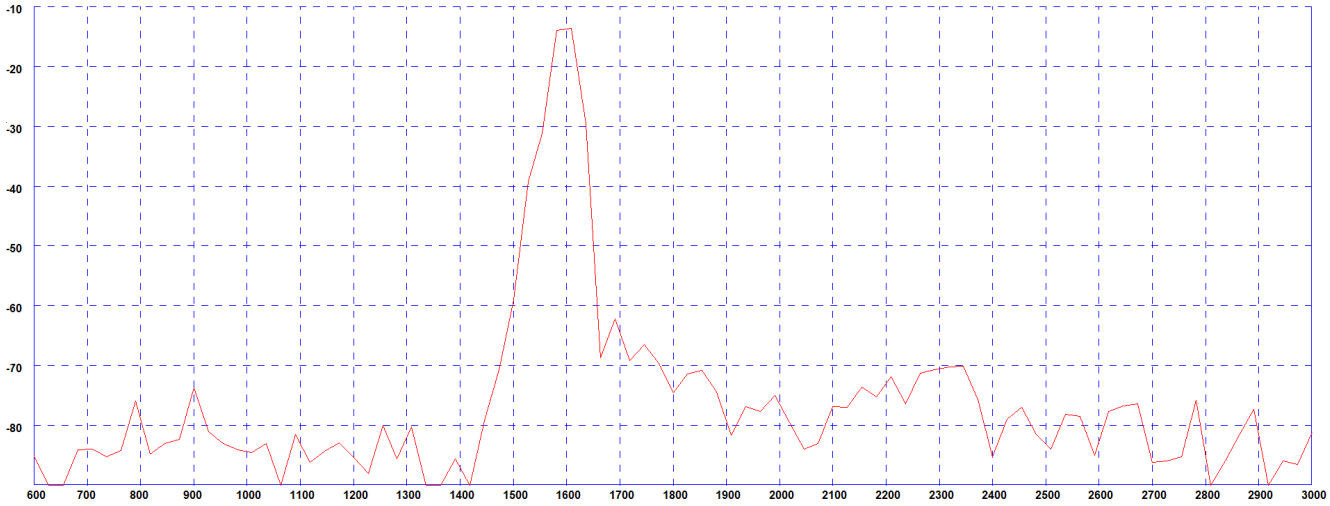
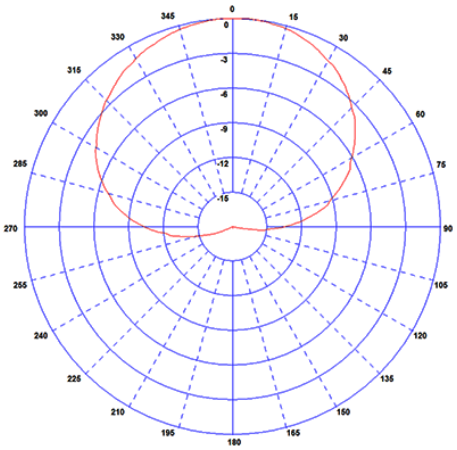
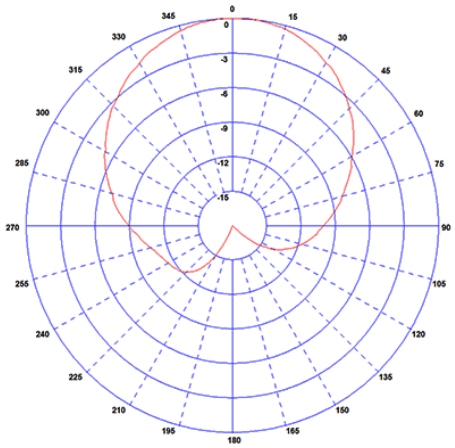
Swept Peak Gain GPS/GNSS



Typical E Plane Pattern - GPS/GNSS 1575 MHz



Typical E Plane Pattern - GPS/GNSS 1602 MHz



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

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