

Fortinet FAP-231KD-Wall mount Antenna Passive Test Report (2x[2.4G/5G WiFi] + 2x[6G] + 1x[BLE])

9th Apr. , 2026



- Test Purpose and Test Item
- Test Environment
- Device Under Test
- Antenna placement
- Performance Summary
- Return Loss
- Isolation
- Antenna 3D Radiation Pattern
- Antenna 2D Radiation Pattern
- Antenna Efficiency & Peak Gain

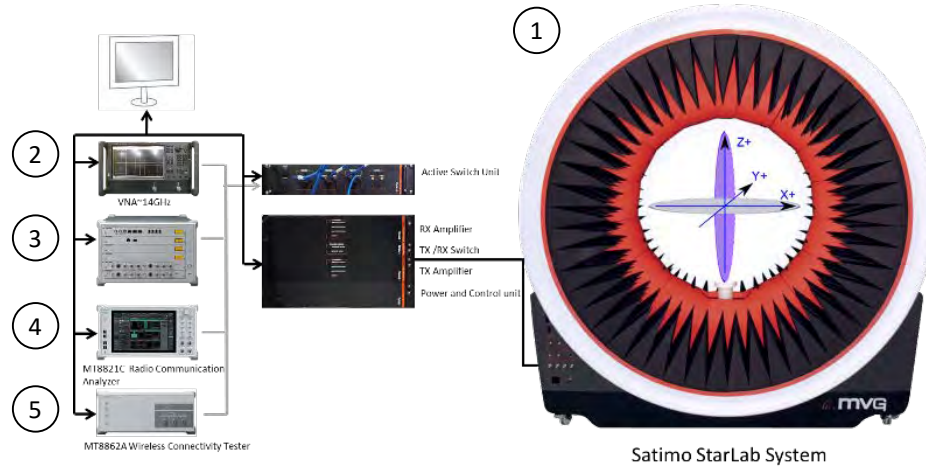
- Test Purpose: Passive testing for Efficiency / Peak Gain / Radiation Pattern

- Device Under Test: (DVT Unit)

Model: FAP-231KD

Testing Environment

MVG 3D Chamber-SATIMO STARLAB Polarization diagram



ITEM	DESCRIPTION	BRAND / Part number	CALIBRATION DATE
1	StarLab System	MVG	10/Dec/2025
2	Vector Network Analyzer	Keysight 5080B	10/Mar/2025
3	5G Radio Communication Station	Anritsu MT8000A	16/Dec/2024
4	4G Radio Communication Analyzer	MT8821C	06/Dec/2024
5	Wireless Connectivity Tester	MT8862A	26/Mar/2026

DUT inside Chamber

Manufacture	Grand-Tek Technology		
Address	8F., No.233-2, Bao Ciao Rd., Hsin Dian Dist, New Taipei City, 23145 Taiwan		
Brand Name	Model Name	Ant. Type	Connector
Grand-Tek	2034G00000390	Dipole	MHF I
Grand-Tek	2034G00000400	Dipole	MHF I
Grand-Tek	203CG00000190	Dipole	MHF I
Grand-Tek	203CG00000200	Dipole	MHF I
Grand-Tek	2039G00000100	PIFA	MHF I

Total Antenna Quantity:5

Test Setup:

- A. Connect testing cable to 1 antenna port.
- B. Connect terminator on the other ports

Follow sequence for the other ports.

ARC ANTs placement

● Antenna Definition and Distribution

□ Antenna: 2x[2.4G/5G WiFi] + 2x[6G] + 1x[BLE]

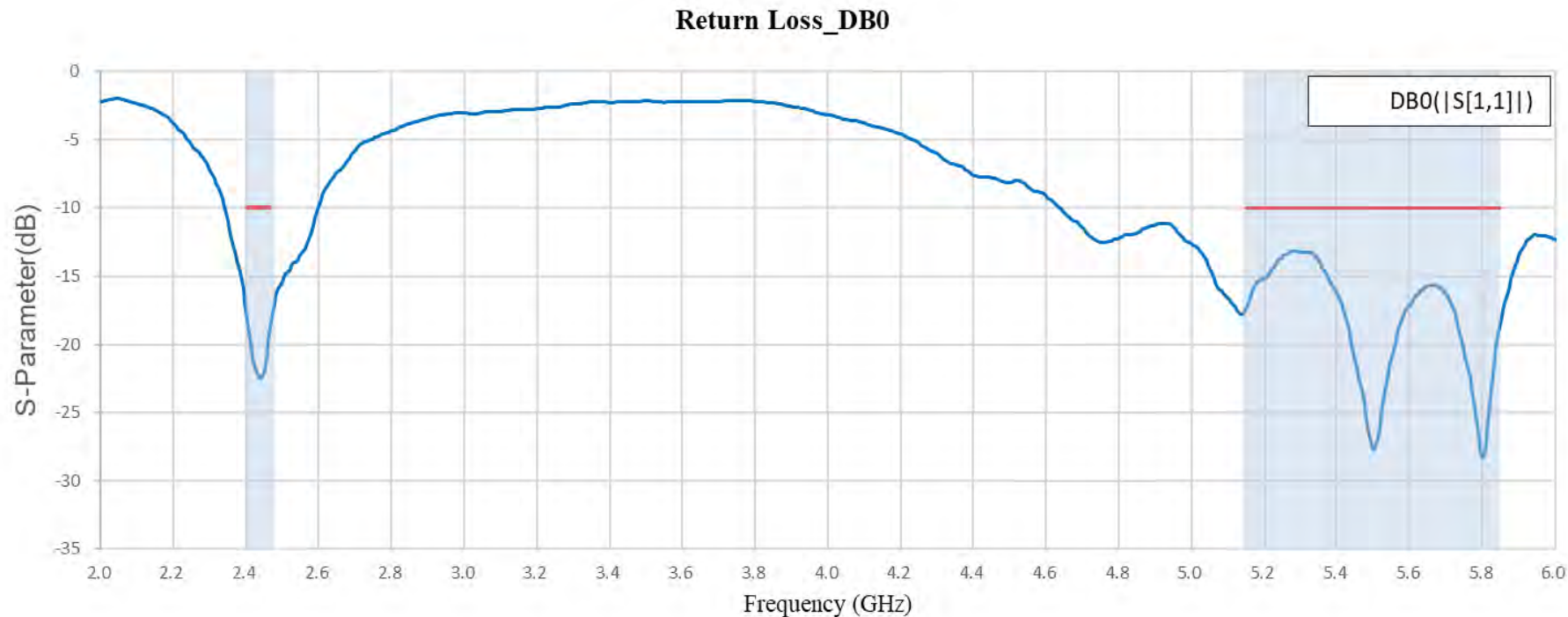
Manufacture	Grand-Tek Technology
Address	8F., No.233-2, Bao Ciao Rd., Hsin Dian Dist, New Taipei City, 23145 Taiwan

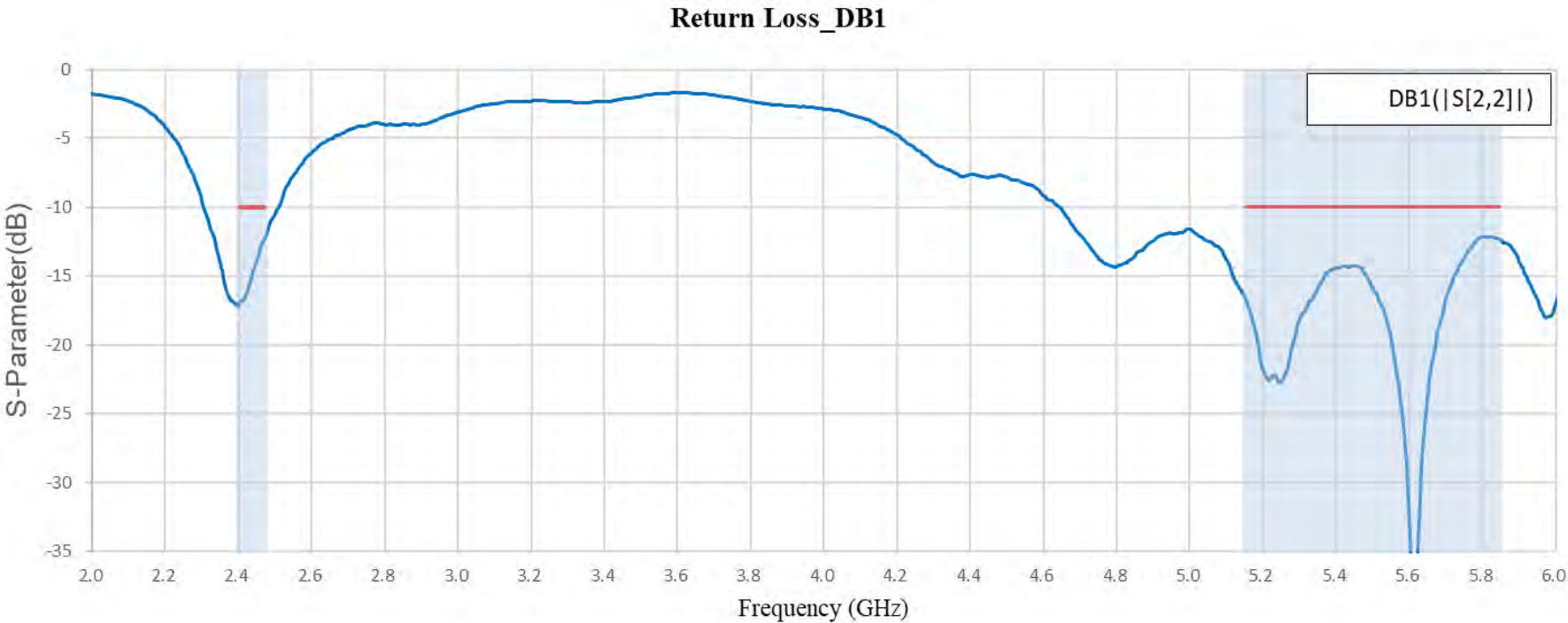
Antenna	Frequency(MHz)	1.37 LowLoss cable length(mm)
2034G00000390	2400~2500/5150~5850 MHz	240,red
2034G00000400	2400~2500/5150~5850 MHz	192,yellow
203CG00000190	5925~7125 MHz	195,black
203CG00000200	5925~7125 MHz	170,blue
2039G00000100	2400~2500 MHz	155,green

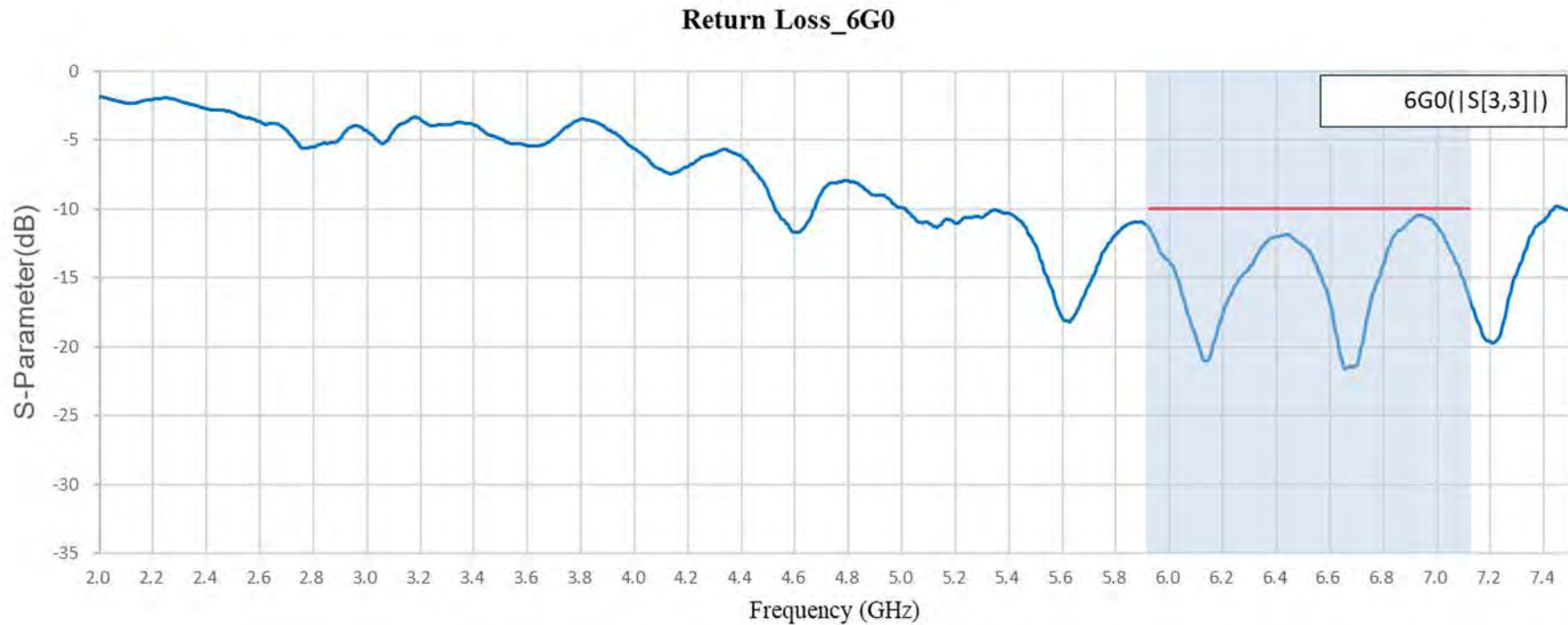
■ Antenna Performance Summary

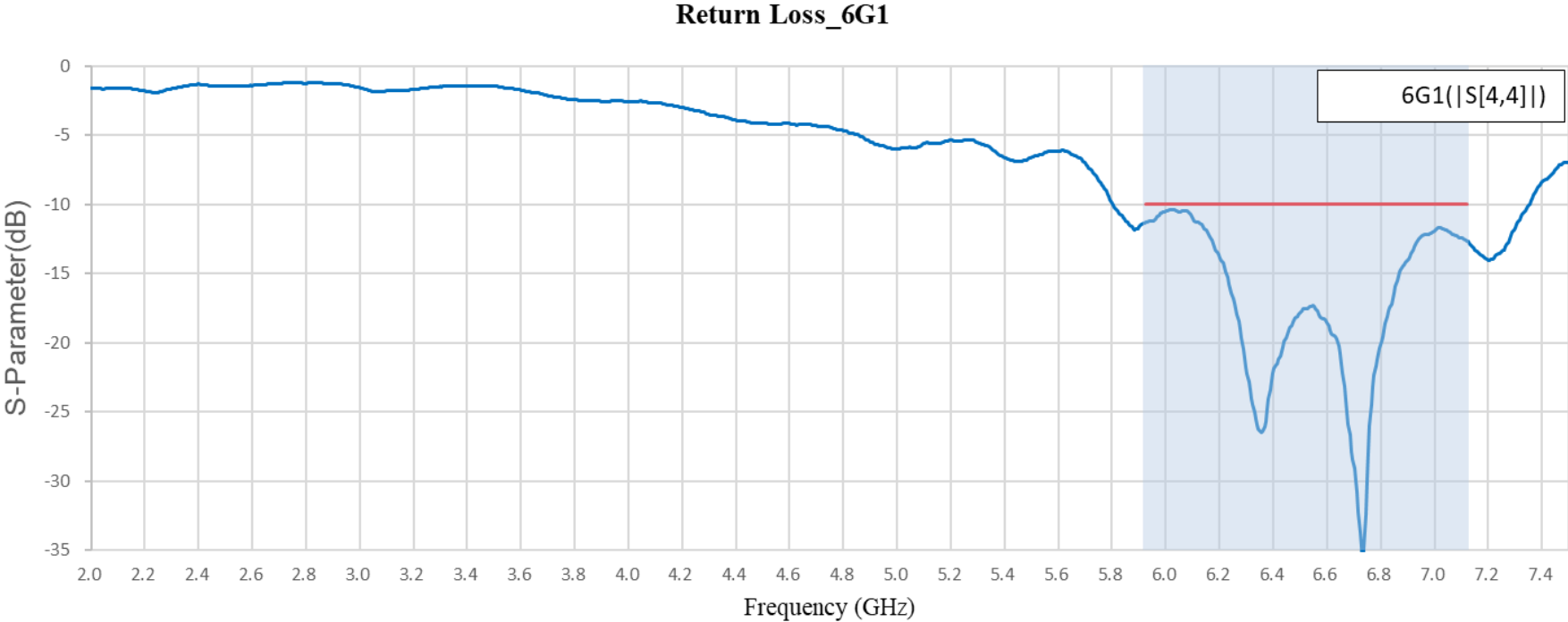
Isolation Summary

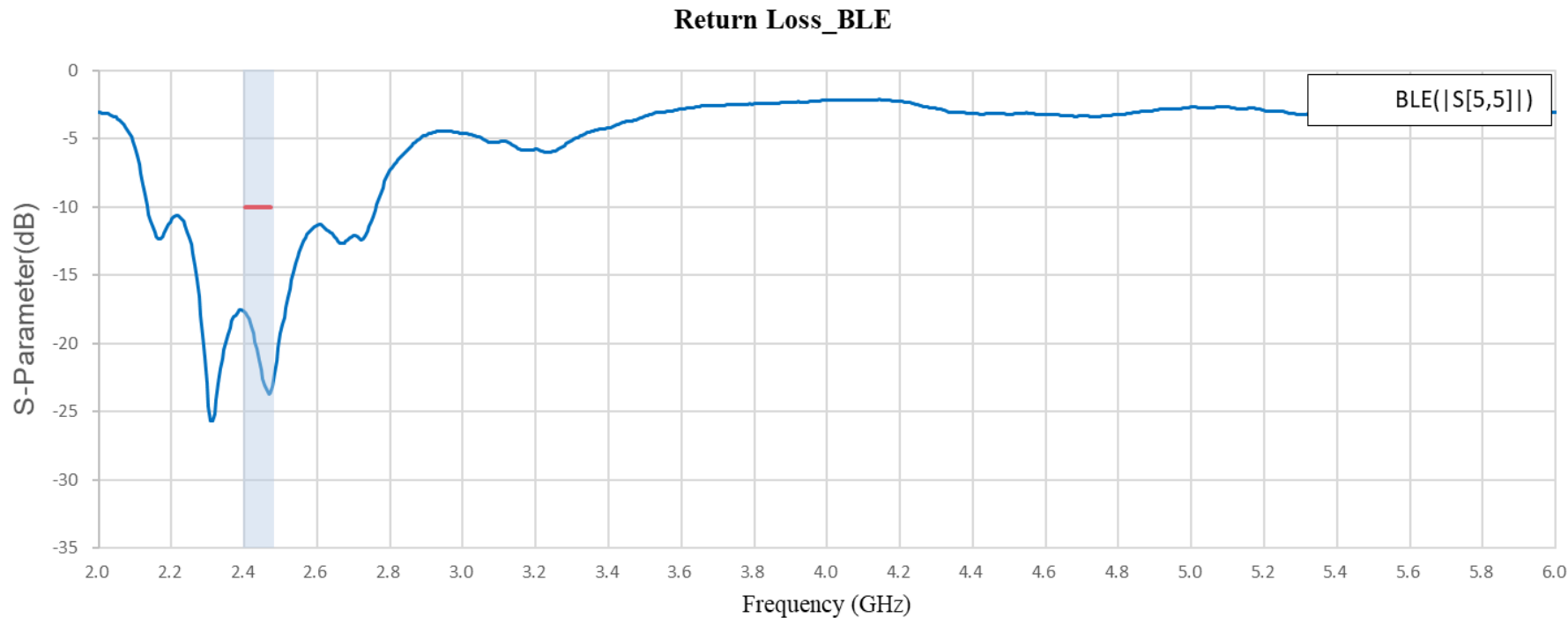
	203CG00000 190	2034G00000 390	203CG00000 200	2034G00000 400	2039G00000 100
203CG00000 190		25	32	30	30
2034G00000 390			31	34	26
203CG00000 200				32	30
2034G00000 400					27
2039G00000 100					

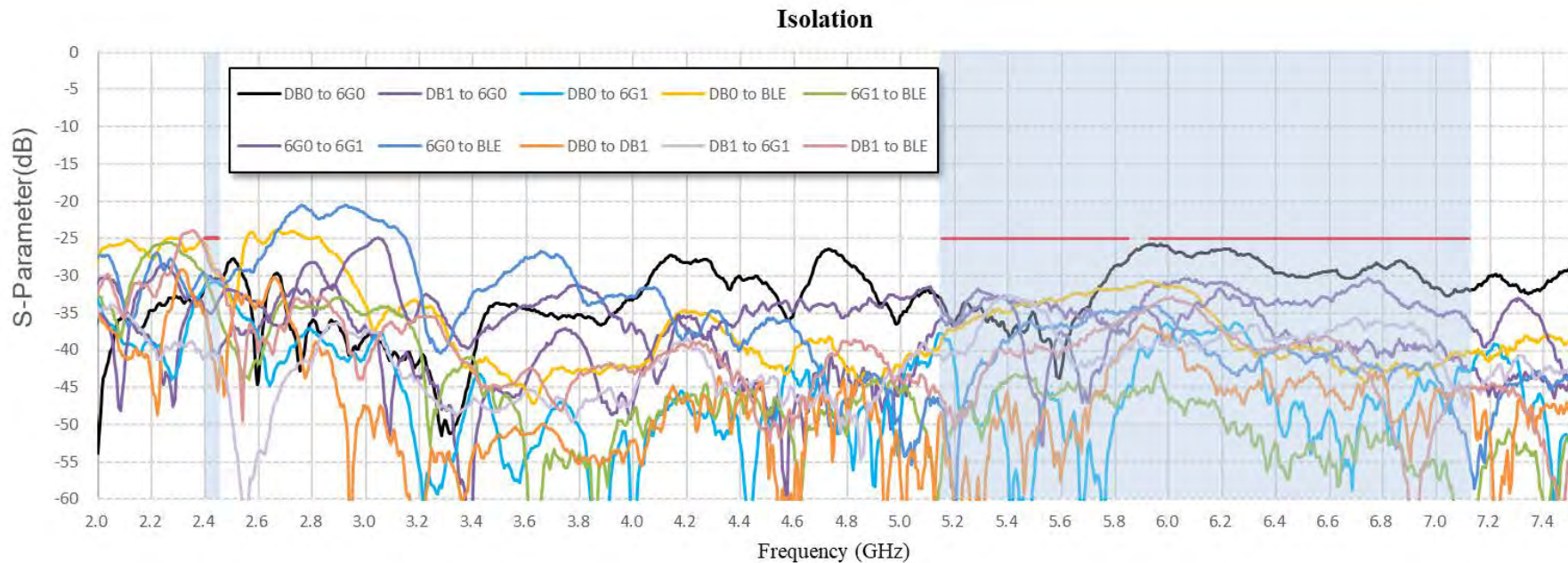


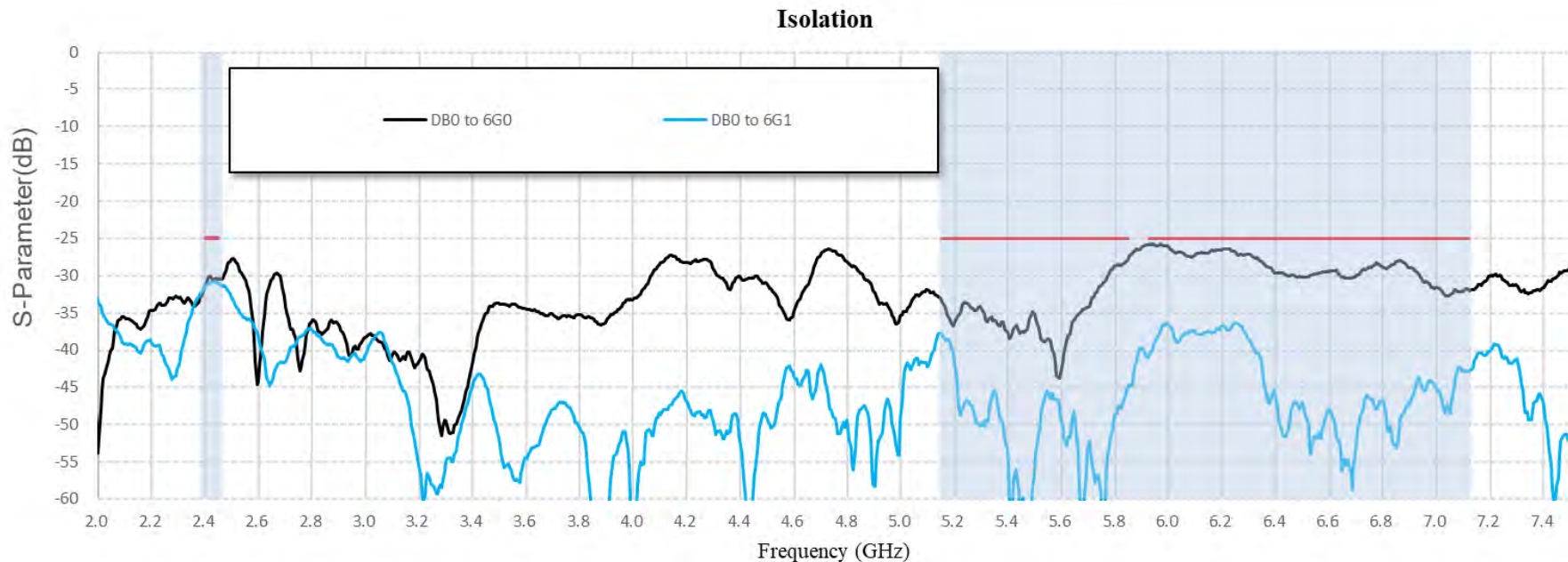


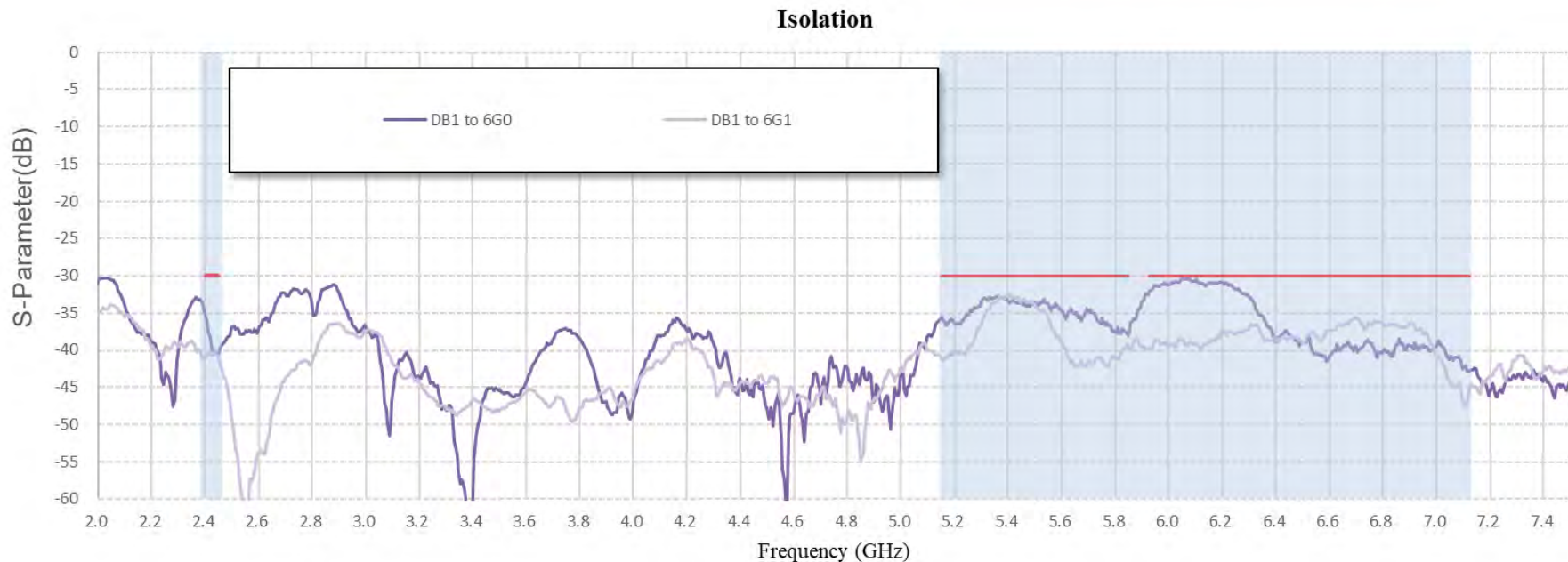


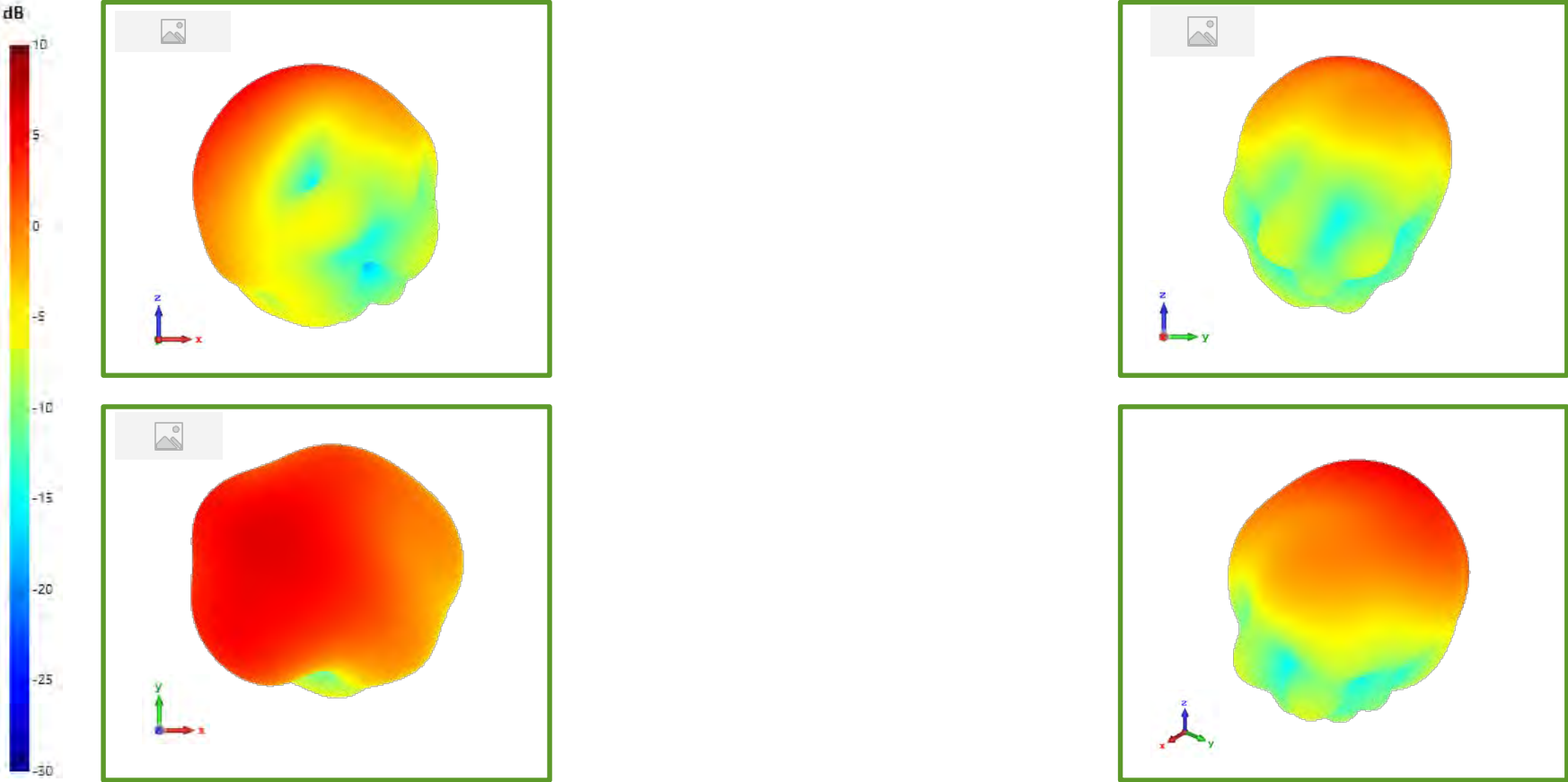


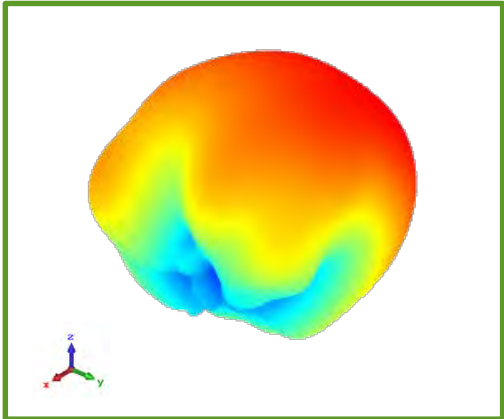
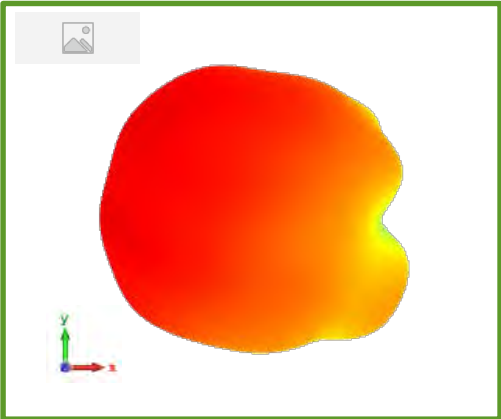
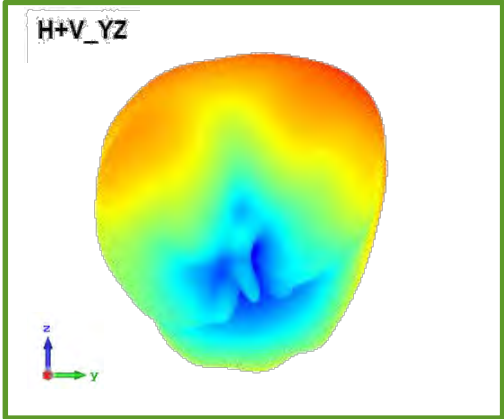
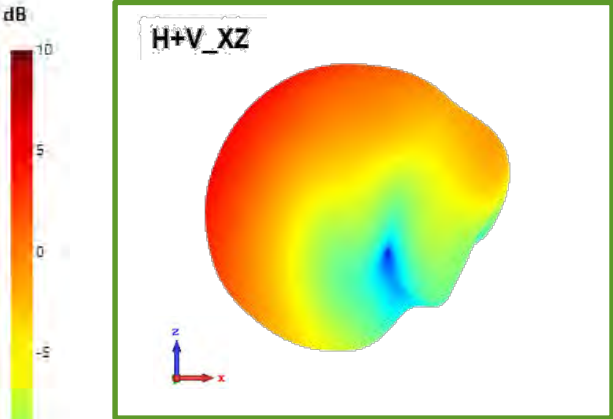




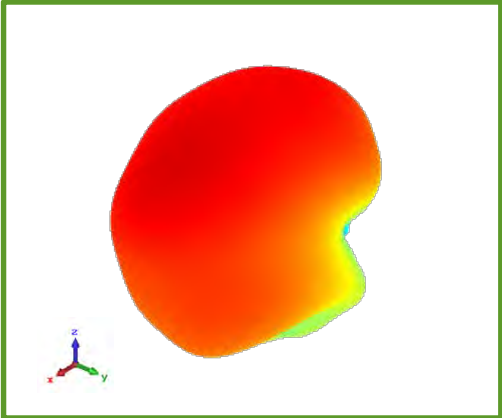
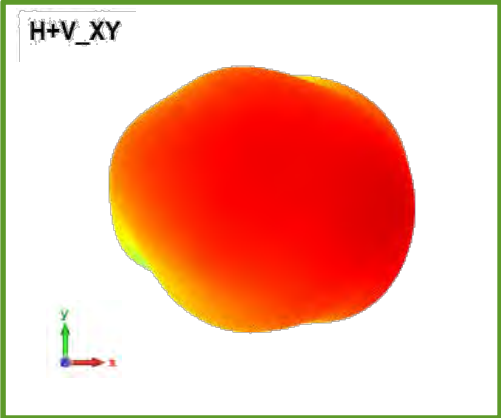
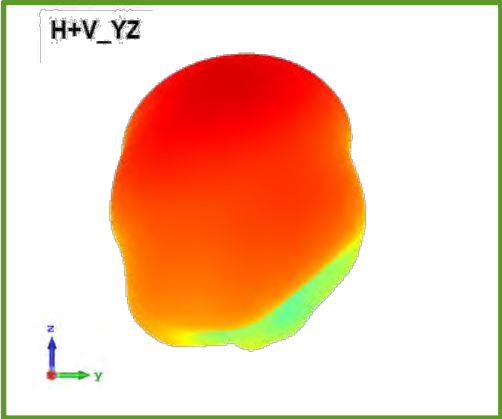
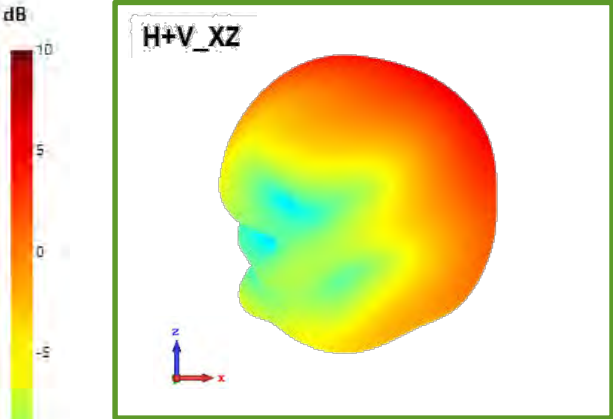








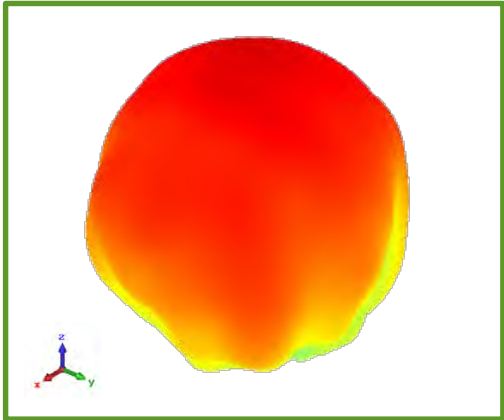
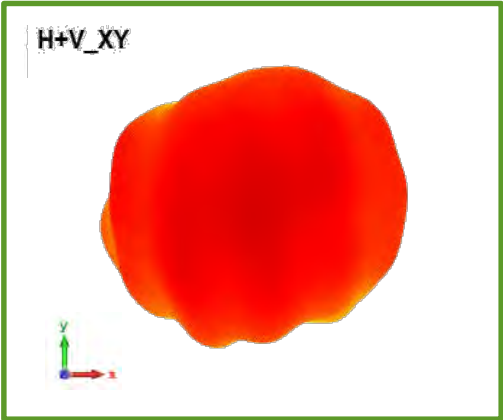
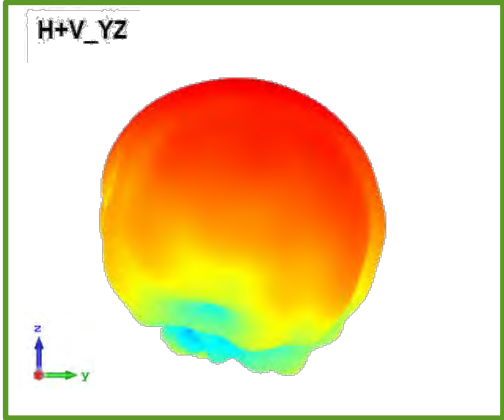
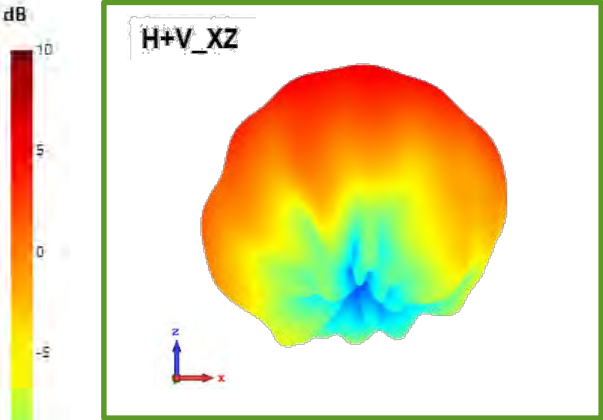
2034G00000400_3D Radiation Pattern of 2.45GHz



2034G00000400_3D Radiation Pattern of 5.5GHz

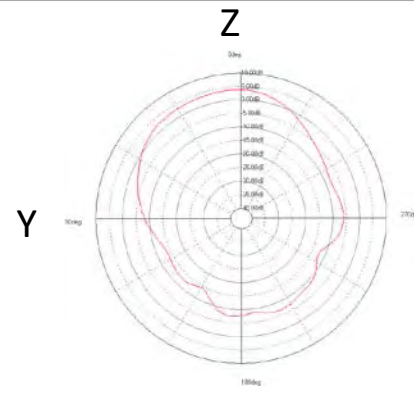




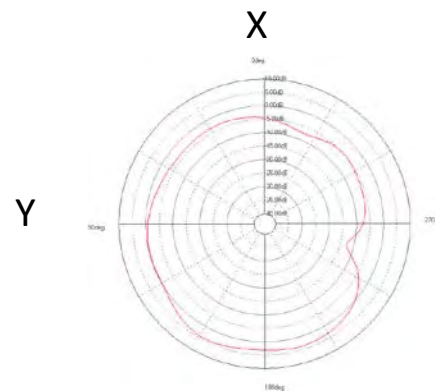


2039G00000100_3D Radiation Pattern of 2.45GHz





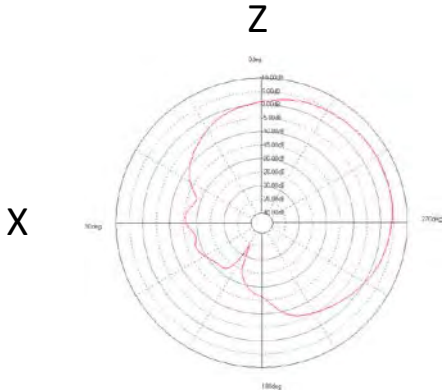
Y-Z plane



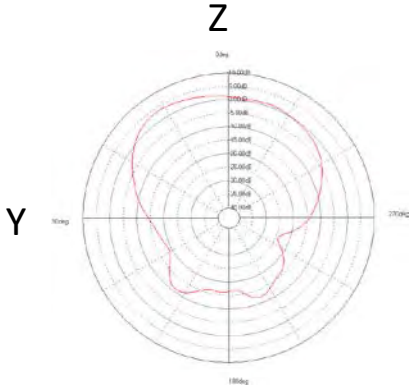
theta 60° plane

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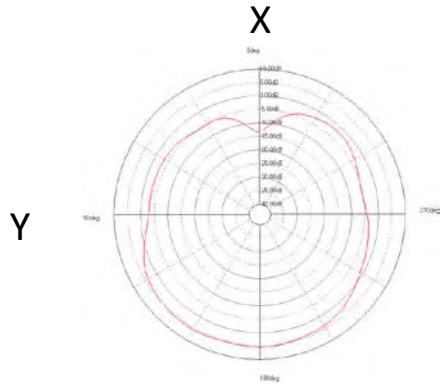
2034G00000390_2D Radiation Pattern of 5.5GHz



X-Z plane



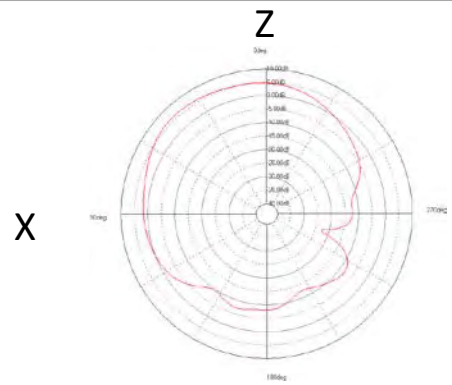
Y-Z plane



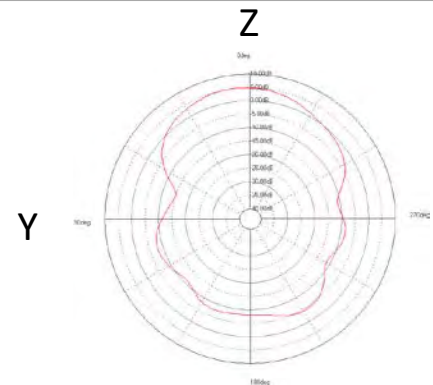
theta 60° plane

Maximum:	10
Minimum:	-40
Step:	5

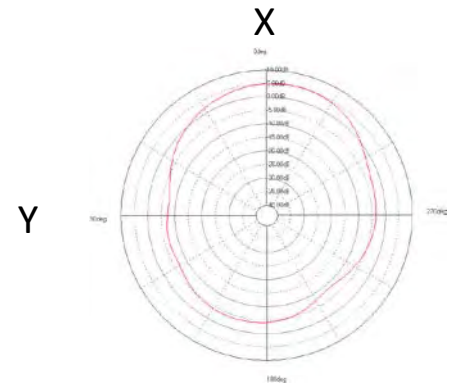
2034G00000400_2D Radiation Pattern of 2.45GHz



X-Z plane



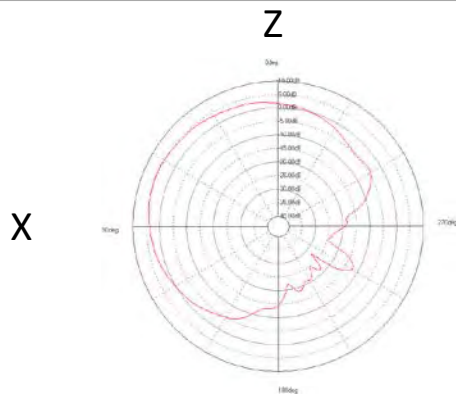
Y-Z plane



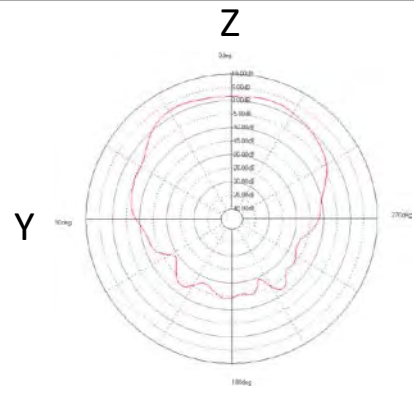
theta 60° plane

Maximum:	10
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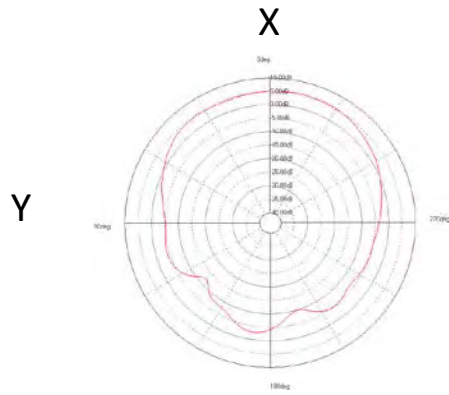
2034G00000400_2D Radiation Pattern of 5.5GHz



X-Z plane



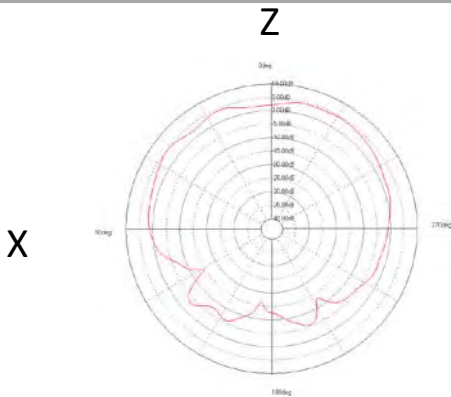
Y-Z plane



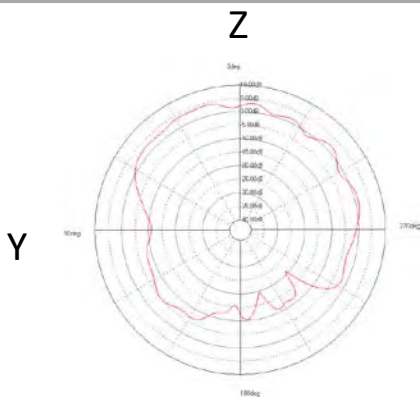
theta 60° plane

Maximum:	10
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Step:	5

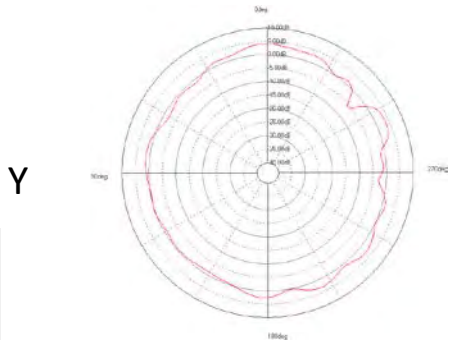
203CG00000190_2D Radiation Pattern of 6.55GHz



X-Z plane
X



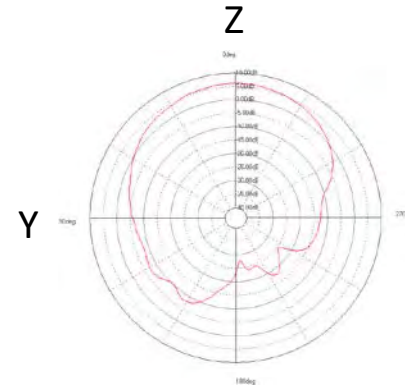
Y-Z plane



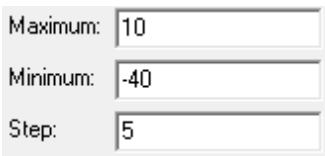
theta 60° plane

Maximum:	10
Minimum:	-40
Step:	5

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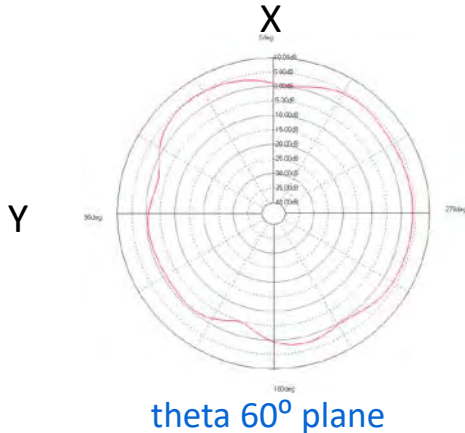
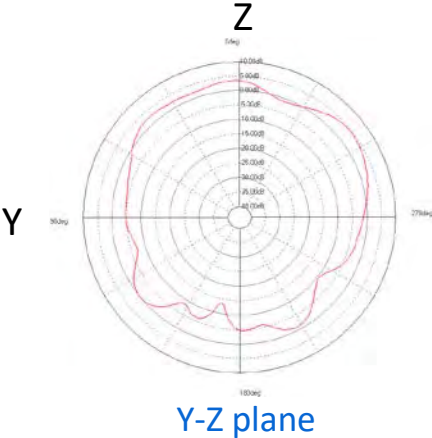
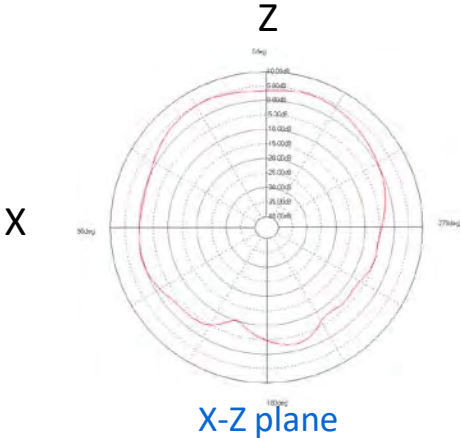


Y-Z plane



theta 60° plane

2039G00000100_2D Radiation Pattern of 2.45GHz

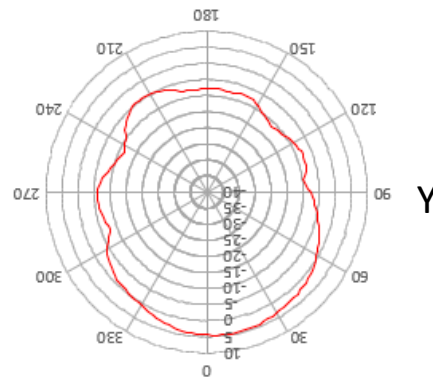


Maximum:	10
Minimum:	-40
Step:	5

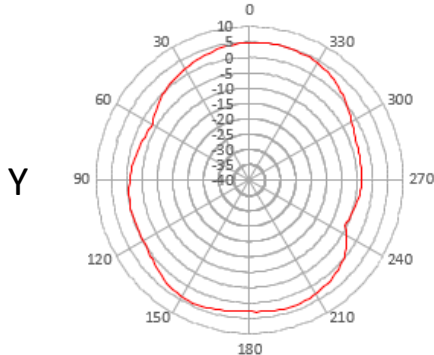
WIFI Antenna Combine Gain of 2.45GHz _ Ceiling Mount



X-Z plane



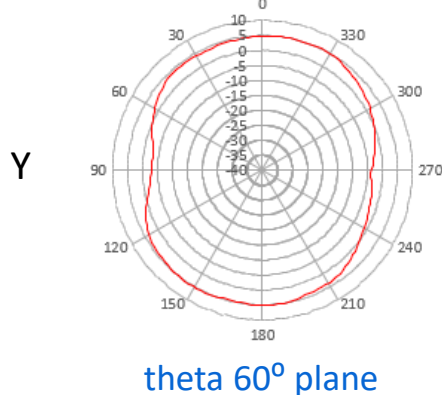
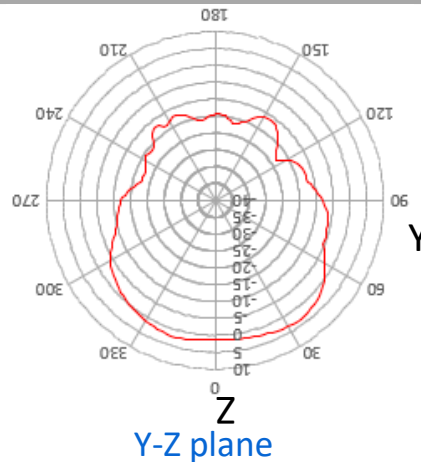
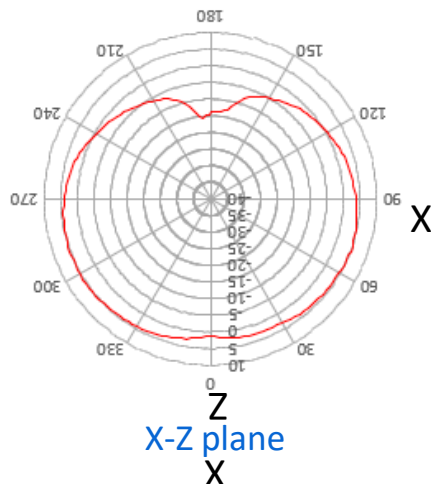
Y-Z plane



theta 60° plane

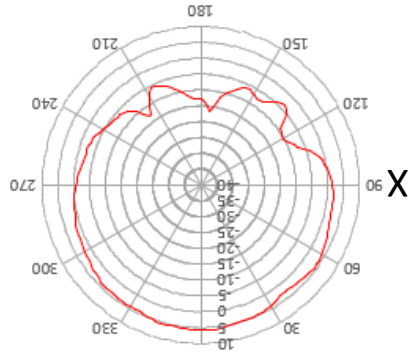
Maximum:	10
Minimum:	-40
Step:	5

WIFI Antenna Combine Gain of 5.5GHz _ Ceiling Mount

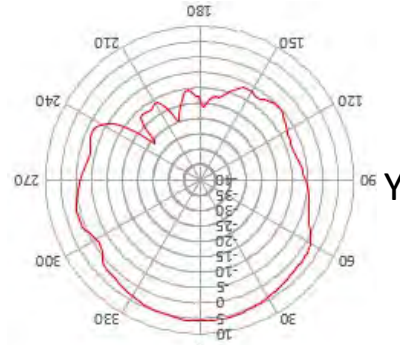


Maximum:	10
Minimum:	-40
Step:	5

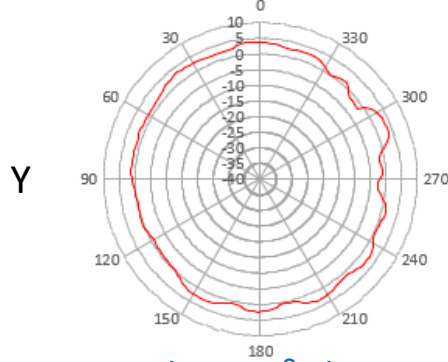
6G Antenna Combine Gain of 6.55GHz _ Ceiling Mount



X-Z plane



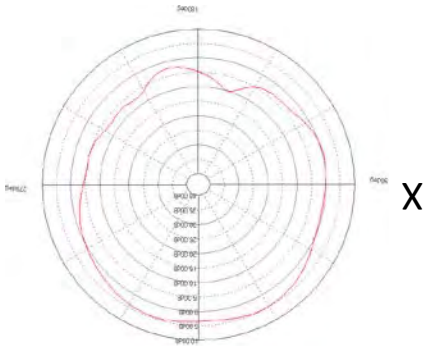
Y-Z plane



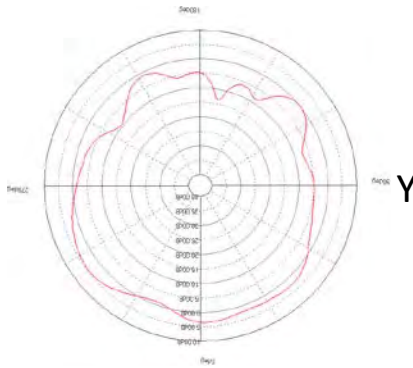
theta 60° plane

Maximum:	10
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Step:	5

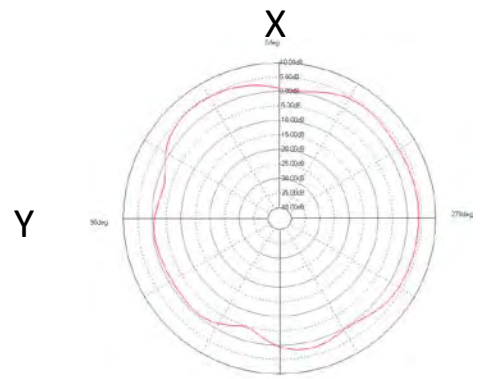
2039G00000100_2D Radiation Pattern of 2.45GHz _ Ceiling Mount



X-Z plane



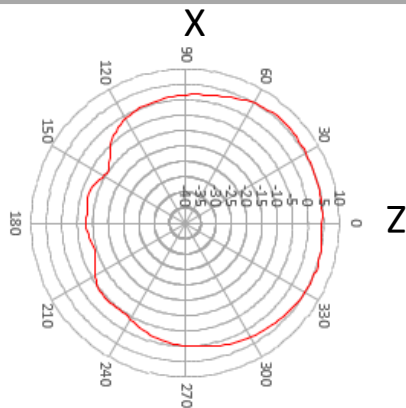
Y-Z plane



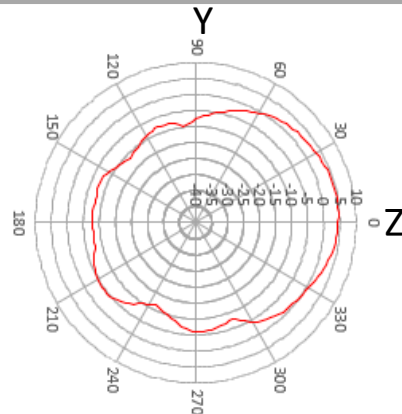
theta 60° plane

Maximum:	10
Minimum:	-40
Step:	5

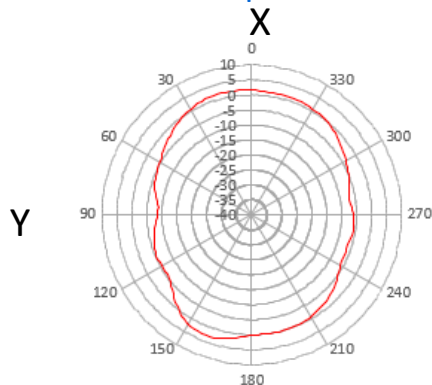
WIFI Antenna Combine Gain of 2.45GHz _ Wall Mount



X-Z plane



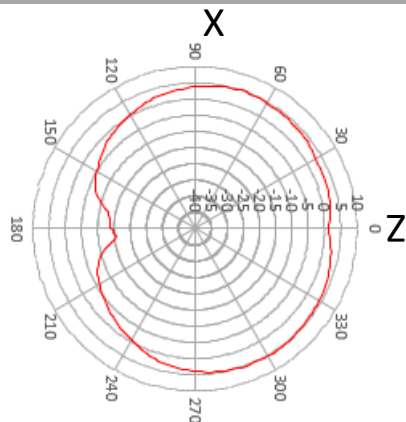
Y-Z plane



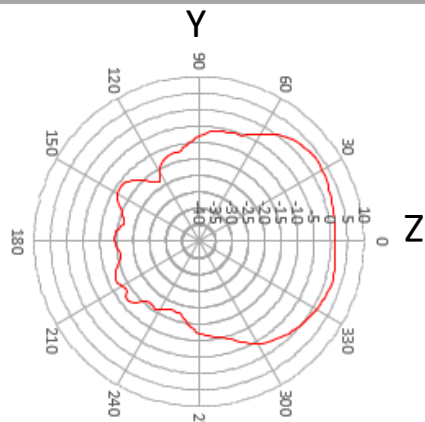
theta 90° plane

Maximum:	10
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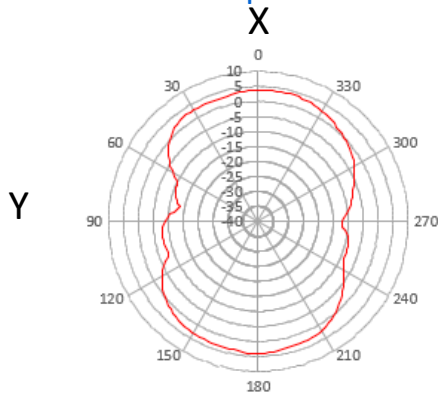
WIFI Antenna Combine Gain of 5.5GHz _ Wall Mount



X-Z plane



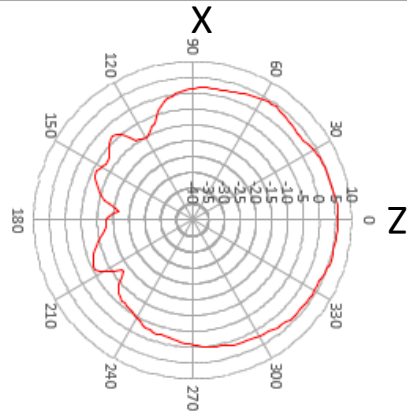
Y-Z plane



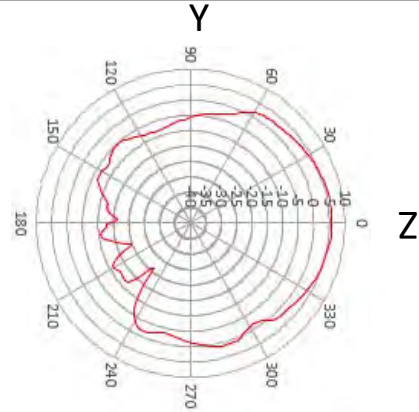
theta 90° plane

Maximum:	10
Minimum:	-40
Step:	5

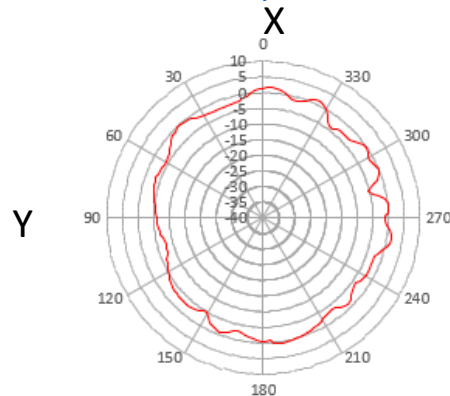
6G Antenna Combine Gain of 6.55GHz _ Wall Mount



X-Z plane



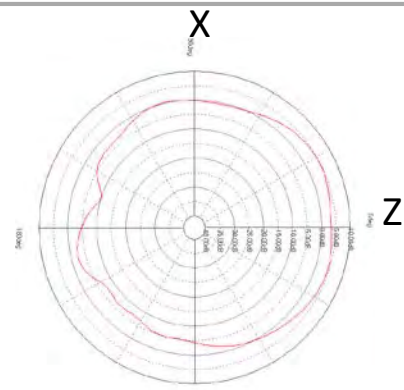
Y-Z plane



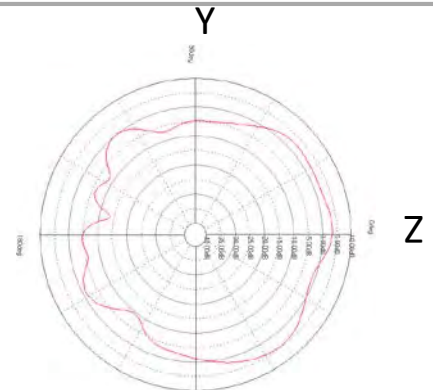
theta 90° plane

Maximum:	10
Minimum:	-40
Step:	5

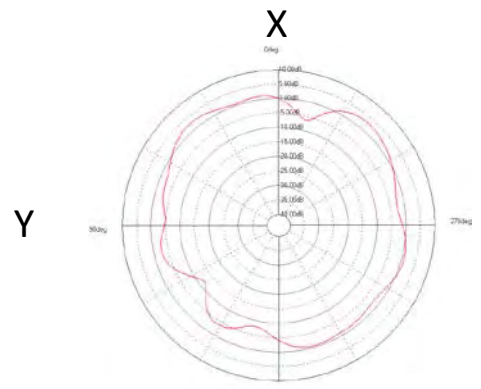
2039G00000100_2D Radiation Pattern of 2.45GHz _ Wall Mount



X-Z plane



Y-Z plane



theta 90° plane

Maximum:	10
Minimum:	-40
Step:	5

Antenna Efficiency & Peak Gain

	2.4G						5G										
Frequency	2400		2450		2500		5150		5300		5500		5650		5850		MHz
2034G00000390	66%	6.0	70%	5.5	75%	5.6	75%	5.6	70%	5.2	72%	5.3	74%	5.2	65%	5.2	Eff./ Peak Gain(dBi)
2034G00000400	71%	5.9	67%	5.9	70%	6.0	75%	5.5	76%	5.4	70%	5.3	75%	5.3	67%	6.0	
2039G00000100	65%	4.3	65%	4.7	71%	5.2											

	6G										
Frequency	5925		6350		6550		6950		7125		MHz
203CG00000190	72%	5.7	70%	5.3	71%	6.1	70%	5.6	78%	6.3	Eff./ Peak Gain(dBi)
203CG00000200	72%	6.2	70%	5.9	79%	6.0	77%	5.1	78%	5.0	



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