

GALTRONICS

WHEN CONNECTIONS COUNT



Gemtek-ELM Wi-Fi Antenna Performance Report

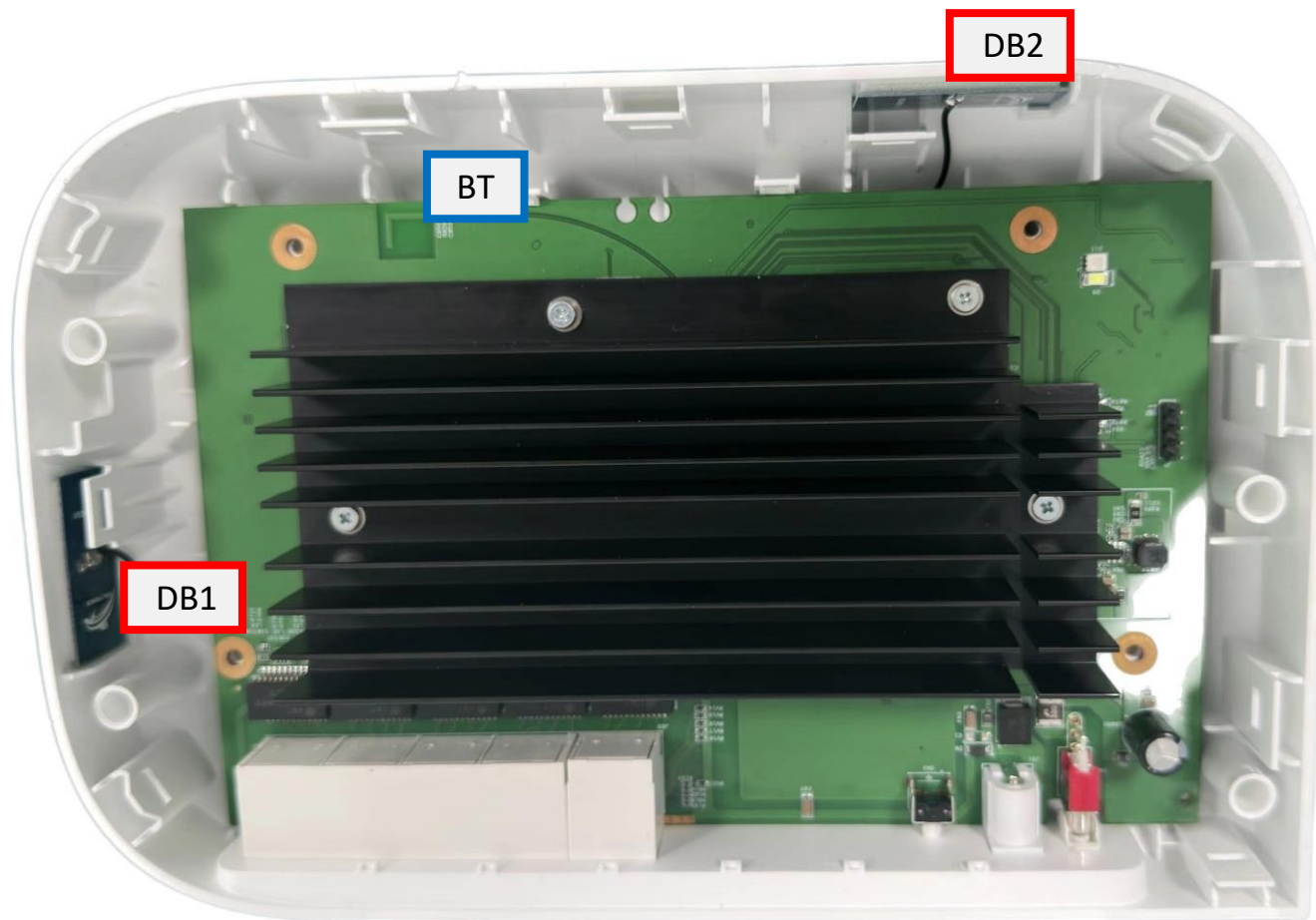
Galtronics Project: 7935

Prepared by Lean
Aug 10th , 2023

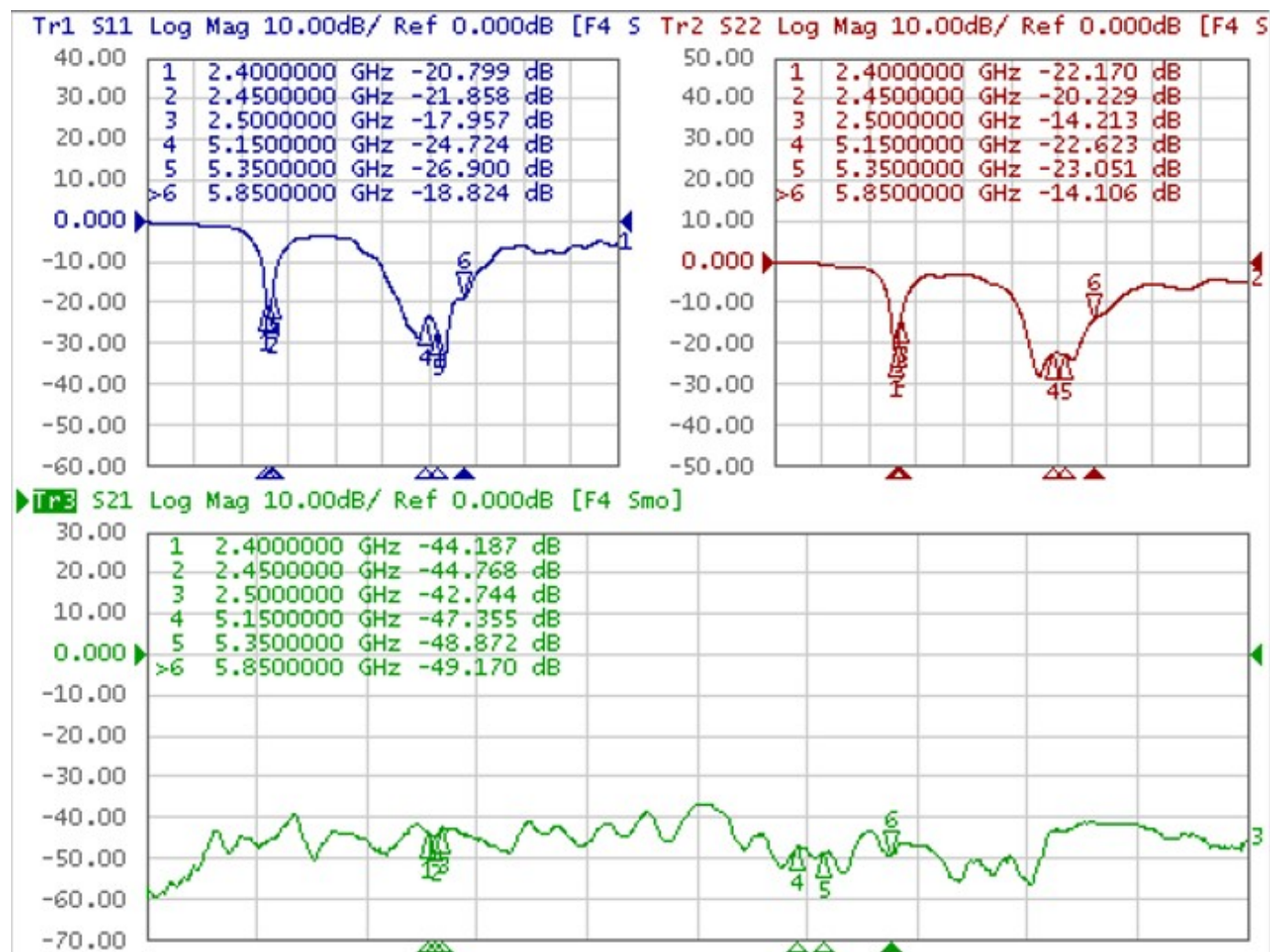
Introduction

- » Galtronics developed an antenna solution for Gemtek-ELM
- » There are 3 antennas :
 - Two Cabled PCB WI-FI Dual band antennas :- DB1 and DB2.
 - One On-board 2G band antenna :- BT.
- » The operating frequency of the Dual band is 2.4 GHz-2.5 GHz and 5.15GHz-5.85GHz.
Model NO: 02102140-07935E1(DB1)/02102140-07935E2(DB2)
- » The operating frequency of the 2G band is 2.4GHz-2.5GHz.
- » Measured return loss, isolation, peak gain, efficiency, and gain patterns of the antennas

Antenna Location



Return Loss and Isolation- Dual Band



Port1= DB1

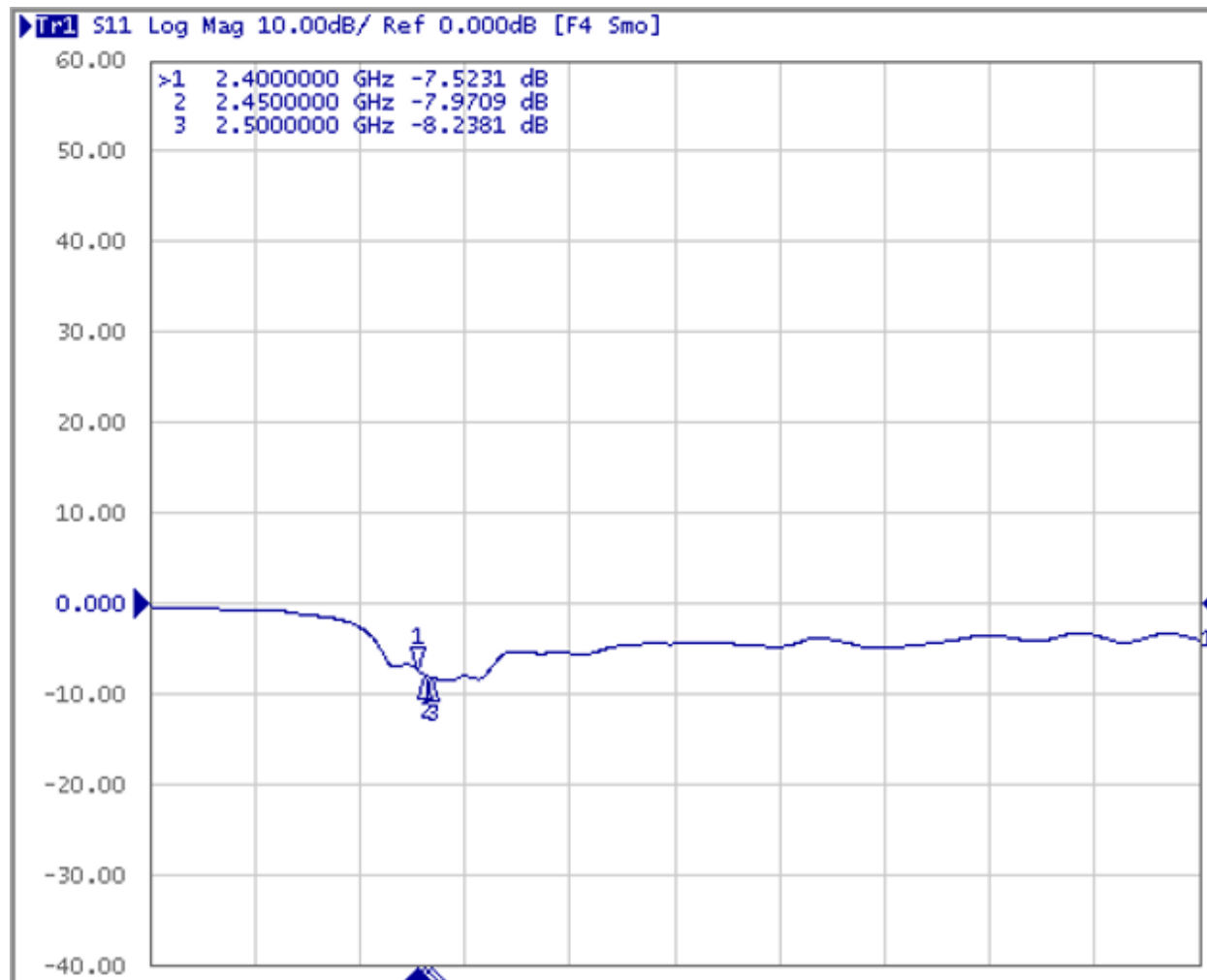
Port2= DB2

DB2

DB1



Antenna Return Loss of BT

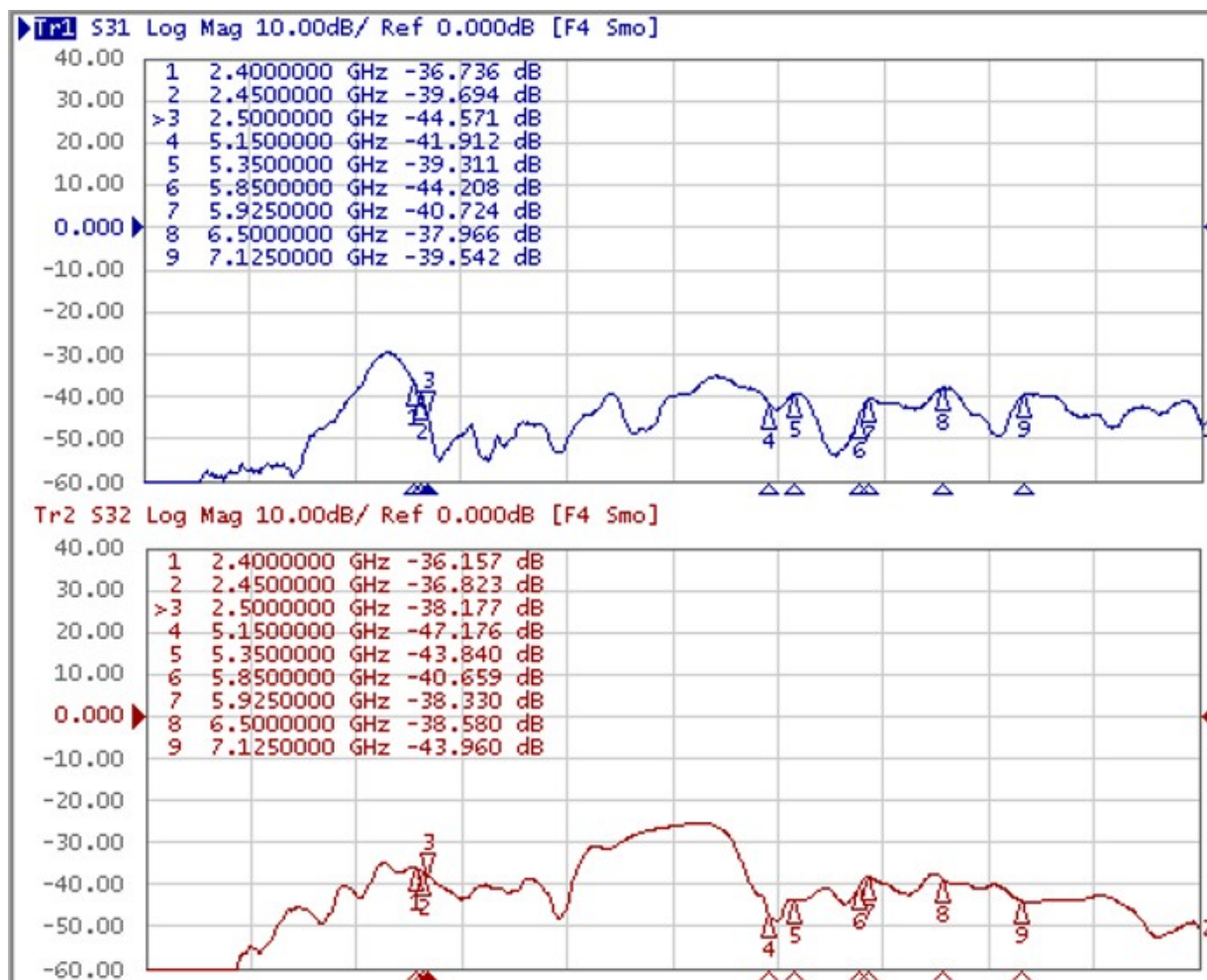


Port3= BT

BT



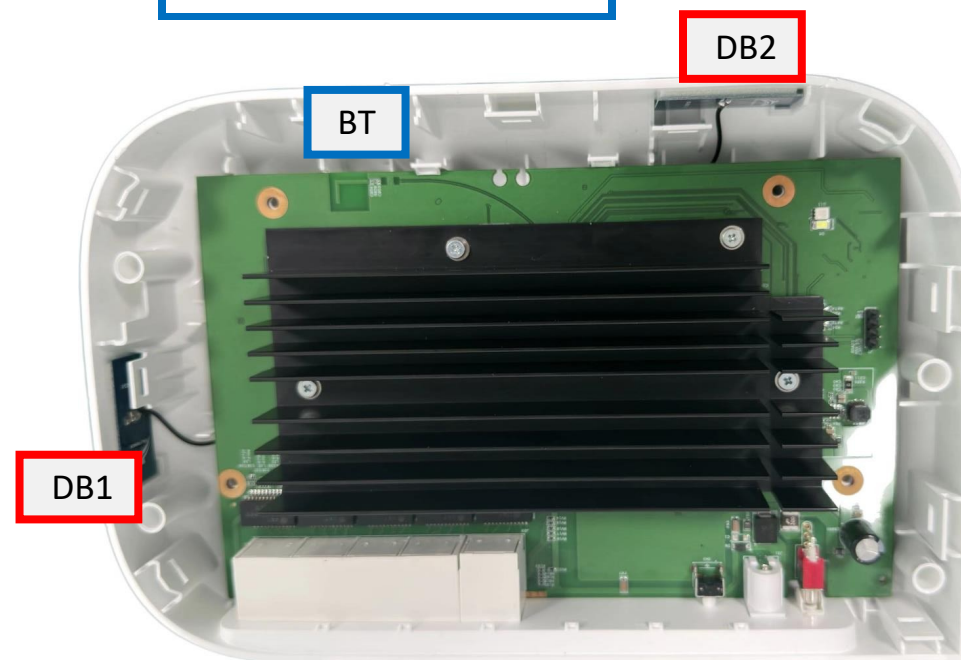
Antenna Isolation the Dual Band and BT



Port1= DB1

Port2= DB2

Port3= BT



Gain & Efficiency summary

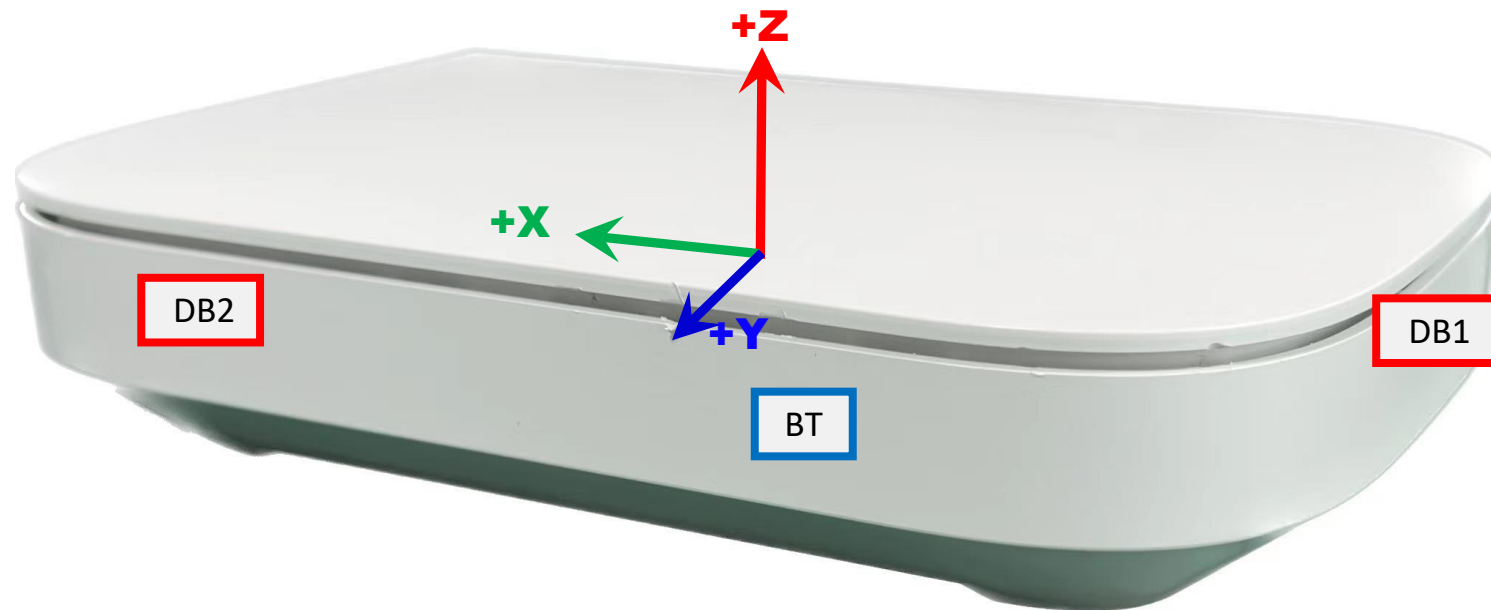
DB1	Freq(MHz)	Peak Gain(dBi)	Directivity(dBi)	Efficiency(%)
	2400	4.69	6.35	68.30%
	2450	4.63	6.21	69.50%
	2500	4.48	6.06	69.55%
	Average			69.12%

DB2	Freq(MHz)	Peak Gain(dBi)	Directivity(dBi)	Efficiency(%)
	2400	4.65	6.26	68.93%
	2450	4.69	6.25	69.85%
	2500	4.67	6.24	69.53%
	Average			69.44%

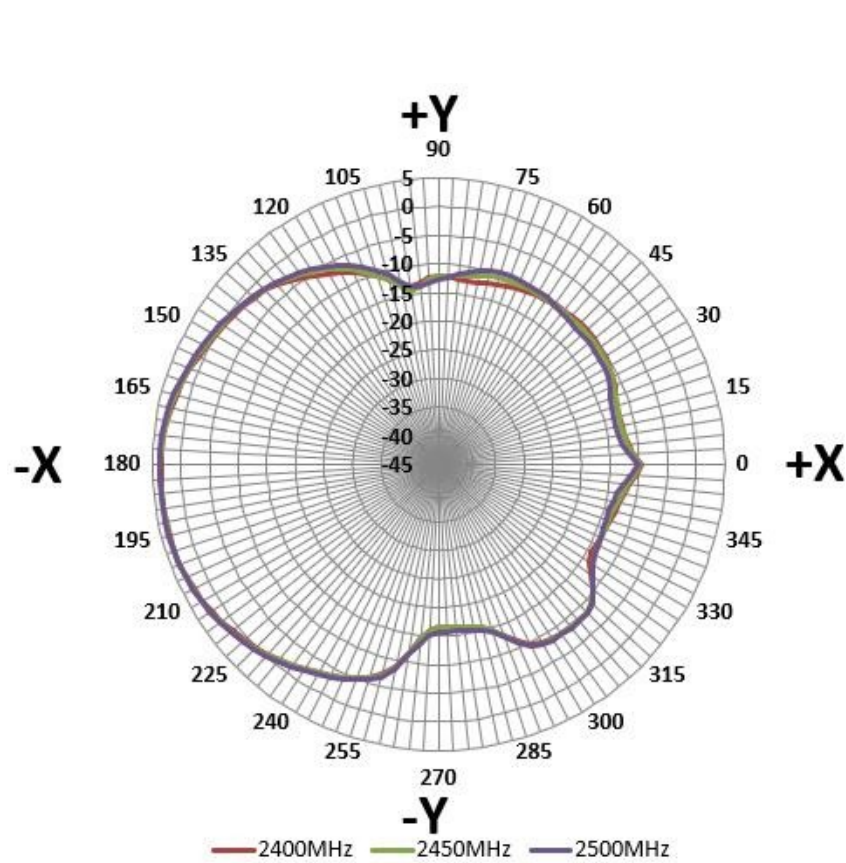
DB1	Freq(MHz)	Peak Gain(dBi)	Directivity(dBi)	Efficiency(%)
	5150	3.79	5.08	74.41%
	5250	3.86	4.99	76.98%
	5350	3.61	5.09	71.10%
	5750	4.05	5.11	78.30%
	5850	3.98	5.38	71.41%
	Average			74.44%

DB2	Freq(MHz)	Peak Gain(dBi)	Directivity(dBi)	Efficiency(%)
	5150	4.88	6.25	72.95%
	5250	4.76	6.28	70.50%
	5350	5.01	6.31	74.11%
	5750	4.88	6.19	73.97%
	5850	4.89	6.29	72.51%
	Average			72.81%

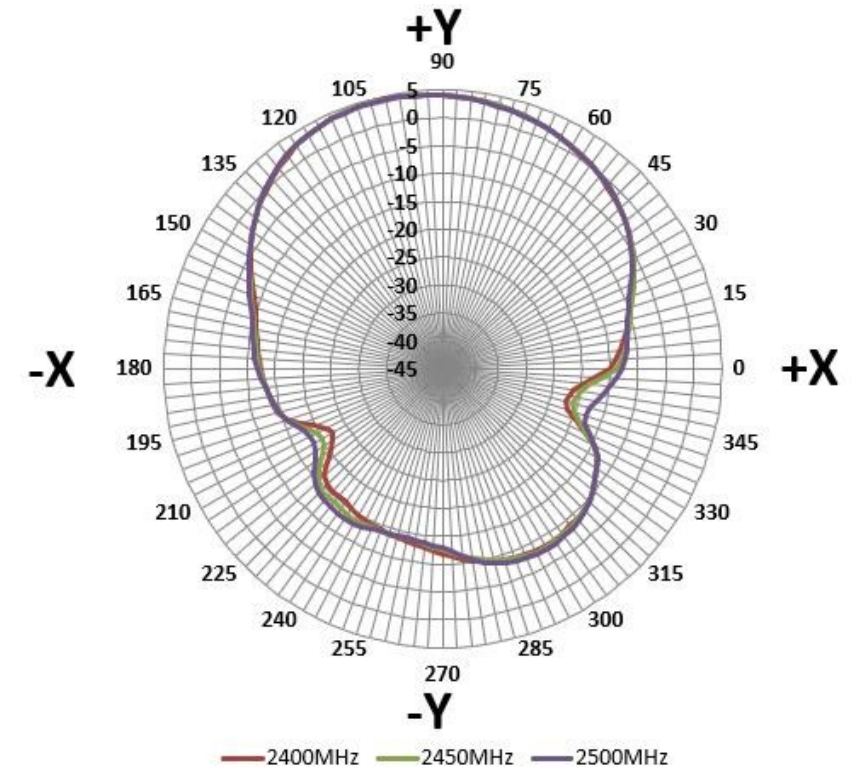
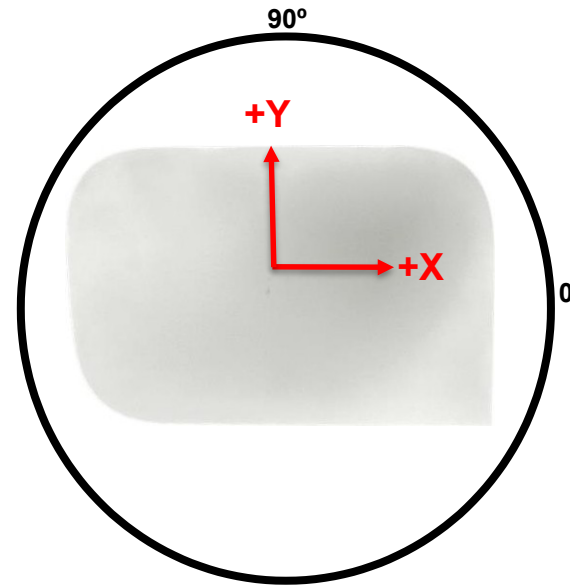
Chamber Coordinates



Power Sum-2.4GHz Band- Azimuth(XY)

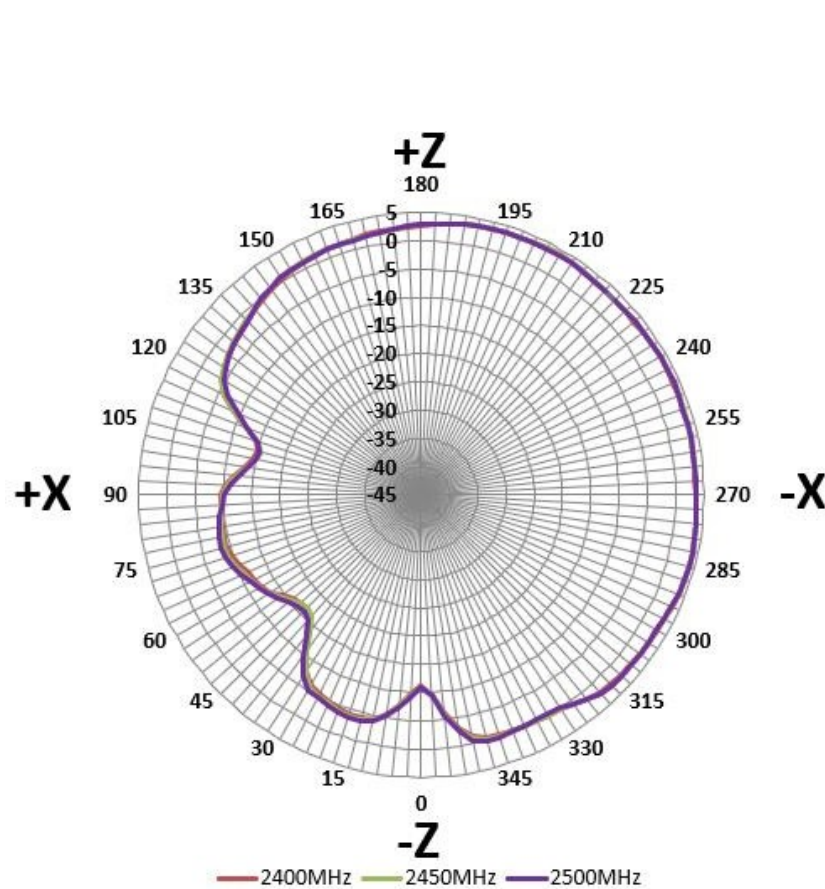


DB1

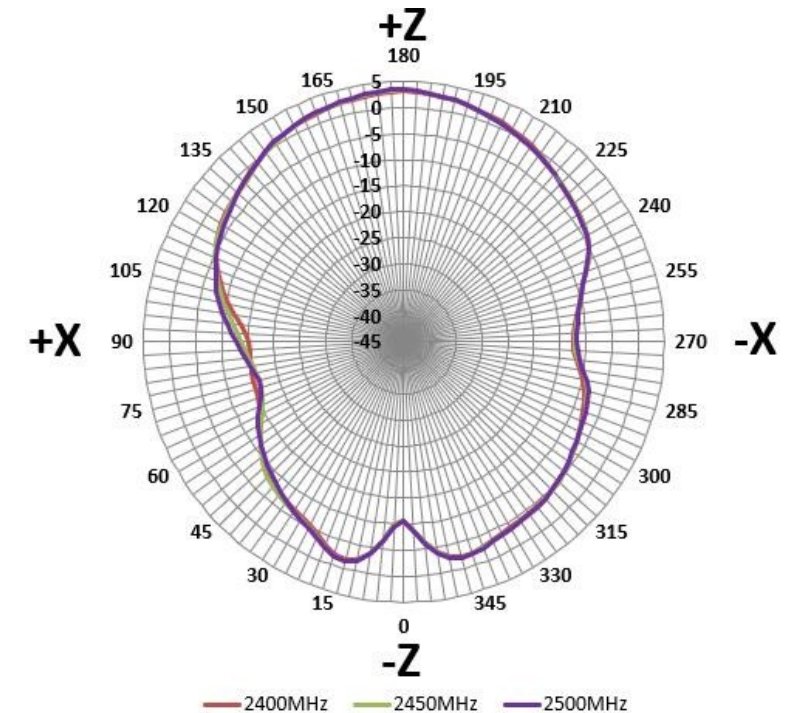
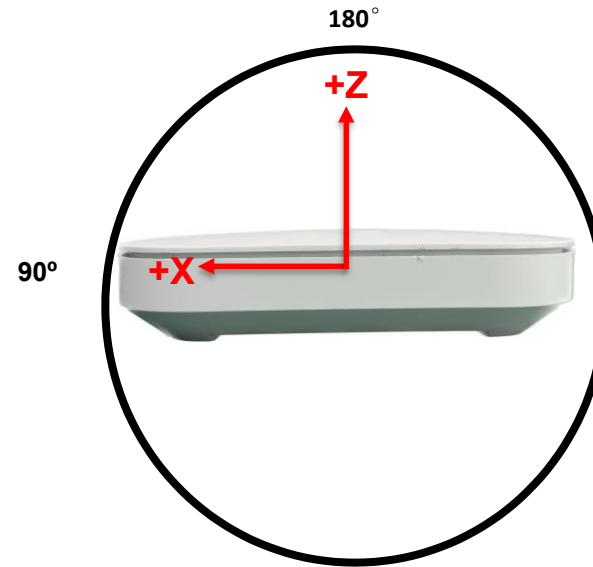


DB2

Power Sum-2.4GHz Band- Elevation Cut (ZX)

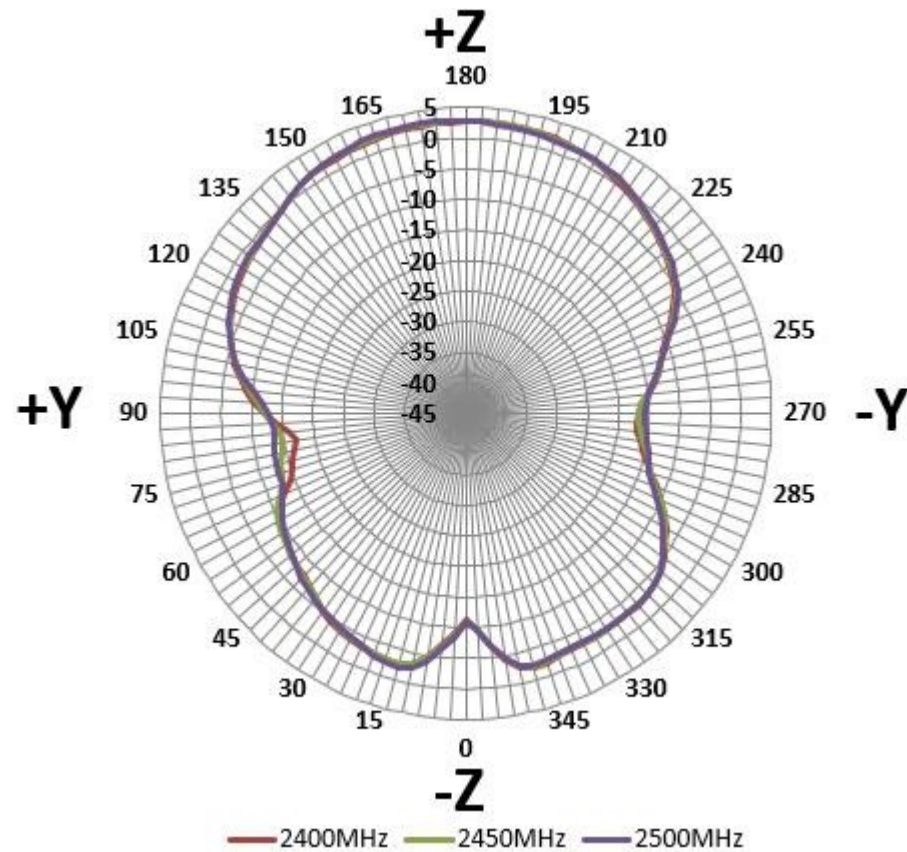


DB1

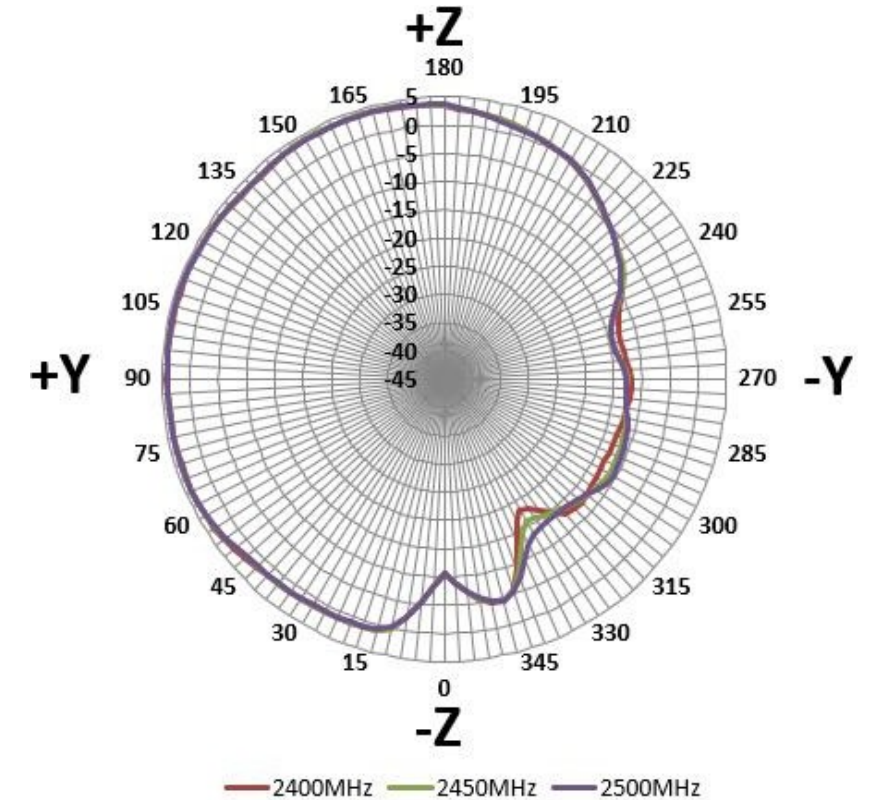
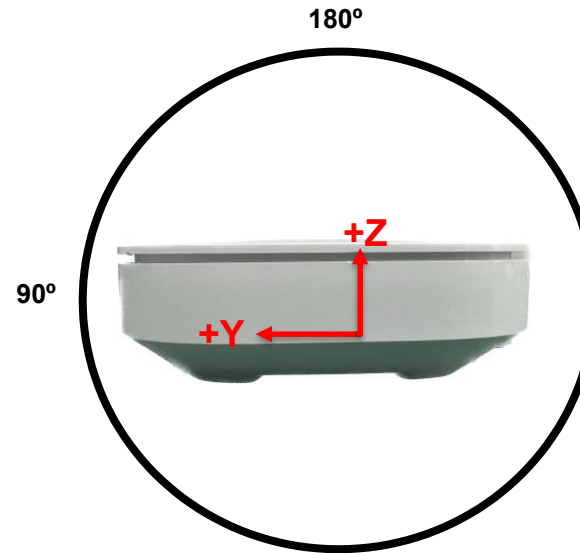


DB2

Power Sum-2.4GHz Band- Elevation Cut (ZY)

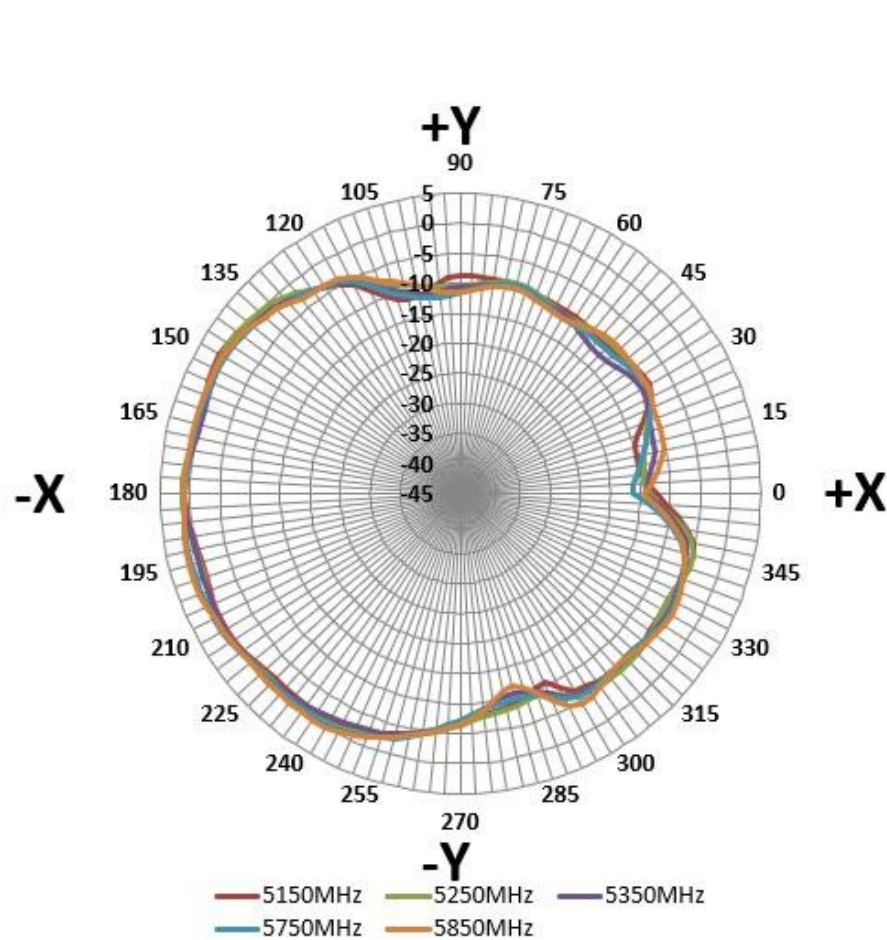


DB1

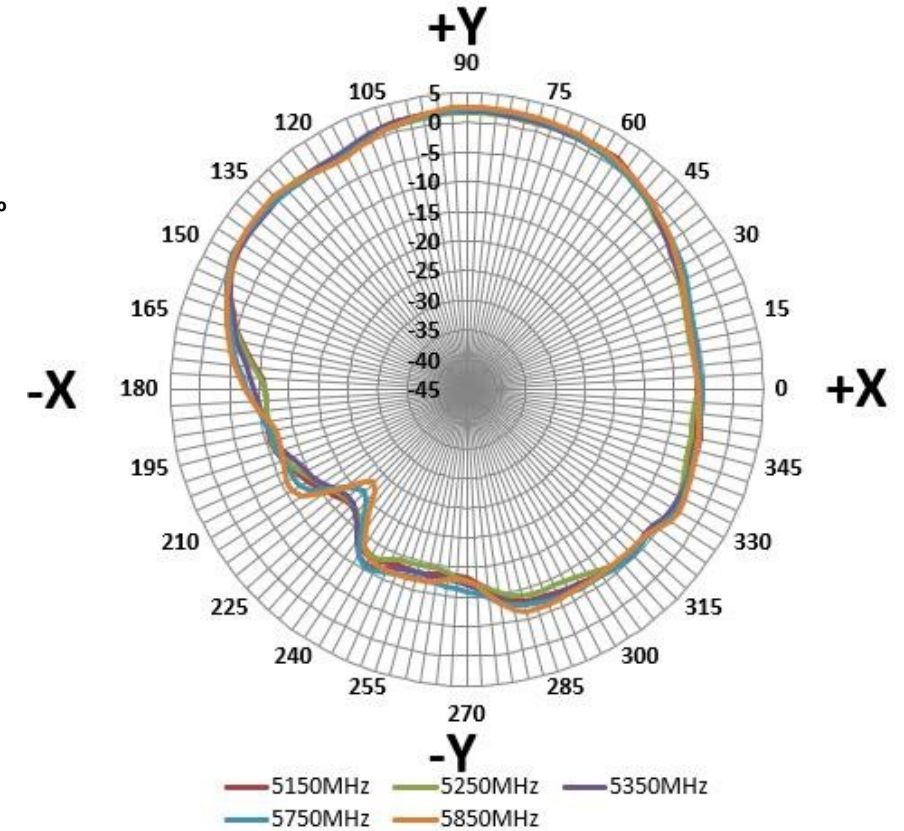
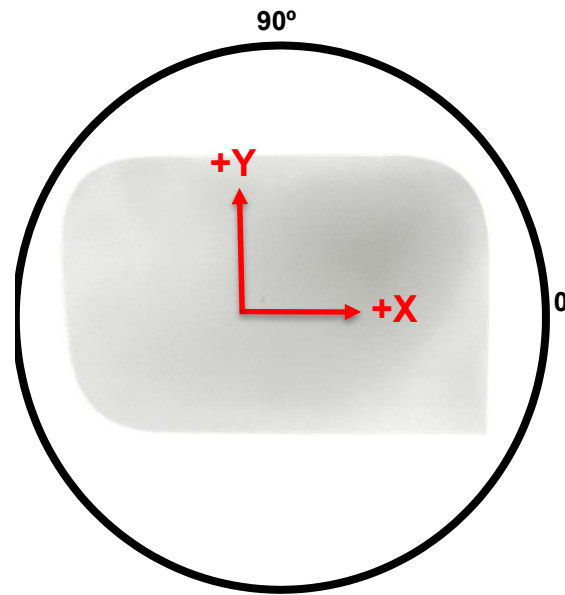


DB2

Power Sum-5GHz Band- Azimuth(XY)

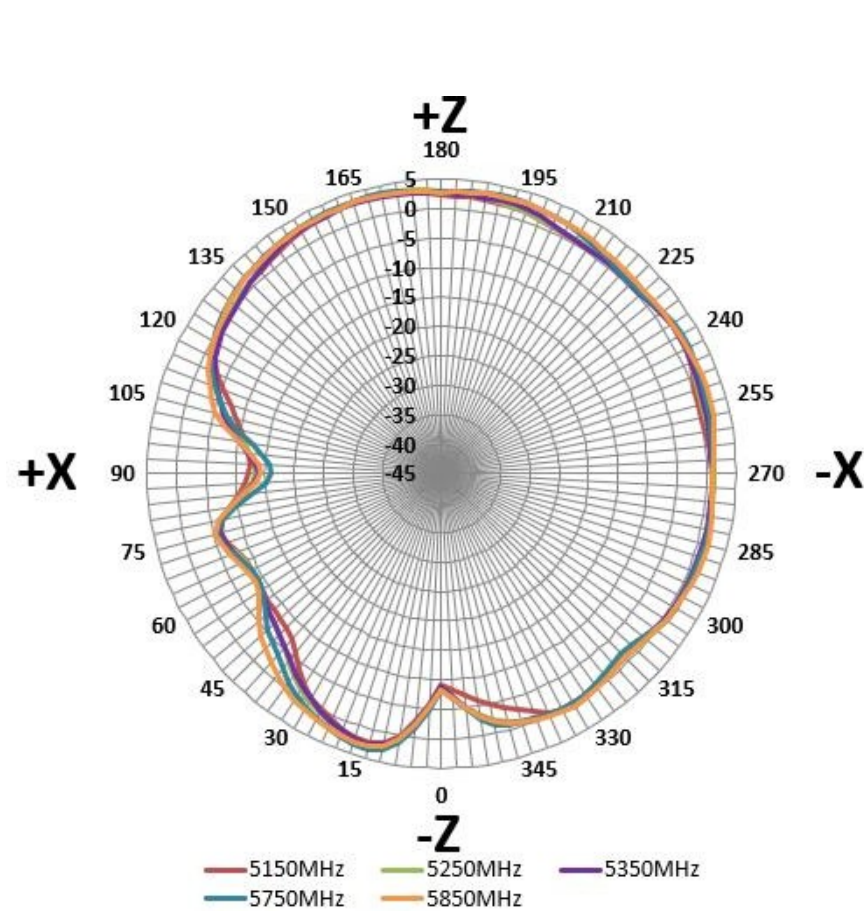


DB1

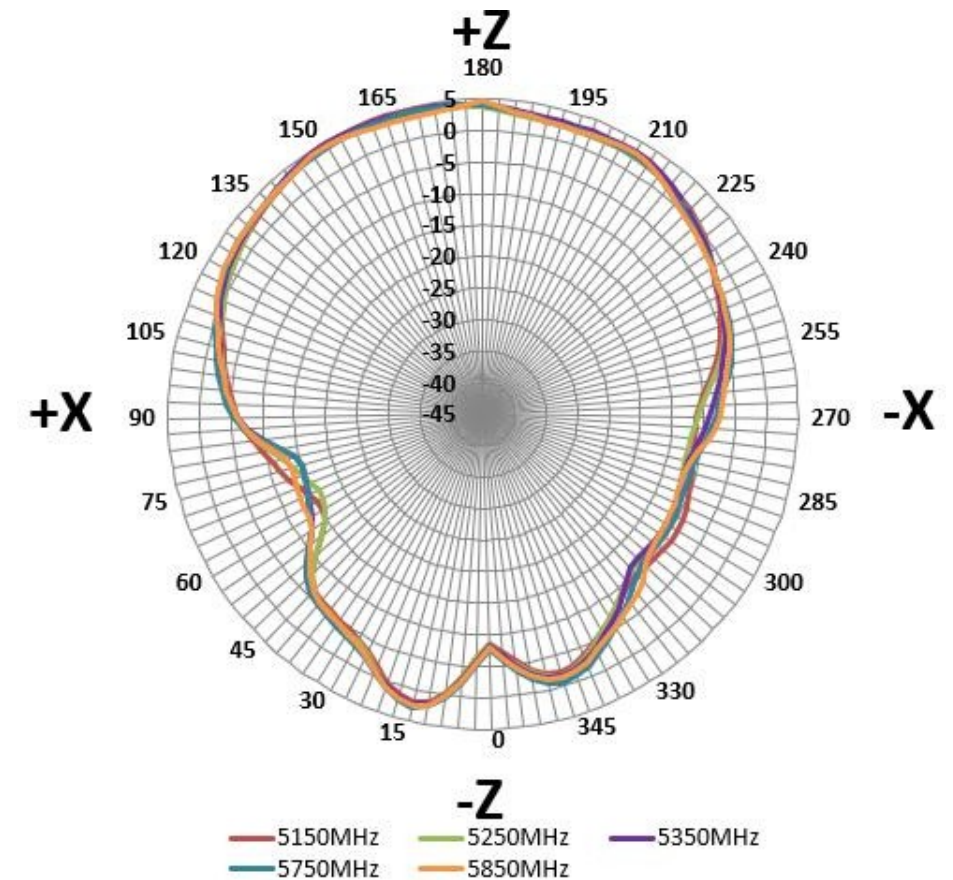
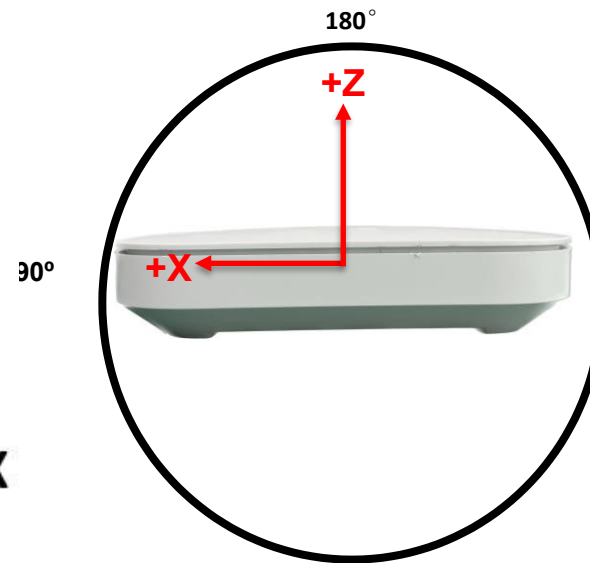


DB2

Power Sum-5GHz Band- Elevation Cut (ZX)

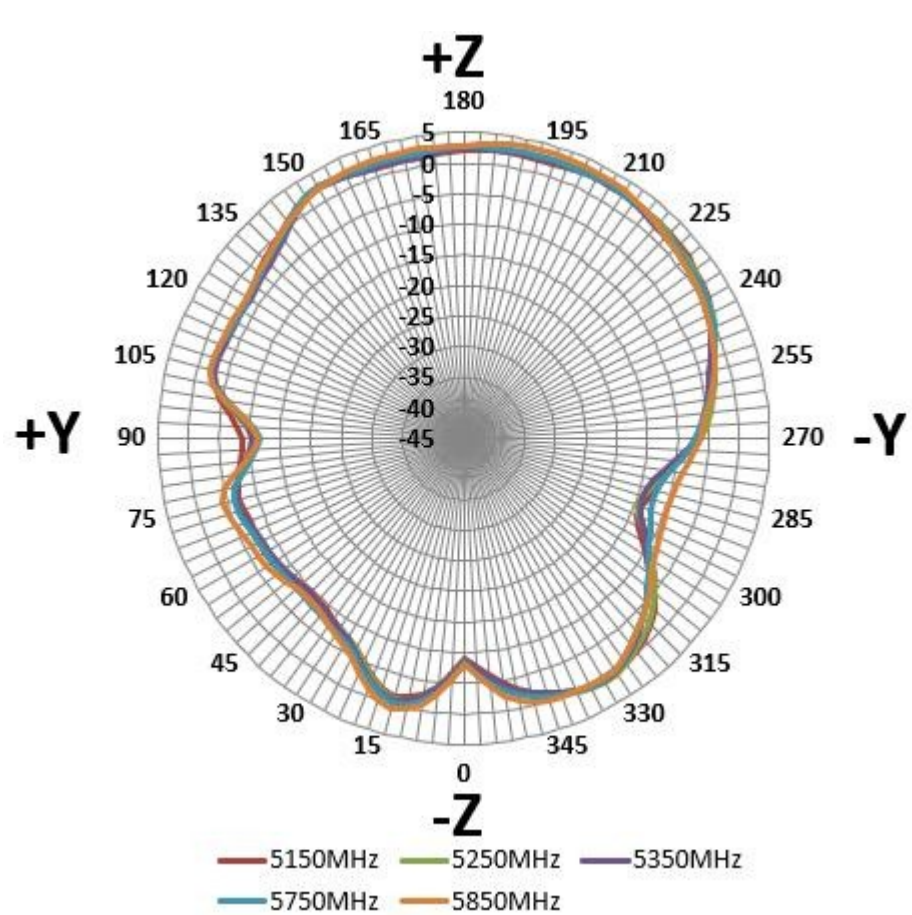


DB1

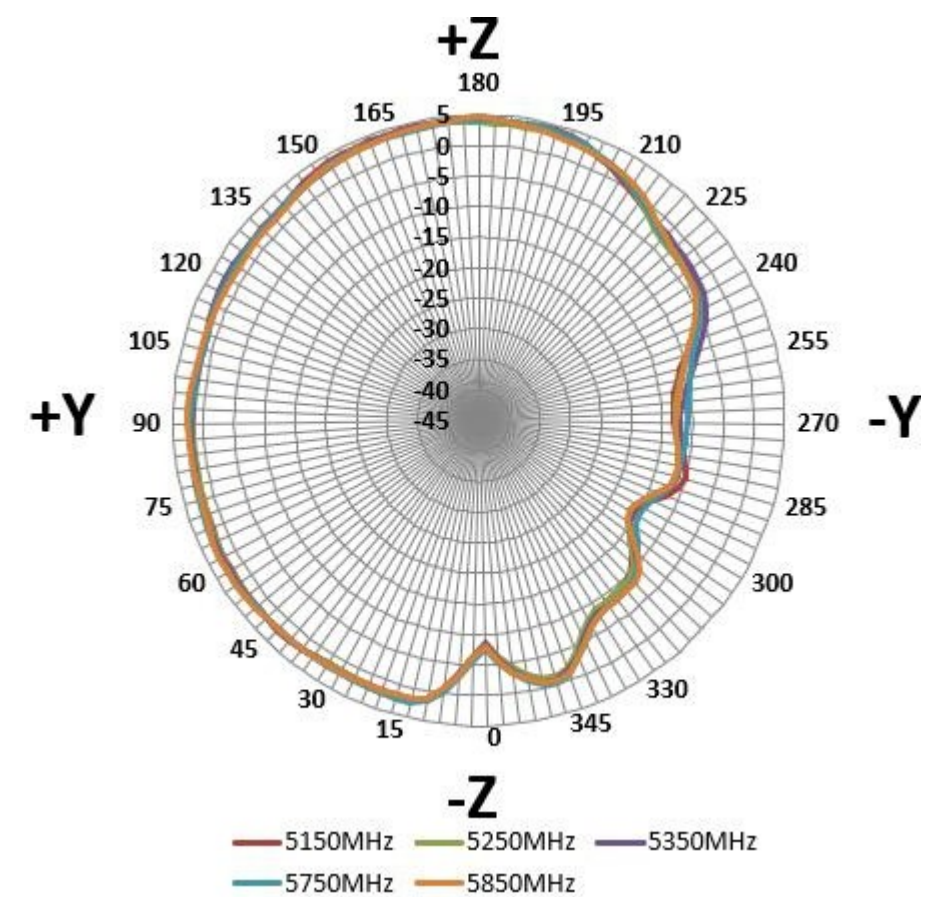
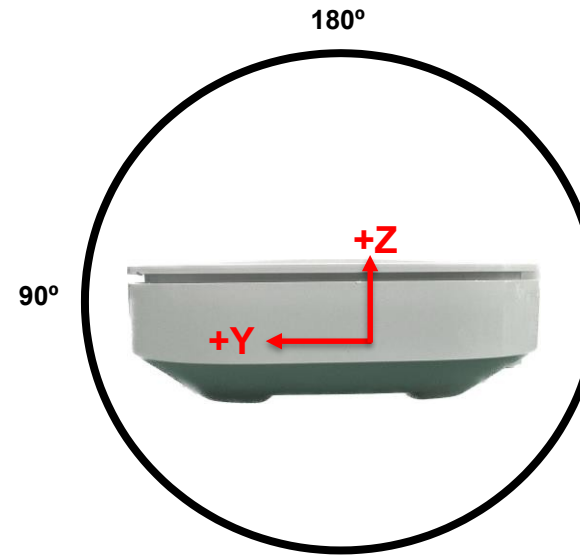


DB2

Power Sum-5GHz Band- Elevation Cut (ZY)



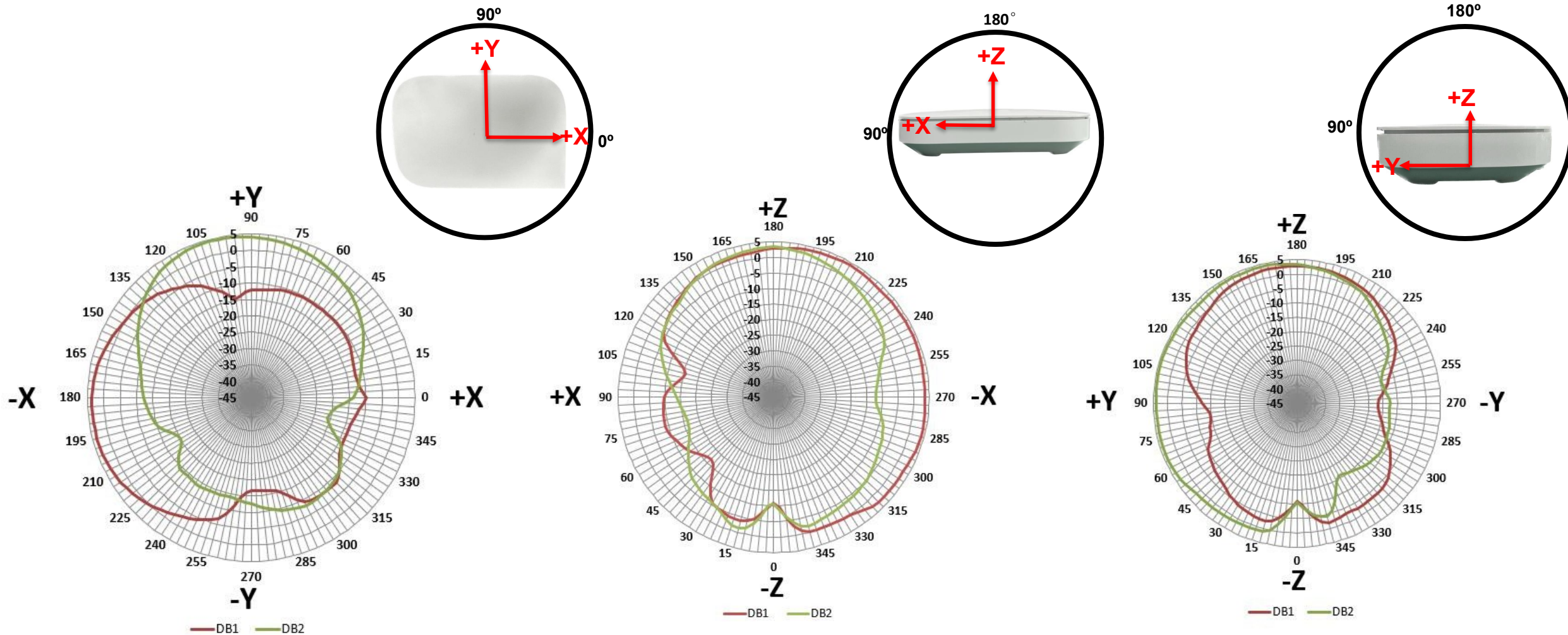
DB1



DB2

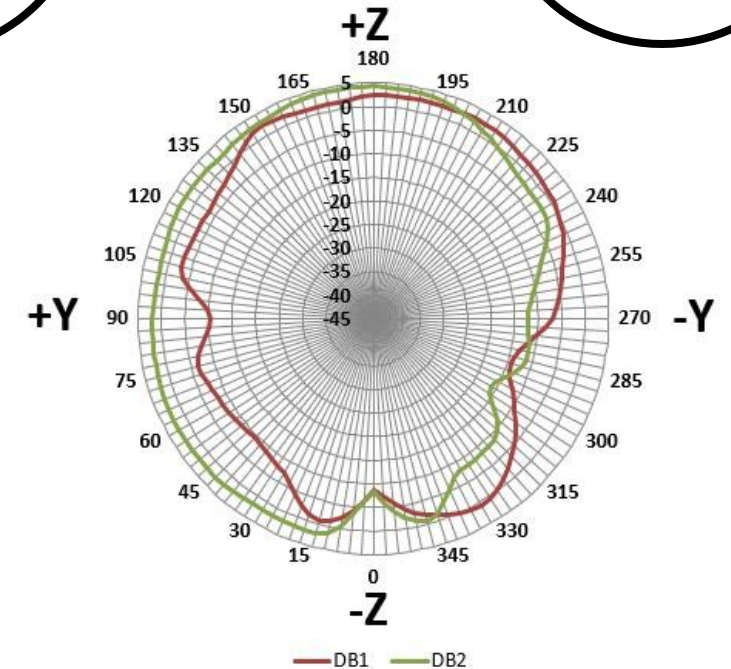
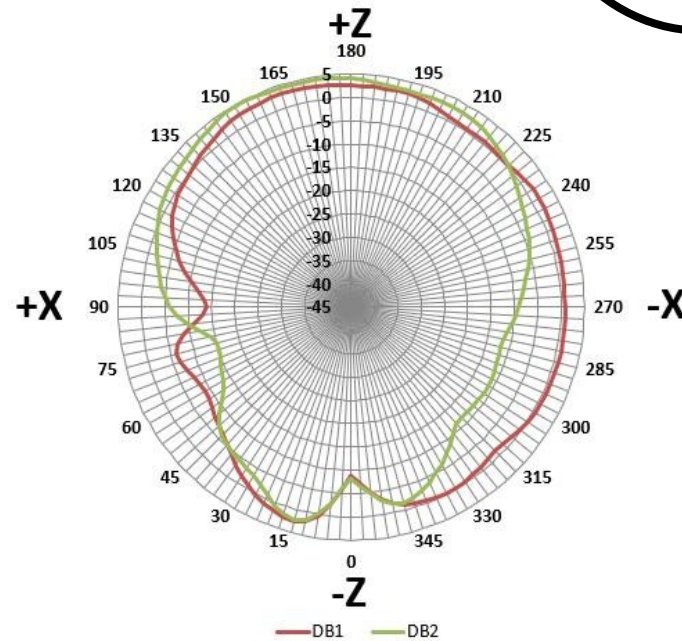
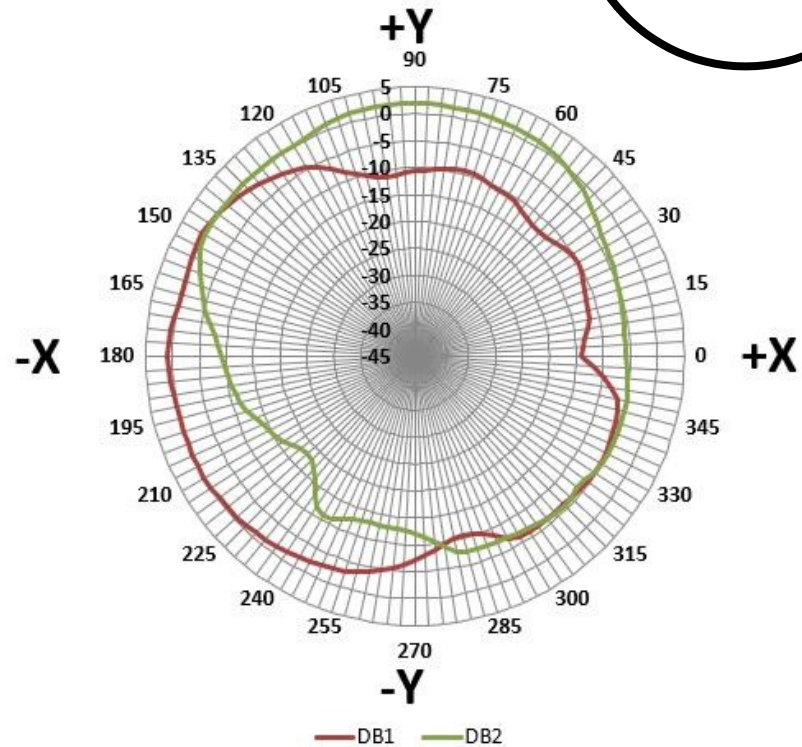
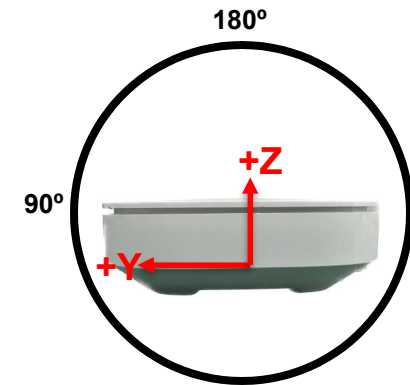
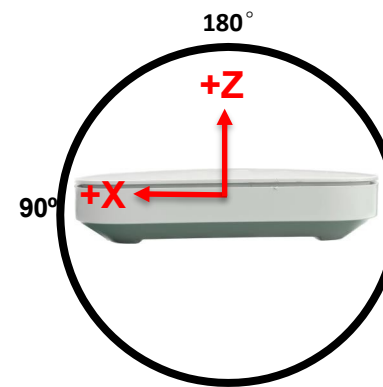
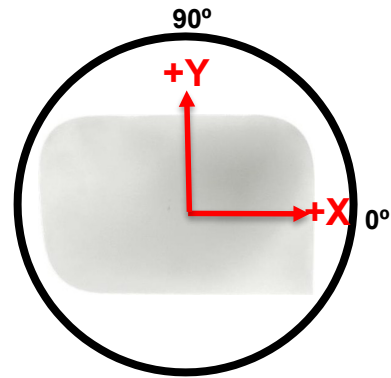
System Coverage- Gain [dB]

2450MHz _Dual band



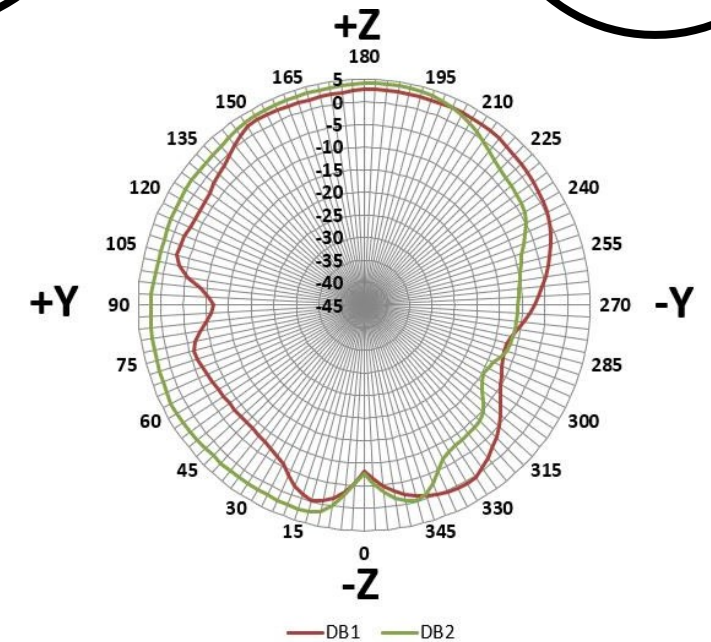
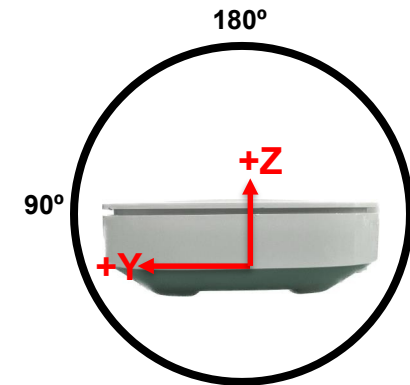
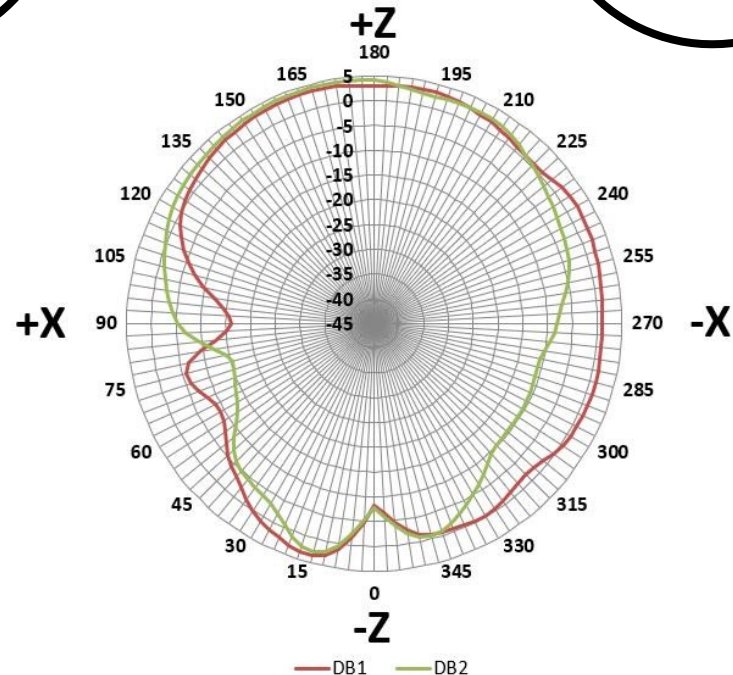
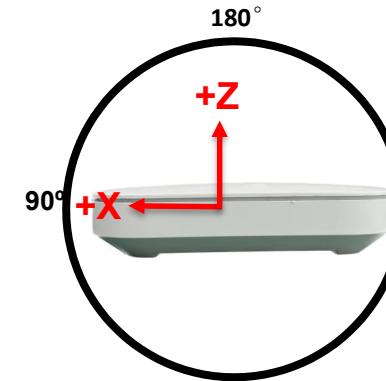
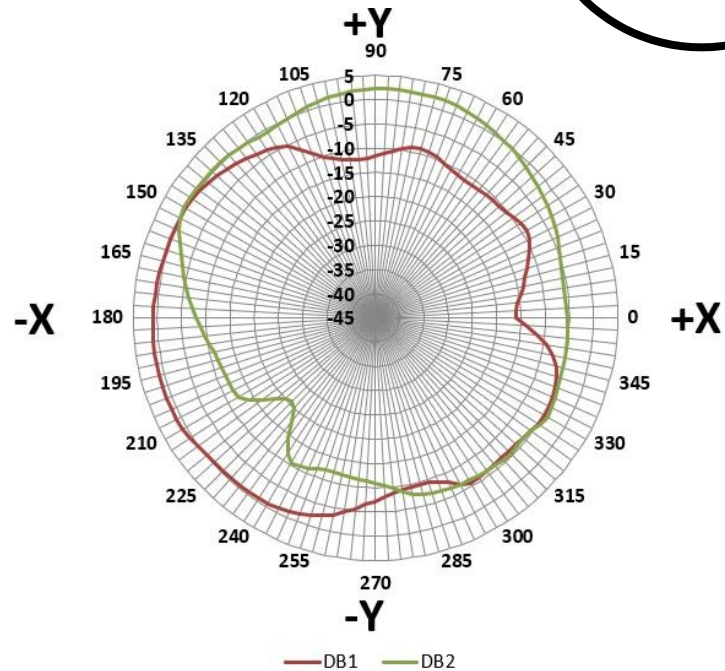
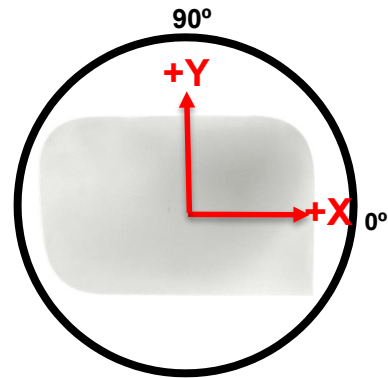
System Coverage- Gain [dB]

5350MHz _Dual band



System Coverage- Gain [dB]

5750MHz _Dual band



WiFi Antenna Performance Summary

Antenna	Worst Return loss (dB)	Average Efficiency (%)	Highest Peak Gain (dB)	Mutual Isolation (dB) 2.4 GHz Band		Mutual Isolation (dB) 5GHz Band	
				DB1	DB2	DB1	DB2
DB1_2G	-17.9	69.12	4.69				
DB2_2G	-14.2	69.44	4.69	-42.7			
DB1_5G	-18.8	74.44	4.05				
DB2_5G	-14.1	72.81	5.01			-44	
BT	-7.5			-36	-36	-37	-38

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Thank You!

We Look Forward To Working Together

