

# GALTRONICS

WHEN CONNECTIONS COUNT



# **Gemtek-Cherry Wi-Fi Antenna Performance Report**

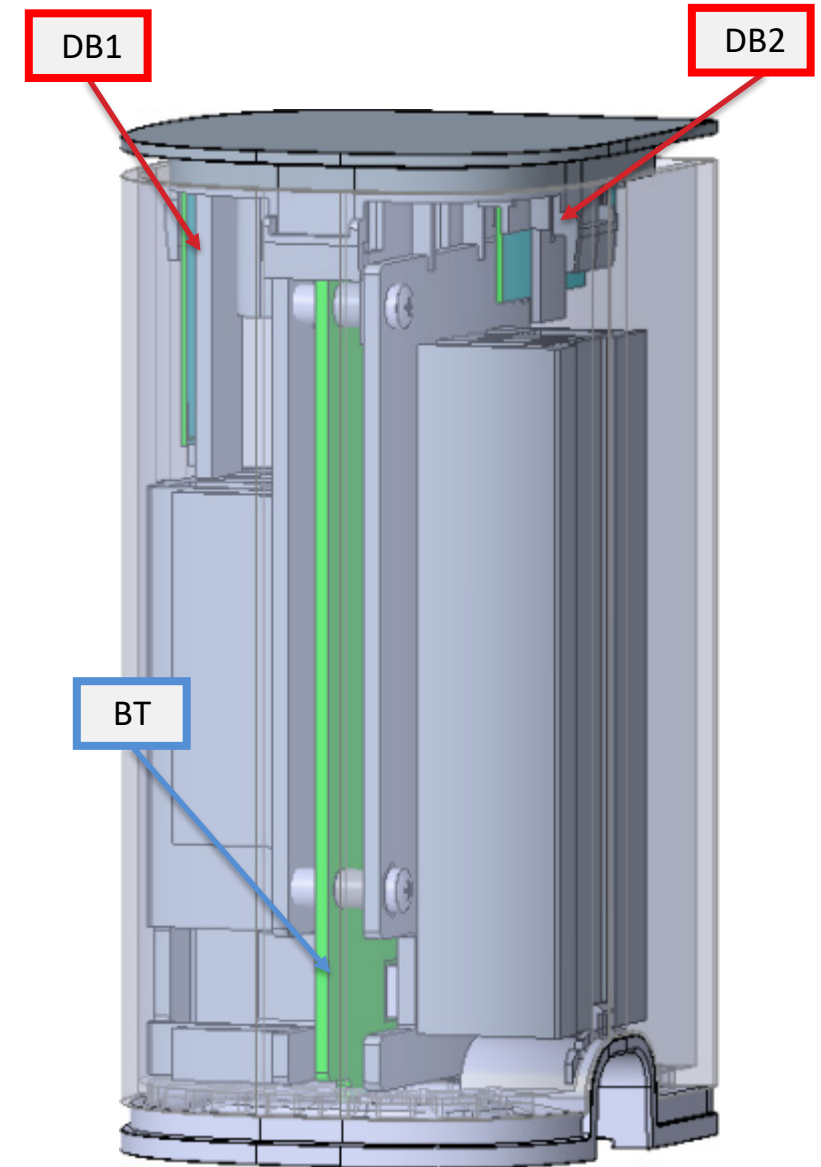
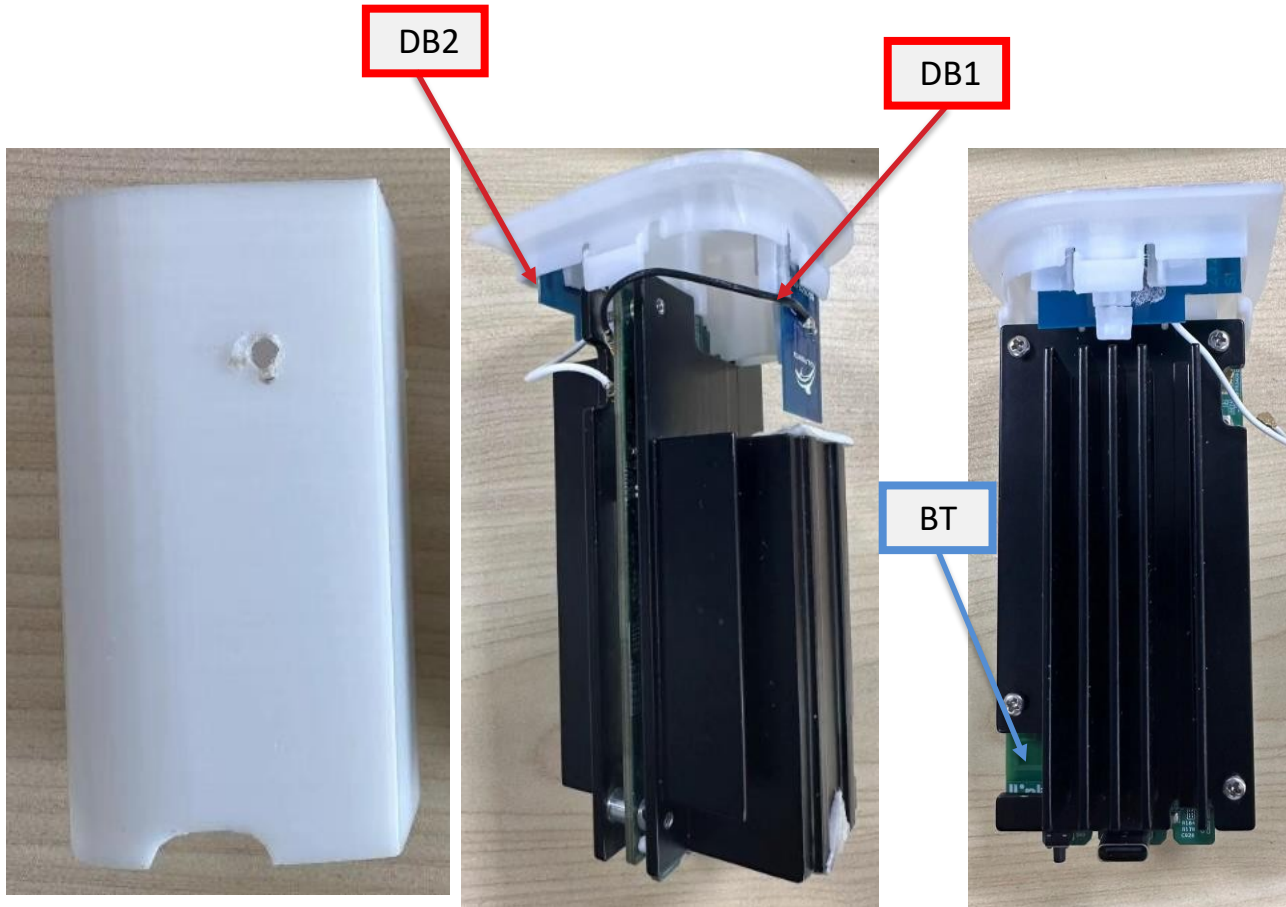
Galtronics Project: 7935

Prepared by Lean  
May 24 , 2023

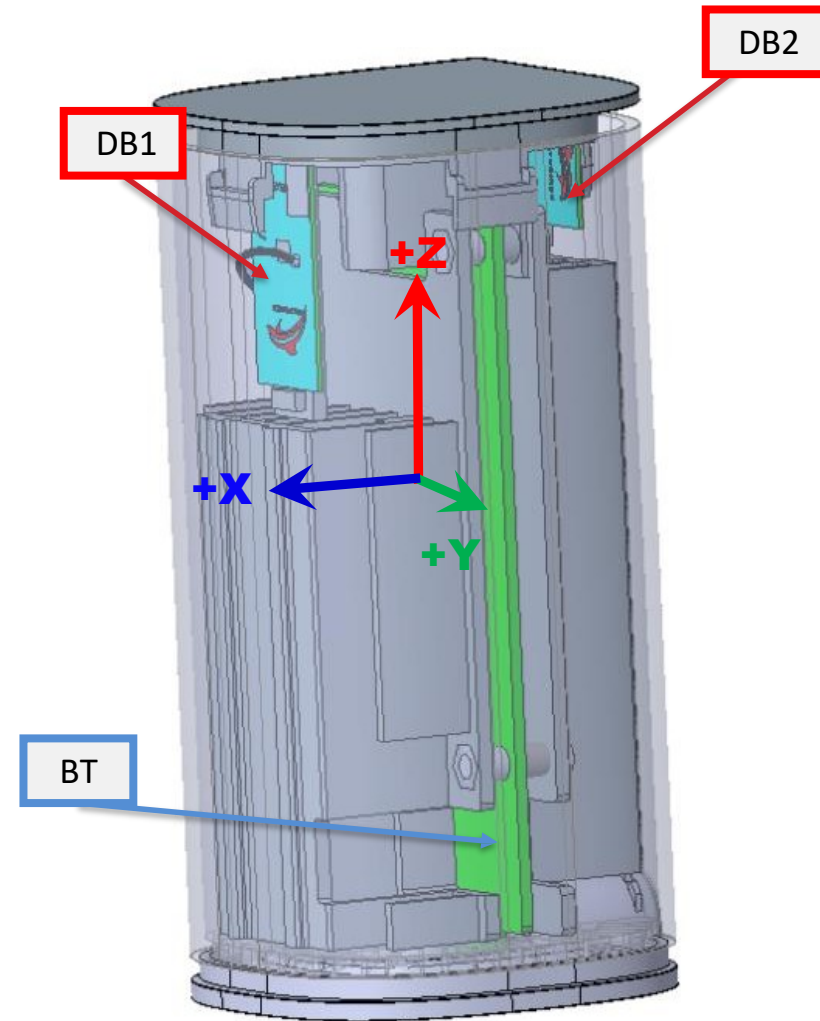
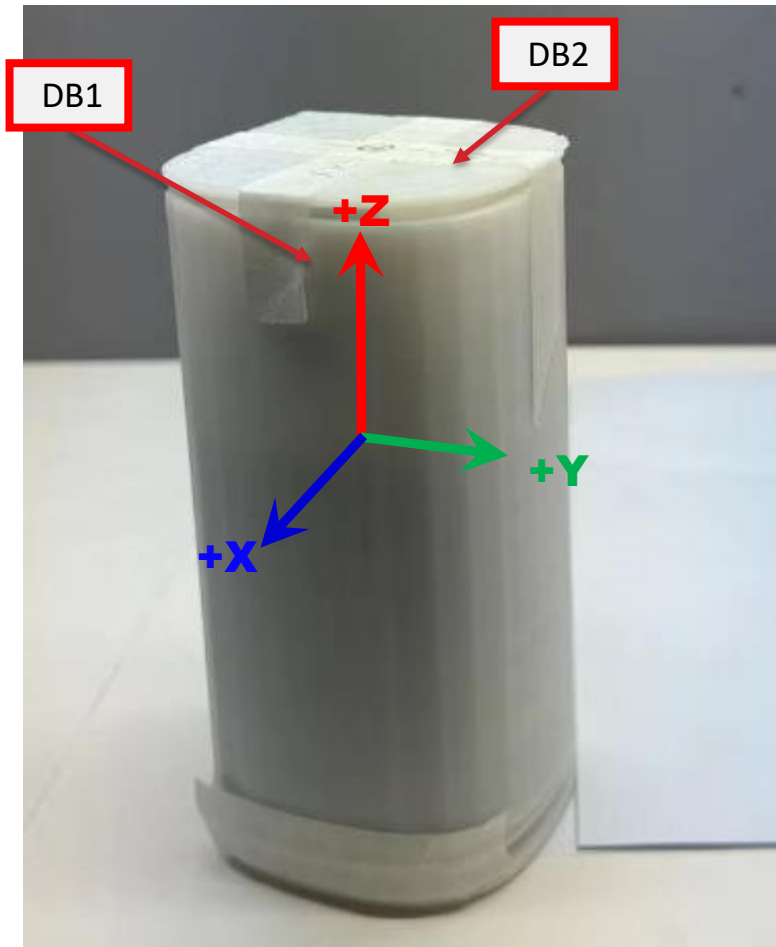
# Introduction

- » Galtronics developed an antenna solution for Gemtek-Cherry
- » There are 3 antennas :
  - Two Cabled PCB WI-FI Dual band antennas :- DB1 and DB2.
  - One On-board 2G band antenna :- BT.
- DB1 : 02102140-07935C1/ DB2: 02102140-07935C2
- » The operating frequency of the Dual band is 2.4 GHz-2.5 GHz and 5.15GHz-5.85GHz.
- » 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



## Chamber Coordinates /



# Antenna Orientation

|     | Antenna Orientation | Cable Length |
|-----|---------------------|--------------|
| DB1 | V                   | 60mm         |
| DB2 | H                   | 60mm         |

V = vertical  
H = horizontal

## 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  | -12.8                  | 63.10                  | 3.35                   |                                    |     |                                 |     |
| DB2_2G  | -13.3                  | 64.98                  | 3.72                   | -21                                |     |                                 |     |
| DB1_5G  | -14.8                  | 70.81                  | 4.92                   |                                    |     |                                 |     |
| DB2_5G  | -13.8                  | 71.87                  | 4.79                   |                                    |     | -29                             |     |
| BT      | -7.8                   |                        |                        | -27                                | -26 | -36                             | -34 |

## Gain & Efficiency summary

| DB1            | Freq(MHz) | Peak Gain(dBi) | Directivity(dBi) | Efficiency(%) |
|----------------|-----------|----------------|------------------|---------------|
|                | 2400      | 3.14           | 5.16             | 62.81%        |
|                | 2450      | 3.19           | 5.25             | 62.26%        |
|                | 2500      | 3.35           | 5.27             | 64.23%        |
| <b>Average</b> |           |                |                  | <b>63.10%</b> |

| DB2            | Freq(MHz) | Peak Gain(dBi) | Directivity(dBi) | Efficiency(%) |
|----------------|-----------|----------------|------------------|---------------|
|                | 2400      | 3.47           | 5.33             | 65.10%        |
|                | 2450      | 3.69           | 5.51             | 65.72%        |
|                | 2500      | 3.72           | 5.64             | 64.13%        |
| <b>Average</b> |           |                |                  | <b>64.98%</b> |

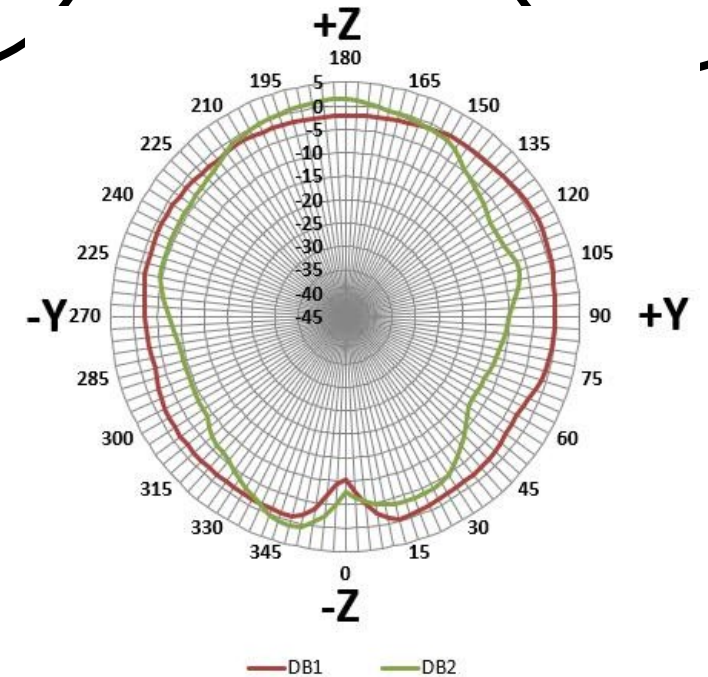
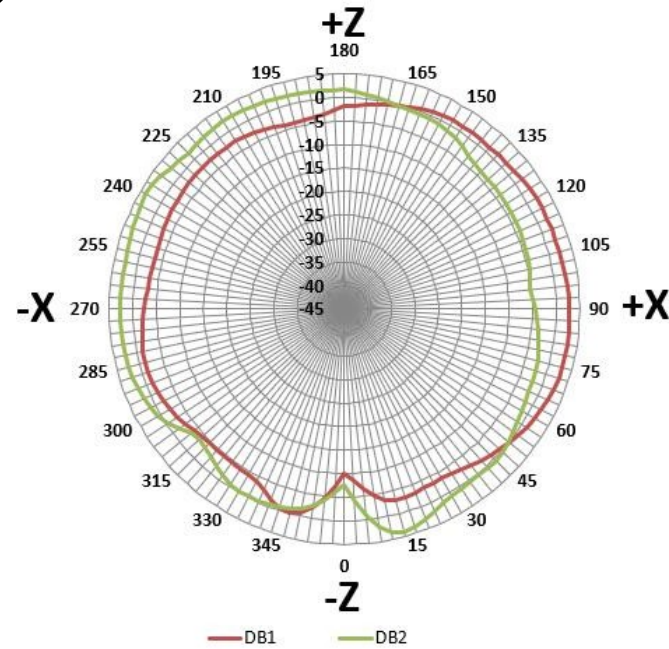
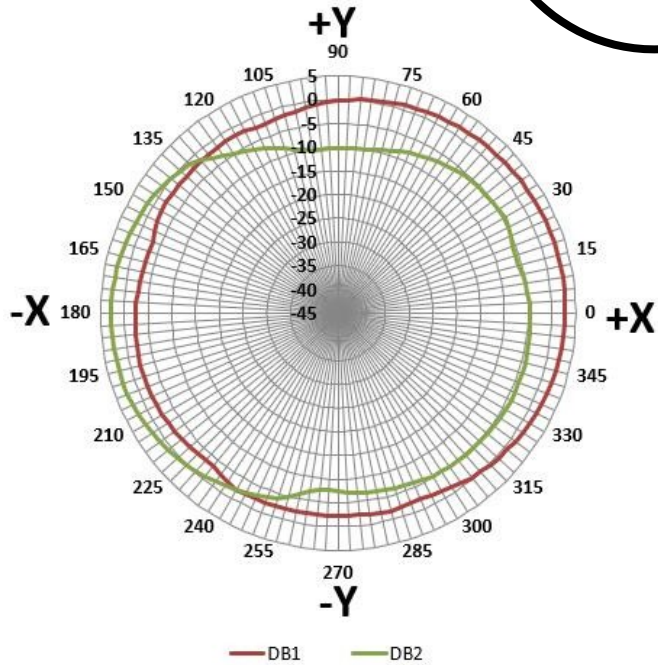
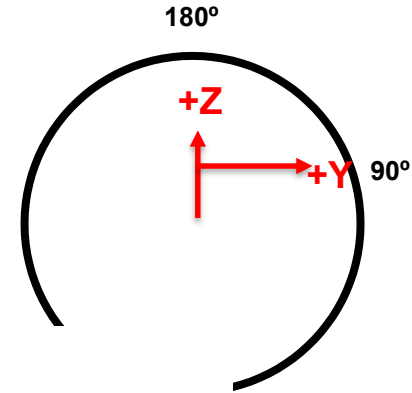
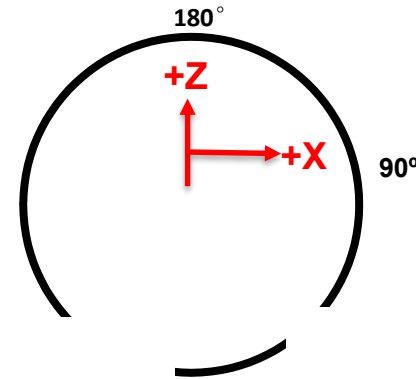
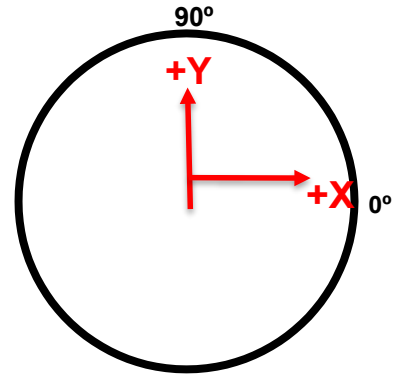
| DB1            | Freq(MHz) | Peak Gain(dBi) | Directivity(dBi) | Efficiency(%) |
|----------------|-----------|----------------|------------------|---------------|
|                | 5150      | 4.85           | 6.34             | 71.05%        |
|                | 5250      | 4.90           | 6.33             | 72.02%        |
|                | 5350      | 4.64           | 6.08             | 71.87%        |
|                | 5750      | 4.92           | 6.50             | 69.45%        |
|                | 5850      | 4.72           | 6.29             | 69.66%        |
| <b>Average</b> |           |                |                  | <b>70.81%</b> |

| DB2            | Freq(MHz) | Peak Gain(dBi) | Directivity(dBi) | Efficiency(%) |
|----------------|-----------|----------------|------------------|---------------|
|                | 5150      | 4.70           | 6.18             | 71.12%        |
|                | 5250      | 4.60           | 6.10             | 70.74%        |
|                | 5350      | 4.70           | 6.19             | 70.94%        |
|                | 5750      | 4.79           | 6.26             | 71.25%        |
|                | 5850      | 4.61           | 5.84             | 75.29%        |
| <b>Average</b> |           |                |                  | <b>71.87%</b> |



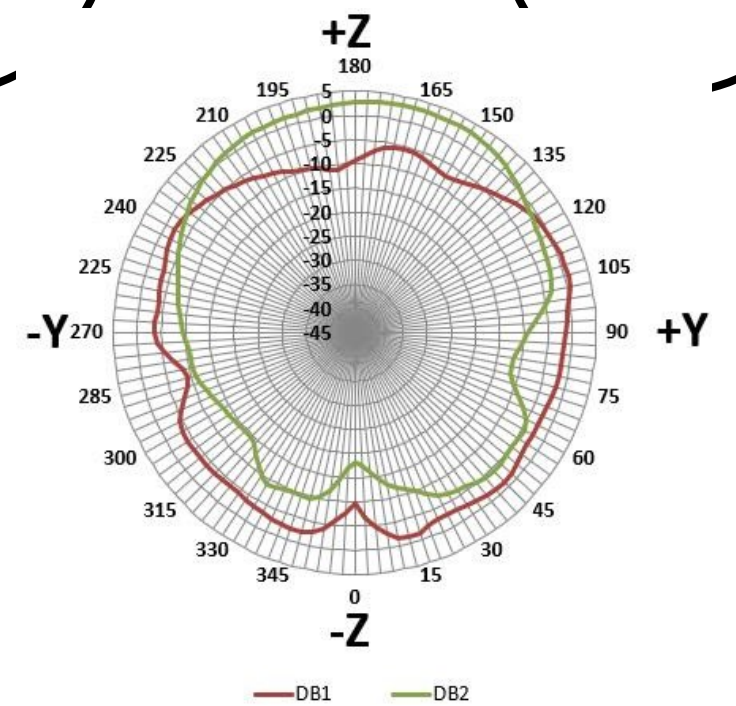
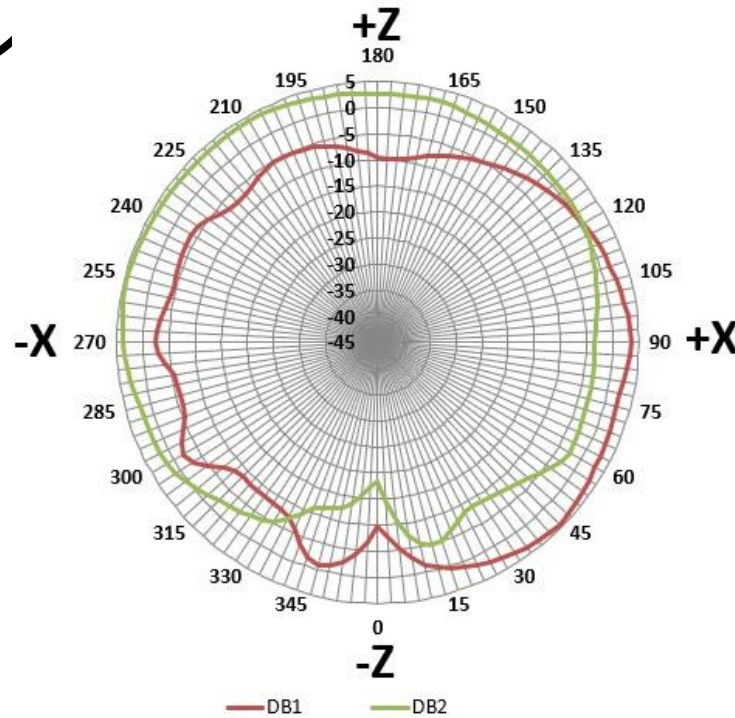
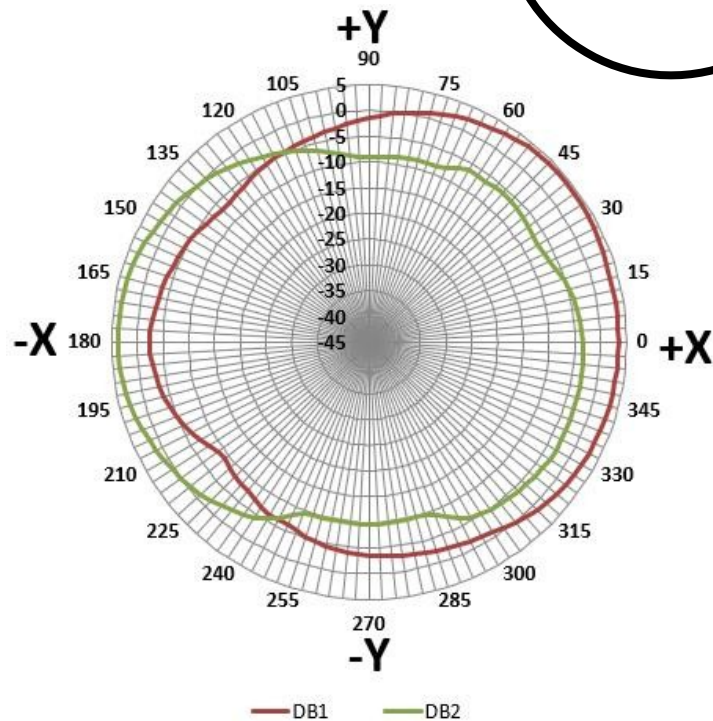
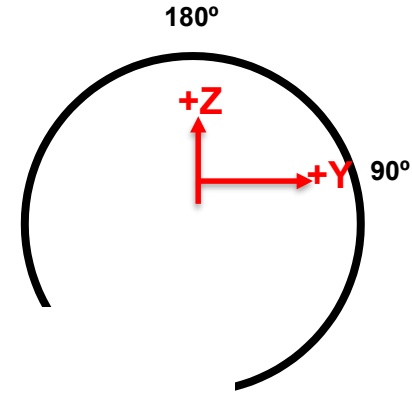
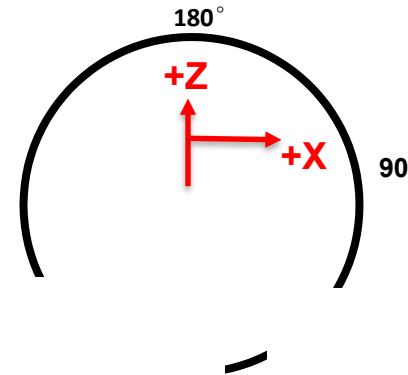
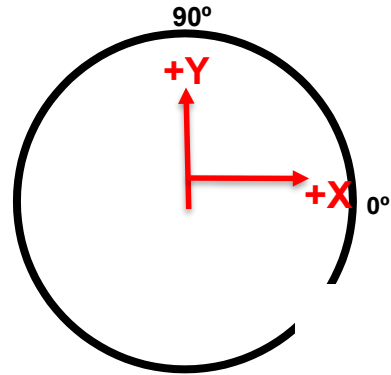
# System Coverage- Gain [dB]

## 2450MHz \_Dual band



# System Coverage- Gain [dB]

## 5350MHz \_Dual band



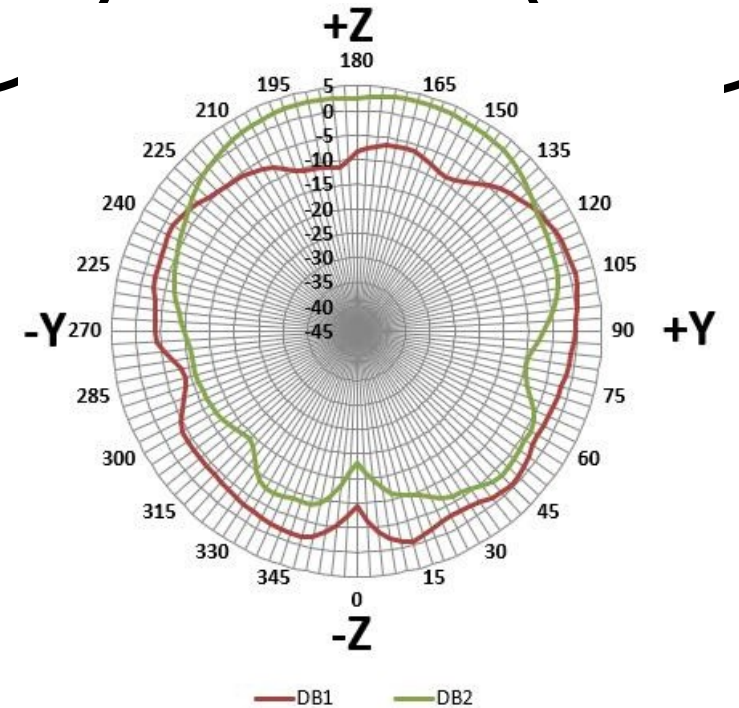
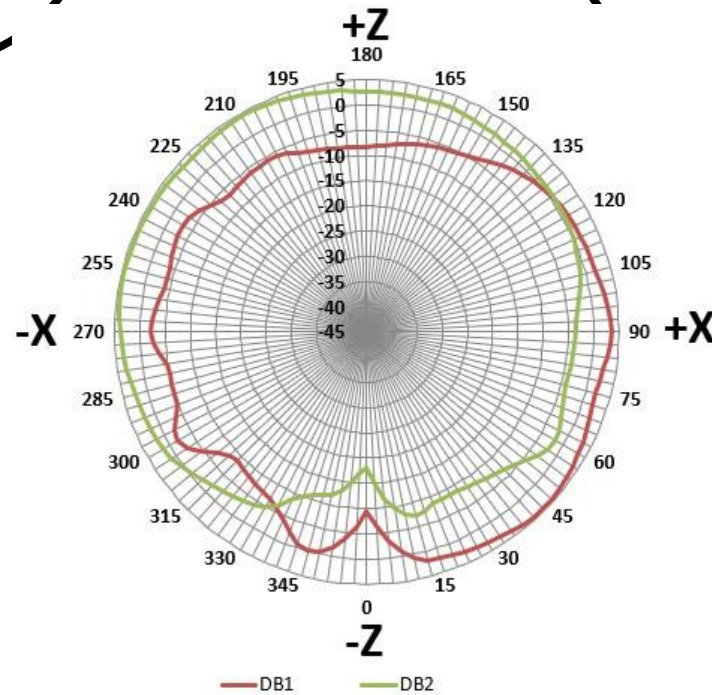
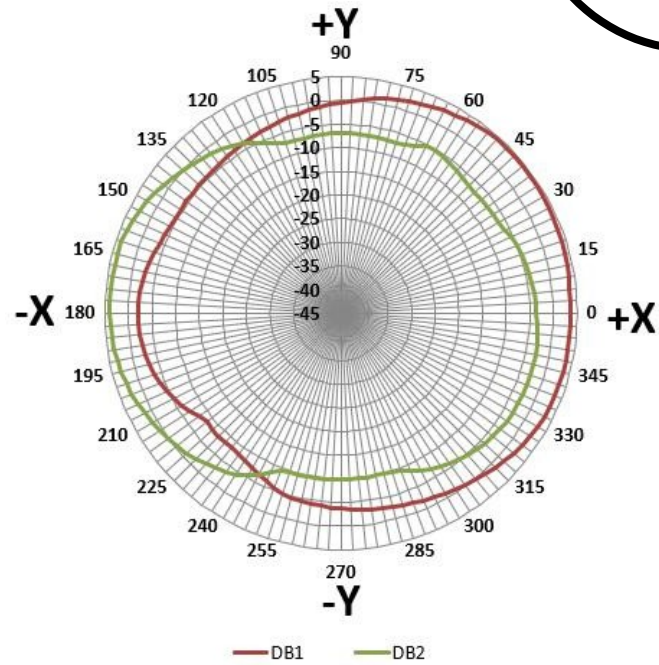
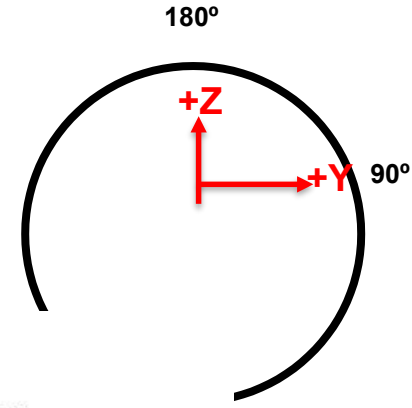
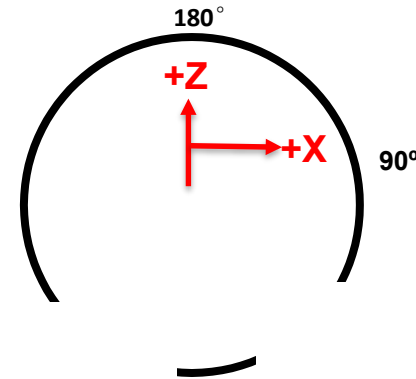
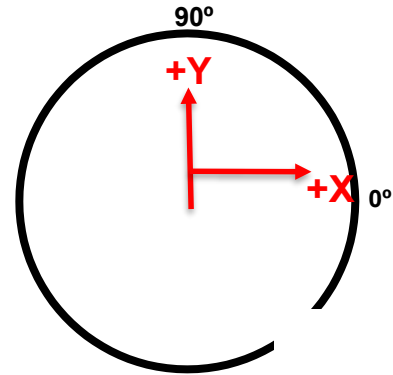
— DB1 — DB2

— DB1 — DB2

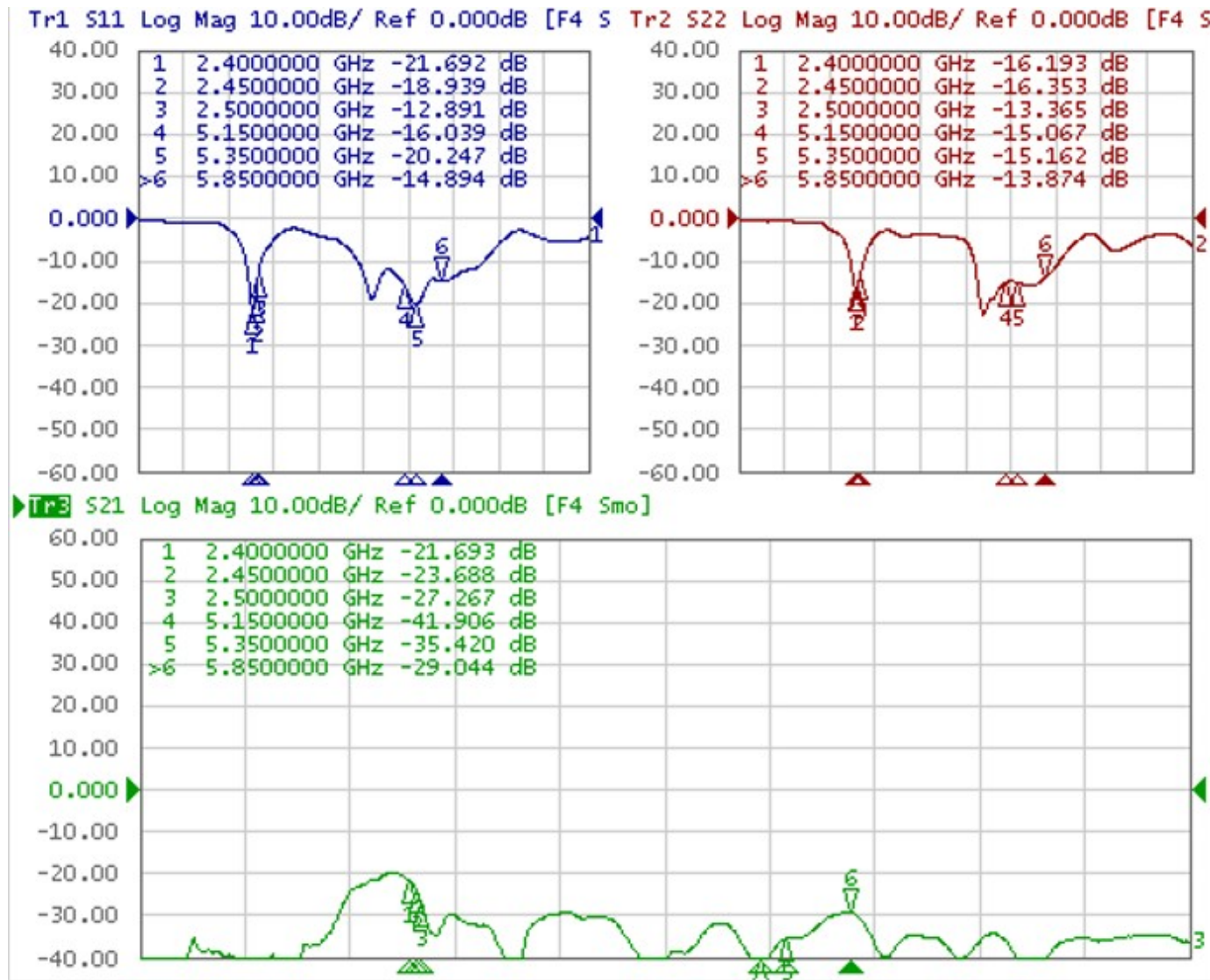
— DB1 — DB2

# System Coverage- Gain [dB]

## 5750MHz \_Dual band



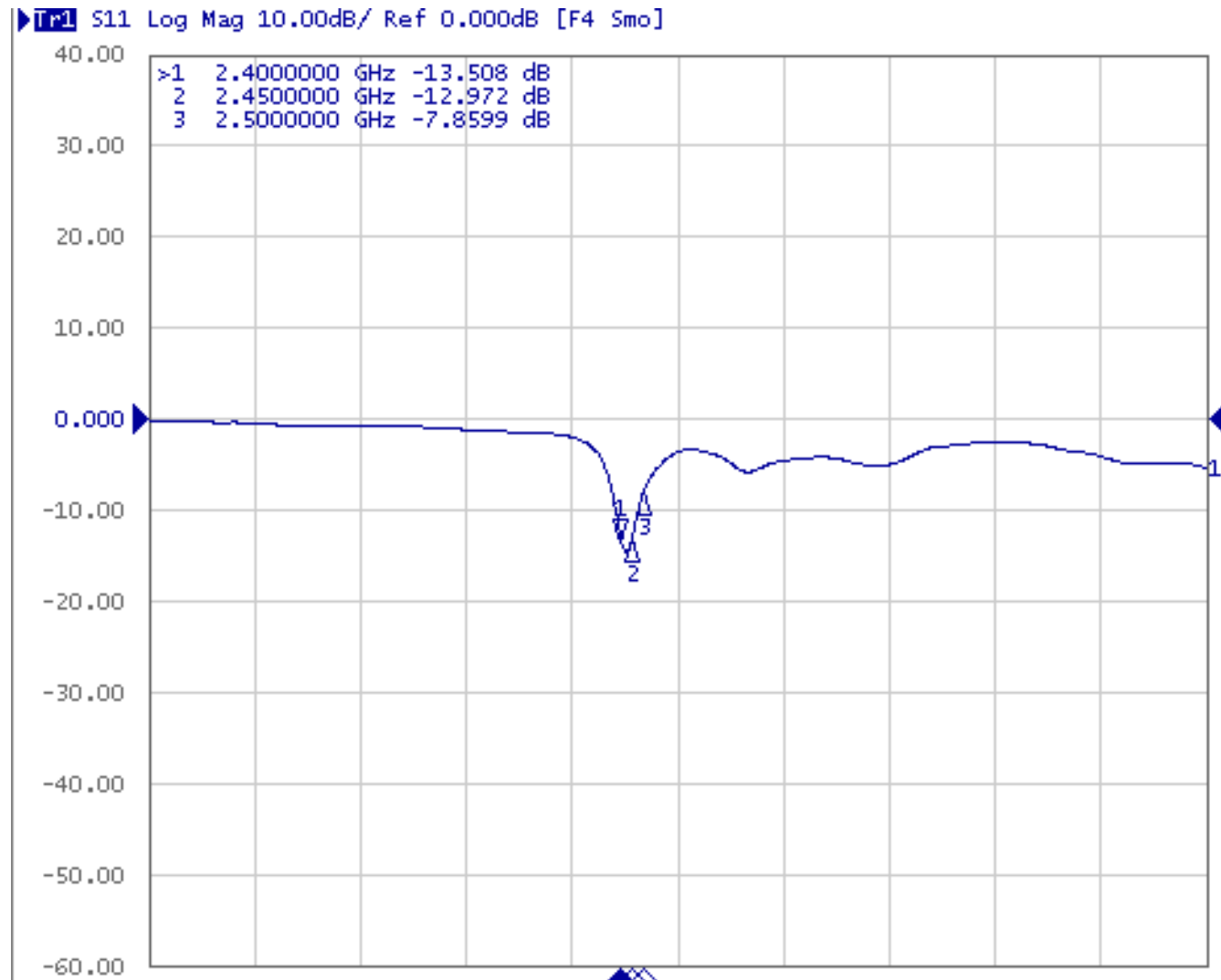
# Return Loss and Isolation- Dual Band



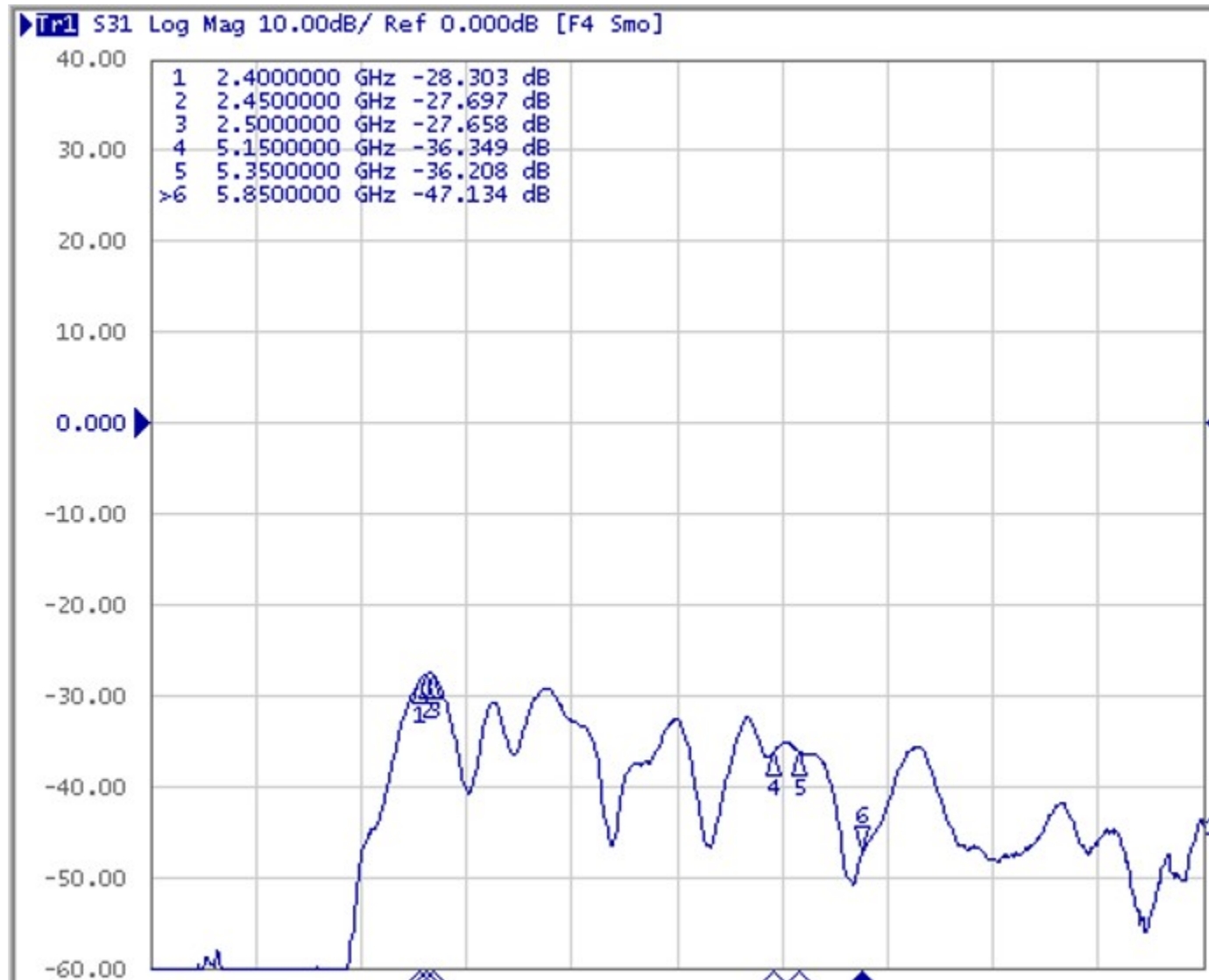
Port1= DB1

Port2= DB2

# Return Loss BT



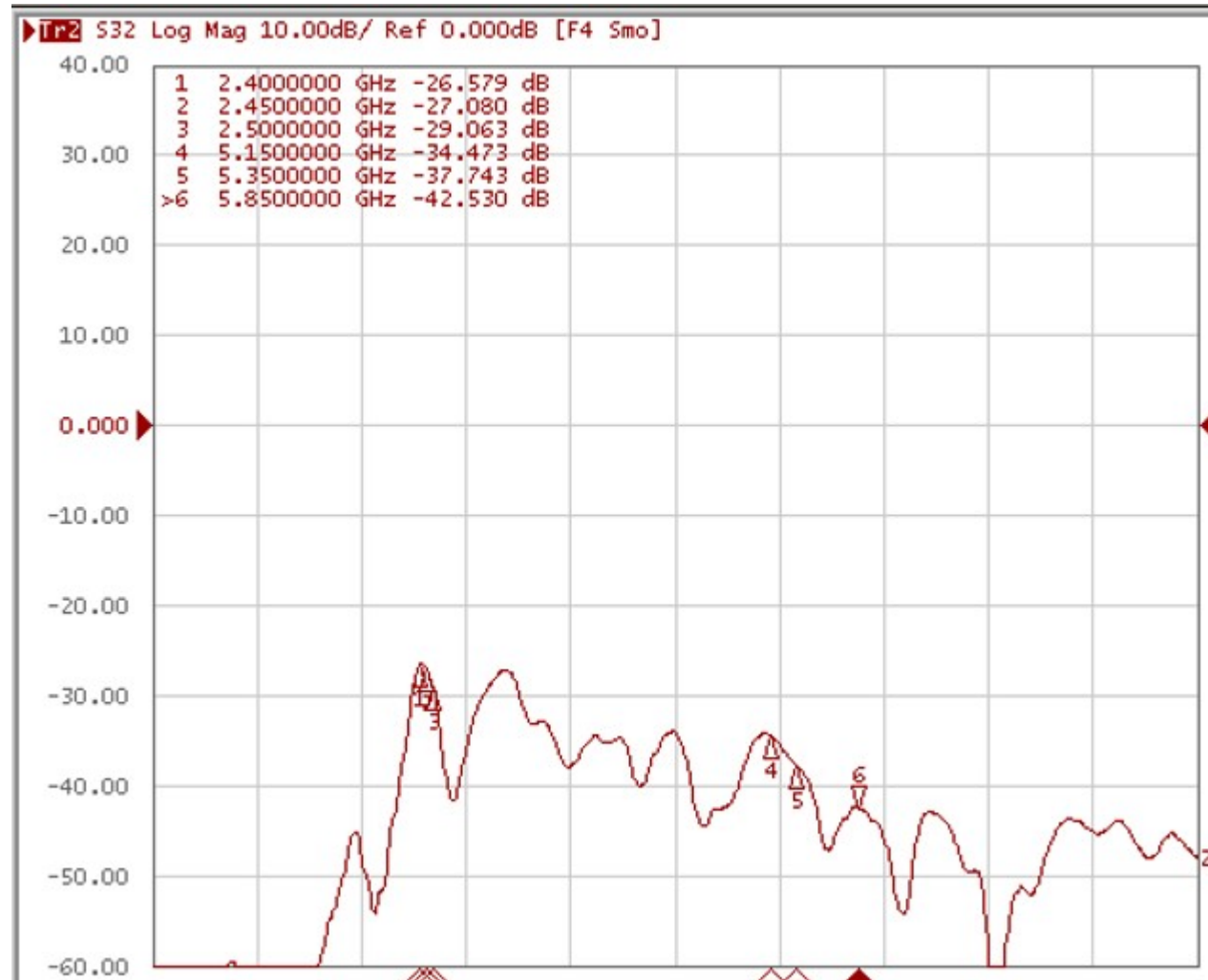
# Isolation- Dual Band / BT



Port1= DB1

Port3= BT

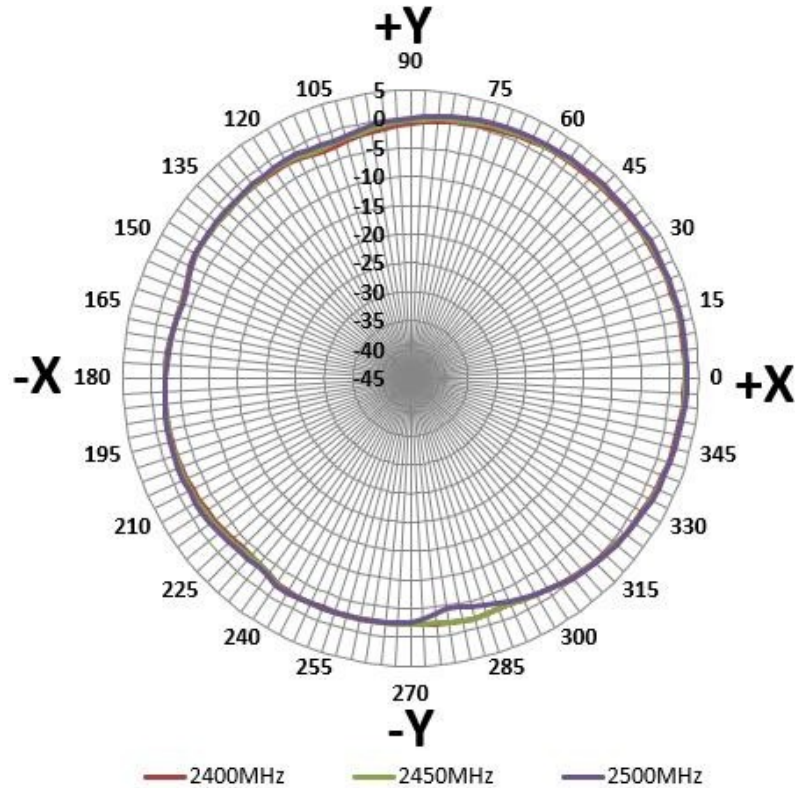
# Isolation- Dual Band / BT



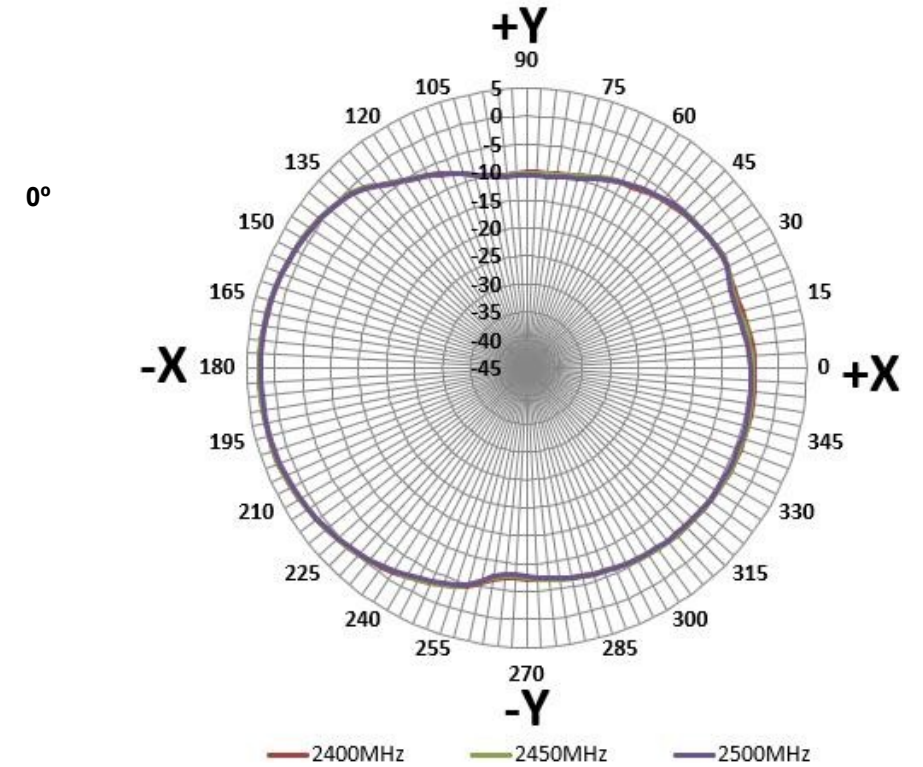
Port2= DB2

Port3= BT

# Power Sum-2.4GHz Band- Azimuth(XY)



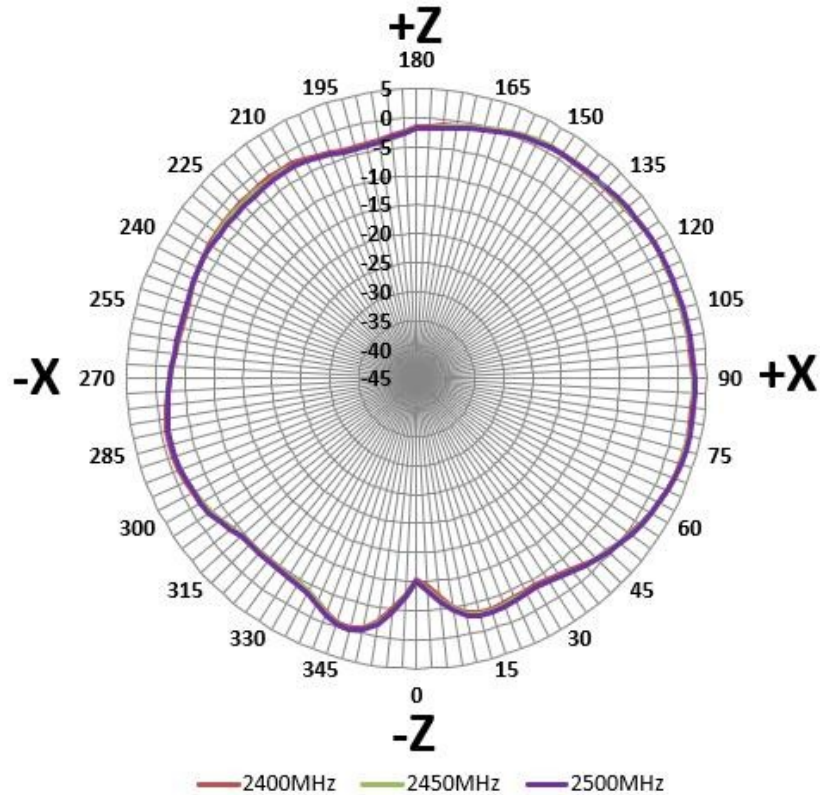
**DB1**



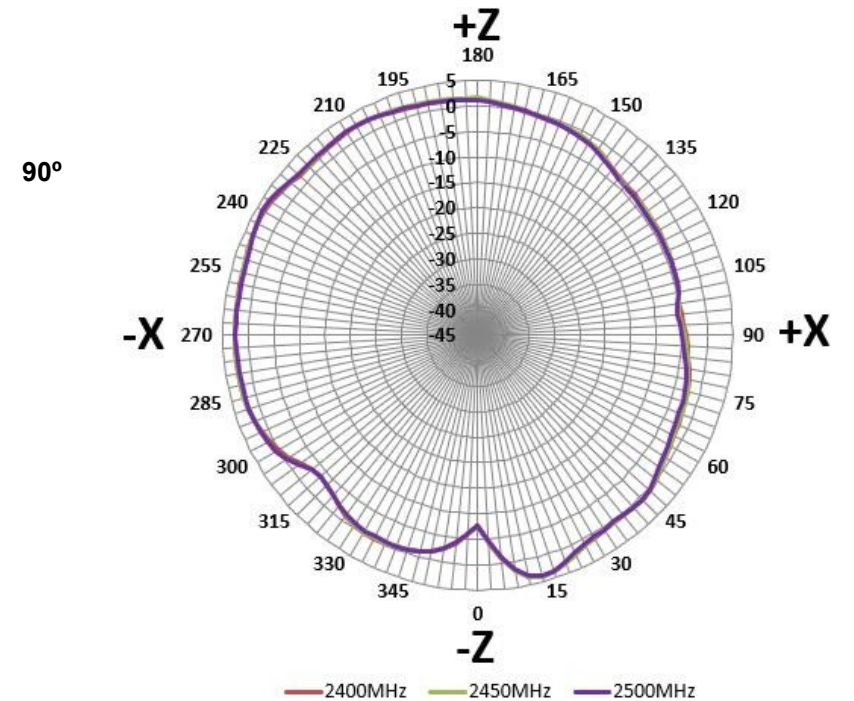
**DB2**



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

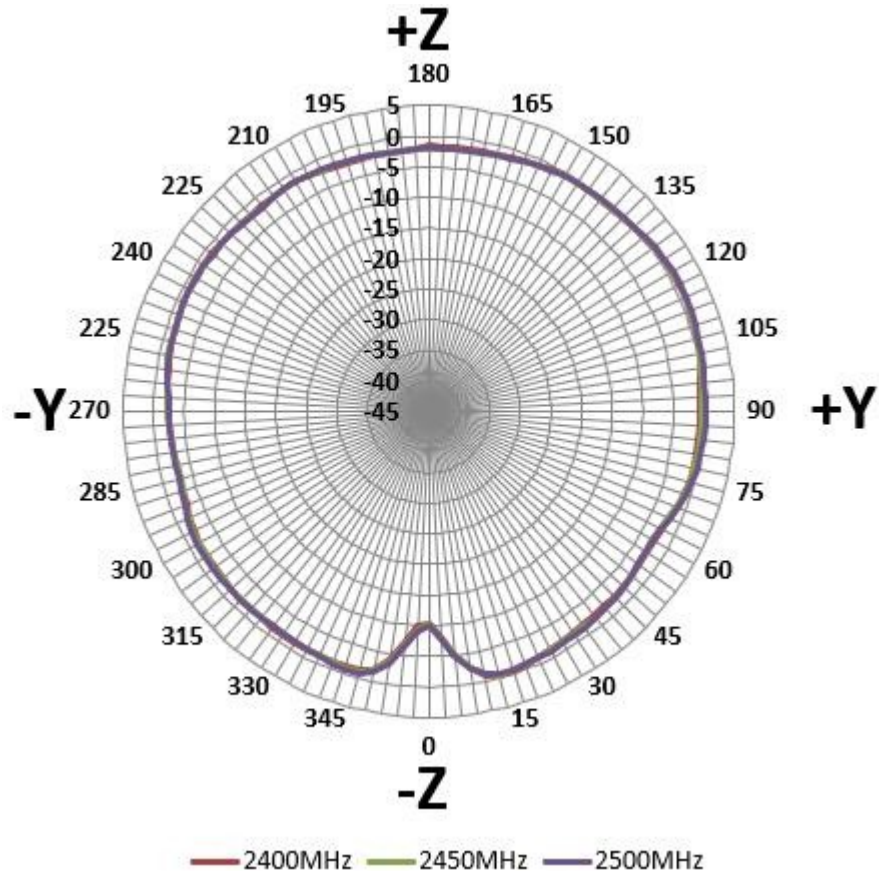


**DB1**

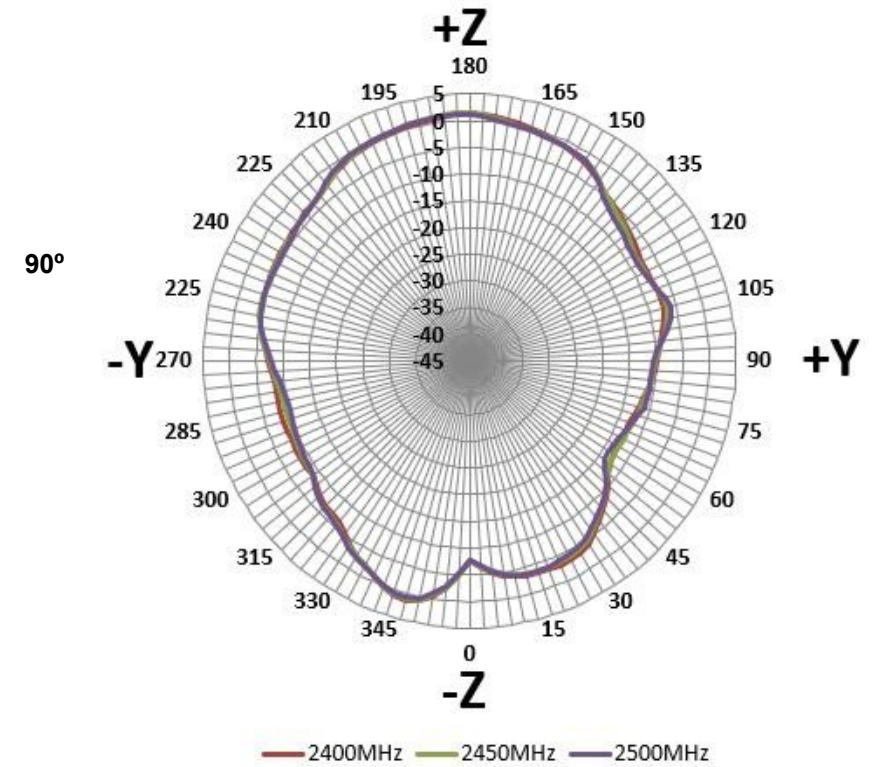


**DB2**

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

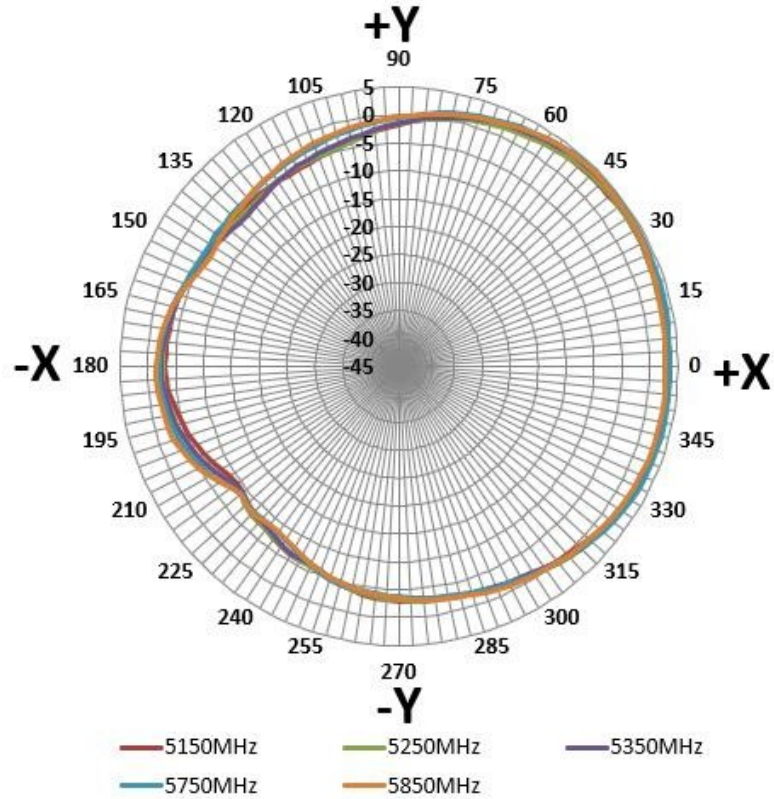


DB1

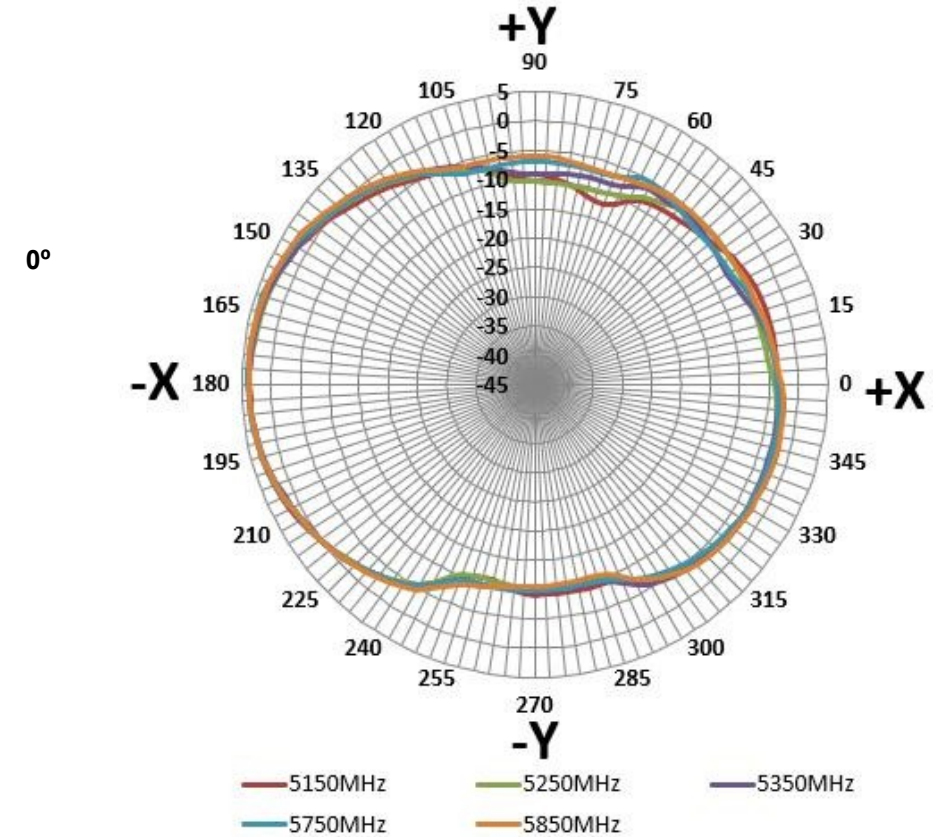


DB2

# Power Sum-5GHz Band- Azimuth(XY)

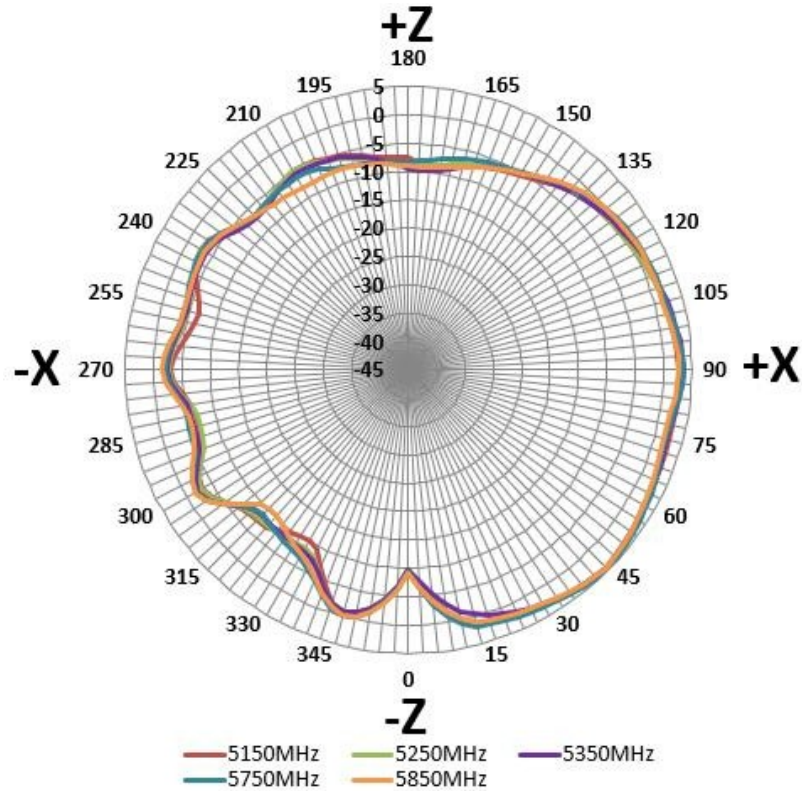


**DB1**

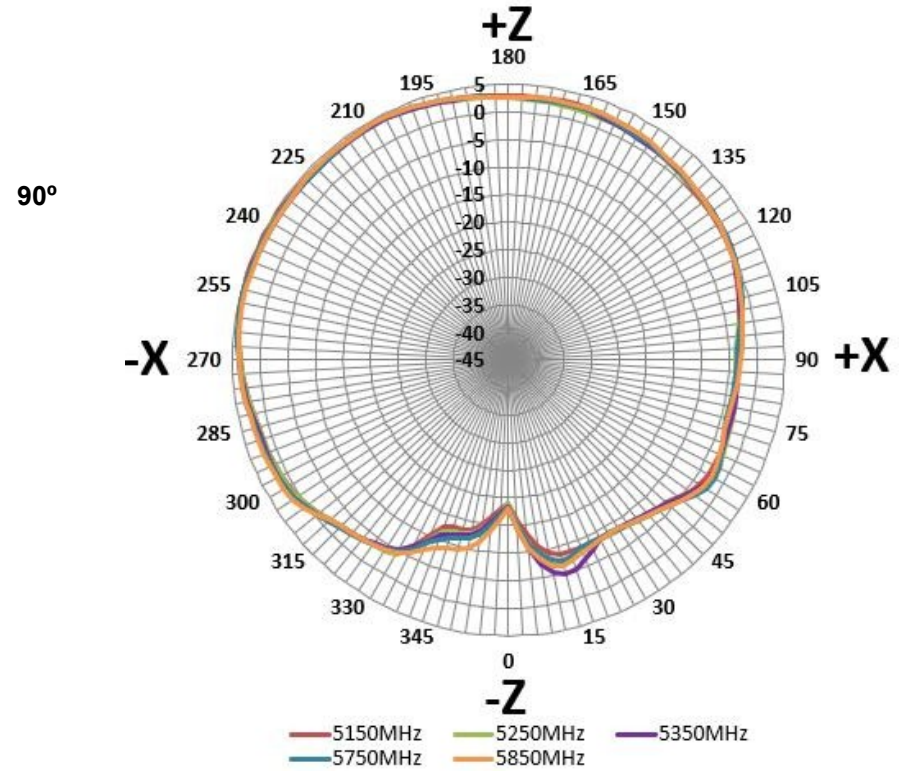


**DB2**

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

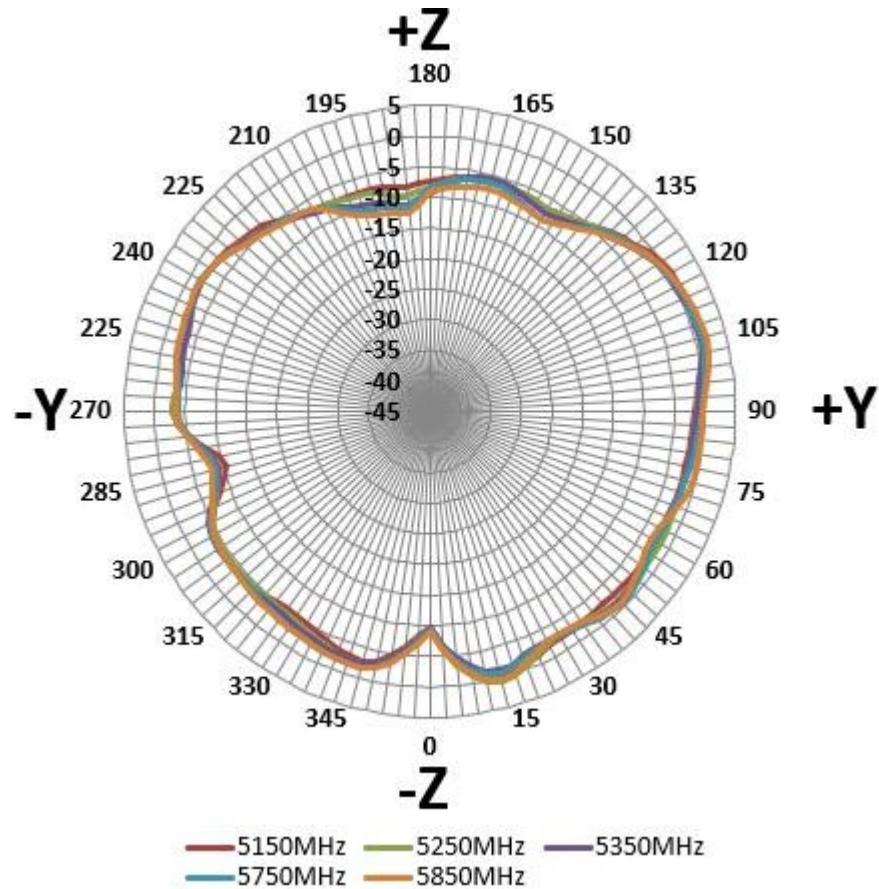


**DB1**

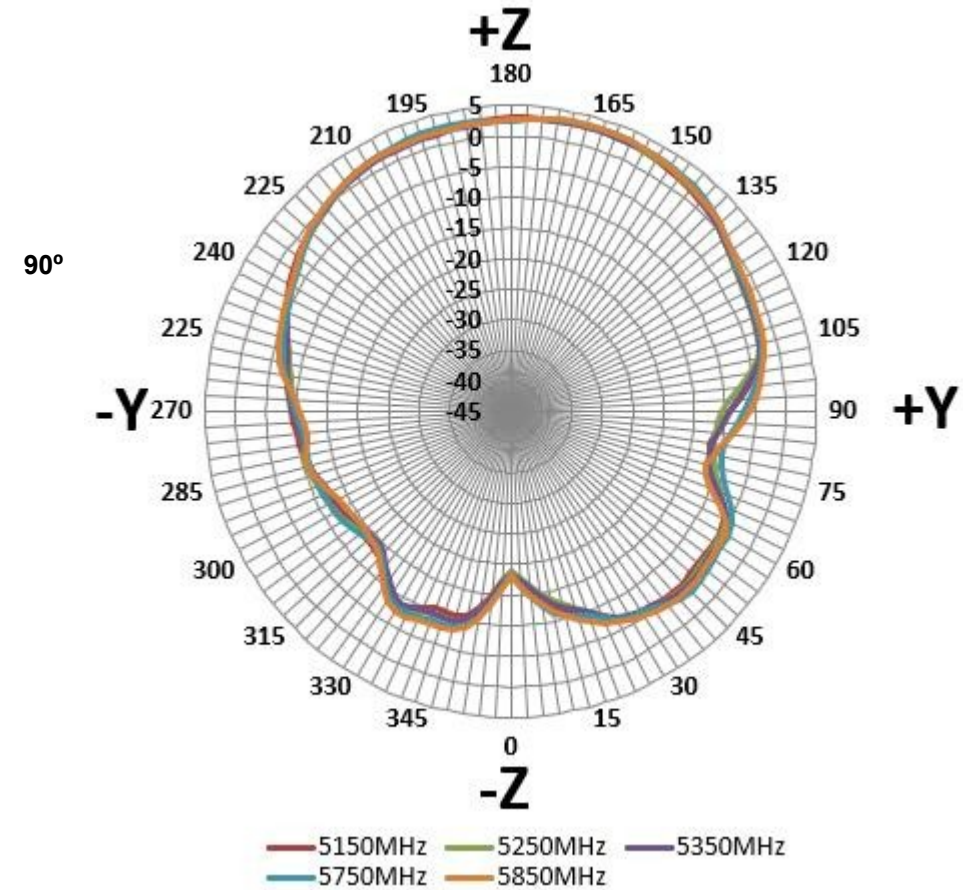


**DB2**

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



DB1



DB2

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## Vietnam Factory

### Galtronics Vietnam

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province, Vietnam

# Thank You!

We Look Forward To Working Together