

# Shenzhen Yishengbang Technology Co. LTD

## Fengmi Projector Project Antenna Performance Report

Customer: Fengmi

Project: C045RGN

Product: WIFI+BT Antenna—FPC

Report date: 2024.05.29

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Approved by :Lin mei cai 18025305599

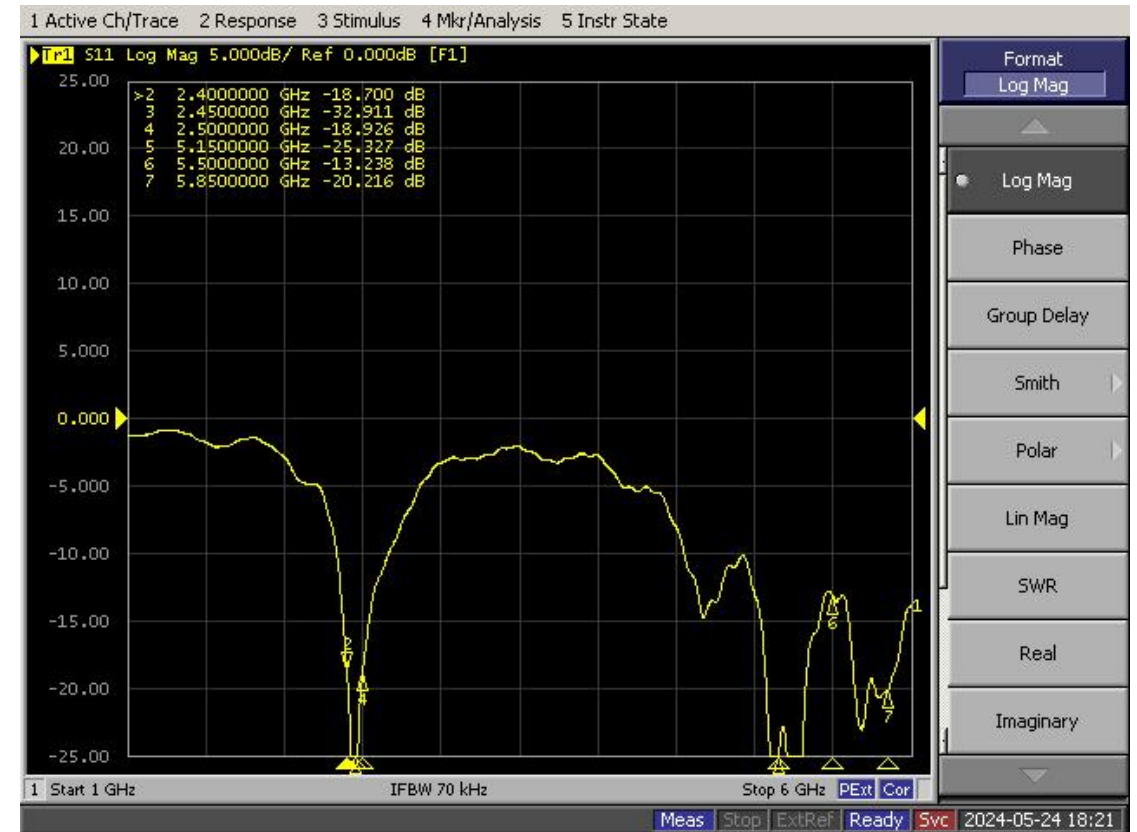
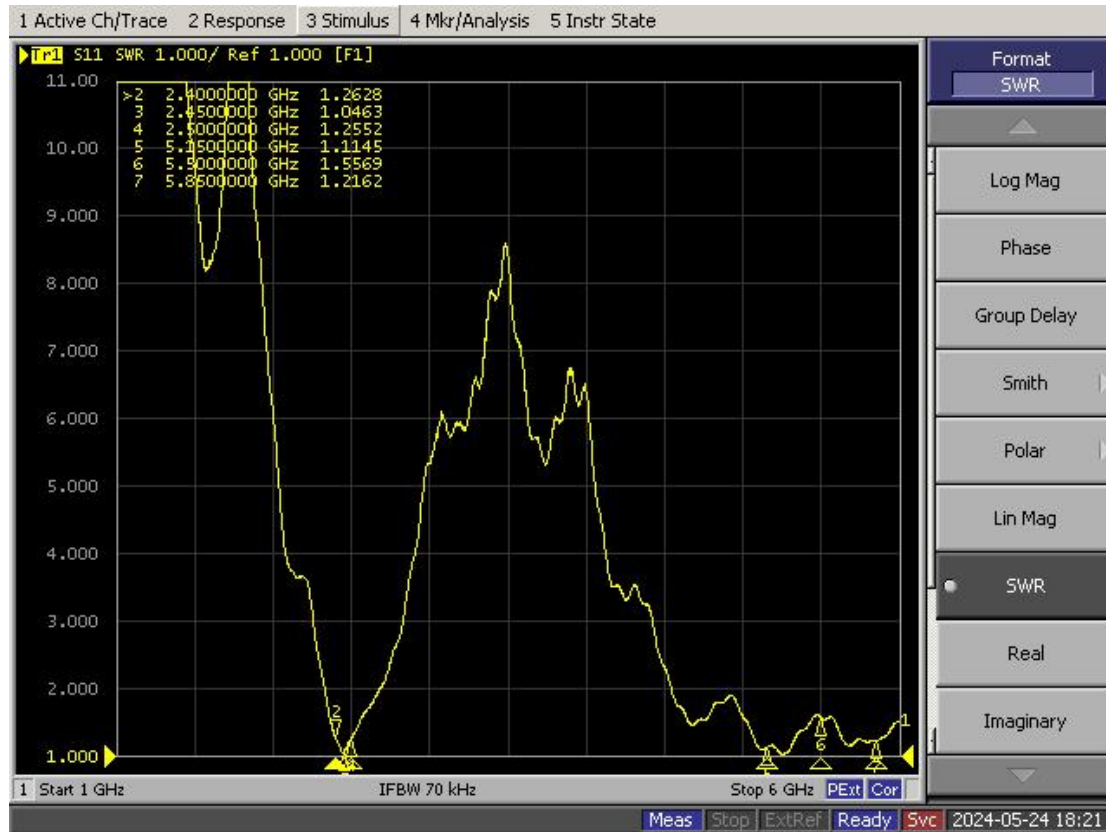
# 1. Antenna layout and antenna environment

Note: Please refer to the file of Test Setup Photo

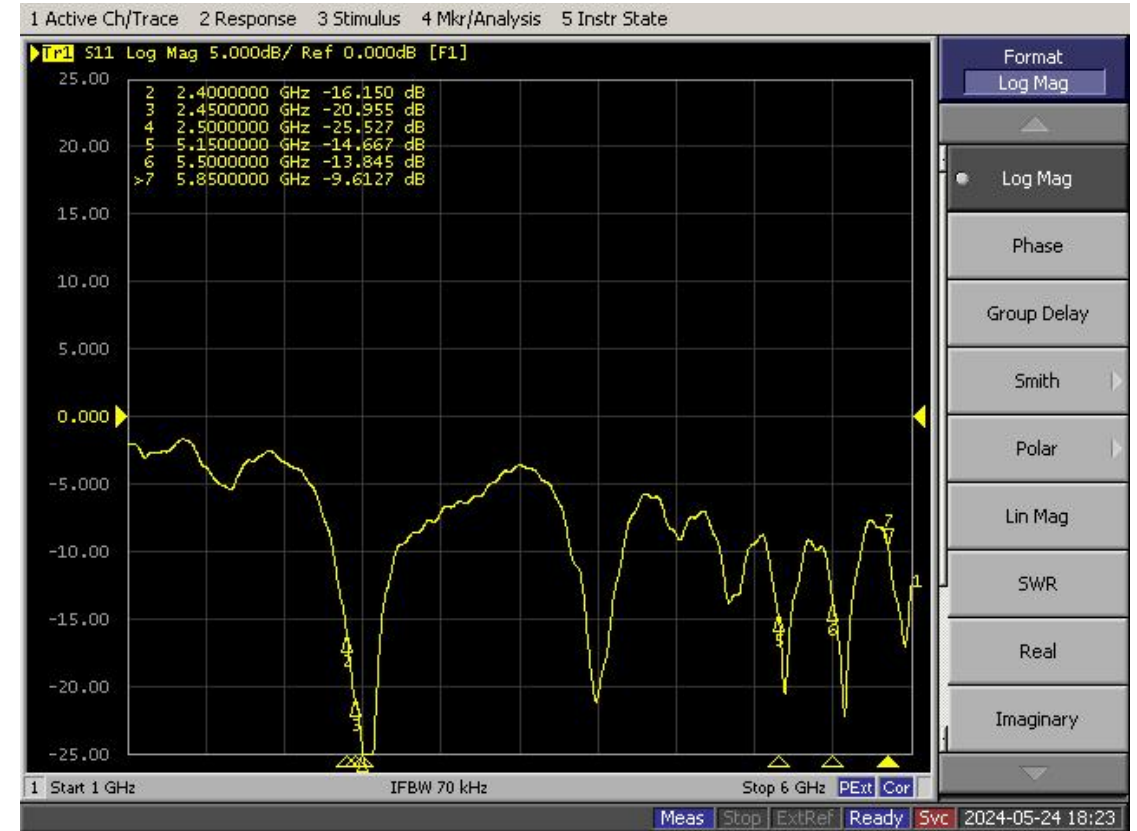
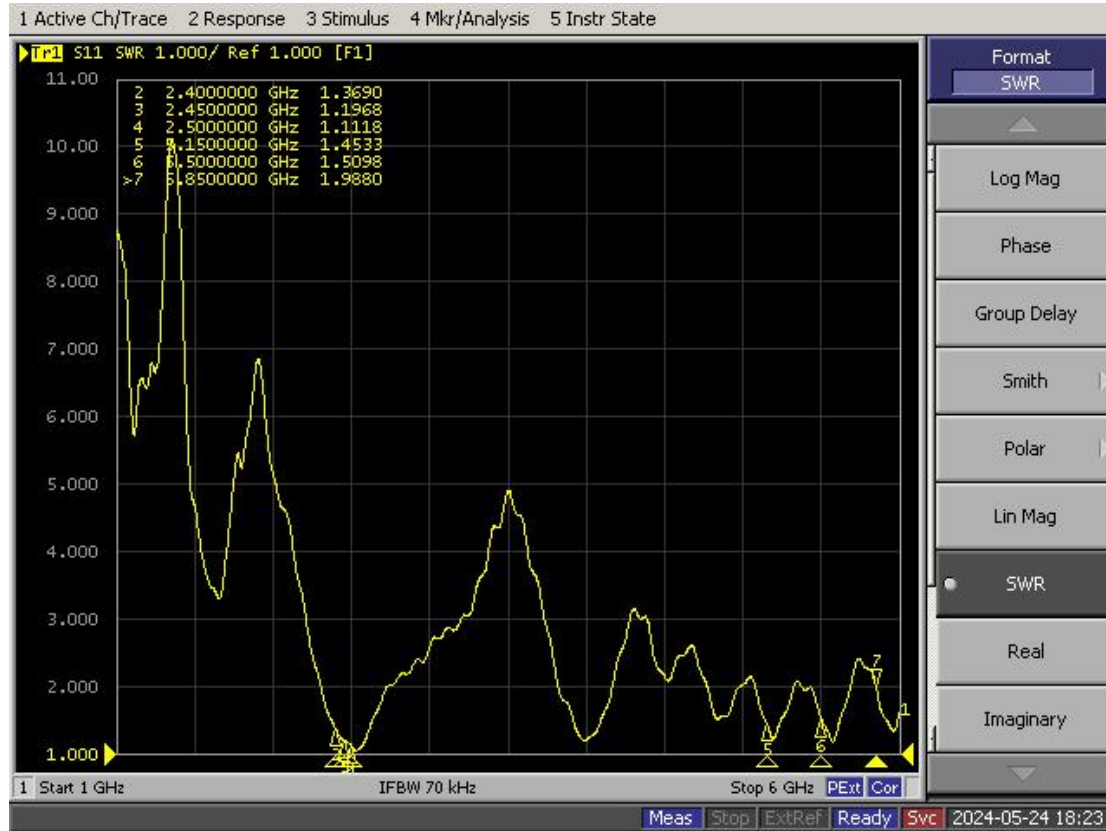
# 1. Antenna layout and antenna environment

Note: Please refer to the file of Test Setup Photo

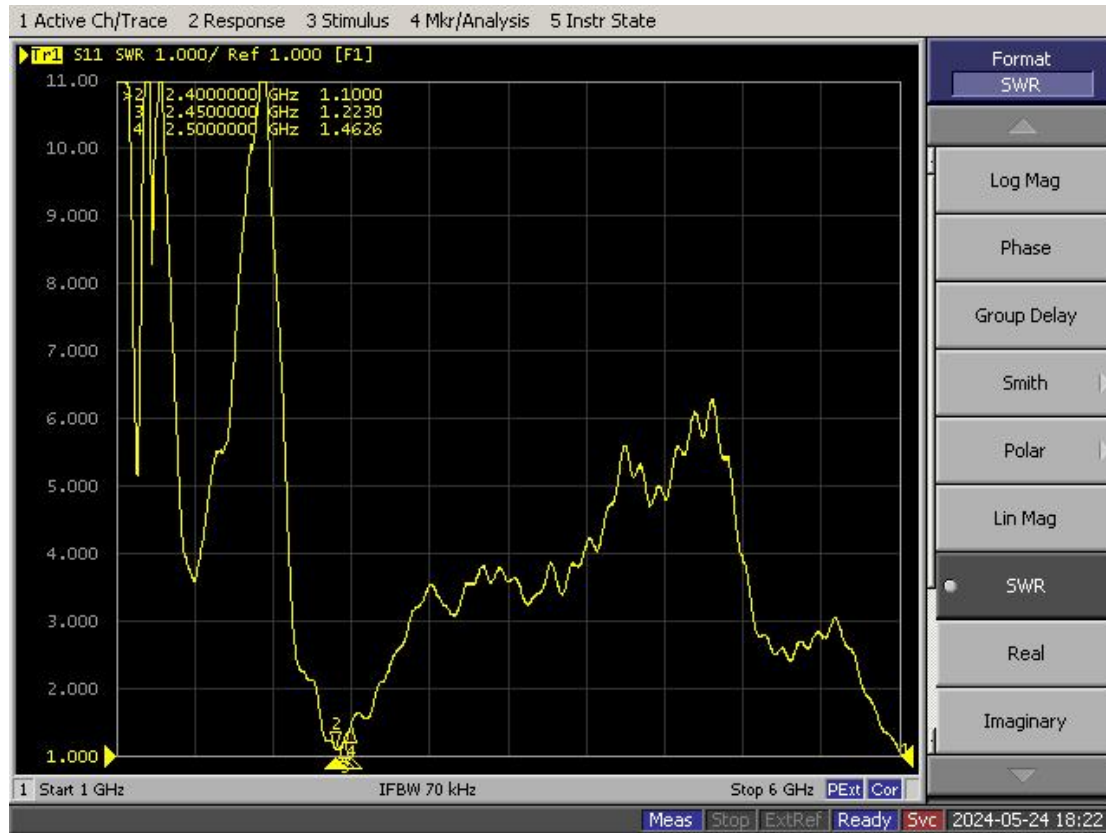
## 2. Passive performance of antennas (WIFI 1 Antenna S11)



## 2. Passive performance of antennas (WIFI 2 Antenna S11)

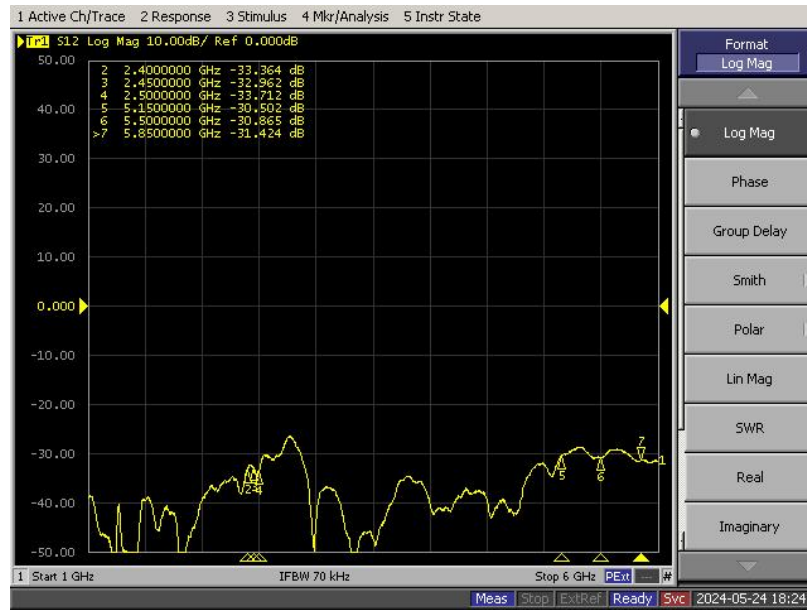


## 2. Passive performance of antennas (BT Antenna S11)

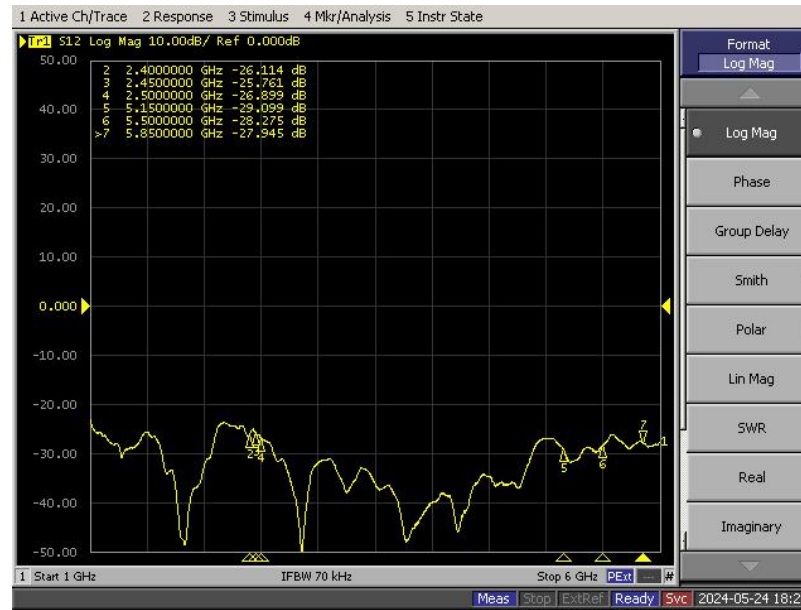


# 2. Passive performance of antennas (Antenna ISOLATION)

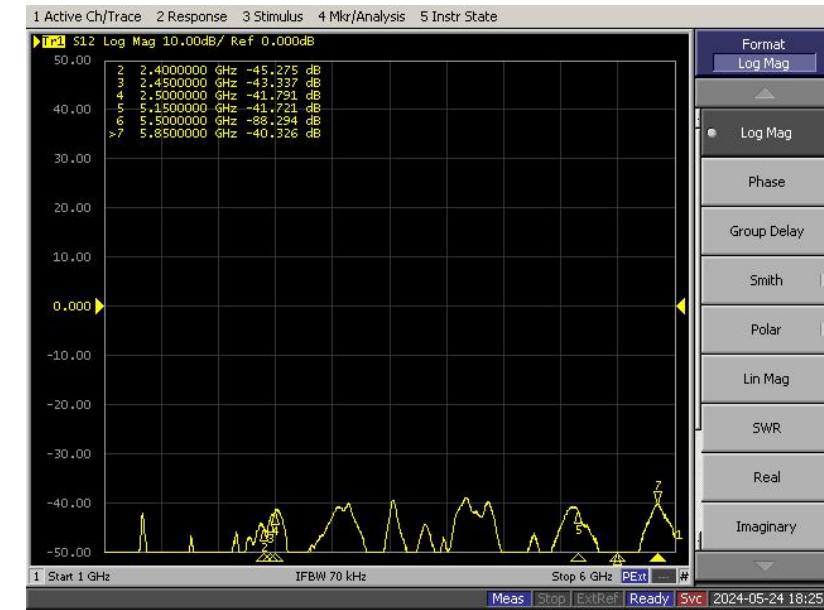
WIFI 1 and WIFI 2



WIFI 1 and BT



WIFI 2 and BT



# 3. Active antenna debugging and experimental results

1#

| WIFI    | CH               | 功率(54M)<br>dBm | 灵敏度<br>(54M)<br>dBm | WIFI    | CH              | 功率(54M)<br>dBm  | 灵敏度<br>(54M)<br>dBm  |
|---------|------------------|----------------|---------------------|---------|-----------------|-----------------|----------------------|
| 802.11a | 36<br>(5180MHz)  | 14.96          | -66.82              | 802.11g | 1<br>(2412MHz)  | 11.52           | -76.03               |
|         | 149<br>(5745MHz) | 15.62          | -68.1               |         | 6<br>(2437MHz)  | 11.11           | -73.57               |
|         | 161<br>(5805MHz) | 16.23          | -69.45              |         | 11<br>(2462MHz) | 11.17           | -75.04               |
| WIFI    | CH               | 功率(11M)<br>dBm | 灵敏度<br>(11M)<br>dBm | WIFI    | CH              | 功率(MCS7)<br>dBm | 灵敏度<br>(MCS7)<br>dBm |
| 802.11b | 1<br>(2412MHz)   | 16.03          | -82.28              | 802.11n | 1<br>(2412MHz)  | 15.02           | -70.06               |
|         | 6<br>(2437MHz)   | 16.33          | -84.92              |         | 6<br>(2437MHz)  | 15.65           | -73.48               |
|         | 11<br>(2462MHz)  | 17.7           | -85.03              |         | 11<br>(2462MHz) | 16.26           | -73.65               |



# 3. Active antenna debugging and experimental results

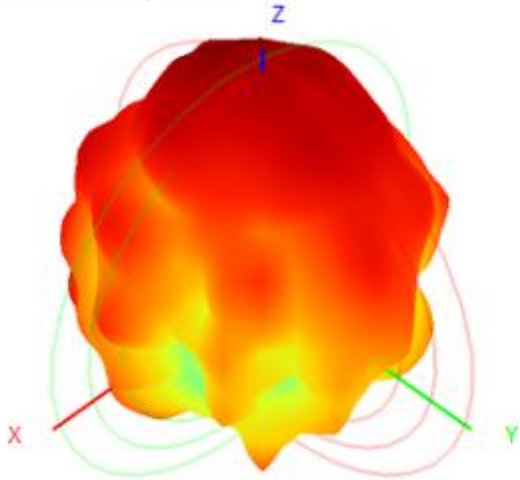
2#

| WIFI    | CH               | 功率(54M)<br>dBm | 灵敏度<br>(54M)<br>dBm | WIFI    | CH              | 功率(54M)<br>dBm  | 灵敏度<br>(54M)<br>dBm  |
|---------|------------------|----------------|---------------------|---------|-----------------|-----------------|----------------------|
| 802.11a | 36<br>(5180MHz)  | 11.86          | -75.63              | 802.11g | 1<br>(2412MHz)  | 15.24           | -70.86               |
|         | 149<br>(5745MHz) | 11.87          | -73.28              |         | 6<br>(2437MHz)  | 15.76           | -74.98               |
|         | 161<br>(5805MHz) | 11.22          | -76.24              |         | 11<br>(2462MHz) | 16.33           | -74.02               |
| WIFI    | CH               | 功率(11M)<br>dBm | 灵敏度<br>(11M)<br>dBm | WIFI    | CH              | 功率(MCS7)<br>dBm | 灵敏度<br>(MCS7)<br>dBm |
| 802.11b | 1<br>(2412MHz)   | 15.79          | -80.35              | 802.11n | 1<br>(2412MHz)  | 15.18           | -65.3                |
|         | 6<br>(2437MHz)   | 16.28          | -80.66              |         | 6<br>(2437MHz)  | 15.8            | -67.11               |
|         | 11<br>(2462MHz)  | 17.27          | -84.2               |         | 11<br>(2462MHz) | 16.35           | -66.92               |

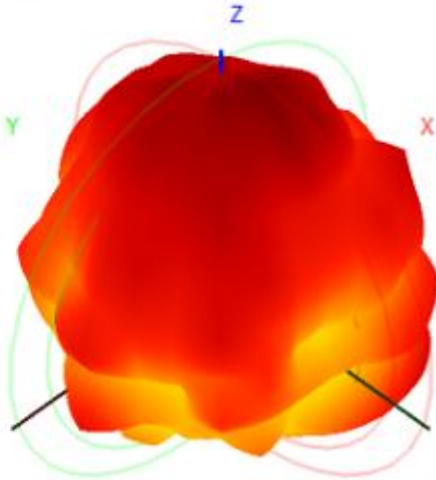
# 4. WIFI 1 Antenna Gain/Efficiency/3D DATA

| Frequency (MHz)  | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 | 5150.0 | 5350.0 | 5500.0 | 5650.0 | 5850.0 |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Efficiency (dBi) | -3.45  | -3.13  | -3.12  | -3.07  | -3.09  | -3.14  | -3.14  | -3.07  | -2.99  | -3.11  | -3.13  | -3.94  | -3.61  | -3.67  | -3.53  | -3.88  |
| Gain (dBi)       | 2.15   | 2.59   | 2.61   | 2.65   | 2.70   | 2.63   | 2.51   | 2.51   | 2.78   | 2.80   | 2.87   | 2.07   | 2.54   | 1.76   | 2.32   | 2.17   |
| Efficiency (%)   | 45.20  | 48.69  | 48.80  | 49.30  | 49.11  | 48.55  | 48.49  | 49.32  | 50.21  | 48.84  | 48.67  | 40.36  | 43.53  | 42.91  | 44.35  | 40.87  |

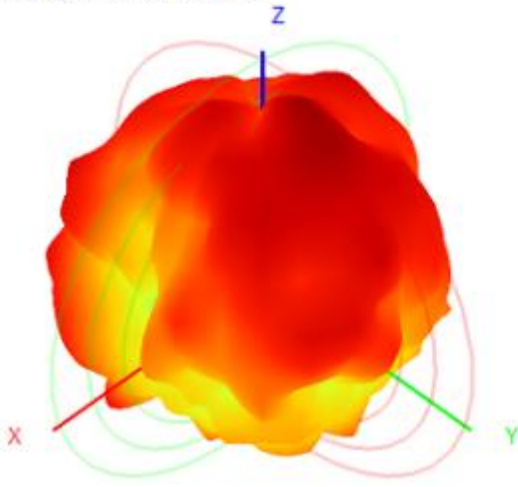
2450.0MHz H+V, Eff: 48.6%



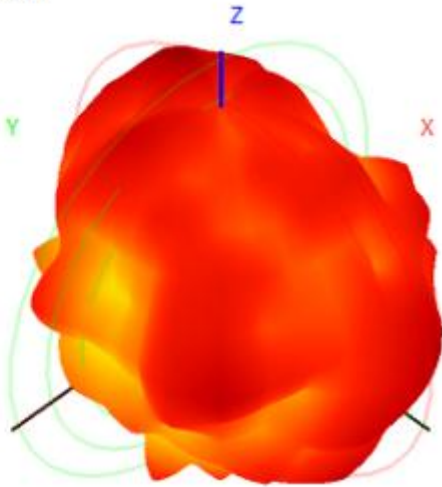
Back View



5850.0MHz H+V, Eff: 40.9%



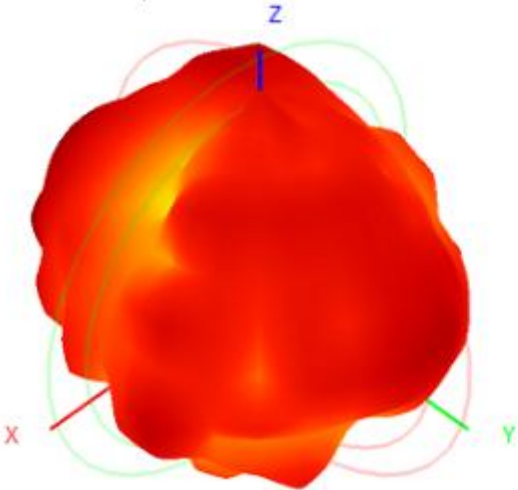
Back View



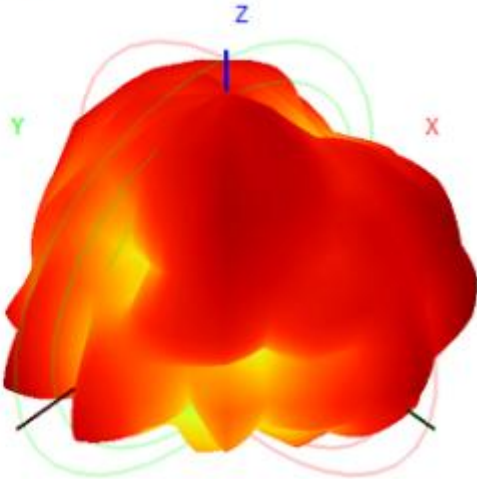
# 4. WIFI 2 Antenna Gain/Efficiency/3D DATA

| Frequency (MHz)  | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 | 5150.0 | 5350.0 | 5500.0 | 5650.0 | 5850.0 |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Efficiency (dBi) | -3.92  | -3.79  | -3.76  | -3.78  | -3.68  | -3.58  | -3.51  | -3.44  | -3.35  | -3.32  | -3.32  | -3.50  | -3.63  | -3.79  | -3.77  | -3.52  |
| Gain (dBi)       | 1.37   | 1.42   | 1.47   | 1.34   | 1.53   | 2.21   | 2.47   | 2.50   | 2.59   | 2.57   | 2.91   | 1.60   | 1.98   | 1.35   | 1.41   | 1.09   |
| Efficiency (%)   | 40.53  | 41.77  | 42.06  | 41.81  | 42.82  | 43.82  | 44.56  | 45.28  | 46.20  | 46.52  | 46.55  | 44.66  | 43.25  | 41.71  | 41.91  | 44.44  |

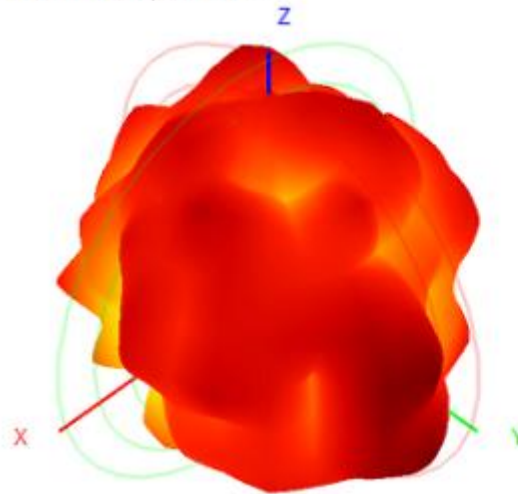
2450.0MHz H+V, Eff: 43.8%



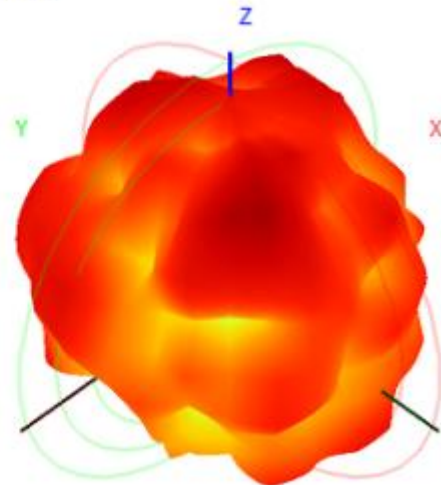
Back View



5850.0MHz H+V, Eff: 44.4%



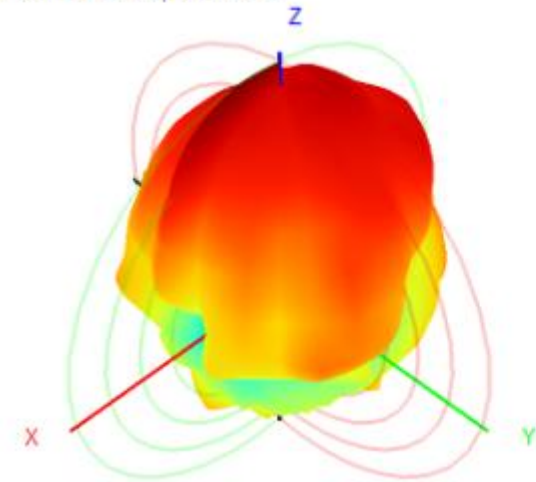
Back View



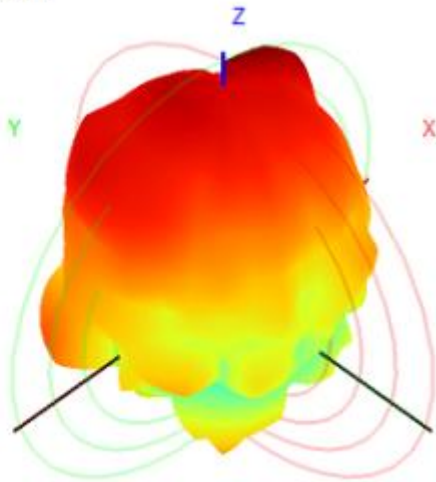
# 4. BT    Antenna Gain/Efficiency/3D    DATA

| Frequency (MHz)  | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
|------------------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|--------|
| Efficiency (dBi) | -3.75  | -3.70  | -3.68  | -3.55  | -3.49  | -3.41  | -3.57  | -3.58  | -3.61  | -3.59  | -3.66  |
| Gain (dBi)       | 1.30   | 1.72   | 1.79   | 1.99   | 2.15   | 2.45   | 2.47   | 2.40   | 2.19   | 2.01   | 1.86   |
| Efficiency (%)   | 42.15  | 42.59  | 42.81  | 44.08  | 44.70  | 45.53  | 43.93  | 43.83  | 43.53  | 43.72  | 42.96  |

2450.0MHz H+V, Eff: 45.5%



Back View



# 5. Wiring

Note: Please refer to the file of Test Setup Photo

# 6. Conclusion

Bluetooth testing: When connected to WIFI, playing online videos, connecting to Bluetooth, using a Bluetooth speaker for 30 meters without stuttering, the overall performance is good.

Based on the above active, passive, and measured data, the overall performance is good. It is important to note the assembly position and the routing of various wires during assembly. Do not place them above the antenna and try to stay away from some antennas. thank you!



Note: Please refer to the file of Test Setup Photo

Note: The placement of the entire machine during the testing process.