

WCF940M

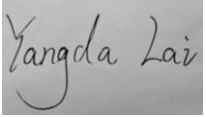
Passive Data

2024/10/18

1. Test Condition

* WCF940M Metal Antenna and Chip Antenna

- Test Chamber: Aplustech OTA Chamber
(Address: R&D Building No.9, Main Park, Taohuayuan Science & Technology Innovation Park, Shenzhen, China)
- Network Analyzer : Return Loss
- 3D Passive Chamber : Gain and Efficiency
- Measured by Yangda Lai 2024/10/18



2. Test Environment

Please refer to Antenna appendix A

3. Test procedure:

1. Maintain the test ambient temperature of 23 C, the instrument is powered on and preheated for more than 30 minutes
2. Turn on the darkroom power supply, connect the test cable, and set up the sample according to the standard
3. Outline sets the test content objectives and conducts calibration tests
4. Run the EMQuest OTA software, the test is complete, export the corresponding test diagram and test data, and save to the corresponding directory

Antenna Gain Measurement Procedure and Software

OTA measurement system

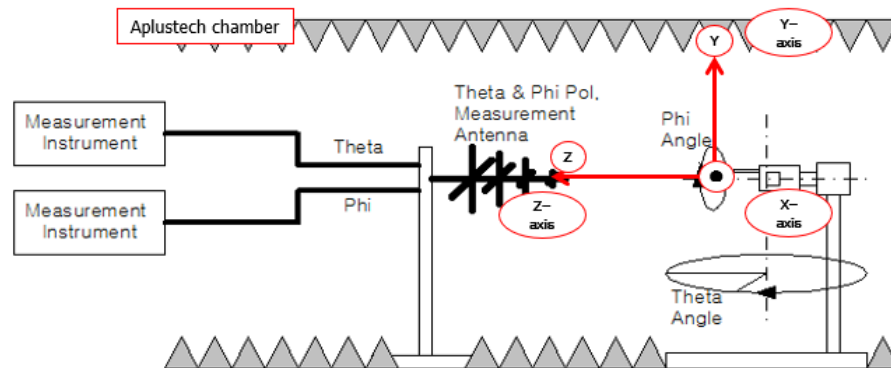
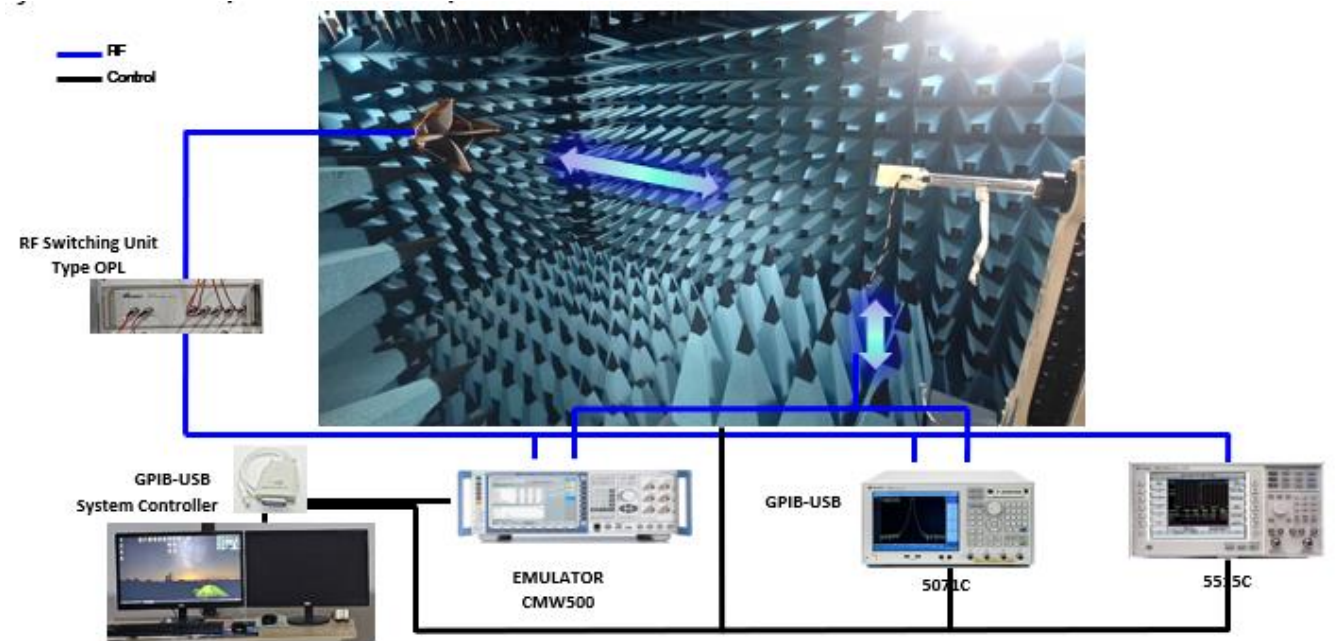
- Test Frequency : Support 400 MHz to 7.5 GHz
- Chamber Size: 4m x 2.5m x 2.5m

Support

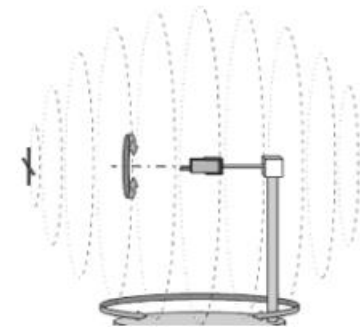
- LTE Support ALL Band (FDD/TDD)
- CDMA,GSM,WCDMA Support ALL Band
- Passive Efficiency Measurement (400 MHz ~ 7.5GHz)

Measurement specifications

- Test Plan for RF Performance Evaluation for LTE Mobile Converged Devices
- Test Plan for Wireless Device Over-the-Air Performance



Great Circle Cut Method

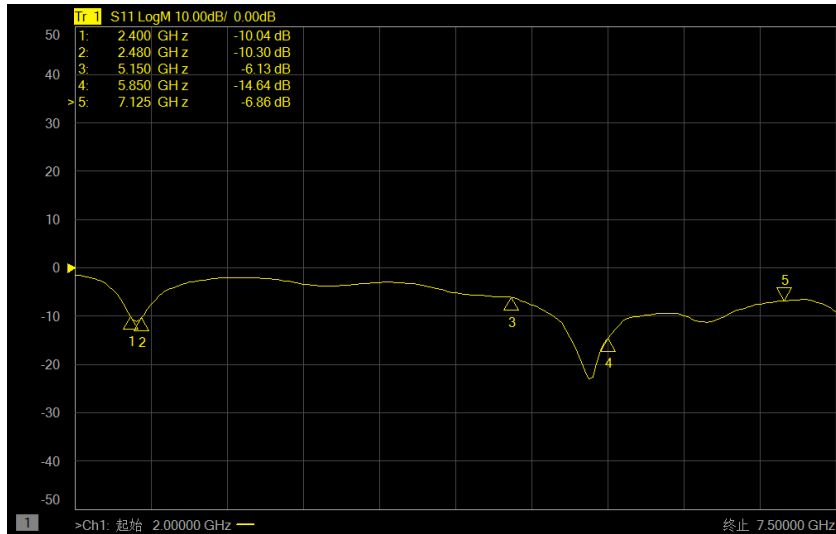


Item	Measuring Instruments	Latest Calibration Schedule
1	OTA Chamber	2024/04/01
2	Network Analyzer Keysight 5071c	2024/07/18

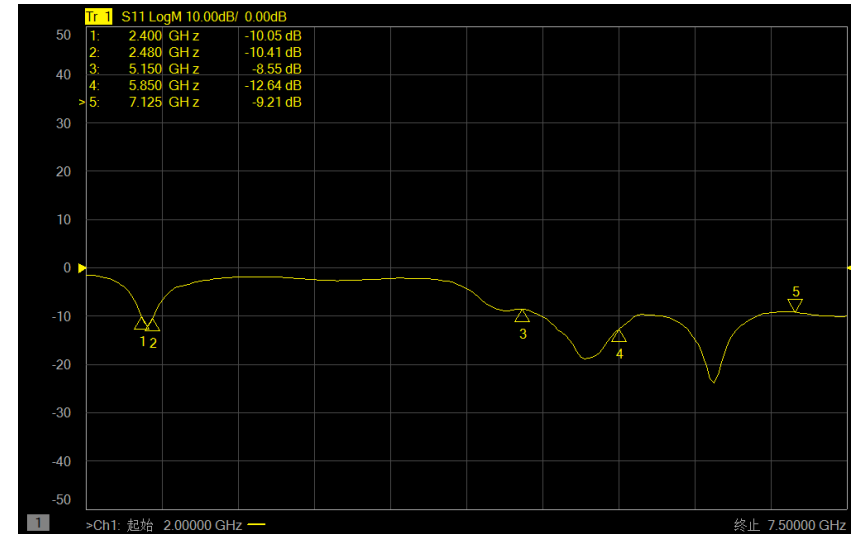
Electrical Characteristics

Item	Specification ANT0			Specification ANT1			Specification BT0	Specification BT1
Antenna Type	Metal Antenna			Metal Antenna			Chip Antenna	Chip Antenna
Central Frequency	2440MHz	5550MHz	6525MHz	2440MHz	5550MHz	6525MHz	2440MHz	2440MHz
Band Width	80MHz	700MHz	1200MHz	80MHz	700MHz	1200MHz	80MHz	80MHz
Peak Gain	-1.87dBi	0.42dBi	-0.14dBi	-2.07 dBi	1.17dBi	0.08dBi	-1.46dBi	0.22dBi
Return Loss	< -6dB			< -8dB			< -6dB	< -7dB
Polarization	Linear			Linear			Linear	Linear
Azimuth Beam width	Omni-directional			Omni-directional			Omni-directional	Omni-directional
Impedance	50Ω			50Ω			50Ω	50Ω
Dimension	10.5*5*2.4mm			10.5*5*2.4mm			6*3*0.55mm	8.5*3*0.55mm

Passive test-Return Loss-WiFi



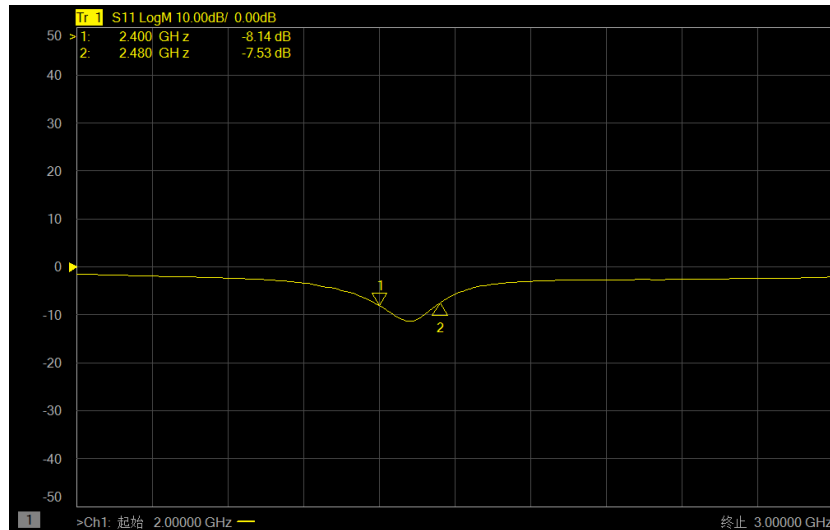
ANT0



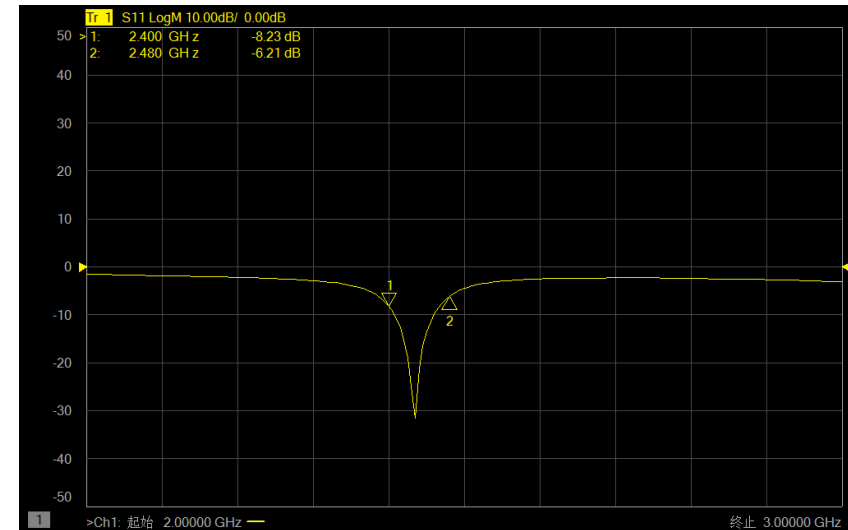
ANT1

Antenna image please refer to Antenna appendix A

Passive test-Return Loss-BT



BT0



BT1

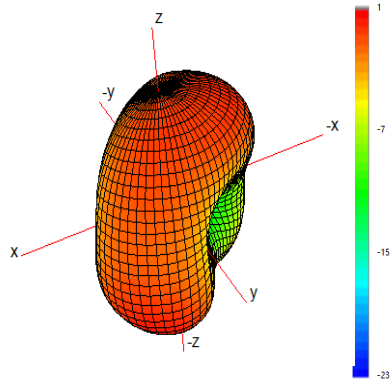
Antenna image please refer to Antenna appendix A

ANT0 Passive Test-Antenna 3D Gain

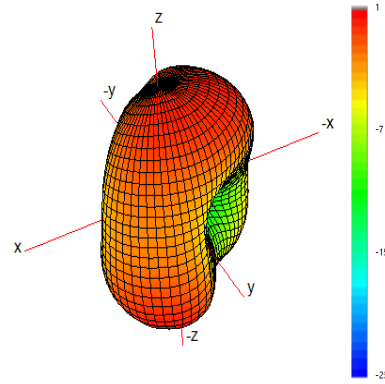
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	23.11 %	-11.47 dBi	-7.97 dBi	-6.36 dBi	-3.33 dBi	-3.21 dBi	-2.54 dBi
2410MHz	22.90 %	-11.50 dBi	-8.01 dBi	-6.40 dBi	-3.19 dBi	-3.22 dBi	-2.57 dBi
2420MHz	22.75 %	-11.56 dBi	-8.02 dBi	-6.43 dBi	-3.23 dBi	-3.21 dBi	-2.56 dBi
2430MHz	22.61 %	-11.59 dBi	-8.05 dBi	-6.46 dBi	-3.14 dBi	-3.24 dBi	-2.58 dBi
2440MHz	22.89 %	-11.57 dBi	-7.98 dBi	-6.40 dBi	-3.07 dBi	-3.19 dBi	-2.58 dBi
2450MHz	23.71 %	-11.41 dBi	-7.83 dBi	-6.25 dBi	-2.90 dBi	-3.12 dBi	-2.42 dBi
2460MHz	24.89 %	-11.26 dBi	-7.59 dBi	-6.04 dBi	-2.76 dBi	-2.91 dBi	-2.18 dBi
2470MHz	26.10 %	-11.17 dBi	-7.34 dBi	-5.83 dBi	-2.65 dBi	-2.69 dBi	-1.99 dBi
2480MHz	26.68 %	-11.16 dBi	-7.21 dBi	-5.74 dBi	-2.76 dBi	-2.60 dBi	-1.87 dBi
5150MHz	30.21 %	-10.75 dBi	-7.52 dBi	-5.20 dBi	-2.14 dBi	-1.37 dBi	-1.18 dBi
5250MHz	30.59 %	-10.15 dBi	-6.94 dBi	-5.14 dBi	-1.79 dBi	-1.08 dBi	-0.88 dBi
5350MHz	31.66 %	-9.98 dBi	-6.90 dBi	-4.99 dBi	-1.78 dBi	-1.46 dBi	-1.30 dBi
5450MHz	33.96 %	-9.44 dBi	-6.46 dBi	-4.69 dBi	-1.42 dBi	-1.04 dBi	-0.61 dBi
5550MHz	36.31 %	-9.15 dBi	-6.17 dBi	-4.40 dBi	-1.61 dBi	-0.51 dBi	-0.27 dBi
5650MHz	40.72 %	-8.75 dBi	-5.62 dBi	-3.90 dBi	-0.96 dBi	0.24 dBi	0.42 dBi
5750MHz	40.92 %	-8.83 dBi	-5.56 dBi	-3.88 dBi	-1.48 dBi	0.19 dBi	0.32 dBi
5850MHz	38.02 %	-9.20 dBi	-5.85 dBi	-4.20 dBi	-1.34 dBi	-0.48 dBi	-0.33 dBi
5925MHz	40.39 %	-9.17 dBi	-5.48 dBi	-3.94 dBi	-1.50 dBi	-0.54 dBi	-0.32 dBi
6075MHz	36.78 %	-9.50 dBi	-5.92 dBi	-4.34 dBi	-1.82 dBi	-1.44 dBi	-1.24 dBi
6225MHz	35.63 %	-9.88 dBi	-5.96 dBi	-4.48 dBi	-2.37 dBi	-1.01 dBi	-0.86 dBi
6375MHz	31.90 %	-10.58 dBi	-6.36 dBi	-4.96 dBi	-3.17 dBi	-0.71 dBi	-0.59 dBi
6525MHz	33.29 %	-10.46 dBi	-6.15 dBi	-4.78 dBi	-4.01 dBi	-0.66 dBi	-0.46 dBi
6675MHz	32.74 %	-11.11 dBi	-6.72 dBi	-4.85 dBi	-4.48 dBi	-0.70 dBi	-0.39 dBi
6825MHz	32.02 %	-10.89 dBi	-6.22 dBi	-4.95 dBi	-4.65 dBi	-0.39 dBi	-0.14 dBi
6975MHz	31.37 %	-11.21 dBi	-6.60 dBi	-5.01 dBi	-4.93 dBi	-1.67 dBi	-1.15 dBi
7125MHz	30.86 %	-11.39 dBi	-6.98 dBi	-5.11 dBi	-5.17 dBi	-2.12 dBi	-1.32 dBi

ANT0 Passive Test-Antenna 3D Radiation Pattern

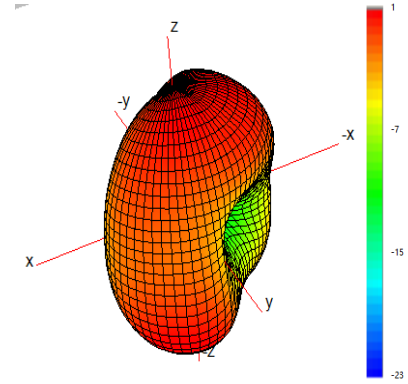
2400MHz



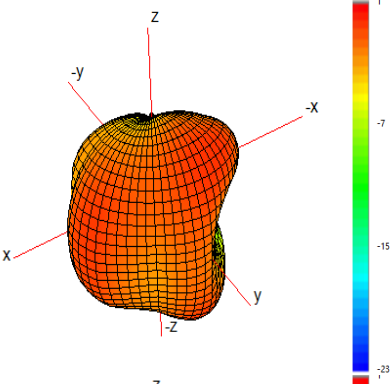
2440MHz



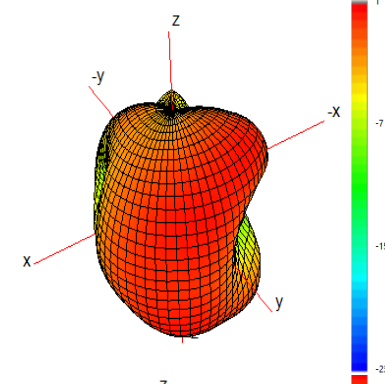
2480MHz



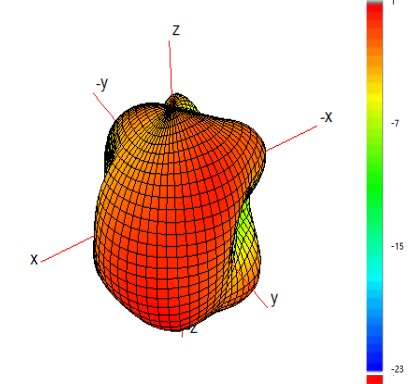
5150MHz



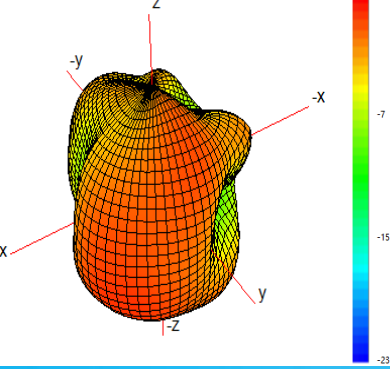
5550MHz



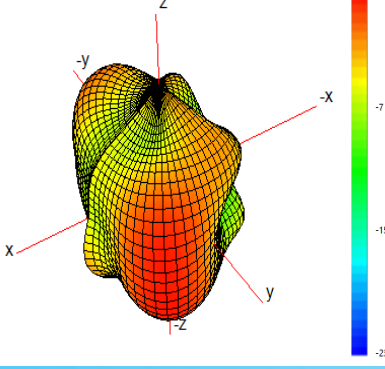
5850MHz



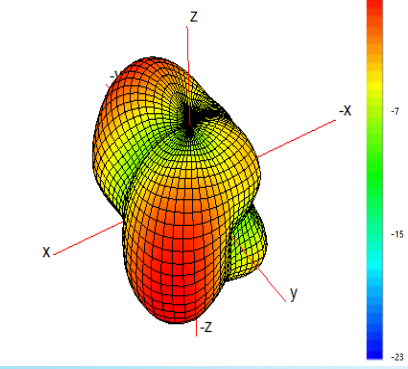
5925MHz



6525MHz



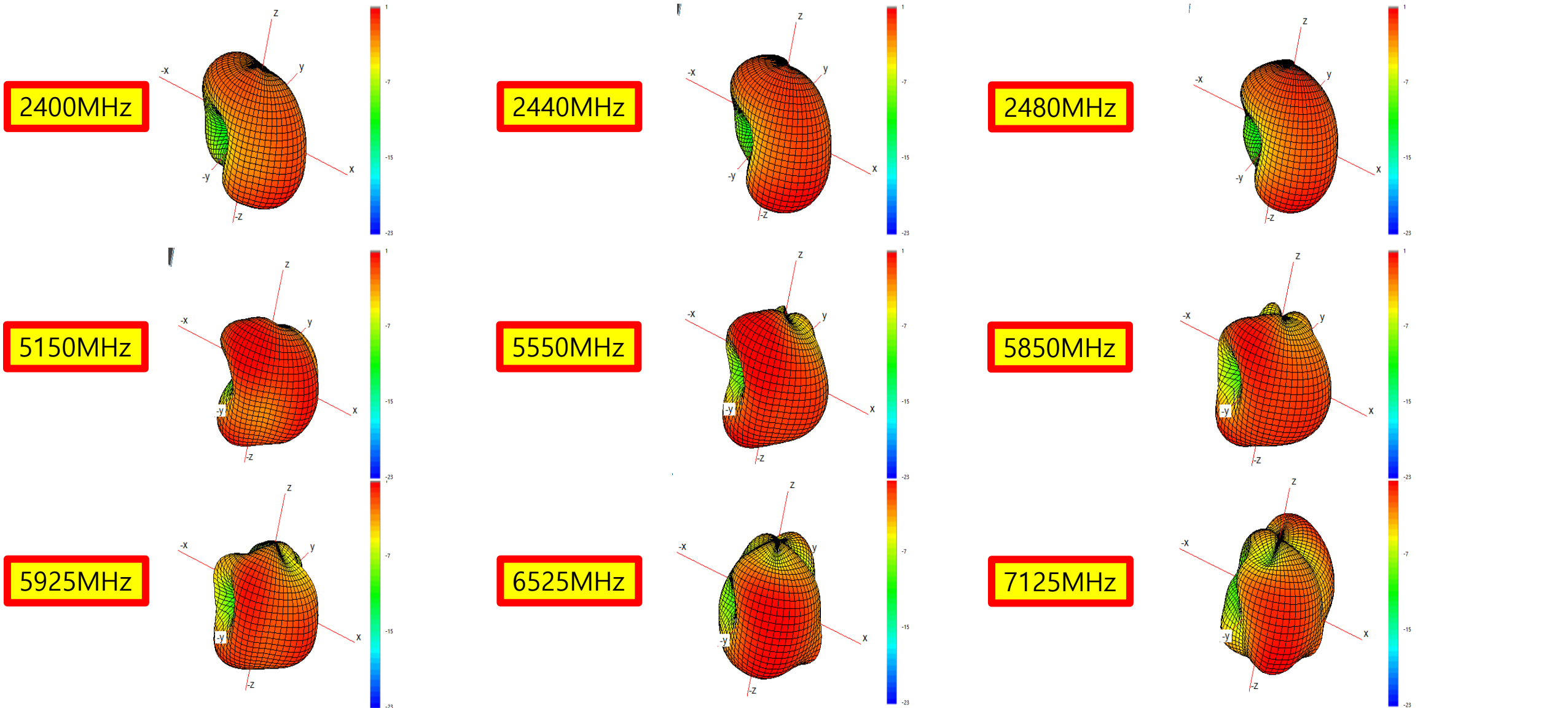
7125MHz



ANT1 Passive Test-Antenna 3D Gain

Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	20.55 %	-13.45 dBi	-8.87 dBi	-6.87 dBi	-5.21 dBi	-3.57 dBi	-3.24 dBi
2410MHz	20.72 %	-13.45 dBi	-8.81 dBi	-6.84 dBi	-5.05 dBi	-3.42 dBi	-3.09 dBi
2420MHz	21.02 %	-13.43 dBi	-8.72 dBi	-6.77 dBi	-5.03 dBi	-3.28 dBi	-2.96 dBi
2430MHz	21.34 %	-13.41 dBi	-8.63 dBi	-6.71 dBi	-4.82 dBi	-3.14 dBi	-2.85 dBi
2440MHz	21.82 %	-13.35 dBi	-8.49 dBi	-6.61 dBi	-4.70 dBi	-3.01 dBi	-2.74 dBi
2450MHz	22.08 %	-13.21 dBi	-8.29 dBi	-6.56 dBi	-4.51 dBi	-2.86 dBi	-2.61 dBi
2460MHz	21.22 %	-13.03 dBi	-8.03 dBi	-6.73 dBi	-4.28 dBi	-2.59 dBi	-2.35 dBi
2470MHz	22.35 %	-12.85 dBi	-7.78 dBi	-6.51 dBi	-4.08 dBi	-2.37 dBi	-2.13 dBi
2480MHz	22.99 %	-12.75 dBi	-7.65 dBi	-6.38 dBi	-4.01 dBi	-2.31 dBi	-2.07 dBi
5150MHz	30.47 %	-9.61 dBi	-7.09 dBi	-5.16 dBi	-1.03 dBi	-0.56 dBi	0.16 dBi
5250MHz	33.50 %	-9.05 dBi	-6.77 dBi	-4.75 dBi	-0.32 dBi	-0.07 dBi	0.53 dBi
5350MHz	32.75 %	-9.01 dBi	-6.95 dBi	-4.85 dBi	-0.66 dBi	-0.41 dBi	0.35 dBi
5450MHz	35.11 %	-8.75 dBi	-6.62 dBi	-4.55 dBi	-0.66 dBi	-0.80 dBi	0.59 dBi
5550MHz	34.03 %	-8.92 dBi	-6.74 dBi	-4.68 dBi	-0.64 dBi	-1.11 dBi	0.58 dBi
5650MHz	39.46 %	-8.35 dBi	-6.05 dBi	-4.04 dBi	0.03 dBi	-0.44 dBi	1.17 dBi
5750MHz	36.99 %	-8.77 dBi	-6.25 dBi	-4.32 dBi	-0.85 dBi	-0.87 dBi	0.26 dBi
5850MHz	36.15 %	-9.04 dBi	-6.26 dBi	-4.42 dBi	-1.13 dBi	-1.16 dBi	-0.19 dBi
5925MHz	41.24 %	-8.61 dBi	-5.61 dBi	-3.85 dBi	-1.13 dBi	-0.52 dBi	0.08 dBi
6075MHz	35.20 %	-9.42 dBi	-6.24 dBi	-4.53 dBi	-1.98 dBi	-1.02 dBi	-0.40 dBi
6225MHz	38.51 %	-9.23 dBi	-5.75 dBi	-4.14 dBi	-1.86 dBi	-1.08 dBi	-0.72 dBi
6375MHz	36.03 %	-9.80 dBi	-5.92 dBi	-4.43 dBi	-1.98 dBi	-0.99 dBi	-0.69 dBi
6525MHz	33.60 %	-10.26 dBi	-6.16 dBi	-4.74 dBi	-3.15 dBi	-1.03 dBi	-0.96 dBi
6675MHz	33.68 %	-10.32 dBi	-6.13 dBi	-4.73 dBi	-3.01 dBi	-1.19 dBi	-1.13 dBi
6825MHz	35.95 %	-10.25 dBi	-5.77 dBi	-4.44 dBi	-3.43 dBi	-0.85 dBi	-0.78 dBi
6975MHz	36.49 %	-10.26 dBi	-5.68 dBi	-4.38 dBi	-4.20 dBi	-1.15 dBi	-1.02 dBi
7125MHz	31.23 %	-10.67 dBi	-6.45 dBi	-5.05 dBi	-4.34 dBi	-2.16 dBi	-1.68 dBi

ANT1 Passive Test-Antenna 3D Radiation Pattern

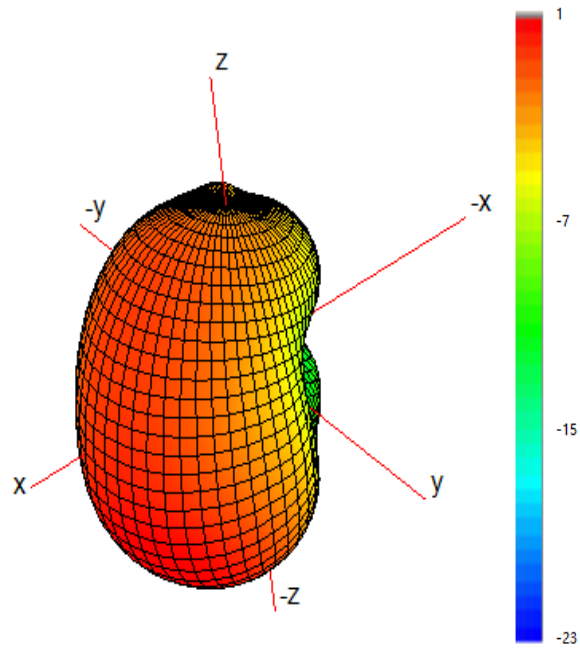


BT0 Passive Test-Antenna 3D Gain

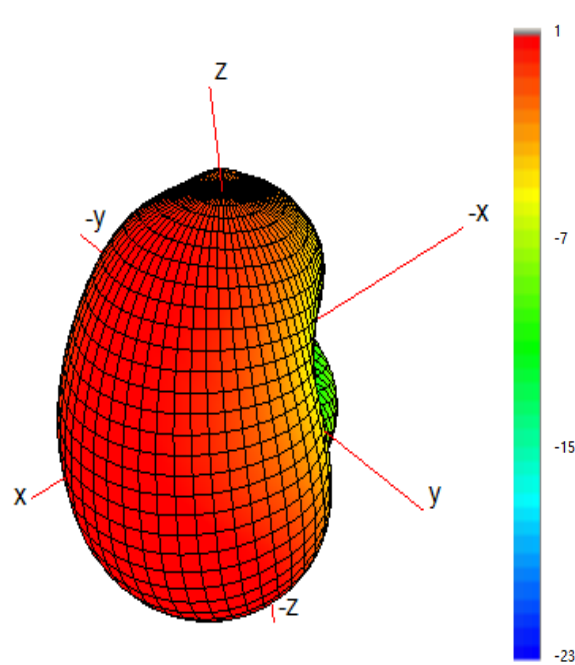
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	19.72 %	-14.29 dBi	-8.59 dBi	-7.05 dBi	-7.07 dBi	-3.01 dBi	-2.79 dBi
2410MHz	22.70 %	-13.75 dBi	-7.95 dBi	-6.44 dBi	-6.42 dBi	-2.32 dBi	-2.12 dBi
2420MHz	25.12 %	-13.43 dBi	-7.49 dBi	-6.00 dBi	-6.19 dBi	-1.87 dBi	-1.66 dBi
2430MHz	26.12 %	-13.32 dBi	-7.29 dBi	-5.83 dBi	-6.00 dBi	-1.67 dBi	-1.46 dBi
2440MHz	25.94 %	-13.39 dBi	-7.32 dBi	-5.86 dBi	-6.08 dBi	-1.77 dBi	-1.55 dBi
2450MHz	24.15 %	-13.68 dBi	-7.63 dBi	-6.17 dBi	-6.38 dBi	-2.18 dBi	-1.95 dBi
2460MHz	21.93 %	-14.16 dBi	-8.04 dBi	-6.59 dBi	-6.88 dBi	-2.66 dBi	-2.44 dBi
2470MHz	19.23 %	-14.81 dBi	-8.59 dBi	-7.16 dBi	-7.59 dBi	-3.32 dBi	-3.11 dBi
2480MHz	16.56 %	-15.52 dBi	-9.22 dBi	-7.81 dBi	-8.41 dBi	-4.09 dBi	-3.89 dBi

BT0 Passive Test-Antenna 3D Radiation Pattern

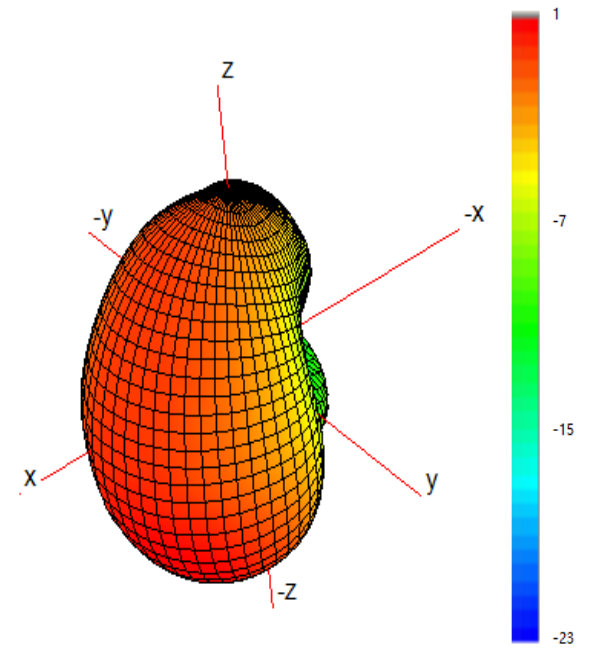
2400MHz



2440MHz



2480MHz

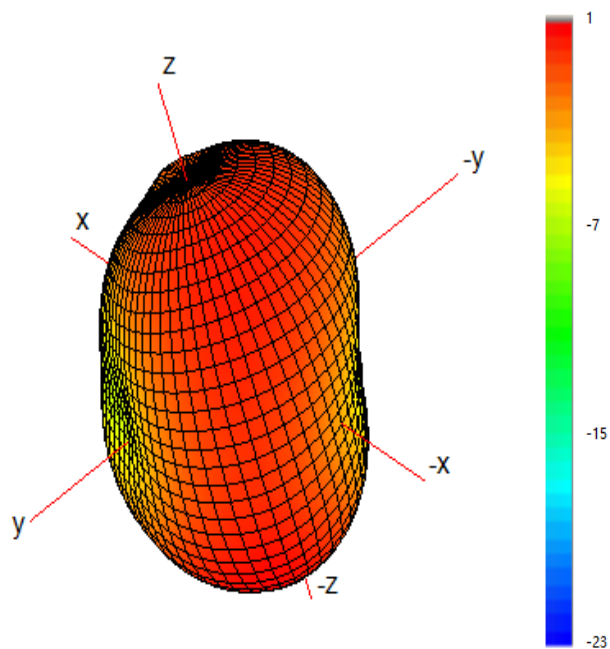


BT1 Passive Test-Antenna 3D Gain

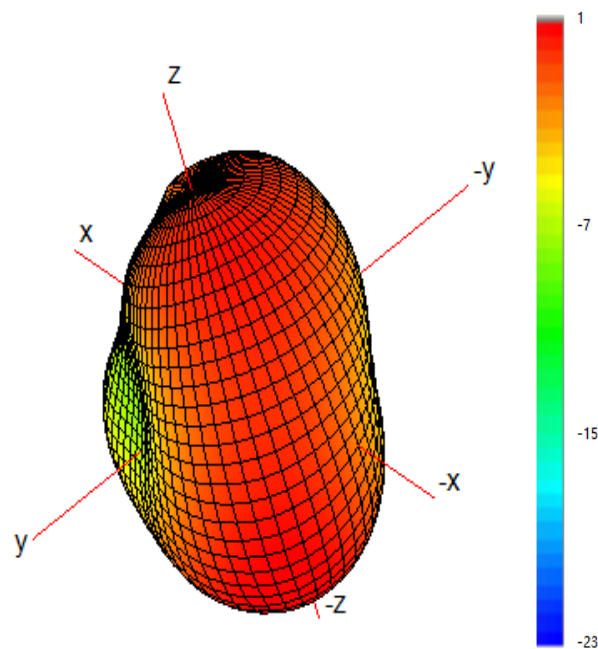
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	47.14 %	-9.84 dBi	-4.35 dBi	-3.27 dBi	-1.05 dBi	-0.39 dBi	-0.15 dBi
2410MHz	47.70 %	-9.80 dBi	-4.29 dBi	-3.21 dBi	-0.90 dBi	-0.18 dBi	0.04 dBi
2420MHz	47.45 %	-9.90 dBi	-4.29 dBi	-3.24 dBi	-1.06 dBi	-0.06 dBi	0.15 dBi
2430MHz	46.92 %	-10.04 dBi	-4.32 dBi	-3.29 dBi	-1.05 dBi	0.03 dBi	0.22 dBi
2440MHz	46.24 %	-10.16 dBi	-4.37 dBi	-3.35 dBi	-1.17 dBi	0.03 dBi	0.22 dBi
2450MHz	44.57 %	-10.35 dBi	-4.52 dBi	-3.51 dBi	-1.33 dBi	-0.07 dBi	0.12 dBi
2460MHz	43.26 %	-10.54 dBi	-4.63 dBi	-3.64 dBi	-1.50 dBi	-0.09 dBi	0.08 dBi
2470MHz	41.91 %	-10.78 dBi	-4.74 dBi	-3.78 dBi	-1.72 dBi	-0.17 dBi	-0.01 dBi
2480MHz	39.79 %	-11.11 dBi	-4.94 dBi	-4.00 dBi	-2.04 dBi	-0.35 dBi	-0.19 dBi

BT1 Passive Test-Antenna 3D Radiation Pattern

2400MHz



2440MHz



2480MHz

