

WCHA31M

Passive Data

2025/09/05

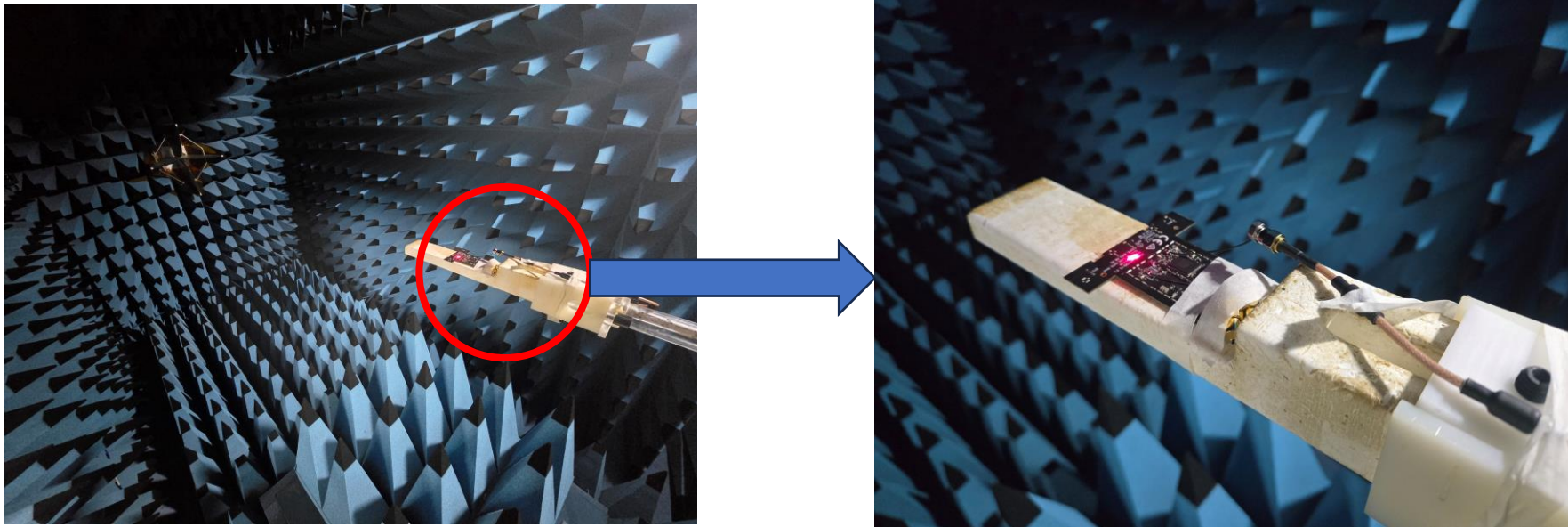
1. Test Condition

* WCHA31M 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 2025/09/05

Yangda Lai

2. Test Environment



Antenna Gain Measurement Procedure and Software

OTA measurement system

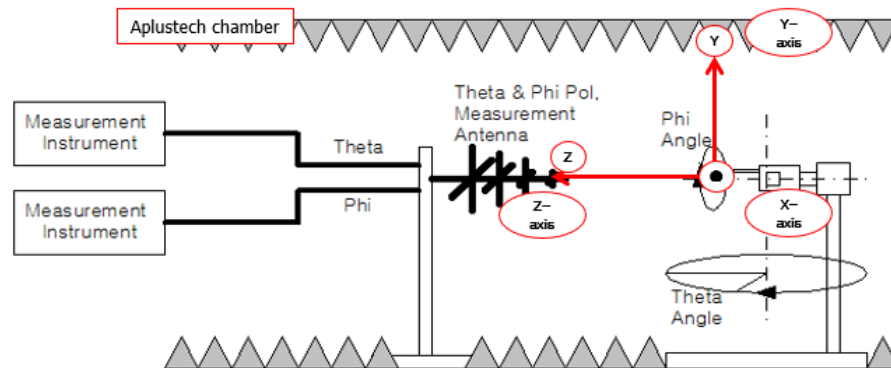
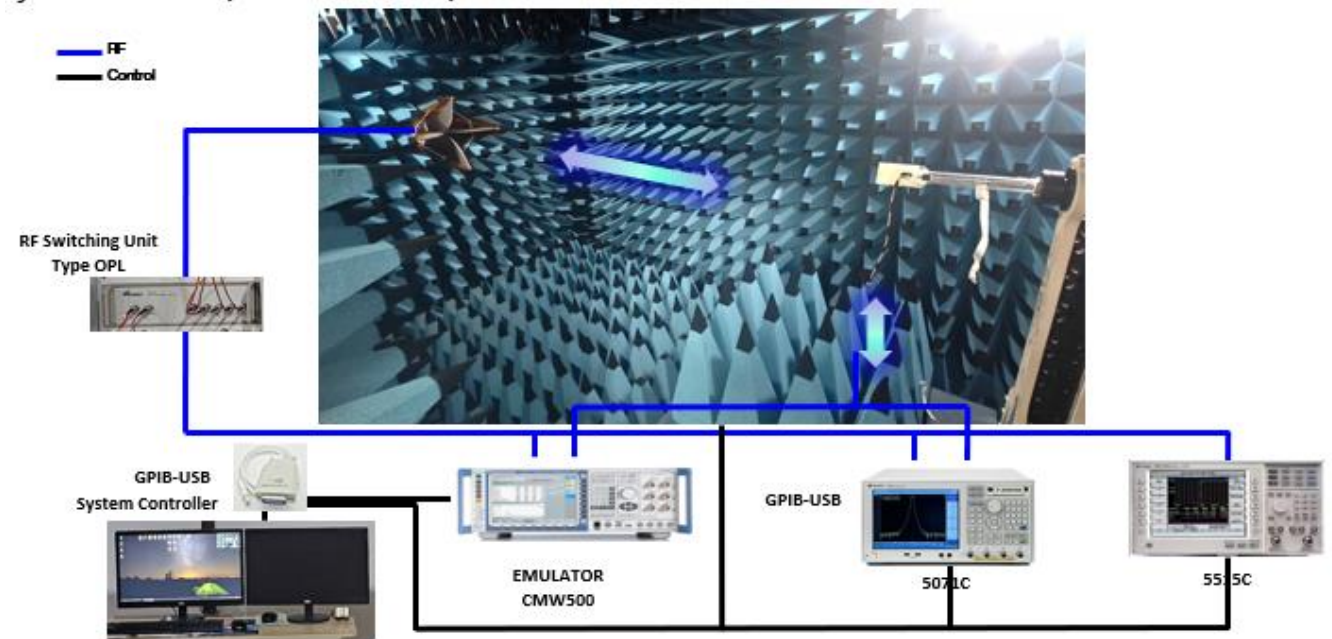
- Test Frequency : Support 400 MHz to 7.5 GHz
- Chamber Size: 4m x 2.5m x 2.5m

Support

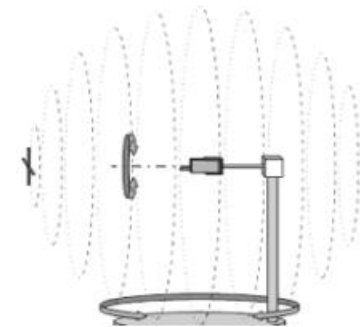
- LTE Support ALL Band (FDD/TDD)
- CDMA,GSM,WCDMA Support ALL Band
- Passive Efficiency Measurement (400 MHz ~ 7.5GHz)

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

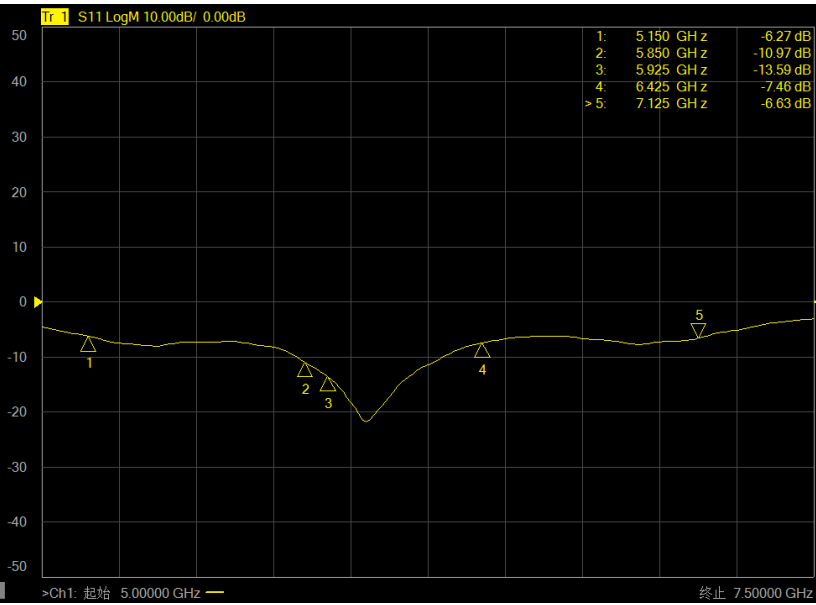


Item	Measuring Instruments	Latest Calibration Schedule
1	OTA Chamber	2024/12/01
2	Network Analyzer Keysight 5071c	2025/06/20

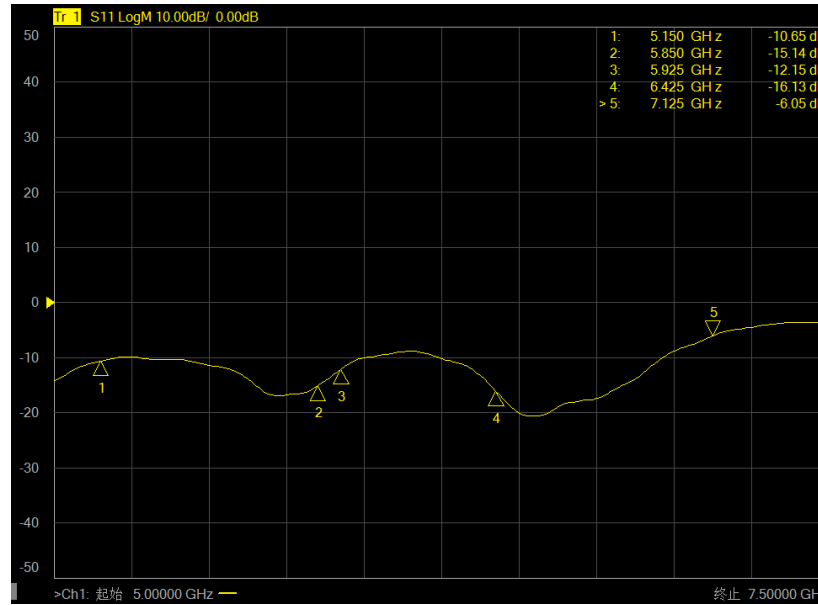
Electrical Characteristics

Item	Specification ANT0			Specification ANT1			Specification BT0
Antenna Type	Metal Antenna			Metal Antenna			Chip Antenna
Central Frequency	5550MHz	6175MHz	6775MHz	5550MHz	6175MHz	6775MHz	2440MHz
Band Width	700MHz	500MHz	700MHz	700MHz	500MHz	700MHz	80MHz
Peak Gain	1.77dBi	1.90dBi	0.59dBi	0.73dBi	1.64dBi	1.50dBi	1.28dBi
Return Loss	< -6dB			< -6dB			< -6dB
Polarization	Linear			Linear			Linear
Azimuth Beam width	Omni-directional			Omni-directional			Omni-directional
Impedance	50Ω			50Ω			50Ω
Dimension	11*5*2mm			12.5*5*2mm			14*5*0.55mm

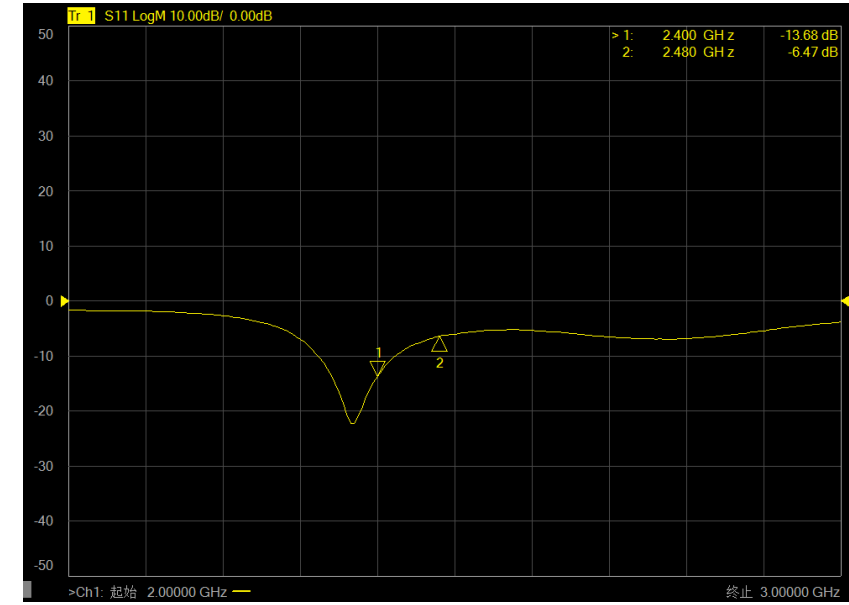
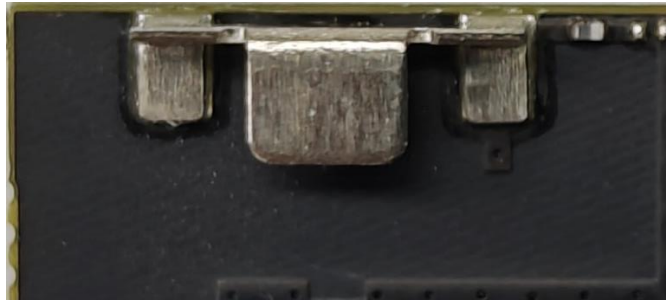
Passive test-Return Loss-WiFi



ANT0



ANT1



BT0

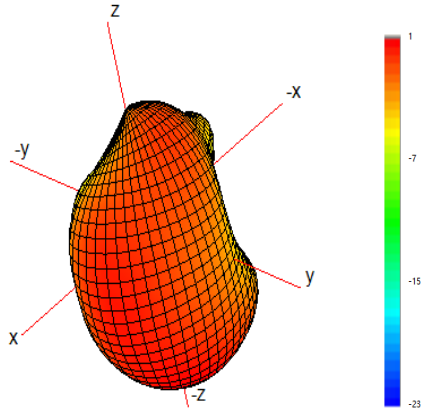


ANT0 Passive Test-Antenna 3D Gain

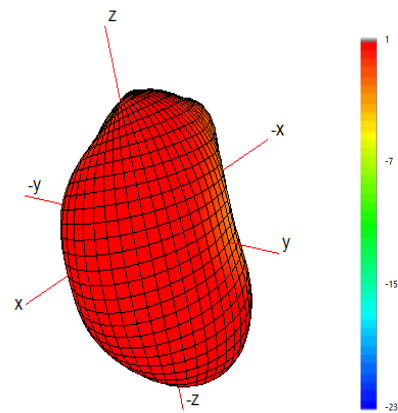
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
5150MHz	20.04 %	-12.17 dBi	-8.55 dBi	-6.98 dBi	-4.39 dBi	-1.59 dBi	-1.45 dBi
5250MHz	22.77 %	-11.40 dBi	-8.09 dBi	-6.43 dBi	-3.44 dBi	-1.23 dBi	-0.74 dBi
5350MHz	25.53 %	-10.60 dBi	-7.74 dBi	-5.93 dBi	-2.35 dBi	-0.58 dBi	-0.42 dBi
5450MHz	29.71 %	-10.03 dBi	-7.04 dBi	-5.27 dBi	-1.75 dBi	0.54 dBi	0.75 dBi
5550MHz	33.11 %	-9.94 dBi	-6.39 dBi	-4.80 dBi	-1.09 dBi	1.11 dBi	1.74 dBi
5650MHz	38.81 %	-9.36 dBi	-5.65 dBi	-4.11 dBi	-0.48 dBi	1.32 dBi	1.63 dBi
5750MHz	40.10 %	-9.47 dBi	-5.41 dBi	-3.97 dBi	-0.32 dBi	1.34 dBi	1.77 dBi
5850MHz	42.68 %	-9.24 dBi	-5.12 dBi	-3.70 dBi	0.16 dBi	1.31 dBi	1.58 dBi
5925MHz	49.31 %	-8.72 dBi	-4.45 dBi	-3.07 dBi	0.52 dBi	1.49 dBi	1.87 dBi
6075MHz	55.58 %	-7.80 dBi	-4.09 dBi	-2.55 dBi	1.28 dBi	1.59 dBi	1.90 dBi
6225MHz	53.21 %	-7.94 dBi	-4.30 dBi	-2.74 dBi	0.76 dBi	1.55 dBi	1.81 dBi
6375MHz	47.21 %	-8.47 dBi	-4.81 dBi	-3.26 dBi	-0.02 dBi	1.34 dBi	1.64 dBi
6425MHz	37.72 %	-9.50 dBi	-5.77 dBi	-4.23 dBi	-1.76 dBi	-0.25 dBi	-0.01 dBi
6675MHz	34.20 %	-9.81 dBi	-6.24 dBi	-4.66 dBi	-2.27 dBi	-0.72 dBi	-0.56 dBi
6825MHz	38.32 %	-9.16 dBi	-5.82 dBi	-4.17 dBi	-2.23 dBi	0.23 dBi	0.37 dBi
6975MHz	34.97 %	-9.24 dBi	-6.37 dBi	-4.56 dBi	-2.72 dBi	0.48 dBi	0.59 dBi
7125MHz	31.41 %	-9.33 dBi	-7.05 dBi	-5.03 dBi	-2.43 dBi	-0.57 dBi	-0.31 dBi

ANT0 Passive Test-Antenna 3D Radiation Pattern

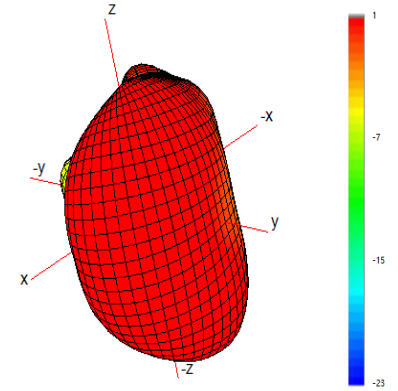
5150MHz



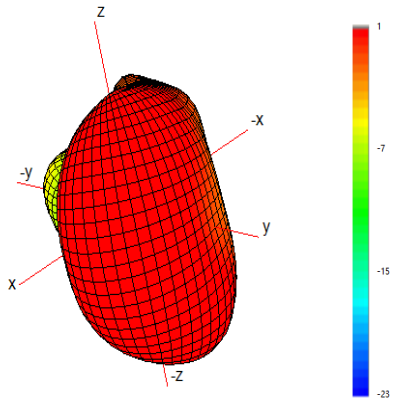
5550MHz



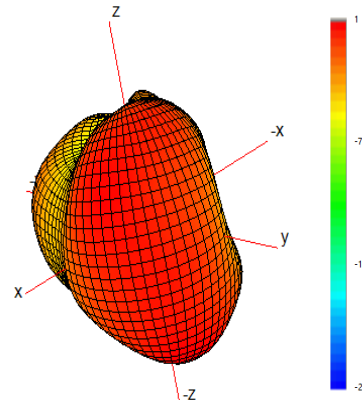
5850MHz



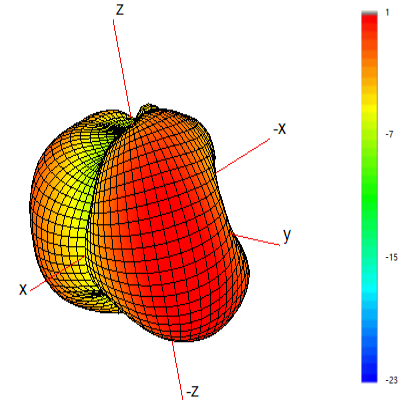
5925MHz



6525MHz



7125MHz

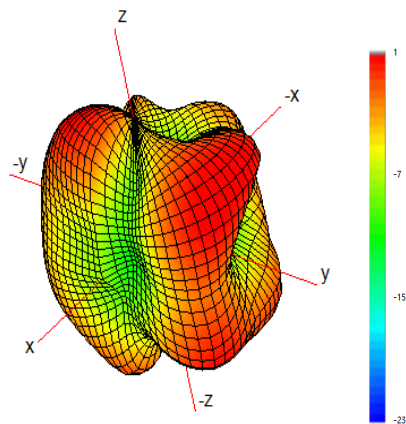


ANT1 Passive Test-Antenna 3D Gain

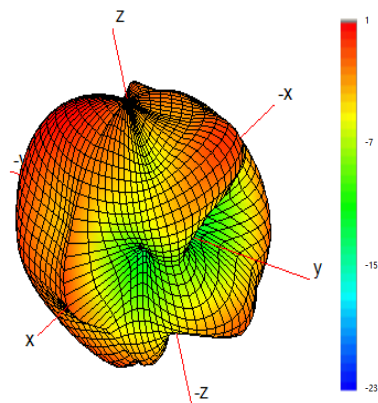
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
5150MHz	40.43 %	-8.07 dBi	-6.05 dBi	-3.93 dBi	-0.26 dBi	-1.42 dBi	0.11 dBi
5250MHz	43.54 %	-8.16 dBi	-5.49 dBi	-3.61 dBi	-0.14 dBi	-0.47 dBi	0.19 dBi
5350MHz	44.82 %	-8.35 dBi	-5.20 dBi	-3.49 dBi	-1.18 dBi	-0.87 dBi	-0.42 dBi
5450MHz	46.08 %	-8.45 dBi	-4.98 dBi	-3.37 dBi	-1.99 dBi	-0.04 dBi	0.15 dBi
5550MHz	46.45 %	-8.66 dBi	-4.84 dBi	-3.33 dBi	-2.63 dBi	0.04 dBi	0.06 dBi
5650MHz	49.38 %	-8.60 dBi	-4.49 dBi	-3.06 dBi	-3.01 dBi	0.35 dBi	0.36 dBi
5750MHz	47.50 %	-8.97 dBi	-4.58 dBi	-3.23 dBi	-3.61 dBi	0.34 dBi	0.35 dBi
5850MHz	45.38 %	-9.45 dBi	-4.68 dBi	-3.43 dBi	-4.05 dBi	0.73 dBi	0.73 dBi
5925MHz	46.52 %	-9.68 dBi	-4.46 dBi	-3.32 dBi	-3.83 dBi	1.22 dBi	1.22 dBi
6075MHz	41.37 %	-10.30 dBi	-4.94 dBi	-3.83 dBi	-4.65 dBi	0.83 dBi	0.93 dBi
6225MHz	39.46 %	-10.66 dBi	-5.10 dBi	-4.04 dBi	-4.47 dBi	0.92 dBi	1.11 dBi
6375MHz	43.18 %	-10.49 dBi	-4.65 dBi	-3.65 dBi	-4.16 dBi	1.39 dBi	1.64 dBi
6425MHz	42.39 %	-10.51 dBi	-4.75 dBi	-3.73 dBi	-3.23 dBi	1.29 dBi	1.50 dBi
6675MHz	39.28 %	-10.59 dBi	-5.15 dBi	-4.06 dBi	-2.41 dBi	0.60 dBi	0.86 dBi
6825MHz	40.47 %	-10.55 dBi	-4.99 dBi	-3.93 dBi	-2.79 dBi	-0.35 dBi	0.65 dBi
6975MHz	31.28 %	-11.48 dBi	-6.17 dBi	-5.05 dBi	-4.10 dBi	-1.23 dBi	-0.83 dBi
7125MHz	22.10 %	-12.84 dBi	-7.72 dBi	-6.56 dBi	-6.11 dBi	-2.38 dBi	-1.98 dBi

ANT1 Passive Test-Antenna 3D Radiation Pattern

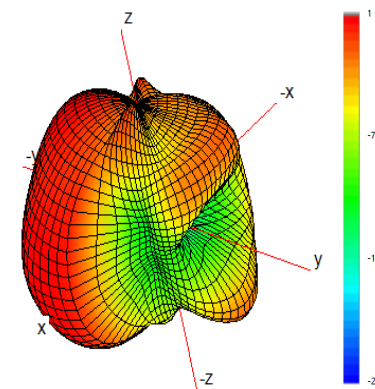
5150MHz



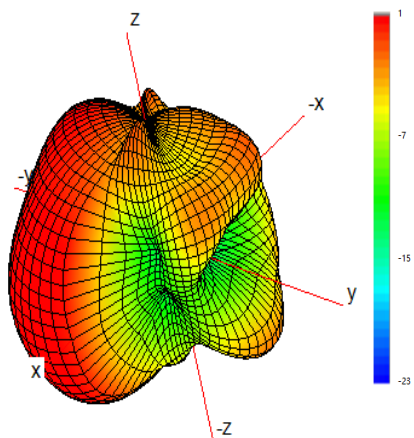
5550MHz



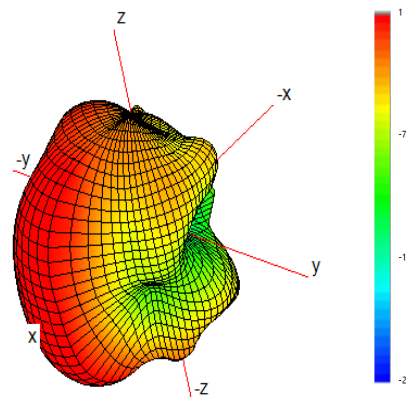
5850MHz



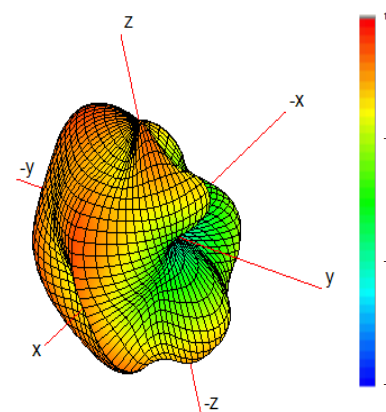
5925MHz



6525MHz



7125MHz

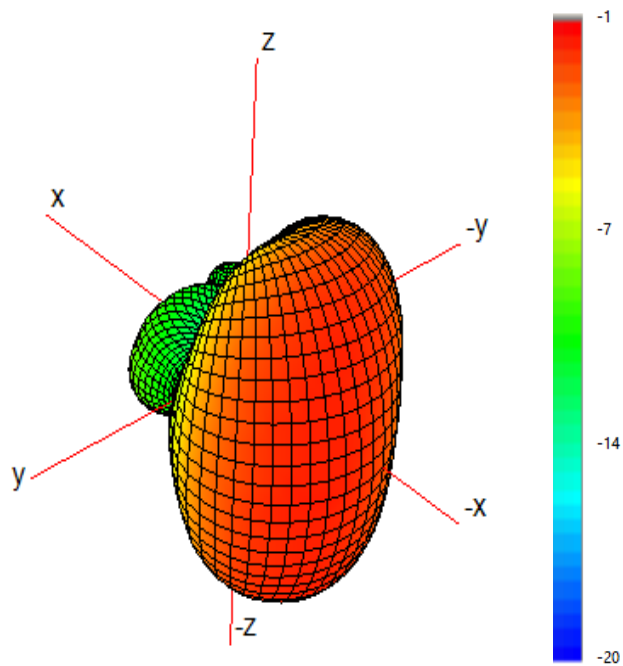


BT0 Passive Test-Antenna 3D Gain

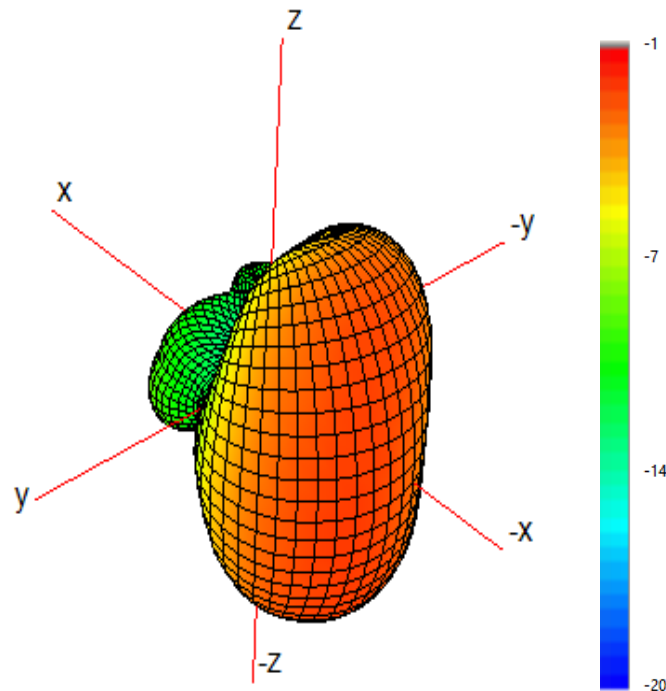
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	38.60 %	-10.13 dBi	-1.30 dBi	-4.13 dBi	-5.39 dBi	1.23 dBi	1.28 dBi
2410MHz	37.89 %	-10.20 dBi	-1.30 dBi	-4.21 dBi	-5.48 dBi	1.18 dBi	1.23 dBi
2420MHz	37.10 %	-10.28 dBi	-1.49 dBi	-4.31 dBi	-5.57 dBi	1.12 dBi	1.18 dBi
2430MHz	35.20 %	-10.49 dBi	-1.66 dBi	-4.53 dBi	-5.81 dBi	0.87 dBi	0.93 dBi
2440MHz	33.57 %	-10.71 dBi	-1.96 dBi	-4.74 dBi	-6.01 dBi	0.69 dBi	0.75 dBi
2450MHz	32.36 %	-10.82 dBi	-2.18 dBi	-4.90 dBi	-6.18 dBi	0.51 dBi	0.58 dBi
2460MHz	31.05 %	-10.98 dBi	-2.45 dBi	-5.08 dBi	-6.37 dBi	0.29 dBi	0.36 dBi
2470MHz	29.93 %	-11.14 dBi	-2.67 dBi	-5.24 dBi	-6.53 dBi	0.10 dBi	0.18 dBi
2480MHz	28.58 %	-11.32 dBi	-2.92 dBi	-5.44 dBi	-6.74 dBi	-0.12 dBi	-0.04 dBi

BT0 Passive Test-Antenna 3D Radiation Pattern

2400MHz



2440MHz



2480MHz

