

WCHA42M

Passive Data

2025/09/19

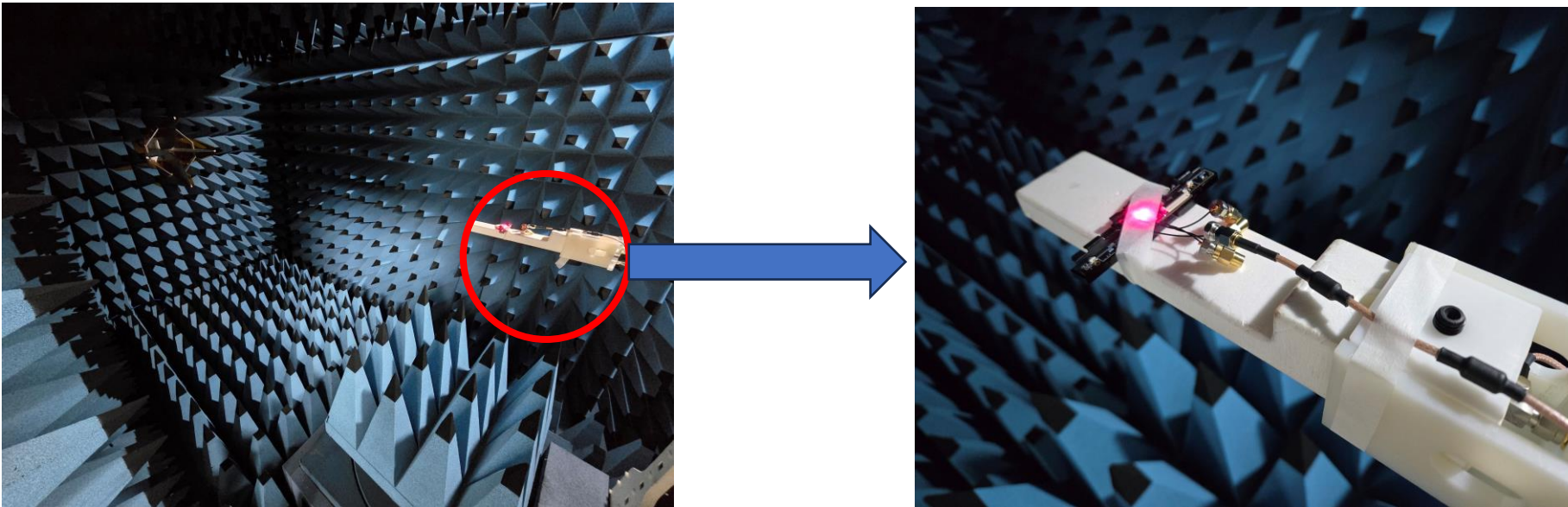
1. Test Condition

* QS95F 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 2025/09/19

Yangda Lai

2. Test Environment



Antenna Gain Measurement Procedure and Software

OTA measurement system

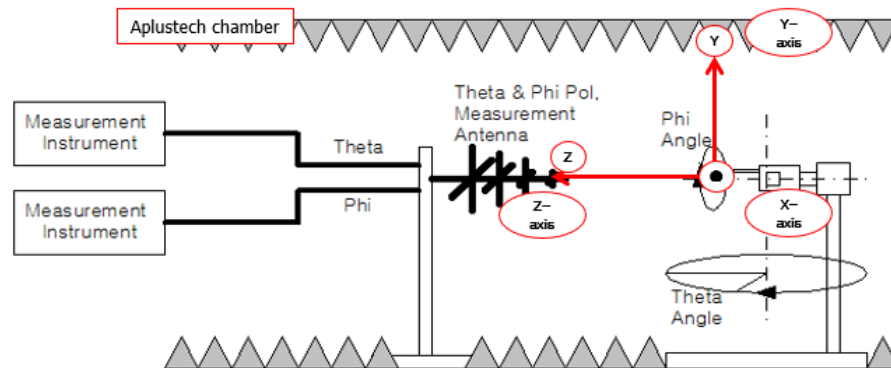
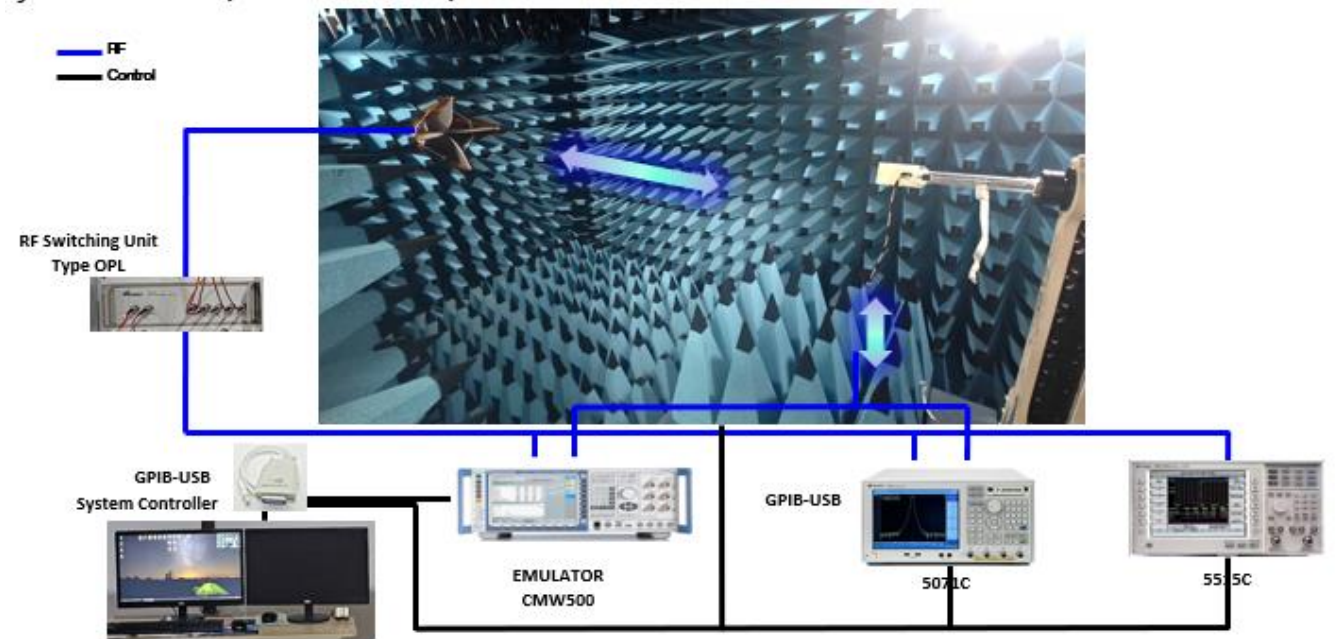
- Test Frequency : Support 400 MHz to 7.5 GHz
- Chamber Size: 4m x 2.5m x 2.5m

Support

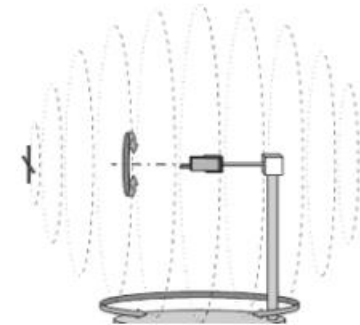
- LTE Support ALL Band (FDD/TDD)
- CDMA,GSM,WCDMA Support ALL Band
- Passive Efficiency Measurement (400 MHz ~ 7.5GHz)

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

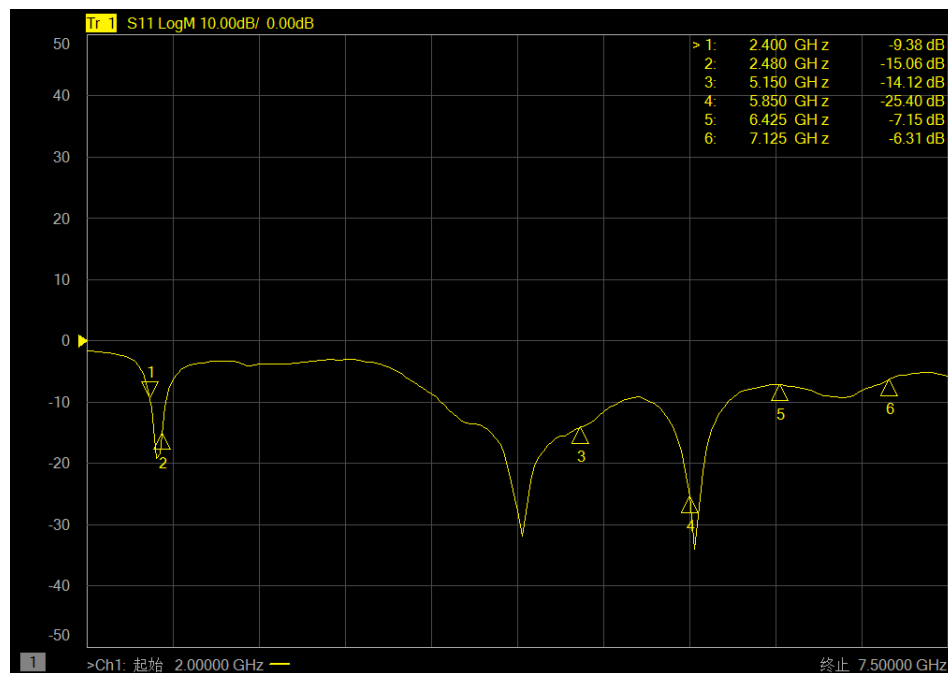


Item	Measuring Instruments	Latest Calibration Schedule
1	OTA Chamber	2024/12/01
2	Network Analyzer Keysight 5071c	2025/06/20

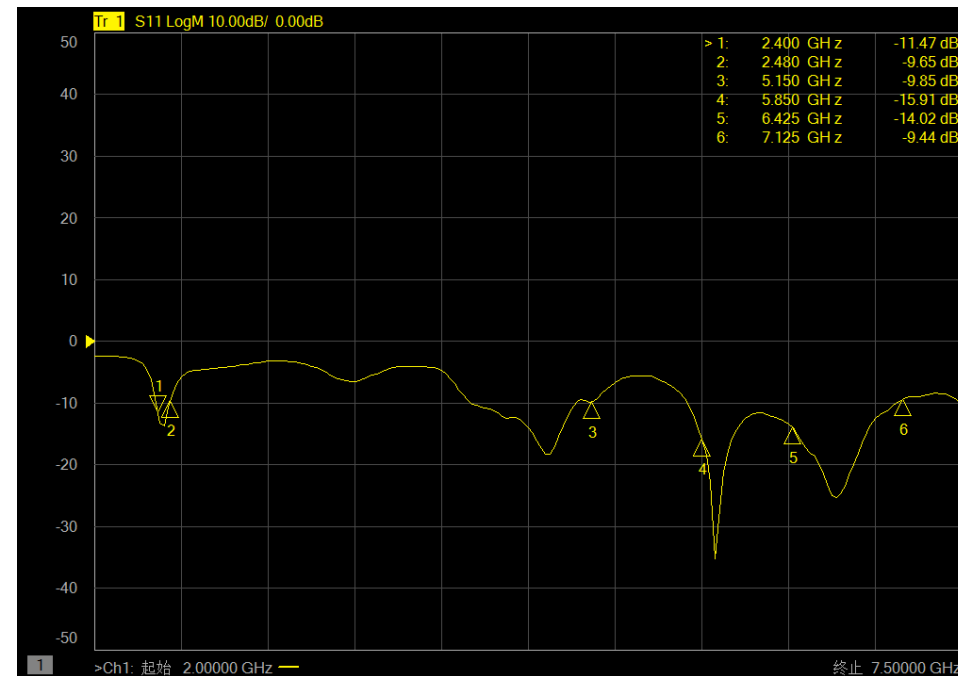
Electrical Characteristics

Item	Specification ANT0				Specification ANT1				Specification BT0	Specification BT1
Antenna Type	Chip Antenna				Chip Antenna				Chip Antenna	Chip Antenna
Central Frequency	2440MHz	5500MHz	6175MHz	6775MHz	2440MHz	5500MHz	6175MHz	6775MHz	2440MHz	2440MHz
Band Width	80MHz	700MHz	500MHz	700MHz	80MHz	700MHz	500MHz	700MHz	80MHz	80MHz
Peak Gain	0.21dBi	1.71dBi	1.79dBi	-0.64dBi	-2.33dBi	0.50dBi	1.80dBi	1.41dBi	-1.64dBi	-3.77dBi
Return Loss	<-6dB				<-9dB				<-5dB	<-6dB
Polarization	Linear				Linear				Linear	Linear
Azimuth Beam width	Omni-directional				Omni-directional				Omni-directional	Omni-directional
Impedance	50Ω				50Ω				50Ω	50Ω
Dimension	12*4*0.55mm				11.5*6*0.55mm				7.5*2.6*0.55mm	6*2.8*0.55mm

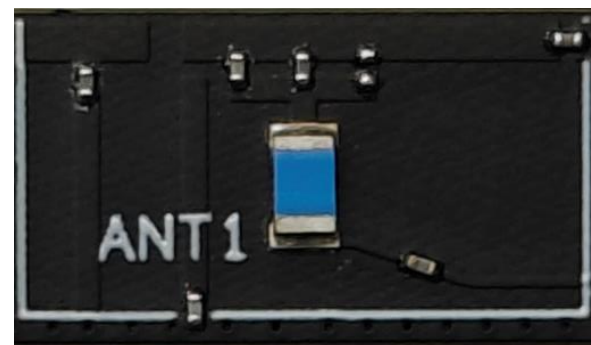
Passive test-Return Loss-WiFi



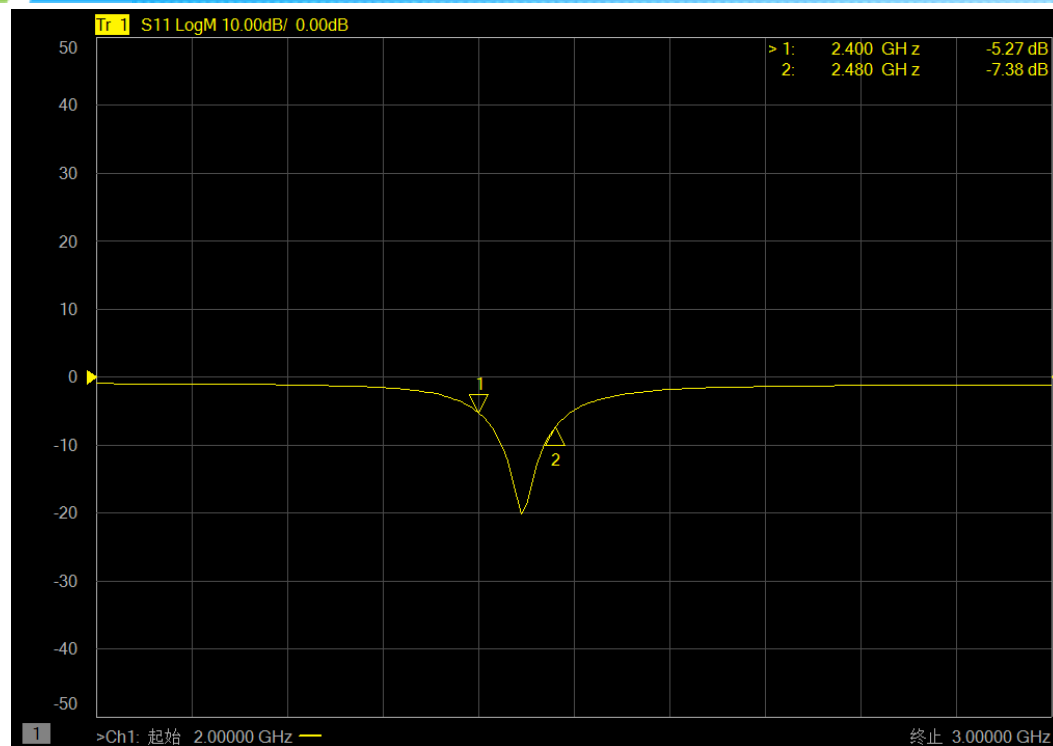
ANT0



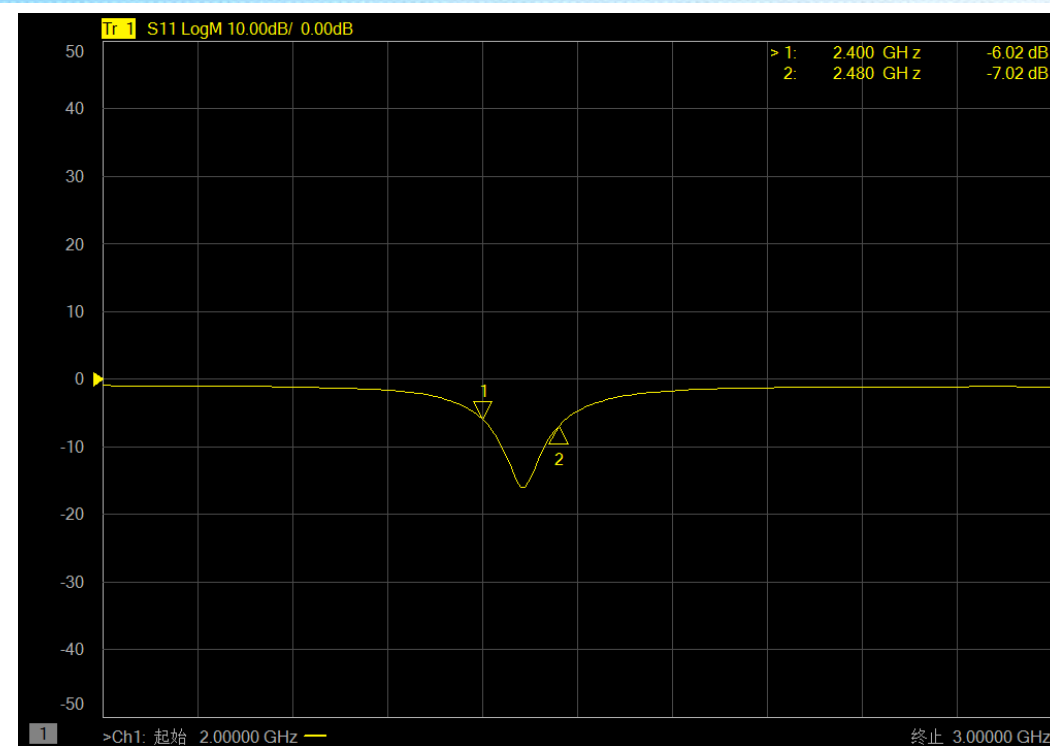
ANT1



Passive test-Return Loss-BT



BT0



BT1

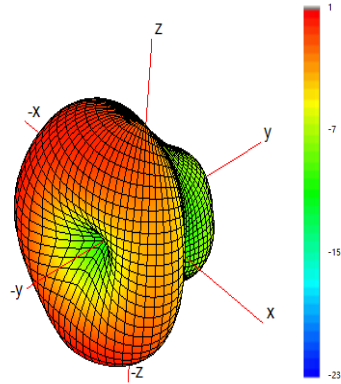


ANT0 Passive Test-Antenna 3D Gain

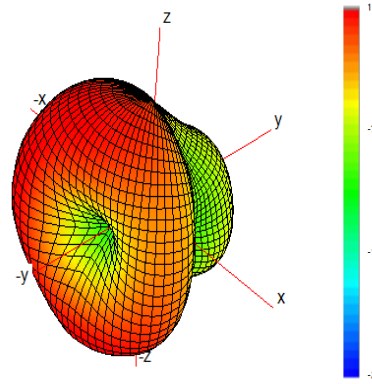
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	26.50 %	-10.68 dBi	-7.46 dBi	-5.77 dBi	-2.31 dBi	-1.47 dBi	-1.44 dBi
2410MHz	28.23 %	-10.44 dBi	-7.17 dBi	-5.49 dBi	-2.07 dBi	-1.05 dBi	-1.02 dBi
2420MHz	29.99 %	-10.25 dBi	-6.87 dBi	-5.23 dBi	-1.83 dBi	-0.66 dBi	-0.63 dBi
2430MHz	31.67 %	-10.06 dBi	-6.61 dBi	-4.99 dBi	-1.60 dBi	-0.31 dBi	-0.29 dBi
2440MHz	33.01 %	-9.89 dBi	-6.43 dBi	-4.81 dBi	-1.40 dBi	-0.04 dBi	-0.02 dBi
2450MHz	34.04 %	-9.73 dBi	-6.31 dBi	-4.68 dBi	-1.25 dBi	0.05 dBi	0.07 dBi
2460MHz	35.04 %	-9.54 dBi	-6.21 dBi	-4.55 dBi	-0.97 dBi	0.09 dBi	0.11 dBi
2470MHz	36.21 %	-9.37 dBi	-6.08 dBi	-4.41 dBi	-0.74 dBi	0.17 dBi	0.19 dBi
2480MHz	37.00 %	-9.22 dBi	-6.02 dBi	-4.32 dBi	-0.49 dBi	0.20 dBi	0.21 dBi
5150MHz	44.88 %	-6.63 dBi	-6.36 dBi	-3.48 dBi	0.70 dBi	0.63 dBi	1.63 dBi
5250MHz	46.30 %	-6.58 dBi	-6.14 dBi	-3.34 dBi	0.43 dBi	0.46 dBi	1.32 dBi
5350MHz	43.68 %	-6.96 dBi	-6.28 dBi	-3.60 dBi	-0.33 dBi	0.51 dBi	1.16 dBi
5450MHz	42.33 %	-7.07 dBi	-6.44 dBi	-3.73 dBi	0.00 dBi	0.21 dBi	1.24 dBi
5550MHz	41.60 %	-7.38 dBi	-6.32 dBi	-3.81 dBi	-0.61 dBi	0.69 dBi	1.32 dBi
5650MHz	43.97 %	-7.17 dBi	-6.06 dBi	-3.57 dBi	0.28 dBi	0.75 dBi	1.71 dBi
5750MHz	42.21 %	-7.55 dBi	-6.08 dBi	-3.75 dBi	0.23 dBi	0.41 dBi	1.65 dBi
5850MHz	40.67 %	-7.86 dBi	-6.14 dBi	-3.91 dBi	0.05 dBi	0.31 dBi	1.38 dBi
5925MHz	43.28 %	-7.62 dBi	-5.85 dBi	-3.64 dBi	0.68 dBi	0.47 dBi	1.79 dBi
6075MHz	39.65 %	-8.00 dBi	-6.23 dBi	-4.02 dBi	-0.23 dBi	0.00 dBi	0.88 dBi
6225MHz	34.09 %	-8.82 dBi	-6.78 dBi	-4.67 dBi	-1.11 dBi	-0.20 dBi	-0.14 dBi
6375MHz	32.45 %	-9.63 dBi	-6.67 dBi	-4.89 dBi	-2.93 dBi	-0.23 dBi	-0.14 dBi
6425MHz	32.29 %	-10.24 dBi	-6.42 dBi	-4.91 dBi	-3.75 dBi	-0.81 dBi	-0.64 dBi
6675MHz	34.05 %	-10.10 dBi	-6.15 dBi	-4.68 dBi	-3.43 dBi	-1.40 dBi	-1.27 dBi
6825MHz	37.70 %	-9.30 dBi	-5.86 dBi	-4.24 dBi	-2.39 dBi	-1.01 dBi	-0.72 dBi
6975MHz	31.42 %	-9.93 dBi	-6.72 dBi	-5.03 dBi	-2.97 dBi	-1.90 dBi	-0.99 dBi
7125MHz	30.15 %	-10.58 dBi	-7.94 dBi	-5.21 dBi	-3.79 dBi	-3.09 dBi	-2.14 dBi

ANT0 Passive Test-Antenna 3D Radiation Pattern

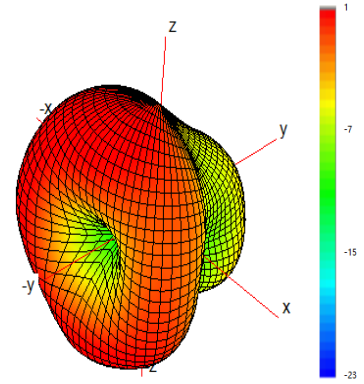
2400MHz



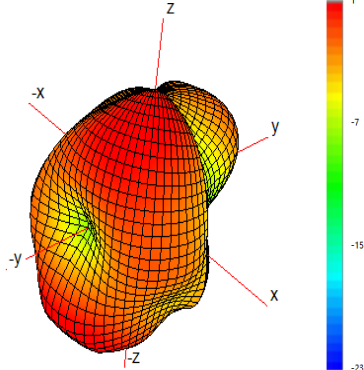
2440MHz



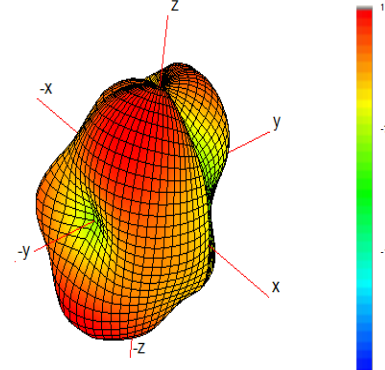
2480MHz



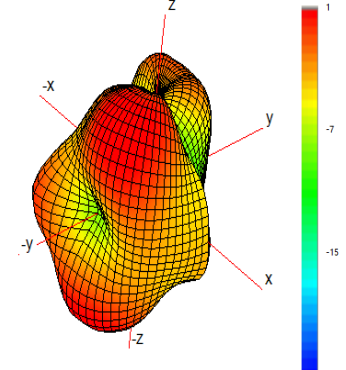
5150MHz



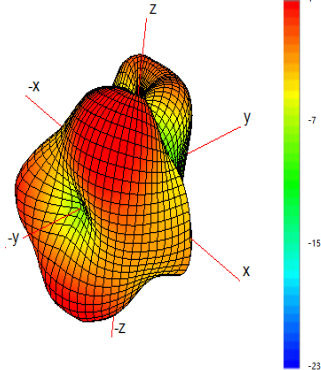
5550MHz



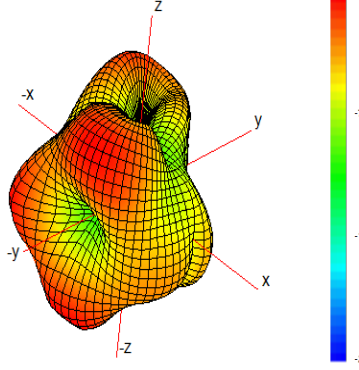
5850MHz



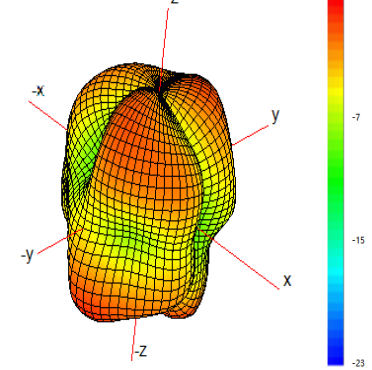
5925MHz



6525MHz



7125MHz

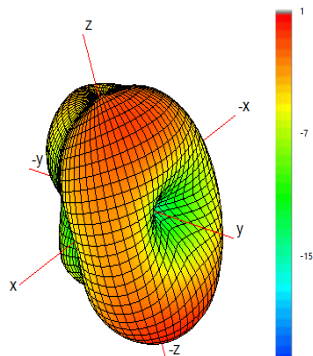


ANT1 Passive Test-Antenna 3D Gain

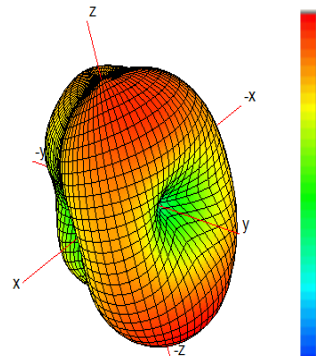
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	25.01 %	-10.52 dBi	-9.94 dBi	-6.02 dBi	-3.32 dBi	-5.84 dBi	-2.80 dBi
2410MHz	25.90 %	-10.26 dBi	-9.57 dBi	-5.87 dBi	-3.06 dBi	-5.35 dBi	-2.54 dBi
2420MHz	26.47 %	-10.06 dBi	-9.30 dBi	-5.77 dBi	-2.87 dBi	-4.91 dBi	-2.40 dBi
2430MHz	27.46 %	-9.97 dBi	-9.14 dBi	-5.61 dBi	-2.77 dBi	-4.72 dBi	-2.33 dBi
2440MHz	27.67 %	-10.05 dBi	-9.08 dBi	-5.58 dBi	-2.89 dBi	-4.45 dBi	-2.45 dBi
2450MHz	27.56 %	-10.28 dBi	-9.11 dBi	-5.60 dBi	-3.05 dBi	-4.45 dBi	-2.66 dBi
2460MHz	26.58 %	-10.51 dBi	-9.18 dBi	-5.75 dBi	-3.30 dBi	-4.44 dBi	-2.92 dBi
2470MHz	25.43 %	-10.73 dBi	-9.21 dBi	-5.95 dBi	-3.47 dBi	-4.36 dBi	-3.12 dBi
2480MHz	25.21 %	-10.97 dBi	-9.26 dBi	-5.98 dBi	-3.61 dBi	-4.38 dBi	-3.27 dBi
5150MHz	30.09 %	-10.52 dBi	-8.12 dBi	-5.22 dBi	-2.22 dBi	-3.26 dBi	-1.23 dBi
5250MHz	32.20 %	-9.78 dBi	-7.50 dBi	-4.92 dBi	-1.56 dBi	-2.95 dBi	-0.65 dBi
5350MHz	30.15 %	-10.04 dBi	-7.85 dBi	-5.21 dBi	-2.15 dBi	-3.05 dBi	-1.06 dBi
5450MHz	30.64 %	-10.05 dBi	-8.10 dBi	-5.14 dBi	-2.25 dBi	-3.43 dBi	-1.12 dBi
5550MHz	31.49 %	-10.12 dBi	-8.23 dBi	-5.02 dBi	-2.43 dBi	-3.45 dBi	-0.97 dBi
5650MHz	29.92 %	-9.45 dBi	-7.79 dBi	-5.24 dBi	-1.65 dBi	-3.21 dBi	-0.11 dBi
5750MHz	30.86 %	-9.22 dBi	-7.70 dBi	-5.11 dBi	-1.96 dBi	-2.93 dBi	0.00 dBi
5850MHz	33.24 %	-8.96 dBi	-7.44 dBi	-4.78 dBi	-1.43 dBi	-2.49 dBi	0.50 dBi
5925MHz	34.48 %	-8.53 dBi	-6.89 dBi	-4.62 dBi	-0.88 dBi	-1.82 dBi	1.24 dBi
6075MHz	36.11 %	-8.31 dBi	-6.71 dBi	-4.42 dBi	0.40 dBi	-1.47 dBi	1.78 dBi
6225MHz	36.41 %	-8.28 dBi	-6.66 dBi	-4.39 dBi	0.09 dBi	-1.77 dBi	1.80 dBi
6375MHz	36.90 %	-8.48 dBi	-6.44 dBi	-4.33 dBi	0.32 dBi	-1.38 dBi	1.77 dBi
6425MHz	32.46 %	-9.27 dBi	-6.86 dBi	-4.89 dBi	-1.32 dBi	-2.03 dBi	1.00 dBi
6675MHz	34.13 %	-8.99 dBi	-6.67 dBi	-4.67 dBi	-0.91 dBi	-1.31 dBi	0.52 dBi
6825MHz	40.06 %	-8.37 dBi	-5.93 dBi	-3.97 dBi	-0.66 dBi	-1.00 dBi	1.41 dBi
6975MHz	35.85 %	-9.02 dBi	-6.32 dBi	-4.46 dBi	-1.20 dBi	-1.73 dBi	1.31 dBi
7125MHz	31.58 %	-9.48 dBi	-6.92 dBi	-5.01 dBi	-1.05 dBi	-2.05 dBi	0.45 dBi

ANT1 Passive Test-Antenna 3D Radiation Pattern

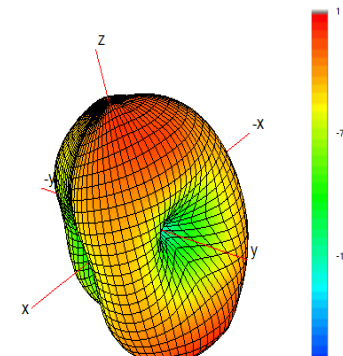
2400MHz



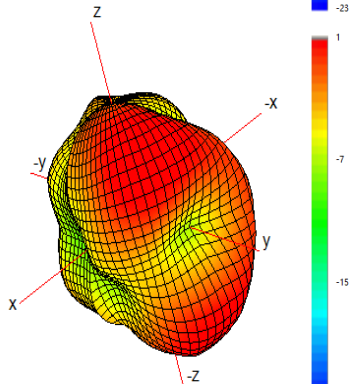
2440MHz



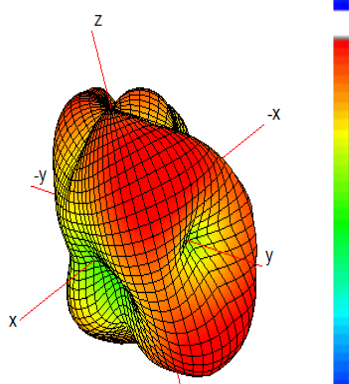
2480MHz



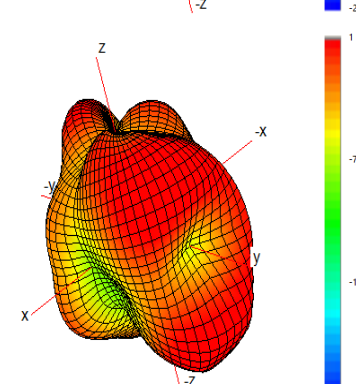
5150MHz



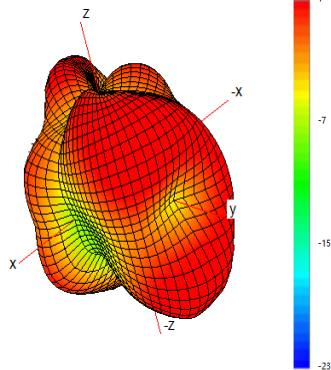
5500MHz



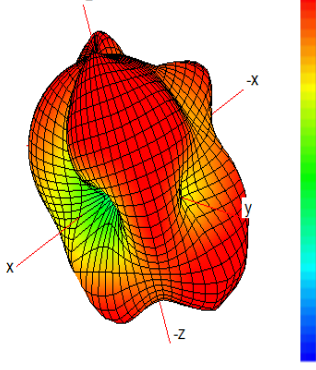
5850MHz



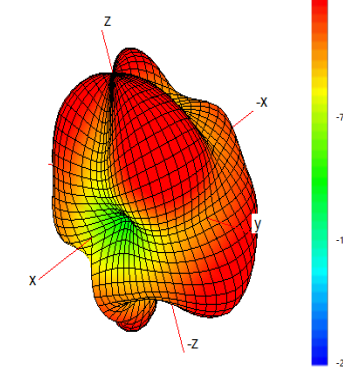
6000MHz



6525MHz



7000MHz

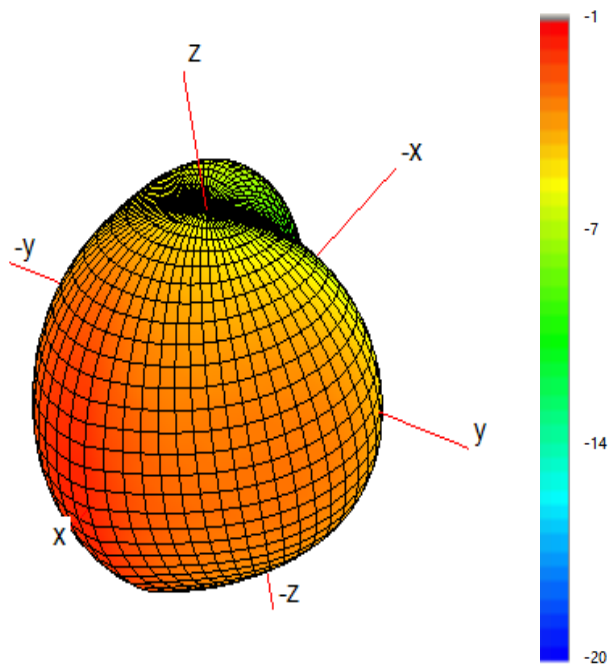


BT0 Passive Test-Antenna 3D Gain

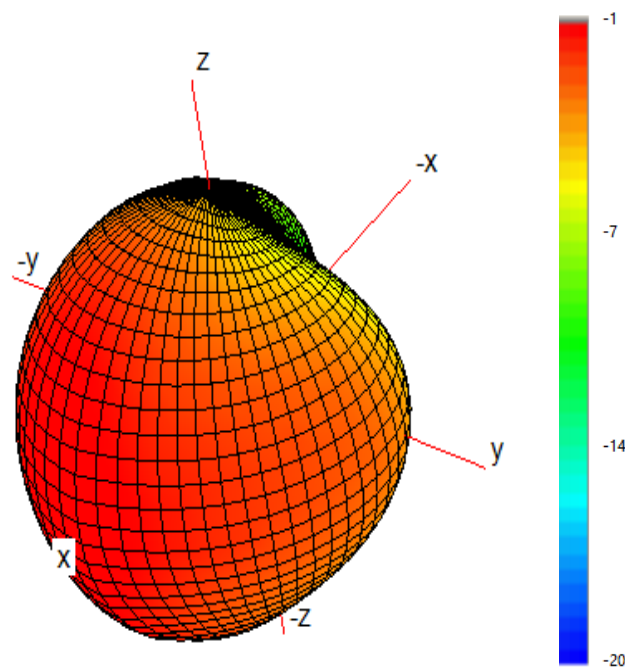
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	17.57 %	-14.59 dBi	-8.85 dBi	-7.55 dBi	-8.71 dBi	-4.87 dBi	-3.24 dBi
2410MHz	18.94 %	-14.40 dBi	-8.33 dBi	-7.23 dBi	-8.66 dBi	-4.28 dBi	-2.66 dBi
2420MHz	20.21 %	-14.36 dBi	-7.93 dBi	-6.94 dBi	-8.70 dBi	-3.81 dBi	-2.20 dBi
2430MHz	21.27 %	-14.36 dBi	-7.63 dBi	-6.72 dBi	-8.62 dBi	-3.47 dBi	-1.87 dBi
2440MHz	22.04 %	-14.45 dBi	-7.52 dBi	-6.57 dBi	-8.57 dBi	-3.23 dBi	-1.64 dBi
2450MHz	22.24 %	-14.54 dBi	-7.59 dBi	-6.53 dBi	-8.43 dBi	-3.26 dBi	-1.68 dBi
2460MHz	22.00 %	-14.66 dBi	-7.80 dBi	-6.58 dBi	-8.37 dBi	-3.43 dBi	-1.85 dBi
2470MHz	21.36 %	-14.76 dBi	-8.01 dBi	-6.70 dBi	-8.36 dBi	-3.60 dBi	-2.02 dBi
2480MHz	20.79 %	-14.86 dBi	-8.31 dBi	-6.82 dBi	-8.39 dBi	-3.88 dBi	-2.30 dBi

BT0 Passive Test-Antenna 3D Radiation Pattern

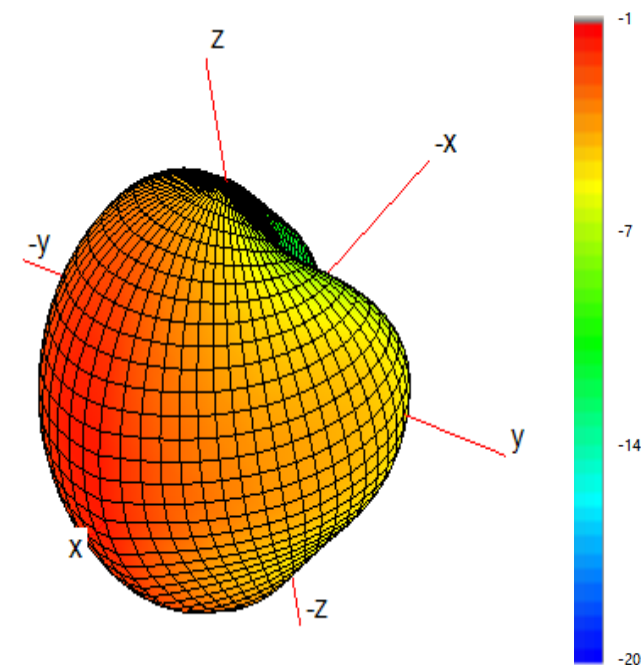
2400MHz



2440MHz



2480MHz



BT1 Passive Test-Antenna 3D Gain

Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	12.53 %	-16.41 dBi	-9.04 dBi	-9.40 dBi	-7.86 dBi	-5.20 dBi	-5.17 dBi
2410MHz	13.58 %	-16.07 dBi	-8.66 dBi	-9.02 dBi	-7.65 dBi	-4.92 dBi	-4.75 dBi
2420MHz	14.55 %	-15.88 dBi	-8.38 dBi	-8.67 dBi	-7.46 dBi	-4.76 dBi	-4.33 dBi
2430MHz	15.14 %	-15.75 dBi	-8.13 dBi	-8.37 dBi	-7.36 dBi	-4.67 dBi	-4.06 dBi
2440MHz	15.46 %	-15.79 dBi	-8.12 dBi	-8.20 dBi	-7.45 dBi	-4.82 dBi	-3.84 dBi
2450MHz	15.35 %	-15.93 dBi	-8.16 dBi	-8.11 dBi	-7.67 dBi	-4.99 dBi	-3.77 dBi
2460MHz	15.04 %	-16.20 dBi	-8.37 dBi	-8.14 dBi	-8.00 dBi	-5.37 dBi	-3.82 dBi
2470MHz	14.46 %	-16.62 dBi	-8.66 dBi	-8.23 dBi	-8.58 dBi	-5.67 dBi	-3.86 dBi
2480MHz	13.67 %	-17.08 dBi	-9.06 dBi	-8.40 dBi	-9.15 dBi	-6.06 dBi	-4.00 dBi

BT1 Passive Test-Antenna 3D Radiation Pattern

