

WCF933M

Passive Data

2024/09/14

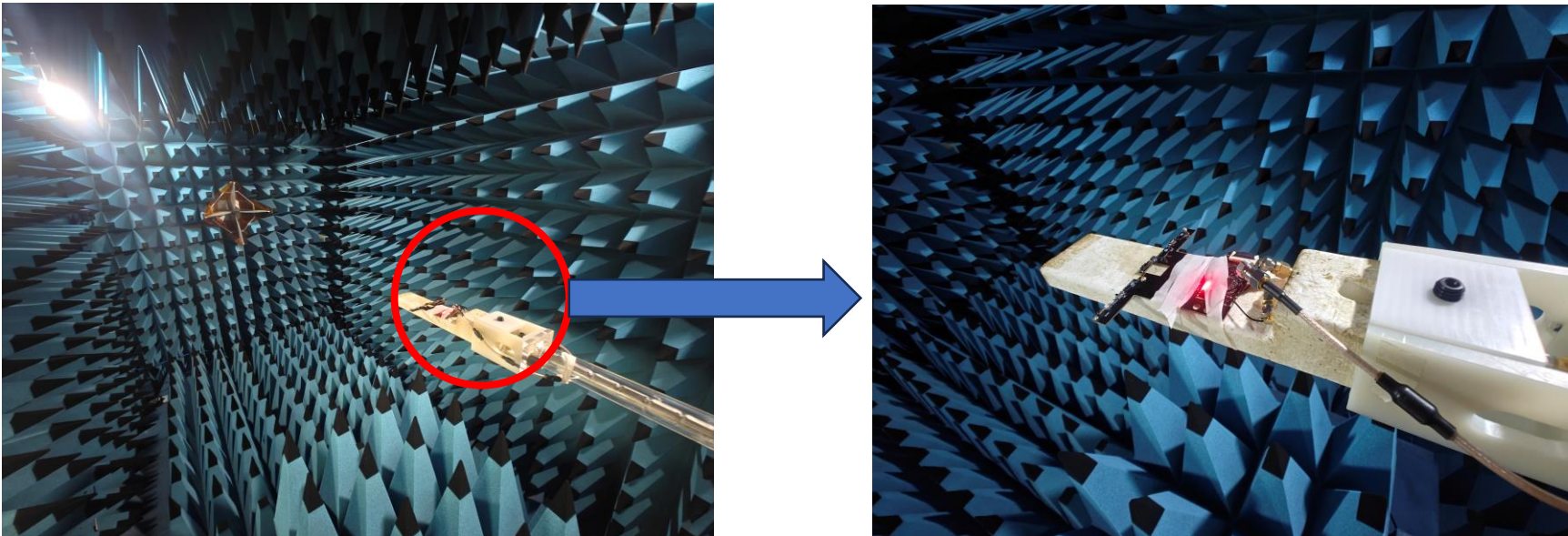
1. Test Condition

* WCF933M Chip Antenna

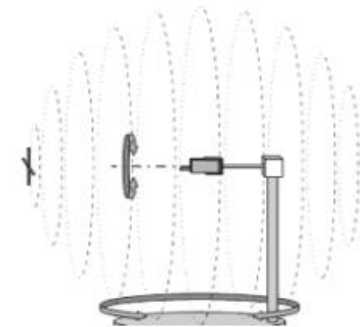
- Test Chamber: Aplustech OTA Chamber
(Address: R&D Building No.9, Main Park, Taohuayuan Science & Technology Innovation Park, Shenzhen, China)
- Network Analyzer : Return Loss
- 3D Passive Chamber : Gain and Efficiency
- Measured by Yangda Lai 2024/09/14

Yangda Lai

2. Test Environment



 Shenzhen Hanyang Antenna Co.,Ltd.
深圳汉阳天线设计有限公司

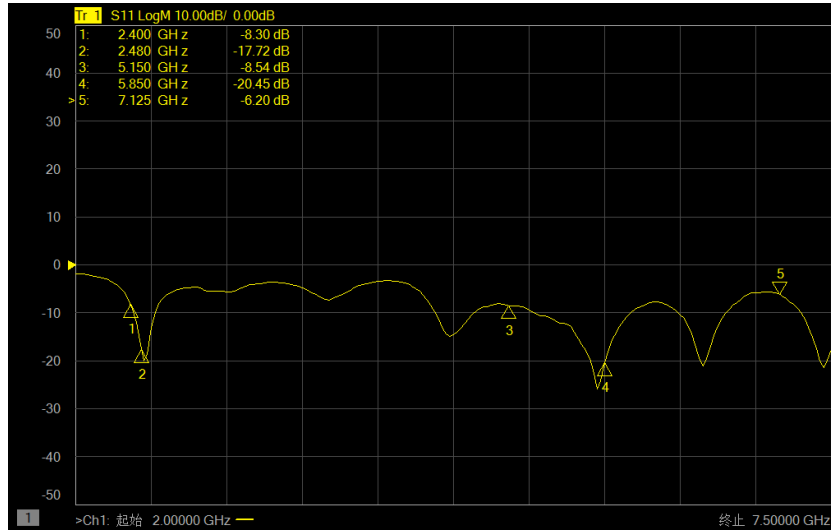


Item	Measuring Instruments	Latest Calibration Schedule
1	OTA Chamber	2024/04/01
2	Network Analyzer Keysight 5071c	2024/07/18

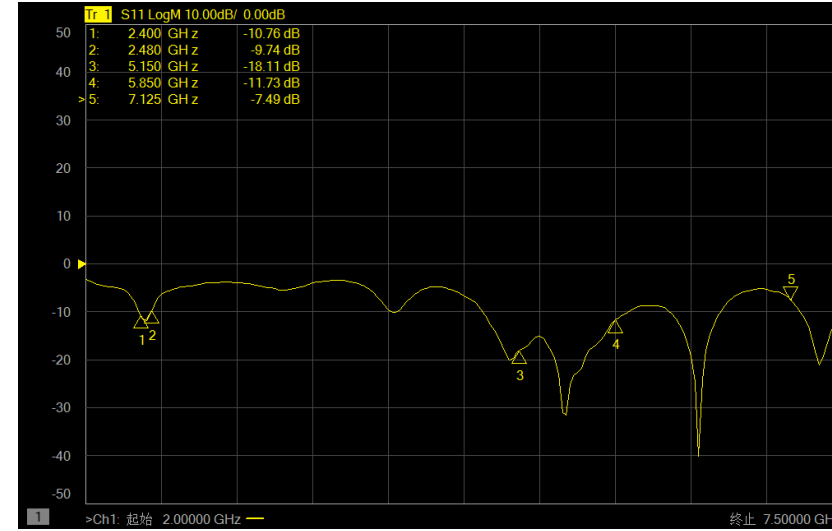
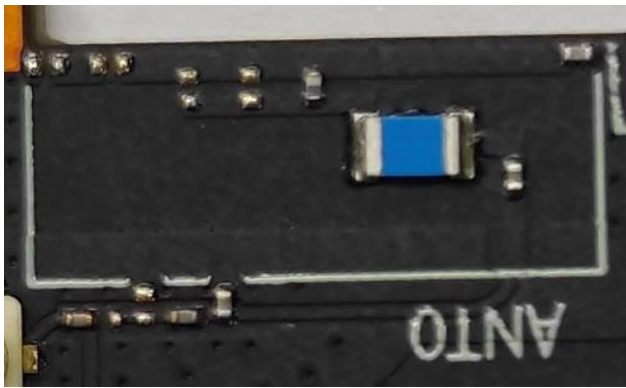
Electrical Characteristics

Item	Specification ANT0			Specification ANT1			Specification BT0	Specification BT1
Antenna Type	Chip Antenna			Chip 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	-1.48dBi	1.75dBi	1.70dBi	0.26dBi	1.74dBi	1.77dBi	-2.06dBi	1.60dBi
Return Loss	< -6dB			< -7dB			< -8dB	< -10dB
Polarization	Linear			Linear			Linear	Linear
Azimuth Beam width	Omni-directional			Omni-directional			Omni-directional	Omni-directional
Impedance	50Ω			50Ω			50Ω	50Ω
Dimension	12*5*0.55mm			10.5*5*0.55mm			8*2.8*0.55mm	8*2.8*0.55mm

Passive test-Return Loss-WiFi



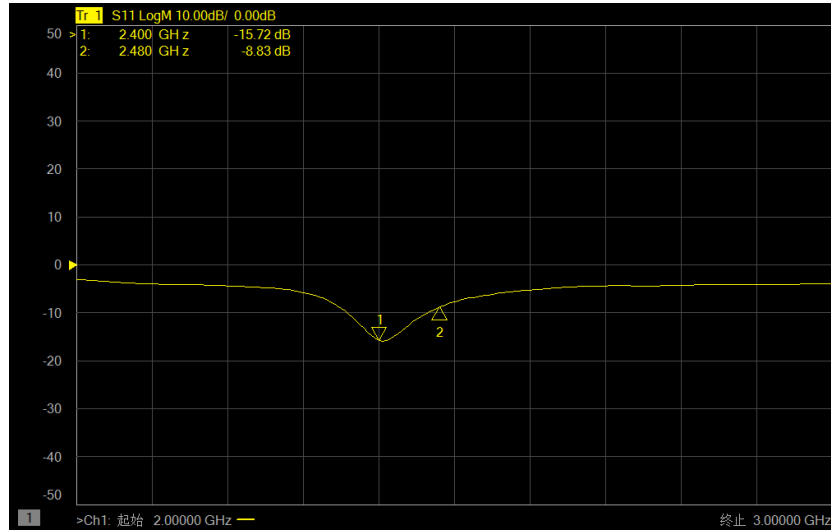
ANT0



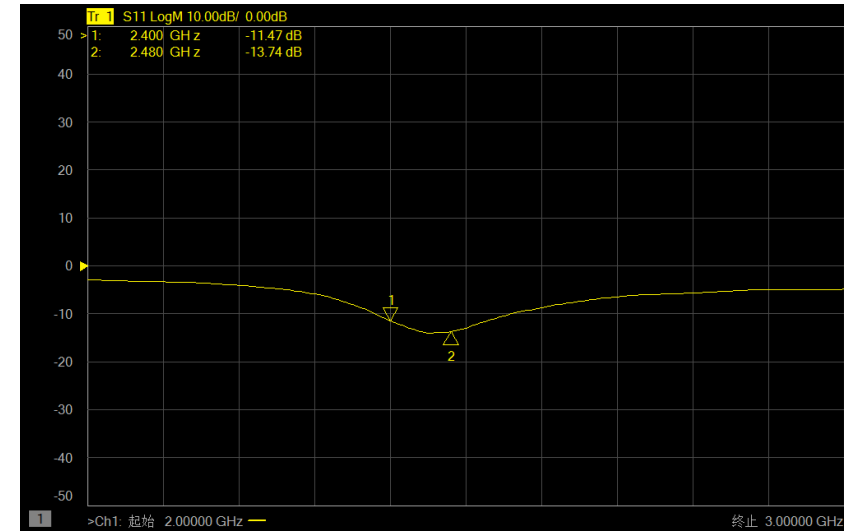
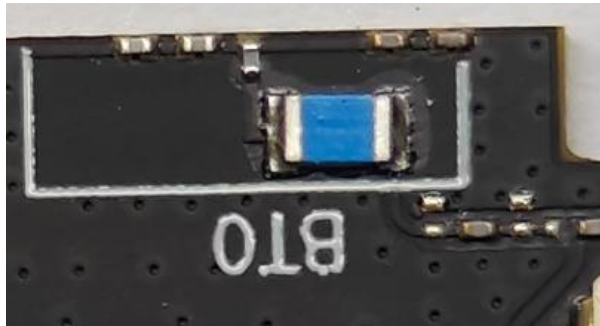
ANT1



Passive test-Return Loss-BT



BT0



BT1

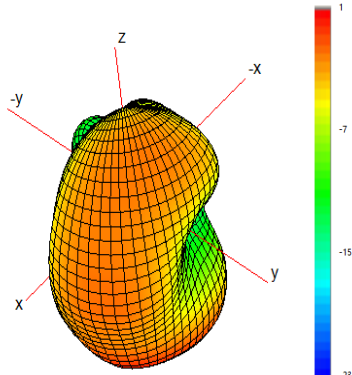


ANT0 Passive Test-Antenna 3D Gain

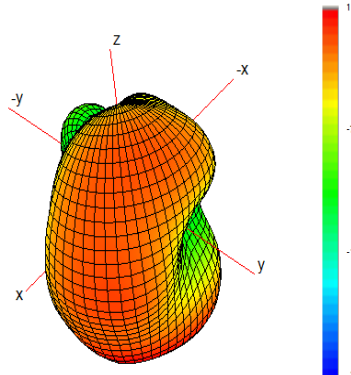
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	22.34 %	-12.88 dBi	-7.65 dBi	-6.51 dBi	-4.25 dBi	-1.98 dBi	-1.71 dBi
2410MHz	23.36 %	-12.60 dBi	-7.48 dBi	-6.31 dBi	-3.89 dBi	-1.85 dBi	-1.60 dBi
2420MHz	24.08 %	-12.44 dBi	-7.36 dBi	-6.18 dBi	-3.81 dBi	-1.78 dBi	-1.53 dBi
2430MHz	24.27 %	-12.43 dBi	-7.31 dBi	-6.15 dBi	-3.72 dBi	-1.72 dBi	-1.48 dBi
2440MHz	24.48 %	-12.42 dBi	-7.27 dBi	-6.11 dBi	-3.66 dBi	-1.76 dBi	-1.52 dBi
2450MHz	24.42 %	-12.44 dBi	-7.28 dBi	-6.12 dBi	-3.60 dBi	-1.80 dBi	-1.55 dBi
2460MHz	24.33 %	-12.46 dBi	-7.29 dBi	-6.14 dBi	-3.60 dBi	-1.80 dBi	-1.54 dBi
2470MHz	24.22 %	-12.49 dBi	-7.31 dBi	-6.16 dBi	-3.65 dBi	-1.80 dBi	-1.51 dBi
2480MHz	23.69 %	-12.62 dBi	-7.39 dBi	-6.25 dBi	-3.76 dBi	-1.84 dBi	-1.57 dBi
5150MHz	37.62 %	-9.72 dBi	-5.69 dBi	-4.25 dBi	-0.88 dBi	1.47 dBi	1.67 dBi
5250MHz	42.08 %	-9.22 dBi	-5.21 dBi	-3.76 dBi	-0.53 dBi	1.55 dBi	1.66 dBi
5350MHz	44.74 %	-8.92 dBi	-4.96 dBi	-3.49 dBi	-0.52 dBi	1.45 dBi	1.66 dBi
5450MHz	45.79 %	-8.67 dBi	-4.64 dBi	-3.39 dBi	-0.69 dBi	1.31 dBi	1.52 dBi
5550MHz	44.27 %	-8.50 dBi	-4.58 dBi	-3.54 dBi	-1.50 dBi	1.60 dBi	1.75 dBi
5650MHz	40.86 %	-8.19 dBi	-4.30 dBi	-3.89 dBi	-0.80 dBi	0.81 dBi	1.39 dBi
5750MHz	41.77 %	-8.49 dBi	-4.46 dBi	-3.79 dBi	-0.28 dBi	0.89 dBi	1.34 dBi
5850MHz	43.05 %	-8.62 dBi	-4.56 dBi	-3.66 dBi	0.29 dBi	0.91 dBi	1.41 dBi
5925MHz	44.87 %	-8.36 dBi	-4.18 dBi	-3.48 dBi	0.36 dBi	1.42 dBi	1.68 dBi
6075MHz	42.57 %	-7.62 dBi	-3.95 dBi	-3.71 dBi	1.55 dBi	1.36 dBi	1.59 dBi
6225MHz	43.90 %	-7.31 dBi	-3.92 dBi	-3.58 dBi	1.08 dBi	1.32 dBi	1.51 dBi
6375MHz	41.31 %	-7.69 dBi	-4.13 dBi	-3.84 dBi	1.45 dBi	1.45 dBi	1.70 dBi
6525MHz	43.29 %	-8.66 dBi	-5.27 dBi	-3.64 dBi	1.06 dBi	0.73 dBi	1.62 dBi
6675MHz	33.36 %	-9.61 dBi	-6.49 dBi	-4.77 dBi	-0.06 dBi	-0.44 dBi	0.07 dBi
6825MHz	31.74 %	-9.86 dBi	-6.69 dBi	-4.98 dBi	-0.68 dBi	-0.87 dBi	-0.58 dBi
6975MHz	26.03 %	-10.70 dBi	-7.56 dBi	-5.85 dBi	-1.65 dBi	-1.81 dBi	-1.56 dBi
7125MHz	23.50 %	-10.93 dBi	-8.12 dBi	-6.29 dBi	-2.41 dBi	-2.41 dBi	-2.29 dBi

ANT0 Passive Test-Antenna 3D Radiation Pattern

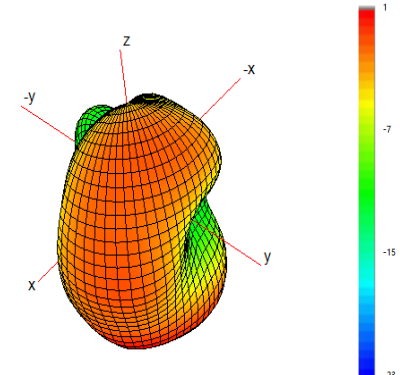
2400MHz



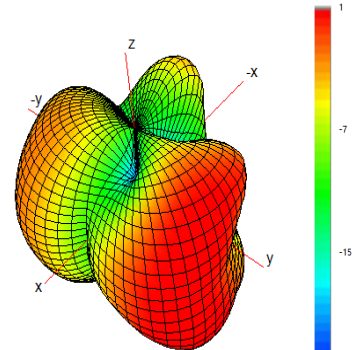
2440MHz



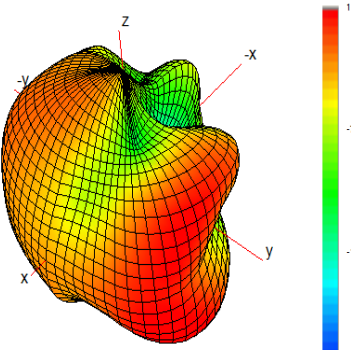
2480MHz



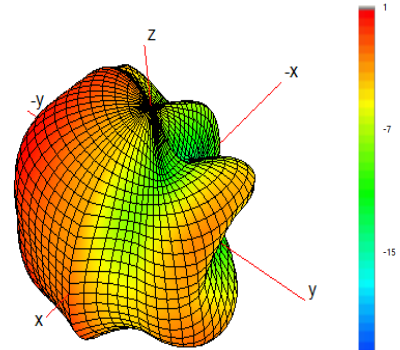
5150MHz



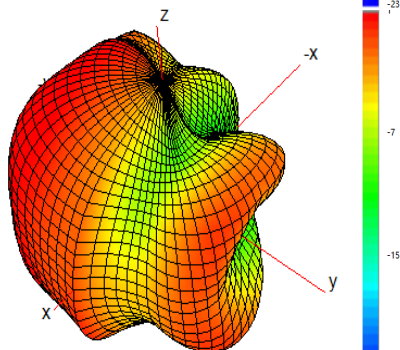
5500MHz



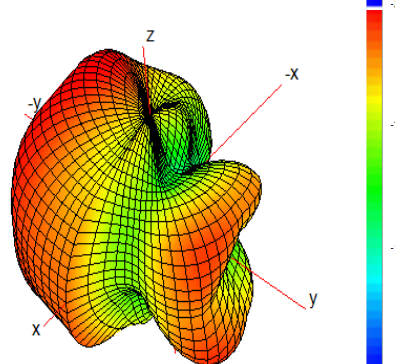
5850MHz



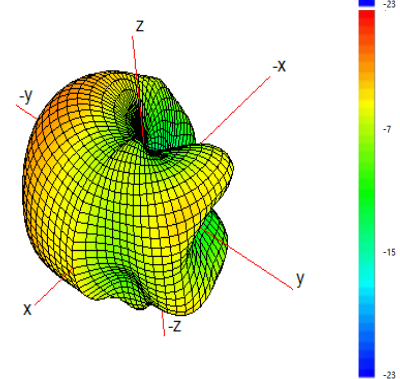
6000MHz



6525M



7000MHz

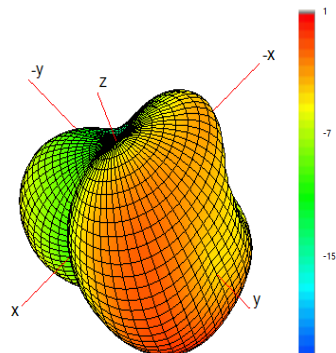


ANT1 Passive Test-Antenna 3D Gain

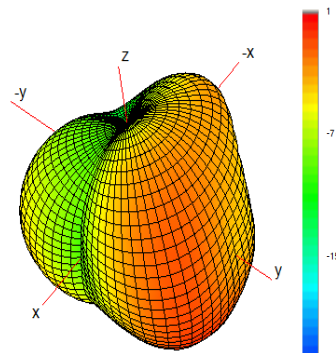
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	30.38 %	-9.92 dBi	-6.95 dBi	-5.17 dBi	-3.19 dBi	-0.62 dBi	0.26 dBi
2410MHz	30.15 %	-9.90 dBi	-7.01 dBi	-5.21 dBi	-3.13 dBi	-0.67 dBi	0.24 dBi
2420MHz	29.46 %	-9.97 dBi	-7.12 dBi	-5.31 dBi	-3.31 dBi	-0.81 dBi	0.15 dBi
2430MHz	28.47 %	-10.13 dBi	-7.27 dBi	-5.46 dBi	-3.36 dBi	-0.91 dBi	0.03 dBi
2440MHz	28.03 %	-10.24 dBi	-7.31 dBi	-5.52 dBi	-3.50 dBi	-0.97 dBi	-0.09 dBi
2450MHz	27.08 %	-10.39 dBi	-7.46 dBi	-5.67 dBi	-3.71 dBi	-1.09 dBi	-0.26 dBi
2460MHz	26.29 %	-10.53 dBi	-7.59 dBi	-5.80 dBi	-3.93 dBi	-1.19 dBi	-0.41 dBi
2470MHz	25.50 %	-10.67 dBi	-7.71 dBi	-5.94 dBi	-4.12 dBi	-1.30 dBi	-0.55 dBi
2480MHz	24.32 %	-10.89 dBi	-7.91 dBi	-6.14 dBi	-4.42 dBi	-1.46 dBi	-0.80 dBi
5150MHz	33.41 %	-9.54 dBi	-6.52 dBi	-4.76 dBi	-1.02 dBi	-0.98 dBi	0.10 dBi
5250MHz	36.51 %	-9.30 dBi	-6.06 dBi	-4.38 dBi	-1.23 dBi	0.16 dBi	0.24 dBi
5350MHz	40.19 %	-8.75 dBi	-5.71 dBi	-3.96 dBi	-1.02 dBi	0.63 dBi	0.79 dBi
5450MHz	43.97 %	-8.30 dBi	-5.35 dBi	-3.57 dBi	-1.82 dBi	0.19 dBi	0.55 dBi
5550MHz	46.63 %	-8.34 dBi	-5.06 dBi	-3.31 dBi	-1.60 dBi	1.14 dBi	1.73 dBi
5650MHz	45.11 %	-8.37 dBi	-4.62 dBi	-3.46 dBi	-0.32 dBi	1.24 dBi	1.74 dBi
5750MHz	41.70 %	-8.81 dBi	-4.59 dBi	-3.80 dBi	-0.73 dBi	1.28 dBi	1.37 dBi
5850MHz	42.61 %	-9.03 dBi	-4.74 dBi	-3.70 dBi	-1.27 dBi	1.17 dBi	1.31 dBi
5925MHz	43.89 %	-8.74 dBi	-4.28 dBi	-3.58 dBi	-1.20 dBi	1.61 dBi	1.77 dBi
6075MHz	45.71 %	-8.33 dBi	-4.32 dBi	-3.40 dBi	-0.85 dBi	1.55 dBi	1.58 dBi
6225MHz	43.41 %	-7.83 dBi	-4.44 dBi	-3.62 dBi	-0.25 dBi	1.53 dBi	1.67 dBi
6375MHz	44.74 %	-8.08 dBi	-4.61 dBi	-3.49 dBi	-0.07 dBi	1.44 dBi	1.72 dBi
6525MHz	40.32 %	-8.86 dBi	-5.63 dBi	-3.94 dBi	-1.17 dBi	0.17 dBi	0.65 dBi
6675MHz	31.33 %	-9.93 dBi	-6.74 dBi	-5.04 dBi	-2.19 dBi	-0.87 dBi	-0.59 dBi
6825MHz	27.54 %	-10.38 dBi	-7.36 dBi	-5.60 dBi	-2.30 dBi	-1.13 dBi	-0.75 dBi
6975MHz	25.54 %	-11.82 dBi	-8.37 dBi	-5.93 dBi	-4.37 dBi	-1.80 dBi	-1.78 dBi
7125MHz	23.18 %	-12.47 dBi	-9.26 dBi	-6.35 dBi	-4.73 dBi	-2.65 dBi	-2.63 dBi

ANT1 Passive Test-Antenna 3D Radiation Pattern

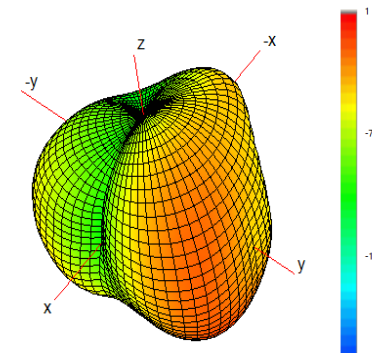
2400MHz



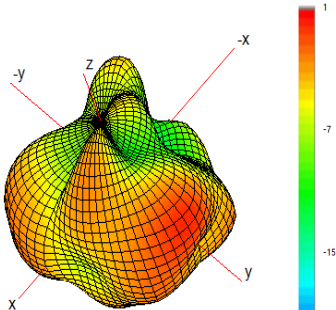
2440MHz



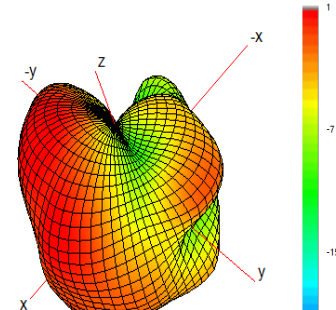
2480MHz



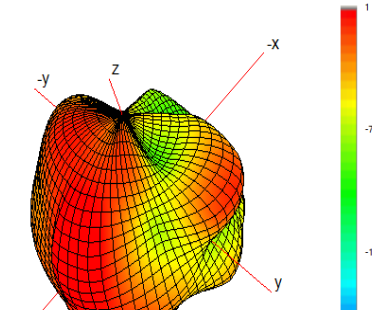
5150MHz



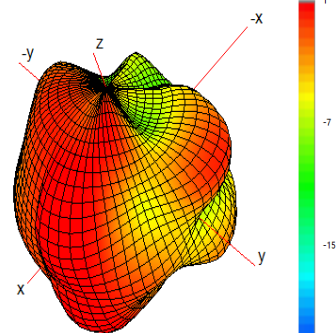
5500MHz



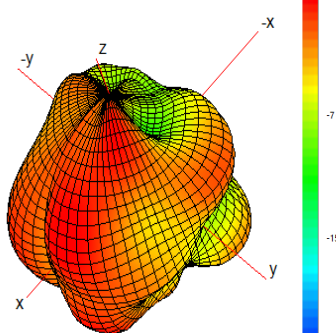
5850MHz



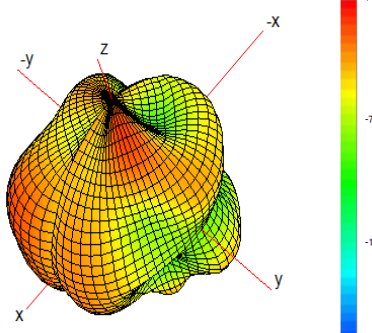
6000MHz



6525MHz



7000MHz

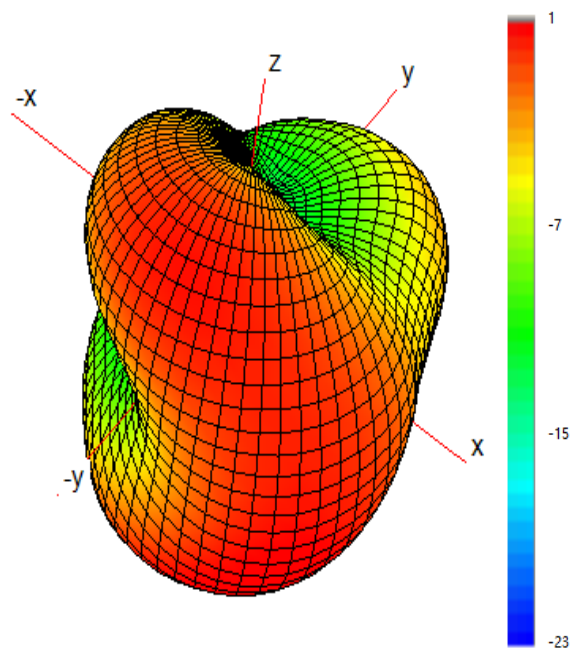


BT0 Passive Test-Antenna 3D Gain

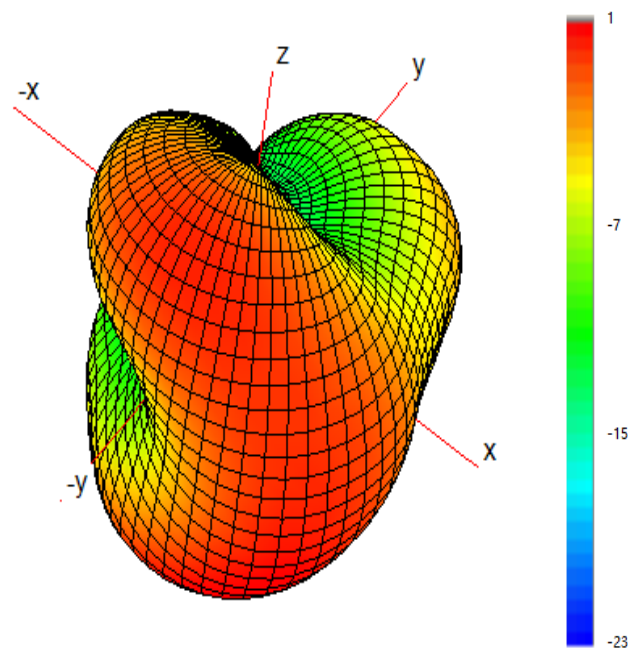
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	25.08 %	-11.66 dBi	-7.39 dBi	-6.01 dBi	-3.01 dBi	-2.06 dBi	-4.44 dBi
2410MHz	24.88 %	-11.65 dBi	-7.44 dBi	-6.04 dBi	-2.94 dBi	-2.13 dBi	-3.55 dBi
2420MHz	24.39 %	-11.69 dBi	-7.54 dBi	-6.13 dBi	-3.08 dBi	-2.30 dBi	-2.87 dBi
2430MHz	23.90 %	-11.74 dBi	-7.64 dBi	-6.22 dBi	-3.03 dBi	-2.44 dBi	-2.33 dBi
2440MHz	23.15 %	-11.88 dBi	-7.78 dBi	-6.35 dBi	-3.19 dBi	-2.63 dBi	-2.08 dBi
2450MHz	22.17 %	-12.03 dBi	-7.98 dBi	-6.54 dBi	-3.38 dBi	-2.83 dBi	-2.07 dBi
2460MHz	21.45 %	-12.16 dBi	-8.14 dBi	-6.69 dBi	-3.56 dBi	-2.96 dBi	-2.40 dBi
2470MHz	20.63 %	-12.31 dBi	-8.31 dBi	-6.85 dBi	-3.78 dBi	-3.10 dBi	-2.87 dBi
2480MHz	20.10 %	-12.45 dBi	-8.49 dBi	-6.97 dBi	-4.01 dBi	-3.36 dBi	-3.56 dBi

BT0 Passive Test-Antenna 3D Radiation Pattern

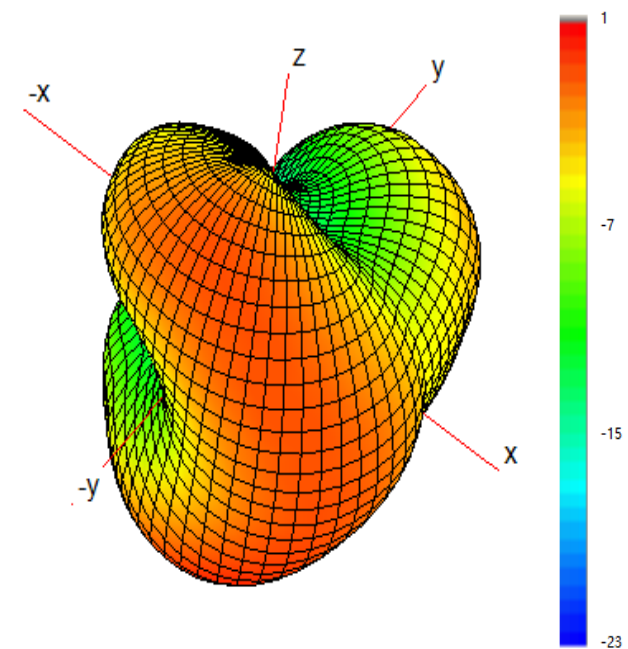
2400MHz



2440MHz



2480MHz

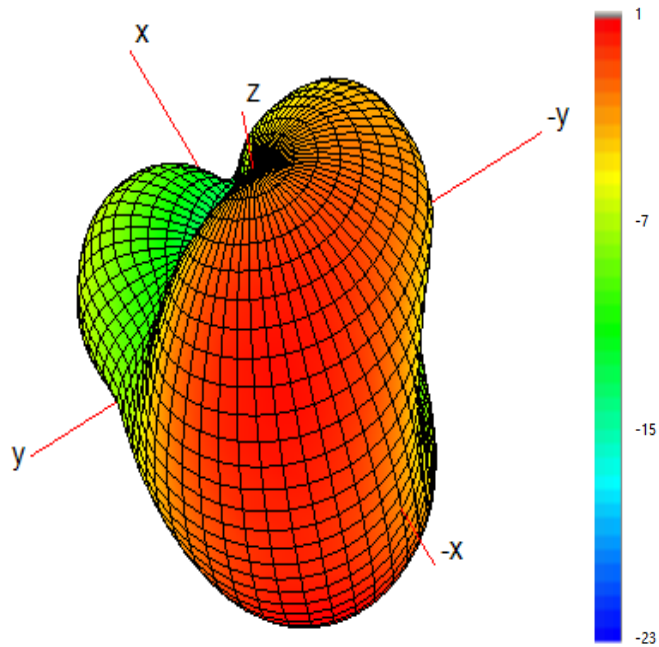


BT1 Passive Test-Antenna 3D Gain

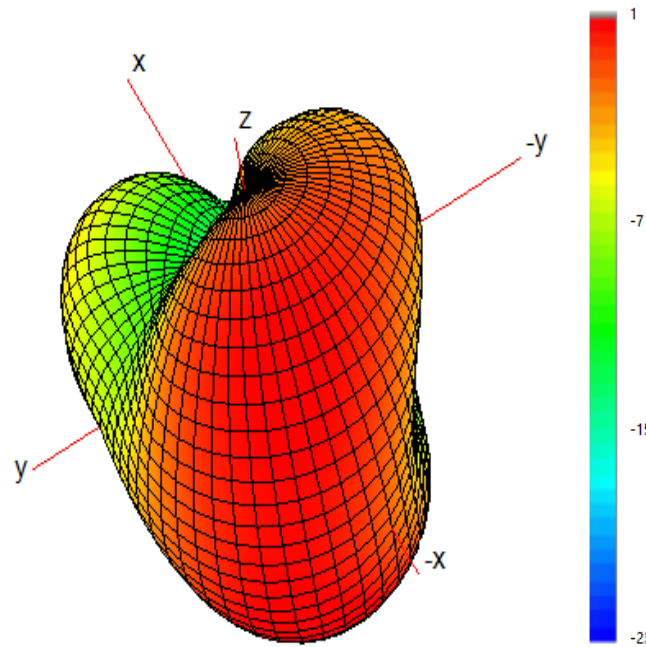
Frequency	Efficiency	Average Gain			Max Gain		
		Ver	Hor	Total	Ver	Hor	Total
2400MHz	44.34 %	-9.44 dBi	-4.82 dBi	-3.53 dBi	-1.45 dBi	1.08 dBi	1.19 dBi
2410MHz	46.14 %	-9.24 dBi	-4.66 dBi	-3.36 dBi	-1.21 dBi	1.22 dBi	1.33 dBi
2420MHz	47.46 %	-9.13 dBi	-4.53 dBi	-3.24 dBi	-1.25 dBi	1.33 dBi	1.45 dBi
2430MHz	48.28 %	-9.07 dBi	-4.45 dBi	-3.16 dBi	-1.14 dBi	1.38 dBi	1.51 dBi
2440MHz	49.95 %	-8.95 dBi	-4.29 dBi	-3.01 dBi	-1.06 dBi	1.47 dBi	1.59 dBi
2450MHz	50.66 %	-8.87 dBi	-4.24 dBi	-2.95 dBi	-1.06 dBi	1.44 dBi	1.57 dBi
2460MHz	51.40 %	-8.78 dBi	-4.19 dBi	-2.89 dBi	-1.07 dBi	1.46 dBi	1.59 dBi
2470MHz	52.01 %	-8.72 dBi	-4.13 dBi	-2.84 dBi	-1.10 dBi	1.47 dBi	1.60 dBi
2480MHz	51.52 %	-8.76 dBi	-4.18 dBi	-2.88 dBi	-1.27 dBi	1.33 dBi	1.47 dBi

BT1 Passive Test-Antenna 3D Radiation Pattern

2400MHz



2440MHz



2480MHz

