WDF520M
Passive Data

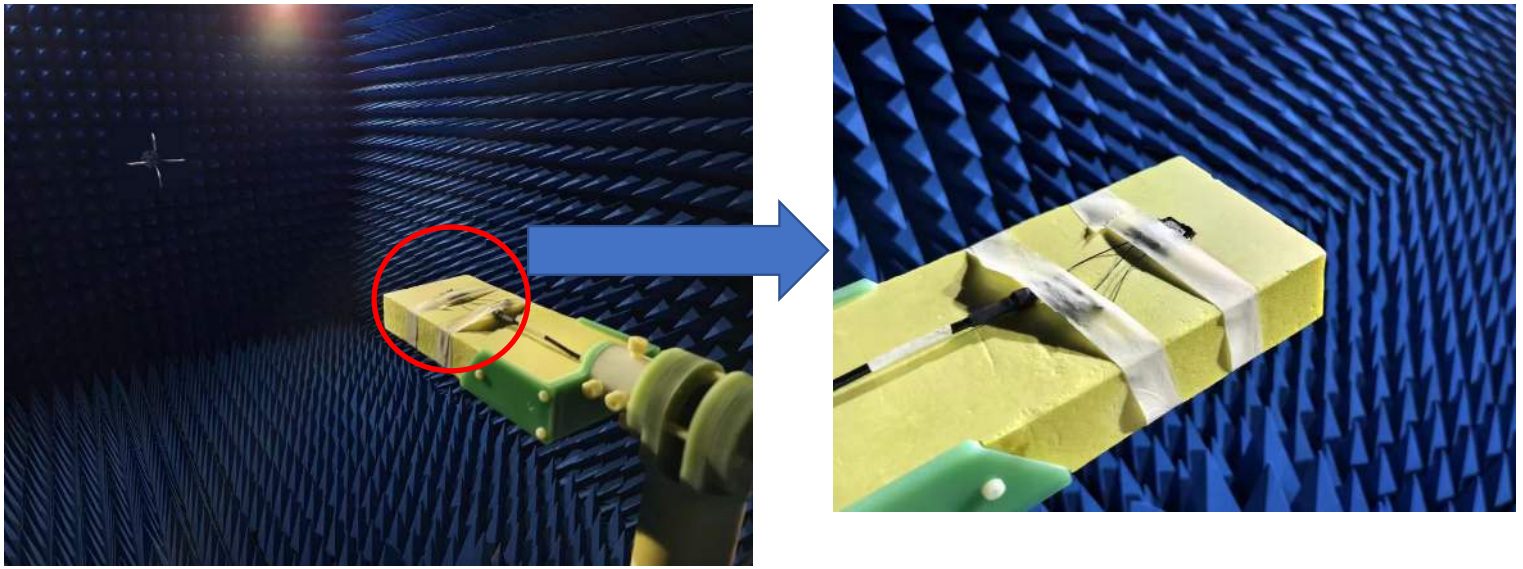
2024/07/31

Test Condition

1. Test Condition

* WDF520M Metal Antenna and PCB Antenna
- Test Chamber: Shine OTA Chamber
  (Address: 1F,Building A5,No.18 Jinxing Rd., Huaqiao Economic Development Zone, Kunshan, China)
- Network Analyzer : Return Loss
- 3D Passive Chamber : Gain and Efficiency
- Measured by Will Wang 2024/07/31

2. Test Environment



Antenna Gain Measurement Procedure and Software

The O5Tester Software is used to test antenna gain in the far field 3D OTA chamber.
The overview of the far field 3D OTA chamber is shown in Fig.1 and the antenna turntable rotation sampling is shown in Fig.2.
The antenna gain can be measured by the following steps

1. Place the AUT (Antenna Under Test) on the biaxial 3D turntable.
2. The test horn antenna maintains horizontal polarization, and the turntable rotation is controlled by the O5Tester test system and the value of each angular horizontal polarization of the AUT is read.
3. The test horn antenna maintains vertical polarization, and the turntable rotation is controlled by the O5Tester test system and the value of each angular vertical polarization of the AUT is read.
4. The O5Tester test system compares the obtained test values with the standard antenna to obtain the final gain values.

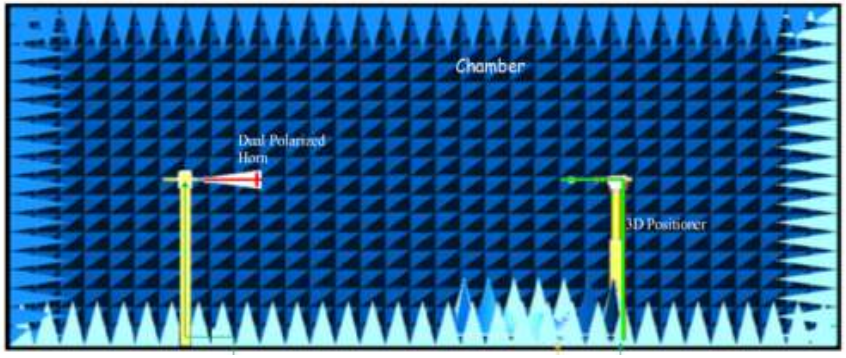


Fig.1 Overview of 3D chamber

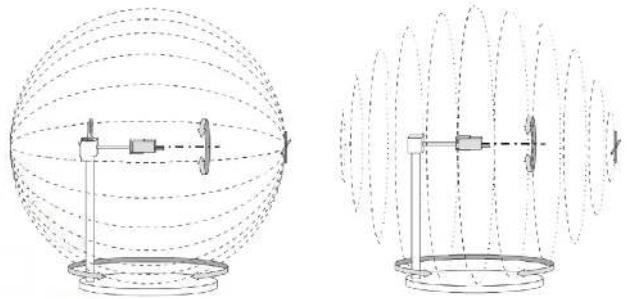


Fig.2 Antenna turntable rotation sampling

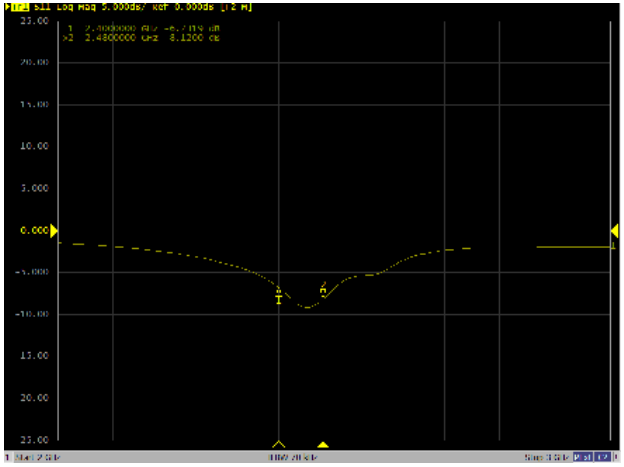
Measuring Instruments

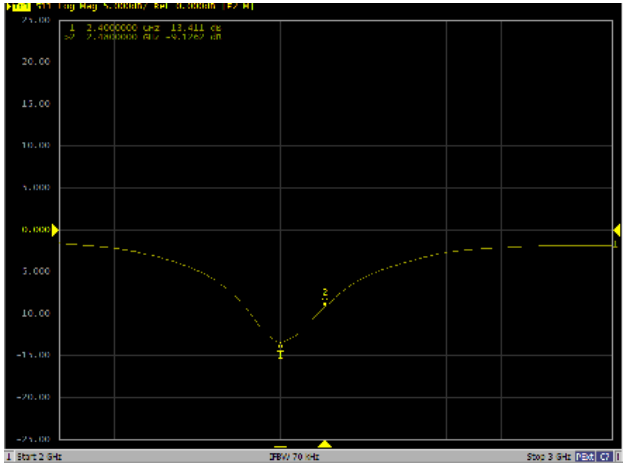
Item	Measuring Instruments	Latest Calibration Schedule
1	OTA Chamber	2024/7/15
2	Network Analyzer Keysight 5071c	2024/5/10

Electrical Characteristics

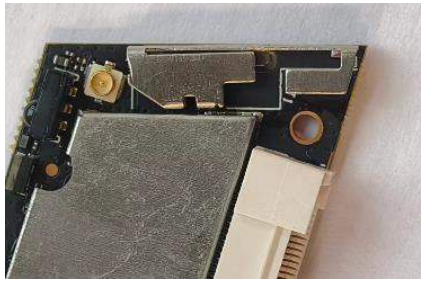
Item	Specification ANT1	Specification ANT2
Antenna Type	Metal Antenna	Metal Antenna
Central Frequency	2440MHz	2440MHz
Band Width	0MHz	80MHz
Peak Gain	-1.51dBi	-0.71dBi
Return Loss	<-6dB	<-8dB
Polarization	Linear	Linear
Azimuth Beam width	Omni-directional	Omni-directional
Impedance	50Ω	50Ω
Dimension	18.5*5.0*2.5mm	18.5*5.0*2.5mm

Passive Test – Return Loss

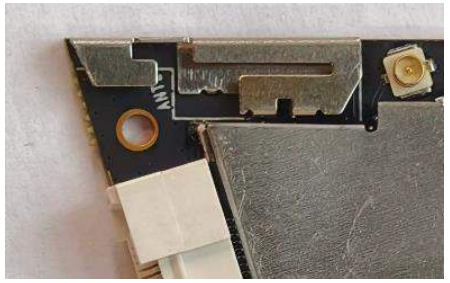




ANT 1



ANT 2

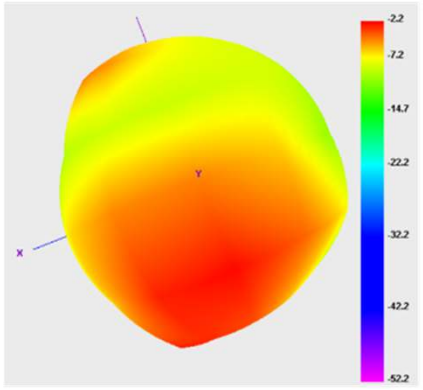


ANT1 Passive Test – Antenna 3D Gain

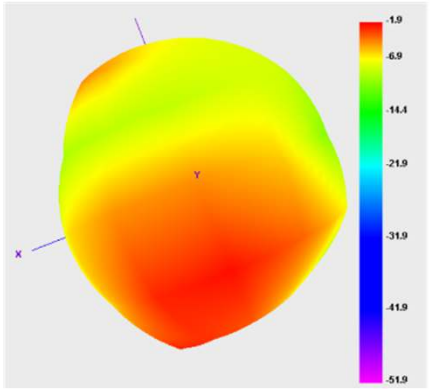
Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	26.77	-8.05	-5.82	-5.72	-2.64	-2.50	-2.15
2410	27.73	-7.85	-5.71	-5.57	-2.59	-2.42	-2.12
2420	27.72	-7.79	-5.95	-5.57	-2.59	-2.71	-2.11
2430	28.11	-7.66	-6.16	-5.51	-2.44	-2.96	-1.96
2440	27.48	-7.76	-6.42	-5.61	-2.54	-3.20	-1.89
2450	28.59	-7.52	-6.34	-5.44	-2.29	-3.07	-1.84
2460	28.96	-7.37	-6.48	-5.38	-2.07	-3.19	-1.69
2470	29.51	-7.16	-6.67	-5.30	-1.80	-3.38	-1.55
2480	29.82	-7.03	-6.91	-5.25	-1.58	-3.64	-1.51

ANT1 Passive Test – Antenna 3D Radiation Pattern

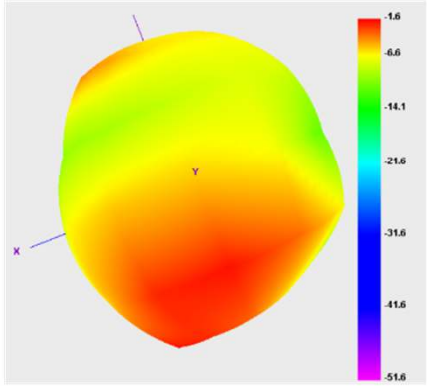
2400MHz



2440MHz



2480MHz

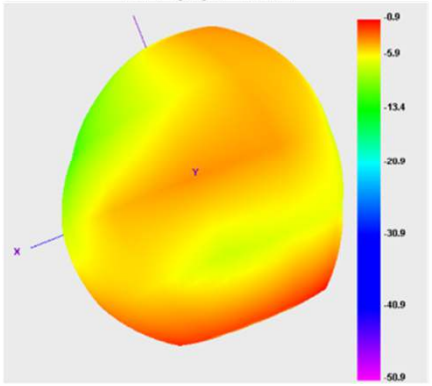


ANT2 Passive Test – Antenna 3D Gain

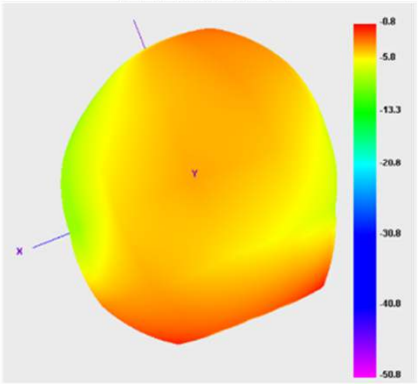
Frequency (MHz)	Efficiency (%)	Average Gain (dBi)			Max Gain (dBi)		
		Ver	Hor	Total	Ver	Hor	Total
2400	32.68	-5.19	-5.21	-4.86	-0.91	-2.53	-0.91
2410	33.49	-5.13	-5.23	-4.75	-0.96	-2.53	-0.96
2420	34.82	-5.03	-5.19	-4.58	-0.92	-2.43	-0.92
2430	36.14	-4.96	-5.19	-4.42	-0.87	-2.31	-0.87
2440	37.39	-4.88	-5.26	-4.27	-0.78	-2.18	-0.78
2450	37.23	-4.97	-5.47	-4.29	-0.83	-2.19	-0.77
2460	36.64	-5.06	-5.70	-4.36	-0.88	-2.29	-0.75
2470	36.28	-5.13	-5.90	-4.40	-0.86	-2.43	-0.73
2480	36.37	-5.13	-5.98	-4.39	-0.76	-2.52	-0.71

ANT2 Passive Test – Antenna 3D Radiation Pattern

2400MHz



2440MHz



2480MHz