

Classification	Confidential
Date	2023/03/30



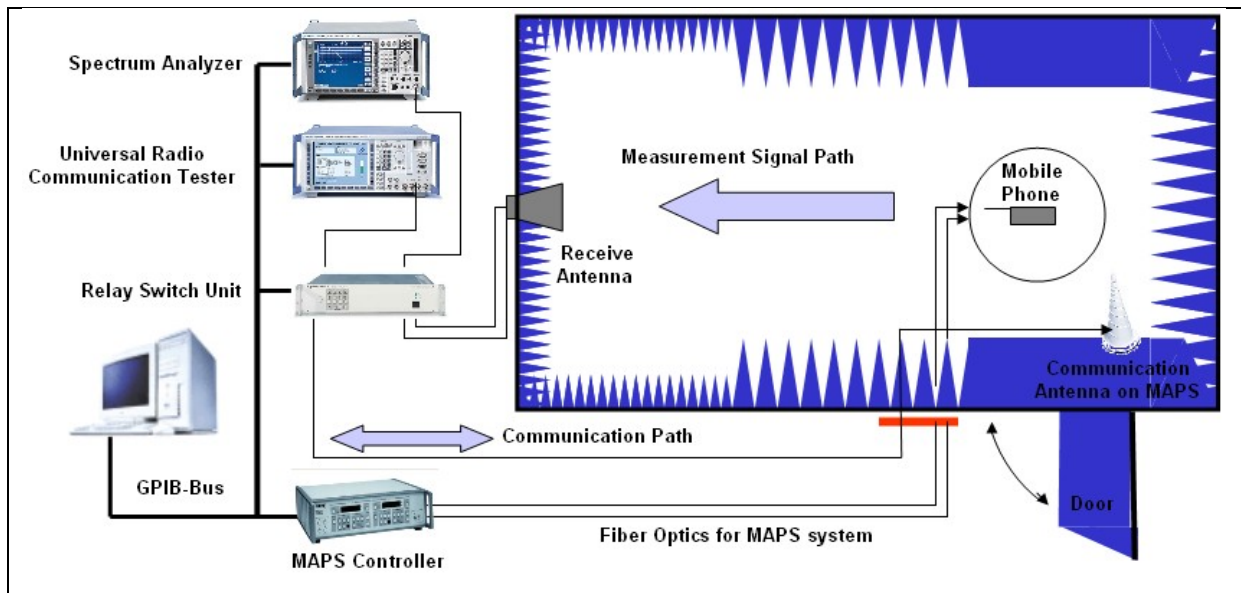
AI2302

Antenna Report

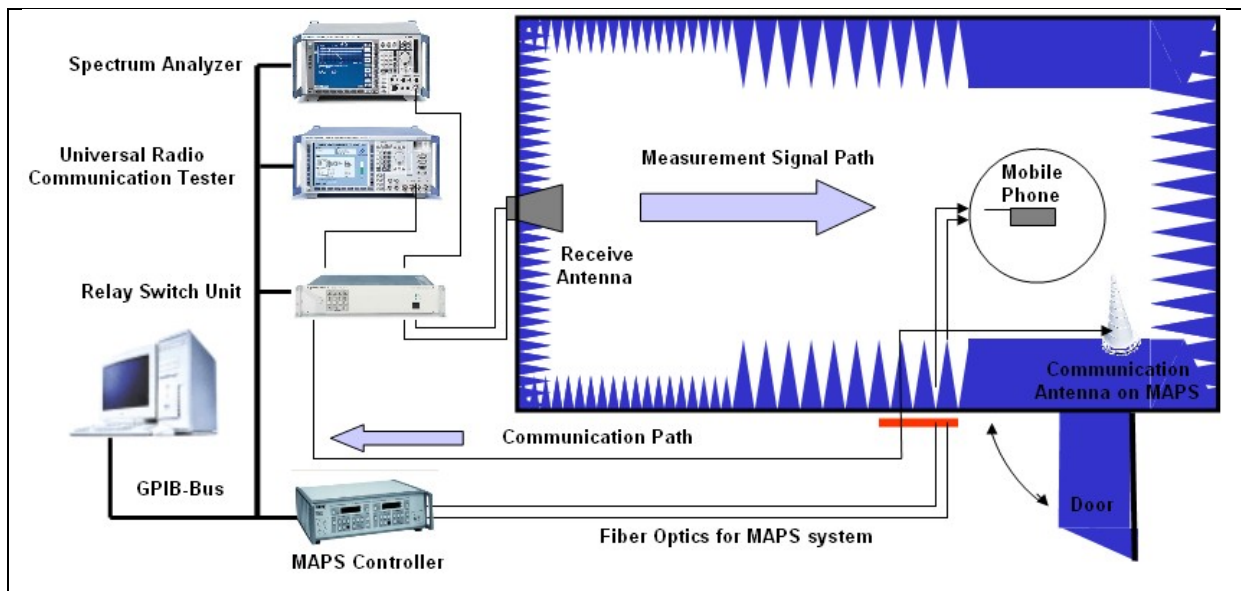
1 Measurement Methodology and Settings

All test results are under chamber environment of **ASUS Antenna Lab**. The basic methodology of getting the test result is following mostly the principles outlined in CTIA the test plan. ^[4]

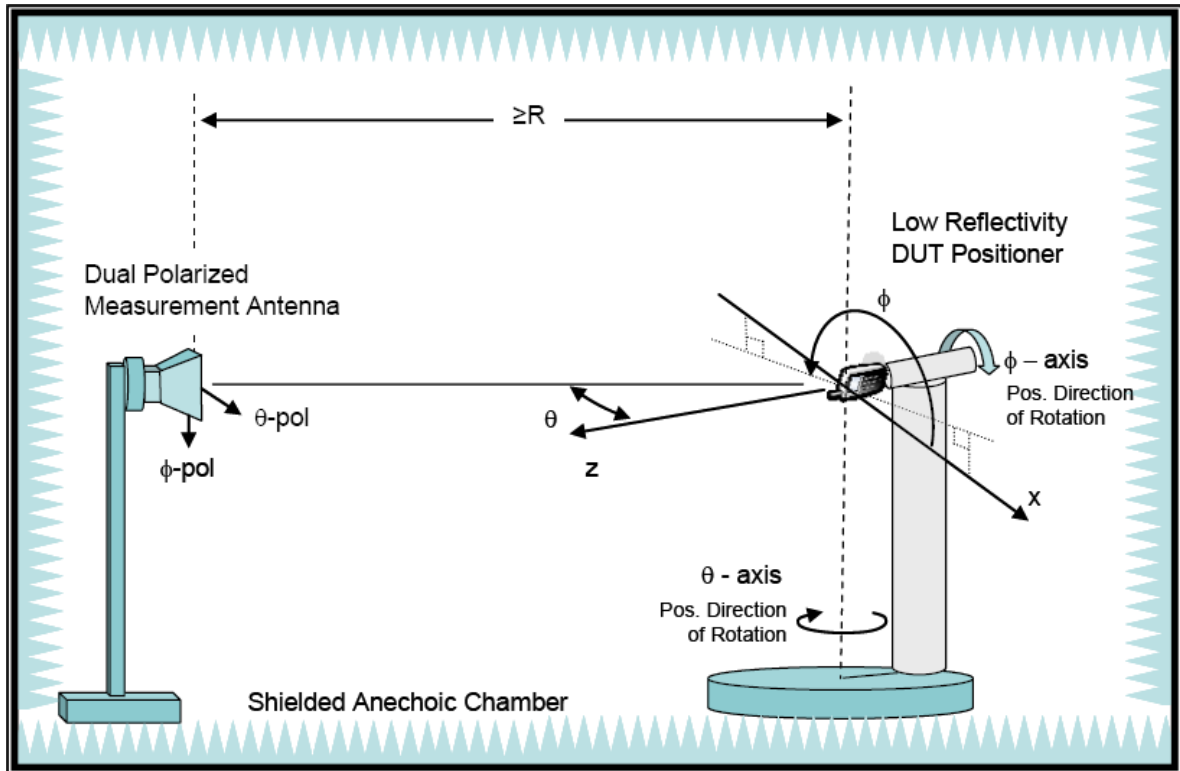
1.1 TRP (Total Radiation Power)



1.2 TIS (Total Isotropic Sensitivity)



1.3 Rectangular / Spherical Coordination of DUT

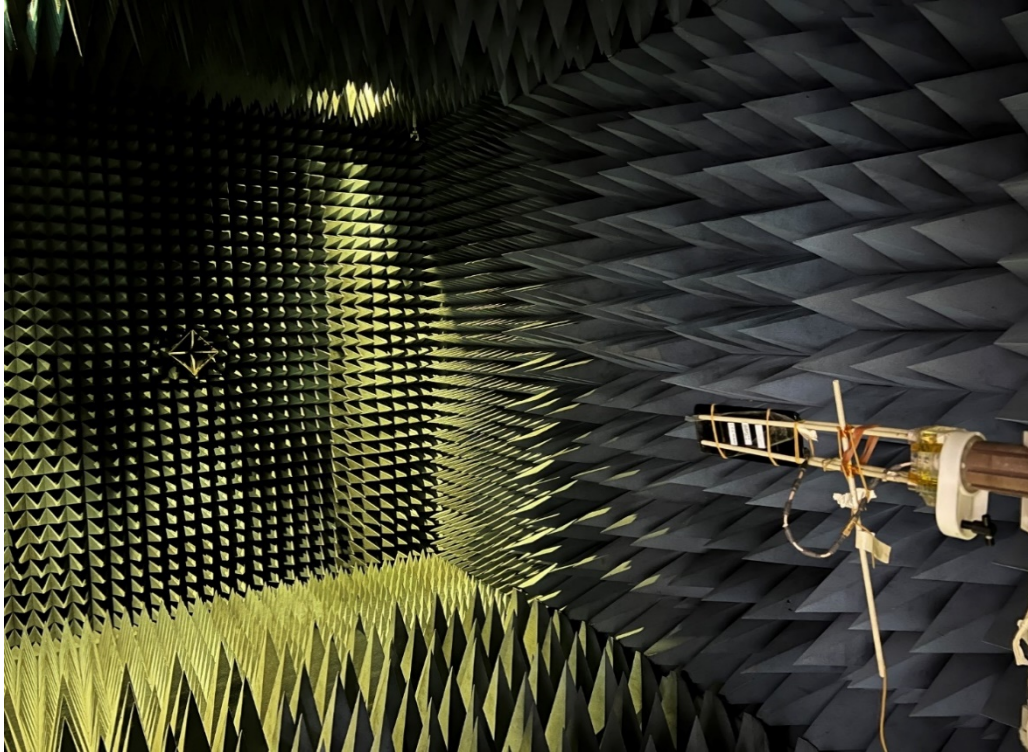


1.4 Tester :

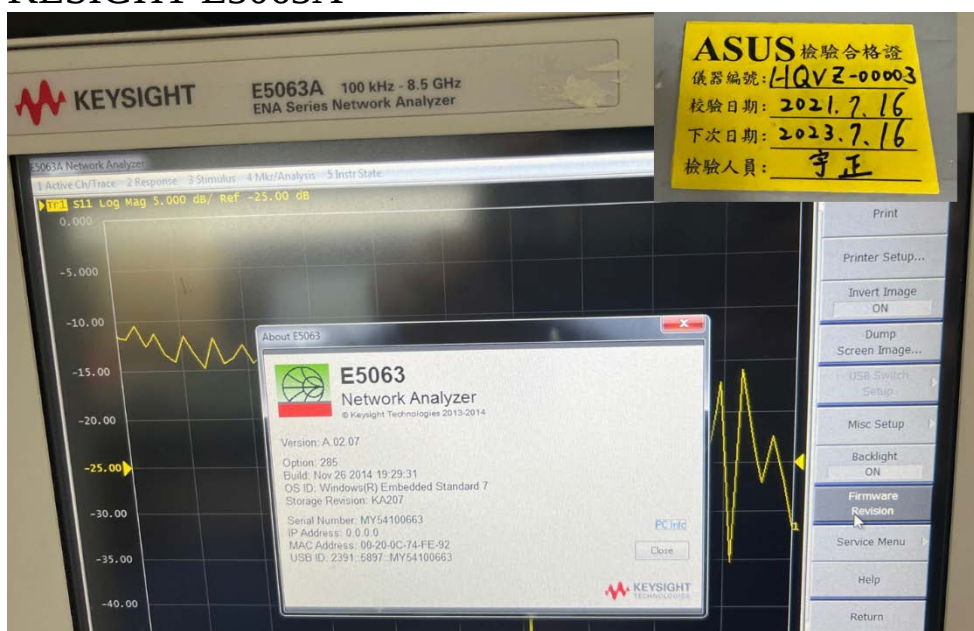
1. JH_Lin , JH_Lin@asus.com, 林建宏
2. David1_Dai, David1_Dai@asus.com, 戴大為
3. Charlie1_Huang , Charlie1_Huang@asus.com , 黃昶穎

1.5 Equipment List /test environment

a.	Company Name	ASUSTeK COMPUTER INC.
	Company Addr	1F., No. 15, Lide Rd., Beitou Dist., Taipei City 112, Taiwan



b. Spectrum Analyzer KESIGHT E5063A



c. Anechoic Chamber

1. Antenna Type: PIFA Type
2. Test environment:

FIG3 : ETS
AMS-8500
Chamber

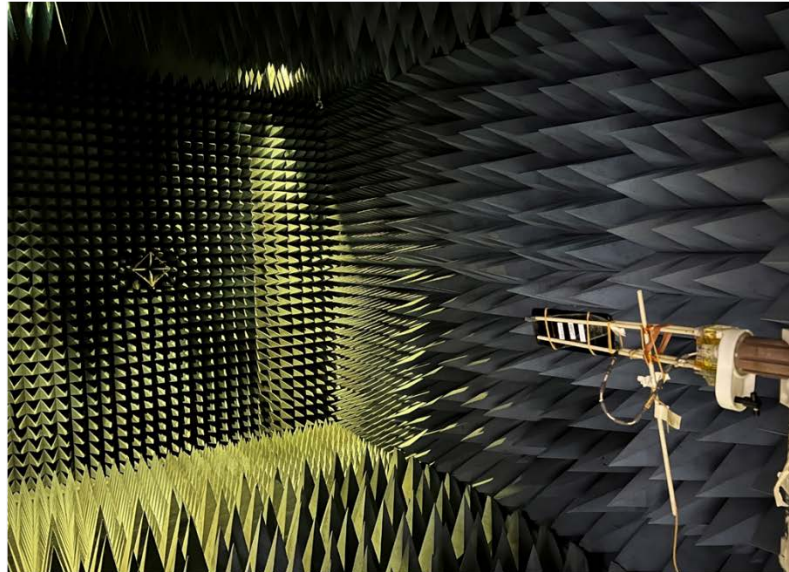
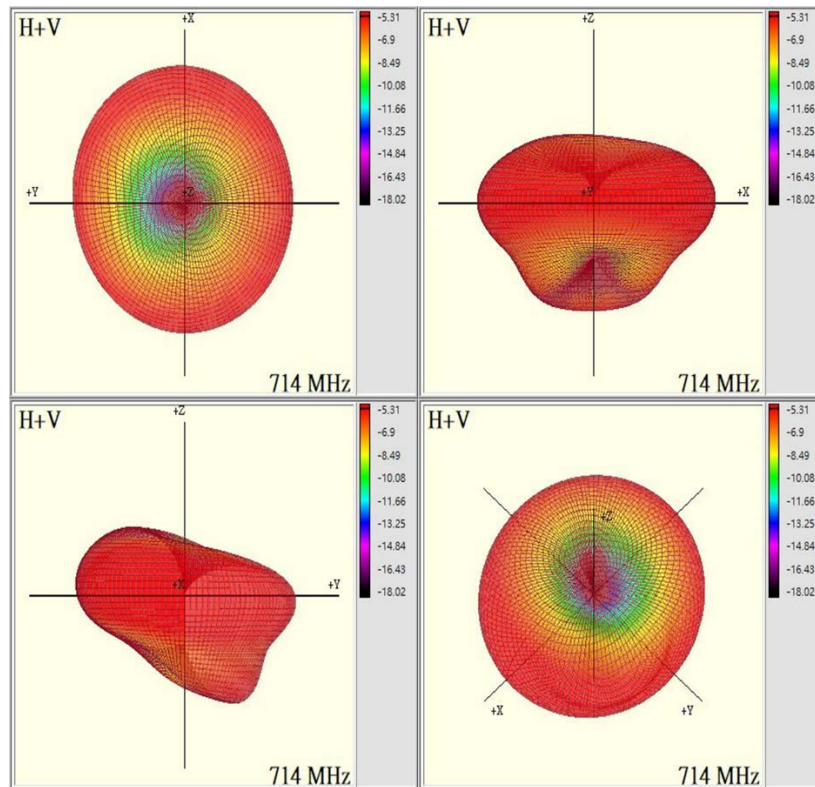


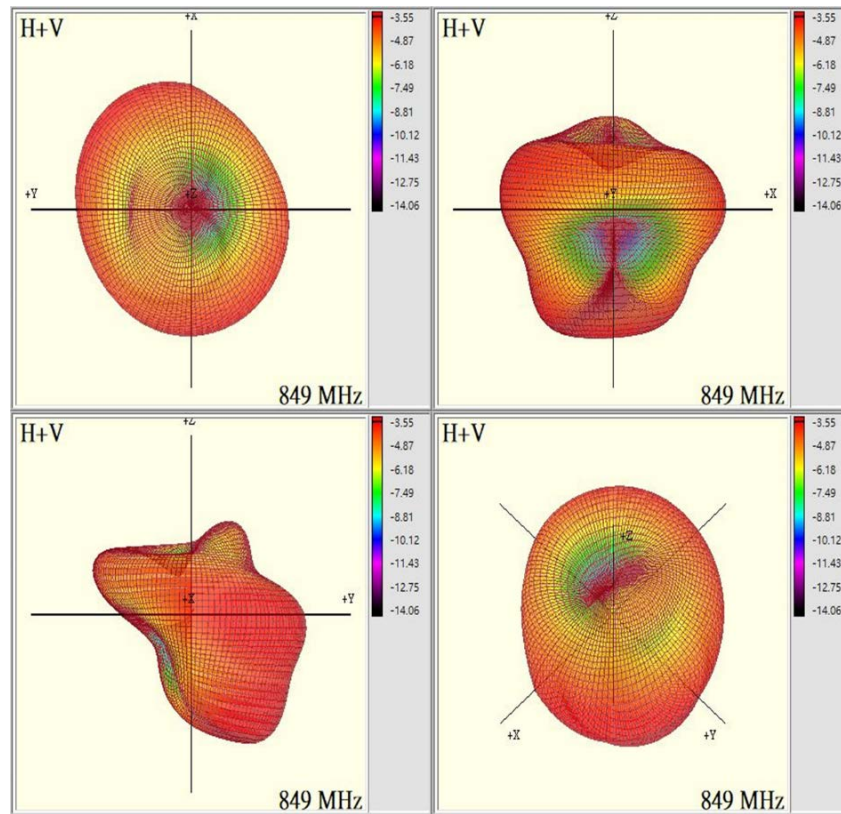
FIG3

Antenna Pattern: ANT1

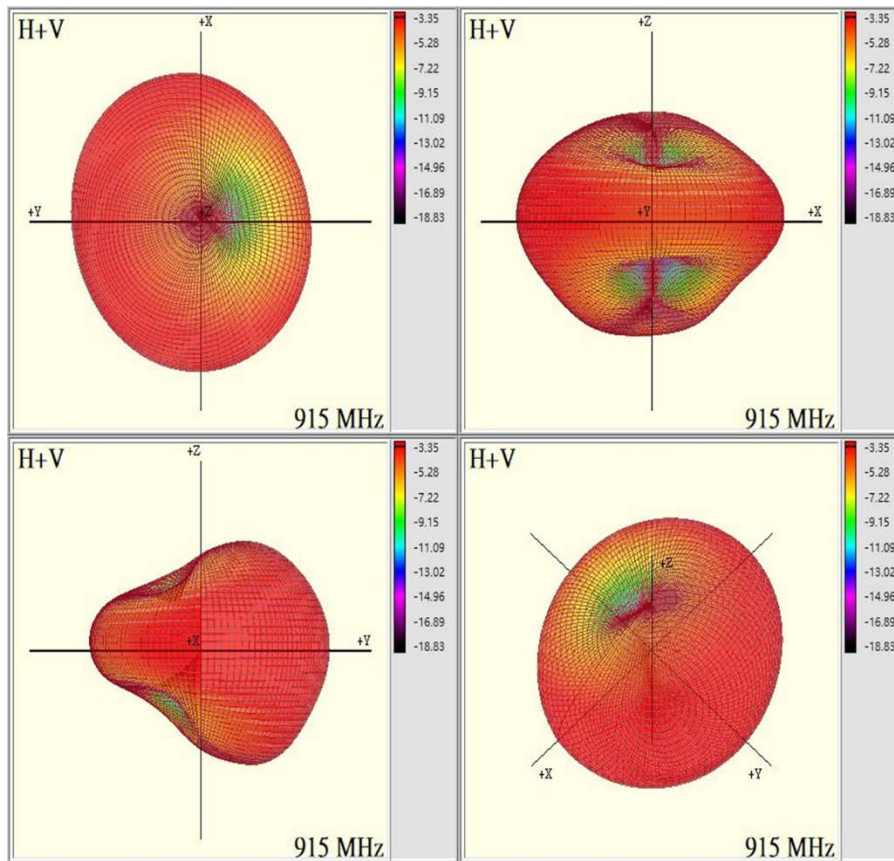
714MHz



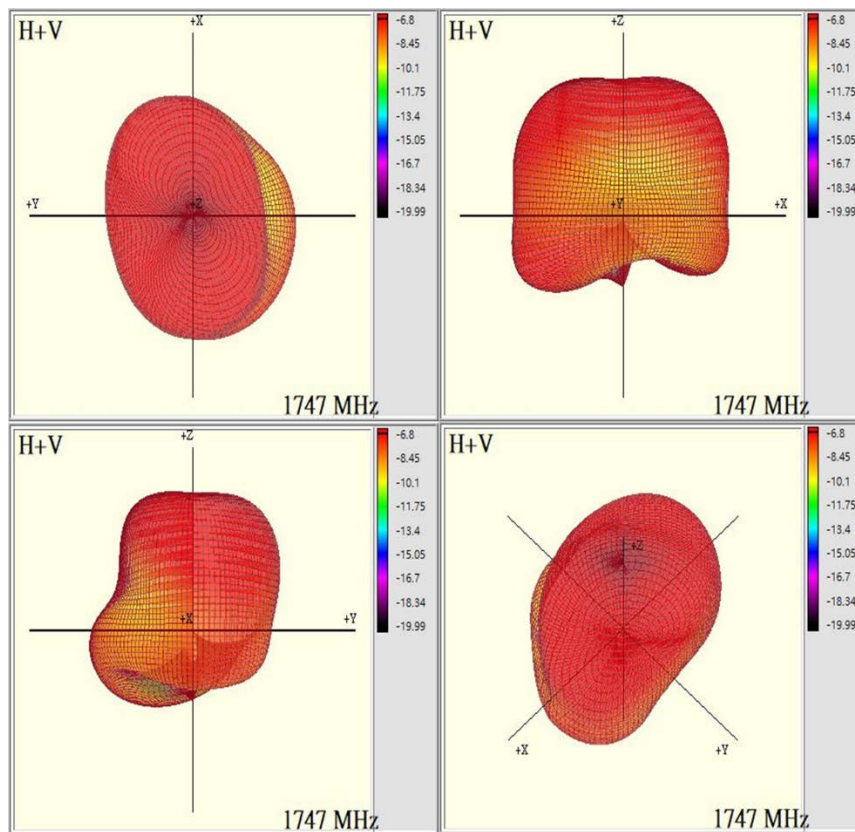
849MHz



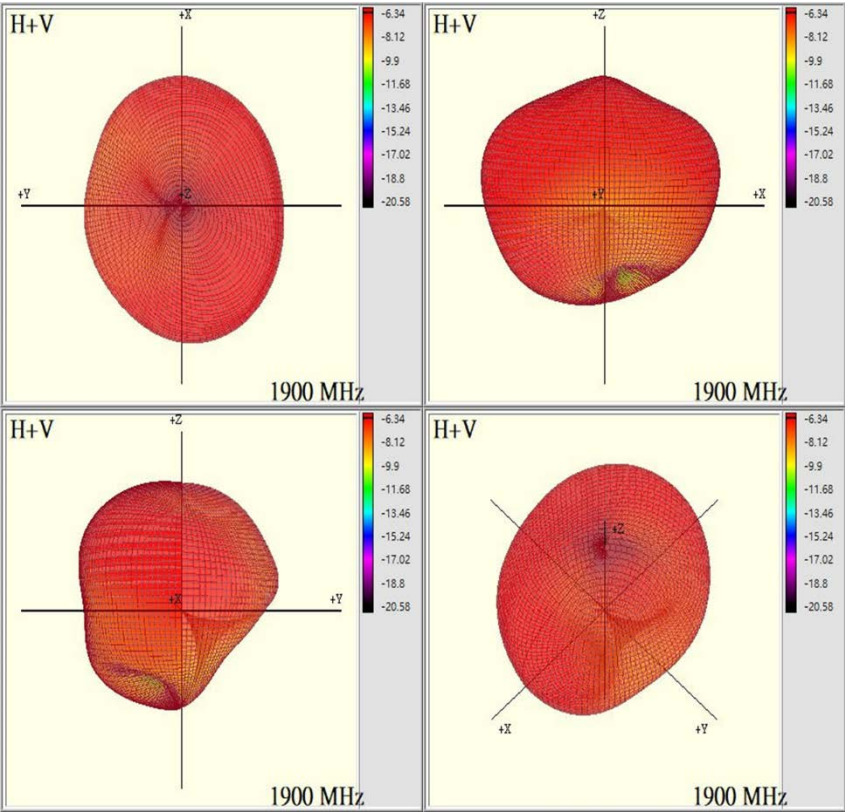
915MHz



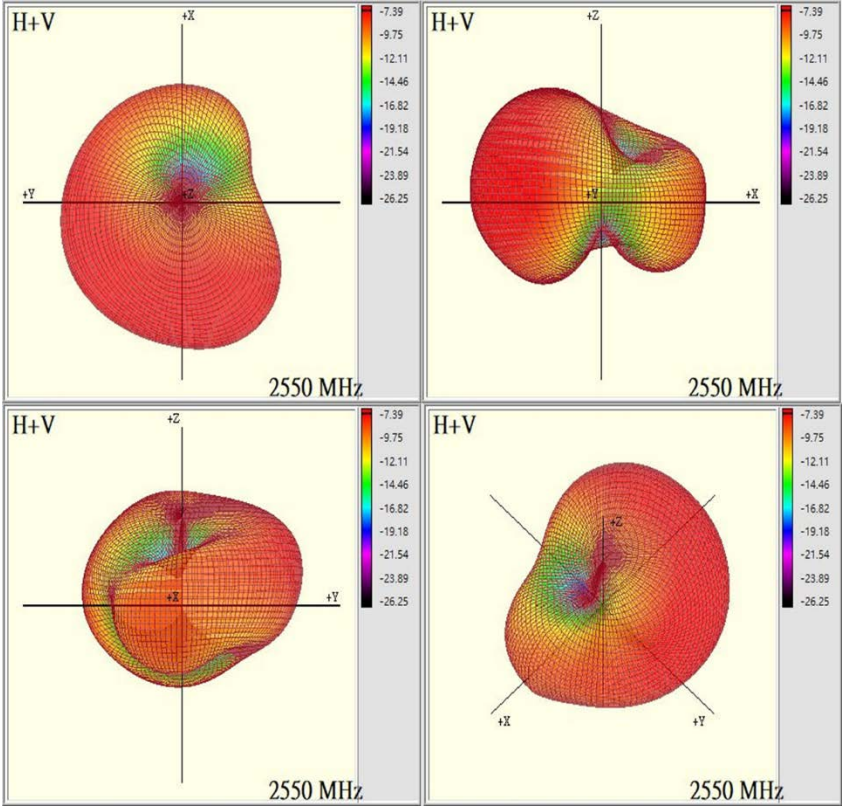
1747MHz



1900MHz



2550MHz



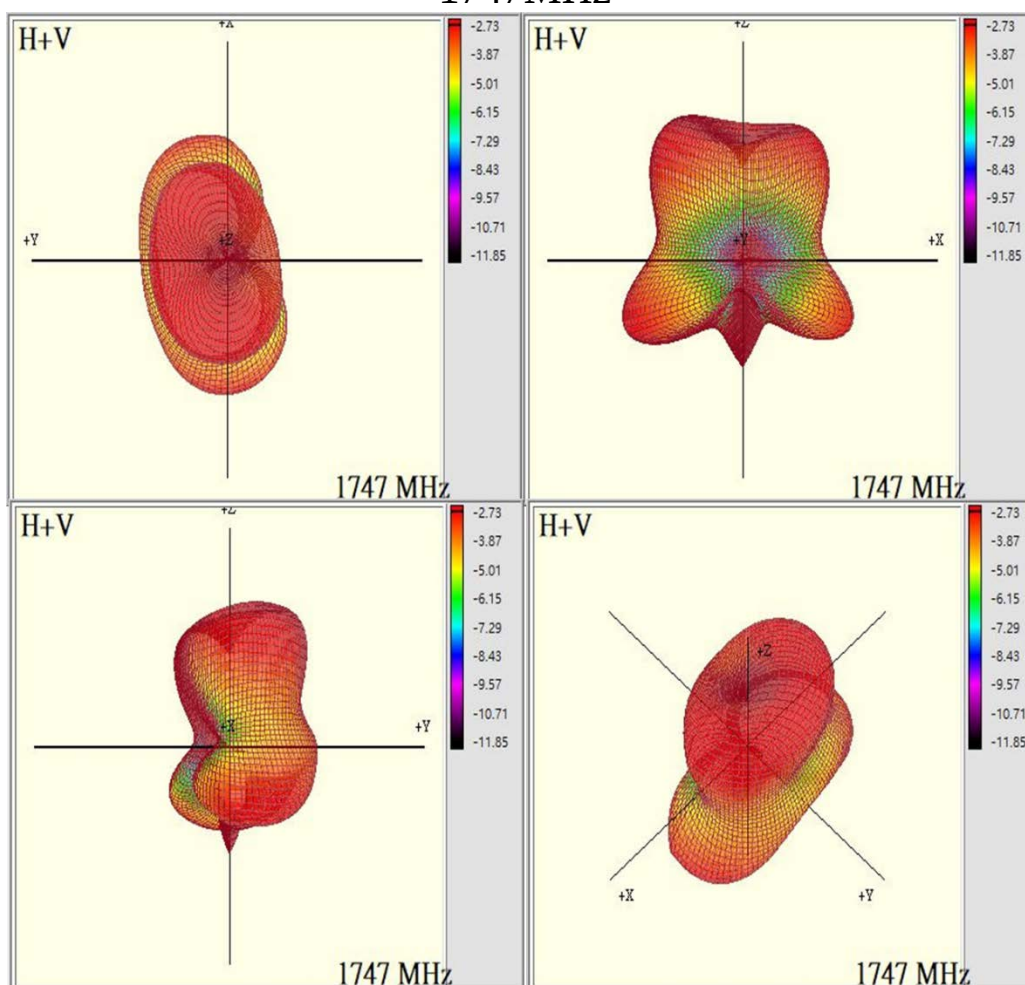
3.2 Ant 2: WWAN TX/RX(test date: 2023/3/30)

Antenna gain

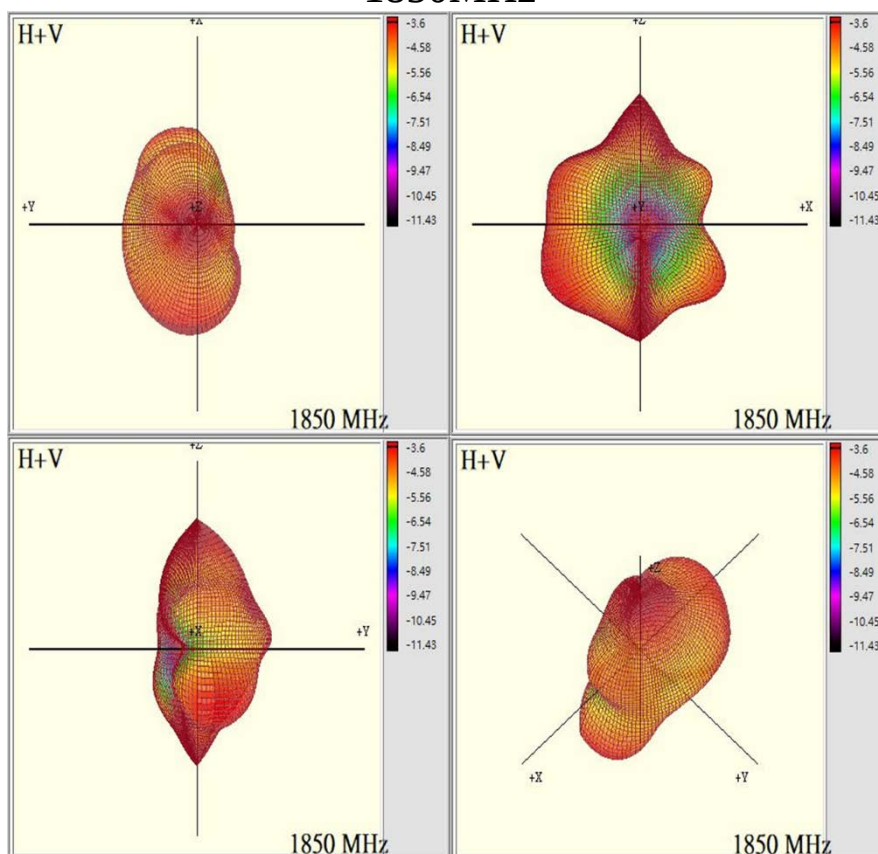
Frequency(MHz)	1710	1747	1785	1805	1842	1850	1880	1900	1910	1920	1930	1950
Ant.Gain(dBi)	-4.04	-2.74	-3.65	-3.12	-3.91	-3.60	-4.80	-5.75	-4.94	-4.85	-5.05	-5.11
Frequency(MHz)	1960	1980	1990	2010	2018	2025	2110	2140	2170			
Ant.Gain(dBi)	-5.11	-4.88	-5.37	-4.66	-5.00	-4.64	-3.73	-5.39	-6.48			
Frequency(MHz)	2200	2250	2300	2350	2400	2410	2420	2430	2440	2450	2460	2470
Ant.Gain(dBi)	-5.12	-3.65	-2.23	-3.14	-3.34	-3.29	-3.35	-3.40	-2.86	-2.45	-2.35	-3.61
Frequency(MHz)	2480	2490	2500	2550	2600	2650	2700					
Ant.Gain(dBi)	-2.43	-2.49	-3.19	-1.34	-1.11	-1.82	-0.35					
Frequency(MHz)	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850
Ant.Gain(dBi)	-3.30	-4.01	-5.24	-5.59	-4.15	-4.86	-3.17	-2.66	-6.45	-4.48	-4.03	-7.23
Frequency(MHz)	3900	3950	4000	4050	4100	4150	4200					
Ant.Gain(dBi)	-7.25	-7.44	-8.64	-9.19	-9.76	-10.71	-11.96					

Antenna Pattern: ANT2

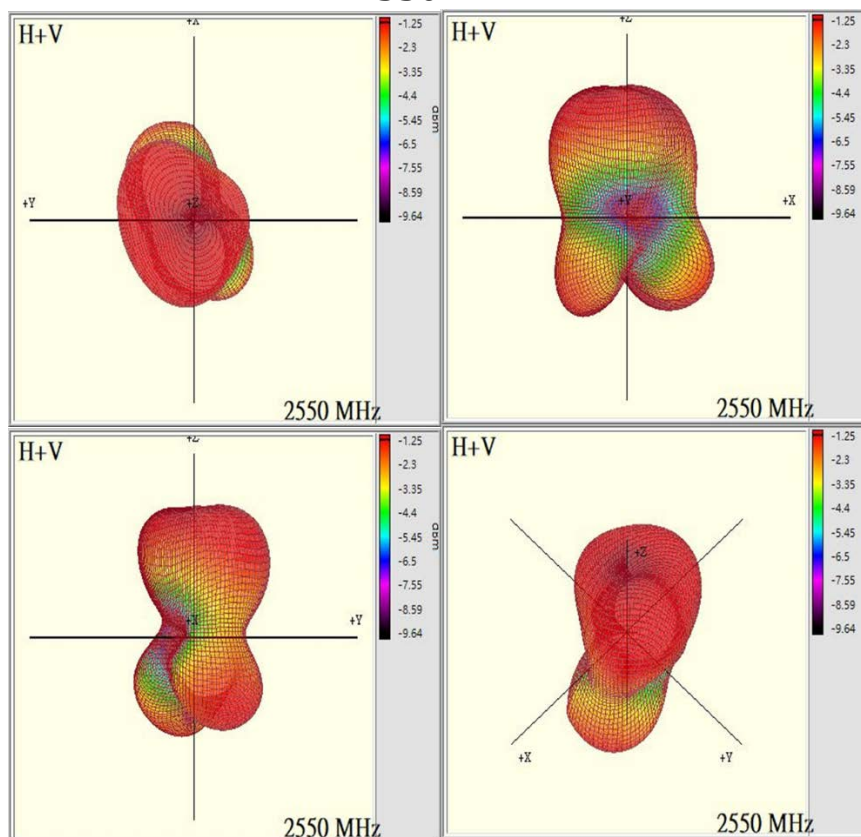
1747MHz



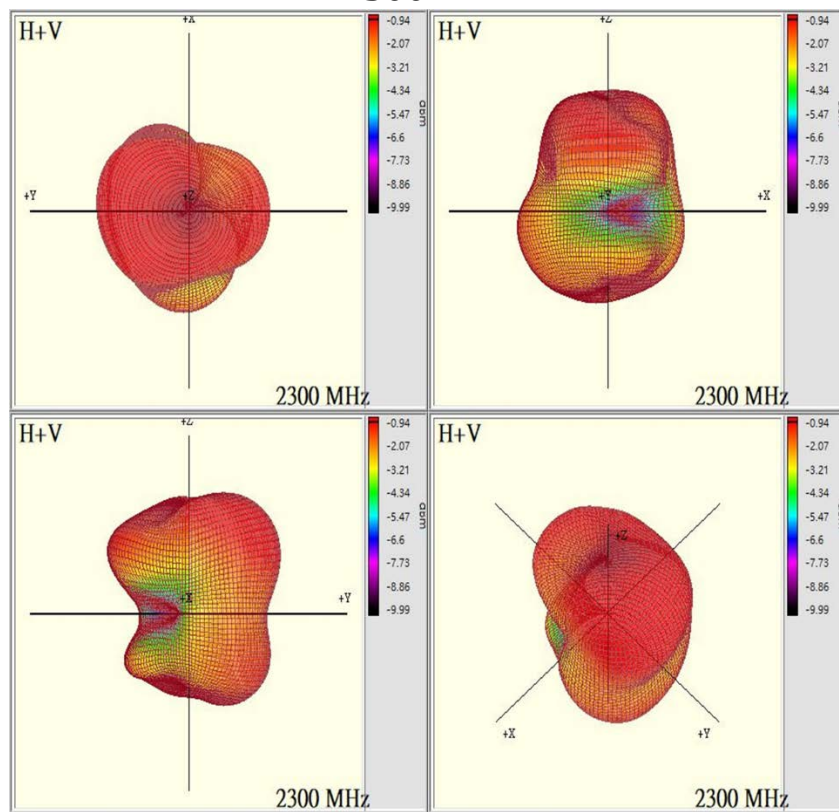
1850MHz



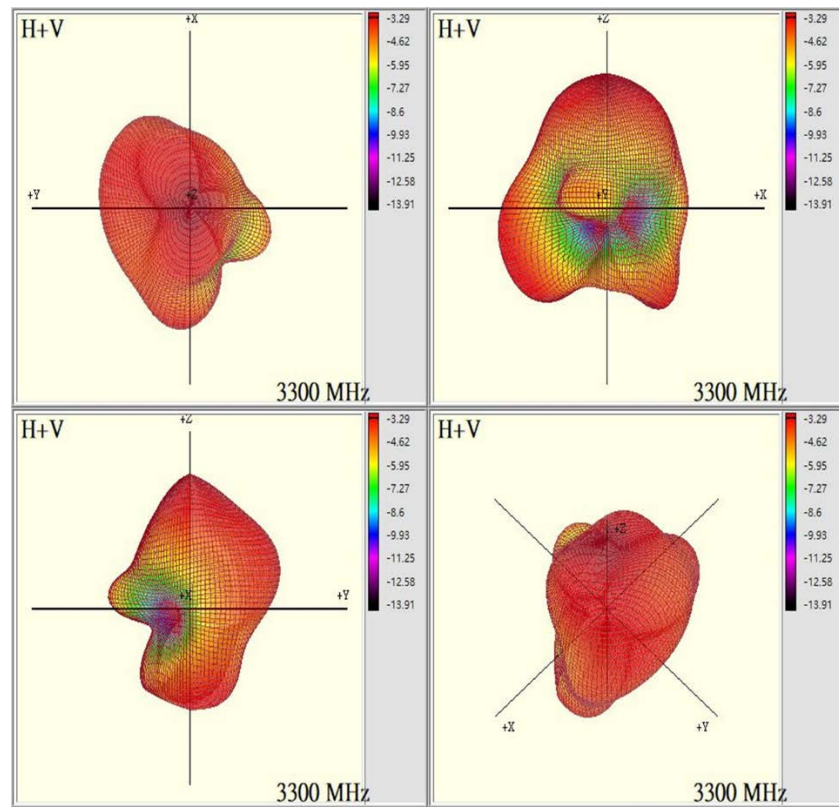
2550MHz



2300MHz



3300MHz



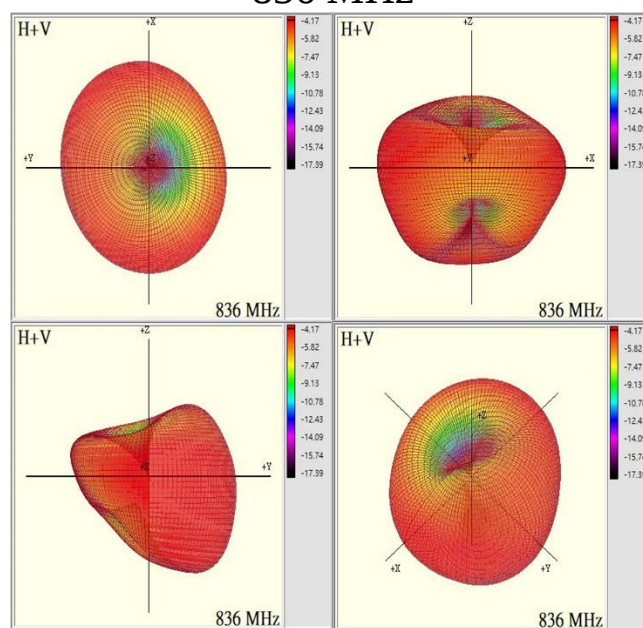
3.3 Ant 3: WWAN TX/RX(test date: 2023/3/30)

Antenna gain

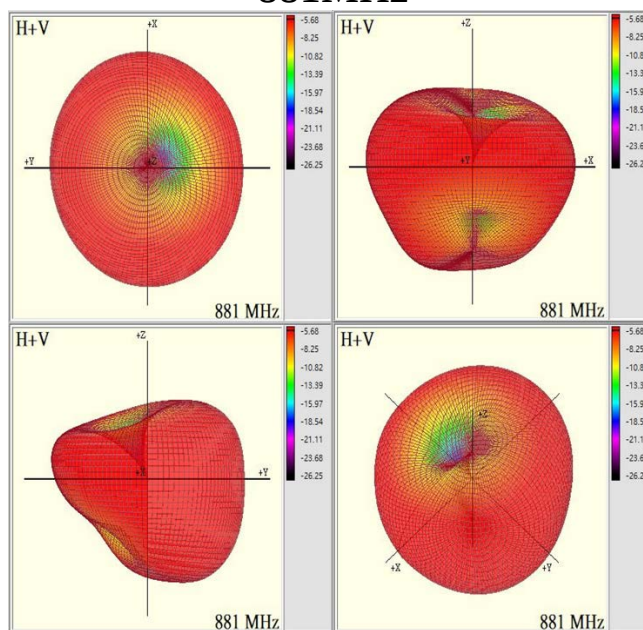
Frequency(MHz)	617	634	652	663	680	698						
Ant.Gain(dBi)	-27.95	-23.65	-17.60	-18.54	-13.88	-9.64						
Frequency(MHz)	704	714	724	734	744	754	764	774	784	794	804	814
Ant.Gain(dBi)	-12.33	-7.78	-8.56	-10.03	-5.82	-5.42	-6.91	-6.28	-5.64	-5.44	-5.90	-5.26
Frequency(MHz)	824	836	849	869	880	881	894	897	915	925	942	960
Ant.Gain(dBi)	-5.01	-4.68	-4.99	-4.88	-5.34	-6.05	-6.54	-6.54	-6.05	-4.98	-5.63	-7.65

Antenna Pattern: ANT3

836 MHz



881MHz



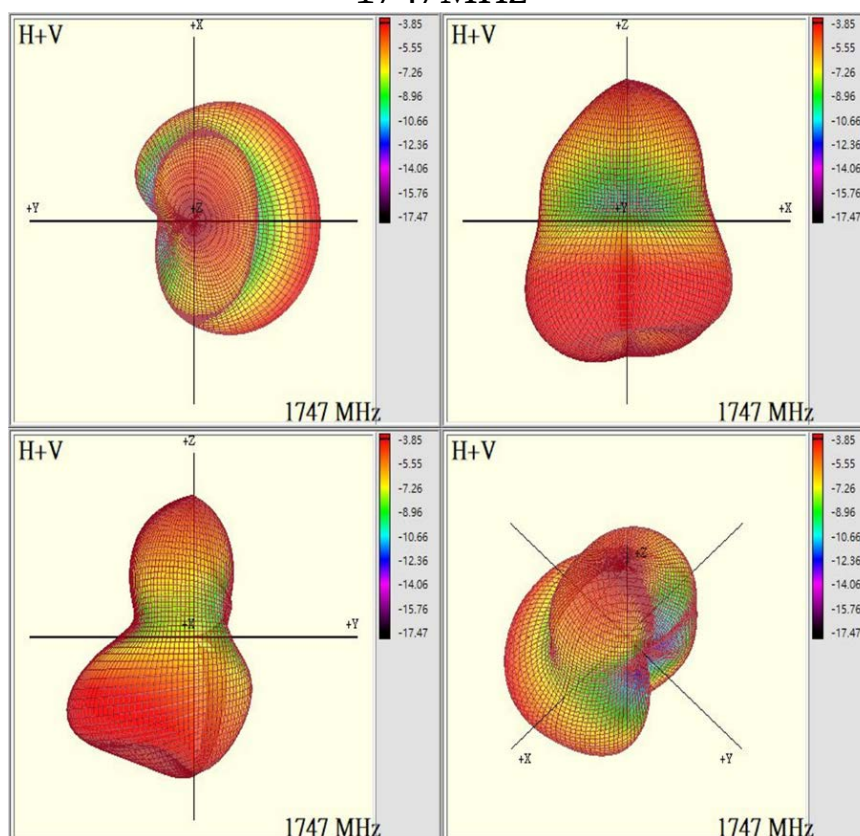
3.4 Ant 4: WWAN TX/RX(test date: 2023/3/30)

Antenna gain

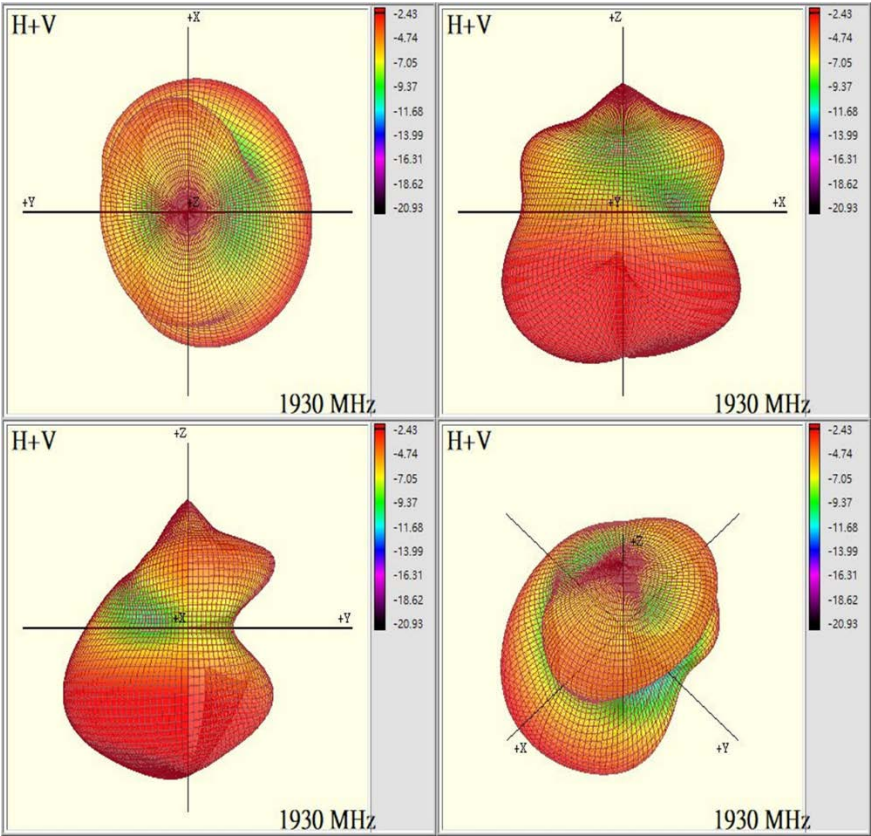
Frequency(MHz)	1710	1747	1785	1805	1842	1850	1880	1900	1910	1920	1930	1950
Ant.Gain(dBi)	-4.48	-4.05	-4.66	-3.85	-4.06	-3.89	-4.31	-3.96	-3.58	-3.16	-2.97	-3.23
Frequency(MHz)	1960	1980	1990	2010	2018	2025	2110	2140	2170	2300	2310	2320
Ant.Gain(dBi)	-3.39	-3.67	-3.76	-4.45	-4.50	-4.25	-3.59	-4.39	-4.88	-3.51	-4.12	-3.63
Frequency(MHz)	2330	2340	2350	2360	2370	2380	2390	2400	2410	2420	2430	2440
Ant.Gain(dBi)	-3.60	-4.85	-4.34	-4.01	-4.28	-4.33	-4.97	-6.24	-4.62	-4.46	-5.48	-4.46
Frequency(MHz)	2450	2460	2470	2480	2490	2500	2510	2520	2530	2540	2550	2560
Ant.Gain(dBi)	-4.46	-4.56	-5.43	-4.18	-5.52	-5.07	-4.34	-4.50	-4.07	-4.19	-3.27	-3.50
Frequency(MHz)	2570	2580	2590	2600	2650	2660	2670	2680	2690	2700		
Ant.Gain(dBi)	-4.19	-3.46	-3.40	-3.08	-2.53	-2.97	-2.546	-2.456	-2.496	-2.03		
Frequency(MHz)	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850
Ant.Gain(dBi)	-1.75	-0.71	-1.55	-2.36	-1.80	-2.79	-1.82	-1.69	-4.42	-1.79	-1.84	-2.99
Frequency(MHz)	3900	3950	4000	4050	4100	4150	4200					
Ant.Gain(dBi)	-2.76	-3.05	-2.82	-2.63	-3.89	-3.73	-2.99					

Antenna Pattern: ANT4

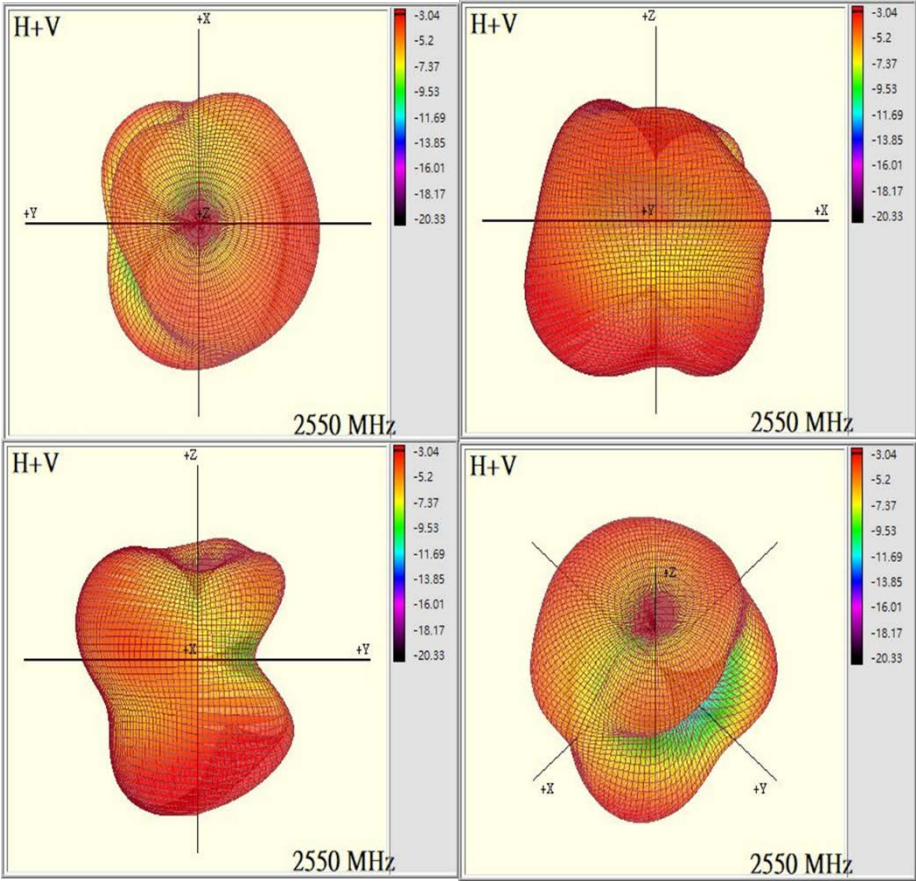
1747MHz



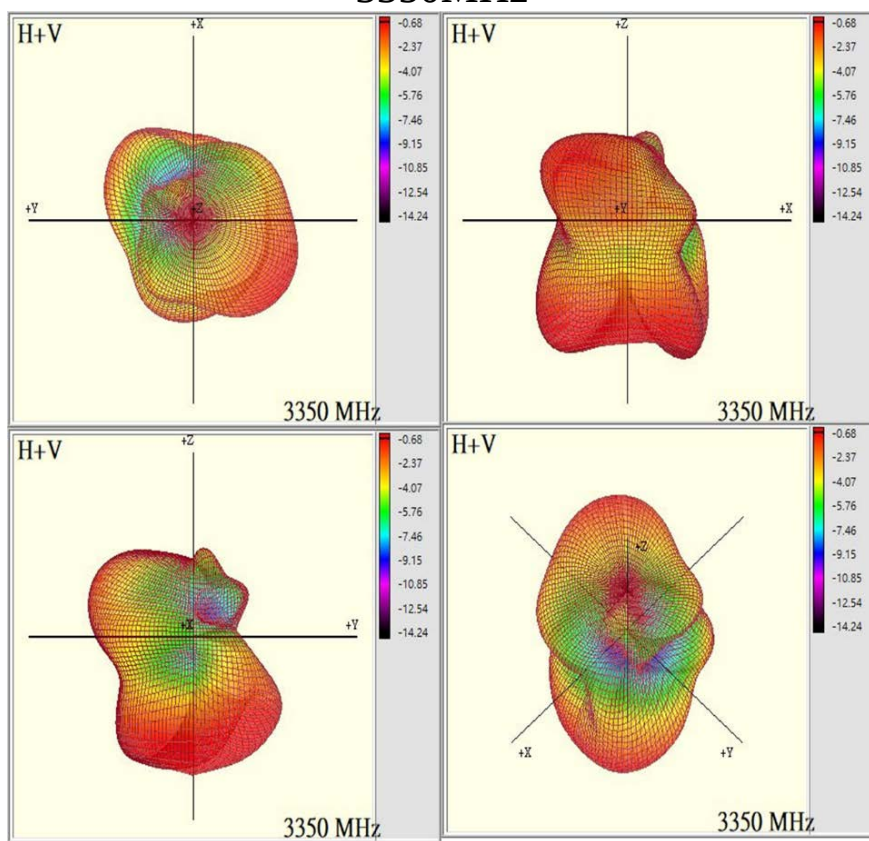
1930MHz



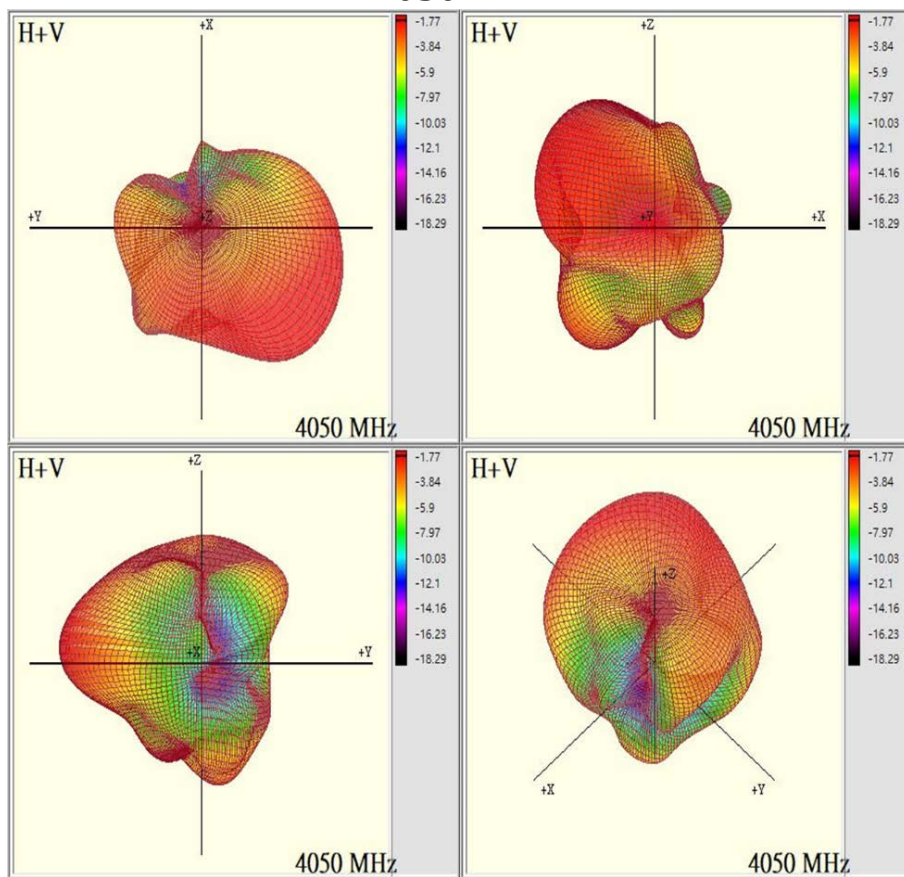
2550MHz



3350MHz



4050MHz



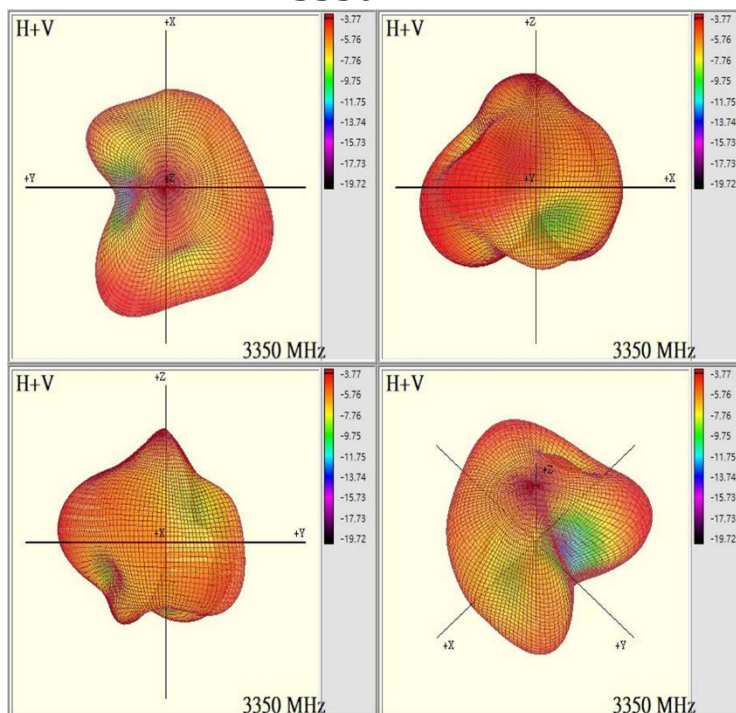
3.5 Ant 5: WWAN TX/RX(test date: 2023/3/30)

Antenna gain

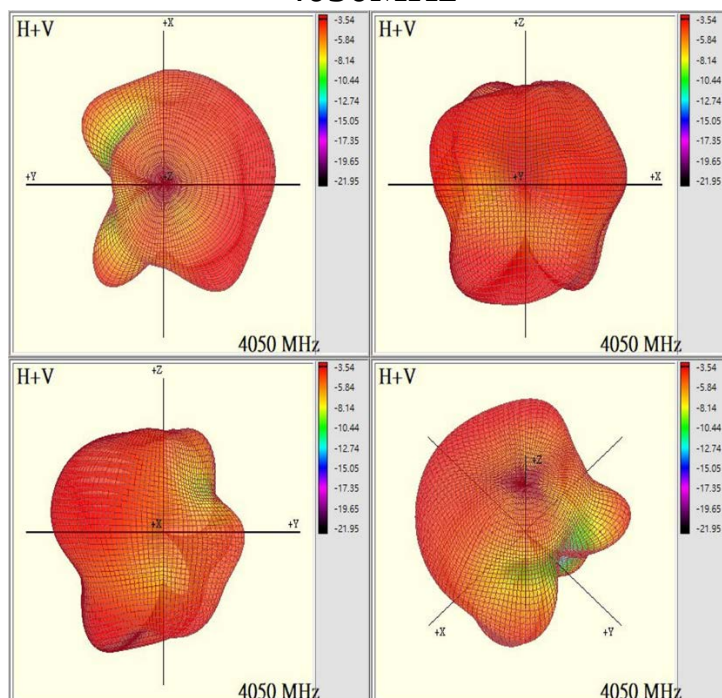
Frequency(MHz)	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850
Ant.Gain(dBi)	-5.73	-4.39	-5.67	-6.54	-5.75	-6.83	-6.61	-5.98	-8.31	-6.92	-6.40	-6.91
Frequency(MHz)	3900	3950	4000	4050	4100	4150	4200					
Ant.Gain(dBi)	-6.81	-6.27	-4.51	-3.86	-4.10	-2.74	-1.75					

Antenna Pattern: ANT5

3350MHz



4050MHz

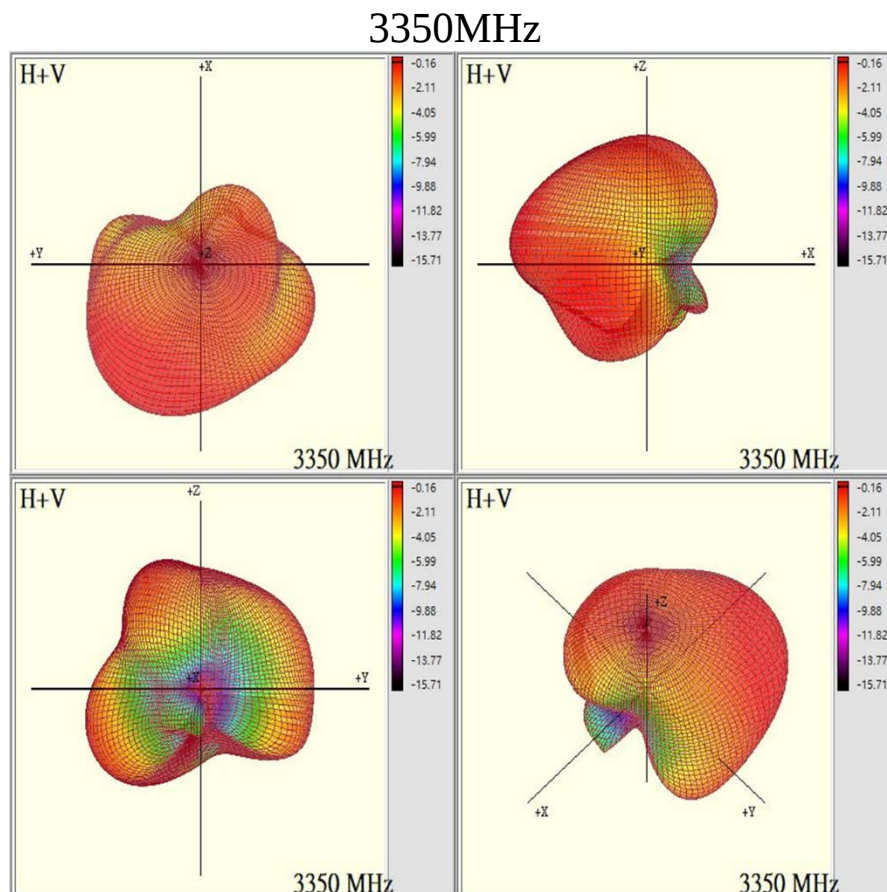


3.6 Ant 6: WWAN TX/RX(test date: 2023/3/30)

Antenna gain

Frequency(MHz)	3300	3350	3400	3450	3500	3550	3600	3650	3700	3750	3800	3850
Ant.Gain(dBi)	-2.47	-0.76	-2.46	-3.78	-3.89	-4.95	-3.12	-3.46	-7.06	-5.20	-5.55	-7.85
Frequency(MHz)	3900	3950	4000	4050	4100	4150	4200					
Ant.Gain(dBi)	-5.94	-6.31	-6.11	-5.00	-6.34	-6.27	-5.19					

Antenna Pattern



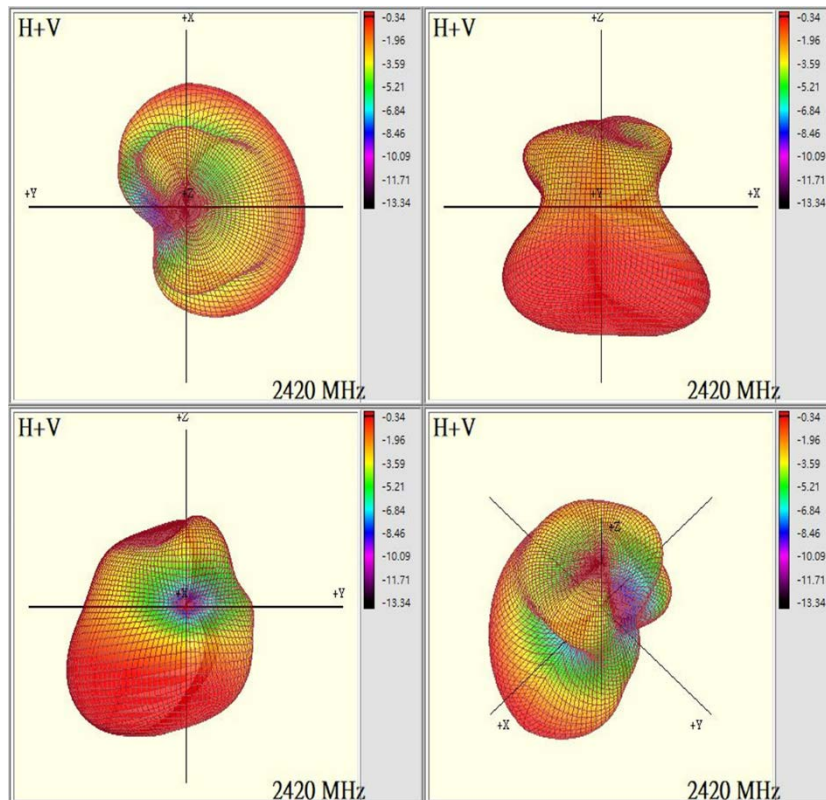
3.7 Ant 7: GPS (L5) +WLAN/BT TX/RX(test date: 2023/3/30)

Antenna gain

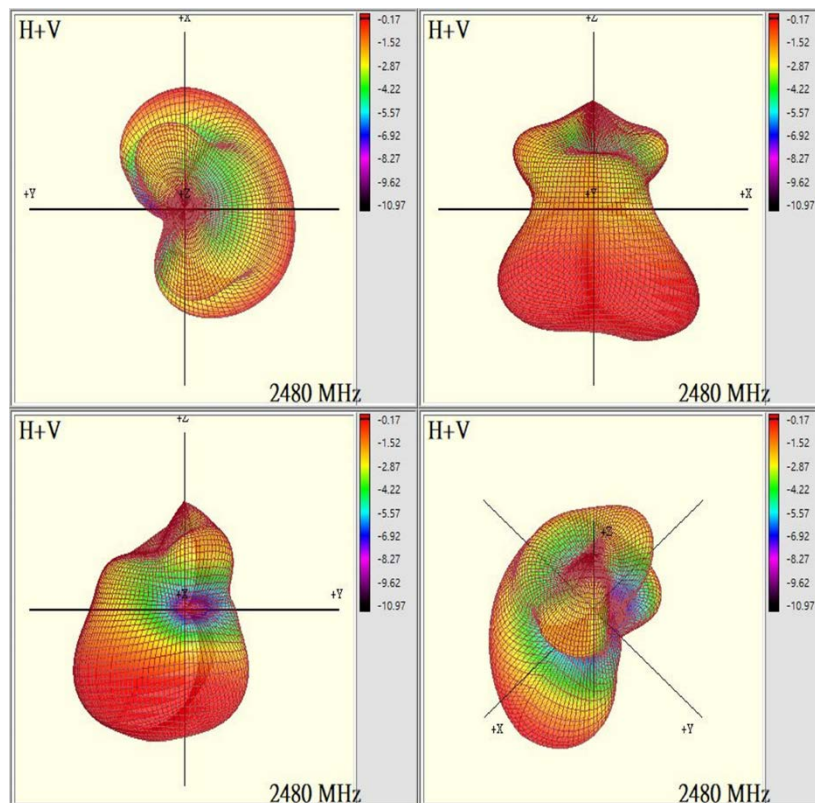
Frequency(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Ant.Gain(dBi)	-1.65	-1.05	-0.79	-1.41	-1.11	-0.69	-0.90	-2.11	-0.74	-1.46	-1.78
Frequency(MHz)	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650
Ant.Gain(dBi)	-3.38	-3.43	-2.72	-2.66	-2.67	-3.01	-3.89	-4.33	-5.19	-4.96	-3.56
Frequency(MHz)	5700	5750	5800	5850	5900	5950	6000	6050	6100	6150	6200
Ant.Gain(dBi)	-2.79	-2.47	-2.60	-1.81	-0.14	-0.37	-1.31	-2.34	-3.16	-3.89	-5.99
Frequency(MHz)	6250	6300	6350	6400	6450	6500	6550	6600	6650	6700	6750
Ant.Gain(dBi)	-6.66	-6.38	-6.66	-7.61	-7.79	-6.22	-6.86	-6.77	-5.23	-5.87	-6.57
Frequency(MHz)	6800	6850	6900	6950	7000	7050	7100	7125			
Ant.Gain(dBi)	-6.04	-6.01	-5.40	-5.33	-6.05	-5.26	-4.55	-5.09			

Antenna Pattern: ANT7

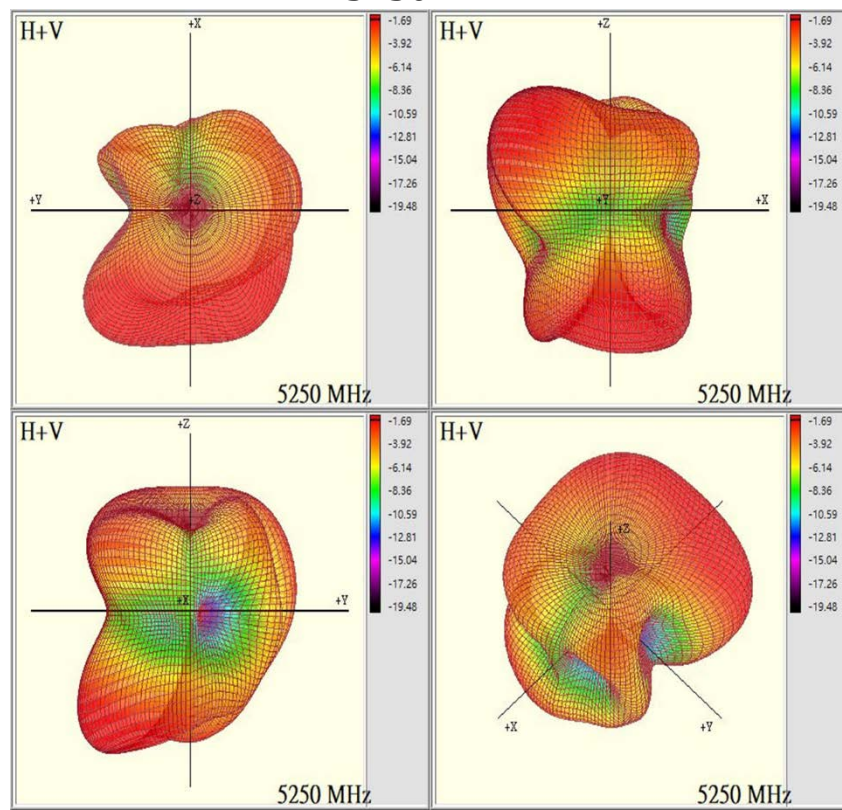
2420MHz



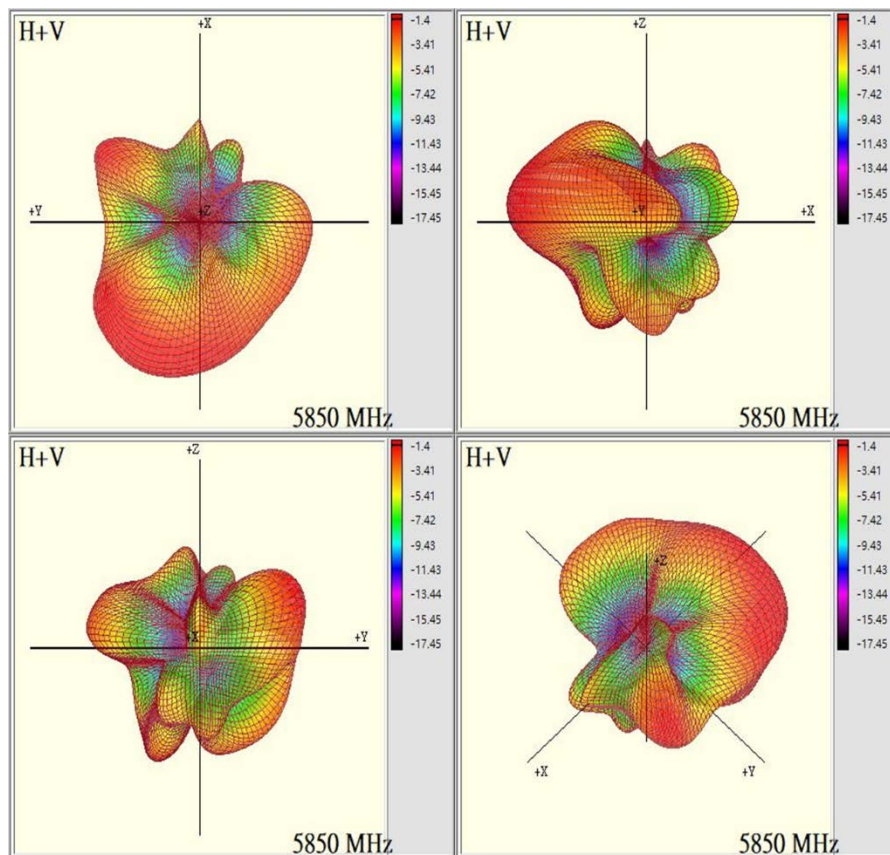
2480MHz



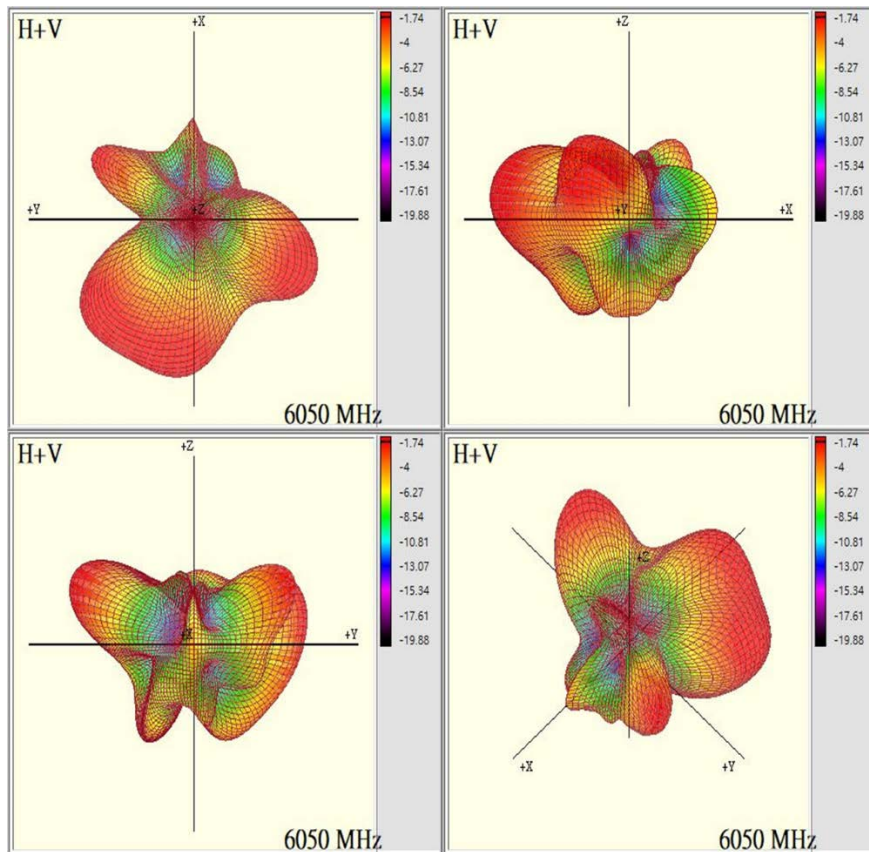
5250MHz



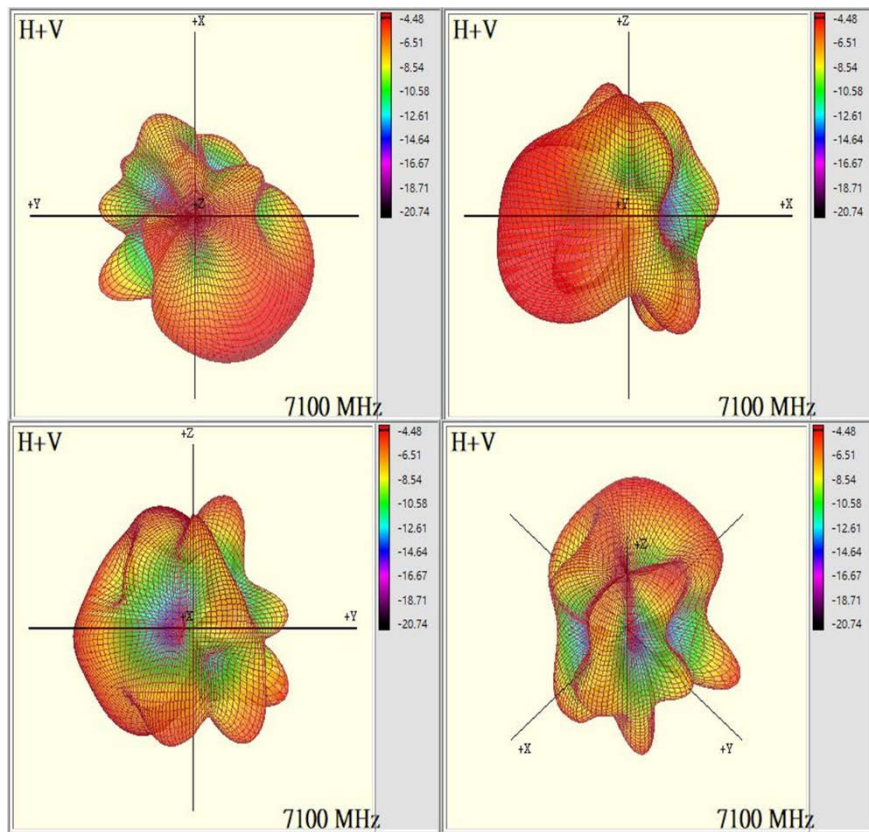
5850 MHz



6050MHz



7100MHz



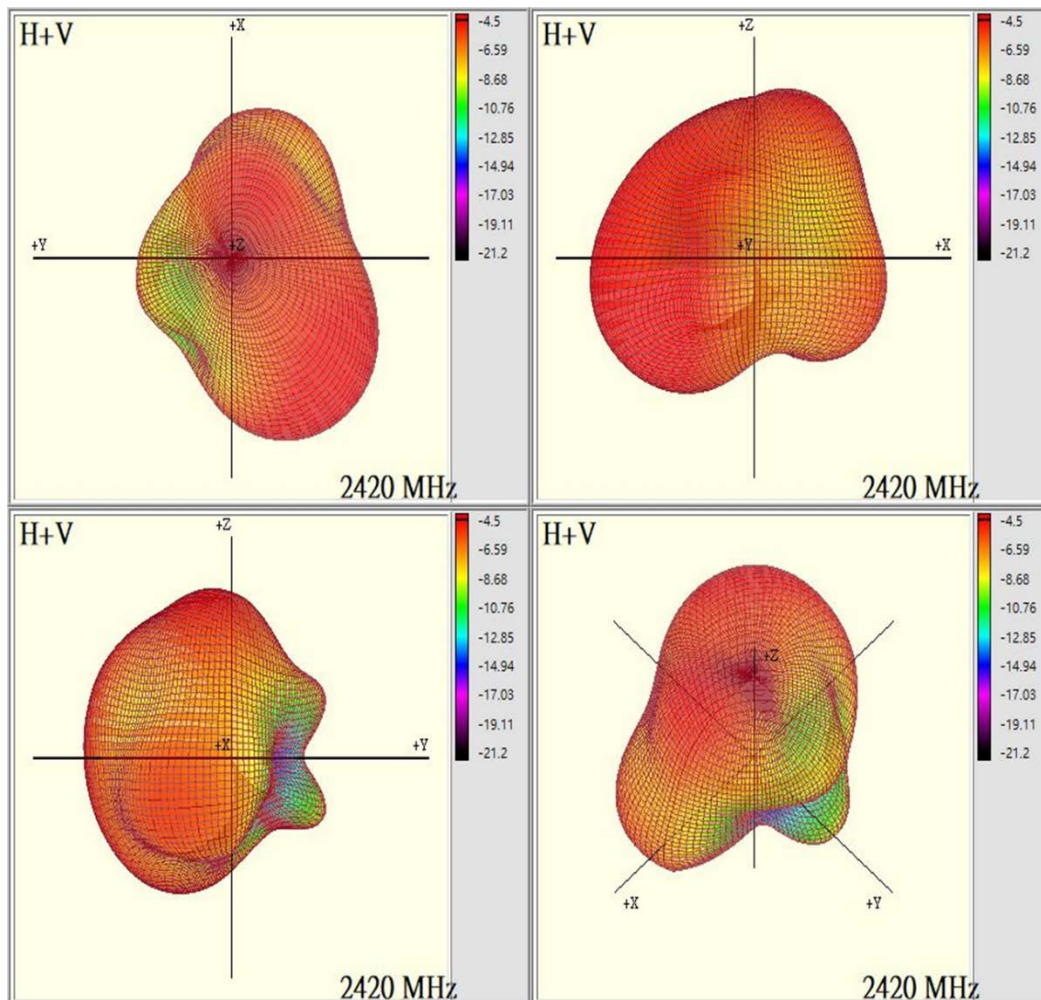
3.8 Ant 8: GPS (L1) +WLAN/BT TX/RX(test date: 2023/3/30)

Antenna gain

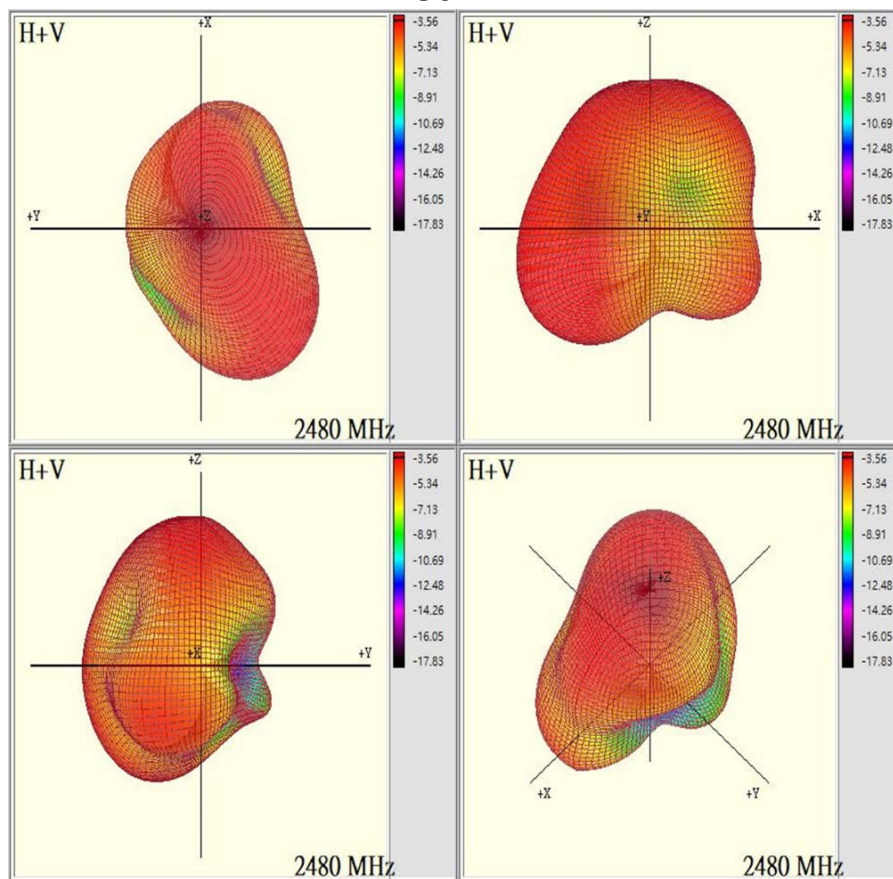
Frequency(MHz)	2400	2410	2420	2430	2440	2450	2460	2470	2480	2490	2500
Ant.Gain(dBi)	-6.81	-5.60	-4.71	-5.55	-4.78	-3.93	-4.06	-5.13	-3.77	-4.77	-4.92
Frequency(MHz)	5150	5200	5250	5300	5350	5400	5450	5500	5550	5600	5650
Ant.Gain(dBi)	-4.92	-3.57	-3.34	-3.20	-3.14	-2.69	-2.29	-2.41	-2.35	-2.27	-2.98
Frequency(MHz)	5700	5750	5800	5850	5900	5950	6000	6050	6100	6150	6200
Ant.Gain(dBi)	-2.02	-2.11	-1.87	-0.21	0.70	0.71	0.92	1.01	0.24	-0.04	-1.71
Frequency(MHz)	6250	6300	6350	6400	6450	6500	6550	6600	6650	6700	6750
Ant.Gain(dBi)	-2.77	-3.88	-4.32	-4.75	-5.24	-4.42	-4.55	-5.07	-5.35	-5.94	-6.37
Frequency(MHz)	6800	6850	6900	6950	7000	7050	7100	7125			
Ant.Gain(dBi)	-6.83	-6.74	-6.76	-6.93	-7.33	-7.82	-7.16	-7.18			

Antenna Pattern

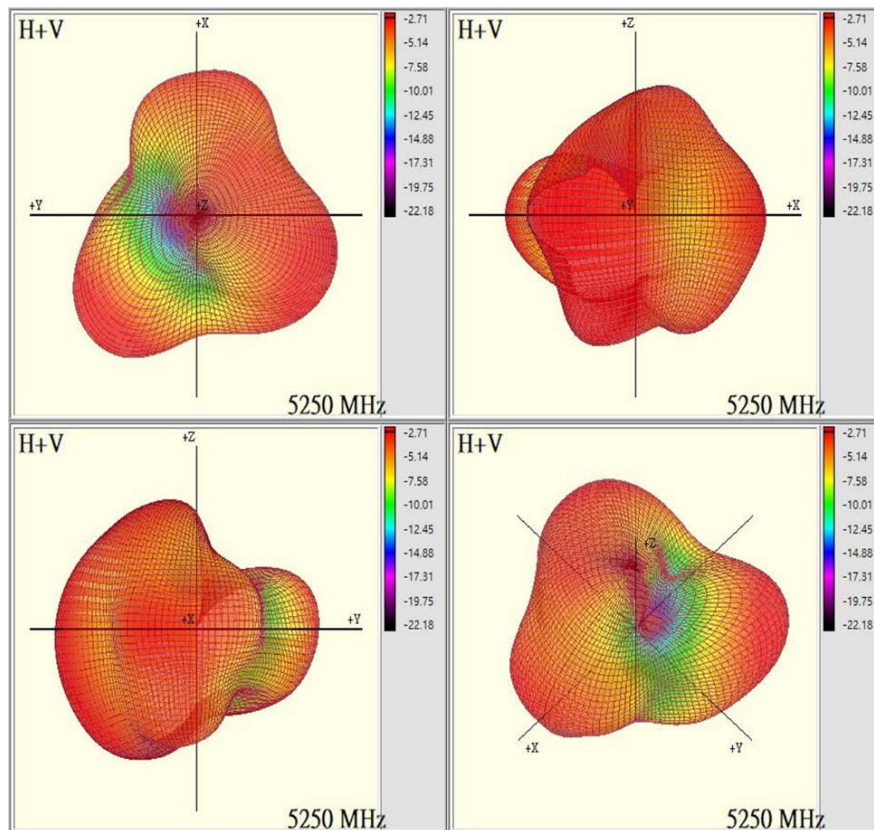
2420MHz



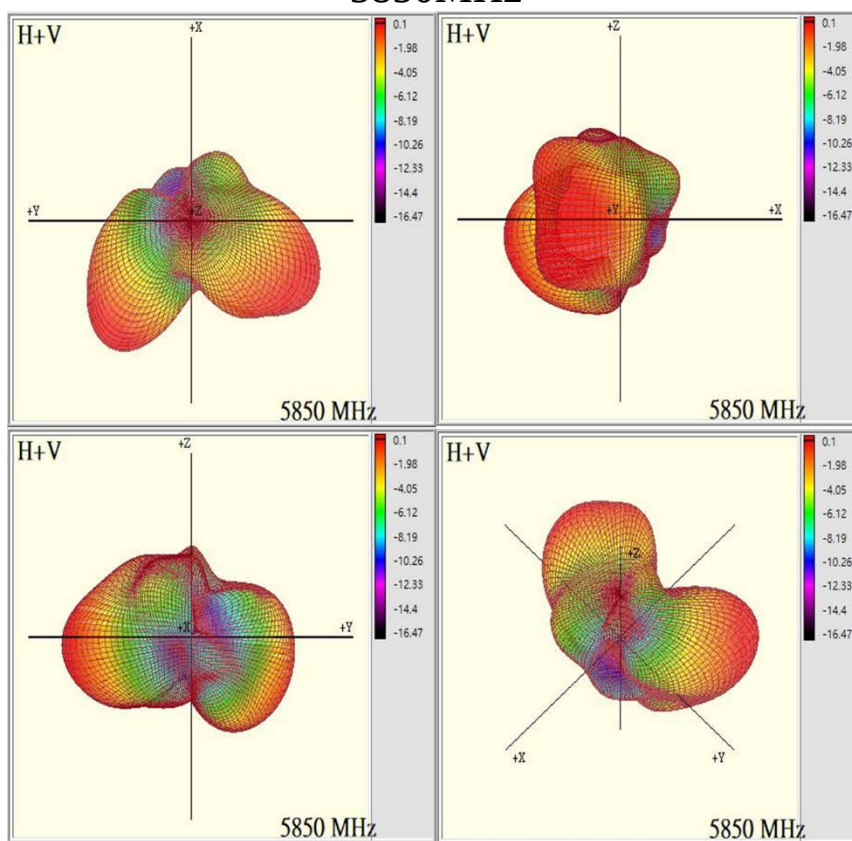
2480MHz



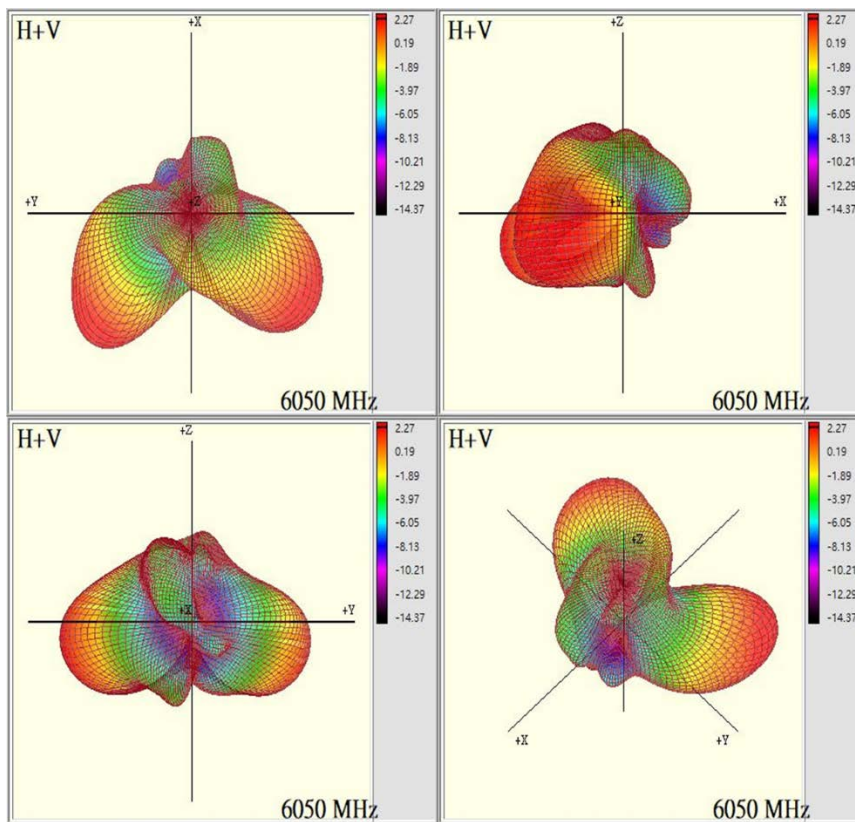
5250MHz



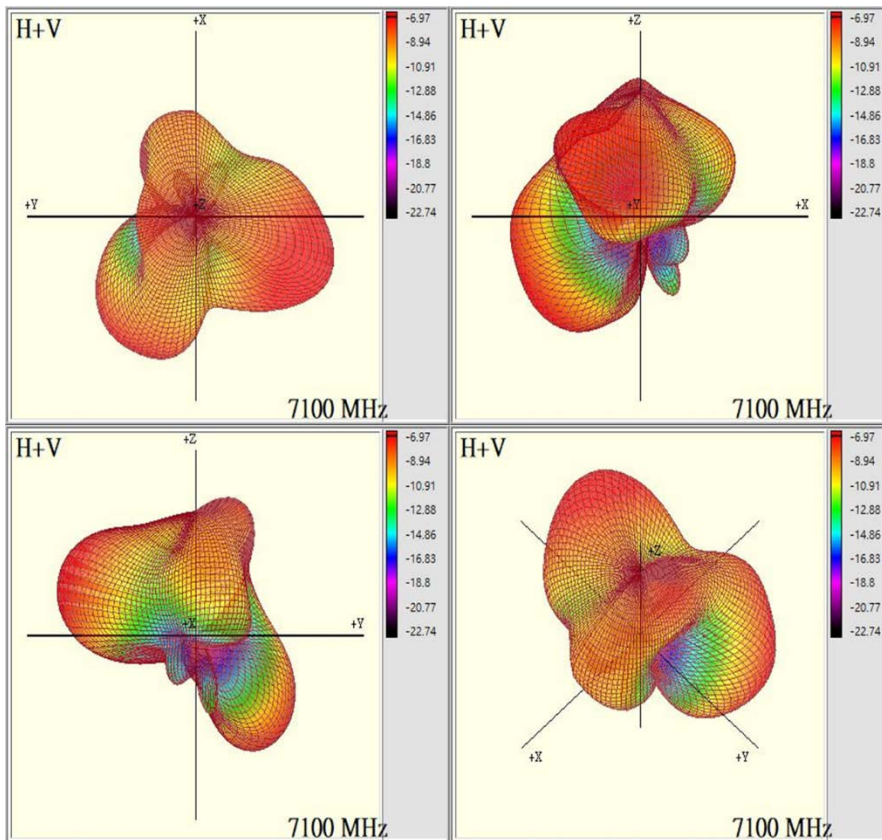
5850MHz



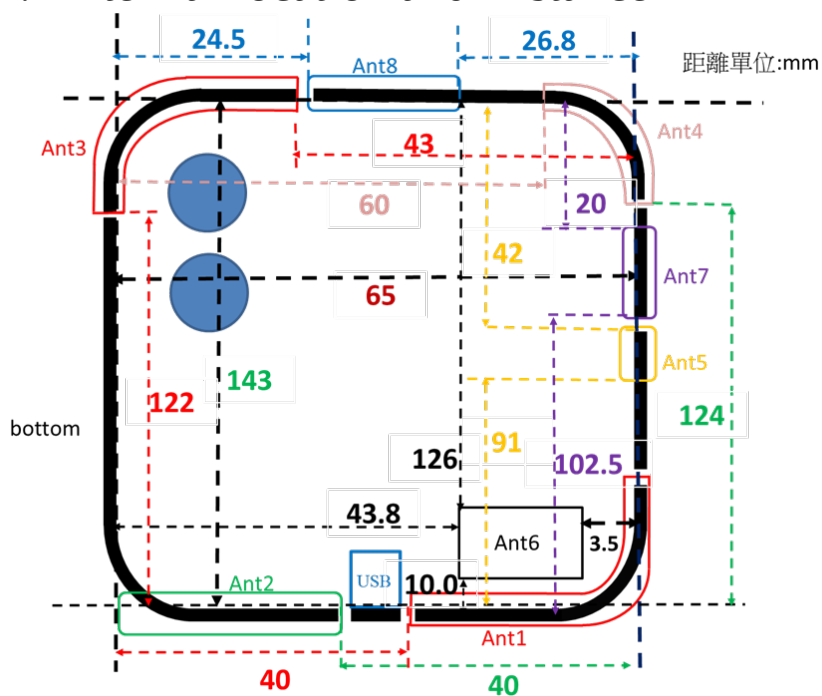
6050MHz



7100MHz



4. Antenna Location and Distance



5. NFC Antenna

- 5.1 Antenna Type: Loop antenna
5.2 Antenna Dimension(mm): 39.80 x 31.55 x 0.26(L x W x H)
5.3 Manufacturer: INPAQ
5.4 Manufacturer P/N: NF-C-F9-R0-195
5.5 Test equipment: WK4100
5.6 Test environment: Fig5.3

Fig5.1. NFC datasheet

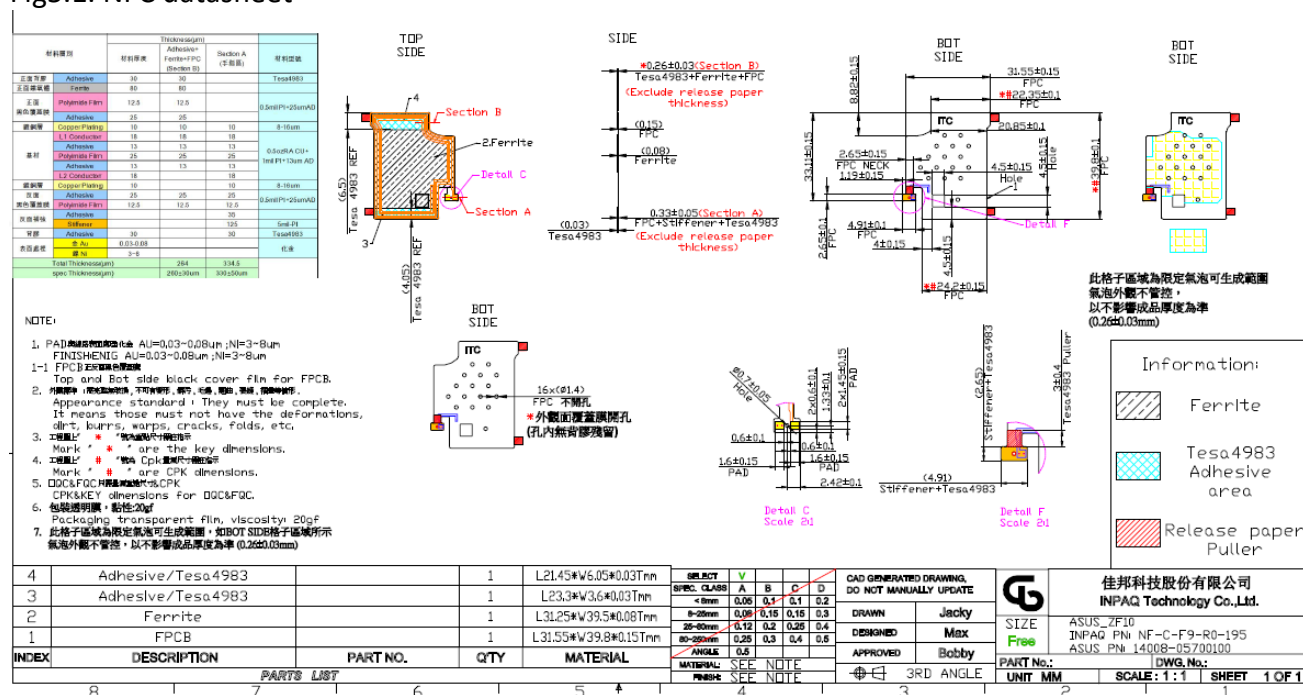
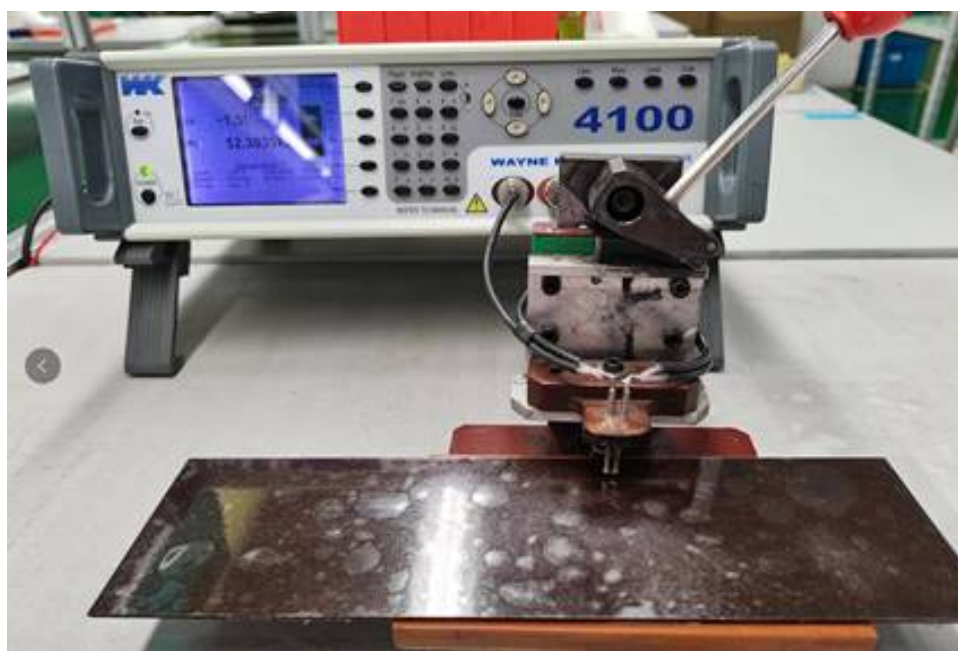


Fig5.3. NFC test environment





设备标示卡			
设备名称	测试机	资产编号	150108562
保管单位	制三部		
保管人	李淑艳 18862335083	单位主管	陆磊 17625126965
维修保养 责任人	庄利刚 1662278815	校验负 责人	吉金娟 13222279376