

OTA TEST REPORT

Applicant Shenzhen General Test System Co., Ltd

Product RayZone1800

Issue Date November 19, 2024

Shenzhen Sanhao Wireless Communication Co., Ltd tested the above equipment in accordance with the requirements in **ANTI/IEEE Std 149-2008**. The test results show that the equipment tested is capable of demonstrating compliance with the Requirements as documented in this report.

Prepared by: Wang Shengping

Approved by: WuZhou

Shenzhen Sanhao Wireless Communication Co., Ltd

501, Block A, Jinfulai Building, No. 49-1 Dabao Road, Xin'an Street, Bao'an District, Shenzhen

1. Test Laboratory

1.1 Notes of the Test report

This report shall not be reproduced in full or partial. The results documented in this report apply only to the tested sample, under the conditions and modes of operation as described herein. Measurement Uncertainties were not taken into account and are published for informational purposes only. This report is written to support regulatory compliance of applicable standards stated above.

1.2 Test facility

GTS1800 Microwave Anechoic Chamber : testing frequency ranges from 600MHz to 6GHz .

1.3 Testing Location

Company: Shenzhen3GoodWirelessCommunicationCo.,Ltd

Address: Room501-508,jinfulaiBuilding,No.49-1,DabaoRoad,BaoanDistrict,
Shenzhen

Contact: Wang Shengping

Telephone: 17674020004

E-mail: wsp-rfrd@3good.net.cn

1.4 Laboratory Environment

Temperature	Min.= 19℃, Max.=25℃	
Relative humidity	Min.=40%, Max.=72%	
Shield effect	0.6-7GHz	>100dB
Ground resistance	<0.5Ω	

2. General Description of Equipment under Test

2.1 Applicant and Manufacturer information

Applicant Name	Shenzhen General Test System Co., Ltd
Applicant address	Building C-A7 Suite 805,2190 Liuxian Avenue, Nanshan District, Shenzhen, P.R. China
Manufacturer Name	Shenzhen General Test System Co., Ltd
Manufacturer address	Building C-A7 Suite 805,2190 Liuxian Avenue, Nanshan District, Shenzhen, P.R. China

2.2 General information

EUT Description	
Product Name	RayZone1800
Model	GTS-ANT D-H
HW Version	RayZone1800 V1.0
SW Version	MaxSign 100
Antenna Type	PCB Antenna
Antenna Manufacturer	Shenzhen General Test System Co., Ltd
Test Frequency	600MHz-5.8GHz

2.3 Applied Standards

According to the specifications of the manufacturer, it must comply with the requirements of the following standards:

Test Method: **ANSI/IEEE Std 149-2008**

3. Test Conditions

3.1 Test Configuration

The method is used to measure the antenna 3D GAIN of EUT in OTA qualified anechoic

chamber. Equipment Under Test (EUT) geometry centre vertical projection at the centre of platform, the distance from EUT to measurement antenna is 1m.

3.2 Test Measurement

Spherical coordinate system

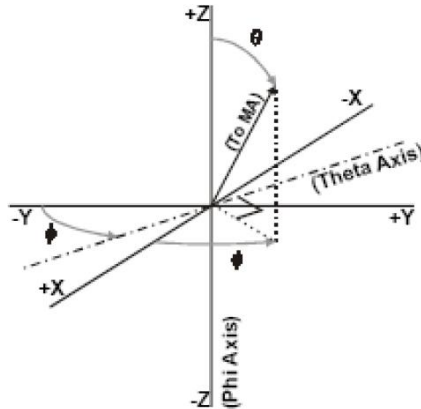
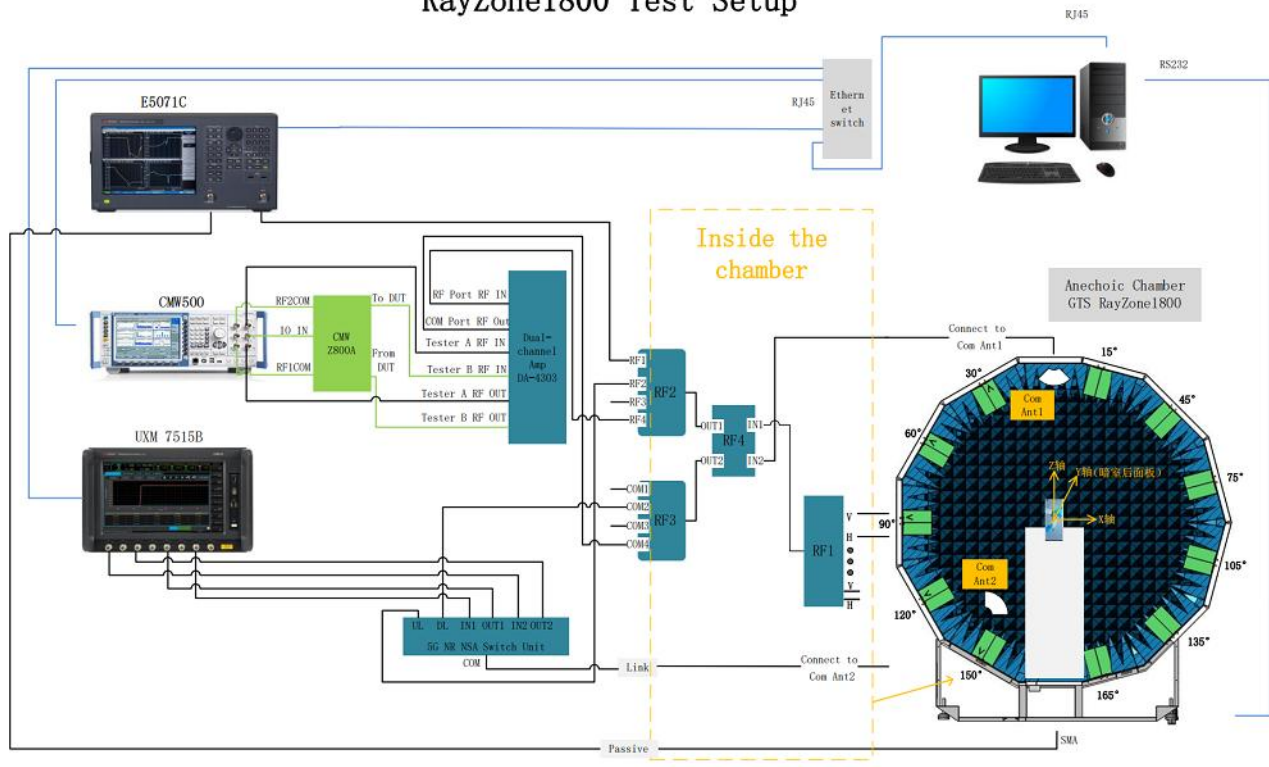


Figure 1 Test coordinate system

Note: Theta is from 0-180degree. Phi is from EUT and record the Date, the step of rotation is 15 degree.

Test Setup

RayZone1800 Test Setup



4. Test Results

4.1 Gain and Efficiency

Model	Test State	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Note
	Free Space	620	11.88	-6.29	1770	36.13	-0.05	
		630	12.67	-5.36	1780	38.29	0.17	
		640	13.91	-5.62	1790	37.91	0.14	
		650	14.07	-4.96	1800	37.96	0.12	
		660	18.65	-3.77	1810	38.17	0.13	
		670	23	-2.17	1820	38.58	0.1	
		680	23.69	-1.96	1830	37.6	0.05	
		690	22.55	-2.26	1840	37.94	0.07	
		700	18.56	-3.29	1850	39.08	0.15	
		710	18.66	-3.25	1860	37.1	-0.18	
		720	14.56	-4.45	1870	35.55	-0.38	
		730	15.45	-4.76	1880	35.08	-0.55	
		740	20.88	-3.32	1890	35.07	-0.81	
		750	22.22	-3.12	1900	36.02	-0.73	
		760	22.42	-2.61	1910	35.09	-0.9	
		770	21.46	-2.85	1920	33.48	-1.12	
		780	19.93	-2.85	1930	32.91	-1.08	
		790	16.6	-3.75	1940	32.27	-0.91	
		800	11.96	-5.19	1950	33.76	-0.56	
		810	16.33	-3.48	1960	35.22	-0.17	
		820	20.24	-2.59	1970	35.57	-0.07	
		830	20.46	-2.65	1980	37.58	0.28	
		840	23.68	-1.88	1990	37.65	0.24	
		850	21.34	-2.29	2000	38.87	0.36	
		860	17.81	-2.72	2010	38.29	0.18	
		870	14.63	-3.61	2020	36.74	-0.12	
		880	12.67	-4.46	2030	37.5	-0.12	
		890	14.85	-4.2	2040	37.56	-0.14	
		900	18.76	-3.29	2050	37.37	-0.01	
		910	20.18	-3.03	2060	37.09	0.02	
		920	20.62	-3.48	2070	36.69	0.06	
		930	18.28	-4.5	2080	36.03	0.06	

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		940	16.28	-4.73	2090	36.18	0.2	
		950	15.34	-4.68	2100	35.8	0.21	
		960	14.53	-4.85	2110	29.56	-0.65	
		1710	29.54	-0.96	2120	28.19	-0.85	
		1720	30.33	-0.85	2130	27.38	-1.06	
		1730	31.1	-0.67	2140	27.26	-1.17	
		1740	30.85	-0.64	2150	25.92	-1.41	
		1750	32.4	-0.38	2160	25.17	-1.53	
		1760	34.9	-0.16	2170	22.84	-2.01	
Model	Test State	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Note
		2180	19.61	-3.79	2670	21.89	-3.5	
		2190	18.99	-3.89	2680	20.56	-3.79	
		2200	19.74	-3.56	2690	18.98	-4.23	
		2210	20.94	-3.13	2700	17.84	-4.61	
		2220	21.65	-3.08	ANT2			
		2230	21.94	-2.94	3300	39.26	-0.22	
		2240	22.79	-2.84	3340	43.92	0.56	
		2250	24	-2.41	3380	42.07	0.14	
		2260	24.86	-2.22	3420	41.46	-0.19	
		2270	25.54	-2.02	3460	36.56	-0.93	
		2280	23.17	-2.48	3500	32.33	-1.49	
		2290	23.65	-2.29	3540	32.8	-1.79	
		2300	24.06	-2.12	3580	28.79	-2.31	
		2310	24.49	-2.04	3620	24.64	-3.13	
		2320	24.77	-1.9	3660	23.55	-2.43	
		2330	24.89	-1.83	3700	19.95	-2.48	
		2340	23.97	-1.88	3740	19.51	-2.47	
		2350	25.77	-1.43	3780	17.82	-2.52	
		2360	24.41	-1.52	3820	21.08	-1.91	
		2370	24.49	-1.39	3860	23.72	-1.76	
		2380	23.69	-1.45	3900	24.67	-1.43	
		2390	23.55	-1.42	3940	28.88	-0.81	
		2400	23.35	-1.53	3980	31.75	-0.45	
		2410	23.38	-1.59	4020	28.91	-0.96	
		2420	22.42	-1.91	4060	34.63	-0.33	
		2430	22.02	-2.07	4100	38.99	0.13	
		2440	21.35	-2.33	4140	38.28	-0.22	
		2450	21.8	-2.34	4180	35.88	-0.45	
		2460	22.13	-2.33	4220	39.51	-0.04	
		2470	21.78	-2.42	4260	39.2	-0.12	
		2480	22.66	-2.22	4300	35.89	-0.53	

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		2490	24.25	-1.92	4340	37.3	0.39	
		2500	25.16	-1.66	4380	40.89	0.94	
		2510	24.89	-1.7	4420	32.03	-0.07	
		2520	25.38	-1.63	4460	32.51	0.43	
		2530	25.19	-1.78	4500	32.37	0.77	
		2540	25.04	-1.86	4540	28.21	-0.13	
		2550	25.79	-1.87	4580	31.22	0.03	
		2560	26.73	-1.9	4620	30.23	-0.47	
		2570	26.97	-1.97	4660	28.4	-1.27	
		2580	27.03	-2.16	4700	27.89	-0.92	

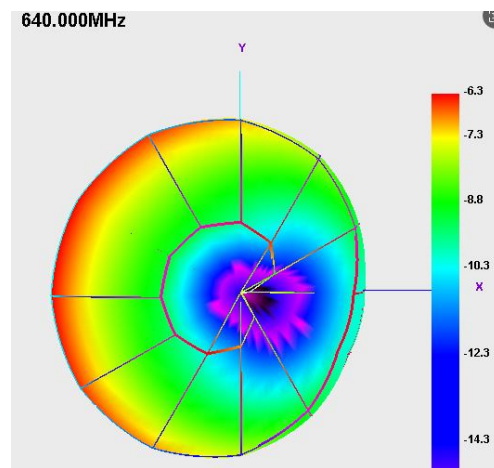
Model	Test State	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Note
		4740	25.5	-1.06	1560	52.6	1.97	
		4780	27.8	-0.95	1575	52.36	1.87	
		4820	26.21	-1.13	1580	52.48	1.72	
		4860	24.96	-1.67				
		4900	22.99	-1.64	2400	50.35	0.84	
		4940	21.19	-1.94	2420	49.32	0.94	
		4980	22.36	-1.61	2440	50.82	1.07	
		5000	23.04	-1.37	2460	51.76	1.09	
		ANT5			2480	49.66	1.09	
		2500	30.17	-1.91	2500	46.03	0.99	
		2510	29.34	-2.19				
		2520	28.78	-2.28	5150	26.06	-0.61	
		2530	28.34	-2.46	5400	22.54	0.35	
		2540	27.19	-2.76	5700	30.27	2.39	
		2550	27.04	-2.99	6000	32.51	1.59	
		2560	27.46	-2.84	6300	25.64	-0.12	
		2570	27.27	-2.67	6500	25.47	0.45	
		2580	26.63	-2.5	6750	29.65	1.89	
		2590	26.23	-2.45	7100	24.89	1.35	
		2600	27.03	-2.21	7250	24.66	1.34	
		2610	27.15	-2.1				
		2620	25.51	-2.16				
		2630	25.75	-2.15				
		2640	27.09	-1.76				
		2650	27.73	-1.71				
		2660	28.88	-1.53				
		2670	29.09	-1.64				

		2680	29.31	-1.52				
		2690	28.75	-1.45				
		2700	28.7	-1.43				

5. Equipment List

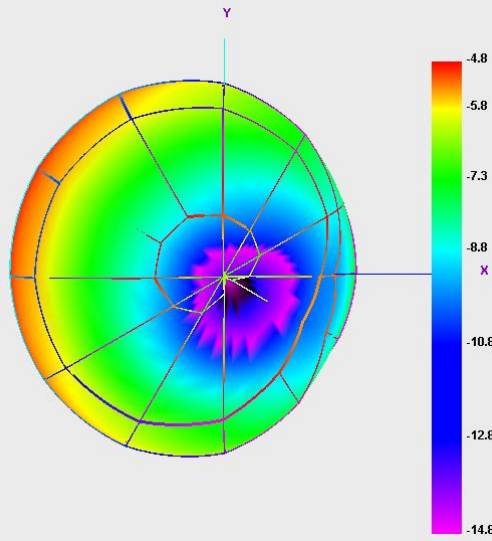
Type of Equipment	Manufacture	Model Number
Network Analyzer	Key sight	E5071C
Switch control System	GTS	RayZone1800
Software	GTS	MaxSign 100 Patten Measurement software

ANNEX A 3-D Patten Plots



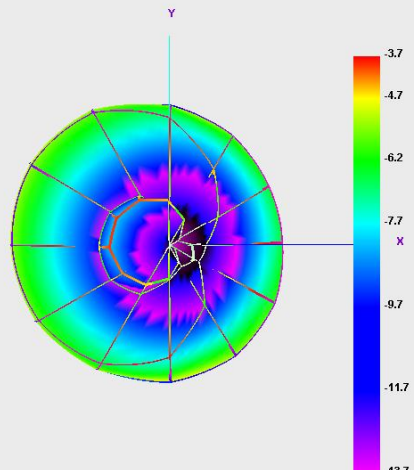
640MHz

700.000MHz



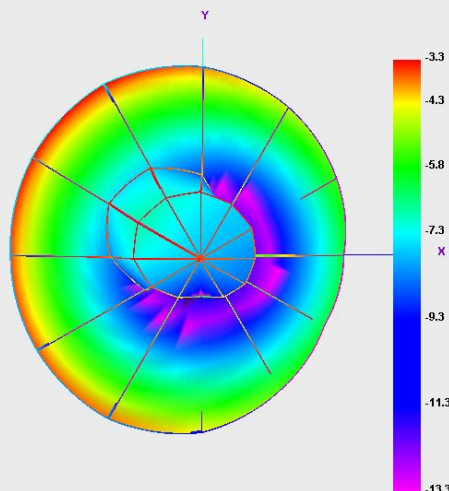
700MHz

820.000MHz

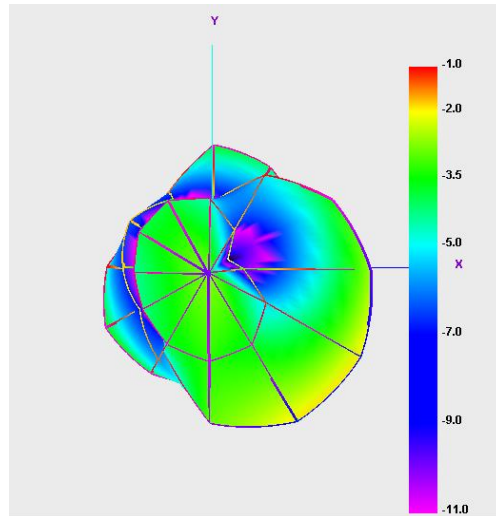


820MHz

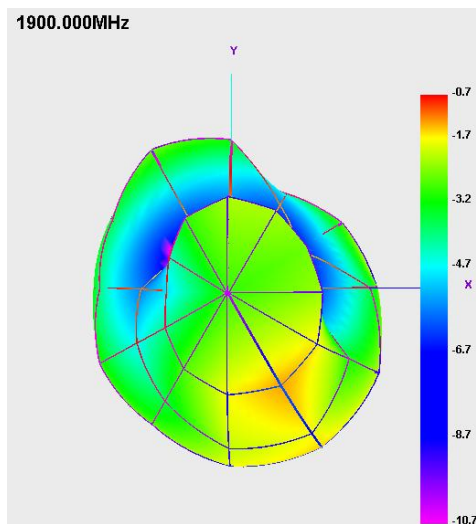
900.000MHz



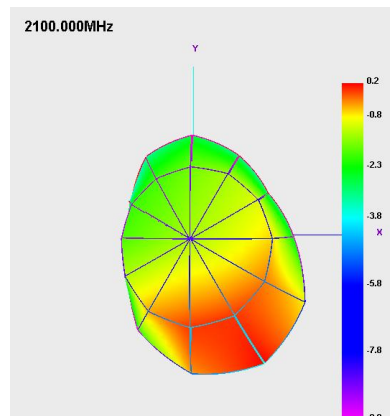
900MHz



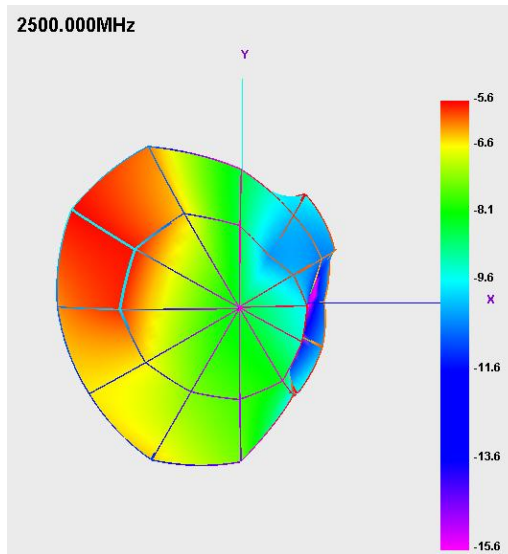
17100MHz



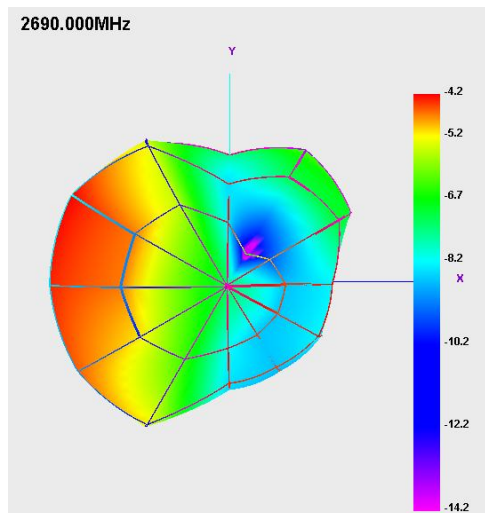
1900MHz



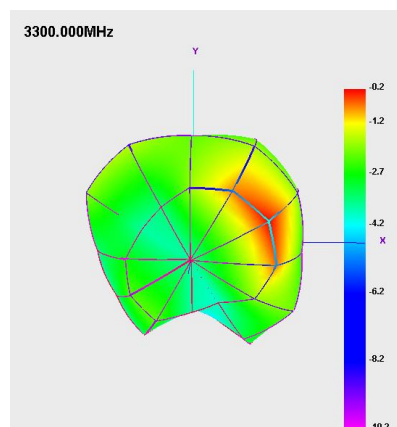
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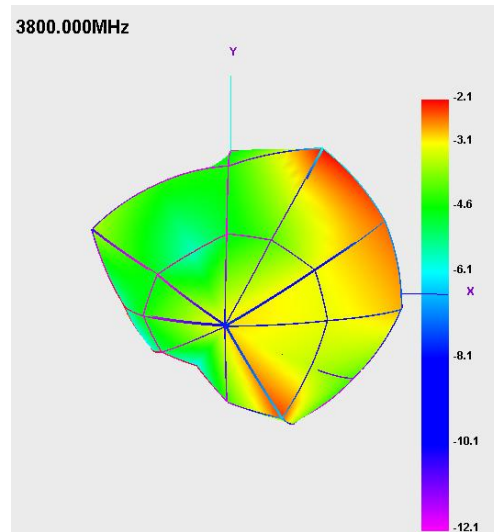
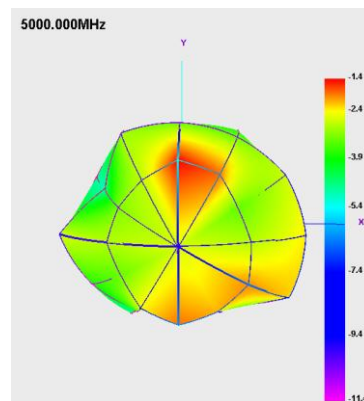
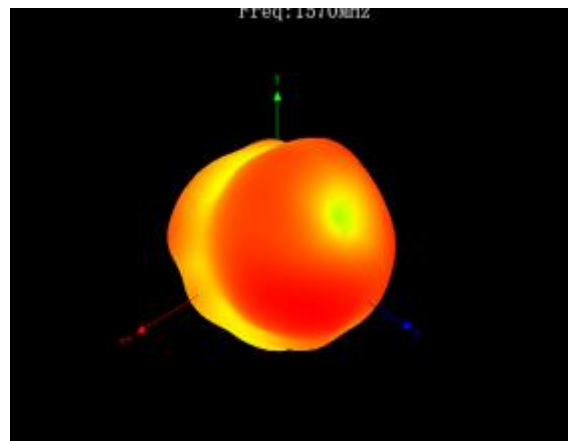


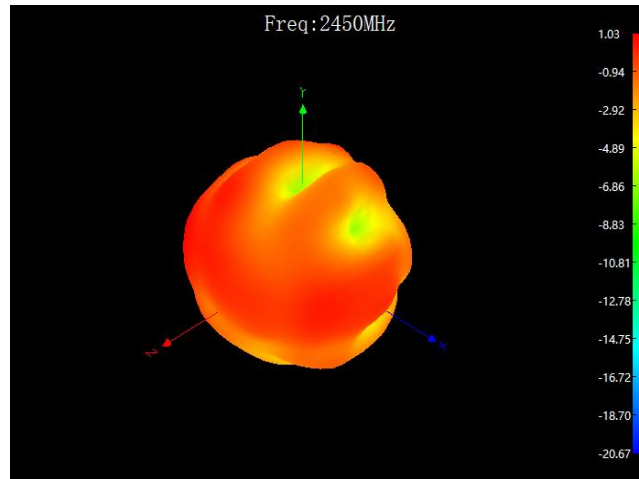
2500MHz



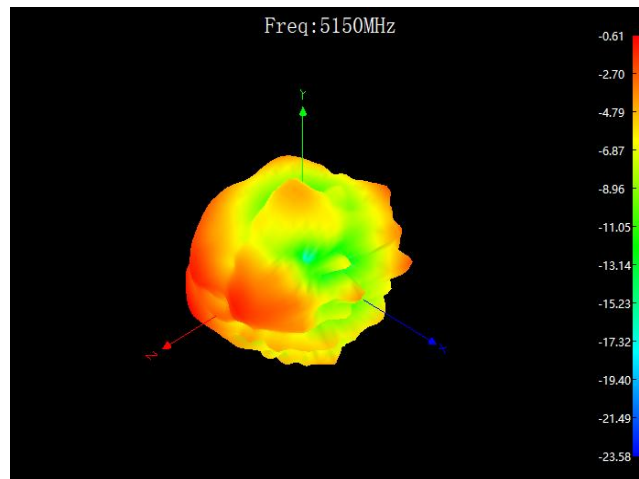
2690MHz



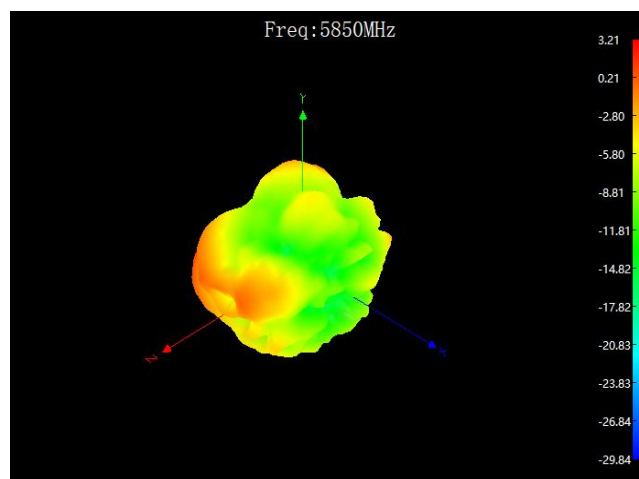
3300MHz**3800MHz****5000MHz****1575MHz**



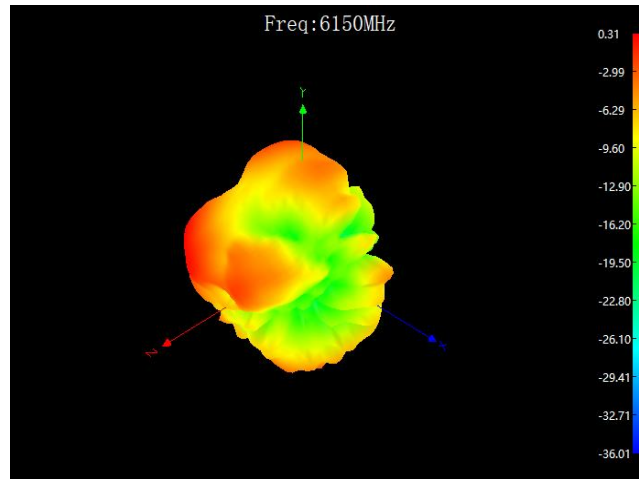
2450MHz



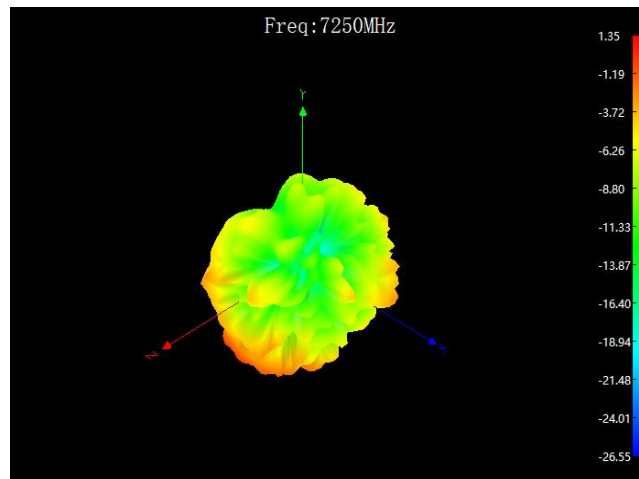
5150MHz



5850MHz



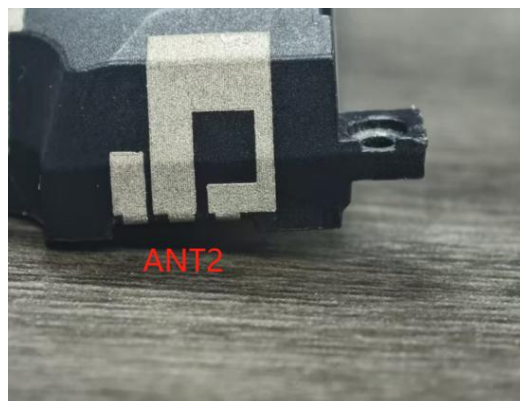
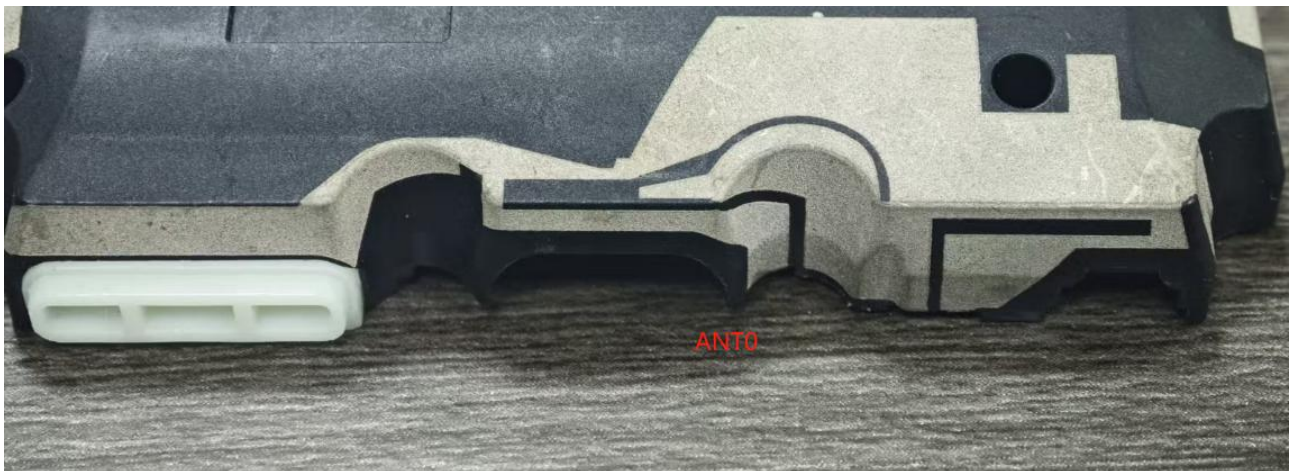
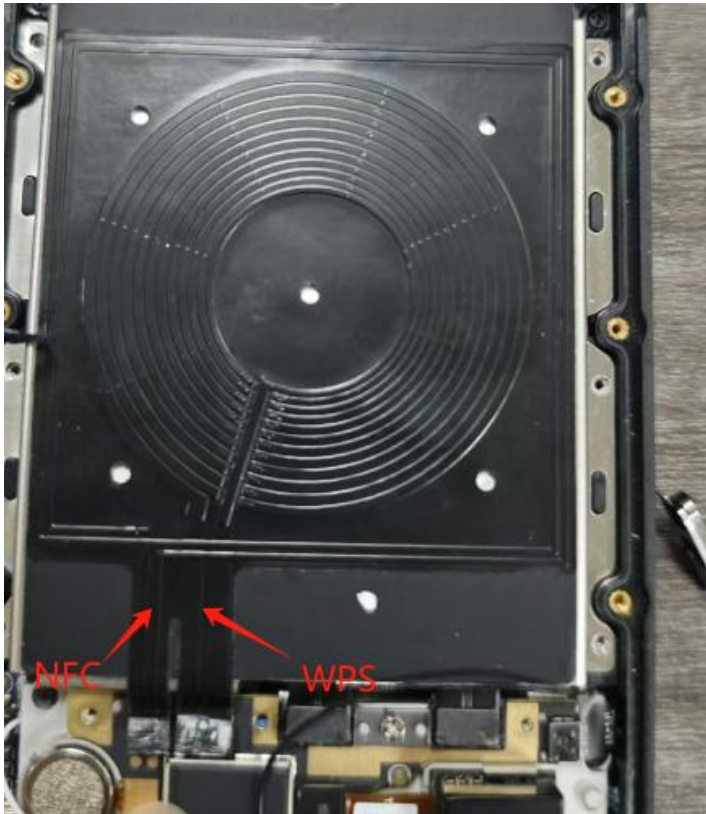
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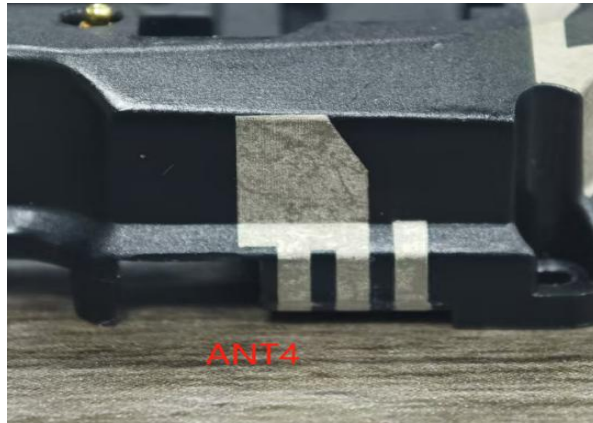
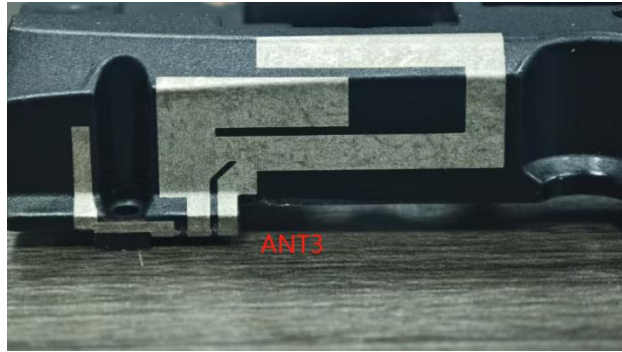


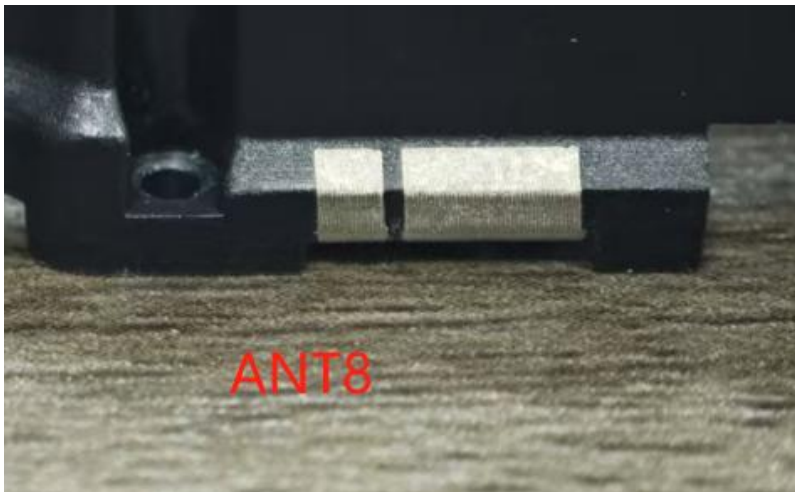
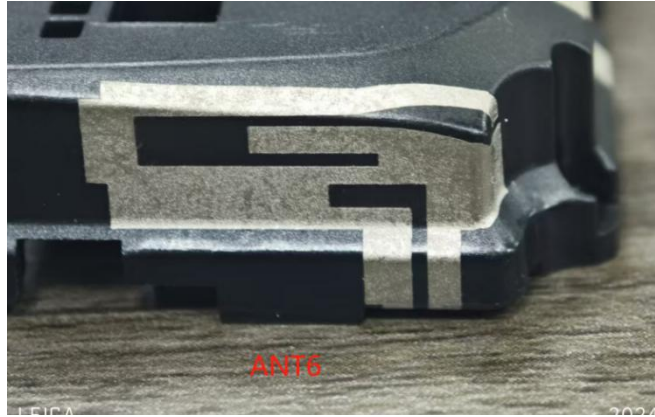
7250MHz

ANNEX B: The EUT Appearance and Test Configuration

B.1 EUT Appearance







B.2 Test Configuration

