OTA TEST REPORT

Applicant Shenzhen General Test System Co., Ltd

ProductRayZone1800

- Issue Date December10,2022

Shenzhen 3Good Wireless CommunicationCo., 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 theRequirements as documented in this report.

Prepared by: RiXinHuang

Approved by: Liao Jian

Shenzhen 3Good Wireless CommunicationCo., Ltd

Room 501-508,jinfulai Building,No.49-1,Dabao Road,Baoan 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 purposesonly. This report is written to support regulatory compliance of applicable standards stated above.

1.2 Test facility

GTS1800Microwave Anechoic Chamber ： testing frequency ranges from 600MHz to 6GHz .

1.3 Testing Location

Company: Shenzhen 3Good Wireless CommunicationCo., Ltd

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

Contact: RiXin Huang

Telephone: 13682667404

E-mail: huangrixin_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	LDS Antenna
Antenna Manufacturer	Shenzhen 3Good Wireless CommunicationCo., 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

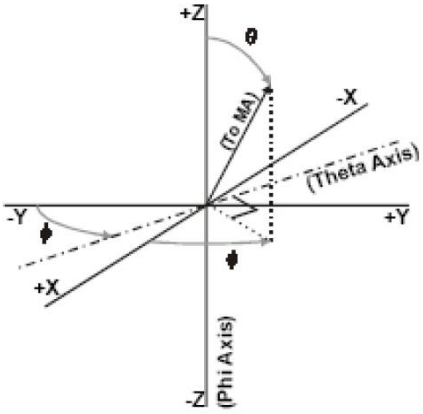
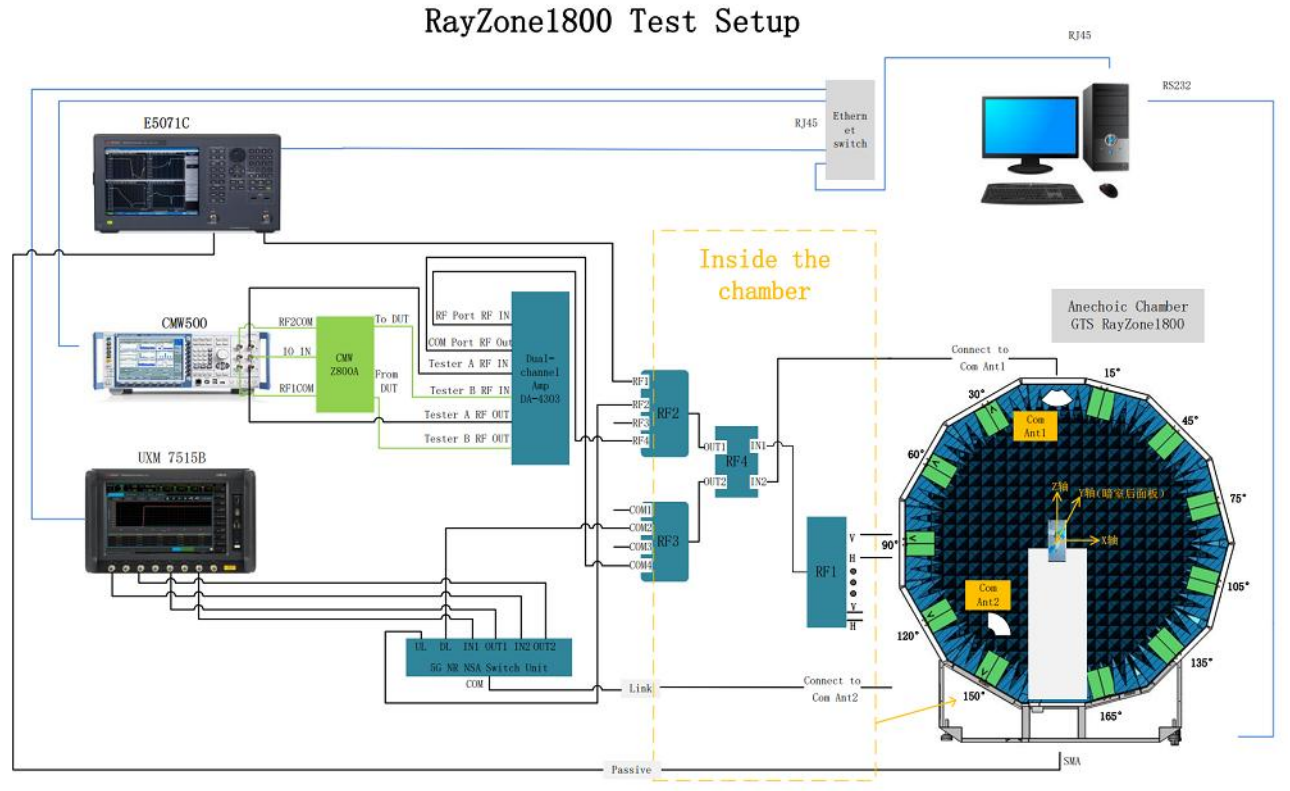


Figure 1 Test coordinate system

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

Test Setup



4. Test Results

4.1 ANT

4.2 Gain and Efficiency

Main Antenna								
Model	**Test State**	**Frequency (MHz)**	**Gain (dBi)**	**Efficiency (%)**	**Frequency (MHz)**	**Gain (dBi)**	**Efficiency (%)**	**Note**
	Free Space	600	-6.98	7.2	1700	-0.78	20.07	
		610	-5.47	9.58	1720	-0.54	21.86	
		620	-4.05	12.1	1740	-0.39	23.97	
		630	-2.45	16.63	1760	-0.11	24.27	
		640	-1.94	19.29	1780	-0.93	22.57	
		650	-1.45	22.23	1800	-1.26	21.16	
		660	-1.63	23.67	1820	-2.38	19.71	
		670	-2.14	23.39	1840	-2.68	17.73	
		680	-2.56	21.9	1860	-2.63	15.74	
		690	-3.04	19.16	1880	-2.24	16.2	
		700	-2.15	23.35	1900	-1.57	18.68	
		710	-2.35	22.79	1920	-1.53	17.48	
		720	-1.73	23.56	1940	-0.56	19.85	
		730	-0.86	24.79	1960	0.43	25.08	
		740	-0.99	21.74	1980	0.48	27.04	
		750	-1.44	17.97	2000	0.76	30.24	
		760	-1.2	18.47	2020	0.95	31.78	
		770	-2.77	13.51	2040	0.72	32.48	
		780	-3.59	12.15	2060	0.37	33.23	
		790	-3.72	12.2	2080	0.95	36.05	
		800	-4.78	9.02	2100	0.02	31.32	
		810	-4.78	7.91	2120	-0.07	29.6	
		820	-2.19	19.56	2300	-2.34	21.42	
		830	-1.23	23.23	2320	-3.57	15.29	
		840	-0.43	26.54	2340	-3.72	15.46	
		850	-0.69	24.44	2360	-3.49	17.76	
		860	-1.11	22.37	2380	-4.03	15.75	
		870	-1.42	19.18	2400	-3.88	14.58	
		880	-1.55	18.19	2420	-3.41	17.25	
		890	-3.96	14.65	2440	-3.45	18.84	
		900	-2.14	20.81	2460	-3.64	19.63	
		910	-3.37	14.96	2480	-2.69	23.28	
		920	-4.06	14.37	2500	-2.08	28.47	
		930	-3.96	14.65	2520	-2.34	26.7	
		940	-2.14	20.81	2540	-2.42	24.58	

		950	-3.37	14.96	2560	-2.09	21.78	
		960	-5.56	10.99	2580	-1.5	21.07	
					2600	-0.25	24.38	
					2620	-0.17	23.11	
					2640	0.02	22.02	
					2660	1.02	27.52	
					2680	1.41	29.83	
					2700	0.27	24.42	

Diversity Antenna								
Model	**Test State**	**Frequency (MHz)**	**Gain (dBi)**	**Efficiency (%)**	**Frequency (MHz)**	**Gain (dBi)**	**Efficiency (%)**	**Note**
	Free Space	600	-10	4.99	1700	0.42	32.05	
		610	-9.28	5.54	1720	0.25	30.26	
		620	-8.24	6.33	1740	0.52	34.69	
		630	-7.66	6.67	1760	0.41	35.96	
		640	-6.58	8.3	1780	-0.17	32.55	
		650	-5.91	9.9	1800	0.09	37.82	
		660	-6.17	10.86	1820	0.33	38.4	
		670	-5.16	14.79	1840	0.84	39.5	
		680	-5.68	13.69	1860	1.87	49.64	
		690	-5.36	14.81	1880	1.53	51.34	
		700	-3.86	19.79	1900	0.88	48.04	
		710	-4.41	16.67	1920	0.34	46.45	
		720	-3.2	23.24	1940	0.7	47.47	
		730	-2.9	24.58	1960	1.03	47.69	
		740	-3.09	21	1980	0.93	44.87	
		750	-2.25	24.62	2000	0.59	40.9	
		760	-2.48	22.85	2020	0.65	38.66	
		770	-3.23	19.46	2040	0.81	38.29	
		780	-2.87	20.84	2060	0.09	29.94	
		790	-3.44	17.95	2080	-1.49	21.22	
		800	-4.03	14.6	2100	-1.54	22.89	
		810	-3.61	15.13	2120	-0.5	26.14	
		820	-2.92	17.42	2140	-0.01	28.02	
		830	-3.84	15.06	2160	0.32	30.9	
		840	-3	19.69	2180	1.42	37.2	
		850	-4.14	15.38	2200	1.13	35.98	
		860	-5.15	12.19	2300	-0.57	33.53	
		870	-4.84	11.92	2320	-0.14	37.27	

		880	-4.96	11.09	2340	-1.14	32.26	
		890	-6.04	8.62	2360	-0.64	34.19	
		900	-5.89	9.5	2380	-0.24	41.13	
		910	-7.11	7.02	2400	-0.36	38.04	
		920	-7.21	6.93	2420	-0.49	33.93	
		930	-6.83	7.91	2440	-0.31	38.49	
		940	-7.51	6.54	2460	-0.53	36.66	
		950	-7.87	6.72	2480	-1.01	31.29	
		960	-7.56	7.19	2500	-0.8	31.35	
					2520	-0.53	33.72	
					2540	-1.06	29.76	
					2560	-0.47	30.51	
					2580	0.02	35.98	
					2600	0.53	39.71	
					2620	-0.83	31.27	
					2640	-1.21	28.16	
					2660	-0.44	34.48	
					2680	-0.49	32.9	
					2700	-1.09	29.89	

GPS/WIFI 2.4G/WIFI 5G/BT								
Model	**Test State**	**Frequency (MHz)**	**Gain (dBi)**	**Efficiency (%)**	**Frequency (MHz)**	**Gain (dBi)**	**Efficiency (%)**	**Note**
		1570	0.25	39.17	5340	2.39	41.02	
		1572	0.34	40.89	5360	2.52	39.73	
		1574	0.38	42.23	5380	2.43	37.89	
		1576	0.3	42.12	5400	2.31	39.19	
		1578	0.07	40.48	5420	3.51	46.45	
		1580	-0.25	38.22	5440	3.75	49.67	
					5460	3.36	44.48	
		2400	1.26	24.08	5480	3.41	45.18	
		2410	1.94	25.8	5500	3.72	46.03	
		2420	2.27	28.82	5520	3.8	44.03	
		2430	1.68	26.16	5540	4.12	45.64	
		2440	2.72	31.39	5560	4.65	46.09	
		2450	2.32	28.28	5580	4.83	48.68	
		2460	2.39	30.52	5600	4.79	48.02	
		2470	3.28	35.07	5620	5.07	51.08	
		2480	2.39	28.76	5640	4.8	47.62	

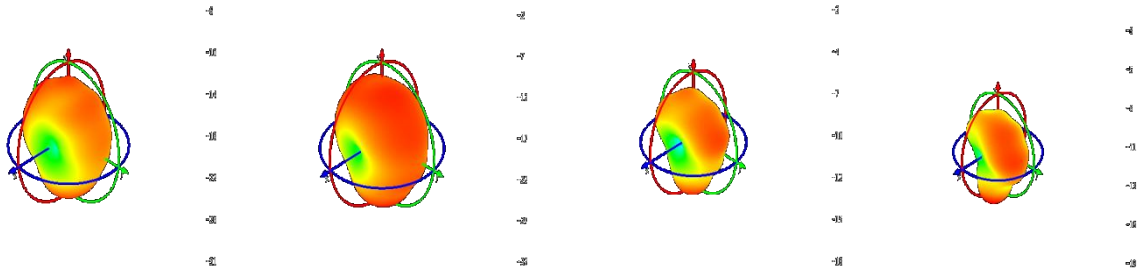
	Free Space	2490	2.98	35.63	5660	5.1	48.58	
		2500	2.02	26.96	5680	5.33	49.21	
					5700	5.15	47.71	
		5100	1.87	35.28	5720	5.83	55.02	
		5120	1.73	33.8	5740	5.08	47.68	
		5140	1.93	33.4	5760	5.23	51.45	
		5160	1.58	32.2	5780	5.21	50.6	
		5180	1.86	34.27	5800	5.07	48.71	
		5200	1.84	32.94	5820	4.71	45.57	
		5220	1.61	32.66	5840	4.33	42.37	
		5240	1.65	32.18	5860	4.44	43.68	
		5260	1.89	33.16	5880	4.66	45	
		5280	1.41	31.47	5900	4.7	44.76	
		5300	1.76	31.69	4920	1.61	39.32	
		5320	2.13	36.79	4940	2.31	47.16	
					4960	1.92	46.11	
					4980	1.24	40.85	
					5000	0.92	40.28	

5. Equipment List

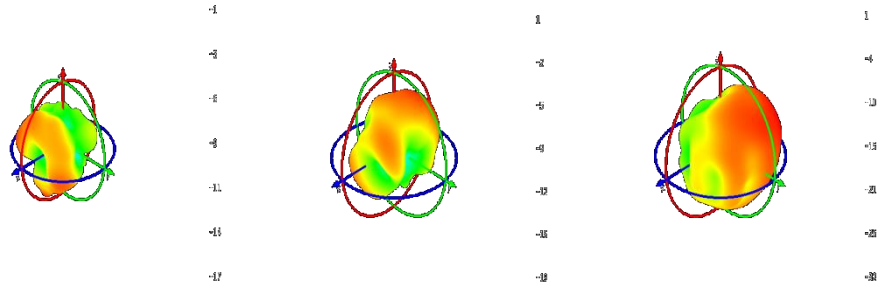
Type of Equipment	Manufacture	Model Number
Network Analyzer	Agilent Technologies	E5071B
Switch control System	GTS	RayZone1800
Software	GTS	MaxSign 100 Patten Measurement software

ANNEX A 3-D Patten Plots

Main Antenna:

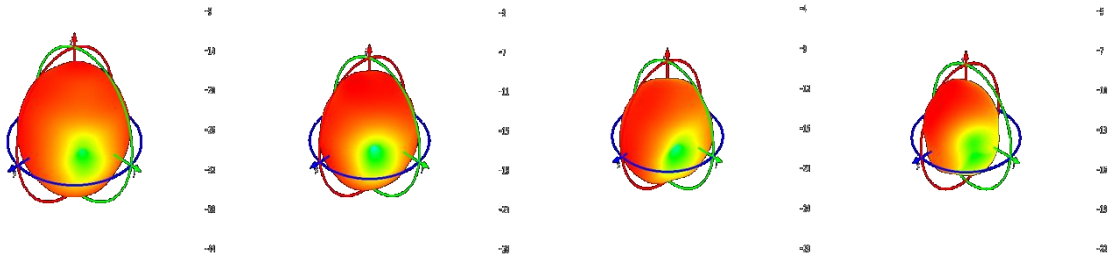


600MHz **700MHz** **800MHz** **900MHz**

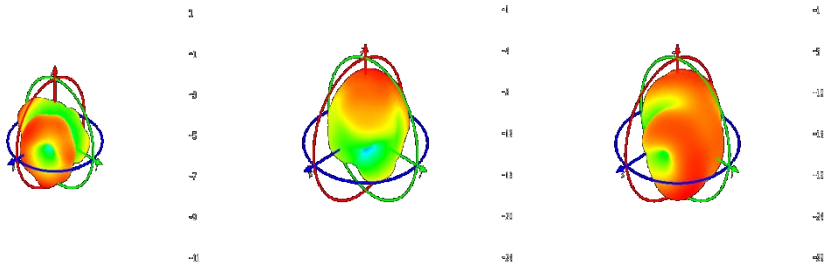


1800MHz2100MHz2700MHz

Diversity Antenna:

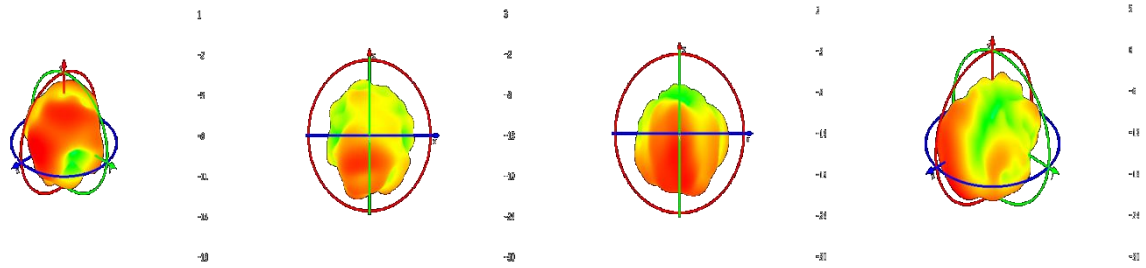


600MHz700MHz800MHz 900MHz



1800MHz2100MHz2700MHz

ANT6:



1575MHz2450MHz 5150MHz 5850MHz

ANNEX B: The EUT Appearance and Test Configuration

B.1 EUT Appearance

B.2 Test Configuration