OTA TEST REPORT(Passive)

Applicant Shenzhen General Test System Co., Ltd

ProductRayZone1800

Issue Date   November 24, 2024.5.16

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 the Requirements as documented in this report.

Prepared by: Songlin Li

Approved by:Pu Xu

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

*GTS1800*Microwave 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,Shenzhe

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Contact:Songlin Li

Telephone:13686856980

E-mail: lsl-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	FPC Antenna
Antenna Manufacturer	Shenzhen 3Good Wireless CommunicationCo., Ltd
Test Frequency	800MHz-2500MHz

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.

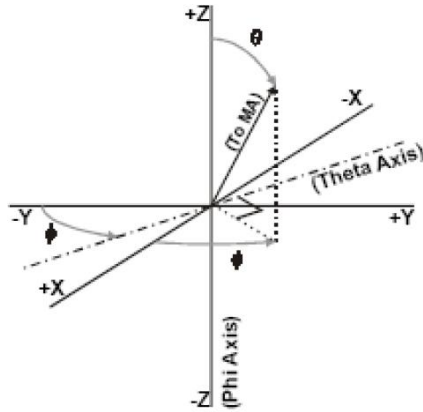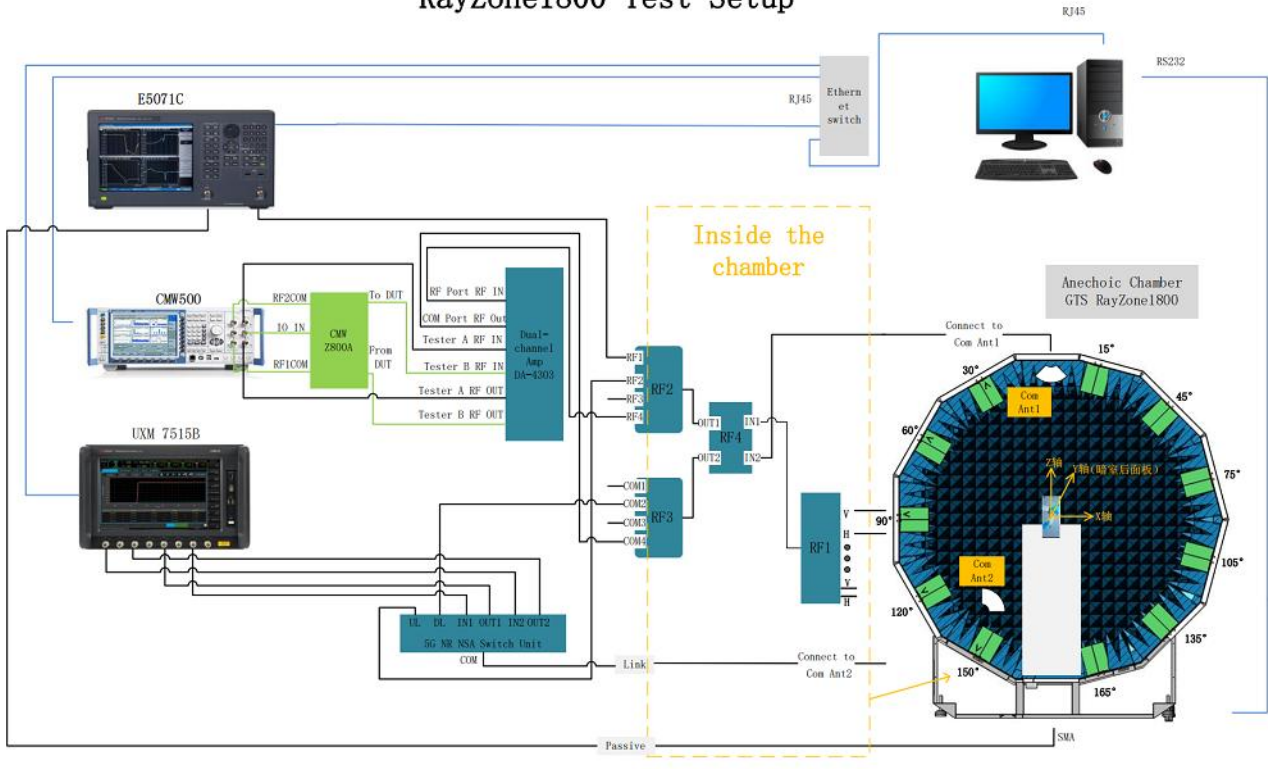## 3.2 Test Measurement

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 Antenna Effi.& Max. Peak Gain

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Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
820	7.35	-11.34	-7.71	1710	29.47	-5.31	-1.47	2210	25.79	-5.89	-1.14
830	6.88	-11.63	-8.21	1720	30.65	-5.14	-1.22	2220	25.55	-5.93	-0.93
840	7.44	-11.29	-7.98	1730	30.23	-5.2	-1.24	2230	25.44	-5.95	-0.85
850	8.35	-10.78	-7.41	1740	29.49	-5.3	-1.41	2240	24.63	-6.08	-0.85
860	10.33	-9.86	-6.29	1750	31.89	-4.96	-1.18	2250	24.29	-6.15	-0.96
870	12.73	-8.95	-5.25	1760	31.97	-4.95	-1.36	2260	24.41	-6.12	-0.97
880	17.05	-7.68	-4.08	1770	32.1	-4.93	-1.51	2270	24.87	-6.04	-0.92
890	20.73	-6.83	-3.19	1780	31.31	-5.04	-1.62	2280	24.94	-6.03	-0.99
900	23.85	-6.23	-2.63	1790	29.76	-5.26	-1.93	2290	24.63	-6.08	-1.03
910	24.74	-6.07	-2.4	1800	29.32	-5.33	-2.03	2300	26.01	-5.85	-0.7
920	25.54	-5.93	-2.34	1810	30.23	-5.2	-1.63	2310	26.97	-5.69	-0.44
930	23.61	-6.27	-2.42	1820	28.91	-5.39	-1.49	2320	28.97	-5.38	-0.02
940	21.1	-6.76	-2.93	1830	29.31	-5.33	-1.12	2330	32.35	-4.9	0.4
950	19.06	-7.2	-3.27	1840	29.31	-5.33	-1.04	2340	36.09	-4.43	0.93
960	17.66	-7.53	-3.58	1850	30.14	-5.21	-0.74	2350	36.84	-4.34	0.94
				1860	32.77	-4.85	-0.25	2360	39.08	-4.08	1.27
				1870	33.5	-4.75	0.01	2370	38.28	-4.17	1.17
				1880	34.07	-4.68	0.19	2380	40.96	-3.88	1.52
				1890	34.63	-4.61	0.25	2390	42.74	-3.69	1.67
				1900	35.83	-4.46	0.35	2400	43.89	-3.58	1.74
				1910	37.18	-4.3	0.43	2410	43.23	-3.64	1.67
				1920	38.7	-4.12	0.46	2420	43.6	-3.61	1.83
				1930	37.55	-4.25	0.07	2430	42.54	-3.71	1.83
				1940	35.5	-4.5	-0.41	2440	43.45	-3.62	1.96
				1950	35.23	-4.53	-0.37	2450	43.64	-3.6	2.08
				1960	33.77	-4.71	-0.33	2460	41.6	-3.81	2.01
				1970	33.41	-4.76	-0.32	2470	39.77	-4	1.88
				1980	33.96	-4.69	-0.25	2480	39.22	-4.07	1.88
				1990	32.74	-4.85	-0.52	2490	39.47	-4.04	1.89
				2000	32.93	-4.82	-0.57	2500	39.64	-4.02	1.82
				2010	31.59	-5	-0.88	2510	38.15	-4.18	1.65
				2020	29.53	-5.3	-1.27	2520	37.31	-4.28	1.56
				2030	29.76	-5.26	-1.32	2530	37.76	-4.23	1.64
				2040	29.14	-5.36	-1.53	2540	36.74	-4.35	1.53
				2050	29.45	-5.31	-1.49	2550	37.88	-4.22	1.75
				2060	31.04	-5.08	-1.35	2560	38.64	-4.13	1.85
				2070	31.89	-4.96	-1.16	2570	39.02	-4.09	1.93
				2080	32.18	-4.92	-1.25	2580	38.08	-4.19	1.86
				2090	33.56	-4.74	-1.06	2590	37.02	-4.32	1.79
				2100	33.79	-4.71	-1.1	2600	37.3	-4.28	1.97
				2110	31.03	-5.08	-1.35	2610	36.89	-4.33	1.97
				2120	29.77	-5.26	-1.54	2620	34.21	-4.66	1.75
				2130	29.73	-5.27	-1.55	2630	33.97	-4.69	1.7
				2140	29.83	-5.25	-1.6	2640	34.91	-4.57	2
				2150	29.14	-5.35	-1.47	2650	34.31	-4.65	1.97
				2160	28.21	-5.5	-1.4	2660	34.34	-4.64	2.26
				2170	28.45	-5.46	-1.19	2670	33.68	-4.73	2.28
				2180	27.93	-5.54	-1.11	2680	33.3	-4.78	2.37
				2190	27.63	-5.59	-1.08	2690	31.82	-4.97	2.27
				2200	27	-5.69	-0.97	2700	30.92	-5.1	2.2

824MHZ-894MHZ			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
800	31.39	-5.03	-0.95
810	26.92	-5.7	-1.48
820	23.47	-6.3	-2.17
830	20.23	-6.94	-2.74
840	17.97	-7.46	-3.24
850	15.84	-8	-3.79
860	14.85	-8.28	-4.12
870	13.86	-8.58	-4.52
880	13.6	-8.67	-4.75
890	13.22	-8.79	-4.94
900	13.31	-8.76	-4.83

703MHZ-803MHZ			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	19.9	-7.01	-3.68
710	24.51	-6.11	-2.67
720	25.37	-5.96	-2.63
730	25.78	-5.89	-2.35
740	28.33	-5.48	-2.05
750	31.13	-5.07	-1.56
760	32.66	-4.86	-1.43
770	27.87	-5.55	-2.09
780	26.34	-5.79	-2.47
790	27.29	-5.64	-1.87
800	30.36	-5.18	-1.02
810	25.53	-5.93	-1.44

617MHZ-698MHZ			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	9.67	-10.15	-6.21
610	10.78	-9.67	-6.06
620	12.14	-9.16	-5.9
630	12.26	-9.11	-5.97
640	9.99	-10	-5.98
650	7.41	-11.3	-6.86
660	10.08	-9.97	-6.83
670	17.09	-7.67	-3.9
680	22.68	-6.44	-2.67
690	26.74	-5.73	-1.88
700	26.04	-5.84	-2.26

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880MHZ-960MHZ				1710MHZ-2700MHZ							
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
880	17.14	-7.66	-4.57	1710	22.01	-6.57	-3.2	2210	17.29	-7.62	-2.15
890	19.07	-7.2	-4.02	1720	24.94	-6.03	-2.86	2220	16.96	-7.71	-2.15
900	21.62	-6.65	-3.67	1730	25.6	-5.92	-2.67	2230	16.91	-7.72	-1.99
910	22.64	-6.45	-3.23	1740	25.34	-5.96	-2.7	2240	16.04	-7.95	-2.17
920	22.75	-6.43	-3.12	1750	26.46	-5.77	-2.43	2250	15.6	-8.07	-2.13
930	21.01	-6.78	-3.41	1760	25.46	-5.94	-2.58	2260	15.26	-8.16	-2.19
940	18.59	-7.31	-4.42	1770	24.3	-6.14	-2.68	2270	15.33	-8.15	-2.05
950	17.27	-7.63	-4.73	1780	21.55	-6.67	-3.09	2280	14.94	-8.26	-2.21
960	15.09	-8.21	-4.76	1790	18.85	-7.25	-3.65	2290	14.29	-8.45	-2.36
				1800	18.02	-7.44	-3.98	2300	14.49	-8.39	-2.33
				1810	18.4	-7.35	-3.74	2310	14.39	-8.42	-2.46
				1820	17.43	-7.59	-3.89	2320	14.61	-8.35	-2.5
				1830	17.87	-7.48	-3.86	2330	15.47	-8.1	-2.42
				1840	17.78	-7.5	-3.8	2340	15.83	-8.01	-2.45
				1850	18.86	-7.24	-3.58	2350	15.68	-8.05	-2.71
				1860	21.68	-6.64	-2.82	2360	15.45	-8.11	-3
				1870	22.91	-6.4	-2.55	2370	14.88	-8.28	-3.35
				1880	23.39	-6.31	-2.31	2380	15.75	-8.03	-3.05
				1890	23.83	-6.23	-2.08	2390	16.93	-7.71	-2.58
				1900	24.71	-6.07	-1.68	2400	17.69	-7.52	-2.39
				1910	25.67	-5.91	-1.27	2410	18.27	-7.38	-2.16
				1920	26.77	-5.72	-0.97	2420	18.7	-7.28	-2.22
				1930	24.55	-6.1	-1.16	2430	18.57	-7.31	-2.4
				1940	22.09	-6.56	-1.57	2440	19.48	-7.1	-2.38
				1950	21.2	-6.74	-1.58	2450	19.86	-7.02	-2.35
				1960	19.41	-7.12	-2	2460	19.09	-7.19	-2.67
				1970	18.02	-7.44	-2.35	2470	18.64	-7.3	-2.75
				1980	17.99	-7.45	-2.52	2480	18.44	-7.34	-2.92
				1990	16.68	-7.78	-2.9	2490	18.71	-7.28	-2.76
				2000	16.64	-7.79	-3.05	2500	18.96	-7.22	-2.91
				2010	15.64	-8.06	-3.39	2510	18.46	-7.34	-3.01
				2020	14.17	-8.49	-3.89	2520	17.94	-7.46	-3.3
				2030	14.03	-8.53	-3.96	2530	18.62	-7.3	-3.16
				2040	13.38	-8.74	-4.11	2540	18.11	-7.42	-3.39
				2050	13.37	-8.74	-4.01	2550	18.99	-7.21	-3.16
				2060	13.93	-8.56	-3.82	2560	19.54	-7.09	-3.05
				2070	14.2	-8.48	-3.7	2570	20.15	-6.96	-3.02
				2080	14.56	-8.37	-3.78	2580	19.97	-7	-3.13
				2090	15.71	-8.04	-3.52	2590	20.23	-6.94	-3.1
				2100	16.28	-7.88	-3.67	2600	20.48	-6.89	-3.1
				2110	16.07	-7.94	-3.75	2610	21.09	-6.76	-2.81
				2120	16.18	-7.91	-3.55	2620	19.91	-7.01	-3.11
				2130	17.21	-7.64	-3.14	2630	19.49	-7.1	-3.08
				2140	17.92	-7.47	-2.76	2640	19.67	-7.06	-3.08
				2150	18.27	-7.38	-2.5	2650	19.56	-7.09	-3.11
				2160	18.19	-7.4	-2.36	2660	18.97	-7.22	-3.2
				2170	19.06	-7.2	-2.05	2670	18.62	-7.3	-3.47
				2180	18.96	-7.22	-2.03	2680	18.79	-7.26	-3.5
				2190	18.94	-7.23	-1.93	2690	17.95	-7.46	-3.71
				2200	18.3	-7.38	-2.01	2700	18.27	-7.38	-3.67

824MHZ-894MHZ			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
800	22.21	-6.53	-3.33
810	20.23	-6.94	-3.48
820	19.4	-7.12	-3.14
830	17.68	-7.53	-3.09
840	16.28	-7.88	-3.54
850	15.07	-8.22	-3.86
860	15.08	-8.22	-4.15
870	15.36	-8.14	-3.91
880	16.21	-7.9	-3.63
890	16.22	-7.9	-3.6
900	16.59	-7.8	-3.61

700MHZ-803MHZ			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	18.33	-7.37	-2.96
710	19.64	-7.07	-2.42
720	17.01	-7.69	-3.23
730	17.28	-7.62	-2.94
740	18.52	-7.32	-3.09
750	19.59	-7.08	-2.87
760	18.66	-7.29	-3.65
770	13.55	-8.68	-4.99
780	11.25	-9.49	-6.15
790	10.44	-9.81	-6.39
800	11.27	-9.48	-5.87
810	9.44	-10.25	-6.22

600MHZ-700MHZ			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	9.89	-10.05	-7.17
610	8.95	-10.48	-7.89
620	8.37	-10.77	-7.62
630	8.09	-10.92	-7.28
640	8.76	-10.57	-7
650	10.99	-9.59	-6.76
660	15.82	-8.01	-4.5
670	21.86	-6.6	-2.53
680	24.06	-6.19	-1.89
690	22.94	-6.39	-2
700	18.55	-7.32	-2.96

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| Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1550	31.51	-5.02	0.7	2400	26.68	-5.74	-0.36	5150	18.78	-7.26	-2.8	5500	27.39	-5.62	-0.92
1555	31.52	-5.01	0.73	2410	27.19	-5.66	-0.15	5160	19.55	-7.09	-2.75	5510	26.7	-5.73	-0.84
1560	31.83	-4.97	0.75	2420	26	-5.85	-0.34	5170	19.66	-7.06	-2.72	5520	25.89	-5.87	-1.3
1565	32.27	-4.91	0.79	2430	26.68	-5.74	-0.12	5180	20.1	-6.97	-2.55	5530	25.8	-5.88	-1.44
1570	32.22	-4.92	0.73	2440	27.13	-5.67	-0.08	5190	20.46	-6.89	-2.44	5540	24.68	-6.08	-1.65
1575	32.05	-4.94	0.64	2450	28.3	-5.48	0.03	5200	21.59	-6.66	-2.28	5550	23.26	-6.33	-1.98
1580	32.01	-4.95	0.54	2460	29.89	-5.24	0.17	5210	23.94	-6.21	-1.71	5560	21.97	-6.58	-2.29
1585	31.93	-4.96	0.39	2470	29.49	-5.3	-0.01	5220	25.2	-5.99	-1.49	5570	21.88	-6.6	-1.96
1590	30.26	-5.19	0.07	2480	30.88	-5.1	0.09	5230	26.69	-5.74	-1.16	5580	21.28	-6.72	-1.91
1595	31.19	-5.06	0.14	2490	33.94	-4.69	0.33	5240	25.93	-5.86	-1.07	5590	20.48	-6.89	-2.08
1600	30.09	-5.22	-0.08	2500	33.59	-4.74	-0.02	5250	25.68	-5.9	-1.24	5600	19.96	-7	-1.99
								5260	26.13	-5.83	-1.28	5610	19.82	-7.03	-1.97
								5270	25.31	-5.97	-1.4	5620	19.82	-7.03	-1.94
								5280	24.93	-6.03	-1.45	5630	20.17	-6.95	-2.14
								5290	25.02	-6.02	-1.44	5640	19.66	-7.06	-2.06
								5300	23.21	-6.34	-1.79	5650	20.78	-6.82	-1.44
								5310	22.6	-6.46	-1.84	5660	21.33	-6.71	-1.38
								5320	23.04	-6.37	-1.84	5670	21.12	-6.75	-1.22
								5330	21.61	-6.65	-1.99	5680	21.22	-6.73	-1.23
								5340	21.34	-6.71	-1.92	5690	22.61	-6.46	-0.87
								5350	21.74	-6.63	-1.85	5700	22.94	-6.39	-0.93
								5360	21.19	-6.74	-2.02	5710	23.31	-6.33	-0.76
								5370	21.48	-6.68	-2.02	5720	23.26	-6.33	-0.77
								5380	21.53	-6.67	-1.84	5730	23.49	-6.29	-0.75
								5390	19.87	-7.02	-2.32	5740	24.02	-6.19	-0.71
								5400	23.45	-6.3	-1.5	5750	24.23	-6.16	-0.66
								5410	24.99	-6.02	-1.27	5760	22.85	-6.41	-0.94
								5420	25.83	-5.88	-1	5770	21.86	-6.6	-0.91
								5430	26.23	-5.81	-0.94	5780	20.4	-6.9	-1.22
								5440	26.57	-5.76	-0.76	5790	19.56	-7.09	-1.37
								5450	26.34	-5.79	-0.85	5800	18.3	-7.37	-1.75
								5460	27.92	-5.54	-0.46	5810	17.62	-7.54	-1.83
								5470	27.55	-5.6	-0.65	5820	17.06	-7.68	-1.74
								5480	28.1	-5.51	-0.68				
								5490	28	-5.53	-0.85				

4.2 **Antenna** radiation pattern
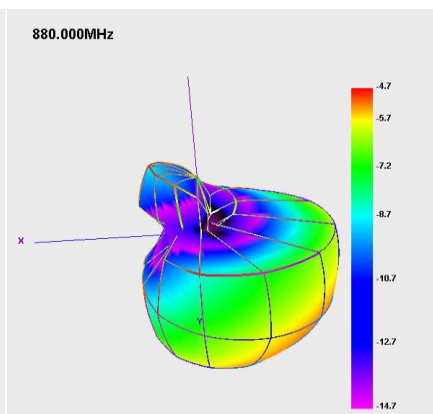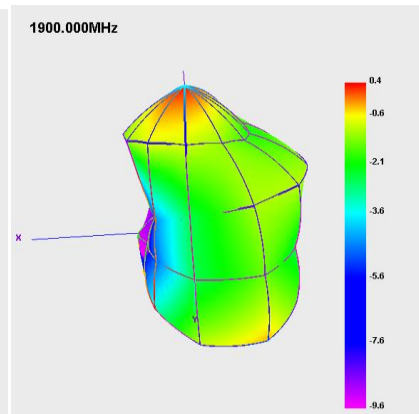
B71(617-698MHZ)
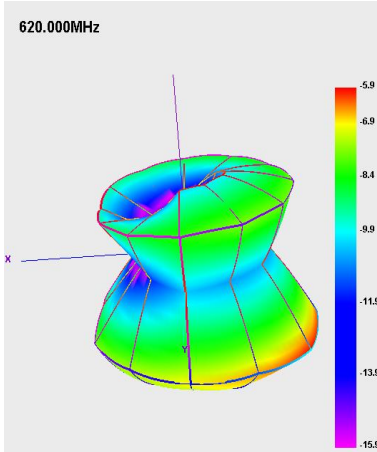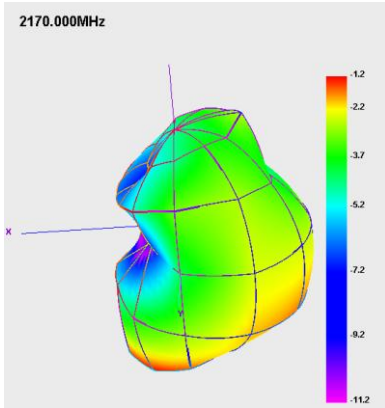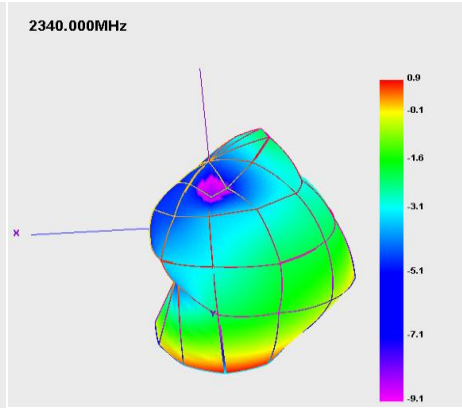
B28(703-803MHZ)
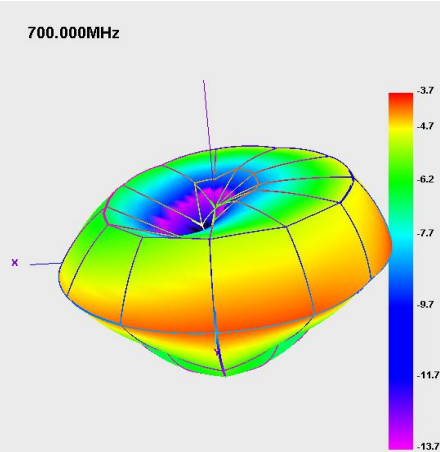
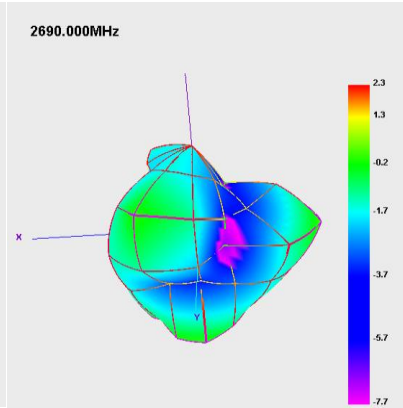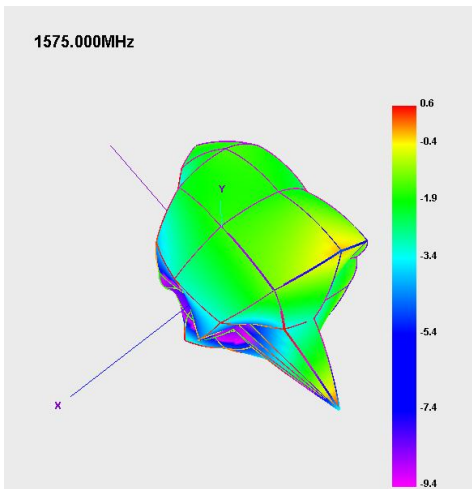B20(791-862MHZ)
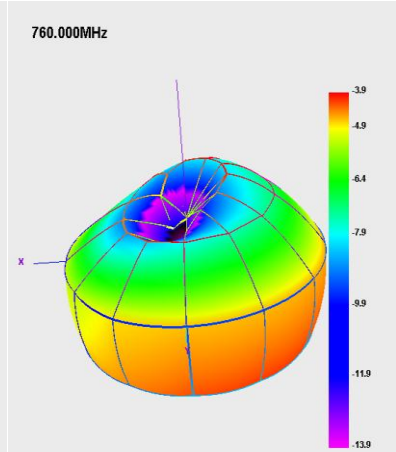
B5(824-894MHZ)
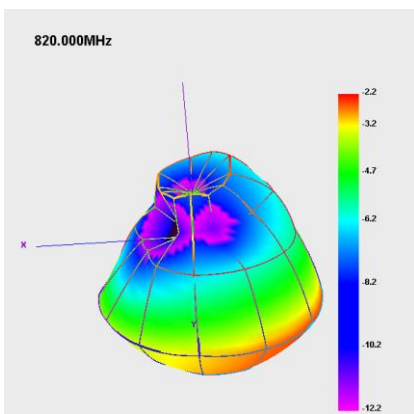
B8(880-960MHZ)

1800(1710-1990)

B1（1920-2710MHZ）

B40(2300-2400MHZ)

B41(2500-2690MHZ)

GPS

WIFI2.4G

BT2.4

WIFI 5G

5350.000MHz
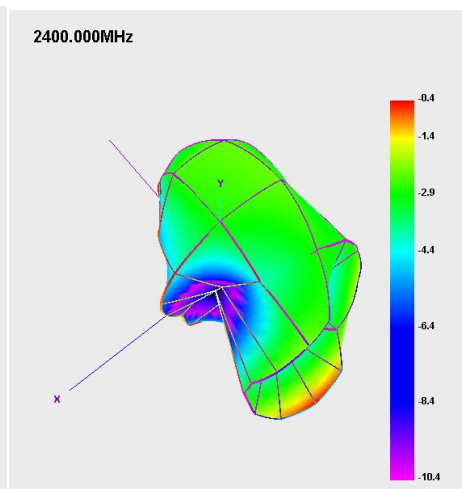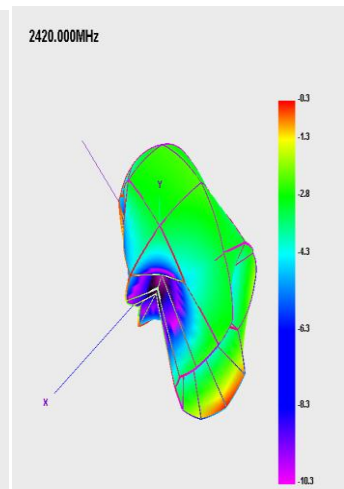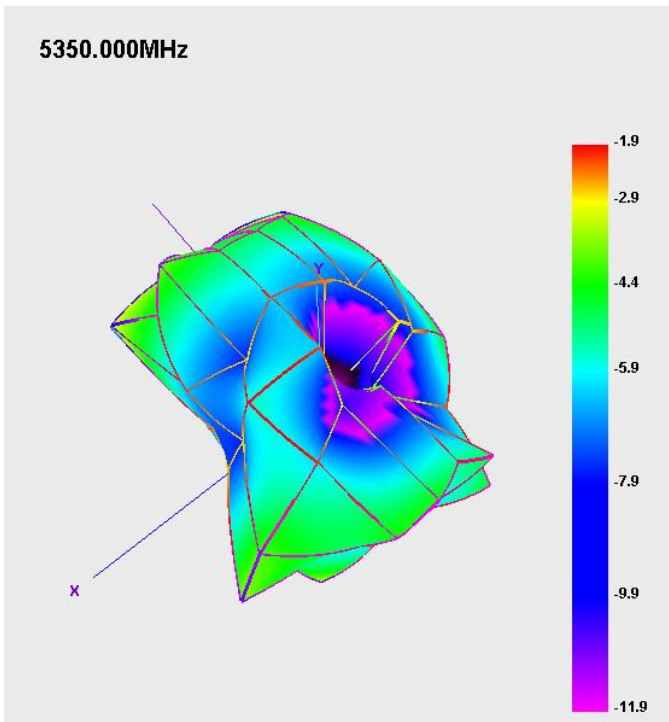
5. Equipment List

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

ANNEX B: The EUT Appearance and Test Configuration

B.1 EUT Appearance