OTA TEST REPORT(Passive)

Applicant： Rhino Mobility LLC

Product： T80

FCC ID： 2AUOUT80

Issue Date： March 15, 2023

Shenzhen 3Good 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: Ning Jiang

Approved by: Wu Chou

Shenzhen 3Good Wireless Communication Co., 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 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: Shenzhen 3Good Wireless Communication Co., Ltd

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

Contact: Ning Jiang

Telephone: 13423911669

E-mail: jn-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 Communication Co., Ltd
Test Frequency	600MHz-2700MHz

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

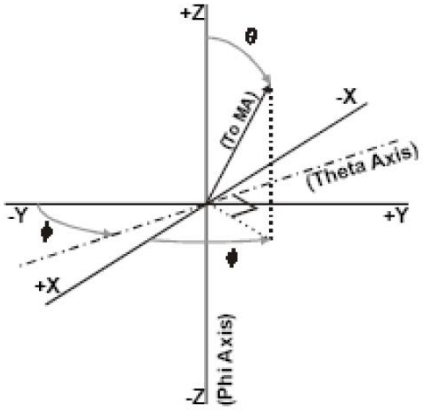
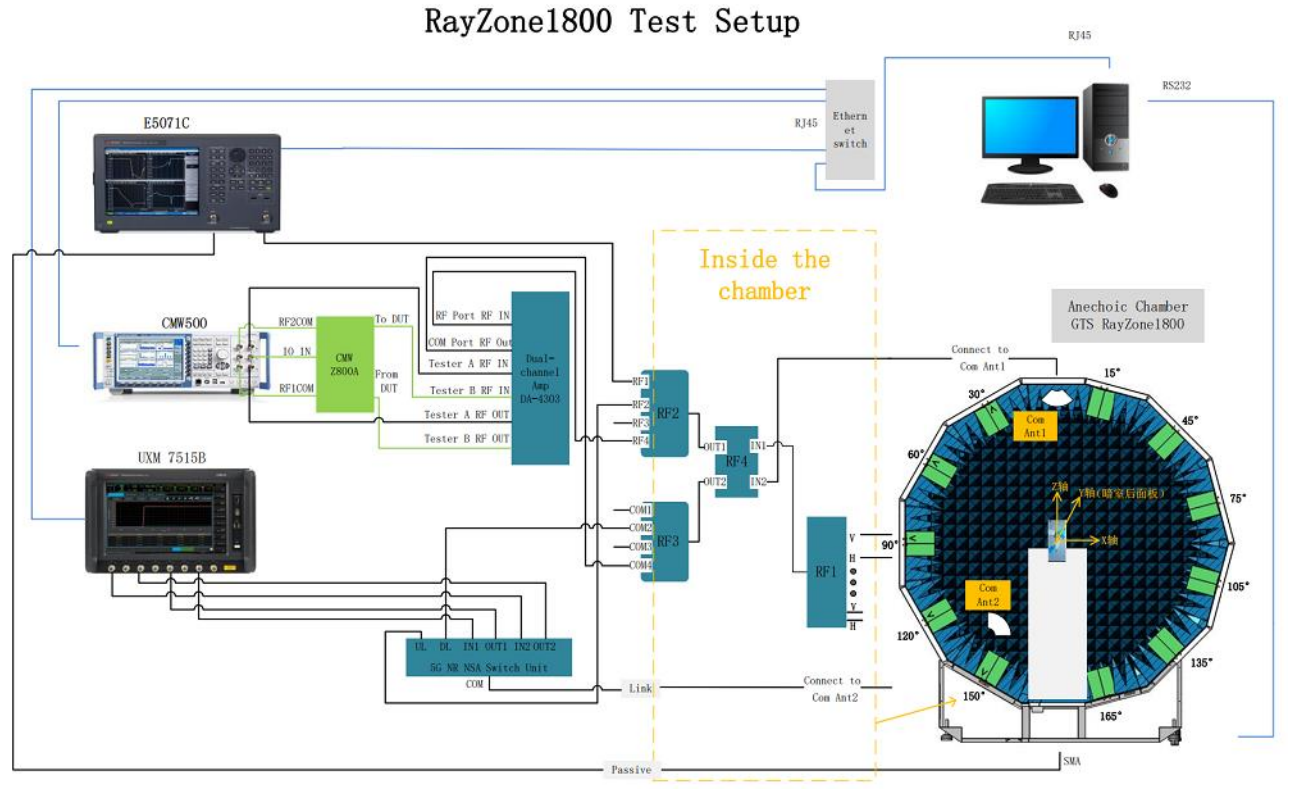


Figure 1 Test coordinate system

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

4.1.1 Main Antenna

Main ANT

WCDMA 1/2/4/5 LTE 1/2/3/4/5/7/18/19/25/26/30/41/66 TX RX

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
820	40.83	-3.89	-0.08
830	42.66	-3.7	0.37
840	42.62	-3.7	0.19
850	41.98	-3.77	0.22
860	42.62	-3.7	-0.18
870	41.5	-3.82	-0.16
880	43.14	-3.65	-0.05
890	44.86	-3.48	-0.17
900	47.46	-3.24	-0.21

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1710	25.55	-5.93	-1.05
1730	34.33	-4.64	0.29
1750	37.32	-4.28	0.67
1770	45.85	-3.39	1.32
1790	50.51	-2.97	1.24
1810	53.95	-2.68	1.2
1830	57.32	-2.42	1.2
1850	59.55	-2.25	1.26
1870	62.1	-2.07	1.49
1890	63.4	-1.98	1.69
1910	66.02	-1.8	1.8
1930	63.29	-1.99	1.45
1950	57.93	-2.37	0.86
1970	52.67	-2.78	0.75
1990	50.88	-2.93	0.82
2010	48.52	-3.14	0.77
2030	40.32	-3.94	0.1
2050	39.16	-4.07	-0.18
2070	40.96	-3.88	0.02
2090	36.11	-4.42	-0.19
2110	31.29	-5.05	-0.61
2130	29.54	-5.3	-0.49
2150	30.03	-5.22	-0.16
2170	29.54	-5.3	-0.05
2310	40.09	-3.97	2.21
2330	42.96	-3.67	2.8
2350	43.19	-3.65	3.02
2370	39.92	-3.99	2.93
2390	41.73	-3.8	3.21
2410	40.53	-3.92	3.05
2430	37.77	-4.23	2.75
2450	39.82	-4	2.73
2470	38.28	-4.17	2.07
2490	39.5	-4.03	1.67
2510	37.68	-4.24	1.15
2530	37.48	-4.26	1.06
2550	38.8	-4.34	0.75
2570	38.41	-4.16	0.69
2590	37.58	-4.25	0.48
2610	39.13	-4.08	0.61
2630	36.97	-4.32	0.52
2650	38.82	-4.11	0.94
2670	39.63	-4.02	1.17
2690	38.65	-4.13	1.17

B20 TX /RX

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
790	33.99	-4.69	-0.63
800	43.59	-3.61	0.22
810	41.35	-3.83	-0.16
820	39.41	-4.04	-0.35
830	33.9	-4.7	-0.86
840	31.21	-5.06	-1.46
850	29.06	-5.37	-1.67
860	29.29	-5.33	-1.99
870	28.51	-5.45	-1.97

B12/17 TX RX

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
700	22.61	-6.46	-1.9
710	31.84	-4.97	-0.72
720	32.9	-4.83	-1.05
730	33.11	-4.8	-1.09
740	34.12	-4.67	-1.22
750	32.31	-4.91	-1.33
760	30.74	-5.12	-1.16
770	23.6	-6.27	-2.57
780	21.8	-6.62	-2.89
790	20.8	-6.82	-3.38
800	23.18	-6.35	-2.82
810	19.63	-7.07	-3.66

B71 TX RX

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	14.26	-8.46	-5.22
610	16.84	-7.74	-3.94
620	20.56	-6.87	-3.04
630	22.98	-6.39	-2.6
640	22.69	-6.44	-1.94
650	23.7	-6.25	-1.55
660	24.36	-6.13	-1.11
670	22.86	-6.41	-3.21
680	20.05	-6.98	-4.12
690	18.66	-7.29	-4.67
700	17.74	-7.51	-5.33

4.1.2 DIV Antenna

DIV ANT

LB

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
600	2.62	-15.82	-12.41
610	2.77	-15.58	-12.04
620	3.43	-14.64	-10.86
630	4.37	-13.6	-9.91
640	4.87	-13.12	-8.86
650	4.86	-13.14	-8.56
660	5.96	-12.25	-7.72
670	7.17	-11.44	-6.63
680	7.86	-11.05	-5.86
690	8.03	-10.95	-5.98
700	7.91	-11.02	-6.28
710	8.79	-10.56	-5.76
720	7.87	-11.04	-6.39
730	7.82	-11.07	-6.25
740	7.75	-11.11	-6.67
750	9.33	-10.3	-5.74
760	10.63	-9.73	-5.58
770	10.44	-9.81	-5.42
780	11.39	-9.43	-5.31
790	14.31	-8.44	-4.1
800	20.55	-6.87	-2.84
810	23.4	-6.31	-2.39
820	24.41	-6.12	-2.36
830	23.29	-6.33	-2.53
840	20.69	-6.84	-3.01
850	17.91	-7.47	-3.54
860	15.02	-8.23	-4.27
870	12.27	-9.11	-5.08
880	9.22	-10.35	-6.37
890	7.47	-11.27	-7.3
900	5.47	-12.62	-8.82
910	4.31	-13.66	-10.17
920	3.42	-14.66	-11.57
930	2.69	-15.7	-12.91
940	2.16	-16.66	-13.19
950	1.9	-17.22	-12.79
960	1.6	-17.96	-12.81

MHB

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1710	19.43	-7.12	-2.69
1730	23.79	-6.24	-1.84
1750	25.05	-6.01	-1.47
1770	28.89	-5.39	-0.48
1790	28.15	-5.51	-0.27
1810	27.91	-5.54	-0.05
1830	28.66	-5.43	0.07
1850	29.04	-5.37	0.17
1870	29.8	-5.26	0.43
1890	31.49	-5.02	0.85
1910	33.51	-4.75	1.32
1930	35.99	-4.44	1.61
1950	37.16	-4.3	1.59
1970	40.2	-3.96	1.74
1990	42.05	-3.76	1.75
2010	43.85	-3.58	1.73
2030	45.09	-3.46	1.66
2050	45.78	-3.39	1.74
2070	43.08	-3.66	1.53
2090	40.6	-3.91	1.43
2110	33.74	-4.72	0.6
2130	35.52	-4.5	0.51
2150	37.04	-4.31	0.77
2170	36.05	-4.43	0.78
2310	40.83	-3.89	0.44
2330	44.24	-3.54	0.68
2350	45.07	-3.46	0.82
2370	42.5	-3.72	0.68
2390	44.8	-3.49	1.05
2410	45.23	-3.45	1.17
2430	44.83	-3.48	0.95
2450	47.87	-3.2	1.15
2470	47.15	-3.26	0.76
2490	50.55	-2.96	0.93
2510	50.26	-2.99	0.86
2530	50.56	-2.96	0.95
2550	50.05	-3.01	0.93
2570	49.89	-3.02	0.97
2590	46.06	-3.37	0.62
2610	46.08	-3.36	0.82
2630	42.26	-3.74	0.68
2650	43.18	-3.65	0.94
2670	42.87	-3.68	0.99
2690	40.6	-3.92	0.76

4.1.3 G/W/B Antenna

G/W/B Ant

GPS

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
1550	38.7	-4.12	0.27
1555	39.85	-4	0.46
1560	41.9	-3.78	0.77
1565	41.29	-3.84	0.7
1570	42.88	-3.68	0.84
1575	43.31	-3.63	0.94
1580	44.67	-3.5	1.07
1585	45.31	-3.44	1.11
1590	45.94	-3.38	1.12
1595	48.27	-3.16	1.28
1600	47.58	-3.23	1.17

2.4G WIFI_TX RX

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	33.26	-4.78	2.26
2410	33.05	-4.81	2.22
2420	31.67	-4.99	1.87
2430	31.15	-5.07	1.91
2440	32.75	-4.85	2.2
2450	33.66	-4.73	2.48
2460	34.1	-4.67	2.68
2470	33.78	-4.71	2.76
2480	35.08	-4.55	2.93
2490	37.68	-4.24	3.28
2500	39.81	-4	3.42

5G_WIFI_TX/RX

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
5150	26.35	-5.79	-0.89
5160	25.91	-5.87	-0.93
5170	25.69	-5.9	-0.96
5180	25.34	-5.96	-1.4
5190	25.43	-5.95	-1.44
5200	25.47	-5.94	-1.54
5210	25.82	-5.88	-1.69
5220	25.32	-5.97	-2
5230	25.67	-5.91	-1.82
5240	24.77	-6.06	-2.06
5250	24.11	-6.18	-1.98
5260	24.51	-6.11	-1.73
5270	23.49	-6.29	-1.79
5280	23.26	-6.33	-1.69
5290	23.77	-6.24	-1.76
5300	22.16	-6.54	-1.86
5310	22.1	-6.56	-1.83
5320	22.64	-6.45	-1.88
5330	21.93	-6.59	-2.06
5340	22.58	-6.46	-1.87
5350	23.41	-6.31	-1.47
5360	22.96	-6.39	-1.63
5370	22.81	-6.42	-1.7
5380	22.61	-6.46	-1.58
5390	21.35	-6.71	-1.71
5400	25.4	-5.95	-0.88
5410	26.27	-5.81	-0.59
5420	26.08	-5.84	-0.42
5430	26.02	-5.85	-0.54
5440	25.6	-5.92	-0.51
5450	25.9	-5.87	-0.6
5460	26.36	-5.79	-0.61
5470	25.89	-5.87	-0.62
5480	25.83	-5.88	-0.6
5490	24.99	-6.02	-0.7
5500	24.66	-6.08	-0.75

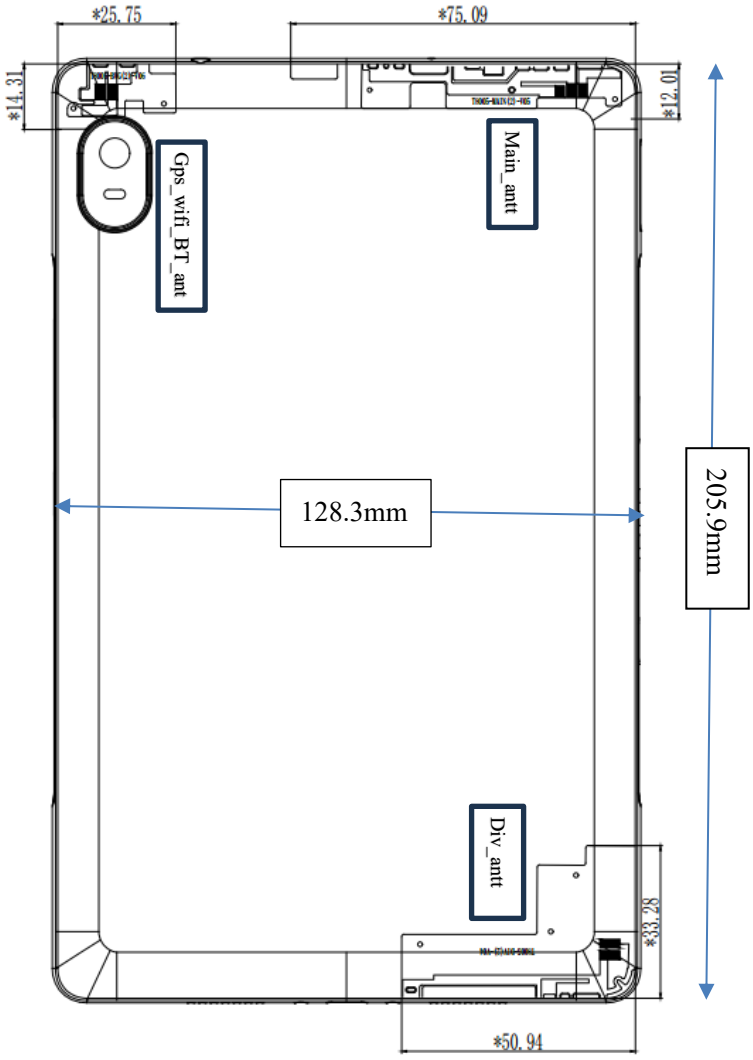
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
5510	24.21	-6.16	-0.68
5520	25.43	-5.95	-0.54
5530	25.93	-5.86	-0.43
5540	25.16	-5.99	-0.64
5550	24.47	-6.11	-0.93
5560	24.13	-6.18	-0.95
5570	25.23	-5.98	-1
5580	25.76	-5.89	-0.81
5590	24.97	-6.03	-1.08
5600	24.63	-6.09	-1.15
5610	25.37	-5.96	-0.77
5620	25.54	-5.93	-0.77
5630	25.56	-5.92	-0.52
5640	25.8	-5.88	-0.45
5650	26.62	-5.75	-0.53
5660	27.98	-5.53	-0.24
5670	27.93	-5.54	-0.18
5680	28.94	-5.38	0.16
5690	30.68	-5.13	0.42
5700	30.12	-5.21	0.38
5710	29.02	-5.37	0.14
5720	28.73	-5.42	0.15
5730	30.84	-5.11	0.57
5740	30.99	-5.09	0.57
5750	30.36	-5.18	0.67
5760	28.27	-5.49	0.68
5770	28.59	-5.44	0.45
5780	28.43	-5.46	0.35
5790	28.27	-5.49	0.56
5800	27.81	-5.56	0.46
5810	27.56	-5.6	0.38
5820	28.12	-5.51	0.59
5830	28.3	-5.48	0.42
5840	29.25	-5.34	0.52
5850	31.81	-4.97	1.06

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



Back view

B.2 Test Configuration

Please refer to antenna setup photo.