

OTA TEST REPORT

Applicant Shenzhen General Test System Co., Ltd

Product RayZone1800

Issue Date August 11, 2023

Shenzhen Fu Bang Wireless Technology 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: Lunkang Yan

Approved by: Siwen Lv

Shenzhen Fu Bang Wireless Technology Co., Ltd.

Room 302, lianjian Industry Part, Huarong road, Longhua District, Shenzhen, P.R. China

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 Fu Bang Wireless Technology Co., Ltd

Address: Room 302, Lianjian Industry Part, Huarong road, Longhua District,
Shenzhen, P.R. China

Contact: lunkang Yan

Telephone: 13760182610

E-mail: 646363118@qq.com

1.4 Laboratory Environment

Temperature	Min.= 19°C, Max.=25°C	
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	620MHz-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

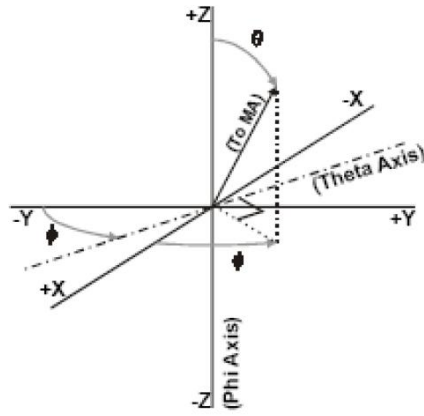
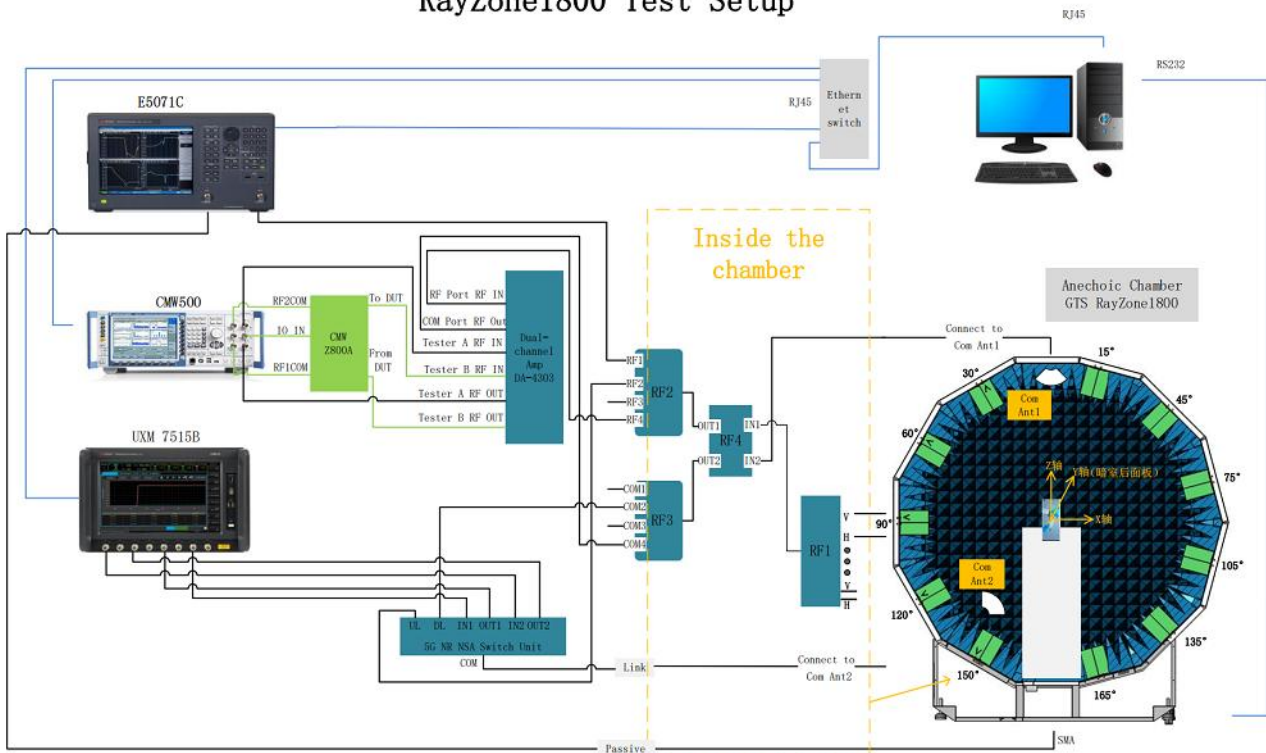


Figure 1 Test coordinate system

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



OTA Test Report

Model	Test State	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Note
	Free Space	620	13.3	-5.7	1700	26.3	-1.5	
		630	14.3	-5.0	1720	27.7	-1.2	
		640	15.7	-4.9	1740	31.1	-1.0	
		650	16.5	-4.6	1760	33.5	-0.4	
		660	17.5	-4.2	1780	34.2	-0.5	
		670	17.3	-3.9	1800	33.9	-0.8	
		680	17.6	-4.0	1820	34.0	-0.8	
		690	17.6	-4.1	1840	33.6	-1.0	
		700	18.1	-3.9	1860	33.3	-0.9	
		710	17.8	-3.9	1880	32.2	-1.3	
		720	17.3	-4.0	1900	32.4	-1.3	
		730	16.3	-4.3	1920	35.1	-1.1	
		740	15.2	-4.7	1940	37.0	-1.0	
		750	14.0	-5.0	1960	38.3	-1.0	
					1980	40.5	-0.9	
		820	21.4	-2.7	2000	40.2	-0.8	
		830	22.0	-2.7	2020	40.3	-0.6	
		840	21.9	-2.8	2040	40.7	-0.5	
		850	21.2	-3.2	2060	38.9	-0.7	
		860	20.2	-3.3	2080	35.9	-0.9	
		870	18.8	-3.7	2100	33.2	-1.2	
		880	17.0	-4.3	2120	31.3	-1.3	
		890	15.2	-5.0	2140	31.2	-1.1	
		900	13.2	-5.9	2160	30.9	-1.0	
				-	2180	29.3	-1.0	
		880	20.7	-3.2	2200	27.9	-1.3	
		890	21.4	-3.1	2300	17.7	-4.7	
		900	20.6	-3.2	2320	21.3	-3.7	
		910	18.9	-3.7	2340	21.5	-3.5	
		920	16.8	-4.3	2360	22.5	-2.8	
		930	14.9	-4.8	2380	22.1	-2.5	
		940	13.1	-5.4	2400	24.1	-2.0	
		950	11.3	-6.1	2500	32.4	0.0	
		960	9.9	-6.9	2520	33.7	0.2	
				2540	32.4	0.0		
				2560	31.6	-0.1		
				2580	29.9	-0.5		
				2600	27.0	-2.2		
				2620	28.3	-2.1		
				2640	28.5	-2.4		
				2660	26.9	-1.1		

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OTA Test Report

					2680	25.6	-1.3	
					2700	24.7	-1.8	

Model	Test State	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Note
	Free Space	2500	35.4	1.4	3990	37.6	0.5	
		2520	36.9	1.6	4020	37.7	0.7	
		2540	38.0	1.7	4050	37.8	1.2	
		2560	38.9	1.9	4080	37.3	1.5	
		2580	39.0	2.0	4110	33.5	1.1	
		2600	38.9	2.1	4140	33.6	0.3	
		2620	38.7	2.2	4170	33.9	-0.6	
		2640	37.8	2.2	4200	33.9	-0.4	
		2660	36.3	2.1	4410	33.3	0.9	
		2680	36.0	2.1	4440	29.4	0.8	
		2700	35.7	2.3	4470	27.2	0.9	
		3300	22.3	-2.2	4500	27.6	1.1	
		3330	23.6	-1.9	4530	30.2	1.4	
		3360	26.0	-1.5	4560	36.5	1.9	
		3390	29.4	-1.4	4590	38.9	2.0	
		3420	32.8	-1.3	4620	41.4	2.1	
		3450	36.6	-0.8	4650	42.3	1.9	
		3480	39.8	-0.8	4680	42.2	1.8	
		3510	37.9	-1.1	4710	43.1	1.6	
		3540	37.1	-1.1	4740	40.6	1.1	
		3570	37.4	-0.9	4770	38.5	1.0	
		3600	36.8	-1.2	4800	36.9	1.0	
		3630	38.6	-0.6	4830	37.4	1.2	
		3660	38.5	-0.3	4860	39.5	1.7	
		3690	38.0	-0.1	4890	39.9	1.8	
		3720	36.3	-0.1	4920	38.4	1.6	
		3750	34.2	-0.2	4950	36.2	1.1	
		3780	31.5	-0.6	4980	39.5	0.9	
		3810	30.2	-0.6	5000	40.5	1.7	
		3840	29.0	-0.7				
		3870	30.0	-1.1				
		3900	34.1	-0.6				
		3930	37.9	0.0				
		3960	38.0	-0.1				

BT/WIFI ANT

Model	Test State	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Frequency (MHz)	Efficiency (%)	Gain (dBi)	Note
	Free Space	1550	40.7	-0.7	5100	22.5	-5	
		1560	39.6	-0.8	5130	23.0	-5	
		1570	38.9	-0.7	5160	24.4	-4.1	
		1580	37.7	-0.8	5190	23.2	-4.6	
		1590	38.2	-0.9	5220	22.1	-4.9	
		1600	37.4	-0.9	5250	21.6	-5.1	
		1610	36.1	-1.1	5280	22.3	-5.1	
		1620	34.5	-1.4	5310	21.0	-5.8	
		1630	33.6	-1.5	5340	22.0	-5.7	
		1640	32.5	-1.5	5370	23.7	-5.2	
		1650	31.4	-1.7	5400	25.1	-4.9	
					5430	28.2	-4.8	
		2400	27.2	-4.3	5460	24.7	-5.5	
		2410	26.6	-4.3	5490	21.3	-5.3	
		2420	25.9	-4.4	5520	22.8	-5.5	
		2430	25.5	-4.5	5550	23.8	-5.1	
		2440	25.6	-4.6	5580	21.0	-5.2	
		2450	25.8	-3.7	5610	21.4	-5.9	
		2460	25.6	-4.5	5640	20.4	-5.4	
		2470	26.2	-4.5	5670	18.5	-5.2	
		2480	26.7	-4.5	5700	18.2	-6.6	
		2490	27.2	-4.5	5730	18.0	-6.5	
		2500	26.8	-4.6	5760	17.5	-6.6	
					5790	17.4	-6.7	
					5800	17.0	-6.1	

5. Equipment List

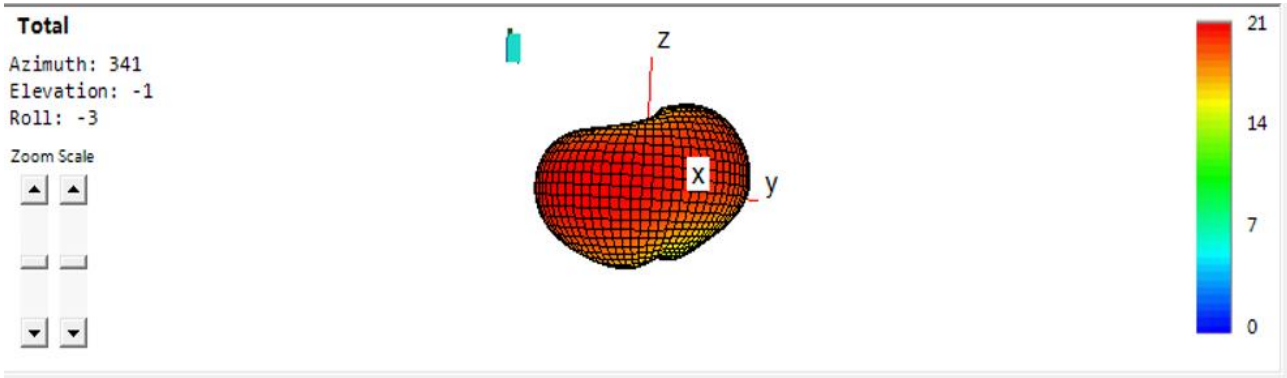
Type of Equipment	Manufacture	Model Number
Network Analyzer	Key sight	E5071C



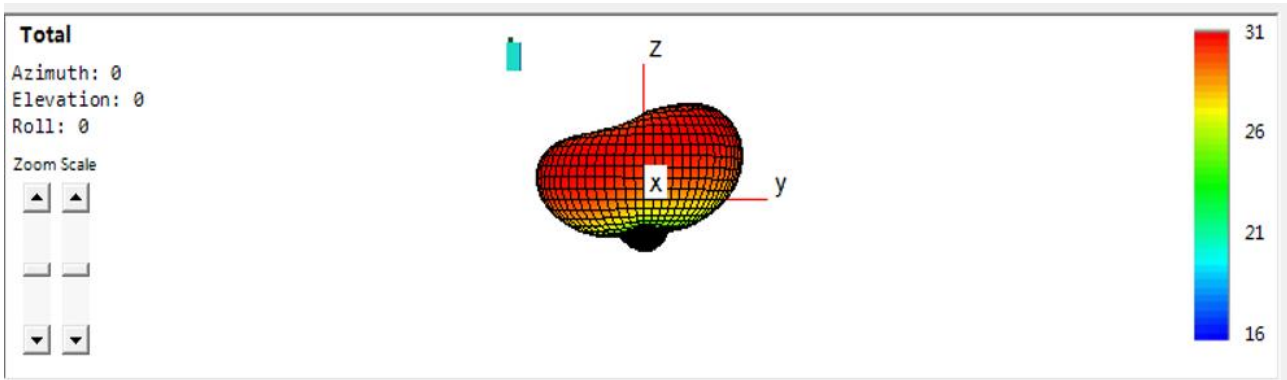
Switch control System	GTS	RayZone1800
Software	GTS	MaxSign 100 Patten Measurement software

ANNEX A 3-D Patten Plots

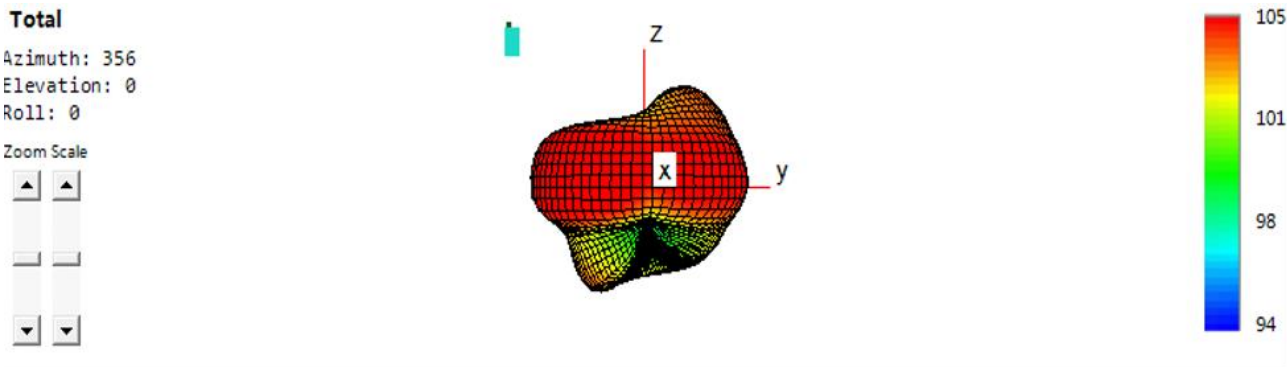
700MHz



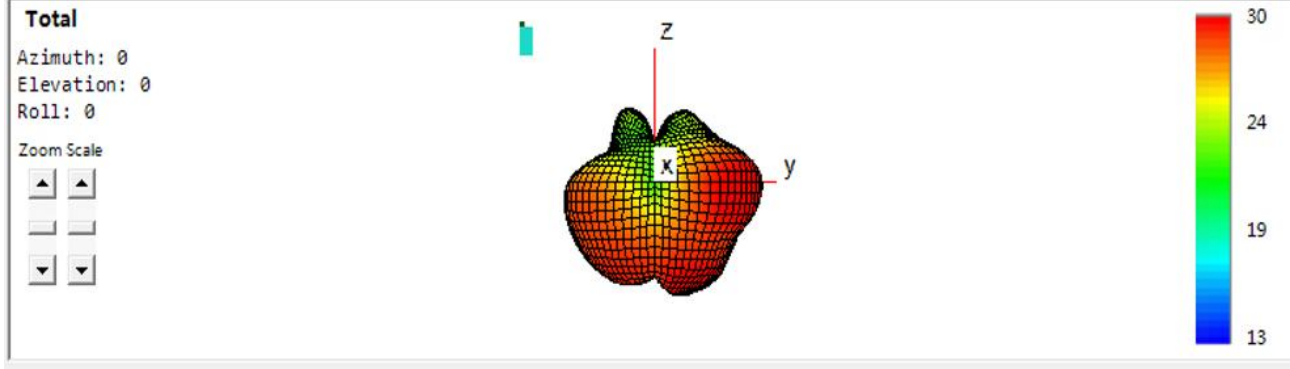
850MHz



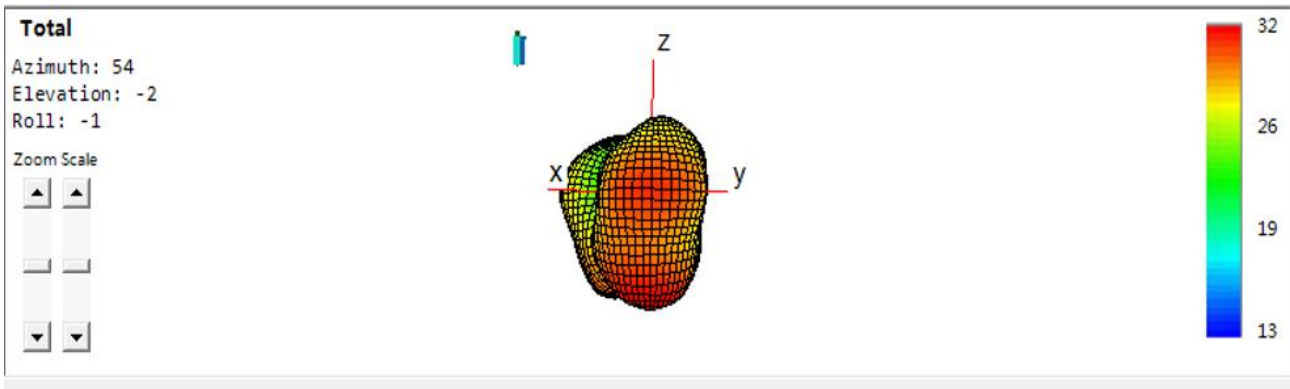
900MHz



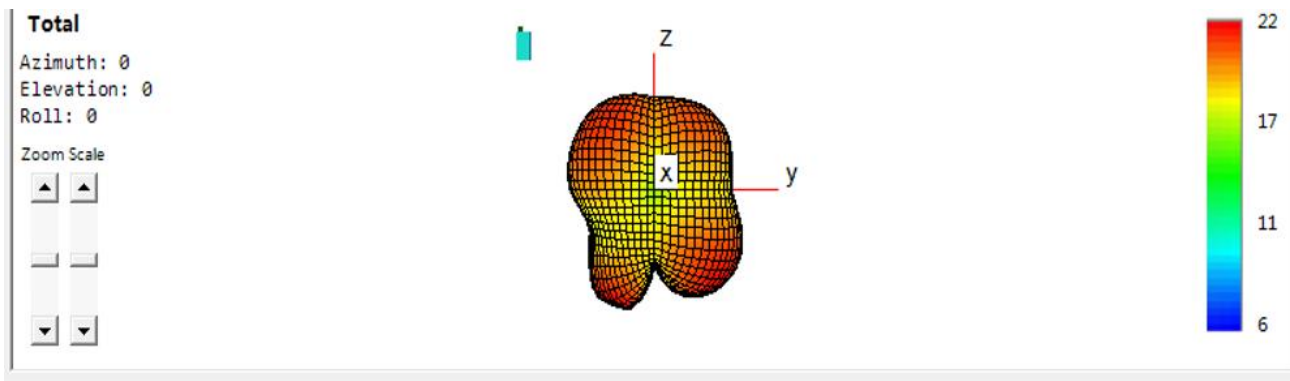
1800MHz



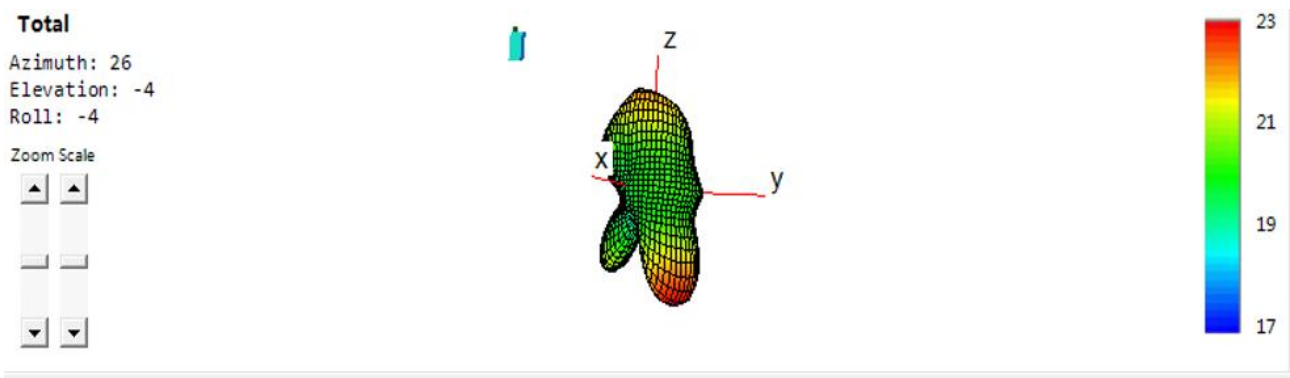
1900MHz



2100MHz



2300MHz

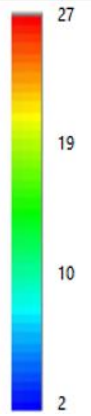
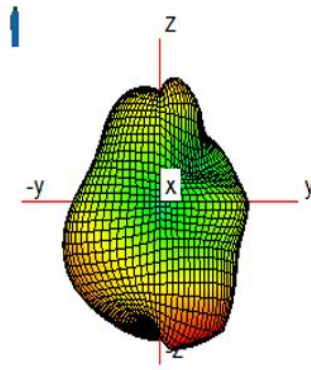


2700MHz

Total

Azimuth: 0
Elevation: 0
Roll: 0

Zoom Scale

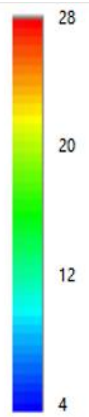
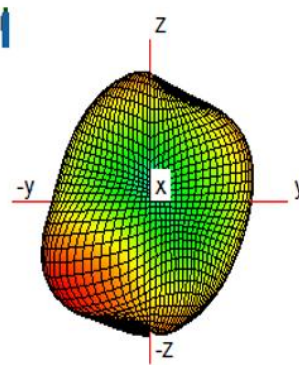


3300MHz

Total

Azimuth: 0
Elevation: 0
Roll: 0

Zoom Scale

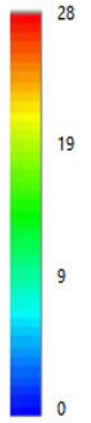
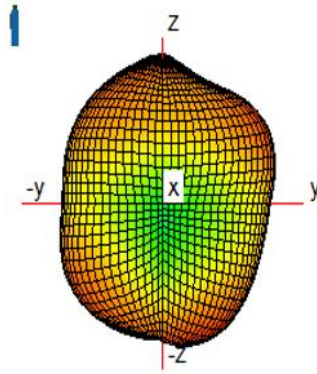
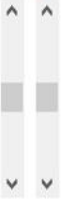


4200MHz

Total

Azimuth: 0
Elevation: 0
Roll: 0

Zoom Scale

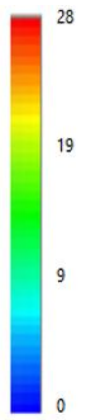
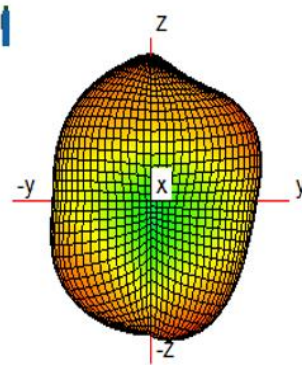


5000MHz

Total

Azimuth: 0
Elevation: 0
Roll: 0

Zoom Scale

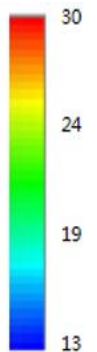
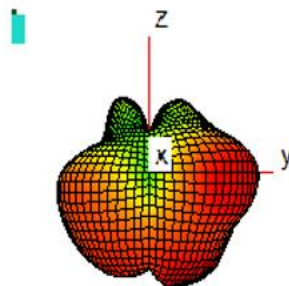


1575MHz

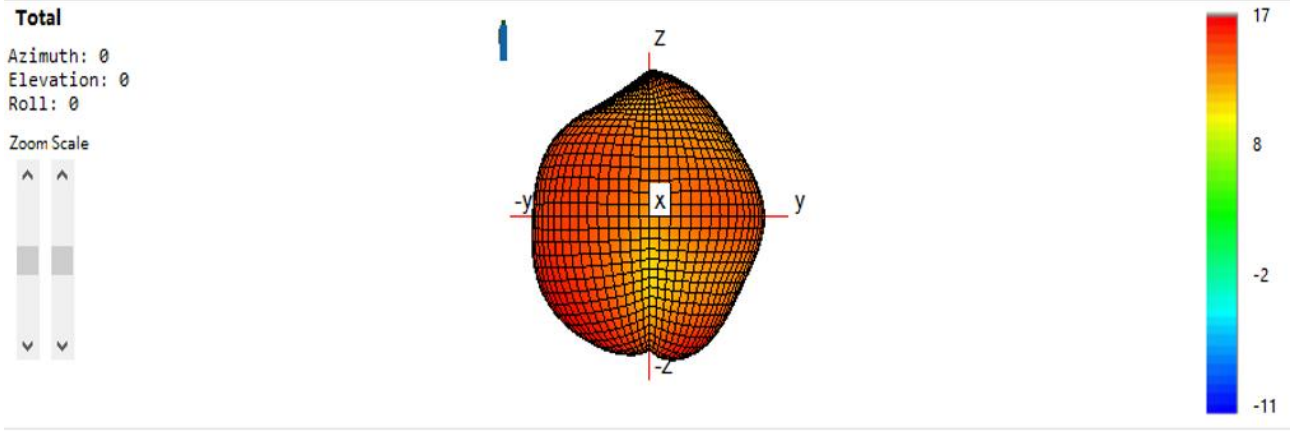
Total

Azimuth: 0
Elevation: 0
Roll: 0

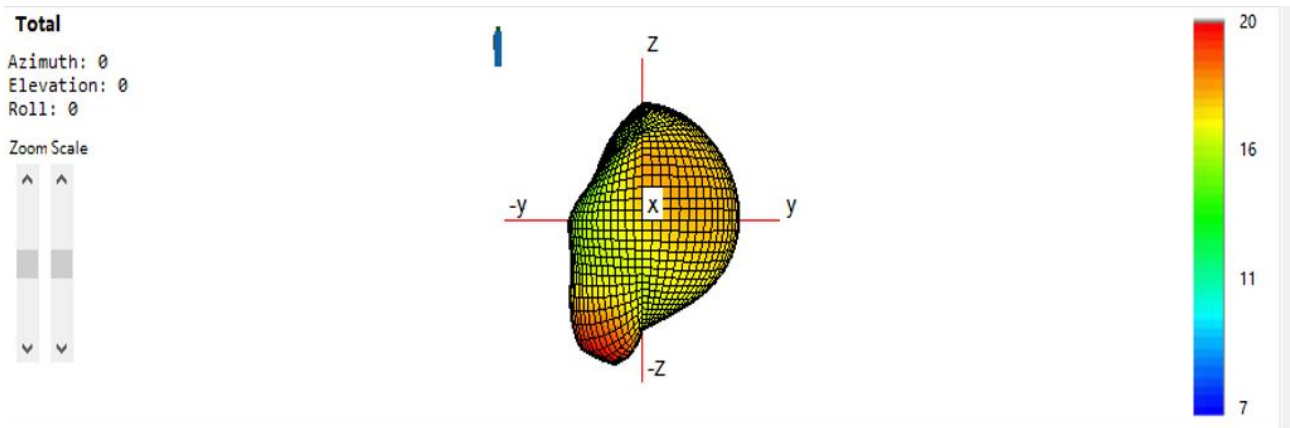
Zoom Scale



2400MHz



5100MHz



ANNEX B: The EUT Appearance and Test Configuration

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6. NFC Antenna

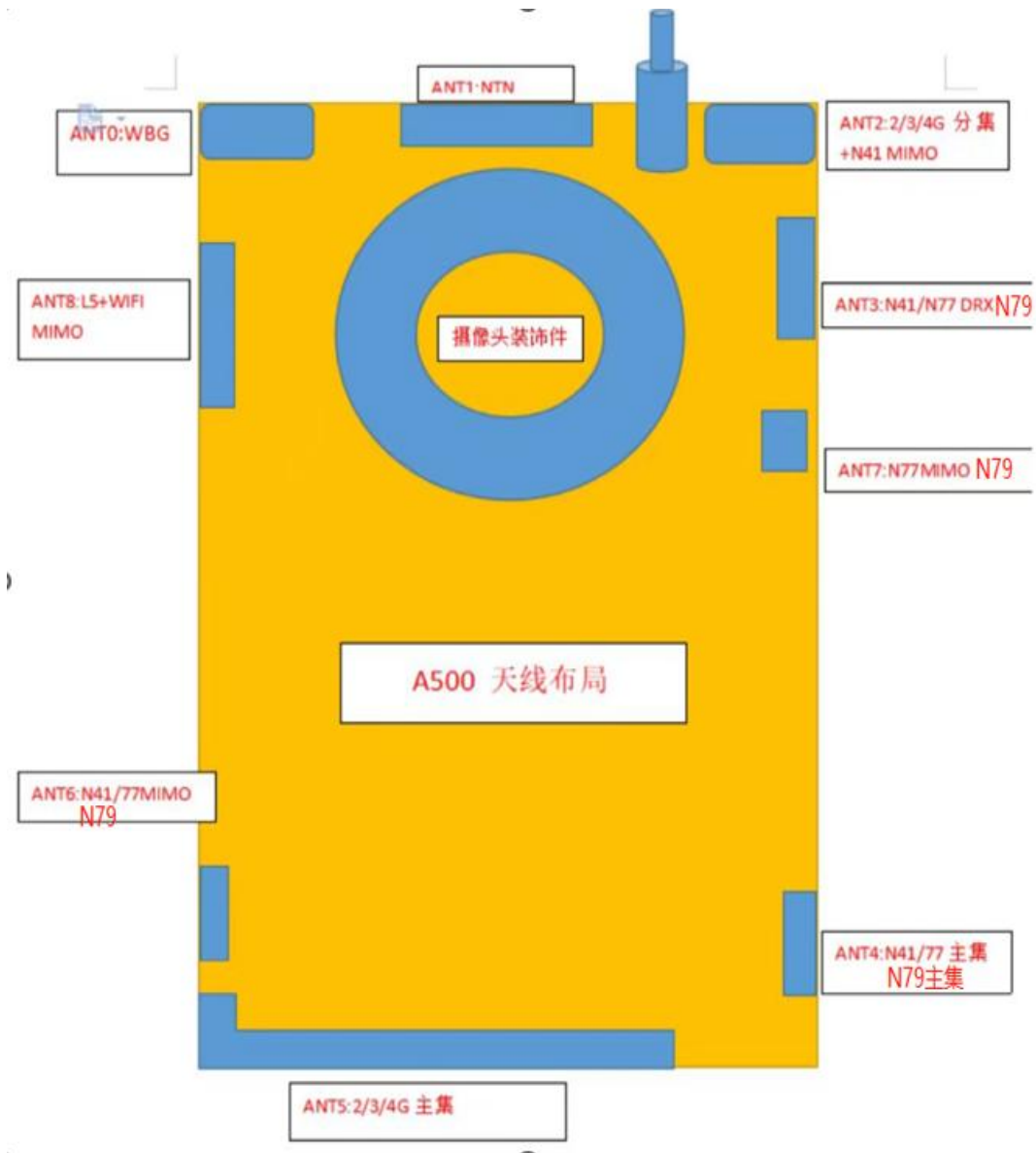
Total NFC Antenna thickness:0.45mm

Antenna turns:1 turn

Line width:0.5mm Line spacing:NA φ : 60.4mm



B.1 EUT Appearance



B.2 Test Configuration

