



OTA TEST REPORT

Applicant Shenzhen General Test System Co., Ltd
Product RayZone1800
Issue Date March 8,2023

Shenzhen hanyang antenna design 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.

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Approved by: Yang Mu

Shenzhen hanyang antenna design Co., Ltd

12A11,Baoyunda logistics information Mansion,Shenzhen,Guangdong





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 5.8GHz .

1.3 Testing Location

Company: Shenzhen hanyang antenna design Co., Ltd

Address: 12A11,Baoyunda logistics information Mansion,Shenzhen,Guangdong

Contact: Linhao Yao

Telephone:18554229336

E-mail:yaolinhao@hyantenna.com

1.4 Laboratory Environment

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





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	MDA
Antenna Manufacturer	Shenzhen hanyang antenna design 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



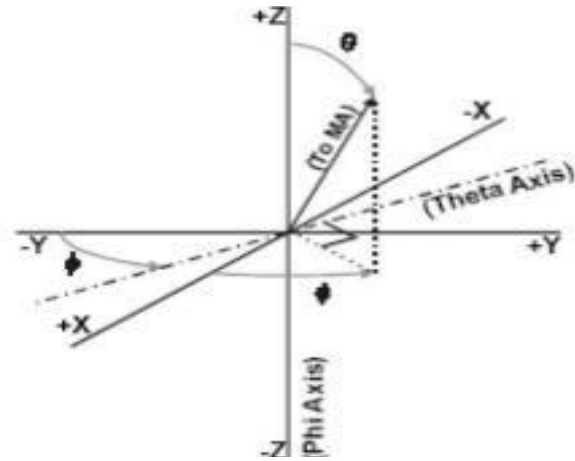
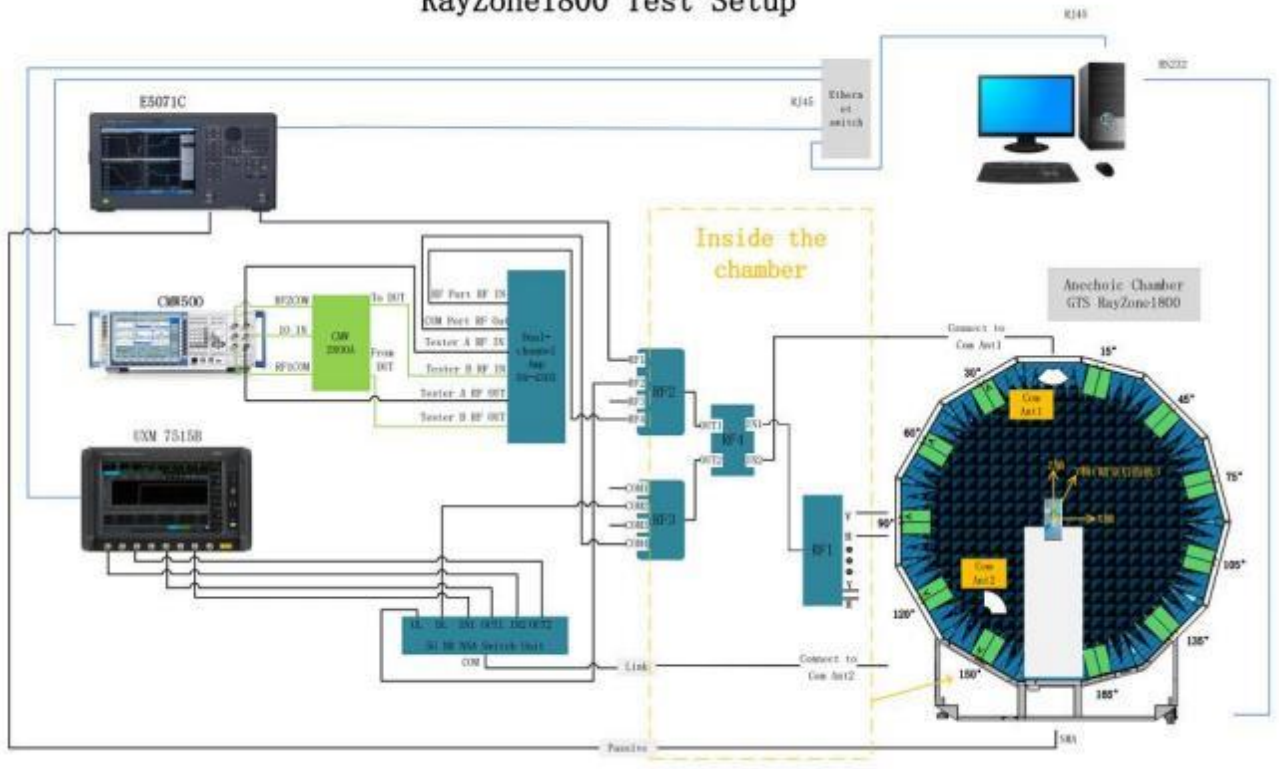


Figure 1 Test coordinate system

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 Antenna Max. Peak Gain

ANT0: -0.5dBi

ANT1: -2dBi

ANT2: 0.5dBi

ANT3: 1dBi

ANT4: 1.2dBi

ANT5: -1.5dBi

ANT6: -4.5dBi

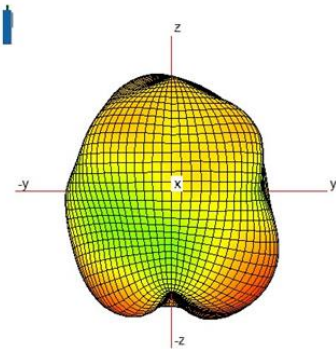
ANT7: -0.5dBi

ANT8: -1.5dBi

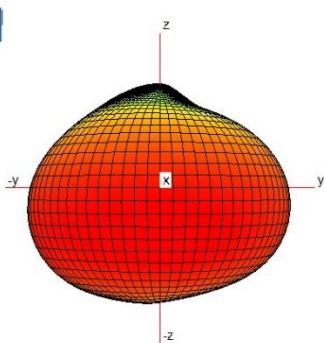
ANT9: 1.5dBi (2.4G) 1dBi (5G)

4.2 Simple Antenna Pattern Plot

(1). ANT0

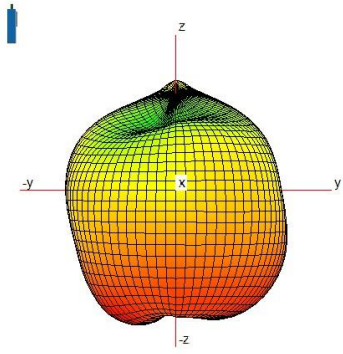


(2). ANT1

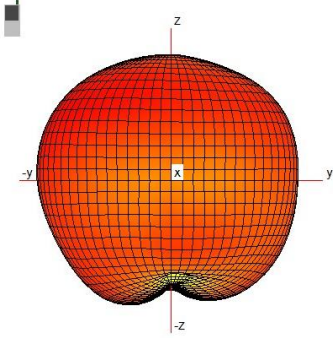


(3). ANT2

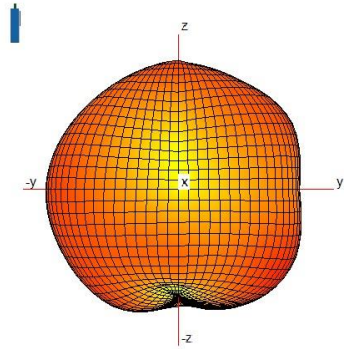




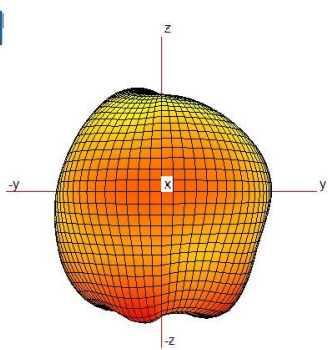
(4). ANT3



(5).ANT4

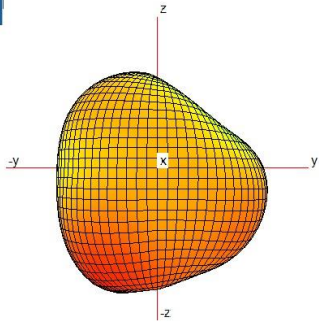


(6).ANT5

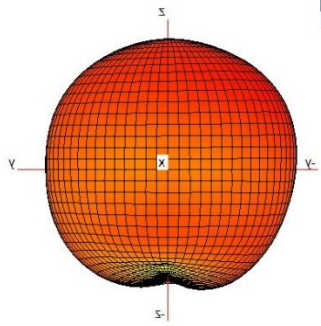


(7). ANT6

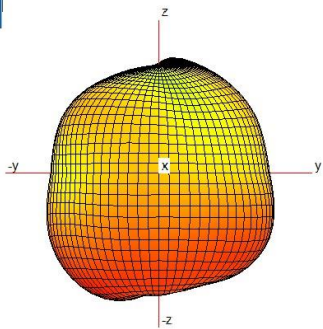




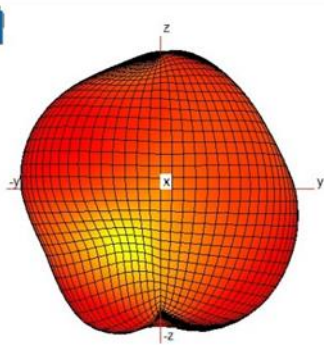
(8).ant7



(9).ant8



(10).ant9



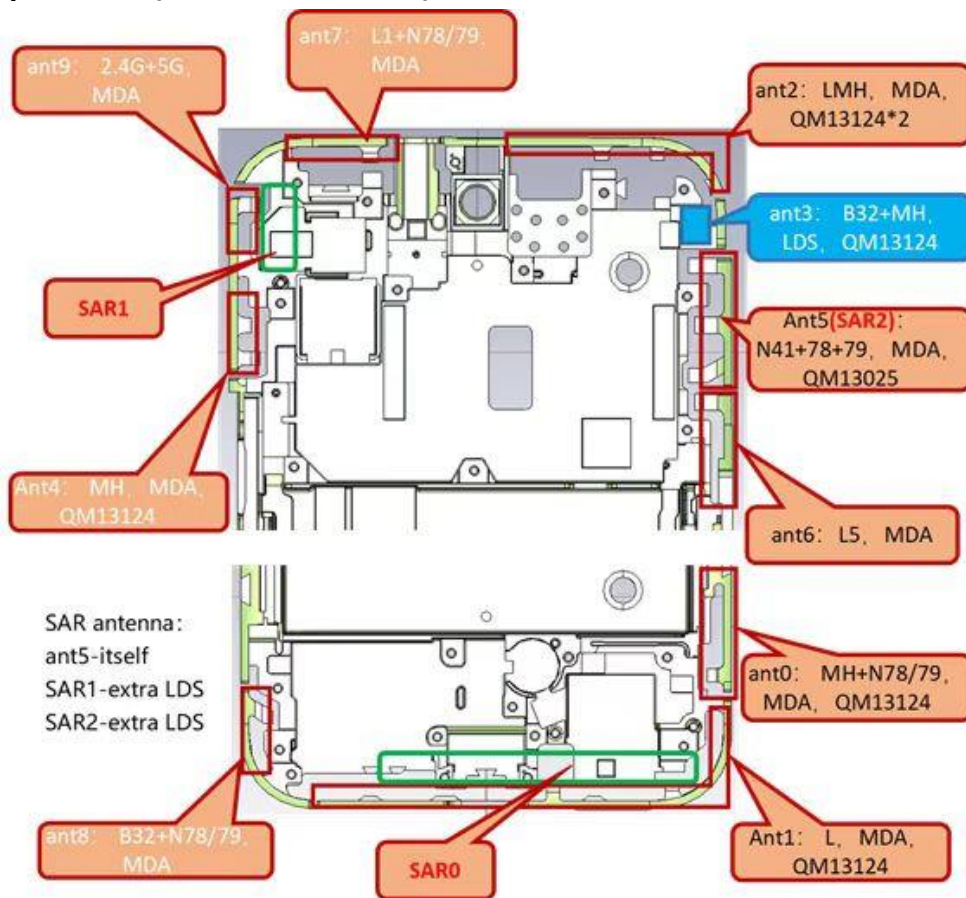


5. Equipment List

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

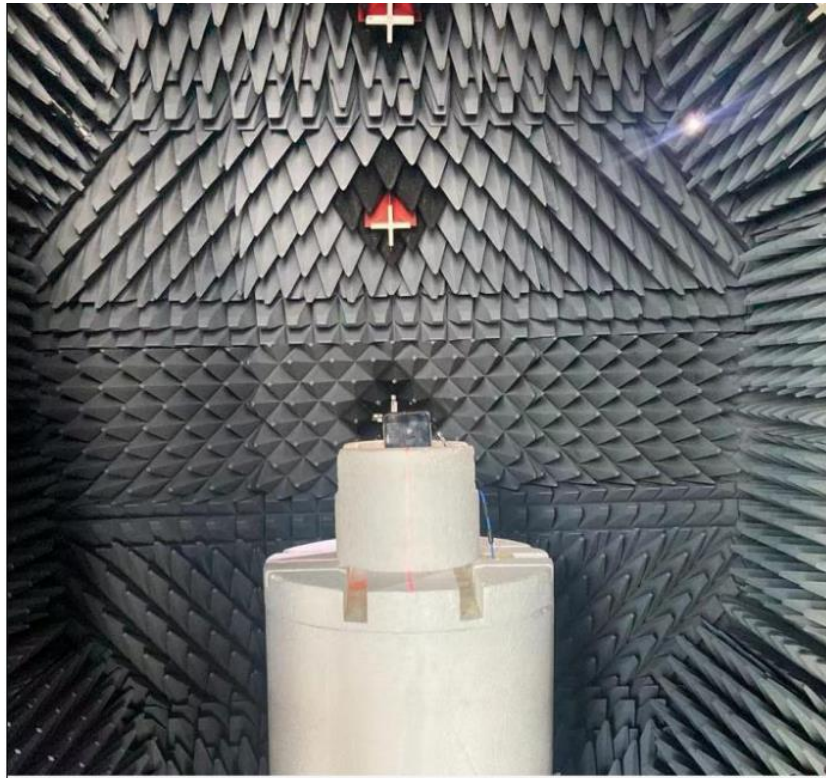
ANNEX B: The EUT Appearance and Test Configuration

B.1 EUT Appearance(Antenna Pattern)



B.2 Test Configuration





6. All of implementation antenna and Antenna Location:

ANT0: GSM1800/1900+WCDMA B1/2/4+LTE B1/2/3/4/7/25/66/38/39/40/41/42/43/48+NR N1/2/3/7/25/66/38/40/41/48/77 (1710~2170,2300~2400,2496~2690 ,3300~4200MHz) TX&RX

ANT1: GSM850/900+WCDMA B5/8+LTE B5/8/12/13/17/20/26/28/71+NR N5/8/20/28/71 (617~960MHz) TX&RX

ANT2: GSM850/900/1800/1900+WCDMA B1/2/4/5/8+LTE B1/2/3/4/5/7/8/12/13/17/20/25/26/28/38/39/40/41/66/71+NR N1/2/3/5/7/8/20/25/28/38/40/41/66/71 (617~960,1710~2170,2300~2400,2496~2690 MHz) TX&RX

ANT3: LTE B1/2/3/4/7/25/32/38/39/40/41/66+NR N1/2/3/7/25/38/40/41/66 (1452~1496,1710~2170,2300~2400,2496~2690 MHz) RX

ANT4: LTE B1/2/3/4/7/25/38/39/40/41/66+NR N1/2/3/7/25/38/40/41/66 (1710~2170,2300~2400,2496~2690 MHz) RX

ANT5: NR N38/41/42/43/48/77/78/79 (2496~2690,3300~4200 MHz) TX&RX

ANT6: GPS L5 (1176.45MHz) RX

ANT7: GPS L1+NR N42/43/48/77/78/79 (1575.42, 3300~4200 MHz) RX

ANT8: LTE B32+NR N42/43/48/77/78/79 (1452~1496,3300~4200 MHz) RX

ANT9: BT/WIFI 2.4G+WIFI 5G (2400~2500, 5150~5850 MHz) TX&RX





OTA Test Report



7. Antenna type

- ANT0: PIFA
- ANT1: PIFA
- ANT2: PIFA
- ANT3: PIFA
- ANT4: PIFA
- ANT5: PIFA
- ANT6: PIFA
- ANT7: PIFA
- ANT8: PIFA
- ANT9: PIFA

