

OTA TEST REPORT

Applicant Shenzhen General Test System Co., Ltd

Product RayZone1800

Issue Date October 11,2022

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: Zhanghong Lai

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 Maya Communication Equipment Co. LTD

Address: 2nd Floor, Building 1, Guanghui Science Park, Longhua New District,
Shenzhen Shenzhen, P.R. China

Contact: Feng Guojun

Telephone: 13425109220

E-mail: 646878854@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

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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 | MVG |
| HW Version | RayZone1800 V1.0 |
| SW Version | MaxSign 100 |
| Antenna Type | PCB Antenna |
| Antenna Manufacturer | Shenzhen Maya Communication Equipment 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

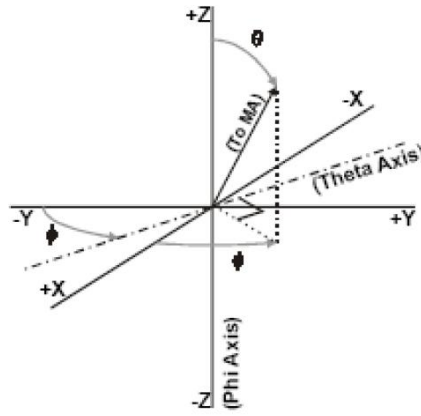
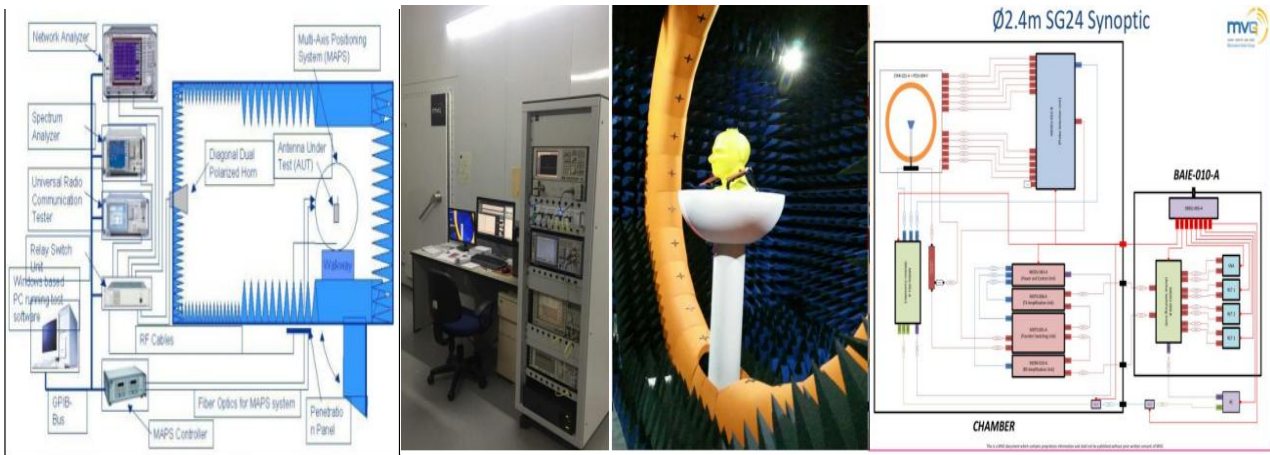


Figure 1 Test coordinate system

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

Test Setup



4. Test Results

4.1 Gain and Efficiency

| Frequency (MHz) | Efficiency (%) | AVG Gain (dB) |
|-----------------|----------------|---------------|
| 700 | 25.89% | -5.87 |
| 720 | 26.77% | -5.72 |
| 740 | 28.69% | -5.42 |
| 760 | 29.89% | -5.24 |
| 780 | 30.61% | -5.14 |
| 800 | 25.37% | -5.96 |
| 820 | 28.37% | -5.47 |
| 840 | 30.70% | -5.13 |
| 860 | 32.81% | -4.84 |
| 880 | 33.88% | -4.70 |
| 900 | 35.71% | -4.47 |
| 910 | 34.38% | -4.64 |
| 920 | 32.22% | -4.92 |
| 930 | 28.21% | -5.50 |
| 940 | 24.97% | -6.03 |
| 950 | 20.22% | -6.94 |
| 960 | 18.29% | -7.38 |

| | | |
|------|--------|-------|
| 1700 | 35.29% | -4.52 |
| 1740 | 38.39% | -4.16 |
| 1780 | 40.82% | -3.89 |
| 1820 | 41.71% | -3.80 |
| 1860 | 42.96% | -3.67 |
| 1900 | 43.82% | -3.58 |
| 1940 | 38.49% | -4.15 |
| 1980 | 36.59% | -4.37 |
| 2020 | 34.34% | -4.64 |
| 2060 | 32.42% | -4.89 |
| 2100 | 34.39% | -4.64 |
| 2140 | 32.62% | -4.87 |
| 2180 | 30.49% | -5.16 |
| 2300 | 28.71% | -5.42 |
| 2340 | 29.39% | -5.32 |
| 2380 | 30.72% | -5.13 |
| 2420 | 32.02% | -4.95 |
| 2460 | 34.82% | -4.58 |
| 2500 | 34.79% | -4.59 |
| 2540 | 33.38% | -4.77 |
| 2580 | 29.62% | -5.28 |
| 2620 | 28.71% | -5.42 |
| 2660 | 27.38% | -5.63 |
| 2700 | 28.11% | -5.51 |

| Frequency (MHz) | Efficiency (%) | AVG Gain (dBi) |
|-----------------|----------------|----------------|
| 1570 | 39.83% | 1.14 |
| 1571 | 39.92% | 1.16 |
| 1572 | 39.39% | 1.15 |
| 1573 | 39.36% | 1.15 |
| 1574 | 39.16% | 1.15 |
| 1575 | 40.83% | 1.18 |
| 1576 | 40.78% | 1.18 |
| 1577 | 40.88% | 1.19 |
| 1578 | 40.45% | 1.18 |
| 1579 | 40.14% | 1.16 |
| 1580 | 40.91% | 1.20 |

| Frequency (MHz) | Efficiency (%) | AVG Gain (dB) |
|-----------------|----------------|---------------|
| 2400 | 30.71% | 0.90 |
| 2410 | 32.07% | 0.93 |
| 2420 | 33.82% | 0.95 |
| 2430 | 34.41% | 0.97 |
| 2440 | 35.89% | 0.98 |
| 2450 | 38.47% | 1.10 |
| 2460 | 37.86% | 1.00 |
| 2470 | 35.16% | 0.98 |
| 2480 | 35.59% | 0.98 |
| 2490 | 35.56% | 0.97 |
| 2500 | 34.18% | 0.96 |

| Frequency (MHz) | Efficiency (%) | AVG Gain (dBi) |
|-----------------|----------------|----------------|
| 5150 | 34.49% | 1.10 |
| 5180 | 35.41% | 1.11 |
| 5210 | 35.27% | 1.11 |
| 5240 | 36.56% | 1.12 |
| 5270 | 36.48% | 1.12 |
| 5300 | 37.37% | 1.13 |
| 5330 | 36.28% | 1.12 |
| 5360 | 37.38% | 1.13 |
| 5390 | 38.51% | 1.15 |
| 5420 | 39.19% | 1.16 |
| 5450 | 39.78% | 1.17 |
| 5480 | 40.64% | 1.18 |
| 5510 | 41.27% | 1.18 |
| 5540 | 42.35% | 1.20 |
| 5570 | 41.46% | 1.20 |
| 5600 | 40.81% | 1.19 |
| 5630 | 40.59% | 1.18 |
| 5660 | 39.49% | 1.16 |
| 5690 | 38.69% | 1.15 |
| 5720 | 37.59% | 1.14 |
| 5750 | 37.38% | 1.13 |
| 5780 | 36.59% | 1.12 |
| 5810 | 36.49% | 1.12 |
| 5840 | 35.59% | 1.11 |
| 5850 | 35.69% | 1.11 |

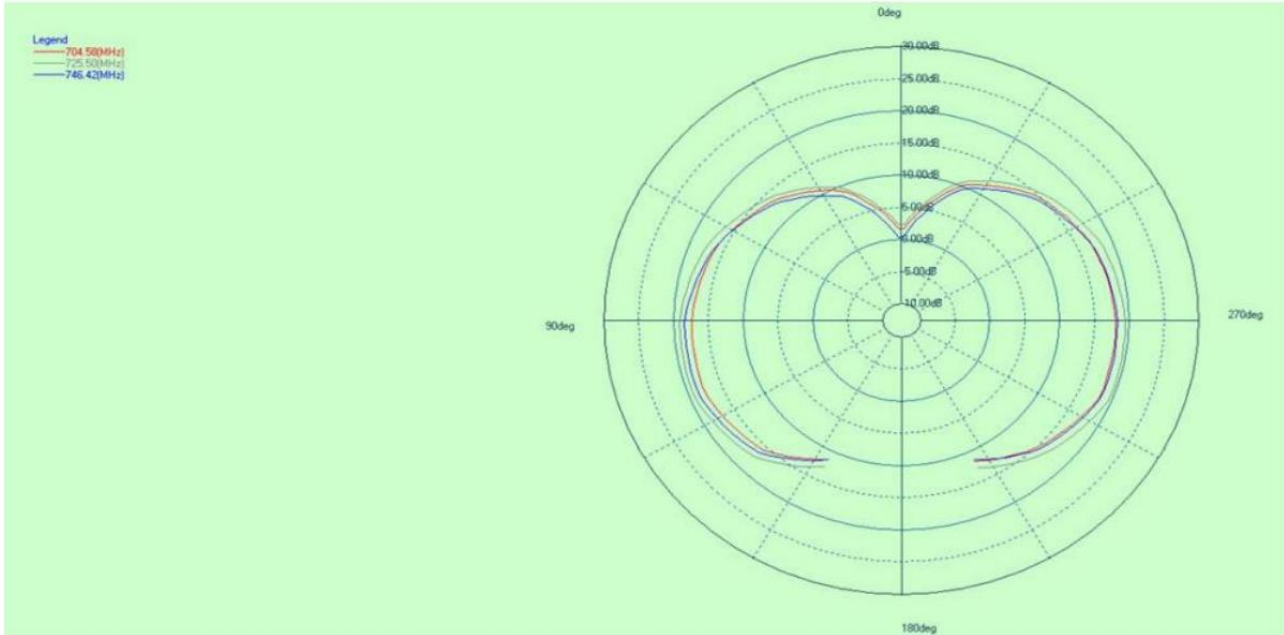
5. Equipment List

| Type of Equipment | Manufacture | Model Number |
|-----------------------|-------------|---|
| Network Analyzer | Key sight | E5071C |
| Switch control System | MVG | RayZone1800 |
| Software | MVG | MaxSign 100 Patten Measurement software |

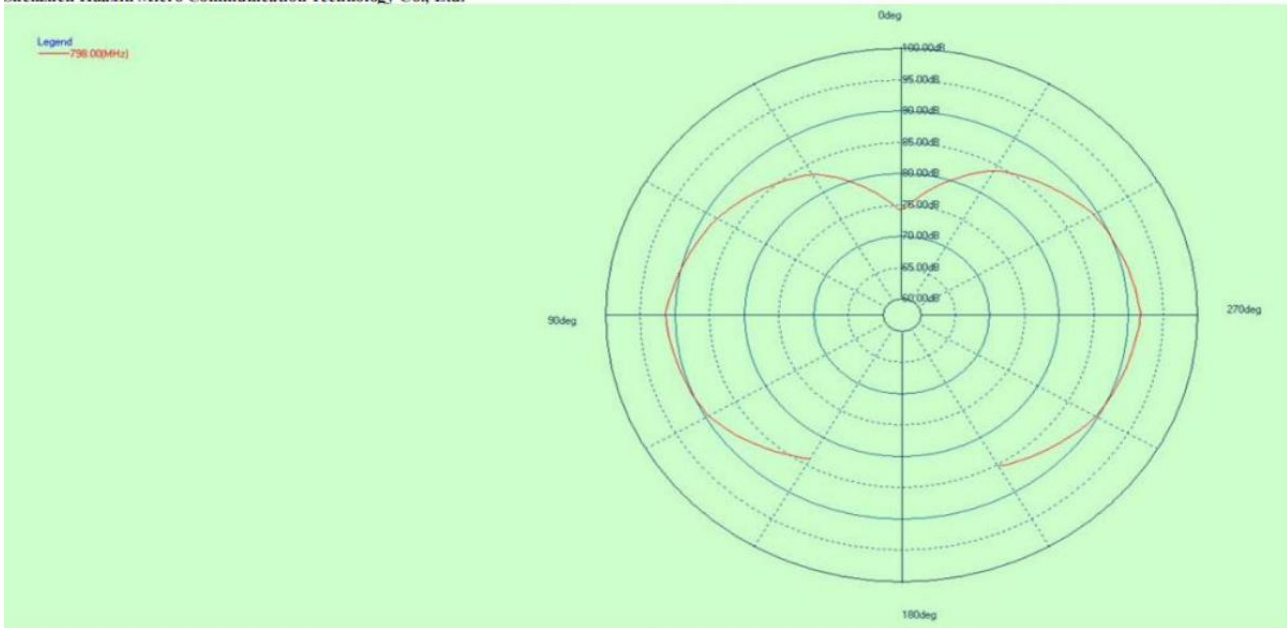
ANNEX A 3-D Patten Plots

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FS pattern 700M-800M

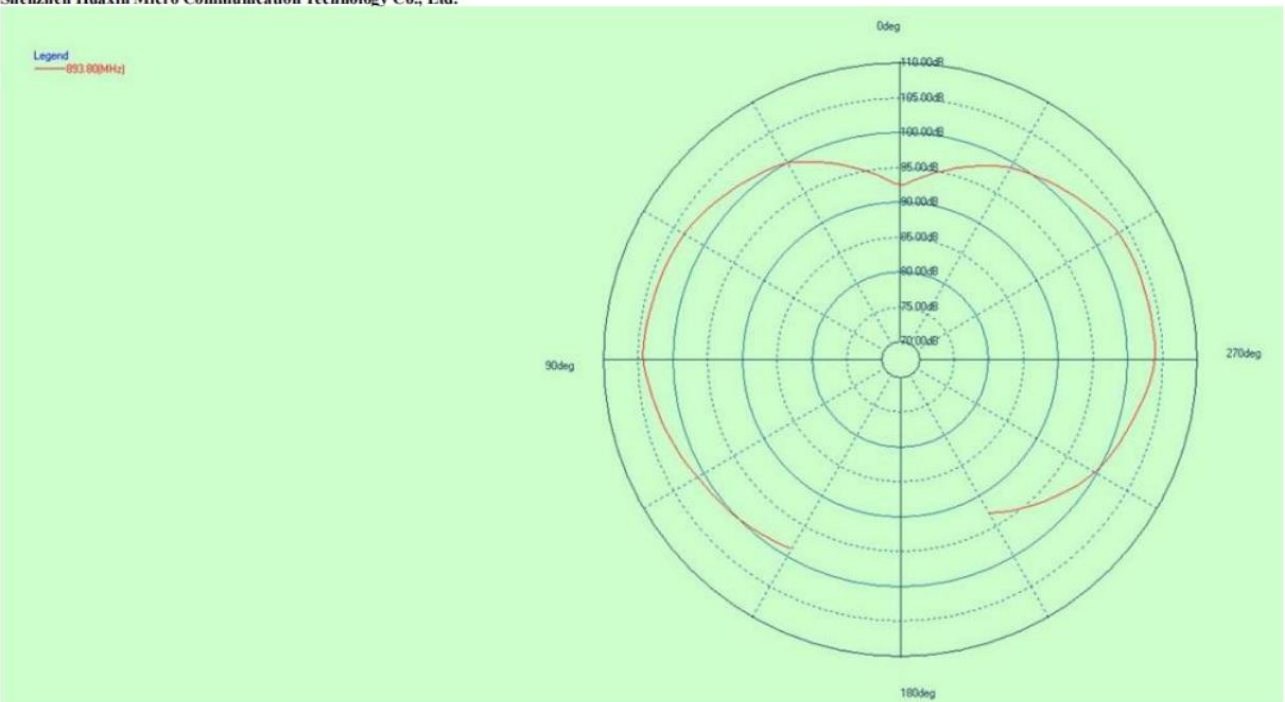
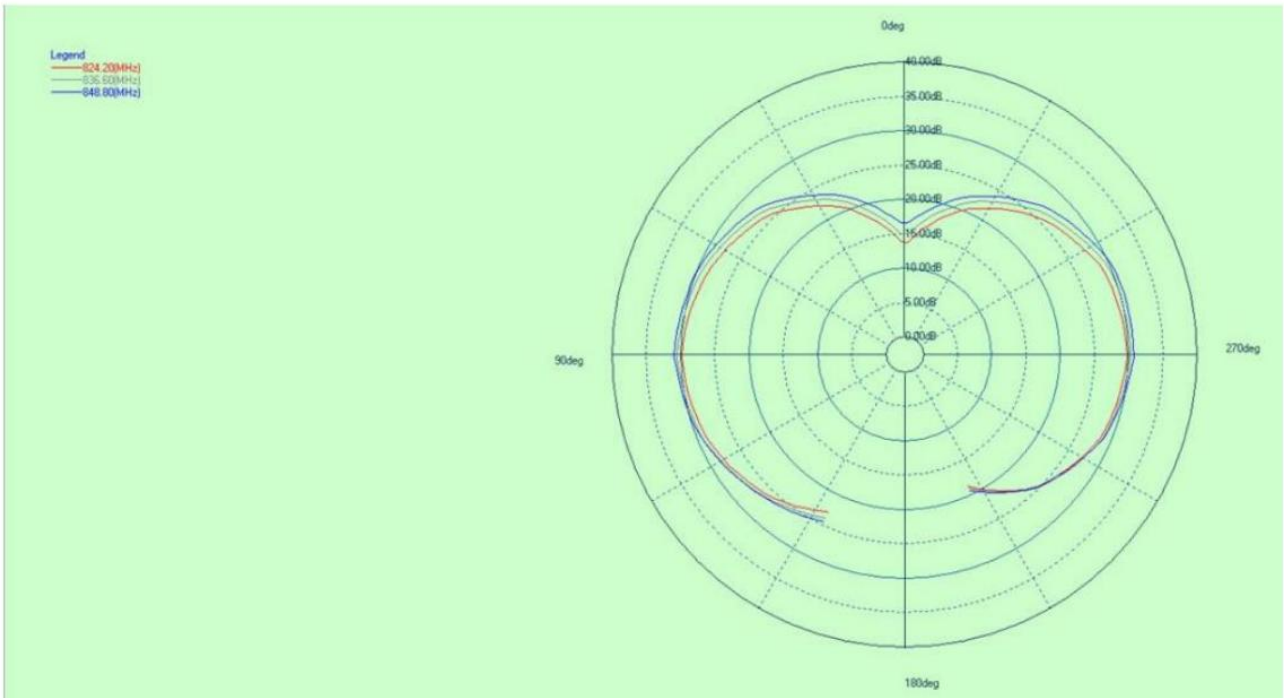


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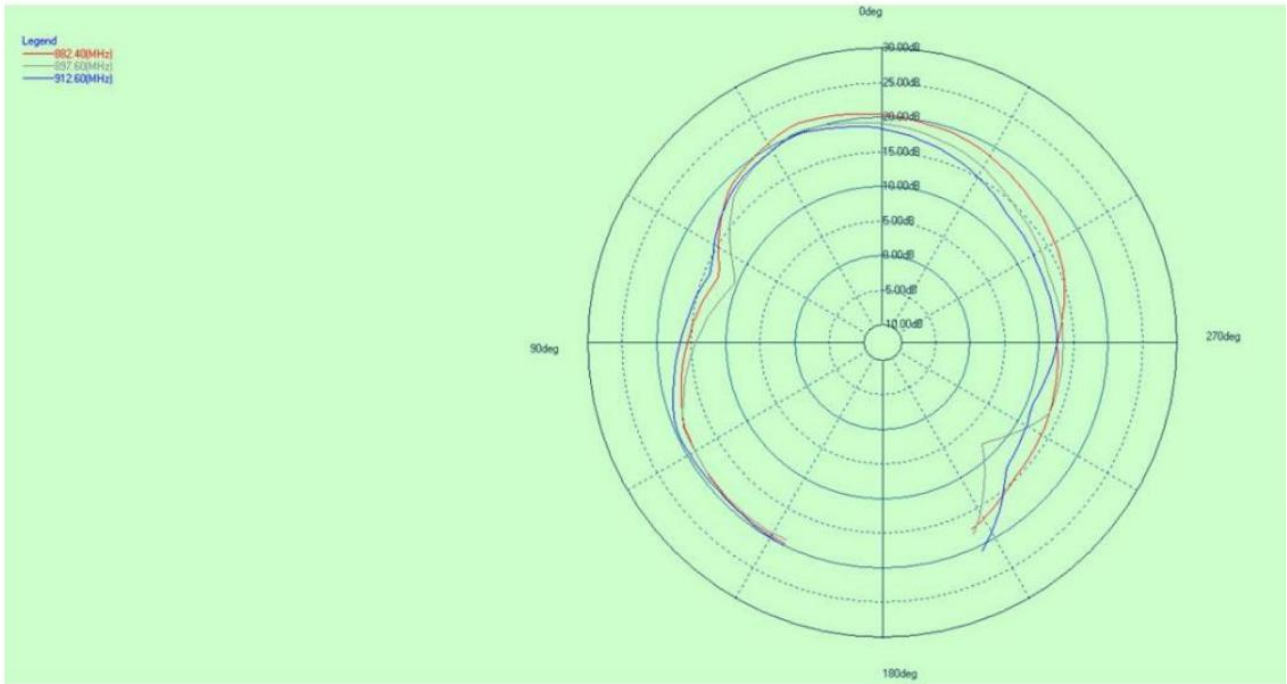
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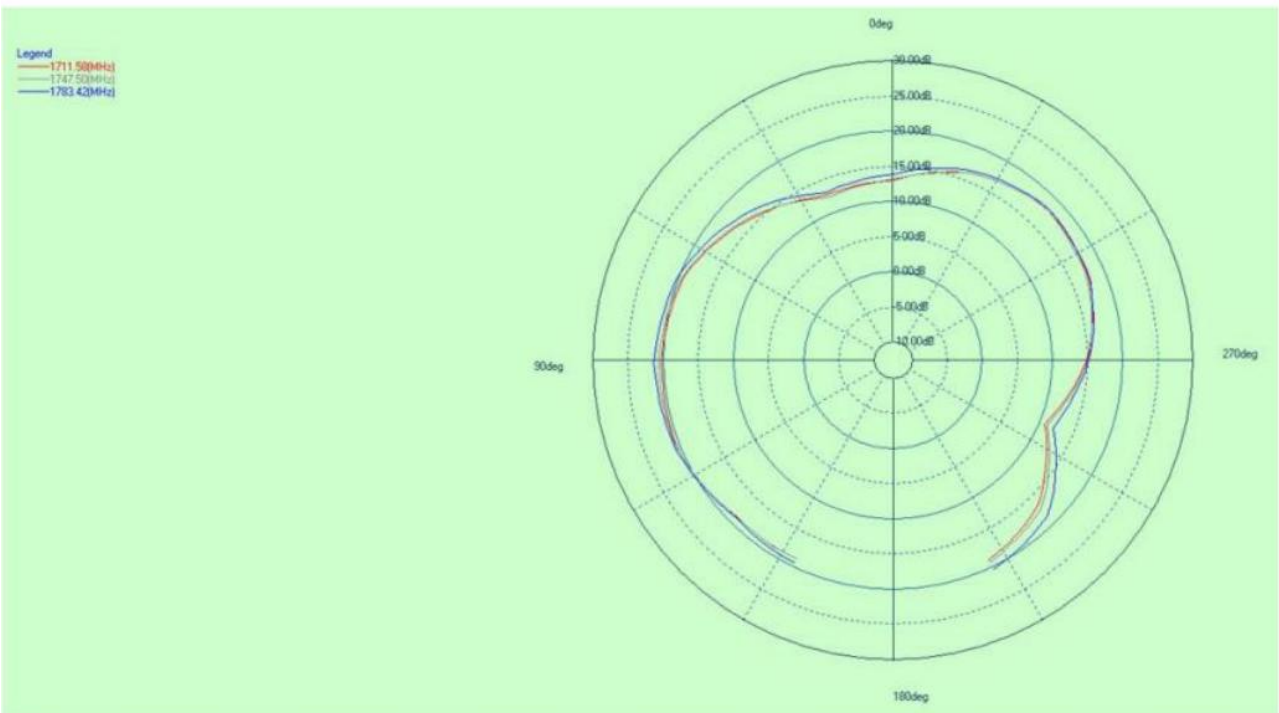
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900M



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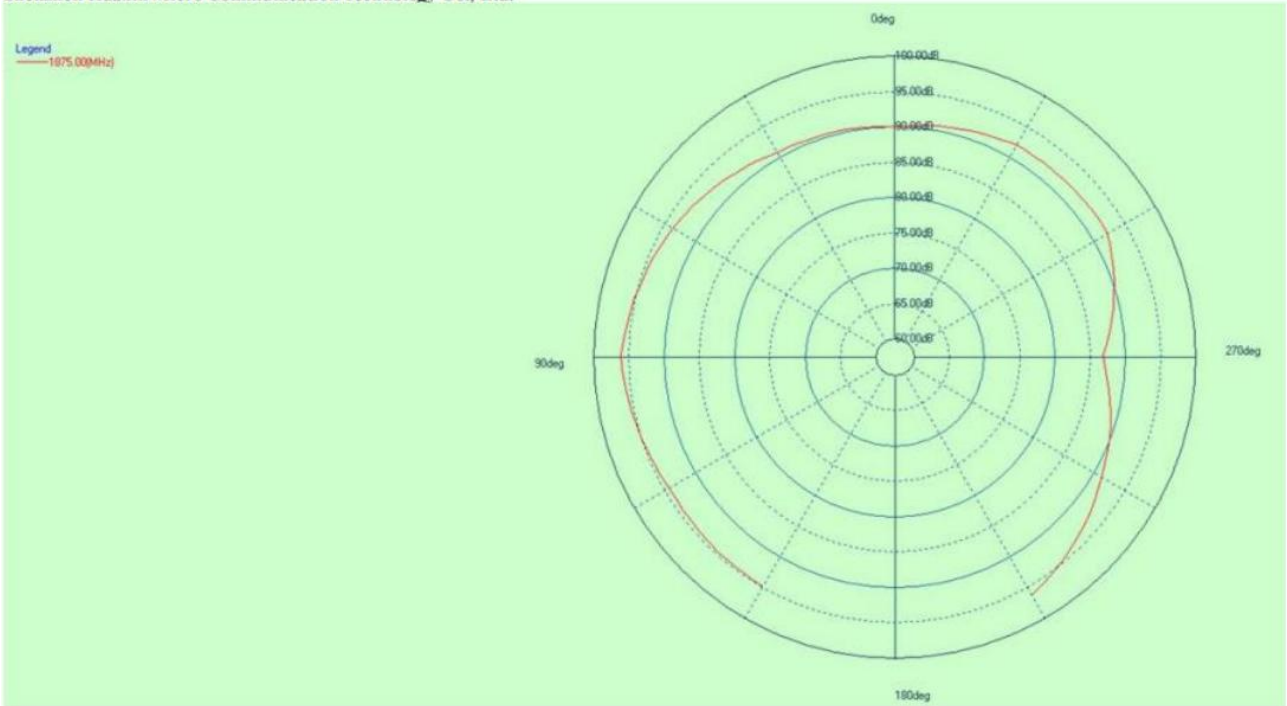
1710M-2100M



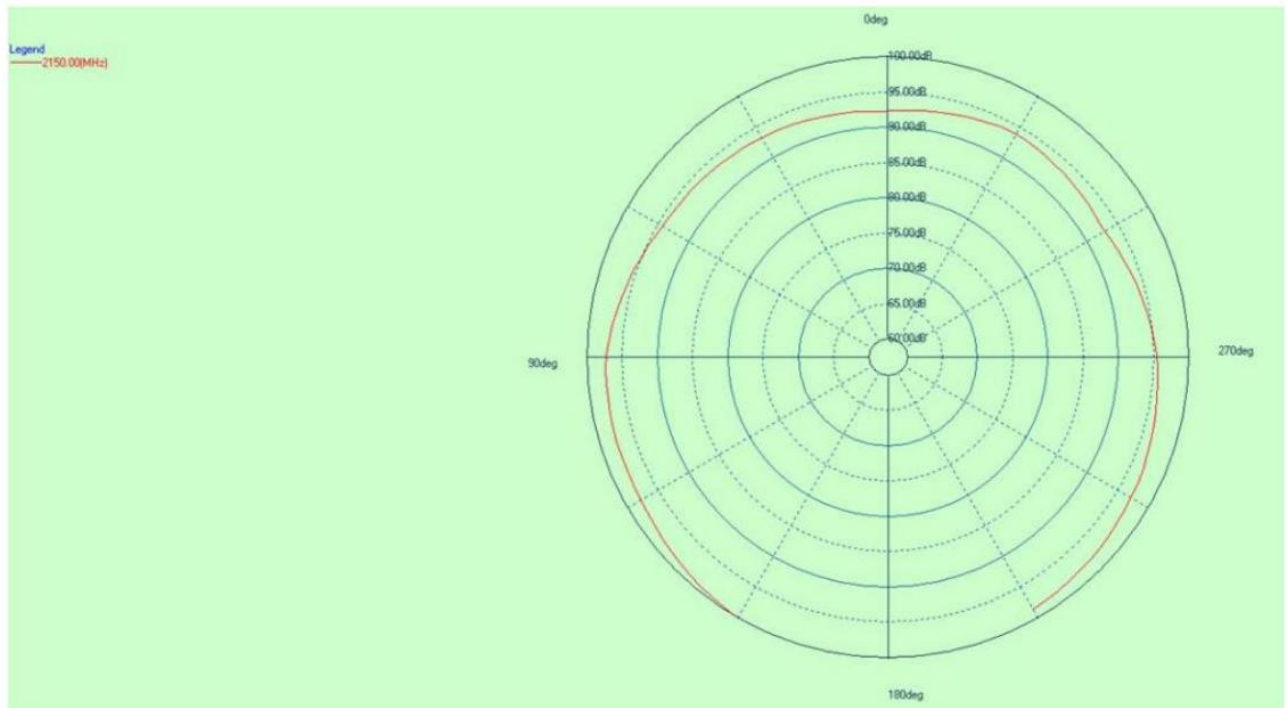
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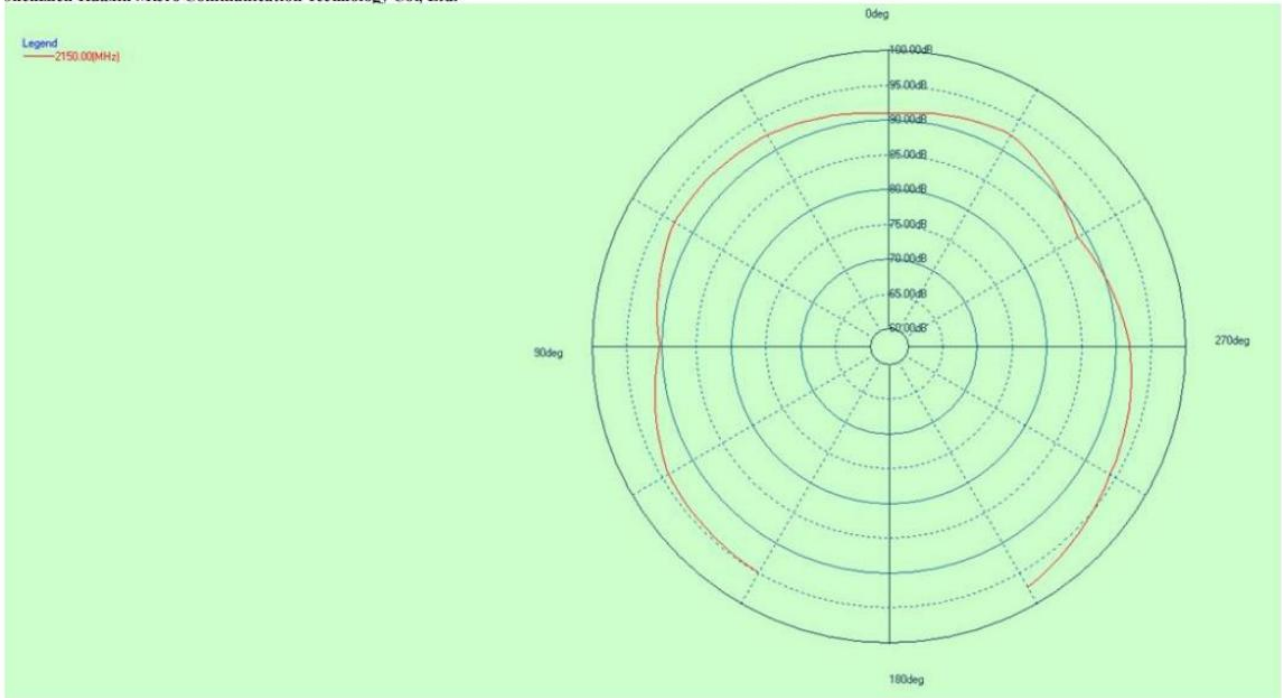
Shenzhen Huaxin Micro Communication Technology Co., Ltd.
2100M-2400M



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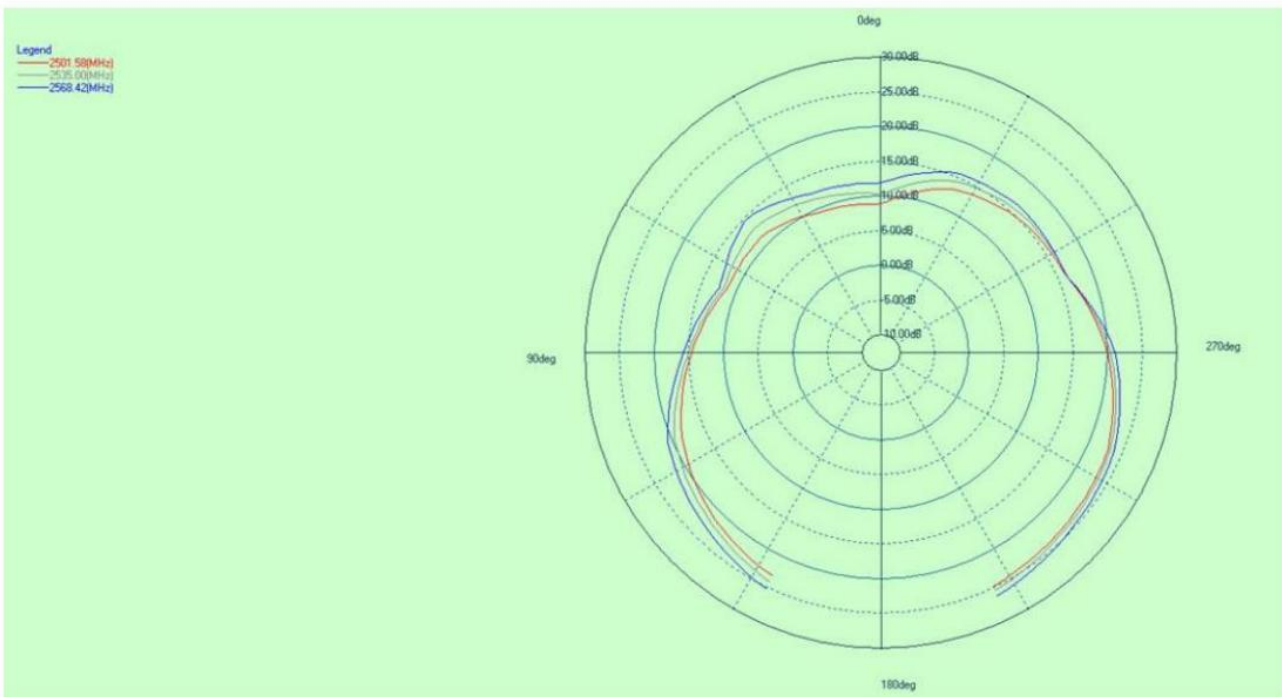
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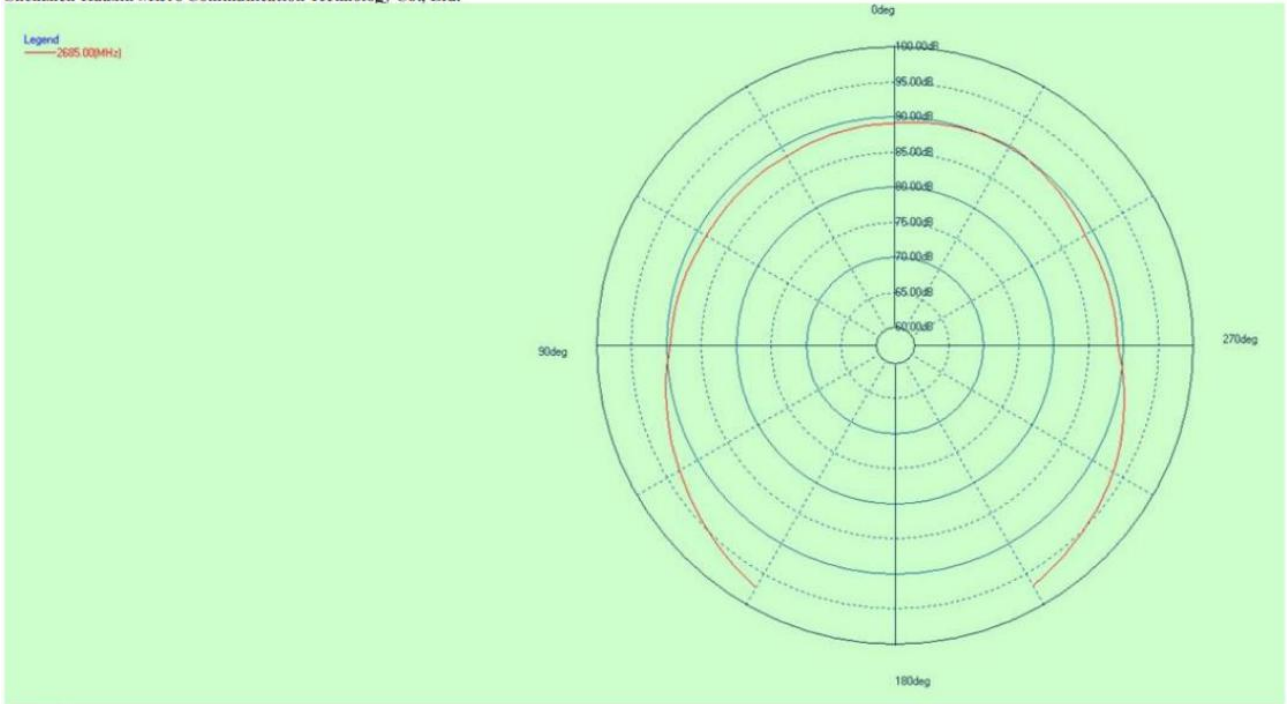
2400M-2700M



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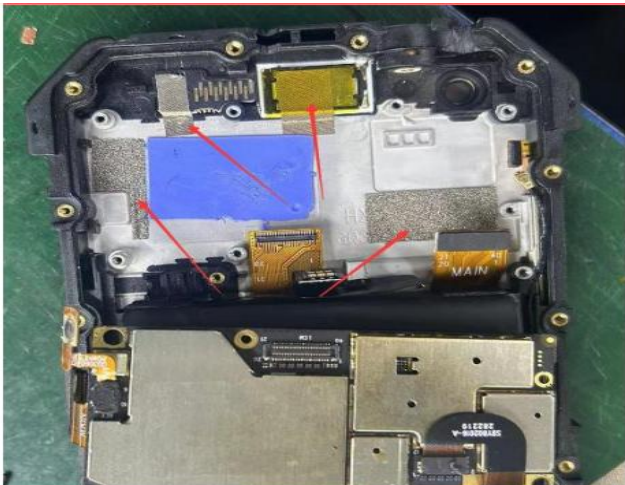


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ANNEX B: The EUT Appearance and Test Configuration

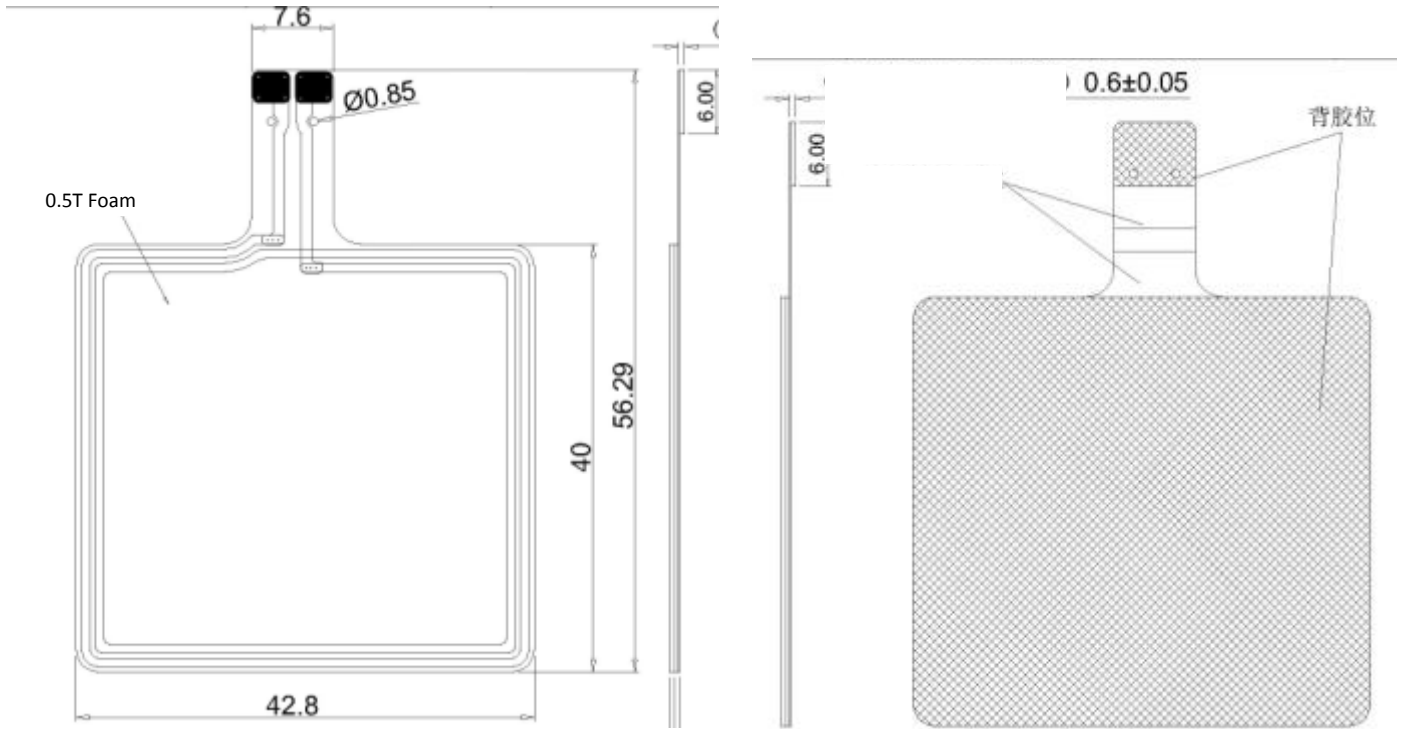
B.1 EUT Appearance



NFC antenna size diagram

Unit: mm

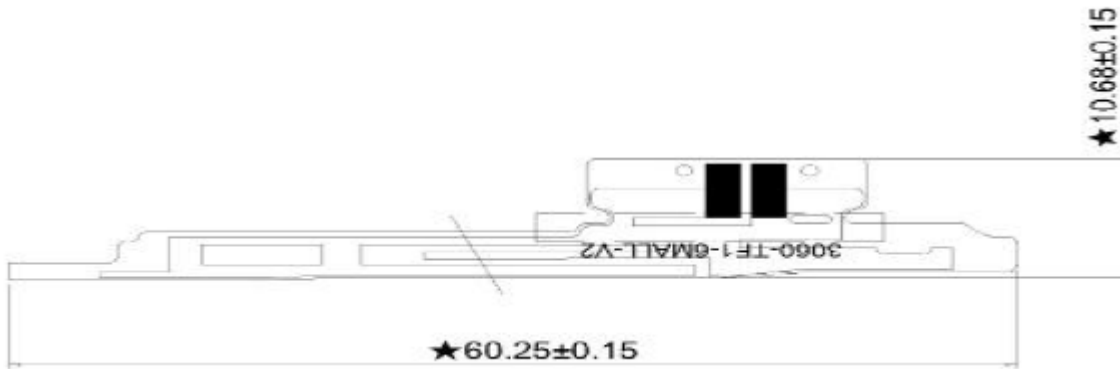
Material: Electrolytic copper+Pi



GSM/WCDMA/LTE PIFA Antenna size diagram

Unit:mm

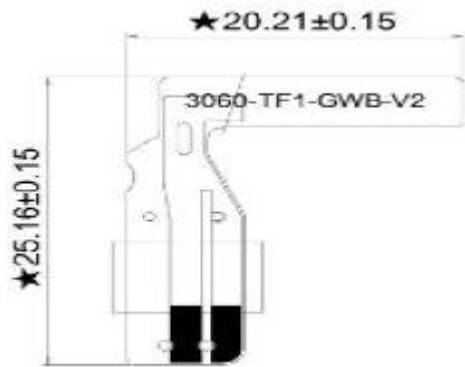
Material: Electrolytic copper+Pi



GPS/WIFI/BT PIFA Antenna size diagram

Unit:mm

Material: Cu+Pi



LTE DIV PIFA Antenna size diagram

Unit: mm

Material: Cu+Pi

