

# OTA TEST REPORT(Passive)

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Approved by: YuanQing.Zhu

## Shenzhen Daxian Technology Co., Ltd.

pproved by: Buji Town, Longgang District, Shenzhen, China Jihua Road 513, Shangshuijing Village (opposite the national defense training base) Dacheng Industrial Park, Building 7.

### 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

Satimo 3D Chamber 4×4×4( m )

CMW500 E5071C

Network analyzer- R & S ZVL

## 1.3 Testing Location

Company: Shenzhen Daxian Technology Co., Ltd.

Buji Town, Longgang District, Shenzhen, China Jihua Road 513, Shangshuijing Village (opposite the national defense training base) Dacheng Industrial Park, Building 7.

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## 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 General information

| EUT Description         |                                                                                                          |
|-------------------------|----------------------------------------------------------------------------------------------------------|
| Product Name            | WX07AA                                                                                                   |
| Model                   | Main 、WIFI、GPS                                                                                           |
| Antenna Type            | FPC Antenna                                                                                              |
| Antenna<br>Manufacturer | Shenzhen Daxian Technology Co., Ltd.                                                                     |
| Test Frequency          | 2G:850/900/1800/1900<br>3G:W1/W2/W4/W5/W8<br>4G:B1/B2/B3/B4/B5/B7/B8/B13/B26/B28(A/B)/B38/B40/B41<br>/66 |

## **2.2 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

## OTA Test Report

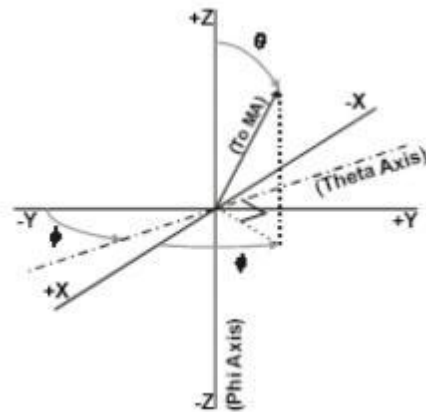
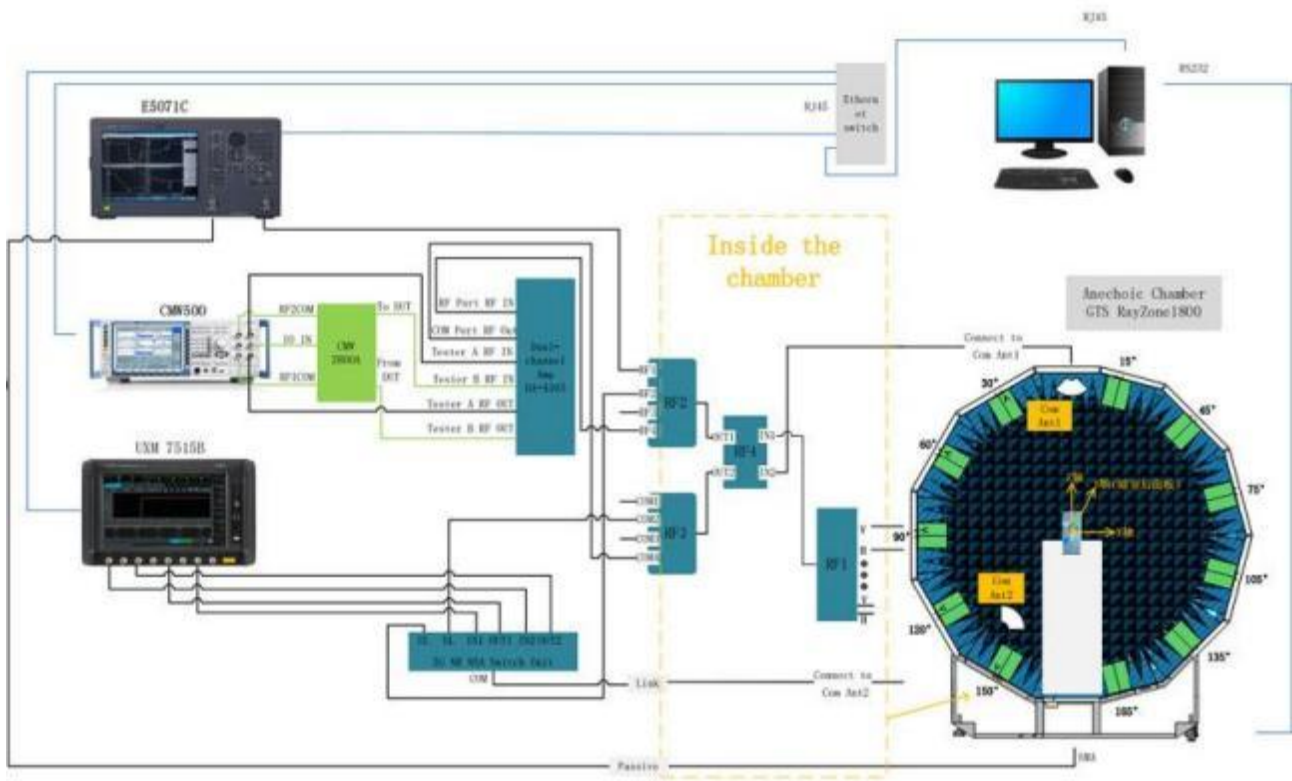


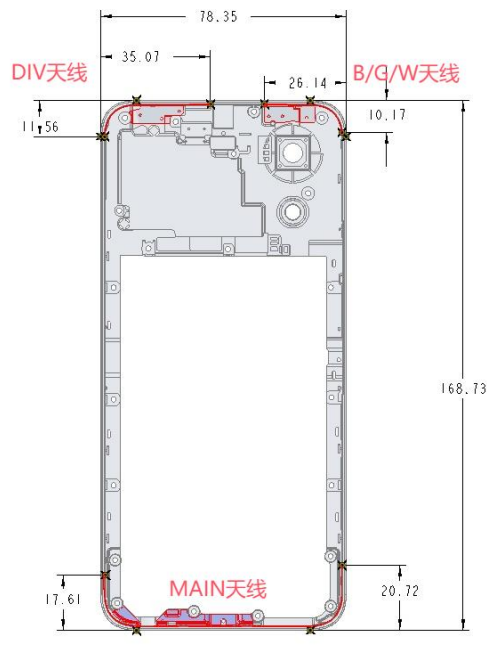
Figure 1 Test coordinate system

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

## Test Setup



## 4. Antenna location map



Main antenna:

LTE B5/8/13/26/28 RX&TX ,LTE B1/2/3/4/7/38/40/41/66 DRX

WCDMA B5/8 RX&TX,WCDMA B1/2/4 DRX

GSM B5/8 RX&TX

DIV antenna:

LTE B1/2/3/4/7/38/40/41/66 RX&TX,

WCDMA B1/2/4 RX&TX,

B/G/W antenna

GPS: 1570 MHz~1620 MHz

WiFi 2.4G/BT: 2412MHz~2472MHz

WiFi 5G: 5100MHz~5800MHz

## 5. Test Results

### 5.1 Antenna Max. Peak Gain

2G: 850: -1.81dBi  
900: -1.75dBi  
1800: -0.71dBi  
1900: -0.01dBi

3G: W1: 1.4 dBi  
W2: -0.01dBi  
W4: 1.4dBi  
W5: -1.81dBi  
W8: -1.75dBi

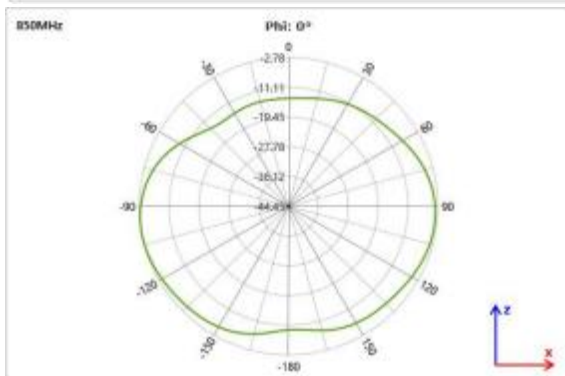
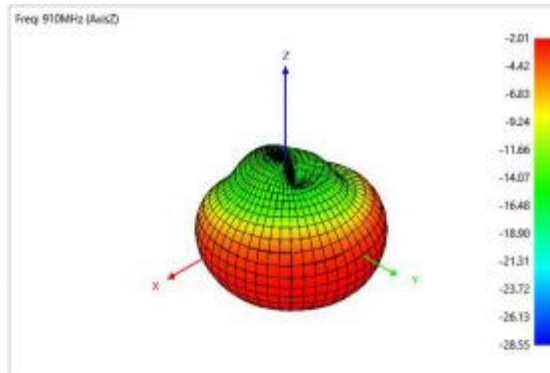
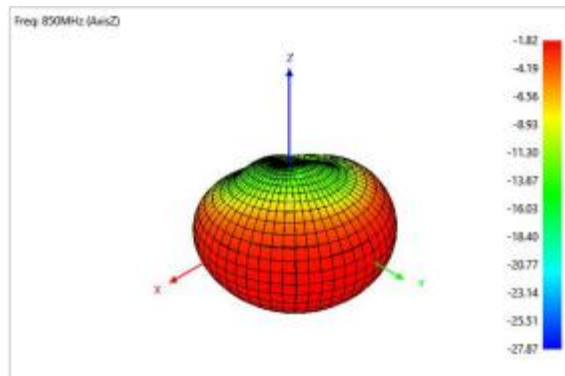
WiFi 2.4G: 0.21dBi  
WiFi 5G: 1.5dBi  
GPS: 2.43dBi

4G: B1: 1.4 dBi  
B2: -0.01dBi  
B3: 0.7dBi  
B4: 1.4dBi  
B5: -1.81dBi  
B7: 0.38dBi  
B8: -1.75dBi  
B13: -1.17dBi  
B26: -1.81dBi  
B28: -0.98dBi  
B38: 0.66dBi  
B40: 1.95dBi  
B41: 0.38dBi  
B66: 1.4dBi

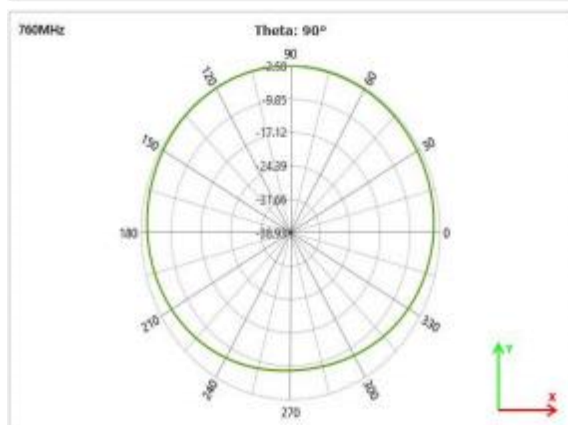
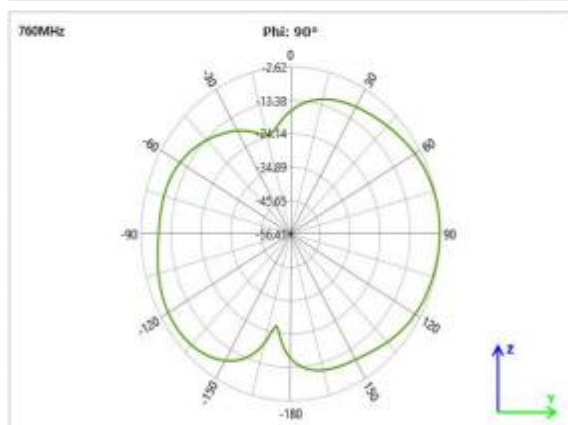
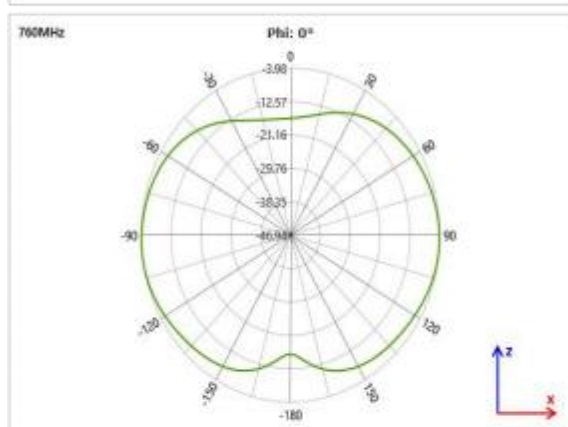
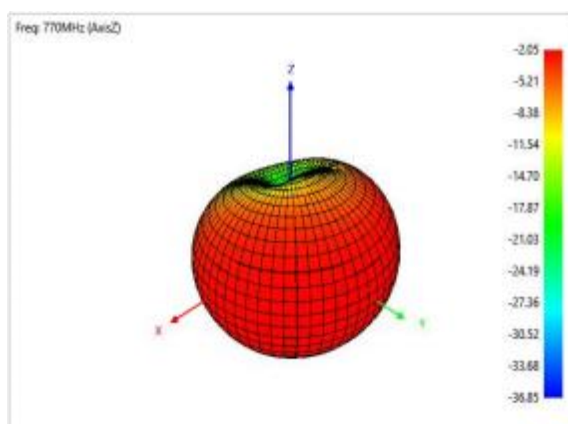
## 5.2 Antenna radiation pattern

B5 B26

B8



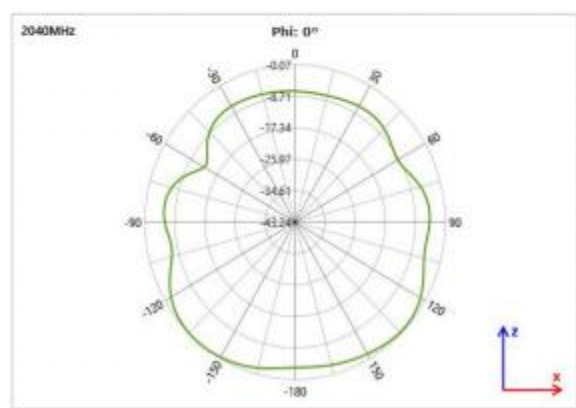
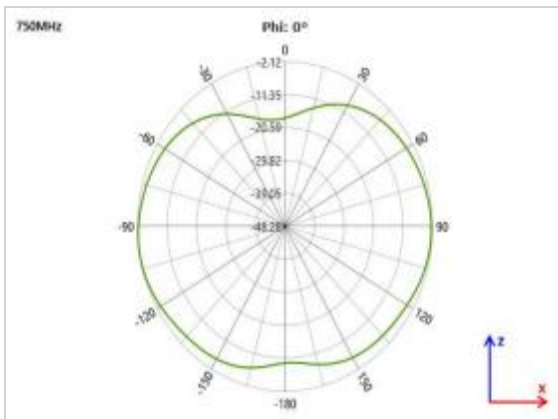
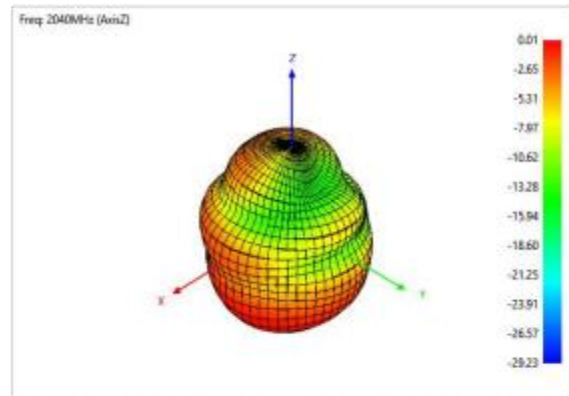
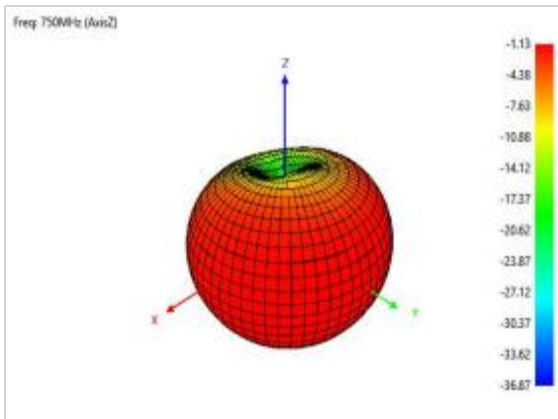
B13



# OTA Test Report

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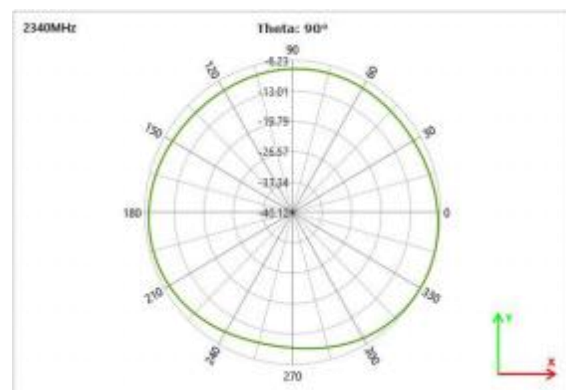
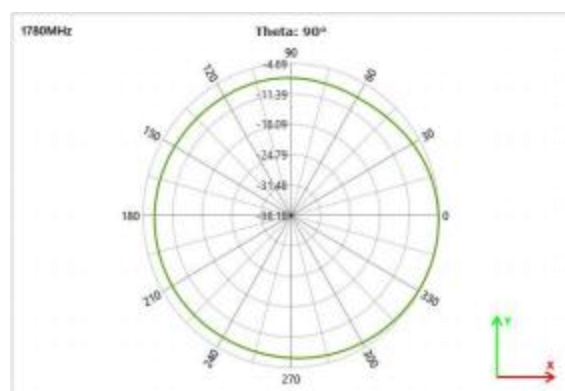
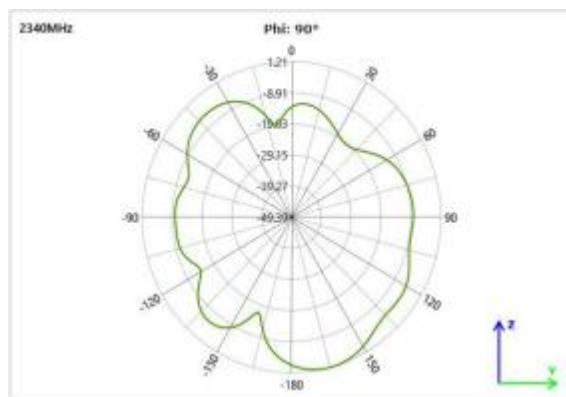
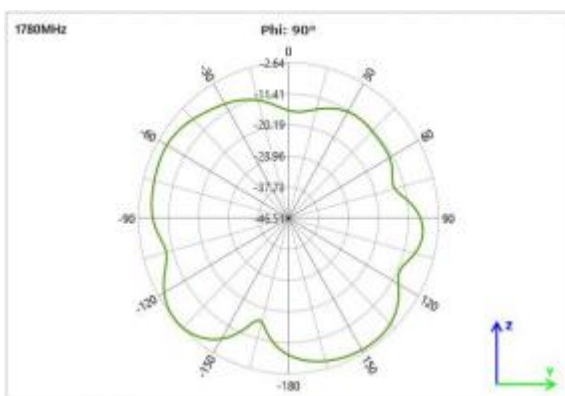
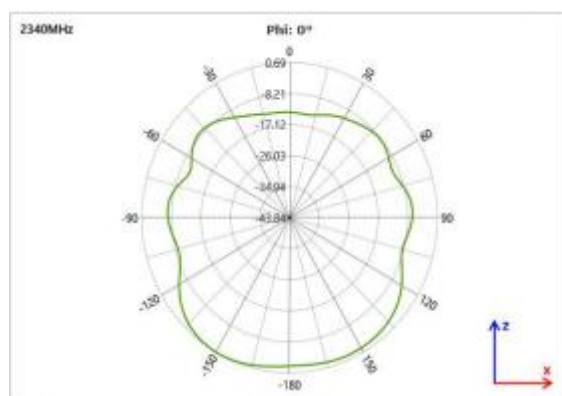
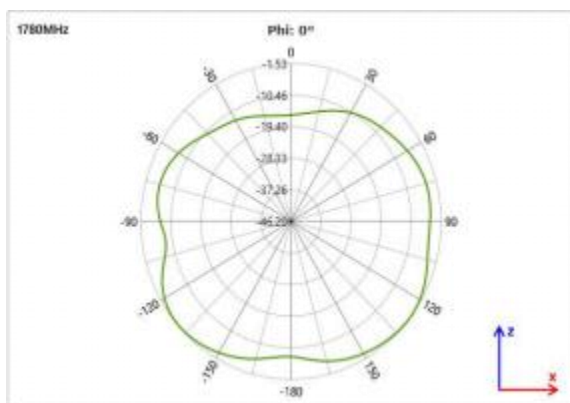
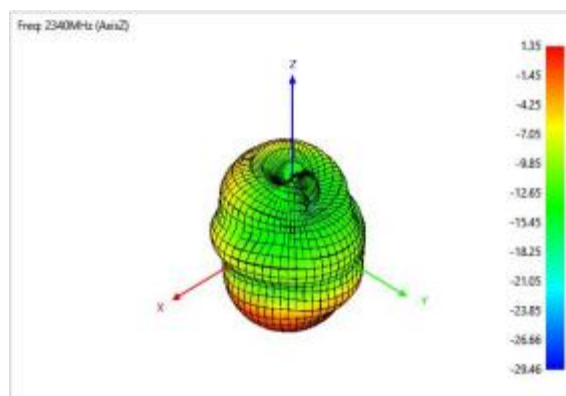
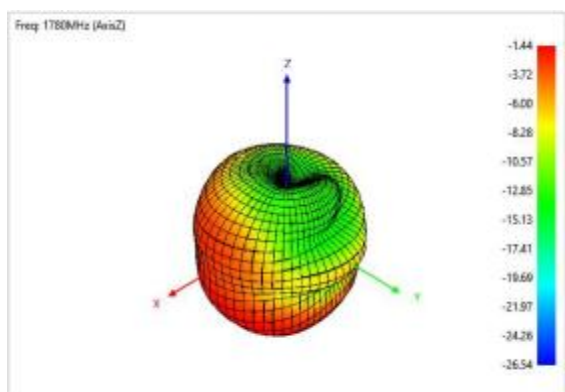
B1



# OTA Test Report

B3

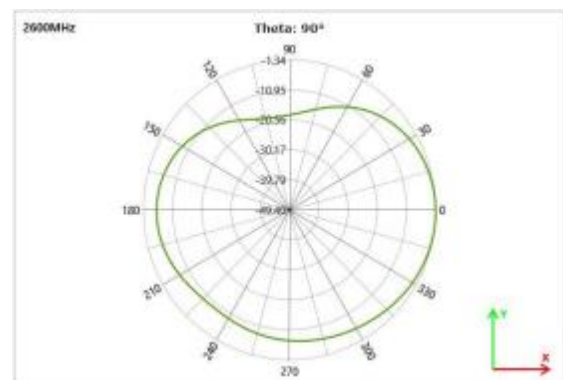
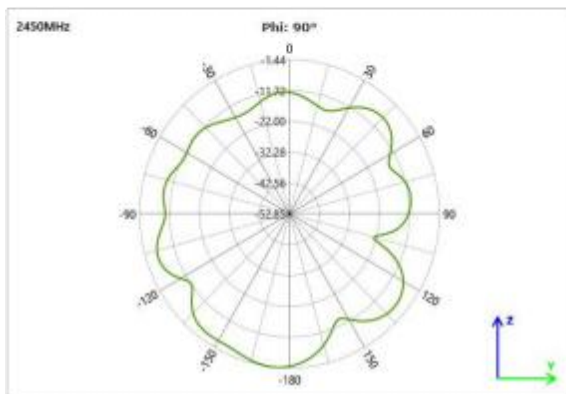
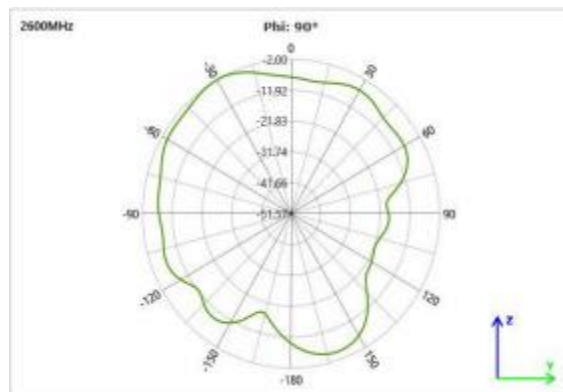
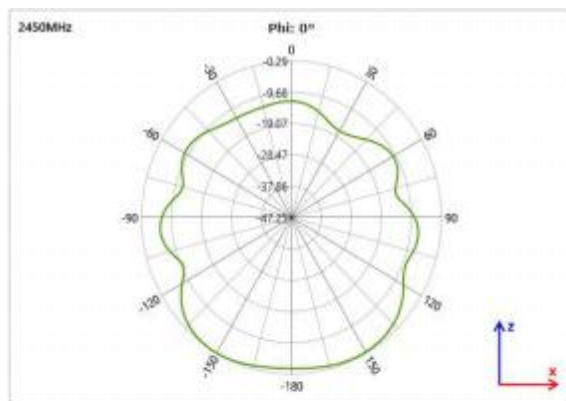
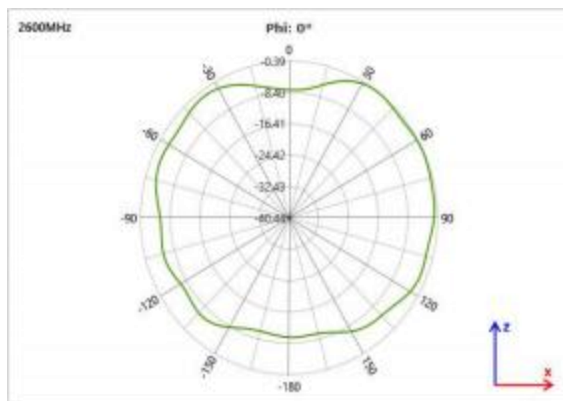
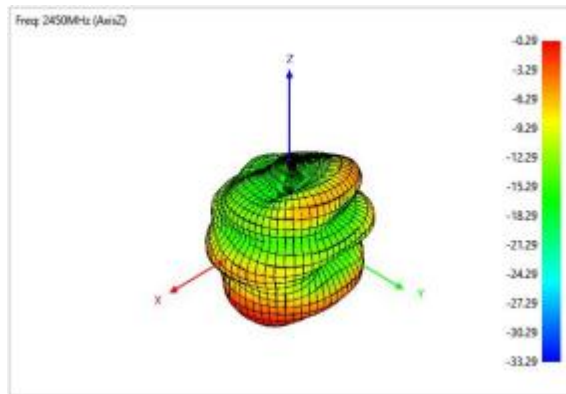
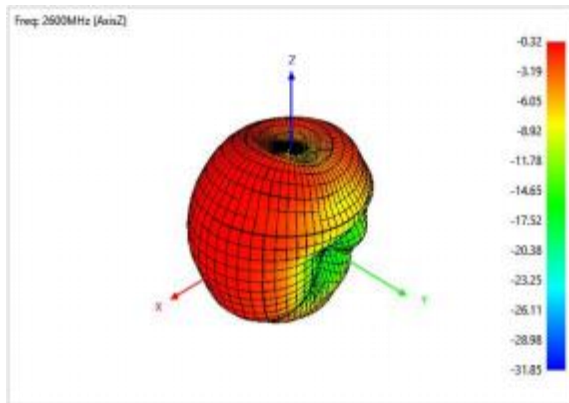
B40



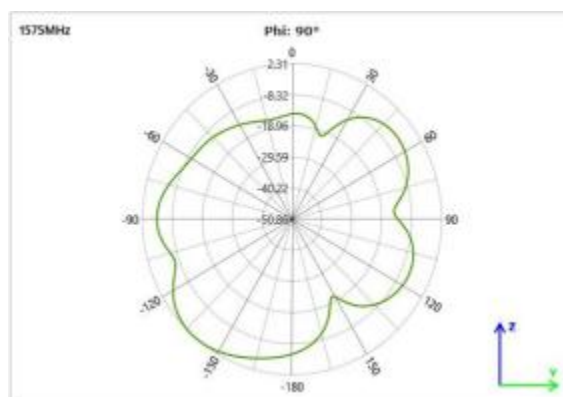
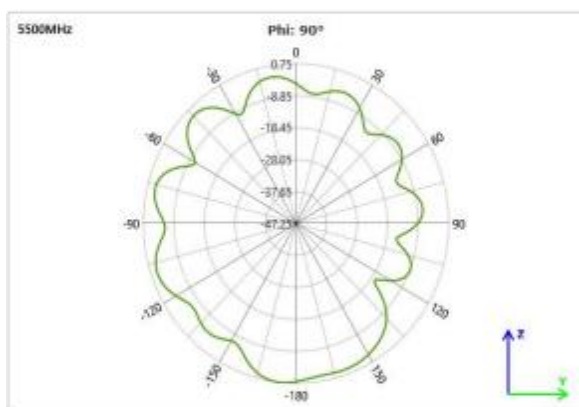
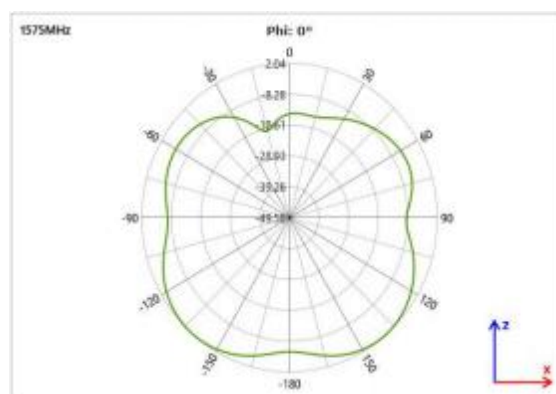
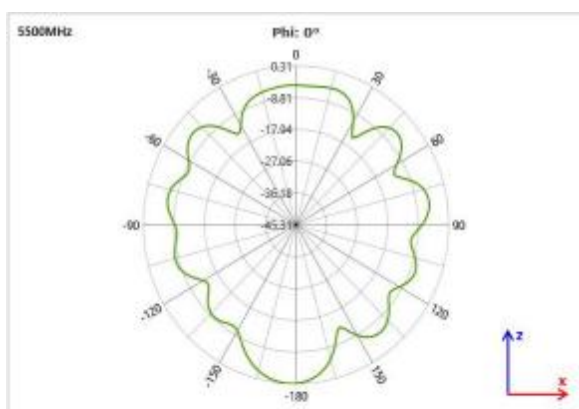
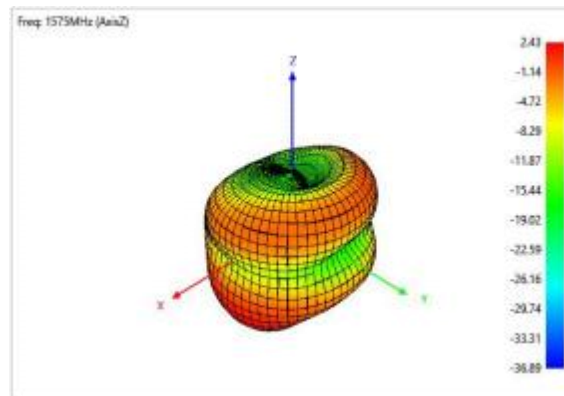
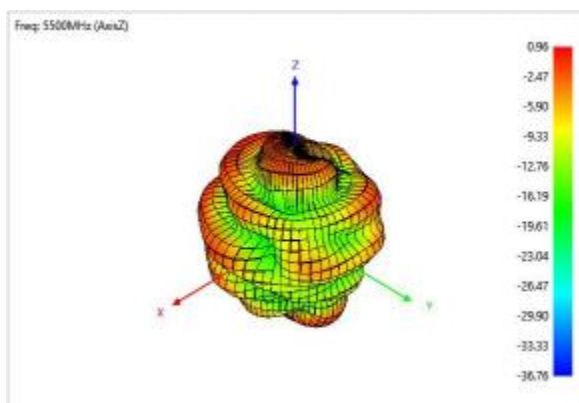
# OTA Test Report

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WIFI-2.4G



## WIFI-5G



## OTA Test Report

## 5.3 Antenna efficiency

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| Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|-----------|-----------------|----------------|
| 820             | -2.5      | -6.38           | 23.02          |
| 830             | -2.18     | -6.07           | 24.69          |
| 840             | -1.89     | -5.79           | 26.36          |
| 850             | -1.82     | -5.73           | 26.72          |
| 860             | -1.81     | -5.86           | 25.96          |
| 870             | -1.94     | -6.08           | 24.64          |
| 880             | -2.21     | -6.43           | 22.73          |
| 890             | -2.55     | -6.83           | 20.75          |
| 900             | -2.98     | -7.31           | 18.56          |

B8

| Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|-----------|-----------------|----------------|
| 880             | -3.29     | -7.5            | 17.77          |
| 890             | -2.8      | -7.09           | 19.57          |
| 900             | -2.36     | -6.71           | 21.34          |
| 910             | -2.01     | -6.46           | 22.57          |
| 920             | -1.75     | -6.37           | 23.08          |
| 930             | -1.81     | -6.53           | 22.22          |
| 940             | -2.08     | -6.94           | 20.24          |
| 950             | -2.42     | -7.45           | 18             |
| 960             | -2.88     | -8.07           | 15.59          |

B13

| Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|-----------|-----------------|----------------|
| 740             | -3.83     | -7.36           | 18.37          |
| 750             | -3.2      | -6.77           | 21.02          |
| 760             | -2.55     | -6.18           | 24.12          |
| 770             | -2.05     | -5.7            | 26.91          |
| 780             | -1.55     | -5.26           | 29.8           |
| 790             | -1.17     | -4.93           | 32.11          |

## OTA Test Report

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| Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|-----------|-----------------|----------------|
| 700             | -3.55     | -6.6            | 21.87          |
| 710             | -2.97     | -5.99           | 25.16          |
| 720             | -2.38     | -5.74           | 26.6           |
| 730             | -1.82     | -5.56           | 27.8           |
| 740             | -1.42     | -5.60           | 27.53          |
| 750             | -1.13     | -5.68           | 27.02          |
| 760             | -0.98     | -5.69           | 26.95          |
| 770             | -0.98     | -5.77           | 26.48          |
| 780             | -1.15     | -5.91           | 25.65          |
| 790             | -1.52     | -6.13           | 24.4           |
| 800             | -2.26     | -6.33           | 23.28          |
| 810             | -2.98     | -6.56           | 22.1           |

mid-to-high frequency

| Frequency (MHz) | Gain (dBi) | Efficiency (dB) | Efficiency (%) | Frequency (MHz) | Gain (dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|------------|-----------------|----------------|-----------------|------------|-----------------|----------------|
| 1700            | -1.25      | -5.78           | 26.43          | 2240            | 0.99       | -5.63           | 27.36          |
|                 | -1.6       | -6.25           | 23.71          |                 | 1.02       | -5.53           | 28             |
|                 | -1.62      | -6.28           | 23.54          |                 | 1.25       | -5.55           | 27.87          |
| 1760            | -1.52      | -6.17           | 24.13          | 2300            | 1.68       | -5.59           | 27.62          |
|                 | -1.44      | -5.98           | 25.22          |                 | 1.54       | -5.86           | 25.95          |
|                 | -1.5       | -5.92           | 25.58          |                 | 1.35       | -5.96           | 25.34          |
| 1820            | -1.25      | -5.81           | 26.26          | 2360            | 1.61       | -5.78           | 26.42          |
|                 | -0.99      | -5.74           | 26.7           |                 | 1.68       | -5.59           | 27.59          |
|                 | -0.97      | -5.8            | 26.31          |                 | 1.95       | -5.55           | 27.84          |
| 1880            | -0.7       | -5.7            | 26.9           | 2420            | 1.58       | -5.69           | 26.95          |
|                 | -0.74      | -5.67           | 27.12          |                 | 1.72       | -5.77           | 26.5           |
|                 | -0.65      | -5.62           | 27.39          |                 | 1.17       | -5.95           | 25.41          |
| 1940            | -1.01      | -5.92           | 25.6           | 2480            | 0.66       | -6.02           | 25.03          |
|                 | -0.82      | -5.56           | 27.77          |                 | 0.38       | -5.82           | 26.21          |
|                 | -0.32      | -5.19           | 30.27          |                 | -0.14      | -5.4            | 28.83          |
| 2000            | -0.01      | -5              | 31.65          | 2540            | -0.18      | -5.19           | 30.24          |
|                 | 0.09       | -4.84           | 32.78          |                 | -0.01      | -5.07           | 31.09          |
|                 | 0.01       | -4.91           | 32.31          |                 | -0.07      | -5.11           | 30.84          |
| 2060            | 0.16       | -5.03           | 31.39          | 2600            | -0.32      | -5.39           | 28.94          |
|                 | 0.45       | -5.09           | 30.96          |                 | -0.61      | -5.57           | 27.72          |
|                 | 1.15       | -4.92           | 32.18          |                 | -0.92      | -5.66           | 27.15          |
| 2120            | 1.4        | -4.92           | 32.2           | 2660            | -0.81      | -5.53           | 27.99          |
|                 | 1.37       | -5.1            | 30.91          |                 | -0.54      | -5.63           | 27.37          |
|                 | 1.13       | -5.44           | 28.58          |                 | -0.73      | -5.83           | 26.14          |
| 2180            | 0.87       | -5.73           | 26.73          |                 |            |                 |                |
|                 | 0.69       | -5.98           | 25.23          |                 |            |                 |                |
|                 | 0.67       | -5.95           | 25.42          |                 |            |                 |                |

# OTA Test Report

## WIFI-2.4G

| Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|-----------|-----------------|----------------|
| 2400            | 0.21      | -5.58           | 27.68          |
| 2410            | 0.1       | -5.37           | 29.01          |
| 2420            | -0.11     | -5.37           | 29.03          |
| 2430            | -0.09     | -5.58           | 27.67          |
| 2440            | -0.17     | -5.8            | 26.33          |
| 2450            | -0.29     | -5.73           | 26.76          |
| 2460            | -0.37     | -5.46           | 28.47          |
| 2470            | -0.42     | -5.29           | 29.59          |
| 2480            | -0.34     | -5.26           | 29.8           |
| 2490            | -0.32     | -5.37           | 29.03          |
| 2500            | -0.39     | -5.49           | 28.27          |

## WIFI-5G

| Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) | Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|-----------|-----------------|----------------|-----------------|-----------|-----------------|----------------|
| 5100            | -0.09     | -6.67           | 21.52          | 5520            | 0.6       | -6.51           | 22.35          |
| 5120            | 0.01      | -6.35           | 23.18          | 5540            | -0.01     | -6.42           | 22.83          |
| 5140            | 0.27      | -6.09           | 24.62          | 5560            | 0.02      | -6.31           | 23.41          |
| 5160            | 0.48      | -6              | 25.13          | 5580            | -0.03     | -6.23           | 23.8           |
| 5180            | 0.61      | -5.84           | 26.05          | 5600            | -0.54     | -6.12           | 24.41          |
| 5200            | 0.66      | -5.83           | 26.13          | 5620            | -0.89     | -6.32           | 23.32          |
| 5220            | 0.55      | -5.93           | 25.54          | 5640            | -0.87     | -6.33           | 23.27          |
| 5240            | 0.33      | -6.05           | 24.83          | 5660            | -1.1      | -6.21           | 23.91          |
| 5260            | 0.11      | -6.12           | 24.41          | 5680            | -1.29     | -6.4            | 22.93          |
| 5280            | 0         | -6.1            | 24.57          | 5700            | -1.5      | -6.21           | 23.92          |
| 5300            | -0.27     | -6.08           | 24.66          | 5720            | -1.65     | -6.25           | 23.71          |
| 5320            | -0.36     | -6.17           | 24.15          | 5740            | -1.48     | -6.43           | 22.75          |
| 5340            | -0.09     | -6.29           | 23.49          | 5760            | -1.53     | -6.28           | 23.55          |
| 5360            | 0.73      | -6.46           | 22.58          | 5780            | -1.61     | -6.23           | 23.81          |
| 5380            | 1.1       | -6.46           | 22.6           | 5800            | -1.7      | -6.73           | 21.24          |
| 5400            | 0.82      | -6.44           | 22.72          | 5820            | -1.88     | -6.73           | 21.23          |
| 5420            | 0.61      | -6.41           | 22.86          | 5840            | -1.58     | -6.63           | 21.72          |
| 5440            | 0.9       | -6.37           | 23.05          | 5860            | -0.99     | -6.69           | 21.41          |
| 5460            | 1.15      | -6.41           | 22.88          | 5880            | -0.68     | -6.85           | 20.66          |
| 5480            | 0.95      | -6.48           | 22.5           | 5900            | -0.35     | -6.99           | 20.02          |
| 5500            | 0.96      | -6.55           | 22.12          |                 |           |                 |                |

## OTA Test Report

GPS

| Frequency (MHz) | Gain(dBi) | Efficiency (dB) | Efficiency (%) |
|-----------------|-----------|-----------------|----------------|
| 1560            | 2.14      | -3.72           | 42.45          |
| 1565            | 2.21      | -3.72           | 42.49          |
| 1570            | 2.29      | -3.71           | 42.57          |
| 1575            | 2.43      | -3.67           | 42.9           |
| 1580            | 2.56      | -3.63           | 43.37          |
| 1585            | 2.66      | -3.59           | 43.75          |
| 1590            | 2.74      | -3.58           | 43.9           |

## 6. Equipment List

| Type of Equipment     | Manufacture          | Model Number                             |
|-----------------------|----------------------|------------------------------------------|
| Network Analyzer      | Agilent Technologies | E5071C                                   |
| Switch control System | Onewave              | OWT-900<br>OWT-2400                      |
| Software              | Onewave              | RedStationV1.4.2<br>Measurement software |

## ANNEX B: The EUT Appearance and Test Configuration

### B.1 EUT Appearance



## B.2 Test Configuration

