

# Material Acknowledgement

Suppliers: Shenzhen Maya Communication Equipment Co., Ltd

Model: A68

Product Name: On the antenna assembly

Specifications / Models: \_\_\_\_\_

Antenna trademark: : 

Color: black

Address: \_\_\_\_\_

Contact / Phone: \_\_\_\_\_

## Supplier (with official seal)

| Structural Department | R&D Department | Quality Department | Project Department |  |
|-----------------------|----------------|--------------------|--------------------|--|
|                       |                |                    |                    |  |
|                       |                |                    |                    |  |

## Customer review

| ID Department | Structural Department / Special | Hardware Department | Packaging engineering | Quality Department |
|---------------|---------------------------------|---------------------|-----------------------|--------------------|
|---------------|---------------------------------|---------------------|-----------------------|--------------------|

|  |         |  |  |  |
|--|---------|--|--|--|
|  | Project |  |  |  |
|  |         |  |  |  |
|  |         |  |  |  |

## Citations

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## Specifications

The report mainly provides A68 GSM +LTE,performance parameter test, antenna for built-in antenna:

## 2、Electrical performance

### 2-1Specification Standard

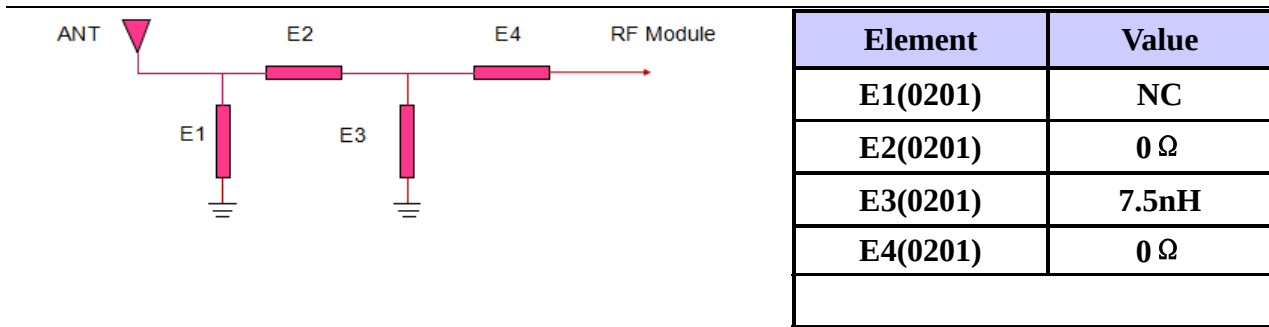
The A68 antenna operates in the LTE700/850/900 1800/1900/2100/2300/2700Mhz band, which generates resonances in this ;The following table shows the mass production performance test indicators for the A68 design antenna:

| Band         | VSWR       | Band         | VSWR       |
|--------------|------------|--------------|------------|
| GSM850       | $\leq 2.0$ | LTE FDD, B26 | $\leq 2.0$ |
| GSM900       | $\leq 2.2$ | LTE FDD, B28 | $\leq 2.5$ |
| DCS1800      | $\leq 2.5$ | LTE FDD, B66 | $\leq 2.2$ |
| PCS1900      | $\leq 2.2$ | LTE TDD, B34 | $\leq 2.2$ |
| WCDMA1       | $\leq 2.2$ | LTE TDD, B38 | $\leq 2.6$ |
| WCDMA2       | $\leq 2.2$ | LTE TDD, B39 | $\leq 2.2$ |
| WCDMA4       | $\leq 2.5$ | LTE TDD, B40 | $\leq 3.0$ |
| WCDMA5       | $\leq 2.0$ | LTE TDD, B41 | $\leq 2.6$ |
| WCDMA6       | $\leq 2.0$ | CDMA BC0     | $\leq 2.0$ |
| WCDMA8       | $\leq 2.0$ | CDMA BC1     | $\leq 2.0$ |
| WCDMA19      | $\leq 2.0$ |              |            |
| LTE FDD, B1  | $\leq 2.2$ |              |            |
| LTE FDD, B2  | $\leq 2.2$ |              |            |
| LTE FDD, B3  | $\leq 2.5$ |              |            |
| LTE FDD, B4  | $\leq 2.5$ |              |            |
| LTE FDD, B5  | $\leq 2.0$ |              |            |
| LTE FDD, B7  | $\leq 2.6$ |              |            |
| LTE FDD, B8  | $\leq 2.0$ |              |            |
| LTE FDD, B12 | $\leq 2.5$ |              |            |
| LTE FDD, B13 | $\leq 2.5$ |              |            |
| LTE FDD, B17 | $\leq 2.5$ |              |            |
| LTE FDD, B18 | $\leq 2.0$ |              |            |
| LTE FDD, B19 | $\leq 2.0$ |              |            |
| LTE FDD, B20 | $\leq 2.0$ |              |            |
| LTE FDD, B25 | $\leq 2.2$ |              |            |

## 2-2antenna matching circuit

Antenna Matching circuit is designed to match the motherboard and antenna, so that the mobile phone in the operating frequency band to achieve the best RF performance.

EGSM+WCDMA+CDMA+LTE, antenna structure mode:



Main antenna

### 3.Standing Wave Ratio(VSWR)test

#### 3-1 Test settings

The VSWR test units are connected in turn: E5071B Network Analyzer → 50 ohm coaxial

Cable → 156mm long copper tube /b110> → Test fixtures. Processing of the test fixture: A hard cable is used from the antenna 50 ohm test point on the pcb of the mobile phone to lead out the SMA-J connector, connect it to the copper tube with a choke, and then connect the other devices in turn.

#### 3-2 VWR test

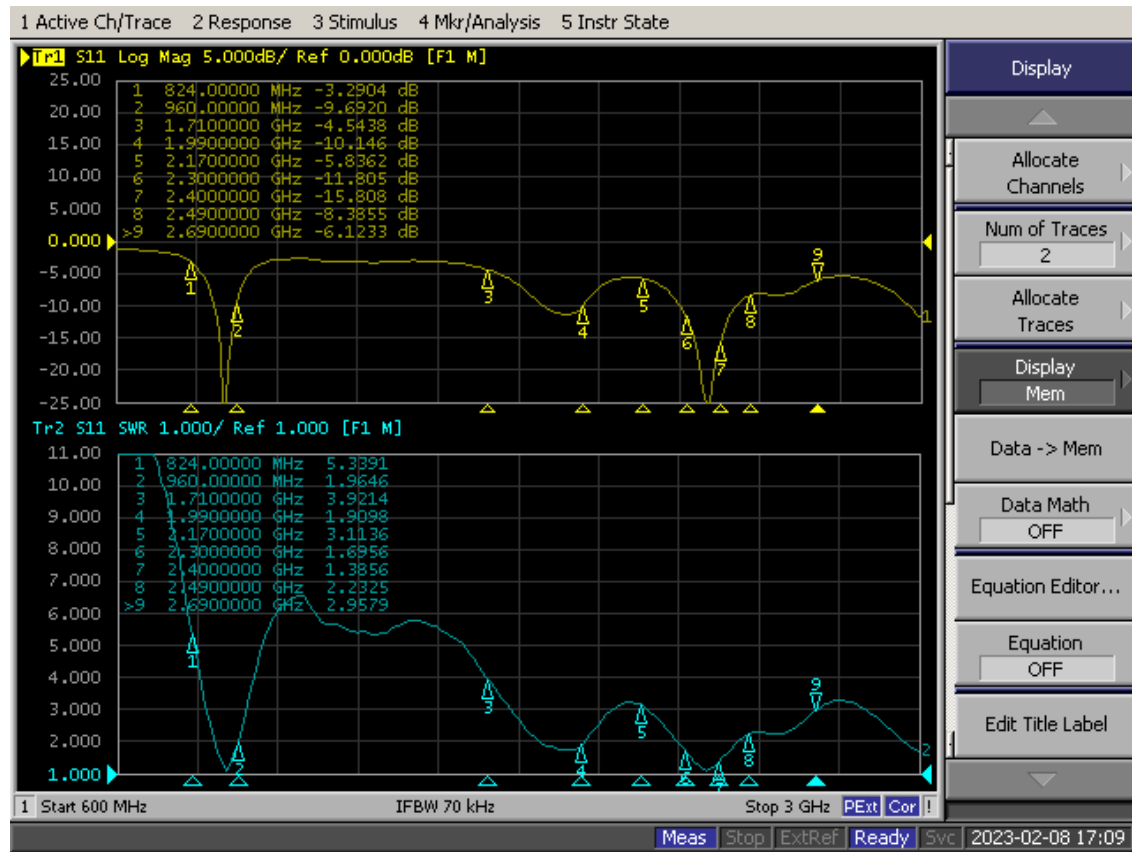
The following table shows the value of the standing wave ratio of the edge frequency point of the GSM+LTE antenna operating band, , the return loss, VSWR, and the relevant waveform plot is shown in the annex:

| Main antenna VSWR |     |     |     |     |      |      |      |      |
|-------------------|-----|-----|-----|-----|------|------|------|------|
| Freq(MHz)         | 824 | 894 | 880 | 960 | 1710 | 1880 | 1850 | 1990 |
| Free Space        | 5.3 | 3.5 | 2.2 | 1.9 | 3.9  | 2.5  | 2.1  | 1.9  |

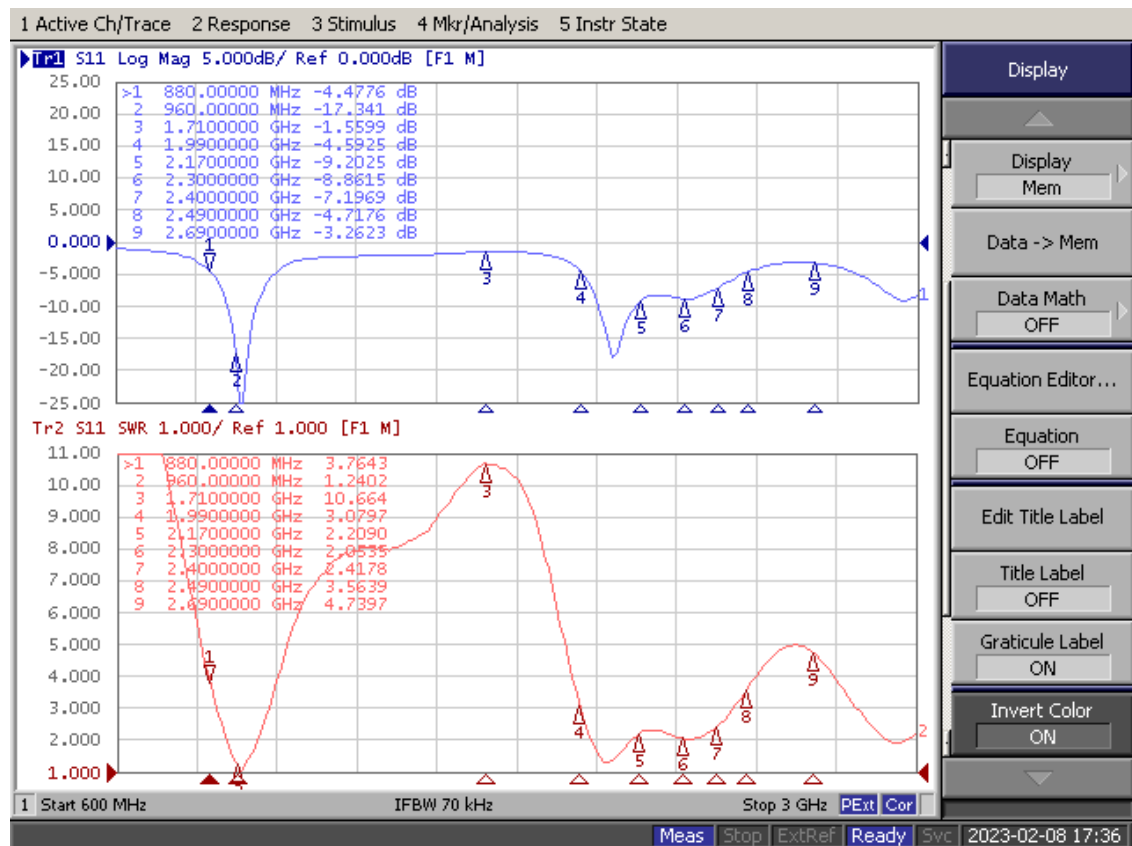
| Main antenna VSWR |      |      |      |      |      |
|-------------------|------|------|------|------|------|
| Freq(MHz)         | 2170 | 2300 | 2400 | 2500 | 2700 |
| Free Space        | 3.11 | 1.69 | 1.38 | 2.2  | 2.9  |

### 3-3test results

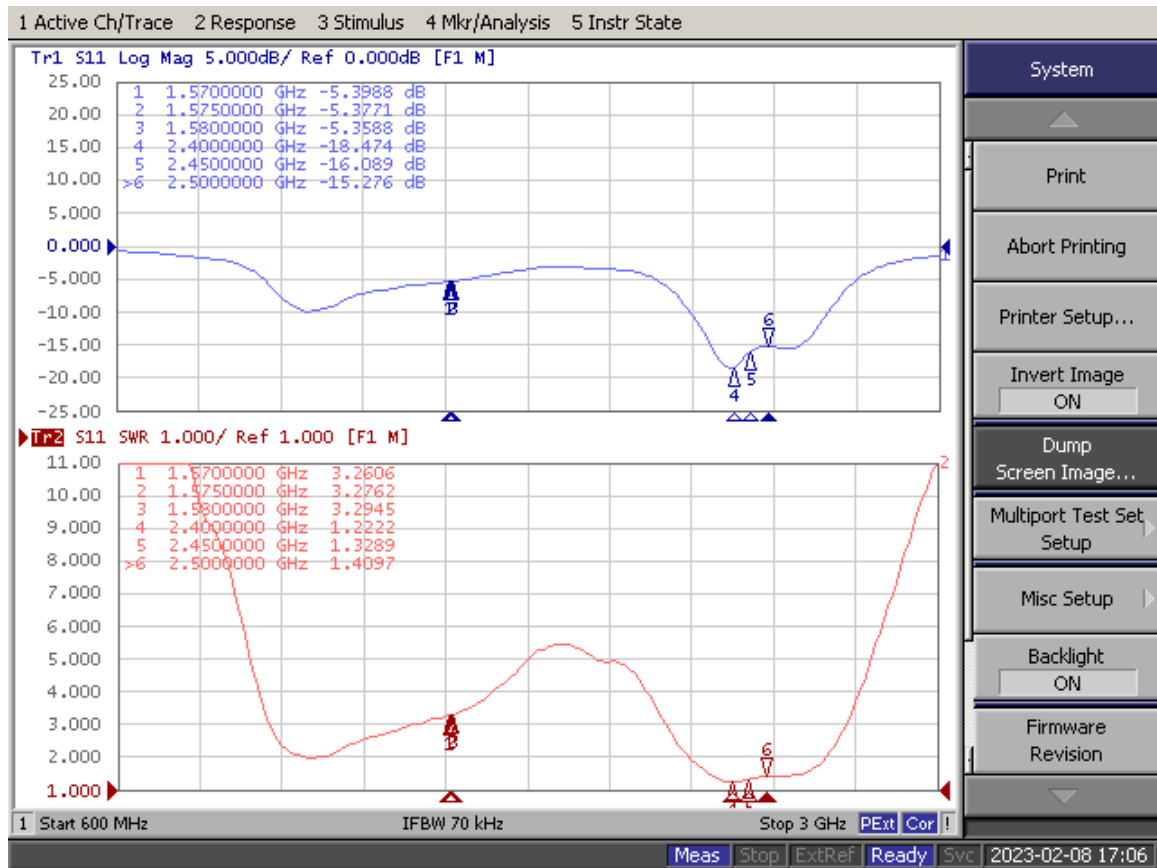
MAIN VSWR/Return Loss



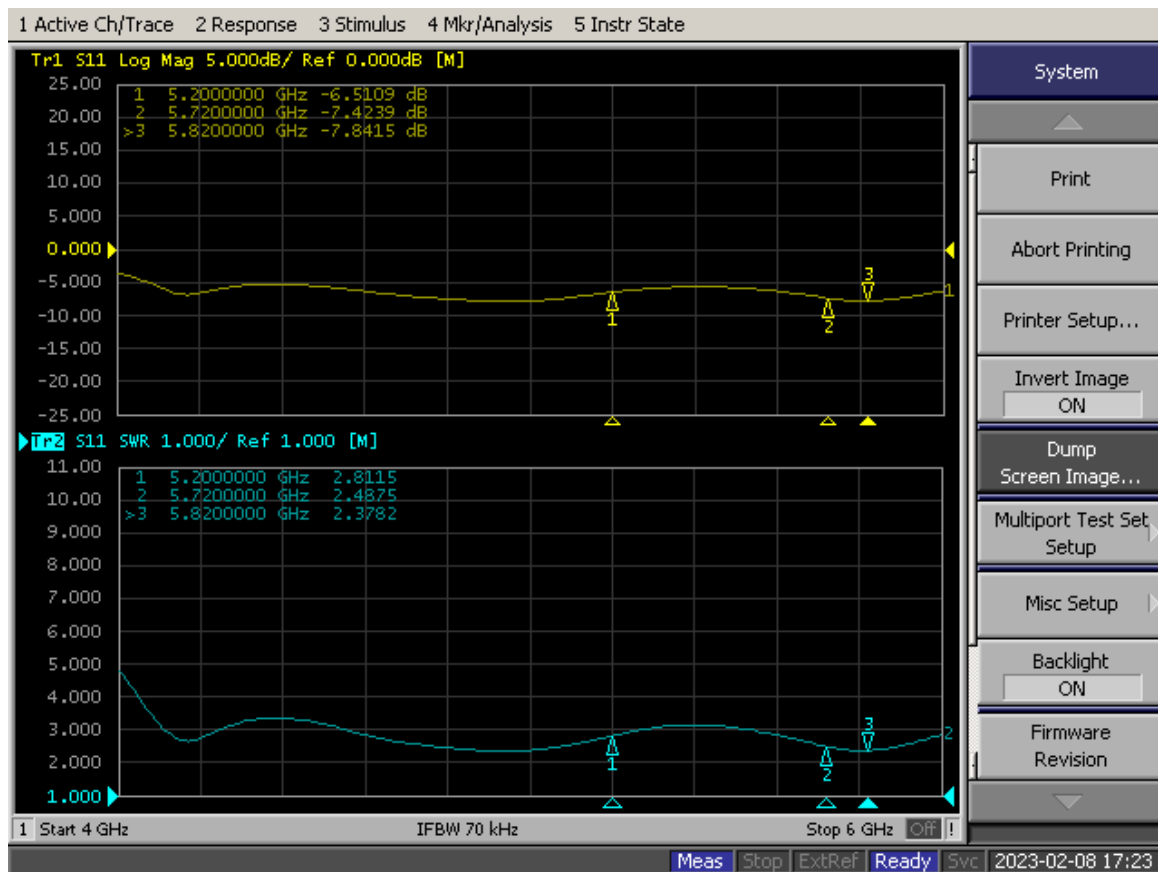
AUX VSWR/Return Loss



## 2.4G-WiFi/GPS VSWR/Return Loss



## 5.8G-WIFI VSWR/Return Loss



**3-4 gain test**

2.4G-WIFI/GPS 5.8G-WIFI Gain

| Freq | Gain | Freq | Gain | Freq | Gain |
|------|------|------|------|------|------|
| 1560 | -1.2 | 2400 | -1.5 | 5200 | 0.5  |
| 1570 | -1.2 | 2420 | -1.6 | 5300 | 0.4  |
| 1580 | -1.2 | 2440 | -1.5 | 5400 | 0.4  |
| 1590 | -1.3 | 2460 | -1.3 | 5500 | 0.6  |
|      |      | 2480 | -1.4 | 5600 | 0.5  |
|      |      | 2500 | -1.1 | 5700 | 0.4  |
|      |      |      |      | 5800 | 0.2  |

MAIN Gain

| Freq | Gain | Freq | Gain | Freq | Gain |
|------|------|------|------|------|------|
| 700  | -4.2 | 950  | -3.5 | 2160 | -0.7 |
| 710  | -3.7 | 960  | -4.2 | 2180 | -0.5 |
| 720  | -3.5 | 1700 | 0.7  | 2300 | -0.2 |
| 730  | -3.6 | 1720 | 0.7  | 2320 | -0.3 |
| 740  | -3.8 | 1740 | 0.7  | 2340 | -0.2 |
| 750  | -3.8 | 1760 | 0.7  | 2360 | -0.5 |
| 760  | -3.9 | 1780 | 0.7  | 2380 | -0.8 |
| 770  | -3.9 | 1800 | 0.7  | 2400 | -1.1 |
| 780  | -4.0 | 1820 | 0.6  | 2420 | -1.2 |
| 790  | -4.0 | 1840 | 0.5  | 2440 | -1.2 |
| 800  | -3.9 | 1860 | 0.2  | 2460 | -1.5 |
| 810  | -4.0 | 1880 | 0.5  | 2480 | -1.7 |
| 820  | -4.0 | 1900 | 0.8  | 2500 | -1.6 |
| 830  | -3.9 | 1920 | 0.8  | 2520 | -1.5 |
| 840  | -4.1 | 1940 | 0.9  | 2540 | -1.4 |
| 850  | -4.2 | 1960 | 0.9  | 2560 | -1.4 |
| 860  | -4.3 | 1980 | 0.8  | 2580 | -1.3 |
| 870  | -4.3 | 2000 | 0.8  | 2600 | -1.0 |
| 880  | -4.0 | 2020 | 0.6  | 2620 | -1.0 |
| 890  | -3.8 | 2040 | 0.7  | 2640 | -1.1 |
| 900  | -3.8 | 2060 | 0.6  | 2660 | -1.2 |
| 910  | -3.7 | 2080 | 0.6  | 2680 | -1.3 |
| 920  | -3.5 | 2100 | 0.7  | 2700 | -1.6 |
| 930  | -3.5 | 2120 | 0.7  |      |      |
| 940  | -3.2 | 2140 | -0.5 |      |      |

#### AUX Gain

| Freq | Gain |
|------|------|
| 720  | -4.0 |
| 740  | -3.6 |
| 760  | -3.8 |
| 840  | -4.5 |
| 860  | -4.3 |
| 880  | -4.4 |
| 900  | -4.3 |
| 920  | -4.2 |
| 930  | -4.4 |
| 940  | -4.0 |
| 950  | -3.8 |
| 960  | -3.9 |

The active test units are connected in turn as follows: Agilent8960/8820C → 50 ohm

coaxial Cable → GTS Test System → sted.

#### 4-1 Test site

GTS microwave anechoic chamber: the test frequency range is 400MHz-6GHz, the quiet zone range is 40cm circumference, and the reflectivity is less than -90 dB.

#### 4-2 Test results

Maximum radiated power and maximum receive sensitivity reflect the antenna's maximum power radiated value and optimal reception performance over the entire radiation space. /b10> TRP and TIS reflect the average radiated power and average reception sensitivity of the antenna, that is, the overall reception performance of the antenna.

### 5. Environmental treatment

Original environment treatment.

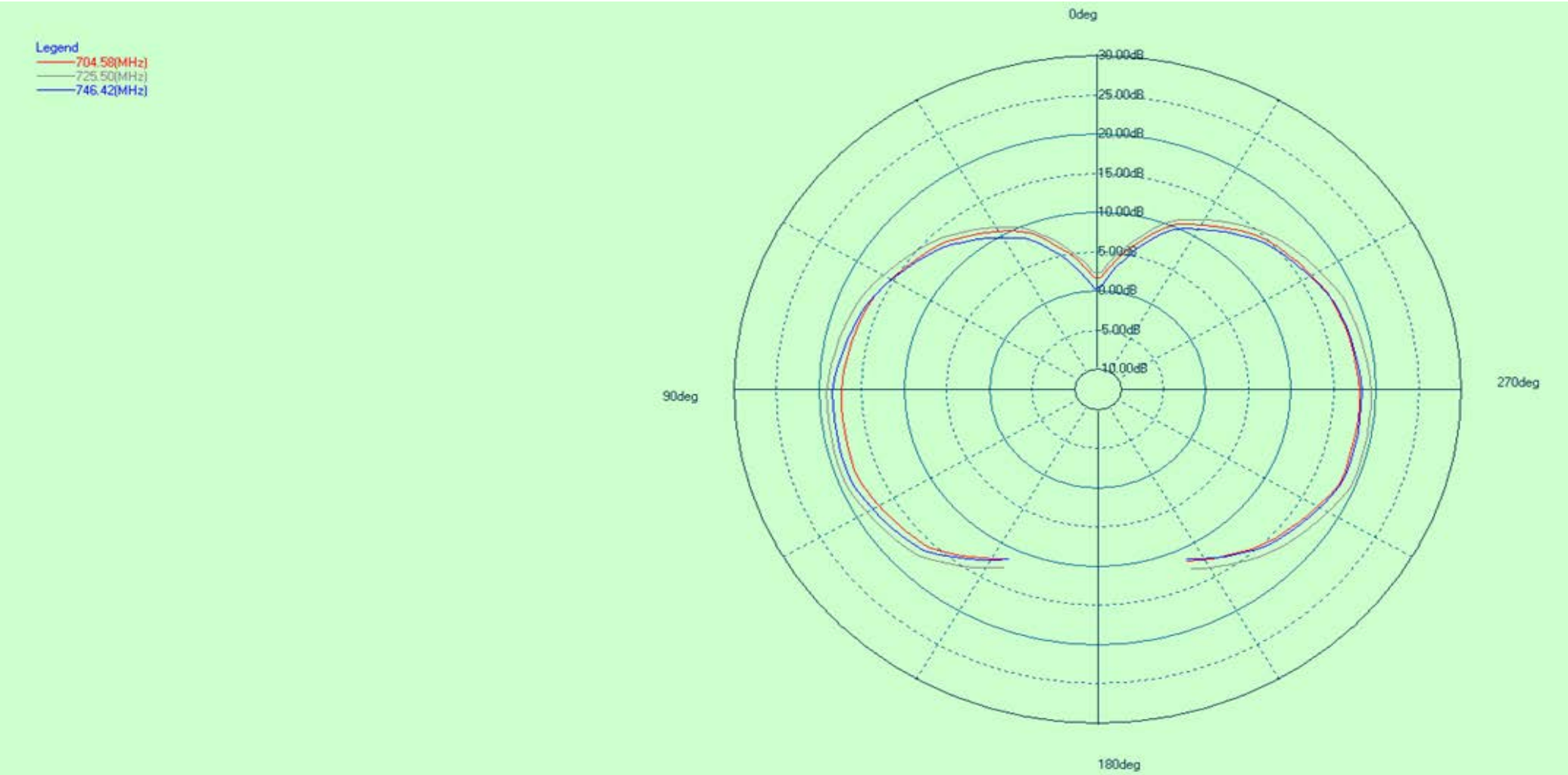
## **6.Recommendations and Conclusions**

This report is based on the antenna electrical performance measured by the customer's final version of the A68. As can be seen from the above test data, this antenna provides better electrical performance.

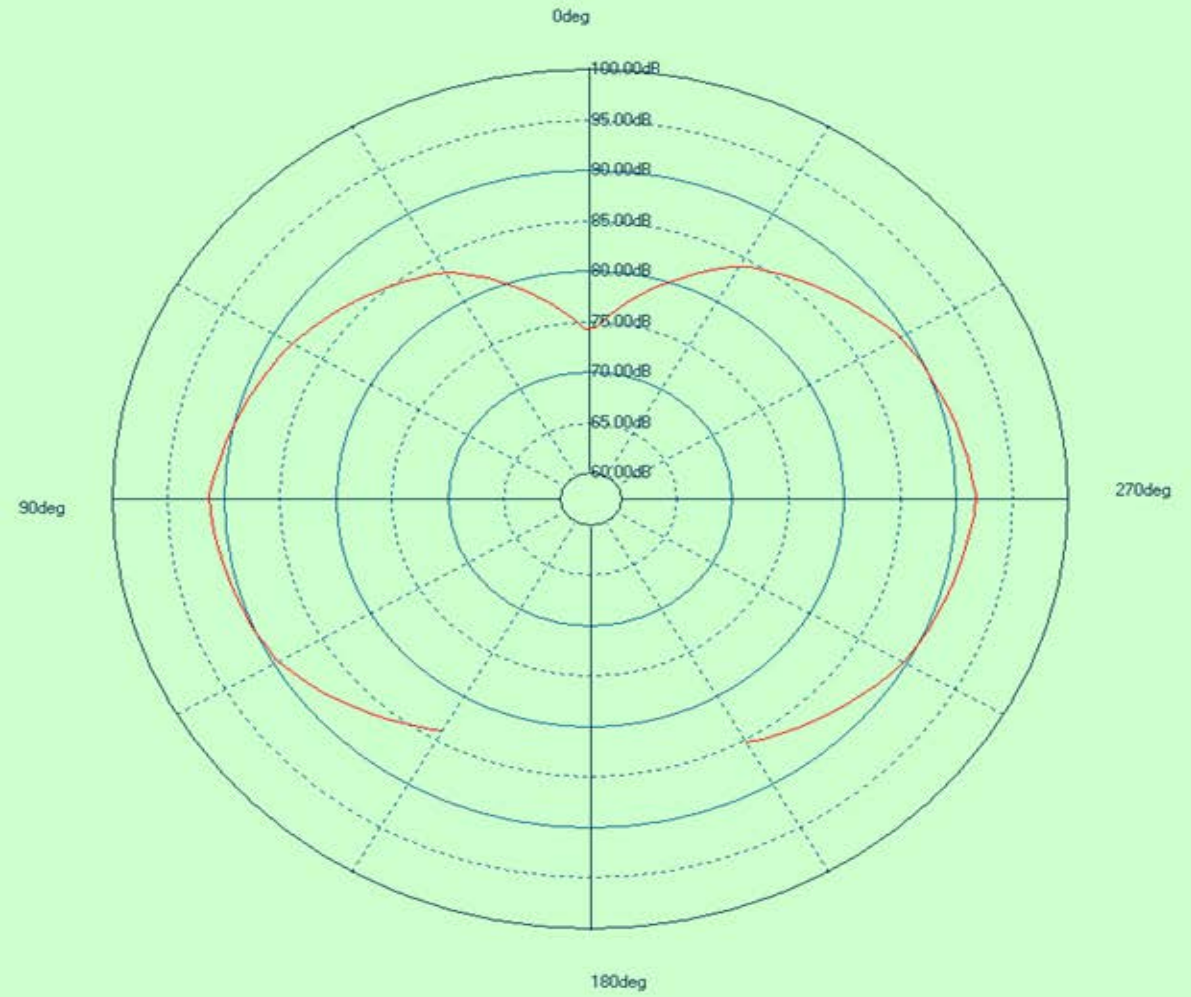
Fubang R&D looks forward to your confirmation, thank you for your cooperation!

## **8、 Product drawings**

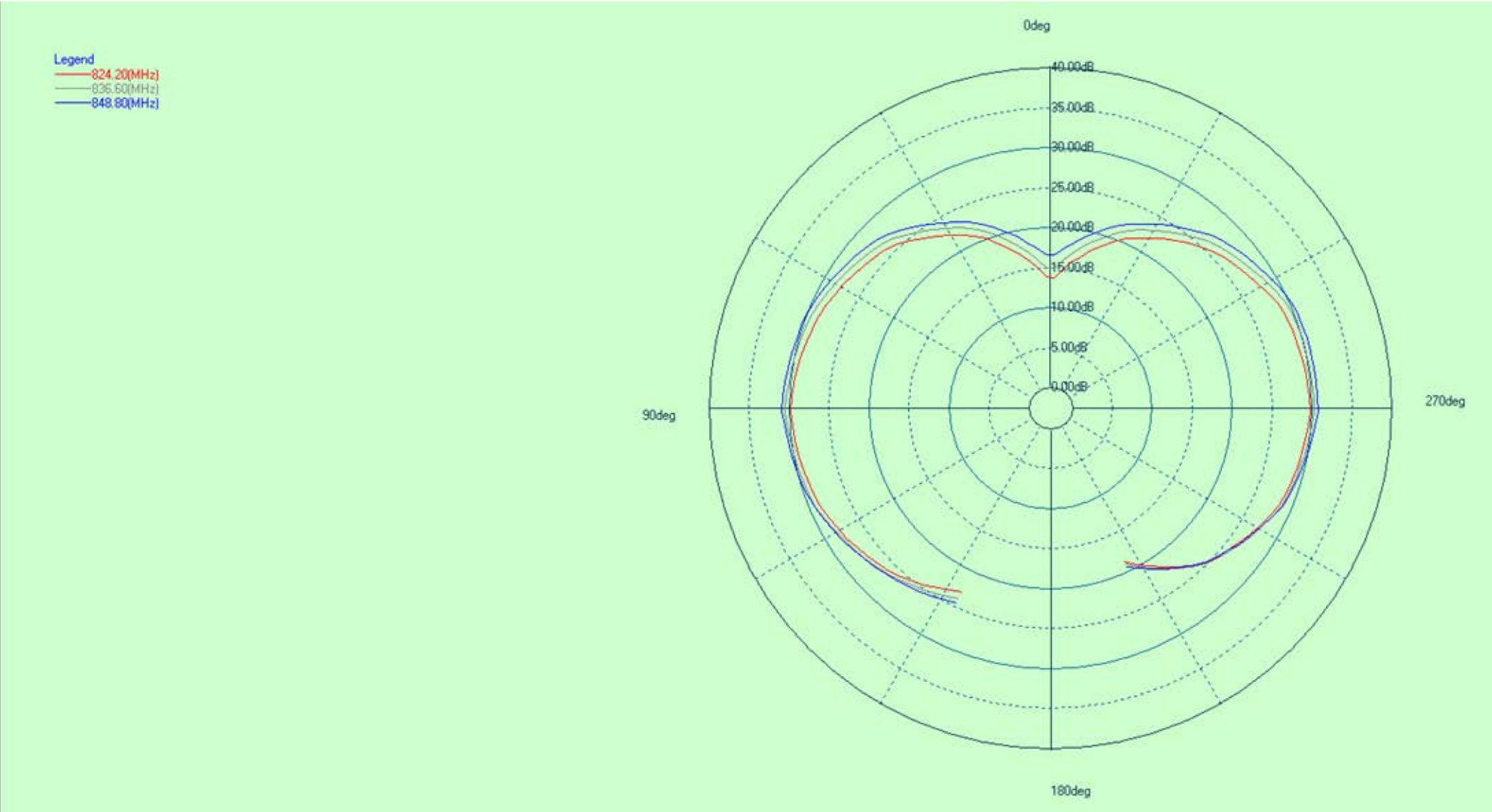
FS pattern      700M-800M



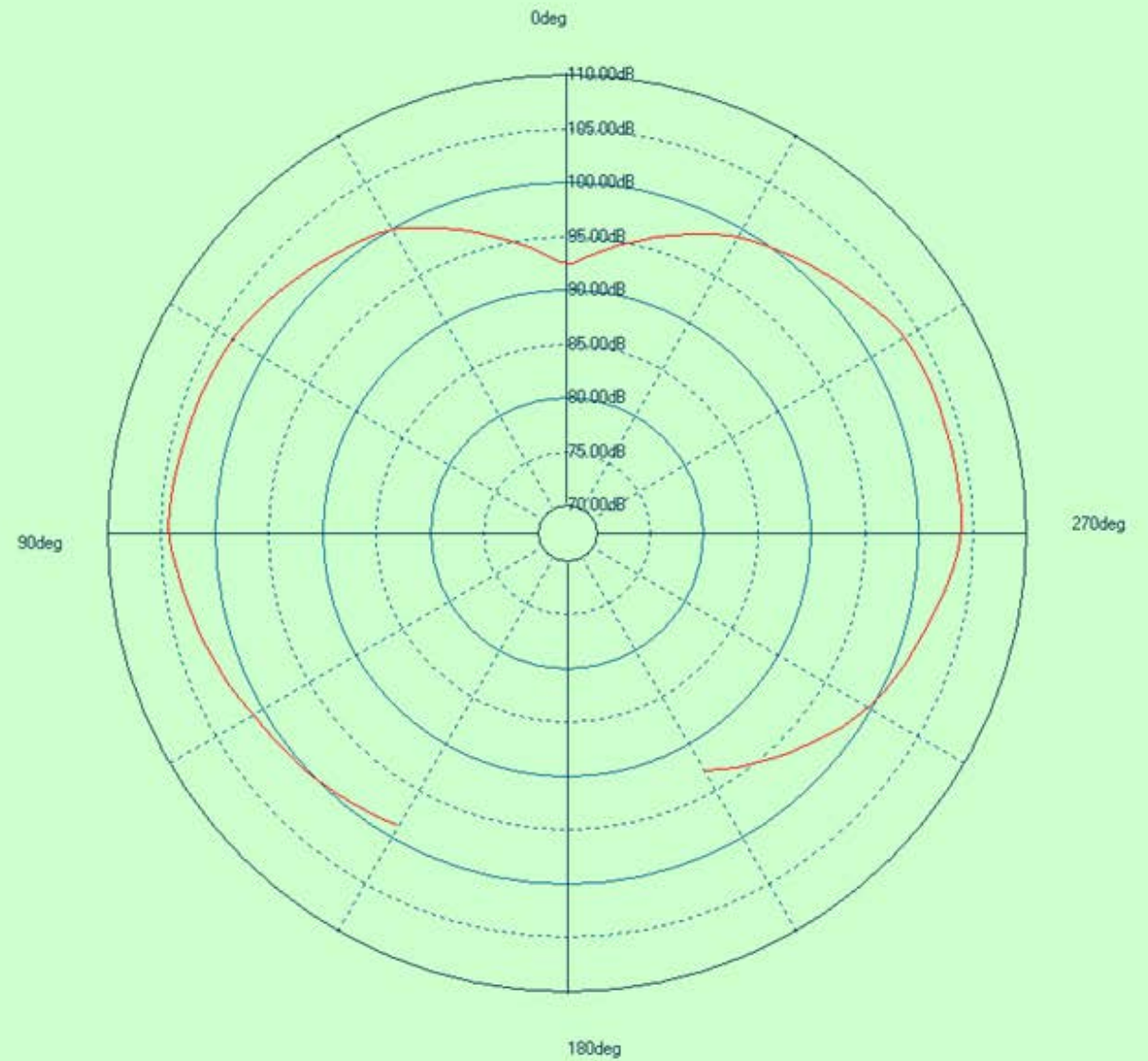
Legend  
798.00(MHz)



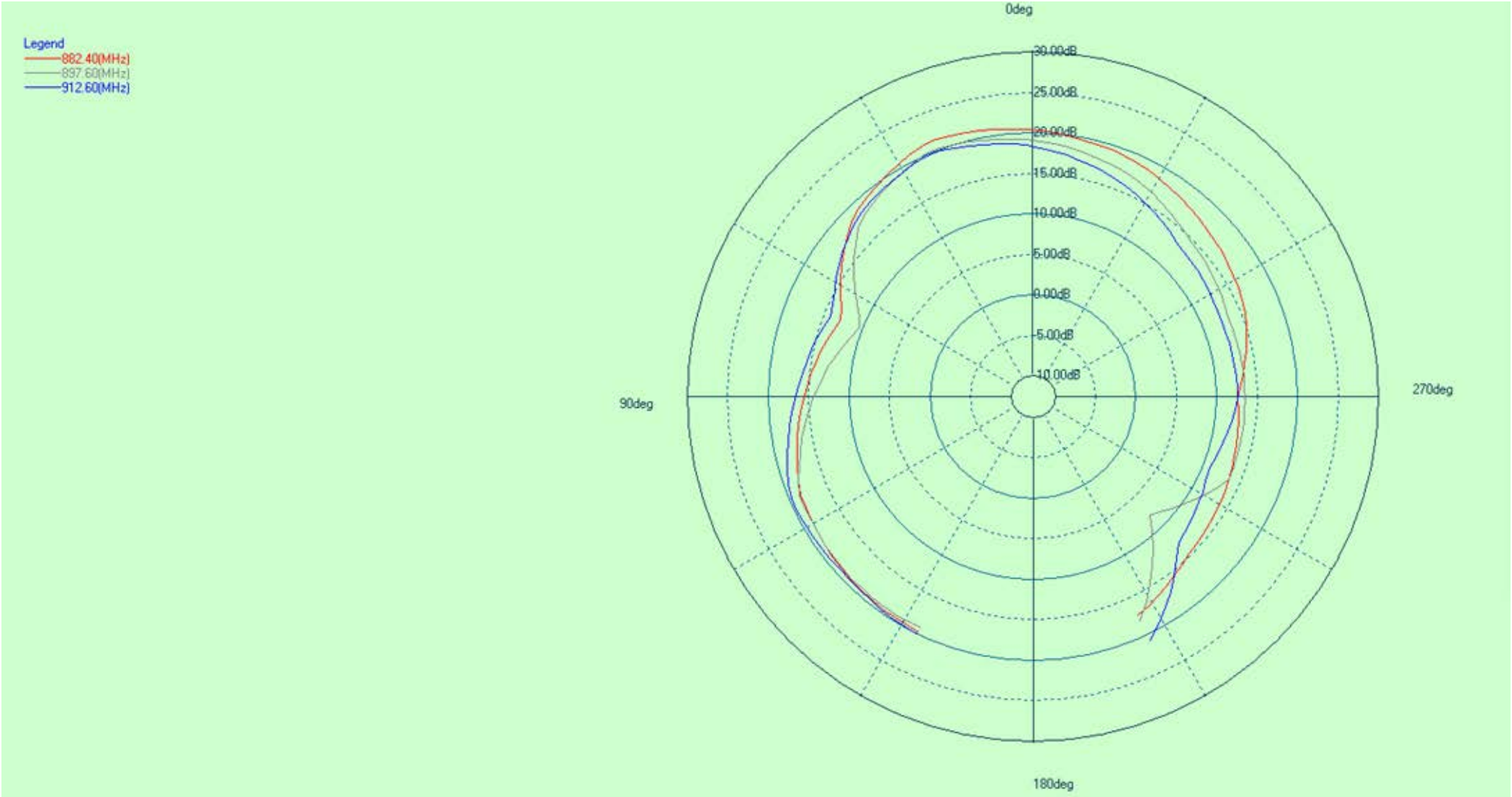
800M-900M



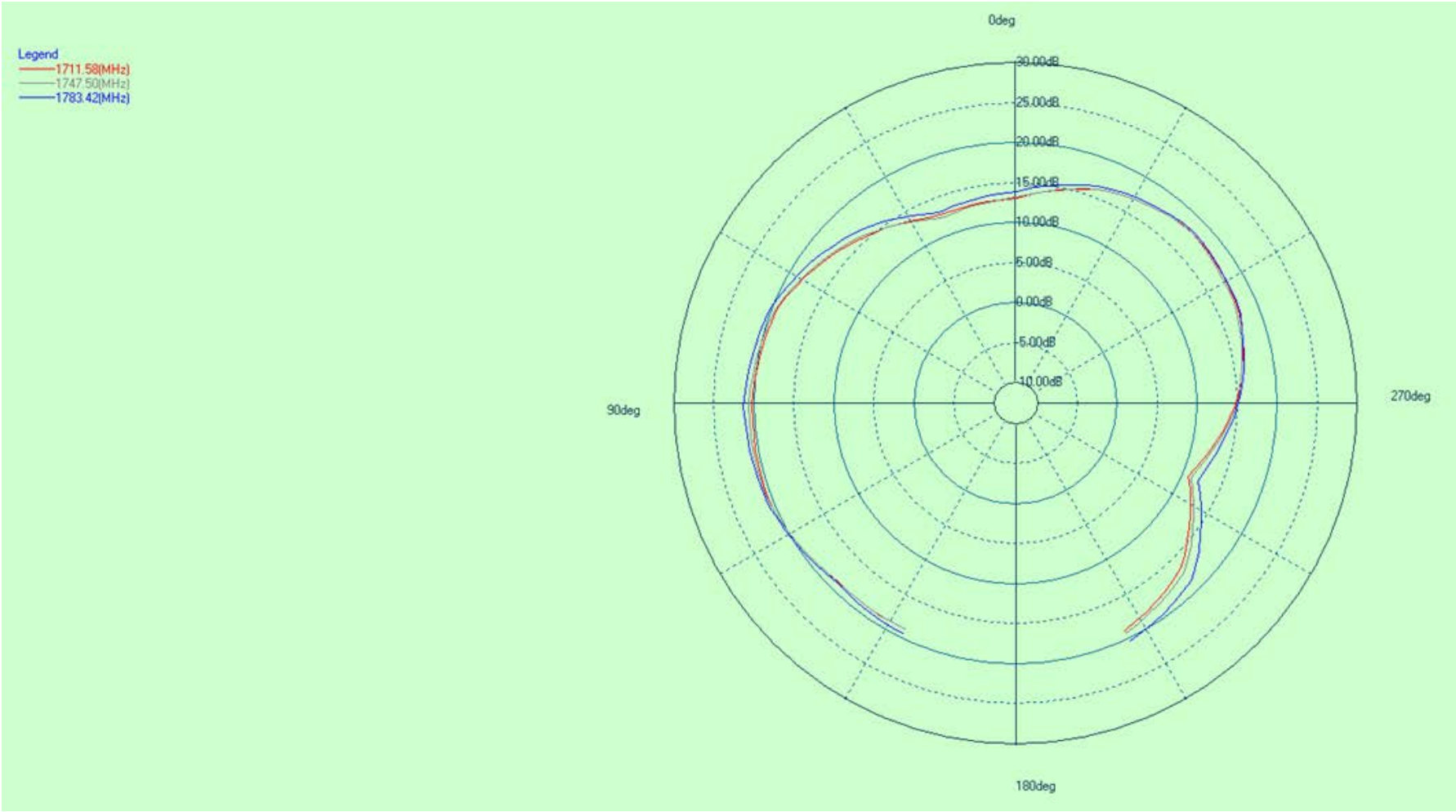
Legend  
— 893.80(MHz)

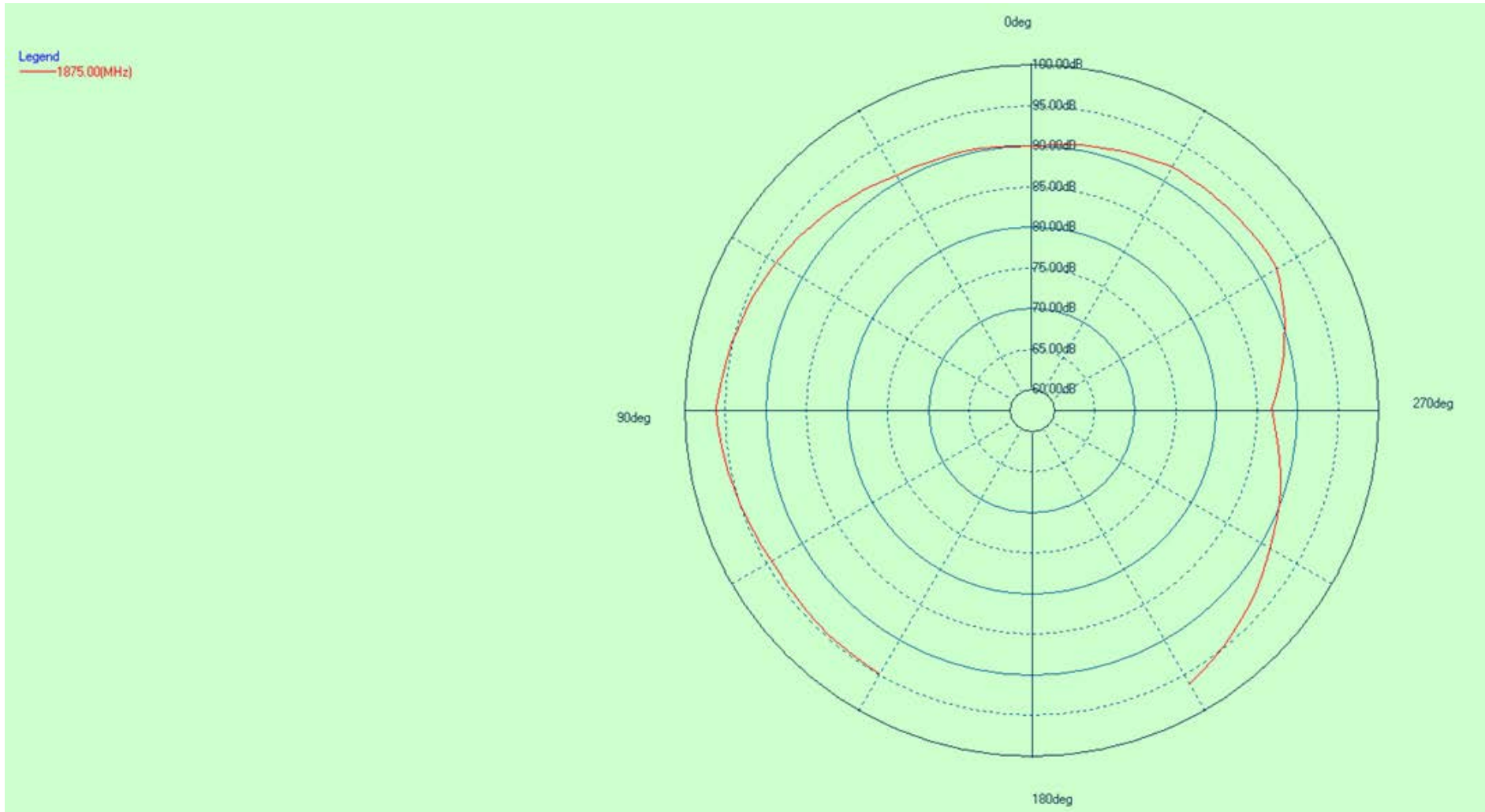


900M

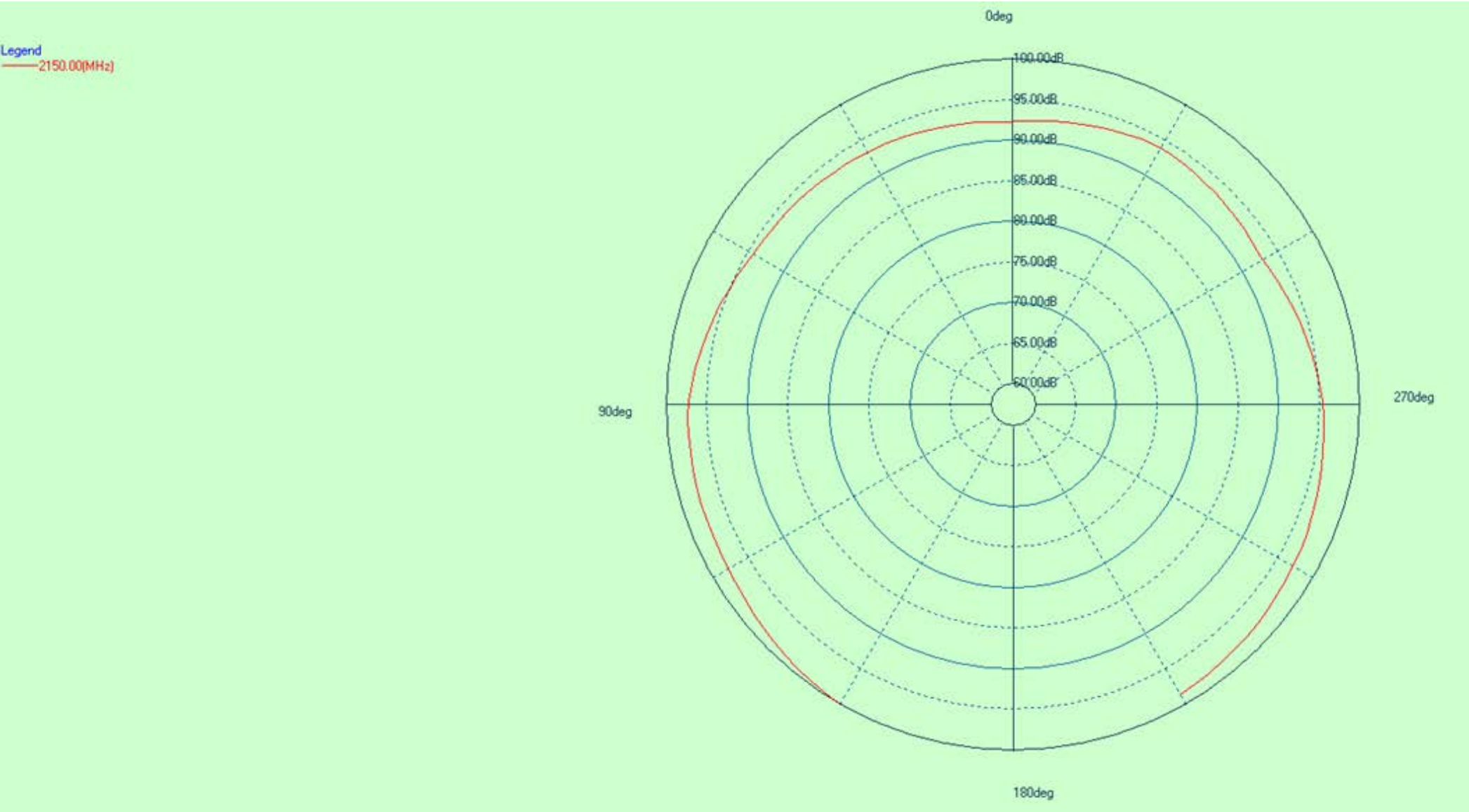


1710M-2100M

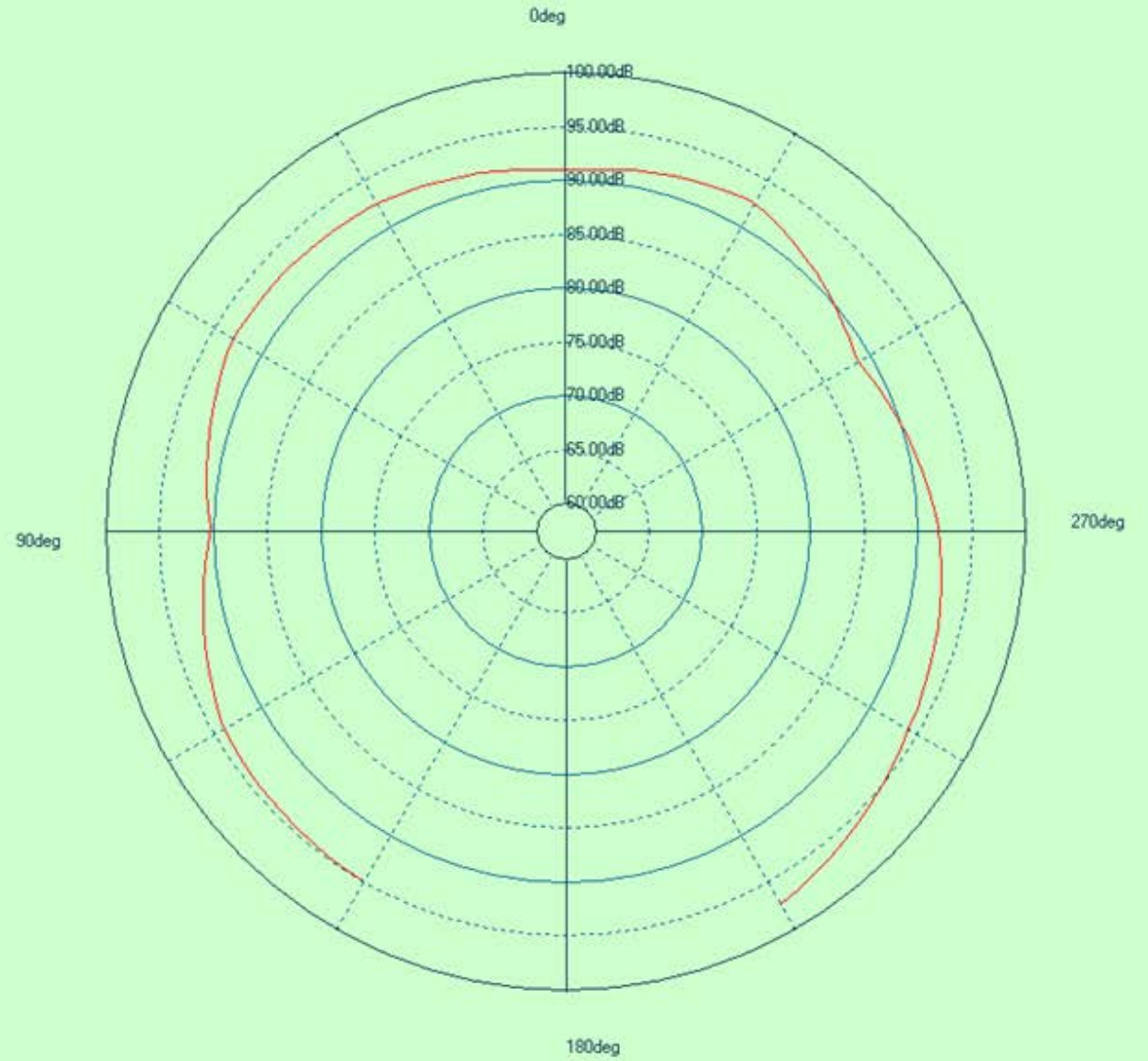




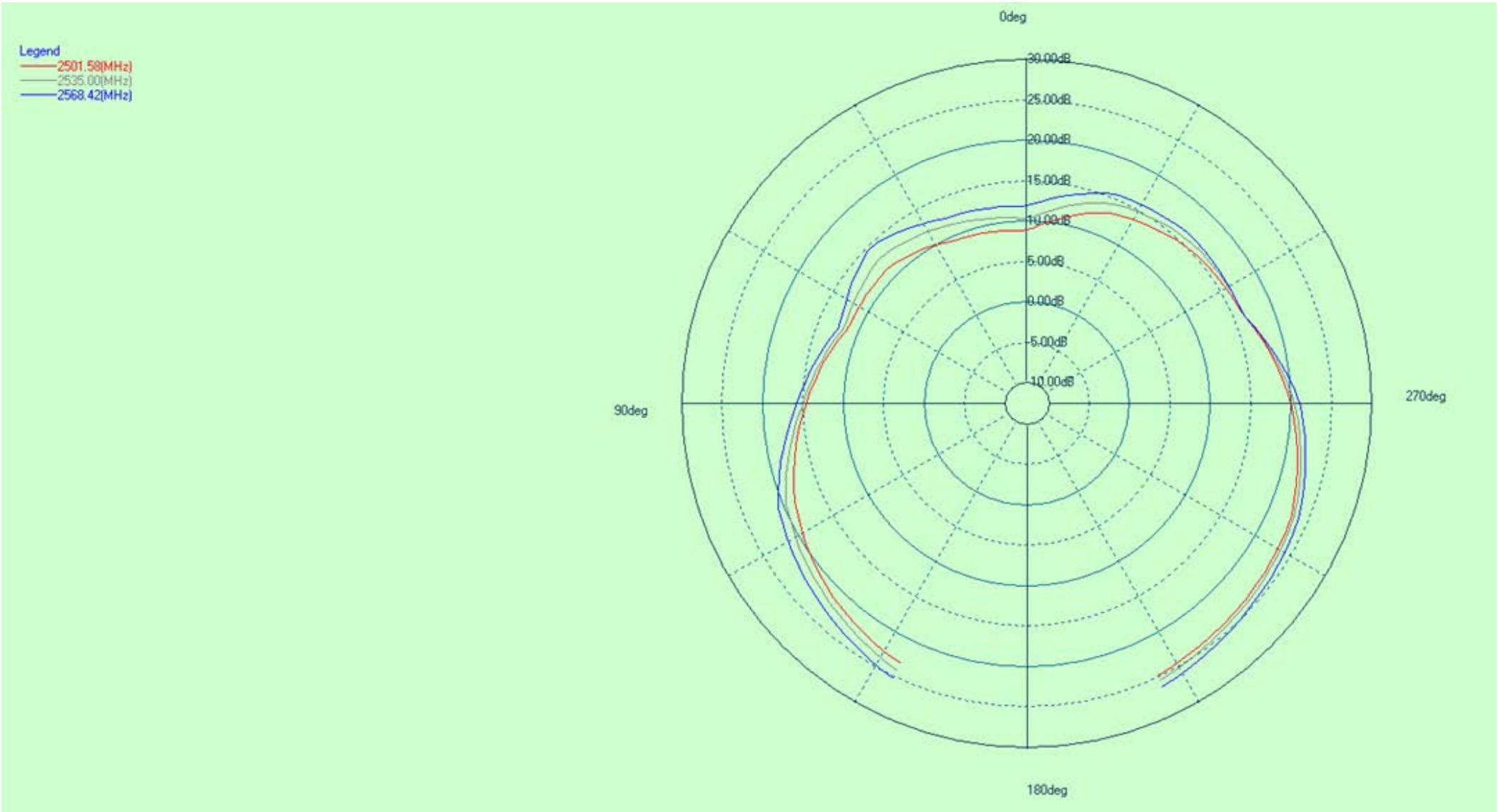
2100M-2400M



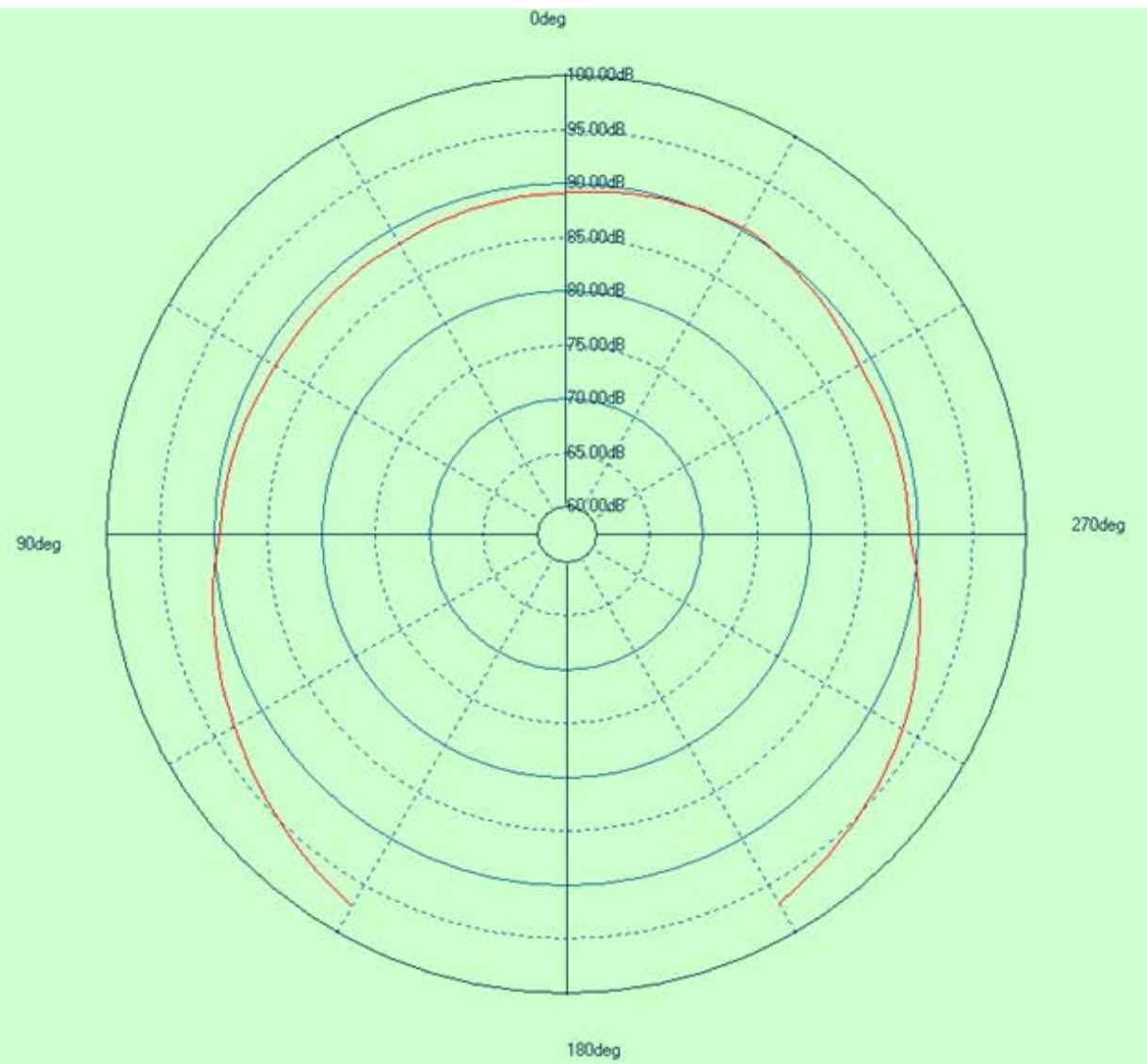
Legend  
— 2150.00(MHz)



2400M-2700M



Legend  
— 2685.00(MHz)



## 8.Product drawings

