

|              |                                  |
|--------------|----------------------------------|
| Manufacturer | /                                |
| Antenna type | Internal antenna                 |
| Antenna Gain | 3.00dBi for 2.4G, 3.00dBi for 5G |

## 1.Test equipment and conditions:

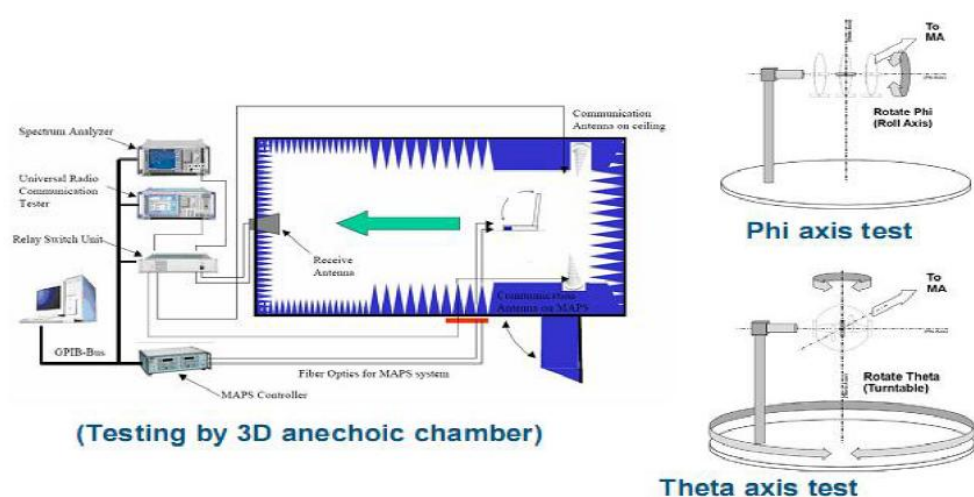
### 1.1.Network Analyzer

Agilent 8753D Agilent 5071B

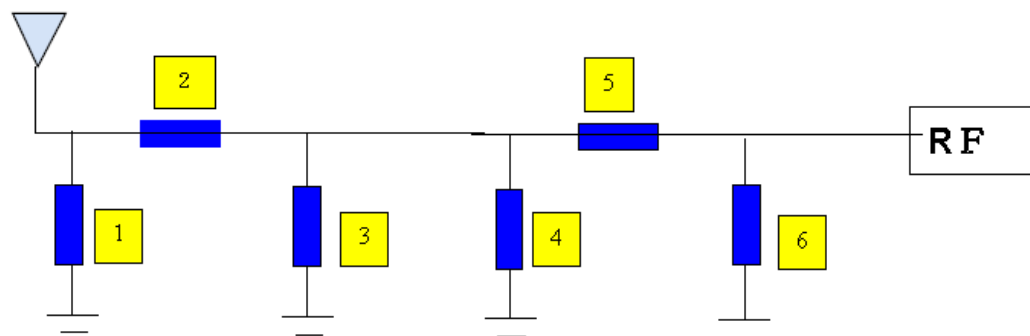
### 1.2.Communication test equipment

Agilent E5515C R&S CMW500

### 1.3.Test system

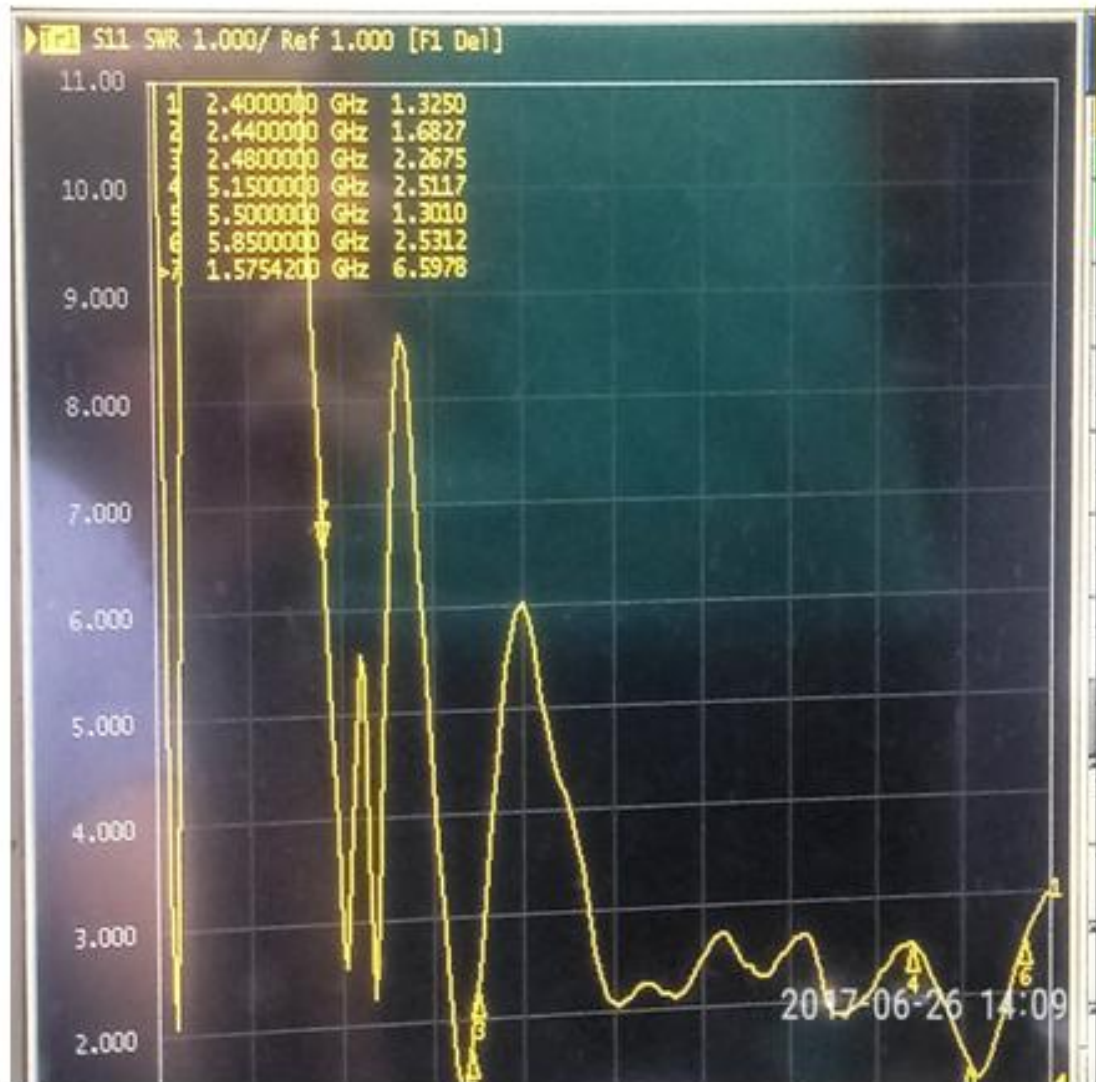


### 1.4.Matching circuit



## 2.Test Data:

### 2.1. Standing wave ratio



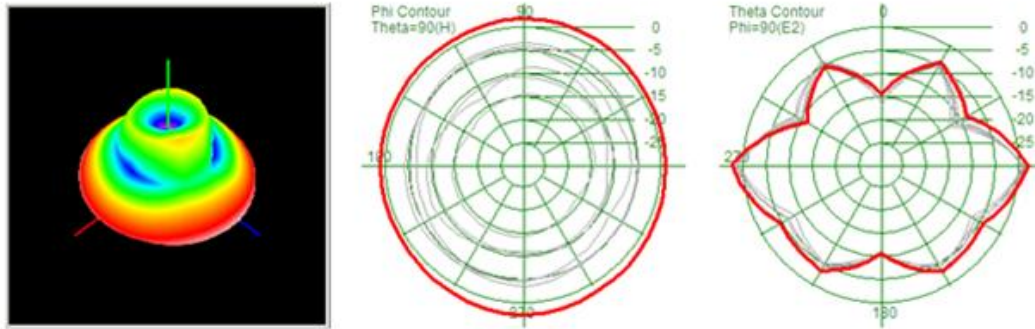
## 2.2.Efficiency

| 2.4G       |          |          |            |            |         |         |          |          |               |               |
|------------|----------|----------|------------|------------|---------|---------|----------|----------|---------------|---------------|
| Fred (MHz) | Effi (%) | Effi (%) | Gain (dBi) | Gain (dBd) | UHS (%) | DHS (%) | Max (dB) | Min (dB) | Attenut (Hor) | Attenut (Ver) |
| 2400       | 44.38    | -2.79    | 2.71       | 0.57       | 40.28   | 13.32   | 2.29     | -23.79   | 48.26         | 49.33         |
| 2410       | 44.63    | -2.46    | 2.56       | 0.42       | 42.42   | 13.54   | 2.46     | -21.29   | 48.66         | 49.58         |
| 2420       | 44.94    | -2.12    | 2.63       | 0.49       | 40.96   | 14.77   | 2.68     | -20.97   | 48.71         | 49.88         |
| 2430       | 44.27    | -2.70    | 2.44       | 0.30       | 43.24   | 15.23   | 2.29     | -22.77   | 48.21         | 49.35         |
| 2440       | 44.75    | -2.39    | 2.91       | 0.77       | 40.71   | 15.79   | 2.53     | -25.39   | 48.58         | 49.56         |
| 2450       | 44.82    | -1.83    | 2.89       | 0.75       | 41.19   | 16.18   | 3.15     | -21.98   | 49.11         | 49.99         |
| 2460       | 44.28    | -2.63    | 2.97       | 0.83       | 42.39   | 18.25   | 2.31     | -25.62   | 48.37         | 49.22         |
| 2470       | 44.49    | -2.34    | 2.89       | 0.75       | 41.78   | 18.80   | 2.50     | -24.31   | 48.50         | 49.54         |
| 2480       | 45.08    | -2.23    | 2.99       | 0.85       | 40.89   | 19.05   | 3.14     | -23.23   | 48.98         | 49.99         |
| 2490       | 44.21    | -2.68    | 2.39       | 0.25       | 43.21   | 19.23   | 2.35     | -21.77   | 48.24         | 49.20         |
| 2500       | 44.46    | -2.32    | 2.71       | 0.57       | 40.44   | 19.62   | 2.48     | -20.30   | 48.48         | 49.61         |

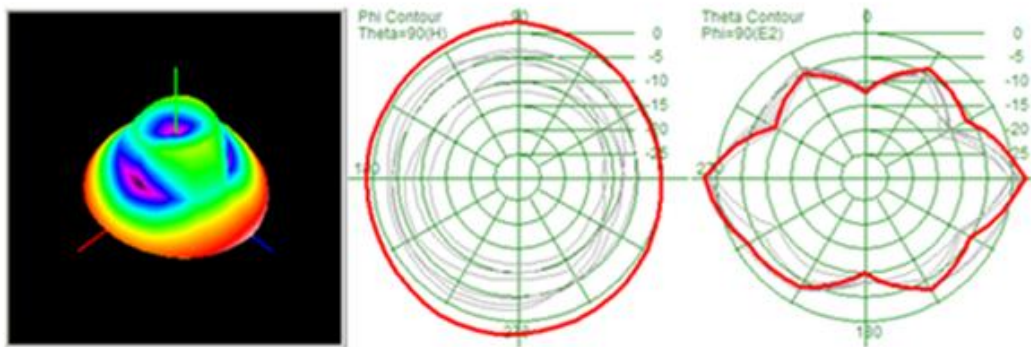
| 5G         |          |          |            |            |         |         |          |          |               |               |
|------------|----------|----------|------------|------------|---------|---------|----------|----------|---------------|---------------|
| Fred (MHz) | Effi (%) | Effi (%) | Gain (dBi) | Gain (dBd) | UHS (%) | DHS (%) | Max (dB) | Min (dB) | Attenut (Hor) | Attenut (Ver) |
| 4900       | 60.30    | -0.78    | 2.23       | 0.09       | 49.26   | 35.28   | 3.29     | -19.67   | 63.32         | 61.32         |
| 5000       | 60.53    | -0.44    | 2.56       | 0.42       | 51.69   | 37.77   | 4.68     | -22.38   | 65.59         | 62.75         |
| 5100       | 60.61    | -0.25    | 2.41       | 0.27       | 52.92   | 34.93   | 3.92     | -21.31   | 64.12         | 64.84         |
| 5200       | 60.27    | -0.69    | 2.99       | 0.85       | 48.24   | 39.31   | 3.29     | -19.74   | 63.35         | 62.37         |
| 5300       | 60.49    | -0.35    | 2.78       | 0.64       | 46.80   | 30.79   | 2.76     | -18.23   | 64.73         | 63.76         |
| 5400       | 60.96    | -0.35    | 2.31       | 0.17       | 50.15   | 30.89   | 3.81     | -25.32   | 64.01         | 60.93         |
| 5500       | 60.30    | -0.75    | 2.83       | 0.69       | 51.34   | 29.28   | 4.22     | -23.61   | 66.30         | 62.24         |
| 5600       | 60.73    | -0.58    | 3.00       | 0.86       | 49.59   | 26.70   | 3.76     | -16.47   | 63.78         | 61.77         |
| 5700       | 60.76    | 0.16     | 2.17       | 0.03       | 53.11   | 26.16   | 4.78     | -17.26   | 64.16         | 61.86         |
| 5800       | 60.21    | -0.63    | 2.85       | 0.71       | 45.22   | 34.40   | 3.21     | -15.65   | 62.26         | 63.31         |
| 5900       | 60.47    | -0.28    | 2.23       | 0.09       | 49.45   | 35.48   | 3.56     | -18.42   | 63.54         | 62.65         |

## 2.3.Directivity diagram

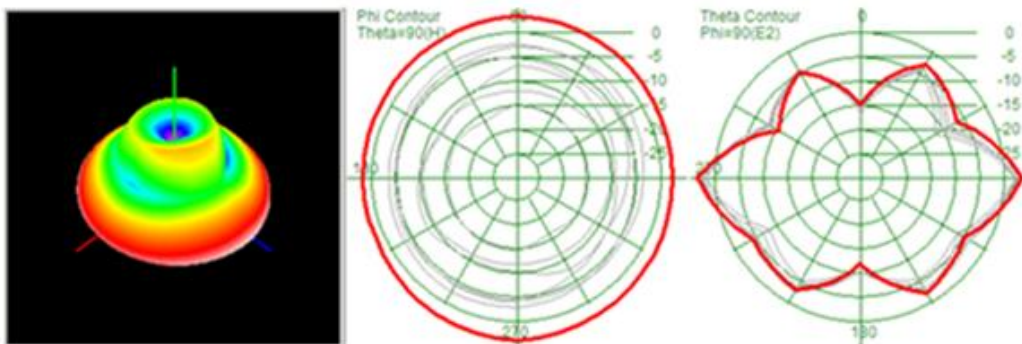
### 2.4GHz



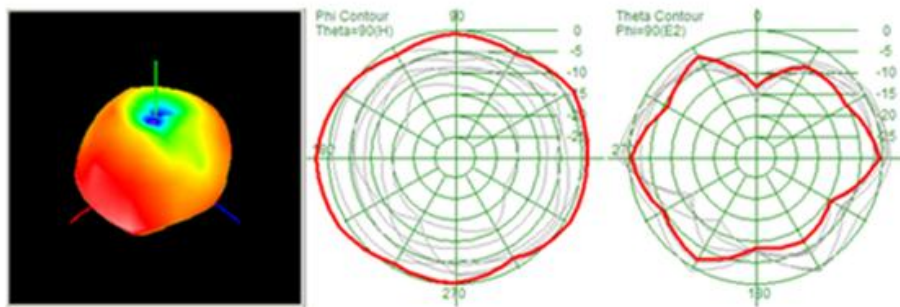
### 2.45GHz



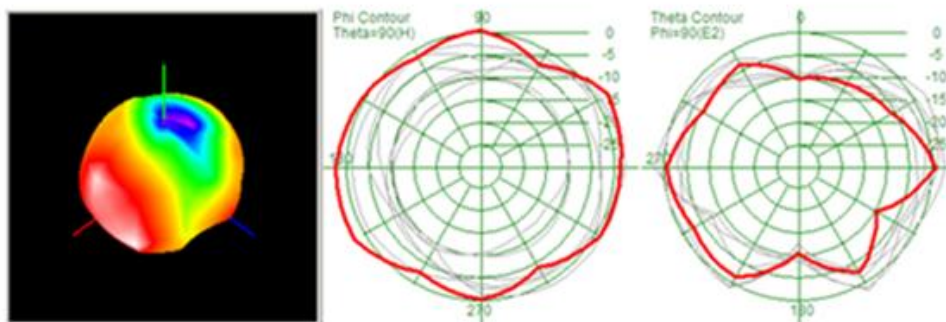
### 2.5GHz



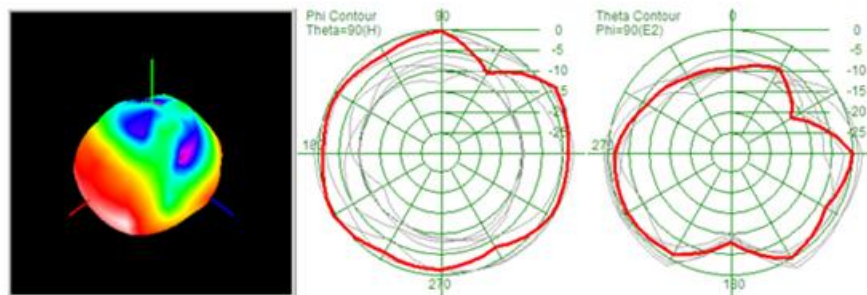
### 5.15GHz



### 5.35GHz



### 5.75GHz



### 5.825GHz



### 3. Antenna drawing:

