# Testing Report

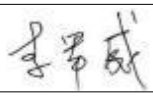
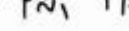
Customer Name: SHENZHENSHIXINZHONGXIN TECHNOLOGY. CO., LTD

Product Name: BT Antenna

Sample Model: F-6988

Reference Standard: *GB/T9410-2008; ANSI/IEEE Std 149-1979*

Issue Date: 2018.03. 10

| | | |
|---|---|---|
| Engineer: |  | Date:2018.03.10 |
| Auditor: | | Date:2018.03.10 |
| Approver: |  | Date:2018.03.10 |

# 1. General Information

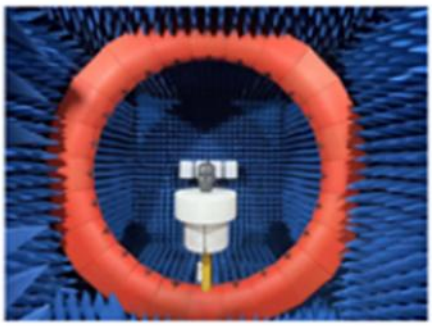
## 1.1 General Information of testing institutions

| | |
|---|---|
| **Name** | Shenzhen Hetuo Technology Co．,Ltd． |
| **Addres s** | Room 1202B，Building C6，Hengfeng Industrial City，Xixiang，Ba oan District，Shenzhen |
| **Tel** | 18665849001 |
| **E-mail** | 18665849001@163.com |
| **Equipm ent** | Agilent 5071C |

## 1.2 Testing principle

### Multi-probe OTA Measurement System

| | | |
|---|---|---|
| OTA Test | TRP&TIS | CMW500 &CMW270<br>ETS&SATIMO |
| Gain & Efficiency | Gain & Efficiency | ETS&SATIMO<br>Agilent 5071C |



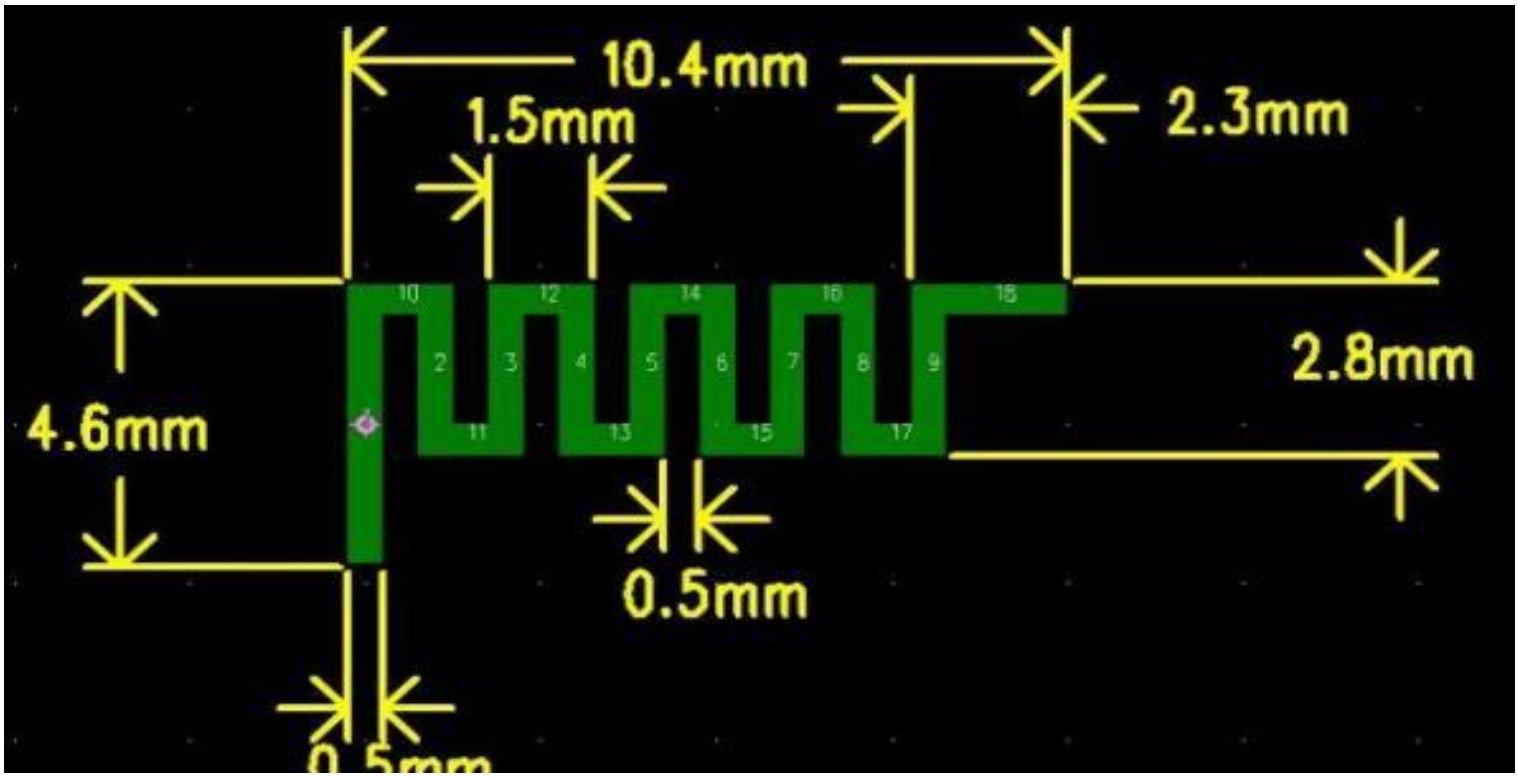
## 1.3 Test equipment

| Equipment | Model No. | Serial No. | Manufacturer | Calibration date | Next calibration date |
|---|---|---|---|---|---|
| 24 probe microwave chamber | 4*3*3 | NA | FEITU | 2018.02.29 | 2018.05.31 |
| Network Analyzer | 5071C | NA | Agilent | 2018.02.29 | 2018.05.31 |

## 1.4 Test environment

| | |
|---|---|
| **Temperature** | 24℃± 1.5℃ |
| **Humidity** | 45%RH |
| **Pressure** | 101kPa |

## 1.5 Antenna Photo & Lenght(mm)



# 2. Sample Information

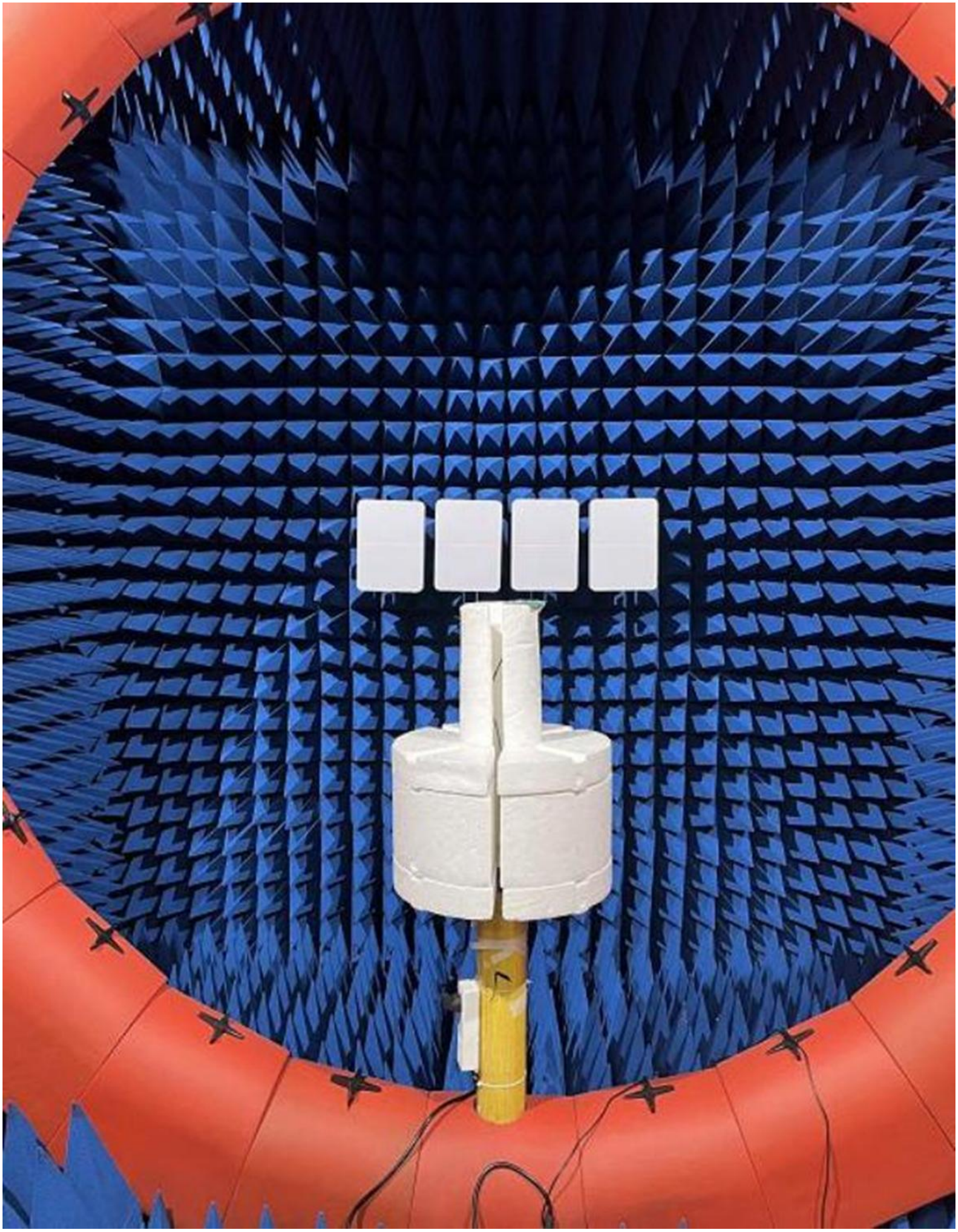
## 2.1 Client information

| | |
|---|---|
| **Name** | SHENZHENSHIXINZHONGXIN TECHNOLOGY .CO . ,LTD |
| **Address** | A1 , Shajing Donghuan Industrial Zone , Bao ' an District , Shenzhen |
| **Contacts** | Ma Chao |
| **Tel** | 18218809918 |
| **E-mail** | machao@ c- chip. com. cn |

## 2.2 Description of EUT(S)

| | |
|---|---|
| **Product Name** | BT Antenna |
| **Sample Model** | F-6988 |
| **Antenna Size** | 4.6*10.4mm |
| **Antenna Type** | PCB antenna |
| **Serial No.** | / |
| **Test Item** | Antenna Gain, Radiation pattern |
| **Frequency Range** | 2400-2500MHz |
| **Received Date** | 2018.03.08 |
| **Test Date** | 2018.03. 10 |
| **Remark** | The length of the RF cable is 50mm |

## The test photos



Test data

## 深圳市合拓科技有限公司

| Frequency ID | 1 | 2 | 3 | 4 | 5 | 6 | 7 | 8 | 9 | 10 | 11 |
|---|---|---|---|---|---|---|---|---|---|---|---|
| Frequency (MHz) | 2400.0 | 2410.0 | 2420.0 | 2430.0 | 2440.0 | 2450.0 | 2460.0 | 2470.0 | 2480.0 | 2490.0 | 2500.0 |
| Efficiency (dBi) | -6.12 | -6.19 | -6.13 | -6.21 | -6.11 | -5.93 | -5.80 | -5.59 | -5.40 | -5.03 | -4.75 |
| Gain (dBi) | -1.80 | -2.22 | -1.62 | -1.87 | -2.01 | -1.77 | -1.56 | -1.48 | -1.11 | -0.73 | -0.25 |
| Efficiency (%) | 24.45 | 24.07 | 24.35 | 23.94 | 24.49 | 25.55 | 26.30 | 27.58 | 28.81 | 31.38 | 33.46 |
| Directivity (dB) | 4.32 | 3.96 | 4.52 | 4.34 | 4.10 | 4.15 | 4.24 | 4.11 | 4.29 | 4.30 | 4.50 |
| Peak Gain Position (Theta) | 126.00 | 124.00 | 124.00 | 124.00 | 123.00 | 119.00 | 123.00 | 122.00 | 126.00 | 124.00 | 31.00 |
| Peak Gain Position (Phi) | 80.00 | 82.00 | 80.00 | 83.00 | 79.00 | 76.00 | 249.00 | 243.00 | 78.00 | 240.00 | 252.00 |
| Efficiency ThetaPol (%) | 6.59 | 6.62 | 6.65 | 6.60 | 6.86 | 7.18 | 7.29 | 7.55 | 7.55 | 8.15 | 8.58 |
| Efficiency PhiPol (%) | 17.86 | 17.45 | 17.71 | 17.33 | 17.63 | 18.36 | 19.01 | 20.02 | 21.26 | 23.23 | 24.88 |
| Upper Hem. Efficiency (%) | 13.42 | 13.21 | 13.18 | 12.93 | 12.82 | 12.70 | 12.75 | 12.96 | 13.79 | 15.10 | 16.41 |
| Lower Hem. Efficiency (%) | 11.03 | 10.86 | 11.18 | 11.01 | 11.67 | 12.85 | 13.55 | 14.62 | 15.02 | 16.28 | 17.05 |
| T90(H)圆度 | 10.94 | 11.30 | 11.56 | 12.29 | 11.61 | 13.99 | 13.46 | 15.24 | 14.72 | 12.13 | 10.10 |
| Gain 15deg (dBi) | | | | | | | | | | | |
| E1(XZ)波瓣宽度 | 61.00 | 91.00 | 85.00 | 93.00 | 87.00 | 84.00 | 85.00 | 81.00 | 80.00 | 84.00 | 83.00 |
| E1(XZ)前后比 | 3.91 | 3.29 | 3.90 | 3.39 | 3.00 | 2.29 | 1.77 | 1.98 | 2.16 | 2.64 | 2.49 |
| E2(YZ)波瓣宽度 | 37.00 | 35.00 | 34.00 | 35.00 | 219.00 | 208.00 | 160.00 | 160.00 | 199.00 | 57.00 | 84.00 |
| E2(YZ)前后比 | 3.61 | 3.36 | 3.64 | 3.20 | 2.33 | 2.41 | 2.32 | 2.20 | 2.29 | 2.32 | 3.05 |
| 最大增益处轴比(P) | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| 仰角10度最差(大)轴比(P) | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 | 1.50 |
| Hc(XY)波瓣宽度 | 94.00 | 92.00 | 96.00 | 100.00 | 109.00 | 112.00 | 118.00 | 135.00 | 119.00 | 116.00 | 126.00 |
| Hc(XY)前后比 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 | 0.00 |
| | | | | | | | | | | | |
| | | | | | | | | | | | |
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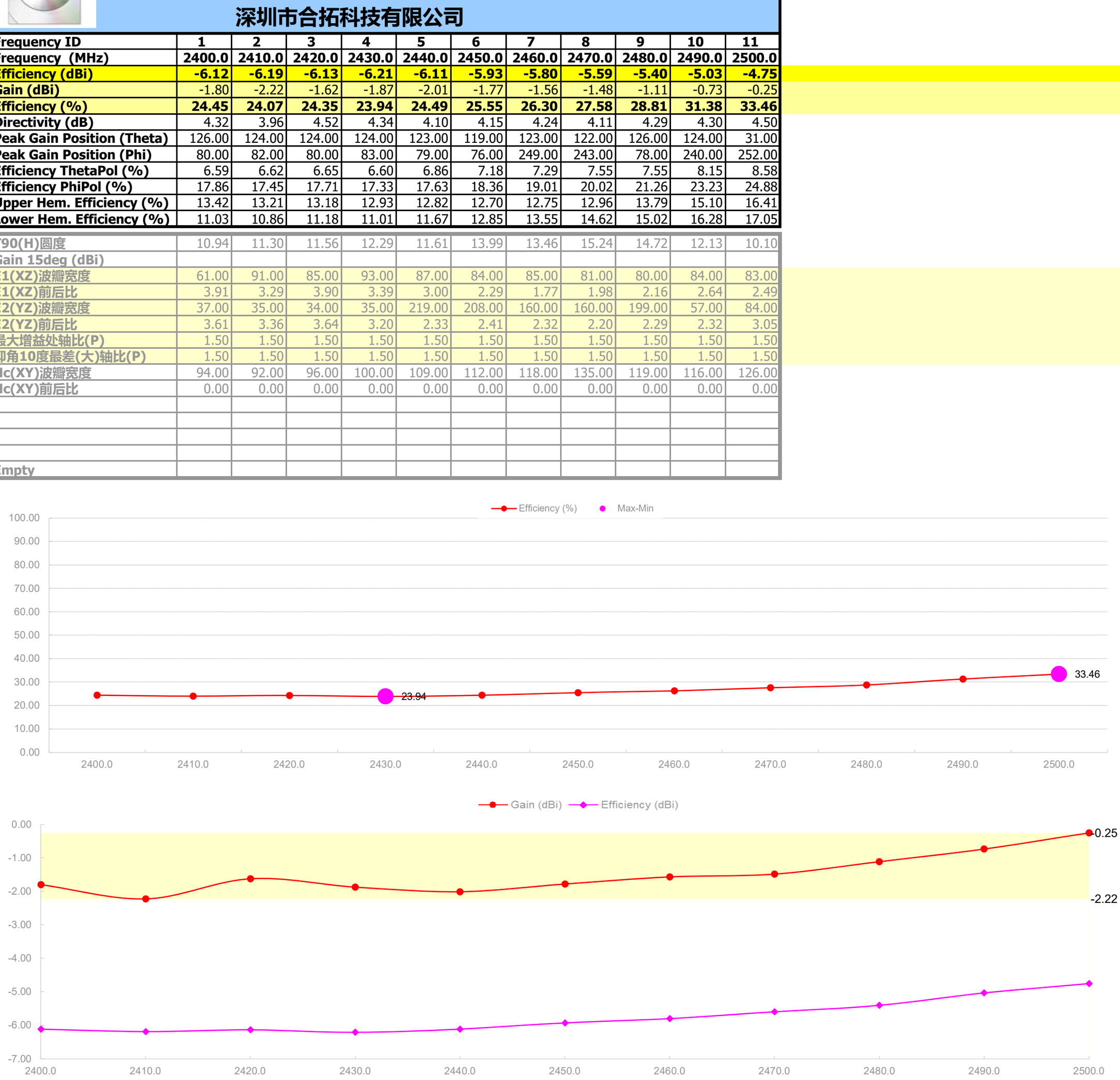
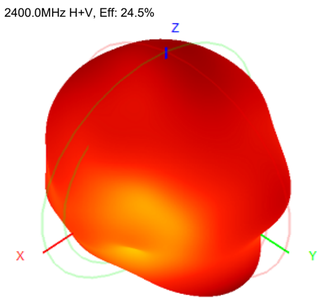
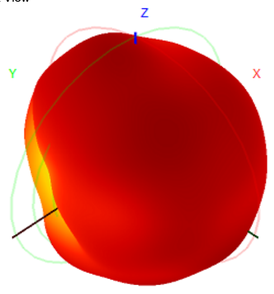
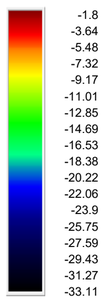


2400.0MHz H+V, Eff: 24.5%

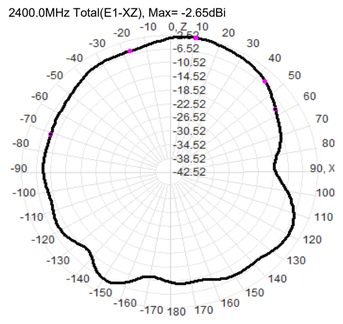



Back View

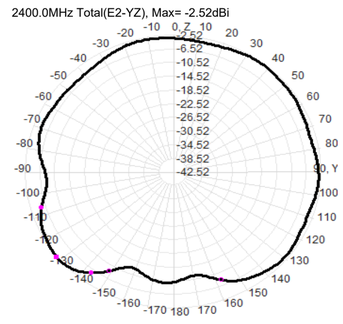


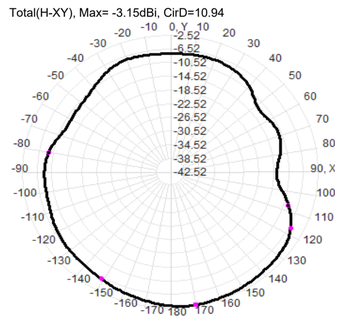

2400.0MHz Total(E1-XZ), Max= -2.65dBi



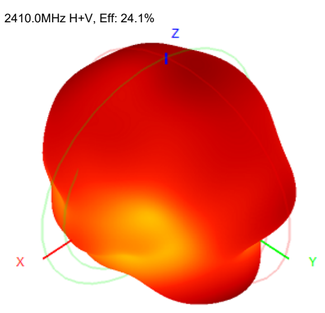
2400.0MHz Total(E2-YZ), Max= -2.52dBi



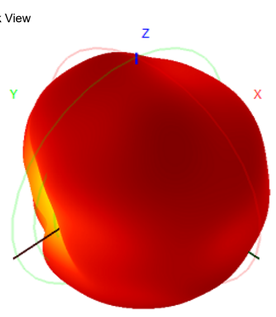
Total(H-XY), Max= -3.15dBi, CirD=10.94

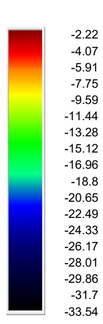


2410.0MHz H+V, Eff: 24.1%

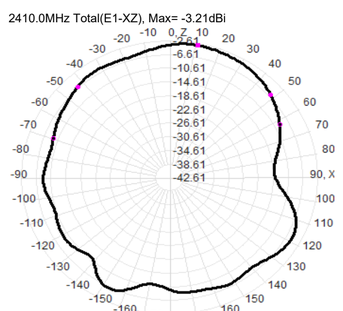



Back View

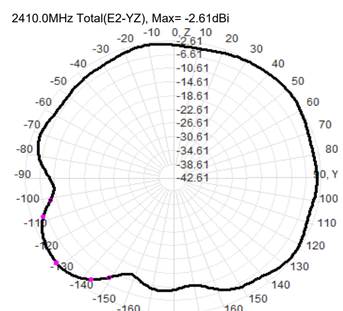


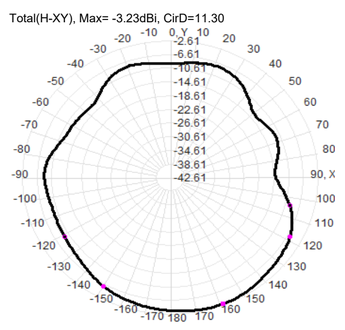

2410.0MHz Total(E1-XZ), Max= -3.21dBi



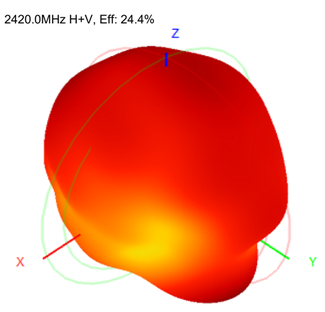
2410.0MHz Total(E2-YZ), Max= -2.61dBi



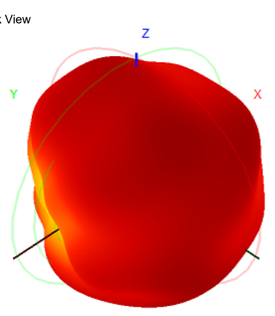
Total(H-XY), Max= -3.23dBi, CirD=11.30

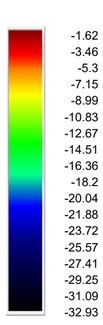


2420.0MHz H+V, Eff: 24.4%

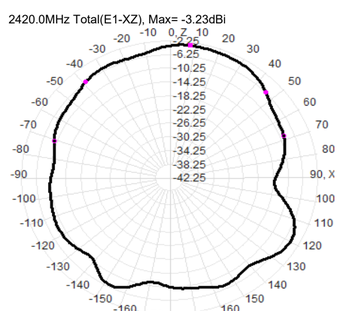



Back View

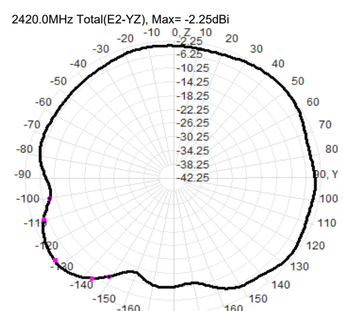


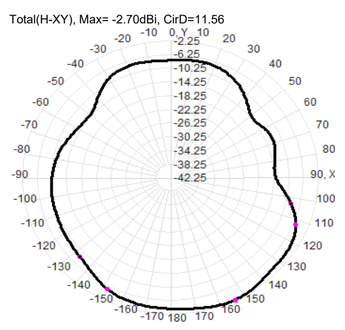

2420.0MHz Total(E1-XZ), Max= -3.23dBi



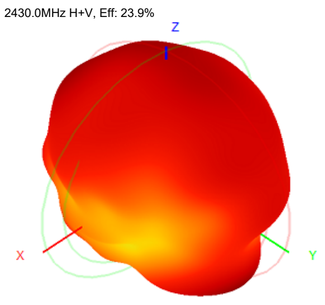
2420.0MHz Total(E2-YZ), Max= -2.25dBi



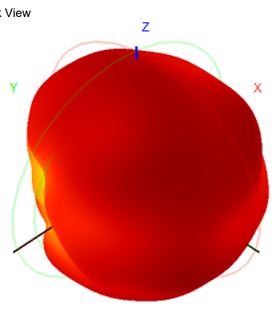
Total(H-XY), Max= -2.70dBi, CirD=11.56

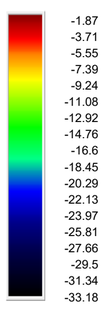


2430.0MHz H+V, Eff: 23.9%

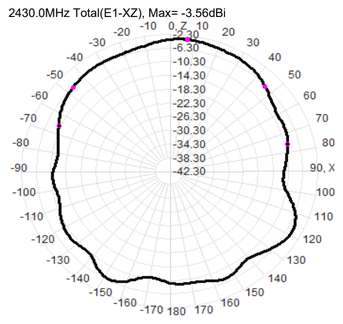



Back View

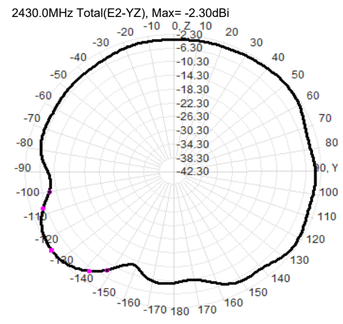


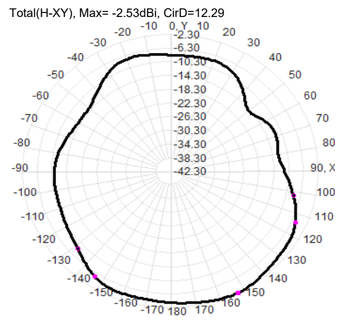

2430.0MHz Total(E1-XZ), Max= -3.56dBi



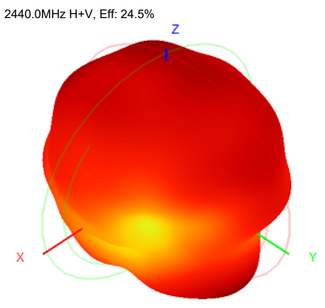
2430.0MHz Total(E2-YZ), Max= -2.30dBi



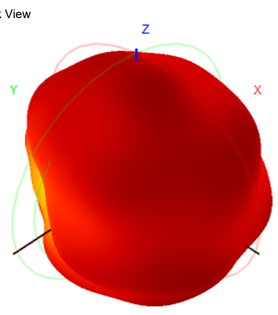
Total(H-XY), Max= -2.53dBi, CirD=12.29

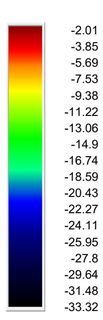


2440.0MHz H+V, Eff: 24.5%

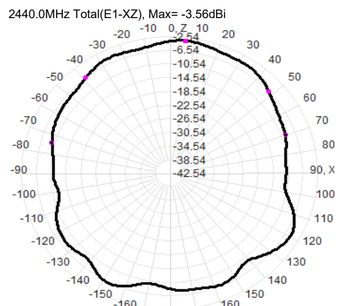



Back View

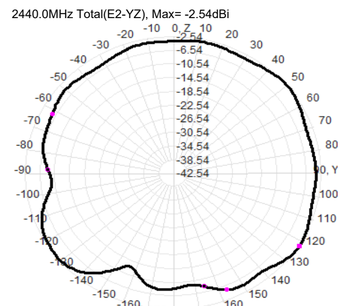


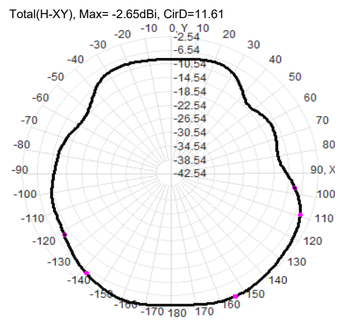

2440.0MHz Total(E1-XZ), Max= -3.56dBi



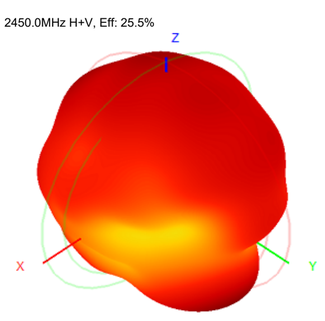
2440.0MHz Total(E2-YZ), Max= -2.54dBi



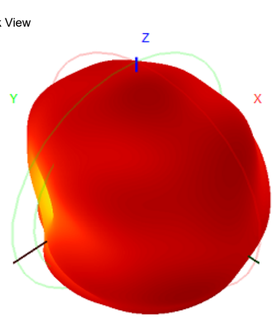
Total(H-XY), Max= -2.65dBi, CirD=11.61

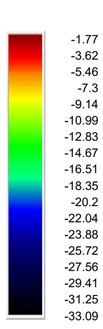


2450.0MHz H+V, Eff: 25.5%

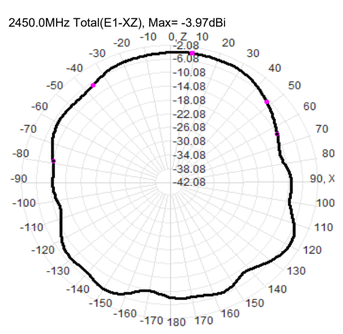



Back View

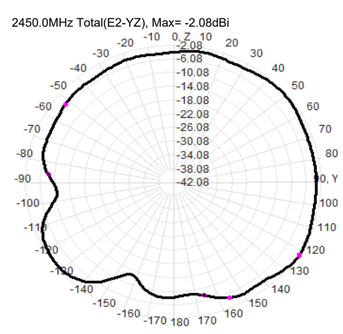


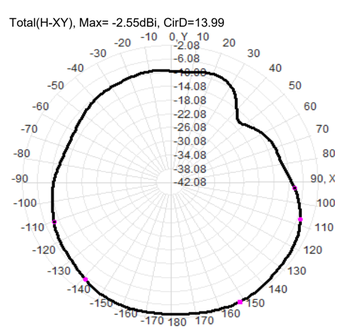

2450.0MHz Total(E1-XZ), Max= -3.97dBi



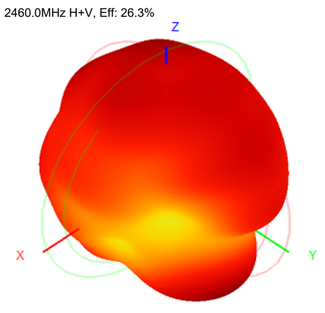
2450.0MHz Total(E2-YZ), Max= -2.08dBi



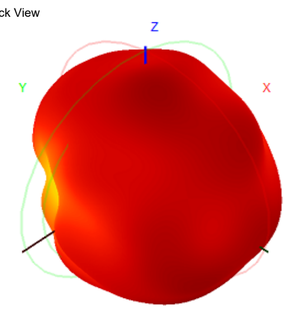
Total(H-XY), Max= -2.55dBi, CirD=13.99

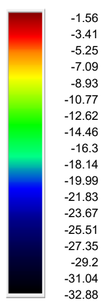


2460.0MHz H+V, Eff: 26.3%

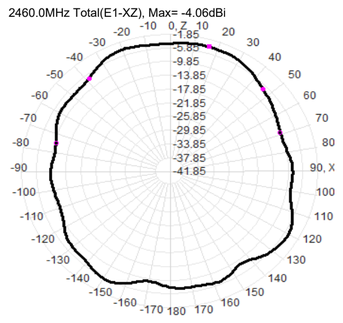



Back View

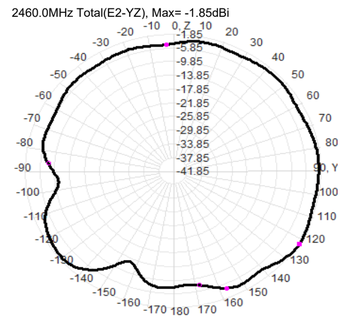


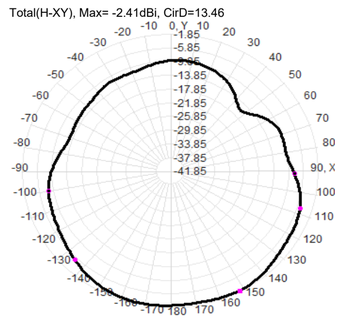

2460.0MHz Total(E1-XZ), Max= -4.06dBi



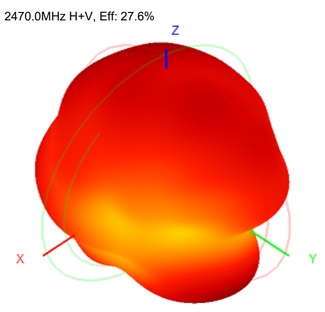
2460.0MHz Total(E2-YZ), Max= -1.85dBi



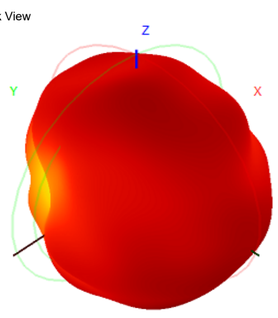
Total(H-XY), Max= -2.41dBi, CirD=13.46

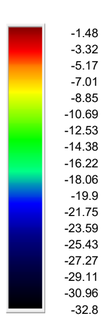


2470.0MHz H+V, Eff: 27.6%

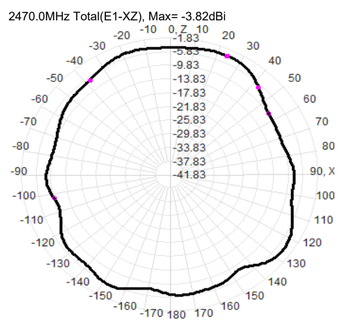



Back View

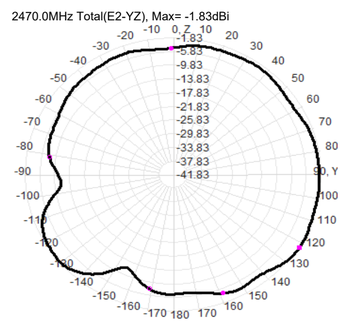


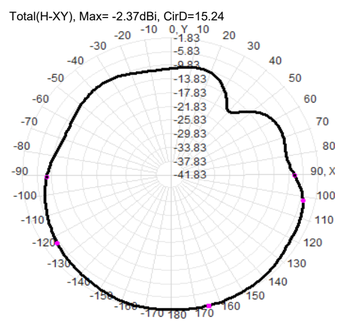

2470.0MHz Total(E1-XZ), Max= -3.82dBi



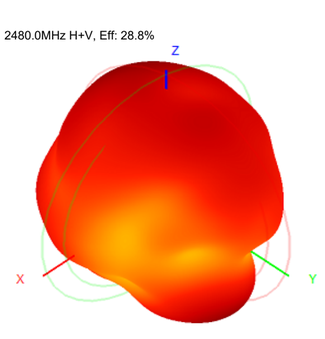
2470.0MHz Total(E2-YZ), Max= -1.83dBi



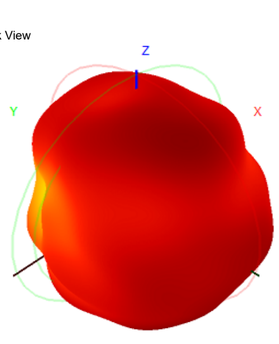
Total(H-XY), Max= -2.37dBi, CirD=15.24

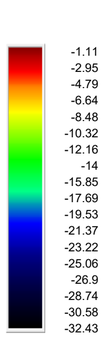


2480.0MHz H+V, Eff: 28.8%

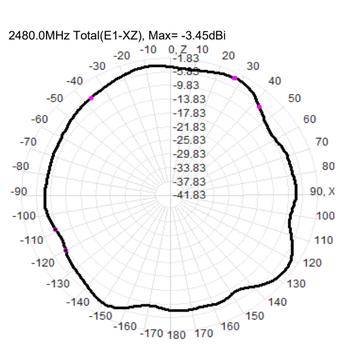



Back View

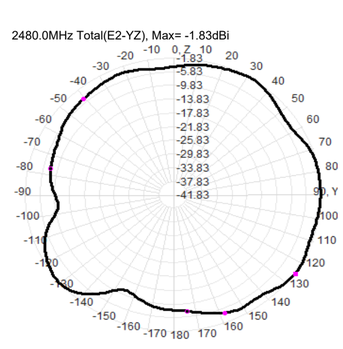


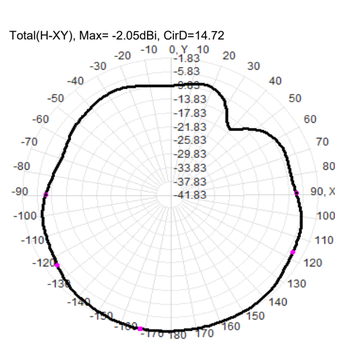

2480.0MHz Total(E1-XZ), Max= -3.45dBi



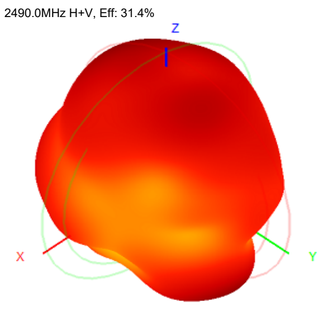
2480.0MHz Total(E2-YZ), Max= -1.83dBi



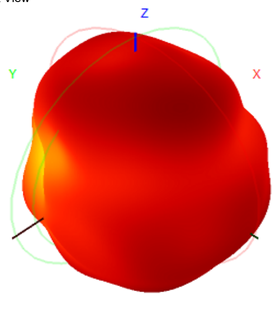
Total(H-XY), Max= -2.05dBi, CirD=14.72

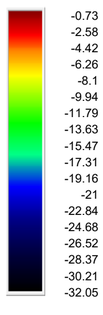


2490.0MHz H+V, Eff: 31.4%

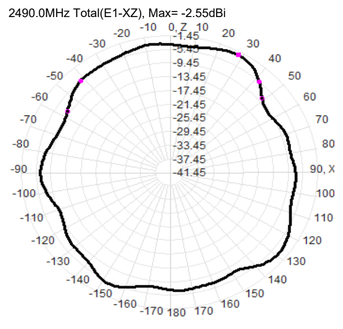



Back View

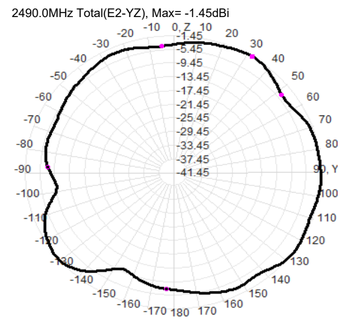


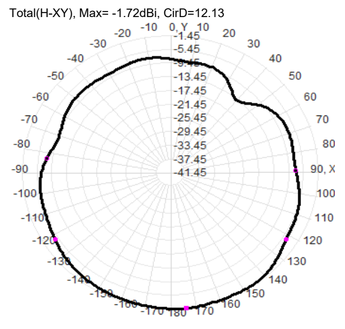

2490.0MHz Total(E1-XZ), Max= -2.55dBi



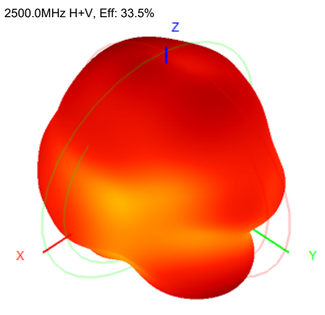
2490.0MHz Total(E2-YZ), Max= -1.45dBi



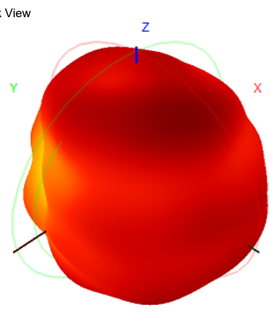
Total(H-XY), Max= -1.72dBi, CirD=12.13

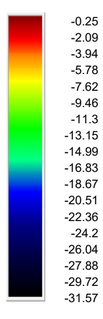


2500.0MHz H+V, Eff: 33.5%

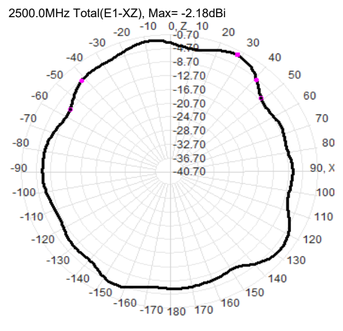



Back View

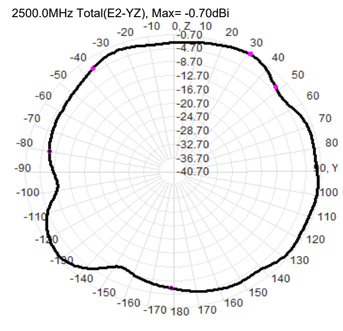
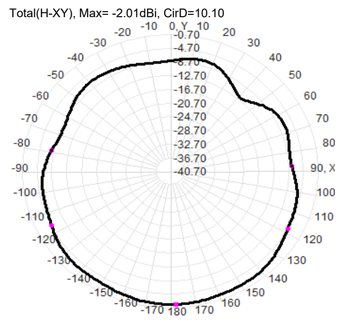



2500.0MHz Total(E1-XZ), Max= -2.18dBi



2500.0MHz Total(E2-YZ), Max= -0.70dBi



Total(H-XY), Max= -2.01dBi, CirD=10.10