

Antenna

YB0008AA Datasheet

Antenna Services

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Quectel Wireless Solutions Co., Ltd.

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: info@quectel.com

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About the Document

Revision History

| Version | Date | Author | Note |
|---------|------------|-----------|---|
| - | 2020-07-16 | Kenny YIN | Creation of the document |
| 1.0 | 2020-07-16 | Kenny YIN | First official release |
| 1.1 | 2020-12-11 | Kenny YIN | Updated the antenna picture in Chapter 2. |
| 2.0 | 2021-04-02 | Kenny YIN | Updated the data in Product Specifications and the test data in the datasheets. |
| 2.1 | 2021-07-25 | Kenny YIN | Updated working temperature. (Chapter 3). |
| 2.2 | 2021-12-03 | Kenny YIN | Updated the product description in Chapter 1. |

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1 Product Description

To meet customers' requirements for the high performance, high integration, and integrated appearance of their products, Quectel provides a combined antenna box series. The antenna box can integrate a variety of antennas, such as 5G, 4G, GNSS, Wi-Fi antennas, to achieve communication functions of 5G MIMO, 4G, GNSS, and Wi-Fi. These antenna boxes can be mounted on the surface of devices via screw, adhesive or other methods, supports multiple connector types and cable lengths. It is a more flexible and reliable high-performance antenna solution for outdoor applications.

We provide comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs.

2 Product Features

- GPS + BD/Cellular LTE/4G DIV
- High efficiency
- Excellent performance



3 Product Specifications

Passive Electrical Specifications

| | |
|-------------------|--|
| Frequency Range | 4G MAIN: 698–1000 MHz; 1700–2700 MHz GNSS: 1575.42 ±5 MHz; 1561.098 ±5 MHz 4G DIV: 698–1000 MHz; 1700–2700 MHz |
| Input Impedence | 50 Ω |
| VSWR | 4G MAIN: ≤ 3.0 4G DIV: ≤ 6.0 |
| Gain | LNA (28 ±2) 2G/3G/4G (2.94) 4G DIV (5.0) |
| Polarization Type | Linear (4G MAIN/4G DIV) Circular (GNSS) |

Mechanical Specifications

| | |
|---------------------|-----------------------|
| Antenna Size | Φ 84 mm × 17.5 mm |
| Casing | ABS + PC |
| Connector Type | SMA Male (center pin) |
| Working Temperature | -40 °C to +85 °C |
| Radome Color | Black |
| IP Rating | IP66 |
| Mounting Type | Adhesive |

4 Overall Performance

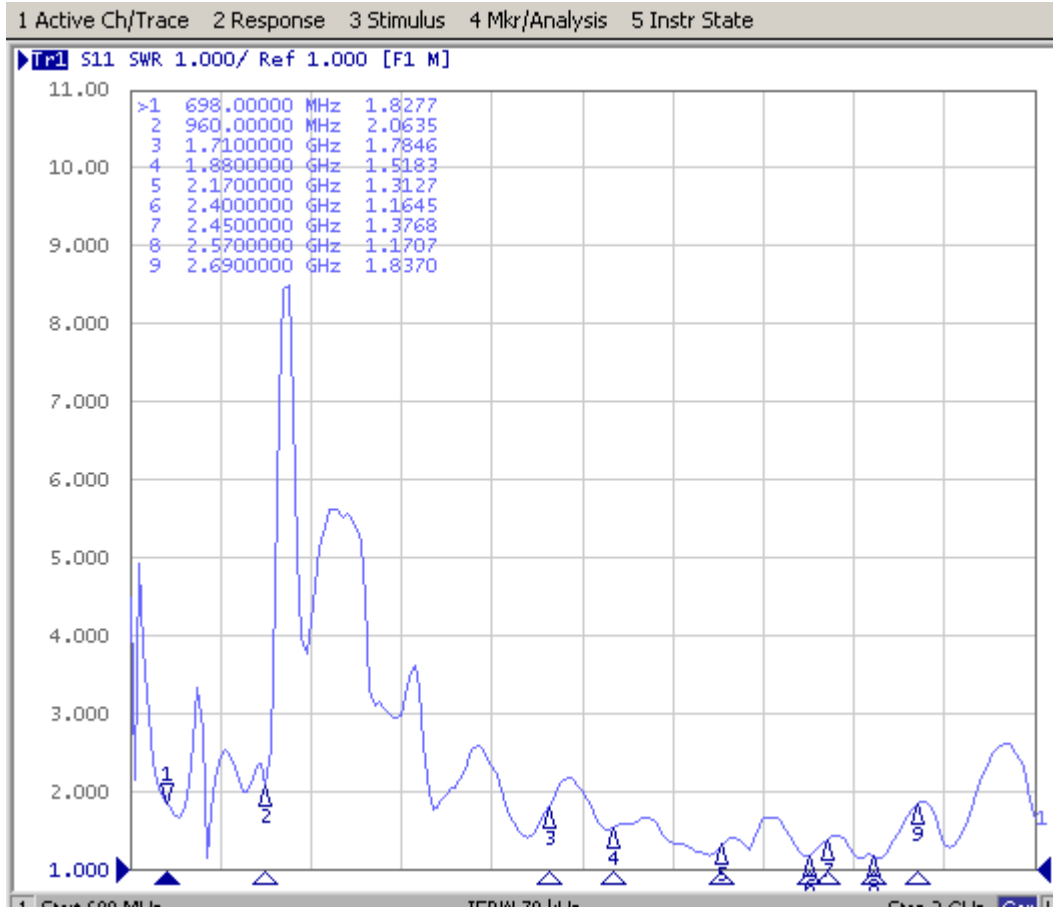
4.1. Test Environment

- KEYSIGHT VNA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 400 MHz – 8.0 GHz



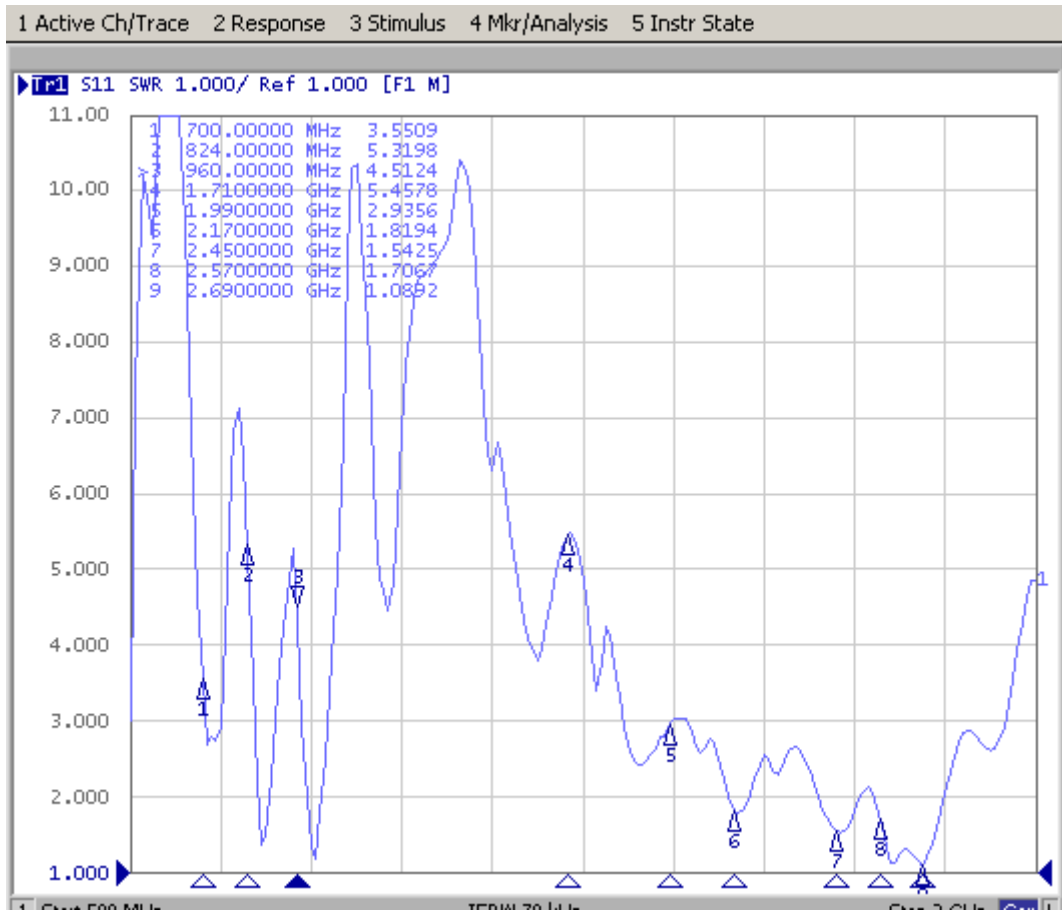
4.2. VSWR

4.2.1. 4G Antenna



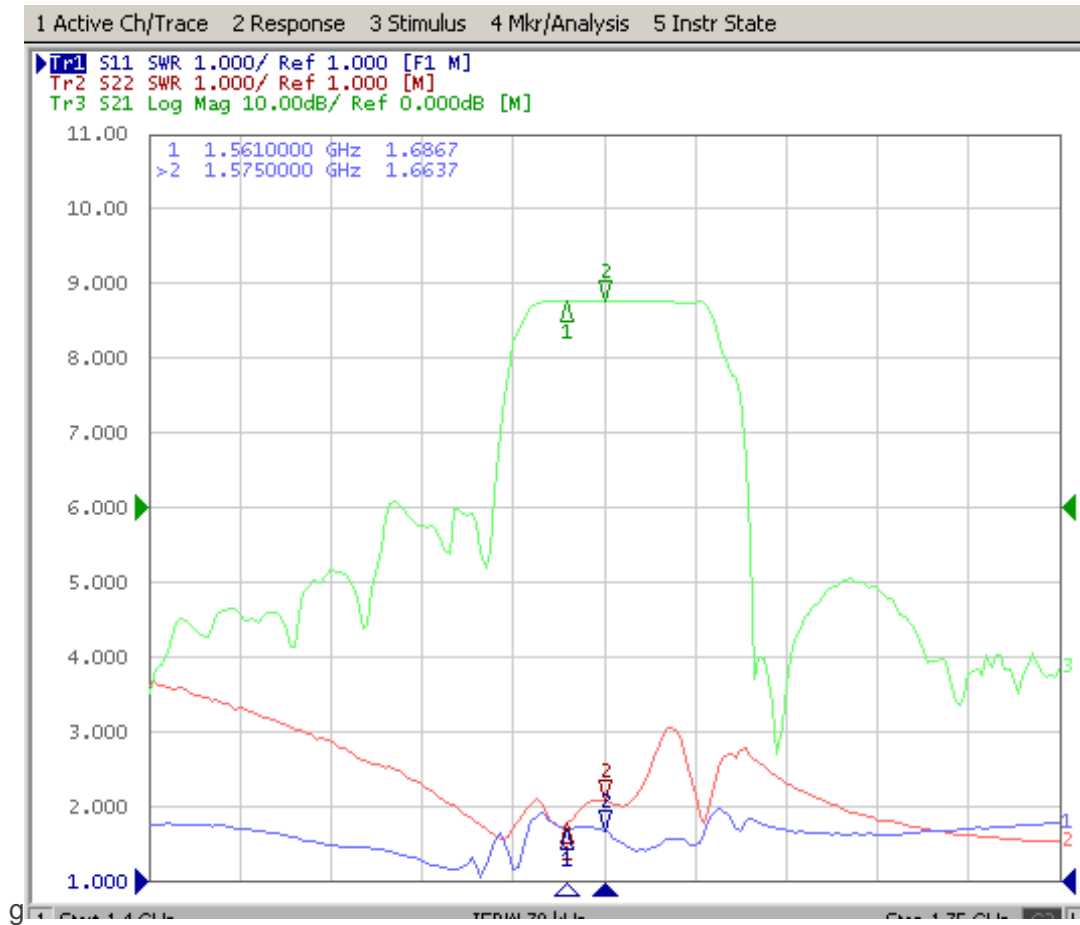
| | | | | | | | | | |
|-----------------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 698 | 960 | 1710 | 1880 | 2170 | 2400 | 2450 | 2570 | 2690 |
| VSWR | 1.82 | 2.06 | 1.78 | 1.51 | 1.31 | 1.16 | 1.37 | 1.17 | 1.84 |

4.2.2. 4G DIV Antenna



| Frequency (MHz) | 700 | 824 | 960 | 1710 | 1990 | 2170 | 2450 | 2570 | 2690 |
|-----------------|------|------|------|------|------|------|------|------|------|
| VSWR | 3.55 | 5.32 | 4.51 | 5.46 | 2.94 | 1.82 | 1.54 | 1.71 | 1.09 |

4.2.3. GNSS Antenna



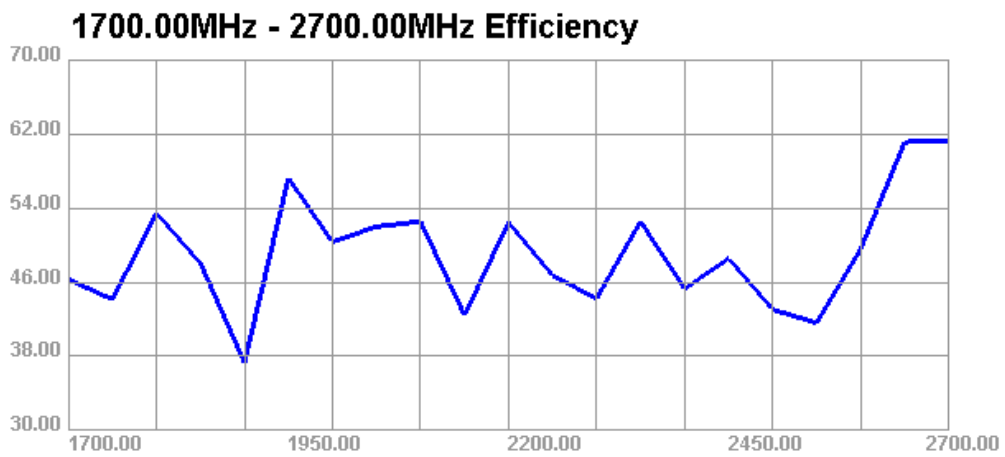
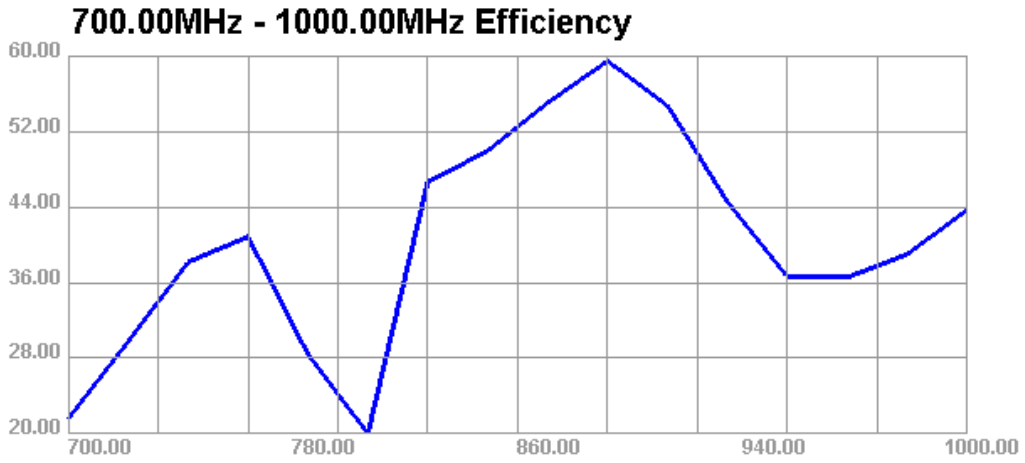
| | | |
|-----------------|------|------|
| Frequency (MHz) | 1561 | 1575 |
| VSWR | 1.68 | 1.66 |



| | | |
|-----------------|------|------|
| Frequency (MHz) | 1561 | 1575 |
| VSWR | 1.76 | 2.08 |

4.3. Efficiency

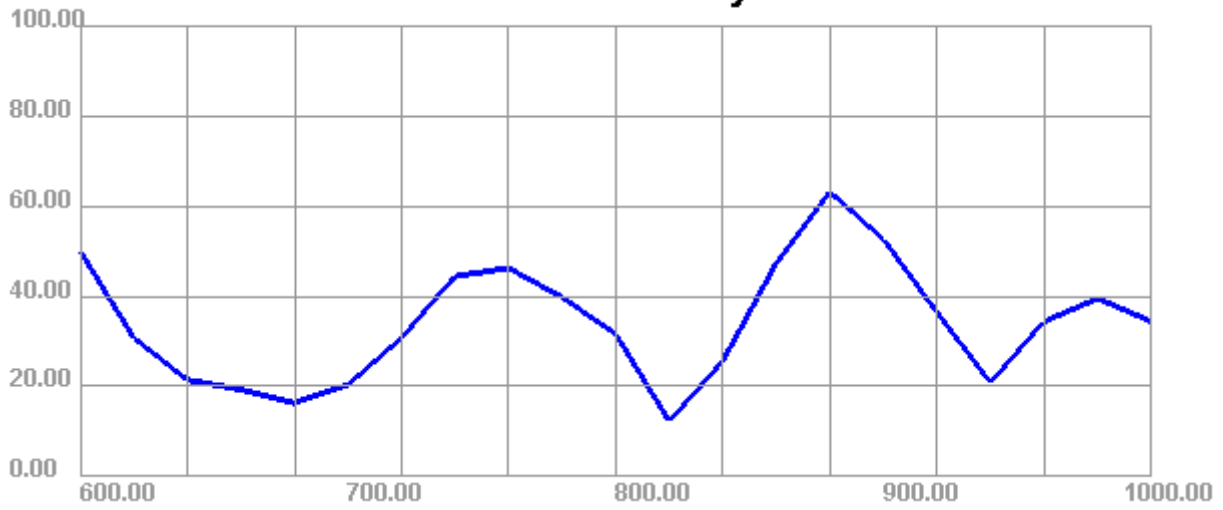
4.3.1. 4G Antenna



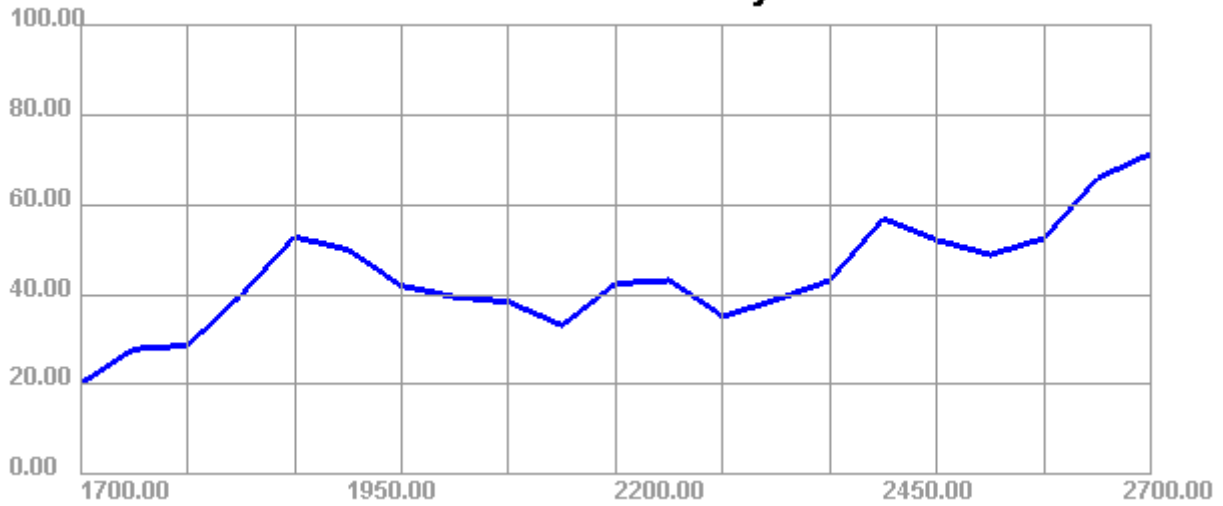
| | | | | | | | | | | |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency (MHz) | 698 | 880 | 960 | 1710 | 1880 | 2170 | 2400 | 2450 | 2570 | 2690 |
| Efficiency (%) | 21.60 | 59.47 | 36.53 | 46.33 | 48.06 | 42.44 | 45.30 | 48.58 | 41.62 | 61.14 |

4.3.2. 4G DIV Antenna

600.00MHz - 1000.00MHz Efficiency



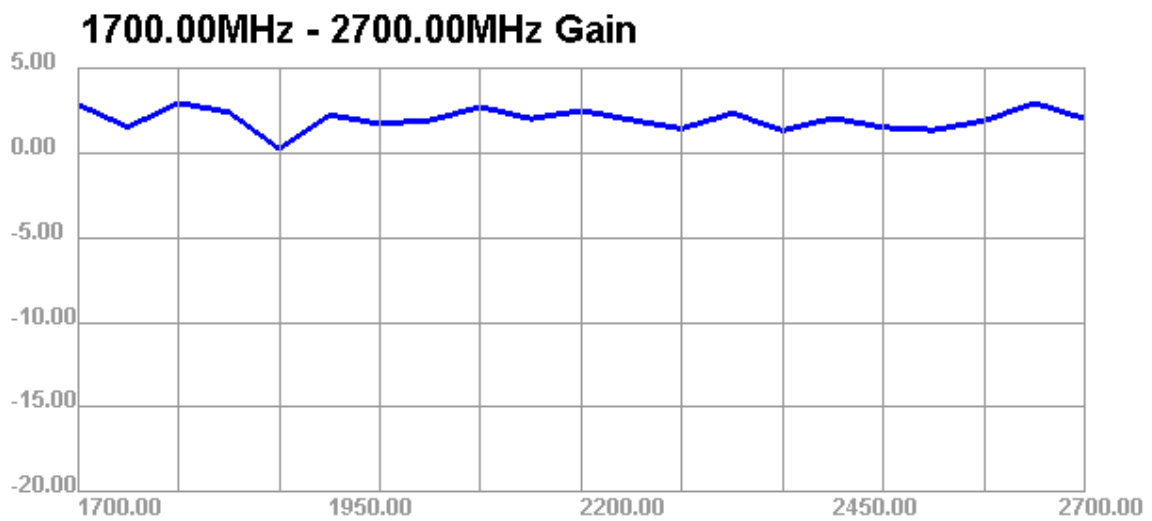
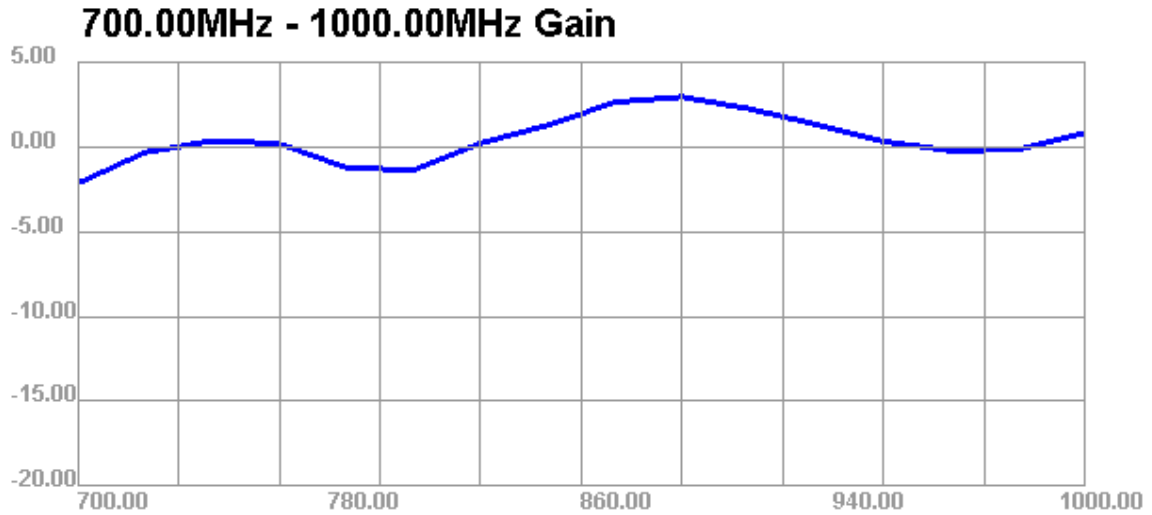
1700.00MHz - 2700.00MHz Efficiency



| | | | | | | | | | | |
|------------------------|-------|-------|-------|-------|-------|-------|-------|-------|-------|-------|
| Frequency (MHz) | 698 | 880 | 960 | 1710 | 1880 | 2170 | 2400 | 2450 | 2570 | 2690 |
| Efficiency (%) | 20.42 | 63.16 | 34.43 | 20.21 | 52.85 | 33.16 | 43.17 | 56.93 | 56.93 | 71.39 |

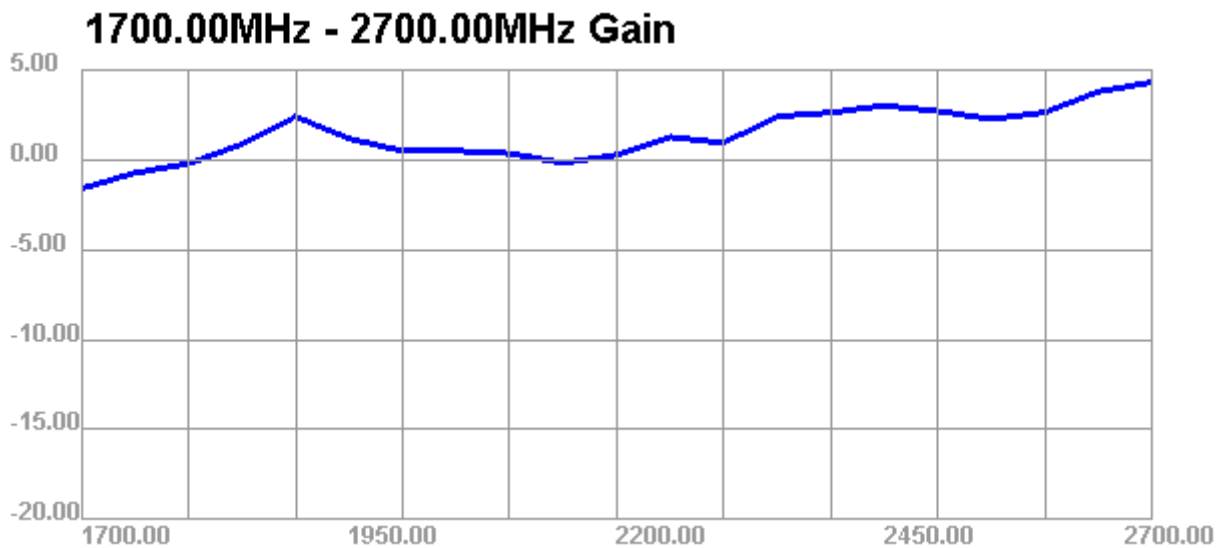
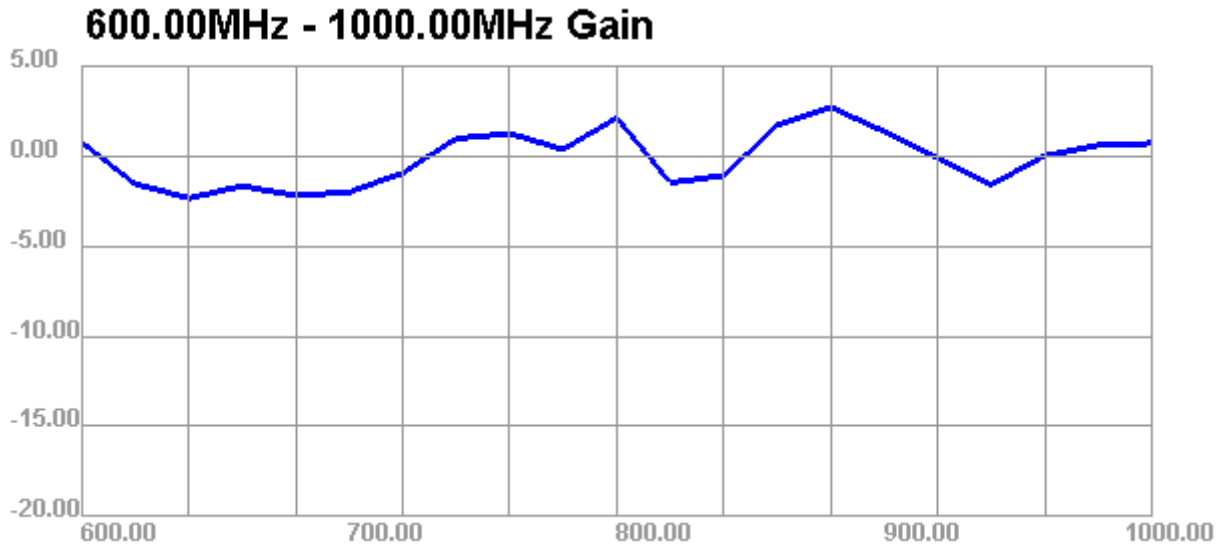
4.4. Gain

4.4.1. 4G Antenna



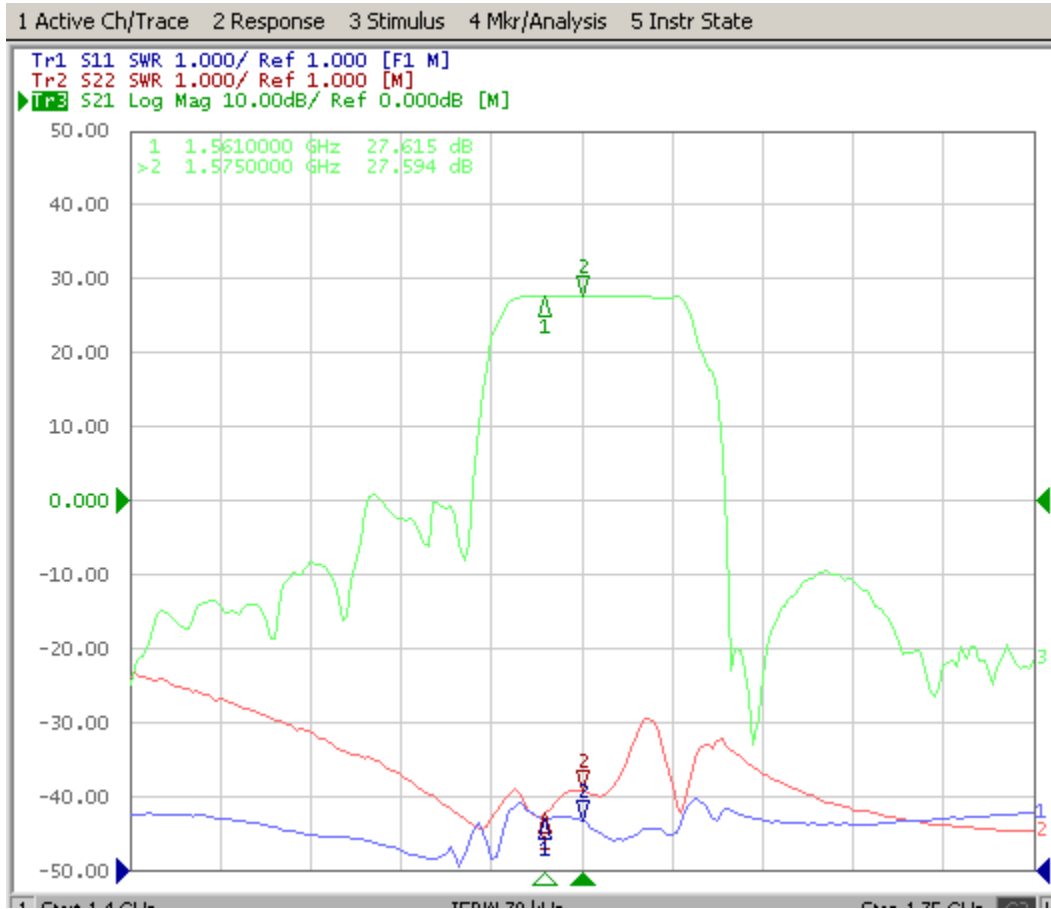
| Frequency (MHz) | 698 | 960 | 1710 | 1880 | 2170 | 2400 | 2450 | 2570 | 2690 |
|-----------------|-------|-------|------|------|------|------|------|------|------|
| Gain | -2.16 | -0.23 | 2.85 | 2.40 | 2.48 | 1.31 | 2.04 | 1.34 | 2.93 |

4.4.2. 4G DIV Antenna



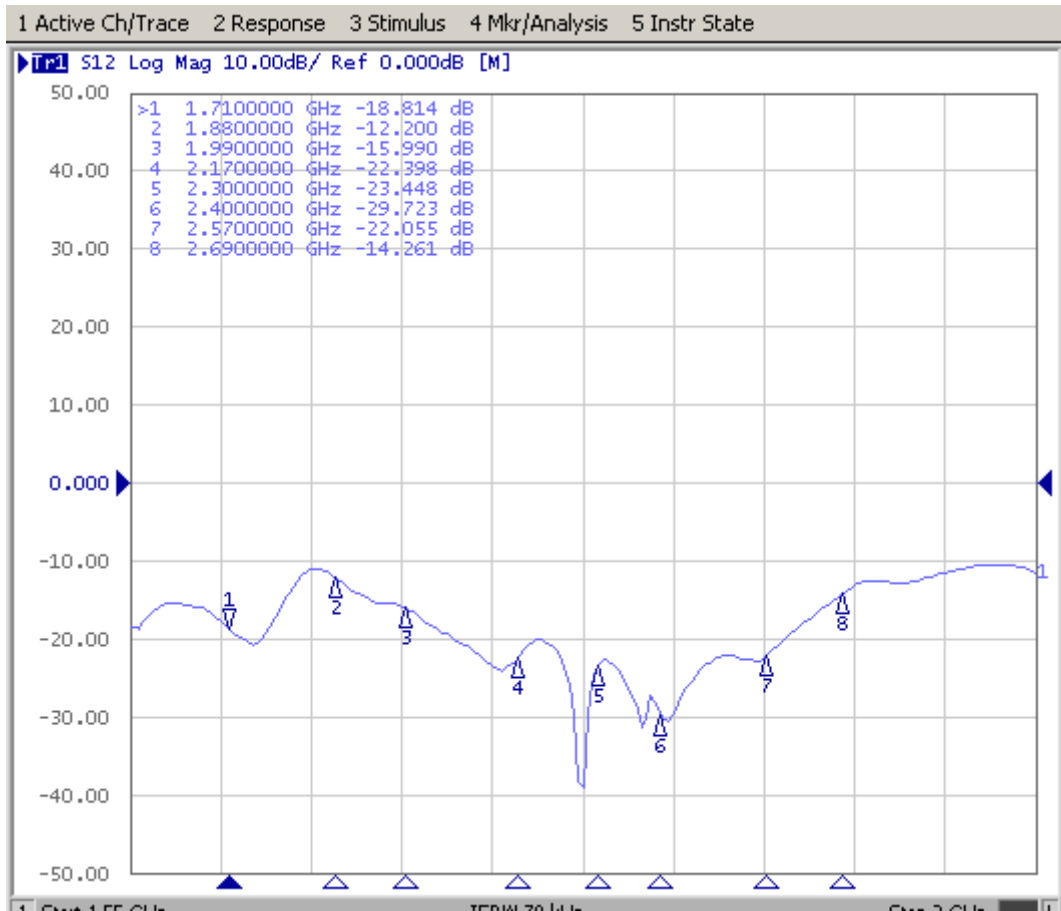
| Frequency (MHz) | 698 | 960 | 1710 | 1880 | 2170 | 2400 | 2450 | 2570 | 2690 |
|-----------------|-------|------|-------|------|------|------|------|------|------|
| Gain (dBi) | -2.01 | 0.02 | -1.61 | 2.39 | 0.27 | 2.62 | 3 | 2.63 | 4.31 |

4.4.3. GNSS Antenna



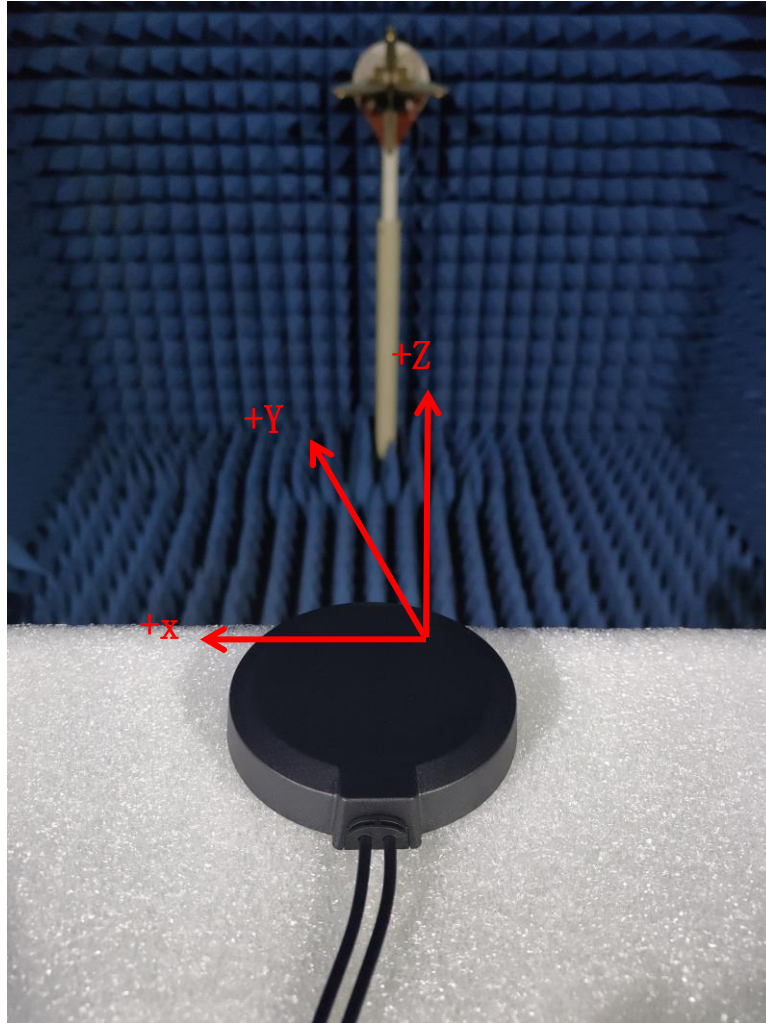
| | | |
|-----------------|-------|-------|
| Frequency (MHz) | 1561 | 1575 |
| Gain | 27.61 | 27.59 |

- Isolation



| | | | | | | | | |
|------------------------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 1710 | 1880 | 1990 | 2170 | 2300 | 2400 | 2570 | 2690 |
| Isolation | -18 | -12 | -15 | -22 | -23 | -29 | -22 | -14 |

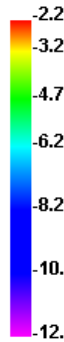
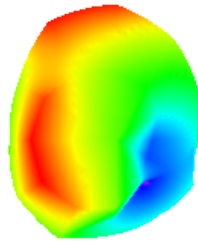
4.5. Radiation Pattern



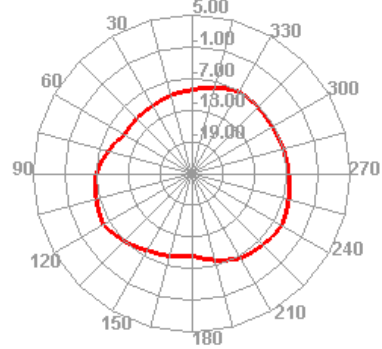
Note: Z is directed towards reflector antenna; Y is directed towards sky; X is directed towards OTA chamber door.

4.5.1. 4G Antenna

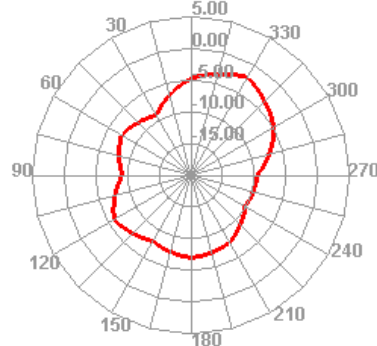
700.000MHz



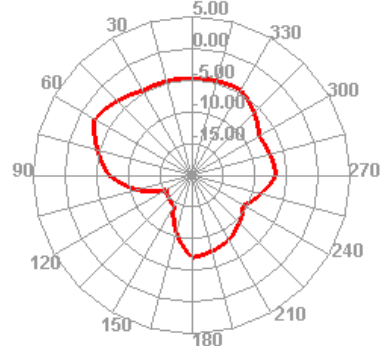
700.000MHz H



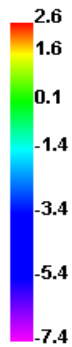
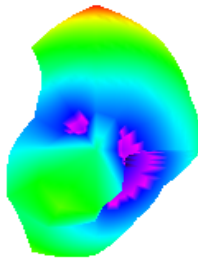
700.000MHz E1



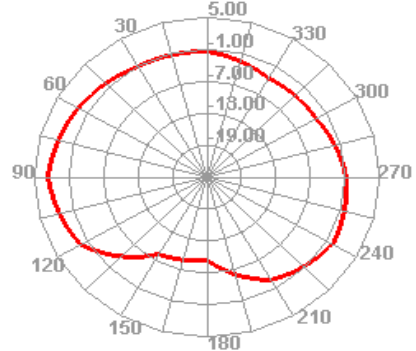
700.000MHz E2



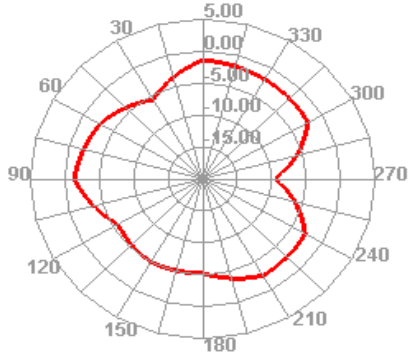
860.000MHz



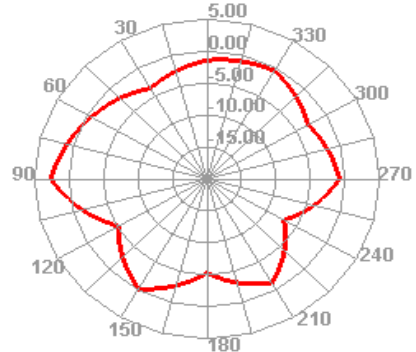
860.000MHz H



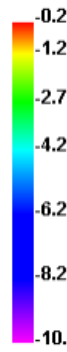
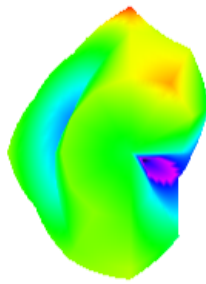
860.000MHz E1



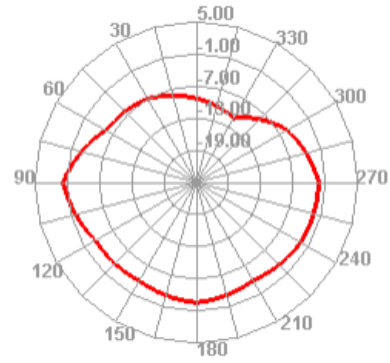
860.000MHz E2



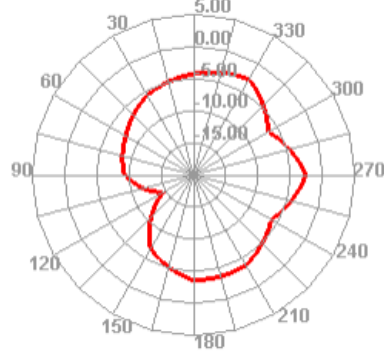
960.000MHz



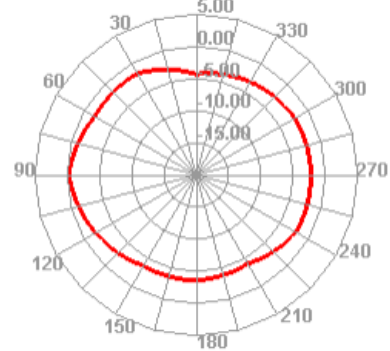
960.000MHz H



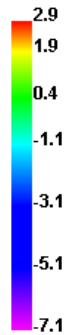
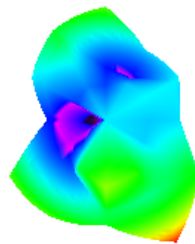
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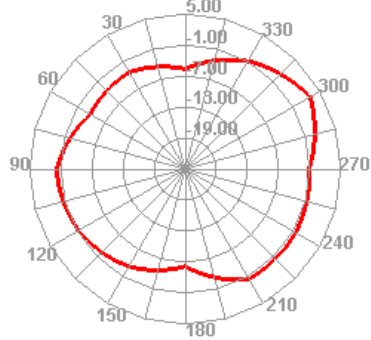
960.000MHz E2



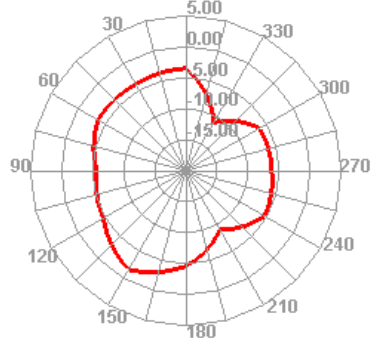
1700.000MHz



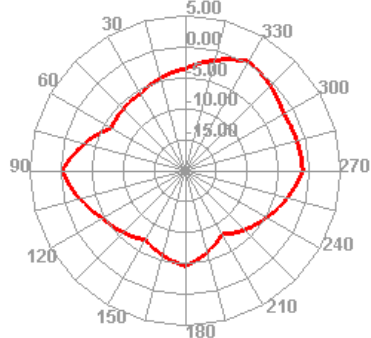
1700.000MHz H



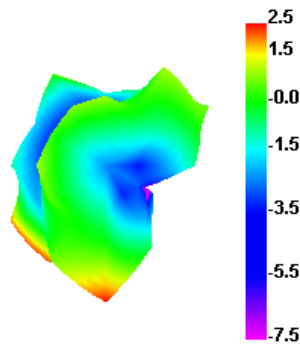
1700.000MHz E1



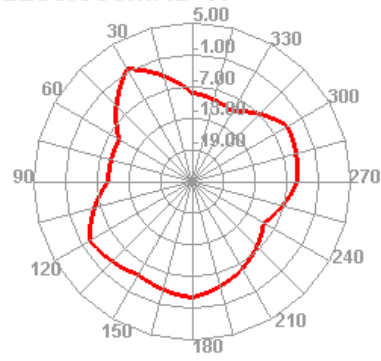
1700.000MHz E2



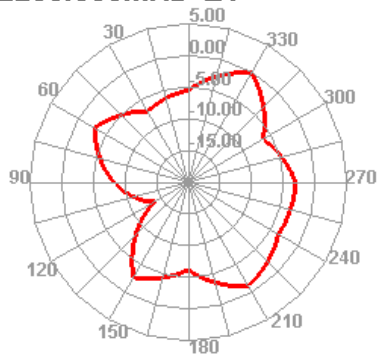
2200.000MHz



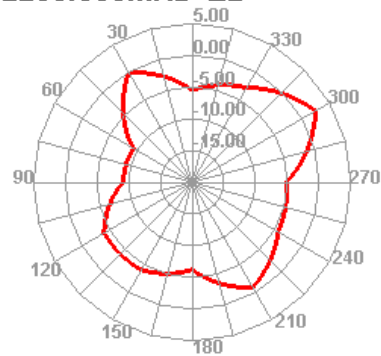
2200.000MHz H



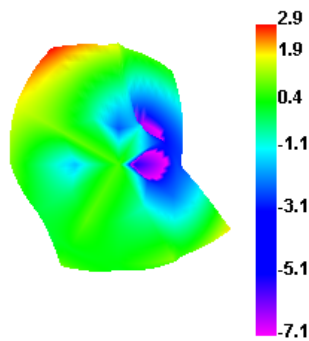
2200.000MHz E1



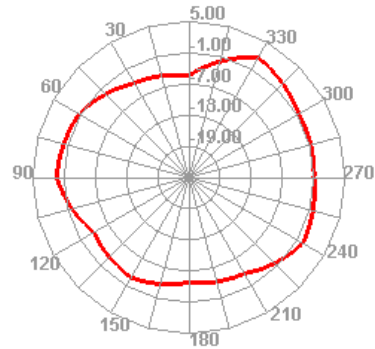
2200.000MHz E2



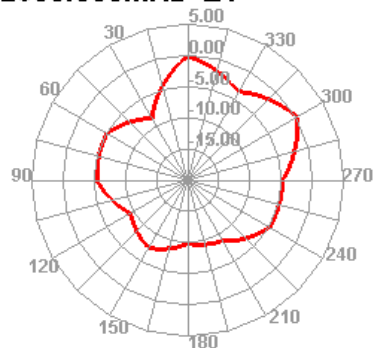
2650.000MHz



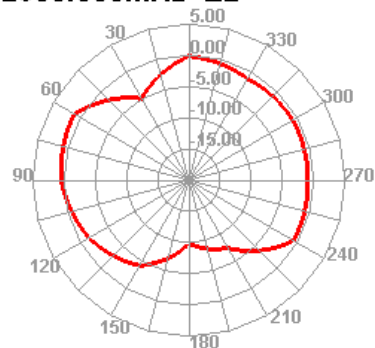
2650.000MHz H



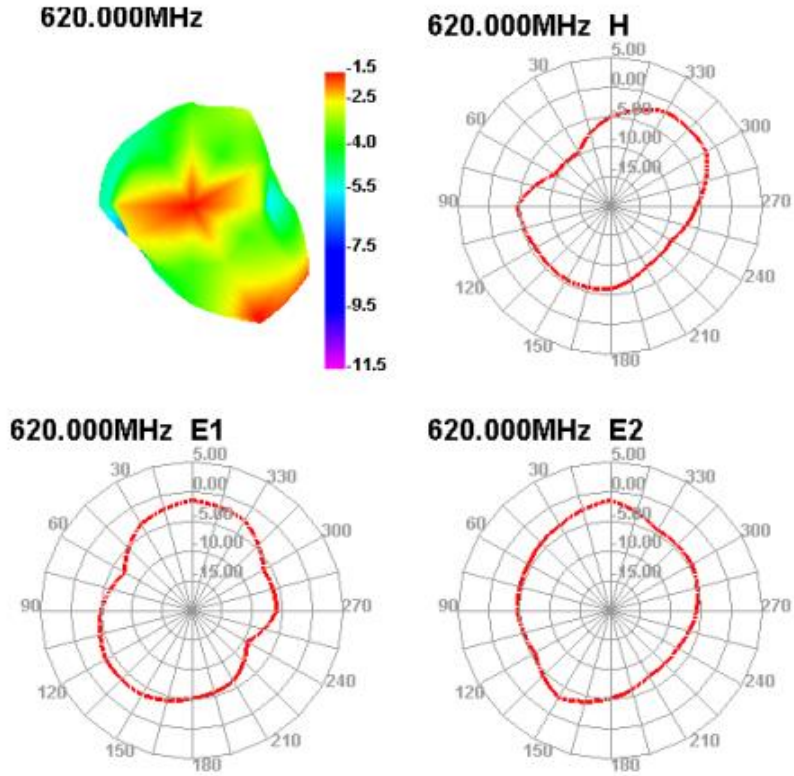
2650.000MHz E1



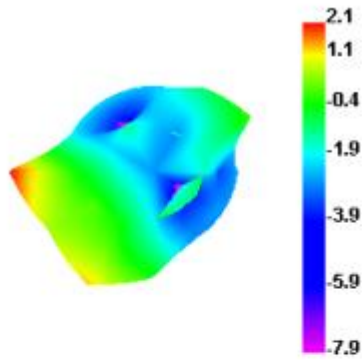
2650.000MHz E2



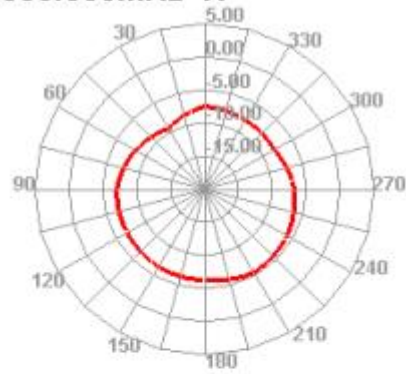
4.5.2. 4G DIV Antenna



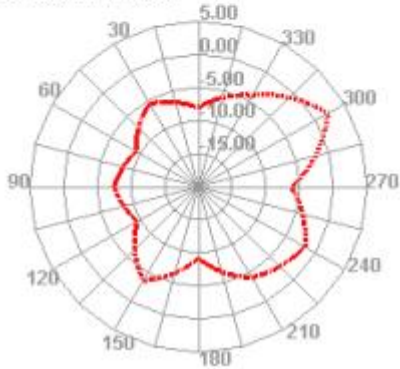
800.000MHz



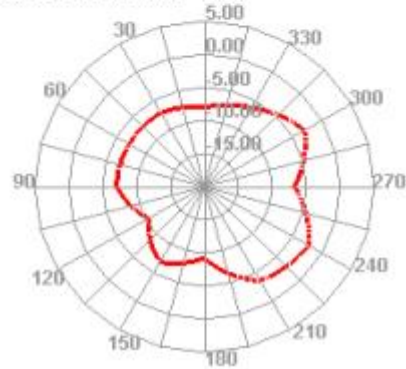
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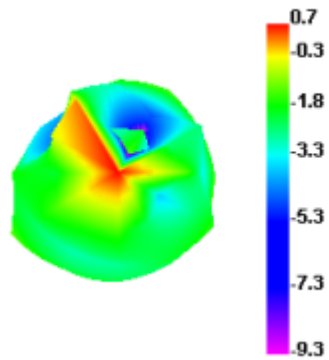
800.000MHz E1



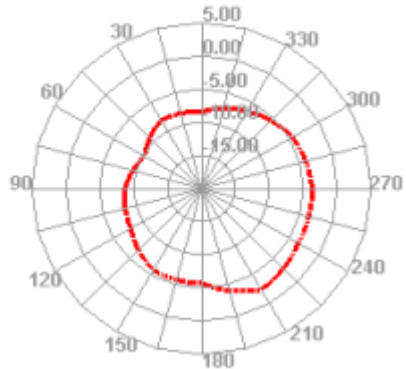
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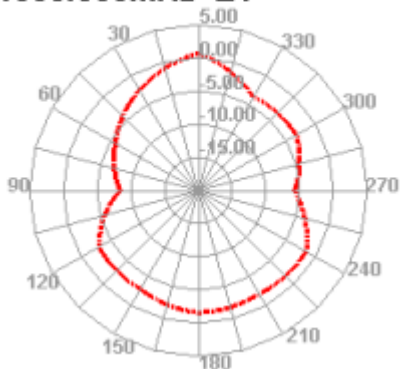
1000.000MHz



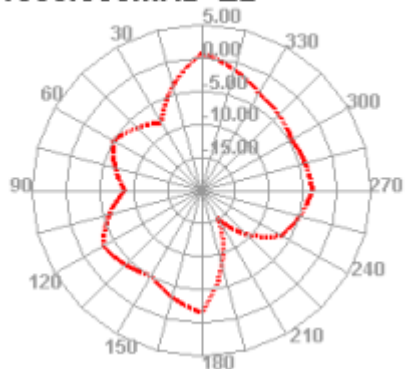
1000.000MHz H



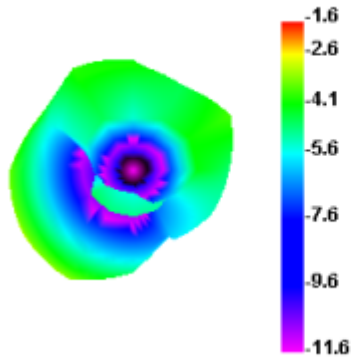
1000.000MHz E1



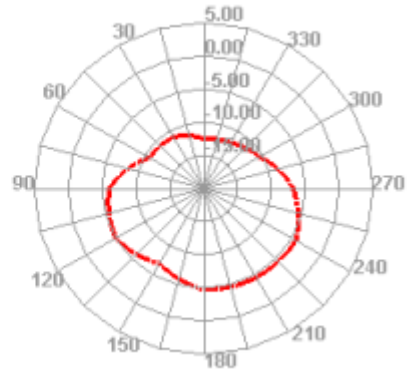
1000.000MHz E2



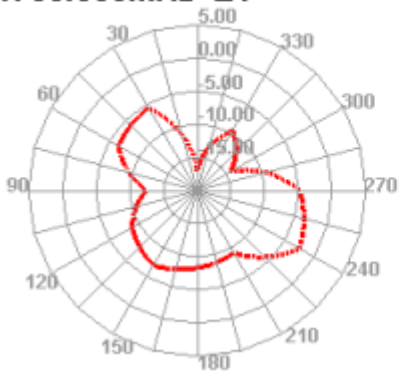
1700.000MHz



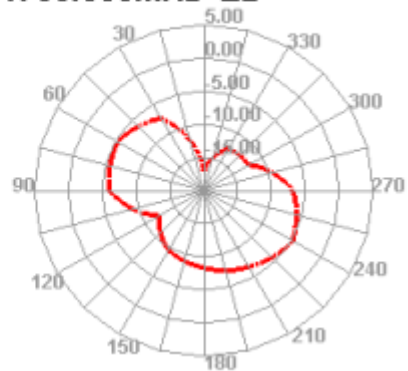
1700.000MHz H



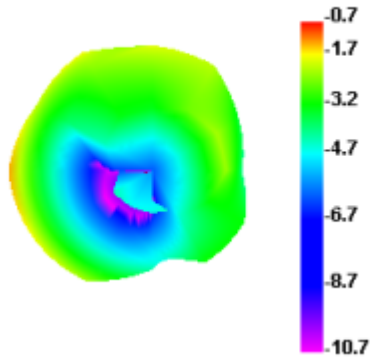
1700.000MHz E1



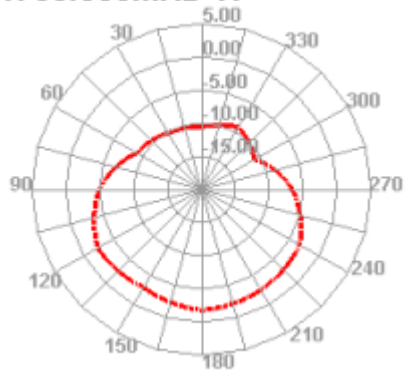
1700.000MHz E2



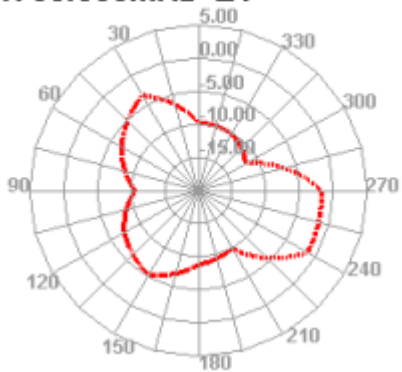
1750.000MHz



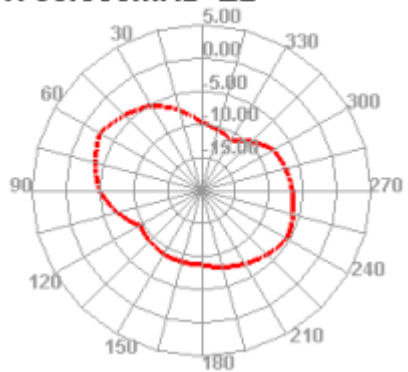
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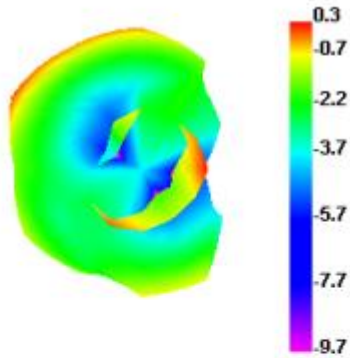
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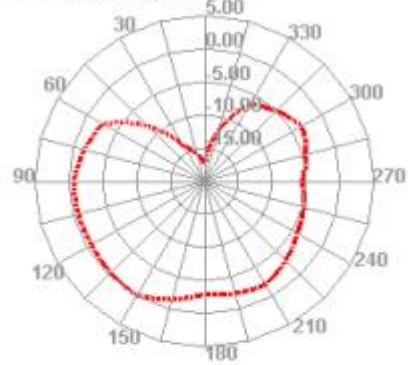
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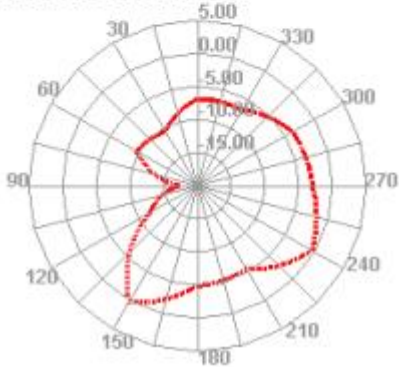
2200.000MHz



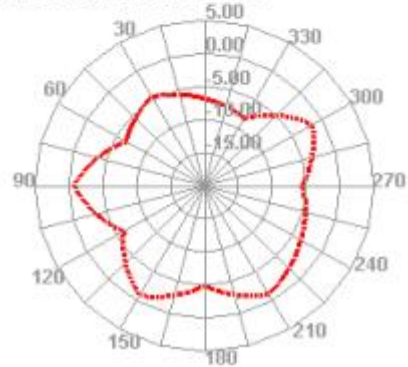
2200.000MHz H



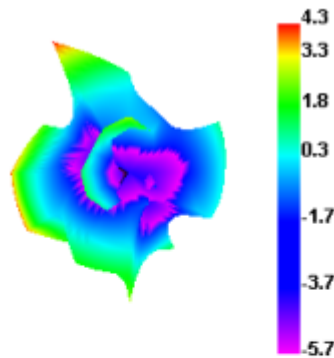
2200.000MHz E1



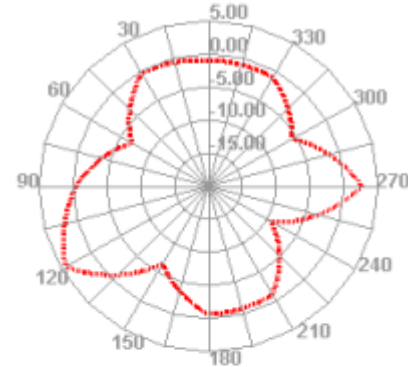
2200.000MHz E2



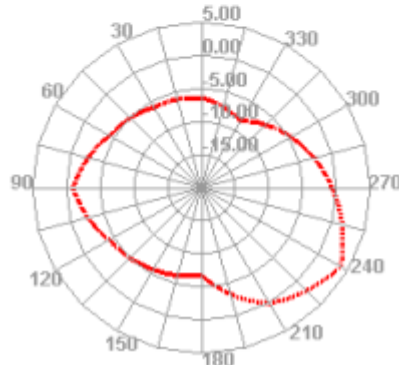
2700.000MHz



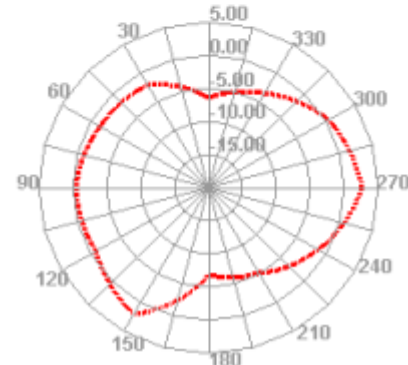
2700.000MHz H



2700.000MHz E1



2700.000MHz E2



5 Product Size

