

Antenna

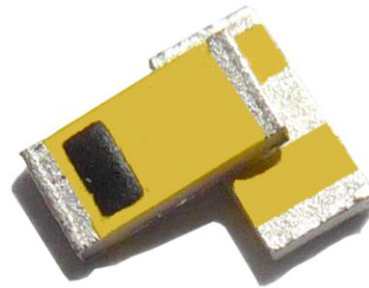
YCGS025AA Datasheet

Antenna Services

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About the Document

Revision History

| Version | Date | Author | Note |
|---------|------------|-------------------------|--------------------------|
| - | 2022-05-21 | Junsen LI/ Joye WANG | Creation of the document |
| 1.0 | 2022-05-21 | Junsen LI/ Joye WANG | First official release |

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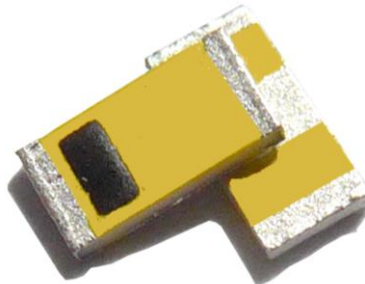
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1 Product Description

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.

2 Product Features

- GPS & Dual Band Wi-Fi (2.4 & 5 GHz)
- High efficiency
- AEC-Q200 compliant
- Stable and reliable in performances
- Compact size
- Excellent performance



3 Product Specifications

Passive Electrical Specifications

| | |
|-------------------|---|
| Frequency Range | 1575.42 MHz; 2400–2500 MHz; 5150–5850 MHz |
| Input Impedence | 50 Ω |
| VSWR | ≤ 3.0 |
| Gain | ≤ 2.3 dBi |
| Polarization Type | Linear |

Mechanical Specifications

| | |
|---------------------|------------------|
| Antenna Size (mm) | 3.2 × 1.6 × 0.5 |
| Materia | Ceramic |
| Cable Type | NA |
| Connector | NA |
| Color | Yellow |
| Weight | Typ. 0.008 g |
| Working Temperature | -40 °C to +85 °C |
| Mounting Type | SMD |

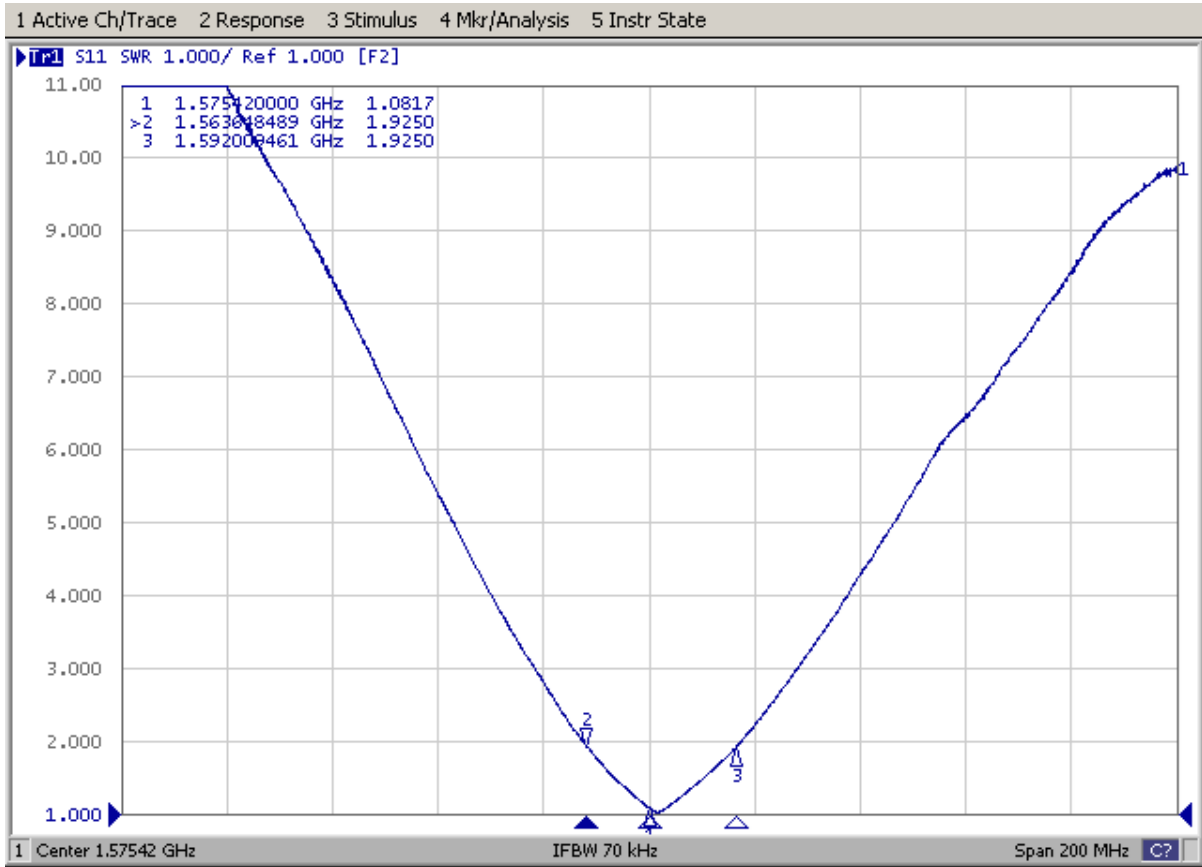
4 Overall Performance

4.1. Test Environment

- KEYSIGHT ENA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 600 MHz – 8.5 GHz

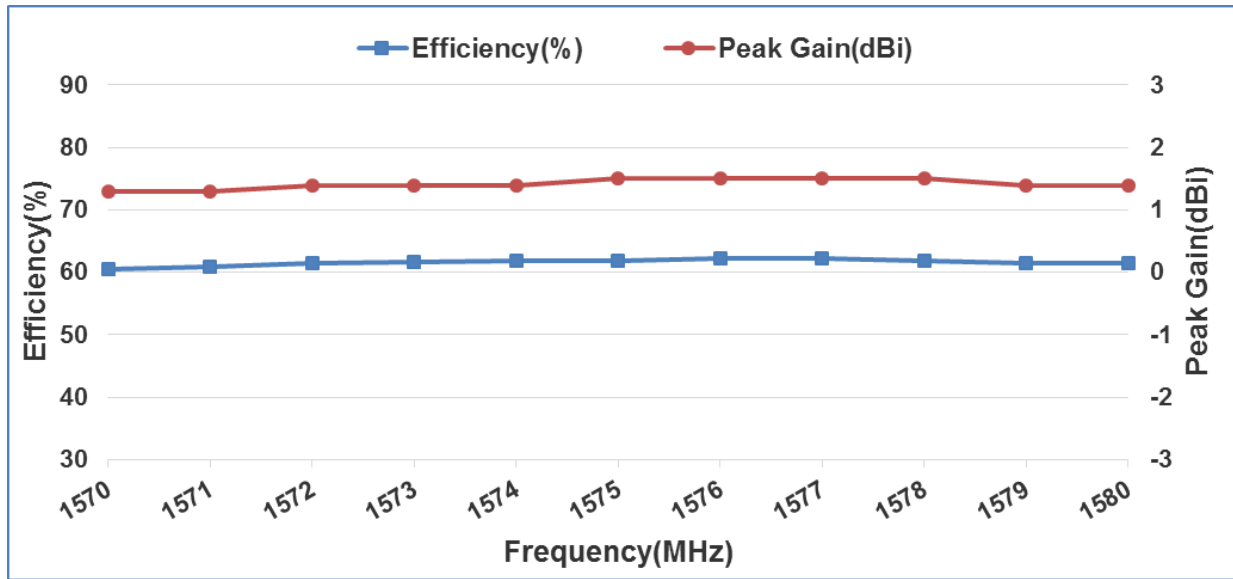


4.2. VSWR of GPS Band



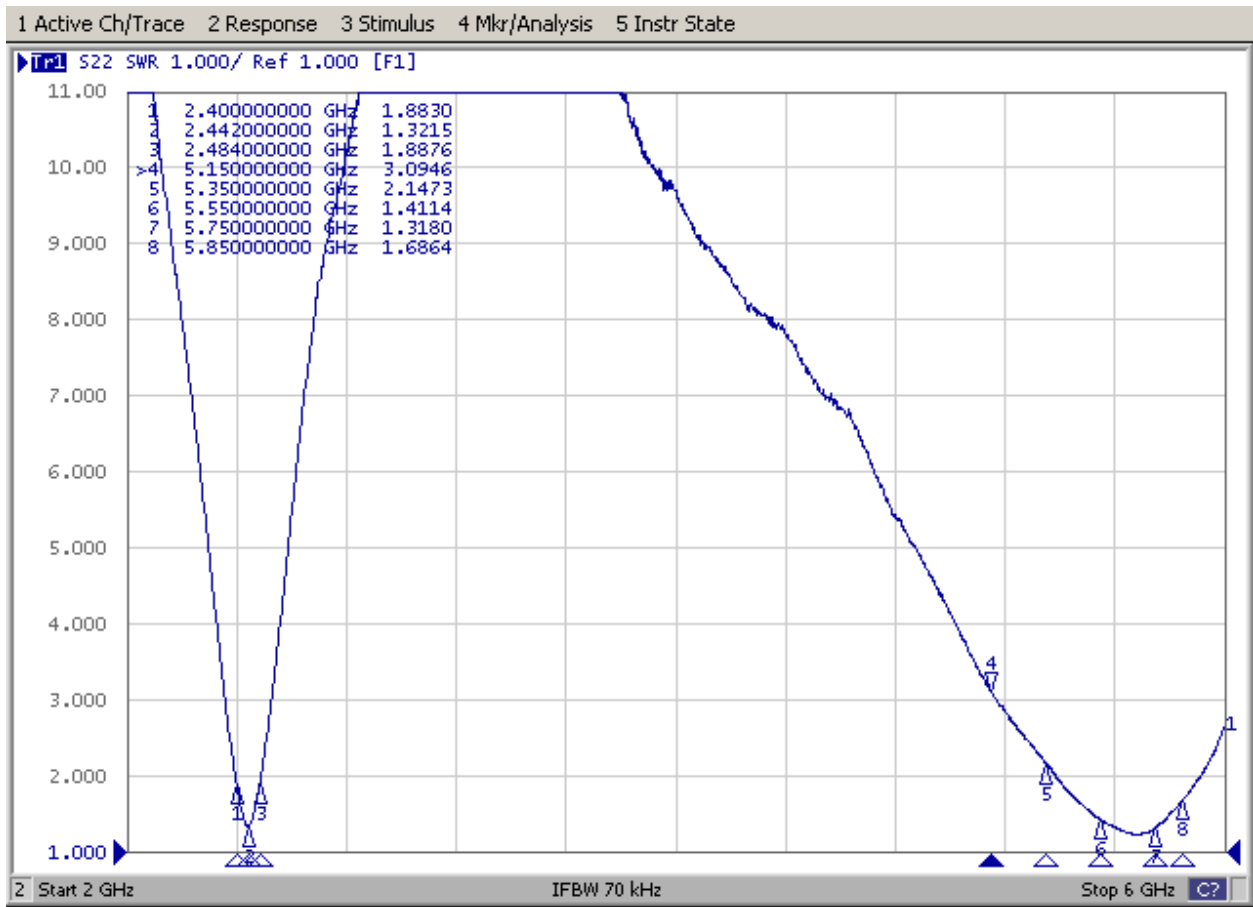
| | |
|-----------------|------|
| Frequency (MHz) | 1575 |
| VSWR | 1.08 |

4.3. Efficiency and Peak Gain of GPS Band



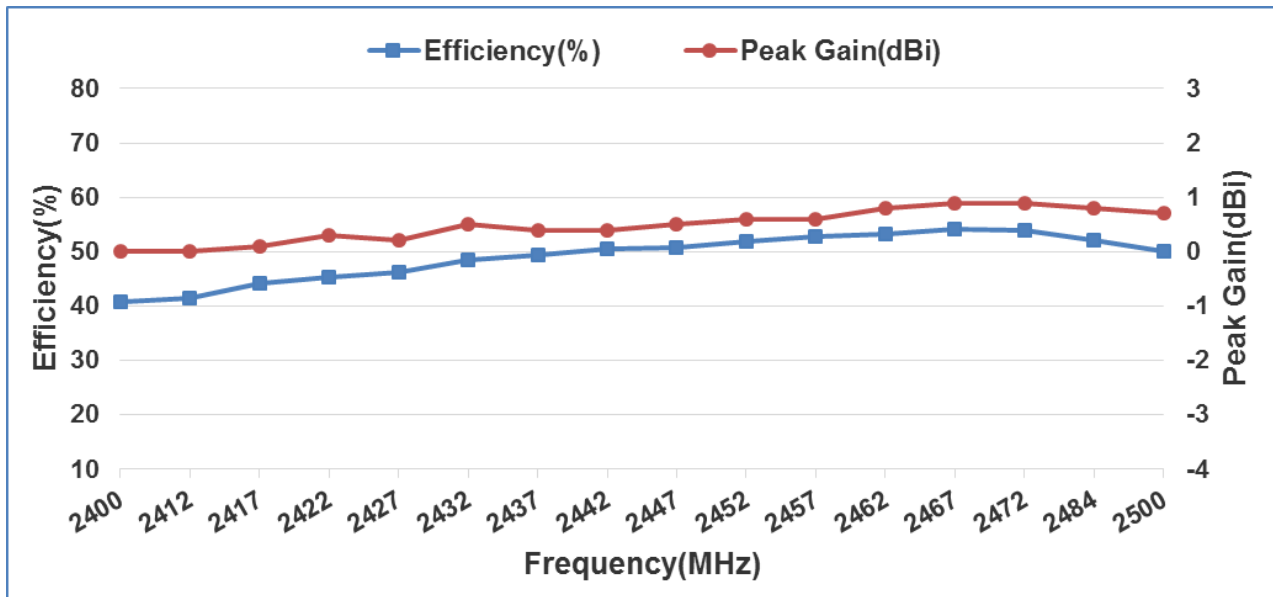
| | |
|-----------------|------|
| Frequency (MHz) | 1575 |
| Efficiency (%) | 61.9 |
| Peak Gain (dBi) | 1.5 |

4.4. VSWR of Wi-Fi Band



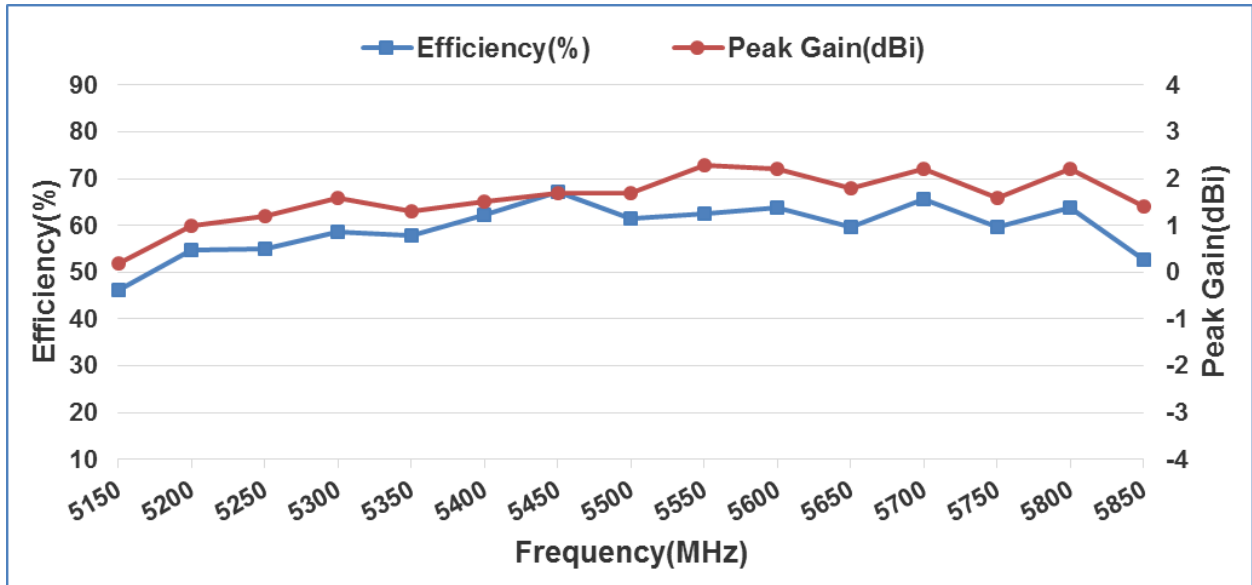
| | | | | | | | | |
|------------------------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 2400 | 2442 | 2484 | 5150 | 5350 | 5550 | 5750 | 5850 |
| VSWR | 1.88 | 1.32 | 1.88 | 3.09 | 2.14 | 1.41 | 1.31 | 1.68 |

4.5. Efficiency and Peak Gain of Wi-Fi Band



| | | | | | | | | | | |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 2400 | 2412 | 2417 | 2422 | 2427 | 2432 | 2437 | 2442 | 2447 | 2452 |
| Efficiency (%) | 40.8 | 41.5 | 44.1 | 45.2 | 46.2 | 48.5 | 49.3 | 50.5 | 50.7 | 51.9 |
| Peak Gain (dBi) | 0.0 | 0.0 | 0.1 | 0.3 | 0.2 | 0.5 | 0.4 | 0.4 | 0.5 | 0.6 |

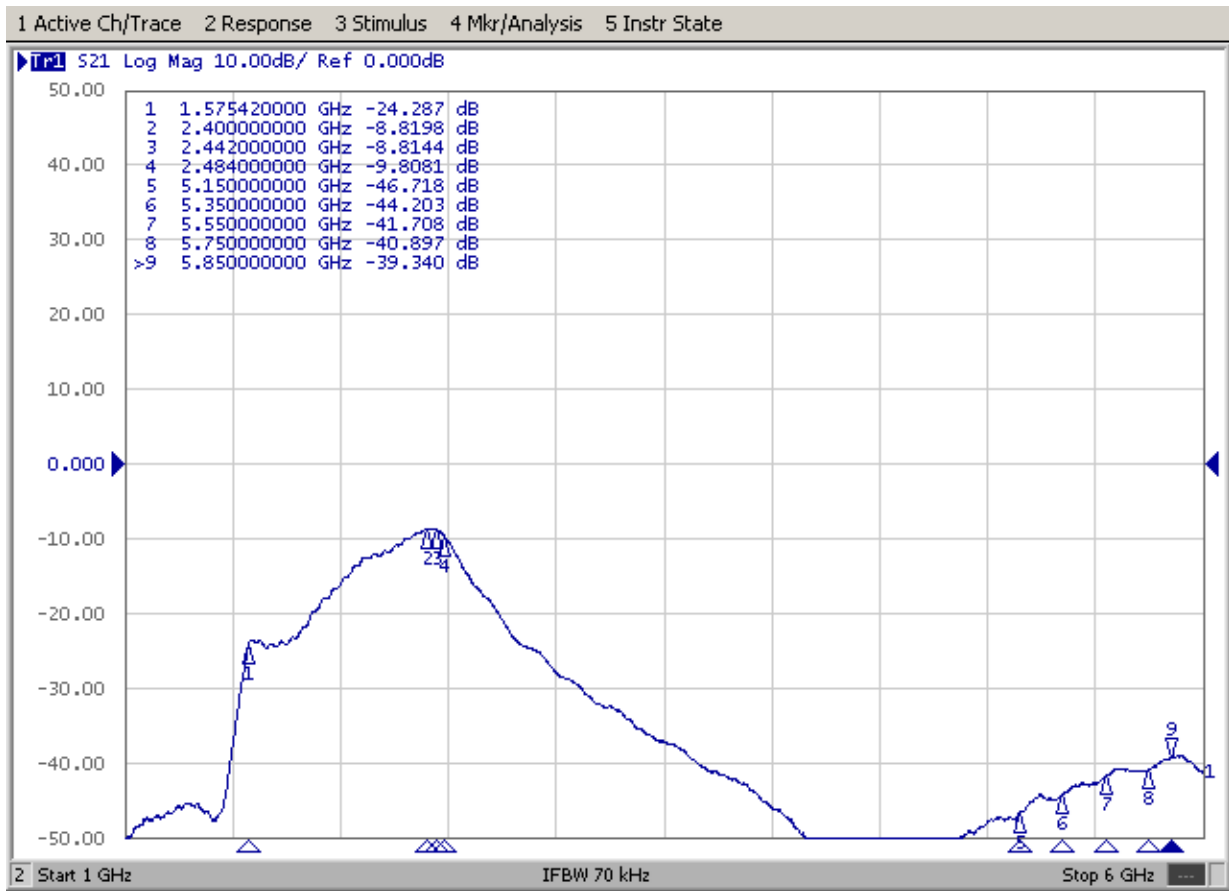
| | | | | | | |
|------------------------|------|------|------|------|------|------|
| Frequency (MHz) | 2457 | 2462 | 2467 | 2472 | 2484 | 2500 |
| Efficiency (%) | 52.7 | 53.2 | 54.2 | 53.9 | 52.2 | 50.1 |
| Peak Gain (dBi) | 0.6 | 0.8 | 0.9 | 0.9 | 0.8 | 0.7 |



| | | | | | | | | | | |
|------------------------|------|------|------|------|------|------|------|------|------|------|
| Frequency (MHz) | 5150 | 5200 | 5250 | 5300 | 5350 | 5400 | 5450 | 5500 | 5550 | 5600 |
| Efficiency (%) | 46.3 | 54.8 | 54.9 | 58.7 | 57.9 | 62.2 | 67.3 | 61.6 | 62.6 | 63.7 |
| Peak Gain (dBi) | 0.2 | 1.0 | 1.2 | 1.6 | 1.3 | 1.5 | 1.7 | 1.7 | 2.3 | 2.2 |

| | | | | | |
|------------------------|------|------|------|------|------|
| Frequency (MHz) | 5650 | 5700 | 5750 | 5800 | 5850 |
| Efficiency (%) | 59.8 | 65.6 | 59.6 | 63.7 | 52.7 |
| Peak Gain (dBi) | 1.8 | 2.2 | 1.6 | 2.2 | 1.4 |

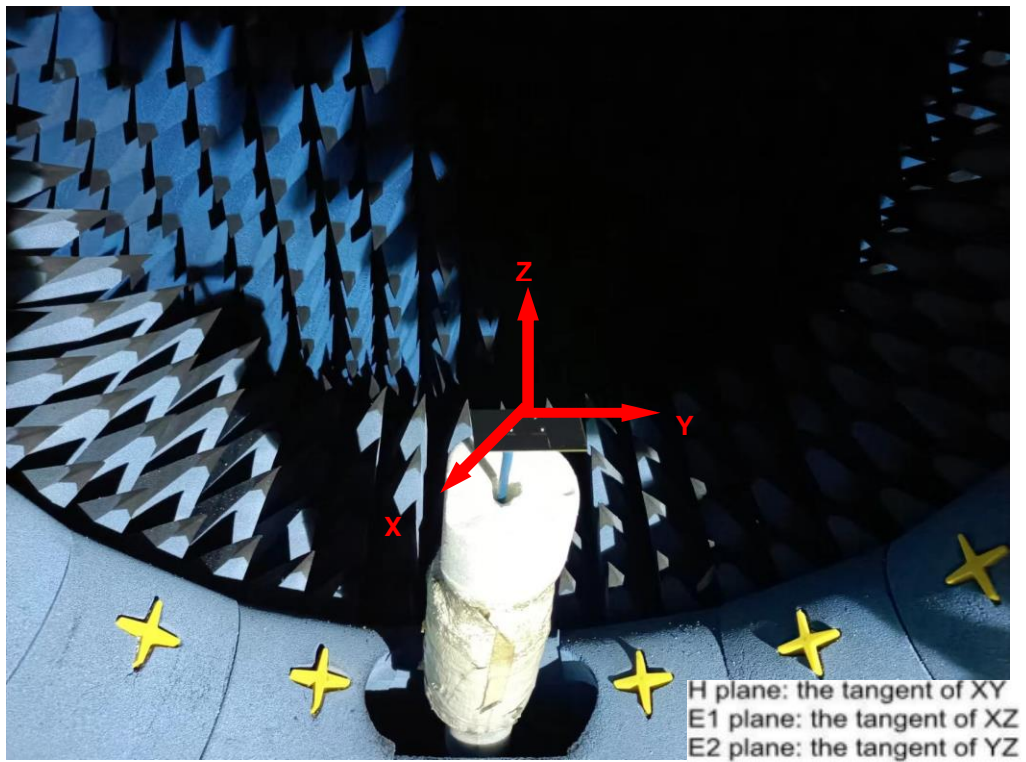
4.6. Isolation Between GPS Band & Wi-Fi Band



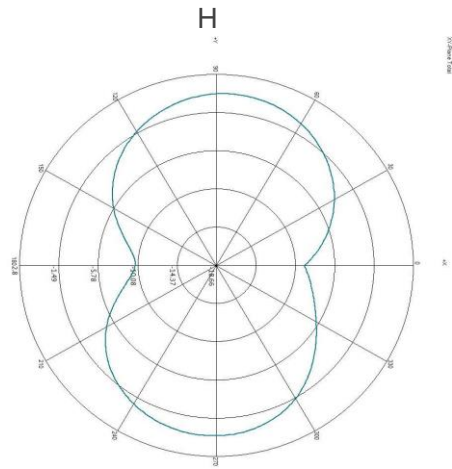
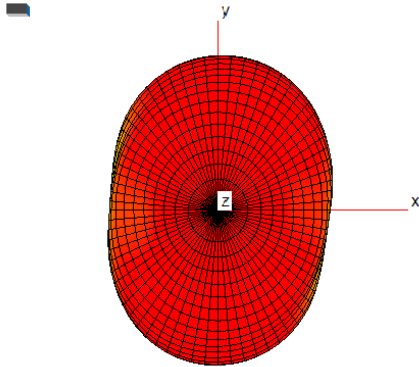
| Frequency (MHz) | 1575 | 2400 | 2442 | 2484 | 5150 | 5350 | 5550 | 5750 | 5850 |
|-----------------|------|------|------|------|------|------|------|------|------|
| Isolation(dB) | -24 | -8.8 | -8.8 | -9.8 | -46 | -44 | -41 | -40 | -39 |

4.7. Radiation Pattern

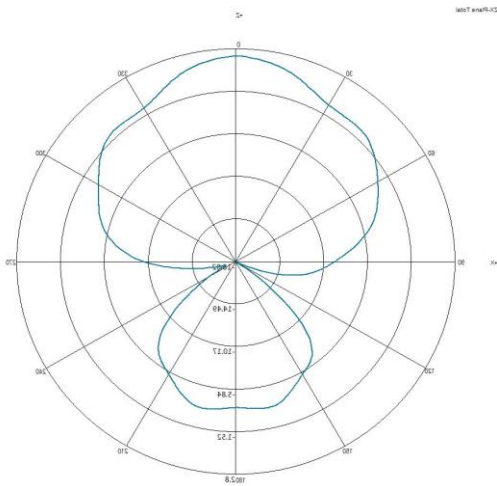
- Test condition: with ground plane (80 mm × 40 mm).



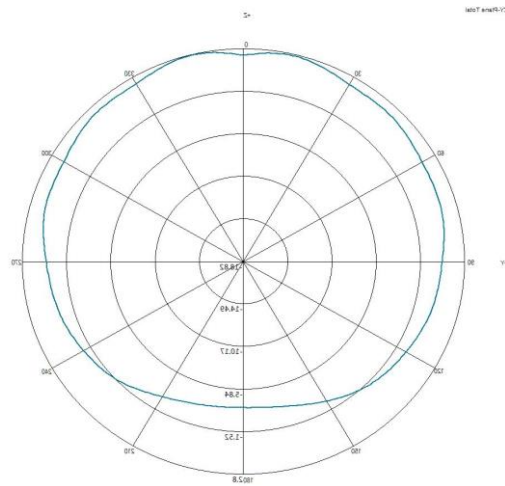
- 1575.42 MHz



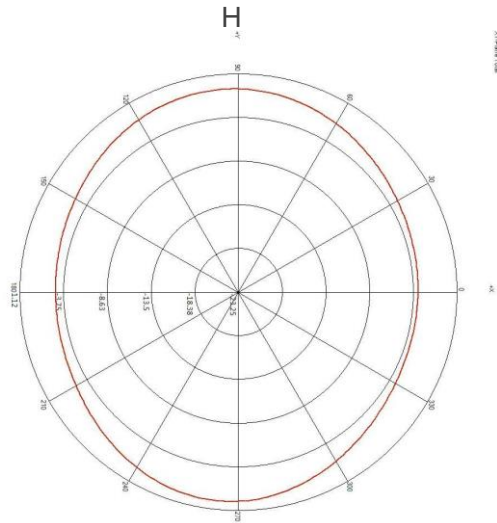
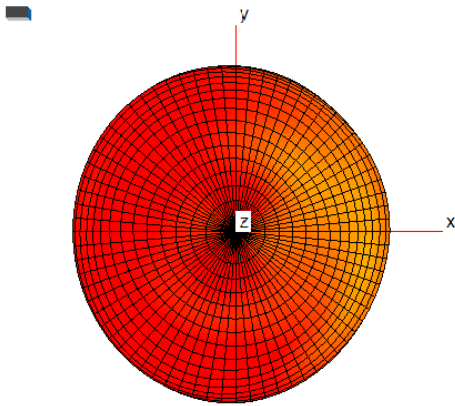
E1



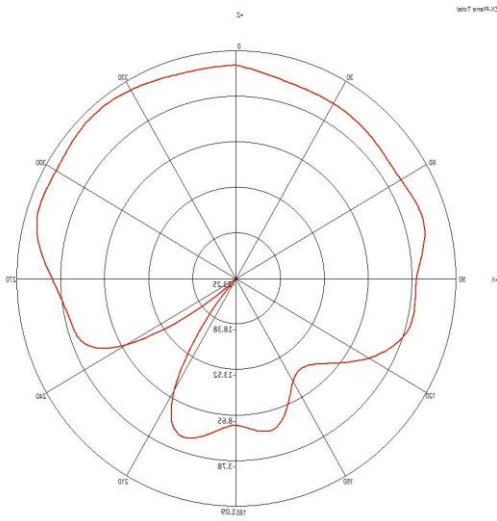
E2



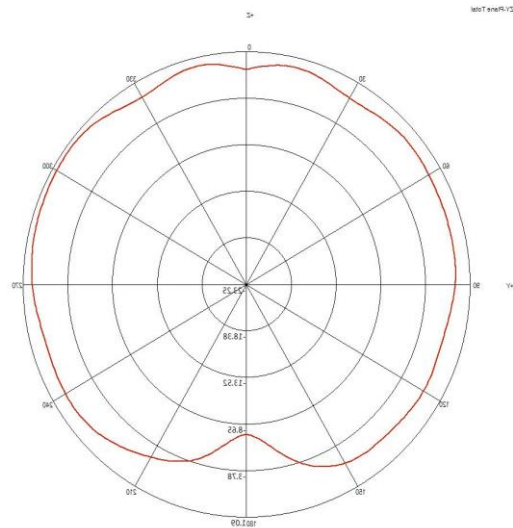
- 2400 MHz



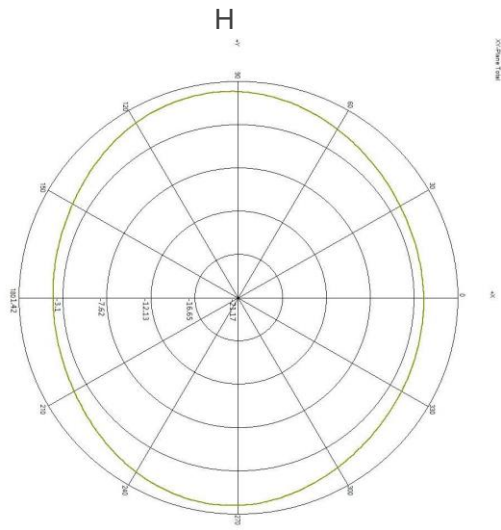
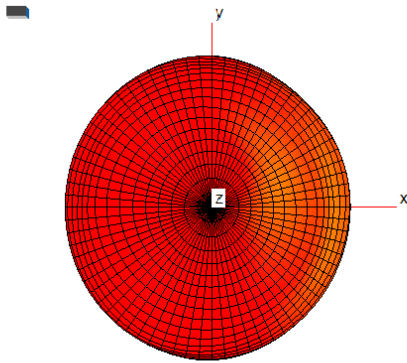
E1



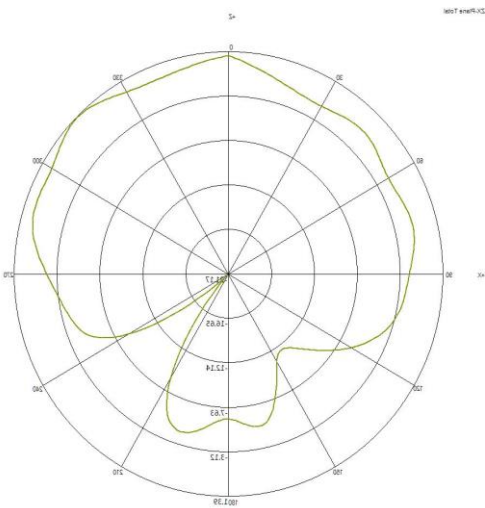
E2



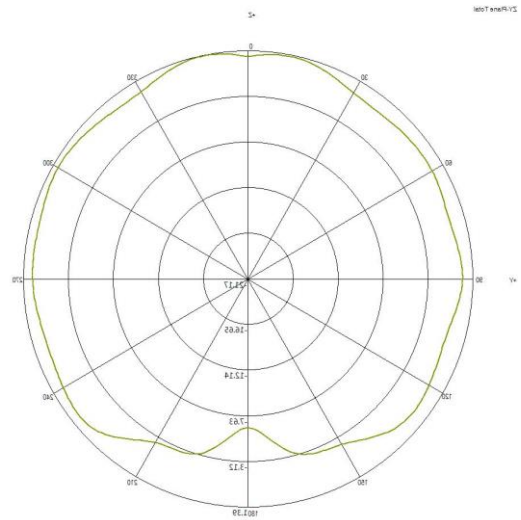
● 2450 MHz



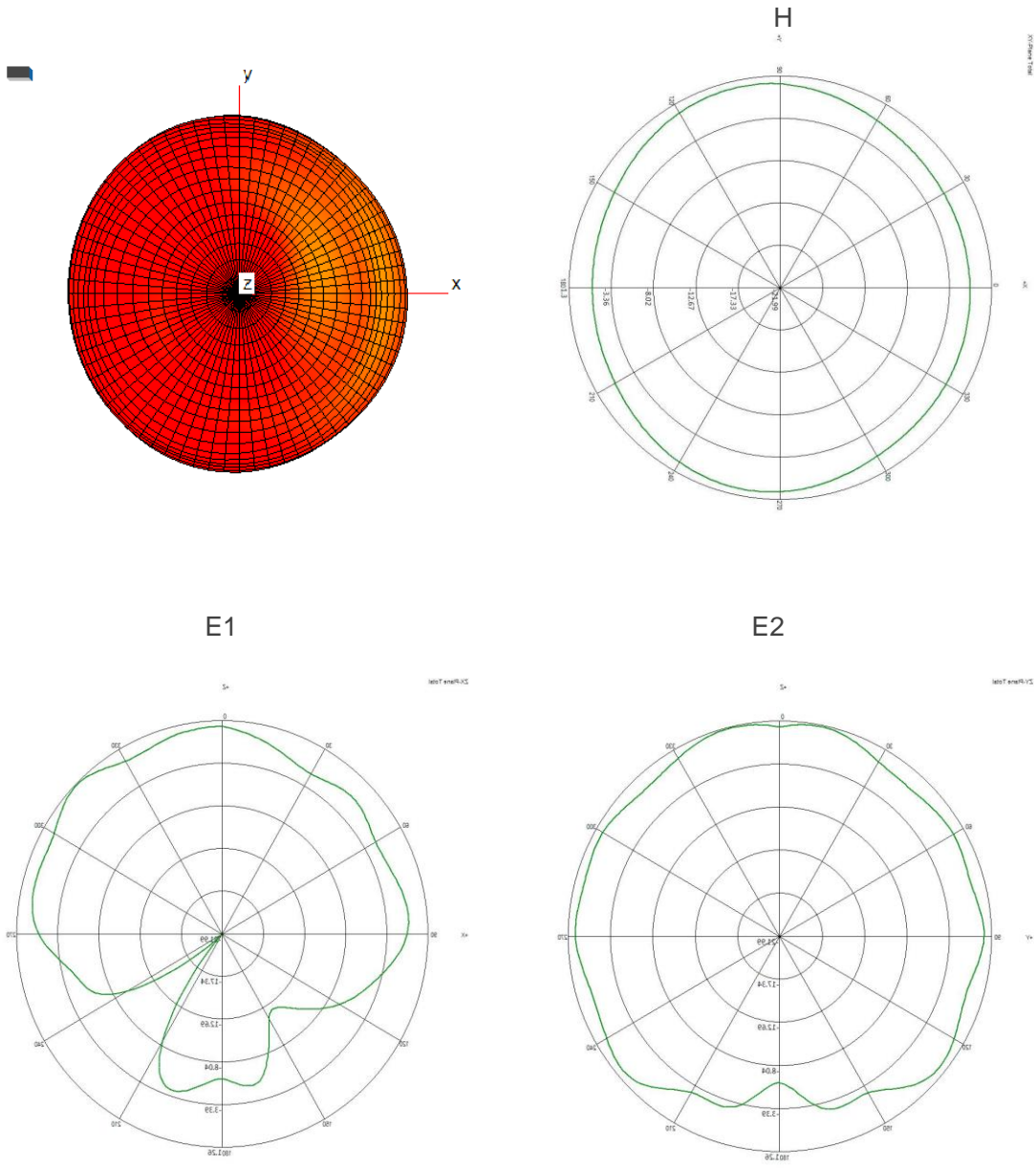
E1



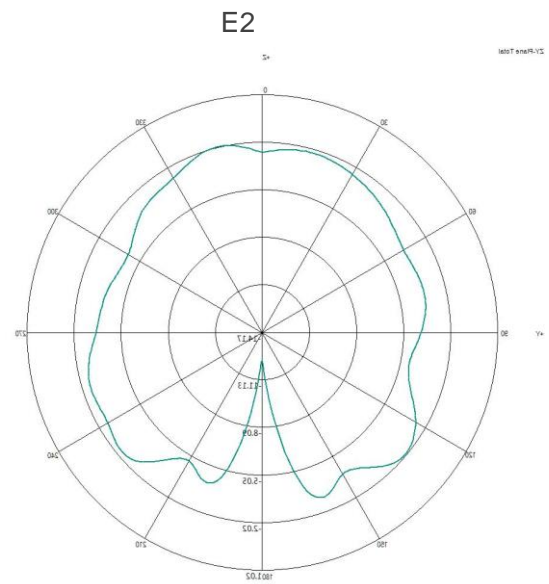
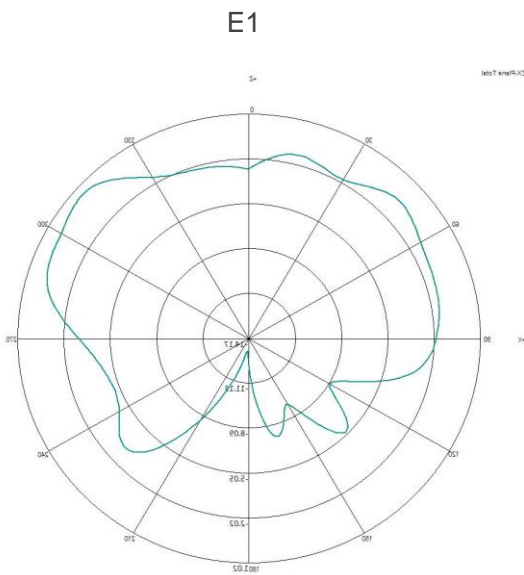
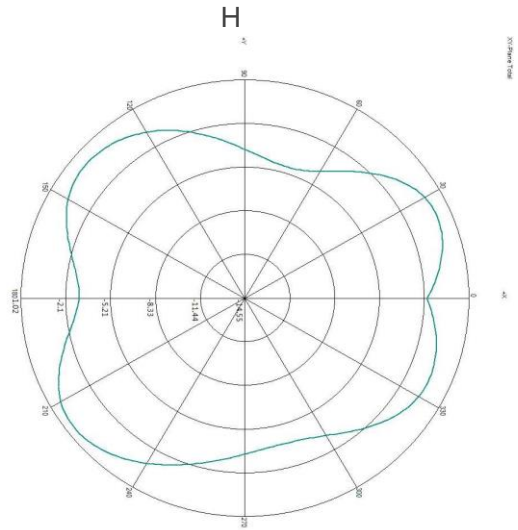
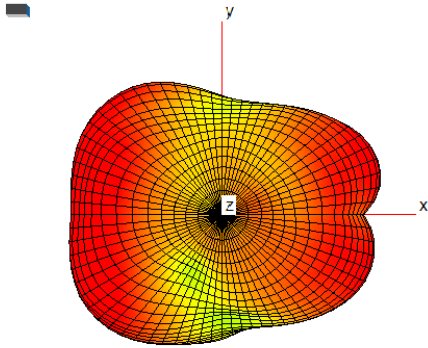
E2



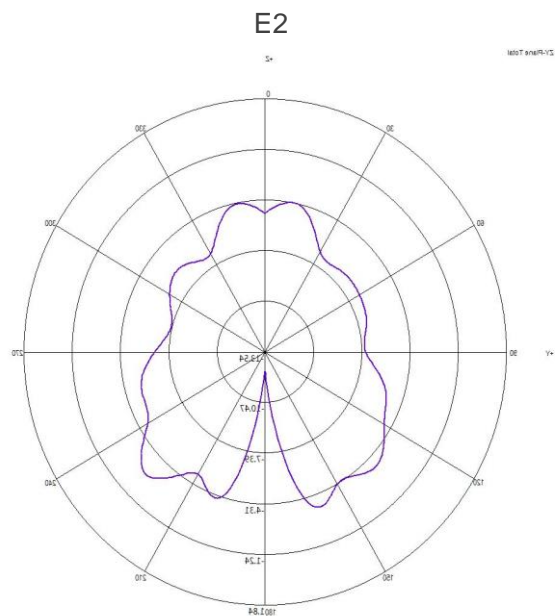
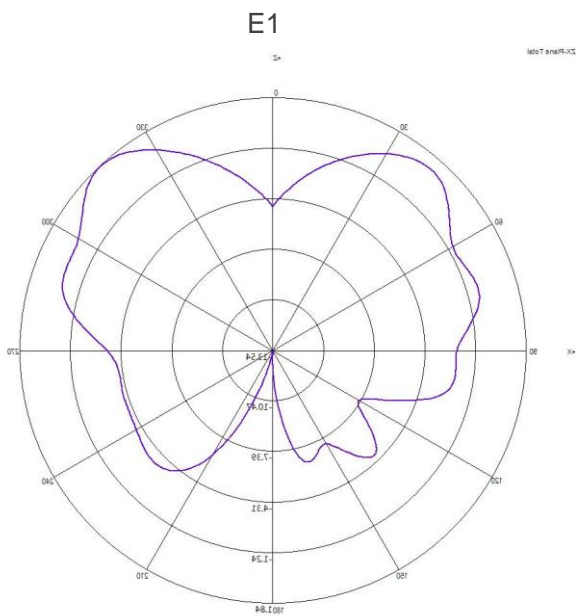
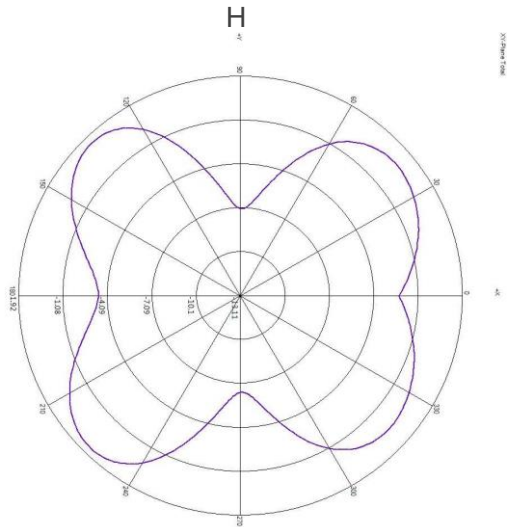
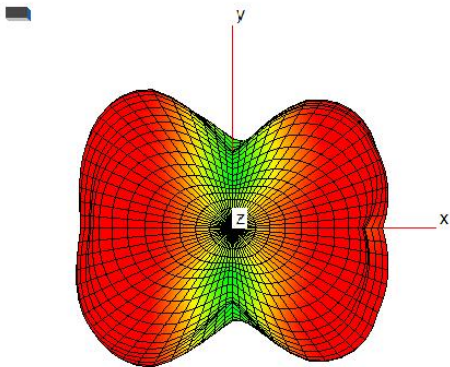
- 2500 MHz



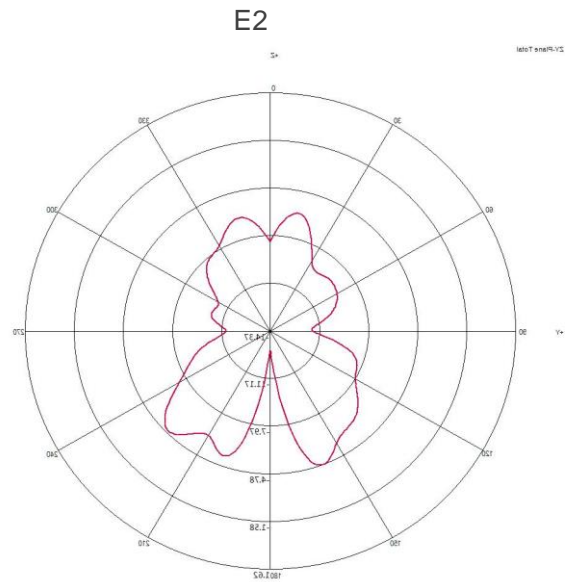
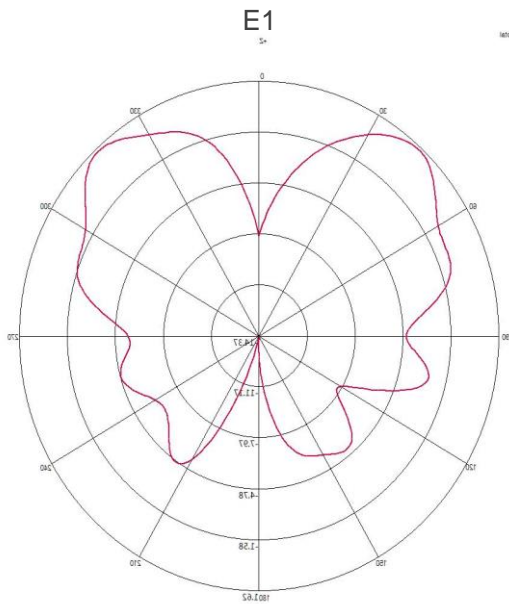
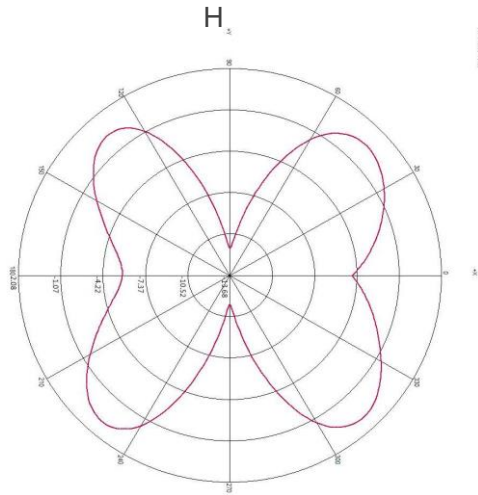
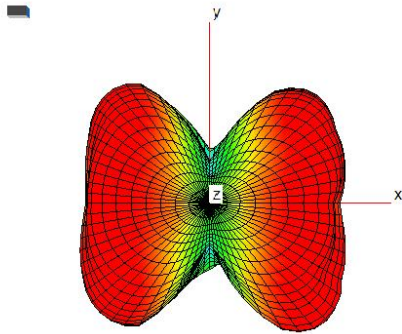
- 5150 MHz



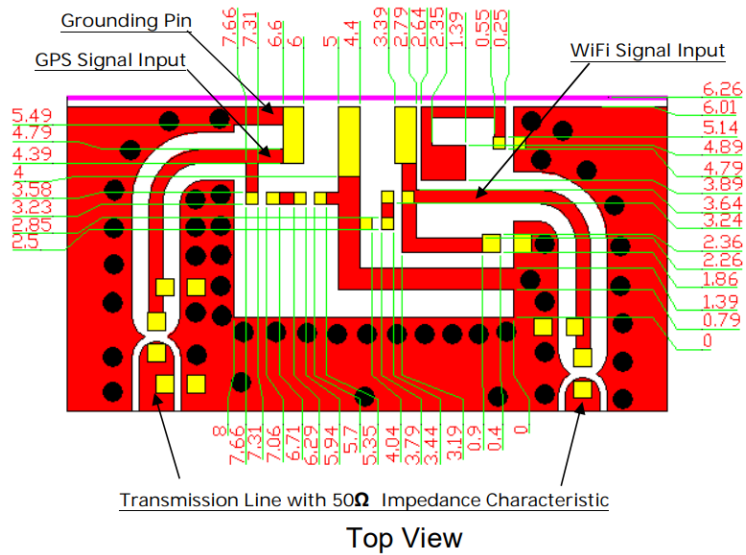
- 5550 MHz



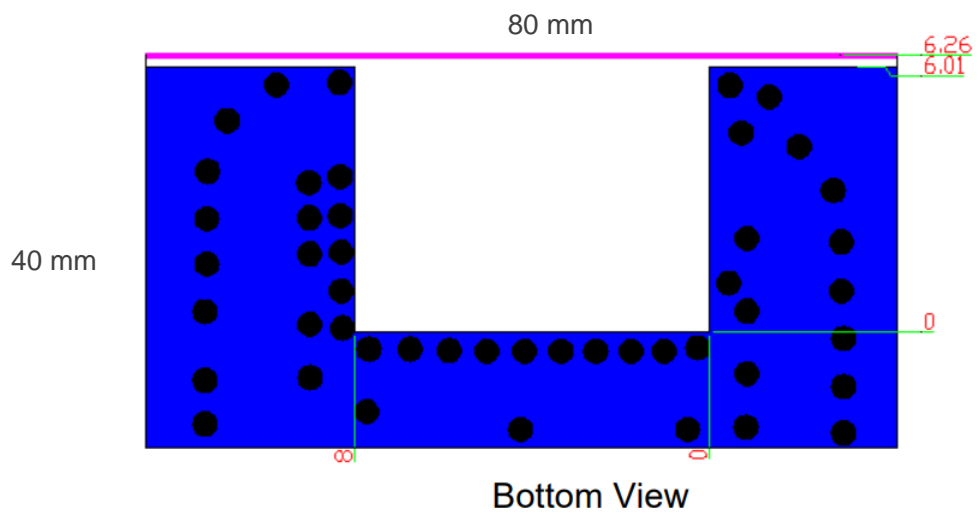
● 5850 MHz



5 PCB Footprint Recommendation



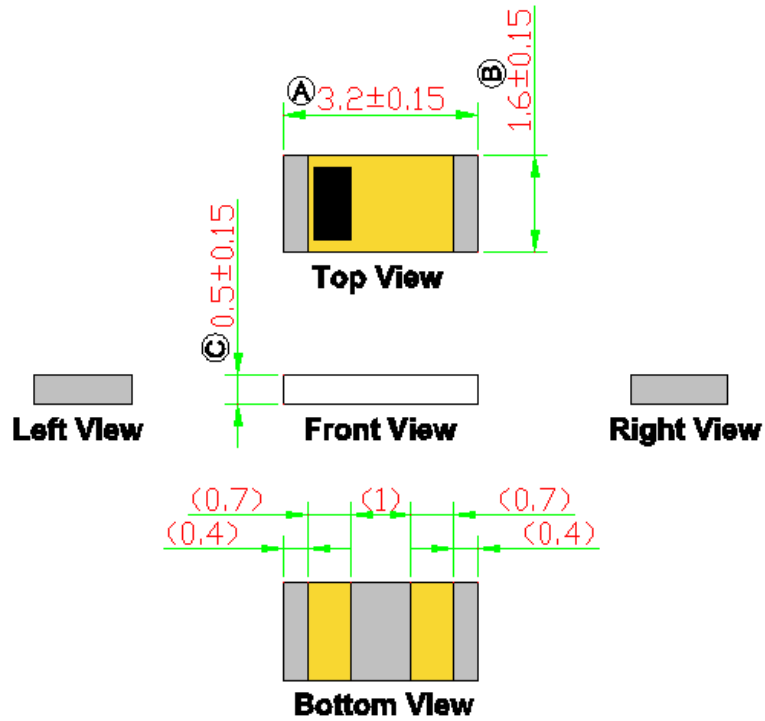
Top View



Bottom View

- **Note: The minimum PCB size is recommended to be 30 mm x 50 mm.**

6 Product Size



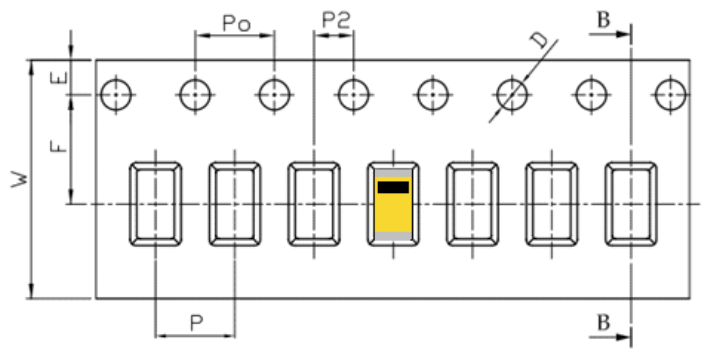
7 Packing Details

Quantity/Reel

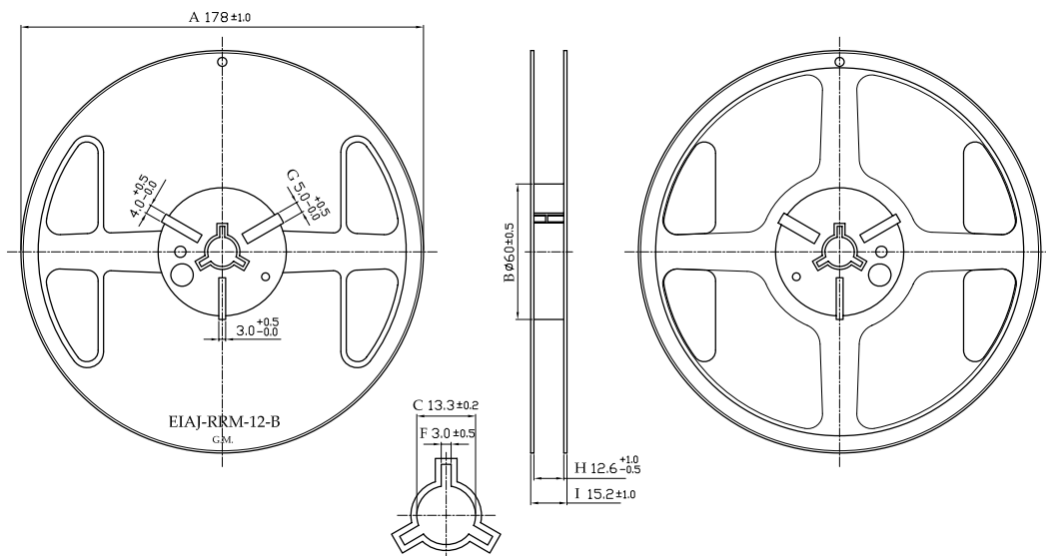
5000 PCS/Reel

Tape Dimensions (Unit: mm)

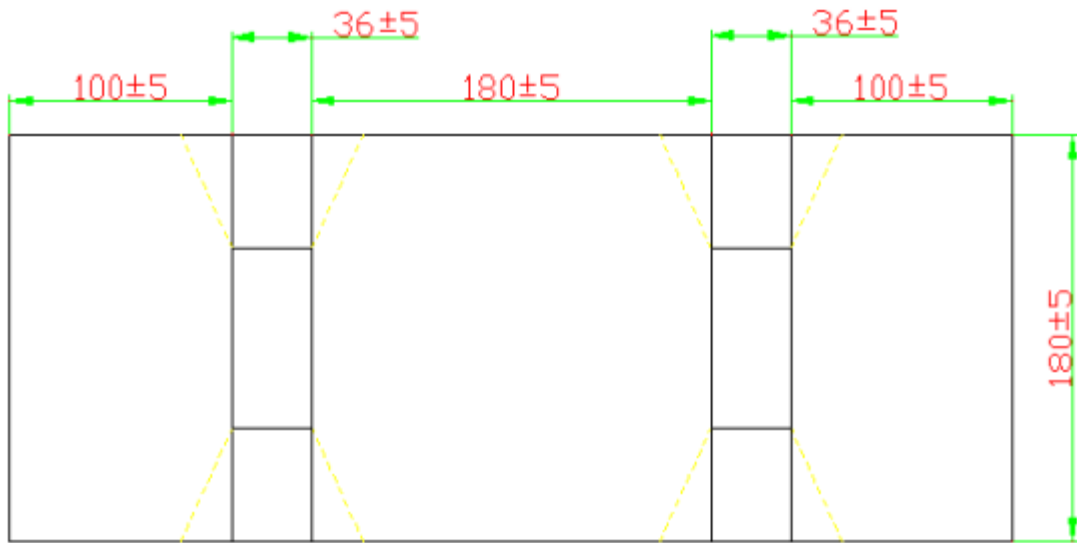
| Feature | Specification | Tolerances |
|---------|---------------|----------------|
| W | 12.00 | ±0.30 |
| P | 4.00 | ±0.10 |
| E | 1.75 | ±0.10 |
| F | 5.50 | ±0.10 |
| P2 | 2.00 | ±0.10 |
| D | 1.50 | +0.10 -0.00 |
| Po | 4.00 | ±0.10 |
| 10Po | 40.00 | ±0.20 |



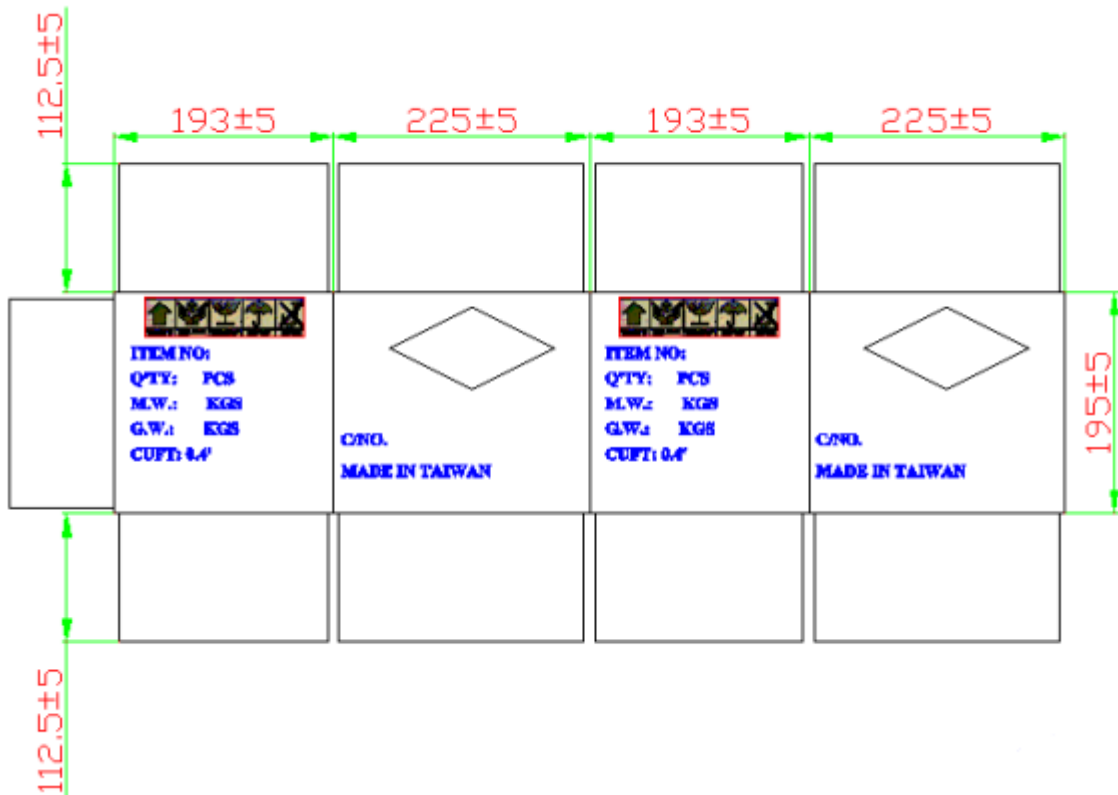
7.1. Reel Drawing



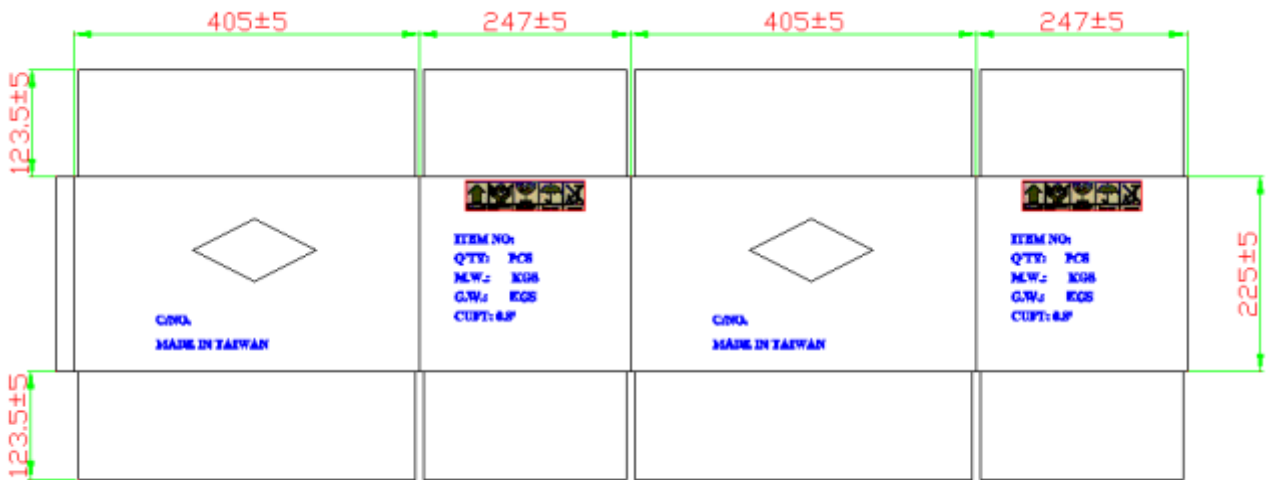
7.2. Drawing of Small Size Carton in Developed View



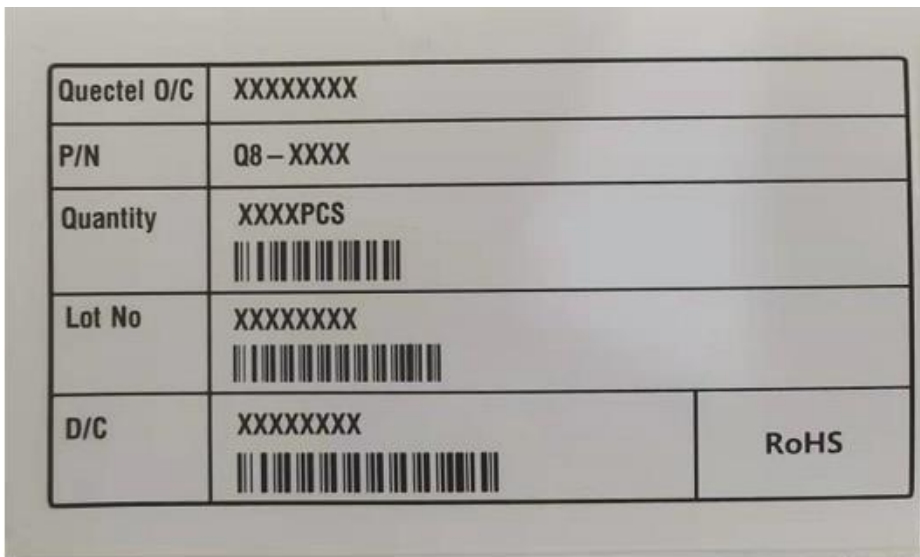
7.3. Drawing of Middle Size Carton in Developed View



7.4. Drawing of Large Size Carton in Developed View



7.5. Picture of Reel Label



7.6. Labeled Reel



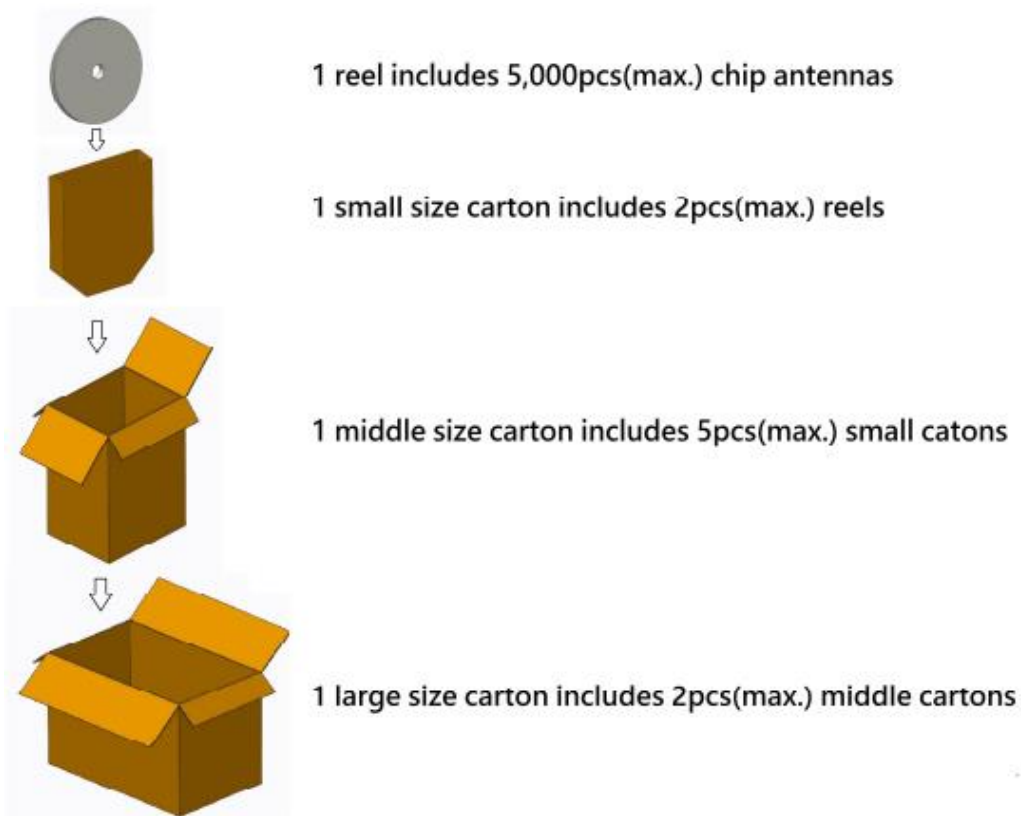
7.7. Small Size Carton Label



7.8. Middle Size Carton Label



7.9. Process of Packing



1. Sealing the carton and attach the label.



(1) Pictures of carton labels.

- Label 1



- Label 2



- Label 3

Paste this label in the carton containing the inspection report, if there are mantissa products.

备注Remark:

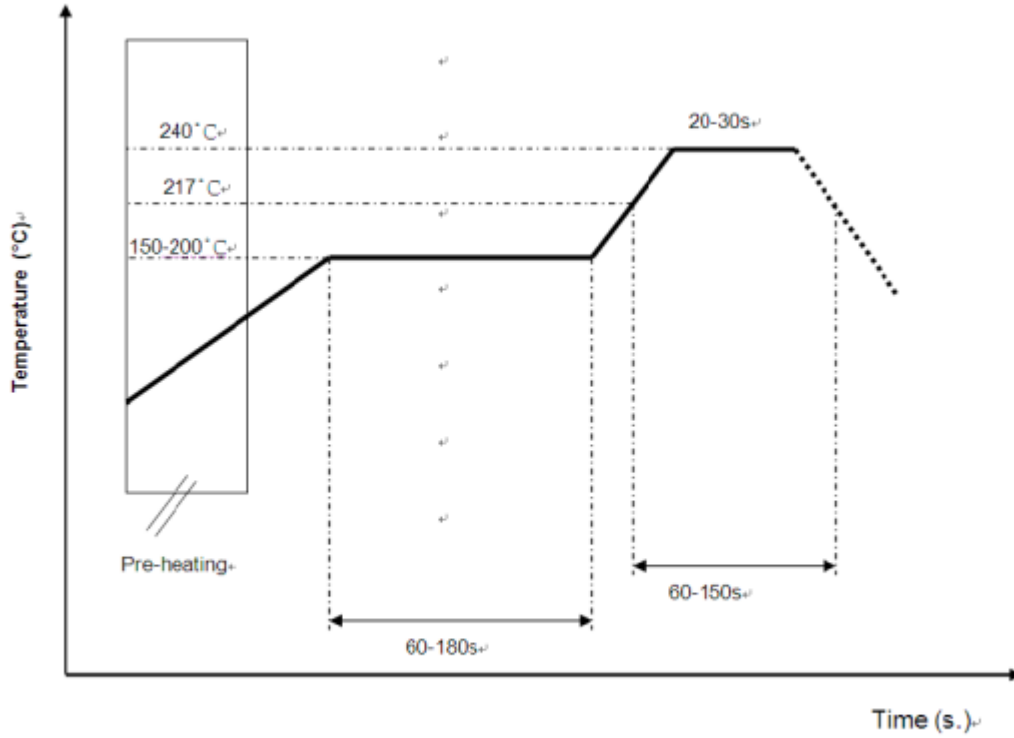
附检验报告
Attached Inspection Report

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上海移远通信技术股份有限公司

尾数箱

8 Soldering Conditions

Typical Soldering Profile for Lead-free Process



*Recommended solder paste alloy: SAC305 (Sn96.5 /Ag3 /Cu0.5) Lead Free solder paste.