



Antenna Datasheet

Product OC: YE0010AA

Version: 2.0

Date: 2023-05-11

Status: Released

Product Name: 4G External Antenna

Key Features:

Frequency Band: 698–2700 MHz

Dimensions: 152 × 18 × 5.9 mm

Efficiency: Up to 79.5 %

RoHS Compliant

IP66

Overview

This Quectel external 4G antenna covers main 4G LTE bands and is compatible with 3G/2G/LPWA bands as well. The external antenna is barely influenced by the internal environment of devices, giving a much better performance in efficiency, radiation and gain whilst providing an optimized solution for a customer product. Quectel also offers flexible installation with custom cable length and connector options.

Contents

| | |
|---|-----------|
| Overview..... | 1 |
| Contents..... | 2 |
| 1 Specification..... | 3 |
| 1.1. Electrical..... | 3 |
| 1.2. Mechanical, Environmental & Storage..... | 4 |
| 2 Drawing..... | 5 |
| 3 Detailed Performance..... | 6 |
| 3.1. S-Parameter Test..... | 6 |
| 3.1.1. VSWR..... | 6 |
| 3.1.2. Return Loss..... | 7 |
| 3.2. Radiation Performance Test..... | 8 |
| 3.2.1. Efficiency..... | 8 |
| 3.2.2. Average Gain..... | 9 |
| 3.2.3. Peak Gain..... | 10 |
| 3.2.4. 3D & 2D Radiation Pattern..... | 11 |
| 3.2.4.1. Test Condition: Free Space..... | 11 |
| 4 Packaging..... | 15 |
| Contact Us..... | 17 |
| Legal Notices..... | 18 |
| Revision History..... | 20 |

1 Specification

Test Condition: Free Space

1.1. Electrical

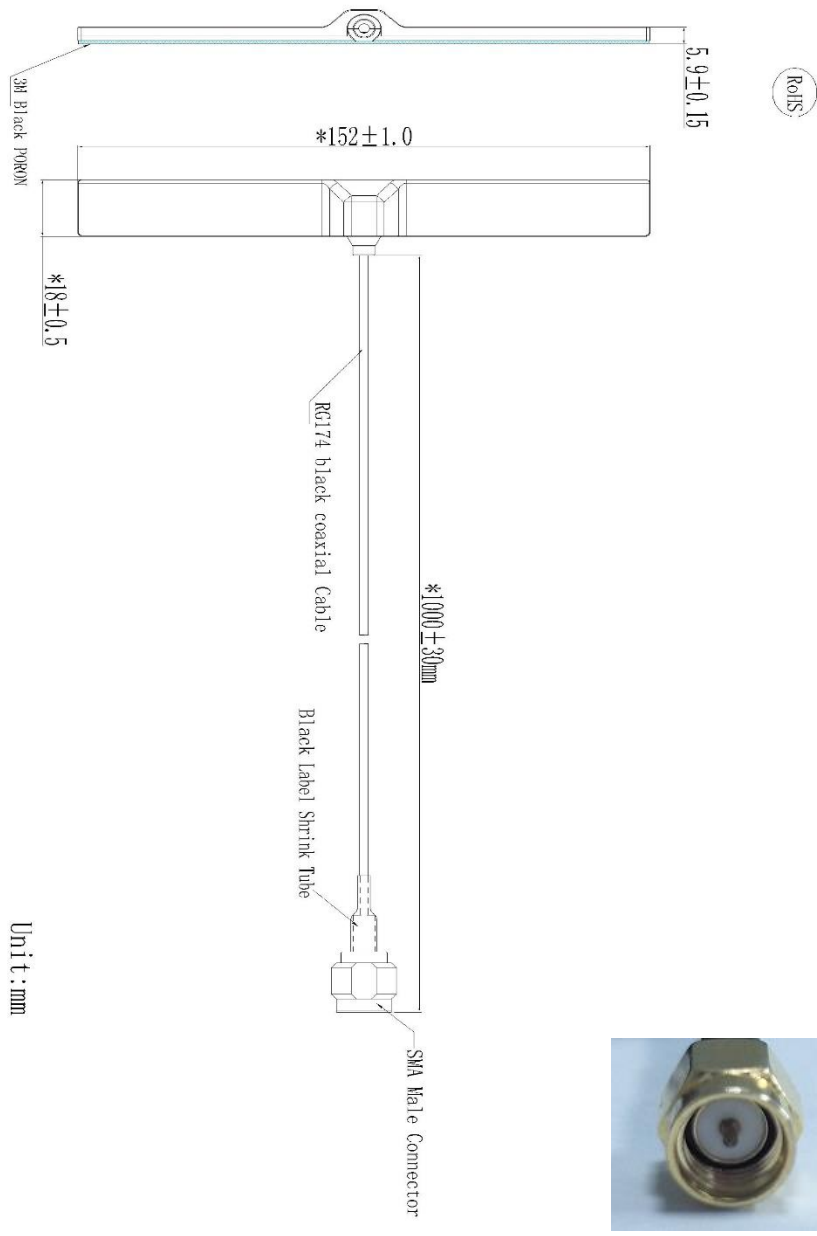
| Electrical | |
|-------------------|------------------|
| Frequency Range | 698–2700 MHz |
| Impedance | 50 Ω |
| Polarization | Linear |
| Radiation Pattern | Omni-directional |

| Electrical - Detail | | | | | | | | | | | | |
|----------------------|----------------|----------------|---------------------|-------------------|---------------------|------------------|---------------|---------------|---------------|---------------------|---------------|---------------|
| SPEC | Band | B71 | B12 /B13 /B28 | B5 /B8 /B26 | N74 /N75 /N76 | B1 /B2 /B3 | B40 | Wi-Fi 2G | B38 /B41 | B42 /B48 /N77 | N79 | Wi-Fi 5G |
| | Freq. (MHz) | 600– 700 | 700– 810 | 820– 960 | 1420– 1520 | 1700– 2170 | 2300– 2400 | 2400– 2500 | 2500– 2690 | 3300– 4200 | 4400– 5000 | 5150– 5850 |
| Max. VSWR | | 3.9 | 2.1 | 2.6 | - | 2.5 | 2.2 | 1.8 | 1.6 | - | - | - |
| Max. Return Loss(dB) | | -4.5 | -8.8 | -7.0 | - | -7.4 | -8.3 | -10.5 | -12.5 | - | - | - |
| AVG Eff. (%) | | 50.1 | 70.3 | 41.0 | - | 48.9 | 44.0 | 49.3 | 50.5 | - | - | - |
| AVG Gain (dB) | | -3.1 | -1.5 | -4.0 | - | -3.1 | -3.6 | -3.1 | -3.0 | - | - | - |
| Max. Peak Gain (dBi) | | 2.2 | 2.0 | 1.5 | - | 2.4 | 1.5 | 2.1 | 2.7 | - | - | - |
| VSWR | | ≤ 3.9 | | | | | | | | | | |
| Return Loss | | ≤ -4.5 dB | | | | | | | | | | |
| Peak Gain | | ≤ 2.7 dBi | | | | | | | | | | |

1.2. Mechanical, Environmental & Storage

| Mechanical | |
|--------------------------------|---|
| Antenna Dimensions | 152 × 18 × 5.9 mm |
| Material & Color | PC + ABS & Black |
| Cable Type & Color & Length | RG174 & Black & 1000 mm |
| Connector Type | SMA Male |
| Mounting Type | Adhesive |
| Weight | Typ. 29.8 g |
| Environmental | |
| Operation Temperature | -40 °C to +85 °C |
| Ingress Protection (IP) Rating | IP66 |
| RoHS Compliant | Yes |
| Storage | |
| Storage Temperature | 18 °C–27 °C |
| Humidity | 30 %–80 % RH |
| Storage Place | Away from corrosive gas and direct sunlight |
| Packaging | Antennas should be stored in unopened sealed manufacturer's plastic packaging |

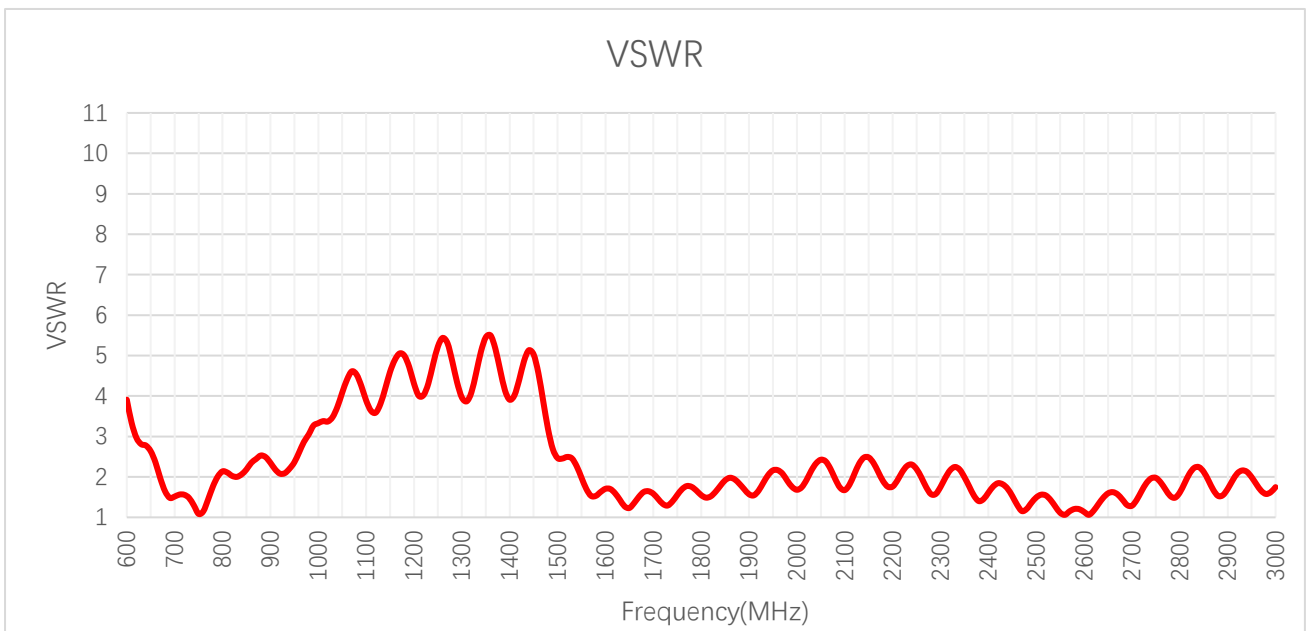
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

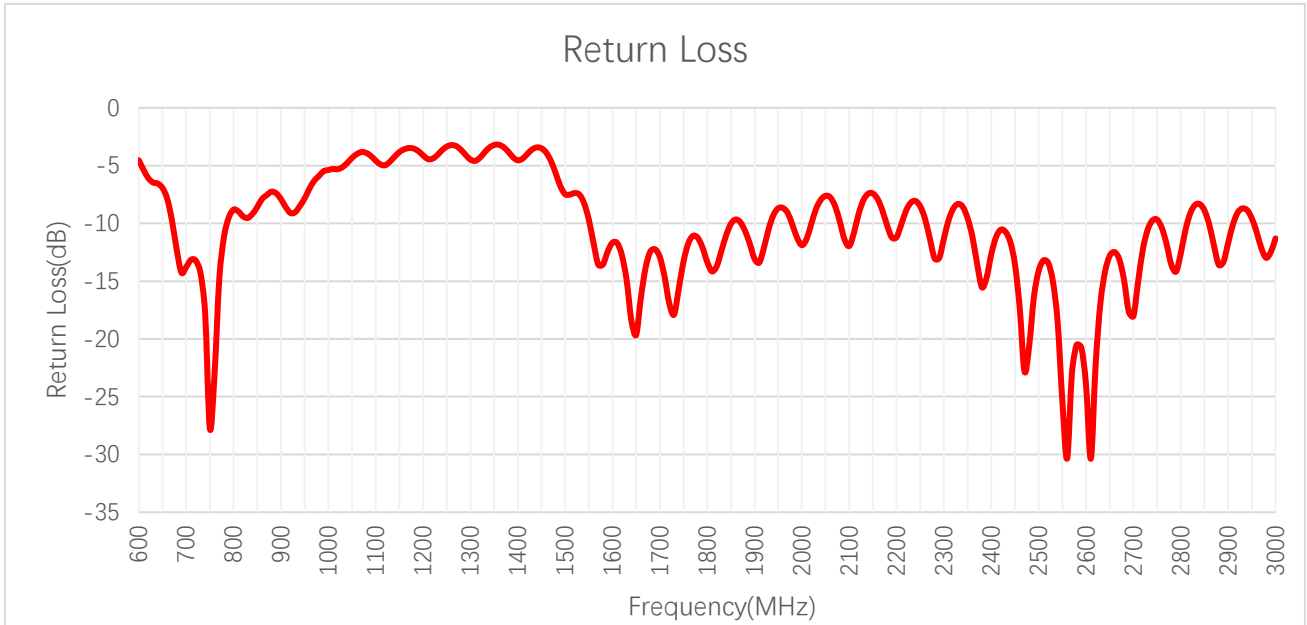
3.1.1. VSWR



VSWR

| | | | | | | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
| VSWR | 3.9 | 2.8 | 1.6 | 2.0 | 2.4 | 2.6 | - | 1.5 | 1.4 | 1.8 |
| Frequency (MHz) | 1950 | 2140 | 2350 | 2450 | 2600 | 2690 | 4700 | 5000 | 5500 | 6000 |
| VSWR | 2.2 | 2.5 | 2.0 | 1.5 | 1.1 | 1.3 | - | - | - | - |

3.1.2. Return Loss

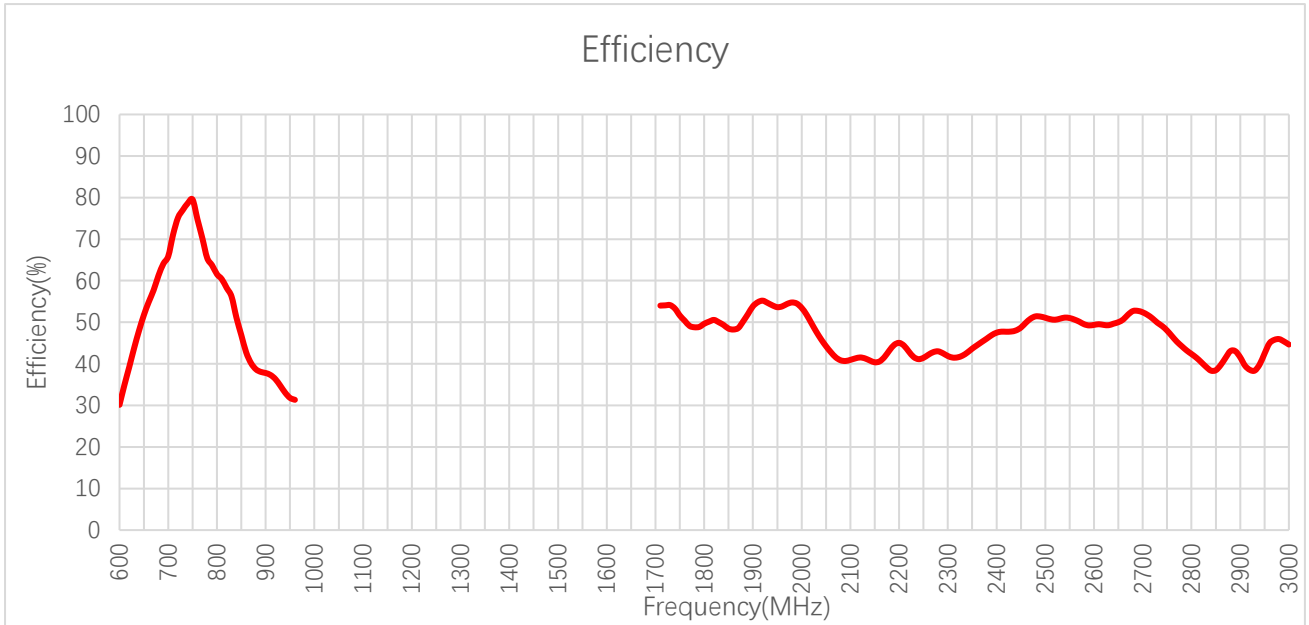


Return Loss (dB)

| | | | | | | | | | | |
|-------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
| Return Loss (dB) | -4.5 | -6.5 | -13.2 | -9.5 | -7.9 | -7.0 | - | -14.6 | -15.7 | -10.7 |
| Frequency (MHz) | 1950 | 2140 | 2350 | 2450 | 2600 | 2690 | 4700 | 5000 | 5500 | 6000 |
| Return Loss (dB) | -8.7 | -7.4 | -9.6 | -13.6 | -24.0 | -17.6 | - | - | - | - |

3.2. Radiation Performance Test

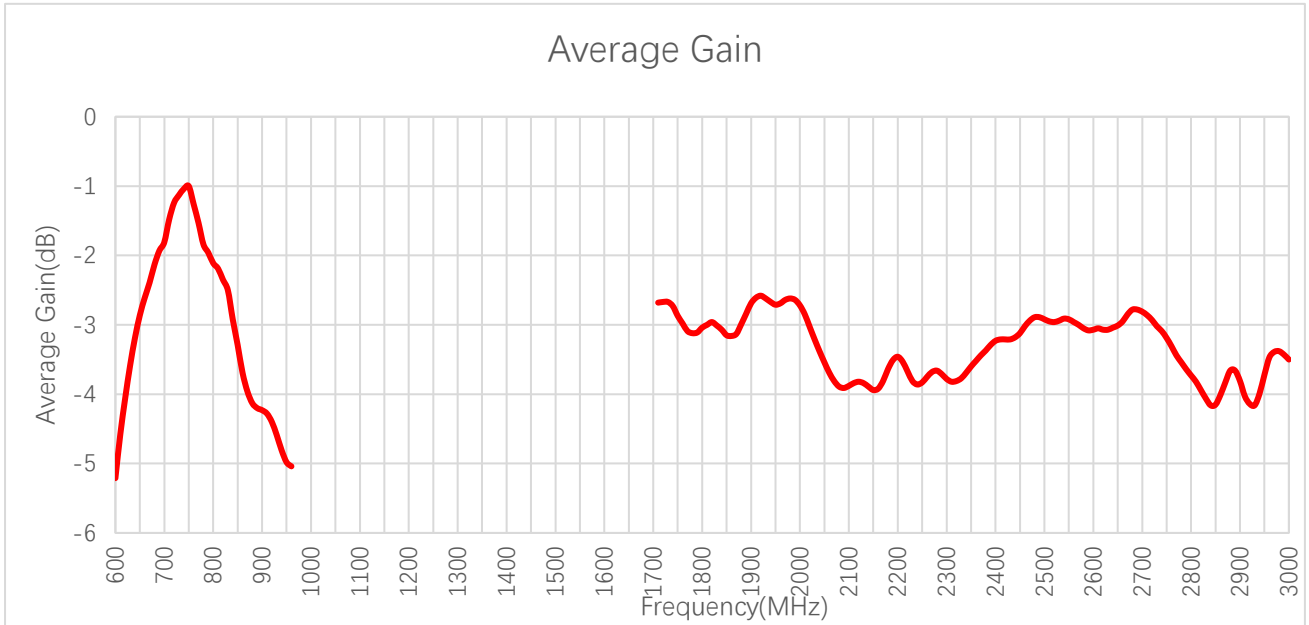
3.2.1. Efficiency



Efficiency (%)

| | | | | | | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
| Efficiency (%) | 30.1 | 43.8 | 71.1 | 56.2 | 37.8 | 31.3 | - | 54.0 | 53.3 | 50.2 |
| Frequency (MHz) | 1950 | 2140 | 2350 | 2450 | 2600 | 2690 | 4700 | 5000 | 5500 | 6000 |
| Efficiency (%) | 53.6 | 40.8 | 43.7 | 48.7 | 49.4 | 52.7 | - | - | - | - |

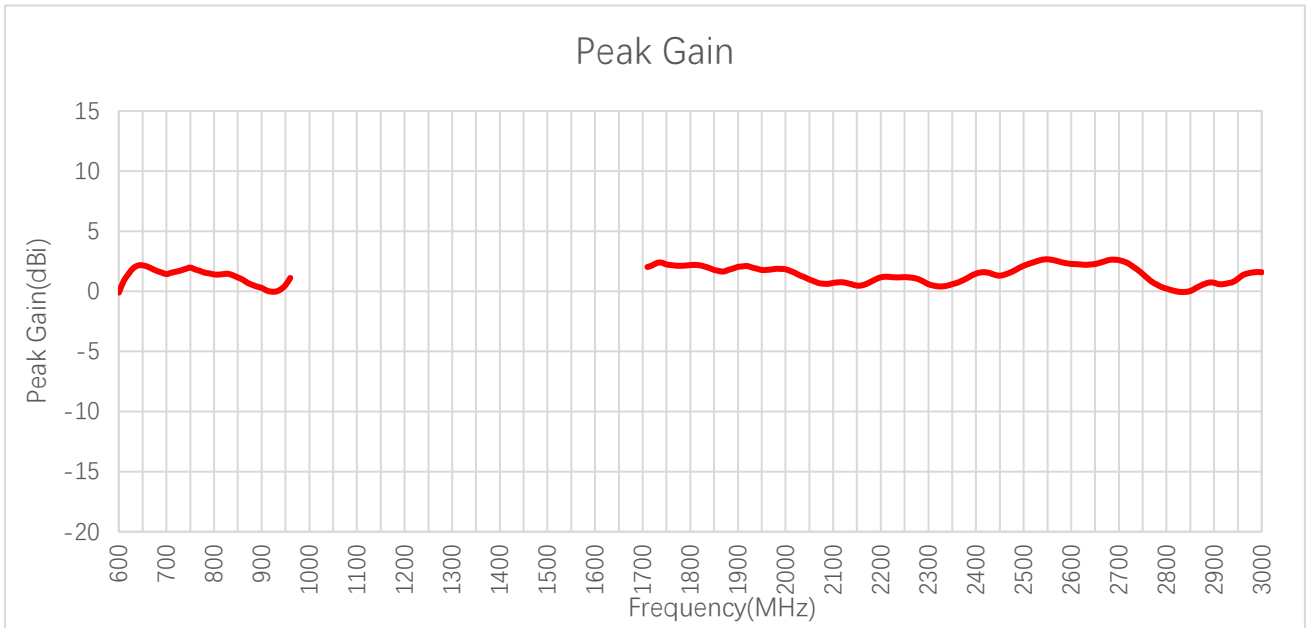
3.2.2. Average Gain



Average Gain (dB)

| | | | | | | | | | | |
|--------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
| Average Gain (dB) | -5.2 | -3.6 | -1.5 | -2.5 | -4.2 | -5.0 | - | -2.7 | -2.7 | -3.0 |
| Frequency (MHz) | 1950 | 2140 | 2350 | 2450 | 2600 | 2690 | 4700 | 5000 | 5500 | 6000 |
| Average Gain (dB) | -2.7 | -3.9 | -3.6 | -3.1 | -3.1 | -2.8 | - | - | - | - |

3.2.3. Peak Gain



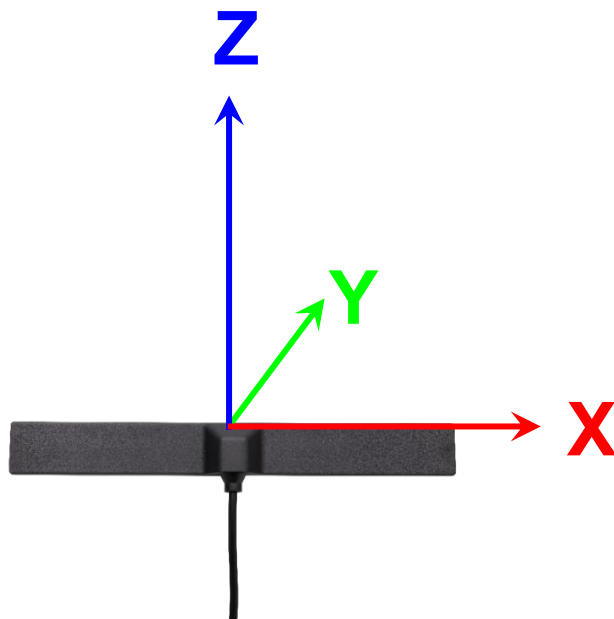
Peak Gain (dBi)

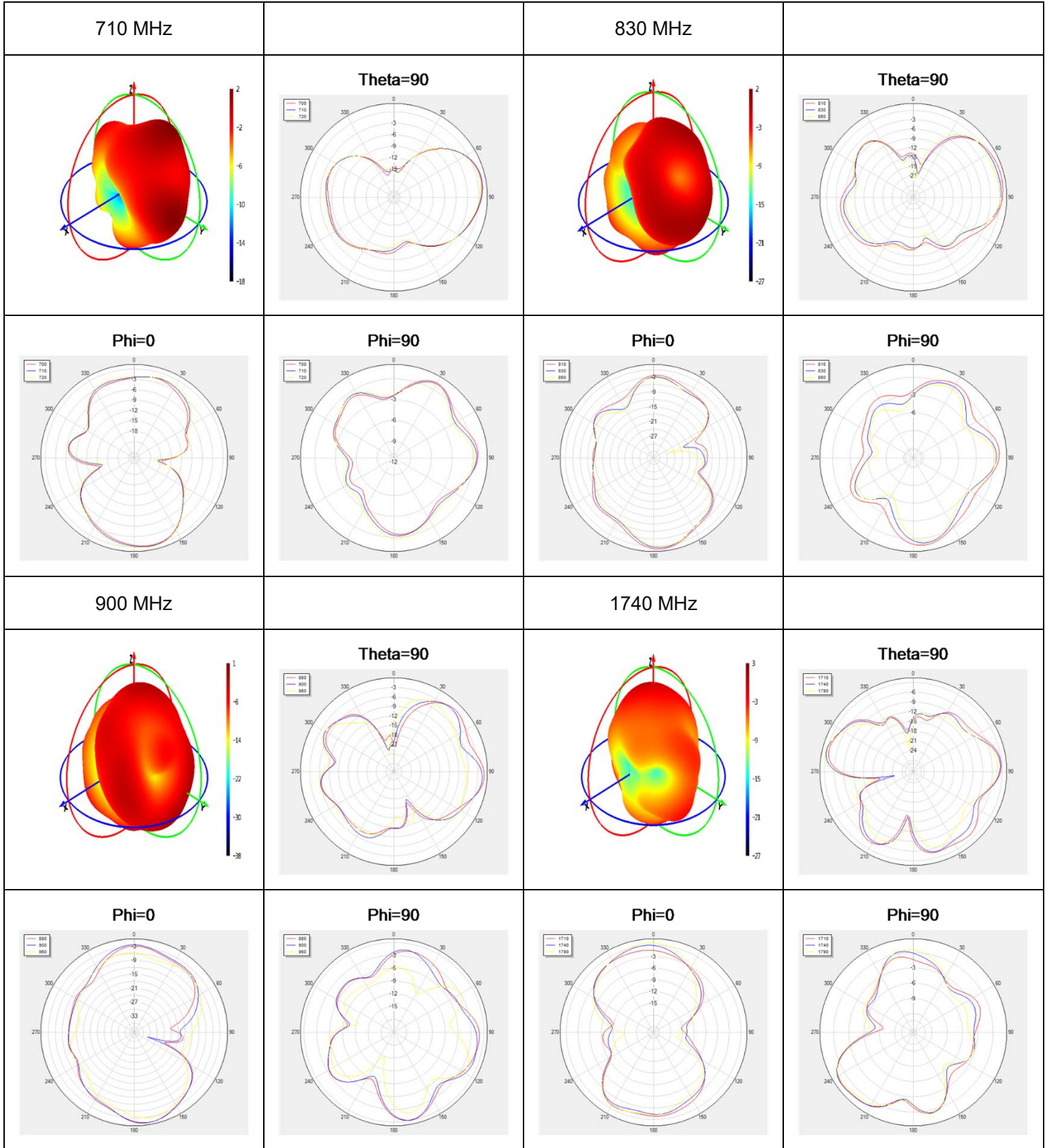
| | | | | | | | | | | |
|------------------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|-------------|
| Frequency (MHz) | 600 | 630 | 710 | 830 | 900 | 960 | 1440 | 1710 | 1740 | 1880 |
| Peak Gain (dBi) | -0.1 | 1.9 | 1.5 | 1.5 | 0.3 | 1.1 | - | 2.0 | 2.4 | 1.8 |
| Frequency (MHz) | 1950 | 2140 | 2350 | 2450 | 2600 | 2690 | 4700 | 5000 | 5500 | 6000 |
| Peak Gain (dBi) | 1.8 | 0.6 | 0.6 | 1.3 | 2.3 | 2.6 | - | - | - | - |

3.2.4. 3D & 2D Radiation Pattern

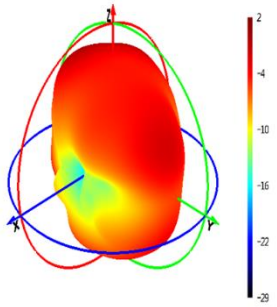
3.2.4.1. Test Condition: Free Space

Test Chamber: GL-S-1

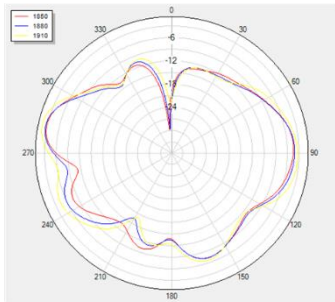




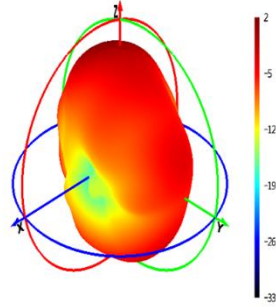
1880 MHz



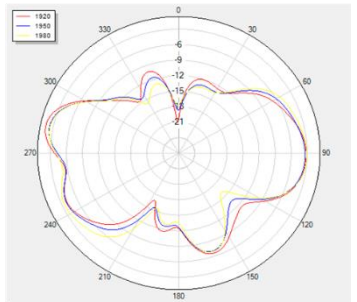
Theta=90



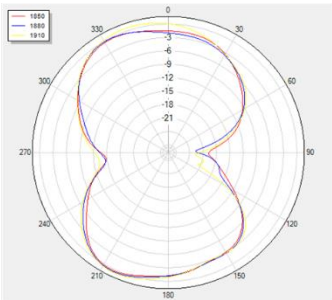
1950 MHz



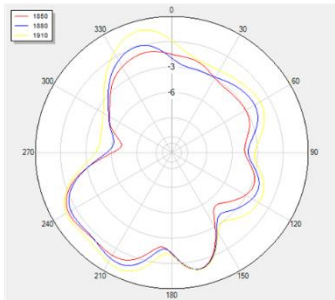
Theta=90



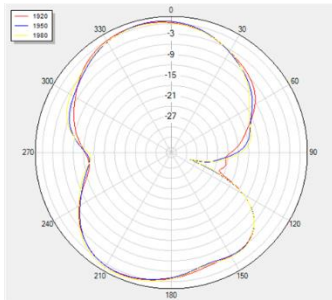
Phi=0



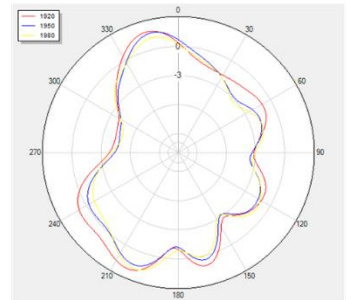
Phi=90



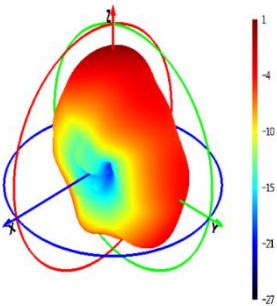
Phi=0



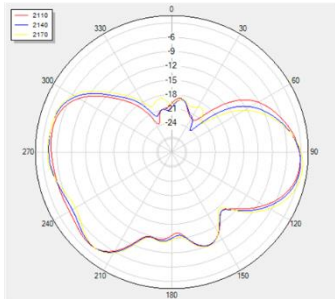
Phi=90



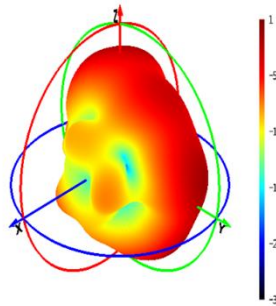
2140 MHz



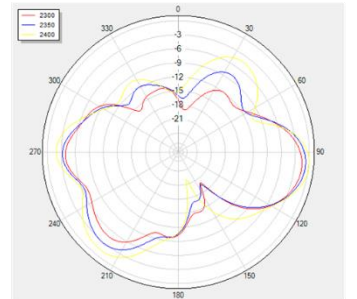
Theta=90



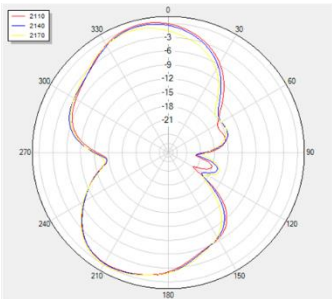
2350 MHz



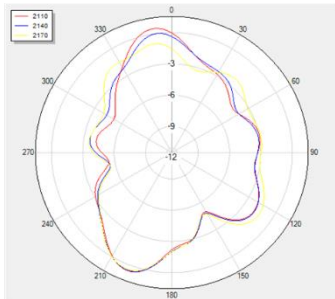
Theta=90



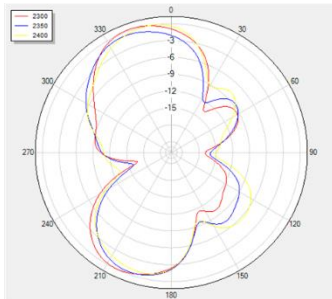
Phi=0



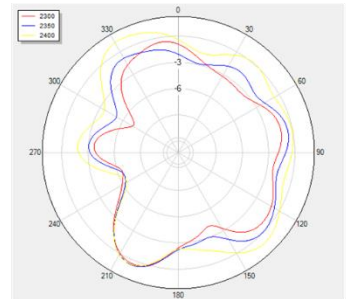
Phi=90

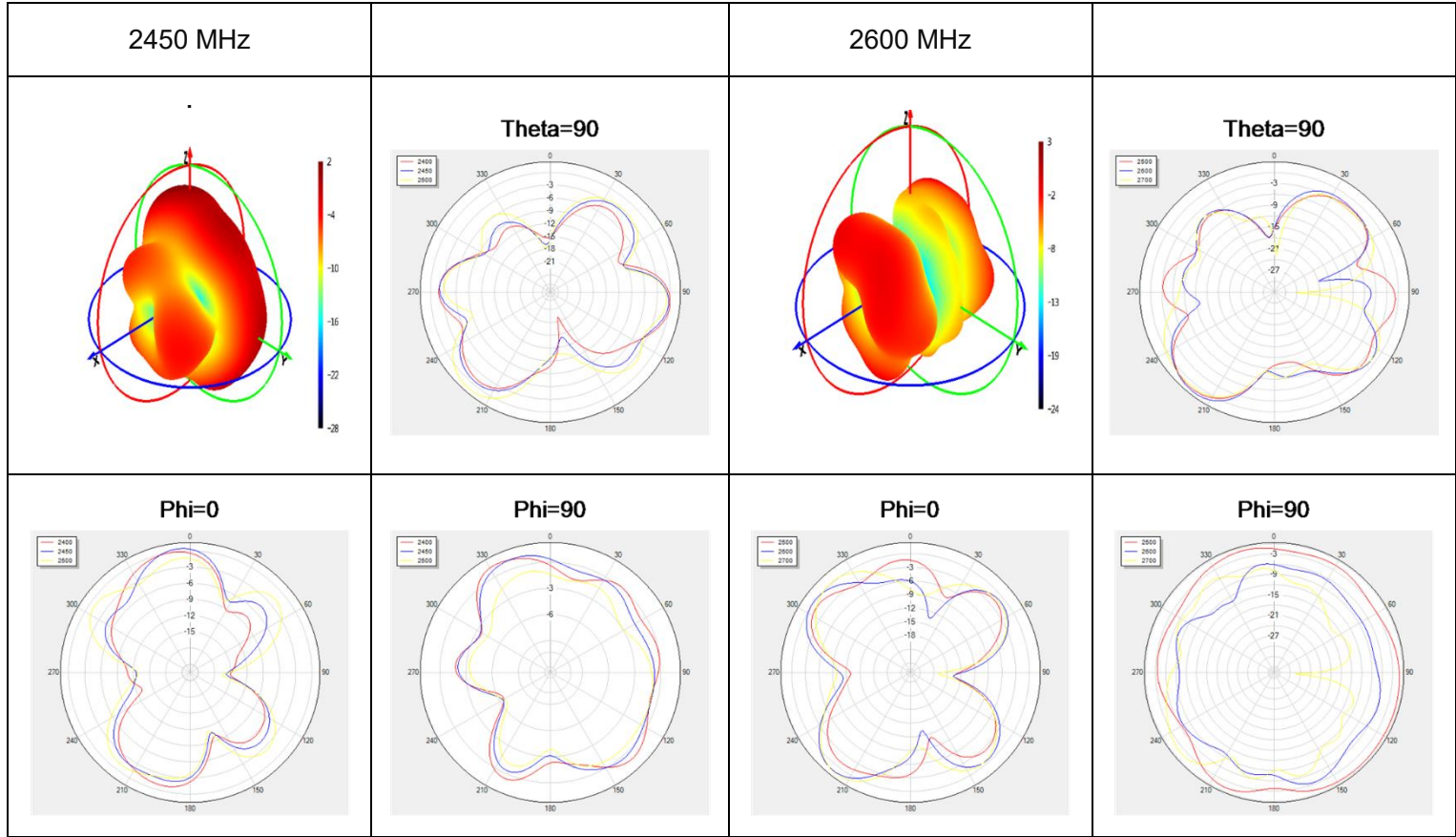


Phi=0



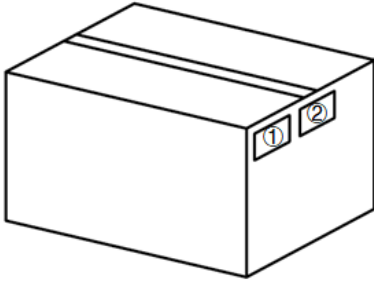
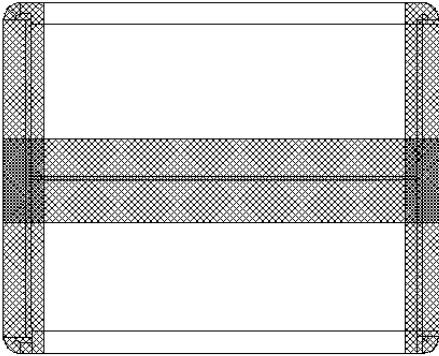
Phi=90





4 Packaging

| Step | Packaging Picture / 2D Picture | Description |
|------|---|--|
| 1 |  | 1 pc antenna product in a PE bag |
| 2 |  | 20 pcs antenna products in a big PE bag |
| 3 |  | <p>(8 pcs PE bags per carton box) (160 pcs antennas per carton box)</p> <p><u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u></p> |

| | | |
|---|---|--|
| 4 |  | <p>Position for Attaching Labels</p> <ul style="list-style-type: none">① Carton Label② Quality Label |
| 5 |  | <p>Sealing Cartons</p> <p>“工” type sealing cartons</p> |

Contact Us

At Quectel, our aim is to provide timely and comprehensive services to our customers. If you require any assistance, please contact our headquarters:

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Email: info@quectel.com

Or our local offices. For more information, please visit:

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Revision History

| Version | Date | Author | Note |
|---------|------------|--|--|
| 1.0 | 2020-06-04 | Kenny YIN | Initial |
| 1.1 | 2020-12-11 | Kenny YIN | Updated the antenna image (Chapter 2). |
| 1.2 | 2021-01-27 | Kenny YIN | Added IP rating description and installation method. |
| 1.3 | 2021-07-25 | Kenny YIN | <ol style="list-style-type: none">1. Updated working temperature (Chapter 3).2. Added detailed passive electrical specifications (Chapter 3). |
| 1.4 | 2021-12-01 | Kenny YIN | Updated the product description (Chapter 1). |
| 2.0 | 2023-05-11 | Mikael ZHONG/ Lucky FENG/ David LIU/ Aria CHU | Updated all data and datasheet template. |

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