

Antenna

YB0009AA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
-	2020-11-10	Kenny YIN	Creation of the document
1.0	2020-11-10	Kenny YIN	First official release
1.1	2021-01-18	Kenny YIN	Updated the antenna image in Chapter 2.
1.2	2021-07-25	Kenny YIN	Updated working temperature. (Chapter 3)
1.3	2021-09-28	Kenny YIN	Updated the GNSS image (Chapter 3).
1.4	2021-11-16	Aria CHU	Updated the information of product features (Chapter 2).
1.5	2021-12-03	Aria CHU	Updated the product description in Chapter 1.
2.0	2022-08-04	Junsen LI	Updated all data in this datasheet.
2.1	2022-11-15	Bunny ZHANG	Added the attention in Chapter 3

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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

- Cellular LTE & GPS
- High efficiency
- Excellent performance



3 Product Specifications

Passive Electrical Specifications

Frequency Range	4G: 824–960 MHz; 1710–2690 MHz GPS & BD: 1575.42 ±3 MHz; 1561 ±3 MHz
Input Impedance	50 Ω
VSWR	4G: ≤ 3.0 GPS & BD: ≤ 2.0
Gain	4G: ≤ 3 dBi GPS & BD: ≤ 1.0 dBi
Polarization Type	Linear (4G MAIN/ Bluetooth) Circular (GNSS)

Low Electrical Specifications

Frequency Range	1575.42 ±3 MHz; 1561 ±3 MHz
LNA Gain	28 ±2 dB
Noise Figure	≤ 2 dB
Output VSWR	≤ 2.0
Voltage Range	DC 3.0–3.6 V
Current	≤ 10 ± 2mA
Impedance	50 Ω

Mechanical Specifications

Antenna Size (mm)	Φ 50 × 48
Cable Type & Length	RG174 Black & 310mm
Casing	PC + ABS
Connector Type	SMA Male (Center Pin)
Working Temperature	-40 °C to +85 °C
Radome Color	Black
IP Rating	IP66
IK Level	IK09
Mounting Type	Screw

Attention: The antenna shall be powered by PS2 or PS1 circuit

4 Overall Performance

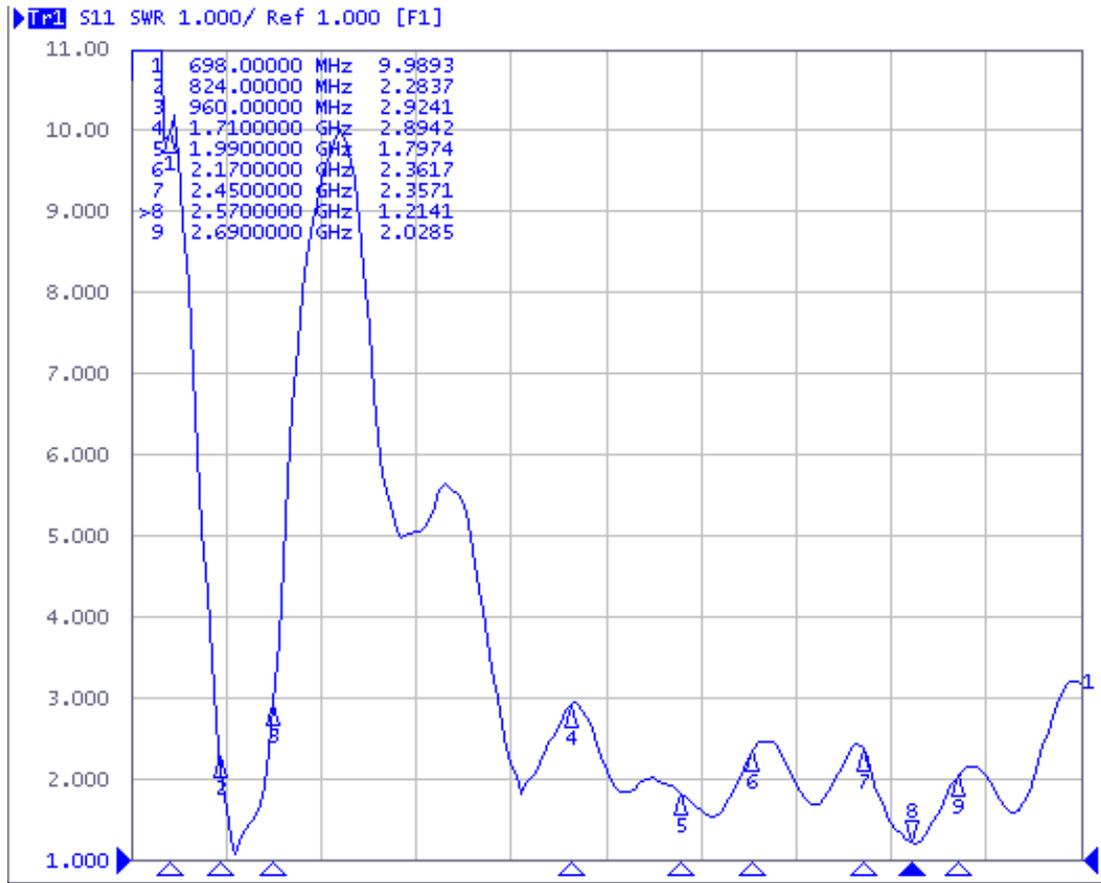
4.1. Test Environment

- 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

- 4G



Frequency (MHz)	698	824	960	1710	1990	2170	2450	2570	2690
VSWR	9.98	2.28	2.92	2.89	1.79	2.36	2.35	1.21	2.02

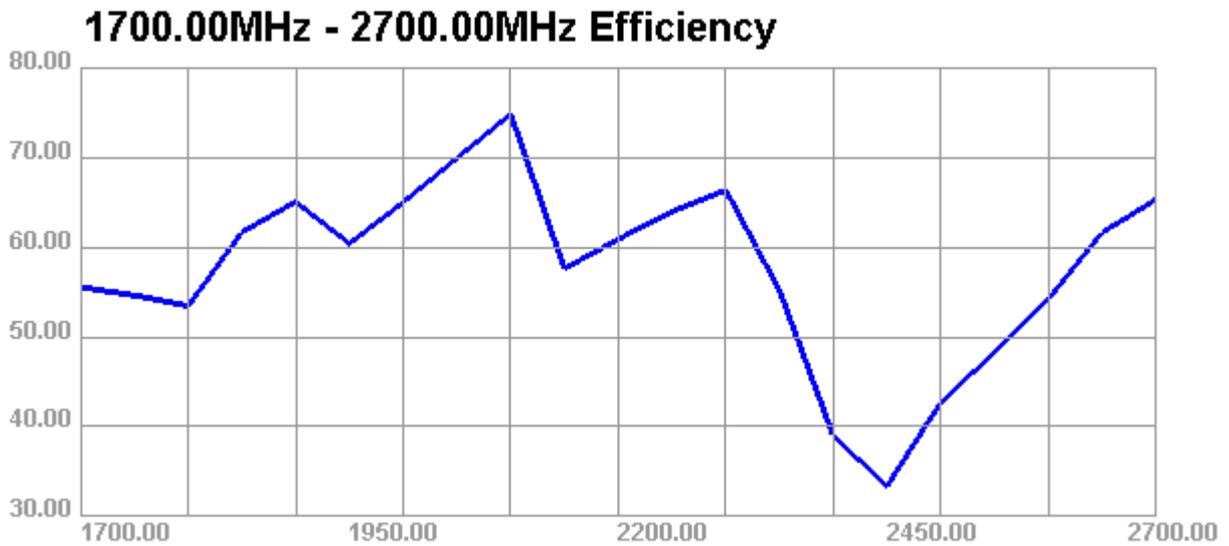
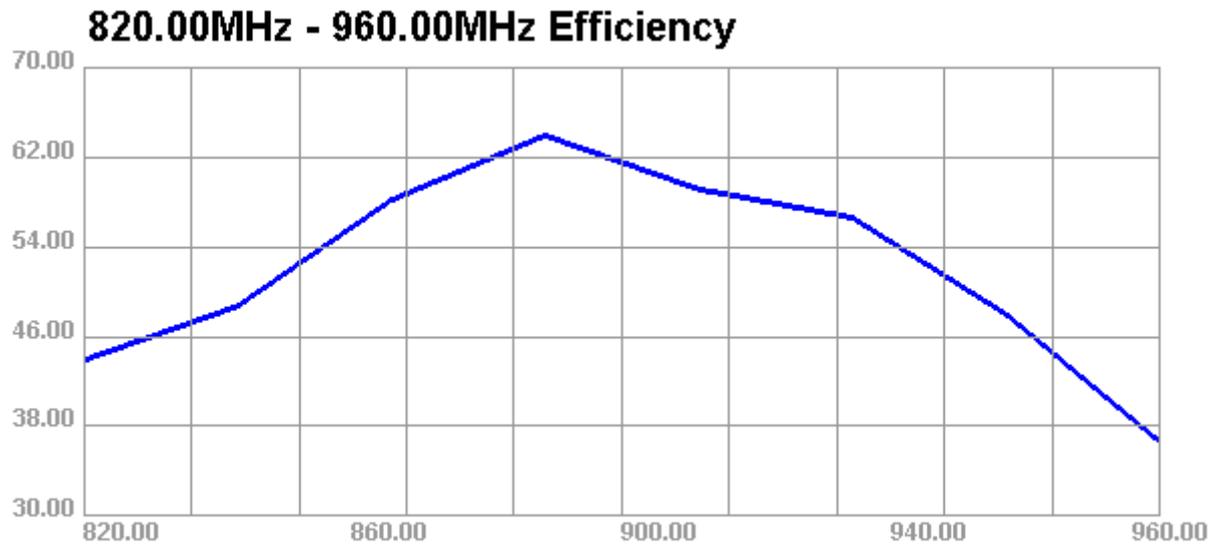
- GPS & BD



Frequency (MHz)	1561	1575
VSWR	1.68	1.23

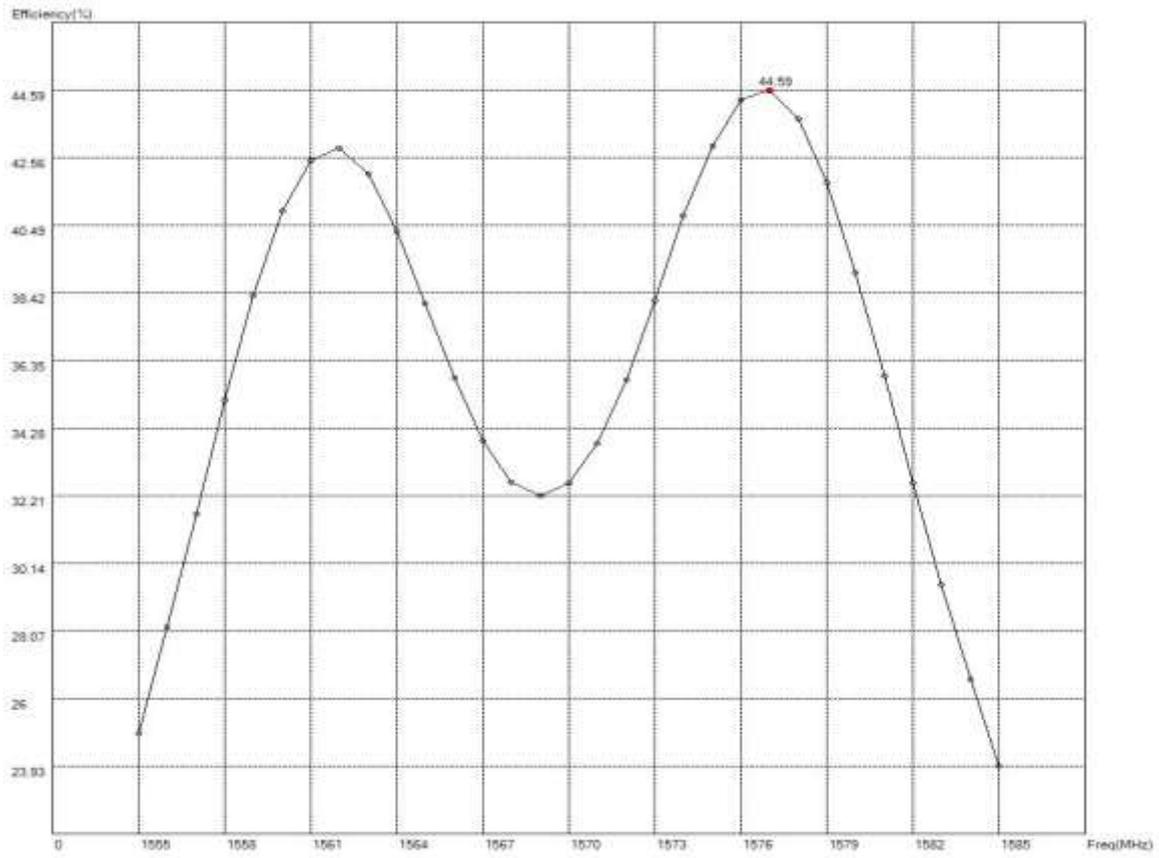
4.3. Efficiency

- 4G



Frequency (MHz)	820	860	900	940	960	1700	1950	2200	2450	2700
Efficiency (%)	43.89	58.17	59.15	47.98	36.63	55.54	60.42	60.89	33.39	65.32

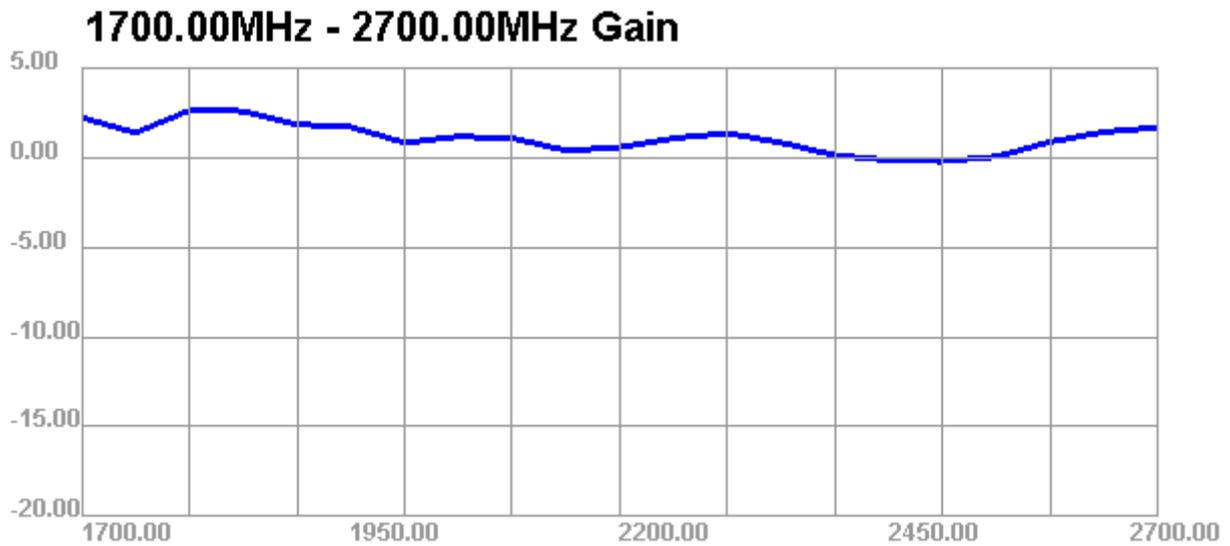
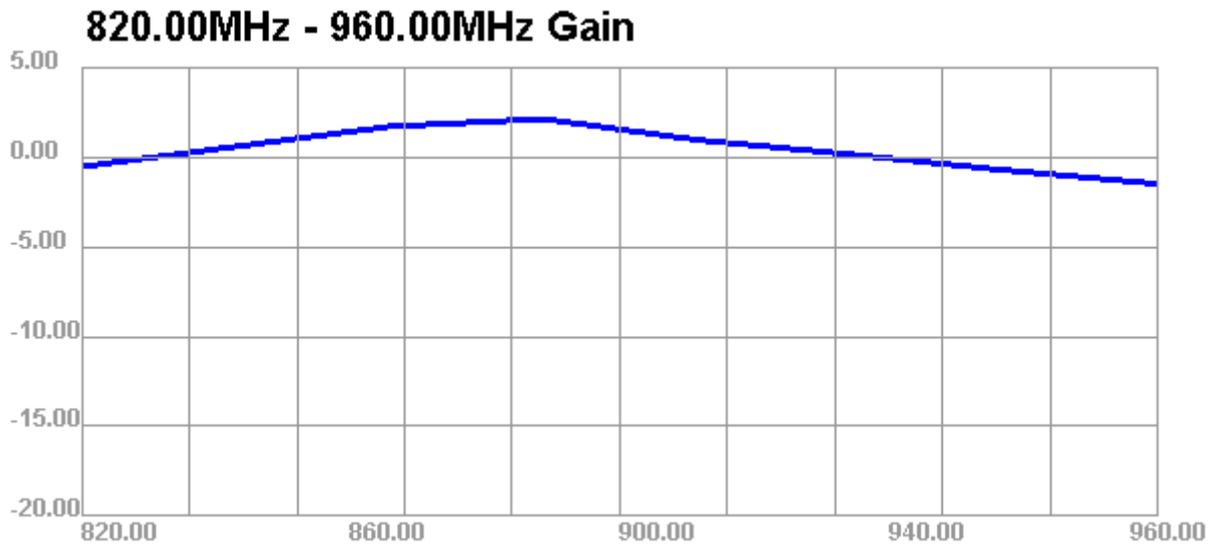
● GPS & BD



Frequency (MHz)	1561	1575
Efficiency (%)	42.44	42.88

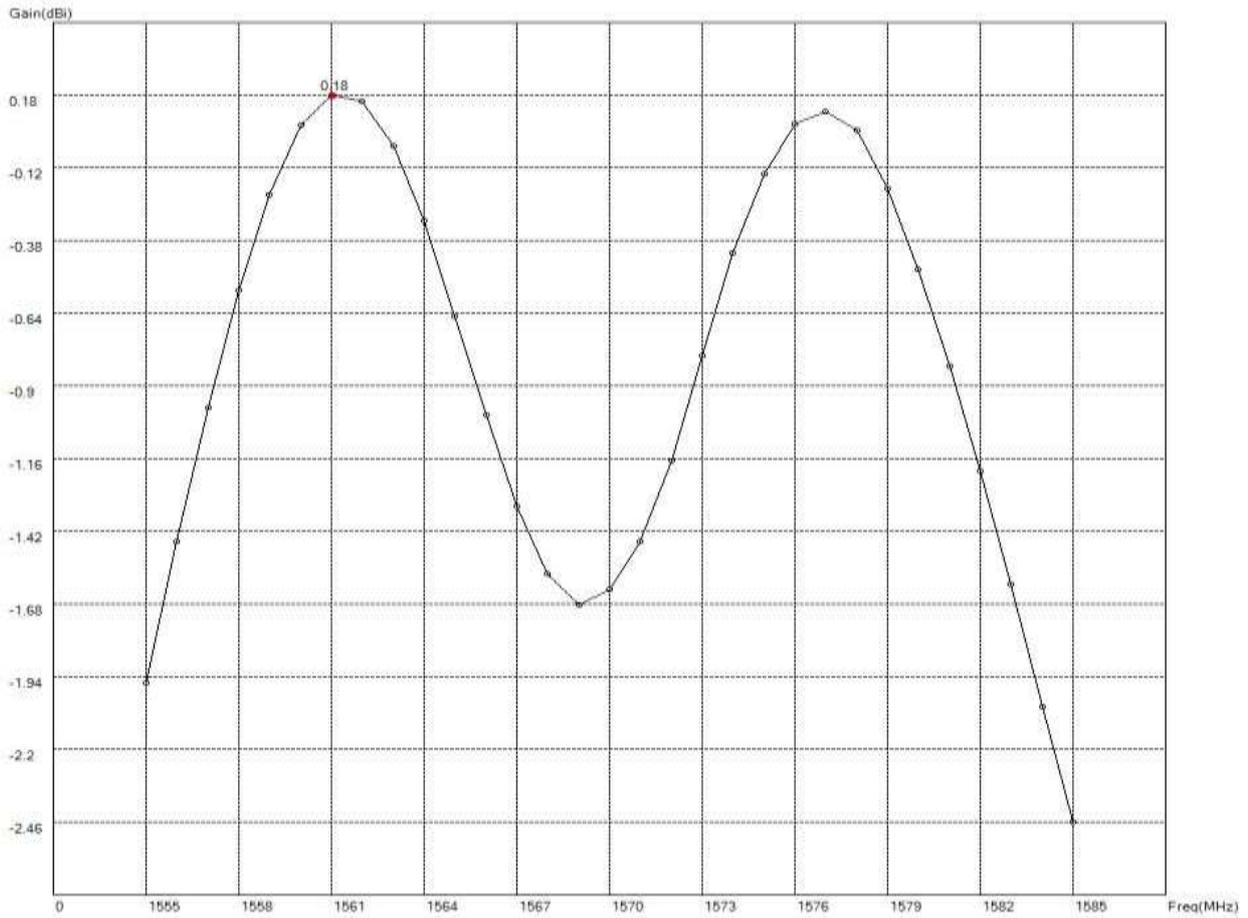
4.4. Gain

- 4G



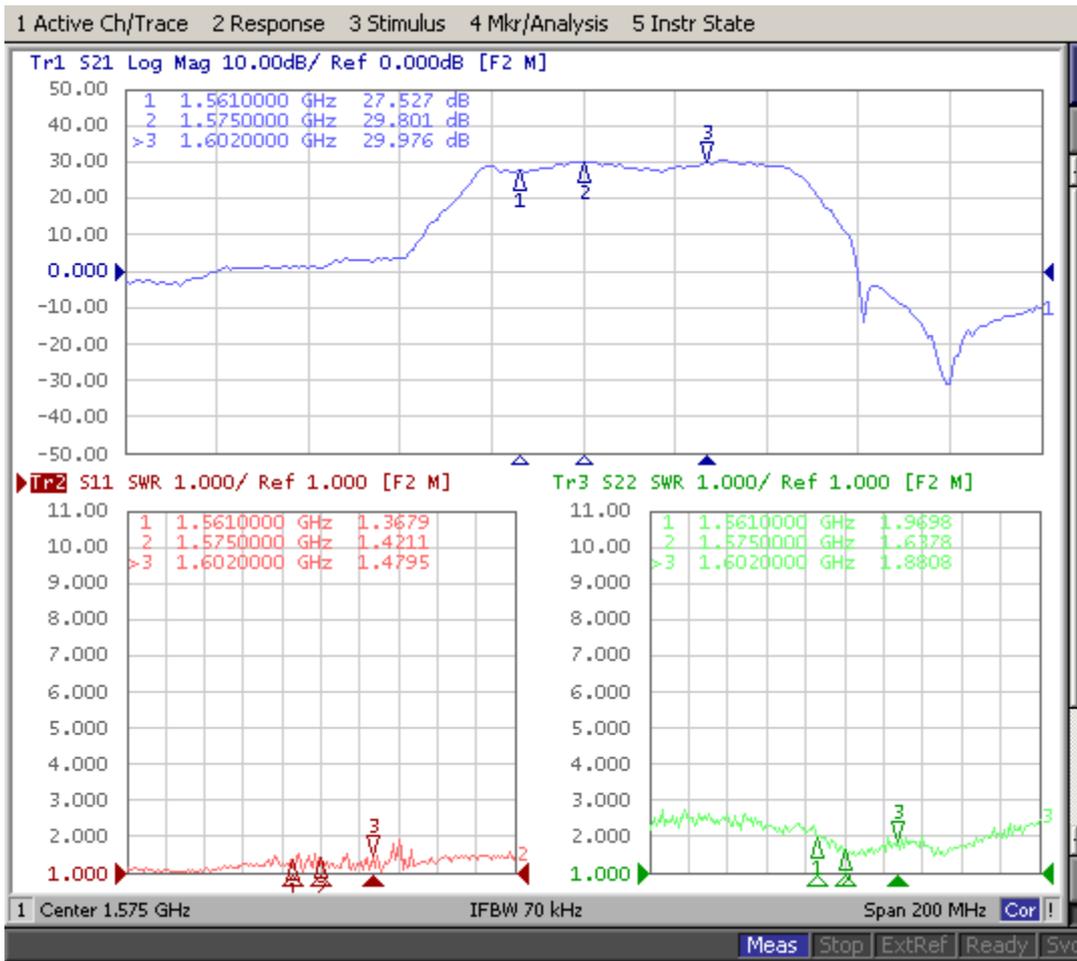
Frequency (MHz)	820	860	900	940	960	1700	1950	2200	2450	2700
Gain (dBi)	-0.53	1.71	0.97	-0.72	-1.49	2.23	1.7	0.56	-0.15	1.67

● GPS & BD



Frequency (MHz)	1561	1575
Gain (dBi)	0.18	-0.10

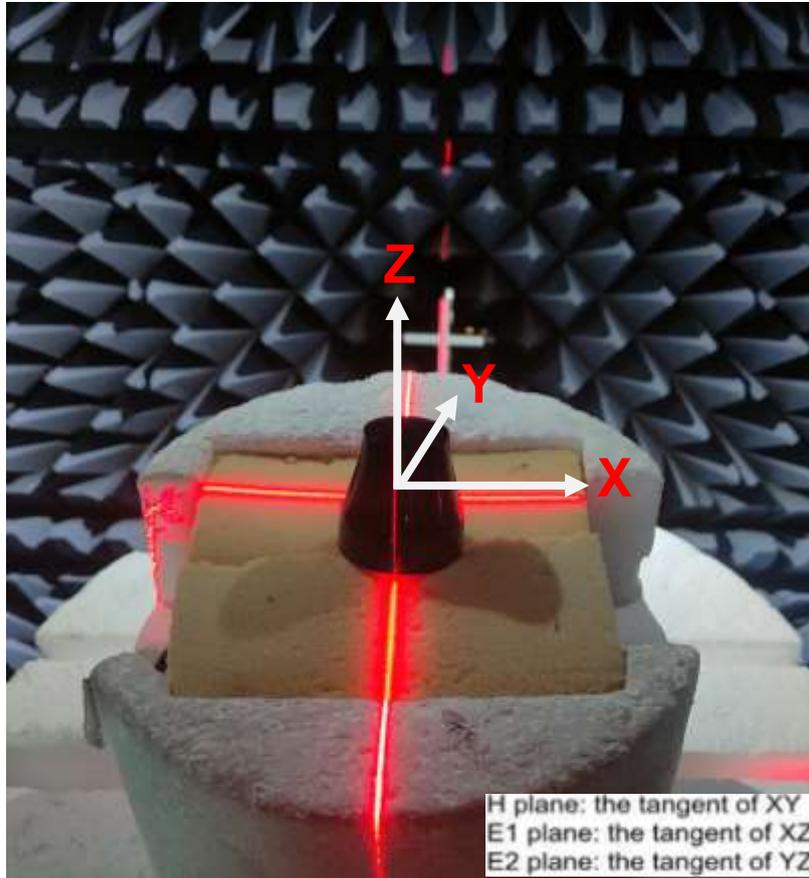
● GNSS



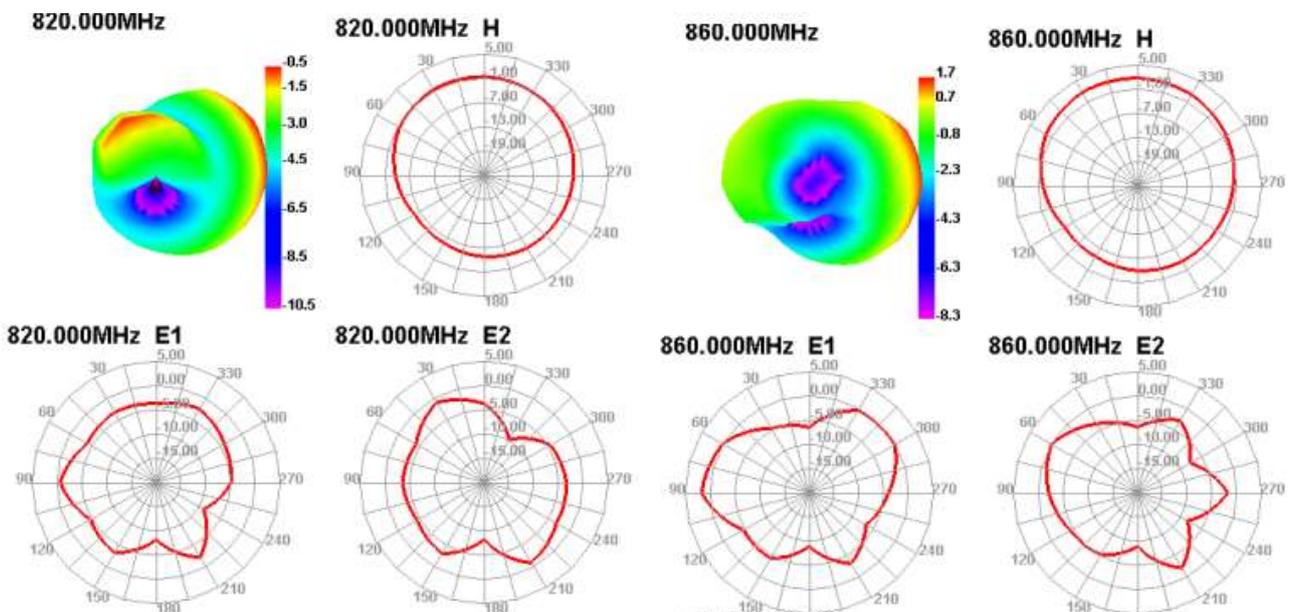
Frequency (MHz)	1561	1575
LNA Gain	27.52	29.8
Input VSWR	1.36	1.42
Output VSWR	1.96	1.63

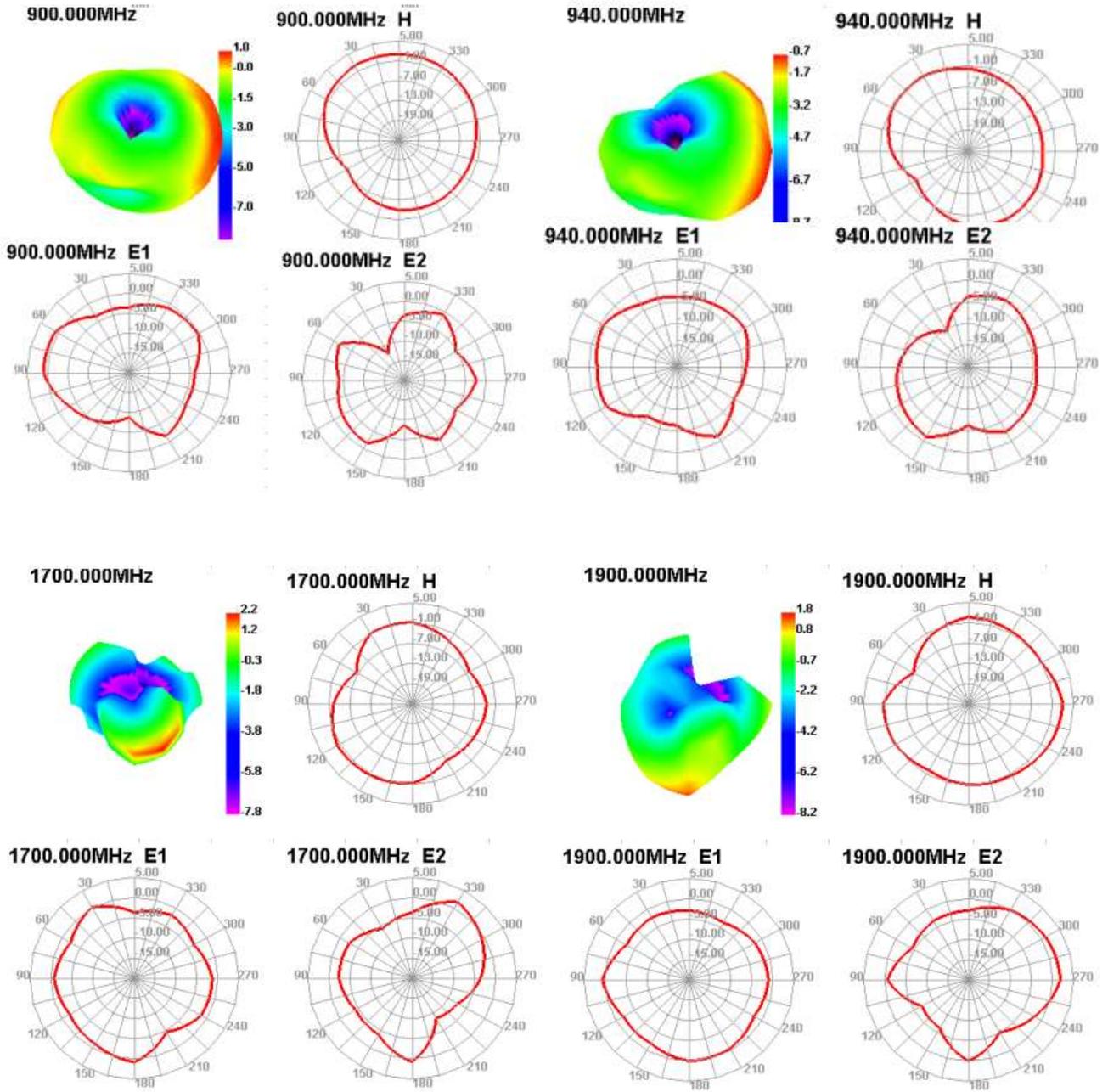
4.5. Radiation Pattern

- Test condition: free space.

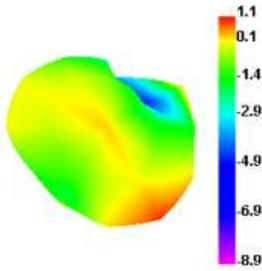


- 4G

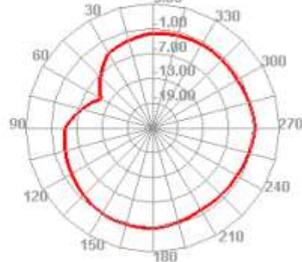




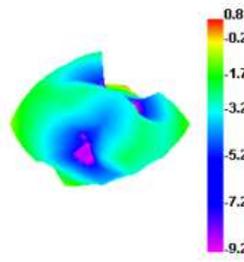
2100.000MHz



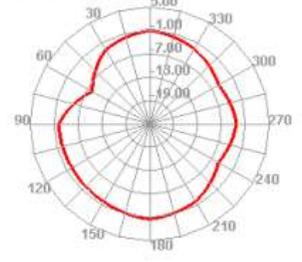
2100.000MHz H



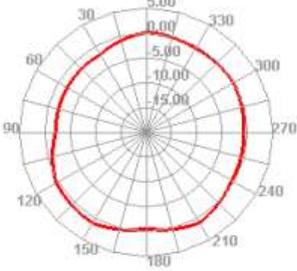
2350.000MHz



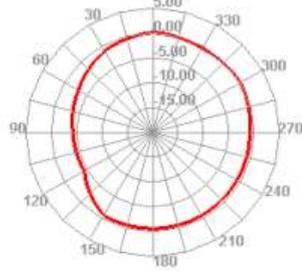
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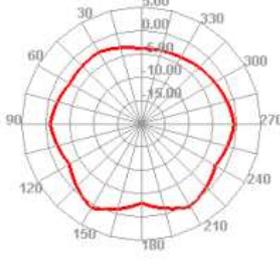
2100.000MHz E1



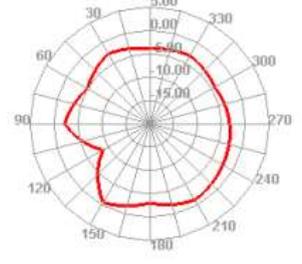
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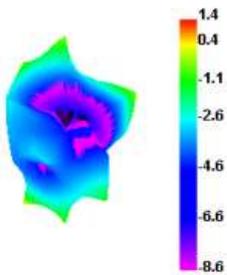
2350.000MHz E1



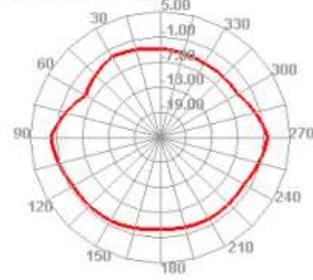
2350.000MHz E2



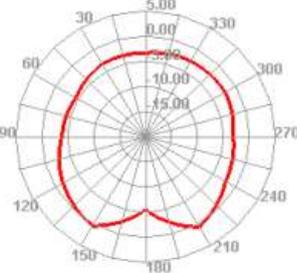
2650.000MHz



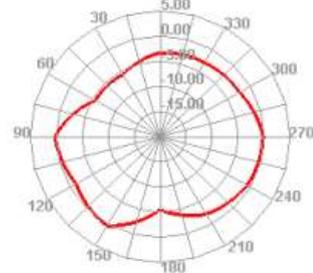
2650.000MHz H



2650.000MHz E1

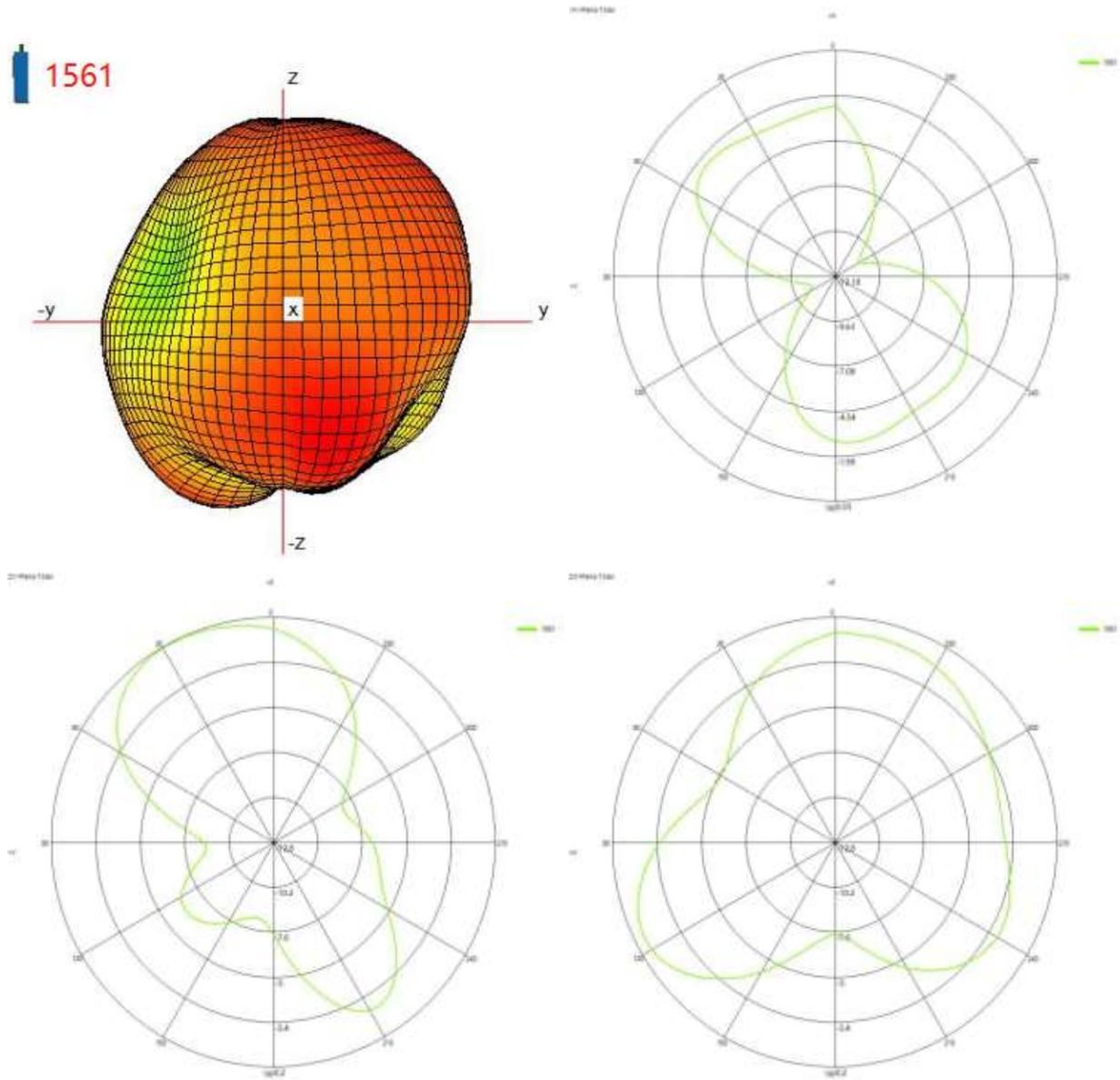


2650.000MHz E2

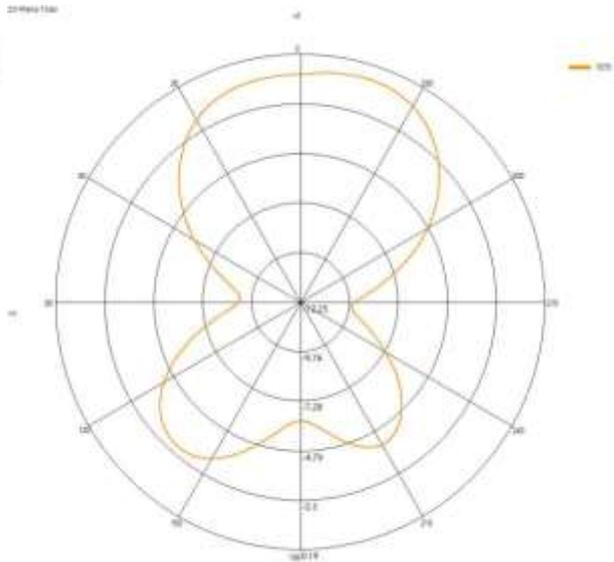
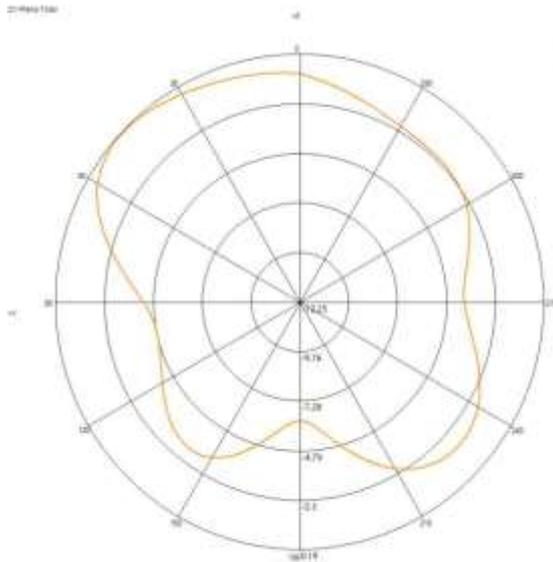
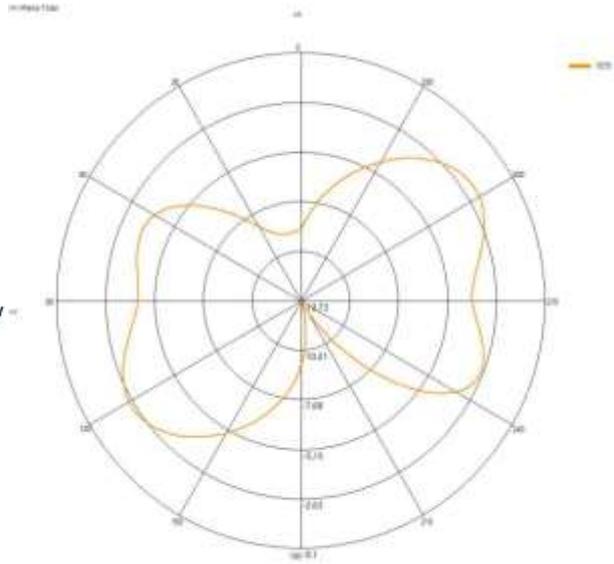
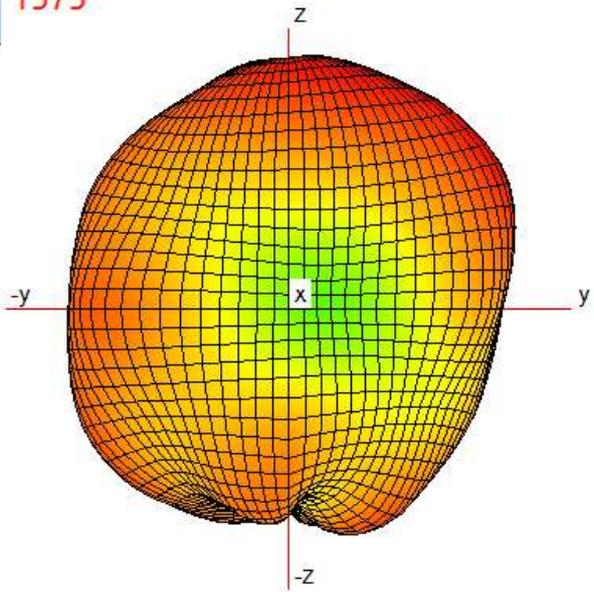


● GPS & BD

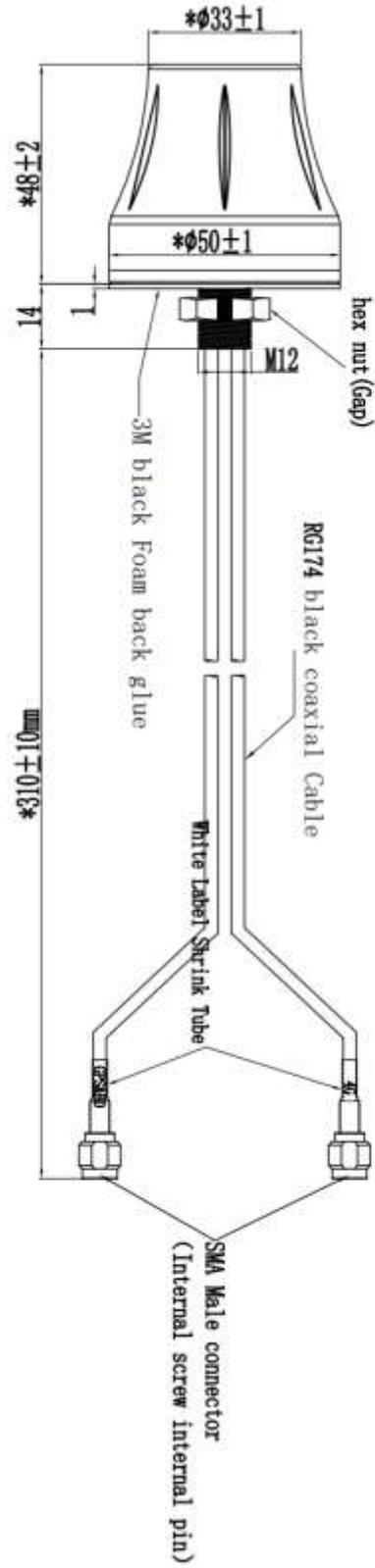
1561



1575



5 Product Size



ROHS

