

Antenna

YB0015AA Datasheet

Antenna Services

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Status: Released



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About the Document

Revision History

Version	Date	Author	Note
-	2020-10-22	Kenny YIN	Creation of the document
1.0	2020-10-22	Kenny YIN	Initial
1.1	2021-01-18	Kenny YIN	Updated the antenna image in Chapter 2.
1.2	2021-07-25	Kenny YIN	1. Updated the working temperature (Chapter 3). 2. Added the GNSS VSWR (Chapter 4.2).

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1 Product Description

The antenna is designed for superior performance, and can be widely used for wireless 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

- Cellular LTE/GPS&BD/WIFI
- High efficiency
- Excellent performance



3 Product Specifications

Electrical Specifications

Frequency Range	LTE: 698–960 MHz, 1700–2700 MHz Wi-Fi & Bluetooth: 2400–2500 MHz GNSS: 1561 ±5 MHz, 1575 ±5 MHz
Input Impedence	50 Ω
VSWR	LTE: ≤ 4.0
Gain	LTE: 698-960 MHz: < 4.0 dBi 1700-2700 MHz: < 5.0 dBi Wi-Fi & Bluetooth : 2400-2500 MHz: < 2.5 dBi GNSS (GPS&BD): 28 ±3 dB (LNA)
Polarization Type	Linear: LTE/Wi-Fi & Bluetooth RHCP: GNSS

Mechanical Specifications

Antenna Size	54 mm × 91 mm RG174 Cable Length = 300 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	Screw

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

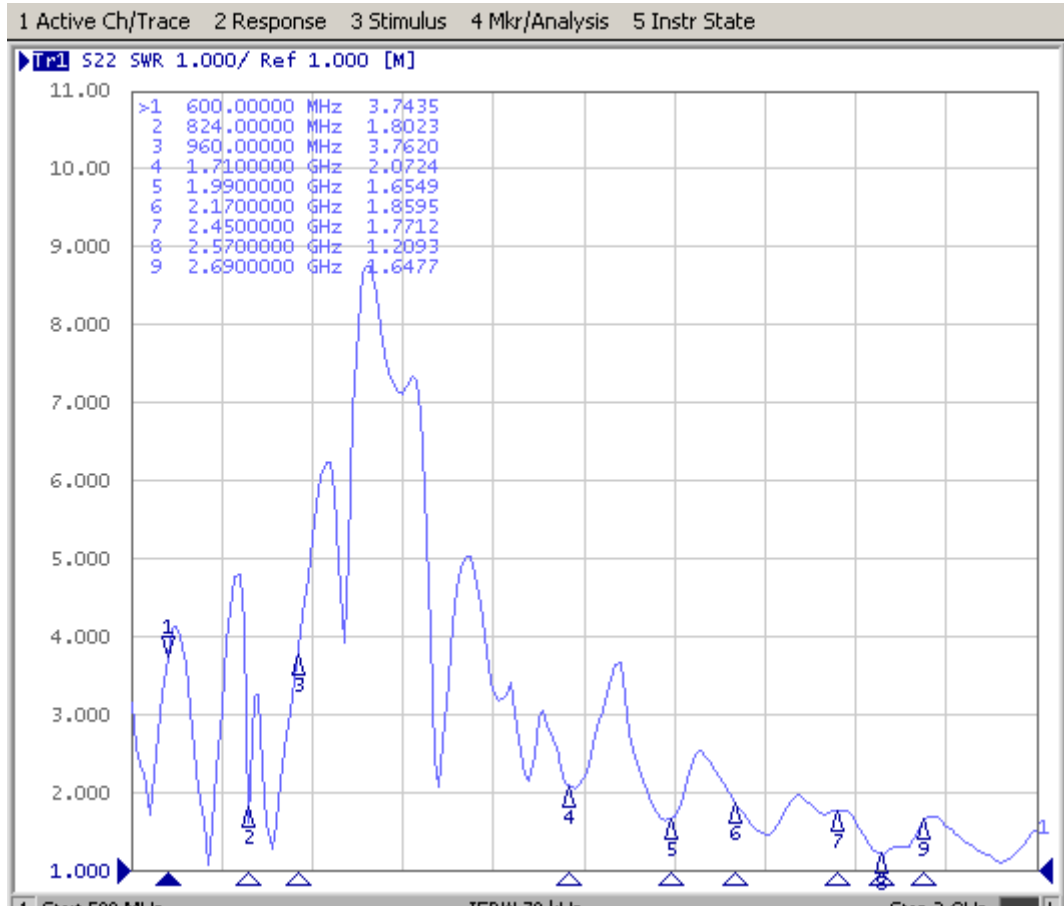


4.2. VSWR

4.2.1. Free Space

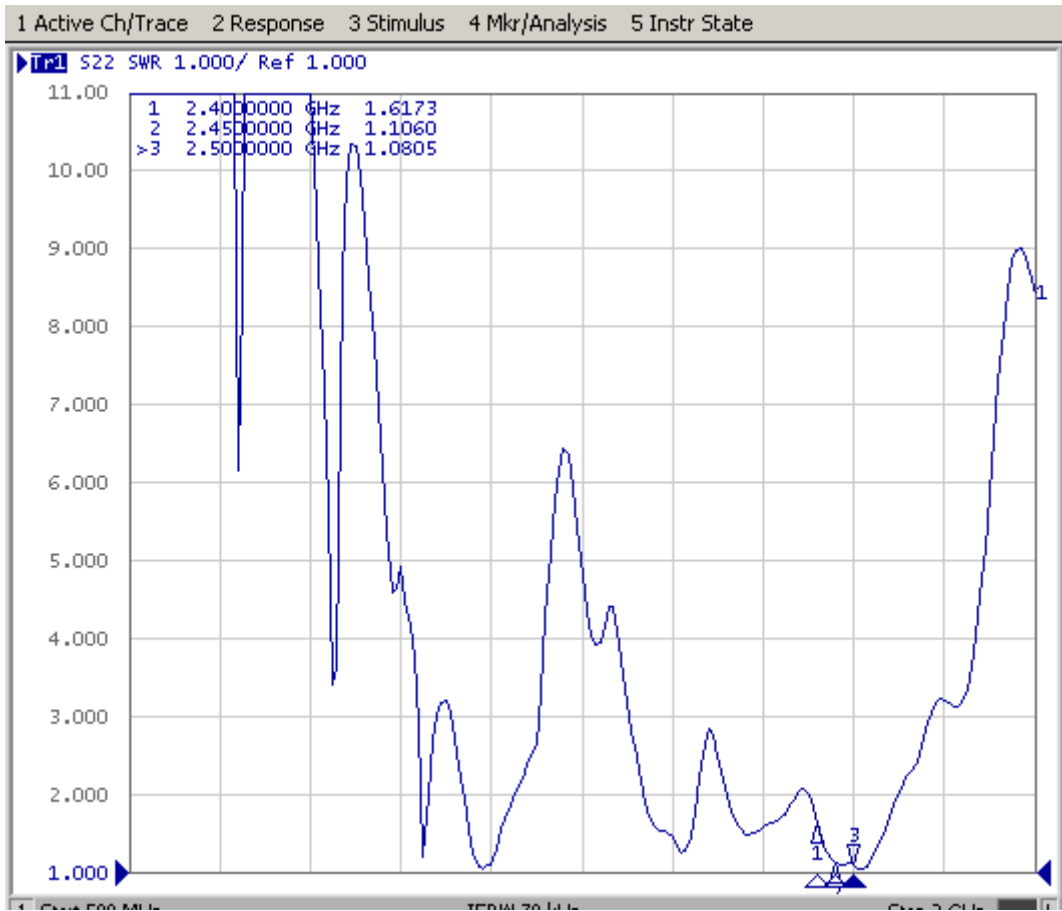
- Test condition: free space.

4.2.1.1. 4G



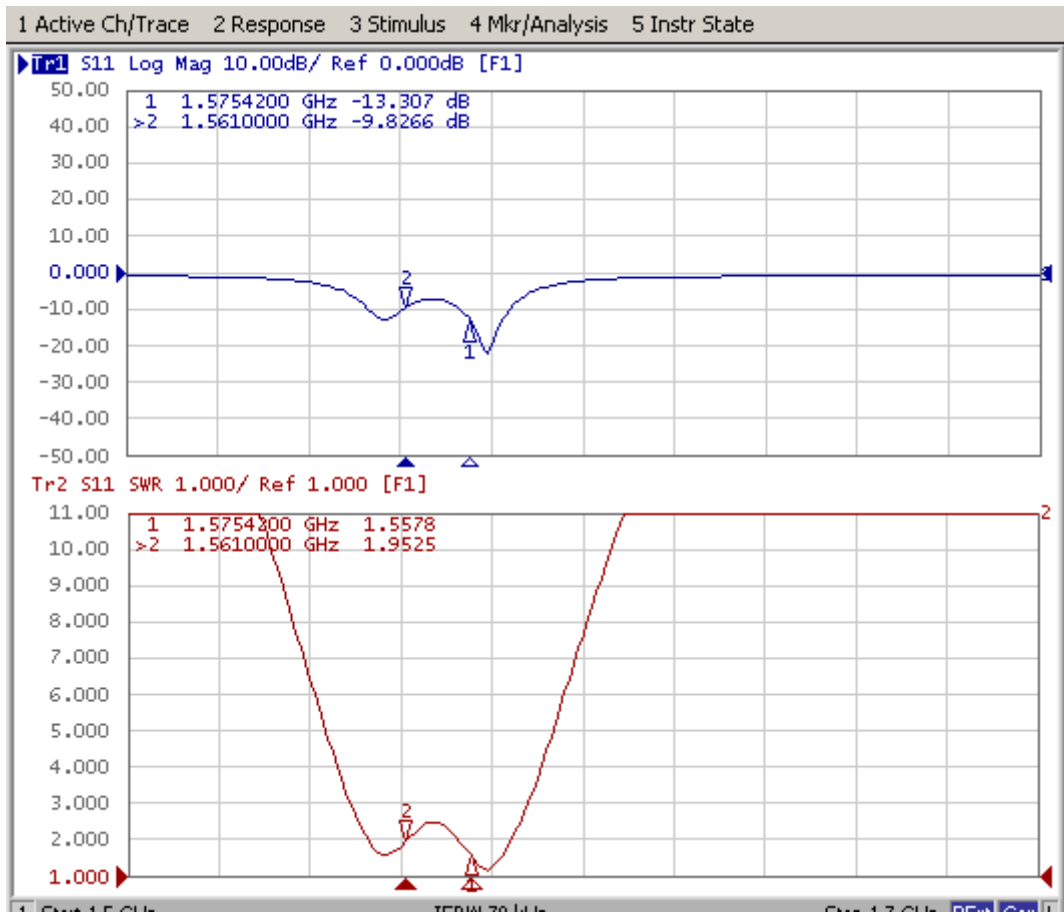
Frequency (MHz)	698	824	960	1710	1990	2170	2450	2570	2690
VSWR	3.74	1.80	3.76	2.07	1.65	1.86	1.77	1.21	1.65

4.2.1.2. Wi-Fi & Bluetooth



Frequency (MHz)	2400	2450	2500
VSWR	1.62	1.11	1.08

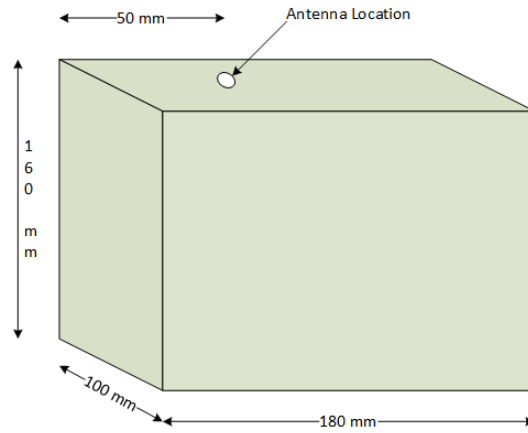
4.2.1.3. GNSS



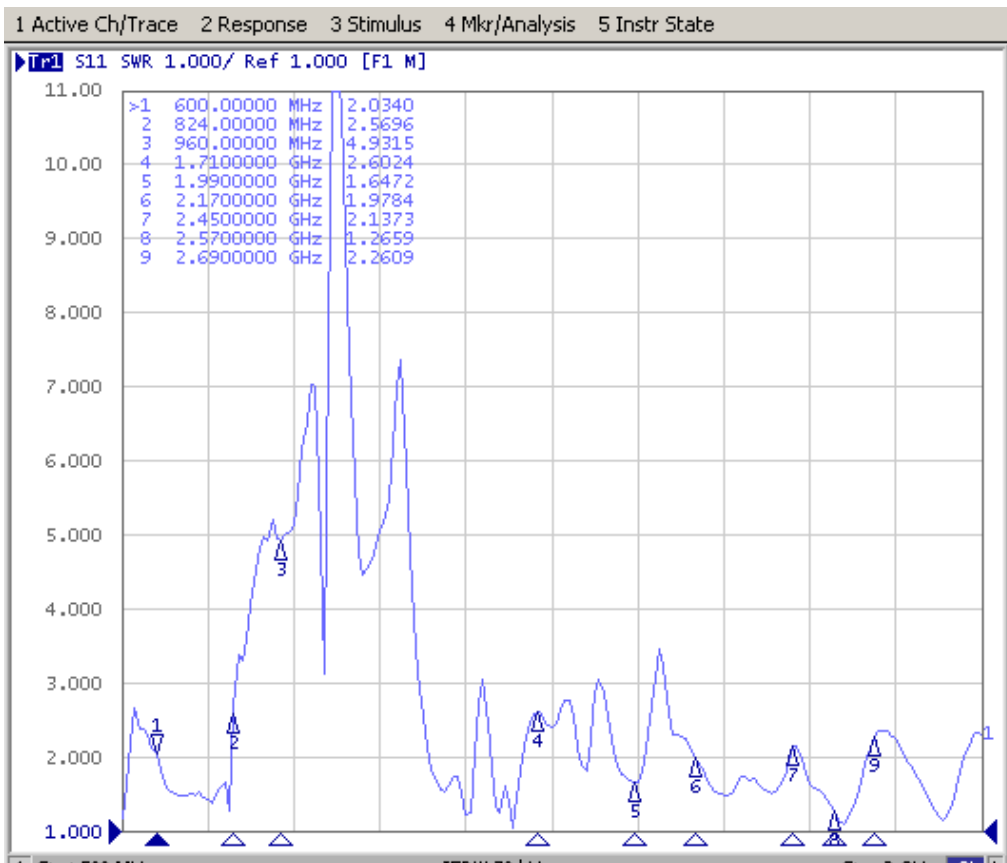
Frequency (MHz)	1561	1575
VSWR	1.95	1.55

4.2.2. With Metal Mounting Plate

- Test condition: with a 180 mm × 100 mm × 160 mm metal mounting plate:

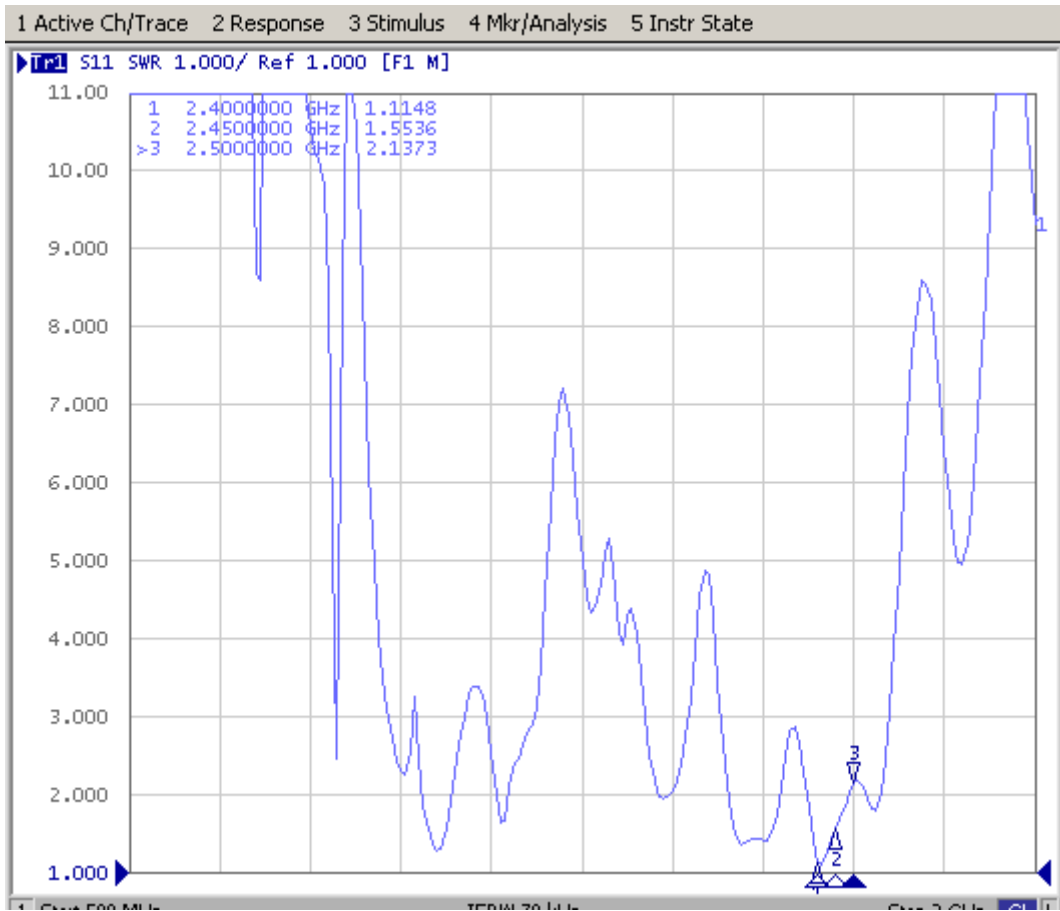


4.2.2.1. 4G



Frequency (MHz)	600	824	960	1710	1990	2170	2450	2570	2690
VSWR	2.03	2.57	4.93	2.60	1.65	1.98	2.14	1.27	2.26

4.2.2.2. Wi-Fi & Bluetooth



Frequency (MHz)	2400	2450	2500
VSWR	1.11	1.55	2.14

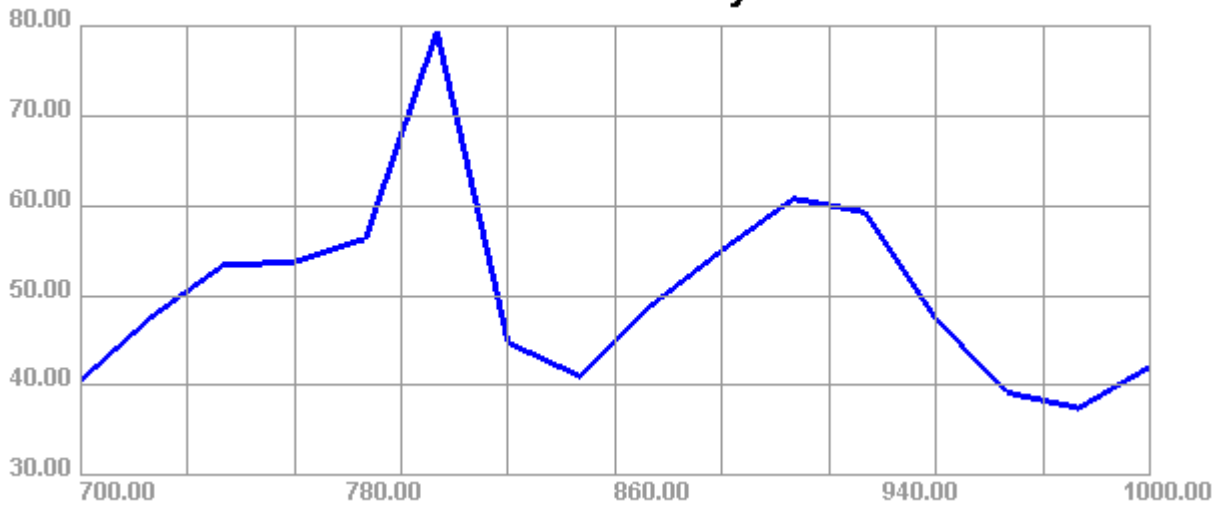
4.3. Efficiency

4.3.1. Free Space

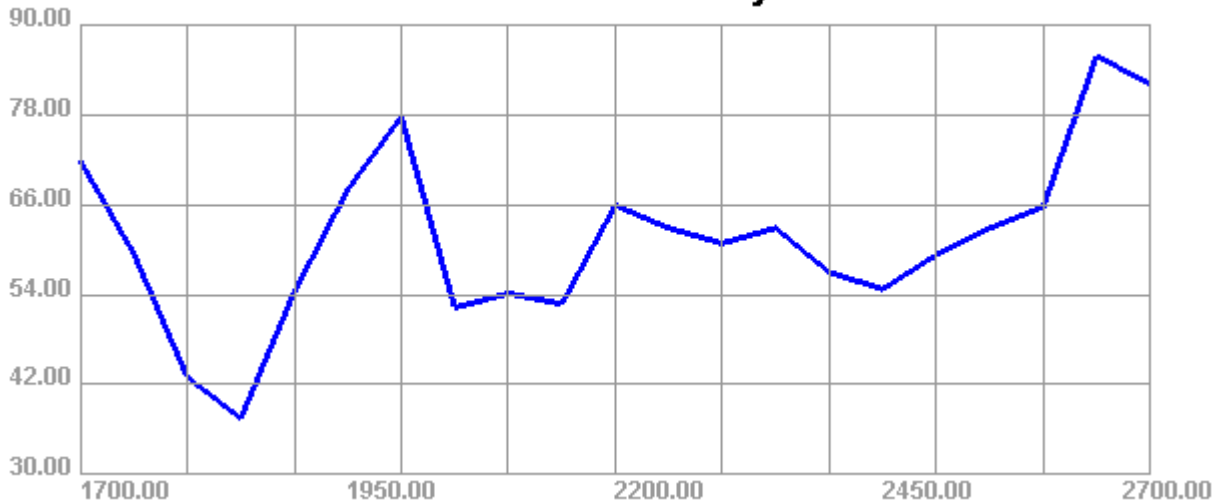
- Test condition: free space.

4.3.1.1. 4G

700.00MHz - 1000.00MHz Efficiency

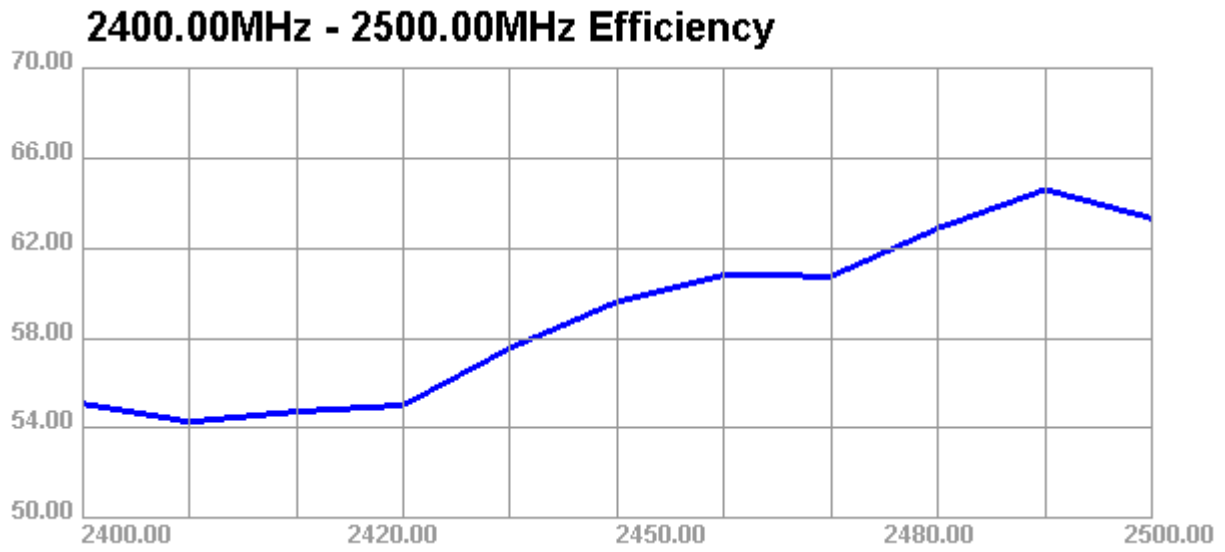


1700.00MHz - 2700.00MHz Efficiency



Frequency (MHz)	700	780	840	960	1000	1700	1950	2150	2450	2650
Efficiency (%)	40.53	56.33	41.07	39.21	42.12	71.84	68.01	52.73	54.76	85.84

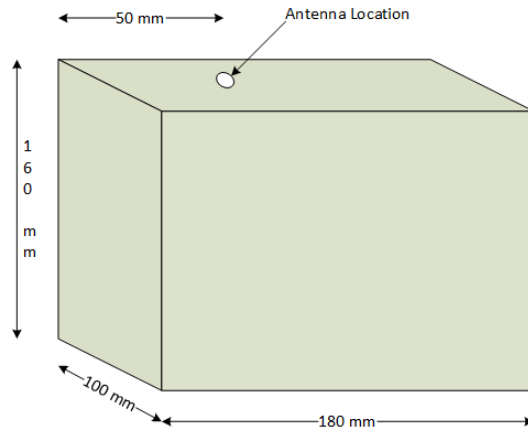
4.3.1.2. Wi-Fi & Bluetooth



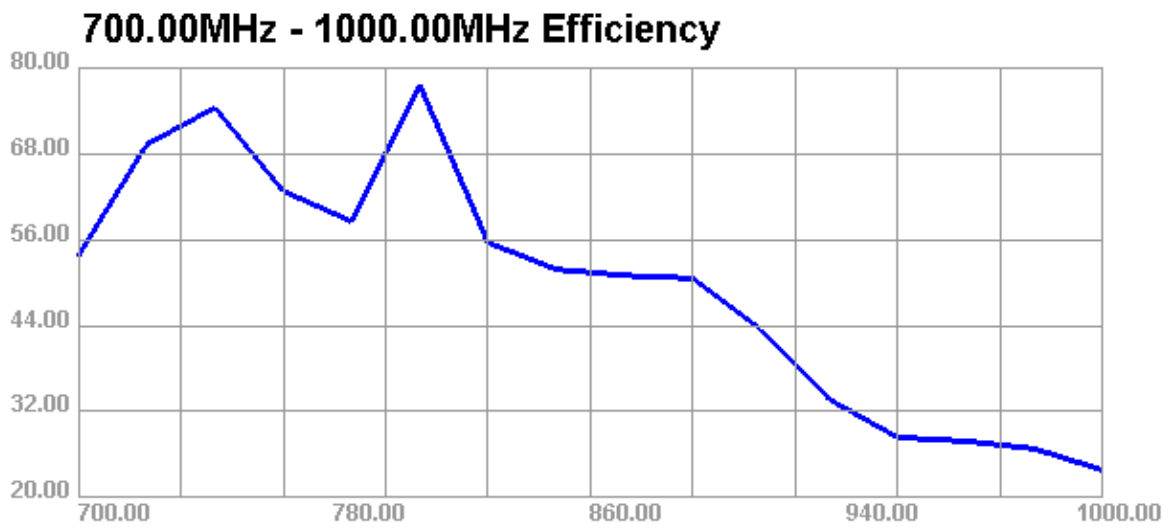
Frequency (MHz)	2400	2420	2450	2500
Efficiency (%)	55.09	54.75	59.62	63.32

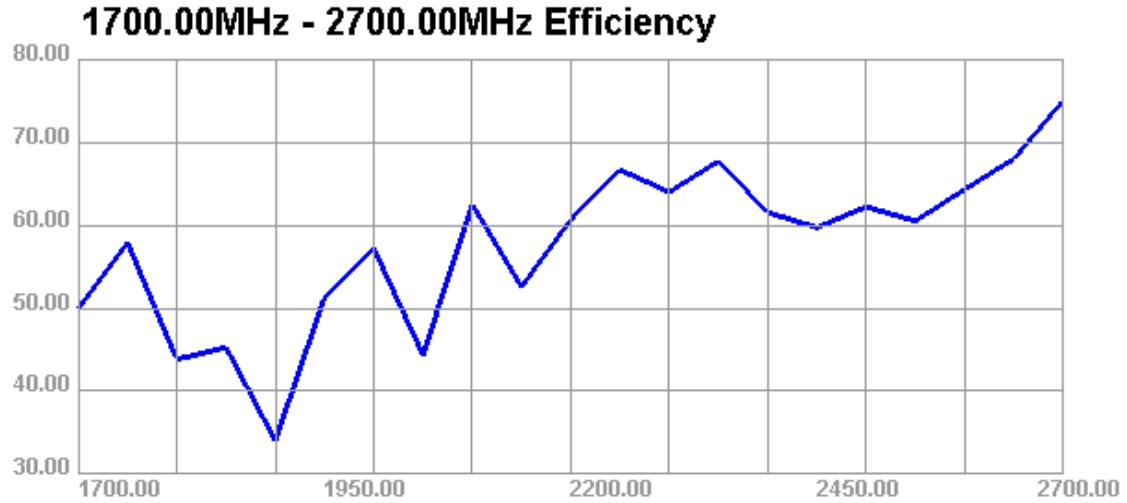
4.3.2. With Metal Mounting Plate

- Test condition: with a 180 mm × 100 mm × 160 mm metal mounting plate:



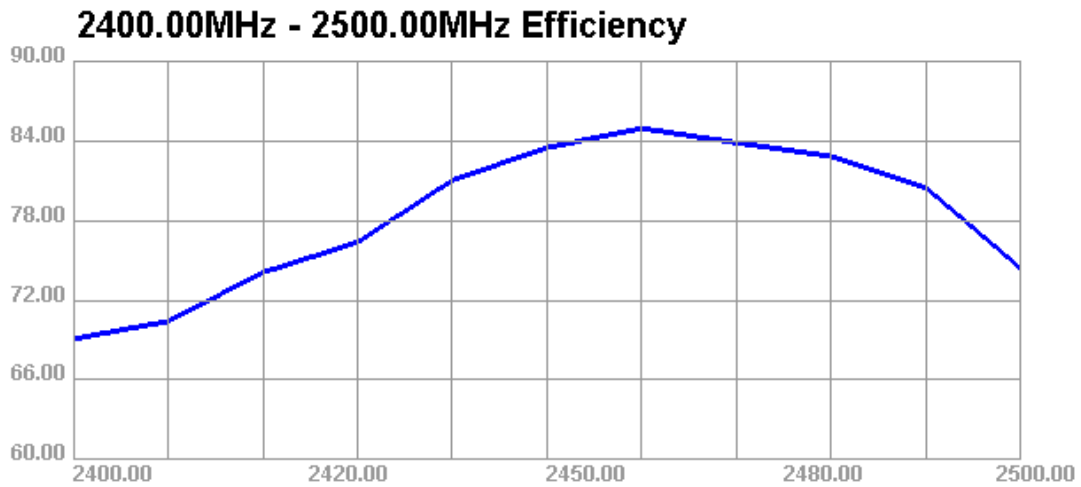
4.3.2.1. 4G





Frequency (MHz)	700	780	840	960	1000	1700	1950	2150	2450	2650
Efficiency (%)	53.76	58.58	51.86	27.87	23.85	49.96	51.29	52.58	59.73	68.02

4.3.2.2. Wi-Fi & Bluetooth



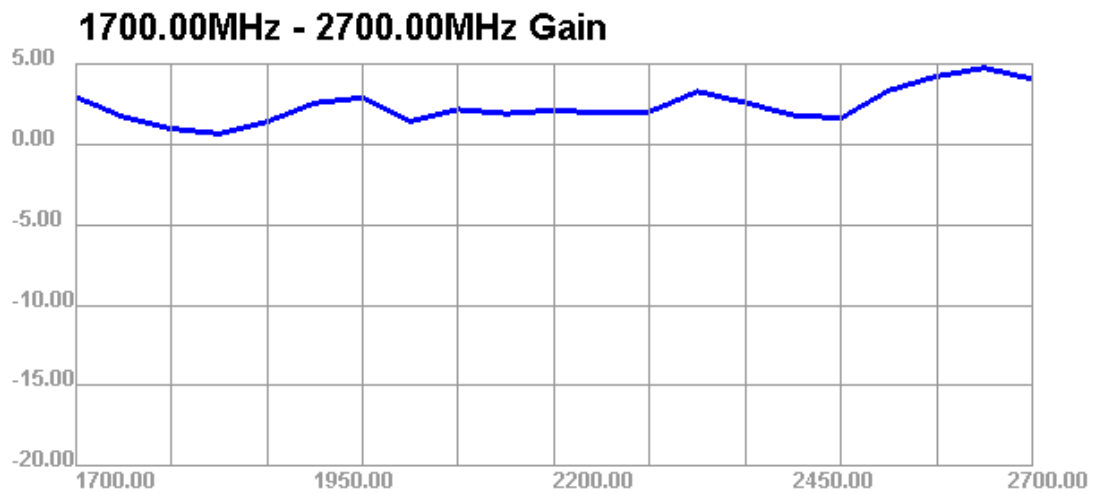
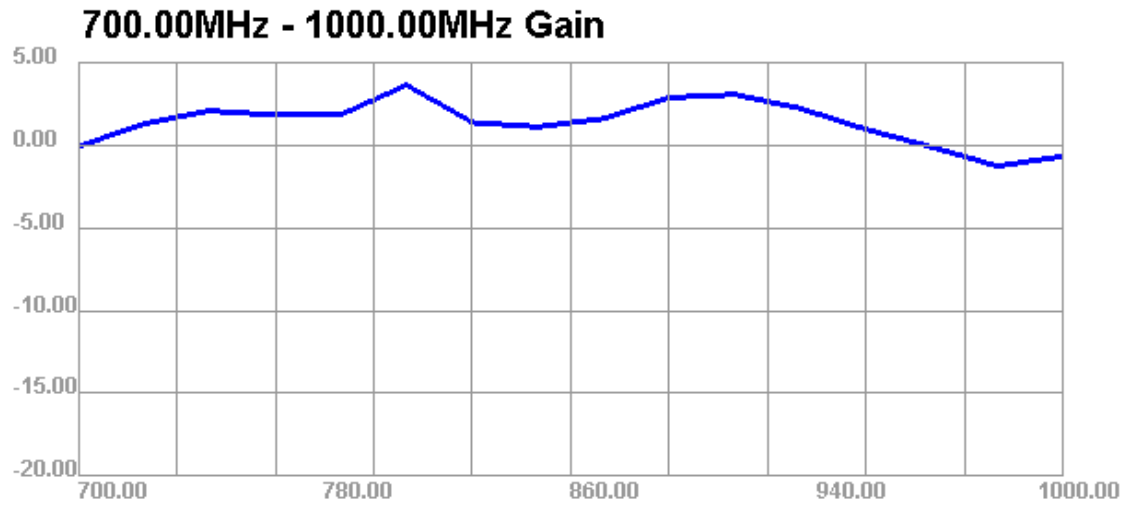
Frequency (MHz)	2400	2420	2450	2500
Efficiency (%)	69.09	74.09	83.48	74.41

4.4. Gain

4.4.1. Free Space

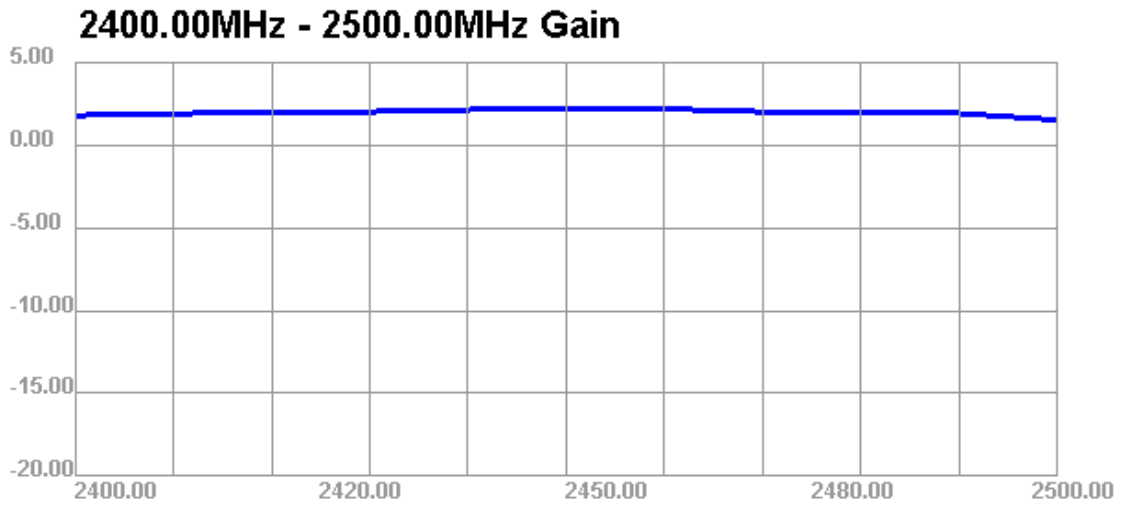
- Test condition: free space.

4.4.1.1. 4G



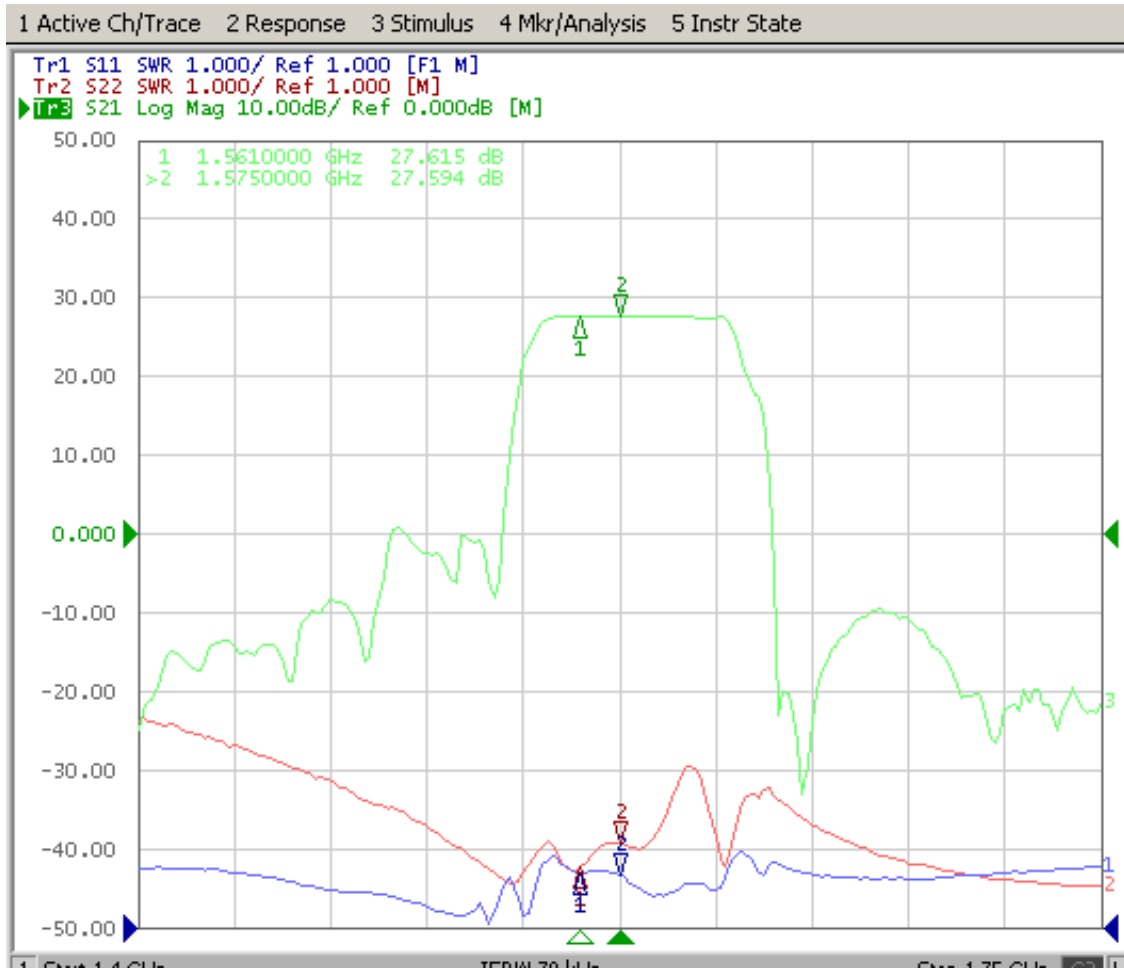
Frequency (MHz)	700	780	840	960	1000	1700	1950	2150	2450	2650
Gain (dBi)	-0.08	1.84	1.1	-0.11	-0.67	2.95	2.55	1.9	1.8	4.73

4.4.1.2. Wi-Fi & Bluetooth



Frequency (MHz)	2400	2420	2450	2500
Gain (dBi)	1.8	2	2.22	1.52

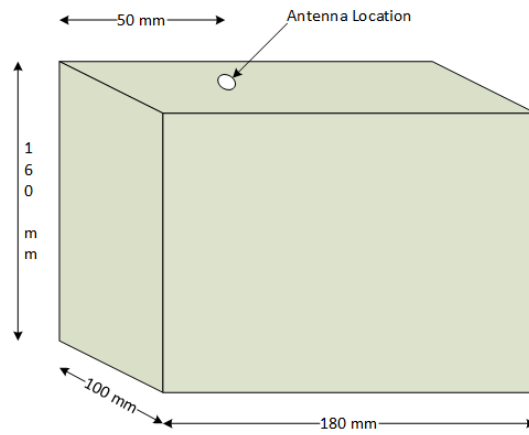
4.4.1.3. GNSS



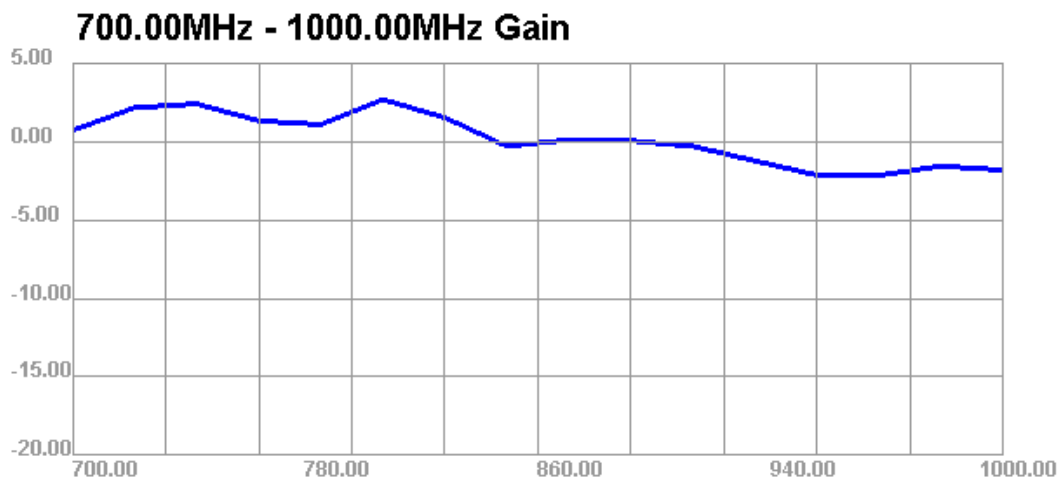
Frequency (MHz)	1561	1575
Gain (dB)	27.62	27.59

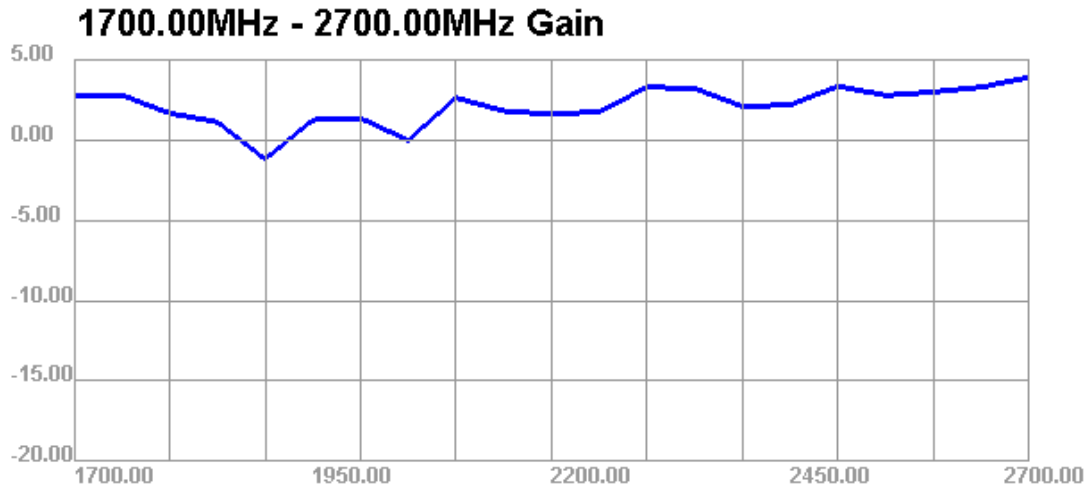
4.4.2. With Metal Mounting Plate

- Test condition: with a 180 mm × 100 mm × 160 mm metal mounting plate:



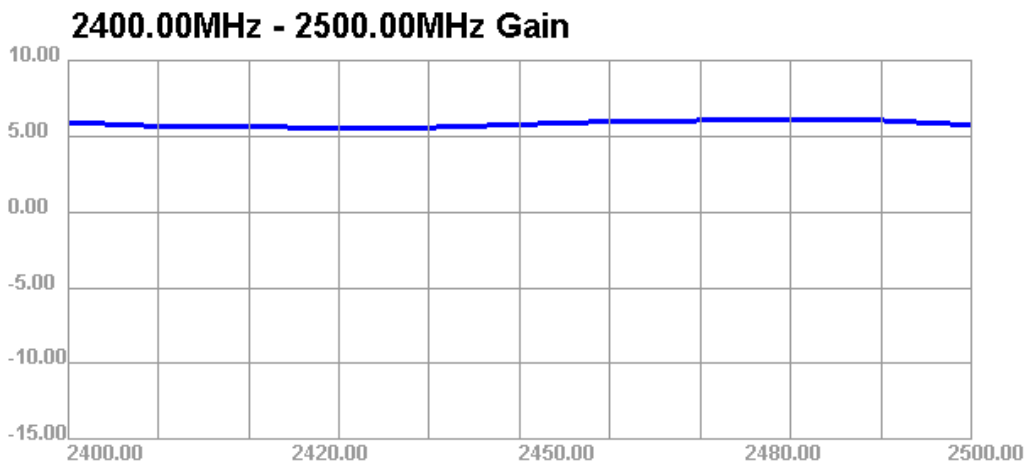
4.4.2.1. 4G





Frequency (MHz)	700	780	840	960	1000	1700	1950	2150	2450	2650
Gain (dBi)	0.71	1.08	-0.3	-2.14	-1.82	2.76	1.25	1.8	2.18	3.28

4.4.2.2. Wi-Fi & Bluetooth



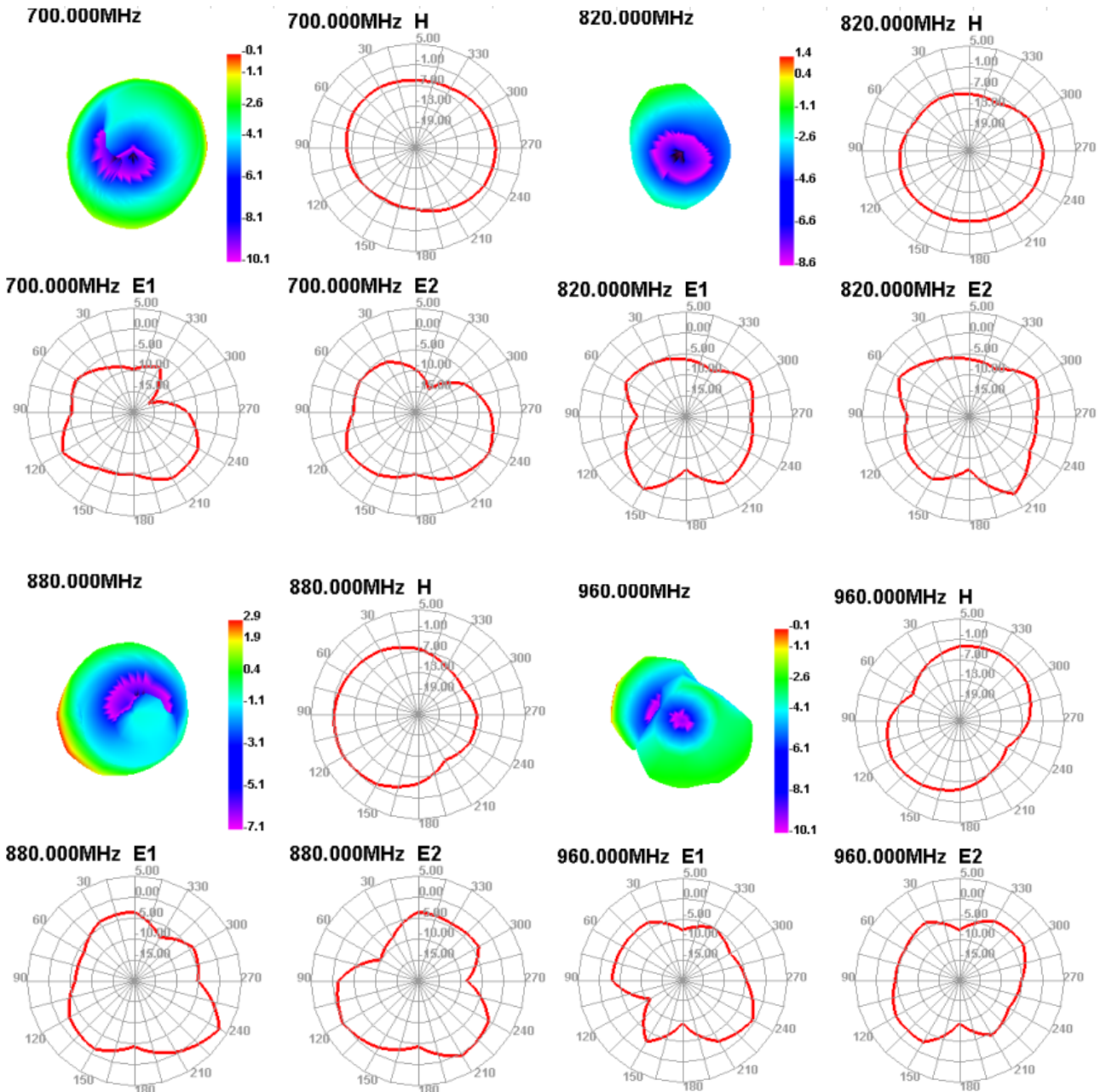
Frequency (MHz)	2400	2420	2450	2500
Gain (dBi)	5.91	5.65	5.77	5.73

4.5. Radiation Pattern

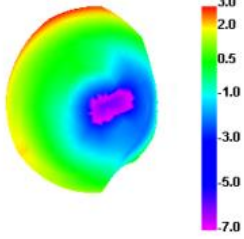
4.5.1. Free Space

- Test condition: free space.

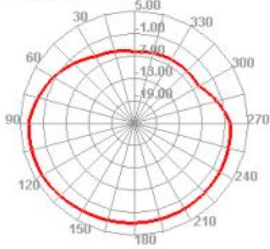
4.5.1.1. 4G



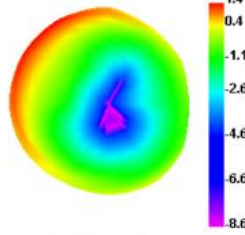
1700.000MHz



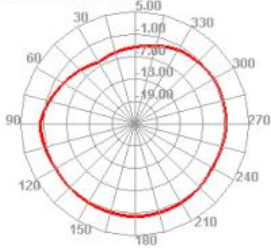
1700.000MHz H



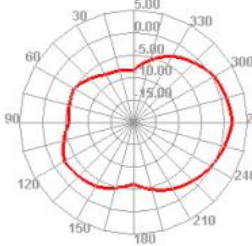
1900.000MHz



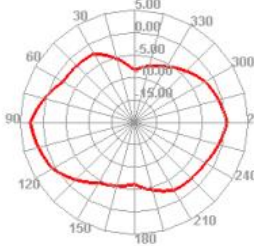
1900.000MHz H



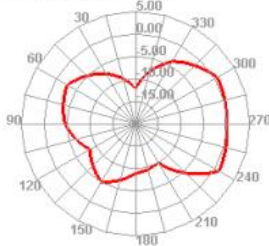
1700.000MHz E1



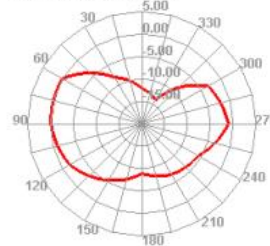
1700.000MHz E2



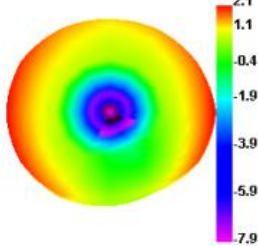
1900.000MHz E1



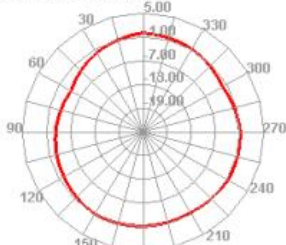
1900.000MHz E2



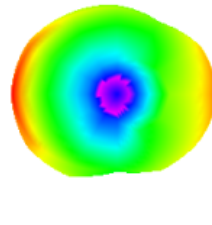
2200.000MHz



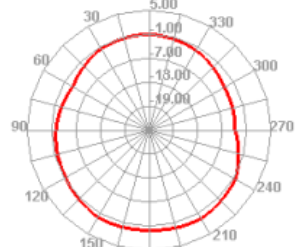
2200.000MHz H



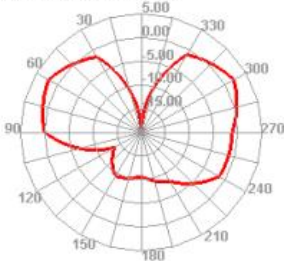
2450.000MHz



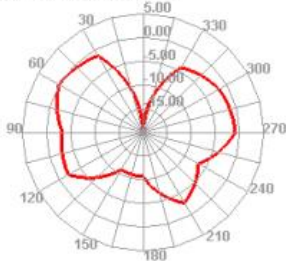
2450.000MHz H



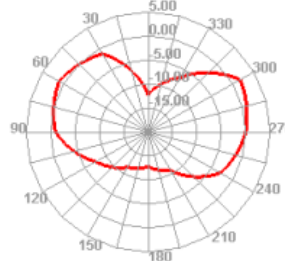
2200.000MHz E1



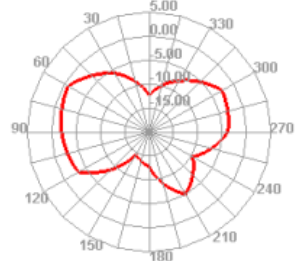
2200.000MHz E2



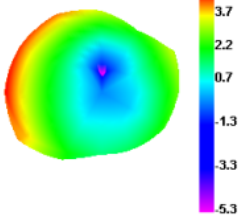
2450.000MHz E1



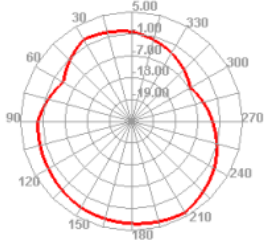
2450.000MHz E2



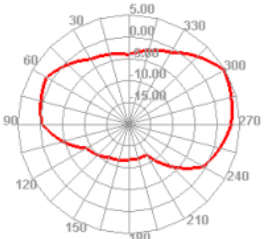
2650.000MHz



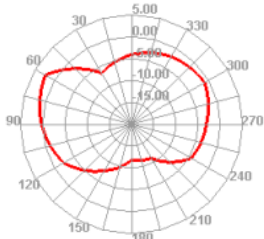
2650.000MHz H



2650.000MHz E1

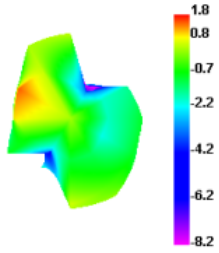


2650.000MHz E2

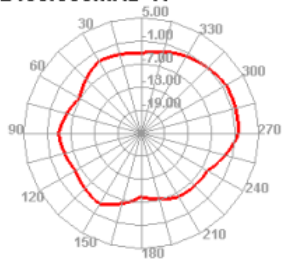


4.5.1.2. Wi-Fi & Bluetooth

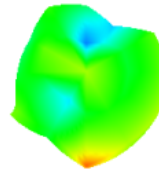
2400.000MHz



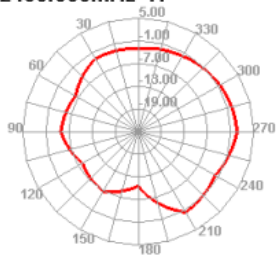
2400.000MHz H



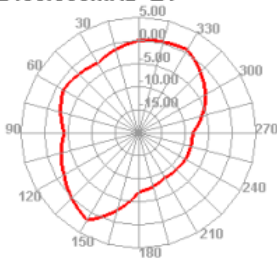
2450.000MHz



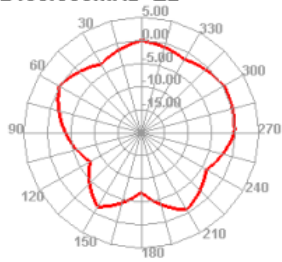
2450.000MHz H



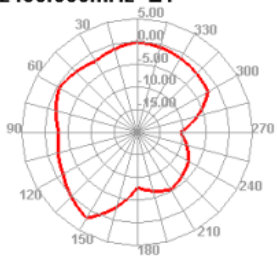
2400.000MHz E1



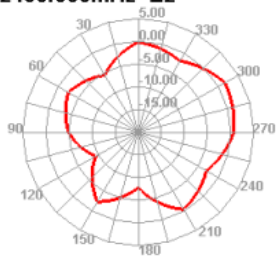
2400.000MHz E2



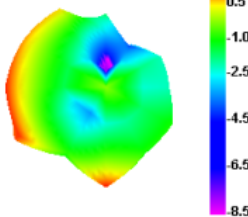
2450.000MHz E1



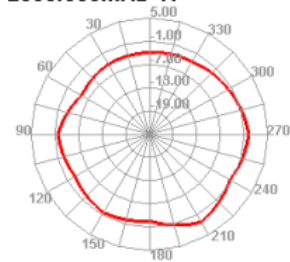
2450.000MHz E2



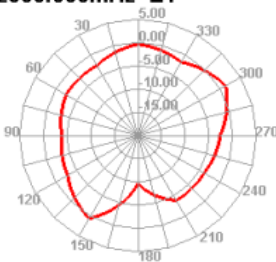
2500.000MHz



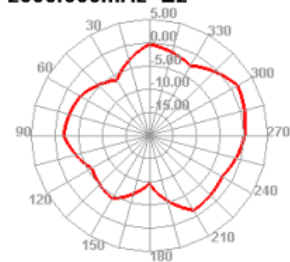
2500.000MHz H



2500.000MHz E1

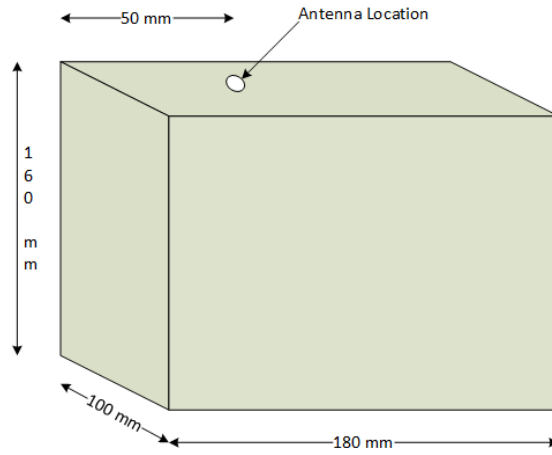


2500.000MHz E2

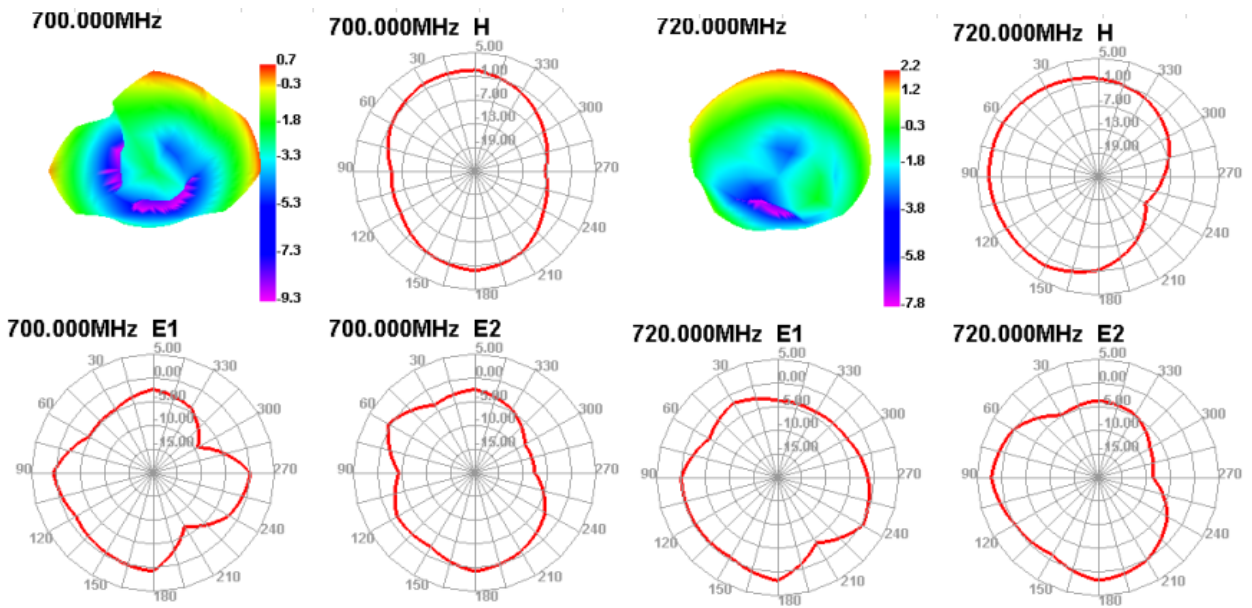


4.5.2. With Metal Mounting Plate

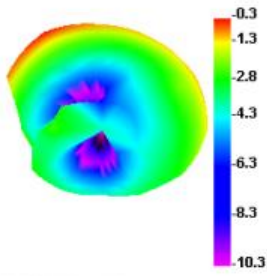
- Test condition: with a 180 mm × 100 mm × 160 mm metal mounting plate:



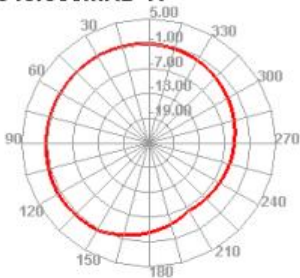
4.5.2.1. 4G



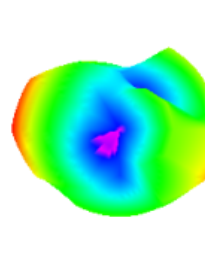
840.000MHz



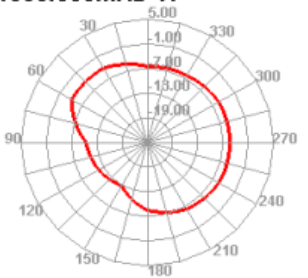
840.000MHz H



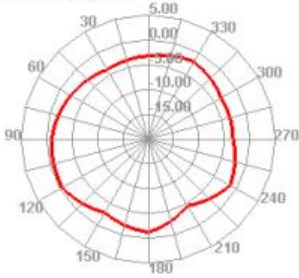
1000.000MHz



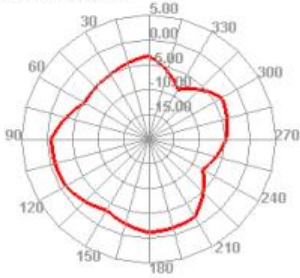
1000.000MHz H



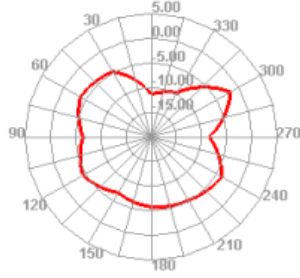
840.000MHz E1



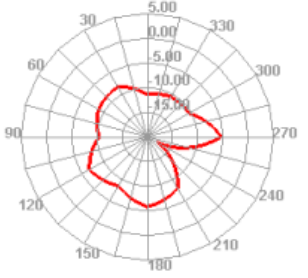
840.000MHz E2



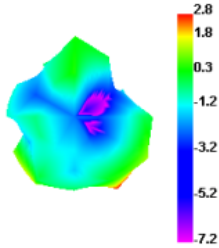
1000.000MHz E1



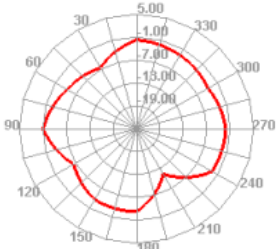
1000.000MHz E2



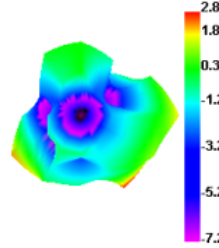
1700.000MHz



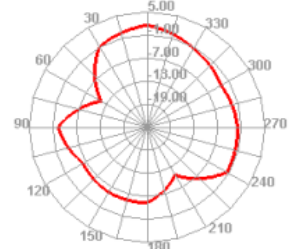
1700.000MHz H



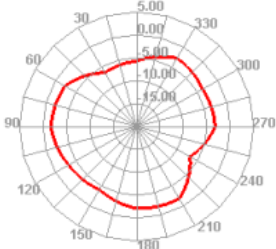
1750.000MHz



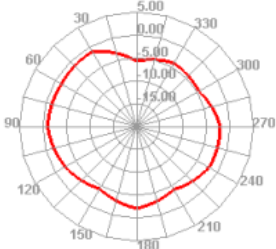
1750.000MHz H



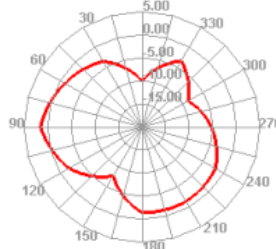
1700.000MHz E1



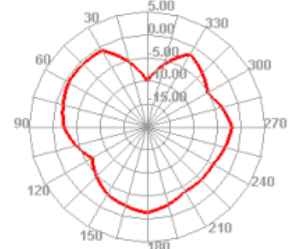
1700.000MHz E2



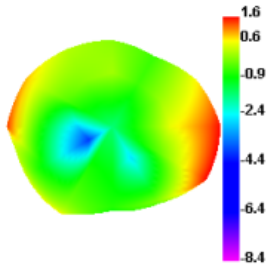
1750.000MHz E1



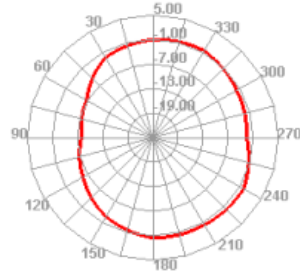
1750.000MHz E2



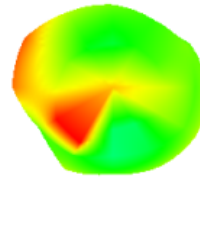
2200.000MHz



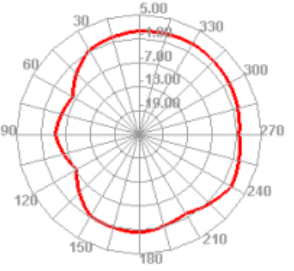
2200.000MHz H



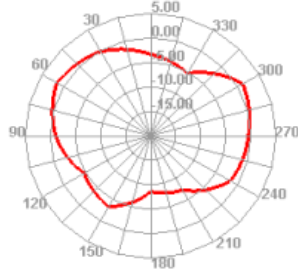
2700.000MHz



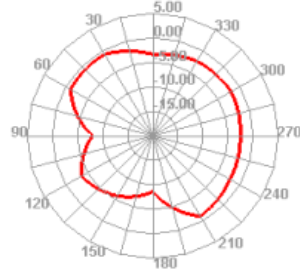
2700.000MHz H



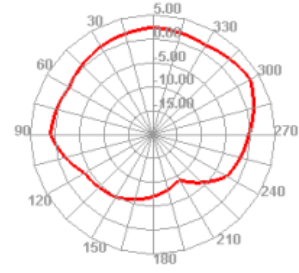
2200.000MHz E1



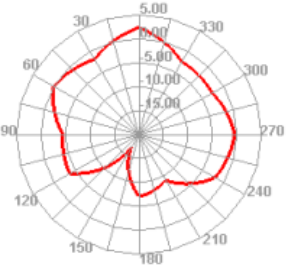
2200.000MHz E2



2700.000MHz E1

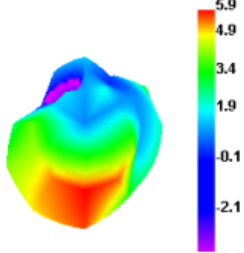


2700.000MHz E2

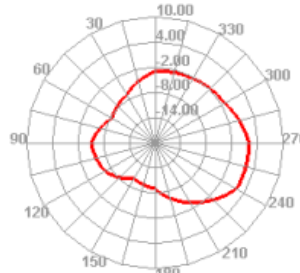


4.5.2.2. Wi-Fi & Bluetooth

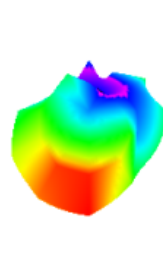
2400.000MHz



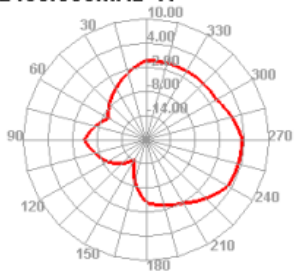
2400.000MHz H



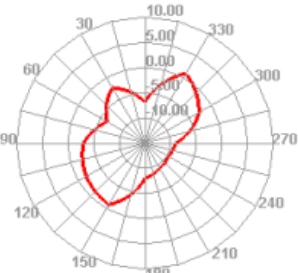
2450.000MHz



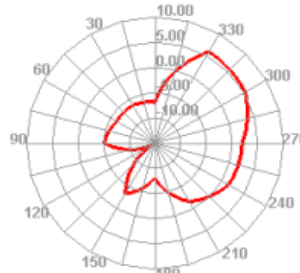
2450.000MHz H



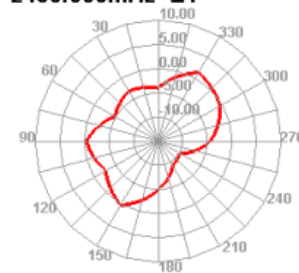
2400.000MHz E1



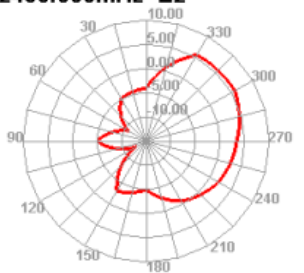
2400.000MHz E2



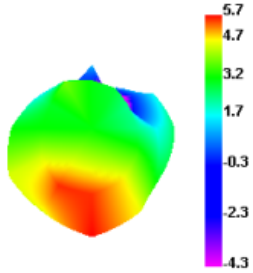
2450.000MHz E1



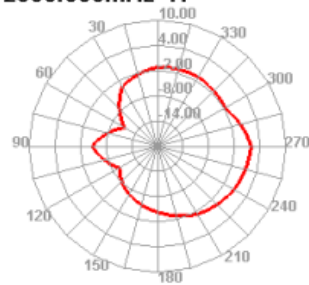
2450.000MHz E2



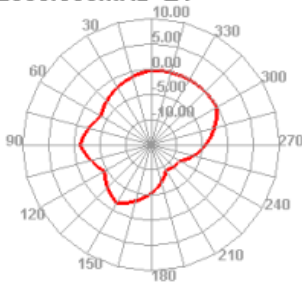
2500.000MHz



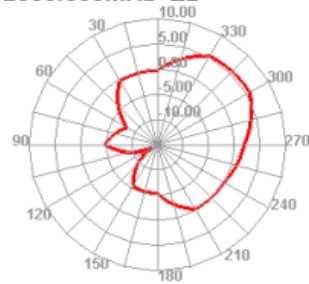
2500.000MHz H



2500.000MHz E1

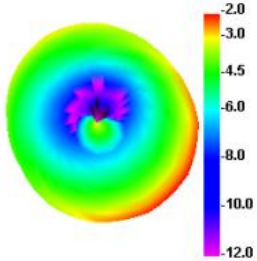


2500.000MHz E2

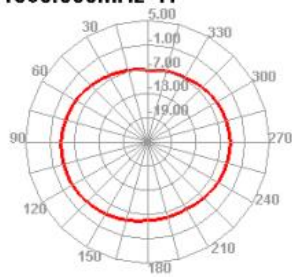


4.5.2.3. GNSS

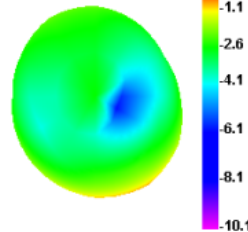
1560.000MHz



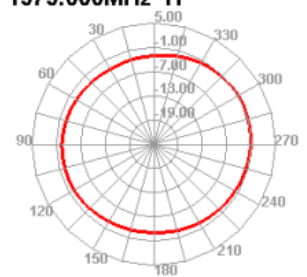
1560.000MHz H



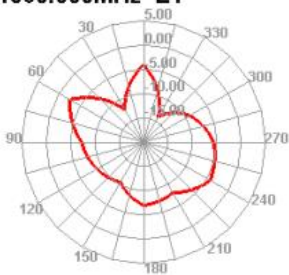
1575.000MHz



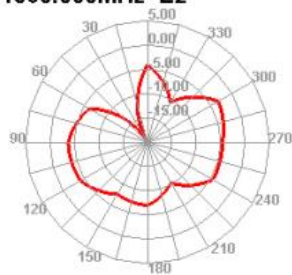
1575.000MHz H



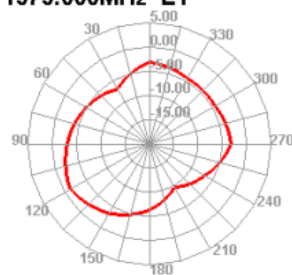
1560.000MHz E1



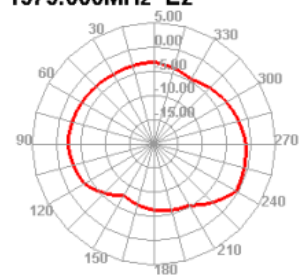
1560.000MHz E2



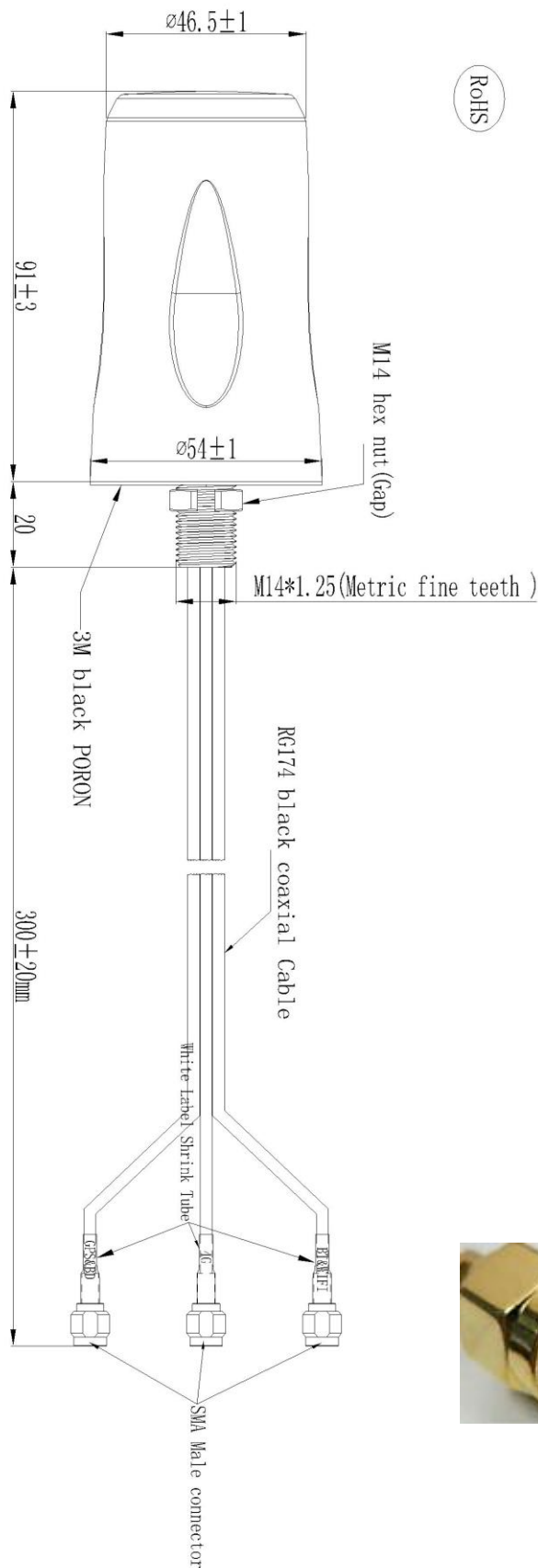
1575.000MHz E1



1575.000MHz E2



5 Product Size



Unit: mm