

# Antenna

# YB0033AA Datasheet

## Antenna Services

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# About the Document

## Revision History

Version	Date	Author	Note
-	2021-07-05	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-07-05	Kenny YIN/ Aria CHU	First official release

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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 L1
- High efficiency
- Excellent performance

### 3 Product Specifications

#### LTE Electrical Specifications

Frequency Range	700–2700 MHz
Input Impedence	50 Ω
VSWR	≤ 3
Gain	≤ 3.0 dBi
Polarization Type	Linear

#### GPS L1 Antenna Electrical Specifications

Frequency Range	GPS L1: 1575 ±3 MHz
Working Voltage	3–5 V
Working Current	9 ±3 mA @ 3 V
Gain	20 ±3 dB
Noise Figure	≤ 2 dB
VSWR	≤ 2
Input Impedence	50 Ω
Polarization Type	RHCP

#### Mechanical Specifications

Antenna Box Size	Φ 120 mm × 43 mm
Casing	KIBILAC® ASA
Connector Type	SMA Male (Center Pin)
Working Temperature	-20 °C to +85 °C
Radome Color	Black
IP Rating	IP67
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

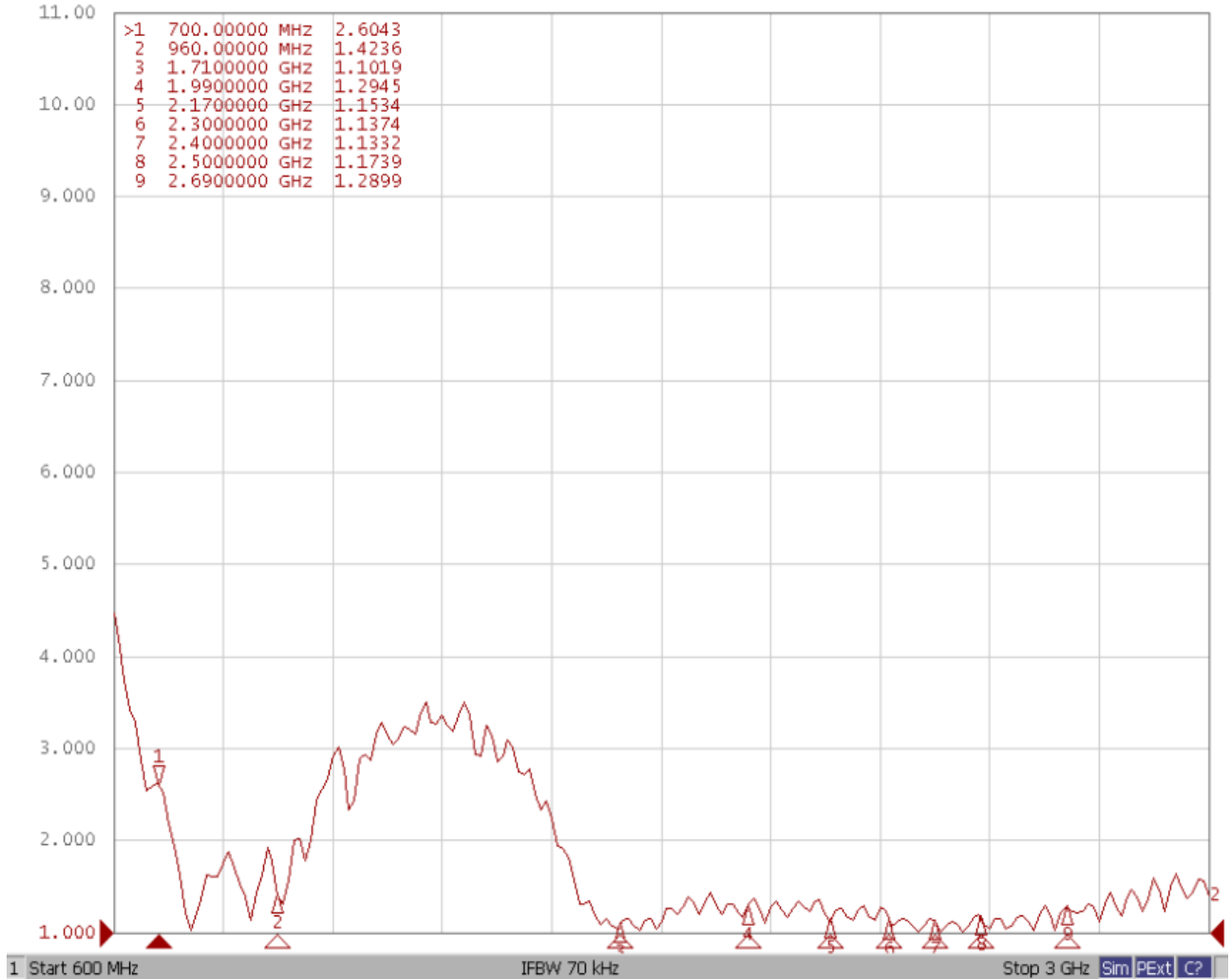




## 4.2. VSWR

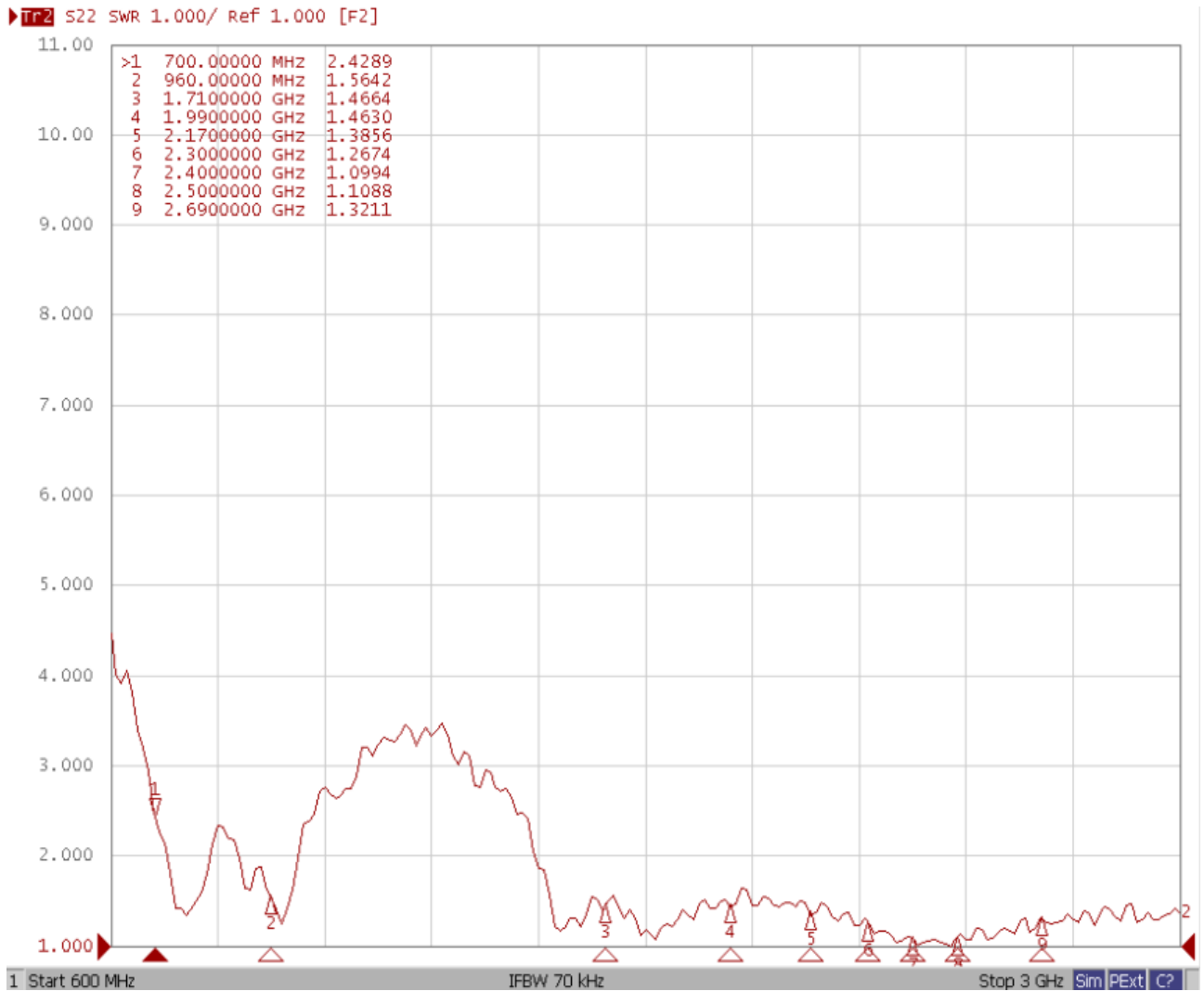
### 4.2.1. LTE MIMO 1

▶ **tr2** S22 SWR 1.000/ Ref 1.000 [F2]



Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
VSWR	2.60	1.42	1.10	1.15	1.13	1.13	1.17	1.28

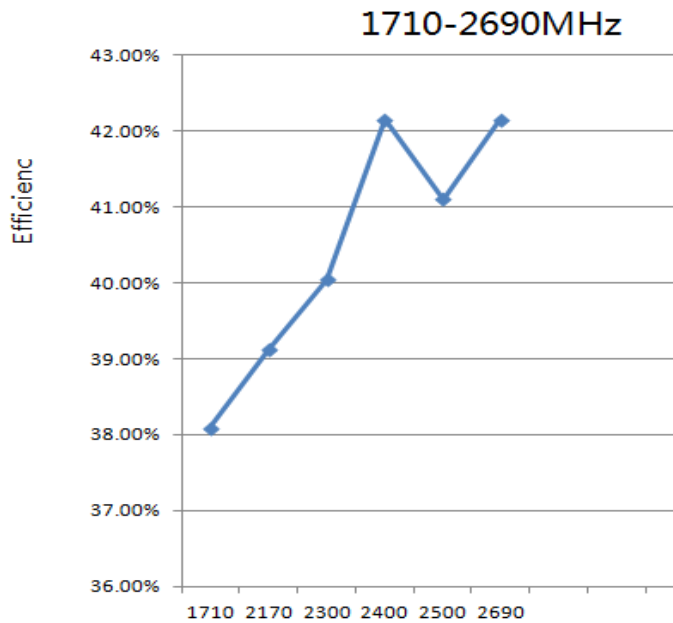
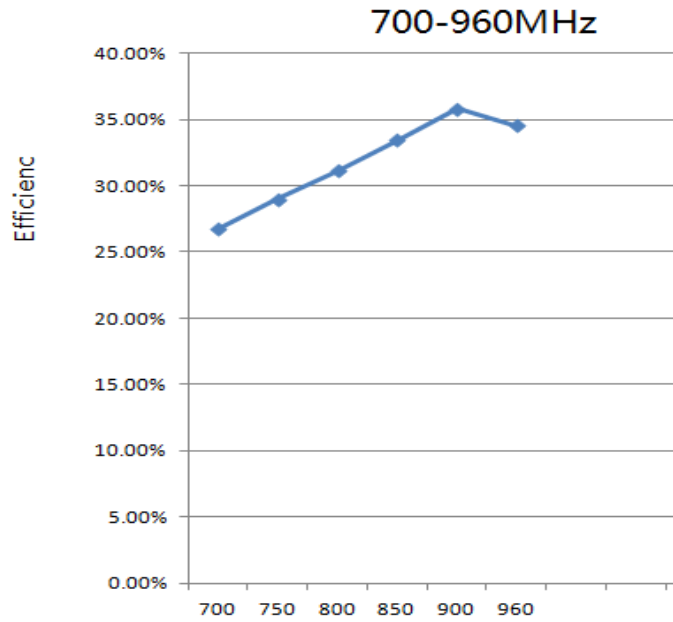
**4.2.2. LTE MIMO 2**



Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
VSWR	2.42	1.56	1.46	1.38	1.26	1.09	1.10	1.32

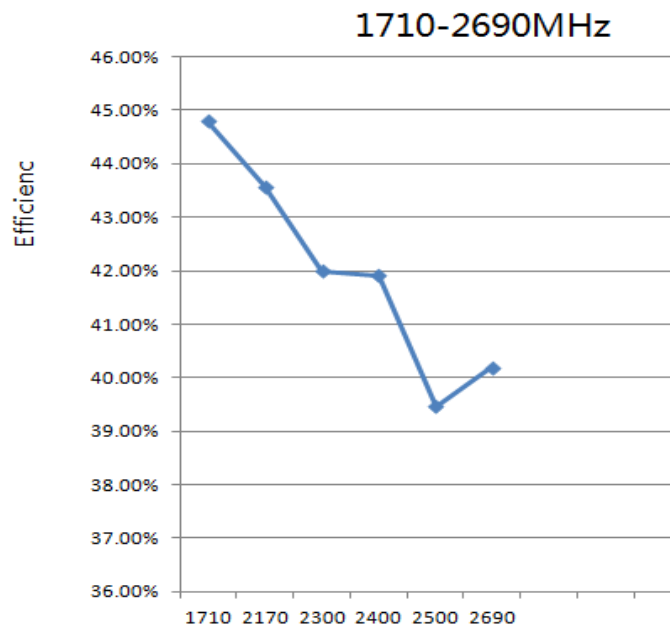
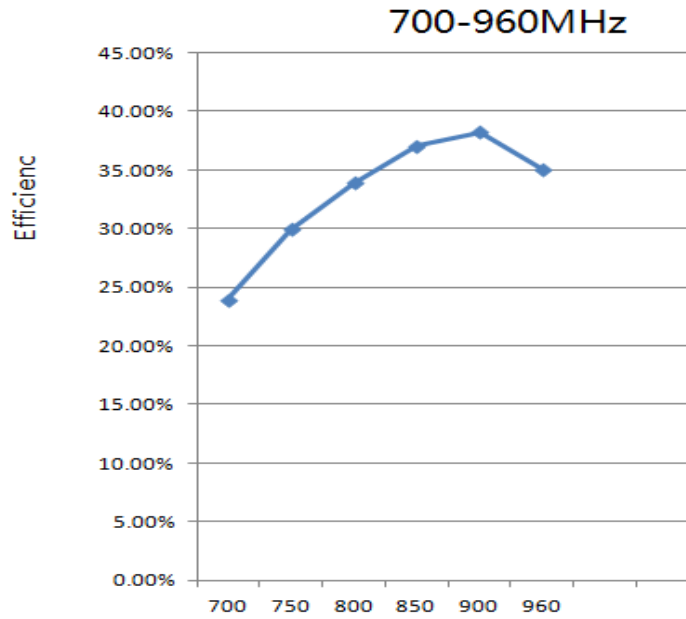
### 4.3. Efficiency

#### 4.3.1. LTE MIMO 1



<b>Frequency (MHz)</b>	700	960	1710	2170	2300	2400	2500	2690
<b>Efficiency (%)</b>	26.73	34.54	38.09	39.12	40.04	42.15	41.10	42.15

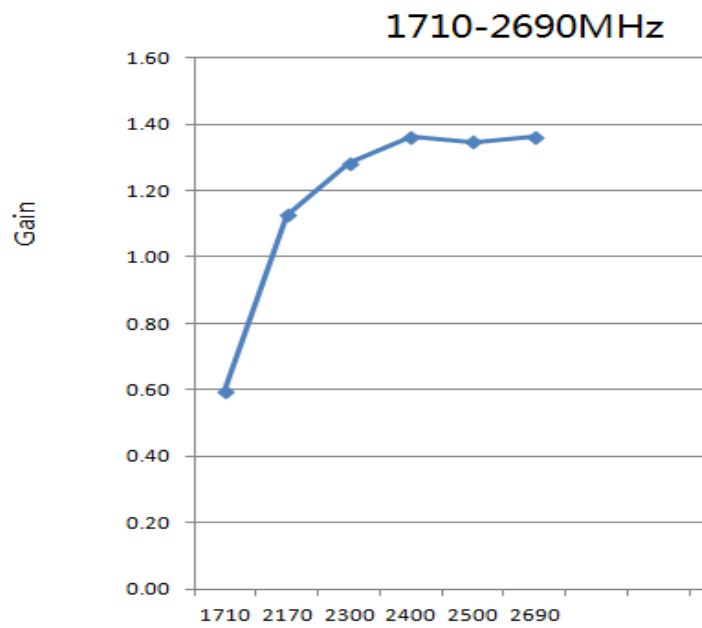
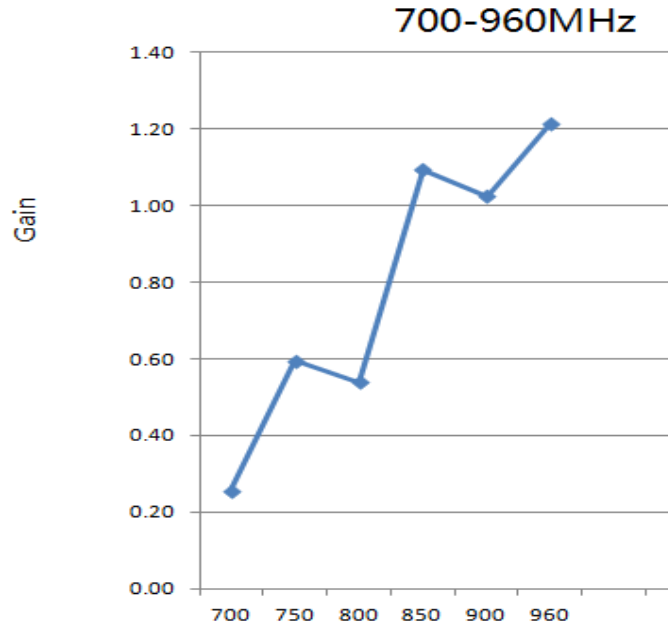
4.3.2. LTE MIMO 2



<b>Frequency (MHz)</b>	700	960	1710	2170	2300	2400	2500	2690
<b>Efficiency (%)</b>	24.32	35.12	44.79	43.57	41.99	41.91	39.46	40.19

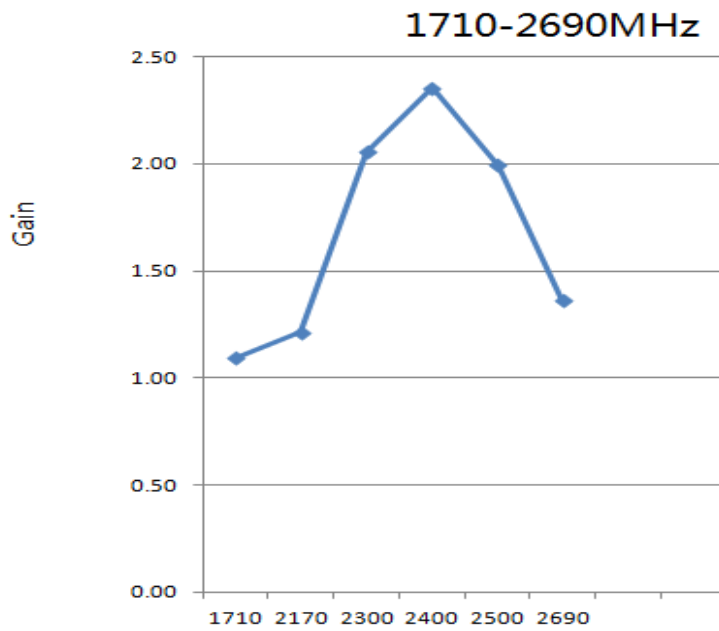
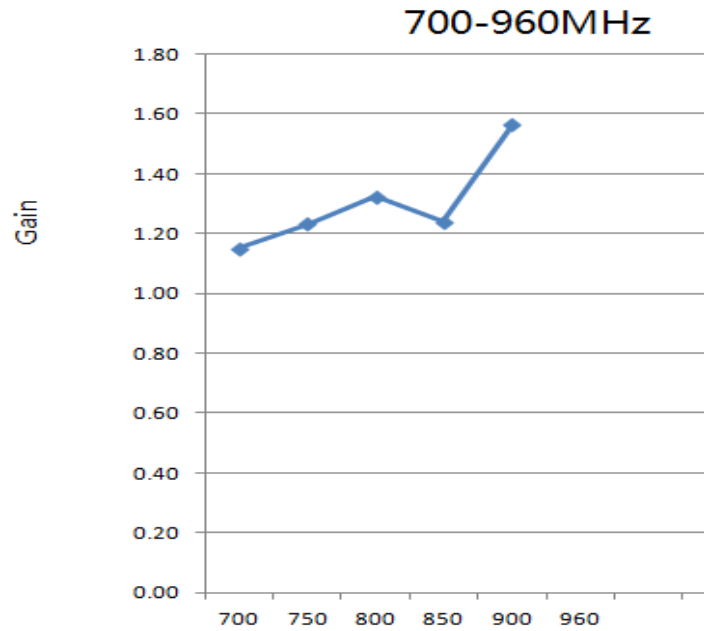
## 4.4. Gain

### 4.4.1. LTE MIMO 1



Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
Gain (dBi)	0.26	1.21	0.60	1.13	1.28	1.36	1.35	1.36

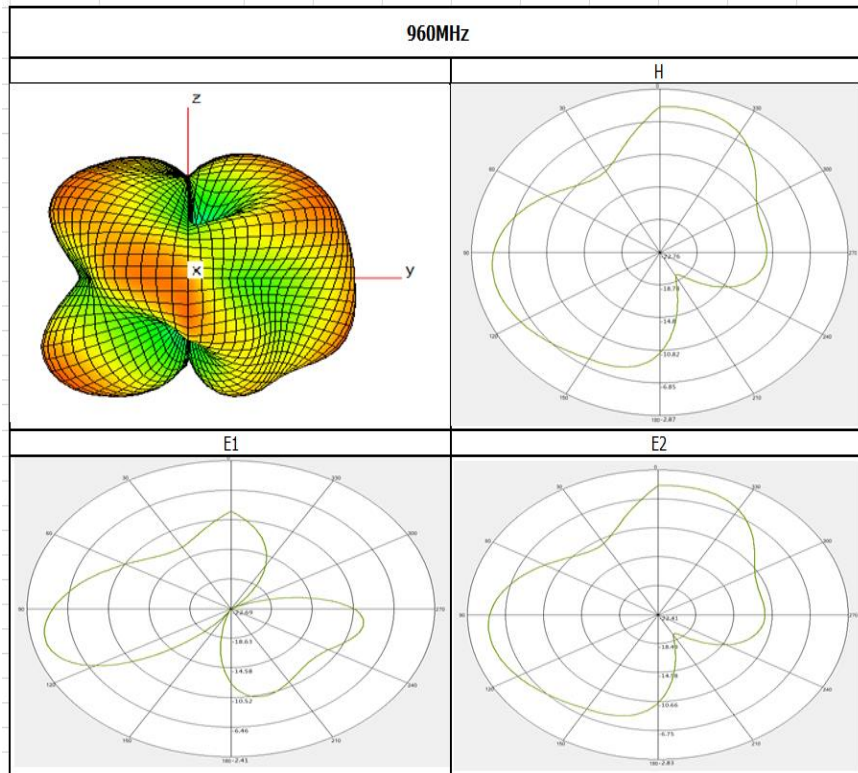
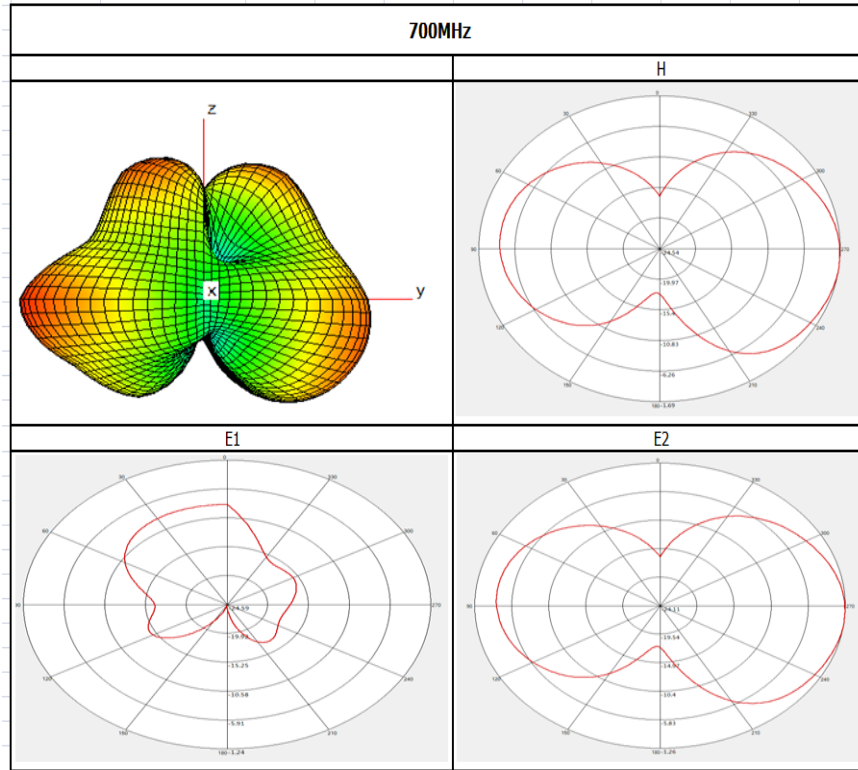
4.4.2. LTE MIMO 2

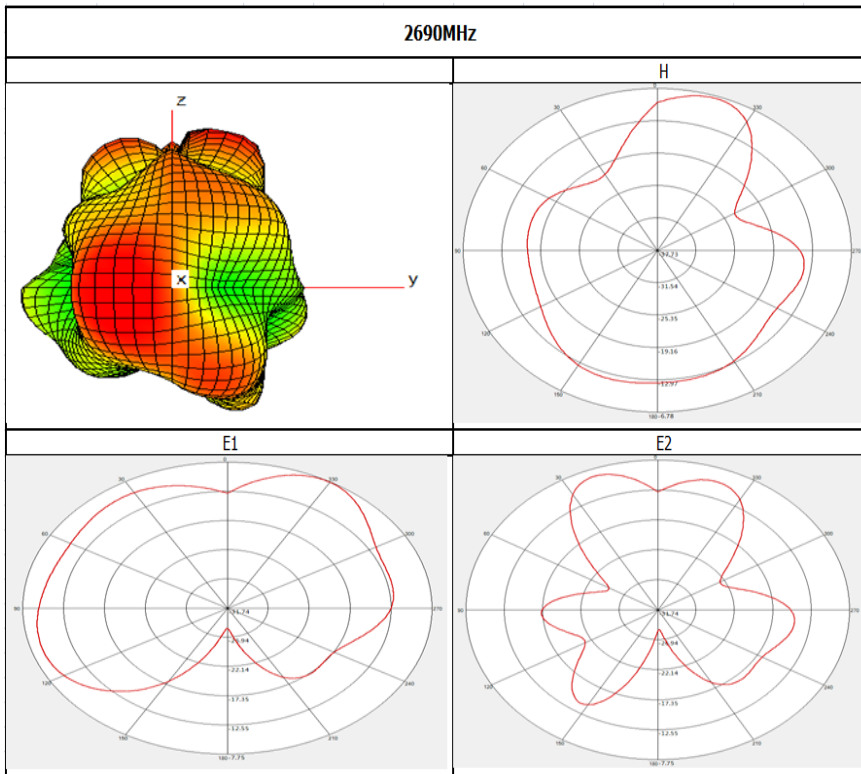
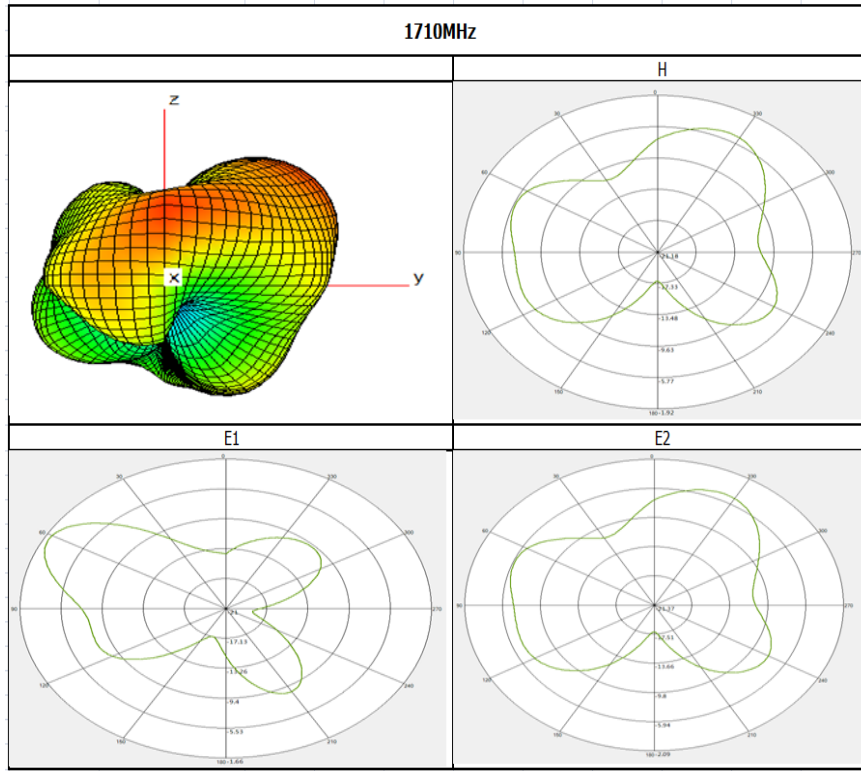


Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
Gain (dBi)	0.82	1.56	1.09	1.21	2.05	2.36	1.99	1.36

## 4.5. Radiation Pattern

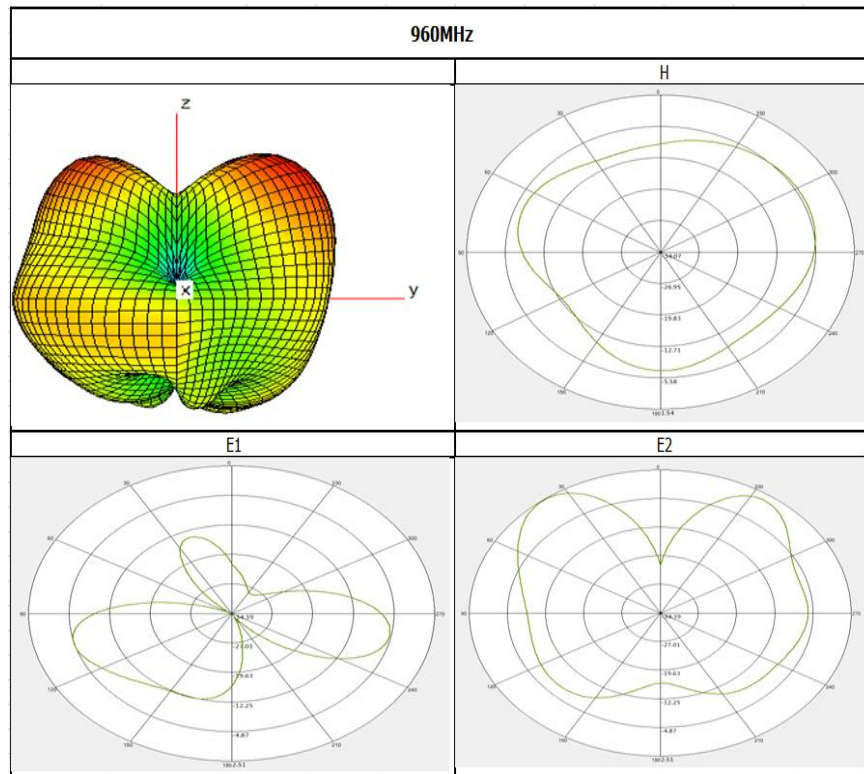
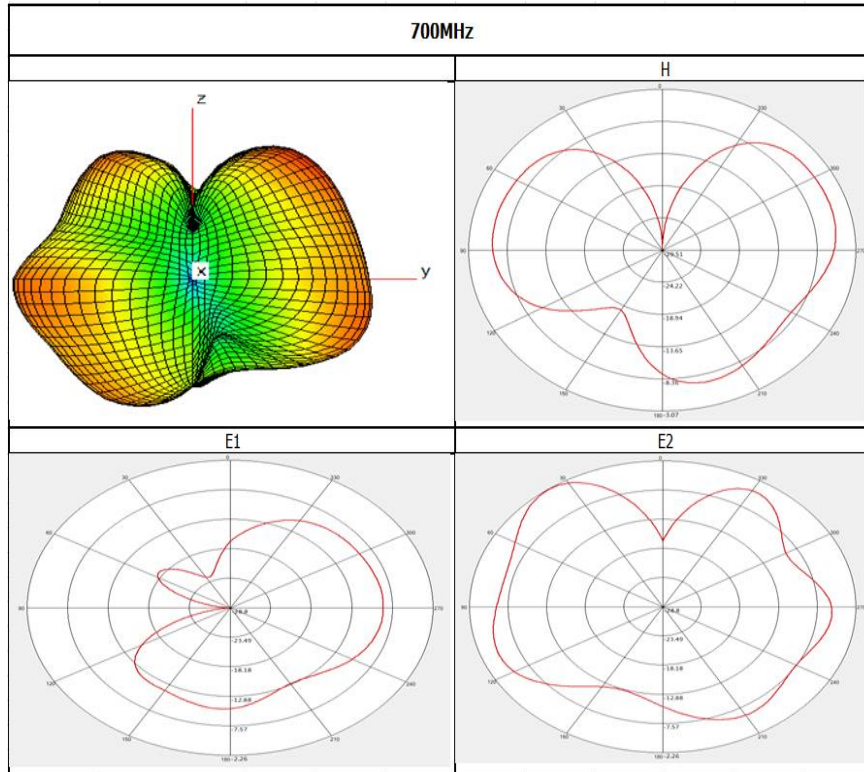
### 4.5.1. LTE MIMO 1

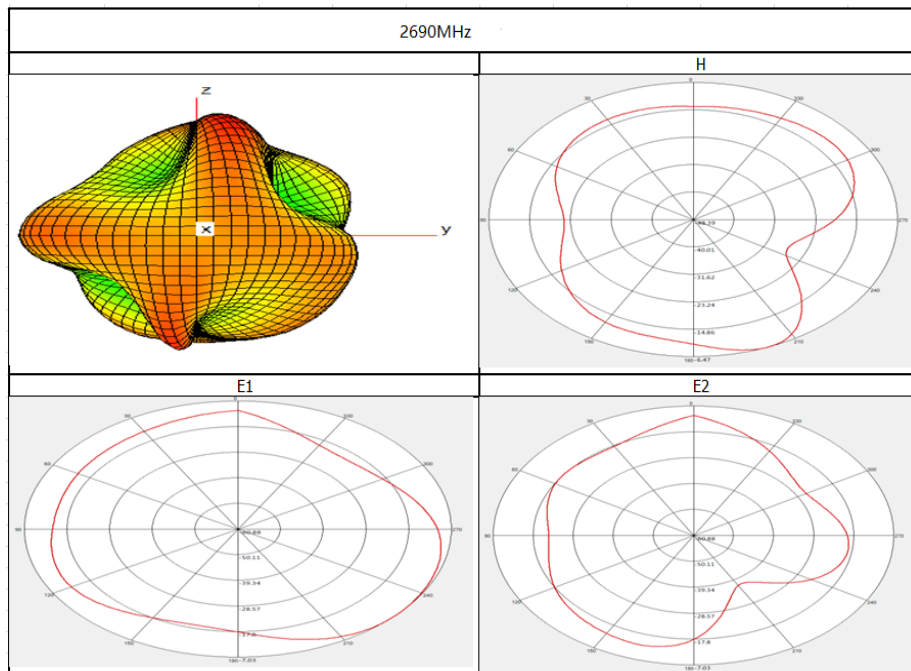
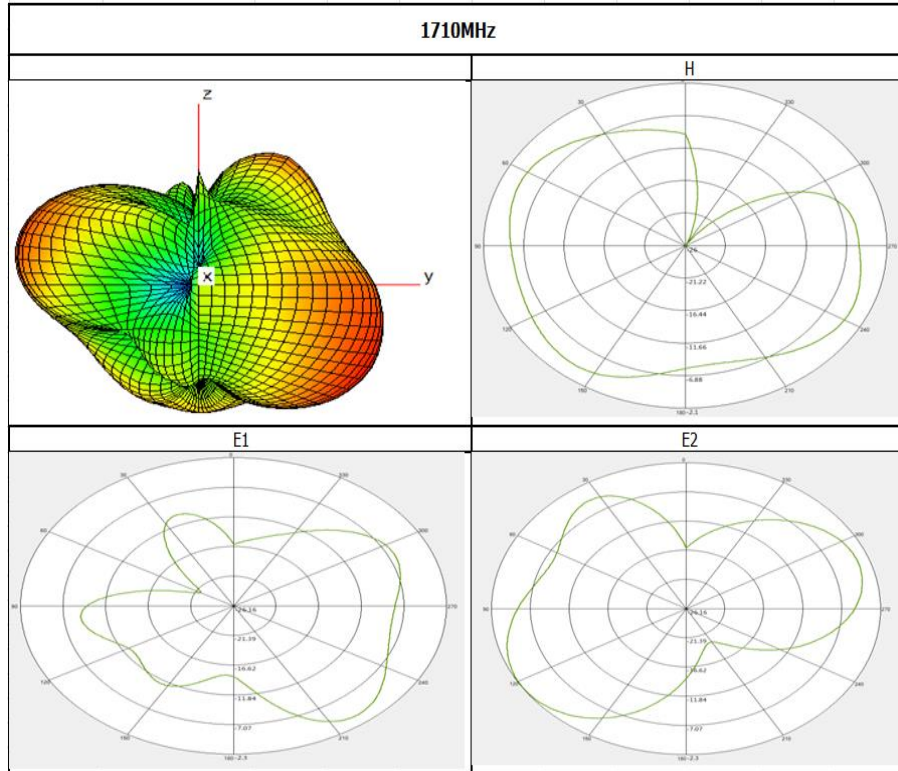






4.5.2. LTE MIMO 2





## 4.6. GNSS Antenna

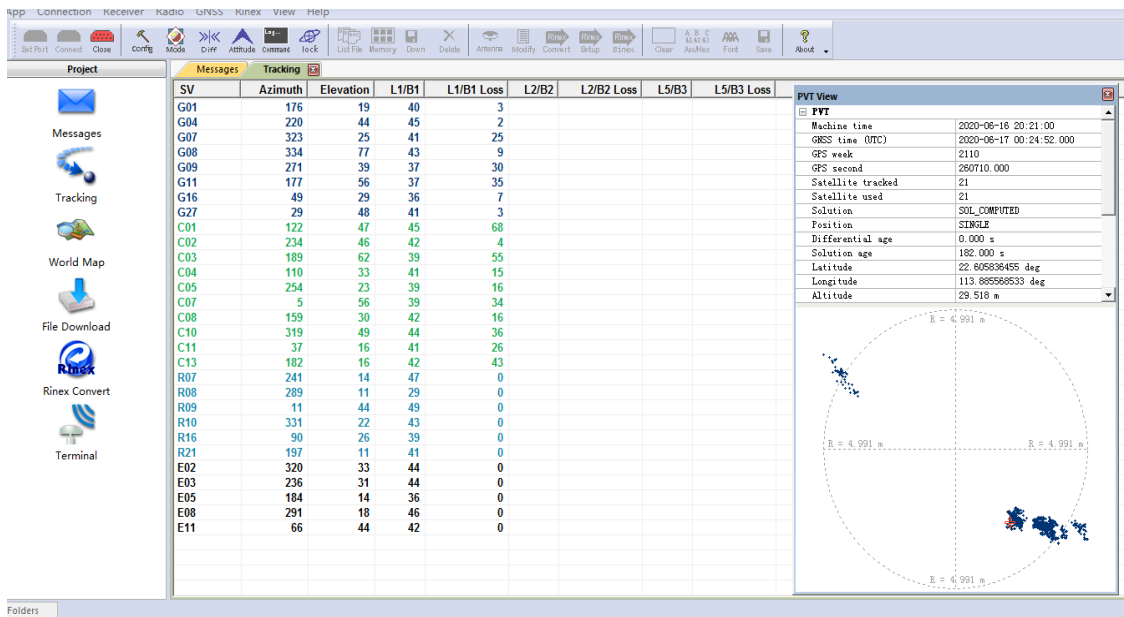
- GPS L1 Antenna Gain (LNA)



GNSS Relative Gain Test Data

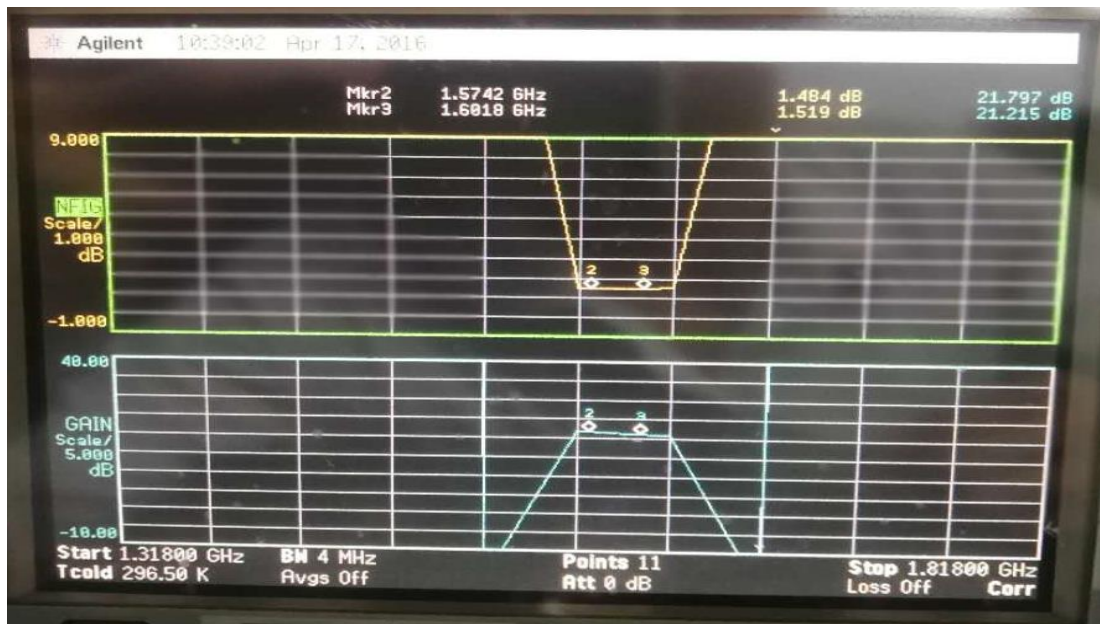
MARKER	Frequency/MHz	Gain/dB	SWR/S11
1	1559	22.2	1.86
2	1580	22.2	1.67
3	1610	21.4	1.59

- GPS L1 Antenna Measurement (Static State)



Test Condition: Outdoor; Roof of Fourth Floor; Sunny Day.

- GPS L1 Antenna Noise Figure (LNA)



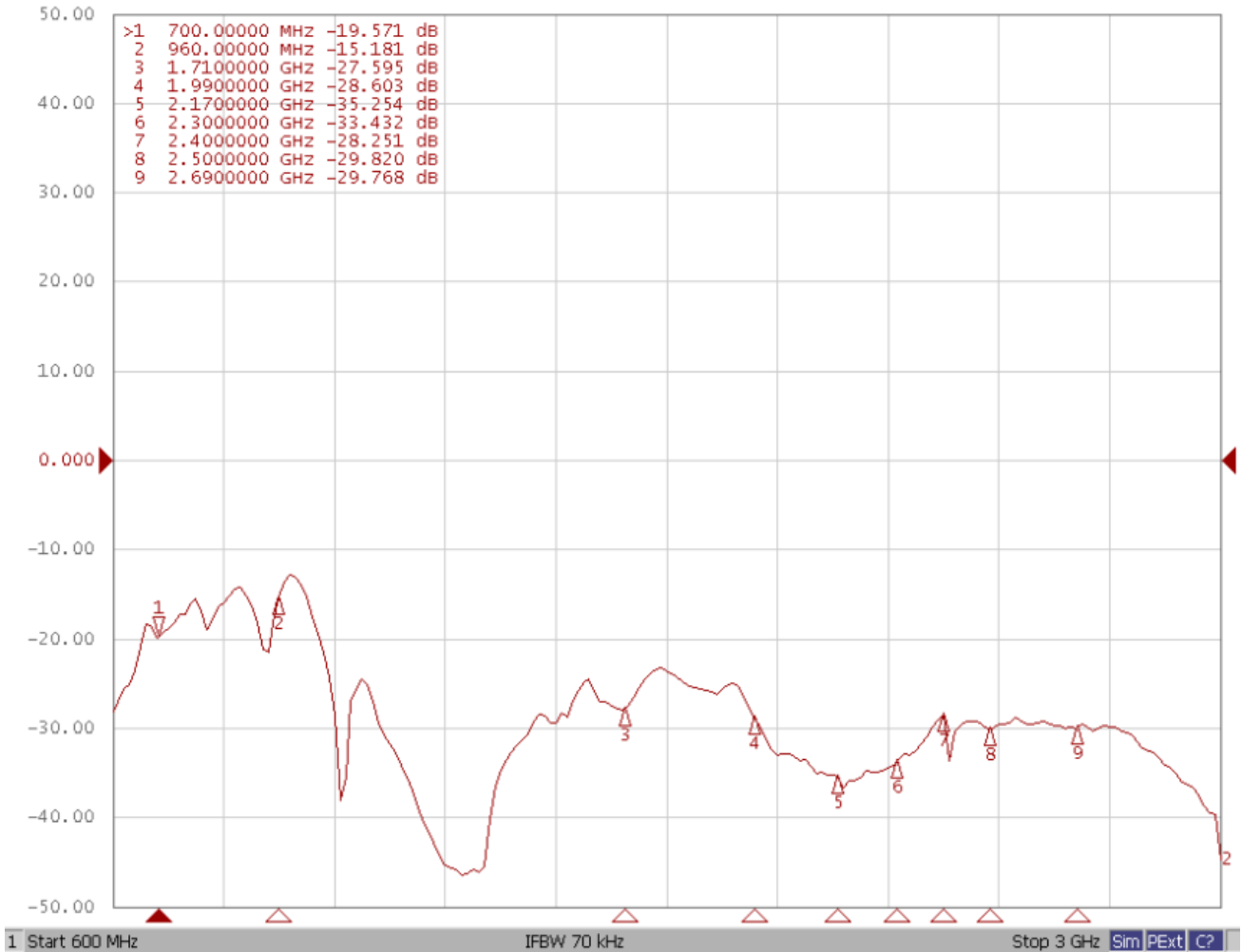
GPS Noise Test Data

MARKER	Frequency/MHz	Noise Factor/dB
1	1575	1.48
2	1601	1.51

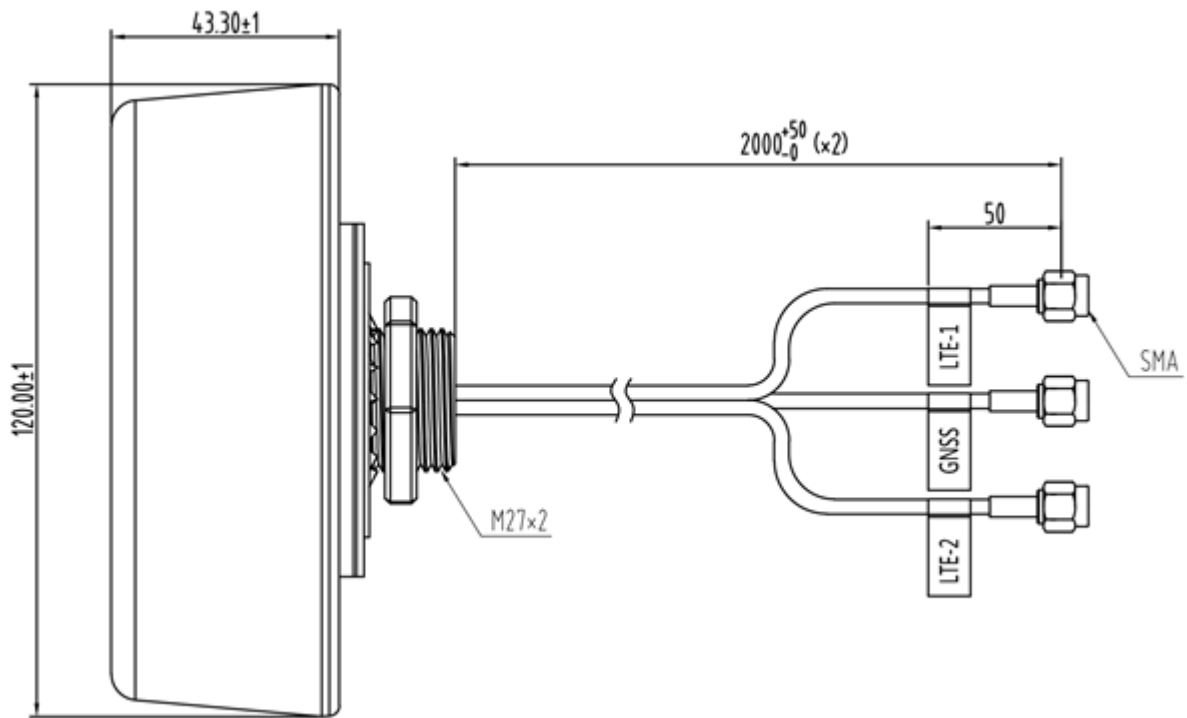
## 4.7. Insulation

- LTE MIMO 1 & LTE MIMO 2

▶ Tr2 S12 Log Mag 10.00dB/ Ref 0.000dB [F2]



## 5 Product Size



## 6 Connect Description

As follows, the default SMA male (center pin) is usually the setting that most users probably choose.



## 7 Installation

- Recommended hole size:  $\Phi 28.0 \pm 0.5$  mm;
- Recommended wall thickness size:  $3.0 \pm 1.0$  mm.

