

# Antenna

# YCGA014AA Datasheet

## Antenna Services

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# About the Document

## Revision History

Version	Date	Author	Note
-	2021-03-25	Kenny YIN/ Xiaodong YANG	Creation of the document
1.0	2021-03-25	Kenny YIN/ Xiaodong YANG	First official release
1.1	2022-05-10	Kenny YIN/ Aria CHU	Updated the data (Chapter 2, 4 and 6).

## Contents

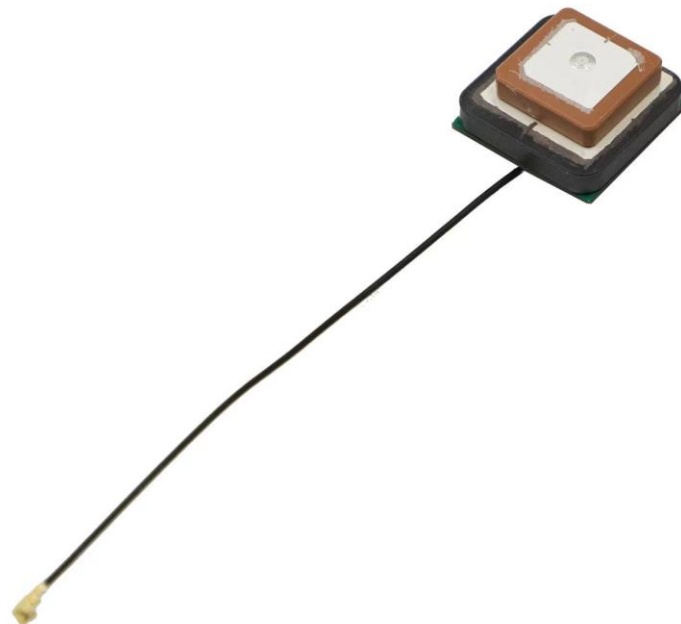
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## 1 Product Description

This Quectel GNSS antenna adopts a diversity of forms to guarantee the most suitable polarization type. Quectel's positioning products support single-band or multi-band operation modes to meet various high-precision positioning requirements of customers' products. Quectel provides both passive and active antennas to satisfy the customer demand for high gain. Such antenna supports different installation or connection methods such as pin mount, surface mount, magnetic mount, internal cable, and external SMA. Customized connector type and cable length are provided according to requirements.

## 2 Product Features

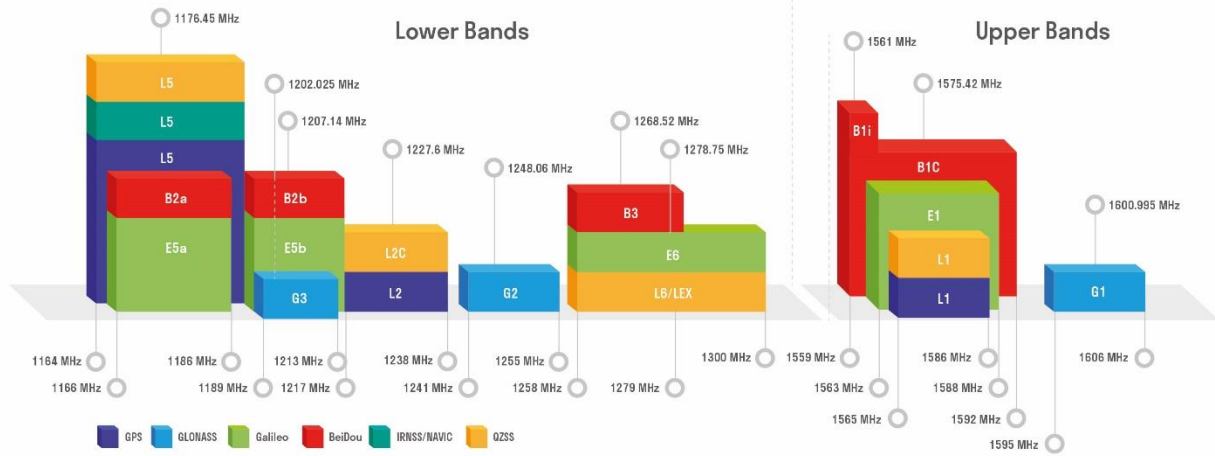
- GPS L1/L5 & GLONASS L1
- High efficiency
- Excellent performance



### 3 GNSS Frequency Band Checklist

GNSS Frequency Bands (MHz)					
GPS	<b>L1</b> Centre 1575.42 (1565–1586)	<b>L2</b> Centre 1227.6 (1217–1238)	<b>L5</b> Centre 1176.45 (1164–1189)		
	•	-	•		
GLONASS	<b>G1/L1OC/L1OF</b> Centre 1601 (1595–1606)	<b>G2/L2OC/L2OF</b> Centre 1248.06 (1241–1255)	<b>G3/L3OC</b> Centre 1202.025 (1189–1213)		
	•	-	-		
GALILEO	<b>E1</b> Centre 1575.42 (1563–1588)	<b>E5a</b> Centre 1176.45 (1166–1187)	<b>E5b</b> Centre 1207.14 (1197–1218)	<b>E6</b> Centre 1278.75 (1258–1300)	
	•	•	-	-	
BEIDOU	<b>B1I</b> Centre 1561.098 (1559–1564)	<b>B1C (BeiDou-3)</b> Centre 1575.42 (1559–1592)	<b>B2a/B2I</b> Centre 1176.45 (1166–1187)	<b>B2b</b> Centre 1207.14 (1197–1217)	<b>B3</b> Centre 1268.52 (1258–1279)
	-	•	•	-	-
QZSS	<b>L1</b> Centre 1575.42 (1573–1578)	<b>L2C</b> Centre 1227.6 (1226–1229)	<b>L5</b> Centre 1176.45 (1166–1187)	<b>L6</b> Centre 1278.75 (1257–1300)	
	•	-	•	-	
IRNSS	<b>L5</b> Centre 1176.45 (1164–1189)				
	•				

### GNSS Bands and Constellations





## 4 Product Specifications

### Passive Electrical Specifications

Frequency Range	GPS L5: 1176.45 MHz GPS L1: 1575.42 MHz, GLONASS L1: 1602 MHz
Input Impedance	50 $\Omega$
VSWR	$\leq 3.0$
Max. Total Gain	$\leq -0.5$ dBi
Polarization Type	RHCP

### LNA Electrical Properties

Gain	17 $\pm$ 3 dB
Noise Figure	< 2.5 dB
Output VSWR	< 2.0
Impedance	50 $\Omega$
Voltage	DC 2.7–3.3 V
Working Current	$\leq 45$ mA @ 3 V

### Mechanical Specifications

Antenna Size	25 mm $\times$ 25 mm $\times$ 11.9 mm
Cable Type	$\Phi$ 1.13 Black
Material	Ceramics + PCB
Connector Type	IPEX MHF I
Working Temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Weight	Typ. 165 g

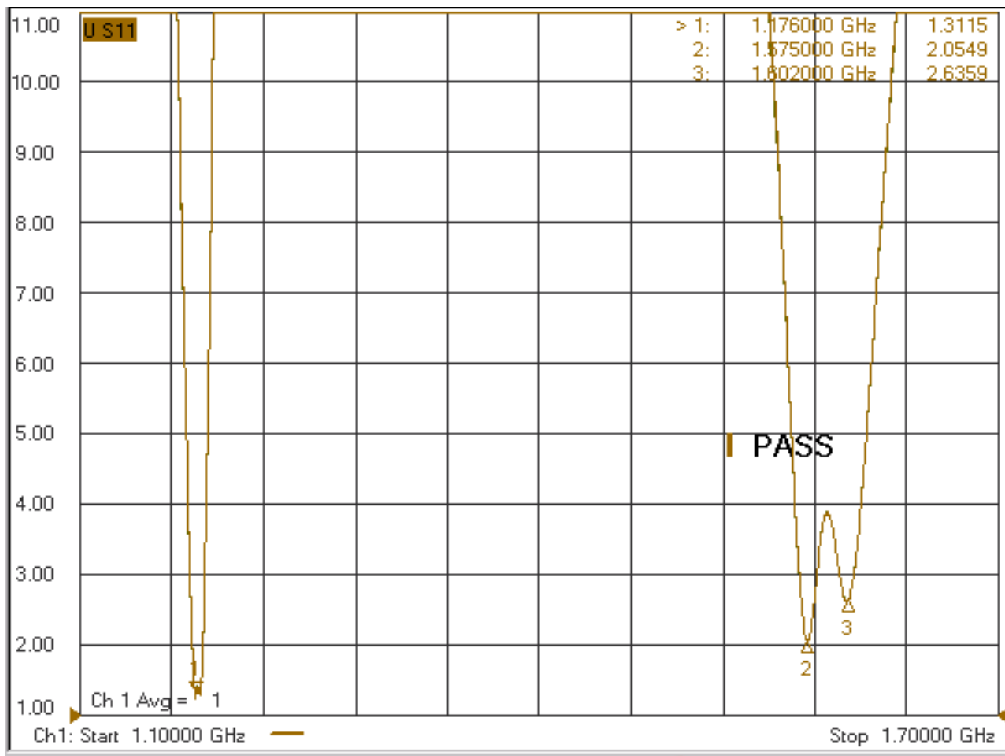
## 5 Overall Performance

### 5.1. Test Environment

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

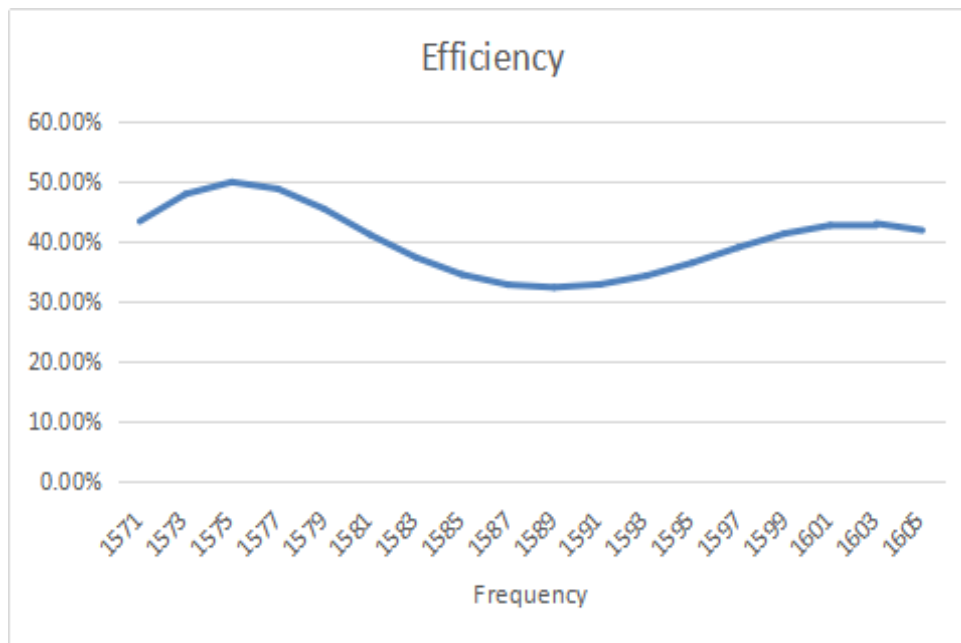
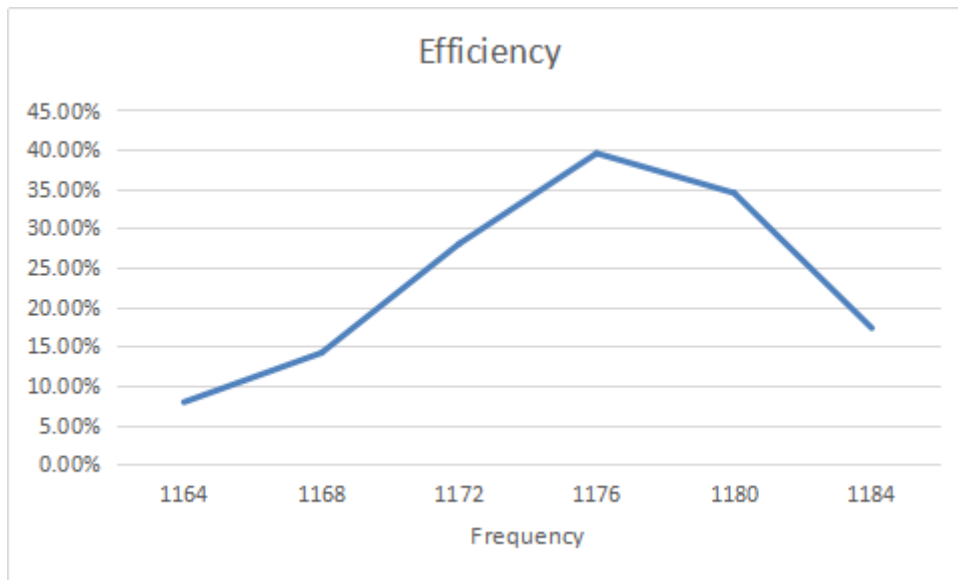


## 5.2. VSWR



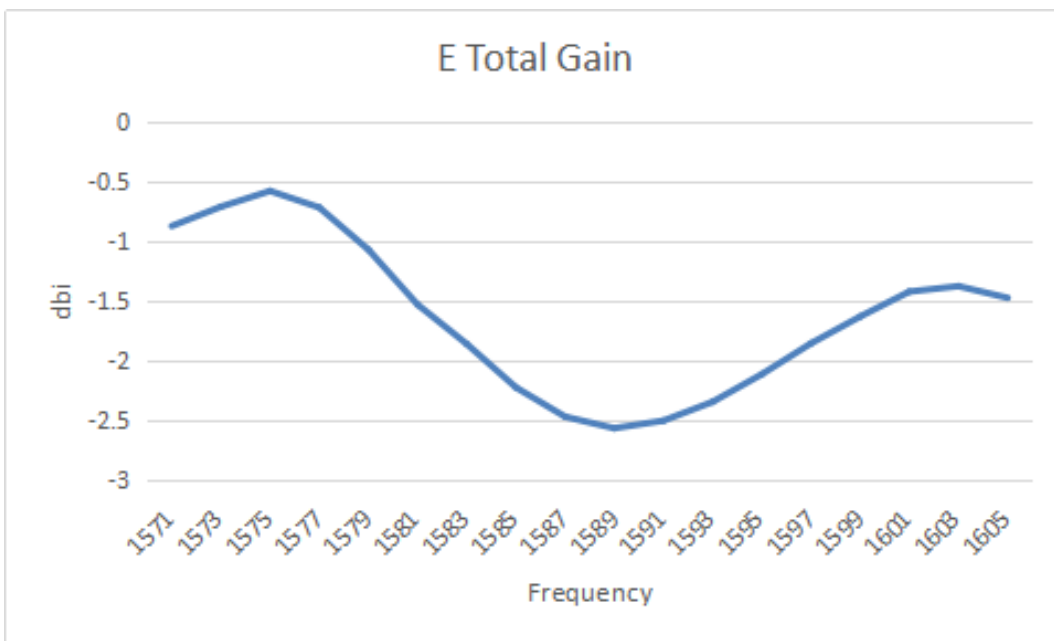
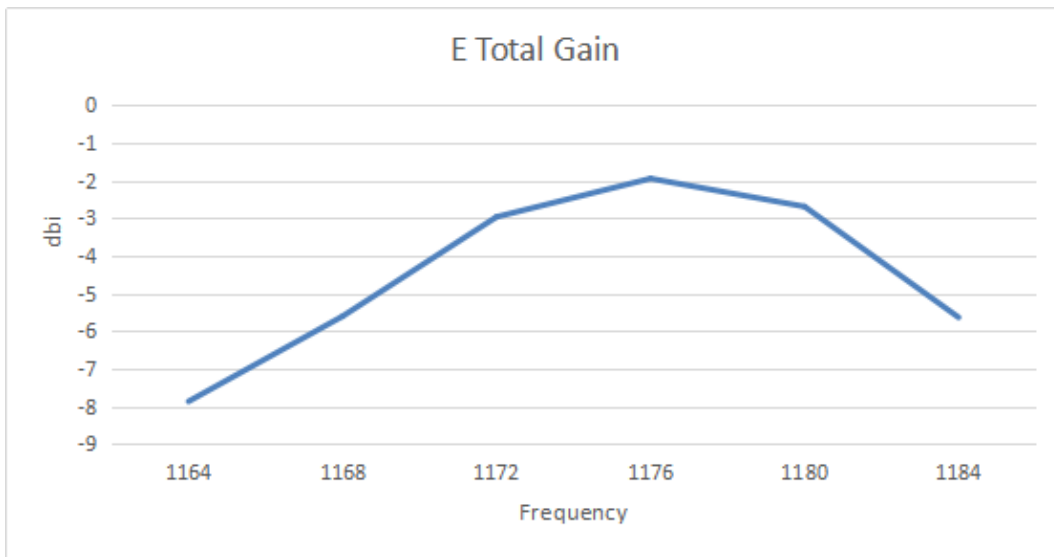
Frequency (MHz)	1176	1575	1602
VSWR	1.31	2.05	2.63

### 5.3. Efficiency



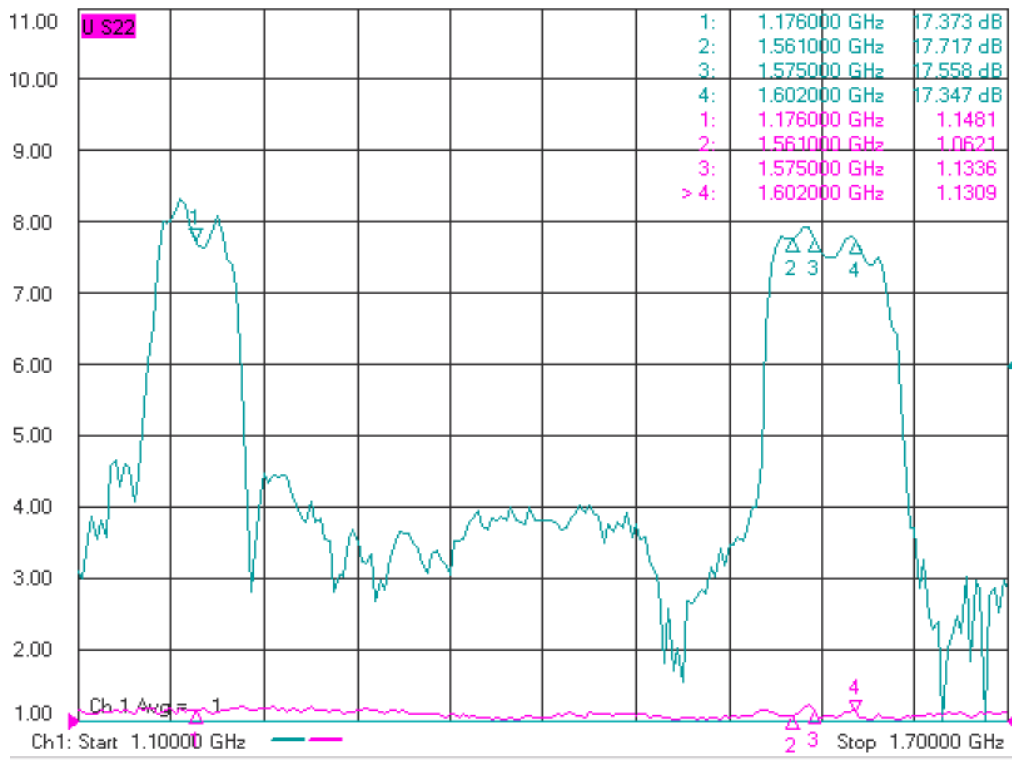
<b>Frequency (MHz)</b>	1176	1575	1602
<b>Efficiency (%)</b>	36	50	42

### 5.4. Gain



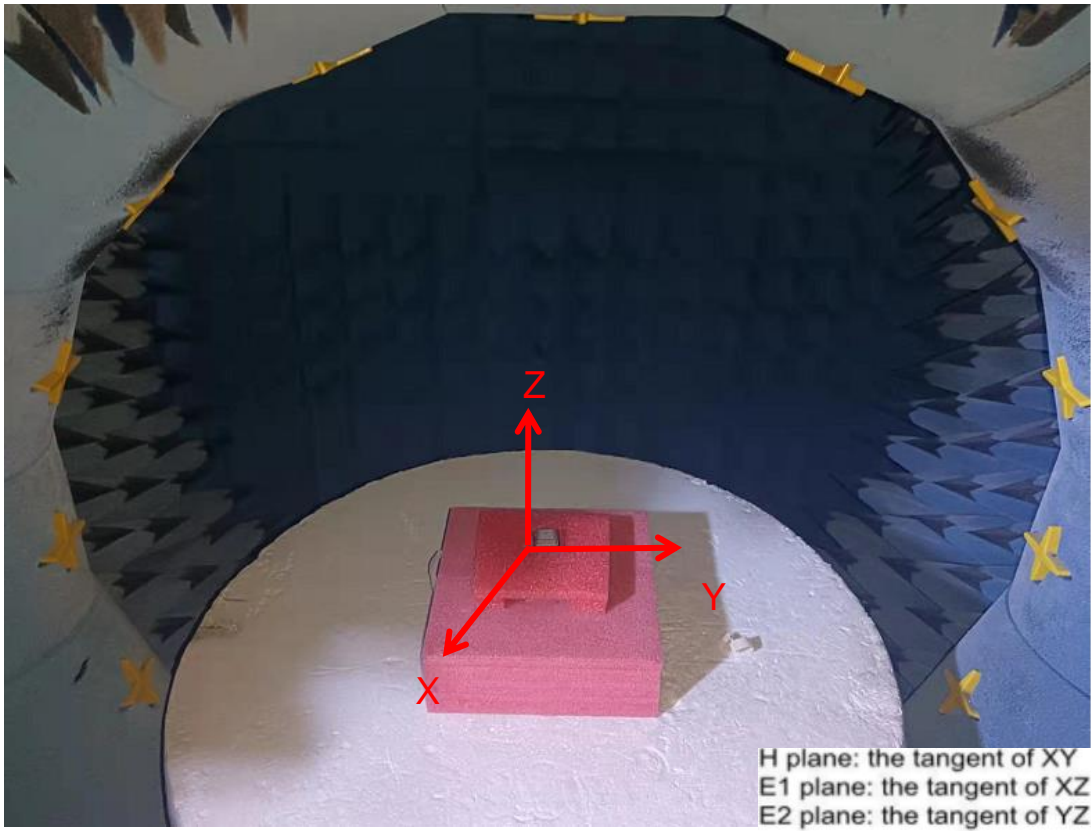
<b>Frequency (MHz)</b>	1176	1575	1602
<b>Gain (dBi)</b>	-1.6	-0.75	-1.6

### 5.5. LNA Gain

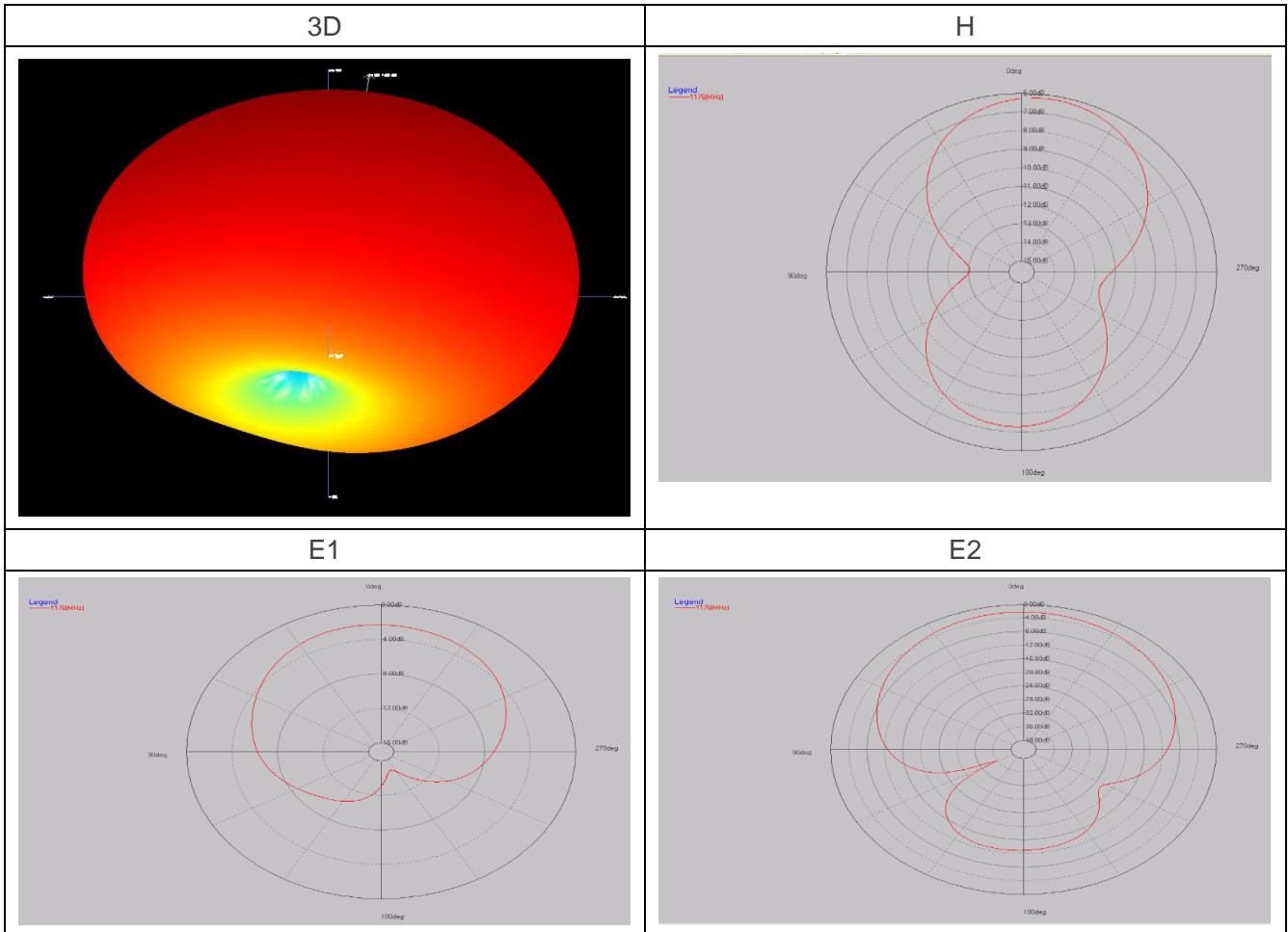


Frequency (MHz)	1176	1575	1602
Gain (dB)	17.3	17.5	17.3

### 5.6. Radiation Pattern

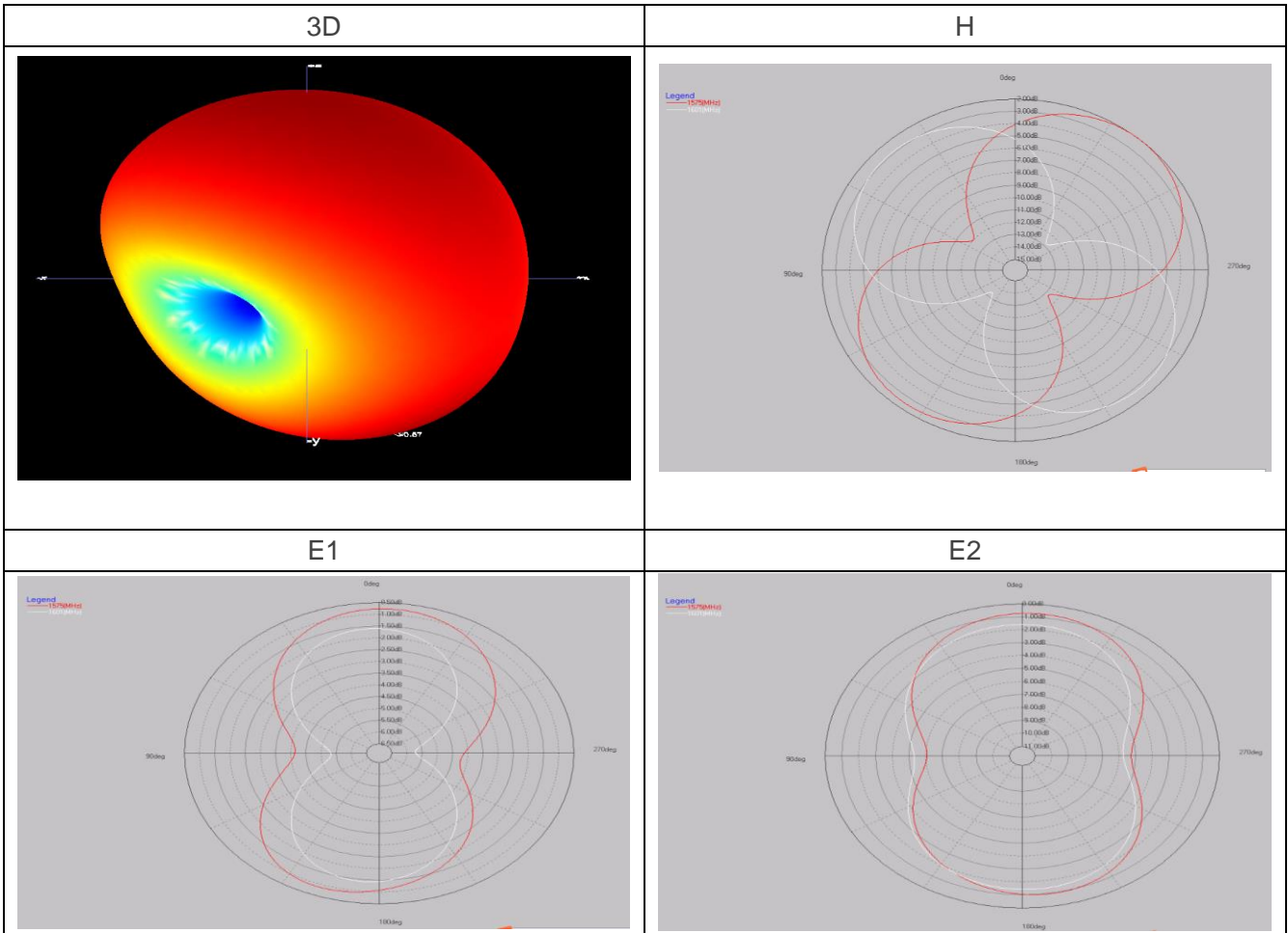


**GPS L5**



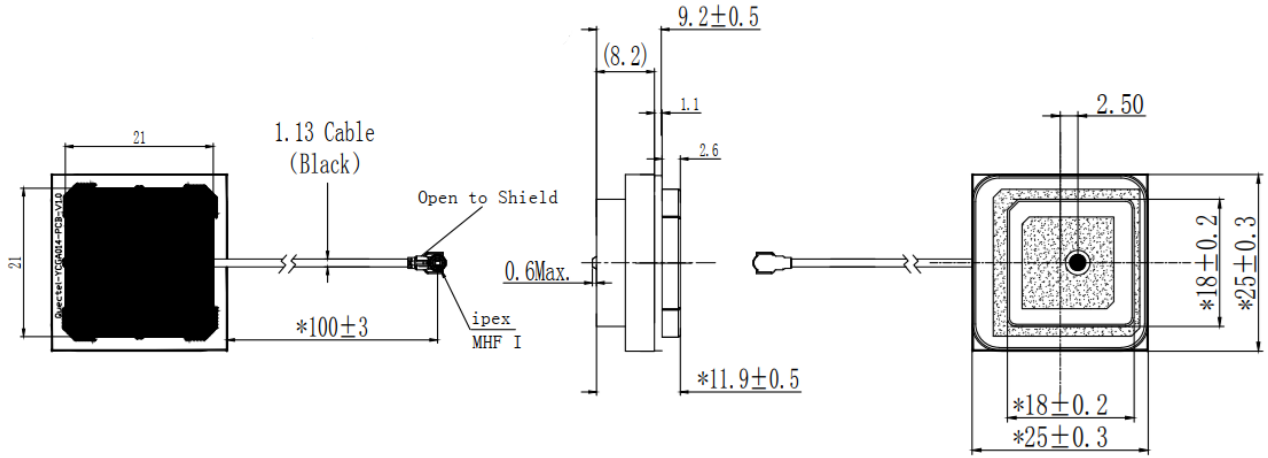


GPS L1 & GLONASS L1



## 6 Product Size

RoHS



## 7 Packaging

S/N	Content	QTY	Remark
1		30	<ul style="list-style-type: none"> <li>● 30 pcs per EPE tray.</li> <li>● Size: 370 mm × 255 mm × 27 mm</li> </ul>
2		150	<ul style="list-style-type: none"> <li>● EPE tray with vacuum packing.</li> <li>● 5 layers.</li> <li>● Place 1 EPE tray at the top and bottom of the carton.</li> </ul>
3		150	<p>Carton Size: 390 (L) mm × 270 (W) mm × 150 (H) mm</p>