



# Antenna Datasheet

**Product OC:** YFGA012E3BM

**Version:** 1.0

**Date:** 2024-04-24

**Status:** Released

**Product Name:** Passive GPS L1 Antenna

**Key Features:**

Frequency Band: 1565–1586 MHz

Dimensions: 12 × 12 × 7.5 mm

Peak Gain: -1.7 dBi

RoHS and REACH Compliant

# Overview

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 IPEX. Customized connector type and cable length are provided according to requirements.

# Contents

Overview.....	1
Contents .....	2
<b>1 Specification.....</b>	<b>3</b>
1.1. Electrical.....	3
1.2. Mechanical & Environmental .....	4
1.3. Supported GNSS Frequency Bands.....	5
<b>2 Drawing .....</b>	<b>7</b>
<b>3 Detailed Performance .....</b>	<b>8</b>
3.1. S-Parameter Test .....	8
3.1.1. VSWR.....	8
3.1.2. Return Loss .....	9
3.2. Radiation Performance Test.....	10
3.2.1. Efficiency .....	10
3.2.2. Peak Gain.....	11
3.2.3. 3D & 2D Radiation Pattern.....	12
<b>4 Packaging .....</b>	<b>14</b>
<b>Contact Us.....</b>	<b>16</b>
<b>Legal Notices .....</b>	<b>17</b>
<b>Revision History .....</b>	<b>19</b>

# 1 Specification

Test Condition: Free Space

## 1.1. Electrical

Electrical	
Frequency Range	1565–1586 MHz
Impedance	50 $\Omega$
Polarization	RHCP
Radiation Pattern	Directional

<div>Band</div> <div>Frequency (MHz)</div>	GPS L5 GALILEO E5a BDS B2a- B2I QZSS L5 IRNSS L5	GALILEO E5b BDS B2b	GPS L2 QZSS L2C	GLONASS G2	BDS B3	BDS B1I	GPS L1 GALILEO E1 BDS B1C QZSS L1	GLONASS G1
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.36	-
Return Loss (dB)	-	-	-	-	-	-	-16.2	-
Efficiency (%)	-	-	-	-	-	-	36	-
Peak Gain (dBi)	-	-	-	-	-	-	-1.7	-

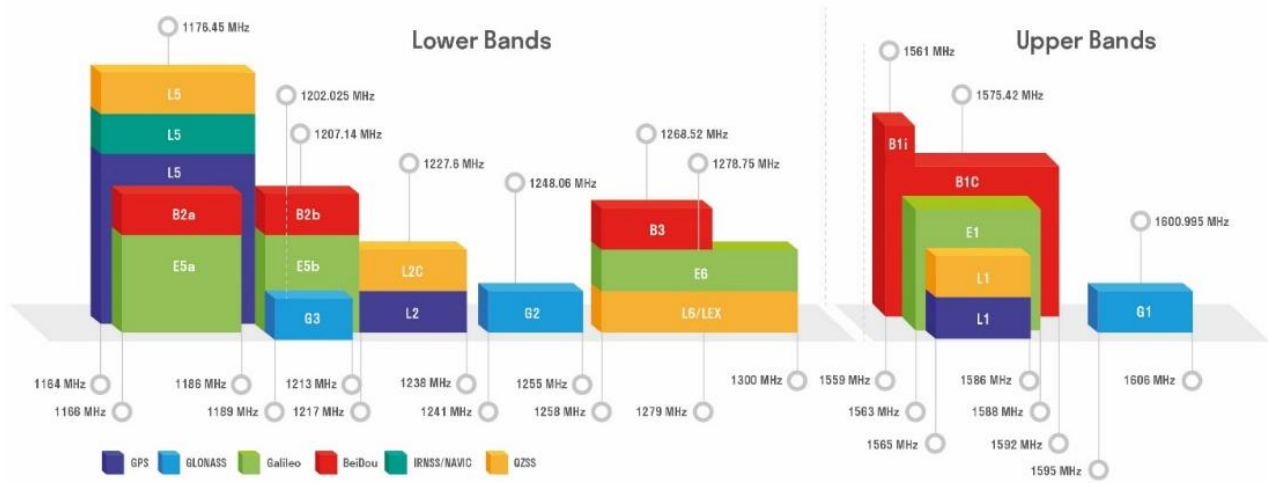
## 1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	12 × 12 × 7.5 mm
Material & Color	PCB + Ceramic + RF Cable
Cable Type & Length	Φ 1.13 mm & Black & 100 mm
Connector Type	IPEX MHF1
Mounting Type	Adhesive / Buckle
Weight	Typ. 4.3 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS & REACH Compliant	Yes

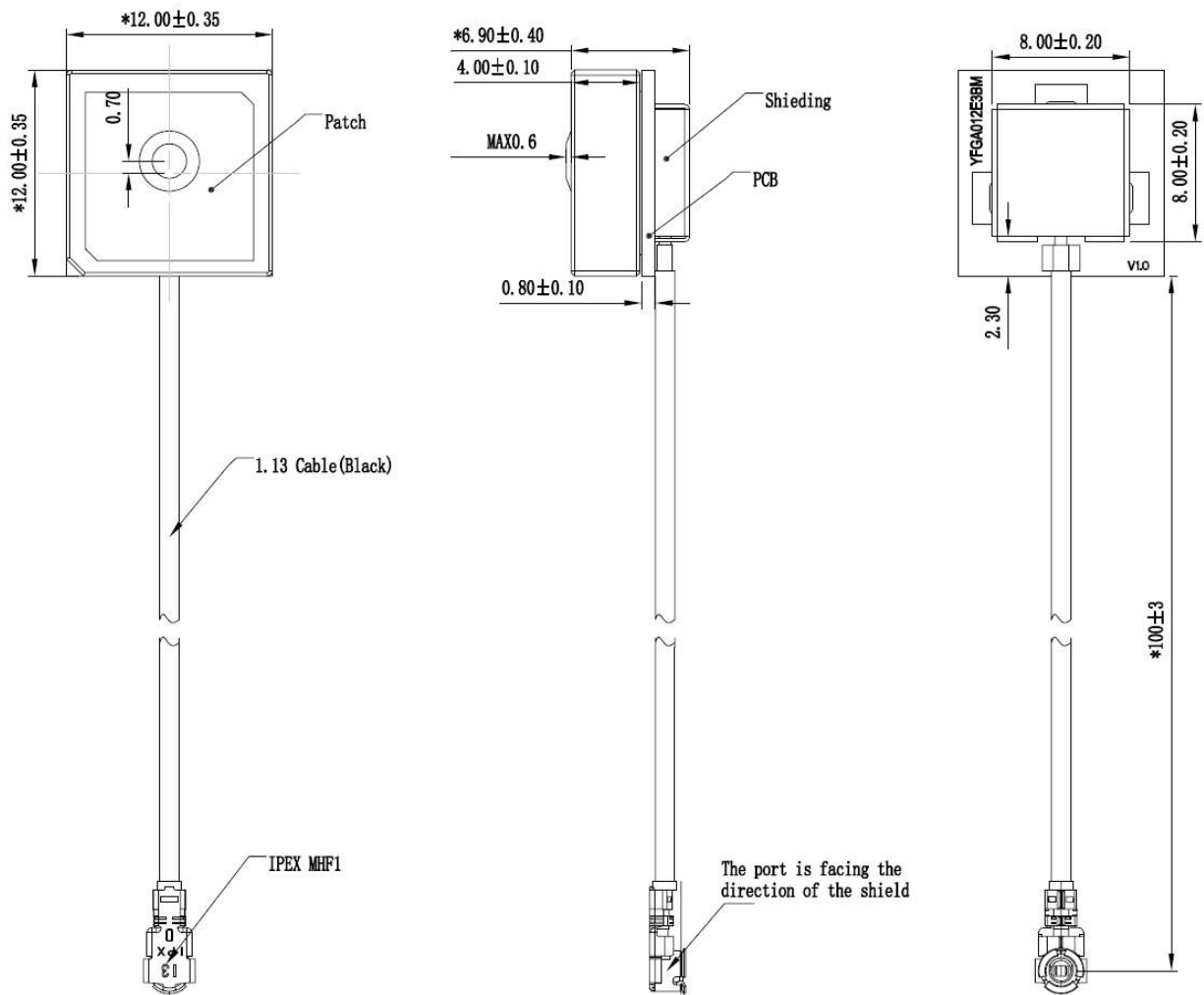
### 1.3. Supported GNSS Frequency Bands

GNSS Frequency Bands (MHz)					
<b>GPS</b>	<b>L1</b> Centre 1575.42 (1565–1586)	<b>L2</b> Centre 1227.6 (1217–1238)	<b>L5</b> Centre 1176.45 (1164–1189)		
	√	-	-		
<b>GLONASS</b>	<b>G1-L10C-L10F</b> Centre 1601 (1595–1606)	<b>G2-L20C-L20F</b> Centre 1248.06 (1241–1255)	<b>G3-L30C</b> Centre 1202.025 (1189–1213)		
	-	-	-		
<b>GALILEO</b>	<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)	
	√	-	-	-	
<b>BDS</b>	<b>B1I</b> Centre 1561.098 (1559–1564)	<b>B1C (BDS-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)
	-	√	-	-	-
<b>QZSS</b>	<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)	
	√	-	-	-	
<b>IRNSS</b>	<b>L5</b> Centre 1176.45 (1164–1189)				
	-				

## GNSS Bands and Constellations



## 2 Drawing

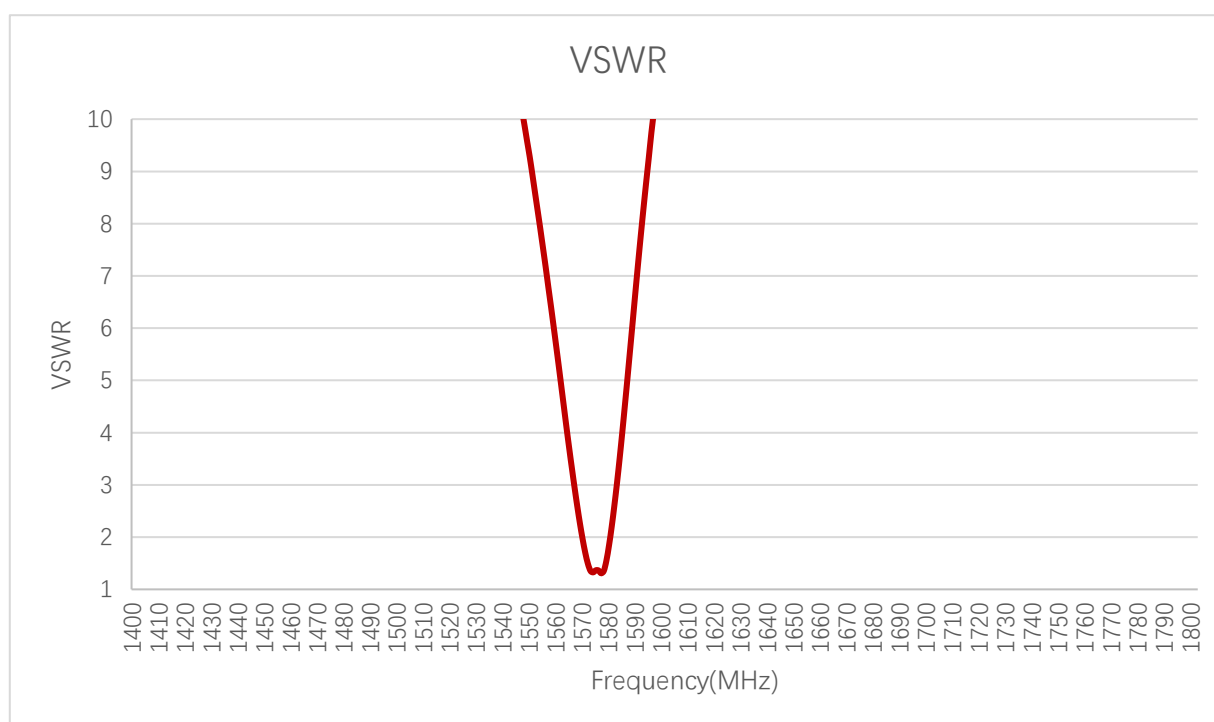




## 3 Detailed Performance

### 3.1. S-Parameter Test

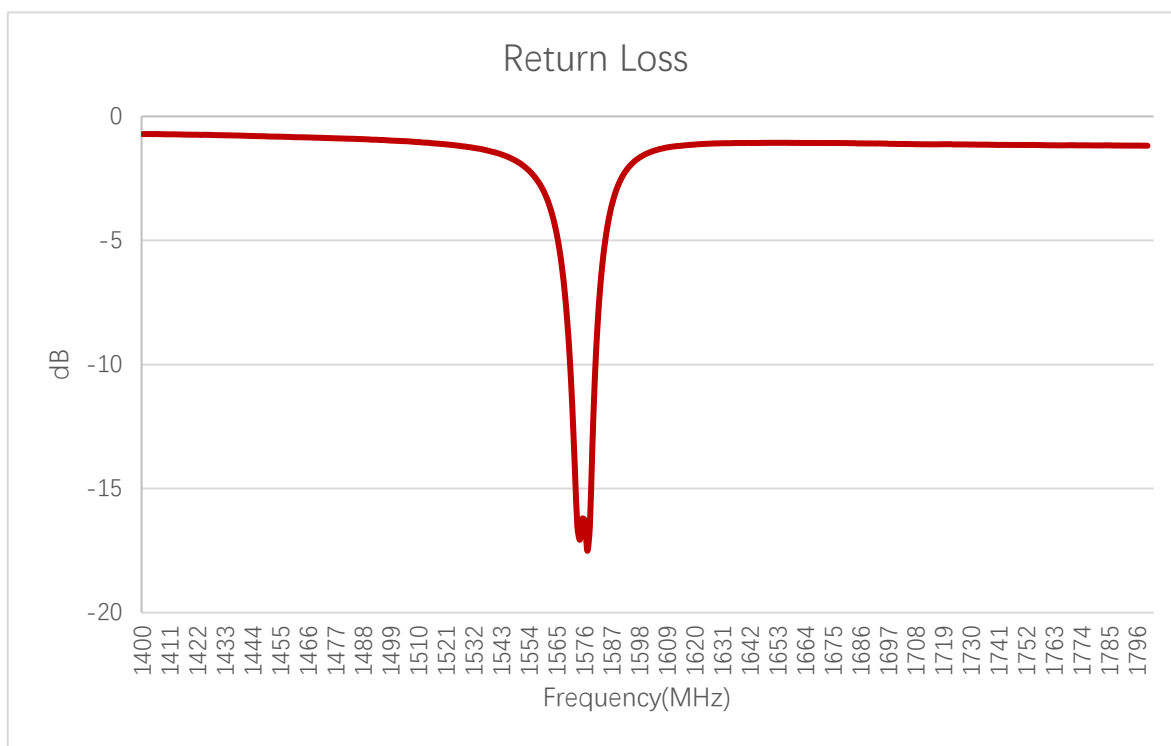
#### 3.1.1. VSWR



**VSWR**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.36	-

### 3.1.2. Return Loss

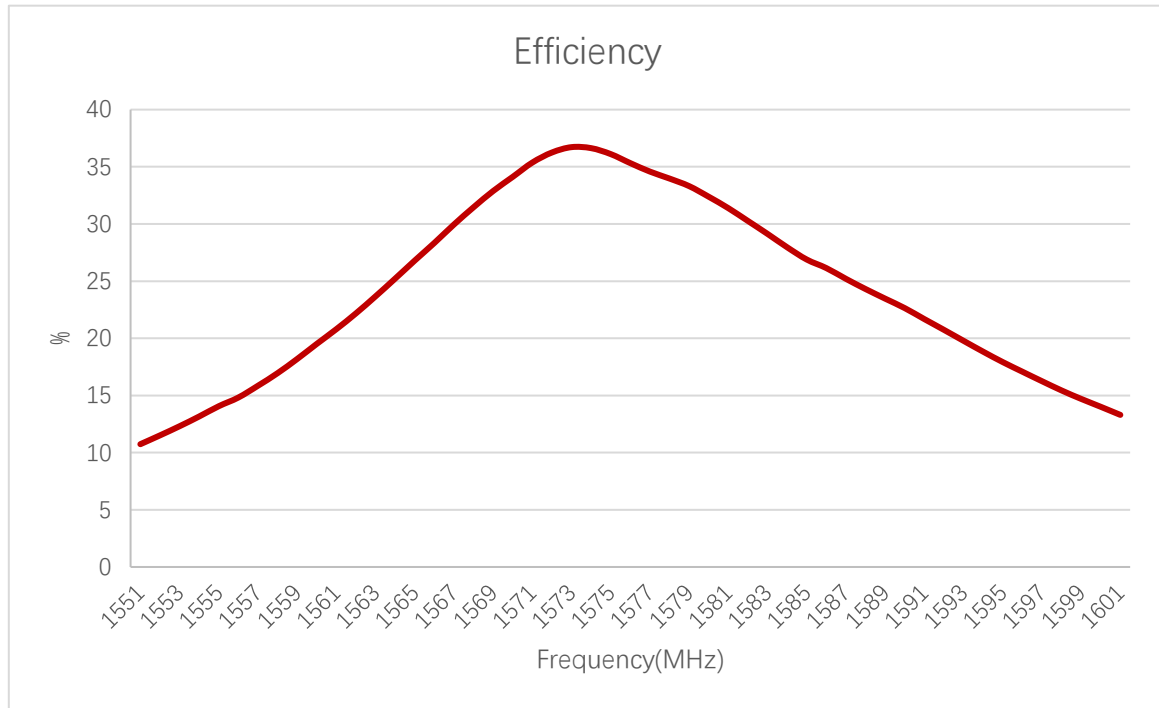


**Return Loss (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-	-16.2	-

## 3.2. Radiation Performance Test

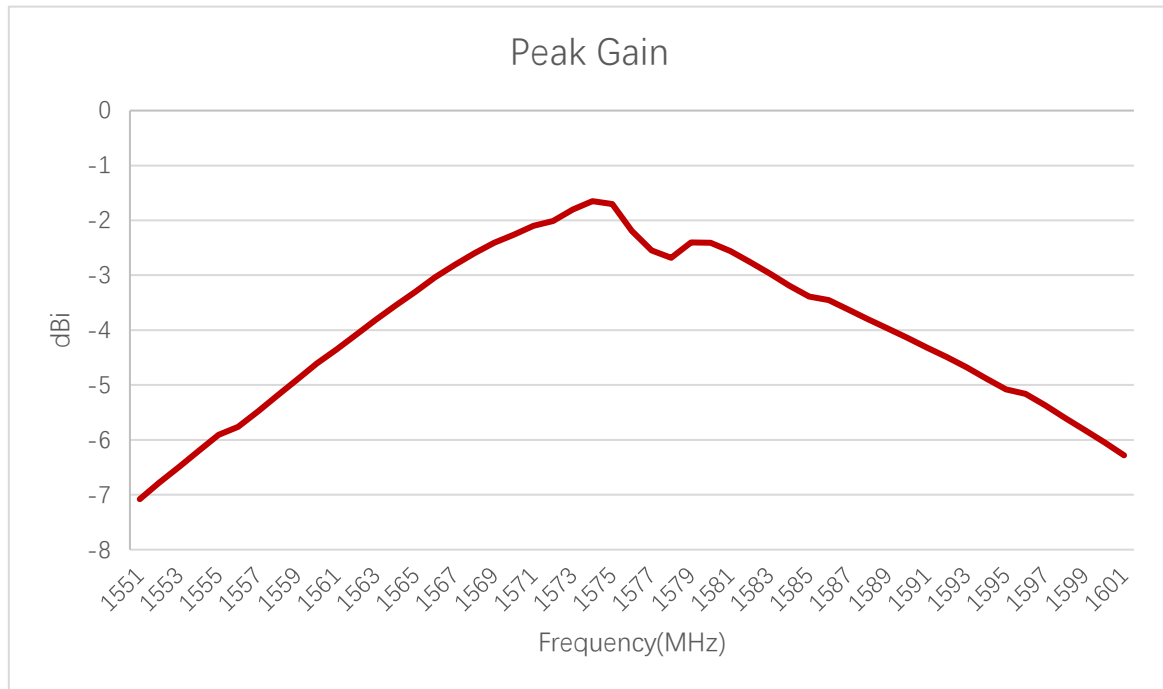
### 3.2.1. Efficiency



**Efficiency (%)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	-	36	-

### 3.2.2. Peak Gain

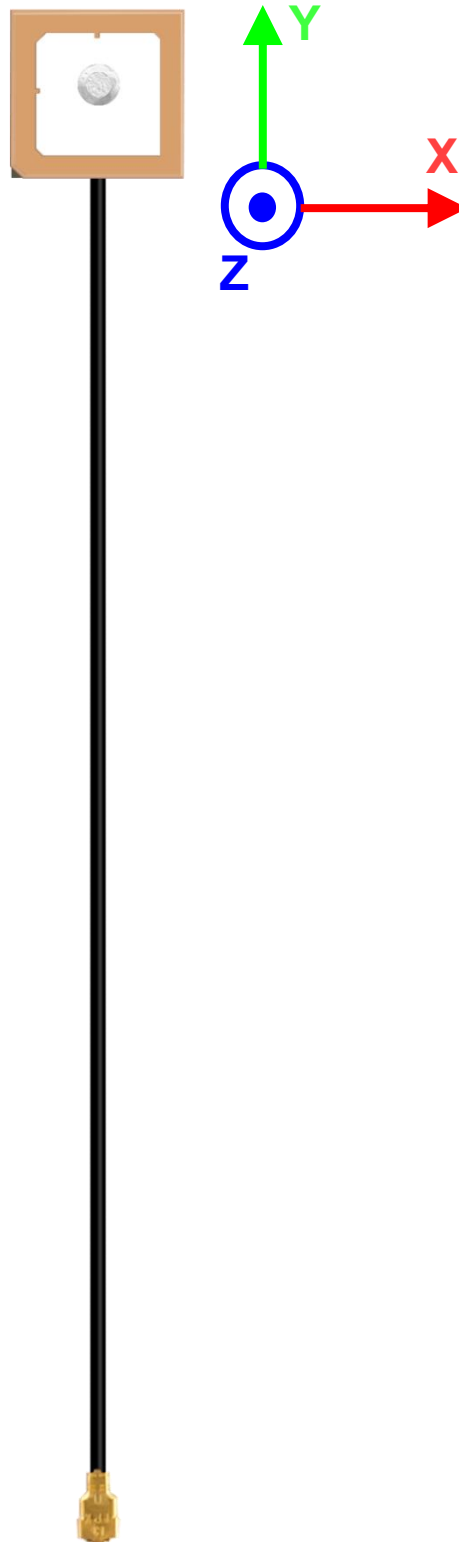


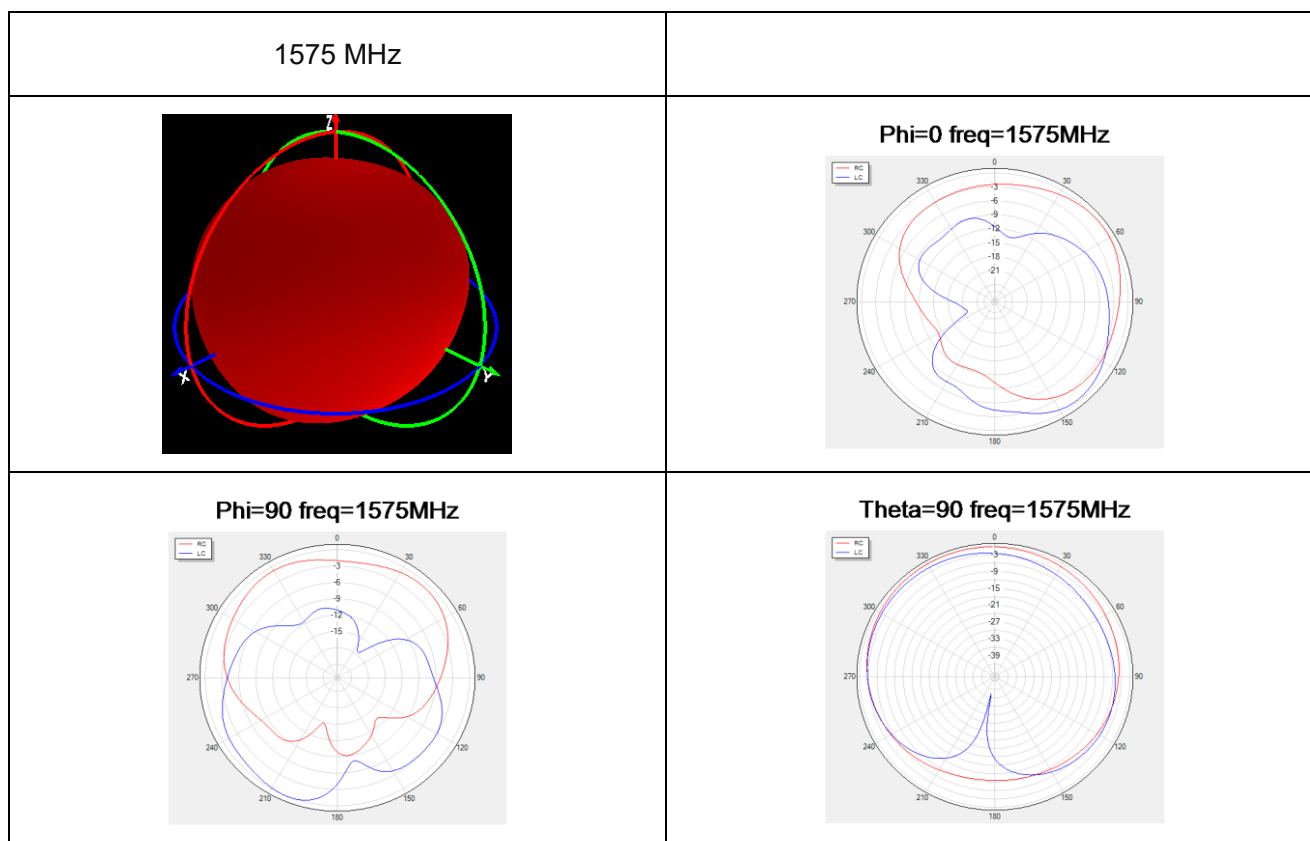
**Peak Gain (dBi)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-		-1.7	

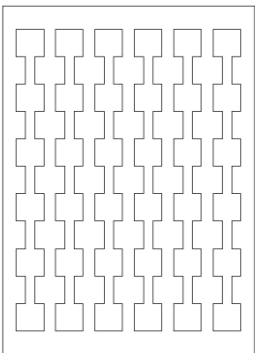
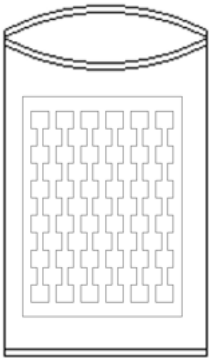
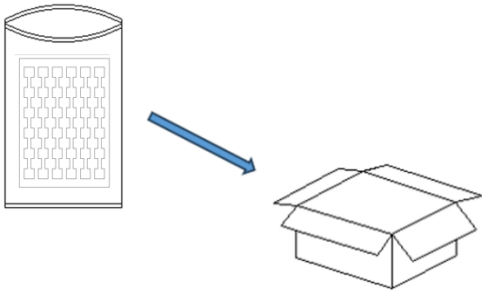
### 3.2.3. 3D & 2D Radiation Pattern

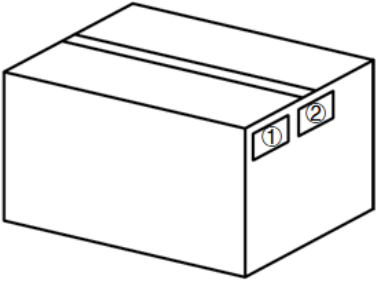
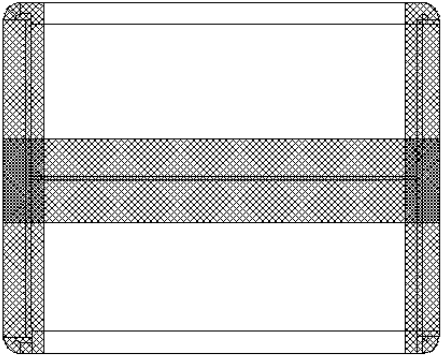
- Test Condition: Free Space
- Test Chamber: SH-SY-16M





## 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		(36 PCS Antennas / Pearl Cotton Tray)
2		The pearl cotton tray is vacuummed in a vacuum bag.
3		(5 Pearl Cotton Trays / Carton Box) (180 PCS Antennas / Carton Box)  <u>Carton Size:</u> <u>L × W × H = 405 × 293 × 185 mm</u>

4		<p><b>Position for Attaching Labels</b></p> <p>① Carton Label</p> <p>② Quality Label</p>
5		<p><b>Sealing Cartons</b></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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## Revision History

Version	Date	Author	Note
-	2024-04-24	Junsen LI/ Poker GUO/ David LIU/ Rainey LIAO	Creation of the document
1.0	2024-04-24	Junsen LI/ Poker GUO/ David LIU/ Rainey LIAO	First official release



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