



# Antenna Datasheet

**Product OC:** YEGM007BA

**Version:** 2.1

**Date:** 2023-12-05

**Status:** Released

**Product Name:** Active GPS L1 & GLONASS G1 Antenna

**Key Features:**

Frequency Band: 1565–1606 MHz

Dimensions: 50.9 mm × 38.6 mm × 17 mm

Efficiency: Up to 54.5 %

RoHS Compliant

LNA Gain: 20 ±3 dB

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

# Contents

<b>Overview</b> .....	<b>1</b>
<b>Contents</b> .....	<b>2</b>
<b>1 Specification</b> .....	<b>3</b>
1.1. Electrical.....	3
1.2. Mechanical & Environmental .....	4
1.3. Block Diagram (Active Antenna).....	5
1.4. Supported GNSS Frequency Bands.....	6
<b>2 Drawing</b> .....	<b>8</b>
<b>3 Detailed Performance</b> .....	<b>9</b>
3.1. S-Parameter Test .....	9
3.1.1. VSWR.....	9
3.1.2. Return Loss .....	10
3.1.3. GNSS LNA Gain.....	11
3.1.4. GNSS Noise Figure.....	12
3.2. Radiation Performance Test.....	13
3.2.1. Efficiency .....	13
3.2.2. Peak Gain.....	14
3.2.3. 3D & 2D Radiation Pattern.....	15
<b>4 Packaging</b> .....	<b>17</b>
<b>Contact Us</b> .....	<b>19</b>
<b>Legal Notices</b> .....	<b>20</b>
<b>Revision History</b> .....	<b>22</b>

# 1 Specification

Test Condition: Free Space

## 1.1. Electrical

Electrical	
Frequency Range	1565–1606 MHz
Impedance	50 Ω
Polarization	RHCP
Radiation Pattern	Directional

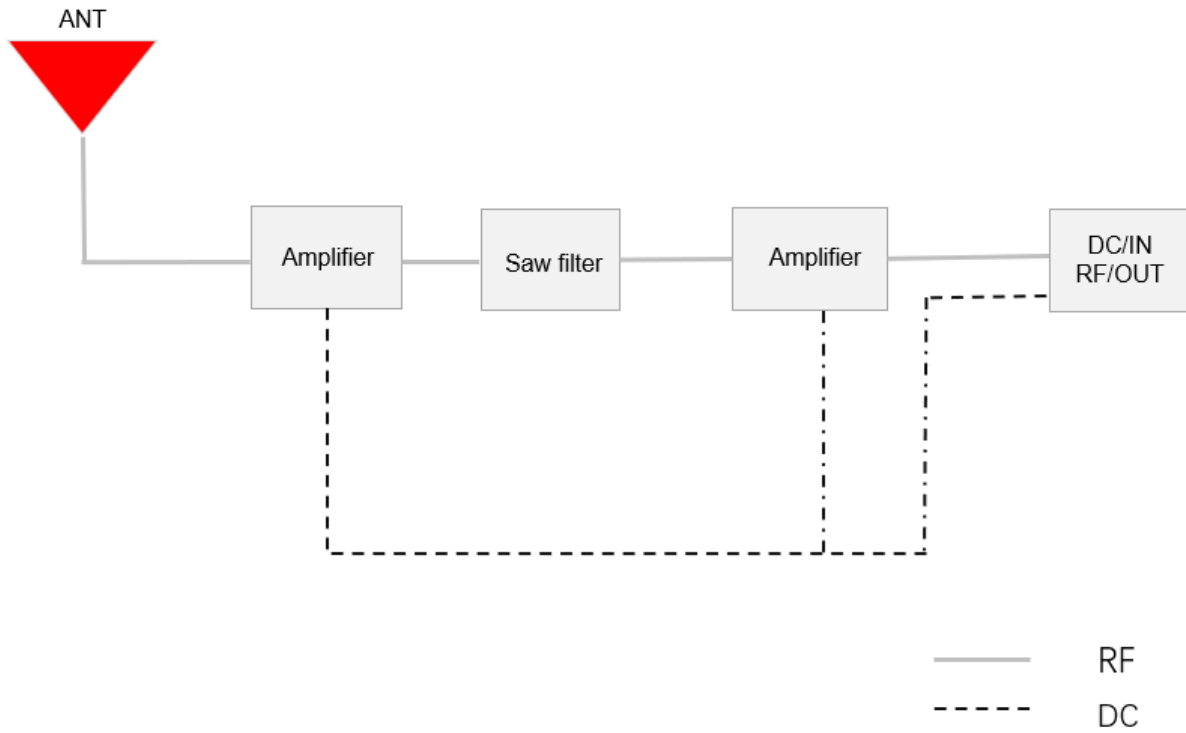
Band	GPS L5	GALILEO	GPS L2	GLONASS	BEIDOU	BEIDOU	GPS L1	
	GALILEO E5a	GALILEO E5b	GPS L2 QZSS L2C	GLONASS G2	BEIDOU B3	BEIDOU B1I	GALILEO E1	GLONASS G1
Frequency (MHz)	BEIDOU B2a-B2I	BEIDOU B2b					BEIDOU B1C	
	QZSS L5						QZSS L1	
	IRNSS L5							
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.3	1.7
Return Loss (dB)	-	-	-	-	-	-	-18.4	-11.7
Efficiency (%)	-	-	-	-	-	-	54.3	51.9
Peak Gain (dBi)	-	-	-	-	-	-	0.6	1.2

LNA Electrical	
LNA Gain	20 ±3 dB
Noise Figure	≤ 1.5 dB
Output VSWR	≤ 2.0
Filter Out-of-band Attenuation	35 dB f0 ±100 MHz f0 (1575 MHz, 1602 MHz)
Working Voltage	3 ±0.3 V
Working Current	13 ±3 mA @ 3 V
Impedance	50 Ω

## 1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	50.9 mm × 38.6 mm × 17 mm
Casing Material & Color	ABS & Black
Cable Type & Color & Length	RG174 & Black & 3000 mm
Connector Type	SMA Male
Mounting Type	Adhesive
Weight	Typ. 56.9 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS Compliant	Yes

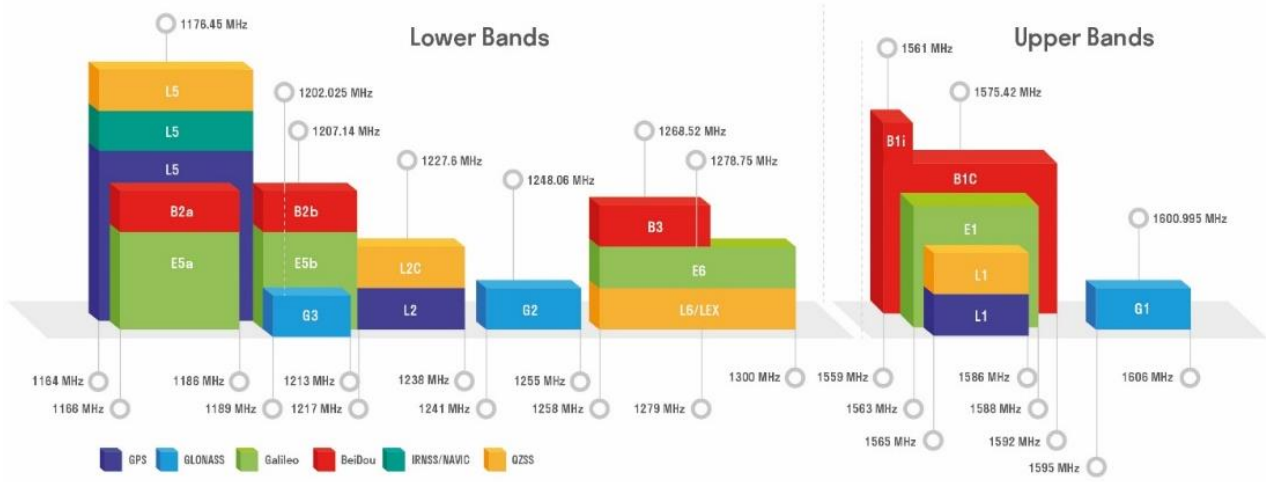
### 1.3. Block Diagram (Active Antenna)



## 1.4. Supported GNSS Frequency Bands

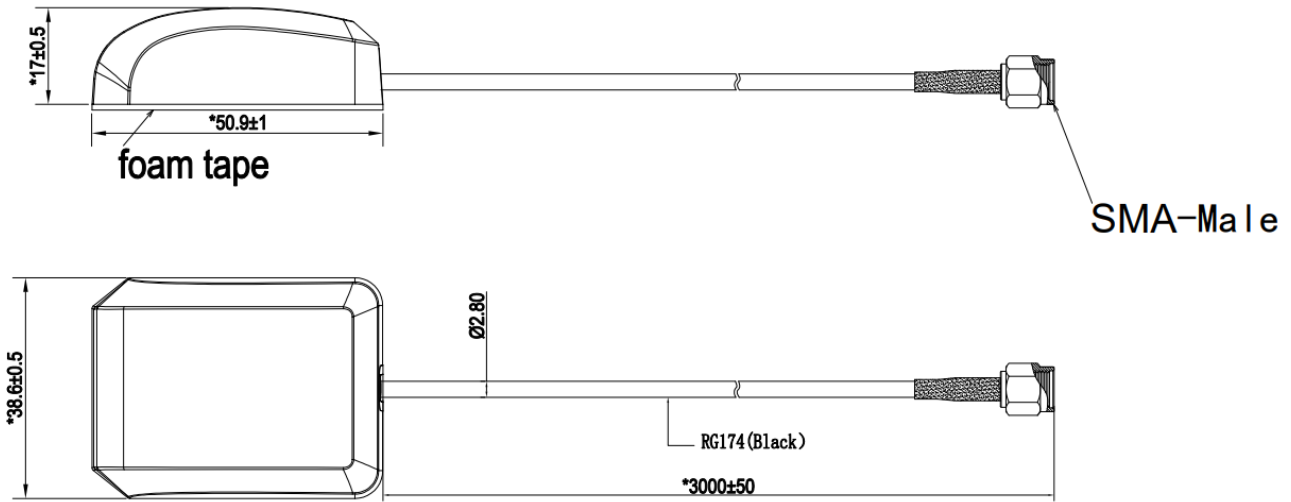
GNSS Frequency Bands (MHz)					
<b>GPS</b>	<b>L1</b> Centre 1575.42 (1565–1586)	<b>L2</b> Centre 1227.6 (1217–1238)	<b>L5</b> Centre 1176.45 (1164–1189)		
	√	-	-		
<b>GLONASS</b>	<b>G1-L10C-L10F</b> Centre 1601 (1595–1606)	<b>G2-L20C-L20F</b> Centre 1248.06 (1241–1255)	<b>G3-L30C</b> Centre 1202.025 (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>BEIDOU</b>	<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)
	-	√	-	-	-
<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





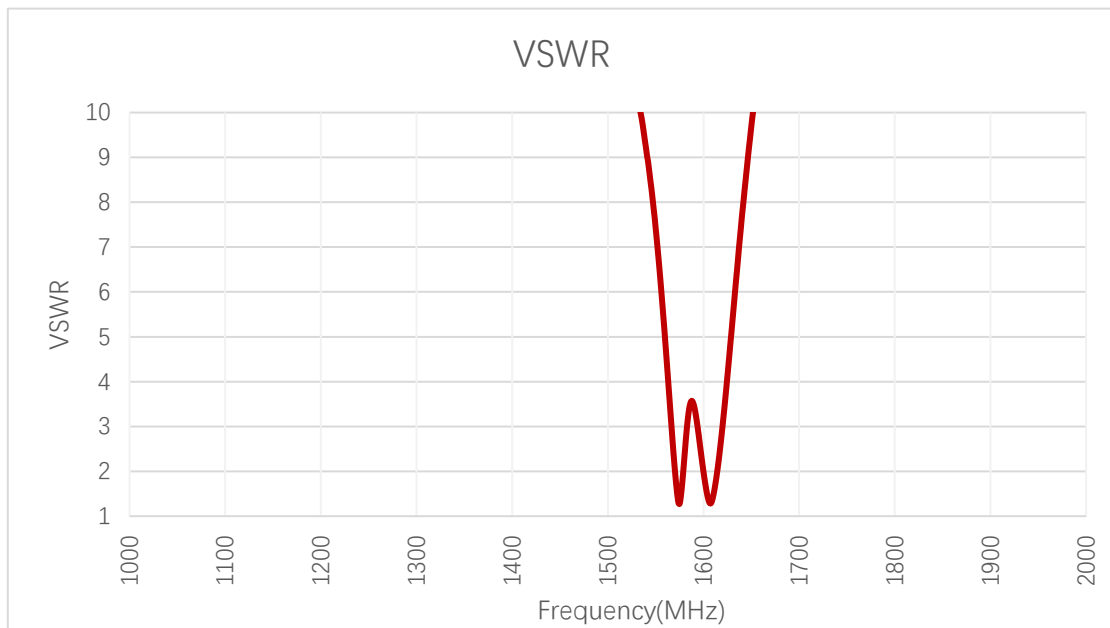
# 2 Drawing



# 3 Detailed Performance

## 3.1. S-Parameter Test

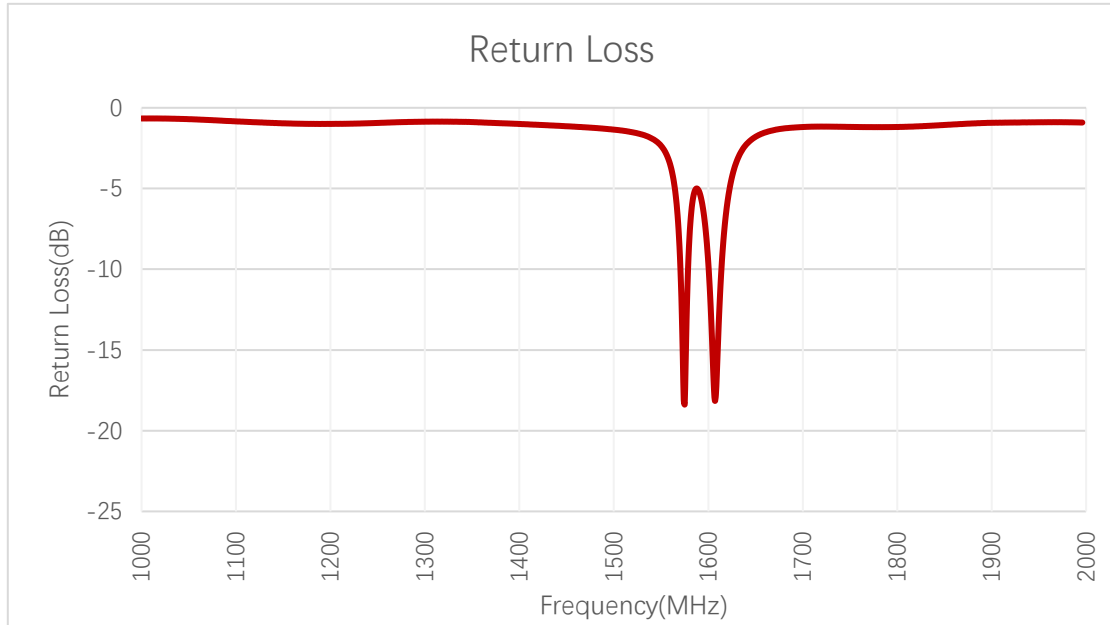
### 3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.3	1.7

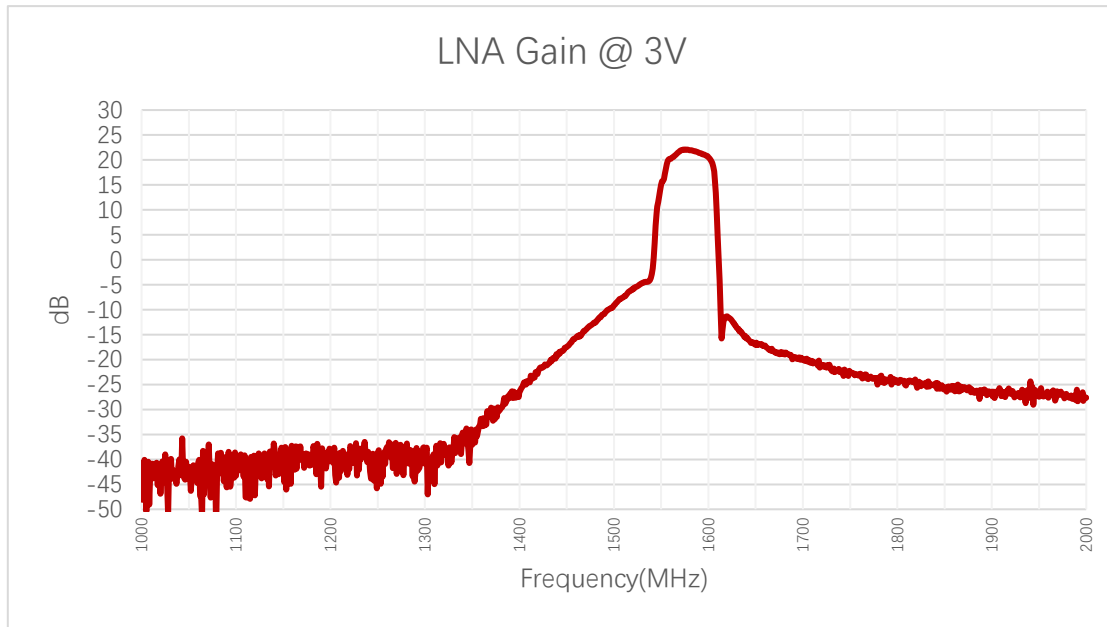
**3.1.2. Return Loss**



**Return Loss (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-	-18.4	-11.7

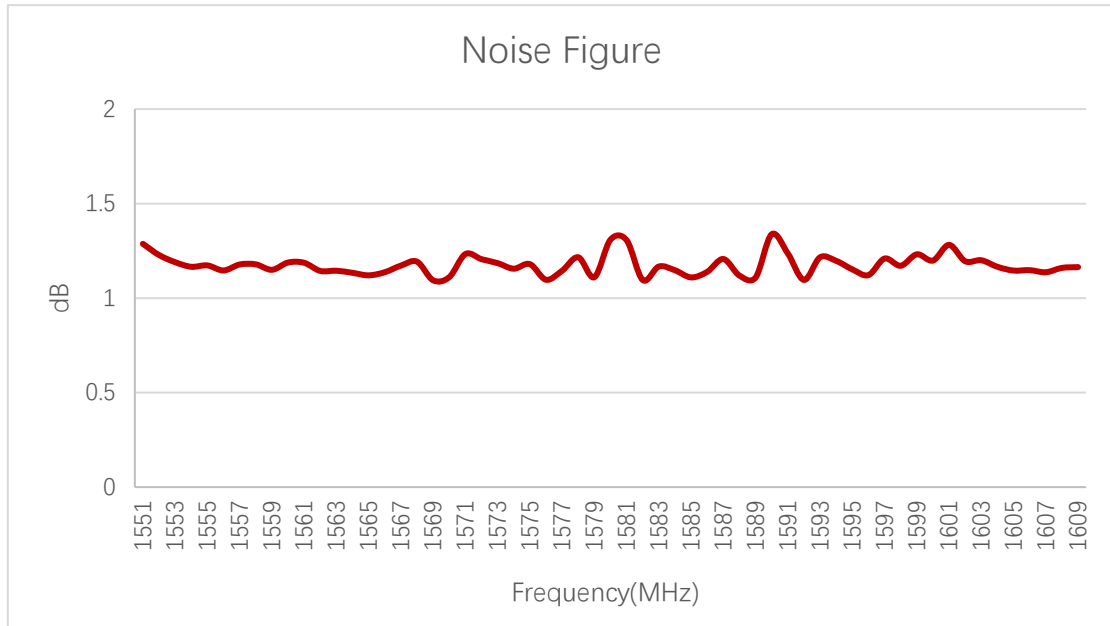
**3.1.3. GNSS LNA Gain**



**LNA Gain (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	-	22.1	20.1

**3.1.4. GNSS Noise Figure**

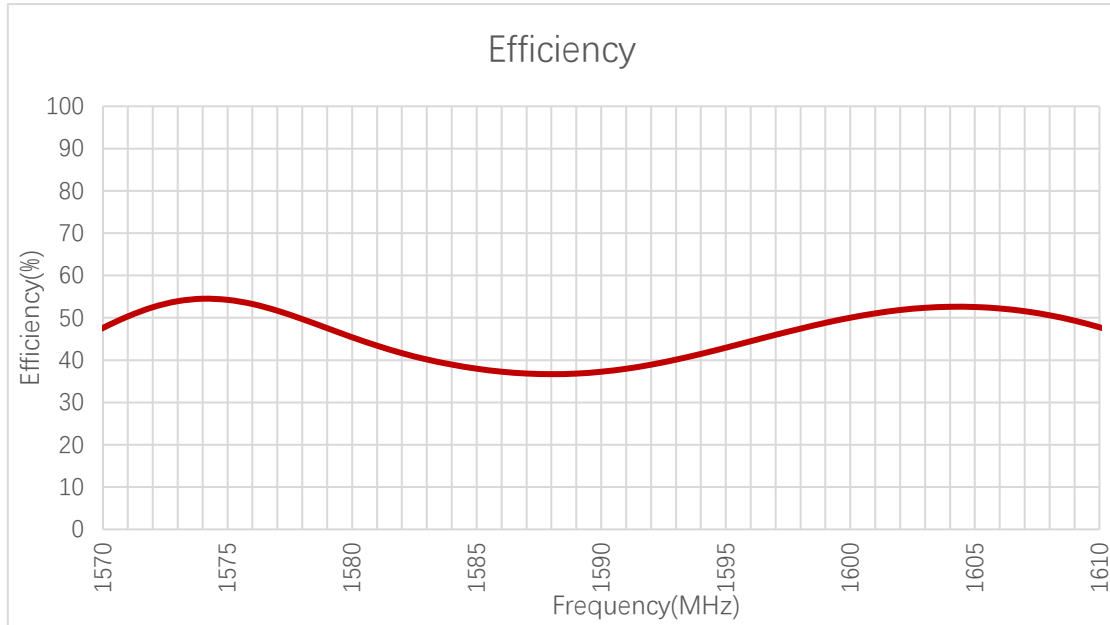


**Noise Figure (dB)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	-	-	-	-	-	-	1.17	1.19

### 3.2. Radiation Performance Test

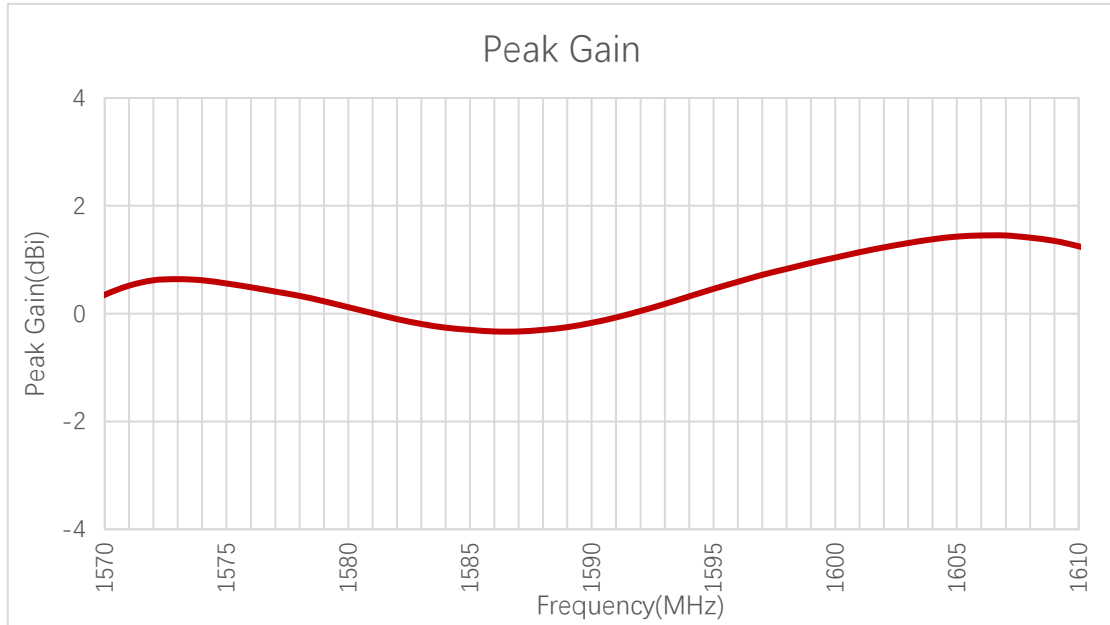
#### 3.2.1. Efficiency



**Efficiency (%)**

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	-	54.3	51.9

**3.2.2. Peak Gain**

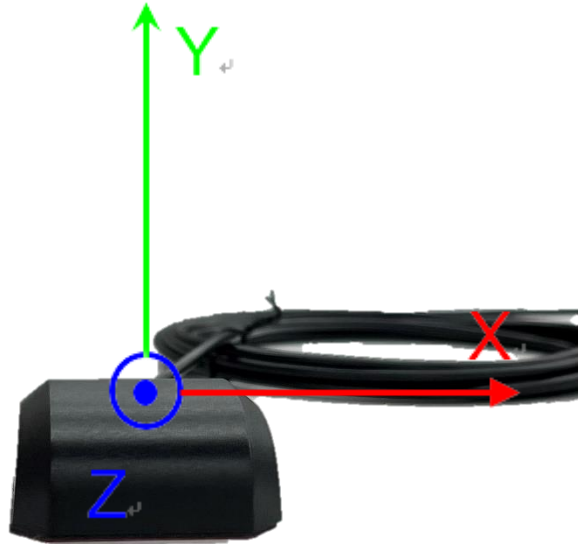


**Peak Gain (dBi)**

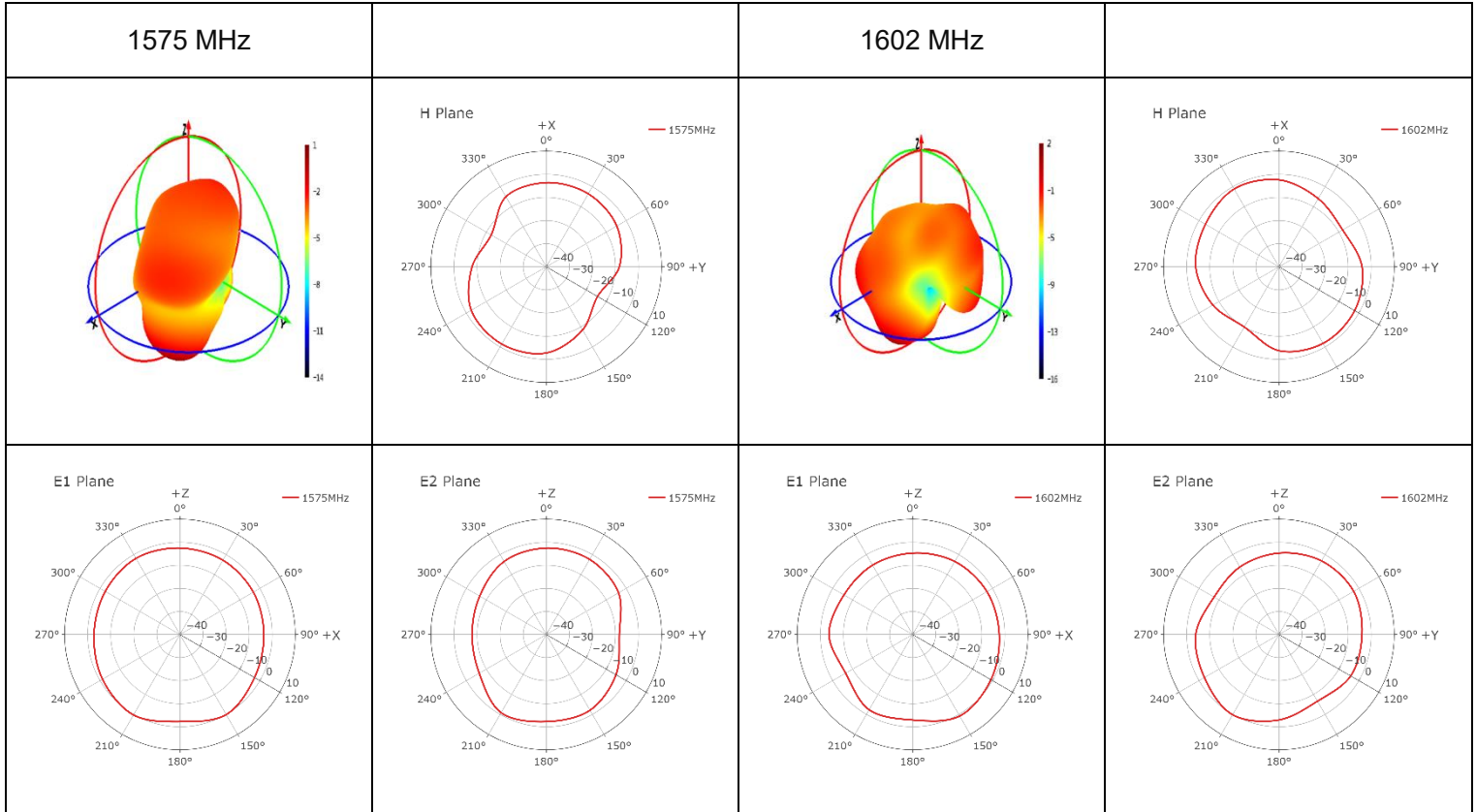
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	-	0.6	1.2

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




- Test Condition: Free Space
- Test Chamber: GL-S-1

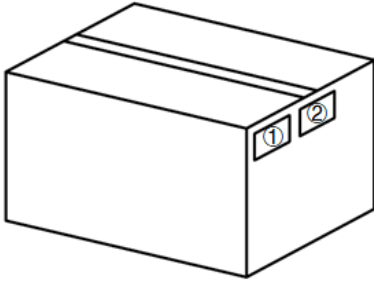
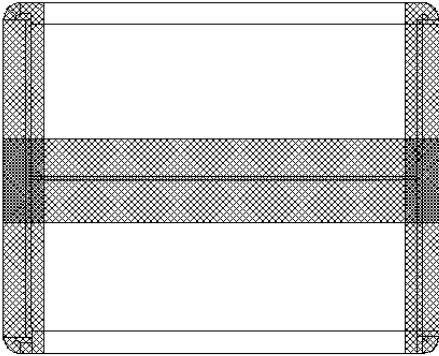






# 4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>25 products are put into the inner box. (25 PCS Antennas / Inner Box)</p>
2		<p>(4 Inner boxes / Carton Box) (100 PCS Antennas / Carton Box)</p> <p><u>Carton Size:</u> <u>L × W × H = 370 × 370 × 295 mm</u></p>
3		<p>Put a bubble bag on the top of the carton.</p>

4		<p><b>Position for Attaching Labels</b></p> <ul style="list-style-type: none"><li>① Carton Label</li><li>② Quality Label</li></ul>
5		<p><b>Sealing Cartons</b></p> <p>“I” 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
-	2022-01-18	Xiaodong YANG/ Toby WANG	Creation of the document
1.0	2022-01-18	Xiaodong YANG/ Toby WANG	First official release
1.1	2022-05-11	Xiaodong YANG/ Toby WANG	Updated the data (Chapter 3).
1.2	2023-07-26	Toby WANG	Updated the drawing (Chapter 5).
2.0	2023-08-26	Jaden FENG/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data in this datasheet.
2.1	2023-12-05	Lucky FENG/ Aria CHU	Deleted REACH compliant (Chapter 5).

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