

Antenna Datasheet

Product OC: YFGA025E3BM

Version: 1.2

Date: 2025-07-21

Status: Released

Product Name: GNSS L1 Buckle Mount Ceramic Patch + Cable Passive
Embedded Antenna

Key Features:

Frequency Band: 1559–1586 MHz

Dimensions: 25 mm × 25 mm × 5.5 mm

Peak Gain: -0.41 dBi

RoHS and REACH Compliant

Overview

The Quectel YFGA025E3BM is a GNSS L1 buckle mount ceramic patch + cable passive embedded antenna, designed for reliable positioning. Operating in the 1559–1586 MHz range with 50 Ω impedance and RHCP polarization, it supports key bands like GPS L1, GALILEO E1, BDS B1I/B1C, and QZSS L1.

With dimensions 25 mm × 25 mm × 5.5 mm and a 7.2 g weight, it features a Φ 1.13 mm black RF cable (100 mm) with an IPEX MHF1 connector and buckle mounting for easy installation. It delivers 47.4 % efficiency at 1561 MHz and a peak gain of -0.41 dBi at 1575 MHz, ensuring stable signal reception.

RoHS and REACH compliant, it operates in -40 °C to +85 °C. Packaged in pearl cotton trays (36 pcs) and cartons (180 pcs), it suits seamless integration into GNSS-enabled devices requiring consistent performance in various environments.

Quectel provides comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs. We have regional R & D centers to offer quick response to meet your requirements. Please contact our sales & FAEs if you have any requests.

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1 Specification

Test Condition: Free Space

1.1. Electrical

Electrical	
Frequency Range	1559–1586 MHz
Impedance	50 Ω
Polarization	RHCP
Radiation Pattern	Directional

Frequency (MHz)	Band	GPS L5	GALILEO	GPS L2	GLONASS	BDS B3	BDS B1I	GPS L1	GLONASS
		E5a	E5b	QZSS L2C	G2			E1	G1
		BDS B2a-B2I	BDS B2b					BDS B1C	
		QZSS L5						QZSS L1	
		IRNSS L5							
		1176	1207	1227	1248	1268	1561	1575	1602
VSWR		-	-	-	-	-	1.31	1.35	-
Return Loss (dB)		-	-	-	-	-	-17.3	-16.4	-
Efficiency (%)		-	-	-	-	-	47.4	47	-
Peak Gain (dBi)		-	-	-	-	-	-0.45	-0.41	-

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	25 mm × 25 mm × 5.5 mm
Material & Color	PCBA + Ceramic + RF Cable
Cable Type & Length	Φ 1.13 mm & Black & 100 mm
Connector Type	IPEX MHF1
Mounting Type	Buckle
Weight	Typ. 7.2 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS & REACH Compliant	Yes

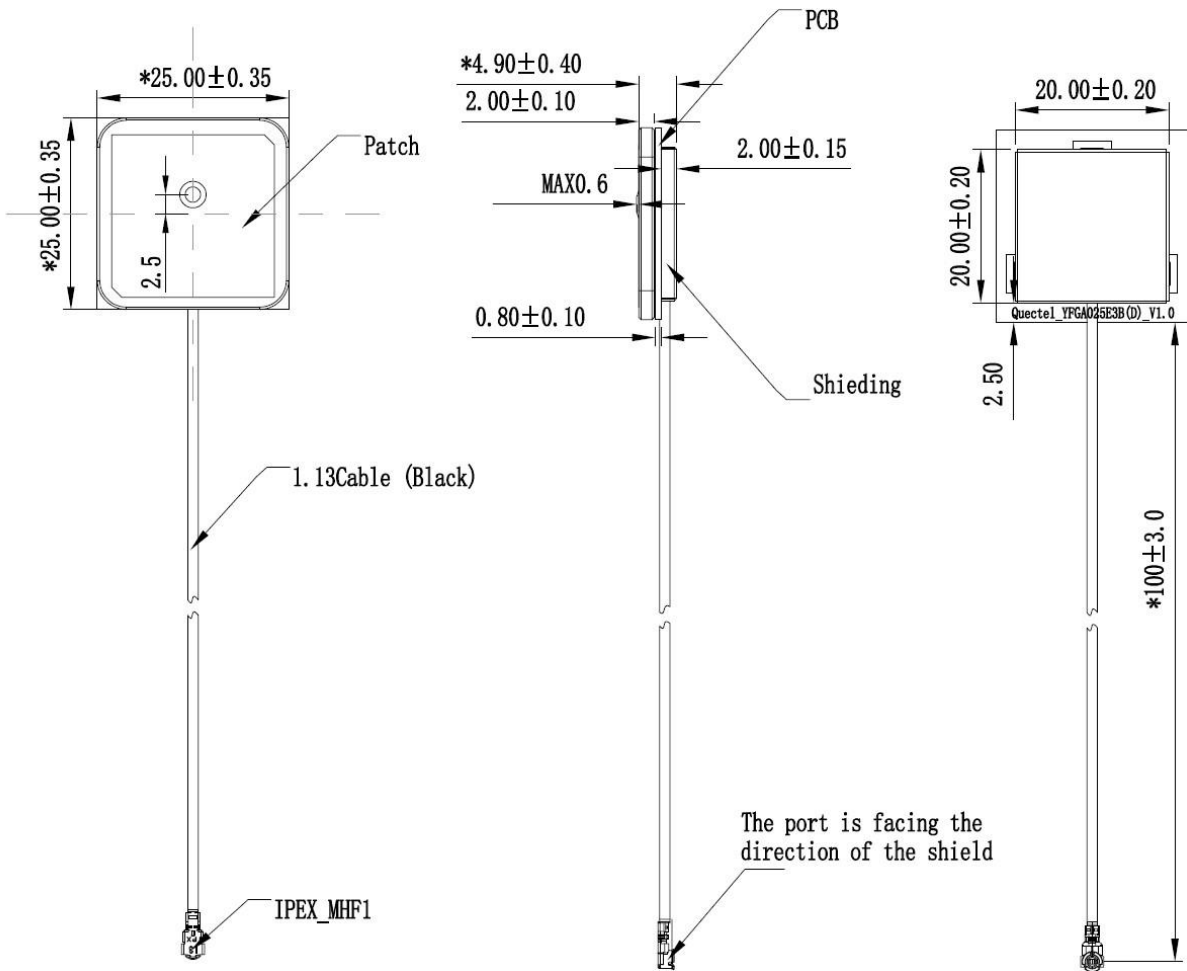
1.3. Supported GNSS Frequency Bands

GNSS Frequency Bands (MHz)					
GPS	L1 Centre 1575.42 (1565–1586)	L2 Centre 1227.6 (1217–1238)	L5 Centre 1176.45 (1164–1189)		
	√	-	-		
GLONASS	G1-L10C-L10F Centre 1601 (1595–1606)	G2-L20C-L20F Centre 1248.06 (1241–1255)	G3-L30C Centre 1202.025 (1189–1213)		
	-	-	-		
GALILEO	E1 Centre 1575.42 (1563–1588)	E5a Centre 1176.45 (1166–1187)	E5b Centre 1207.14 (1197–1218)	E6 Centre 1278.75 (1258–1300)	
	√	-	-	-	
BDS	B1I Centre 1561.098 (1559–1564)	B1C (BDS-3) Centre 1575.42 (1559–1592)	B2a-B2I Centre 1176.45 (1166–1187)	B2b Centre 1207.14 (1197–1217)	B3 Centre 1268.52 (1258–1279)
	√	√	-	-	-
QZSS	L1 Centre 1575.42 (1573–1578)	L2C Centre 1227.6 (1226–1229)	L5 Centre 1176.45 (1166–1187)	L6 Centre 1278.75 (1257–1300)	
	√	-	-	-	
IRNSS	L5 Centre 1176.45 (1164–1189)				
	-				

GNSS Bands and Constellations



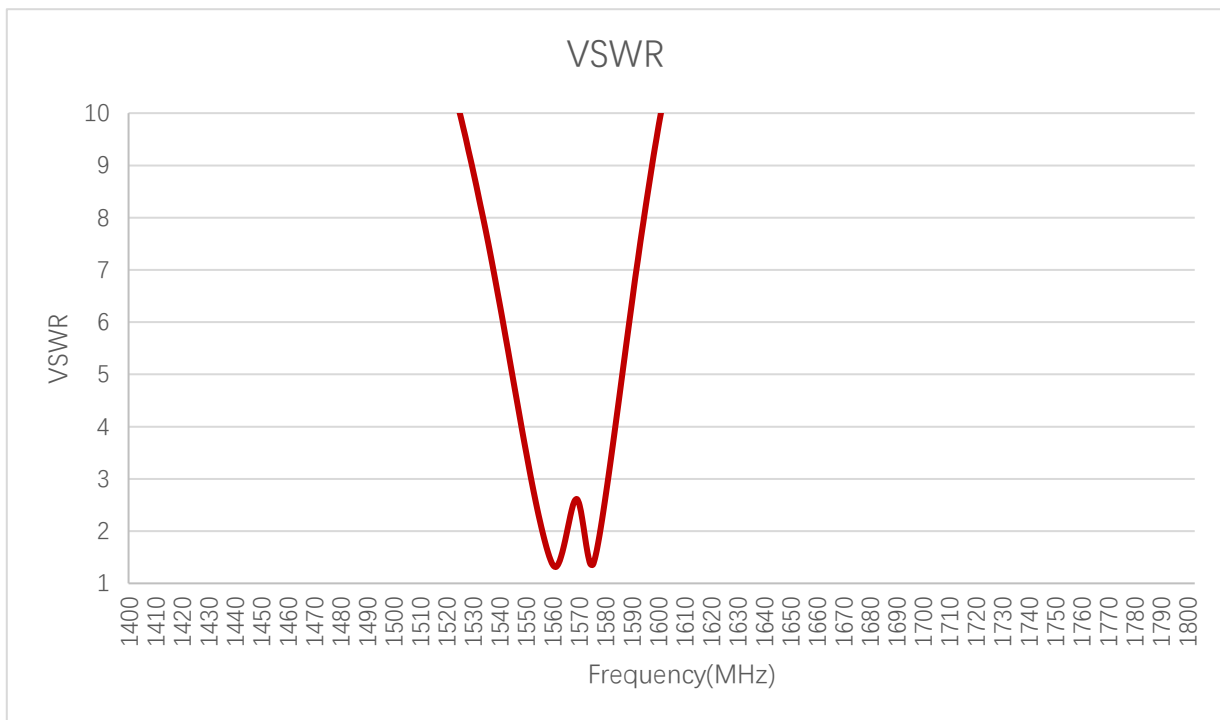
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.31	1.35	-

3.1.2. Return Loss

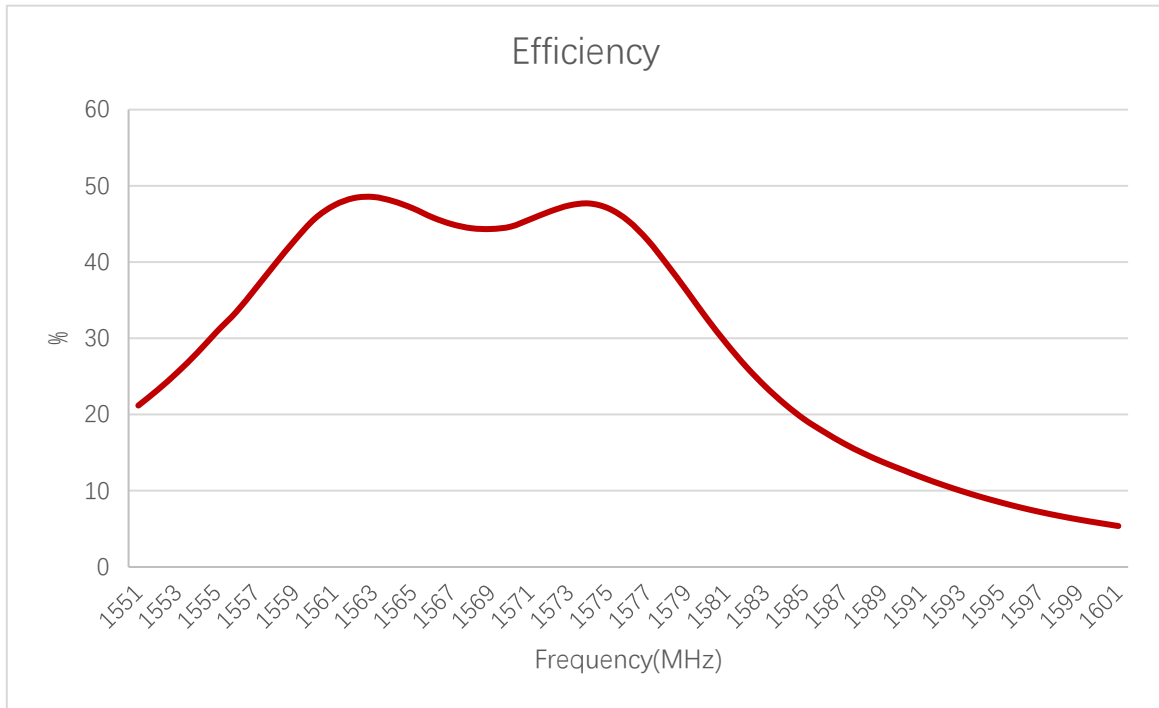


Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-17.3	-16.4	

3.2. Radiation Performance Test

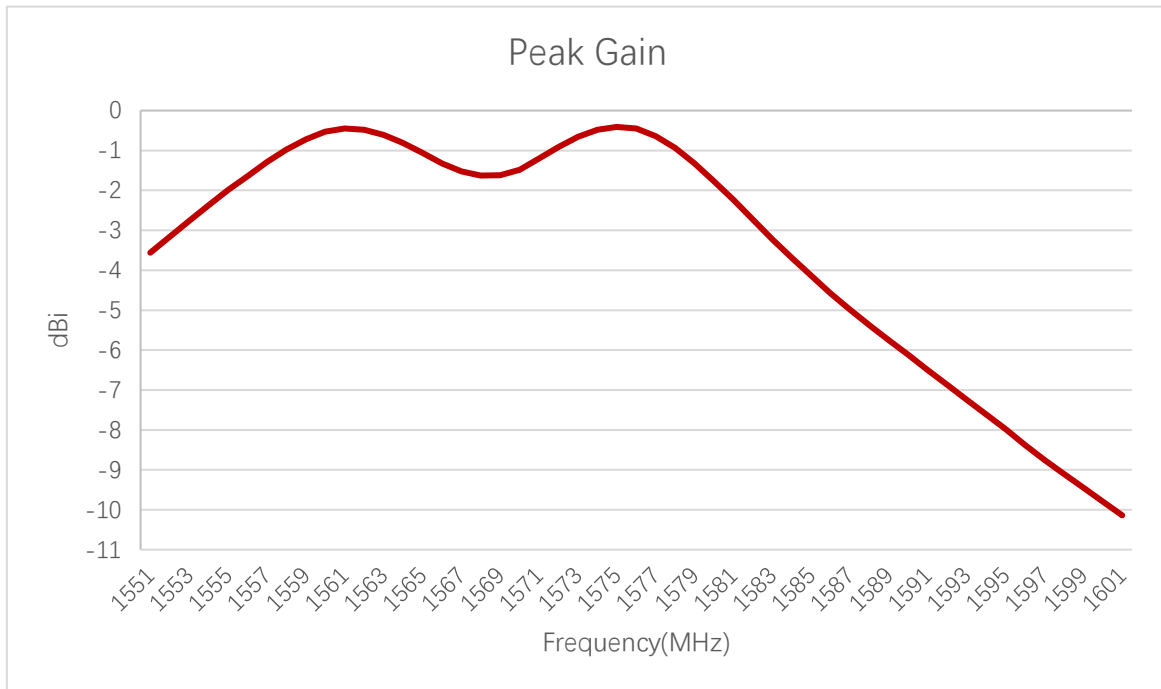
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	47.4	47	-

3.2.2. Peak Gain

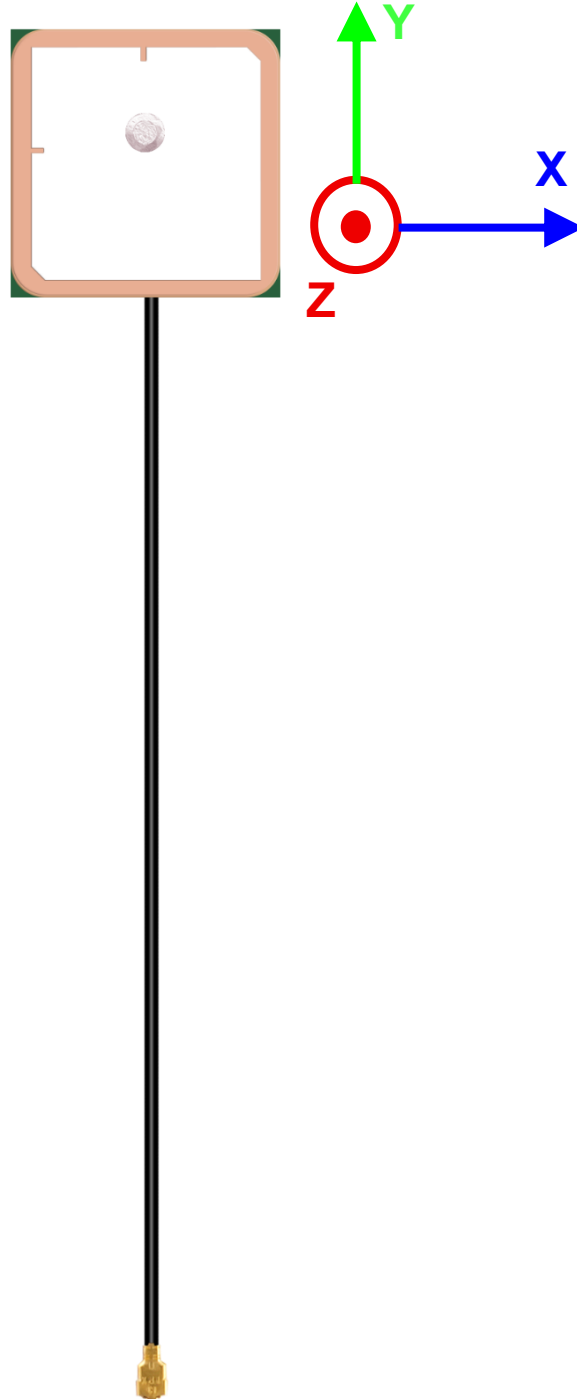


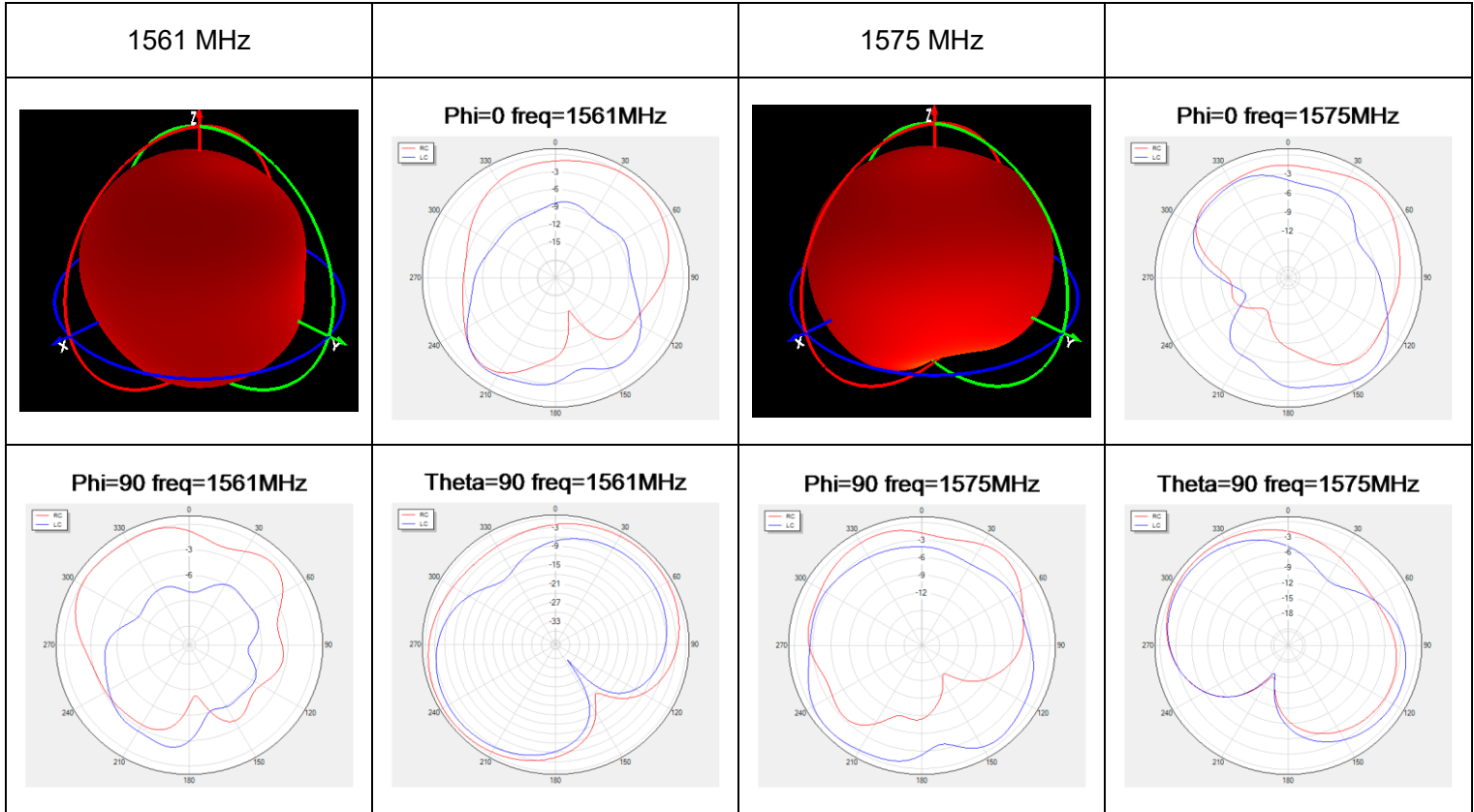
Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	-0.45	-0.41	-

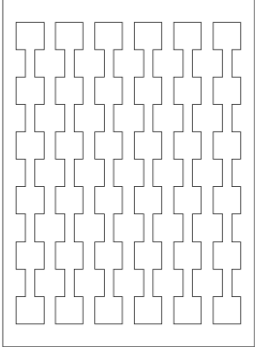
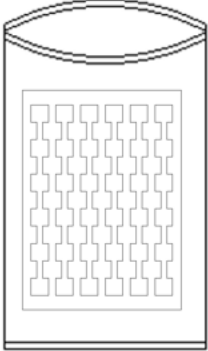
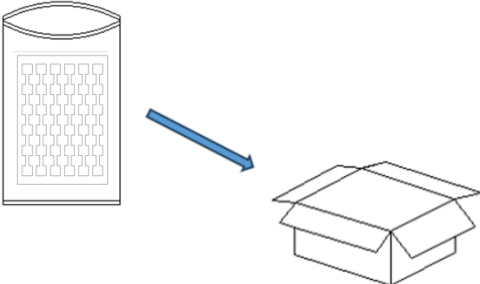
3.2.3. 3D & 2D Radiation Pattern

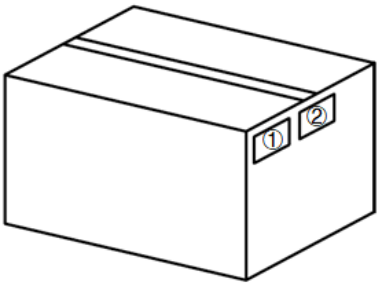
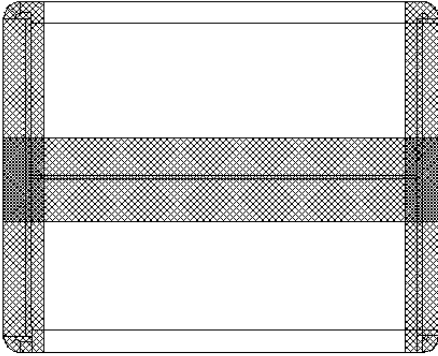
- Test Condition: Free Space
- Test Chamber: SH-SY-16M





4 Packaging

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

4	 A 3D perspective drawing of a rectangular carton. On the front face, there are two small rectangular labels. The left label is marked with a circled '1' and the right label is marked with a circled '2'.	<p>Position for Attaching Labels</p> <ul style="list-style-type: none">① Carton Label② Quality Label
5	 A 3D perspective drawing of a rectangular carton with a shaded, H-shaped structure. The structure consists of two vertical bars on the left and right sides, connected by two horizontal bars across the top and bottom, forming an 'H' shape. The shaded area represents the sealing structure.	<p>Sealing Cartons H-shaped 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
-	2024-04-19	Junsen LI/ Mike GUO/ David LIU/ Rainey LIAO	Creation of the document
1.0	2024-04-19	Junsen LI/ Mike GUO/ David LIU/ Rainey LIAO	First official release
1.1	2024-11-19	Mike GUO	Deleted adhesive mounting type of antenna (Chapter 1.2).
1.2	2025-07-21	Aria CHU	1. Updated the antenna image (Cover page). 2. Updated the overview.

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