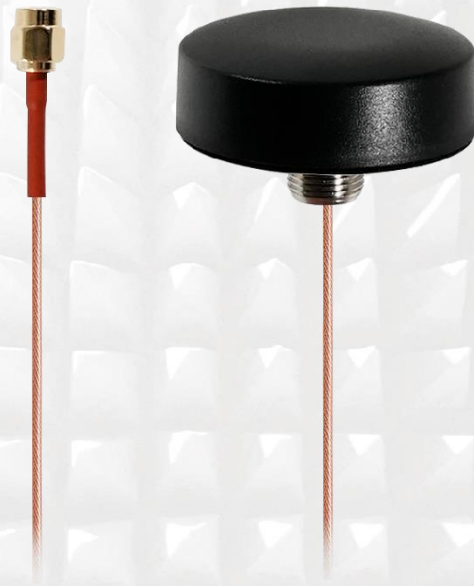




Antenna Datasheet

Product OC: YEMN105J1BM

Version: 1.0

Date: 2026-04-27

Status: Released

Product Name: GPS L1 & GLONASS G1 Screw Mount Low Profile Active
External Antenna

Key Features:

Frequency Band: 1565–1606 MHz

Dimensions: Φ 46 mm $\times$ 16 mm

GNSS LNA Gain: 28 $\pm$ 3 dB

RoHS Compliant

IP67

Overview

The Quectel YEMN105J1BM is a low-profile, screw-mount, active external antenna designed for high-performance GNSS applications. It supports GPS L1 and GLONASS G1 frequency bands, operating within the 1565–1606 MHz range. With its compact design and robust construction, this antenna is ideal for applications requiring reliable and precise positioning in challenging environments.

- **Key Features**

- ✓ Frequency Band: 1565–1606 MHz
- ✓ Supported Systems: GPS L1, GLONASS G1, GALILEO E1, BDS B1C, QZSS L1
- ✓ LNA Gain: 28 $\pm$ 3 dB (3–5 V), 27 $\pm$ 3 dB (1.8 V)
- ✓ Noise Figure: $\leq$ 2.5 dB
- ✓ Impedance: 50 Ω
- ✓ Polarization: RHCP (Right-Hand Circular Polarization)
- ✓ Radiation Pattern: Directional
- ✓ Dimensions: Φ 46 mm $\times$ 16 mm
- ✓ Ingress Protection: IP67
- ✓ Operating Temperature: -40 °C to +85 °C
- ✓ RoHS Compliant: Yes

- **Typical applications include:**

- ✓ Automotive navigation systems
- ✓ Fleet management
- ✓ Industrial tracking devices
- ✓ Marine and agricultural equipment
- ✓ Any GNSS-enabled device requiring a compact, high-gain external antenna

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

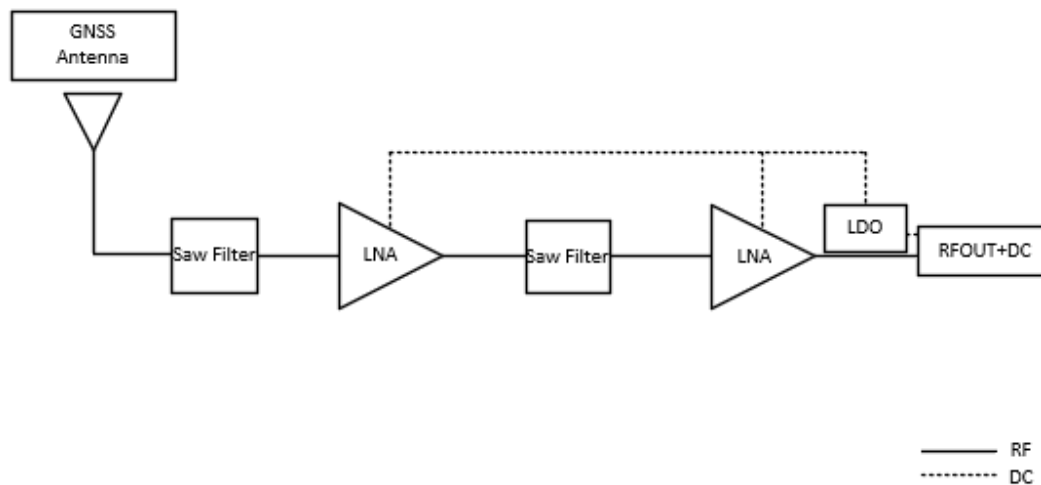
Band Frequency (MHz)	GPS L5 GALILEO E5a BDS B2a- B2I QZSS L5 IRNSS L5	GALILEO E5b BDS B2b	GPS L2 QZSS L2C	GLONASS G2	BDS B3	BDS B1I	GPS L1 GALILEO E1 BDS B1C QZSS L1	GLONASS G1
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.49	1.36
Return Loss (dB)	-	-	-	-	-	-	-14	-16.2
Efficiency (%)	-	-	-	-	-	-	47.4	45.1
Peak Gain (dBi)	-	-	-	-	-	-	0.47	0.59

LNA Electrical	
LNA Gain	28 $\pm$ 3 dB @ 3-5 V 27 $\pm$ 3 dB @ 1.8 V
Noise Figure	$\leq$ 2.5 dB
Output VSWR	$\leq$ 2.0
Input VSWR	$\leq$ 2.0
Filter Out-of-Band Attenuation	60 dB f0 $\pm$ 100 MHz f0 (1588 MHz)
Working Voltage	1.8–5 V
Working Current	8.5 $\pm$ 2 mA
Impedance	50 Ω

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	Φ 46 mm × 16 mm
Casing Material & Color	ABS & Black
Cable Type & Color & Length	RG178 & Brown & 300 mm
Connector Type	SMA Male
Mounting Type	Screw (M12 Nut)
Weight	Typ. 32.4g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP67
RoHS Compliant	Yes

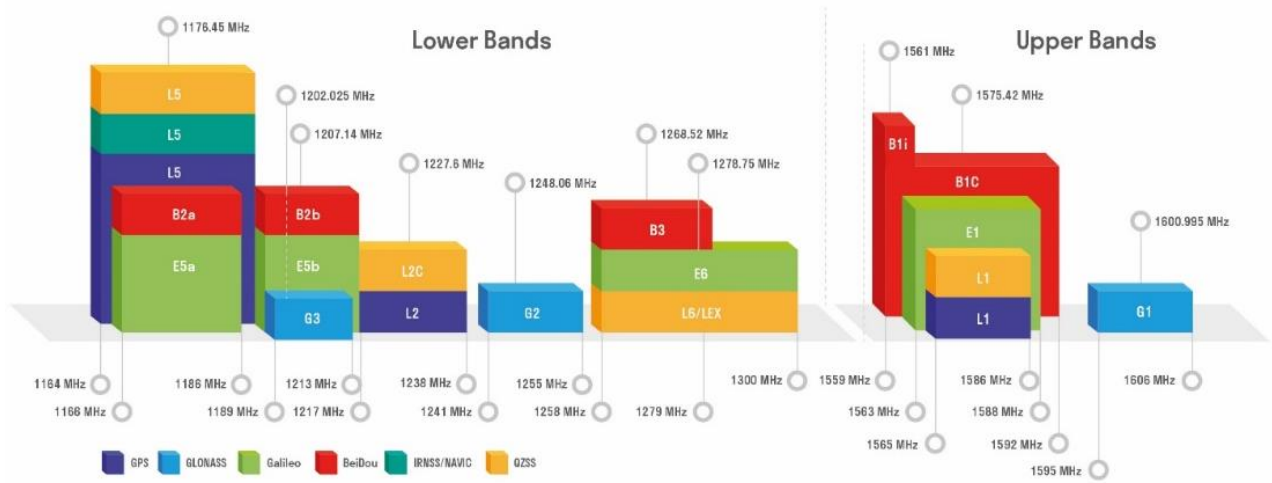
1.3. Block Diagram (Active Antenna)



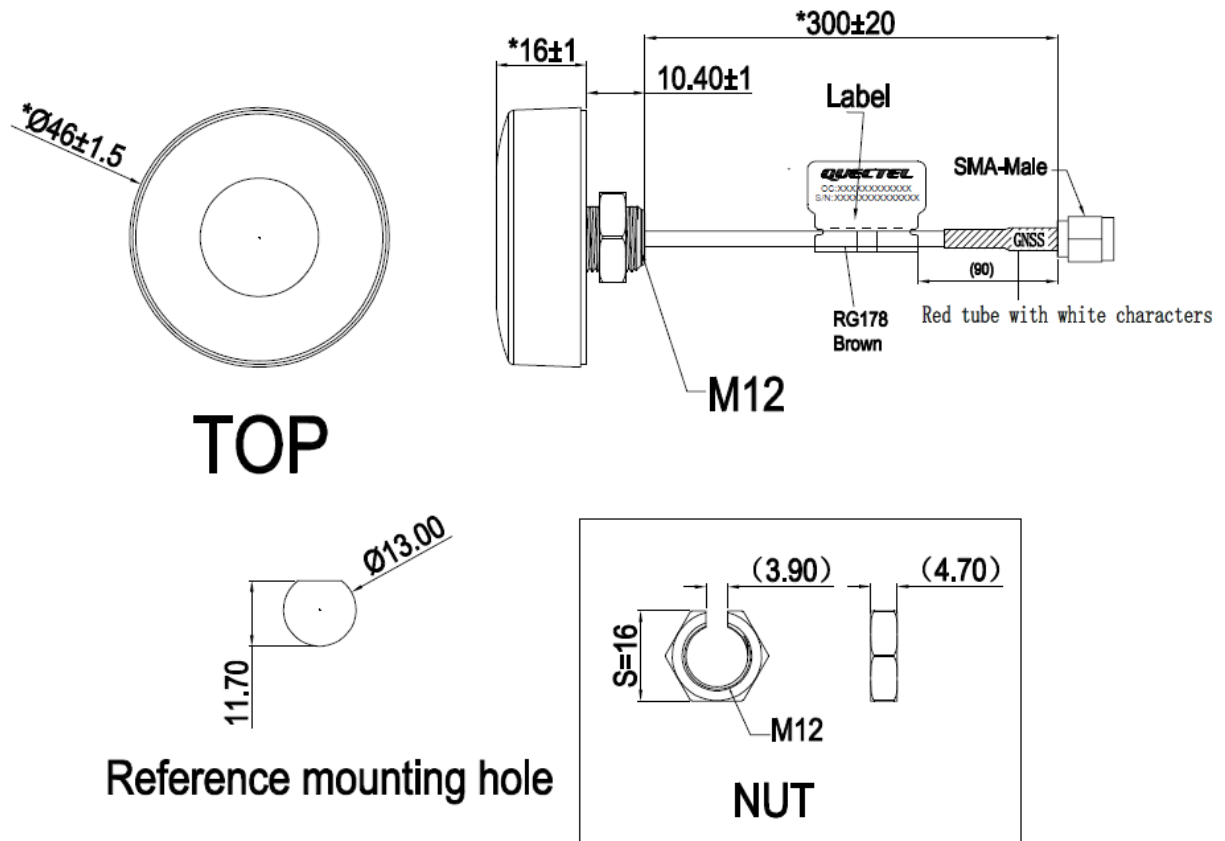
1.4. Supported GNSS Frequency Bands

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



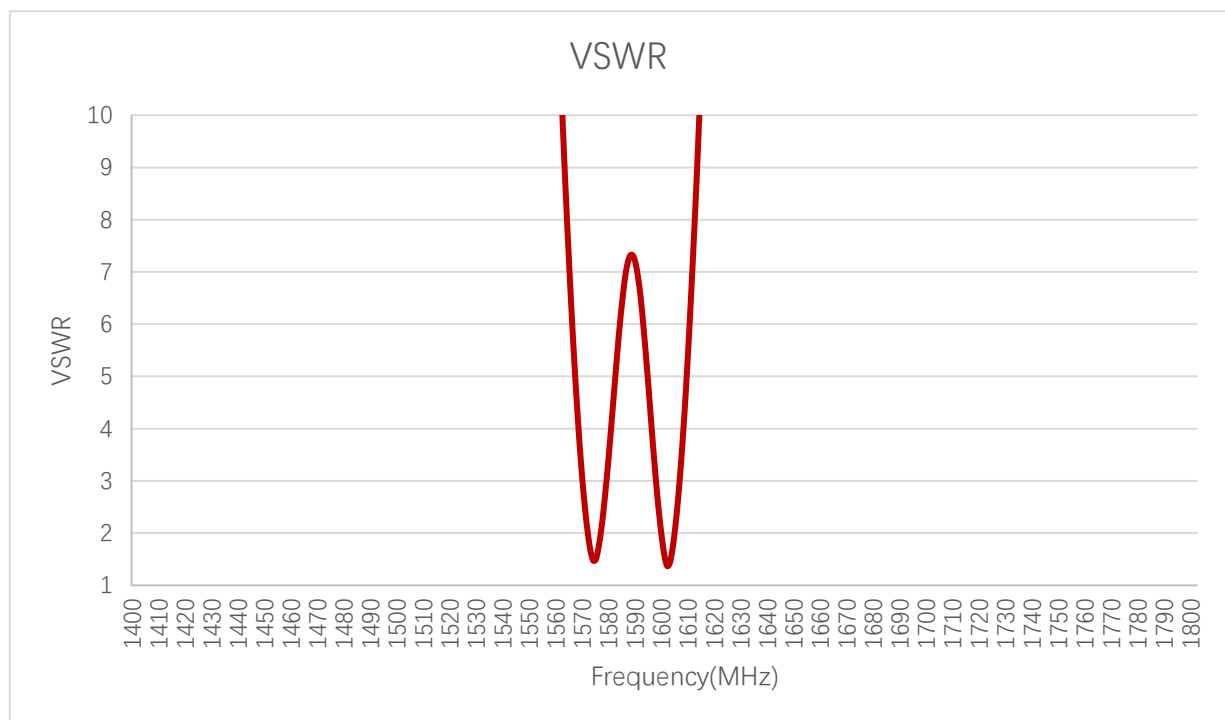
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

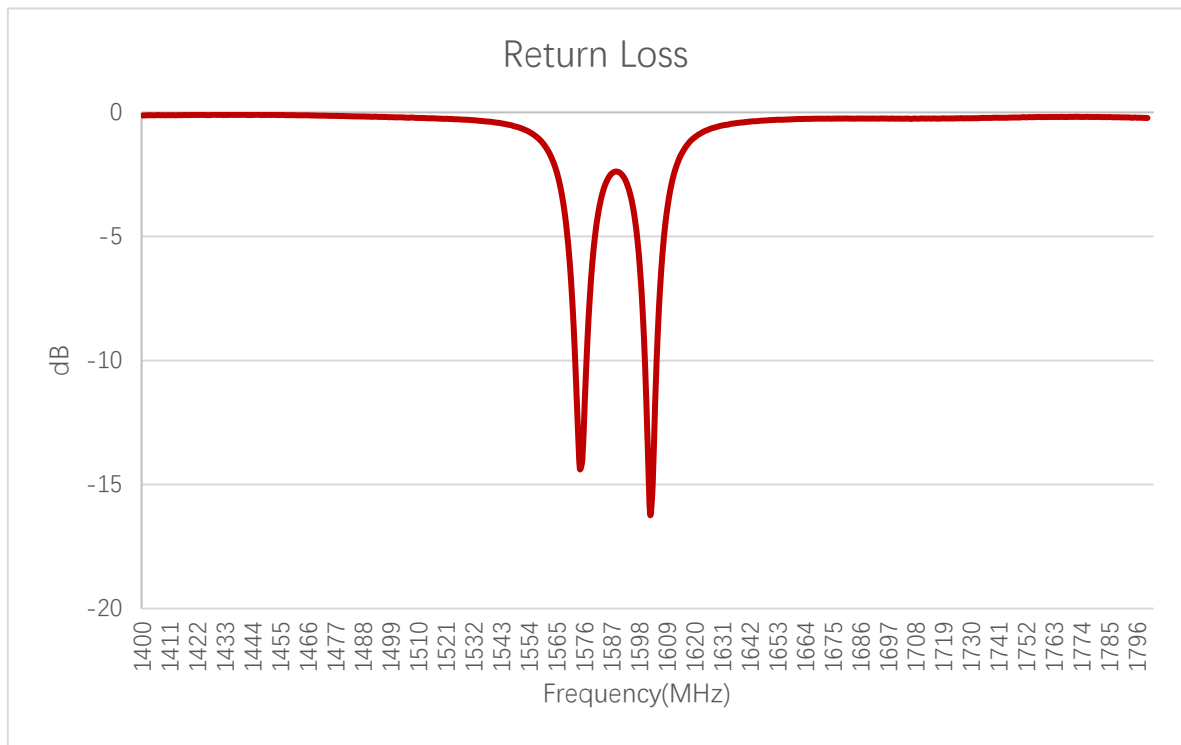
3.1.1. VSWR



VSWR – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.49	1.36

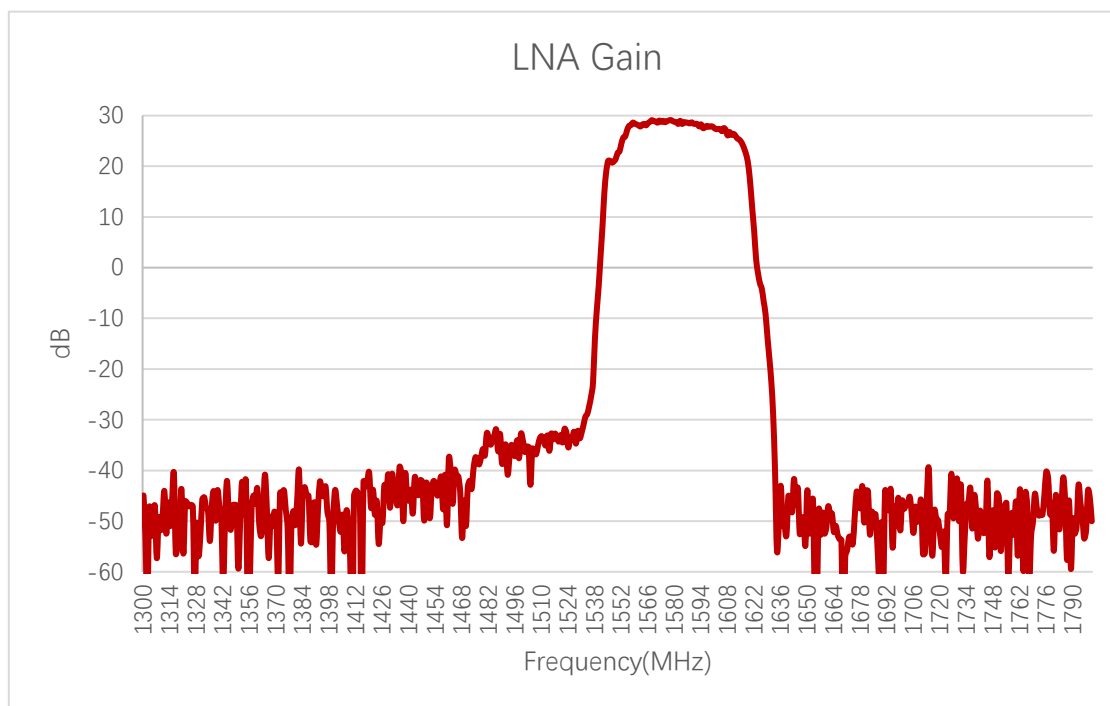
3.1.2. Return Loss



Return Loss (dB) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-	-14	-16.2

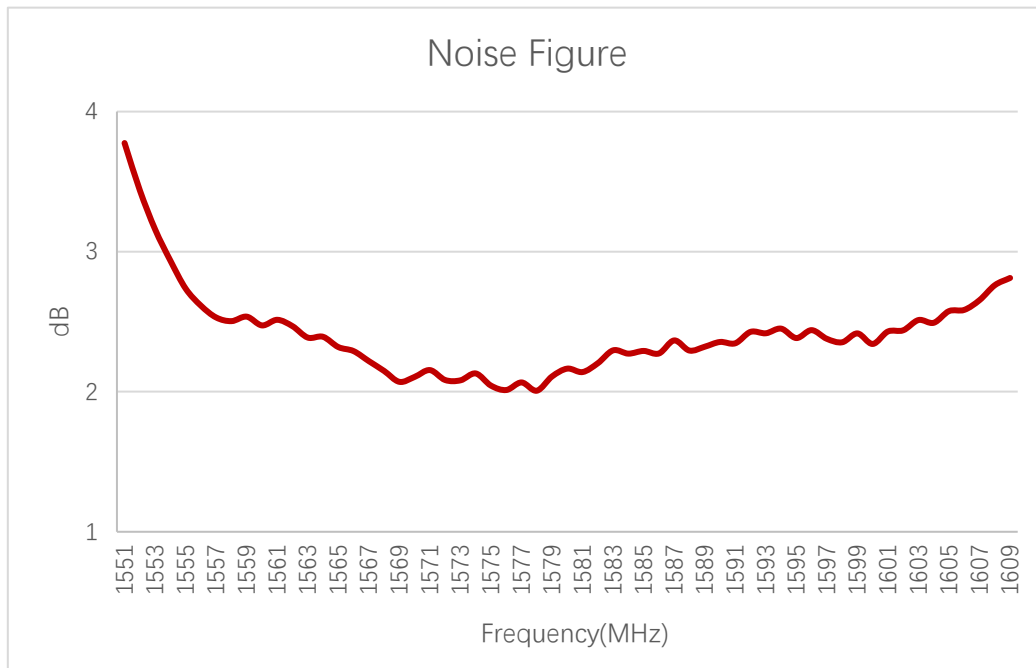
3.1.3. GNSS LNA Gain



LNA Gain (dB) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	28.1	28.6	27.3

3.1.4. GNSS Noise Figure

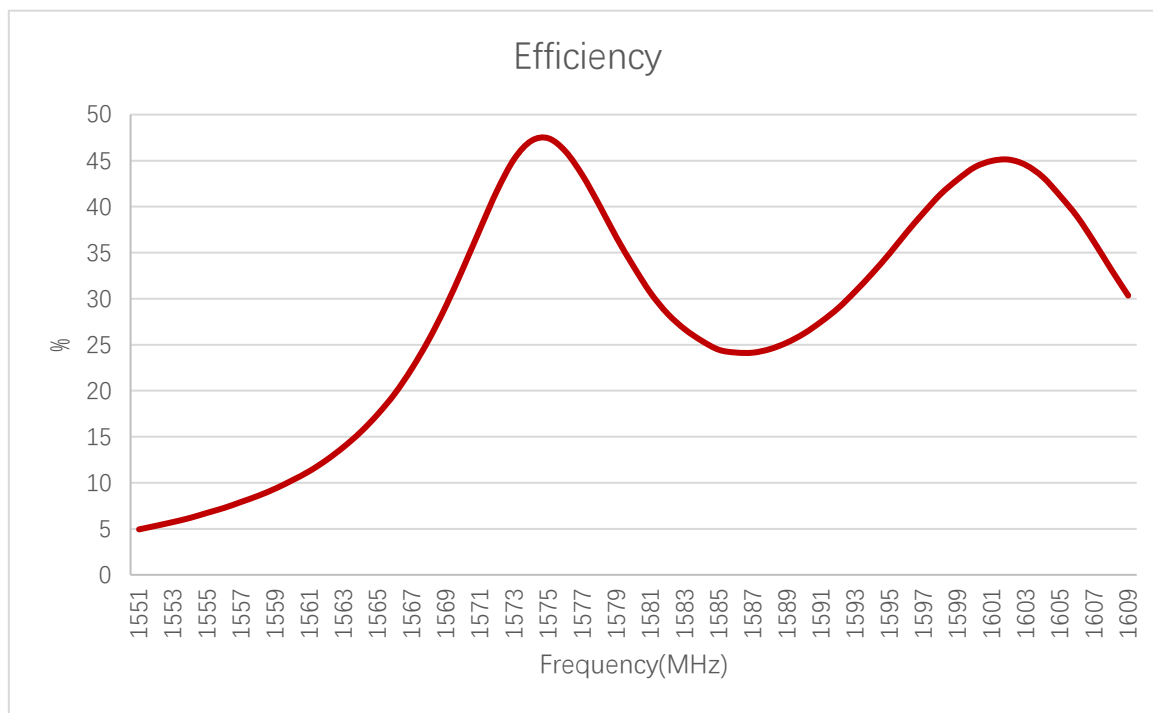


Noise Figure (dB) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	-	-	-	-	-	-	2.04	2.43

3.2. Radiation Performance Test

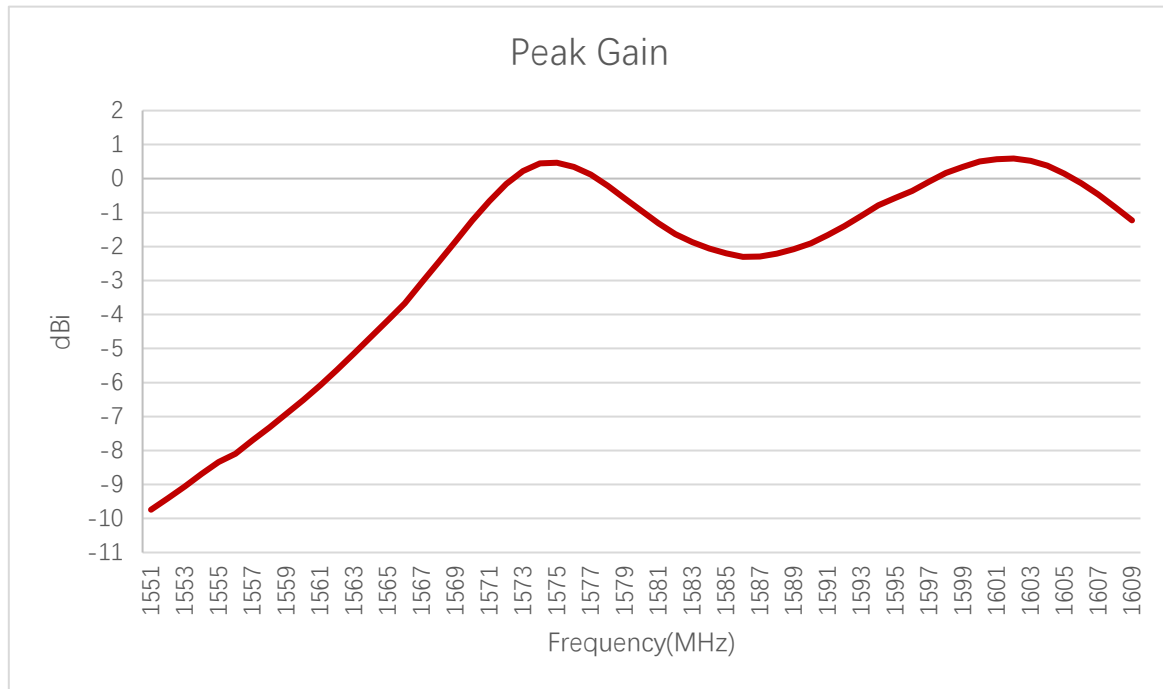
3.2.1. Efficiency



Efficiency (%) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	-	47.4	45.1

3.2.2. Peak Gain



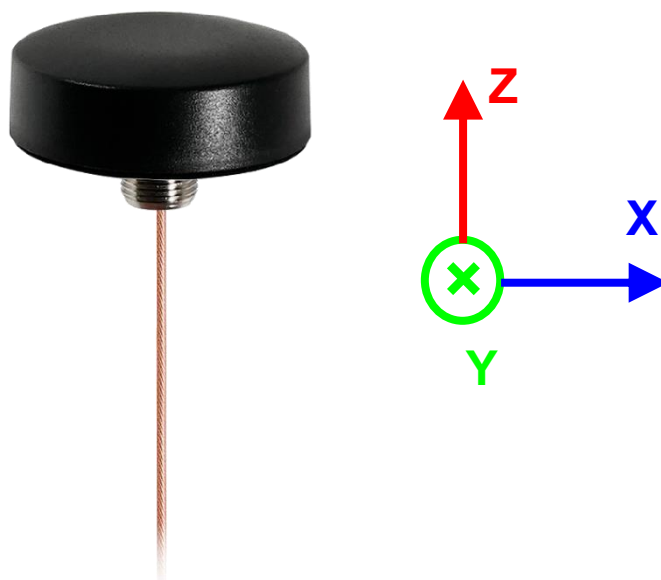
Peak Gain (dBi) – GNSS

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	-	0.47	0.59

3.2.3. 3D & 2D Radiation Pattern

3.2.4.1 Test Condition: Free Space

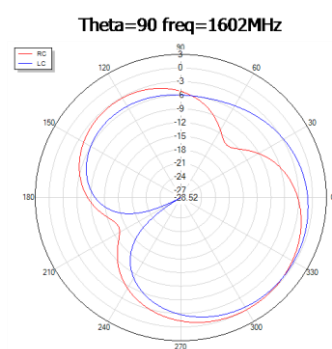
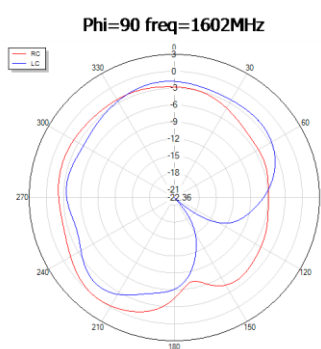
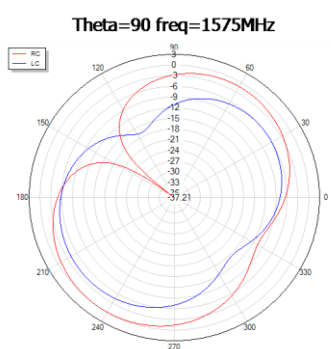
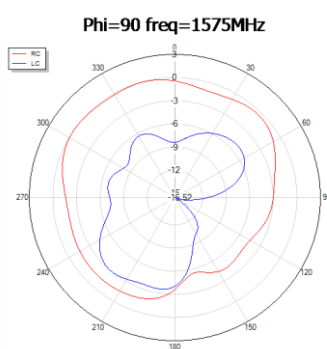
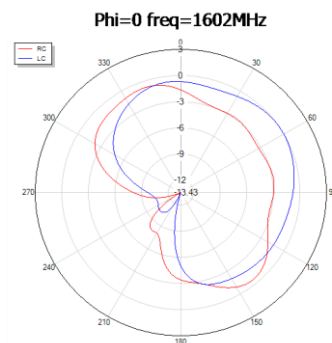
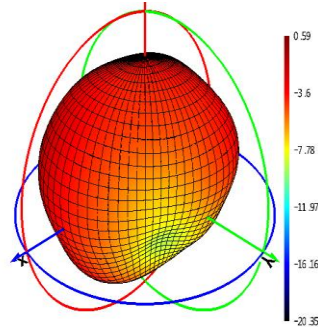
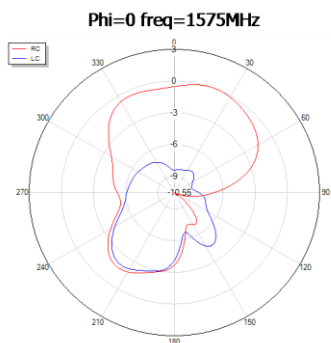
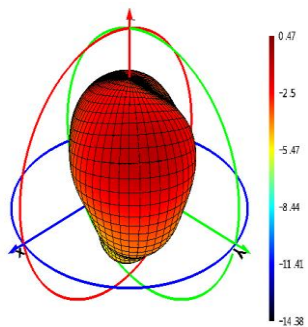
- Test Chamber: SH-SY-1



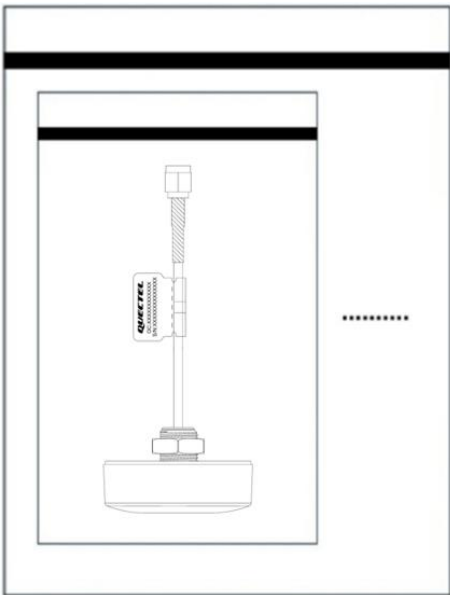
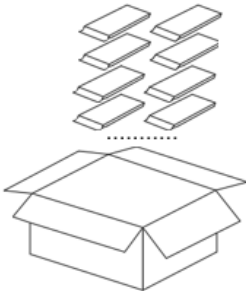
● **GNSS**

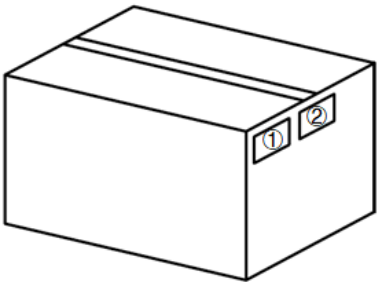
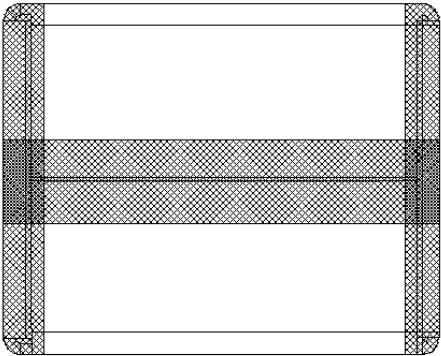
1575 MHz

1602 MHz



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		Whole antenna product in a small PE bag. (1 Antenna / Small PE Bag)
2		20 antenna products in a big PE bag. (20 Antennas / Big PE Bag)
3		(14 Big PE Bags / Carton Box) (280 Antennas / Carton Box) Estimated quantity Products that cannot fill the entire carton box are packed in a suitable size carton box. <u>Carton Size:</u> <u>L × W × H = 470 × 430 × 310 mm</u>

4		Position for Attaching Labels ① Carton Label ② Quality Label
5		Sealing Cartons H-shaped sealing cartons
Note	The initial packaging method described above is for reference only, and the final actual packaging method shall be subject to the actual shipping packaging.	

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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Tel: +86 21 5108 6236

Email: info@quectel.com

Or our local offices. For more information, please visit:

<https://www.quectel.com/contact/>.

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<https://www.quectel.com/tech-support/>.

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Revision History

Version	Date	Author	Note
-	2026-04-27	Junsen Li/ Blake Xiang/ Kessie Geng/ Rainey Liao	Creation of the document
1.0	2026-04-27	Junsen Li/ Blake Xiang/ Kessie Geng/ Rainey Liao	First official release



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