



Antenna Datasheet

Product OC: YEGM001Q1AM

Version: 1.1

Date: 2025-08-11

Status: Released

Product Name: GNSS Magnetic Mount Low Profile Active Embedded
Antenna

Key Features:

Frequency Band: 1559–1606 MHz

Dimensions: 55.6 mm × 50.3 mm × 18 mm

Total LNA Gain: 17 ±3 dB

RoHS Compliant

IP67

Overview

The Quectel YEGM001Q1AM represent the pinnacle of rugged, high-performance GNSS antenna technology, designed to deliver multi-constellation, single-band (L1) positioning in the most demanding environments. Combining active amplification with industrial-grade durability, these antennas provide unmatched signal clarity and reliability for applications requiring centimeter-level accuracy. With IP67 ingress protection, magnetic mount and extended temperature operation (-40 °C to +85 °C), they are engineered to thrive in harsh outdoor, automotive, and industrial settings.

Key Features & Technical Specifications

- Single-Band Precision & Active Amplification.
- Frequency Bands: 1559–1606 MHz (L1), supporting GPS, Galileo, BDS, QZSS, and GLONASS.
- Integrated LNA: Delivers 17 ±3 dB total gain (21 ±3 dB at PCBA) with an ultra-low noise figure (≤ 1.5 dB), enhancing weak signal reception in urban canyons or remote areas.

Superior RF Performance

- Peak Efficiency: 53.6 % at 1575 MHz (GPS L1) with RHCP polarization for multipath rejection.
- Industrial-Grade Durability.
- IP67 Rating: Fully waterproof, suitable for marine or outdoor deployments.

Power Efficiency & Compliance

- Low Power Consumption: Operates at 2.7–3.3 V, ideal for battery-powered systems.
- RoHS Compliant: Environmentally safe for global deployments.

Target Applications

- These antennas are ideal for mission-critical systems requiring high precision and reliability:
- Autonomous Vehicles: Lane-level navigation for ADAS and robotics.
- Marine: Offshore navigation, and other positioning devices.
- Precision Agriculture: Guidance systems for tractors and harvesters.
- Industrial IoT: Asset tracking in ports, mining, and logistics.
- Surveying & Geodesy: High-accuracy mapping and timing synchronization.

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.

Contents

Overview.....	1
Contents	2
1 Specification.....	3
1.1. Electrical.....	3
1.2. Mechanical & Environmental	5
1.3. Block Diagram (Active Antenna)	6
1.4. Supported GNSS Frequency Bands.....	7
2 Drawing	9
3 Detailed Performance	10
3.1. S-Parameter Test	10
3.1.1. VSWR	10
3.1.2. Return Loss.....	11
3.1.3. LNA Gain.....	12
3.1.4. Noise Figure.....	13
3.2. Radiation Performance Test.....	14
3.2.1. Efficiency.....	14
3.2.2. Peak Gain	15
3.2.3. 3D & 2D Radiation Pattern	16
4 Packaging	18
Contact Us.....	20
Legal Notices	21
Revision History	23

1 Specification

Test Condition: Free Space

1.1. Electrical

Electrical	
Frequency Range	1559–1606 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	-	-	-	-	-	3.14	2.07	3.72
Return Loss (dB)	-	-	-	-	-	-5.7	-9.1	-4.7
Efficiency (%)	-	-	-	-	-	45.3	53.6	42.1
Peak Gain (dBi)	-	-	-	-	-	-1.3	-0.34	-1.09

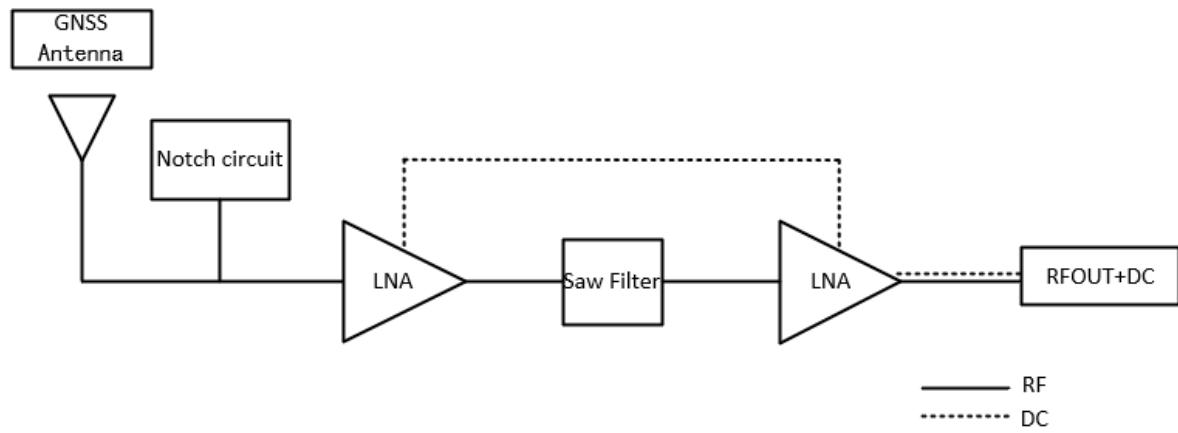
LNA Electrical	
LNA Gain	21 $\pm$ 3 dB (PCBA)
Total LNA Gain	17 $\pm$ 3 dB (with cable loss)

Noise Figure	≤ 1.5 dB
Output VSWR	< 2.0
Filter Out-of-Band Attenuation	36 dB $f_0 \pm 100$ MHz f_0 (1580 MHz)
Working Voltage	2.7–3.3 V
Working Current	8.5 ± 2 mA @ 3 V
Impedance	50 Ω

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	55.6 mm × 50.3 mm × 18 mm
Material & Color	ABS + PC & Black
Cable Type & Length	RG174 Black & 3000 mm
Connector Type	SMA Male
Mounting Type	Magnet
Weight	Typ. 74.2 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP67 (Antenna body)
RoHS Compliant	Yes

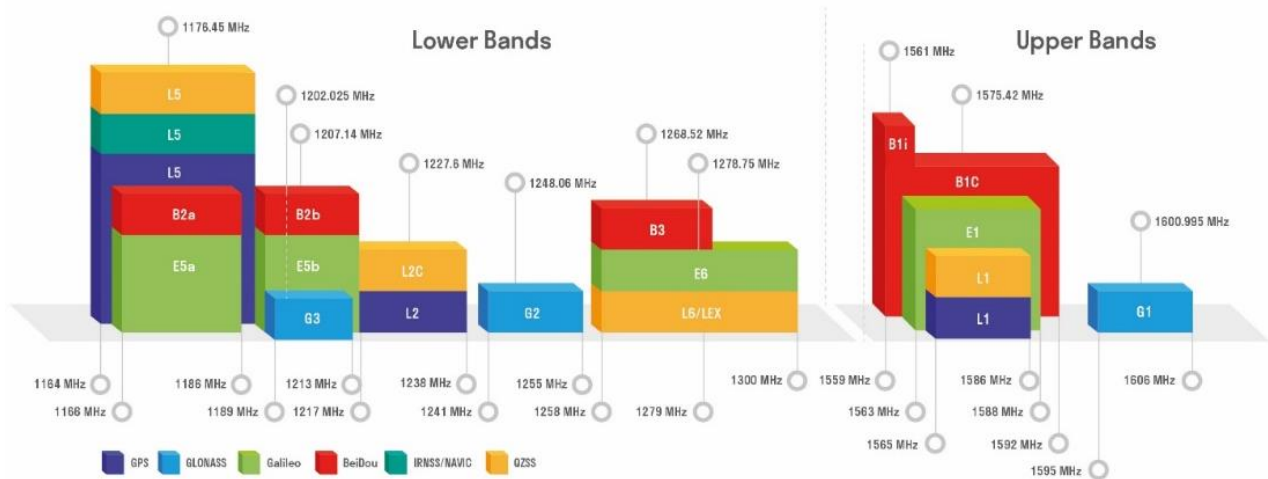
1.3. Block Diagram (Active Antenna)



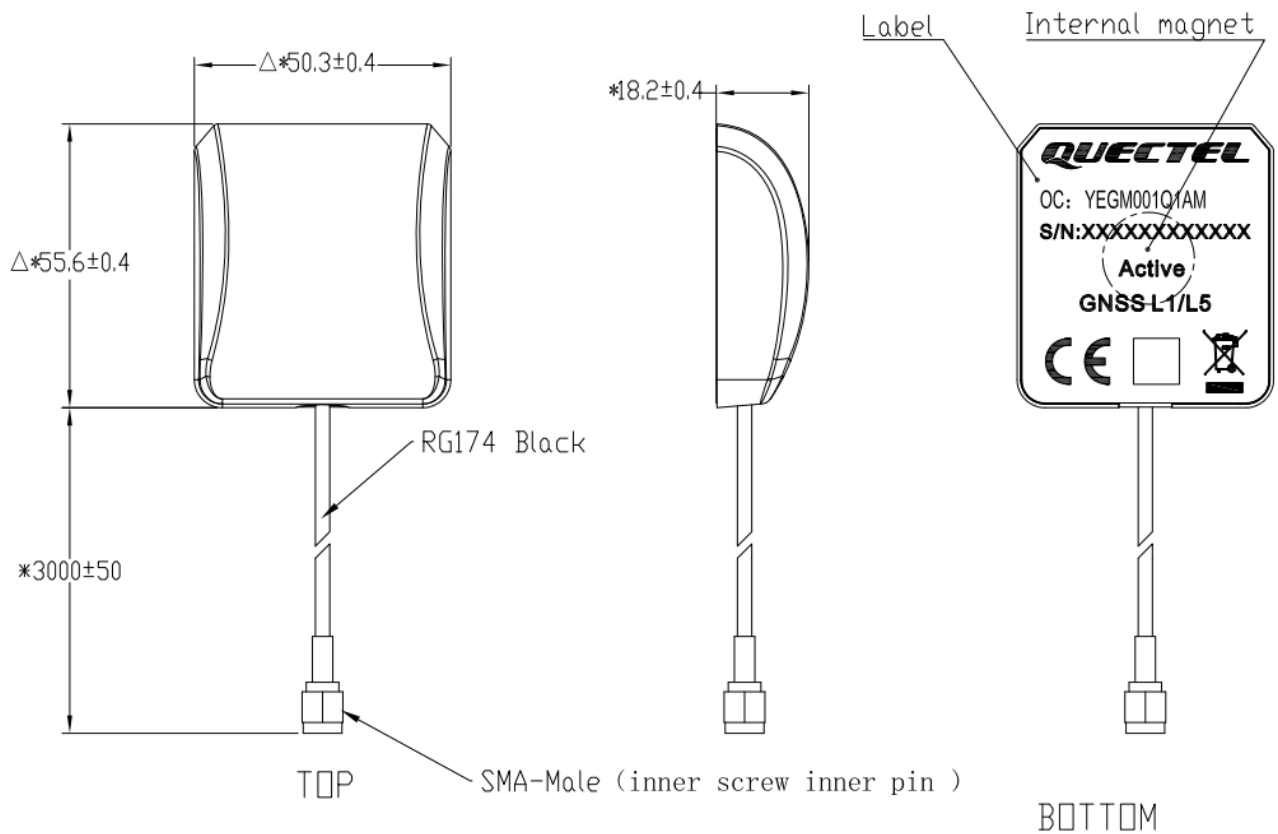
1.4. Supported GNSS Frequency Bands

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



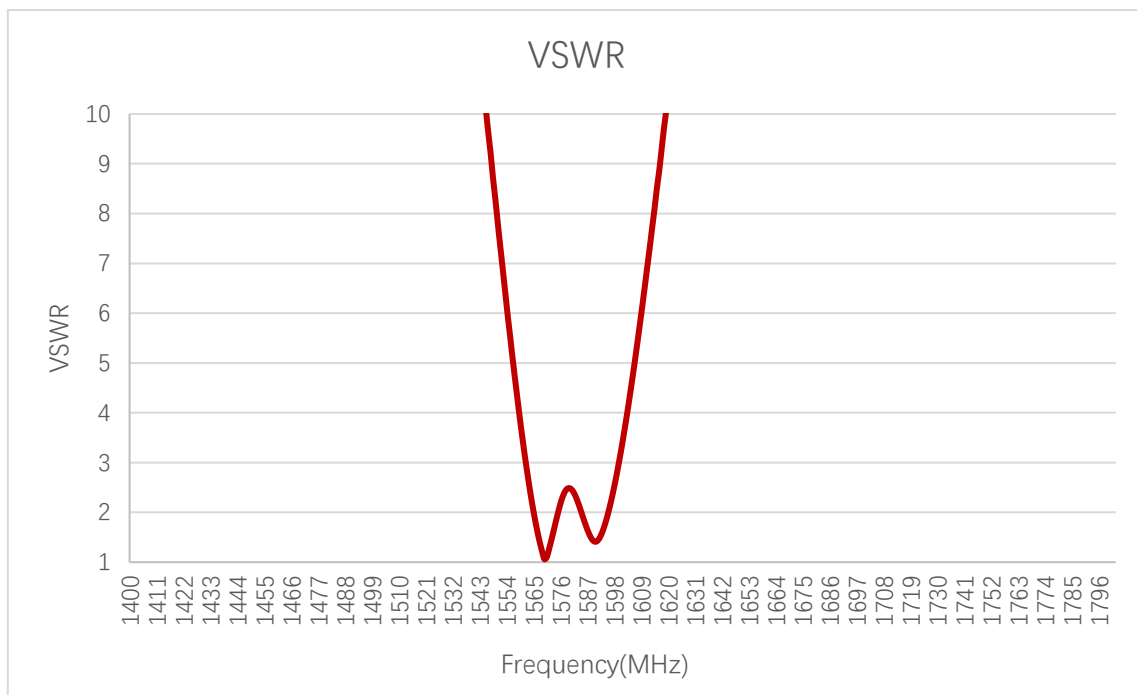
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

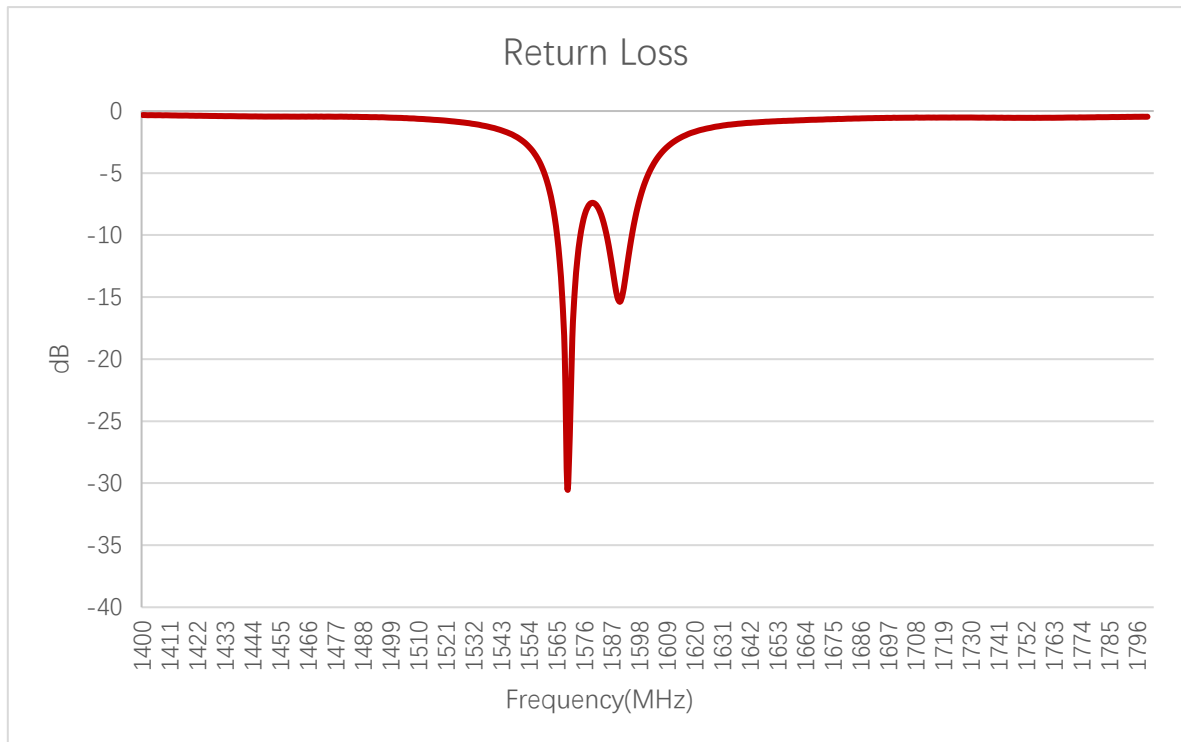
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	3.14	2.07	3.72

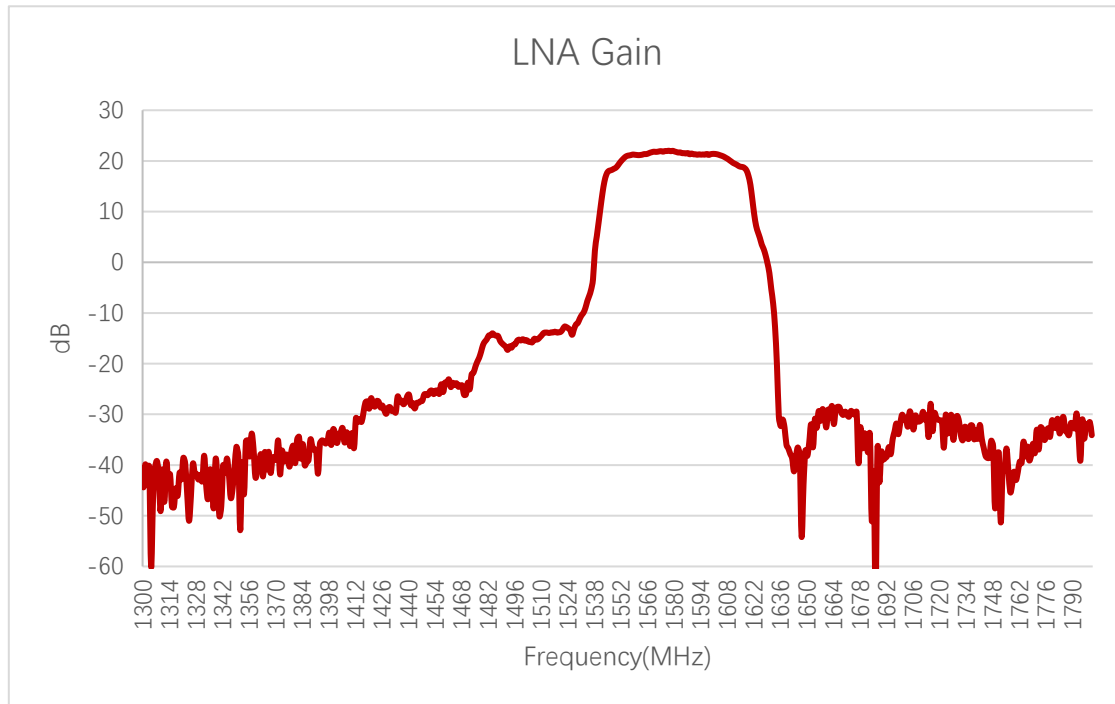
3.1.2. Return Loss



Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-5.7	-9.1	-4.7

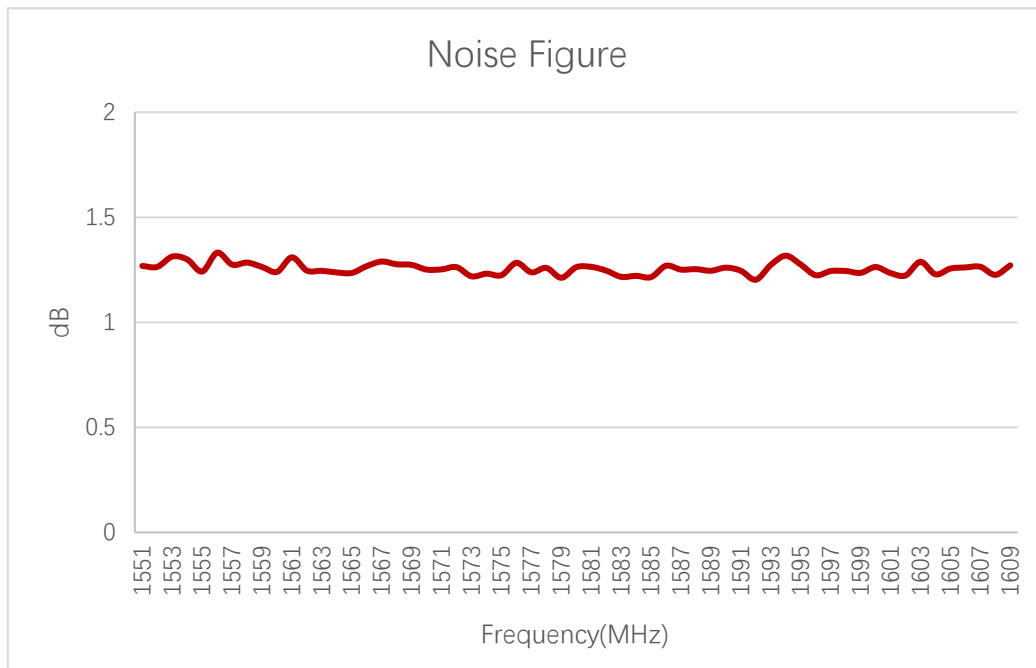
3.1.3. LNA Gain



LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	21.1	21.9	21.3

3.1.4. Noise Figure

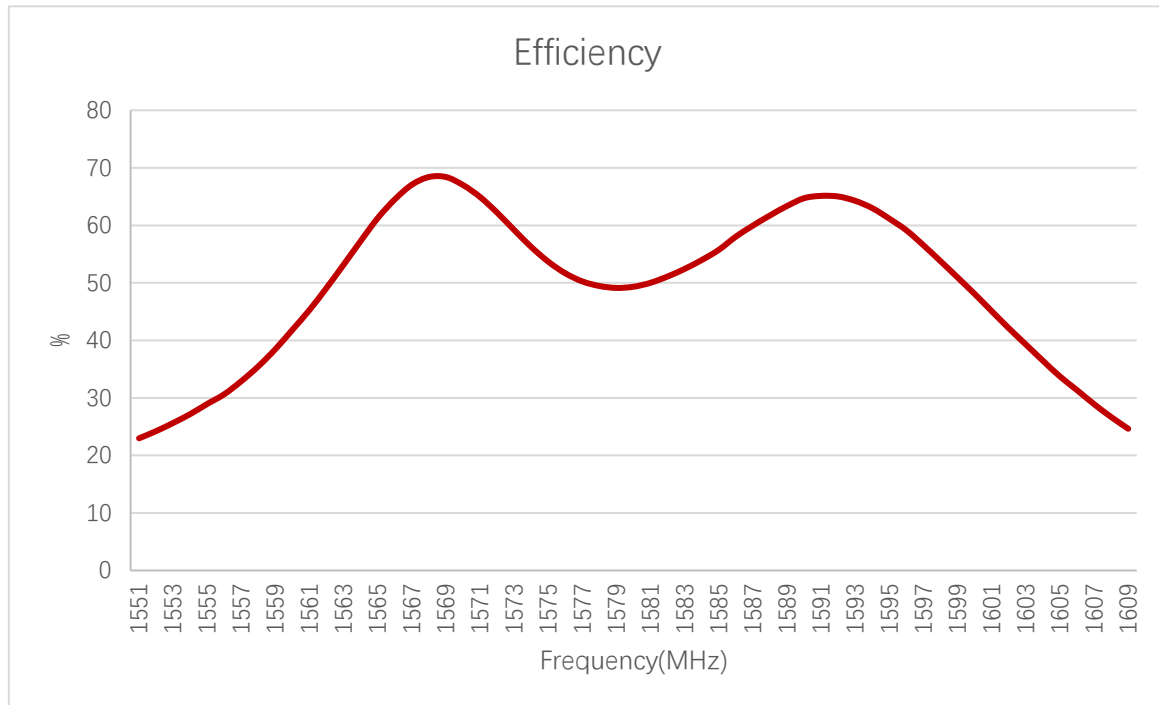


Noise Figure (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	-	-	-	-	-	1.3	1.2	1.2

3.2. Radiation Performance Test

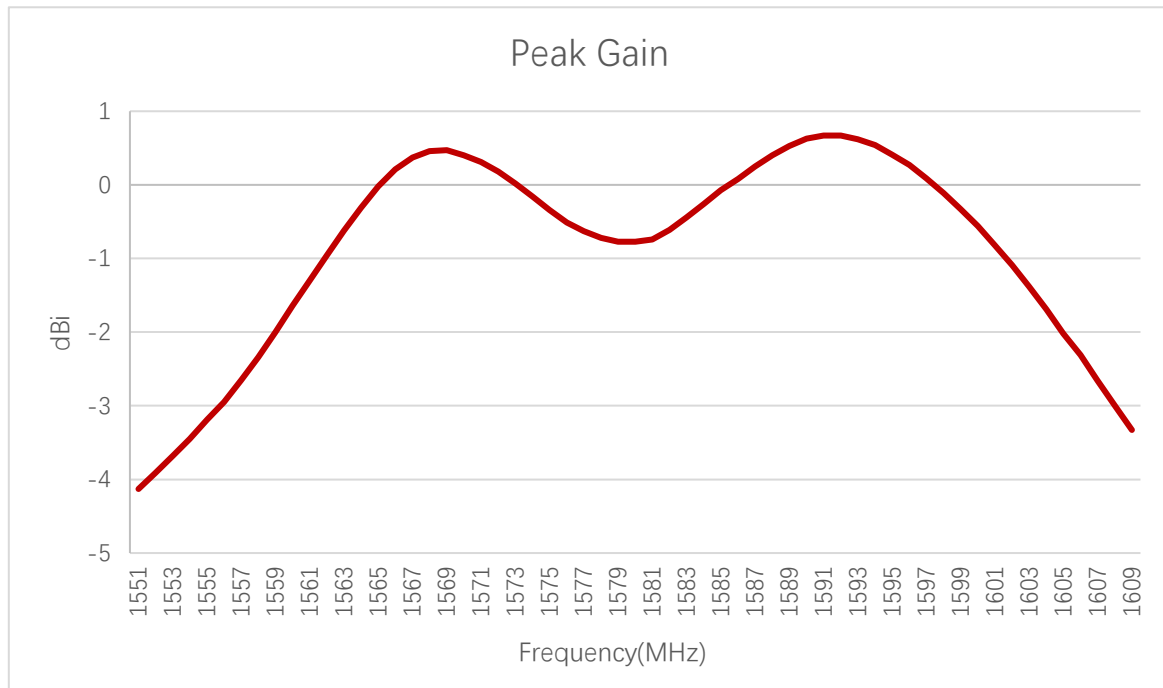
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	45.3	53.6	42.1

3.2.2. Peak Gain

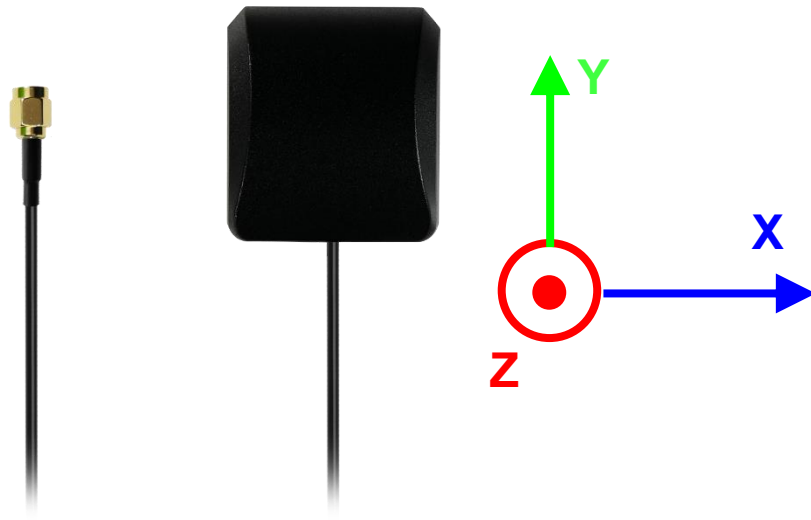


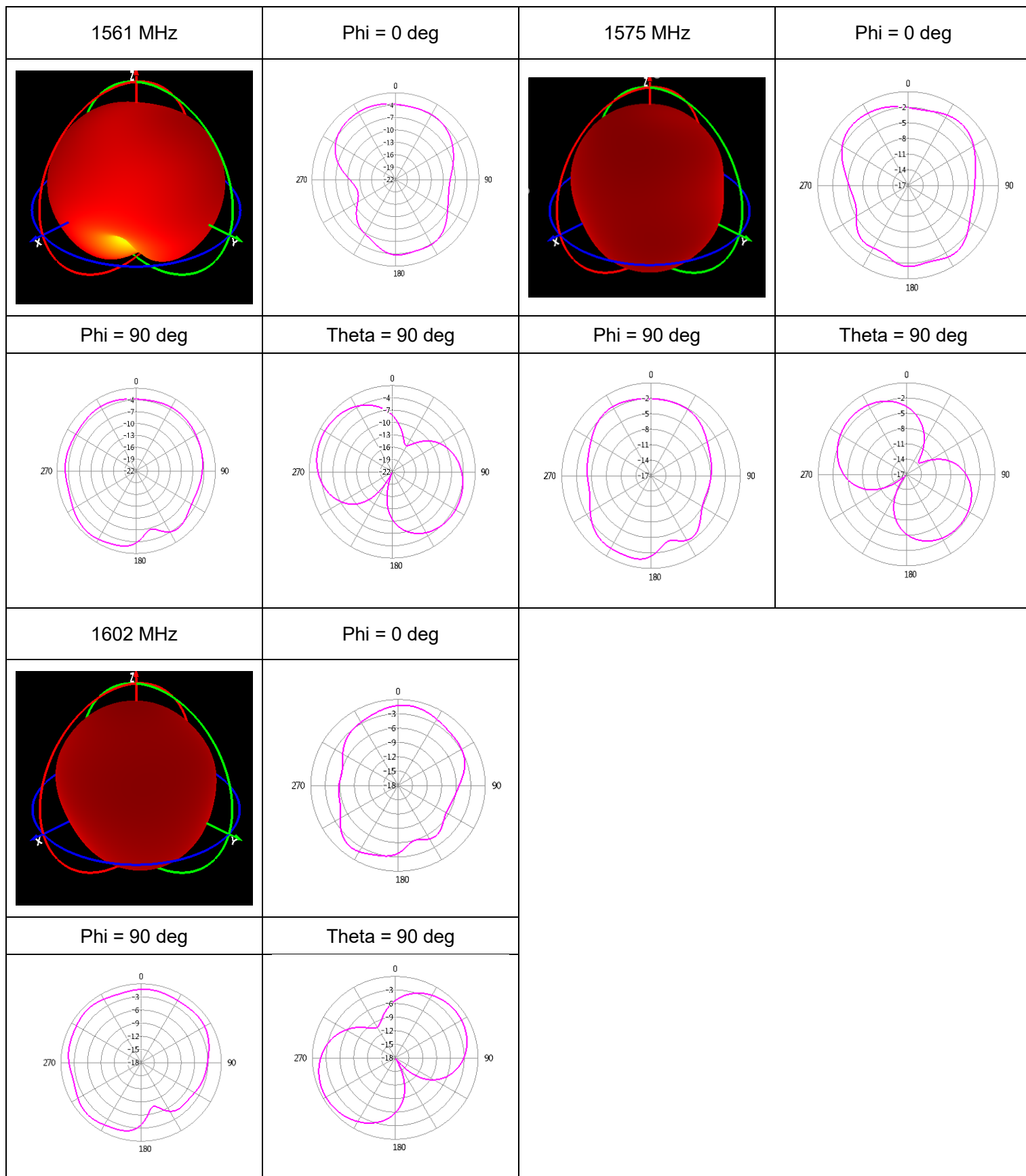
Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	-1.3	-0.34	-1.09

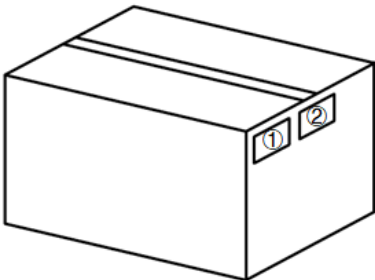
3.2.3. 3D & 2D Radiation Pattern

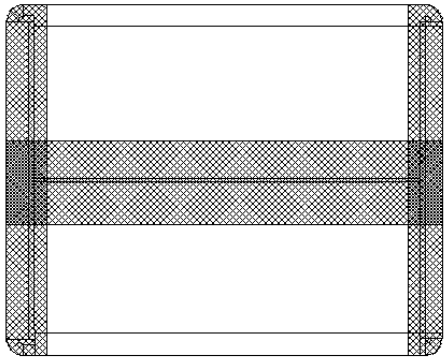
- Test Condition: Free Space
- Test Chamber: SH-SY-16M





4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		1 antenna product in a small PE bag. (1 Antenna / Small PE Bag)
2		10 antenna products in a big PE bag. (10 Antennas / Big PE Bag)
3		(6 Big PE Bags / Carton Box) (60 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 = 405 × 293 × 185 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:

Quectel Wireless Solutions Co., Ltd.

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: info@quectel.com

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

<http://www.quectel.com/support/sales.htm>.

For technical support, or to report documentation errors, please visit:

<http://www.quectel.com/support/technical.htm>.

Or email us at: support@quectel.com.

Legal Notices

We offer information as a service to you. The provided information is based on your requirements and we make every effort to ensure its quality. You agree that you are responsible for using independent analysis and evaluation in designing intended products, and we provide reference designs for illustrative purposes only. Before using any hardware, software or service guided by this document, please read this notice carefully. Even though we employ commercially reasonable efforts to provide the best possible experience, you hereby acknowledge and agree that this document and related services hereunder are provided to you on an “as available” basis. We may revise or restate this document from time to time at our sole discretion without any prior notice to you.

Use and Disclosure Restrictions

License Agreements

Documents and information provided by us shall be kept confidential, unless specific permission is granted. They shall not be accessed or used for any purpose except as expressly provided herein.

Copyright

Our and third-party products hereunder may contain copyrighted material. Such copyrighted material shall not be copied, reproduced, distributed, merged, published, translated, or modified without prior written consent. We and the third party have exclusive rights over copyrighted material. No license shall be granted or conveyed under any patents, copyrights, trademarks, or service mark rights. To avoid ambiguities, purchasing in any form cannot be deemed as granting a license other than the normal non-exclusive, royalty-free license to use the material. We reserve the right to take legal action for noncompliance with abovementioned requirements, unauthorized use, or other illegal or malicious use of the material.

Trademarks

Except as otherwise set forth herein, nothing in this document shall be construed as conferring any rights to use any trademark, trade name or name, abbreviation, or counterfeit product thereof owned by Quectel or any third party in advertising, publicity, or other aspects.

Third-Party Rights

This document may refer to hardware, software and/or documentation owned by one or more third parties (“third-party materials”). Use of such third-party materials shall be governed by all restrictions and obligations applicable thereto.

We make no warranty or representation, either express or implied, regarding the third-party materials, including but not limited to any implied or statutory, warranties of merchantability or fitness for a particular purpose, quiet enjoyment, system integration, information accuracy, and non-infringement of any third-party intellectual property rights with regard to the licensed technology or use thereof. Nothing herein constitutes a representation or warranty by us to either develop, enhance, modify, distribute, market, sell, offer for sale, or otherwise maintain production of any our products or any other hardware, software, device, tool, information, or product. We moreover disclaim any and all warranties arising from the course of dealing or usage of trade.

Privacy Policy

To implement module functionality, certain device data are uploaded to Quectel's or third-party's servers, including carriers, chipset suppliers or customer-designated servers. Quectel, strictly abiding by the relevant laws and regulations, shall retain, use, disclose or otherwise process relevant data for the purpose of performing the service only or as permitted by applicable laws. Before data interaction with third parties, please be informed of their privacy and data security policy.

Disclaimer

- a) We acknowledge no liability for any injury or damage arising from the reliance upon the information.
- b) We shall bear no liability resulting from any inaccuracies or omissions, or from the use of the information contained herein.
- c) While we have made every effort to ensure that the functions and features under development are free from errors, it is possible that they could contain errors, inaccuracies, and omissions. Unless otherwise provided by valid agreement, we make no warranties of any kind, either implied or express, and exclude all liability for any loss or damage suffered in connection with the use of features and functions under development, to the maximum extent permitted by law, regardless of whether such loss or damage may have been foreseeable.
- d) We are not responsible for the accessibility, safety, accuracy, availability, legality, or completeness of information, advertising, commercial offers, products, services, and materials on third-party websites and third-party resources.

Copyright © Quectel Wireless Solutions Co., Ltd. 2025. All rights reserved.

Revision History

Version	Date	Author	Note
-	2025-05-26	Junsen Li/ Steven Mo/ Riva Ren/ Rainey Liao	Creation of the document
1.0	2025-05-26	Junsen Li/ Steven Mo/ Riva Ren/ Rainey Liao	First official release
1.1	2025-08-11	Steven Mo	Updated the waterproof rating to IP67.



www.quectel.com