



Antenna Datasheet

Product OC: YEGN001Q1A

Version: 1.2

Date: 2025-10-15

Status: Released

Product Name: GNSS Multiple Mount Low Profile Active External Antenna

Key Features:

Frequency Band: 1164–1189 MHz, 1559–1606 MHz

Dimensions: 55.2 mm × 48 mm × 20.5 mm

Total LNA Gain: 17 ±3 dB

RoHS and REACH Compliant

IP 67

Compatible with ECE-R118 cables under demand

Overview

The Quectel YEGN000Q1A represent the pinnacle of rugged, high-performance GNSS antenna technology, designed to deliver multi-constellation, dual-band (L1/L5) 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, 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

Dual-Band Precision & Active Amplification

Frequency Bands: 1164–1189 MHz (L5) and 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 (≤2.5 dB), enhancing weak signal reception in urban canyons or remote areas.

Advanced Filtering: SAW filters and hybrid couplers provide 60 dB out-of-band attenuation, minimizing interference from adjacent frequencies.

Superior RF Performance

Peak Gain: 1.39 dBi(max) with RHCP polarization for multipath rejection.

Industrial-Grade Durability

IP67 Rating: Fully dustproof and waterproof, suitable for marine or outdoor deployments.

UV-Resistant & Flame-Retardant Housing: Compliant with UL 94 V-0 and UL 746c f1 standards.

Mounting Flexibility:

YEGN000Q1A: Bracket-mounted with 0.7 N·m torque support for permanent fixtures.

Power Efficiency & Compliance

Low Power Consumption: Operates at 1.8–5 V, ideal for battery-powered systems.

RoHS/REACH Compliant: Environmentally safe for global deployments.

Target Applications

1. These antennas are ideal for mission-critical systems requiring high precision and reliability:
2. Autonomous Vehicles: Lane-level navigation for ADAS and robotics.
3. Marine: Offshore navigation, and other positioning devices.
4. Precision Agriculture: Guidance systems for tractors and harvesters.
5. Industrial IoT: Asset tracking in ports, mining, and logistics.
6. 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.

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1 Specification

Test Condition: Free Space

1.1. Electrical

Electrical	
Frequency Range	1164–1189 MHz, 1559–1606 MHz
Impedance	50 Ω
Polarization	RHCP
Radiation Pattern	Directional

Band	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
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.16	-	-	-	-	1.21	1.35	1.46
Return Loss (dB)	-22.3	-	-	-	-	-20.1	-16.2	-14.4
Efficiency (%)	52	-	-	-	-	37	52	32
Peak Gain (dBi)	0.99	-	-	-	-	-0.62	1.19	-0.97
Axial Ratio (dB)	1.72	-	-	-	-	1.88	1.42	1.17

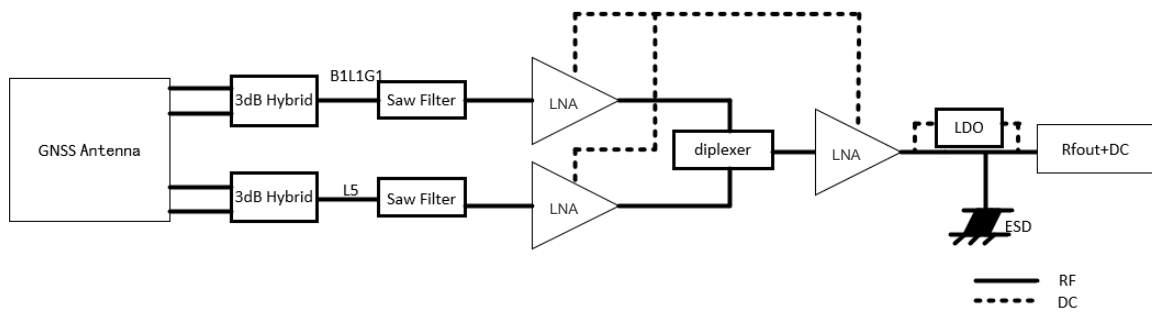
LNA Electrical	
LNA Gain	21 ±3 dB (PCBA) @ 3-5V 19 ±3 dB (PCBA) @ 1.8V
Total LNA Gain	17 ±3 dB (With cable loss) @ 3-5V 15 ±3 dB (With cable loss) @ 1.8V
Noise Figure	≤ 2.5 dB
Output VSWR	< 2.0
Filter Out-of-Band Attenuation	60 dB f0 ±100 MHz f0 (1176 MHz, 1580 MHz)
Working Voltage	1.8–5 V
Working Current	15.3 ±5 mA @ 3-5V 11.5 ±5 mA @ 1.8V
Impedance	50 Ω

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	55.2 mm × 48 mm × 20.5 mm
Material & Color	PC & Black
Cable Type & Length	RG174 Black & 3000 mm
Connector Type	SMA Male (The current state of the SMA connector is not waterproof. If a waterproof connector is required, it can be customized.)
Mounting Type	Bracket (Support installation reference torque 0.7N.m)
Weight	Typ. 104.1 ±5 g

Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP67
RoHS & REACH Compliant	Yes
Housing Flame Rating	UL 94 V-0
Housing UV Resistant	UL 746c f1

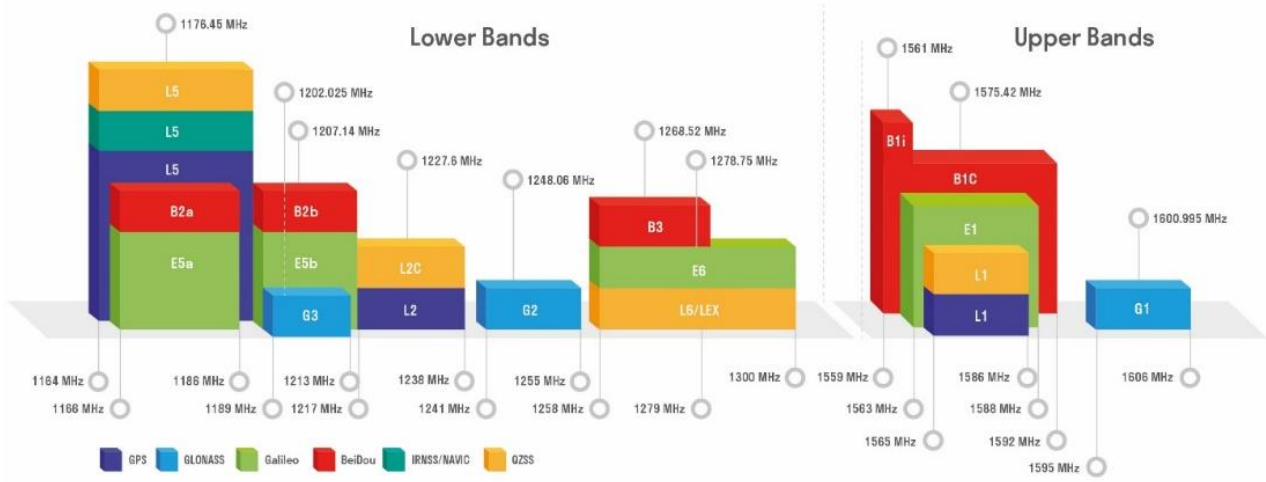
1.3. Block Diagram (Active Antenna)



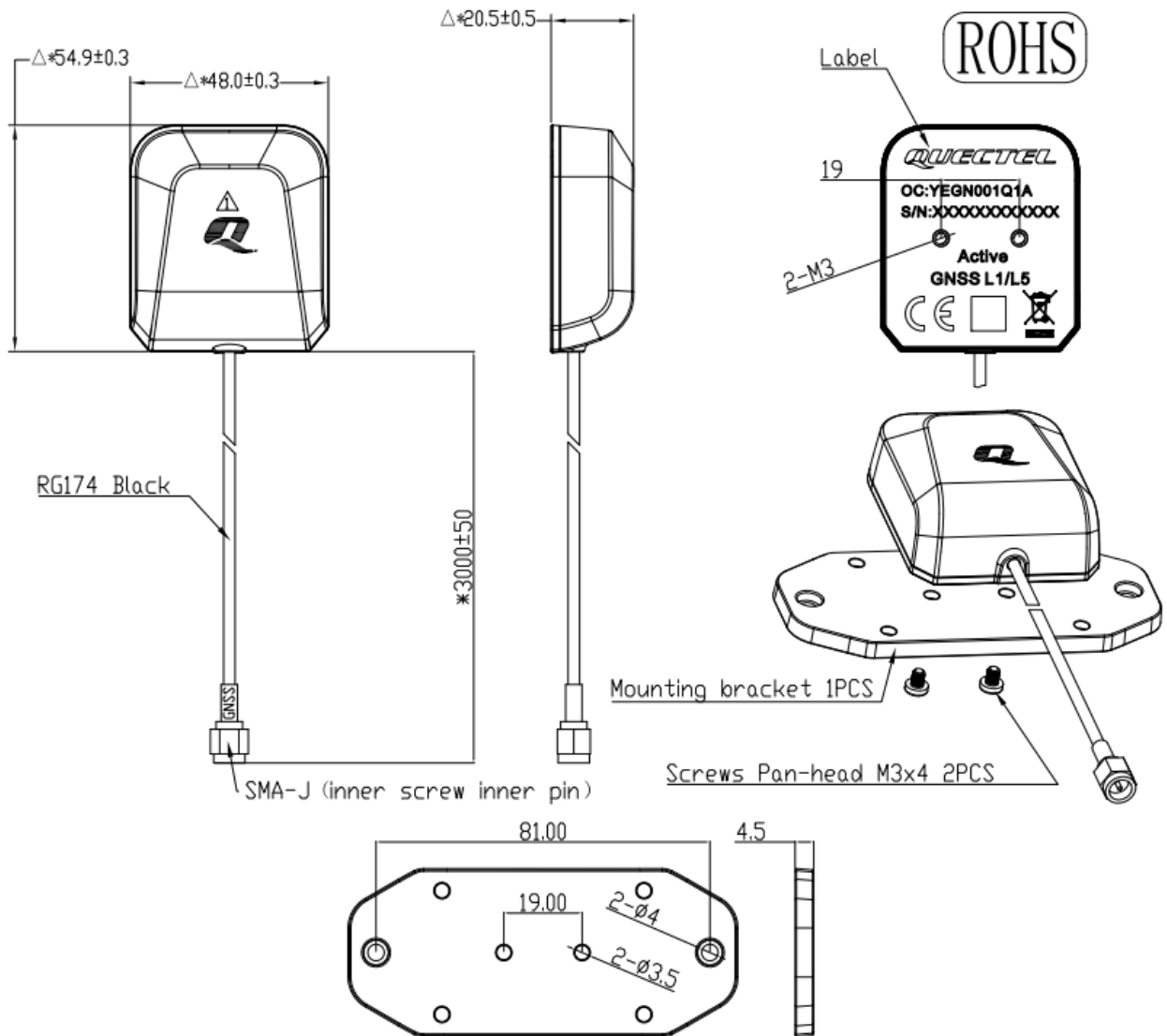
1.4. Supported GNSS Frequency Bands

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



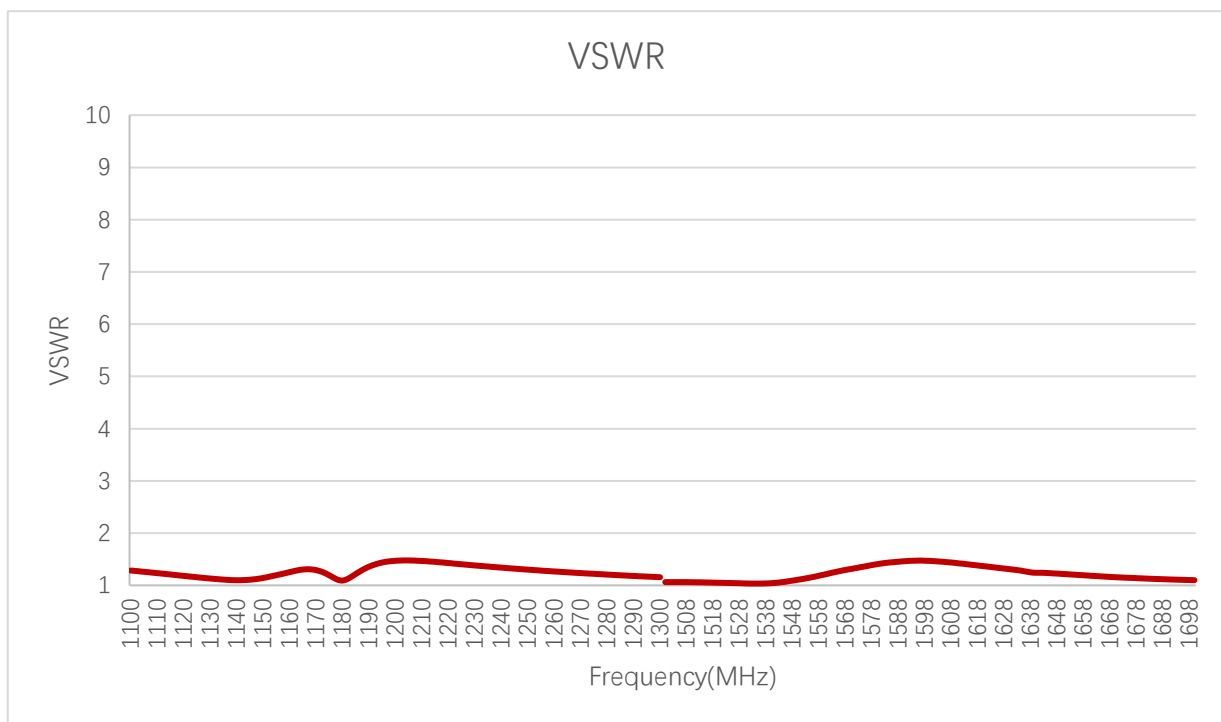
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	1.16	-	-	-	-	1.21	1.35	1.46

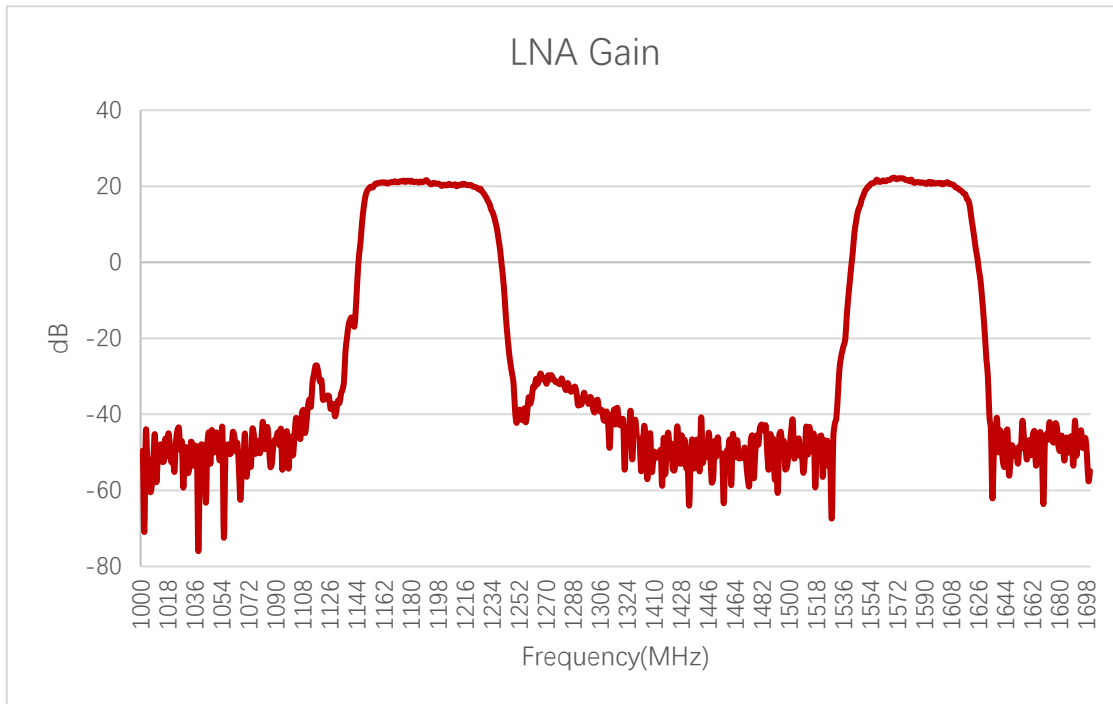
3.1.2. Return Loss



Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-22.3	-	-	-	-	-20.1	-16.2	-14.4

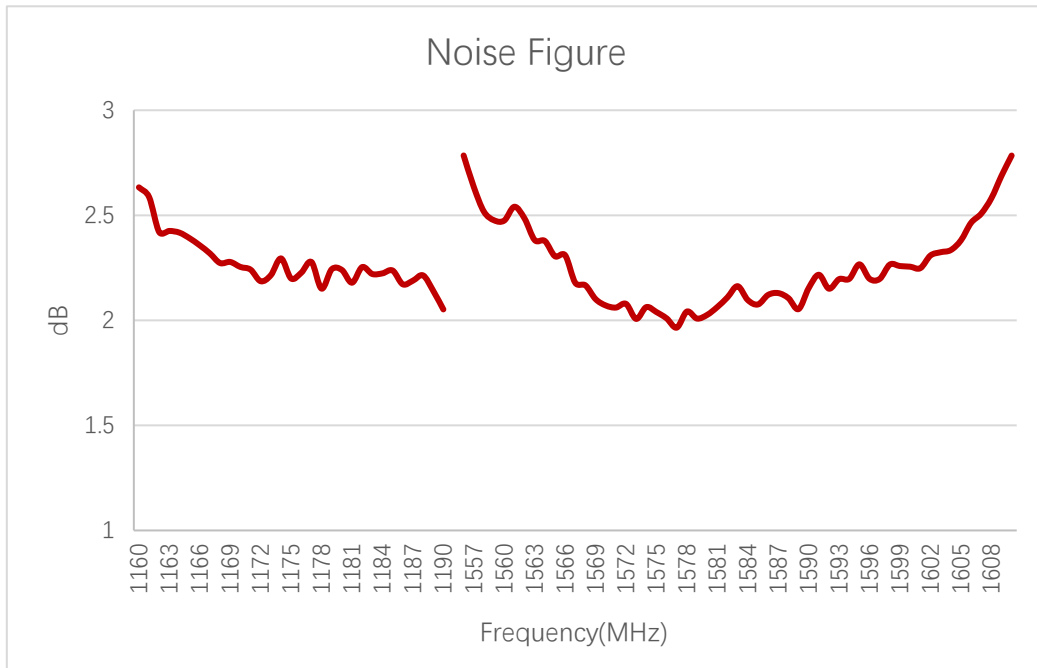
3.1.3. LNA Gain



LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	21.1	-	-	-	-	21.2	22	20.5

3.1.4. Noise Figure

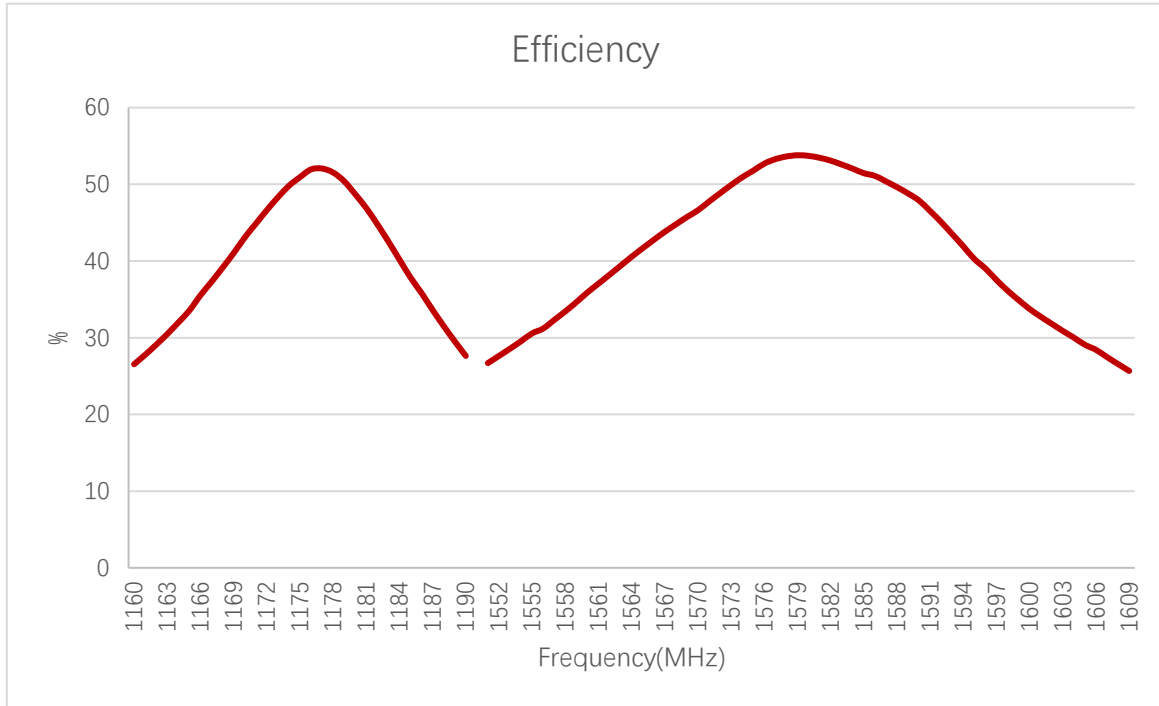


Noise Figure (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Noise Figure (dB)	2.22	-	-	-	-	2.5	2.01	2.3

3.2. Radiation Performance Test

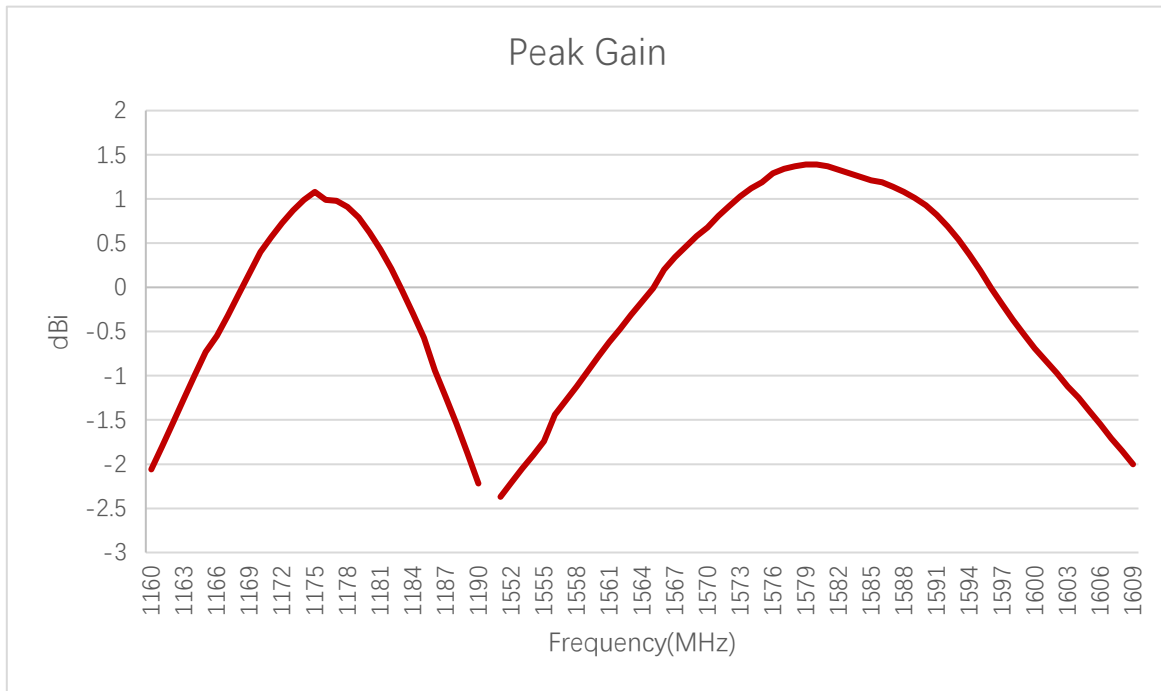
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	52	-	-	-	-	37	52	32

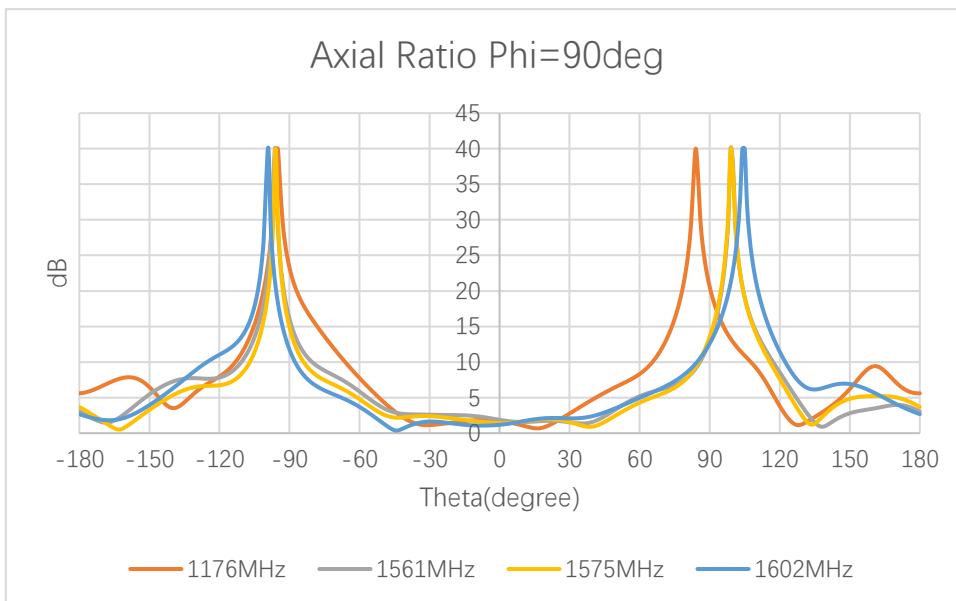
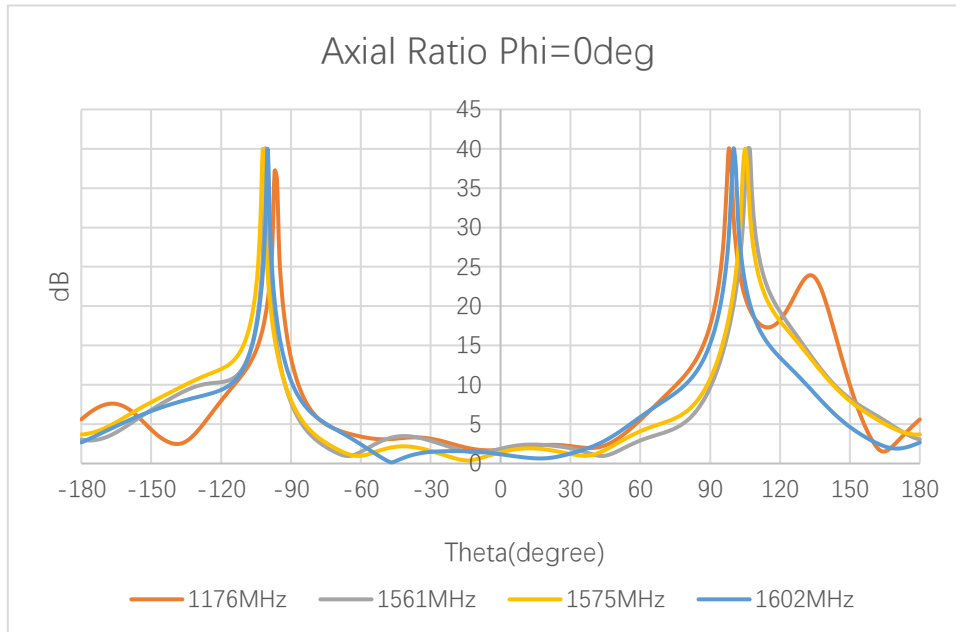
3.2.2. Peak Gain



Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	0.99	-	-	-	-	-0.62	1.19	-0.97

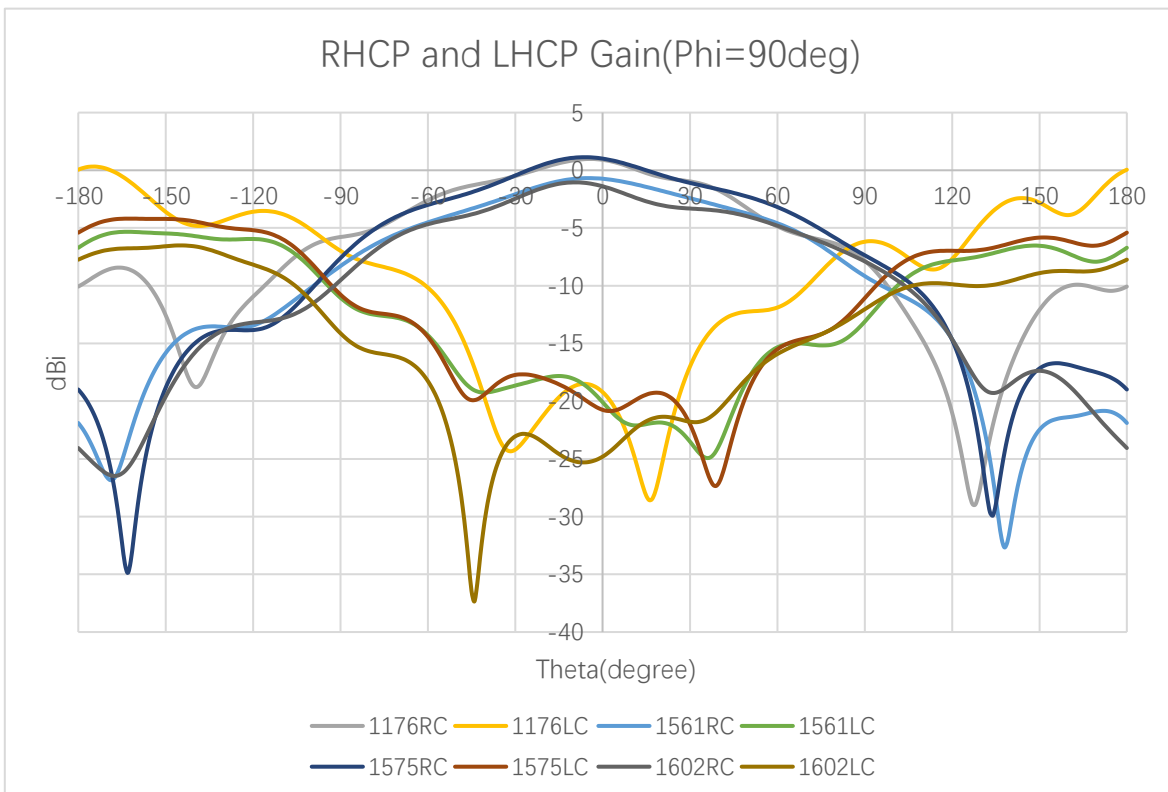
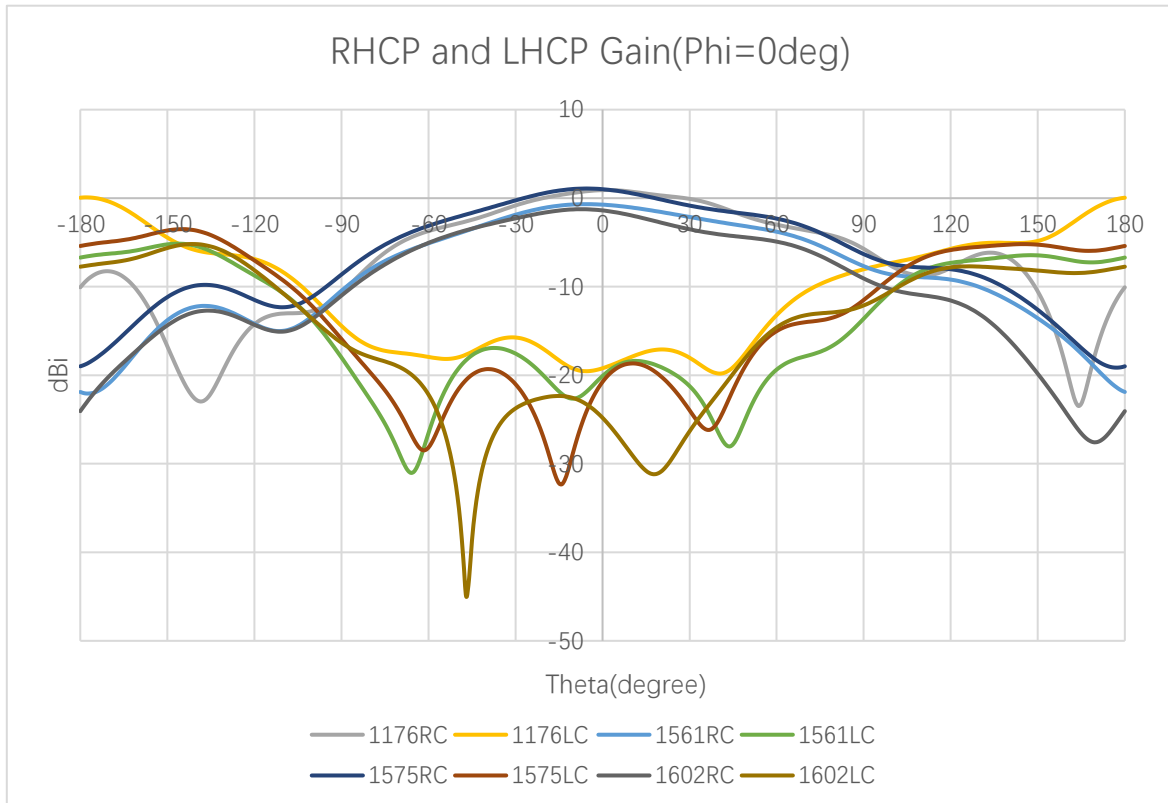
3.2.3. Axial Ratio



Axial Ratio (dB)

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	1.72	-	-	-	-	1.88	1.42	1.17
	Phi = 90 (deg) Theta = 0 (deg)	1.72	-	-	-	-	1.88	1.42	1.17

3.2.4. 2D RHCP and LHCP Gain

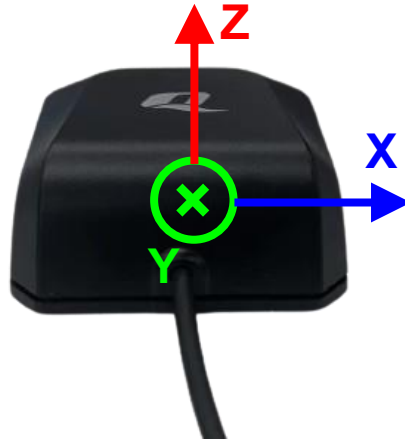


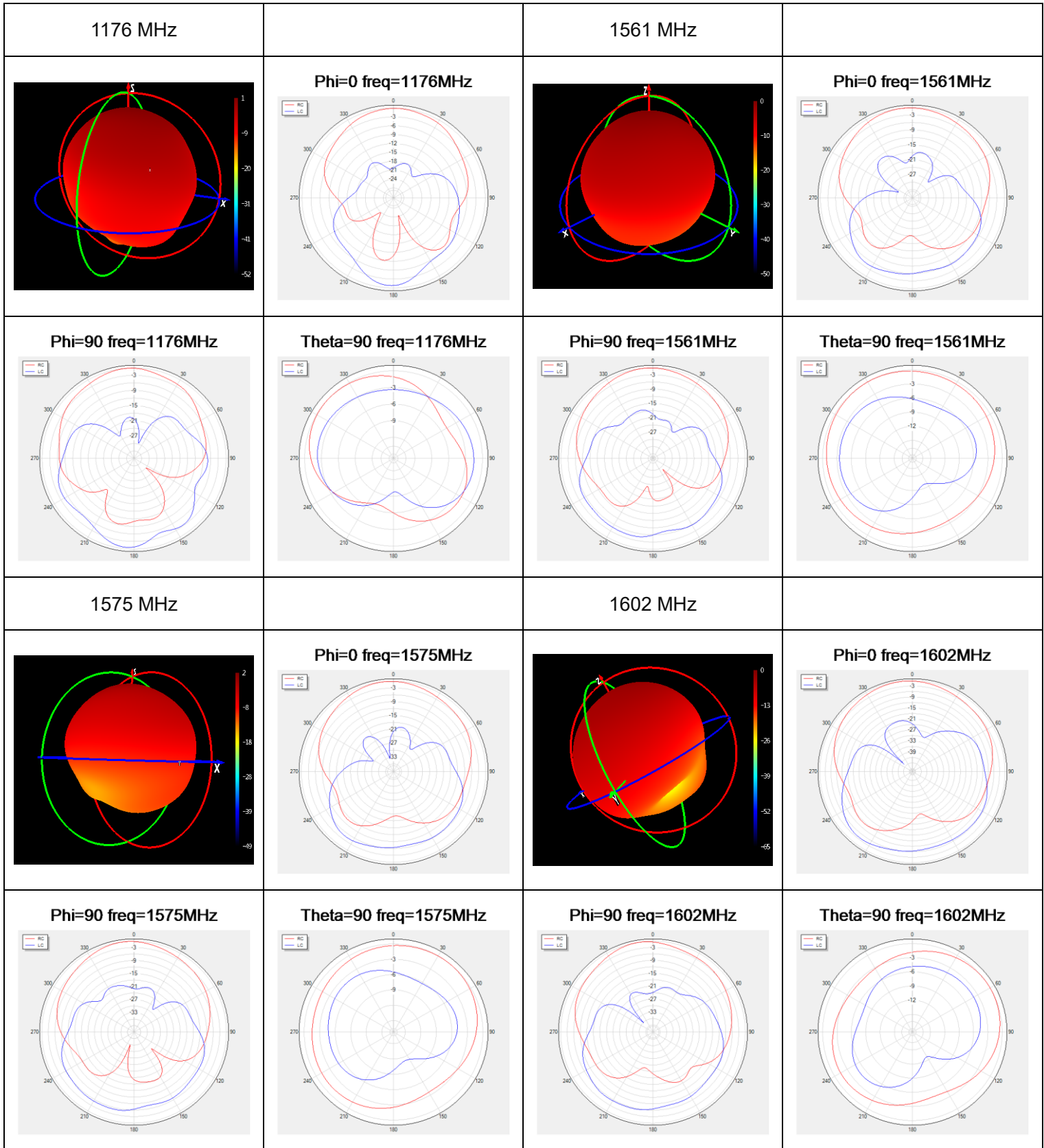
2D RHCP and LHCP Gain (dBi)

Frequency (MHz)		1176	1207	1227	1248	1268	1561	1575	1602
RC Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	0.91	-	-	-	-	-0.73	1.01	-1.38
	Phi = 90 (deg) Theta = 0 (deg)	0.91	-	-	-	-	-0.73	1.01	-1.38
LC Gain (dBi)	Phi = 0 (deg) Theta = 0 (deg)	-19.2	-	-	-	-	-20.8	-20.7	-25.8
	Phi = 90 (deg) Theta = 0 (deg)	-19.2	-	-	-	-	-20.8	-20.7	-25.8





3.2.5. 3D & 2D Radiation Pattern

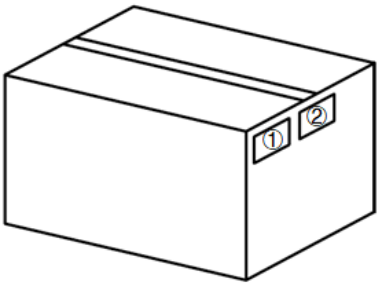
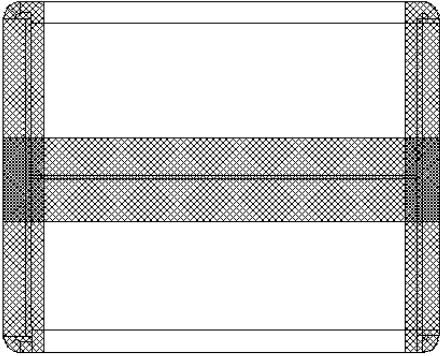
- Test Condition: Free Space
- Test Chamber: SH-SY-16M





4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>1 antenna products in a small PE bag. (1 Antenna / Small PE Bag)</p>
2		<p>10 antenna products in a big PE bag. (10 Antennas / Big PE Bag)</p>
3		<p>Independent packaging of accessories</p>
4		<p>(6 Big Product PE Bags and Accessory Bag / Carton Box) (60 Antennas / Carton Box) <u>Carton Size:</u> <u>L x W x H = 405 x 293 x 185 mm</u></p>

5	 A 3D perspective drawing of a rectangular cardboard box. On the front face, there are two small rectangular labels. The left label contains the number '1' and the right label contains the number '2'.	<p>Position for Attaching Labels</p> <ul style="list-style-type: none">① Carton Label② Quality Label
6	 A 2D perspective drawing of a rectangular box with a mesh-like texture. It features a prominent H-shaped structure on the front face, consisting of two horizontal bars and two vertical bars, which likely represent a sealing mechanism.	<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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Or our local offices. For more information, please visit:

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Revision History

Version	Date	Author	Note
-	2024-10-08	Junsen Li/ Steven Mo/ David Liu/ Rainey Liao	Creation of the document
1.0	2024-10-08	Junsen Li/ Steven Mo/ David Liu/ Rainey Liao	First official release
1.1	2025-06-12	Rainey Liao	1. Updated the antenna image (Cover page). 2. Updated the overview.
1.2	2025-10-15	Junsen Li	Added LNA gains according to different supply voltages (Chapter 1.1).

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