



Antenna Datasheet

Product OC: YCGO011AA

Version: 4.0

Date: 2023-08-26

Status: Released

Product Name: Active GPS L1 & GLONASS G1 Antenna

Key Features:

Frequency Band: 1565–1606 MHz

Dimensions: 25 × 25 × 6.3 mm

Efficiency: Up to 59.5 %

RoHS Compliant

LNA Gain: 17 ±2 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.

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1 Specification

Test Condition: By 25 mm square ground plane

1.1. Electrical

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

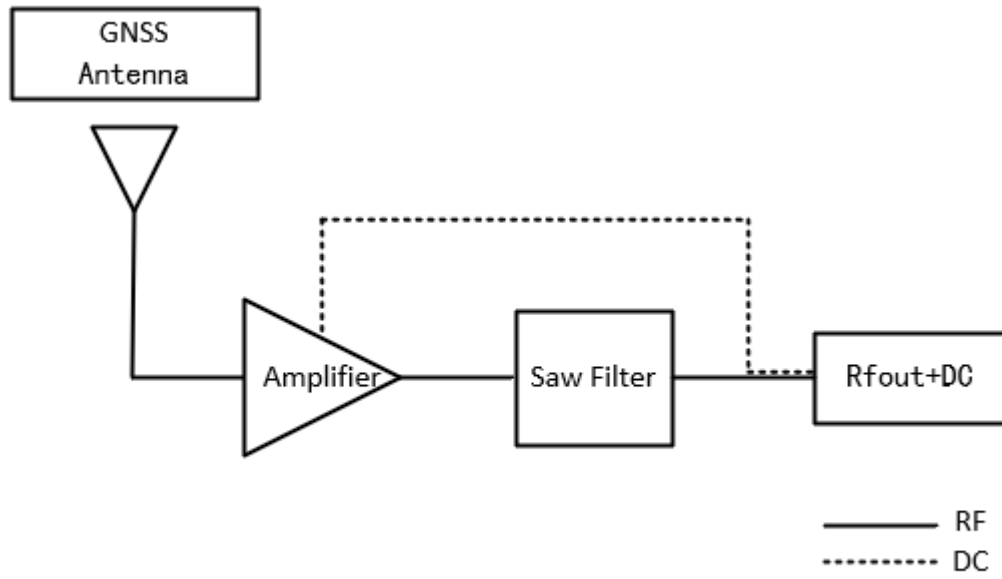
Band	GPS L5	GALILEO	GPS L2	GLONASS	BEIDOU	BEIDOU	GPS L1	
	GALILEO E5a	GALILEO E5b	GPS L2 QZSS L2C	GLONASS G2	BEIDOU B3	BEIDOU B1I	GALILEO E1	GLONASS G1
Frequency (MHz)	BEIDOU B2a-B2I	BEIDOU B2b					BEIDOU B1C	
	QZSS L5						QZSS L1	
	IRNSS L5							
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.8	1.5
Return Loss (dB)	-	-	-	-	-	-	-11.0	-14.7
Efficiency (%)	-	-	-	-	-	-	59.5	58.4
Peak Gain (dBi)	-	-	-	-	-	-	1.5	1.4

LNA Electrical	
LNA Gain	17 ±2 dB
Noise Figure	≤ 1.5 dB
Output VSWR	< 2.0
Filter Out-of-Band Attenuation	47 dB f0 ±100 MHz f0 (1588 MHz)
Working Voltage	2.7–3.3 V
Working Current	8 ±2 mA @ 3 V
Impedance	50 Ω

1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	25 × 25 × 6.3 mm
Material	PCB + Ceramic
Cable Type & Color & Length	Φ 1.13 & Black & 50 mm
Connector Type	IPEX MHF 1
Mounting Type	Buckle
Weight	Typ. 11.2 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS Compliant	Yes

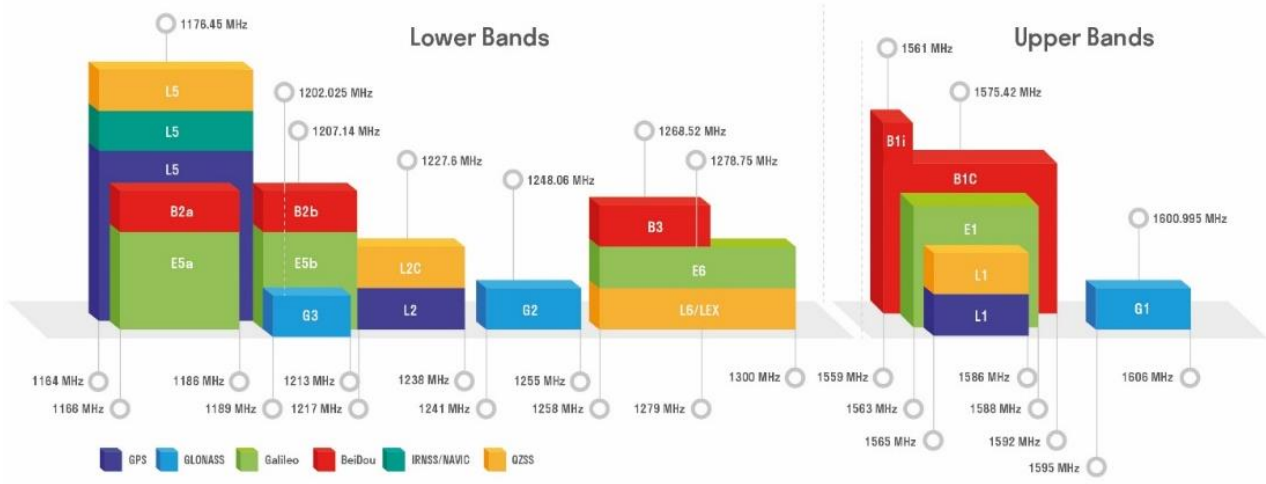
1.3. Block Diagram (Active Antenna)



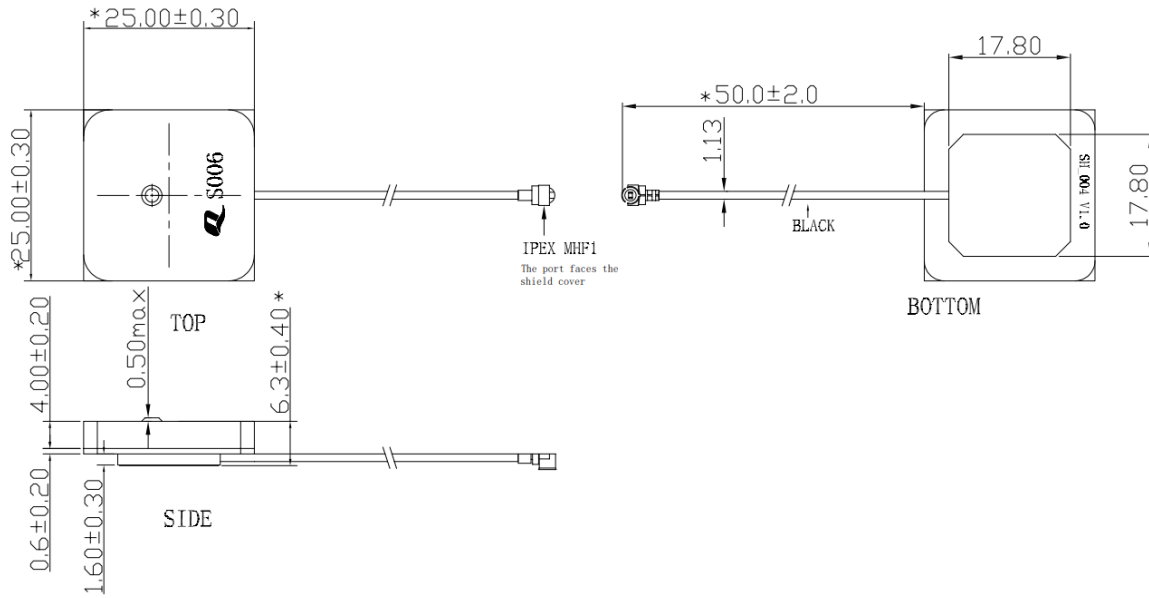
1.4. Supported GNSS Frequency Bands

GNSS Frequency Bands (MHz)					
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)	
	√	-	-	-	
BEIDOU	B1I Centre 1561.098 (1559–1564)	B1C (BeiDou-3) Centre 1575.42 (1559–1592)	B2b Centre 1176.45 (1166–1187)	B2a-B2I 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



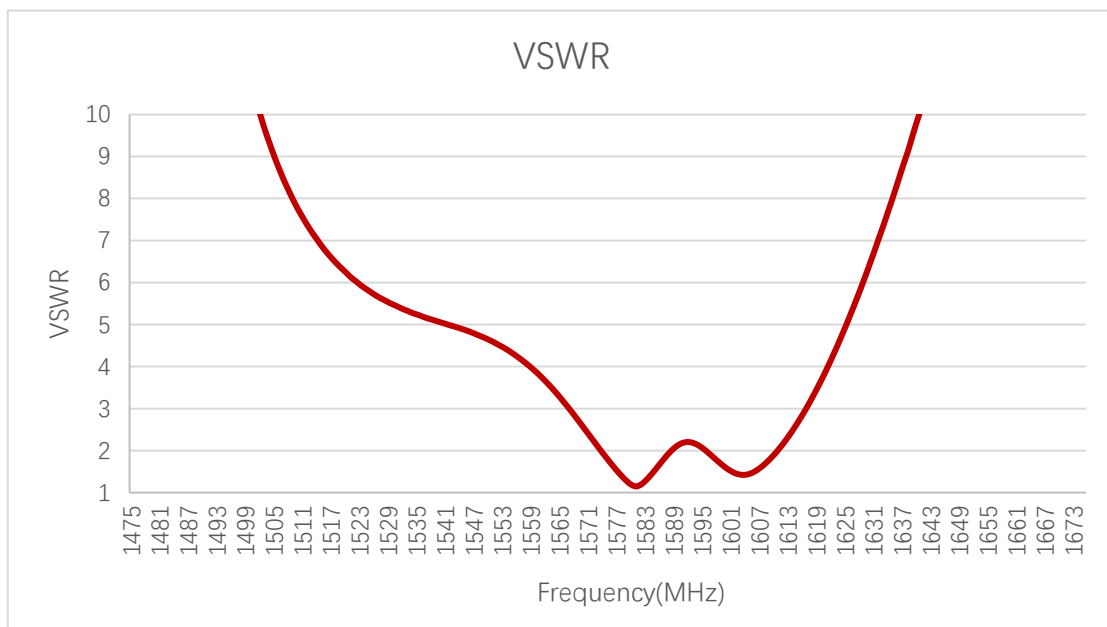
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

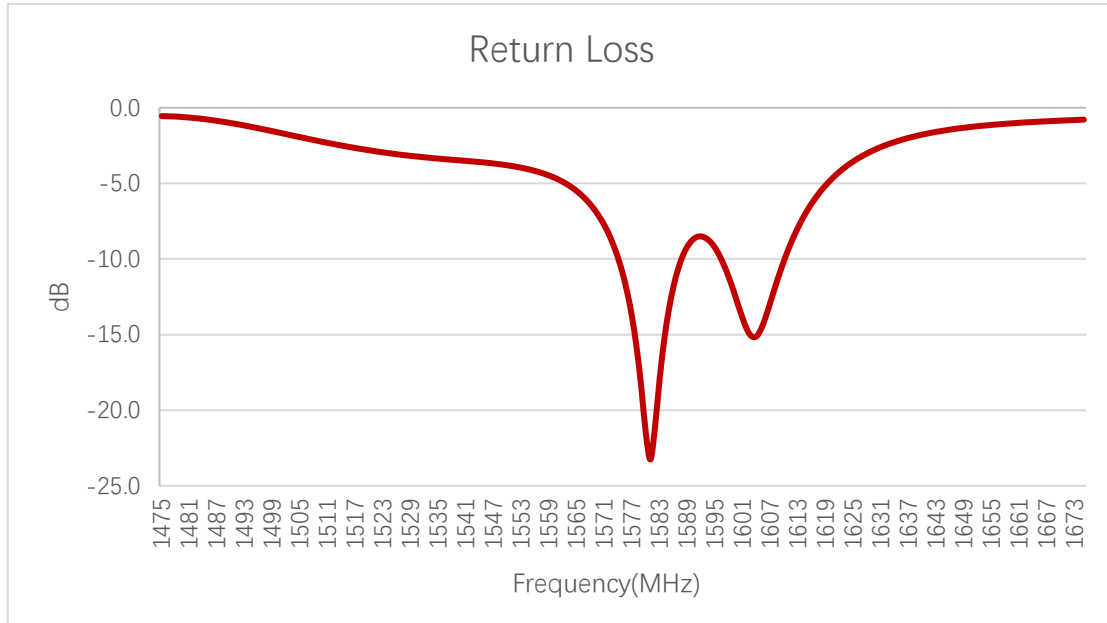
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	-	1.8	1.5

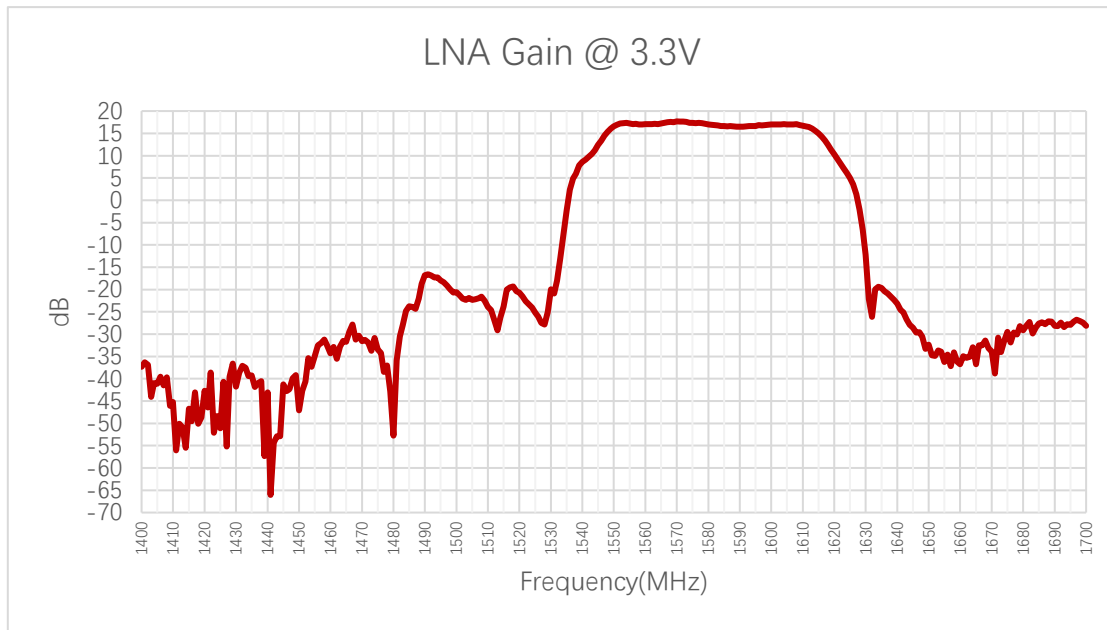
3.1.2. Return Loss



Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-	-11.0	-14.7

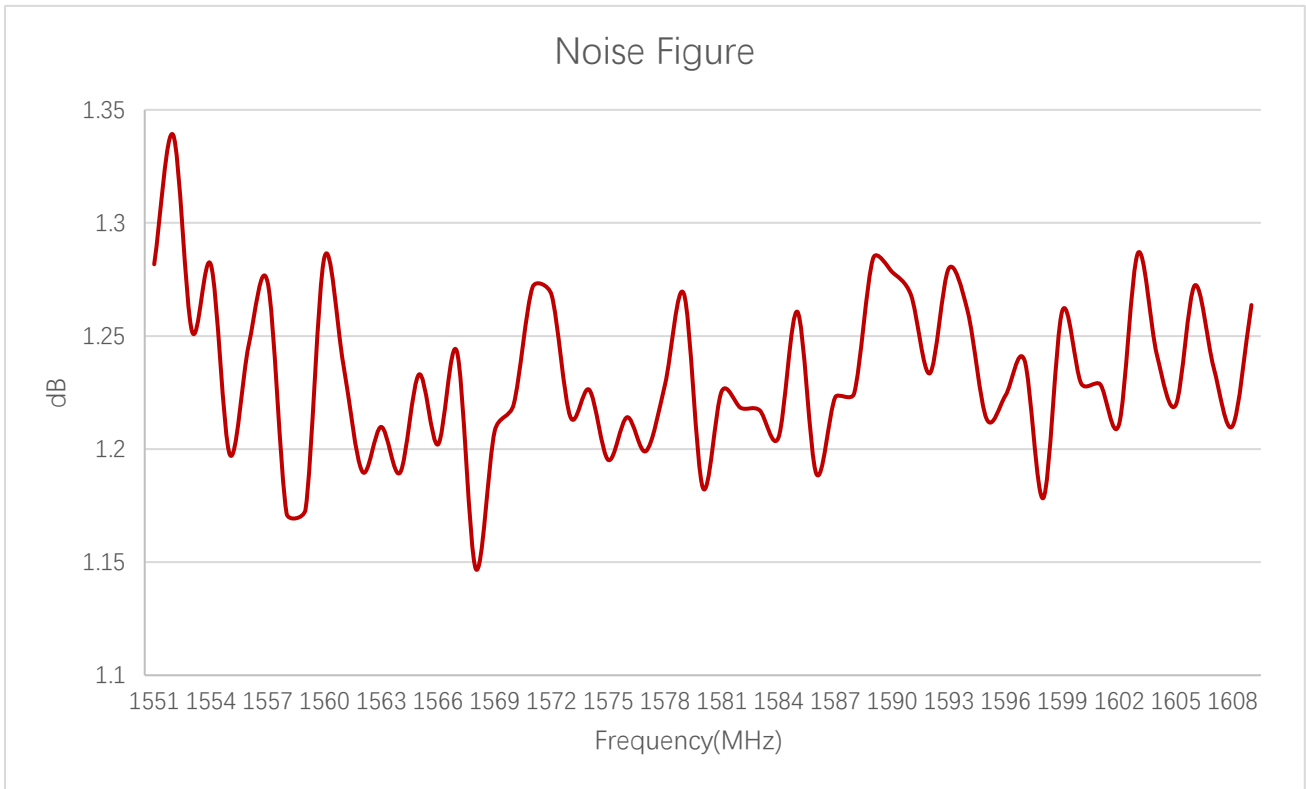
3.1.3. GNSS LNA Gain



LNA Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
LNA Gain (dB)	-	-	-	-	-	-	17.3	17.0

3.1.4. Noise Figure

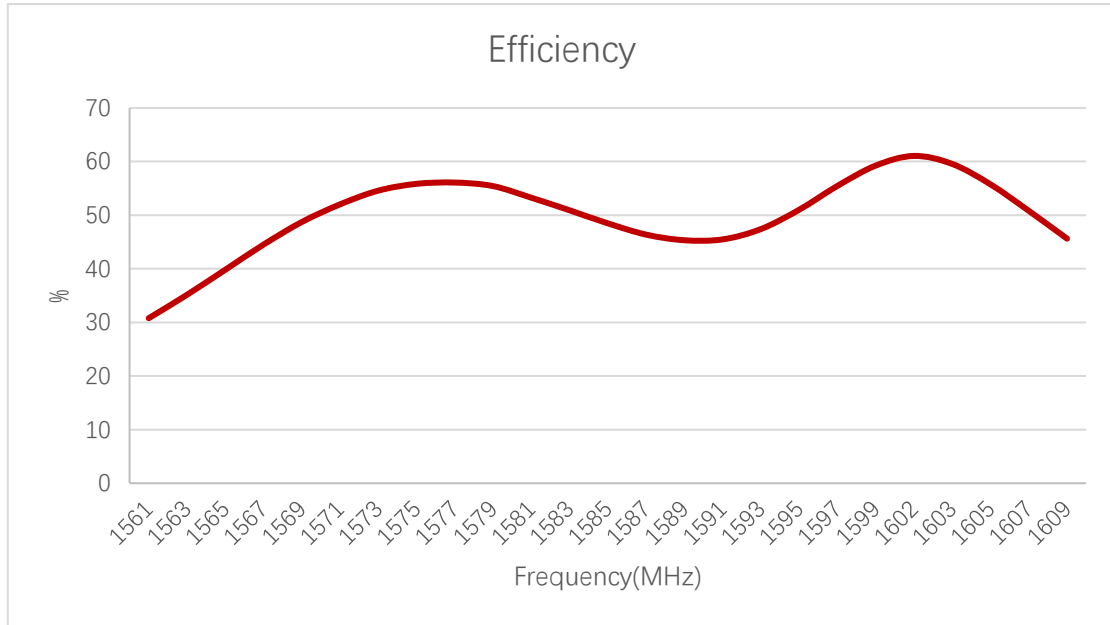


Noise Figure (dB)

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

3.2. Radiation Performance Test

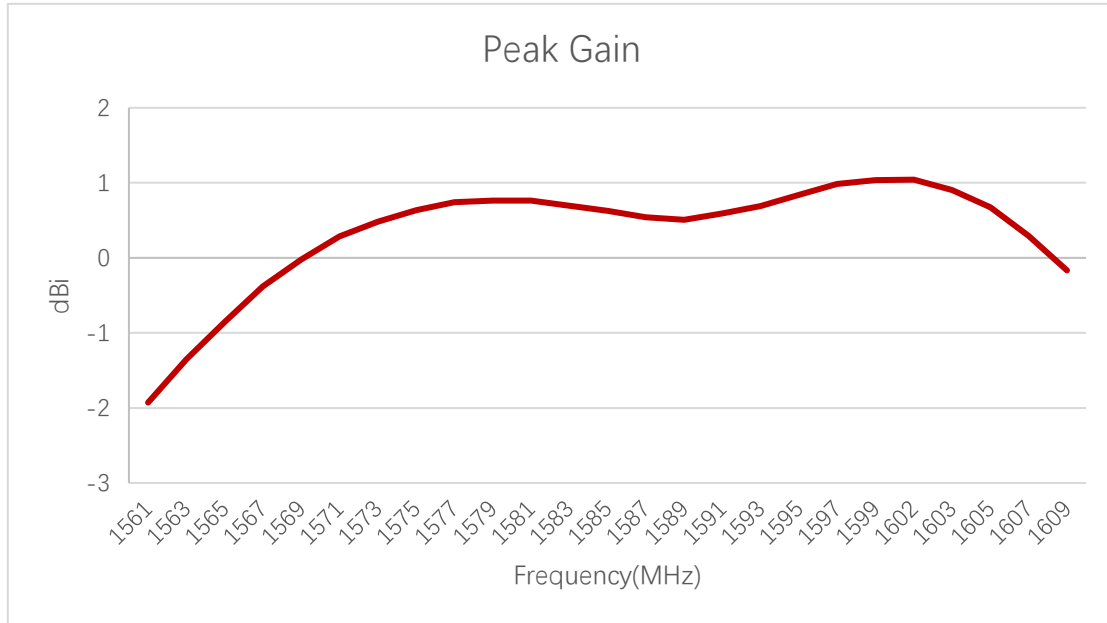
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	-	55.9	61.1

3.2.2. Peak Gain

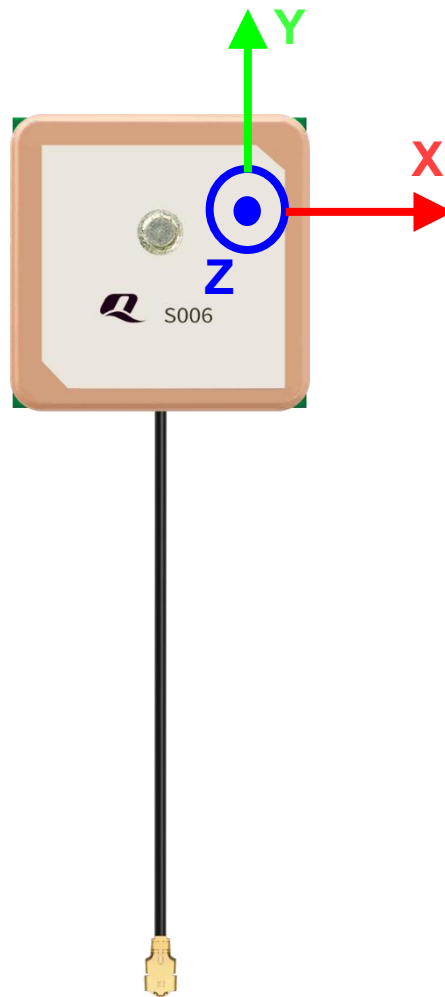


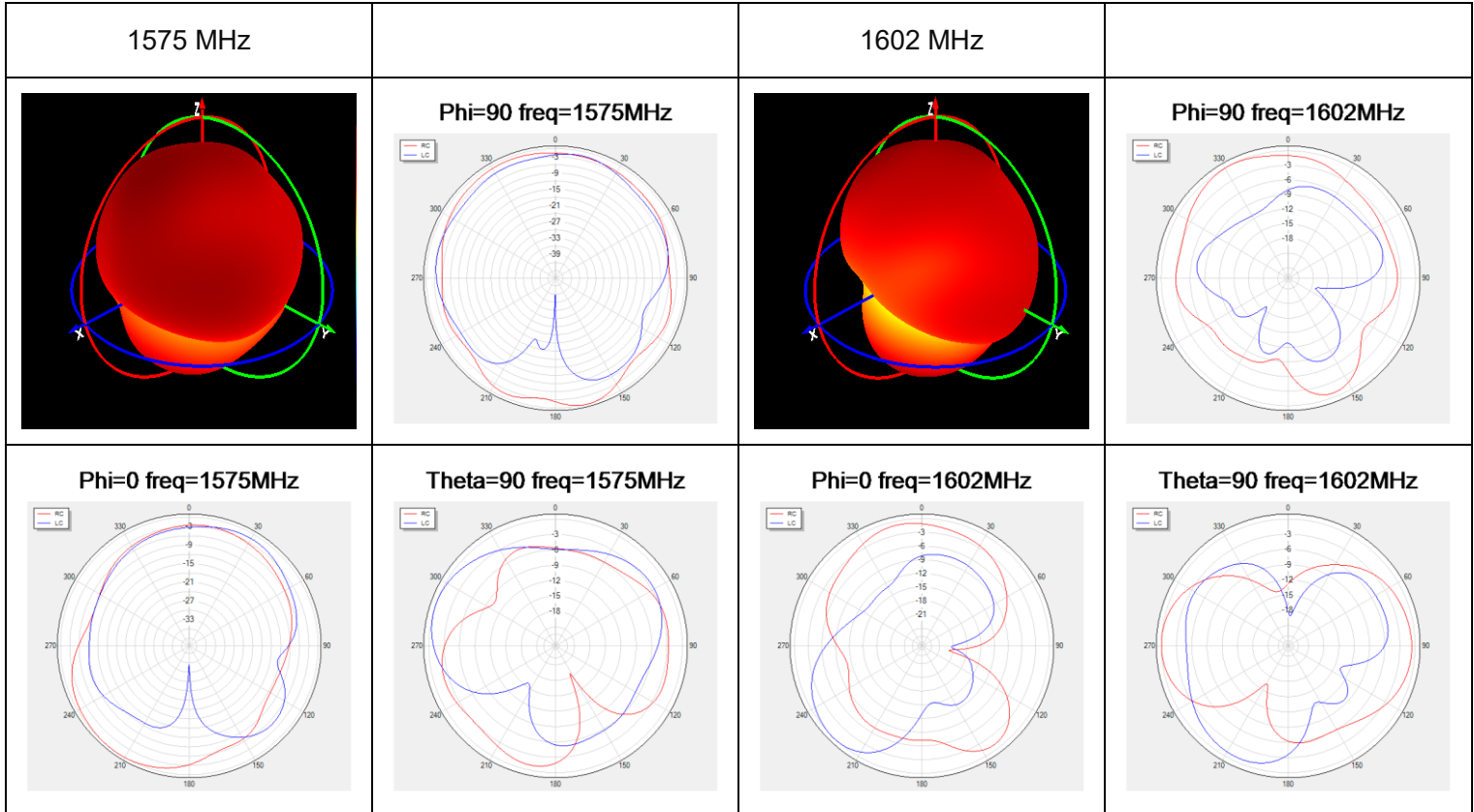
Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	-	0.6	1.0

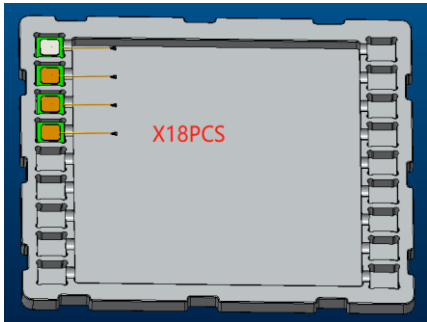
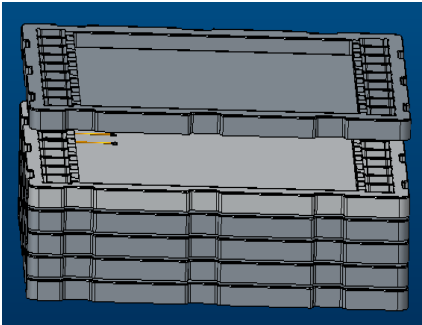
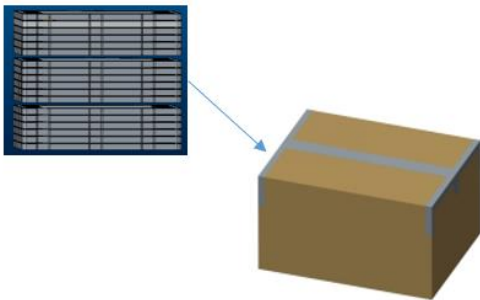
3.2.3. 3D & 2D Radiation Pattern

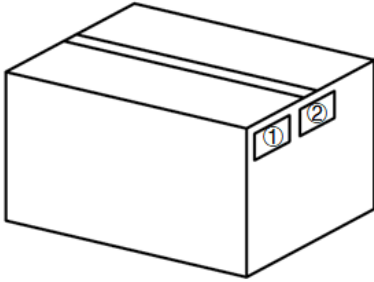
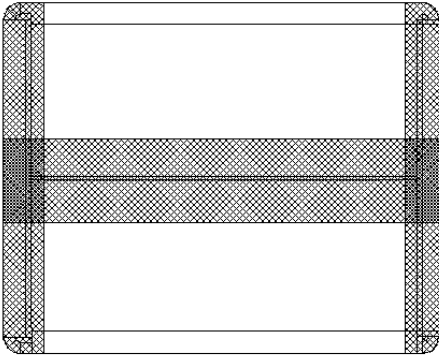
- Test Condition: By 25 mm square ground plane
- Test Chamber: GL-S-1





4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		<p>Put the product into the tray (18 pcs per tray)</p>
2		<p>Stack 5 layers of trays into a vacuum bag to vacuum; 90 pcs antenna products in a vacuum bag.</p>
3		<p>Put 3 vacuum bags into the carton box; (270 pcs antennas per carton box)</p> <p><u>Carton Box Size:</u> <u>L × W × H = 390 × 340 × 175 mm</u></p>

4		<p>Position for Attaching Labels</p> <ul style="list-style-type: none">① Carton Label② Quality Label
5		<p>Sealing Cartons</p> <p>“工” 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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Or our local offices. For more information, please visit:

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Revision History

Version	Date	Author	Note
-	2021-06-04	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-06-04	Kenny YIN/ Aria CHU	First official release
1.1	2021-06-23	Aria CHU	Added the LNA electrical properties (Chapter 3).
1.2	2021-11-30	Aria CHU	Updated the product description (Chapter 1).
2.0	2021-11-22	Xiaodong YANG	Updated the product description (Chapter 1).
3.0	2022-03-01	Junsen LI	Updated all test data in this datasheet.
3.1	2022-03-17	Junsen LI	Updated all test data in this datasheet.
4.0	2023-08-26	Nico PAN/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data in this datasheet.

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