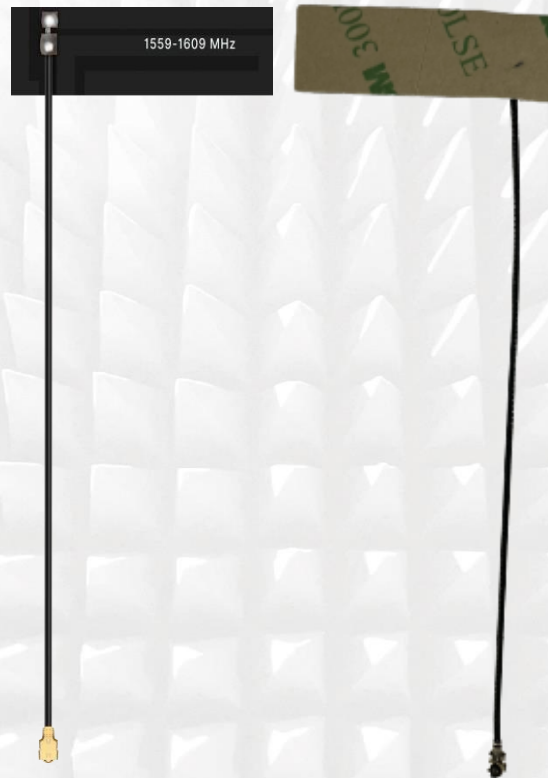




Antenna Datasheet

Product OC: YFGA003AA

Version: 2.1

Date: 2023-12-05

Status: Released

Product Name: Passive GNSS L1 Antenna

Key Features:

Frequency Band: 1559–1606 MHz

Efficiency: Up to 61.9 %

Dimensions: 39.45 mm × 13.25 mm

RoHS and REACH Compliant

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.

Contents

Overview.....	1
Contents	2
1 Specification.....	3
1.1. Electrical.....	3
1.2. Mechanical & Environmental	4
1.3. Supported GNSS Frequency Bands.....	5
2 Drawing	7
3 Detailed Performance	8
3.1. S-Parameter Test	8
3.1.1. VSWR.....	8
3.1.2. Return Loss	9
3.2. Radiation Performance Test.....	10
3.2.1. Efficiency	10
3.2.2. Peak Gain.....	11
3.2.3. 3D & 2D Radiation Pattern.....	12
4 Packaging	14
Contact Us.....	16
Legal Notices	17
Revision History	19

1 Specification

Test Condition: Free Space

1.1. Electrical

Electrical	
Frequency Range	1559–1606 MHz
Impedance	50 Ω
Polarization	Linear
Radiation Pattern	Omni-directional

Band Frequency (MHz)	GPS L5 GALILEO E5a BEIDOU B2a-B2I QZSS L5 IRNSS L5	GALILEO E5b BEIDOU B2b	GPS L2 QZSS L2C	GLONASS G2	BEIDOU B3	BEIDOU B1I	GPS L1 GALILEO E1 BEIDOU B1C QZSS L1	GLONASS G1
	1176	1207	1227	1248	1268	1561	1575	1602
VSWR						1.1	1.1	1.1
Return Loss (dB)						-23.8	-25.3	-27.8
Efficiency (%)						57.9	58.5	61.0
Peak Gain (dBi)						3.5	3.3	3.2

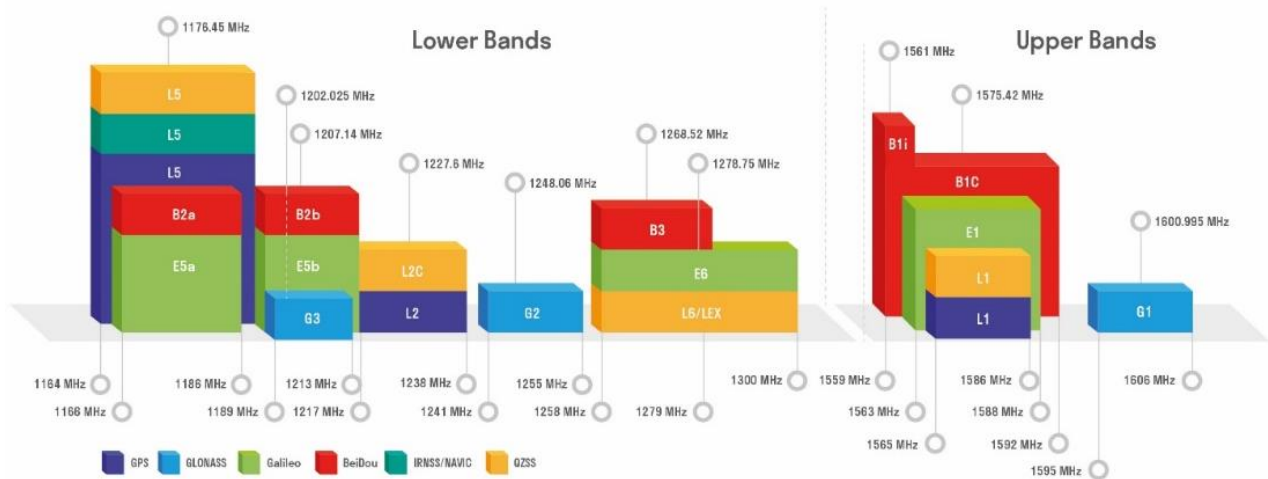
1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	39.45 mm × 13.25 mm
Material & Color	FPC & Black
Cable Type & Length	Φ 1.13 Black & 100 mm
Connector Type	RF 1
Mounting Type	Adhesive
Weight	Typ. 0.6 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS and REACH Compliant	Yes

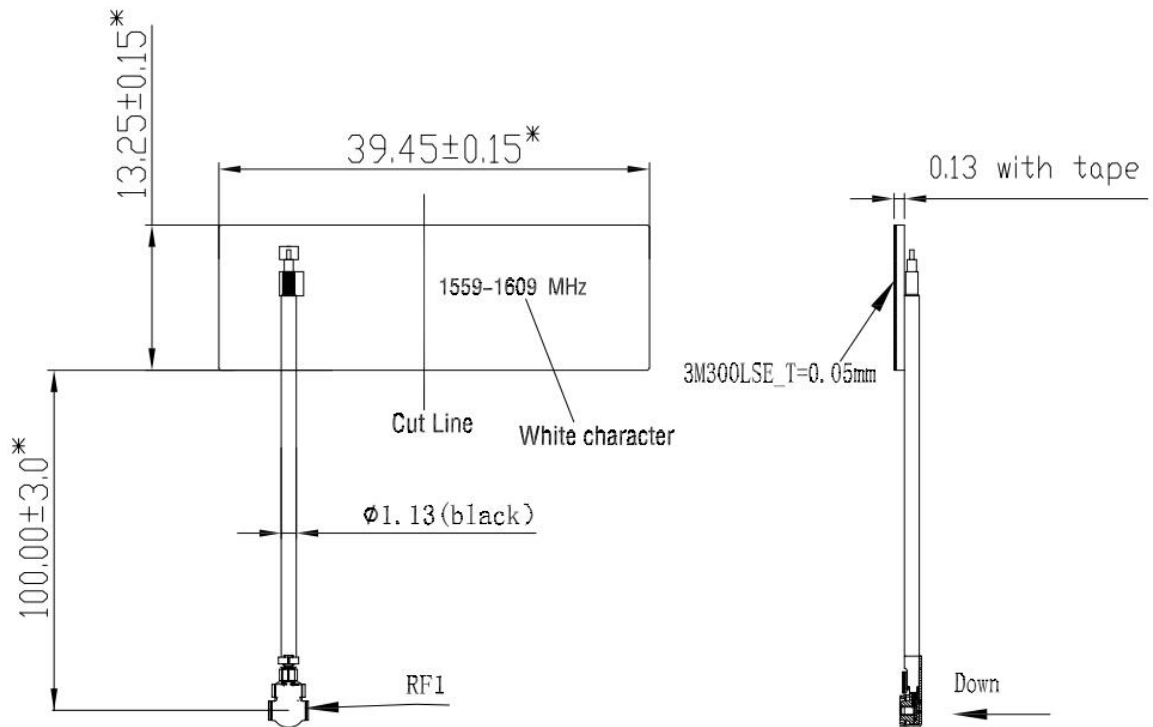
1.3. Supported GNSS Frequency Bands

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



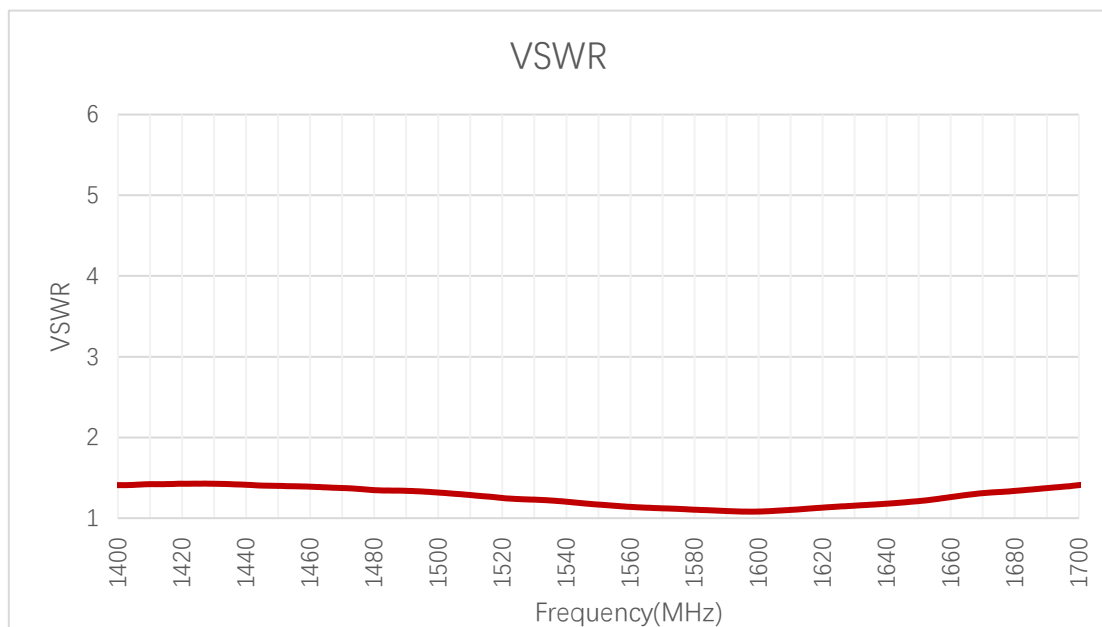
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

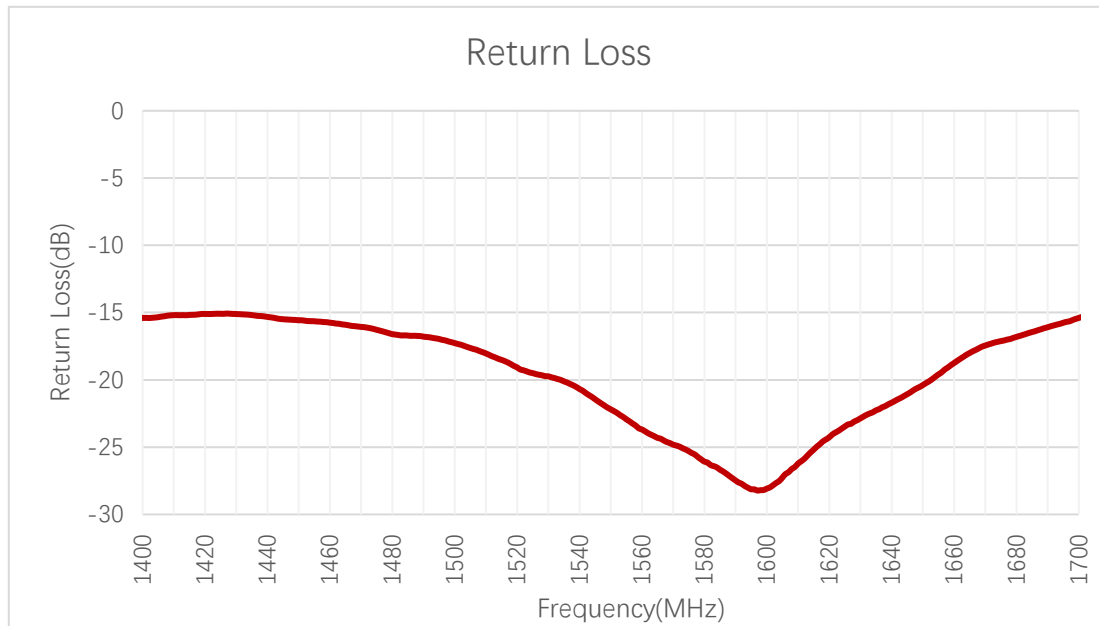
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
VSWR	-	-	-	-	-	1.1	1.1	1.1

3.1.2. Return Loss

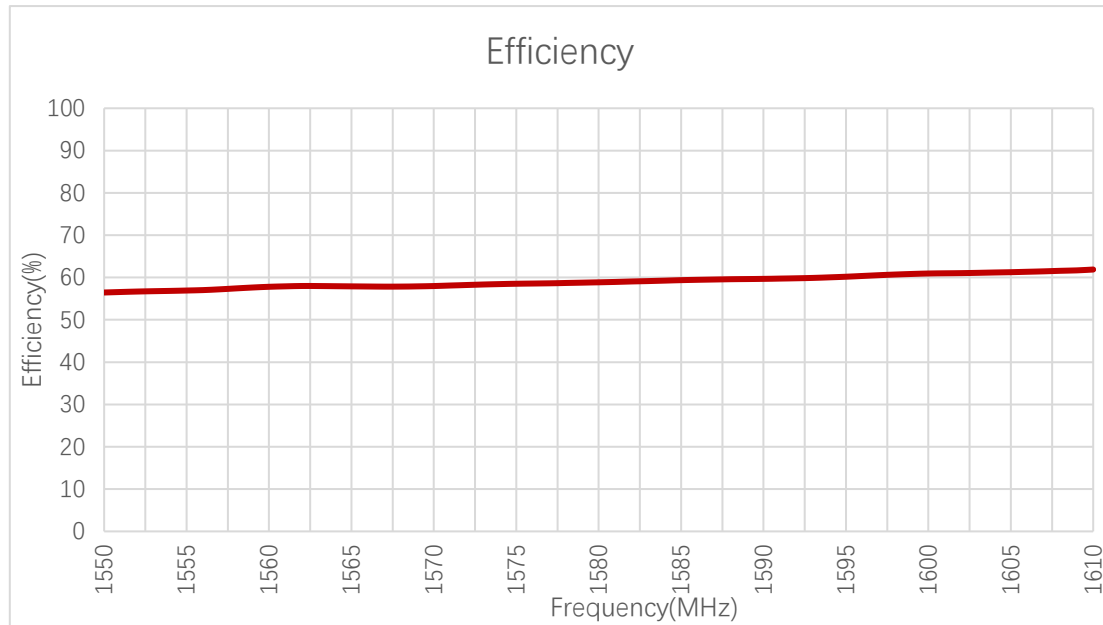


Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Return Loss (dB)	-	-	-	-	-	-23.8	-25.3	-27.8

3.2. Radiation Performance Test

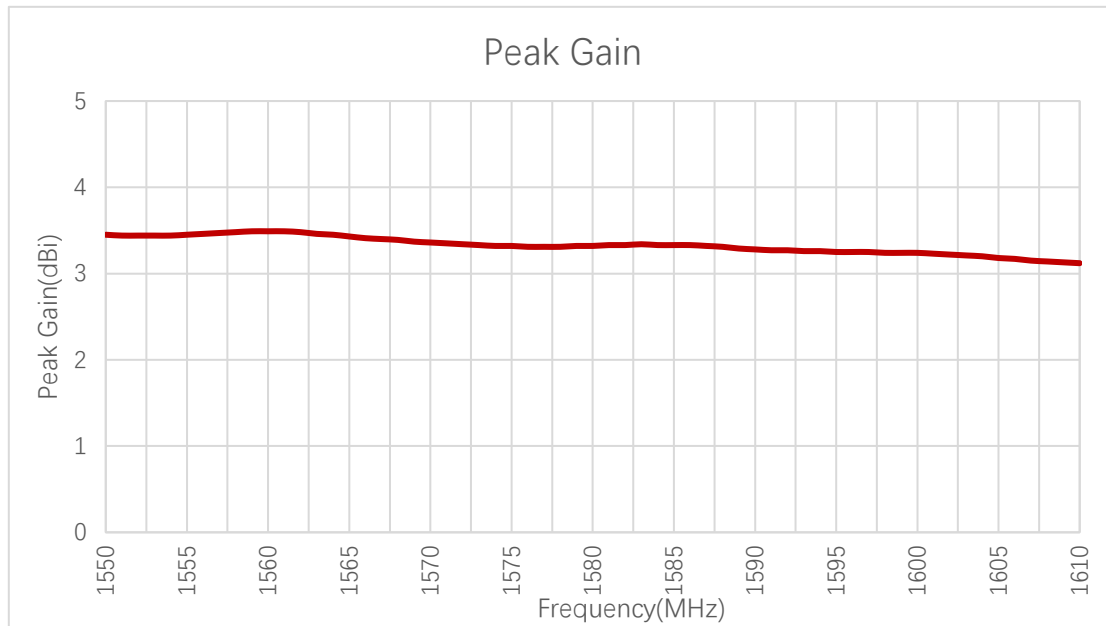
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Efficiency (%)	-	-	-	-	-	57.9	58.5	61.0

3.2.2. Peak Gain

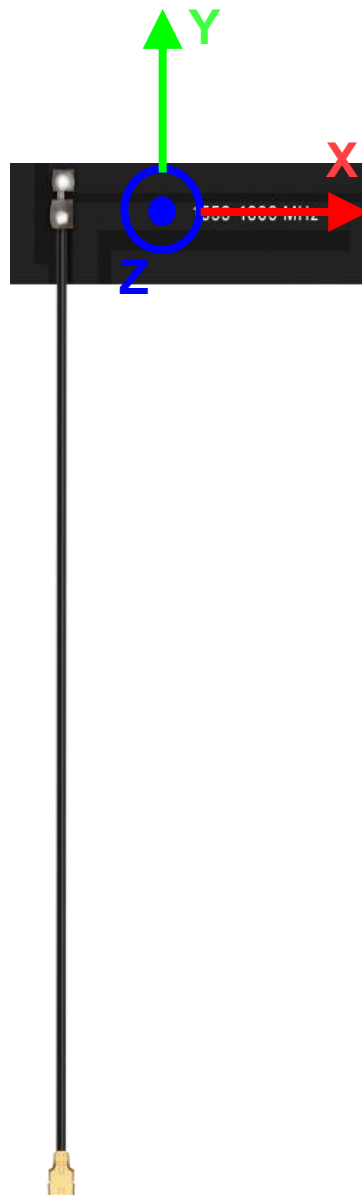


Peak Gain (dBi)

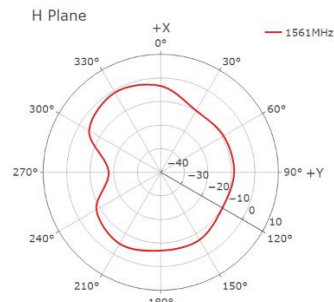
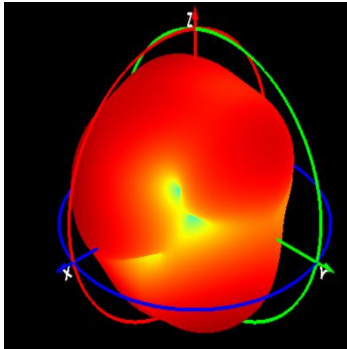
Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
Peak Gain (dBi)	-	-	-	-	-	3.5	3.3	3.2

3.2.3. 3D & 2D Radiation Pattern

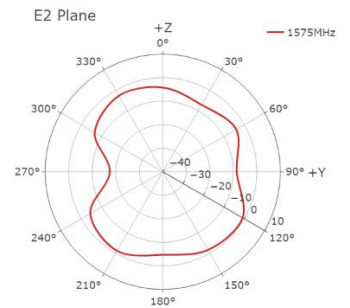
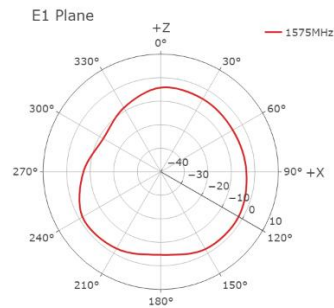
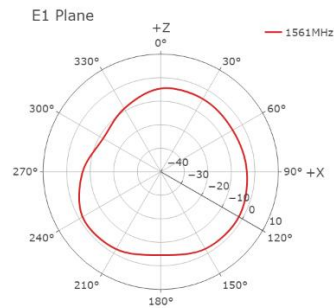
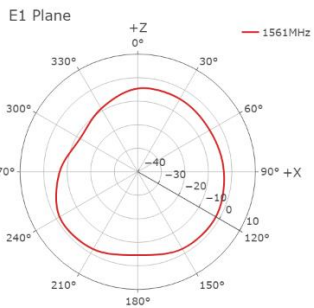
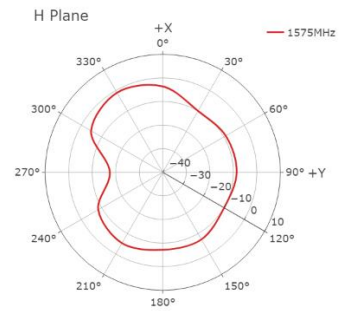
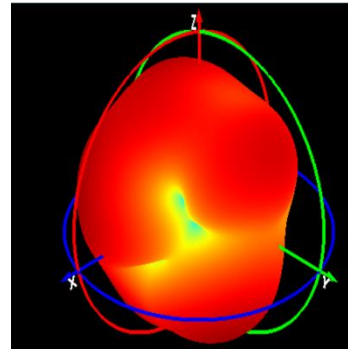
- Test Condition: Free Space
- Test Chamber: GL-S-1



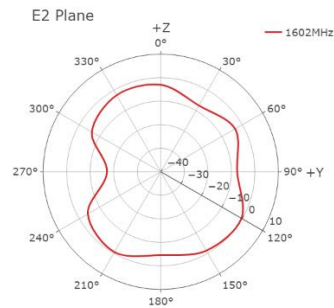
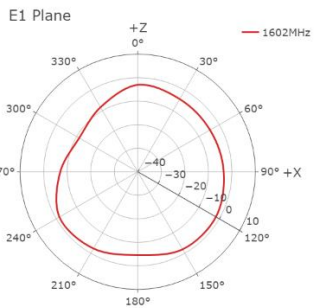
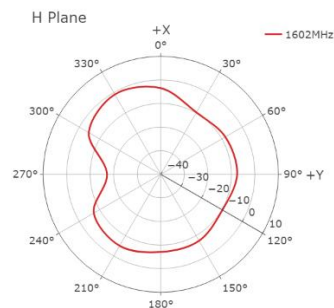
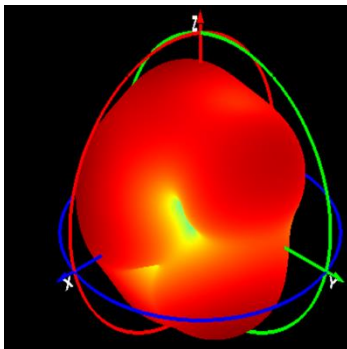
1561 MHz



1575 MHz

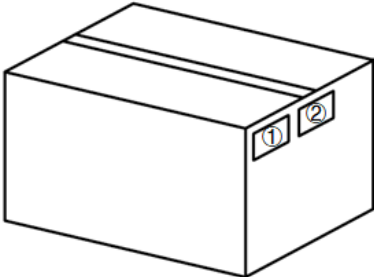
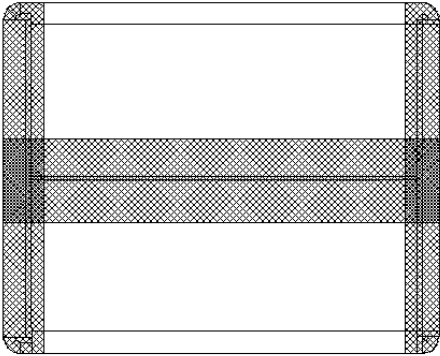


1602 MHz



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		50 pcs antenna products in a small PE bag. (50 pcs antennas per small PE bag)
2		200 pcs antenna products in a big PE bag. (200 pcs antennas per big PE bag)
3		(25 big PE bags per carton box) (5000 pcs antennas per carton box) <u>Carton Size:</u> <u>L × W × H = 300 × 250 × 200 mm</u>

4		Position for Attaching Labels ① Carton Label ② Quality Label
5		Sealing Cartons “Γ” type sealing cartons

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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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>.

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Revision History

Version	Date	Author	Note
-	2021-05-26	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-05-26	Kenny YIN/ Aria CHU	First official release
1.1	2021-12-03	Kenny YIN/ Aria CHU	Updated the product description (Chapter 1).
2.0	2023-08-26	Rainey LIAO/ Lucky FENG/ David LIU/ Aria CHU	Updated all test data in this datasheet.
2.1	2023-12-05	Lucky FENG/ Aria CHU	Added REACH compliant (Chapter 1.2).



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