



Antenna Datasheet

Product OC: YEGT001W1AM

Version: 1.2

Date: 2024-11-07

Status: Released

Product Name: GNSS Terminal Mount External Dipole Antenna

Key Features:

Frequency Band: 1559–1606 MHz

Dimensions: 135 mm × 15.6 mm × 13 mm

Efficiency: Up to 78.2 %

RoHS

Compatible with FAKRA, TNC and N-Type connectors

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: Free Space & 130 mm × 70 mm EVB

1.1. Electrical

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

Frequency (MHz)	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
		1176	1207	1227	1248	1268	1561	1575	1602
VSWR	FS Straight	-	-	-	-	-	1.2	1.1	1.2
	FS Bent	-	-	-	-	-	1.2	1.1	1.2
	EVB Straight	-	-	-	-	-	1.2	1.2	1.2
	EVB Bent	-	-	-	-	-	1.4	1.4	1.3
Return Loss (dB)	FS Straight	-	-	-	-	-	-21.5	-23.5	-19.6
	FS Bent	-	-	-	-	-	-19.7	-23.1	-20.4

	EVB Straight	-	-	-	-	-	-20.4	-20.2	-22.5
	EVB Bent	-	-	-	-	-	-14.7	-14.9	-16.8
Efficiency (%)	FS Straight	-	-	-	-	-	77.5	75.9	75.1
	FS Bent	-	-	-	-	-	76.2	75.3	70.4
	EVB Straight	-	-	-	-	-	74.9	74.0	71.6
	EVB Bent	-	-	-	-	-	71.2	69.5	69.9
AVG Gain (dB)	FS Straight	-	-	-	-	-	-1.1	-1.2	-1.2
	FS Bent	-	-	-	-	-	-1.2	-1.2	-1.5
	EVB Straight	-	-	-	-	-	-1.3	-1.3	-1.5
	EVB Bent	-	-	-	-	-	-1.5	-1.6	-1.6
Peak Gain (dBi)	FS Straight	-	-	-	-	-	2.9	2.7	2.5
	FS Bent	-	-	-	-	-	2.2	2.1	2.0
	EVB Straight	-	-	-	-	-	3.0	2.9	2.5
	EVB Bent	-	-	-	-	-	1.3	1.1	1.3
VSWR		FS Straight			≤ 1.3				
		FS Bent			≤ 1.2				
		EVB Straight			≤ 1.2				
		EVB Bent			≤ 1.5				
Return Loss		FS Straight			≤ -18.8 dB				
		FS Bent			≤ -19.1 dB				
		EVB Straight			≤ -20.1 dB				
		EVB Bent			≤ -14.7 dB				
Peak Gain		FS Straight			≤ 2.9 dBi				

	FS Bent	≤ 2.4 dBi
	EVB Straight	≤ 3.0 dBi
	EVB Bent	≤ 1.4 dBi

- Straight: The connector is vertical.
- Bent: The connector is bend.
- FS: On Free Space.
- EVB: On 130 mm × 70 mm EVB.

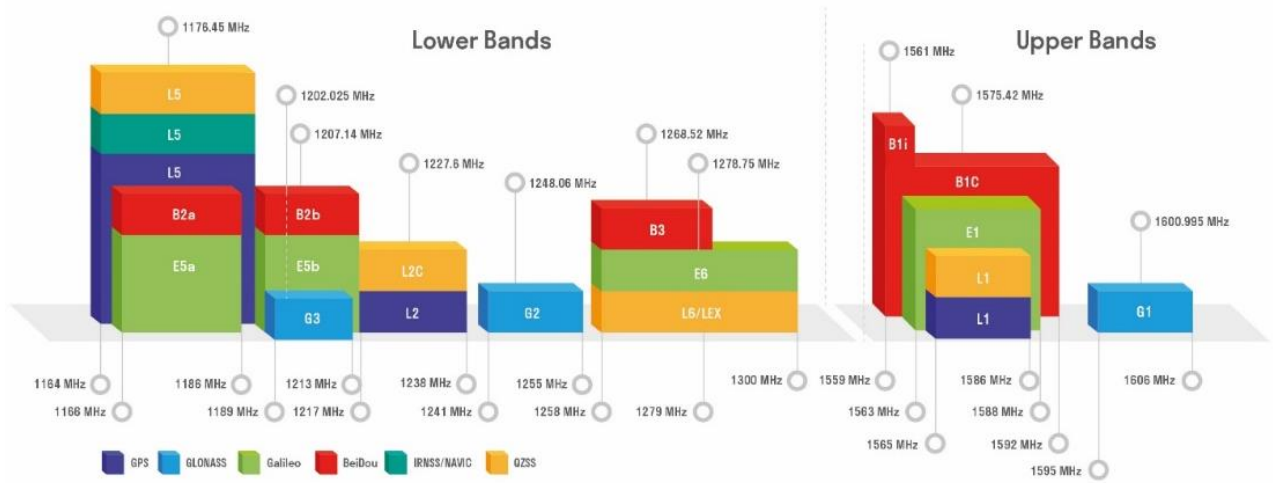
1.2. Mechanical & Environmental

Mechanical	
Antenna Dimensions	135 mm × 15.6 mm × 13 mm
Material & Color	PC + ABS & Black
Connector Type	SMA Male
Mounting Type	Terminal
Weight	Typ. 16 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Storage Temperature	-40 °C to +85 °C
RoHS	Yes

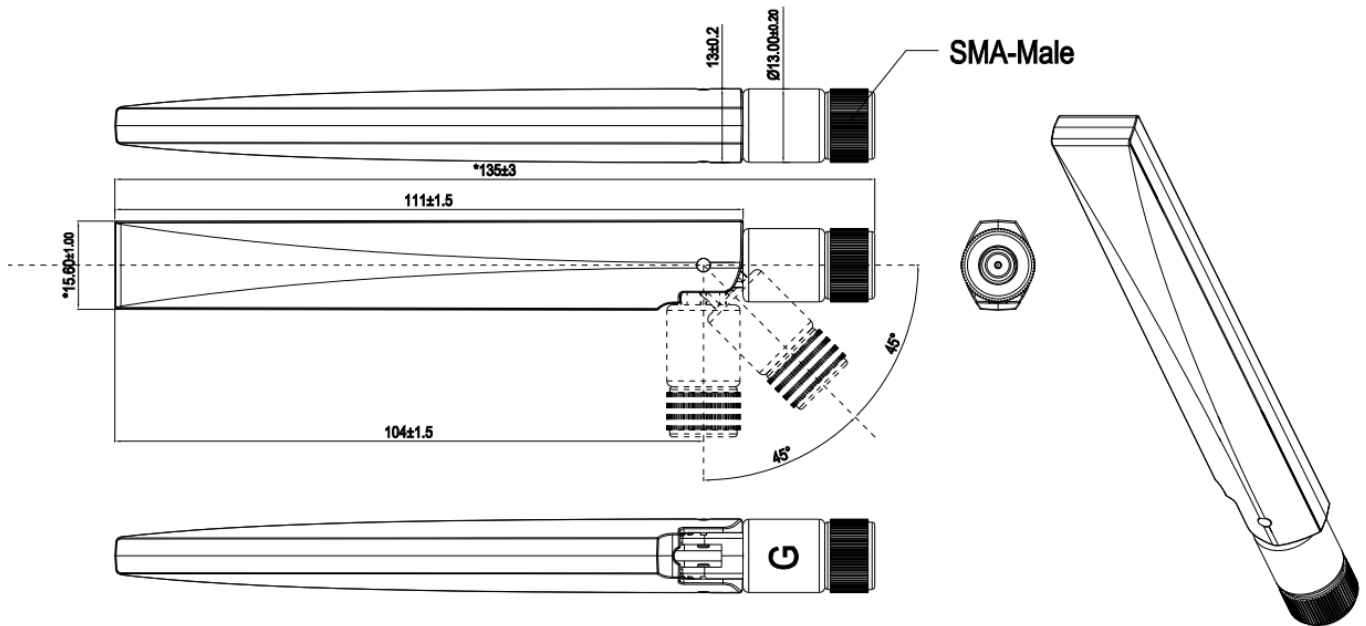
1.3. Supported GNSS Frequency Bands

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)	
	√	-	-	-	
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



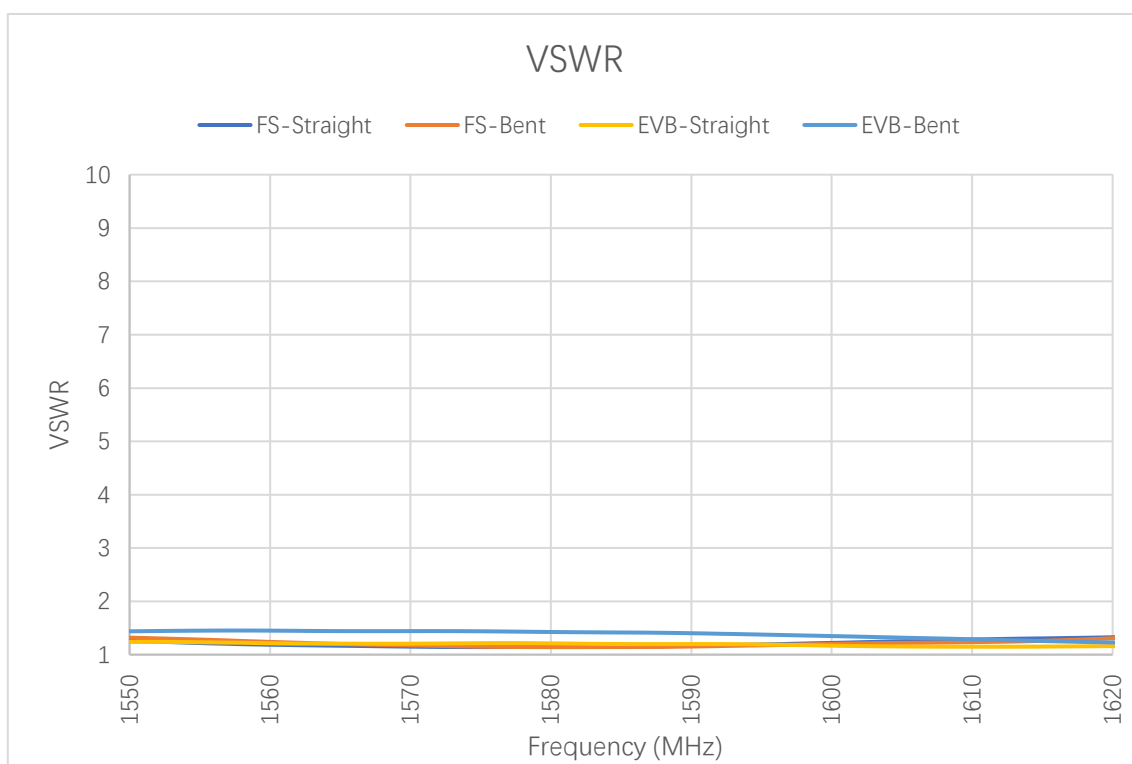
UNIT:mm

Note: If you use a torque wrench, the recommended force for mounting the antenna is 0.9Nm and the maximum torque to prevent antenna damage is 1.17Nm.

3 Detailed Performance

3.1. S-Parameter Test

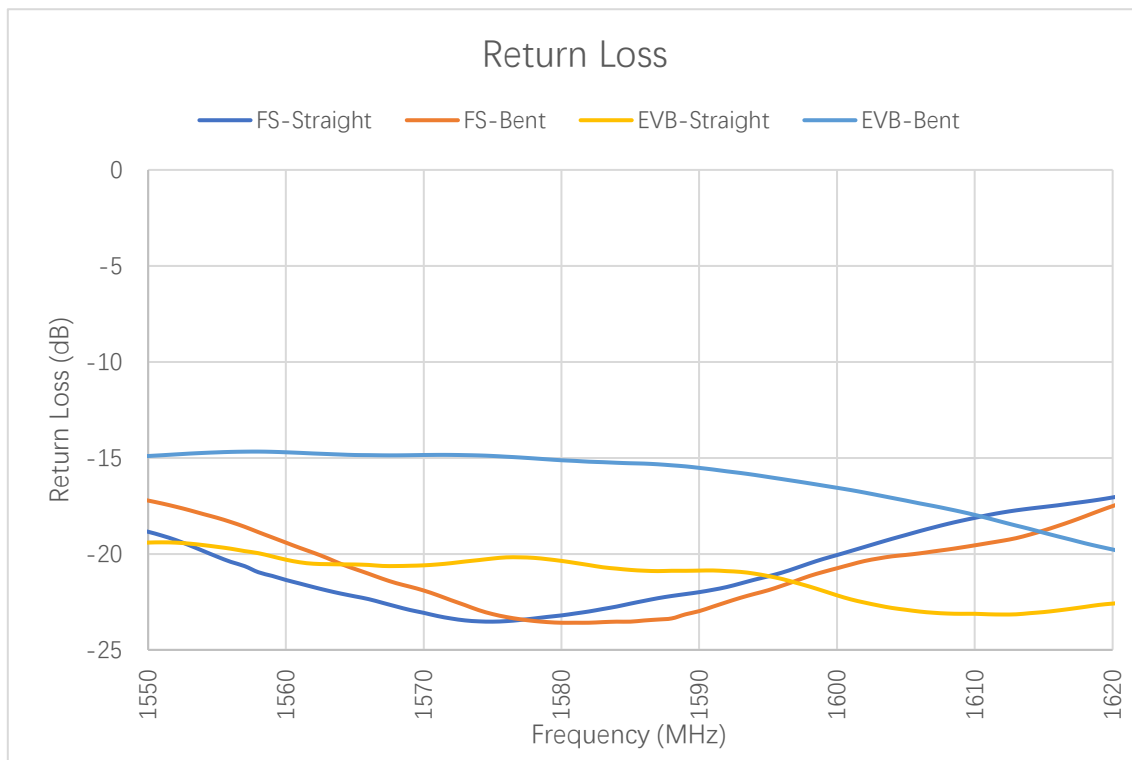
3.1.1. VSWR



VSWR

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
FS Straight	-	-	-	-	-	1.2	1.1	1.2
FS Bent	-	-	-	-	-	1.2	1.1	1.2
EVB Straight	-	-	-	-	-	1.2	1.2	1.2
EVB Bent	-	-	-	-	-	1.4	1.4	1.3

3.1.2. Return Loss

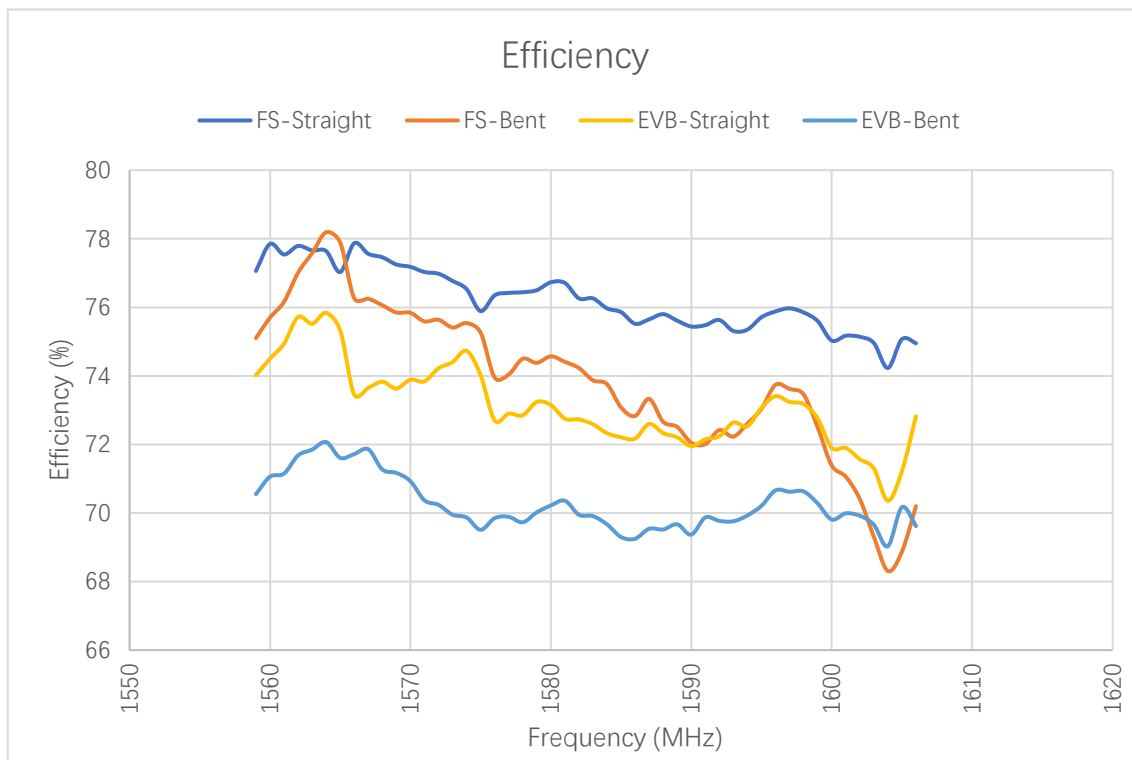


Return Loss (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
FS Straight	-	-	-	-	-	-21.5	-23.5	-19.6
FS Bent	-	-	-	-	-	-19.7	-23.1	-20.4
EVB Straight	-	-	-	-	-	-20.4	-20.2	-22.5
EVB Bent	-	-	-	-	-	-14.7	-14.9	-16.8

3.2. Radiation Performance Test

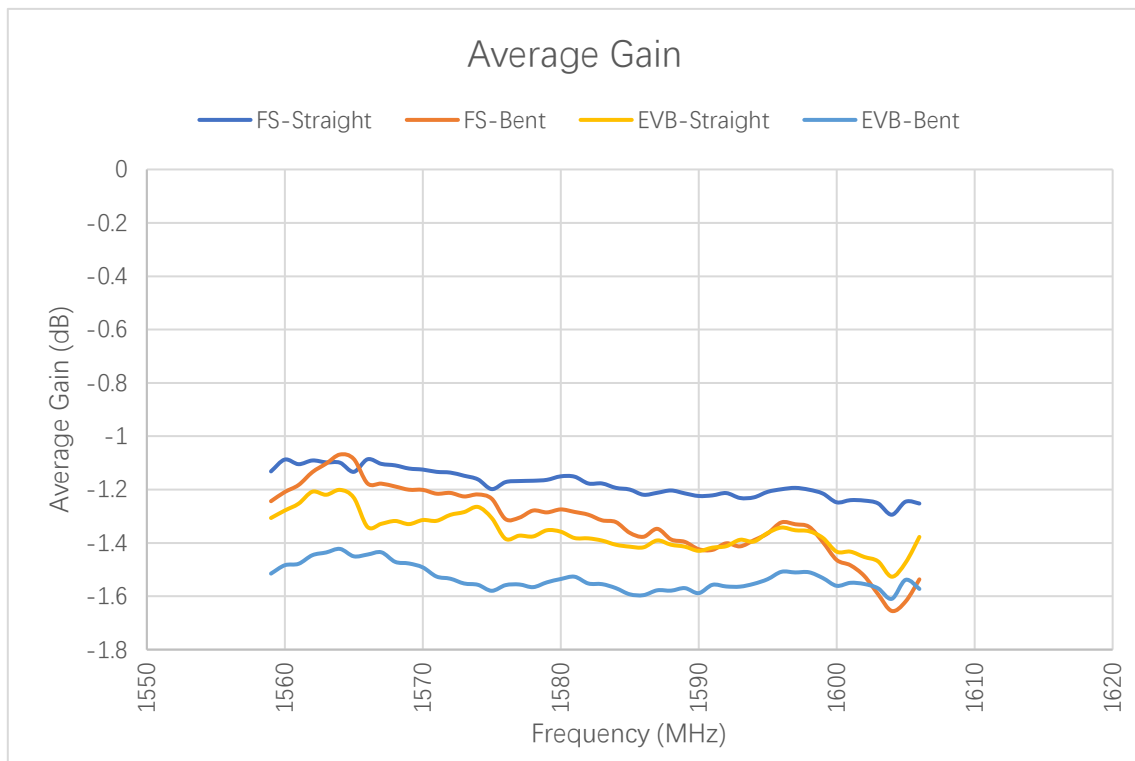
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
FS Straight	-	-	-	-	-	77.5	75.9	75.1
FS Bent	-	-	-	-	-	76.2	75.3	70.4
EVB Straight	-	-	-	-	-	74.9	74.0	71.6
EVB Bent	-	-	-	-	-	71.2	69.5	69.9

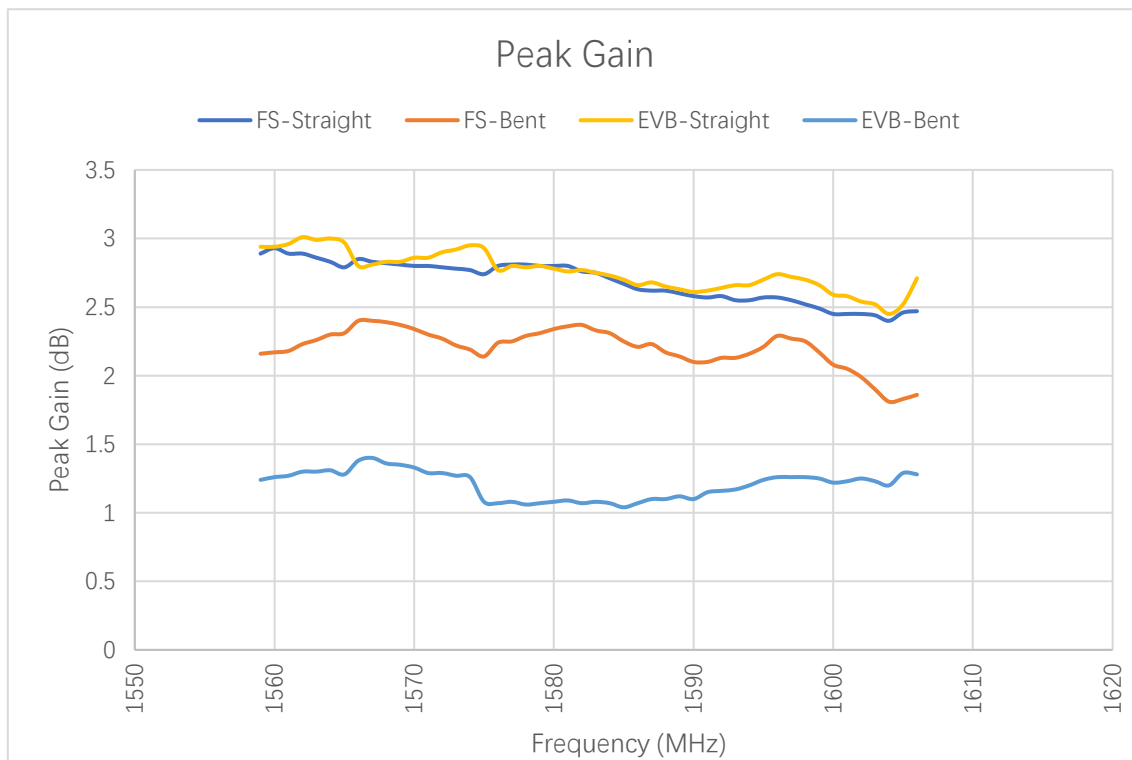
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
FS Straight	-	-	-	-	-	-1.1	-1.2	-1.2
FS Bent	-	-	-	-	-	-1.2	-1.2	-1.5
EVB Straight	-	-	-	-	-	-1.3	-1.3	-1.5
EVB Bent	-	-	-	-	-	-1.5	-1.6	-1.6

3.2.3. Peak Gain



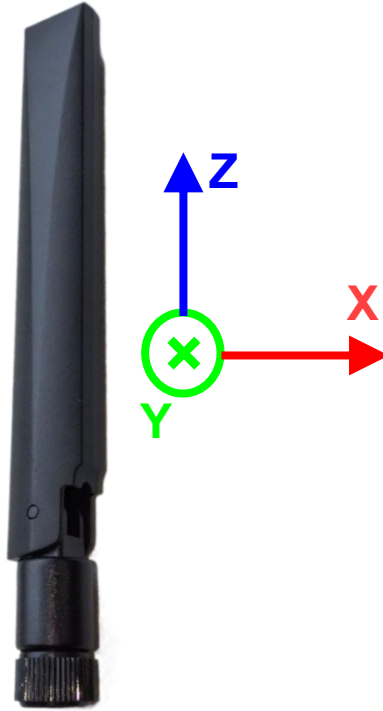
Peak Gain (dBi)

Frequency (MHz)	1176	1207	1227	1248	1268	1561	1575	1602
FS Straight	-	-	-	-	-	2.9	2.7	2.5
FS Bent	-	-	-	-	-	2.2	2.1	2.0
EVB Straight	-	-	-	-	-	3.0	2.9	2.5
EVB Bent	-	-	-	-	-	1.3	1.1	1.3

3.2.4. 3D & 2D Radiation Pattern

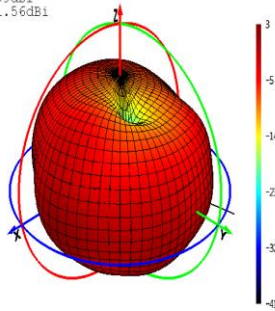
3.2.4.1. Test Condition: Free Space Straight

- Test Chamber: FS-S-1

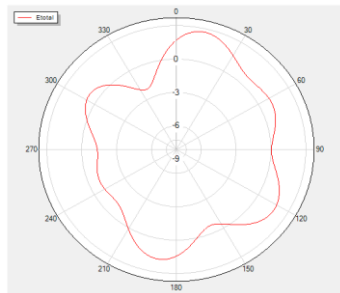


1561 MHz

MAX:2.89dBi
MIN:-41.56dBi

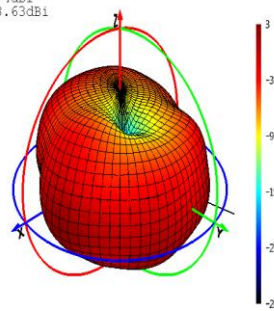


Theta=90 Freq=1561MHz

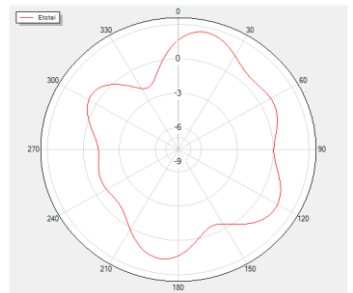


1575 MHz

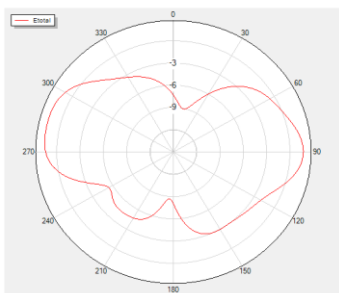
MAX:2.74dBi
MIN:-28.63dBi



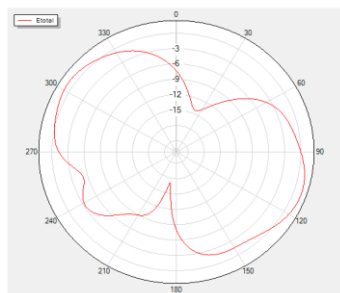
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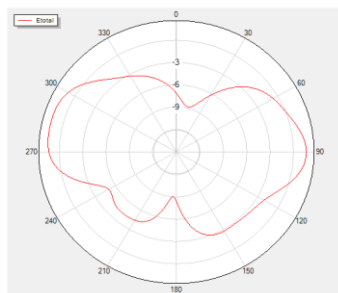
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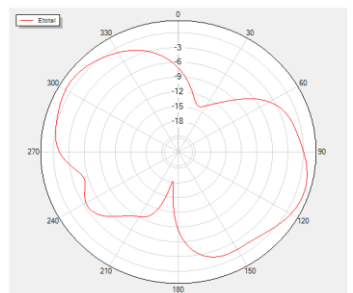
Phi=90 Freq=1561MHz



Phi=0 Freq=1575MHz

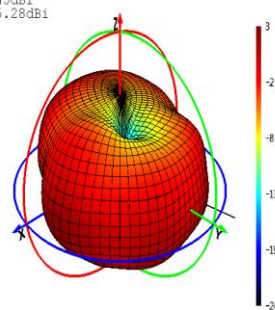


Phi=90 Freq=1575MHz

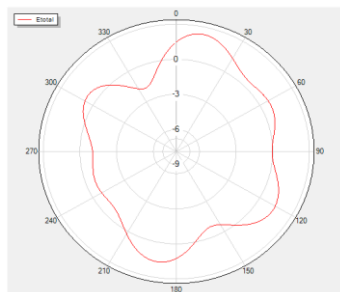


1602 MHz

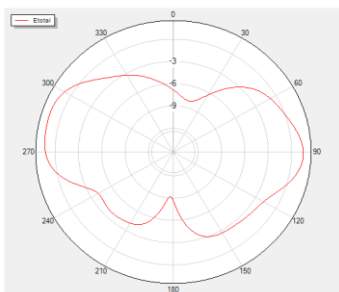
MAX:2.45dBi
MIN:-25.28dBi



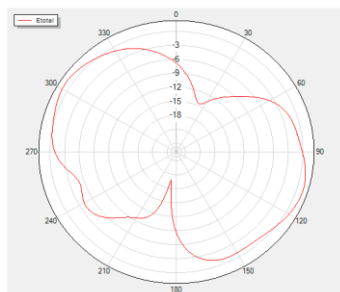
Theta=90 Freq=1602MHz



Phi=0 Freq=1602MHz

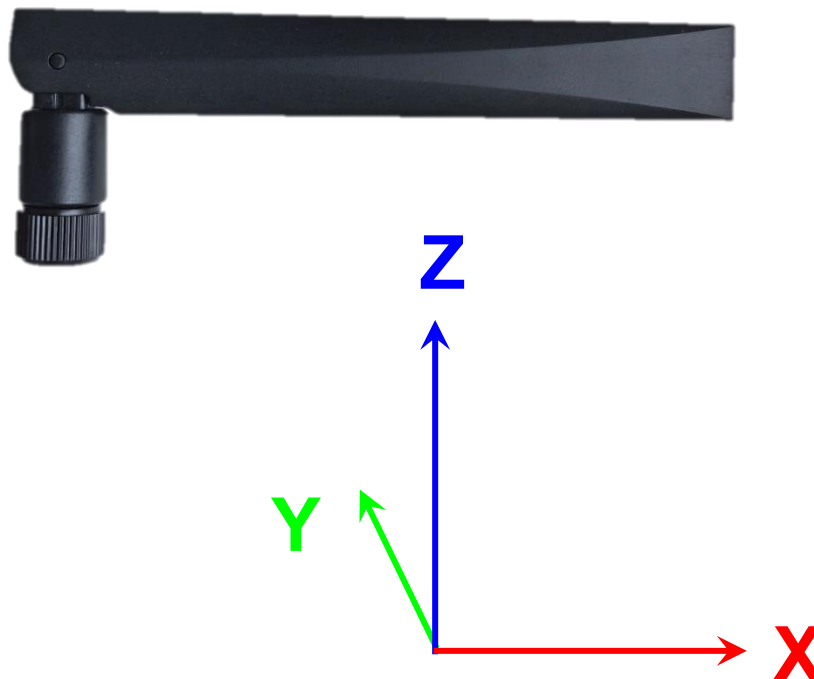


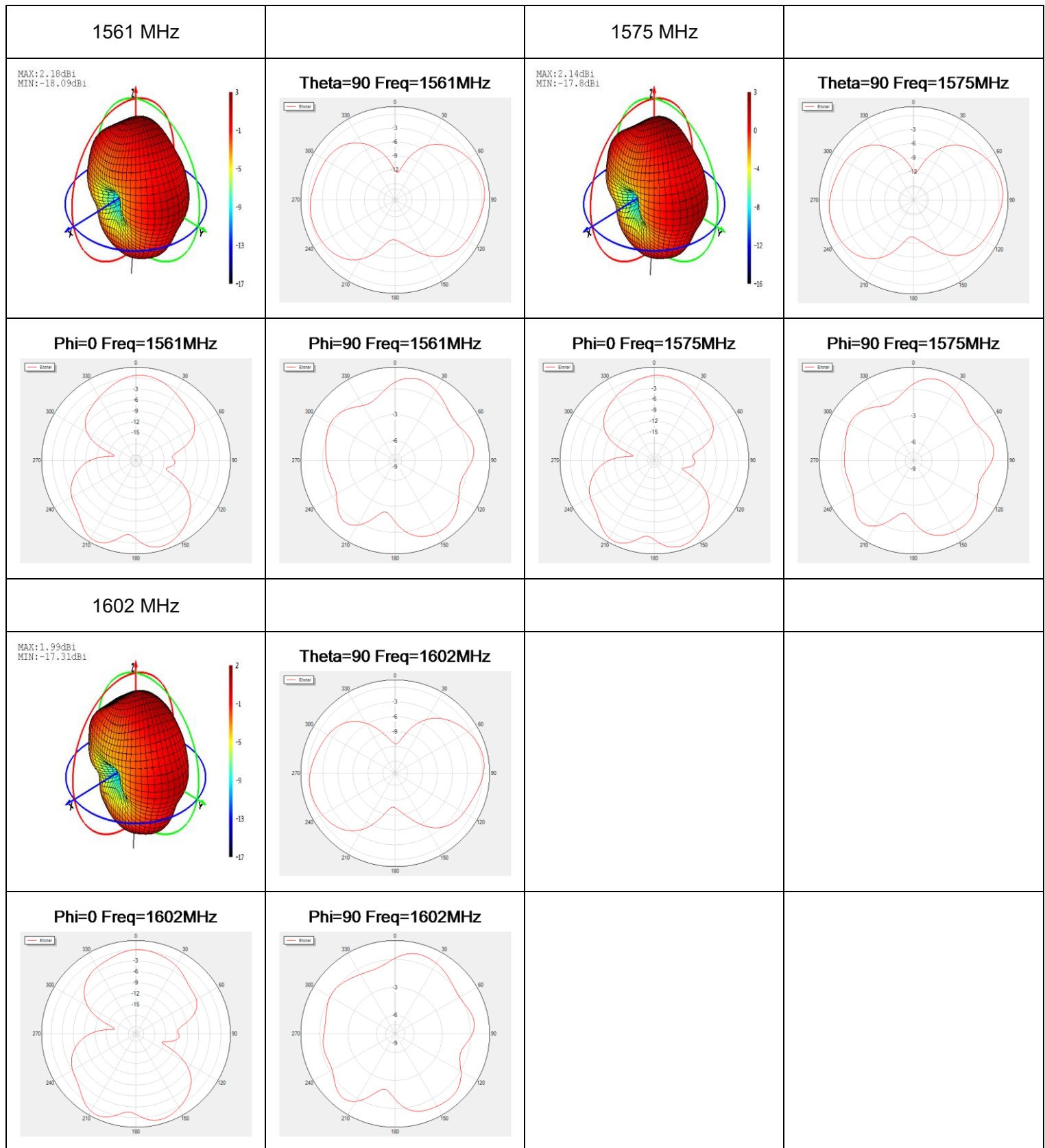
Phi=90 Freq=1602MHz



Test Condition: Free Space Bent

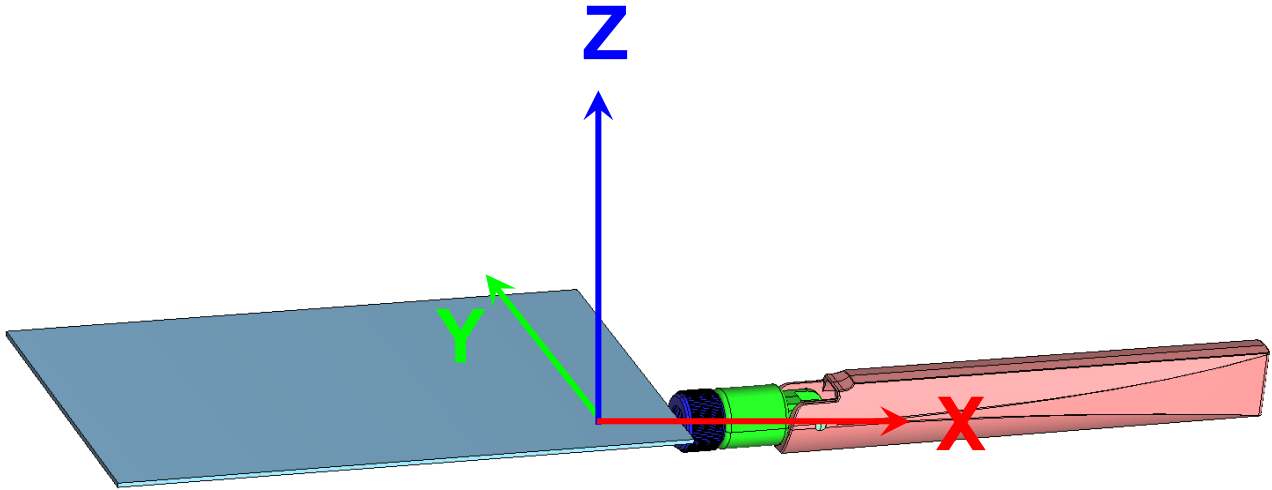
- Test Chamber: FS-S-1

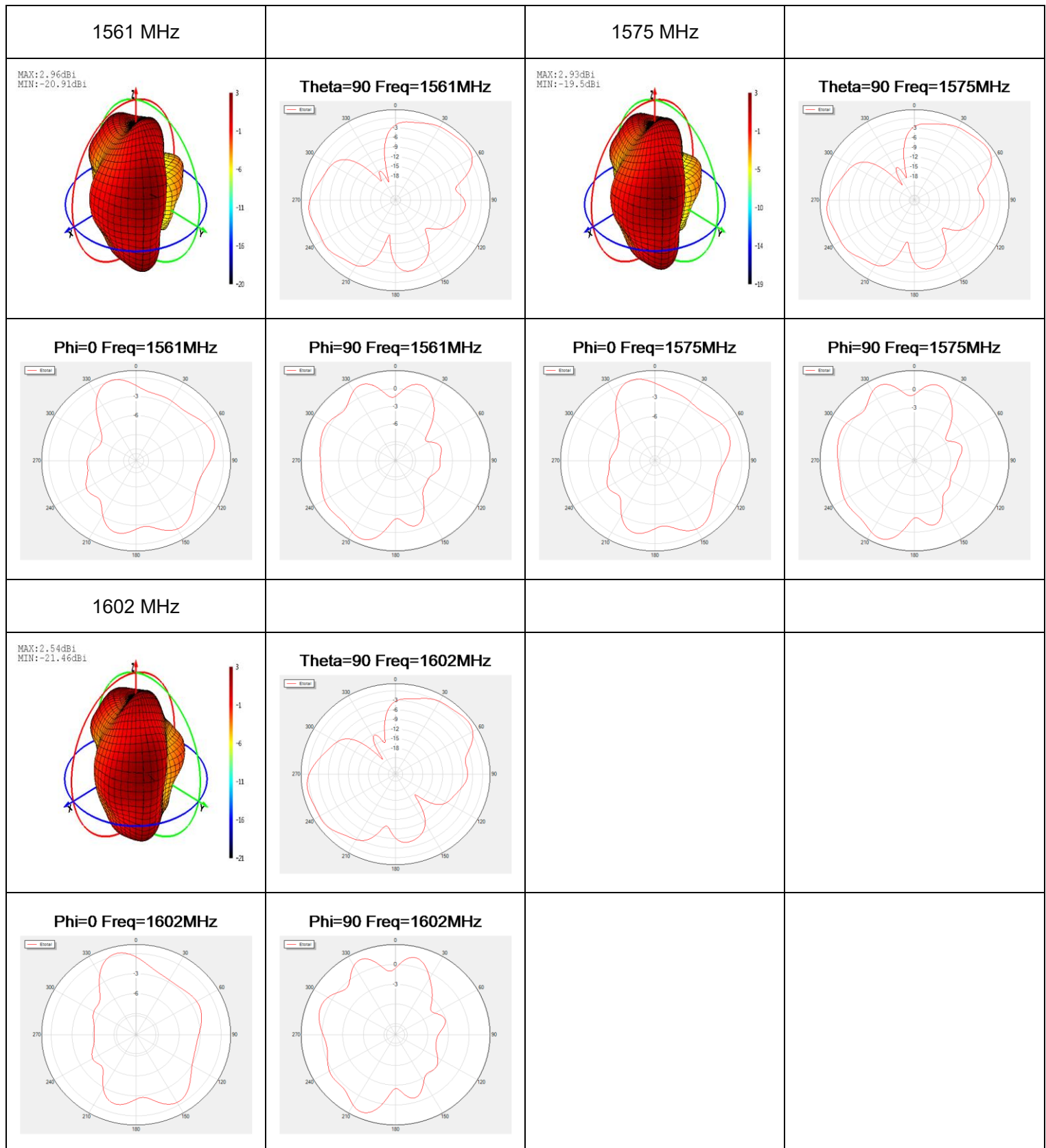




3.2.4.2. Test Condition: On 130 mm × 70 mm EVB Straight

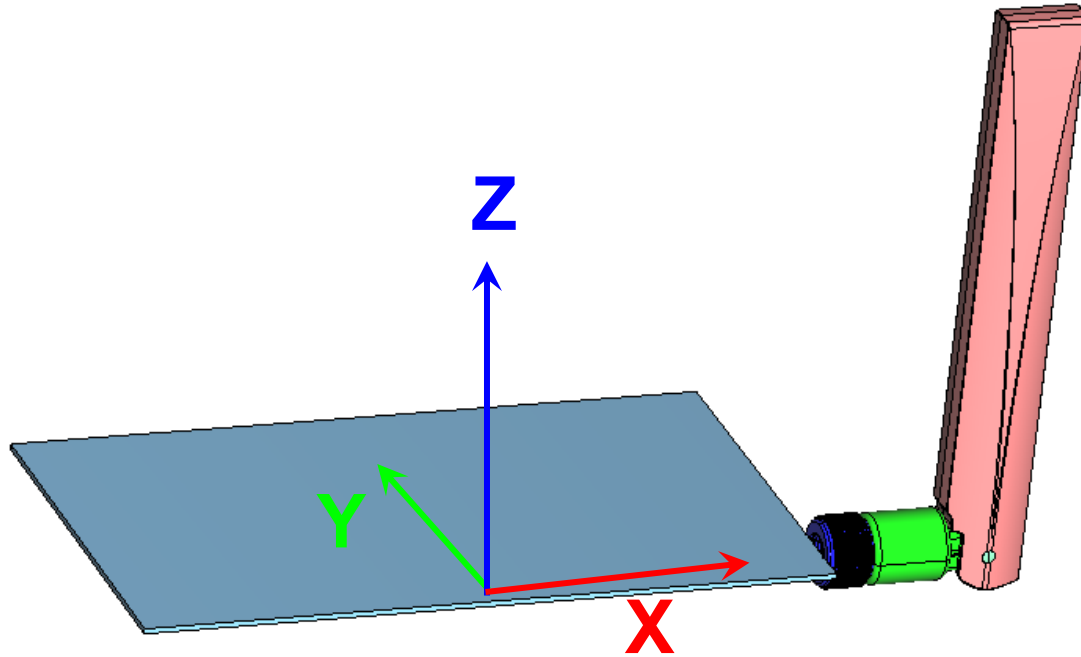
- Test Chamber: FS-S-1





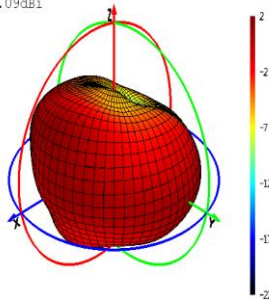
3.2.4.3. Test Condition: On 130 mm × 70 mm EVB Bent

- Test Chamber: FS-S-1

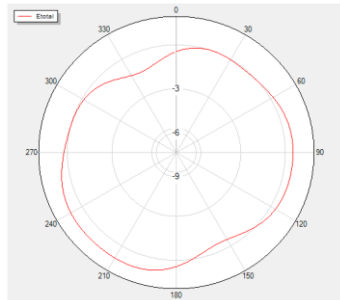


1561 MHz

MAX:1.27dBi
MIN:-23.09dBi

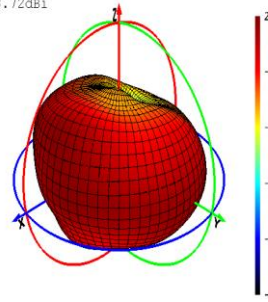


Theta=90 Freq=1561MHz

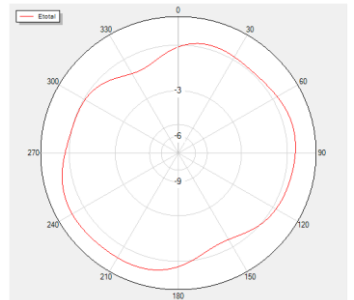


1575 MHz

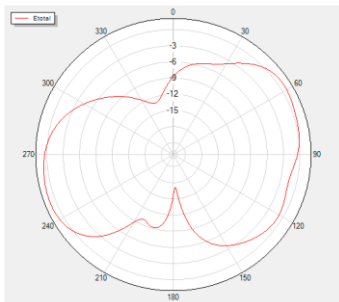
MAX:1.08dBi
MIN:-23.72dBi



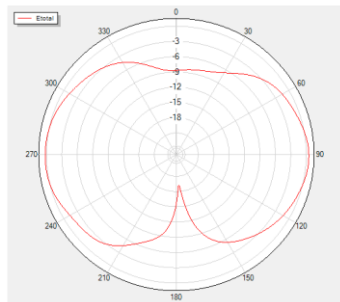
Theta=90 Freq=1575MHz



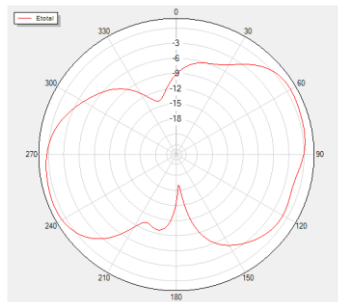
Phi=0 Freq=1561MHz



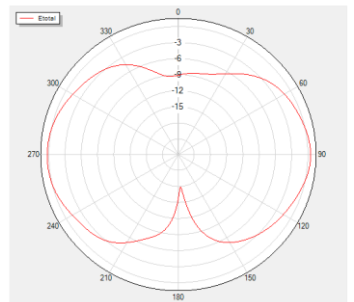
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Phi=0 Freq=1575MHz

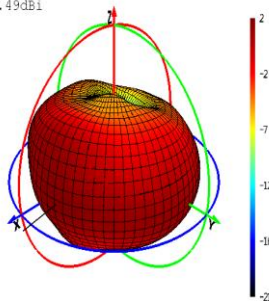


Phi=90 Freq=1575MHz

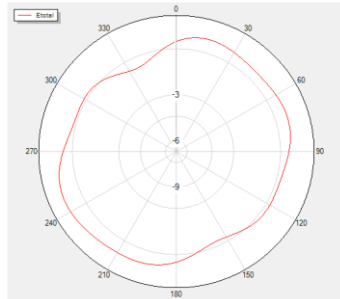


1602 MHz

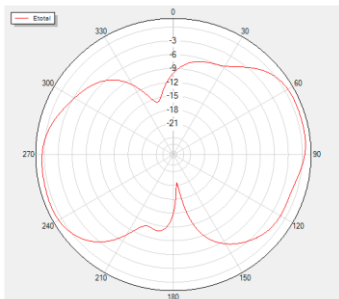
MAX:1.25dBi
MIN:-22.49dBi



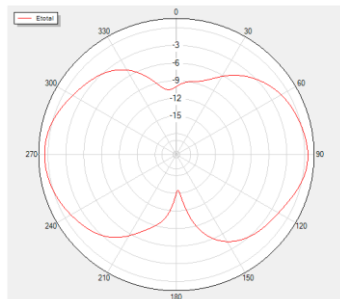
Theta=90 Freq=1602MHz



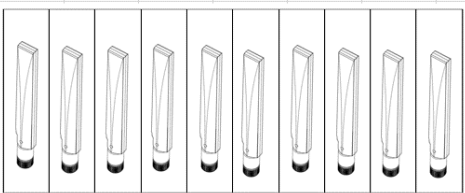
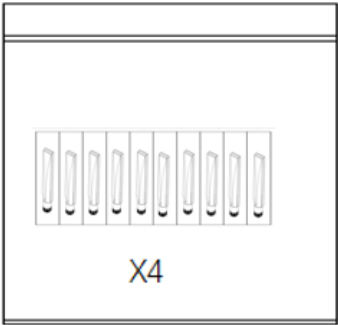
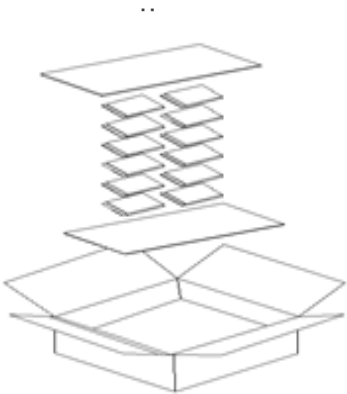
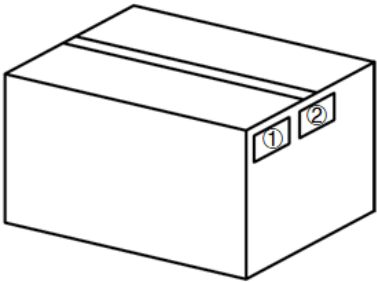
Phi=0 Freq=1602MHz

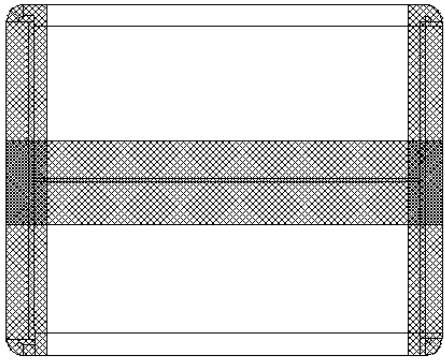


Phi=90 Freq=1602MHz



4 Packaging

Step	Packaging Picture / 2D Picture	Description
1		10 pcs antenna products in a one-piece bag. (10 PCS / One-piece Bag)
2		40 pcs antenna products in a PE bag. (40 PCS / PE Bag)
3		(8 PE Bags / Carton Box) (320 PCS 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 = 325 × 325 × 200 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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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:

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Revision History

Version	Date	Author	Note
-	2024-05-24	Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO	Creation of the document
1.0	2024-05-24	Mordecai LIU/ Lance SUN/ David LIU/ Rainey LIAO	First official release
1.1	2024-09-03	Mordecai LIU	Numerous changes were made to this document. It should be read in its entirety.
1.2	2024-11-07	Lance SUN	Updated the drawing (Chapter 2).



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