



Antenna Datasheet

Product OC: YEGM023AA

Version: 1.0

Date: 2023-03-01

Status: Released

Product Name: L-Band & GNSS L1 Antenna

Key Features:

Frequency Band: GNSS L1: 1559–1606 MHz

L-Band:

TX: 1626.5–1660.5 MHz, 1668–1675 MHz

RX: 1518–1559 MHz

Efficiency: Up to 78%

RoHS and REACH Compliant

IP66

Overview

This Quectel satellite communication antenna adopts a diversity of forms to guarantee the most suitable polarization type. Quectel's satellite communication antenna products support L band, S band and L+S combination to meet various requirements of customers' products. 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

1.1. Electrical

Electrical		
Frequency Range	L-Band	TX: 1626.5–1660.5 MHz, 1668–1675 MHz RX: 1518–1559 MHz
	GNSS	1559–1606 MHz
Impedance		50 Ω
Polarization		RHCP
Radiation Pattern		Directional

Band Frequency (MHz)	L-Band TX			L-Band RX			BEIDOU B1I	GPS L1 GALILEO E1 BEIDOU B1C QZSS L1	GLONASS G1
	1626	1650	1675	1518	1538	1559	1561	1575	1602
VSWR	1.21	1.19	1.16	1.01	1.01	1.05	1.05	1.08	1.20
Return Loss (dB)	-19.8	-20.6	-22.2	-34.2	-40.4	-29.1	-28.6	-25.6	-18.6
Efficiency (%)	47.1	30.7	21.9	23.2	40	61.7	64	73.4	66.6
Peak Gain (dBi)	2.29	-0.24	-2.06	-1.7	1	3.45	3.61	4.42	4.12
Axial Ratio (dB)	1.43	1.57	0.14	0.54	0.41	0.12	0.25	0.89	1.25

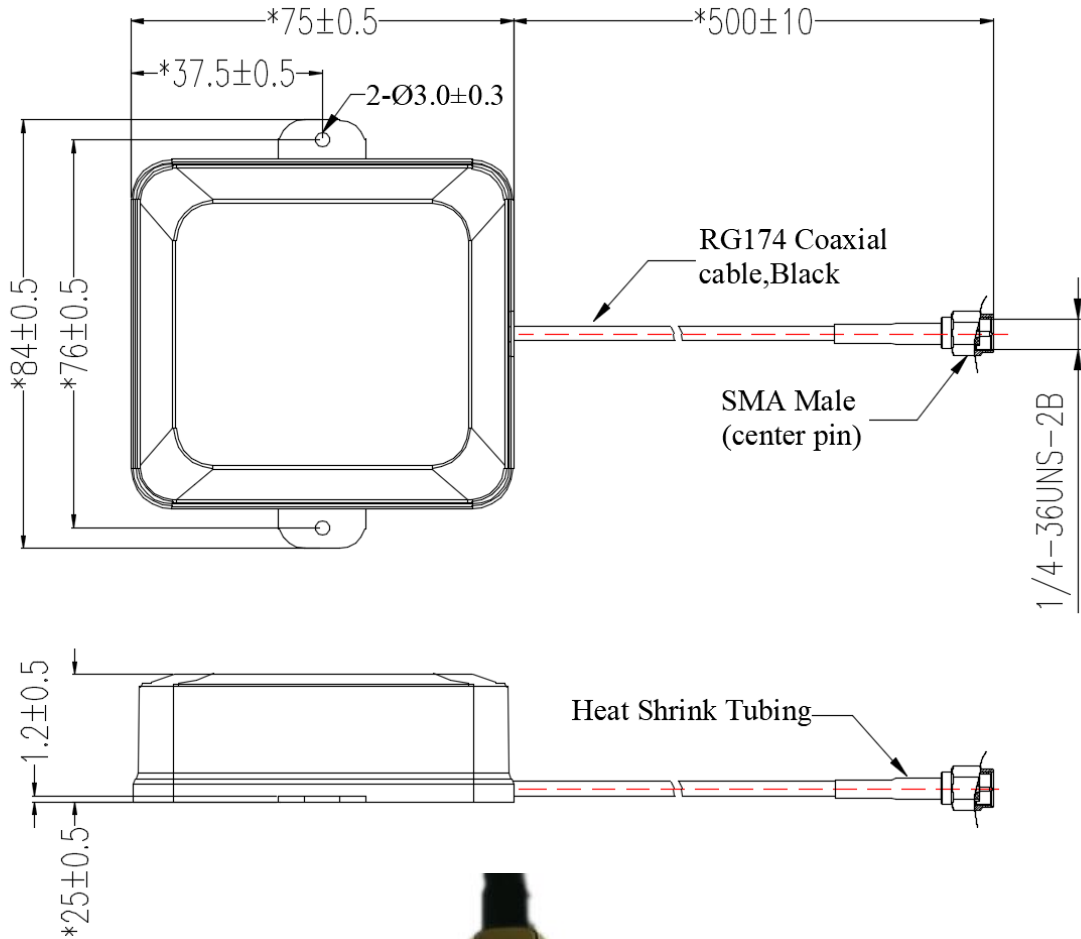
1.2. Mechanical, Environmental & Storage

Mechanical	
Antenna Dimensions	75 × 84 × 25 mm
Casing Material & Color	ABS & Black
Cable Type & Color & Length	RG 174 & Black & 500 mm
Connector Type	SMA Male (center pin)
Mounting Type	Screw
Weight	Typ. 112.9 g
Environmental	
Operation Temperature	-40 °C to +85 °C
Ingress Protection (IP) Rating	IP66
RoHS & 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-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)				
	-				

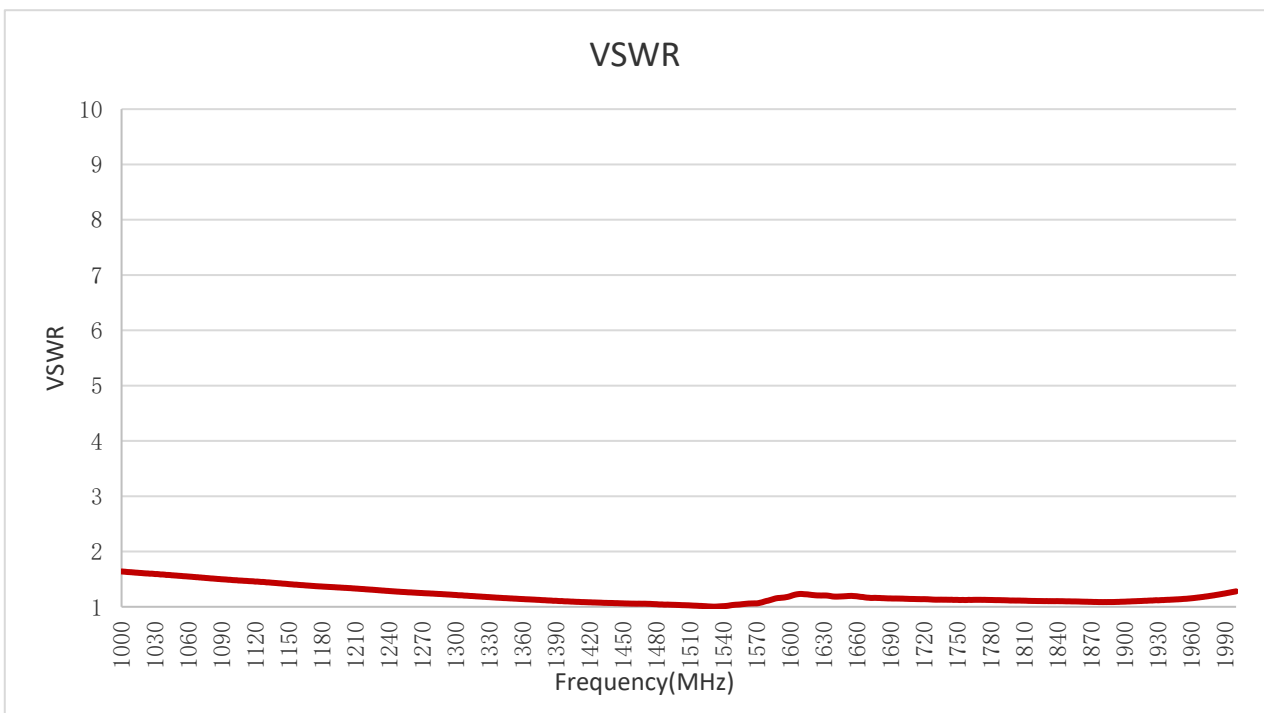
2 Drawing



3 Detailed Performance

3.1. S-Parameter Test

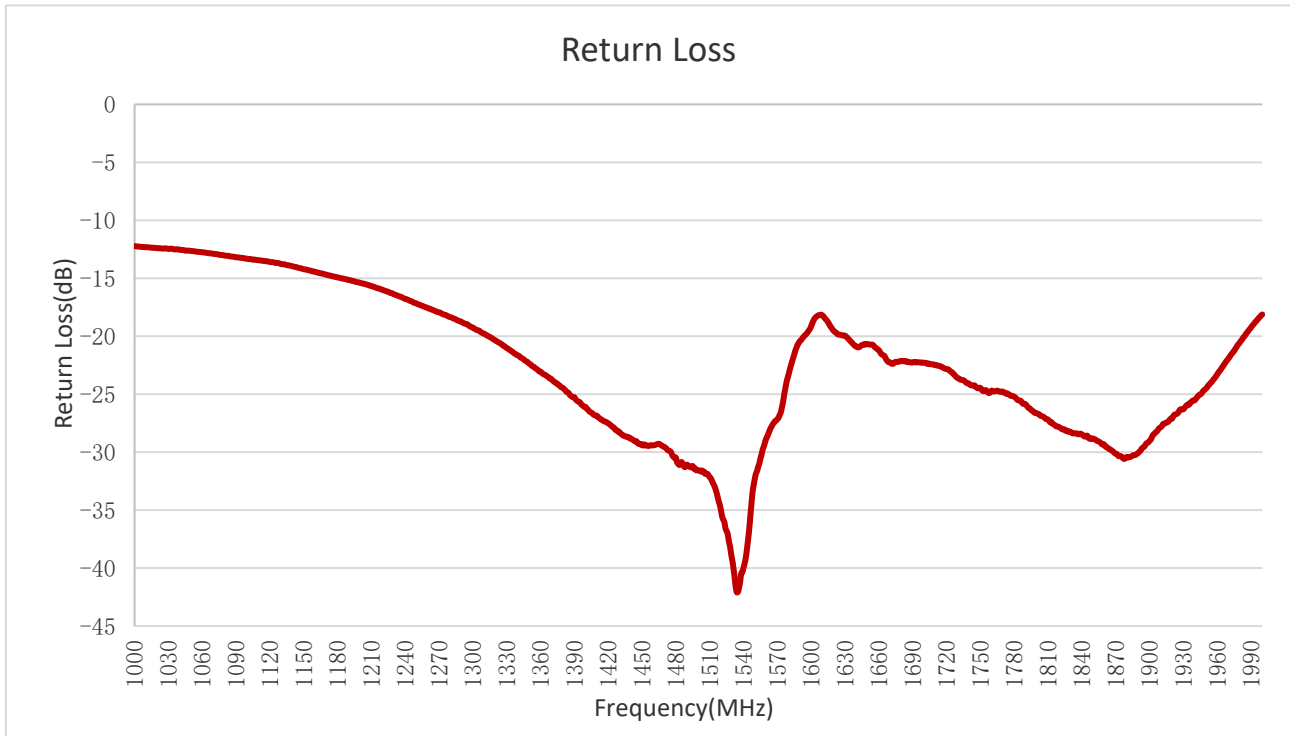
3.1.1. VSWR



VSWR

Frequency (MHz)	1518	1538	1559	1561	1575	1602	1626	1650	1675
VSWR	1.01	1.01	1.06	1.05	1.08	1.20	1.21	1.19	1.16

3.1.2. Return Loss

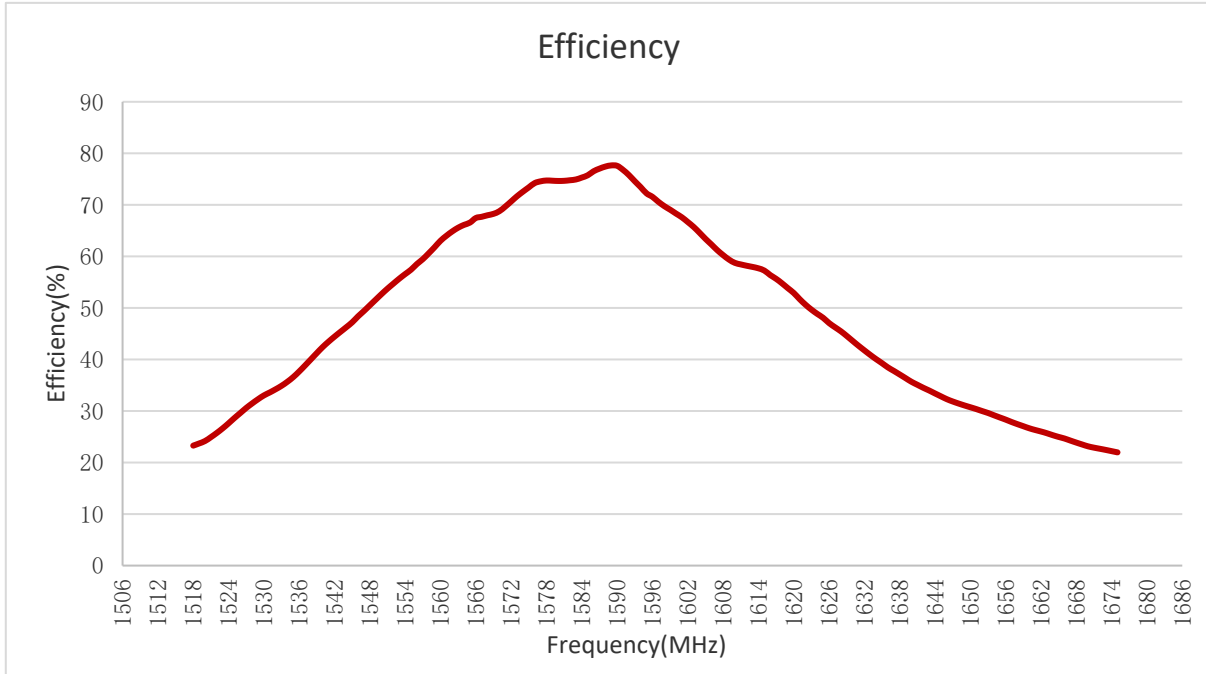


Return Loss (dB)

Frequency (MHz)	1518	1538	1559	1561	1575	1602	1626	1650	1675
Return Loss (dB)	-34.2	-40.4	-29.1	-28.6	-25.6	-18.6	-19.8	-20.6	-22.2

3.2. Radiation Performance Test

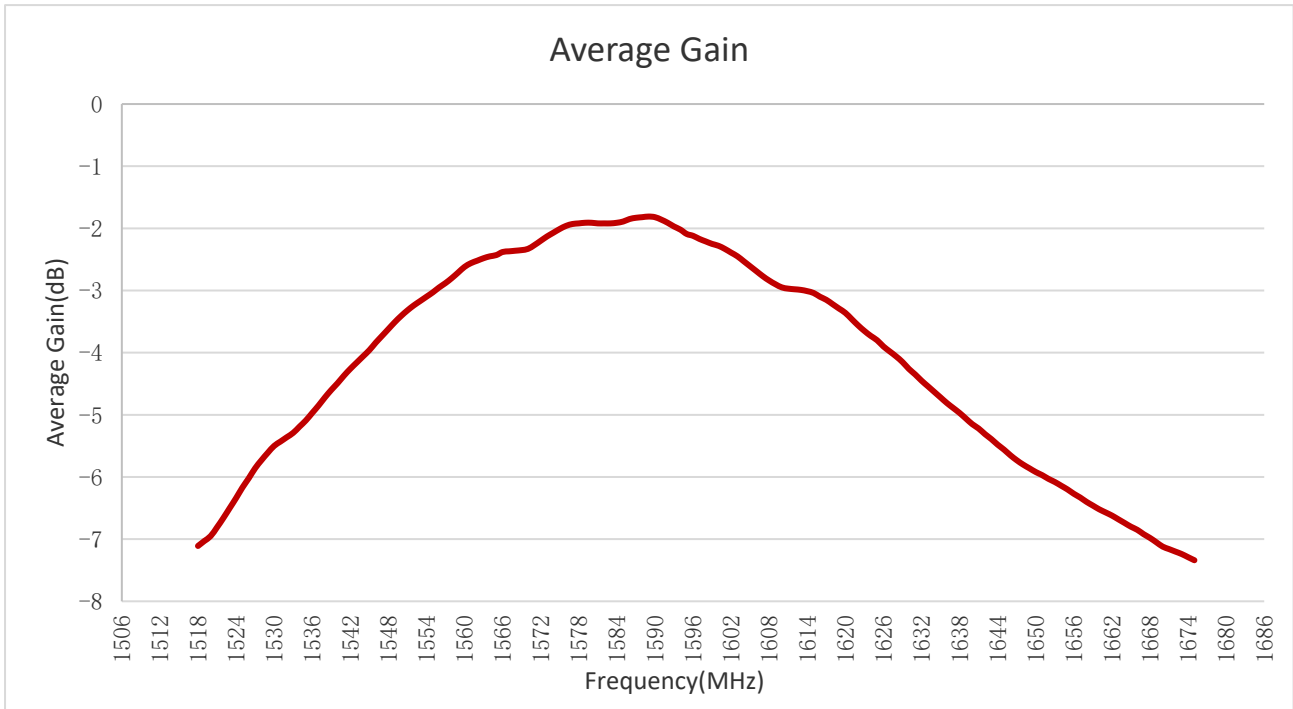
3.2.1. Efficiency



Efficiency (%)

Frequency (MHz)	1518	1538	1559	1561	1575	1602	1626	1650	1675
Efficiency (%)	23.2	40	61.7	64	73.4	66.6	47.1	30.7	21.9

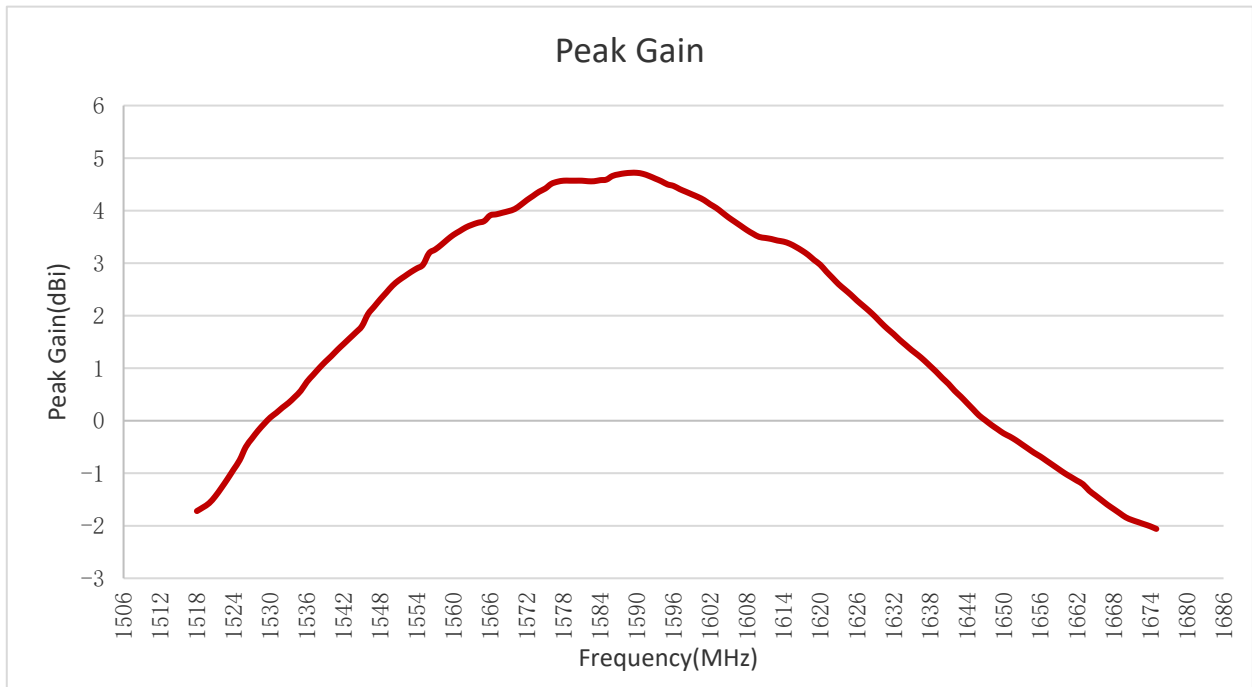
3.2.2. Average Gain



Average Gain (dB)

Frequency (MHz)	1518	1538	1559	1561	1575	1602	1626	1650	1675
Average Gain (dB)	-7.1	-4.7	-2.7	-2.56	-2.01	-2.39	-3.9	-5.9	-7.34

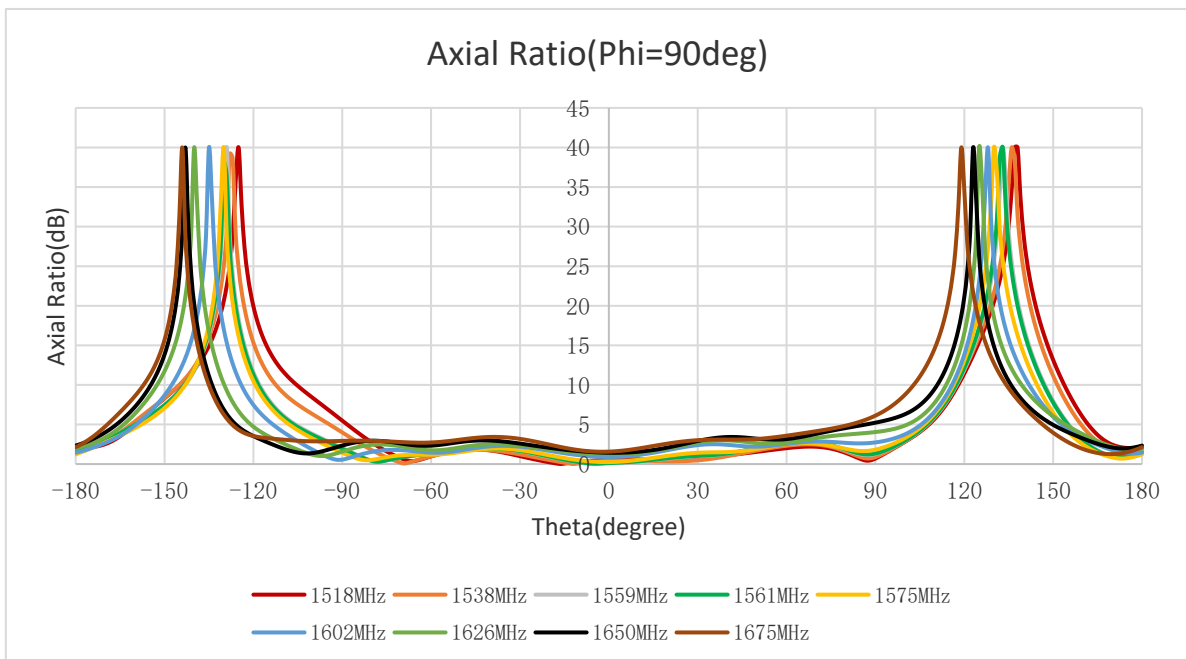
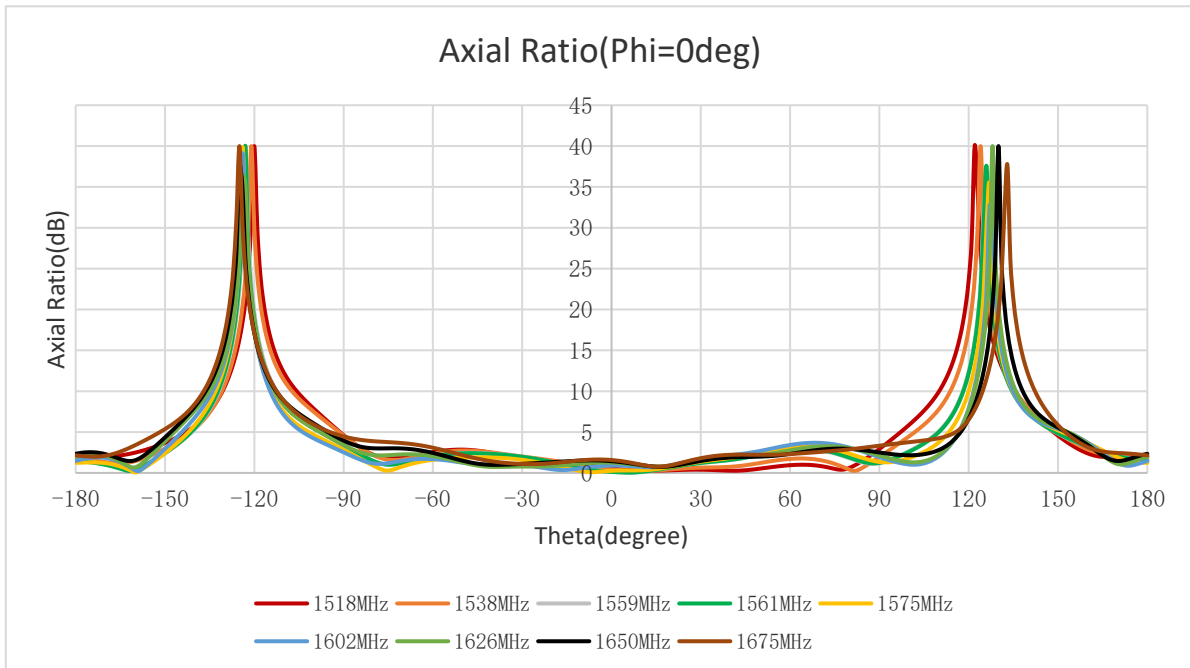
3.2.3. Peak Gain



Peak Gain (dBi)

Frequency (MHz)	1518	1538	1559	1561	1575	1602	1626	1650	1675
Peak Gain (dBi)	-1.7	1	3.45	3.61	4.42	4.12	2.29	-0.24	-2.06

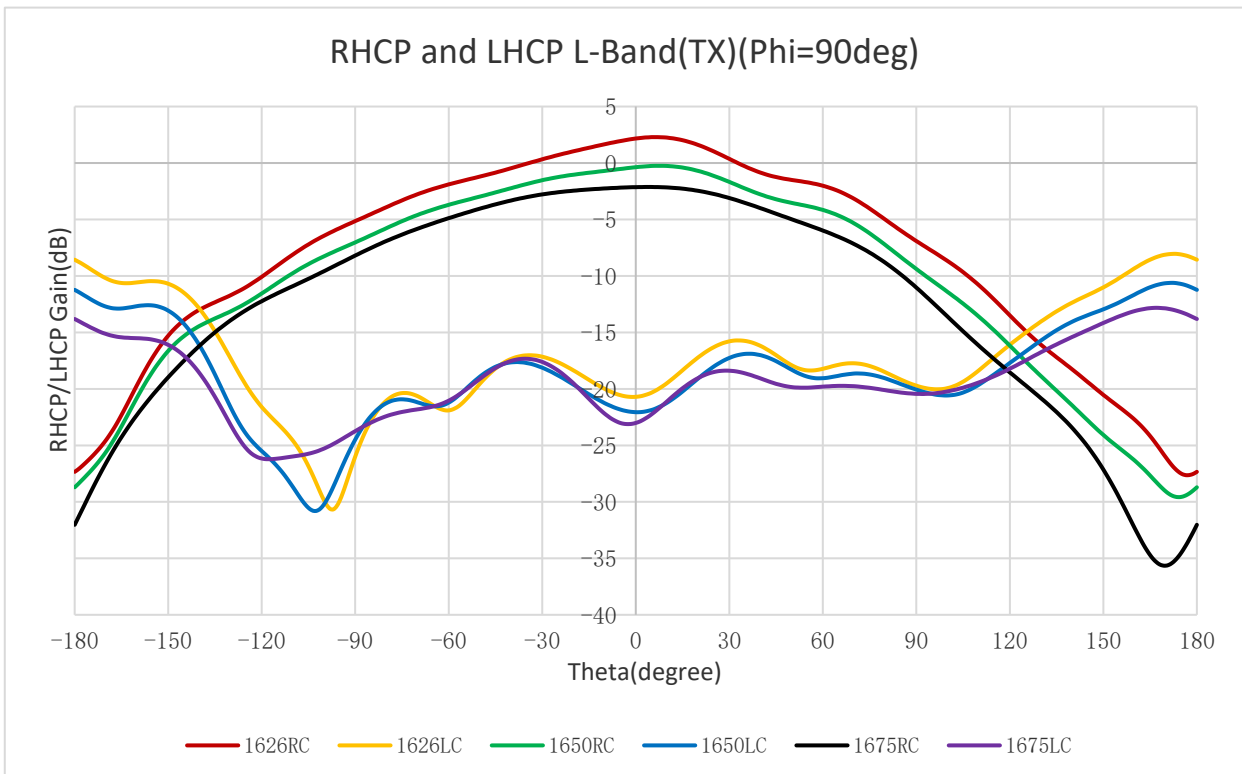
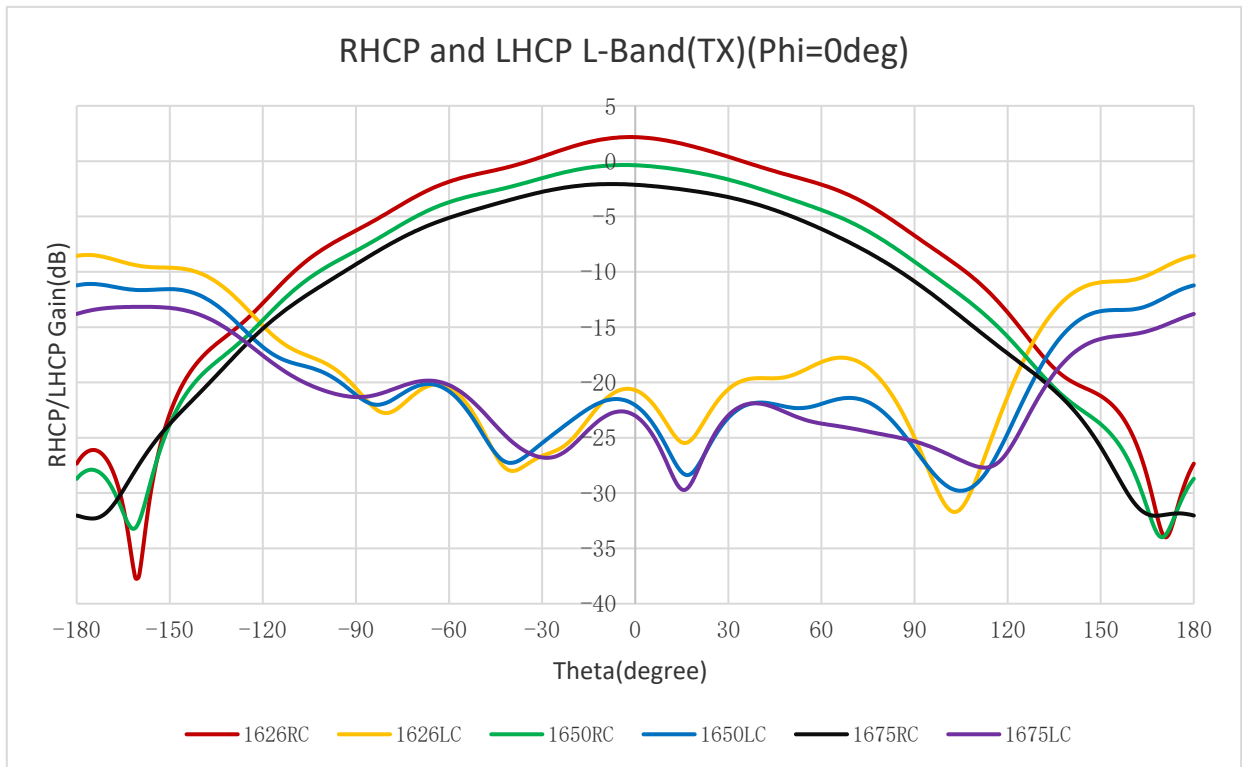
3.2.4. Axial Ratio

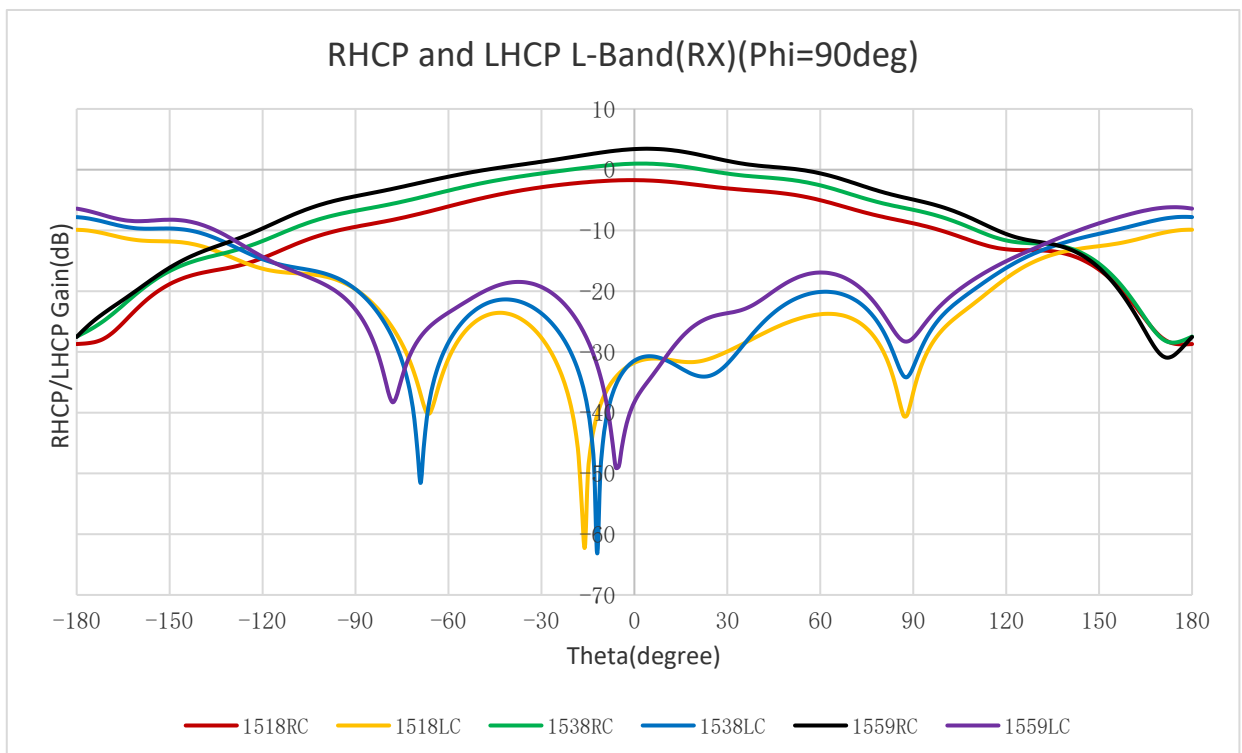
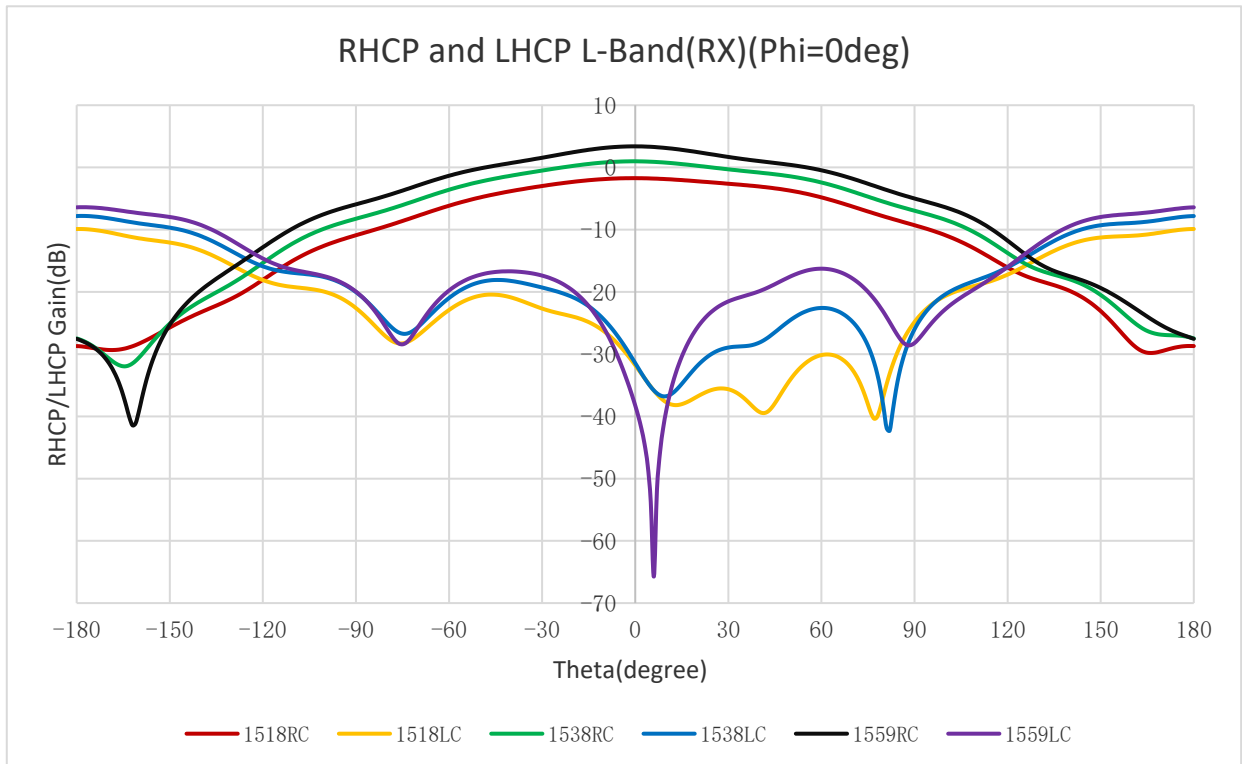


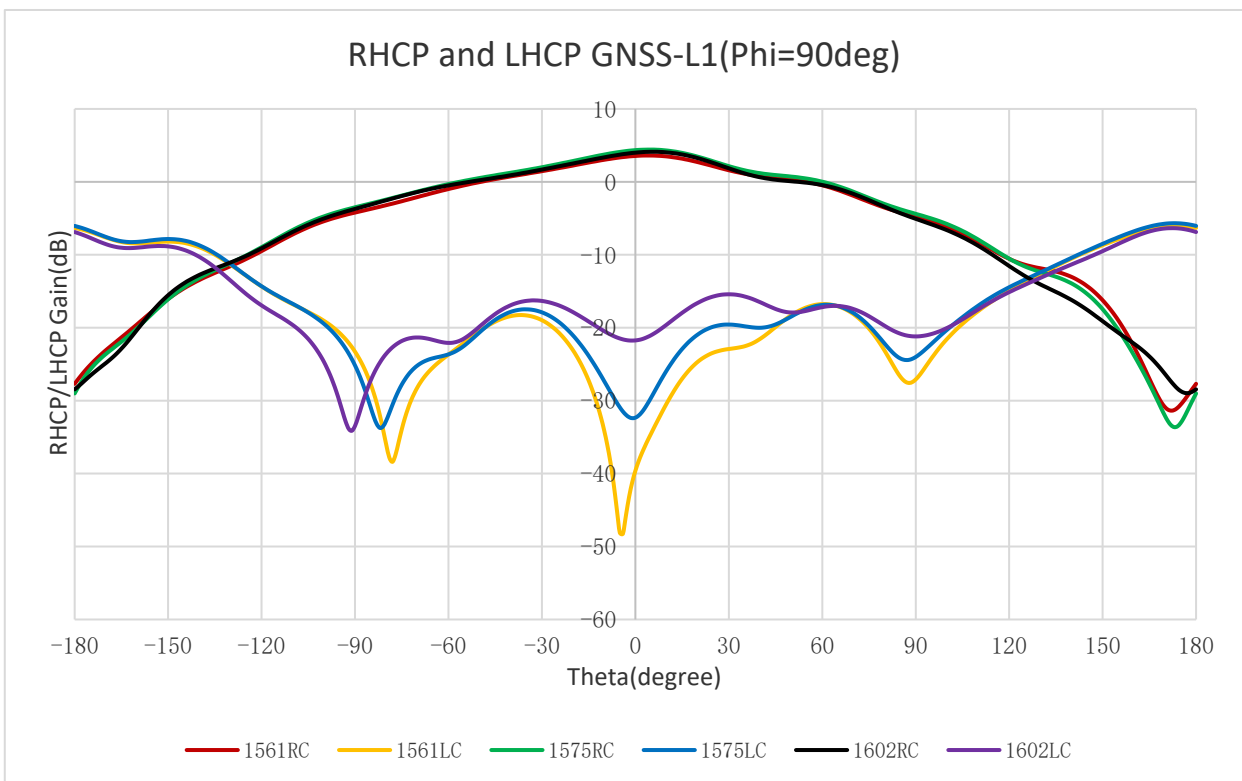
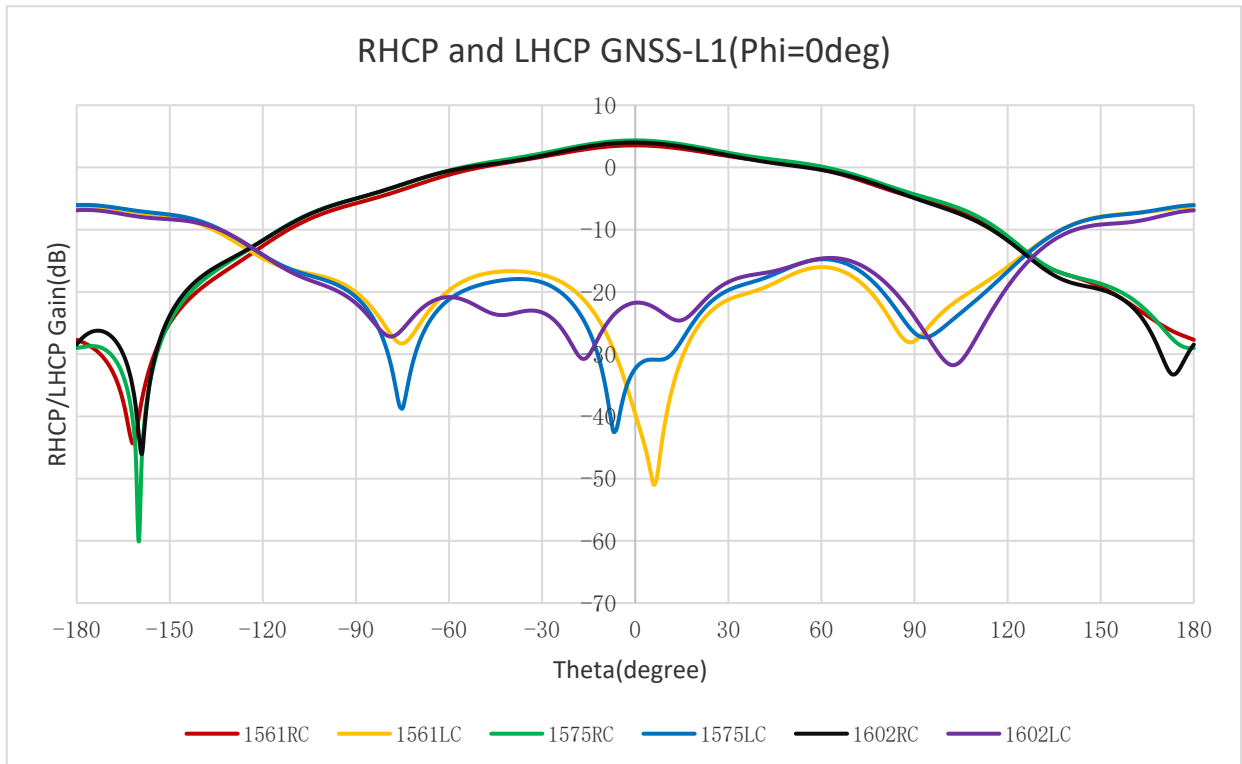
Axial Ratio (dB)

Frequency (MHz)		1518	1538	1559	1561	1575	1602	1626	1650	1675
Axial Ratio (dB)	Phi = 0 (deg) Theta = 0 (deg)	0.54	0.41	0.12	0.25	0.89	1.25	1.43	1.57	0.14
	Phi = 90 (deg) Theta = 0 (deg)	0.54	0.41	0.12	0.25	0.89	1.25	1.43	1.57	0.14

3.2.5. 2D RHCP and LHCP Gain





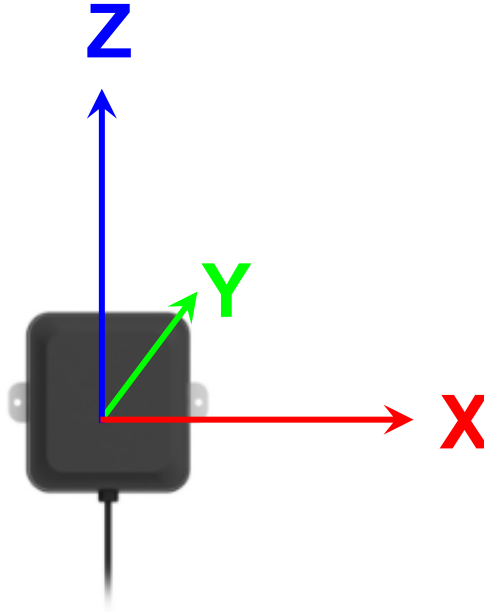


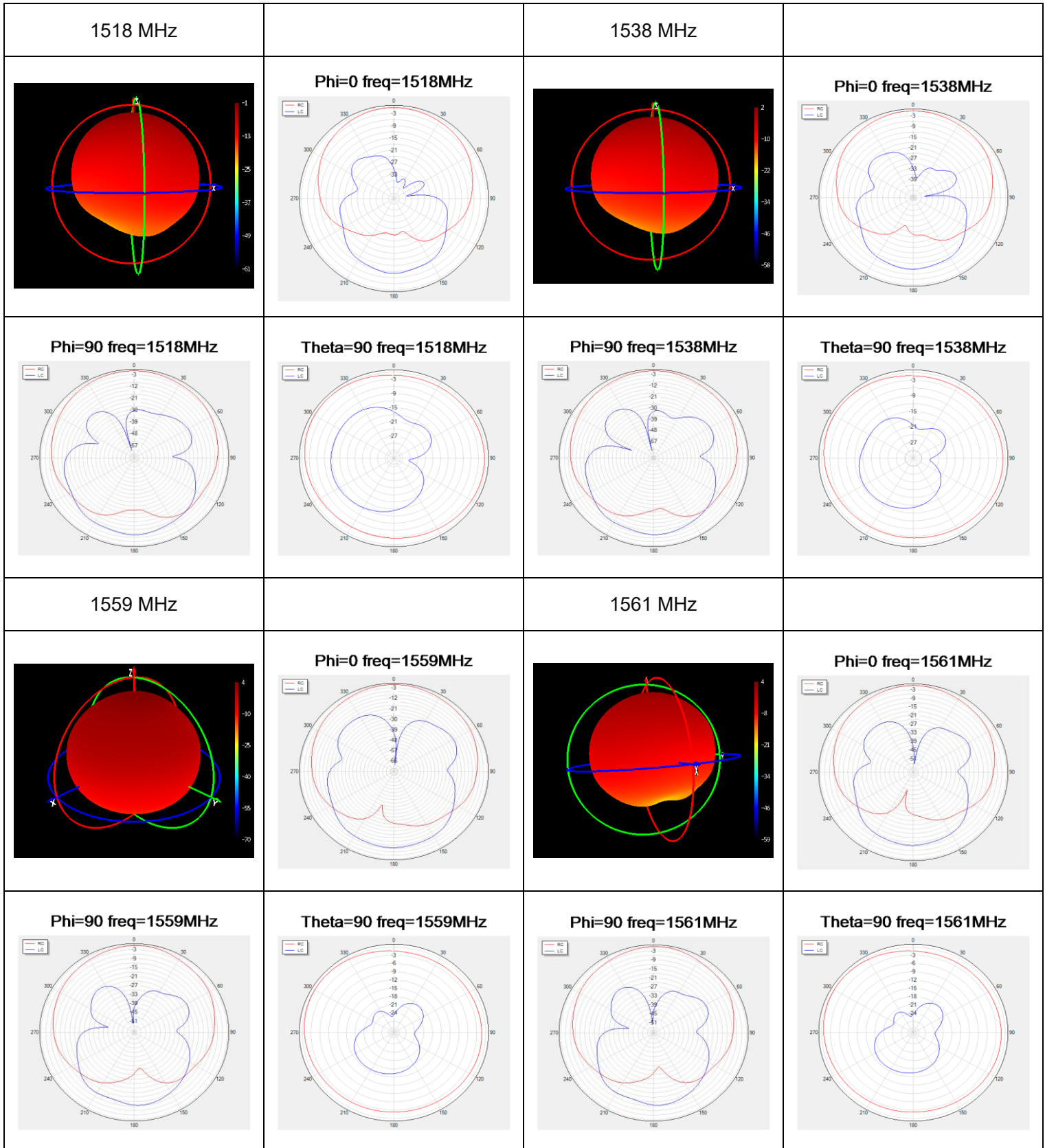
2D RHCP and LHCP Gain (dB)

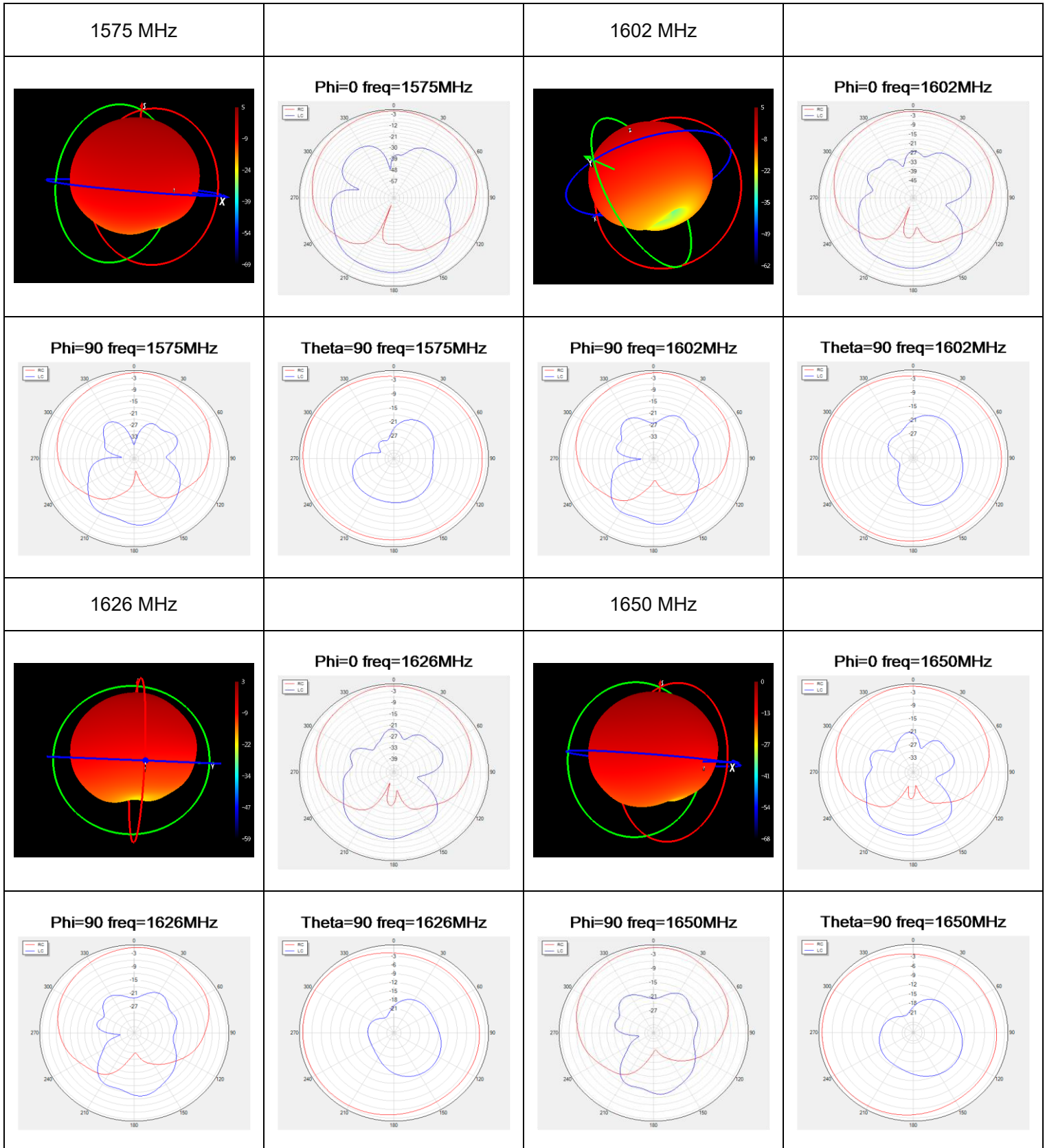
Frequency (MHz)		1518	1538	1559	1561	1575	1602	1626	1650	1675
RC Gain (dB)	Phi = 0 (deg) Theta = 0 (deg)	-1.72	0.99	3.39	3.55	4.35	4	2.17	-0.37	-2.14
	Phi = 90 (deg) Theta = 0 (deg)	-1.72	0.99	3.39	3.55	4.35	4	2.17	-0.37	-2.14
LC Gain (dB)	Phi = 0 (deg) Theta = 0 (deg)	-	-	-	-	-32.3	-21.7	-20.7	-22	-23
	Phi = 90 (deg) Theta = 0 (deg)	31.78	31.44	38.26	39.62	-32.3	-21.7	-20.7	-22	-23
	Phi = 90 (deg) Theta = 0 (deg)	-	-	-	-	-32.3	-21.7	-20.7	-22	-23

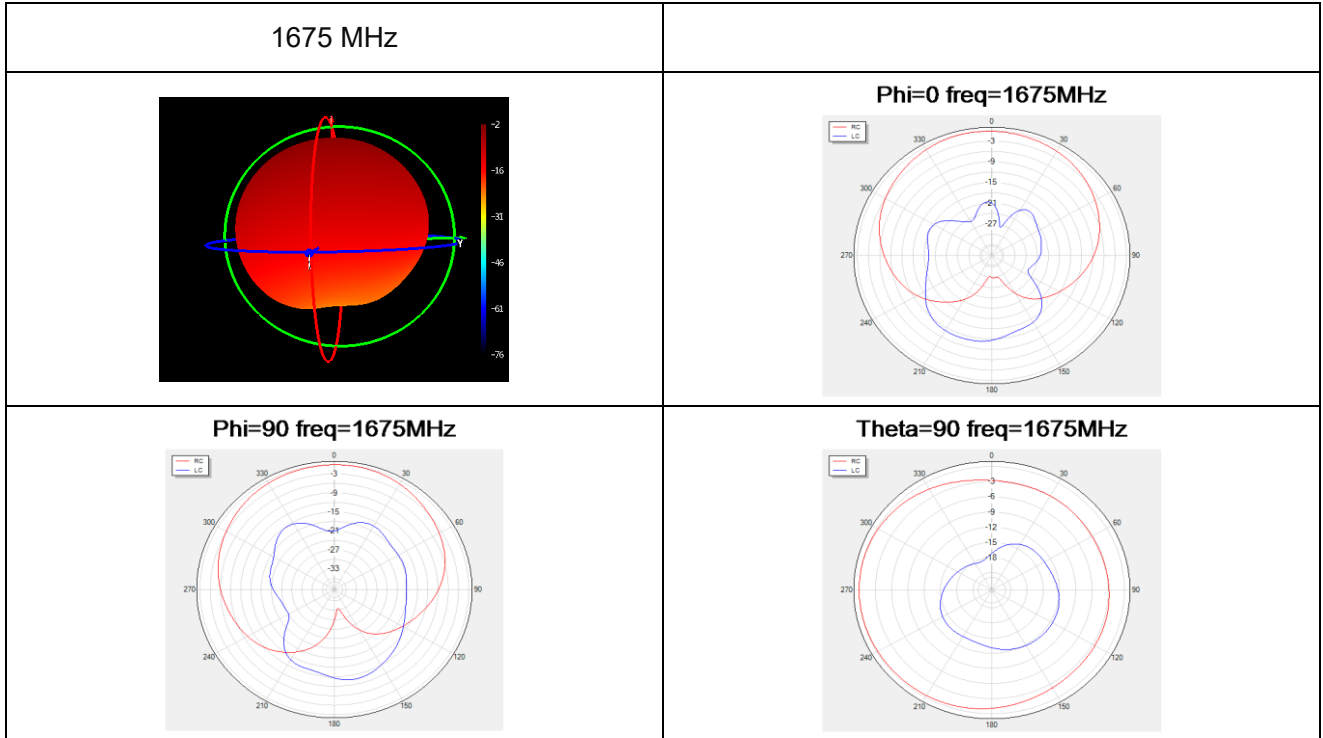
3.2.6. 3D & 2D Radiation Pattern

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

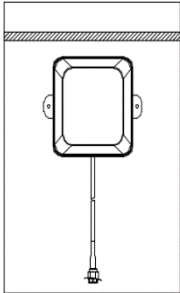
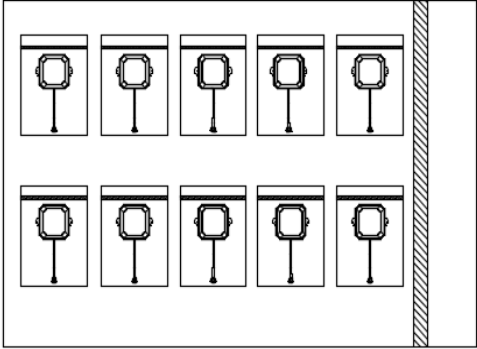


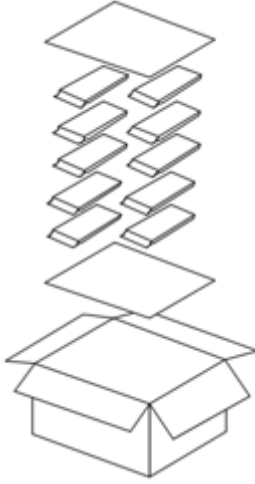
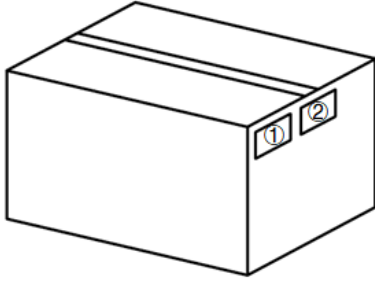
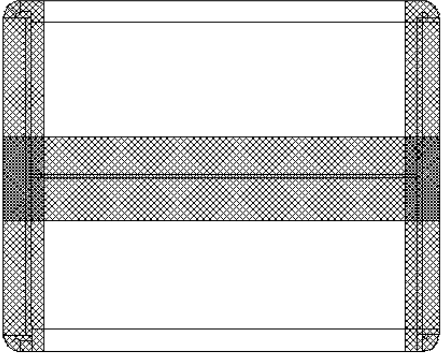






4 Packaging

Step	Packaging Picture / 2D Picture	Description
1	 <p data-bbox="499 1016 632 1055">1pcs/PE bag</p>	<p data-bbox="879 797 1374 875">1 pc antenna product in a small PE bag (1 pc antenna per small PE bag)</p>
2	 <p data-bbox="523 1547 767 1585">10pcs/PE bag</p>	<p data-bbox="879 1290 1374 1368">10 pcs antenna product in a big PE bag (10 pcs antennas per big PE bag)</p>

<p>3</p>		<p>Place a clapboard at the bottom and top</p> <p><u>Carton Size:</u> <u>L × W × H = 325 × 325 × 200 mm</u></p>
<p>4</p>		<p>Position for Attaching Labels</p> <ul style="list-style-type: none"> ① Carton Label ② Quality Label
<p>5</p>		<p>Sealing Cartons</p> <p>“I” 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
-	2023-03-01	Junsen LI/ Joye WANG/ David LIU/ Vinnie LIU	Creation of the document
1.0	2023-03-01	Junsen LI/ Joye WANG/ David LIU/ Vinnie LIU	First official release

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