

Antenna

YEGS001AA Datasheet

Antenna Services

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Quectel Wireless Solutions Co., Ltd.

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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About the Document

Revision History

Version	Date	Author	Note
-	2021-10-22	Kenny YIN/ Junsen LI	Creation of the document
1.0	2021-10-22	Kenny YIN/ Junsen LI	First official release

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1 Product Description

The antenna is designed for superior performance, and can be widely used for wireless applications.

We provide comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs.

2 Product Features

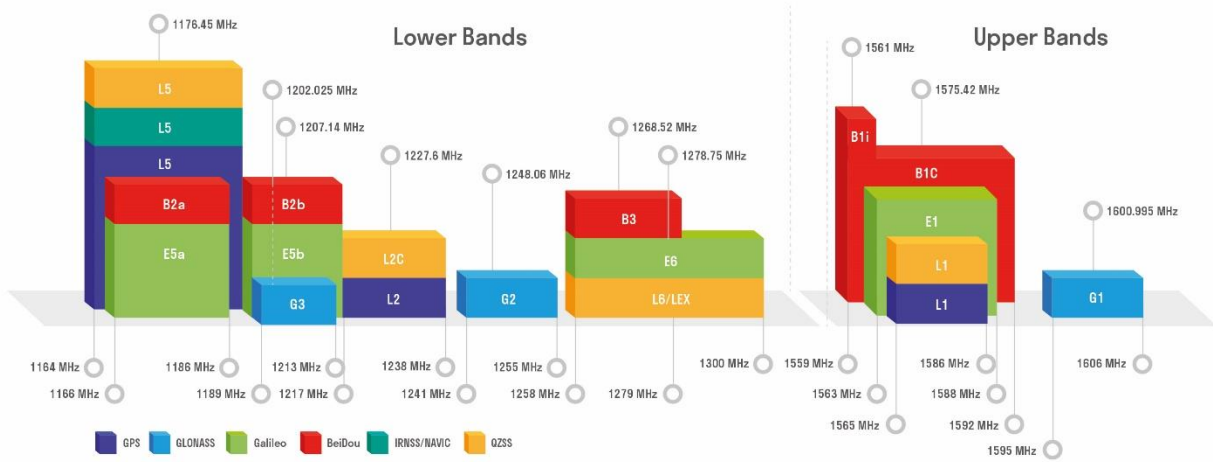
- High gain
- High rejection
- Low noise



3 GNSS Frequency Band Checklist

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)				
	-				

GNSS Bands and Constellations



4 Product Specification (Testing Description)

Test condition: on a Φ 80 mm PCB board.

Passive Electrical Specifications

Frequency Range	1557–1606 MHz
Input Impedance	50 Ω
VSWR	≤ 2.0
Peak Gain	B1 ≤ 3.51 dBi; L1 ≤ 4.05 dBi; G1 ≤ 2.68 dBi
Axial Ratio	< 1 dB
Polarization Type	RHCP

Active Electrical Specifications

Gain (LNA)	B1 ≤ 31.96 dB; L1 ≤ 31.06 dB; G1 ≤ 31.24 dB
Noise Figure	< 2 dB
Filter Out-of-band Attenuation	52 dB $f_0 \pm 100$ MHz
	45 dB $f_0 \pm 100$ MHz
	f_0 (1561–1602MHz)
Output VSWR	< 1.5
Operation Voltage	3–12 V
Current	< 20 mA

Mechanical Specifications

Antenna Size	Φ 85 mm \times 25 mm RG174 Cable Length = 600 mm
Casing	ABS
Connector Type	N-Type Male
Working Temperature	-40°C to +85 °C
Radome Color	-Black
IP Rating	IP67
Mounting Type	Screw

5 Overall Performance

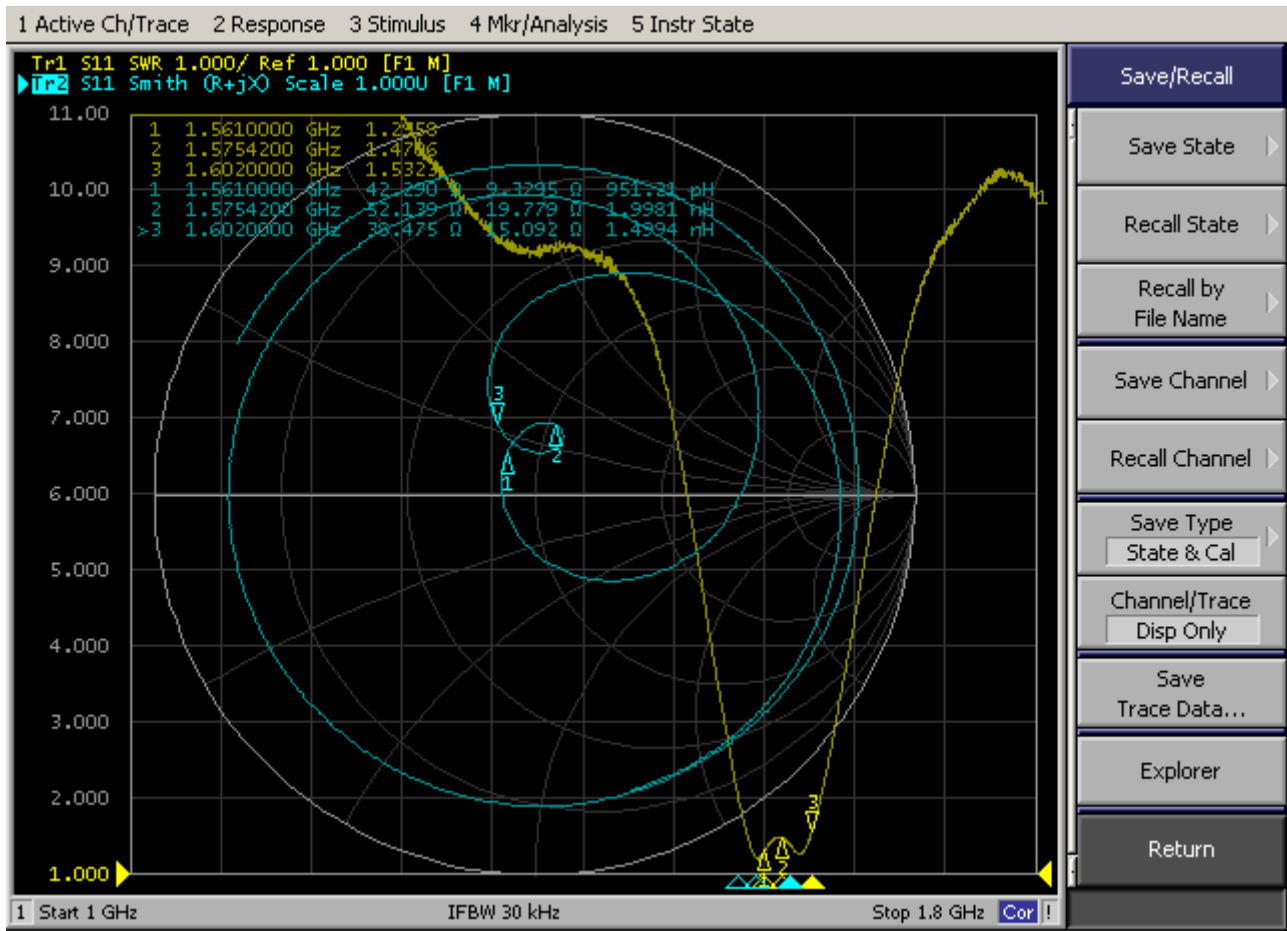
5.1. Passive Performance

5.1.1. Test Environment

- KEYSIGHT VNA Network Analyzer E5071C 100 kHz – 4.5 GHz
- Microwave anechoic chamber, 7 m × 4 m × 3 m, 900 MHz – 6.5 GHz

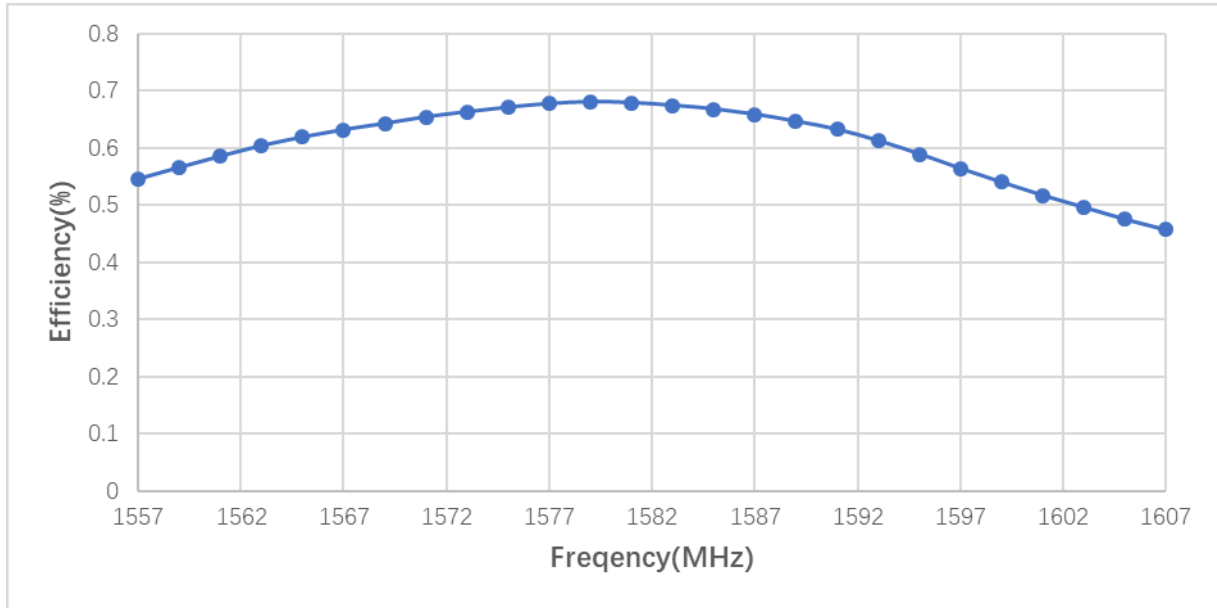


5.1.2. VSWR



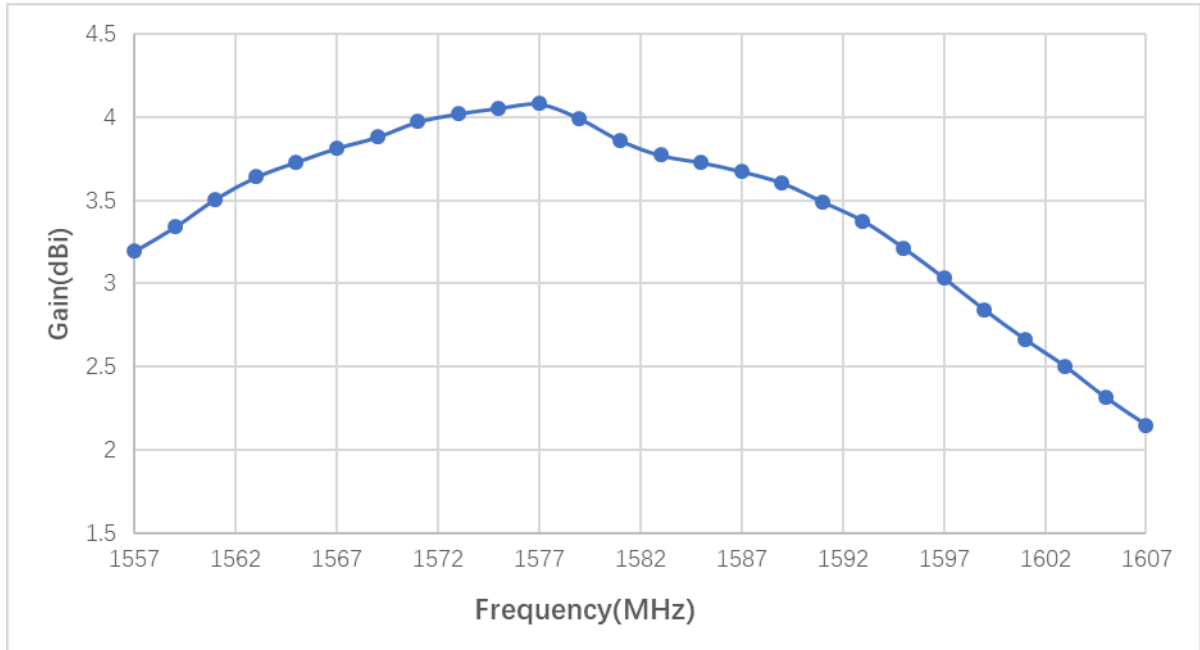
Frequency (MHz)	1561	1575	1602
VSWR	1.25	1.47	1.53

5.1.3. Efficiency Varied with Frequency



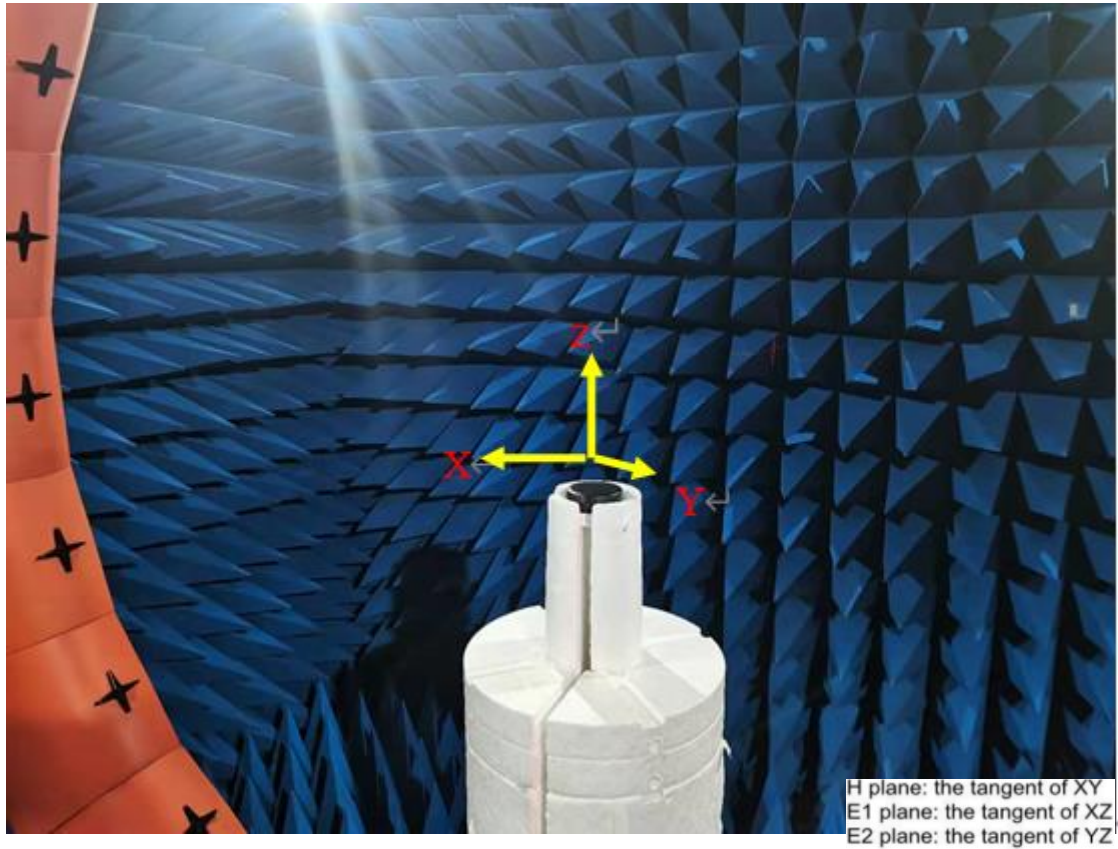
Frequency (MHz)	1561	1575	1602
Efficiency (%)	59	67	50

5.1.4. Gain Varied with Frequency

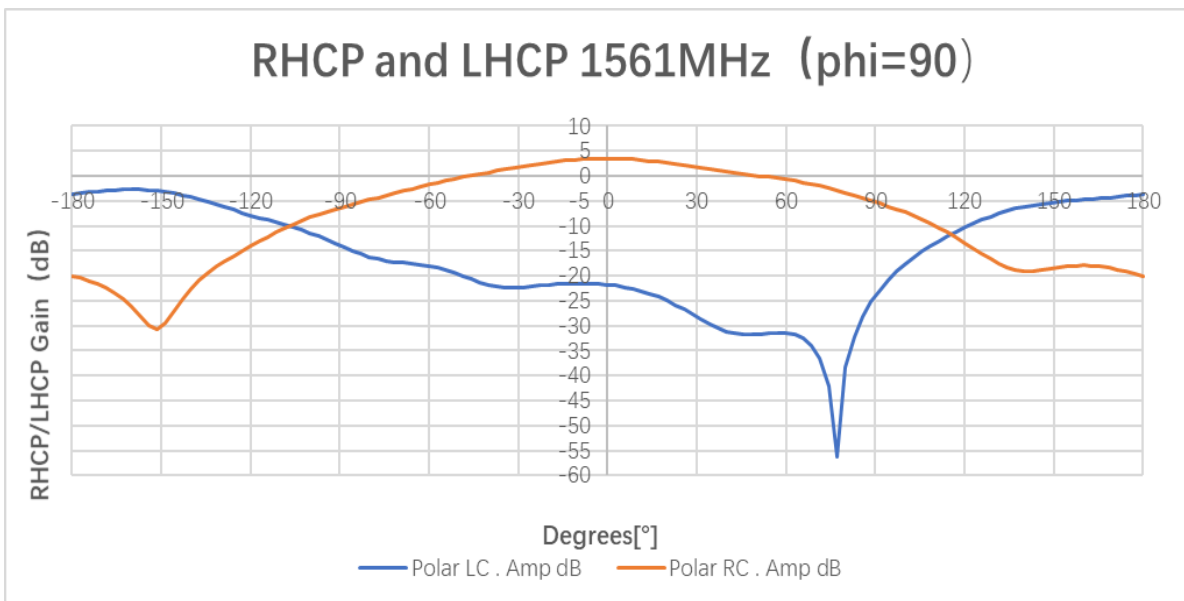
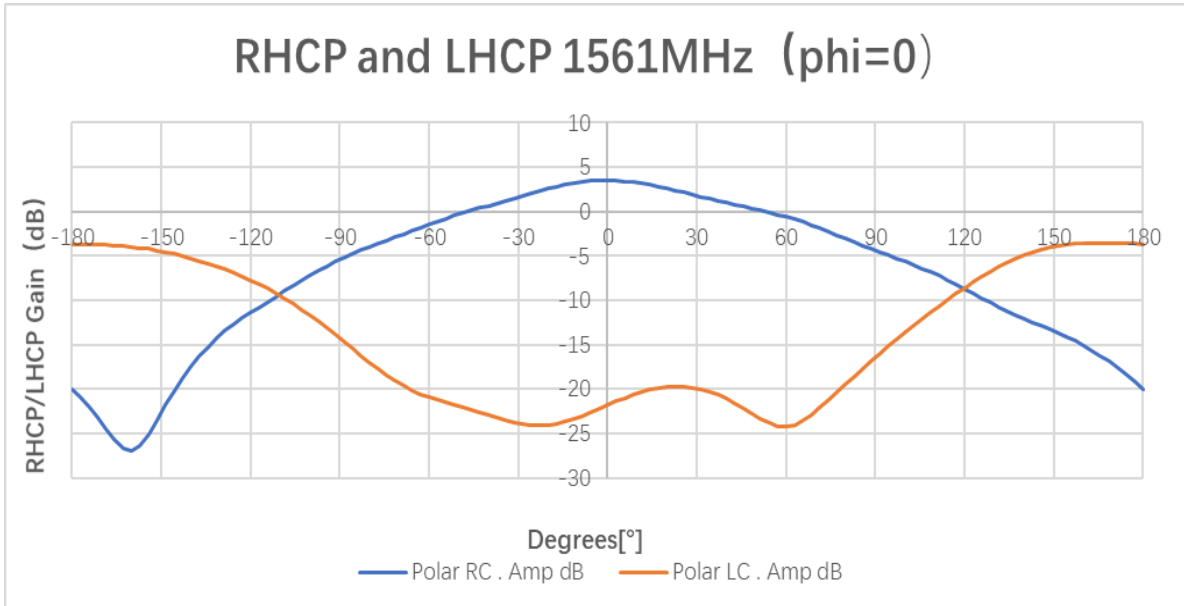


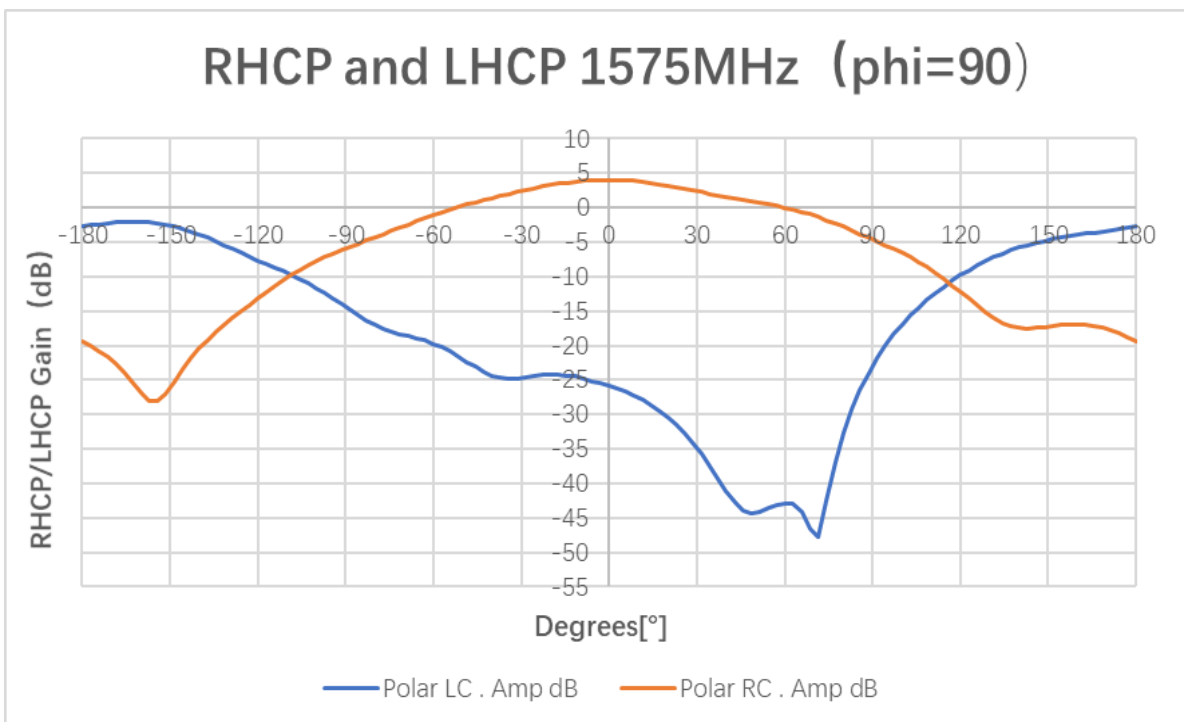
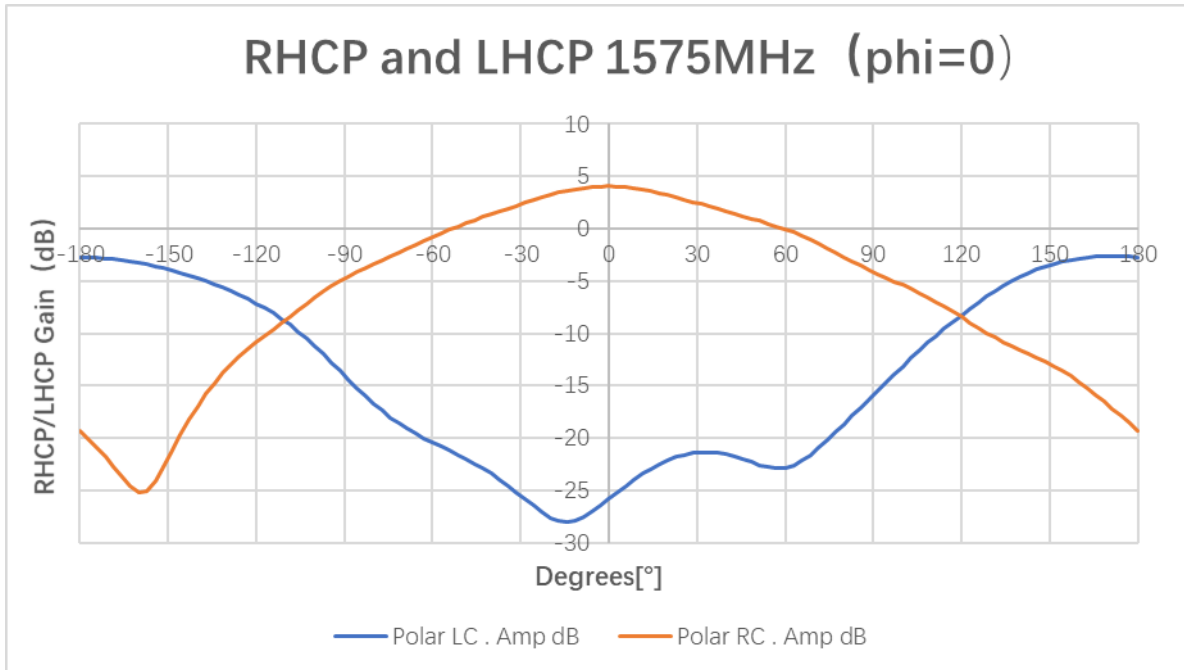
Frequency (MHz)	1561	1575	1602
Gain (dBi)	3.51	4.05	2.66

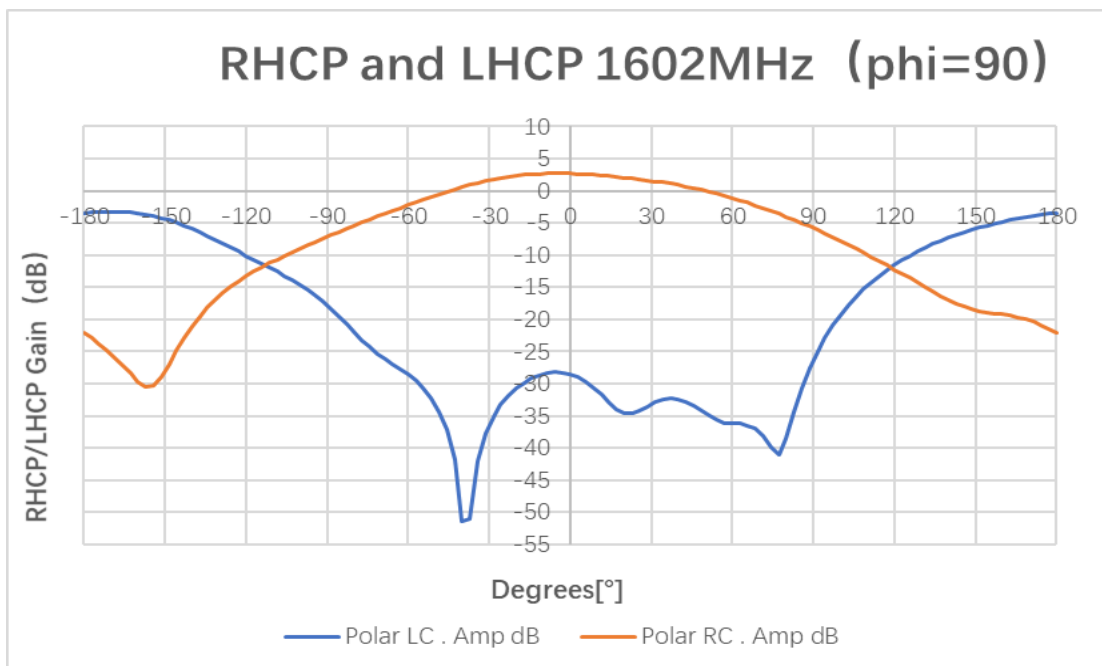
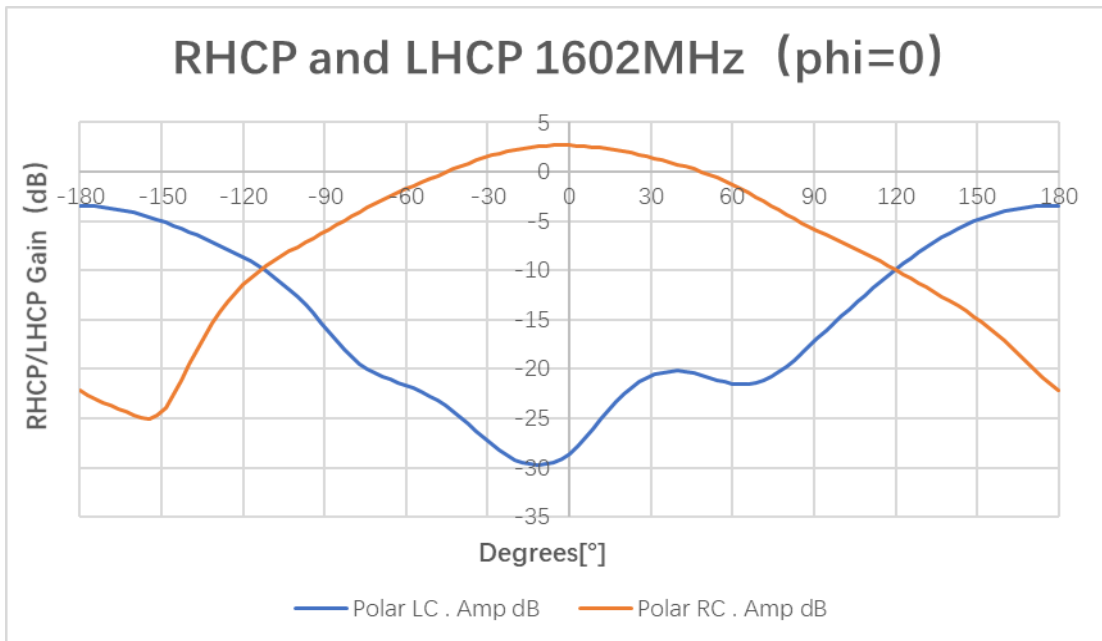
5.1.5. Antenna Test in Chamber



5.1.6. 2D RHCP and LHCP Gain

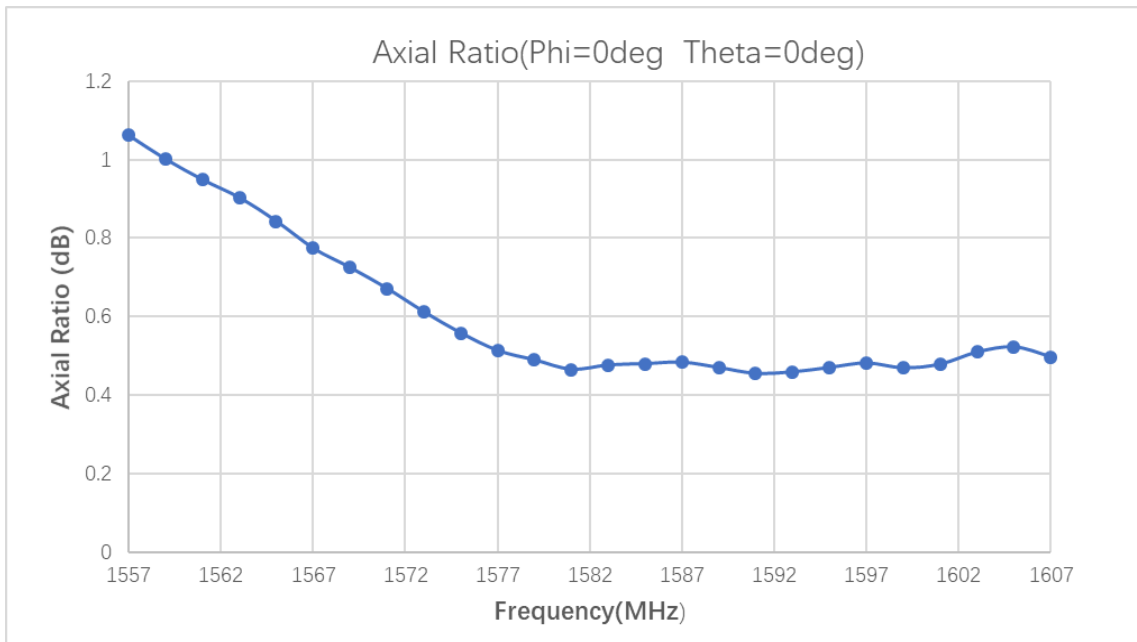




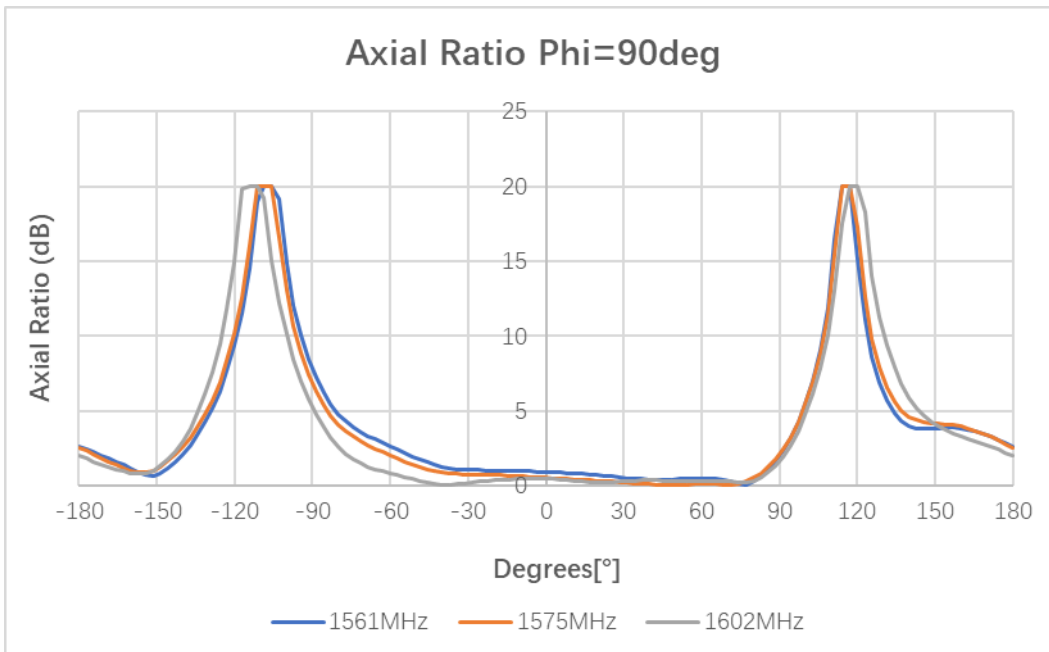
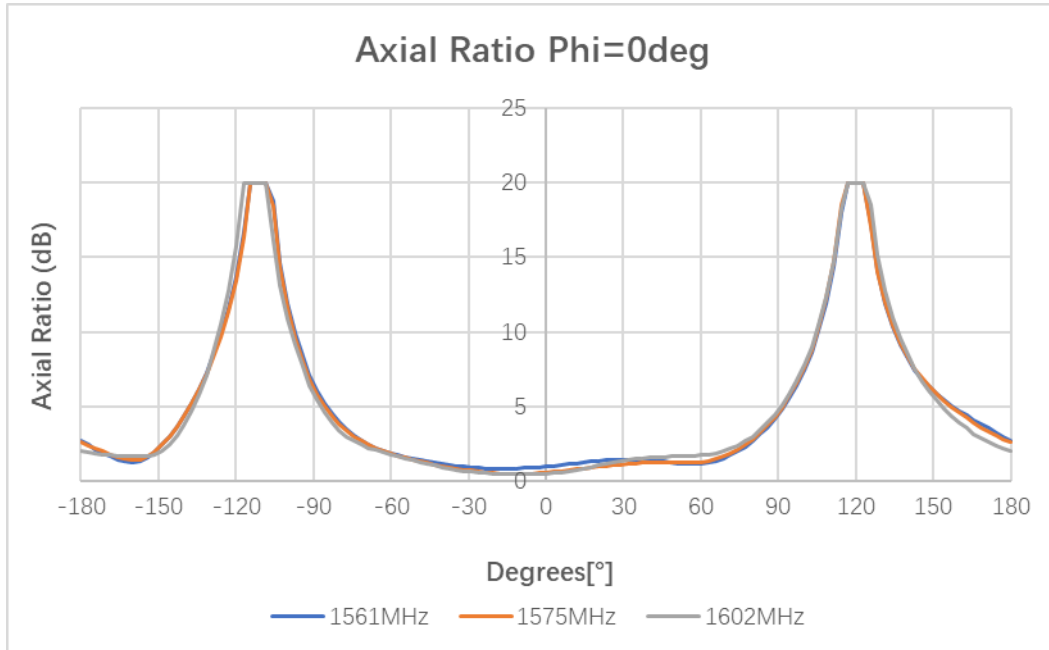


Frequency (MHz)	1561	1575	1602
RC Gain (dB) Phi = 0 (deg) Theta = 0 (deg)	3.51	4.05	2.66
RC Gain (dB) Phi = 90 (deg) Theta = 0 (deg)	3.51	4.05	2.66
LC Gain (dB) Phi = 0 (deg) Theta = 0 (deg)	-21.75	-25.82	-28.54
LC Gain (dB) Phi = 90 (deg) Theta = 0 (deg)	-21.75	-25.82	-28.54

5.1.7. Axial Ratio Varied with Frequency

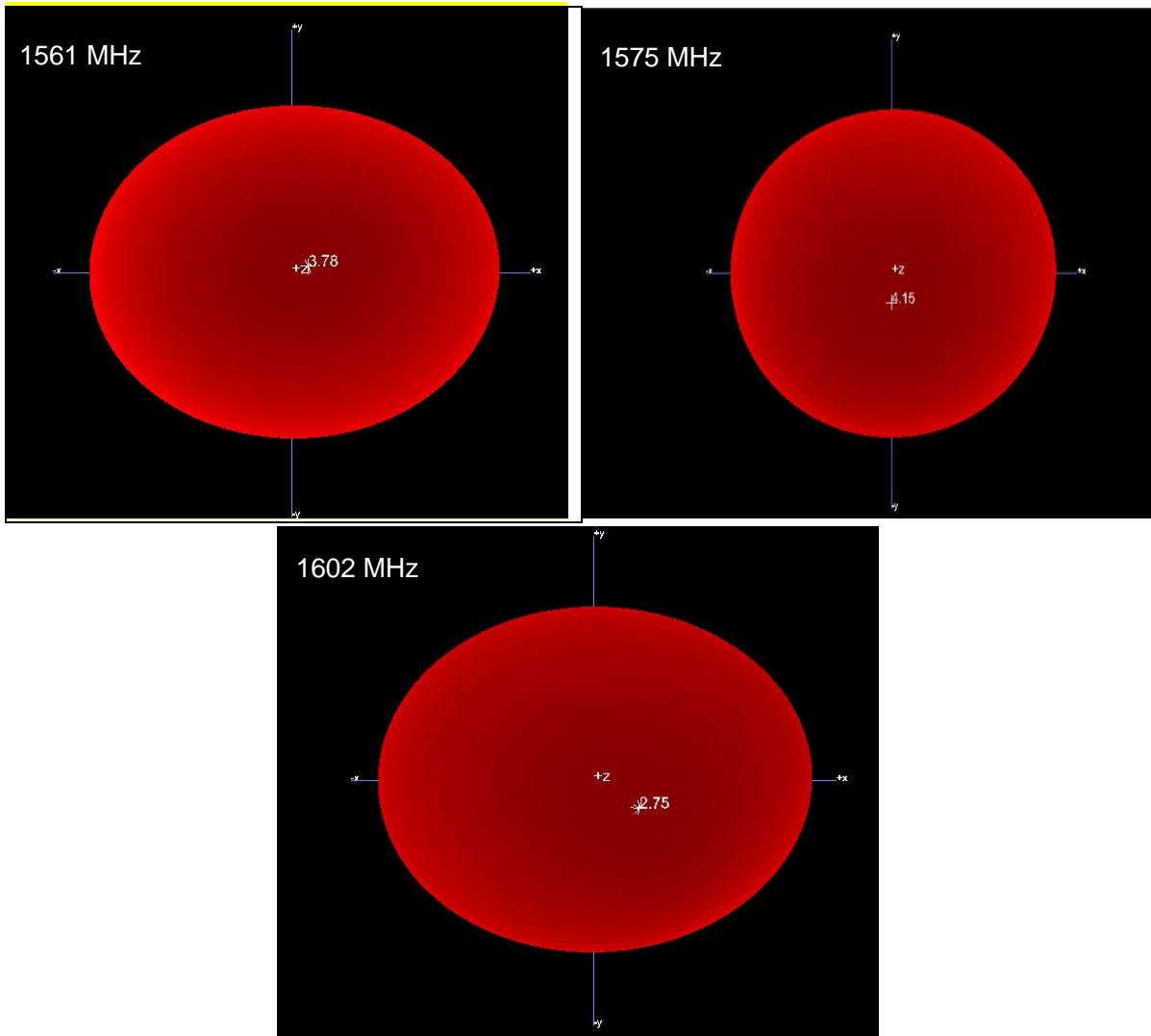


5.1.8. Axial Ratio in XOZ/YOZ



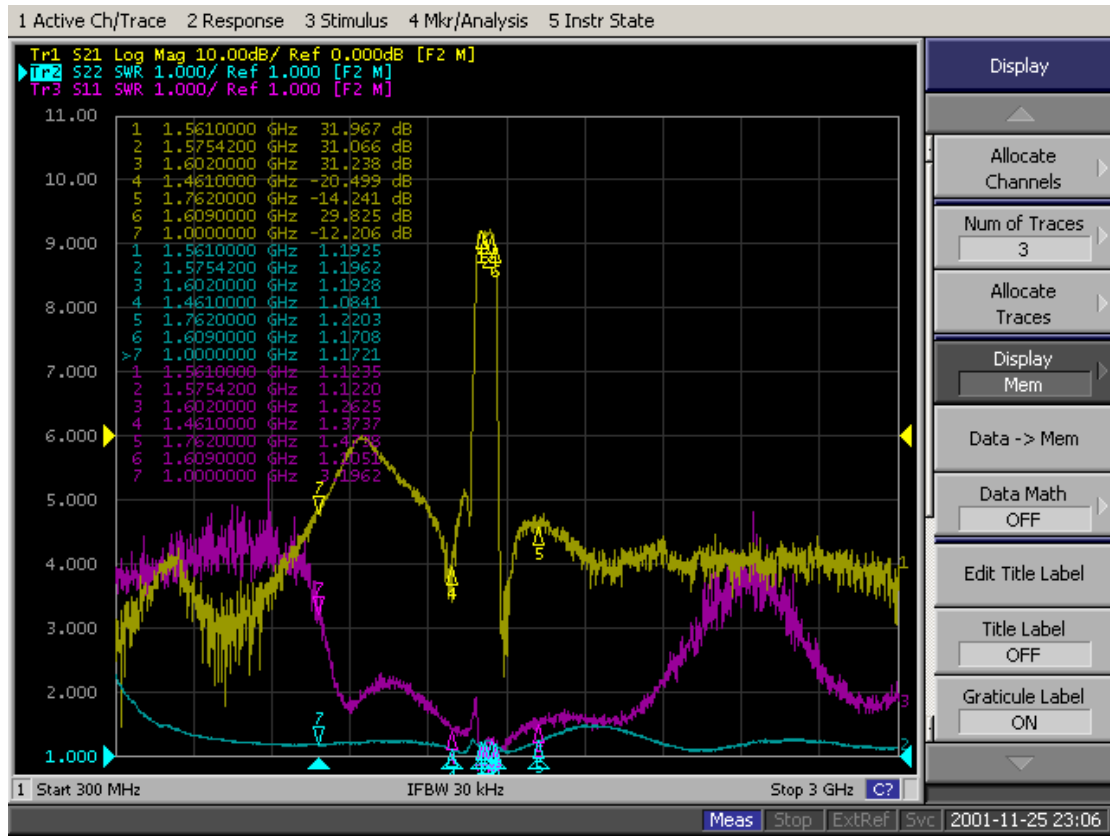
Frequency (MHz)	1561	1575	1602
AR (dB) Phi = 0 (deg) Theta = 0 (deg)	0.95	0.56	0.48
AR (dB) Phi = 90 (deg) Theta = 0 (deg)	0.95	0.56	0.48

5.1.9. 3D Radiation



5.2. Active Performance

5.2.1. LNA Gain (Input S11 and Output S11)



Frequency (MHz)	1561	1575.42	1602
Input VSWR	1.19	1.19	1.26
Output VSWR	1.19	1.19	1.19
LNA Gain (dB)	31.96	31.96	31.24

6 Product Size

