

Antenna

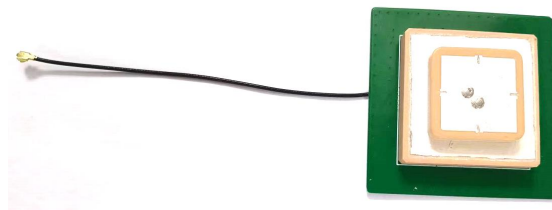
YCGO022AA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
-	2022-05-06	Xiaodong YANG/ Joye WANG	Creation of the document
1.0	2022-05-06	Xiaodong YANG/ Joye WANG	First official release

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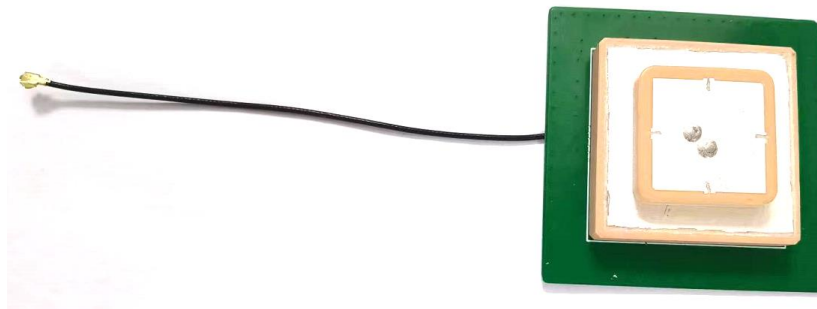
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1 Product Description

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.

2 Product Features

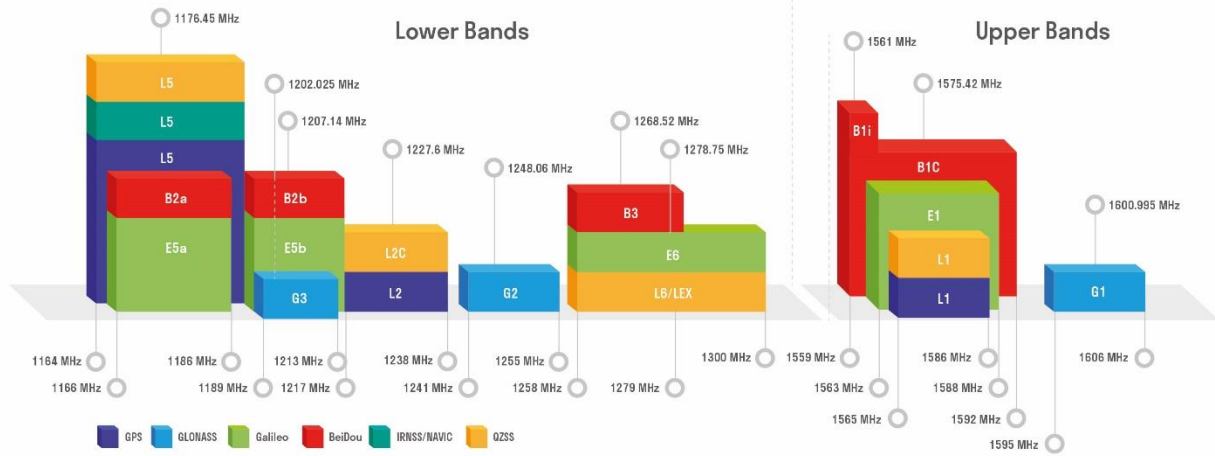
- Cellular GNSS L1 & L5
- High efficiency
- Excellent performance



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 Specifications

Passive Electrical Specifications

Frequency Range	L1: 1559–1586 MHz; L5: 1164–1189 MHz
Input Impedence	50 Ω
VSWR	≤ 2.0
Gain	≤ 3.55 dBi
Axial Ratio	< 3 dB
Polarization Type	RHCP

LNA Electrical Properties

LNA Gain	18 ± 2 dB
Noise Figure	< 3 dB
Filter Out-of-band Attenuation	30 dB $f_0 \pm 50$ MHz f_0 (1176 MHz, 1575 MHz)
Output VSWR	< 2
Voltage	DC 2.6–3.4 V
Current	≤ 30 mA
Input Impedence	50 Ω

Mechanical Specifications

Antenna Size (mm)	50 x 50 x 13.4
Material	Ceramics
Cable Type	RF1.13 Black
Connector Type	IPEX MHF1
Antenna Color	BLACK
Working Temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Weight	Typ. 48.5 g
Mounting Type	Buckle

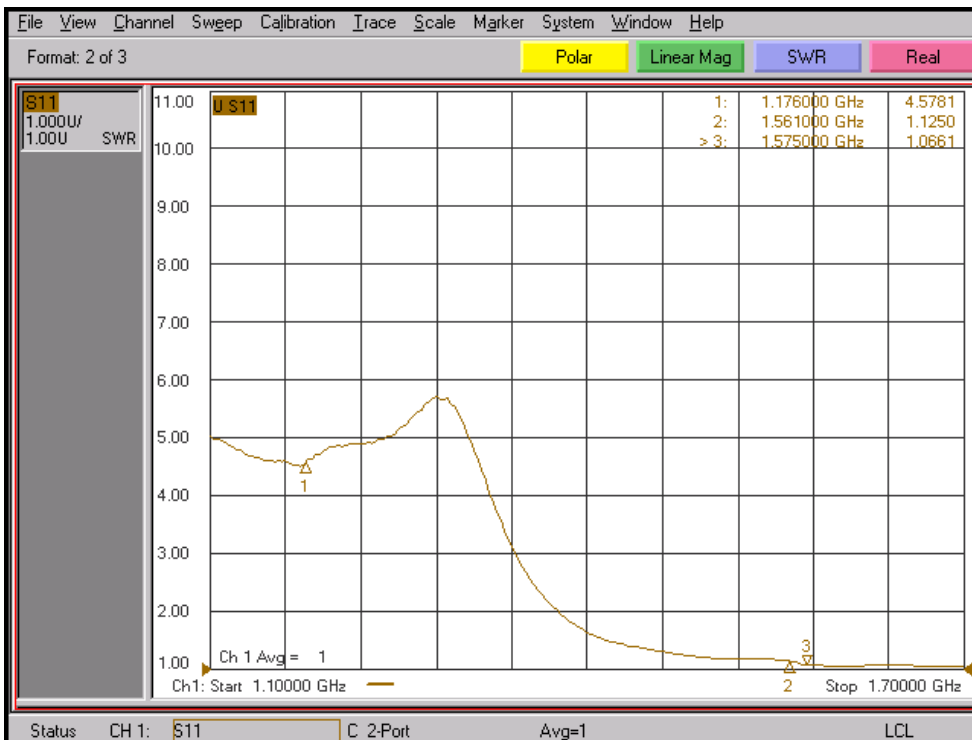
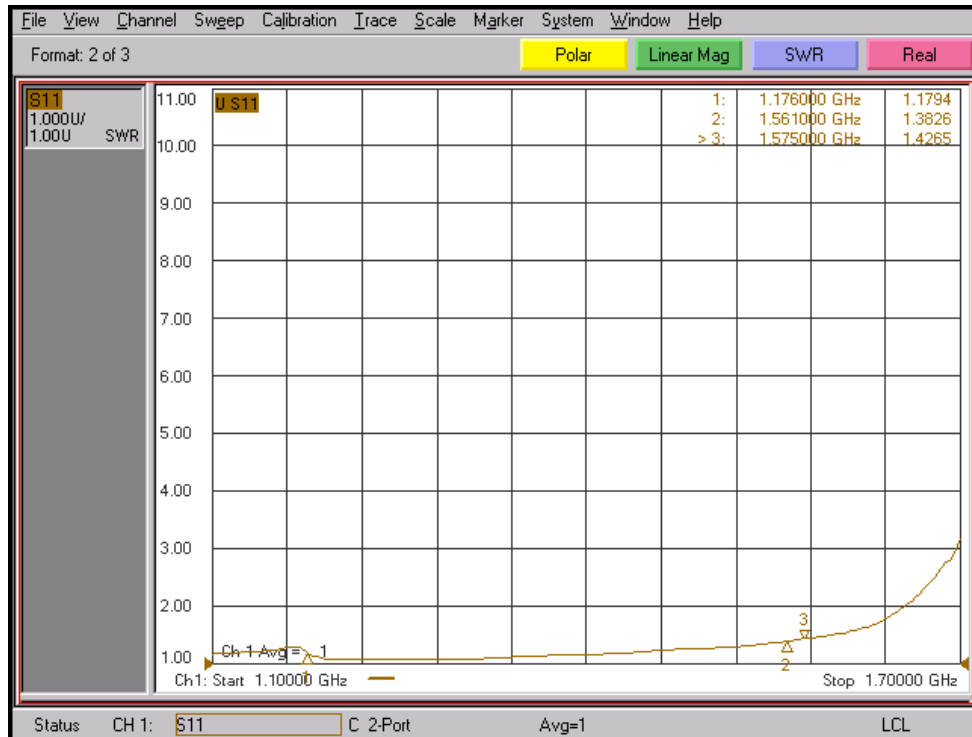
5 Overall Performance

5.1. Test Environment

- KEYSIGHT ENA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 600 MHz – 8.5 GHz

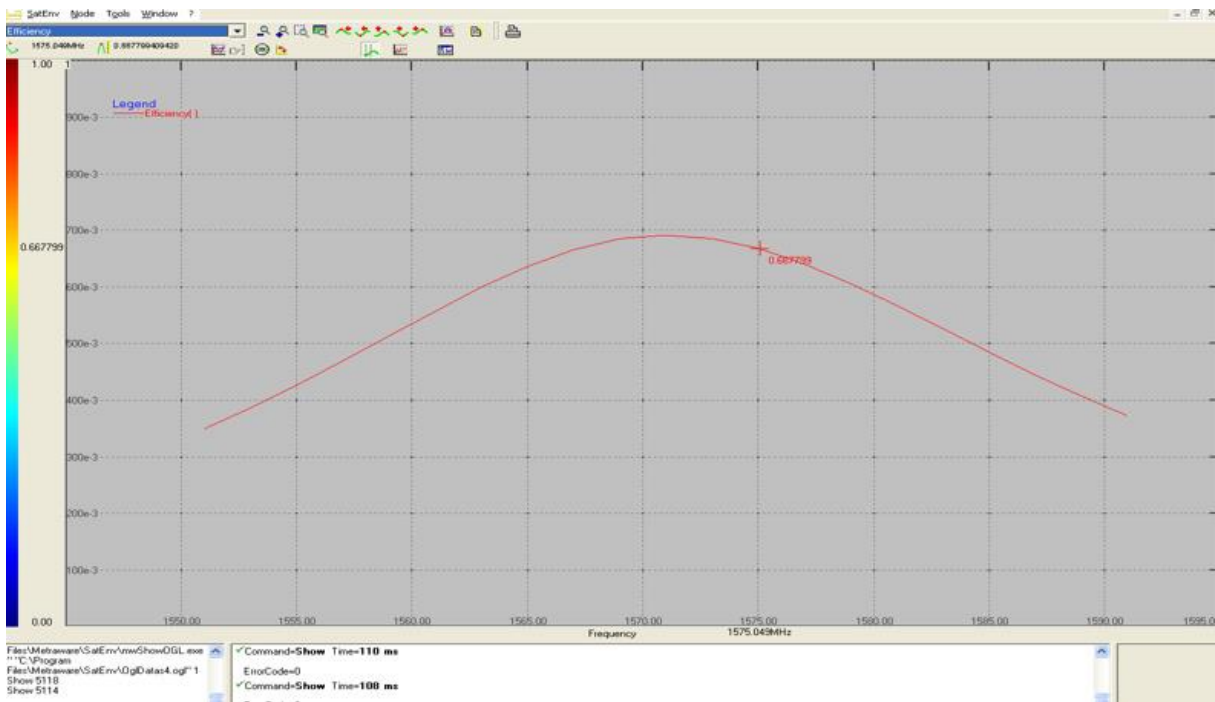
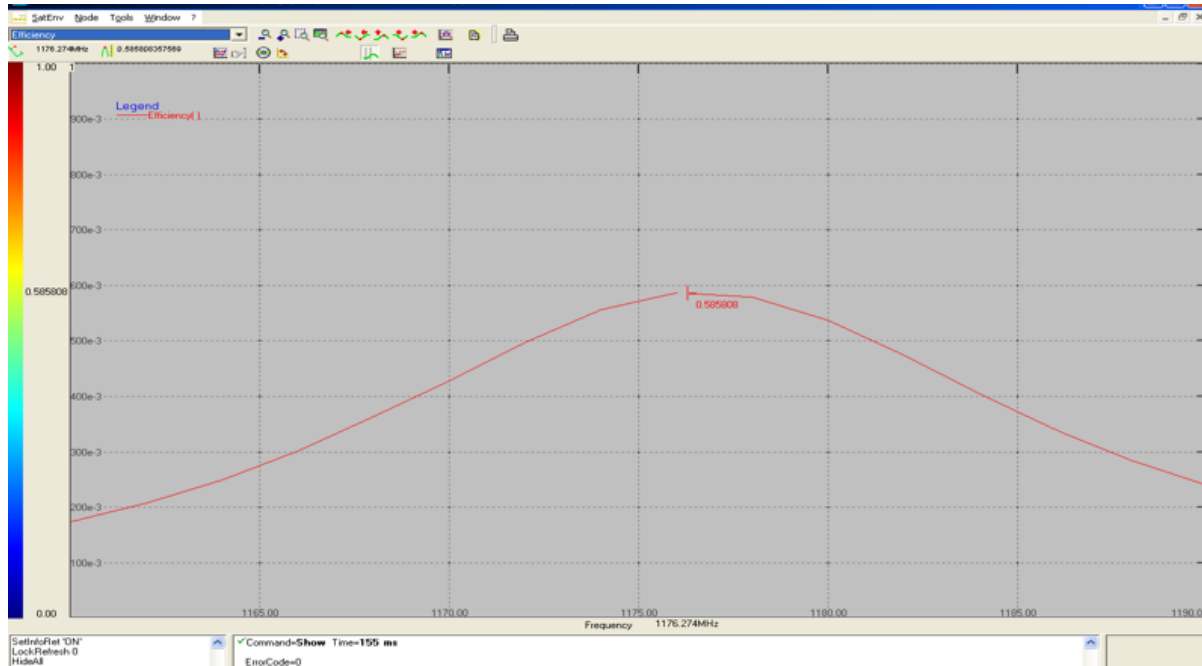


5.2. VSWR



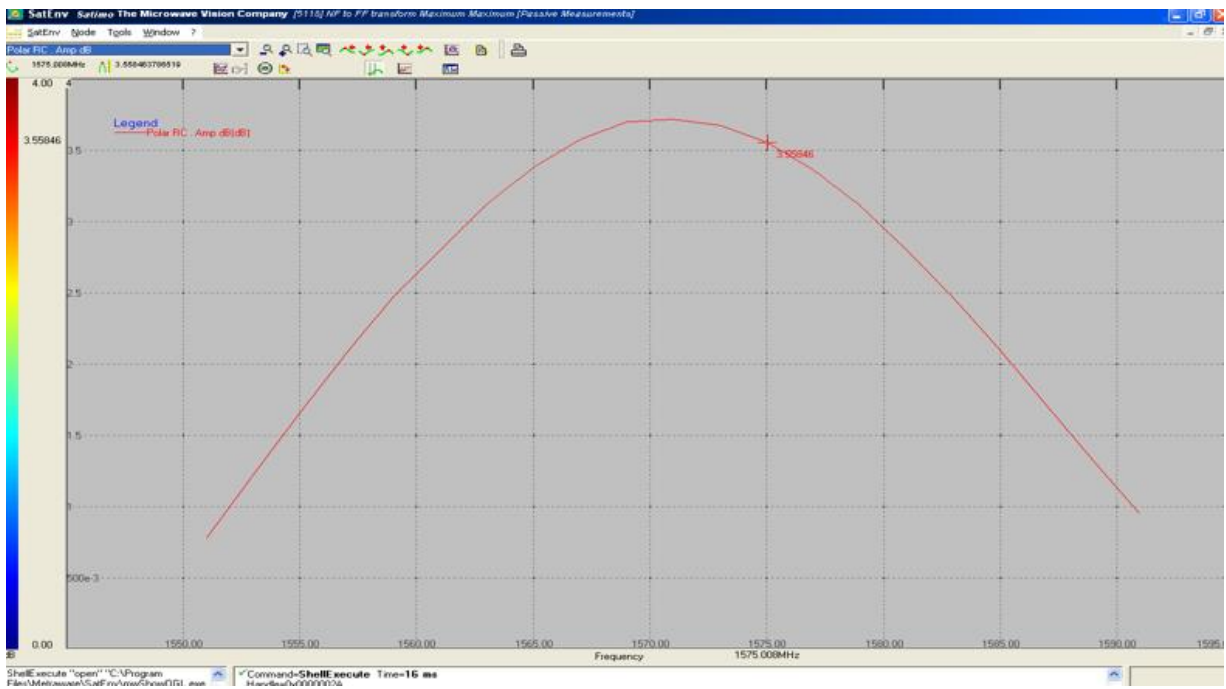
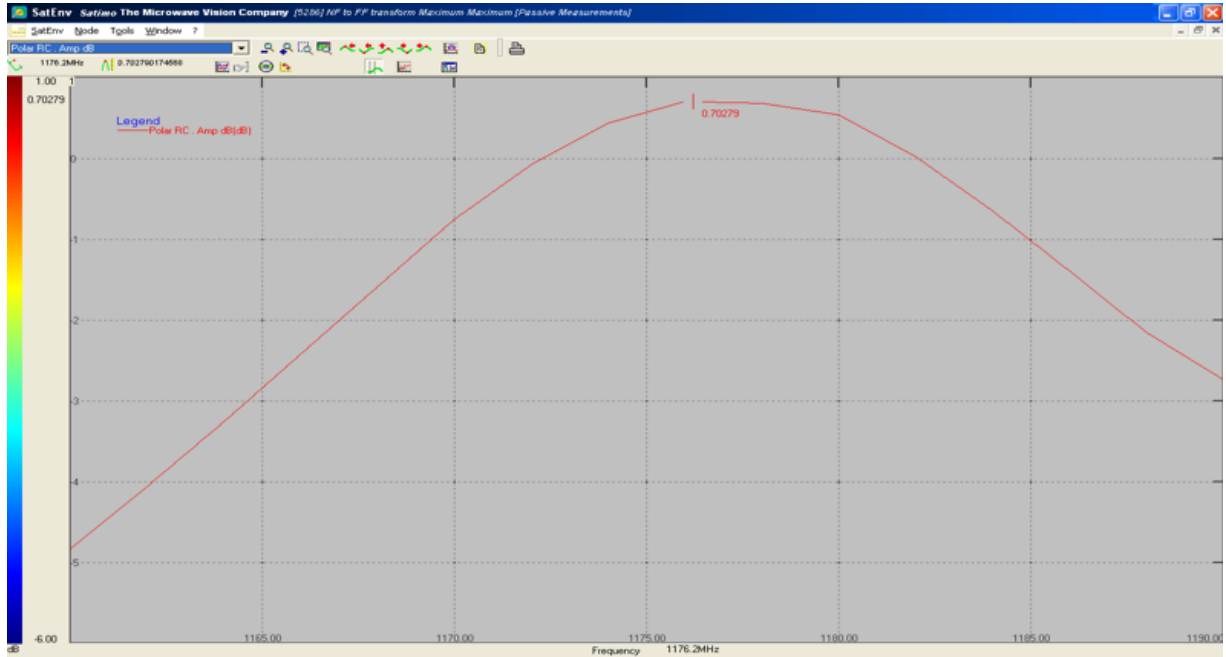
Frequency (MHz)	1176	1561	1575
VSWR	1.17	1.12	1.06

5.3. Efficiency



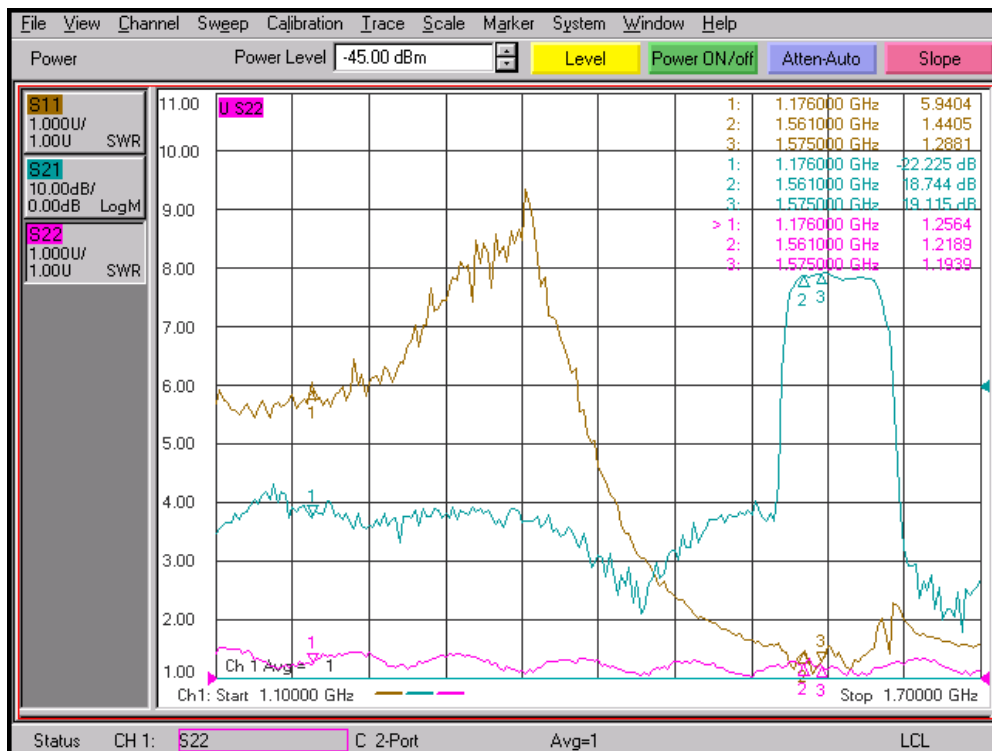
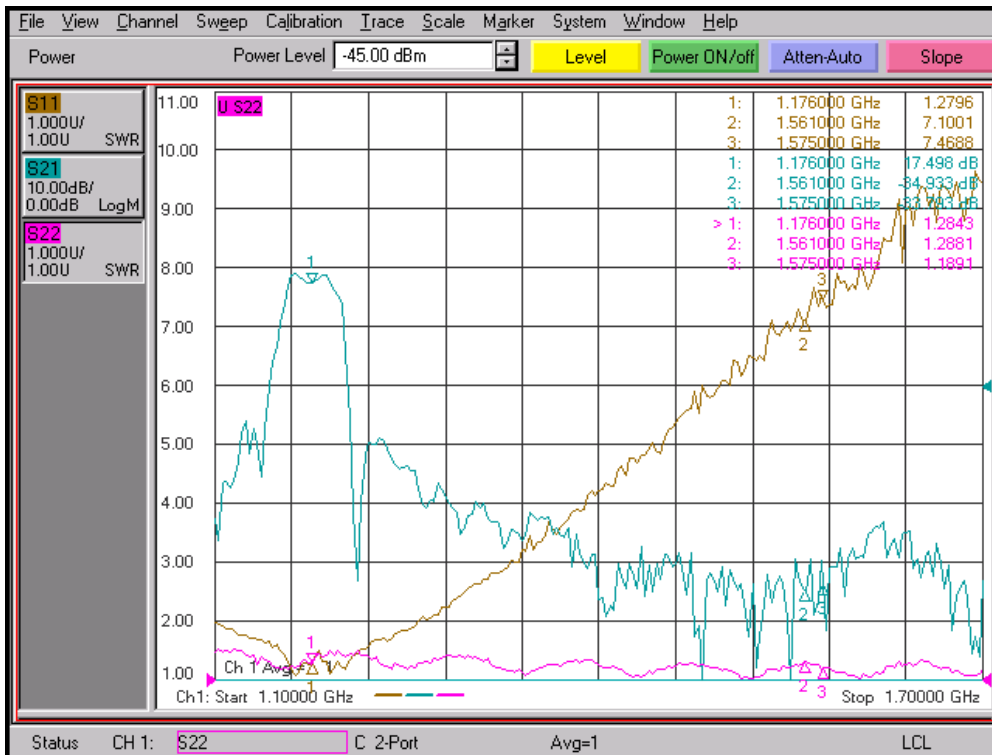
Frequency (MHz)	1176	1561	1575
Efficiency (%)	58	54	66.7

5.4. Gain



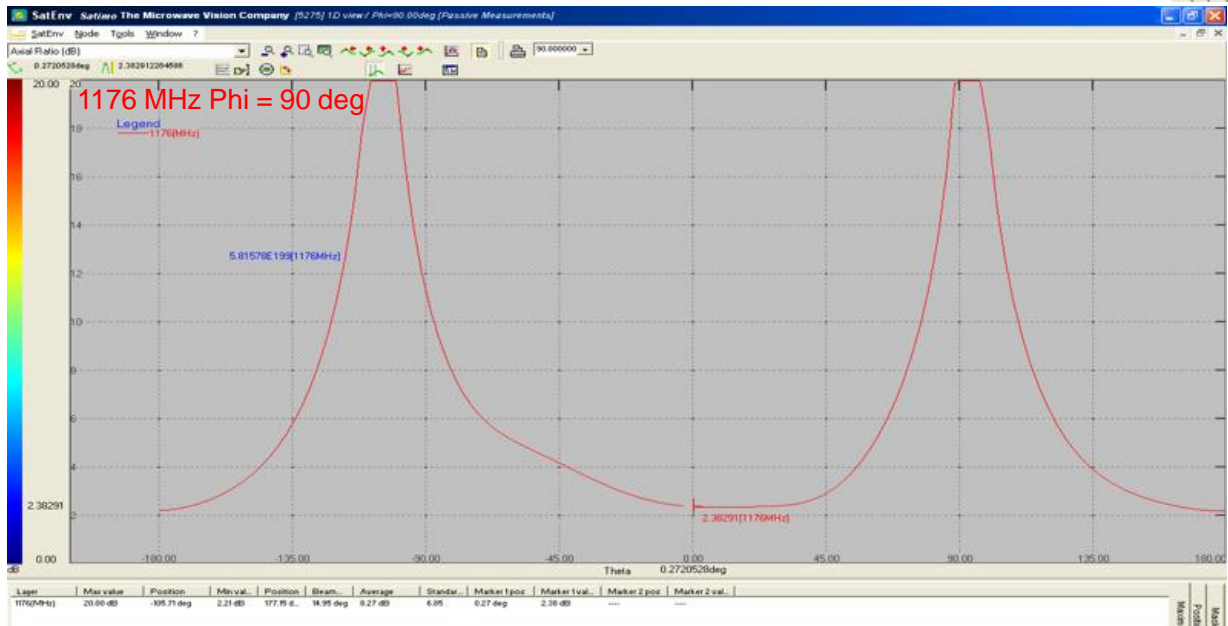
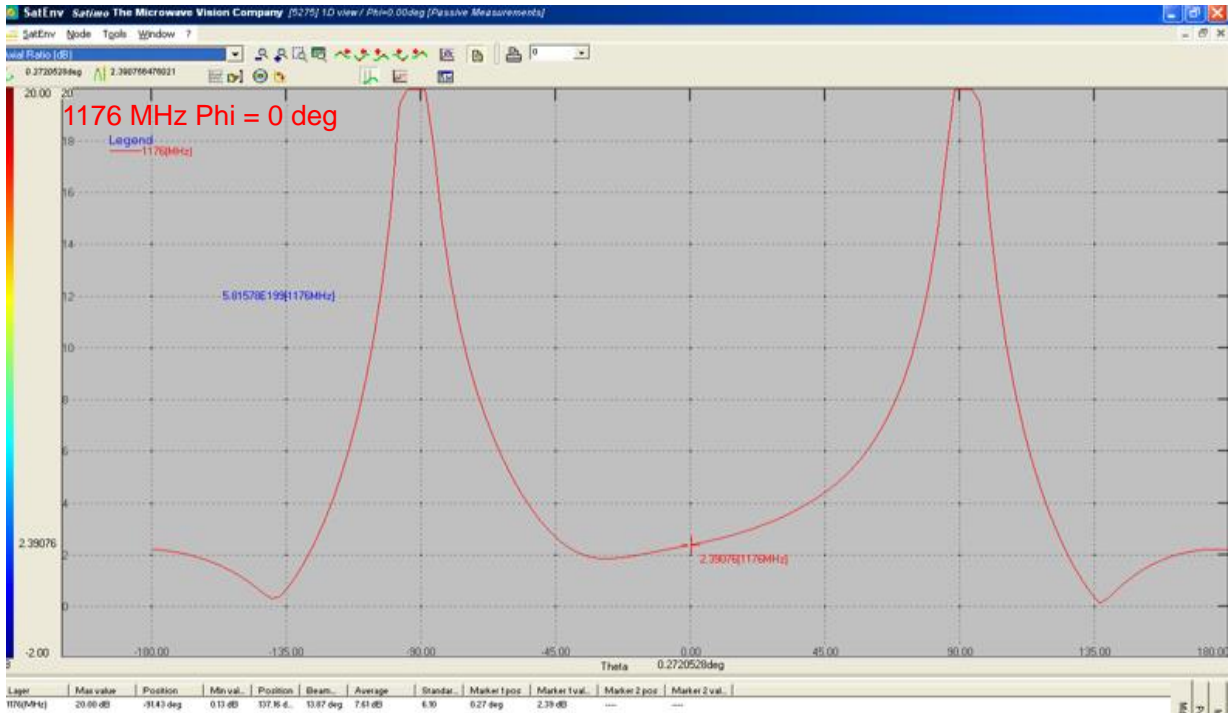
Frequency (MHz)	1176	1561	1575
Gain (dBi)	0.7	2.8	3.55

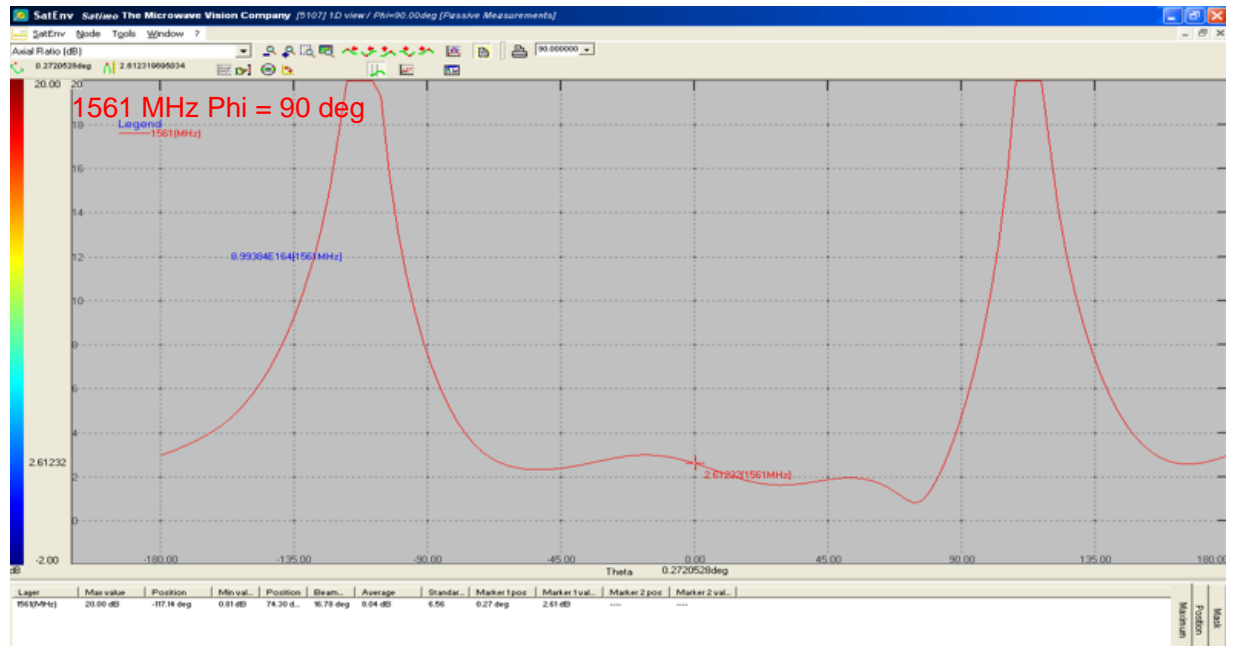
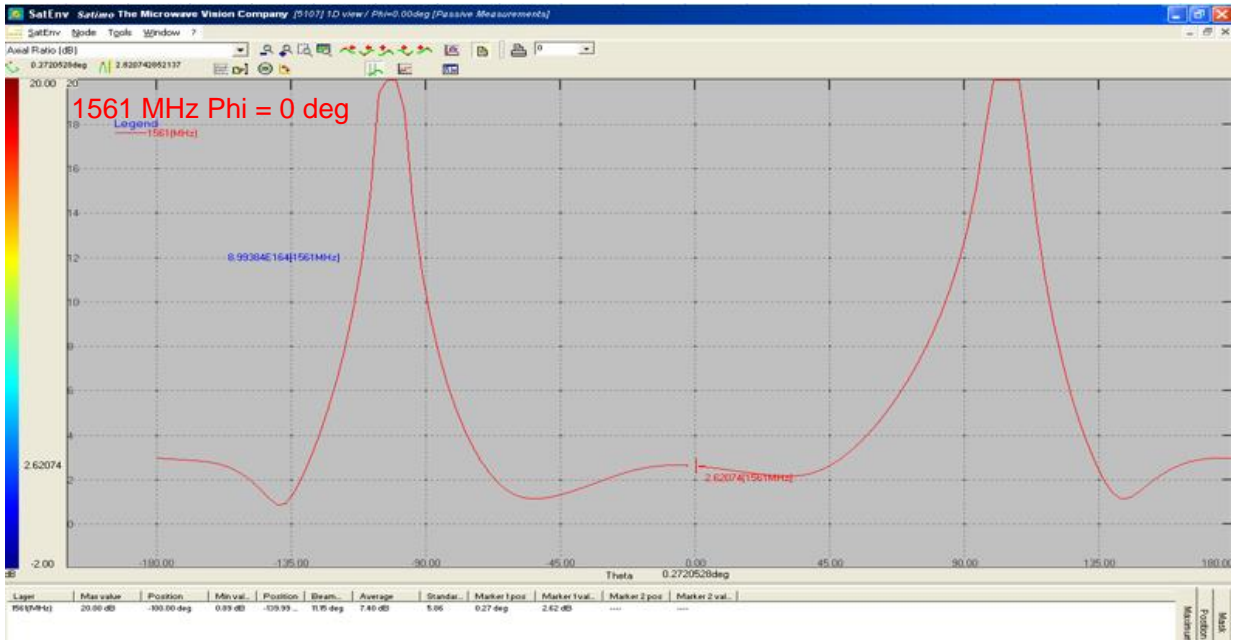
5.5. LNA Gain

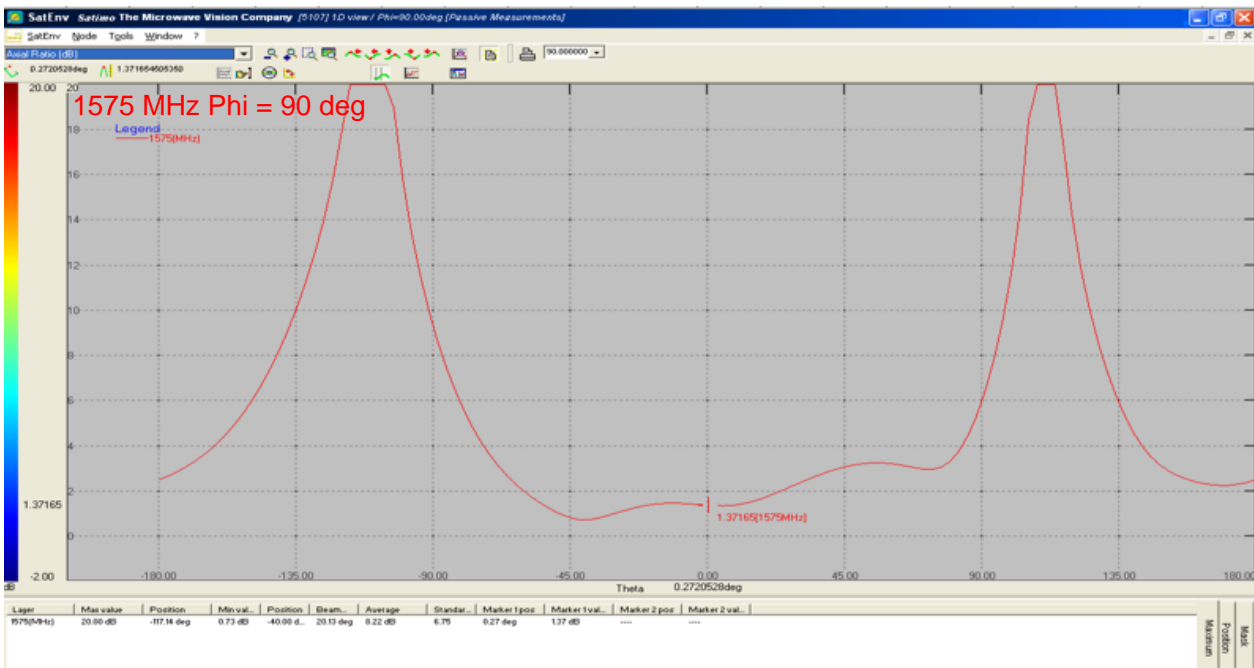
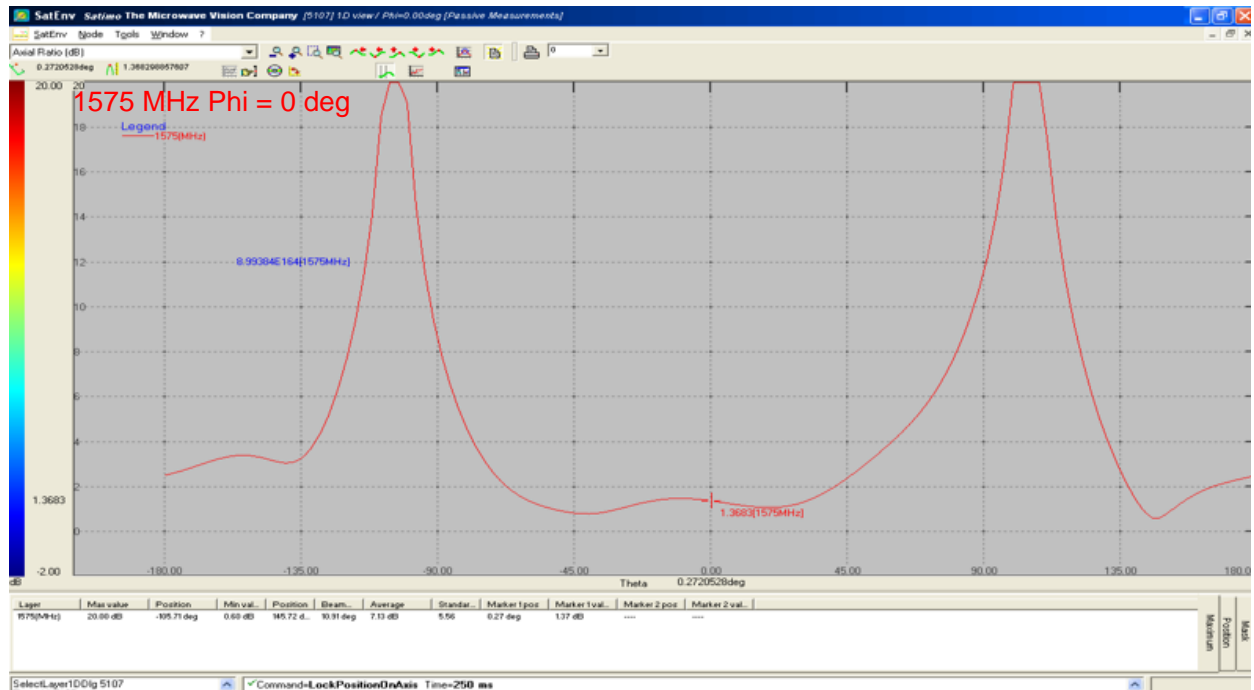


Frequency (MHz)	1176	1561	1575
LNA Gain (dB)	17.4	18.7	19.1

5.6. Axial Ratio in XOZ/YOZ



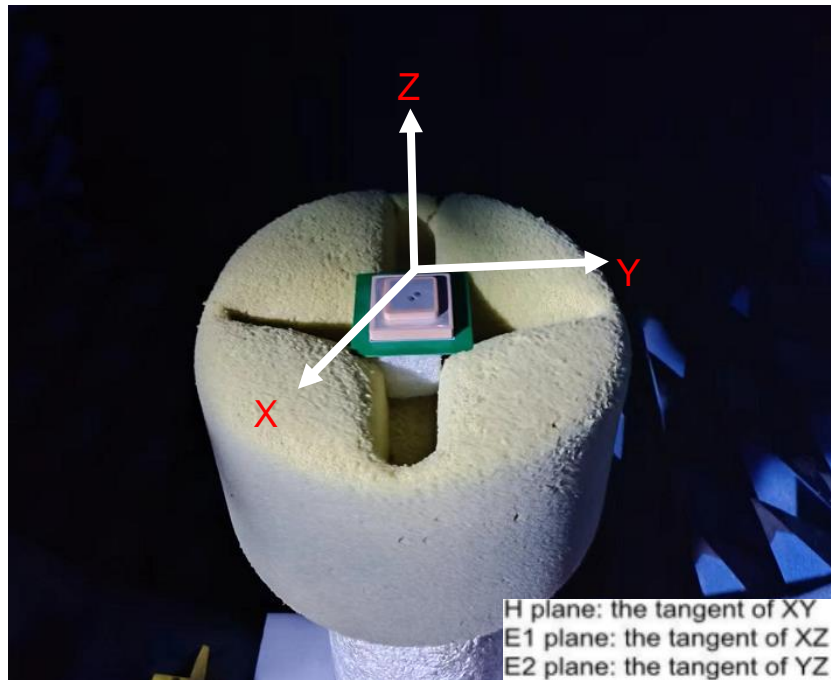


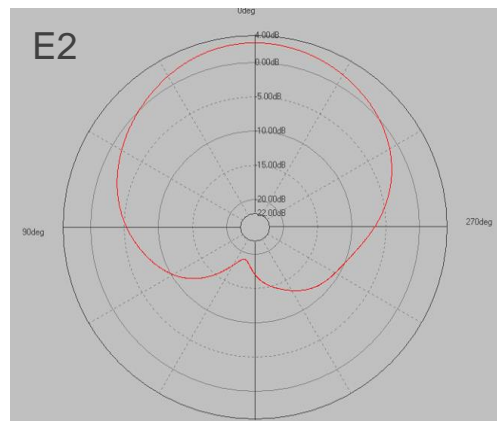
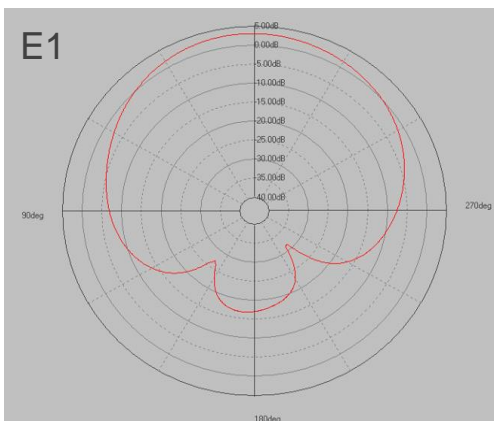
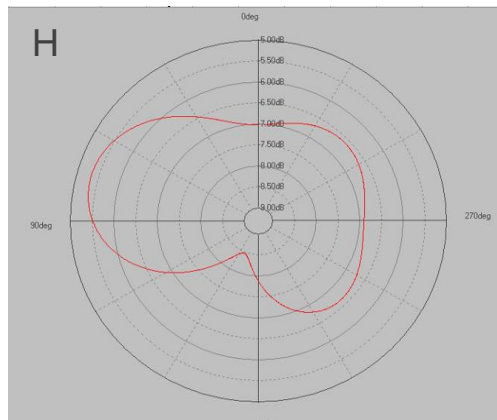
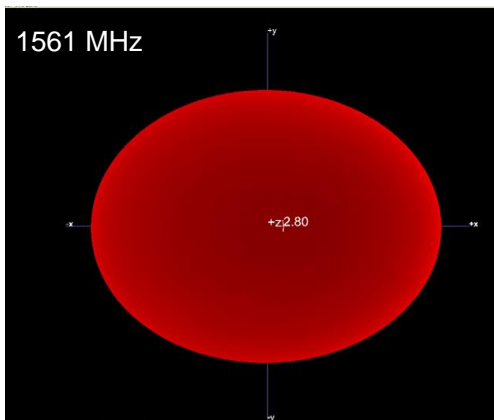
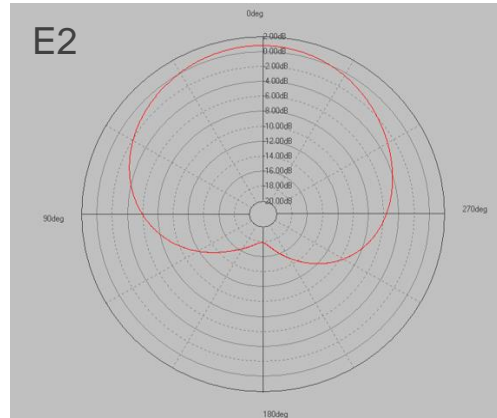
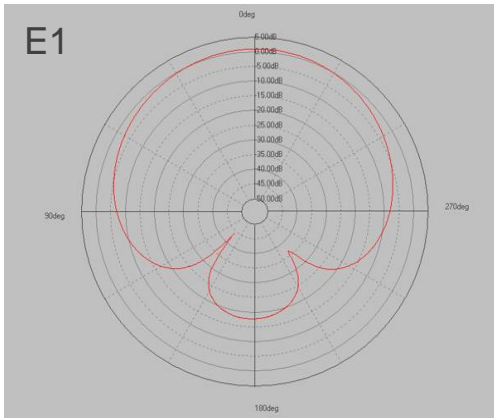
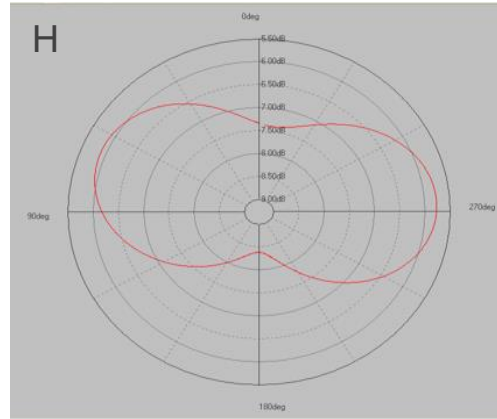
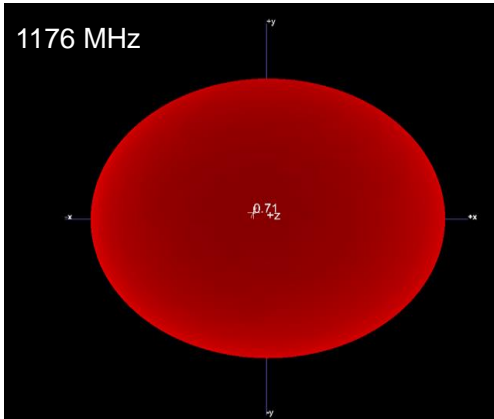


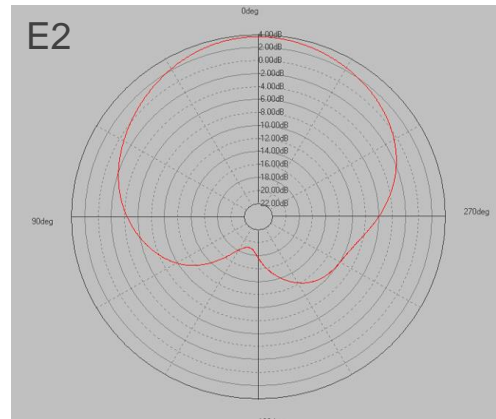
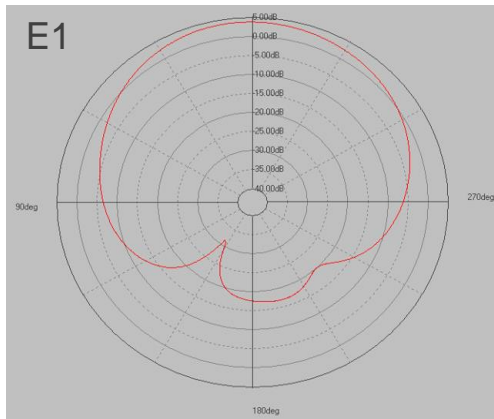
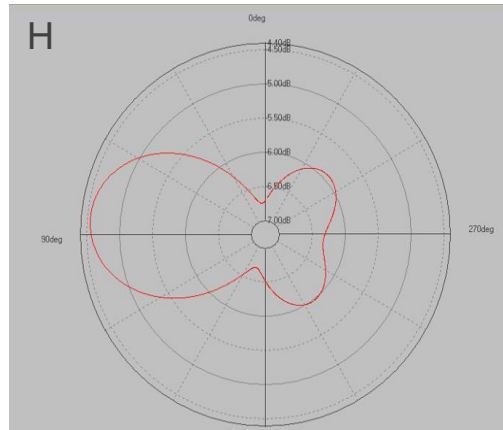
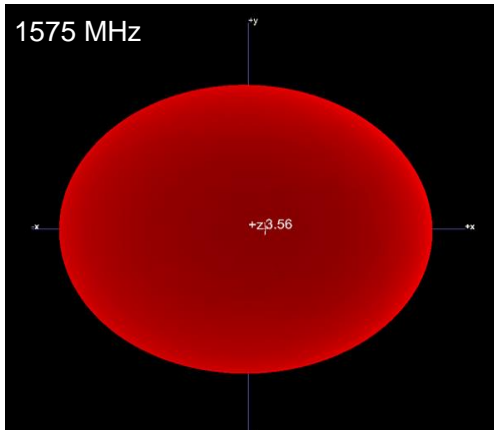
Frequency (MHz)	1176	1561	1575
AR (dB) Phi = 0 (deg), Theta = 0 (deg)	2.38	2.62	1.37
AR (dB) Phi = 90 (deg), Theta = 0 (deg)	2.39	2.61	1.37

5.7. Radiation Pattern

- Test condition: free space.







6 Product Size

