

Antenna

YAT001CA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
-	2021-05-11	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-05-11	Kenny YIN/ Aria CHU	First official release
1.1	2021-07-22	Aria CHU	1. Added Chapter 3. 2. Updated active data (Chapters 4 and 5.5).
1.2	2021-11-16	Xiaodong YANG	Updated the data (Chapter 4).
1.3	2021-11-30	Xiaodong YANG	Updated the product description in Chapter 1.

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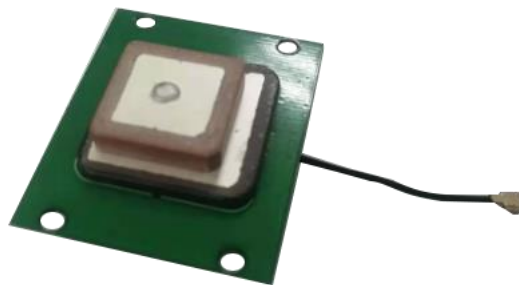
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1 Product Description

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 also 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

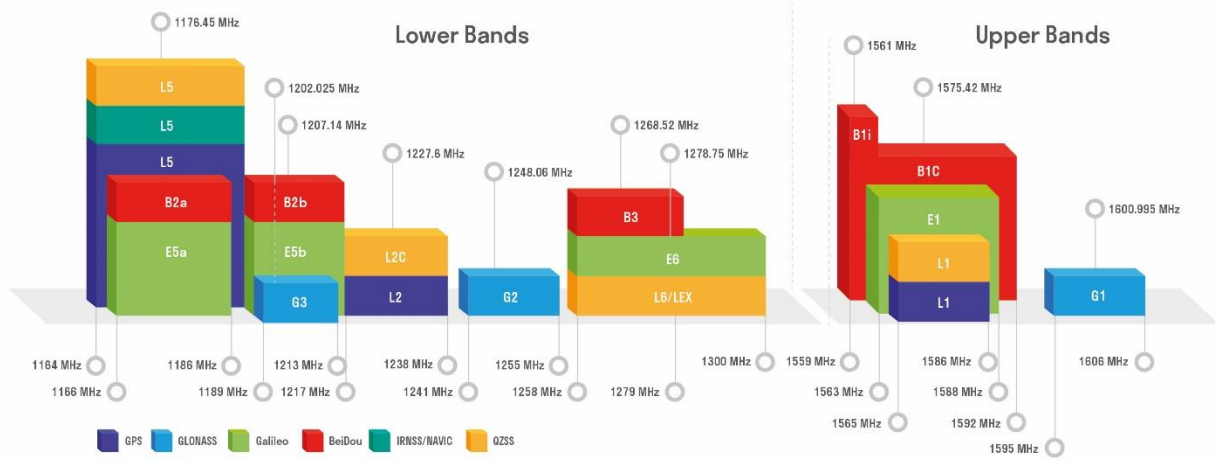
- BDS B1 & GPS L5
- High efficiency
- Excellent performance



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/L1OC/L1OF Centre 1601 (1595–1606)	G2/L2OC/L2OF Centre 1248.06 (1241–1255)	G3/L3OC 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	GPS L5: 1176.45 MHz; BDS B1: 1561.098 MHz
Input Impedence	50 Ω
VSWR	≤ 2.0
Gain	GPS L5: ≤ -1.0 dBi; BDS B1: ≤ 2.0 dBi
Polarization Type	RHCP

Active electrical performance

Output Impedence	50 Ω
Output VSWR	≤ 2.0
NF	GPS L5: ≤ 3.0 dB; BDS B1: ≤ 3.0 dB
Gain	GPS L5: 22 ± 3 dB; BDS B1: 17 ± 3 dB
Voltage	2.7–3.6 V
Electric Current	< 28 mA

Mechanical Specifications

Antenna Size	25 mm \times 25 mm \times 2 mm + 18 mm \times 18 mm \times 4 mm (Ground Plane: 43 mm \times 35 mm \times 0.8 mm)
Casing	Ceramics
Connector Type	RF 1
Working Temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Radome Color	-

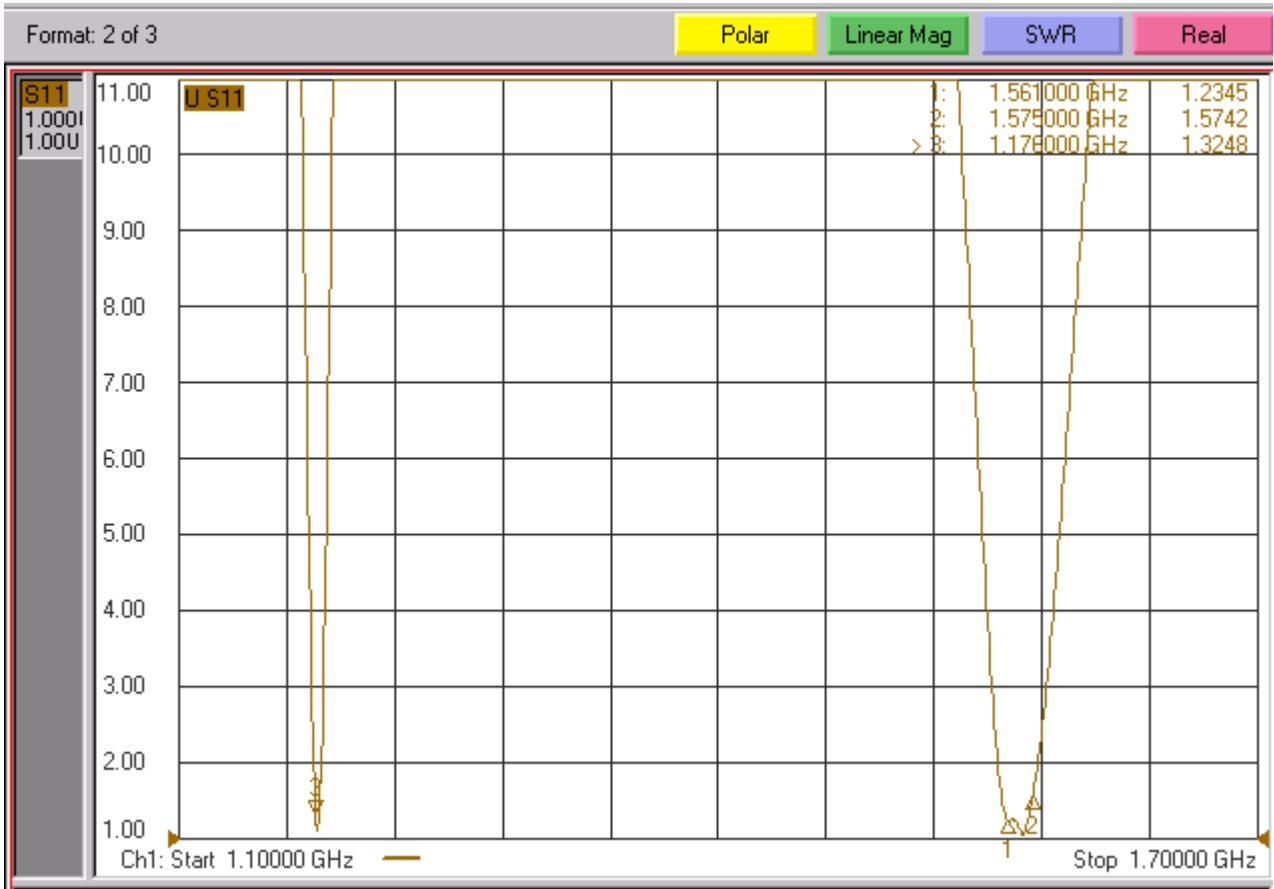
5 Overall Performance

5.1. Test Environment

- KEYSIGHT VNA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 400 MHz – 8.0 GHz

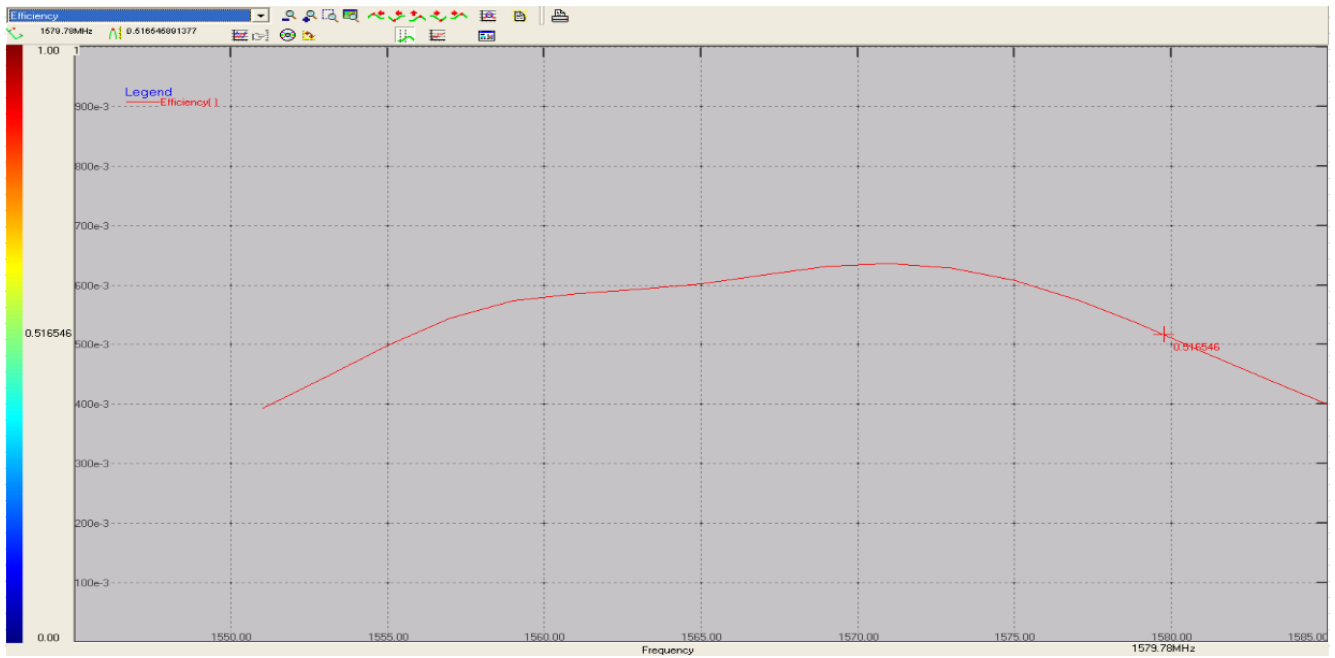
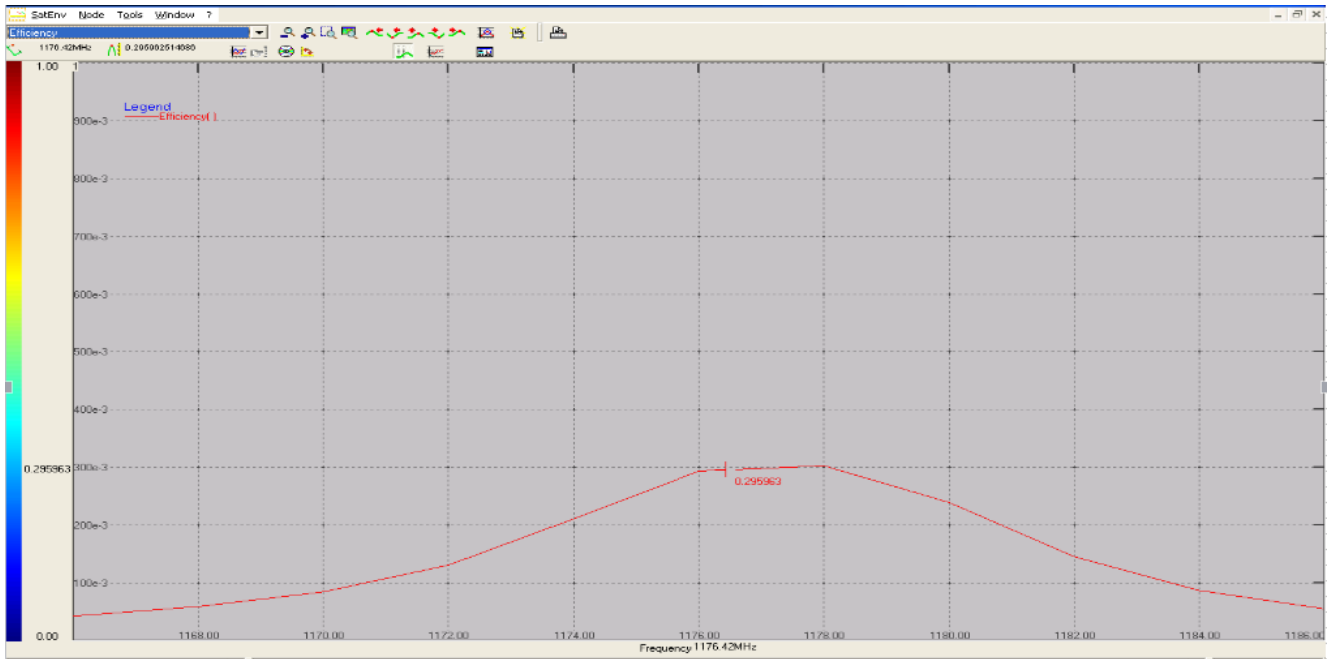


5.2. VSWR



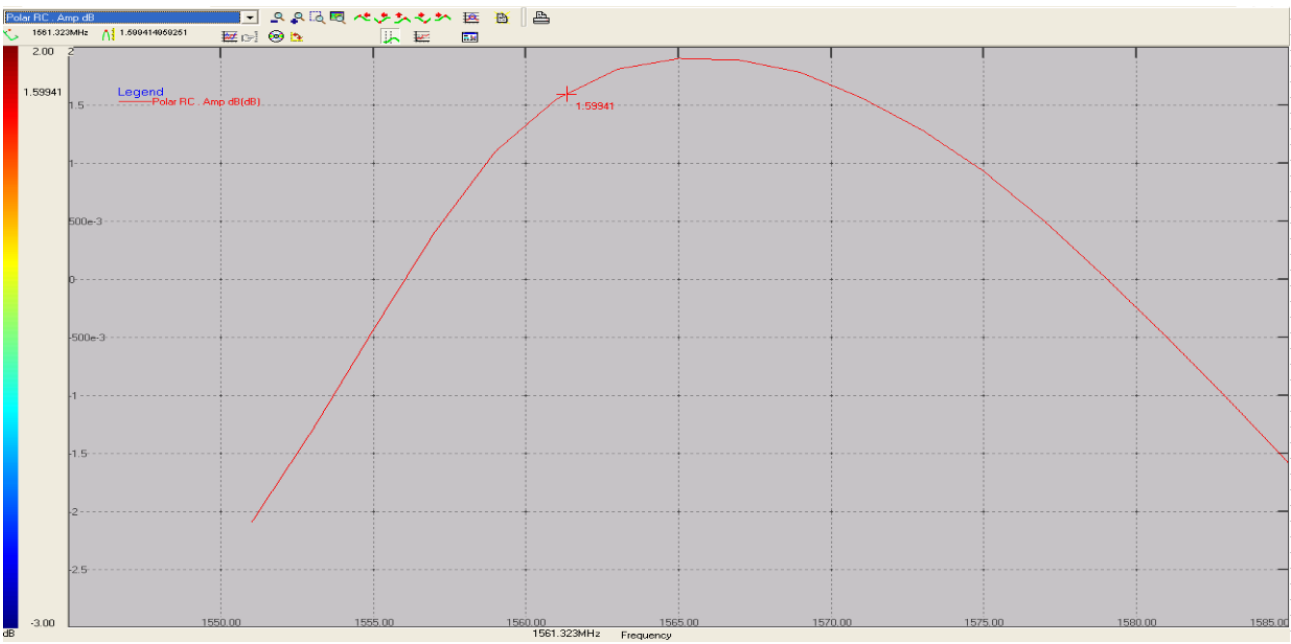
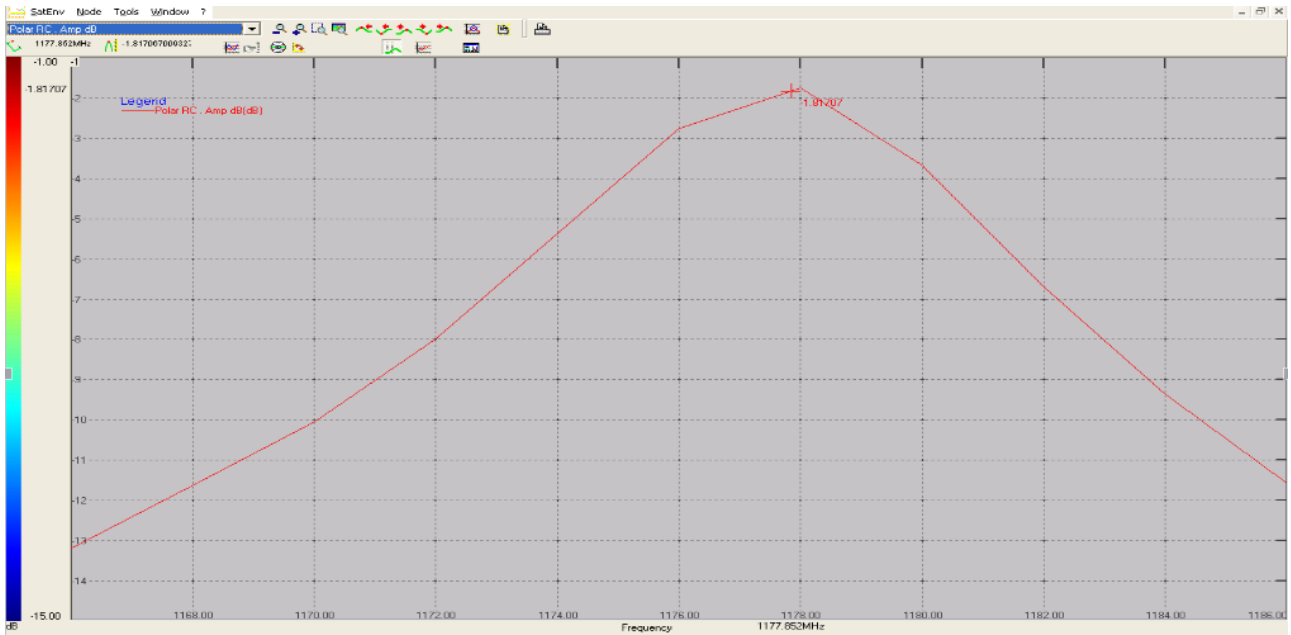
Frequency (MHz)	1176	1561	1575
VSWR	1.23	1.57	1.32

5.3. Efficiency



Frequency (MHz)	1176	1561.098	1575.42
Efficiency (%)	30	58	62

5.4. Gain



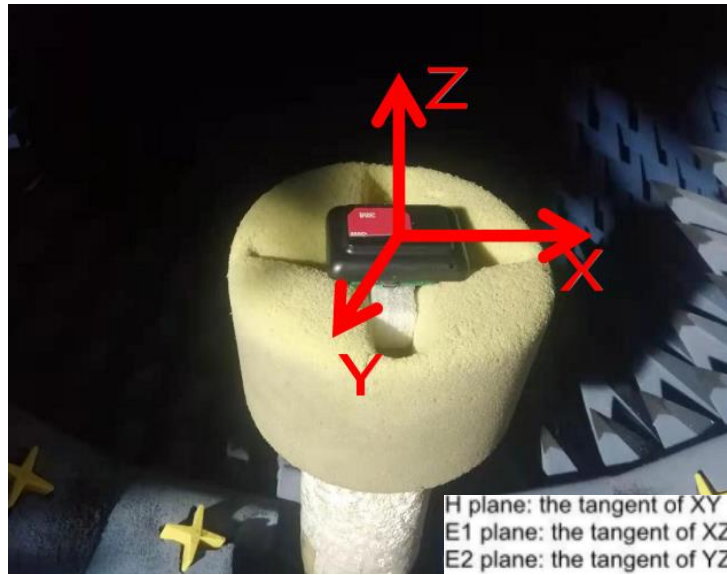
Frequency (MHz)	1176	1561.098	1575.42
Gain (dBi)	-2.7	1.6	0.8

5.5. LNA data

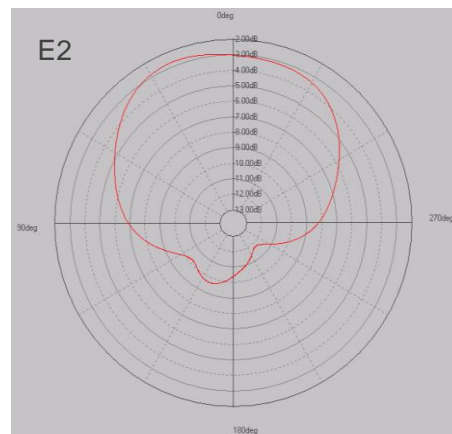
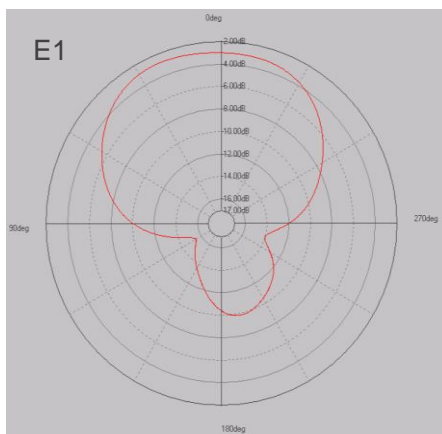
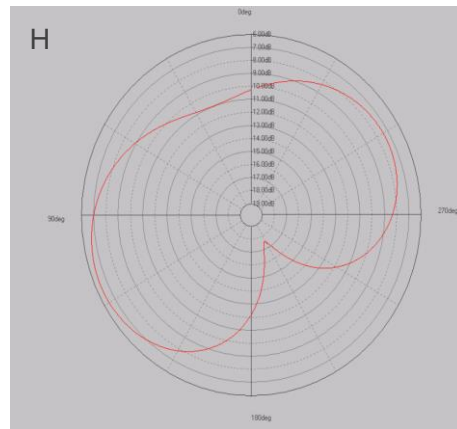
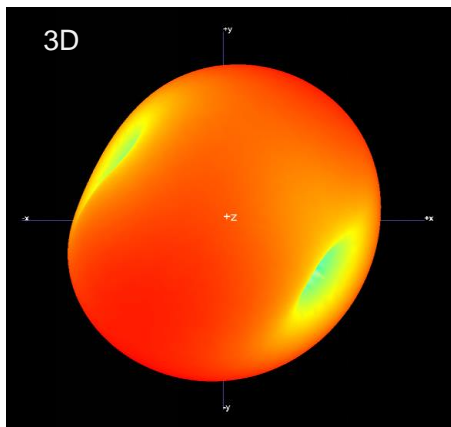


Frequency (MHz)	1176	1561	1575
Gain (dB)	21.3	17.5	16.7

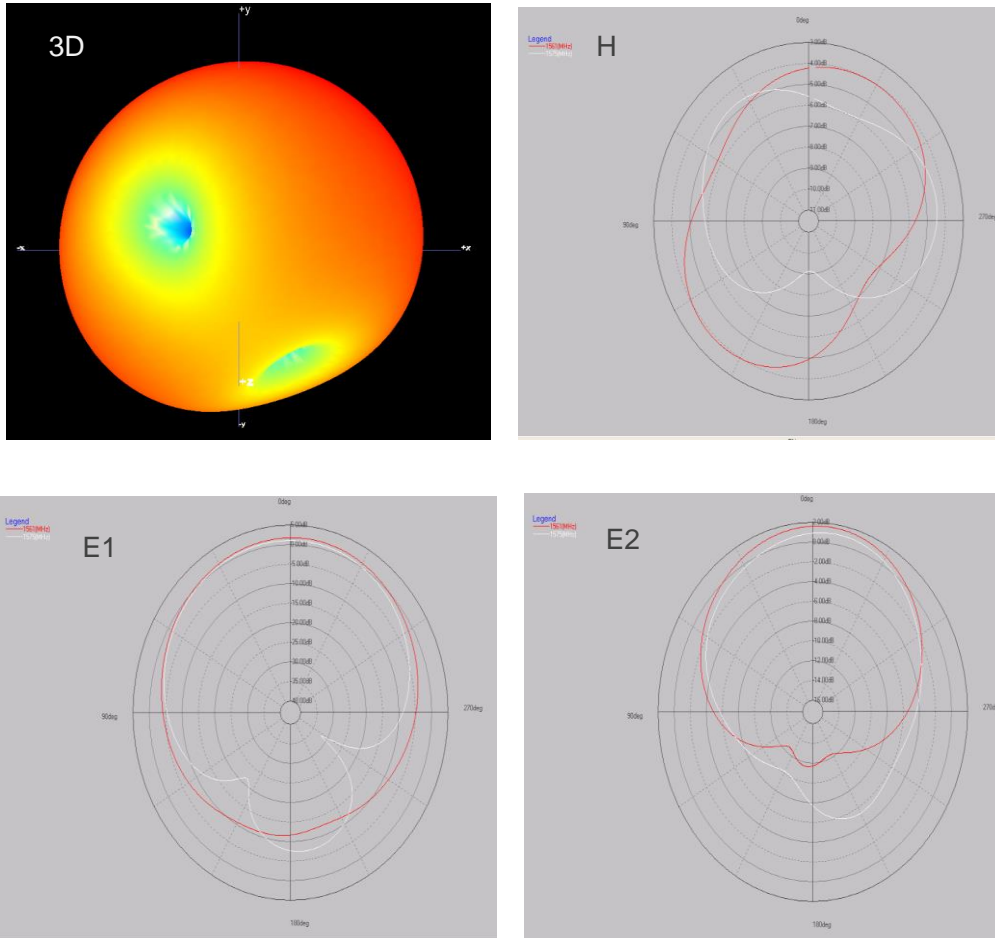
5.6. Radiation Pattern



5.6.1. 1176 MHz



5.6.2. 1561 MHz



6 Product Size

