Antenna

YCGO011AA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
-	2021-06-04	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-06-04	Kenny YIN/ Aria CHU	First official release
1.1	2021-06-23	Aria CHU	Added the LNA electrical properties in Chapter 3.
1.2	2021-11-30	Aria CHU	Updated the product description in Chapter 1.
2.0	2021-11-22	Xiaodong YANG	Updated all test data in this datasheet.
3.0	2022-03-01	Junsen LI	Updated all test data in this datasheet.

Contents

1 Product Description

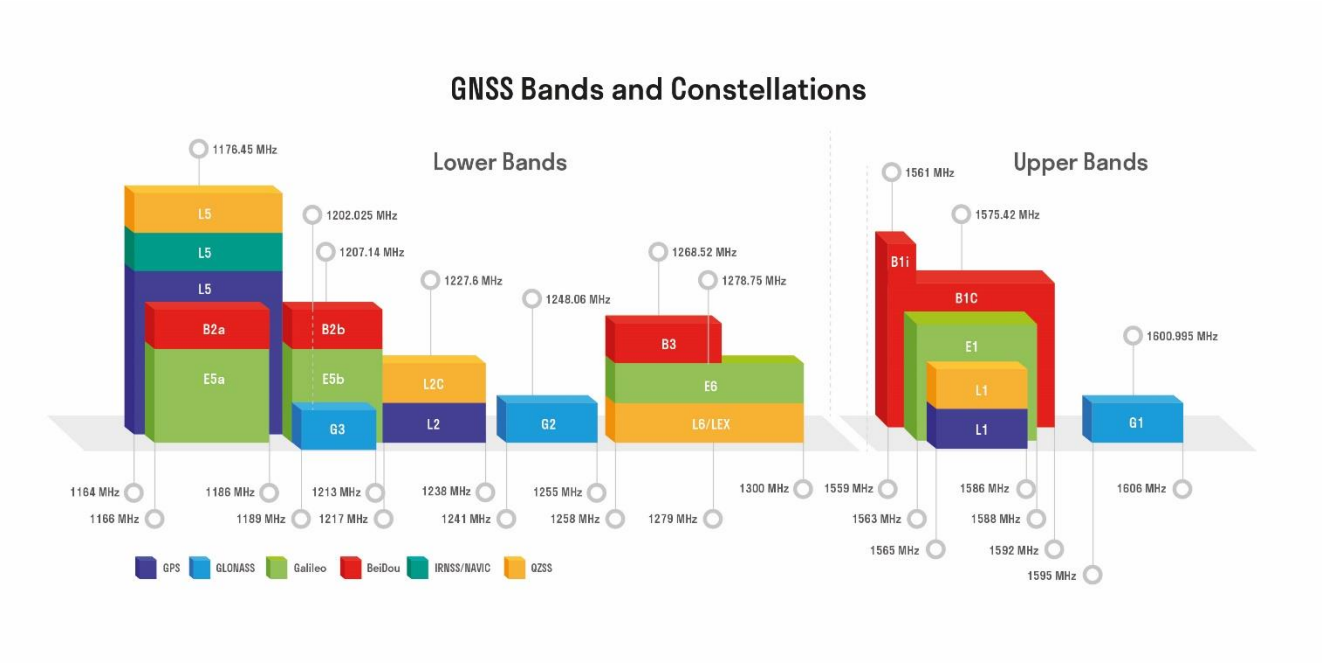
This Quectel GNSS antenna adopts a diversity of forms to guarantee the most suitable polarization type. Quectel's positioning products support single-band or multi-band operation modes to meet various high-precision positioning requirements of customers' products. Quectel provides both passive and active 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

- GNSS L1
- 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
Lower Bands
Upper Bands
1176.45 MHz
L5
L5
L5
B2a
E5a
1202.025 MHz
1207.14 MHz
B2b
E5b
B3
1227.6 MHz
L2C
L2
1248.06 MHz
G2
1268.52 MHz
1278.75 MHz
E6
L6/LEX
1561 MHz
1575.42 MHz
B1i
B1C
E1
L1
L1
1600.995 MHz
G1
1164 MHz
1166 MHz
1186 MHz
1189 MHz
1213 MHz
1217 MHz
1238 MHz
1241 MHz
1255 MHz
1258 MHz
1279 MHz
1300 MHz
1559 MHz
1563 MHz
1565 MHz
1586 MHz
1588 MHz
1592 MHz
1595 MHz
1606 MHz
GPS
GLONASS
Galileo
BeiDou
IRNSS/NAVIC
QZSS

4 Product Specifications

Passive Electrical Specifications	
Frequency Range	1575–1602 MHz (±5)
Input Impendence	50 Ω
VSWR	≤ 2
Gain	≤ 2.0 dBi
Polarization Type	Linear
LNA Electrical Properties	
Gain	17 ±2 dB
Noise Figure	Typ.1.5 dB (25 +5 °C)
Output VSWR	< 2.0
Input VSWR	< 2.0
Voltage	DC 3–5 V
Current	≤ 8 mA
Impedance	50 Ω
Mechanical Specifications	
Antenna Size	25 mm × 25 mm × 6.3 mm
Casing	Ceramic
Connector Type	IPEX MHF I
Working Temperature	-40 °C to +85 °C
Radome Color	-

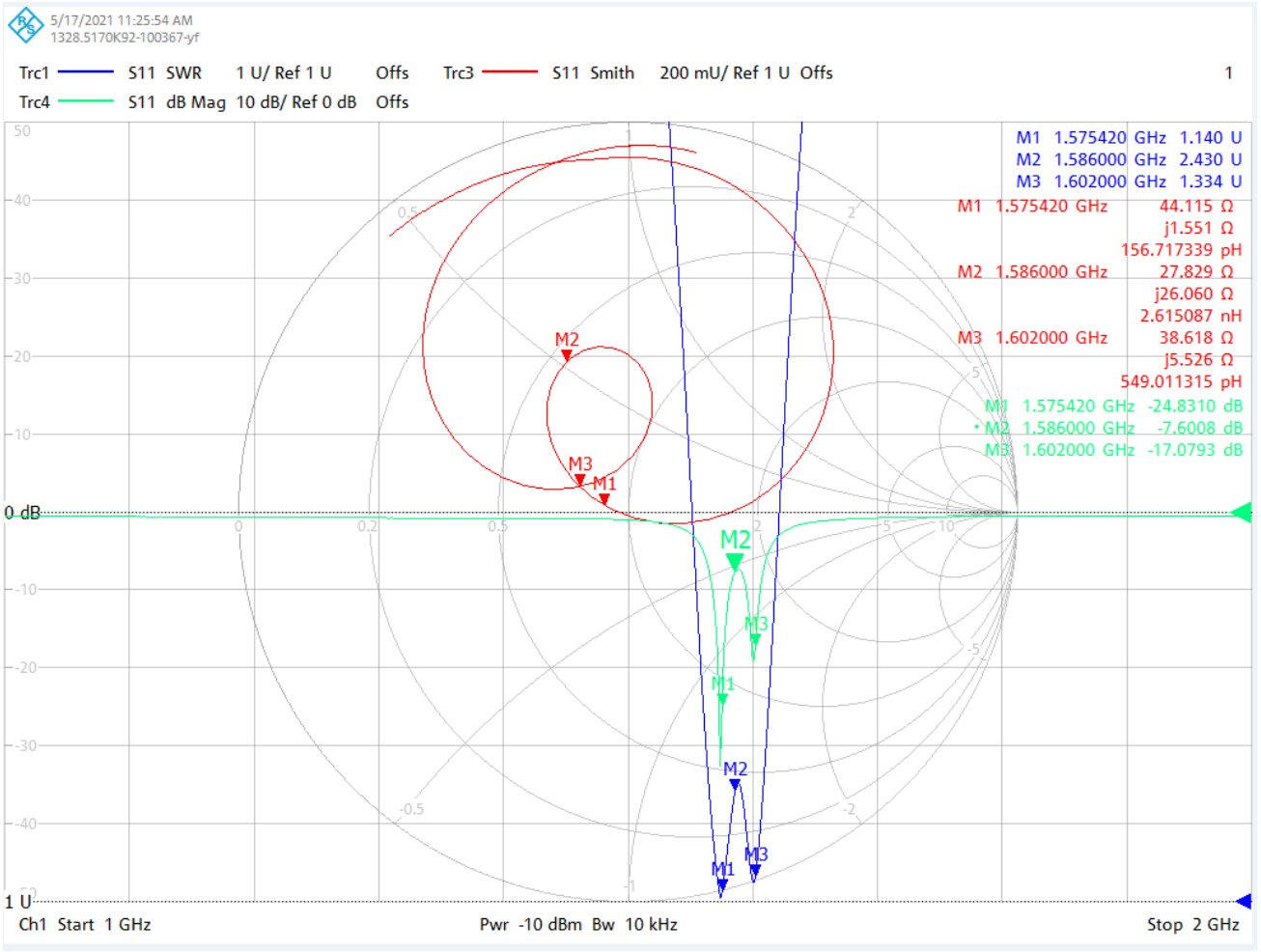
5 Overall Performance

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

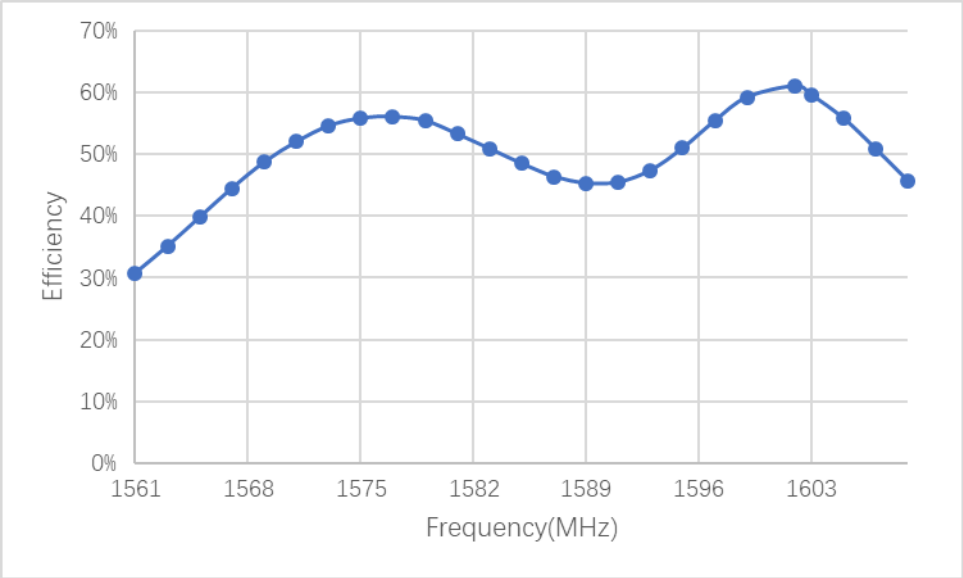
5.2. VSWR

- Note: 25 mm × 25 mm ground plane for grounding test and debugging.



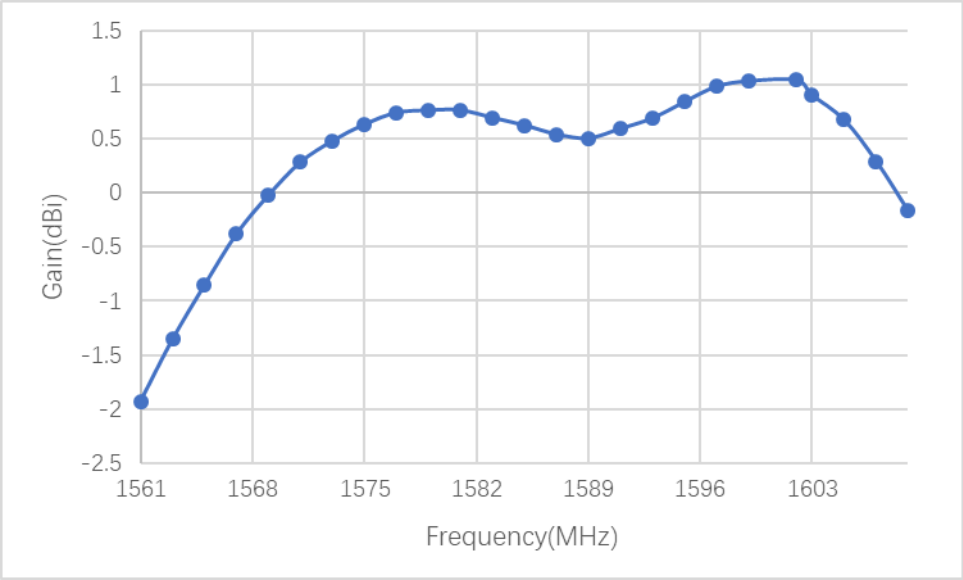
Frequency (MHz)	1575.42	1602
VSWR	1.14	1.33

5.3. Efficiency



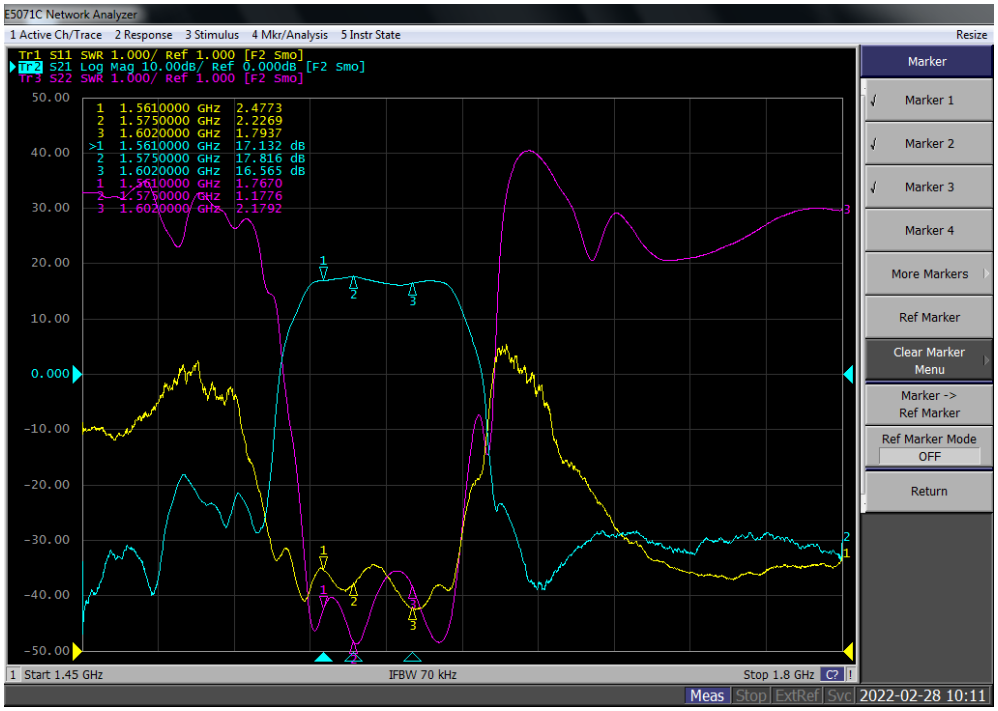
Frequency (MHz)	1575	1602
Efficiency	56%	61%

5.4. Gain



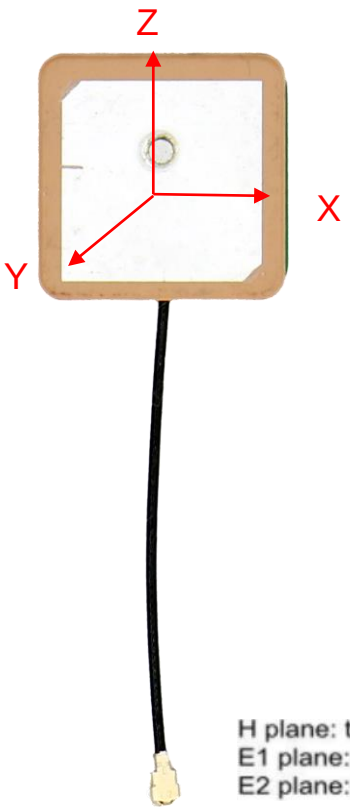
Frequency (MHz)	1575	1602
Gain (dBi)	0.63	1.04

5.5. LNA data



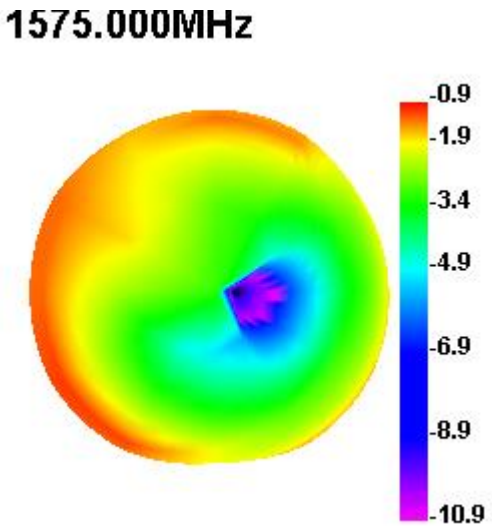
Frequency (MHz)	1575	1602
LNA Gain (dB)	17.8	16.5

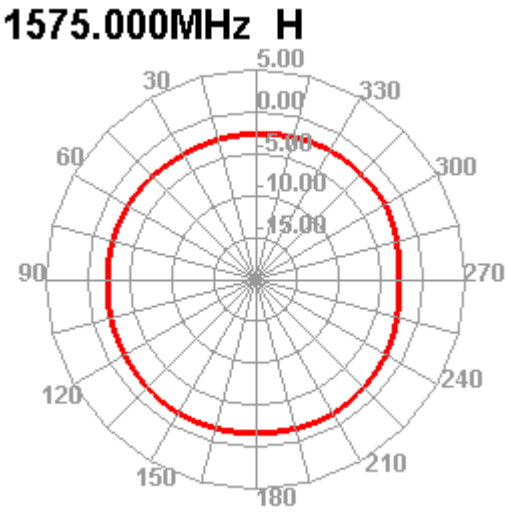
5.6. Radiation Pattern

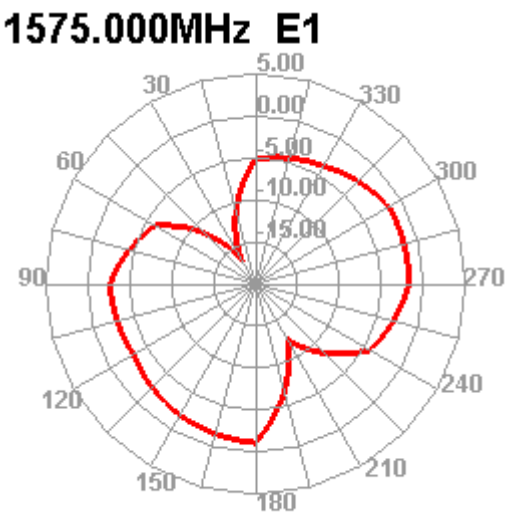


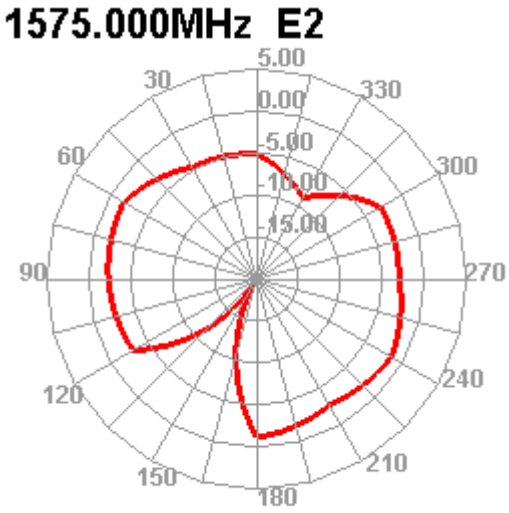
H plane: the tangent of XY
E1 plane: the tangent of XZ
E2 plane: the tangent of YZ

5.6.1. 1575 MHz

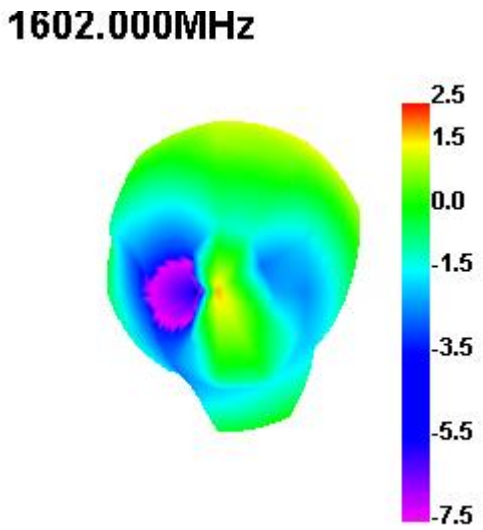

1575.000MHz
-0.9
-1.9
-3.4
-4.9
-6.9
-8.9
-10.9

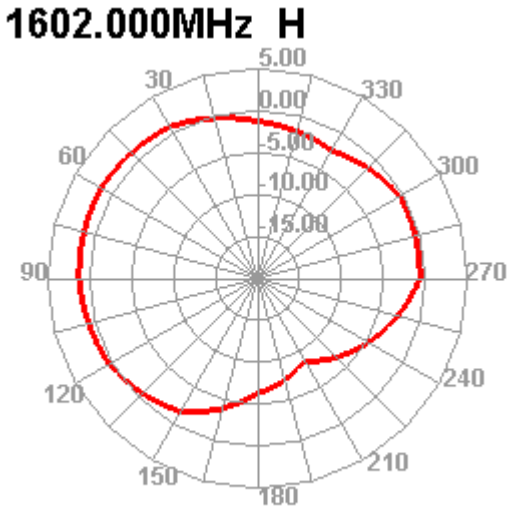

1575.000MHz H
5.00
0.00
-5.00
-10.00
-15.00
30
330
60
300
90
270
120
240
150
210
180

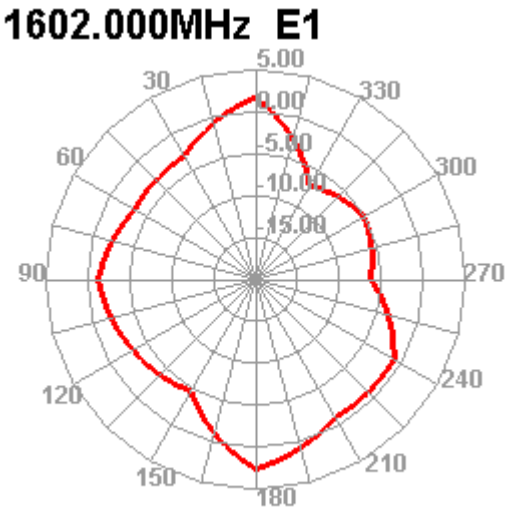

1575.000MHz E1
5.00
0.00
-5.00
-10.00
-15.00
30
330
60
300
90
270
120
240
150
210
180

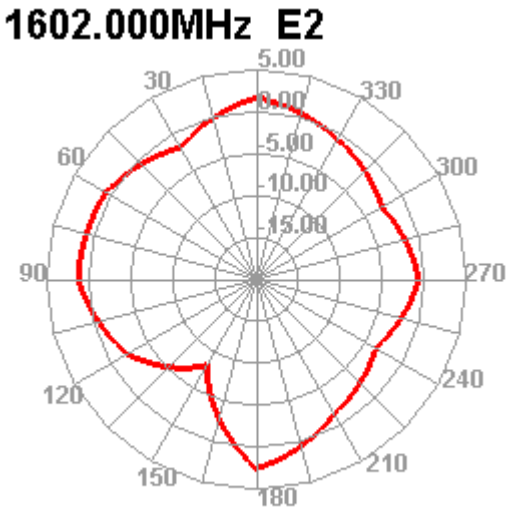

1575.000MHz E2
5.00
0.00
-5.00
-10.00
-15.00
30
330
60
300
90
270
120
240
150
210
180

5.6.2. 1602 MHz


1602.000MHz
2.5
1.5
0.0
-1.5
-3.5
-5.5
-7.5


1602.000MHz H
5.00
0.00
-5.00
-10.00
-15.00
30
330
60
300
90
270
120
240
150
210
180


1602.000MHz E1
5.00
0.00
-5.00
-10.00
-15.00
30
330
60
300
90
270
120
240
150
210
180


1602.000MHz E2
5.00
0.00
-5.00
-10.00
-15.00
30
330
60
300
90
270
120
240
150
210
180

6 Product Size