

Antenna

YB0014AA Datasheet

Antenna Services

Version: 3.2

Date: 2021-12-08

Status: Released



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About the Document

Revision History

Version	Date	Author	Note
-	2020-09-11	Kenny YIN	Creation of the document
1.0	2020-09-11	Kenny YIN	First official release
1.1	2021-01-18	Kenny YIN	Updated the antenna image in Chapter 2.
2.0	2021-04-02	Kenny YIN	Updated the data in Product Specifications and the test data in the datasheets.
3.0	2021-07-25	Kenny YIN	Updated all test data in this datasheet.
3.1	2021-12-03	Kenny YIN	Updated the product description in Chapter 1.
3.2	2021-12-08	Aria CHU	Updated the data for product specifications (Chapter 3).

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1 Product Description

To meet customers' requirements for the high performance, high integration, and integrated appearance of their products, Quectel provides a combined antenna box series. The antenna box can integrate a variety of antennas, such as 5G, 4G, GNSS, Wi-Fi antennas, to achieve communication functions of 5G MIMO, 4G, GNSS, and Wi-Fi. These antenna boxes can be mounted on the surface of devices via screw, adhesive or other methods, supports multiple connector types and cable lengths. It is a more flexible and reliable high-performance antenna solution for outdoor applications.

2 Product Features

- Cellular LTE + GNSS
- High efficiency
- Excellent performance



3 Product Specifications

Passive Electrical Specifications

Frequency Range	4G: 698–1000 MHz; 1700–2700 MHz 4G DIV: 698–1000 MHz; 1700–2700 MHz GNSS: 1561.098 MHz \pm 3 MHz; 1575.42 \pm 3 MHz
Input Impedence	50 Ω
VSWR (Data of 1 Meter Cable)	4G: \leq 3.0 4G DIV: \leq 4.0
Gain (Data of 1 Meter Cable)	LNA (28 \pm 2 dB) 4G: \leq 2 dBi 4G DIV: \leq 2 dBi
Polarization Type	Linear (4G MAIN) Circular (GNSS)

Mechanical Specifications

Antenna Size	81 mm \times 14.5 mm RG174 Cable Length = 3000 mm
Casing	ABS + PC
Connector Type	SMA Male (with center pin)
Working Temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C
Radome Color	Black
IP Rating	IP66
Mounting Type	Screw

4 Overall Performance

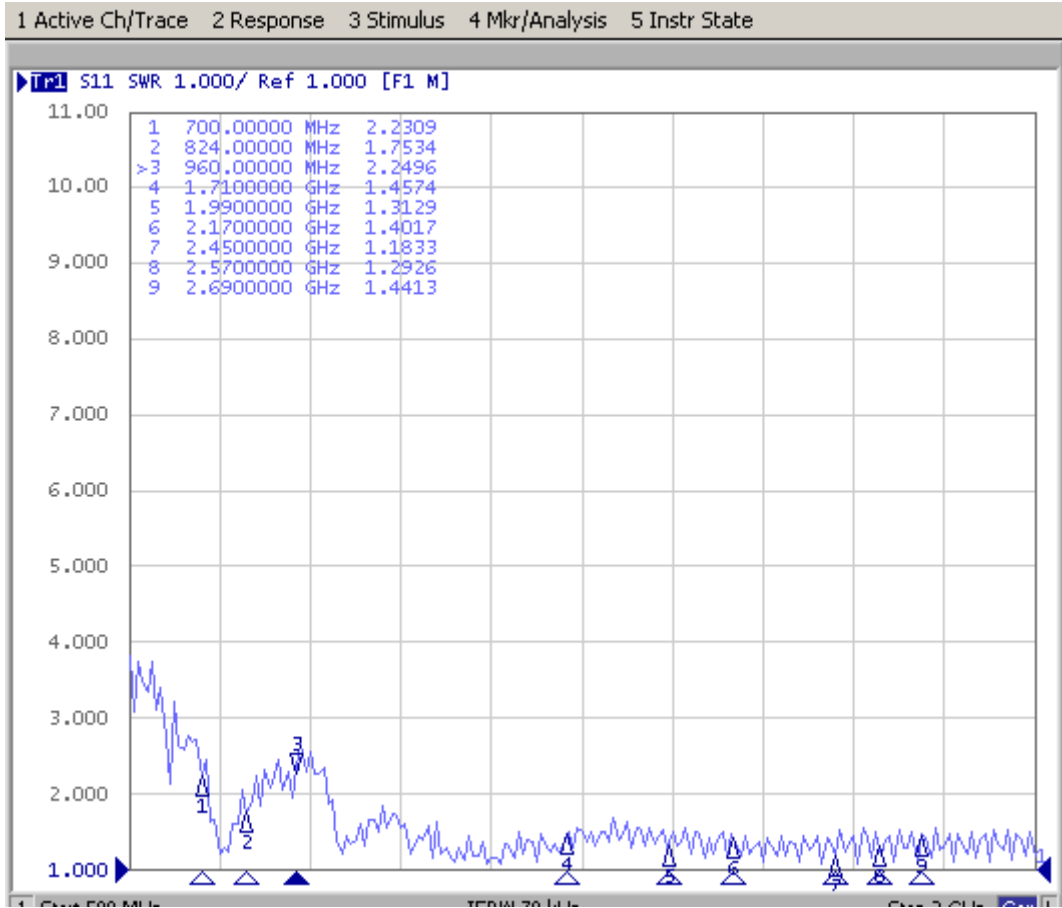
4.1. Test Environment

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



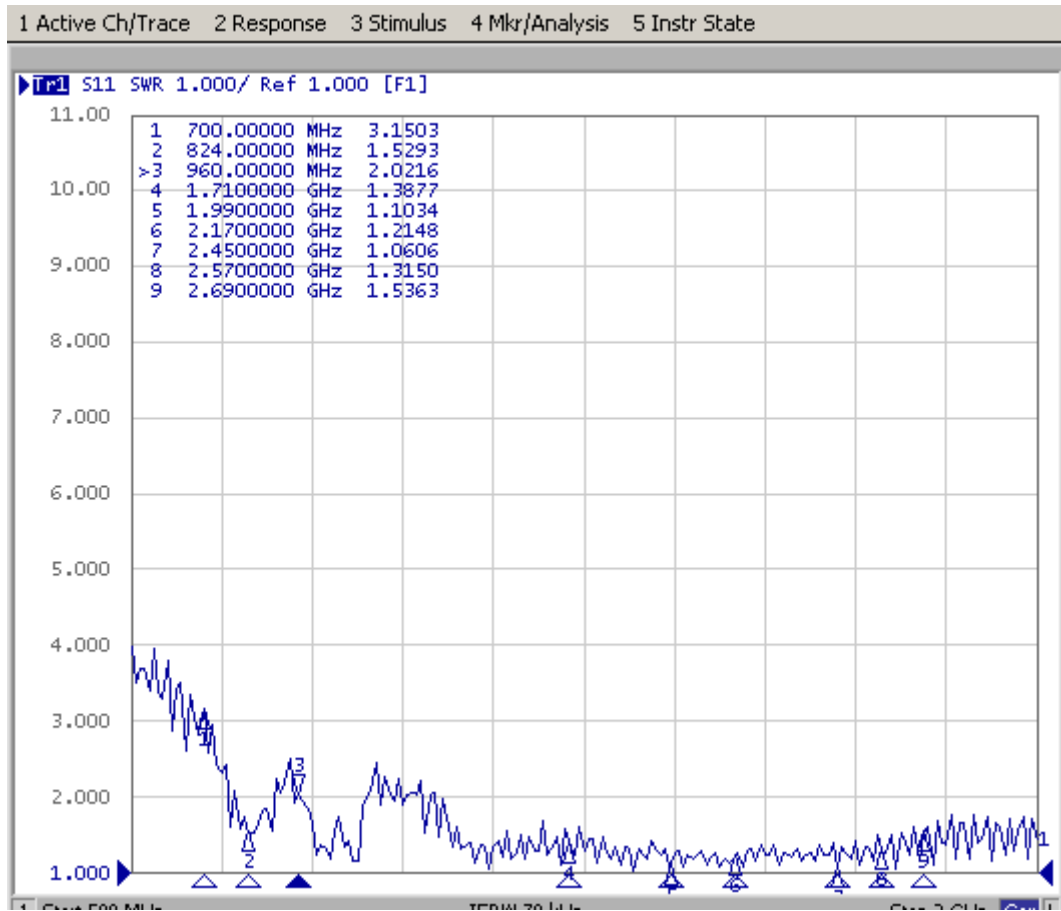
4.2. VSWR (Data of 1 Meter Cable)

4.2.1. 4G



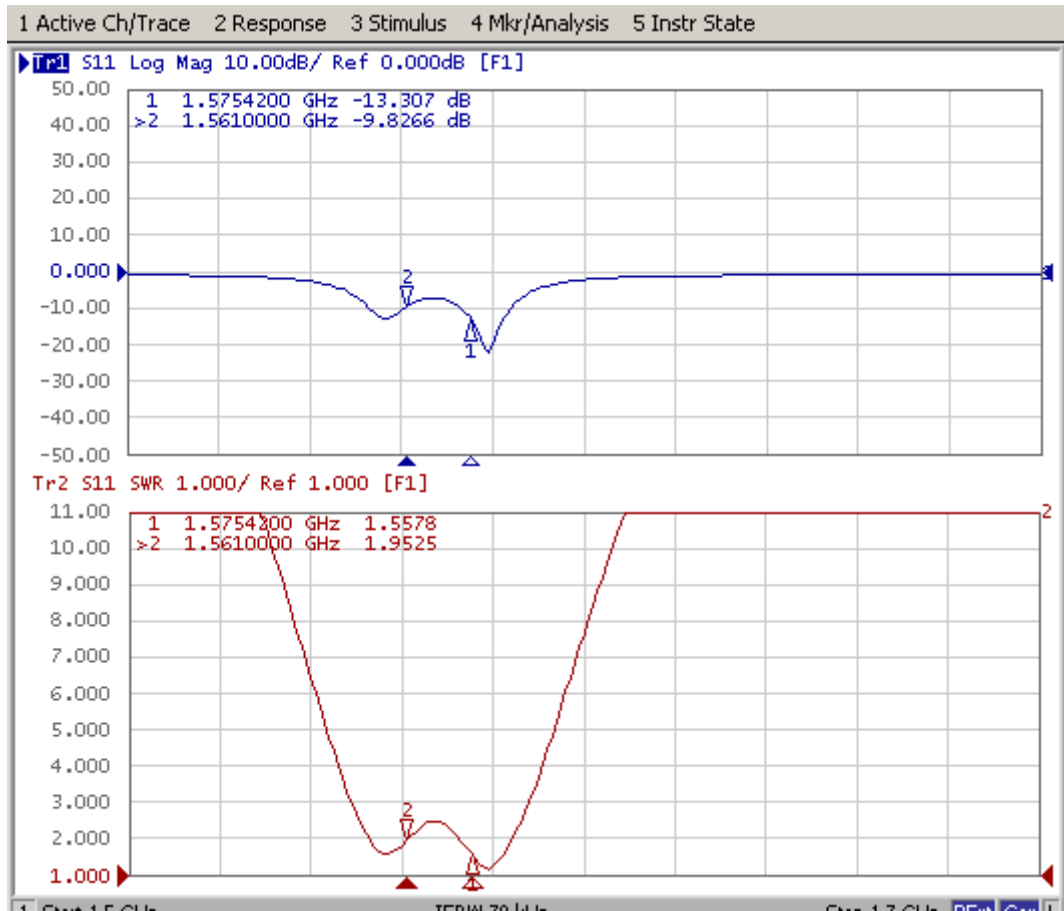
Frequency (MHz)	700	824	960	1710	1990	2170	2450	2570	2690
VSWR	2.23	1.75	2.25	1.46	1.31	1.4	1.18	1.29	1.44

4.2.2. 4G DIV



Frequency (MHz)	700	824	960	1710	1990	2170	2450	2570	2690
VSWR	3.15	1.53	2.02	1.39	1.1	1.21	1.06	1.32	1.54

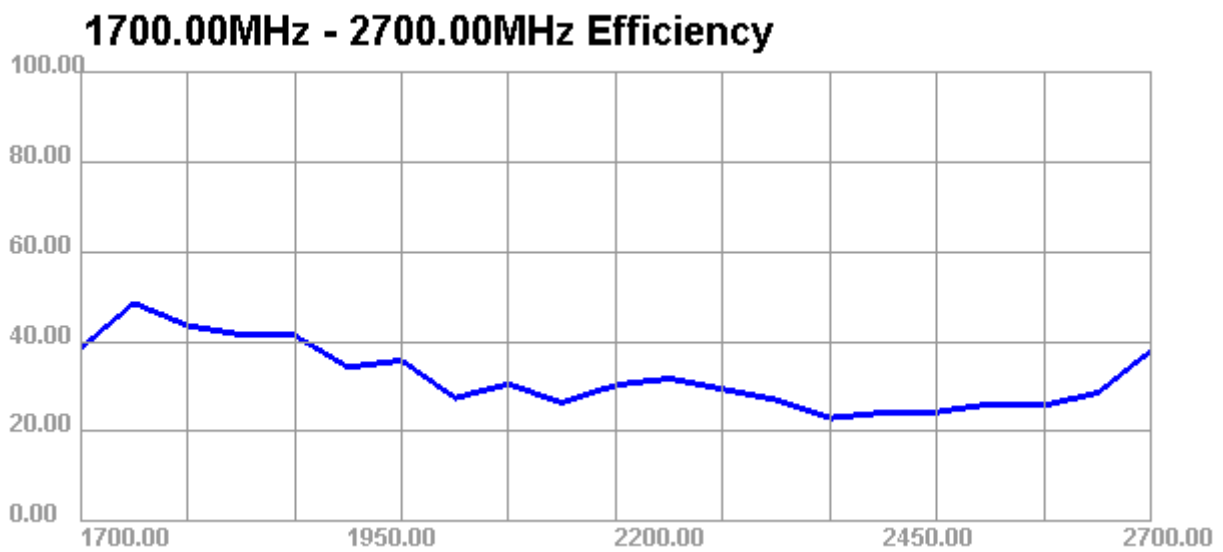
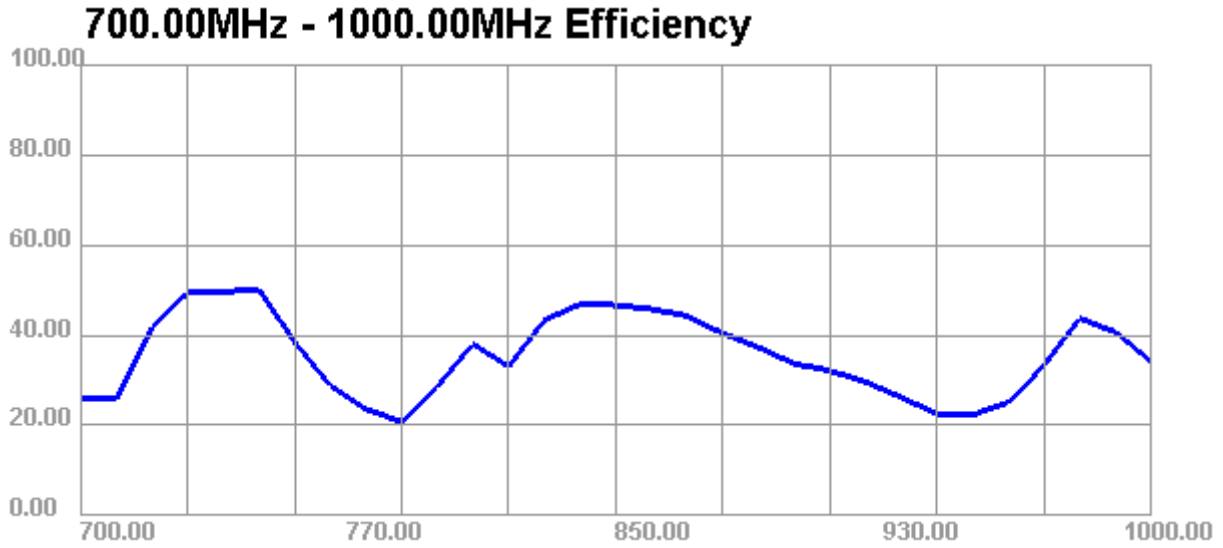
4.2.3 GNSS



Frequency (MHz)	1561	1575
VSWR	1.95	1.55

4.3. Efficiency (Data of 1 Meter Cable)

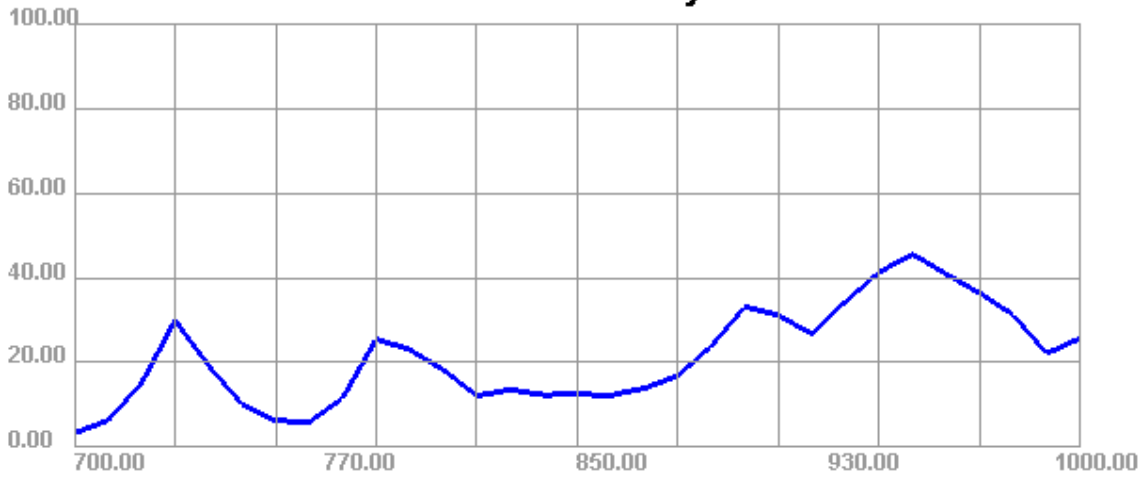
4.3.1. 4G



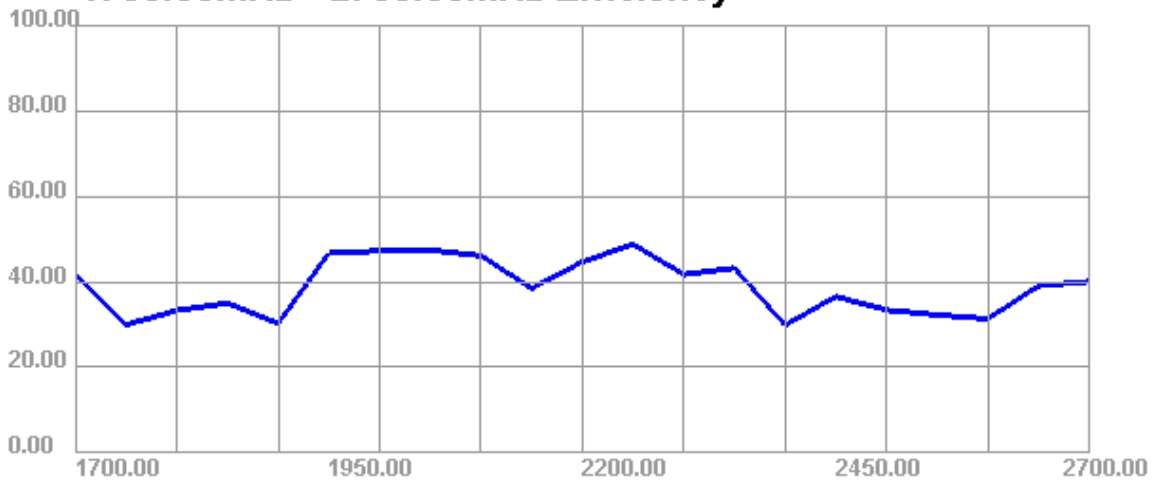
Frequency (MHz)	760	860	960	1700	1950	2200	2450	2650
Efficiency (%)	38.54	45.81	25.03	38.48	34.34	30.36	24.25	28.62

4.3.2. 4G DIV

700.00MHz - 1000.00MHz Efficiency



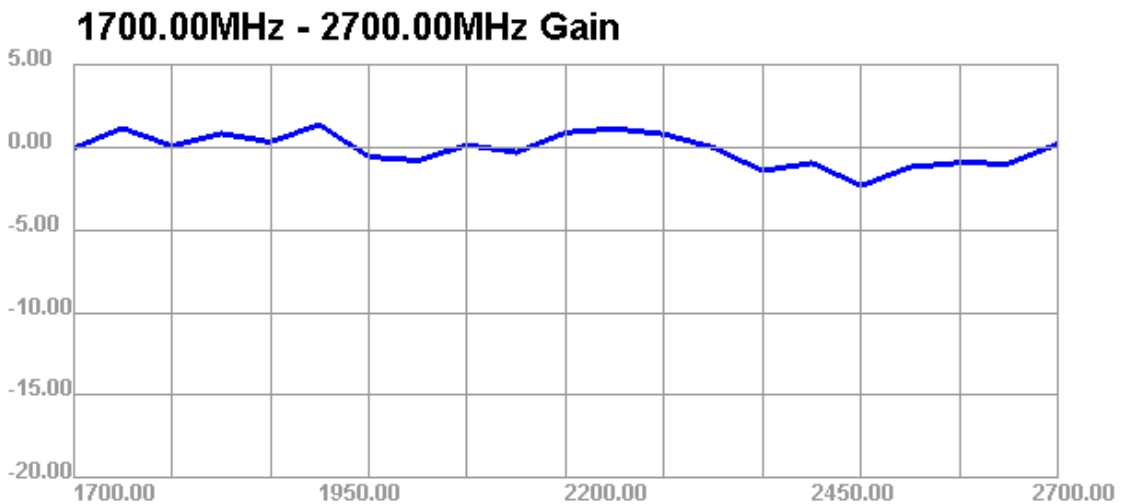
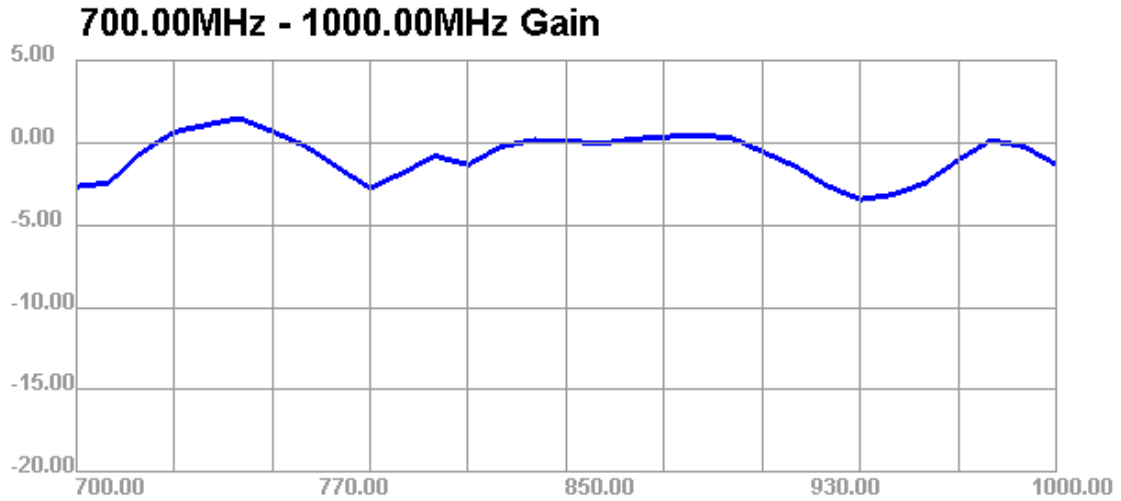
1700.00MHz - 2700.00MHz Efficiency



Frequency (MHz)	760	860	960	1700	1950	2200	2450	2650
Efficiency (%)	6.31	12.3	40.88	41.77	46.74	44.72	36.58	39.1

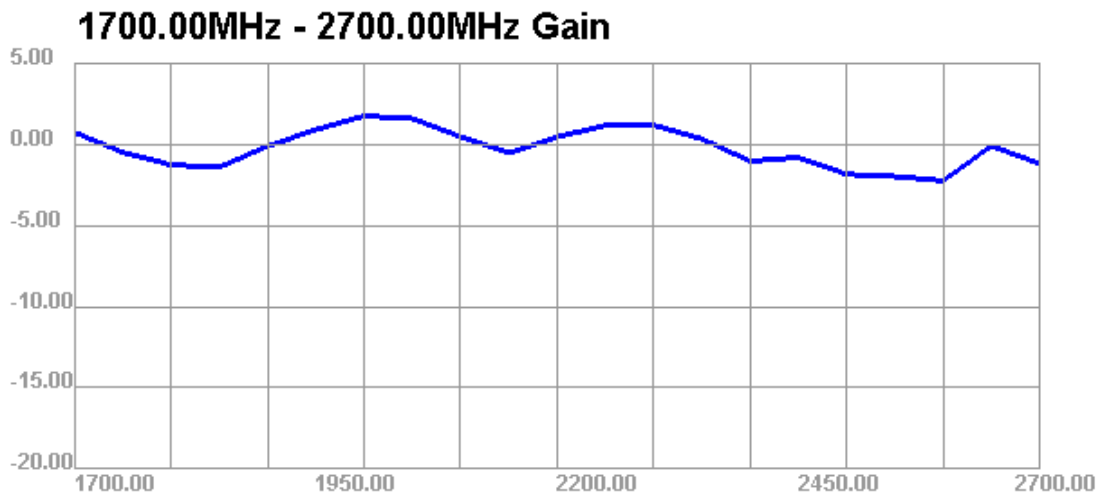
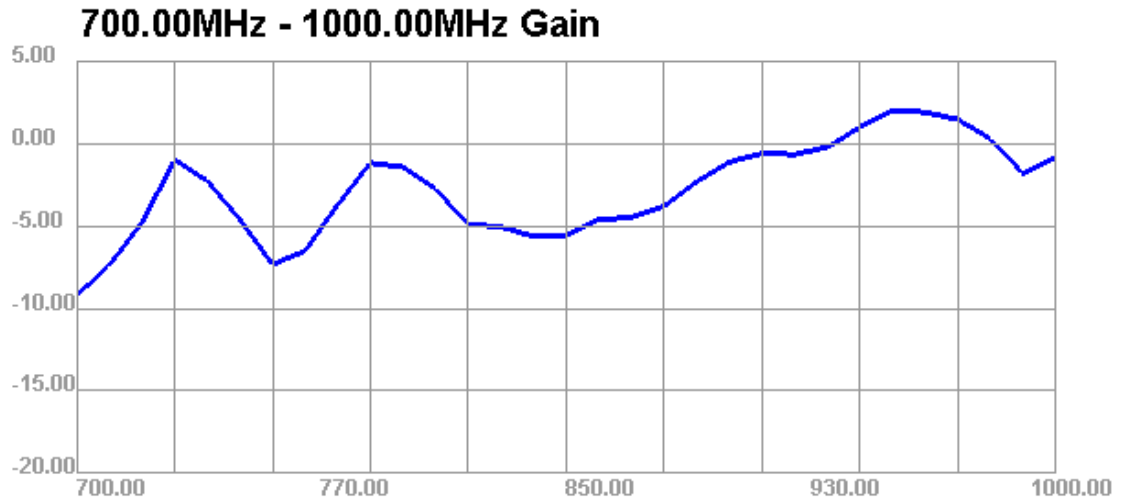
4.4. Gain (Data of 1 Meter Cable)

4.4.1. 4G



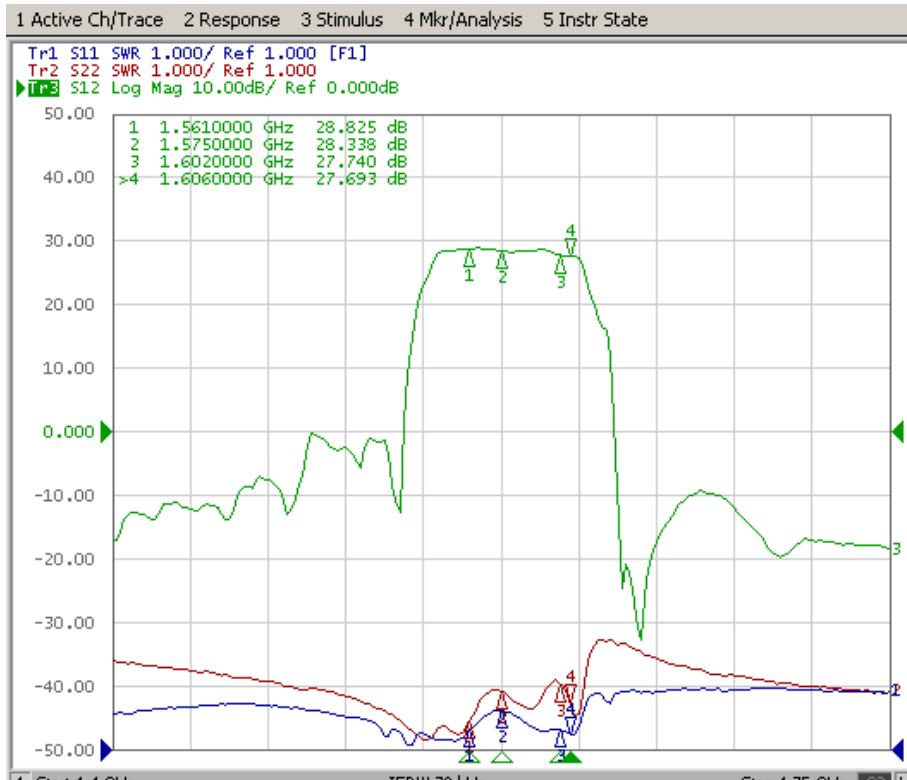
Frequency (MHz)	760	860	960	1700	1950	2200	2450	2650
Gain (dBi)	0.68	-0.09	-2.44	-0.06	1.36	0.88	-0.96	-1

4.4.2. 4G DIV



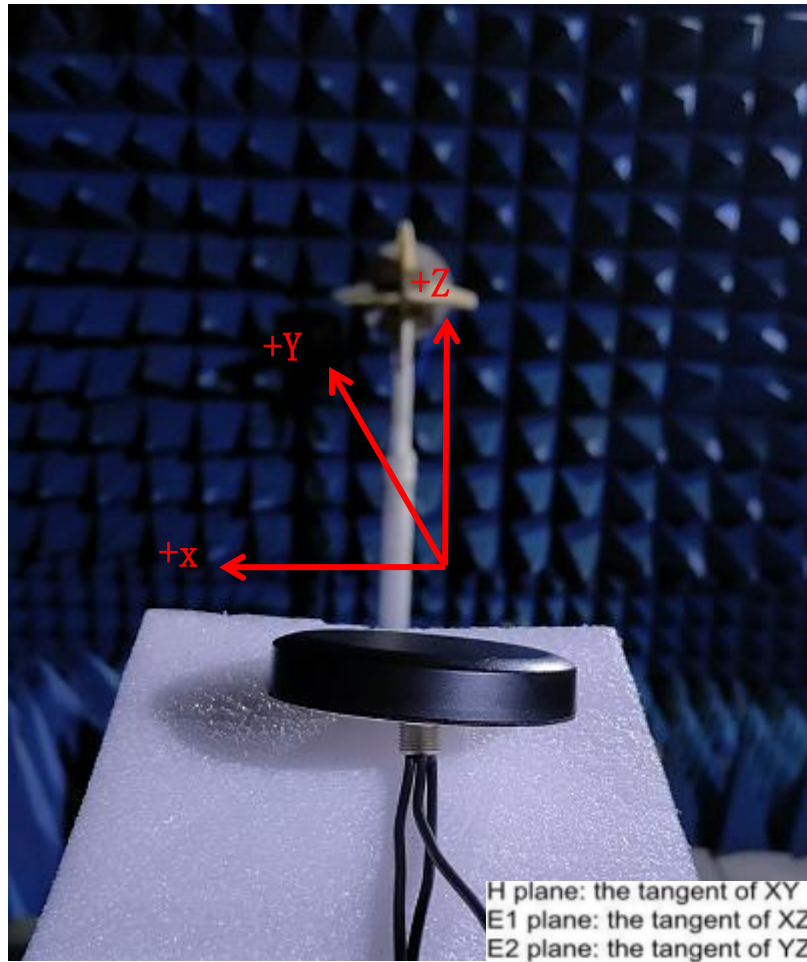
Frequency (MHz)	760	860	960	1700	1950	2200	2450	2650
Gain (dBi)	-7.33	-4.61	1.91	0.74	0.9	0.45	-0.81	-0.09

4.4.3. GNSS



Frequency (MHz)	1561	1575	1602	1606
Gain (dB)	28.82	28.34	27.74	27.69

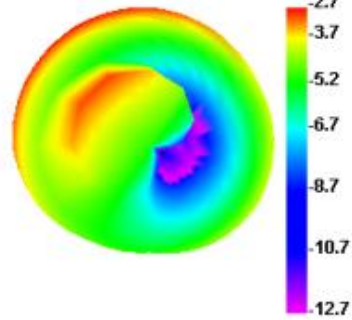
4.5. Radiation Patterns (Data of 1 Meter Cable)



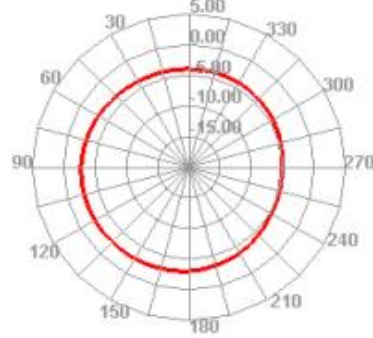
Note: Z is directed towards reflector antenna; Y is directed towards sky; X is directed towards OTA chamber door.

4.5.1. 4G

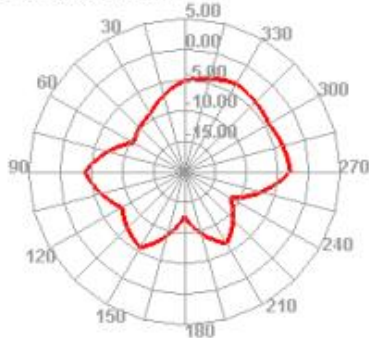
700.000MHz



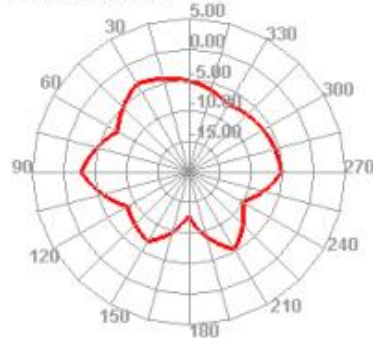
700.000MHz H



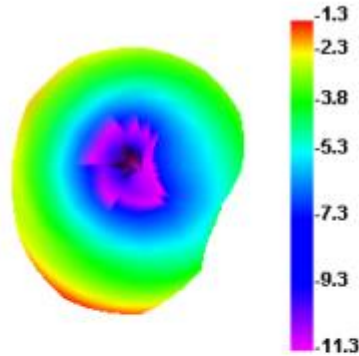
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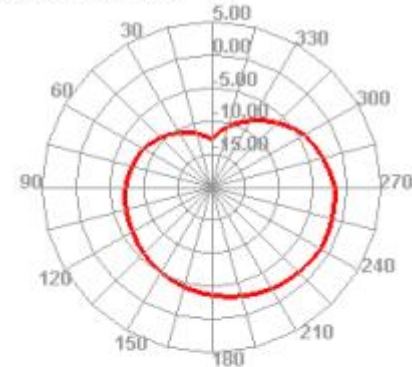
700.000MHz E2



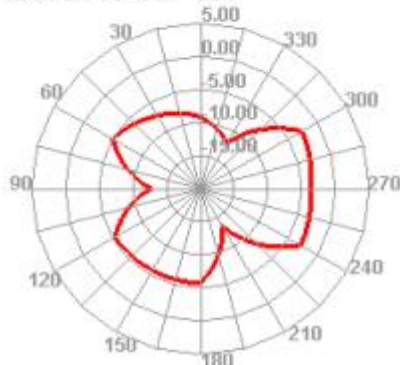
820.000MHz



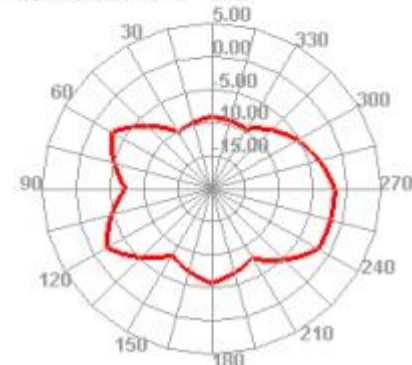
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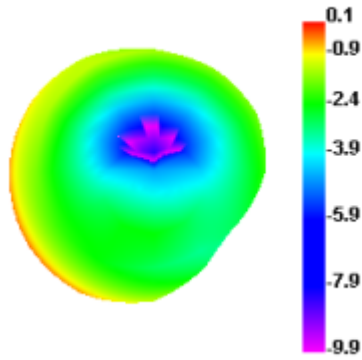
820.000MHz E1



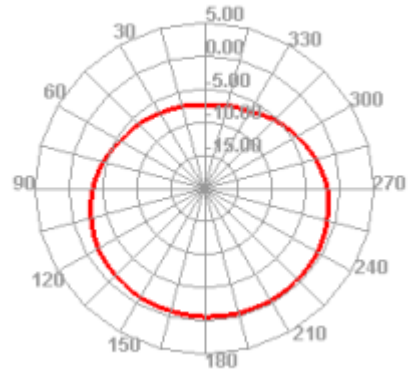
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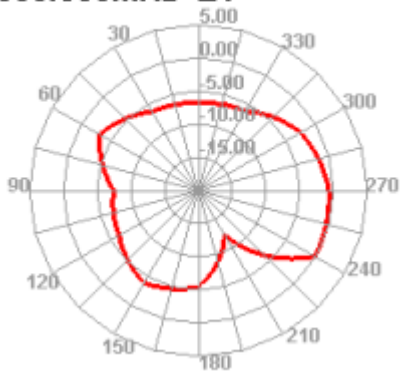
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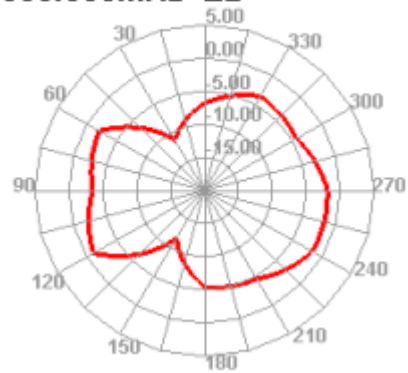
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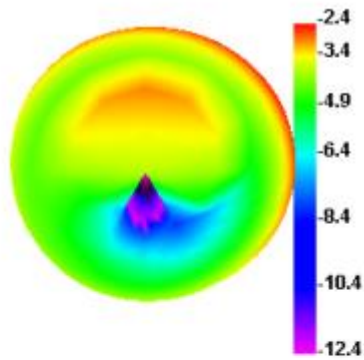
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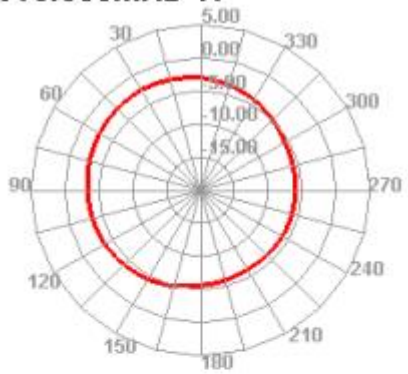
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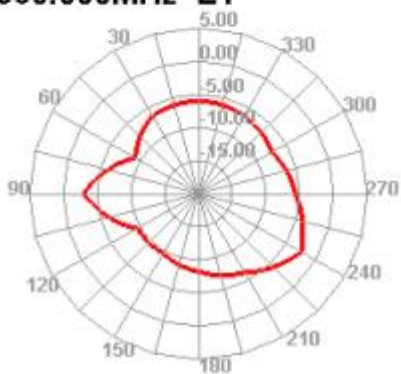
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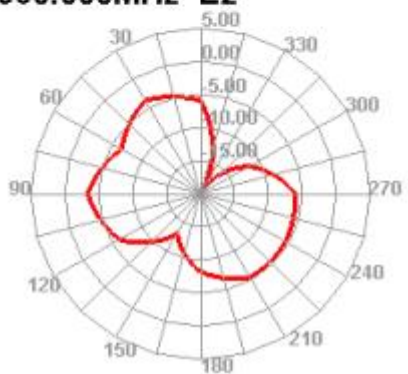
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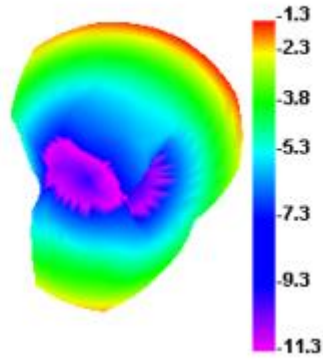
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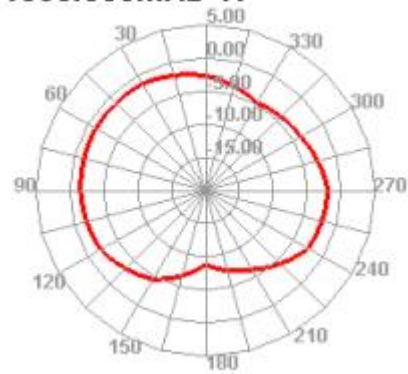
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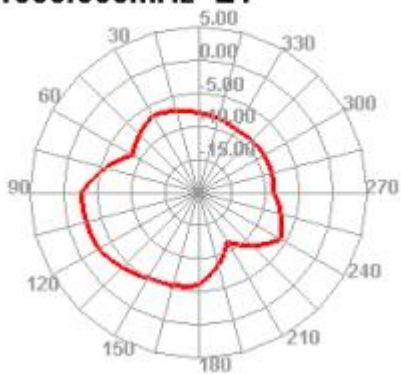
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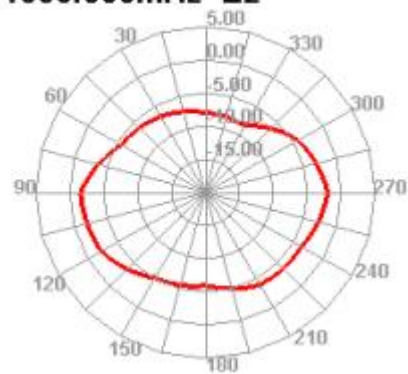
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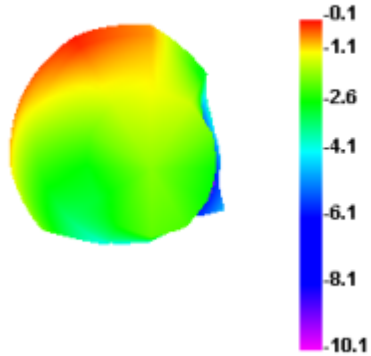
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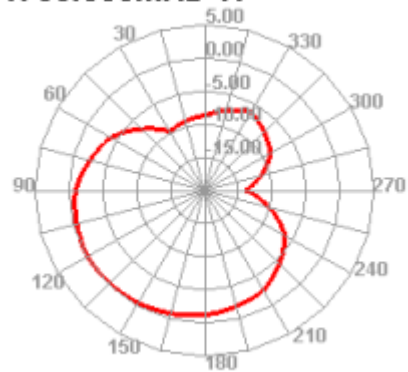
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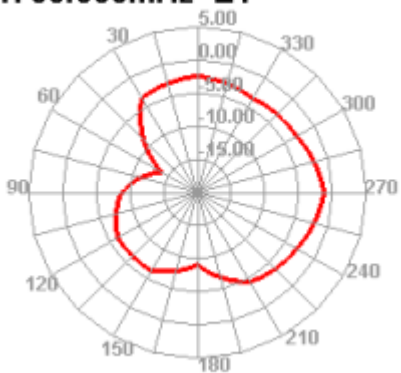
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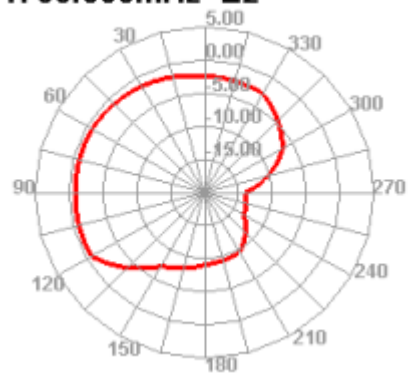
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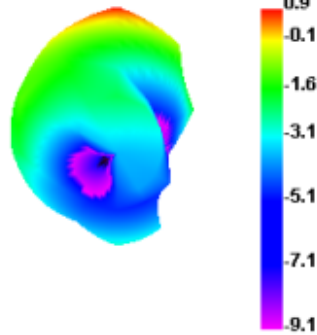
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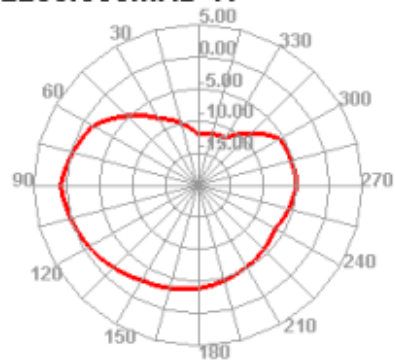
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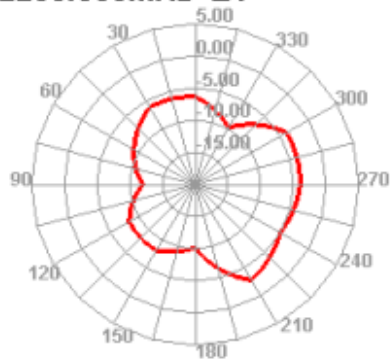
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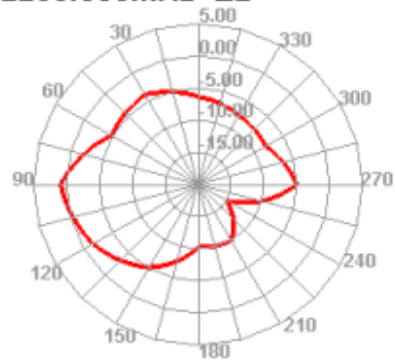
2200.000MHz H



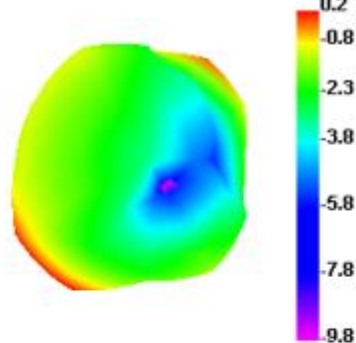
2200.000MHz E1



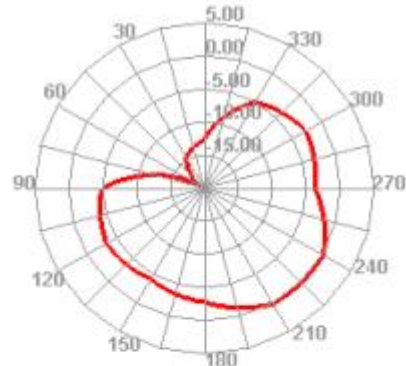
2200.000MHz E2



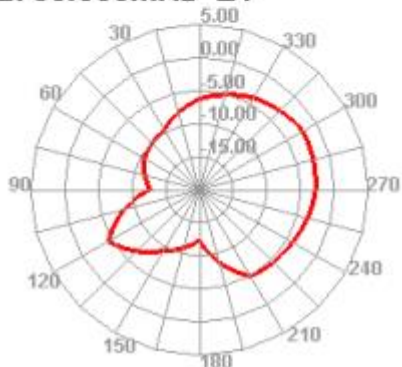
2700.000MHz



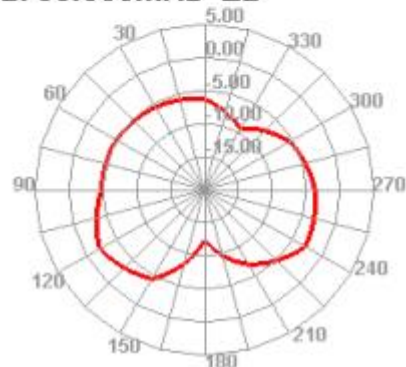
2700.000MHz H



2700.000MHz E1

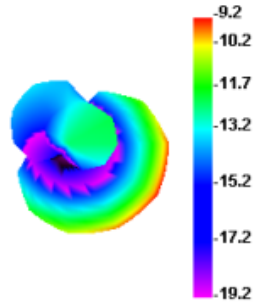


2700.000MHz E2

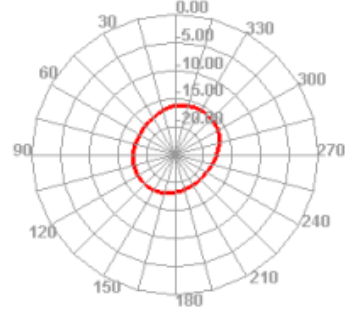


4.5.2. 4G DIV

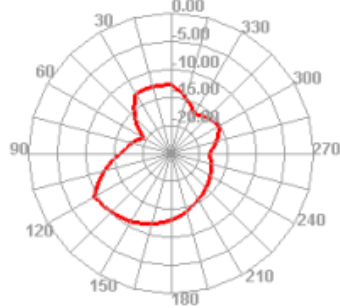
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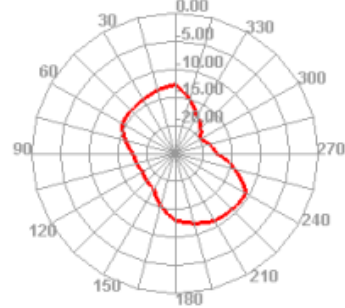
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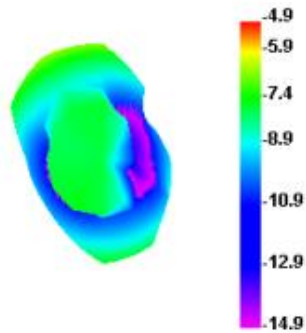
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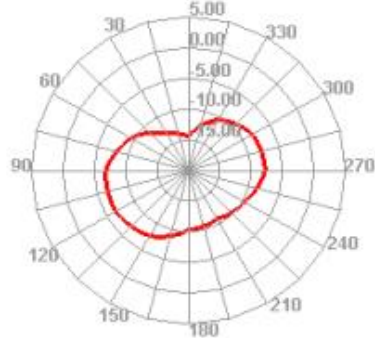
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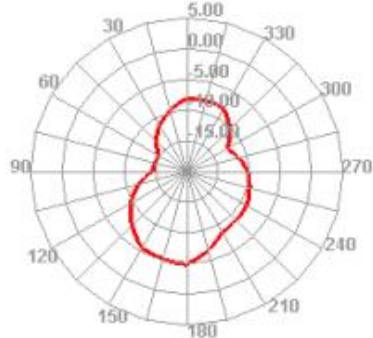
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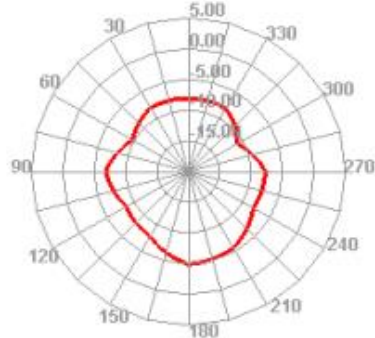
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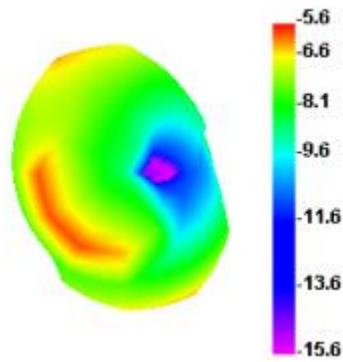
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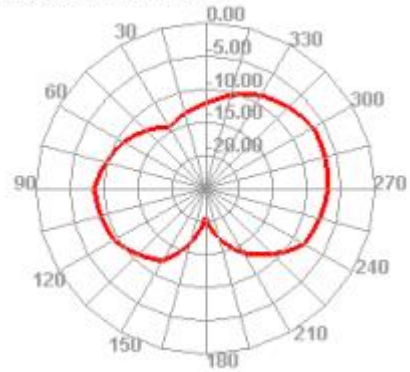
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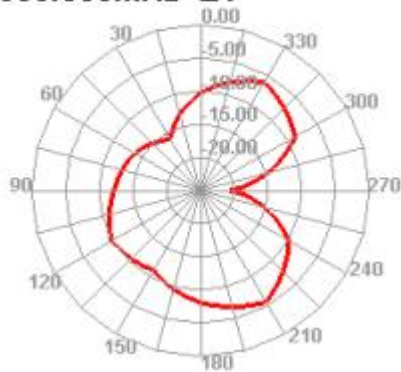
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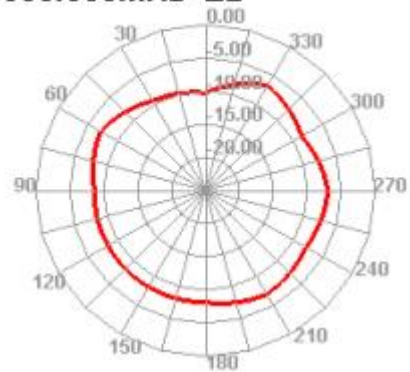
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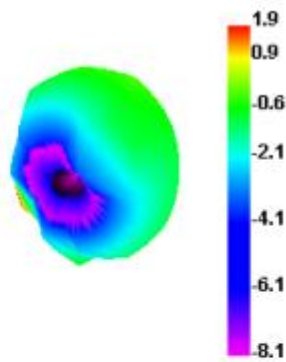
850.000MHz E1



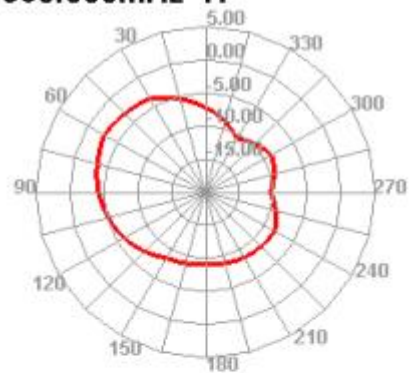
850.000MHz E2



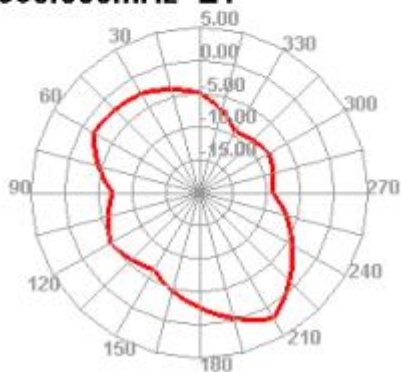
960.000MHz



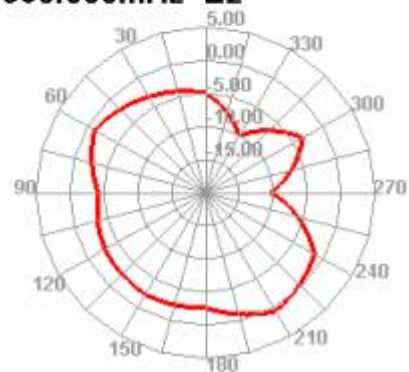
960.000MHz H



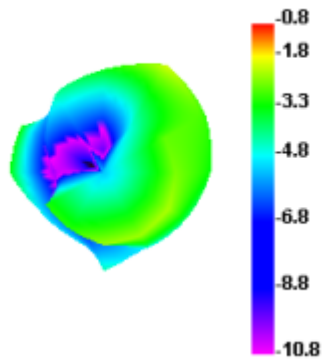
960.000MHz E1



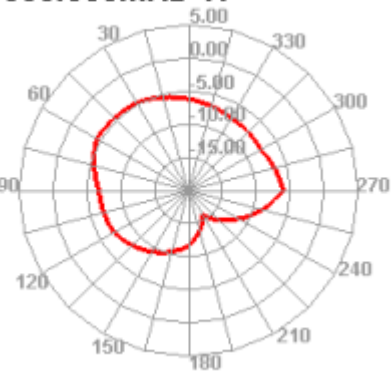
960.000MHz E2



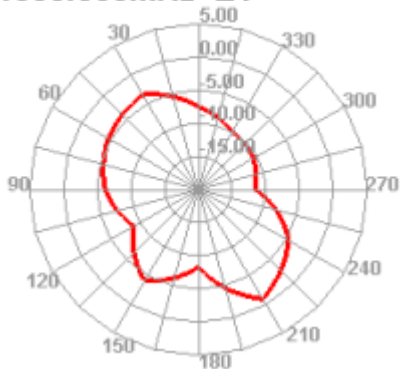
1000.000MHz



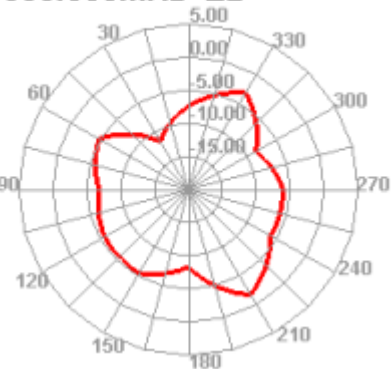
1000.000MHz H



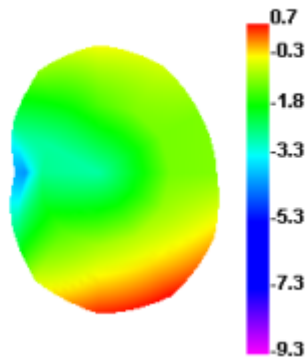
1000.000MHz E1



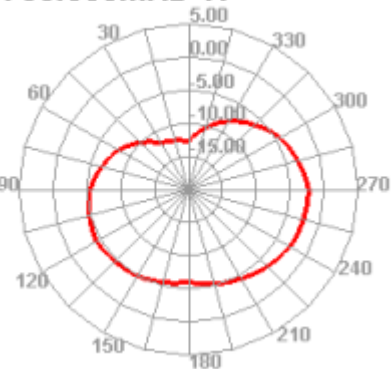
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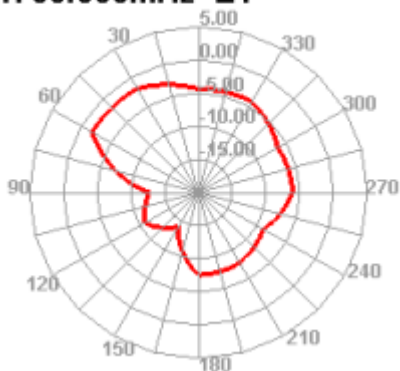
1700.000MHz



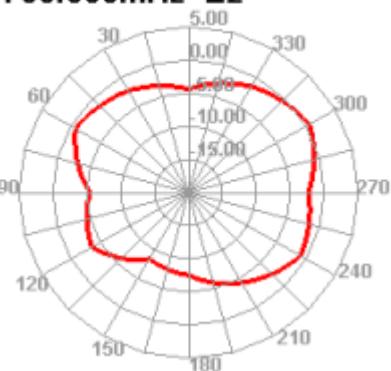
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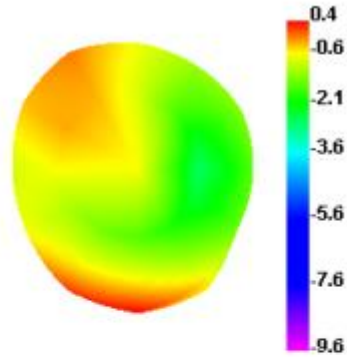
1700.000MHz E1



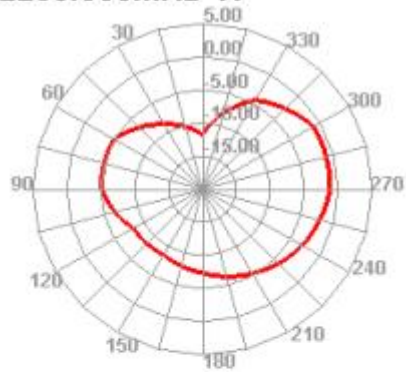
1700.000MHz E2



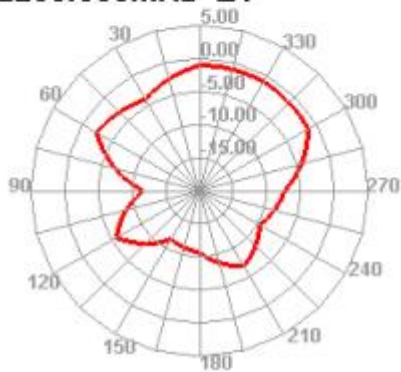
2200.000MHz



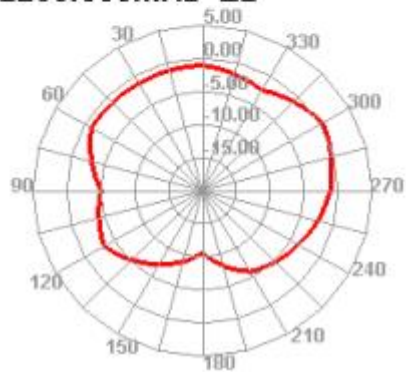
2200.000MHz H



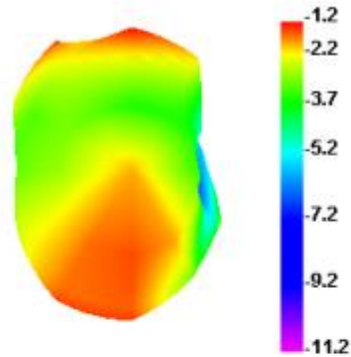
2200.000MHz E1



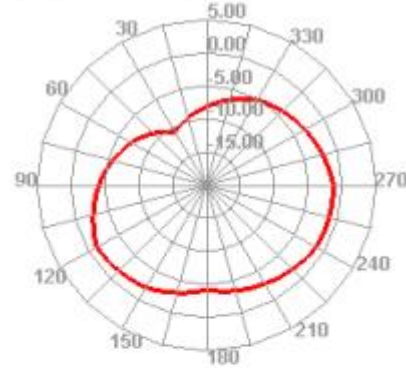
2200.000MHz E2



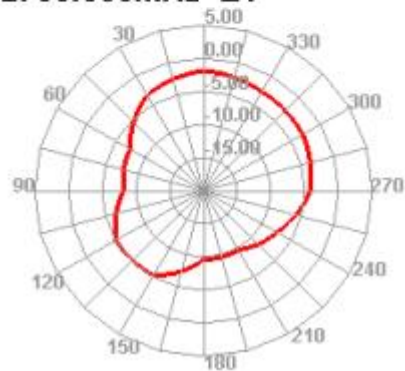
2700.000MHz



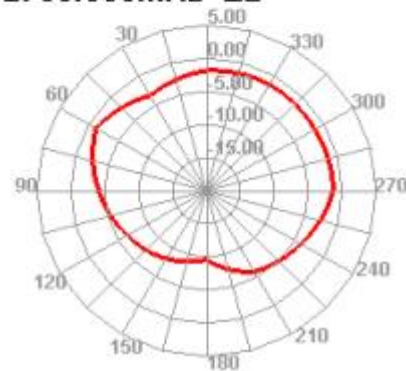
2700.000MHz H



2700.000MHz E1



2700.000MHz E2



5 Product Size

