

## **CW-ZH-0020**

### **4G/GPS Combined Antenna**

#### **Key Features**

Frequency: 824-960/1710-2700MHz&1560-1610MHz

SMA Male Connector

Dimensions: 46\*16mm

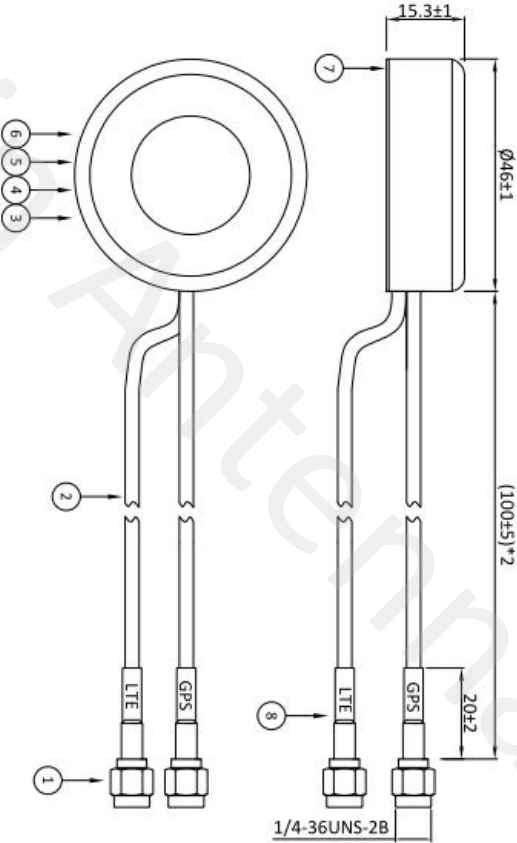



## 1. Antenna Electrical Characteristics

<b>4G</b>	
Band (MHz)	
Frequency (MHz)	824-960/1710-2700
VSWR	≤3.5
Efficiency (%)	61.56/58.48
Peak Gain (dBi)	4.35/3.98
Impedance (Ohm)	50
Polarisation	Vertical
Max. Input Power (W)	10
Connector Type	SMA Male
<b>GPS (Active Antenna)</b>	
Band (MHz)	
Frequency (MHz)	1560-1610
VSWR	≤2.0
Efficiency (%)	21.1
Peak Gain (dBi)	2.48
<b>LNA Specification</b>	
Gain(dbi)	28
NF(db)	2.59
Impedance (Ohm)	50
Polarisation	RHCP
Max. Input Power (W)	2.5-5
Connector Type	SMA Male

## 2. Material and environmental characteristics

<b>4G</b>	
External Structure	ABS
Inner Structure	PCB
Cable Type	RG174
Connector Type	SMA Male
Dimensions (mm)	46*16
Antenna Color	Black
Operation Temperature(°)	-40 to +80
Storage Temperature(°)	-40 to +80
Antenna Storage life(year)	10
Substance Compliance	ROHS
<b>GPS (Active Antenna)</b>	
External Structure	ABS
Inner Structure	Ceramic antenna
Cable Type	RG174
Connector Type	SMA Male
Dimensions (mm)	46*16
Antenna Color	Black
Operation Temperature	-40 to +80
Storage Temperature	-40 to +80
Antenna Storage life(year)	10
Substance Compliance	ROHS

1	A	B	C	D	E	F	G																																																
							<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>REV</th> <th>Date</th> <th>Description</th> </tr> <tr> <td>X1</td> <td>2024/08/12</td> <td>New Issue</td> </tr> </table>	REV	Date	Description	X1	2024/08/12	New Issue																																										
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<p>100% Continuity,short and open circuit test Materials,parts and process must by environmentally (ROHS)</p>																																																							
<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 5%;">8</td> <td style="width: 45%;">Heat shrink tubing</td> <td style="width: 20%;">Ø3.5*20mm; Ordinary</td> <td style="width: 5%;">2</td> <td style="width: 25%;">Black</td> </tr> <tr> <td>7</td> <td>Double-sided tape</td> <td>Ø46mm</td> <td>1</td> <td>Red</td> </tr> <tr> <td>6</td> <td>Ceramic Antenna</td> <td>25*25*2mm</td> <td>1</td> <td></td> </tr> <tr> <td>5</td> <td>PCB</td> <td>FR4</td> <td>1</td> <td></td> </tr> <tr> <td>4</td> <td>Lower cover</td> <td>ABS</td> <td>1</td> <td>Black</td> </tr> <tr> <td>3</td> <td>Shell</td> <td>ABS</td> <td>1</td> <td>Black</td> </tr> <tr> <td>2</td> <td>Cable</td> <td>RG174</td> <td>2</td> <td>Black</td> </tr> <tr> <td>1</td> <td>Connector</td> <td>SMA Male</td> <td>2</td> <td>Copper gold-plating</td> </tr> <tr> <td>NO</td> <td>Name</td> <td>Description</td> <td>QTY</td> <td>Remark</td> </tr> </table>							8	Heat shrink tubing	Ø3.5*20mm; Ordinary	2	Black	7	Double-sided tape	Ø46mm	1	Red	6	Ceramic Antenna	25*25*2mm	1		5	PCB	FR4	1		4	Lower cover	ABS	1	Black	3	Shell	ABS	1	Black	2	Cable	RG174	2	Black	1	Connector	SMA Male	2	Copper gold-plating	NO	Name	Description	QTY	Remark				
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## 4. Antenna test parameters

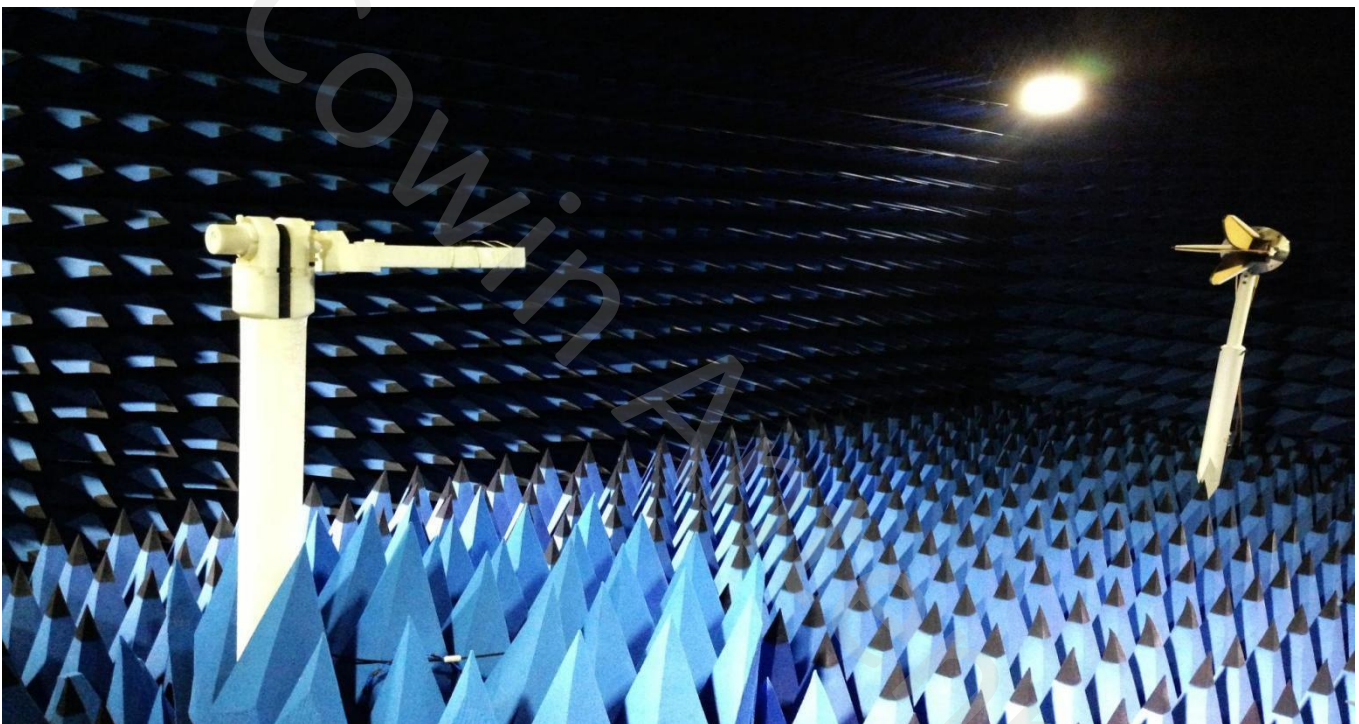
**Antenna Measurement Conditions:**

Mounted on Ground Plane of 280 x 80 mm

Measured in Certified 3D Anechoic Chamber

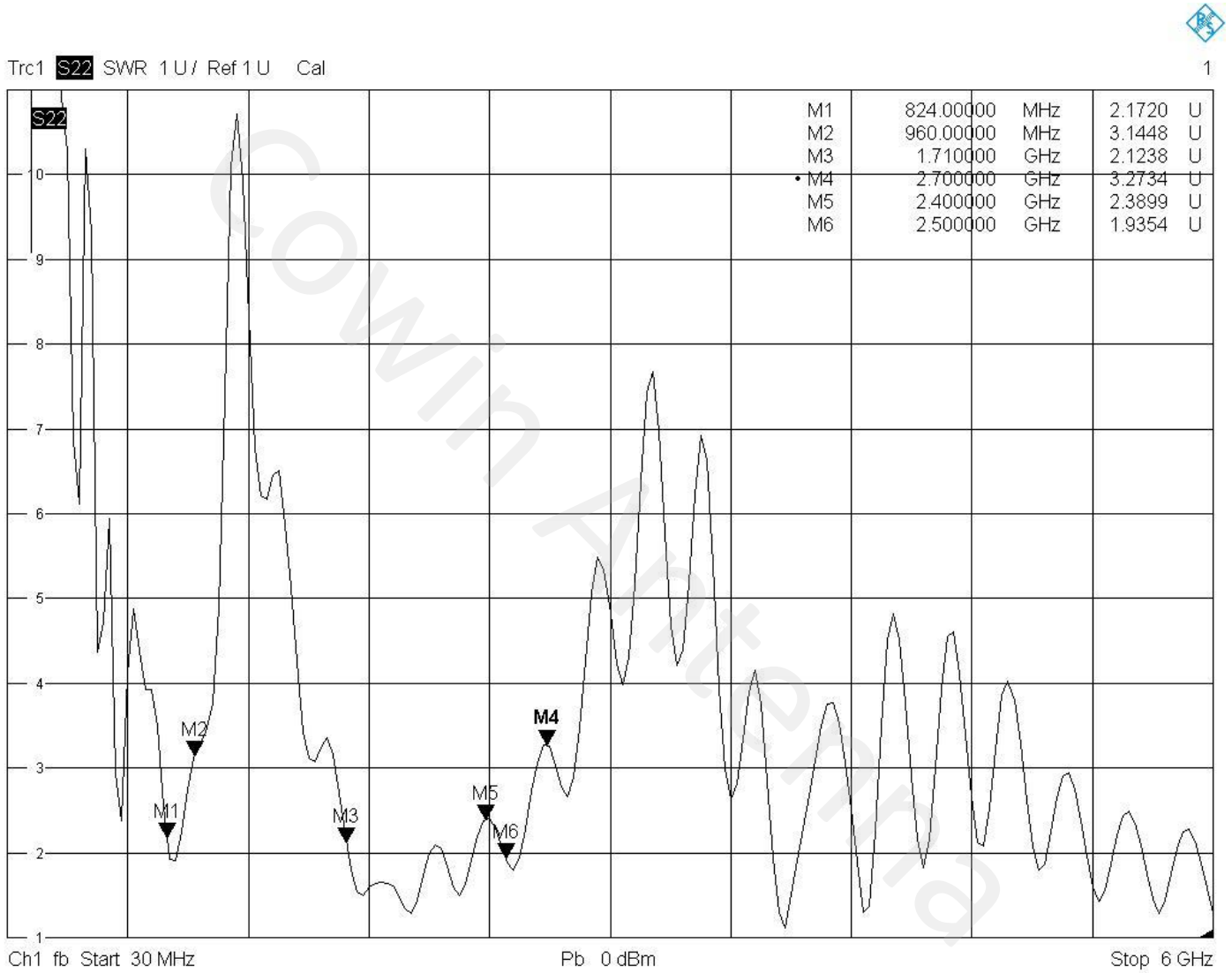
The network analyzer is Agilent 5071c

The comprehensive tester is Agilent cmv500

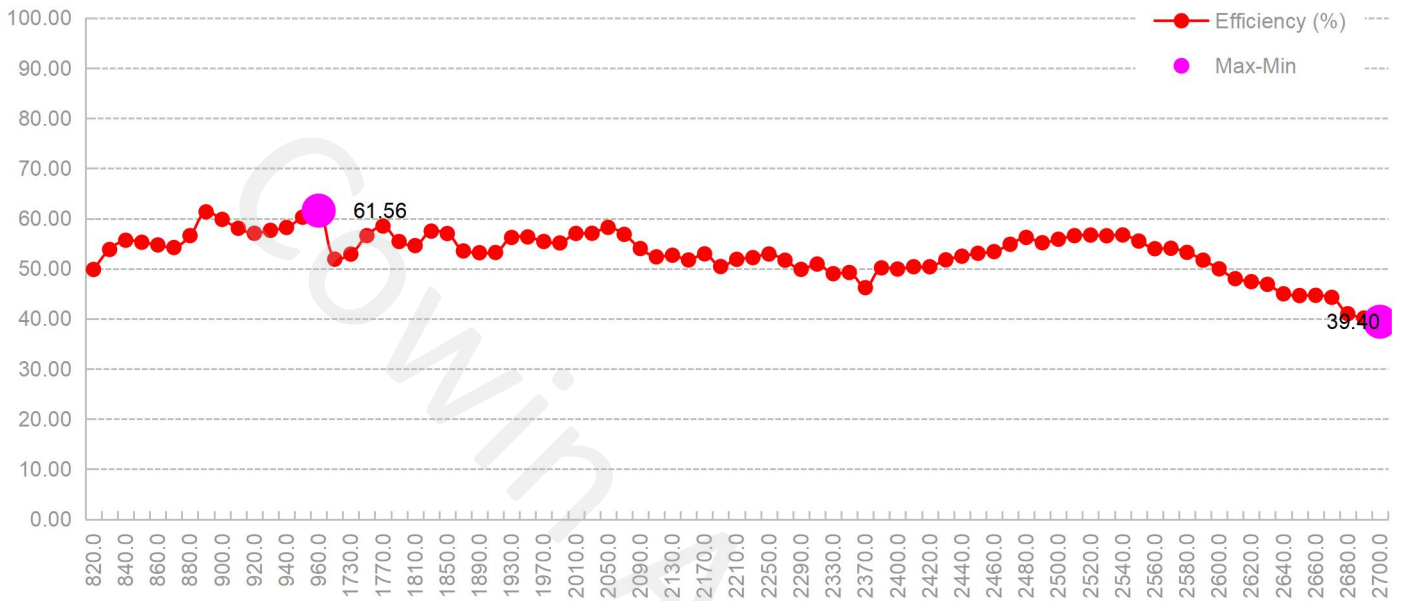


## 4.1 4G

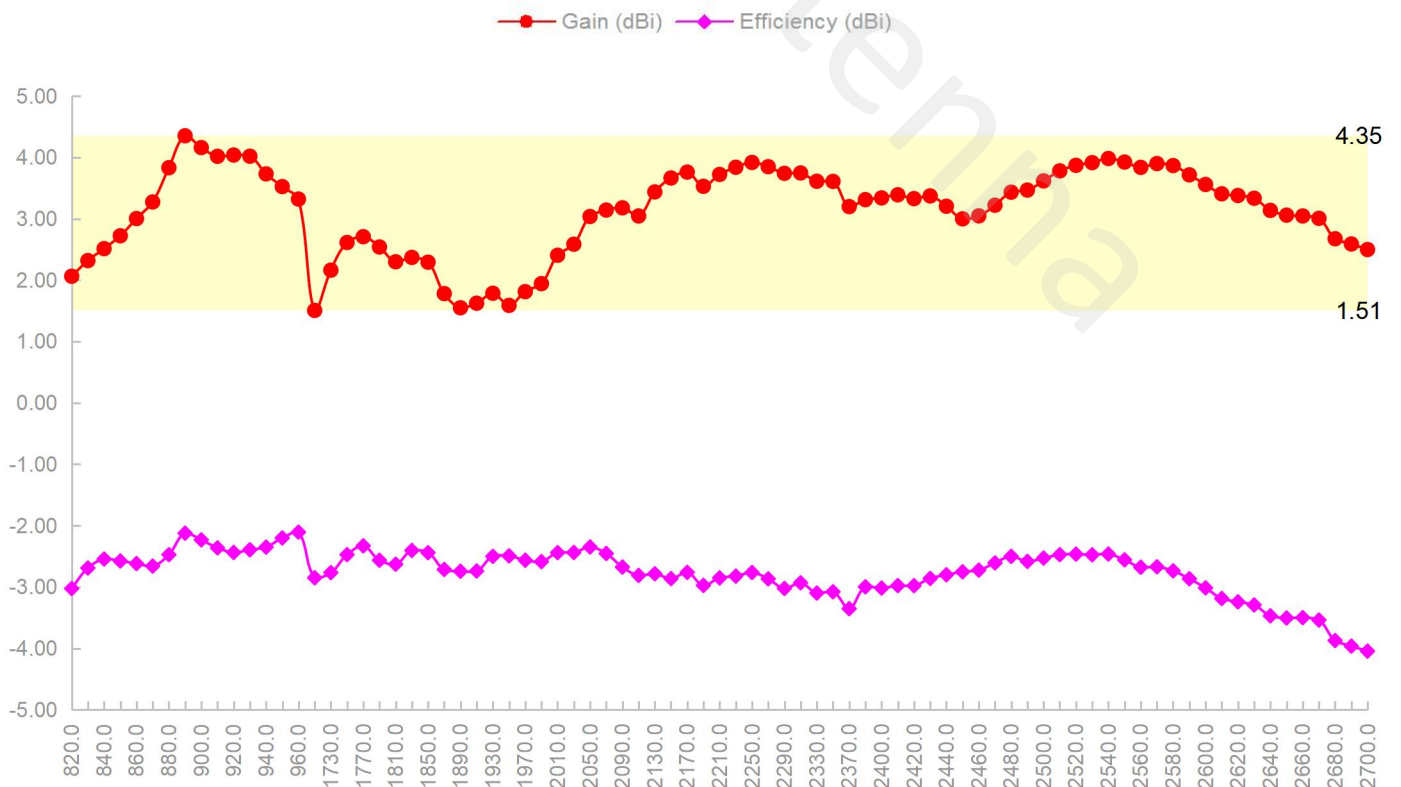
### 4.1.1 VSWR



## 4.1.2 Efficiency



## 4.1.3 Peak gain

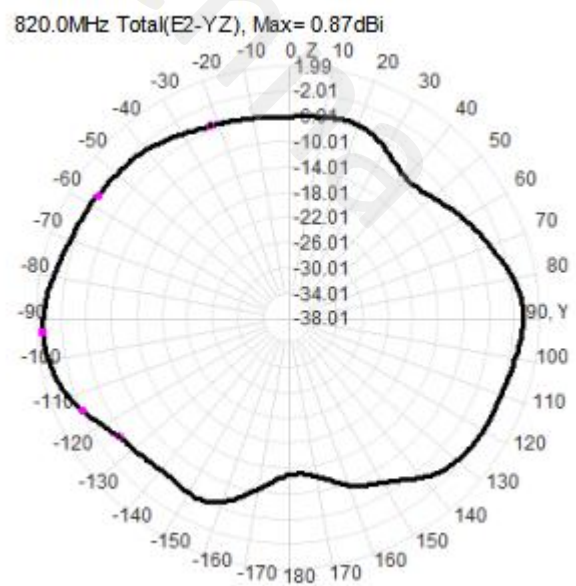
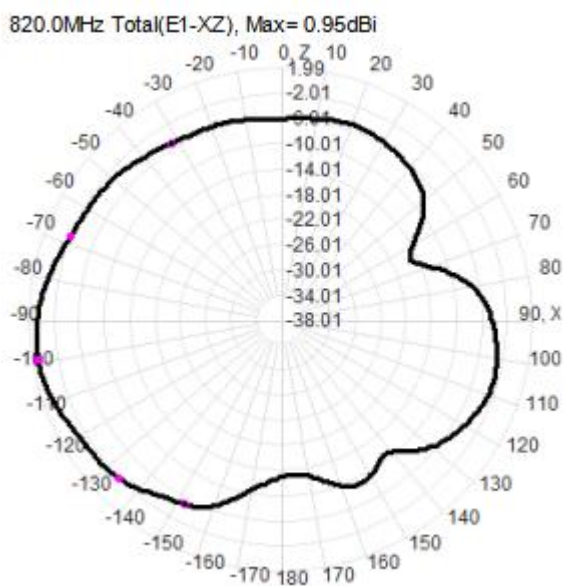
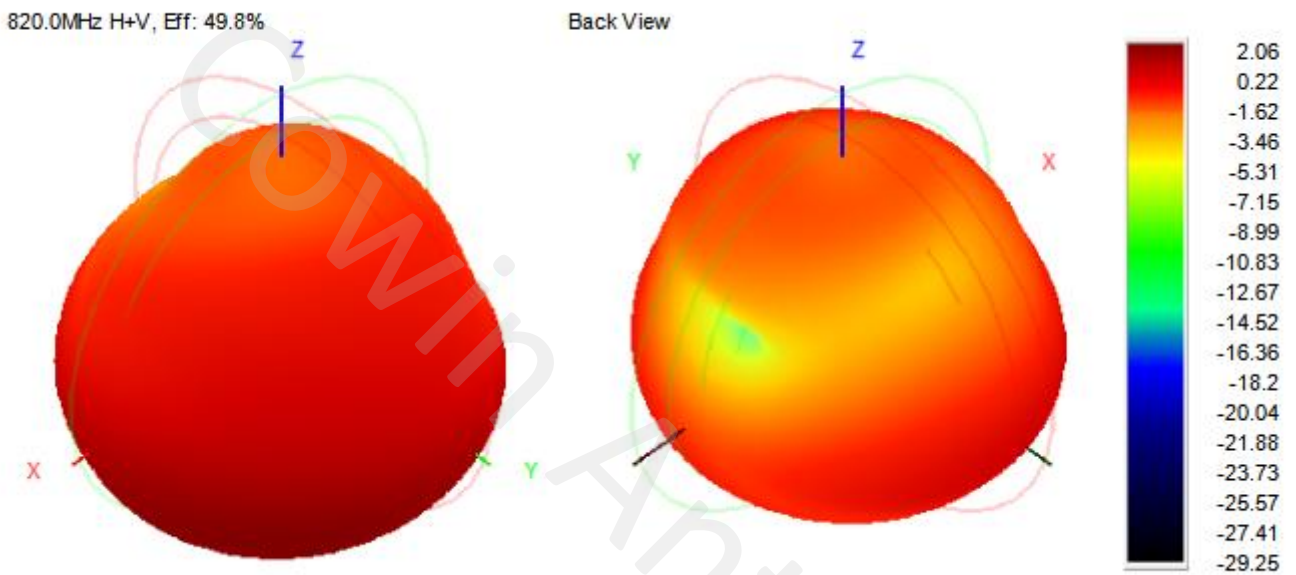


## 4.1.4 Data summary

Frequency (MHz)	Gain (dBi)	Efficiency (%)
820.0	2.06	49.83
850.0	2.72	55.26
880.0	3.83	56.58
910.0	4.02	58.04
940.0	3.73	58.20
960.0	3.32	61.56
1710.0	1.51	51.88
1750.0	2.61	56.58
1790.0	2.54	55.40
1830.0	2.37	57.47
1870.0	1.78	53.52
1910.0	1.62	53.21
1950.0	1.59	56.32
1990.0	1.94	55.12
2030.0	2.59	57.04
2070.0	3.14	56.83
2110.0	3.05	52.34
2150.0	3.66	51.72
2190.0	3.53	50.41
2230.0	3.84	52.19
2270.0	3.85	51.67
2310.0	3.75	50.90
2350.0	3.61	49.23
2390.0	3.31	50.15
2430.0	3.37	51.75
2470.0	3.22	54.85
2510.0	3.78	56.57
2550.0	3.92	55.49
2590.0	3.72	51.69
2630.0	3.33	46.85
2670.0	3.01	44.27
2690.0	2.59	40.14
2700.0	2.50	39.40

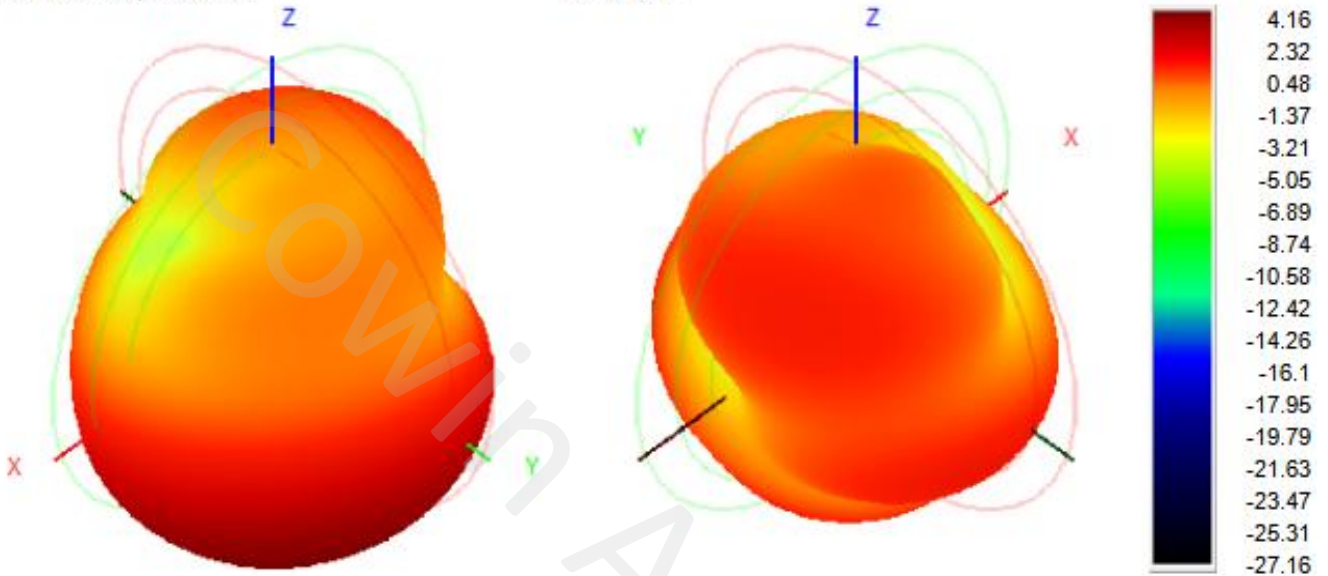


## 4.1.5 3D&2D Radiation Patterns



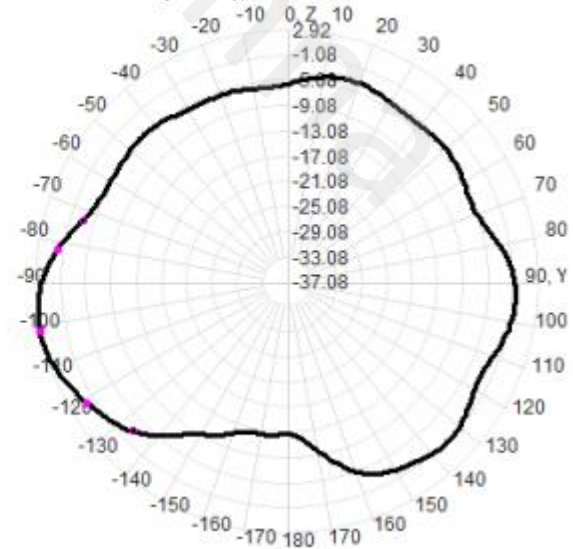
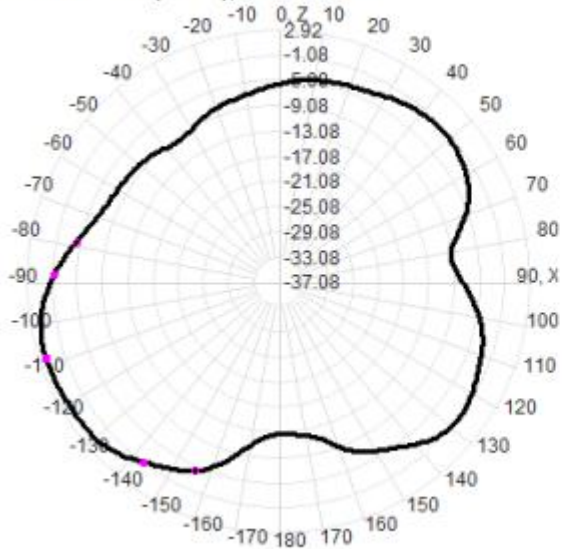
900.0MHz H+V, Eff: 59.8%

Back View

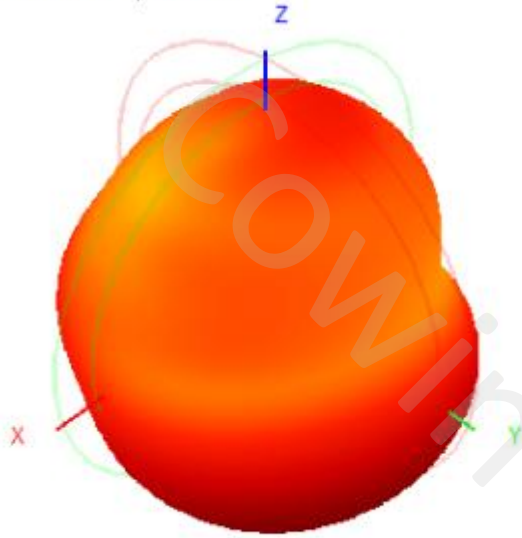


900.0MHz Total(E1-XZ), Max= 1.76dBi

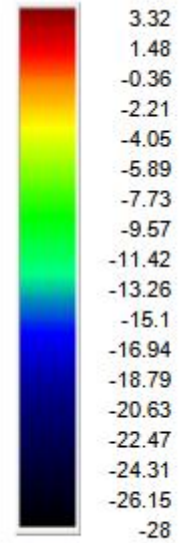
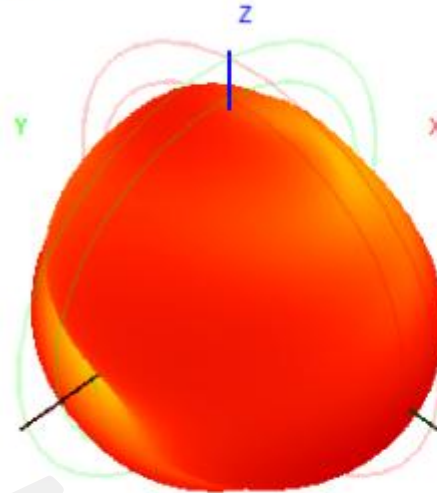
900.0MHz Total(E2-YZ), Max= 2.92dBi



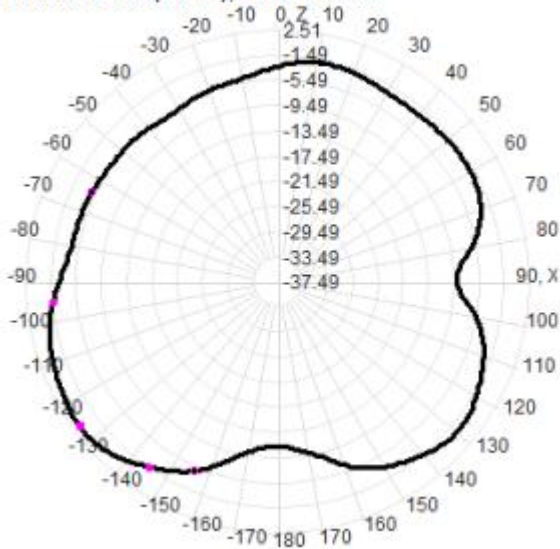
960.0MHz H+V, Eff: 61.6%



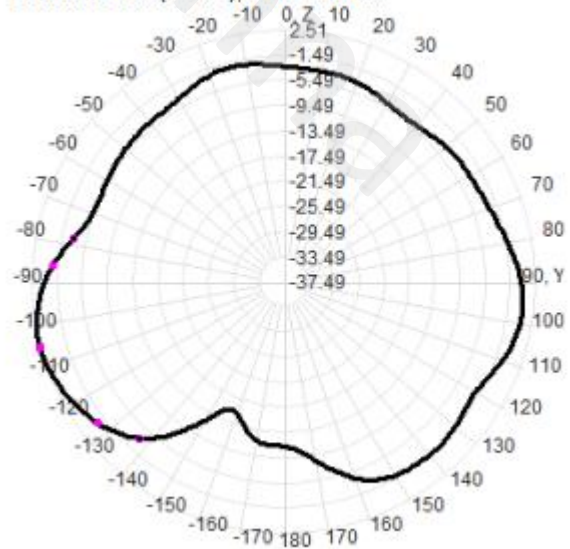
Back View



960.0MHz Total(E1-XZ), Max= 1.29dBi

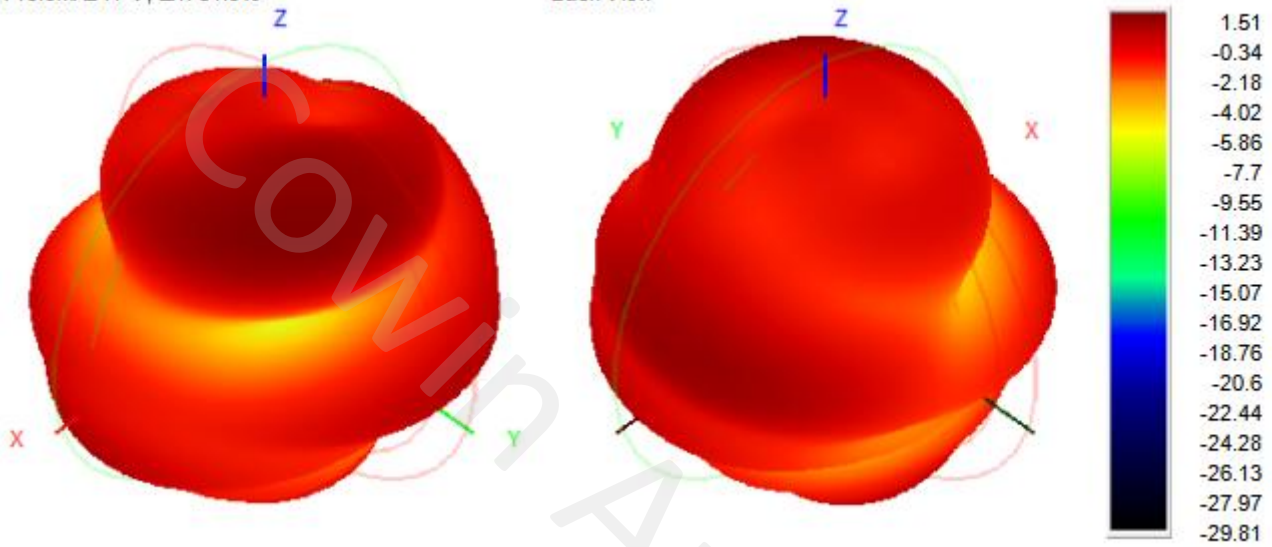


960.0MHz Total(E2-YZ), Max= 2.51dBi

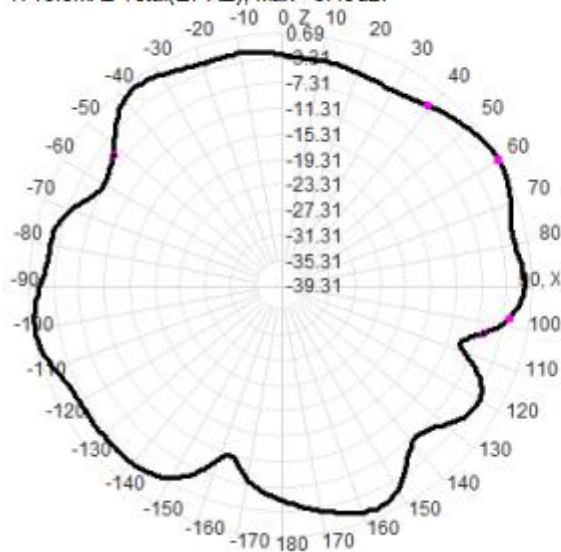


1710.0MHz H+V, Eff: 51.9%

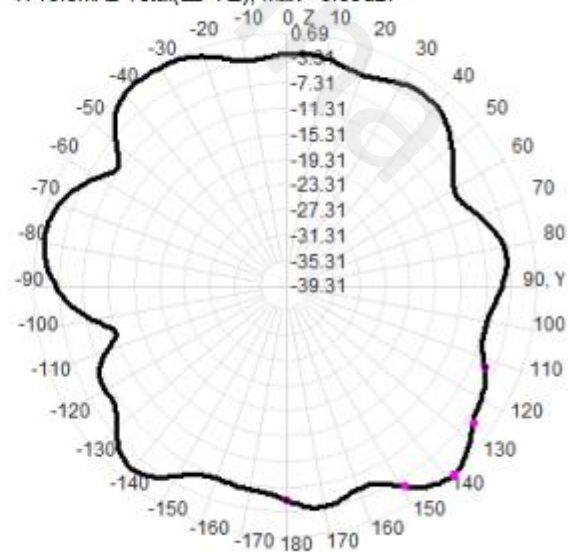
Back View



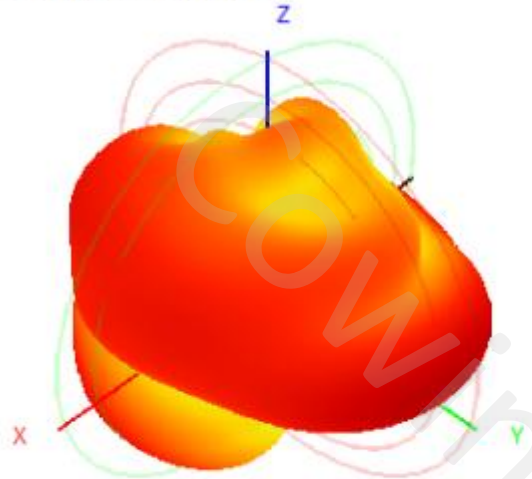
1710.0MHz Total(E1-XZ), Max= 0.49dBi



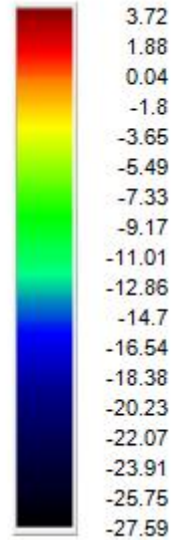
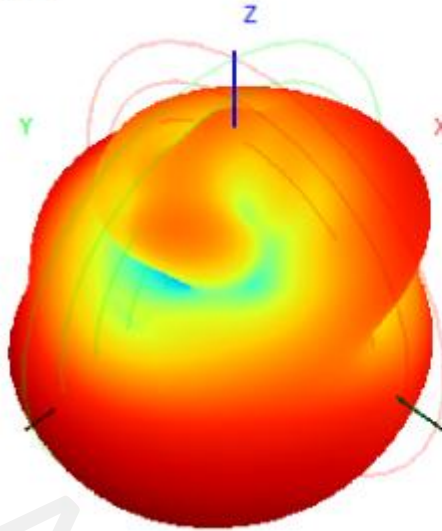
1710.0MHz Total(E2-YZ), Max= 0.69dBi



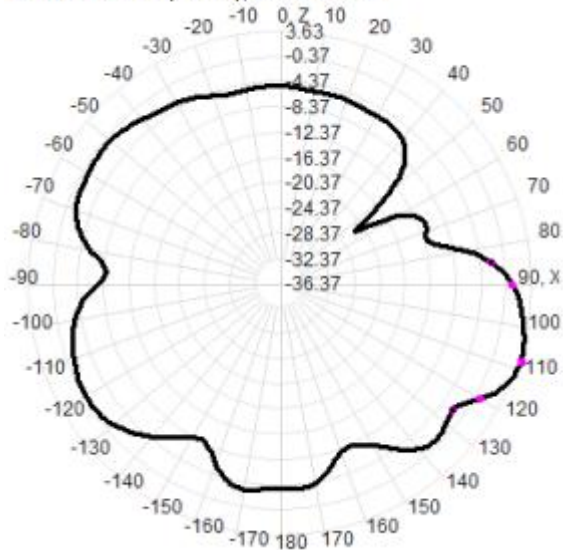
2210.0MHz H+V, Eff: 51.8%



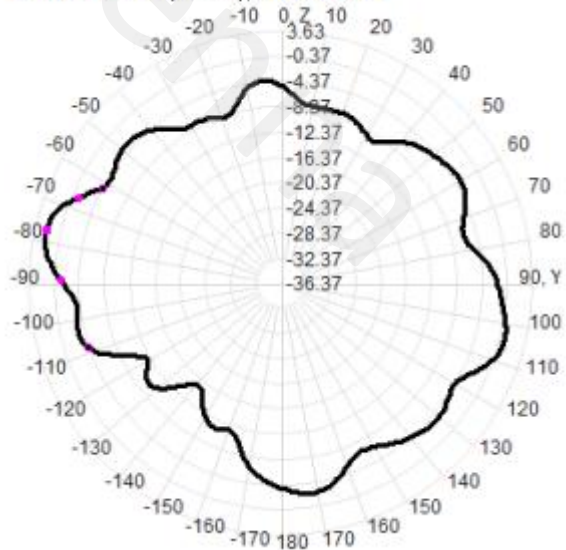
Back View



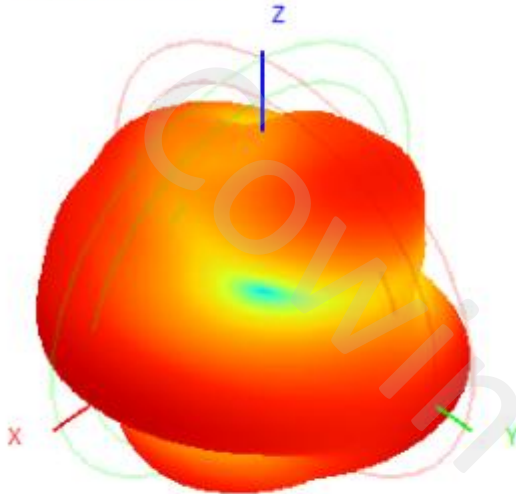
2210.0MHz Total(E1-XZ), Max= 3.63dBi



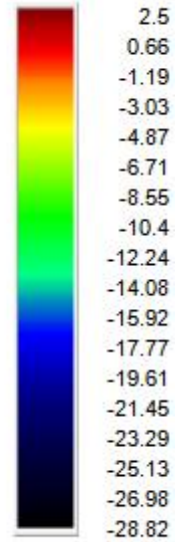
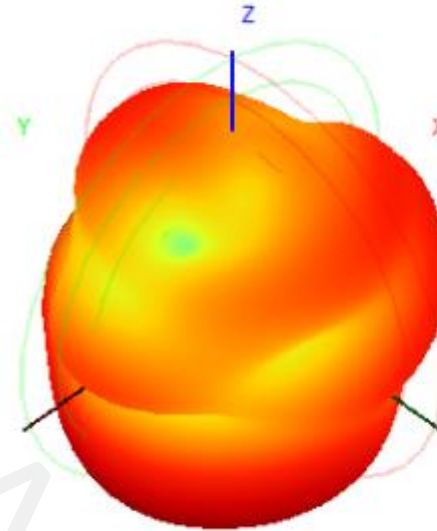
2210.0MHz Total(E2-YZ), Max= 1.81dBi



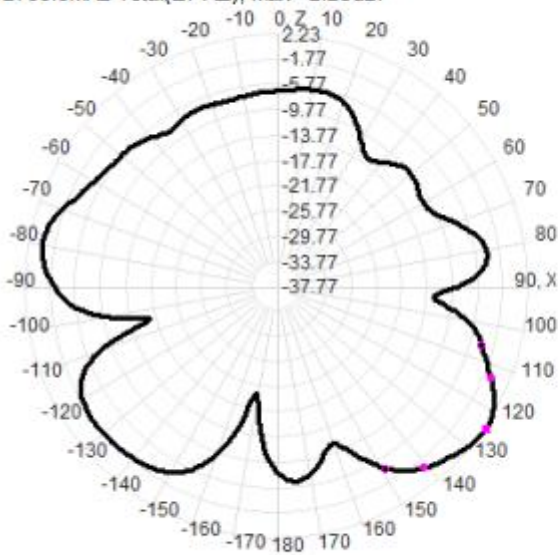
2700.0MHz H+V, Eff: 39.4%



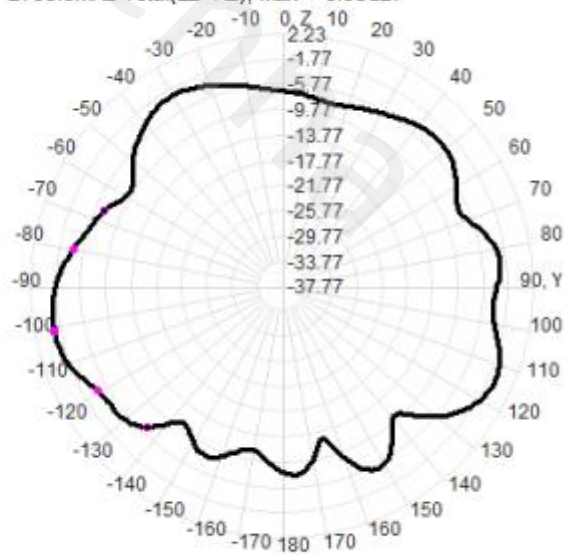
Back View



2700.0MHz Total(E1-XZ), Max= 2.23dBi

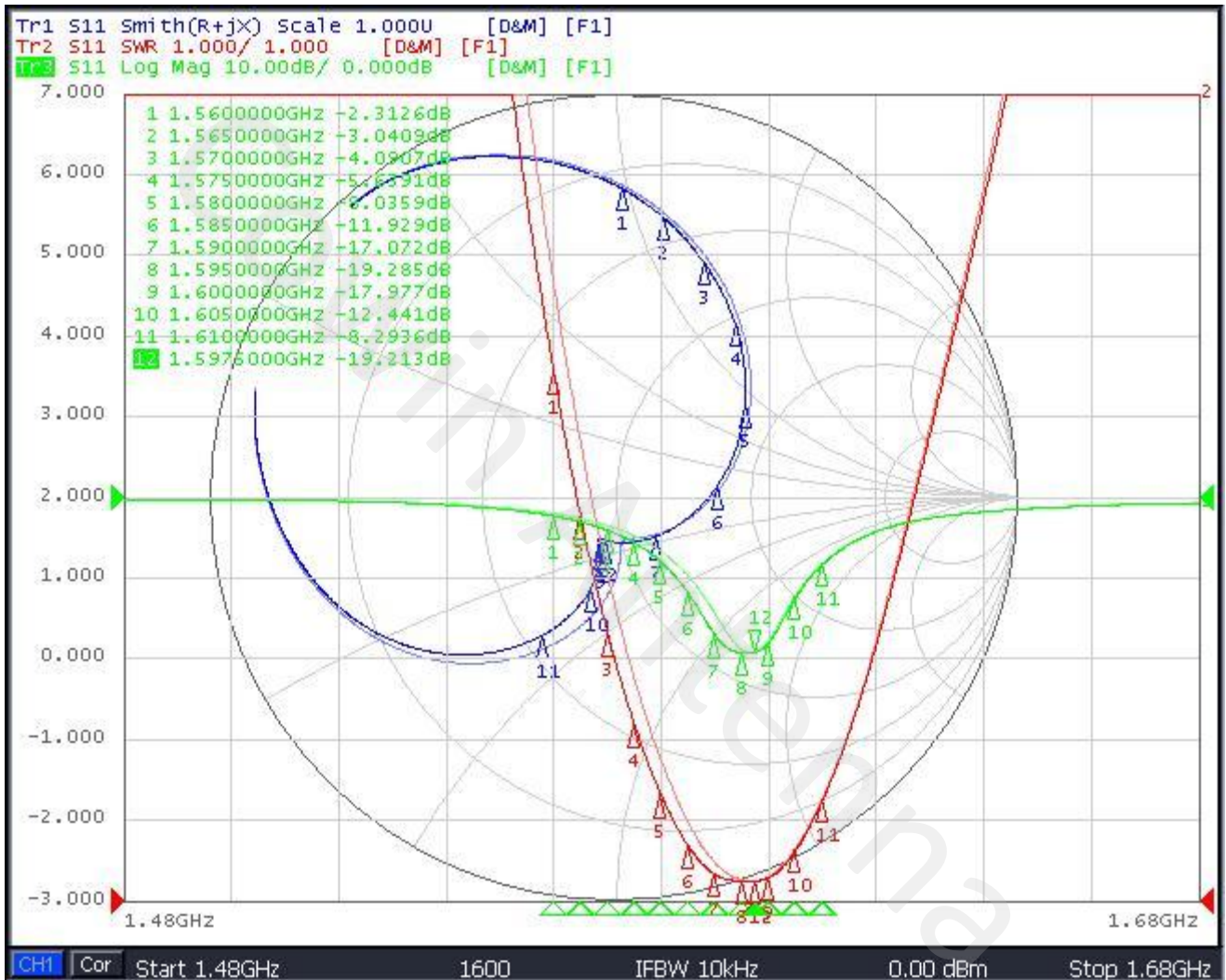


2700.0MHz Total(E2-YZ), Max= -0.95dBi

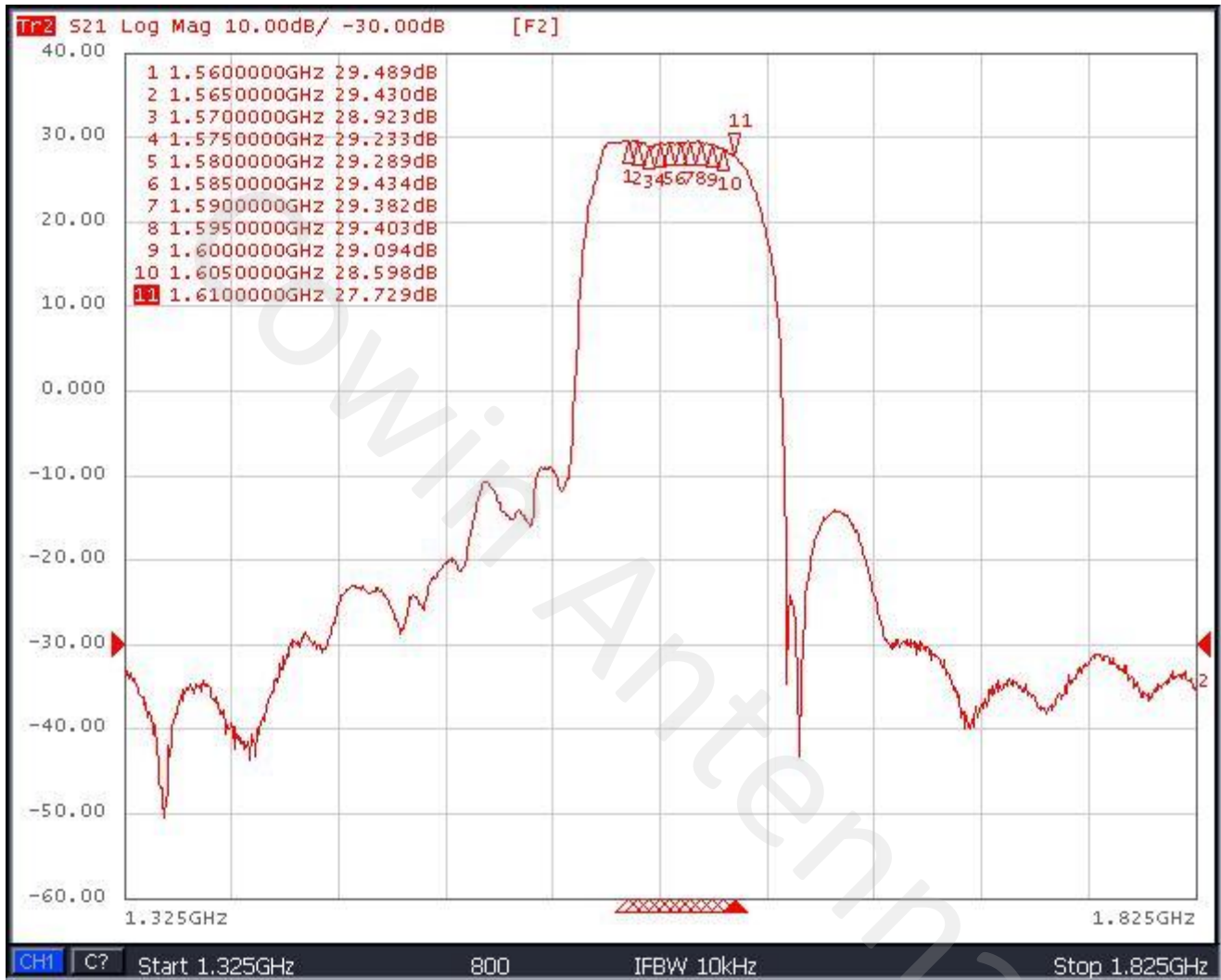


## 4.2 GPS (Active Antenna)

### 4.2.1 VSWR

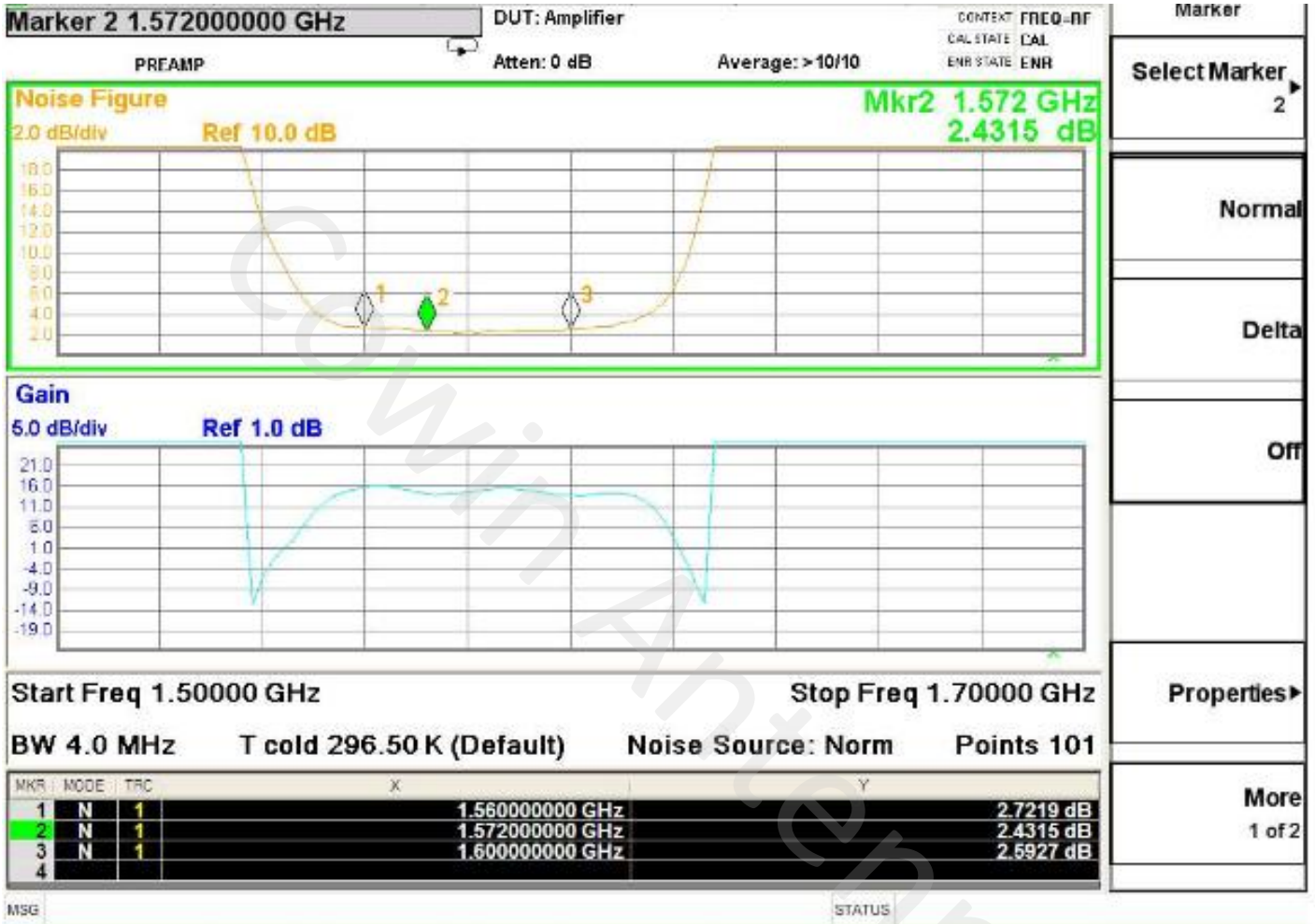


## 4.2.2 LNA Gain (dBi)





### 4.2.3 Noise figure @ 3.0V





## 4.2.4 Search GPS signal test(Place outside the window)

