

## CW-ZH-0014

### 4G/GPS External Combo Antenna

#### Key Features

Frequency: 698-960/1710-2700&1560-1610MHz

SMA Connector

Screw Mount

Dimensions: 50\*48mm



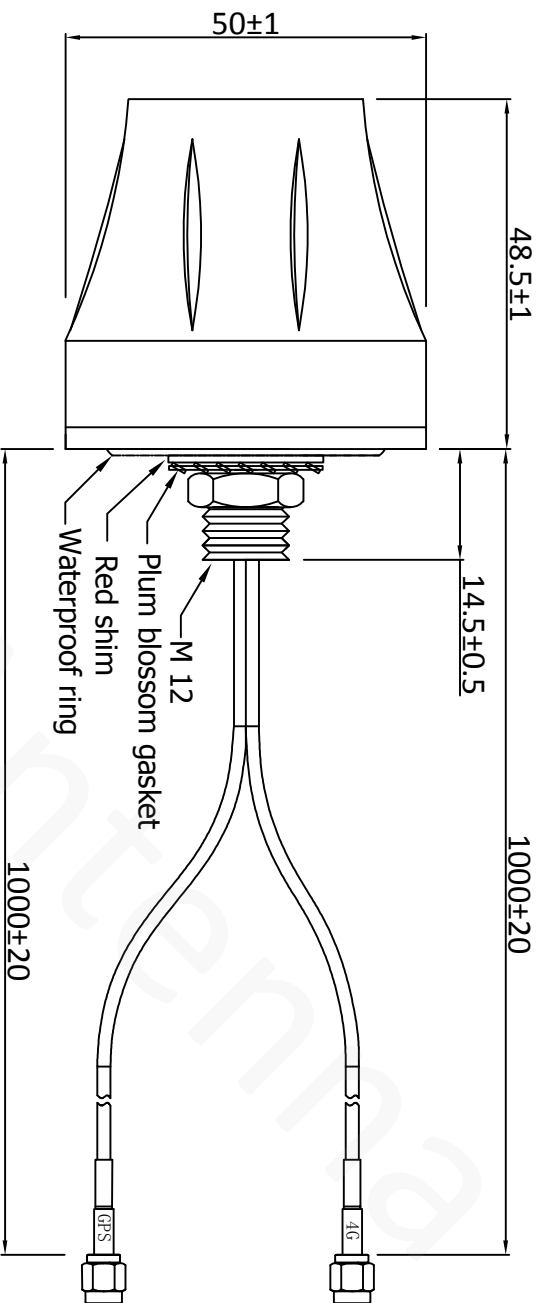
## 1. Antenna Electrical Characteristics

4G	
Band (MHz)	
Frequency (MHz)	698-960/1710-2700MHz
VSWR	≤2.0
Efficiency (%)	62.13%/70.39%
Peak Gain (dBi)	4.2/5.09
Impedance (Ohm)	50
Polarisation	Vertical
Max. Input Power (W)	10
Connector Type	SMA
GPS	
Band (MHz)	
Frequency (MHz)	1560-1610MHz
VSWR	2:1
Efficiency (%)	21.1%
Peak Gain (dBi)	2.48
LNA Specification	
Gain(dbi)	28
NF(db)	2.59
Impedance (Ohm)	50
Polarisation	RHCP
Max. Input Power (W)	2.5-5
Connector Type	SMA

## 2. Material and environmental characteristics

4G	
External structure	ABS
Inner structure	PCB+Copper Wire
Cable Type	RG174
Connector Type	SMA
Dimensions (mm)	50*48MM
Antenna color	Black
Operation Temperature(°)	-40 to +80
Storage Temperature(°)	-40 to +80
Antenna Storage life(year)	10
Substance Compliance	ROHS
GPS	
External structure	ABS
Inner structure	PCB+Ceramics
Cable Type	RG174
Connector Type	SMA
Dimensions (mm)	50*48mm
Antenna color	Black
Operation Temperature	-40 to +80
Storage Temperature	-40 to +80
Antenna Storage life(year)	10
Substance Compliance	ROHS

REV	Date	Description
X1	2024/01/22	New issue



Specification(Free Test):  
 Frequency Range: 698-960MHz/1710-2700MHz  
 Impedance:  $50\Omega$   
 V.S.W.R:  $\leq 2.0$

Specification(Free Test):  
 Frequency Range: 1560MHz -1610MHz  
 Impedance:  $50\Omega$   
 V.S.W.R:  $\leq 2.0$

100% Continuity,short and open circuit test  
 Materials,parts and process must by environmentally (ROHS)

13	Waterproof ring	Silica gel	1	
12	Plum blossom gasket	Brass	1	Nickel plating
11	Shim	Red shim	1	
10	Nut	Brass	1	Nickel plating
9	Stud	Brass	1	Nickel plating
8	Lower cover	Black ABS	1	
7	Shell	Black ABS	1	
6	Tube	$\phi 4.0$ mm ordinary White	2	
5	Cable	RG174	2	
4	Ceramic antenna	25*25*4MM	1	
3	PCB+Signal Tube	FR4+Copper Wire	1	
2	Connector 2(GPS)	SMA Male Brass	1	Gold-plating
1	Connector 1(4G)	SMA Male Brass	1	Gold-plating
NO	Name	Description	QTY	Remark
XX.	$\pm 5.0$	Approved		
X.	$\pm 3.0$			
.X	$\pm 1.0$	Checked		
.XX	$\pm 0.2$			
.XXX	$\pm 0.1$			
		Drawing		
		REV	Unit	File
		X1	m/m	Sheet :
				1/1

## 4. Antenna test parameters

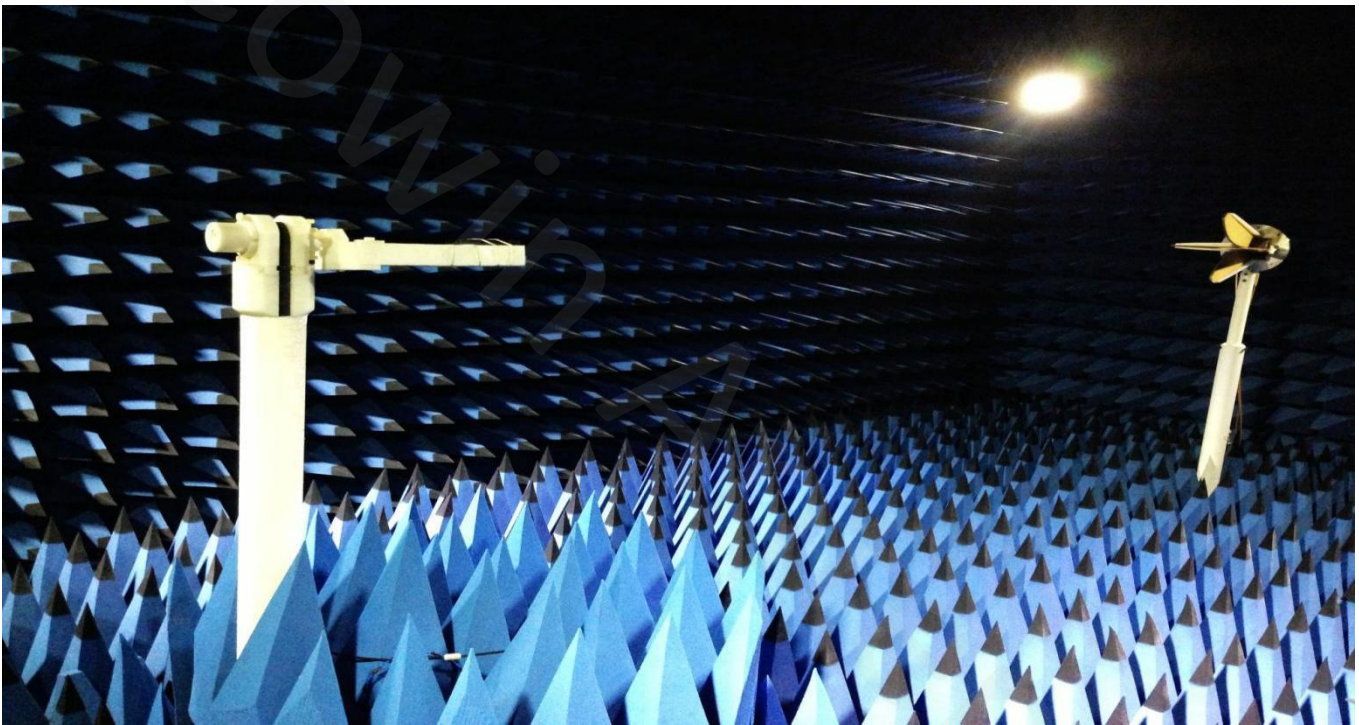
### Antenna Measurement Conditions:

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

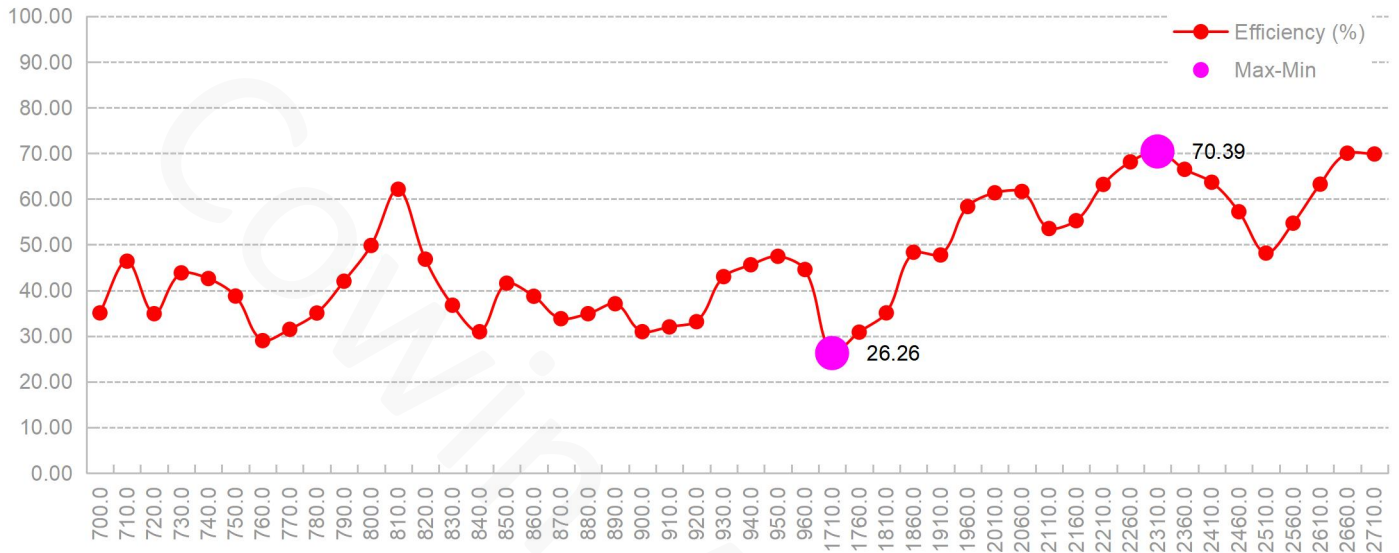
### 4.1.1 VSWR



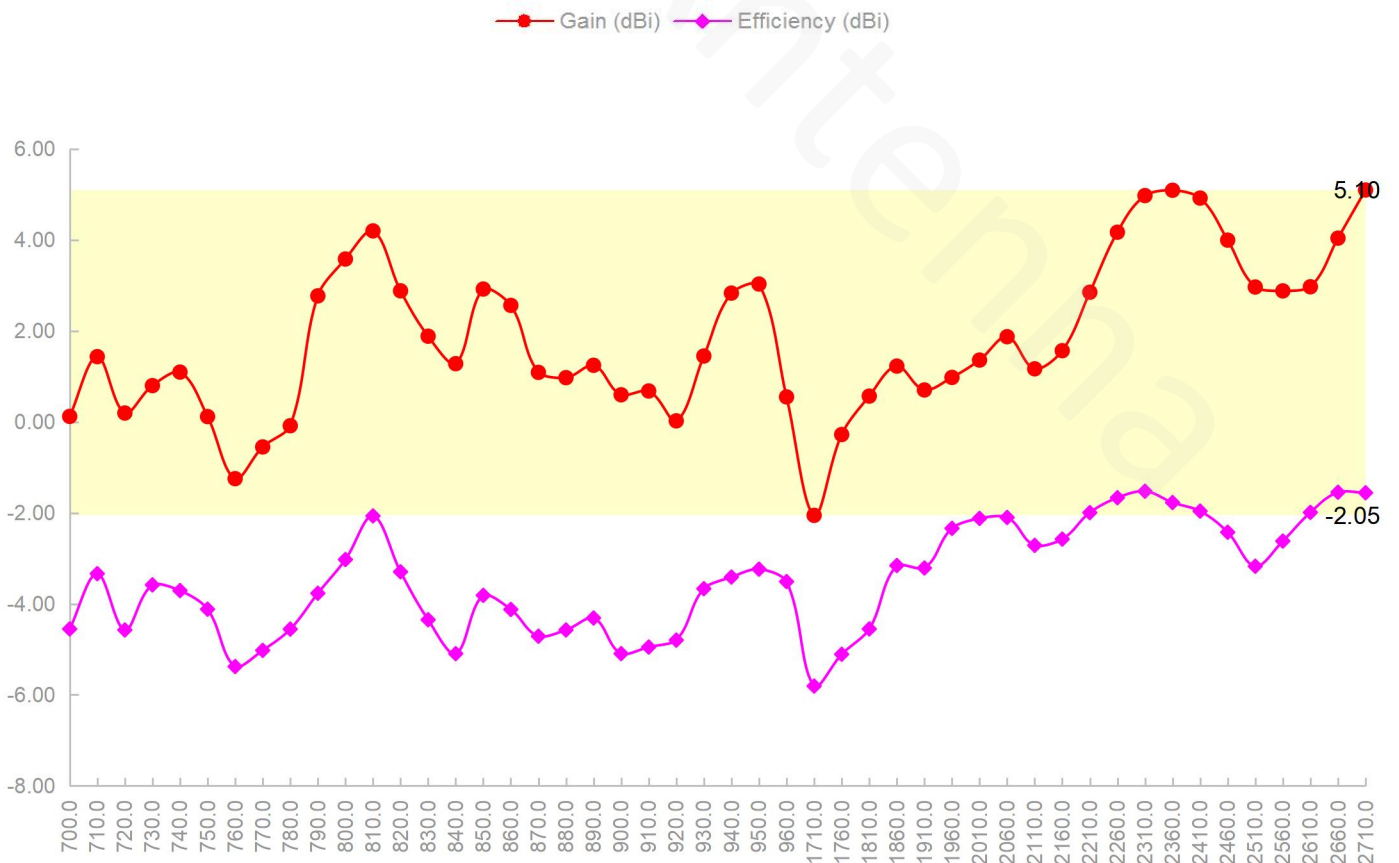
1/19/2024, 12:52 PM



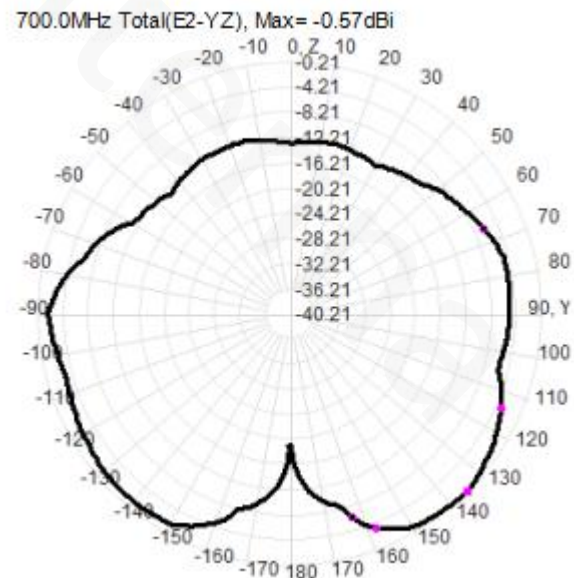
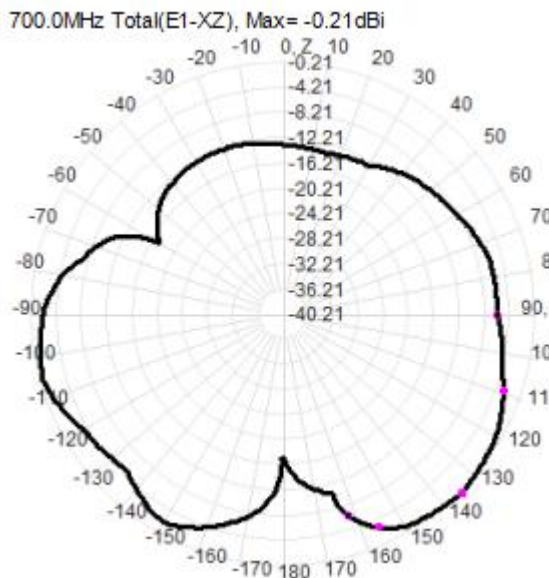
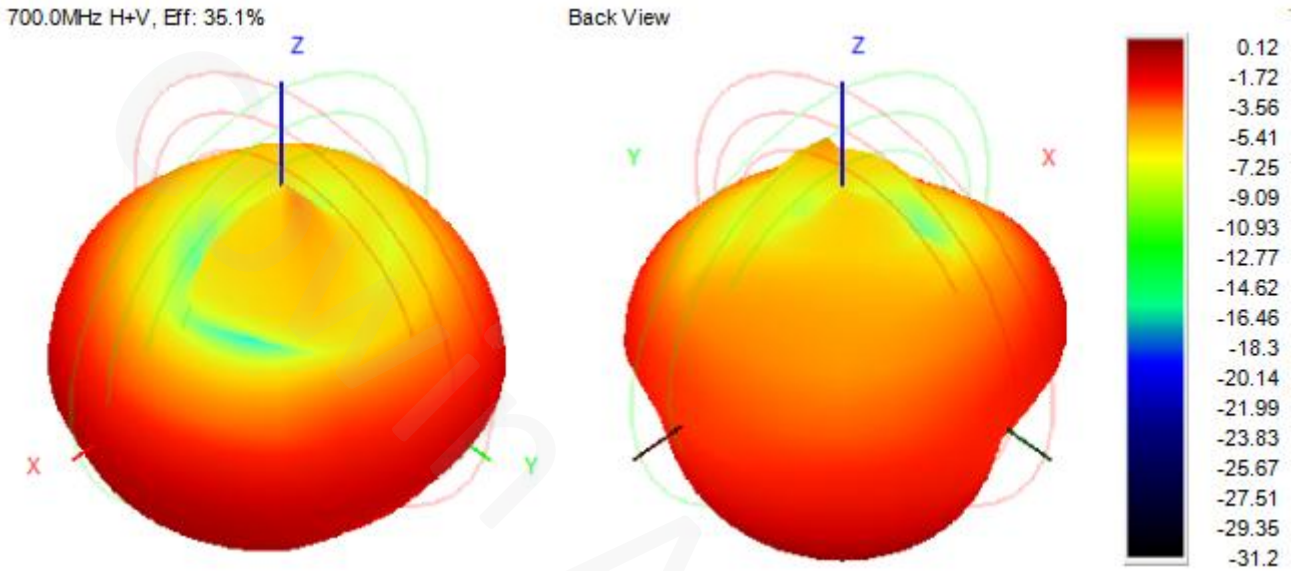
### 4.1.2 Efficiency



### 4.1.3 Peak gain

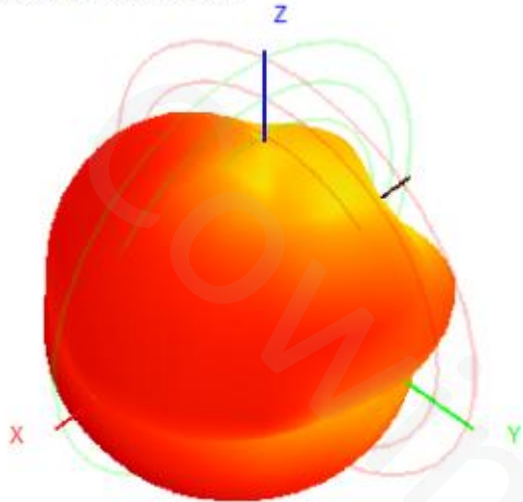


## 4.1.4 3D&2D Radiation Patterns

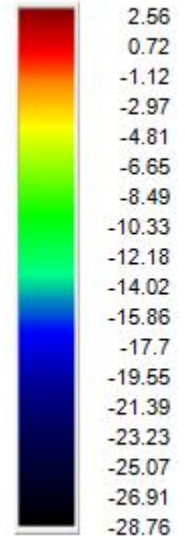
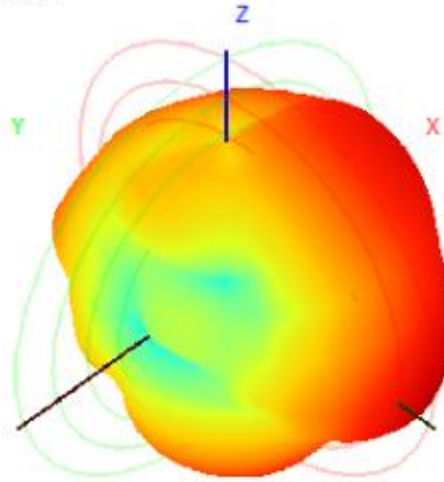




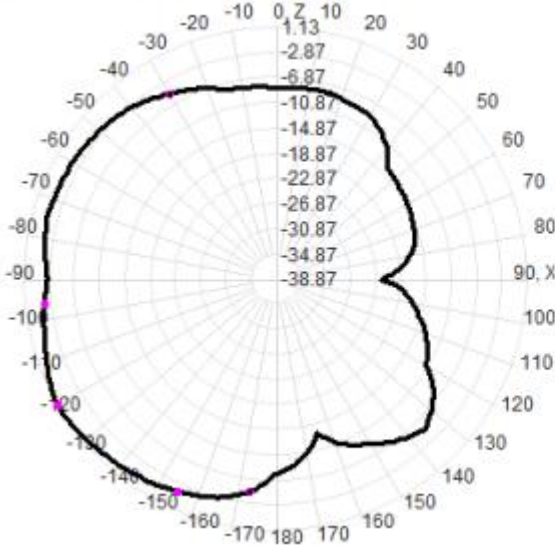
860.0MHz H+V, Eff: 38.7%



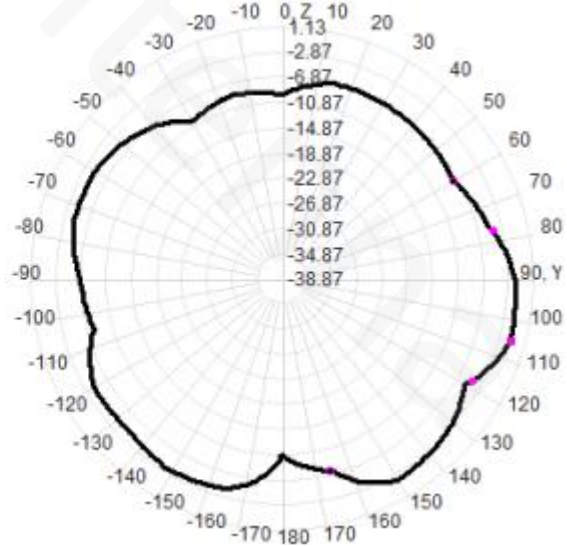
Back View



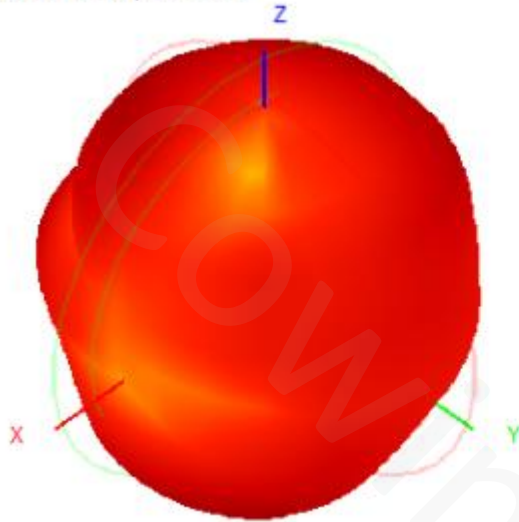
860.0MHz Total(E1-XZ), Max= 1.13dBi



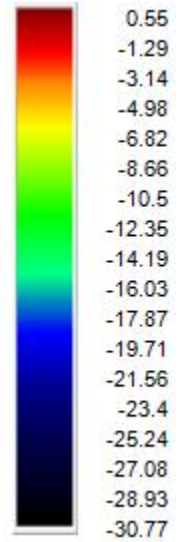
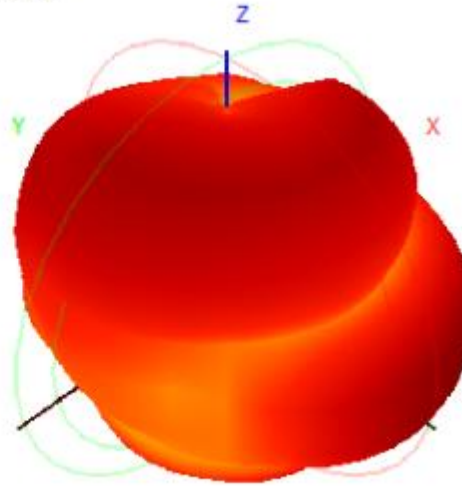
860.0MHz Total(E2-YZ), Max= -1.49dBi



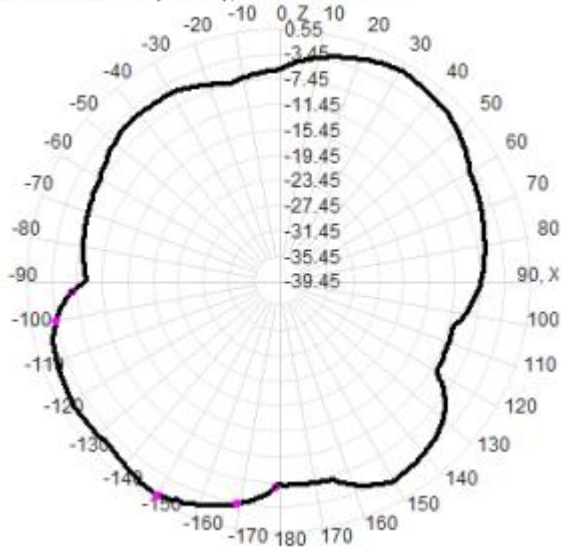
960.0MHz H+V, Eff: 44.6%



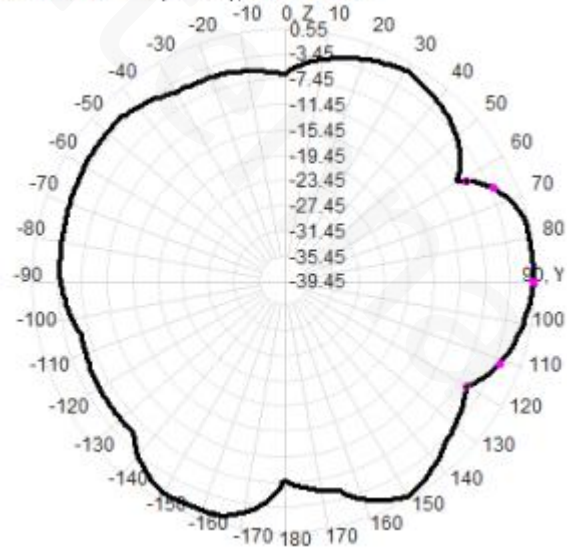
Back View



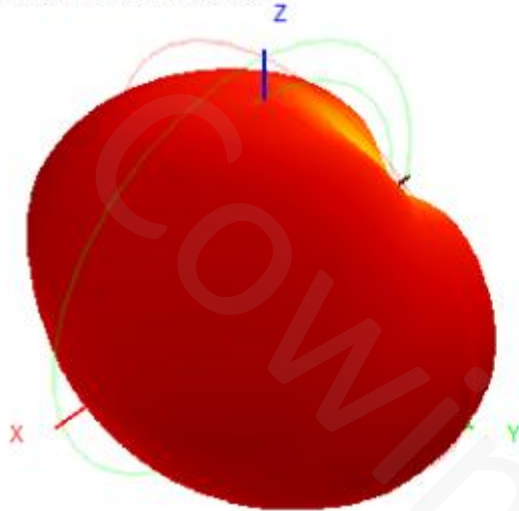
960.0MHz Total(E1-XZ), Max=-0.49dBi



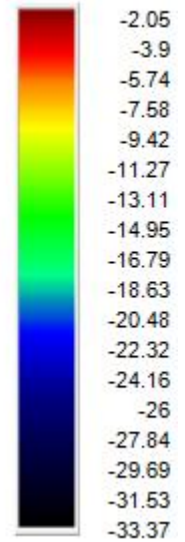
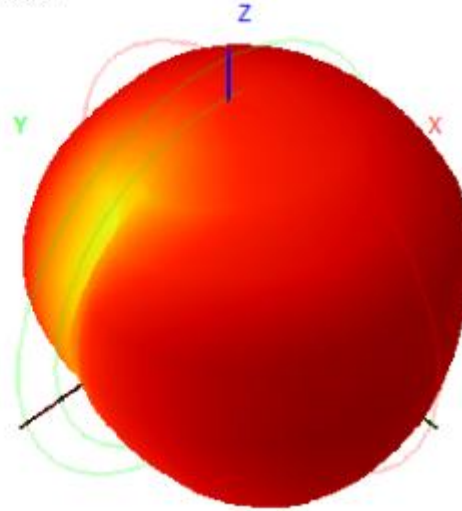
960.0MHz Total(E2-YZ), Max=0.01dBi



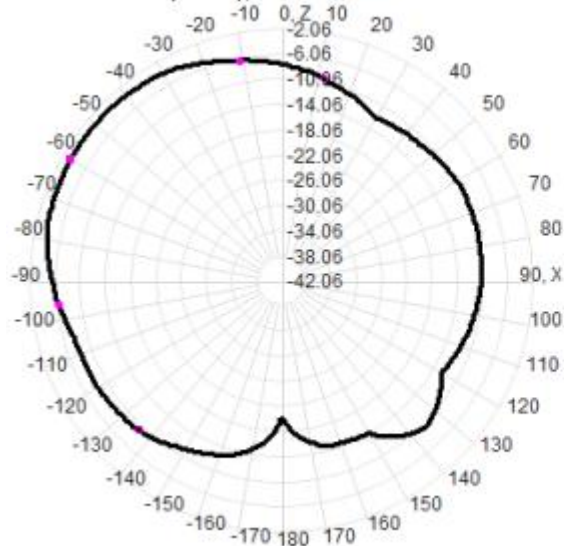
1710.0MHz H+V, Eff: 26.3%



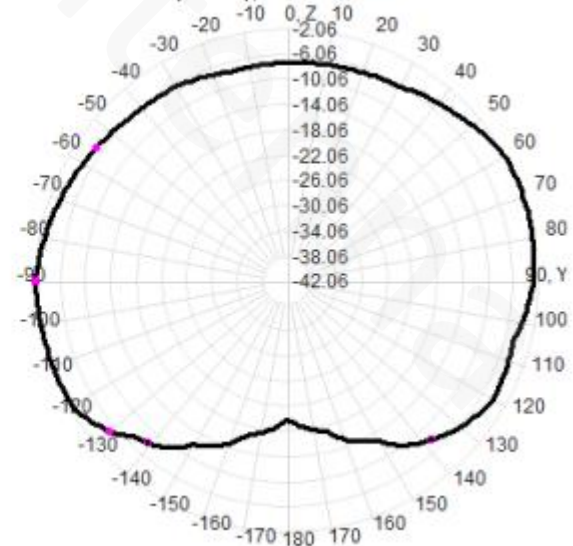
Back View



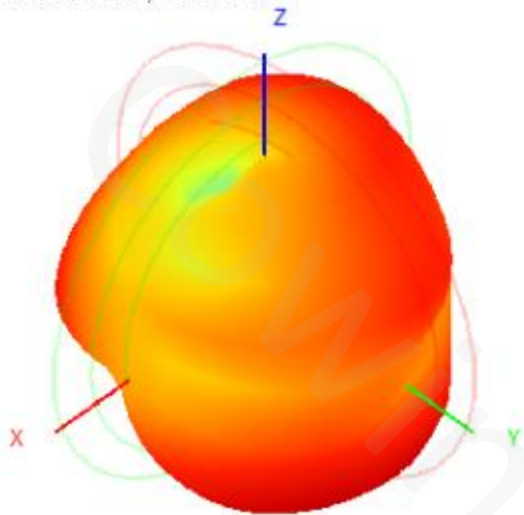
1710.0MHz Total(E1-XZ), Max= -3.33dBi



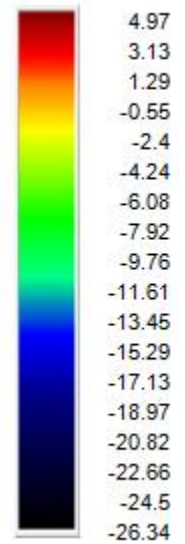
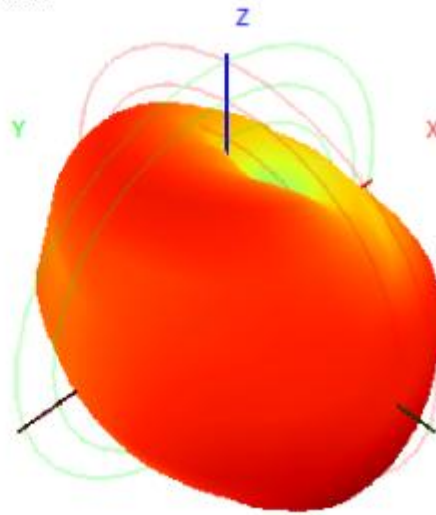
1710.0MHz Total(E2-YZ), Max= -2.16dBi



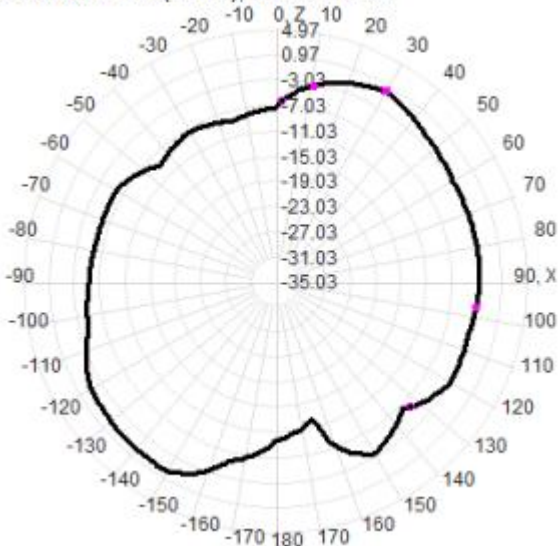
2310.0MHz H+V, Eff: 70.4%



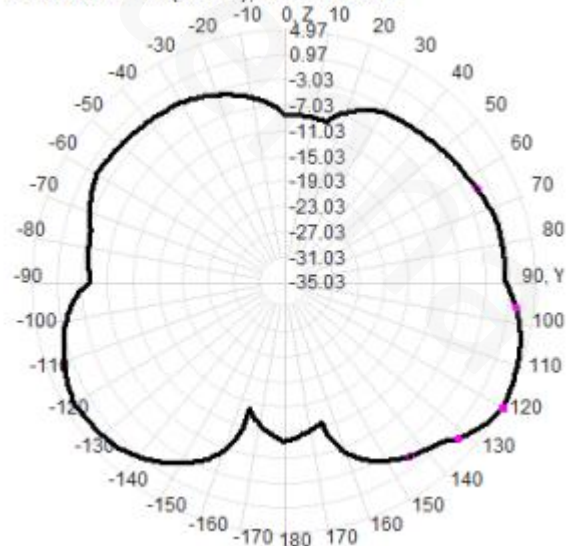
Back View



2310.0MHz Total(E1-XZ), Max= -0.12dBi

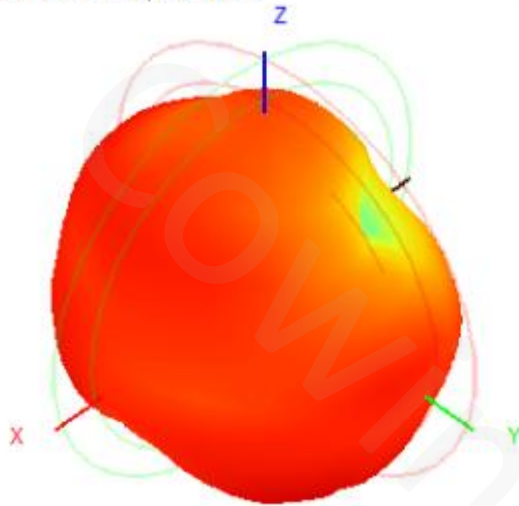


2310.0MHz Total(E2-YZ), Max= 4.97dBi

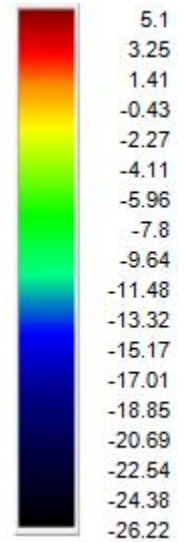
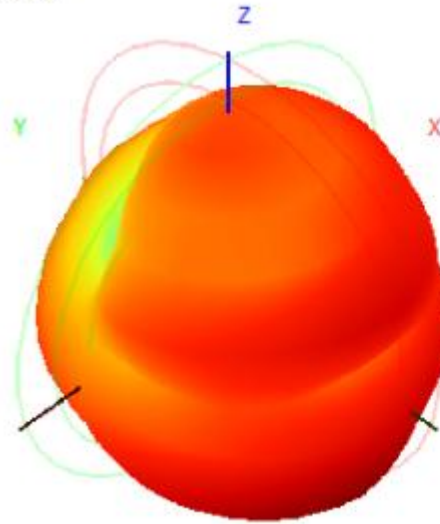




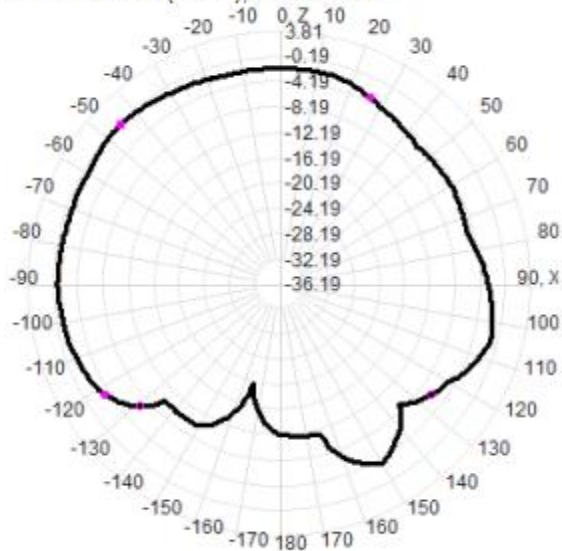
2710.0MHz H+V, Eff: 69.8%



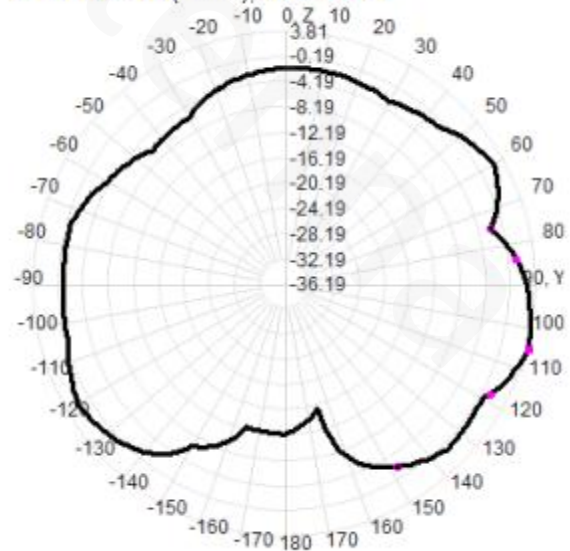
Back View



2710.0MHz Total(E1-XZ), Max= -0.41dBi

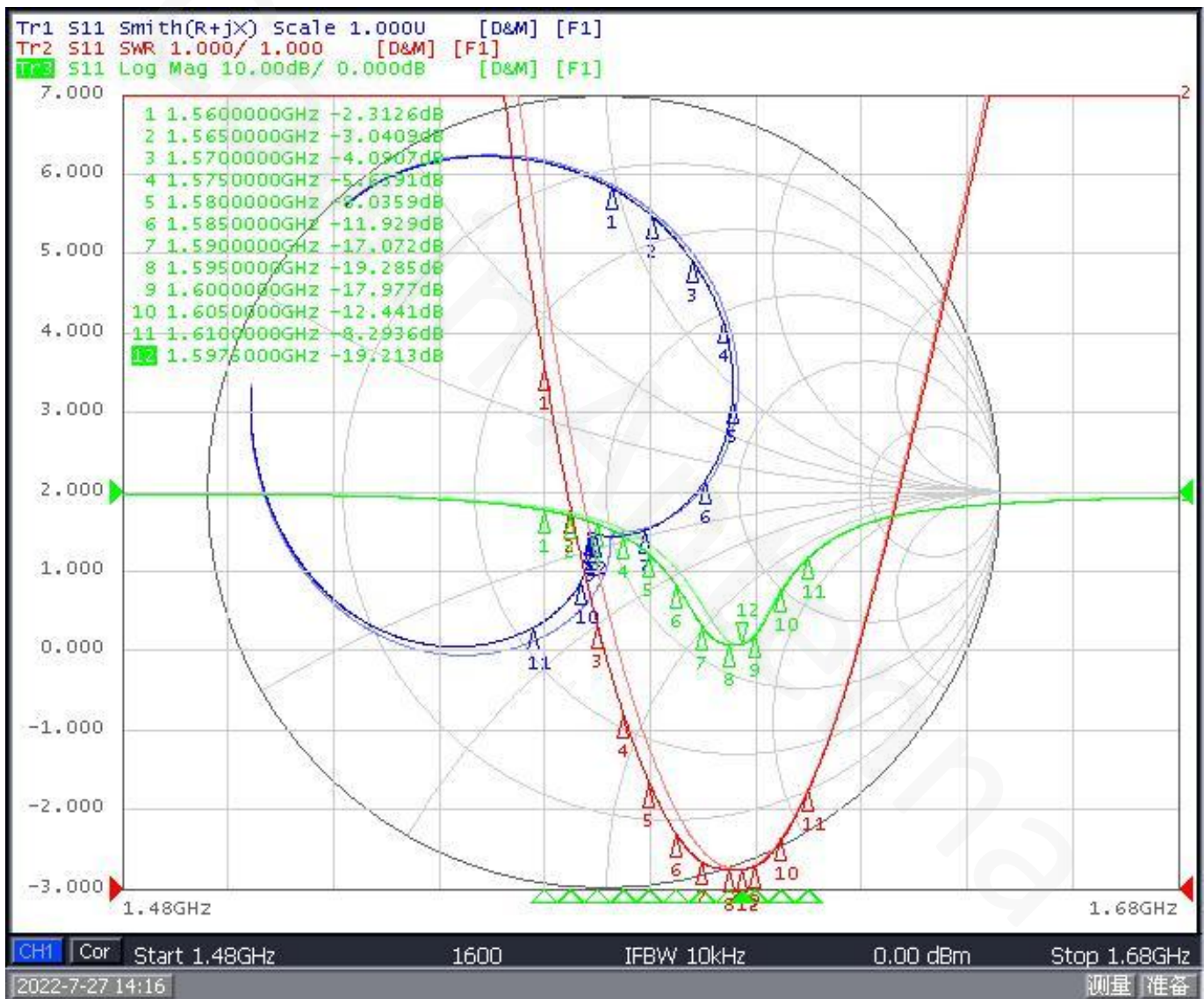


2710.0MHz Total(E2-YZ), Max= 3.81dBi



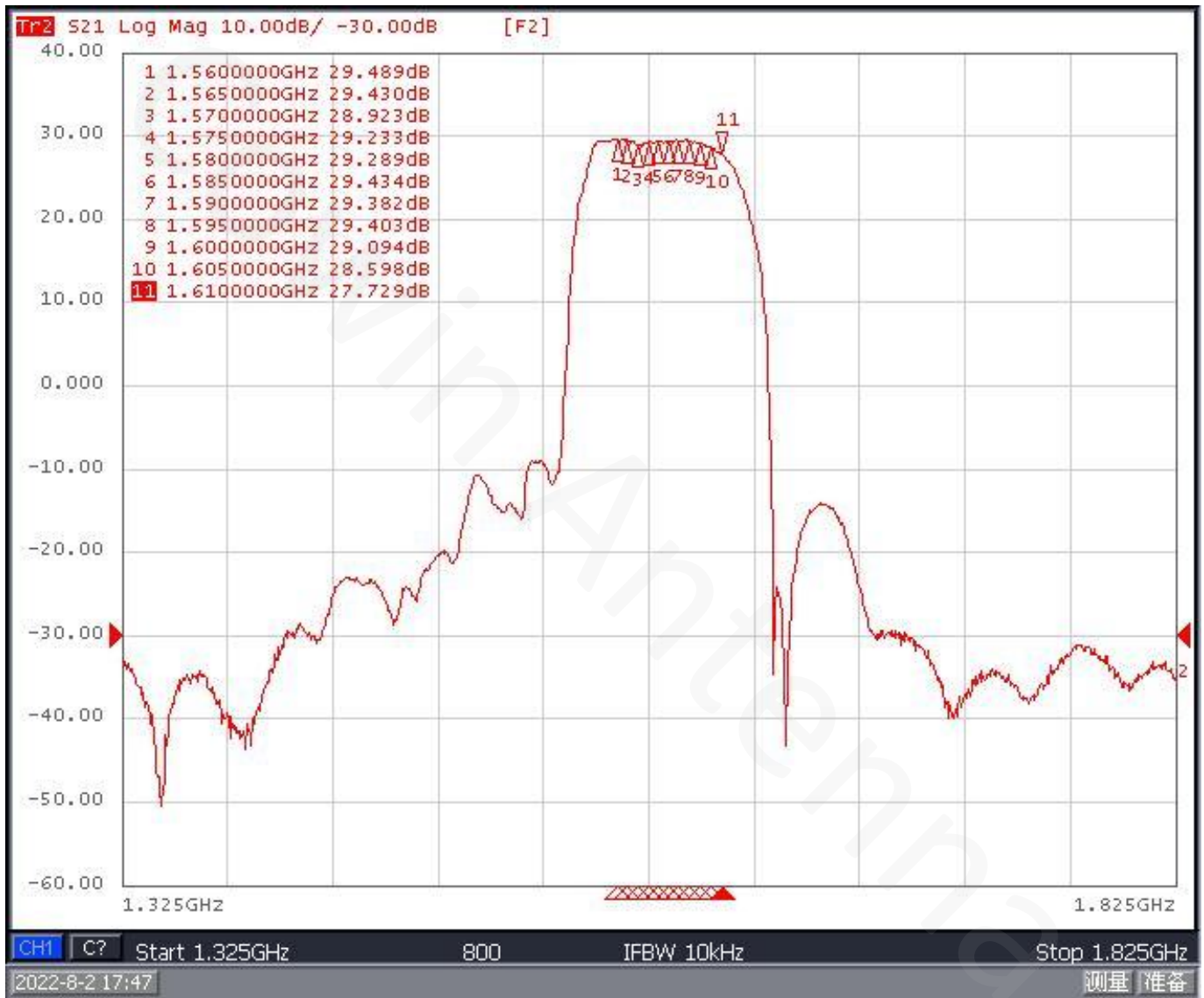
## 4.2 GPS

### 4.2.1 VSWR

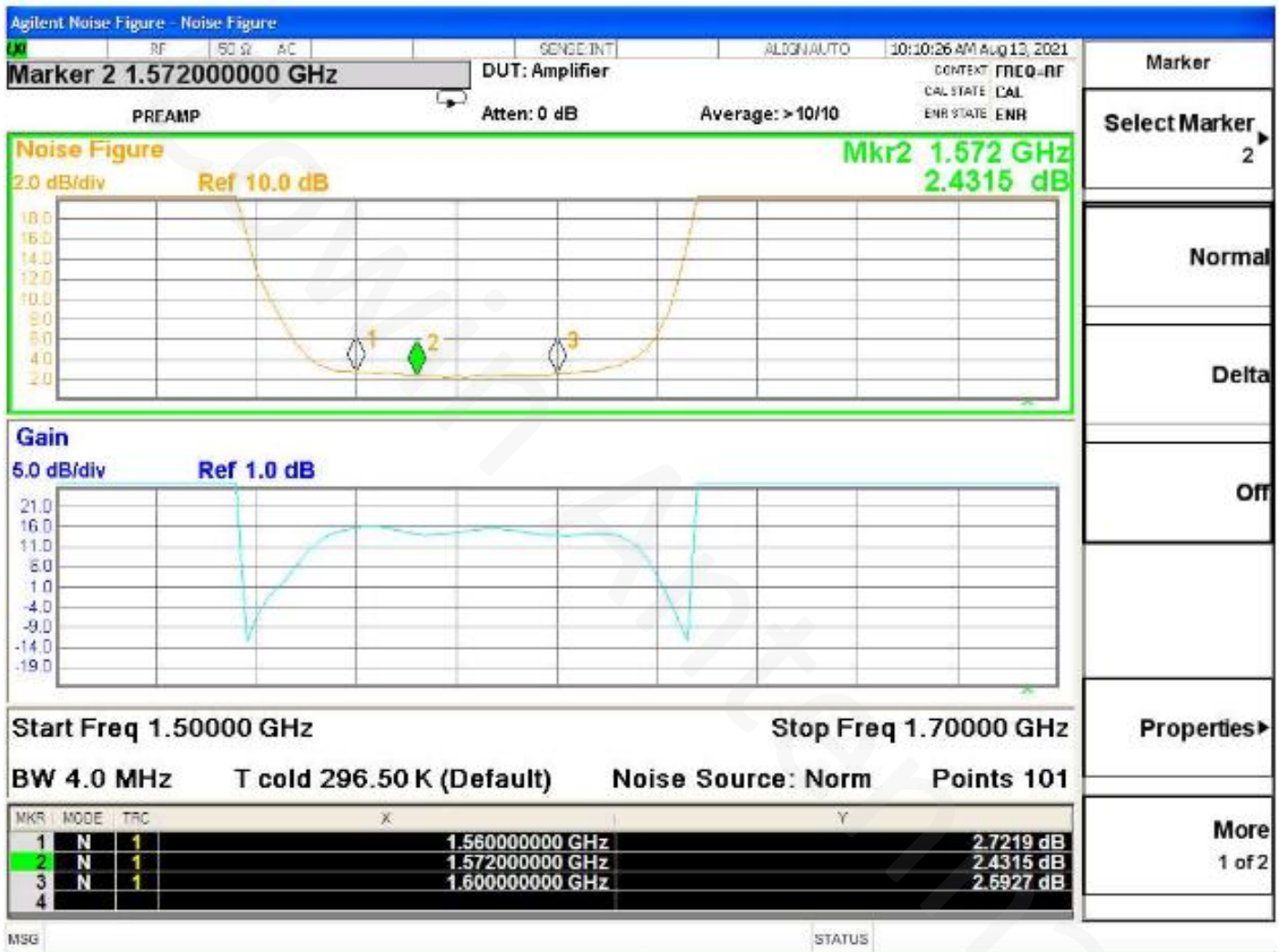




## 4.2.2 LNA Gain (dBi)



### 4.2.3 Noise figure @ 3.0V



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

