

Antenna

YB0022AA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
-	2021-07-13	Kenny YIN/ Aria CHU	Creation of the document
1.0	2021-07-13	Kenny YIN/ Aria CHU	First official release

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1 Product Description

The antenna is designed for superior performance, and can be widely used for wireless applications.

We provide comprehensive antenna design support such as simulation, testing and manufacturing for custom antenna solutions to meet your specific application needs.

2 Product Features

- Cellular LTE/Wi-Fi/GNSS
- High efficiency
- Excellent performance

3 Product Specifications

LTE/ Wi-Fi Electrical Specifications

Frequency Range	LTE: 700–2700 MHz Wi-Fi: 2400–5850 MHz
Input Impedence	50 Ω
VSWR	4G: ≤ 3.0 4G DIV: ≤ 4.0 Wi-Fi: ≤ 2.0
Gain	4G: ≤ 2.5 dBi 4G DIV: ≤ 2.5 dBi Wi-Fi: ≤ 3.0 dBi
Polarization Type	Linear

GNSS Antenna Electrical Specifications

Frequency Range	1561 MHz/1575.42 MHz/1602 MHz
Working Voltage	3–5 V
Working Current	9 $\pm$ 3 mA @ 3 V
Gain	20 $\pm$ 3 dB
Noise Figure	≤ 2 dB
VSWR	≤ 2
Input Impedence	50 Ω
Polarization Type	Circular

Mechanical Specifications

Antenna Box Size	Φ 120 mm $\times$ 43 mm 1.5DS Cable Length = 1000 mm
Casing	KIBILAC® ASA
Connector Type	FME Female Connector
Working Temperature	-20 °C to +85 °C
Radome Color	Black
IP Rating	IP67
Mounting Type	Screw

4 Overall Performance

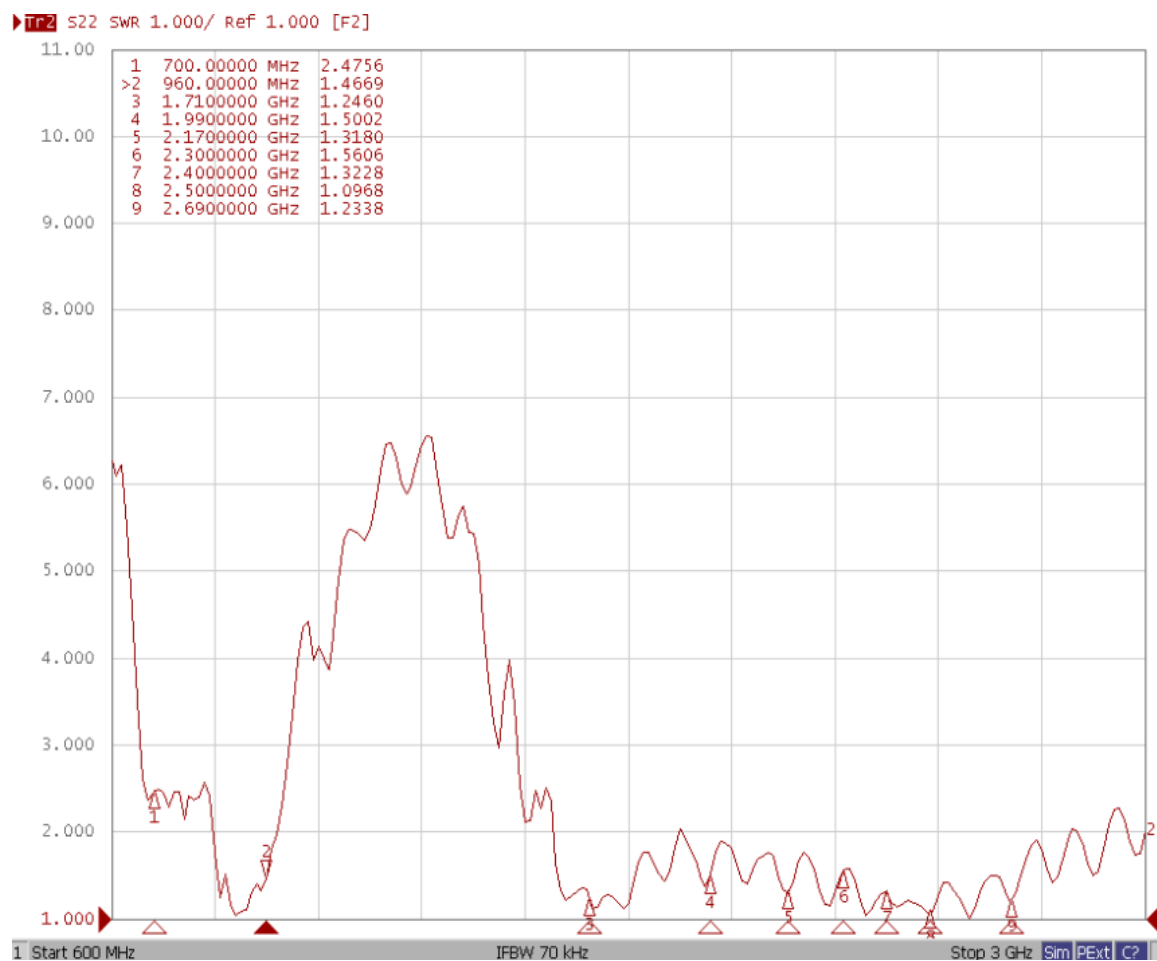
4.1. Test Environment

- 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

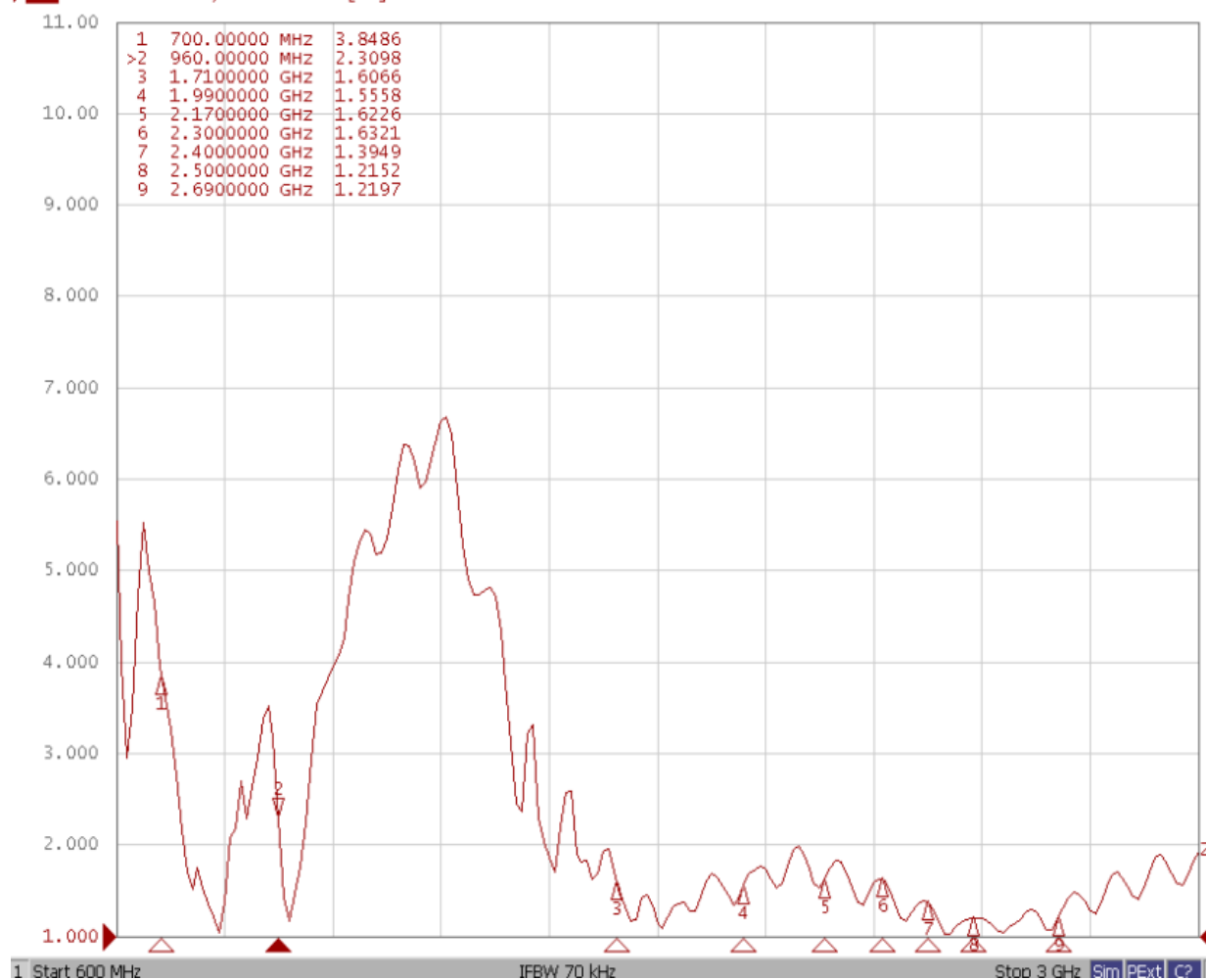
4.2.1. 4G Main Antenna



Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
VSWR	2.47	1.46	1.24	1.31	1.56	1.32	1.09	1.23

4.2.2. 4G Diversity Antenna

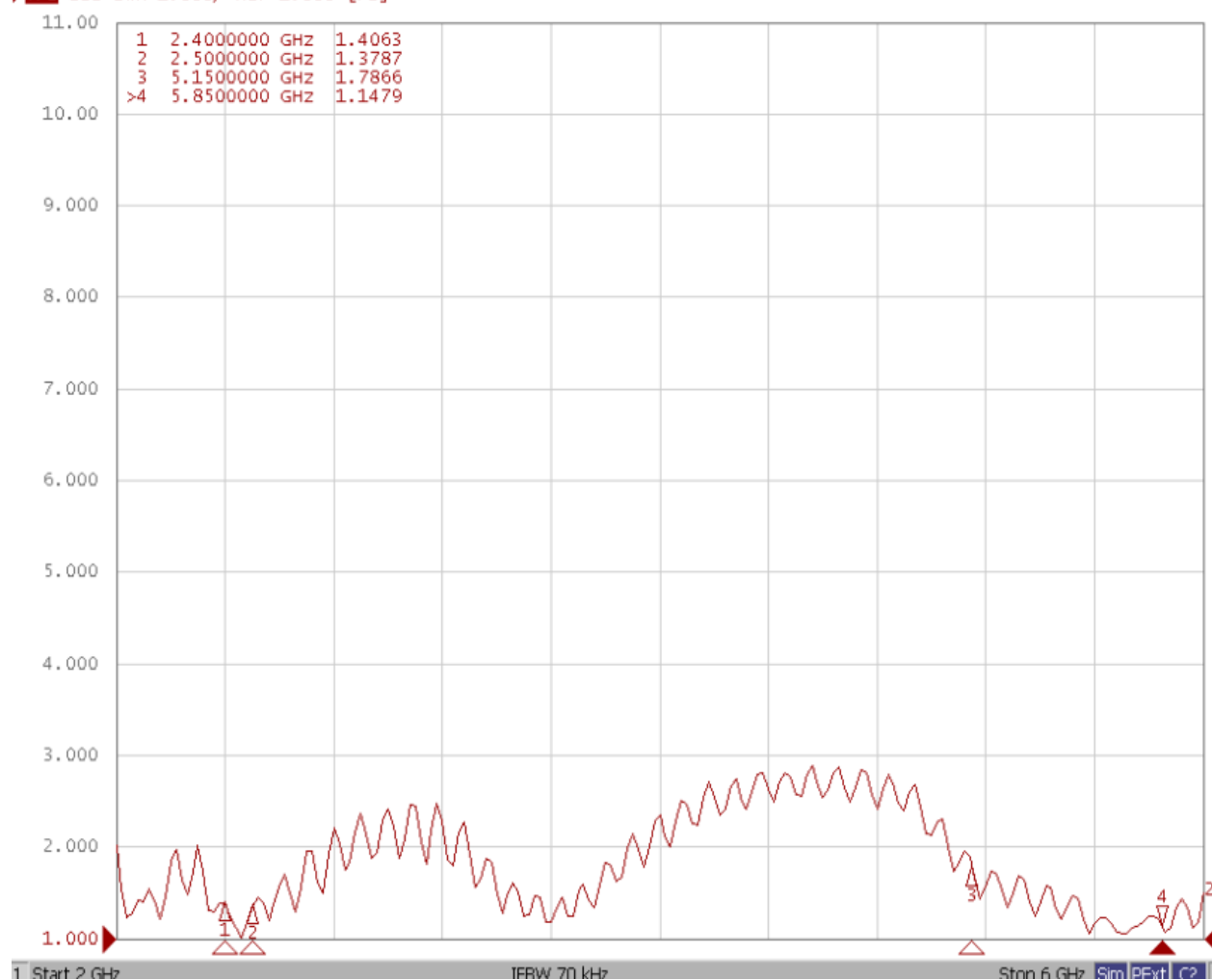
► **IT2** S22 SWR 1.000/ Ref 1.000 [F2]



Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
VSWR	3.84	2.30	1.60	1.62	1.63	1.39	1.21	1.21

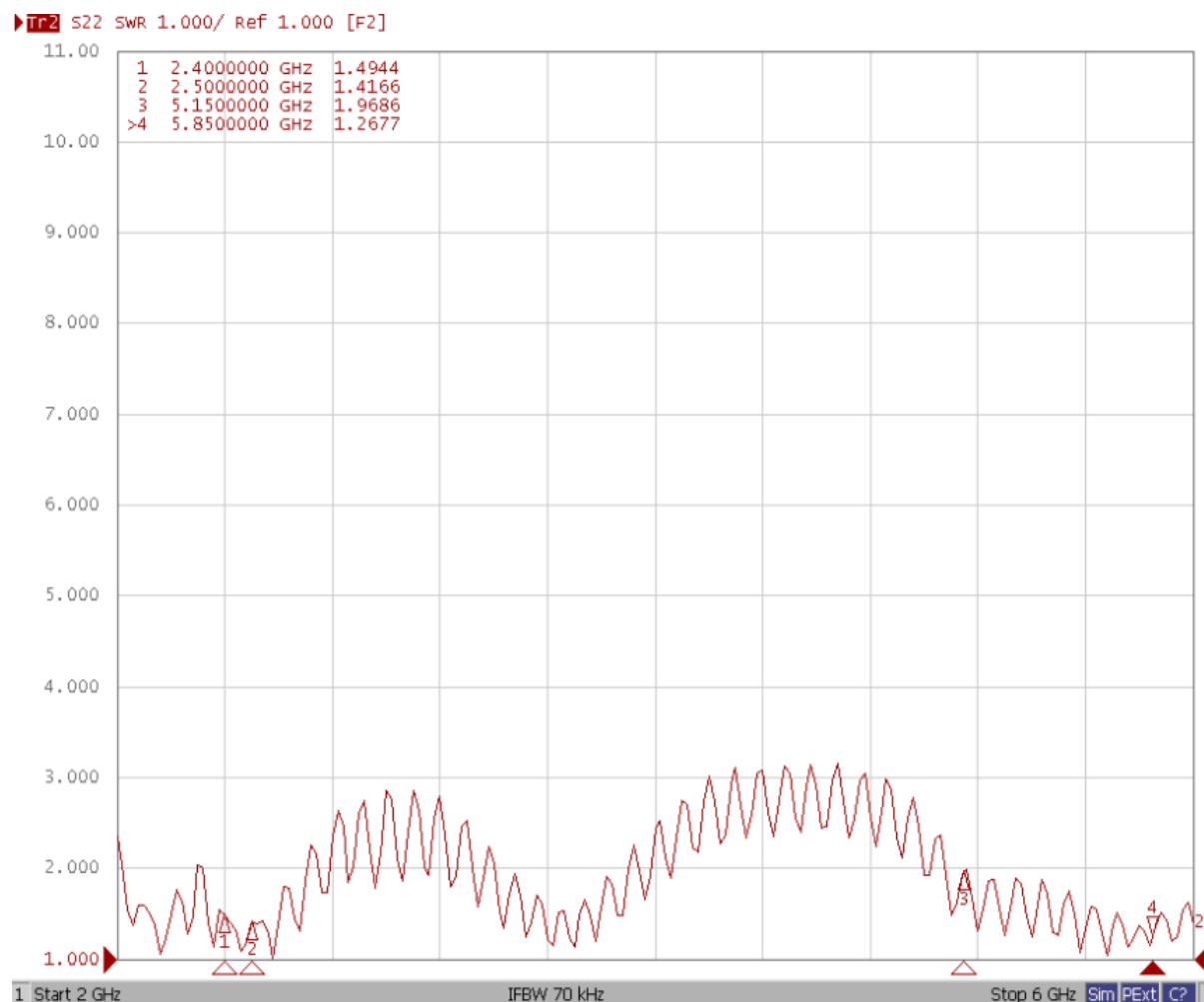
4.2.3. Wi-Fi-1

▶ **ir2** S22 SWR 1.000/ Ref 1.000 [F2]



Frequency (MHz)	2400	2500	5150	5850
VSWR	1.40	1.37	1.78	1.14

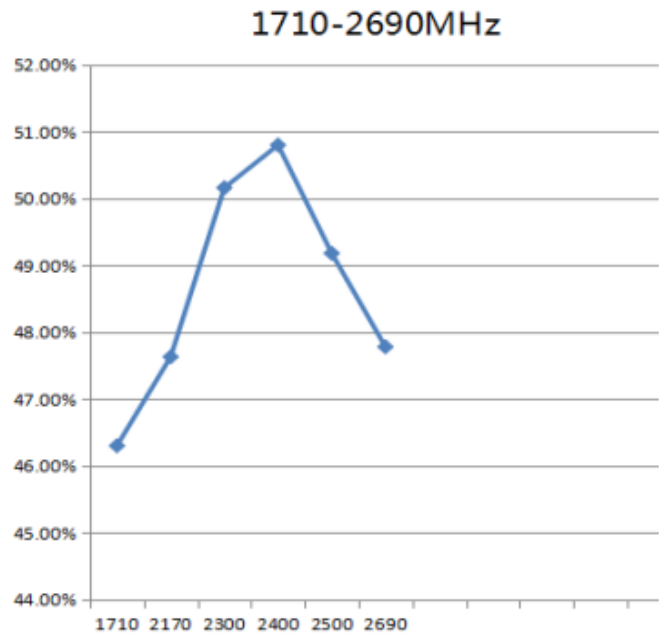
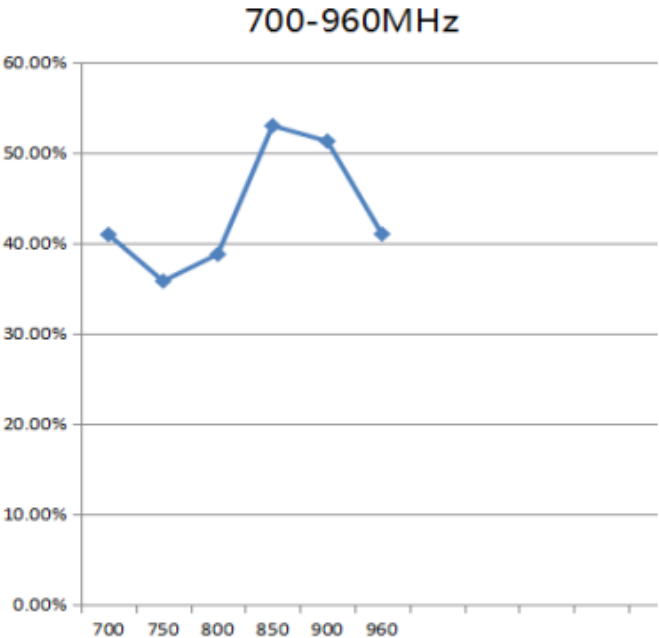
4.2.4. Wi-Fi-2



Frequency (MHz)	2400	2500	5150	5850
VSWR	1.49	1.41	1.96	1.26

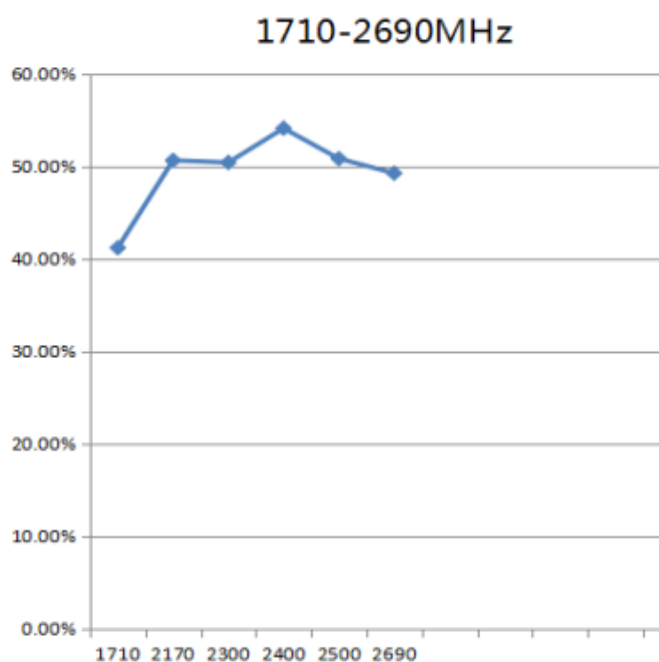
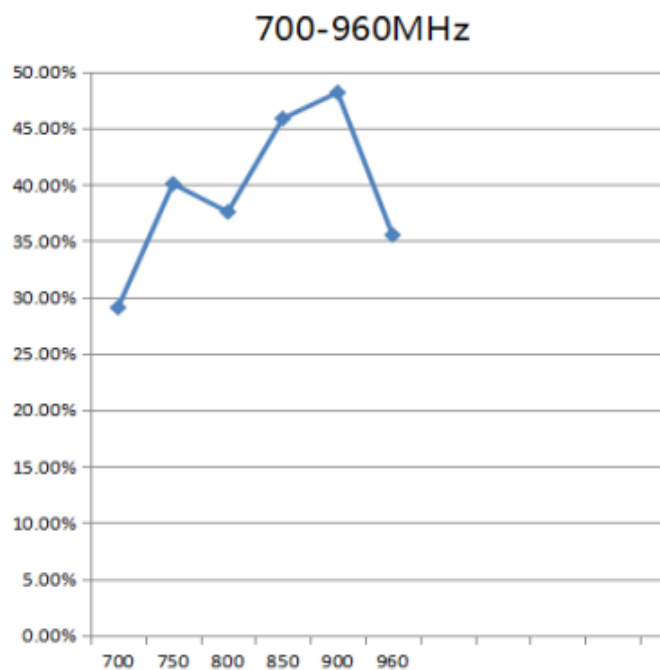
4.3. Efficiency

4.3.1. 4G Main Antenna

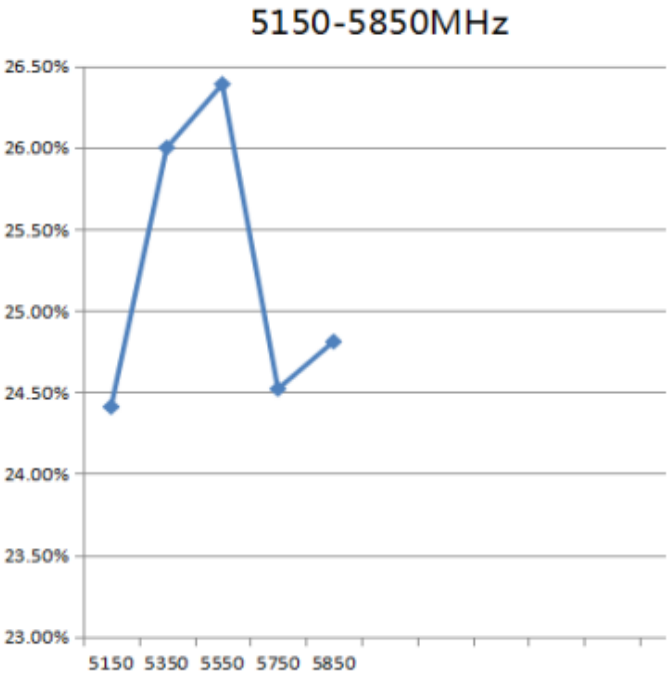
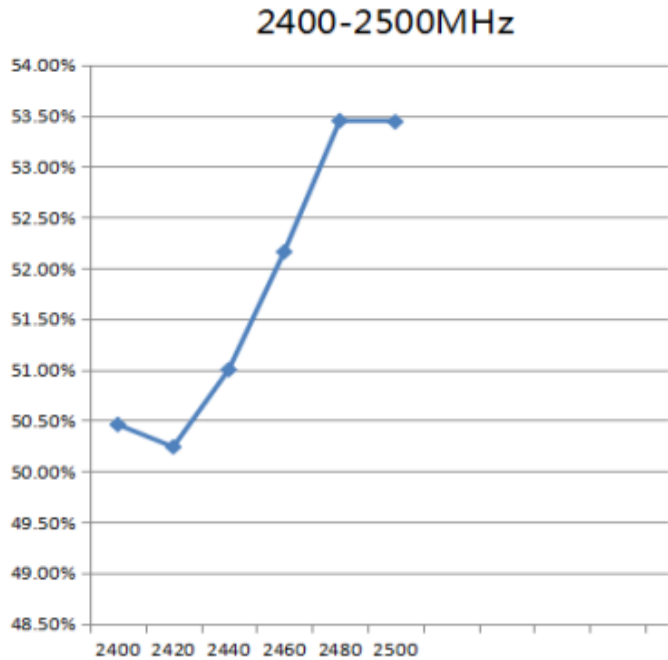


Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
Efficiency (%)	40.93	40.98	46.30	47.63	50.16	20.80	49.18	47.78

4.3.2. 4G Diversity Antenna

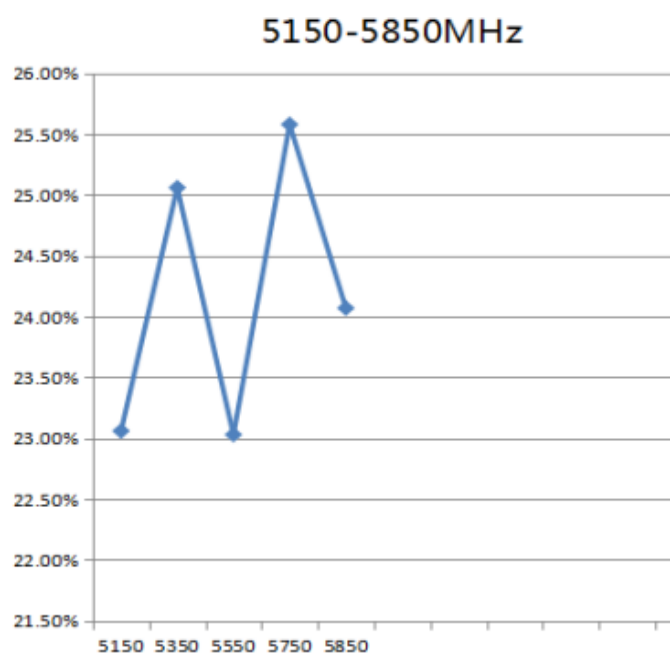
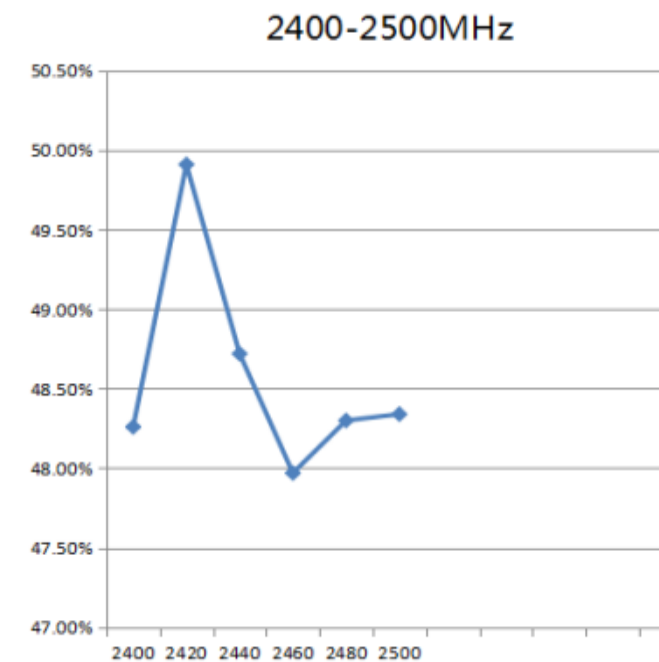


Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
Efficiency (%)	29.08	35.52	41.18	50.61	50.41	54.11	50.83	49.25

4.3.3. Wi-Fi-1

Frequency (MHz)	2400	2460	2500	5150	5350	5550	5750	5850
Efficiency (%)	50.46	52.16	53.44	24.41	26.00	26.39	24.52	24.81

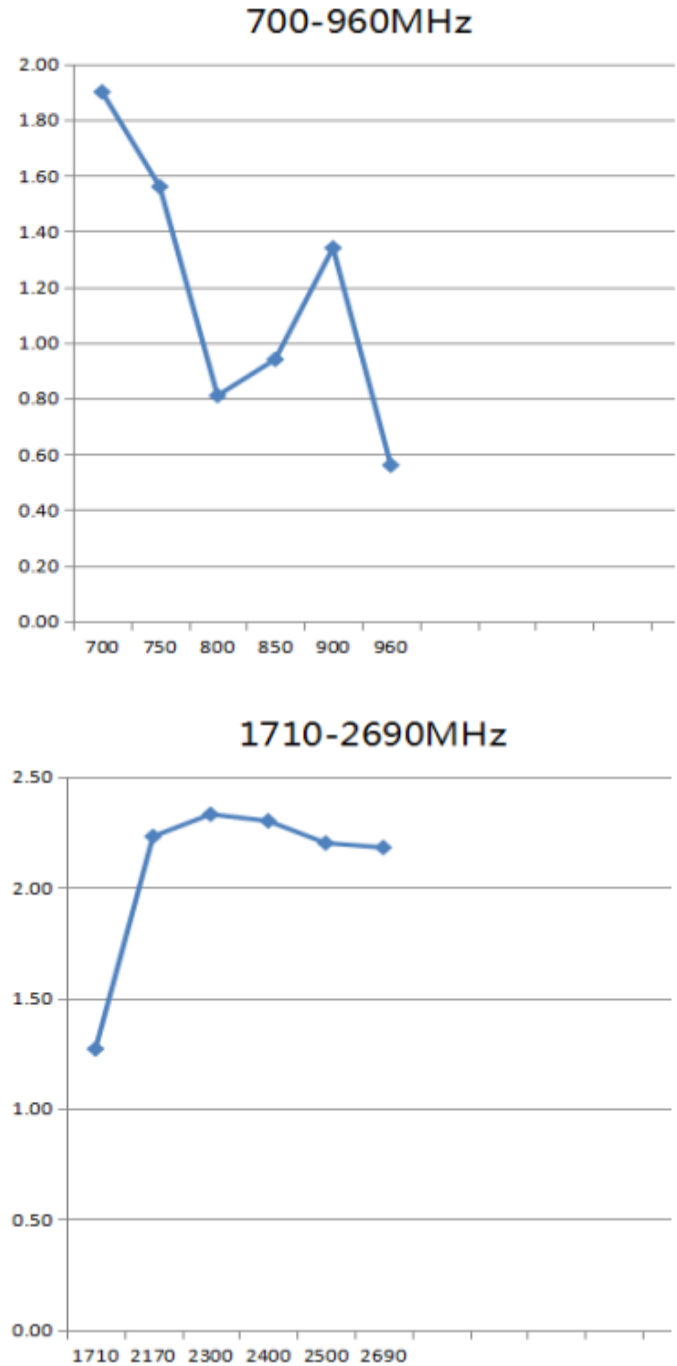
4.3.4. Wi-Fi-2



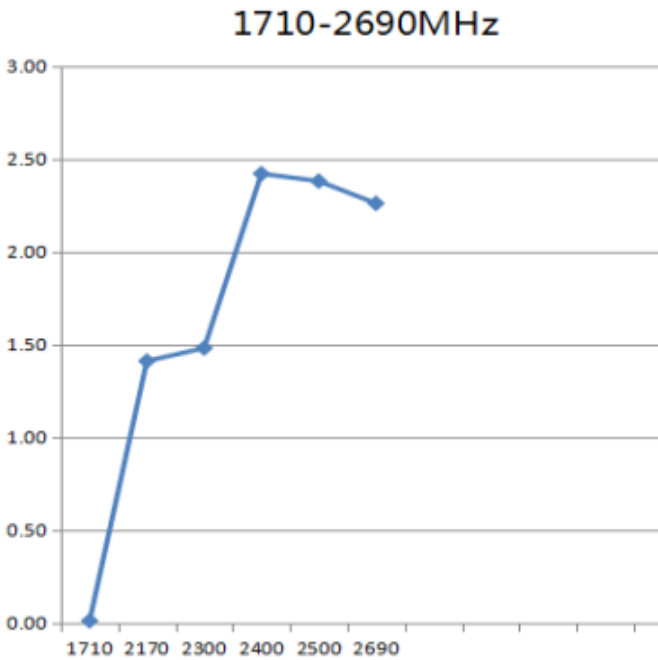
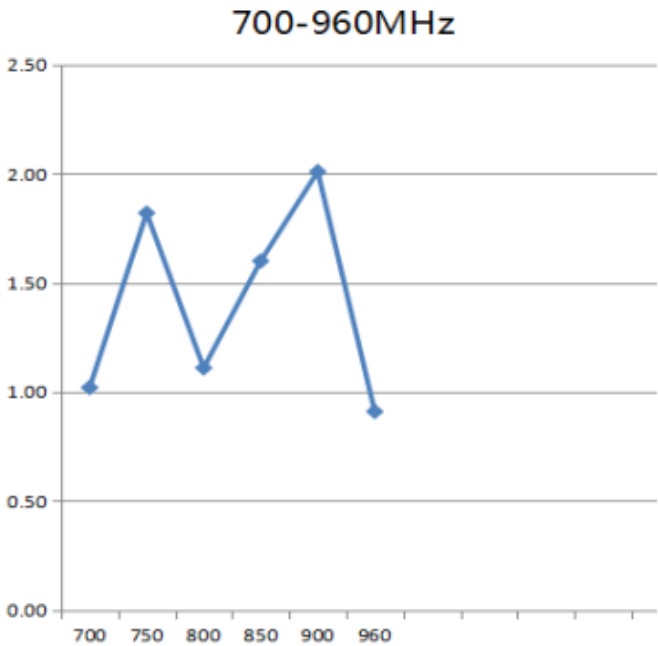
Frequency (MHz)	2400	2460	2500	5150	5350	5550	5750	5850
Efficiency (%)	48.26	47.97	48.34	23.06	25.06	23.03	25.58	24.07

4.4. Gain

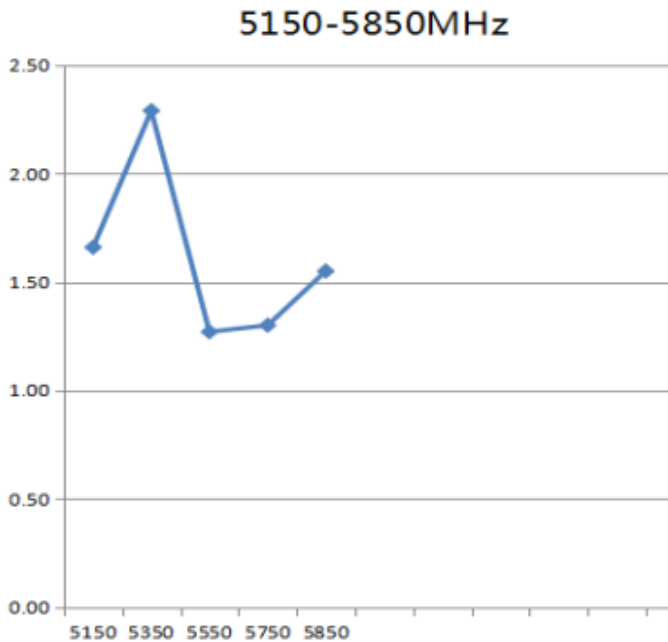
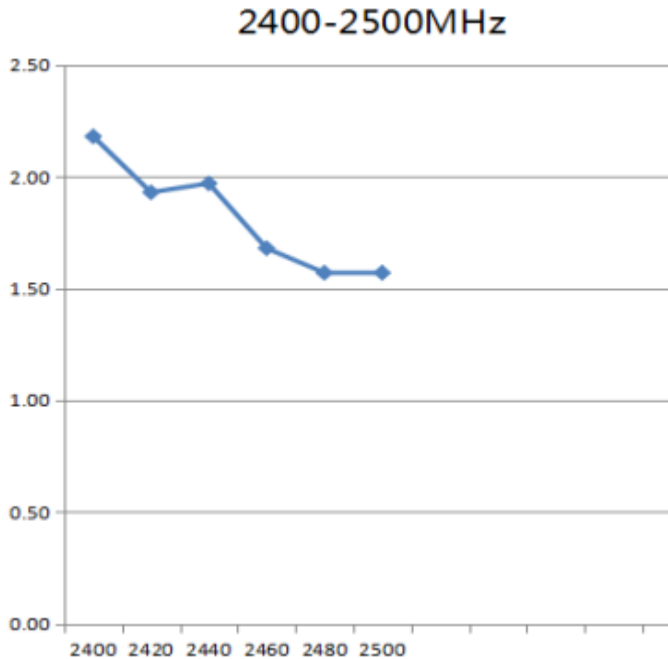
4.4.1. 4G Main Antenna



Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
Gain (dBi)	1.90	0.56	1.27	2.23	2.33	2.30	2.20	2.18

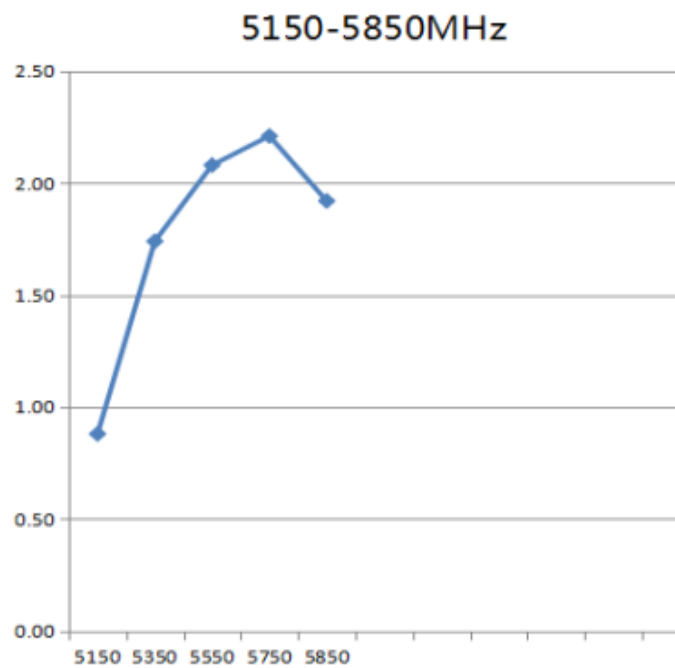
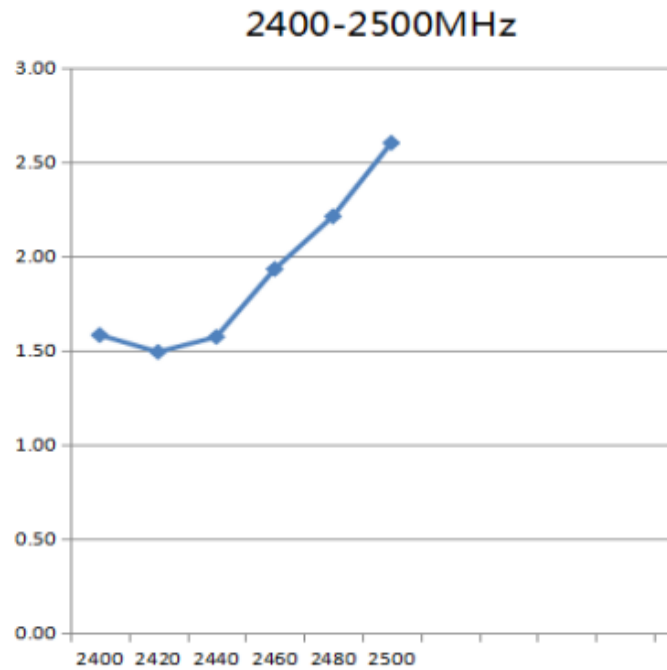
4.4.2. 4G Diversity Antenna

Frequency (MHz)	700	960	1710	2170	2300	2400	2500	2690
Gain (dBi)	1.02	0.91	0.01	1.41	1.48	2.42	2.38	2.26

4.4.3. Wi-Fi-1

Frequency (MHz)	2400	2460	2500	5150	5350	5550	5750	5850
Gain (dBi)	2.18	1.68	1.57	1.66	2.29	1.27	1.30	1.55

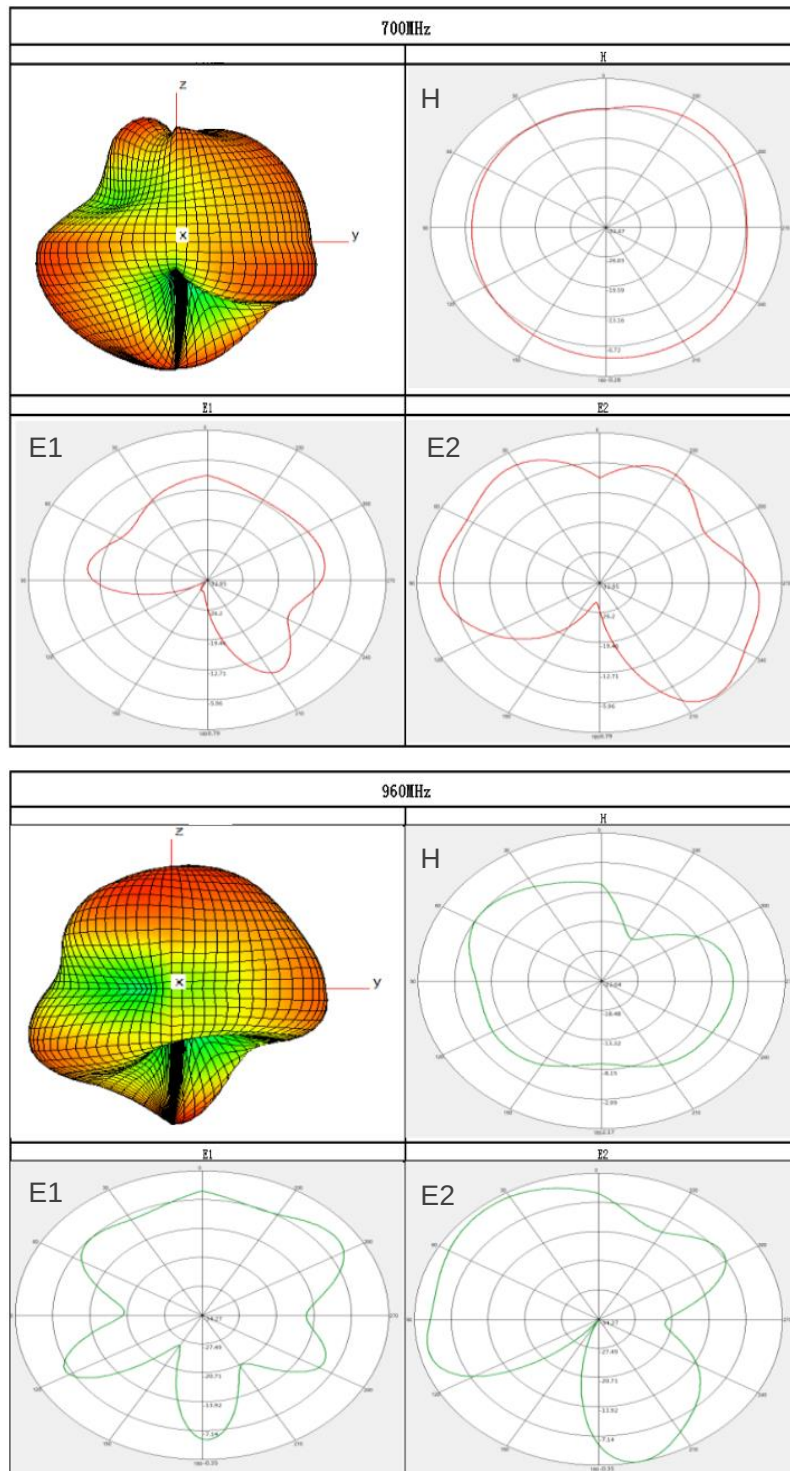
4.4.4. Wi-Fi-2

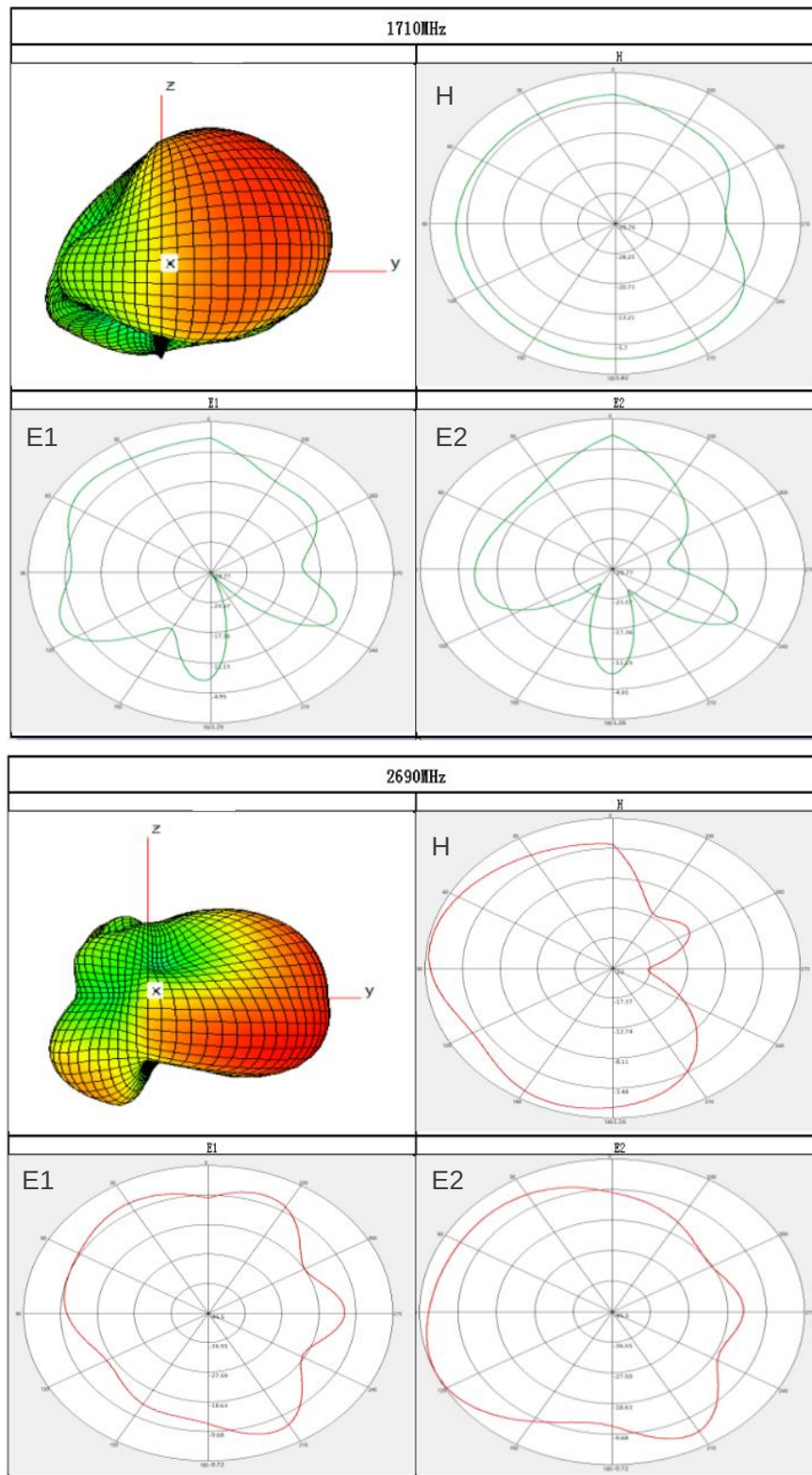


Frequency (MHz)	2400	2460	2500	5150	5350	5550	5750	5850
Gain (dBi)	1.58	1.93	2.60	0.88	1.74	2.08	2.21	1.92

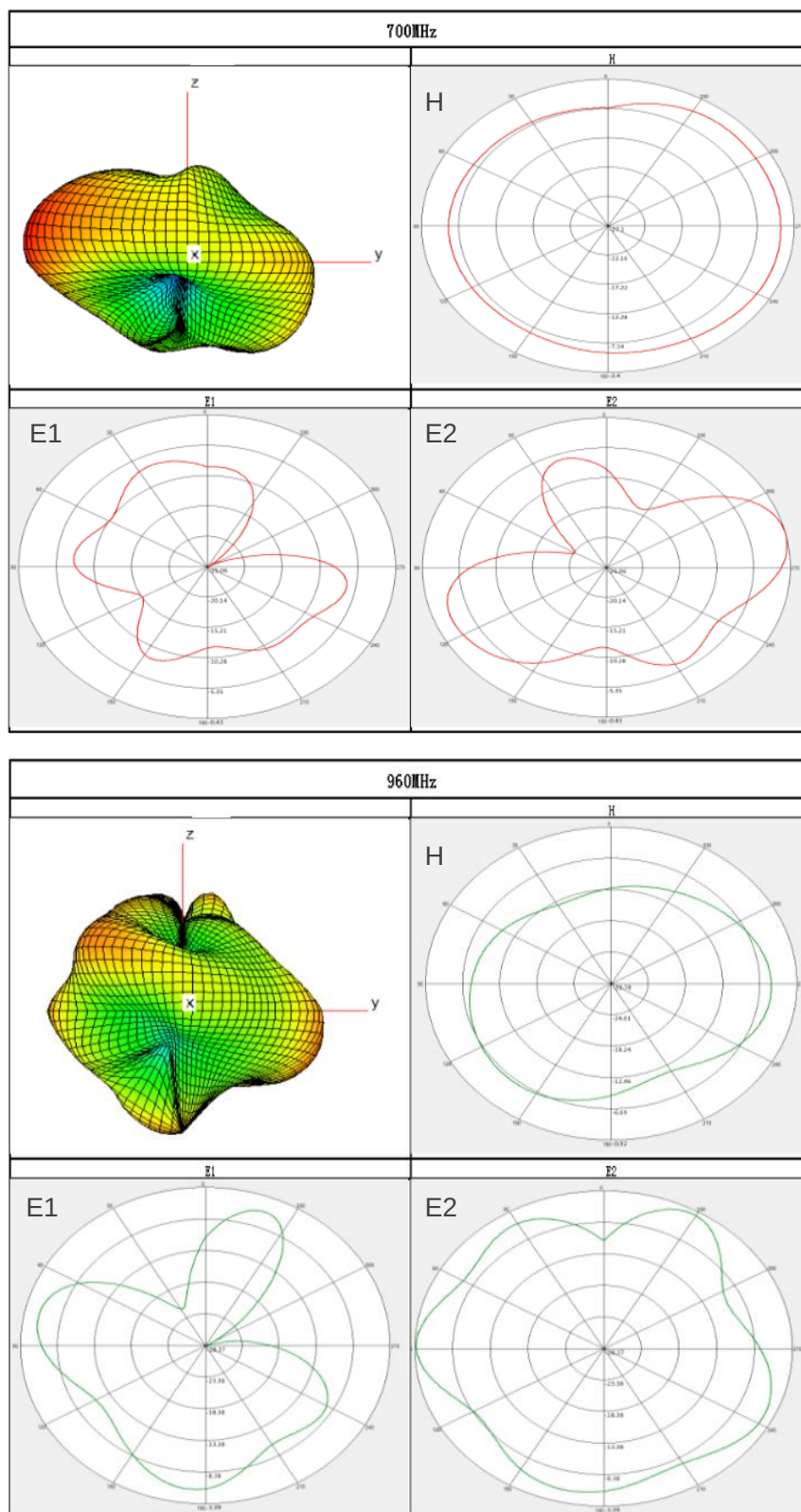
4.5. Radiation Patterns

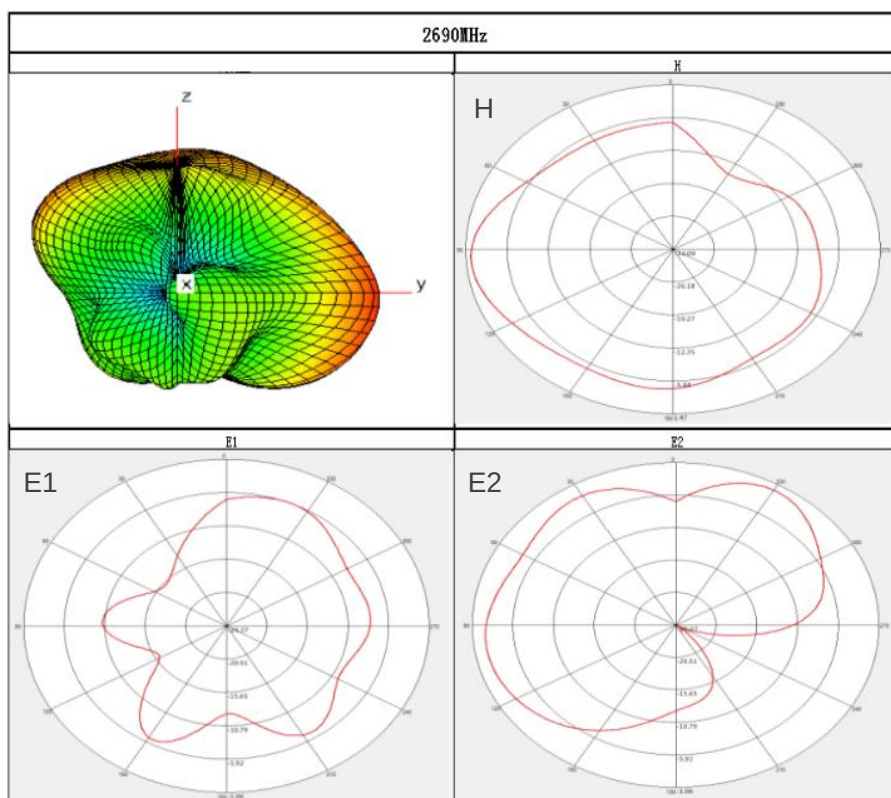
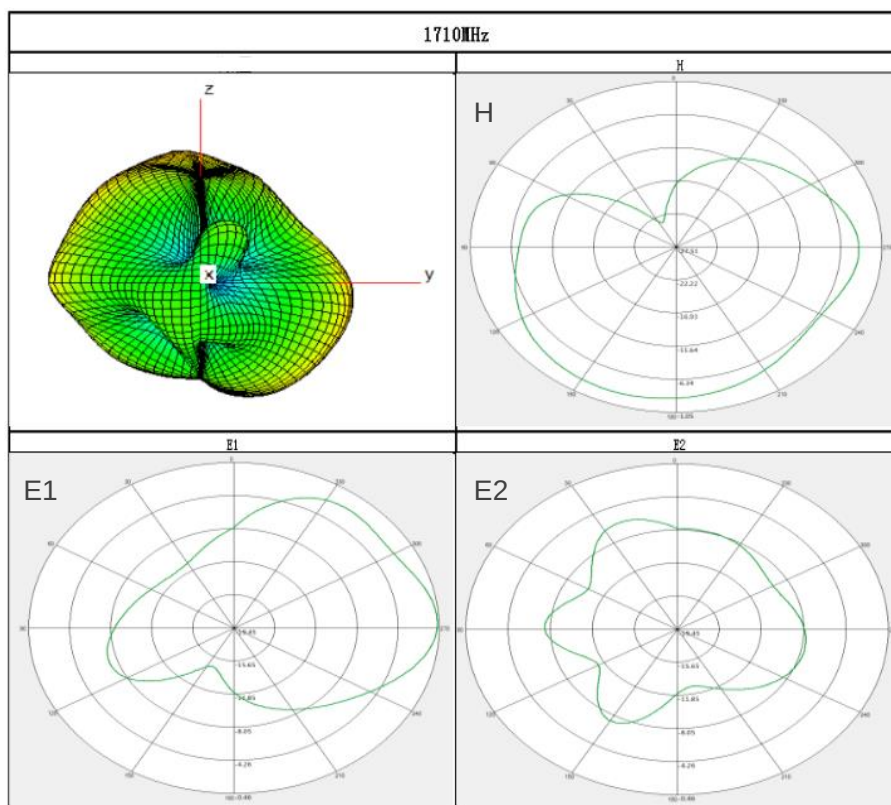
4.5.1. 4G Main Antenna



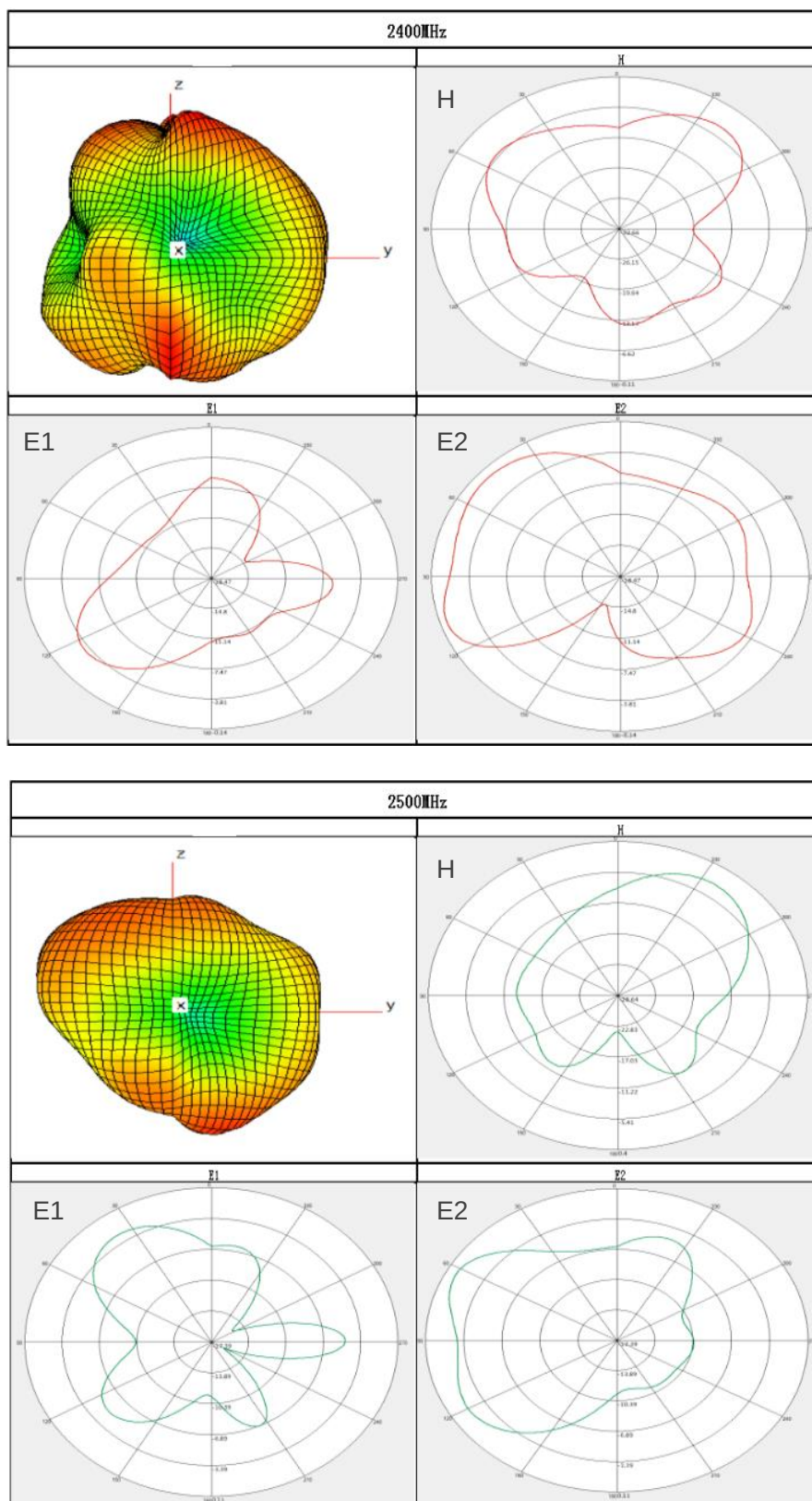


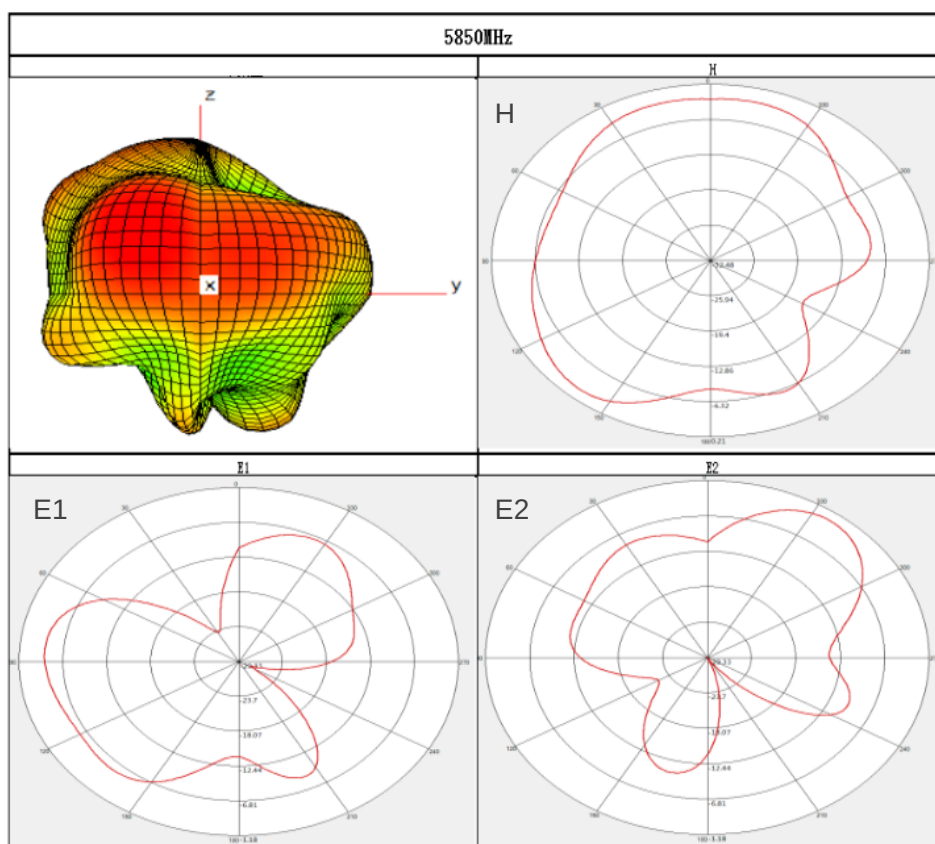
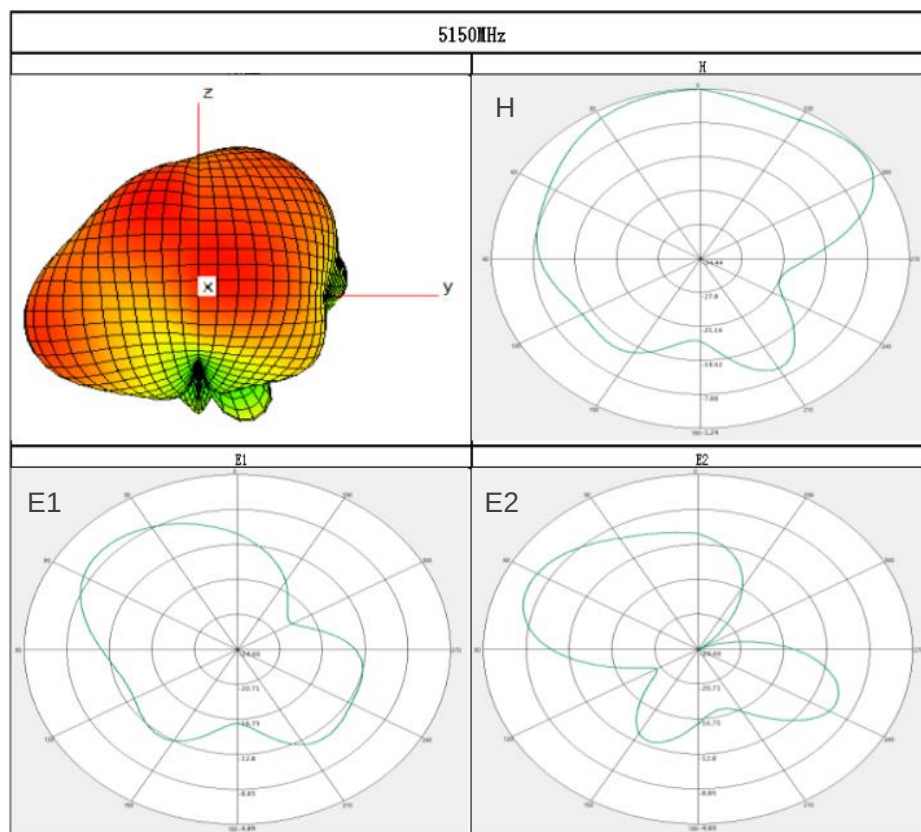
4.5.2. 4G Diversity Antenna



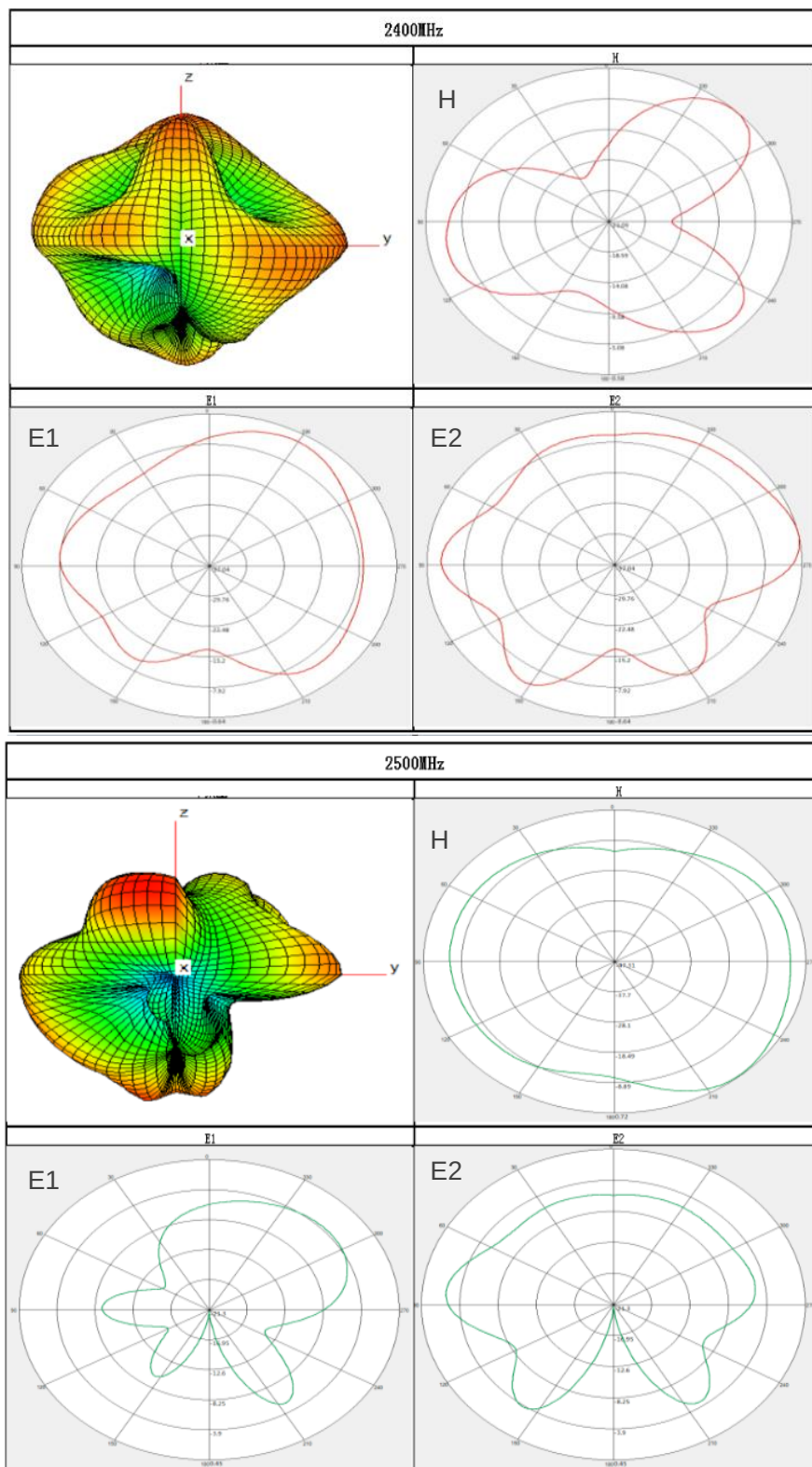


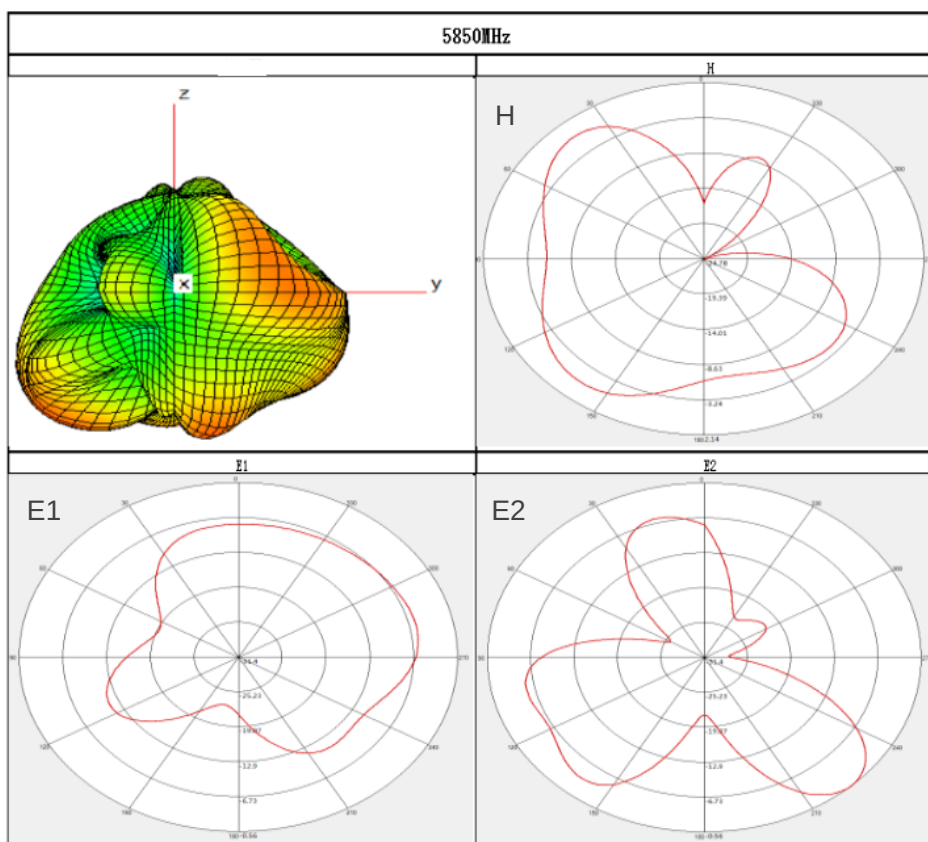
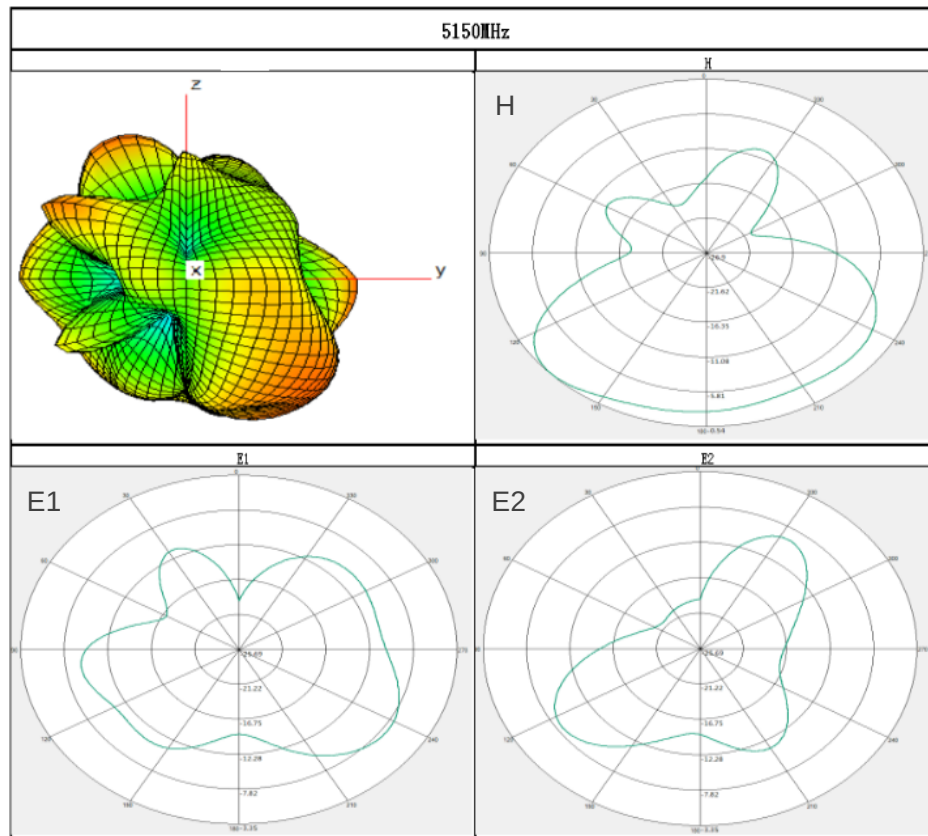
4.5.3. Wi-Fi-1





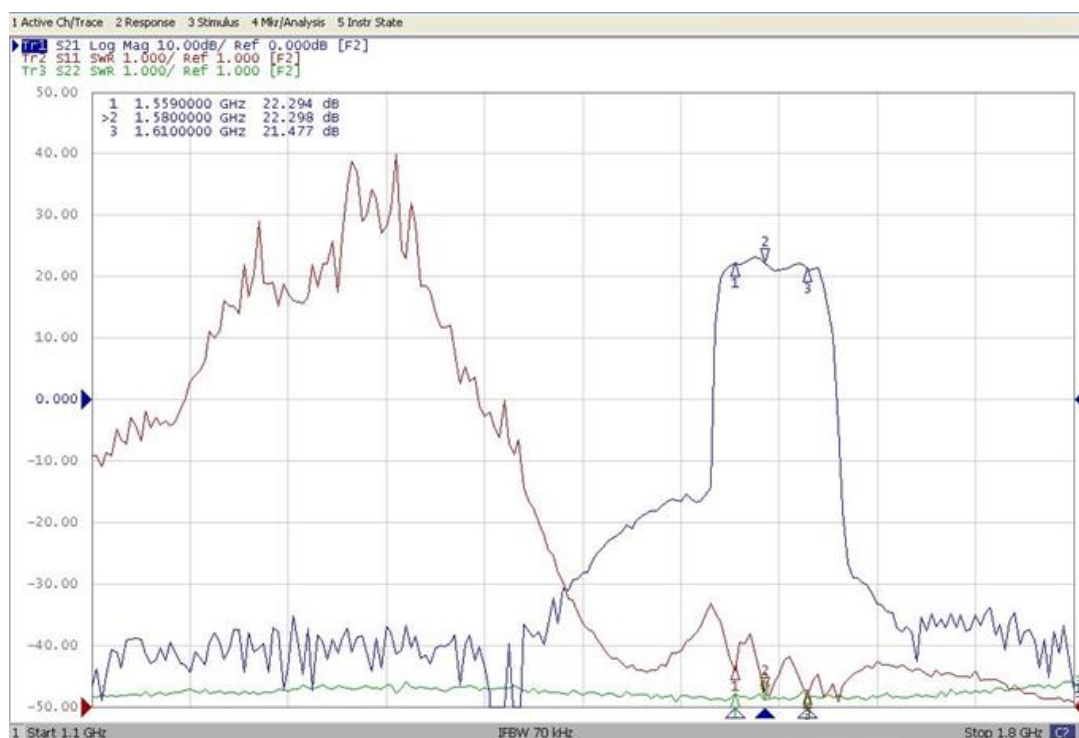
4.5.4. Wi-Fi-2





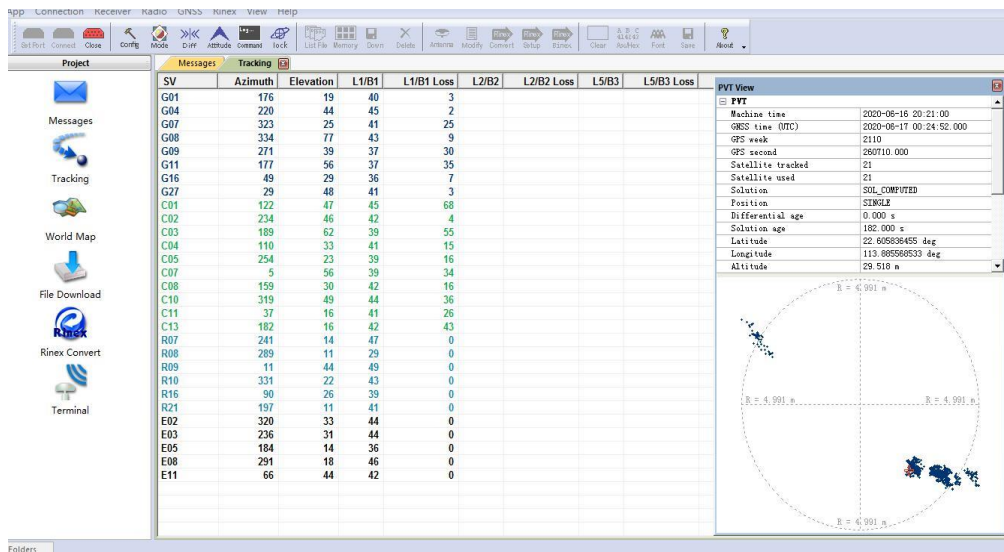
4.6. GNSS Antenna

4.6.1. GNSS Antenna Gain (LNA)

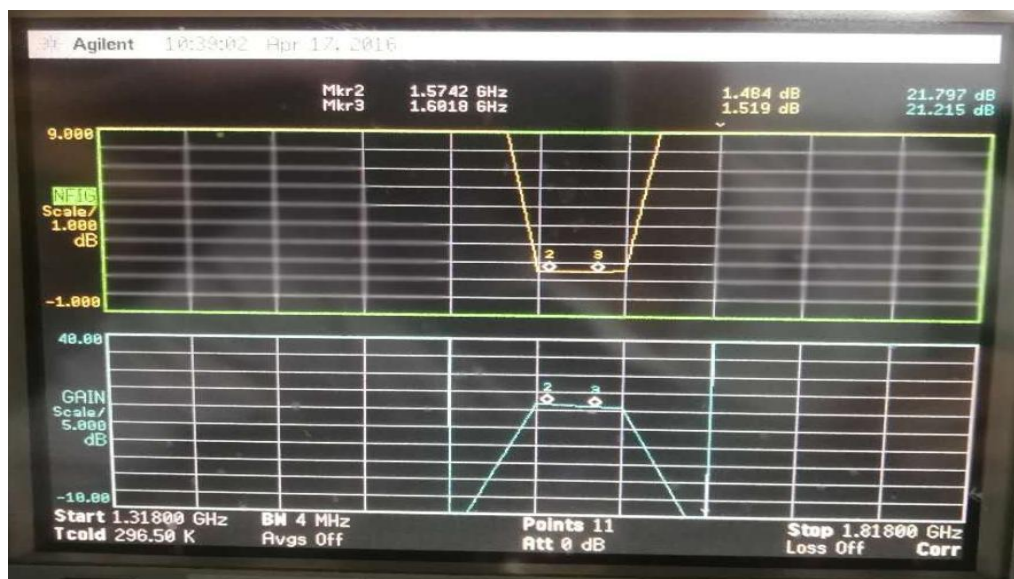


GNSS Relative Gain Test Data			
MARKER	Frequency (MHz)	Peak Gain (dB)	VSWR
1	1559	22.2	1.86
2	1580	22.2	1.67
3	1610	21.4	1.59

4.6.2. GNSS Antenna Measurement (Static State)



4.6.3. GNSS Antenna Noise Figure (LNA)



GNSS Noise Test Date		
MARKER	Frequency (MHz)	Noise Figure (dB)
1	1575	1.48
2	1601	1.51

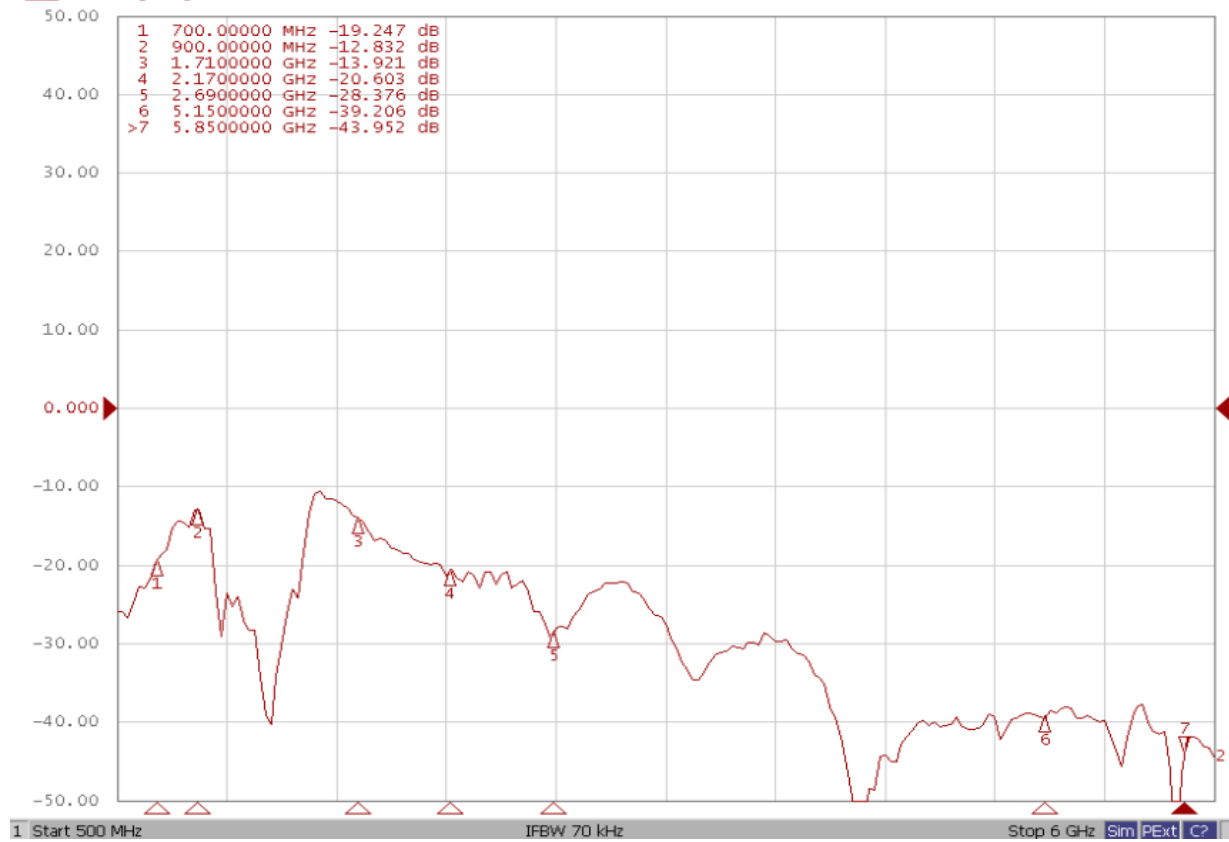
4.7. Insulation

4.7.1. 4G Main & 4G Diversity

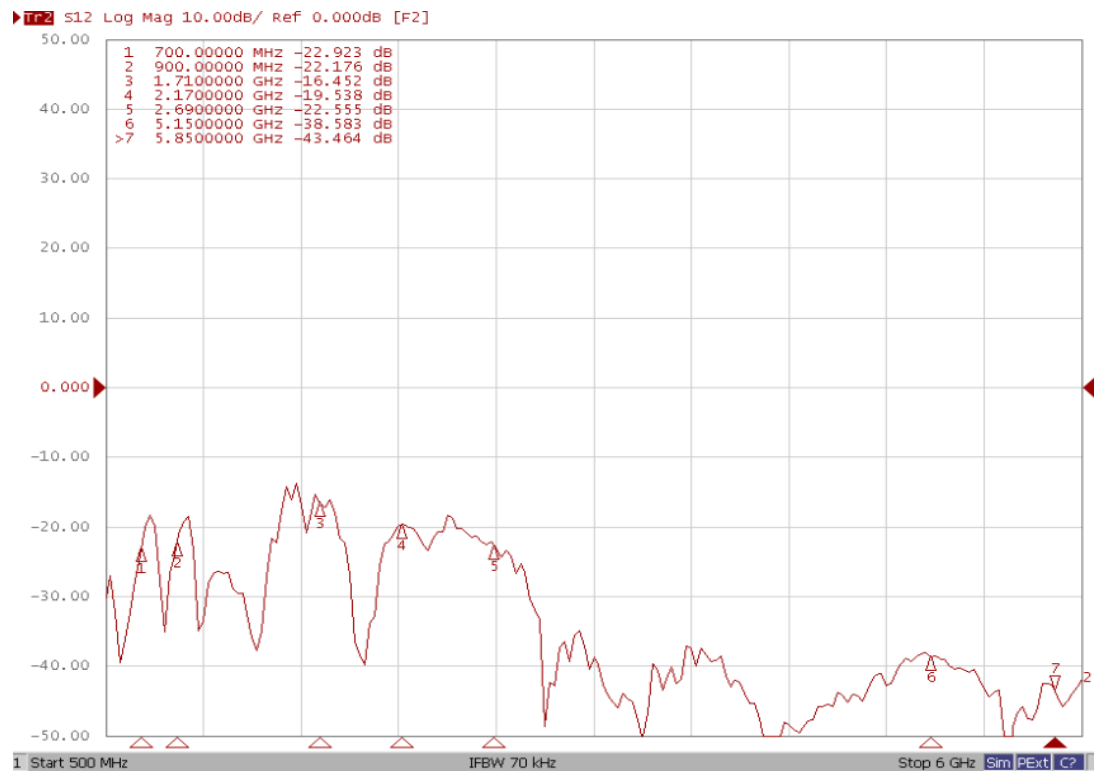


4.7.2. 4G Main & Wi-Fi-1

► **F2** S12 Log Mag 10.00dB/ Ref 0.000dB [F2]

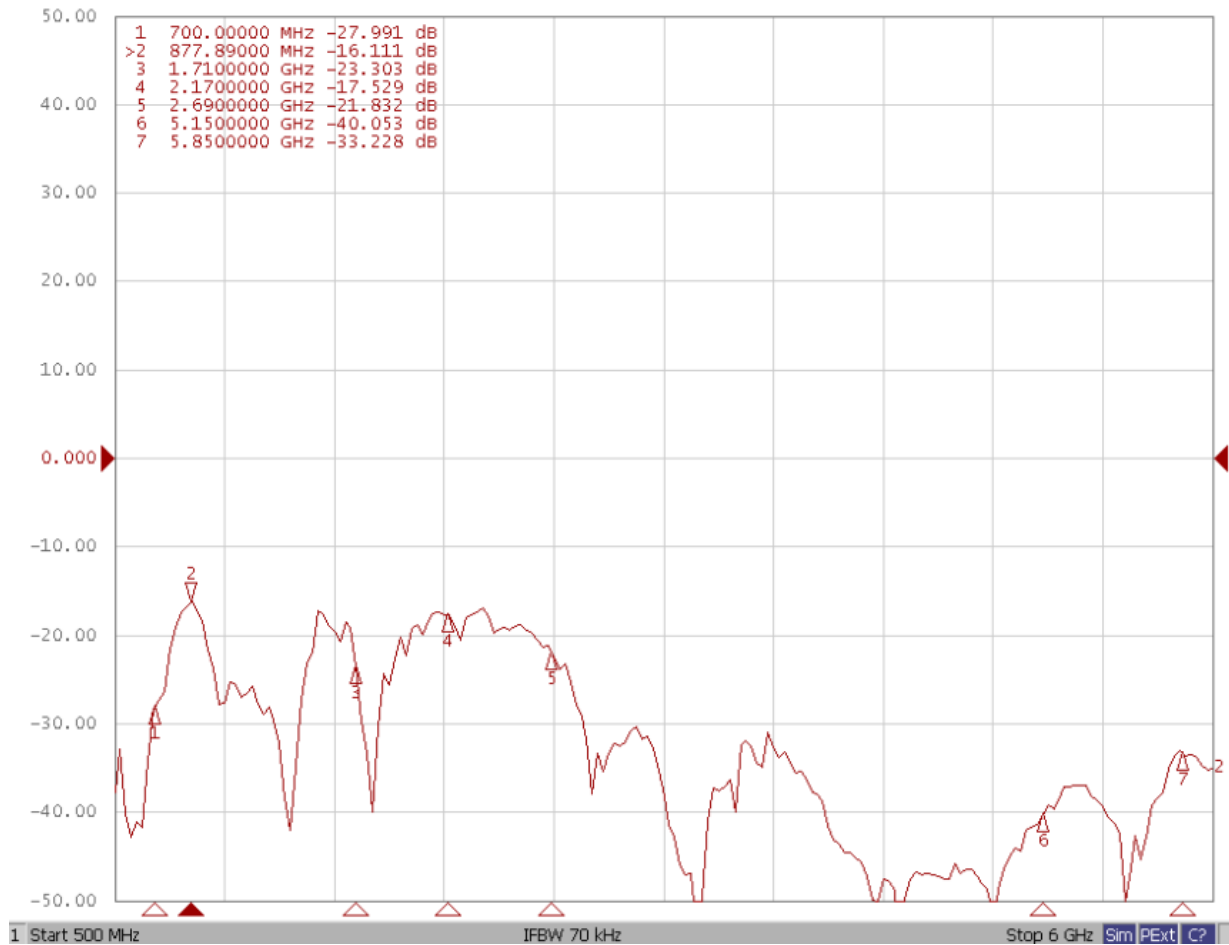


4.7.3. 4G Main & Wi-Fi-2



4.7.4. 4G Diversity & Wi-Fi-2

▶ **Tr2** S12 Log Mag 10.00dB/ Ref 0.000dB [F2]



4.7.5. 4G Diversity & Wi-Fi-1

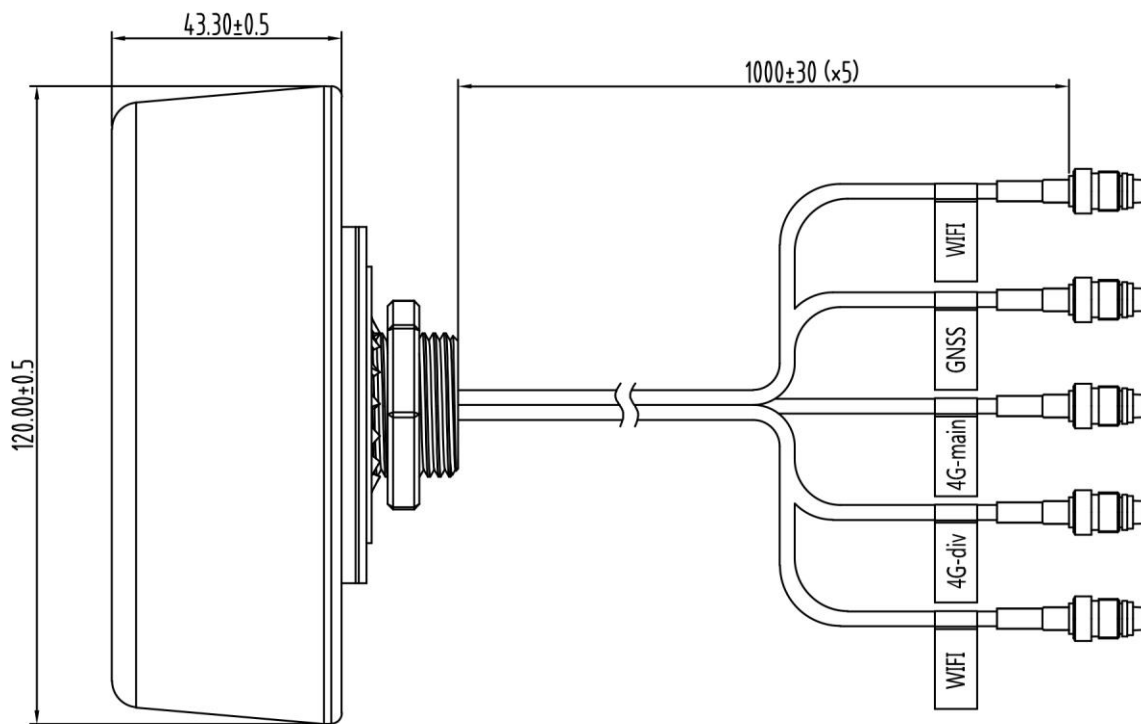


4.7.6. Wi-Fi-2 & Wi-Fi-1

► **F2** S12 Log Mag 10.00dB/ Ref 0.000dB [F2]

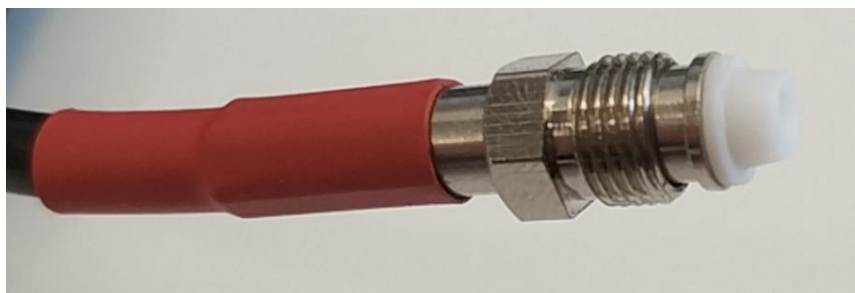


5 Product Size



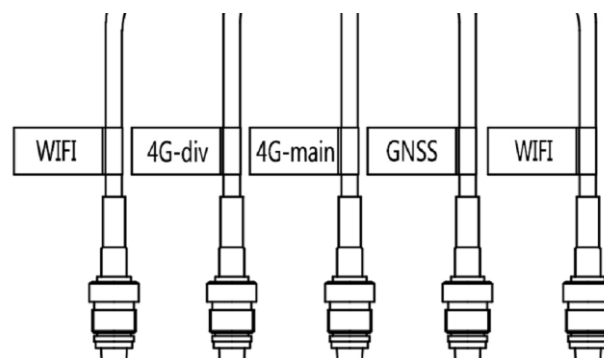
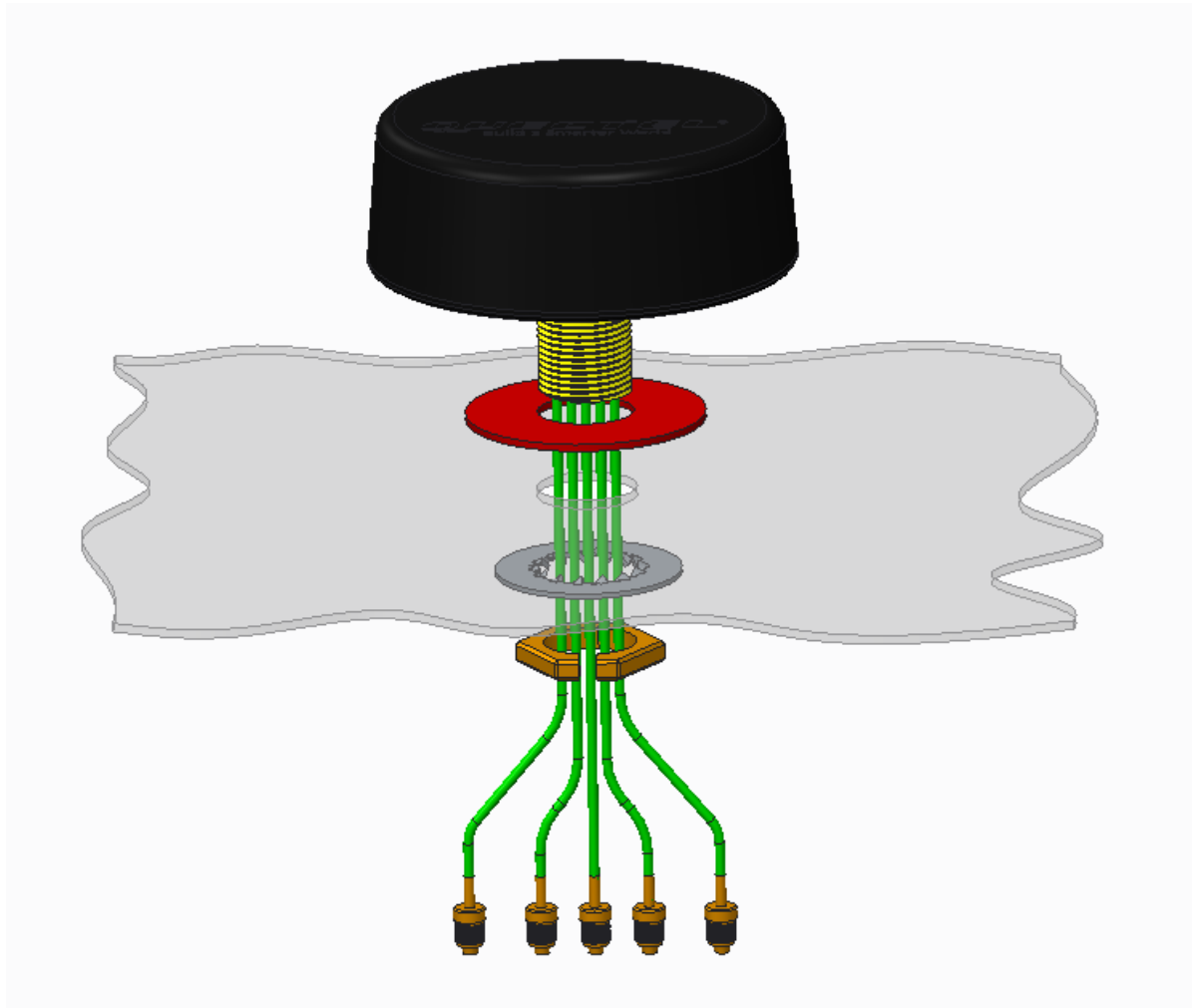
6 Connect Description

As follows, the connector on the product is FME female connector.



7 Installation

- Recommended hole size: $\Phi 28.0 \pm 0.5$ mm;
- Recommended wall thickness size: 3.0 ± 1.0 mm.



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