

Antenna

YC0018AA Datasheet

Antenna Services

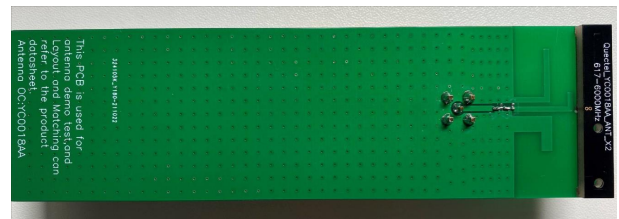
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OC (Antenna Only): **YC0018AA**

OC (Antenna + EVB): **YC0018AAEVB**

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About the Document

Revision History

Version	Date	Author	Note
-	2021-11-04	Winfred WU/ Toby WANG	Creation of the document
1.0	2021-11-15	Winfred WU/ Toby WANG	First official release
1.1	2021-11-30	Winfred WU/ Toby WANG	Updated the product description in Chapter 1
1.2	2021-12-13	Winfred WU/ Toby WANG	1. Updated the product picture (Chapter 2). 2. Updated the product size (Chapter 5).
2.0	2022-09-09	Edison Liu	Optimized the matching circuit and updated the test data (Chapter 4).

Contents

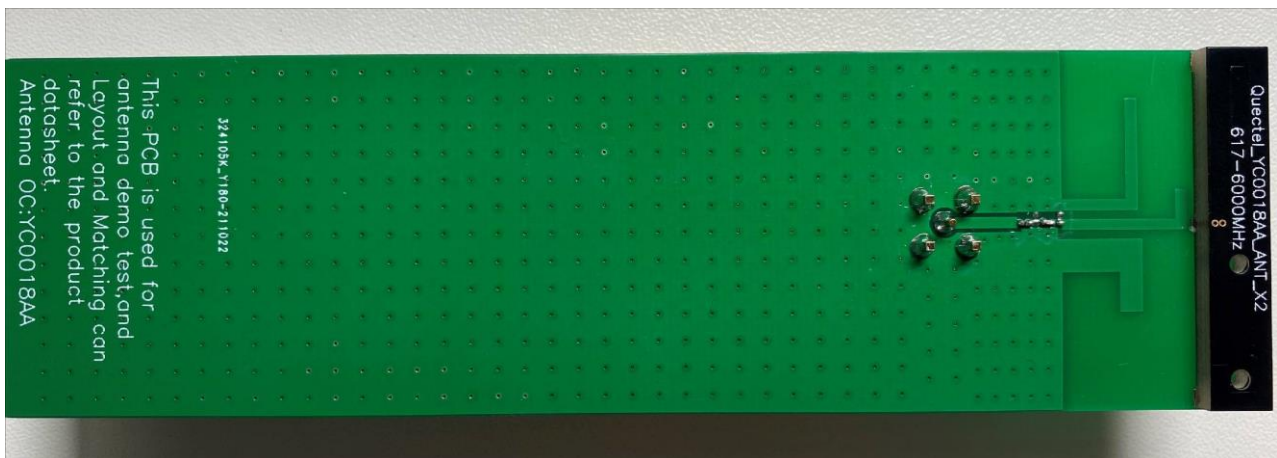
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1 Product Description

This Quectel embedded 5G SMD antenna covers 5G NR Sub-6 GHz frequency bands and is compatible with 4G/3G/2G/LPWA bands. Ground plane dependent, it's designed to be mounted directly to the device host PCB using a conventional PCB reflow process. Supplied tape and reel for high volume pick and place assembly, this SMD antenna can be tuned specifically for the final device environment with a simple PI matching circuit. Used with other 5G antennas, it can achieve MIMO (multiple input, multiple output) antenna technology for wireless communications in which multiple antennas are used at both the source (transmitter) and the destination (receiver).

2 Product Features

- 0.6-6G_ANT
- High efficiency
- Excellent performance



3 Product Specifications

Passive Electrical Specifications

Frequency Range	600–960 MHz; 1427–1707 MHz; 1710–2170 MHz; 2300–2700 MHz; 3300–5000 MHz; 5100–6000 MHz
Input Impedence	50 Ω
VSWR	≤ 4
Gain	≤ 6.0 dBi
Polarization Type	Linear

Detailed Passive Electrical Specifications

Frequency Range (MHz)	617–960	1176–1280	1427–1710	1710–2170	2170–2690	3300–4000	4000–5000	5000–6000
VSWR (Max.)	3.67	-	3.14	2.89	3.03	3.11	1.91	2.08
Average Efficiency (%)	52	-	51	55	58	61	66	51
Max. Peak Gain (dBi)	0.82	-	2.15	2.19	3.29	5.16	4.24	2.59

Mechanical Specifications

Antenna Size (mm)	40 × 7 × 3
Material	FR4
Color	Black
Working Temperature	-40 °C to +85 °C
Mounting Type	SMD

EVB Mechanical Specifications

EVB Size (mm)	141 × 40.4 × 0.8
Material & Color	FR4 & Green
Connector Type	SMA Female
Working Temperature	-40 °C to +85 °C
Mounting Type	Screw

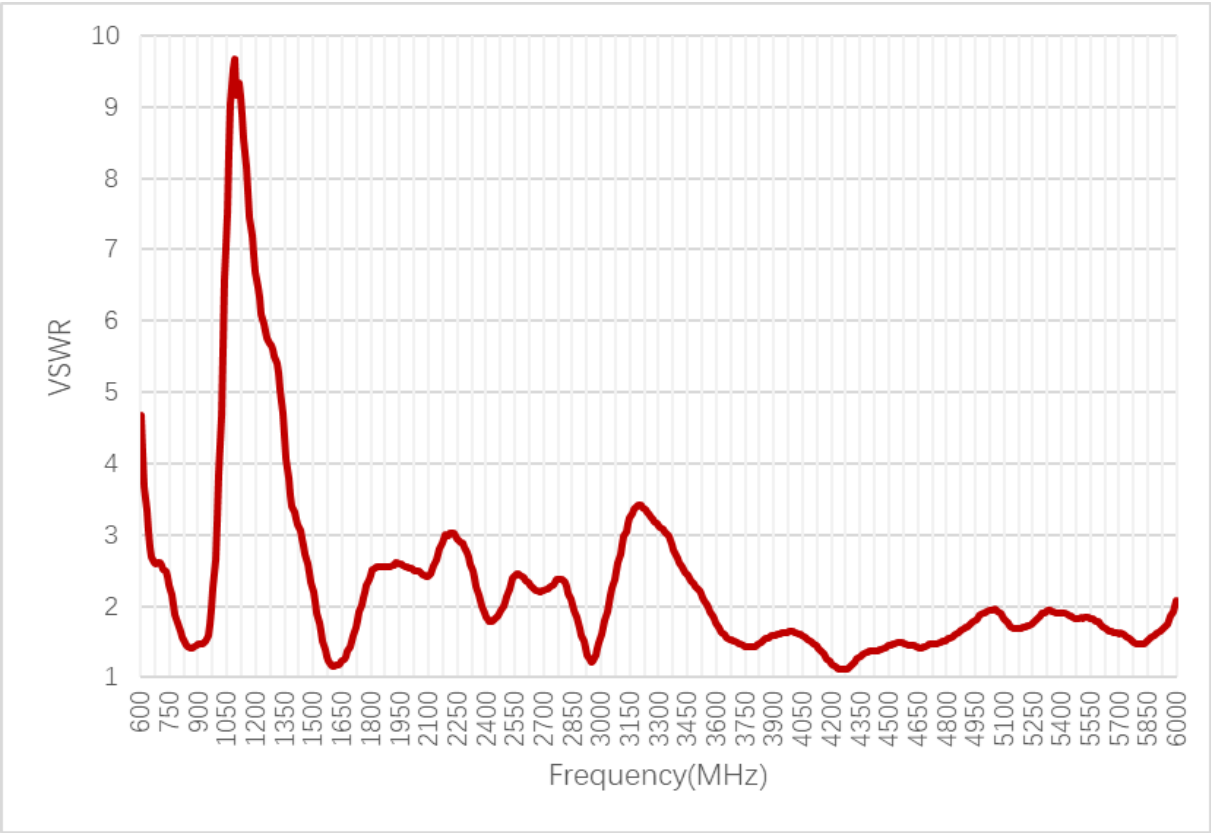
4 Overall Performance

4.1. Test Environment

- KEYSIGHT ENA Network Analyzer E5063A 100 kHz – 8.5 GHz
- RayZone® 2800 Chamber 5G (FR1) SISO/MIMO, 600 MHz – 8.5 GHz

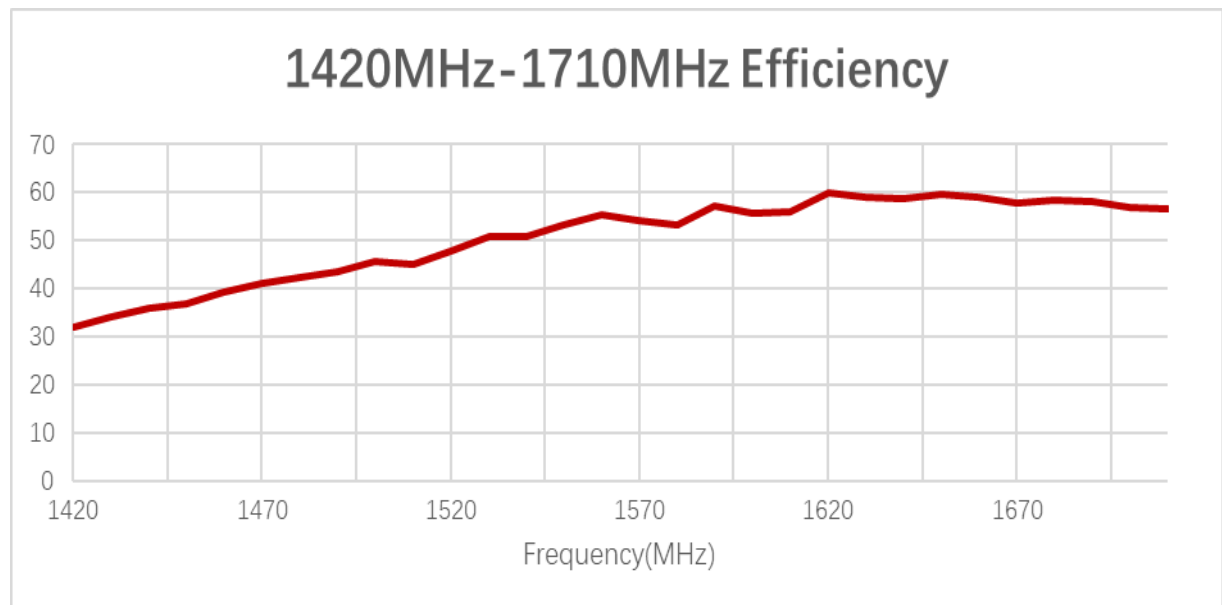
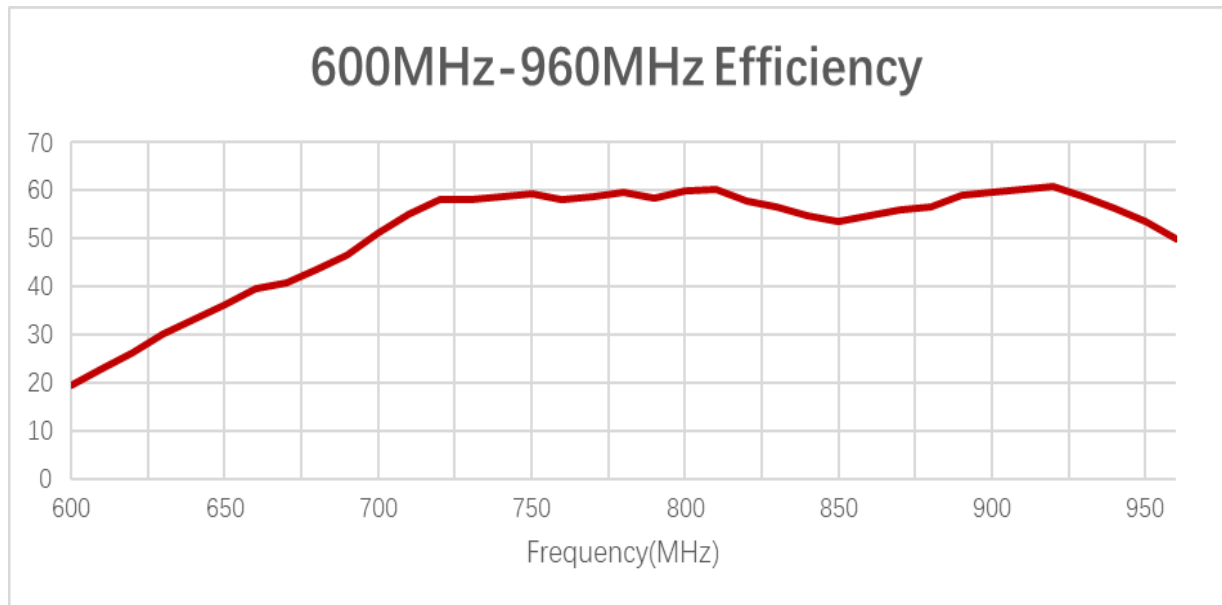


4.2. VSWR

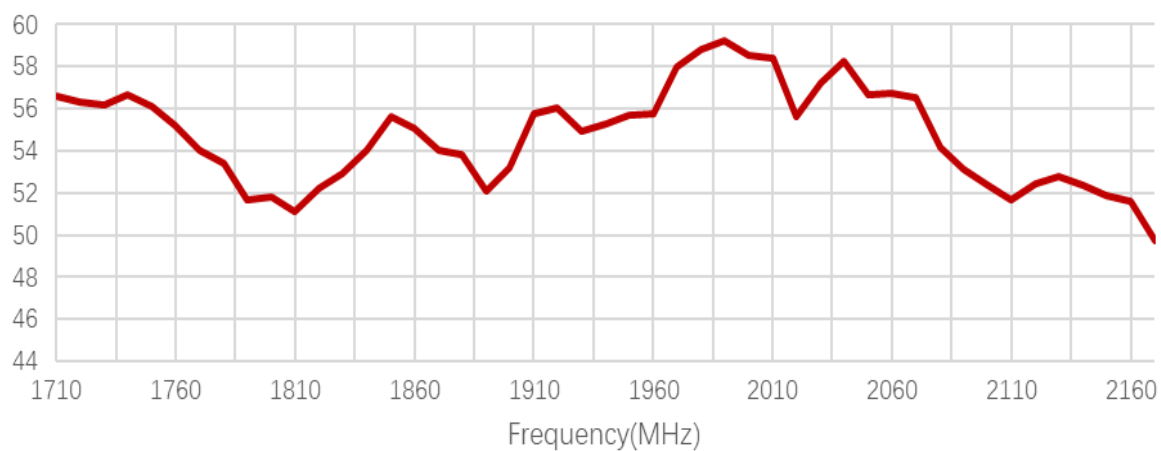


Frequency (MHz)	617	960	1427	1710	2300	2690	3300	4400	6000
VSWR	3.68	1.74	3.06	1.59	2.76	2.11	3.11	1.37	2.08

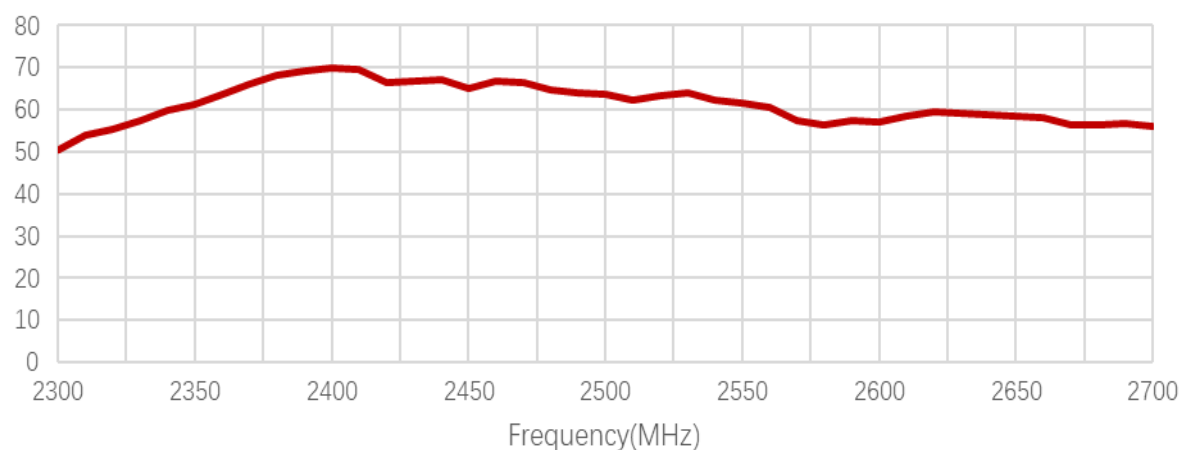
4.3. Efficiency



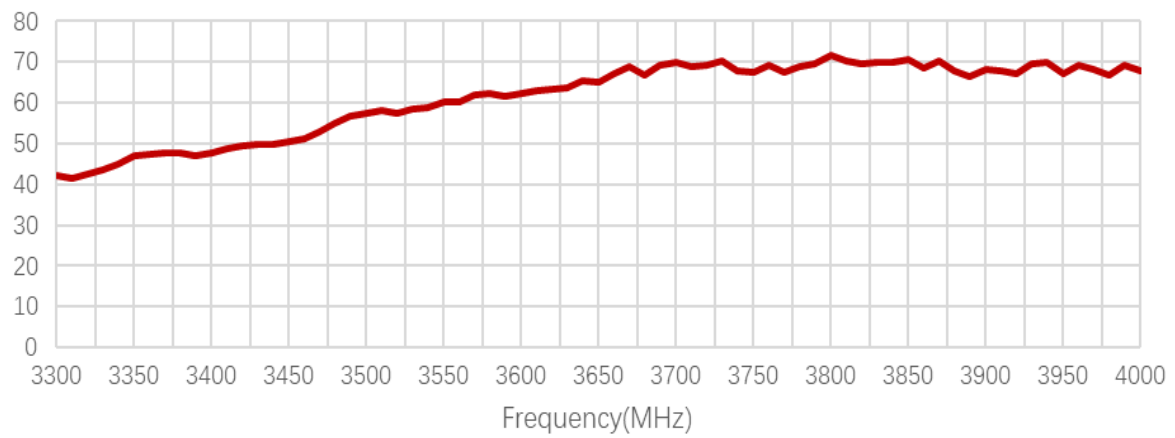
1710MHz-2170MHz Efficiency



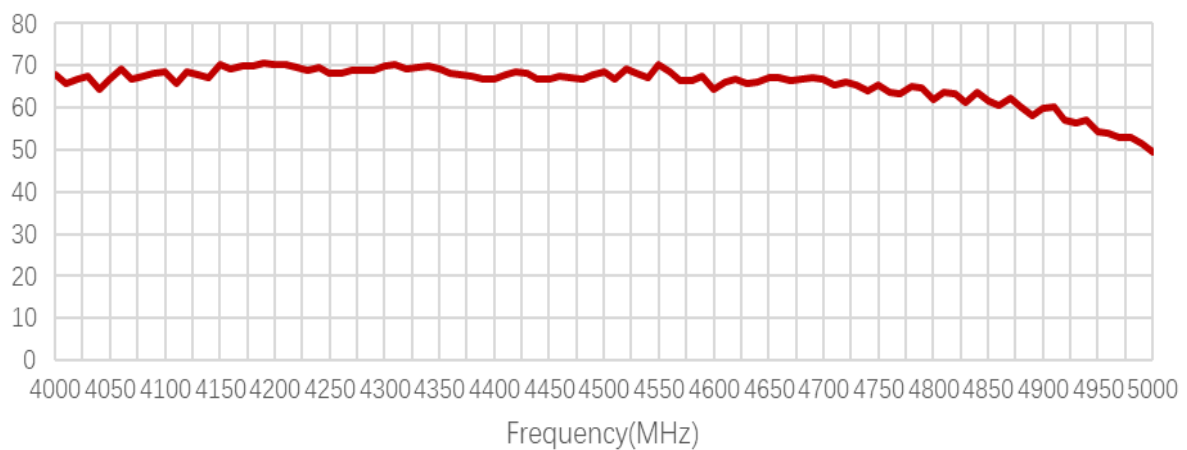
2300MHz-2700MHz Efficiency

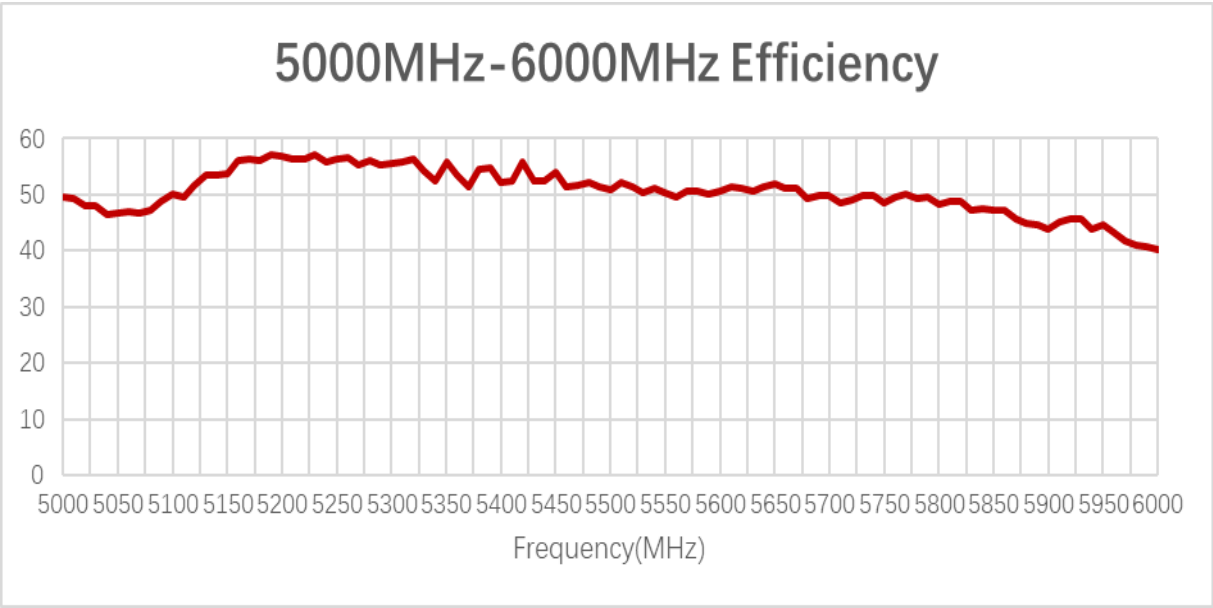


3300MHz-4000MHz Efficiency



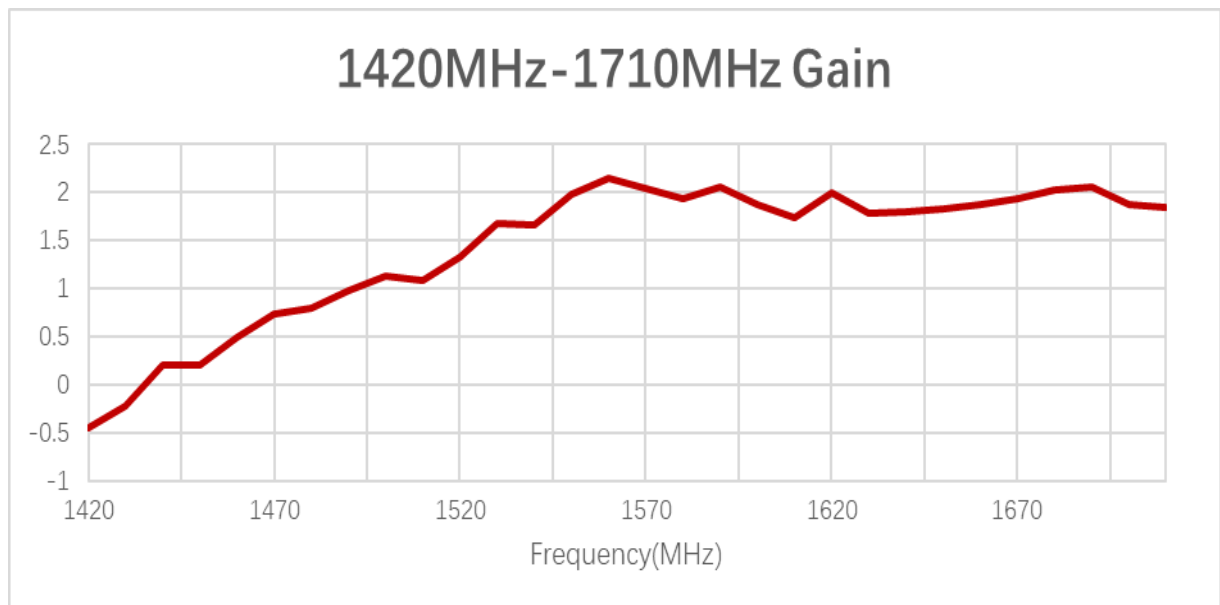
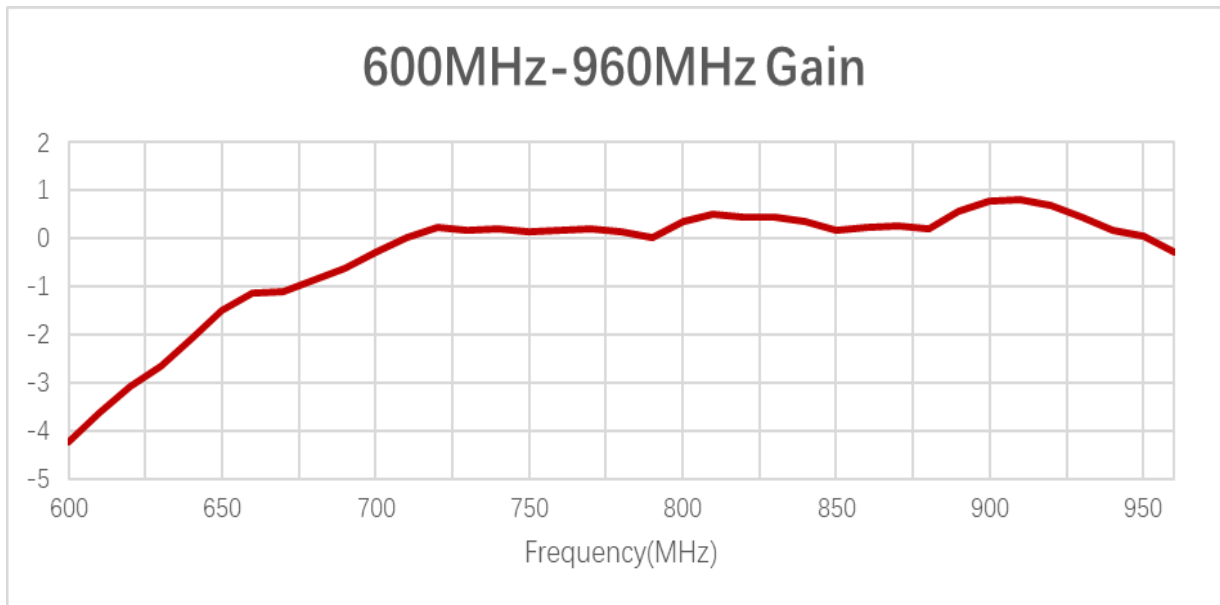
4000MHz-5000MHz Efficiency



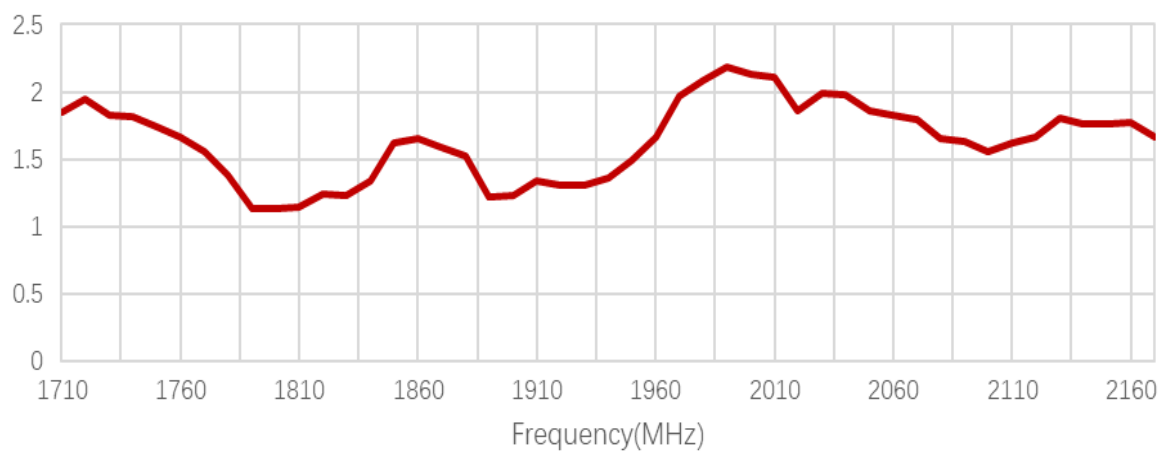


Frequency (MHz)	617	960	1427	1710	2170	2300	2690	3300	5000	5100	5500	6000
Efficiency (%)	22.87	49.95	34.28	56.58	49.71	50.53	56.60	42.21	49.5	50.23	50.83	40.34

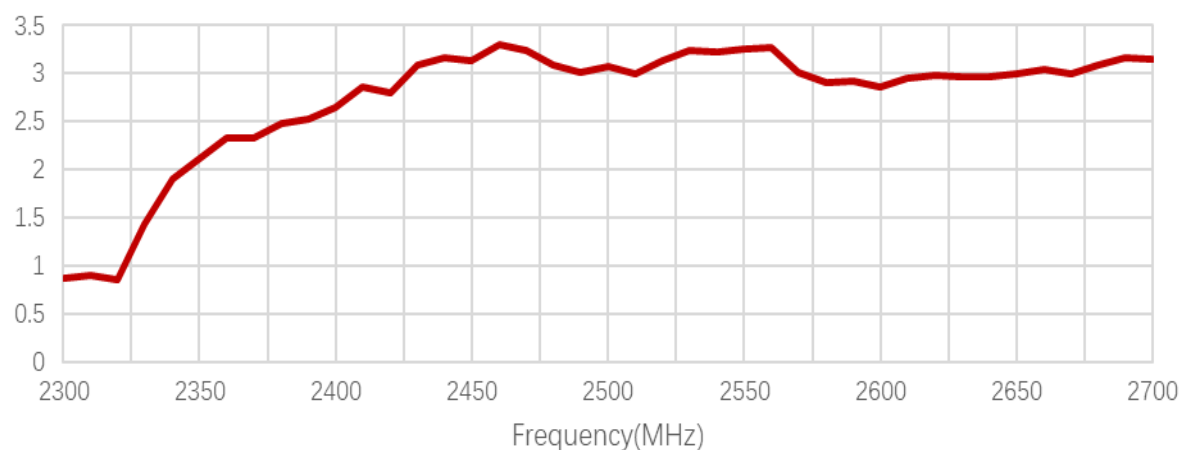
4.4. Gain



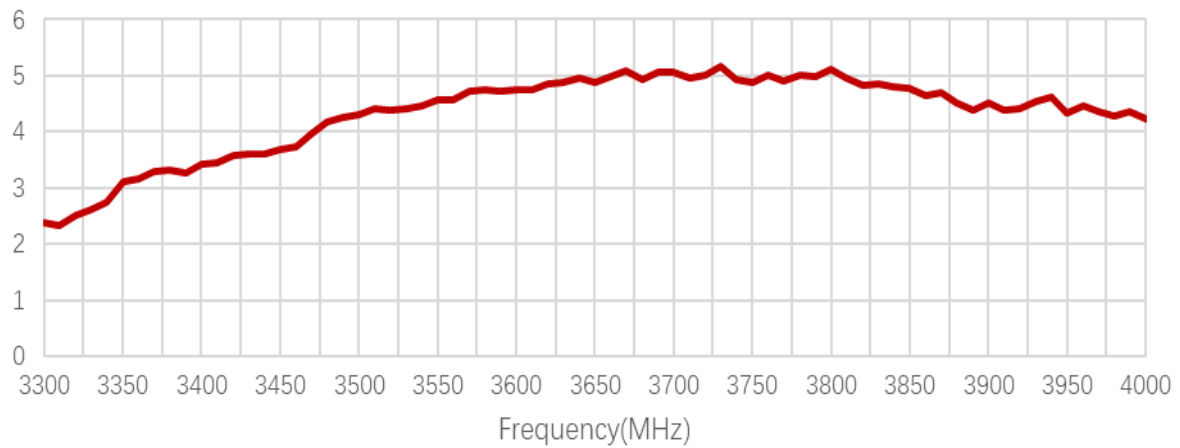
1710MHz-2170MHz Gain



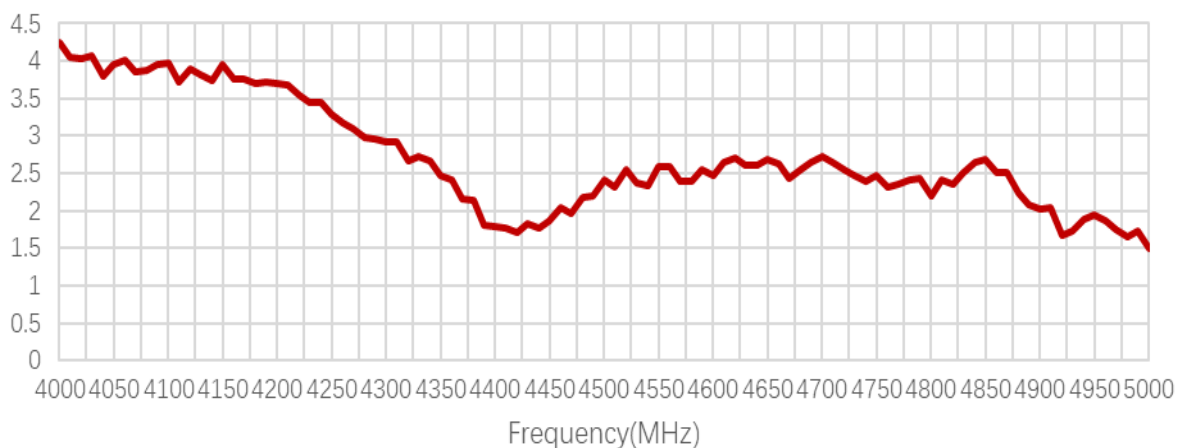
2300MHz-2700MHz Gain

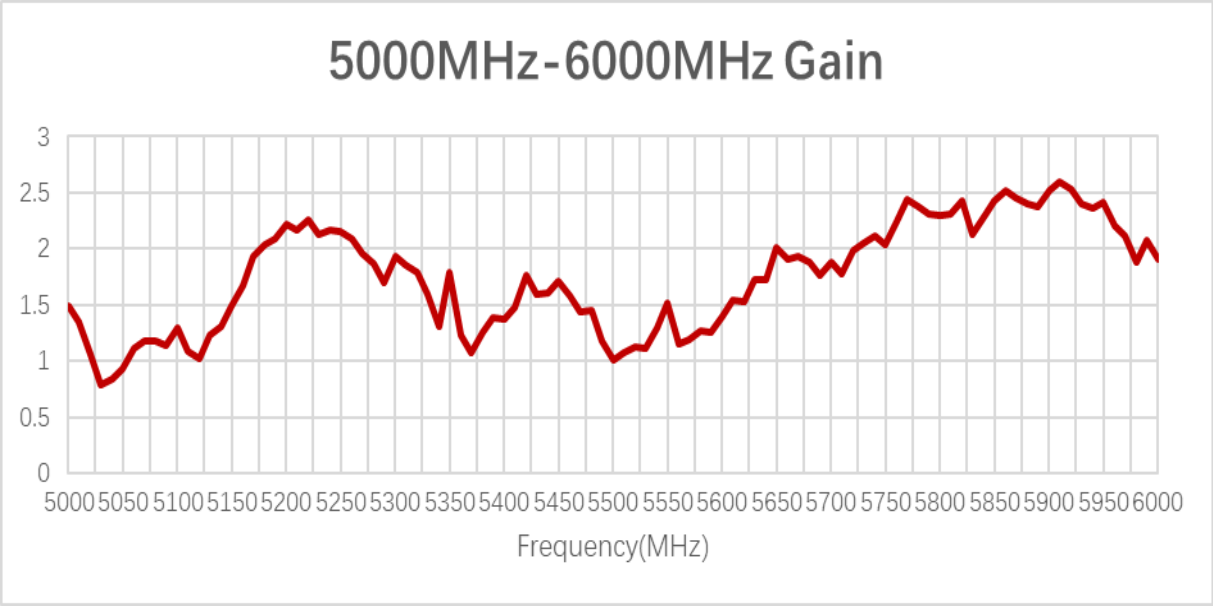


3300MHz-4000MHz Gain



4000MHz-5000MHz Gain

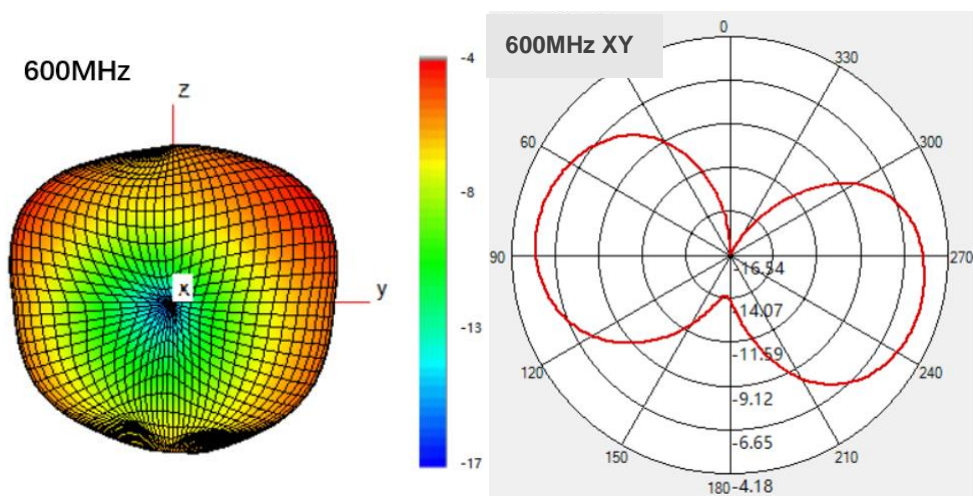
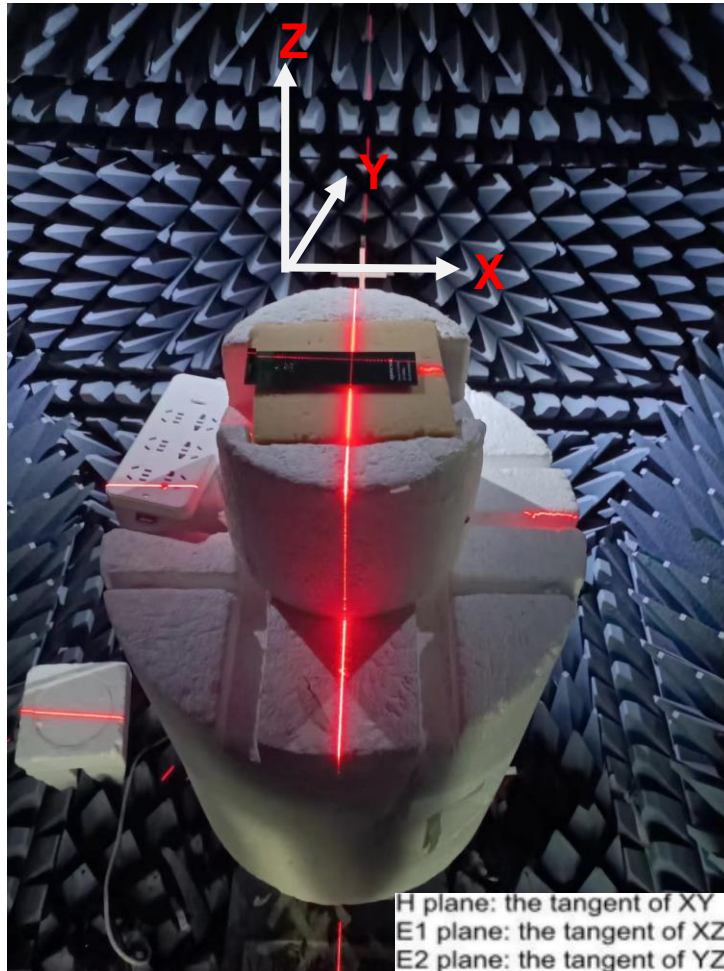


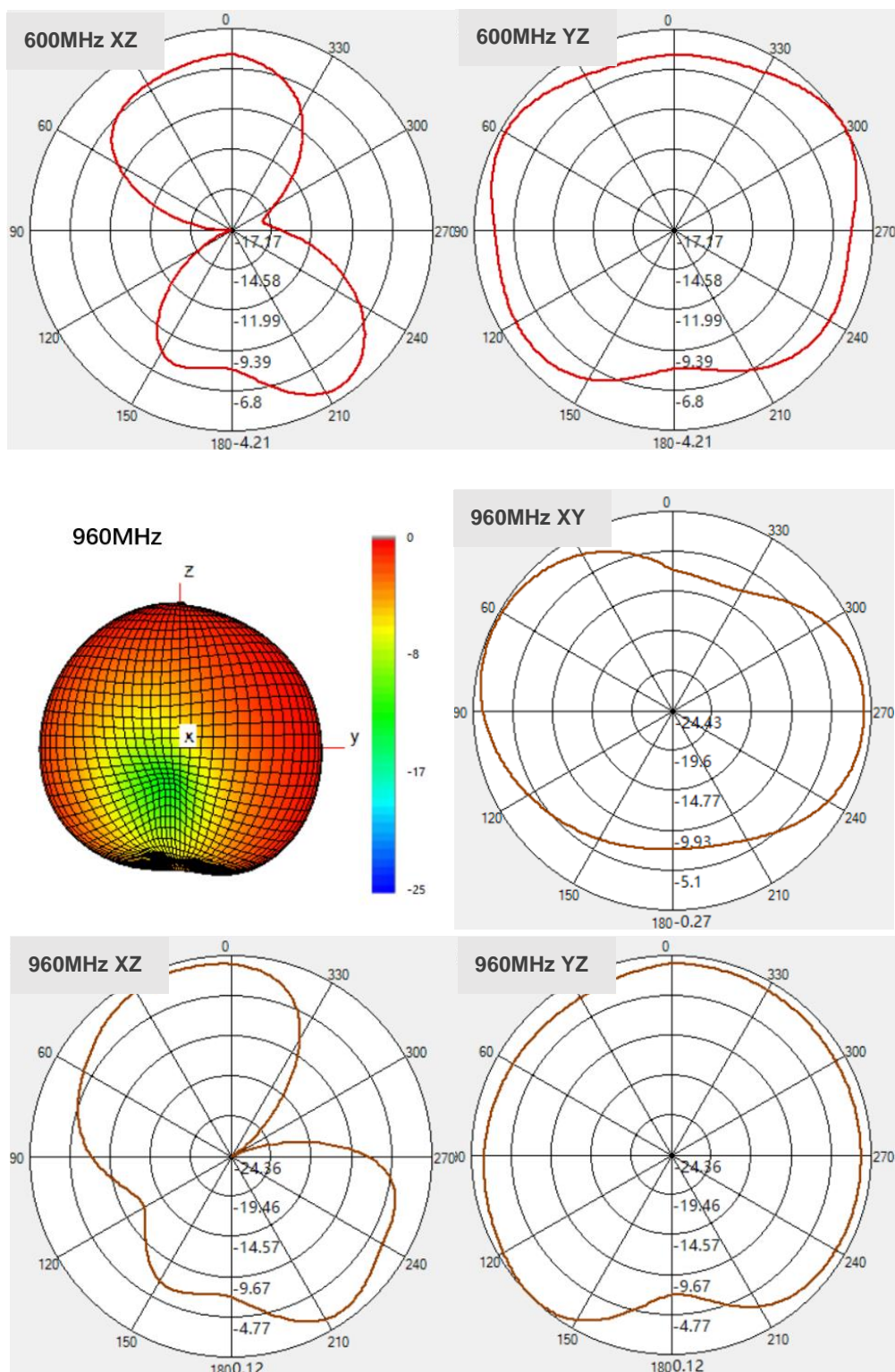


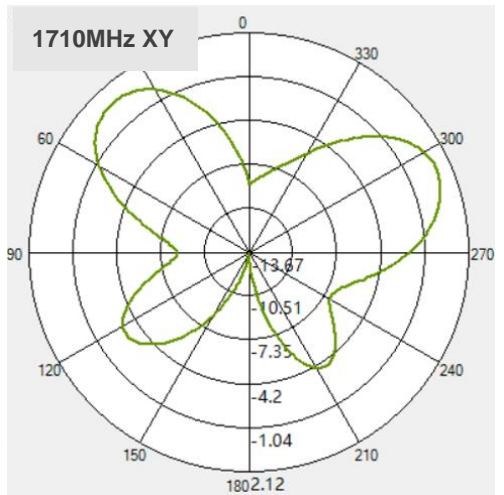
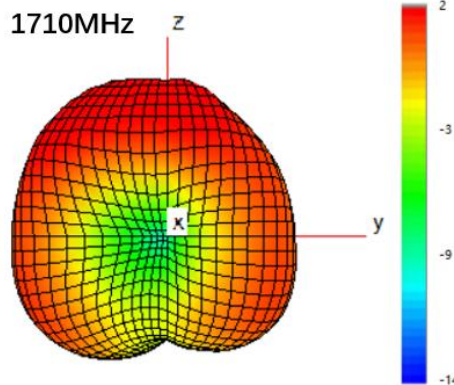
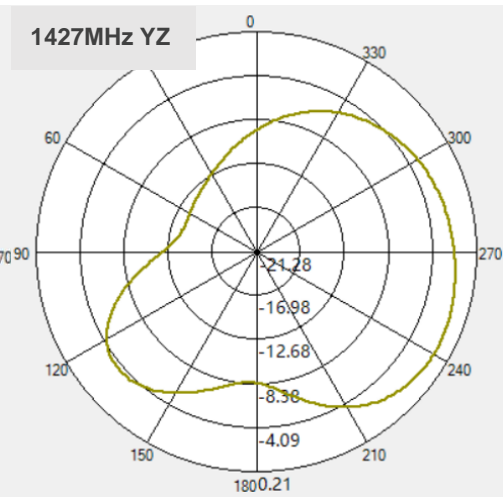
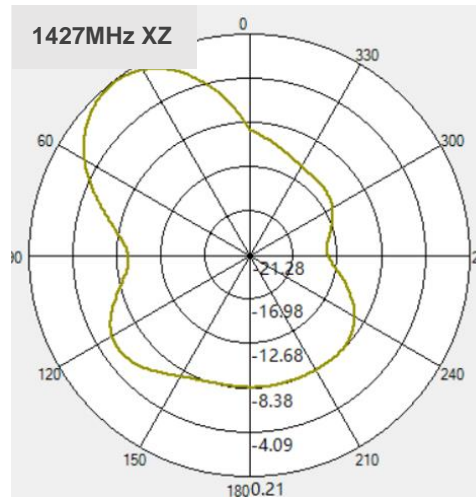
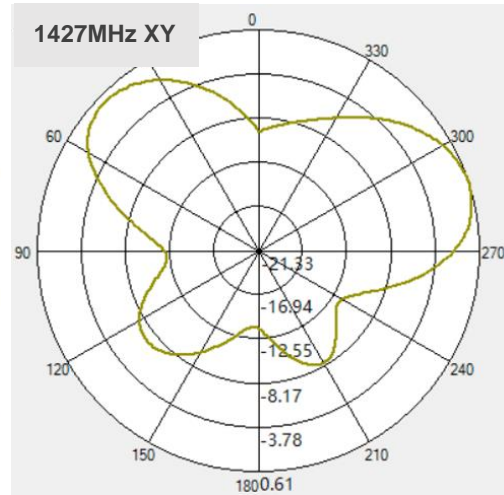
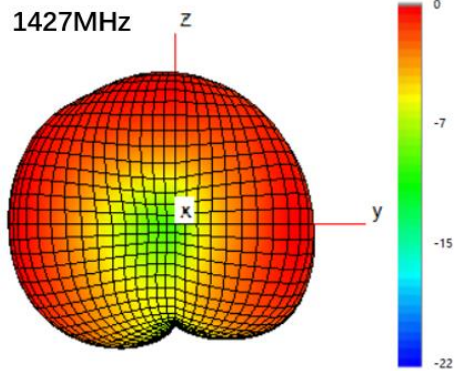
Frequency (MHz)	617	960	1427	1710	2170	2300	2690	3300	5000	5100	5500	6000
Gain (dBi)	-3.62	-0.28	-0.22	1.85	1.67	0.88	3.17	2.38	1.49	1.30	1.01	2.08

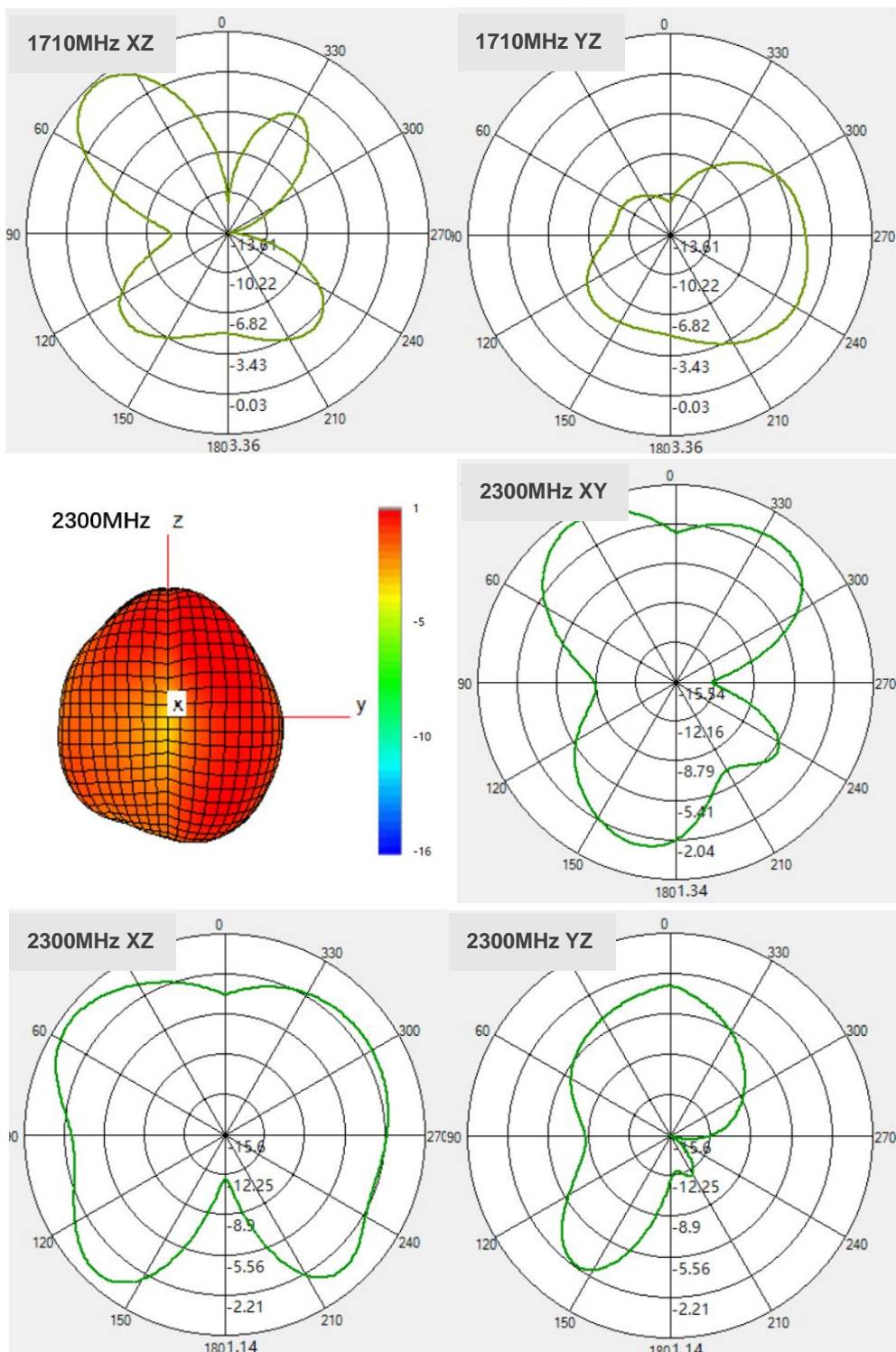
4.5. Radiation Pattern

- Test condition: assembled on EVB

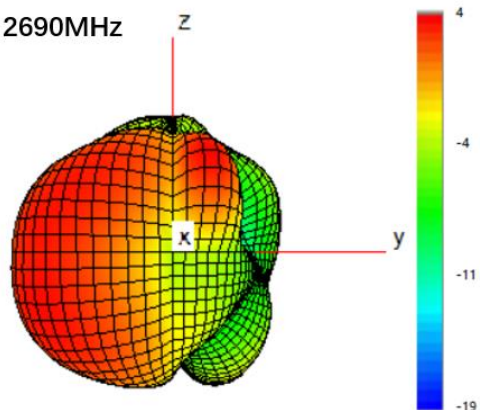




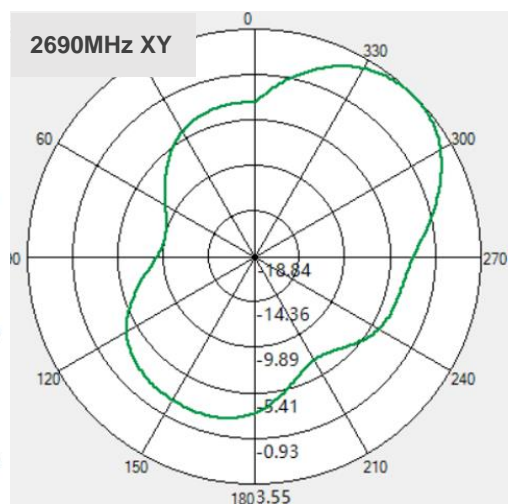




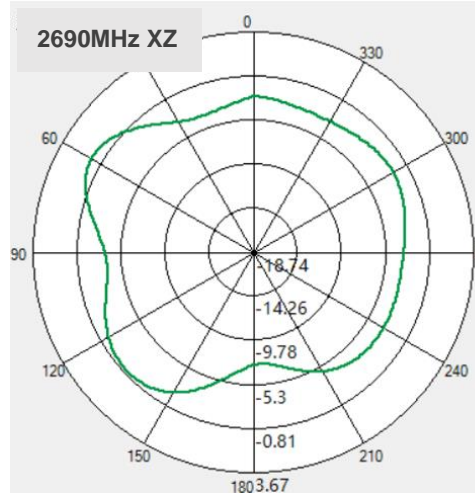
2690MHz



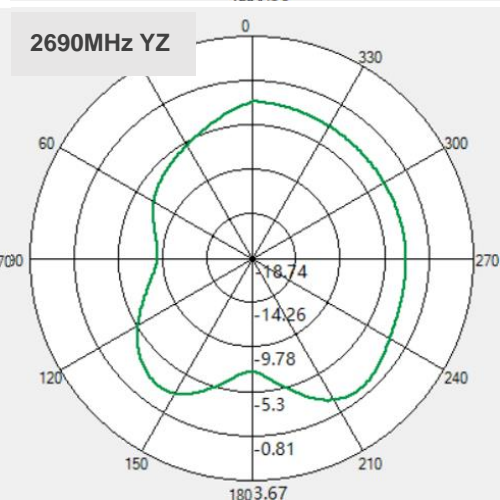
2690MHz XY



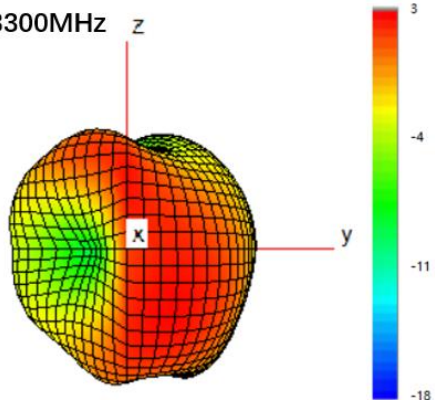
2690MHz XZ



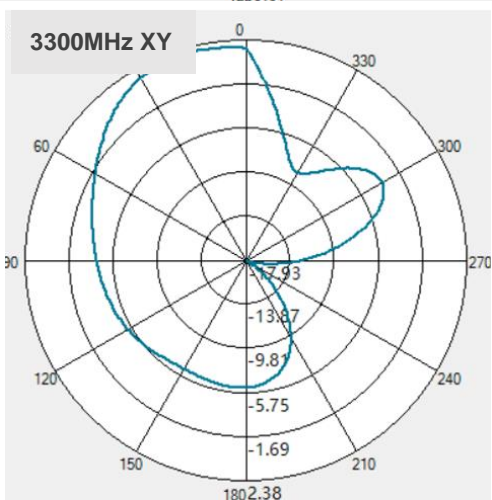
2690MHz YZ

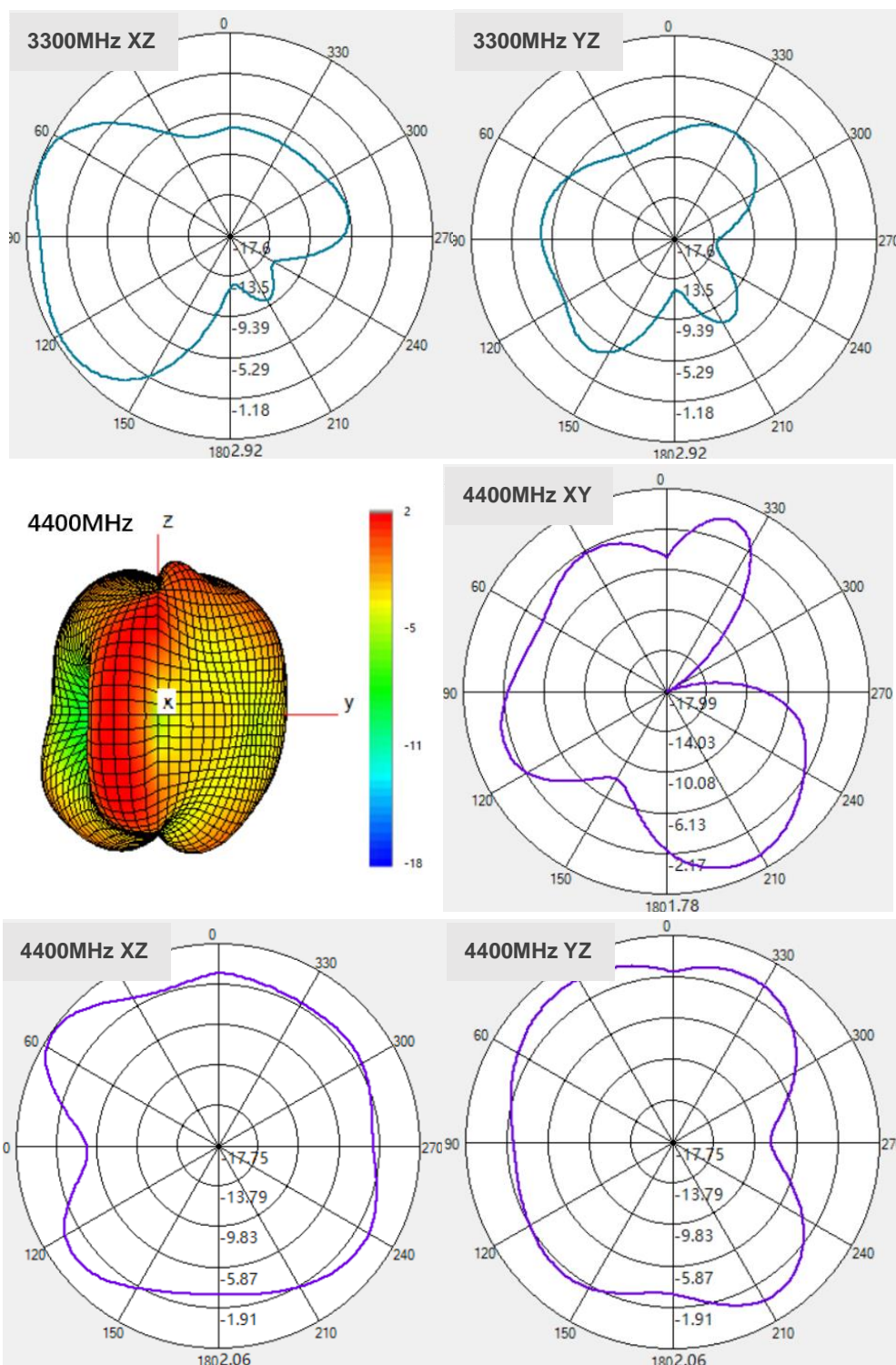


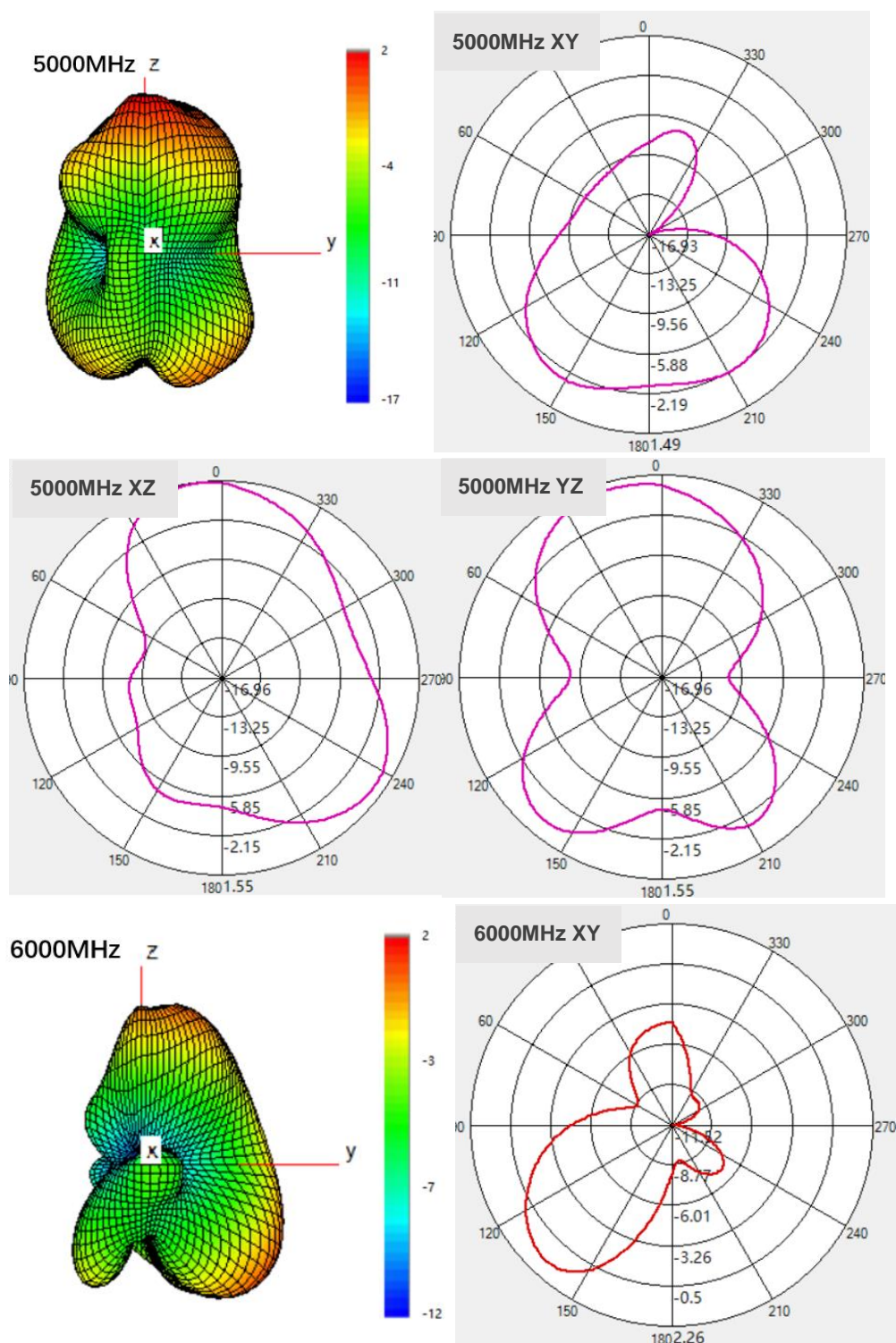
3300MHz

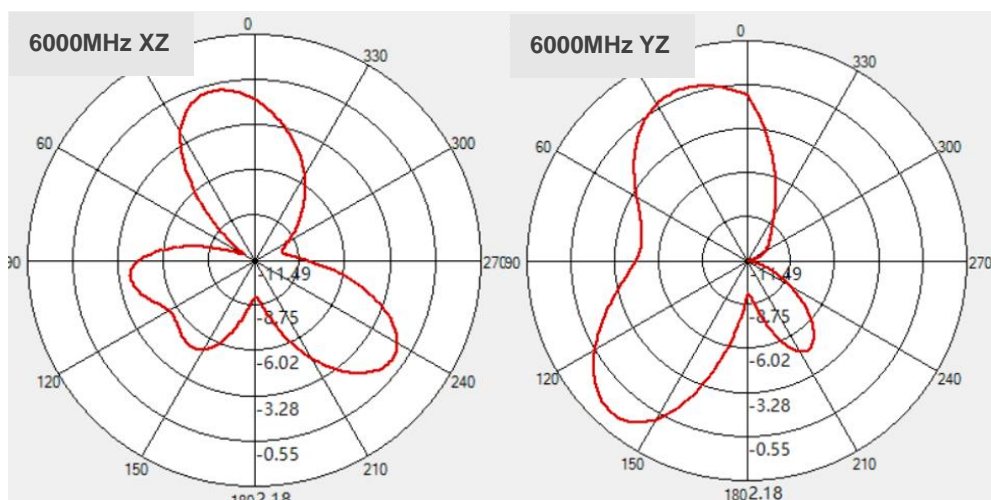


3300MHz XY

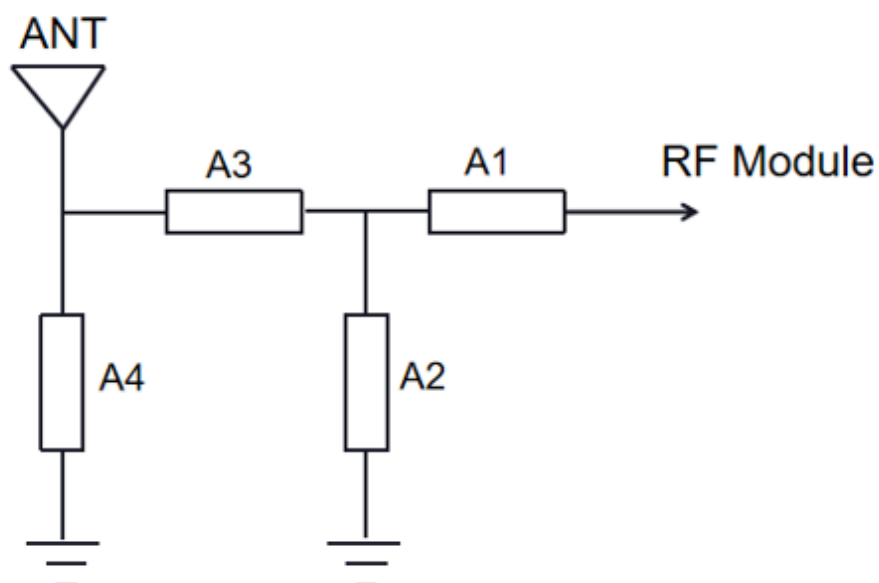




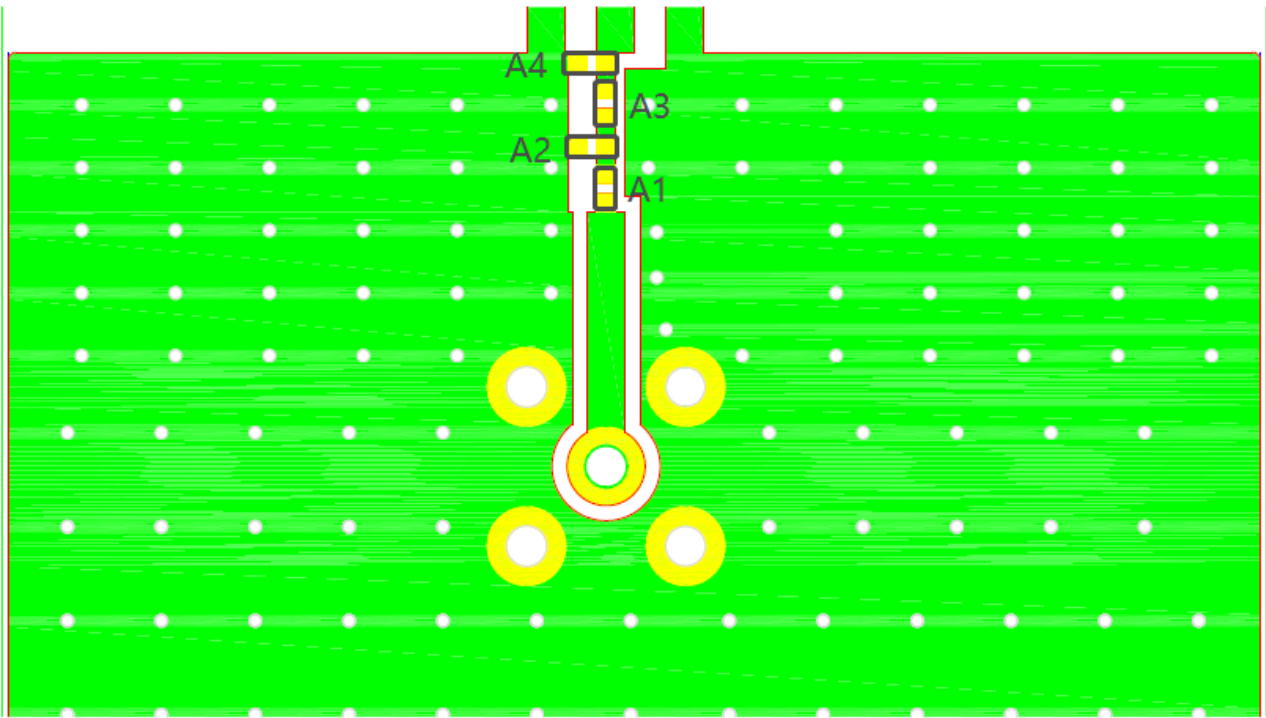




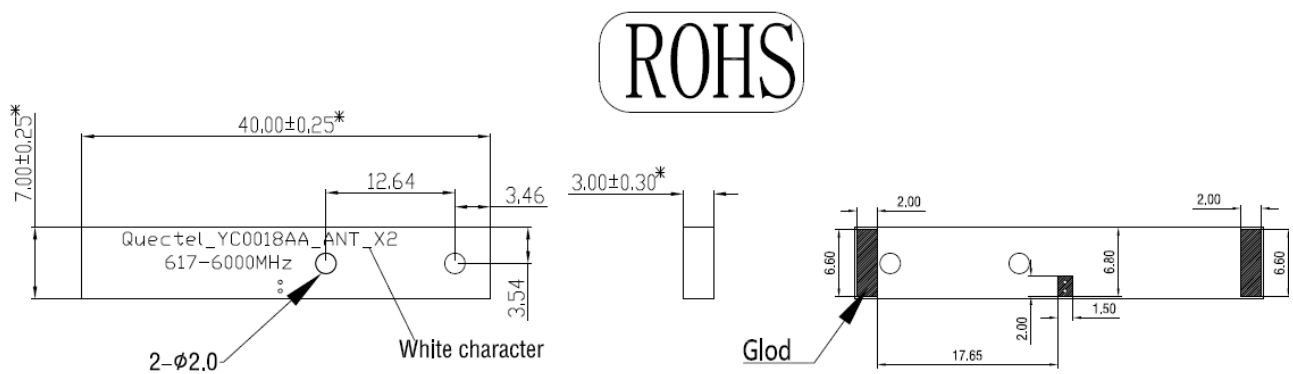
4.6. Matching Circuit

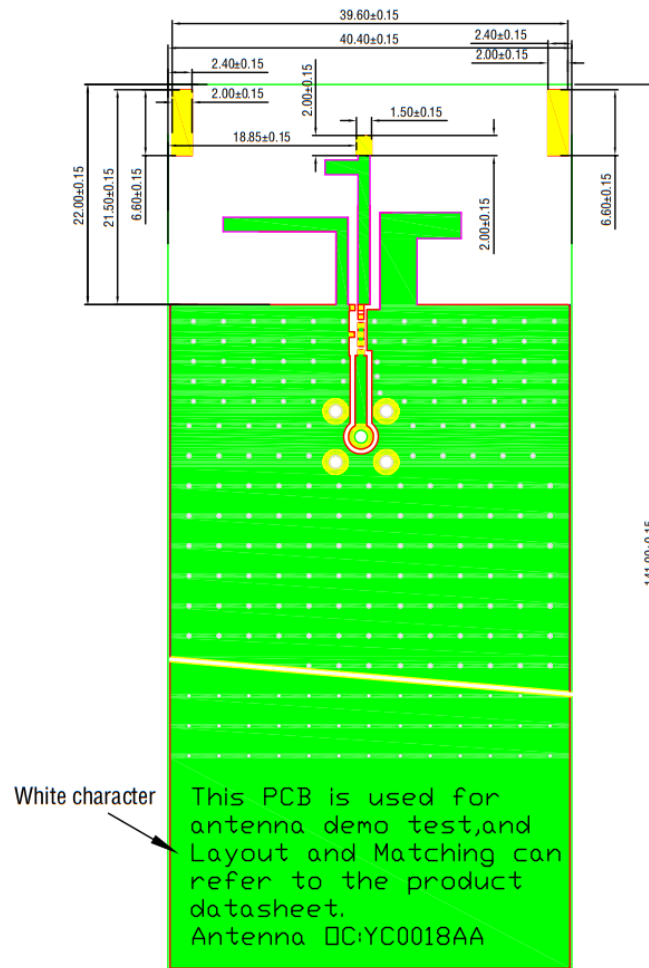


A4	11nH
A3	3.6pF
A2	/
A1	0Ω

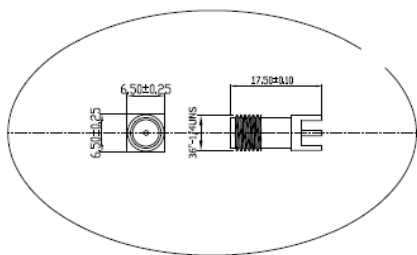


5 Product Size

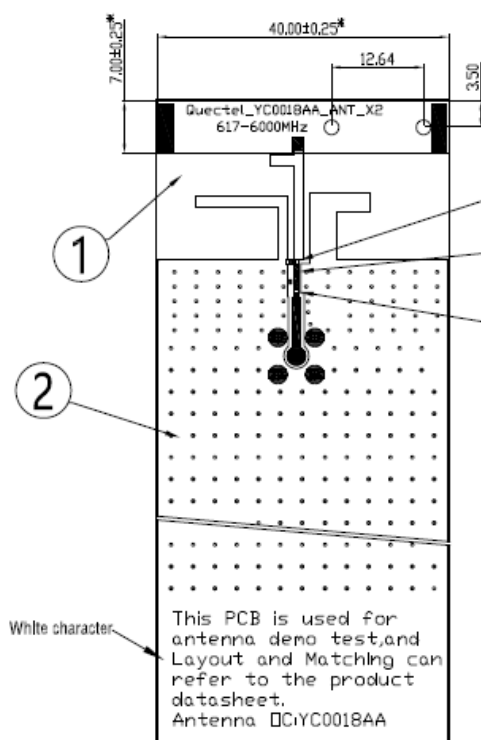




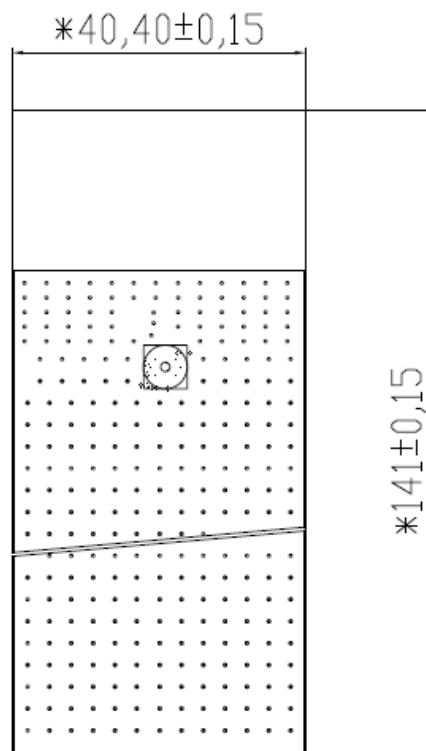
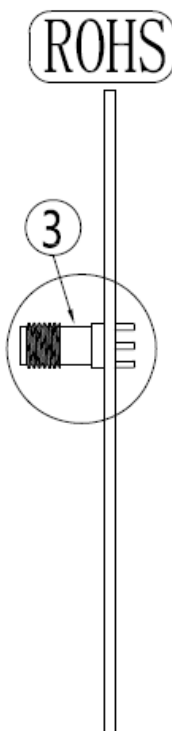




	Name	Material	Brand	QTY	NO
1	Antenna	FR4 3.0t	BLACK	1	
2	PCBA	FR4 0.8t	Green	1	
3	SMA-K	Brass	Gold Plated	1	
4	11nH Inductor(0201)	Ceramics	MURATA	1	LQP03TG11NH02D
5	3.6pF Inductor(0402)	Ceramics	MURATA	1	GRM1555C1H3R6CA01D
6	1nH Inductor(0402)	Ceramics	MURATA	1	LQG15HS1N0S02



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