

Antenna

YC0003AA Datasheet

Antenna Services

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About the Document

Revision History

Version	Date	Author	Note
1.0	2020-06-23	Kenny YIN	Initial
2.0	2020-08-28	Kenny YIN	Updated the specifications.
2.1	2020-12-11	Kenny YIN	Updated the antenna image in Chapter 2.
2.2	2021-01-14	Kenny YIN	Added the coordinate picture of the product in the lab.
2.3	2021-01-15	Kenny YIN	Added Return Loss and package.
2.4	2021-01-20	Kenny YIN	Updated direction map.

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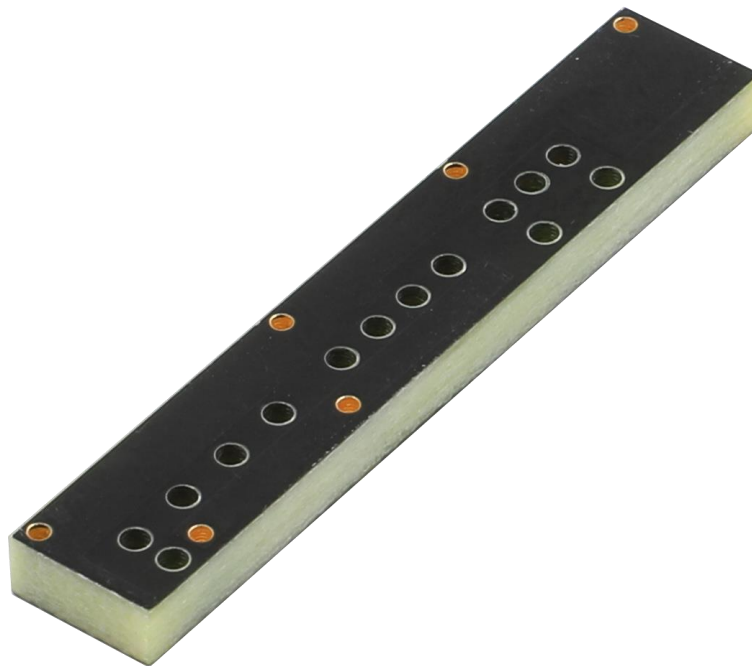
1 Product Description

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

- LTE
- High efficiency
- Excellent performance



3 Product Specifications

Passive Electrical Specifications

Frequency Range	698–960 MHz, 1695–2200 MHz, 2300–2700 MHz
Input Impedance	50 Ω
VSWR	< 3
Gain	< 5.5 dBi
Polarization Type	Linear

Mechanical Specifications

Antenna Size	40 mm (L) x 7 mm (W) x 3 mm (H)
Carrier	FR4
Connector Type	SMD
Working Temperature	-40 °C to +85 °C
Radome Color	Black

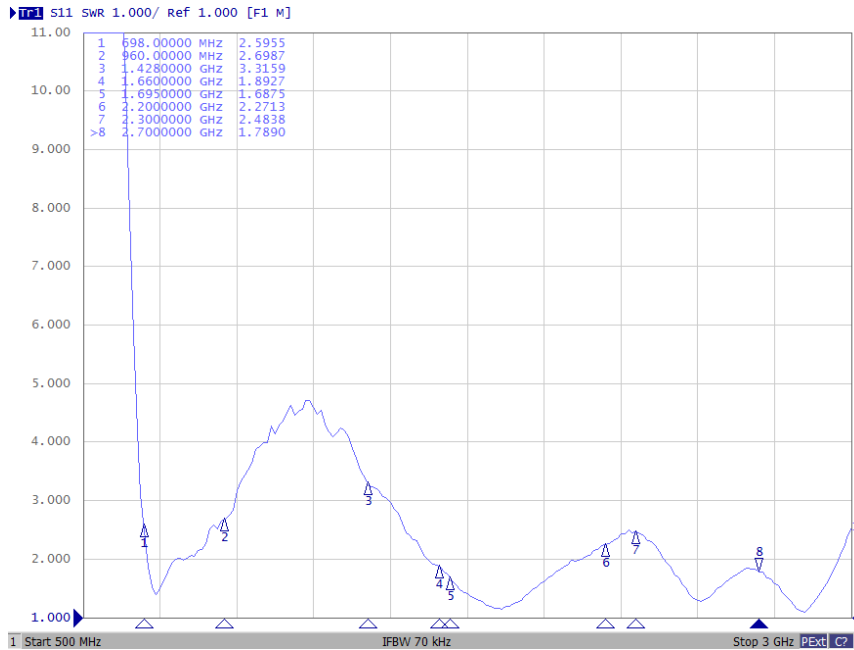
4 Overall Performance

4.1. Test Environment

- KEYSIGHT VNA Network Analyzer E5063A 100 kHz – 6.5 GHz.
- RayZone®2800 Chamber 5G (FR1) SISO/MIMO, 400 MHz – 6.0 GHz.

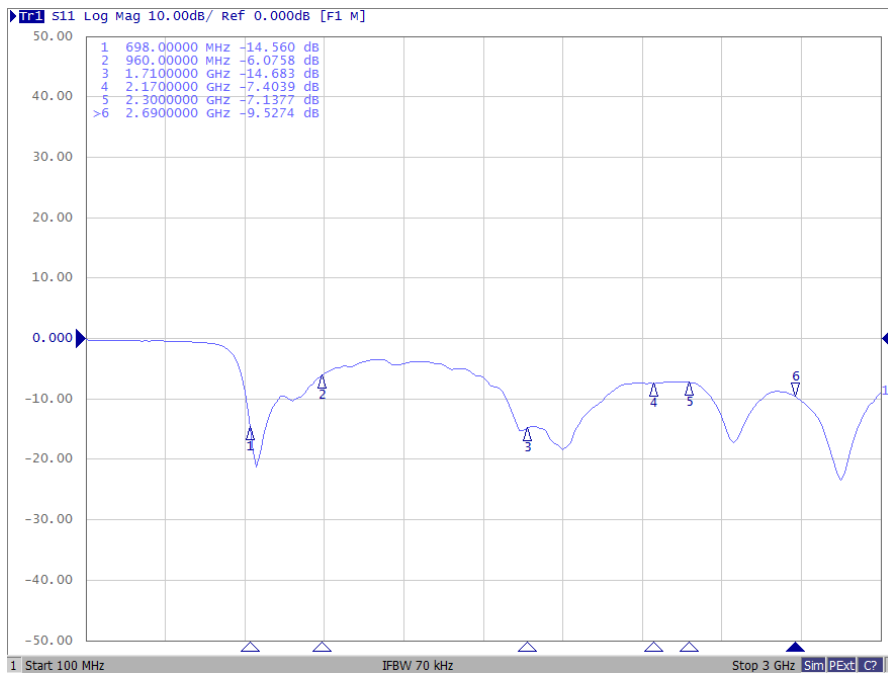


4.2. VSWR



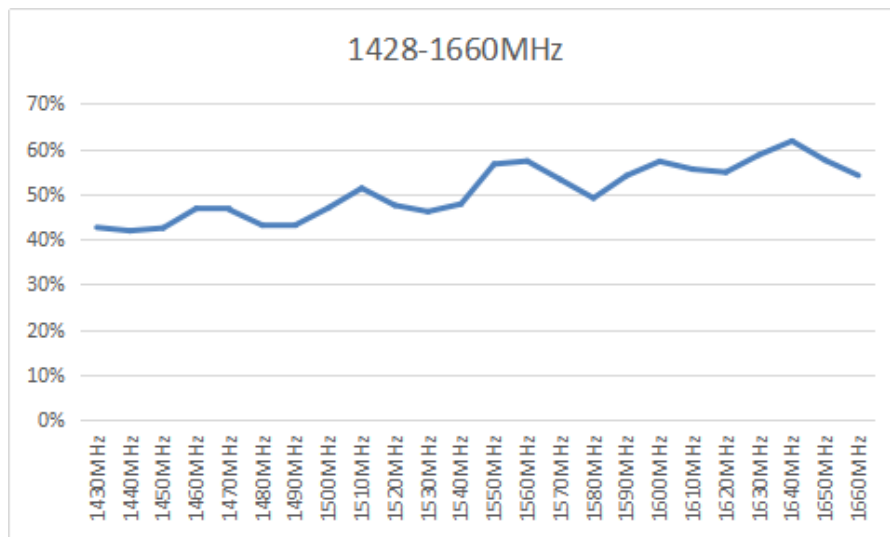
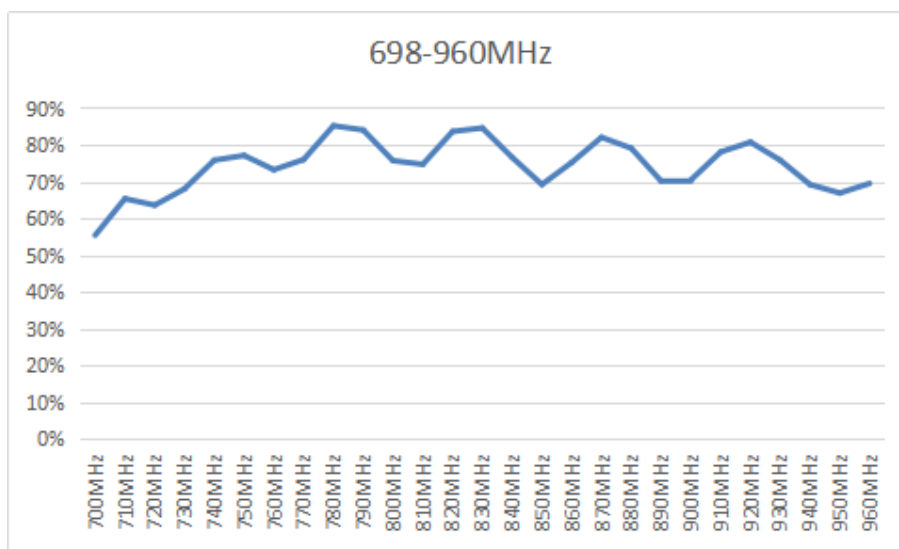
Frequency (MHz)	698	960	1428	1660	1695	2200	2300	2700
VSWR	2.5	2.6	3.3	1.8	1.6	2.2	2.4	1.7

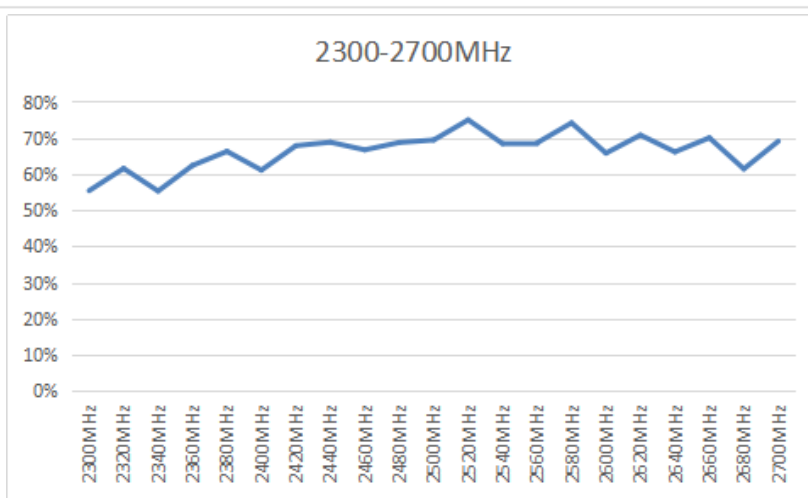
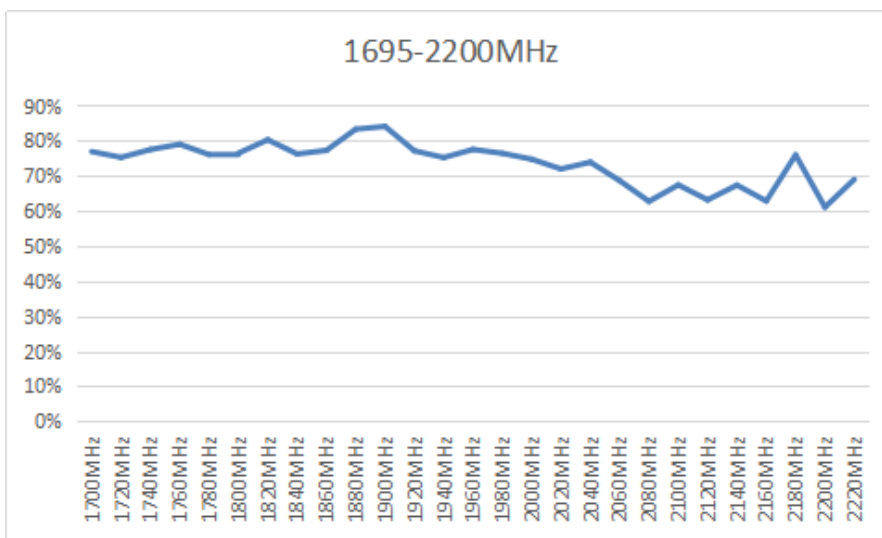
4.3. Return Loss



Frequency (MHz)	698	960	1710	2170	2300	2700
Return Loss	-14	-6	-14	-7	-7	-9

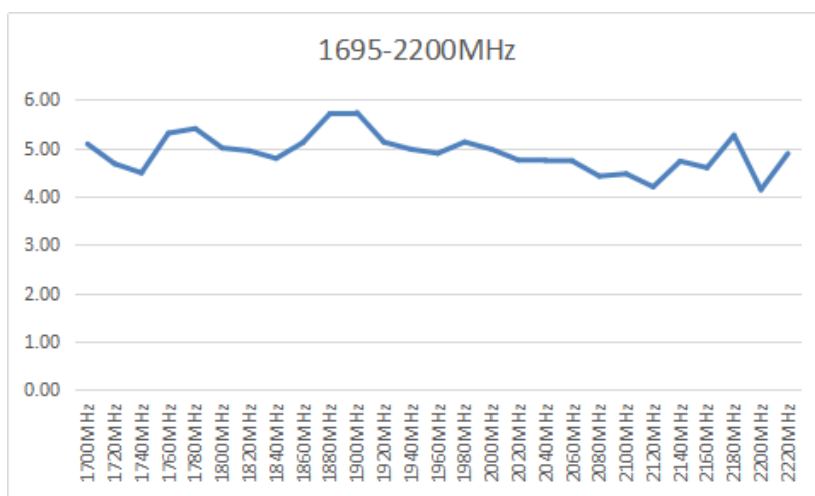
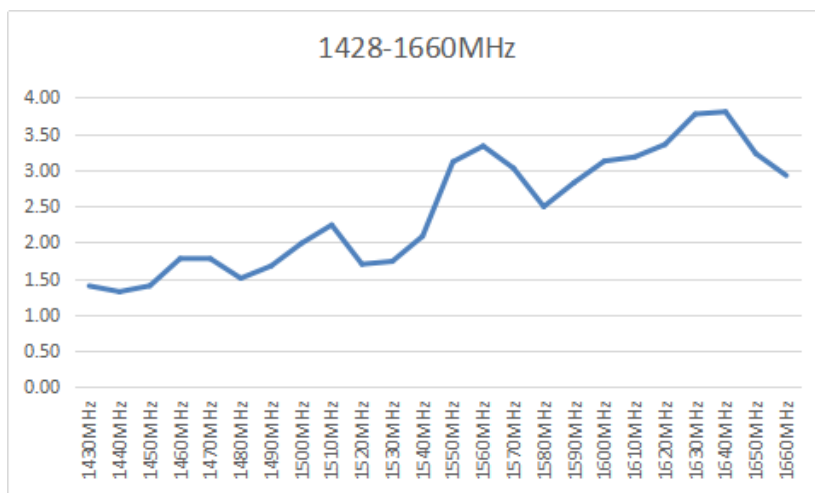
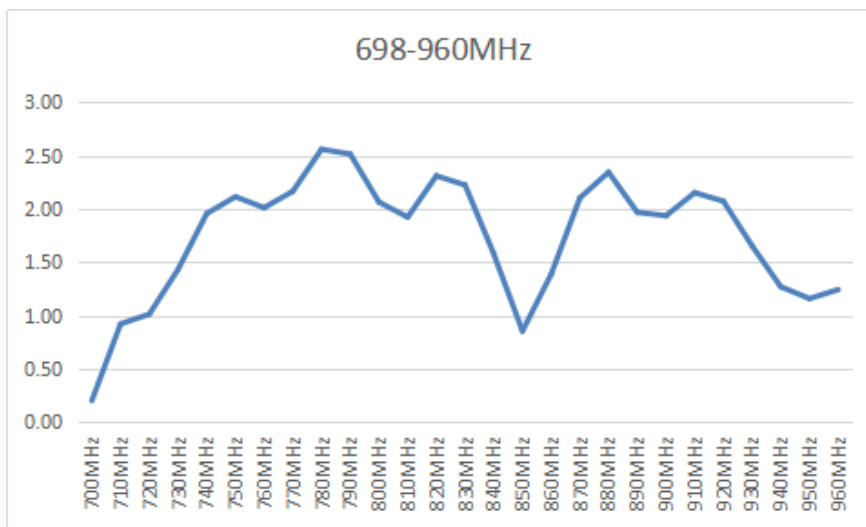
4.4. Efficiency

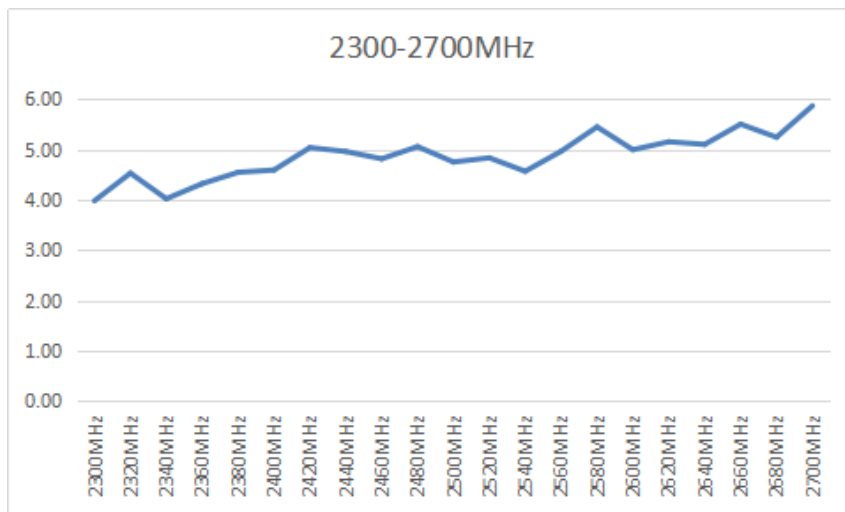




Frequency (MHz)	698	960	1428	1660	1695	2200	2300	2700
Efficiency (%)	55%	69%	43%	54%	77%	69%	55%	69%

4.5. Gain

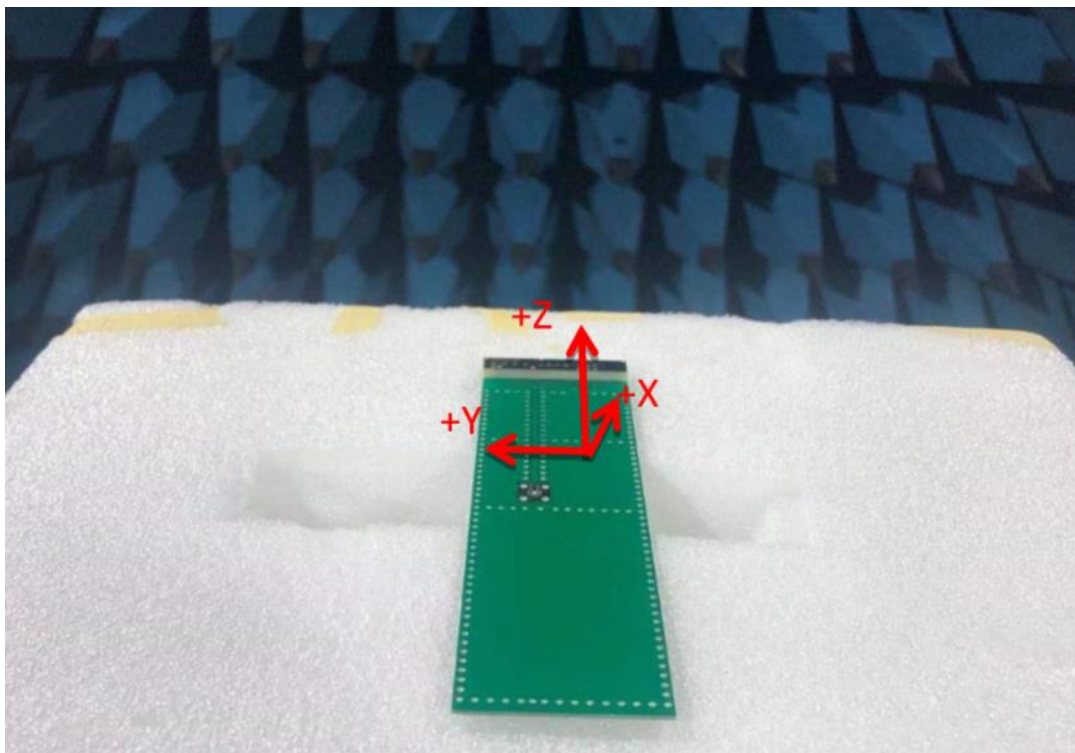


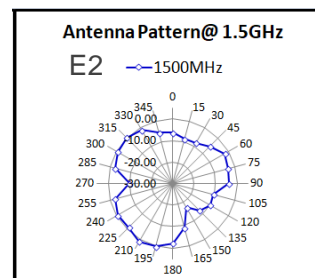
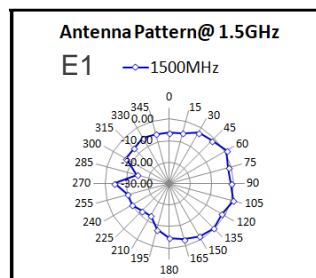
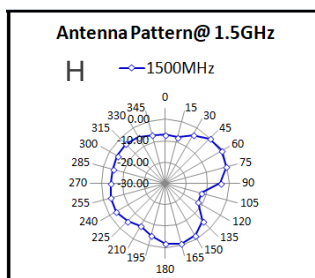
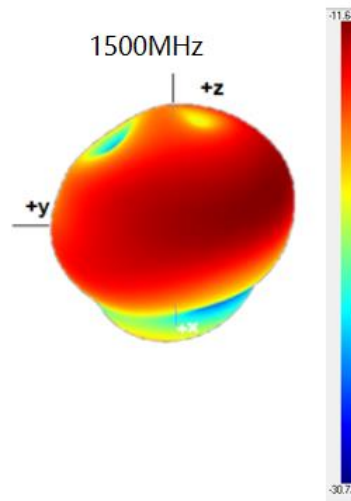
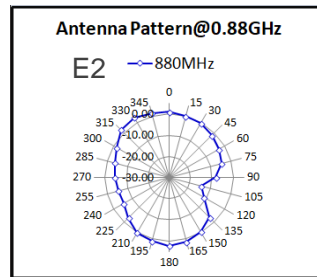
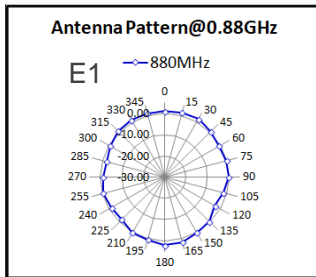
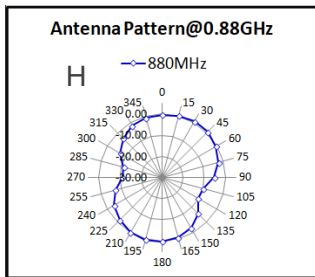
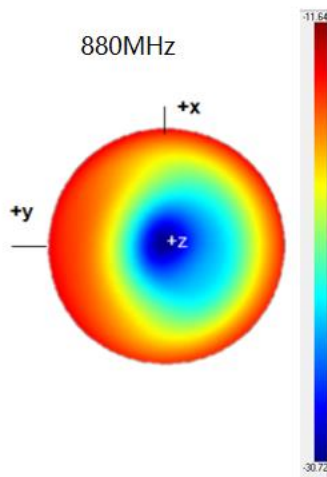


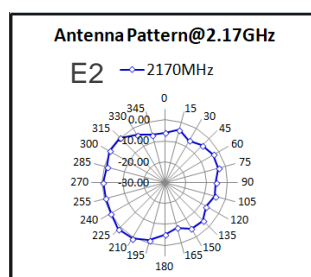
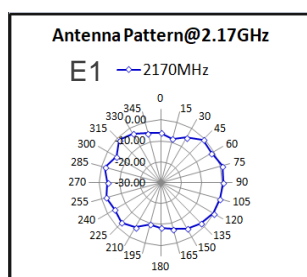
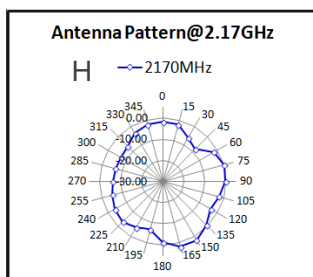
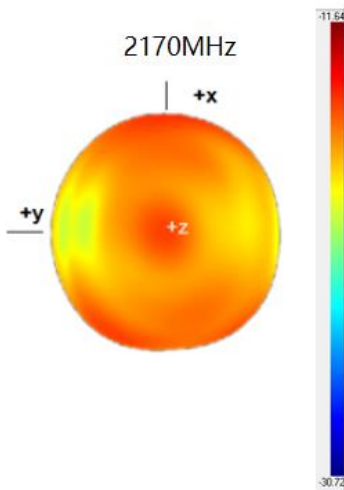
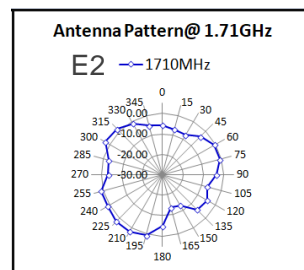
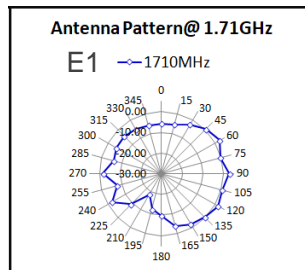
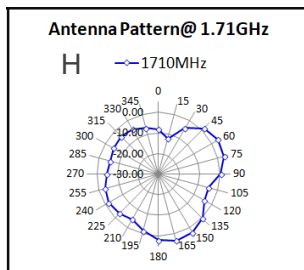
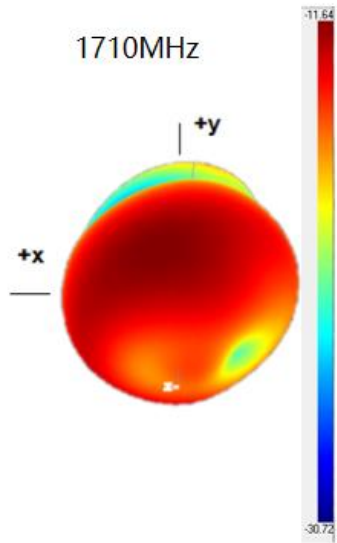
Frequency (MHz)	698	960	1428	1660	1695	2200	2300	2700
Gain (dB)	0.20	1.24	1.40	2.92	5.09	4.89	3.98	5.87

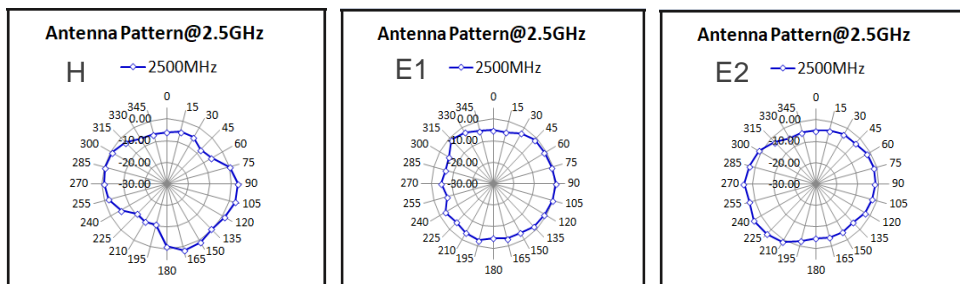
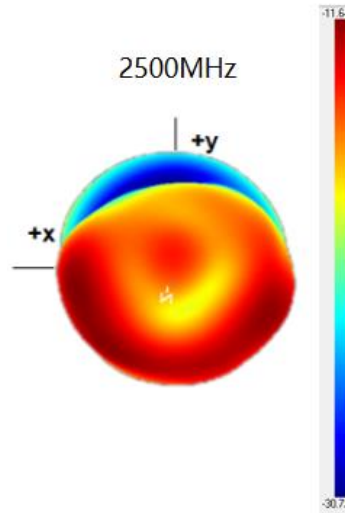
4.6. Radiation Patterns

Board length 135 mm



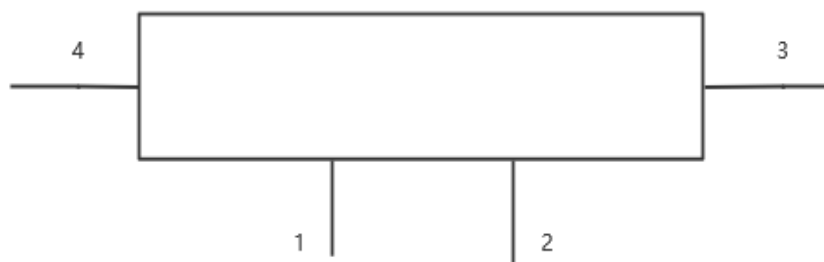






5 Schematic symbol and Pin definition

The pin assignment for the antenna is as follows. The antenna has 4 pins and only two work. All other pins are designed for mechanical strength.



Pin No.	Description
1	Feed
2	Return/GND
3, 4	Not used (Mechanical only)

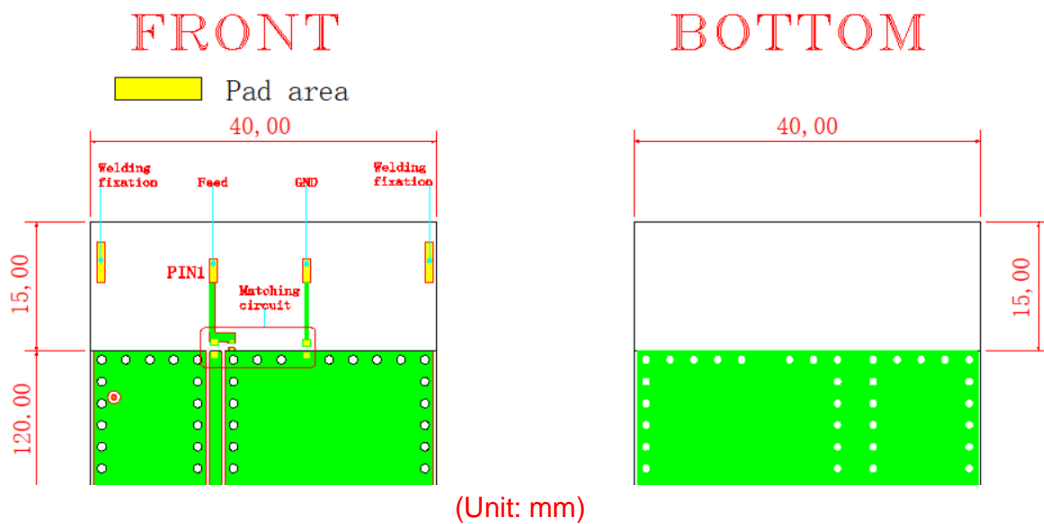
6 Transmission Line

The characteristic impedance of all transmission lines shall be designed as 50 Ω.

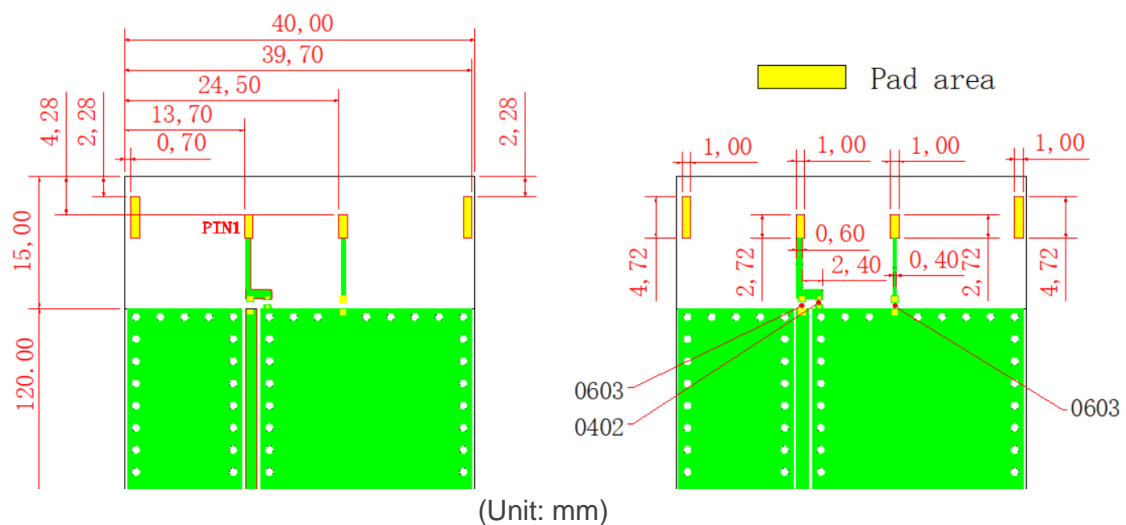
- The length of the transmission lines should be kept to as short as possible
- Any other part of the RF system, such as transceiver, power amplifiers, etc., shall also be designed with an impedance of 50 Ω

7 Recommend PCB Layout

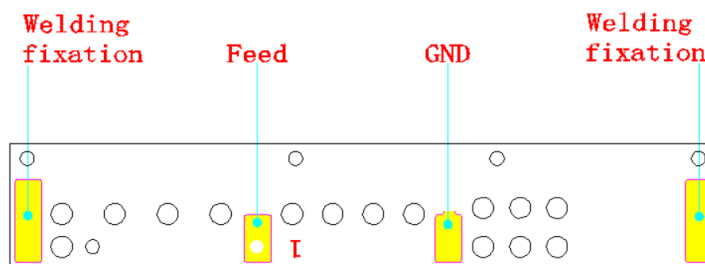
- TEST PCB SIZE: 135 x 40, PCB clearance area: 15 x 40



- Layout front Details

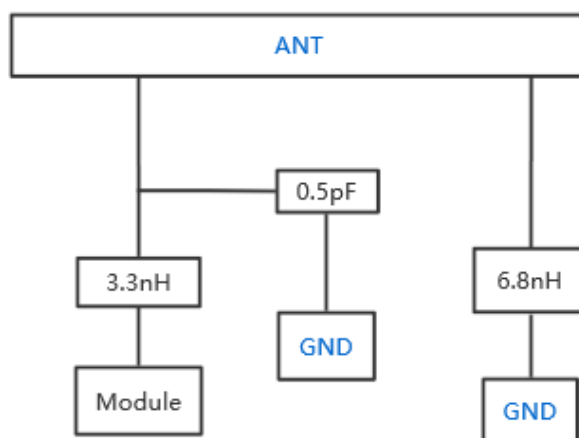


- Antenna pad



Front: Perspective view

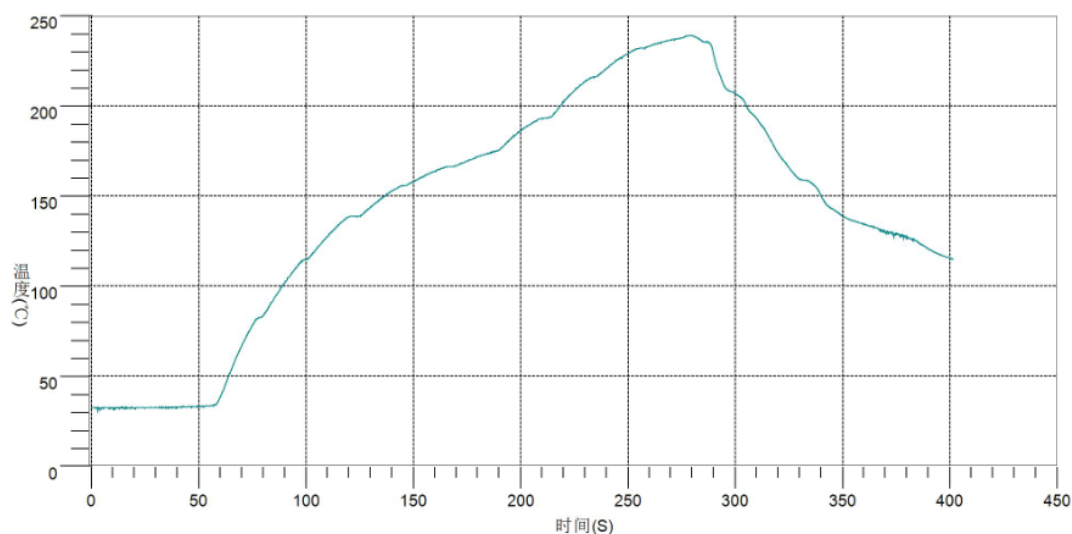
8 Matching circuit



9 Soldering Temperature

Phase	Profile Features	PB-Free Assembly
RAMP-UP	Avg. Ramp-up Rate (T _{max} to T _p)	3 °C/second (max.)
PREHEAT	Temperature Min (T _{min})	150 °C
	Temperature Max (T _{max})	190 °C
	Time (t _{min} to t _{max})	110 seconds max.
REFLOW	Temperature (TL)	220 °C
	Total Time above TL (tl)	90 seconds max.
PEAK	Temperature (T _p)	230–250 °C
RAMP-DOWN	Rate	-1 °C/second max.

10 Reflow Profile

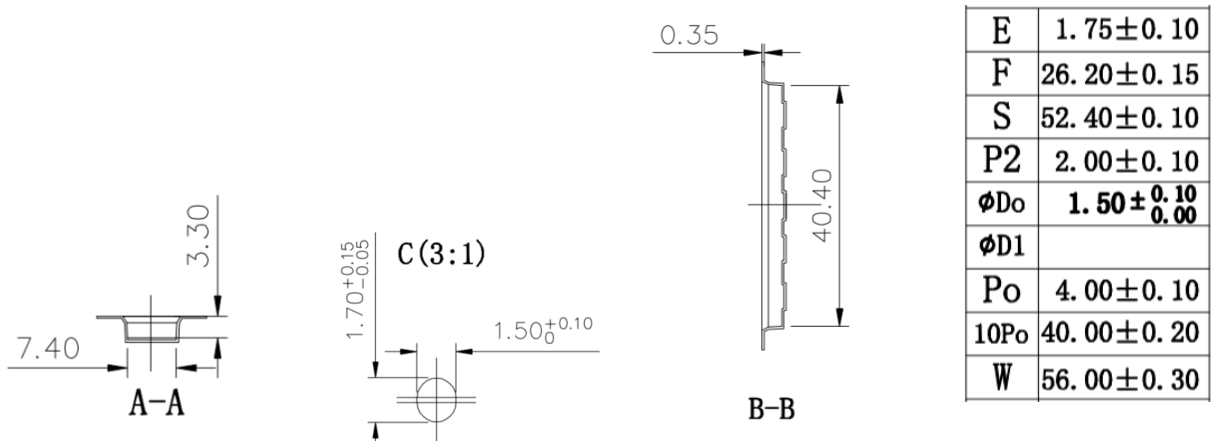
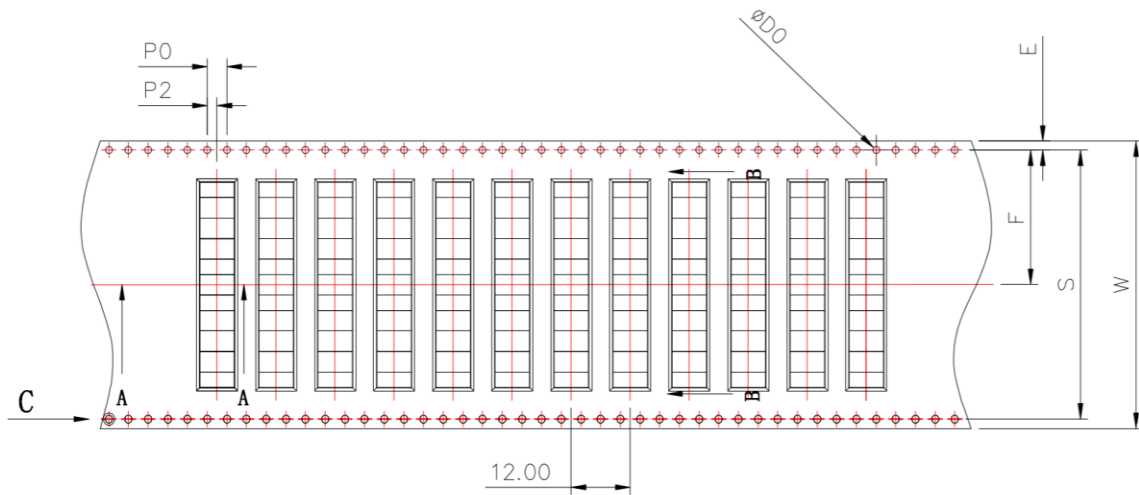


No	Probe name	150-190°C		>220°C	peak temperature°C
		60-110s	slope 0.0-3.0	40-90s	230-250°C
No.1	J1	67.9	0.59	52.4	239

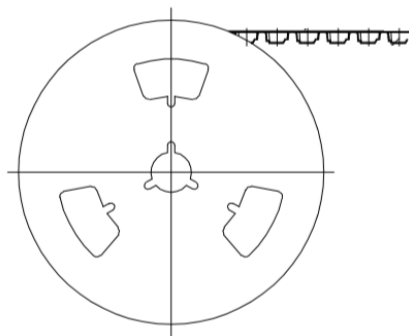
furnace parameter	1	2	3	4	5	6	7	8	9	10	11	12
Up Temperature zone	175.0	185.0	185.0	185.0	190.0	195.0	230.0	275.0	275.0	275.0		
Down Temperature zone	175.0	185.0	185.0	185.0	190.0	195.0	230.0	275.0	275.0	275.0		
Temperature zone length	0	0	0	0	0	0	0	0	0	0	0	0

11 Package

- Quantity/Reel: 1500 pcs/Reel
- Carrier tape dimensions (mm)



- Taping reel dimensions (mm)



330*100*56

12 Product Size

