

# Antenna

# YC0002AA Datasheet

## Antenna Services

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Date: 2020-12-16

Status: Released



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# About the Document

## Revision History

Version	Date	Author	Note
1.0	2020-06-03	Kenny YIN	Initial
2.0	2020-06-22	Kenny YIN	Updated the specifications.
2.1	2020-12-16	Kenny YIN	Updated the antenna image in Chapter 2.

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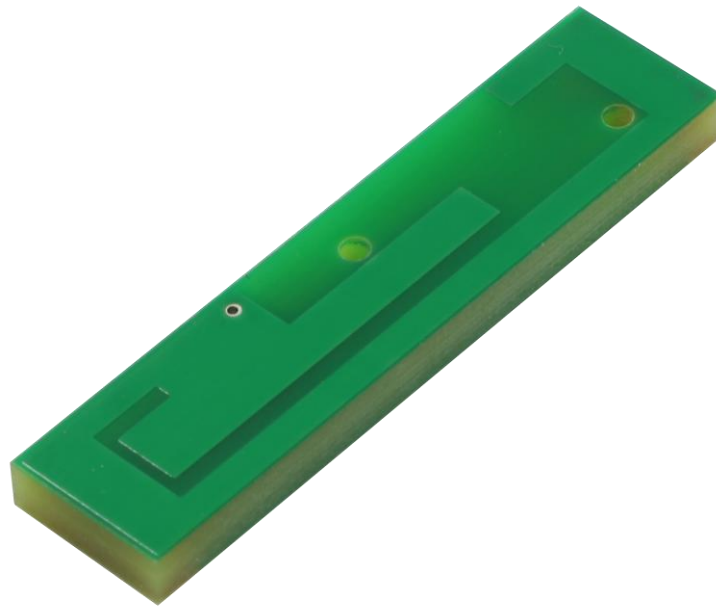
## 1 Product Description

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

- 4G LTE SMD Antenna
- High efficiency
- Excellent performance



### 3 Product Specifications

#### Passive Electrical Specifications

Frequency Range	698–960 MHz; 1710–2690 MHz
Input Impedance	50 $\Omega$
VSWR	$\leq 3.0$
Gain	$\leq 3$ dBi
Polarization Type	Linear

#### Mechanical Specifications

Antenna Size	42 mm x 10 mm x 3 mm
Casing	FR4
Radiator	Cu
Connect Type	SMD
Working Temperature	-20 °C to +80 °C
Radome Color	Green

## 4 Overall Performance

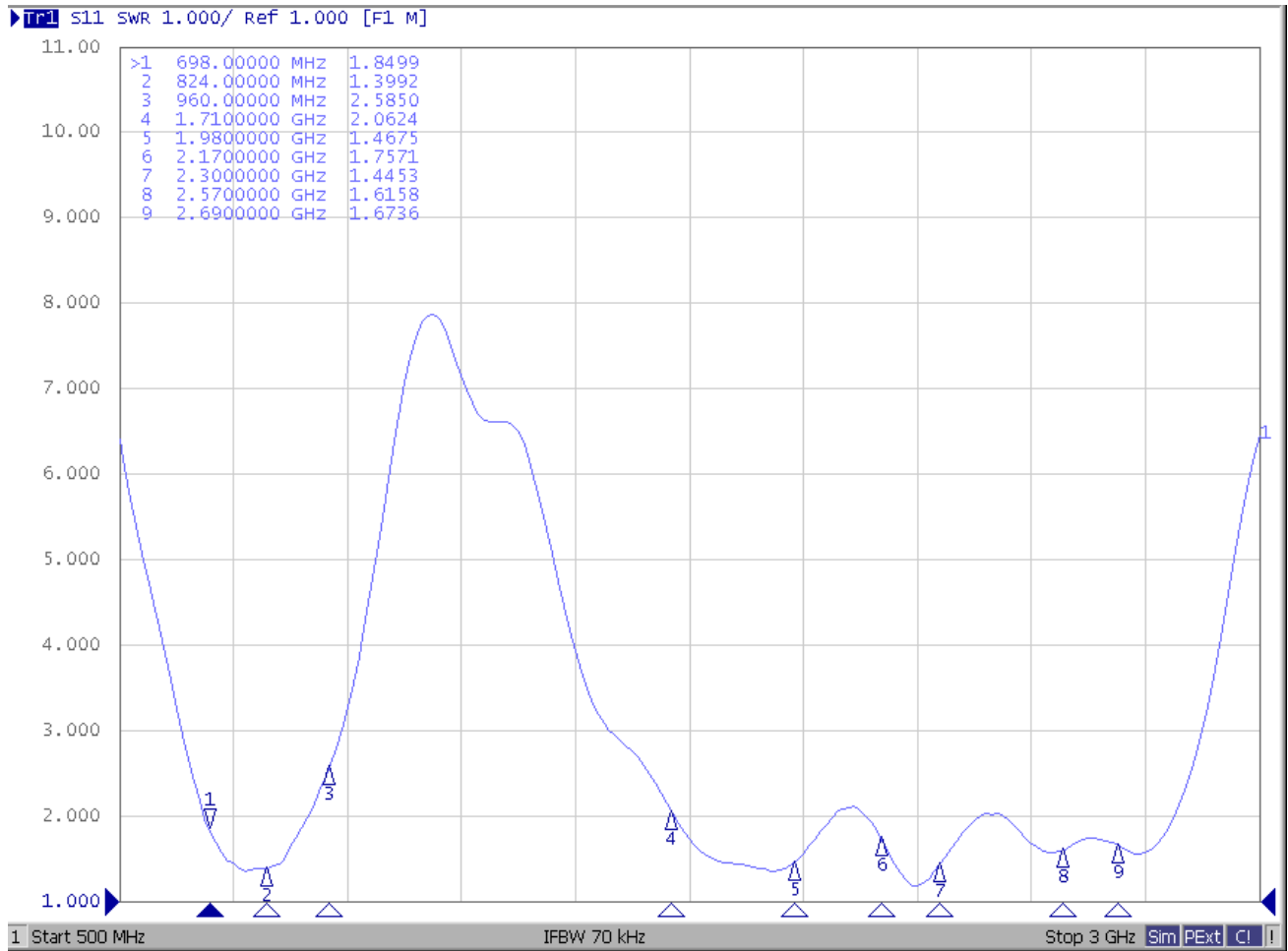
### 4.1. Test Environment

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



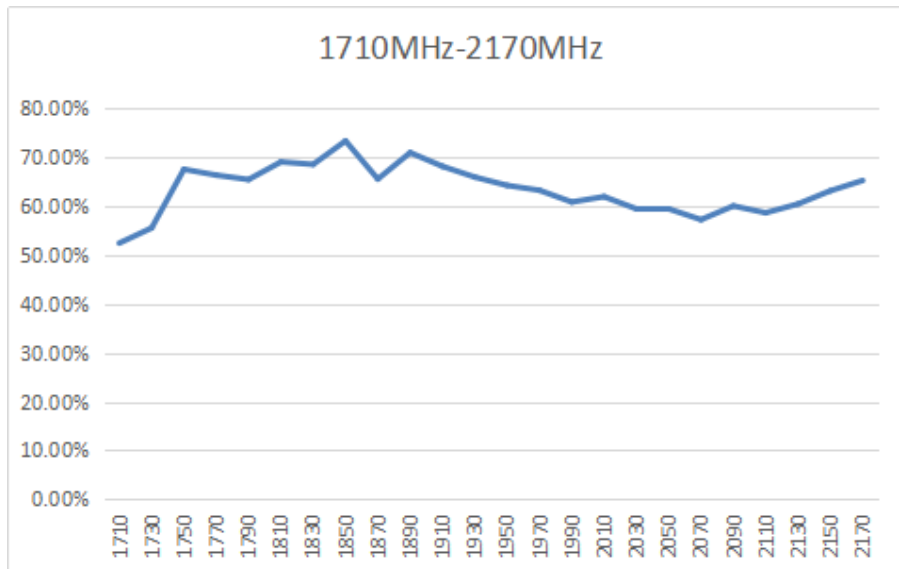
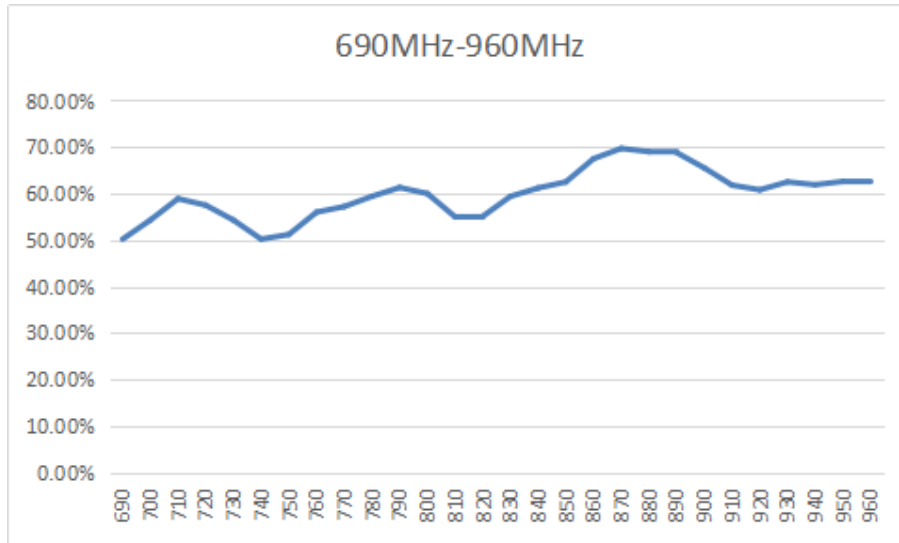


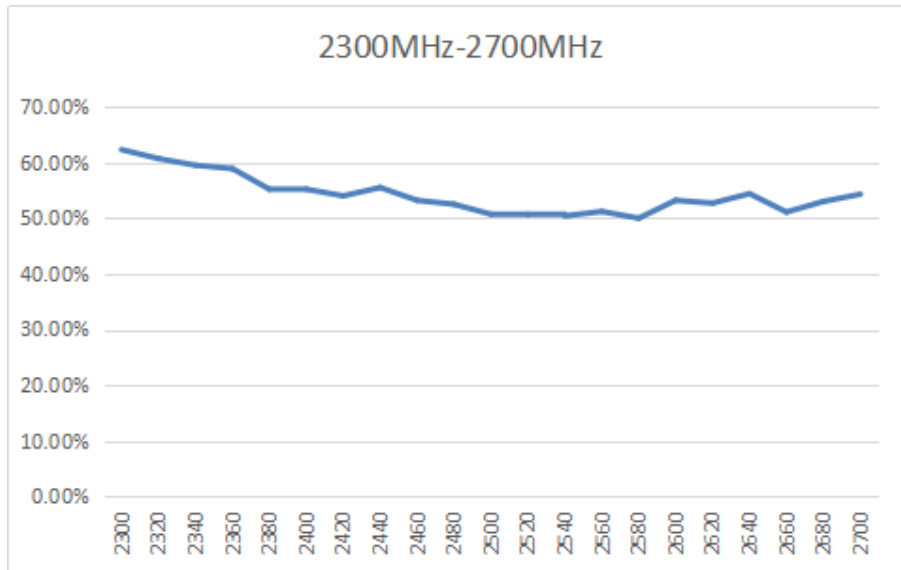
## 4.2. VSWR



Frequency (MHz)	698	824	960	1710	1980	2170	2300	2570	2690
VSWR	1.85	1.40	2.59	2.06	1.47	1.76	1.45	1.62	1.67

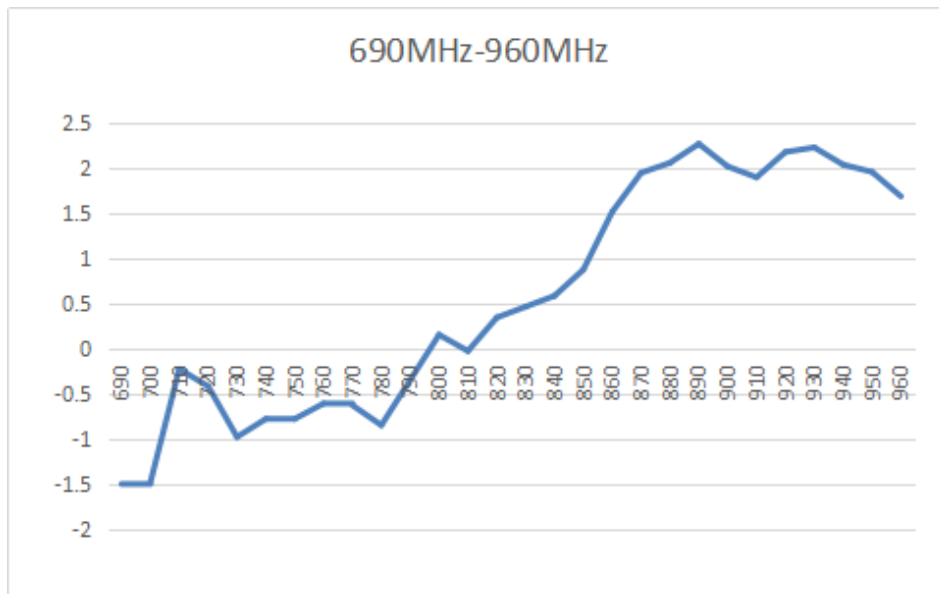
### 4.3. Efficiency

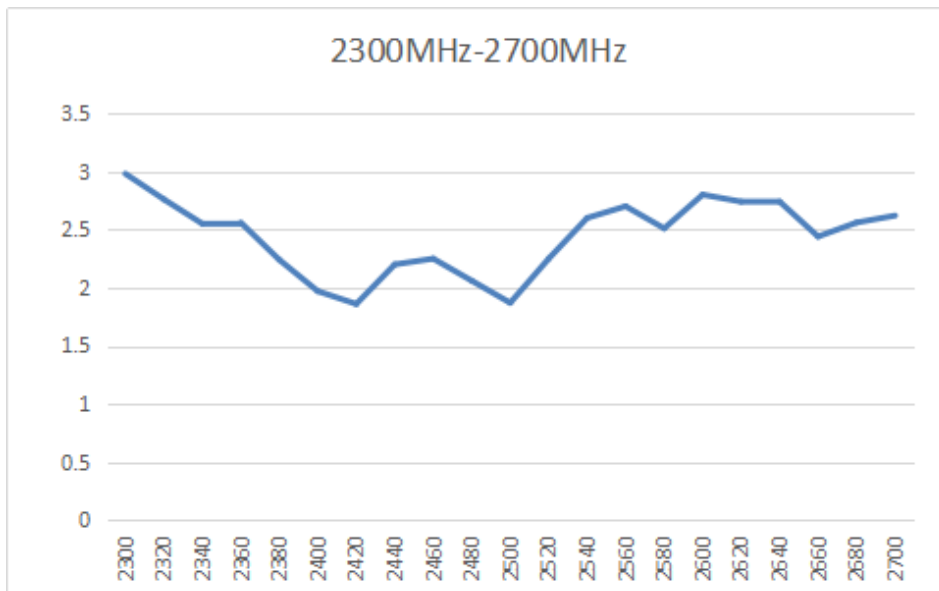
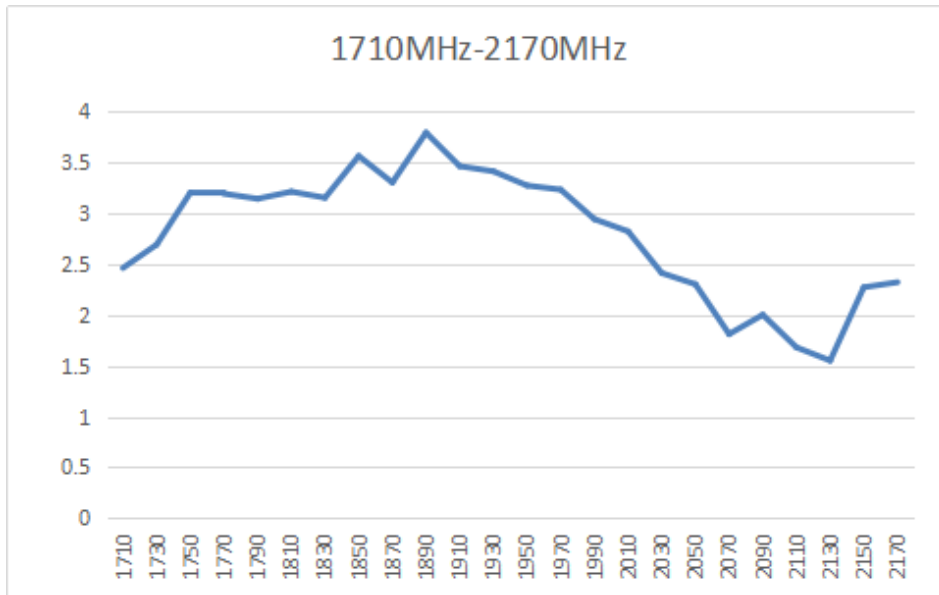




<b>Frequency (MHz)</b>	690	820	960	1710	1990	2170	2300	2580	2680
<b>Eff. (%)</b>	50.20	55.10	62.5	52.4	60.8	65.2	62.3	50	53

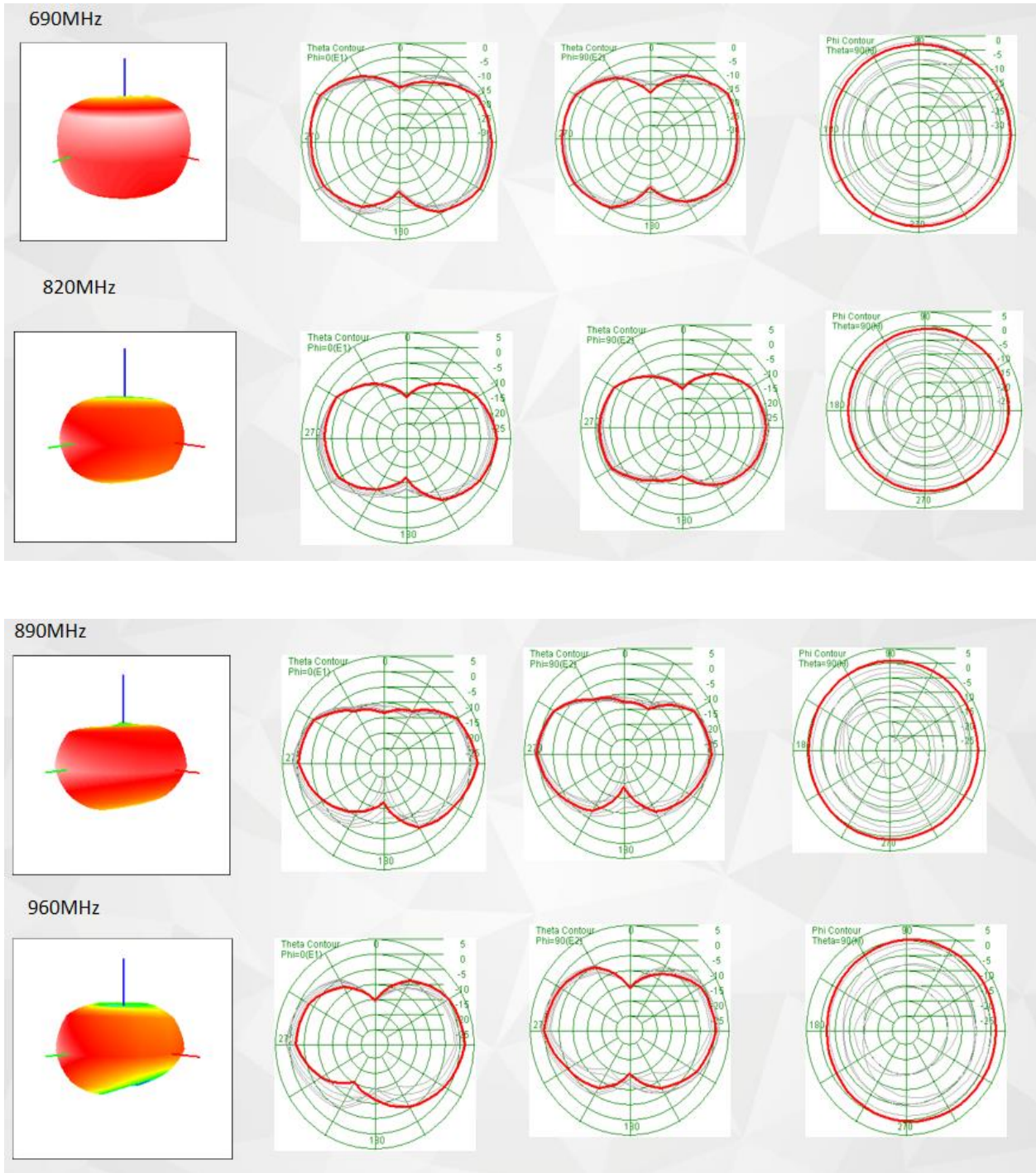
#### 4.4. Gain



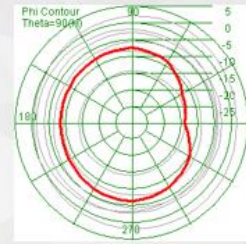
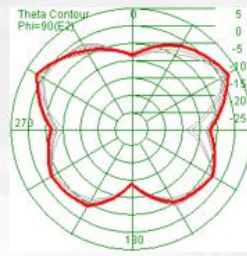
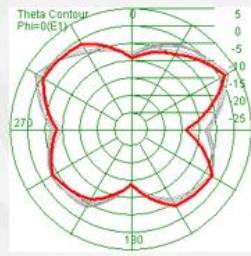
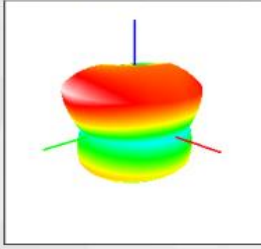


<b>Frequency (MHz)</b>	690	820	960	1710	1990	2170	2300	2580	2680
<b>Gain (dBi)</b>	-1.5	0.34	1.68	2.46	2.94	2.32	2.98	2.51	2.56

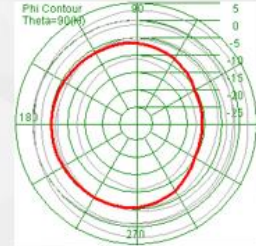
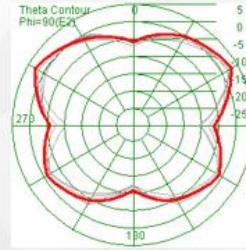
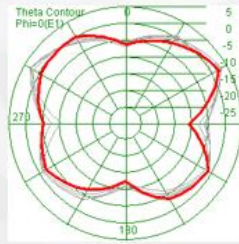
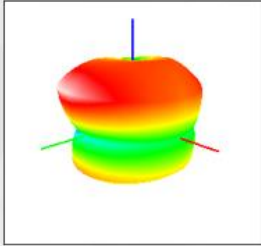
### 4.5. Radiation Patterns



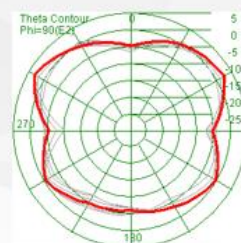
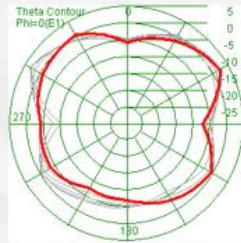
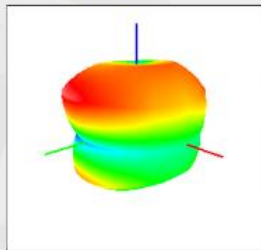
1710MHz



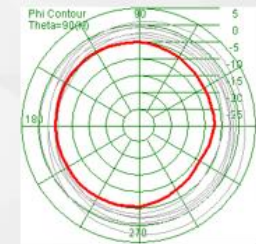
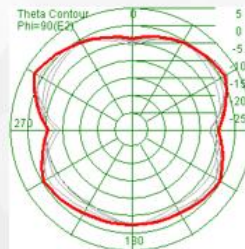
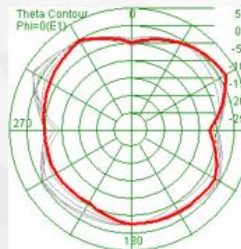
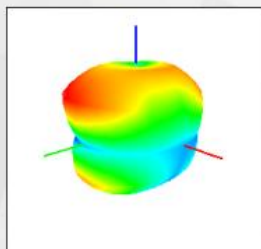
1810MHz



1910MHz

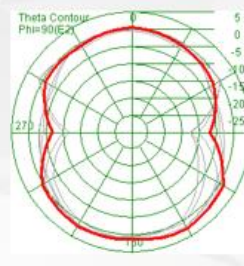
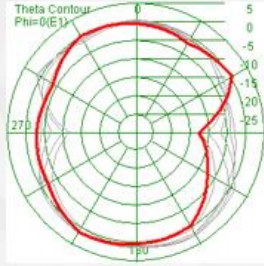
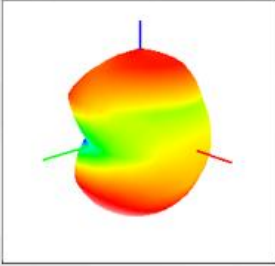


1990MHz

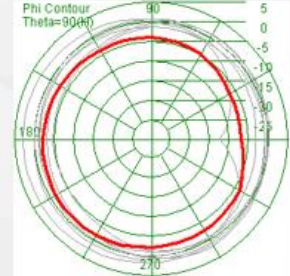
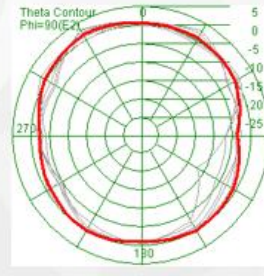
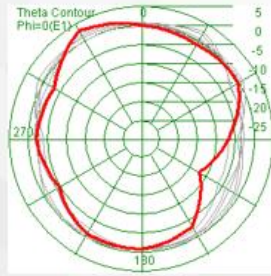
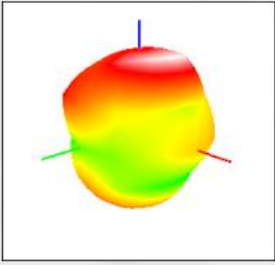




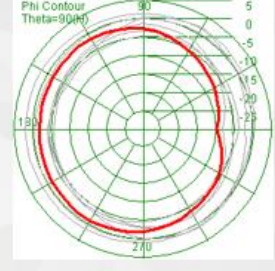
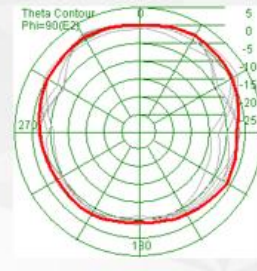
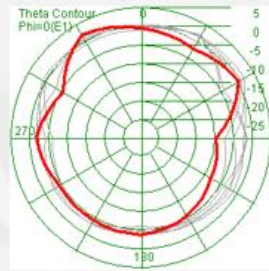
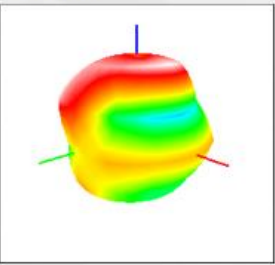
2170MHz



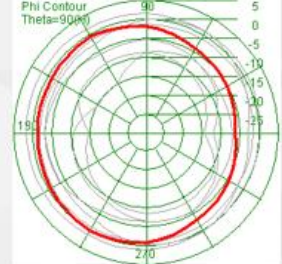
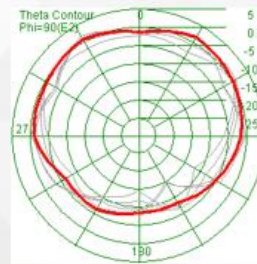
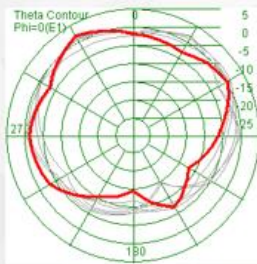
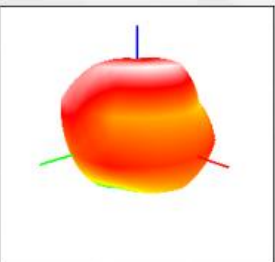
2300MHz



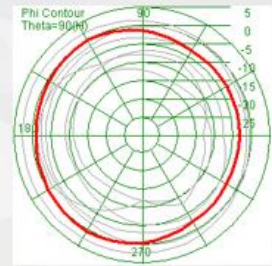
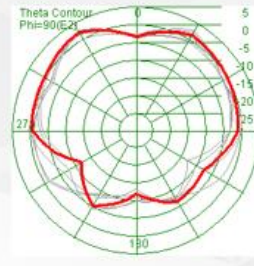
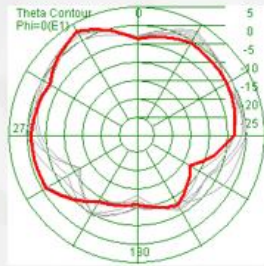
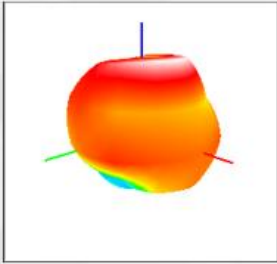
2400MHz



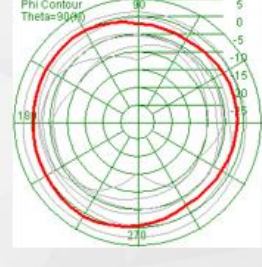
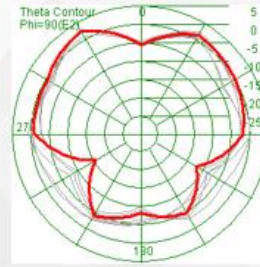
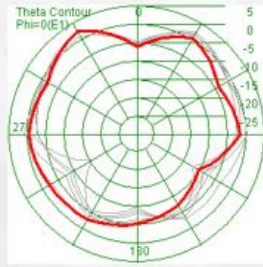
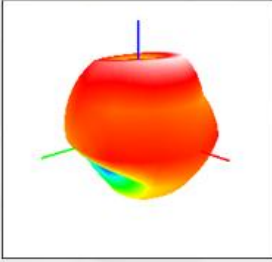
2500MHz



2600MHz



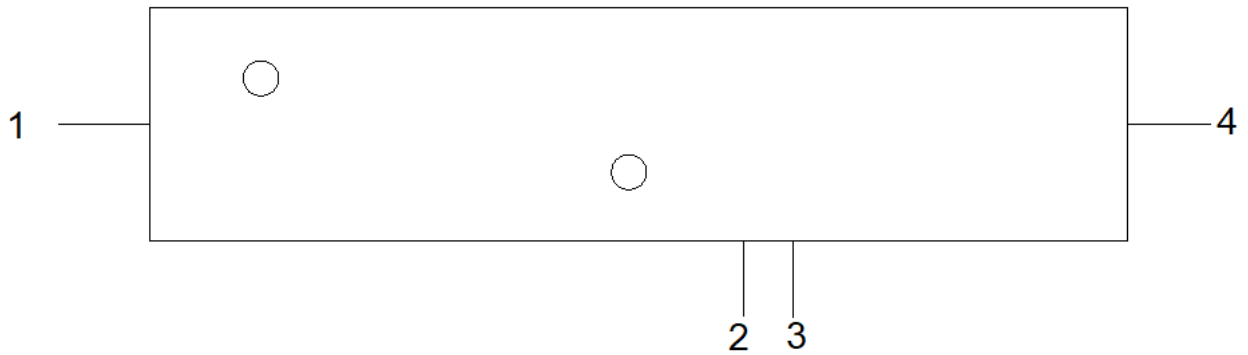
2700MHz





## 5 Schematic Symbol and Pin definition

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

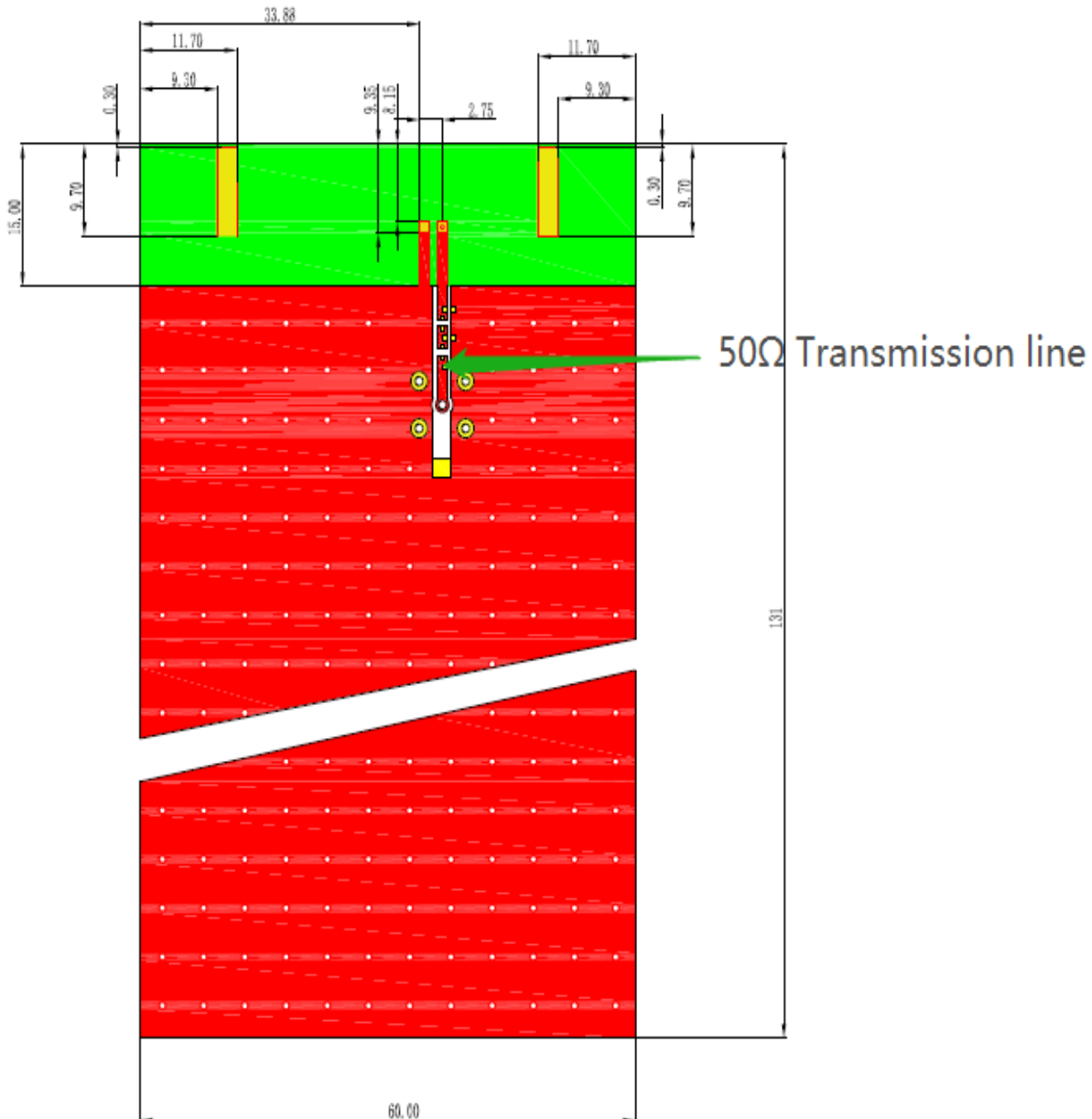


Pin No.	Description
3	Feed
2	Return/GND
1.4	Not used (Mechanical only)

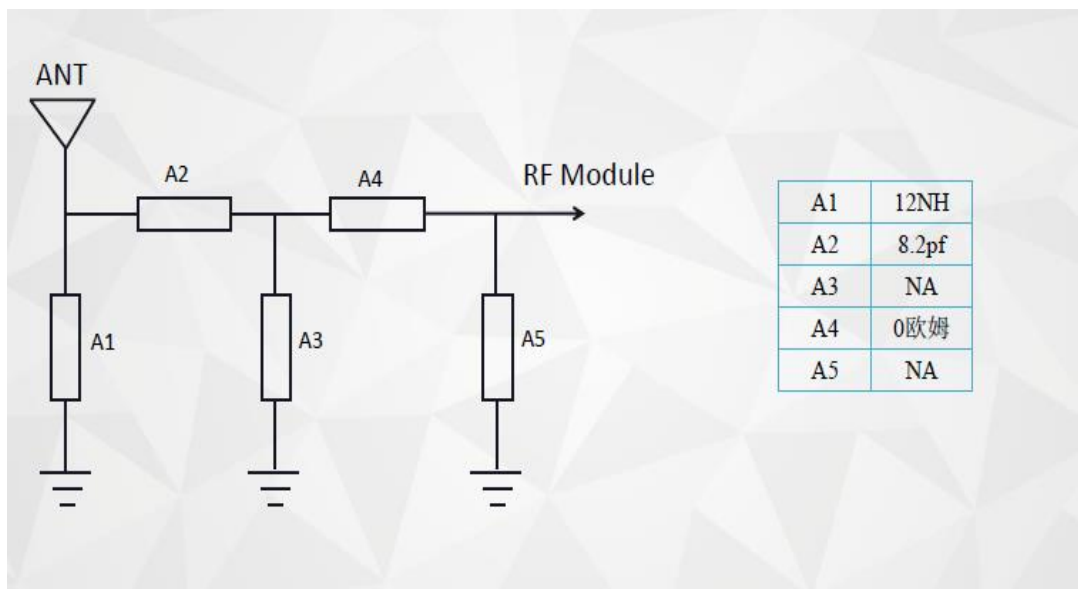
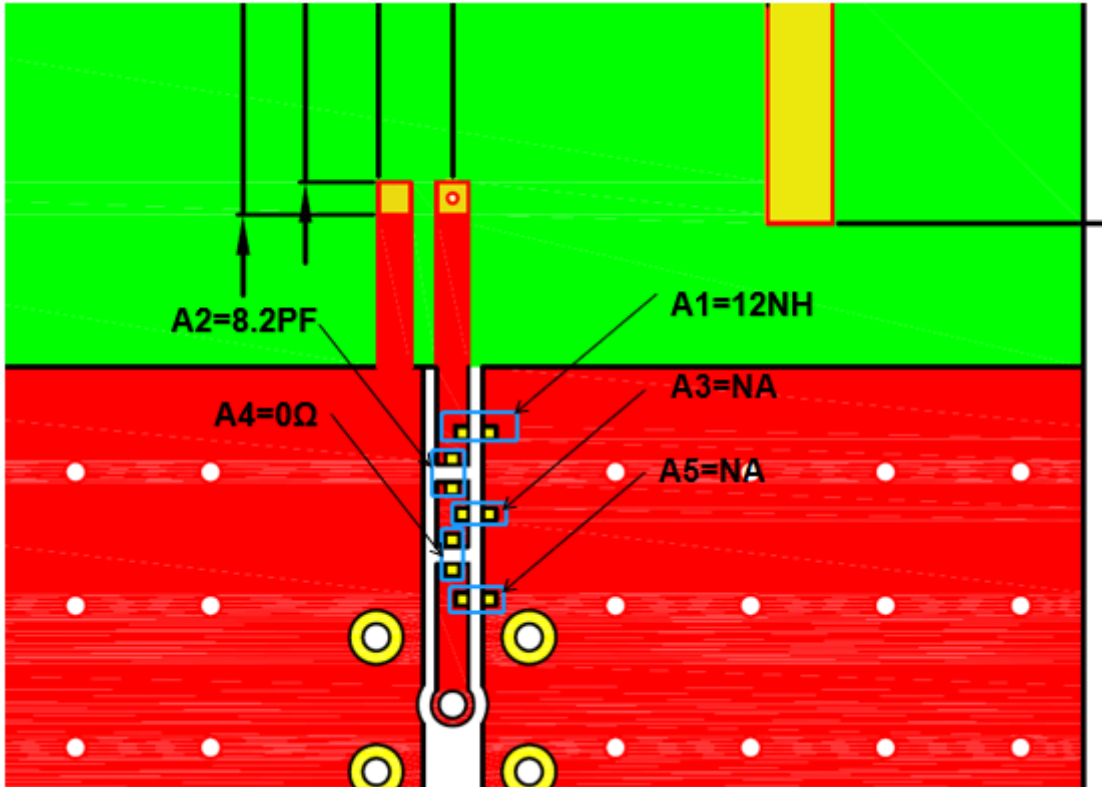
## 6 Transmission Line

The characteristic impedance of all transmission lines shall be designed as 50  $\Omega$ .

- 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  $\Omega$ .



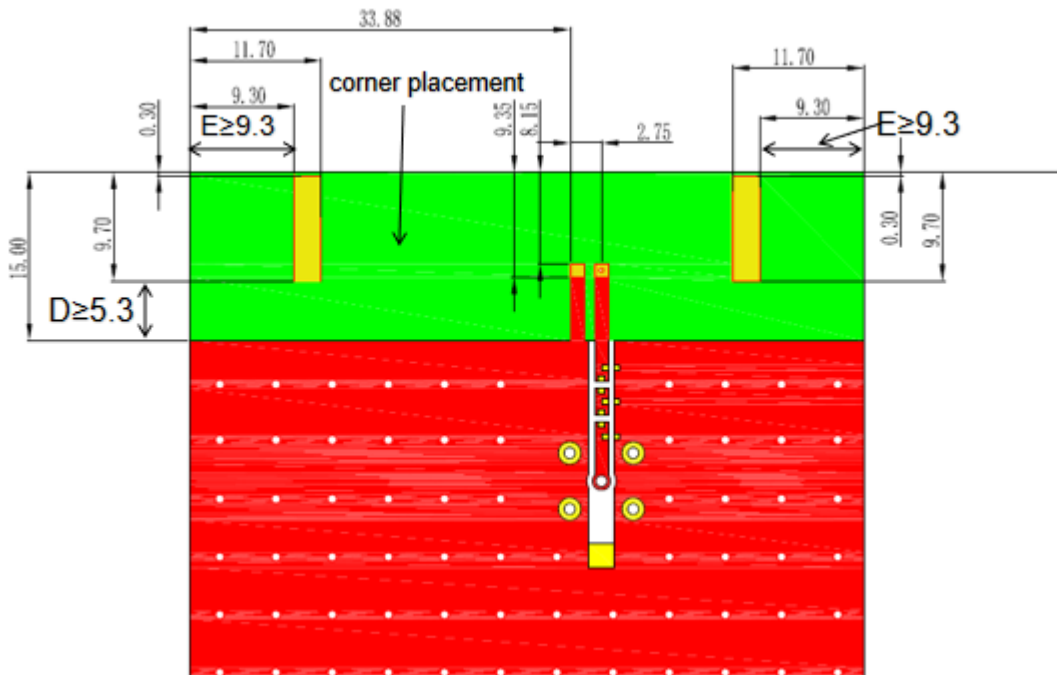
## 7 Matching Circuit



## 8 Host PCB Requirement

The printed circuit board of the host must ensure that the antenna clearance area meets the antenna specifications. It is suggested that putting the antenna in the mid of the PCB.

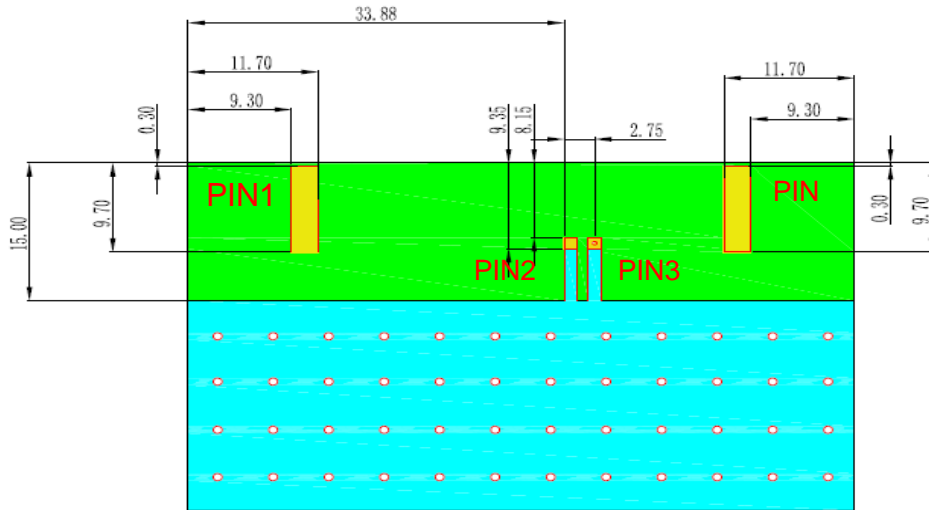
An example of a PCB layout shown as below:



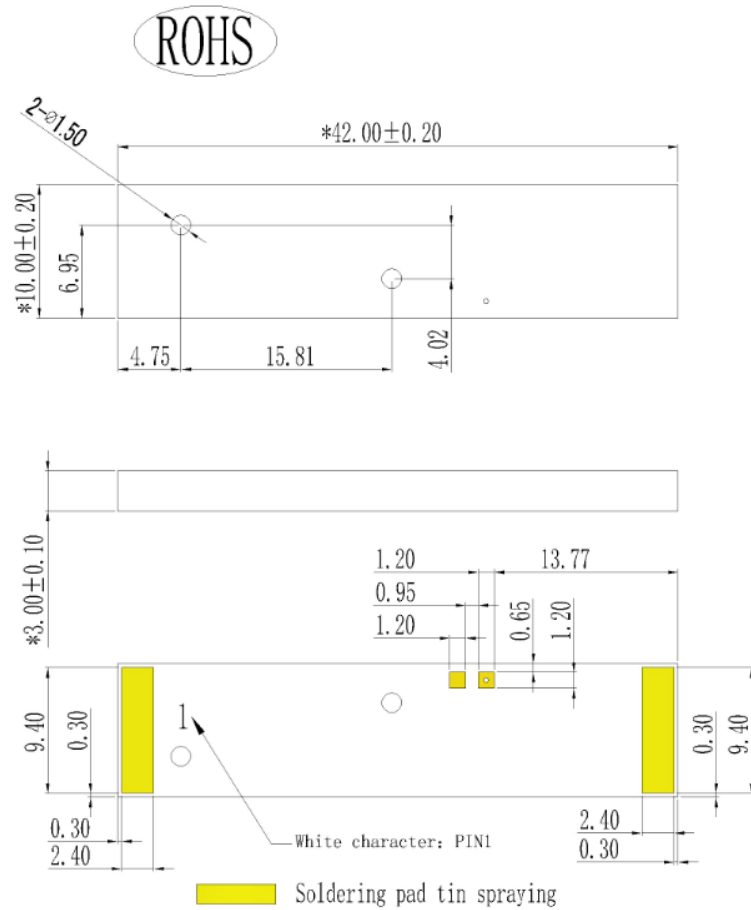
**Gap D** is required from the edge of the antenna to the ground plane. This should be maintained along the edge of the antenna placement, **minimum value is 5.3 mm**.

**Gap E** is required from the edge of the antenna to the ground plane or PCB traces, **minimum value is 9.3 mm**.

## 9 Product Size



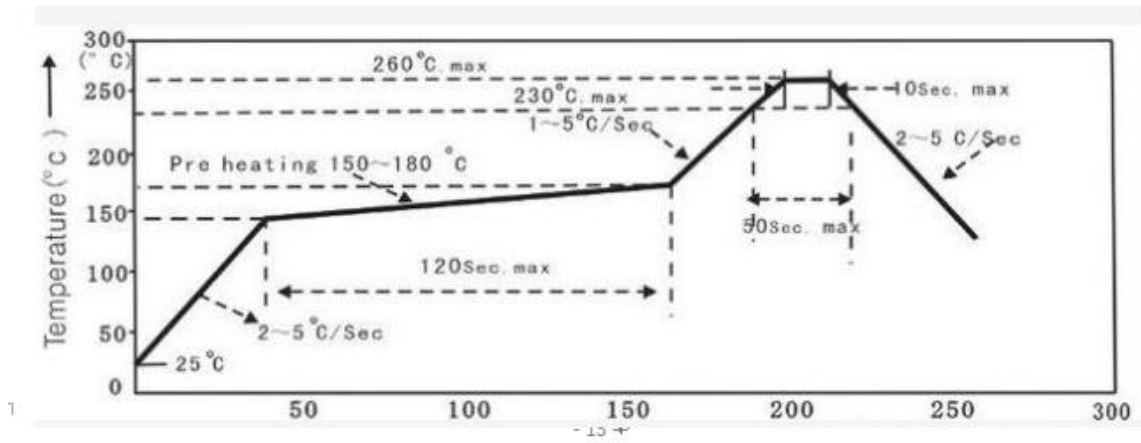
PCB Reference Pad



## 10 Soldering Temperature

PHASE	Profile Features	PB-Free Assembly (max.)
RAMP-UP	Avg. Ramp-up Rate (T <sub>smax</sub> to T <sub>p</sub> )	3 °C/second (max.)
PREHEAT	Temperature Min (T <sub>smin</sub> )	150 °C
	Temperature Max (T <sub>smax</sub> )	180 °C
	Time (t <sub>smin</sub> to t <sub>smax</sub> )	120 seconds max
REFLOW	Temperature (TL)	210 °C
	Total Time above TL (tl)	50 seconds max
PEAK	Temperature (T <sub>p</sub> )	260 °C
	Time(t <sub>p</sub> )	10 seconds max
RAMP-DOWN	Rate	5 °C/second max

## 11 Reflow Profile



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