

Antenna

YC0009AA Datasheet

Antenna Services

Version: 1.8

OC (Antenna Only): **YC0009AA**

OC (Antenna + EVB): **YC0009AAEVB**

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About the Document

Revision History

Version	Date	Author	Note
-	2020-09-20	Kenny YIN	Creation of the document
1.0	2020-09-20	Kenny YIN	First official release
1.1	2021-01-12	Kenny YIN	Updated the antenna image (Chapter 2).
1.2	2021-06-25	Aria CHU	Updated VSWR values (Chapter 3).
1.3	2021-07-25	Kenny YIN	Updated package quantity (Chapter 8).
1.4	2021-09-28	Aria CHU	Added the new OC YC0009AAEVB on the cover.
1.5	2021-11-30	Aria CHU	Updated the product description (Chapter 1).
1.6	2022-03-12	Aria CHU	Updated the data (Chapter 4.5).
1.7	2022-04-02	Aria CHU	Updated the data (Chapter 4.5).
1.8	2023-07-21	David LIU/ Vinnie LIU	Updated the packaging (Chapter 8).

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1 Product Description

Quectel Wi-Fi antenna covers 2.4 GHz, 5 GHz, and up to 7 GHz bands, fully satisfying customers' requirements for Wi-Fi 5, Wi-Fi 6, and Wi-Fi 6E. There are various antenna types, including built-in FPC antenna, ceramic patch antenna, and other external antennas of different shapes or sizes. The antenna performance meets the customers' demands for efficiency, gain, and radiation and ensures the superior experience of the customers' products in use.

2 Product Features

- Wi-Fi/Bluetooth
- High efficiency
- Excellent performance



3 Product Specifications

Passive Electrical Specifications

Frequency Range	2400–2500 MHz
Input Impedance	50 Ω
VSWR	≤ 2.0
Gain	≤ 4 dBi
Polarization Type	Linear

Mechanical Specifications

Antenna Size	3.2 mm \times 1.6 mm \times 0.5 mm
Casing	Ceramic
Connector Type	SMD
Working Temperature	-40 $^{\circ}$ C to +85 $^{\circ}$ C

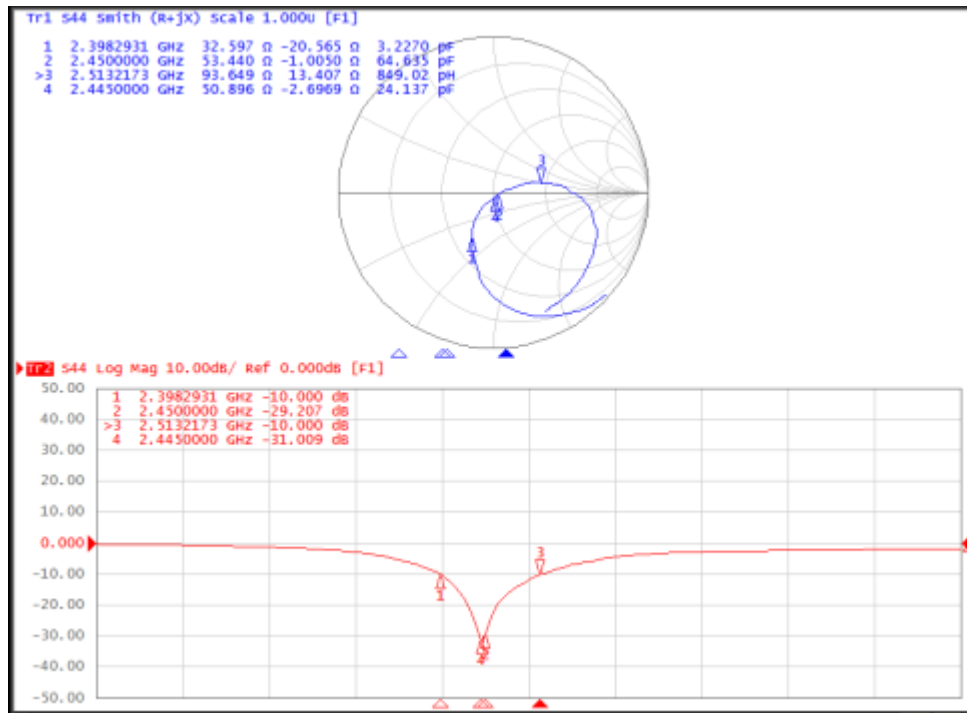
4 Overall Performance

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. Return Loss



Frequency (MHz)	2390	2450	2513
Return Loss	-10	-29.2	-10

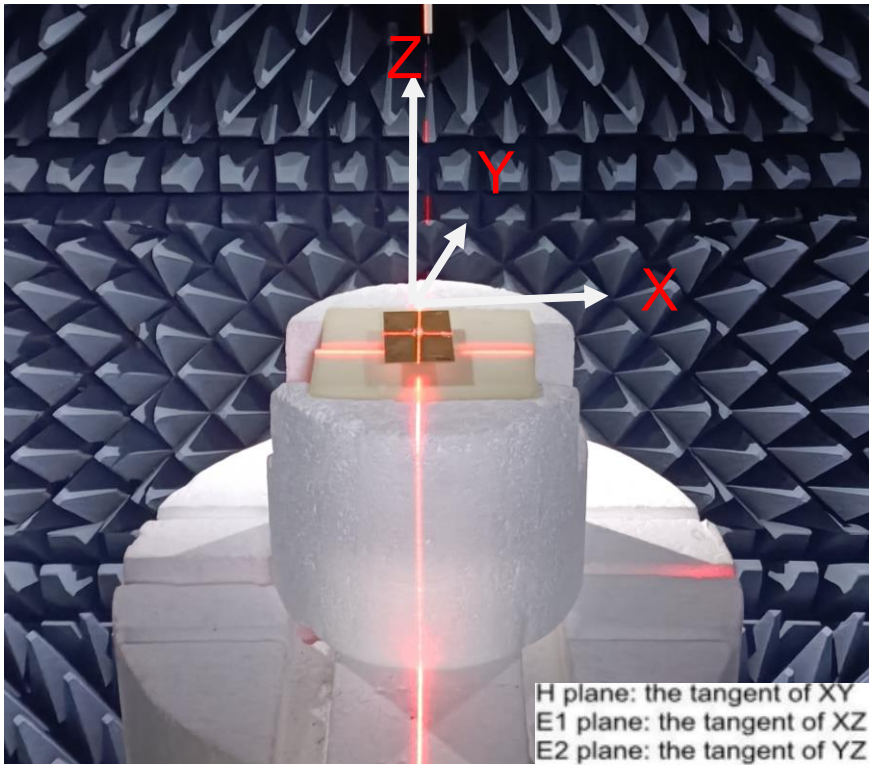
4.3. Efficiency

Frequency (MHz)	2400	2450	2500
Efficiency (%)	72.1	78.2	71.8

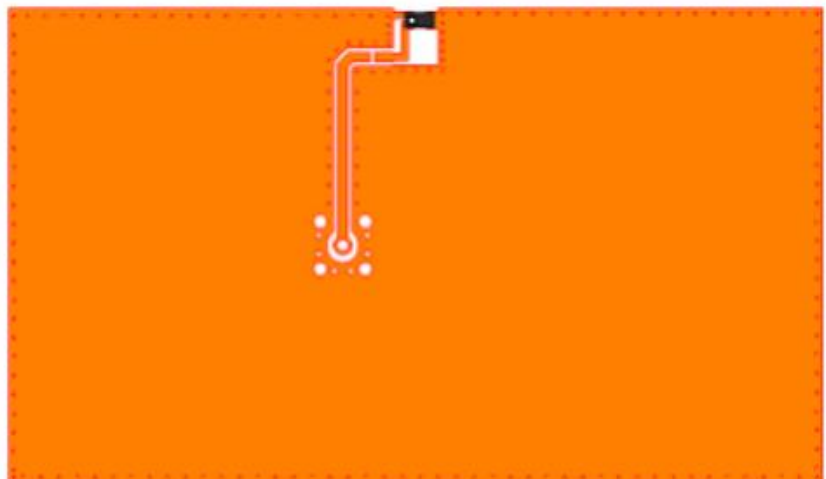
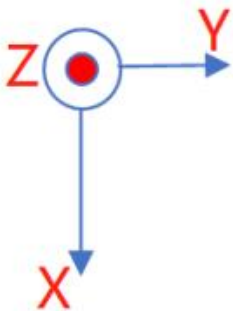
4.4. Gain

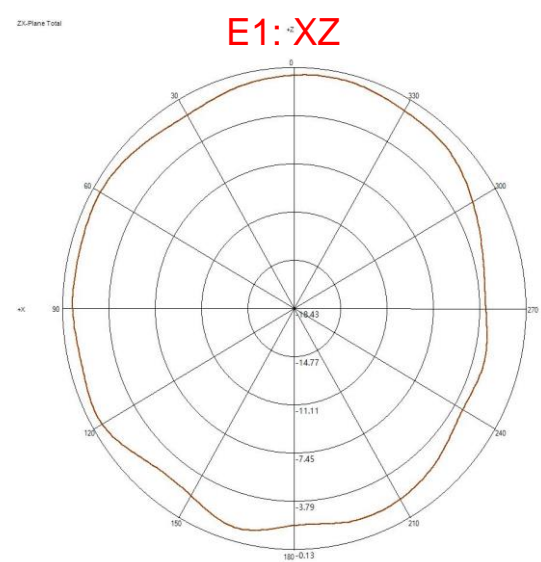
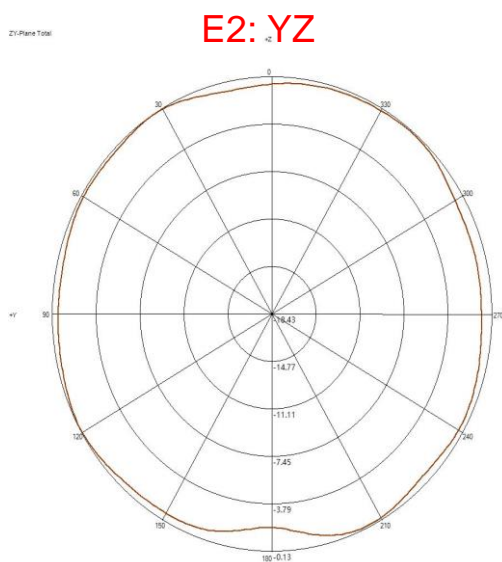
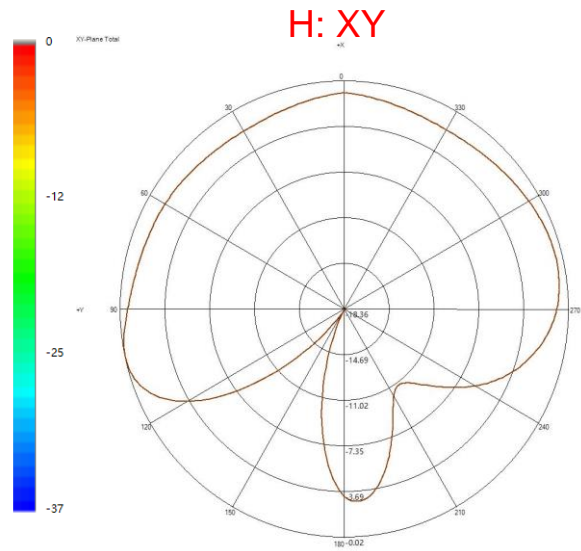
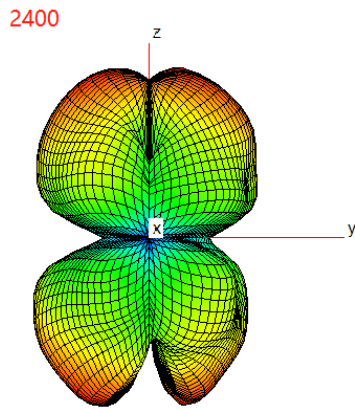
Frequency (MHz)	2400	2450	2500
Gain	1.76	4.08	2.53

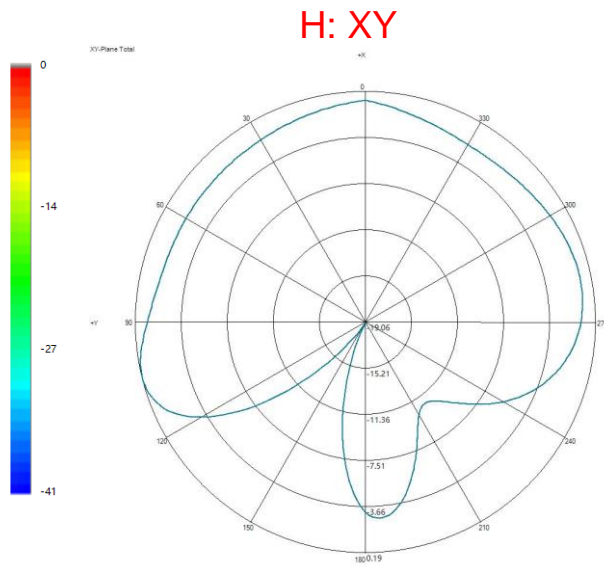
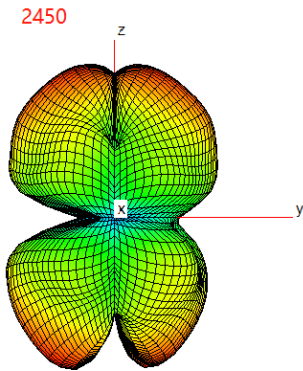
4.5. Radiation Pattern



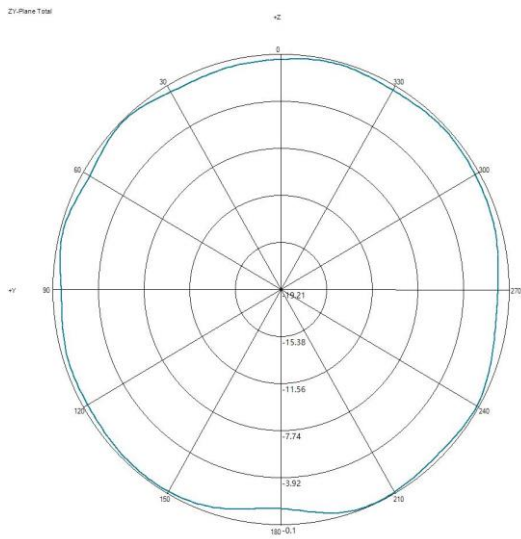
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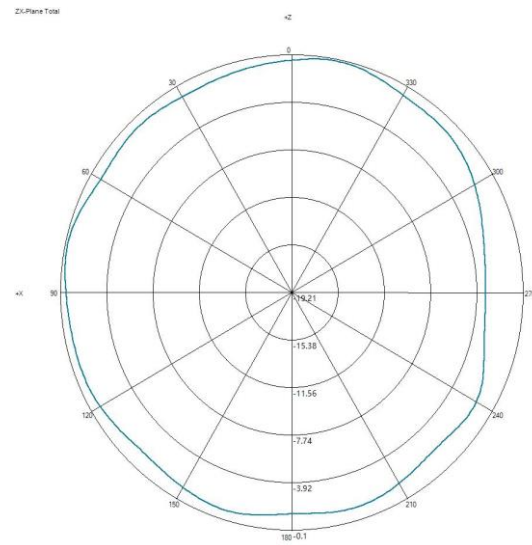


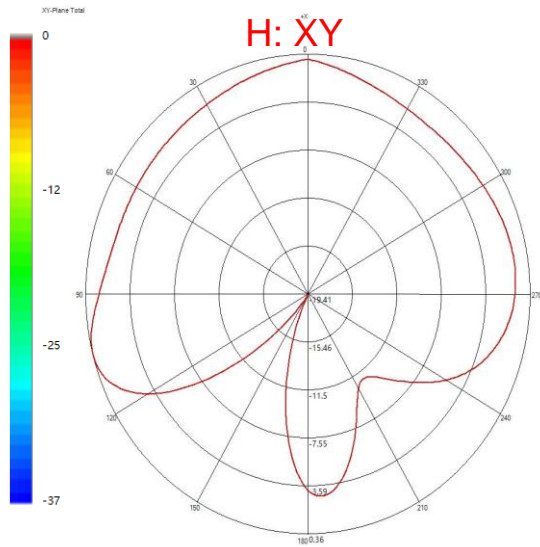
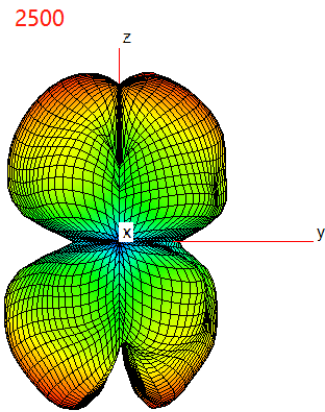


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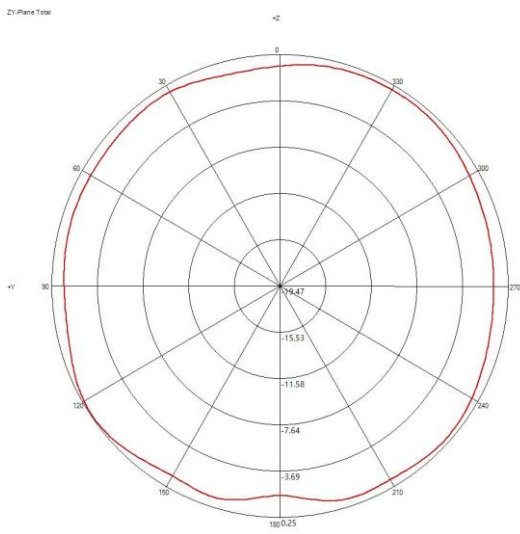


E1: XZ

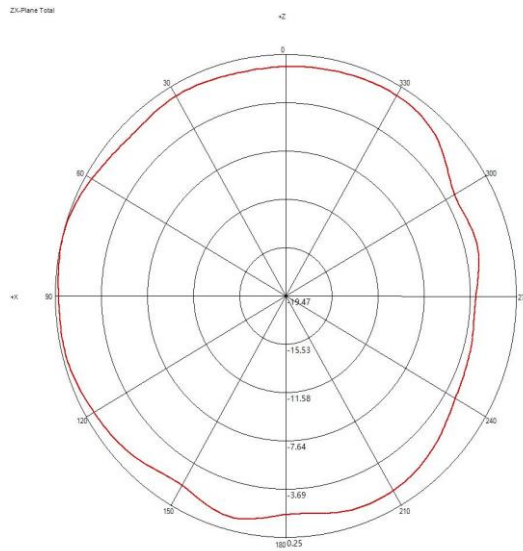




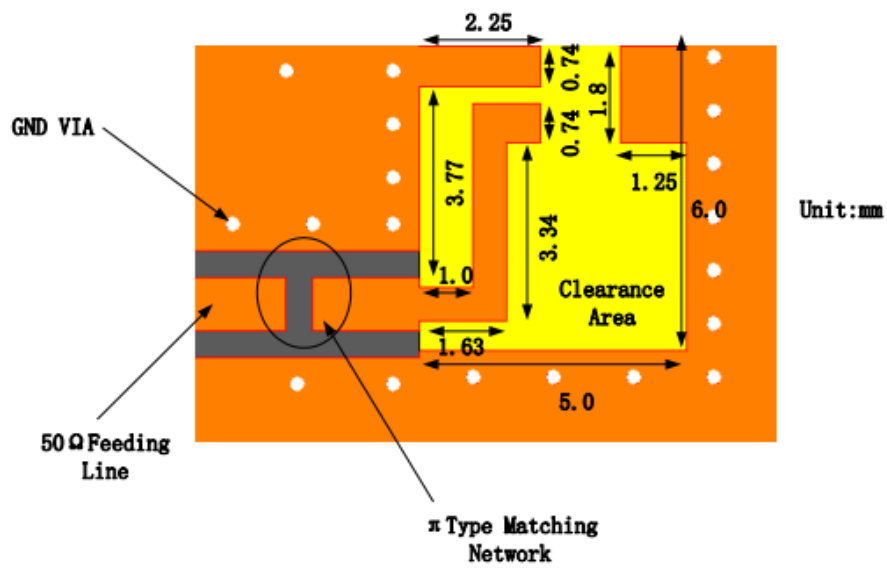
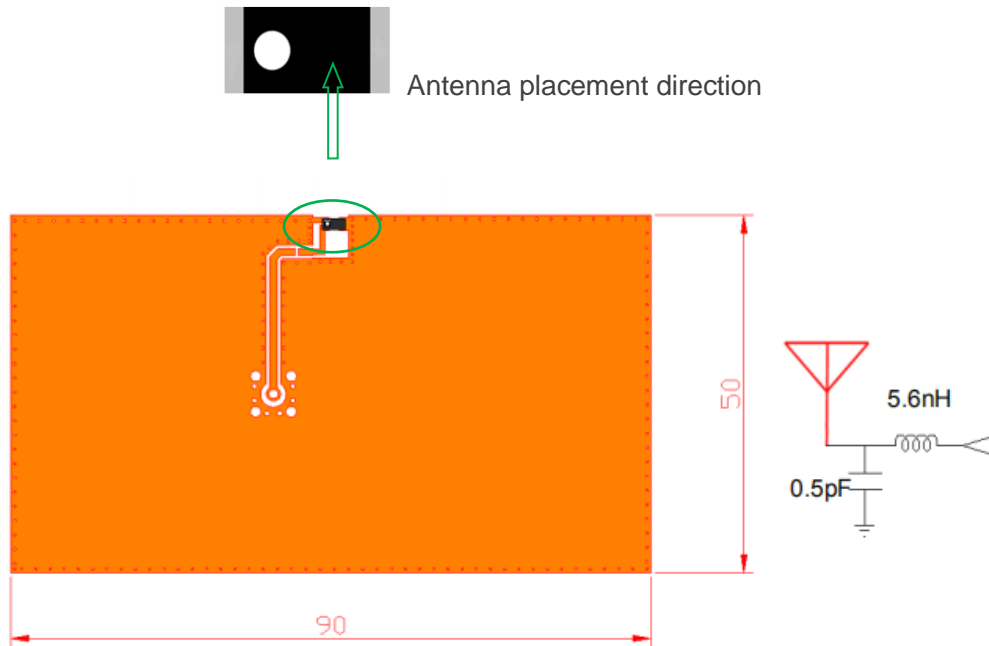
E2: YZ



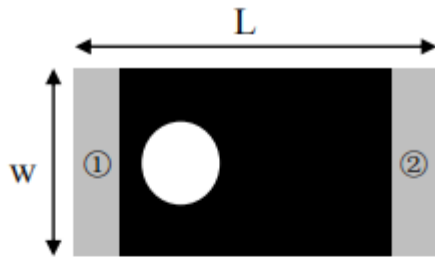
E1: XZ



4.6. Reference PCB Design (Unit: mm)



5 Product Size



(Top View)

Number	Terminal Name
①	INPUT
②	NC



(Bottom View)



(Side View)

Symbols	L	W	T	A
Dimensions	3.2+/-0.2	1.6+/-0.2	0.5+/-0.1	0.4+/-0.1

6 Reliability Test

Temperature Range	25 ±5 °C
Relative Humidity Range	55–75 %
Operating Temperature Range	-40 °C to +85 °C
Storage Temperature Range	-40 °C to +85 °C

6.1. Vibration Resistance

The device should fulfil the electrical specification after being applied to the vibration of 10–55 Hz with amplitude of 1.5 mm for 2 hours in X, Y and Z directions respectively.

6.2. Drop and Shock Tests

The device should have no mechanical damage after dropping onto the hard-wooden board from the height of 100 cm for 3 times at each facet of the 3 dimensions of the device.

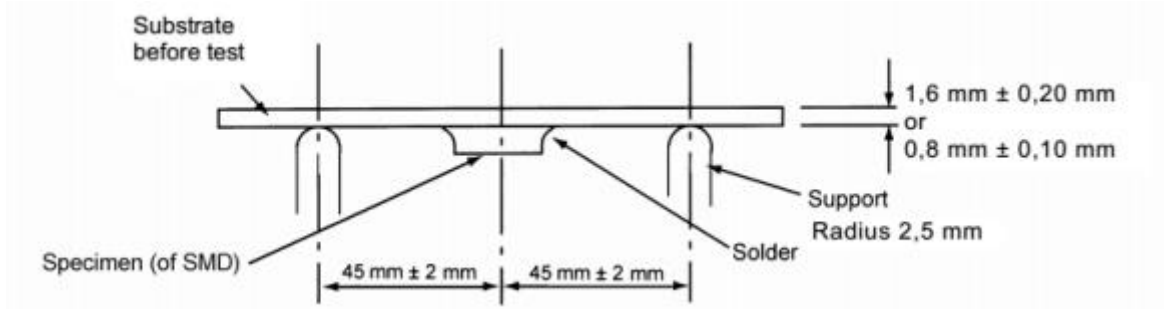
6.3. Resistance to Soldering Heat

The device should have no damage after pre-heating at 120–150 °C for 120 seconds and immersion in Sn solder at 255 ±10 °C for 5 ±0.5 seconds, or electric iron at 300 ±10 °C for 3 ±0.5 seconds.

6.4. Adhesive Strength of Termination

The device has no remarkable damage or removal of the termination after horizontal force of 5 N (\leq 0603); 10 N ($>$ 0603) for 10 ±1 seconds.

6.5. Bending Resistance Test



Weld the product to the central part of the PCB with the thickness 1.6 ± 0.2 mm or 0.8 ± 0.1 mm as the illustration shows, and keep exerting force arrow-ward on it at speed of 1 mm/s, and hold for 5 ± 1 seconds at the position of 1.5 mm bending distance, so far, any peeling-off of the product metal coating should not be detected.

6.6. Moisture Proof

The device should fulfil the electrical specifications after being exposed to the temperature 60 ± 2 °C and the relative humidity 90–95 % for 96 hours and experiencing 1–2 hours recovery time under normal condition.

6.7. High Temperature Endurance

The device should fulfil the electrical specifications after being exposed to temperature 85 ± 5 °C for 96 ± 2 hours and experiencing 1–2 hours recovery time under normal temperature.

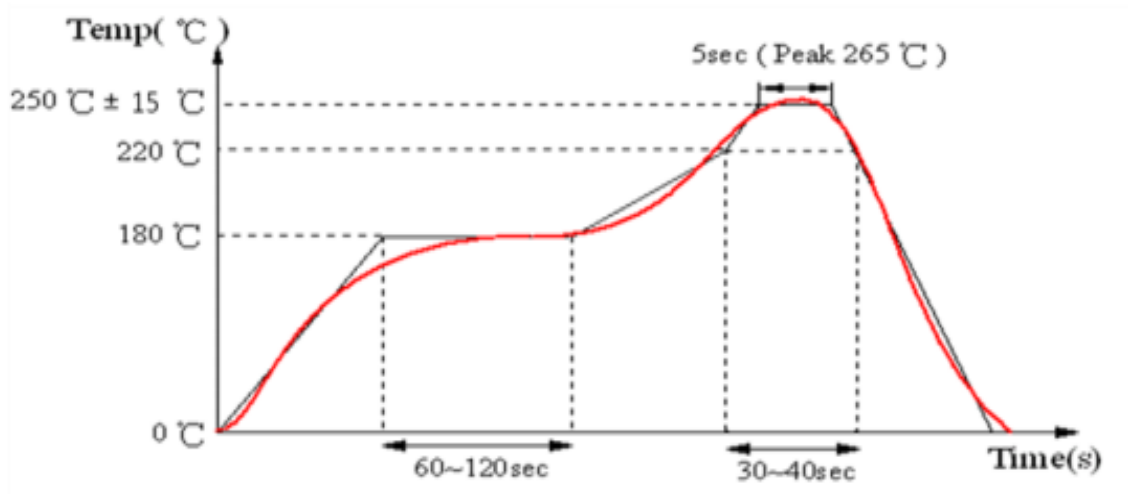
6.8. Low Temperature Endurance

The device should fulfil the electrical specifications after being exposed to the temperature -40 °C ± 5 °C for 96 ± 2 hours and experiencing 2 hours recovery time under normal temperature.

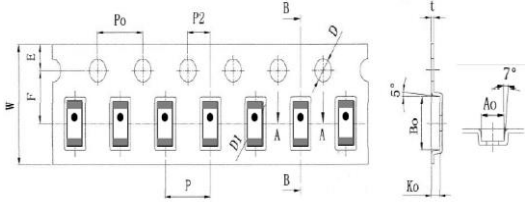


6.9. Temperature Cycle Test


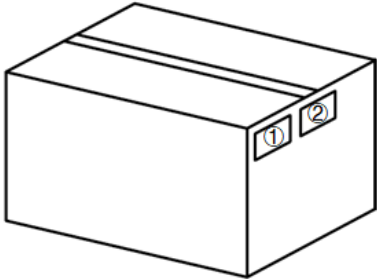
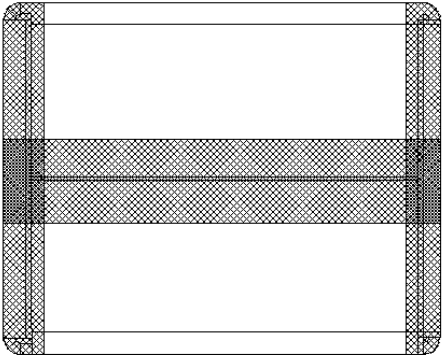
The device should fulfil the electrical specifications after being exposed to the low temperature -40 °C and high temperature $+85$ °C for 30 ± 2 minutes each by 5 cycles and experiencing 1 to 2 hours recovery time under normal temperature.

7 Reflow Soldering Standard Condition



8 Packaging

Step	Packaging Picture / 2D Picture	Description
1		reel
2		6000 pcs antennas per reel
3		Put the product into a vacuum bag and pump the true hole.

<p>4</p>		<p>(10 reel per carton Box) (60000 pcs antennas per carton box)</p> <p><u>Carton Size:</u> <u>L x W x H = 300 x 250 x 200 mm</u></p>
<p>5</p>		<p>Position for Attaching Labels</p> <ul style="list-style-type: none"> ① Carton Label ② Quality Label
<p>6</p>		<p>Sealing Cartons “I” type sealing cartons</p>