

# SPECIFICATIONS

Customer	
Product Name	Chip Antenna
SunlordPart Number	SLDA31-2R450G-S1TF
CustomerPart Number	

New Released,  Revised]

SPEC No.: **SLDA190008**

【 This SPEC is total 8pages including specifications and appendix. 】

【 ROHS Compliant Parts 】

Approved By	Checked By	Issued By

## Shenzhen Sunlord Electronics Co., Ltd.

Address: Sunlord Industrial Park, Dafuyuan Industrial Zone, Baoan, Shenzhen, China518110

Tel: 0086-755-29832660 Fax: 0086-755-82269029 E-Mail: sunlord@sunlordinc.com

### 【 For Customer approval Only 】

Date:

Qualification Status:

Full  Restricted  Rejected

Approved By	Verified By	Re-checked By	Checked By

Comments:

**【Version change history】**

Rev.	Effective Date	Changed Contents	Change reasons	Approved By
V01	Apr.28,2018	New release	/	Jimmy Ko
V02	May.07,2020	Add test board	Meet customer requirements	Jimmy Ko

1. Scope

This specification applies to SLDA31-2R450G-S1TF of Chip Antenna.

2. Product Description and Identification (Part Number)

- 1) Description:  
Multi-layer Chip Antenna
- 2) Product Identification (Part Number)

SLDA 31 -2R450G -S1 T F  
① ② ③ ④ ⑤ ⑥

①	Type
SLDA	Multilayer Chip Antenna

②	External Dimensions (L×W) (mm)
31	3.2×1.6

③	Center Frequency
2R450G	2450MHz

④	Series Code
S1	

⑤	Packing
T	Tape Carrier Package

⑥	Hazardous Substance Free Products
F	

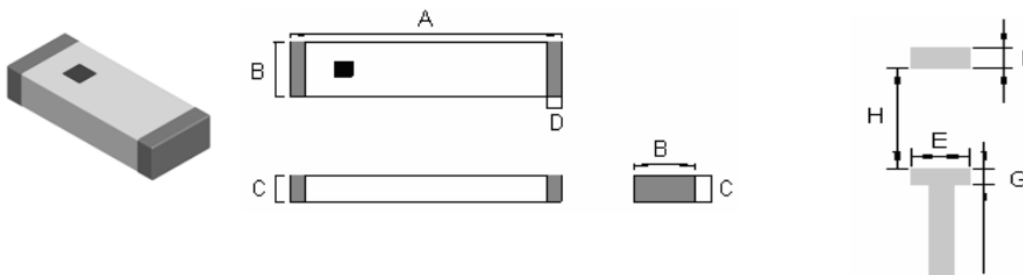
3. Electrical Characteristics

Part Number	SLDA31-2R450G-S1TF
Center Frequency	2450 MHz
Bandwidth	100 MHz min.
Peak Gain(V-XZ)	-3.53 dBi typ.
Average Gain(V-XZ)	-1 dBi typ.
VSWR in BW	2.0 max.
Port Impedance	50 ohm
Power Capacity	3 W max.

- a) Operating temperature range (individual chip without packing):-40°C~+85°C.
- b) Storage temperature range (individual chip without packing):-40°C~+85°C.
- c) Storage temperature range (packaging conditions): -10°C~+40°C and RH 70% (Max.).
- d) Test equipment: Network Analyzer:E5071C.

4. Shape and Dimensions

1) Dimensions and recommended PCB pattern for reflow soldering: See Fig. 4-1, Fig. 4-2 and Table 4-1



Unit: mm

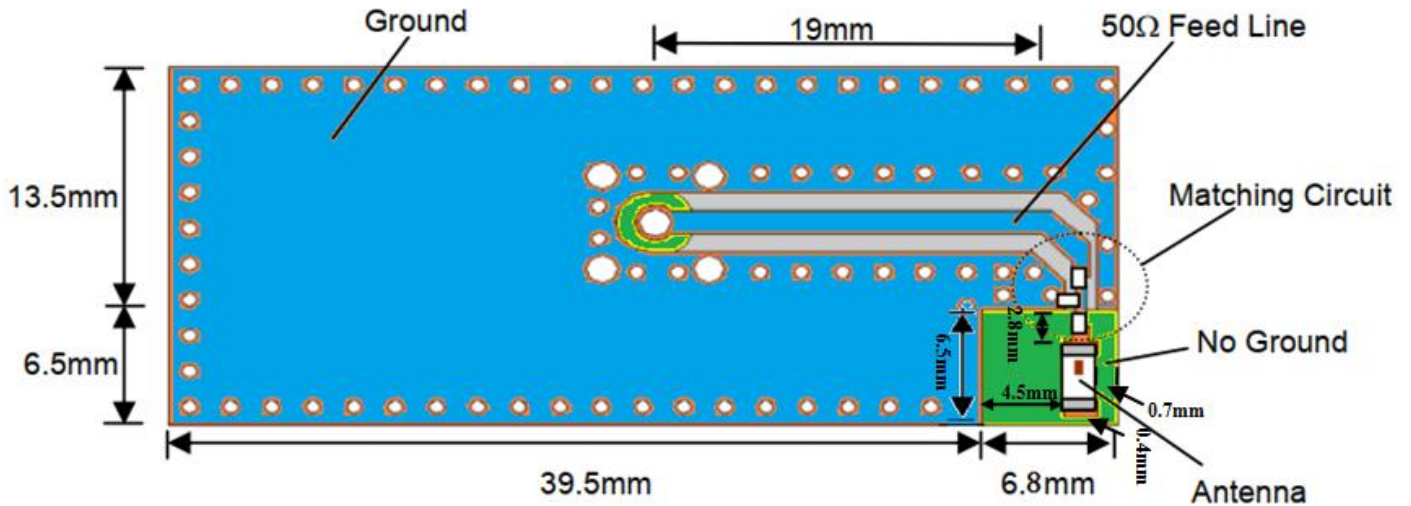
	A	B	C	D.	E	F	G	H
SLDA31	3.2±0.2	1.6±0.2	1.2±0.2	0.5±0.2	1.6±0.2	0.8±0.2	0.8±0.2	2.6±0.2

2) Terminal Configuration:



No.	Terminal Name	No.	Terminal Name
(1)	Feeding Point	(2)	NC

3) Test Board



5. Test and Measurement Procedures

5.1 Test Conditions

Unless otherwise specified, the standard atmospheric conditions for measurement/test as:

- a. Ambient Temperature: 20±15°C
- b. Relative Humidity: 65±20%
- c. Air Pressure: 86 KPa to 106 KPa

If any doubt on the results, measurements/tests should be made within the following limits:

- a. Ambient Temperature: 20±2°C
- b. Relative Humidity: 65±5%
- c. Air Pressure: 86KPa to 106 KPa

5.2 Visual Examination

- a. Inspection Equipment: 20 X magnifier

5.3 Reliability Test

Items	Requirements	Test Methods and Remarks
5.3.1 Terminal Strength	No visible mechanical damage.	<ul style="list-style-type: none"> <li>① Solder the inductor to the testing jig (glass epoxy board shown as the following figure) using leadfree solder. Then apply a force in the direction of the arrow.</li> <li>② 10N force for 3216 series.</li> <li>③ Keep time: 10±1sec.</li> </ul>
5.3.2 Resistance to Flexure	No visible mechanical damage.	<ul style="list-style-type: none"> <li>① Solder the chip to the test jig (glass epoxy board) using a leadfree solder. Then apply a force in the direction shown as the following figure. Solder the chip to the test jig (glass epoxy board) using leadfree solder. Then apply a force in the direction.</li> <li>② Flexure: 2mm</li> <li>③ Pressurizing Speed: 0.5mm/sec</li> </ul>

		④ Keep time: $\geq 30$ sec
	<p>The diagram shows a chip antenna with a central rectangular chip. The chip has a width of 20 mm and a height of 10 mm. The antenna leads are 45 mm long on each side. A radius of R10 is indicated for the curved part of the leads. A flexure of 2 mm is shown at the end of the leads. The unit is mm.</p>	
5.3.3 Dropping	No visible mechanical damage.	Drop the chip 5 times on a wood floor from a height of 50 cm.
5.3.4 Solderability	a. No visible mechanical damage. b. Wetting shall be exceeded 75% coverage.	① Solder temperature: $240 \pm 2^\circ\text{C}$ ② Duration: 3sec ③ Solder: Sn/3.0Ag/0.5Cu ④ Flux: 25% Resin and 75% ethanol in weight
5.3.5 Resistance to Soldering Heat	No visible mechanical damage.	a. Solder temperature: $260 \pm 5^\circ\text{C}$ b. Duration: 5 sec c. Solder: Sn/3.0Ag/0.5Cu d. Flux: 25% Resin and 75% ethanol in weight e. The chip shall be stabilized at normal condition for 1~2 hours before measuring.
5.3.6 Thermal Shock	① No visible mechanical damage. ② Satisfy electrical Characteristic.	① Temperature and time: $-40^\circ\text{C}$ for $30 \pm 3$ min $\rightarrow$ $85^\circ\text{C}$ for $30 \pm 3$ min ② Transforming interval: Max. 20 sec. ③ Tested cycle: 10 cycles. ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
	<p>The waveform shows a temperature cycle between <math>85^\circ\text{C}</math> and <math>-40^\circ\text{C}</math>. The dwell time at <math>85^\circ\text{C}</math> is 30 min, and the dwell time at <math>-40^\circ\text{C}</math> is 30 min. The transition time between the two temperatures is 20 sec (max.). The y-axis is labeled 'Temperature' and the x-axis is labeled 'Time'.</p>	
5.3.7 Damp Heat (Steady States)	① No visible mechanical damage. ② Satisfy electrical Characteristic.	① Temperature: $60 \pm 2^\circ\text{C}$ ② Humidity: 90% to 95% RH ③ Duration: $96^{+24}$ hours ④ The chip shall be stabilized at normal condition for 1~2 hours before measuring.
5.3.8 Resistance to High temperature	① No visible mechanical damage. ② Satisfy electrical Characteristic.	① Temperature: $85 \pm 2^\circ\text{C}$ ② Duration: $96^{+24}$ hours ③ The chip shall be stabilized at normal condition for 1~2 hours before measuring.

6. Packaging and Storage

6.1 Packaging

There is one type of packaging for the Chip Antenna. Please specify the packing code when ordering.

6.1.1 Tape Carrier Packaging:

Packaging code: T

- i. Tape carrier packaging are specified in attached figure **Fig.6.1-1~3**
- ii. Tape carrier packaging quantity please see the following table:

Type	3216[1206]
Tape	Embossed Tape
Quantity	3K

a) Taping Drawings (Unit: mm)

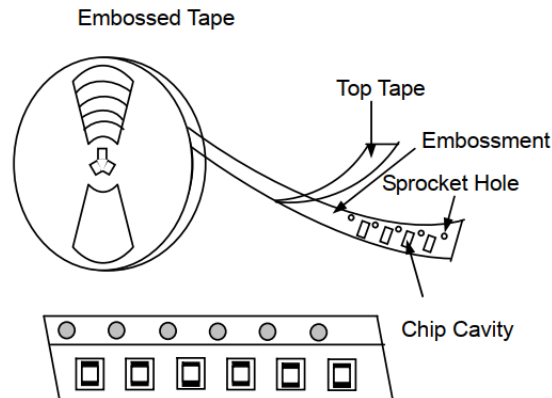


Fig. 6.1-1

Remark: The sprocket holes are to the right as the tape is pulled toward the user.

b) Taping Dimensions (Unit: mm)

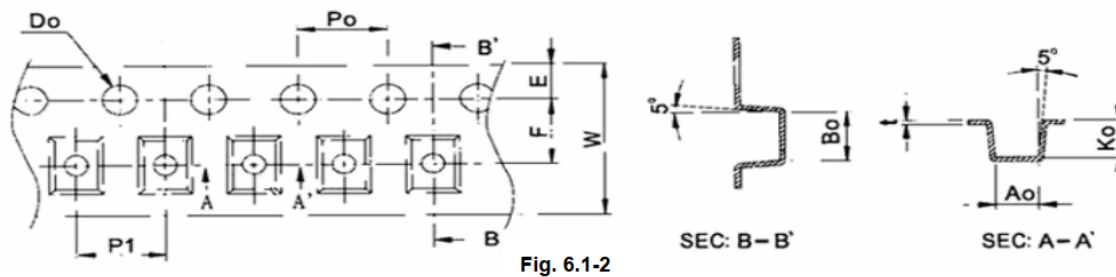


Fig. 6.1-2

Type	W	P1	E	F	DO	PO	KO	A0	B0	t
Tolerance	±0.1	±0.1	±0.1	±0.15	+0.1/ -0.0	±0.1	±0.1	±0.1	±0.1	±0.05
SLDA31	8.00	4.00	1.75	3.5	1.5	4.0	1.50	1.80	3.50	0.22

c) Reel Dimensions (Unit: mm)

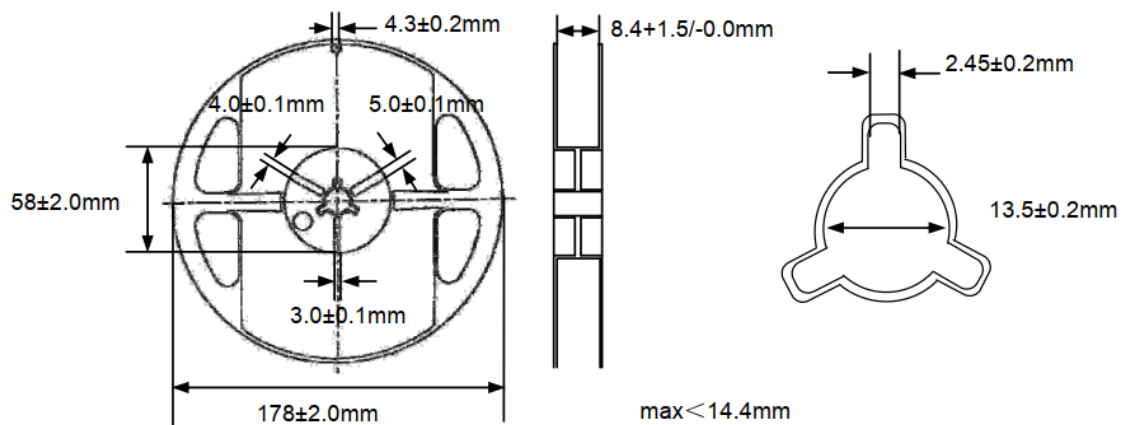


Fig. 6.1-3

6.2 Storage

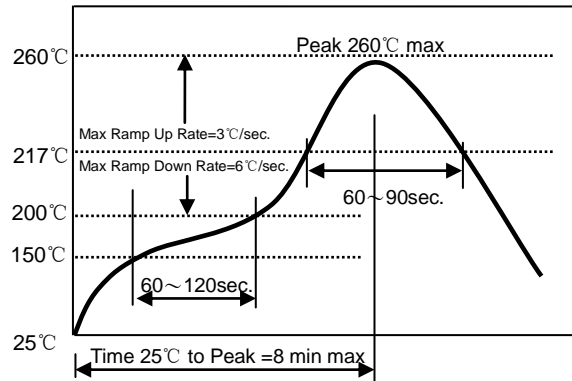
- b. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to high humidity. Package must be stored at -55°C~+125°C or less and 70% RH or less
- c. The solderability of the external electrode may be deteriorated if packages are stored where they are exposed to dust of harmful gas (e.g. HCl, sulfurous gas of H<sub>2</sub>S).
- d. Packaging material may be deformed if package are stored where they are exposed to heat of direct sunlight.
- e. Solderability specified in **Clause 5.3.6** shall be guaranteed for 12months from the date of delivery on condition that they are stored at the

environment specified in **Clause 3**. For those parts, which passed more than 12 months shall be checked solder-ability before use.

**7. Recommended Soldering Technologies**

**7.1 Reflow Profile**

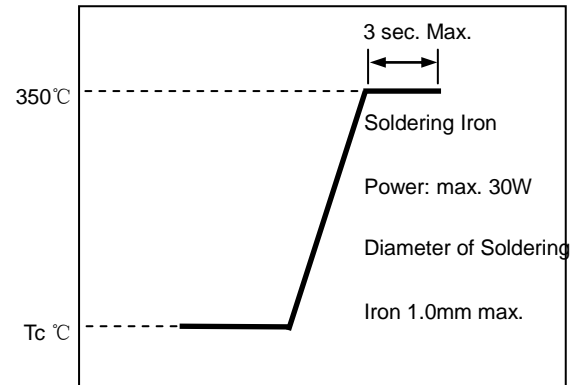
1. Preheat condition: 150 ~200°C/60~120sec.
2. Allowed time above 217°C: 60~90sec.
3. Max temp: 260°C
4. Max time at max temp: 10sec.
5. Solder paste: Sn/3.0Ag/0.5Cu
6. Allowed Reflow time: 3x max



[Note: The reflow profile in the above table is only for qualification and is not meant to specify board assembly profiles. Actual board assembly profiles must be based on the customer's specific board design, solder paste and process, and should not exceed the parameters as the Reflow profile shows.]

**7.2 Iron Soldering Profile**

7. Iron soldering power: Max.30W
8. Pre-heating: 150 °C / 60 sec.
9. Soldering tip temperature: 350°C Max.
10. Soldering time: 3 sec Max.
11. Solder paste: Sn/3.0Ag/0.5Cu
12. Max.1 times for iron soldering



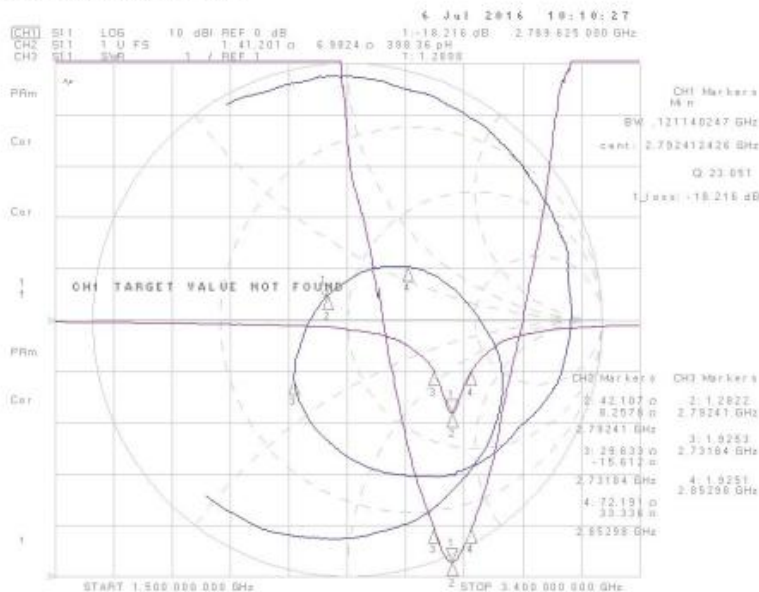
[Note: Take care not to apply the tip of the soldering iron to the terminal electrodes.]

**8. Supplier Information**

- a) Supplier: **Shenzhen Sunlord Electronics Co., Ltd.**
- b) Manufacturer: **Shenzhen Sunlord Electronics Co., Ltd.**
- c) Manufacturing Address: **Sunlord Industrial Park, Dafuyuan Industrial Zone, Guanlan, Shenzhen, China Zip: 518110**

**Appendix 1**

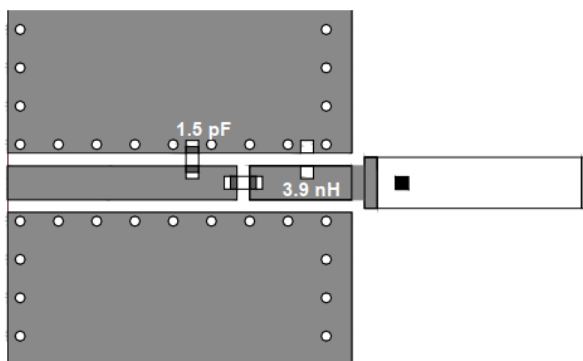
**1. Without Matching circuit electrical performance:**



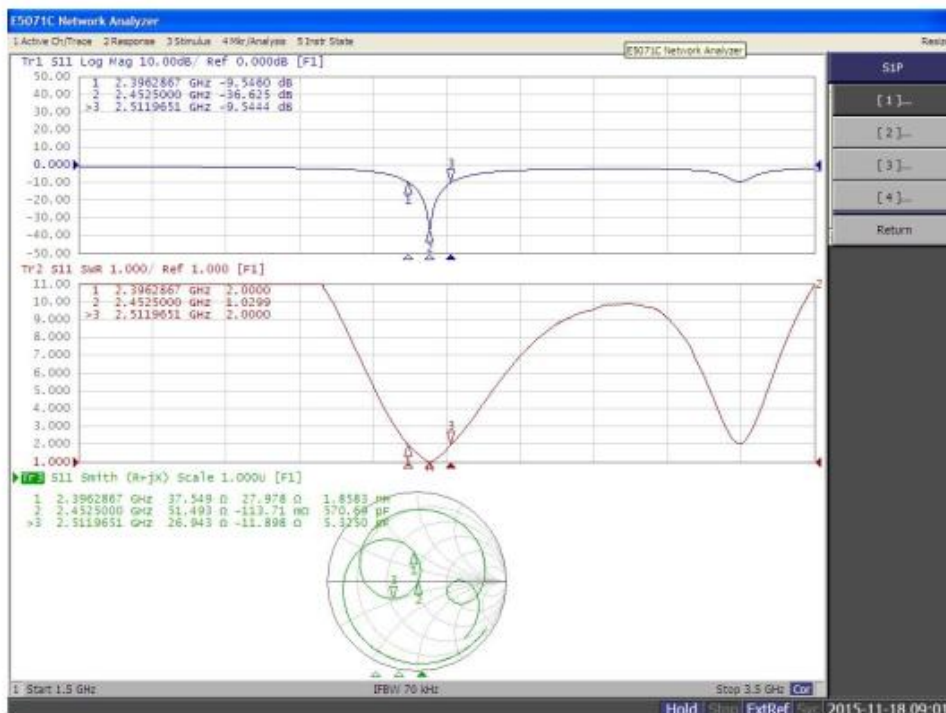
2. With Matching Circuit:  
evaluation board: 80\*40mm

\*Line width should be designed to match 50Ω characteristic impedance, depending on PCB material and thickness.

(Matching circuit and component values will be different, depending on PCB layout)



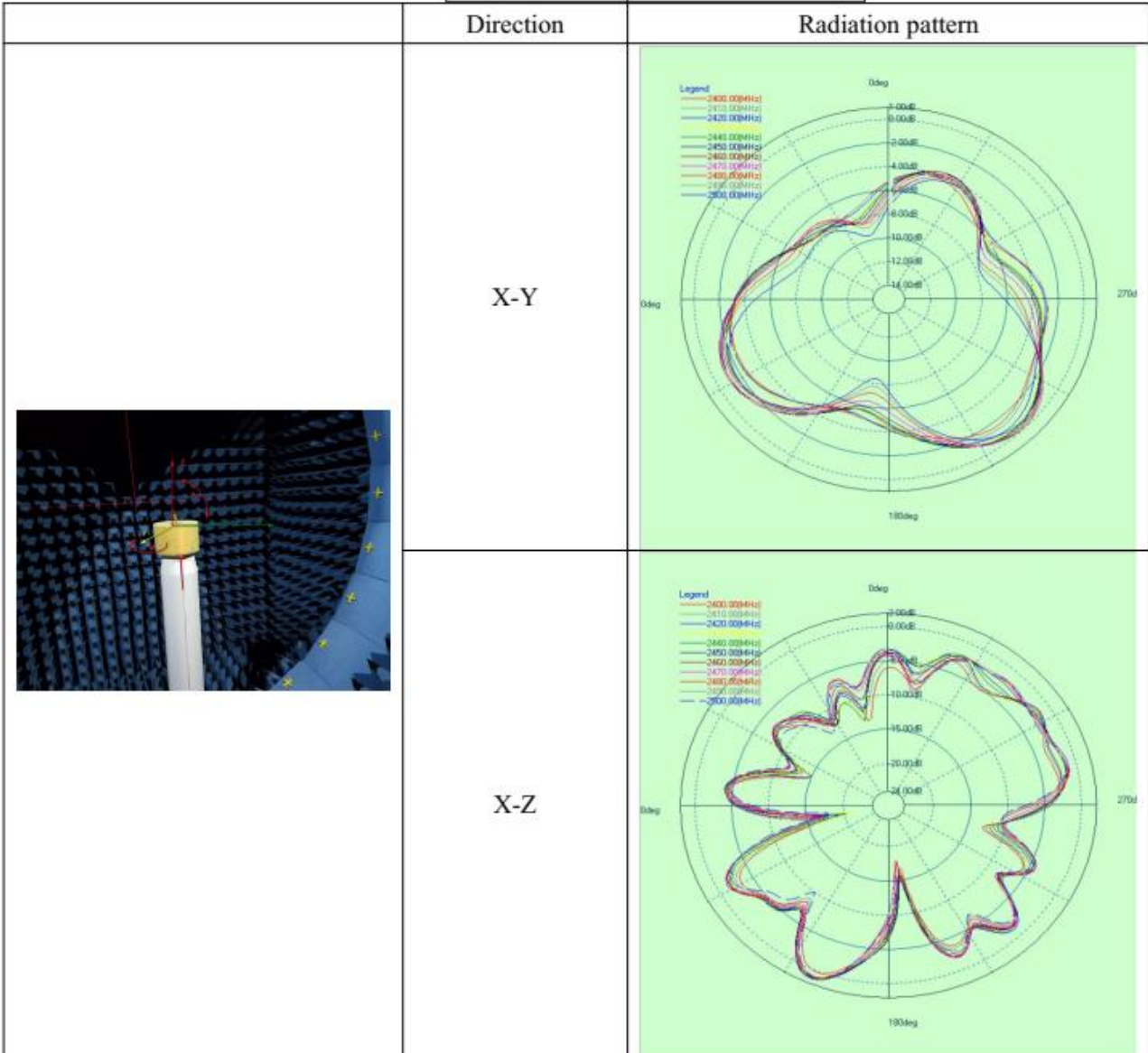
electrical performance:

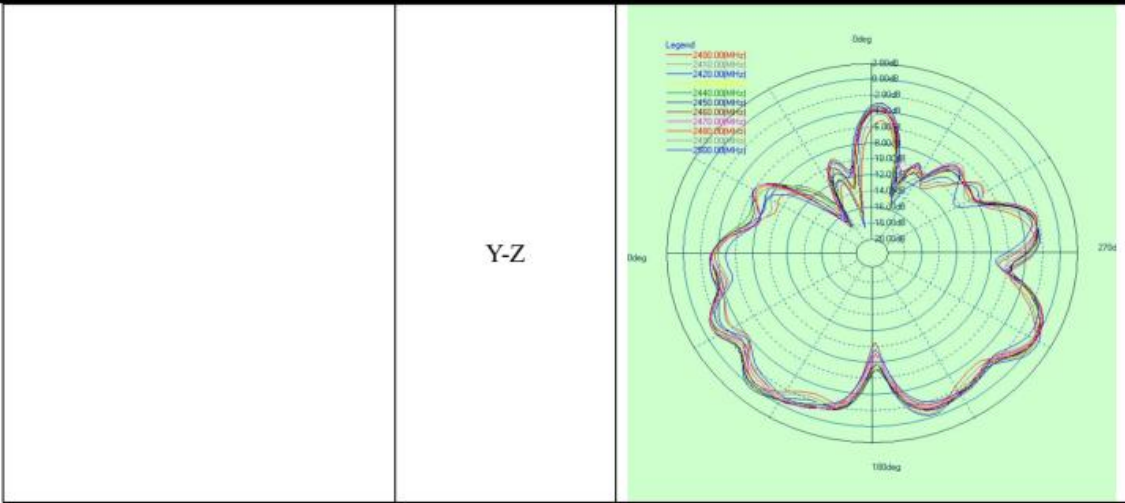




Gain & 2D Radiation pattern:

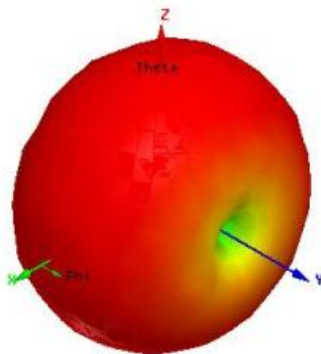
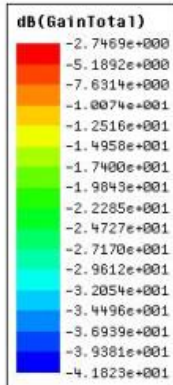
Frequency	Gain(dbi)
2400	-4.12543482
2410	-4.180958401
2420	-3.877599807
2430	-3.930632294
2440	-3.676540694
2450	-3.582882743
2460	-3.53429473
2470	-3.598055402
2480	-3.690017588
2490	-3.87625979
2500	-3.918544199



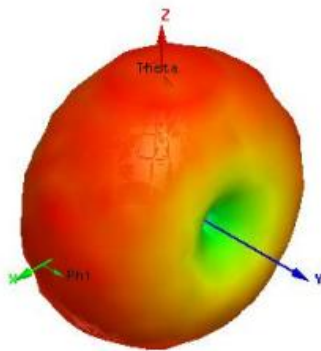
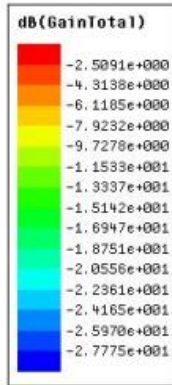


3D Radiation pattern:

2400MHz



2450MHz



2500MHz

