TAI-SAW TECHNOLOGY CO., LTD.
No. 3, Industrial 2nd Rd., Ping-Chen Industrial District,
Taoyuan, 324, Taiwan, R.O.C.
TEL: 886-3-4690038 FAX: 886-3-4697532
E-mail: tstsales@mail.taisaw.com Web: www.taisaw.com

Product Specifications Approval Sheet

Product:Dielectric Antenna 830/1940/2600MHz BW 260/460/200MHz Size 37.0x5.0mm

TST Part No.: TQ0171AA0000

Customer Part No.:_____

Customer signature required

Company:_____

Division:_____

Approved by :_____

Date:_____

Checked by:_____ Nina Chen Nina Chen

Approved by:_____ Kazuma Lee Kazuma Lee

Date:_____ 2023/02/21

1. Customer signed back is required before TST can proceed with sample build and receive orders.
2. Orders received without customer signed back will be regarded as agreement on the specifications.
3. Any specifications changes must be approved upon by both parties and a new revision of specifications shall be released to reflect the change

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Dielectric Antenna 830/1940/2600MHz BW 260/460/200MHz Size 37.0x5.0mm

MODEL NO.: TQ0171AA0000 REV.1.0

RoHS Compliant
Lead free
Lead-free soldering

Electrostatic **S**ensitive **D**evice (**ESD**)

A. Maximum Rating:

1. Operating temperature range: -40°C to +85°C
2. Storage temperature range: -40°C to +85°C
3. Moisture Sensitive Level: Level 1

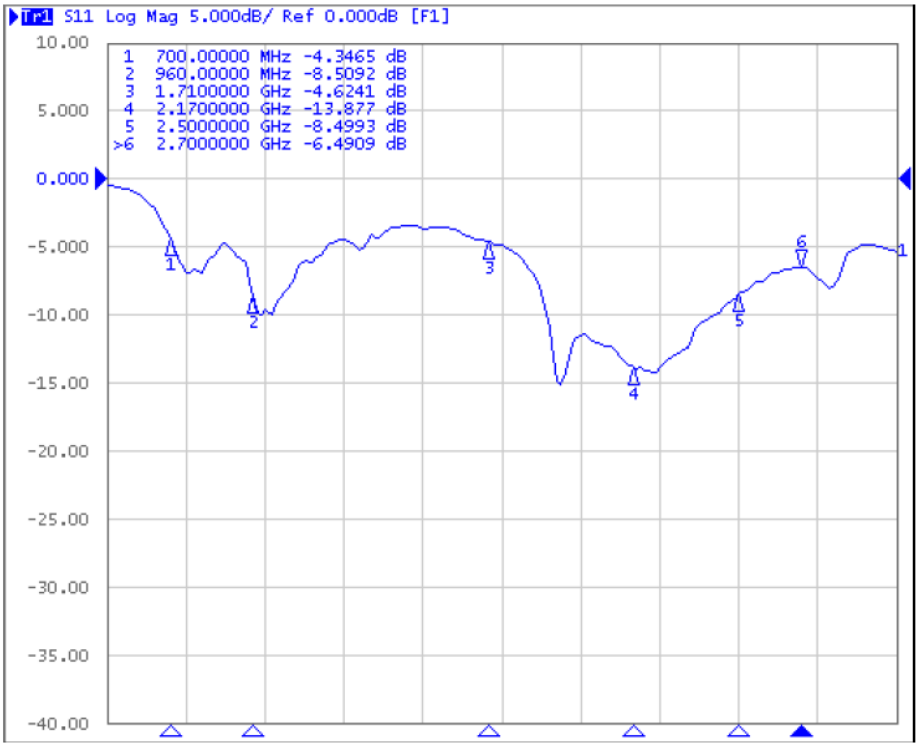
B. Electrical Characteristics:

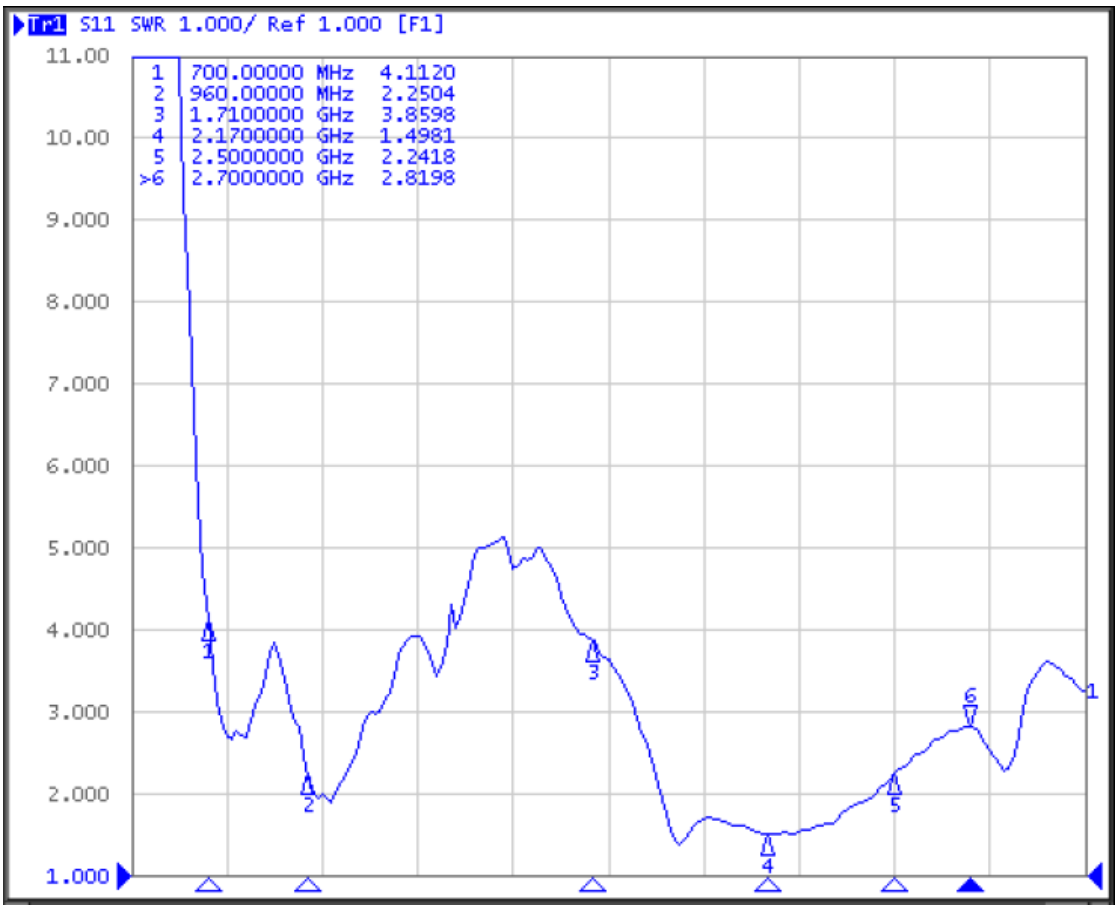
Item	Spec
Working frequency	700~960MHz,1710~2170 MHz,2500~2700 MHz
VSWR	4.5 max(depends on the special environment)
Polarization	Linear
Termination	Ag (Environmentally-Friendly Pb Free)

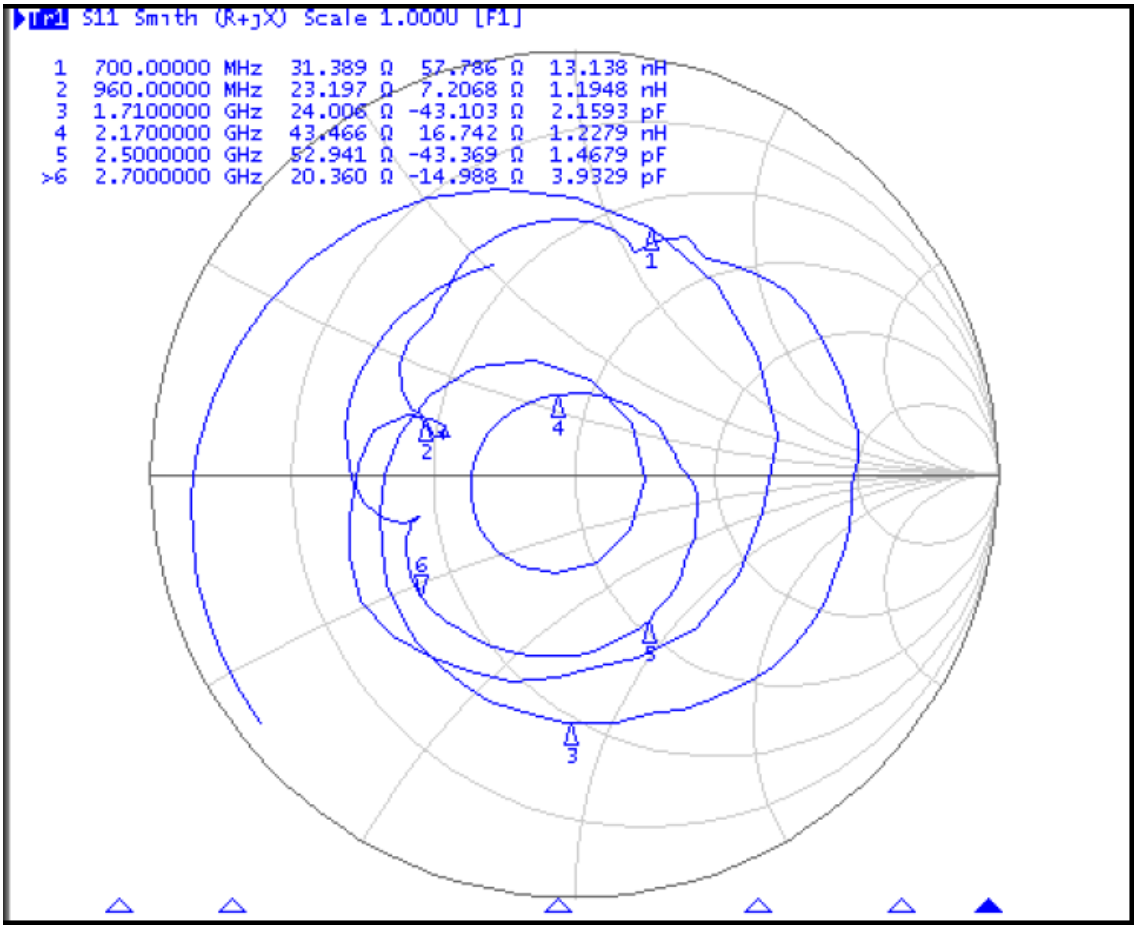
* Evaluation board size 45x120 mm.
* Actual Electrical value will depend on customer ground plane size.

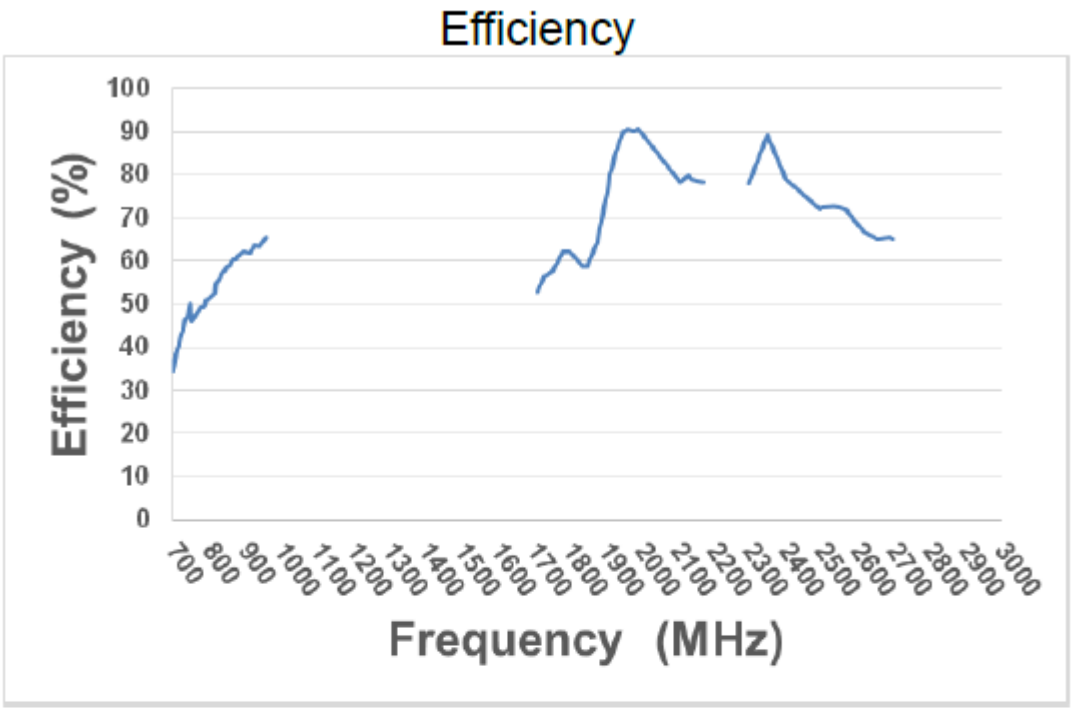
C. Frequency Characteristics:

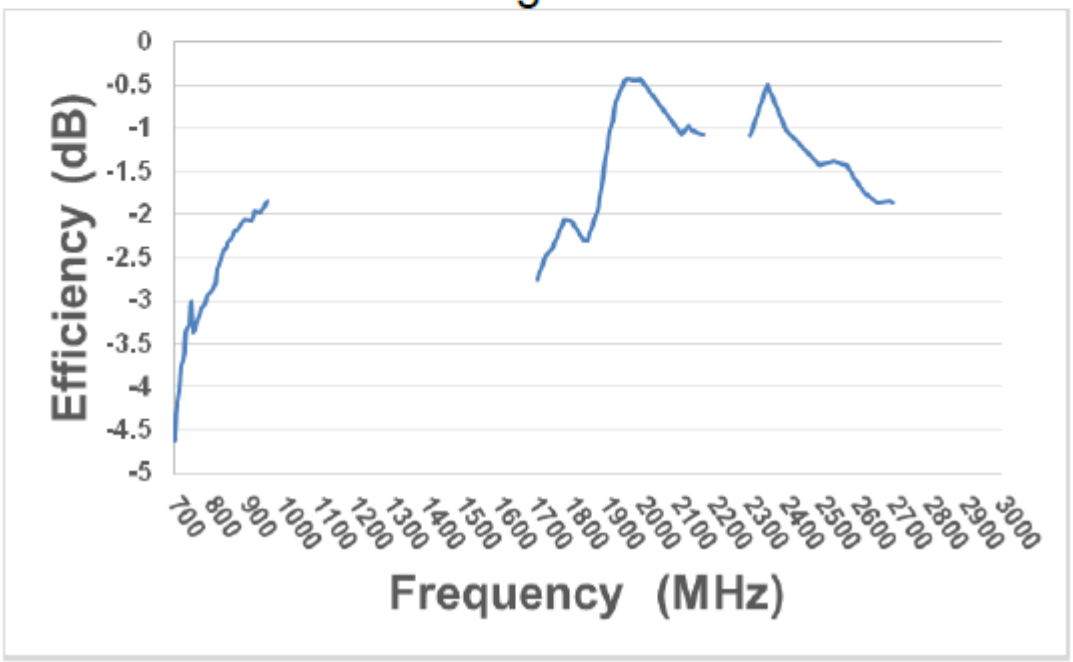
S11 Response curve

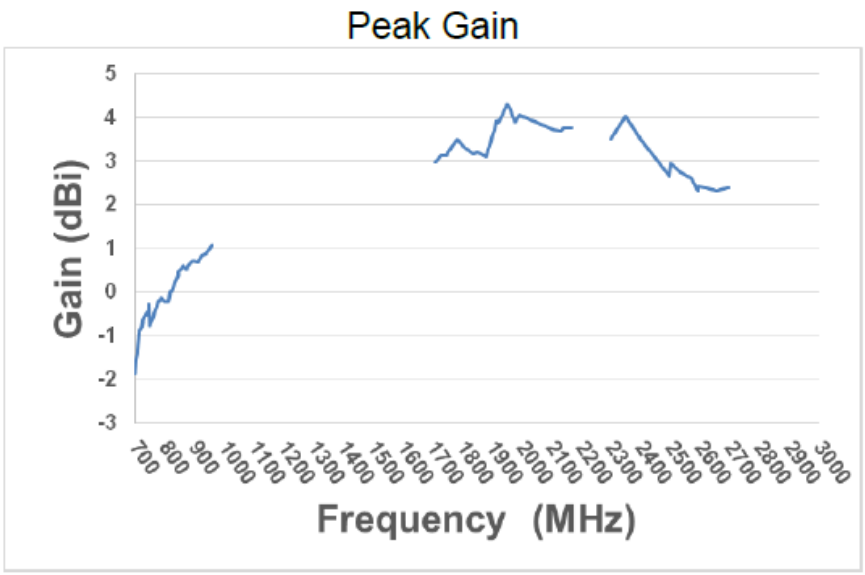



Tr1 S11 SWR 1.000/ Ref 1.000 [F1]
1 700.00000 MHz 4.1120
2 960.00000 MHz 2.2504
3 1.7100000 GHz 3.8598
4 2.1700000 GHz 1.4981
5 2.5000000 GHz 2.2418
>6 2.7000000 GHz 2.8198
11.00
10.00
9.000
8.000
7.000
6.000
5.000
4.000
3.000
2.000
1.000


Tr1 S11 Smith (R+jX) Scale 1.000U [F1]
1 700.00000 MHz 31.389 Ω 57.786 Ω 13.138 nH
2 960.00000 MHz 23.197 Ω 7.2068 Ω 1.1948 nH
3 1.7100000 GHz 24.006 Ω -43.103 Ω 2.1593 pF
4 2.1700000 GHz 43.466 Ω 16.742 Ω 1.2279 nH
5 2.5000000 GHz 52.941 Ω -43.369 Ω 1.4679 pF
>6 2.7000000 GHz 20.360 Ω -14.988 Ω 3.9329 pF

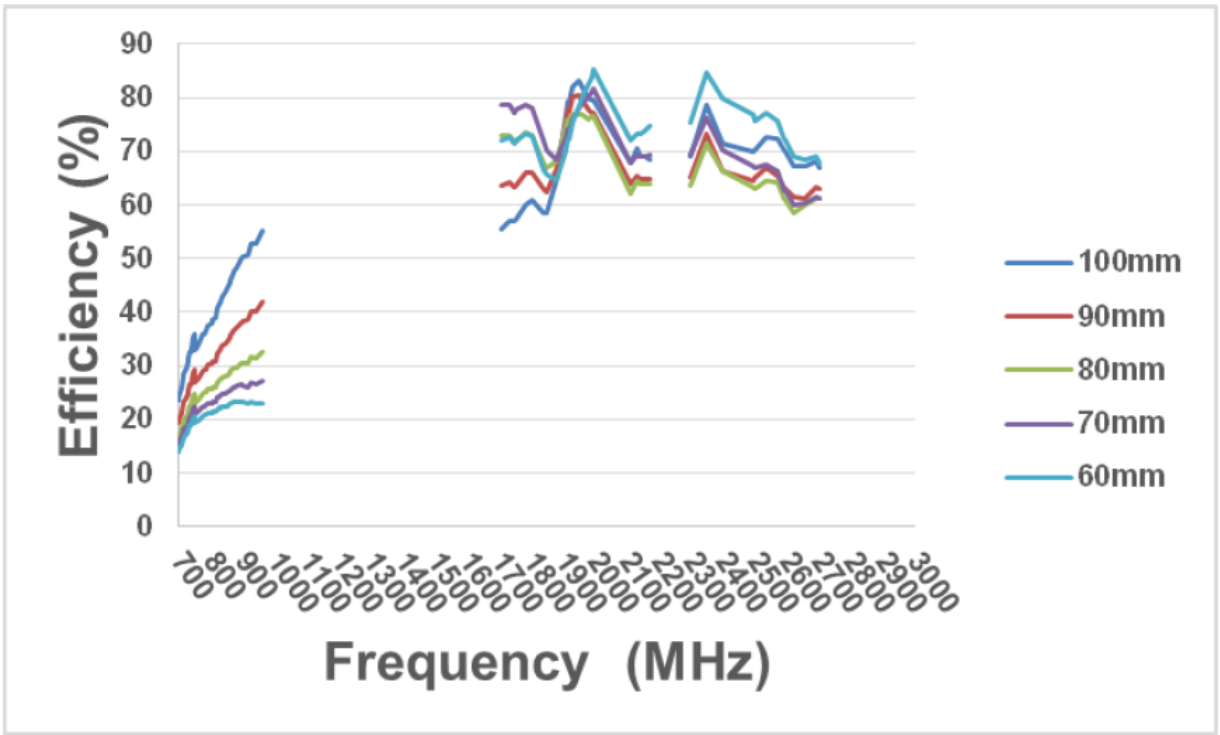

Efficiency
Efficiency (%)
100
90
80
70
60
50
40
30
20
10
0
700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000
Frequency (MHz)


Average Gain
Efficiency (dB)
0
-0.5
-1
-1.5
-2
-2.5
-3
-3.5
-4
-4.5
-5
700 800 900 1000 1100 1200 1300 1400 1500 1600 1700 1800 1900 2000 2100 2200 2300 2400 2500 2600 2700 2800 2900 3000
Frequency (MHz)

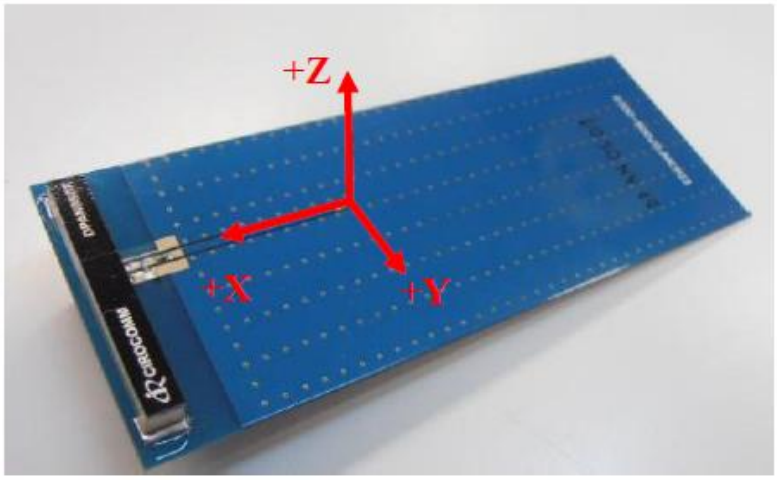


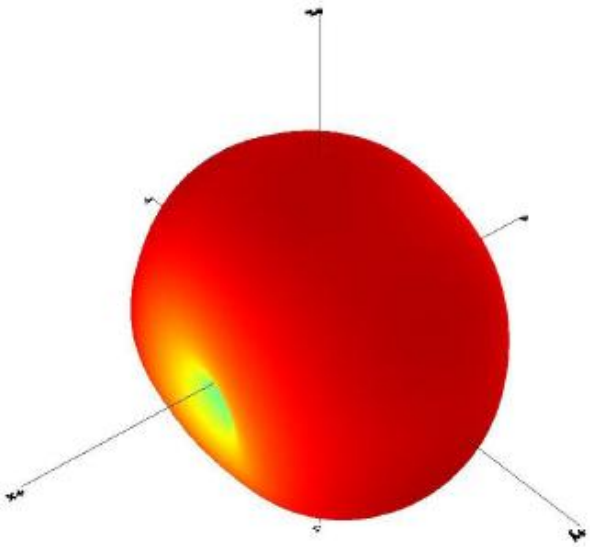
Band	700	824	960	1710	1850	1990	2170	2500	2700
Efficiency (%)	35.12	55.26	65.49	53.03	58.87	90.53	78.19	72.31	65.10
Average Gain(dB)	-4.54	-2.57	-1.83	-2.75	-2.30	-0.43	-1.06	-1.40	-1.86
Peak Gain (dBi)	-1.80	0.016	1.07	2.97	3.21	4.03	3.76	2.96	2.38

Reference efficiency data with different ground plane length:

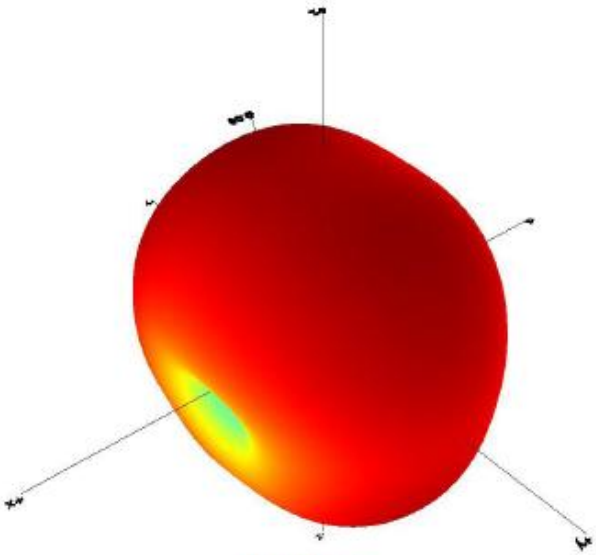


3D Radiation Pattern

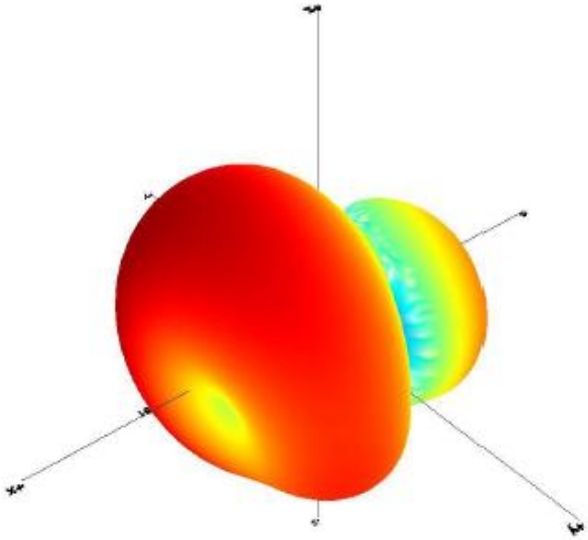




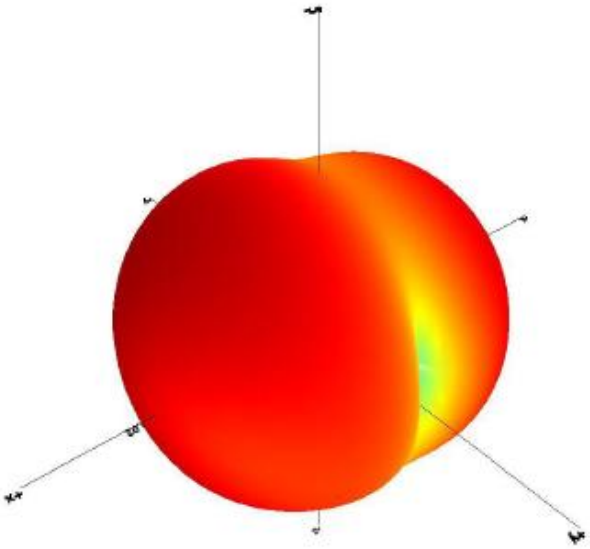
824MHz



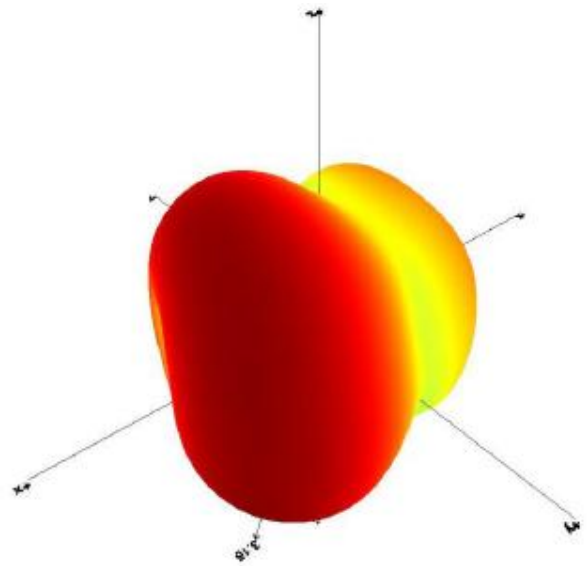
960MHz



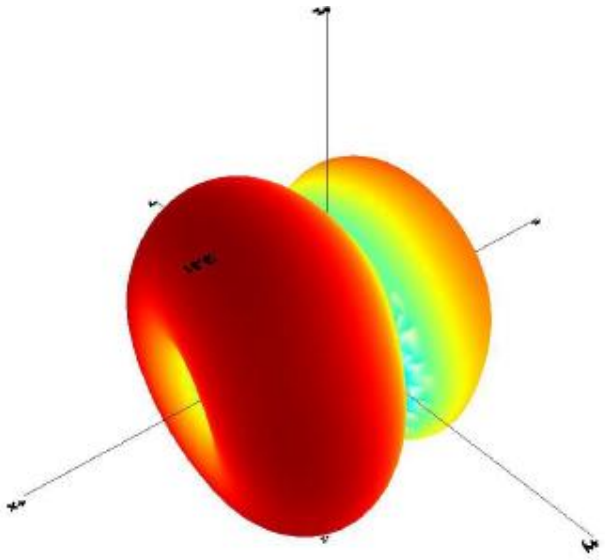
1710MHz



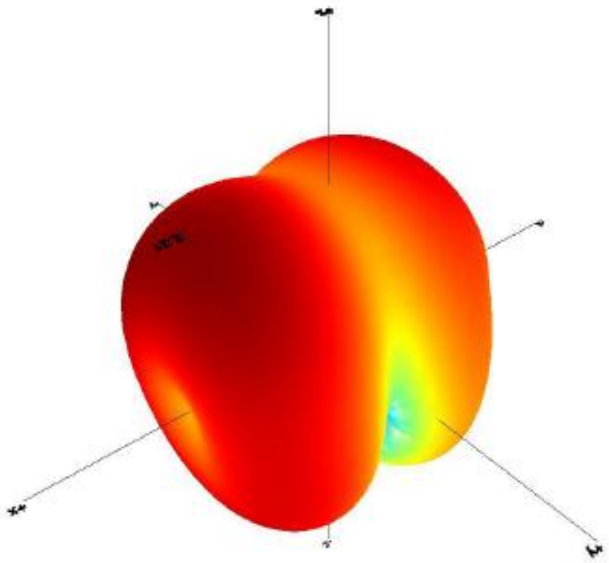
1850MHz



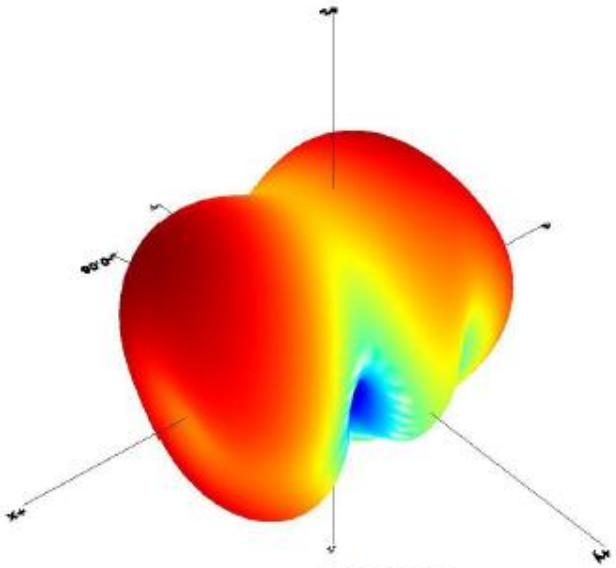
1990MHz



2170MHz

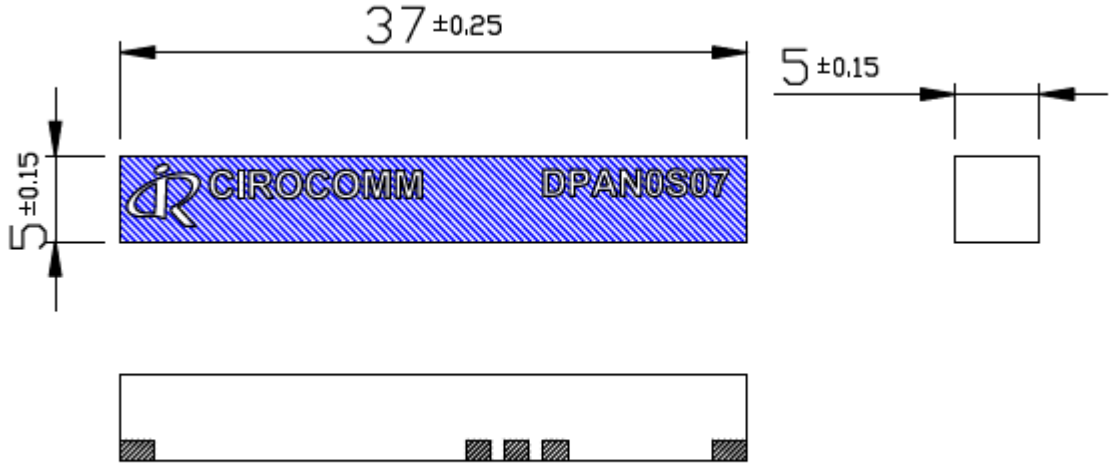


2500MHz



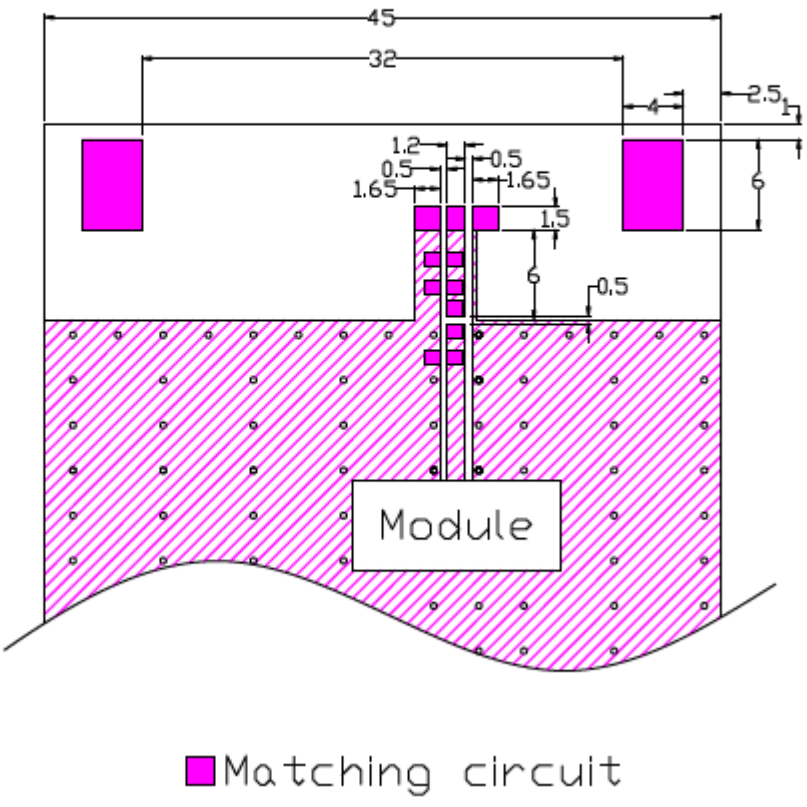
2700MHz

D. Dimension:



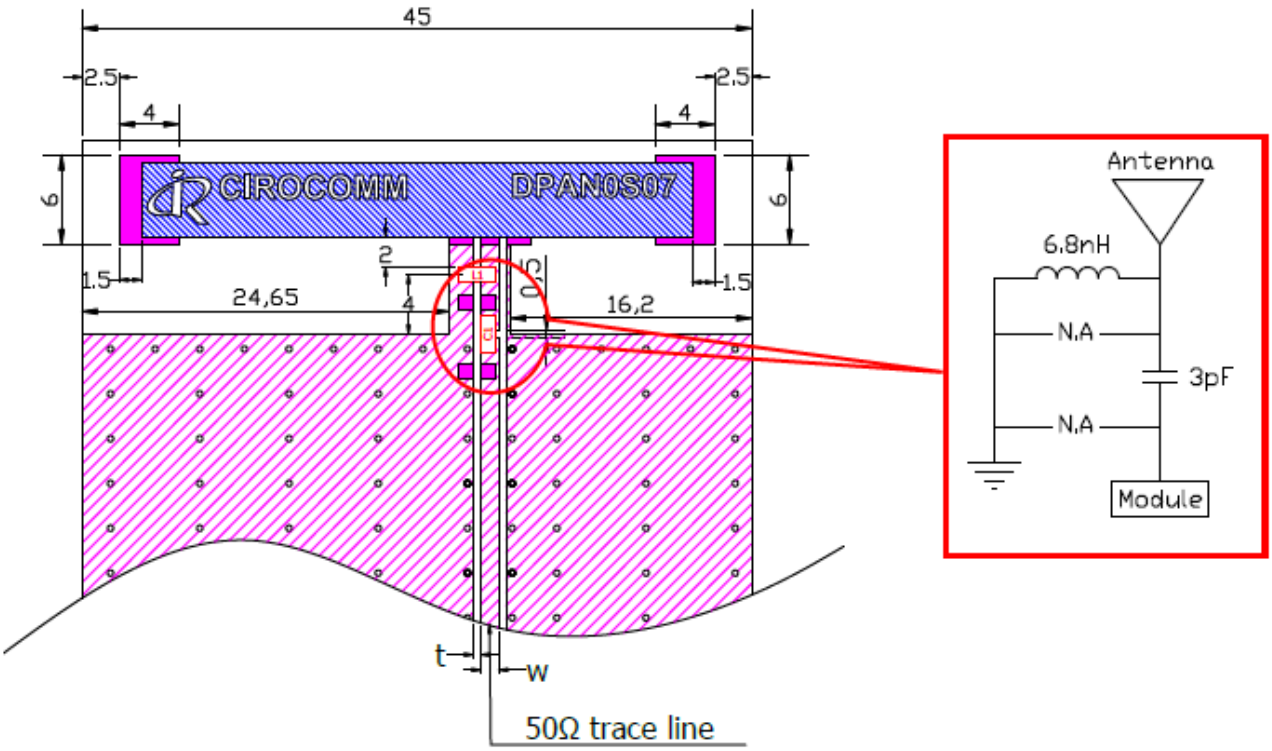
Unit:mm

Customer's Requirement Layout Dimension

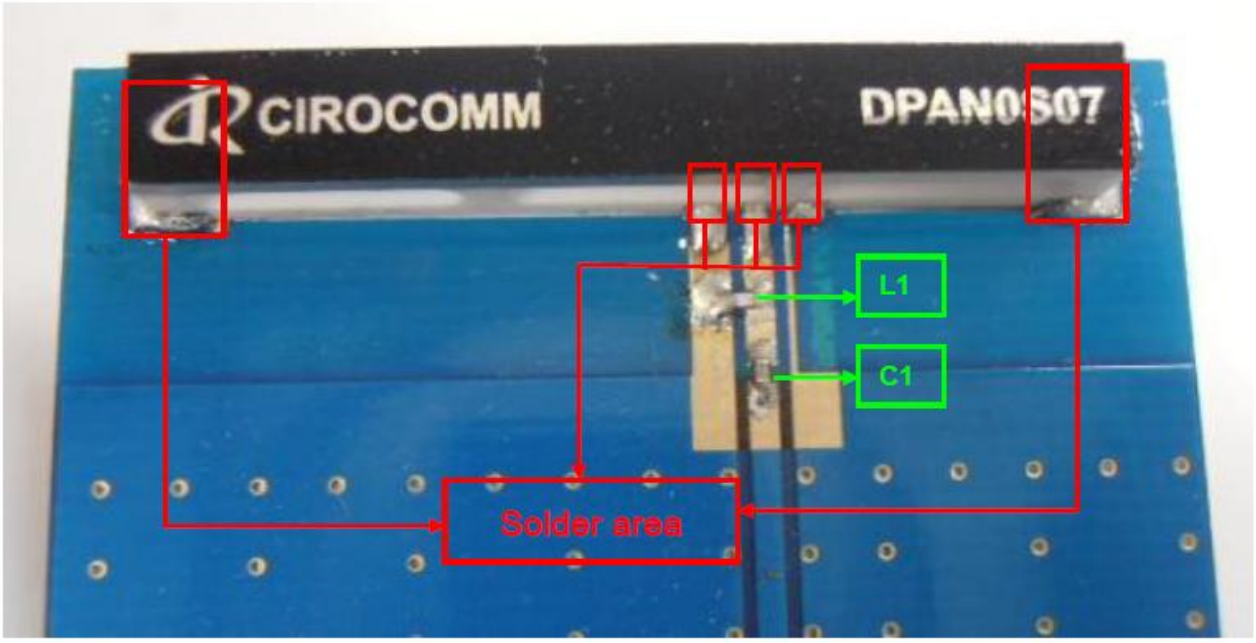


E. Measurement Circuit:

Recommend foot print for Evaluation Board

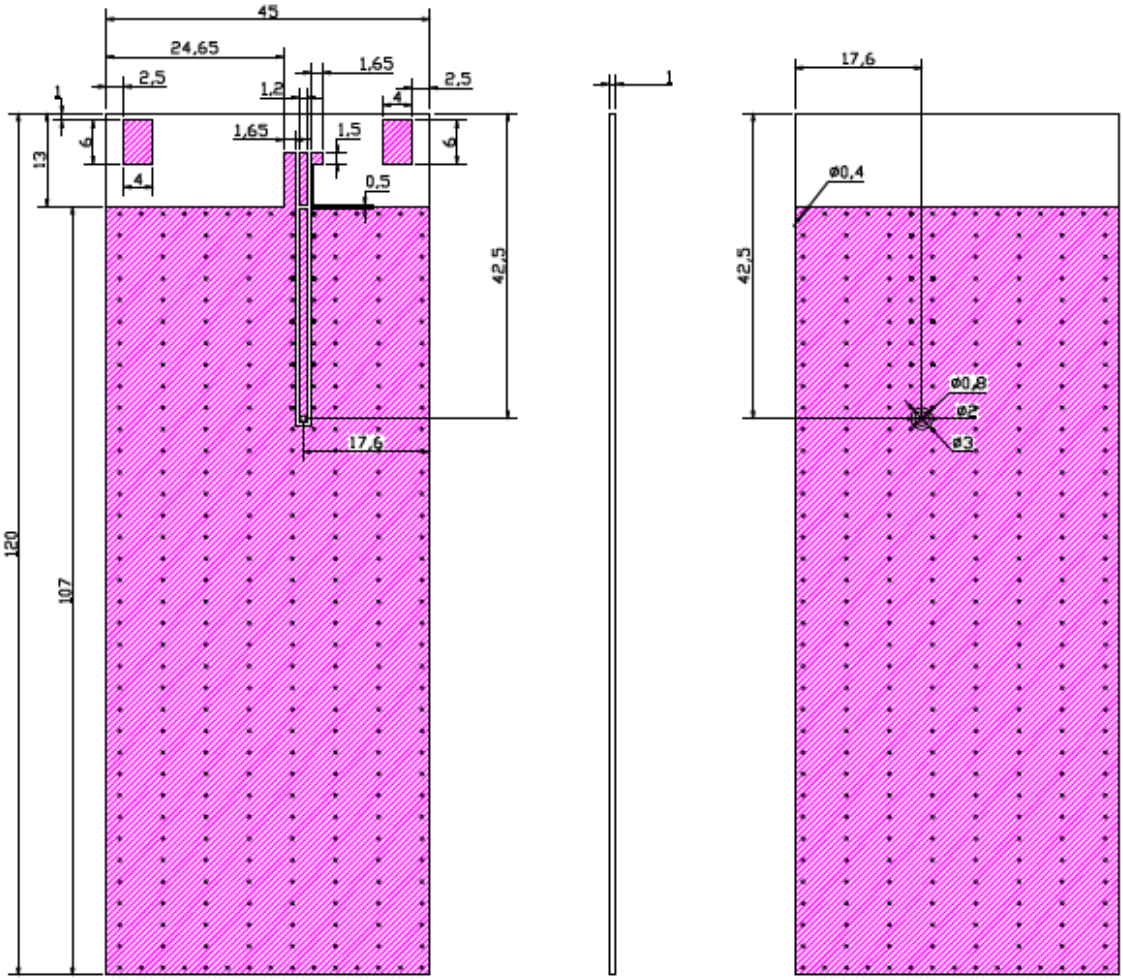


t,w=Unique dimensioning according to your PCB.



Circuit Symbol	Size	Description
L1	0402	6.8nH Inductor (MLK1005S15NIT)
C1	0402	3pF Capacitor (C1005C0G1H030CT)

Test board dimensions

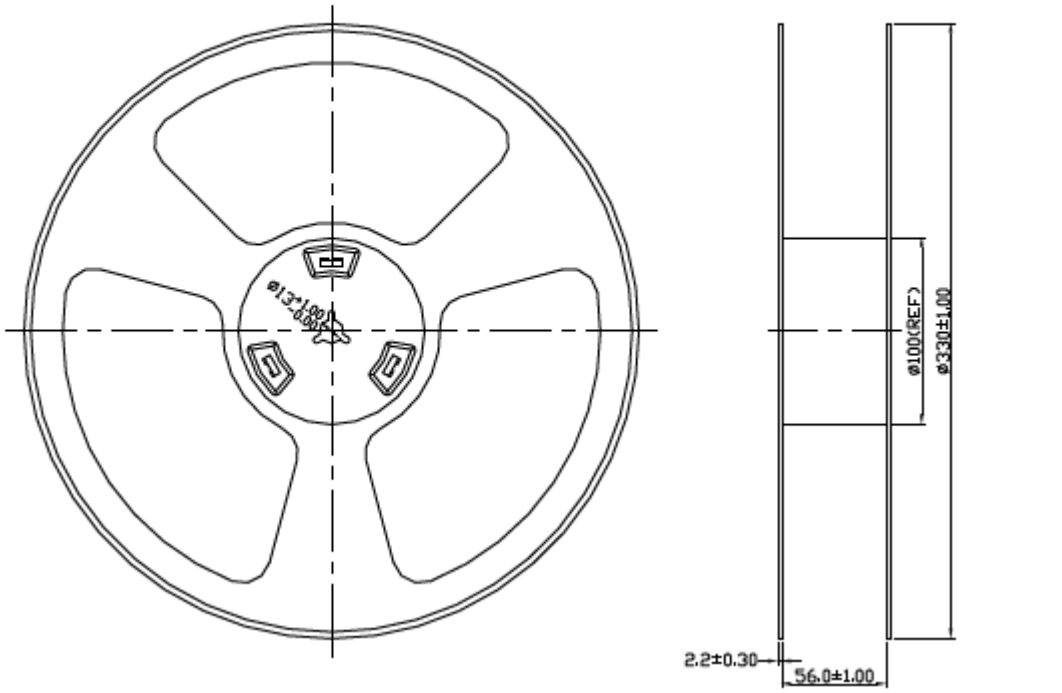


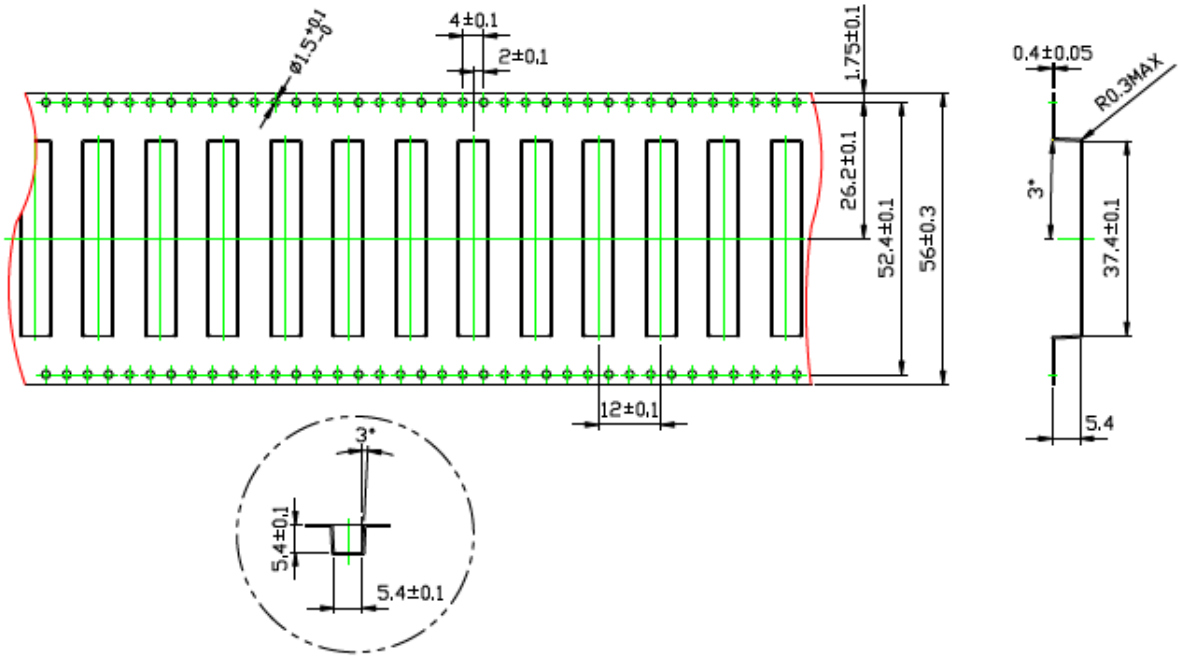
The test board is designed for evaluation purposes

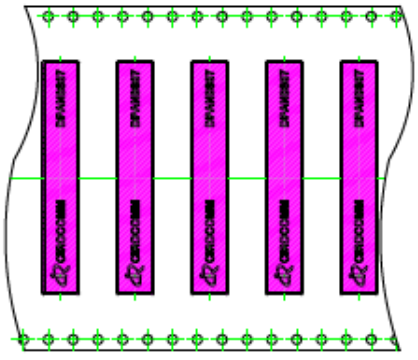
F. Packing:

1 Blister tape to IEC 286-3，polyester。

2 Pieces/tape：450 pcs







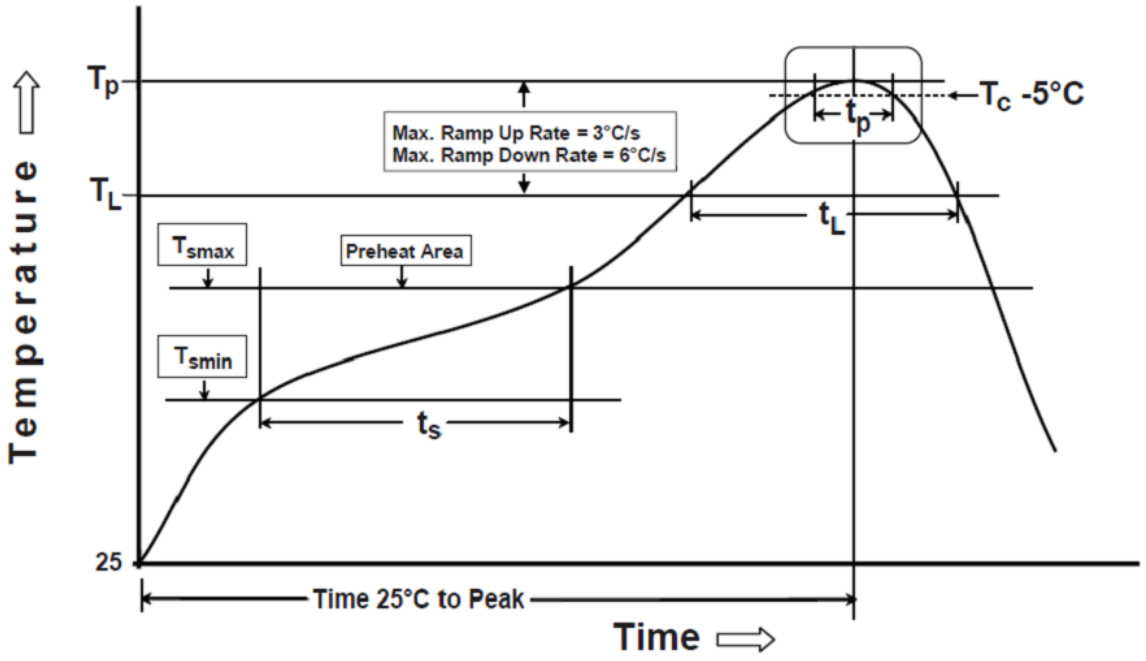
G. Recommended Solder Profile:

Products can be assembled following Pb-free assembly. According to the Standard IPC/JEDEC J-STD-020C, the temperature profile suggested is as follow:

Phase	Profile features	Pb-Free Assembly (SnAgCu)
PREHEAT	-Temperature Min(Tsmin) -Temperature Max(Tsmax) -Time(ts) form (Tsmin to Tsmax)	150℃ 200℃ 60-120 seconds
RAMP-UP	Avg. Ramp-up Rate (Tsmax to TP)	3℃/second(max)
REFLOW	-Temperature(TL) -Total Time above TL (t L)	217℃ 30-100 seconds
PEAK	-Temperature(TP) -Time(tp)	260℃ 5-10 second
RAMP-DOWN	Rate	6℃ / second max.
Time from 25℃ to Peak Temperature		8 minutes max.
Composition of solder paste		96.5Sn/3Ag/0.5Cu
Solder Paste Model		SHENMAO PF606-P26

Note：All the temperature measure point is on top surface of the component, if temperature over recommend, it will make component surface peeling or damage.

The graphic shows temperature profile for component assembly process in reflow ovens



Soldering With Iron:

Soldering condition : Soldering iron temperature 270±10 ℃.
Apply preheating at 120℃ for 2-3 minutes. Finish soldering for each terminal within 3 seconds, if soldering iron over temperature 270±10 ℃ or 3 seconds, it will make component surface peeling or damage.
Soldering iron can not leakage of electricity.