Low Profile Dual Band WiFi Chip Antenna

ACAR0301-SW2

3.05 x 1.60 x 0.55 mm
RoHS/RoHS II Compliant
MSL = 1

Features

- Dual band WiFi 2.4 GHz/5.5 GHz
- Low profile
- Gain of 1.0/2.5 dBi
- Omnidirectional pattern
- Low VSWR of 2.0

Applications

- WiFi
- Bluetooth
- ISM
- Wearables
- IoT
- AR/VR
- Drones
- Broadband connectivity

Electrical Characteristics

Item	Spec*		Comments
Working Frequency	2400~2500MHz	5150~5825MHz	Dual 2.4GHz and 5GHz bands
VSWR	2:1	2:1	
Peak Gain (2400~2500MHz)	Typ 1.0 dBi	Typ 2.5 dBi	
Efficiency	75%	80%	
Polarization	Linear		
Impedance	50 Ω		
Operating Temperature	-40˚C ~ 85˚C		
Storage Temperature	-40˚C ~ 85˚C		

* Data collected per Table on standard evaluation board, and under the environmental conditions of +40˚C and 0-95% relative humidity.

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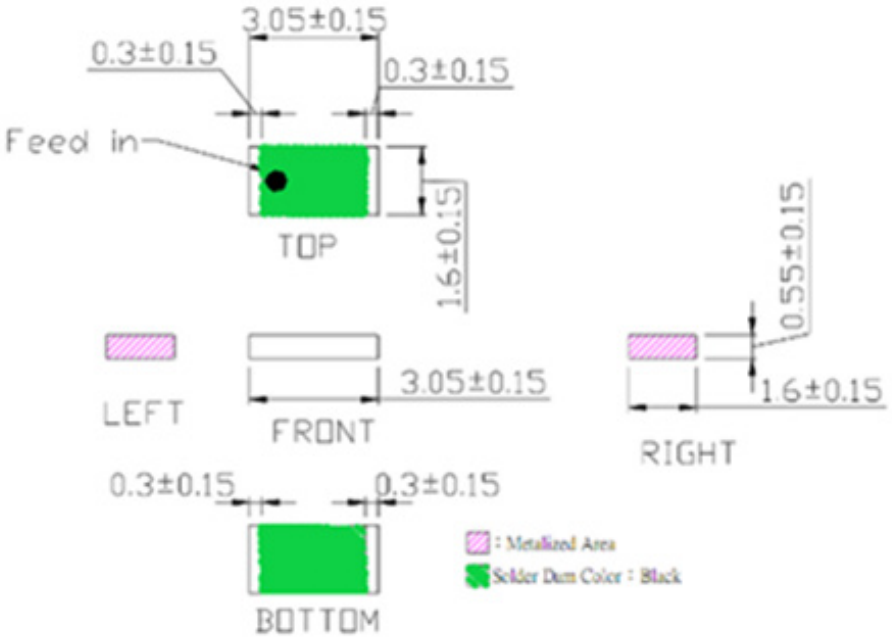
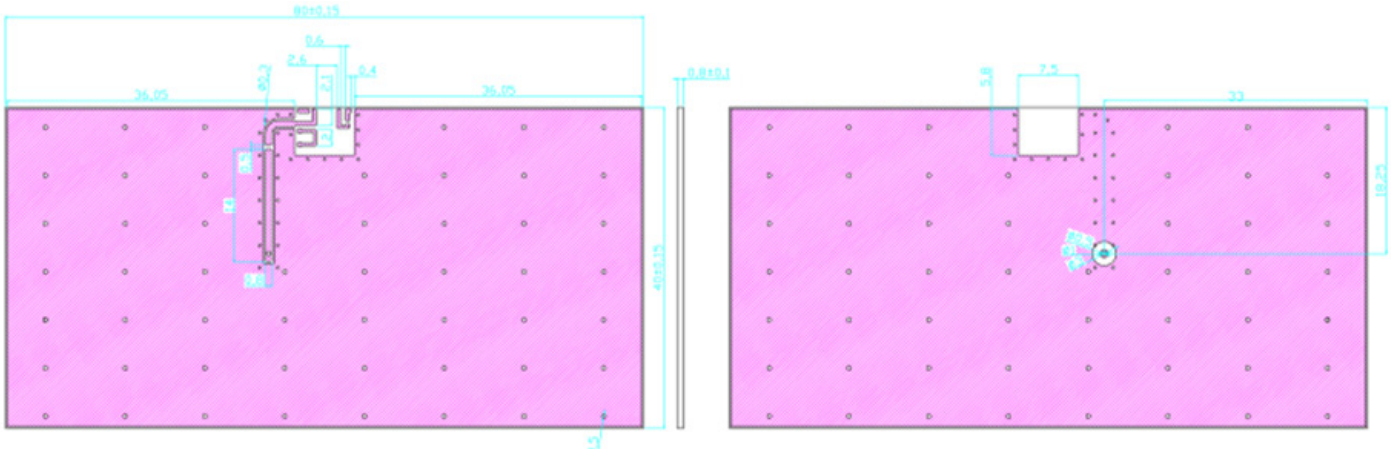
Dimensions



Dimensions (mm)

Evaluation Board and Dimensions



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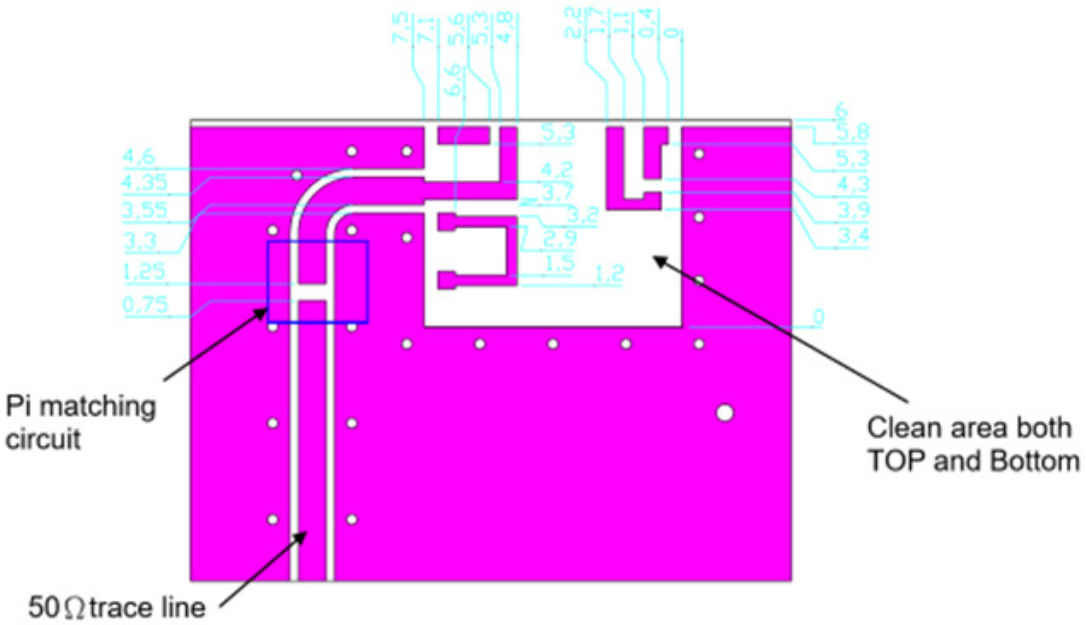
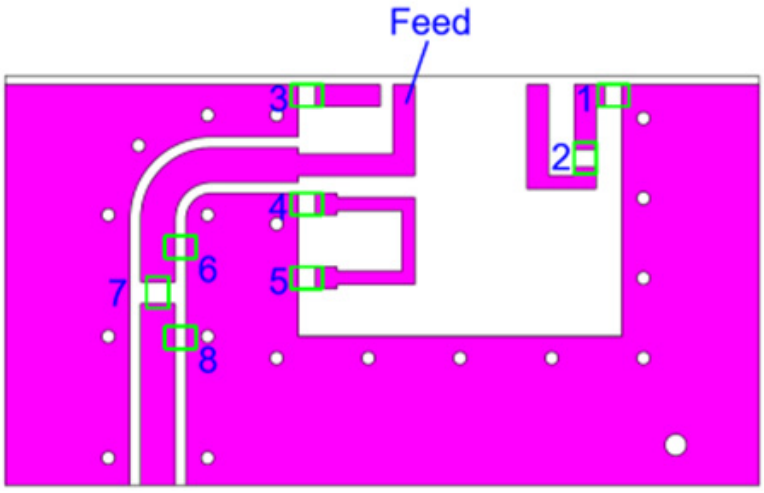
Recommended Layout Dimensions



Recommended Matching Circuit



Matching Components								
No.	1	2	3	4	5	6	7	8
Value	1.2pF	1.0pF	NA	NA	NA	1.2nH	1.0nH	NA

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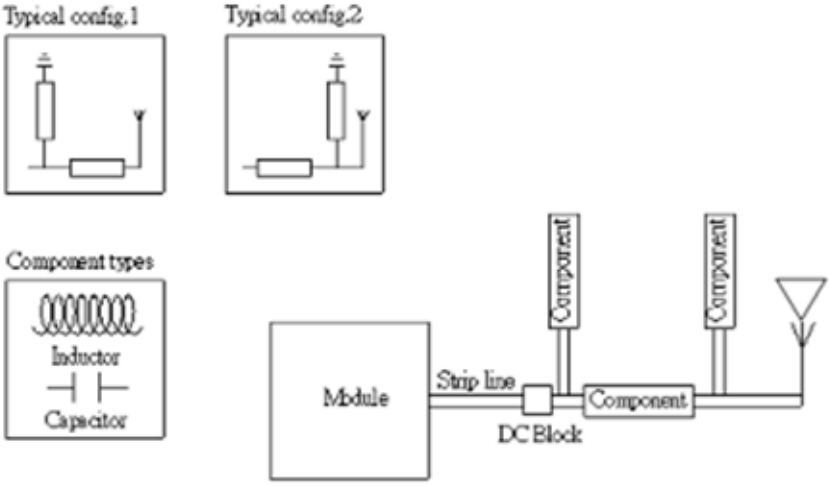
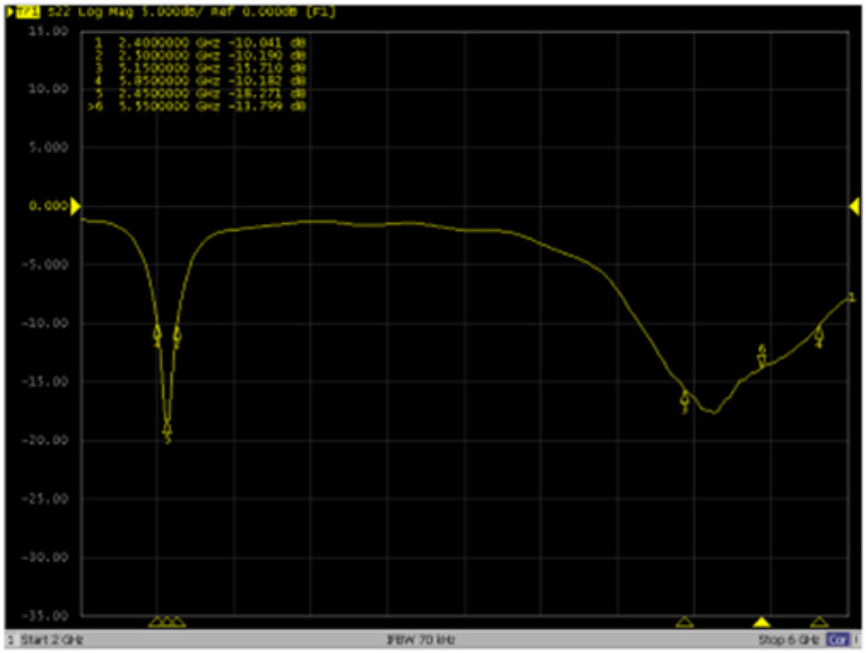
Transmission Line Antenna Matching



Matching should be considered using a Pi network where 1, 2 or 3 components could be used. This shall be matched to the transmission line and the ground plane in the design.

Antenna Response – Return Loss S11



Return Loss	2400MHz	2450MHz	2500MHz	5150MHz	5550MHz	5850MHz
S11	-10.04dB	-18.27dB	-10.19dB	-15.71dB	-13.79dB	-10.18dB

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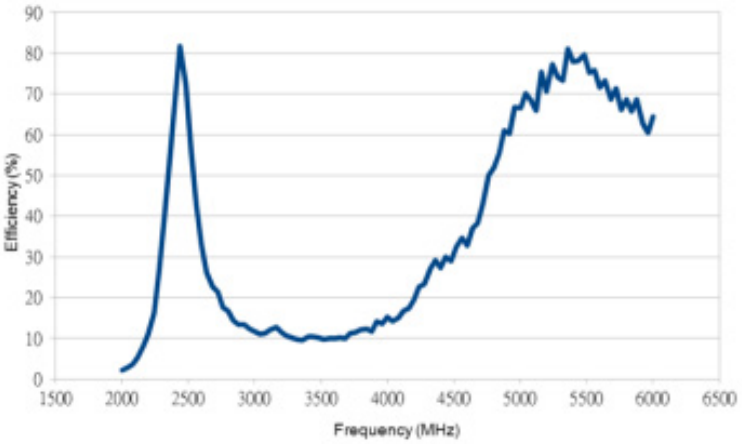
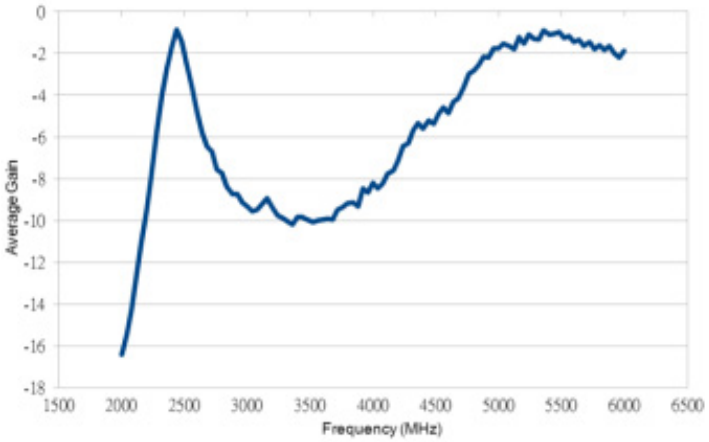
Antenna Performance

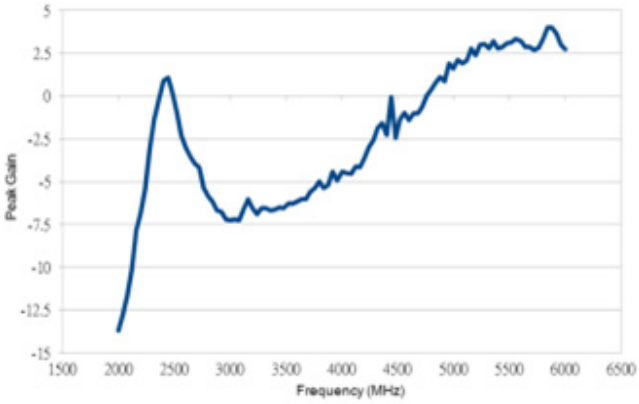
Efficiency



Average Gain



Peak Gain



WLAN	2400MHz	2450MHz	2500MHz	5150MHz	5850MHz
Efficiency (%)	68.02	79.73	65.16	75.38	65.62
Average Gain (dB)	-1.67	-0.98	-1.86	-1.22	-1.82
Peak Gain (dB)	0.88	1.05	-0.19	2.56	4.01

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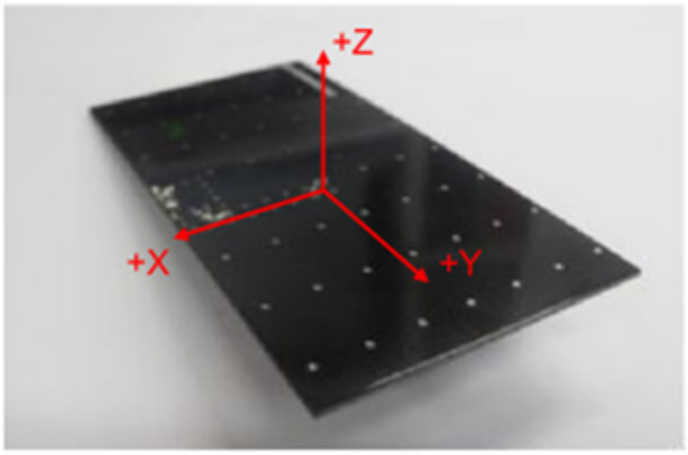
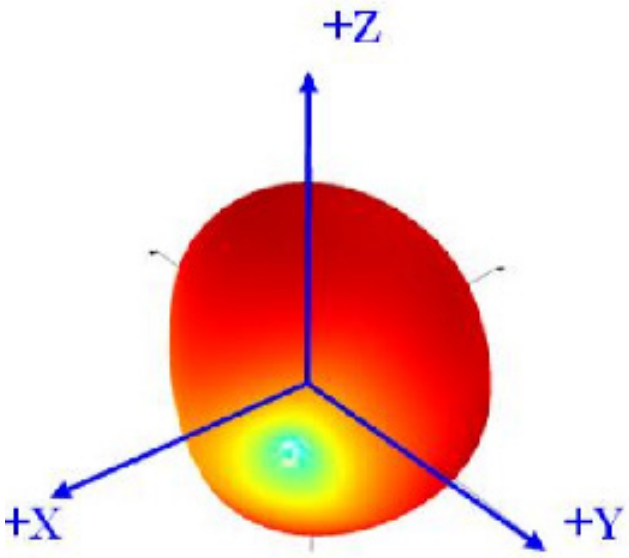
Antenna 3D Radiation Patterns – Evaluation Board

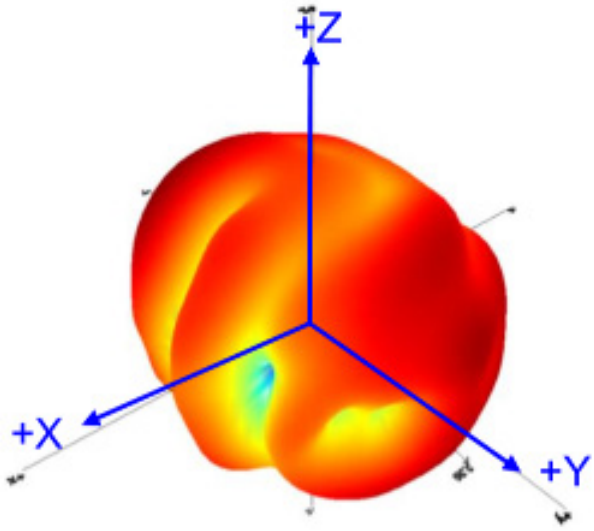
Coordinates



Radiation patterns 2450MHz (3D)



Radiation patterns 5550MHz (3D)



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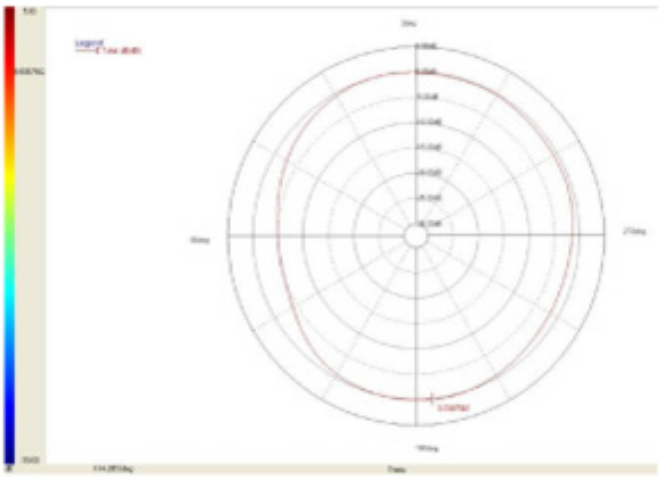
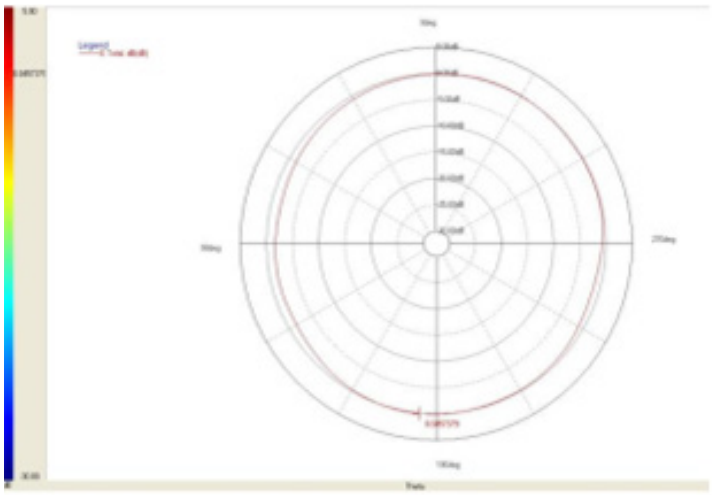
Antenna 2D Radiation Patterns @ 2450MHz

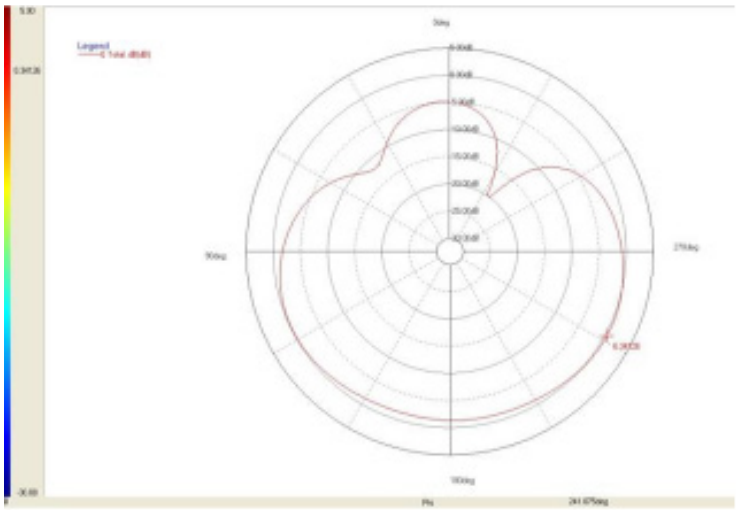
2D Radiation Pattern X-Z Plane 2450MHz



2D Radiation Pattern Y-Z Plane 2450MHz



2D Radiation Pattern X-Y Plane 2450MHz



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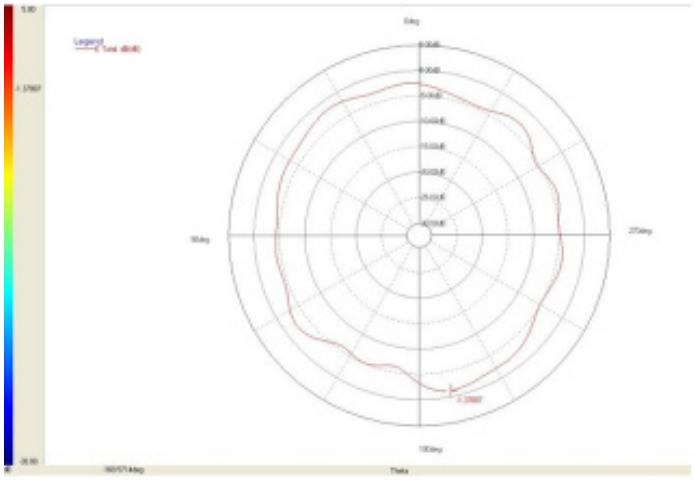
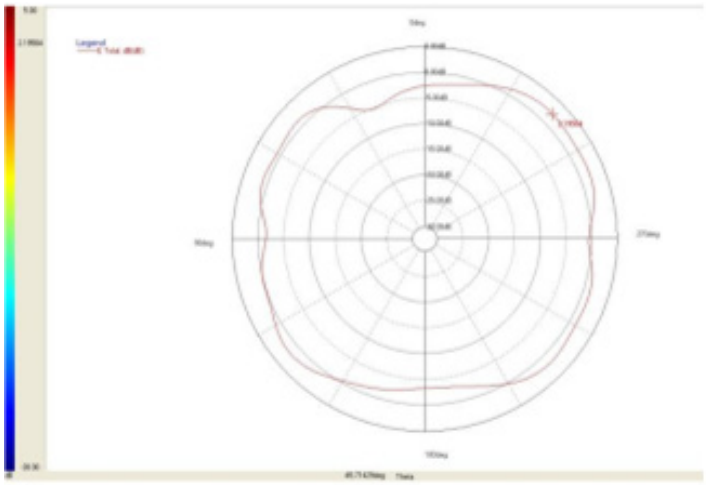
Antenna 2D Radiation Patterns @ 5550MHz

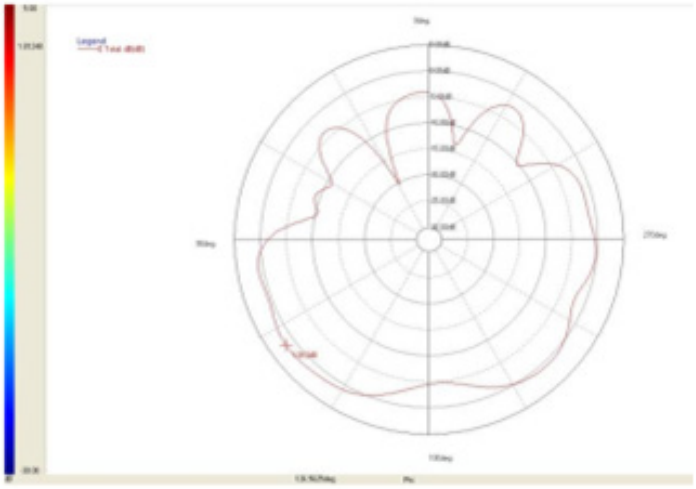
2D Radiation Pattern X-Z Plane 5550MHz



2D Radiation Pattern Y-Z Plane 5550MHz



2D Radiation Pattern X-Y Plane 5550MHz



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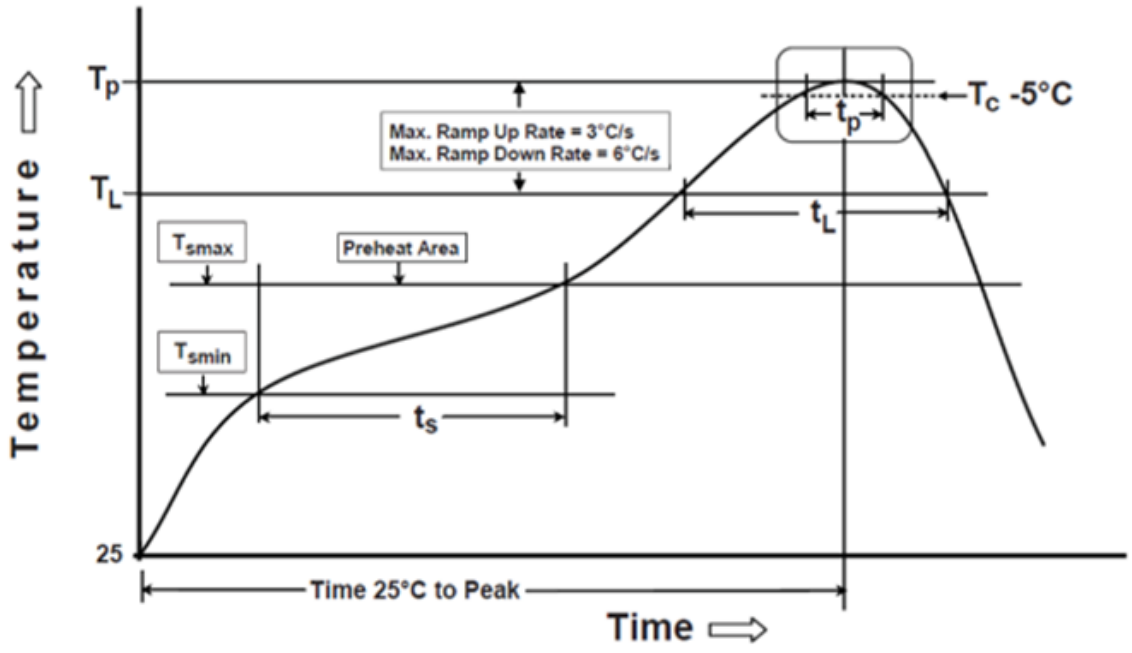
Reflow Soldering Standard Condition

Abracon 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)
Pre-Heat	-Temperature Min (Tsmin) -Temperature Max (Tsmax) -Time (ts) from (Tsmin to Tsmax)	150°C 200°C 60-120 seconds
Ramp-Up	Avg. Ramp-up Rate (Tsmax to TP)	3°C /second(max)
Reflow	-Temperature (TL) -Total Time above TL (t L)	217°C 30-100 seconds
Peak	-Temperature (TP) -Time (tp)	260°C 5-10 second RAMP
Ramp-Down	Rate	6°C / second max.
Time from 25°C 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.



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