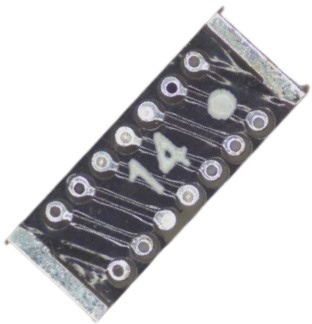
Wi-Fi / Bluetooth

ST0147-00-010-A

Amphenol

Datasheet

2.4-2.5GHz
Chip antenna



5 X 2 X 1 mm

Chip Antenna

Features:

High performing Wi-Fi & Bluetooth antenna with SMT mounting on PCB.

Applications:

- CPE - Router, Set-top boxes & Gateway
- IoT devices
- Wi-Fi & Bluetooth Mesh
- Smart Metering
- Robotics

RoHS

Electrical Specifications

Antenna Characteristics

Antenna Type	Radiation Pattern	Polarization	Max. Input Power	Impedance
Chip Antenna	Omni	Linear	2W	50Ω

Frequency (GHz)	**2.4~2.5**
Return Loss (dB)	< -10
Peak Gain (dBi)	3.3
Average Gain (dB)	-1.1
Efficiency (%)	77

Antenna testing includes evaluation board.

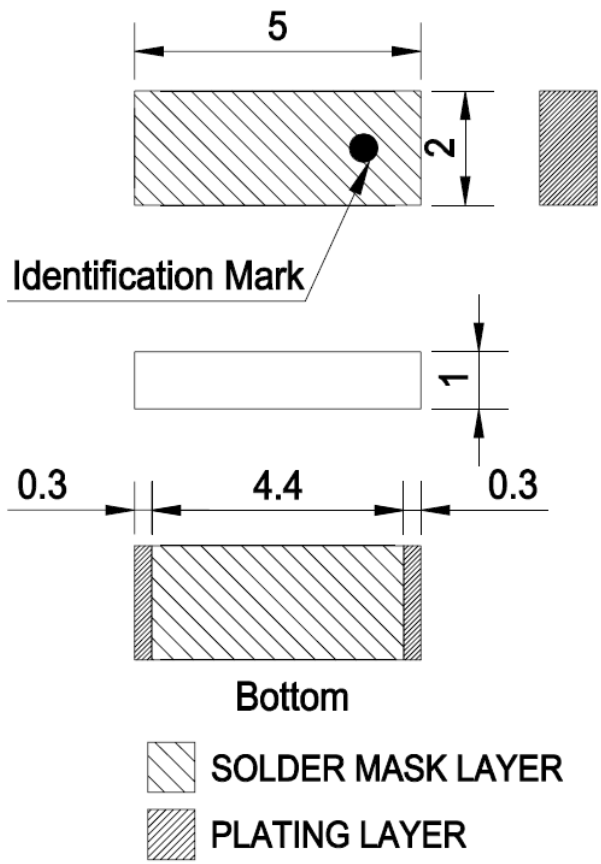
Mechanical Specifications

Environmental	
Temperature Range (˚C)	-40 to 85
Humidity	Non-condensing 65°C 95% RH
RoHS Compliant	

Part Number	Dimension (mm)	Weight (g)	Material
ST0147-00-010-A	5 X 2 X 1	0.025	FR-4

Mechanical Drawing

Unit : mm



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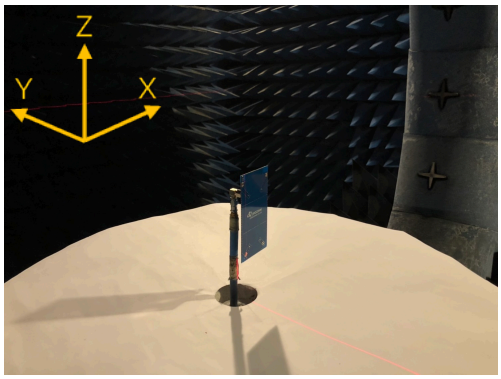
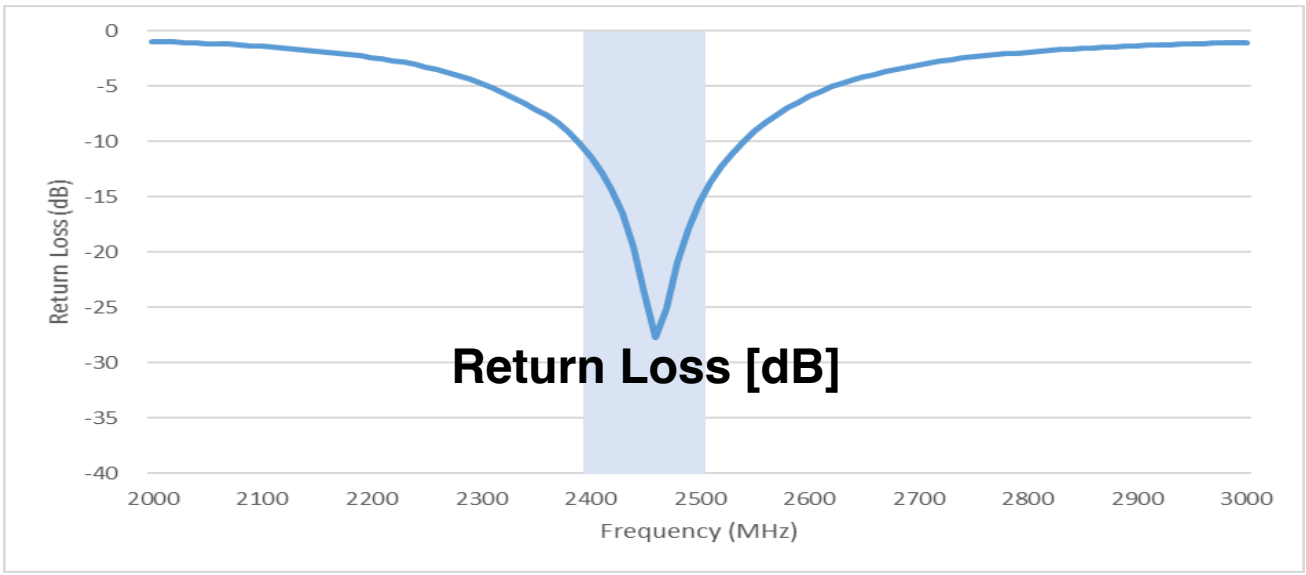
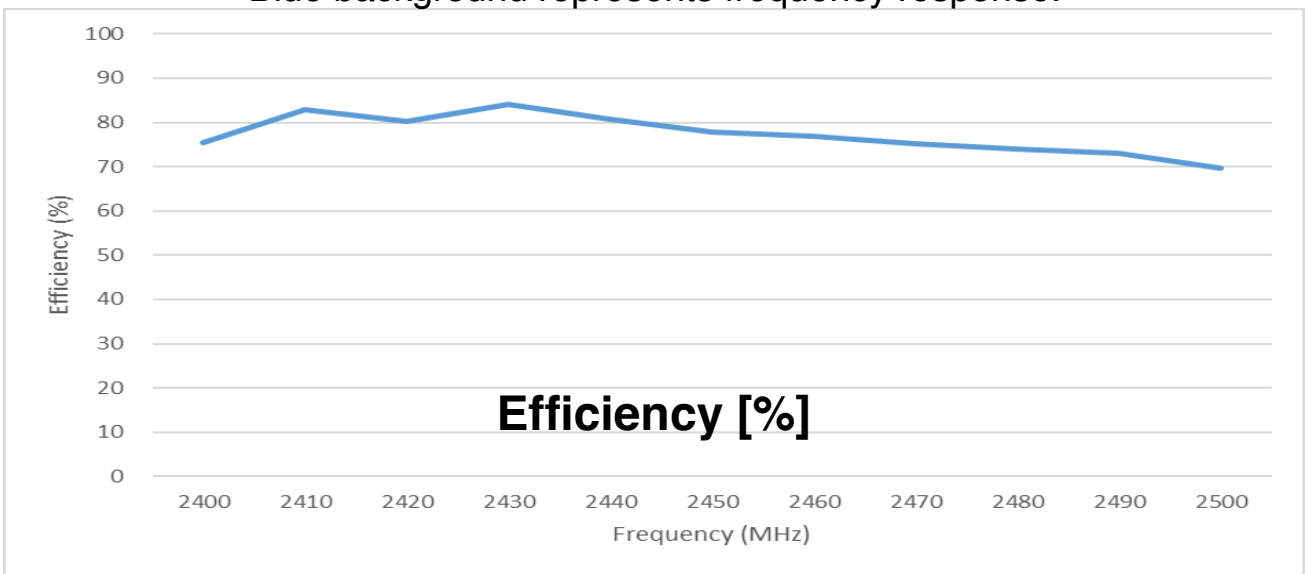
Antenna Testing Includes Evaluation Board



Test setup, measurement performed in 3D anechoic chamber.

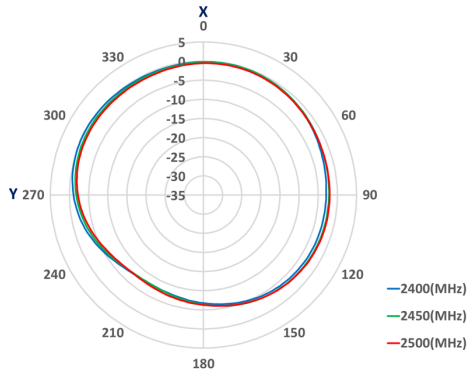


Blue background represents frequency response.

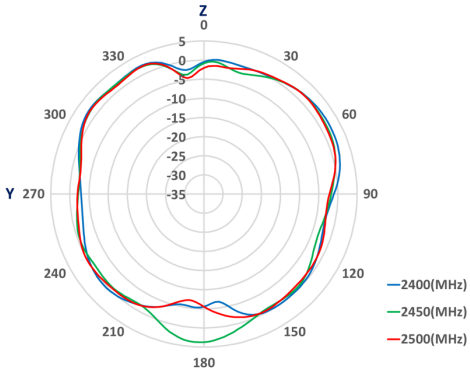


Radiation Pattern - Includes Evaluation Board

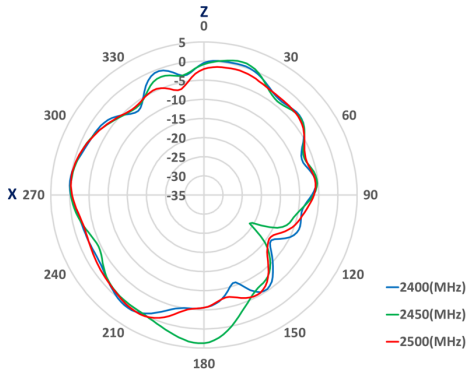
XY - Plane



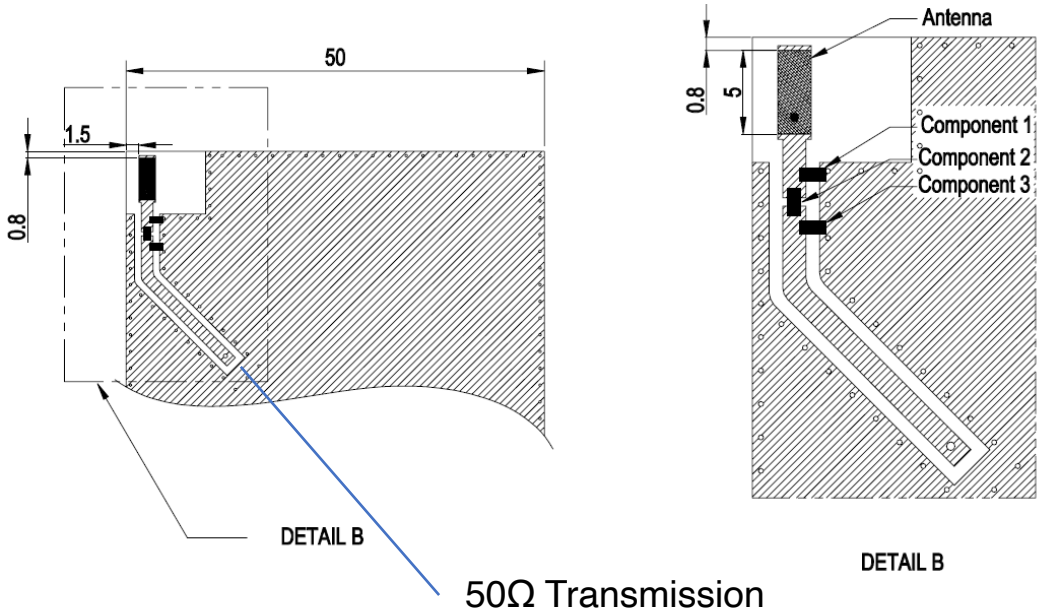
YZ - Plane



XZ - Plane



Matching Circuit Design

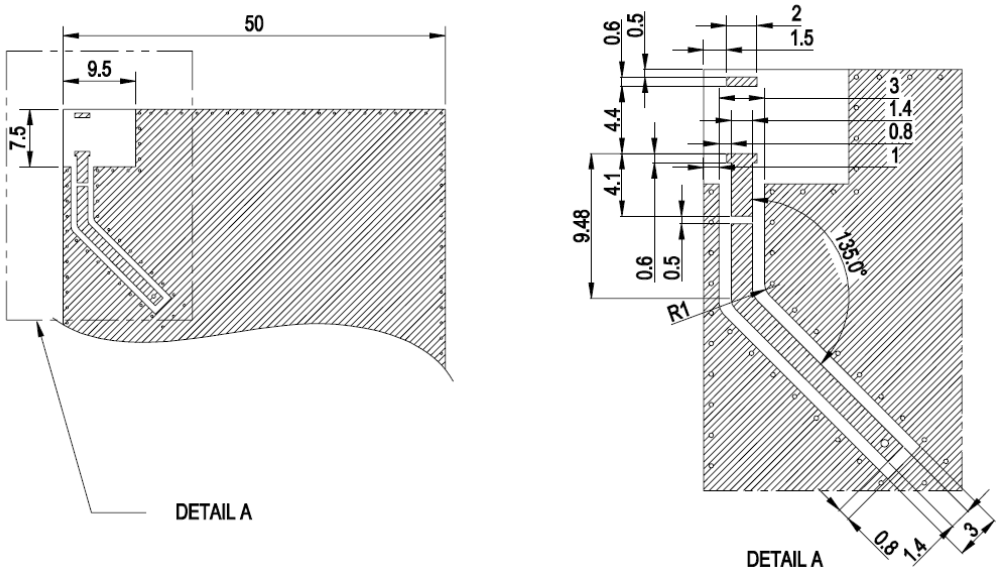


* To make the antenna have this resonance, must be matched with matching circuit.
* The matching component may be slightly different than that show depending ondistance to ground plane, dielectric constant of PCB, and PCB material thickness.

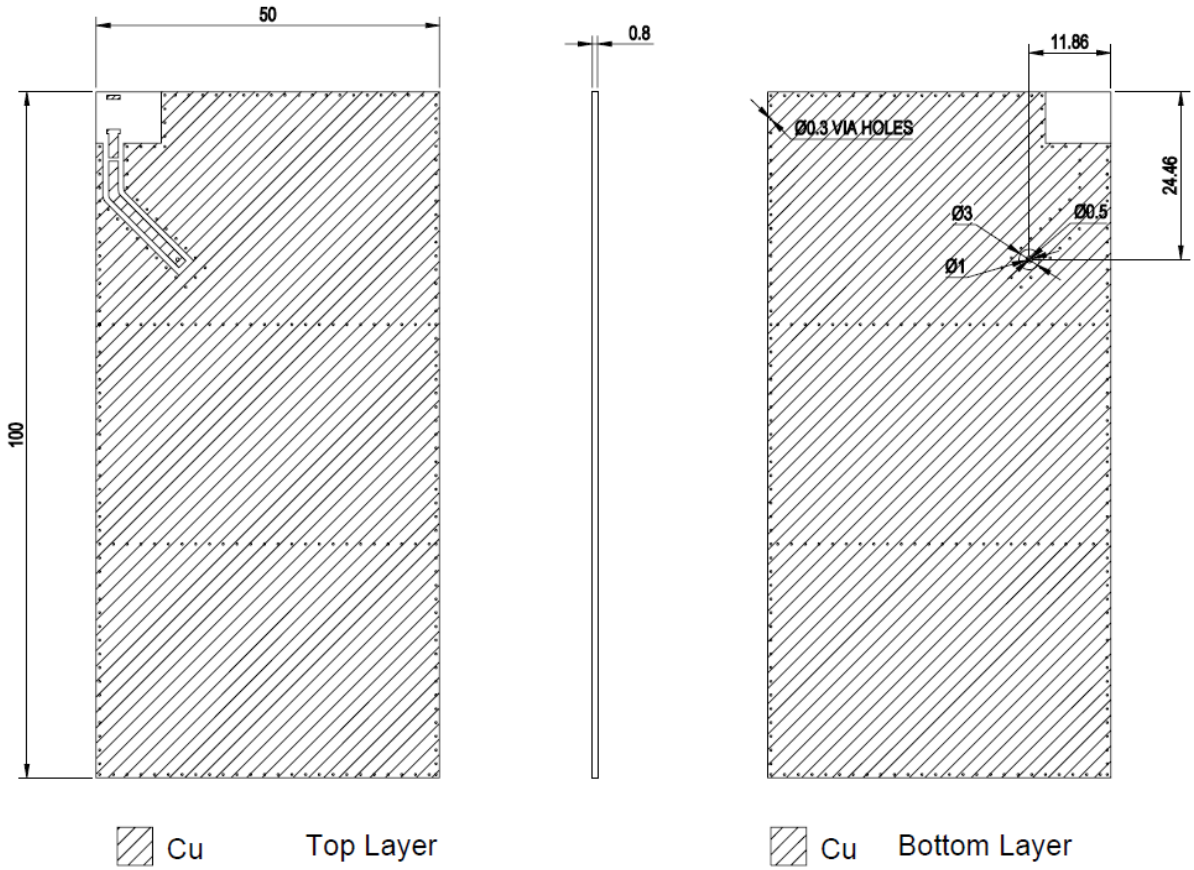
Circuit Matching Components

Circuit Symbol	Size	Description
Component 1	0402	None
Component 2	0402	0 ohm Resistance
Component 3	0402	None

Clearance Area Design



Evaluation Board



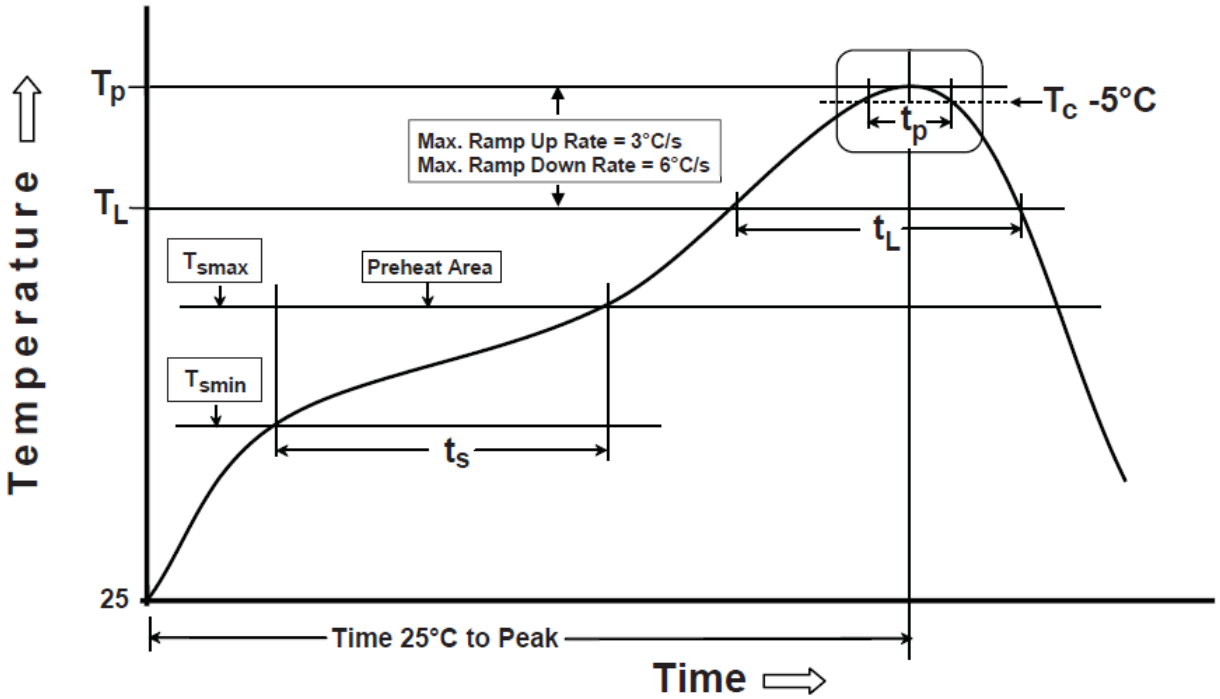
Base Material : FR-4

Recommended Reflow Temperature Profile

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

Reflow Setting		
Phase	**Profile Features**	**Pb-Free Assembly (Sn Ag Cu)**
PREHEAT	-Temperature min (Ts min.) -Temperature max (Ts max.) -Time (ts) form (Ts min. to Ts max.)	150°C 200°C 60~120 seconds
RAMP-UP	Avg. ramp-up rate (Ts max. 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 10~20 second
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.



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

Soldering With Iron

Soldering condition :

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

Revisions				
Rev	Description	Date	ECN	Approval
A	Initial Release	2022-10-25	ST0147-00-010-A-RA00	ATC
B	RF Performance update	2023-01-02	ST0147-00-010-A-RB00	ATC