

Datasheet

0.61-0.96GHz & 1.7-5.9GHz

Chip antenna

Features:

High performing 5G FR1 antenna with SMT mounting on PCB.

Applications:

- Sub-6 Mesh
- Smart Metering
- Robotics
- Intelligent Transport Systems
- Internet of Things (IoT)
- High Definition Video Broadcast Systems



35 × 5 × 4 mm

Chip Antenna



Electrical Specifications

Antenna Characteristics

Antenna Type	Radiation Pattern	Polarization	Max. Input Power	Impedance
Chip Antenna	Omni	Linear	5W	50Ω

Frequency (GHz)	0.617~0.96	1.71~2.17	2.3~2.69	3.3~5.0	5.15~5.925
Return Loss (dB)	< -4	< -4	< -4	< -4	< -4
Peak Gain (dBi)	2.5	4.7	4.3	5.5	3.8
Average Gain (dB)	-2.5	-1.3	-1.8	-2.3	-3.0
Efficiency (%)	57	74	66	59	50

## Mechanical Specifications

## Mechanical

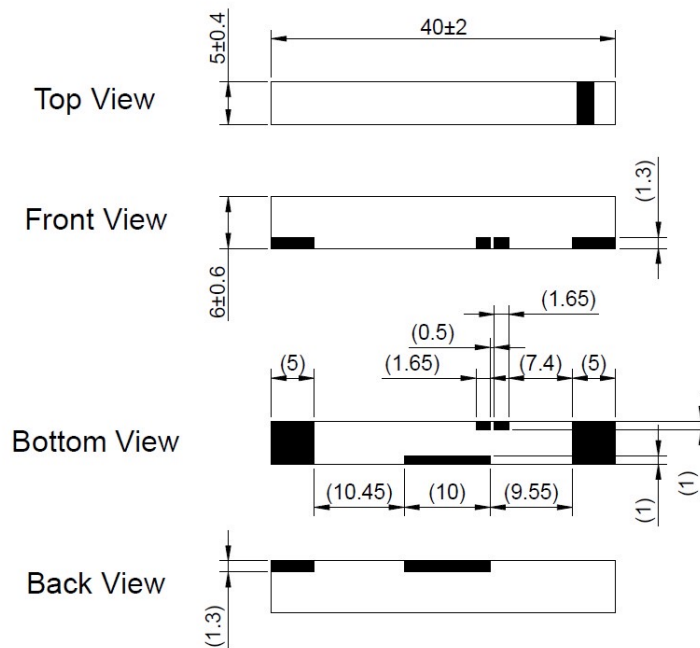
Dimension (mm)	40.0 × 5.0 × 6.0
Material	Ceramic
Weight (g)	4.0

## Environmental

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

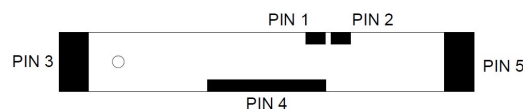
RoHS Compliant

## Mechanical Drawing



Unit : mm

## PIN Definitions

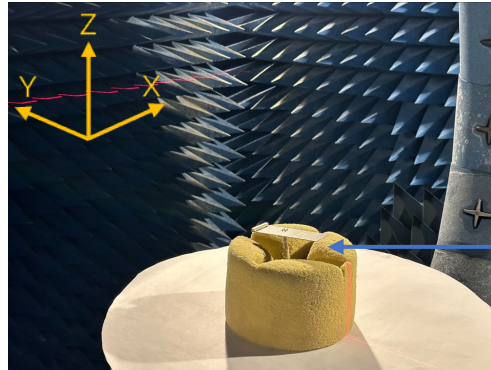


## Bottom View

Pin	Soldering PAD
1	Tuning/Ground
2	Signal
3~5	Fixing

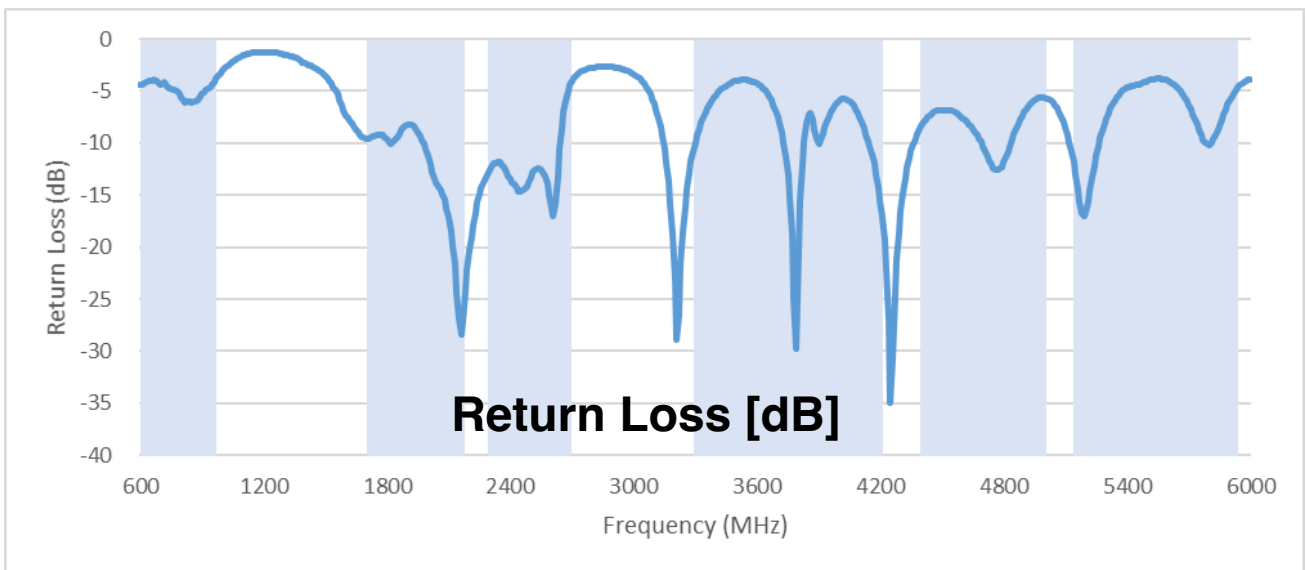
ST0443-10-N01-B

## Antenna Testing Includes Evaluation Board

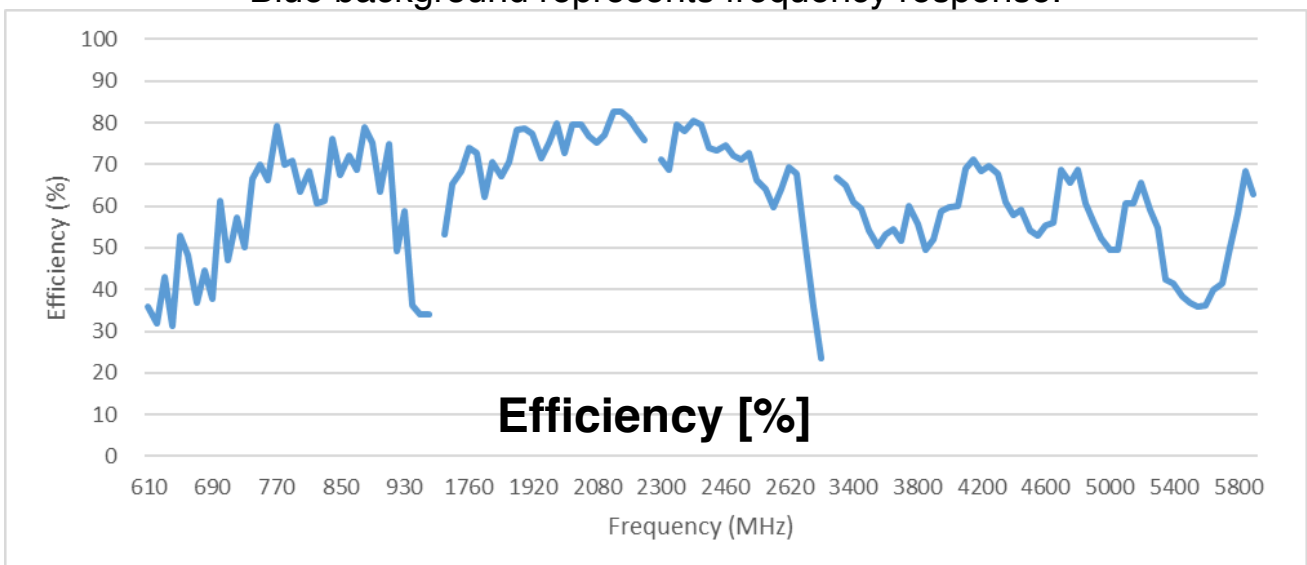


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Test setup, measurement performed in 3D anechoic chamber.

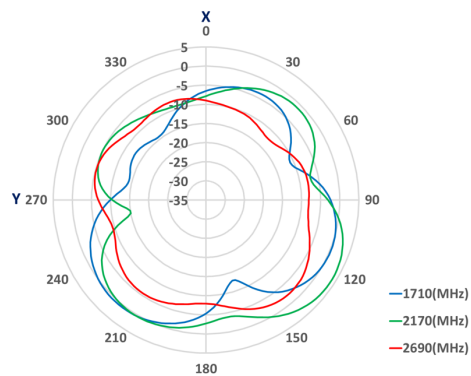
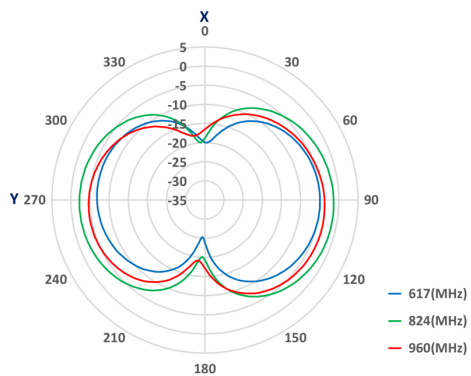


Blue background represents frequency response.

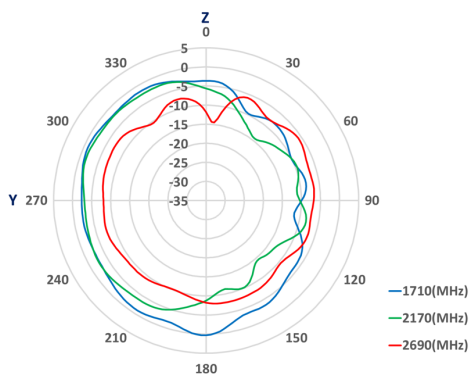
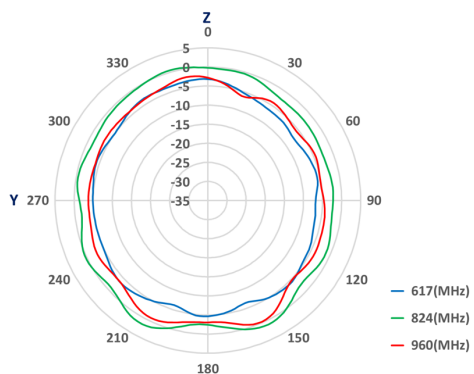


## Radiation Pattern - Free Space

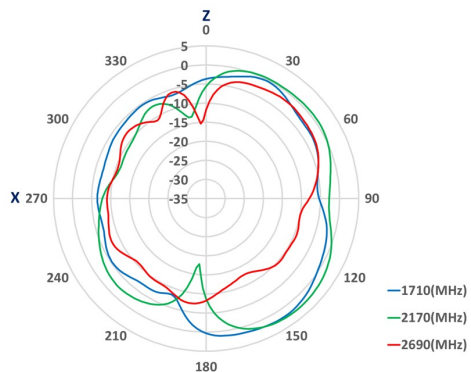
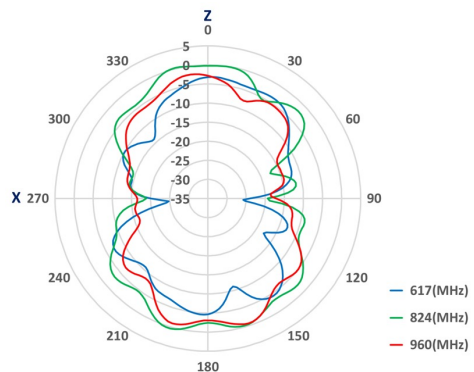
### XY - Plane



### YZ - Plane

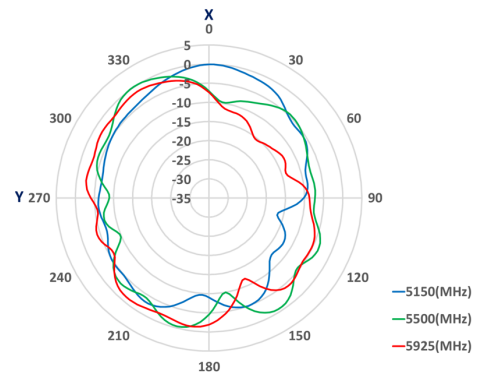
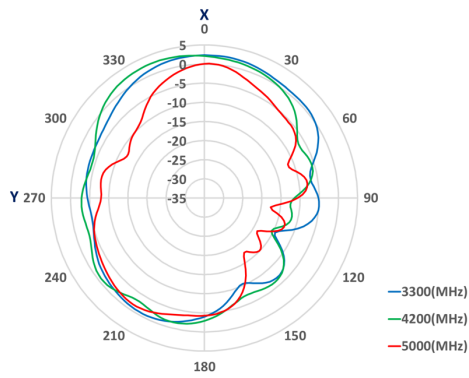


### XZ - Plane

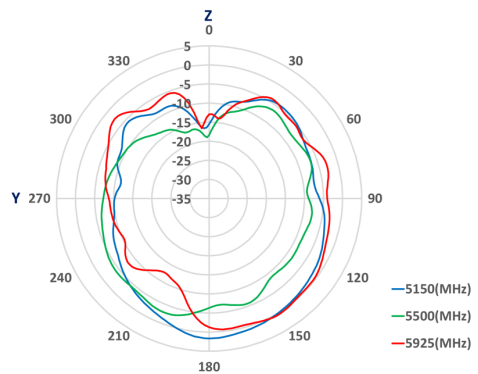
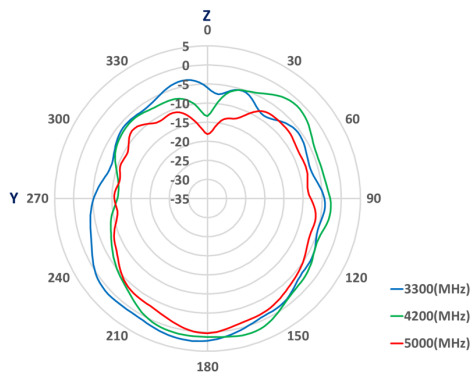


## Radiation Pattern - Free Space

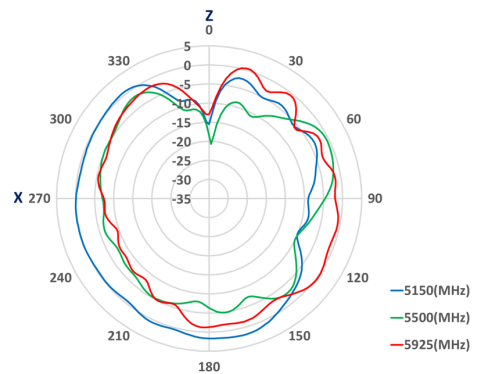
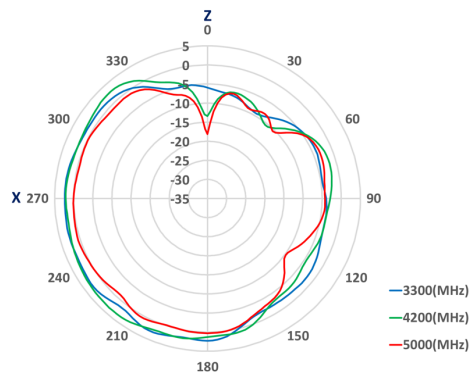
### XY - Plane



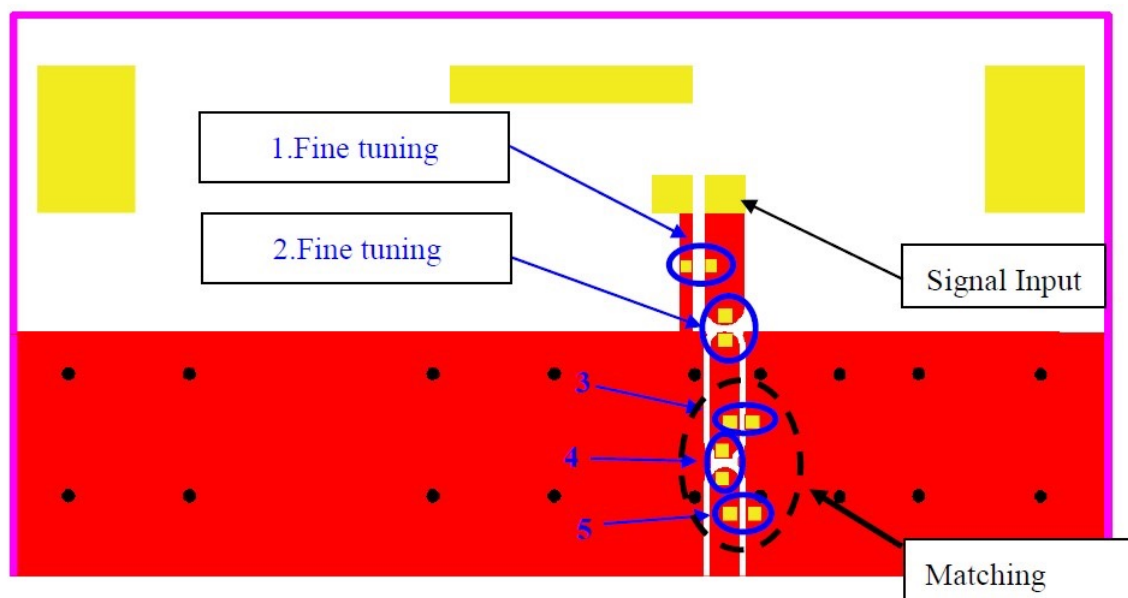
### YZ - Plane



### XZ - Plane



## Matching Circuit Design



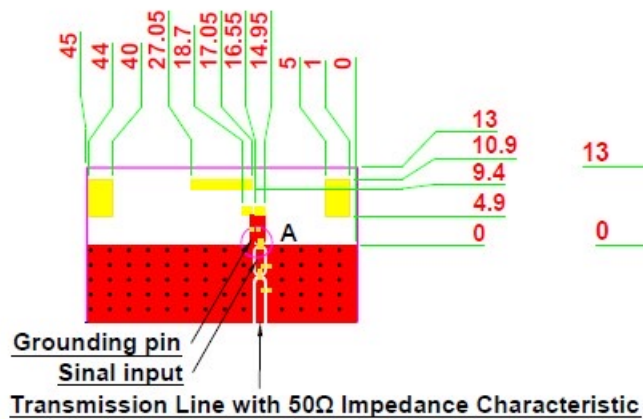
\* To make the antenna have this resonance must be matched with the matching circuit.

\* The matching component may be slightly different than that shown depending on the distance to the ground plane, the dielectric constant of the PCB, and PCB material thickness.

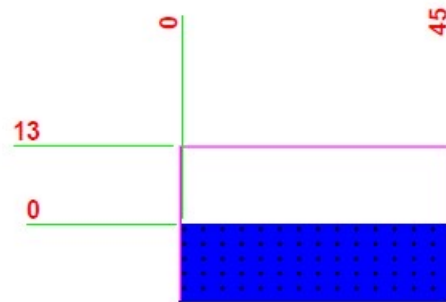
### Circuit Matching Components

Circuit Symbol	Size	Description
1. Fine tuning element	0402	6.8 nH Inductance
2. Fine tuning element	0402	6.8 pF Capacitor
3	0402	None
4	0402	0 Ohm Resistance
5	0402	None

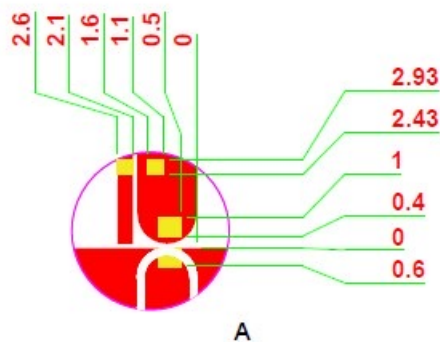
## Clearance Area Design



Top View



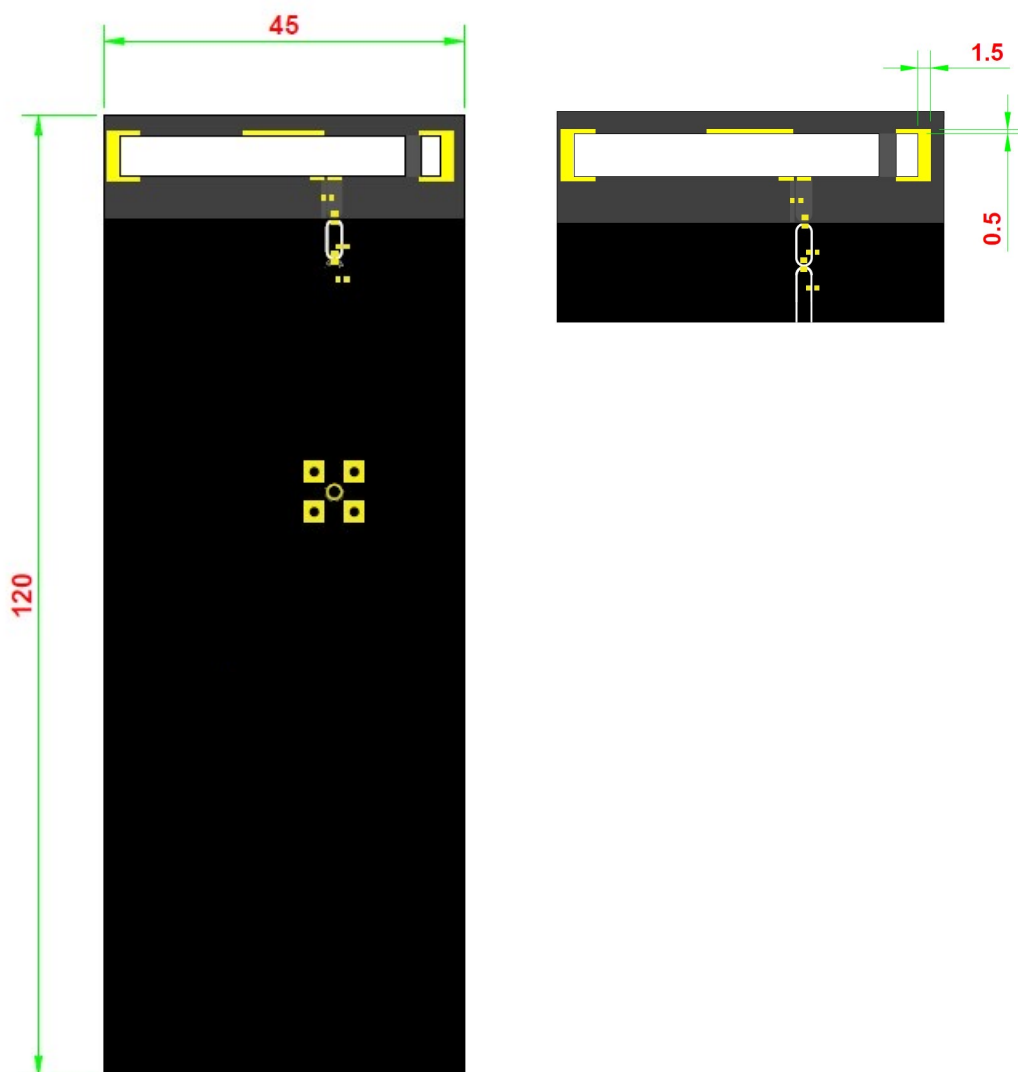
Bottom View



A

Evaluation Board

Unit : mm



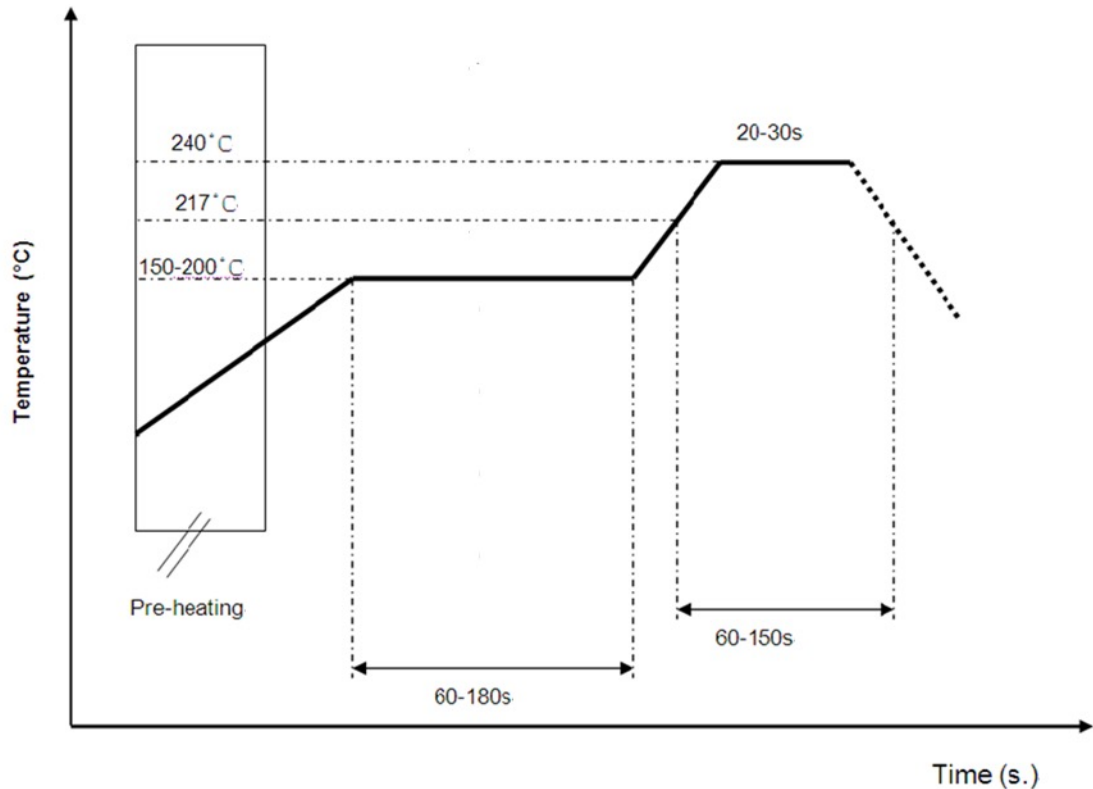
Base Material : FR-4, T=1.0



## Recommended Reflow Temperature Profile

Recommended solder paste alloy:

SAC305 (Sn96.5 /Ag3 /Cu0.5) Lead Free solder paste



Revisions				
Rev.	Description	Date	ECN	Approval
A	Initial Release	2023-02-16	ST0443-10-N01-B-RA00	ATC

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