

Datasheet

GNSS

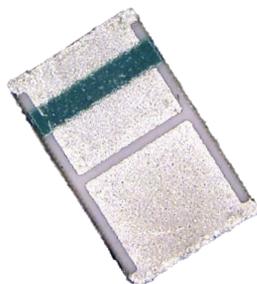
Chip Antenna

Features:

This antenna is designed to cover GPS/GLONASS/QZSS/BDS/Galileo frequency band. High performing and compact size with low profile.

Applications:

- Public Safety, Search and Rescue
- IoT tracker
- GPS Navigator
- Asset tracking
- Navigation devices
- Location based services
- Drones, Robotics and Vehicles



5.0 × 3.0 × 0.5 mm

Chip Antenna



Electrical Specifications

Antenna Characteristics

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

Frequency (GHz)	1.176	1.227	1.278	1.575
Return Loss (dB) at 80mm x 40 mm ground	< -9.5	< -6	< -3.5	< -9.5
Peak Gain (dBi)	1.8	1.9	0.5	2.1
Average Gain (dB)	-3.7	-3.5	-3.6	-2.3
Efficiency (%) at 80mm x 40 mm ground	43	45	44	59

Mechanical Specifications

Mechanical

Dimension (mm)	5.0 × 3.0 × 0.5
Material	Ceramic
Weight (g)	0.01

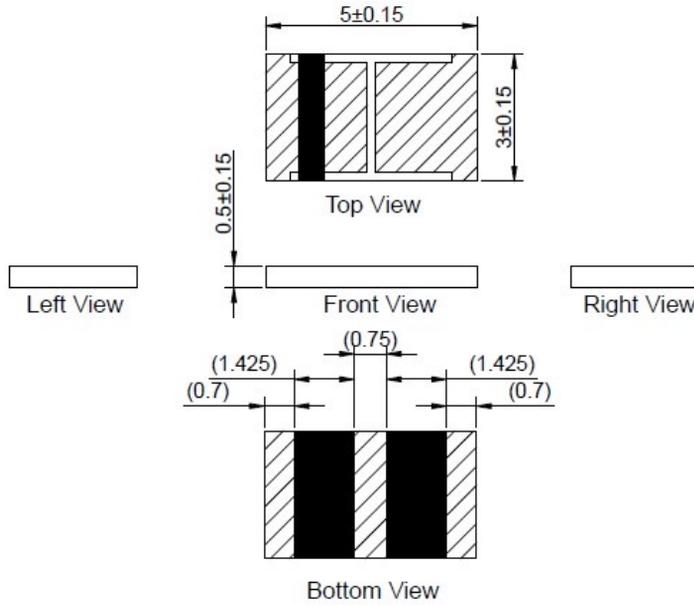
Environmental

Temperature Range (°C)	-40 to 85
Humidity	10% to 70% RH

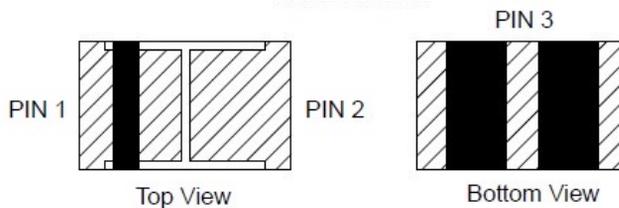
RoHS Compliant

Mechanical Drawing

Unit : mm

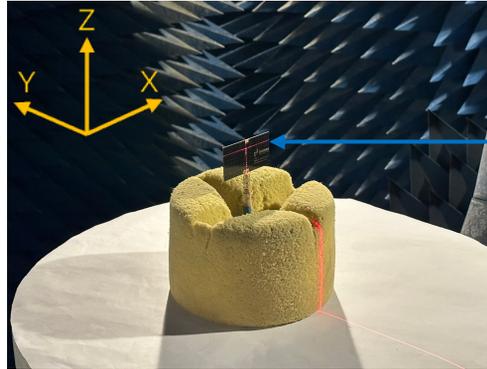


PIN Definitions



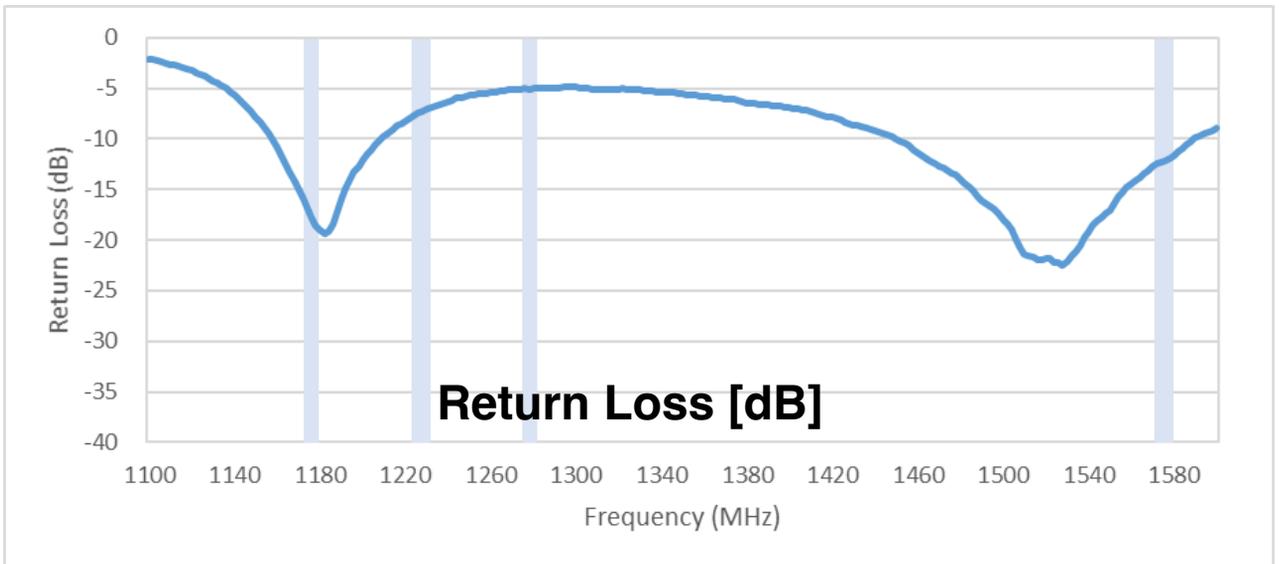
Pin	Soldering PAD
1	Tuning/Ground
2	Tuning/Ground
3	Signal

Antenna Testing Includes Evaluation Board

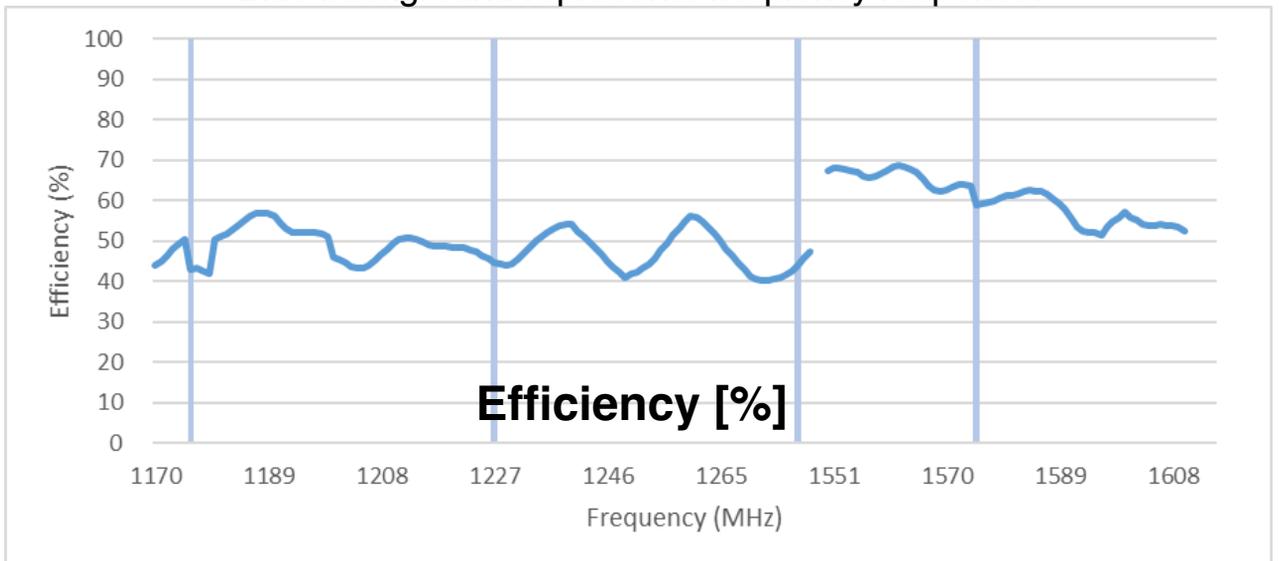


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Test setup, measurement performed in 3D anechoic chamber.

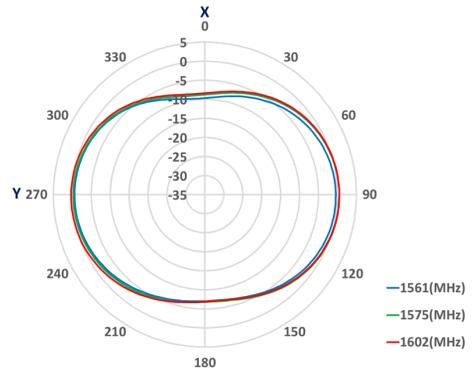
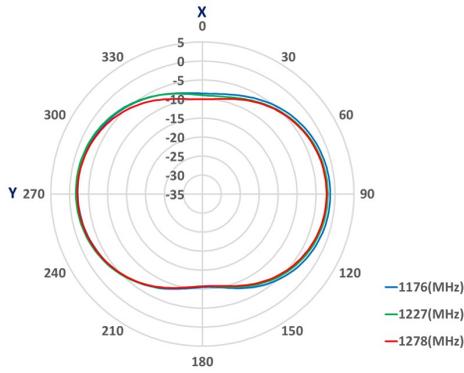


Blue background represents frequency response.

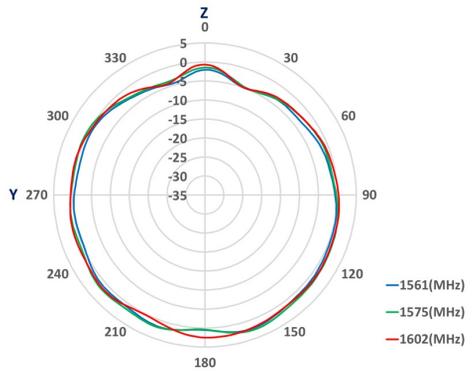
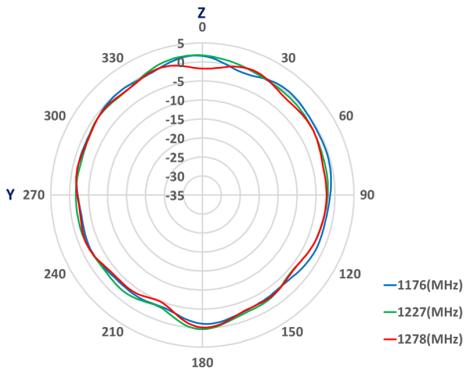


Radiation Pattern - Free Space

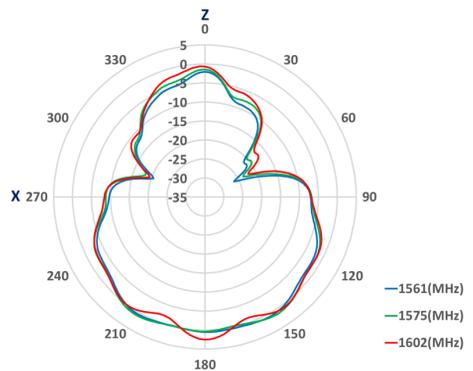
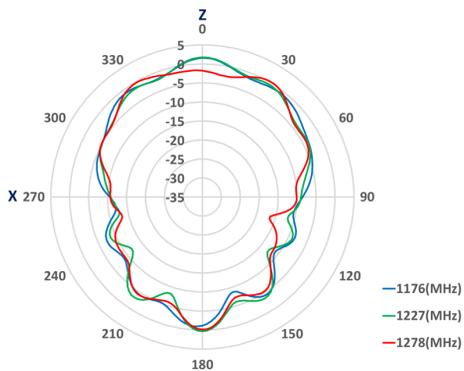
XY - Plane



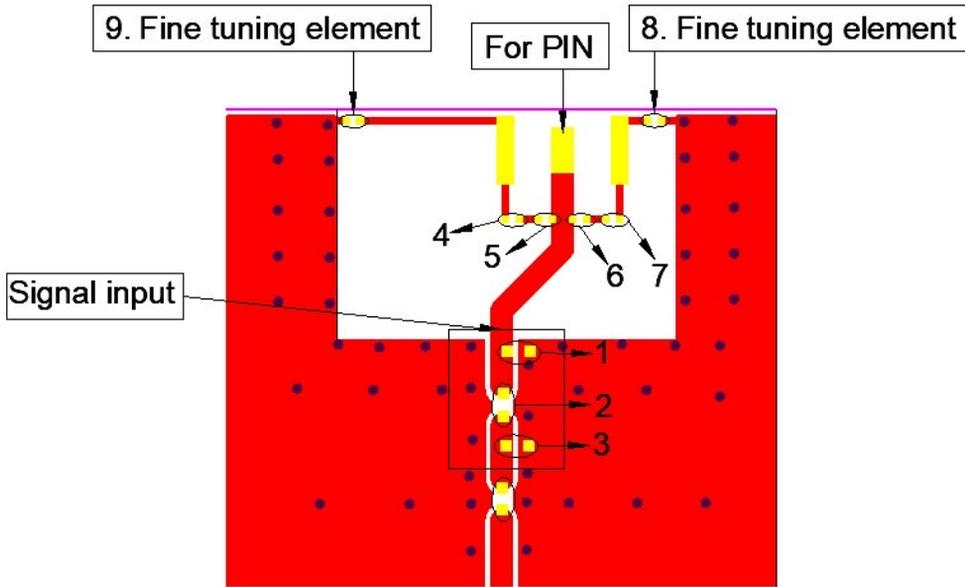
YZ - Plane



XZ - Plane



Matching Circuit Design



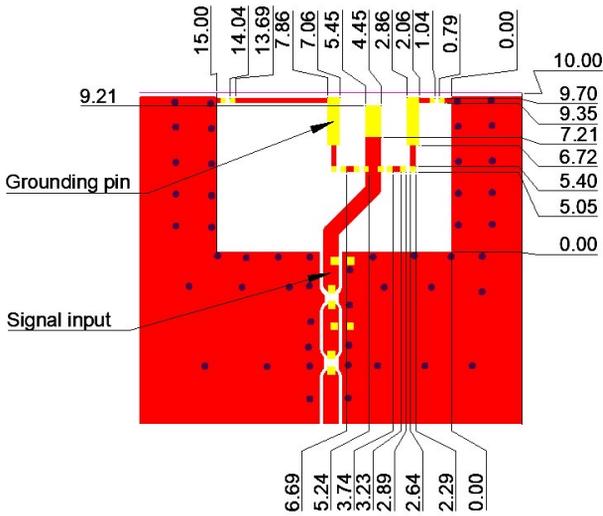
- * To make the antenna have this resonance must be matched with the matching circuit.
- * The matching component may be slightly different than that shown depending on the distance to the ground plane, the dielectric constant of the PCB, and PCB material thickness.

Circuit Matching Components

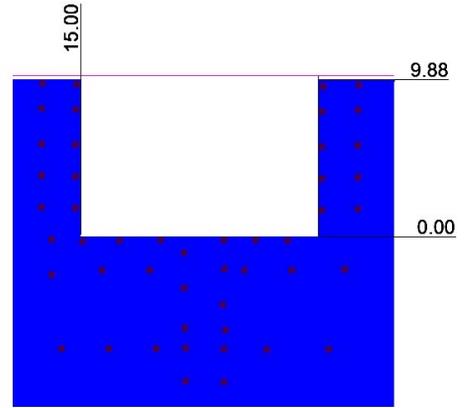
Circuit Symbol	Size	Description
1	0402	1.5 pF Capacitor
2	0402	3.6 pF Capacitor
3	N/A	N/A
4~7 Fine tuning element	N/A	N/A
8 Fine tuning element	0201	2.7 pF Capacitor
9 Fine tuning element	0201	6.8 pF Capacitor

Clearance Area Design

Unit : mm



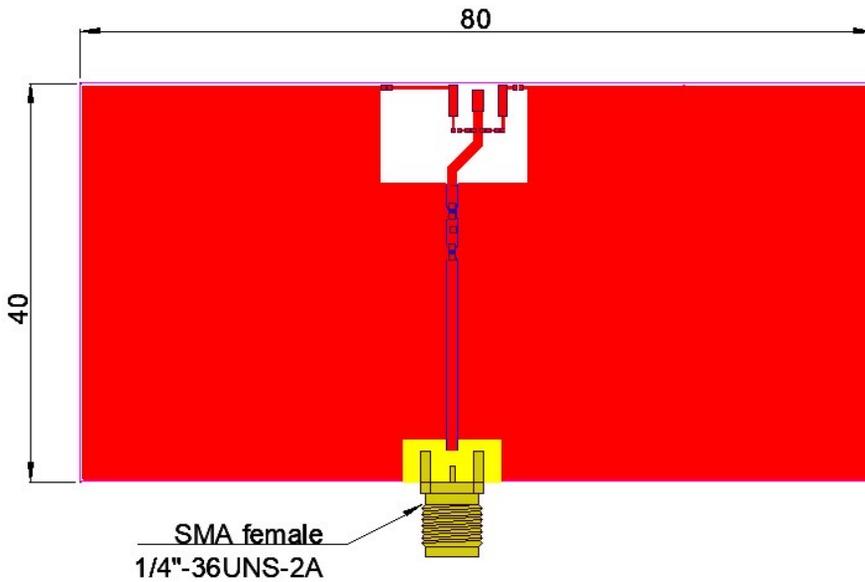
Top View



Bottom View

Evaluation Board

Unit : mm

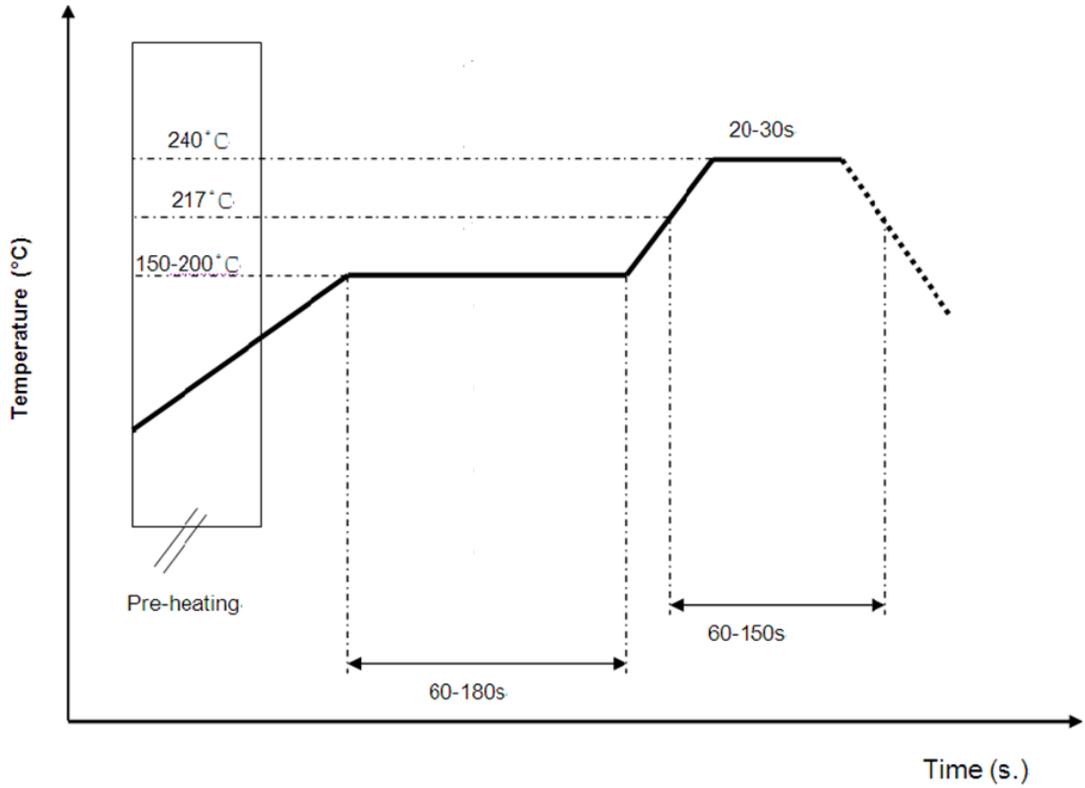


Base Material : FR-4, T=1.0

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	2023-05-30	ST0543-00-N01-B-RA00	ATC

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