antenova

DATASHEET

Gatun

SR42I110 • IamiiANT®

Features

- Antenna for ISM 868 and 915 MHz applications including LoRa, Sigfox and Zigbee.
- Covers 863-870 MHz and 902-928 MHz
- Maintains high performance on PCB: DFI (Designed for Integration)
- Placement in left corner with clearance to the right side.
- SMD (Surface Mount Device)
- Supplied in Tape and Reel
- Automotive temperature rating
- Fiberglass Material
- Dimensions: 26×7.6×3.1 mm

1. Description

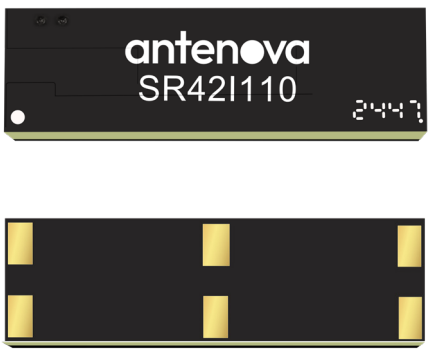
Gatun uses the ground plane of the host PCB to radiate effectively. The antenna requires clearance on all layers around itself. An external matching circuit is used to optimise the antenna to the required bands. Designed specifically for 868/915 ISM applications that require a small robust solution. Gatun is placed at the left-hand top corner of the host PCB.

2. Applications

- Industrial/Scientific/Medical (ISM) bands
- Remote monitoring/ Smart meters
- Manufacturing automation
- Agriculture/Environment monitoring
- Consumer tracking devices
- Smart Grid devices

3. Part number

SR42I110



4. General data

Frequency	863 – 870 MHz 902 – 928 MHz
Polarization	Linear
Operating temperature	-40°C to 140°C
Environmental condition test	ISO16750-4 5.1.1.1/5.1.2.1/5.3.2
Impedance with matching	50 Ω
Weight	<1.5g
Antenna type	SMD
Dimensions	26.0 x 7.6 x 3.1 (mm)

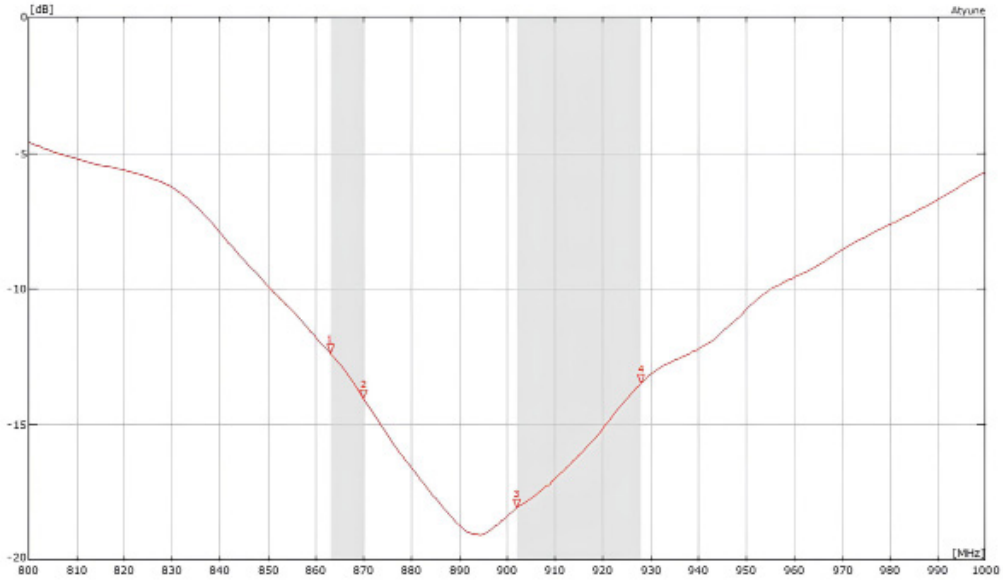
5. RF characteristics

Frequency	ISM 868 863 – 870 MHz	ISM 915 902 – 928 MHz
Peak gain	2.2 dBi	2.8 dBi
Average gain (Linear)	-1.4 dB	-1.1 dB
Average efficiency	72.5 %	77.9 %
Maximum return loss	-12.36dB	-13.45dB
Maximum VSWR	1.64:1	1.54:1

All data measured on Antenova's evaluation PCB
Part No. SR421110-EVB-1

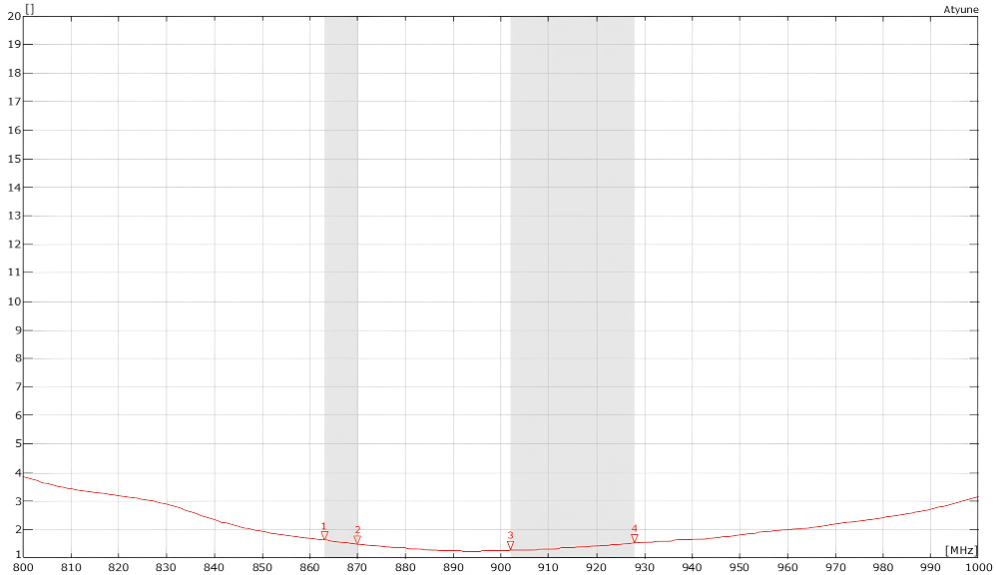
6. RF performance

6.1. Return loss



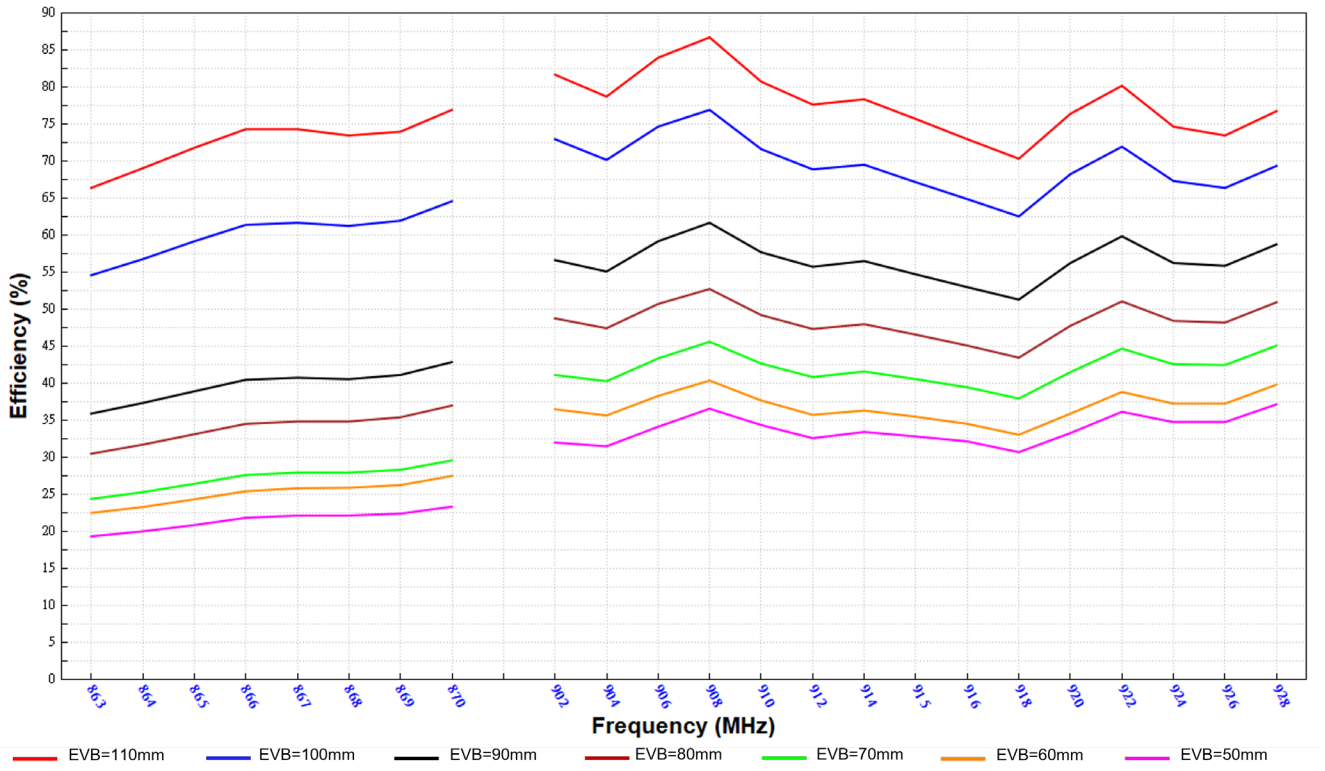
All data measured on Antenova's evaluation PCB
Part No. SR42I110-EVB-1

6.2. VSWR



All data measured on Antenova's evaluation PCB
Part No. SR42I110-EVB-1

6.3. Efficiency

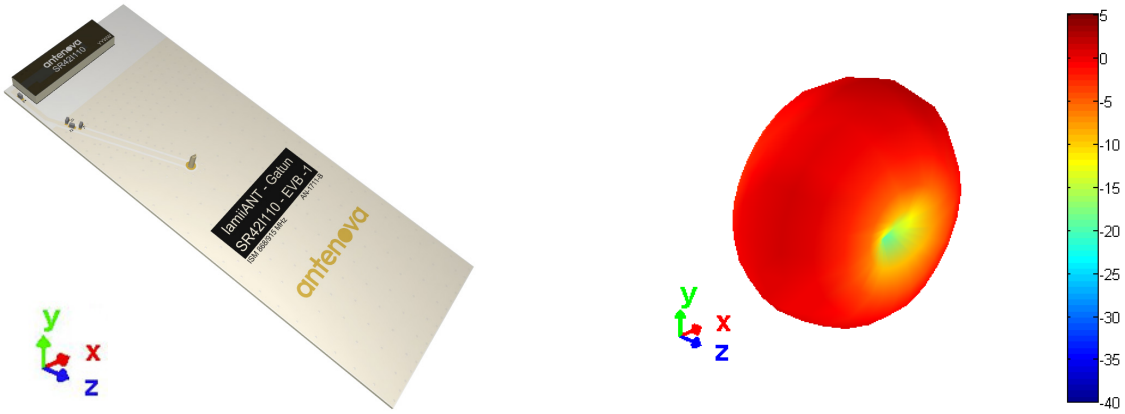


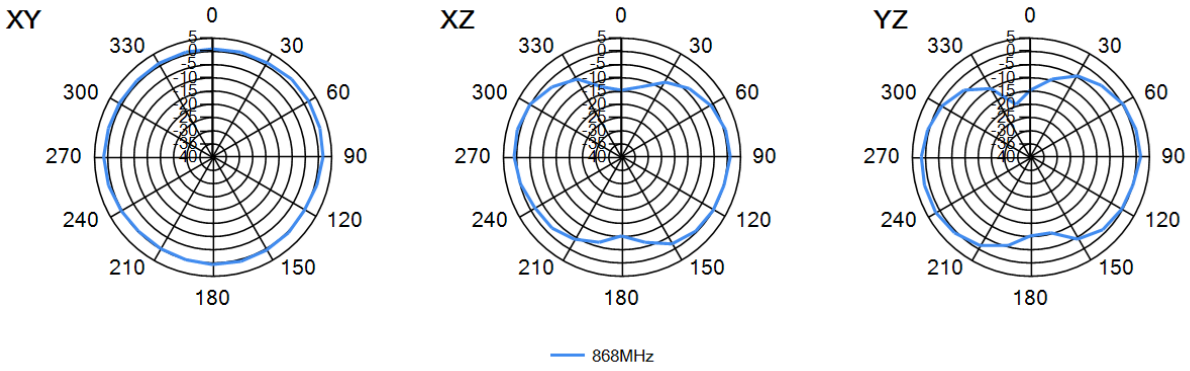
All data measured on Antenova's evaluation PCB
Part No. SR42I110-EVB-1

6.4. Antenna pattern

6.4.1. 868MHZ

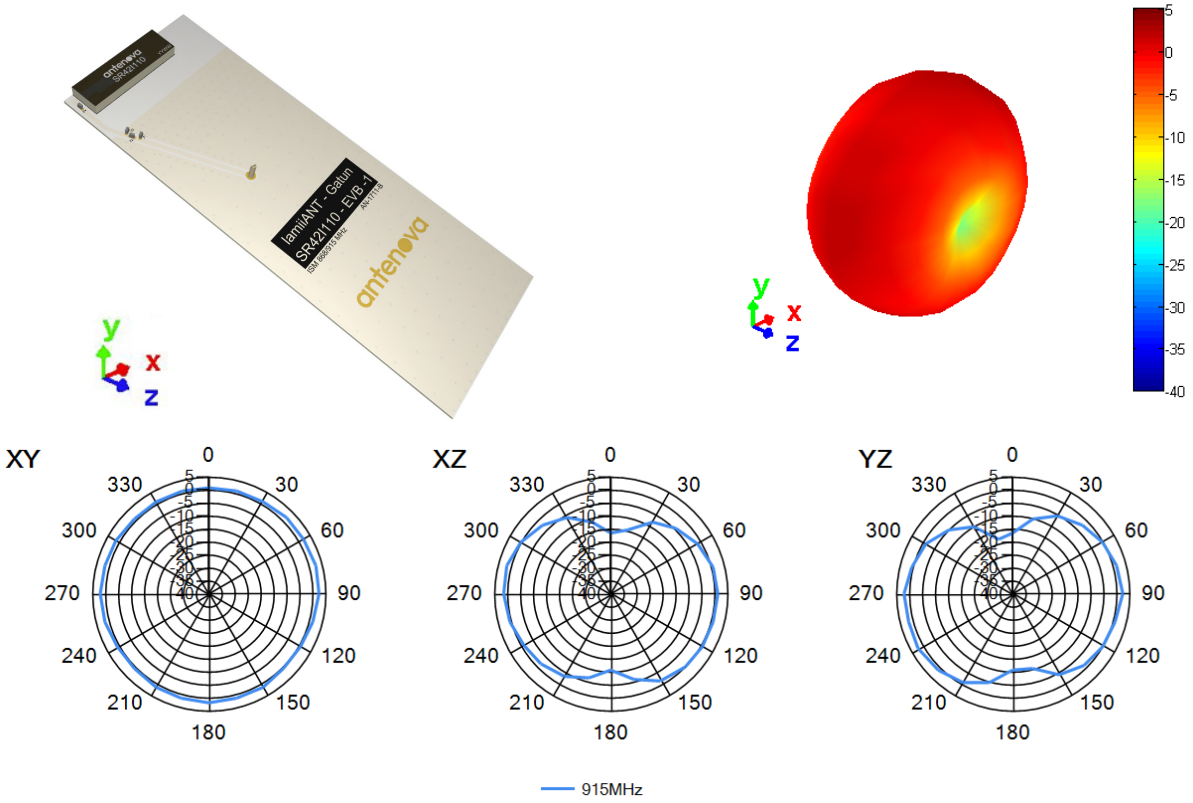
3D pattern at 868MHz





6.4.2. 915MHZ

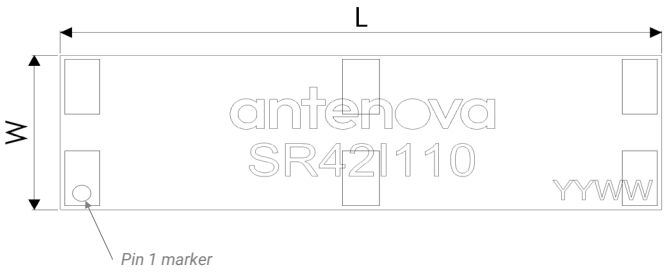
3D pattern at 915MHz



7. Antenna dimensions

7.1. Dimensions Assembled

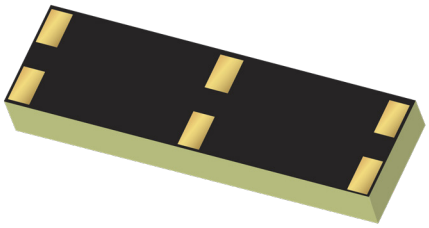
Top view

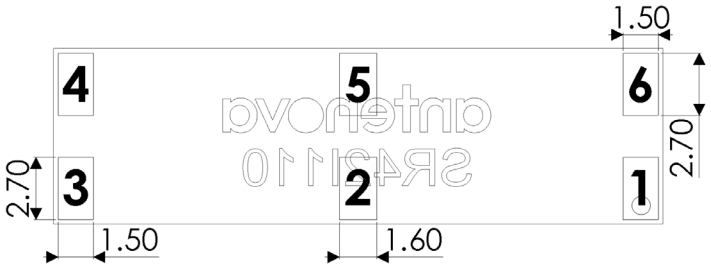


L	W	H
Length	Width	Height
26.0 ± 0.1	7.6 ± 0.1	3.1 ± 0.2

All dimensions in (mm)

Bottom view



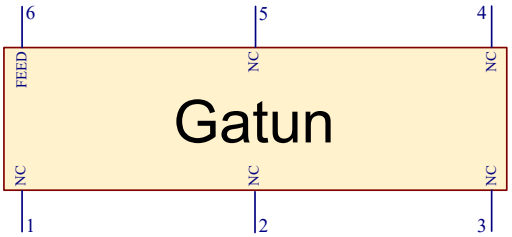


1, 3, 4, 6copper pads: 1.5 x 2.7 (mm)
2, 5copper pads: 1.6 x 2.7 (mm)

8. Schematic symbol and pin definition

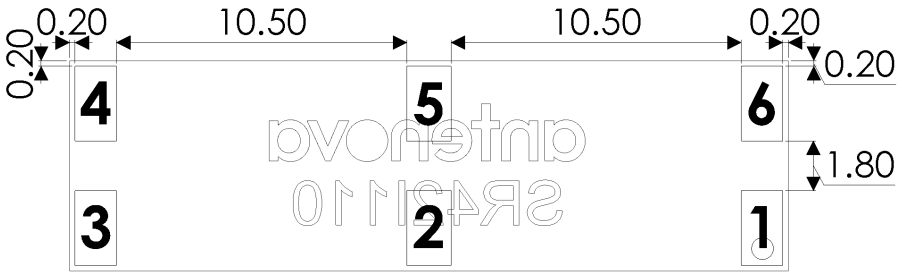
The circuit symbol for the antenna is shown below. The antenna has 6 pins with Pin 6 as functional. All other pins are for mechanical strength.

Pin	Description
6	Feed
Others	Not used (Mechanical only)



9. Host PCB footprint

The recommended host PCB footprint is below.



1, 3, 4, 6copper pads: 1.5 x 2.7 (mm)
2, 5copper pads: 1.6 x 2.7 (mm)

10. Electrical interface

10.1. Transmission line

All transmission lines should be designed to have a characteristic impedance of 50Ω.

- The length of each transmission lines should be kept to a minimum
- All other parts of the RF system like transceivers, power amplifiers, etc, should also be designed to have a 50 Ω impedance

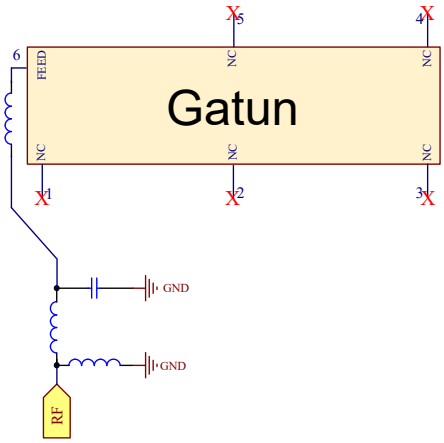
A co-planar transmission line can be designed using an online transmission line calculator tool, such as:

https://blog.antenova.com/rf-transmission-line-calculator

The PCB thickness, copper thickness and substrate dielectric constant are entered, then the tool calculates the transmission line width and gaps on either side of the track to give a 50 Ω impedance.

10.2. Matching circuit

The antenna requires a matching circuit that must be optimized for each product. The matching circuit will require up to four components and the following circuit should be designed into the host PCB. Not all components may be required but should be included as a precaution. The matching network should be placed close to the antenna feed to ensure it is optionally effective in tuning the antenna.

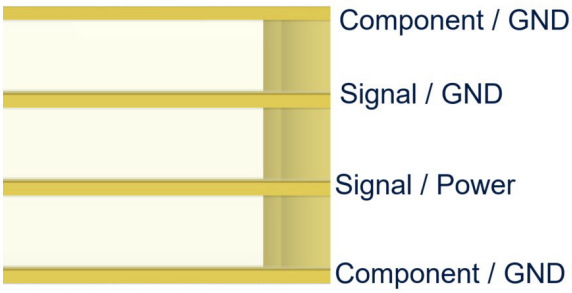


11. Antenna integration guide

We recommend the following during the design phase to maximise antenna performance and minimize noise:

- Minimum 4 layer PCB
- Route signals and power internally where possible
- Flood all layers with ground
- Knit ground on all layers together with plenty of vias

Follow placement guidance carefully, in addition Antenova provide technical support to help you through all stages of your design. Register for an account on https://ask.antenova.com/ to access technical support.

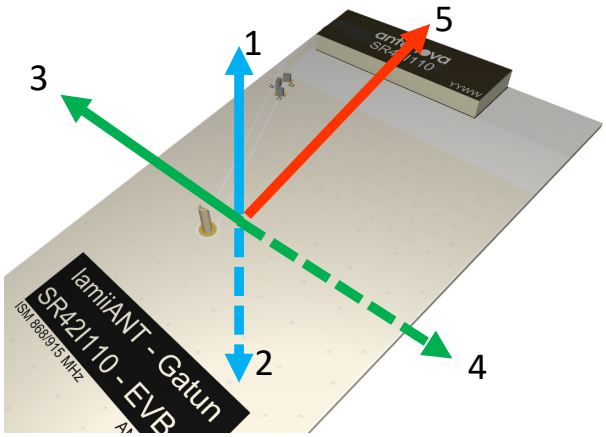


11.1. Antenna placement

The antenna requires clearance ideally in 5 spatial directions in antenna area as shown below.

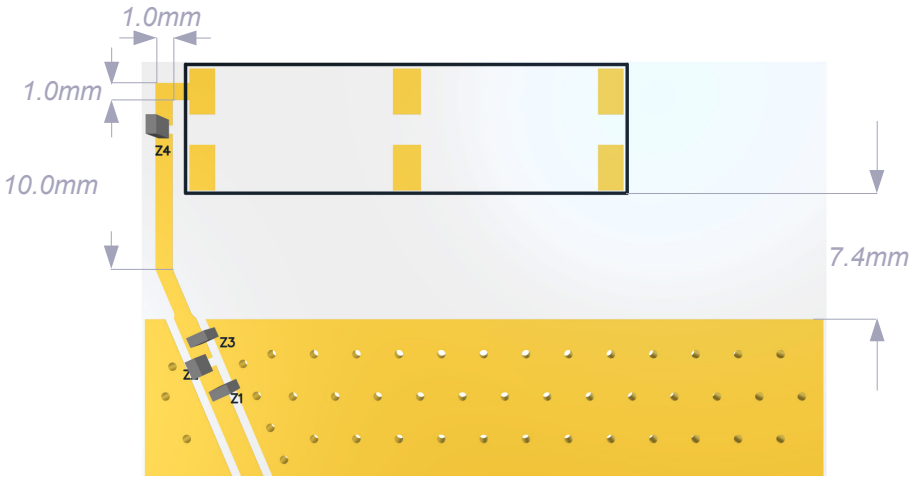
The Antenova placement tool can be used to advise on antenna placement, see:

https://blog.antenova.com/intelligent-antenna-selection-and-placement-tool-antenova



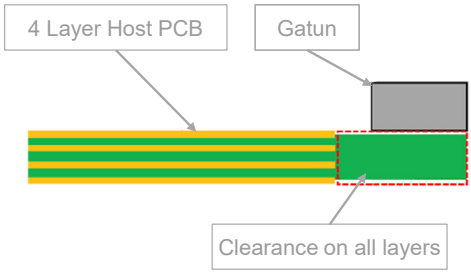
11.2. Host PCB Layout

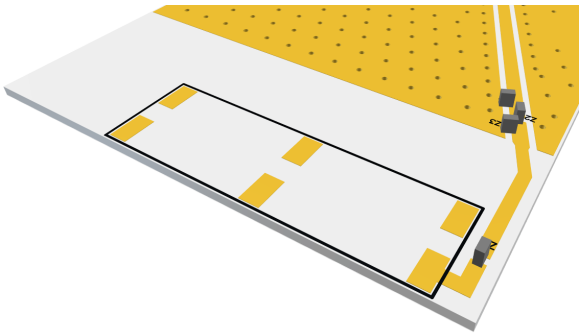
The host PCB must be designed using the PCB footprint shown with the correct clearances. An example of the PCB layout shows the antenna footprint. Please note this clearance area is critical to the performance of the antenna and must be applied through all layers of the PCB.



11.3. Host PCB Clearance

The host PCB must be designed using the PCB footprint shown with the correct clearances. An example of the PCB layout shows the antenna footprint. Please note this clearance area is critical to the performance of the antenna and must be applied through all layers of the PCB.



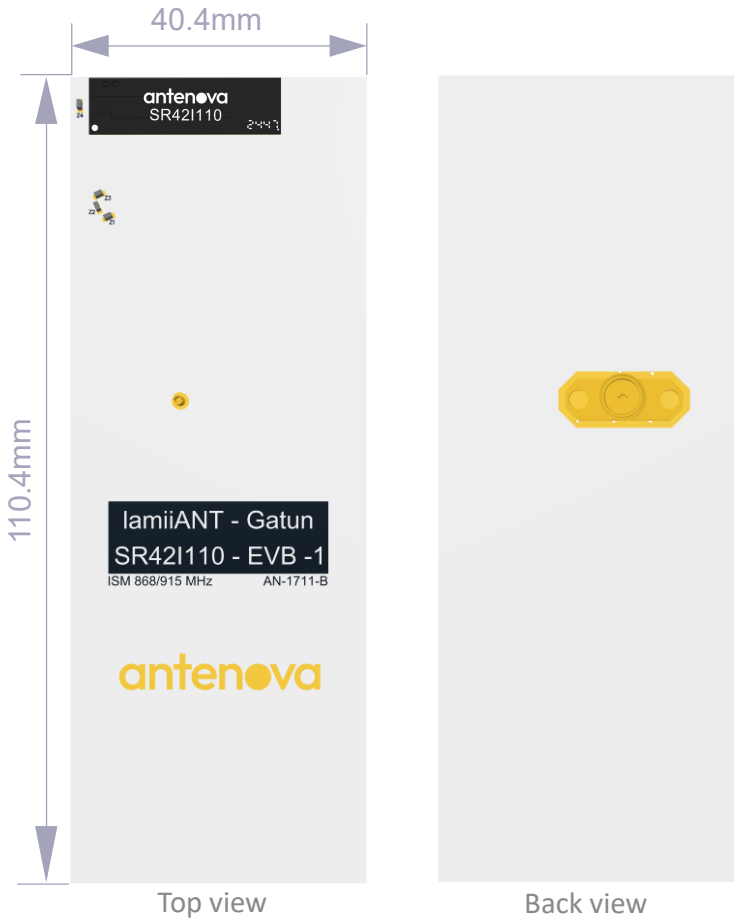


12. Reference board

A reference board is used for evaluating the antenna SR42I110 and it includes a SMA female connector. (Part number SR42I110-EVB-1)

To order a reference board

please see antenova.com



12.1. Reference board matching circuit

Designator	Type	Value	Description
Z1	Not Fitted		
Z2	Resistor	0ohm	Non-Specific
Z3	Not Fitted		
Z4	Inductor	10nH	Murata LQG15HS series

13. Soldering

This antenna is suitable for lead free soldering. The reflow profile should be adjusted to suit the device, oven and solder paste, while observing the following conditions:

- For leaded soldering, the maximum temperature should not exceed 240 °C.
- For lead free soldering, a maximum temperature of 255 °C for no more than 20 seconds is permitted.
- The antenna should not be exposed to temperatures exceeding 120°C more than 3 times during the soldering process.

14. Hazardous material regulation conformance

The antenna has been tested to conform to RoHS and REACH requirements. A certificate of conformance is available from Antenova's website.

15. Packaging

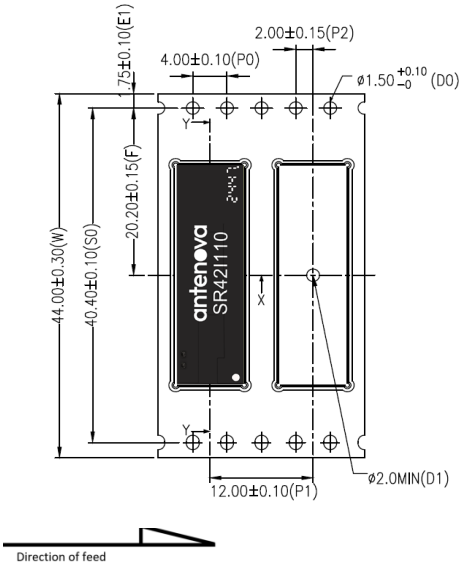
15.1. Optimal storage conditions

Temperature	-10°C to 40°C
Humidity	Less than 75% RH
Shelf life	24 Months
Storage place	Away from corrosive gas and direct sunlight
Packaging	Reels should be stored in unopened sealed manufacturer's plastic packaging.
MSL level	1

Note: Storage of open reels of antennas is not recommended due to possible oxidization of pads on antennas. If short term storage is necessary, then it is highly recommended that the bag containing the antenna reel is re-sealed and stored in conditions as described in the table above .

The shelf life of the antenna is 2 years provided the factory seal on the package has not been broken.

15.2. Tape characteristics



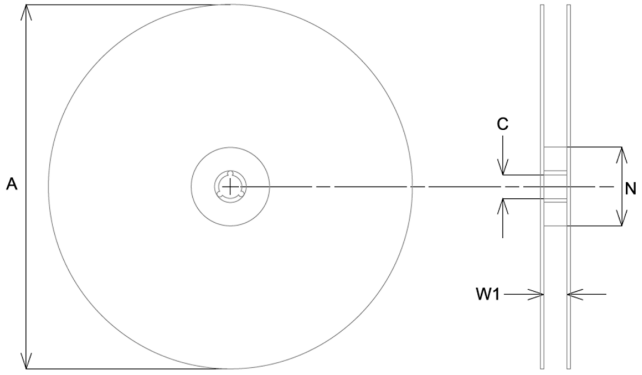
P0	P1	P2	D0
4.00± 0.10	12.00± 0.10	2.00± 0.15	1.50+0.10/-0

E1	F	W
1.75± 0.10	20.20± 0.15	44.00± 0.30

All dimensions in (mm)

Quantity	Leading space	Trailing space
1000 pcs / reel	30 blank antenna holders	30 blank antenna holder

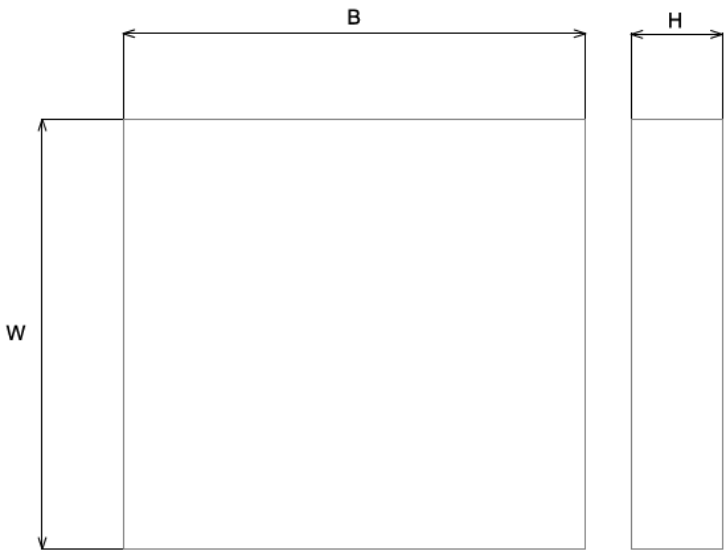
15.3. Reel Dimensions



A	C	N	W1
330.0 ± 2.0	13.0 + 0.5/-0.2	178.0 ± 0.2	44.40 +2.0/-0

All dimensions in (mm)

15.4. Box Dimensions

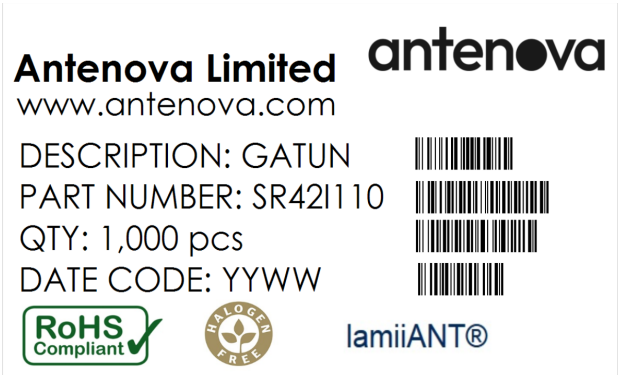


Width (W)	Breadth (B)	Height (H)
350 mm	340 mm	65 mm

15.5. Bag properties

Reels are supplied in protective plastic packaging.

15.6. Reel label information



Quality statements

Antenova's products conform to REACH and RoHS legislation. For our statements regarding these and other quality standards, please see antenova.com

Datasheet version

1.01 release 28 Feb 2025

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Antenna design, integration and test resources

Product designers – the details contained in this datasheet will help you to complete your embedded antenna design. Please follow our technical advice carefully to obtain optimum antenna performance.

We aim to support our customers to create high performance wireless products. You will find a wealth of design resources, calculators and case studies to aid your design on our website.

Antenova's design laboratories are equipped with the latest antenna design tools and test chambers. We provide antenna design, test and technical integration services to help you complete your design and obtain the required certifications.

If you cannot find the antenna you require in our product range, please contact us to discuss creating a custom antenna to meet your exact requirements.

Share knowledge with RF Experts around the world

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