

DATASHEET

Garbei

SRC1114 • ceriiANT®



Features

- Antenna for ISM 868 and 915 MHz applications including LoRa, Sigfox and Zigbee
- Maintains high performance on PCB: DFI (Designed for Integration)
- Surface Mount Ceramic Loop Antenna
- Requires a Ground plane and a clearance area
- Supplied on tape and reel
- Dimensions: 5.2 x 3.7 x 0.7mm

1. Description

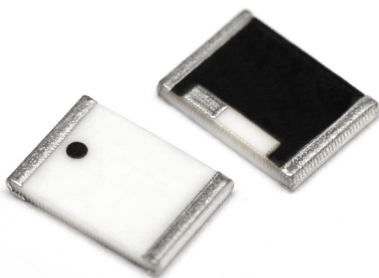
Garbei is a ceramic antenna for the 868/915MHz ISM bands. As a loop antenna, it is mounted in the centre of the long edge of the PCB. The recommended matching network component values are given to speed up design integration. The antenna can be matched to operate on a single band or matched for dual-band operation. The frequency range covered is 863-870MHz for Europe and 902-928 MHz for North America.

2. Applications

- ISM (Industrial Scientific Medical) bands
- Remote monitoring/ Automatic Meter Reading (AMR)/ Utility meters
- Street-lighting controls
- Manufacturing automation
- Agriculture/Environment monitoring
- Consumer tracking devices
- Smart Grid devices

3. Part number

SRCI114



4. General data

Frequency	863-870MHz 902-928MHz
Polarization	Linear
Operating temperature	-40°C to 125°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	5.2 x 3.7 x 0.7 (mm)
Footprint area	20.0 x 9.8 (mm)

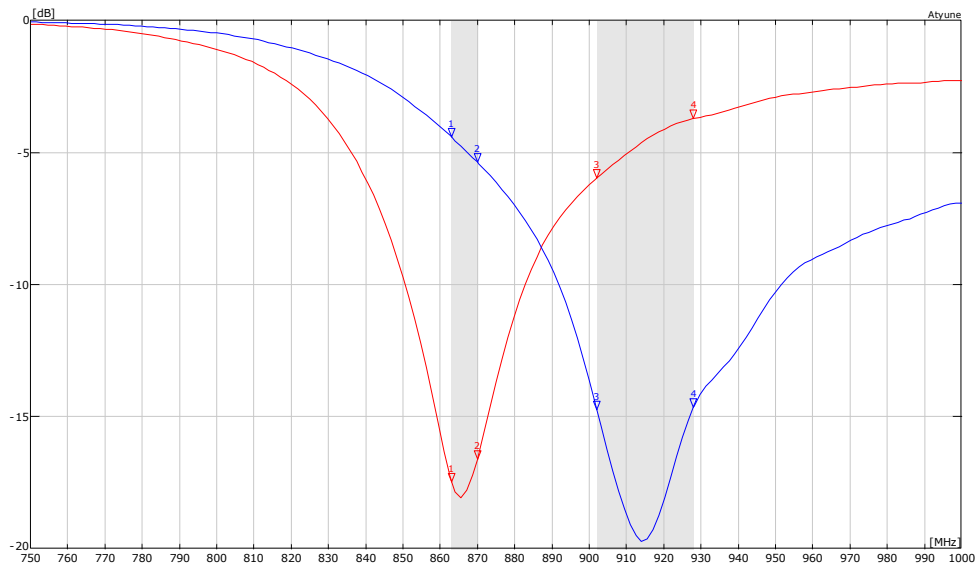
5. RF characteristics

Frequency	863-870MHz	902-928MHz
Peak gain	3.3dBi	4.2dBi
Average gain (Linear)	-1.4 dB	-0.9 dB
Average efficiency	71.90 %	80.70 %
Maximum return loss	16.6dB	14.6dB
Maximum VSWR	1.3:1	1.4:1

All data measured on Antenova's evaluation PCB Part No. SRCI114-EVB-1

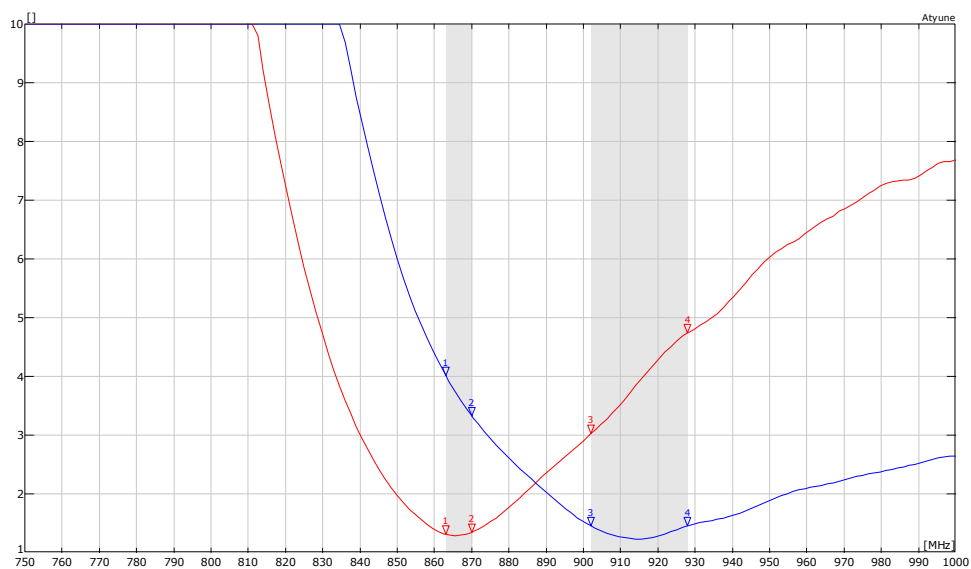
6. RF performance

6.1. Return loss



All data measured on Antenova's evaluation PCB Part No. SRCI114-EVB-1

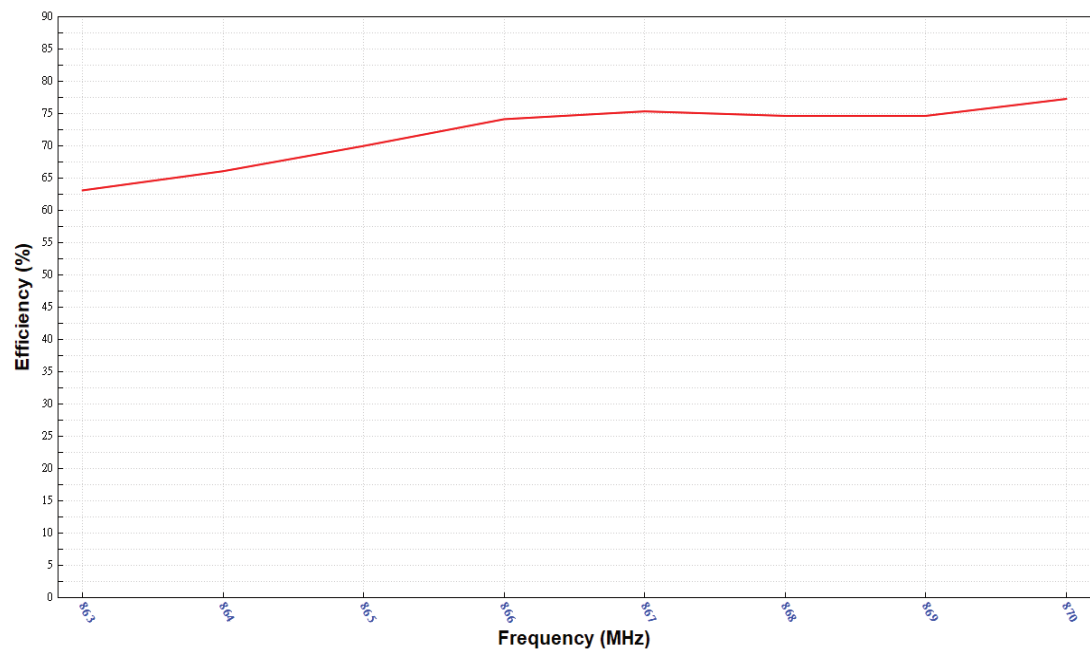
6.2. VSWR



All data measured on Antenova's evaluation PCB Part No. SRCI114-EVB-1

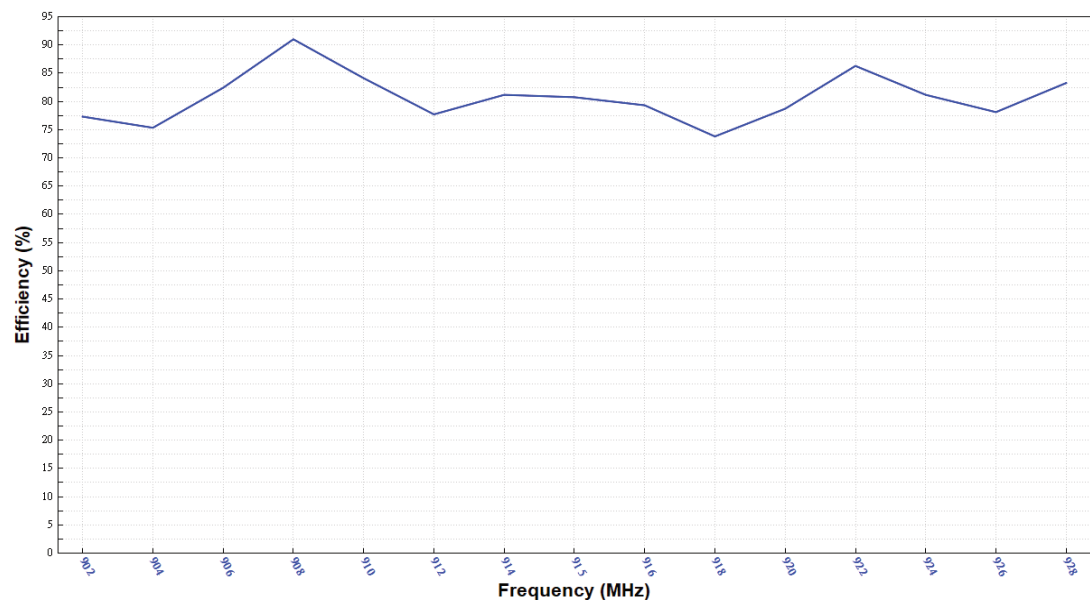
6.3. Efficiency

868MHz



All data measured on Antenova's evaluation PCB Part No. SRCI114-EVB-1

915MHz

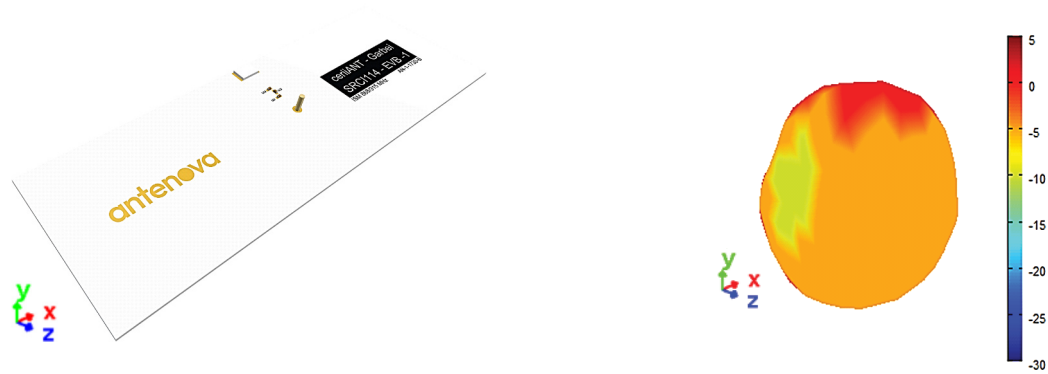


All data measured on Antenova's evaluation PCB Part No. SRCI114-EVB-1

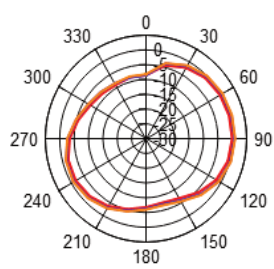
6.4. Antenna pattern

6.4.1. 868MHZ

3D pattern at 868MHz

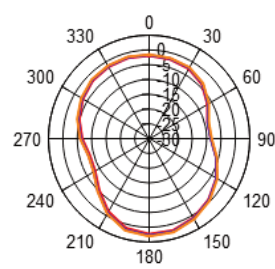


XY



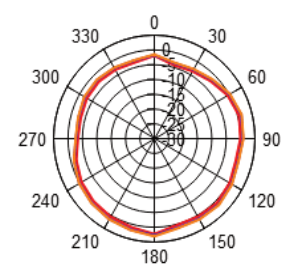
863MHz

XZ



868MHz

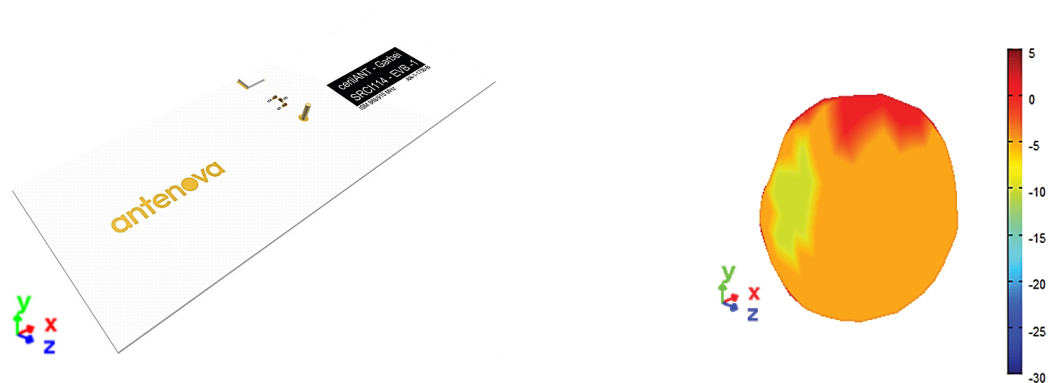
YZ



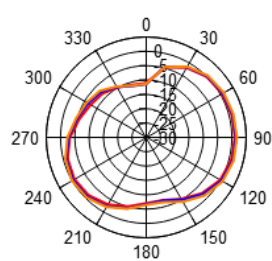
870MHz

6.4.2. 915MHZ

3D pattern at 915MHz

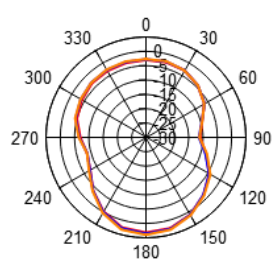


XY



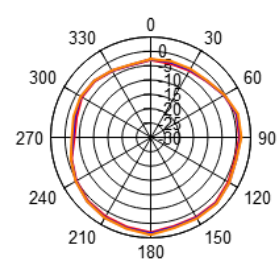
902MHz

XZ



915MHz

YZ

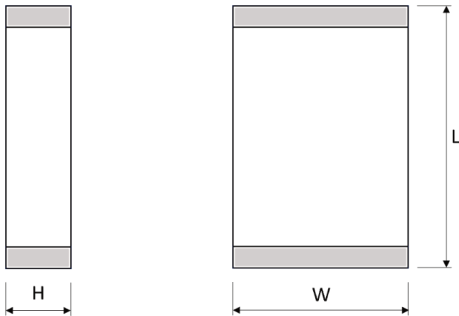
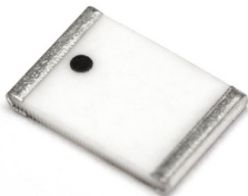


928MHz

7. Antenna dimensions

7.1. Dimensions Assembled

Top view



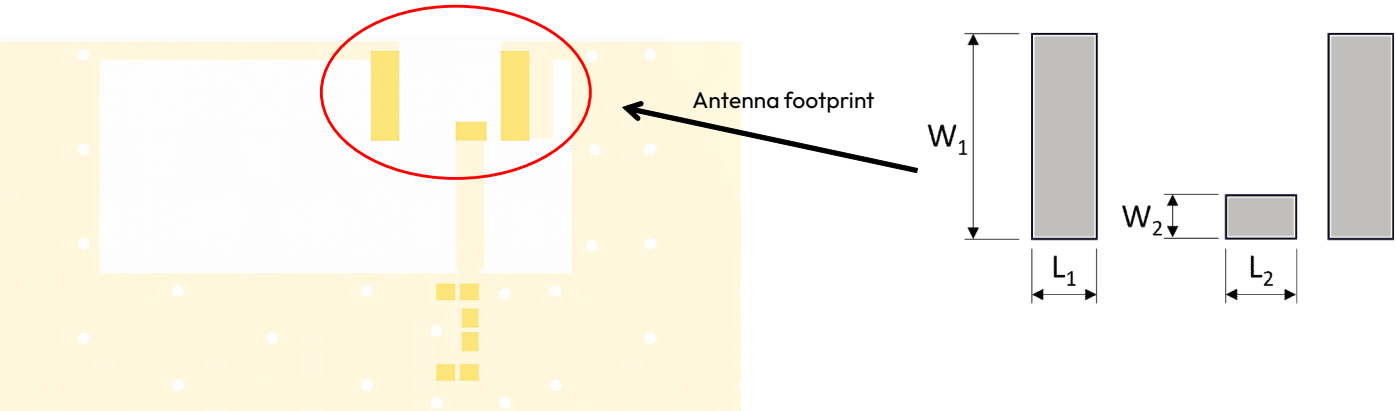
Bottom view



L	W	H
Length	Width	Height
5.2 ± 0.1	3.7 ± 0.1	0.7 ± 0.1

All dimensions in (mm)

8. Antenna footprint



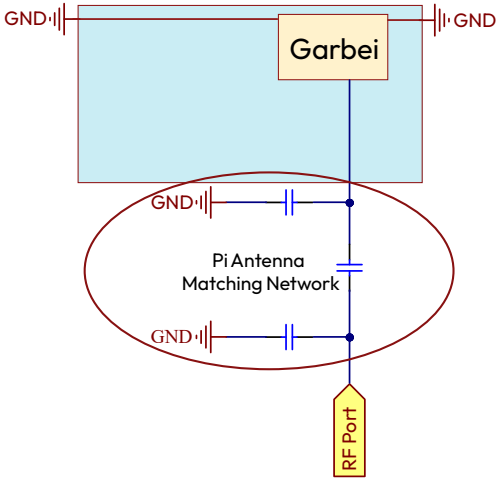
Length		Width	
L_1	L_2	W_1	W_2
1.2 ± 0.1	1.3 ± 0.1	3.8 ± 0.1	0.8 ± 0.1

All dimensions in (mm)

9. Schematic

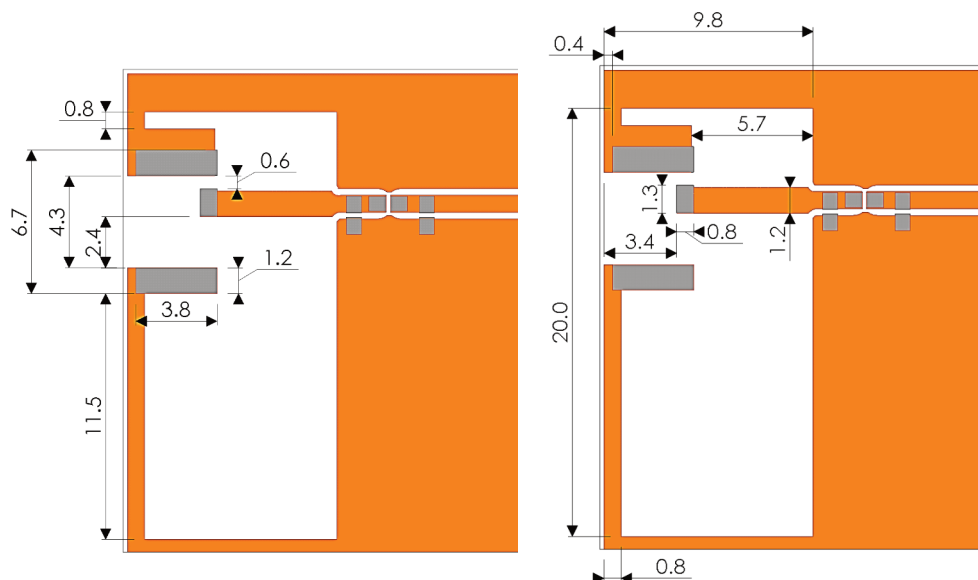
The circuit symbol for the antenna is shown below.

Name	Description
Garbei (SRCI114)	Antenna
Pi Network	Antenna matching network



9.1. Host PCB Foot Print

The recommended host PCB footprint is below.



Antenna clearance area
= 20mm x 9.8mm

Unit: mm

 COPPER AREA

 SOLDER AREA

10. Electrical interface

10.1. Transmission line

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

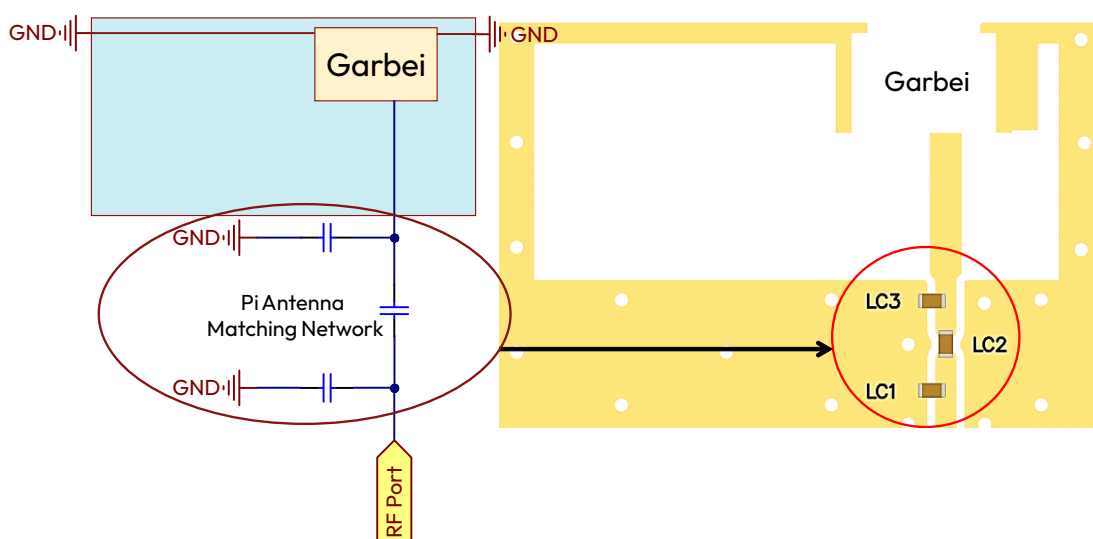
- The length of each transmission lines should be kept to a minimum
- All other parts of the RF system like transceivers, power amplifiers, etc, should also be designed to have a 50Ω impedance

A co-planar transmission line can be designed using an online transmission line calculator tool, see TOOL at <https://www.antenova.com/>

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 50Ω 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 three 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.

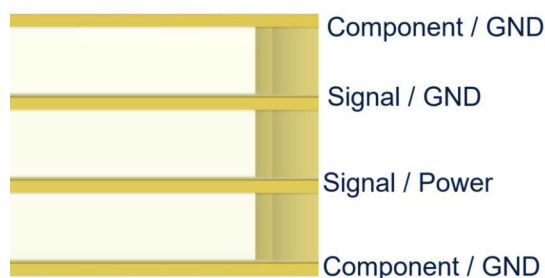


11. Antenna integration guide

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

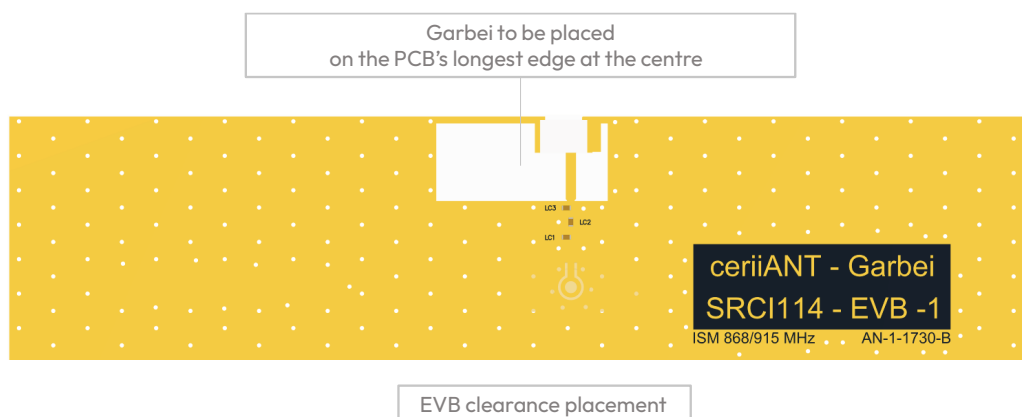
Follow placement guidance carefully, in addition Antenova provide technical support to help you through all stages of your design. Register for an account on <https://ask.antenova.com/> to access technical support.



11.1. Antenna placement

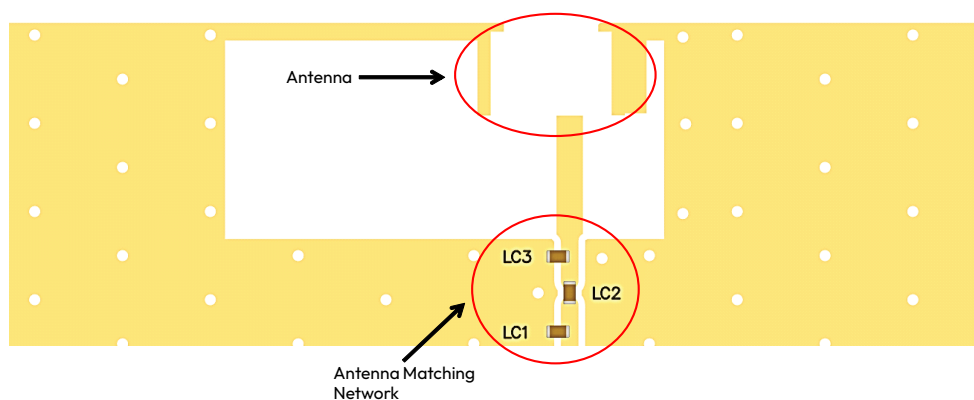
The antenna requires only top layer clearance ideally in one spatial direction in antenna area as shown below.

The Antenova placement tool can be used to advise on antenna placement, see: <https://blog.antenova.com/intelligent-antenna-selection-and-placementtool-antenova>



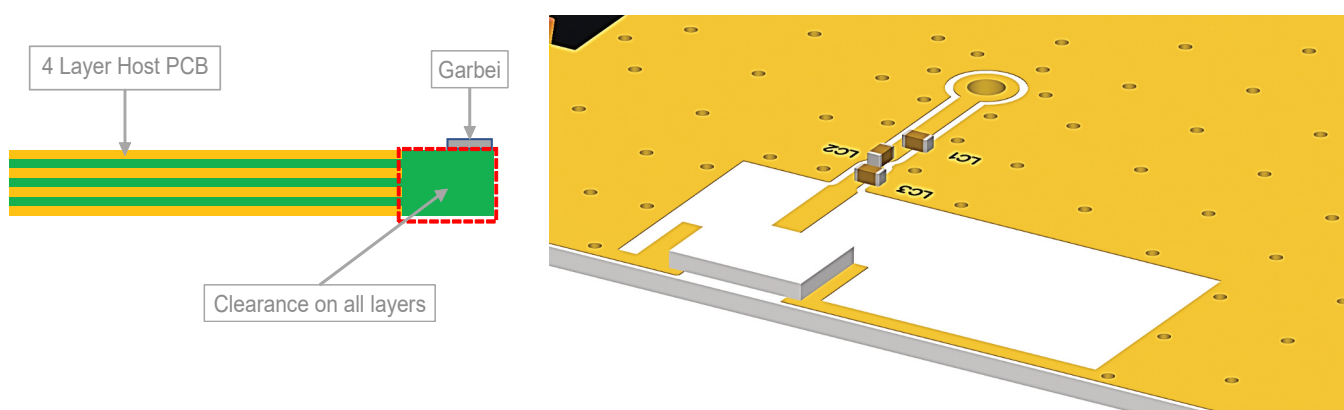
11.2. Host PCB layout

The recommended host PCB footprint is below.



11.3. Host PCB clearance

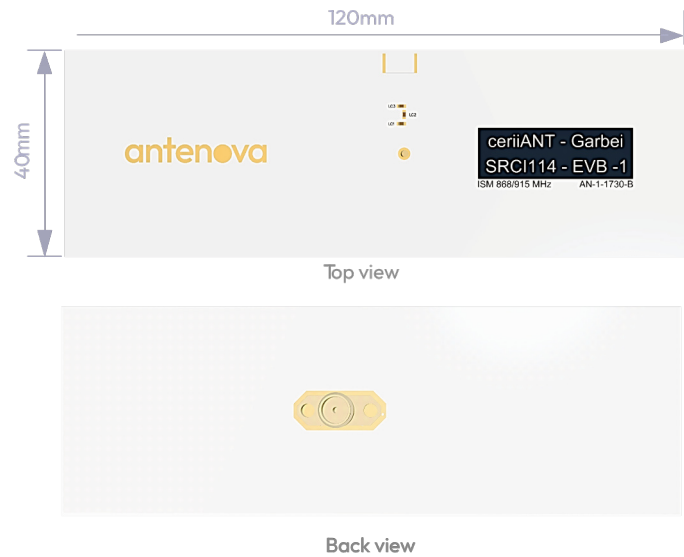
The host PCB must be designed using the PCB footprint shown with the correct clearances. An example of the PCB layout shows the antenna footprint. Please note this clearance area is critical to the performance of the antenna and must be applied through all layers of the PCB.



12. Reference board

A reference board is used for evaluating the antenna SRCI114 and it includes a SMA female connector. (Part number SRCI114-EVB-1)

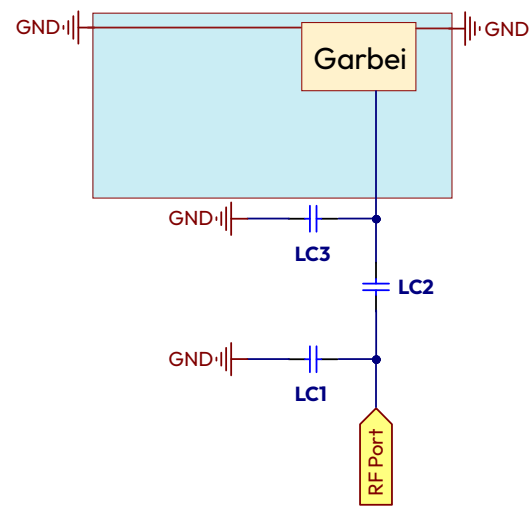
To order a reference board
Please see [antenova.com](https://www.antenova.com)



12.1. Reference board matching circuit

Designator	Type	Value	Description
Garbei	Ceramic	Antenna	868MHz
LC1	Not Fitted	Not Fitted	Not Fitted
LC2	Capacitor	1.1pF	Murata GJM15 series
LC3	Capacitor	1.3pF	Murata GJM15 series

Designator	Type	Value	Description
Garbei	Ceramic	Antenna	915MHz
LC1	Not Fitted	Not Fitted	Not Fitted
LC2	Capacitor	1.2pF	Murata GJM15 series
LC3	Capacitor	0.7pF	Murata GJM15 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

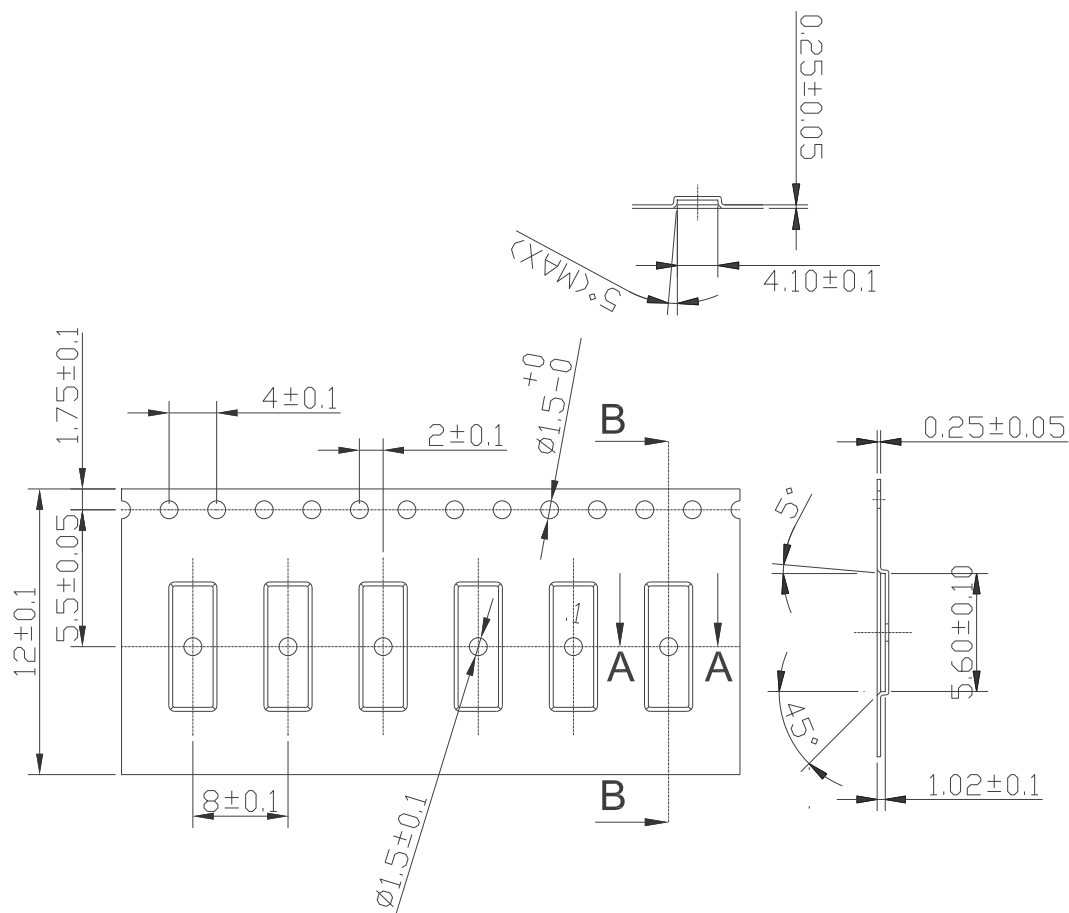
15.1. Optimal storage conditions

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 oxidation 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.

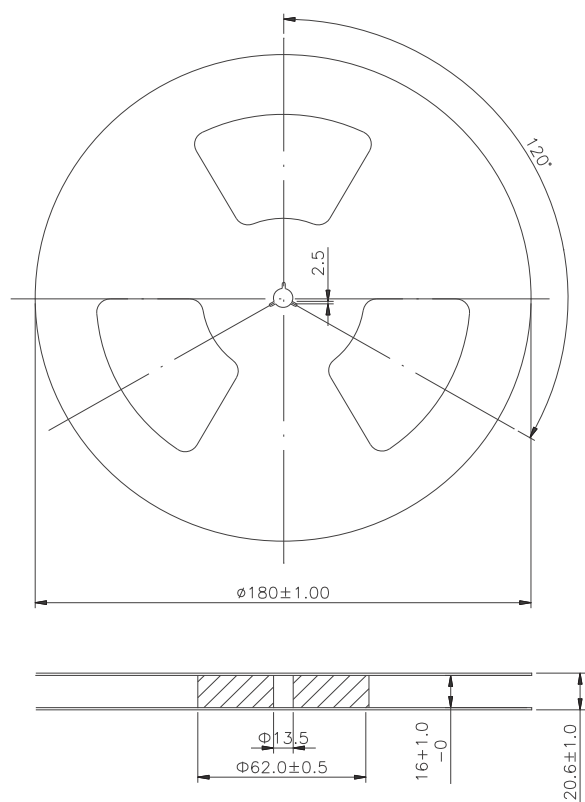
15.2. Tape characteristics



All dimensions in (mm)

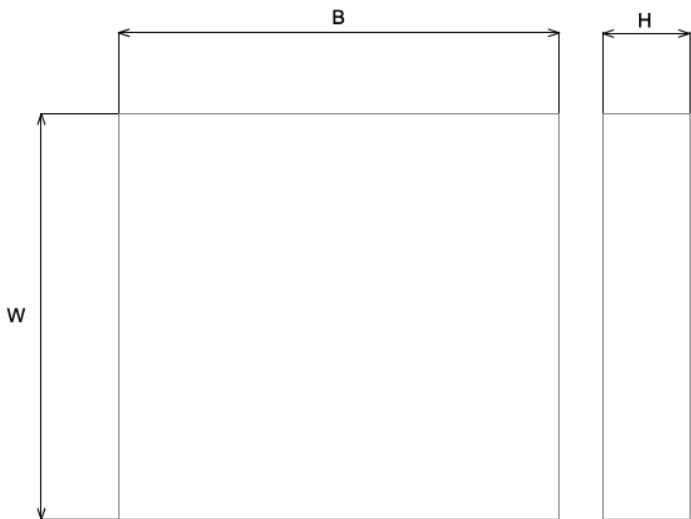
Quantity	Leading space	Trailing space
2000 pcs / reel	50 blank antenna holders	50 blank antenna holders

15.3. Reel dimensions



All dimensions in (mm)

15.4. Box Dimensions

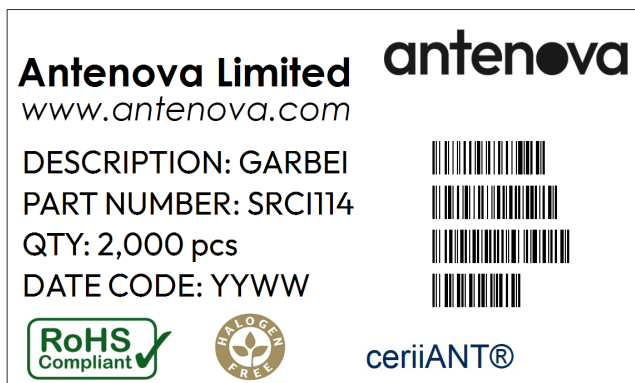


Width (W)	Breadth (B)	Height (H)
200mm	185mm	40mm

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.



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Datasheet version

1.01 released 31st July 2026

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.

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