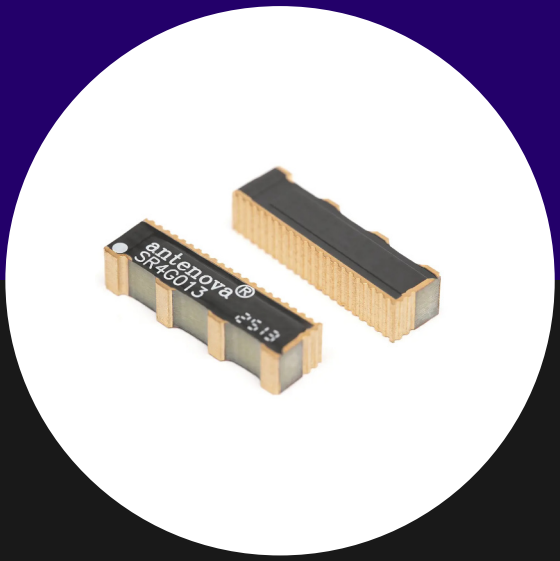
antenova

DATASHEET

Beltii

SR4G013 • IamiiANT®



Features

- Antenna for 1559 – 1609 MHz, GNSS for embedded applications
- Solution for all global public constellations: GPS, GLONASS, Beidou and GALILEO.
- Works over a ground plane. No clearance required.
- Ideal for wearables.
- Maintains high performance on device: DFI (Designed for Integration)
- SMD mounted
- Supplied on Tape and Reel

1. Description

Beltii is intended for use with GNSS applications. Designed for small ground planes and integrates into the corner with no GND clearance required. High resistance to detuning makes this antenna ideal for small wearable devices.

2. Applications

- Wearable devices
- Trackers
- Portable Devices
- Drones
- Navigation
- Sports tracking

3. Part number

SR4G013

4. General data

Frequency	1559 - 1609 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	<0.5g
Antenna Type	SMD
Dimensions	15.6 x 3.3 x 4.4 (mm)

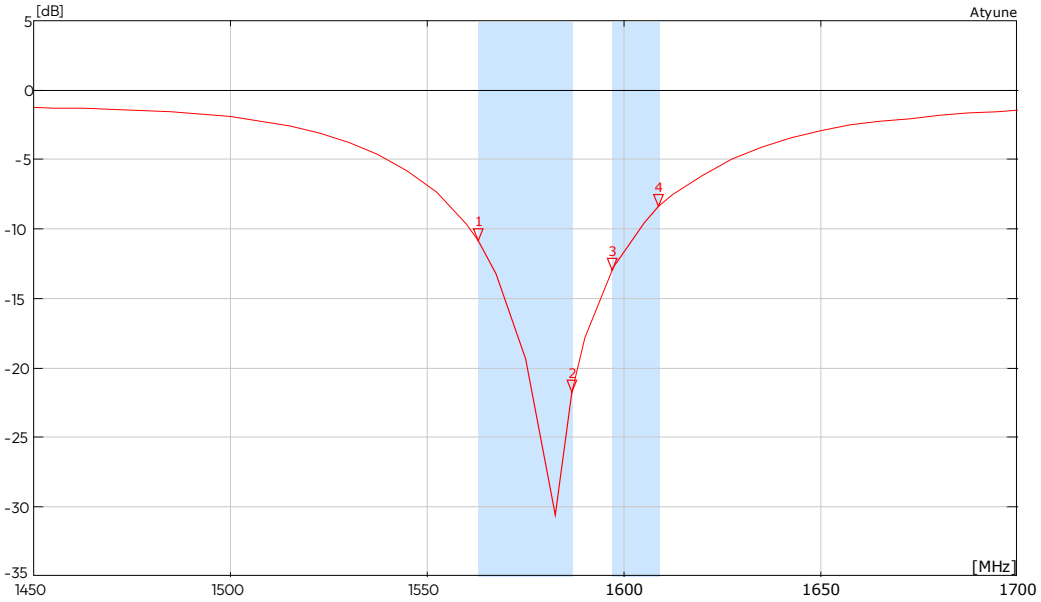
5. RF characteristics

All data measured on Antenova's evaluation PCB Part No. SR4F013-EVB-1.

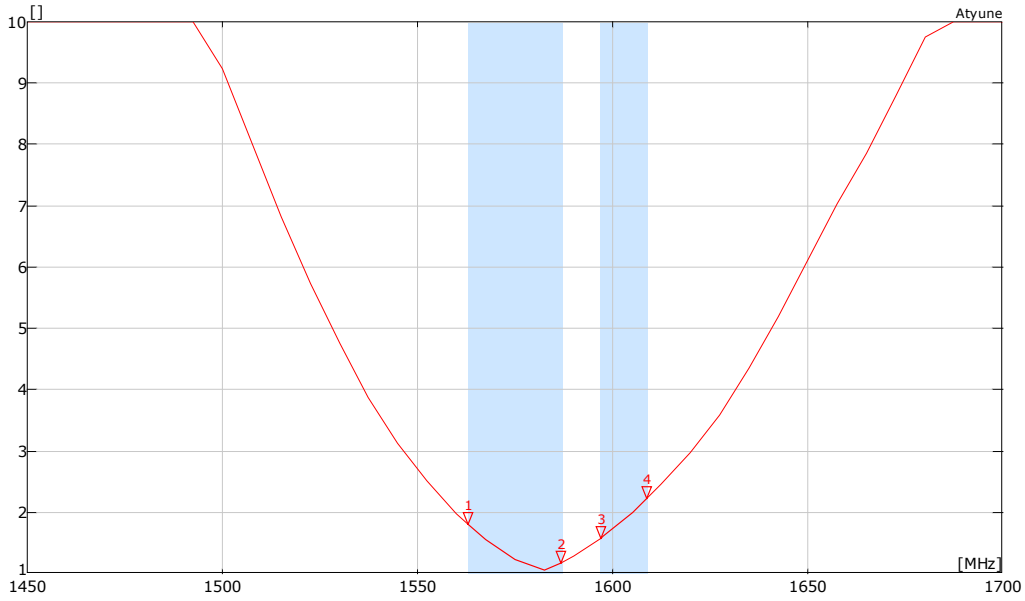
Frequency	1559-1609 MHz
Peak gain	2.3dBi
Average gain (Linear)	-2.3dBi
Average efficiency	>60%
Maximum return loss	<-8.0dB
Maximum VSWR	2.2:1

6. RF performance

6.1. Return loss

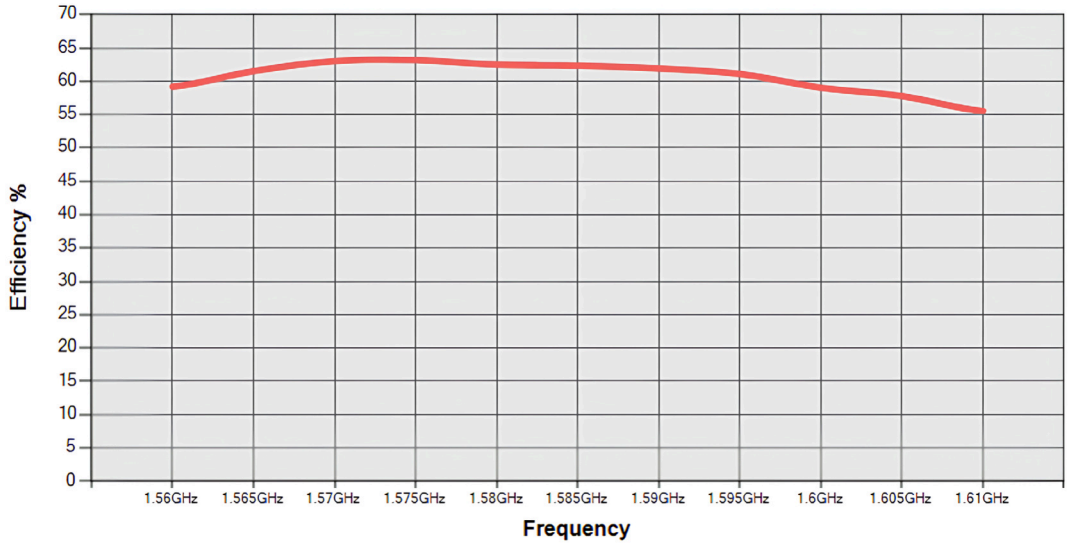


6.2. VSWR



All data measured on Antenova's evaluation PCB Part No. SR4G013-EVB-1

6.3. Efficiency

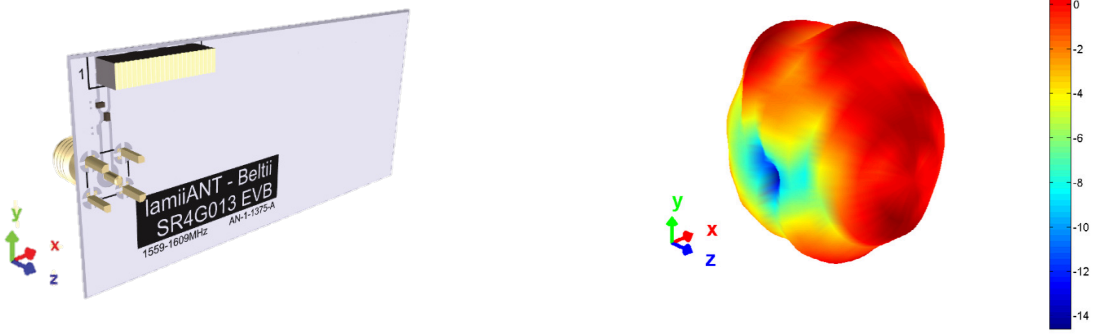


All data measured on Antenova's evaluation PCB Part No. SR4G013-EVB-1.

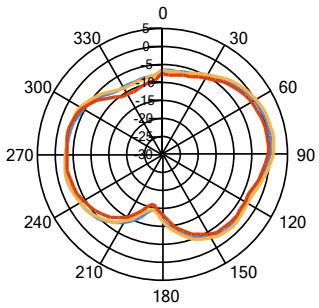
6.4. Antenna pattern

6.4.1. 1559 MHz – 1609 MHz MHz

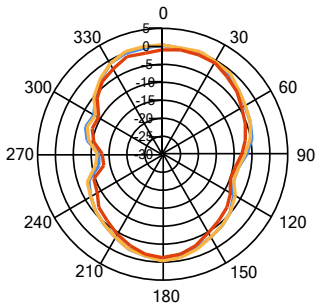
3D pattern at 1575.42 MHz



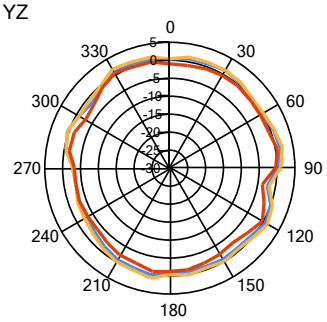
XY



XZ

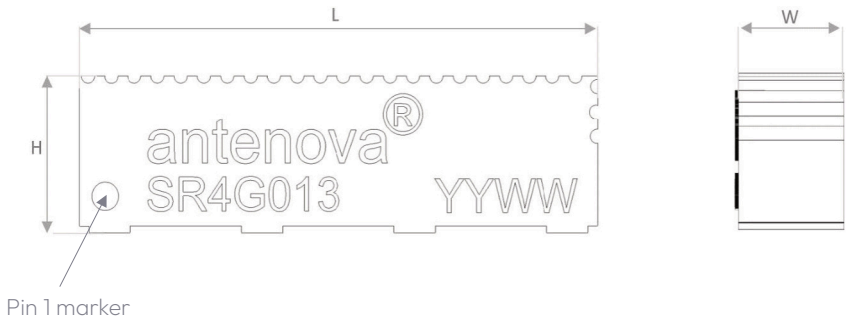


YZ



7. Antenna dimensions

7.1. Top side dimensions

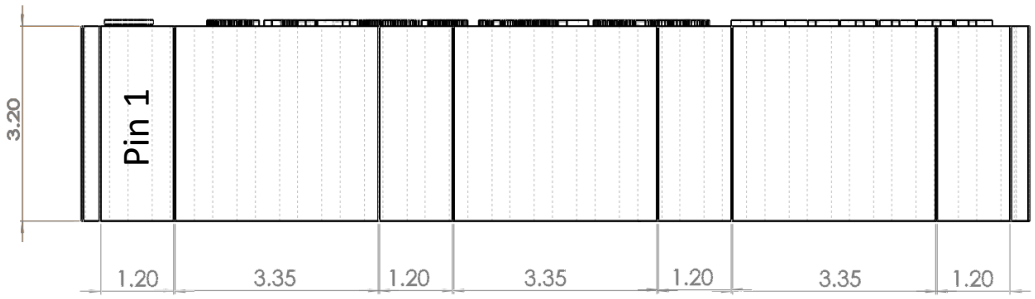


L	W	H
15.6	3.3	4.4

All dimensions in (mm)

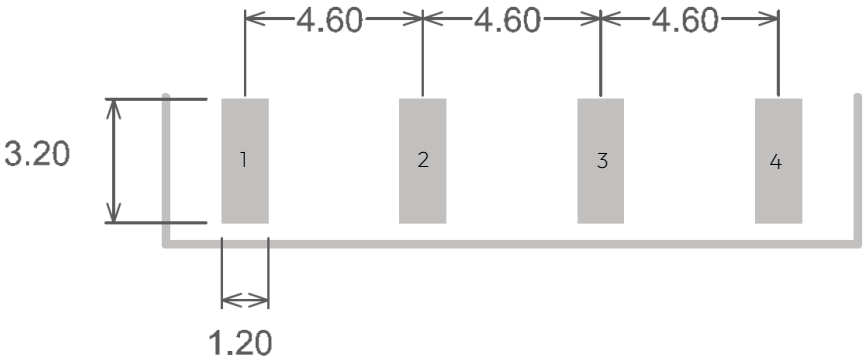
7.2. Bottom side dimensions

4 solder pads (3.2 x 1.2 mm)



8. Host PCB footprint

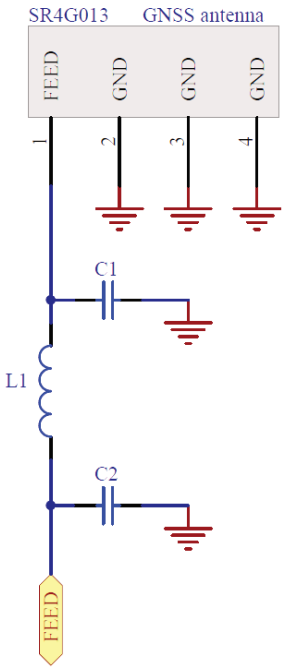
The recommended host PCB footprint is below.



4 copper pads all 3.2 x 1.2 (mm)

9. Schematic

The circuit for the antenna and the matching components is below. The RF feed connection and GND connections are critical to the function of the antenna, and must be followed as shown.



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

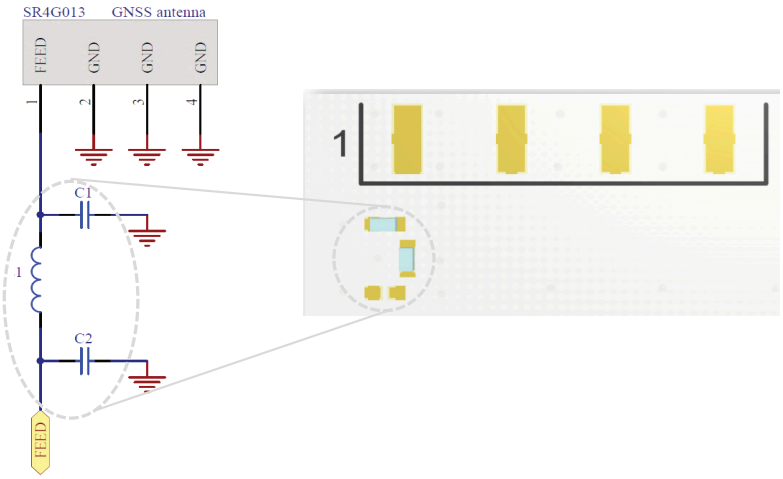
A co-planar transmission line can be designed using an online transmission line calculator tool, such as:

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 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.

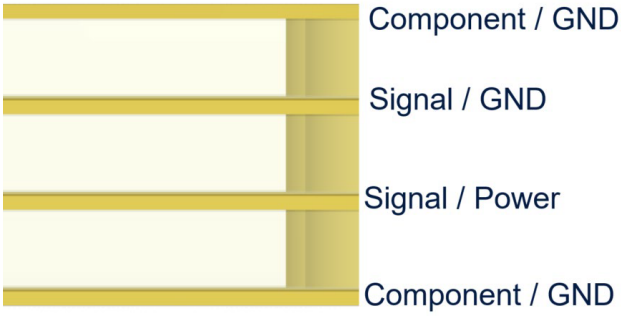


11. Antenna integration guide

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

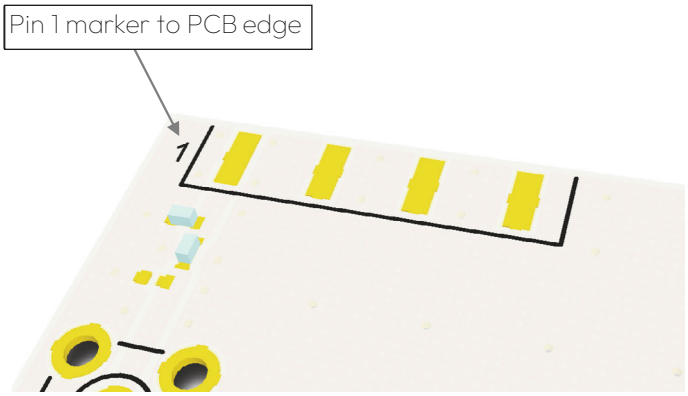
Follow placement guidance carefully, in addition Antenova provide technical support to help you through all stages of your design. Register for an account on https://ask.antenova.com/ to access technical support.



11.1. Antenna placement

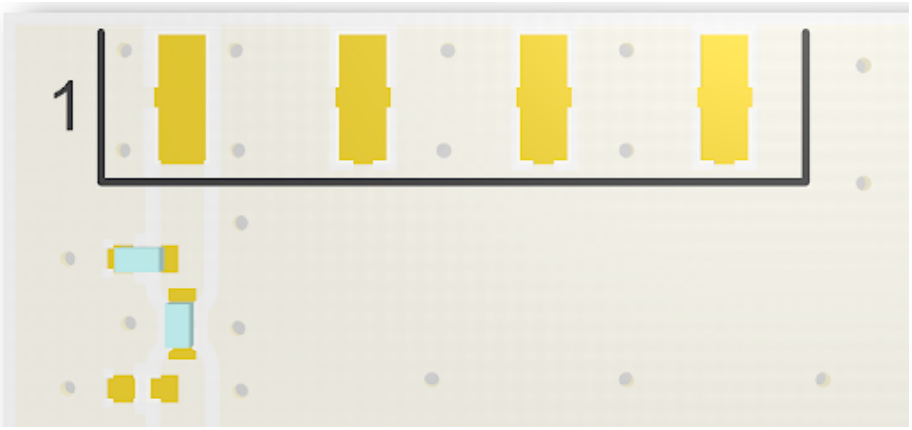
The best position for the antenna is to be placed into the PCB corner. Ideally Pin 1 should be closest to the PCB edge.

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

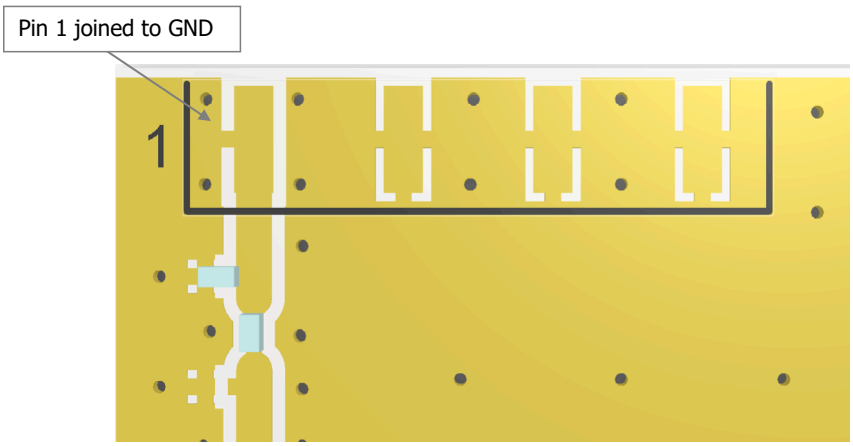


11.2. Host PCB layout

The host PCB must be designed the footprint meets the antenna specification. An example of the PCB layout shows the antenna footprint as below. The antenna uses solder mask defined pads.



Below the footprint is shown without the solder mask. Pin 1 feed must be connected to GND as shown below.



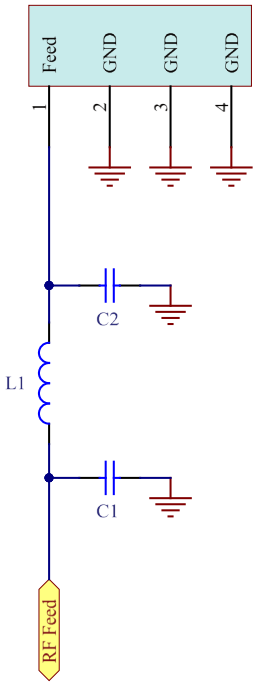
12. Reference board

A reference board is used for evaluating the antenna SR4G013 and it includes a SMA female connector. (Part number: SR4G013-EVB-1).

To order a reference board
please see antenova.com

12.1. Reference board matching circuit

Designator	Type	Value	Description
C1	Capacitor	1.8pF	Murata GJM15 series
C2	Capacitor	Not fitted	Not fitted
L1	Inductor	1.8nH	Murata LQG15HN 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

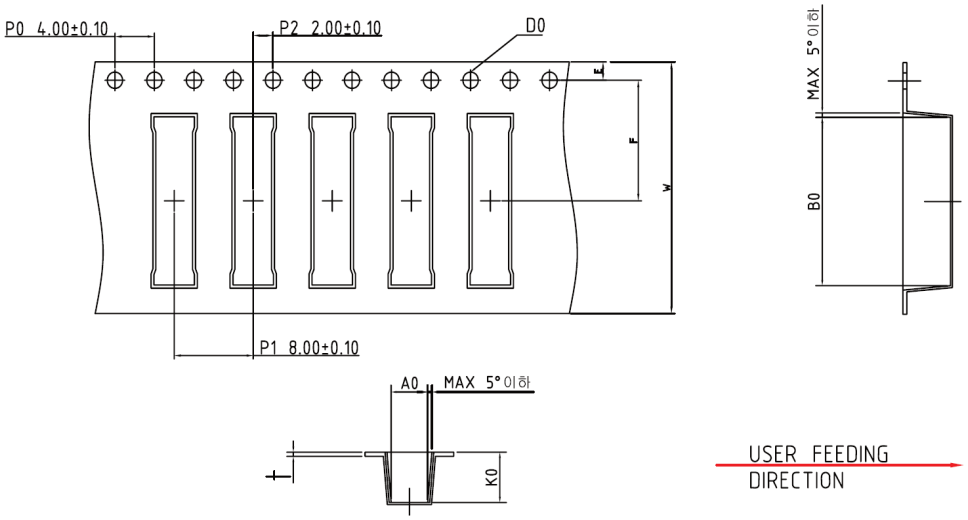
15.1. Optimal storage conditions

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

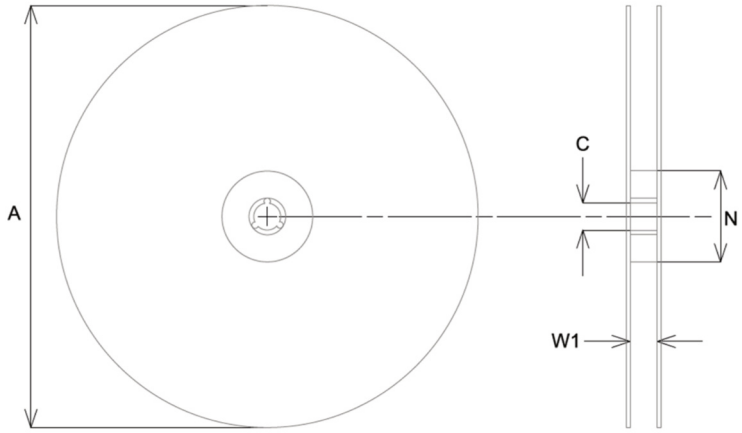


D0	A0	B0	P0	P1	P2
1.50 ± 0.1	3.70 ± 0.1	16.05 ± 0.1	4.00 ± 0.1	8.00 ± 0.1	2.00 ± 0.1

E	F	W	K0
1.75 ± 0.1	11.50 ± 0.1	24.00 ± 0.3	4.80 ± 0.1

All dimensions in (mm)

15.3. Reel dimensions

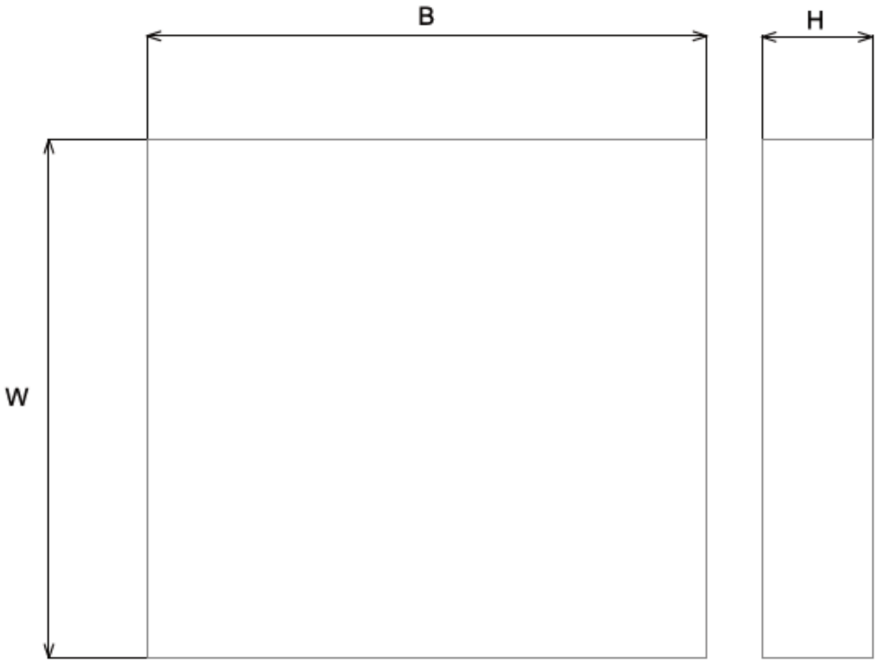


A	C	N	W1
330.0 ± 2.0	14.0 ± 0.5	80.0	32.0

Quantity	Leading space	Trailing space
1000 pcs / reel	16 blank holders	24 blank holders

All dimensions in (mm)

15.4. Box dimensions



Width (W)	Breadth (B)	Height (H)
203mm	188mm	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.

RoHS compliant

REACH COMPLIANT

UNITED STATES ENVIRONMENTAL PROTECTION AGENCY TSCA CERTIFIED

ISOQAR REGISTERED UKAS MANAGEMENT SYSTEMS 0026
Certificate No. 11070
ISO 9001

Prop 65

Datasheet version

2.02 released 28th May 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.

Share knowledge with RF Experts around the world

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sales@antenova.com

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