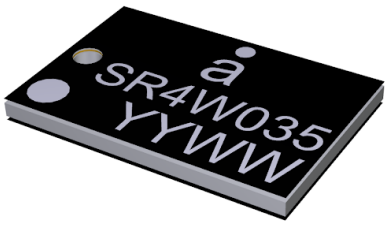
antenova

DATASHEET

Serica

SR4W035 • IamiiANT®



Features

- Antenna for 2.4GHz applications
- Bluetooth, Wi-Fi, ZigBee, ISM.
- Maintains high performance on device: DFI (Designed for Integration)
- Ultra-low profile innovative design.
- SMD mounting
- Supplied on Tape and Reel
- Automotive temperature rating.

1. Description

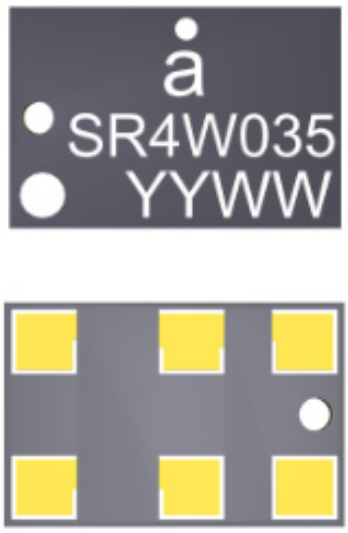
Serica is intended for use with 2.4GHz applications. The antenna only requires a small ground plane. It is ideal for single and MIMO antenna systems.
This product specification shows the performance of the antenna over the frequency range 2.4 – 2.5GHz.

2. Applications

- Wearable devices
- Medical equipment
- Tablets
- Network Devices
- MIMO Systems
- IP Cameras
- Access Points

3. Part number

SR4W035



4. General data

Frequency	2.4 – 2.5 (GHz)
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	< 1g
Antenna Type	SMD
Dimensions	6.0 x 4.0 x 0.4 (mm)

5. RF characteristics

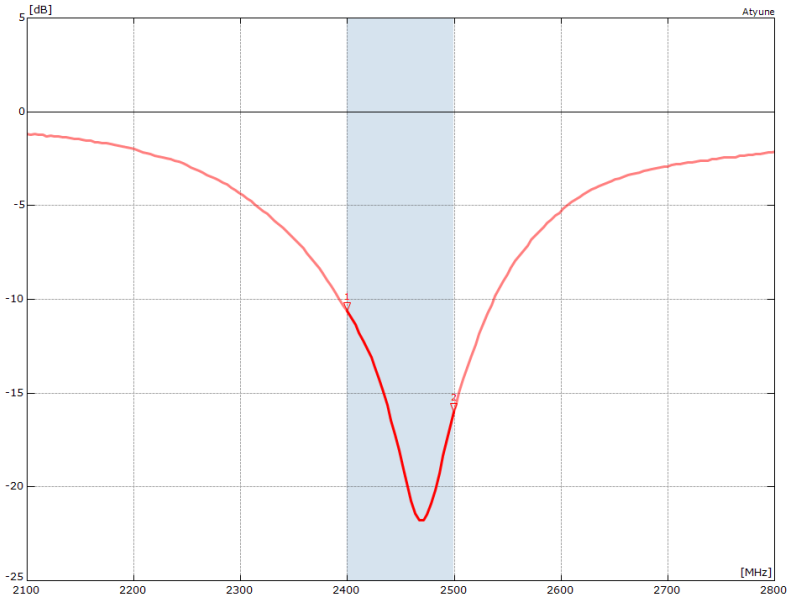
Frequency	2400 - 2500 MHz
Peak Gain	3.50dBi
Average Gain (Linear)	-1.50dBi
Average Efficiency (Linear)	>65%
Maximum Return Loss	-10.0dB
Maxium VSWR	1.85:1

All data measured on Antenova's evaluation PCB

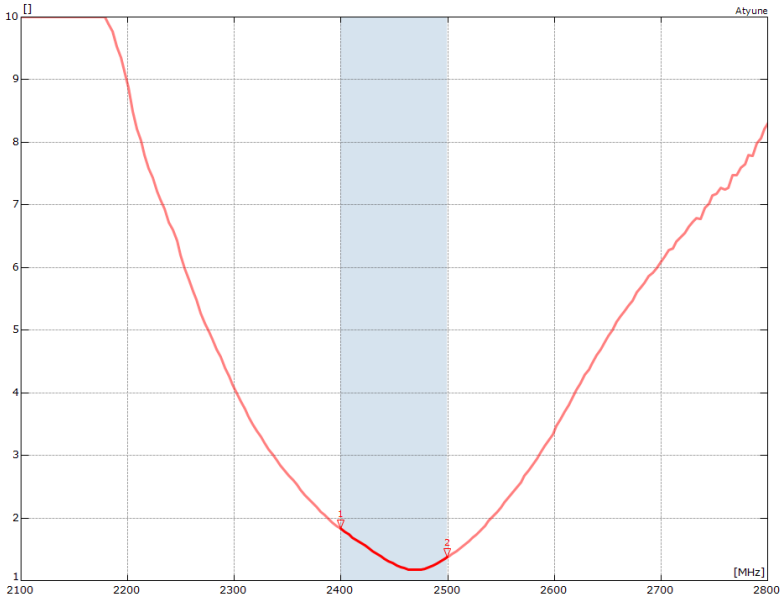
Part No. SR4W035-EVB-1

6. RF performance

6.1. Return loss



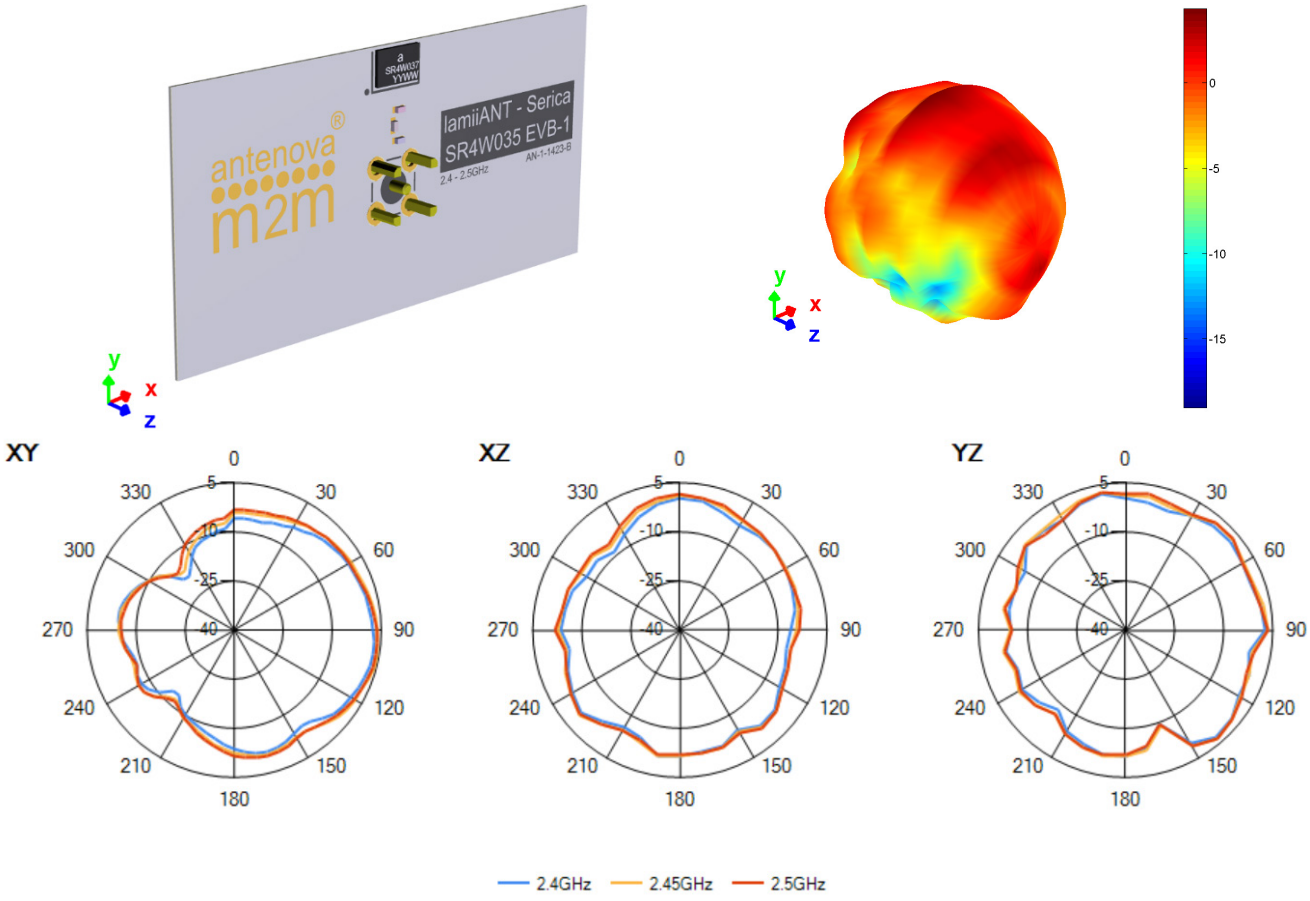
6.2. VSWR



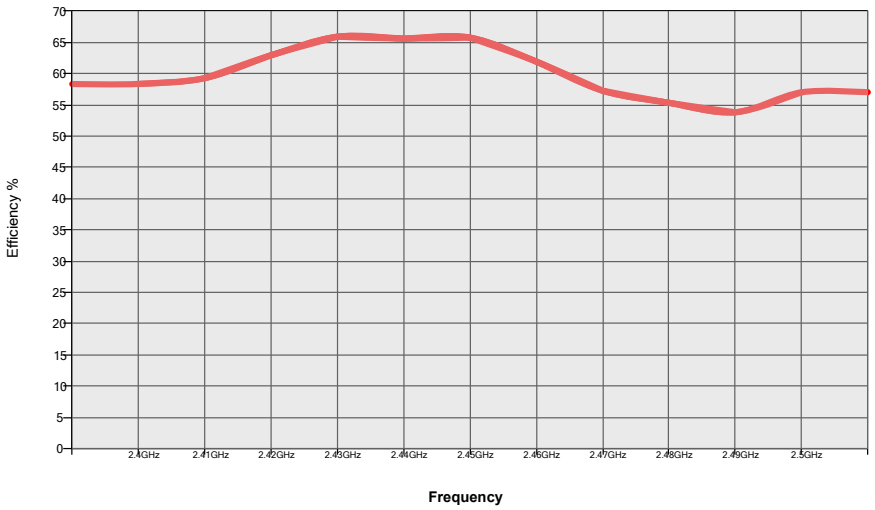
6.3. Antenna pattern

6.3.1. 2400 MHz - 2500 MHz

3D pattern at 2.45 GHz

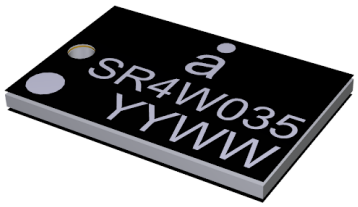


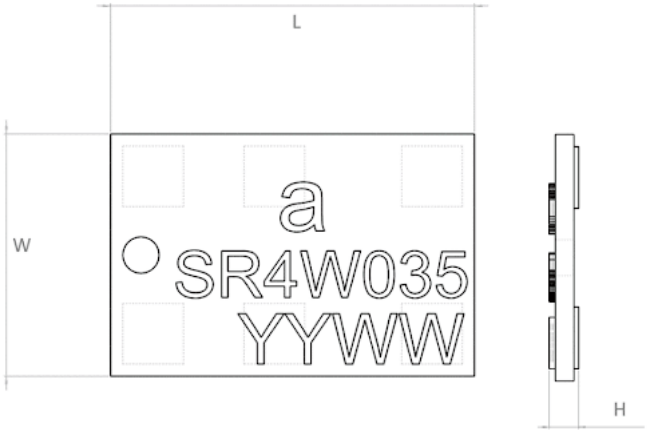
6.4. Efficiency



All data measured on Antenova's evaluation PCB Part No. SR4W035-EVB-1 (EVK size 60mm x 30mm)

7. Antenna dimensions

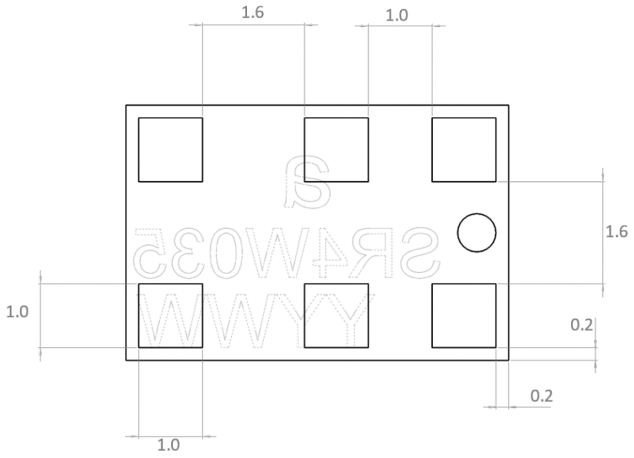




Top view

L	W	H
6.0 ±0.1	4.0 ±0.1	0.4 ±0.1 - 0.0

All dimensions in (mm)

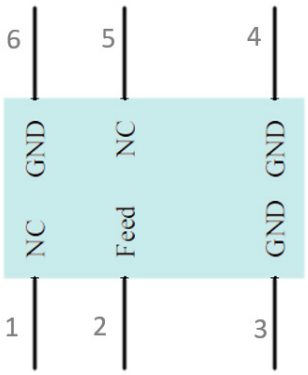


Bottom view

8. Schematic symbol and pin definition

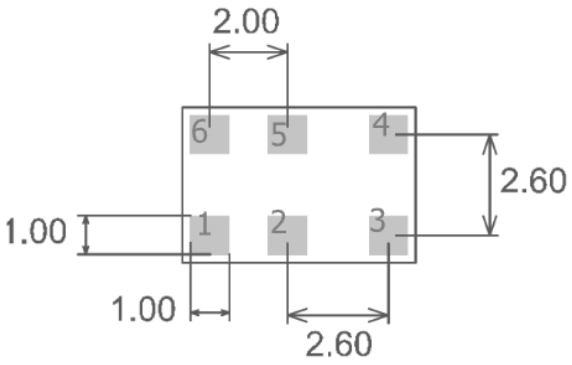
The circuit symbol for the antenna is shown below. The antenna has 6 pins with only four as functional. All other pins are for mechanical strength.

Pin	Description
2	Feed (Transceiver port)
3, 4, 6	Return/GND
1, 5	NC (Not used, mechanical only)



9. Host PCB footprint

The recommended host PCB footprint is below.



6 copper pads all 1.0 x 1.0 (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:

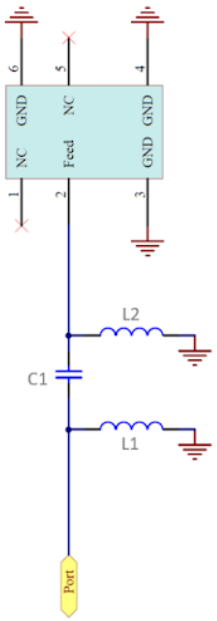
https://blog.antenova.com/rf-transmission-line-calculator

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 three components and the following pad layout should be designed into the device so the correct circuit can be installed.

The Pi matching network must be placed close to the antenna feed to ensure it is more effective in tuning the antenna.

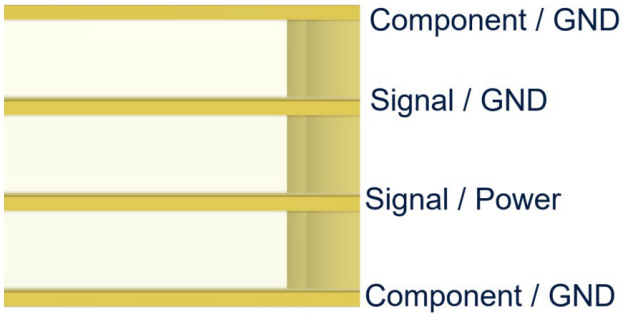


11. Antenna integration guide

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.

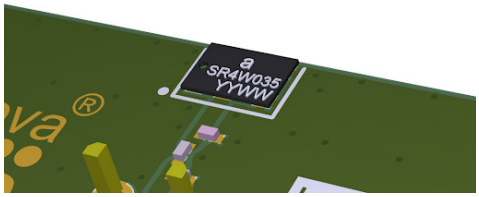


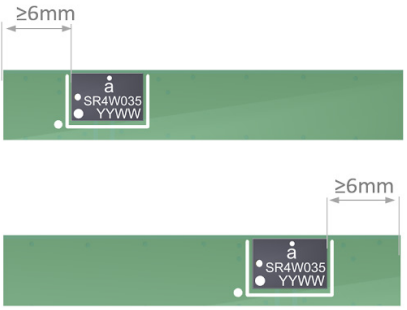
11.1. Antenna placement

The best position for the antenna is at the centre of the longest edge of the PCB.

Where the centre is not a viable option the antenna can be placed offset on the PCB to within the limits shown below. A minimum of 6mm from either PCB edge should be observed. Where possible this distance should be greater than 6mm.

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

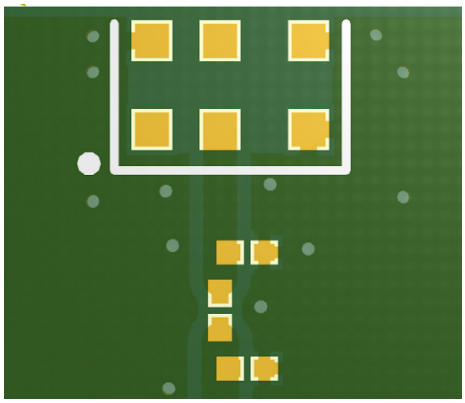




11.2. Host PCB layout

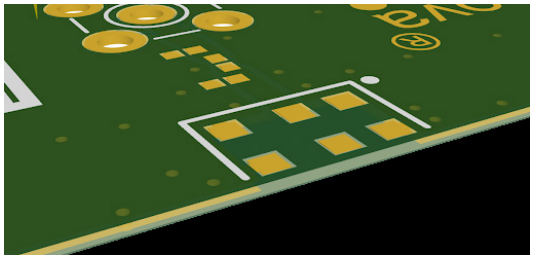
The host PCB must be designed using the PCB footprint shown with the correct clearances. An example of the PCB layout shows the antenna footprint. Please note this clearance area is critical to the performance of the antenna and must be applied through all layers of the PCB.

Pins 3, 4 and 6 (GND) are shown directly connecting to the GND with the shortest route. The feed (Pin 2) connects to the matching circuit close to the antenna.

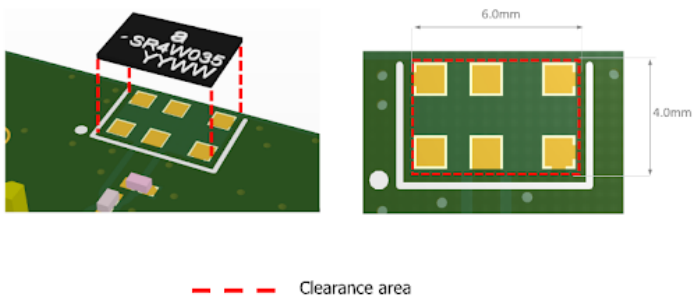


11.3. Host PCB clearance

The diagram below shows the antenna footprint and clearance through all layers on the PCB. Only the antenna pads and connections to feed and GND are present within this clearance area. The clearance area required is 6.0 x 4.0 (mm).



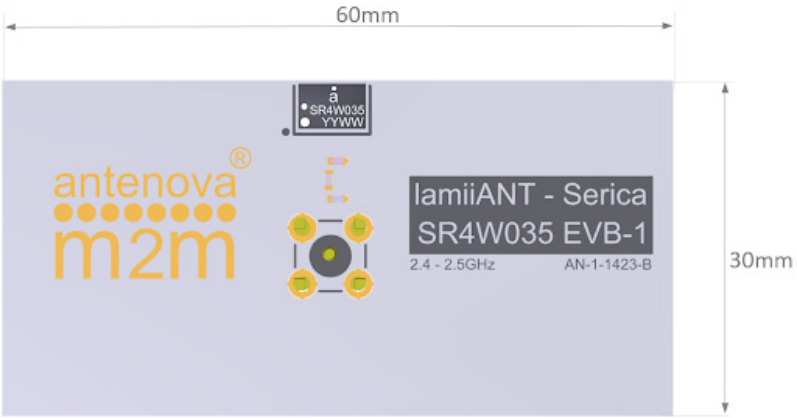
The clear-out area is simply defined as the same size as the antenna. No additional clearance is required.



12. Reference board

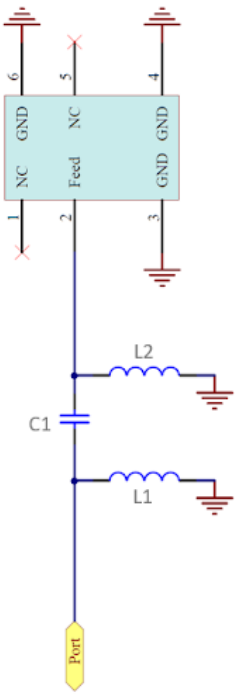
The reference board has been designed for the purpose of evaluating SR4W035 and includes an SMA female connector.

To order a reference board please see antenova.com



12.1. Reference board matching circuit

Designator	Type	Value	Description
L1	Not fitted	Not fitted	Not fitted
L2	Inductor	2.2nH	Murata LQG15HN series or equivalent
C1	Capacitor	1.5pF	Murata GRM15HS series or equivalent



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

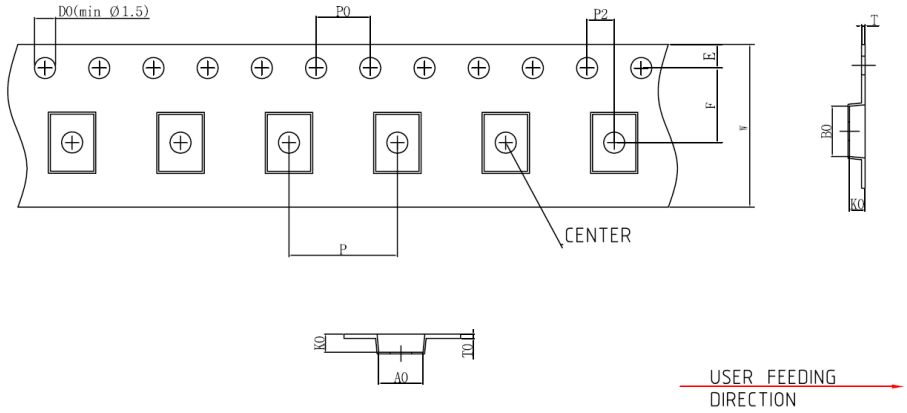
15.1. Optimal storage conditions

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 packagaing

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 tabel 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

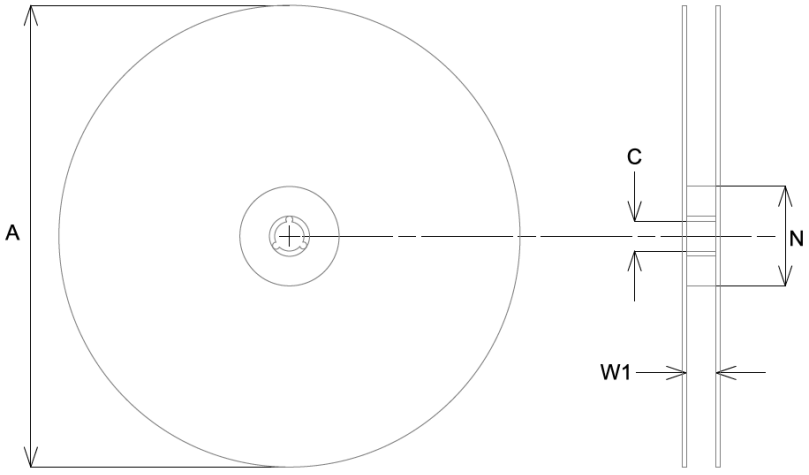


Ko	Ao	Bo	P0	P1	P2
0.95 ± 0.1	4.20 ± 0.1	6.20 ± 0.1	4.00 ± 0.1	8.00 ± 0.1	2.00 ± 0.1

E	F	W
1.75 ± 0.1	7.50 ± 0.15	12.00 ± 0.3

All dimensions in (mm)

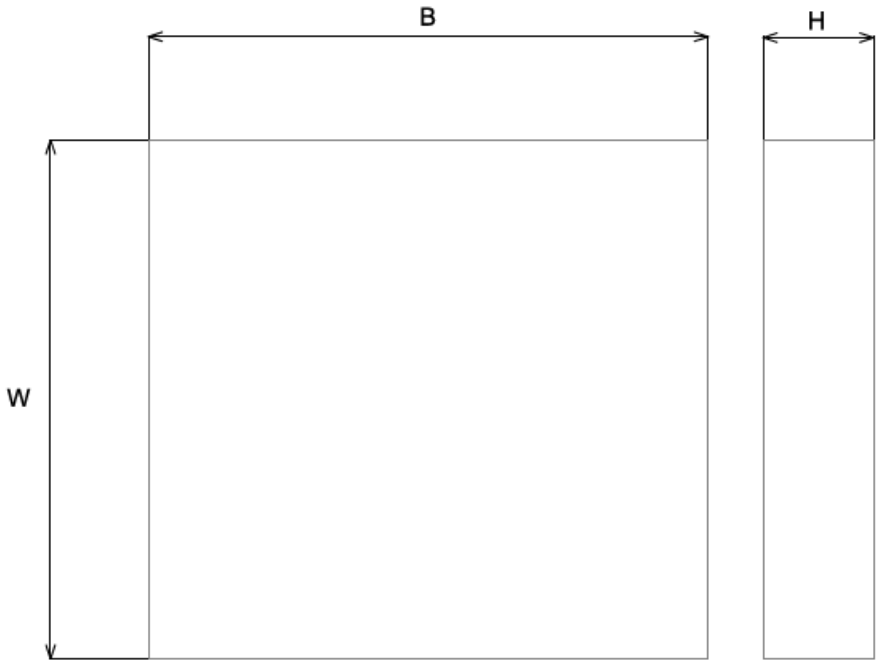
15.3. Reel dimensions



A	C	N	W1
178.0 ± 2.0	13.5 ± 0.5	60.0 ± 0.2	13.0 ± 0.3

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**.

Datasheet version

2.01 release Dec 25th 2024

antenova

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

ask.antenova is a global forum for designers and engineers working with wireless technology

Visit Ask.Antenova

Visit antenova.com

Order antenna samples and evaluation boards, and read our antenna resources

Visit antenova.com

Request a volume quotation for antennas:

sales@antenova.com

+44 (0) 1707 927589

Global headquarters

Antenova Ltd, 2nd Floor
Titan Court, 3 Bishop Square,
Hatfield, AL10 9NA