antenova

DATASHEET

# Petrosa

SR43W081 • IamiiANT®


## Features

- Wi-Fi6E and Wi-Fi7 : 802.11a/b/g/n/ac/ax
- Antenna for 2.4 – 2.5 GHz and 4.9-7.125 GHz applications
- Works on a ground plane. No clearance required.
- Ideal for products that require high data rates such as video cameras.
- High performance: DFI (Designed For Integration)
- Small SMD footprint of 20mm × 5mm
- Supplied on Tape and Reel



Note: This product is compatible with Bluetooth® technology but does not incorporate Bluetooth® technology

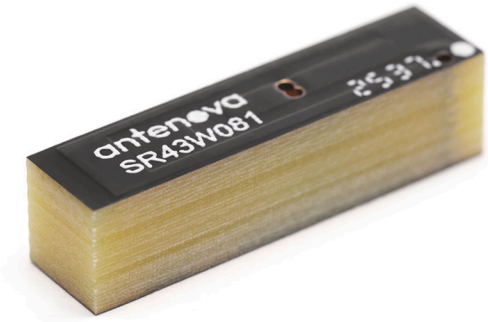
# 1. Description

Petrosa is compatible with Wi-Fi6E & Wi-Fi7 protocols, and also supports older versions of WiFi on 2.4 and 5GHz bands. It operates over a ground plane and integrates with minimal PCB clearance area. Recommended matching network component values are given to speed up the design integration. Petrosa is ideal for single and MIMO antenna systems.

# 2. Applications

- Portable/ Wearable Devices
- Access Points/Network Devices
- PC-cards/ Games consoles
- Immersive VR/AR & Telemedicine
- High-Definition video/Set-Top-Boxes
- MIMO Systems

# 3. Part number

# 4. General data

| | |
|---|---|
| Frequency | 2400-2500MHz<br>4900-7125MHz |
| 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 | 20.0 x 5.0 x 5.0 (mm) |

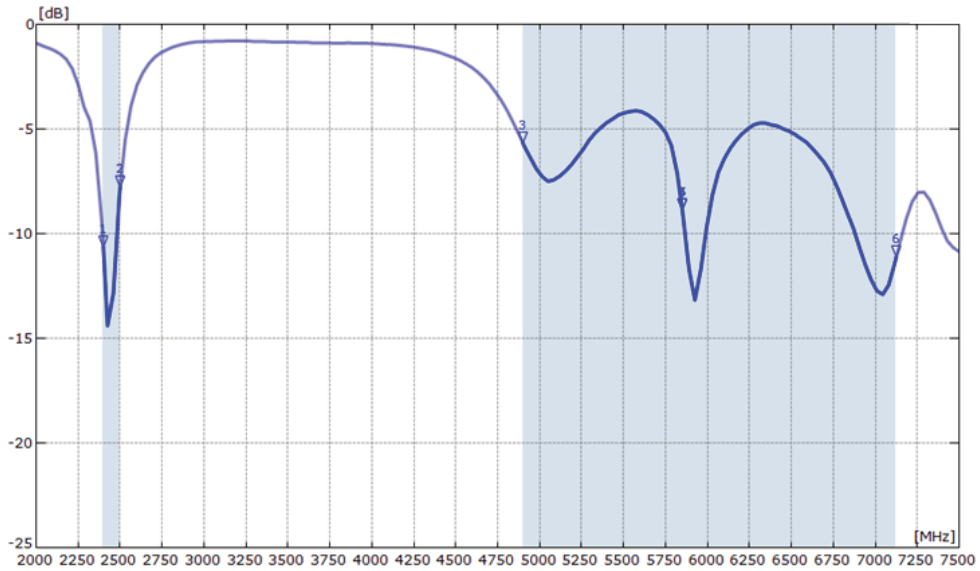
# 5. RF characteristics

| Frequency | 2400– 2500 MHz | 4900 – 7125 MHz |
|---|---|---|
| Peak gain | 2.3dBi | 4.0dBi |
| Average gain (Linear) | -2.6 dB | -3.5 dB |
| Average efficiency | 55.0 % | 45.0 % |
| Average efficiency | -7.8dB | -4.1dB |
| Maximum VSWR | 2.3:1 | 4.3:1 |

All data measured on Antenova's evaluation PCB Part No. SR43W081-EVB-1

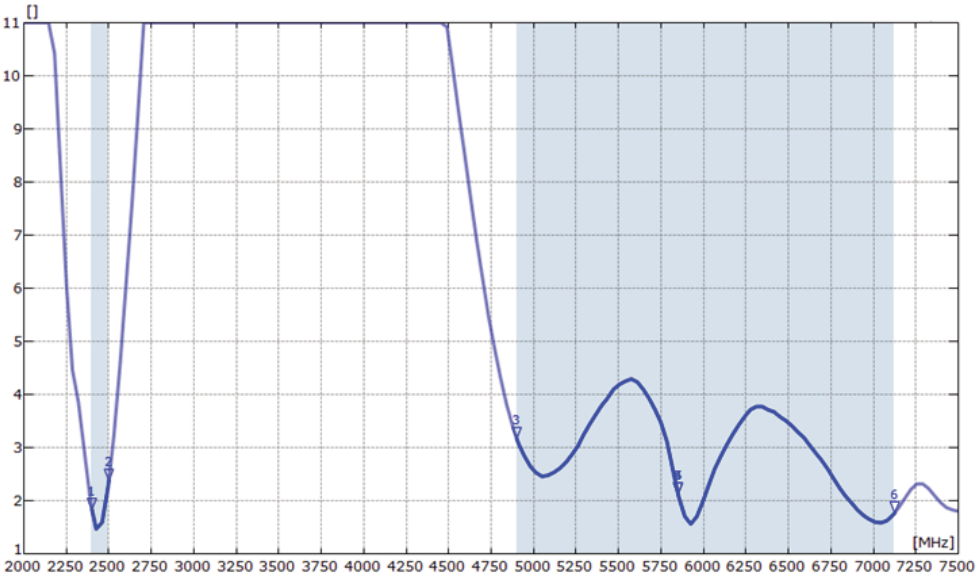
# 6. RF performance

## 6.1. Return loss



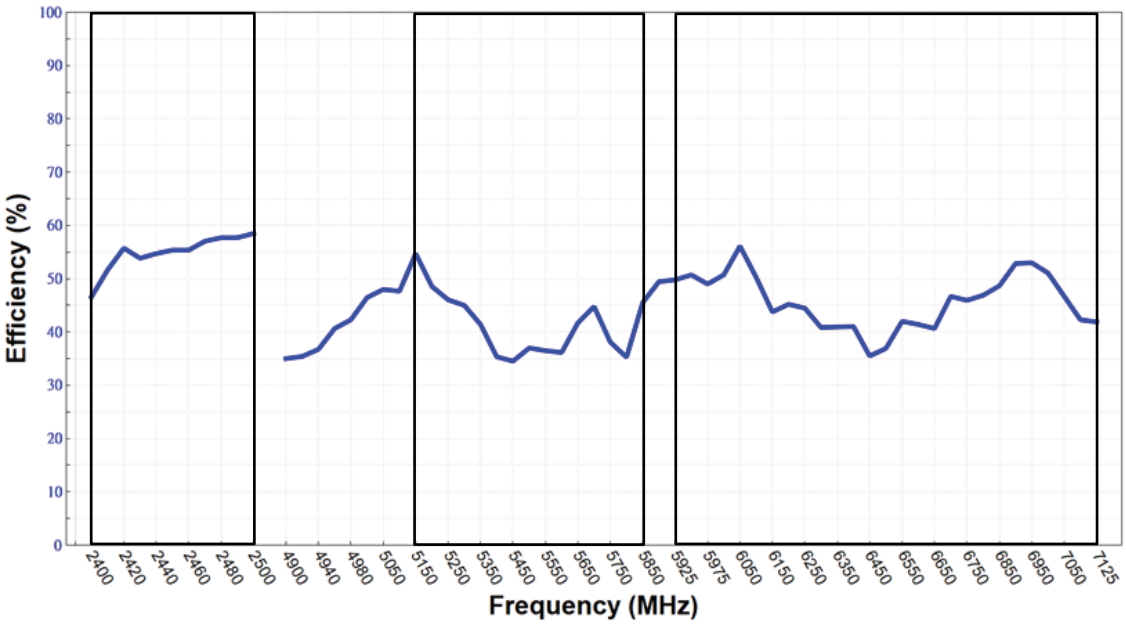

All data measured on Antenova's evaluation PCB Part No. SR43W081-EVB-1

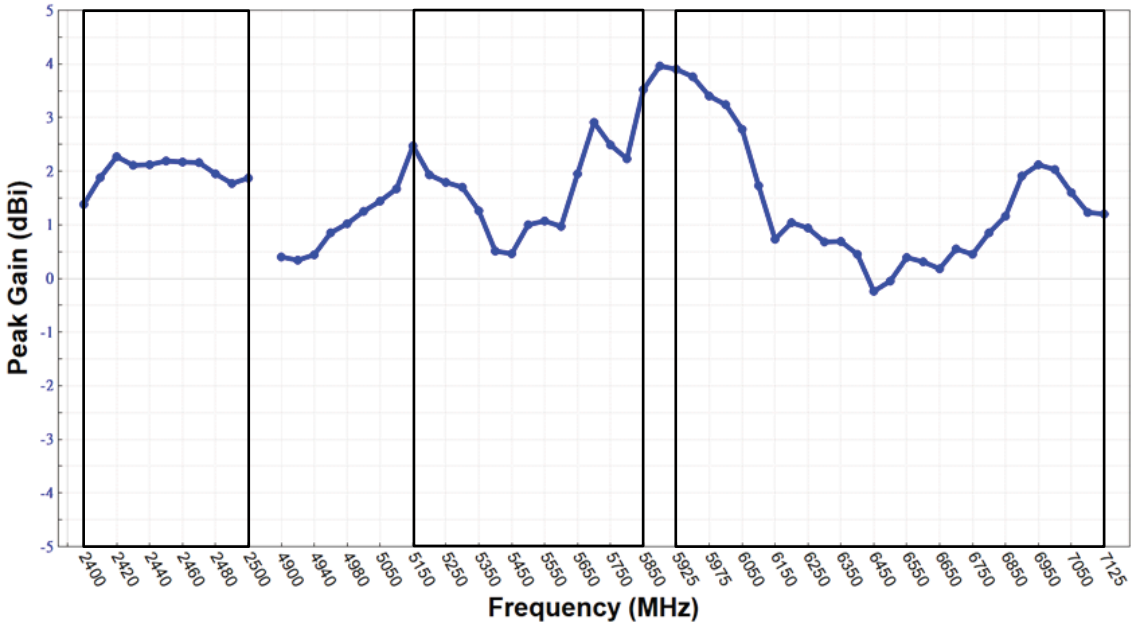
## 6.2. VSWR




All data measured on Antenova's evaluation PCB Part No. SR43W081-EVB-1

## 6.3. Efficiency



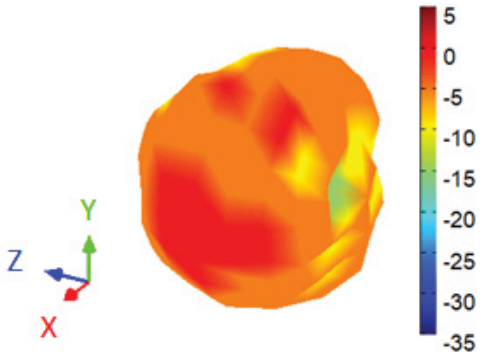



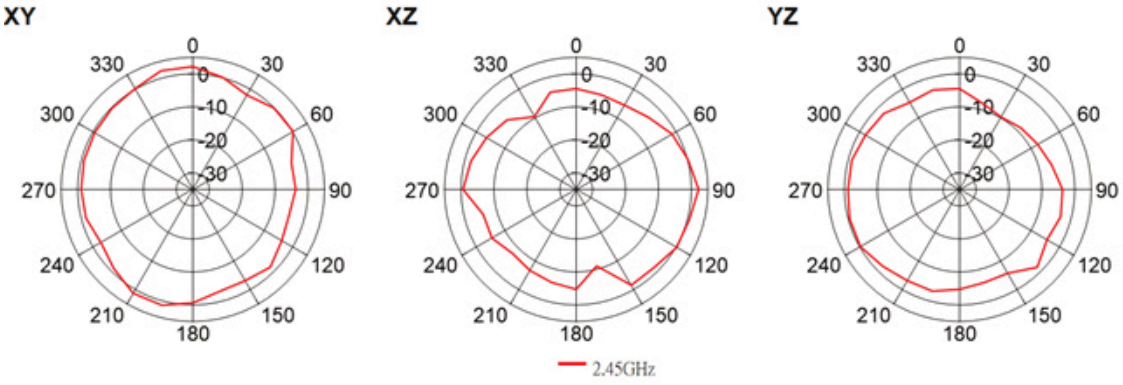

All data measured on Antenova's evaluation PCB Part No. SR43W081-EVB-1

# 6.4. Antenna pattern

## 6.4.1. 2450MHZ

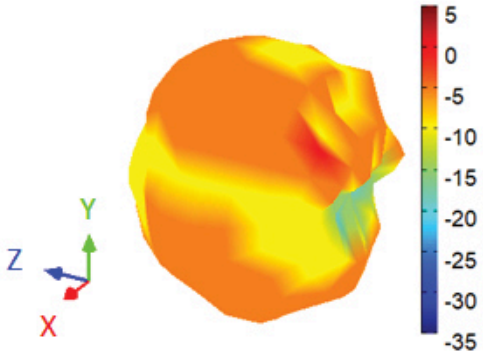
3D pattern at 2450MHz

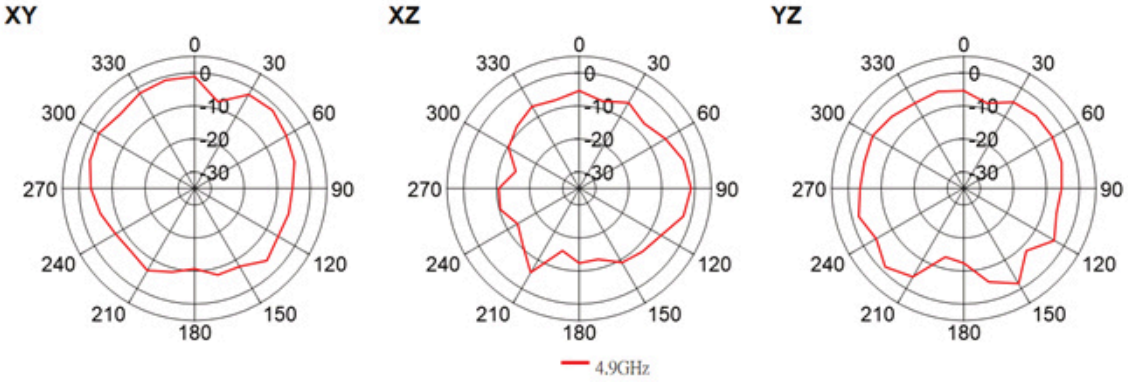



### 6.4.2. 4900MHZ

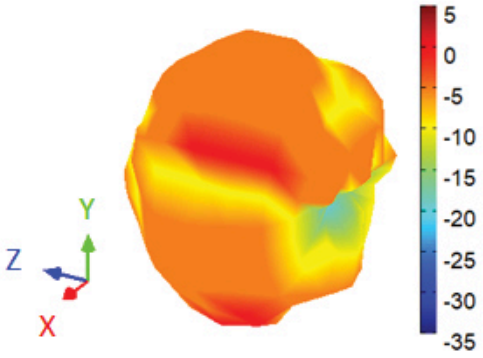
3D pattern at 4900MHZ MHz

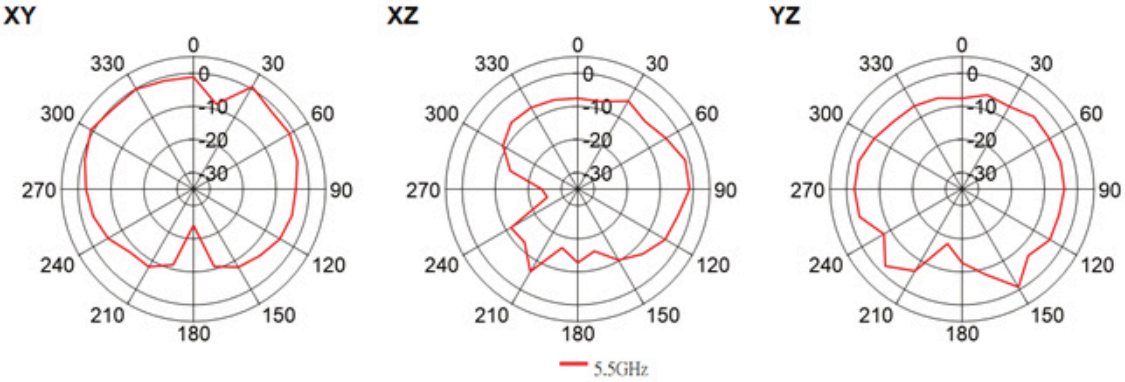



### 6.4.3. 5500MHZ

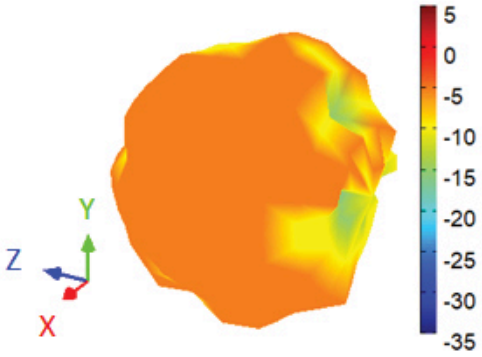
3D pattern at 5500MHz

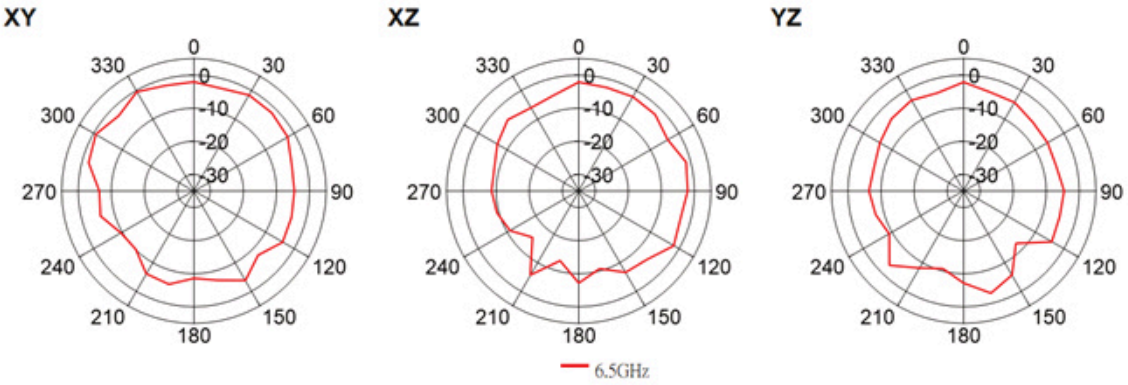



### 6.4.4. 6500MHZ

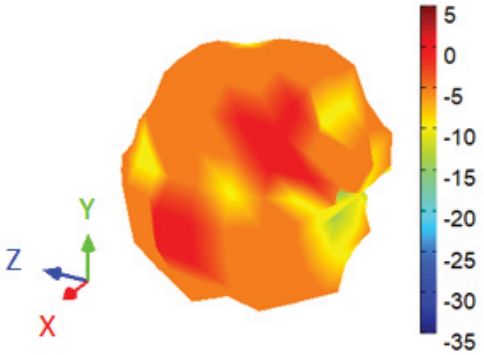
3D pattern at 6500MHz

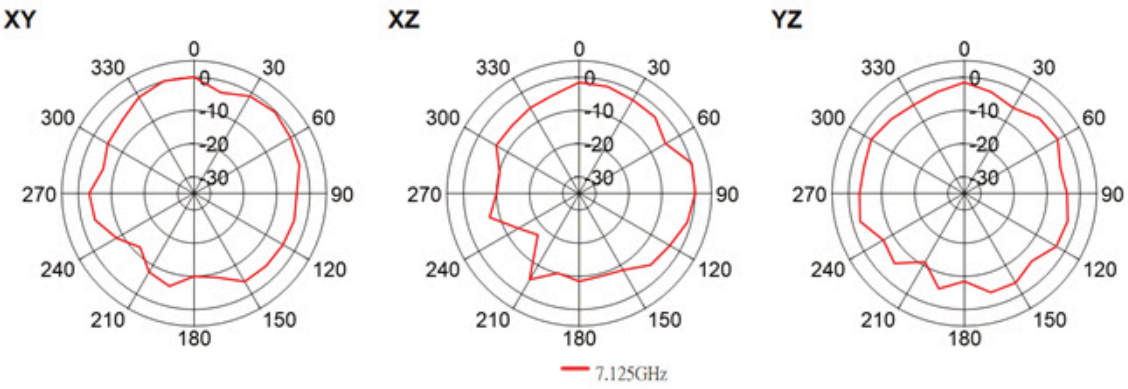



### 6.4.5. 7125MHZ

3D pattern at 7125MHz

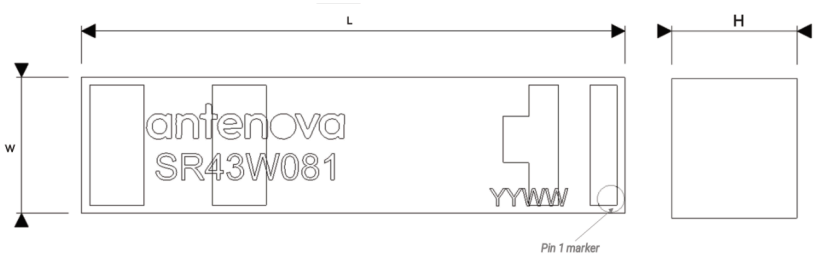



# 7. Antenna dimensions

## 7.1. Dimensions Assembled

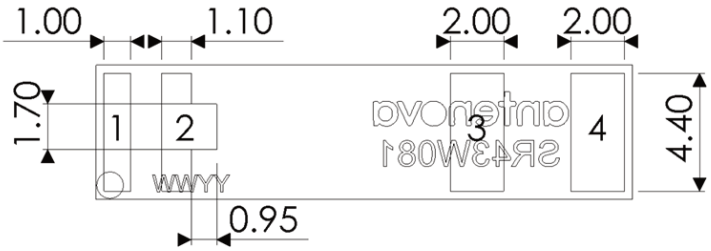
### Top view


| L | W | H |
|---|---|---|
| Length | Width | Height |
| 20 ± 0.1 | 5.0 ± 0.1 | 5.0 ± 0.2 |

All dimensions in (mm)

### Bottom view




1,2 copper pads are varied by different size (mm)
3,4 copper pads: 2.0 x 4.4 (mm)

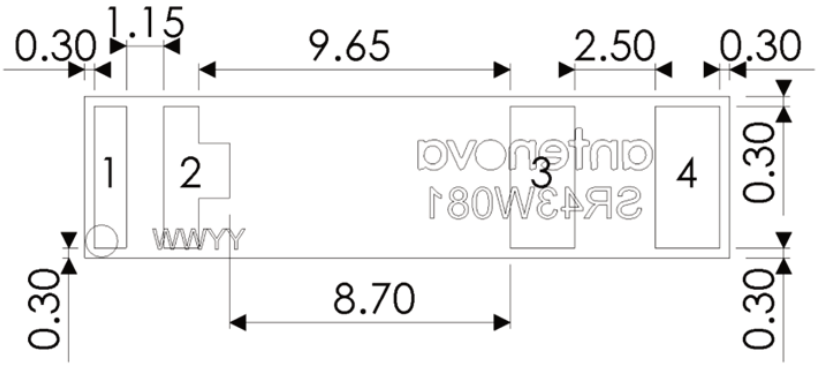
# 8. Schematic symbol and pin definition

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

| Pin | Description |
|---|---|
| 2 | Feed |
| 1 | GND |
| Others | Not used<br>(Mechanical only) |


# 9. Host PCB footprint

The recommended host PCB footprint is below.




1,2 copper pads are varied by different size (mm)
3,4 copper pads: 2.0 x 4.4 (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 ampliffers, etc, should also be designed to have a 50 Ω impedance

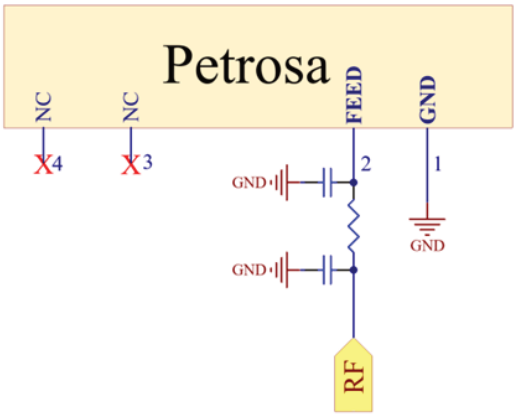
A co-planar transmission line can be designed using an online transmission line calculator tool, such as:

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.

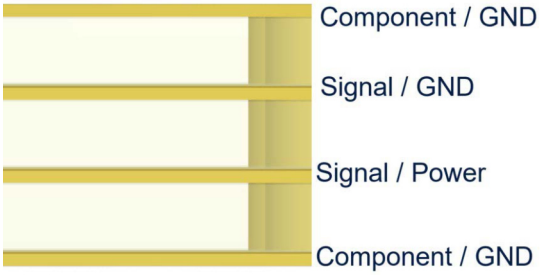


# 11. Antenna integration guide

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

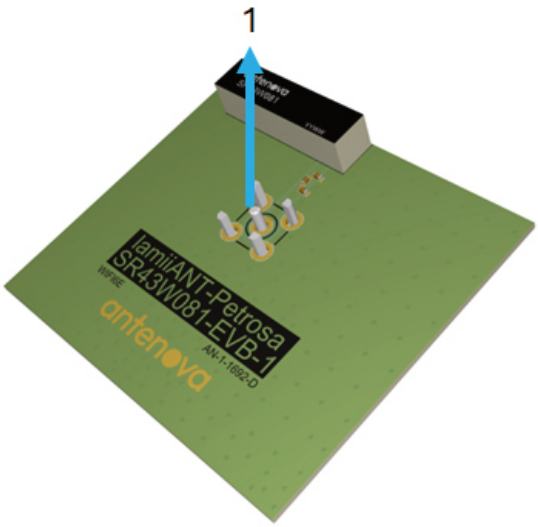
Follow placement guidance carefully, in addition Antenova provide technical support to help you through all stages of your design. Register for an account on https://ask.antenova.com/ to access technical support.




## 11.1. Antenna placement

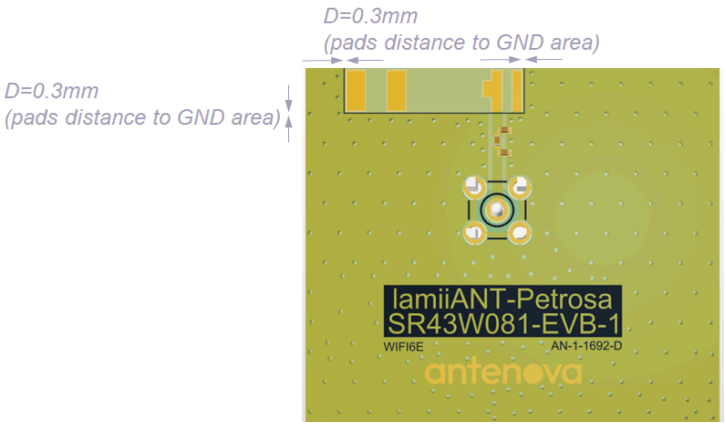
The antenna requires only top layer clearance ideally in one spatial direction in antenna area as shown below.

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 host PCB must be designed using the PCB footprint shown with the correct position. An example of the PCB layout shows the antenna footprint. Please note the dimensions given for the separation between the pads and the ground plane. Also note that pad layout on the bottom of the antenna, these dimensions are critical for the performance of the antenna.



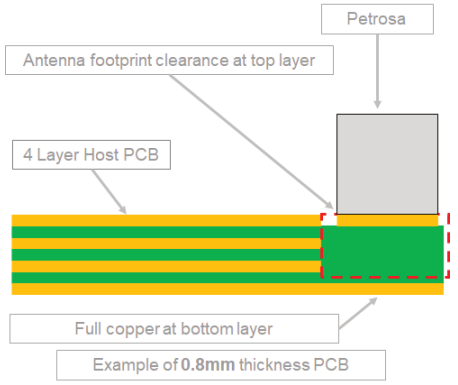
## 11.3. Host PCB clearance

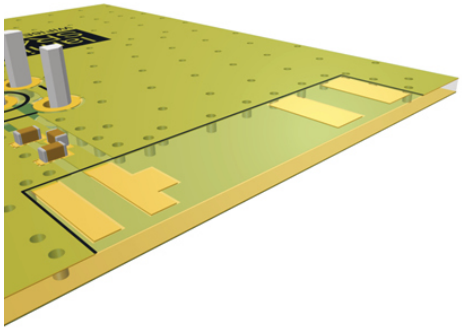
1. The area under the antenna should be free from any copper traces. There may be groundplane on bottom layer (0.8mm FR-4) or bottom two layers (1.6mm FR4). Refer to image below for further detail.

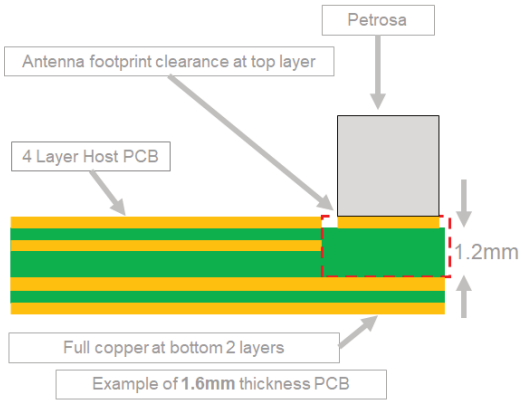
2. The area directly below the antenna should be free from any copper traces. Ground plane may be used as shown in Table X.

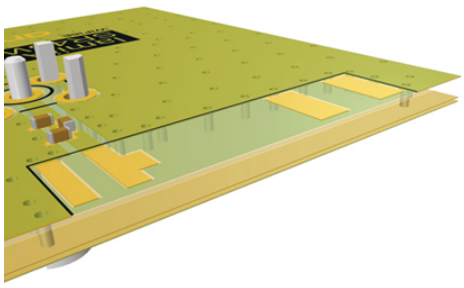
Table X

| 4-Layer FR-4 | 0.8mm | 1.6m |
|---|---|---|
| Top Layer | No | No |
| Layer 2 | No | No |
| Layer 3 | No | Yes |
| Bottom Layer | Yes | Yes |



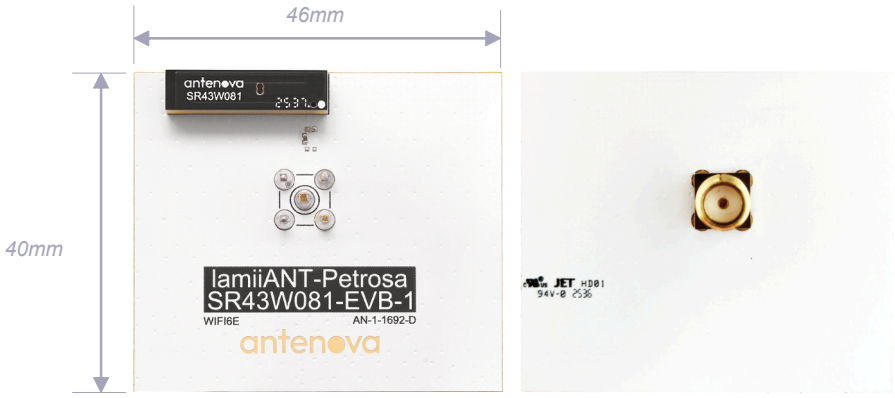


# 12. Reference board

A reference board is used for evaluating the antenna SR43W081 and it includes an SMA female connector. (Part number SR43W081-EVB-1 )

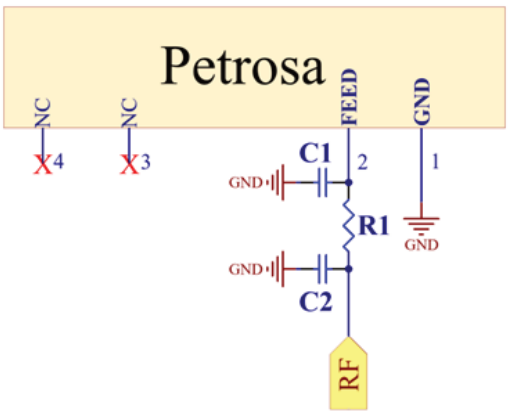
To order a reference board
Please see antenova.com




Top view Back view

## 12.1. Reference board matching circuit

| Designator | Type | Value | Description |
|---|---|---|---|
| C1 | Capacitor | 0.2 pF | Murata GJM15 series |
| C2 | Not Fitted | Not Fitted | Not Fitted |
| R1 | Resistor | 0 ohm | Non-specific (0402) |



# 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 than20 seconds is permitted.
- The antenna should not be exposed to temperatures exceeding 120 °C morethan 3 times during the soldering process.

# 14. Hazardous material regulation conformance

The antenna has been tested to conform to RoHS and REACH requirements.

A certiffcate of conformance is available from Antenova's website.

# 15. Packaging

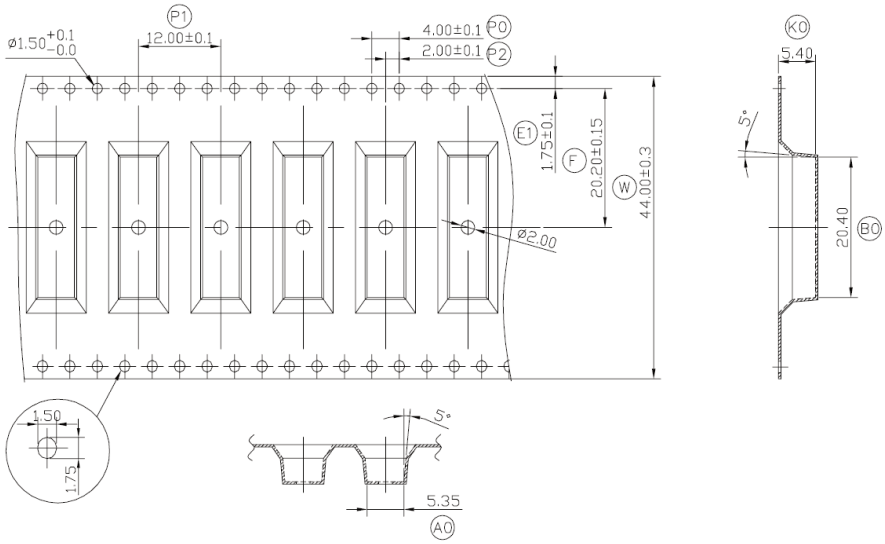
## 15.1. Optimal storage conditions

| | |
|---|---|
| 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



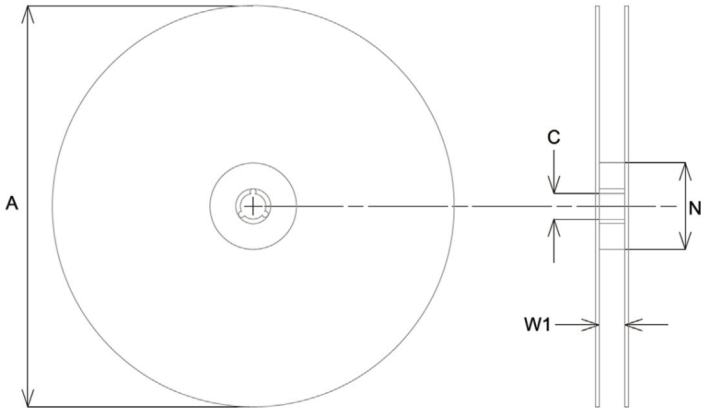

| P0 | P1 | P2 | A0 | K0 | B0 |
|---|---|---|---|---|---|
| 4.00± 0.10 | 12.00 ± 0.10 | 2.00 ± 0.10 | 5.35 ± 0.10 | 5.40 ± 0.10 | 20.40 ± 0.10 |

| 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 holders |

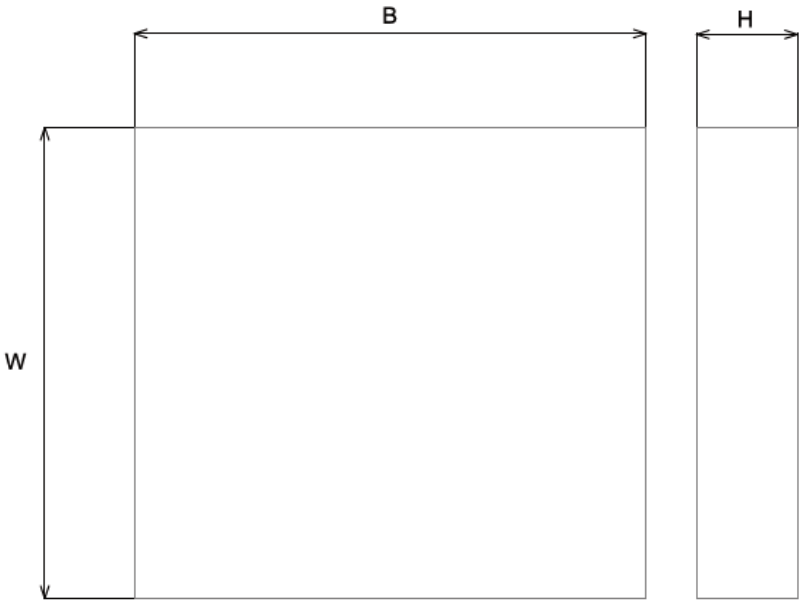
## 15.3. Reel dimensions




| A | C | N | W1 |
|---|---|---|---|
| 330.0 ± 2.0 | 13.0 ± 0.5/-0.2 | 178.0 ± 0.2 | 44 ± 2.0/-0 |

All dimensions in (mm)

## 15.4. Box Dimensions




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

### 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.

Certificate No. 11070
ISO 9001



## Datasheet version

1.10 released 6th March 2026

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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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+ 44 (0) 23 9400 1023

Global headquarters
Antenova Ltd, 7 The Briars,
Waterberry Drive, Waterlooville,
Hampshire, PO7 7YH