



Tri-band Wi-Fi SMD Antenna

SZP-C-1W11/SZP-C-1W12

WLAN/Wi-Fi 6E 2400-2500; 5100-7125MHz

Description

ADARA1 and 2, for the complete Wi-Fi solution, Wi-Fi 6 and 6E applications. For use internal to a device which requires an integrated antenna solution. High performance with a small form factor for simple integration.

A corner mounted SMD antenna. Also ideal for MIMO applications using ADARA2 as a second antenna.

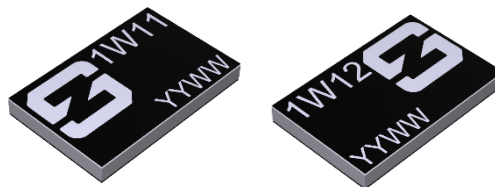
- For WLAN Applications 2.4-2.5GHz; 4.9-5.85GHz; 5.90 – 7.125GHz
- Ideal for MIMO systems 2x2, 4x4, 8x8.
- Simple integration, plug and operate the device without designing onboard antenna.
- Small form factor of 9.0 x 5.8 x 1.1 (mm) including clearance area.
- ADARA 1 left and ADARA 2 right corner version

Applications

Access Points
Smart Grid

M2M Industrial
Healthcare

Smart Meters
Set Top Box





General Specifications

Mechanical Specifications

Part Number	SZP-C-1W11/SZP-C-1W12
Name	ADARA1/ADARA2
Dimensions	9.0 x 5.8 x 1.1 (mm)
Required Clearance area	9.0 x 5.8 (mm)
Weight	<0.2g
Antenna Type	Surface Mount Device

RF Specifications*

Band	Frequency Range (MHz)	Efficiency (%)	Peak Gain (dBi)	Impedance	Polarization
2.4GHz Wi-Fi	2400-2500	>48	0.80	50Ω	Linear
5.8GHz Wi-Fi	5150-5850	>50	2.48		
7.1Ghz Wi-Fi	5925-7125	>55	2.82		

*All performance stated is measured of SZDV-C-1W11 evaluation kit

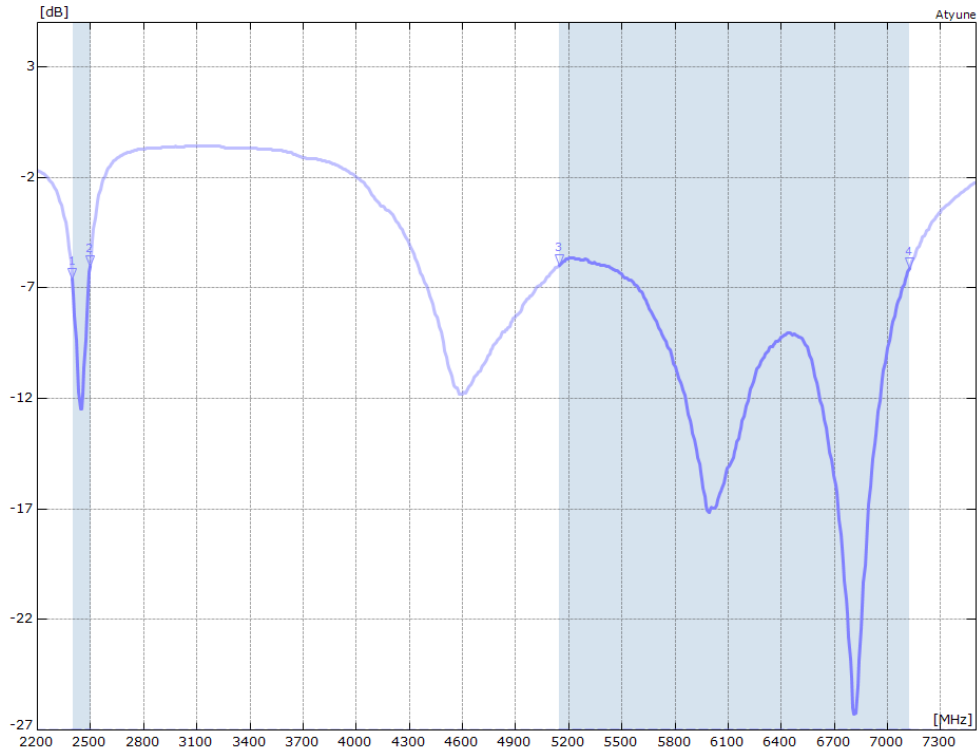
Environmental Specifications

Operational Temperature	-40 to +125 (°C)
Storage Temperature	-10 to +40 (°C)
Relative Humidity	≤75%

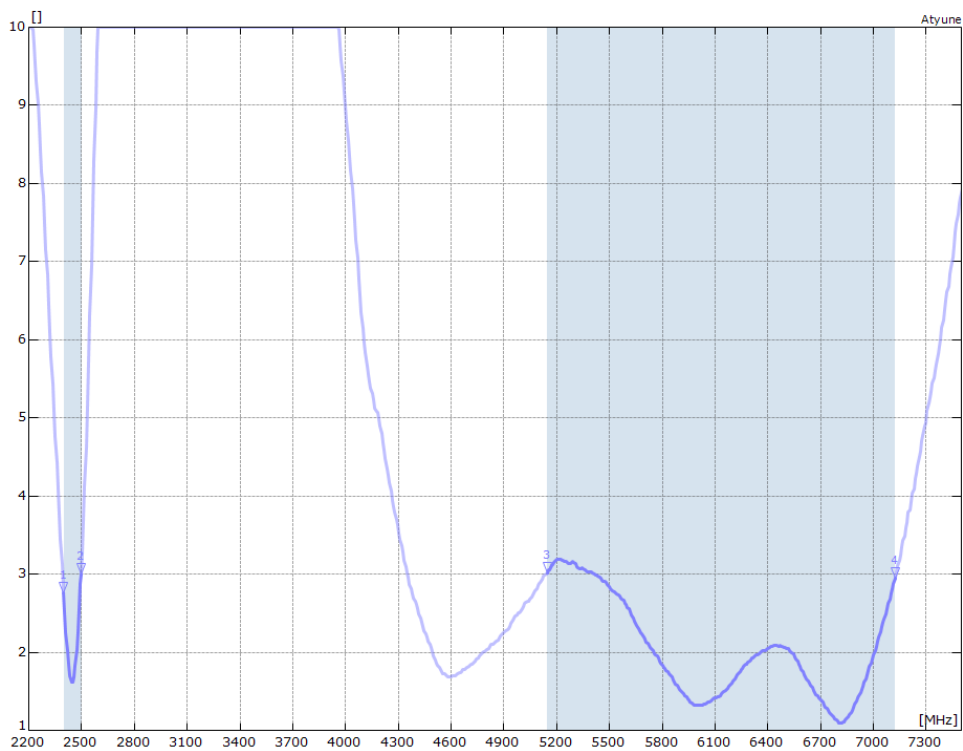


RF Characteristics

S11 Parameter



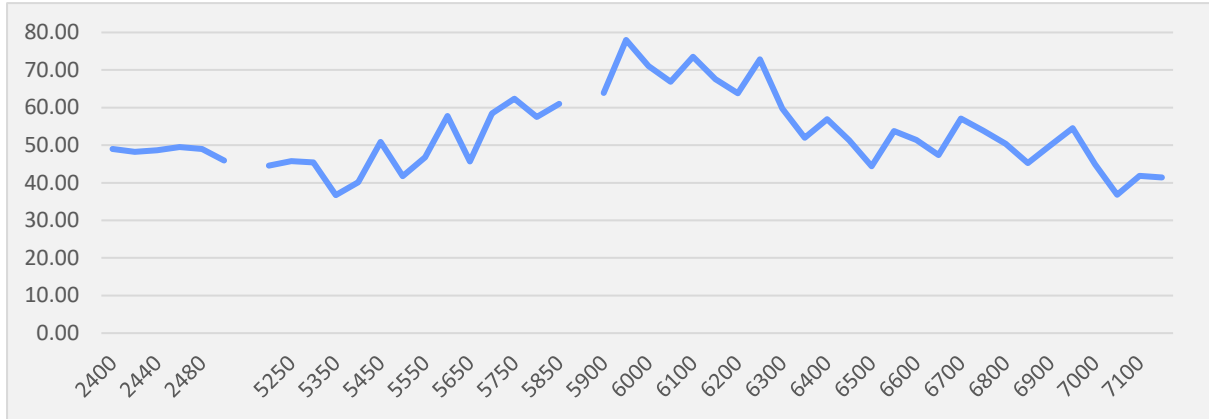
VSWR



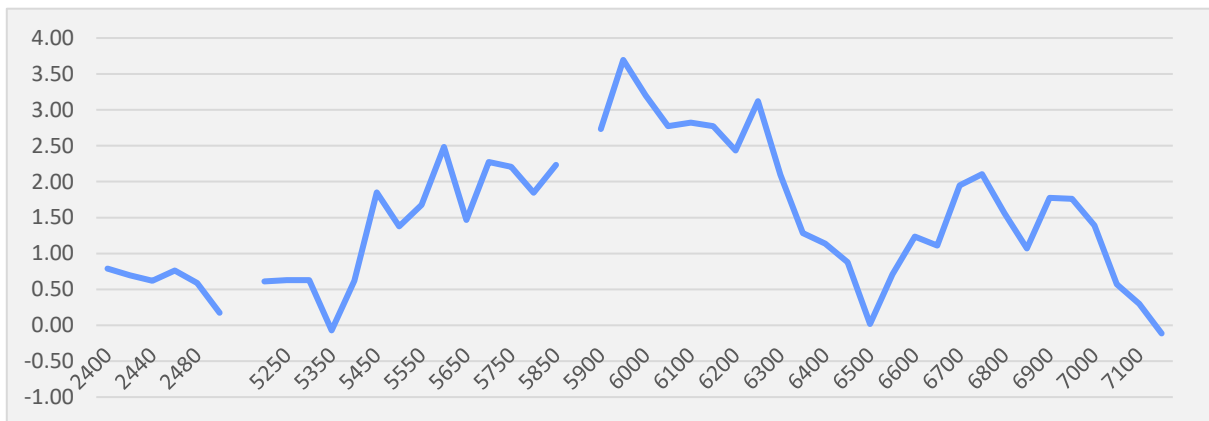


Antenna Performance

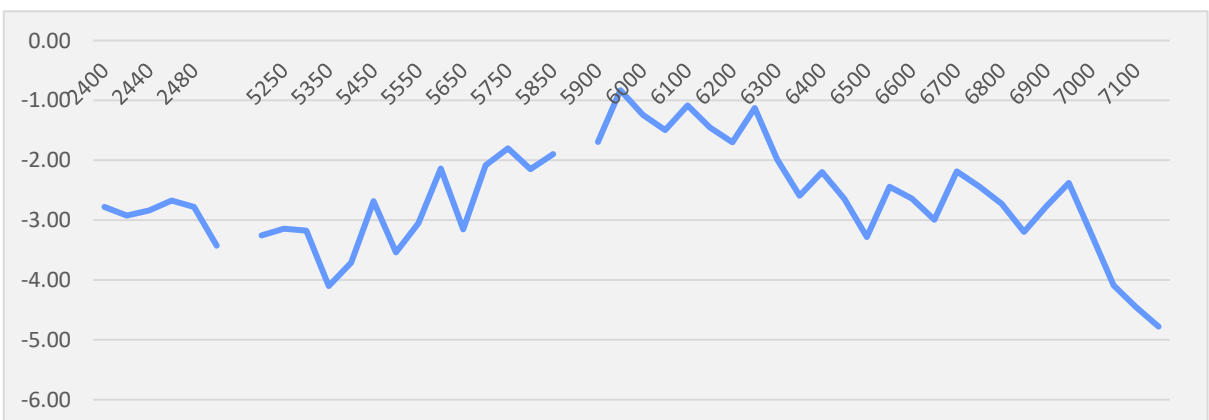
Efficiency



Peak Gain



Average Gain

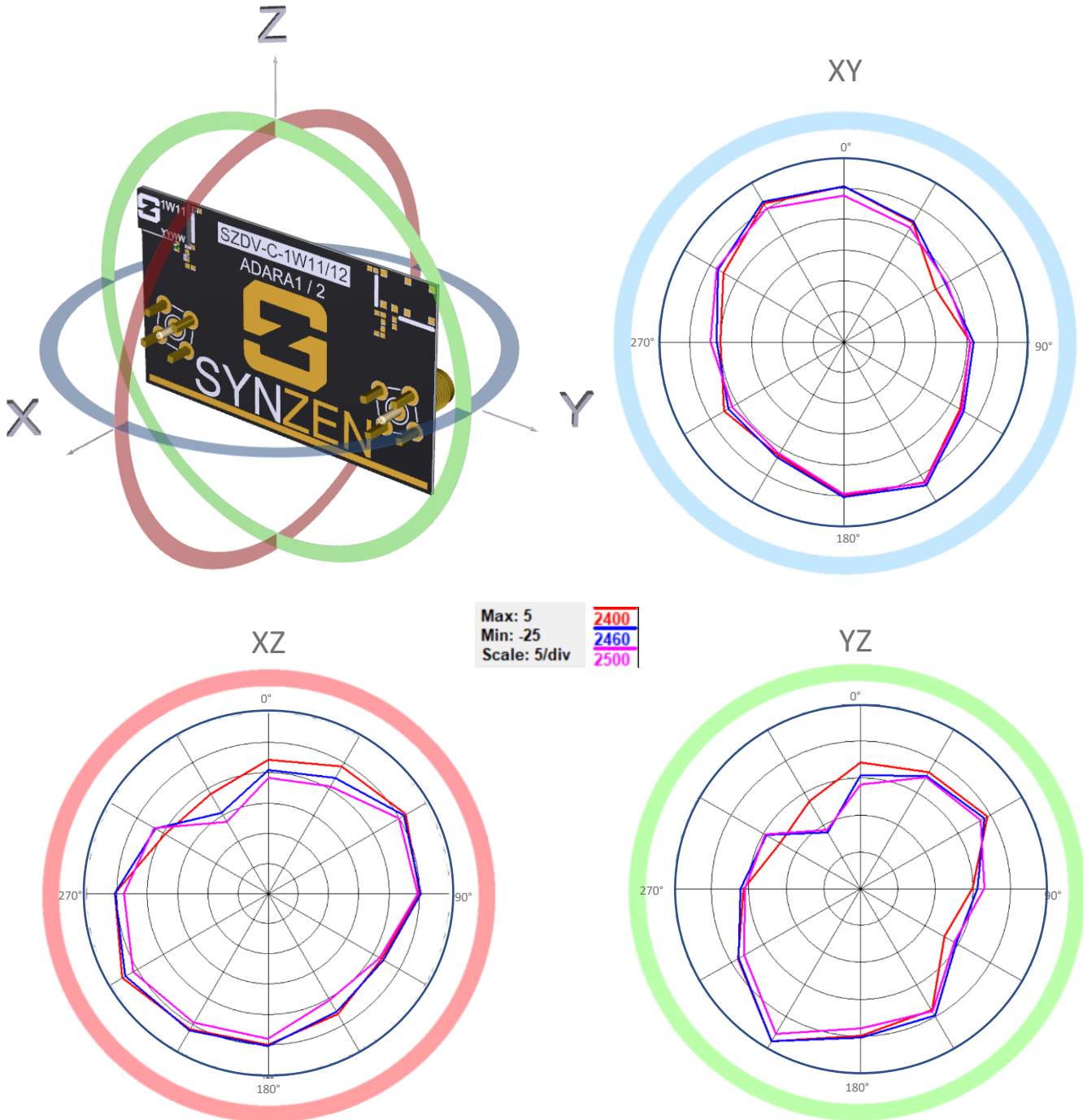




Radiated Performance

2D Polar Plot 2400-2500

The data shown was measured on Synzen EVK (SZDV-C-1W11)

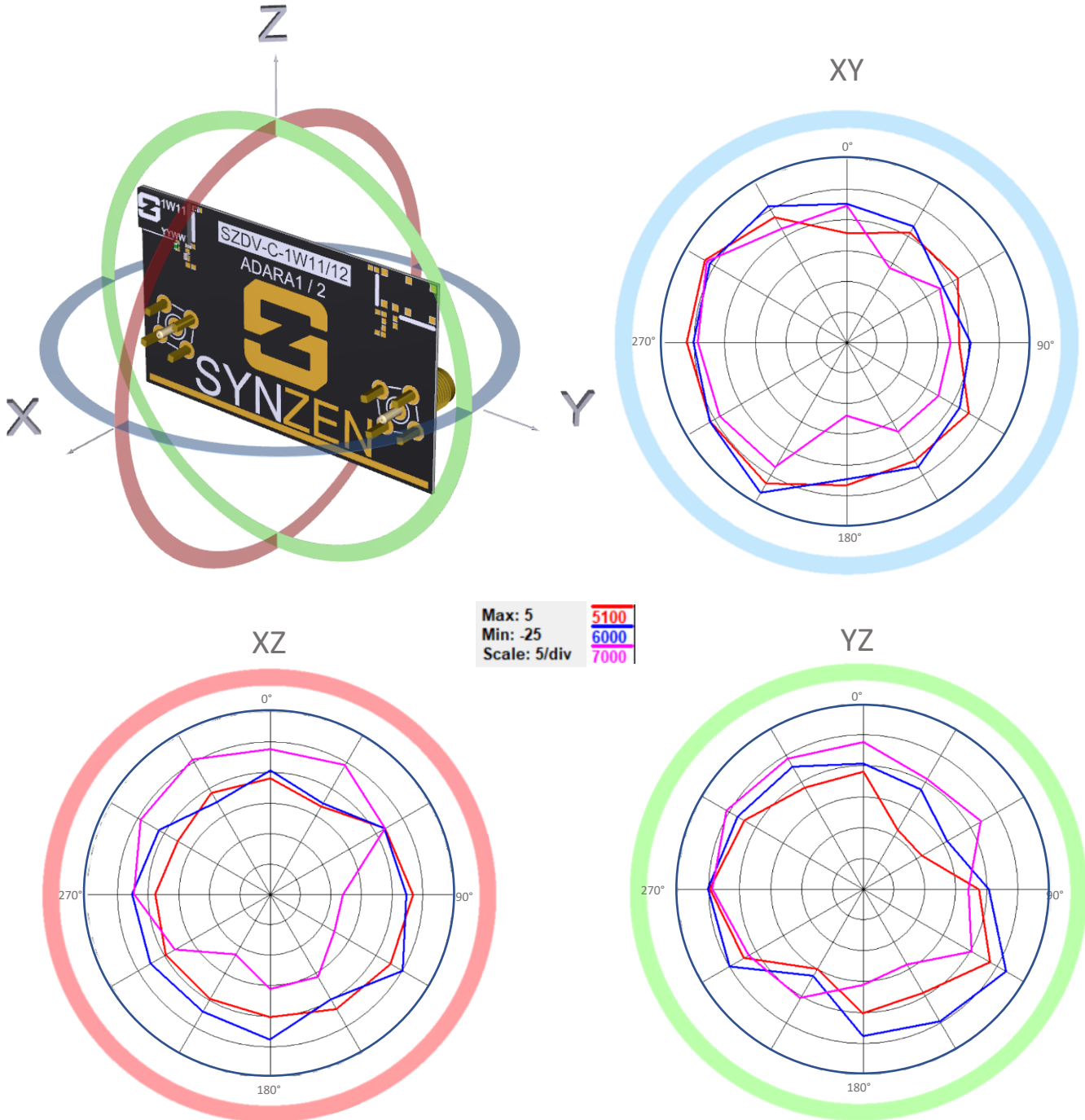




Radiated Performance

2D Polar Plot 5100-7125

The data shown was measured on Synzen EVK (SZDV-C-1W11)

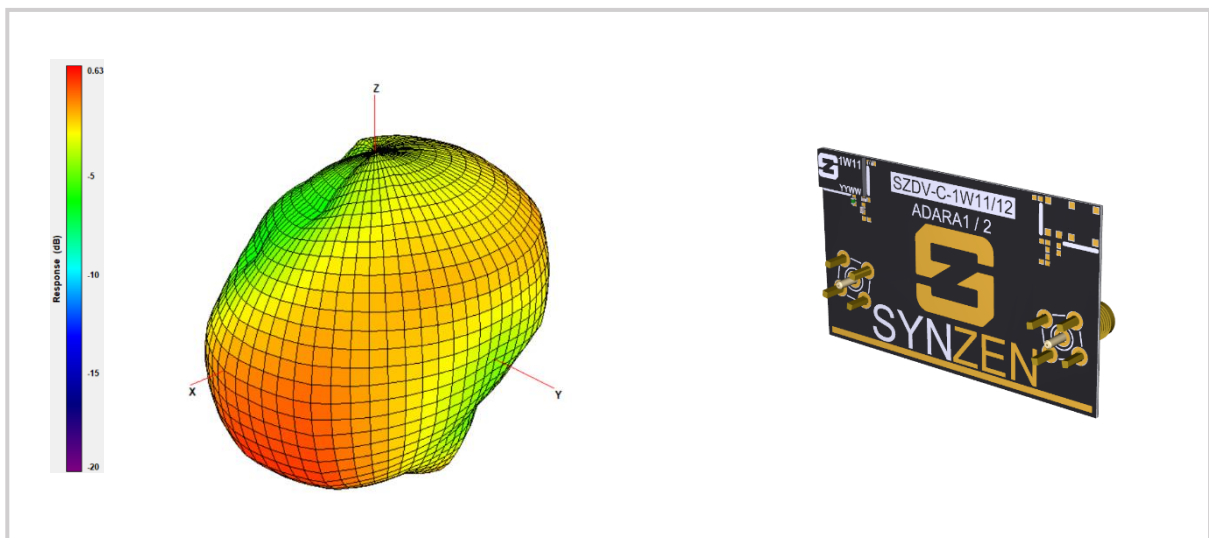
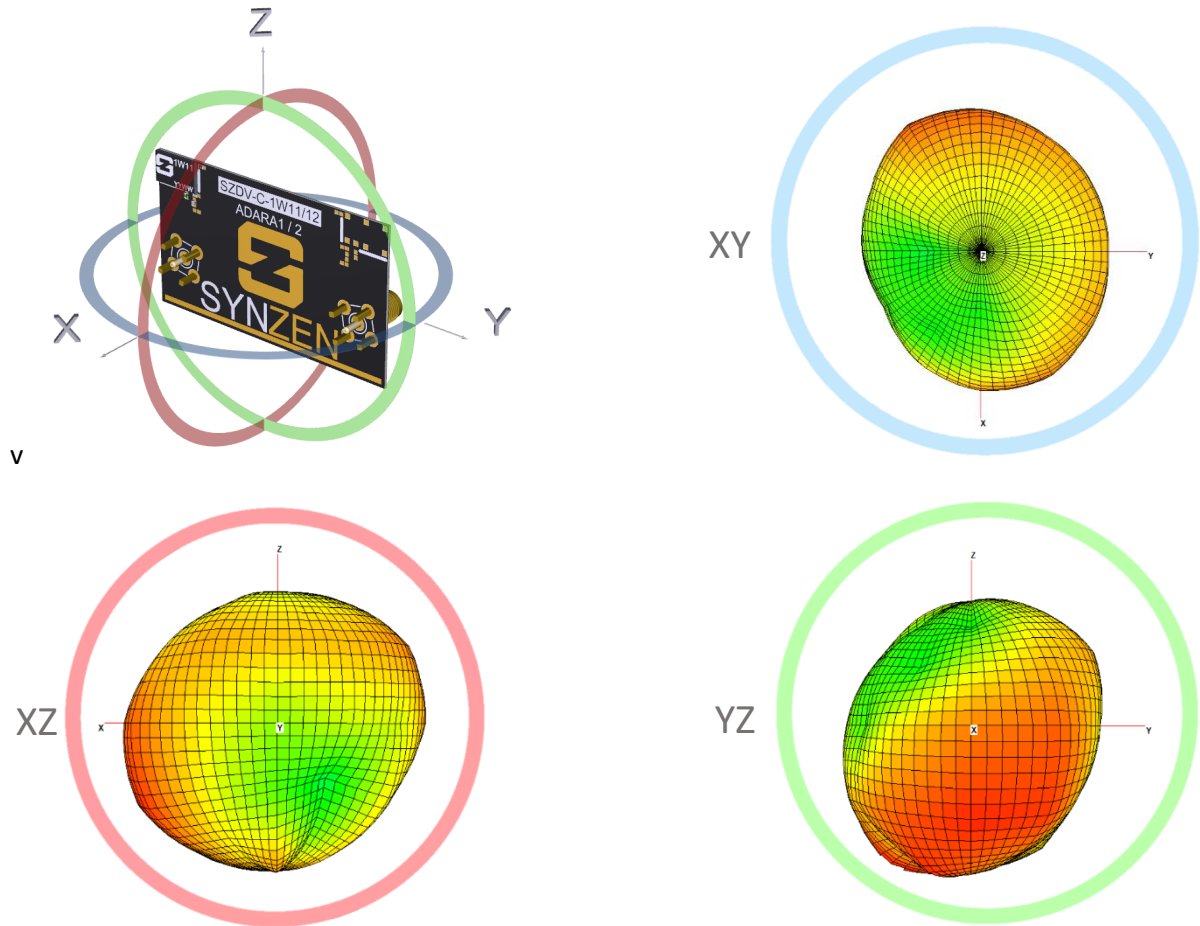




Radiated Performance

3D Radiation Pattern at 2450MHz

The data shown was measured on Synzen EVK (SZDV-C-1W11). The frequency point shown here is 2450MHz.

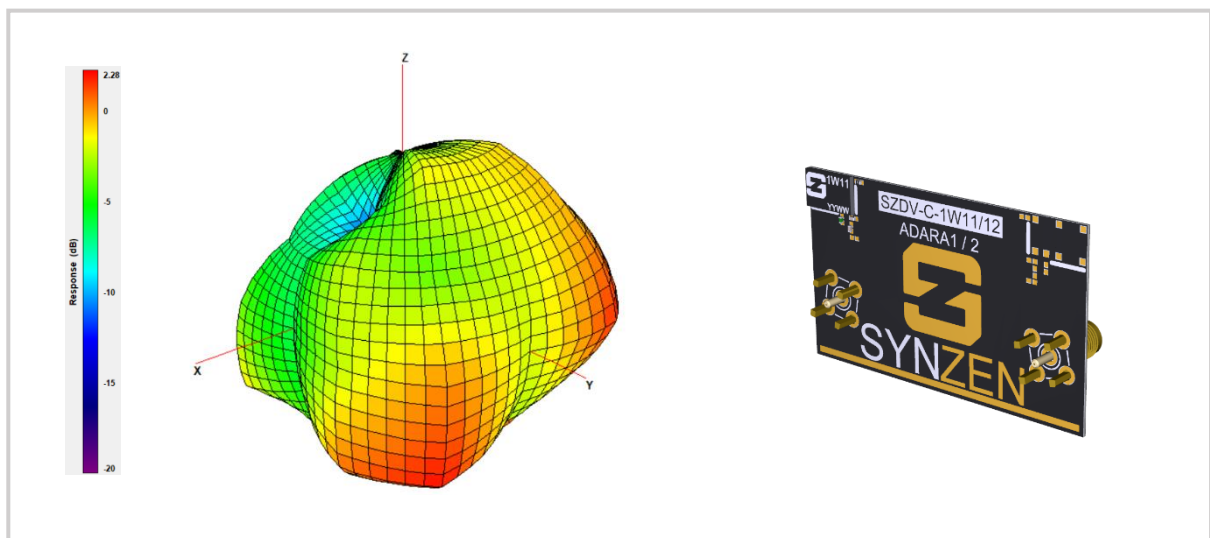
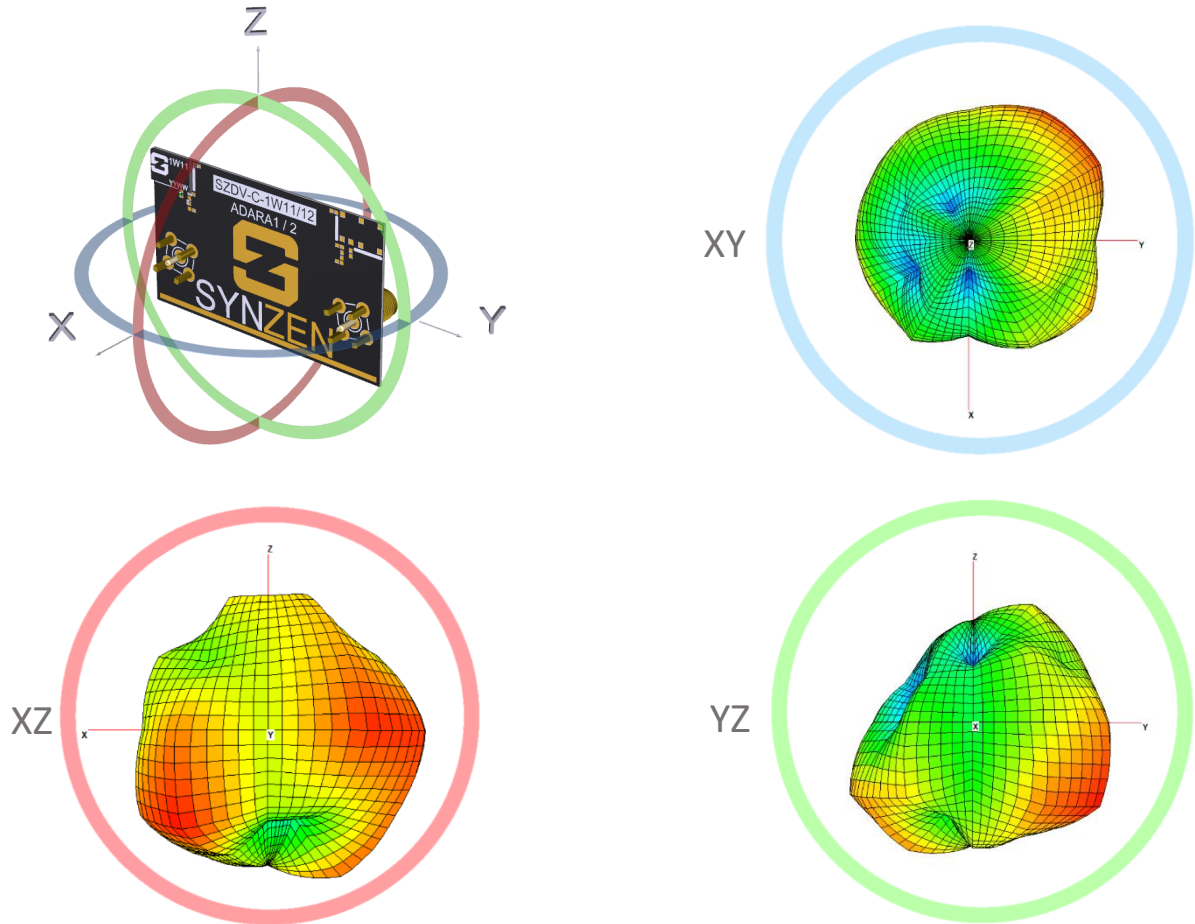




Radiated Performance

3D Radiation Pattern at 5500MHz

The data shown was measured on Synzen EVK (SZDV-C-1W11). The frequency point shown here is 5700MHz.

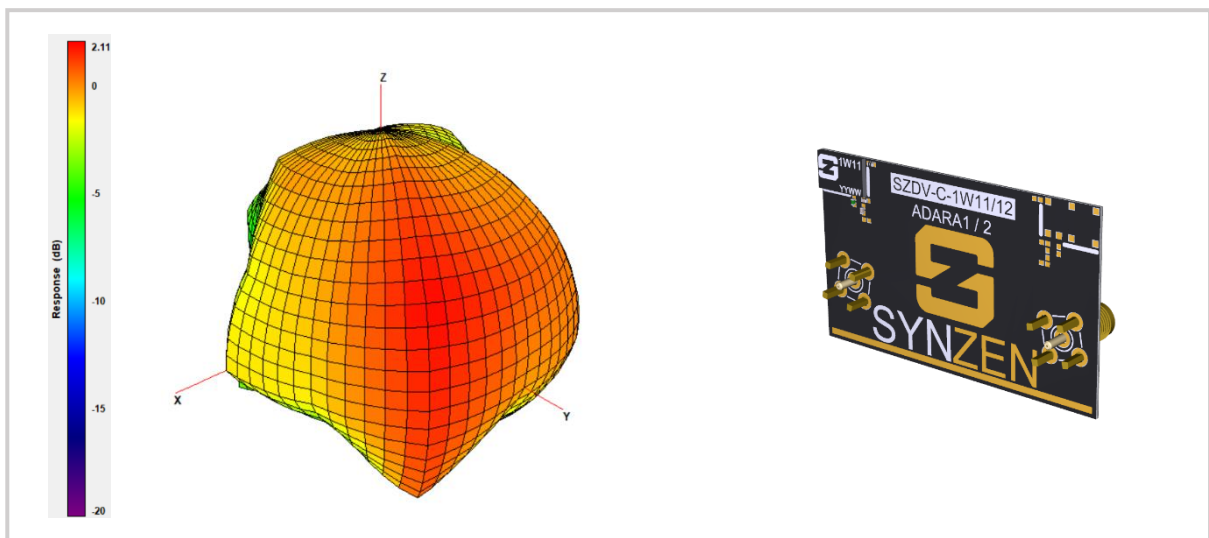
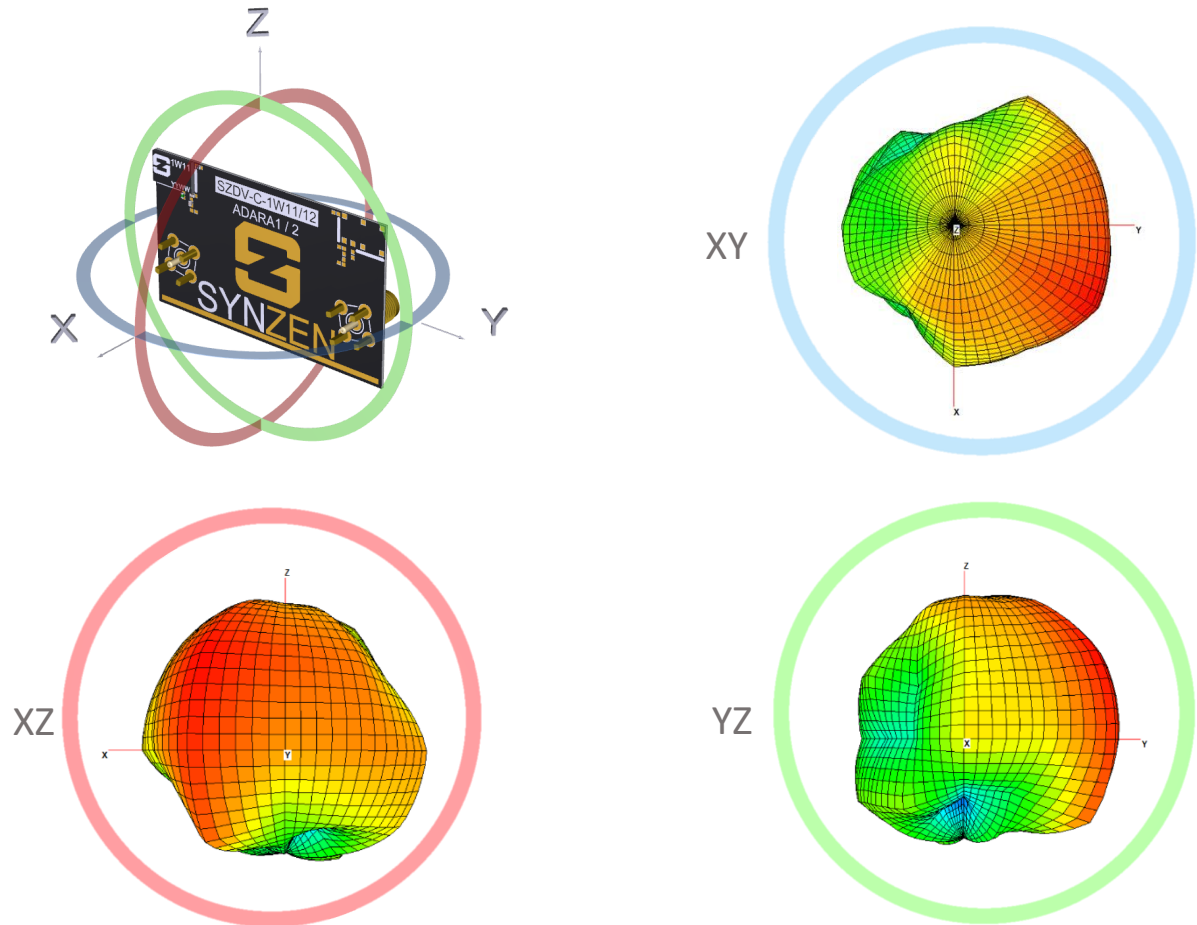




Radiated Performance

3D Radiation Pattern at 6700MHz

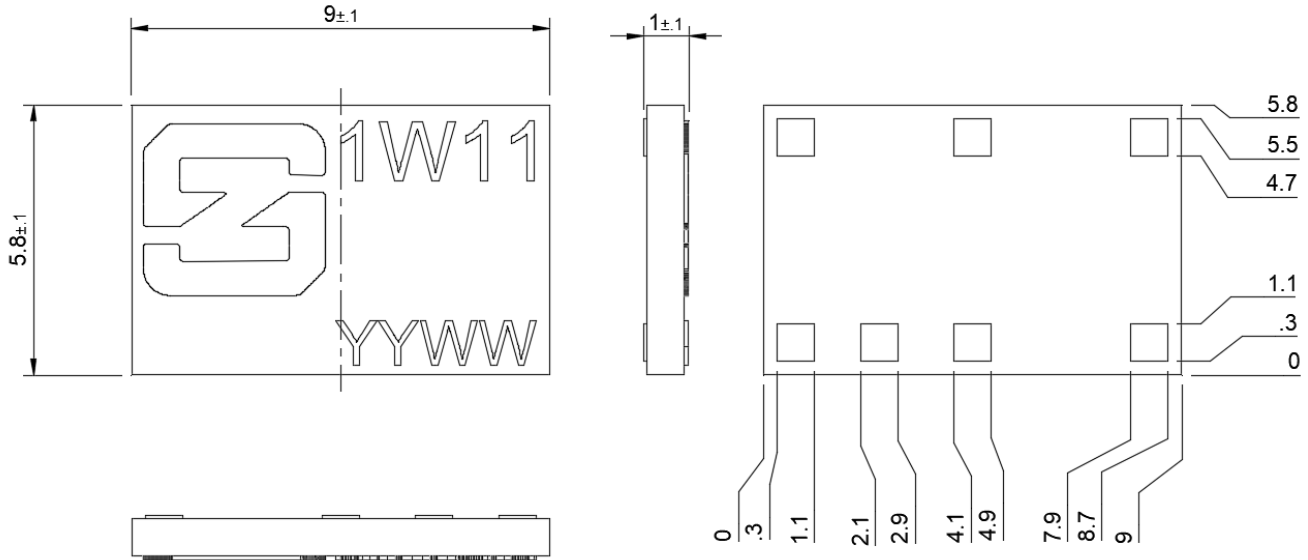
The data shown was measured on Synzen EVK (SZDV-C-1W11). The frequency point shown here is 6700MHz.





Mechanical

Antenna Mechanical Drawing



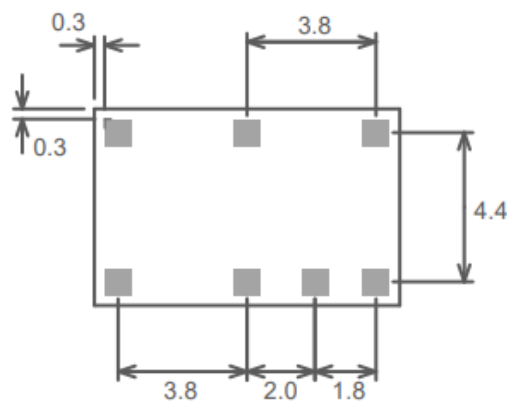
All dimensions in mm

ADARA 2 is a mirror image of ADARA 1

Required Host PCB Footprint

The host PCB requires the footprint shown below. PCB library files and DXF is available from our website www.synzen.com.tw/products.

The required clearance for the host PCB is 9.0×5.8 (mm) on all layers.



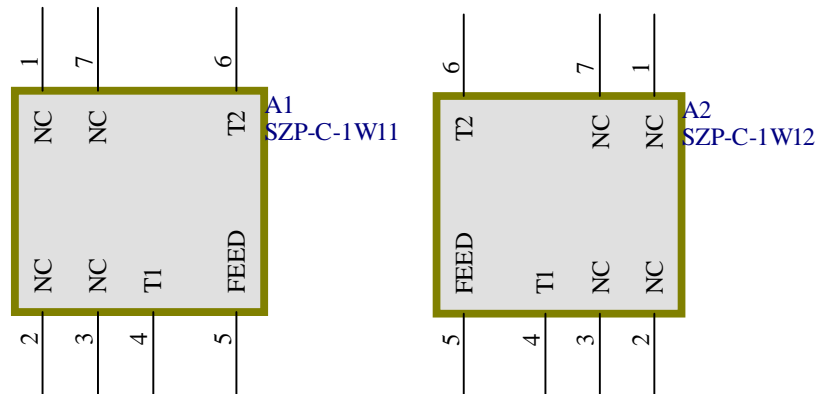
ALL PADS = 0.8×0.8 (MM)



Antenna Pinout

SZP-C-1W11/12 Schematic Symbol

The schematic symbol for the antenna is shown below with a description of each pin.



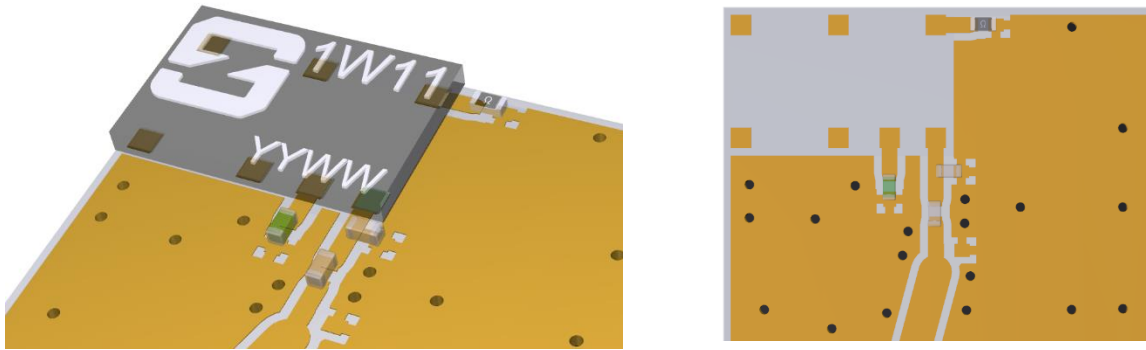
Pin	Description
1,2,3,7	Not Connected for mechanical strength only
4	T1 = Tuning Pin 1
5	RF Feed
6	T2 = Tuning Pin 2



PCB Layout Requirements

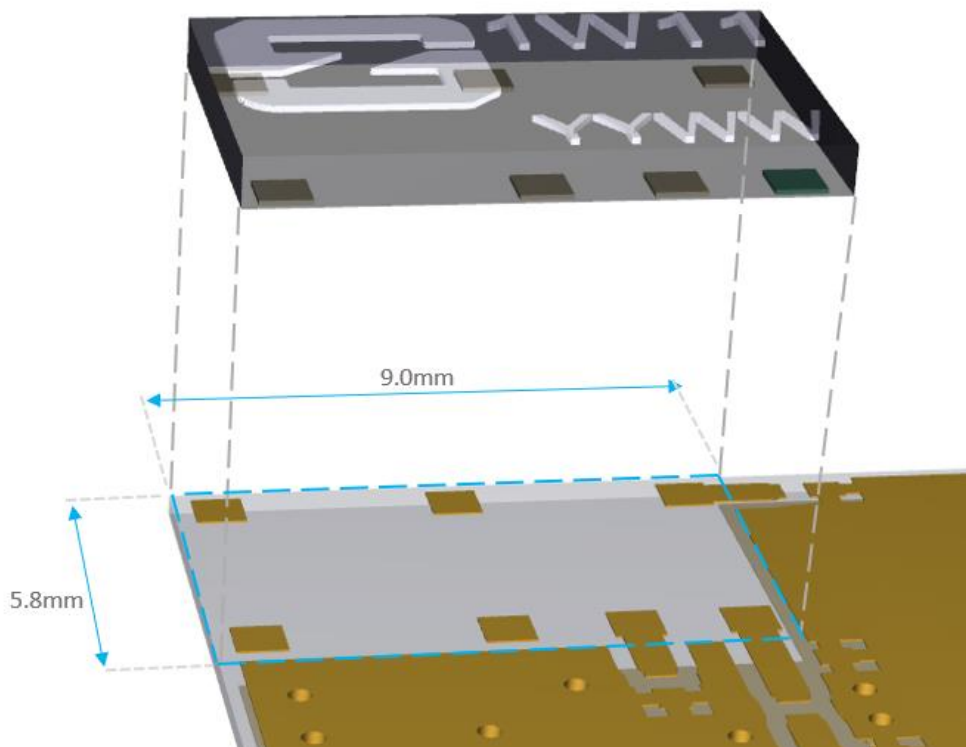
Placement

The antenna is designed to function placed at the PCB corner.



Required Clearance

A clearance is required through all PCB layers and is identical to the antenna size. For any components such as battery or display, these must avoid this area.



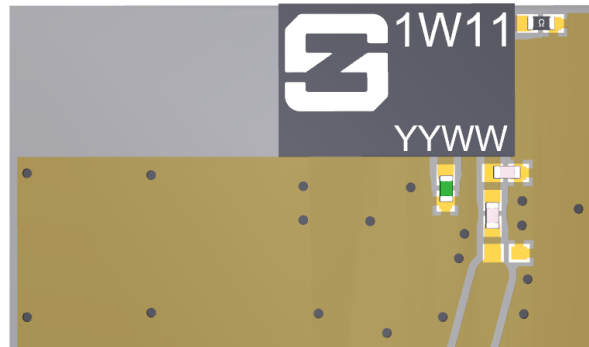


PCB Layout Requirements

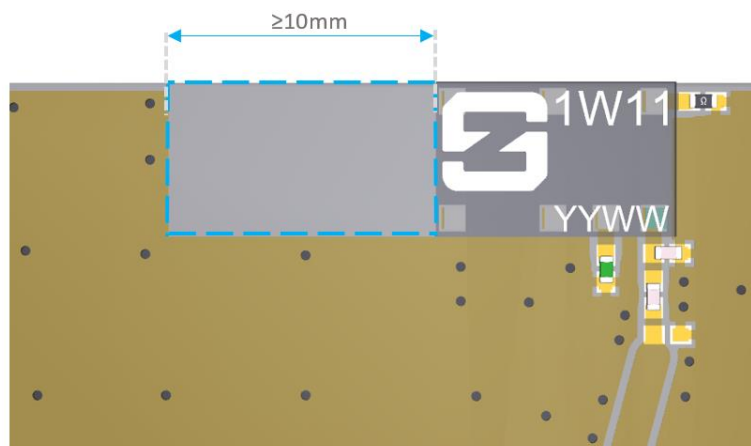
Offset Placement

If the antenna is unable to be placed into the PCB corner, then the following rules should be followed to ensure performance.

- 1) Antenna away from corner but clearance extended all the way to PCB edge.



- 2) Antenna away from corner but clearance partially extended but required to keep a minimum of 10mm clearance as shown.

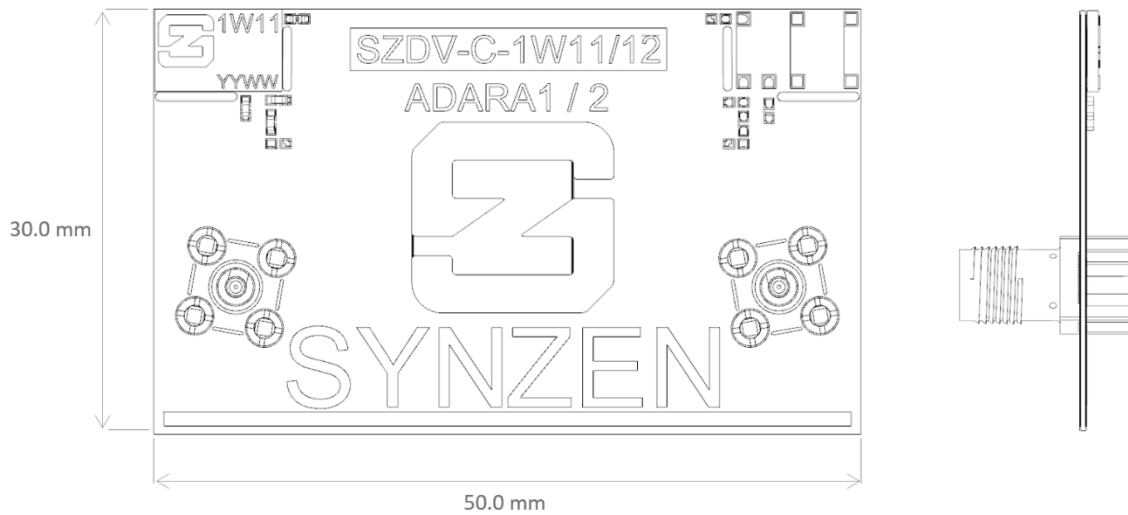




Evaluation Kit

SZDV-C-1W11/12 Evaluation Kit

The SZDV-C-1W11/12 evaluation kit is a PCBA with the antenna (SZP-C-1W11/12) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.



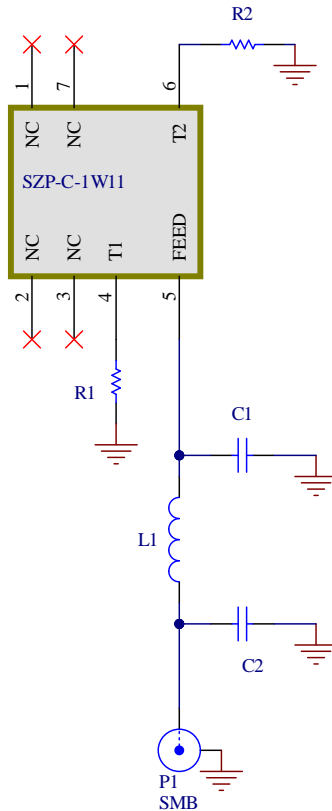
A	SZP-C-1W11 (Antenna)
B	Host PCB
C	SMA Connector
D	Matching Circuit



Evaluation Kit Schematic

Evaluation Kit Matching Circuit

The circuit of the EVK kit along with the BOM is shown below. The matching network topology should be used on the device host PCB although the matching values will be dependent on the host PCB and device environment. Synzen provide a matching service to optimise your device to ensure the best performance, please contact sales@synzen.com.tw for more information.

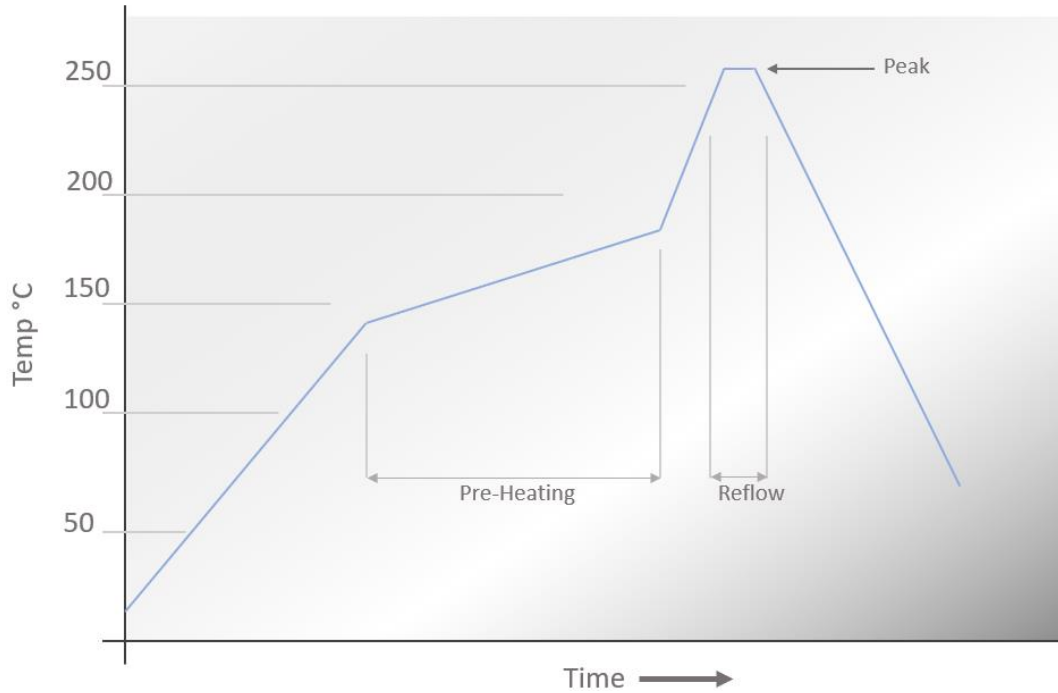


Designator	Component Type	Value	Size	Manufacturing Part No.
A1	Antenna	ADARA1	-	SZP-C-1W11
R1, R2	Resistor	0R	0402	Nonspecific part
L1	Inductor		0402	
C1, C2	NA	DNP	0402	Not Fitted
J1	SMA Connector		-	ACE solution A3SAFTST135



Soldering

Reflow Profile



Pre-Heating	130 - 180°C	50 to 190 seconds
Reflow	>220 °C	50 to 160 seconds
Peak Temperature	260 °C	15 to 45 seconds



Packaging

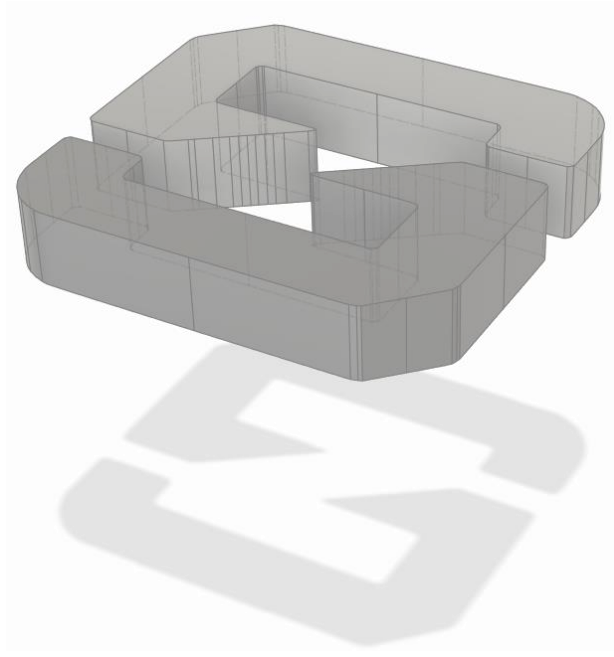
Tape and Reel



Environmental

Material Regulation

The antenna has been tested to conform to RoHS requirements. A certificate of conformance is available upon request.



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