



2.45GHz Ceramic Chip Antenna

SZC-C-3W17

WLAN/Bluetooth/ISM: 2.4.0 – 2.50 GHz

Description

RISHA, for the ultimate compact and low-profile Wi-Fi/Bluetooth solution, RISHA was developed to be compact but high performing on small devices and ideal for wearable applications.

- For Wi-Fi/Bluetooth/ISM applications (2.4 to 2.5GHz)
- Resistant to de-tuning
- Small form factor of 1.6 x 0.8 x 0.8 (mm).
- Ideal for smaller wearable designs.
- Suitable for sealing with resin / potting compounds.

Typical Applications

Industrial/Scientific/Medical
Access Point
Smart Grid

Wearables
Headsets
ODBII

Smart Meters
Healthcare
Tablets





General Specifications

Mechanical Specifications

Part Number	SZC-C-3W17
Name	RISHA
Dimensions	1.6 x 0.8 x 0.8 (mm)
Required Clearance area	9.5 x 5.0 (mm)
Weight	<0.5g
Antenna Type	Surface Mount Device
Material	Ceramic

Electrical / RF Specifications*

Frequency Range (MHz)	Avg Efficiency (%)	Peak Gain (dBi)	Impedance	Polarization
2400-2500	>70	0.77	50Ω	Linear

*All performance stated is measured of SZDV-C3W17 evaluation kit.

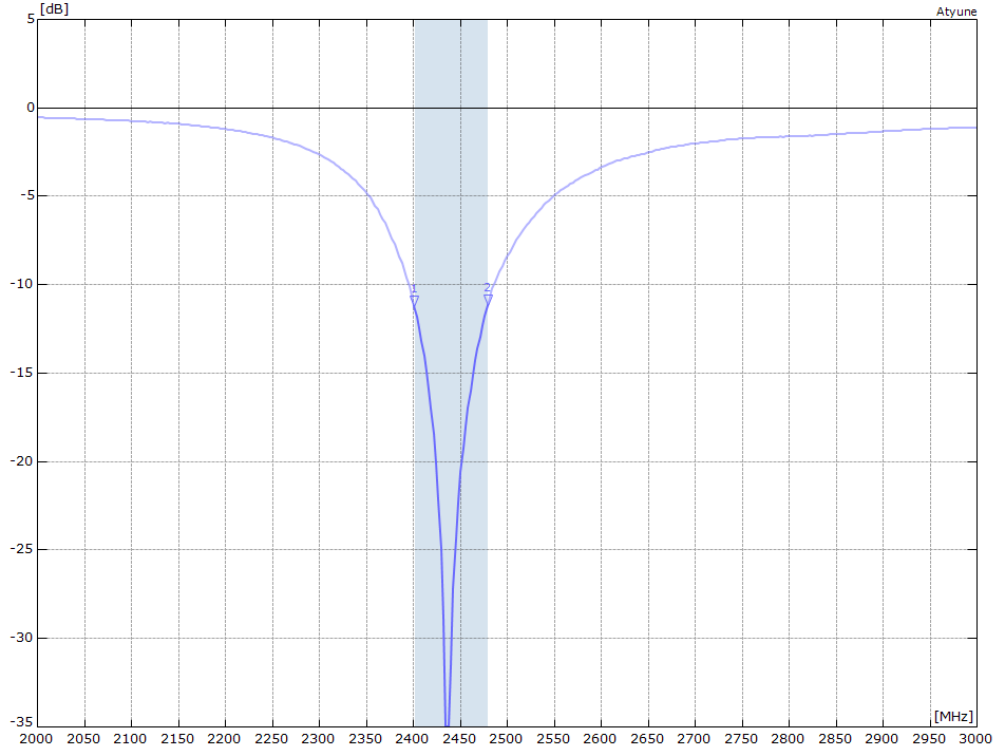
Environmental Specifications

Operational Temperature	-40 to +125 (°C)
Storage Temperature	-10 to +40 (°C)
Relative Humidity	≤75%
Moisture Sensitivity Level (MSL)	1
RoHs & REACH compliant	Yes

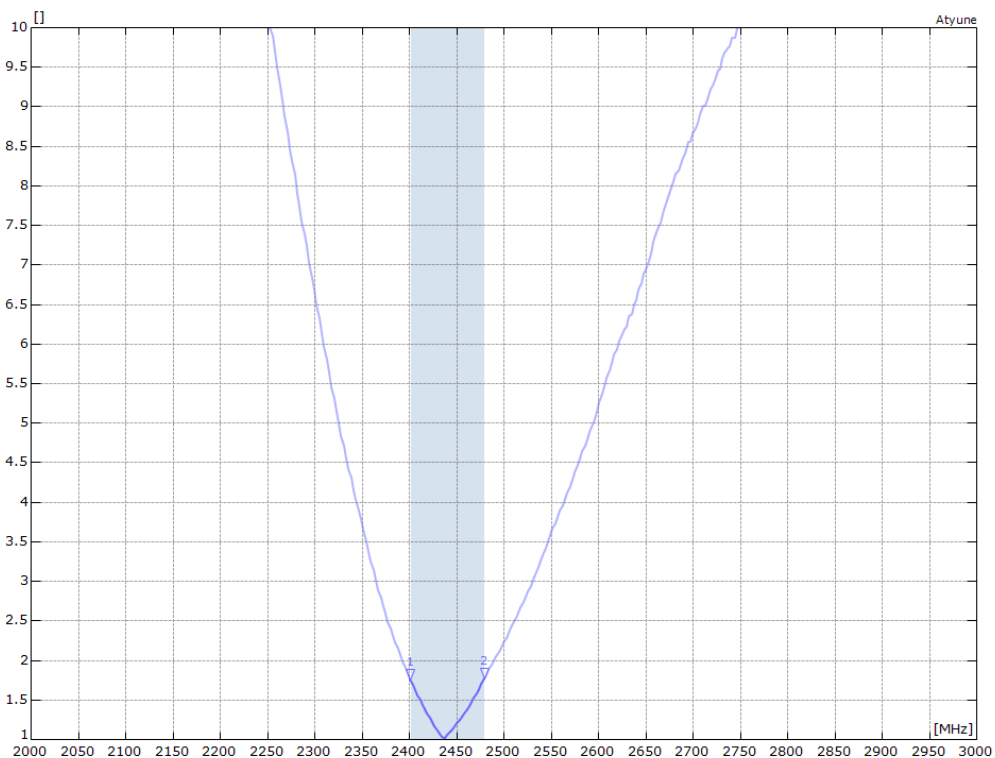


RF Characteristics

S11 Parameter



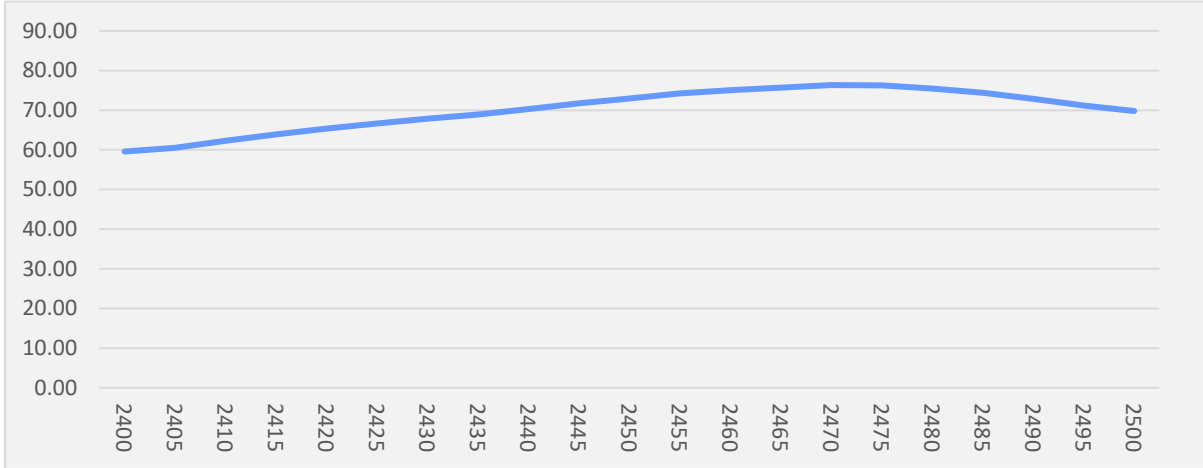
VSWR



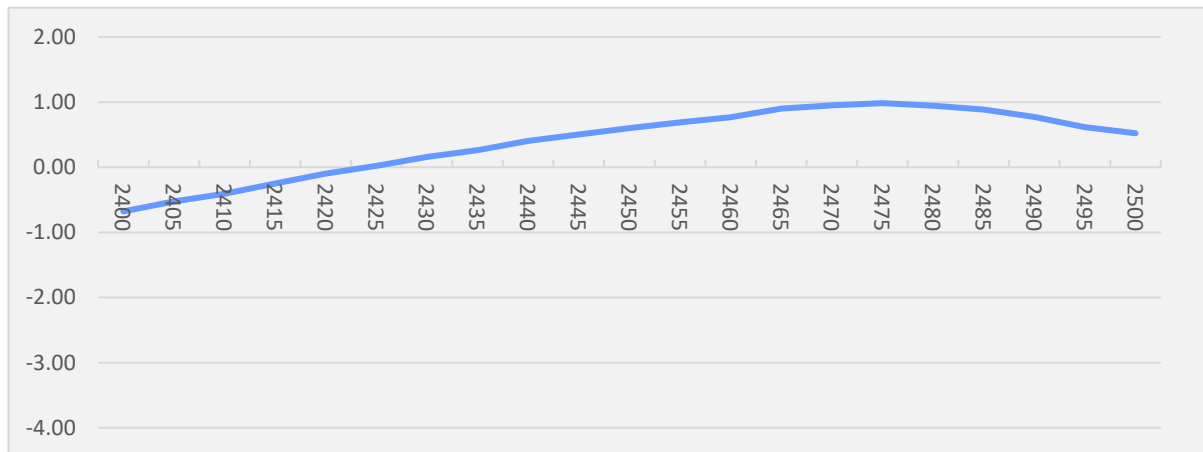


Antenna Performance

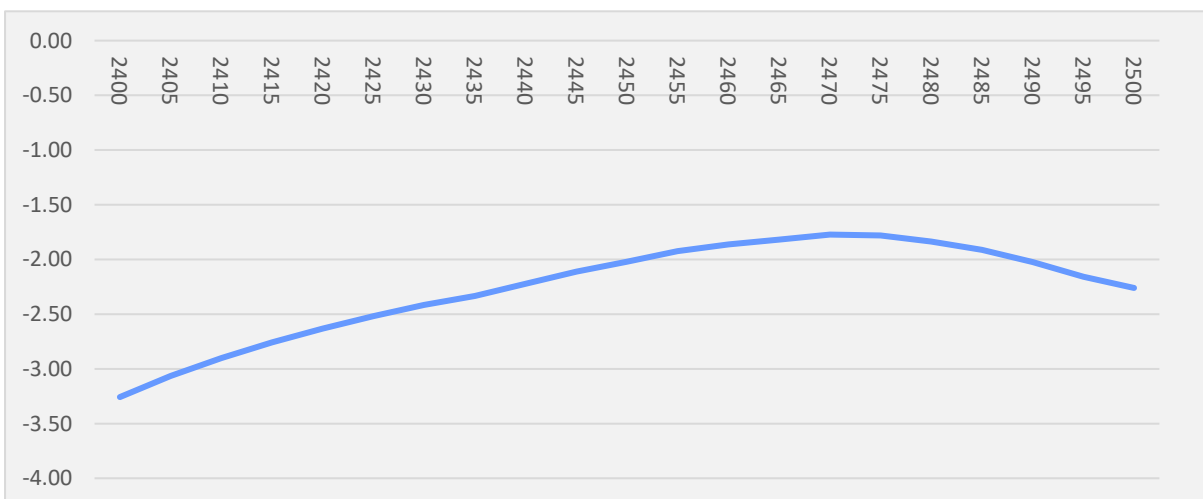
Efficiency



Peak Gain



Average Gain

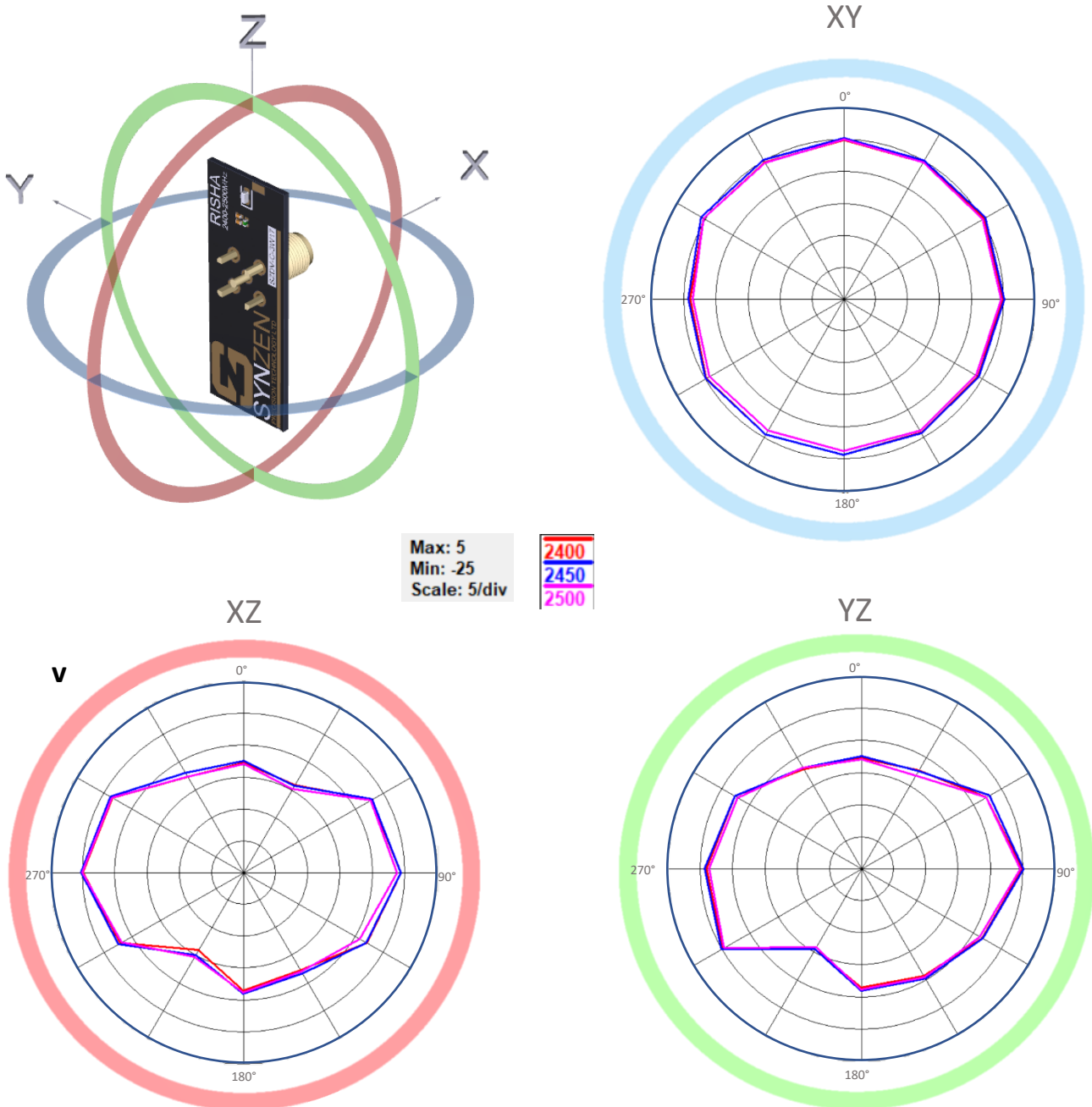




Radiated Performance

2D Polar Plot 2400 - 2500MHz

The data shown was measured on Synzen EVK (SZDV-C-3W17)

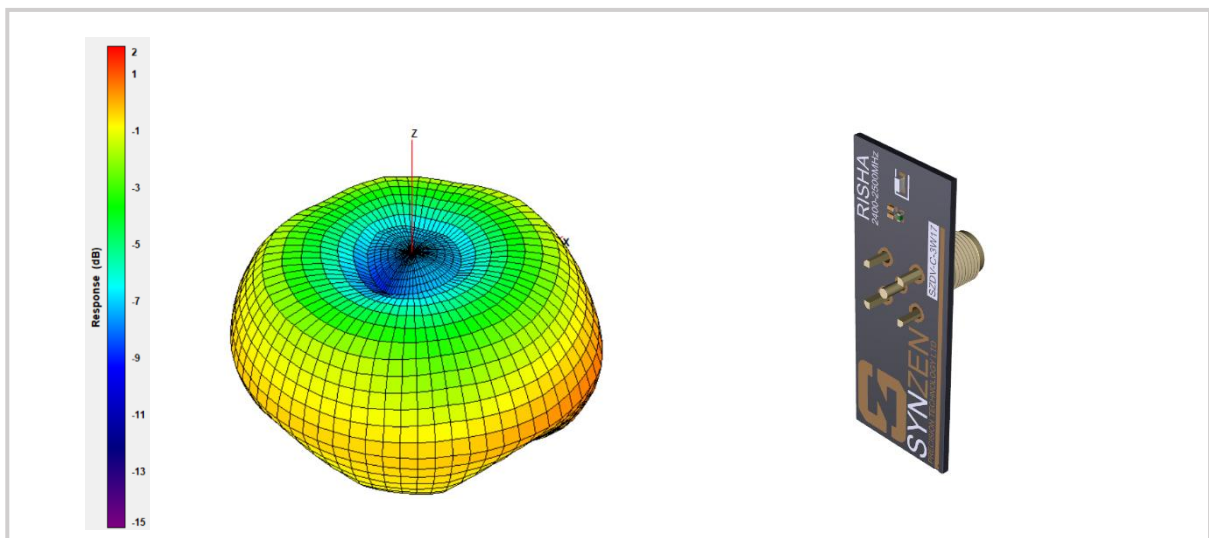
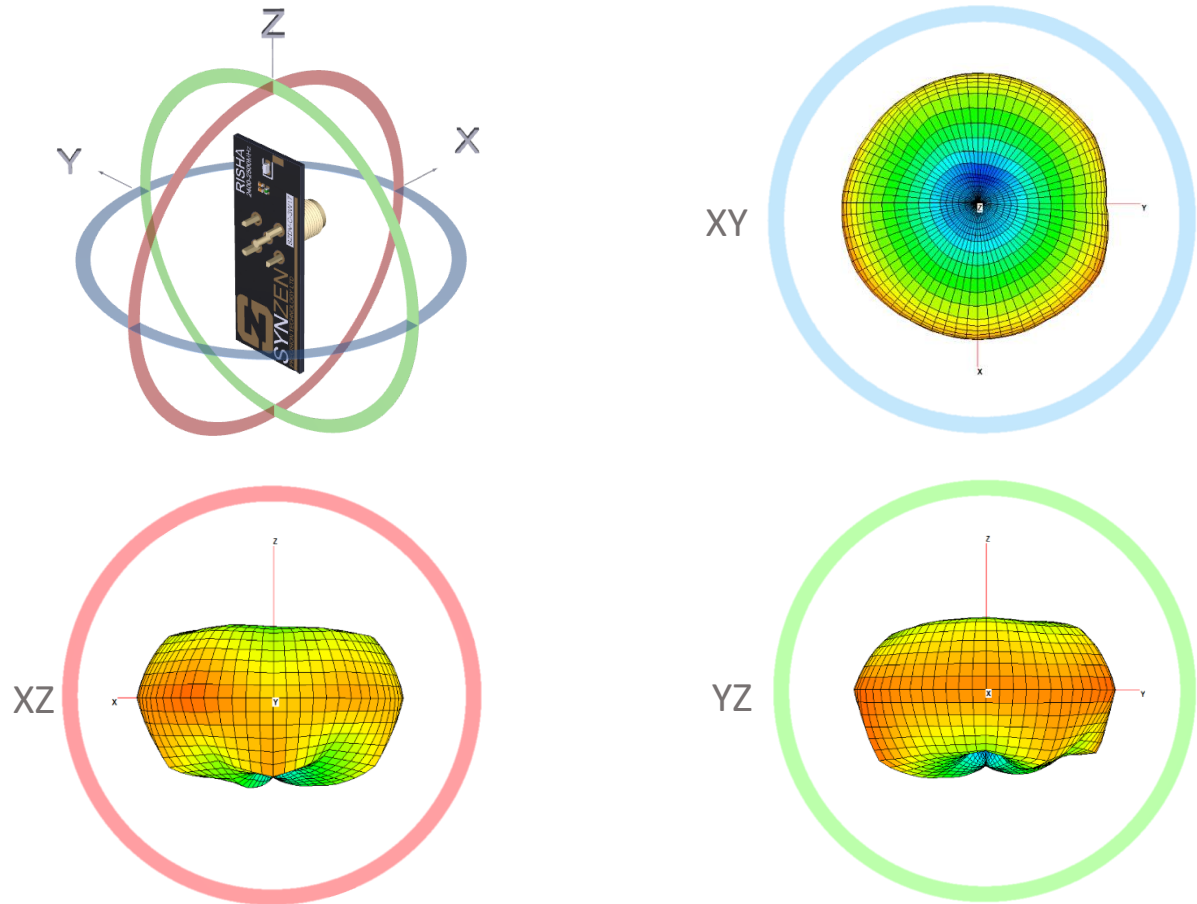




Radiated Performance

3D Radiation Pattern at 2450MHz

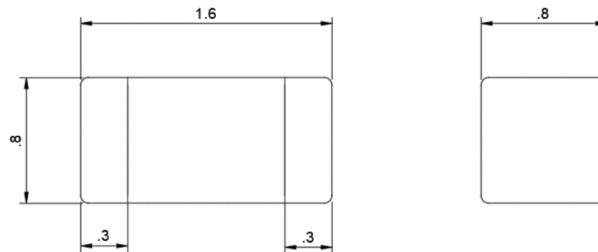
The data shown was measured on Synzen EVK (SZDV-C-3W17). The frequency point shown here is 2450MHz.





Mechanical

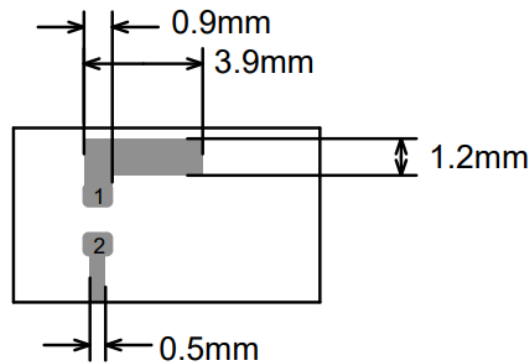
Antenna Mechanical Drawing



All dimensions in mm

Required Host PCB Footprint

The host PCB requires the footprint shown below. PCB library files and DXF is available from our website <https://synzen.com.tw/pages/search-all-products>



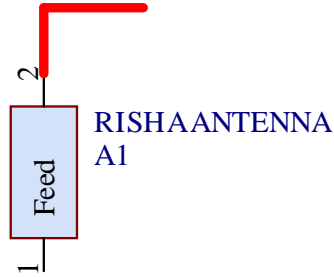
PADS 1, 2 = 1.0 x 0.8
ALL DIMENSIONS IN MM



Antenna Pinout

SZC-C-3W17 Schematic Symbol

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

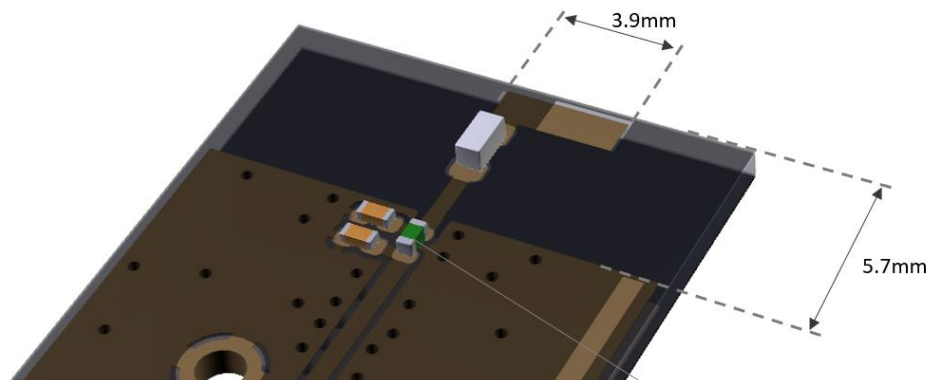


Pin	Description
1	RF Feed
2	Mechanical / Trace Section

PCB Layout Requirements

Placement

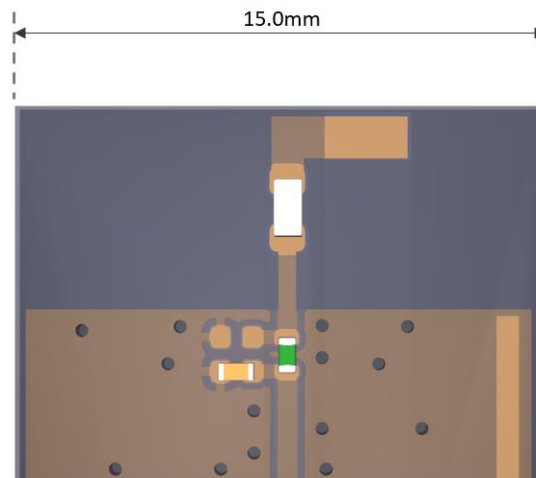
The antenna is designed to function placed at the PCB edge with clearance either side to the PCB ends.



Matching Network Components must be close to the antenna.
Transmission line should be kept as short possible to the RF port.

Required Clearance

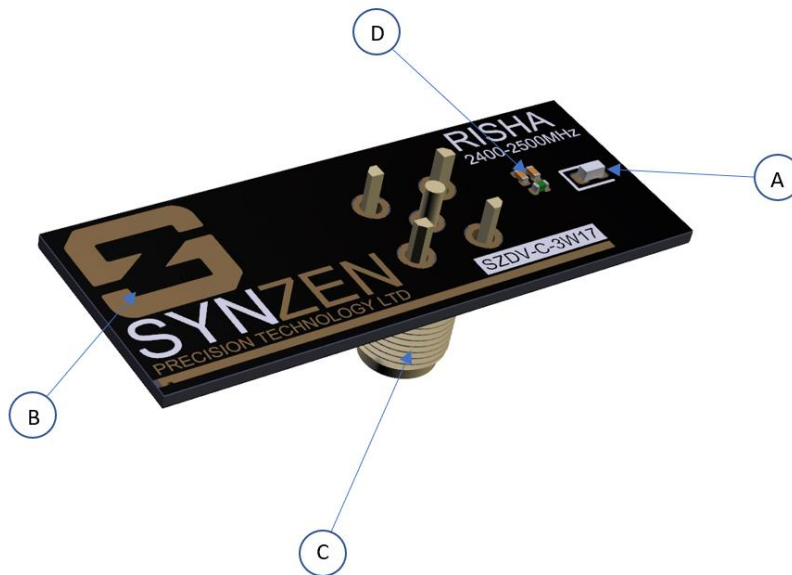
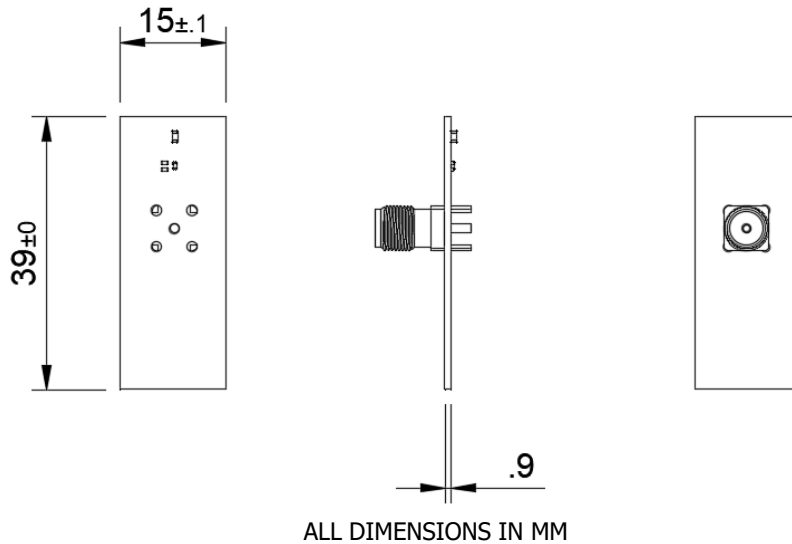
A clearance is required through all PCB layers. Adjacent copper to either side should be a minimum of 10mm distance, ask Synzen for advice on placement and use our free support service for optimal performance.



Evaluation Kit

SZDV-C-3W17 Evaluation Kit

The SZDV-C-3W17 evaluation kit is a PCBA with the antenna (SZP-C-3W17) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.

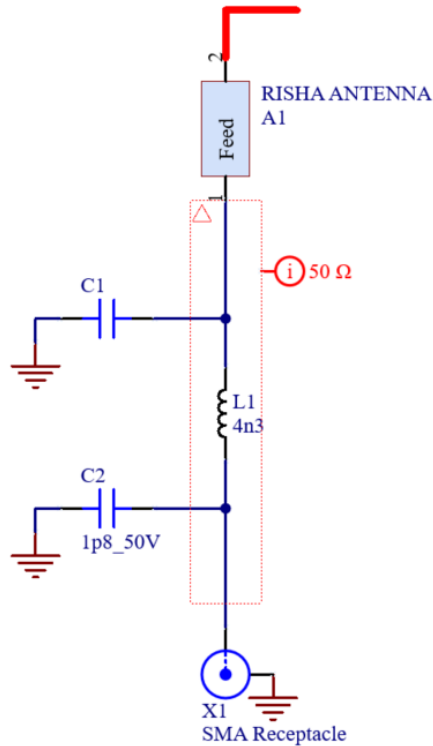


A	SZC-C-3W17 (RISHA)
B	Host PCB
C	SMA Connector
D	Matching Circuit

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.

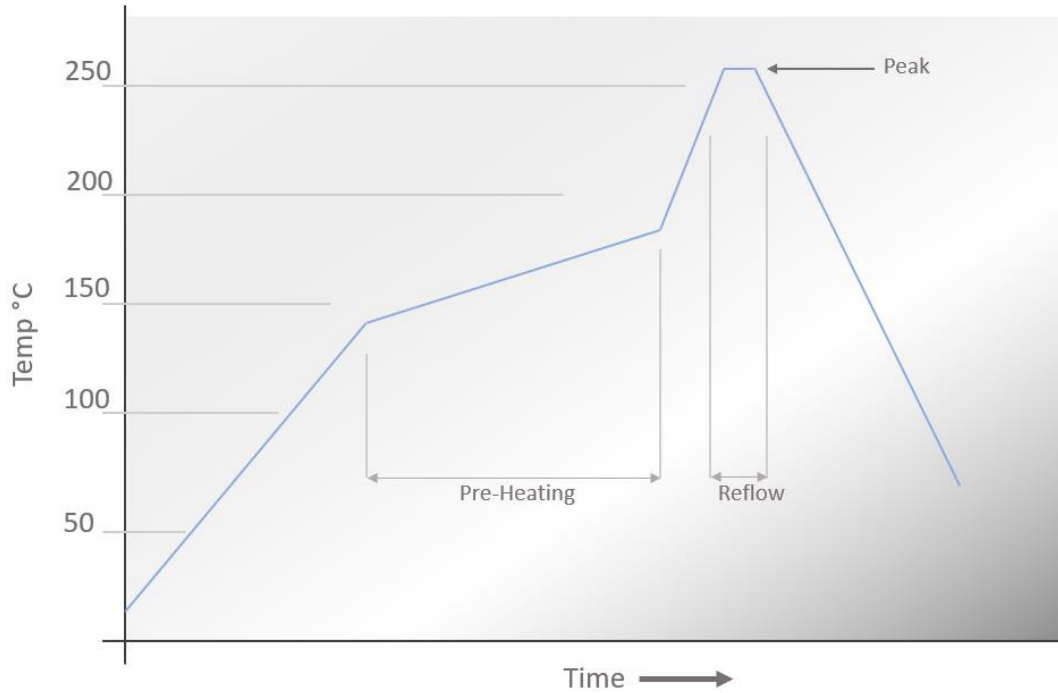


Designator	Component Type	Value	Size	Manufacturing Part No.
A1	Antenna	RISHA	-	SZC-C-3W17
C1	NA	DNP	0402	Not Fitted
L1	Inductor	4.3nH	0402	
C2	Capacitor	1.8pF	0402	
J1	SMA Connector		-	ct-sab04x (Joymax)



Soldering

Reflow Profile



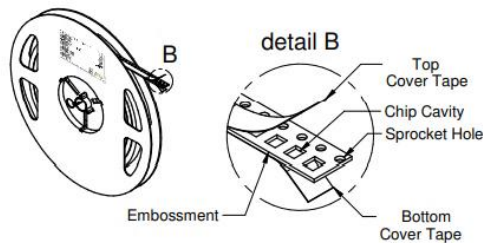
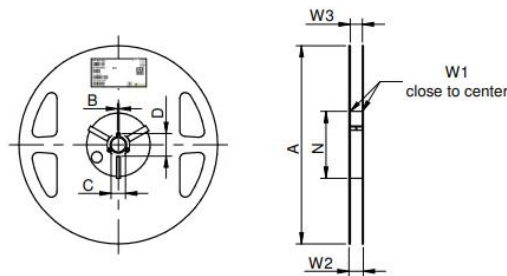
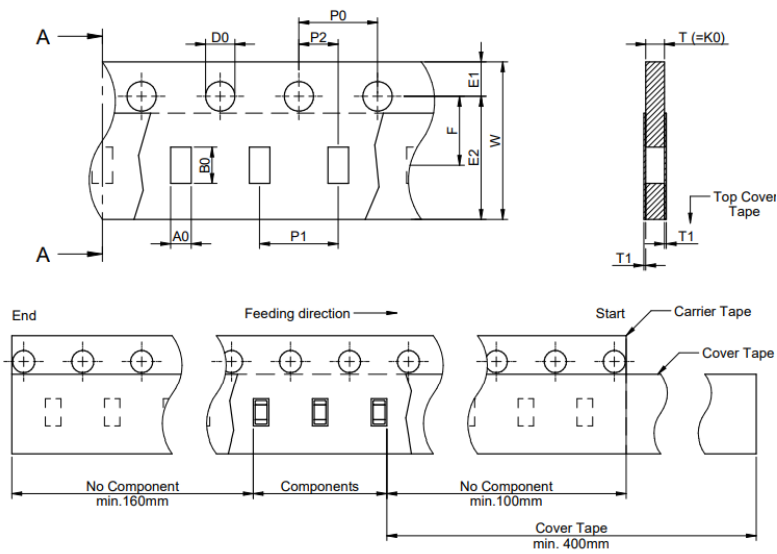
Pre-Heating	130 - 180°C	50 to 190 seconds
Reflow	>220 °C	50 to 160 seconds
Peak Temperature	260 °C	15 to 45 seconds



Packaging

Tape and Reel

		A0	B0	W	T	T1	P0	P1	P2	D0	E1	E2	F	Tape Type 1a	VPE / packaging unit
tolerance	Tolerances	typ.	typ.	+0.3/-0.1	typ.	max.	±0.1		+0.05	+0.1 / -0.0	±0.1	min.	±0.05		pcs.
size	0603	1.05	1.85	8.00	0.95	0.10	4.00	4.00	2.00	1.50	1.75	6.25	3.50	Paper	4000



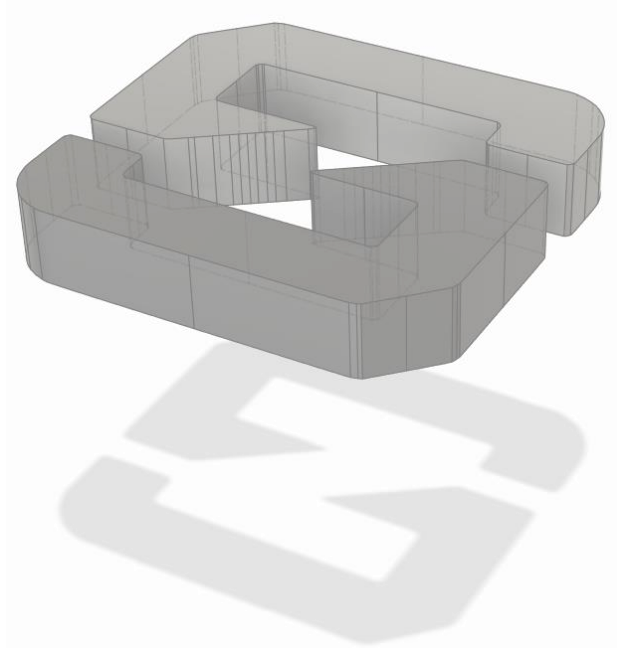
A (mm)	B (mm)	C (mm)	D (mm)	N (mm)	W1 (mm)	W2 (mm)	W3 (mm)	W3 (mm)	Material
± 2.0	min.	min.	min.	min.	+1.5	max.	min.	max.	
178	1.5	12.8	20.2	50	8.4	14.4	7.9	10.9	Polystyrene/ Polyurethane



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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