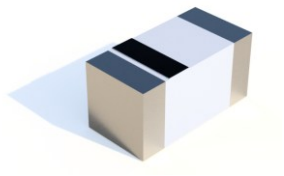
SYNZEN



DATASHEET

HYDOR SZC-C-5X01 | Ceramic Chip Antenna | ISM + BLE

Features:

ISM + BLE : 863-870/902-928 and 2400-2500MHz

>2.5dBi Peak Gain, >55% Efficiency

Dimensions: 1.6 x 0.8 x 0.8 mm
Clearance Area: 26.0 x 12 mm
RoHs compliant

Contents

Introduction

HYDOR is a miniature dual band ceramic antenna designed for compact wireless devices that require stable performance in both <1 GHz and 2.4 GHz bands. With a footprint of only 1.6 mm by 0.8 mm by 0.8 mm, HYDOR delivers dependable radiation efficiency despite its extremely small size. The antenna operates in 863 to 870 MHz and 2400 to 2500 MHz as standard and can also be tuned for 902 to 928 MHz to support NA ISM requirements. HYDOR uses a single feed structure and requires a ground clearance of 26 x 12 mm in order to achieve optimal performance. This device is well suited for high density designs where board space is limited but robust wireless range and reliability are still required.

Features

- Ultra miniature ceramic antenna with a 1.6 mm by 0.8 mm by 0.8 mm form factor
- Single port dual band operation
- Standard tuning for 863 to 870 MHz + 2400 to 2500 MHz
- Optional tuning for 902 to 928 + 2400-2500 MHz for NA ISM devices
- Stable performance within a compact 26 mm by 12 mm clearance region
- Suitable for standard SMT manufacturing processes
- Low profile design for dense and space constrained layouts
- Excellent reliability and consistent batch performance

Applications

- ISM band telemetry and control systems
- Smart meters and utility monitors
- Low power sensors for industrial and agricultural deployments
- Asset tracking and location tags
- Smart home and smart building devices
- Security systems and wireless alarm nodes
- Wearable devices and compact portable equipment
- Low power wireless modules that require <1 GHz and 2.4 GHz support

Mechanical Specifications

Parameter	
Part Number	SZC-C-4W27
Name	HYDOR
Dimensions (mm)	1.6 x 0.8 x 0.8
Clearance Area (mm))	26.0 x 12.0
Weight	<1g
Antenna Type	Surface Mount Ceramic Chip

Electrical / RF Specifications

Band	Frequency Range (MHz)	Avg. Efficiency (%)	Peak Gain (dBi)	VSWR	Impedance
ISM 868	863-870	>50	1.06	1.80:1	50 Ω
ISM915	902-928	>60	0.94	1.90:1	
Wi-Fi/BLE	2400-2500	>60	4.60	2.30:1	

Notes:

All performance stated is measured of SZDV-C-5X01 evaluation kit

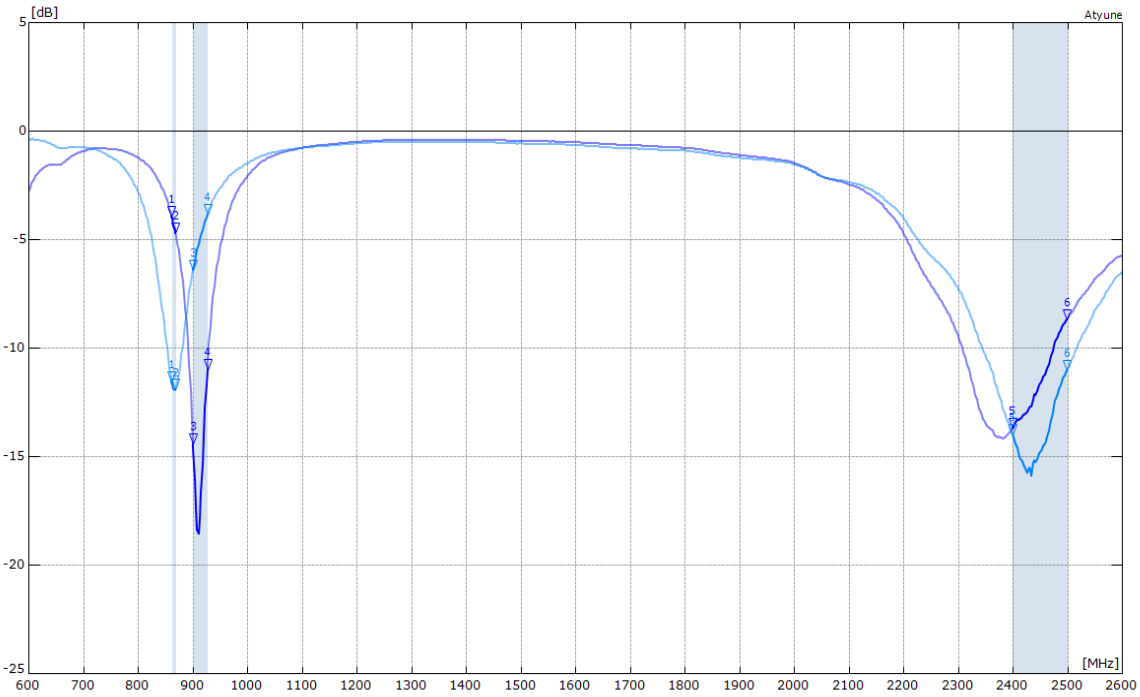
Can be tuned for either ISM868 and Wi-Fi or ISM915 and WIFI

Environmental

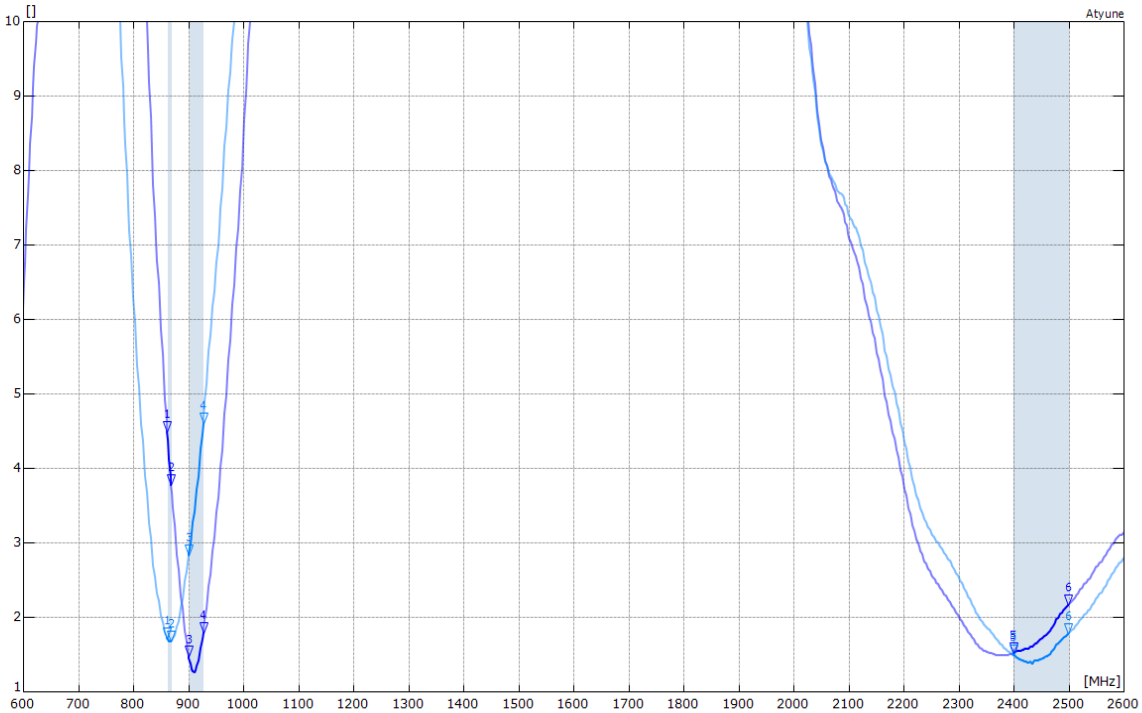
Parameter	
Operational Temperature	-55 to +125
Storage Temperature	-65 to +125
Relative Humidity (Storage)	65±20% RH
Moisture Sensitivity	1
RoHs and REACH compliant	Yes

RF Characteristics

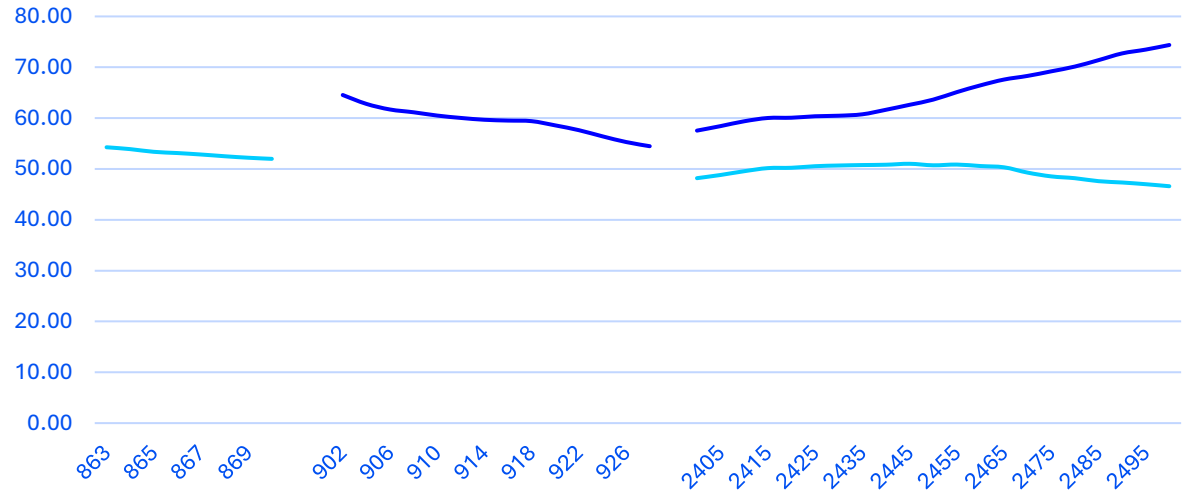
Return loss



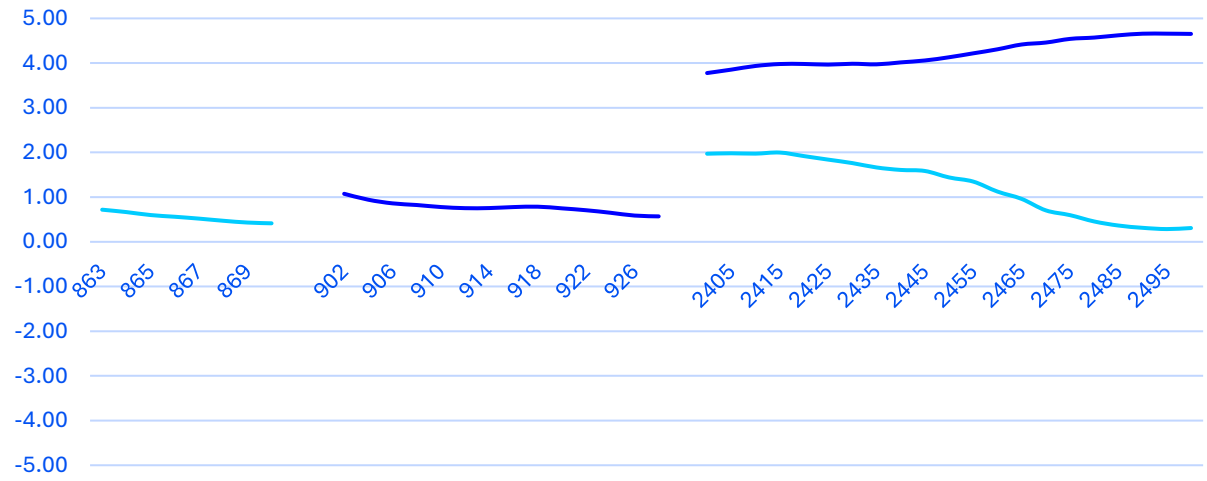
VSWR



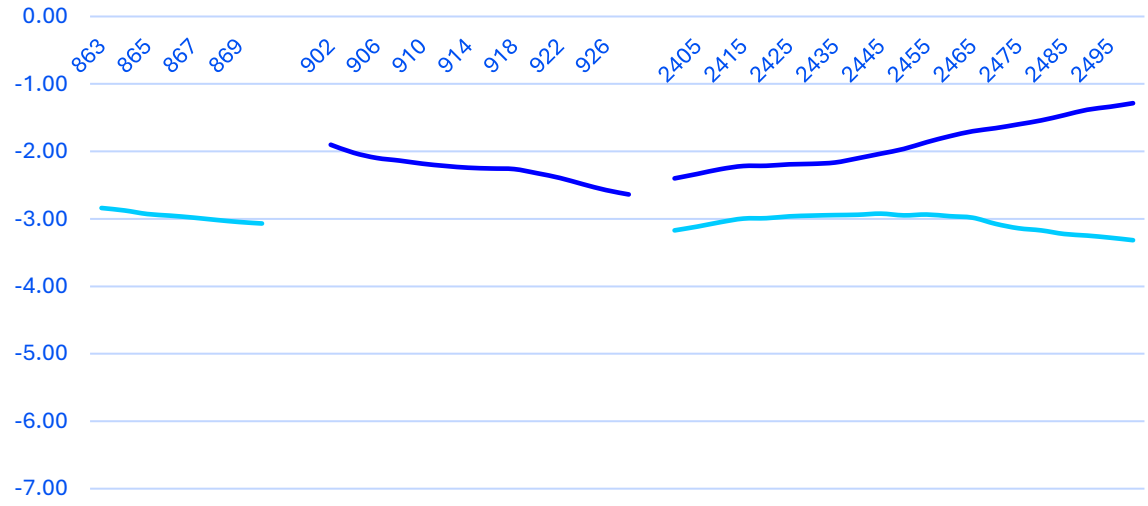
Efficiency



Peak Gain

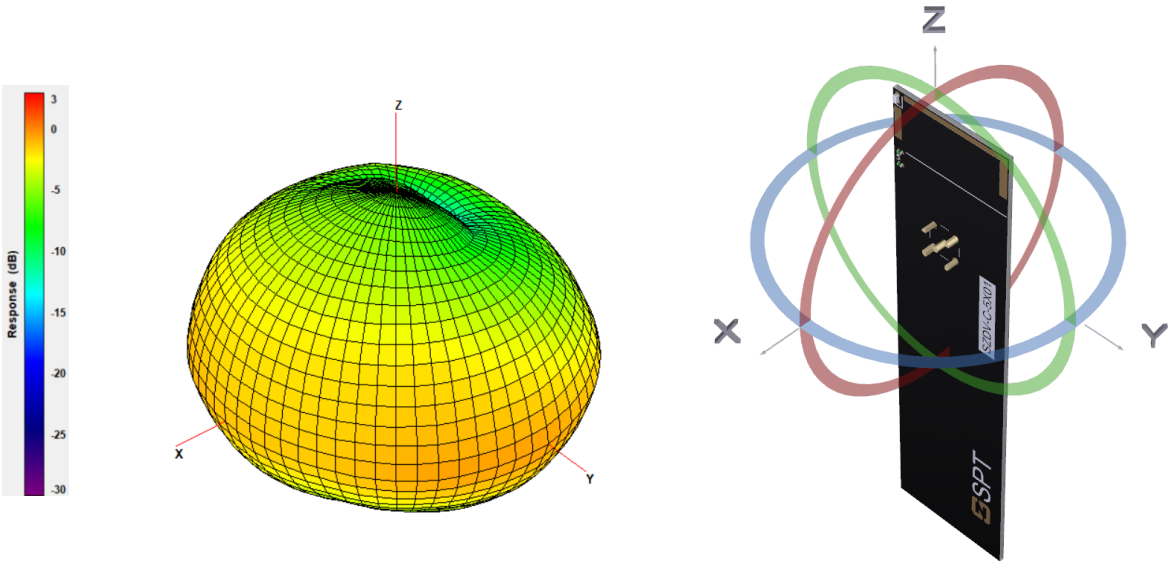


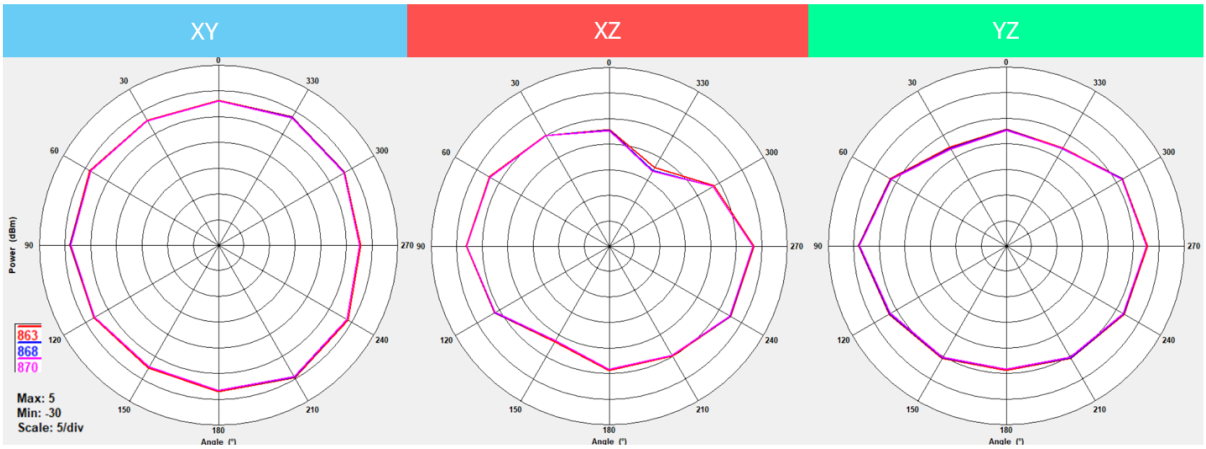
Average Gain



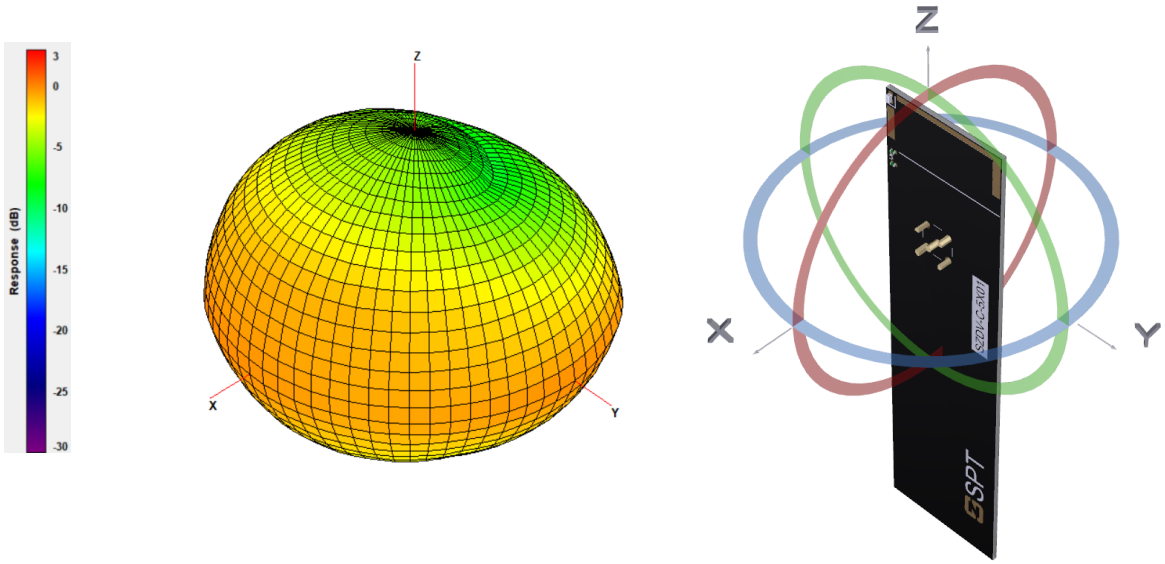
RF Radiation Patterns

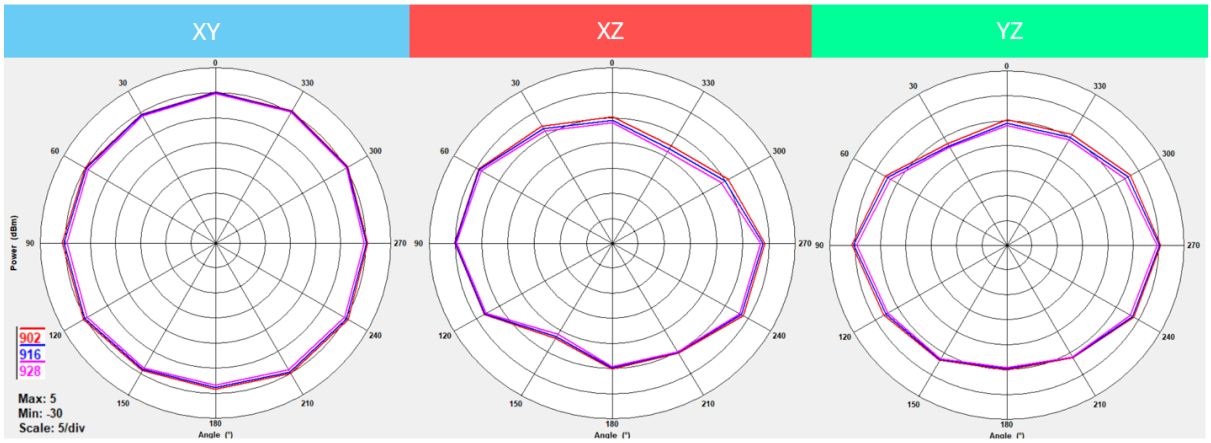
RF Radiation Patterns at 868MHz



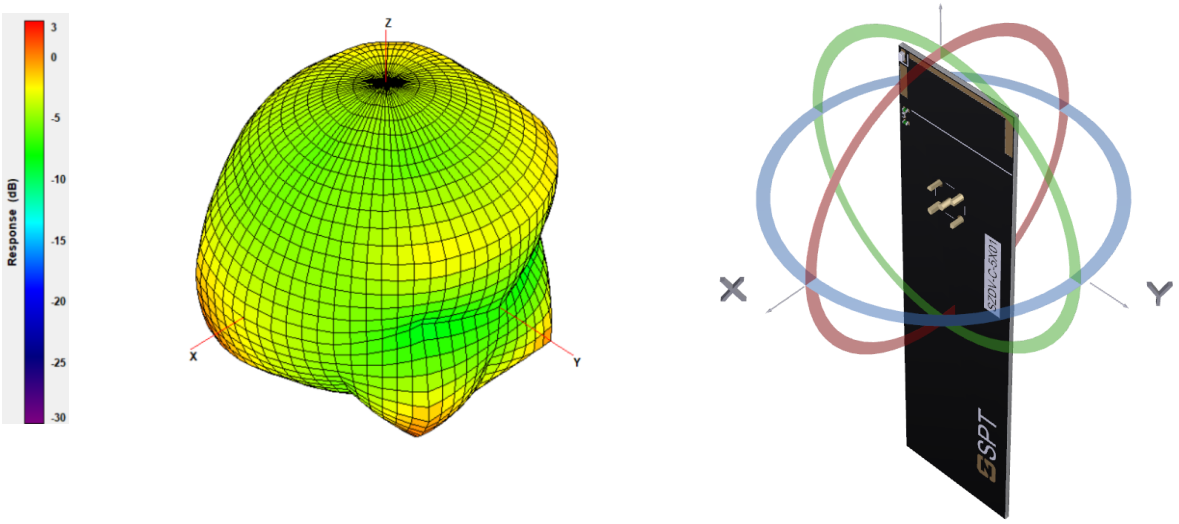


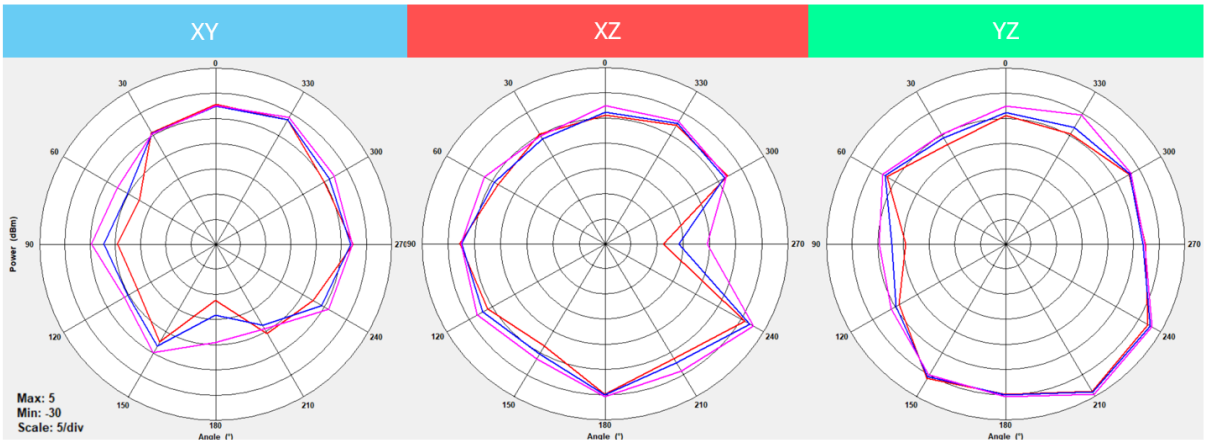
RF Radiation Patterns at 915MHz





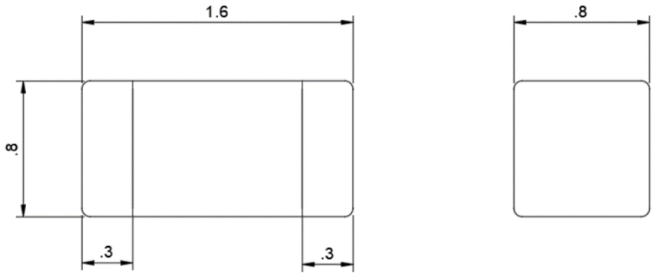
RF Radiation Patterns at 2450MHz





Mechanical Drawing

All dimensions in mm



L	W	T
0.6 ±0.04	0.3 ±0.03	0.3 ±0.03

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 26.0 x 12.0 (mm) on all layers.

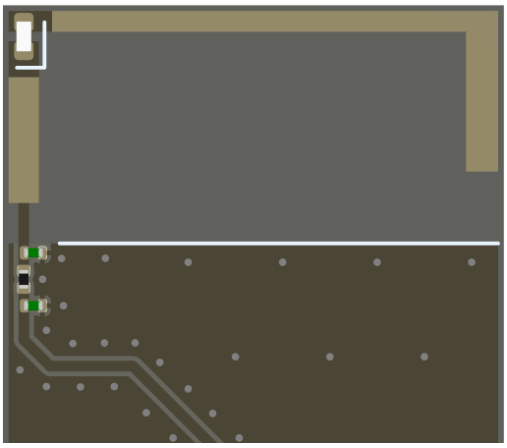
Schematic Symbol

Pin	Description
1	Not orientation sensitive
2	Not orientation sensitive

PCB Layout Guide

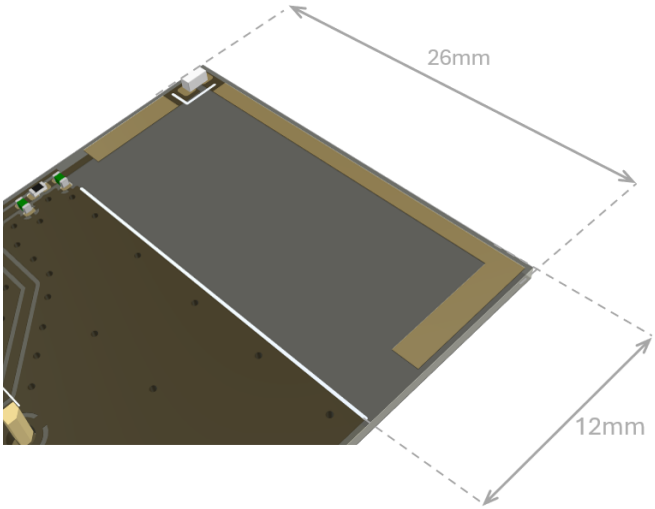
Placement

The antenna is designed to function placed at the end of the PCB on the shortest edge.



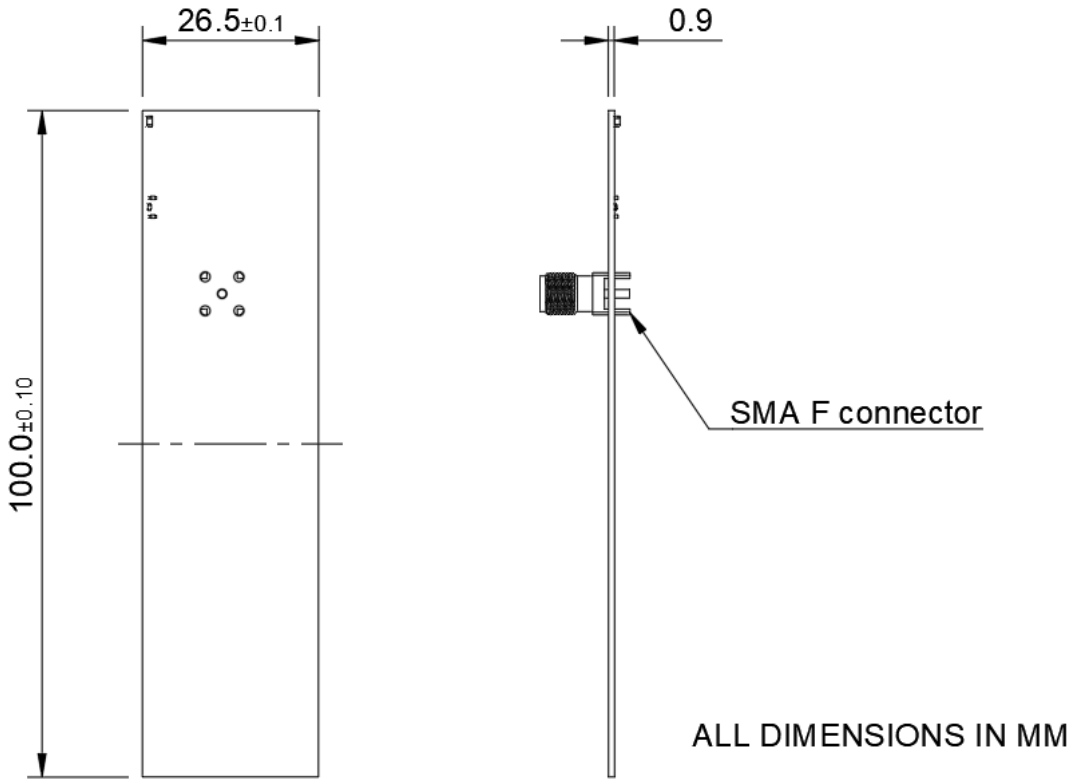
Clearance

A clearance is required through all PCB layers for the precise area shown. Also, any components such as battery or display must also avoid this area. The rest of the area under the antenna should be filled GND.

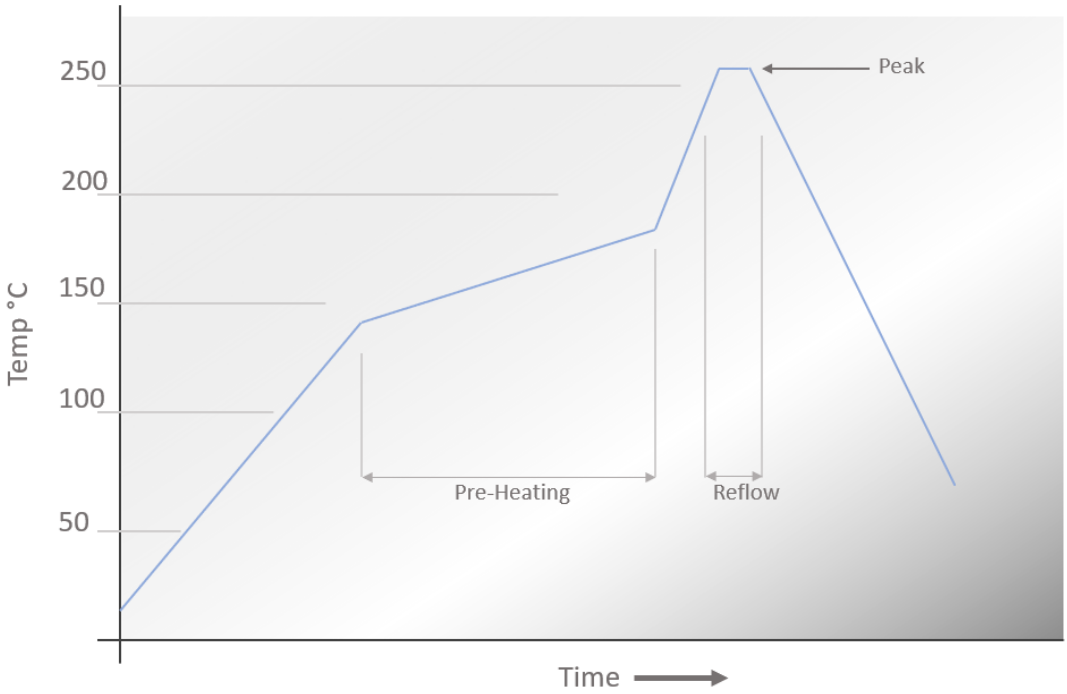


Evaluation Kit

The SZDV-C-5X01 development kit is a PCBA with the antenna (SZC-C-5X01) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.



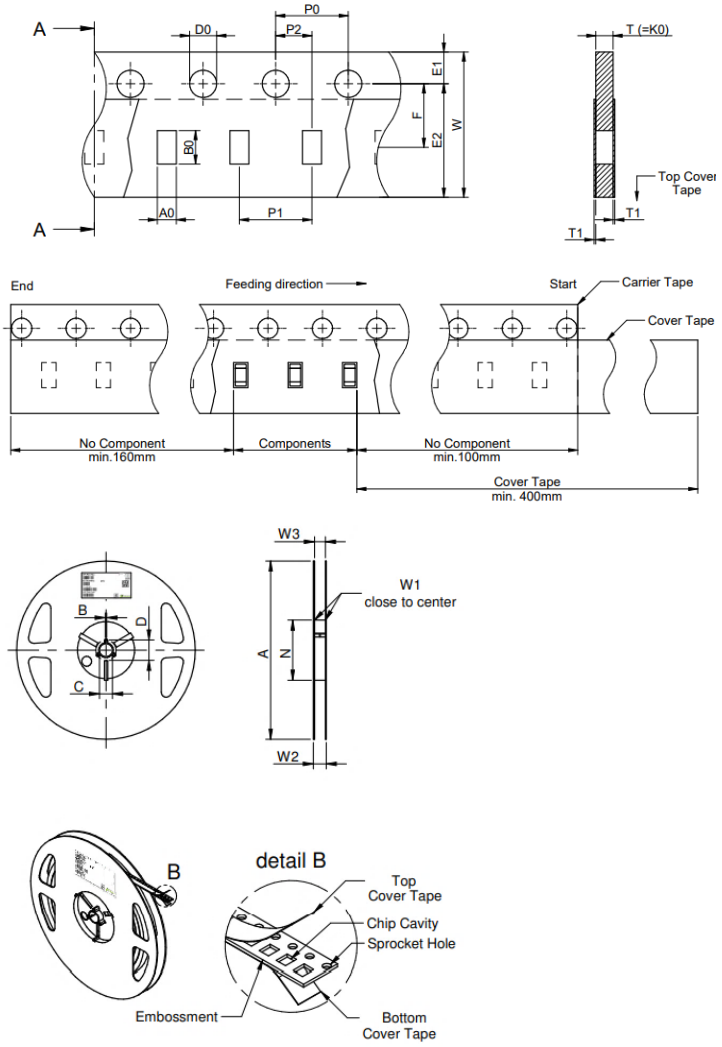
Soldering Profile



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

		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

Material Regulation

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