

— ISM / LPWAN PATCH

ARIEL1

ISM 868 MHz Ceramic Through Hole Patch Antenna

SZC-N-3M13

FREQUENCY
863 to 870 MHz

PEAK GAIN
2.0 dBi

POLARIZATION
RHCP

SIZE
25 × 25 × 4 mm

ISM 868

863 to 870 MHz

Covers LoRa, Sigfox, LPWAN, RFID

— Key Features

- 868 MHz ISM band ceramic patch
- RHCP with axial ratio below 3 dB
- Efficiency 60% and peak gain 2.00 dBi on a 70 × 70 mm ground plane
- Through hole patch, 25 × 25 × 4 mm
- Custom tuning services available

1 Introduction

ARIEL1 (SZC-N-3M13) by Synzen is a ceramic patch antenna tailored for exceptional performance within the 868 MHz frequency range, at $25 \times 25 \times 4$ mm. It is an ideal solution for applications demanding a high performance directive antenna while simultaneously conserving valuable board space.

When affixed to a 70×70 mm ground plane, the ARIEL1 ceramic patch antenna exhibits remarkable efficiency, boasting an impressive 60% and a peak gain of 2.00 dBi. Additionally, it offers right hand circular polarization with an outstanding axial ratio of less than 3 dB. This combination guarantees maximum link reliability, even when devices constantly change their orientation in relation to one another.

The ARIEL1 (SZC-N-3M13) stands as the perfect choice for compact fixed wireless applications operating within the 868 MHz ISM band. Its versatility shines in a variety of use cases, including remote instrumentation and RFID applications. Furthermore, it delivers exceptional performance in Low Power Wide Area Networks (LPWAN) operating at 868 MHz, such as LoRa, allowing users to harness the benefits of low power, long range communication capabilities provided by these networks.

Antenna performance may vary depending on the surrounding device environment and ground plane conditions compared to the specified parameters. To address this variability, Synzen offers custom tuning services tailored to specific device environments and ground planes.

— Features

- ◆ 868 MHz ISM band ceramic patch
- ◆ RHCP with axial ratio below 3 dB
- ◆ Efficiency 60% and peak gain 2.00 dBi on a 70×70 mm ground plane
- ◆ Through hole patch, $25 \times 25 \times 4$ mm
- ◆ Custom tuning services available

— Applications

- | | |
|-------------------------|----------------------|
| ◆ Asset Tracking | ◆ Fleet management |
| ◆ Precision agriculture | ◆ Emergency response |
| ◆ Automotive | |

2 Mechanical Specifications

Part Number	SZC-N-3M13
Name	ARIEL1
Dimensions (mm)	25.0 × 25.0 × 4.0
Weight	<8 g
Antenna Type	Through Hole Patch
Material	Ceramic

3 Electrical / RF Specifications

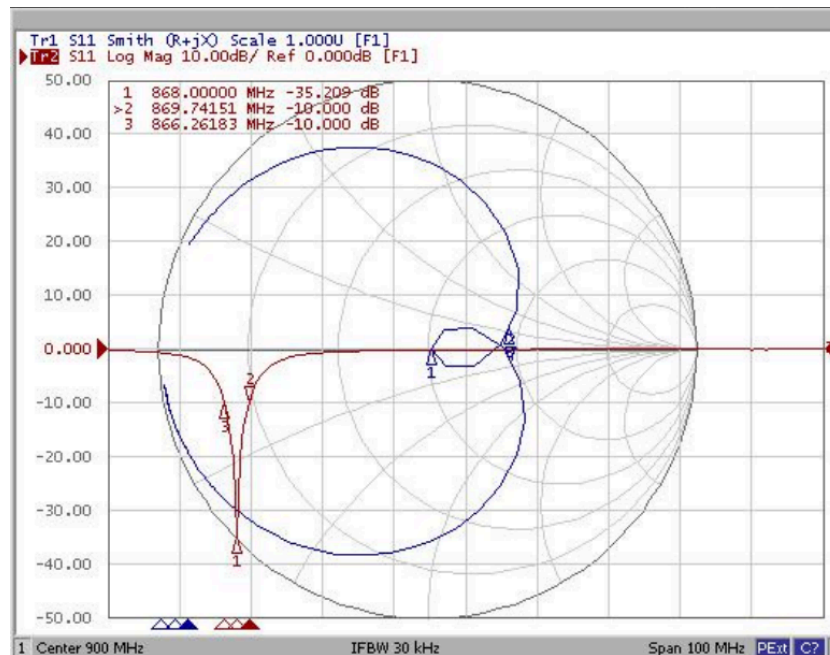
Band	Frequency Range (MHz)	Avg Efficiency (%)	Peak Gain (dBi)	Avg Gain (dBi)	Axial Ratio (dB)	Impedance	Polarization
ISM 868	863 to 870	>60	2.0	-2.0	<3.0	50 Ω	RHCP

*All performance stated is measured on the SZDV-C-3M13 evaluation kit.

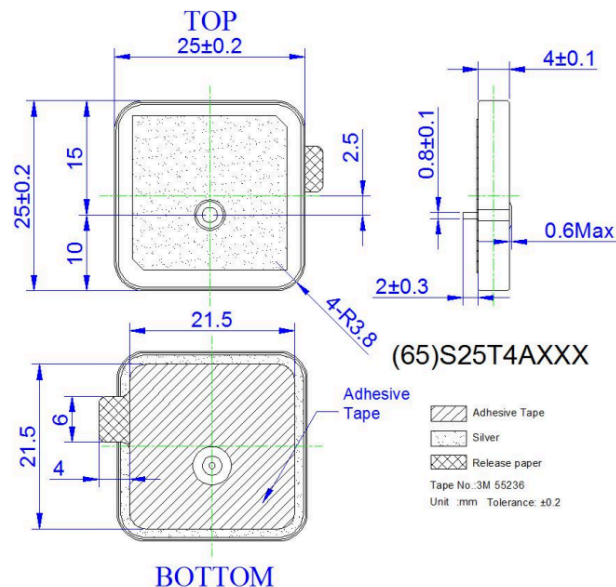
4 Environmental

Operational Temperature	-40 to +85°C
Storage Temperature	-10 to +40°C
Relative Humidity	≤75%
Moisture Sensitivity Level (MSL)	NA
RoHS and REACH compliant	Yes

5 S11 / Smith Chart



6 Antenna Mechanical Drawing

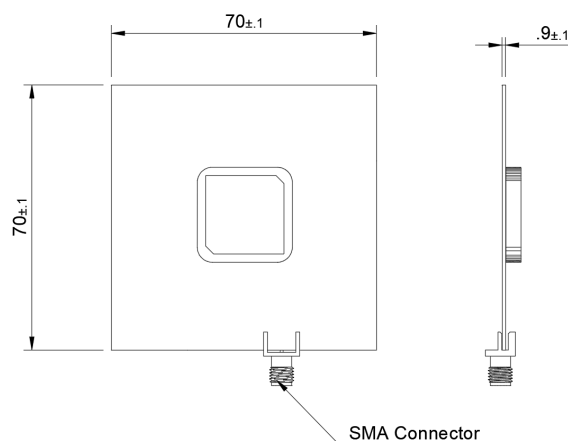


UNLESS OTHER SPECIFIED TOLERANCES ON :
X=±0.5 X.X=±0.3 X.XX=± 0.1
ANGLES=±1° HOLEDIA= ±0.1

All dimensions in mm

7 SZDV-C-3M13 Evaluation Kit

The SZDV-C-3M13 evaluation kit is a PCBA with the antenna (SZC-N-3M13) fitted. Connection to the antenna is made using the fitted female SMA connector.



8 Packaging

Plastic Tray	Inner Box	Outside Box
40 pcs / tray	200 pcs / box	800 pcs / box

9 Material Specification

Description	Material	Specification
Antenna Substrate	Microwave dielectric	65 ±2
Pin	Copper and Ag plated	4 mm
Electrode	Ag plated	
Adhesive Type	3M 55236	S21.5 × 21.5
Sn	Sn:Ag:Cu	96.5:3:0.5

10

Compliance

ROHS

Compliant

Conforms to EU RoHS Directive 2011/65/EU as amended by Delegated Directive (EU) 2015/863.

REACH

Compliant

Conforms to EU REACH Regulation (EC) No 1907/2006.

CERTIFICATE

On request

A certificate of conformance is available upon request from sales@synzen.com.tw.

Synzen Precision Technology Ltd makes no warranties based on the accuracy or completeness of the contents of this document and reserves the right to make changes to specifications and product descriptions at any time without notice. Synzen reserves all rights to this document and the information contained herein. Reproduction, use or disclosure to third parties without express permission is strictly prohibited.