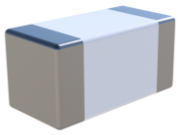


LILII-2 SZC-C-4G37 | Ceramic Chip Antenna | Multi-GNSS

Features:

GNSS : E6/L5/E5a/E5b/L2/E2/L3/L1/E1
GNSS: 1164-1214; 1215-1240; 1260-1300; 1559-1609 MHz

>3.00dBi Peak Gain, >70% Efficiency

Dimensions: 1.6 x 1.6 x 0.8 mm
Clearance Area: 15.0 x 10.0 mm
RoHs compliant

Contents

Introduction

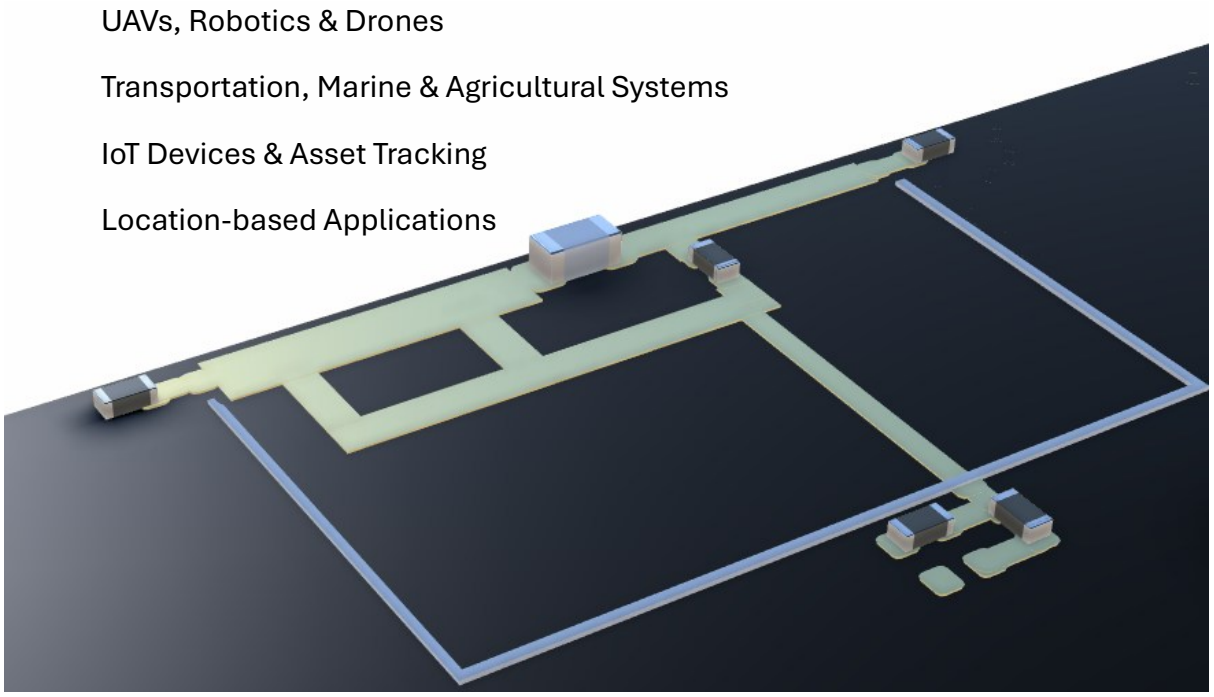
LILII 2 (**SZC-C-4G37**) is an advanced, compact embedded ceramic chip antenna that supports multiple GNSS bands, including **L1, L2, L5, L6**, and **E6**, covering a wide frequency range from **1164–1300 MHz, 1559–1609 MHz** . This antenna is compatible with all major GNSS systems, such as GPS (L1, L2, L5), GLONASS (L1, L2), Galileo (E1, E5a, E5b, E6), BeiDou (B1, B2), IRNSS (L5), QZSS, and L6.

With a minimal clearance requirement of just 15 x 10 mm on the PCB, the LILII 2 is designed for high-precision, multi-band GNSS applications in space-constrained devices. Its small size and SMD form factor, delivered on tape and reel, make it ideal for edge-of-board mounting, ensuring a seamless integration process. The omnidirectional radiation pattern guarantees stable, reliable performance even in devices where orientation may vary or undergo frequent movement.

The LILII 2 offers excellent bandwidth and high efficiency across all supported GNSS bands, with efficiency levels ranging from **60% to 90%** and a peak gain between **3.00 to 3.90 dBi**. Its performance rivals larger patch antennas while maintaining a compact size, thanks to advanced ceramic materials and a carefully optimized design that ensures reliable operation in compact and demanding environments.

Applications:

- Navigation & RTK Systems
- UAVs, Robotics & Drones
- Transportation, Marine & Agricultural Systems
- IoT Devices & Asset Tracking
- Location-based Applications



Mechanical Specifications

Parameter	
Part Number	SZC-C-4G37
Name	LILII-2
Dimensions (mm)	1.6 x 1.6 x 0.8
Clearance Area (mm)	15.0 x 10.0
Weight	<0.1g
Antenna Type	Surface Mount Ceramic Chip

Electrical / RF Specifications

Band	Frequency Range (MHz)	Efficiency (%)	Peak Gain (dBi)	VSWR	Impedance
L5/E5	1164-1189	>60	2.50	2.80:1	50 Ω
L2/E2/L3	1215-1249	>73	3.00	2.50:1	
E6	1260-1300	>62	2.60	3.10:1	
L1/E1	1559-1609	>80	3.90	2.20:1	

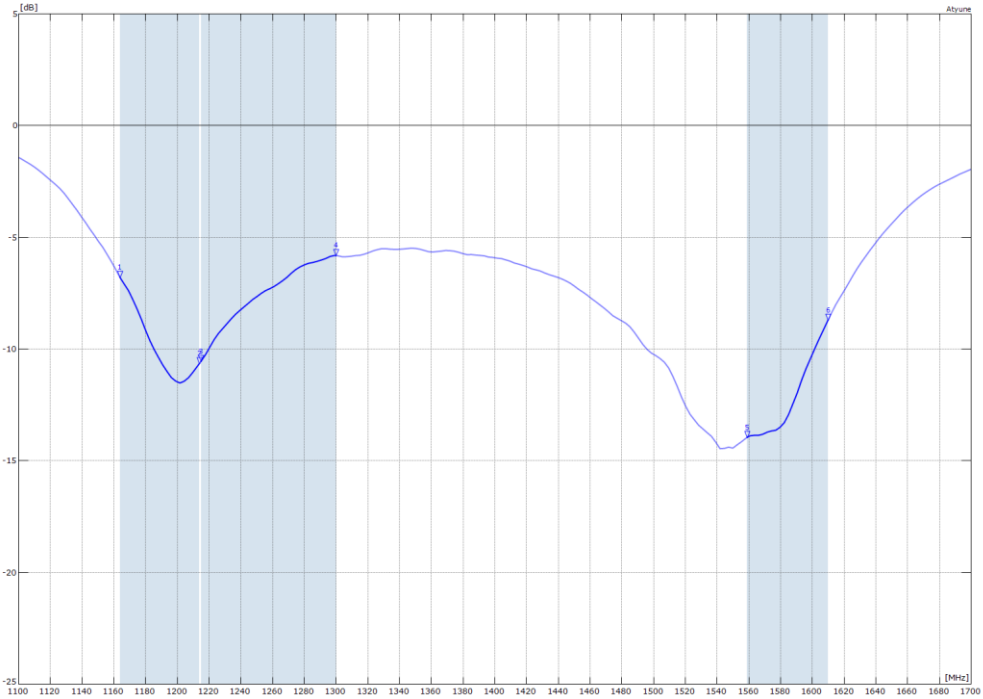
Note: All performance stated is measured of SZDV-C-4G37 evaluation kit

Environmental

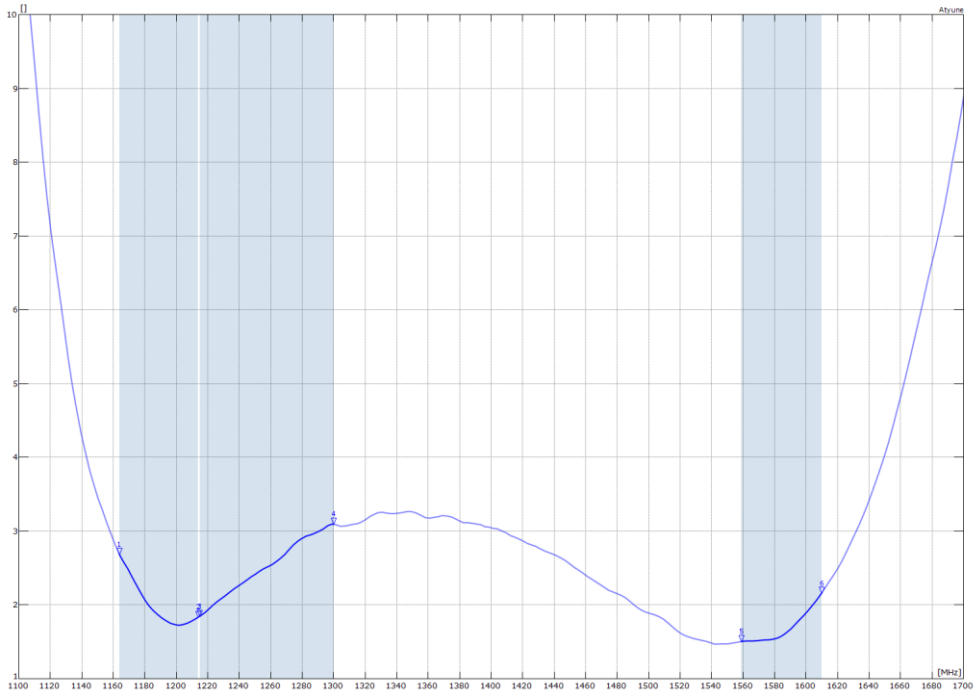
Parameter	
Operational Temperature	-40 to +125
Storage Temperature	-10 to +40
Relative Humidity (Storage)	65±20% RH
Moisture Sensitivity	1
RoHs and REACH compliant	Yes

RF Characteristics

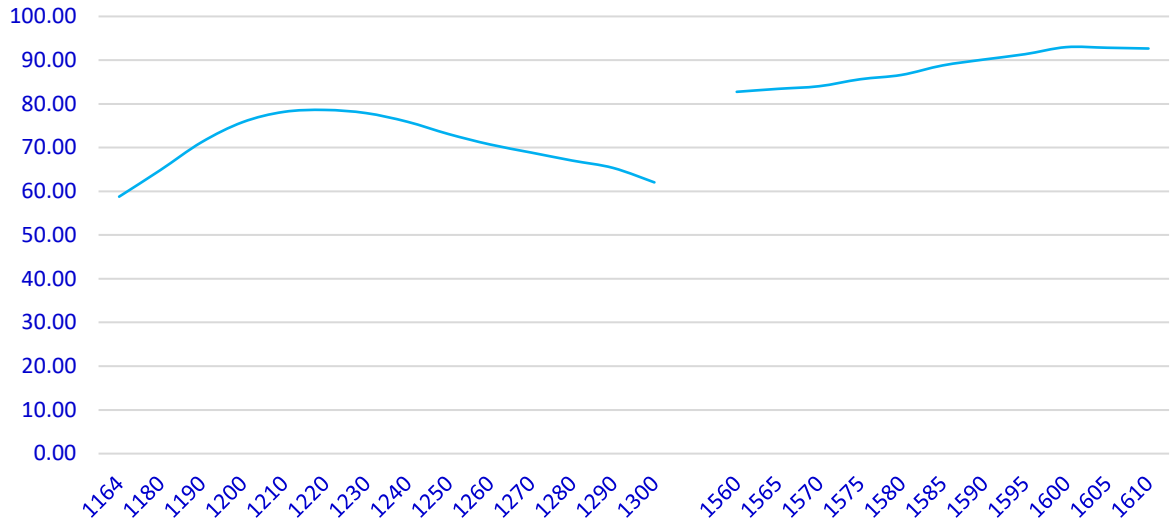
Return loss



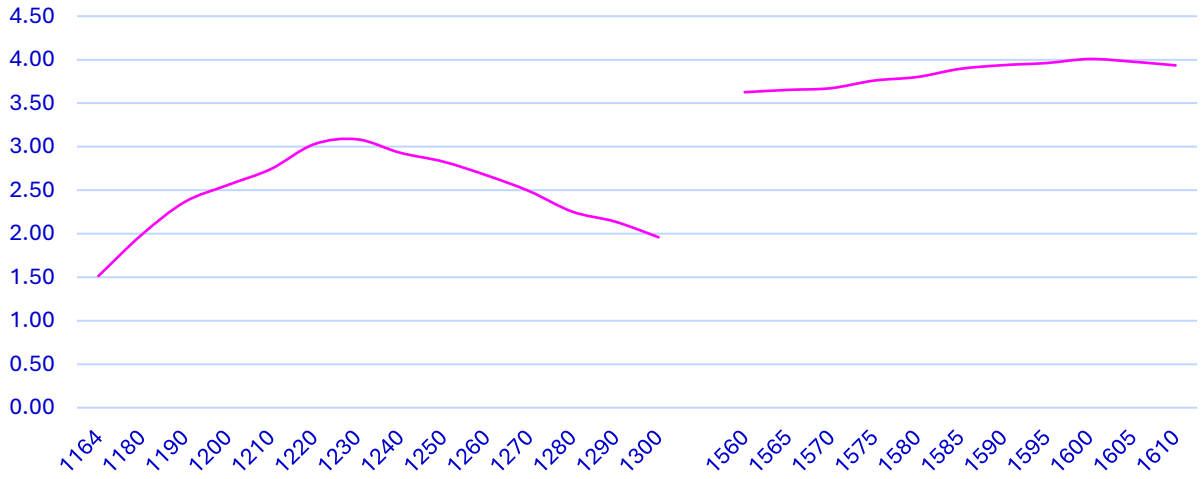
VSWR



Efficiency



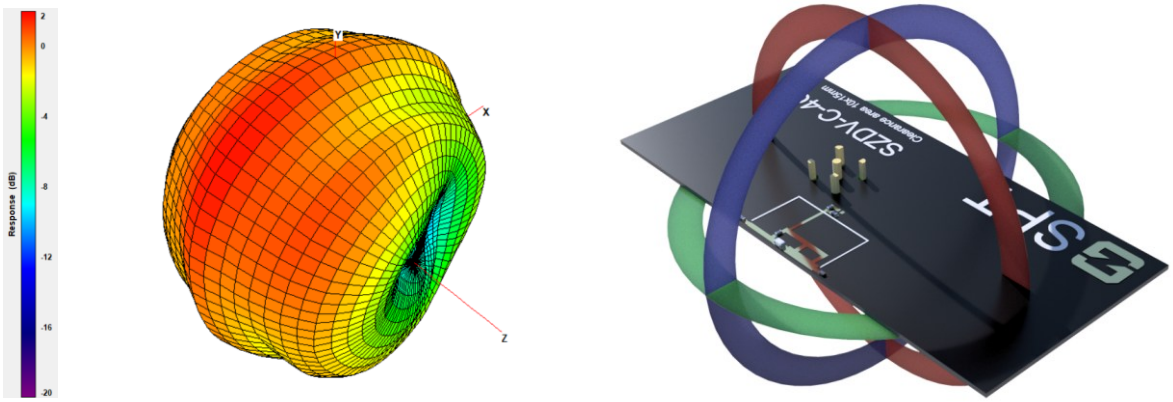
Peak Gain

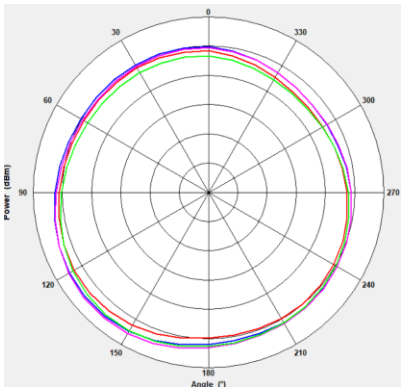
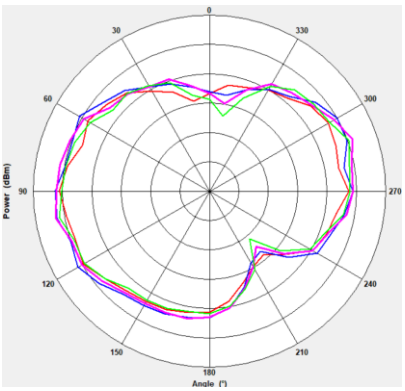
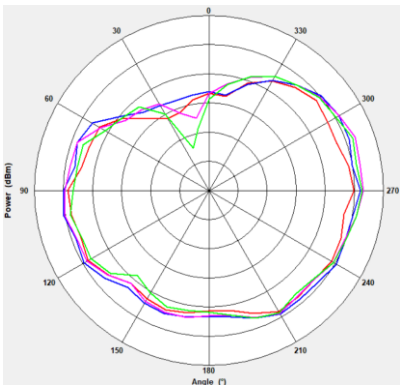


Average Gain

RF Radiation Patterns

RF Radiation Patterns at 1176MHz

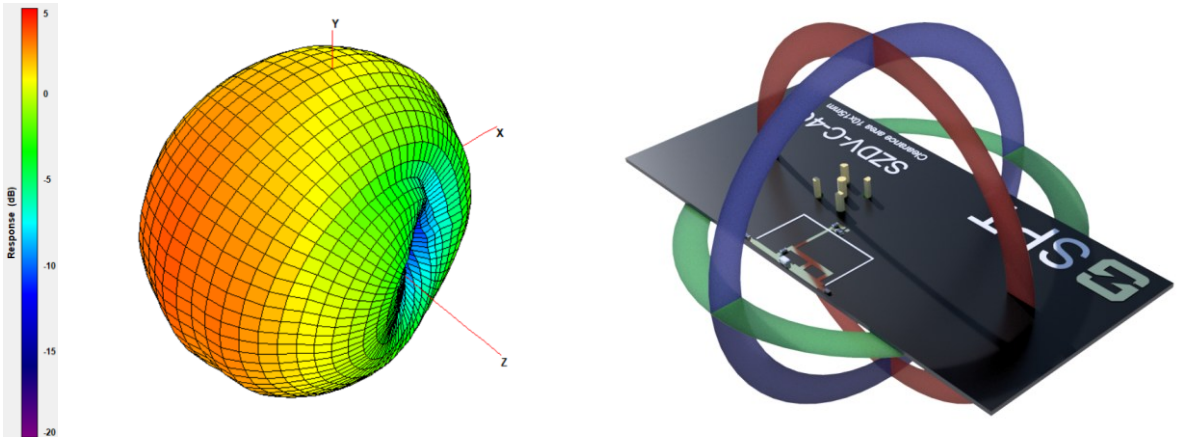


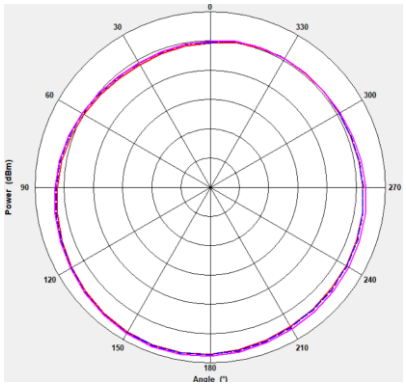
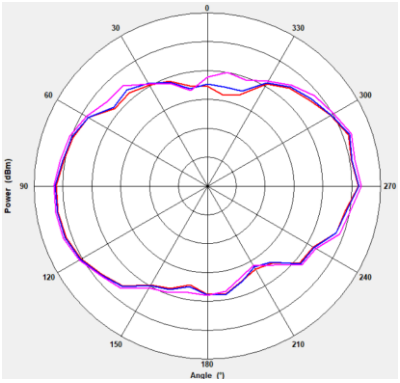
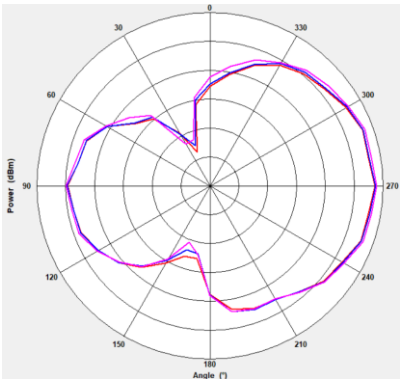
XY	XZ	YZ
		

Max: 5	1170 MHz
Min-25	1200 MHz
Scale: 5/div	1240 MHz
	1280 MHz

RF Radiation Patterns

RF Radiation Patterns at 1575MHz

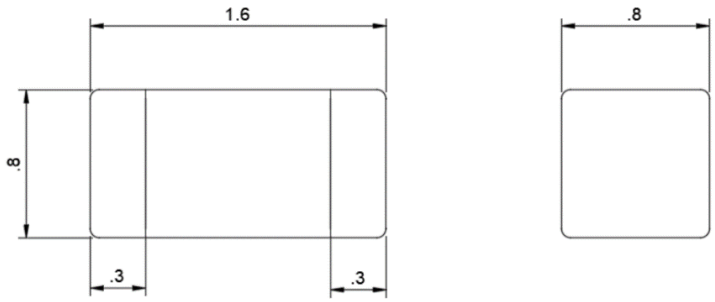


XY	XZ	YZ
		

Max: 5
Min-25
Scale: 5/div

1560 MHz
1575 MHz
1610 MHz

Mechanical Drawing



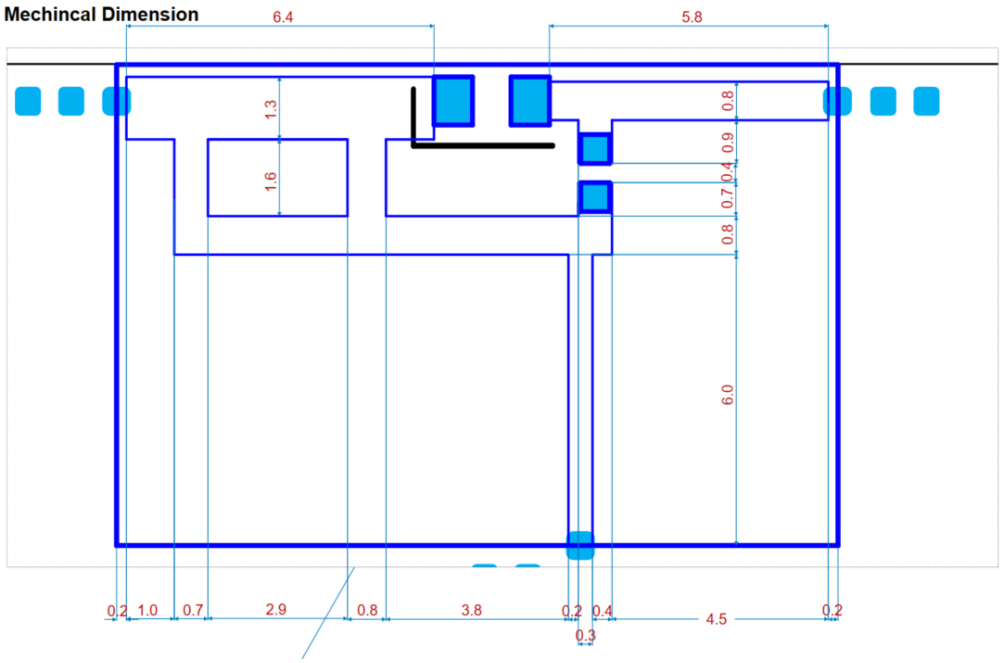
All dimensions in mm

L	W	T
1.6 ±0.15	0.8 ±0.15	0.8 ±0.15

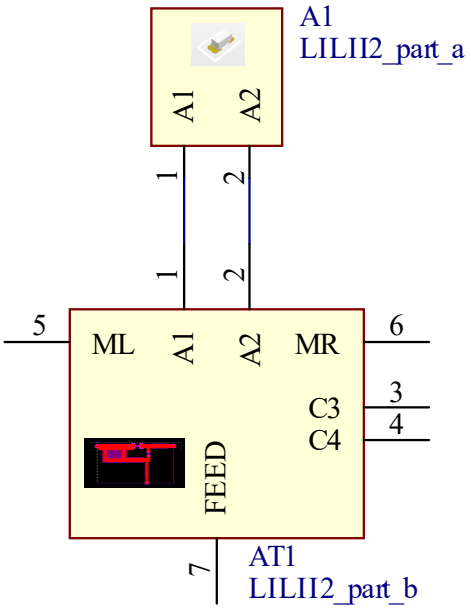
Required Host PCB Footprint

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 15.0 x 10.0 (mm) on all layers.



Schematic Symbol

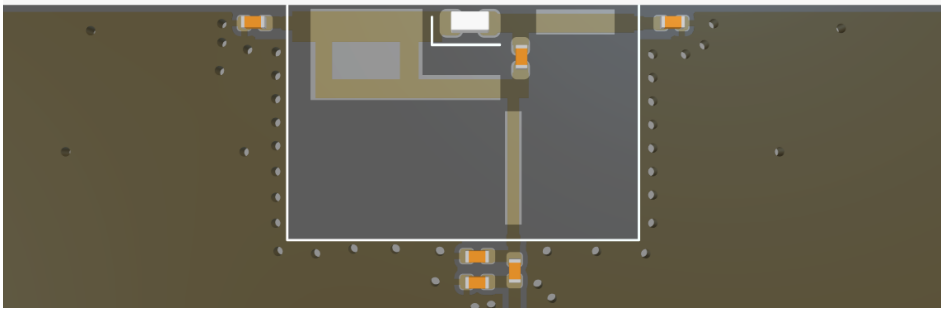


Pin	Description
1	Antenna pad 1 - Not orientation sensitive
2	Antenna pad 2 - Not orientation sensitive
3	Tuning capacitor pad
4	Tuning capacitor pad
5	Tuning component Left
6	Tuning component Right
7	Antenna feed – 50R transmission line

PCB Layout Guide

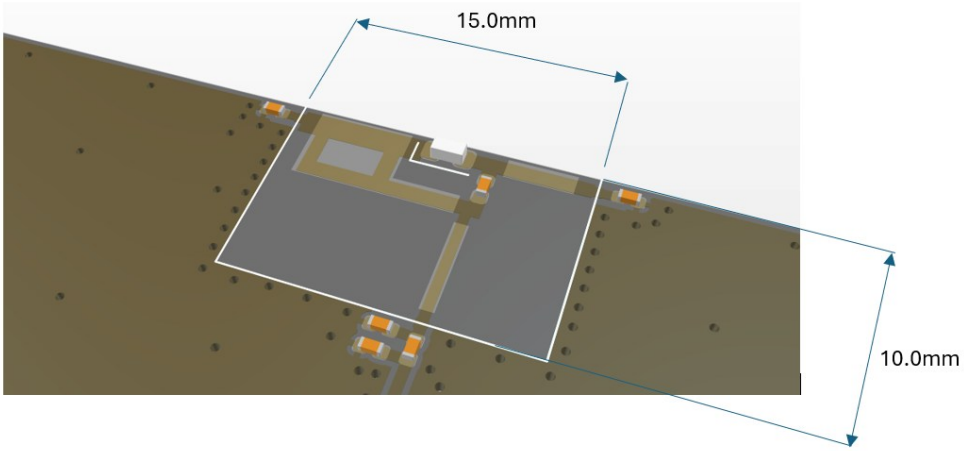
Placement

The antenna is designed to function placed at the centre of the longest PCB edge. Where possible the top and bottom layers of the PCB should be flooded with GND, this optimizes the antenna performance.



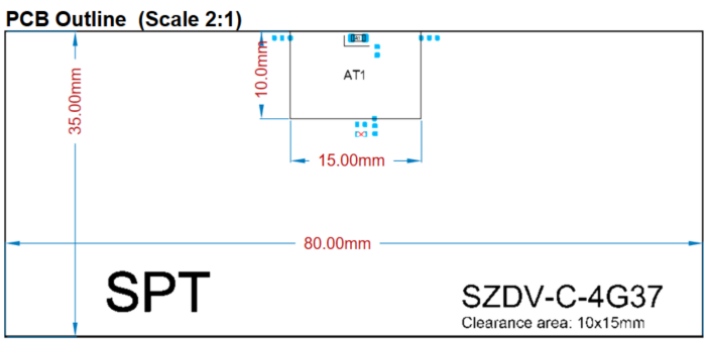
Clearance

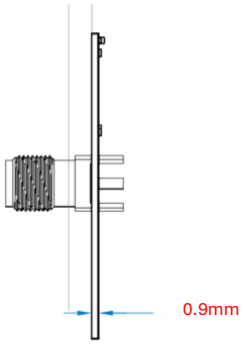
A clearance is required through all PCB layers for the precise area shown. Also, any components such as battery or display must also avoid this area. The rest of the area under the antenna should be filled GND.

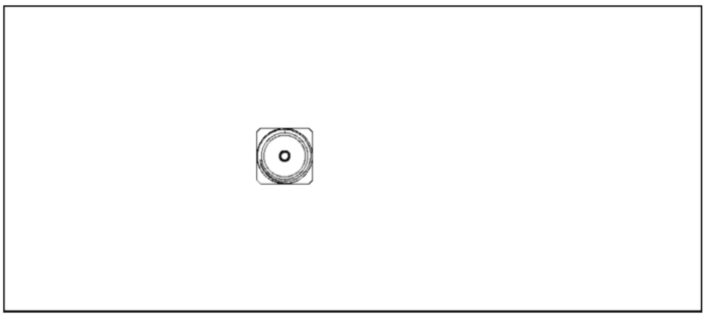


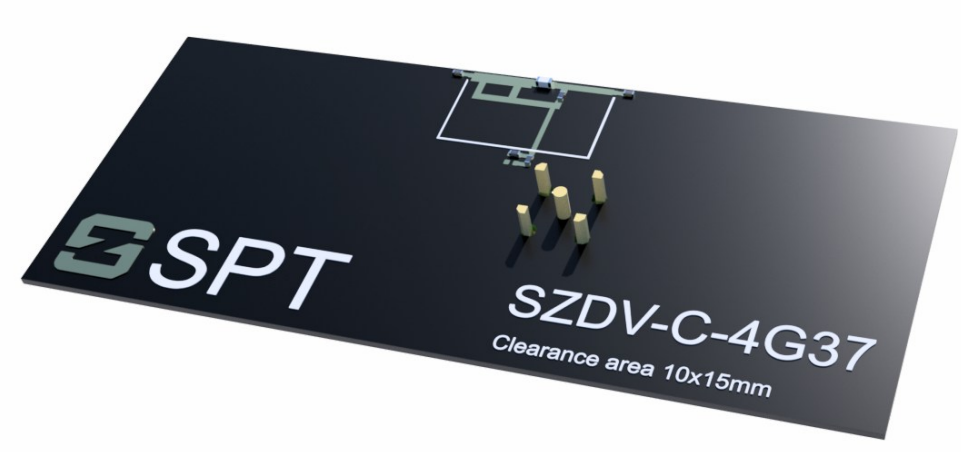
Evaluation Kit

The SZDV-C-4G37 development kit is a PCBA with the antenna (SZC-C-4G37) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.



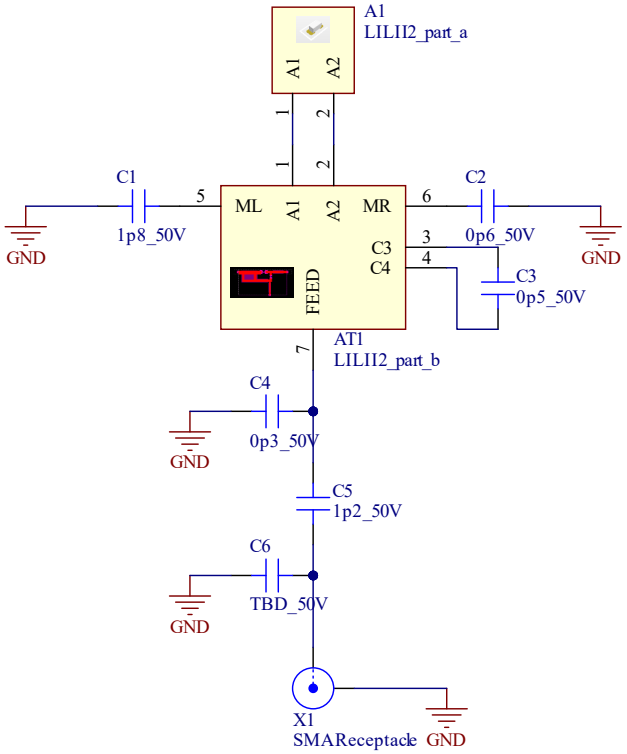




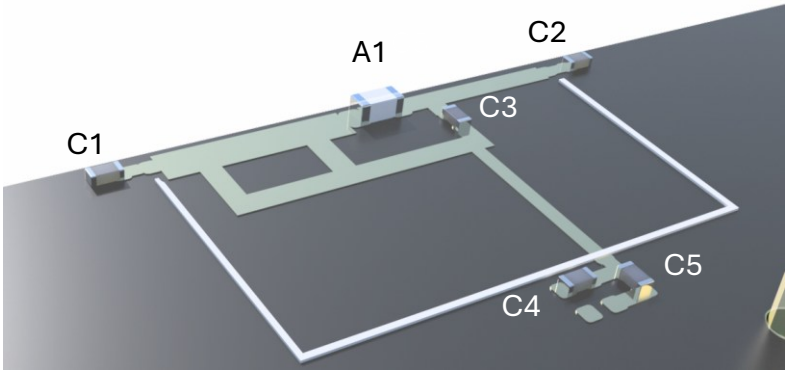


Evaluation Kit Matching Circuit

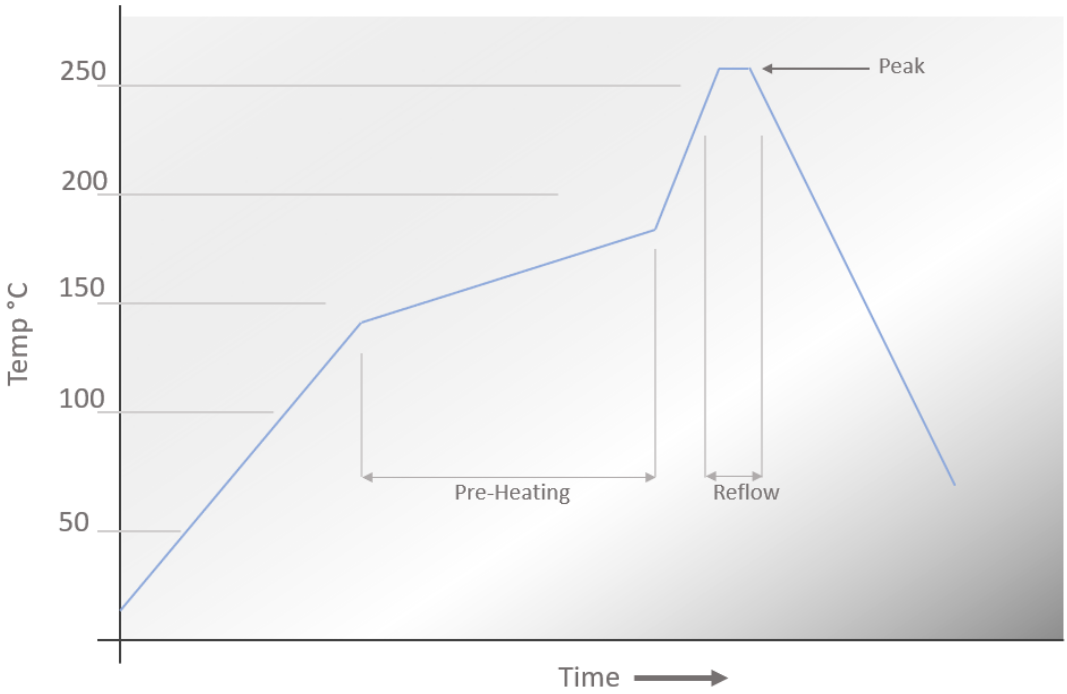
The circuit of the DEV kit along with the BOM is shown below. The matching network topology should be used on the device host PCB although the matching values will be dependent on the host PCB and device environment. Synzen provide a matching service to optimise your device to ensure the best performance,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



Designator	Component Type	Value	Size	Manufacturing Part No.
A1	Antenna	LILII2	-	SZC-C-4G37
C6	-	DNP	0402	Not Fitted
C5	Capacitor	1.2pF	0402	
C4	Capacitor	0.3pF	0402	
C1	Capacitor	1.8pF	0402	
C3	Capacitor	0.5pF	0402	
C2	Capacitor	0.6pF	0402	



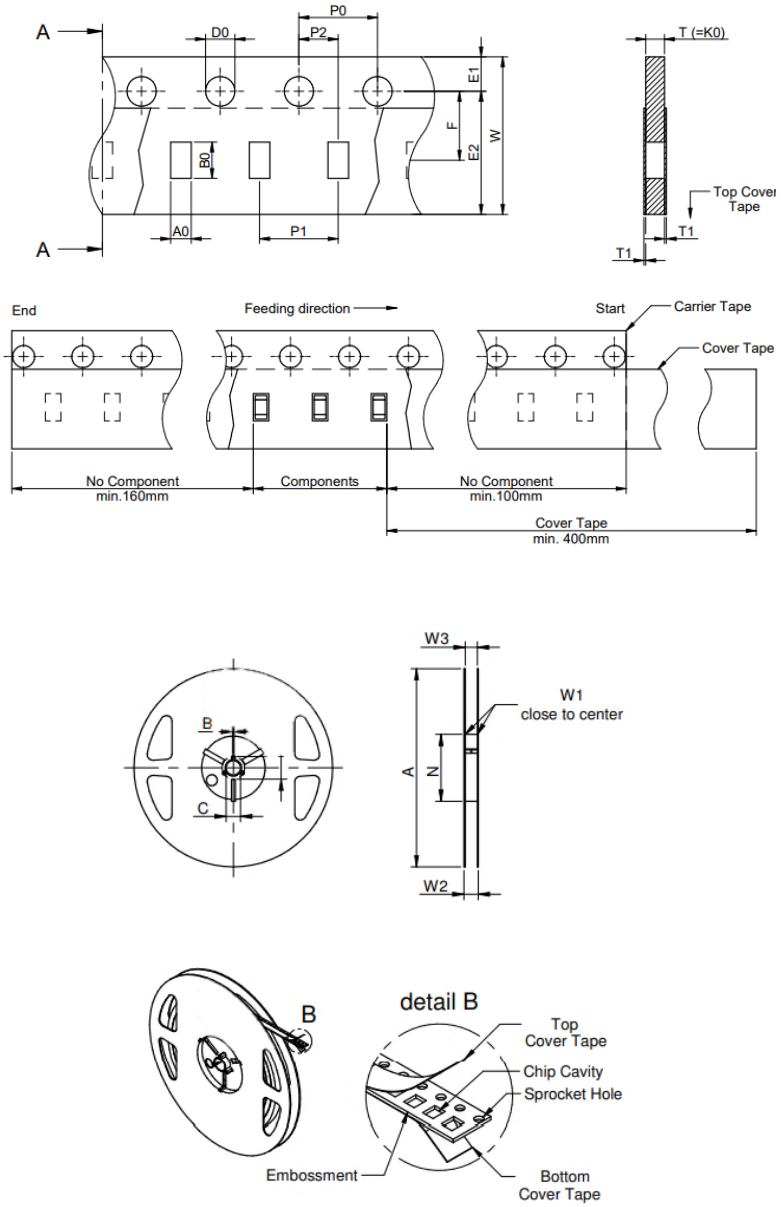
Soldering Profile



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.