



4G LTE SMD Corner Mounted Antenna

SZP-C-0L09

4G LTE/3G/2G: 698-960; 1710-2200; 2300-2400; 2500-2690MHz



Name: PROCYON a

Part Number: SZP-C-0L09

Description: 4G LTE Surface Mount Device Antenna

- SMD PCB Antenna using precision laminate materials
- Dimensions: 30.0 x 7.0 x 3.3 (mm)
- RoHS & Reach Compliant, Halogen free



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Description

A compact and high performing solution for smaller devices. A complete solution for global 4G LTE applications.

- Suitable for Diversity applications
- Designed to work in compact devices with limited space, corner mounted
- For 4G LTE Applications, but also backward compatible for 3G/2G systems
- Less dependency on GND plane length
- SMD component supplied in Tape and reel
- Higher performance than larger OTS solutions
- Project life support Direct from Synzen Engineers
- Suitable for sealing with resin / potting compounds



Applications

Telematics
Smart City
Drones

Smart Metering
Gateways
POS

Home Automation
Healthcare
OBD-II



30.0 x 7.0 x 3.3 (mm)



Patent pending design



General Specifications

Mechanical Specifications

| | |
|--------------------------------|-----------------------|
| Part Number | SZP-C-0L09 |
| Name | PROCYON a |
| Dimensions | 30.0 x 7.0 x 3.3 (mm) |
| Required Clearance area | 310 mm ² |
| Weight | <1.8g |
| Antenna Type | Surface Mount Device |

RF Specifications

| Frequency Range (MHz) | 698-960 | 1710-2200 | 2300-2400 | 2500-2690 |
|------------------------------------|---------|-----------|-----------|-----------|
| Average Efficiency (Linear) | >50% | >60% | >60% | >50% |
| Peak Gain (dBi) | 1.20 | 3.10 | 2.50 | 3.00 |
| S11 (max) dB | <-5.8 | <-6.1 | <-6.5 | <-6.2 |
| VSWR (max) | 3.5:1 | 2.9:1 | 2.8:1 | 3.0:1 |
| Impedance | 50 Ω | | | |
| Polarization | Linear | | | |

The data shown was measured on Synzen DVK (SZDV-C-0L09)

Environmental Specifications

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



LTE Bands Covered by SZP-C-0L02

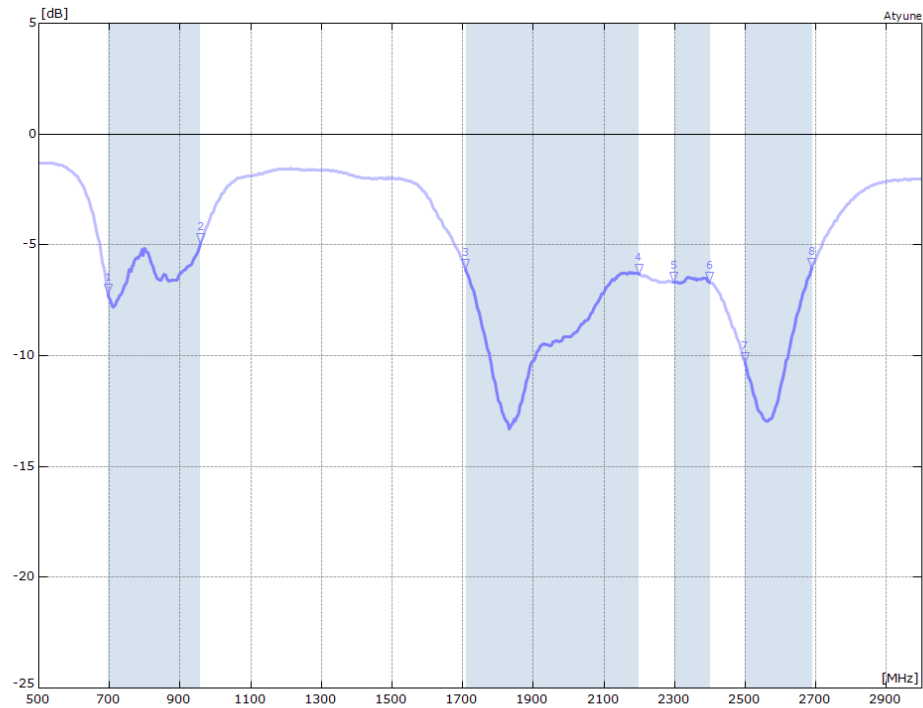
Supported band list

| LTE Band | Frequency Band | Uplink (MHz) | Downlink (MHz) | Supported |
|----------|----------------|-----------------|-----------------|-----------|
| 1 | 2100 | 1920 – 1980 | 2110 – 2170 | YES |
| 2 | 1900 | 1850 – 1910 | 1930 – 1990 | YES |
| 3 | 1800 | 1710 – 1785 | 1805 – 1880 | YES |
| 4 | 1700 | 1710 – 1755 | 2110 – 2155 | YES |
| 5 | 850 | 824 – 849 | 869 – 894 | YES |
| 7 | 2600 | 2500 – 2570 | 2620 – 2690 | YES |
| 8 | 900 | 880 – 915 | 925 – 960 | YES |
| 10 | 1700 | 1710 – 1770 | 2110 – 2170 | YES |
| 11 | 1500 | 1427.9 – 1447.9 | 1475.9 – 1495.9 | NO |
| 12 | 700 | 699 – 716 | 729 – 746 | YES |
| 13 | 700 | 777 – 787 | 746 – 756 | YES |
| 14 | 700 | 788 – 798 | 758 – 768 | YES |
| 17 | 700 | 704 – 716 | 734 – 746 | YES |
| 18 | 850 | 815 – 830 | 860 – 875 | YES |
| 19 | 850 | 830 – 845 | 875 – 890 | YES |
| 20 | 800 | 832 – 862 | 791 – 821 | YES |
| 21 | 1500 | 1447.9 – 1462.9 | 1495.9 – 1510.9 | NO |
| 22 | 3500 | 3410 – 3490 | 3510 – 3590 | NO |
| 24 | 1600 | 1626.5 – 1660.5 | 1525 – 1559 | NO |
| 25 | 1900 | 1850 – 1915 | 1930 – 1995 | YES |
| 26 | 850 | 814 – 849 | 859 – 894 | YES |
| 27 | 800 | 807 – 824 | 852 – 869 | YES |
| 28 | 700 | 703 – 748 | 758 – 803 | YES |
| 29 | 700 | N/A | 717 – 728 | YES |
| 30 | 2300 | 2305 – 2315 | 2350 – 2360 | YES |
| 31 | | 452.5 – 457.5 | 462.5 – 467.5 | NO |
| 32 | 1500 | N/A | 1452 – 1496 | NO |
| 33 | 2100 | 1900 – 1920 | | YES |
| 34 | 2100 | 2010 – 2025 | | YES |
| 35 | 1900 | 1850 – 1910 | | YES |
| 36 | 1900 | 1930 – 1990 | | YES |
| 37 | | 1910 – 1930 | | YES |
| 38 | 2600 | 2570 – 2620 | | YES |
| 39 | 1900 | 1880 – 1920 | | YES |
| 40 | 2300 | 2300 – 2400 | | YES |
| 41 | 2500 | 2496 – 2690 | | YES |
| 42 | 3500 | 3400 – 3600 | | NO |
| 43 | 3700 | 3600 – 3800 | | NO |
| 44 | 700 | 703 – 803 | | YES |
| 45 | 1500 | 1447 – 1467 | | NO |
| 46 | 5200 | 5150 – 5925 | | NO |
| 47 | 5900 | 5855 – 5925 | | NO |
| 48 | 3600 | 3550 – 3700 | | NO |
| 50 | 1500 | 1432 – 1517 | | NO |
| 51 | 1500 | 1427 – 1432 | | NO |
| 65 | 2100 | 1920 – 2010 | 2110 – 2200 | YES |
| 66 | 1700 | 1710 – 1780 | 2110 – 2200[2] | YES |
| 67 | 700 | N/A | 738 – 758 | YES |
| 68 | 700 | 698 – 728 | 753 – 783 | YES |
| 69 | 2600 | N/A | 2570 – 2620 | YES |
| 70 | 2000 | 1695 – 1710 | 1995 – 2020 | NO |

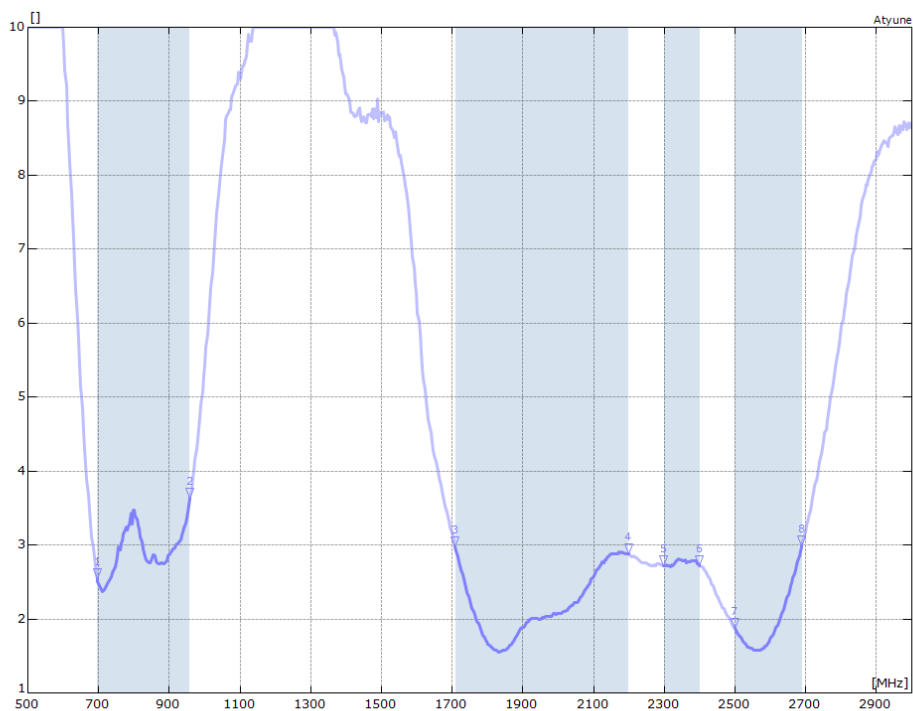


RF Characteristics

S11 Parameter



VSWR

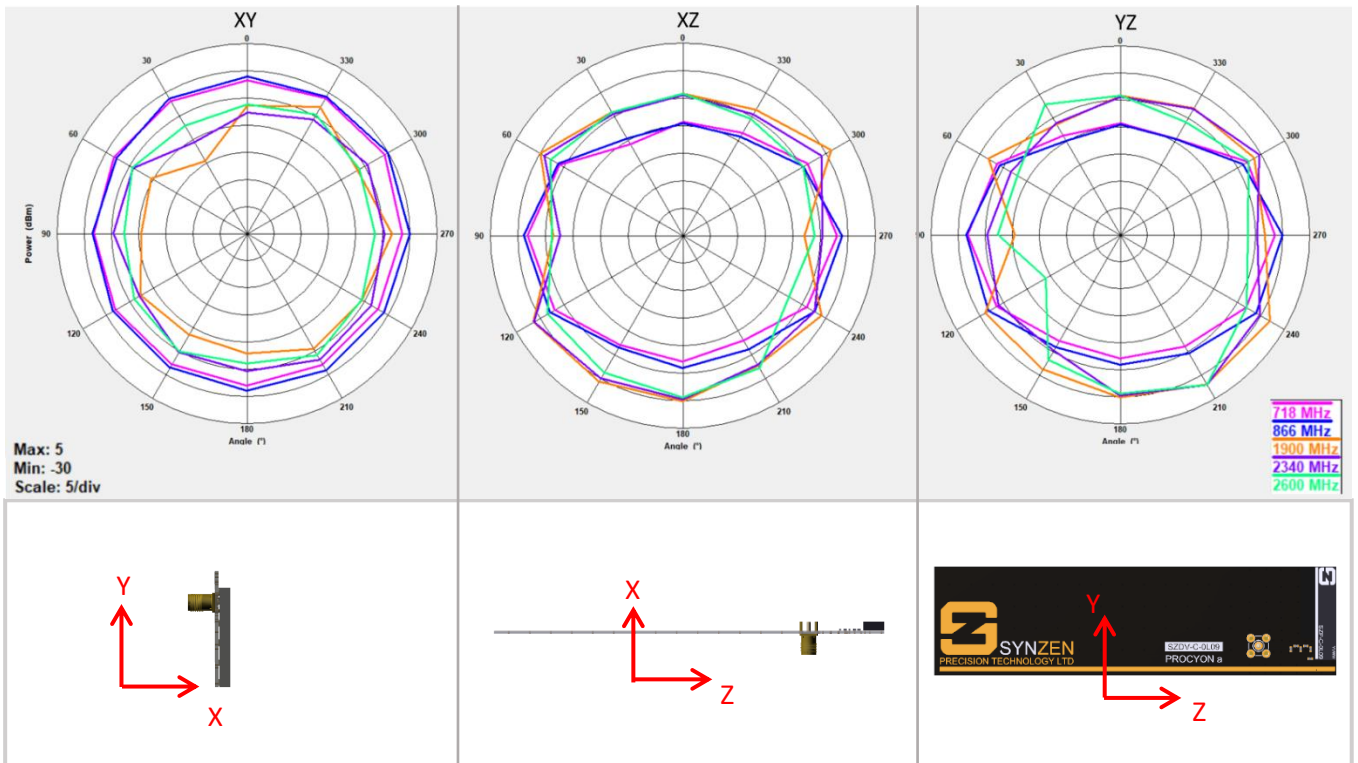




Radiated Performance

2D Polar Plot

The data shown was measured on Synzen DVK (SZDV-C-0L09)

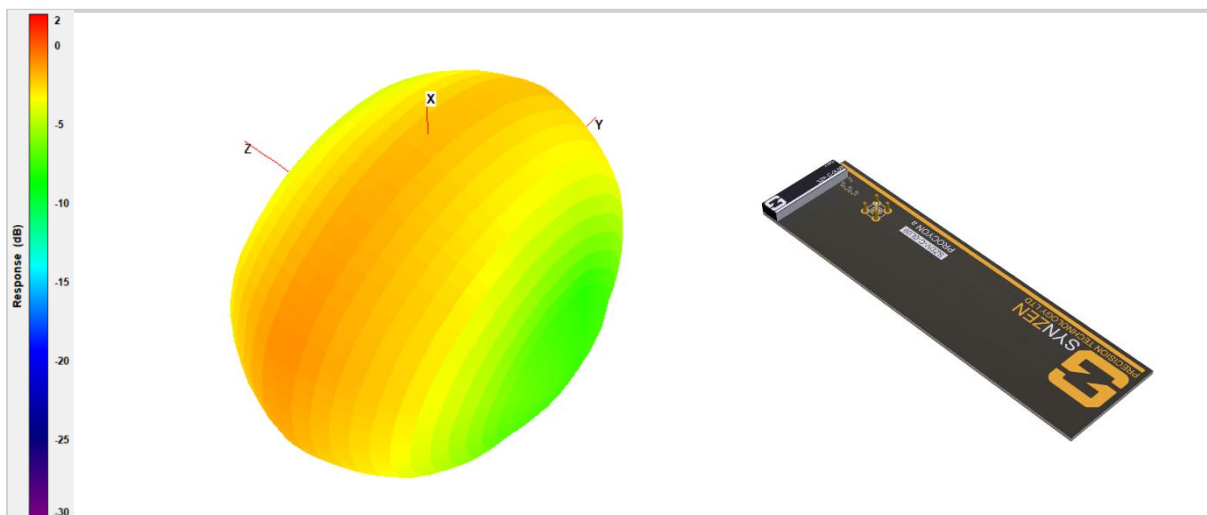
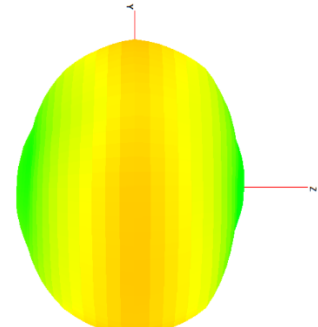
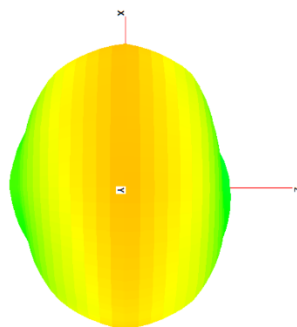
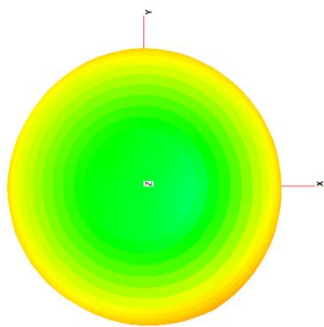
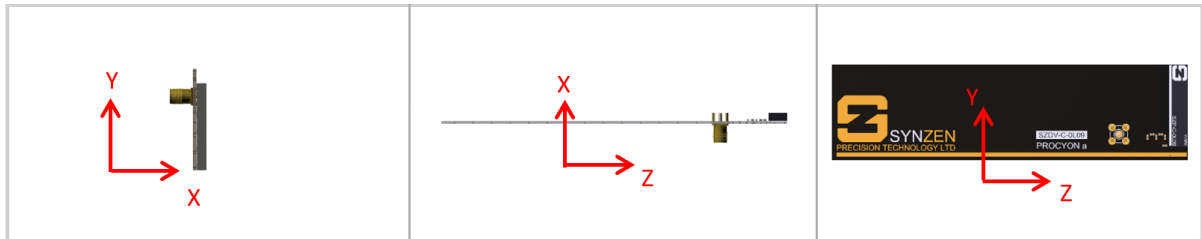




Radiated Performance

3D Radiation Pattern at 714MHz

The data shown was measured on Synzen DVK (SZDV-C-0L09).

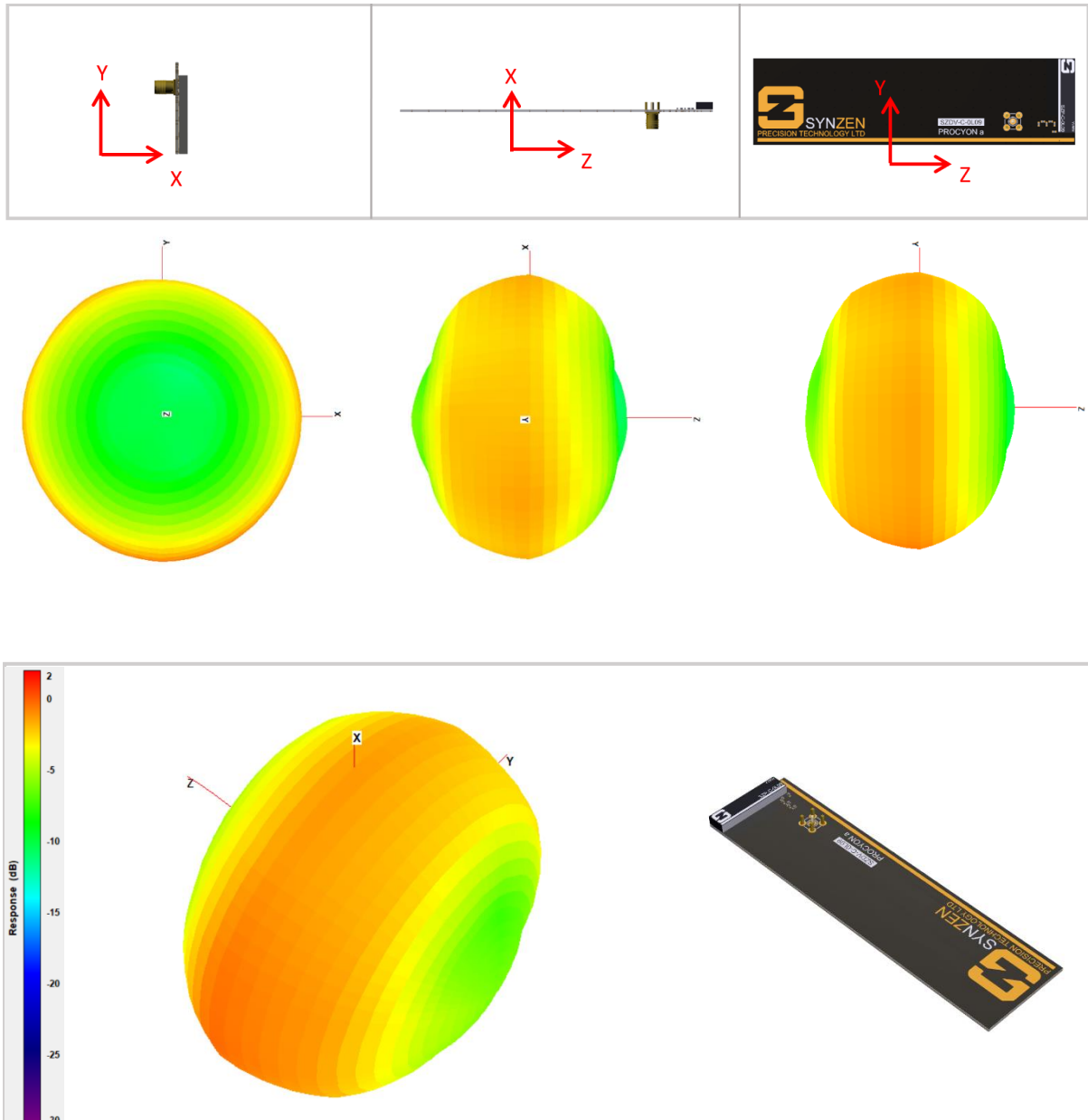




Radiated Performance

3D Radiation Pattern at 870MHz

The data shown was measured on Synzen DVK (SZDV-C-0L09).

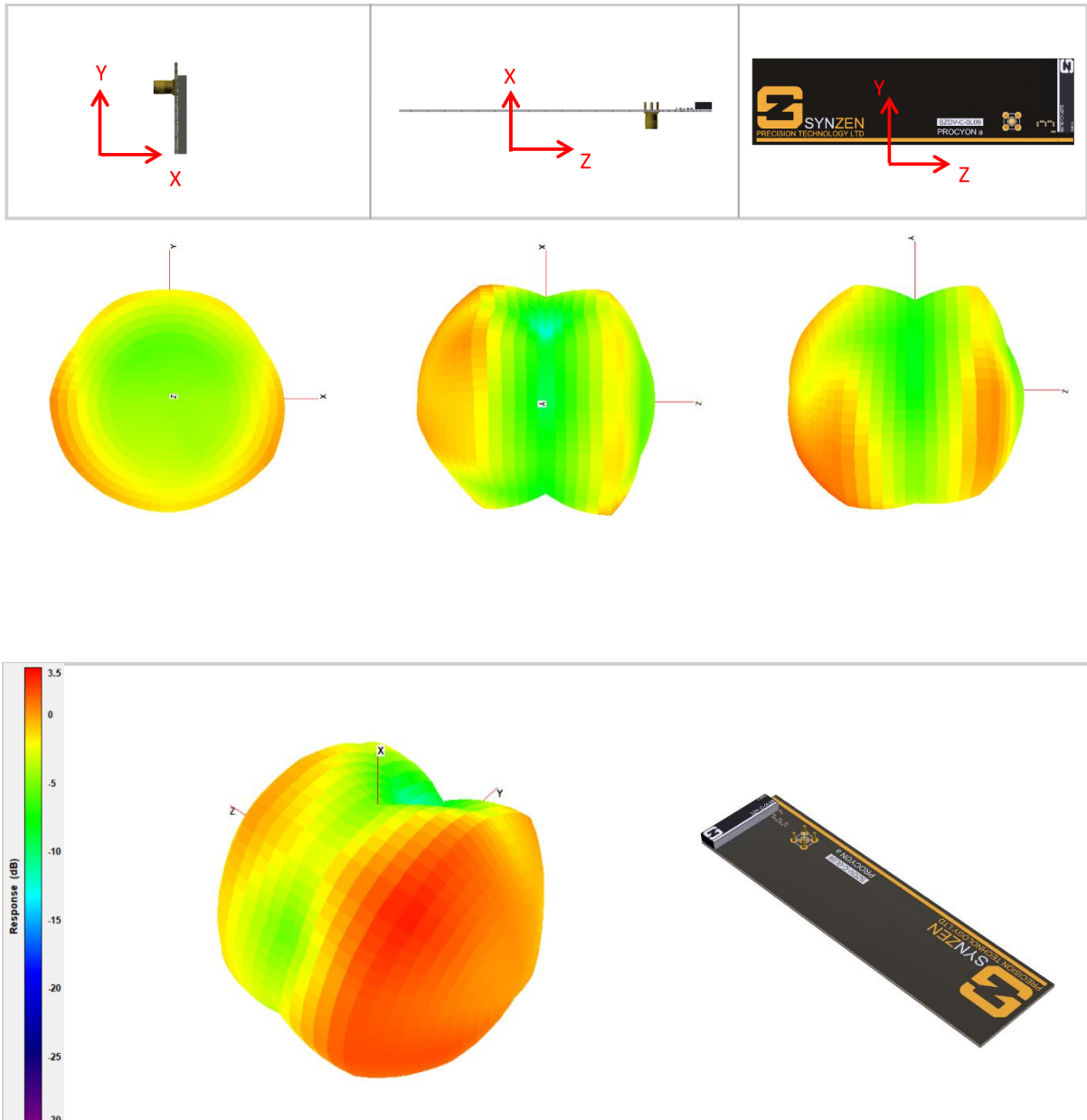




Radiated Performance

3D Radiation Pattern at 1880MHz

The data shown was measured on Synzen DVK (SZDV-C-0L09).

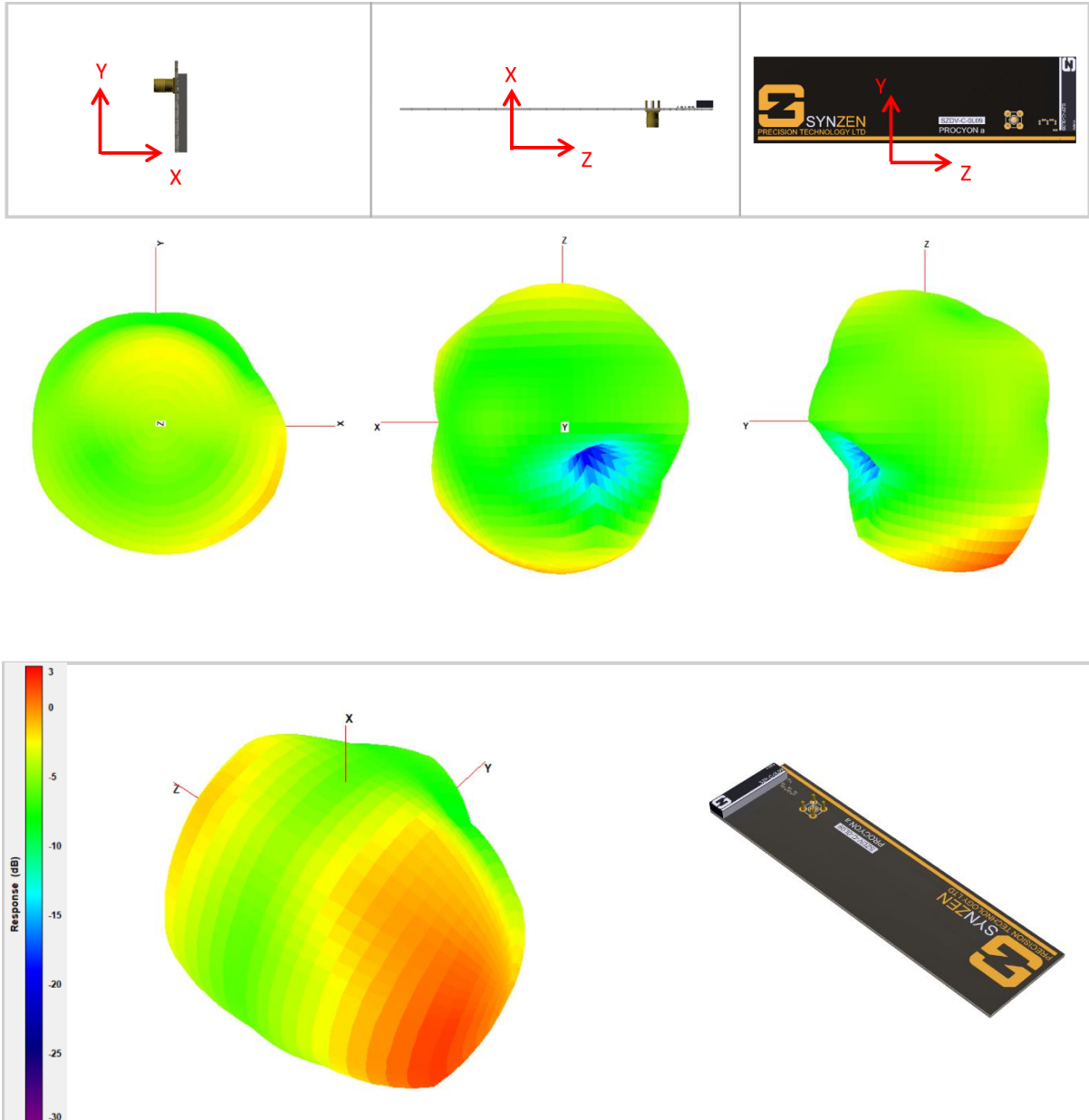




Radiated Performance

3D Radiation Pattern at 2600MHz

The data shown was measured on Synzen DVK (SZDV-C-0L09).

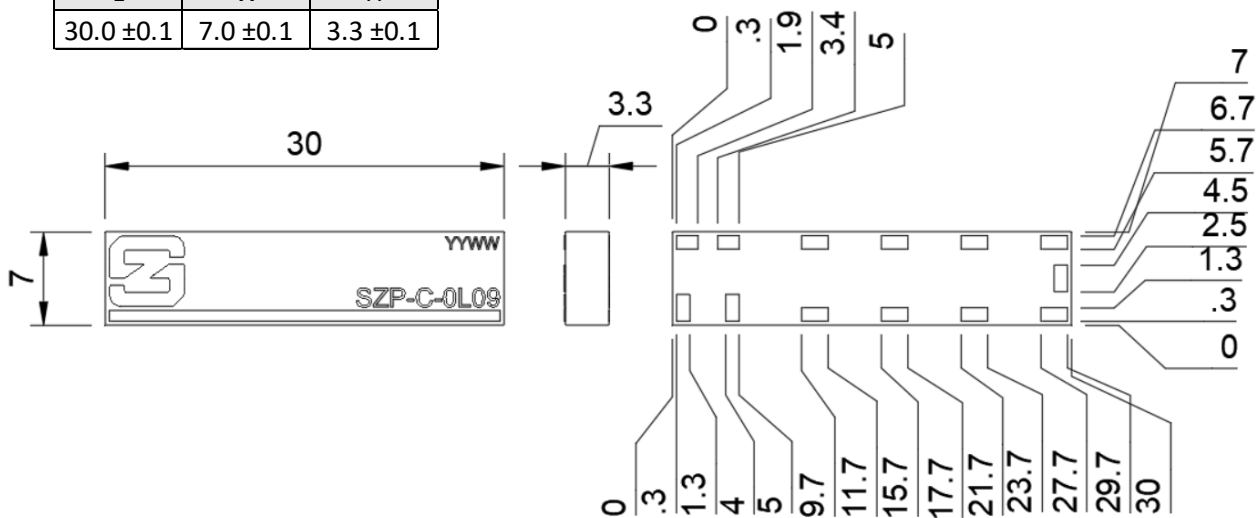




Mechanical

Antenna Mechanical Drawing

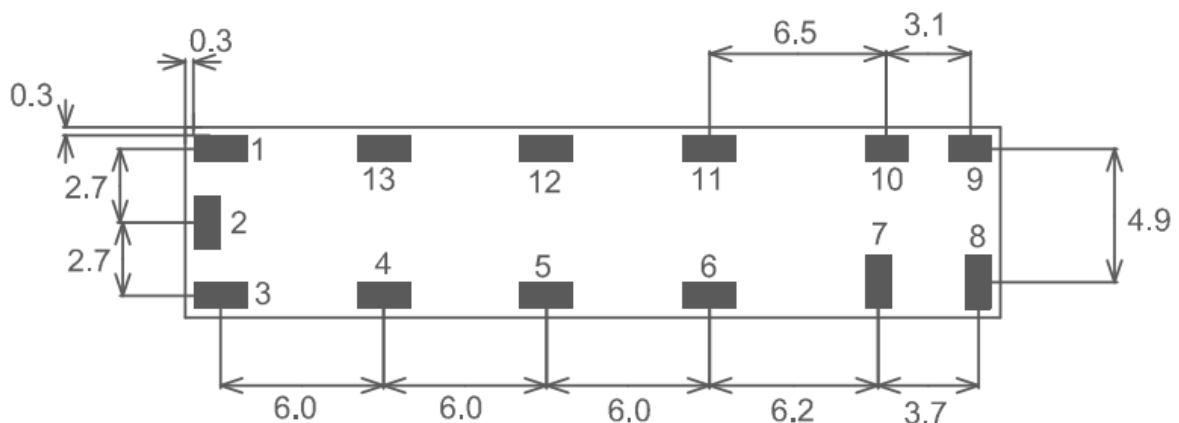
| L | W | H |
|-----------|----------|----------|
| 30.0 ±0.1 | 7.0 ±0.1 | 3.3 ±0.1 |



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 www.synzen.com.tw/products.



PADS 1,2,3,4,5,6,7,8,11,12,13 = 2.0 x 1.0

PADS 9,10 = 1.6 x 1.0

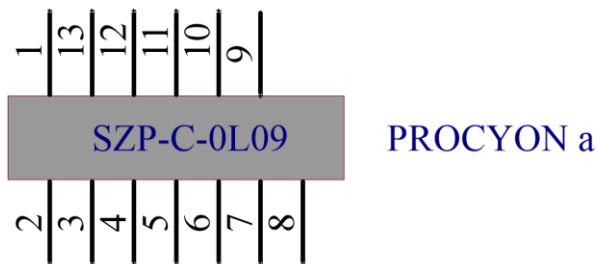
ALL DIMENSIONS IN MM



Antenna Pinout

SZP-C-0L09 Schematic Symbol

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



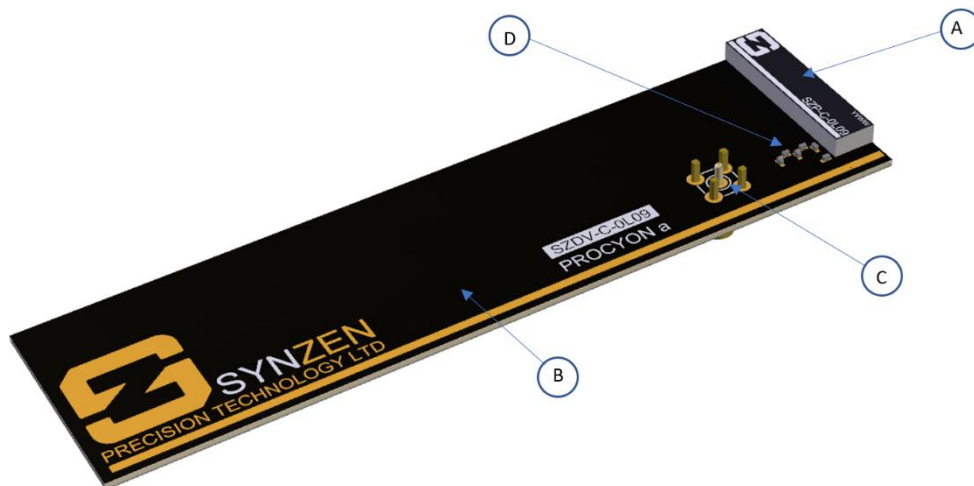
| Pin | Description |
|---------------------------|-------------------------------|
| 1,2,3,4,5,6,9,10,11,12,13 | Not used (Mechanical support) |
| 7 | Feed to Matching network |
| 8 | Tuning Return |



Development Kit Mechanical

SZDV-C-0L09 Development Kit

The SZDV-C-0L09 development kit is a PCBA with the LTE antenna (SZP-C-0L09) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.

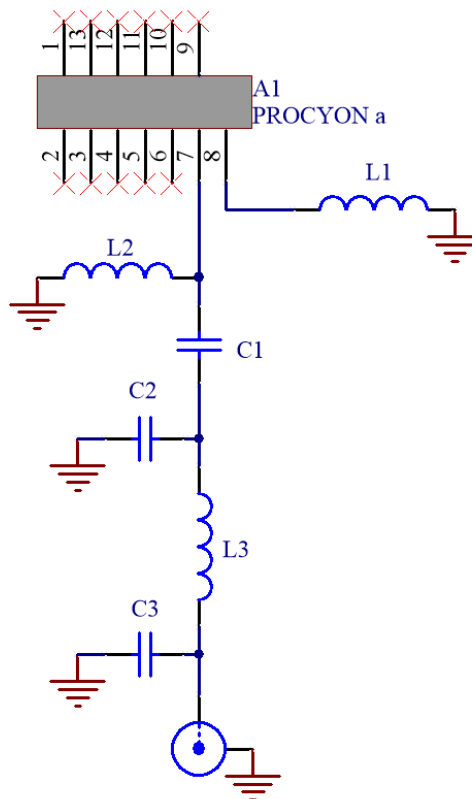


| | |
|---|-----------------------|
| A | SZP-C-0L09 (PROCYONa) |
| B | Host PCB |
| C | SMA Connector |
| D | Matching Circuit |

Development Kit Circuit

Development 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.



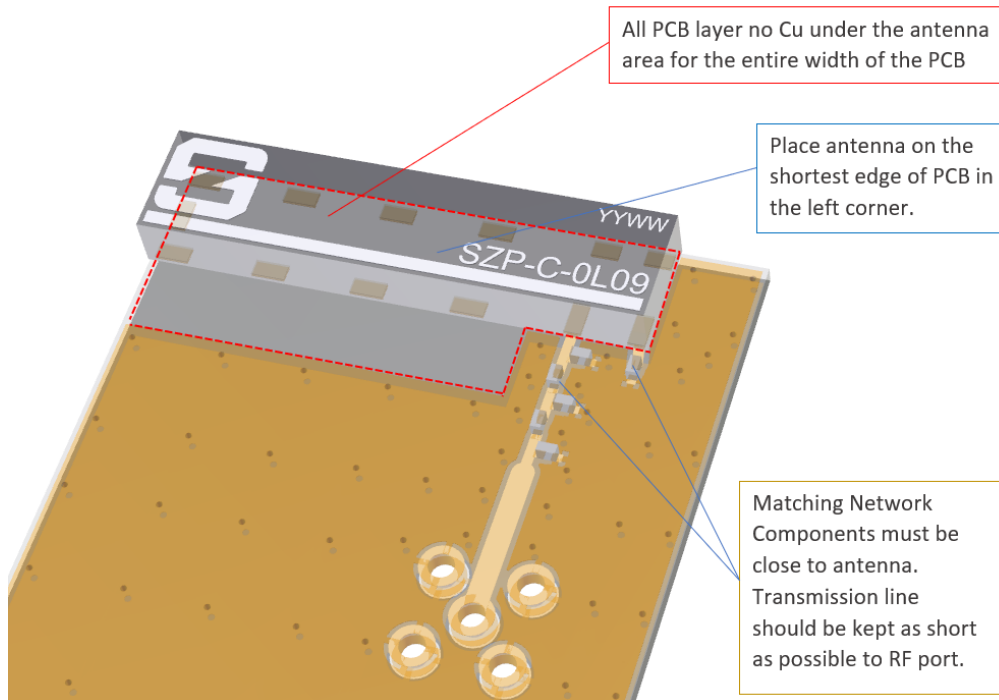
| Designator | Component Type | Value | Size | Manufacturing Part No. |
|------------|----------------|-----------|------|--------------------------|
| A1 | Antenna | PROCYON a | - | SZP-C-0L09 |
| L1 | Inductor | 5.1nH | 0402 | LQG15HS5N1H02D |
| L2 | Inductor | 68nH | 0402 | LQG15HS68NS02D |
| C2, C3 | NA | DNP | 0402 | Do Not Place |
| C1 | Capacitor | 2.4pF | 0402 | GJM1555C1H2R4CB01D |
| L3 | Inductor | 2.2nH | 0402 | LQG15HS2N2J02D |
| J1 | SMA Connector | - | - | ACE solution A3SAFTST135 |



Host PCB Placement and Clearance

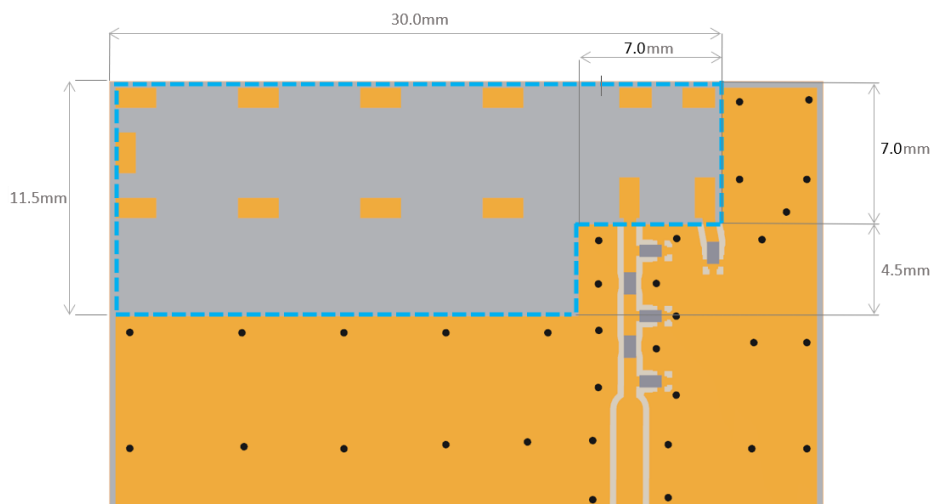
Placement

The antenna is designed to function placed at the left side corner of the host PCB. For a right-hand side version see PROCYON b (SZP-C-0L10).



Clearance

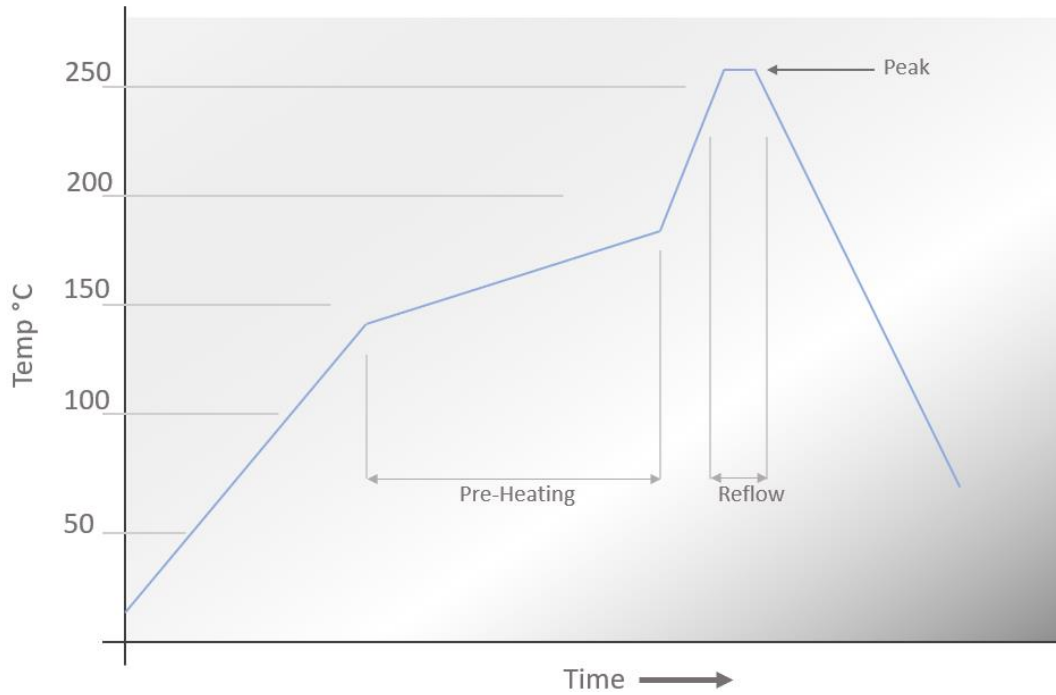
A clearance is required through all PCB layers for the precise area shown. No components must be placed within this area otherwise RF coupling from the antenna to any conductor will occur reducing performance significantly. Also, any components such as battery or display must also avoid this area.





Soldering

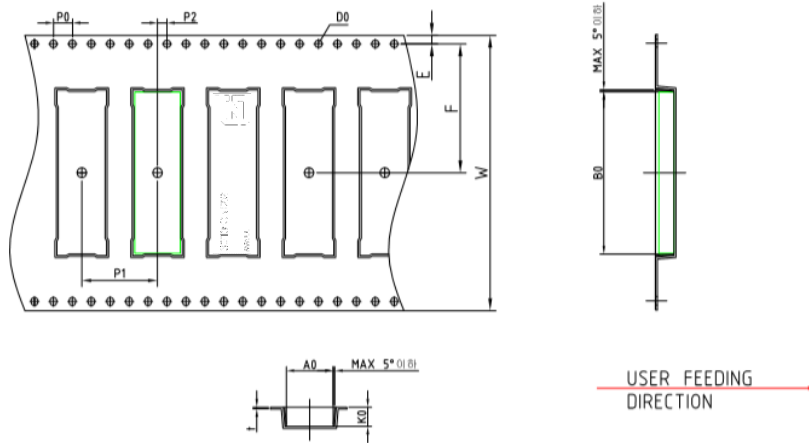
Reflow Profile



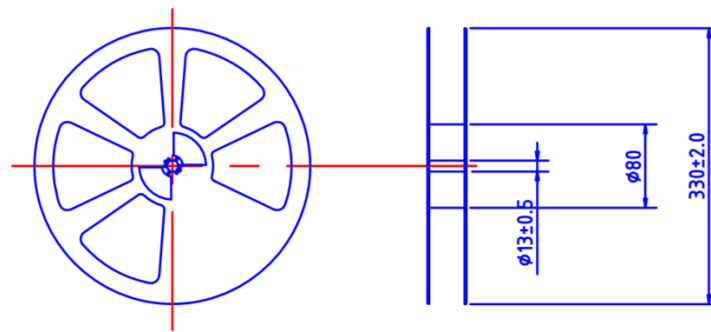
| | | |
|-------------------------|-------------|-------------------|
| Pre-Heating | 130 - 180°C | 50 to 190 seconds |
| Reflow | >220 °C | 50 to 160 seconds |
| Peak Temperature | 260 °C | 15 to 45 seconds |

Packaging

Tape and Reel



1. 10 sprocket hole pitch cumulative tolerance ± 0.2
2. Camber not to exceed 1mm in 100mm.
3. A₀ and B₀ measured on a plane 0.1mm above the bottom of the pocket
4. K₀ measured from a plane on the inside bottom of the pocket to the top surface of the carrier.



ANTI-STATIC

| REEL DIMENSION | Type | Color | Size | Hub |
|-------------------|------|-------|-------|------------|
| | | PS | Black | $\phi 330$ |



Environmental

Material Regulation

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

This product is Halogen free.



Synzen Precision Technology Ltd



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