5G Surface Mount Antenna SZP-C-2L14

5G NR/4G LTE/3G: 617-960; 1427-1518; 1710-2200; 2300-2400; 2500-2690; 3300-4200MHz

Description

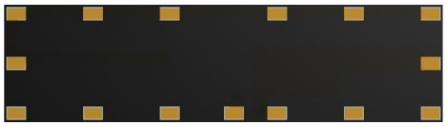
ALTAIR, for the ultimate compact 5G solution, ALTAIR was developed to be compact but still cover bands from 600-4200MHz. With a small footprint of 40 x 10.6 (mm). With a fall back to 4G/3G/2G.

Typical applications include:

- For 5G/4G Cellular Applications
- Ideal for MIMO 5G systems
- Small form factor of 40.0 x 10.6 x 3.3 (mm).

Typical Applications

Telematics	Pico base stations	Autonomous / UAV
Smart Metering	Connected Health	Payment Terminals



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General Specifications

Mechanical Specifications

Part Number	SZP-C-2L14
Name	ALTAIR
Dimensions	40.0 x 10.6 x 3.3 (mm)
Required Clearance area	9.0 x 5.8 (mm)
Weight	<2g
Antenna Type	Surface Mount Device

RF Specifications*

Band	Frequency Range (MHz)	Avg Efficiency (%)	Peak Gain (dBi)	Impedance	Polarization
5GNR/4G LTE B5,8,12,13,14,17,18,20,26,27,28,29,71	617-960	>60	1.47	50Ω	Linear
5GNR/4G LTE B21,32,74,75,76	1427-1518	>45	0.01		
5GNR/4G LTE B1,2,3,4,9,23,35,39,66	1710-2200	>75	2.82		
5GNR/4G LTE B40	2300-2400	>70	3.69		
5GNR/4G LTE B7,38,41	2490-2690	>60	3.26		
5GNR/4G LTE B77,78	3300-4200	>65	5.91		

*All performance stated is measured of SZDV-C-2L14 evaluation kit with 130 x 40 (mm) GND.

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

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5G NR/ 4G LTE Bands

Supported Band List

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
9		1749.9-1784.9	1844.9-1879.9	YES
10	1700	1710-1770	2110-2170	YES
11	1500	1427.9-1447.9	1475.9-1495.9	YES
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	YES
22	3500	3410-3490	3510-3590	YES
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	YES
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		YES
43	3700	3600-3800		YES
44	700	703-803		YES
45	1500	1447-1467		YES
46	5200	5150-5925		No
47	5900	5855-5925		No
48	3600	3550-3700		YES
50	1500	1430-1517		YES
51	1500	1427-1432		YES
65	2100	1920-2010	2110-2200	YES
66	1700	1710-1780	2110-2200	YES
67	700	N/A	738-758	YES
68	700	698-728	753-783	No
69	2600	N/A	2570-2620	YES
70	2000	1695-1710	1995-2020	YES
71		663-698	617-652	YES
74		1427-1518		YES
77		3300-4200		YES
78		3300-3800		YES
79		4400-5000		No
85		698-716	728-746	YES

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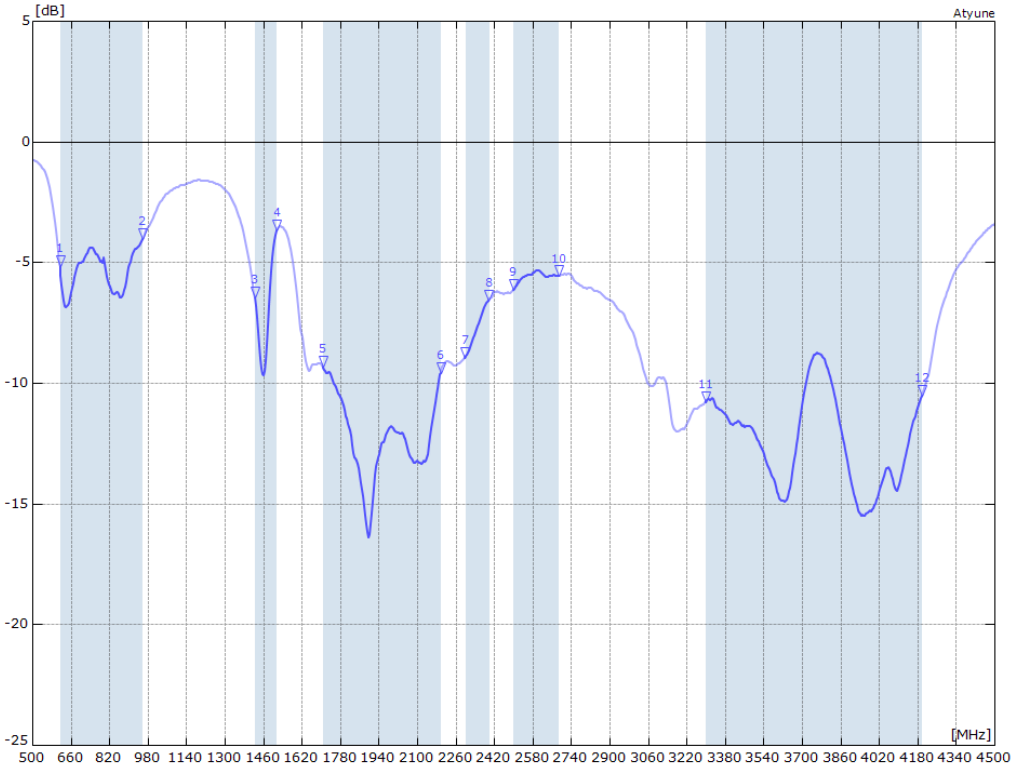
RF Characteristics

S11 Parameter



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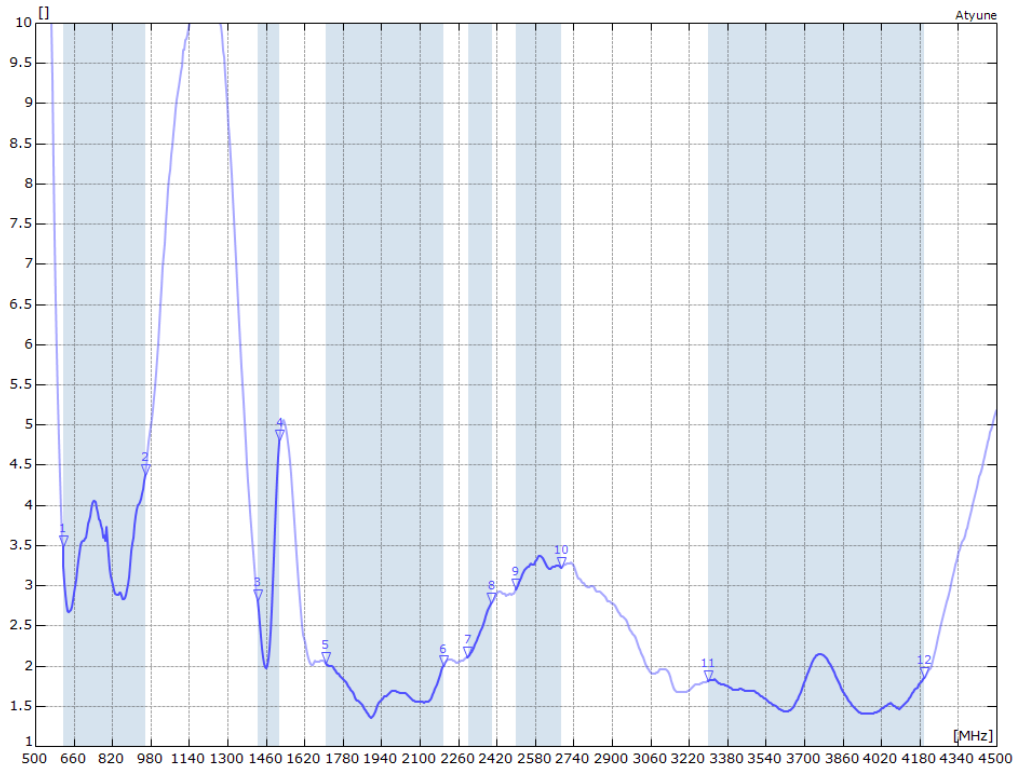

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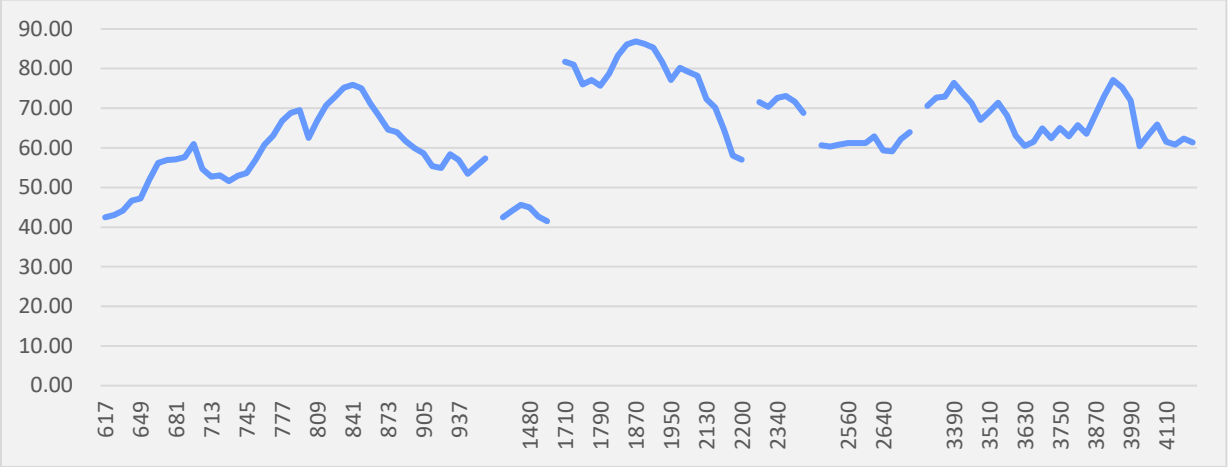
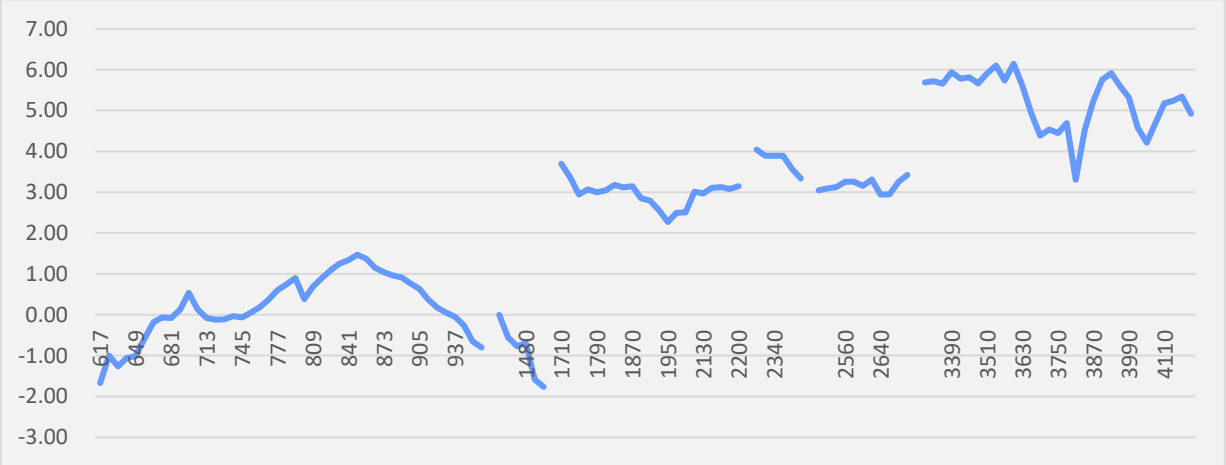
Antenna Performance

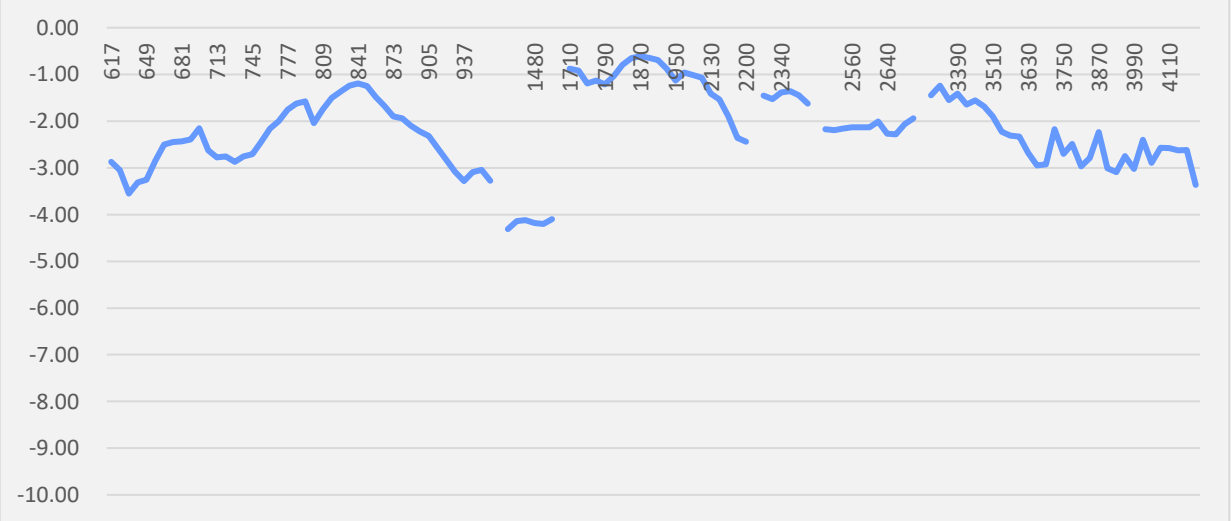
Efficiency



Peak Gain



Average Gain



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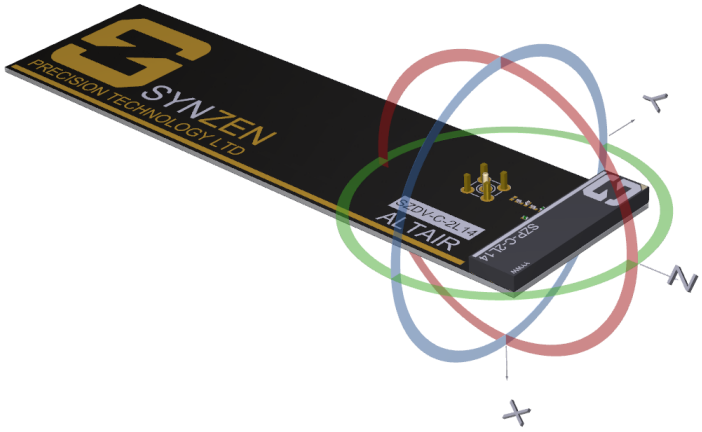
Radiated Performance

2D Polar Plot 617-960MHz

The data shown was measured on Synzen EVK (SZDV-C-2L14)



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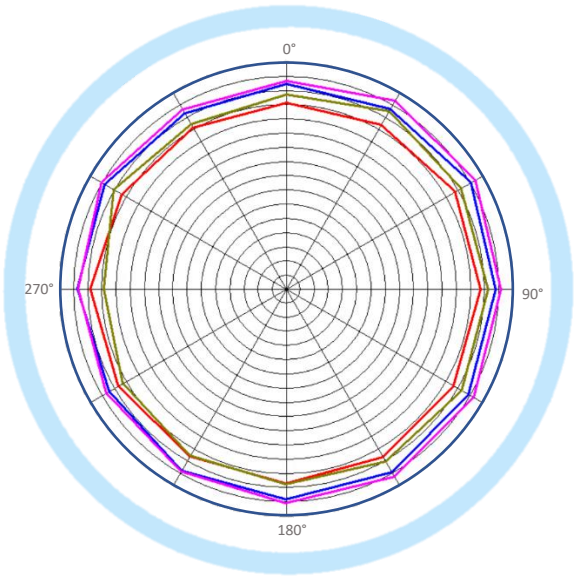
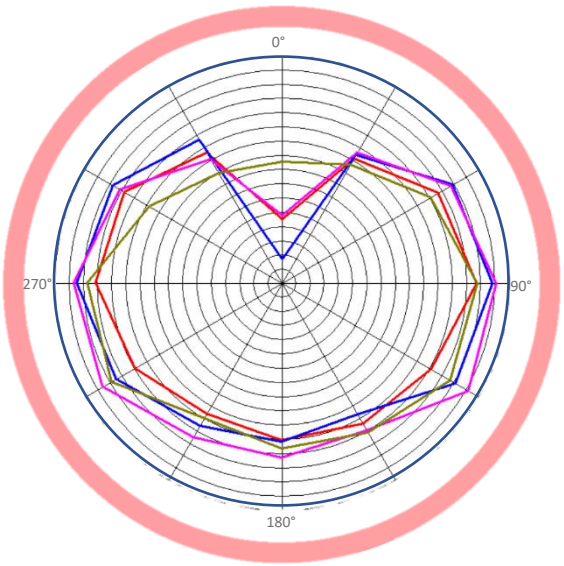


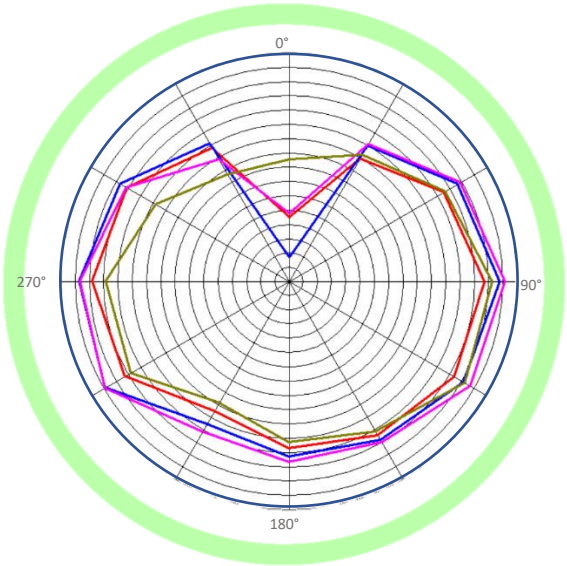
Max: 2
Min: -30
Scale: 2/div

617 MHz
745 MHz
881 MHz
960 MHz

XZ



YZ



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Radiated Performance

2D Polar Plot 1710-2690

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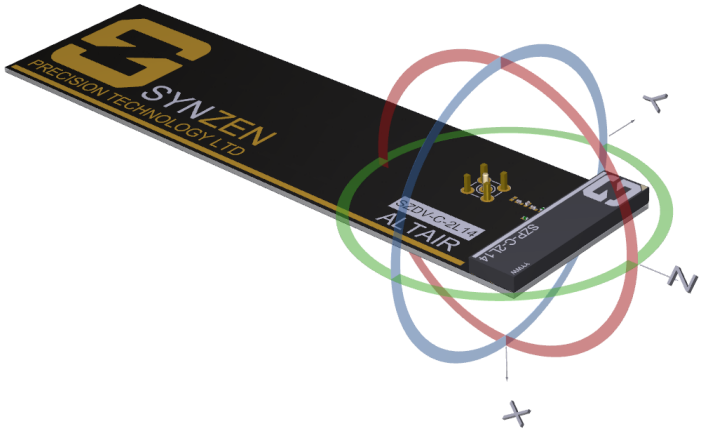

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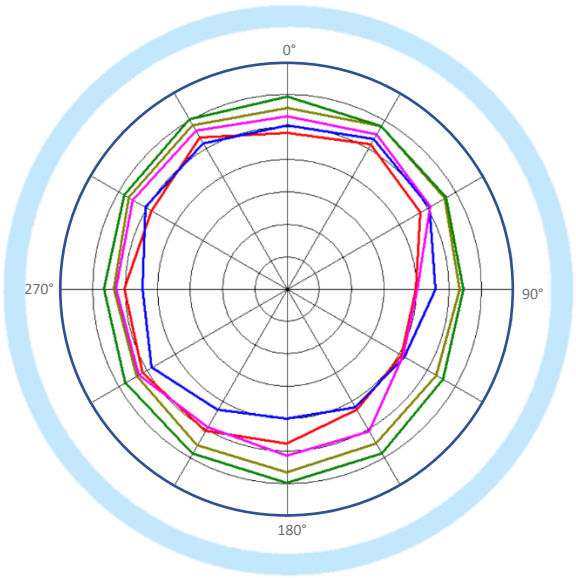
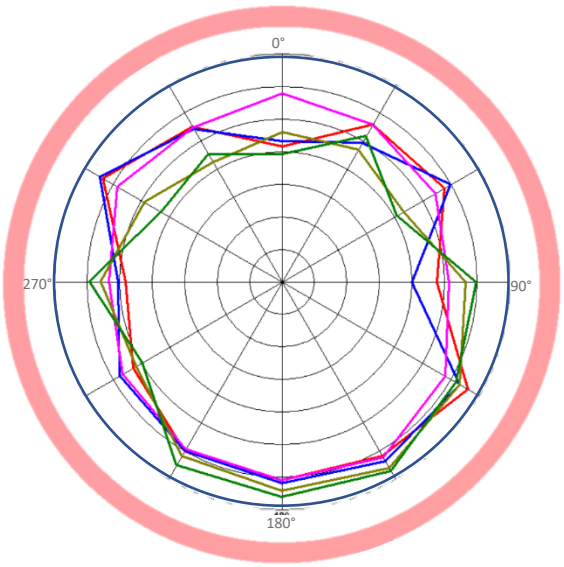


Max: 5
Min: -30
Scale: 5/div

1710 MHz
1990 MHz
2200 MHz
2500 MHz
2690 MHz

XZ



YZ

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Radiated Performance

2D Polar Plot 3300-4200

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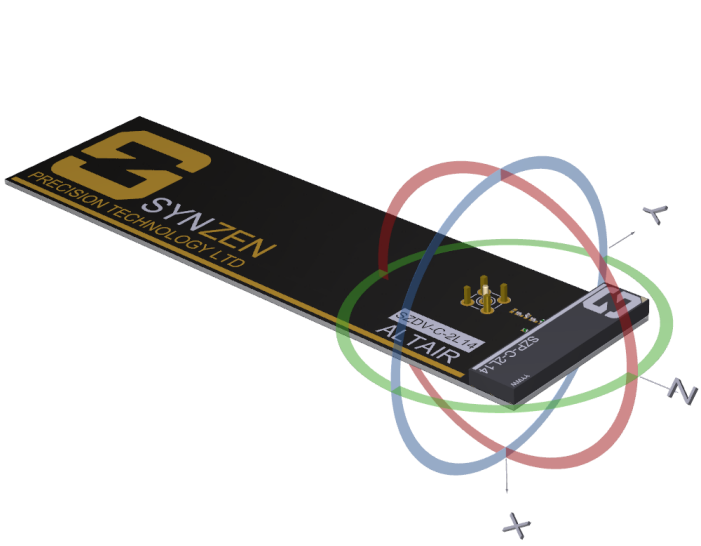
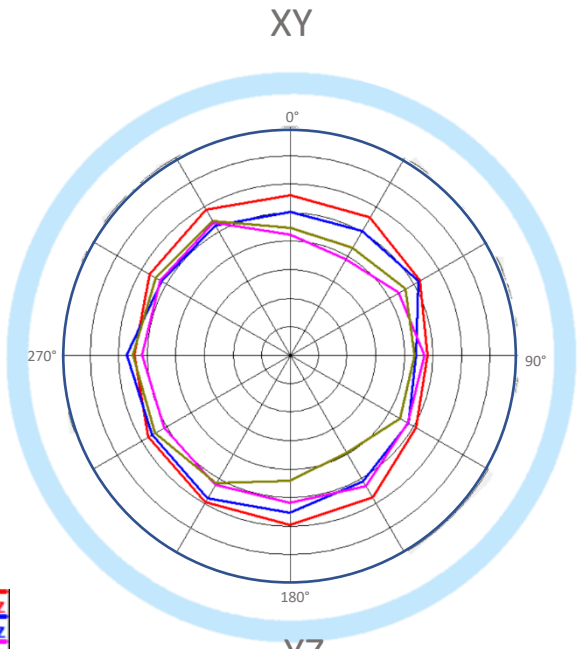
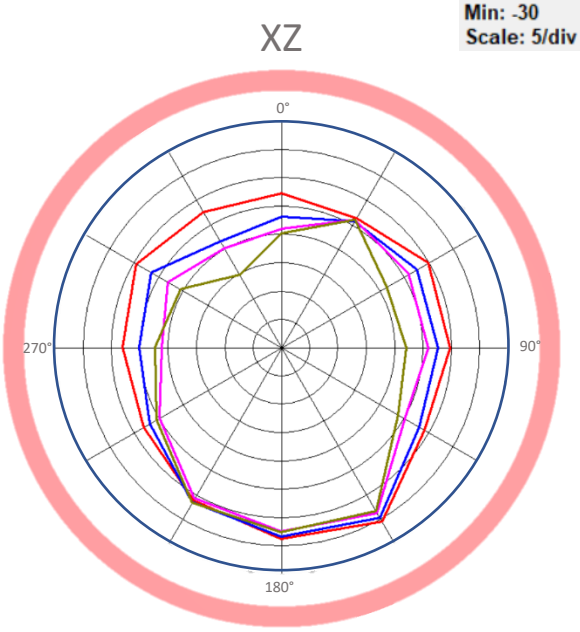
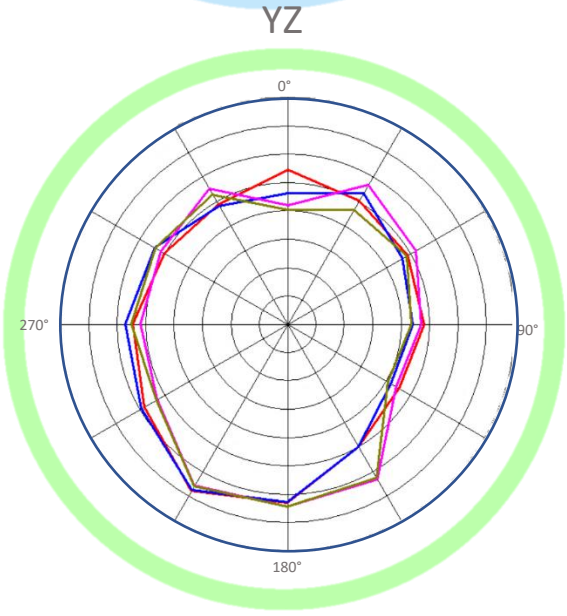




Max: 10
Min: -30
Scale: 5/div

3300 MHz
3600 MHz
3900 MHz
4200 MHz





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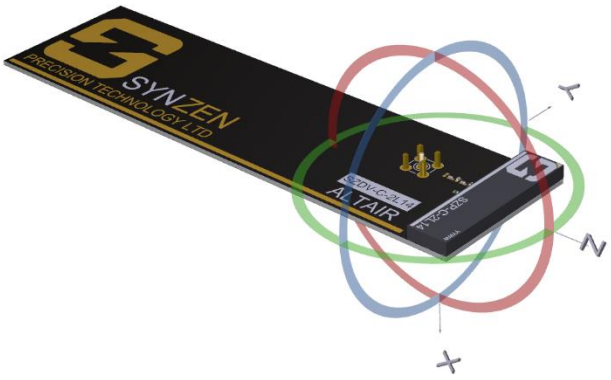
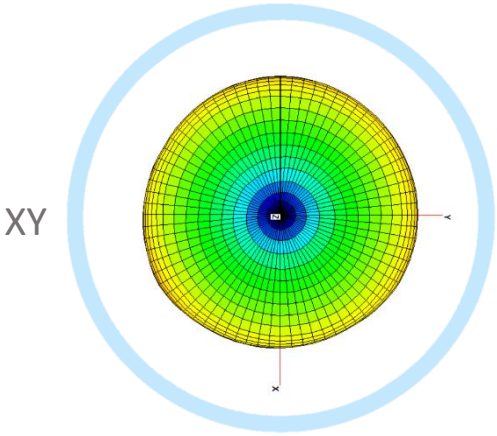
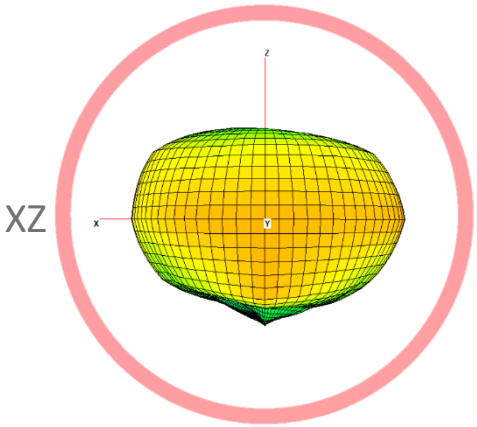
Radiated Performance

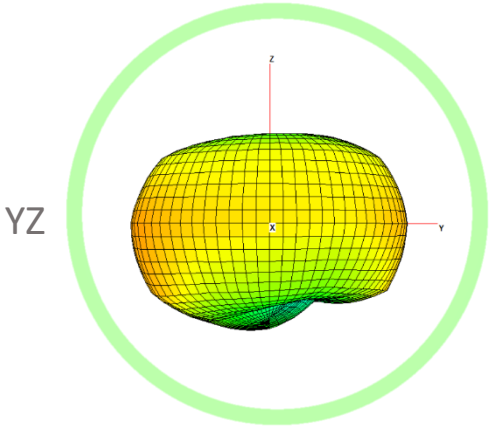
3D Radiation Pattern at 650MHz

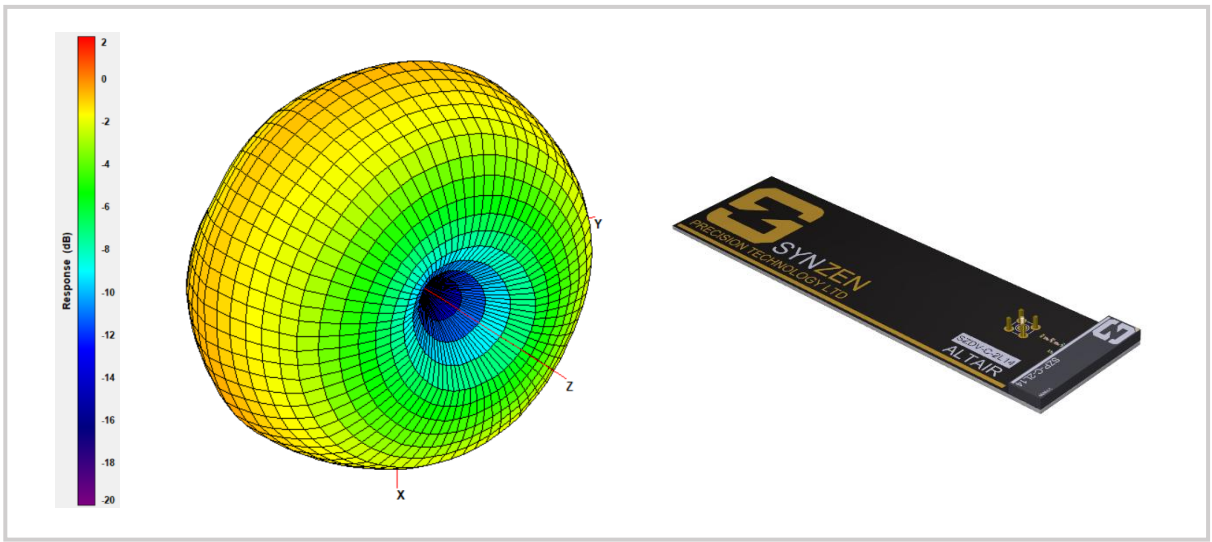
The data shown was measured on Synzen EVK (SZDV-C-2L14). The frequency point shown here is 650MHz.











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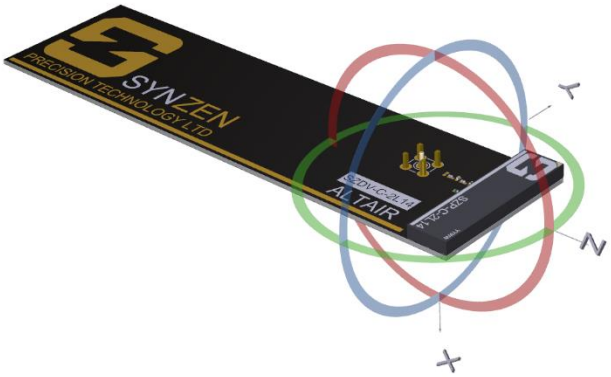
Radiated Performance

3D Radiation Pattern at 880MHz

The data shown was measured on Synzen EVK (SZDV-C-2L14). The frequency point shown here is 880MHz.



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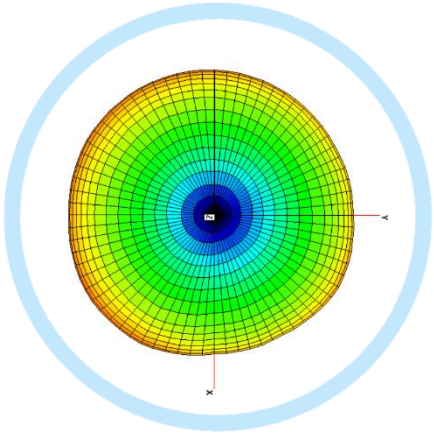
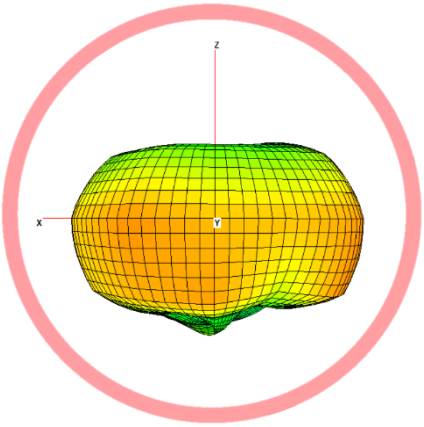


XZ



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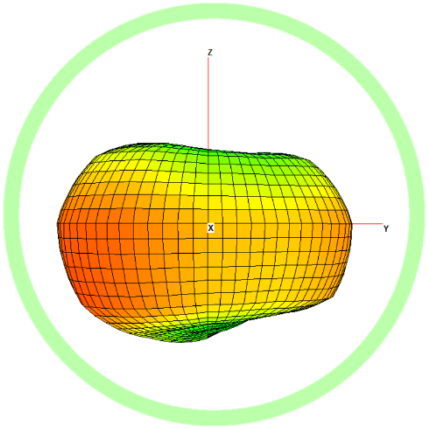

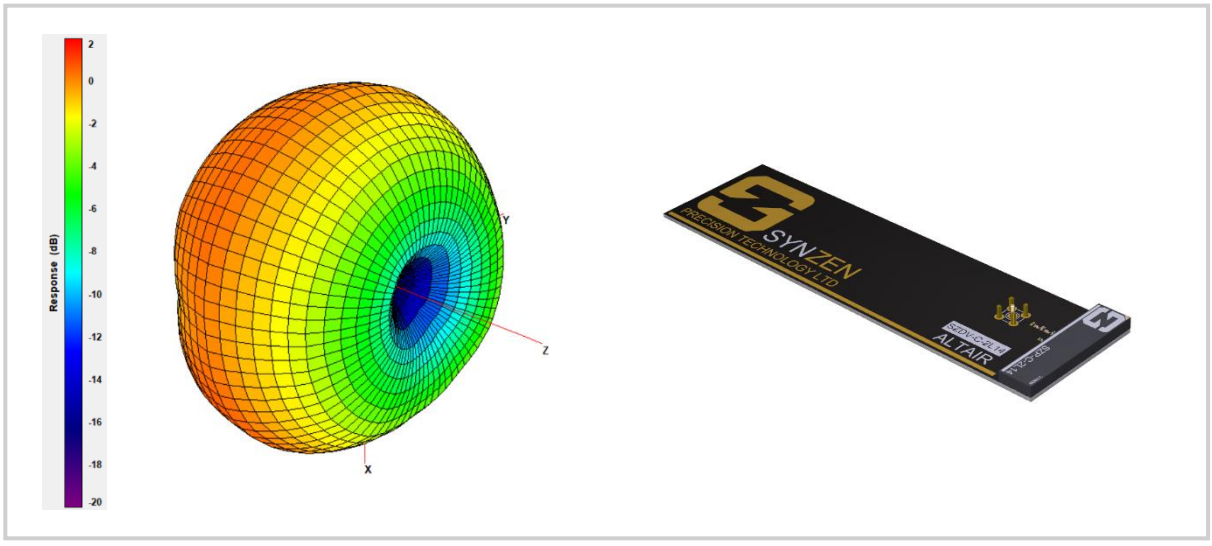

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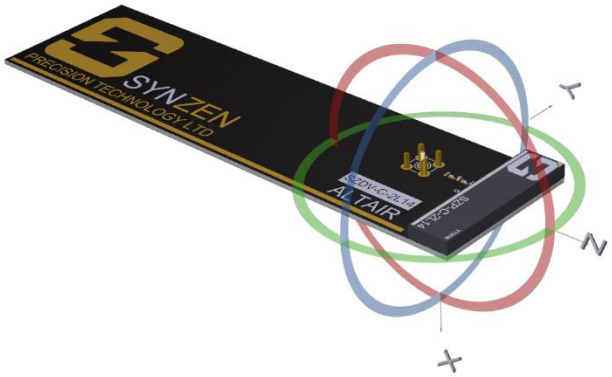
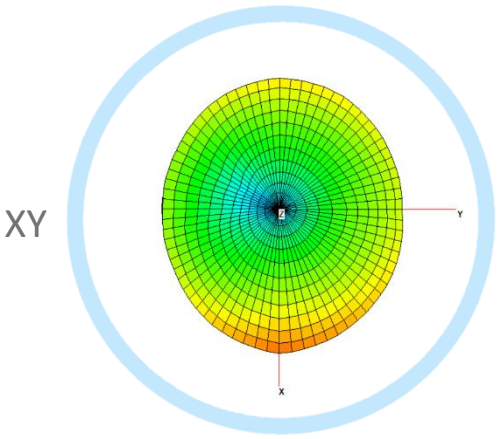
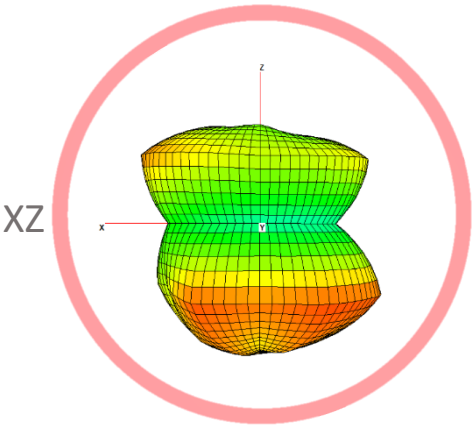
Radiated Performance

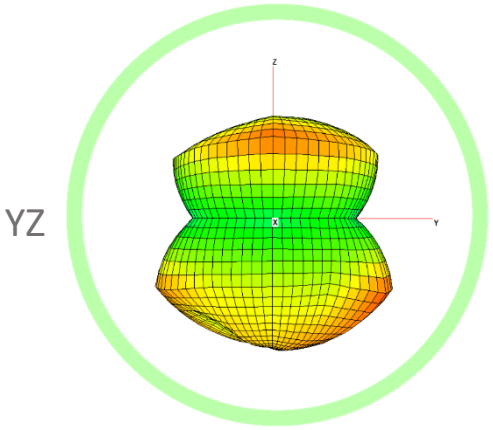
3D Radiation Pattern at 1880MHz

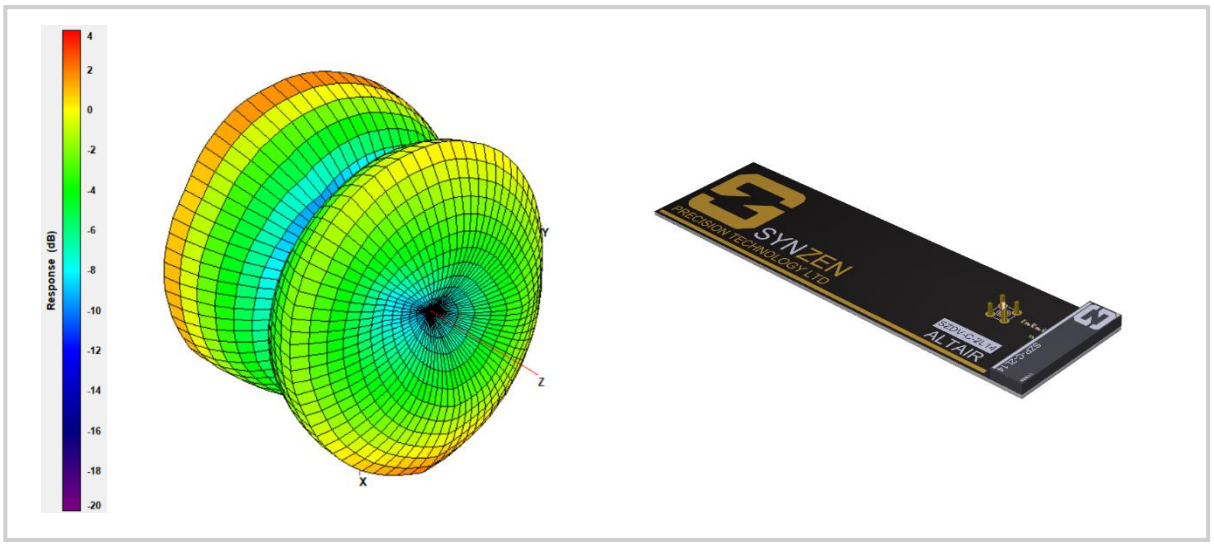
The data shown was measured on Synzen EVK (SZDV-C-2L14). The frequency point shown here is 1880MHz.











Radiated Performance

3D Radiation Pattern at 2600MHz

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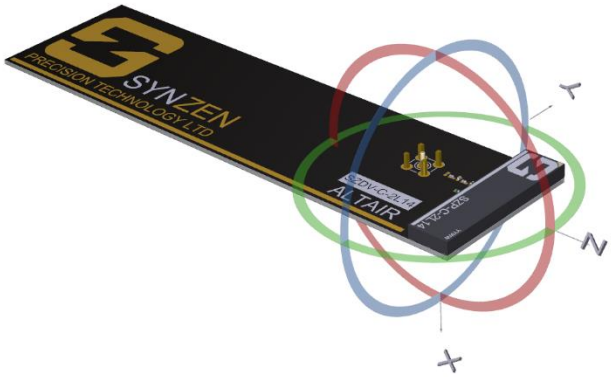

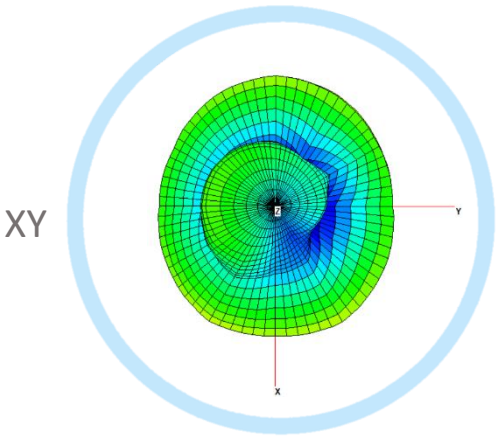

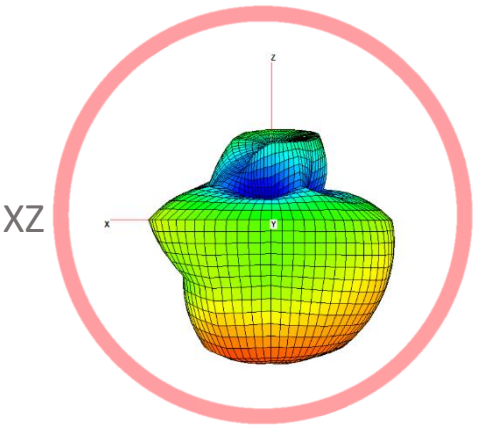

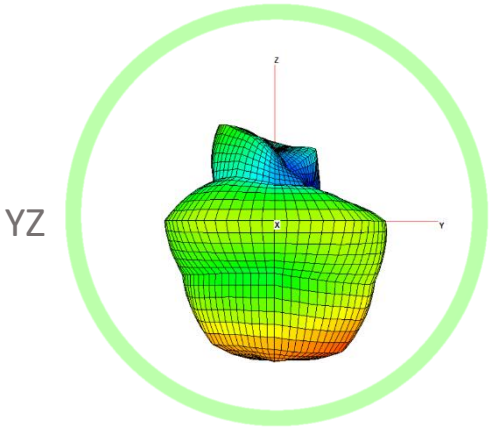

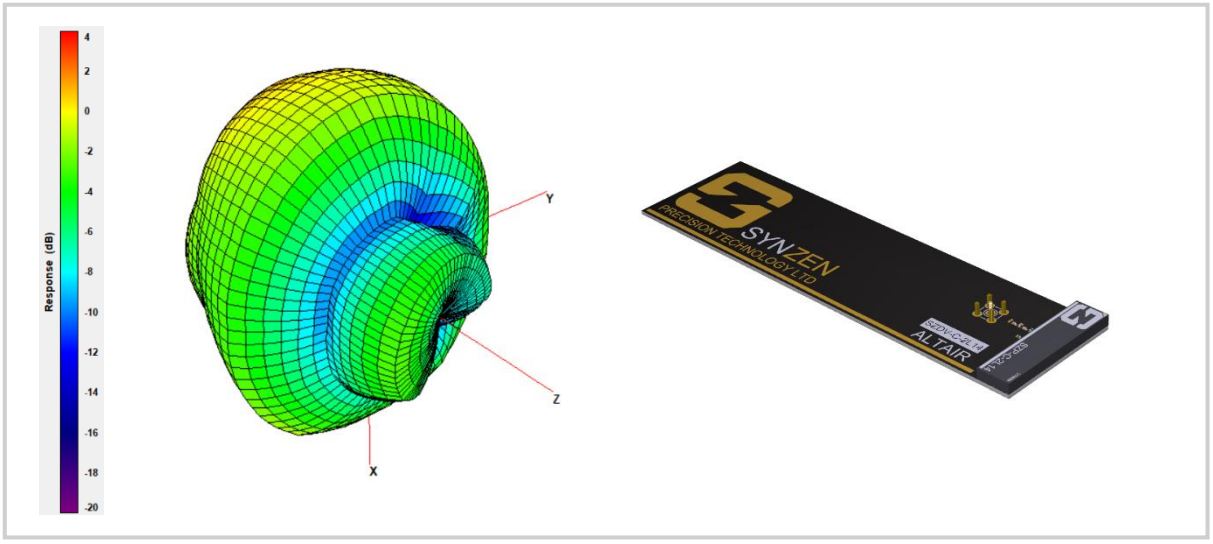

Radiated Performance

3D Radiation Pattern at 3600MHz

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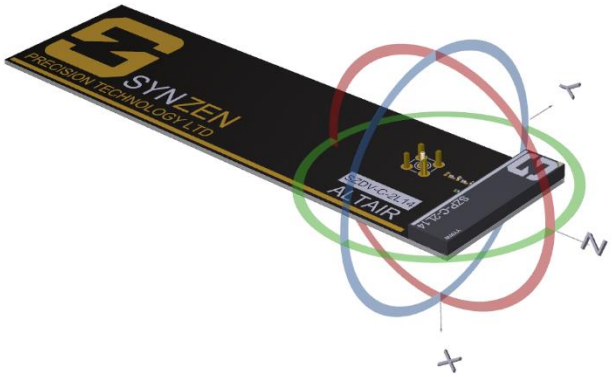
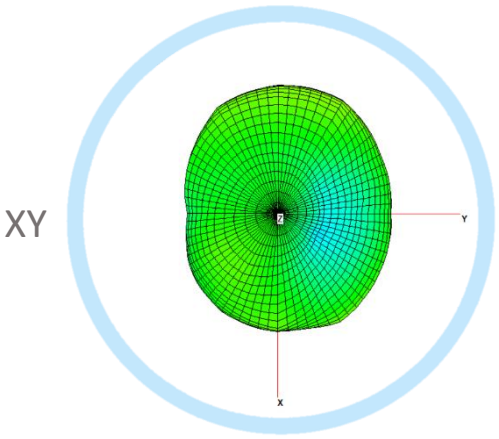
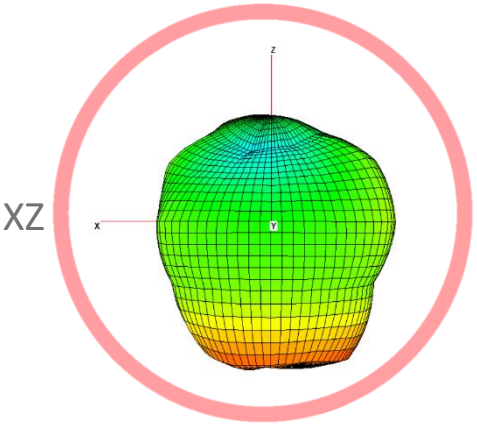
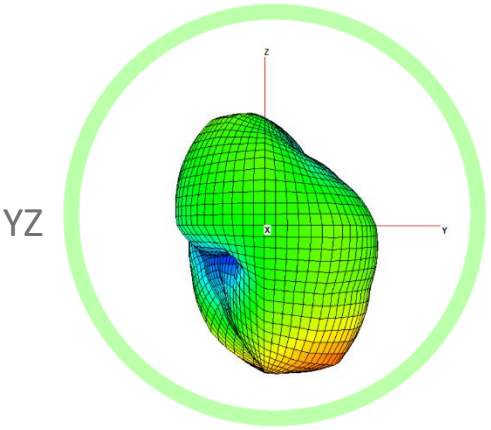
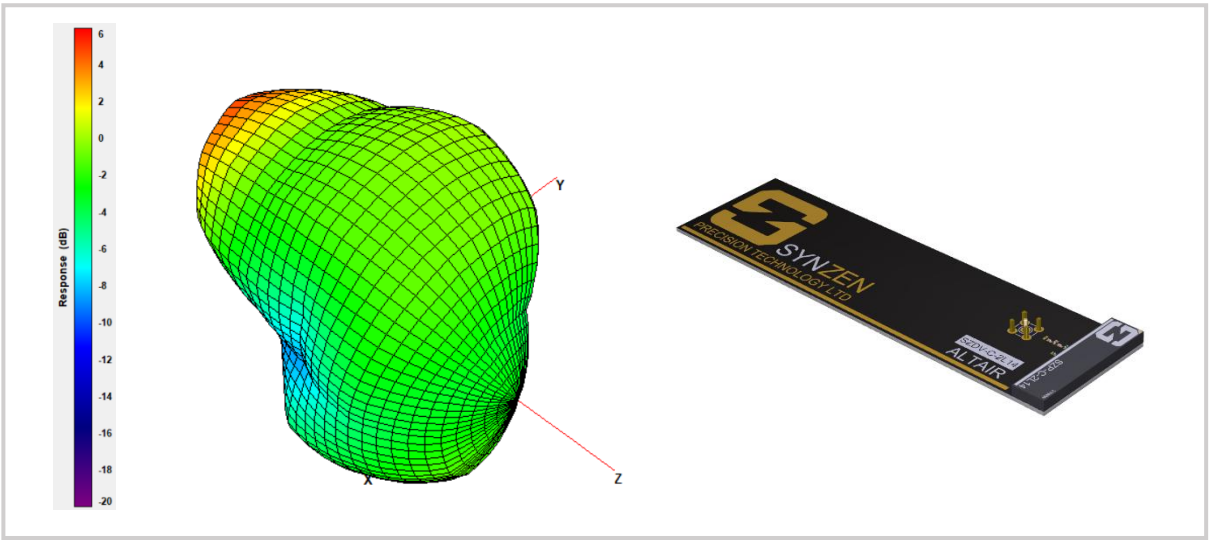




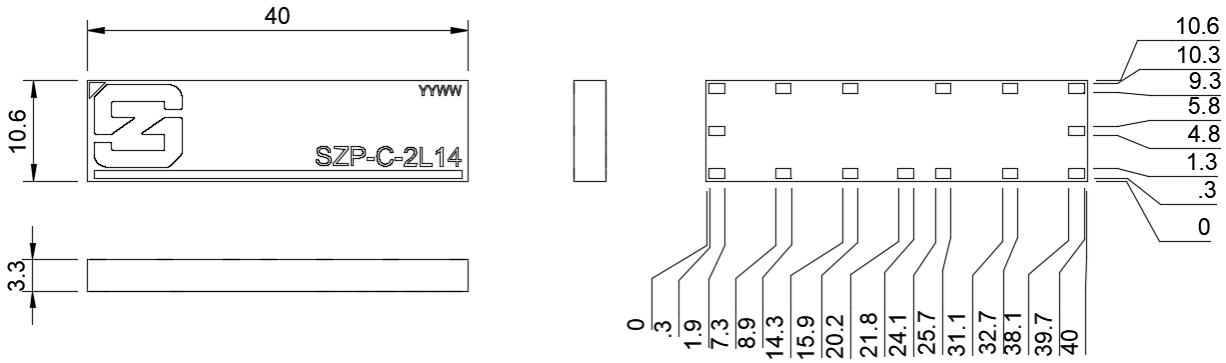






Mechanical

Antenna Mechanical Drawing



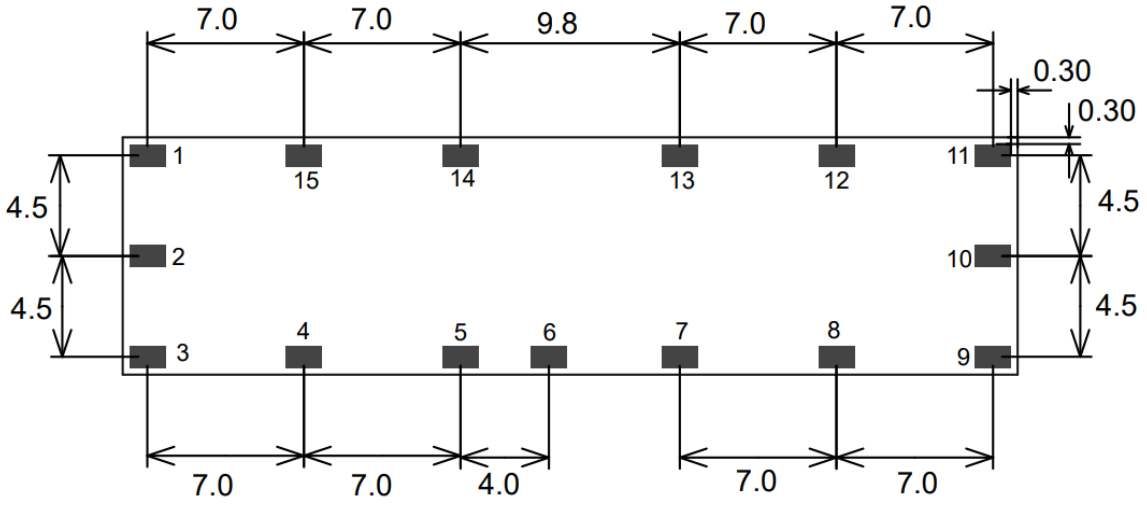
L	W	H
40.0±0.1	10.6±0.1	3.3±0.1

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.

The required clearance for the host PCB is 40.0 x 13.6 (mm) on all layers.

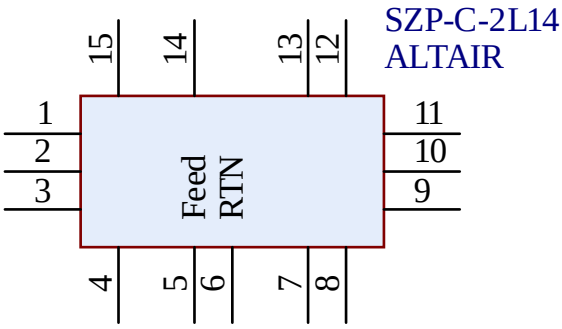


ALL DIMENSIONS IN MM
PADS 1-15 = 1.6 X 1.0

Antenna Pinout

SZP-C-2L14 Schematic Symbol

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



Pin	Description
1,2,3,4,7,8,9,10,11,12,13,14,15	Not Connected for mechanical strength only
5	RF Feed
6	RTN – Tuning to GND via component

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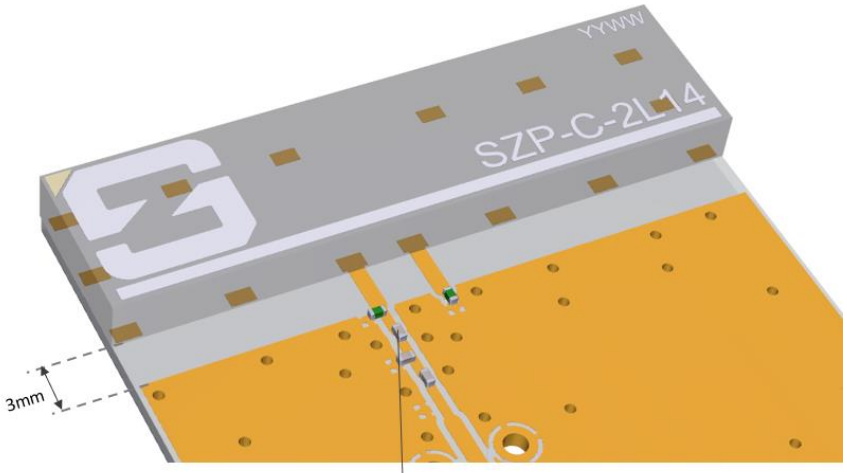
PCB Layout Requirements

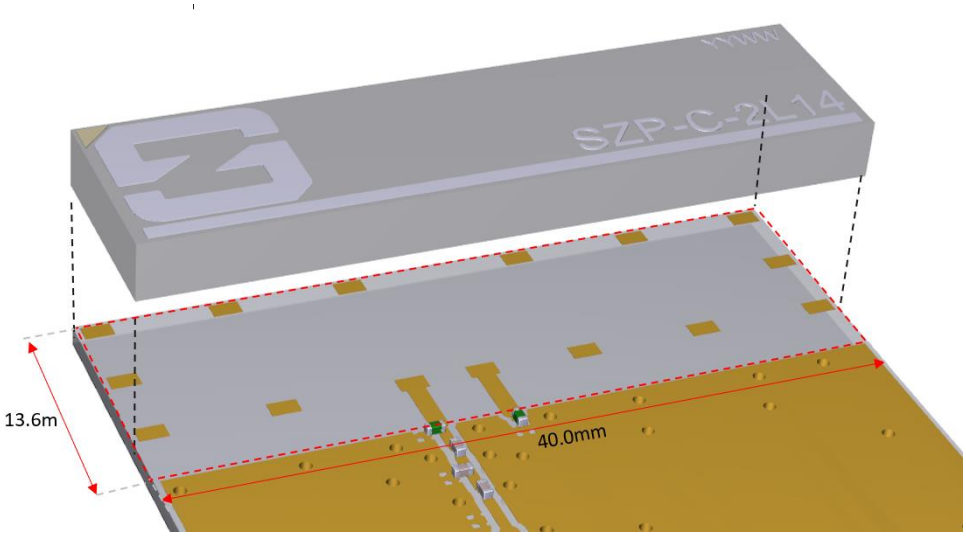
Placement

The antenna is designed to function placed at the shortest edge to utilise the PCB length for optimal low band performance.



Required Clearance

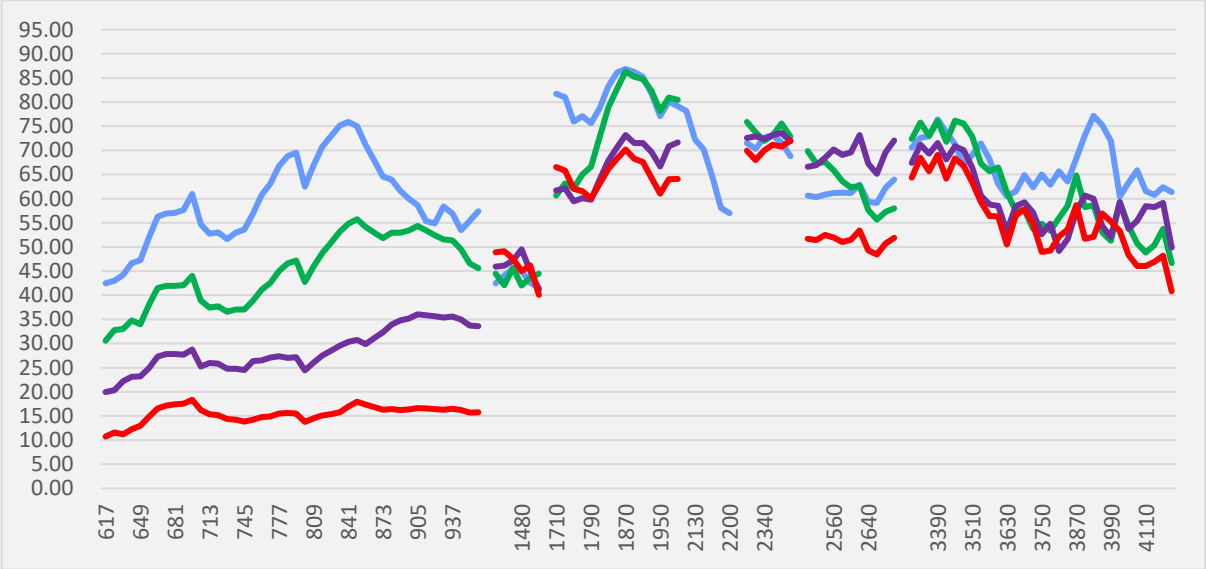
A clearance is required through all PCB layers.

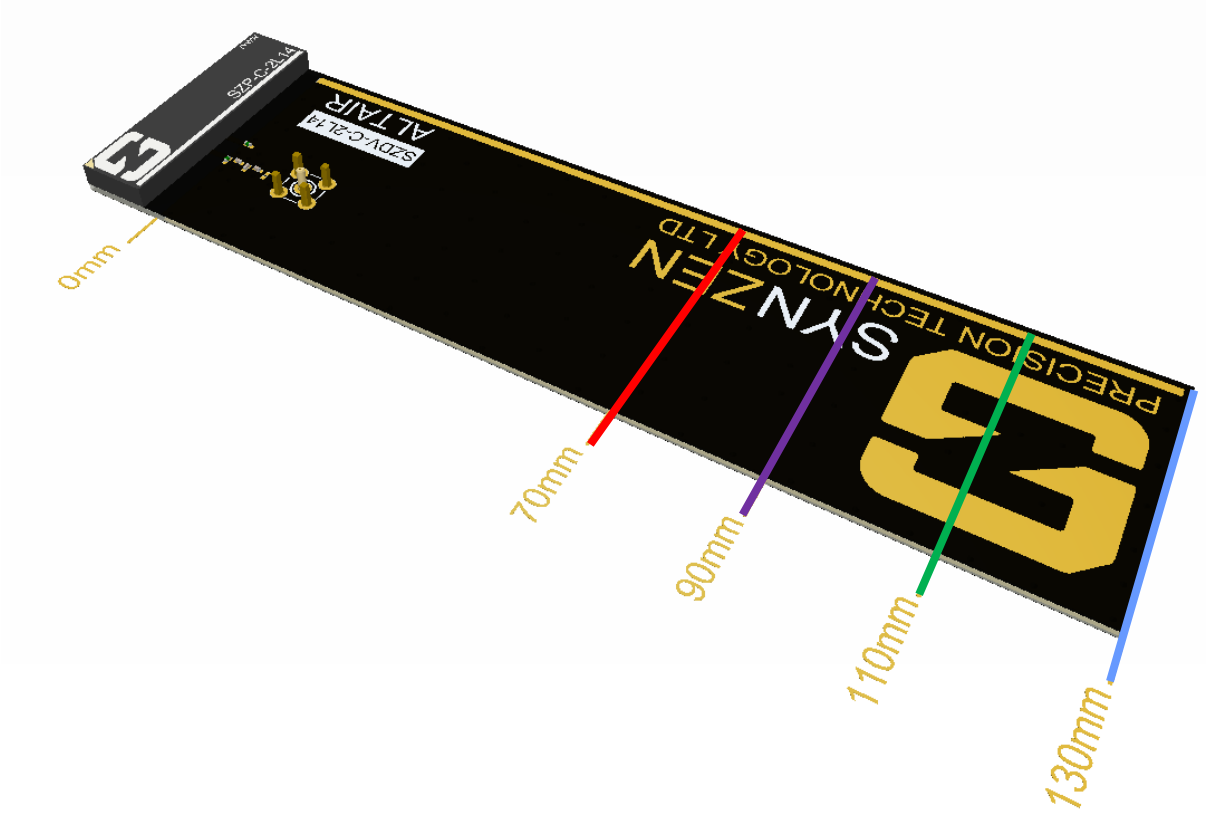


Efficiency Vs. GND Length

Antenna Efficiency

Antenna efficiency on various PCB GND lengths.

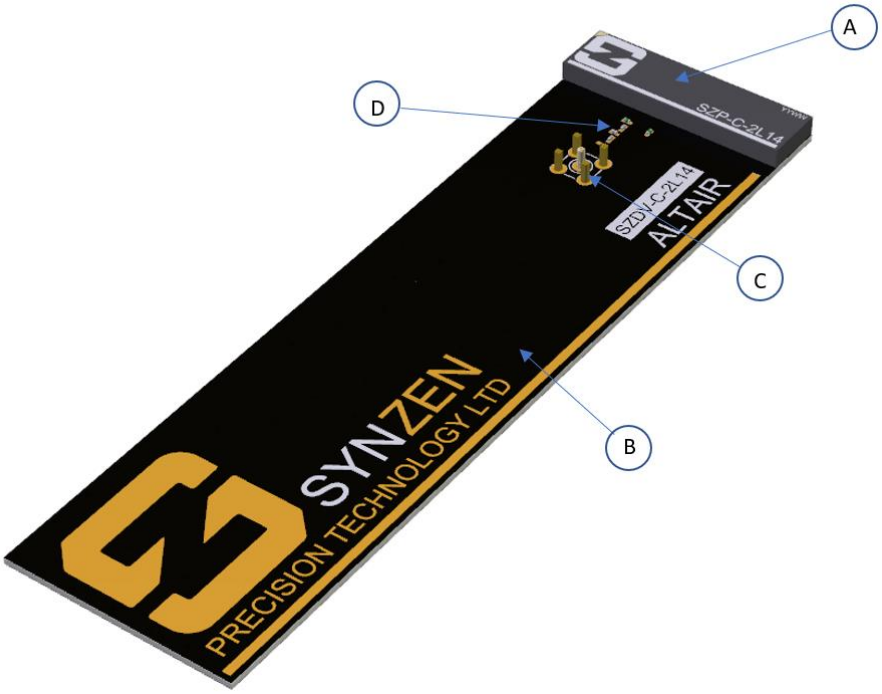




Evaluation Kit

SZDV-C-2L14 Evaluation Kit

The SZDV-C-2L14 evaluation kit is a PCBA with the antenna (SZP-C-2L14) fitted and optimised with a matching network. Connection to the antenna is made using the fitted female SMA connector.



A	SZP-C-2L14 (Antenna)
B	Host PCB
C	SMA Connector
D	Matching Circuit

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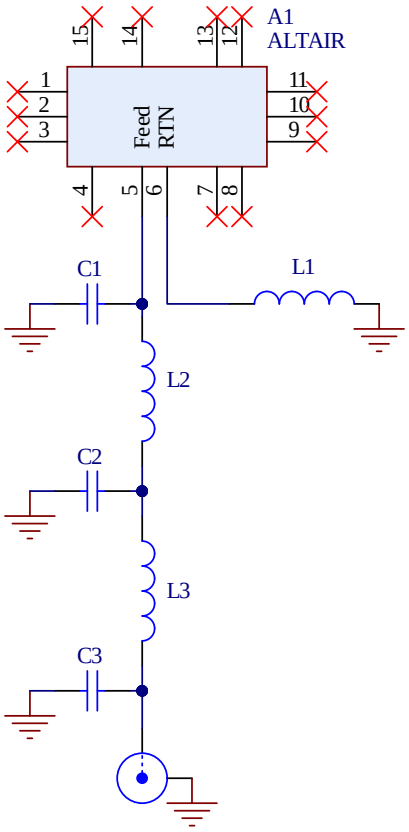
Evaluation Kit Schematic

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	ALTAIR	-	SZP-C-2L14
R1, R2	Resistor	0R	0402	Nonspecific part
L1	Inductor		0402	
C1, C2	NA	DNP	0402	Not Fitted
J1	SMA Connector		-	ACE solution A3SAFTST135

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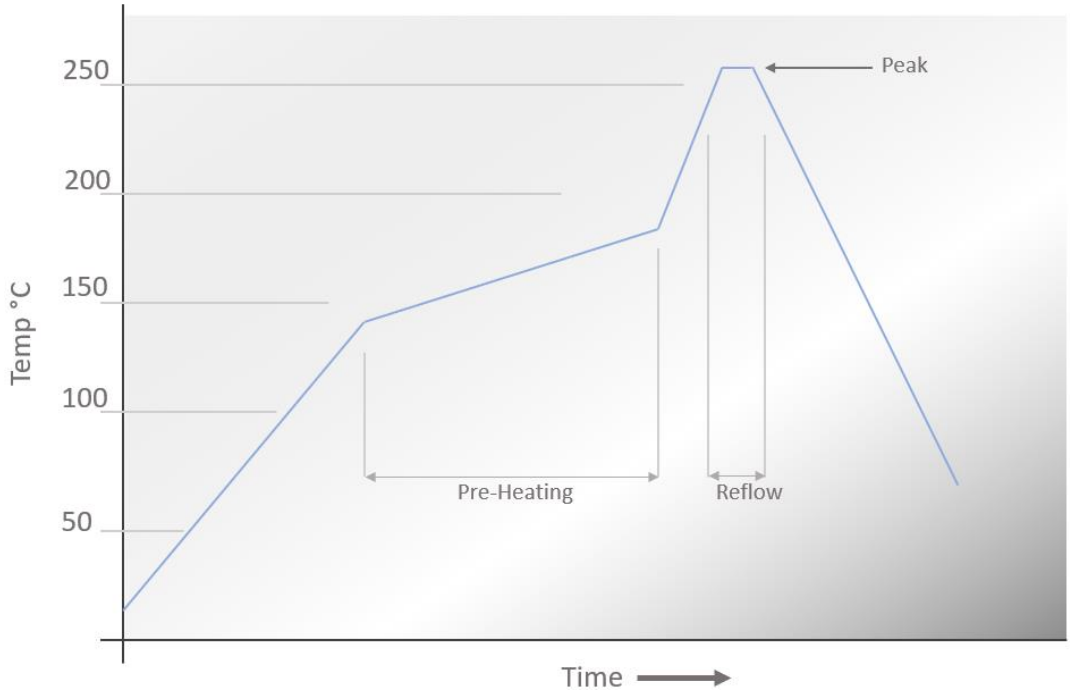
Soldering

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

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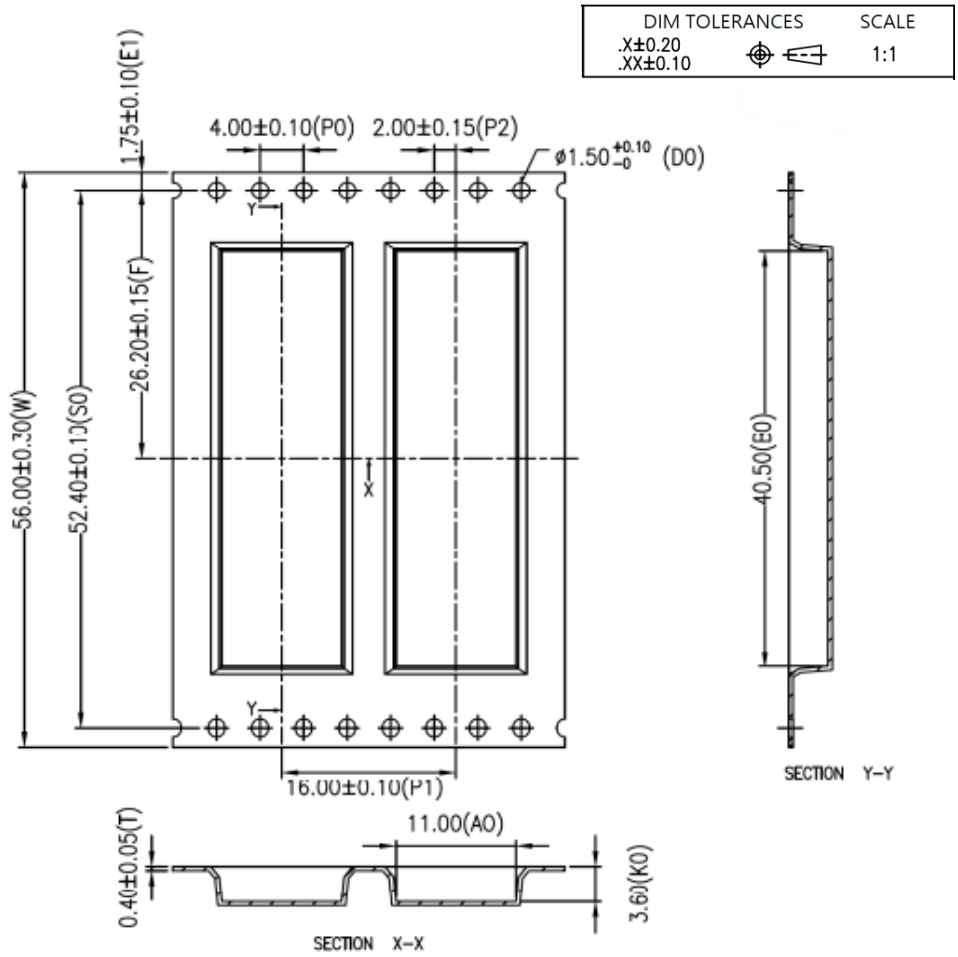
Packaging

Tape and Reel



1. Part conforms to EIA-481-D standards.
2. All dimensions in millimetres unless otherwise stated.
3. Material : Conductive polystyrene.
4. Packing length for 22" reel : 51.0 Meters. (1:3)
5. Component packing to 13" reel : 1000 pcs.

A0	11.00 ±0.20
B0	40.50 ±0.20
K0	3.60 ±0.20

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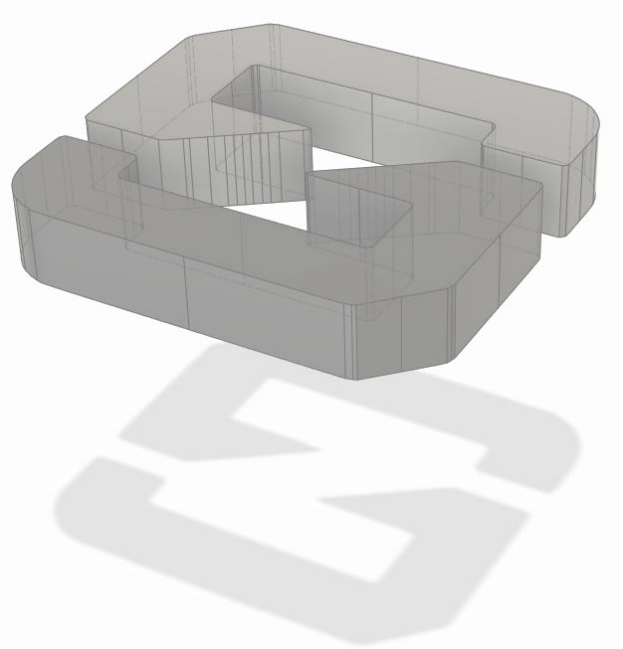
Environmental

Material Regulation

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



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