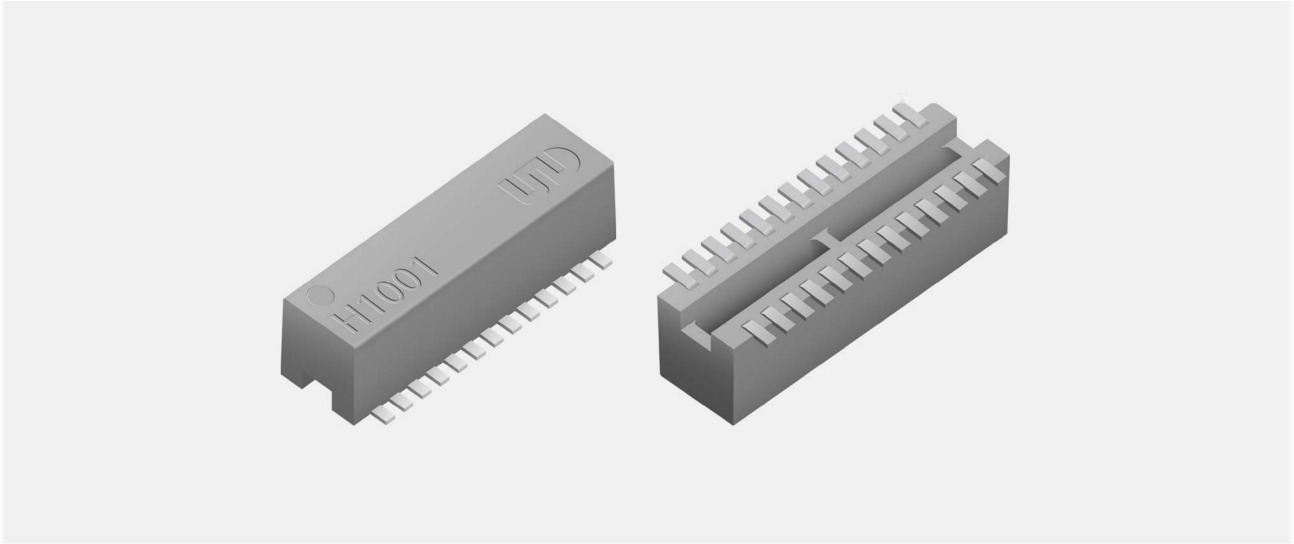
SYMMETRIC ANTENNA WITH MULTI-MODE FUNCTIONALITY

4G LTE-M 824-960 MHz | 1710-2690 MHz

◎ We support frequency customization.

Clearance Area: 18 x 52 mm

Dimensions: 14.5 x 5.6 x 4.3 mm (Tolerance: ±0.15 mm)

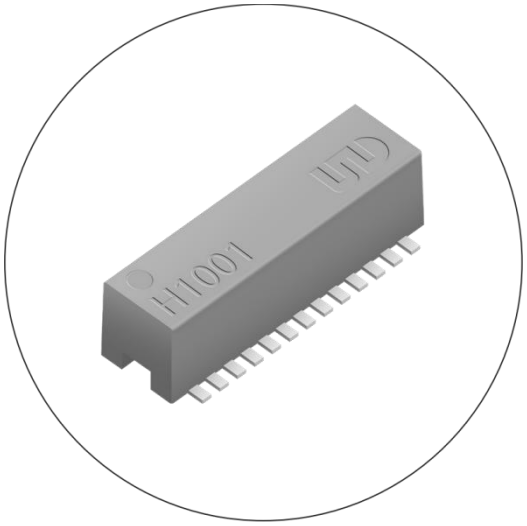


1 FEATURES & BENEFITS

- Low Profile
- Light Weight
- Easy to Integrate
- Intended for SMD Mounting
- Reduced Cost and Time-to-Market

2 APPLICATIONS

- IoT Devices
- Smart Cities
- Smart Agriculture
- Consumer Tracking
- Smart Metering
- Smart Agriculture

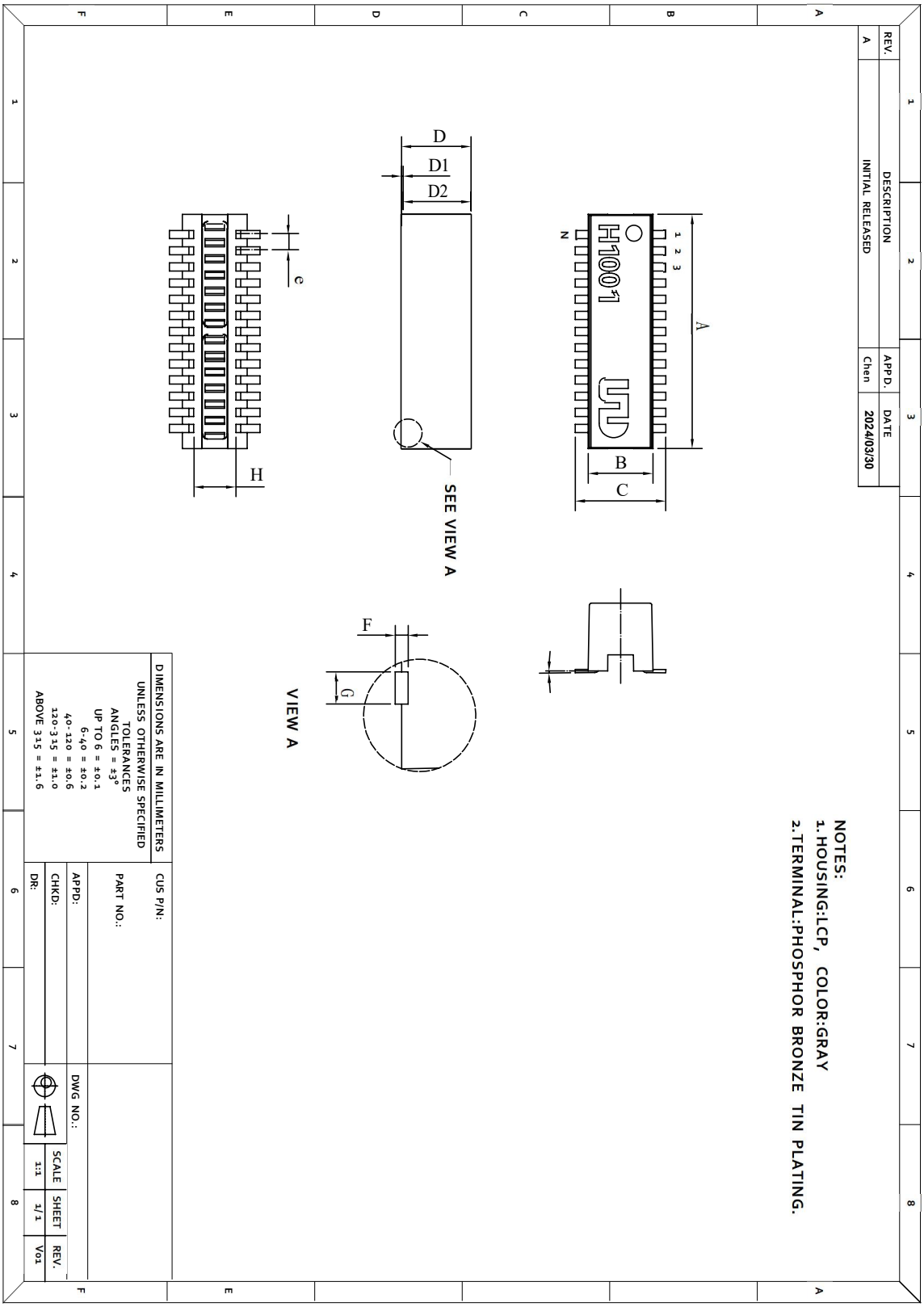


Antenna Image

2 ORDER INFORMATION

Product Name	4G LTE/Cellular Symmetric Antenna with Multi-Mode Functionality
Part Number	AirANT1564
Dimensions	14.5 x 5.6 x 4.3 mm
Mounting	SMT
Packaging	Tape & Reel
MOQ	1000 pcs/reel

3 MECHANICAL DIMENSIONS

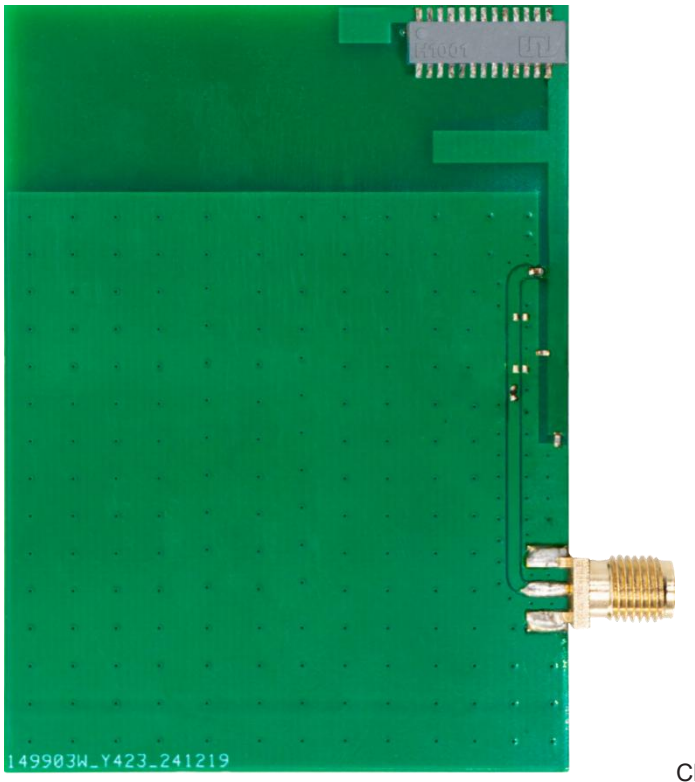


4 REFERENCE GUIDE

Technical Features	824-960 MHz	1710-2690 MHz
Max VSWR	4.12 : 1	2.32 : 1
Max Efficiency	71.96%	
Max Return Loss	-4.31 dB	
Peak Gain	Up to 3.01 dBi (Typ)	
Polarization	Linear	
Input Impedance	50 Ω	
Operating Temperature	-40°C to +85°C	
Relative Humidity	10 to 70%	
All data were measured in free space and on a reference ground plane of 72 mm length, 52 mm width, and 1.6 mm thickness. Application data might vary.		

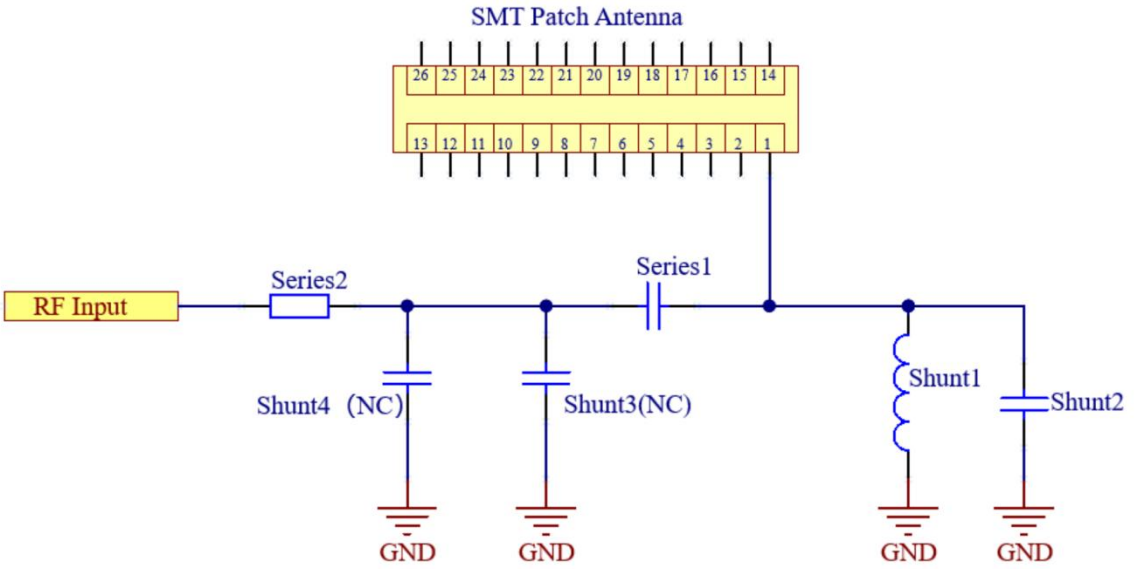
5 EVALUATION BOARD WITH THE ANTENNA

The evaluation board provides operation at 698-960, 1710-2690 MHz.
Evaluation Board dimension: 72 x 52 x 1.6 mm



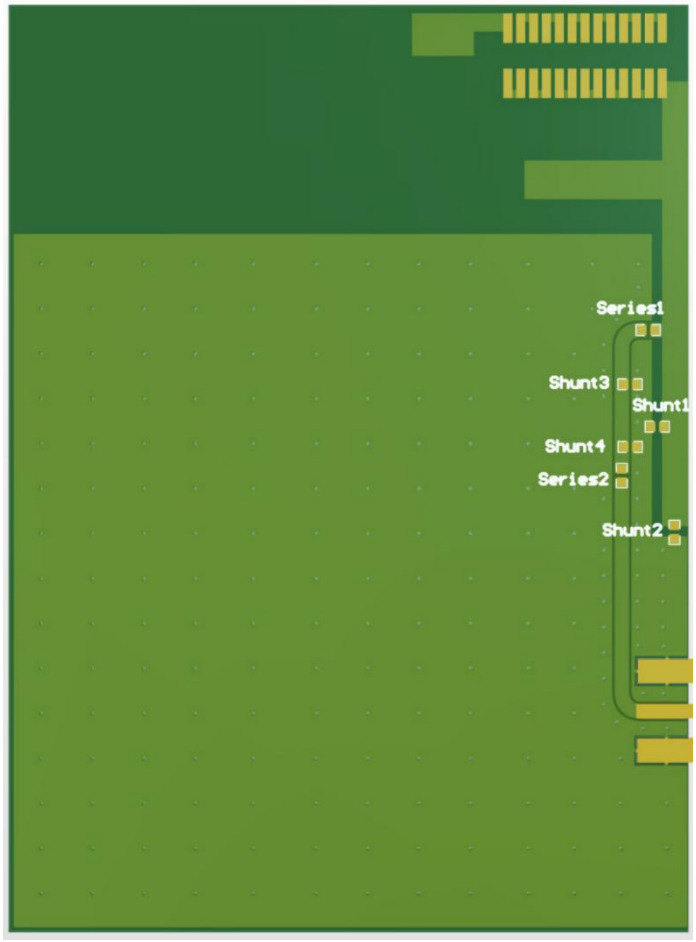
Clearance Area: 18.0 X 52.0 mm

6 MATCHING NETWORK



Tag	Value
Series 1	10pf
Shunt 1	2.4nH
Series 2	0Ω
Shunt 2	2pF
Shunt 3	NC
Shunt 4	NC

7 RECOMMENDED LAYOUT



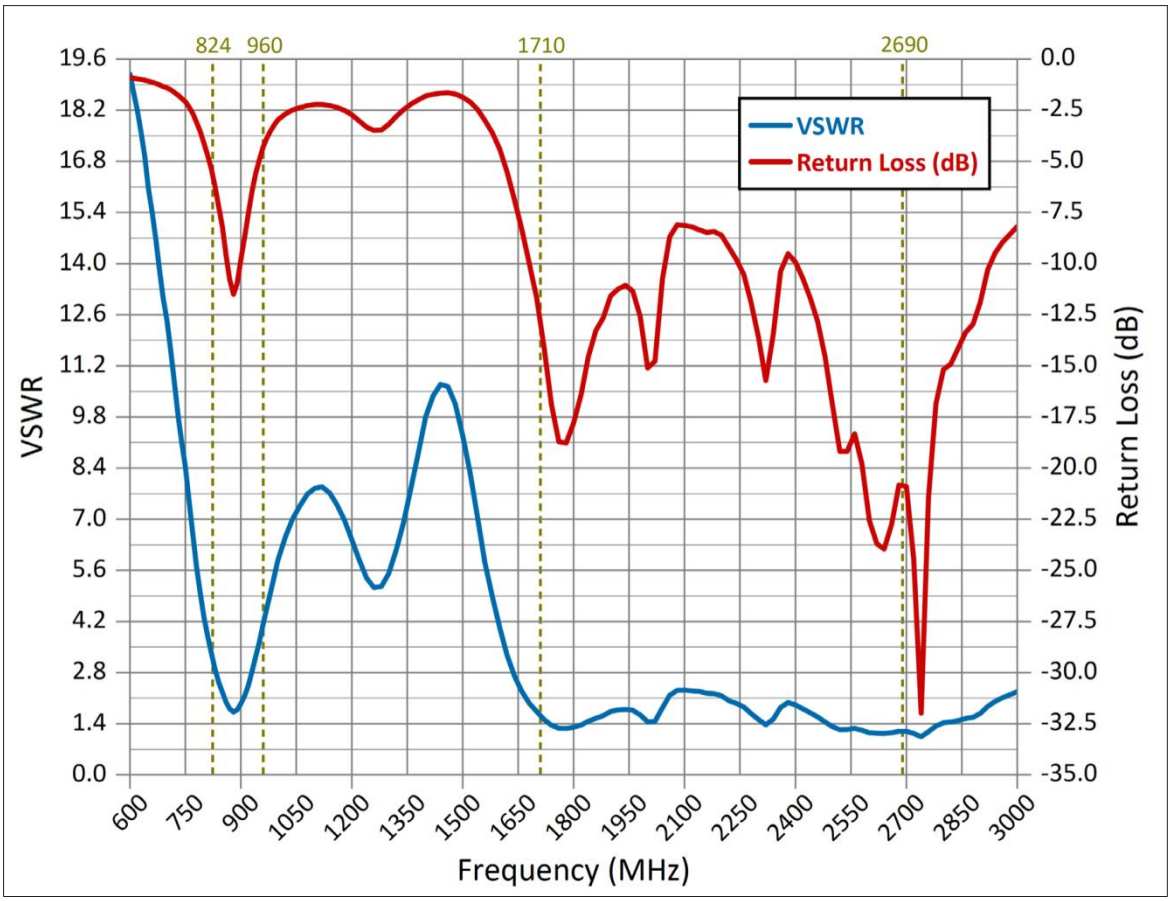
It's strongly recommended to place the antenna near the edge of the board. Maximum antenna performance is achieved by placing the antenna towards one of the corners of the PCB and with the feed point of the antenna as close to same corner of the PCB as possible.

8 ELECTRICAL PERFORMANCE

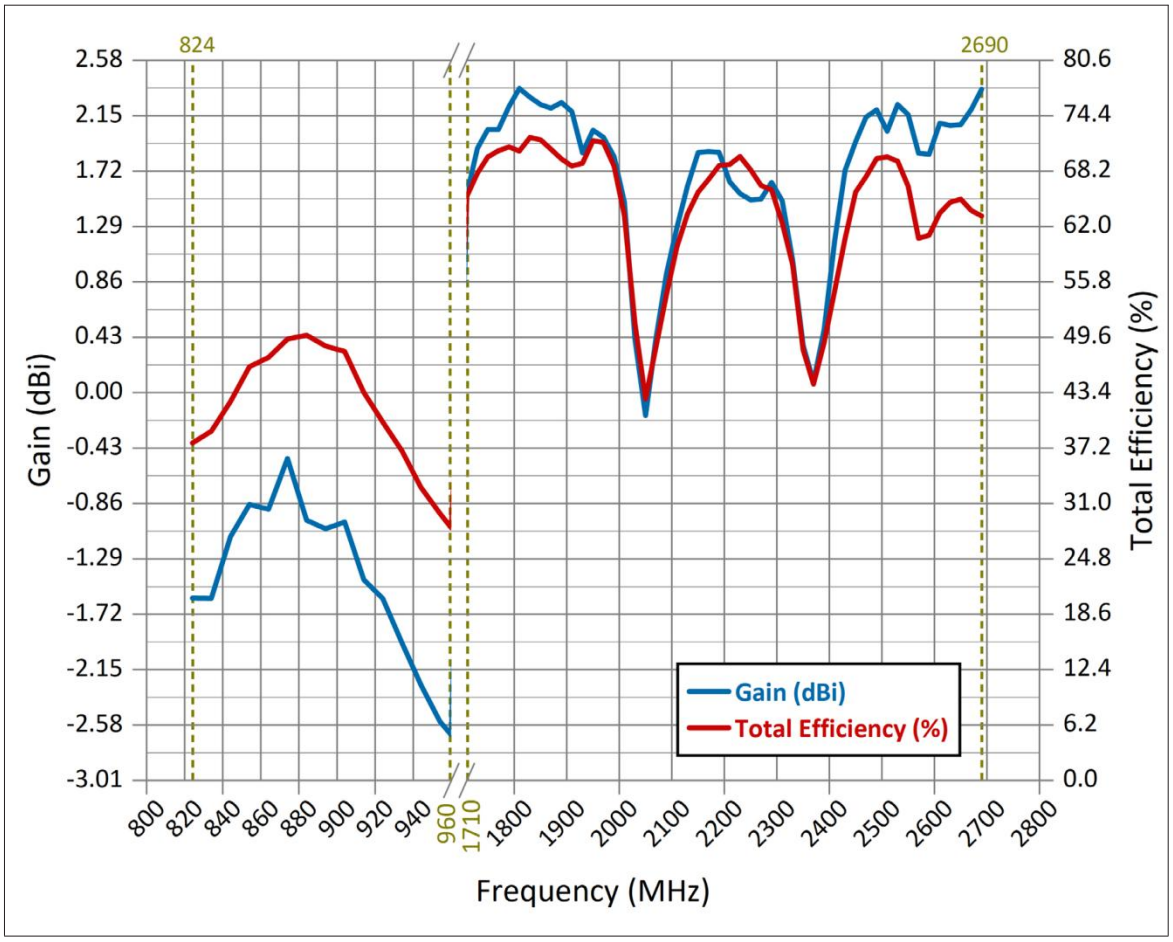
Note

The data displayed in Chapter 10 were measured in free space and on a reference ground plane of 72mm length, 52 mm width, and 1.6 mm thickness.

8.1 VSWR and Return Loss (dB)



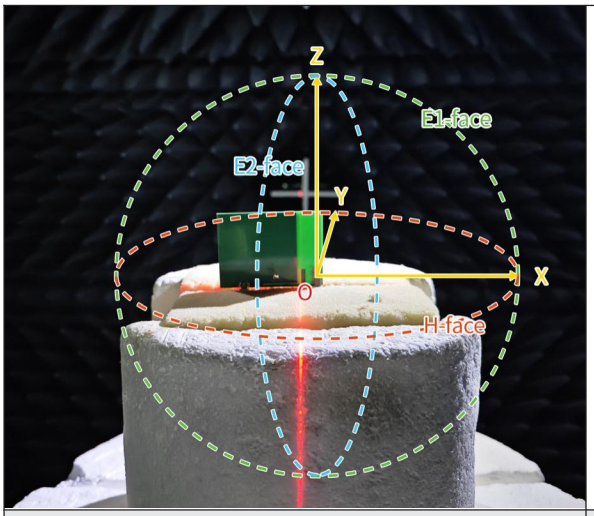
8.2 Gain (dBi) and Total Efficiency (%)



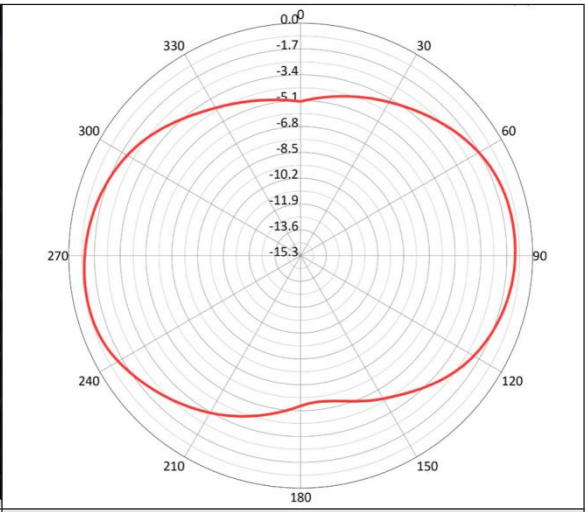
Antenna Data					
Freq (MHz)	Gain (dBi)	Efficiency (%)	**Freq (MHz)**	Gain (dBi)	Efficiency (%)
824	-1.59	71.96	**904**	-1.00	69.83
834	-1.60	71.70	**914**	-1.45	69.80
844	-1.12	71.61	**924**	-1.60	69.80
854	-0.87	71.38	**934**	-1.94	69.62
864	-0.90	70.91	**944**	-2.27	69.57
874	-0.51	70.66	**954**	-2.55	69.31
884	-0.99	70.48	**960**	-2.66	69.09
894	-1.06	70.45			

Freq (MHz)	Gain (dBi)	Efficiency (%)	**Freq (MHz)**	Gain (dBi)	Efficiency (%)
1710	1.54	68.94	**2210**	1.64	59.74
1730	1.90	68.82	**2230**	1.55	57.76
1750	2.04	68.79	**2250**	1.50	54.83
1770	2.04	68.76	**2270**	1.50	54.44
1790	2.22	68.34	**2290**	1.63	51.11
1810	2.36	67.96	**2310**	1.49	49.84
1830	2.29	67.57	**2330**	1.03	49.41
1850	2.24	67.25	**2350**	0.37	49.01
1870	2.21	66.60	**2370**	0.08	48.63
1890	2.25	66.49	**2390**	0.49	48.51
1910	2.18	66.09	**2410**	1.18	48.20
1930	1.86	65.87	**2430**	1.73	48.02
1950	2.04	65.85	**2450**	1.95	47.35
1970	1.98	65.38	**2470**	2.14	46.29
1990	1.83	65.06	**2490**	2.19	44.37
2010	1.48	64.69	**2510**	2.03	43.43
2030	0.41	63.80	**2530**	2.24	42.71
2050	-0.18	63.50	**2550**	2.16	42.40
2070	0.42	63.41	**2570**	1.86	40.11
2090	0.93	63.23	**2590**	1.85	39.09
2110	1.28	63.16	**2610**	2.09	37.77
2130	1.60	62.43	**2630**	2.07	36.91
2150	1.86	61.04	**2650**	2.08	32.81
2170	1.87	60.67	**2670**	2.20	29.87
2190	1.86	60.63	**2690**	2.36	28.27

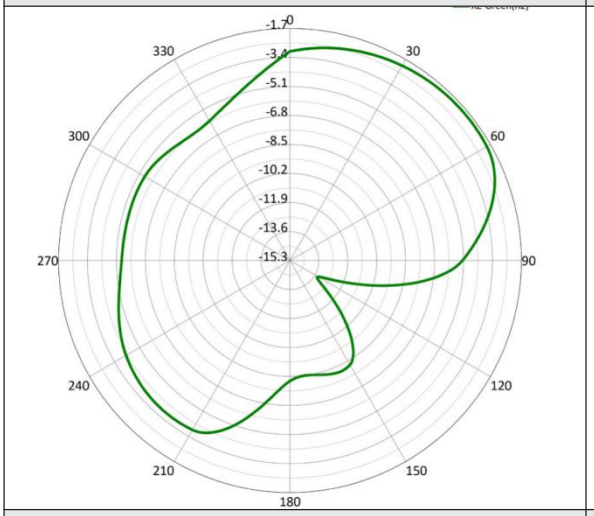
8.3 2D and 3D Radiation Patterns (824-960 MHz)



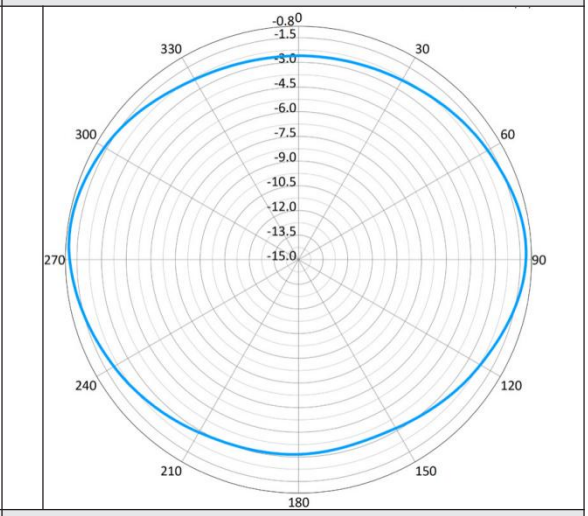
PCB board size: 72 mm x 52 mm x 1.6 mm



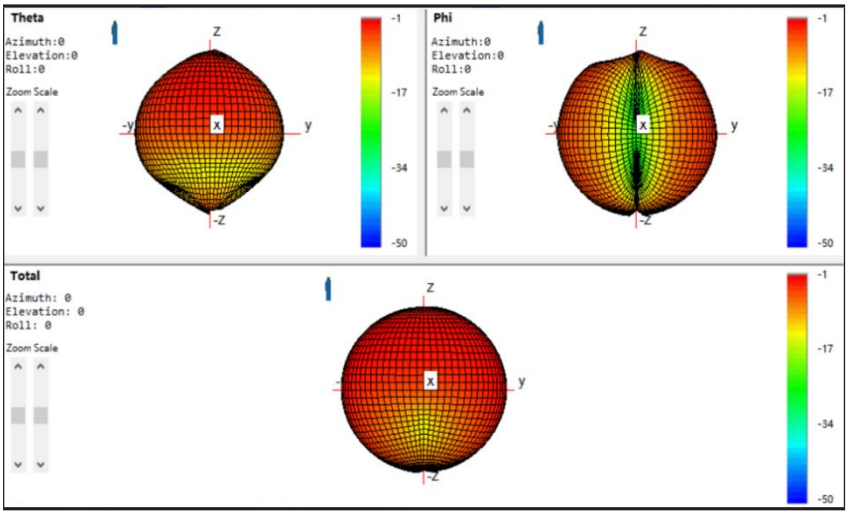
θ = 90º Plane XY at 894 MHz, Gain=-1.06 dBi



Φ = 0º Plane XZ at 894 MHz, Gain=-1.06 dBi

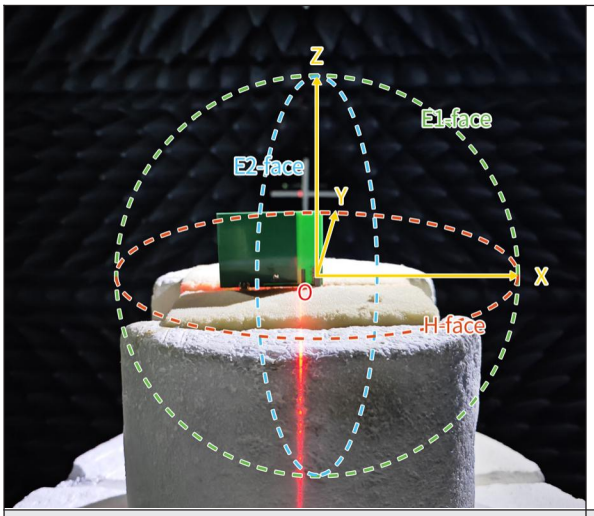


θ = 0º Plane YZ at 894 MHz, Gain=-1.06 dBi

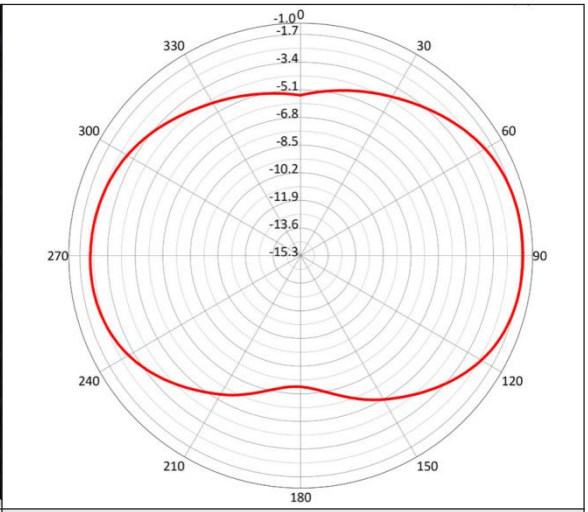


@ 894MHz, Gain= -1.06 dBi

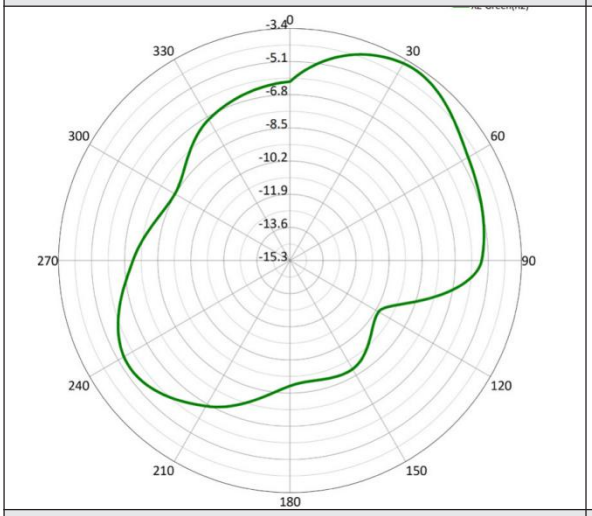
8.4 2D and 3D Radiation Patterns (1710-2170 MHz)



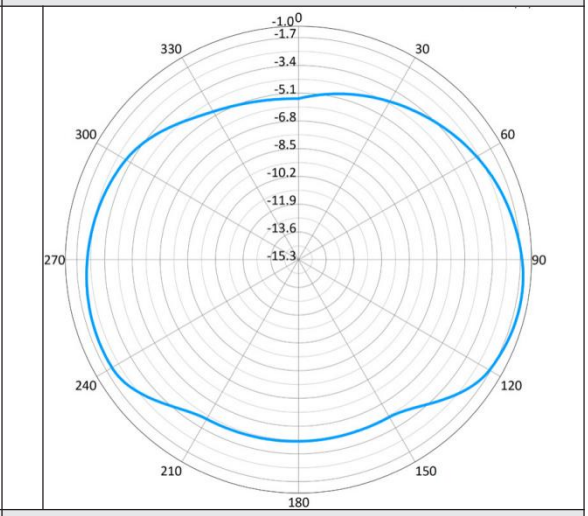
PCB board size: 72 mm x 52 mm x 1.6 mm



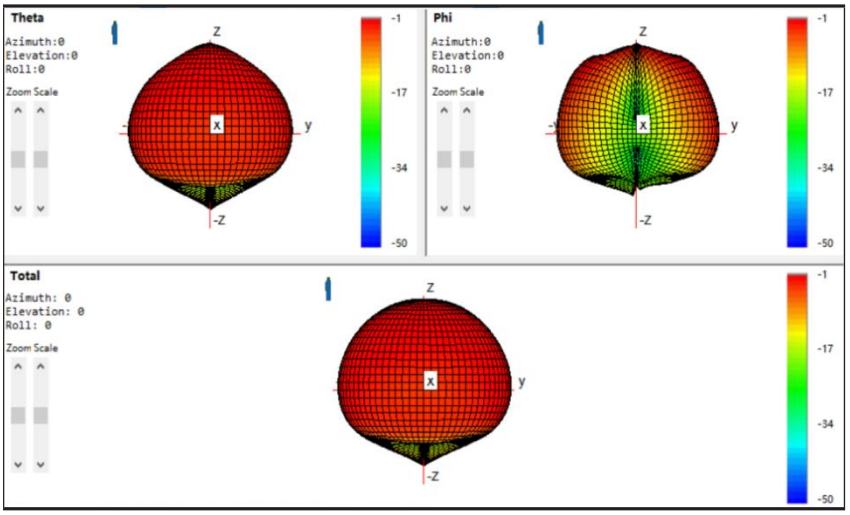
θ = 90º Plane XY at 1950 MHz, Gain =2.04 dBi



Φ = 0º Plane XZ at 1950 MHz, Gain=2.04 dBi

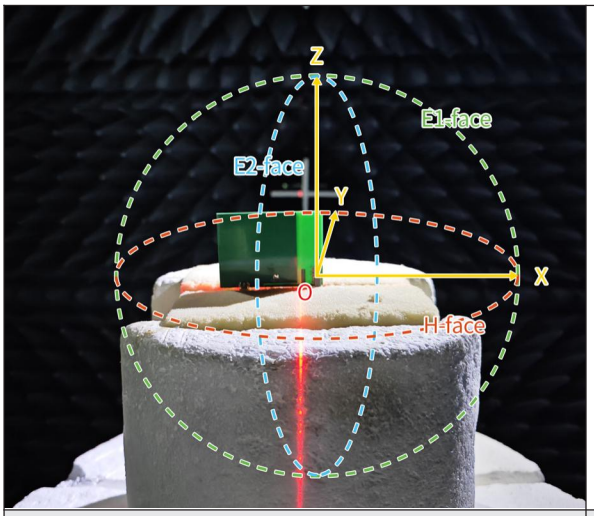


θ = 0º Plane YZ at 1950 MHz, Gain=2.04dBi

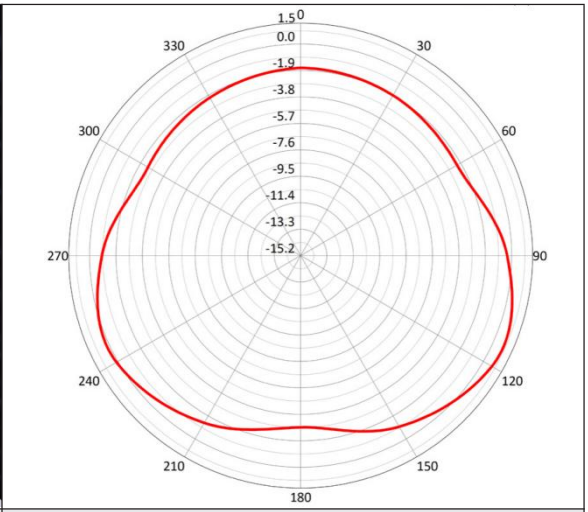


@ 1950MHz, Gain=2.04dBi

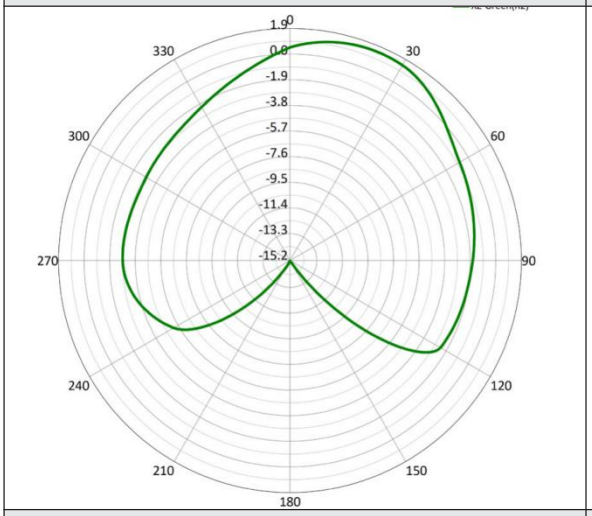
8.5 2D and 3D Radiation Patterns (2300-2690 MHz)



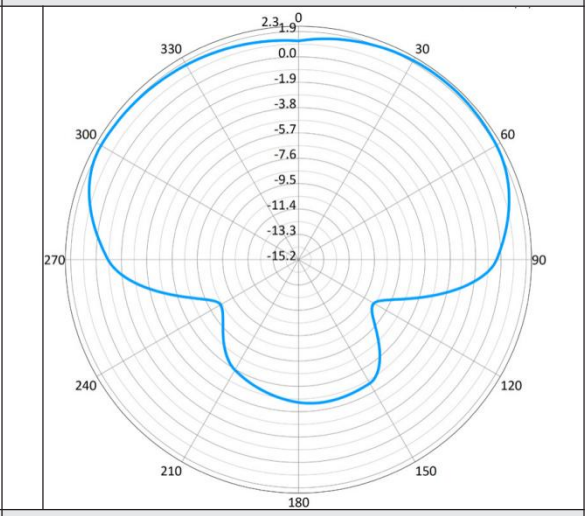
PCB board size: 72 mm x 52 mm x 1.6 mm



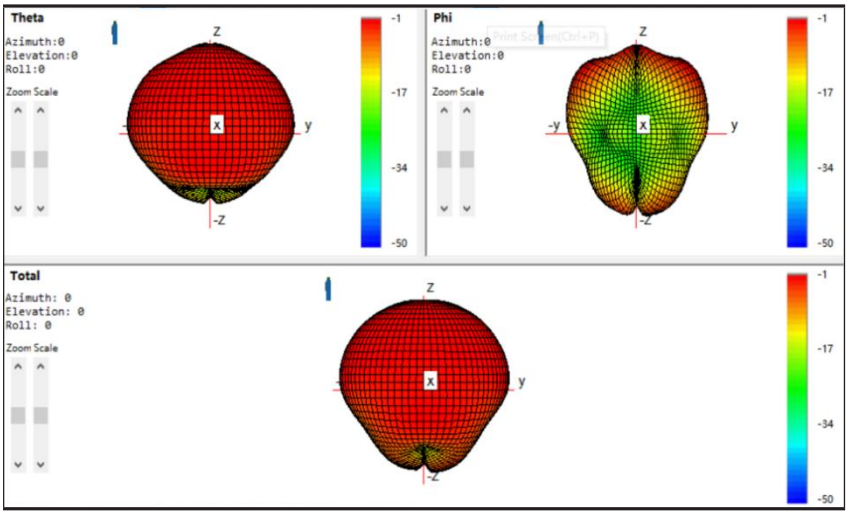
θ = 90º Plane XY at 2510 MHz, Gain=2.03 dBi



Φ = 0º Plane XZ at 2510 MHz, Gain=2.03 dBi



θ = 0º Plane YZ at 2510MHz, Gain=2.03 dBi



@ 2510MHz, Gain=2.03 dBi

9 SOLDERING CONDITIONS

This antenna is suitable for lead free soldering.

The reflow duration should be adjusted to create good solder joints without raising the antenna temperature beyond the allowed maximum of 260°C.

The figure below shows the temperature profile for soldering.