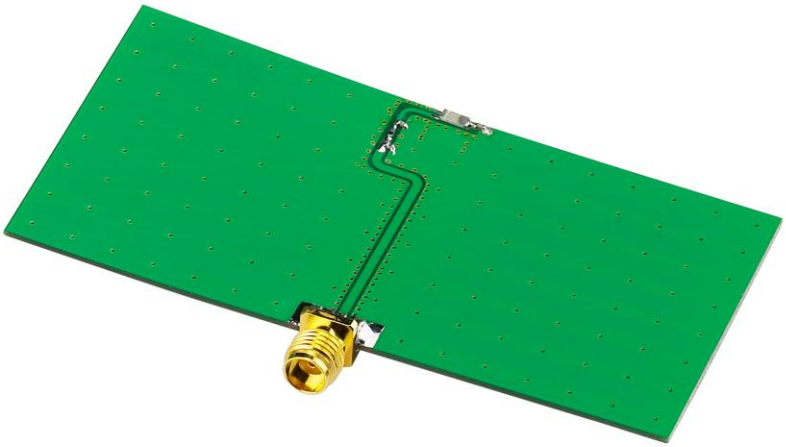
SPECIFICATION

Part No. : **HLA.01**

Product Name : 5150-5900 MHz Ceramic Loop antenna
WLAN/ Wi-Fi/ HDMI

Feature : 3.2mm *1.6mm * 0.5mm
Low profile
Peak gain 2.1dBi
65%+ Efficiency Typical
Compact Size
RoHS Compliant



HLAD.01 EVB Board



Bottom Top

1. Introduction

The HLA.01 5150-5900 MHz ceramic chip antenna is specifically designed for Wi-Fi/ WHDMI applications where high data throughput is needed. It is a high efficiency miniature SMD edge mounted ceramic antenna with minimum footprint requirement. This ceramic chip antenna uses the main PCB as its ground plane, thereby increasing antenna efficiency. It is tuned for different PCB sizes by simply changing the value of the matching circuit. The HLA.01 with dimension of 3.2mm *1.6mm * 0.5mm, is one of the smallest antennas available worldwide. This antenna is delivered on tape and reel.

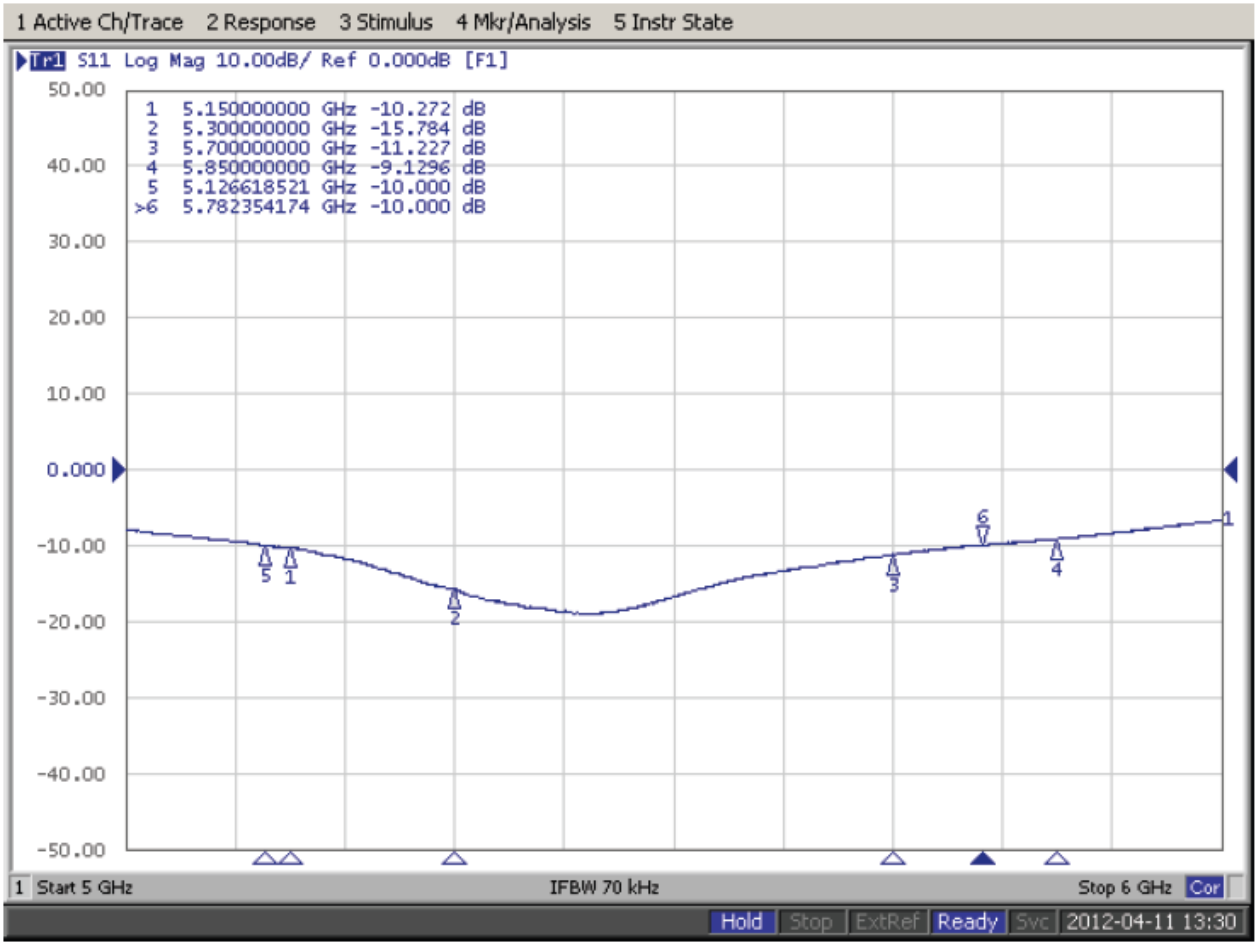
Applications

IEEE802.11a (5150-5900 MHz)
WHDMI PCMCIA cards or Wireless USB dongles

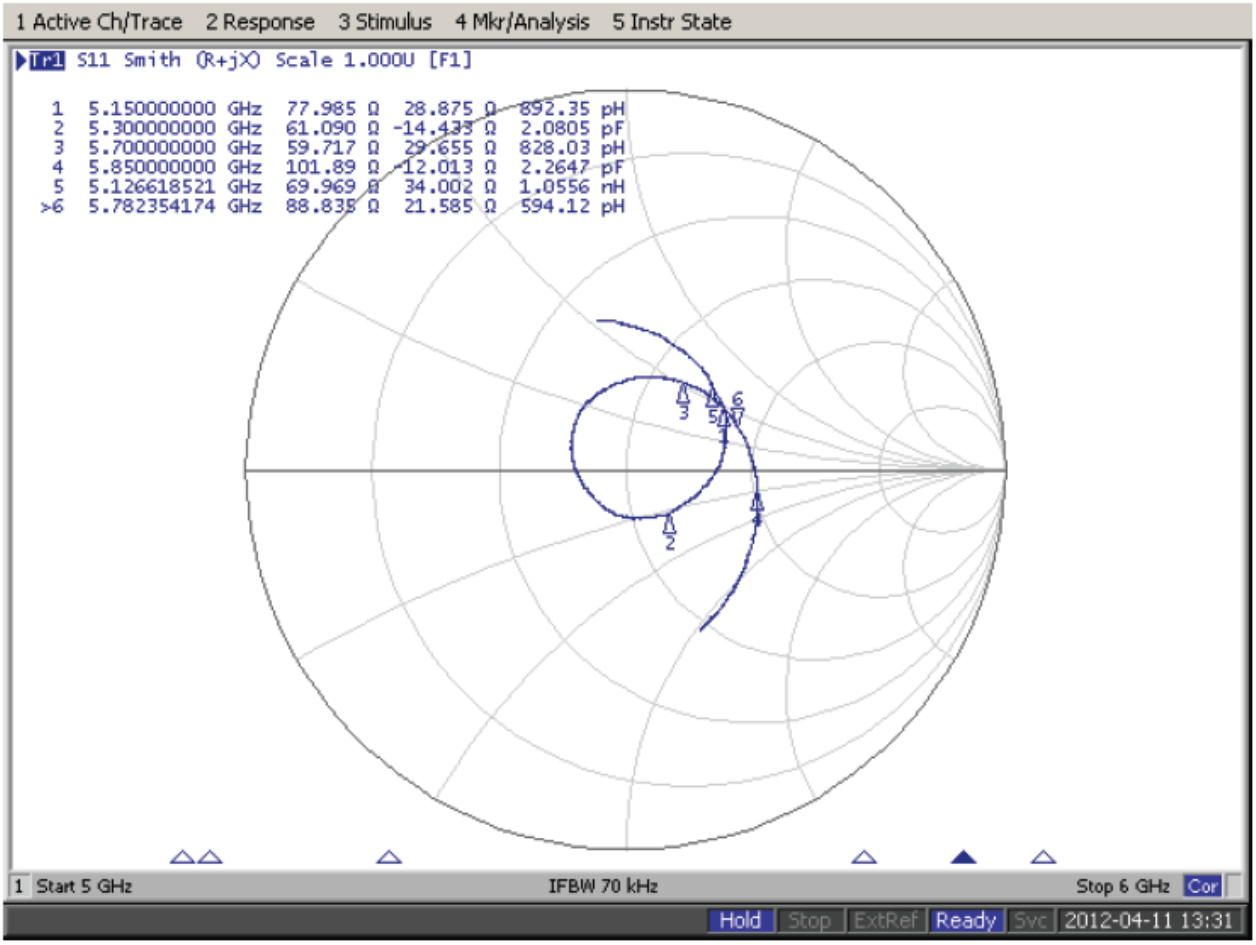
2. Specification Table

Electrical	
Center Frequency (MHz)	5500
Bandwidth (MHz)	524
Peak Gain (dBi)	2.1 (typical)
Efficiency (%)	65 (typical)
VSWR	2 max.
Impedance (Ω)	50
Polarization	Linear
Radiation Pattern	Omni
Input Power(W)	50
MECHANICAL	
Dimensions (mm)	3.2 x 1.6 x 0.5
Ground plane (mm)	80x40
Material	AS 6
ENVIRONMENTAL	
Temperature Range	-40°C to 85°C
Temperature Coefficient of Frequency (ppm/°C)	0±20 max. (@-40°C to 85°C)
Humidity	Non-condensing 65°C 95% RH

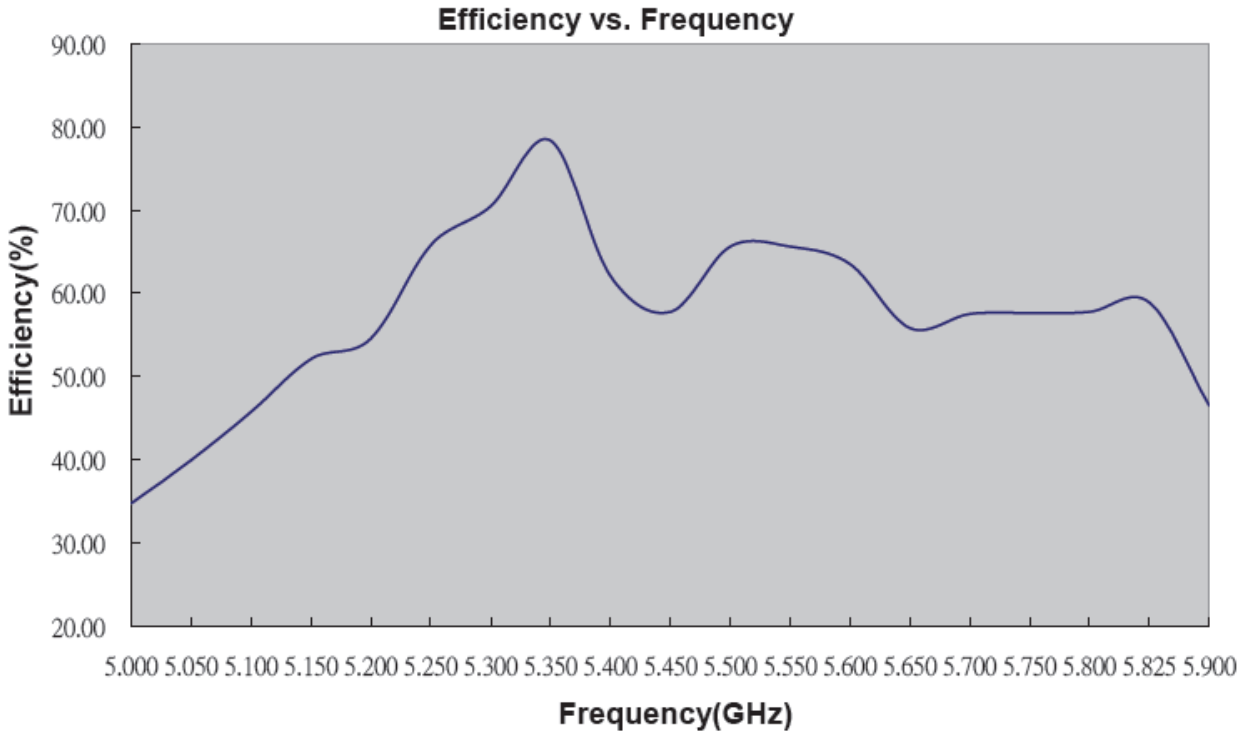
3. Return Loss



4. Smith Chart



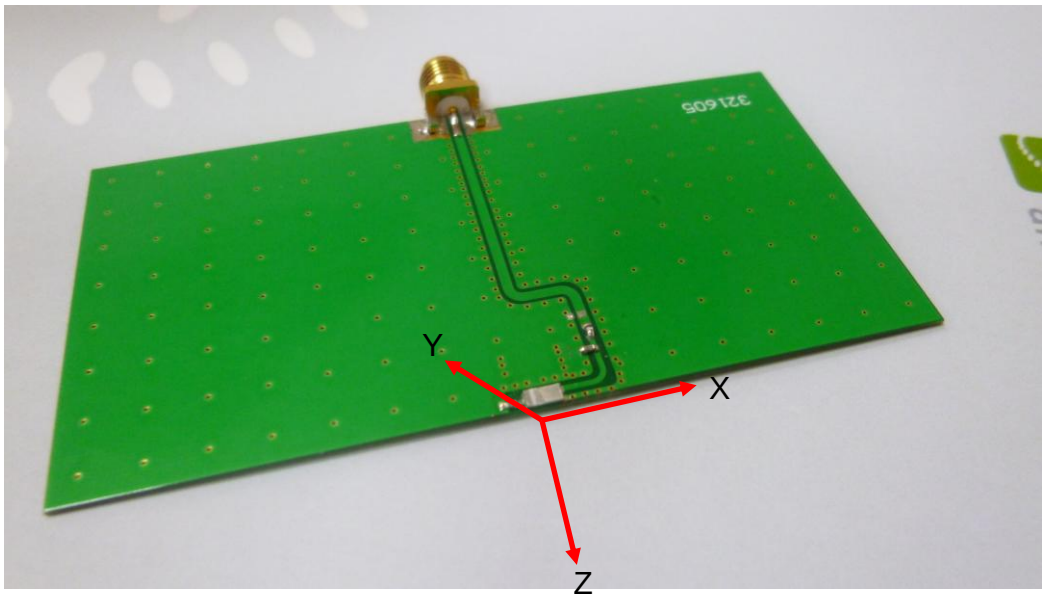
5. Efficiency



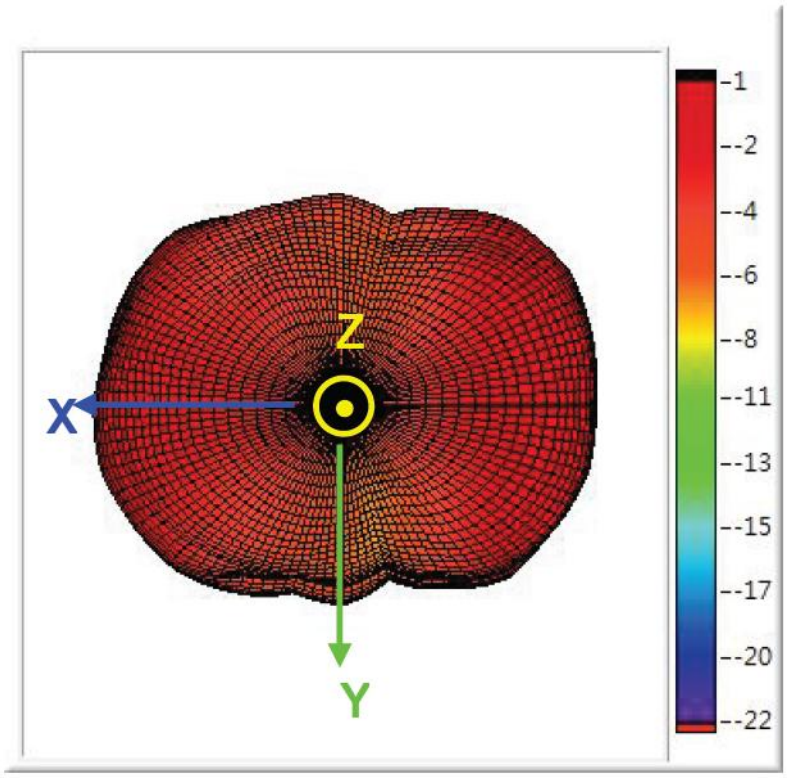
Frequency(GHz)	5.000	5.050	5.100	5.150	5.200	5.250	5.300	5.350	5.400	5.450
Efficiency(dB)	-4.58	-3.98	-3.39	-2.83	-2.63	-1.82	-1.52	-1.06	-2.07	-2.38
Efficiency(%)	34.83	39.99	45.81	52.12	54.58	65.77	70.47	78.34	62.09	57.81
Gain(dBi)	-0.23	0.00	0.54	0.83	1.23	2.06	1.95	2.46	1.82	1.14

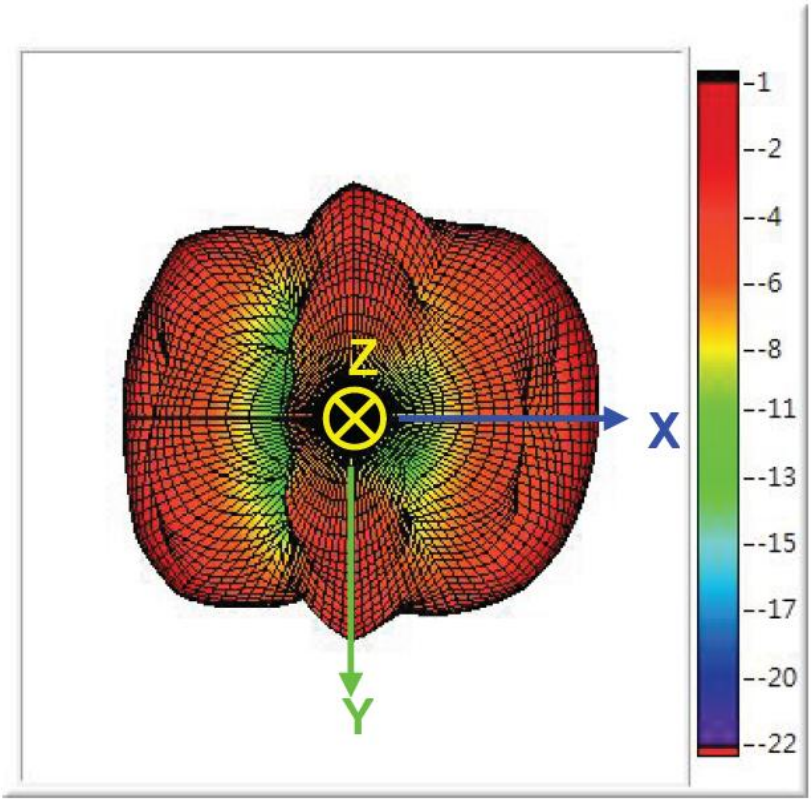
Frequency(GHz)	5.500	5.550	5.600	5.650	5.700	5.750	5.800	5.825	5.900
Efficiency(dB)	-1.83	-1.83	-1.97	-2.53	-2.40	-2.39	-2.38	-2.30	-3.32
Efficiency(%)	65.61	65.61	63.53	55.85	57.54	57.68	57.81	58.88	46.56
Gain(dBi)	2.12	1.73	1.70	1.28	1.75	1.85	1.87	1.63	0.60

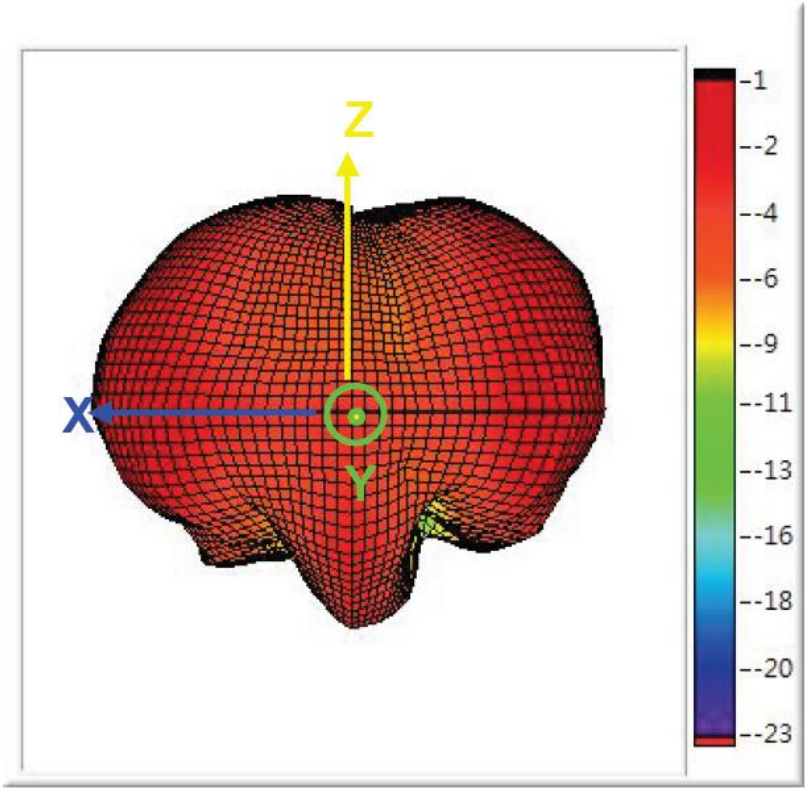
6. Antenna Radiation Patterns



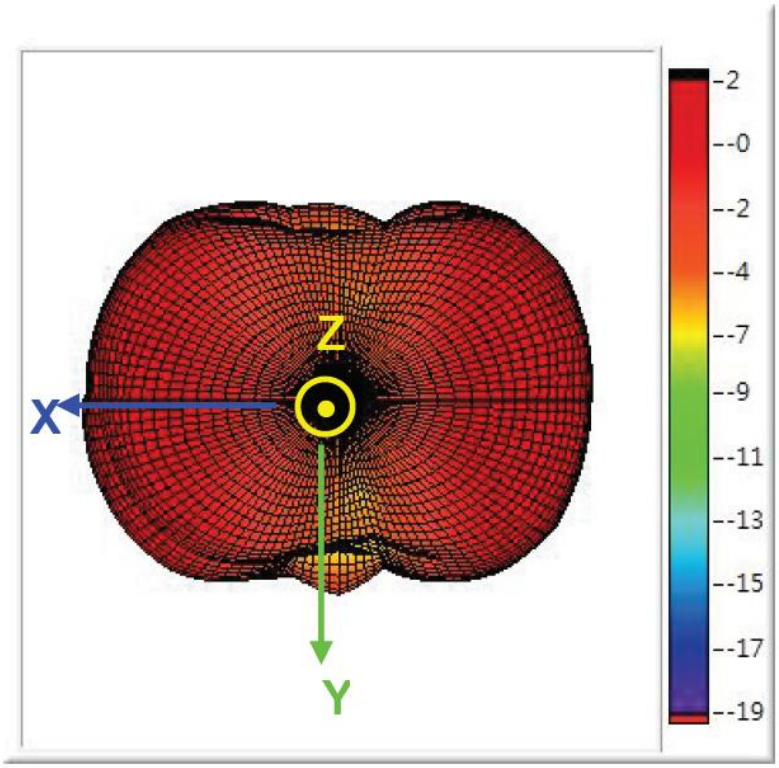
6.1 3D Gain pattern @ 5150 MHz

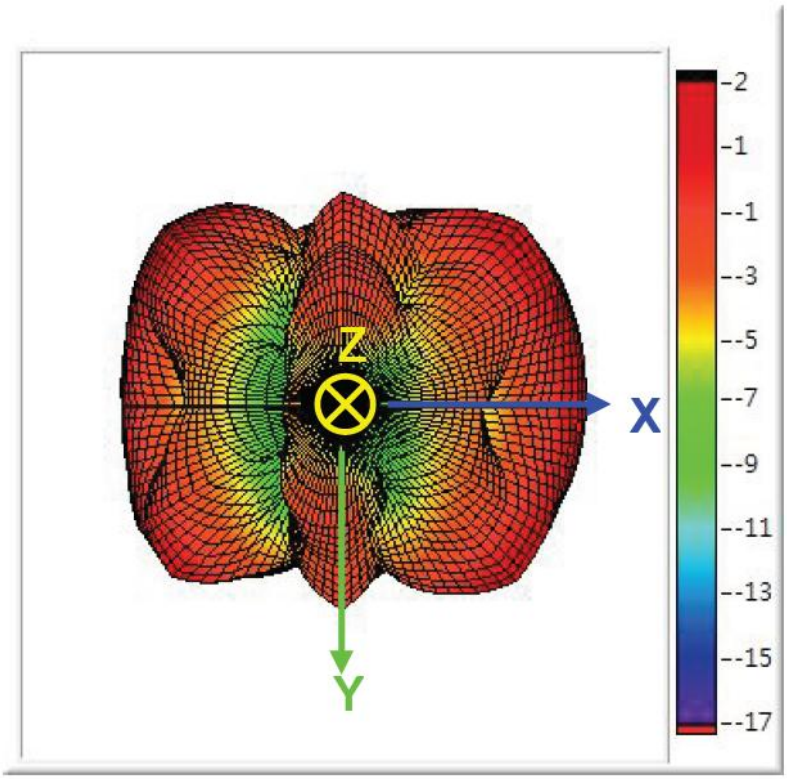


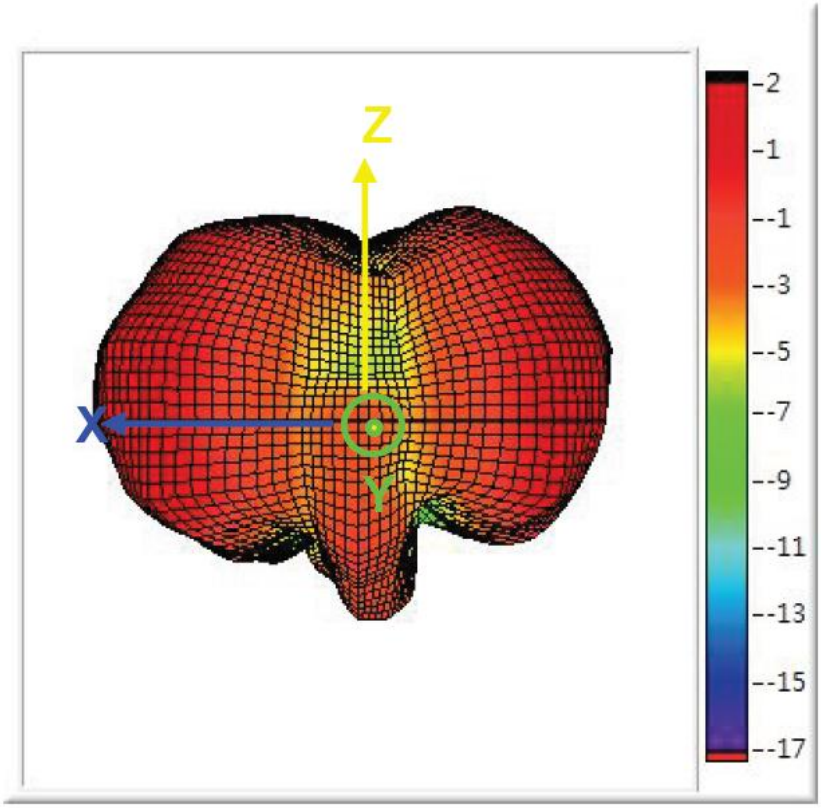

Z
X
Y
-1
--2
--4
--6
--8
--11
--13
--15
--17
--20
--22


Z
X
Y
-1
--2
--4
--6
--9
--11
--13
--16
--18
--20
--23

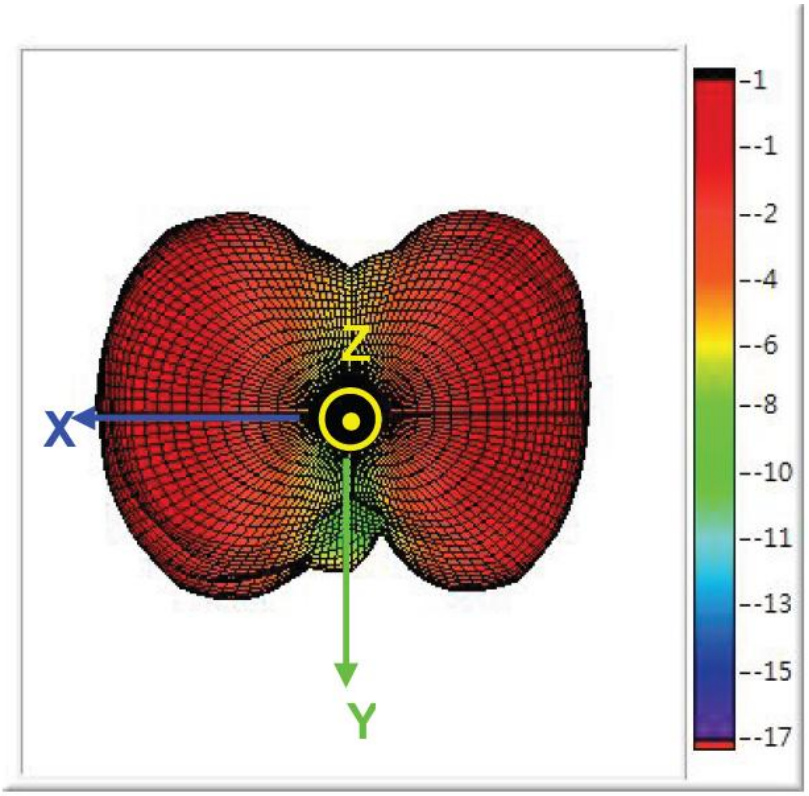
6.2 3D Gain pattern @ 5350 MHz

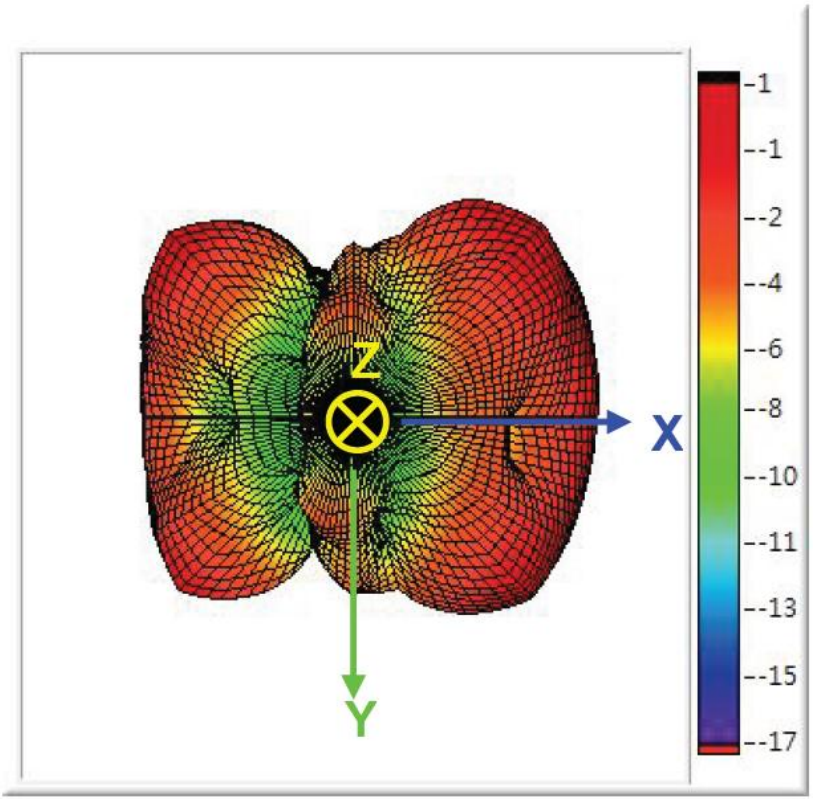


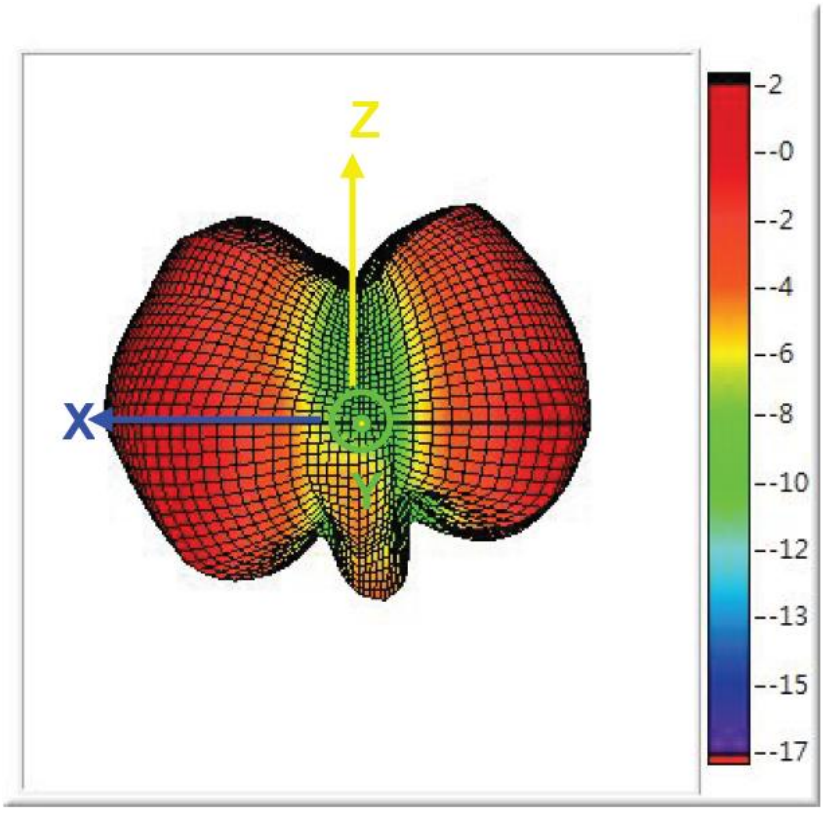




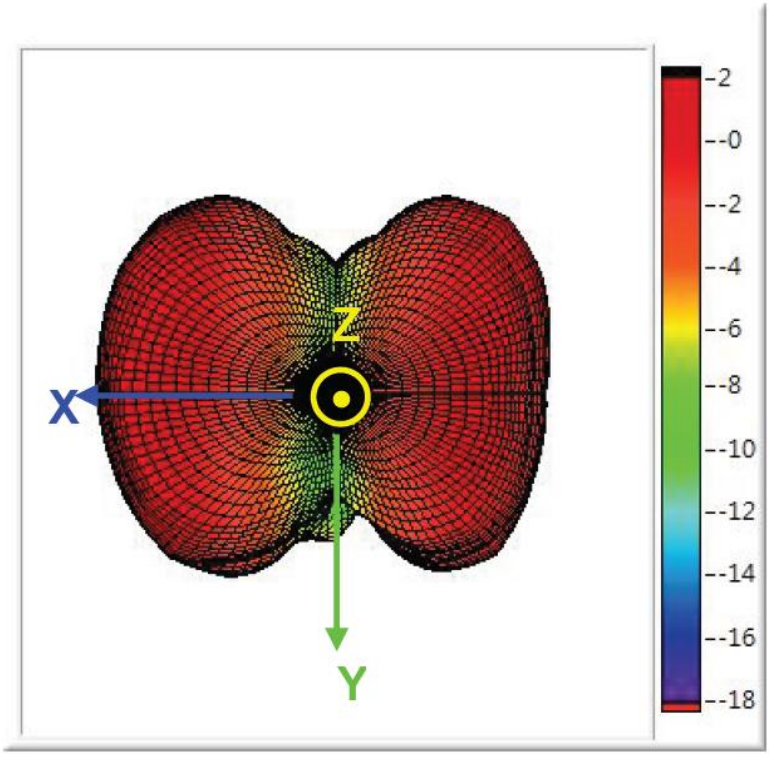
6.3 3D Gain pattern @ 5700 MHz

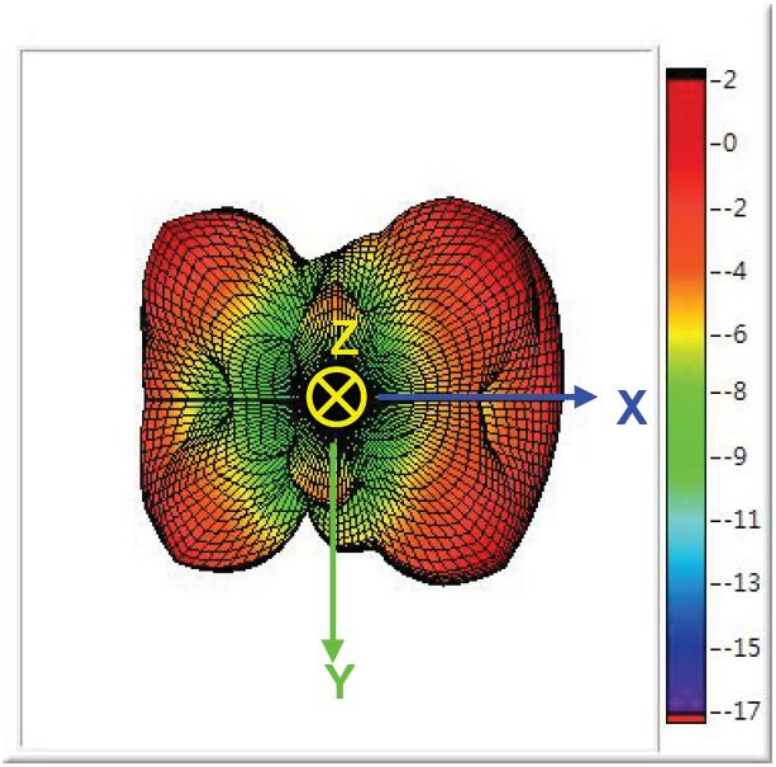


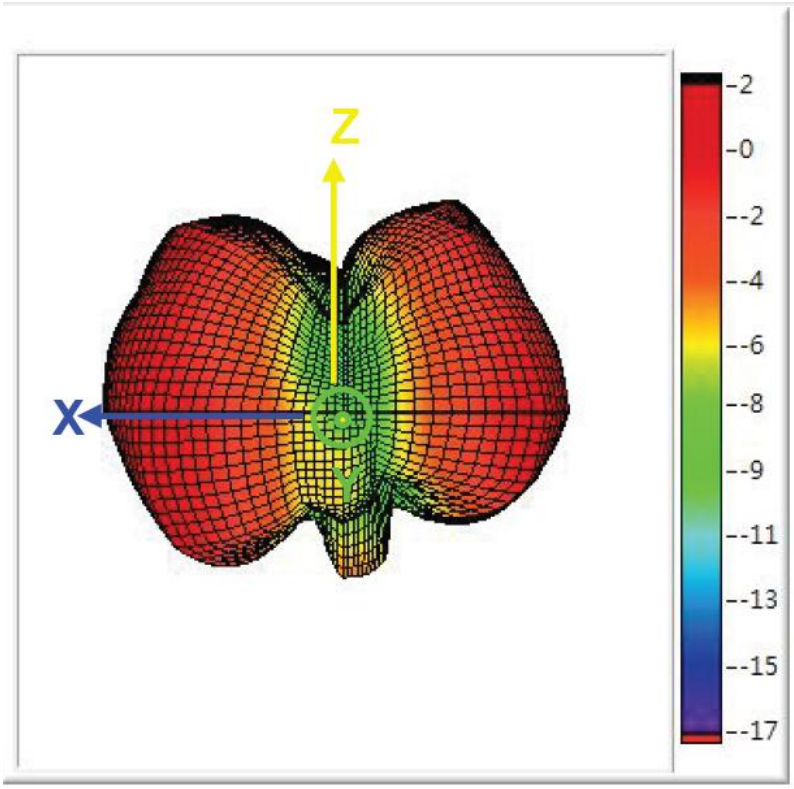

-1
--1
--2
--4
--6
--8
--10
--11
--13
--15
--17
Z
X
Y


-2
--0
--2
--4
--6
--8
--10
--12
--13
--15
--17
Z
X
Y

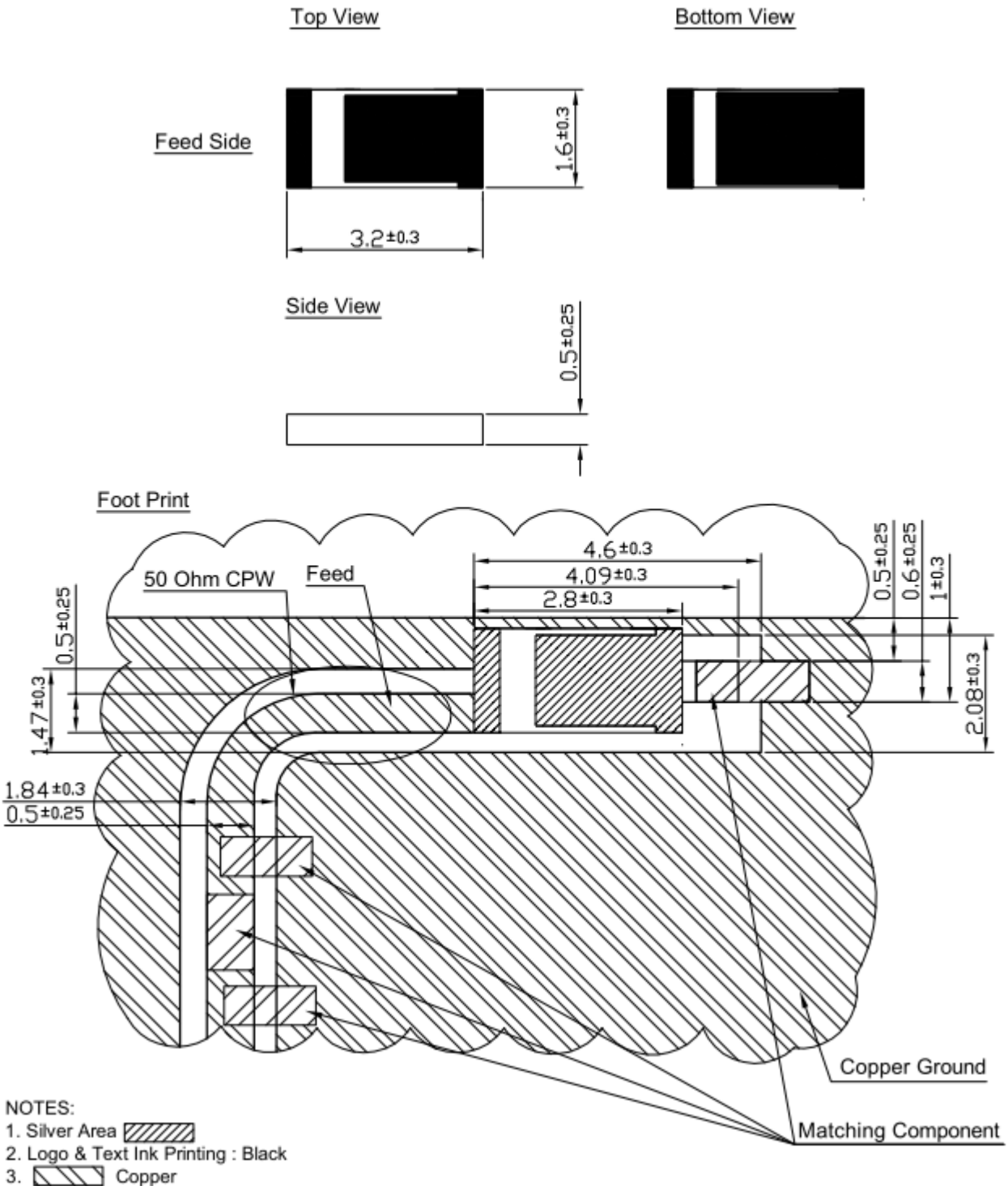
6.4 3D Gain pattern @ 5850 MHz

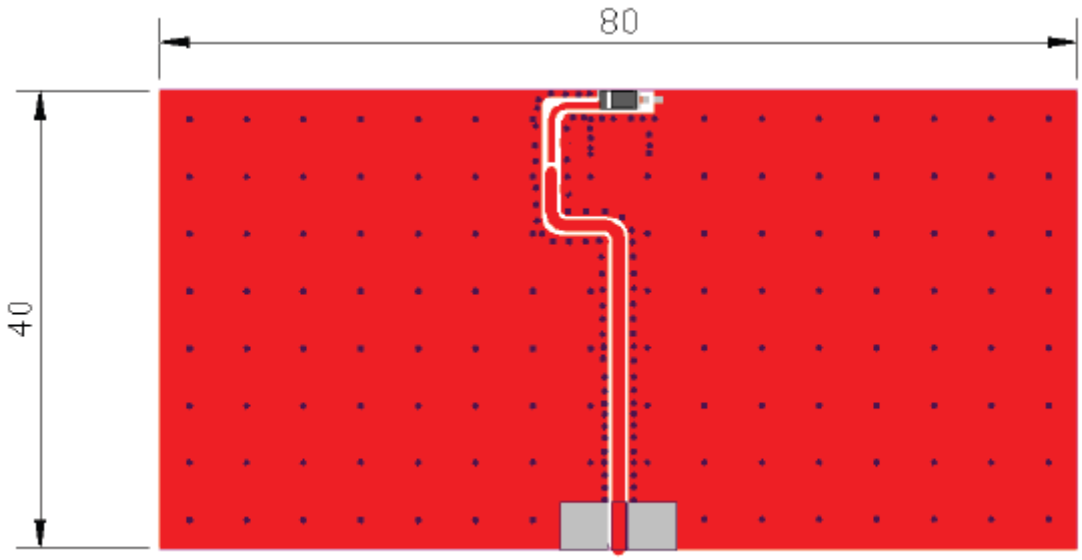





Z
X
-2
-0
--2
--4
--6
--8
--9
--11
--13
--15
--17

7. Mechanical Drawing

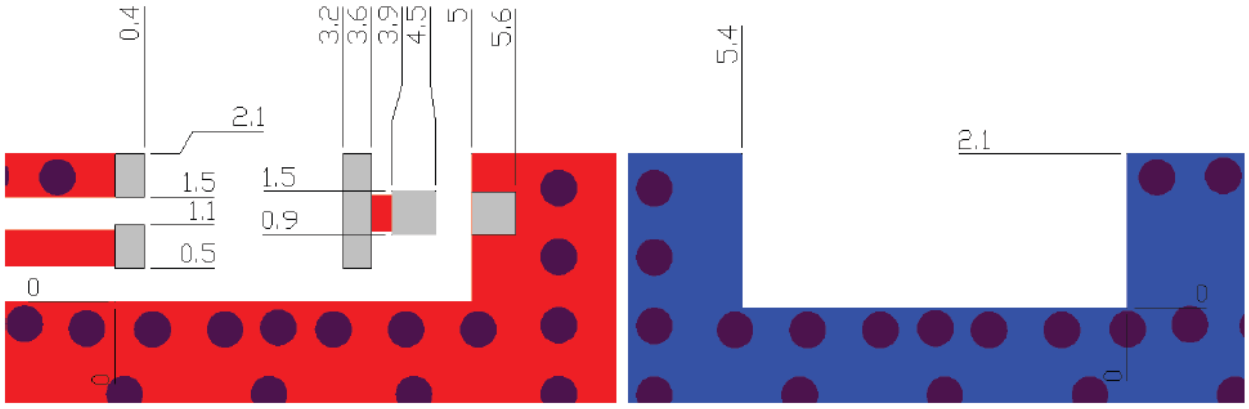




Unit : mm

8. Layout Guide

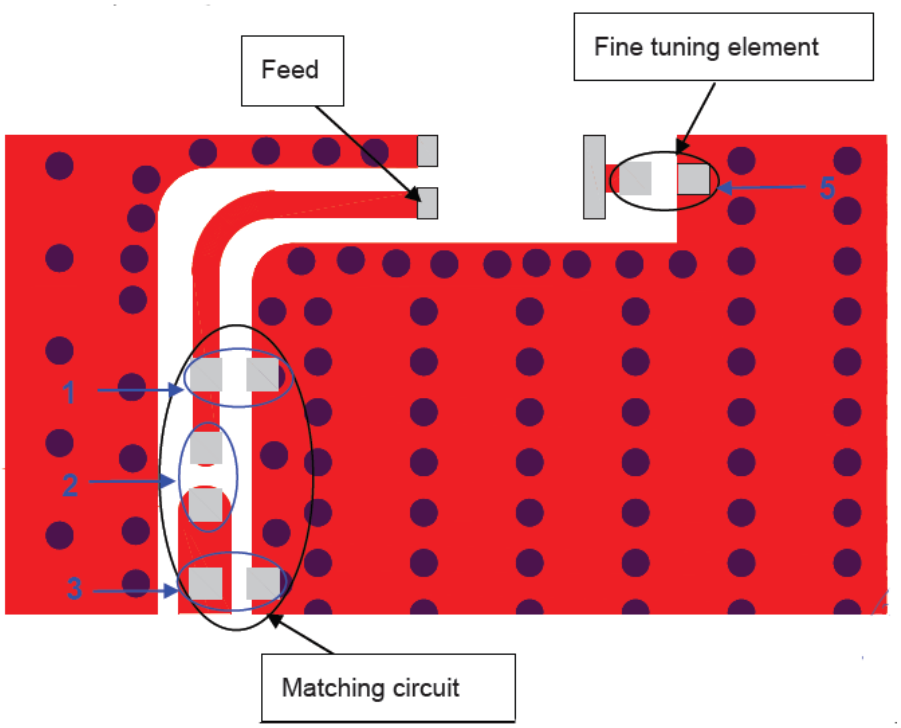
Solder Land Pattern:



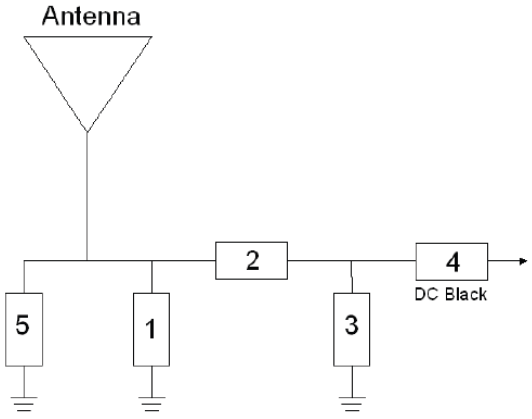
Unit : mm

9. Frequency tuning

Antenna tuning scenario:



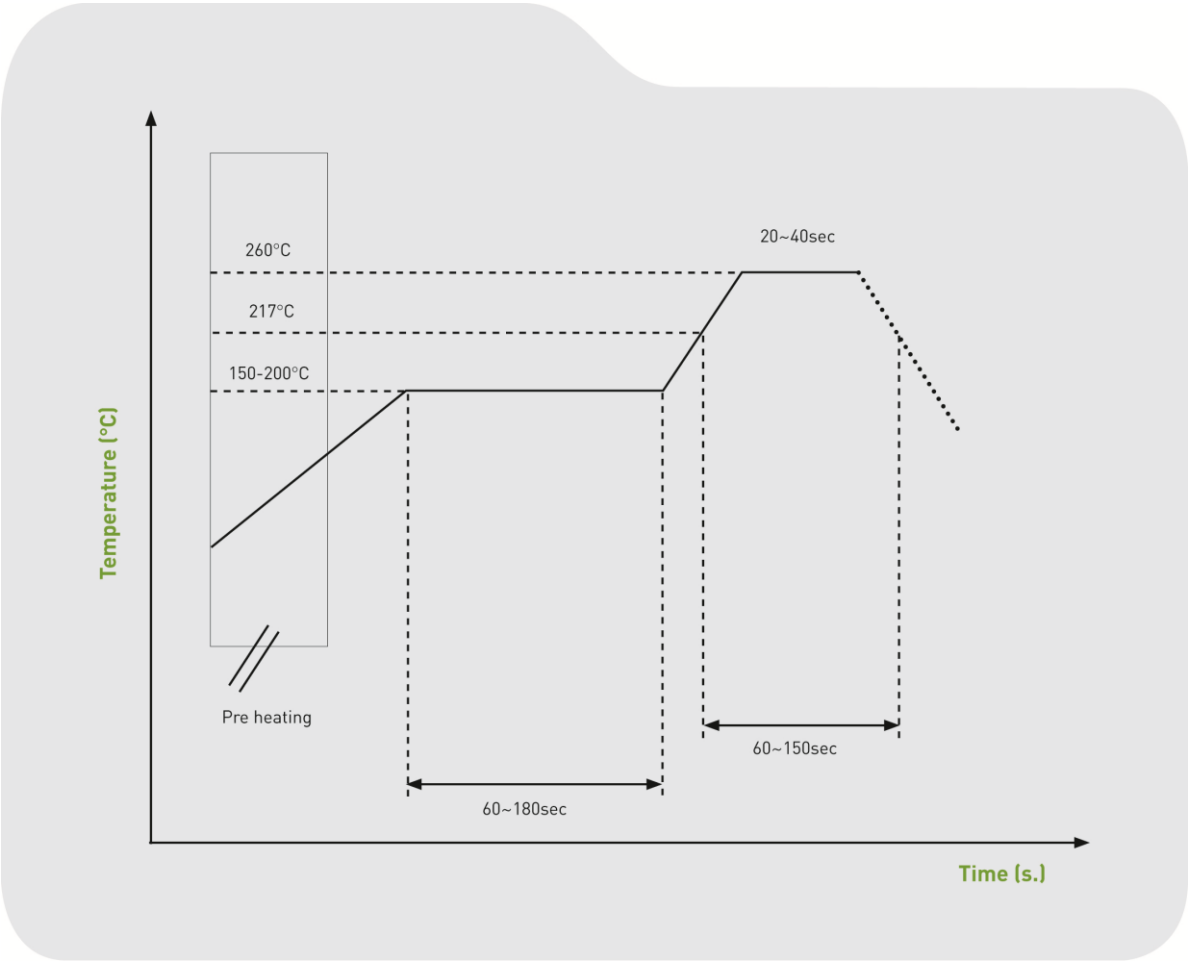
Matching circuit: (Center frequency is 5500MHz at 80x40mm ground plane)



System Matching Circuit Component		
Location	Description	Vendor
1	0.2pF	DARFON(0402)
2	0Ω	(0402)
3	1.5nH	DARFON(0402)
4	22pF	DARFON(0402)
5 (Fine tuning element)	0.2pF	DARFON(0402)

10. Soldering Conditions

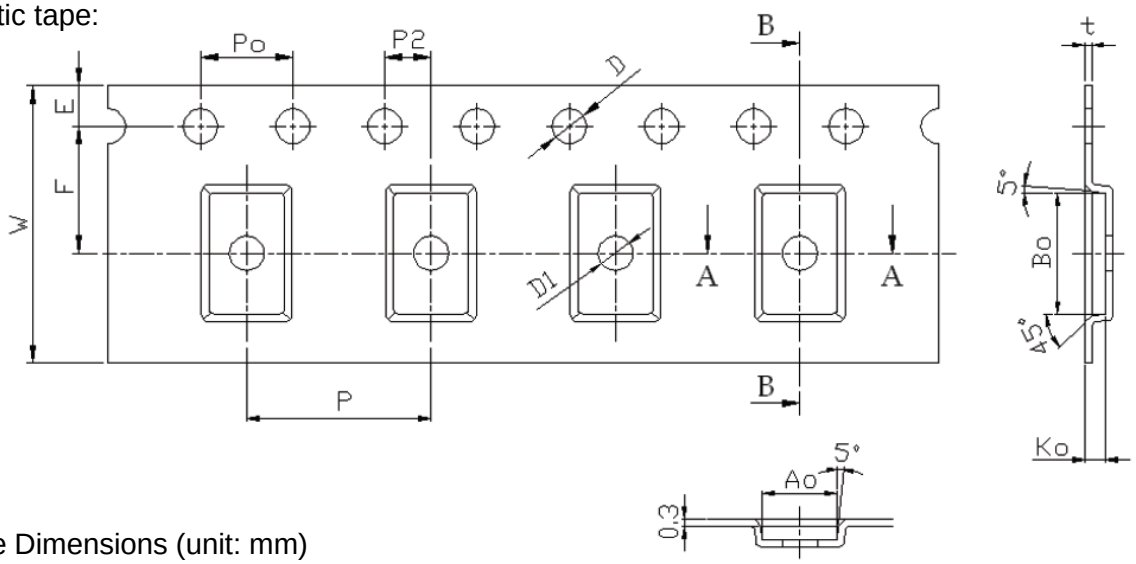
Typical Soldering profile for lead-free process:



11. Packing

Quantity: 6000pcs/ Reel

Plastic tape:



Tape Dimensions (unit: mm)

Feature	Specification	Tolerance
W	12.00	±0.30
P	8.00	±0.10
E	1.75	±0.10
F	5.50	±0.10
P2	2.00	±0.10
D	1.50	+0.10 / -0.00
D1	-	±0.10
Po	4.00	±0.10
10Po	40.00	±0.20

Pocket Dimensions (unit: mm)

Feature	Specification	Tolerance
Ao	1.90	+0.20
Bo	3.50	-0.10
Ko	0.60	±0.05
t	0.30	±0.05

1. Cumulative tolerance of 10 pocket hole pitch: ±0.20mm
2. Carrier camber not to exceed 1mm in 250mm
3. Ao and Bo measured on a plane above the inside bottom of the pocket
4. Ko measured from a plane on the inside bottom of the pocket to the top surface of the carrier
5. All dimensions meet EIA-481-B requirements
6. Material – Clear non Anti-Static Polystyrene, Black Conductive Polystyrene