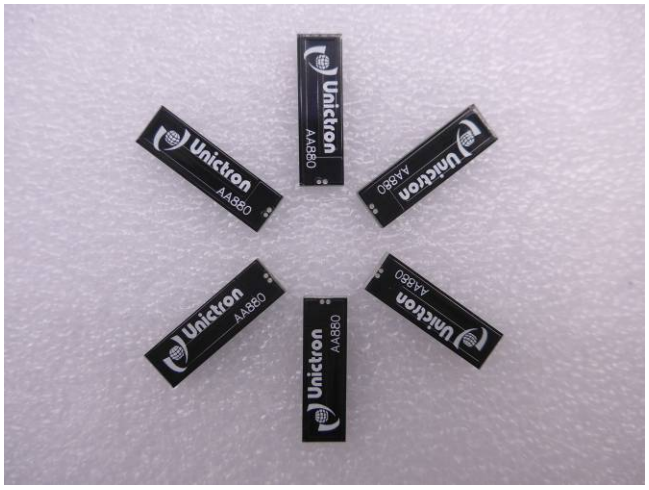
27.0 x 8.0 x 3.2 (mm) GSM / 3G Chip Antenna (AA880)

Engineering Specification

1. Product Number

H	2	U	A	6	K	1	K	1	N	0	1	0	0



2. Features

*GSM/3G antenna supporting up to 5 bands including 824-960 MHz and 1710-2170 MHz
*Stable and reliable in performances
*Low profile, compact size
*RoHS compliance
*SMT processes compatible

3. Applications

* Machine-to-machine wireless communication.
* Femto base stations.
* GSM/3G position routers & tracking systems.

4. Description

Unictron's antenna series are specially designed for GSM/3G applications. Based on Unictron's proprietary design and processes, this chip antenna has excellent stability and sensitivity to consistently provide high signal reception efficiency.

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Prepared by : Xenia	Designed by : Allen	Checked by : Chinling	Approved by : Herbert	UNIT : mm

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5. Electrical Specifications (110 x 49 x 0.9 mm^3 test board)

5-1. Electrical Table (824~960 MHz)

Characteristics		Specifications	Unit
Outline Dimensions		27.0 x 8.0 x 3.2	mm
Working Frequency		824~960	MHz
VSWR(@Center Frequency)*		3 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain	Peak	1.7 (typical)	dBi
	Efficiency	70 (typical)	%

*Center frequency will be offset to another frequency according to the conditions of user's ground plane and radome.

5-2. Electrical Table (1710~2170 MHz)

Characteristics		Specifications	Unit
Working Frequency		1710~2170	MHz
VSWR (@Center Frequency)*		3 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Gain	Peak	3.0 (typical)	dBi
	Efficiency	79 (typical)	%

*Center frequency will be offset to another frequency according to the conditions of user's ground plane and radome.

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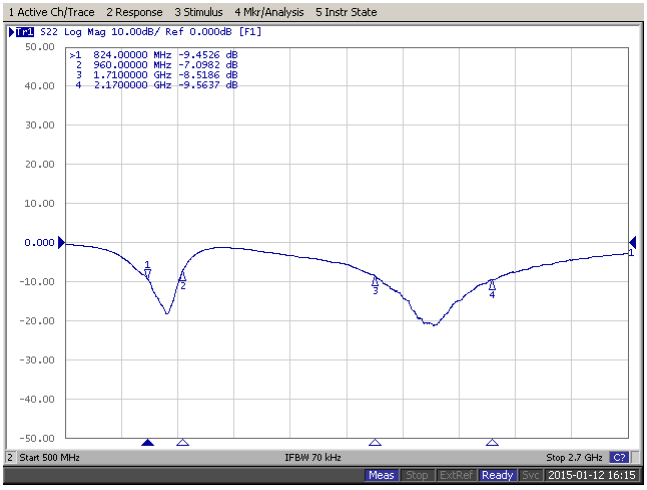
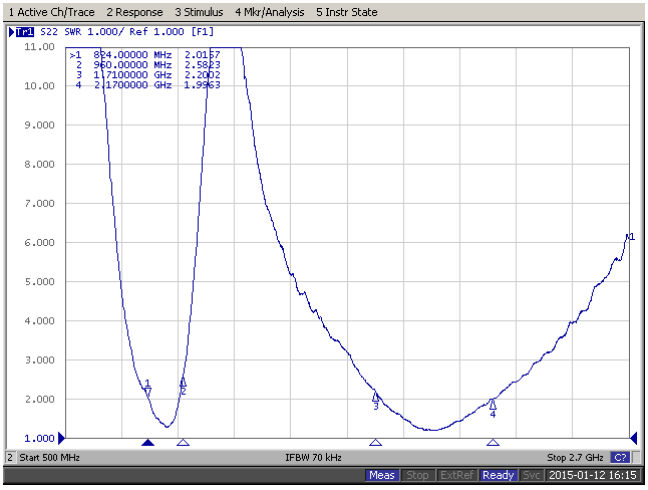
5-3. Return Loss & VSWR

Return Loss (S_{11})

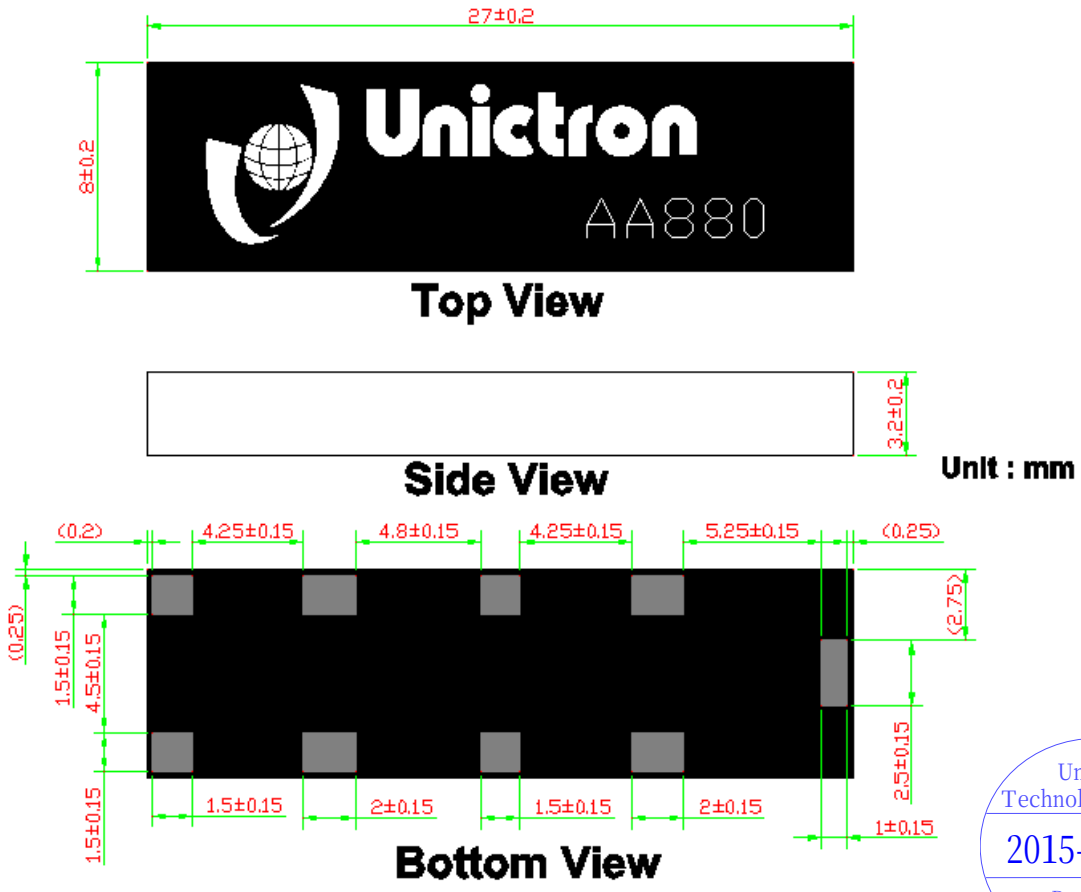


VSWR (S_{11})



6. Antenna Dimensions & Test Board (unit: mm)

a. Antenna Dimensions



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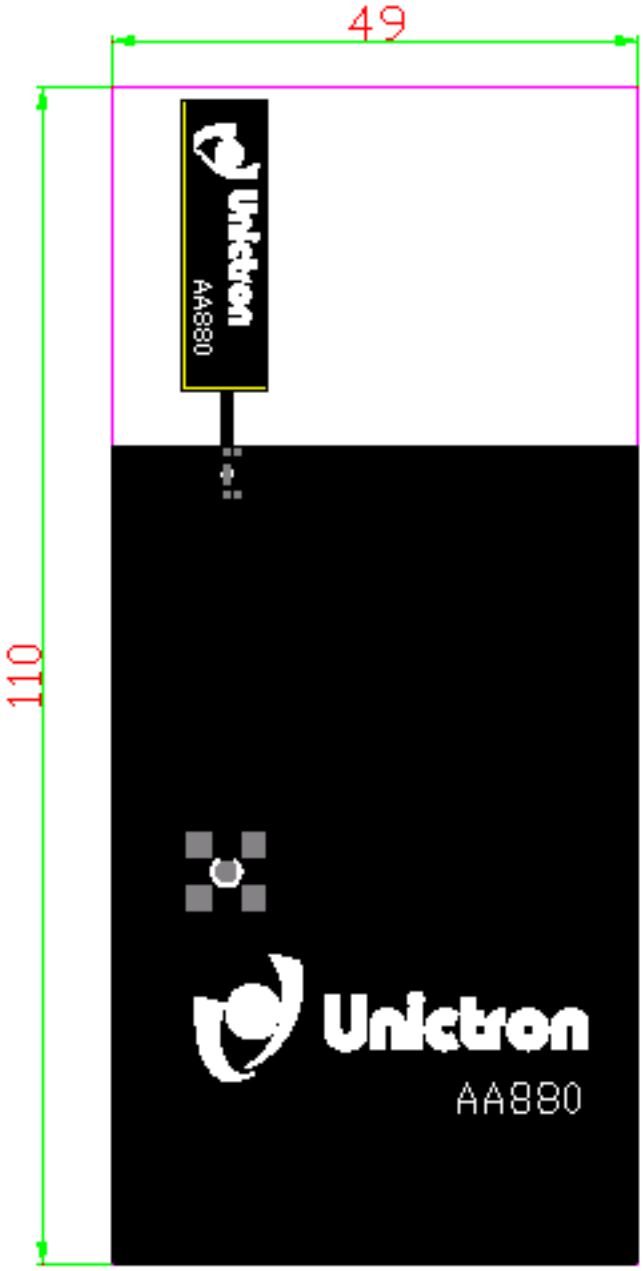
b. Test Board with Antenna



Unit:mm

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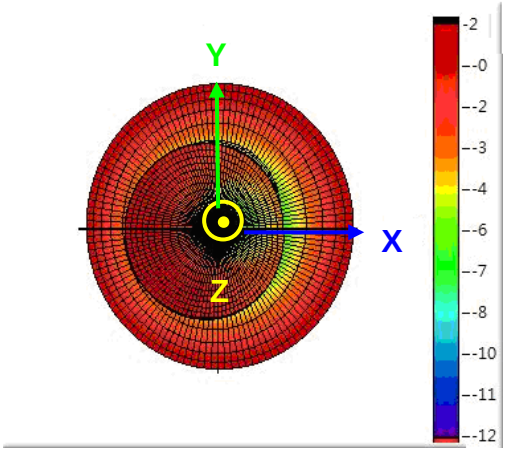
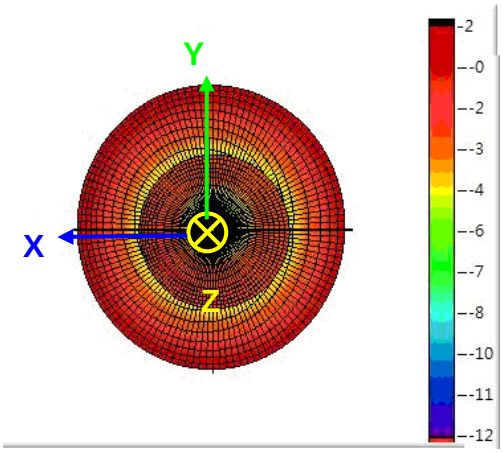
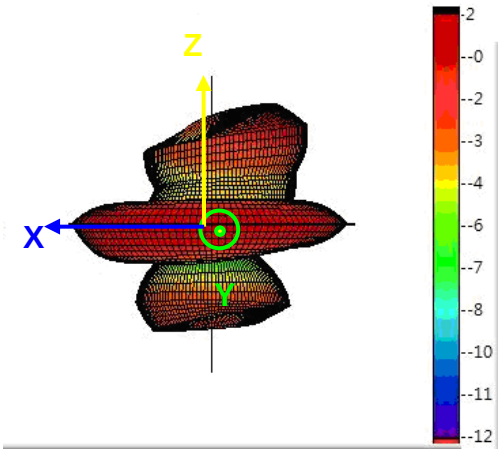
7. 3D Radiation Pattern (@ 110 x 49 x 0.9 mm^3 test board)

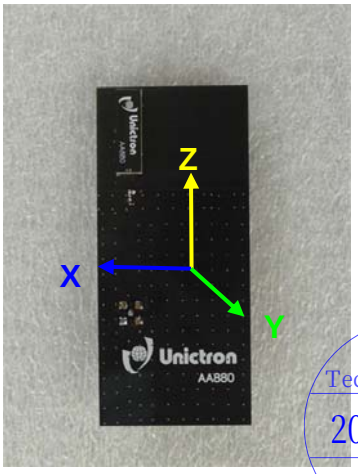
7-1. 824~960 MHz Band

7-1.1. 3D Gain Pattern @ 824 MHz









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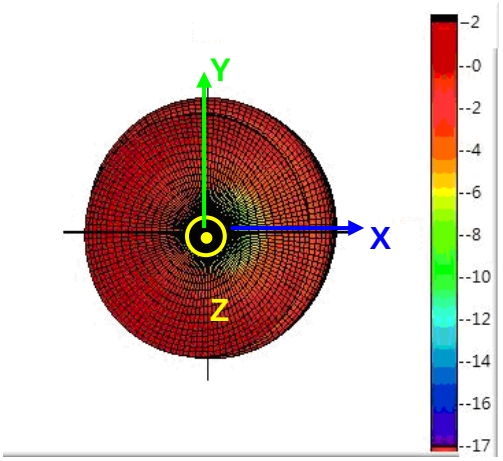
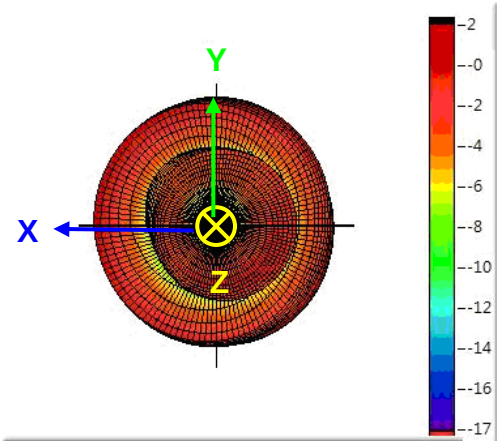
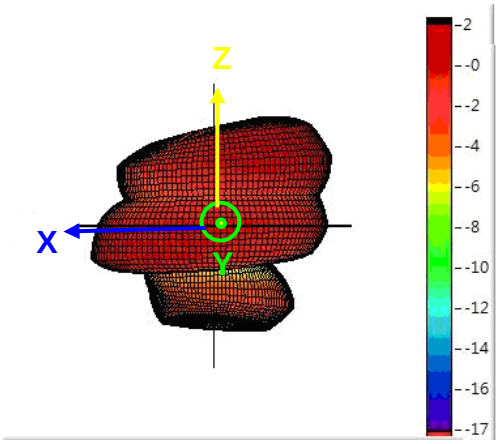
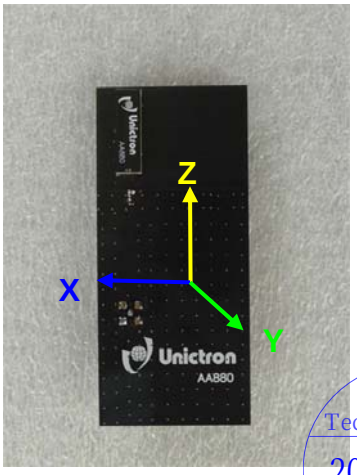
7-1.2. 3D Gain Pattern @ 960 MHz









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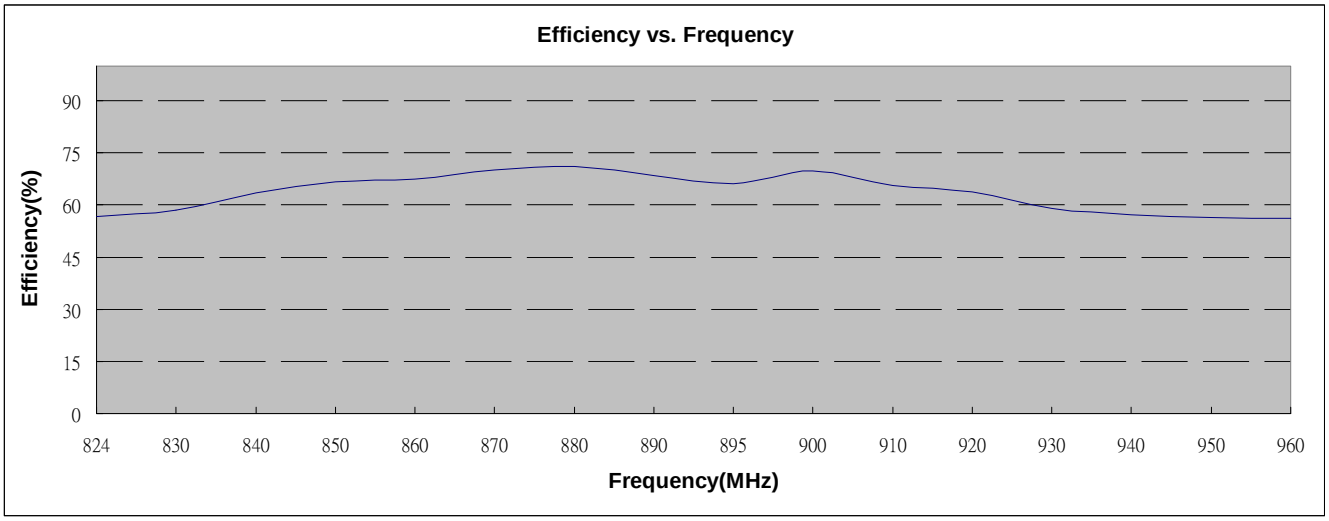
7-1.3. 3D Efficiency Table

Frequency(MHz)	824	830	840	850	860	870	880	890	895	900	910	920	930	940	950	960
Efficiency(dB)	-2.47	-2.32	-1.98	-1.76	-1.70	-1.54	-1.48	-1.64	-1.79	-1.56	-1.83	-1.95	-2.29	-2.43	-2.47	-2.50
Efficiency(%)	56.59	58.66	63.43	66.75	67.54	70.08	71.05	68.53	66.21	69.75	65.55	63.85	59.05	57.1	56.56	56.22
Gain(dBi)	-0.51	-0.07	0.53	1.43	1.63	1.71	1.69	1.65	1.63	1.51	1.29	1.08	0.89	0.58	0.49	0.03

7-1.4. 3D Efficiency vs. Frequency



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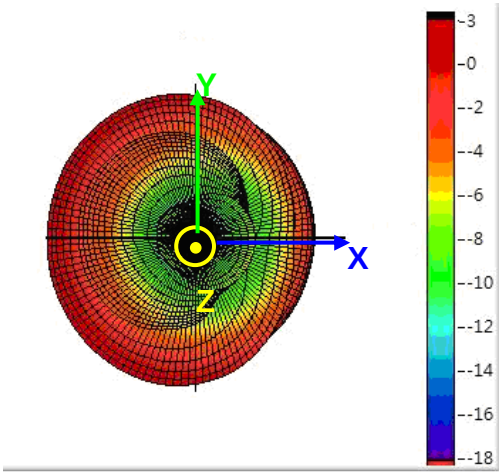
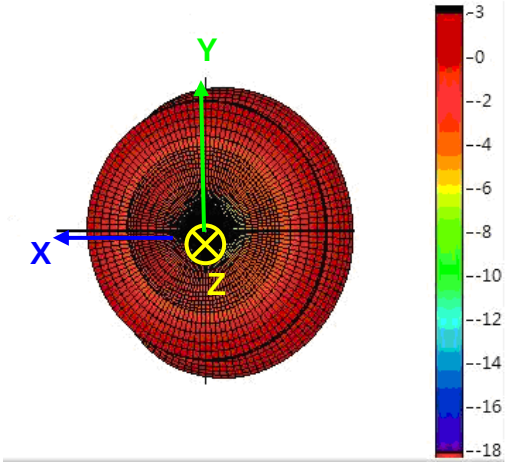
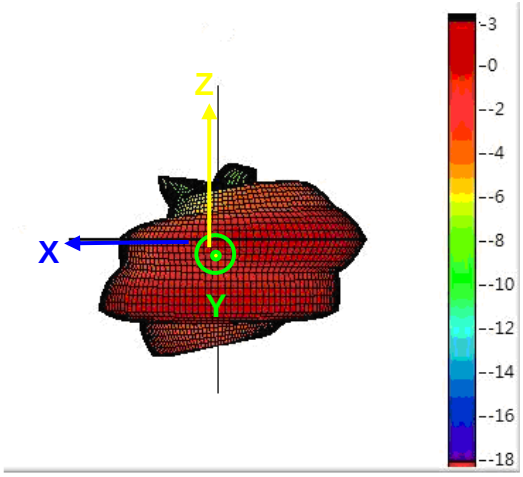
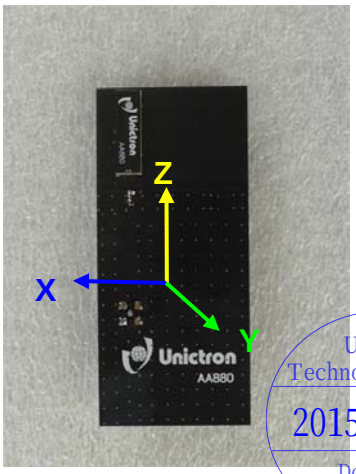
7-2. 1710~2170 MHz Band

7-2-1. 3D Gain Pattern @ 1710 MHz









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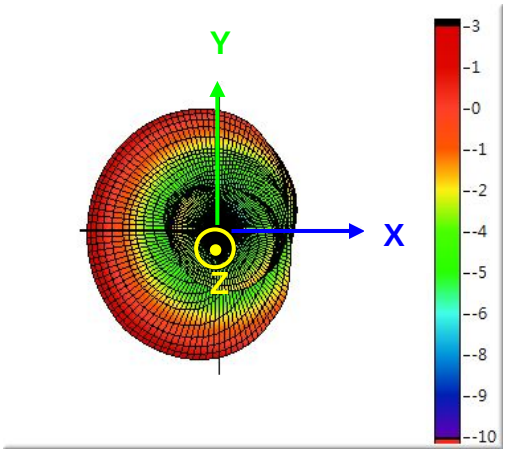
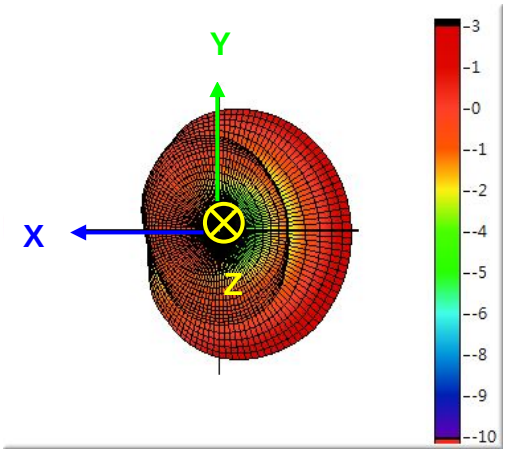
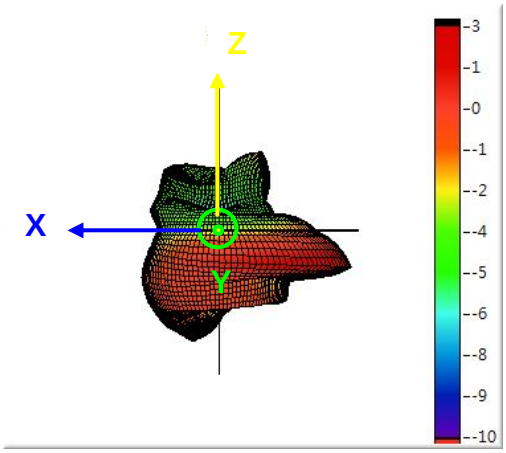
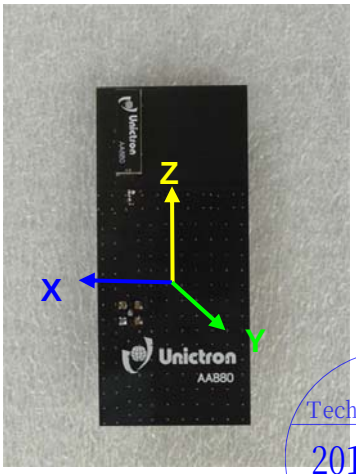
7-2-2. 3D Gain Pattern @ 2170 MHz









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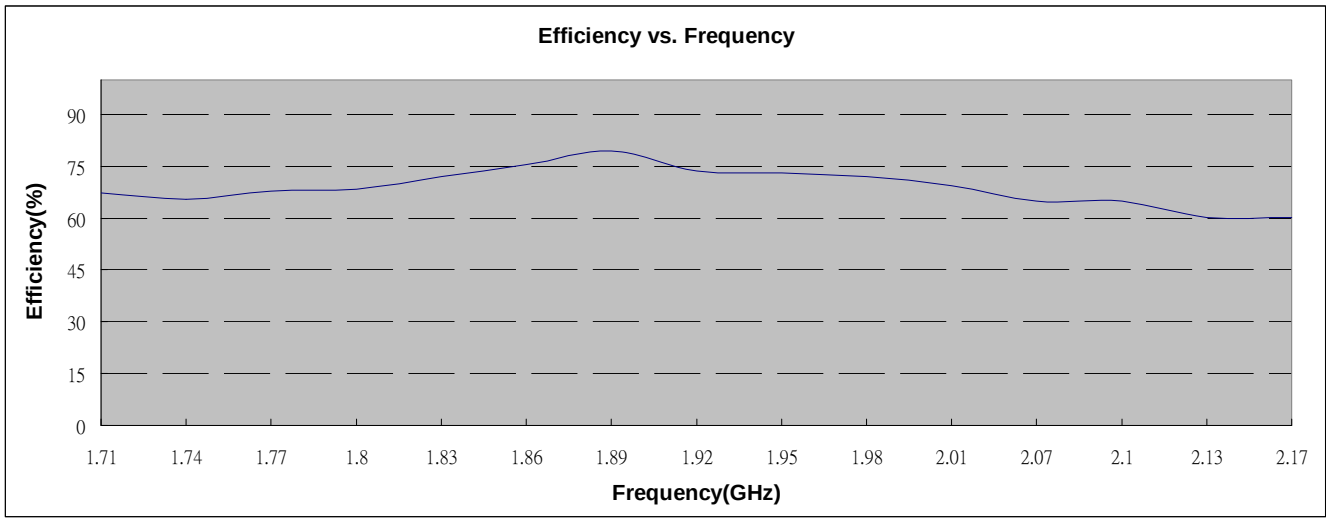
7-2-3. 3D Efficiency Table

Frequency(GHz)	1.71	1.74	1.77	1.80	1.83	1.86	1.89	1.92	1.95	1.98	2.01	2.07	2.10	2.13	2.17
Efficiency(dB)	-2.41	-1.84	-1.69	-1.65	-1.42	-1.22	-1	-1.32	-1.36	-1.43	-1.28	-1.88	-1.88	-1.86	-2.21
Efficiency(%)	67.4	65.4	67.7	68.3	72.1	75.5	79.4	73.7	73.1	71.9	69.4	64.8	64.8	60.1	60.1
Gain(dBi)	2.41	2.88	2.72	2.73	2.09	2.81	3.04	2.92	2.81	2.68	3.06	2.86	2.57	2.37	3.05

7-2-4. 3D Efficiency vs. Frequency



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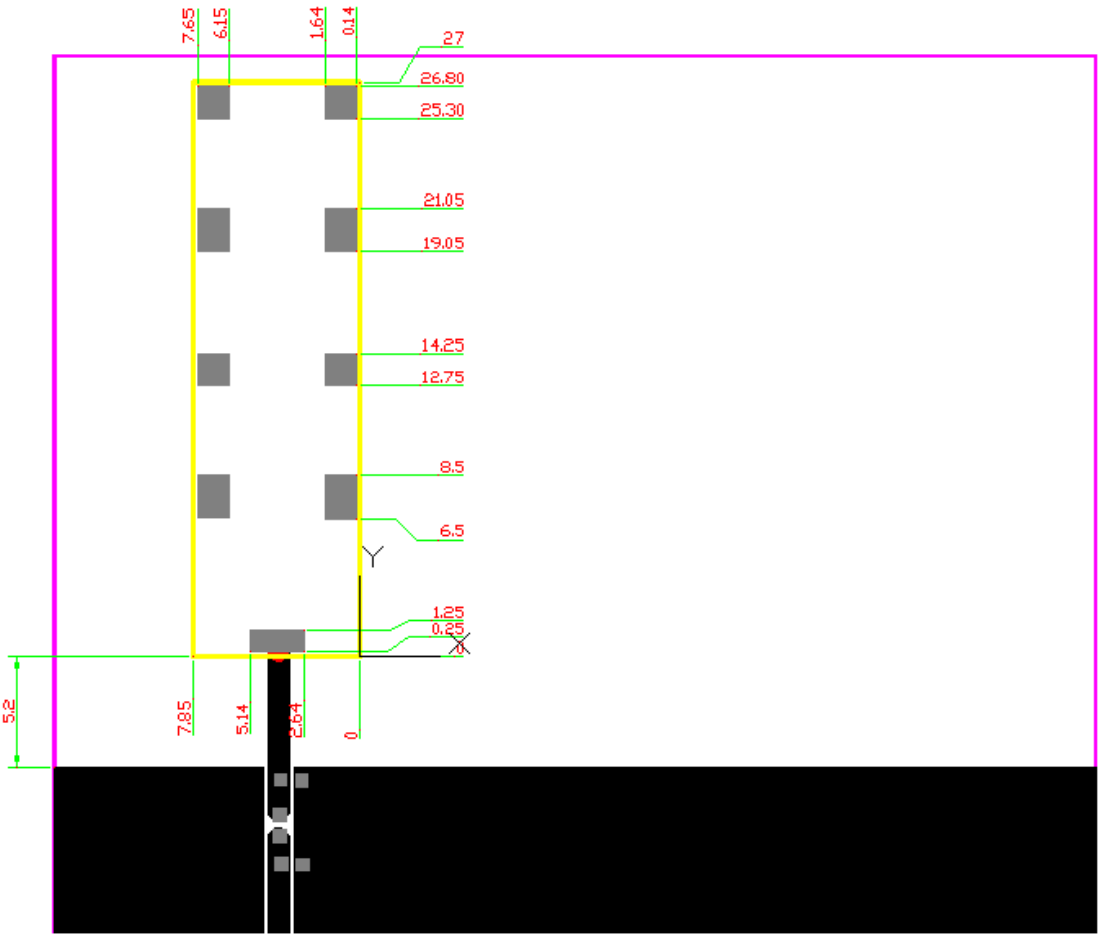
8. Layout Guide

Solder Land Pattern

Land pattern for soldering (gray marking areas) is as shown below. Matching circuit is needed for good performance, when customer's device is different.



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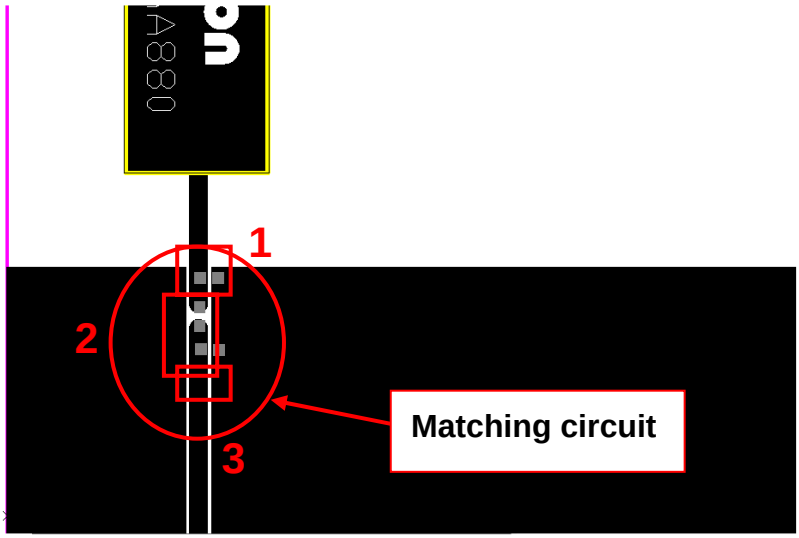
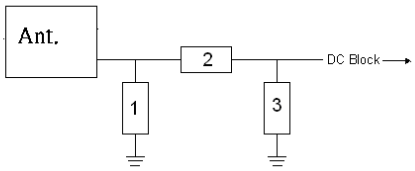
9. Matching

a. Chip antenna tuning scenario



b. Matching circuit

Working frequencies are about 824~960MHz & 1710~2170MHz @ 110x49x0.9 mm^3 test board



System Matching Circuit Component			
Location	Description	Vendor	Tolerance
1	6.8nH*	DARFON(0402)	±0.1 nH
2	3.9pF*	DARFON(0402)	±0.1 pF
3	N/A*	-	-

*Typical reference values which may need to be changed when circuit boards or part vendors are different.

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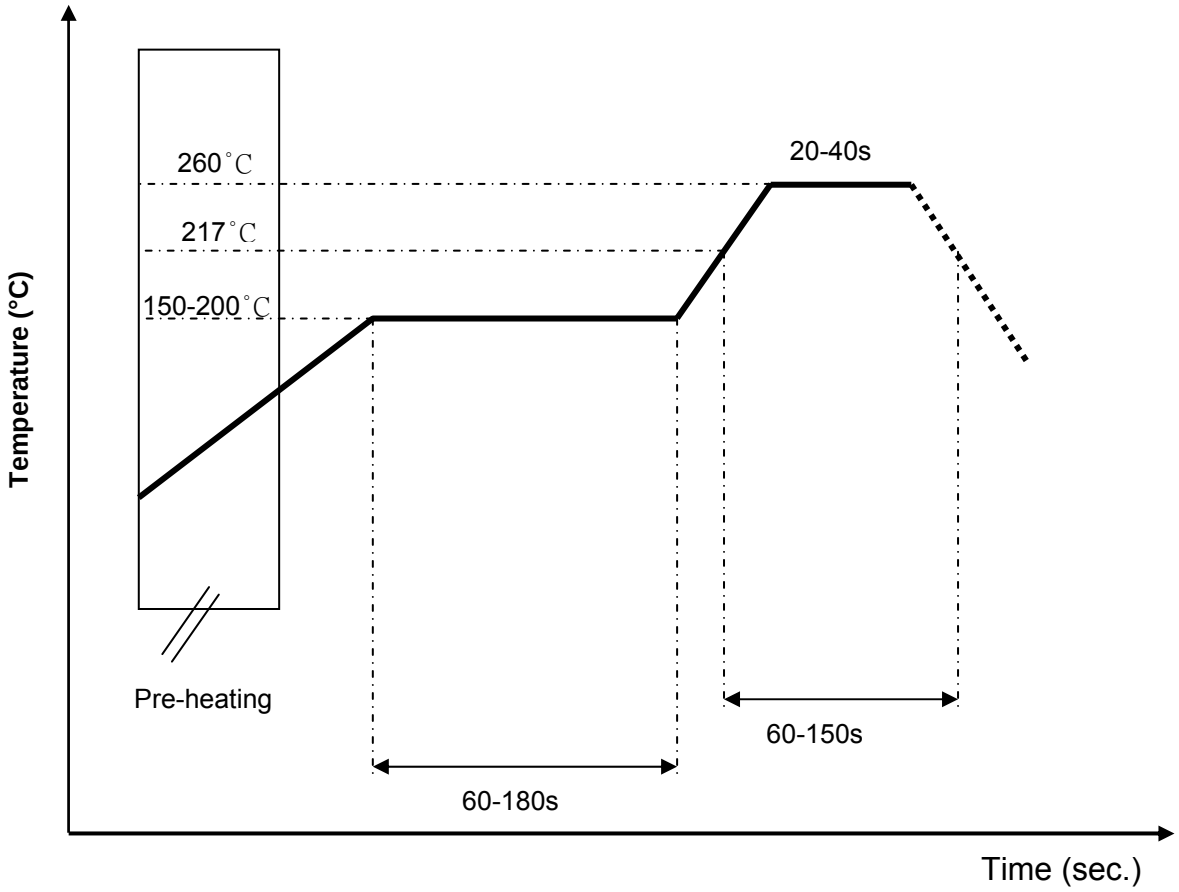
10. Soldering Conditions

Typical Soldering Profile for Lead-free Process



11. Notifications for Assembly

We recommend the notifications as following

a. Do NOT touch or push the chip antenna after SMT process.
b. Do NOT bend PCB after SMT process.
c. Do NOT place the cutting point between PCB and frame near the chip antenna.
d. Do NOT use ultrasonic welding process or vibration process to avoid the cracking of the soldering of the chip antenna.

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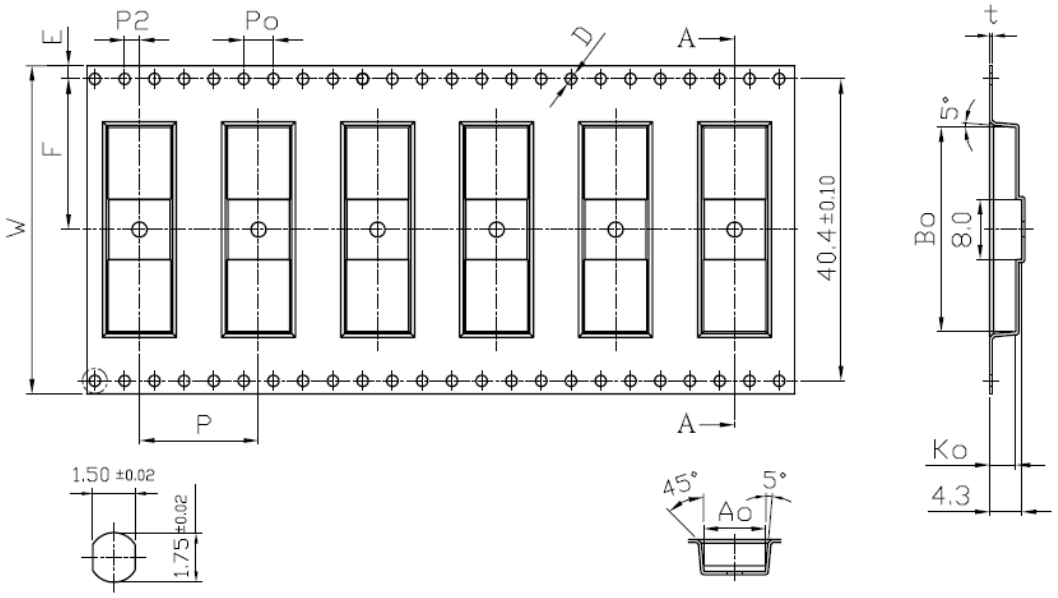
12. Packing

(1) Quantity/Reel: 1000pcs/Reel

(2) Plastic tape:



1. 10 sprocket hole pitch cumulative tolerance ±0.20mm.
2. Carrier camber not to exceed 1mm in 250mm
3. Ao and Bo measured on a plane the 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-D requirements.
6. Material: □ Clear Non Anti-Static Polystyrene.
   ■ Black Conductive Polystyrene.

2.1 Tape Dimensions(unit: mm)

Feature	Specifications	Tolerances
W	44.00	±0.30
P	16.00	±0.10
E	1.75	±0.10
F	20.20	±0.15
P2	2.00	±0.15
D	1.50	+0.10 -0.00
D1	2.00	±0.10
Po	4.00	±0.10
10Po	40.00	±0.20

2.2 Pocket Dimensions(unit: mm)

Feature	Specifications	Tolerances
Ao	8.40	±0.10
Bo	27.40	±0.10
Ko	3.50	±0.10
t	0.40	±0.05

13. Storage Conditions

(1) Temperature: -25℃ to 85℃

(2) Relative Humidity: 20% to 70%

(3) Shelf Life :one year

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