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.

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

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

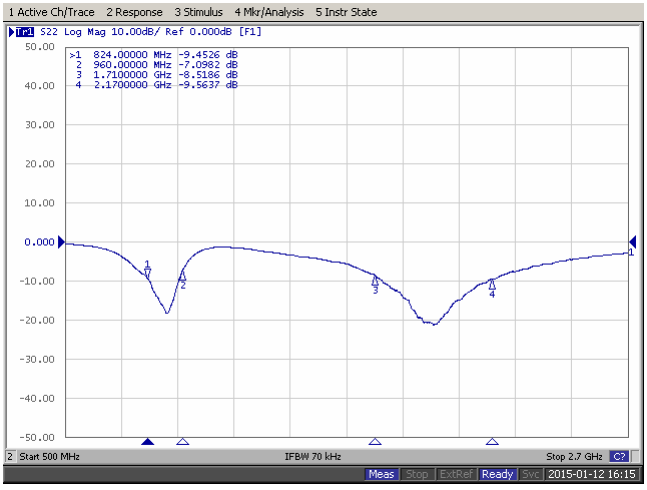
Characteristics		Specifications	Unit
Outline Dimensions		27.0 x 8.0 x 3.2	mm
Working Frequency		824~960	MHz
VSWR		3 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@ 895 MHz)	1.6 (typical)	dBi
Efficiency		66 (typical)	%

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

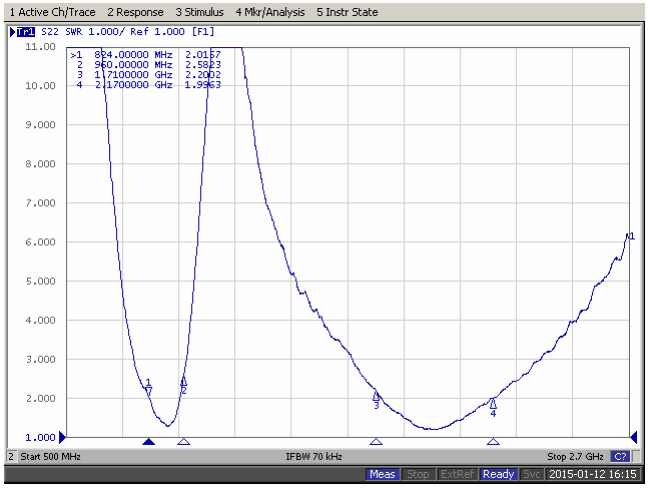
Characteristics		Specifications	Unit
Working Frequency		1710~2170	MHz
VSWR		3 Max.	
Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@ 1950 MHz)	2.8 (typical)	dBi
Efficiency		73 (typical)	%

5-3. Return Loss & VSWR

Return Loss (S_{11})

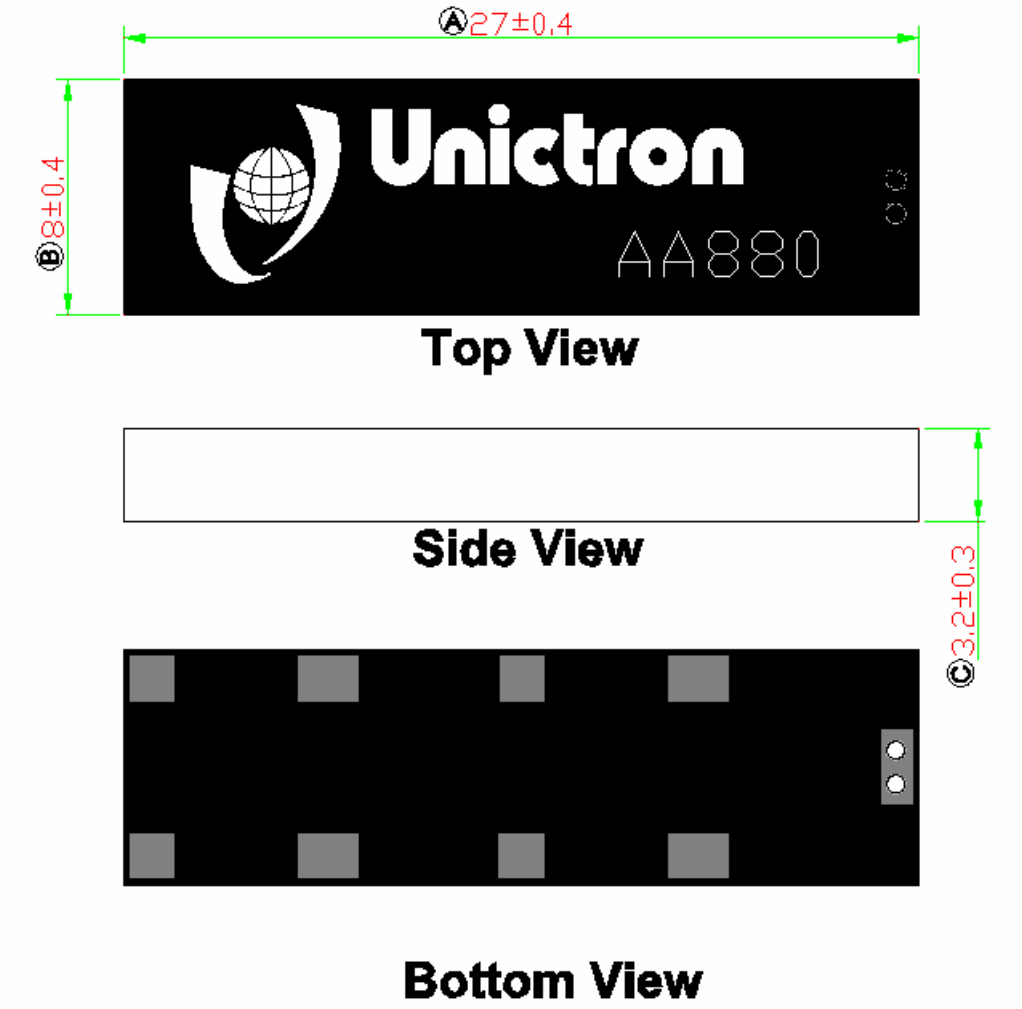


VSWR (S_{11})



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

a. Antenna Dimensions

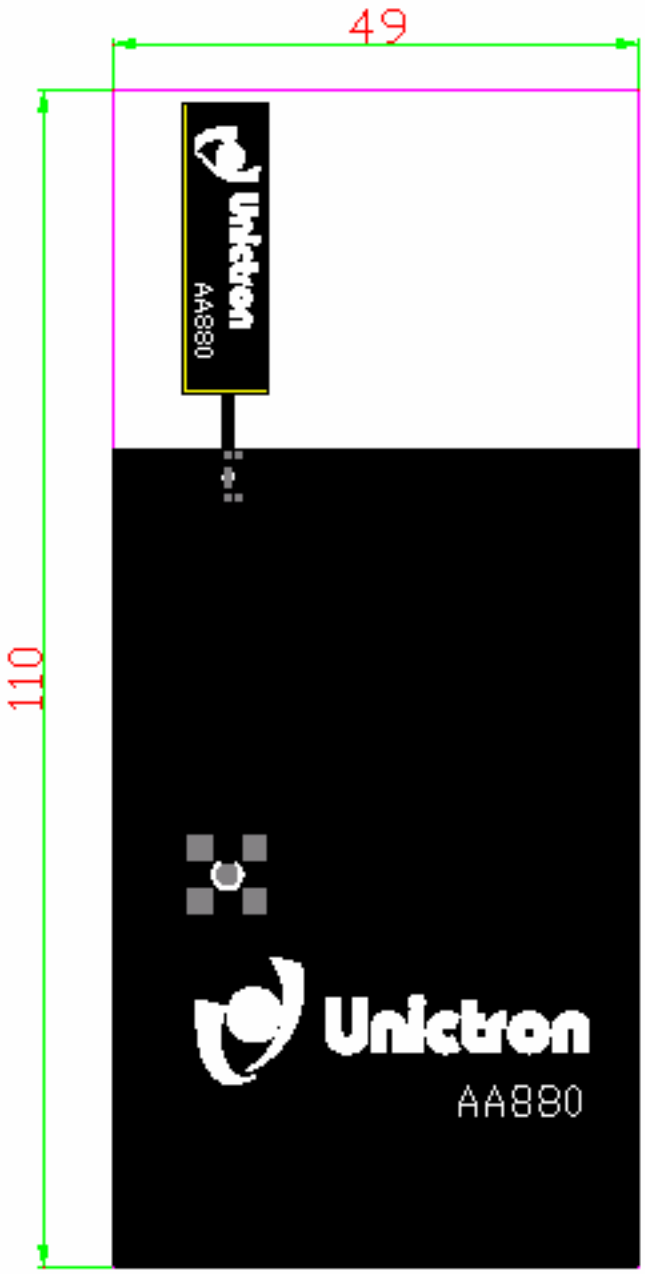


NOTE:
1.All materials are RoHS compliant.
2."Ⓐ~Ⓒ" Critical Dimensions.
3."( )" Reference Dimensions.

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

TITLE：27.0 x 8.0 x 3.2 (mm) GSM / 3G Chip Antenna (AA880) Engineering Specification	DOCUMENT NO.	H2UA6K1K1N0100	REV. B

b. Test Board with Antenna

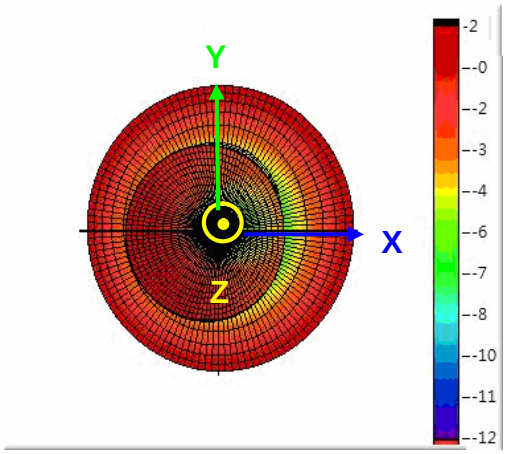


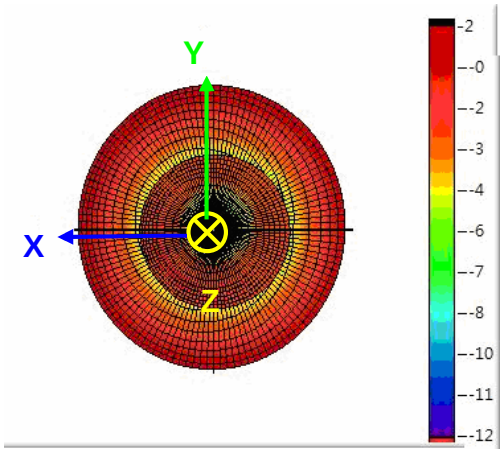
unit: mm

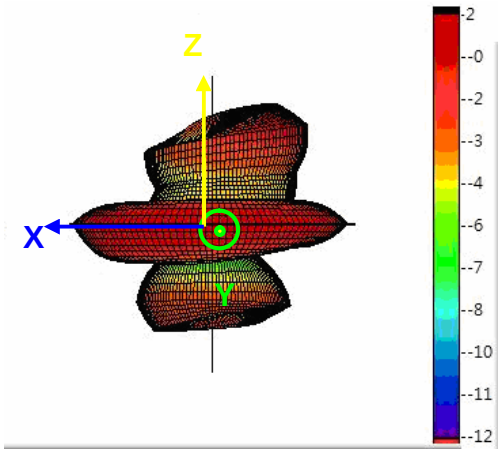
7. 3D Radiation Pattern (@ 110 x 49 x 0.9 mm^3 test board)

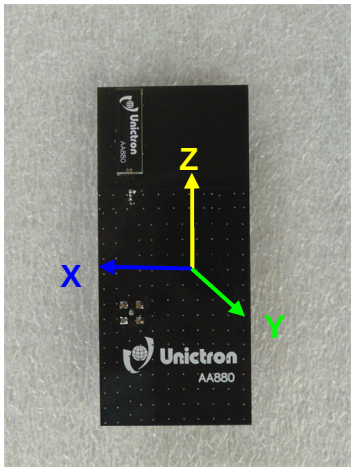
7-1. 824~960 MHz Band

7-1.1. 3D Gain Pattern @ 824 MHz

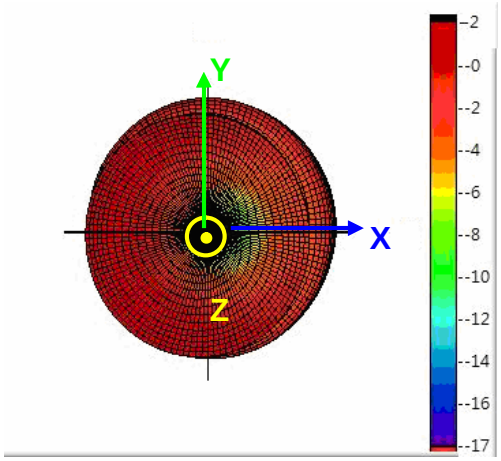


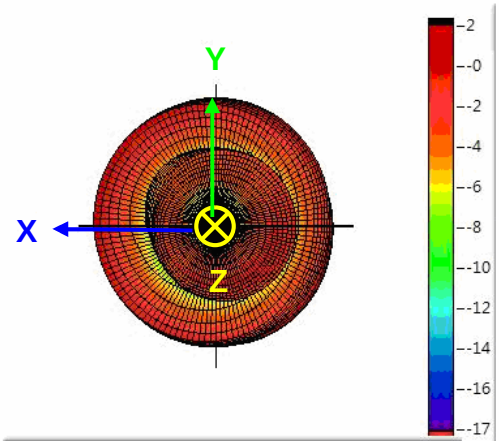


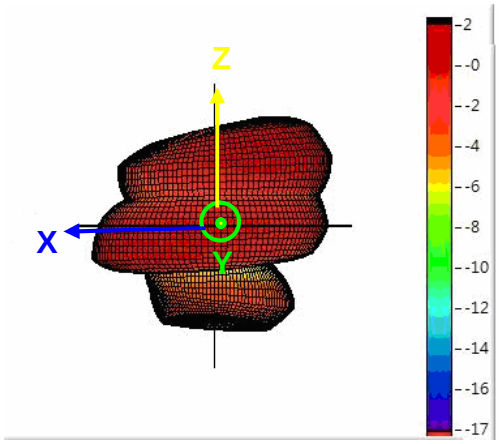


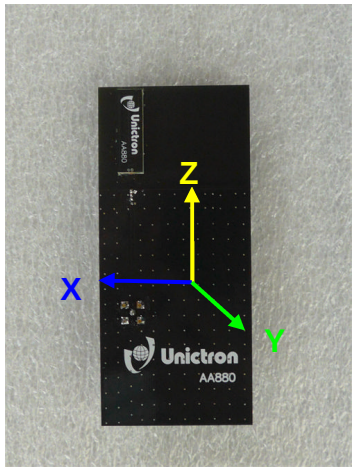


7-1.2. 3D Gain Pattern @ 960 MHz





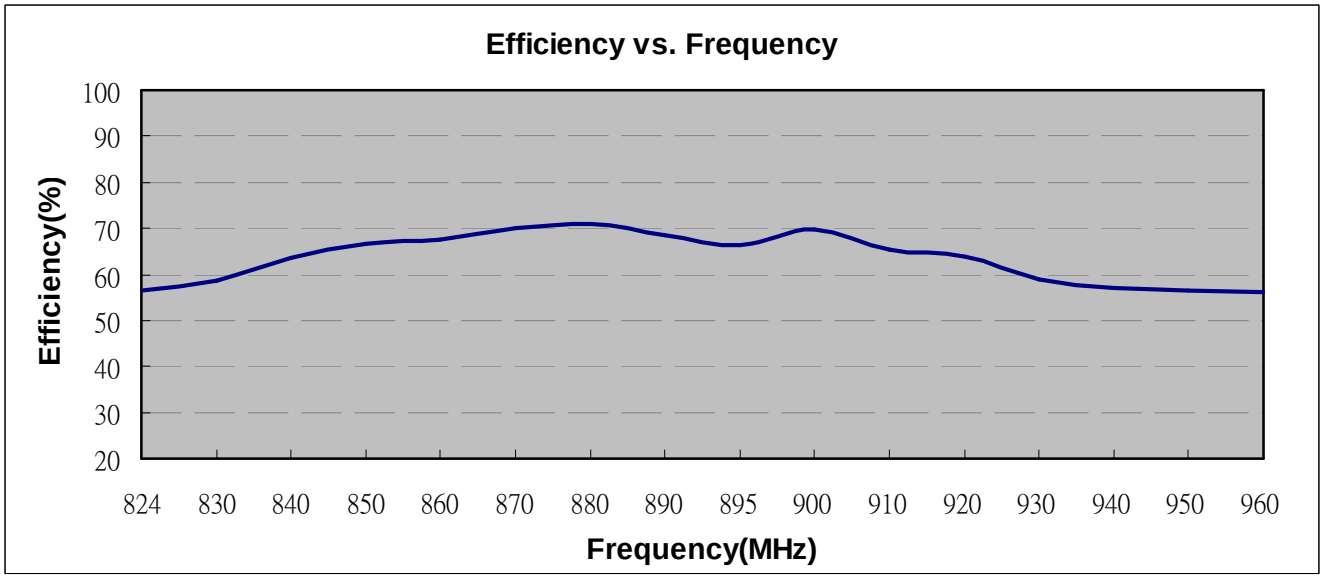




7-1.3. 3D Efficiency Table

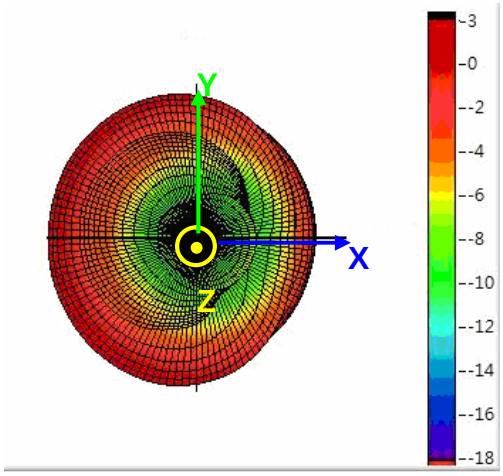
Frequency(MHz)	824	830	840	850	860	870	880	890	895	900	910	920	930	940	950	960
Efficiency(dB)	-2.5	-2.3	-2.0	-1.8	-1.7	-1.5	-1.5	-1.6	-1.8	-1.6	-1.8	-2.0	-2.3	-2.4	-2.5	-2.5
Efficiency(%)	56.6	58.7	63.4	66.8	67.5	70.1	71.1	68.5	66.2	69.8	65.6	63.9	59.1	57.1	56.6	56.2
Gain(dBi)	-0.5	-0.1	0.5	1.4	1.6	1.7	1.7	1.7	1.6	1.5	1.3	1.1	0.9	0.6	0.5	0.0

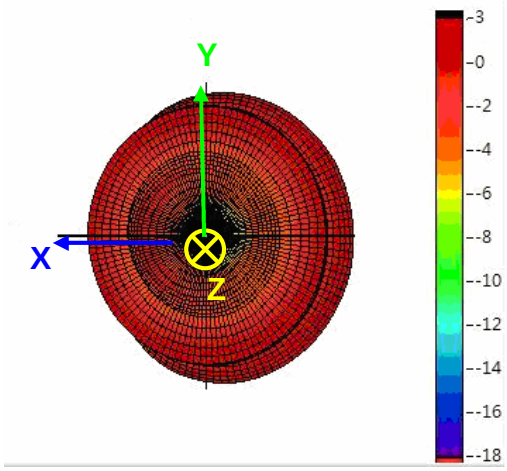
7-1.4. 3D Efficiency vs. Frequency

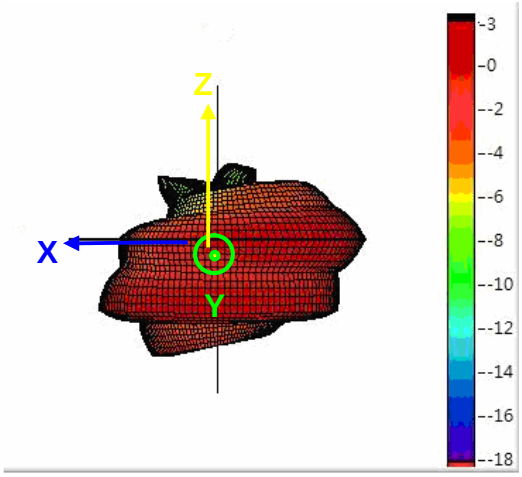


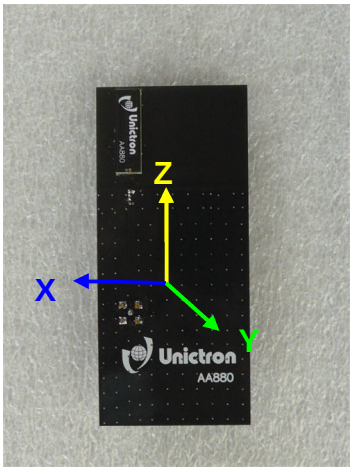
7-2. 1710~2170 MHz Band

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

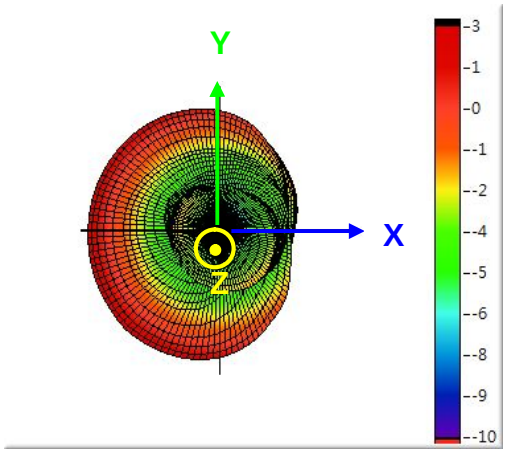


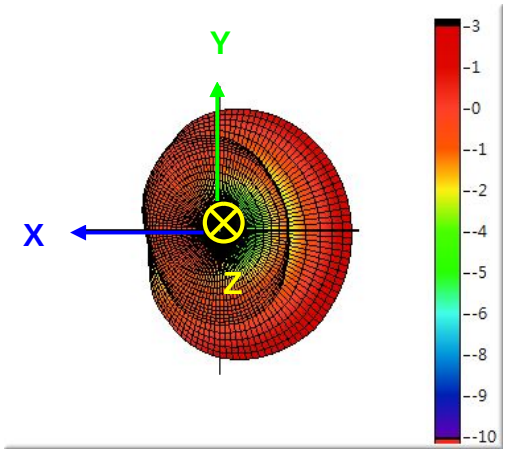


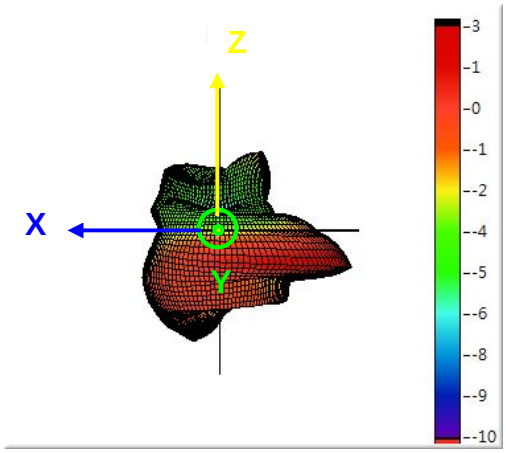


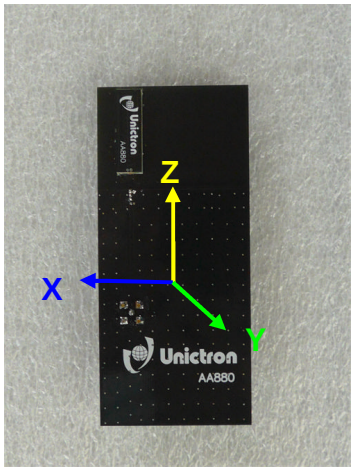


7-2-2. 3D Gain Pattern @ 2170 MHz





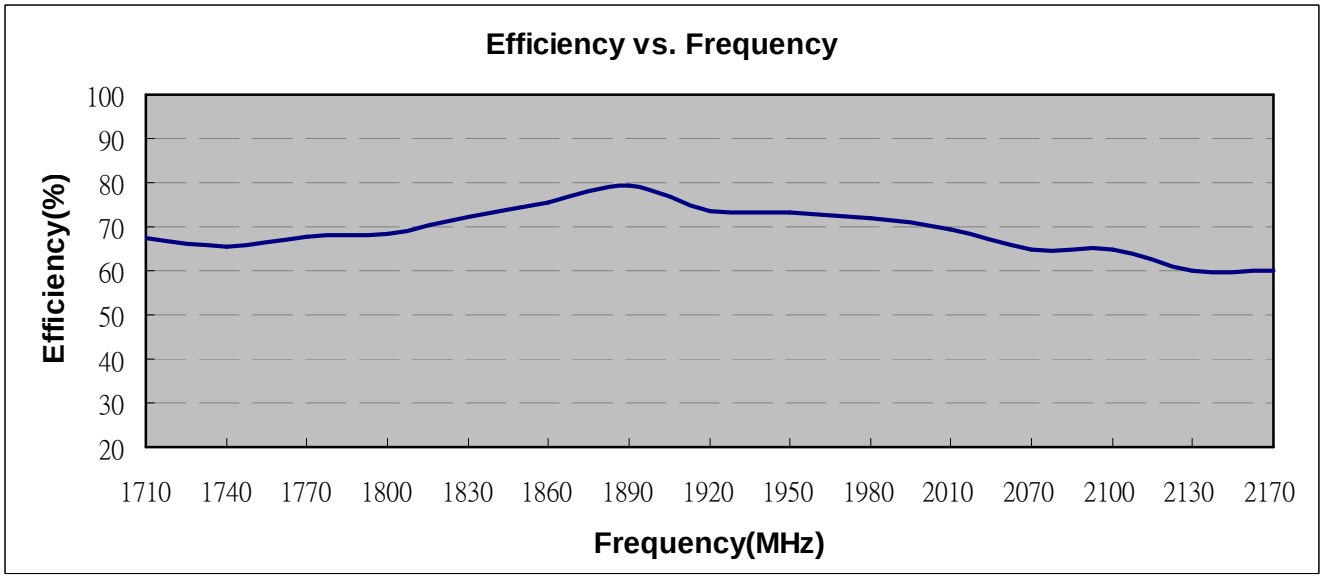




7-2-3. 3D Efficiency Table

Frequency(MHz)	1710	1740	1770	1800	1830	1860	1890	1920	1950	1980	2010	2070	2100	2130	2170
Efficiency(dB)	-2.4	-1.8	-1.7	-1.7	-1.4	-1.2	-1.0	-1.3	-1.4	-1.4	-1.3	-1.9	-1.9	-1.9	-2.2
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)	2.4	2.9	2.7	2.7	2.1	2.8	3.0	2.9	2.8	2.7	3.1	2.9	2.6	2.4	3.1

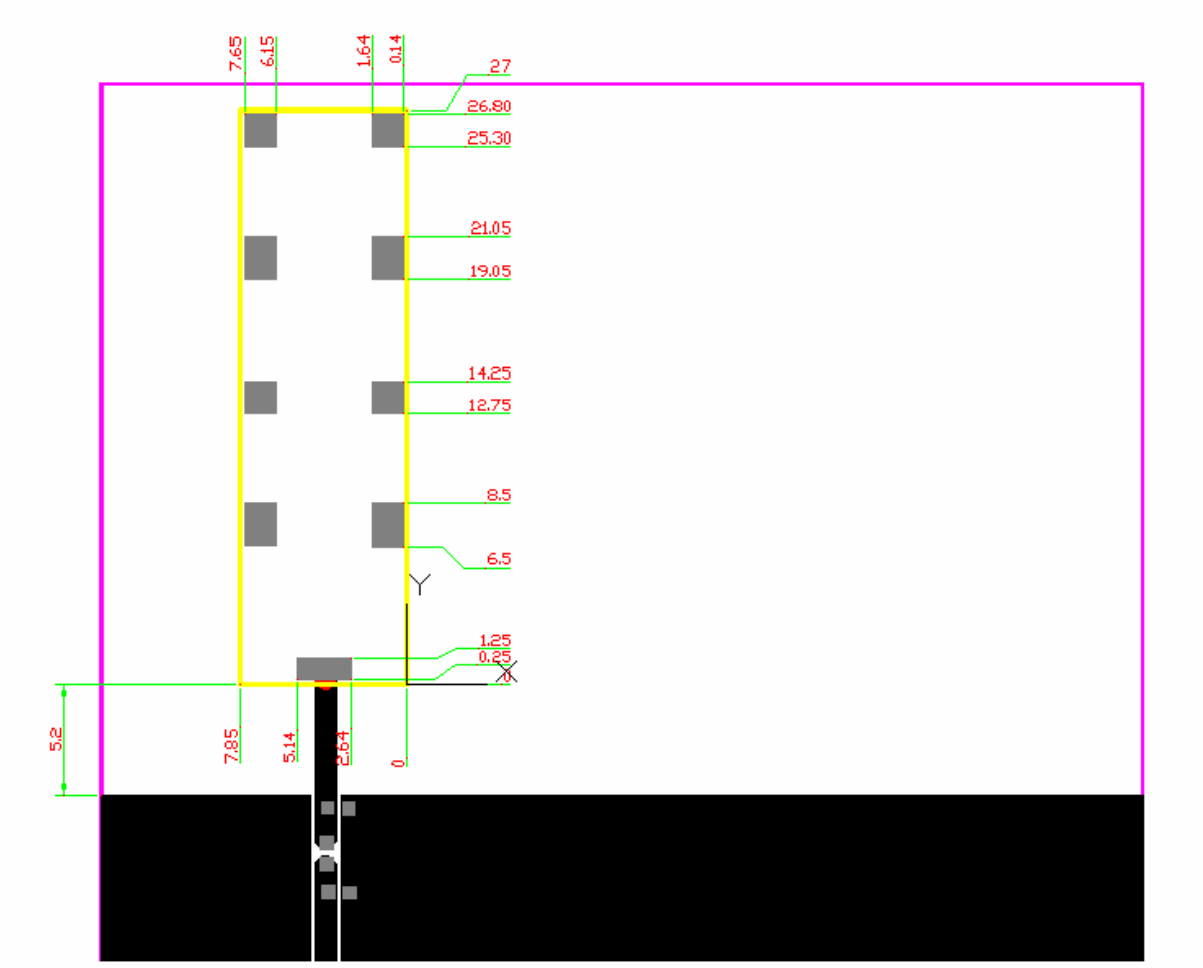
7-2-4. 3D Efficiency vs. Frequency



8. Layout Guide

Solder Land Pattern

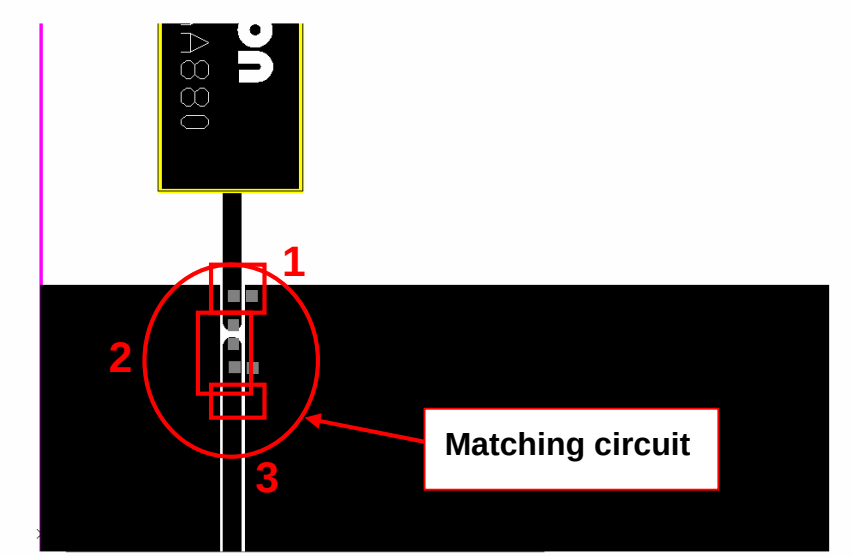
Land pattern for soldering (gray marking areas) is as shown below. Matching circuit is needed for good performance, when customer's device is different.



unit: mm

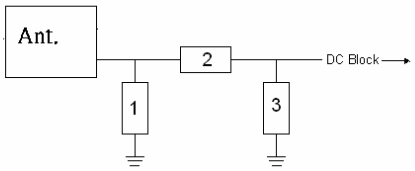
9. Matching Circuit

a. Chip antenna tuning scenario



b. Matching circuit

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

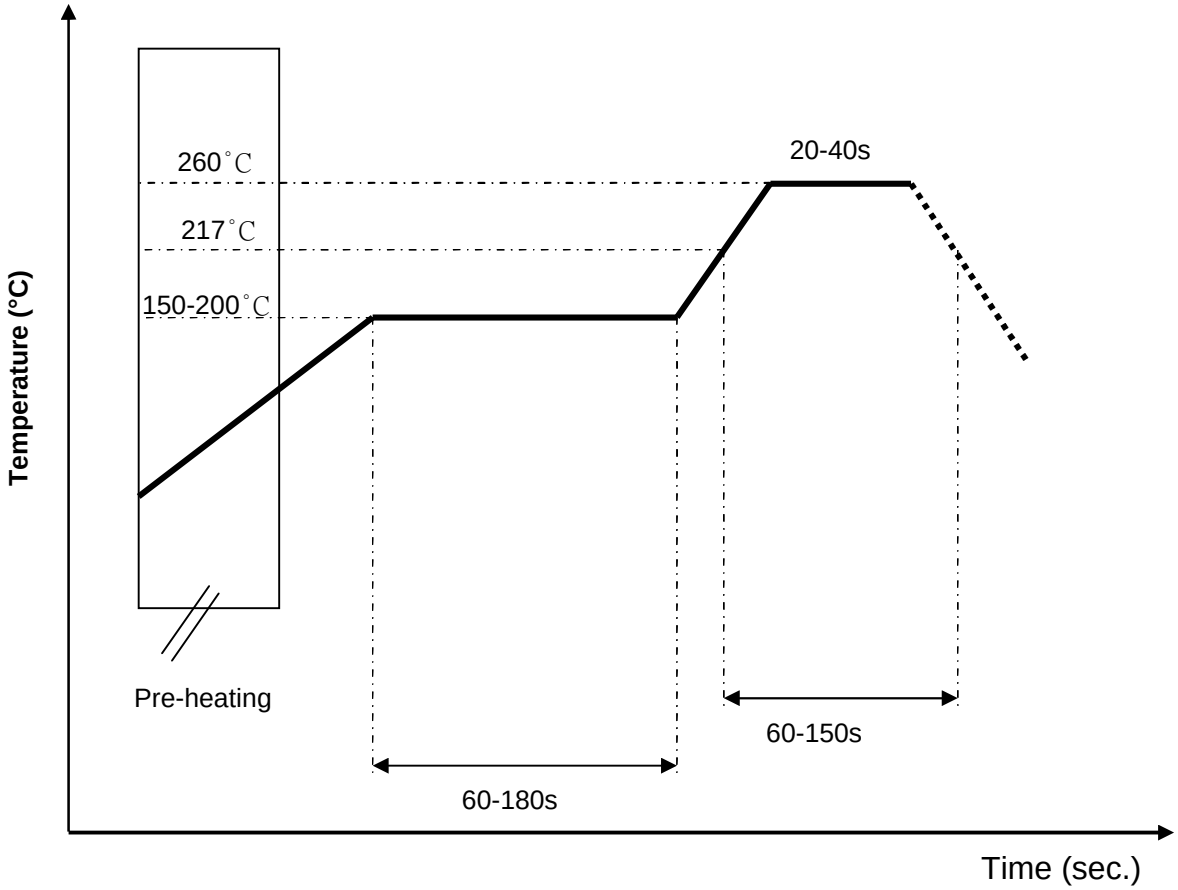


System Matching Circuit Component			
Location	Description	Vendor	Tolerance
1	6.8nH*	DARFON(0402)	±0.1 nH
2	3.9pF*	DARFON(0402)	±0.1 pF
3	N/A*	-	-

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

10. Soldering Conditions

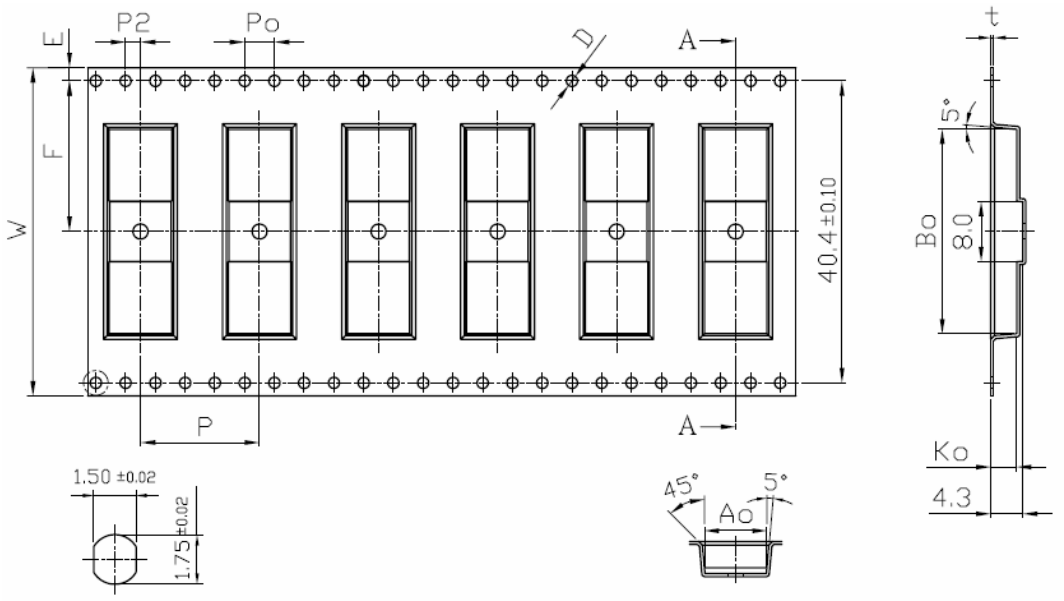
Typical Soldering Profile for Lead-free Process



11. Packing

(1) Quantity/Reel: 1000 pcs/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

12. Storage Conditions

(1) Temperature: -25℃ to 85℃

(2) Relative Humidity: 20% to 70%

(3) Shelf Life :one year