

26.0 x 7.65 x 3.2 (mm) GSM / 3G Chip Antenna (CC26DH)

Engineering Specification

1. Product Number

H 2 U A 6 K 2 K 1 N 0 2 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 CC26DH chip antenna is designed for cellular 2G/3G bands applications, covering frequencies 824~960 MHz & 1710~2170 MHz. Fabricated with proprietary design and processes, CC26DH shows excellent performance and is fully compatible with SMT processes which can decrease the assembly cost and improve device's quality and consistency.



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Prepared by : **Mina**

Designed by : **Tom**

Checked by : **Mike**

Approved by : **Herbert**

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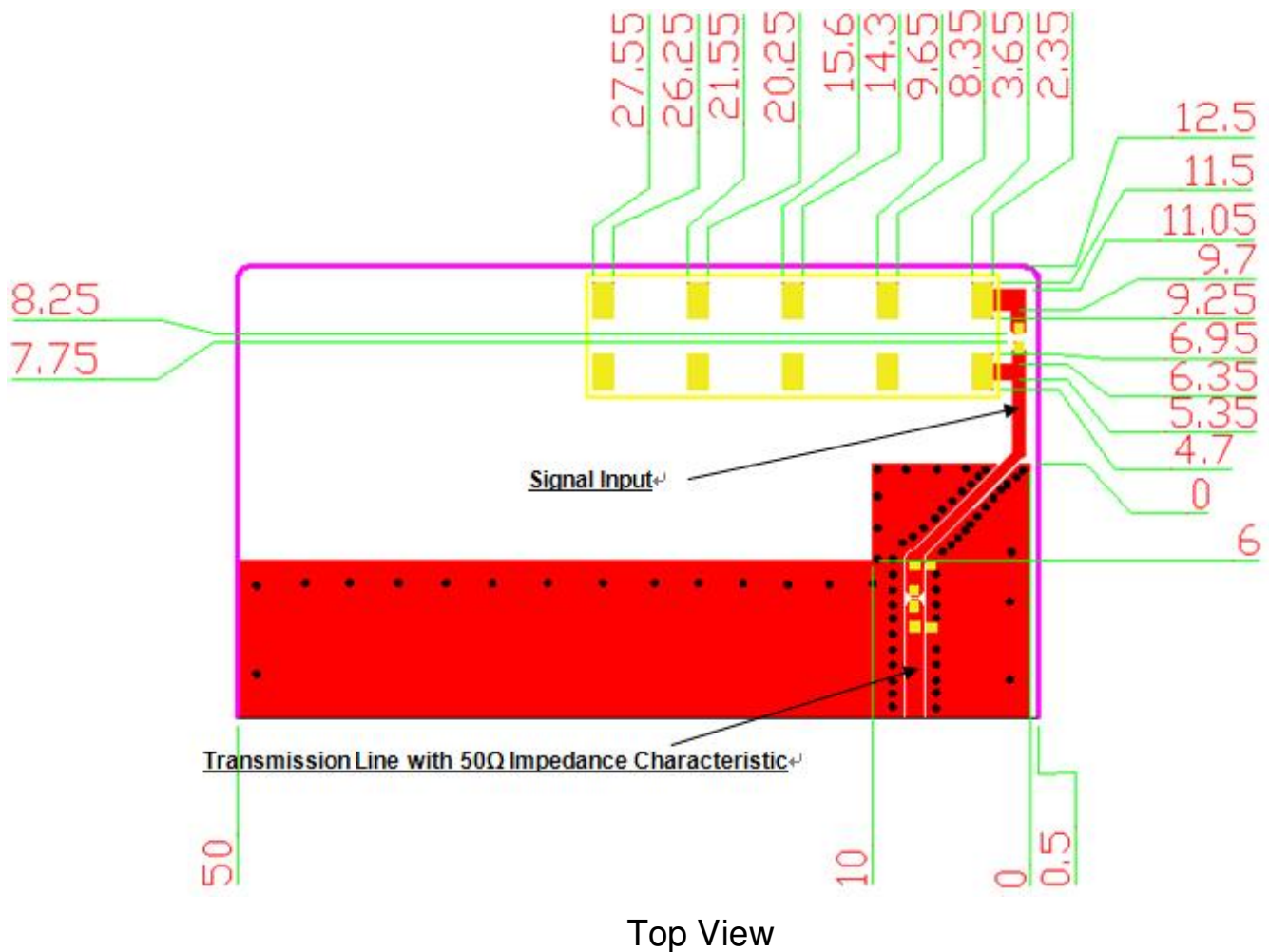
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5. Layout Guide & Electrical Specifications

5-1. Layout Guide (unit : mm)

Solder Land Pattern:

The solder land pattern (gold marking areas) is shown below. Recommendation on matching circuit will be provided according to customer's installation conditions.



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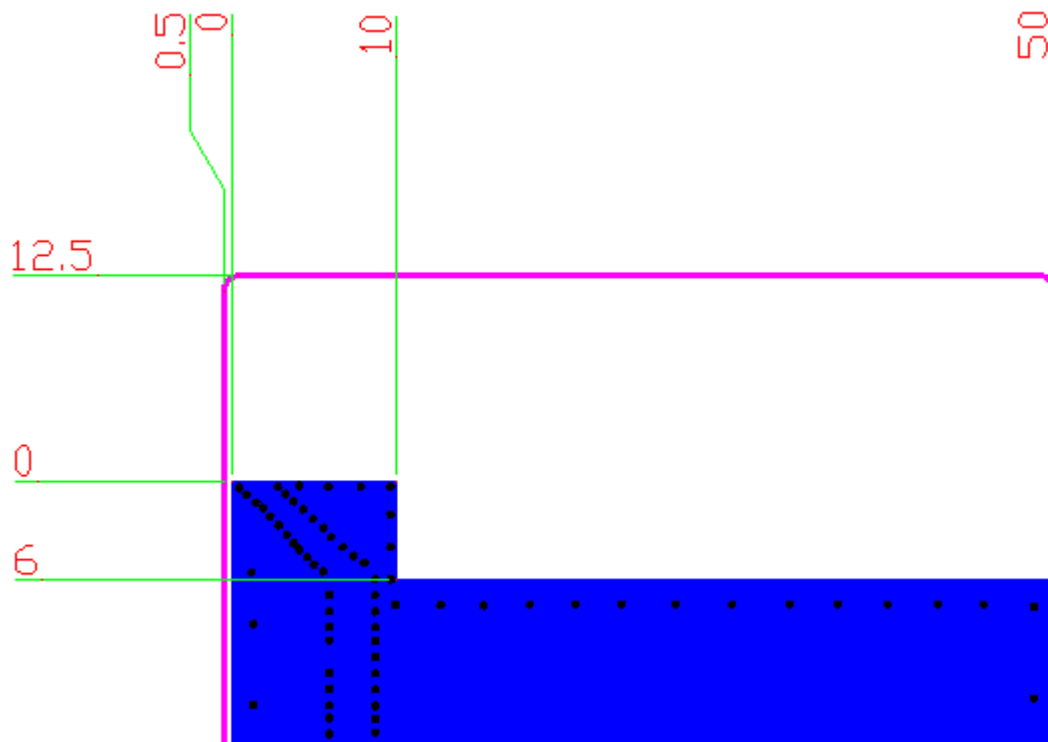
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Bottom View

5-2. Electrical Specifications (Evaluation Board Dimensions: 110.5 x 50.5 mm²)

5-2-1. Electrical Table (824~960 MHz Band)

Characteristics		Specifications	Unit
Outline Dimensions		26.0 x 7.65 x 3.2	mm
Working Frequency		824~960	MHz
VSWR (@ center frequency)*		3 Max.	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@895 MHz)	1.1 (typical)	dBi
Efficiency		75 (typical)	%

*Center frequency means the frequency with the lowest value in return loss of the chip antenna on the evaluation board.

**A typical value is for reference only, not guaranteed. .



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

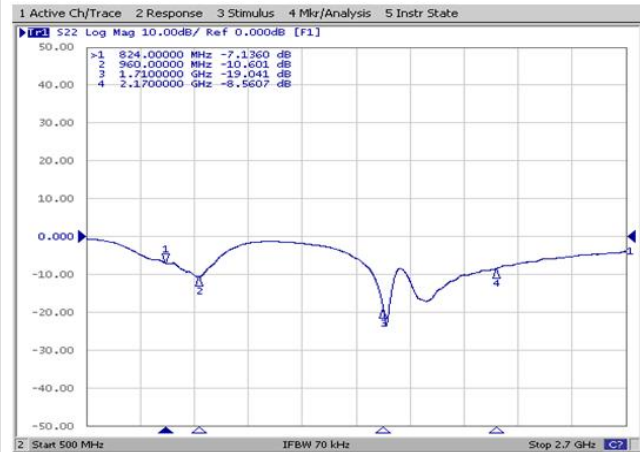
Characteristics		Specifications	Unit
Working Frequency		1710~2170	MHz
VSWR (@ center frequency)*		3 Max.	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@1950 MHz)	2.4 (typical)	dBi
Efficiency		80 (typical)	%

*Center frequency means the frequency with the lowest value in return loss of the chip antenna on the evaluation board.

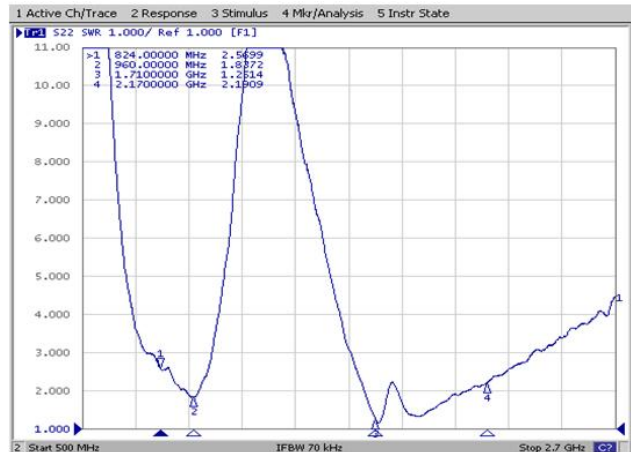
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5-2-3. Return Loss & VSWR

Return Loss (S_{11})



VSWR (S_{11})



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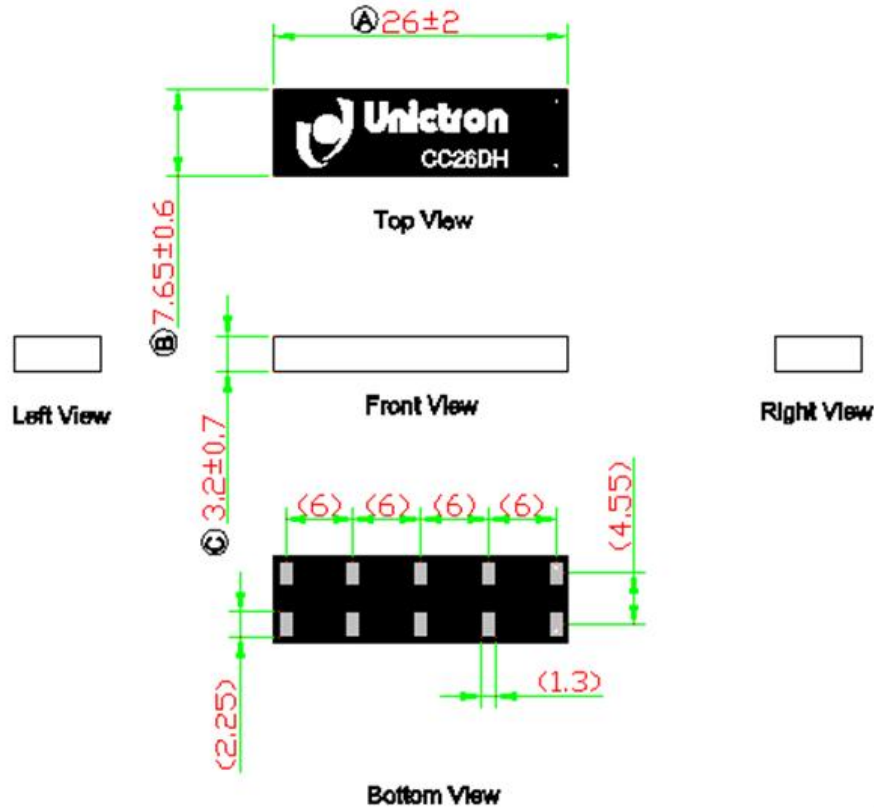
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6. Outline Dimensions of Antenna & Evaluation Board (unit: mm)

6-1. Antenna Dimensions



NOTE:

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

PIN Definitions



PIN	1	2	3~10
Soldering Pad	Signal	Tuning	N/C

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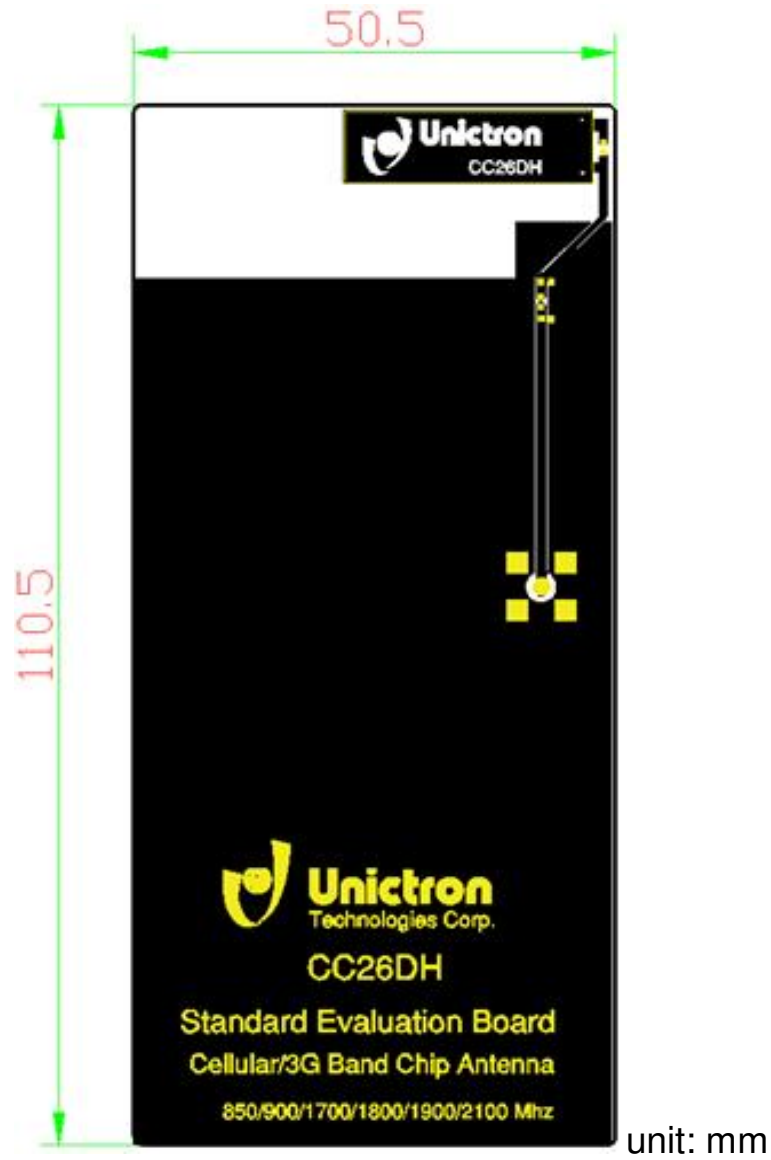
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6-2. Evaluation Board with Antenna



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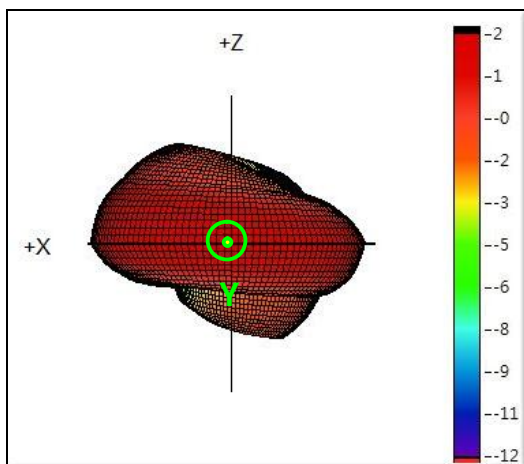
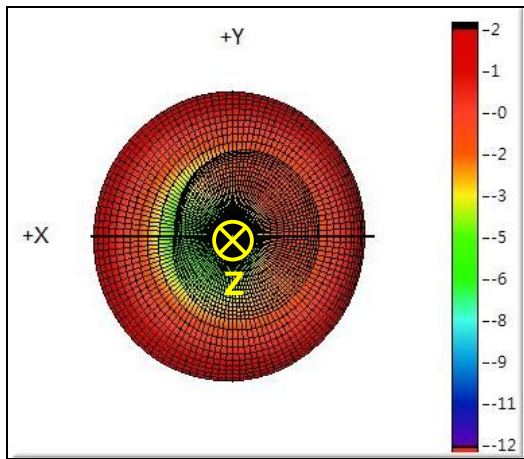
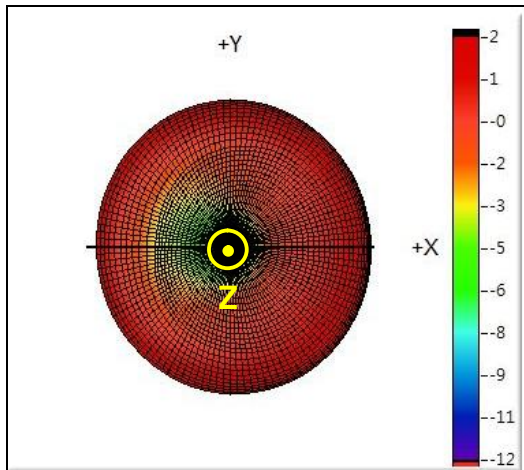
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7. 3D Radiation Pattern (with 110.5 x 50.5 mm² Evaluation Board)

7-1. 824~960 MHz Band

7-1-1. 3D Radiation Gain Pattern @ 895 MHz (unit: dBi)



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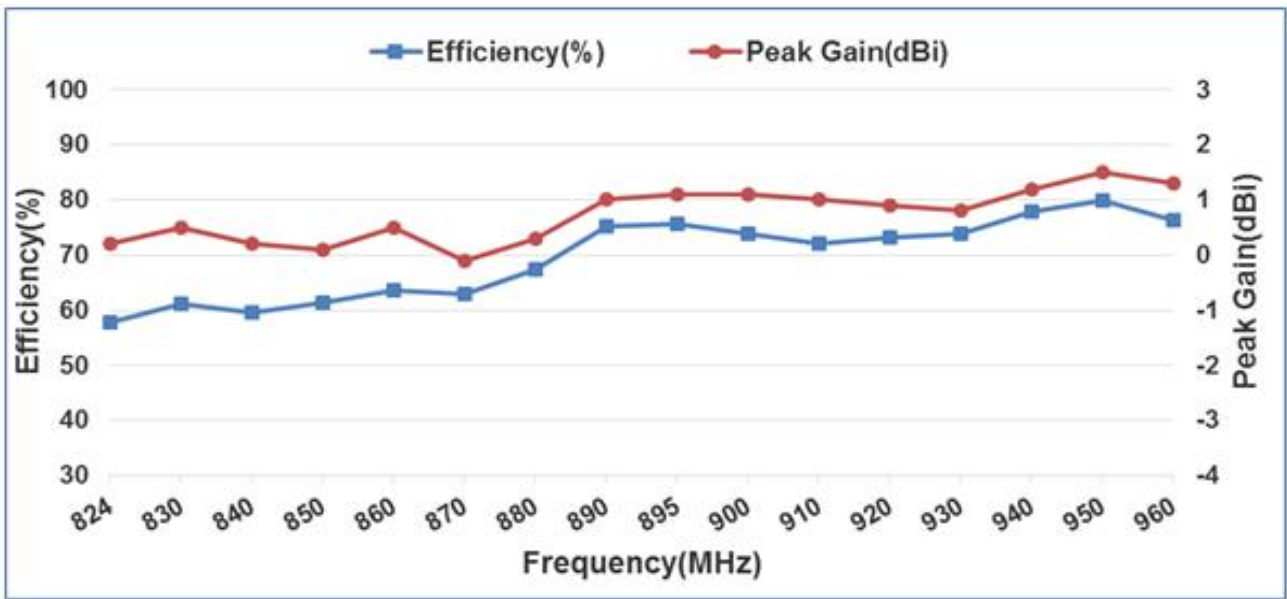
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7-1-2.3D Efficiency Table

Frequency(MHz)	824	830	840	850	860	870	880	890	895	900	910	920	930	940	950	960
Efficiency(dB)	-2.4	-2.1	-2.3	-2.1	-2.0	-2.0	-1.7	-1.2	-1.2	-1.3	-1.4	-1.4	-1.3	-1.1	-1.0	-1.2
Efficiency(%)	57.8	61.2	59.6	61.3	63.6	62.9	67.4	75.3	75.6	73.9	72.1	73.2	73.9	77.8	79.9	76.2
Peak Gain(dBi)	0.2	0.5	0.2	0.1	0.5	-0.1	0.3	1.0	1.1	1.1	1.0	0.9	0.8	1.2	1.5	1.3

7-1-3. 3D Efficiency vs. Frequency



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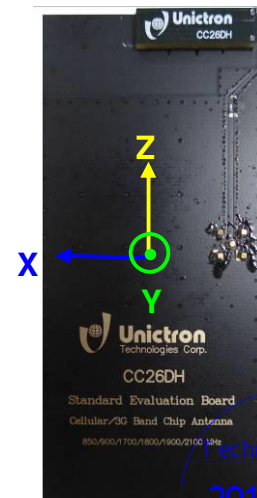
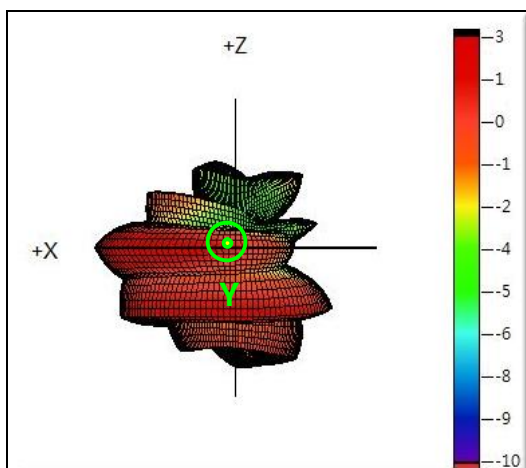
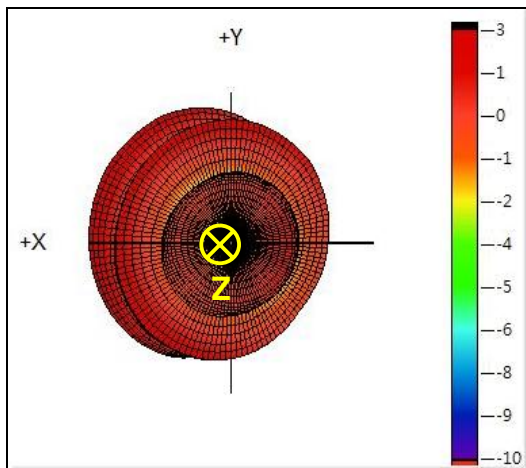
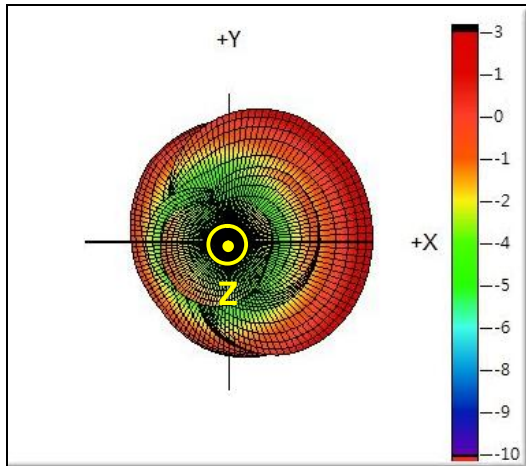
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7-2. 1710~2170 MHz Band

7-2-1. 3D Radiation Gain Pattern @ 1950 MHz (Unit: dBi)



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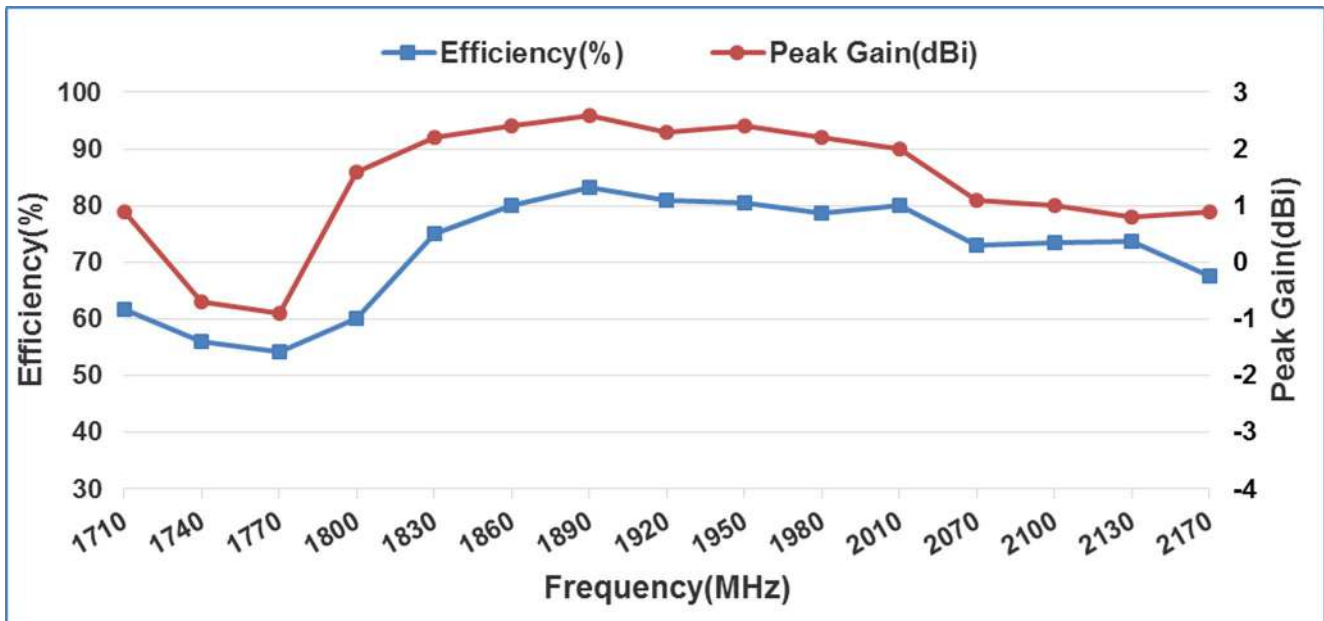
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7-2-2. 3D Efficiency Table

Frequency(MHz)	1710	1740	1770	1800	1830	1860	1890	1920	1950	1980	2010	2070	2100	2130	2170
Efficiency(dB)	-2.1	-2.5	-2.7	-2.2	-1.2	-1.0	-0.8	-0.9	-0.9	-1.0	-1.0	-1.4	-1.3	-1.3	-1.7
Efficiency(%)	61.6	56.1	54.2	60.2	75.1	80.0	83.3	80.9	80.4	78.6	80.0	73.0	73.5	73.7	67.5
Peak Gain(dBi)	0.9	-0.7	-0.9	1.6	2.2	2.4	2.6	2.3	2.4	2.2	2.0	1.1	1.0	0.8	0.9

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



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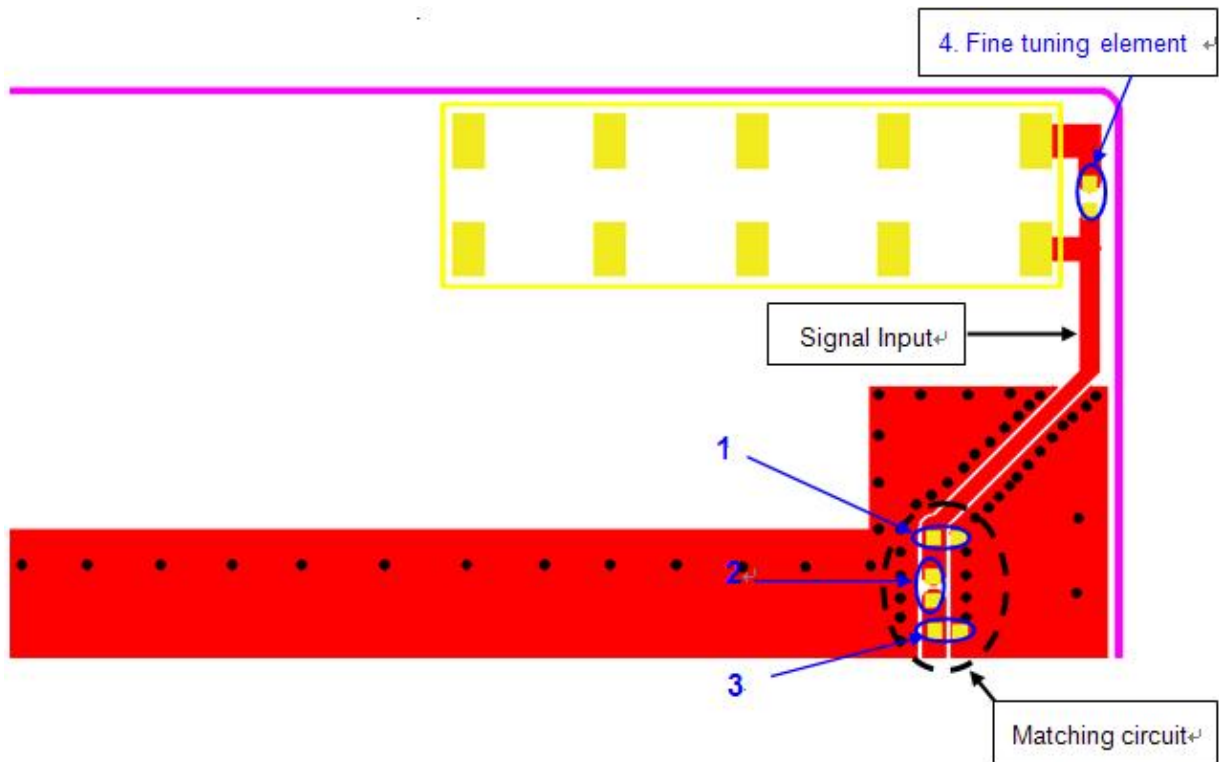
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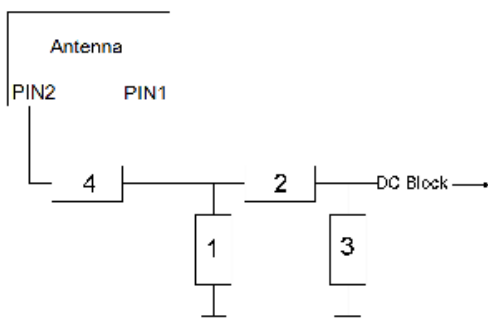
8. Frequency tuning

8-1. Chip antenna tuning scenario :



8-2. Matching circuit :

With the following recommended values of matching and tuning components, the covering frequencies will be about 824~960 MHz & 1710~2170 MHz at our standard 110.5 x 50.5 mm² evaluation board. However, these are typical reference values which may need to be changed when circuit boards or part vendors are different.



System Matching Circuit Component			
Location	Description	Vendor	Tolerance
1	8.2 nH, (0402)	DARFON	±2%
2	5 pF, (0402)	DARFON	±0.1 pF
3	N/A	-	-
4	Fine tuning element 5.6 nH, (0402)	DARFON	±0.1 nH



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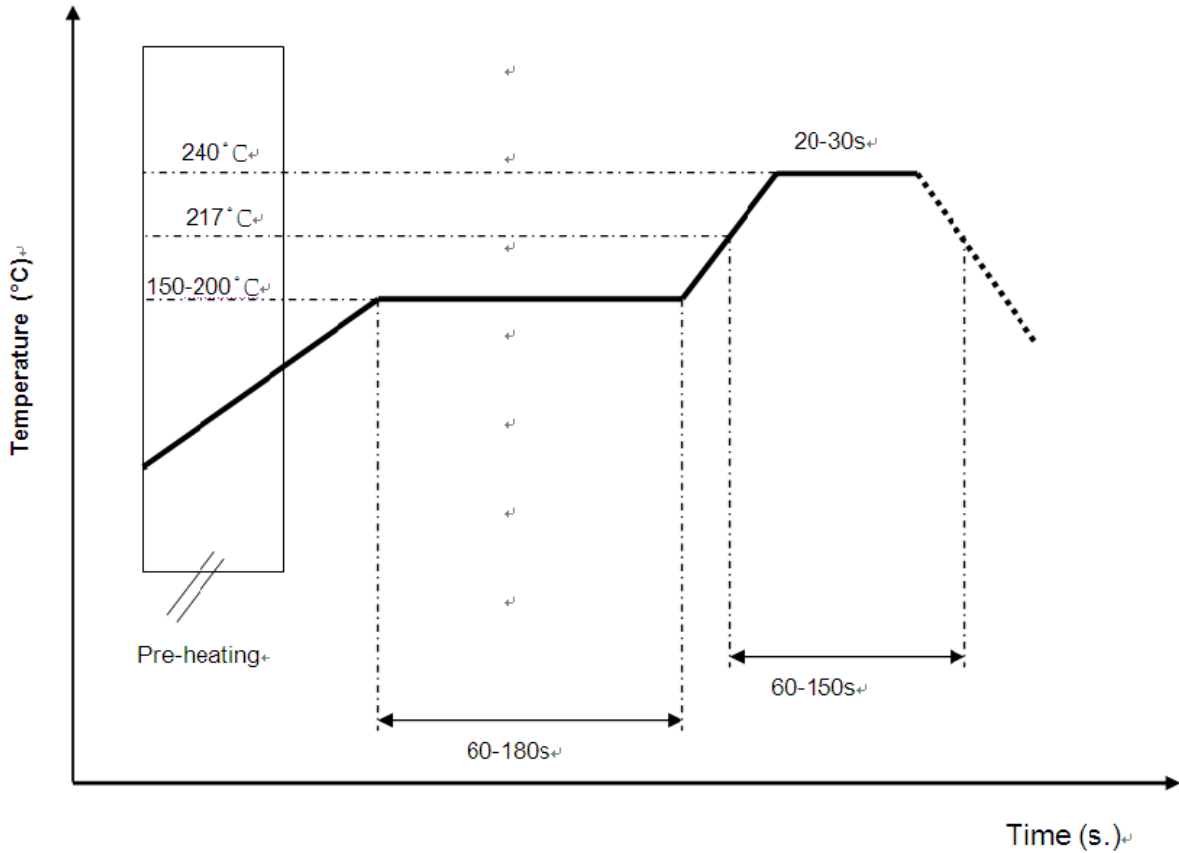
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9. Soldering Conditions

Typical Soldering Profile for Lead-free Process



*Recommended solder paste alloy: SAC305 (Sn96.5 /Ag3 /Cu0.5) Lead Free solder paste.



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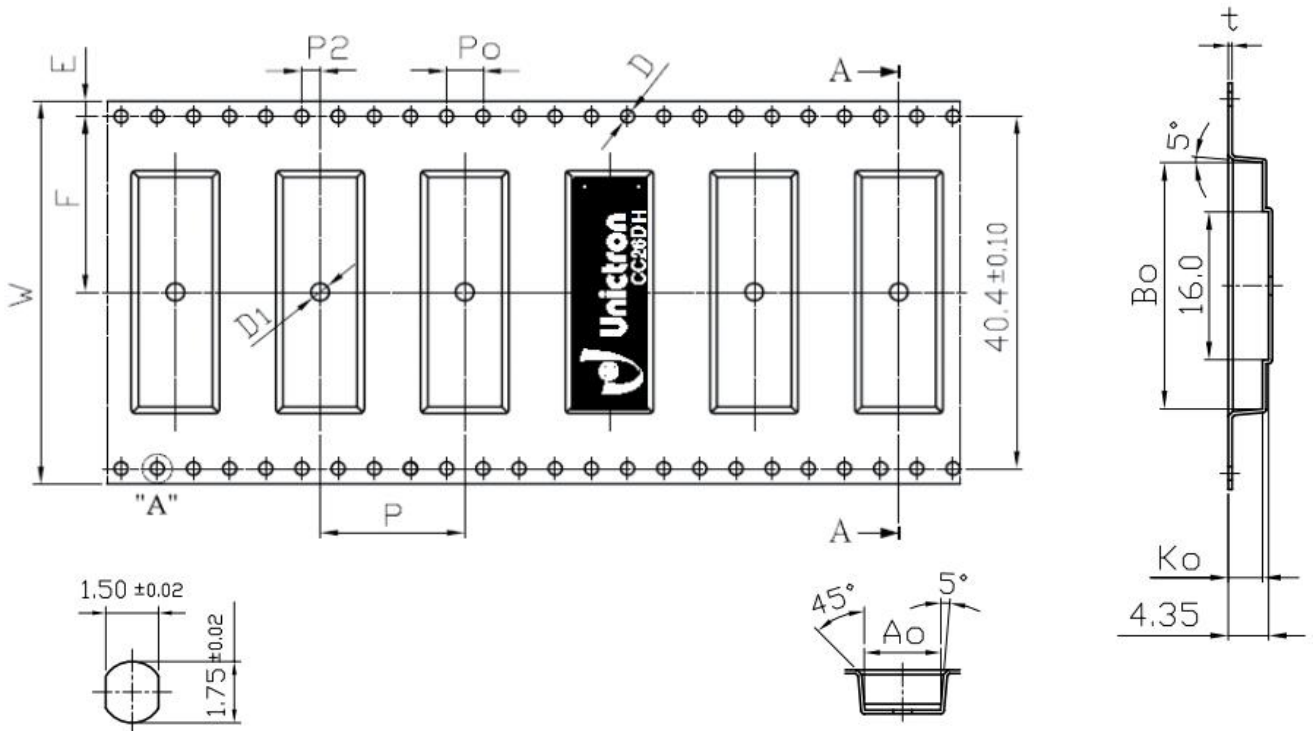
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10. Packing

- (1) Quantity/Reel: 1000 pcs/Reel
- (2) Plastic tape: Black Conductive Polystyrene.

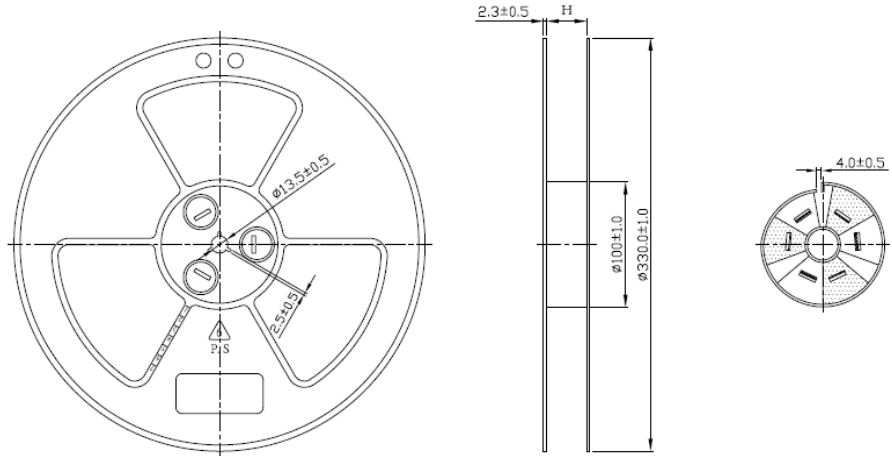


2.1 共同尺寸

外觀	規格	公差
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 口袋尺寸

外觀	規格	公差
Ao	8.30	±0.10
Bo	26.65	±0.10
Ko	3.70	±0.10
t	0.40	±0.05



H 值	公差
45.0 mm	±1.0 mm

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11. Operating & Storage Conditions

11-1. Operating

- (1) Maximum Input Power: 2 W
- (2) Operating Temperature: -40°C to 85°C
- (3) Relative Humidity: 10% to 70%

11-2. Storage (sealed)

- (1) Storage Temperature: -5°C to 40°C
- (2) Relative Humidity: 20% to 70%
- (3) Shelf Life: 1 year

11-3. Storage (unsealed)

Meet the criteria of J-STD-033 MSL2a

11-4. Storage (After mounted on customer's PCB with SMT process)

- (1) Storage Temperature: -40°C to 85°C
- (2) Relative Humidity: 10% to 70%

12. Notice

(1) Installation Guide:

Please refer to Unictron's application note "General guidelines for the installation of Unictron's chip antennas" for further information.

(2) All specifications are subject to change without notice.



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