

20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5)

Engineering Specification

1. Product Number

H 2 U 6 6 K 1 K 2 J 0 1 0 0



2. Features

- *Stable and reliable in performances
- *Low profile, compact size
- *RoHS compliance
- *SMT processes compatible

3. Applications

- *Smart meters
- *Wireless alarm and security system
- *Industrial monitoring and control
- *Machine to machine data communication
- *433/450/470 MHz ISM Band applications
- *LTE band 31
- *LPD433

4. Description

Unictron's C420D5 chip antenna is designed for ISM 433/450/470 MHz bands applications, covering frequencies 433 MHz or 450~470 MHz. Fabricated with proprietary design and processes, C420D5 shows excellent performance and is fully compatible with SMT processes which can decrease the assembly cost and improve device's quality and consistency.



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

DOCUMENT NO.

H2U66K1K2J0100

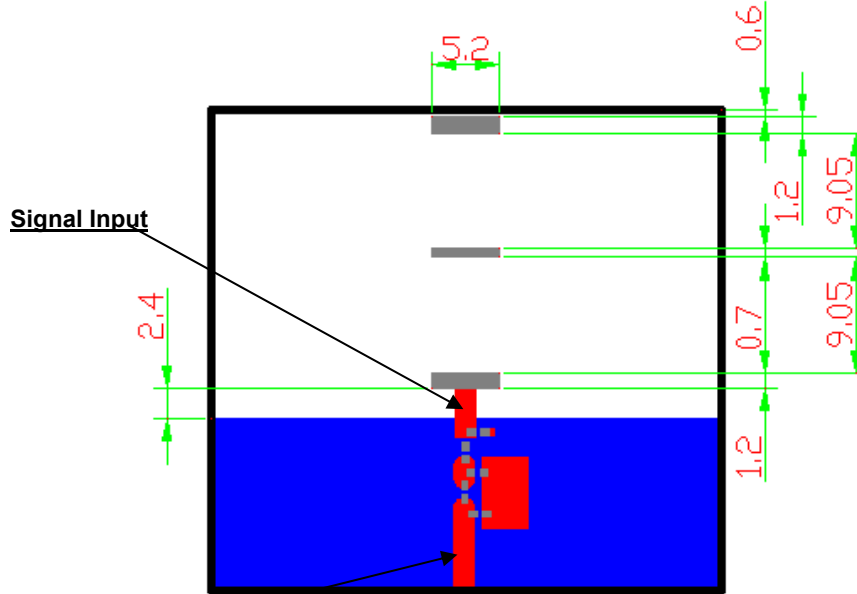
REV. D

5. Layout Guide & Electrical Specifications

5-1. Layout Guide (unit : mm)

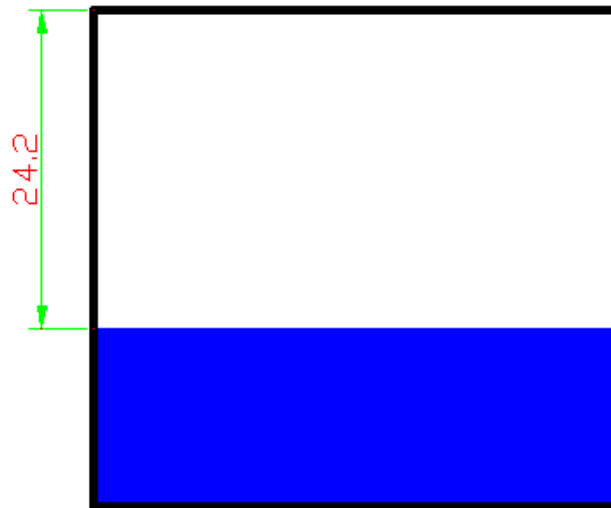
Solder Land Pattern:

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



Transmission Line with 50Ω Impedance Characteristic

Top View



Bottom View



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

DOCUMENT NO.

H2U66K1K2J0100

REV. D

5-2. Electrical Specifications (Evaluation Board Dimensions: 80 x 40 mm²)

5-2-1. Electrical Table (*for 433 MHz band applications)

Characteristics		Specifications	Unit
Outline Dimensions		20.0 x 5.0 x 1.6	mm
Ground Plane Dimensions		55.8 x 40	mm
Working Frequency		433.05 ~ 434.79	MHz
Bandwidth		25 (typical)	MHz
VSWR		2 Max. (typical)	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@433 MHz)	-0.2 (typical)	dBi
Efficiency		32 (typical)	%

5-2-2. Electrical Table (*for 450~470 MHz band applications)

Characteristics		Specifications	Unit
Working Frequency		450 ~ 470	MHz
Bandwidth		16 (typical)	MHz
VSWR		2.5 Max. (typical)	
Characteristic Impedance		50	Ω
Polarization		Linear Polarization	
Peak Gain	(@460 MHz)	-0.2 (typical)	dBi
Efficiency		35 (typical)	%

*C420D5 can be implemented for 433MHz / 450MHz / 470 MHz with specific matching components. The specific matching components will be defined base on the environment of cases or devices.



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip
Antenna (C420D5) Engineering Specification

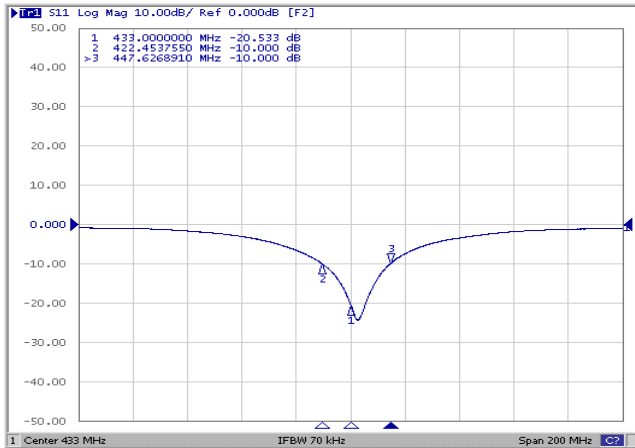
DOCUMENT
NO.

H2U66K1K2J0100

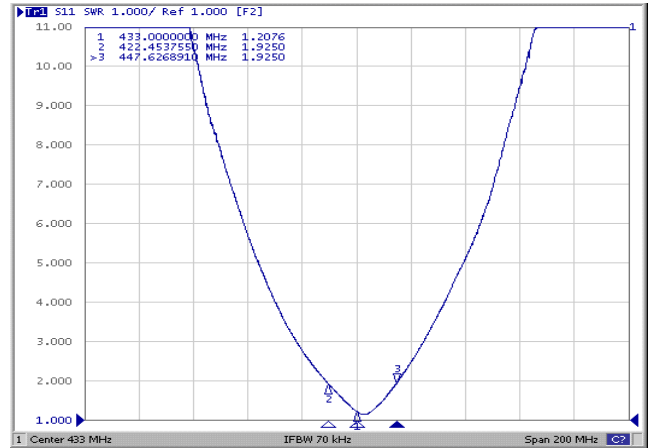
REV.
D

5-2-3. Return Loss & VSWR for 433 MHz Band

Return Loss (S_{11})

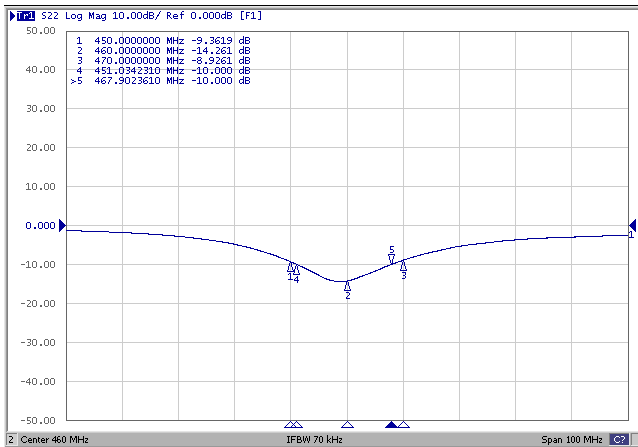


VSWR (S_{11})

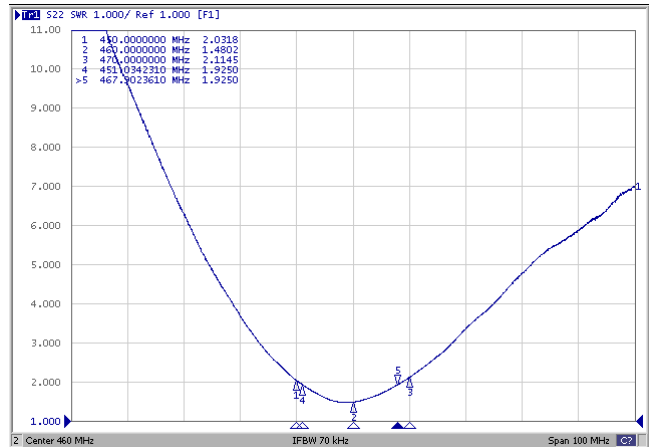


5-2-4. Return Loss & VSWR for 450~470 MHz Band

Return Loss (S_{11})



VSWR (S_{11})



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

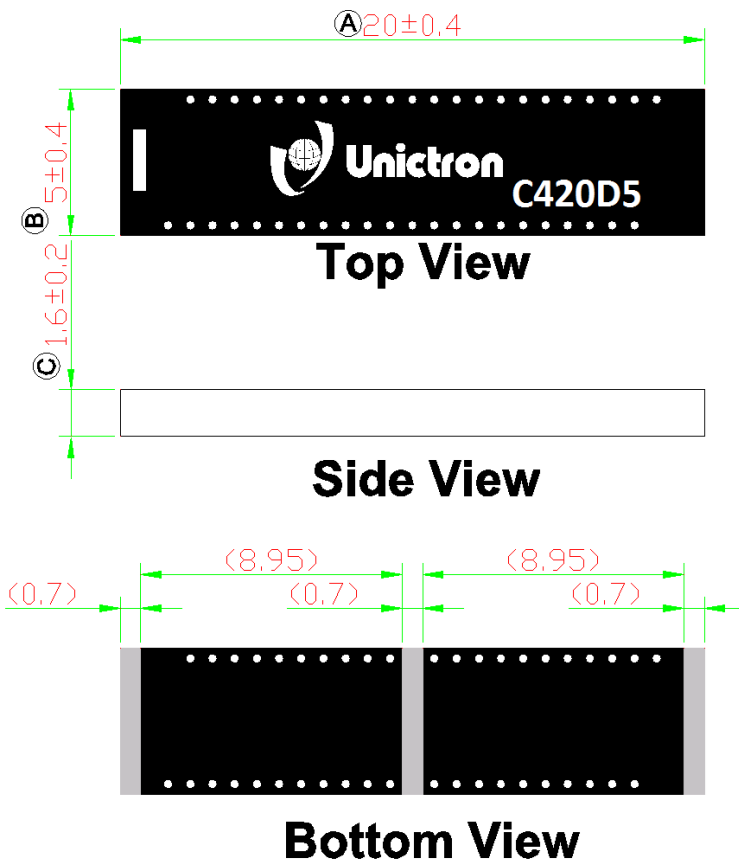
DOCUMENT NO.

H2U66K1K2J0100

REV. D

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



Item	PIN 1	PIN 2	PIN 3
Terminal	Signal	Soldering Pad	Soldering Pad

2016-02-04

Document Control Center



詠業科技股份有限公司
Unicon Technologies Corporation
Website: www.unicon.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

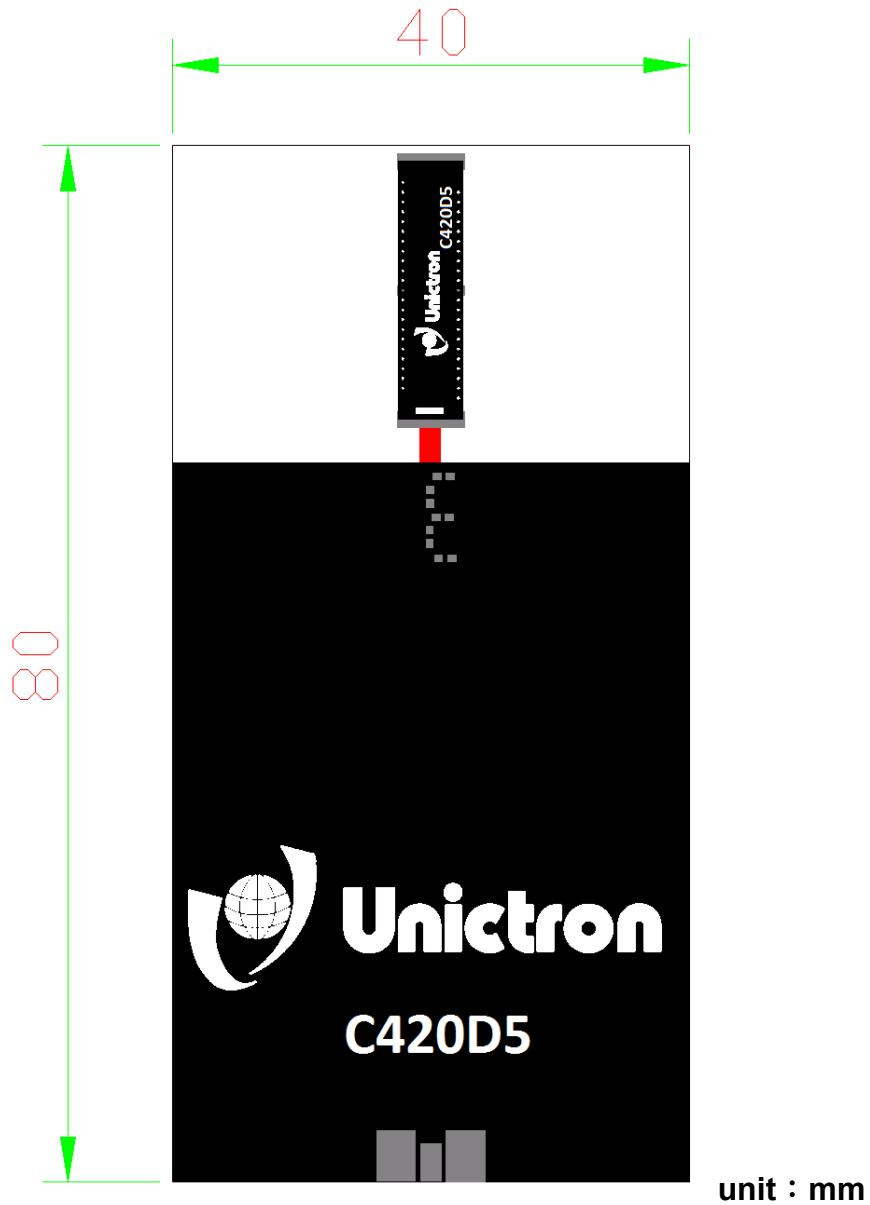
DOCUMENT NO.

H2U66K1K2J0100

REV.

D

6-2. Evaluation Board with Antenna



詠業科技股份有限公司
Unictron Technologies Corporation
Website:www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

DOCUMENT NO.

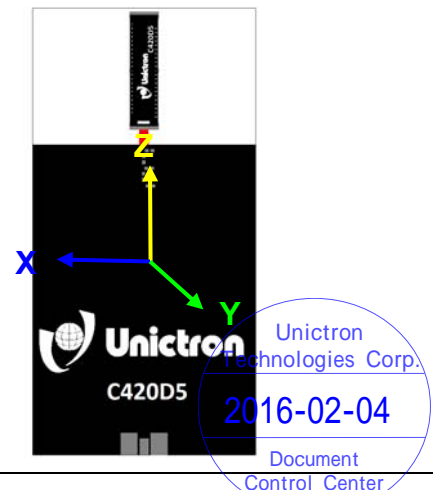
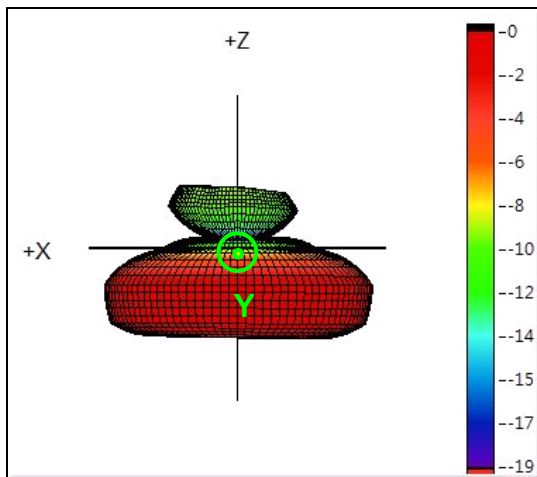
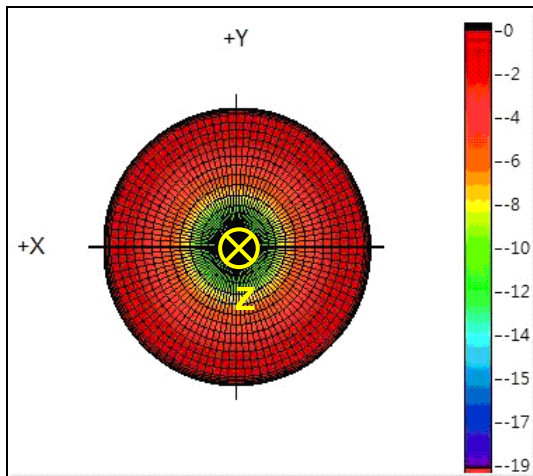
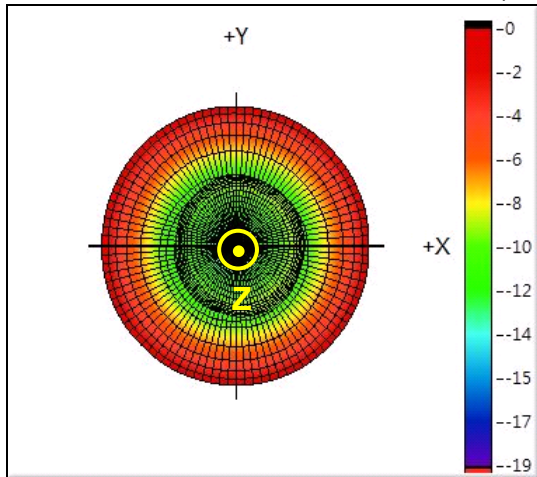
H2U66K1K2J0100

REV.
D

7. Radiation Pattern (with 80 x 40 mm² Evaluation Board)

7-1. 433 MHz Band

7-1-1.3D Gain Pattern @ 433 MHz (unit: dBi)



詠業科技股份有限公司
Unicon Technologies Corporation
Website: www.unicon.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

DOCUMENT NO.

H2U66K1K2J0100

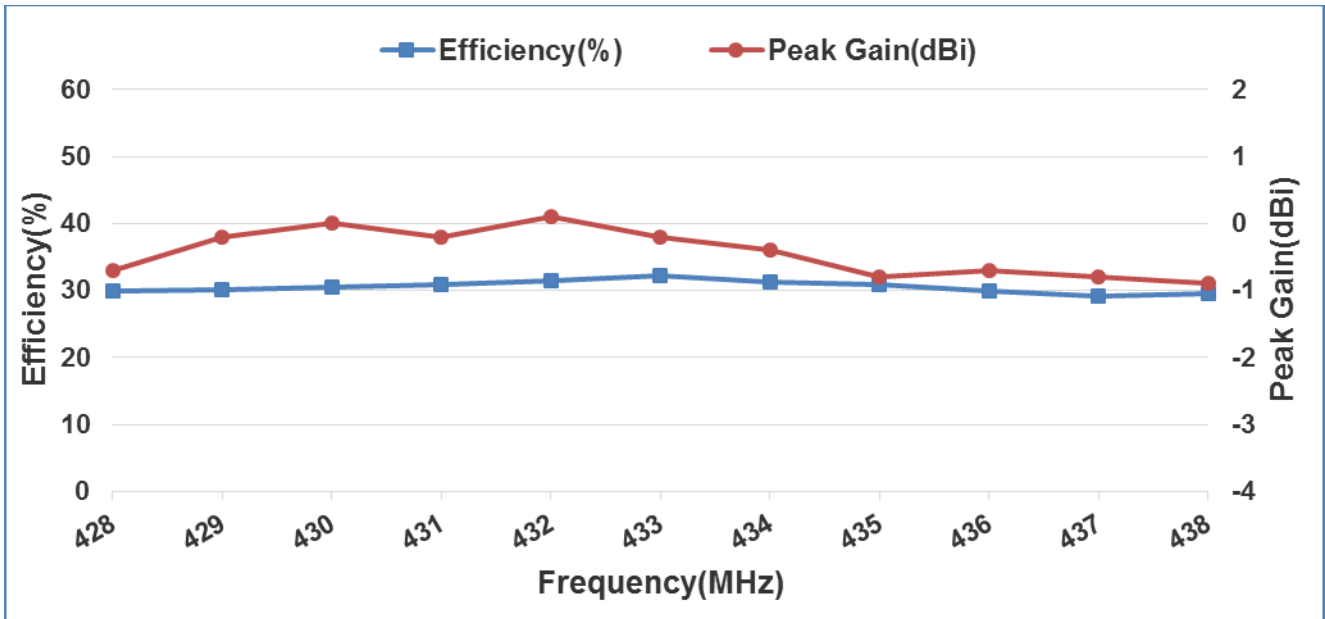
REV.

D

7-1-2. 3D Efficiency Table

Frequency (MHz)	428	429	430	431	432	433	434	435	436	437	438
Efficiency (dB)	-5.2	-5.2	-5.1	-5.1	-5.0	-4.9	-5.1	-5.1	-5.2	-5.3	-5.3
Efficiency (%)	29.9	30.2	30.6	30.9	31.4	32.2	31.2	30.8	29.9	29.2	29.5
Peak Gain (dBi)	-0.7	-0.2	0.0	-0.2	0.1	-0.2	-0.4	-0.8	-0.7	-0.8	-0.9

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



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

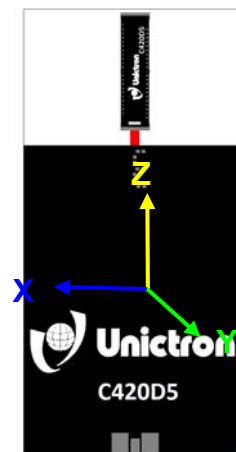
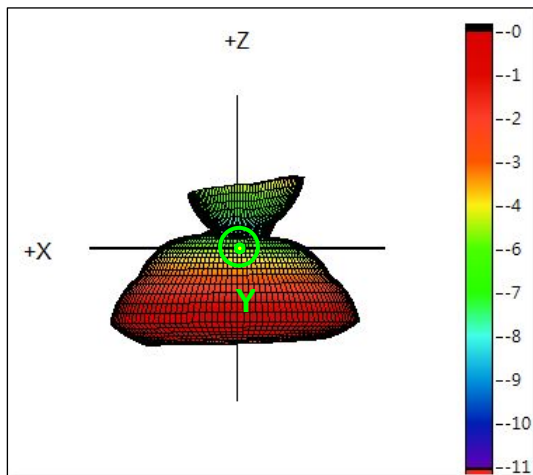
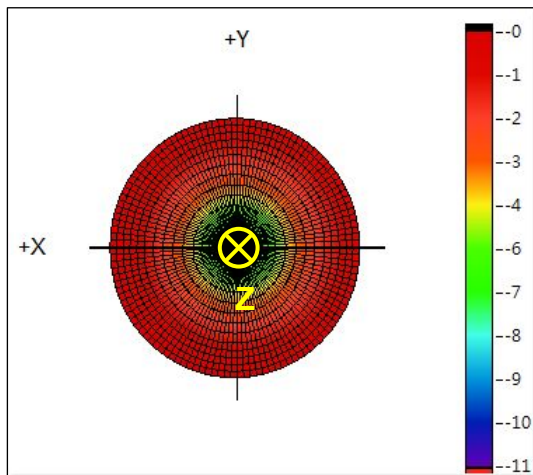
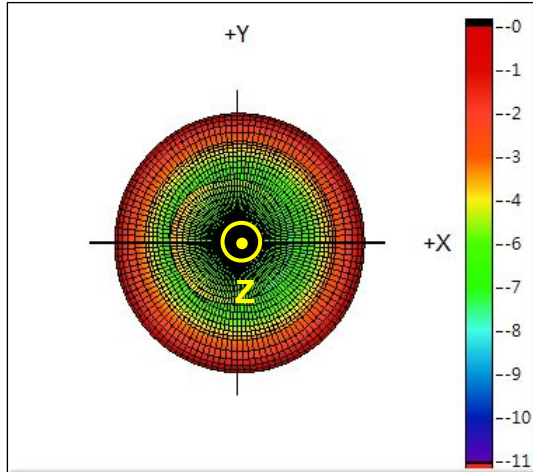
DOCUMENT NO.

H2U66K1K2J0100

REV. D

7-2. 450 ~ 470 MHz Band

7-2-1. 3D Gain Pattern @ 460 MHz (unit: dBi)



Unictron
Technologies Corp.

2016-02-04

Document
Control Center



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip
Antenna (C420D5) Engineering Specification

DOCUMENT
NO.

H2U66K1K2J0100

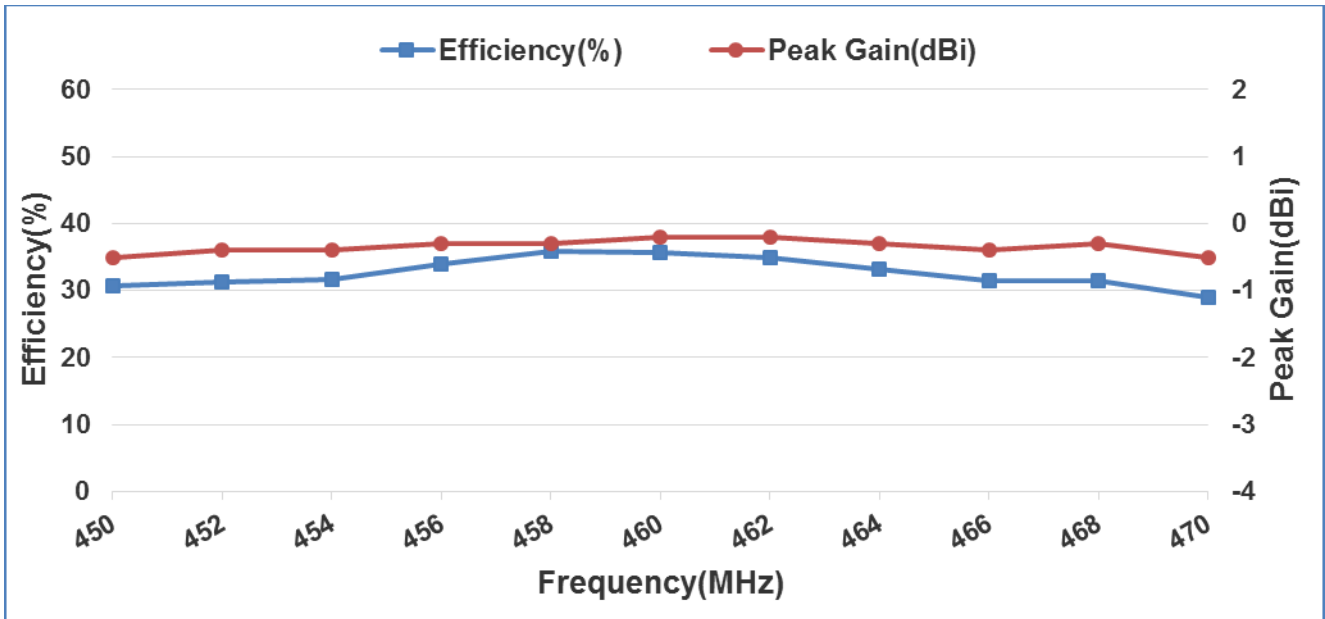
REV.

D

7-2-2. 3D Efficiency Table

Frequency (MHz)	450	452	454	456	458	460	462	464	466	468	470
Efficiency (dB)	-5.1	-5.1	-5.0	-4.7	-4.5	-4.5	-4.6	-4.8	-5.0	-5.0	-5.4
Efficiency (%)	30.7	31.2	31.6	34.0	35.8	35.6	34.9	33.1	31.4	31.4	29.0
Peak Gain (dBi)	-0.5	-0.4	-0.4	-0.3	-0.3	-0.2	-0.2	-0.3	-0.4	-0.3	-0.5

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



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

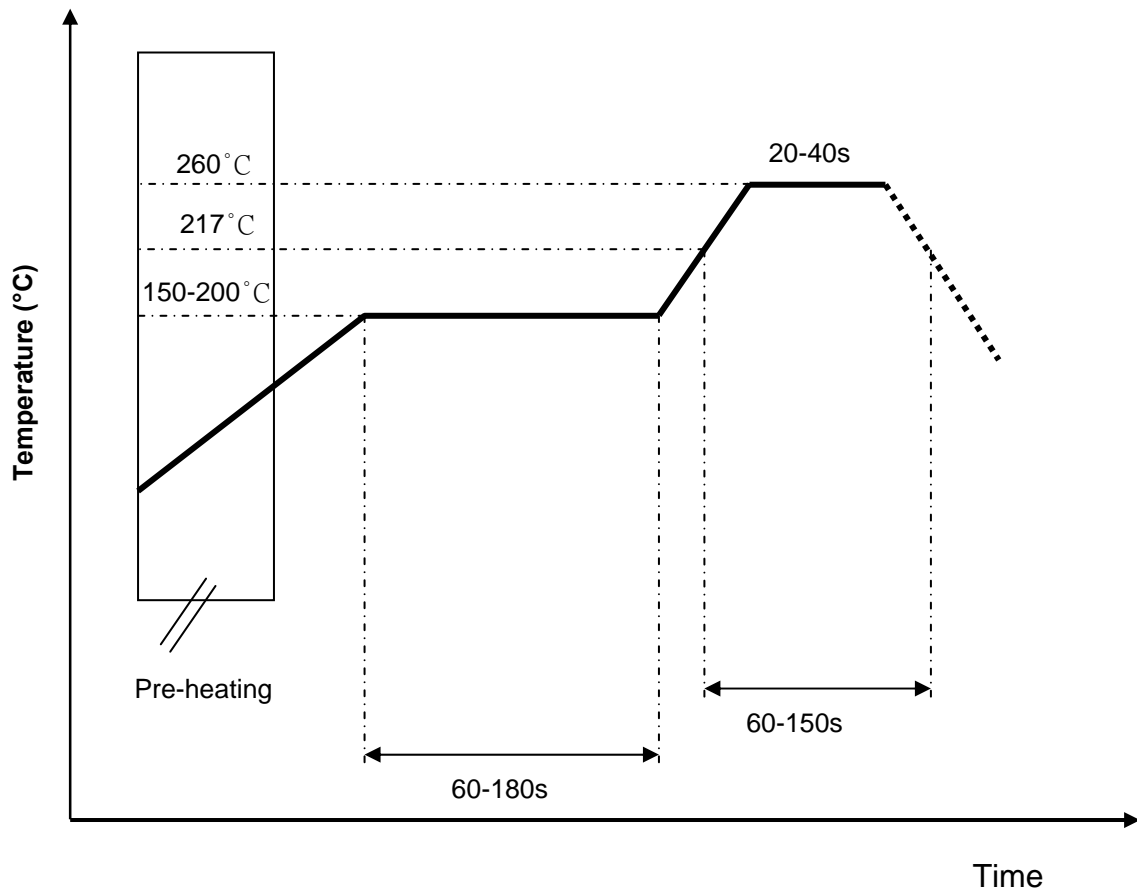
DOCUMENT NO.

H2U66K1K2J0100

REV. D

8. Soldering Conditions

8-1. Typical Soldering Profile for Lead-free Process



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip
Antenna (C420D5) Engineering Specification

DOCUMENT
NO.

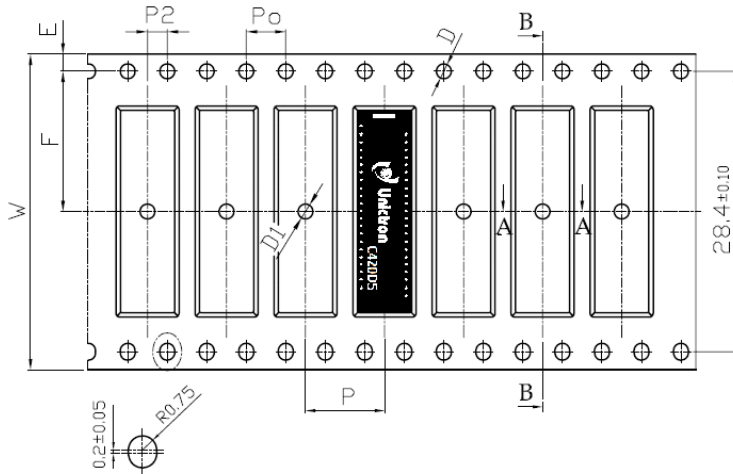
H2U66K1K2J0100

REV.
D

9. Packing

- (1) Quantity/Reel: 3500 pcs/Reel
- (2) Plastic tape:

a. Tape Drawing



b. Tape Dimensions (unit: mm)

Feature	Specifications	Tolerances
W	32.00	±0.30
P	8.00	±0.10
E	1.75	±0.10
F	14.20	±0.10
P2	2.00	±0.10
D	1.50	+0.10 -0.00
D1	1.50	±0.10
Po	4.00	±0.10
10Po	40.00	±0.20

10. Operating & Storage Conditions

10-1. Operating

- (1) Maximum Input Power: 2 W
- (2) Operating Temperature: -40°C to 85°C

10-2. Storage

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

11. 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.



詠業科技股份有限公司
Unictron Technologies Corporation
Website: www.unictron.com

THIS DRAWINGS AND SPECIFICATIONS ARE THE PROPERTY OF UNICTRON TECHNOLOGIES CORPORATION AND SHALL NOT BE REPRODUCED OR USED AS THE BASIS FOR THE MANUFACTURE OR SALE OF APPARATUS OR DEVICES WITHOUT PERMISSION

Prepared by : Xenia

Designed by : ken

Checked by : Mike

Approved by : Herbert

TITLE : 20.0 x 5.0 x 1.6 (mm) ISM 433/450/470 MHz Chip Antenna (C420D5) Engineering Specification

DOCUMENT NO.

H2U66K1K2J0100

REV.

D