

|             |                         |
|-------------|-------------------------|
| Document    | Datasheet               |
| Type        | Dielectric Chip Antenna |
| Application | 2.442 GHz               |
| Part No.    | AMAN802012MS02          |
| Revision    | 0.0                     |

# DATASHEET

## Application

Bluetooth ( 2.442 GHz )

## Features

PIFA structure

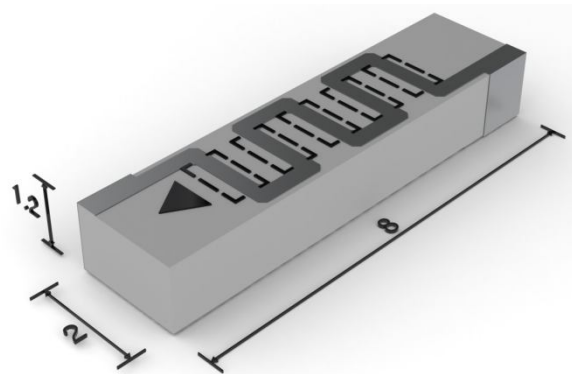
Size (8.0\*2.0\*1.2mm<sup>3</sup>)

Performance optimizing

with tuning the conductive pattern on the ceramic body

SMT available under Pb-free condition

RoHS compliant



# AMOTECH

## Notes

The contents of this datasheet are subject to change without notice. Please confirm the specifications and delivery conditions when placing your order.

## Revision History

| Rev. No | Date         | Title | Contents      | Page |
|---------|--------------|-------|---------------|------|
| 0       | 2012. 08. 16 |       | New Published |      |
|         |              |       |               |      |
|         |              |       |               |      |
|         |              |       |               |      |
|         |              |       |               |      |

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## 1. Specifications

### 1.1 Electrical Specifications

| No | Item                   | Spec.                | Remark |
|----|------------------------|----------------------|--------|
| 1  | Frequency Range [GHz]  | 2.400 MHz ~2.485 MHz |        |
| 2  | VSWR                   | Max 2.5:1            |        |
| 3  | Avg. Gain [dBi]        | typ. -2.19           |        |
| 4  | Efficiency [%]         | typ. 60.44           |        |
| 5  | Polarization           | Linear               |        |
| 6  | Impedance [ $\Omega$ ] | Nominal 50           |        |

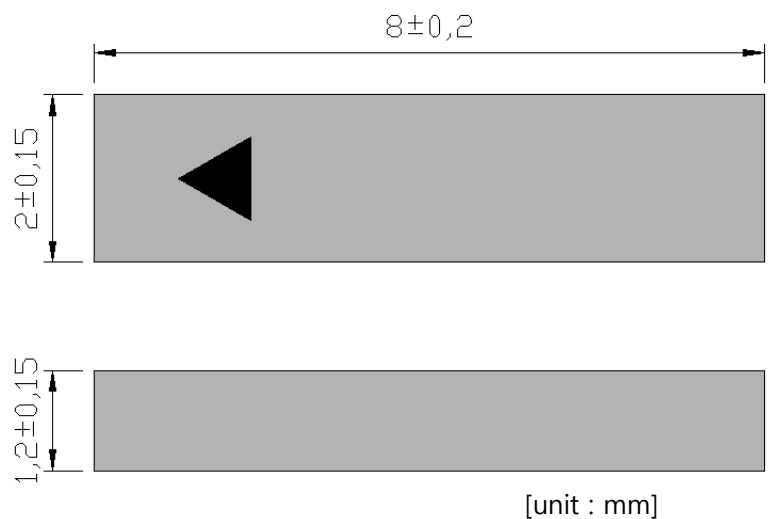
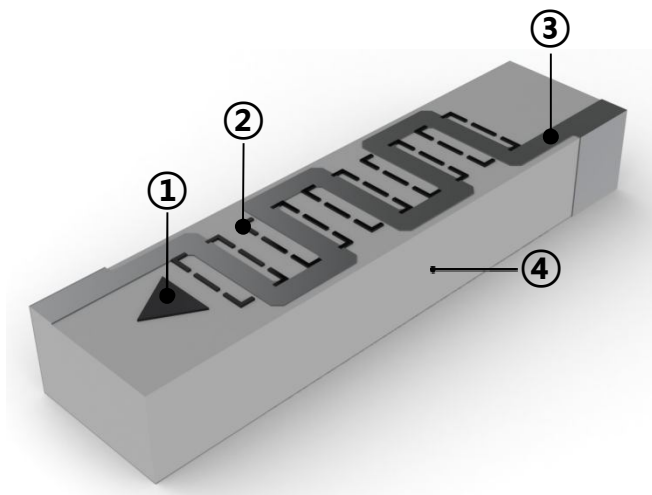
- ✓ The results are measured on the 100x50mm<sup>2</sup> evaluation board(EVB).
- ✓ See Page 6. for more detail gain parameter

### 1.2 Mechanical Specifications

| No | Item                  | Spec.                       | Remark |
|----|-----------------------|-----------------------------|--------|
| 1  | Dimensions (LxWxH)    | 8.0x2.0x1.2 mm <sup>3</sup> |        |
| 2  | Unit Weight           | typ. 63mg                   |        |
| 3  | Operating Temperature | -35 ~ +85 °C                |        |

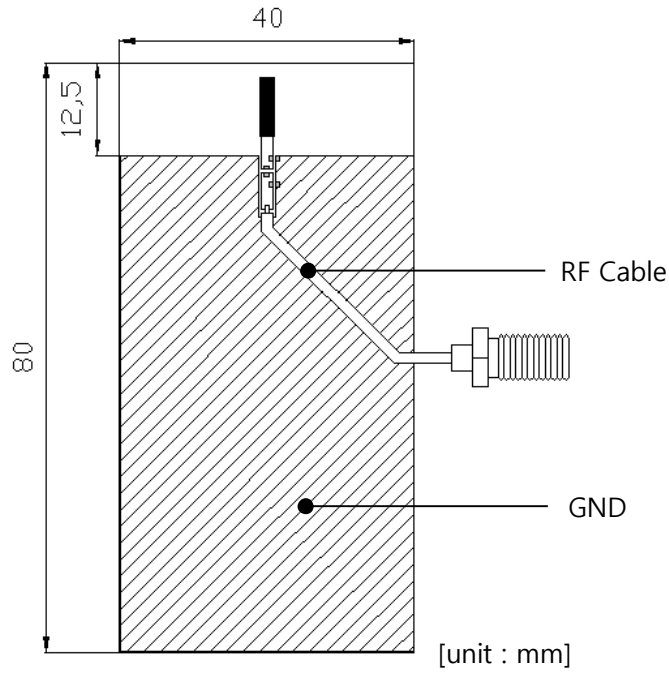
### 1.3 Appearance & Material

| No | Item         | Function              | Material |
|----|--------------|-----------------------|----------|
| ①  | Marking      | Feeding Index         | Ink      |
| ②  | Marking      | P/N, Year, Month, Day | Ink      |
| ③  | Electrode    | Radiation Element     | Ag       |
| ④  | Ceramic Body | -                     | Ceramic  |



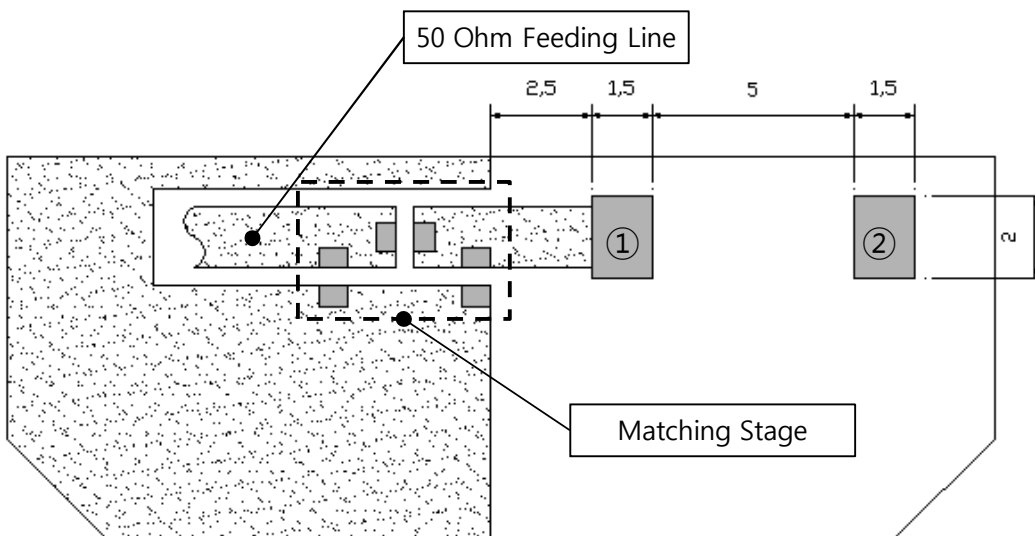
## 2. PCB Design for Test

### 2.1 Evaluation Board Dimension



- ✓ Evaluation board size ~ 40.0 x 80.0
- ✓ Fill Cut Area (GND Clearance) ~ 40.0 x 12.5

### 2.2 PCB Design Guide

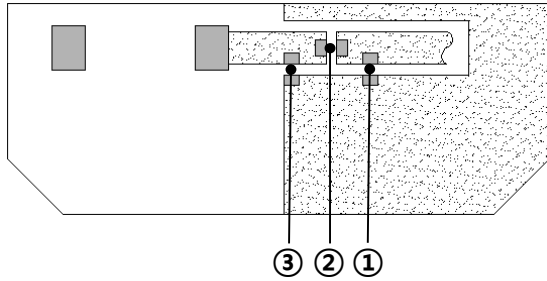


| No | Pin Assignment |
|----|----------------|
| ①  | Feeding        |
| ②  | N/C            |

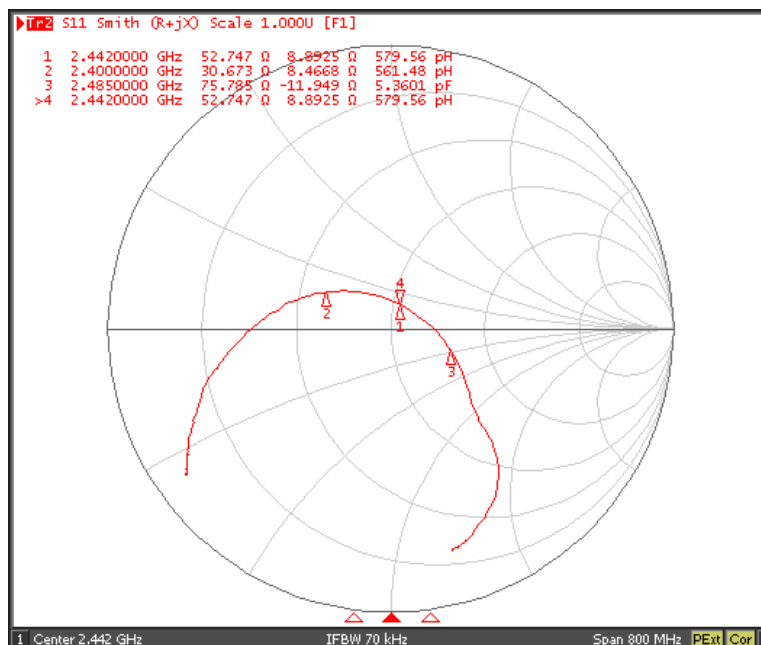
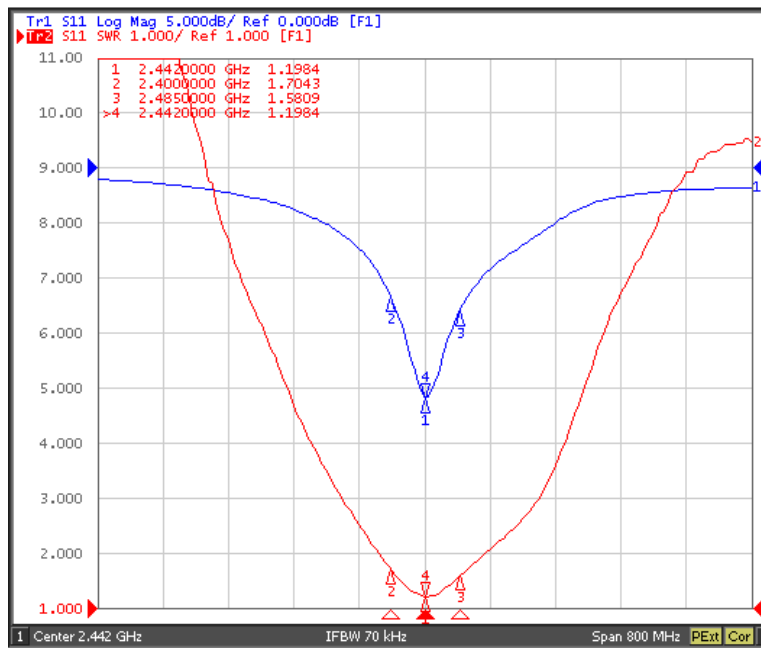
[unit : mm]

### 3. Measurement Result

#### 3.1 Typical Measurement Result (VSWR/RL, Smithchart)



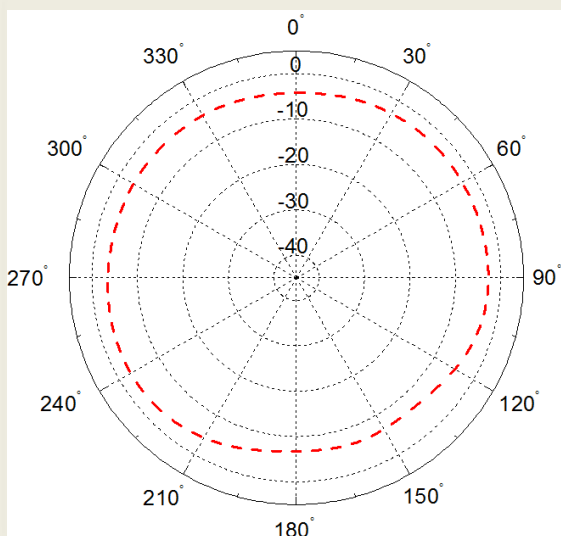
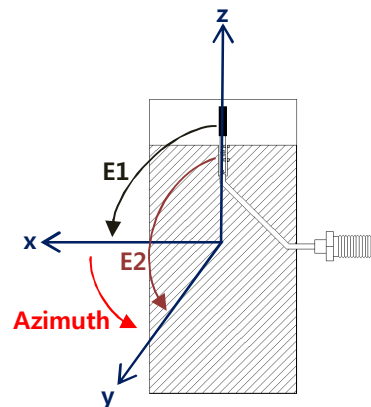
| No | Matching Value |
|----|----------------|
| ①  | 1.0 nH         |
| ②  | 2.2 nH         |
| ③  | N/C            |



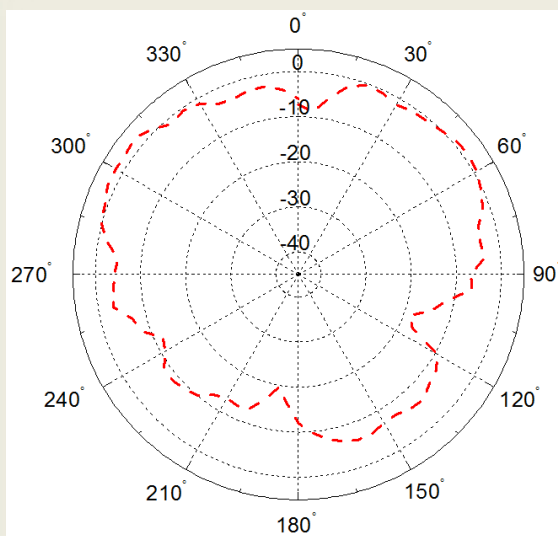
✓ The results are measured on the 100x50mm<sup>2</sup> evaluation board(EVB).

### 3.2 Typical Measurement Result (Gain, Radiation Pattern)

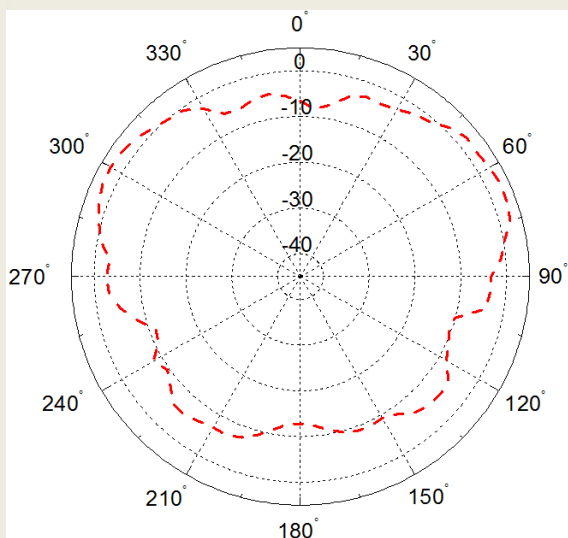
|             | Peak Gain (dBi) | Avg. Gain (dBi) | Efficiency(%) |
|-------------|-----------------|-----------------|---------------|
| Azimuth     | -2.68           | -3.89           | 60.44         |
| Elevation 1 | 2.23            | -3.29           |               |
| Elevation 2 | 3.14            | -2.40           |               |



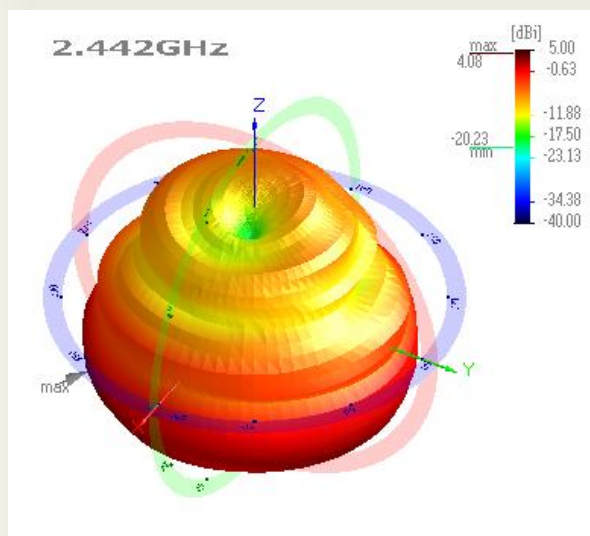
[Azimuth plane @2.442GHz ]



[Elevation1 plane @2.442GHz ]

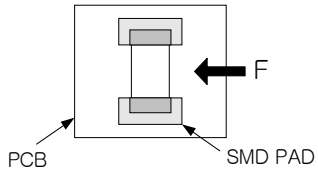


[Elevation2 plane @2.442GHz ]

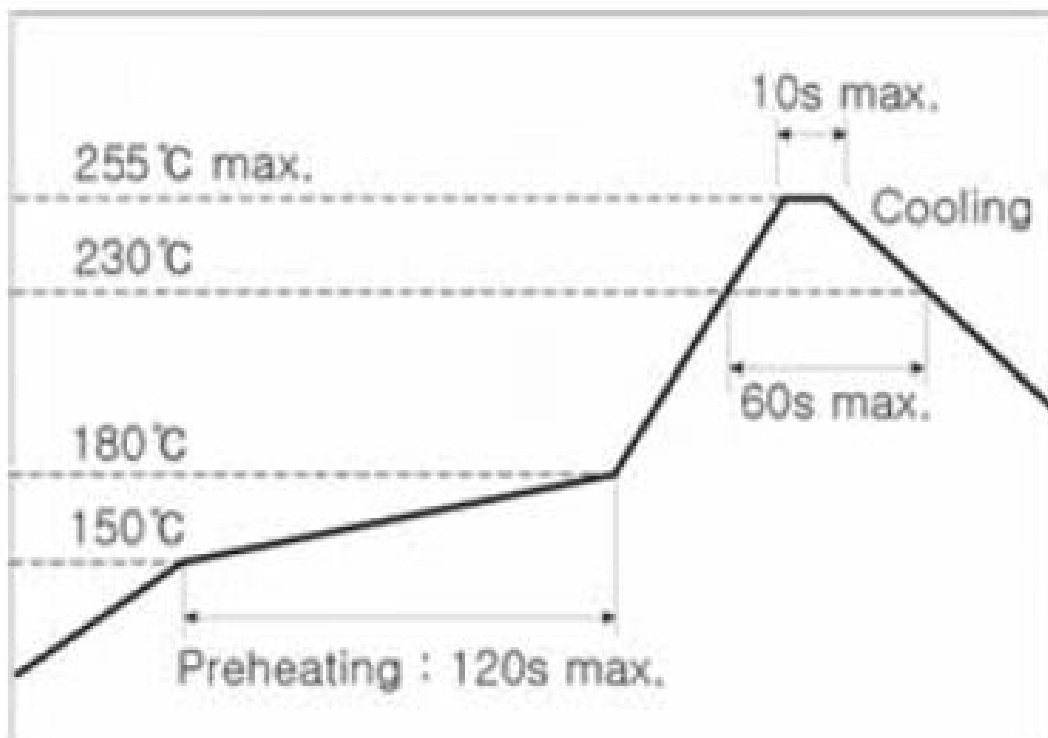


[3D Radiation Pattern]

#### 4. Reliability

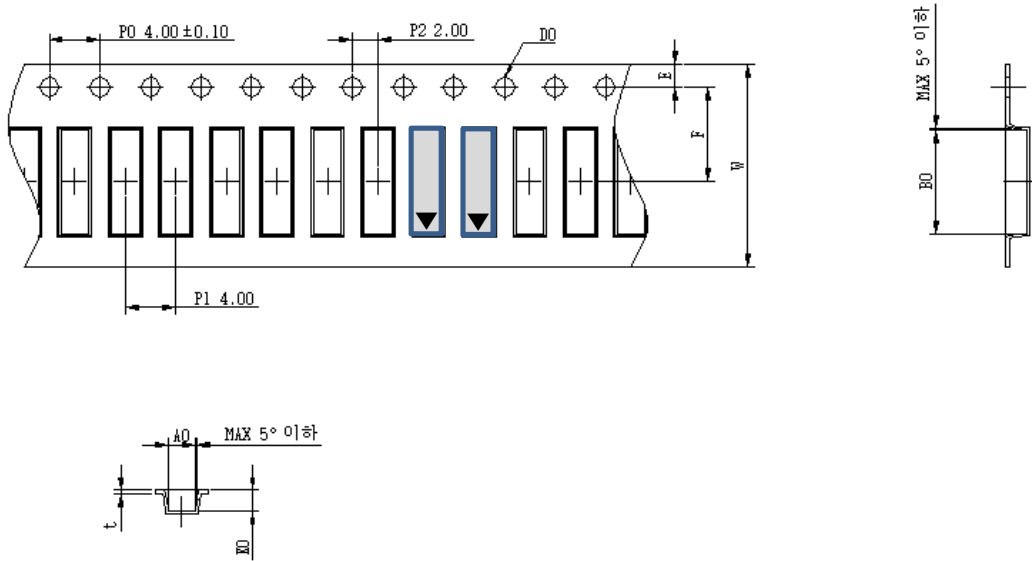
| No | Item                             | Test Condition  | Test Requirements   |
|----|----------------------------------|---|---|
| 1  | Adhesive Strength of Termination | 1. Applied force on SMT chip till detached point from PCB.<br> | 1. No mechanical damage by applied force<br>2. Strength (F) > 5 kgf |
| 2  | Thermal Shock (Cycle)            | 1. Step 1 : $-40 \pm 3^\circ\text{C}$ , 30 min<br>Step 2 : $+125 \pm 3^\circ\text{C}$ , 30 min<br>2. Number of cycle : 30                       | 1. No visual damage<br>2. Within electric spec (VSWR)               |
| 3  | High Temperature Resistance      | 1. Temperature : $+125 \pm 5^\circ\text{C}$<br>2. Time : $1000 \pm 24$ hrs  | 1. No visual damage<br>2. Within electric spec (VSWR)               |
| 4  | Low Temperature Resistance       | 1. Temperature : $-40 \pm 5^\circ\text{C}$<br>2. Time : $1000 \pm 24$ hrs   | 1. No visual damage<br>2. Within electric spec (VSWR)               |
| 5  | Humidity                         | 1. Humidity : 85 % RH<br>Temperature : $+85 \pm 3^\circ\text{C}$<br>2. Time : $1000 \pm 24$ hrs   | 1. No visual damage<br>2. Within electric spec (VSWR)               |

#### 5. Soldering Reflow Profile



## 6. Packaging

### 6.1 Carrier Tape Dimension



| Item | Spec.       | Item | Spec.       | Item | Spec.        |
|------|-------------|------|-------------|------|--------------|
| A0   | 2.20 ± 0.10 | P0   | 4.00 ± 0.10 | E    | 1.75 ± 0.10  |
| B0   | 8.20 ± 0.10 | P1   | 4.00 ± 0.10 | F    | 7.50 ± 0.10  |
| K0   | 1.65 ± 0.10 | P2   | 2.00 ± 0.10 | W    | 16.00 ± 0.30 |
| D0   | 1.55 ± 0.05 | -    | -           | t    | 0.30 ± 0.05  |

### 6.2 Packaging Quantity

| Item       | Quantity                 | Dimension                          |
|------------|--------------------------|------------------------------------|
| Reel       | 2,000ea                  | Φ7" * 16mm                         |
| Inner Box  | 6,000 ea (3 reel)        | 183 * 70 * 185 (mm <sup>3</sup> )  |
| Outer Box1 | 30,000 ea (5 Inner Box)  | 375 * 200 * 205 (mm <sup>3</sup> ) |
| Outer Box2 | 60,000 ea (10 Inner Box) | 390 * 375 * 205 (mm <sup>3</sup> ) |

### 6.3 Packaging Label

**AMOTECH Co., Ltd.**

5BL-1Lot, 617, Namchon-Dong, Namdong-Gu, Incheon, Korea

**Dielectric Chip Antenna**

P/N : AMAN802012ST03

Lot No :

Quantity : 2,000 pcs    Date : 2012/08/16