

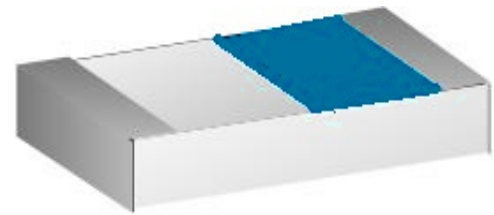
## 2.4GHz Chip Antenna: AAN3216H5P2G45

### Application:

WLAN, 802.11b/g, Bluetooth, etc...

### Features

SMD, high reliability, ultra Impact, Omni-directional...



### Part number

AAN 3216 H5 P 2G45

(1) (2) (3) (4) (5)

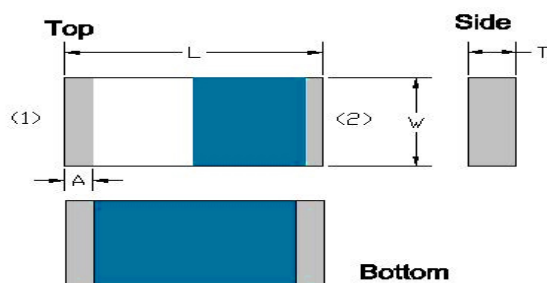
|                 |               |
|-----------------|---------------|
| (1)Product Type | Chip Antenna  |
| (2) Size Code   | 3.2x1.6mm     |
| (3) Type Code   | H5            |
| (4) Packing     | Tape and reel |
| (5) Frequency   | 2.45GHz       |

### Electrical Specification

|                           |                  |
|---------------------------|------------------|
| Working Frequency Range   | 2400 ~2484 MHz   |
| Peak Gain                 | 3.0dBi (Typ.)    |
| Impedance                 | 50 Ohm           |
| Return loss               | 10 dB ( Min)     |
| Polarization              | Linear           |
| Azimuth Beamwidth         | Omni-directional |
| Operation Temperature(°C) | -40 ~85°C        |

The specification is defined on EVB.

### Dimension and Terminal Configuration



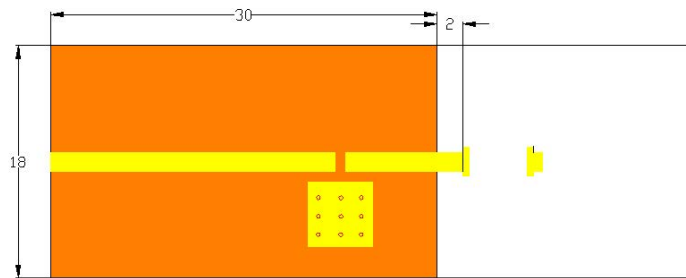
| Dimension (mm) |             |
|----------------|-------------|
| L              | 3.15+-0.15  |
| W              | 1.55+- 0.15 |
| T              | 0.5+-0.10   |
| A              | 0.35+-0.10  |

| No. | Terminal Name |
|-----|---------------|
| 1   | Feeding       |
| 2   | Soldering     |

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### Evaluation Board Reference

#### PCB Dimension & Antenna Layout Reference

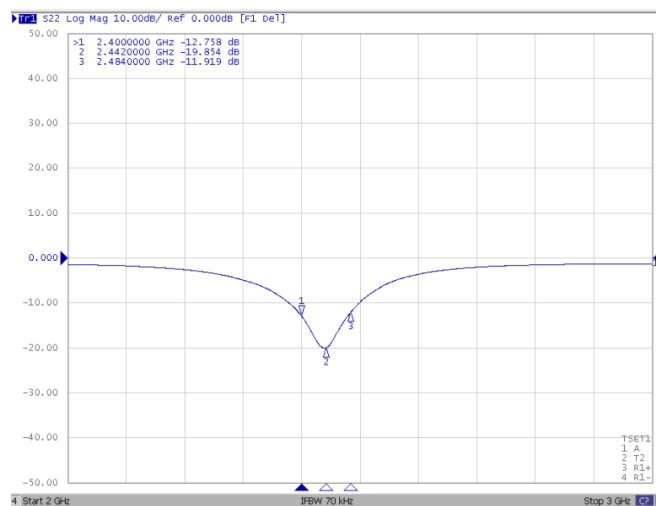


unit :mm

### Electrical Characteristics

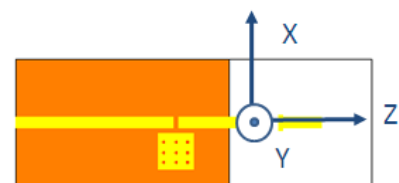
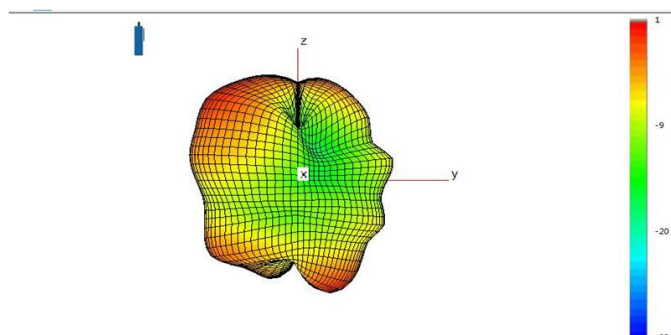
#### Return Loss & Radiation

##### Return Loss



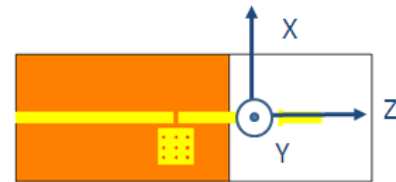
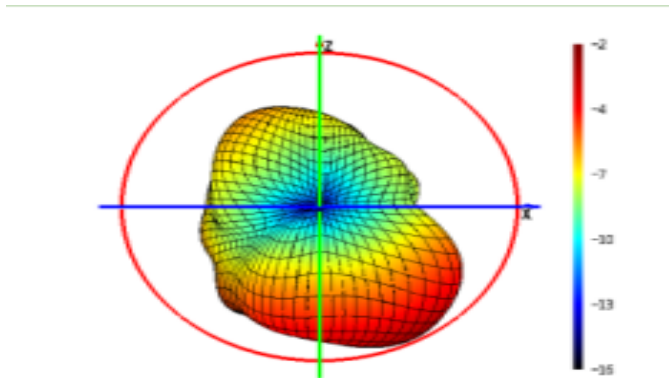
| Frequency (MHz) | S11 (dB) |
|-----------------|----------|
| 2400            | -12.8    |
| 2442            | -19.8    |
| 2484            | -11.9    |

##### Radiation



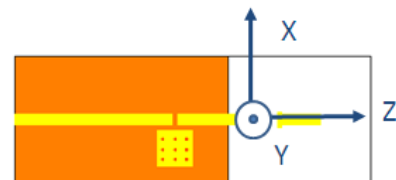
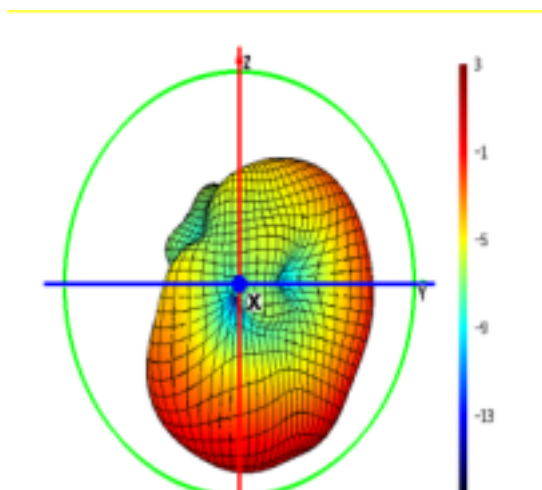
##### 2.45GHz

|            |         |
|------------|---------|
| Frequency  | 2445MHz |
| Peak gain  | 3.0dBi  |
| Efficiency | 79.2%   |



#### 2.4GHz

|            |        |
|------------|--------|
| Frequency  | 2400MH |
| Peak gain  | 2.7dBi |
| Efficiency | 77.6%  |

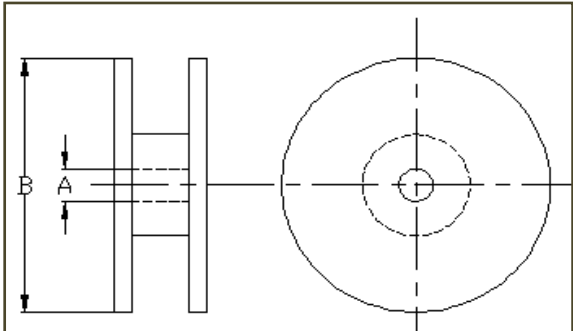


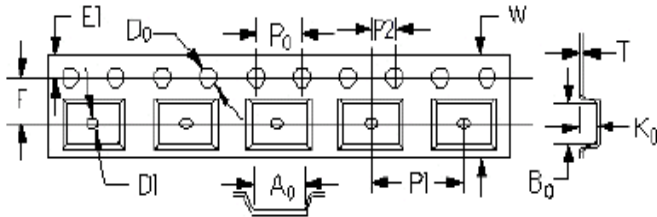
#### 2.48GHZ

|            |         |
|------------|---------|
| Frequency  | 2480MH  |
| Peak gain  | 2.95dBi |
| Efficiency | 78.6%   |

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### Taping Specifications

| Reel                                                                             |                       |              |
|----------------------------------------------------------------------------------|-----------------------|--------------|
|  |                       |              |
| Checking note                                                                    | Index                 | Spec (mm)    |
| Internal diameter of reel                                                        | A                     | 60.20 ± 0.50 |
| External diameter of reel                                                        | B                     | 178 ± 1.00   |
| Quantity/per reel                                                                | 5000 pcs              |              |
| Tape material                                                                    | Plastic<br>(embossed) |              |

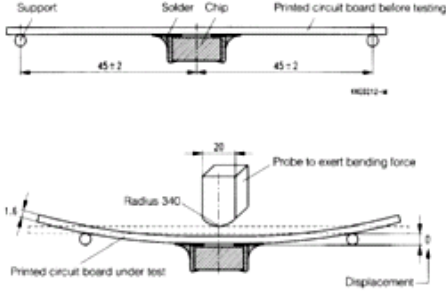
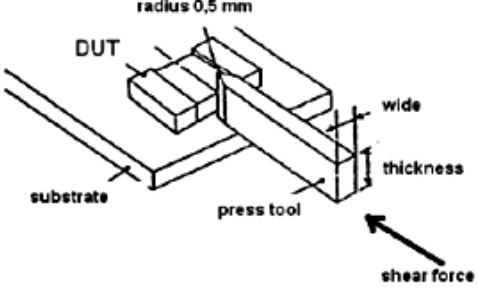
| Taping Blister Tape                                                                |       |                   |
|------------------------------------------------------------------------------------|-------|-------------------|
|  |       |                   |
| Checking note                                                                      | Index | Spec (mm)         |
| Sprocket hole                                                                      | D0    | 1.50 +0.10/-0.00  |
| Distance sprocket hole to outside                                                  | E1    | 1.75 ± 0.10       |
| Distance sprocket hole to pocket                                                   | F     | 5.50 ± 0.05       |
| Distance sprocket hole to sprocket hole                                            | P0    | 4.00 ± 0.10       |
| Distance pocket to pocket                                                          | P1    | 4.00 ± 0.10       |
| Distance sprocket hole to pocket                                                   | P2    | 2.00 ± 0.05       |
| Tape width                                                                         | W     | 12.00 +0.30/-0.10 |
| Pocket width nominal clearance                                                     | A0    | 2.28 ± 0.13       |
| Pocket length nominal clearance                                                    | B0    | 5.70 ± 0.13       |
| Pocket depth minimum clearance                                                     | K0    | 1.58 ± 0.10       |
| Thickness of tape                                                                  | T     | 0.23 ± 0.02       |

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### Reliability Table

| Test Item                             | Procedure                                                                                                                                                                                                                                                                                                                                                 | Requirements<br>Ceramic Type                                                | Remark<br>(Reference)     |
|---------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------|
| Electrical<br>Characterization        |                                                                                                                                                                                                                                                                                                                                                           | Fulfill the electrical<br>specification                                     | User Spec.                |
| Thermal<br>Shock                      | 1. Preconditioning:<br>$50 \pm 10^{\circ}\text{C}$ / 1 hr , then keep for $24 \pm 1$ hrs at room temp.<br>2. Initial measure: Spec: refer Initial spec.<br>3. Rapid change of temperature test:<br>$-30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ ; 100 cycles;<br>15 minutes at Lower category temperature;<br>15 minutes at Upper category temperature. | No Visible Damage.<br>Fulfill the electrical<br>specification.              | MIL-STD-202<br>107        |
| Temperature<br>Cycling                | 1. Initial measure: Spec: refer Initial spec.<br>2. 100 Cycles ( $-30^{\circ}\text{C}$ to $+85^{\circ}\text{C}$ ), Soak Mode=1 (2 Cycle/hours).<br>3. Measurement at $24 \pm 2$ Hours after test condition.                                                                                                                                               | No Visible Damage.<br>Fulfill the electrical<br>specification.              | JESD22<br>JA104           |
| High Temperature<br>Exposure          | 1. Initial measure: Spec: refer Initial spec.<br>2. Unpowered; 500hours @ $T=+85^{\circ}\text{C}$ .<br>3. Measurement at $24 \pm 2$ hours after test.                                                                                                                                                                                                     | No Visible Damage.<br>Fulfill the electrical<br>specification.              | MIL-STD-202<br>108        |
| Low Temperature<br>Storage            | 1. Initial measure: Spec: refer Initial spec.<br>2. Unpowered: 500hours @ $T=-30^{\circ}\text{C}$ .<br>3. Measurement at $24 \pm 2$ hours after test.                                                                                                                                                                                                     | No Visible Damage.<br>Fulfill the electrical<br>specification.              | MIL-STD-202<br>108        |
| Solderability<br>(SMD Bottom Side)    | Dipping method:<br>a. Temperature: $235 \pm 5^{\circ}\text{C}$<br>b. Dipping time: $3 \pm 0.5\text{s}$                                                                                                                                                                                                                                                    | The solder should cover<br>over 95% of the critical<br>area of bottom side. | IEC 60384-21/22<br>4.10   |
| Soldering Heat<br>Resistance<br>(RSH) | Preheating temperature: $150 \pm 10^{\circ}\text{C}$ .<br>Preheating time: 1~2 min.<br>Solder temperature: $260 \pm 5^{\circ}\text{C}$ .<br>Dipping time: $5 \pm 0.5\text{s}$                                                                                                                                                                             | No Visible Damage.                                                          | IEC 60384-21/22<br>4.10   |
| Vibration                             | 5g's for 20 min., 12 cycles each of 3 orientations<br>Note: Use 8"X5" PCB .031" thick 7 secure points on, one long<br>side and 2 secure points at corners of opposite sides. Parts<br>mounted within 2" from any secure point. Test from 10-2000<br>Hz.                                                                                                   | No Visible Damage.                                                          | MIL-STD-202<br>Method 204 |
| Mechanical<br>Shock                   | Three shocks in each direction shall be applied along the three<br>mutually perpendicular axes of the test specimen (18 shocks)<br>Peak value: 1,500g's<br>Duration: 0.5ms<br>Velocity change: 15.4 ft/s<br>Waveform: Half-sine                                                                                                                           | No Visible Damage.                                                          | MIL-STD-202<br>Method 213 |
| Humidity<br>Bias                      | 1. Humidity: 85% R.H., Temperature: $85 \pm 2^{\circ}\text{C}$ .<br>2. Time: $500 \pm 24$ hours.<br>3. Measurement at $24 \pm 2$ hrs after test condition.                                                                                                                                                                                                | No Visible Damage.<br>Fulfill the electrical<br>specification.              | MIL-STD-202<br>Method 106 |

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|                           |                                                                                                                                                                                                                                              |                                                                                                                                                                          |              |
|---------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|
| <b>Board Flex (SMD)</b>   | <p>1. Mounting method:<br/>IR-Reflow. PCB Size (L:100 × W:40 × T:1.6mm)</p> <p>2. Apply the load in direction of the arrow until bending reaches 2 mm.</p>  | No Visible Damage.                                                                                                                                                       | AEC-Q200 005 |
| <b>Adhesion</b>           | <p>Force of 1.8Kg for 60 seconds.</p>                                                                                                                       | No Visible Damage<br>Magnification of 20X or greater may be employed for inspection of the mechanical integrity of the device body terminals and body/terminal junction. | AEC-Q200 006 |
| <b>Physical Dimension</b> | Any applicable method using x10 magnification, micrometers, calipers, gauges, contour projectors, or other measuring equipment, capable of determining the actual specimen dimensions.                                                       | In accordance with specification.                                                                                                                                        | JESD22 JB100 |

## Revision History

| Revision | Date      | Content   |
|----------|-----------|-----------|
| 1        | 2023/1/13 | New issue |