Pulse | LARSEN Antennas
A YAGEO Company

TECHNICAL DATA SHEET

# **Description**: 1204 433MHz FR4 Chip Antenna

## PART NUMBER: ANT1204F002R0433A


## Features:

- Size : 12.3x4.0x1.6 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart meter
- Industrial remote control
- ISM band equipment



RoHS COMPLIANT

Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 1204 433MHz FR4 Chip Antenna

## PART NUMBER: ANT1204F002R0433A

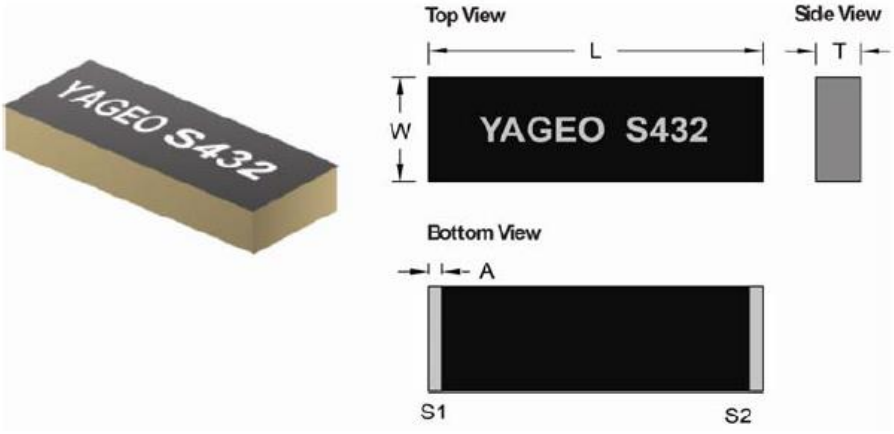
## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 433 MHz |
| **Bandwidth** | 28 MHz(Typ.) |
| **Return Loss** | 6.5 dB Min. |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 0.79 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 2 W |
| **Termination** | Ni / Au (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 12.3 ±0.20 |
| W (mm) | 4.00 ±0.20 |
| T (mm) | 1.60 ±0.20 |
| A (mm) | 0.50 ±0.20 |

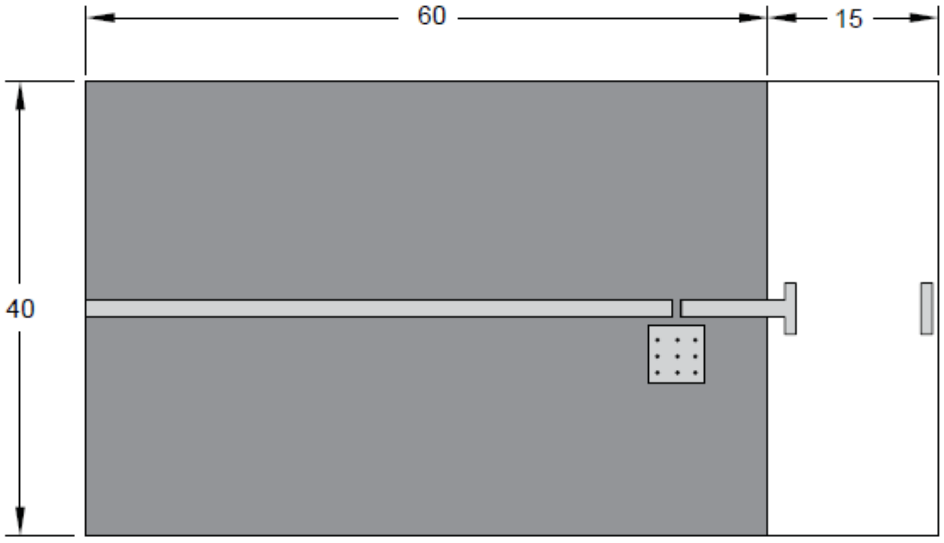



| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

**Description**: 1204 433MHz FR4 Chip Antenna

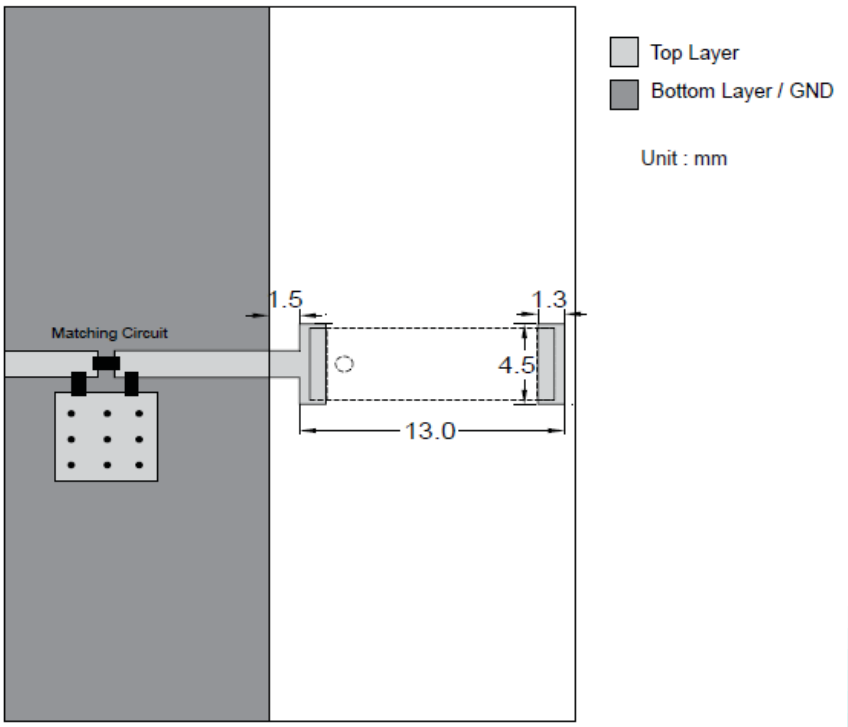
**PART NUMBER: ANT1204F002R0433A**

## REFERENCE DESIGN OF EVALUATION BOARD




Outlook and dimension of evaluation board

Unit : mm

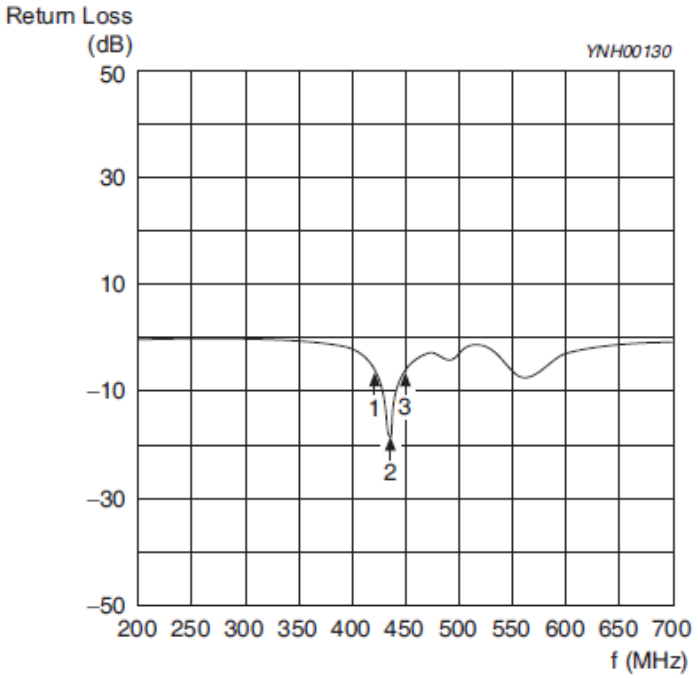



Details of soldering Pad

**Description**: 1204 433MHz FR4 Chip Antenna

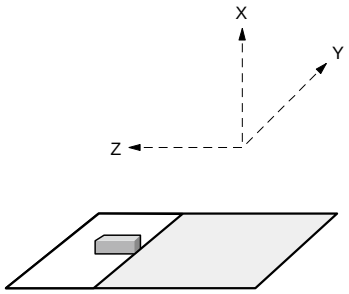
**PART NUMBER: ANT1204F002R0433A**

## ELECTRICAL PERFORMANCES

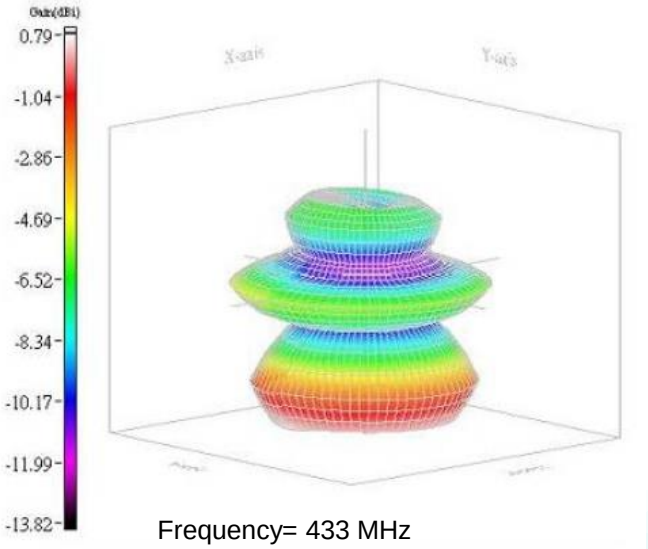



Marker data
1. 419MHz, -6.5dB
2. 433MHz, -16 dB
3. 447MHz, -6.5dB

Return loss




Evaluation board and XYZ direction




Frequency= 433 MHz
Max gain = 0.79 dBi, at (150,330)
MEG (mean effective gain)= -4.84 dBi
Directivity (dB) = 6.35
Efficiency = -5.56dB, 27.79 %

Radiation pattern

**Description**: 1204 433MHz FR4 Chip Antenna

**PART NUMBER: ANT1204F002R0433A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Apr. 29, 2021 | - New issue for Maximum Power 2W. |
| Version 2 | Jul. 9, 2021 | - Modified plating material Ni/Au from Ni/Sn. |

# **Description**: 1204 UHF 870MHz Chip Antenna

## PART NUMBER: ANT1204F007R0870A


## Features:

- Size : 12.2 x 4.0 x 1.6 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart meter
- Industrial remote control



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Zeppelinstrasse 15
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Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# **Description**: 1204 UHF 870MHz Chip Antenna

## PART NUMBER: ANT1204F007R0870A

## ELECTRICAL SPECIFICATIONS

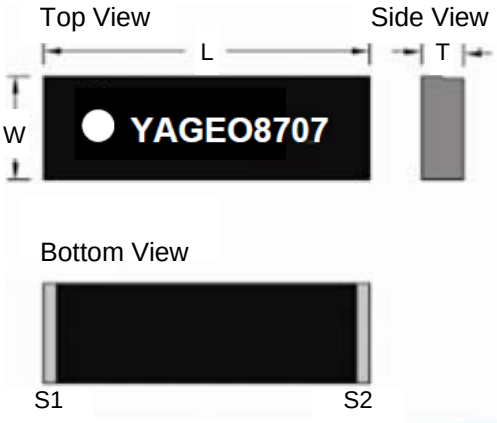
| | |
|---|---|
| **Centre Frequency** | 870 MHz |
| **Bandwidth** | 30 MHz (Typ.) |
| **Return Loss** | 10 dB Min |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 1.67 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~85 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Cu / Au (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | **Dimension** |
|---|---|
| L (mm) | 12.2 ±0.2 |
| W (mm) | 4.0 ±0.2 |
| T (mm) | 1.6 ±0.2 |

| TERMINATION | **Function** |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

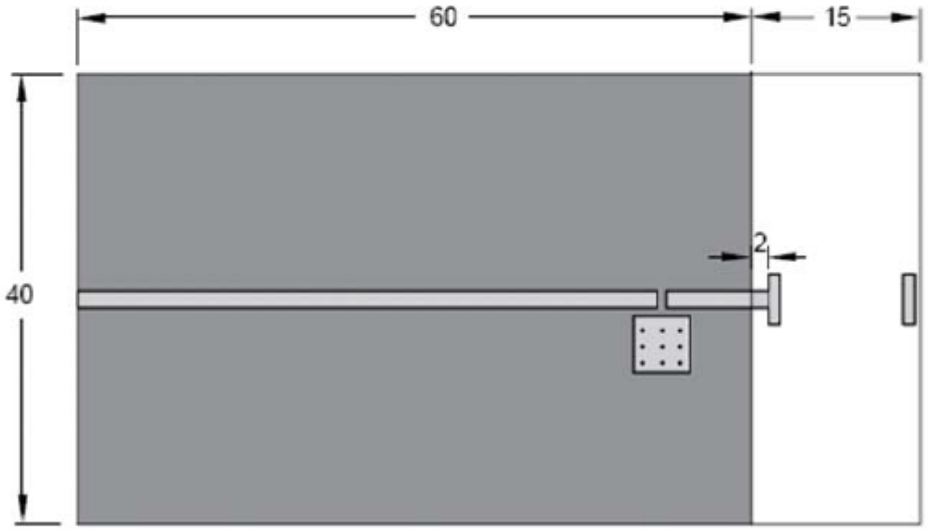




Antenna outlines

**Description**: 1204 UHF 870MHz Chip Antenna

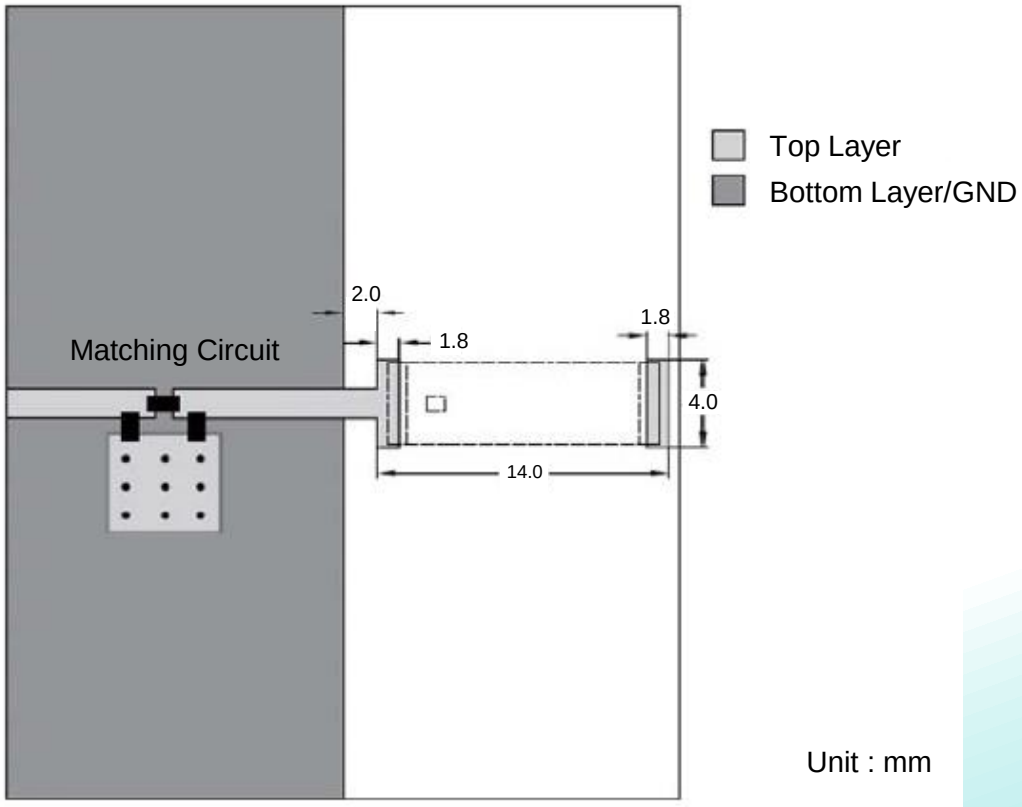
**PART NUMBER: ANT1204F007R0870A**

## REFERENCE DESIGN OF EVALUATION BOARD




Unit: mm

Outlook and dimension of evaluation board



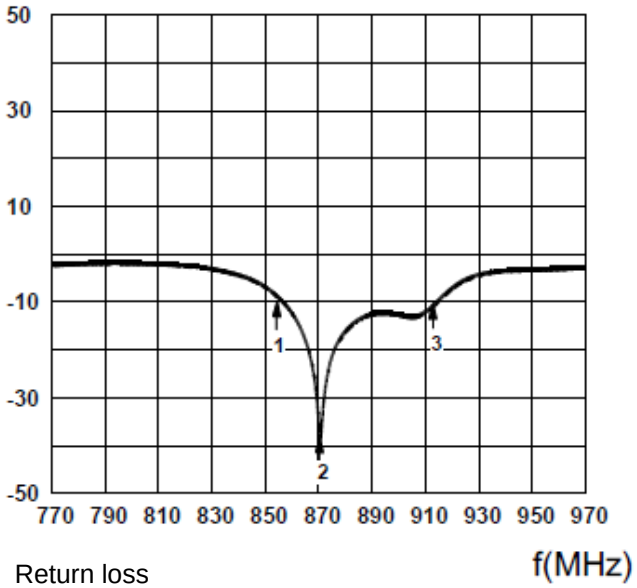

Details of soldering Pad

Unit : mm

**Description**: 1204 UHF 870MHz Chip Antenna

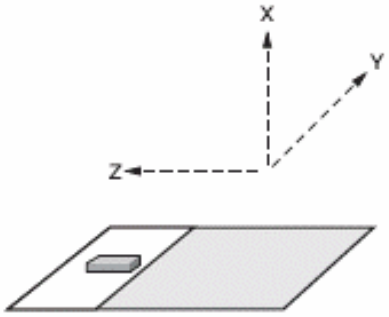
**PART NUMBER: ANT1204F007R0870A**

## ELECTRICAL PERFORMANCES

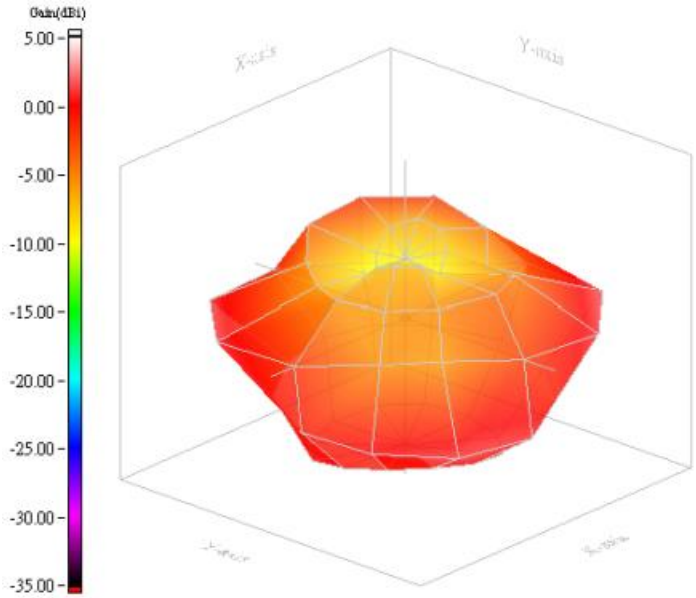



Return loss

Marker data
1. 856 MHz, -10dB
2. 870 MHz, -34dB
3. 914 MHz, -10dB




Evaluation board and XYZ direction




Max gain = 1.67dBi, at (90,150)
MEG (mean effective gain) = -2.69dBi
Directivity (dB) = 3.87
Efficiency = -2.20dB, 60.3%

Radiation pattern

**Description**: 1204 UHF 870MHz Chip Antenna

**PART NUMBER: ANT1204F007R0870A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Mar. 8, 2021 | - New issue for Pulse version. |

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TECHNICAL DATA SHEET

# **Description**: 1204 915MHz Chip Antenna

## PART NUMBER: ANT1204LL05R0915A

## Features:

- Size : 12.1x4.1x1.6 mm
- Omni-directional radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart meter
- Industrial remote control
- ISM band equipment
- ZigBee device



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
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Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 1204 915MHz Chip Antenna

## PART NUMBER: ANT1204LL05R0915A

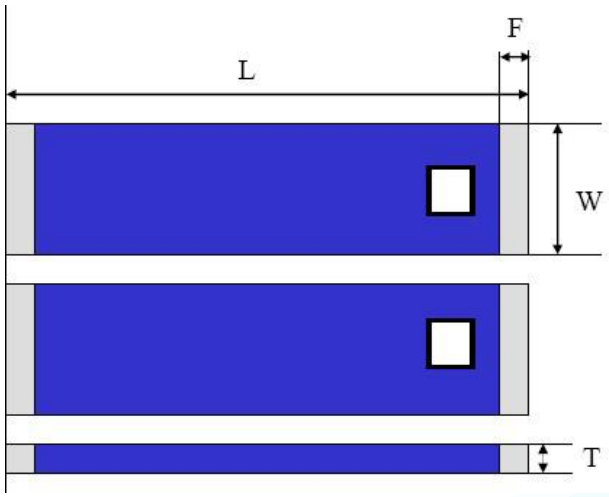
## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 915 MHz |
| **Bandwidth** | 20 MHz(Typ.) |
| **V.S.W.R.** | 2.0 dB Max. |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 3.32 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 12.1 ±0.20 |
| W (mm) | 4.10 ±0.20 |
| T (mm) | 1.60 ±0.20 |
| A (mm) | 0.85 ±0.35 |

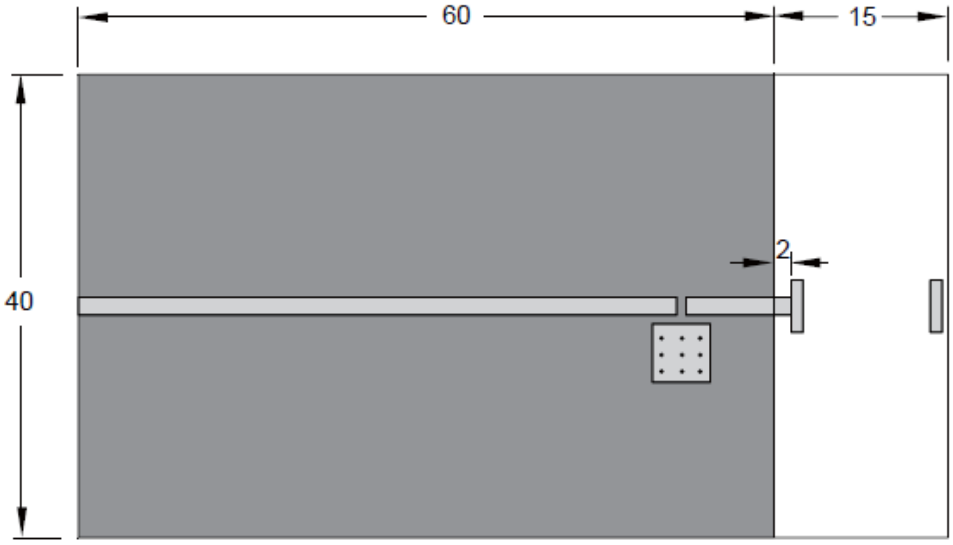



| Terminal name | Function |
|---|---|
| W | Feeding Point |
| L | Soldering Point |

**Description**: 1204 915MHz Chip Antenna

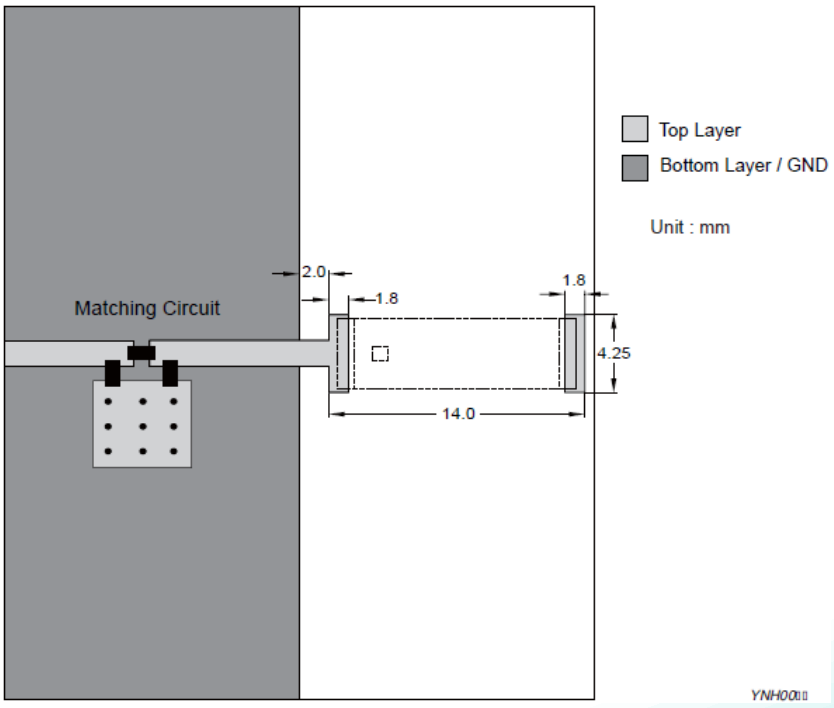
**PART NUMBER: ANT1204LL05R0915A**

## REFERENCE DESIGN OF EVALUATION BOARD




Unit : mm

Outlook and dimension of evaluation board

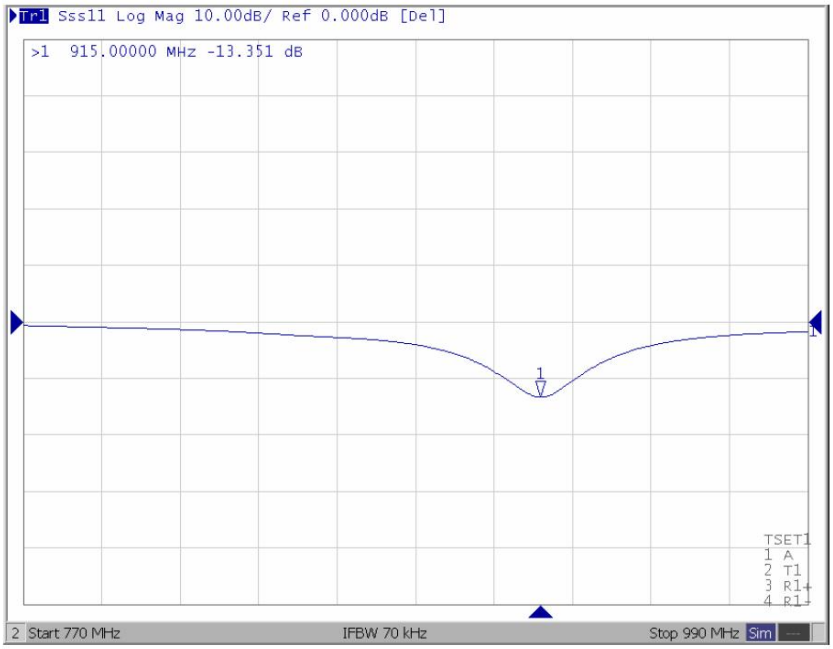



Details of soldering Pad

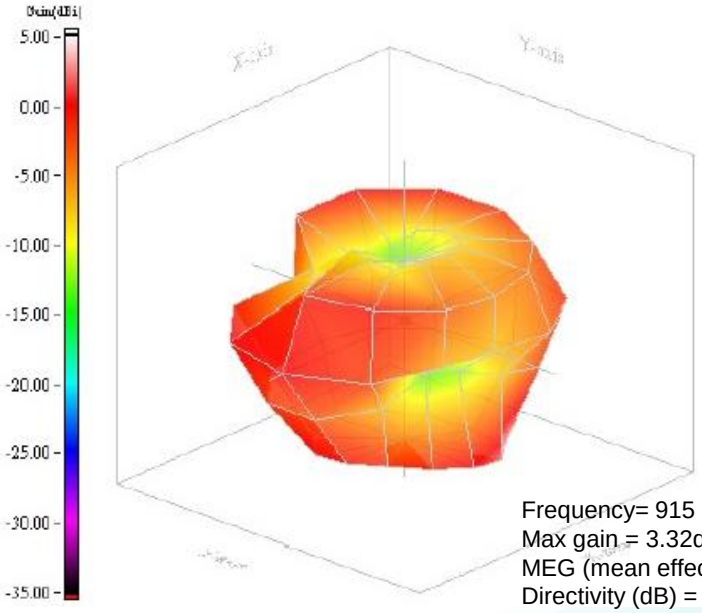
**Description**: 1204 915MHz Chip Antenna

**PART NUMBER: ANT1204LL05R0915A**

## ELECTRICAL PERFORMANCES




Return loss




Frequency= 915 MHz
Max gain = 3.32dBi, at (150,180)
MEG (mean effective gain)= -3.11 dBi
Directivity (dB) = 5.92
Efficiency = -2.60dB, 55.02 %

Radiation pattern

**Description**: 1204 915MHz Chip Antenna

**PART NUMBER: ANT1204LL05R0915A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 14, 2020 | - New issue |

TECHNICAL DATA SHEET

# **Description**: 1204 870MHz Chip Antenna

## PART NUMBER: ANT1204LL08R0870A

## Features:

- Size : 12.1x4.1x1.6 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart meter
- Industrial remote control
- ISM band equipment



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Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 1204 870MHz Chip Antenna

## PART NUMBER: ANT1204LL08R0870A

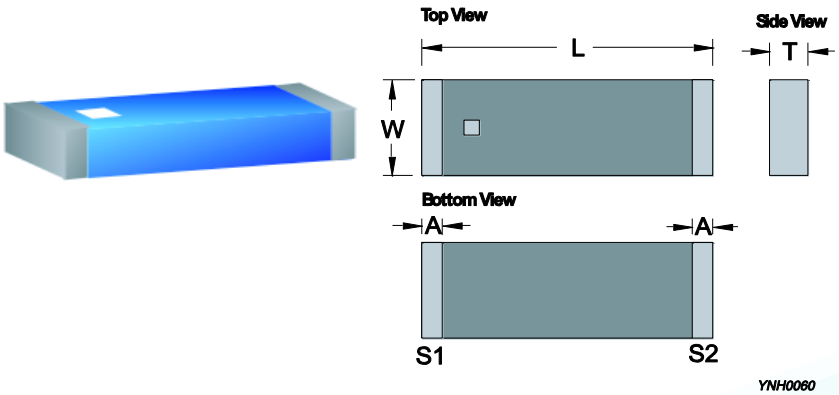
## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 870 MHz |
| **Bandwidth** | 34 MHz(Typ.) |
| **Return Loss** | 10.0 dB Min |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 1.51 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 12.1 ±0.20 |
| W (mm) | 4.10 ±0.20 |
| T (mm) | 1.60 ±0.20 |
| A (mm) | 0.85 ±0.35 |

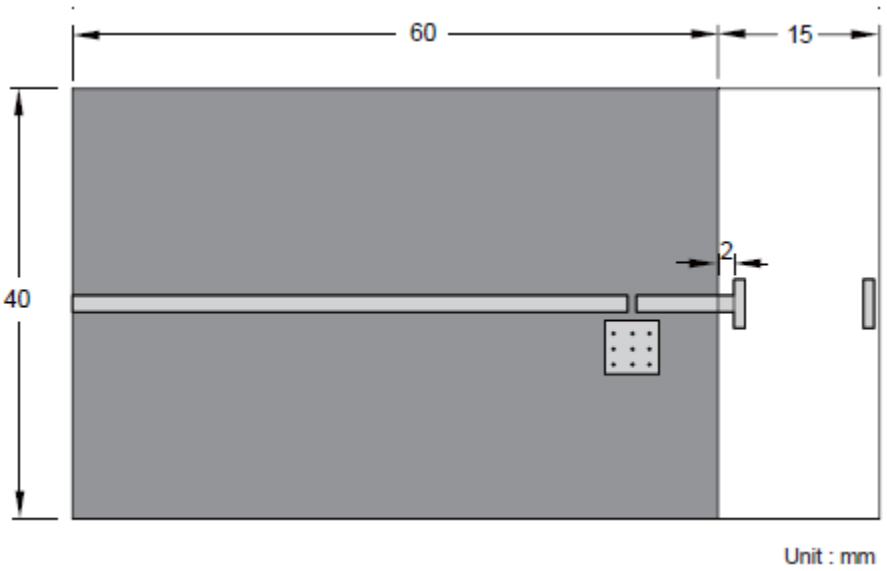



| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

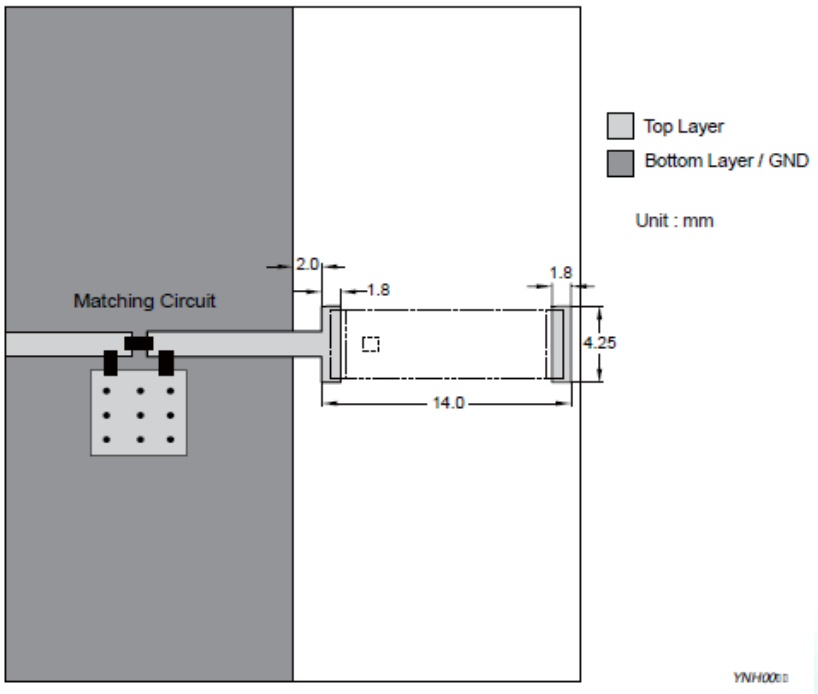
**Description**: 1204 870MHz Chip Antenna

**PART NUMBER: ANT1204LL08R0870A**

## REFERENCE DESIGN OF EVALUATION BOARD




Outlook and dimension of evaluation board

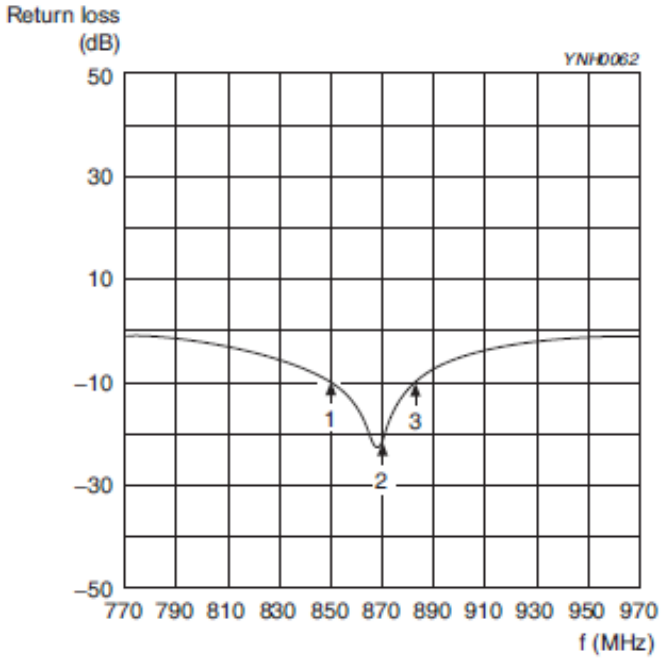



Details of soldering Pad

**Description**: 1204 870MHz Chip Antenna

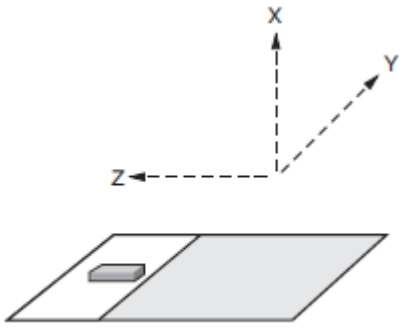
**PART NUMBER: ANT1204LL08R0870A**

## ELECTRICAL PERFORMANCES

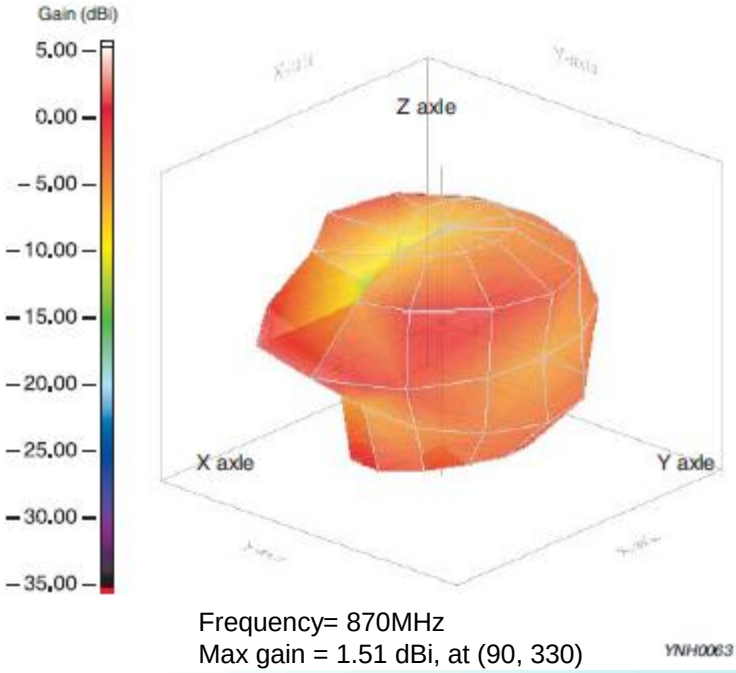



Marker data
1. 849MHz, -10dB
2. 870MHz, -21.6dB
3. 883MHz, -10dB

Return loss




Evaluation board and XYZ direction




Frequency= 870MHz
Max gain = 1.51 dBi, at (90, 330)
MEG (mean effective gain)= -2.64 dBi
Directivity (dB) = 3.58
Efficiency = -2.07 dB, 62.06 %

Radiation pattern

**Description**: 1204 870MHz Chip Antenna

**PART NUMBER: ANT1204LL08R0870A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 14, 2020 | - New issue |

Pulse | LARSEN Antennas
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TECHNICAL DATA SHEET

# Description: 1204 870MHz Chip Antenna

## PART NUMBER: ANT1204LL16R0870A

## Features:

- Size : 12.0x4.0x1.2 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart meter
- Industrial remote control
- ISM band equipment

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 870 MHz |
| **Bandwidth** | 15 MHz(Typ.) |
| **Return Loss** | 6.49 dB Min |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 1.05 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board



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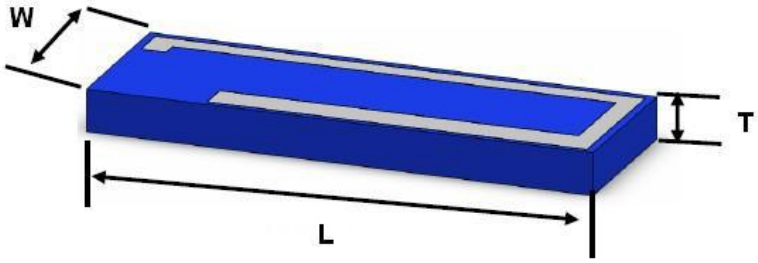
Tel: 86 512 6807 9998

**Description**: 1204 870MHz Chip Antenna

**PART NUMBER: ANT1204LL16R0870A**

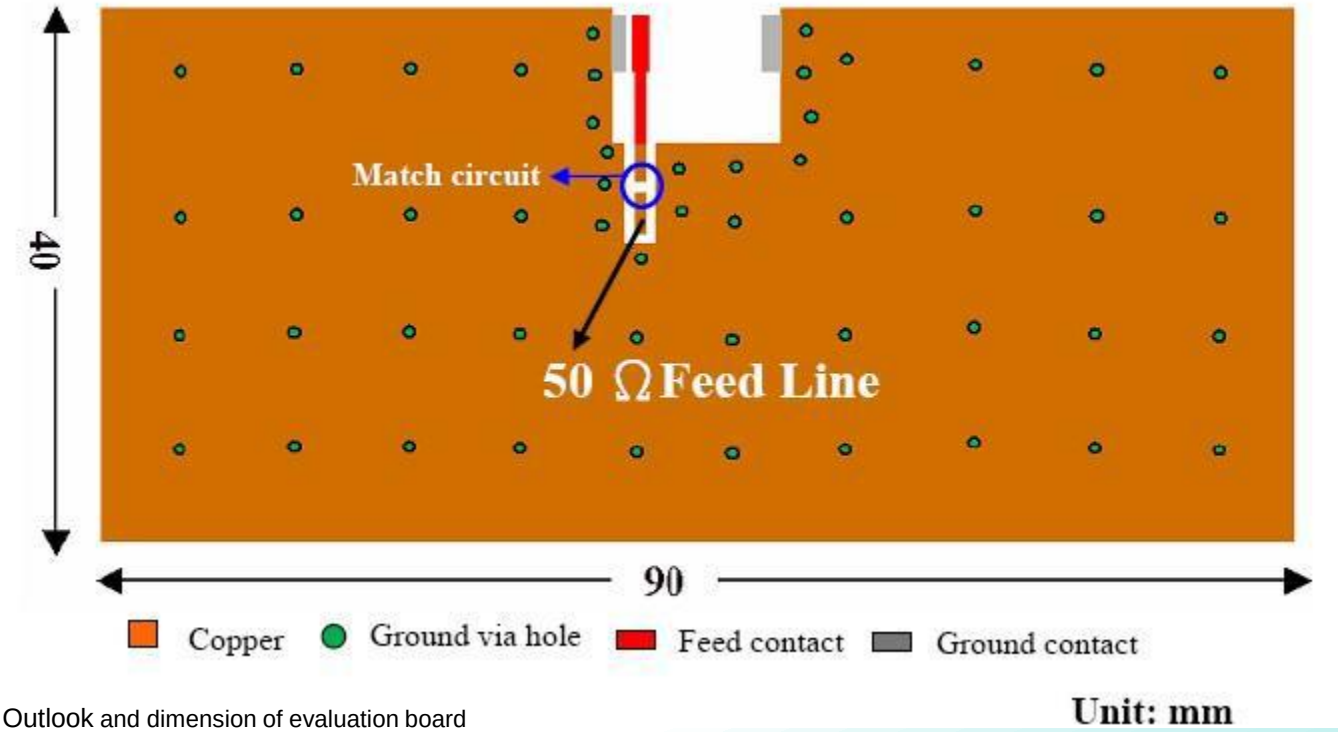
## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 12.0 ±0.10 |
| W (mm) | 4.00 ±0.10 |
| T (mm) | 1.20 ±0.10 |




Unit: mm

## REFERENCE DESIGN OF EVALUATION BOARD

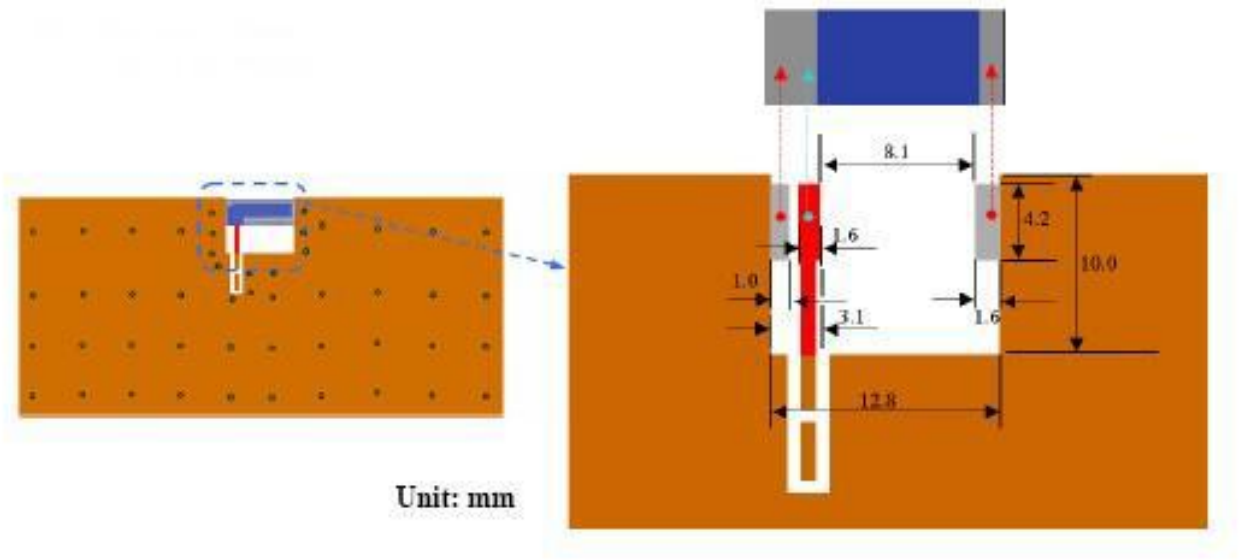


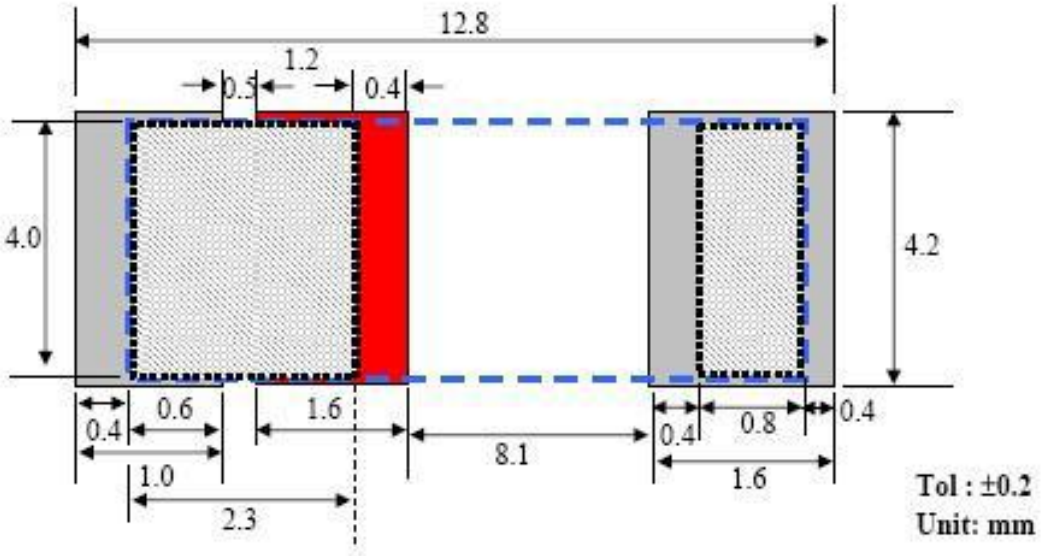

Outlook and dimension of evaluation board

**Description**: 1204 870MHz Chip Antenna

**PART NUMBER: ANT1204LL16R0870A**

## REFERENCE DESIGN OF EVALUATION BOARD



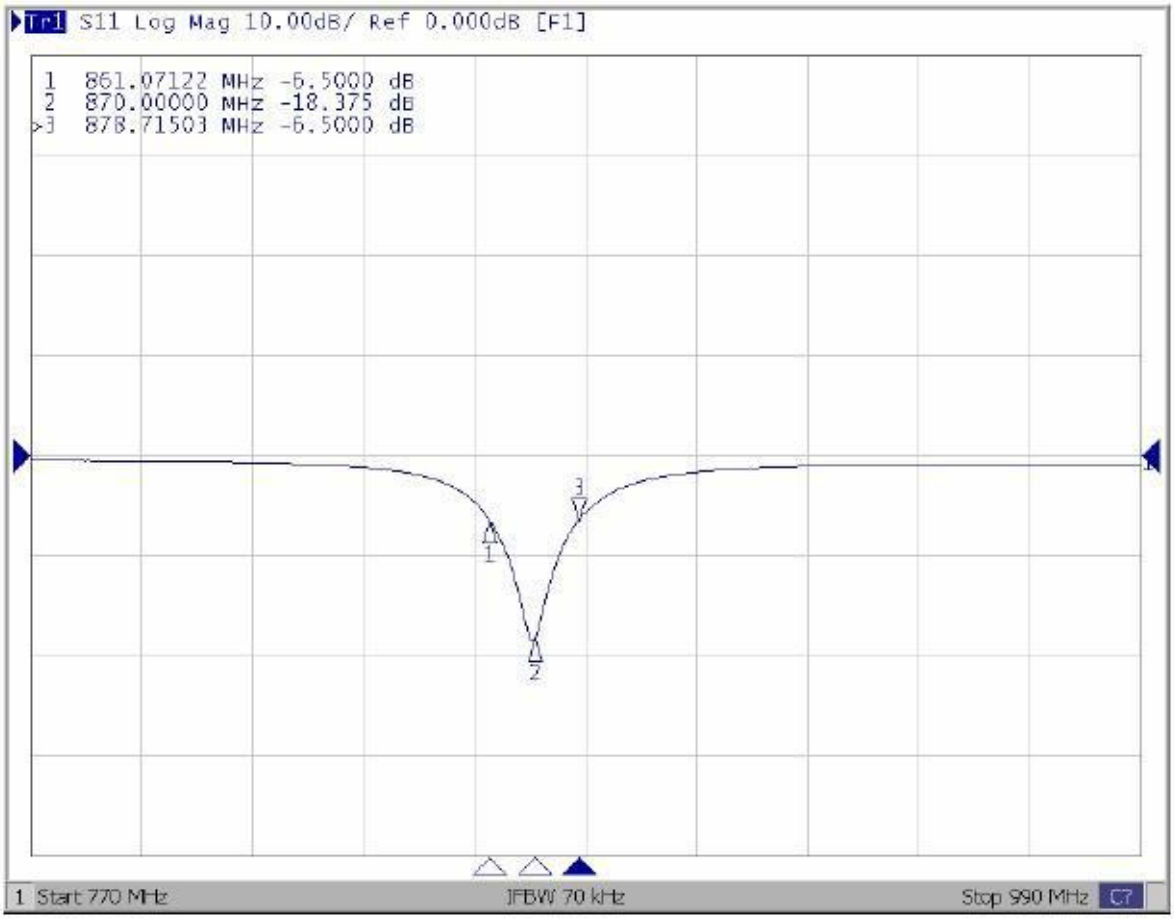




Details of soldering Pad

**Description**: 1204 870MHz Chip Antenna

**PART NUMBER: ANT1204LL16R0870A**

## ELECTRICAL PERFORMANCES



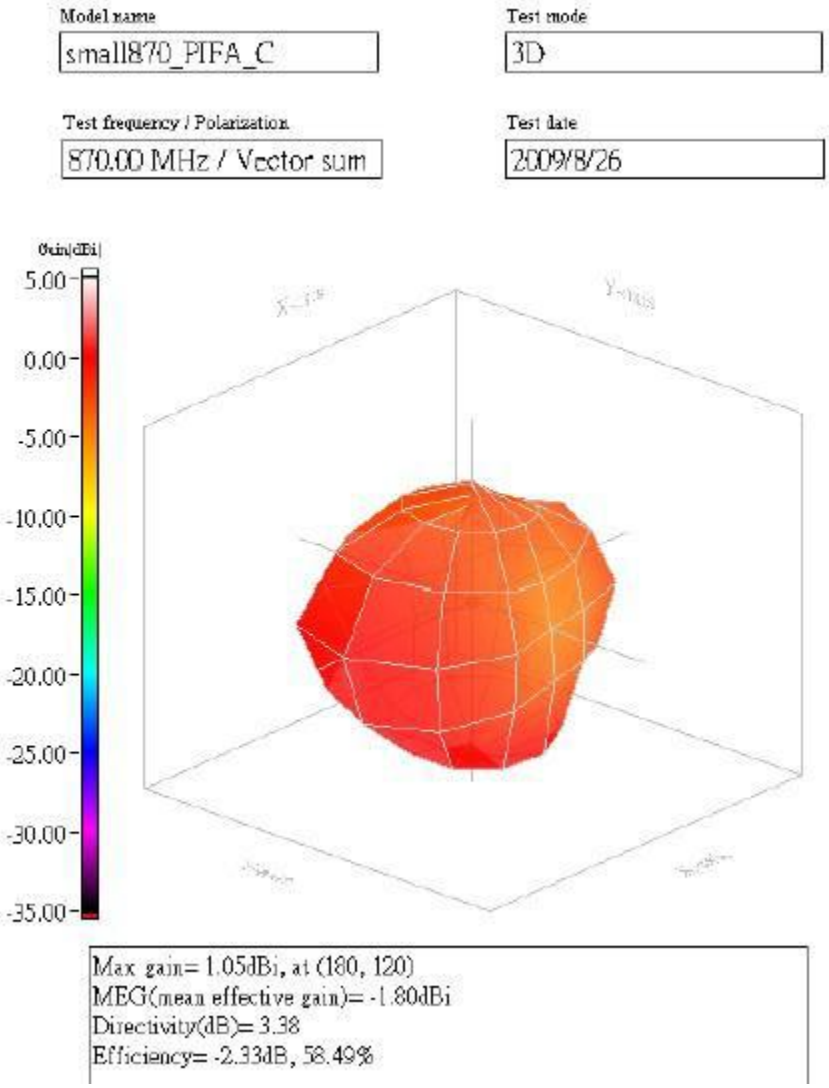

Marker data
1. 861MHz, -6.5000dB
2. 870MHz, -18.375dB
3. 878MHz, -6.5000dB

Return loss

**Description**: 1204 870MHz Chip Antenna

**PART NUMBER: ANT1204LL16R0870A**

## ELECTRICAL PERFORMANCES




Frequency= 870MHz
Max gain = 1.05 dBi, at (180, 120)
MEG (mean effective gain)= -1.80 dBi
Directivity (dB) = 3.38
Efficiency = -2.33 dB, 58.49 %

Radiation pattern

**Description**: 1204 870MHz Chip Antenna

**PART NUMBER: ANT1204LL16R0870A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 14, 2020 | - New issue |

Pulse | LARSEN Antennas
A YAGEO Company

TECHNICAL DATA SHEET

# **Description**: 1204 433MHz Chip Antenna

## PART NUMBER: ANT1204LL20R0433A

## Features:

- Size : 12.0x4.0x1.5 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart meter
- Industrial remote control
- ISM band equipment



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 1204 433MHz Chip Antenna

## PART NUMBER: ANT1204LL20R0433A

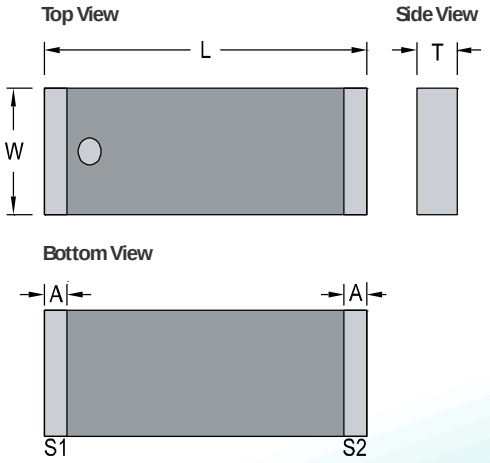
## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 433 MHz |
| **Bandwidth** | 28 MHz(Typ.) |
| **Return Loss** | 6.5 dB Min. |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 0.83 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 2 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 12.0 ±0.50 |
| W (mm) | 4.00 ±0.50 |
| T (mm) | 1.50 ±0.30 |
| A (mm) | 0.85 ±0.30 |



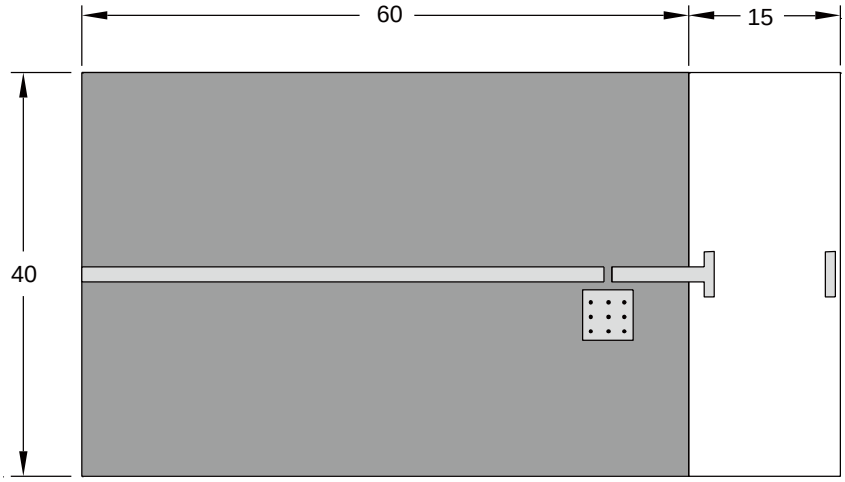

YNH00128

| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

**Description**: 1204 433MHz Chip Antenna

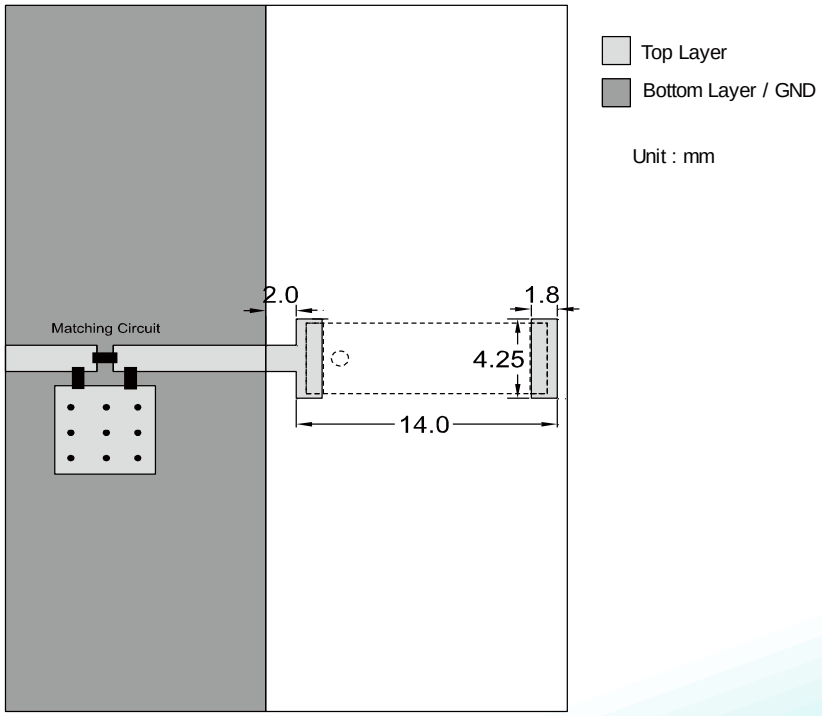
**PART NUMBER: ANT1204LL20R0433A**

## REFERENCE DESIGN OF EVALUATION BOARD




Unit : mm

Outlook and dimension of evaluation board



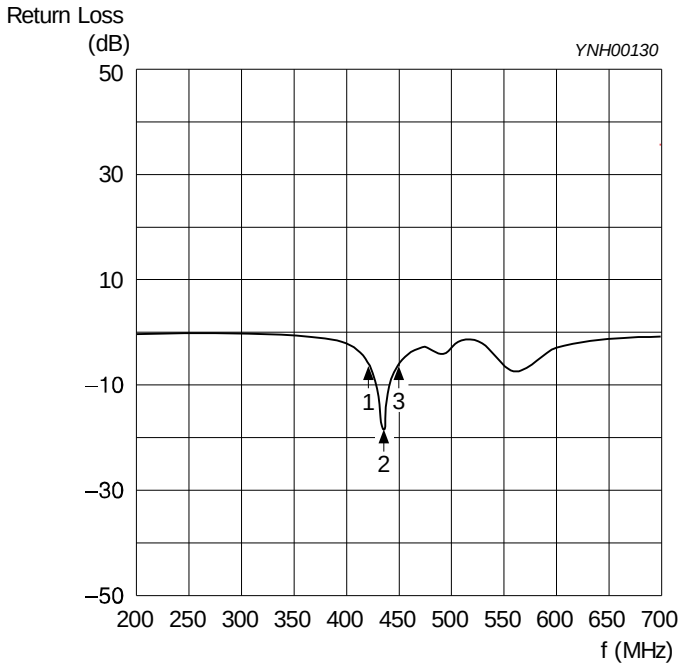

Details of soldering Pad

*YNH00129-1*

**Description**: 1204 433MHz Chip Antenna

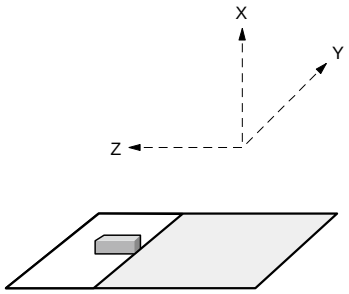
**PART NUMBER: ANT1204LL20R0433A**

## ELECTRICAL PERFORMANCES

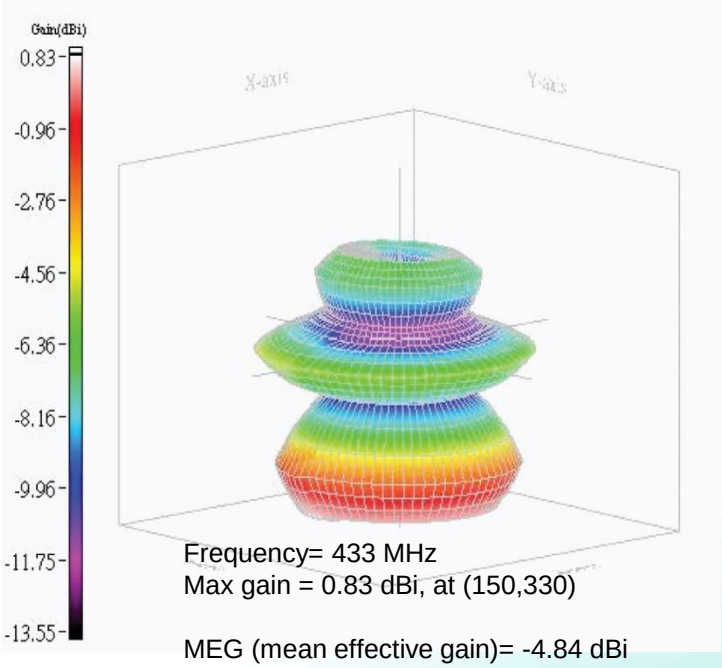



Marker data
420MHz, -6.5dB
433MHz, -17dB

Return loss




Evaluation board and XYZ direction




Frequency= 433 MHz
Max gain = 0.83 dBi, at (150,330)

MEG (mean effective gain)= -4.84 dBi
Directivity (dB) = 6.41
Efficiency = -5.57dB, 27.72 %

Radiation pattern

**Description**: 1204 433MHz Chip Antenna

**PART NUMBER: ANT1204LL20R0433A**

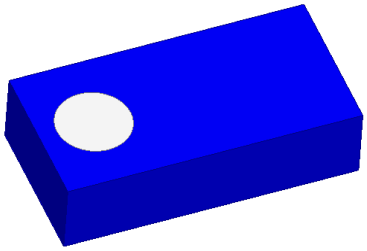
## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 14, 2020 | - New issue |
| Version 2 | Apr. 29, 2021 | - Modified the Maximum Power, 1W to 2W. |

TECHNICAL DATA SHEET

# **Description**: 1608 2.4G&5G Chip Antenna

## PART NUMBER: ANT1608LL14R2455A



## Features:

- Size : 1.6x0.8x0.4 mm
- Omni-directional Radiation
- Dual-band design
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4&5GHz WiFi device
- ISM band equipment

All dimensions are in mm / inches


For more information:

Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
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Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 1608 2.4G&5G Chip Antenna

## PART NUMBER: ANT1608LL14R2455A

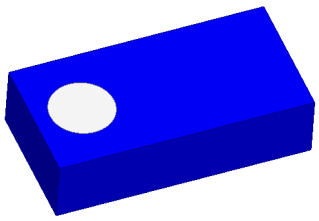
## ELECTRICAL SPECIFICATIONS

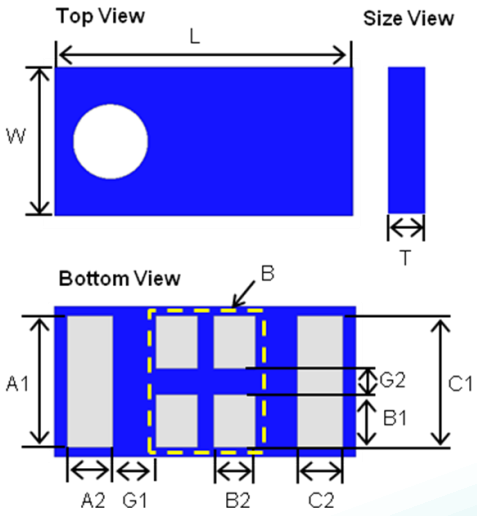
| | |
|---|---|
| **Working Frequency** | 2.45G / 5.5G Hz |
| **Bandwidth** | 120 / 900M Hz(Typ.) |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 3.11 / 3.43 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ag (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 1.60 ±0.15 |
| W (mm) | 0.80 ±0.15 |
| T (mm) | 0.40 ±0.15 |
| A1(mm) | 0.70 ±0.15 |
| A2(mm) | 0.25 ±0.15 |
| B1(mm) | 0.30 ±0.15 |
| B2(mm) | 0.25 ±0.15 |
| C1(mm) | 0.70 ±0.15 |
| C2(mm) | 0.25 ±0.15 |
| G1(mm) | 0.20 ±0.05 |
| G2(mm) | 0.10 ±0.05 |



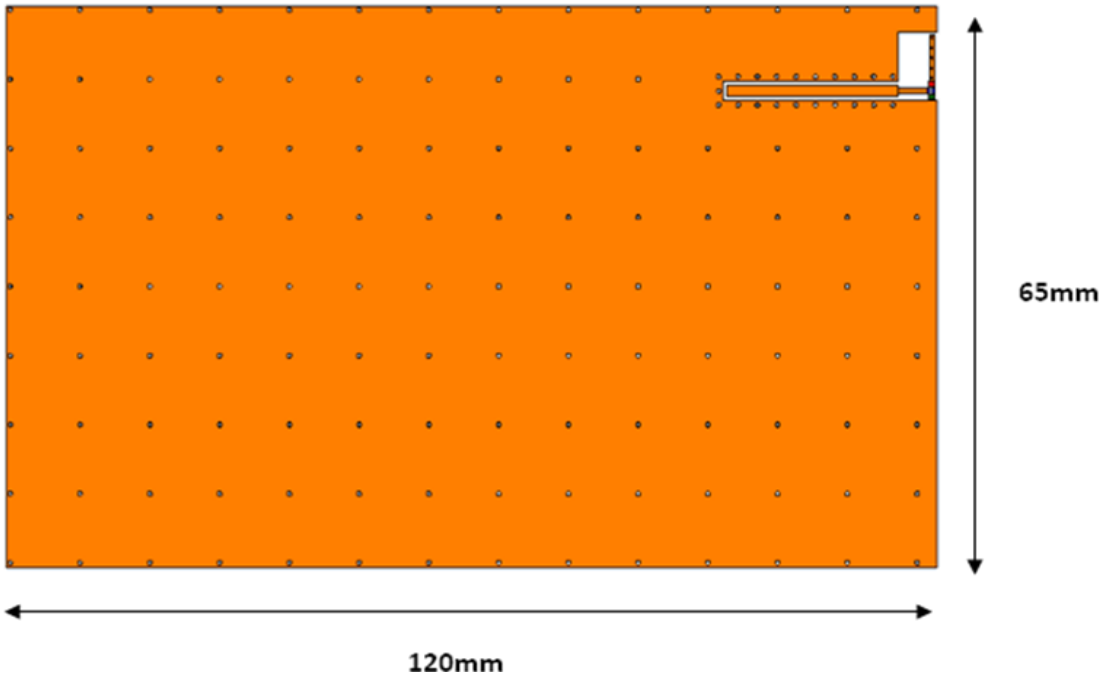



| Terminal name | Function |
|---|---|
| B | Feeding Point |
| A1,A2 | Soldering Point for 2.4GHz |
| C1,C2 | Soldering Point for 5GHz |

**Description**: 1608 2.4G&5G Chip Antenna

**PART NUMBER: ANT1608LL14R2455A**

## REFERENCE DESIGN OF EVALUATION BOARD

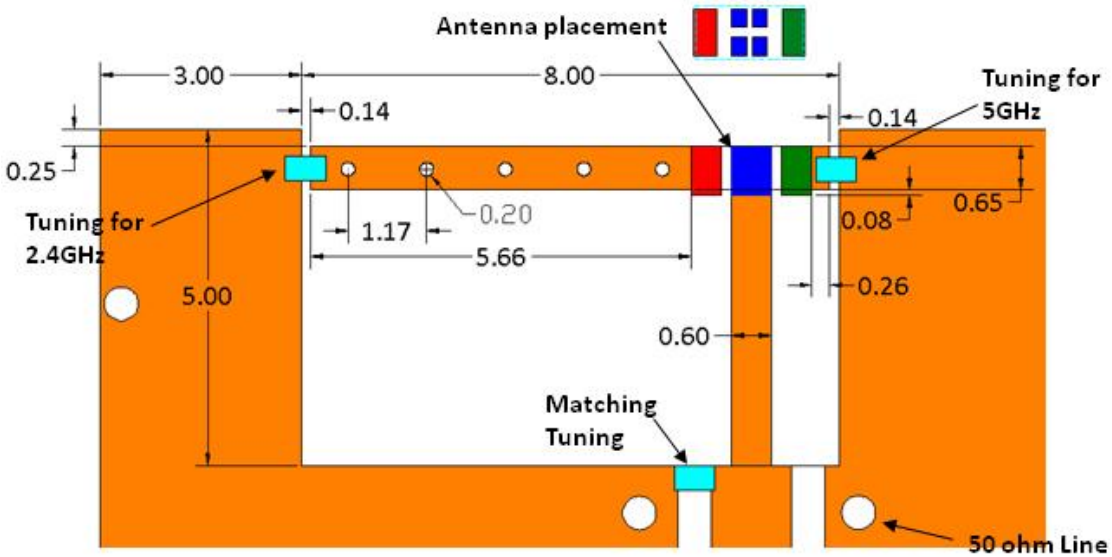



Outlook and dimension of evaluation board

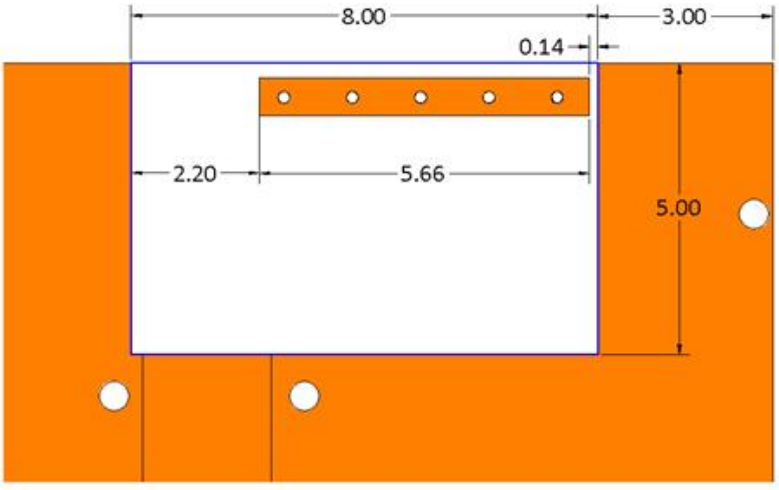
**Description**: 1608 2.4G&5G Chip Antenna

**PART NUMBER: ANT1608LL14R2455A**

## REFERENCE DESIGN OF EVALUATION BOARD




Top Layer




Unit : mm

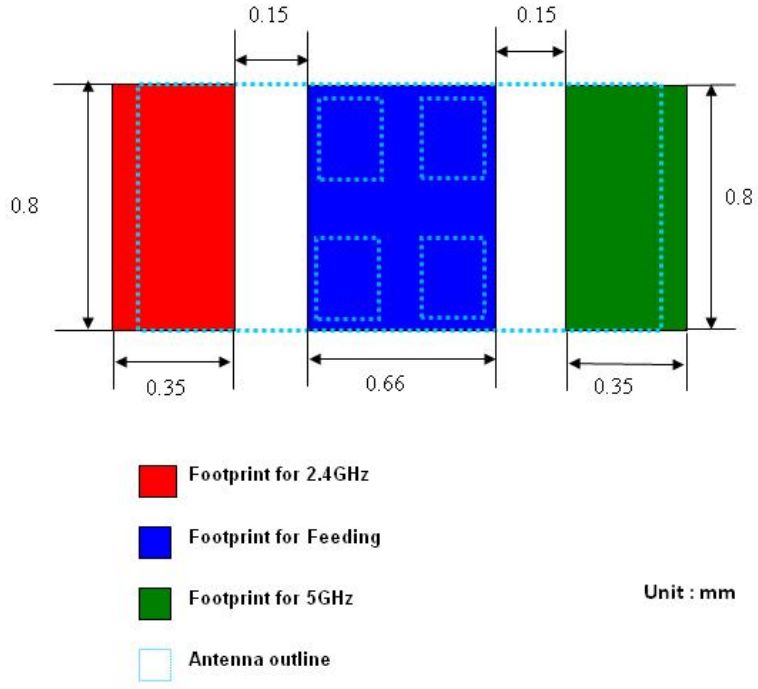
Bottom Layer

Details of soldering Pad

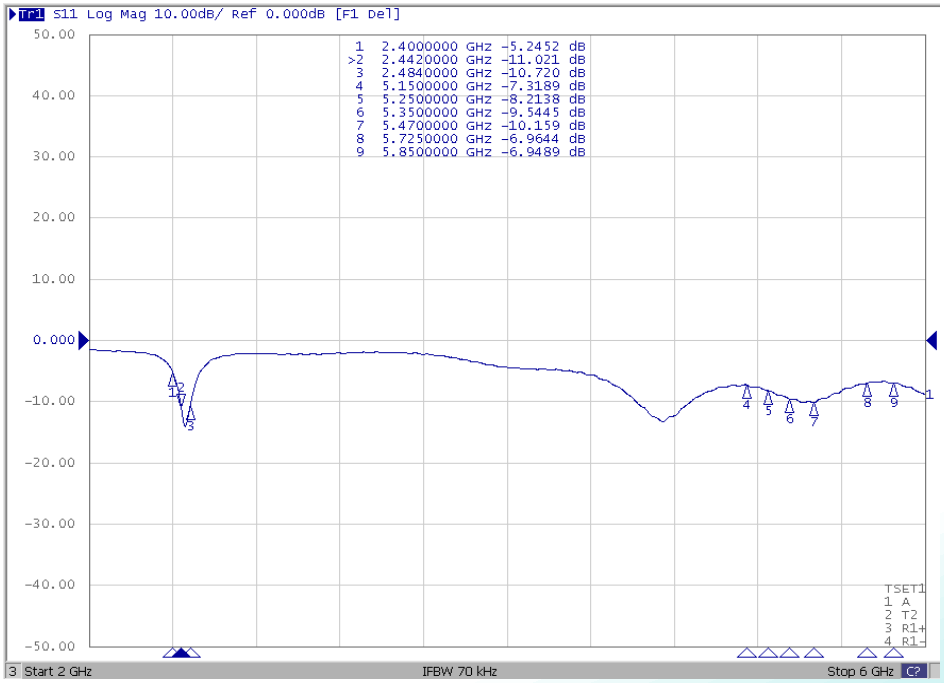
**Description**: 1608 2.4G&5G Chip Antenna

**PART NUMBER: ANT1608LL14R2455A**

## REFERENCE DESIGN OF EVALUATION BOARD




Footprint



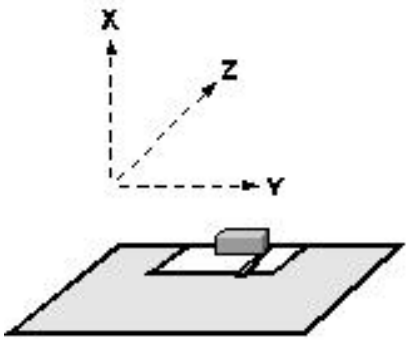

Return loss

**Description**: 1608 2.4G&5G Chip Antenna

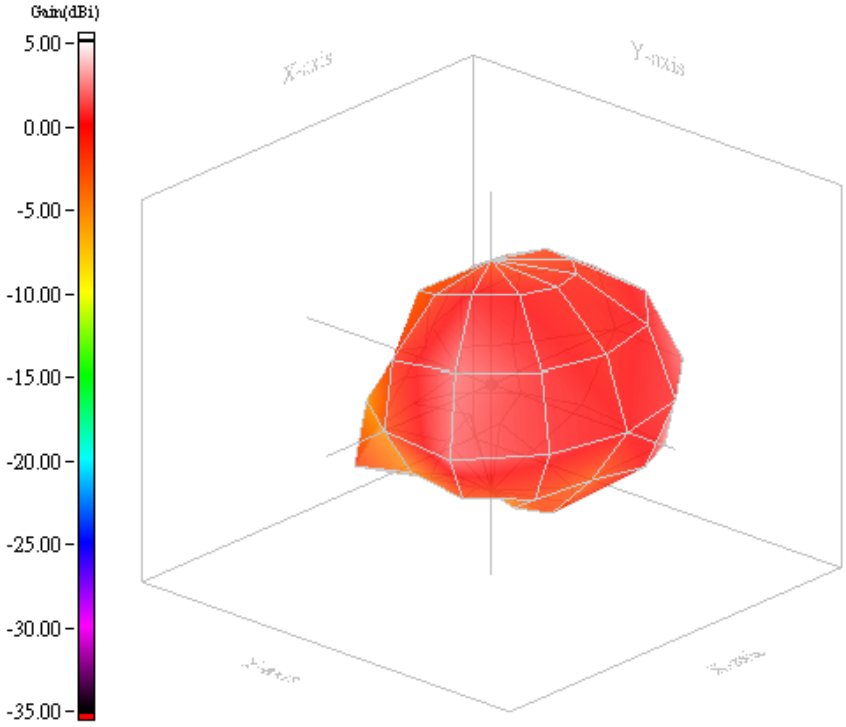
**PART NUMBER: ANT1608LL14R2455A**

## ELECTRICAL PERFORMANCES

| | |
|---|---|
| Model name: 1608 | Test mode: DB |
| Test frequency / Polarization: 2450.00 MHz / Vector | Test date: 2014/11/6 |




Evaluation board and XYZ direction




Max gain= 3.11dBi, at (120, 150)
MEG(mean effective gain)= -2.69dBi
Directivity(dB)= 5.31
Efficiency= -2.20dB, 60.28%

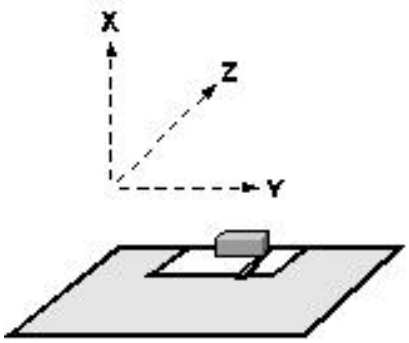
Radiation pattern

**Description**: 1608 2.4G&5G Chip Antenna

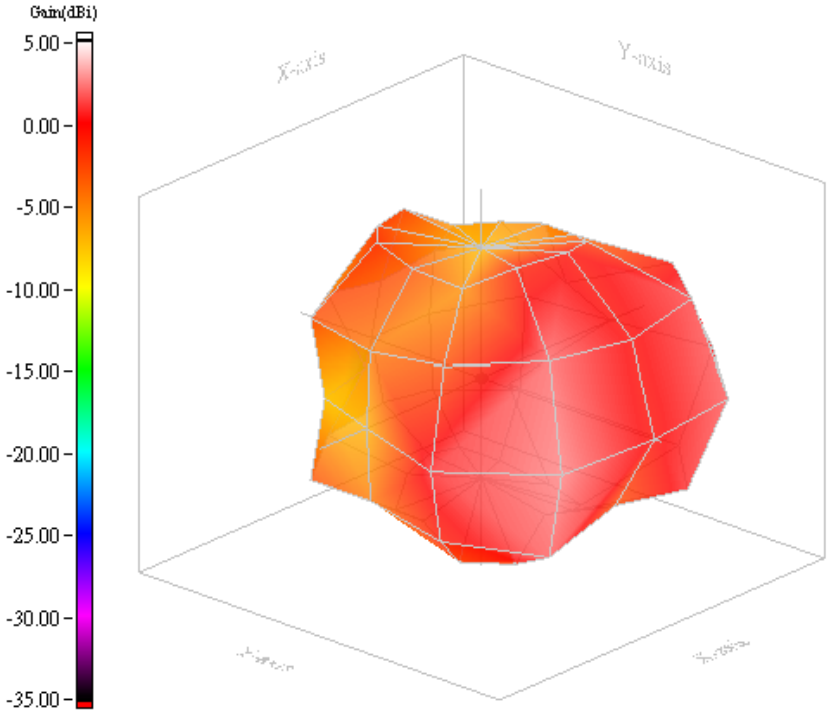
**PART NUMBER: ANT1608LL14R2455A**

## ELECTRICAL PERFORMANCES

| Model name | Test mode |
|---|---|
| 1608 | DB |
| **Test frequency / Polarization** | **Test date** |
| 5470.00 MHz / Vector | 2014/11/6 |




Evaluation board and XYZ direction




Max gain= 2.50dBi, at (90, 60)
MEG (mean effective gain)= -3.79dBi
Directivity(dB)= 5.07
Efficiency= -2.57dB, 55.28%

Radiation pattern

**Description**: 1608 2.4G&5G Chip Antenna

**PART NUMBER: ANT1608LL14R2455A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 13, 2020 | - New issue |

Pulse | LARSEN Antennas
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TECHNICAL DATA SHEET

# Description: 2012 2.4-2.5GHz Chip Antenna

## PART NUMBER: ANT2012LL13R2400A

## Features:

- Size : 2.00x1.25x1.00 mm
- Omni-directional radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4 GHz WiFi device
- Bluetooth gadget
- Zigbee device
- ISM band equipment

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 2.45 GHz |
| **Bandwidth** | 85 MHz(Typ.) |
| **Return Loss** | 6dBi min. |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 2.72 dBi (Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ag (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board



Pulse Worldwide Headquarters
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San Diego, CA 92128
USA
Tel:1-858-674-8100

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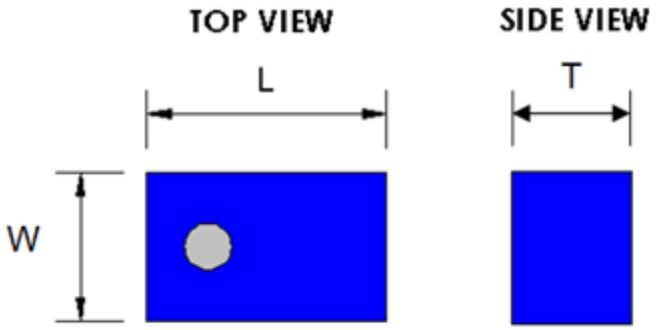
Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

**Description**: 2012 2.4-2.5GHz Chip Antenna

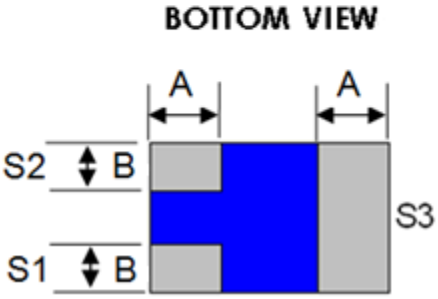
**PART NUMBER: ANT2012LL13R2400A**

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 2.00 ±0.20 |
| W (mm) | 1.25 ±0.20 |
| T (mm) | 1.00 ±0.20 |
| A (mm) | 0.60 ±0.10 |
| B (mm) | 0.40 ±0.10 |



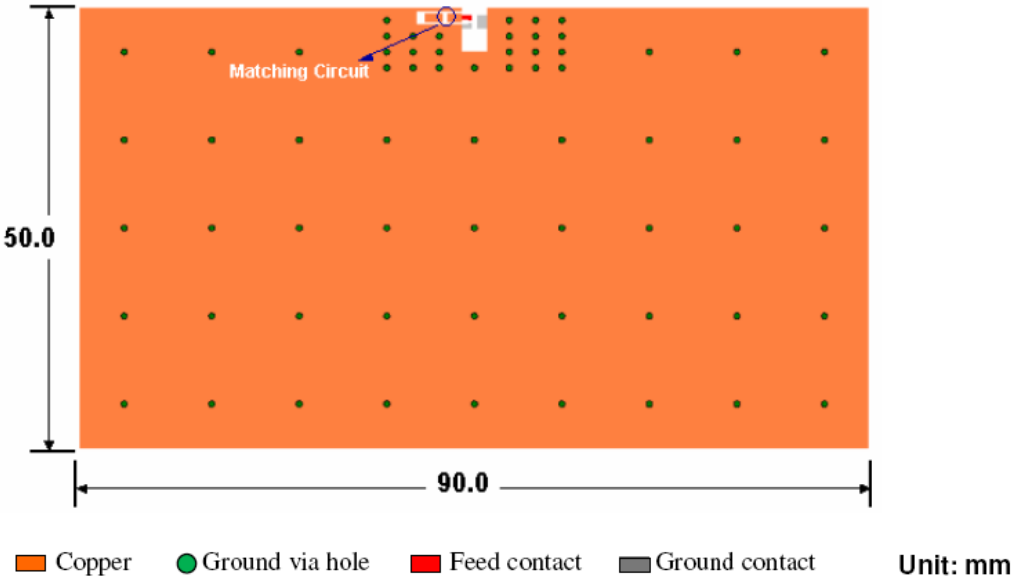

| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | GND |
| S3 | GND |



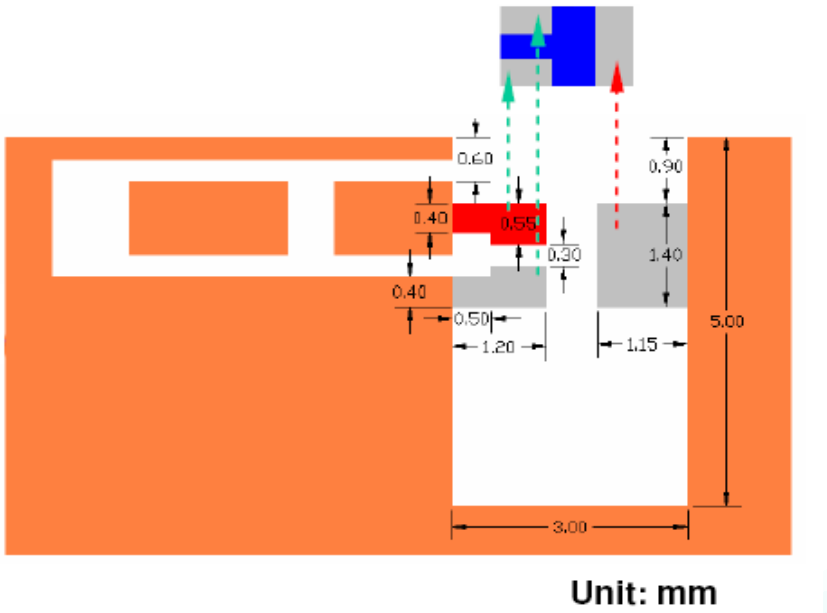
**Description**: 2012 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT2012LL13R2400A**

## REFERENCE DESIGN OF EVALUATION BOARD




Outlook and dimension of evaluation board

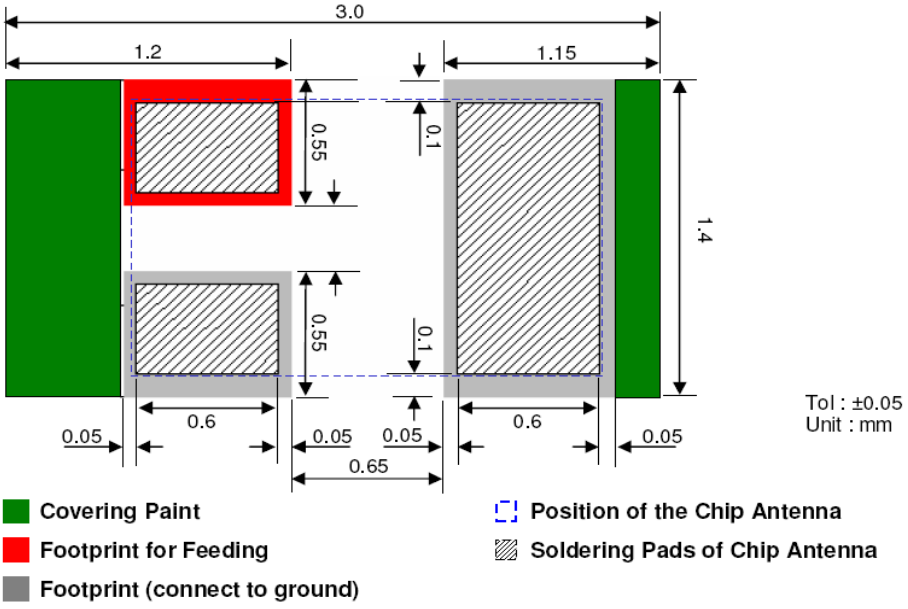



Dimension of footprint

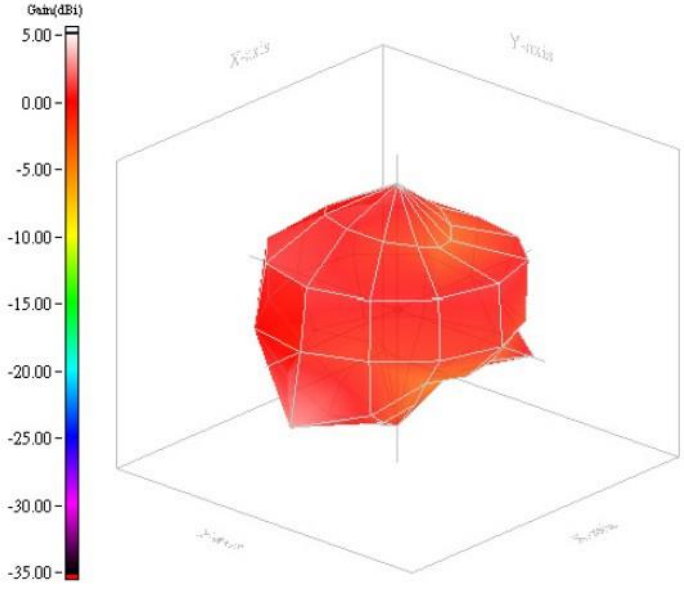
**Description**: 2012 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT2012LL13R2400A**

## REFERENCE DESIGN OF EVALUATION BOARD




Details of soldering pad



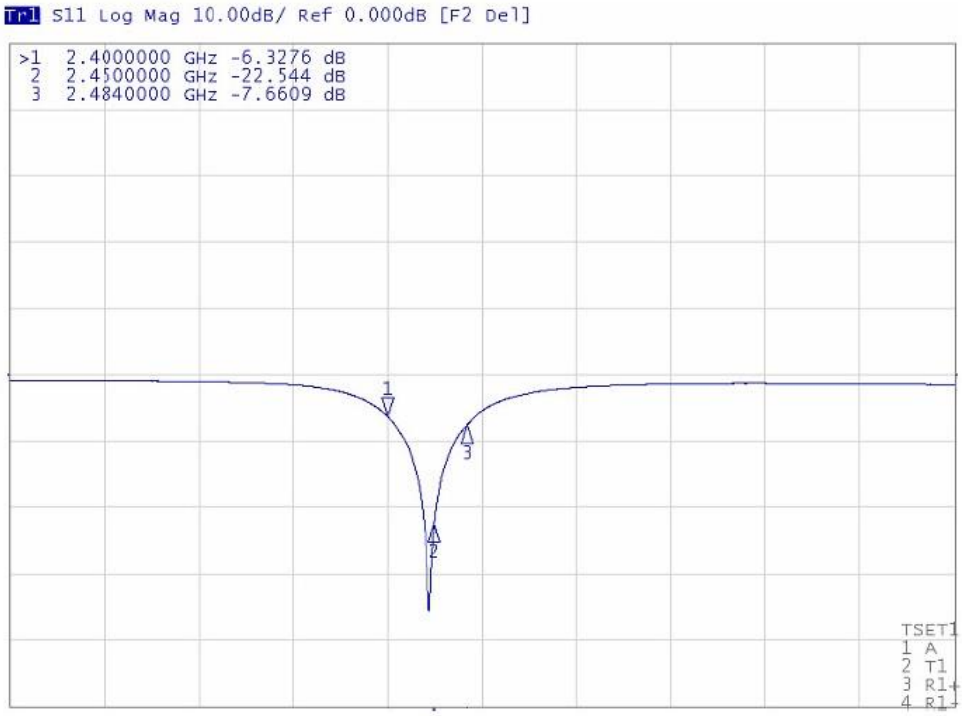

Frequency= 2.45 GHz
Max gain = 2.72dBi, at (120,0)
MEG (mean effective gain)= -0.69 dBi
Directivity (dB) = 3.88
Efficiency = -1.16dB, 76.56%

Radiation pattern

**Description**: 2012 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT2012LL13R2400A**

## ELECTRICAL PERFORMANCES




Maker data
1. 2.40GHz, -6.3276dB
2. 2.45GHz, -22.544dB
3. 2.48GHz, -7.6609dB

Return loss

**Description**: 2012 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT2012LL13R2400A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Nov. 19, 2020 | - New issue |
| Version 2 | April. 6, 2021 | - Modified MECHANICAL DRAWING: S1 and S2 label |

Pulse A YAGEO Company | LARSEN Antennas

TECHNICAL DATA SHEET

# Description: 3216 2.4-2.5GHz Chip Antenna

## PART NUMBER: ANT3216A063R2400A

## Features:

- Size : 3.05x1.55x0.55 mm
- Omni-directional Radiation
- Tape & reel automaic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4GHz WiFi device
- Bluetooth gadget
- Zigbee device
- ISM band equipment

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 2.45 GHz |
| **Bandwidth** | 200 MHz(Typ.) |
| **Return Loss** | 6.5 dB(Min.) |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 1.69 dBi (Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
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Vancouver, WA 98683
USA
Tel: 1-360-944-7551

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Zeppelinstrasse 15
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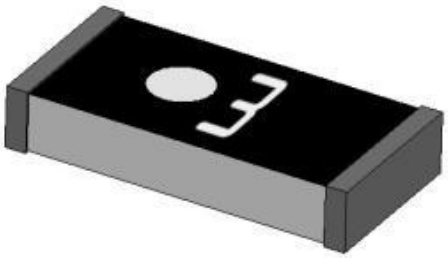
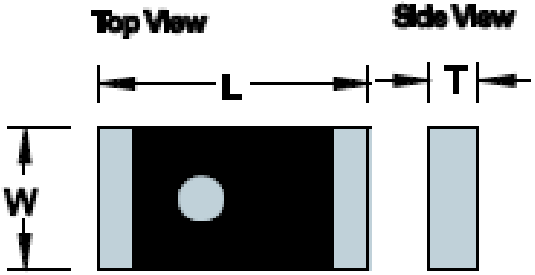
Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

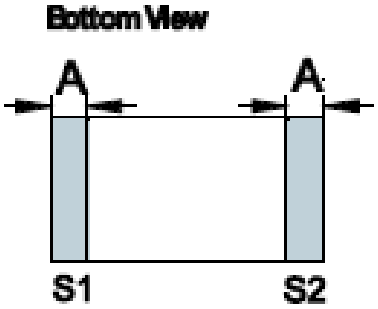
**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2400A**

## MECHANICAL DRAWING






| | Dimension |
|---|---|
| L (mm) | 3.05 ±0.10 |
| W (mm) | 1.55 ±0.10 |
| T (mm) | 0.55 ±0.10 |
| A (mm) | 0.40 ±0.10 |

| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | GND |

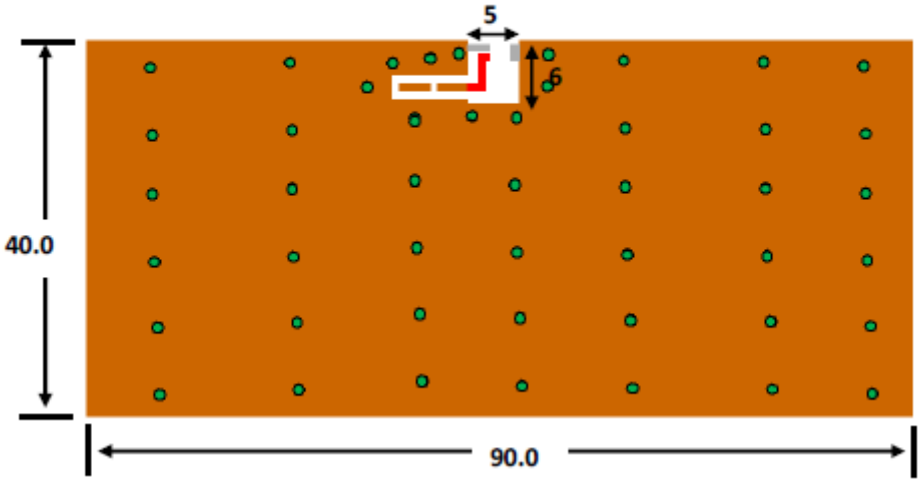
**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2400A**

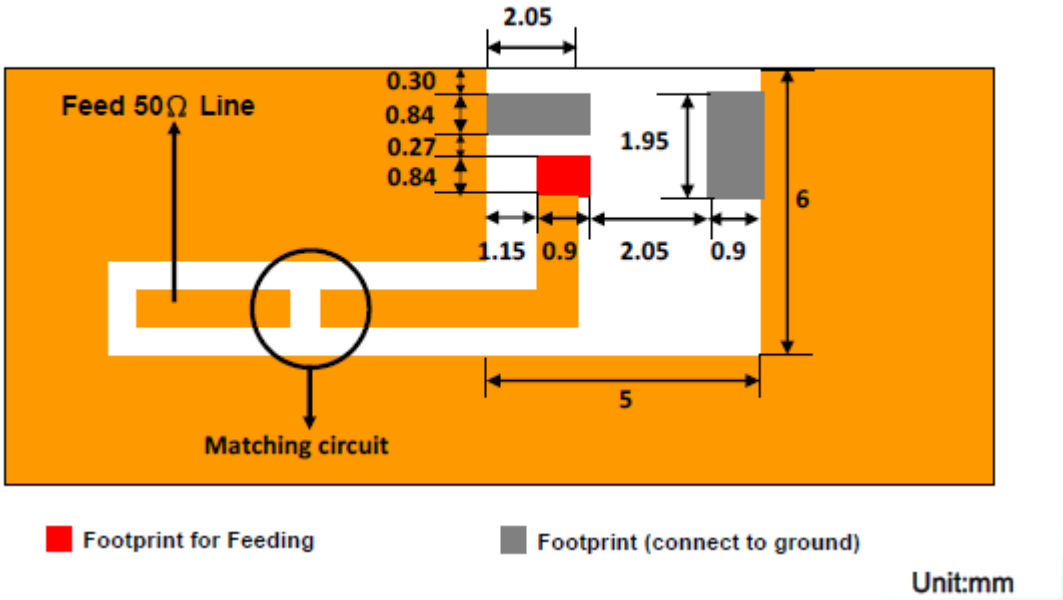
## LAYOUT OF EVALUATION BOARD

■ Clearance Definition:

□ ( Size = 6.0 * 5.0 mm )




■ Soldering Pads Dimension and Footprint :

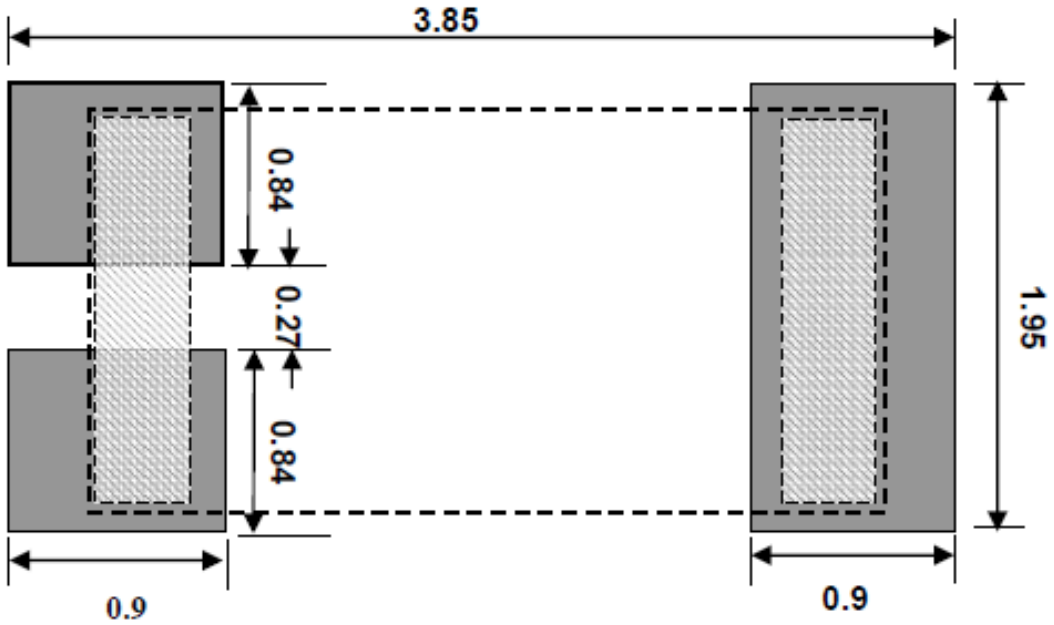



Outlook and dimension of evaluation board

**Description**: 3216 2.4-2.5GHz Chip Antenna

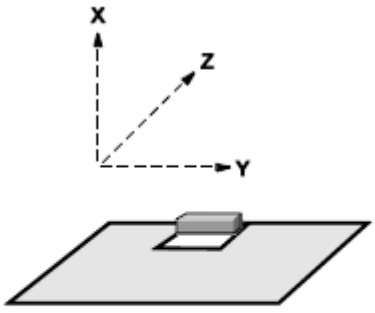
**PART NUMBER: ANT3216A063R2400A**

## LAYOUT OF EVALUATION BOARD

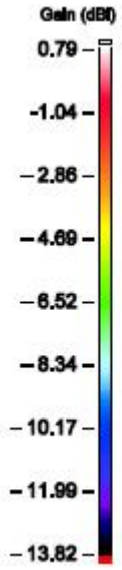


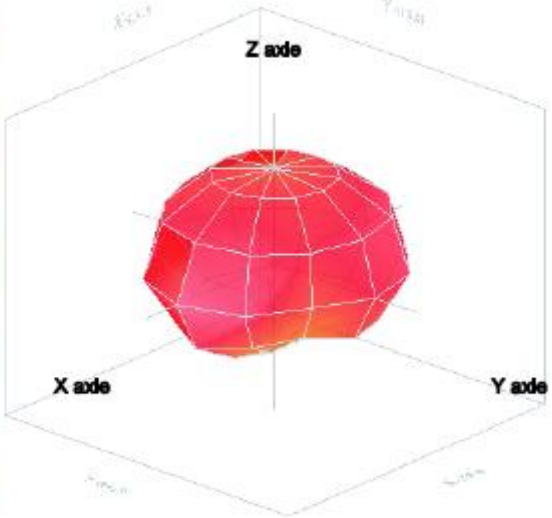

Tol : ±0.1
Unit : mm

Dimension of footprint




Evaluation board and XYZ direction



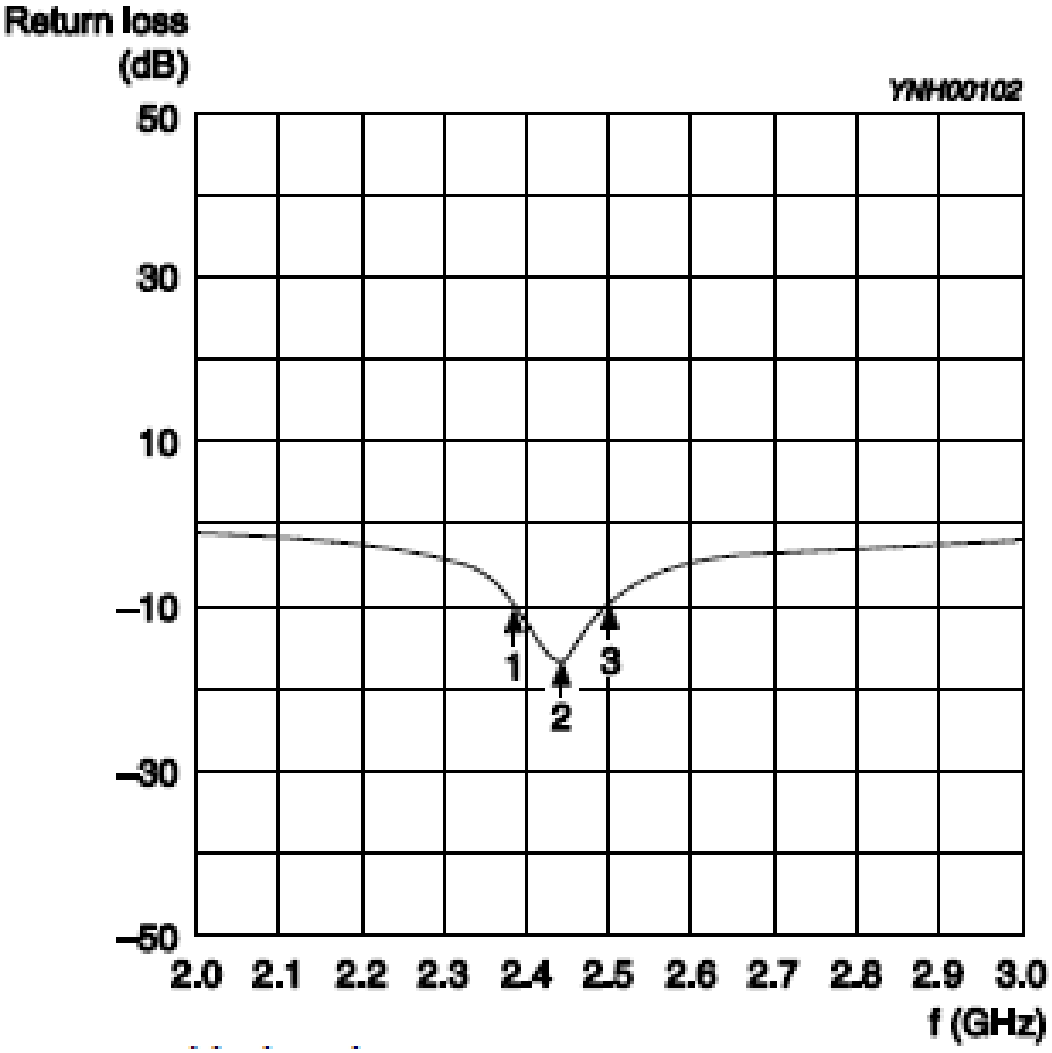

Radiation pattern

Frequency= 2.45 GHz
Max gain = 1.69 dBi
MEG (mean effective gain)= -1.00 dBi
Directivity (dB) = 2.18
Efficiency = - 0.49dB, 89.33%

**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2400A**

## ELECTRICAL PERFORMANCES




Maker data
1. 2.39GHz, -10.00dB
2. 2.45GHz, -16.48dB
3. 2.50GHz, -10.00dB

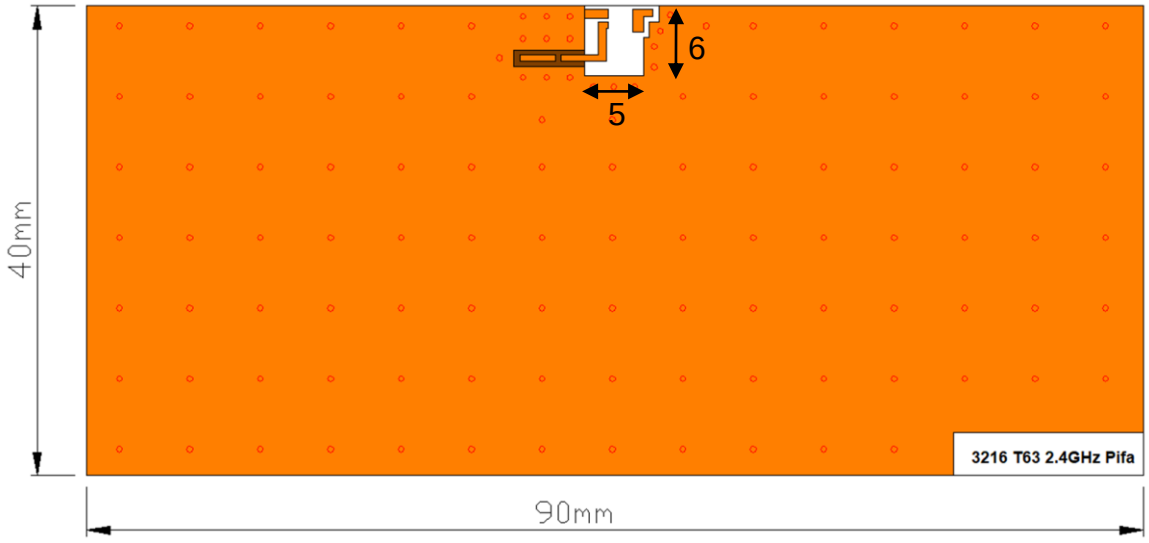
Return loss

**Description**: 3216 2.4-2.5GHz Chip Antenna

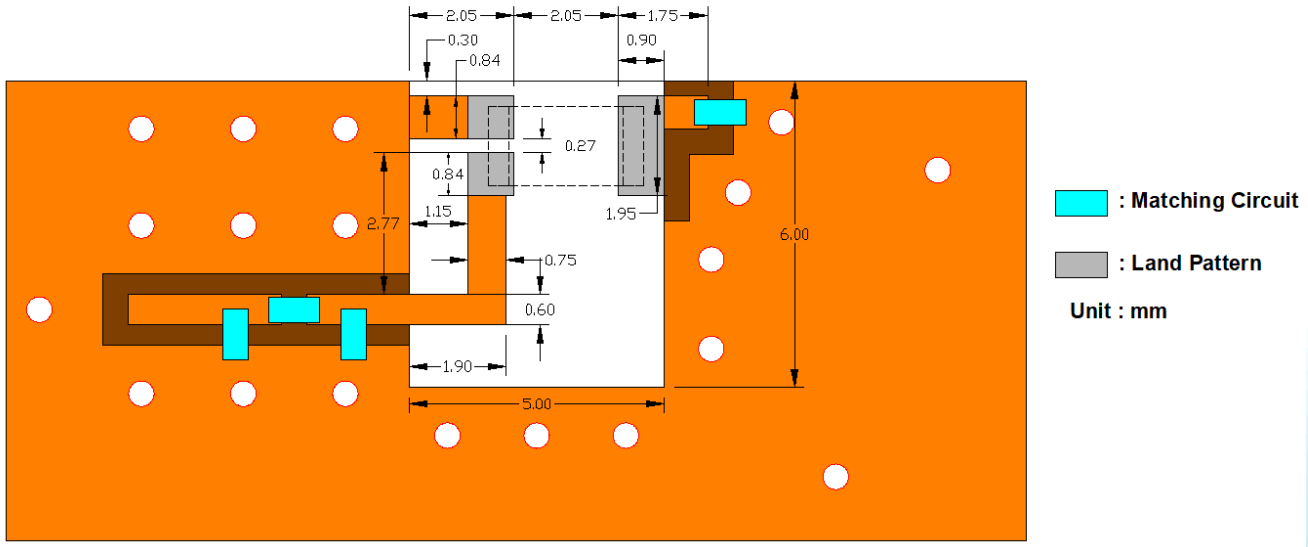
**PART NUMBER: ANT3216A063R2400A**

## REFERENCE DESIGN OF MATCHING CIRCUIT

- Clearance Definition :
  Size = 5.0 * 6.0 mm




- Soldering Pads Dimension Footprint :




Outlook and dimension of matching circuit

**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2400A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Nov. 20, 2020 | - New issue. |
| Version 2 | Aug. 11, 2021 | - Added reference design of matching circuit. |

Pulse A YAGEO Company | LARSEN Antennas

**TECHNICAL DATA SHEET**

# Description: 3216 2.4-2.5GHz Chip Antenna

## PART NUMBER: ANT3216A063R2455A

## Features:

- Size : 3.05x1.55x0.55 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Dual-band design
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4&5GHz WiFi device
- ISM band equipment

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 2.45G / 5.5 GHz |
| **Bandwidth** | 90 / 700 MHz(Typ.) |
| **Return Loss** | 10 dBi min. |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 1.59 / 2.23 dBi (Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

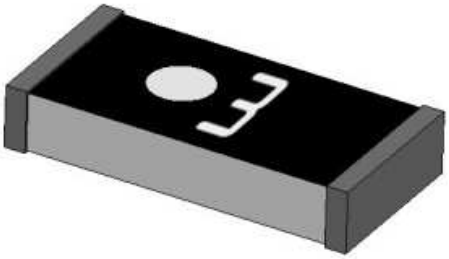
Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

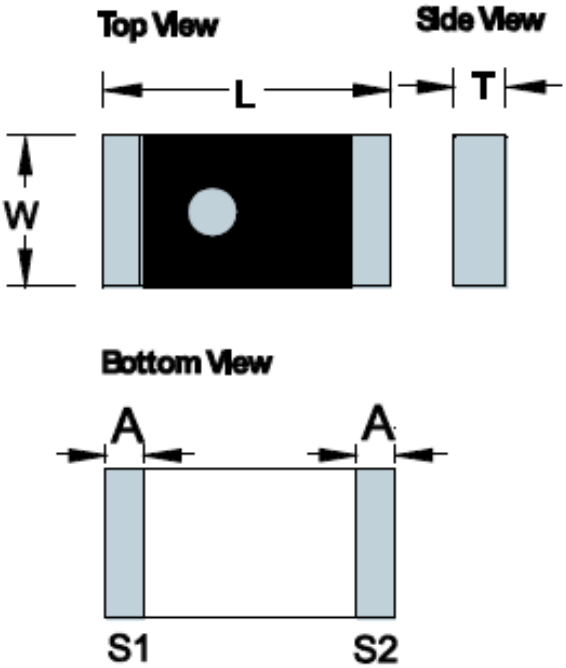
Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2455A**

## MECHANICAL DRAWING





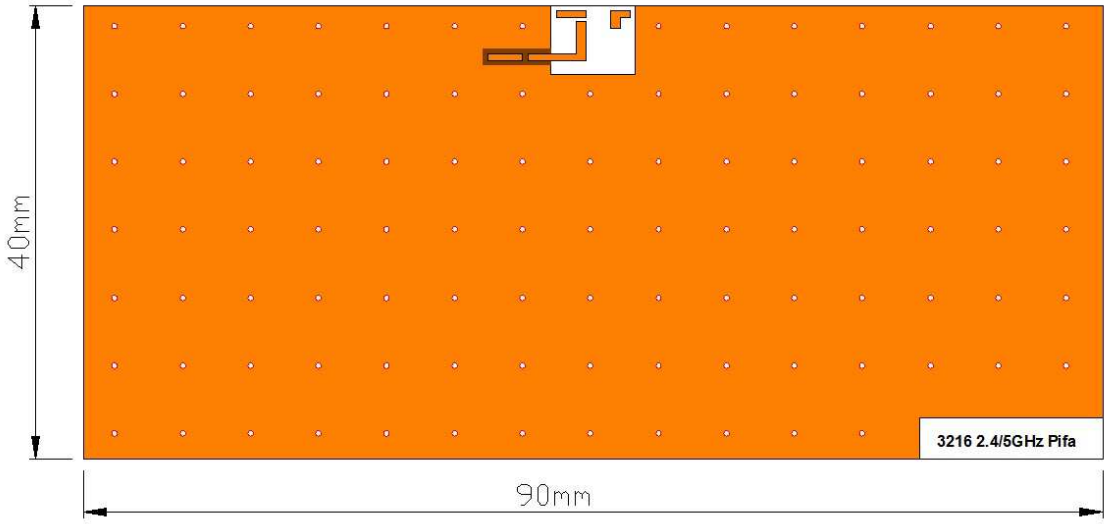

| | Dimension |
|---|---|
| L (mm) | 3.05 ±0.10 |
| W (mm) | 1.55 ±0.10 |
| T (mm) | 0.55 ±0.10 |
| A (mm) | 0.40 ±0.10 |

| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | GND |

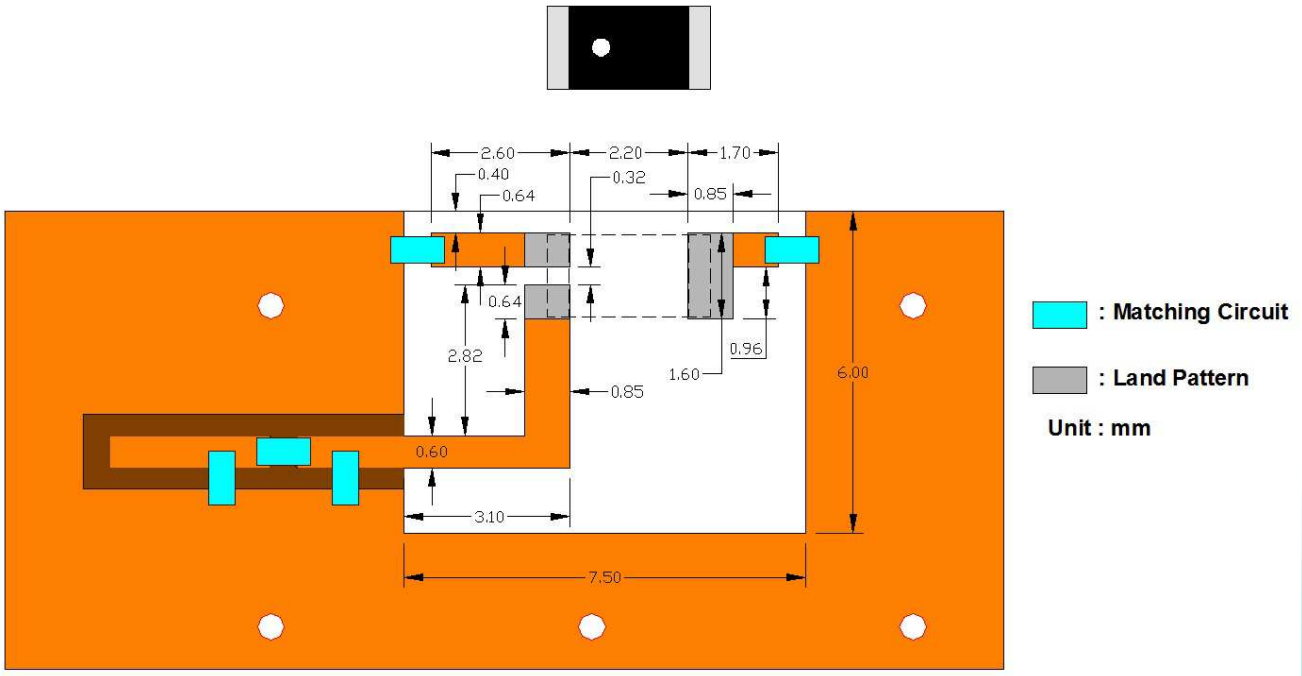
**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2455A**

## REFERENCE DESIGN OF EVALUATION BOARD




Outlook and dimension of evaluation board

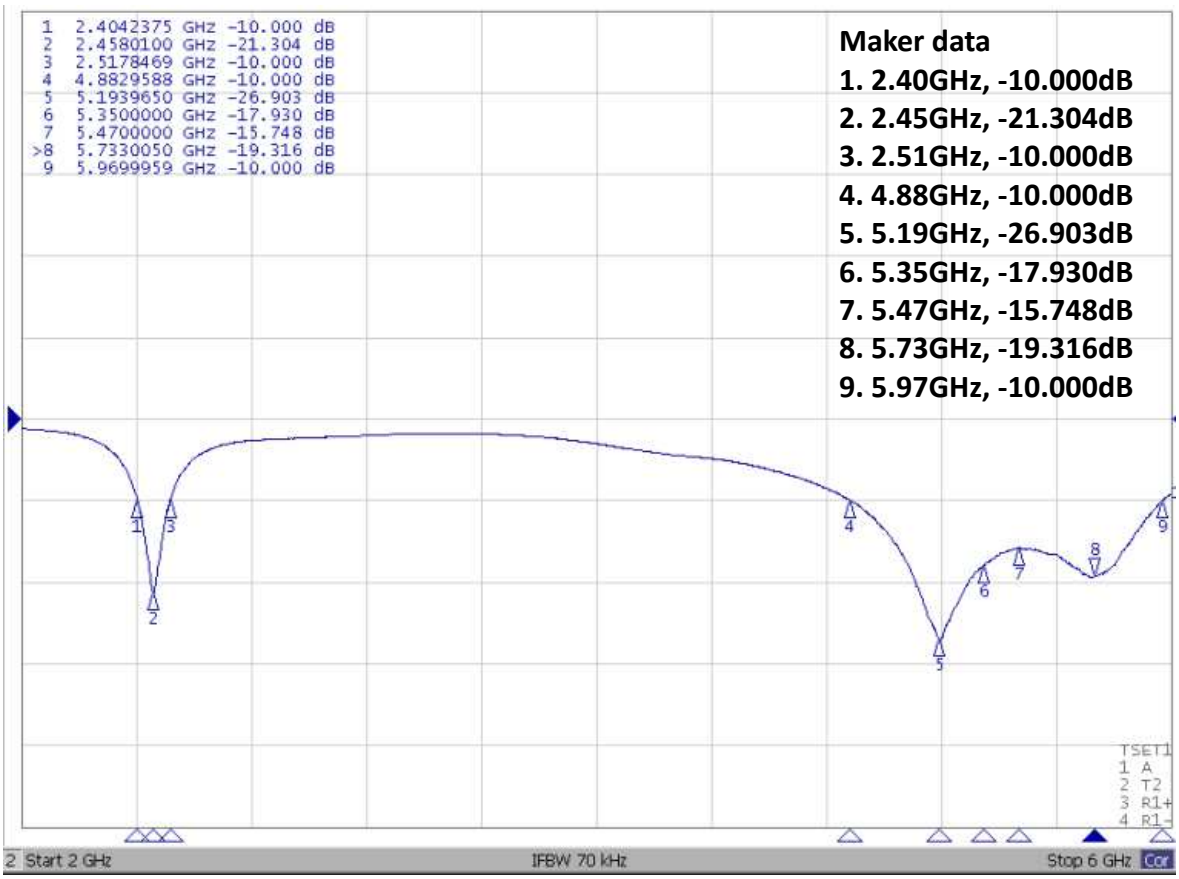



Dimension of footprint

**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2455A**

## ELECTRICAL PERFORMANCES

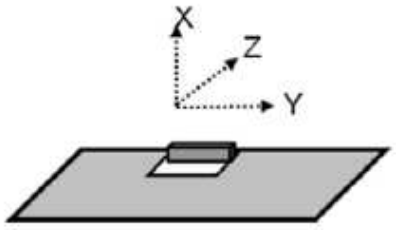



Return loss

**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2455A**

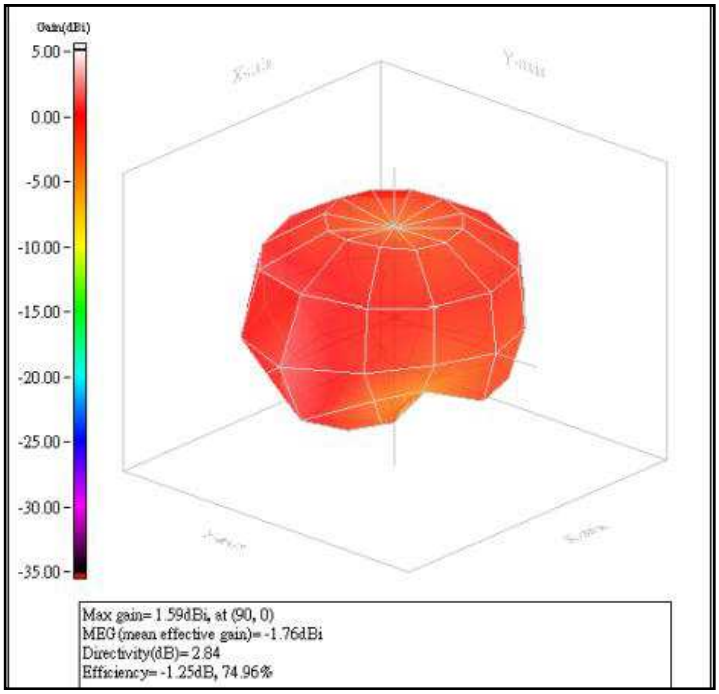
## REFERENCE DESIGN OF EVALUATION BOARD



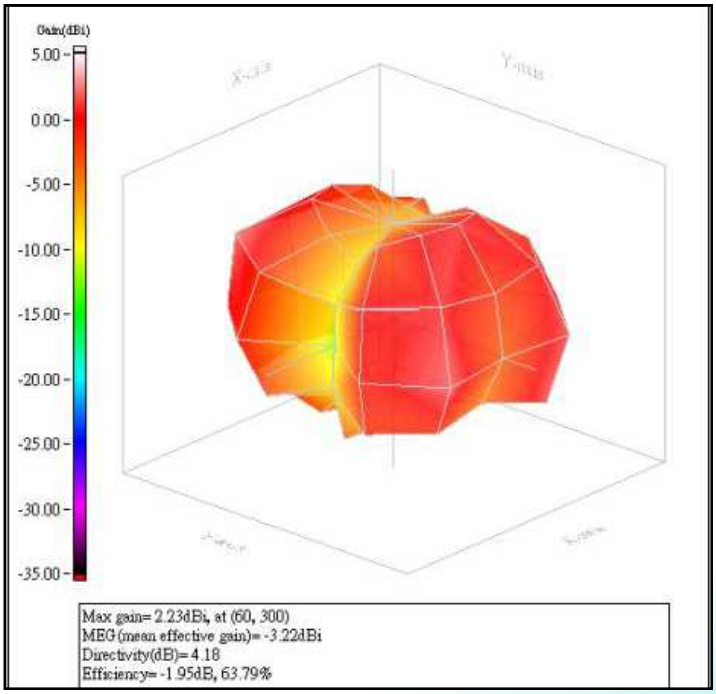

Evaluation board and XYZ direction

Details of soldering pad

***2450MHz***




***5500MHz***




Radiation pattern

**Description**: 3216 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT3216A063R2455A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Nov. 19, 2020 | - New issue |

Pulse A YAGEO Company | LARSEN Antennas

TECHNICAL DATA SHEET

# **Description**: 3216 2.4G Chip Antenna

## PART NUMBER: ANT3216LL00R2400A

## Features:

- Size : 3.2x1.6x1.2 mm
- Working Frequency : 2.4~2.5GHz
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4GHz WiFi device
- Bluetooth gadget
- Zigbee device
- ISM band equipment



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 3216 2.4G Chip Antenna

## PART NUMBER: ANT3216LL00R2400A

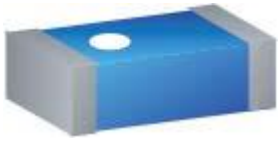
## ELECTRICAL SPECIFICATIONS

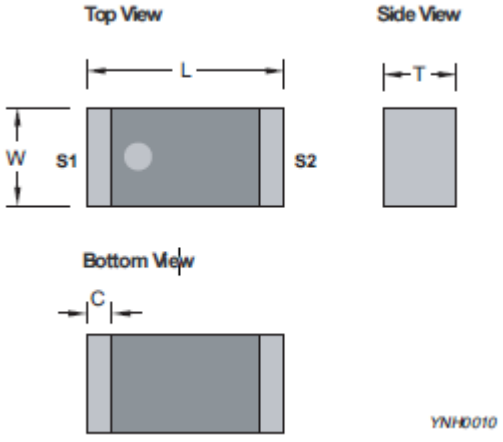
| | |
|---|---|
| **Working Frequency** | 2.4-2.5 GHz |
| **Bandwidth** | 160 MHz(Typ.) |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 5.05 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 3.2 ±0.15 |
| W (mm) | 1.6 ±0.15 |
| T (mm) | 1.2 ±0.15 |
| C (mm) | 0.4 ±0.20 |



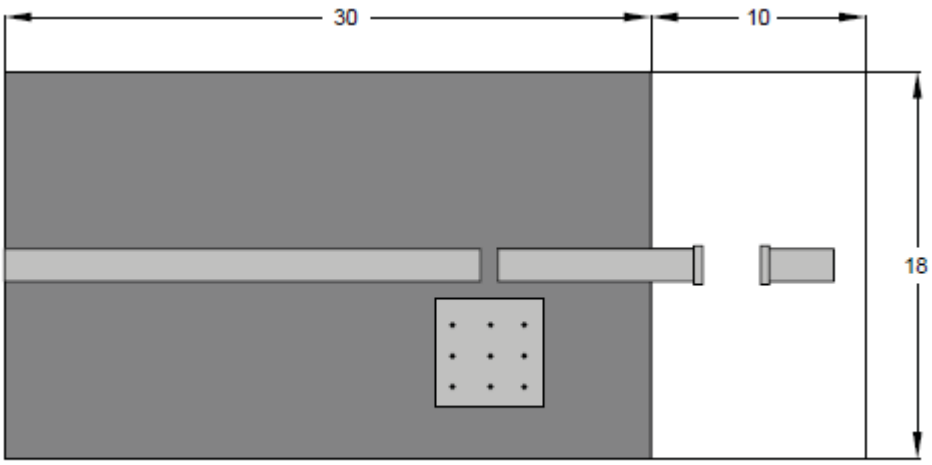



| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

**Description**: 3216 2.4G Chip Antenna

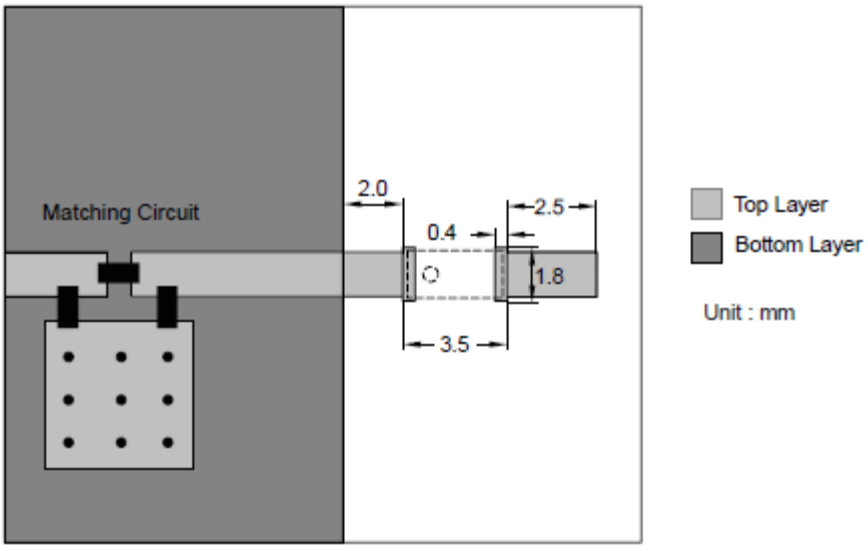
**PART NUMBER: ANT3216LL00R2400A**

## REFERENCE DESIGN OF EVALUATION BOARD




Unit : mm

Outlook and dimension of evaluation board

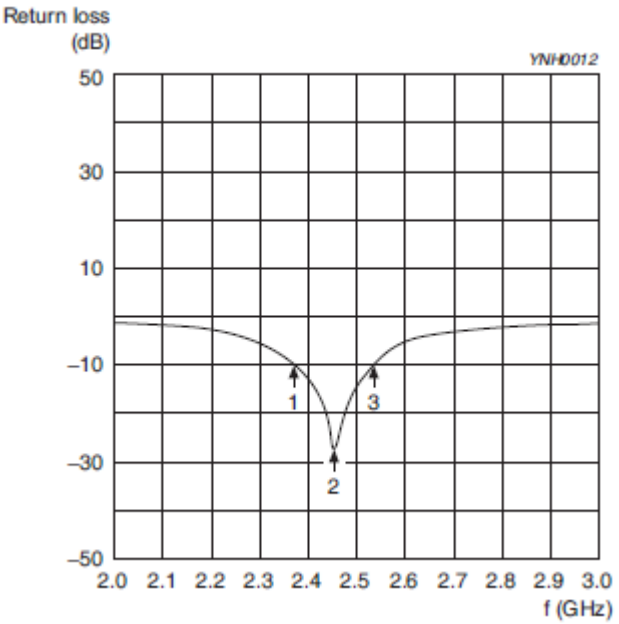



Details of soldering Pad

**Description**: 3216 2.4G Chip Antenna

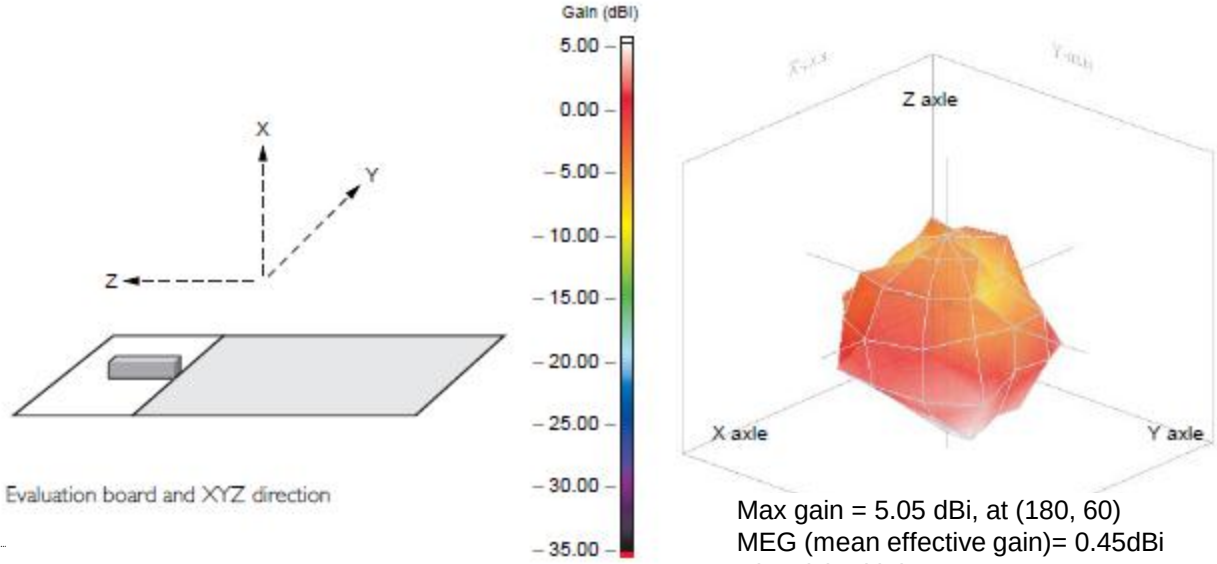
**PART NUMBER: ANT3216LL00R2400A**

## ELECTRICAL PERFORMANCES




Marker data
1. 2.37GHz, -10dB
2. 2.45GHz, -27.3dB
3. 2.53GHz, -10dB

Return loss




Max gain = 5.05 dBi, at (180, 60)
MEG (mean effective gain)= 0.45dBi
Directivity (dB) = 7.15
Efficiency = -1.50dB, 70.74%

Radiation pattern

**Description**: 3216 2.4G Chip Antenna

**PART NUMBER: ANT3216LL00R2400A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 13, 2020 | - New issue |

Pulse A YAGEO Company | LARSEN Antennas

TECHNICAL DATA SHEET

# **Description**: 3216 UWB 6.5-8GHz Chip Antenna

## PART NUMBER: ANT3216LL00R6580A

## Features:

- Size : 3.2x1.6x1.2 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart tag
- Indoor navigation
- Access management
- RTLS B2B
- UWB group Channel 5 (6.5GHz) to Channel 9 (8GHz)

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 6200 ~ 8200MHz |
| **Bandwidth** | 2000 MHz |
| **Return Loss** | 10 dB (Min.) |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 2 dBi (Min.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 30 ~ 85 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board



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San Diego, CA 92128
USA
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99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
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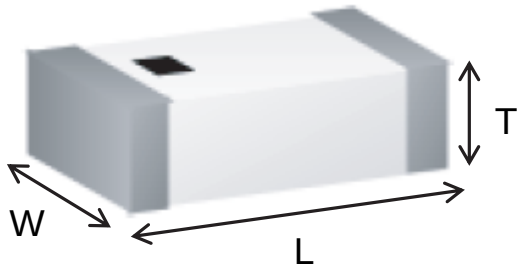
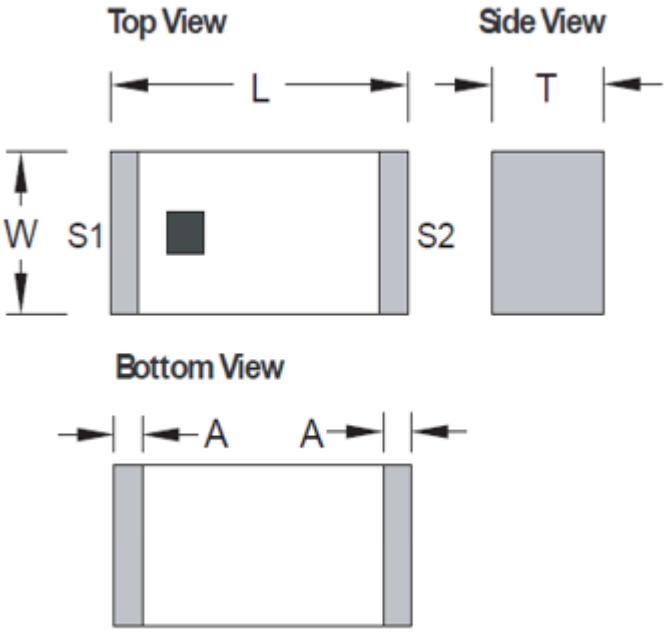
Tel: 86 512 6807 9998

# Description: 3216 UWB 6.5-8GHz Chip Antenna

## PART NUMBER: ANT3216LL00R6580A

## MECHANICAL DRAWING




| | Dimension |
|---|---|
| L (mm) | 3.20 ±0.20 |
| W (mm) | 1.60 ±0.15 |
| T (mm) | 1.20 ±0.15 |
| A (mm) | 0.40 ±0.25 |

| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |



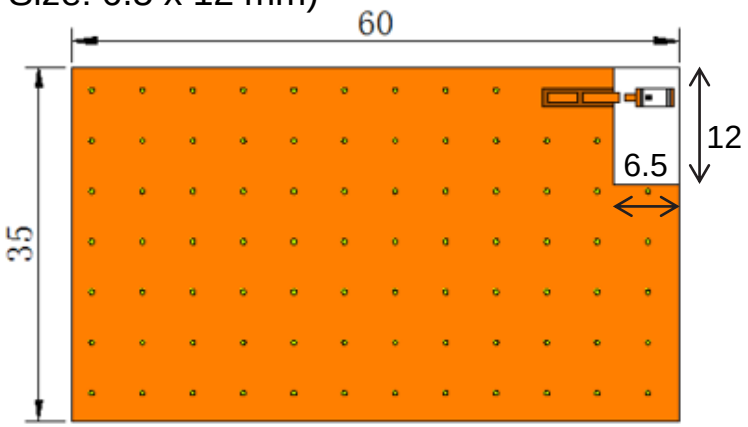
RoHS COMPLIANT

**Description**: 3216 UWB 6.5-8GHz Chip Antenna

**PART NUMBER: ANT3216LL00R6580A**

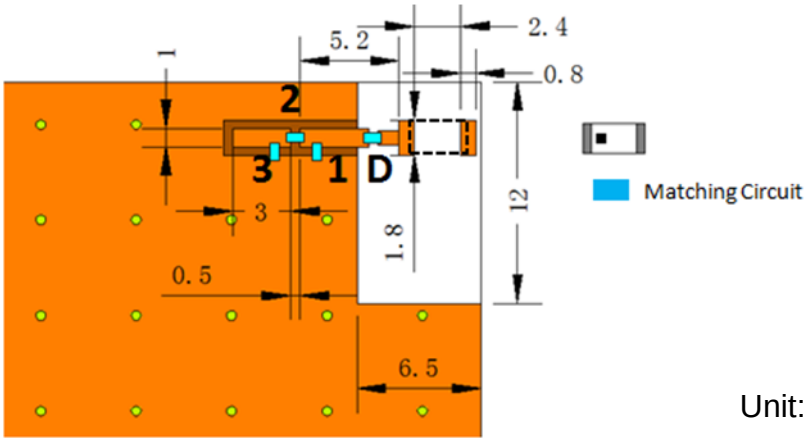
## LAYOUT OF EVALUATION BOARD

- Clearance Definition:
  ( Size: 6.5 x 12 mm)



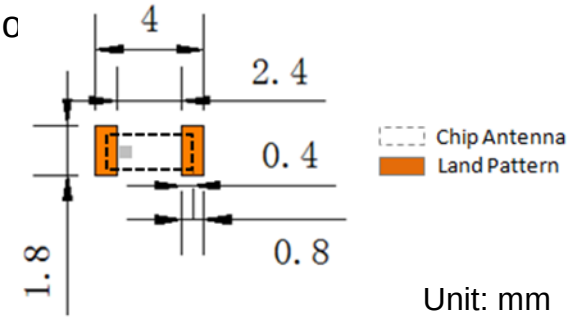

Unit: mm

- Reference design of Matching circuit




Unit: mm

- Soldering Pads Dimensio
  and Footprint




Unit: mm

Outlook and dimension of evaluation board

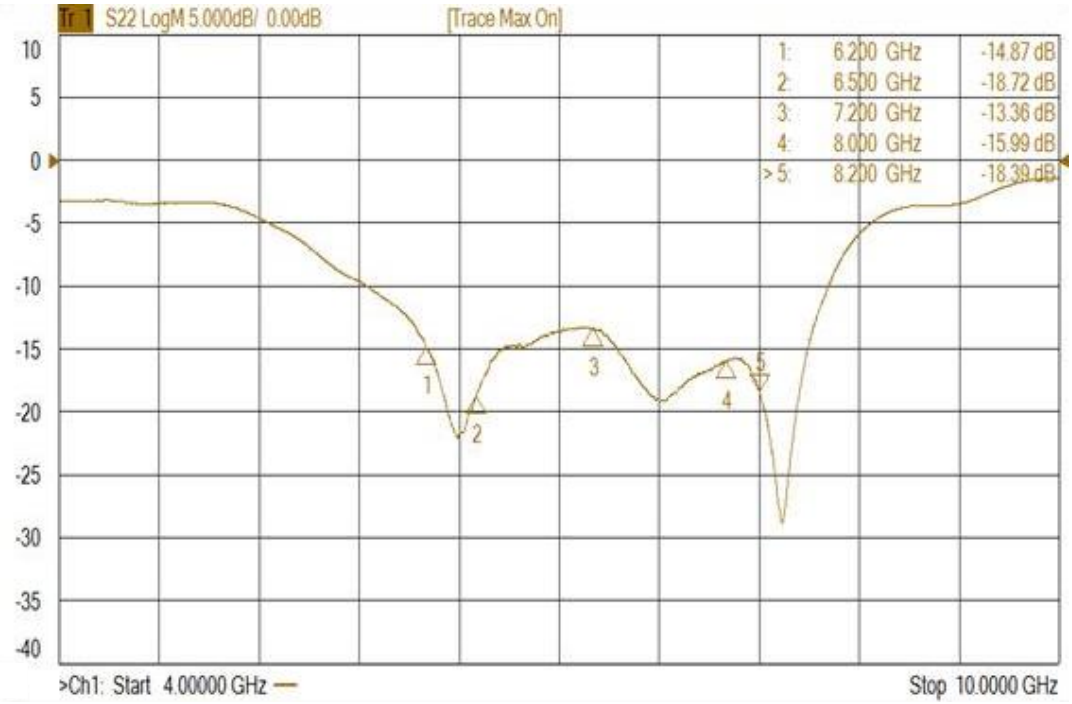


RoHS COMPLIANT

**Description**: 3216 UWB 6.5-8GHz Chip Antenna

**PART NUMBER: ANT3216LL00R6580A**

## ELECTRICAL PERFORMANCES




Maker data
1. 6.2GHz, -14.87dB
2. 6.5GHz, -18.72dB
3. 7.2GHz, -13.38dB
4. 8.0GHz, -15.99dB
5. 8.2GHz, -18.39dB

Return loss

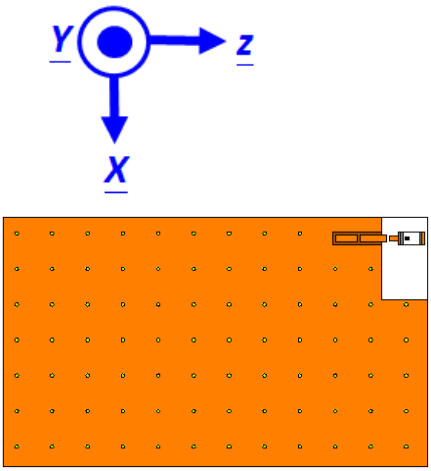


RoHS COMPLIANT

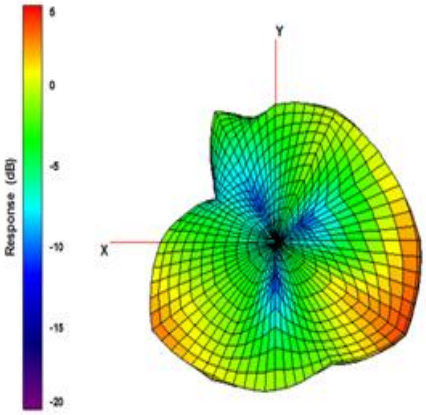
**Description**: 3216 UWB 6.5-8GHz Chip Antenna

**PART NUMBER: ANT3216LL00R6580A**

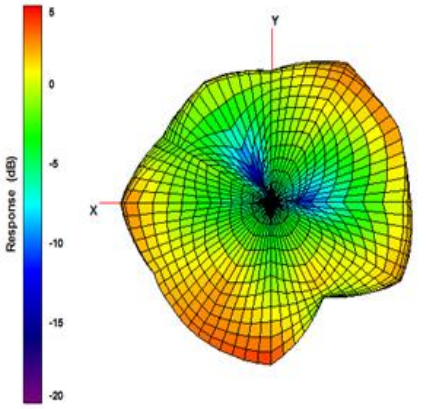
## ELECTRICAL PERFORMANCES



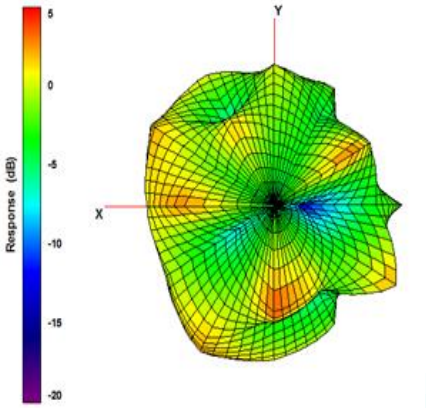

Evaluation board and XYZ direction




Frequency = 6500MHz
Max. Gain = 3.0 dBi
MEG (mean effective gain) = -1.7 dBi
Efficiency = 67.9%




Frequency = 7200MHz
Max. Gain = 5.2 dBi
MEG (mean effective gain) = -1.3 dBi
Efficiency = 74.9%




Frequency = 8000MHz
Max. Gain = 1.7 dBi
MEG (mean effective gain) = -3.1 dBi
Efficiency = 48.7%

Radiation pattern



RoHS COMPLIANT

**Description**: 3216 UWB 6.5-8GHz Chip Antenna

**PART NUMBER: ANT3216LL00R6580A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Aug. 5, 2021 | - New issue. |



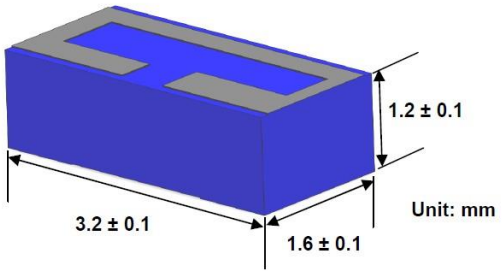
RoHS COMPLIANT

Pulse | LARSEN Antennas
A YAGEO Company

TECHNICAL DATA SHEET

# Description: 3216 2.4G Chip Antenna

## PART NUMBER: ANT3216LL11R2400A




## Features:

- Size : 3.2x1.6x1.2 mm
- Working Frequency : 2.4~2.5GHz
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4GHz WiFi device
- Bluetooth gadget
- Zigbee device
- ISM band equipment



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 3216 2.4G Chip Antenna

## PART NUMBER: ANT3216LL11R2400A

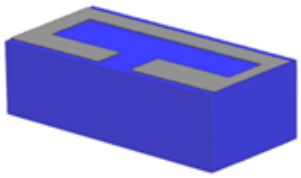
## ELECTRICAL SPECIFICATIONS

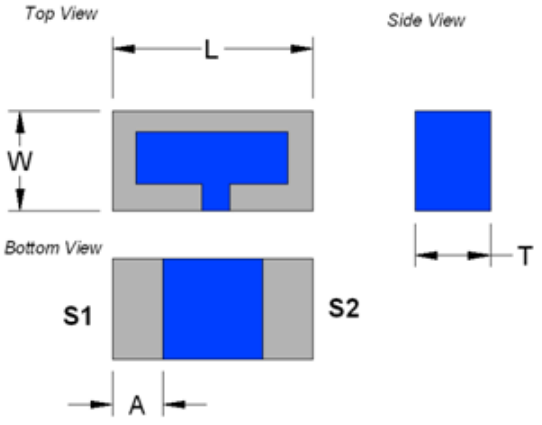
| | |
|---|---|
| **Working Frequency** | 2.45 GHz |
| **Bandwidth** | 230 MHz(Typ.) |
| **Return Loss** | 6.5 dB(Min.) |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 3.68 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ag (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 3.2 ±0.20 |
| W (mm) | 1.6 ±0.20 |
| T (mm) | 1.2 ±0.20 |
| A (mm) | 0.8 ±0.20 |



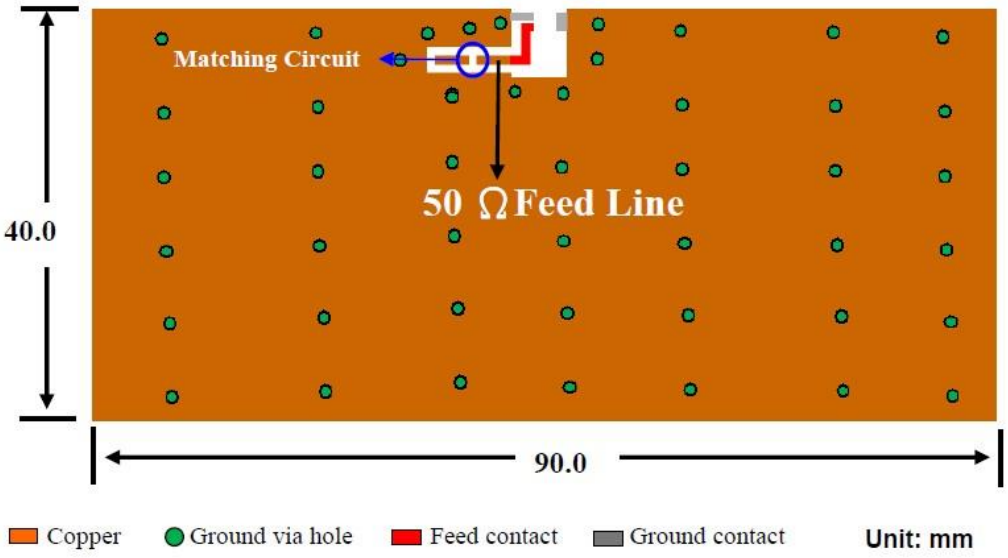



| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

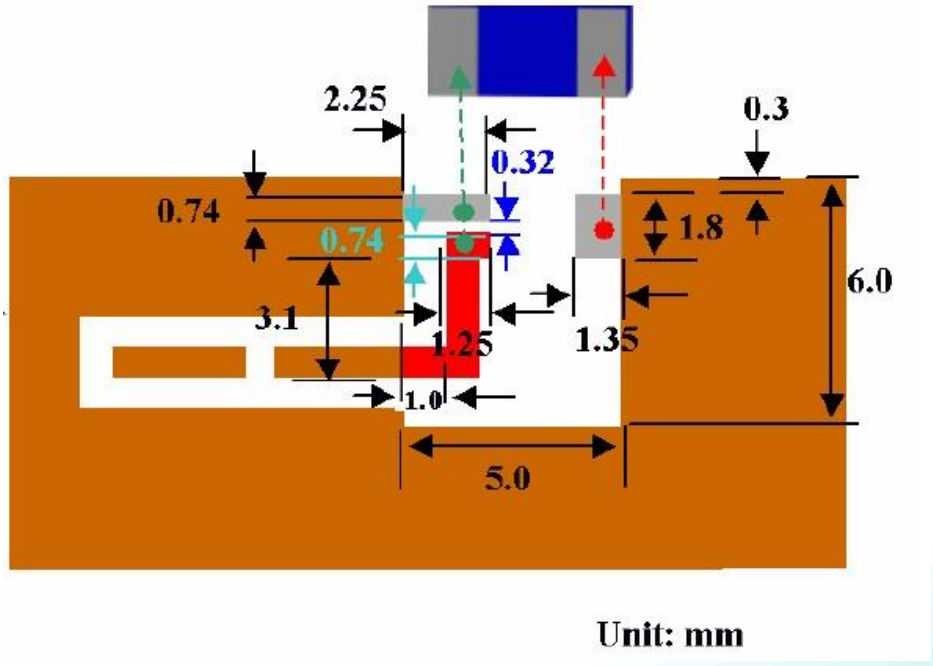
**Description**: 3216 2.4G Chip Antenna

**PART NUMBER: ANT3216LL11R2400A**

## LAYOUT OF EVALUATION BOARD




Outlook and dimension of evaluation board

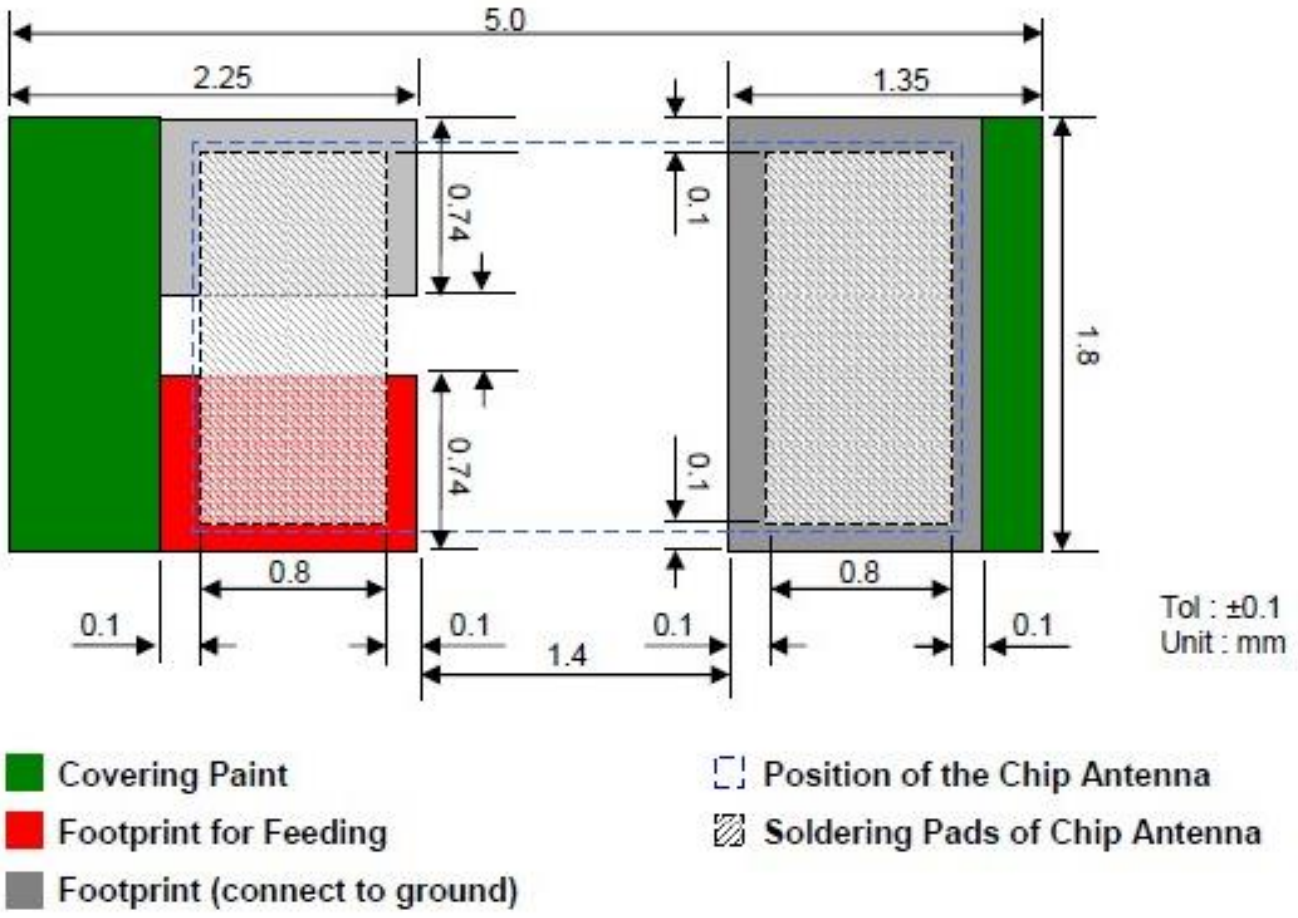



Details of soldering Pad

**Description**: 3216 2.4G Chip Antenna

**PART NUMBER: ANT3216LL11R2400A**

## LAYOUT OF EVALUATION BOARD

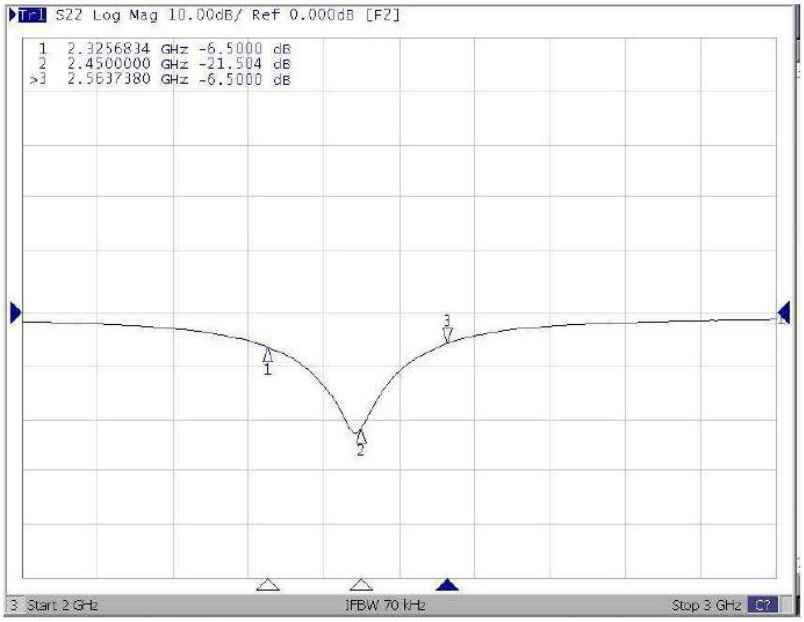



Soldering Pads Dimension and Footprint

**Description**: 3216 2.4G Chip Antenna

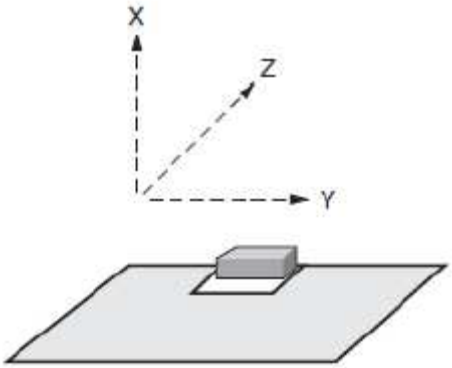
**PART NUMBER: ANT3216LL11R2400A**

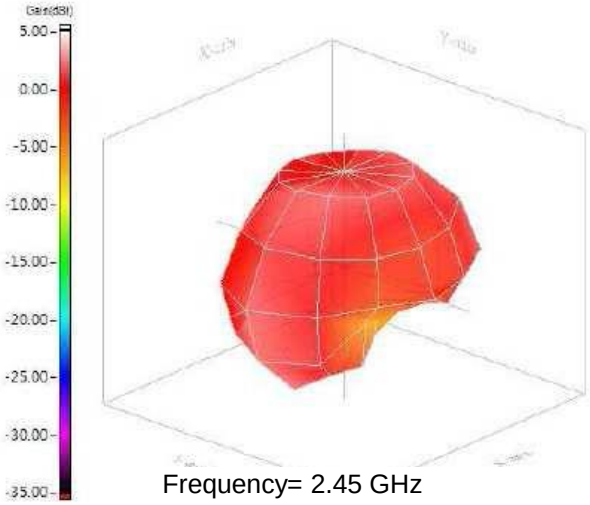
## ELECTRICAL PERFORMANCES




Marker data
1. 2.32GHz, -6.5 dB
2. 2.45GHz, -21.5 dB
3. 2.56GHz, -6.5 dB

Return loss




Frequency= 2.45 GHz
Max gain = 3.68 dBi, at (120,180)
MEG (mean effective gain)= -0.47 dBi
Directivity (dB) = 4.29
Efficiency = -0.61 dB, 86.89 %

Evaluation board and XYZ direction

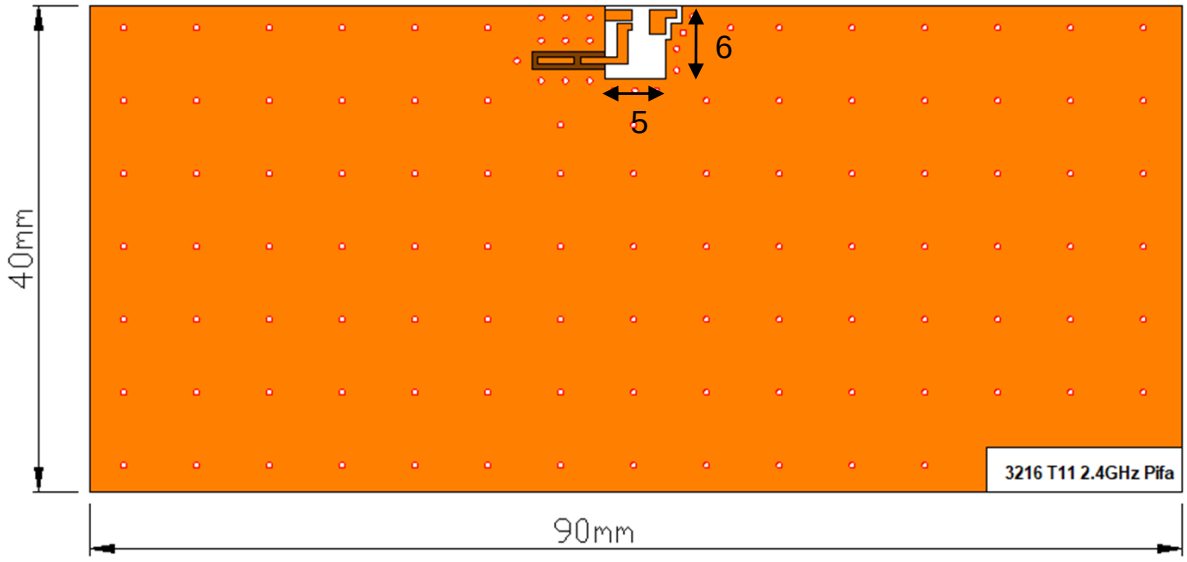
Radiation pattern

**Description**: 3216 2.4G Chip Antenna

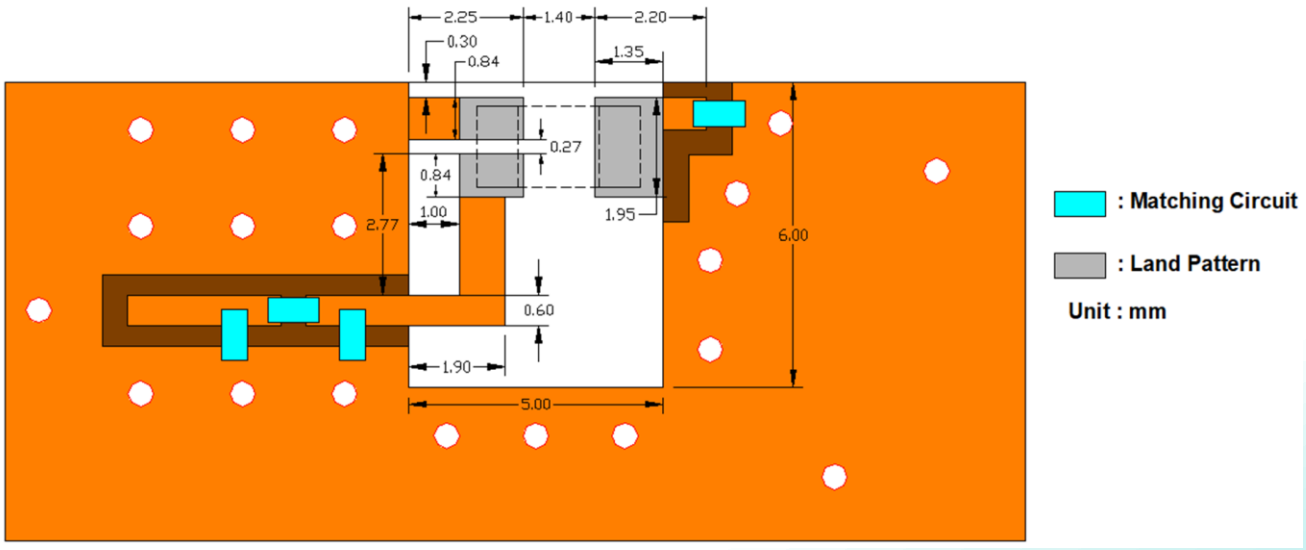
**PART NUMBER: ANT3216LL11R2400A**

## REFERENCE DESIGN OF MATCHING CIRCUIT

- Clearance Definition :
  Size = 5.0 * 6.0 mm




- Soldering Pads Dimension Footprint :




Outlook and dimension of matching circuit

**Description**: 3216 2.4G Chip Antenna

**PART NUMBER: ANT3216LL11R2400A**

## REVISION HISTORY

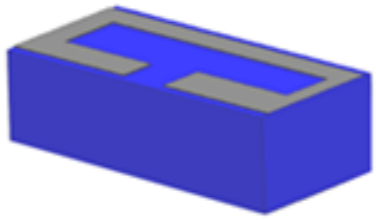
| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 12, 2020 | - New issue |
| Version 2 | Aug. 11, 2021 | - Added reference design of matching circuit. |

Pulse A YAGEO Company | LARSEN Antennas

TECHNICAL DATA SHEET

# **Description**: 3216 2.4G/5G Chip Antenna

## PART NUMBER: ANT3216LL11R2455A



## Features:

- Size : 3.2x1.6x1.2 mm
- Omni-directional Radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4G/5GHz WiFi device
- Bluetooth gadget
- Zigbee device
- ISM band equipment



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

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Herrenberg, Germany
Tel: 49 7032 7806 0

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99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 3216 2.4G/5G Chip Antenna

## PART NUMBER: ANT3216LL11R2455A

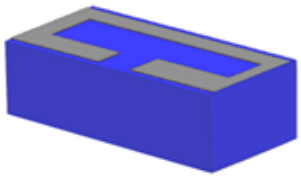
## ELECTRICAL SPECIFICATIONS

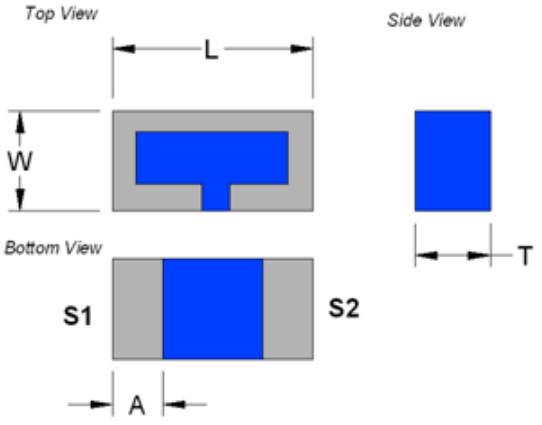
| | |
|---|---|
| **Working Frequency** | 2.45 / 5.5 GHz |
| **Bandwidth** | 90/700 MHz(Typ.) |
| **Return Loss** | 6.5 dB Min |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 0.45/0.64 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~85 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ag (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 3.2 ±0.20 |
| W (mm) | 1.6 ±0.20 |
| T (mm) | 1.2 ±0.20 |
| A (mm) | 0.8 ±0.20 |



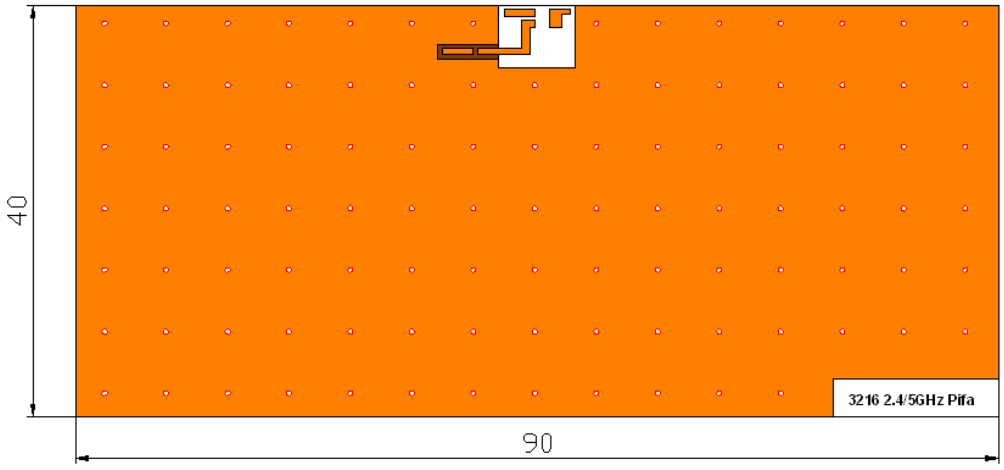



| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

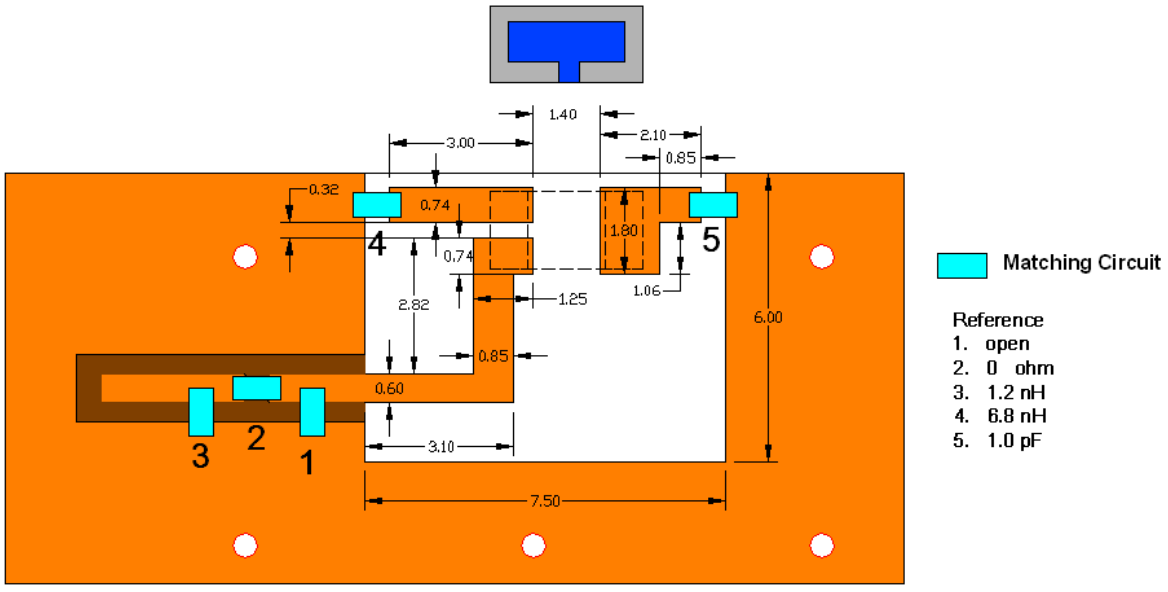
**Description**: 3216 2.4G/5G Chip Antenna

**PART NUMBER: ANT3216LL11R2455A**

## REFERENCE DESIGN OF EVALUATION BOARD




Outlook and dimension of evaluation board




Details of soldering Pad

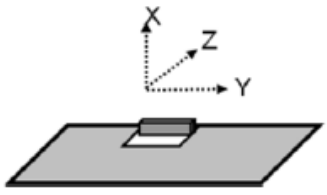
**Description**: 3216 2.4G/5G Chip Antenna

**PART NUMBER: ANT3216LL11R2455A**

## ELECTRICAL PERFORMANCES

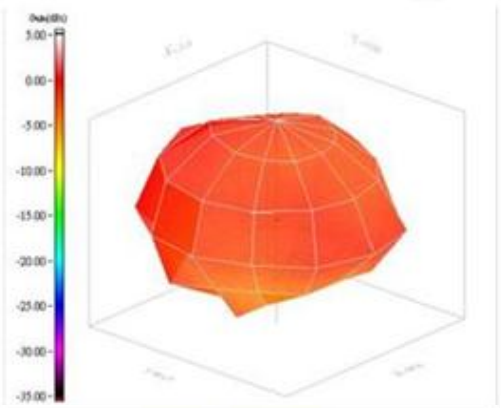

Marker data
1. 2.40GHz, -8.0747dB
2. 2.44GHz, -12.014dB
3. 2.48GHz, -7.5008dB
4. 5.15GHz, -9.0265dB
5. 5.47GHz, -16.850dB
6. 5.85GHz, -6.1971dB

Return loss



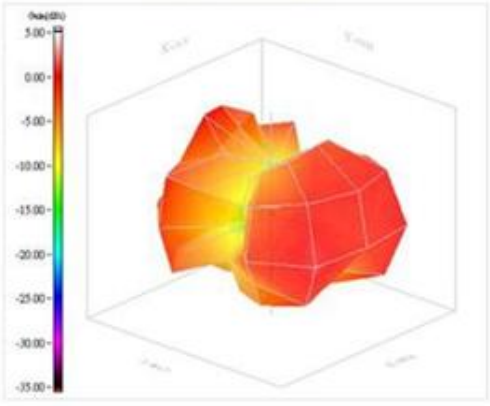

Evaluation board and XYZ direction

2442MHz



Max gain = 0.47 dBi
Avg gain = -2.49 dB
Efficiency = 56%

5470MHz



Max gain = 0.64 dBi
Avg gain = -3.26 dB
Efficiency = 47%

Radiation pattern

**Description**: 3216 2.4G/5G Chip Antenna

**PART NUMBER: ANT3216LL11R2455A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 27, 2020 | - New issue |

Pulse A YAGEO Company | LARSEN Antennas

TECHNICAL DATA SHEET

# Description: 5320 2.4-2.5GHz Chip Antenna

## PART NUMBER: ANT5320LL24R2400A

## Features:

- Size : 5.30x2.00x1.20 mm
- Omni-directional radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4 GHz WiFi device
- Bluetooth gadget
- Zigbee device
- ISM band equipment

## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 2.45 GHz |
| **Bandwidth** | 84 MHz(Typ.) |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 2.78 dBi (Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
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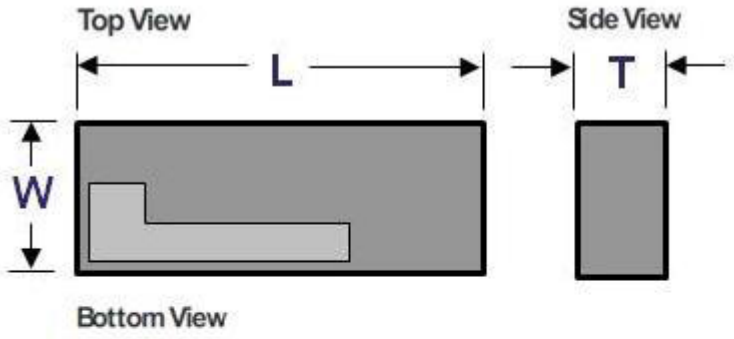
Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

**Description**: 5320 2.4-2.5GHz Chip Antenna

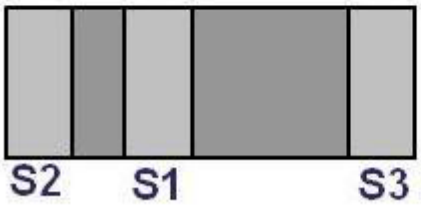
**PART NUMBER: ANT5320LL24R2400A**

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 5.30 ±0.10 |
| W (mm) | 2.00 ±0.10 |
| T (mm) | 1.20 ±0.10 |




Bottom View

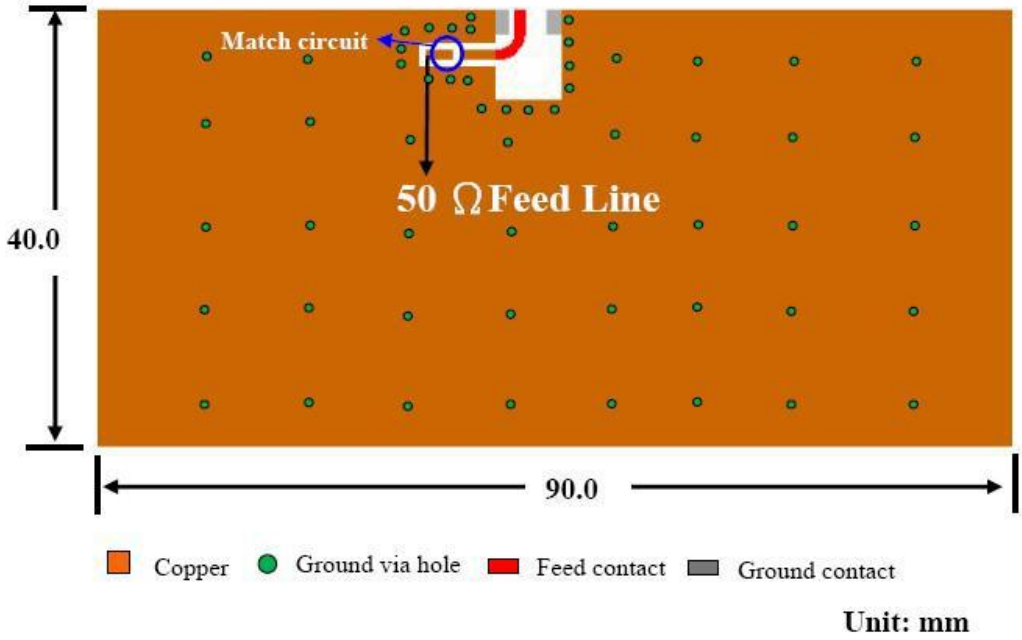



| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Ground Point |
| S3 | Ground Point |

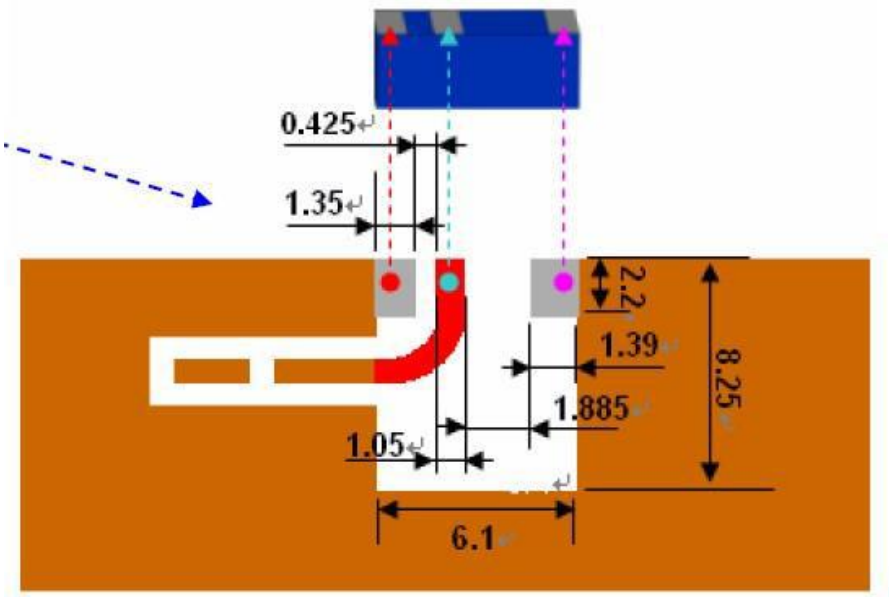
**Description**: 5320 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT5320LL24R2400A**

## REFERENCE DESIGN OF EVALUATION BOARD




Outlook and dimension of evaluation board

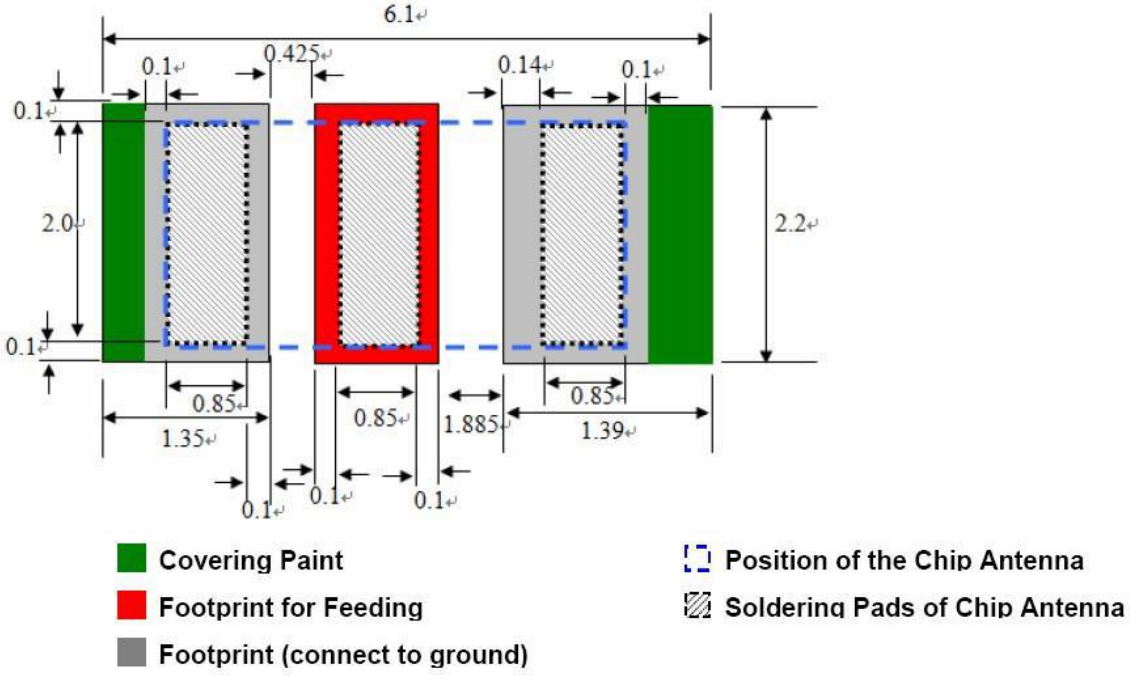



Dimension of footprint

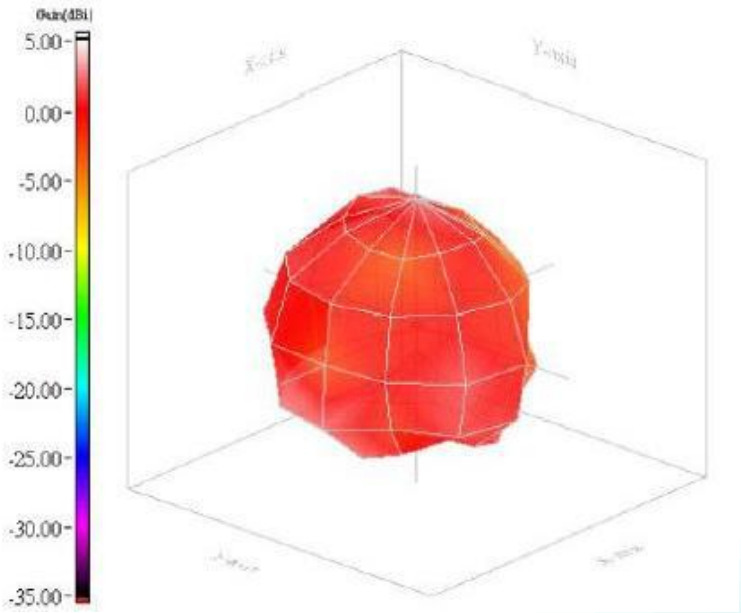
**Description**: 5320 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT5320LL24R2400A**

## REFERENCE DESIGN OF EVALUATION BOARD




Details of soldering pad

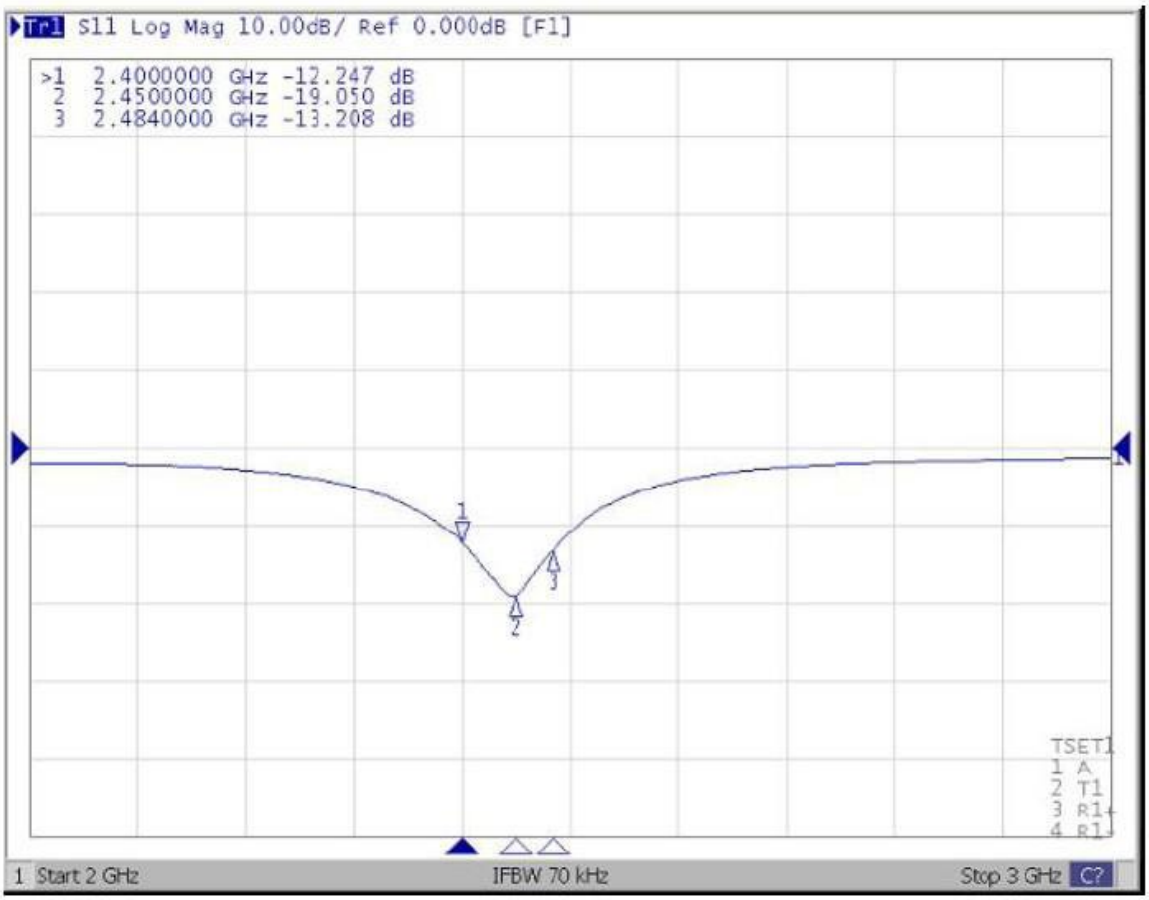



Radiation pattern

**Description**: 5320 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT5320LL24R2400A**

## ELECTRICAL PERFORMANCES




Maker data
2.40GHz, -12.247dB
2.45GHz, -19.050dB
2.48GHz, -13.208dB

Return loss

**Description**: 5320 2.4-2.5GHz Chip Antenna

**PART NUMBER: ANT5320LL24R2400A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Nov. 23, 2020 | - New issue |

TECHNICAL DATA SHEET

# Description: 7020 870MHz Chip Antenna

## PART NUMBER: ANT7020LL05R0870A

## Features:

- Size : 7.00x2.05x0.78 mm
- Omni-directional radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- Smart meter
- Industrial remote control
- ISM band equipment



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
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Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 7020 870MHz Chip Antenna

## PART NUMBER: ANT7020LL05R0870A

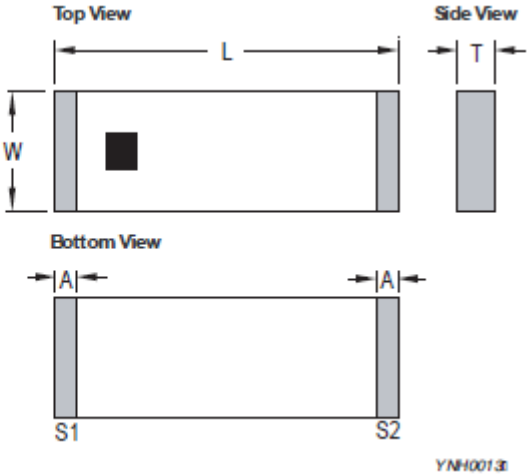
## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 870 MHz |
| **Bandwidth** | 37 MHz(Typ.) |
| **Return Loss** | 10 dB Min. |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 1.83 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 7.00 ±0.20 |
| W (mm) | 2.05 ±0.20 |
| T (mm) | 0.78 ±0.20 |
| A (mm) | 0.45 ±0.20 |

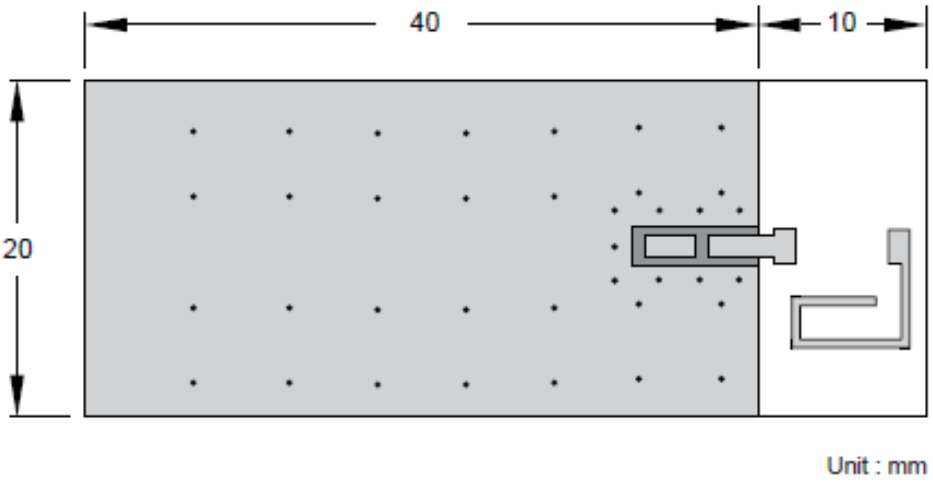



| Terminal name | Function |
|---|---|
| S1 | Feeding Point |
| S2 | Soldering Point |

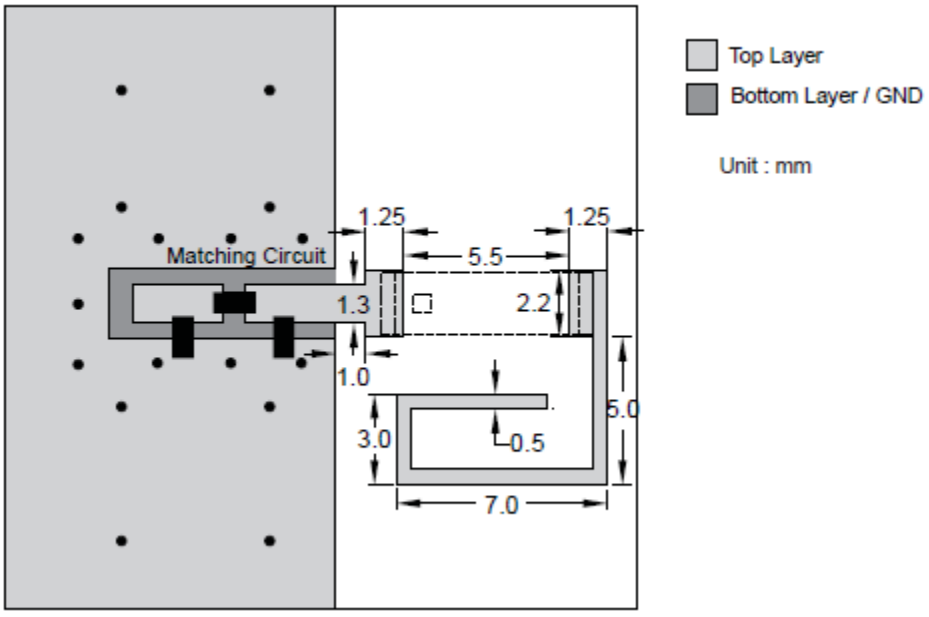
**Description**: 7020 870MHz Chip Antenna

**PART NUMBER: ANT7020LL05R0870A**

## REFERENCE DESIGN OF EVALUATION BOARD




Outlook and dimension of evaluation board

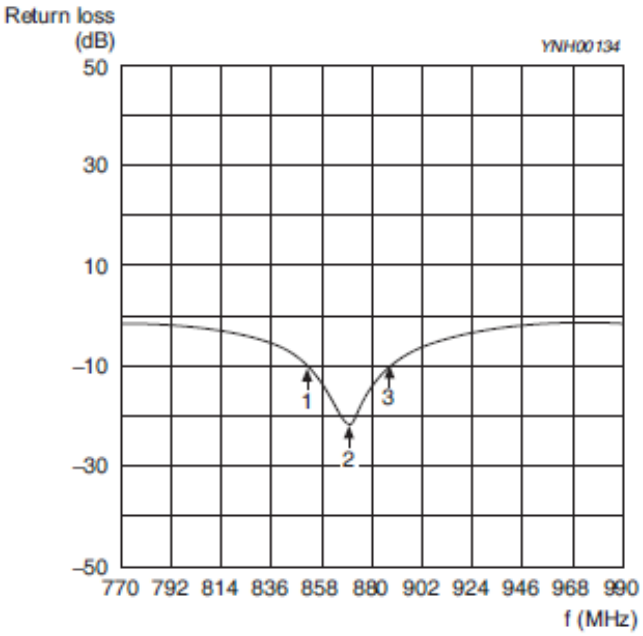



Details of soldering Pad

# Description: 7020 870MHz Chip Antenna

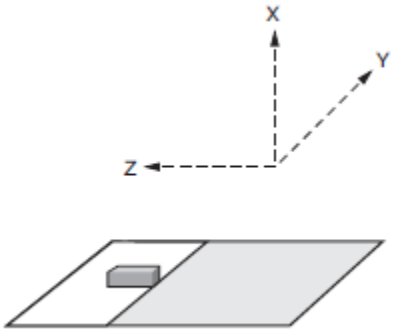
## PART NUMBER: ANT7020LL05R0870A

## ELECTRICAL PERFORMANCES

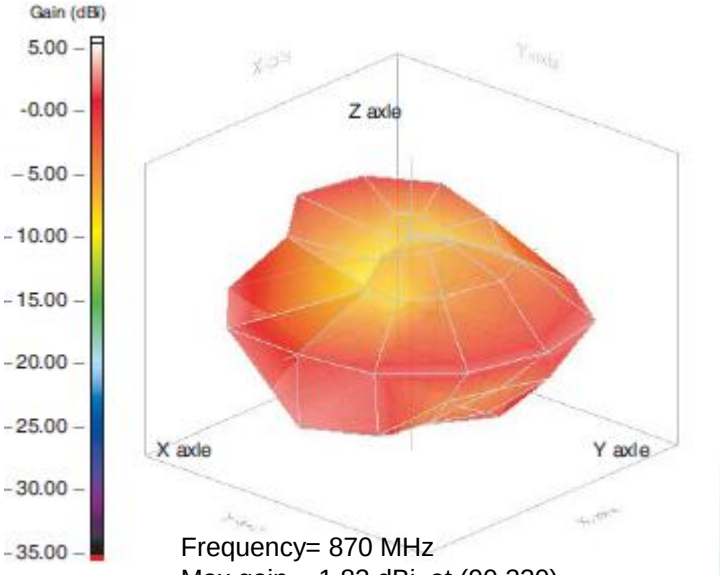



Maker data
1. 852MHz, -10dB
2. 870MHz, -22dB
3. 889MHz, -10dB

Return loss




Evaluation board and XYZ direction




Frequency= 870 MHz
Max gain = 1.83 dBi, at (90,330)
MEG (mean effective gain)= -2.51dBi
Directivity (dB) = 3.75
Efficiency = -1.92dB, 64.20%

Radiation pattern

**Description**: 7020 870MHz Chip Antenna

**PART NUMBER: ANT7020LL05R0870A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 14, 2020 | - New issue |

Pulse A YAGEO Company | LARSEN Antennas

TECHNICAL DATA SHEET

# **Description**: 8010 2.4GHz Chip Antenna

## PART NUMBER: ANT8010LL04R2400A

## Features:

- Size : 8.0x1.0x1.0 mm
- Omni-directional radiation
- Tape & reel automatic mounting
- Reflow process compatible
- RoHS compliant

## Applications:

- 2.4GHz WiFi device
- Bluetooth gadget
- Zigbee device
- ISM band equipment



Pulse Worldwide Headquarters
15255 Innovation Drive #100
San Diego, CA 92128
USA
Tel:1-858-674-8100

Pulse/Larsen Antennas
18110 SE 34th St Bldg 2 Suite 250
Vancouver, WA 98683
USA
Tel: 1-360-944-7551

Europe Headquarters
Pulse GmbH & Do, KG
Zeppelinstrasse 15
Herrenberg, Germany
Tel: 49 7032 7806 0

Pulse (Suzhou) Wireless Products Co, Inc.
99 Huo Ju Road(#29 Bldg,4th Phase
Suzhou New District
Jiangsu Province, Suzhou 215009 PR China
Tel: 86 512 6807 9998

# Description: 8010 2.4GHz Chip Antenna

## PART NUMBER: ANT8010LL04R2400A

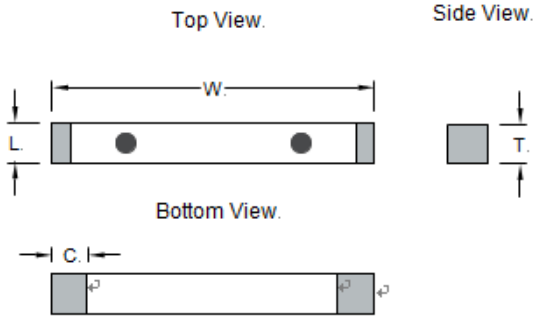
## ELECTRICAL SPECIFICATIONS

| | |
|---|---|
| **Working Frequency** | 2.4 ~ 2.5 GHz |
| **Bandwidth** | 170 MHz(Typ.) |
| **Return Loss** | 10.0 dB Min |
| **Polarization** | Linear |
| **Azimuth Beamwidth** | Omni-directional |
| **Peak Gain** | 5.46 dBi(Typ.) |
| **Impedance** | 50 Ω |
| **Operating Temperature** | - 40~105 ℃ |
| **Maximum Power** | 1 W |
| **Termination** | Ni / Sn (Environmentally-Friendly Leadless) |
| **Resistance to Soldering Heats** | 260℃ , 10sec. |

NOTE
1. The specification is defined on Pulse evaluation board

## MECHANICAL DRAWING

| | Dimension |
|---|---|
| L (mm) | 1.00 ±0.10 |
| W (mm) | 8.00 ±0.10 |
| T (mm) | 1.00 ±0.10 |
| C (mm) | 0.90 ±0.15 |

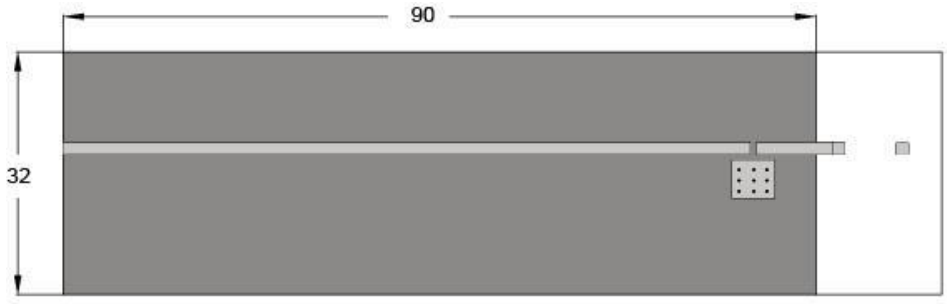


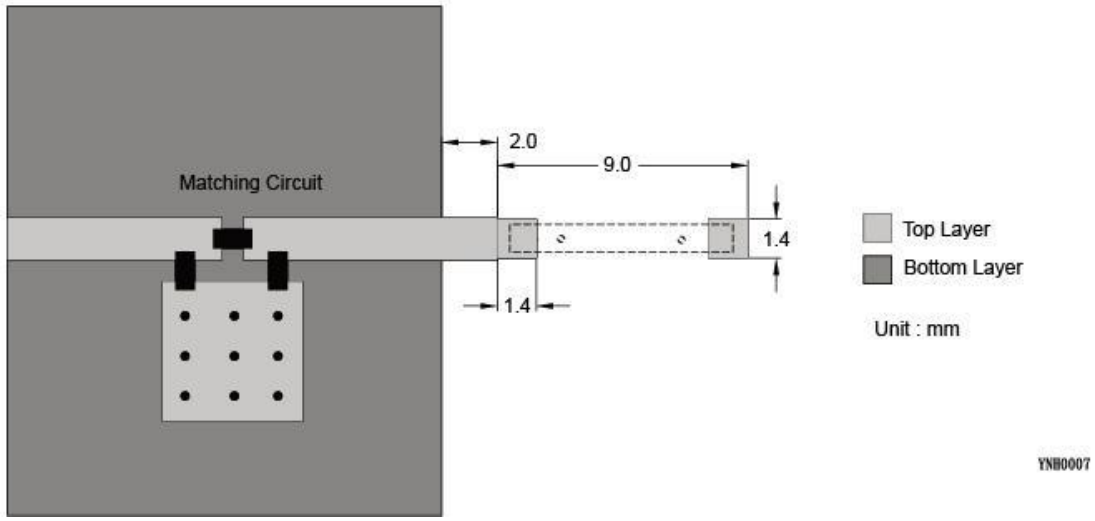

| Terminal name | Function |
|---|---|
| S1 | Feeding / Soldering Pad |
| S2 | Soldering / Feeding Pad |

**Description**: 8010 2.4GHz Chip Antenna

**PART NUMBER: ANT8010LL04R2400A**

## REFERENCE DESIGN OF EVALUATION BOARD



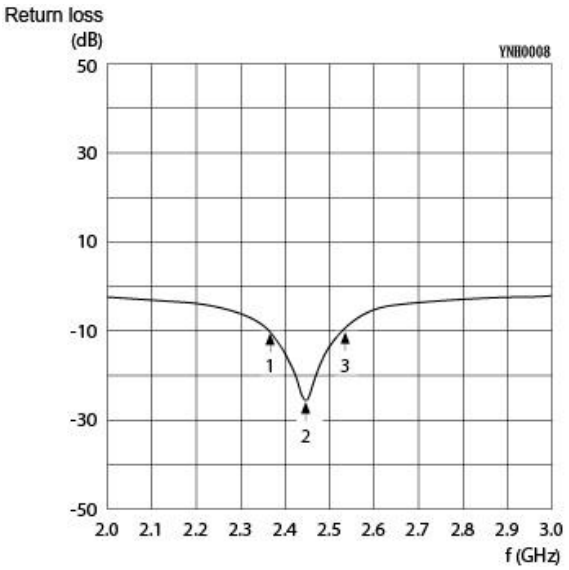

Outlook and dimension of evaluation board

Footprint

**Description**: 8010 2.4GHz Chip Antenna

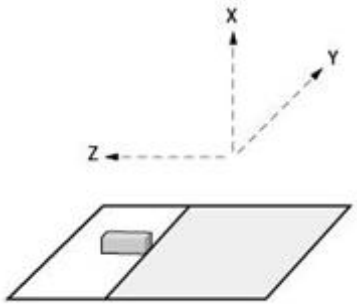
**PART NUMBER: ANT8010LL04R2400A**

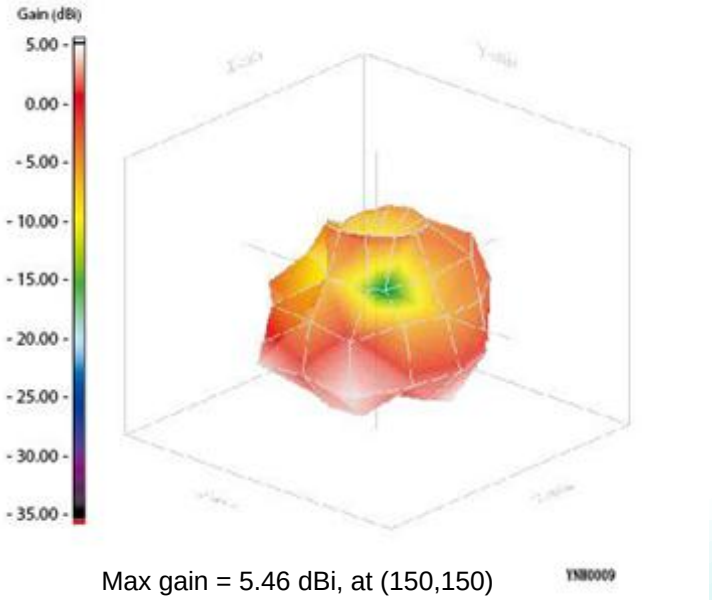
## ELECTRICAL PERFORMANCES




Marker data
1. 2.37GHz, -10dB
2. 2.45GHz, -24.9dB
3. 2.54GHz, -10dB

Return loss




Max gain = 5.46 dBi, at (150,150)
MEG (mean effective gain) =-1.46 dBi
Directivity (dB) = 6.78
Efficiency = -1.32 dB, 73.73 %

Evaluation board and XYZ direction

Radiation pattern

**Description**: 8010 2.4GHz Chip Antenna

**PART NUMBER: ANT8010LL04R2400A**

## REVISION HISTORY

| Revision | Date | Description |
|---|---|---|
| Version 1 | Oct. 12, 2020 | - New issue |