TAOGLAS


Datasheet

# Wi-Fi High Band Patch

**Part No:**

**WLP.4958.12.4.A.02**

**Description:**

12mm*12mm*4mm 4.9~5.8GHz Pin mount Ceramic Patch

**Features:**

For Upper band Wi-Fi 4.9-5.8GHz

Ceramic Patch with Pin

High Gain - up to 7dBi

TESA adhesive for ease of mounting

Dimensions: 12 x 12 x 4mm

RoHS & REACH Compliant

# 1. Introduction


This 12mm*12mm*4mm 6dBi high gain 4.9~5.8GHz patch pin fed antenna is ideally suited for high performance industrial and consumer applications in Wi-fi, ISM, Public Safety, and Zigbee bands. It can also be placed anywhere on the device ground-plane, unlike most chip or loop antennas which need to be edge mounted. The antenna can be matched by a PI matching circuit, or by creating a custom tuned part for a specific layout configuration on a board.

Many module manufacturers specify peak gain limits for any antennas that are to be connected to that module. Those peak gain limits are based on free-space conditions. In practice, the peak gain of an antenna tested in free-space can degrade by at least 1 or 2dBi when put inside a device. So ideally you should go for a slightly higher peak gain antenna than mentioned on the module specification to compensate for this effect, giving you better performance.

Upon testing of any of our antennas with your device and a selection of appropriate layout, integration technique, or cable, Taoglas can make sure any of our antennas' peak gain will be below the peak gain limits. Taoglas can then issue a specification and/or report for the selected antenna in your device that will clearly show it complying with the peak gain limits, so you can be assured you are meeting regulatory requirements for that module.

For example, a module manufacturer may state that the antenna must have less than 2dBi peak gain, but you don't need to select an embedded antenna that has a peak gain of less than 2dBi in free-space. This will give you a less optimized solution. It is better to go for a slightly higher free-space peak gain of 3dBi or more if available. Once that antenna gets integrated into your device, performance will degrade below this 2dBi peak gain due to the effects of GND plane, surrounding components, and device housing. If you want to be absolutely sure, contact Taoglas and we will test. Choosing a Taoglas antenna with a higher peak gain than what is specified by the module manufacturer and enlisting our help will ensure you are getting the best performance possible without exceeding the peak gain limits.

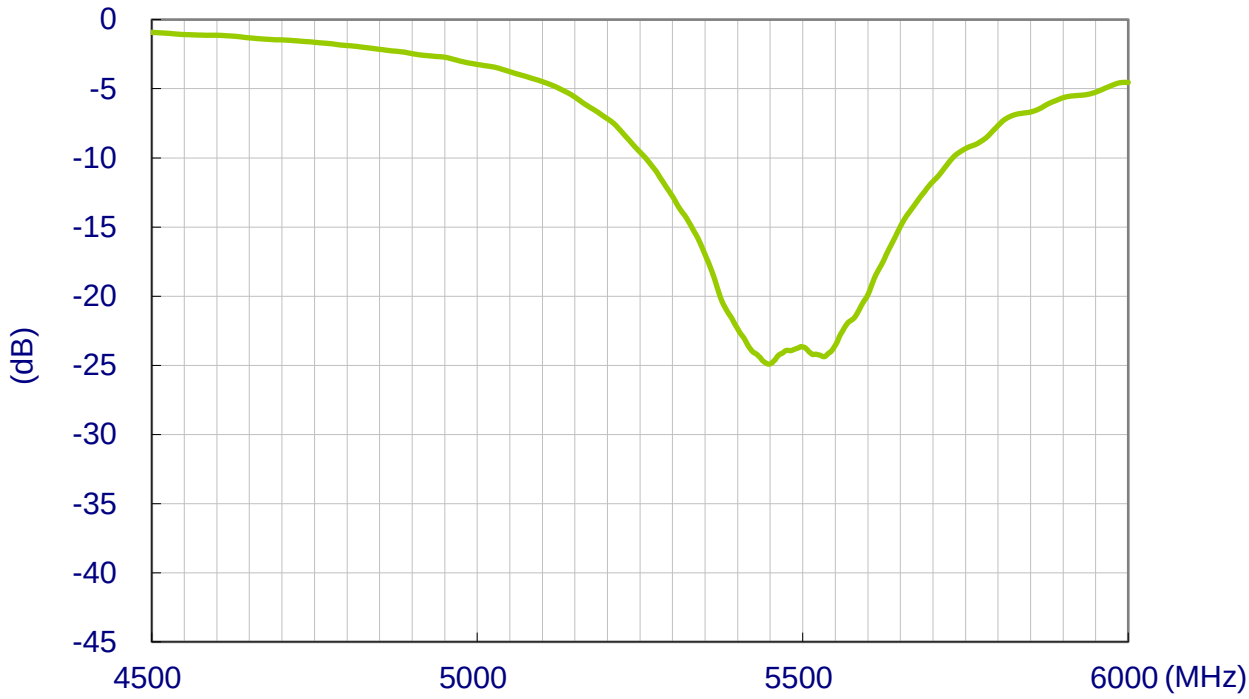
The patch can be specifically tuned for customer applications/devices subject to NRE and MOQ, for further information please contact your regional Taoglas customer support team.

# 2. Specifications

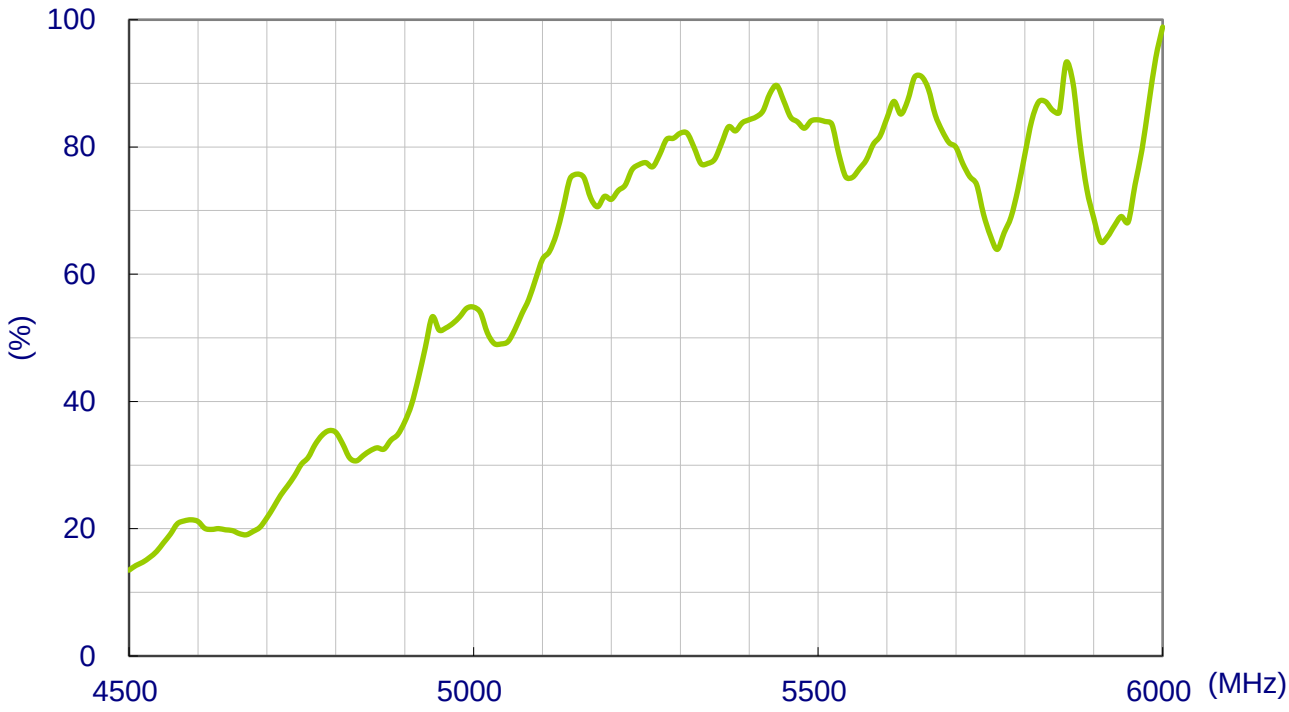
| Electrical | |
|---|---|
| **Frequency (MHz)** | **4900 to 5825** |
| **Peak Gain (dBi)** | |
| On 70*70mm GND Plane | 6 |
| **VSWR** | |
| On 70*70mm GND Plane | 1.5:1 |
| **Efficiency** | |
| On 70*70mm GND Plane | 69% |
| Impedance | 50Ω |
| Polarization | Linear |
| Radiation Pattern | Omni-Directional |
| **Mechanical** | |
| Dimensions | 12 x 12 x 4 mm |
| Material | Ceramic |
| Adhesive | TESA 4972 |
| **Environmental** | |
| Operating Temperature | -40°C to 85°C |
| Storage Temperature | -40°C to 85°C |
| RoHS Compliant | Yes |
| REACH Compliant | Yes |

# 3. Antenna Characteristics

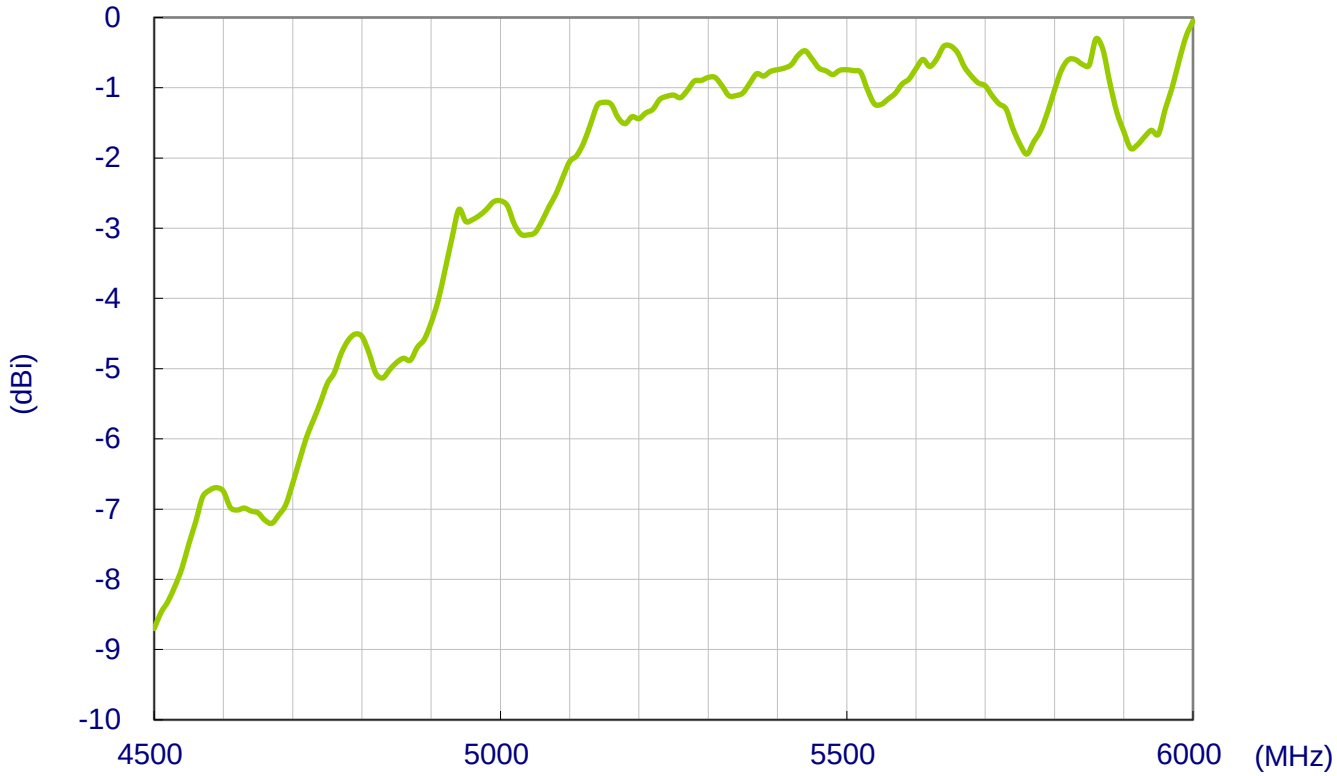
## 3.1 Return Loss



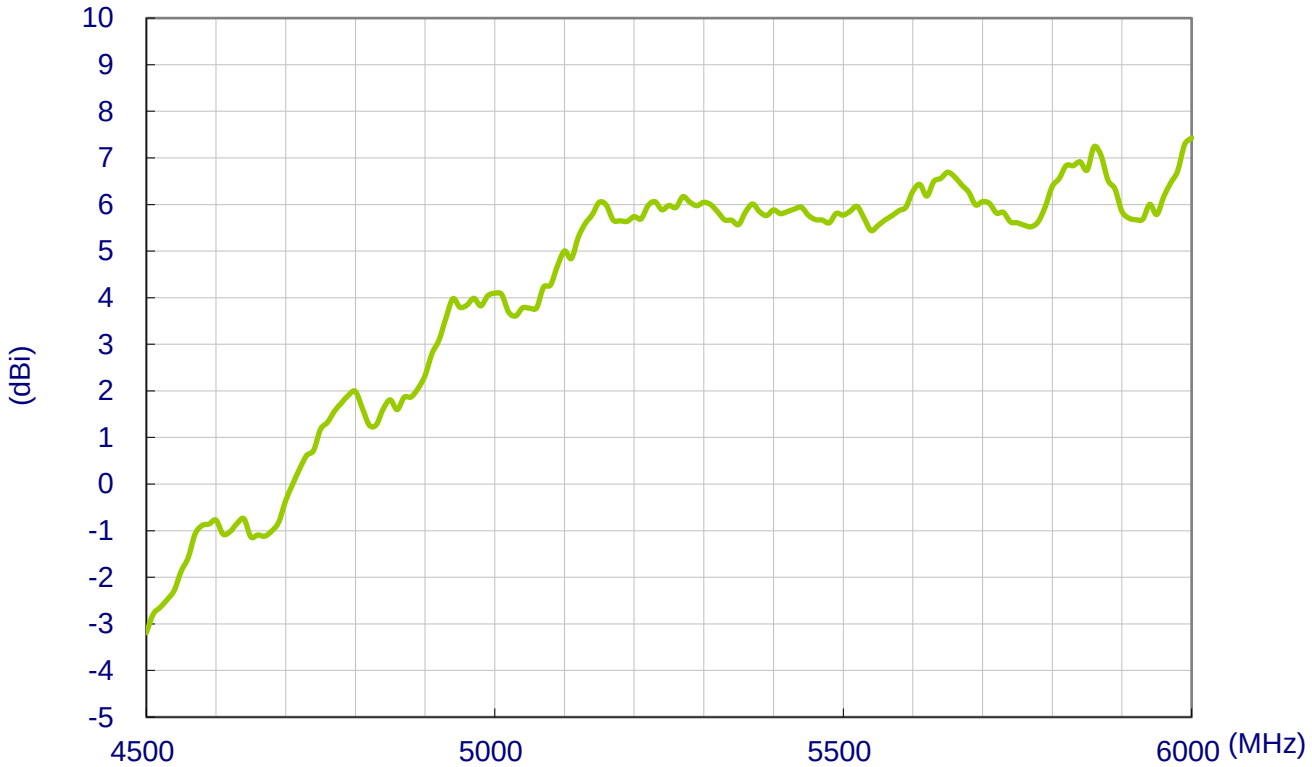

## 3.2 Efficiency



## 3.3 Average Gain




## 3.4 Peak Gain



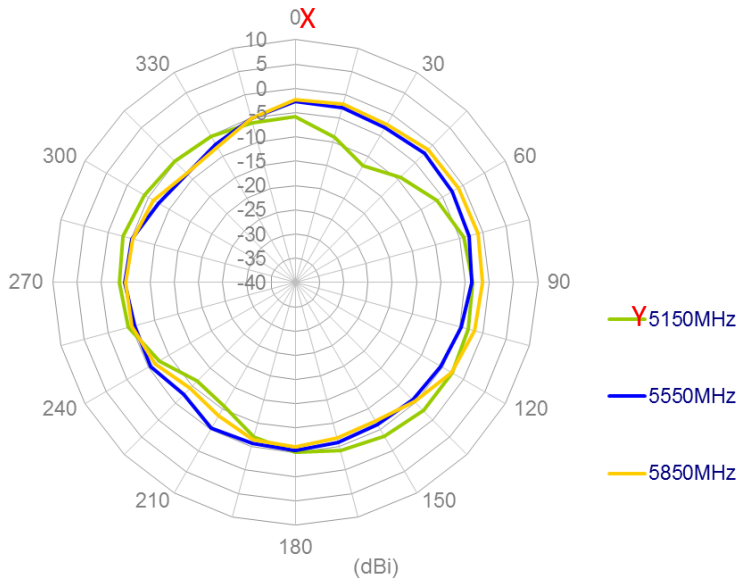
# 4. Radiation Patterns

## 4.1 Test Setup

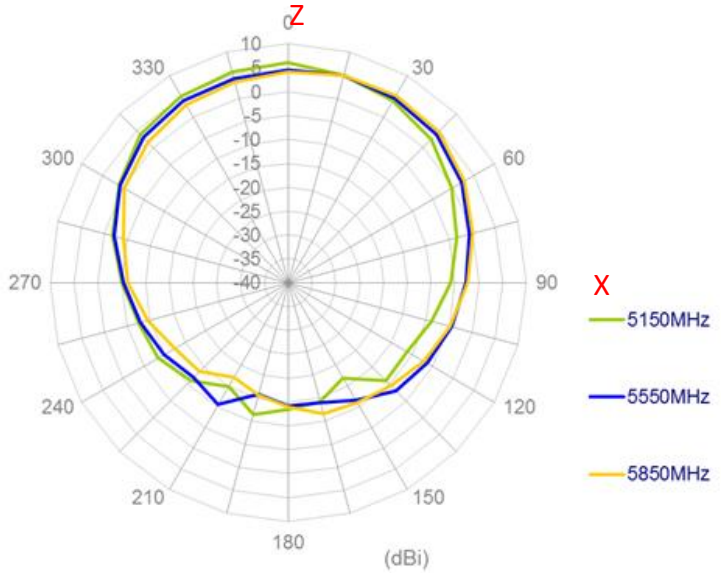

On 70*70mm Ground Plane

## 4.2 2D Radiation Patterns

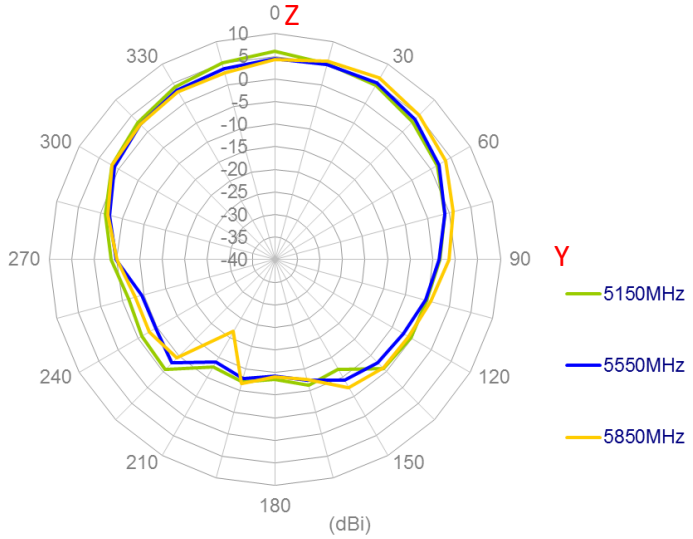
### XY Plane



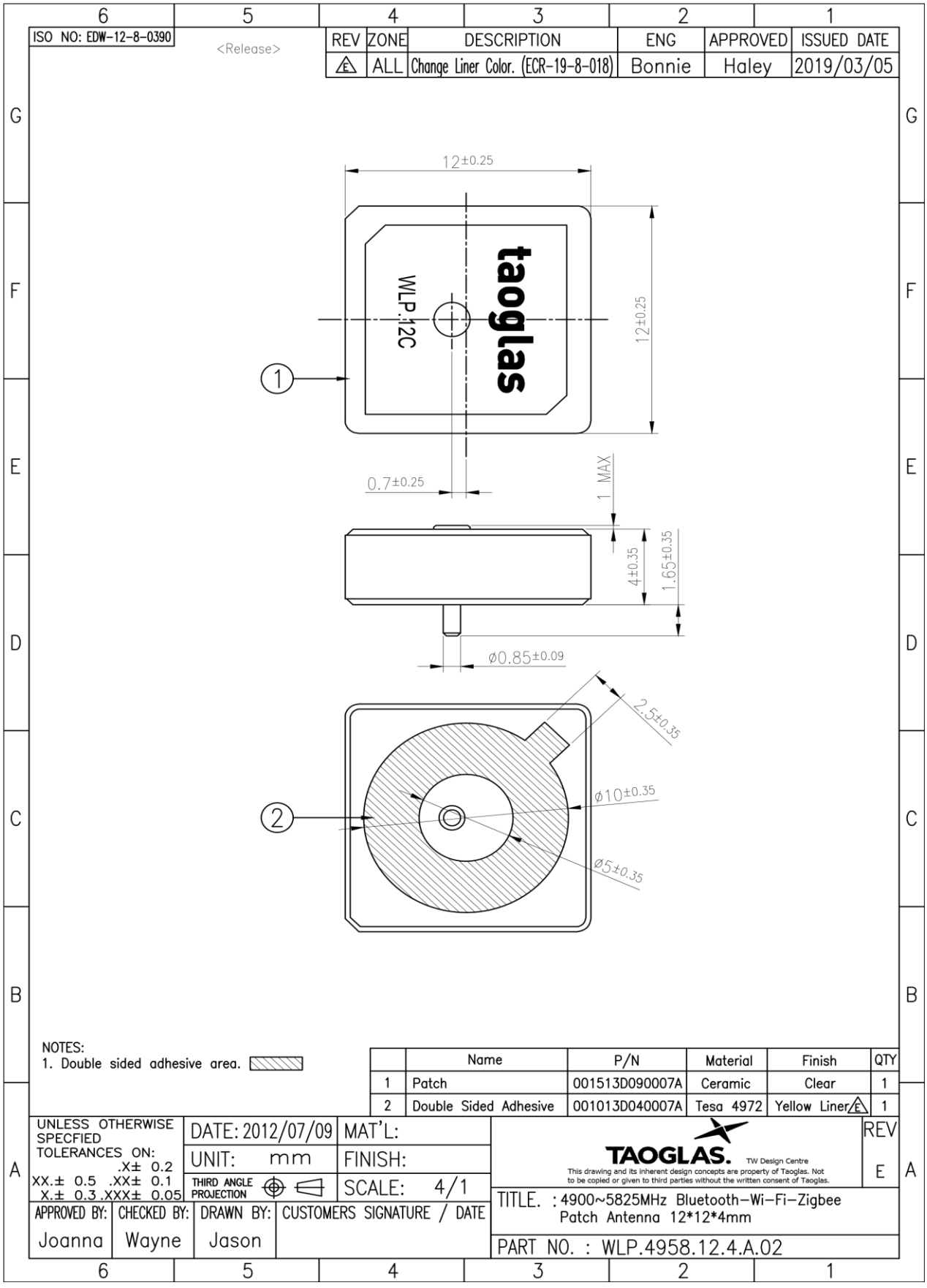

### XZ Plane




### YZ Plane



# 5. Mechanical Drawing (Units: mm)

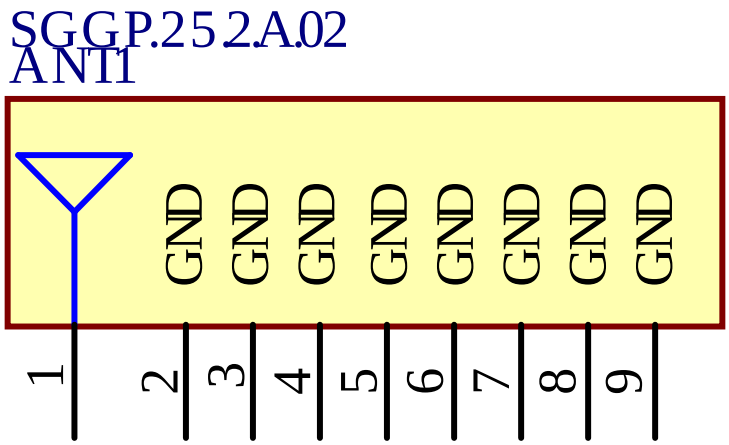


# 6. Antenna Integration Guide


## 6.1 Schematic Symbol and Pin Definition

The circuit symbol for the antenna is shown below. The antenna has 1 pin as indicated below.

| Pin | Description |
|---|---|
| 1 | RF Feed |



## 6.2 Antenna Integration

The antenna should be placed at the center of the ground plane with a length and width of 70mm. Maintaining a square symmetric ground plane shape and symmetric environment around the antenna is critical to maintaining the excellent axial ratio and phase center performance shown in this datasheet.

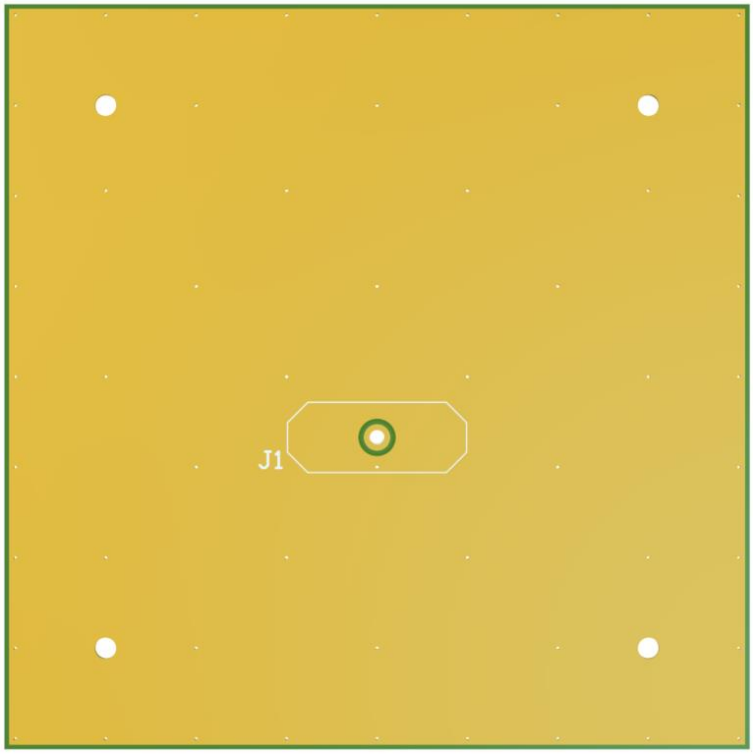

Top Side w/ Solder Mask


Top Side w/o Solder Mask

## 6.3 PCB Layout

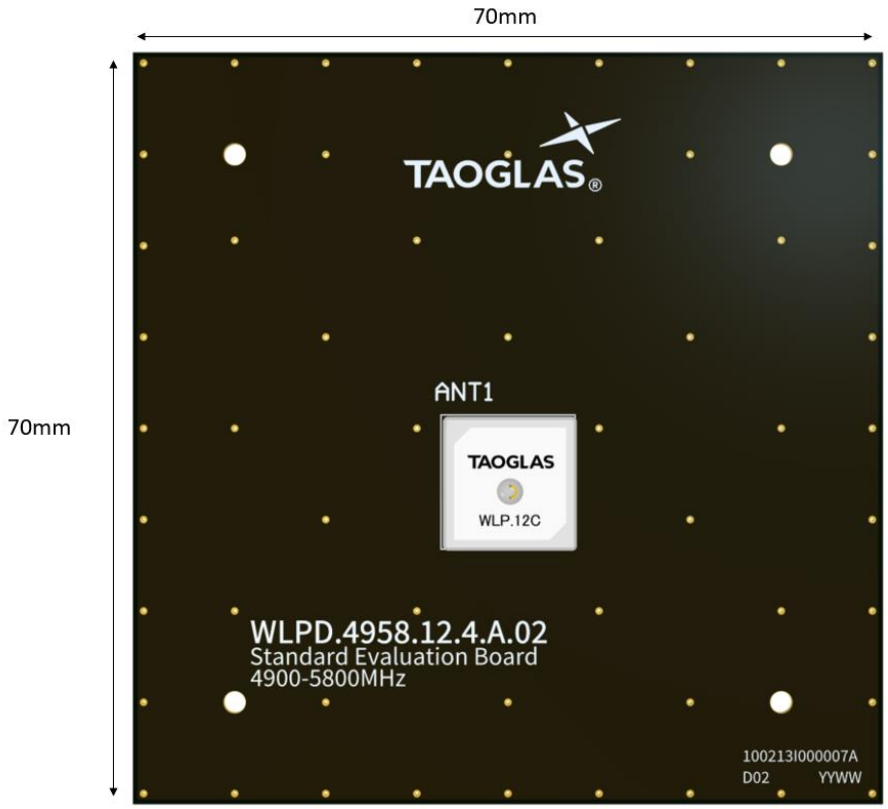
The footprint and clearance on the PCB must comply with the antenna specification. The PCB layout shown in the diagram below demonstrates the antenna footprint.


Topside

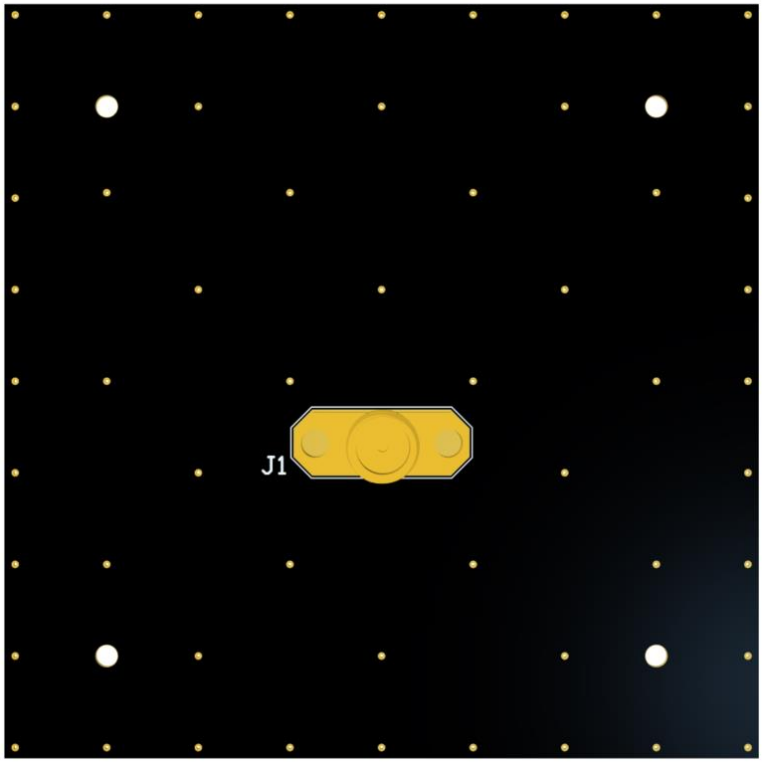



Bottom Side

## 6.4 Evaluation Board



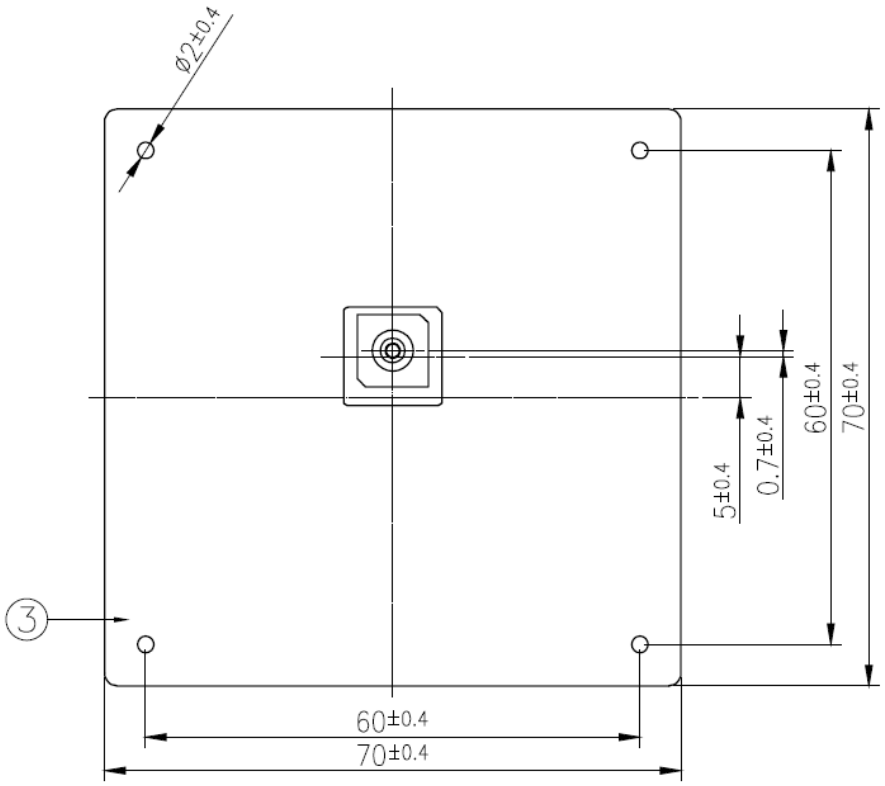

Topside



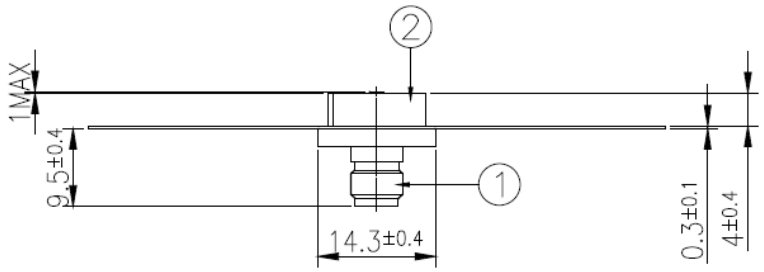

Bottom Side

# 7. Mechanical Drawing – Evaluation Board

Top View



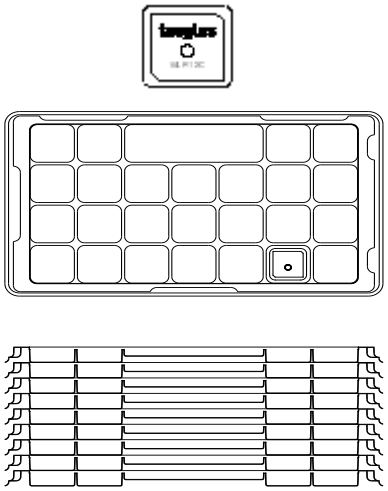

Side View



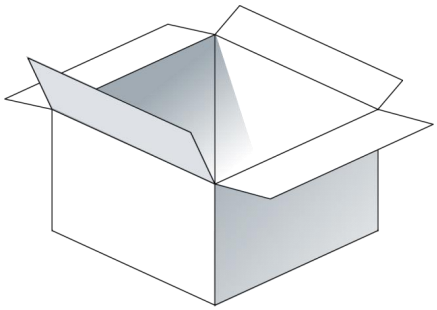

| | Name | P/N | Material | Finish | QTY |
|---|---|---|---|---|---|
| 1 | PCB SMA(F) ST | 001513C210007A | Brass | Au Plated | 1 |
| 2 | WLP.4958 Patch (12x12x4mm) | 001513C220007A | Ceramic | Clear | 1 |
| 3 | WLPD.4958 PCB (70x70x0.3mm) | 100213I000007A | FR4 0.3t | N/A | 1 |

# 8. Packaging

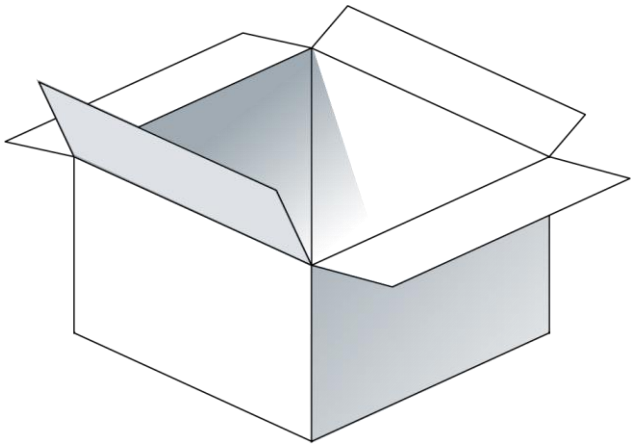
25pcs WLP.4958.12.4.A.02 per tray
Weight – 100g



400pcs WLP.4958.12.4.A.02 per carton
Dimensions - 263*154*96mm
Weight – 2Kg



1600pcs WLP.4958.12.4.A.02 per carton
Dimensions - 327*280*218mm
Weight – 8.2Kg



Changelog for the datasheet

## SPE-13-8-023 – WLP.4958.12.4.A.02

| Revision: E (Current Version) | |
|---|---|
| Date: | 2023-03-16 |
| Changes: | Antenna Integration Guide |
| Changes Made by: | Cesar Sousa |

**Previous Revisions**

| Revision: D | |
|---|---|
| Date: | 2021-07-20 |
| Changes: | Updated Format |
| Changes Made by: | Jack Conroy |

| Revision: C | |
|---|---|
| Date: | 2017-03-16 |
| Changes: | Updated to Linear |
| Changes Made by: | Peter Monahan |

| Revision: B | |
|---|---|
| Date: | 2017-03-16 |
| Changes: | Updated EDW |
| Changes Made by: | Jack Conroy |

| Revision: A (Original First Release) | |
|---|---|
| Date: | 2013-02-22 |
| Notes: | |
| Author: | Technical Writer |

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