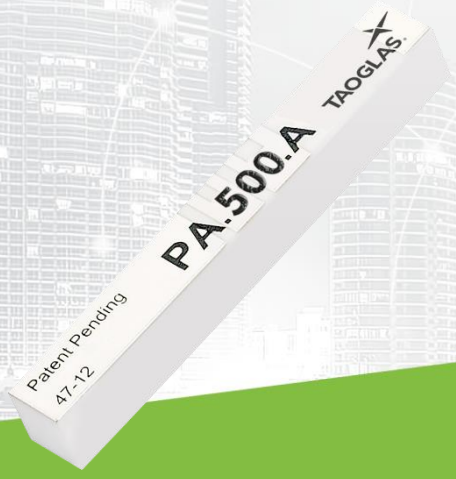



Datasheet

# Warrior Band 28 Chip Antenna

**Part No:**
**PA.500.A**

**Description**

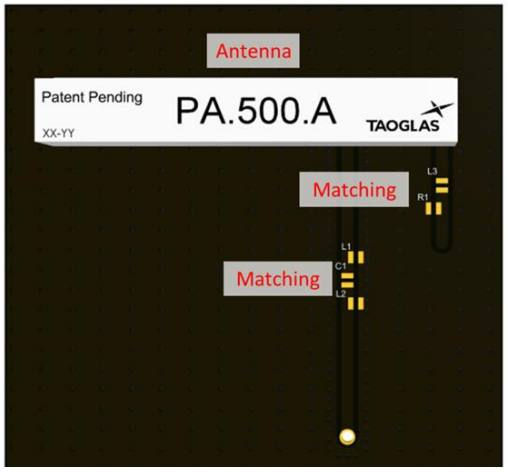
LTE/Cellular SMD Antenna

For 703-803MHz

**Features:**

703MHz to 803MHz
Designed for Band 28 IoT applications
Manufactured in an IATF16949 Certified Facility
Surface Mount Distribution
Dimensions: 40 x 5 x 6 mm
RoHS & REACH Compliant

# 1. Introduction




The Taoglas Warrior PA.500.A has been designed for use on cellular Band 28 for IoT device applications that utilize this band. The PA.500.A has strong performance at a difficult frequency – it is a specific band 28 antenna for IoT applications.

The PA.500 has been designed to have no clearance area to make integration easier for customers who may have difficulty integrating a different type of antenna which will not perform well at band 28.

In past years band 28 was for analogue TV transmission in Australia, New Zealand, and some Asia-Pacific areas. It is now the main Australian 4G band due to redefined spectrum usage.

Typical Applications include:
- Compact IoT Sensors
- Tablets and Smartphones
- Telematics and Tracking

For further information please contact your regional Taoglas customer support team.

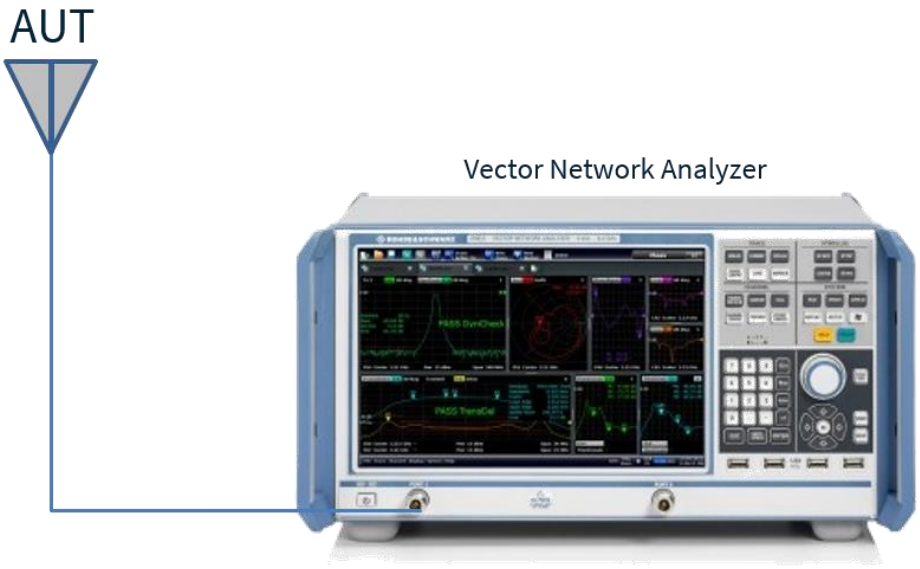
# 2. Specification

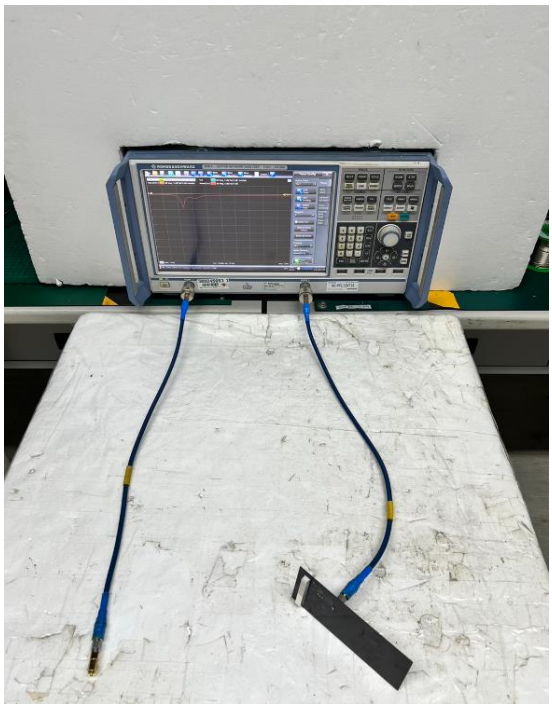
| Electrical | |
|---|---|
| Frequency (MHz) | B28 |
| | 703-803 |
| Efficiency (%) | |
| B28 | 45.5 |
| Average Gain (dB) | |
| B28 | -3.5 |
| Peak Gain (dBi) | |
| B28 | -1.3 |
| Impedance | 50 Ω |
| Polarization | Linear |
| Radiation Pattern | Omni |
| Max. input power | 5W |

| Mechanical | |
|---|---|
| Dimensions | 40 x 5 x 6 mm |
| Material | Ceramic |
| EVB Connector | SMA (F) |
| **Environmental** | |
| Temperature Range | -40°C to 85°C |
| Moisture Sensitivity Level | 3 |

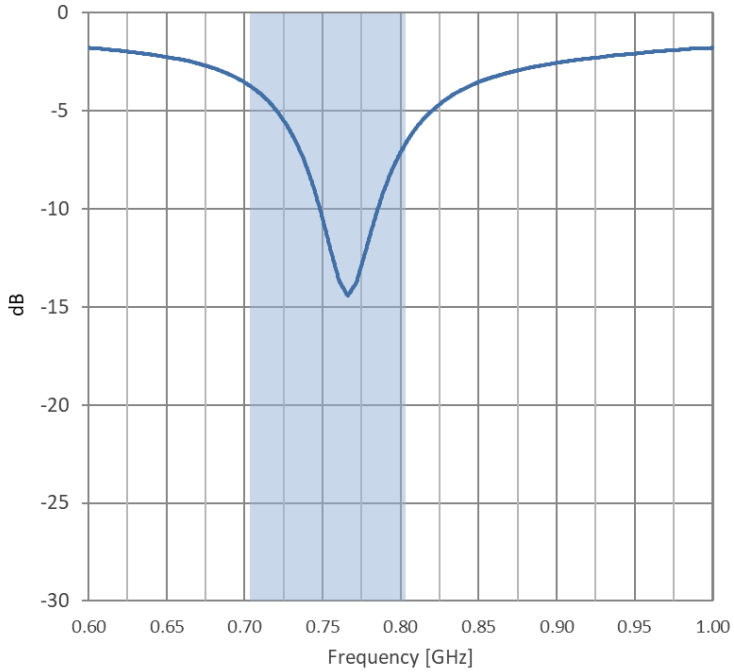
# 3. Antenna Characteristics

## 3.1 Test Setup

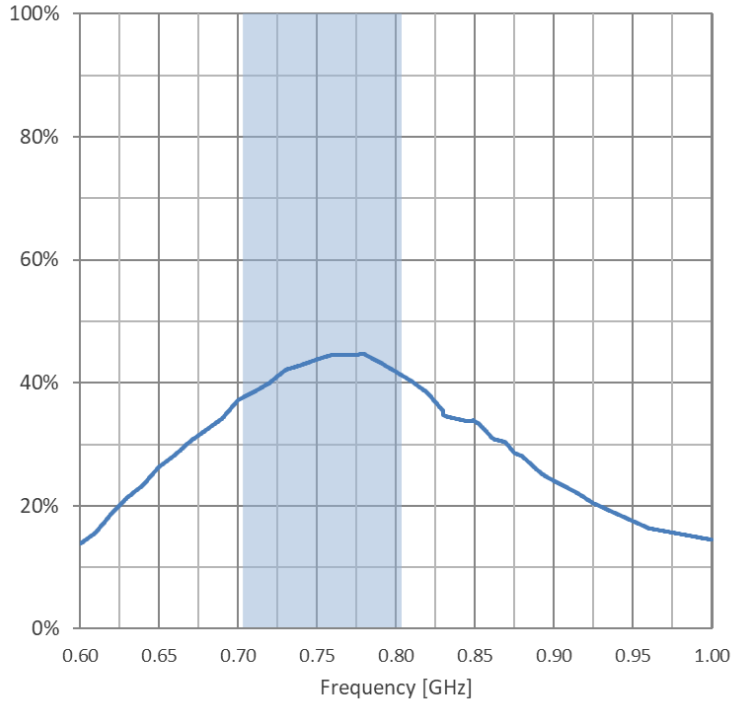


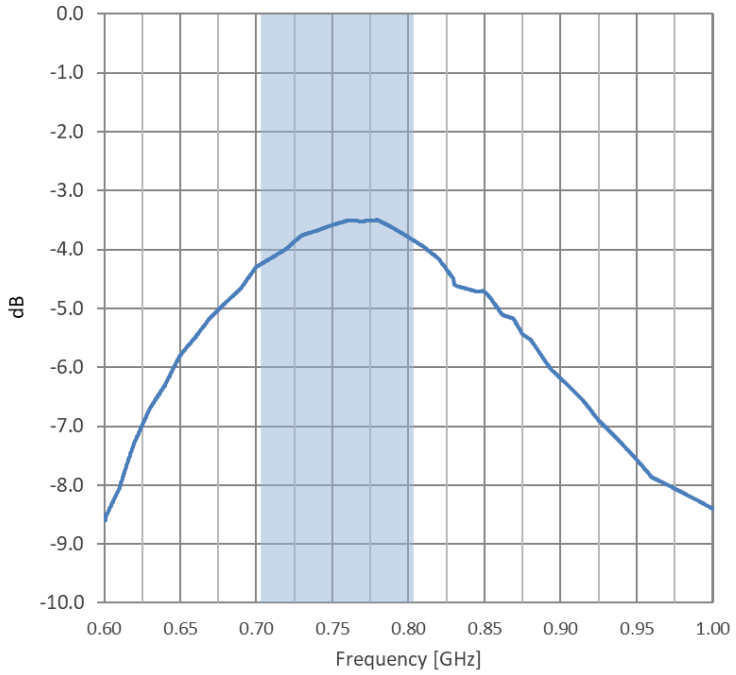
## 3.2 Return Loss



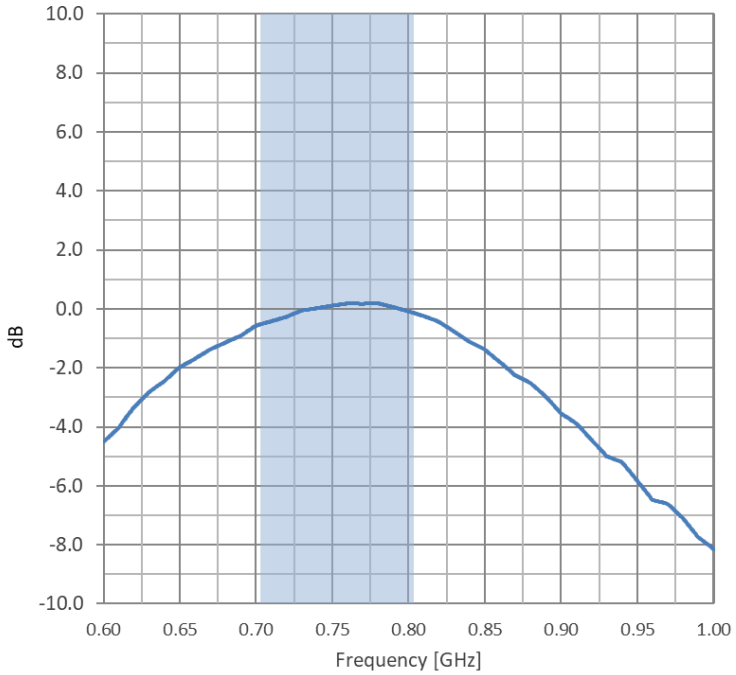

## 3.3 Efficiency



## 3.4 Average Gain

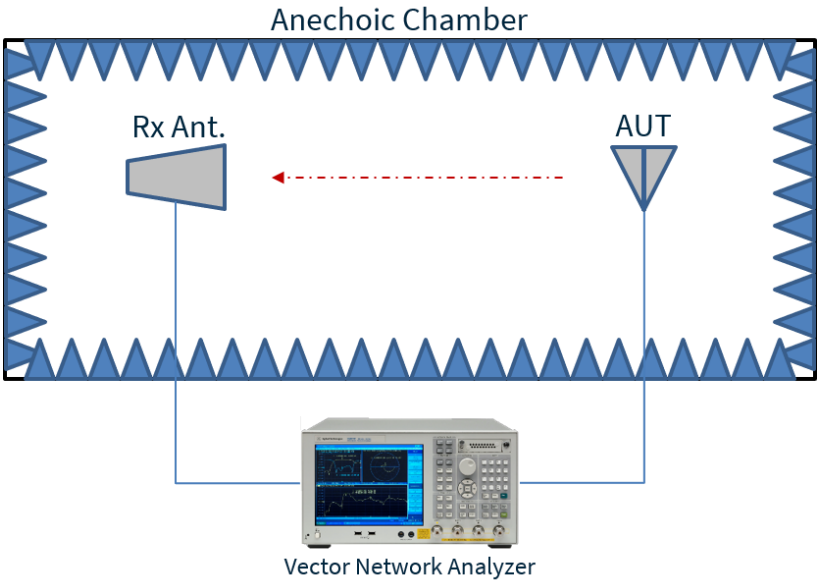


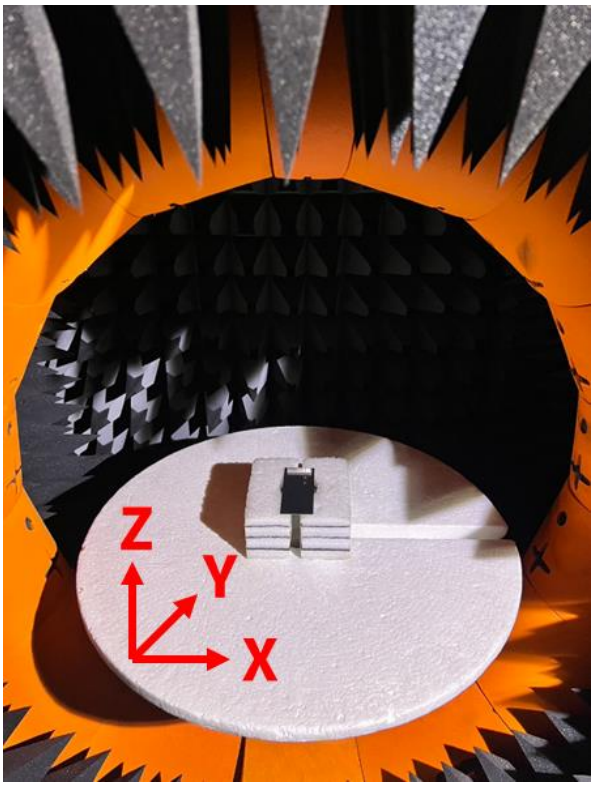

## 3.5 Peak Gain



# 4. Radiation Patterns

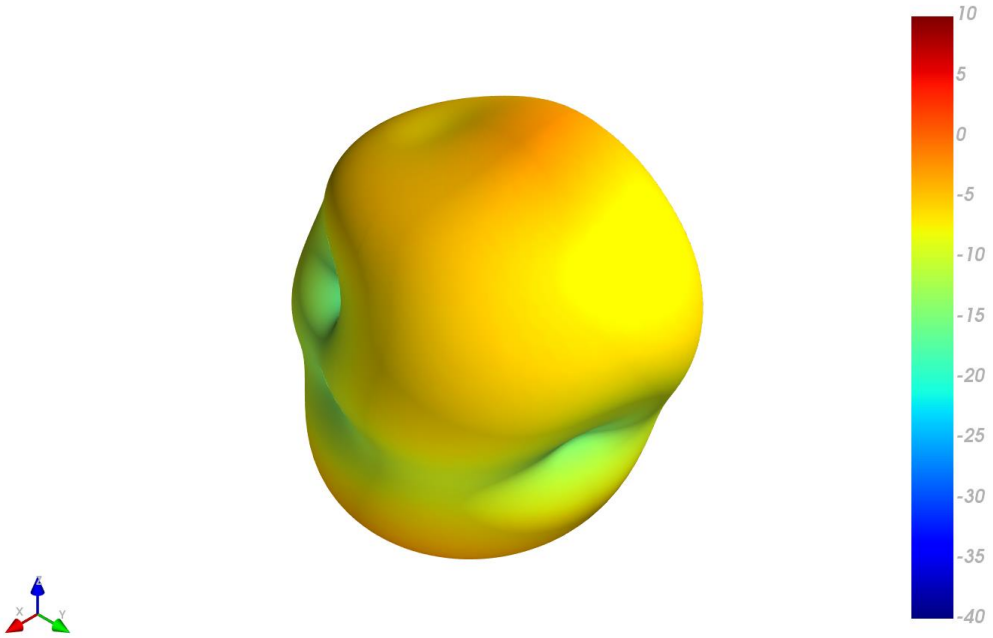
## 4.1 Test Setup

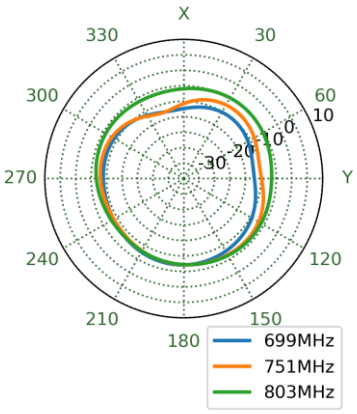
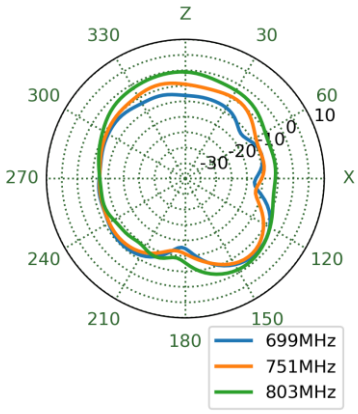
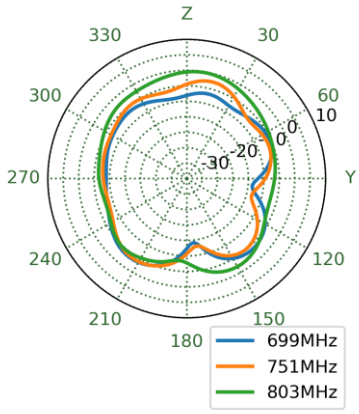


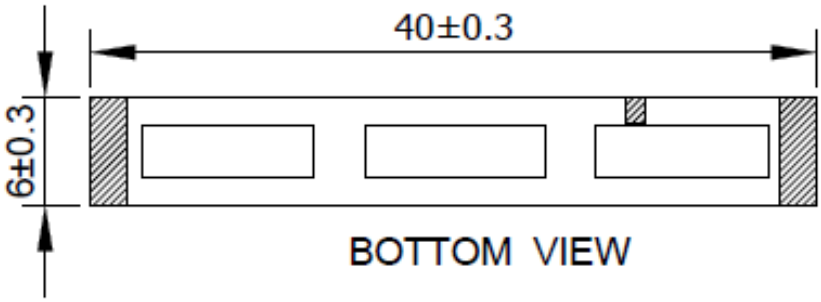
## 4.2 PA.500.A Patterns at 751 MHz

Gain total, 751MHz

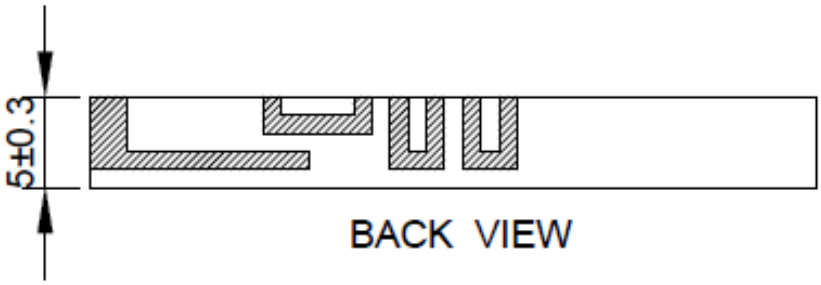



| XZ Plane | YZ Plane | XY Plane |
|---|---|---|
|  |  |  |

# 5. Mechanical Drawing




BOTTOM VIEW




BACK VIEW


TOP VIEW

FRONT VIEW

# 6. Packaging


☑ 450 PCS/ Reel
☑ SPQ Label

☑ 1 PCS / Vacuum bag
☑ 2 PCS / 3g Desiccant
☑ 1 PCS / Humidity test paper
☑ SPQ Label

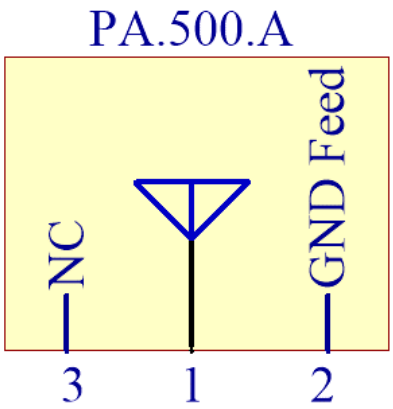
☑ 1 PCS / Box
☑ Box(mm): 350x340x85
☑ Carton Label

# 7. Antenna Integration Guide

## 7.1 Schematic and Symbol Definition

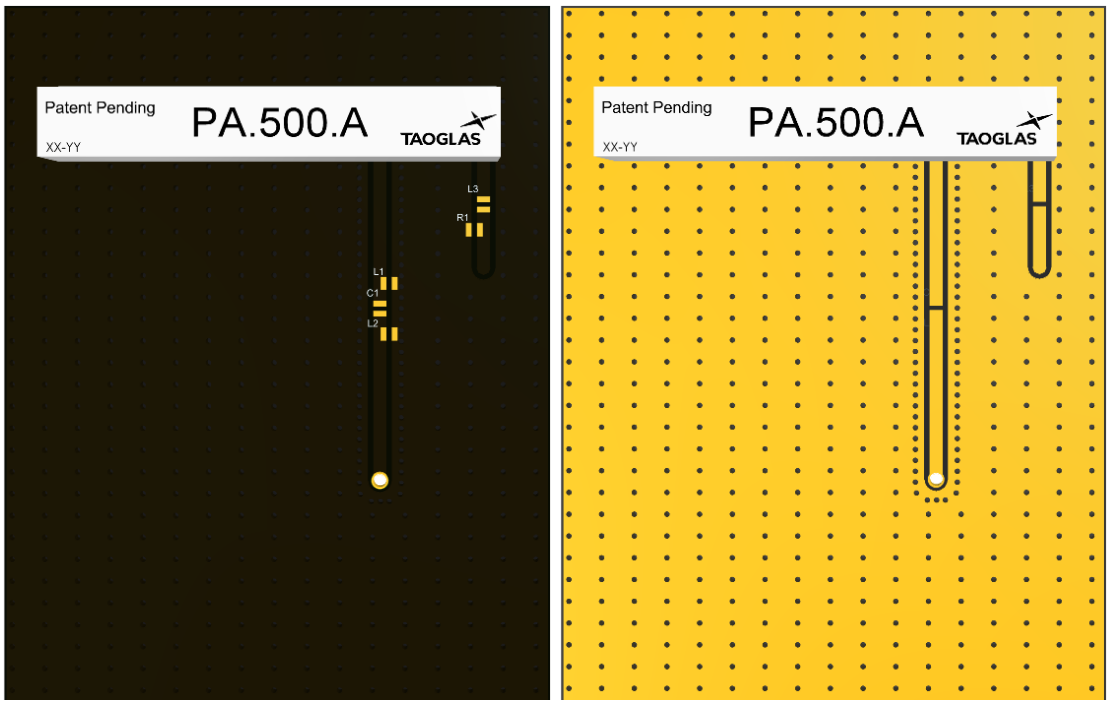
The circuit symbol for the antenna is shown below. The antenna has 2 pins. (Pin 1: RF Feed and Pin 2: Ground)

| Pin | Description |
|---|---|
| 1 | RF Feed |
| 2 | GND Feed |
| 3 | NC |



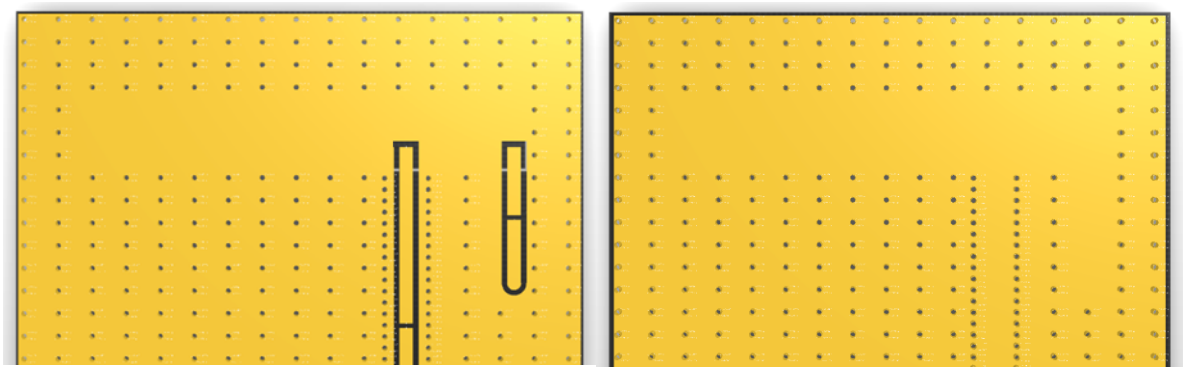
## 7.2 Antenna Integration

Whatever the size of the PCB, the antenna should ideally be placed on the PCB's shortest side, to take advantage of the ground plane. Optimized matching components can be placed as shown.



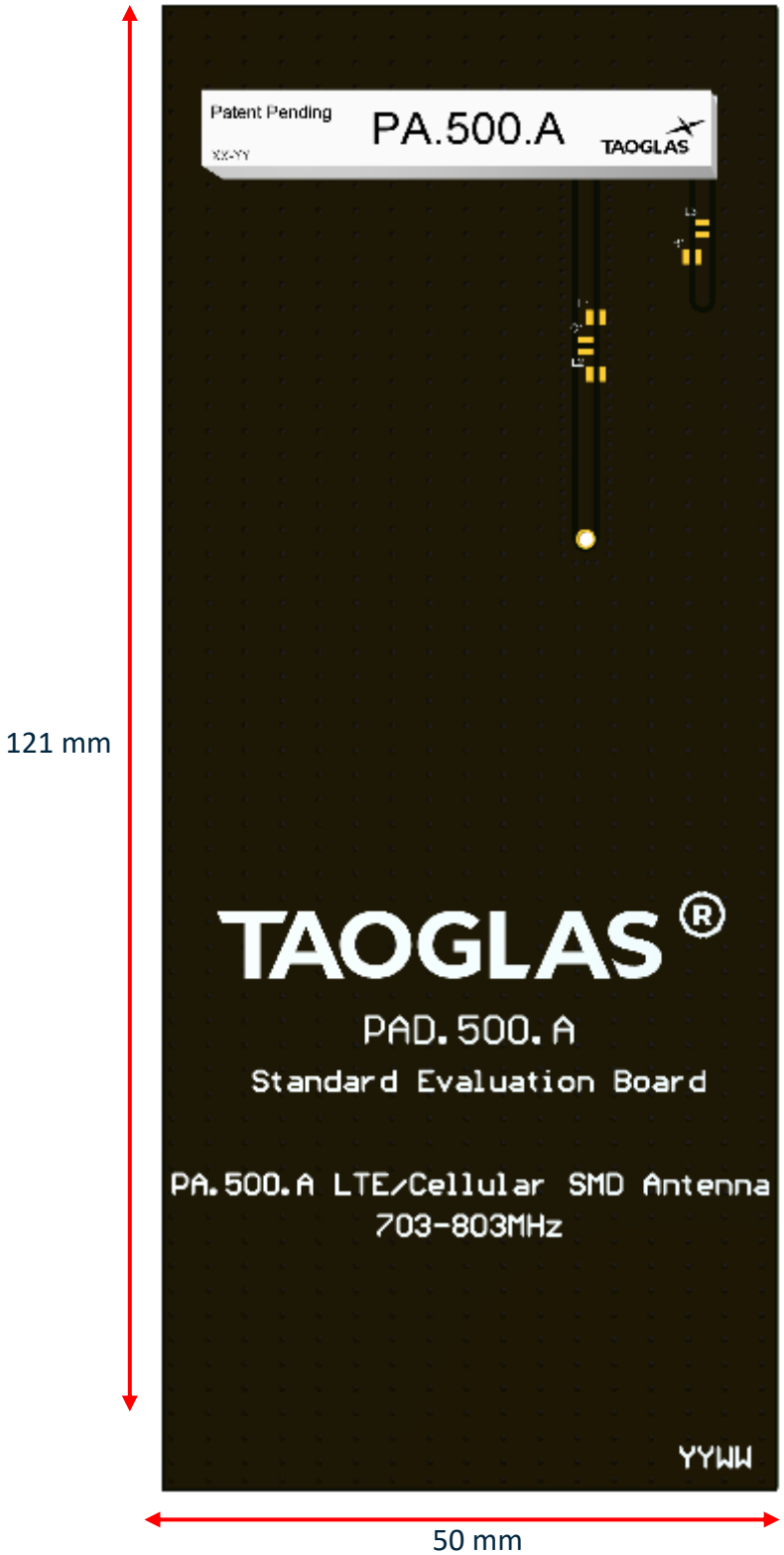

## 7.3 PCB Layout

The footprint on the PCB must meet the antenna specification. An example of the PCB layout shows the antenna footprint without clearance.



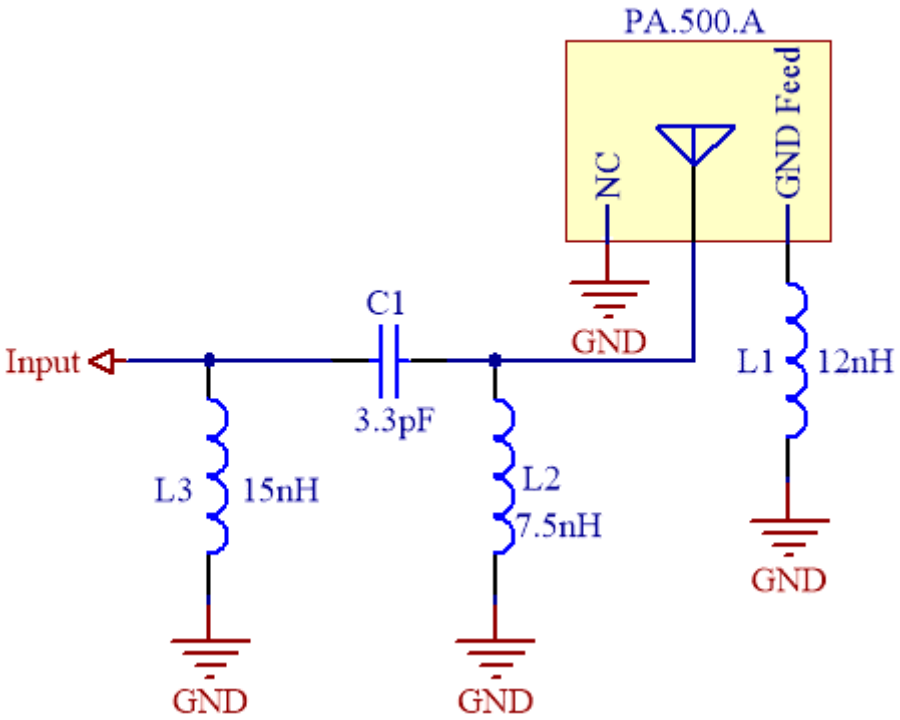
Topside Bottom Side

## 7.4 Evaluation Board



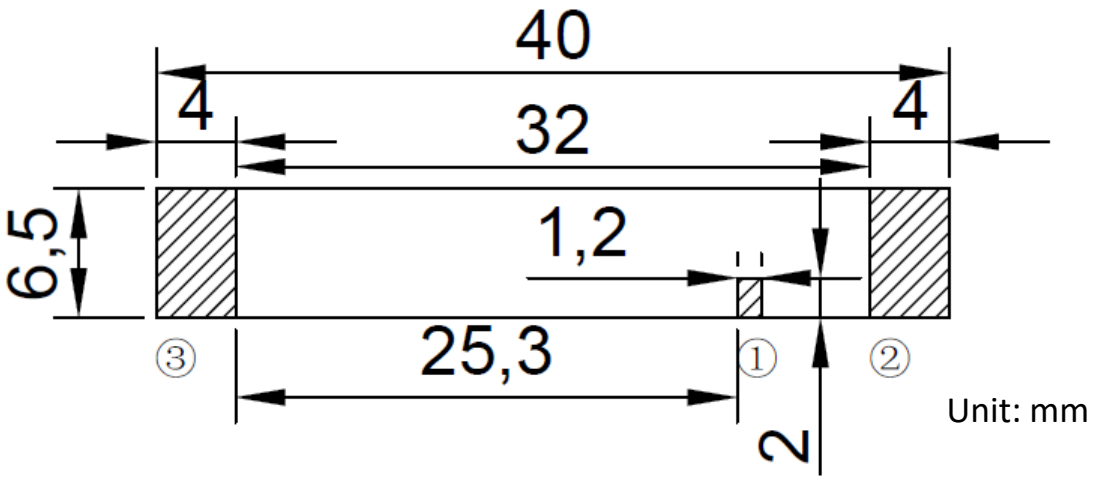
## 7.5 Evaluation Board Matching Circuit

The footprint on the PCB must meet the antenna specification. An example of the PCB layout shows the antenna footprint without clearance room.




| Designator | Type | Value |
|---|---|---|
| L1 | Inductor | 12 nH |
| L2 | Inductor | 7.5 nH |
| L3 | Inductor | 15 nH |
| C1 | Capacitor | 3.3 pF |

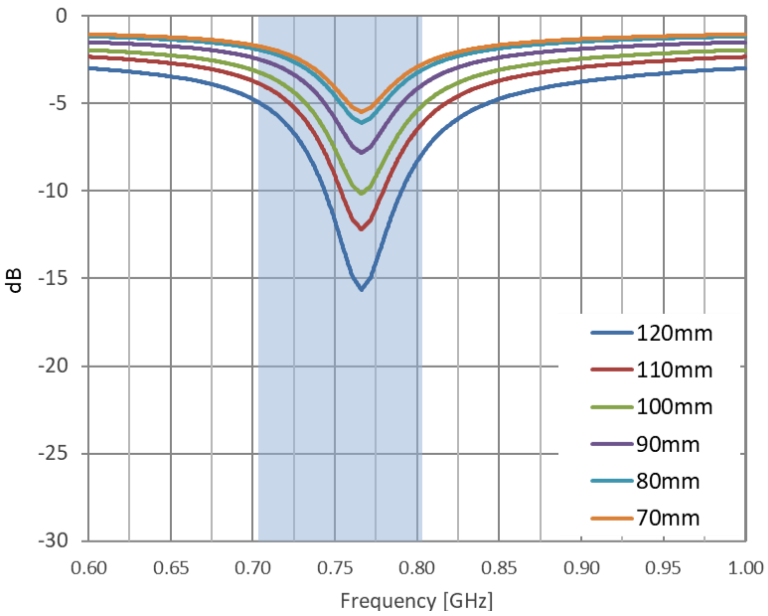
## 7.6 Footprint



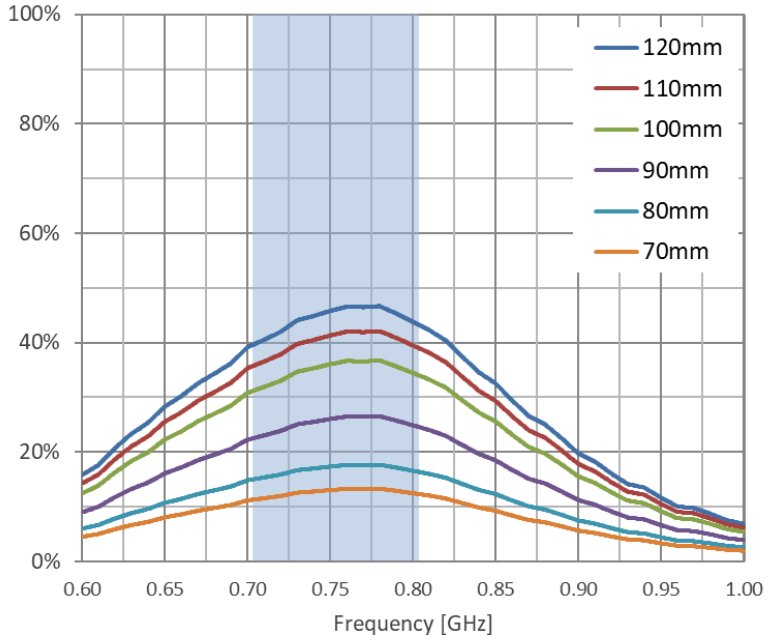

| Pin | Description |
|---|---|
| 1 | RF Feed |
| 2 | GND Feed |
| 3 | NC |

# 8. Application Note (Different PCB length)

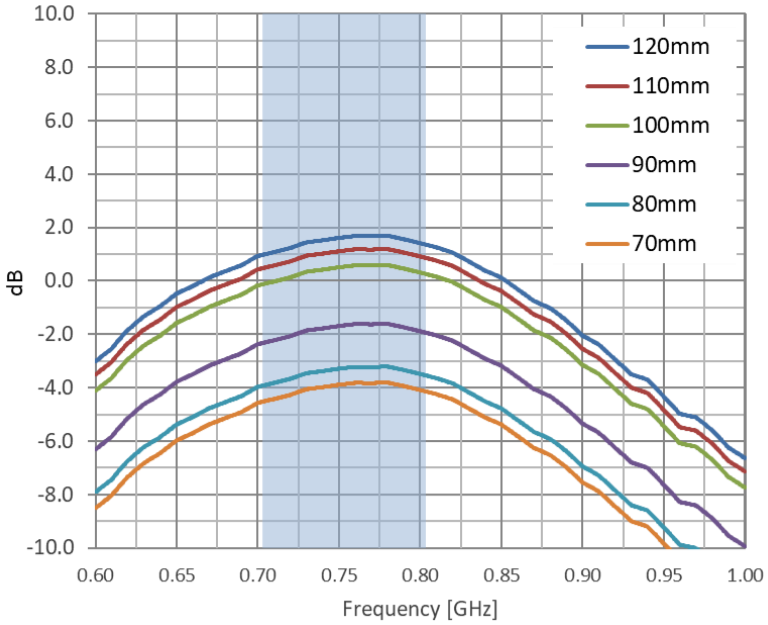
## 8.1 Return Loss



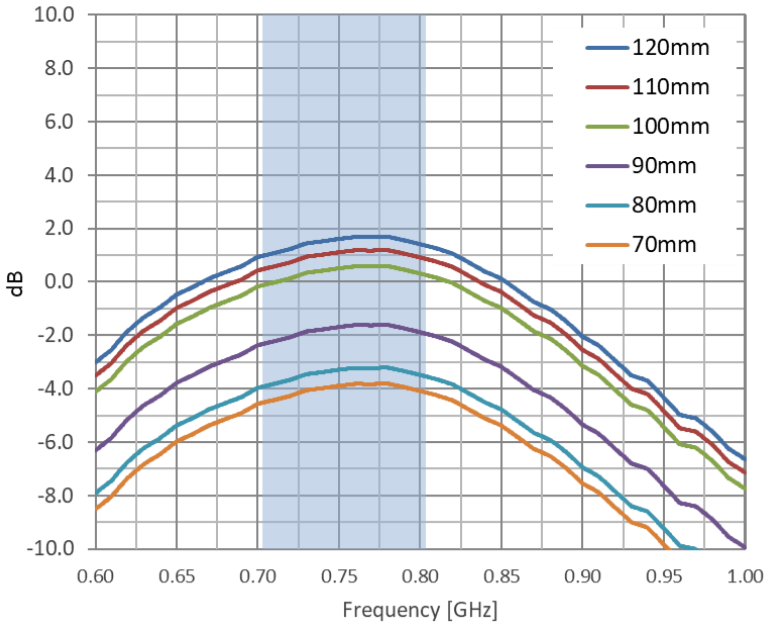

## 8.2 Efficiency



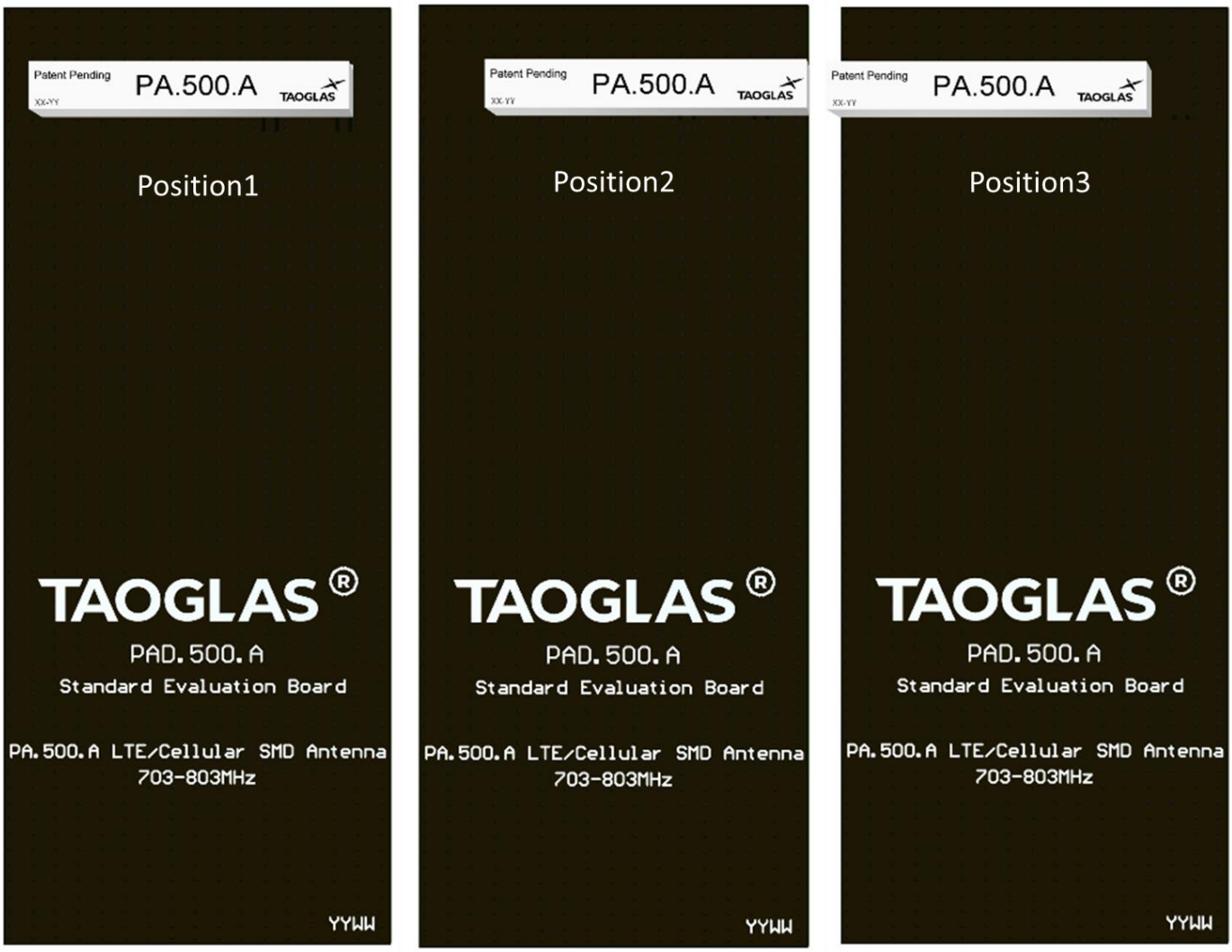
## 8.3 Average Gain



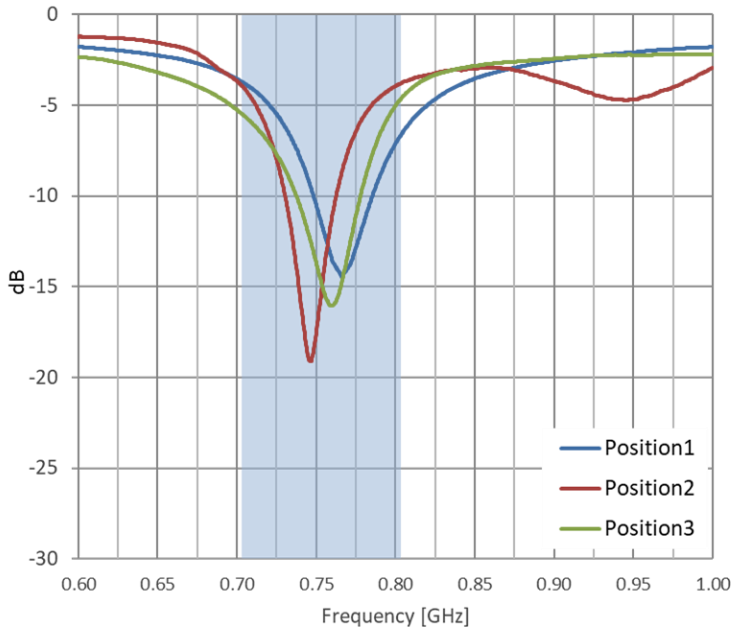

## 8.4 Peak Gain



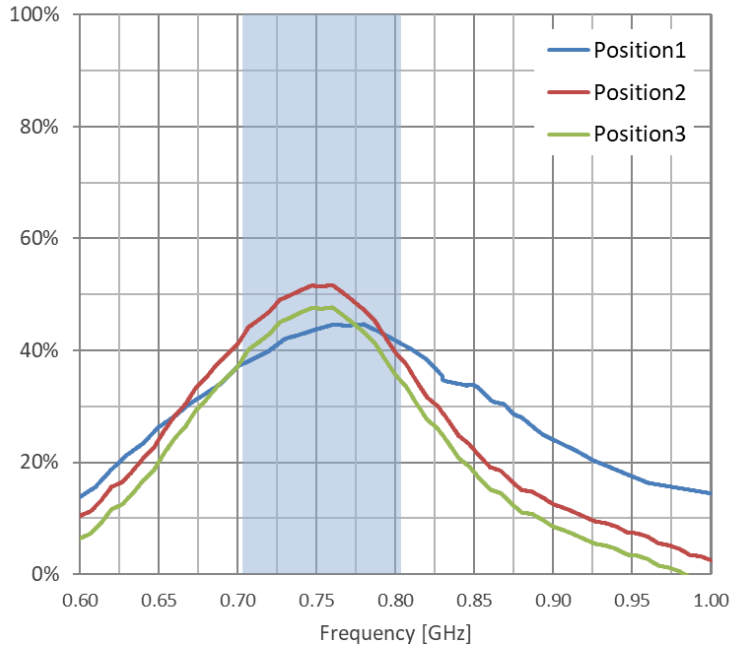
# 9. Application Note (Antenna in different position)



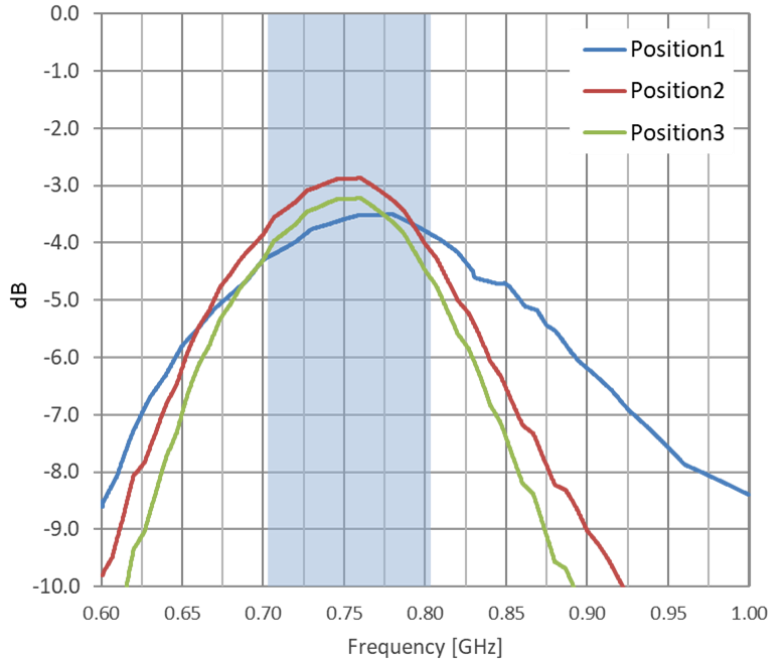
## 9.1 Return Loss



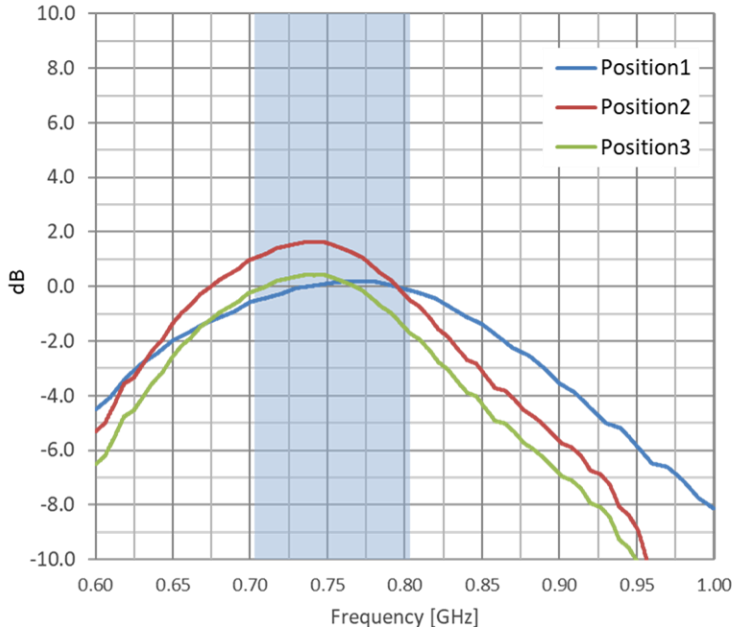

## 9.2 Efficiency



## 9.3 Average Gain




## 9.4 Peak Gain



Changelog for the datasheet

## SPE-23-8-182– PA.500.A

| Revision: A (Initial Release) | |
|---|---|
| Date: | 2023-06-19 |
| Changes: | |
| Changes Made by: | Jack Conroy |

**Previous Revisions**

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