

## SPECIFICATION

|              |   |                                                                                                                                                                                                                             |
|--------------|---|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Part No.     | : | WSA.2400.A.101151                                                                                                                                                                                                           |
| Product Name | : | Phoenix WSA.2400 Bluetooth® I-Bar 2.4GHz Antenna                                                                                                                                                                            |
| Features     | : | Wi-Fi®/WLAN 2.4GHz Adhesive Mount Antenna<br>1m RG-174 cable with RP-SMA(M) connector<br>Adhesive Mount<br>Low Profile for Ease of Installation<br>Fully Customizable Cable and Connector<br>105*30*7.7mm<br>RoHS Compliant |



## 1. Introduction

The Phoenix WSA.2400 I-Bar antenna is a robust and low profile antenna operating on the 2.4GHz band for Wi-Fi®, Bluetooth®, and ISM applications.

The Phoenix has a slim-line design, which allows for covert and convenient installation in any application, while its omnidirectional radiation pattern and 2dBi gain ensure constant reception and transmission. It is manufactured and tested in a TS16949 first tier automotive approved facility and has undergone full PPAP design, reliability and quality audits.

The Phoenix is especially suited for applications such as:

- First-tier automotive applications
- Telematics

The Phoenix has exceptional industry performance characteristics considering its very low profile (just 7.7mm) and compact size (105\*30mm).

This UV resistant antenna is designed to be mounted on glass or plastic but not on metal. It comes with strong 3M double-sided adhesive for a permanent and secure fix to your application.

Cable lengths, types and connectors are fully customizable.

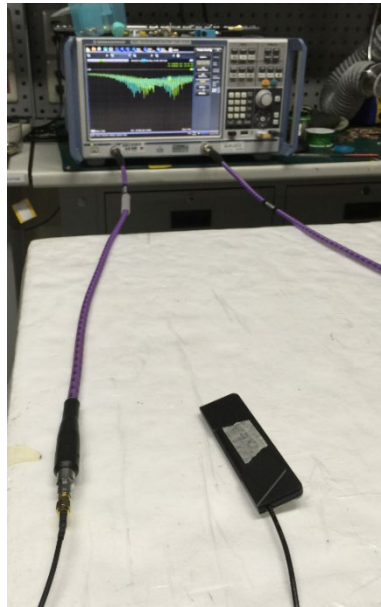
## 2. Specification

| Wi-Fi             |      |              |
|-------------------|------|--------------|
| Frequency         |      | 2400~2500MHz |
| Efficiency (%)    |      |              |
| In free space     | 0.3m | 72.38        |
|                   | 1m   | 57.37        |
|                   | 2m   | 40.97        |
|                   | 3m   | 29.31        |
|                   | 5m   | 15.19        |
| On glass          | 0.3m | 73.09        |
|                   | 1m   | 57.94        |
|                   | 2m   | 41.36        |
|                   | 3m   | 29.59        |
|                   | 5m   | 15.34        |
| On the 2mm ABS    | 0.3m | 71.10        |
|                   | 1m   | 56.37        |
|                   | 2m   | 40.24        |
|                   | 3m   | 28.79        |
|                   | 5m   | 14.92        |
| Average Gain(dBi) |      |              |
| In free space     | 0.3m | -1.40        |
|                   | 1m   | -2.41        |
|                   | 2m   | -3.88        |
|                   | 3m   | -5.33        |
|                   | 5m   | -8.19        |
| On glass          | 0.3m | -1.36        |
|                   | 1m   | -2.37        |
|                   | 2m   | -3.83        |
|                   | 3m   | -5.29        |
|                   | 5m   | -8.14        |
| On the 2mm ABS    | 0.3m | -1.48        |
|                   | 1m   | -2.49        |
|                   | 2m   | -3.95        |
|                   | 3m   | -5.41        |
|                   | 5m   | -8.26        |

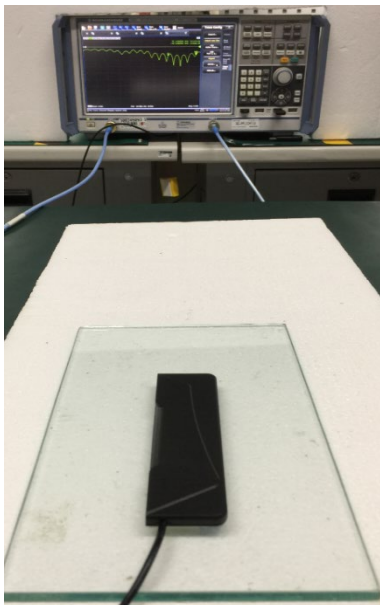
| Peak Gain(dBi)       |      |                 |
|----------------------|------|-----------------|
| In free space        | 0.3m | 2.18            |
|                      | 1m   | 1.18            |
|                      | 2m   | -0.22           |
|                      | 3m   | -1.72           |
|                      | 5m   | -4.52           |
| On glass             | 0.3m | 4.67            |
|                      | 1m   | 3.67            |
|                      | 2m   | 2.17            |
|                      | 3m   | 0.77            |
|                      | 5m   | -2.13           |
| On the 2mm ABS       | 0.3m | 3.21            |
|                      | 1m   | 2.21            |
|                      | 2m   | 0.74            |
|                      | 3m   | -0.69           |
|                      | 5m   | -3.56           |
| Return loss          |      | < -10 dB        |
| VSWR                 |      | ≤ 2:1           |
| Impedance            |      | 50Ω             |
| Polarization         |      | Linear          |
| Radiation Pattern    |      | Omnidirectional |
| Input Power          |      | 2W              |
| <b>MECHANICAL</b>    |      |                 |
| Dimensions           |      | 105*30*7.7mm    |
| Casing               |      | PC/ABS          |
| Connector            |      | RP-SMA(M)       |
| Cable                |      | RG-174          |
| Weight               |      | 50g             |
| <b>ENVIRONMENTAL</b> |      |                 |
| Temperature Range    |      | -40°C to 85°C   |

## 3. Antenna Characteristics

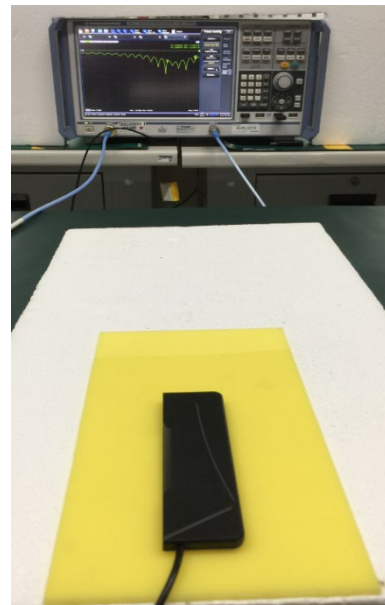
### 3.1 Antenna Test Setup



In free space

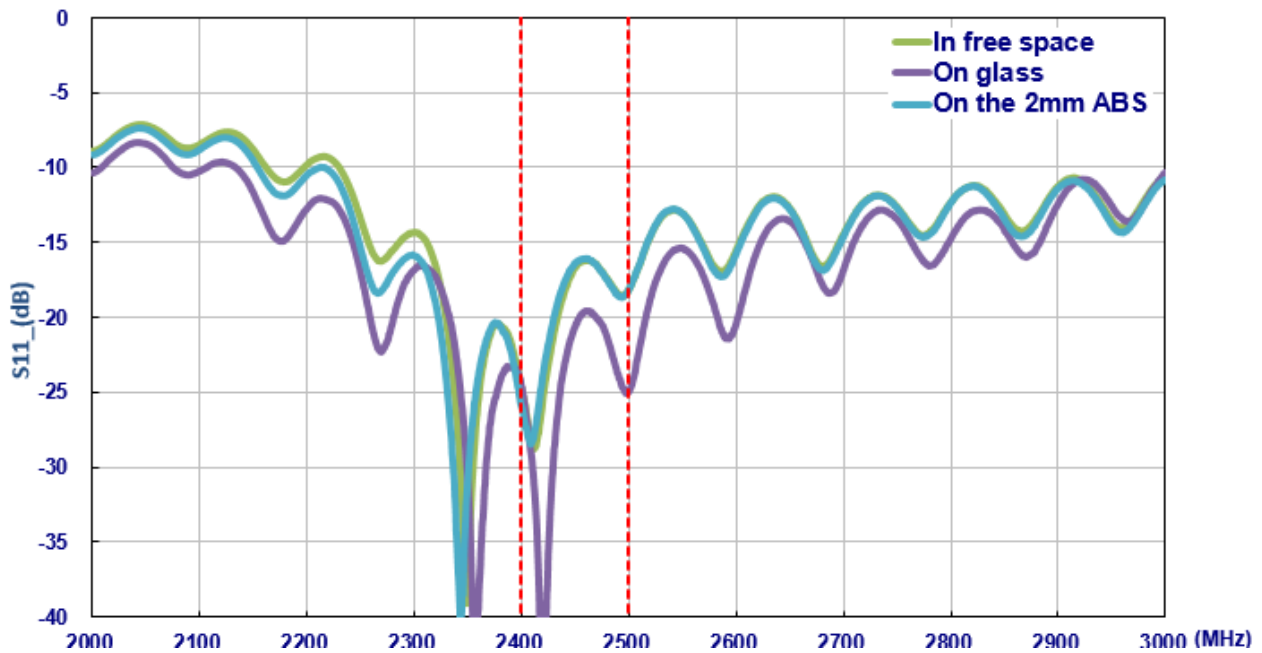


On glass

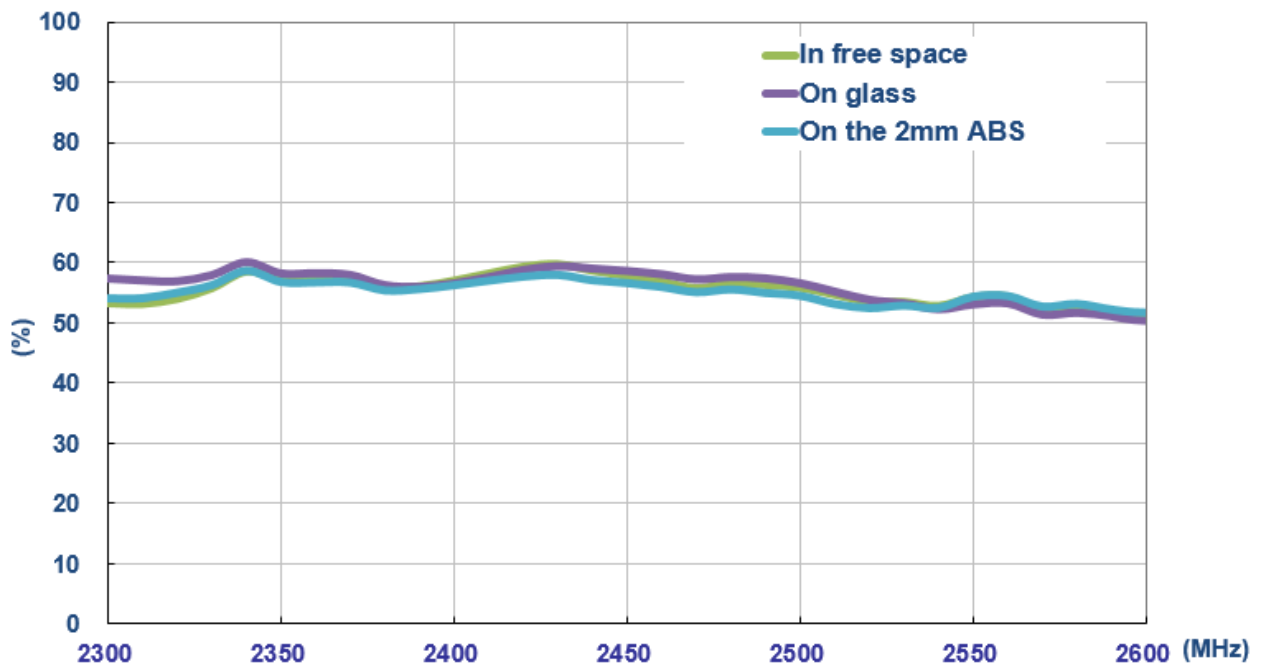


On the 2mm ABS

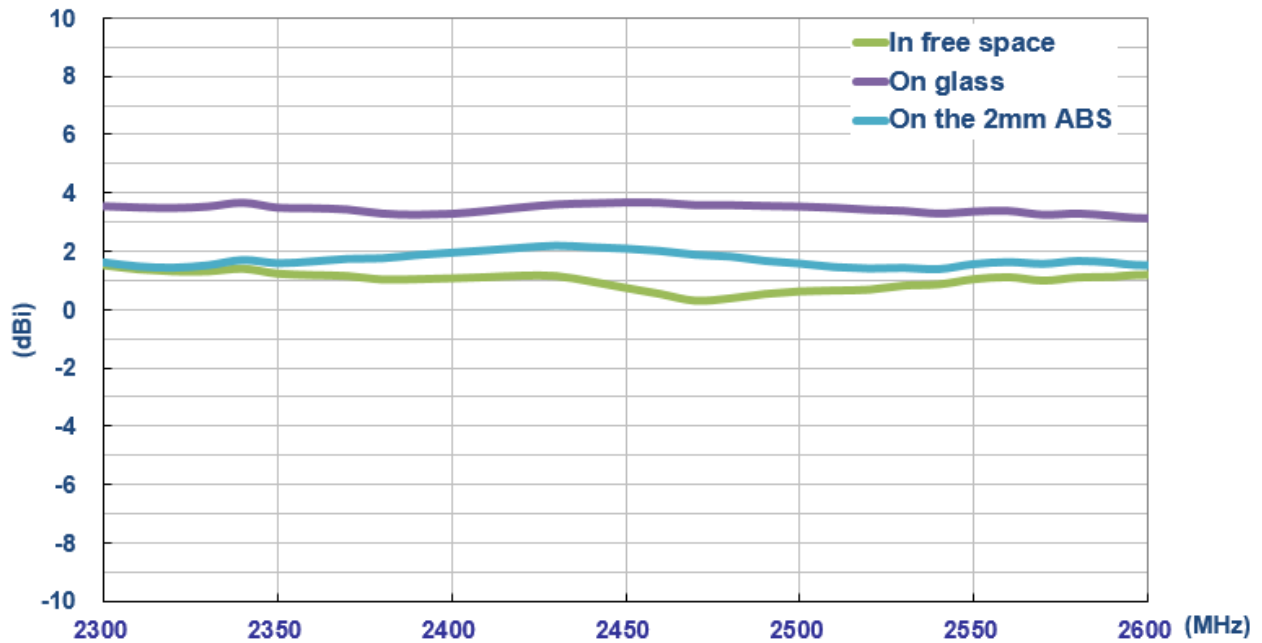
## 3.2 Return Loss



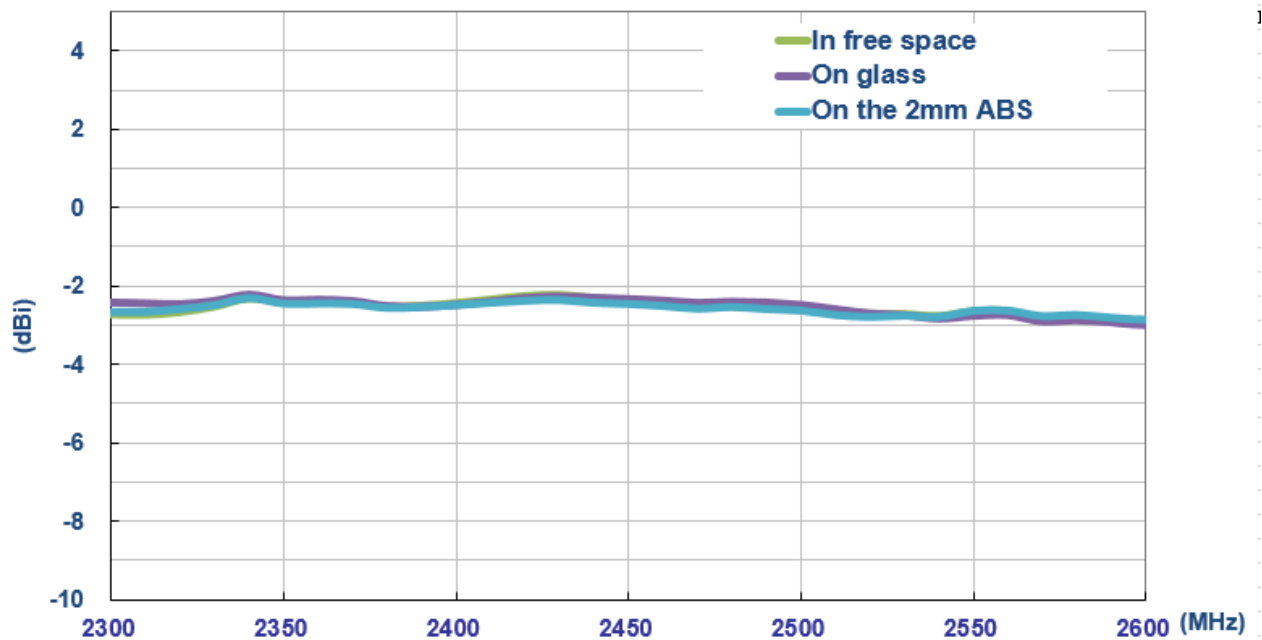
## 3.3 Efficiency



## 3.4 Peak Gain

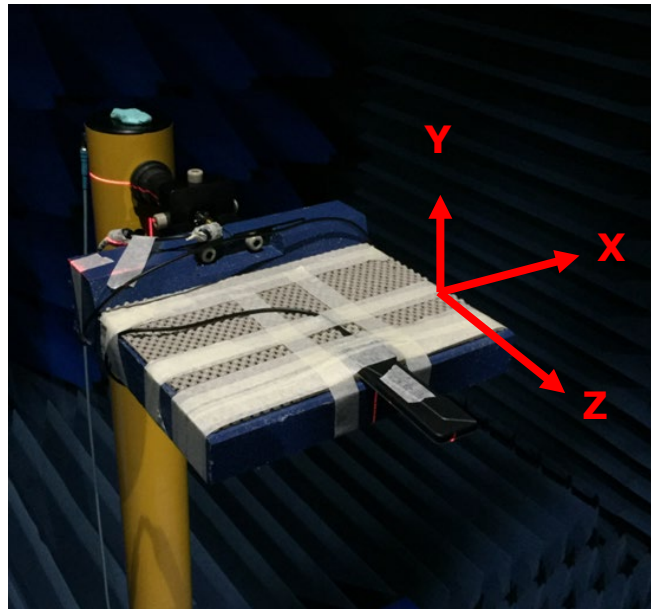


## 3.5 Average Gain

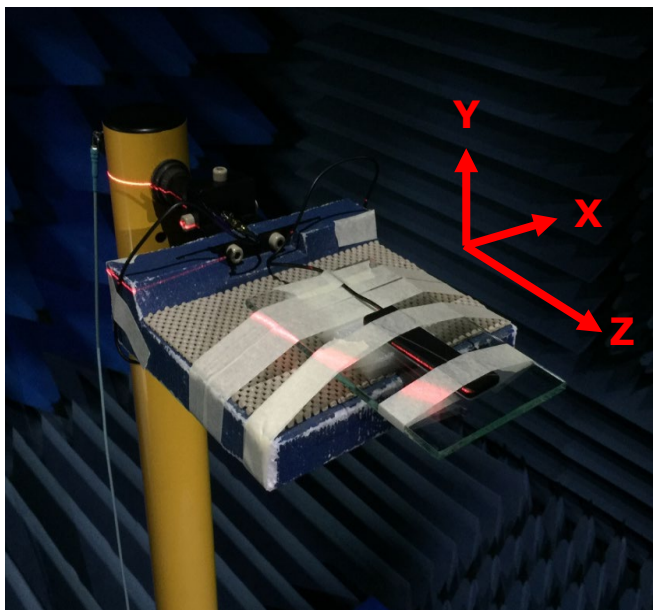


## 4. Antenna Radiation Patterns

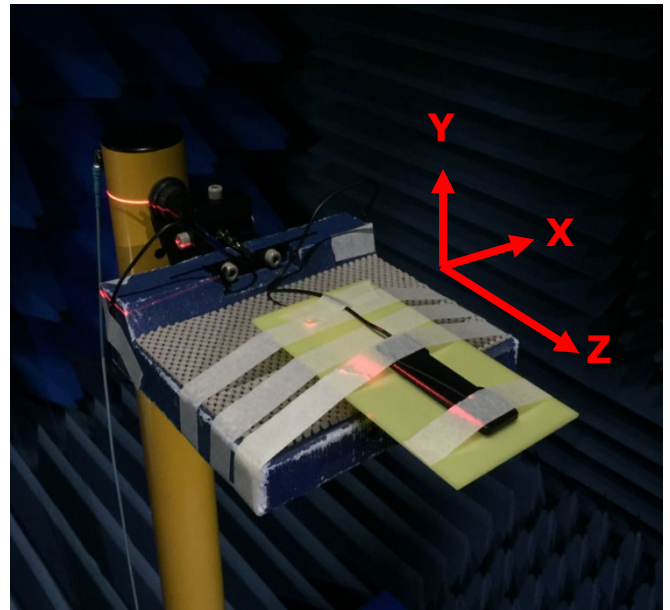
### 4.1 Antenna Setup (Antenna testing Setup in ETS Anechoic Chamber)



In free space



On glass

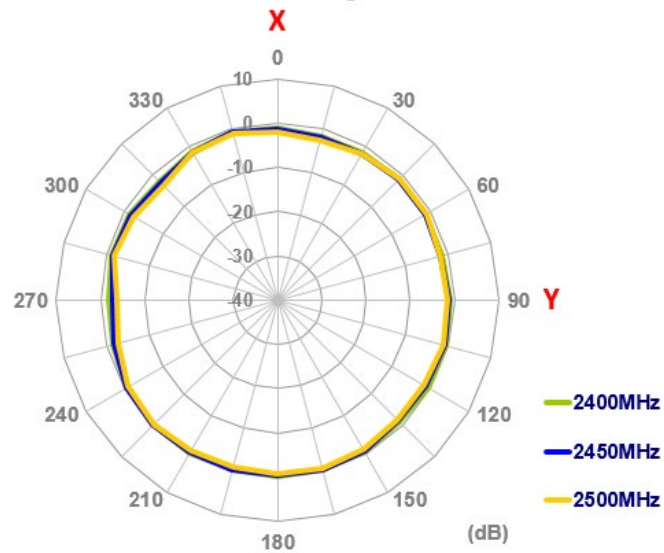


On the 2mm ABS

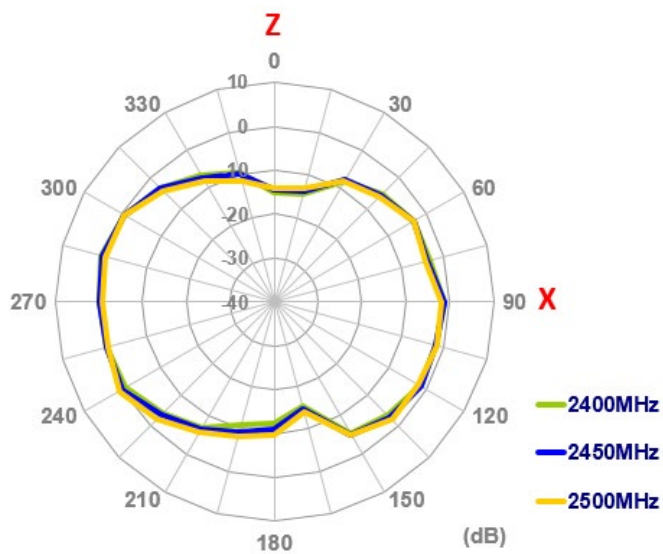
## 4.2 2D Radiation Patterns

### 4.2.1 In free space

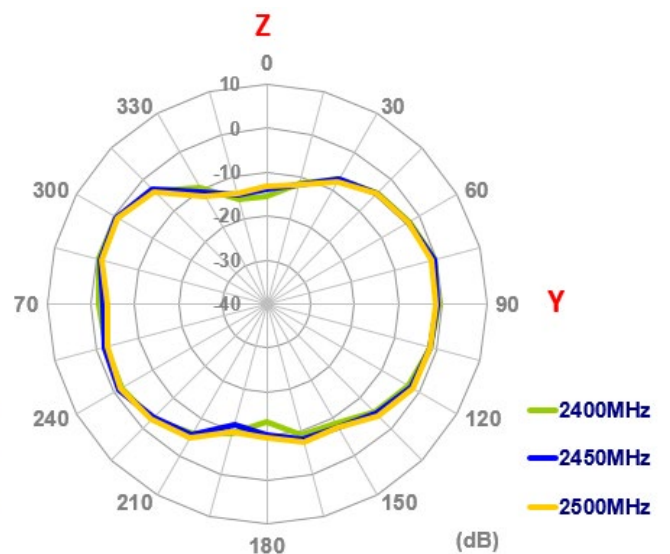
XY Plane



XZ Plane

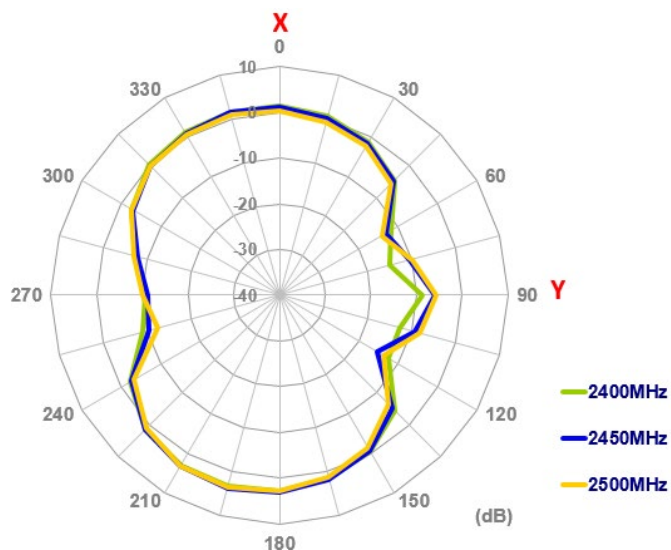


YZ Plane

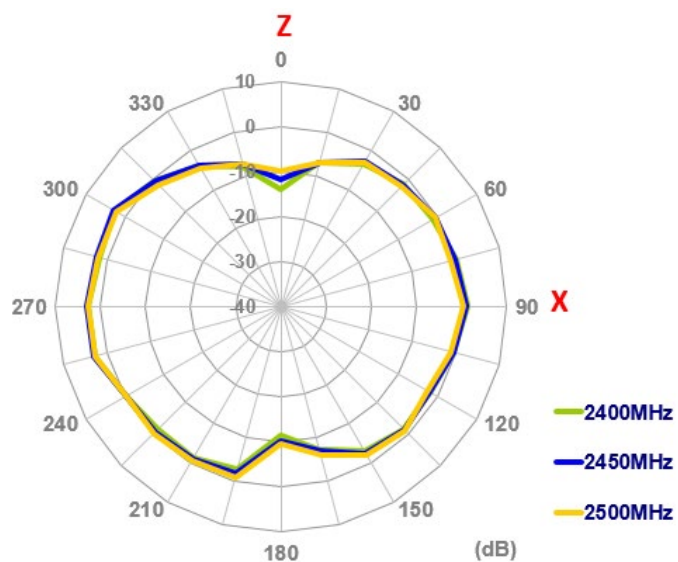


## 4.2.2 On glass

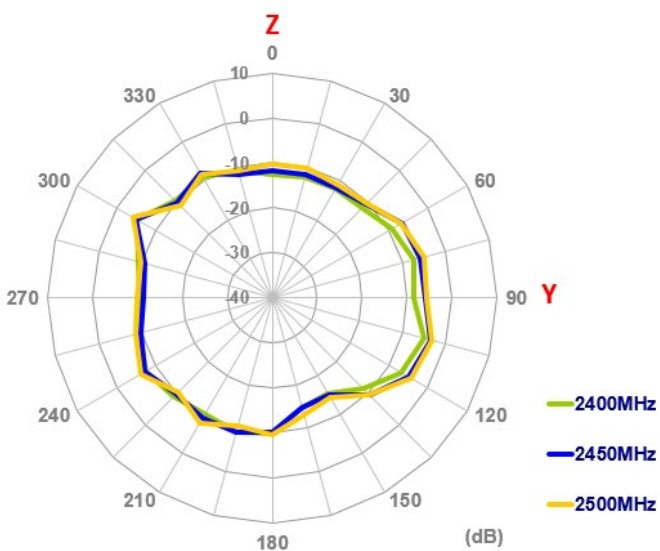
### XY Plane



### XZ Plane

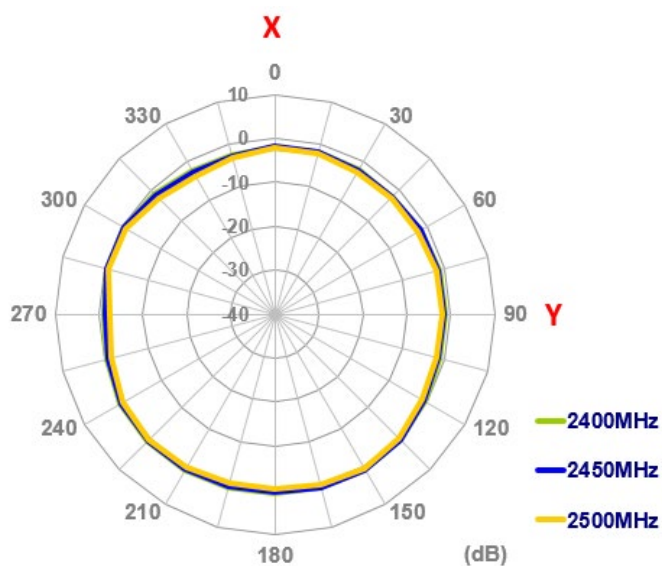


### YZ Plane



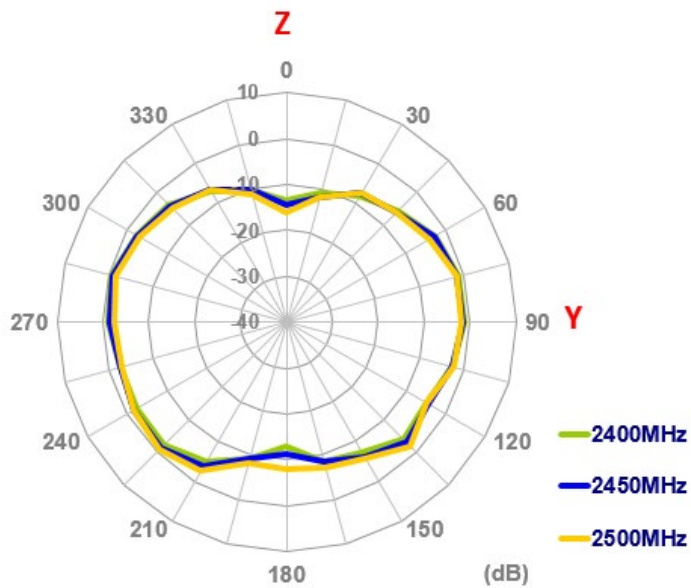
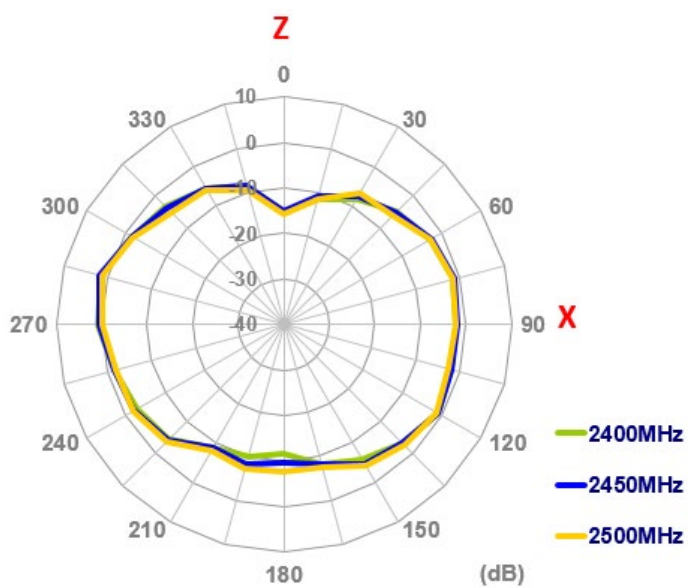
## 4.2.3 On the 2mm ABS

XY Plane



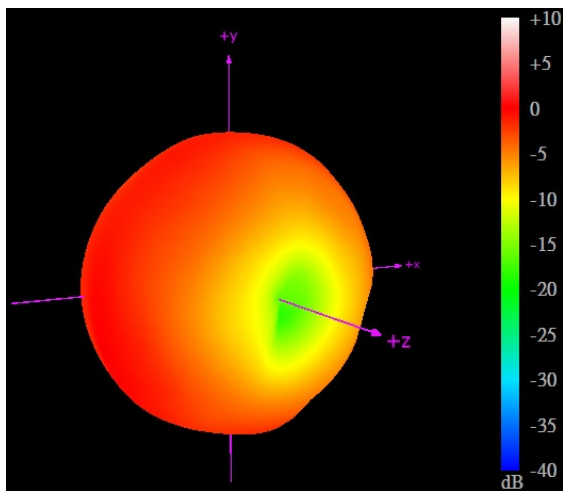
XZ Plane

YZ Plane

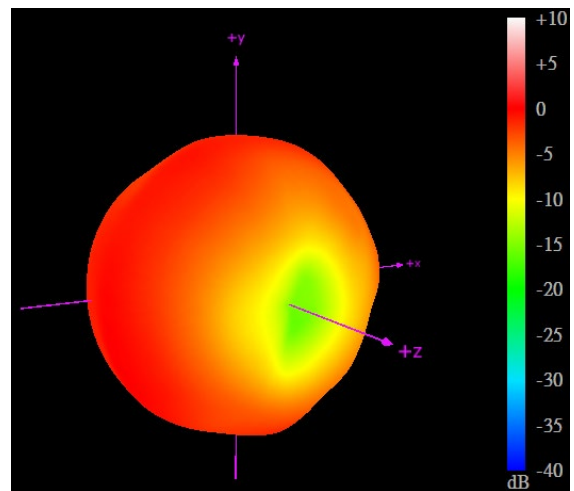


## 4.3 Antenna 3D Radiation Pattern

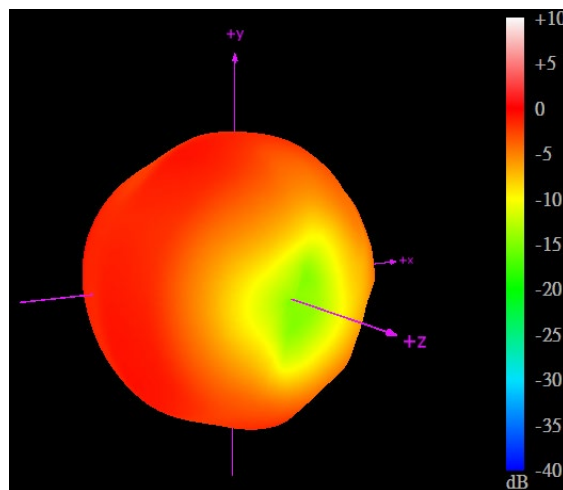
### 4.3.1 In free space



2400MHz

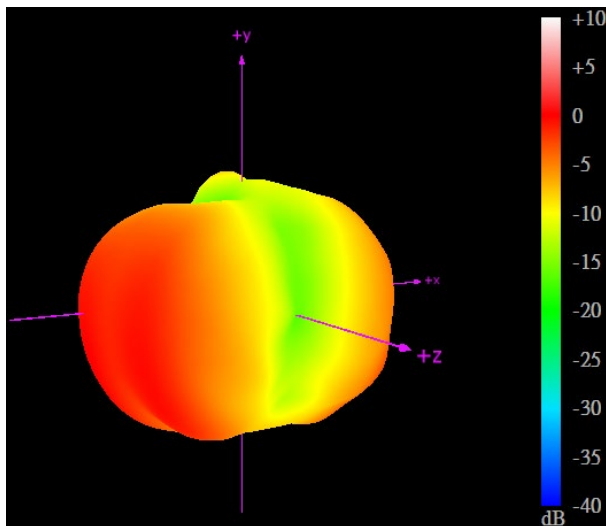


2450MHz

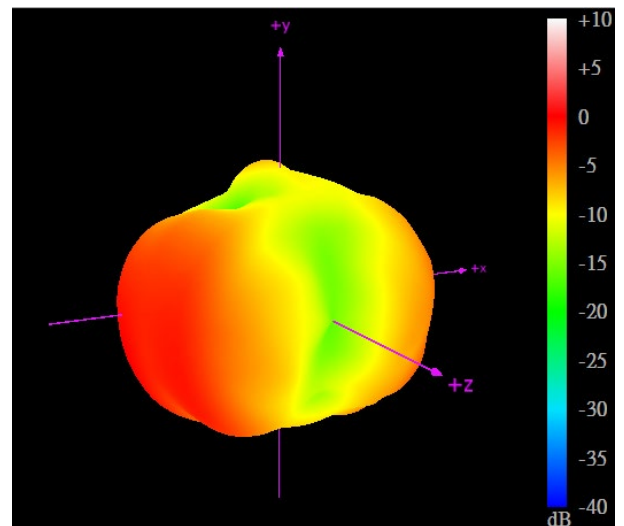


2500MHz

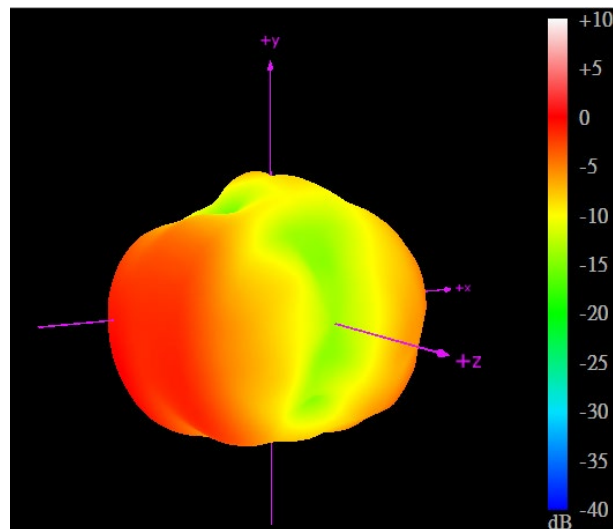
### 4.3.2 On glass



2400MHz

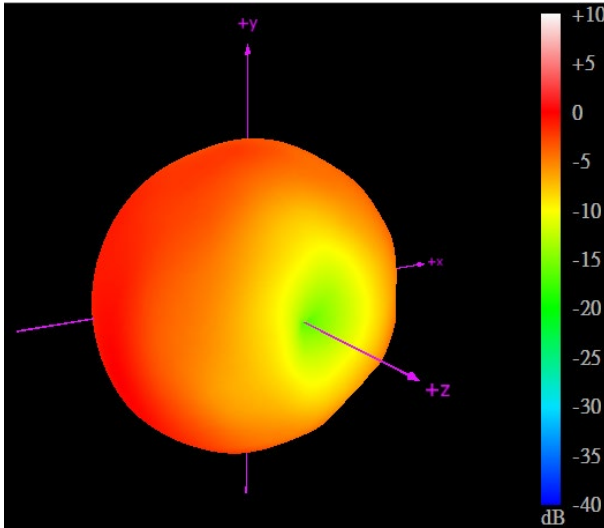


2540MHz

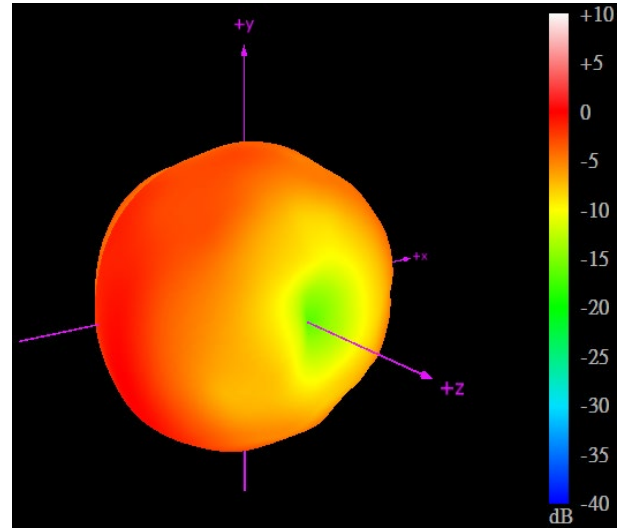


2500MHz

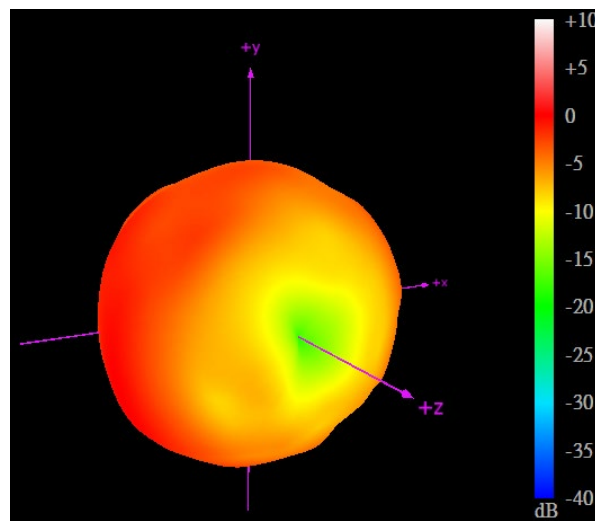
### 4.3.3 On the 2mm ABS



2400MHz



2540MHz



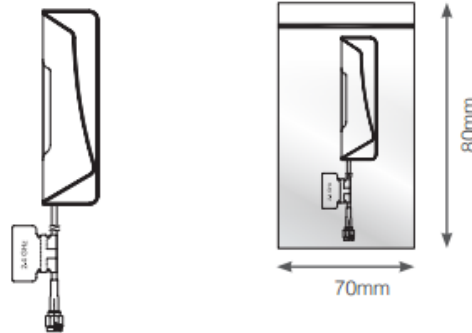
2500MHz



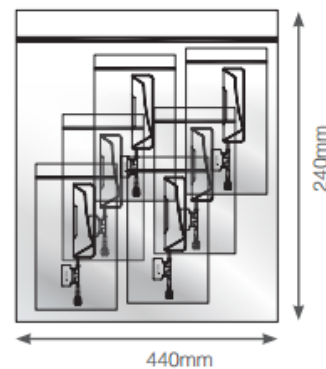
## 6. Packaging

### Packaging Specifications

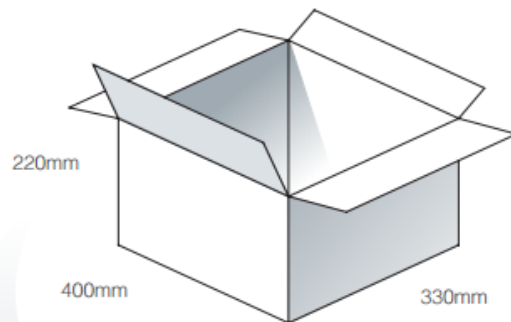
1pcs WSA.2400.A.101151 per PE Bag  
Bag Dimensions - 70 x 80mm  
Weight - 35g



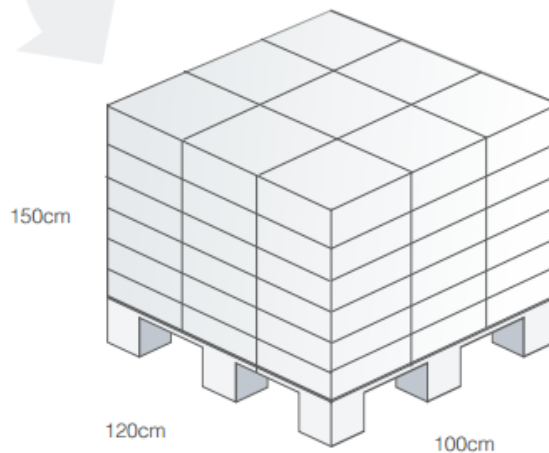
10 PE Bags per large PE Bags  
10 pcs MA301.A.AB.001 per large PE Bag  
large PE Bags Dimensions - 440 x 240mm  
Weight - 0.44KG



10 pcs WSA.2400.A.101151 per carton  
Carton - 400 x 330 x 220mm  
Weight - 5.2Kg



Pallet Dimensions 120 x 100x 150cm  
54 Cartons per Pallet  
9 Cartons per layer  
6 Layers

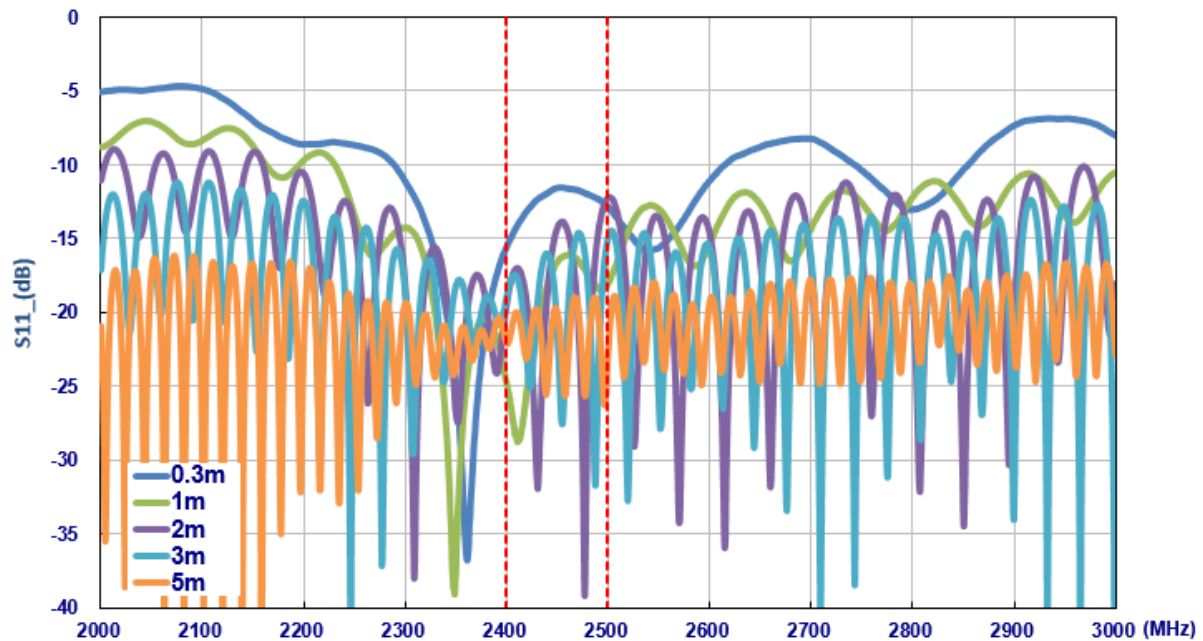


## 7. Application Note

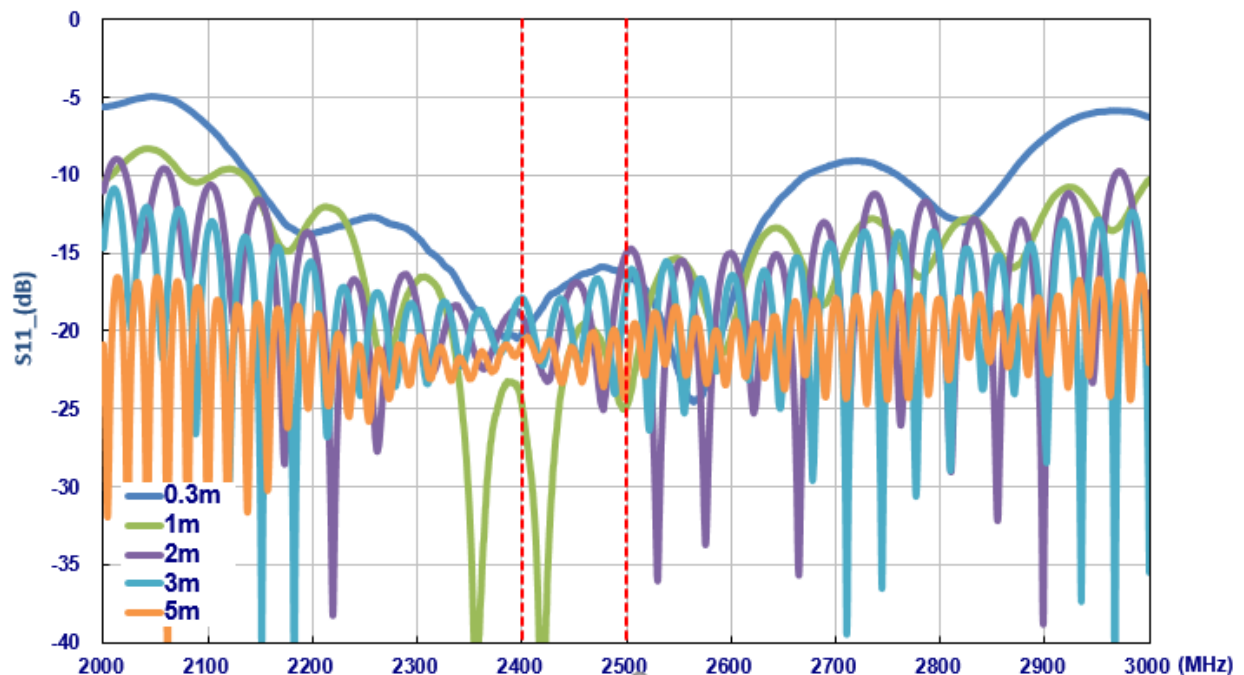
Antenna performance versus cable length is shown below.

### 7.1 Return Loss

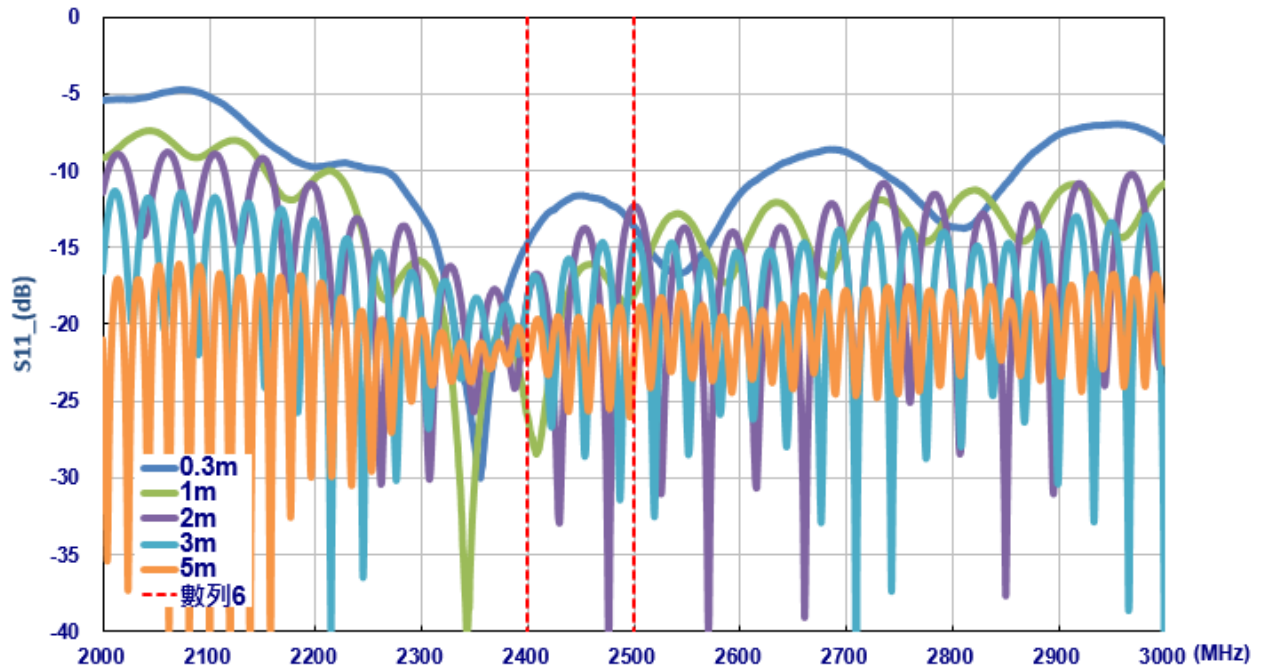
In free space



On glass

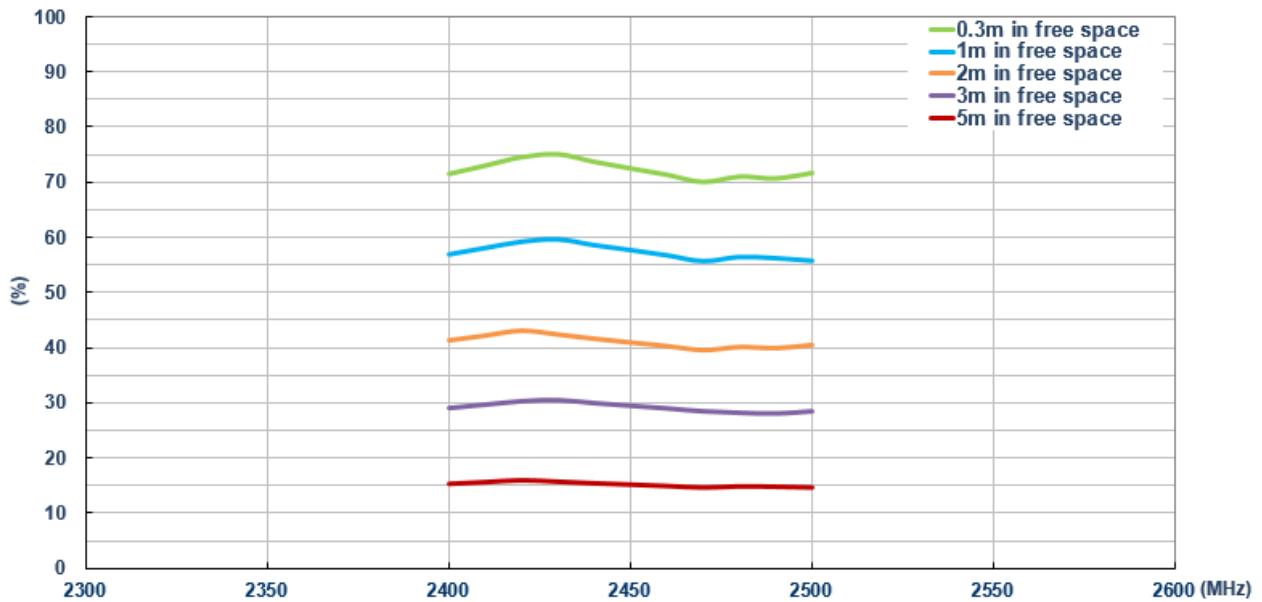


On the 2mm ABS

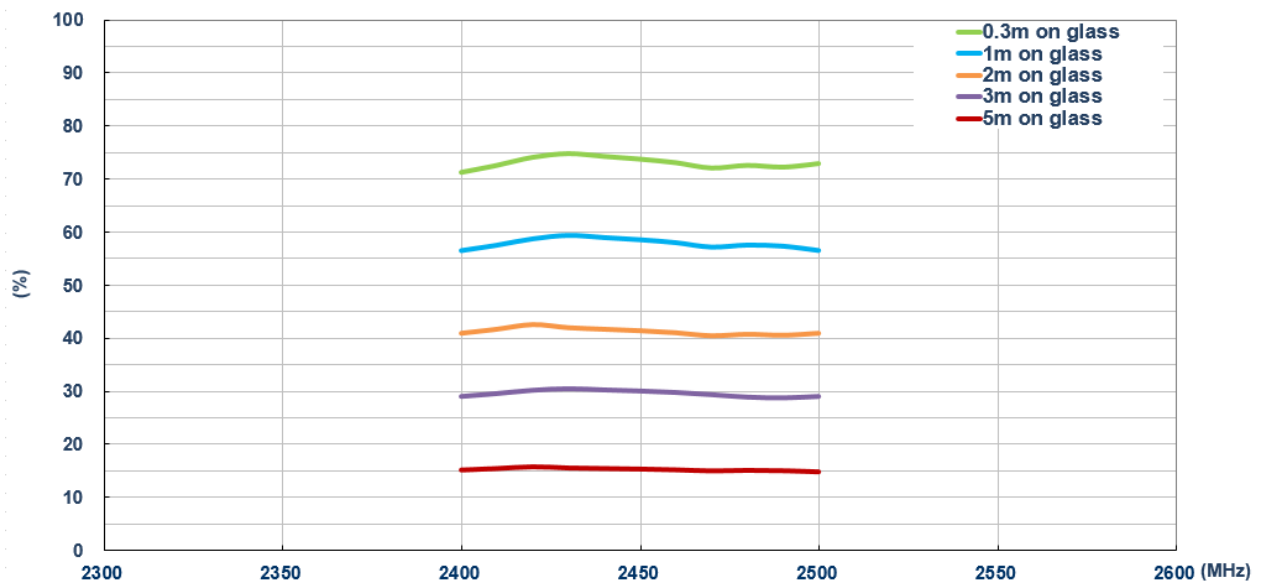


## 7.2 Efficiency

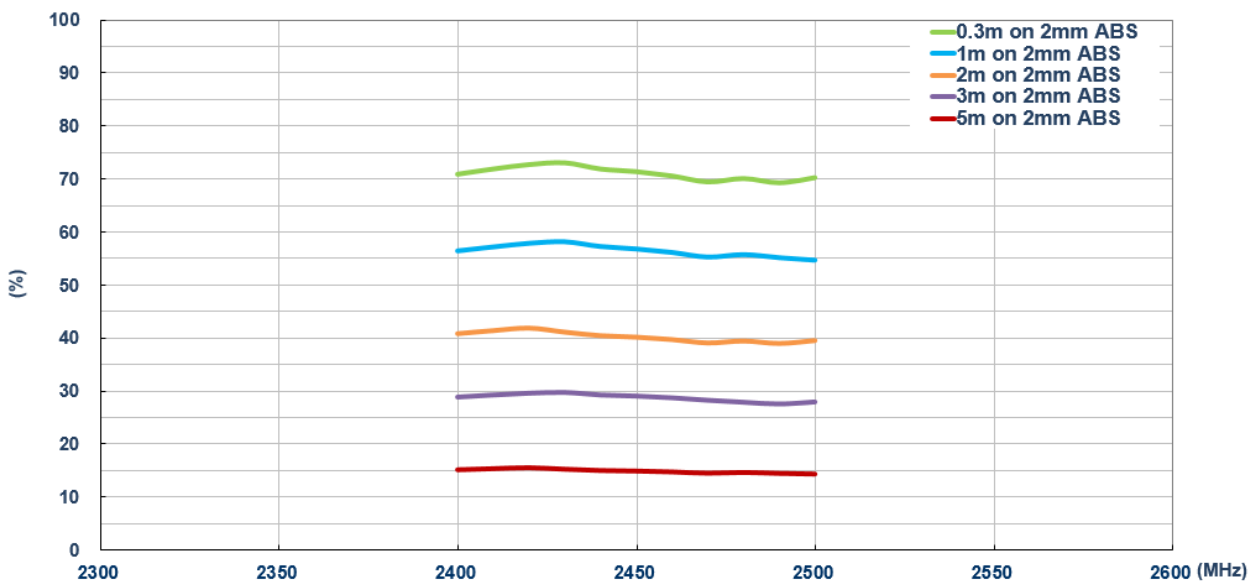
### In free space



## On glass

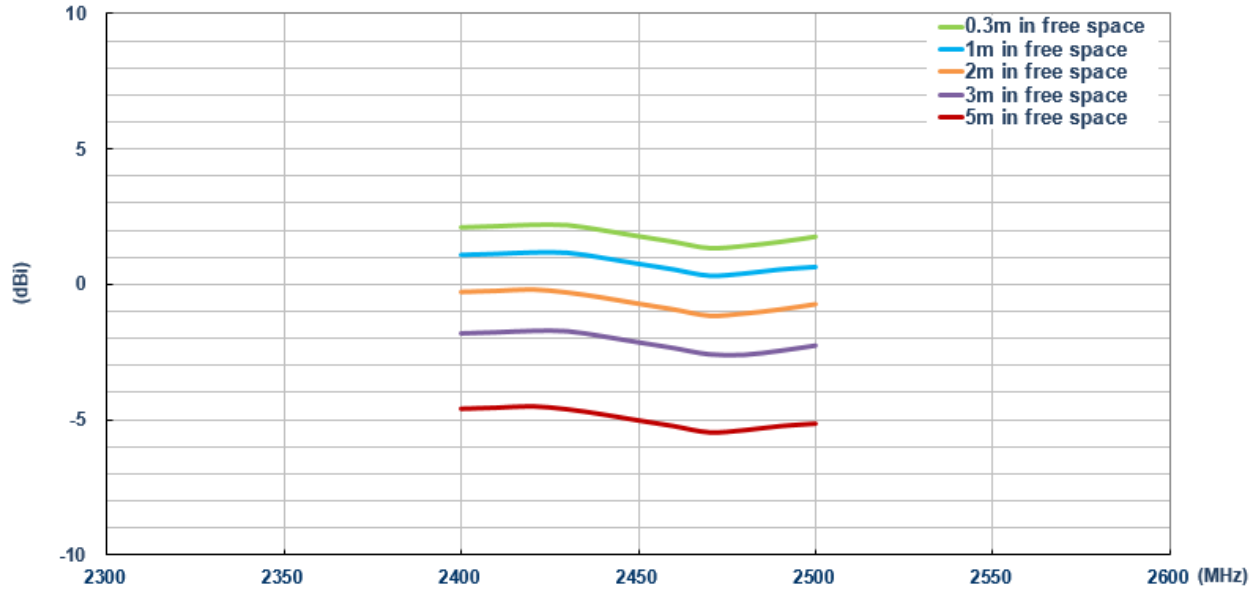


## On the 2mm ABS

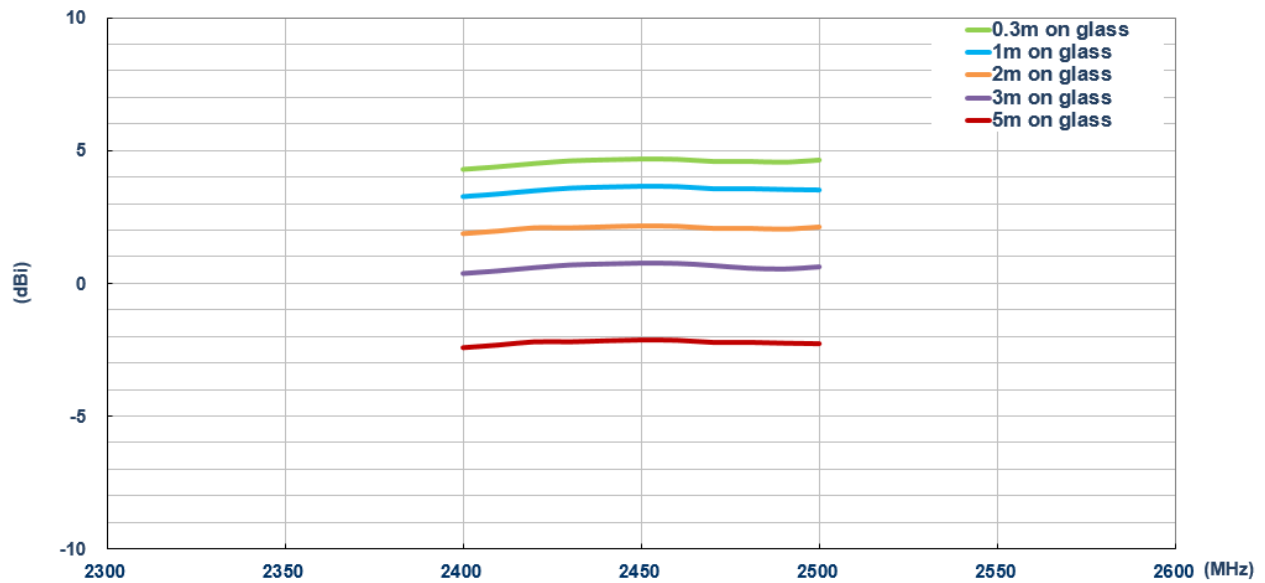


## 7.3 Peak Gain

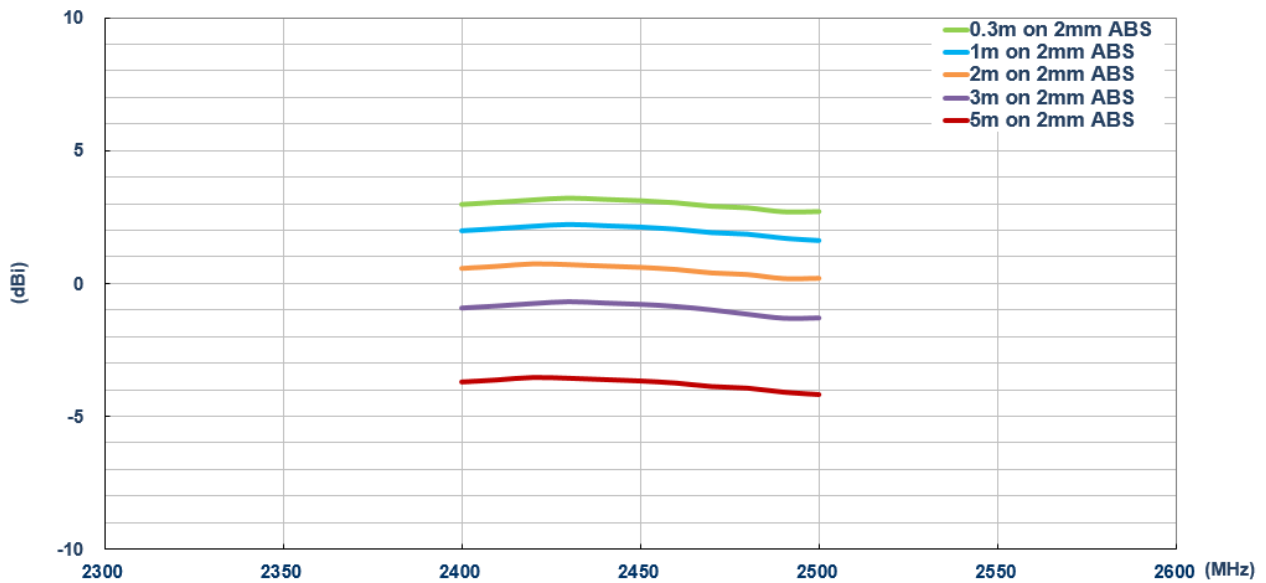
### In free space



### On glass

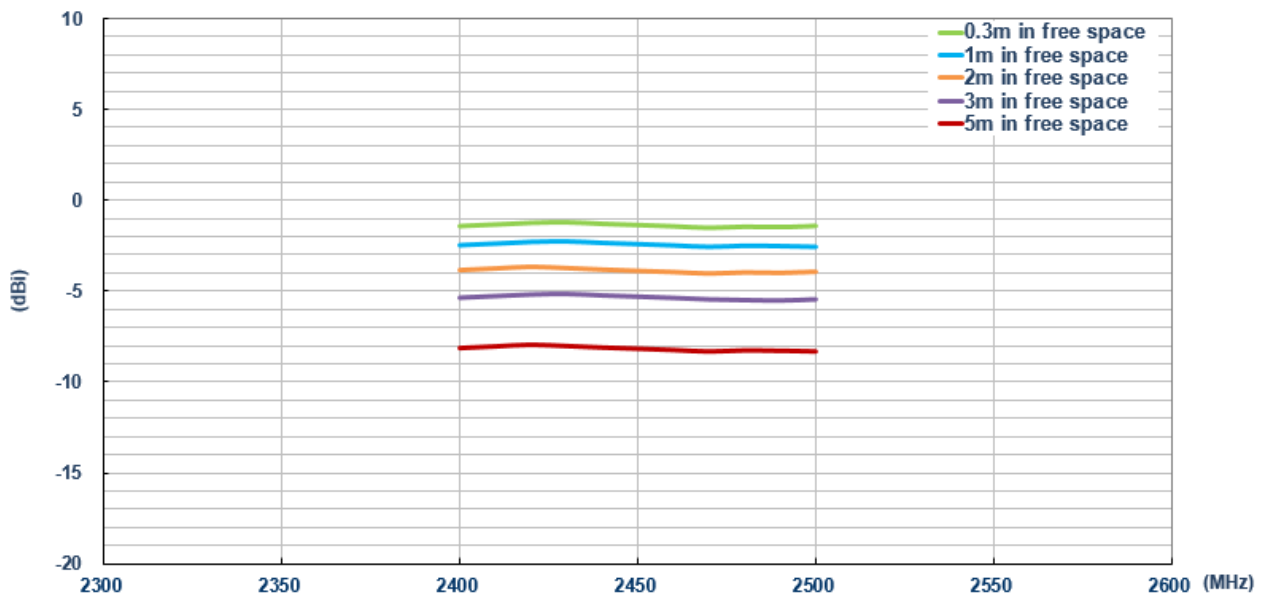


## On the 2mm ABS

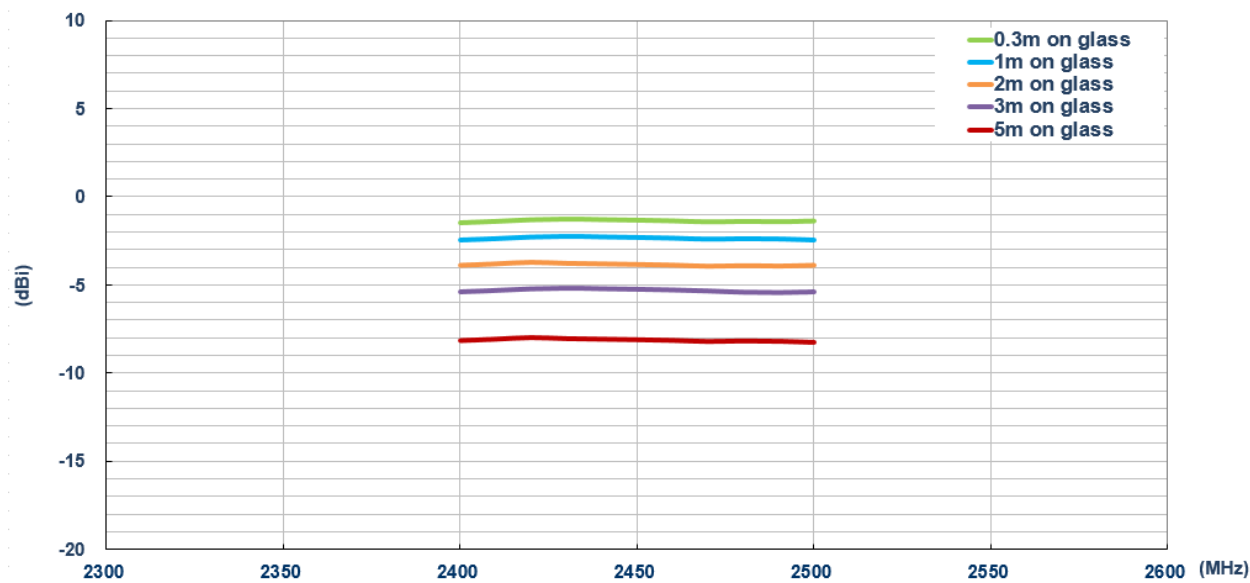


## 7.4 Average Gain

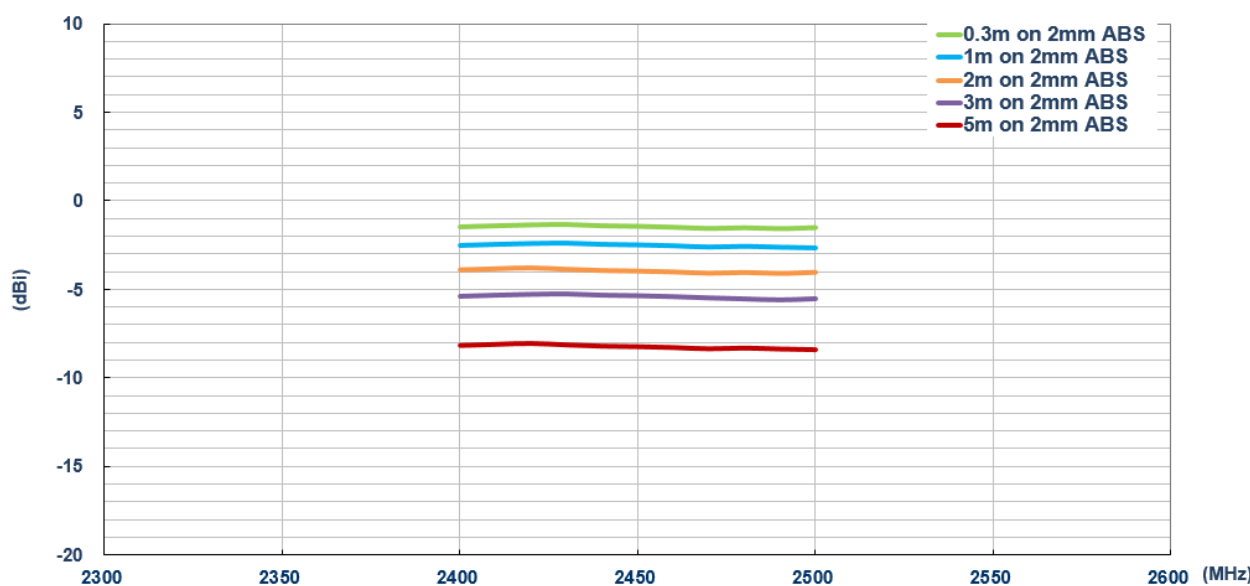
### In free space



On glass



On the 2mm ABS





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