# SPECIFICATION

| | | |
|---|---|---|
| Part No. | : | **GSA.8859.A.105111** |
| Product Name | : | 4dBi Adhesive Mini DSRC 5.9GHz Antenna<br>1M CFD200 with SMA(M) Connector |
| Feature | : | Omnidirectional<br>For V2V and V2X Applications<br>High Efficiency and High Peak Gain<br>IP67 Rating<br>Adhesive Mount on Plastic or Glass<br>Low Loss 1M CFD200 Cable<br>SMA(M) ST Connector<br>Customizable Cable Type, Length, Connector<br>Dims: 36*30*10mm<br>RoHS compliant |

# 1. Introduction

The GSA.8859 Mini DSRC antenna is an external adhesive mount antenna that operates from 5850-5925MHz for DSRC systems.

DSRC (Dedicated Short Range Communications) is the communications medium of choice for active safety V2V (Vehicle-to-Vehicle) and V2X (Vehicle-to-Other) systems, primarily allocated for vehicle safety applications. DSRC supports high speed, low latency, short-range V2V/V2X wireless communications. The GSA.8859 at only 10mm comes in a very compact size enabling flexibility of integration. It can be mounted on glass or plastic surfaces easily with the double-sided adhesive. The antenna features high peak gain at 4.14 dBi on glass and 3.24 dBi on 2mm thick plastic.

Contact your regional Taoglas office for support to integrate and test this antenna's performance in your device.

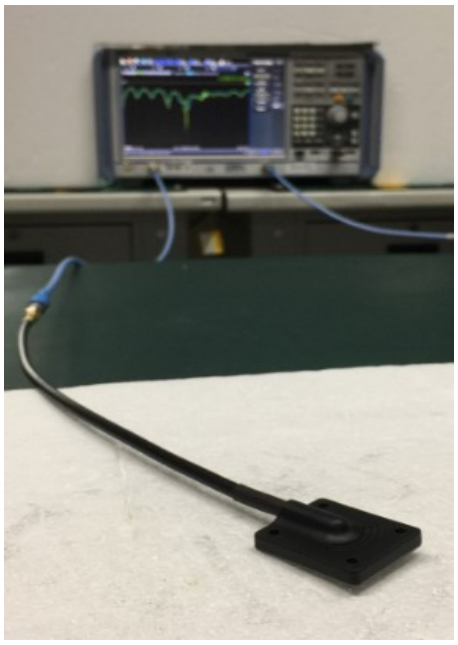
# 2. Specification

| Wi-Fi | | |
|---|---|---|
| Frequency | | 5850~5925MHz |
| Efficiency (%) | | |
| In free space | 0.3m | 80.23 |
| | 1m | 68.30 |
| | 2m | 54.24 |
| | 3m | 44.09 |
| | 5m | 28.26 |
| On glass | 0.3m | 72.05 |
| | 1m | 61.33 |
| | 2m | 48.71 |
| | 3m | 39.59 |
| | 5m | 25.38 |
| On the 2mm ABS | 0.3m | 78.34 |
| | 1m | 66.67 |
| | 2m | 52.96 |
| | 3m | 43.05 |
| | 5m | 27.60 |
| Average Gain (dBi) | | |
| In free space | 0.3m | -0.96 |
| | 1m | -1.66 |
| | 2m | -2.66 |
| | 3m | -3.56 |
| | 5m | -5.49 |
| On glass | 0.3m | -1.42 |
| | 1m | -2.12 |
| | 2m | -3.12 |
| | 3m | -4.02 |
| | 5m | -5.96 |
| On the 2mm ABS | 0.3m | -1.06 |
| | 1m | -1.76 |
| | 2m | -2.76 |
| | 3m | -3.66 |
| | 5m | -5.59 |

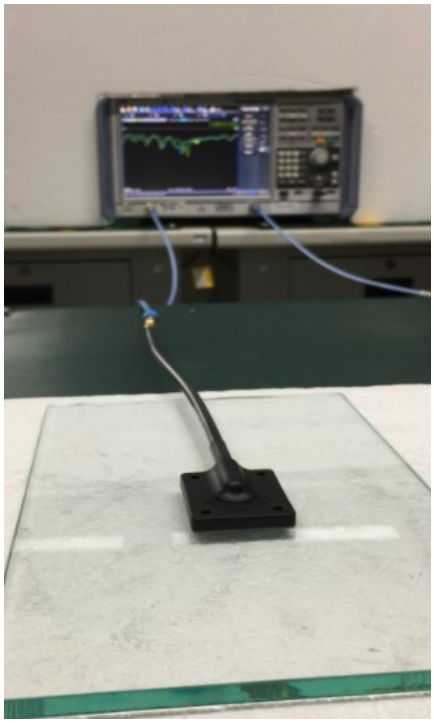
| Peak Gain (dBi) | | |
|---|---|---|
| In free space | 0.3m | 3.27 |
| | 1m | 2.57 |
| | 2m | 1.57 |
| | 3m | 0.67 |
| | 5m | -1.30 |
| On glass | 0.3m | 4.84 |
| | 1m | 4.14 |
| | 2m | 3.14 |
| | 3m | 2.24 |
| | 5m | 0.34 |
| On the 2mm ABS | 0.3m | 3.94 |
| | 1m | 3.24 |
| | 2m | 2.24 |
| | 3m | 1.34 |
| | 5m | -0.66 |
| Return loss | | <-10 |
| VSWR | | <2 |
| Impedance | | 50 |
| Polarization | | Linear |
| Radiation Pattern | | Omnidirectional |
| Input Power | | 5W |
| **MECHANICAL** | | |
| Dimensions | | 36*30*10mm |
| Casing | | PP |
| Connector | | SMA(M) ST, fully customizable |
| Cable | | 1M CFD200, fully customizable |
| Waterproof | | IP67 |
| Weight | | 42g |
| **ENVIRONMENTAL** | | |
| Temperature Range | | -40°C to 85°C |
| Humidity | | Non-condensino 65°C 95% RH |

# 3. Antenna Characteristics

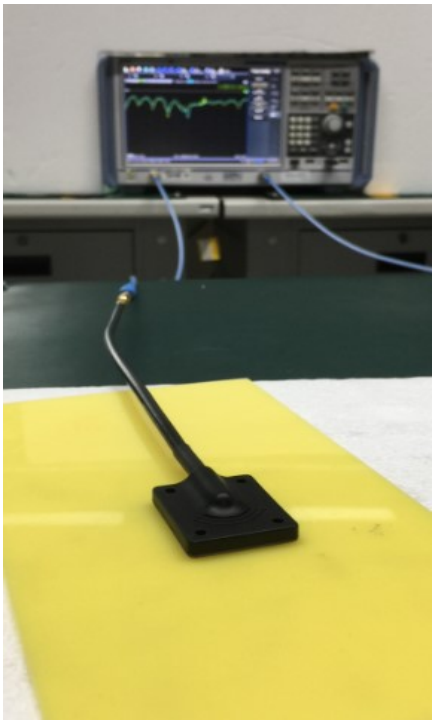
## 3.1 Antenna Test Setup



Free Space

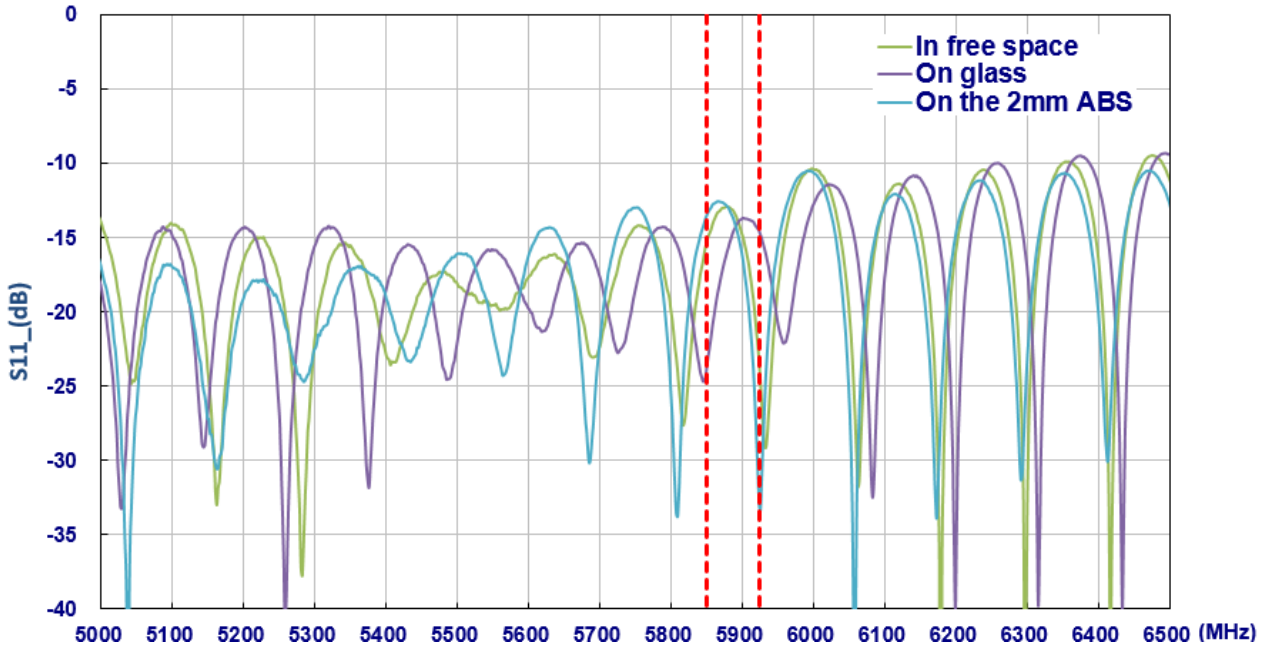


On Glass

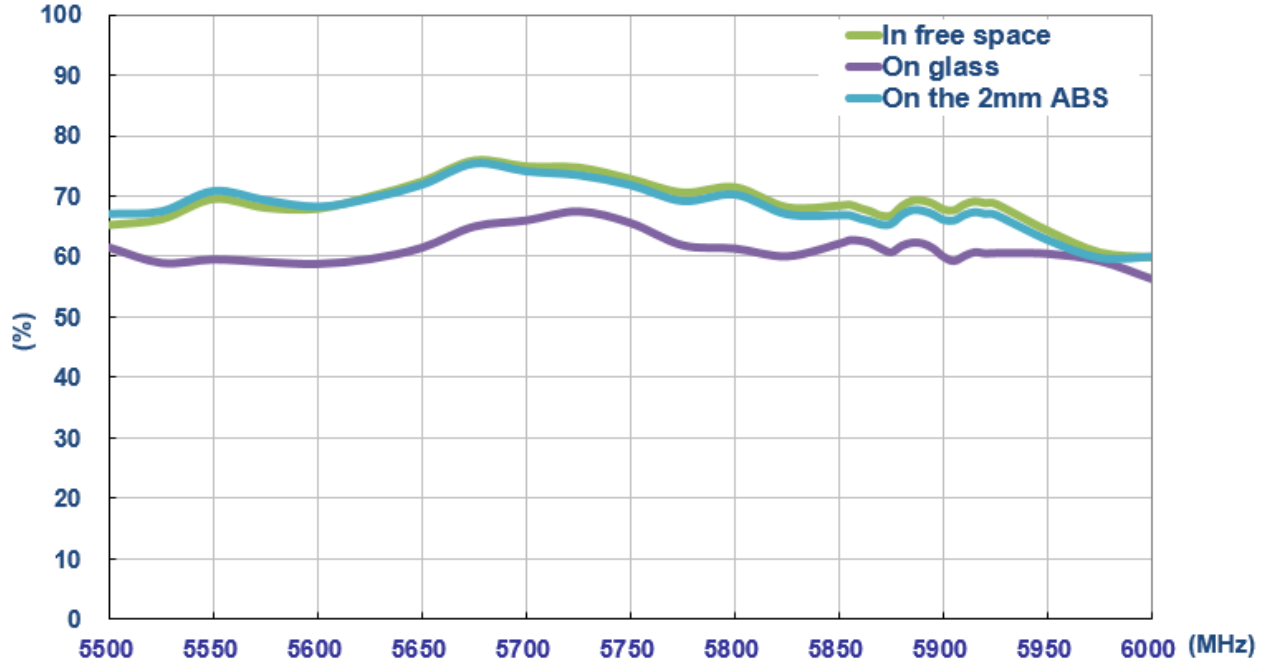


On 2mm ABS

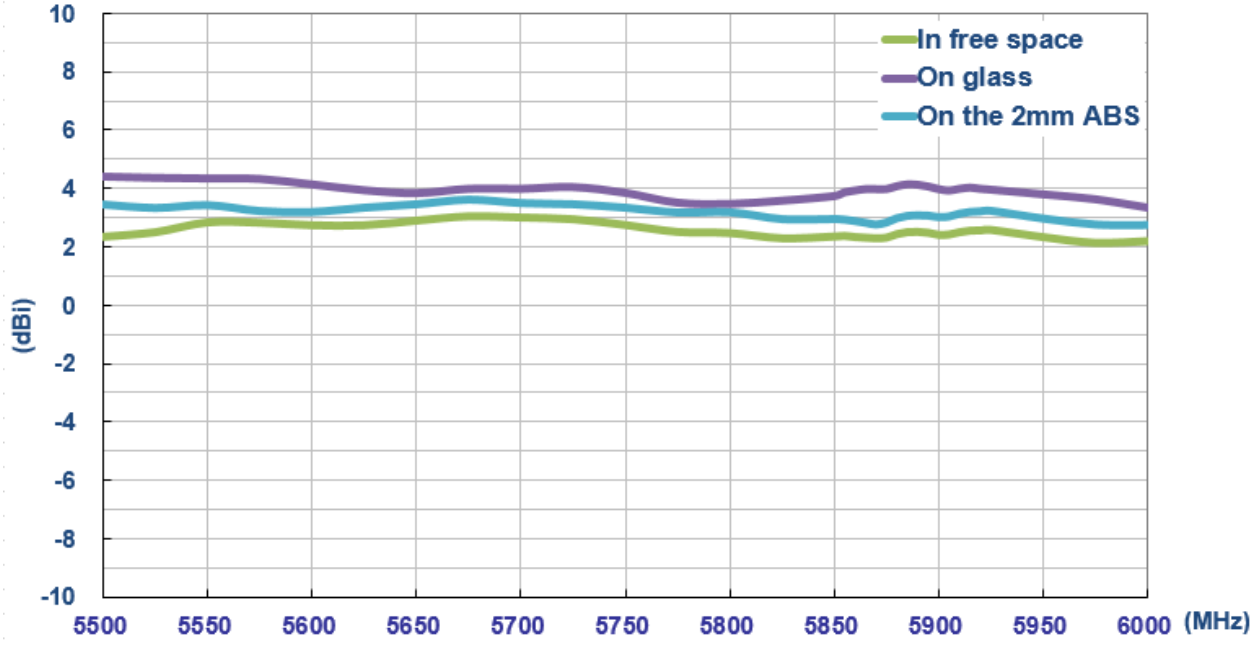
## 3.2 Return Loss



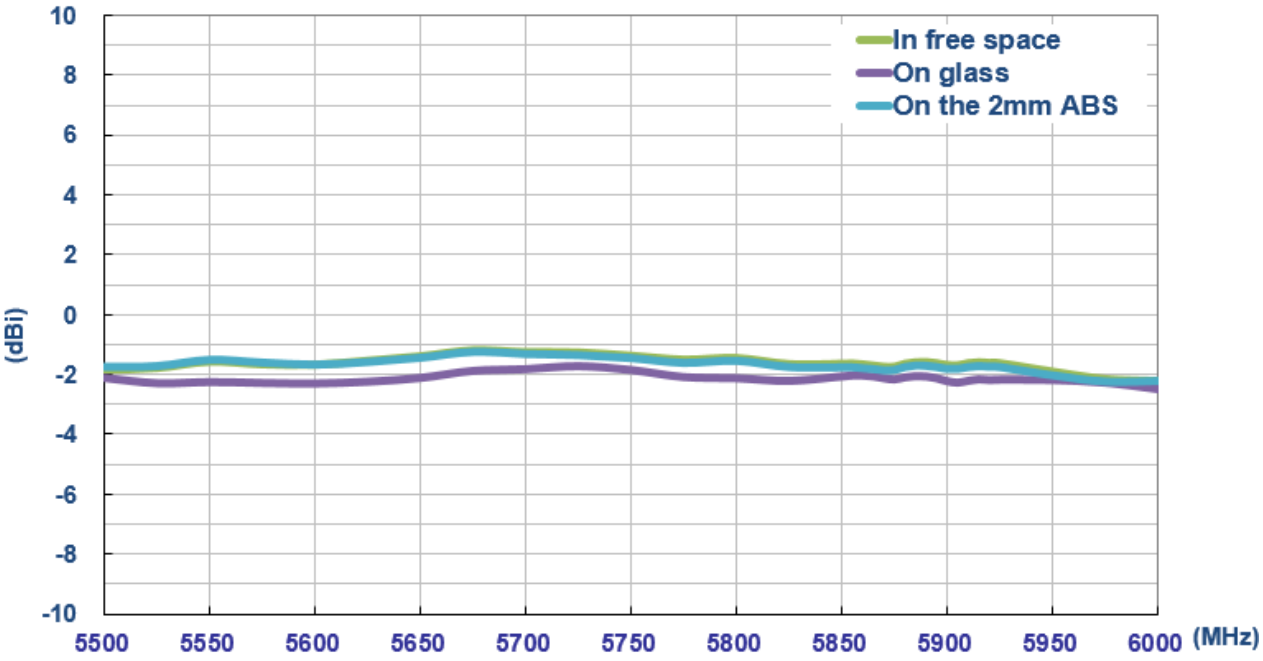

## 3.3 Efficiency



## 3.4 Peak Gain

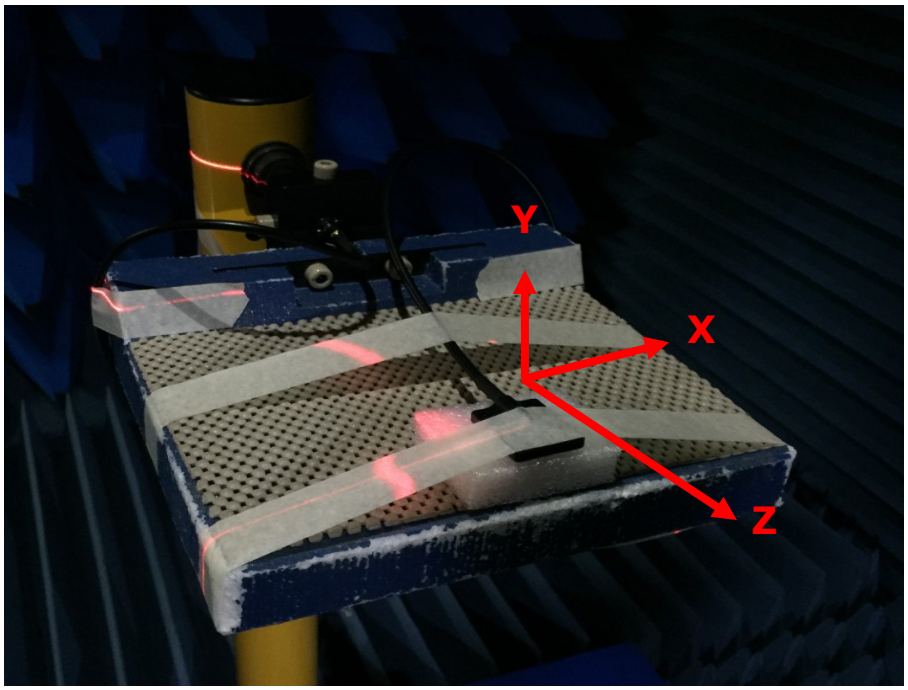



## 3.5 Average Gain

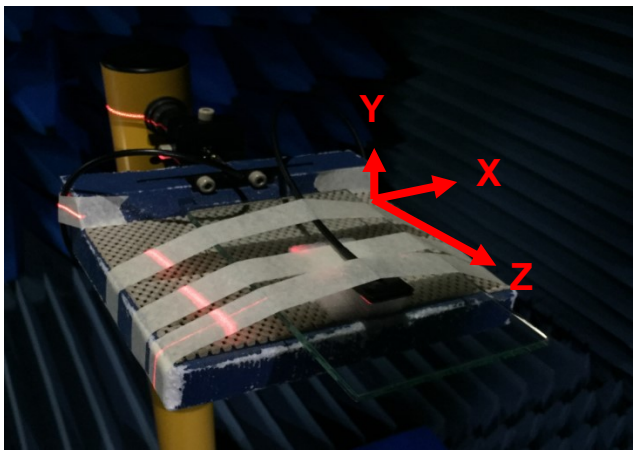


# 4. Antenna Radiation Patterns

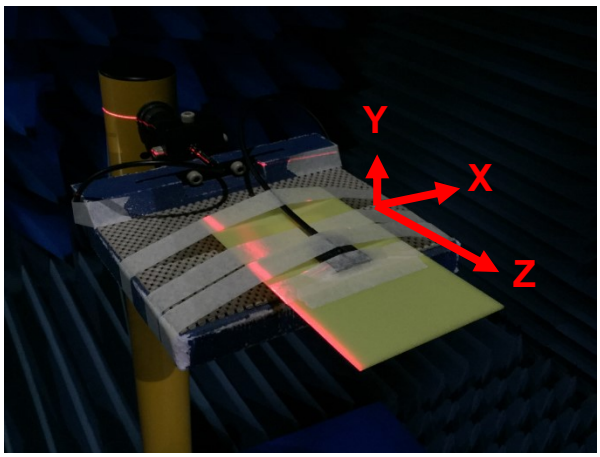
## 4.1 Antenna setup (Free space with 1m cable)




Free Space




On Glass



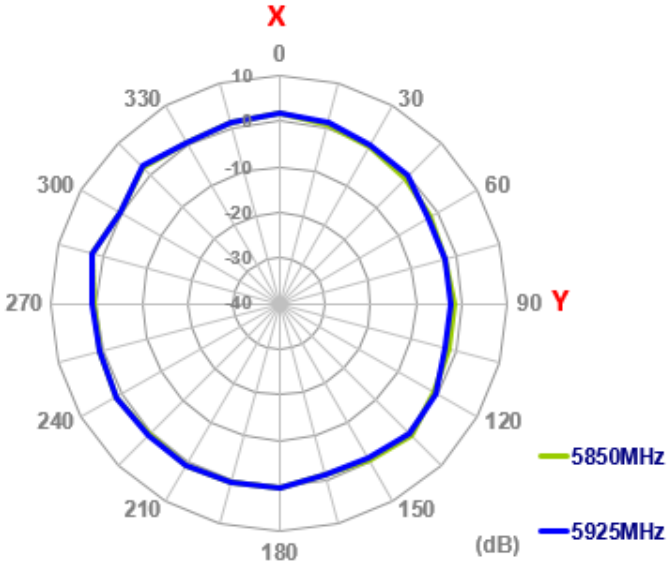

On 2mm ABS

**Antenna testing Setup in ETS Anechoic Chamber**

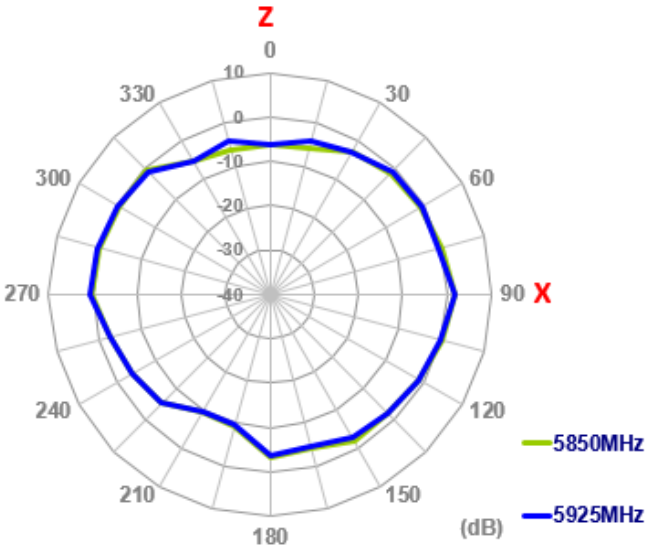
## 4.2 2D Radiation Patterns

### 4.2.1 In Free Space

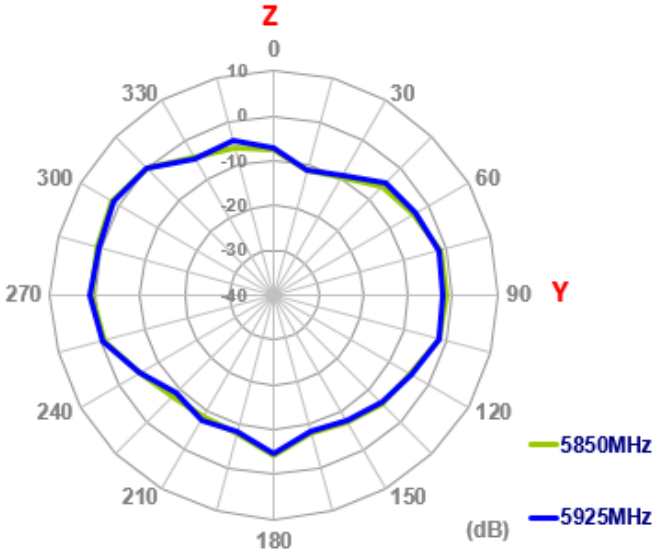
**XY Plane**




**XZ Plane**

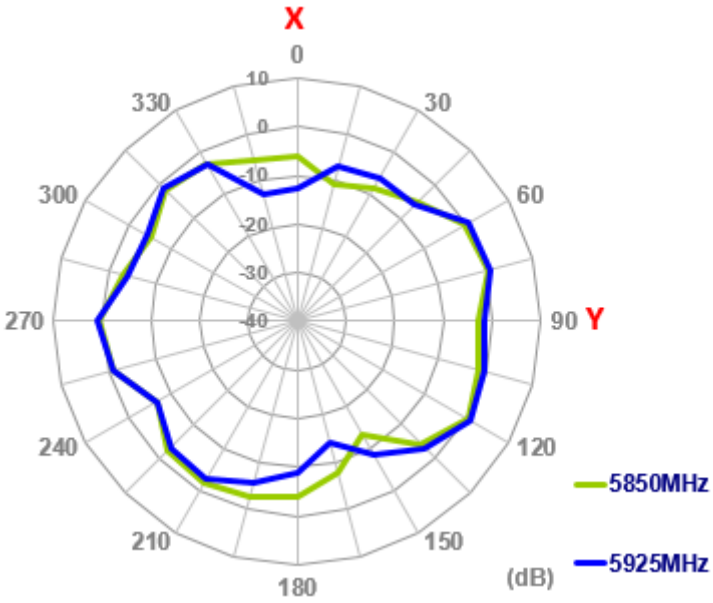



**YZ Plane**

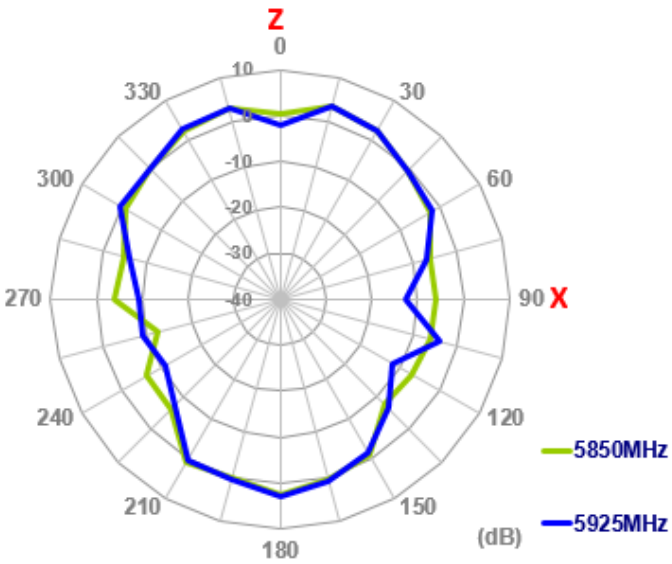


### 4.2.2 On Glass

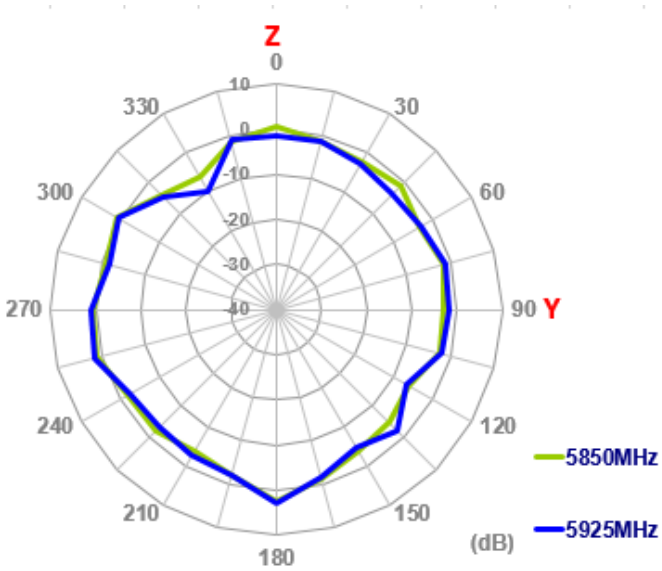
**XY Plane**




**XZ Plane**

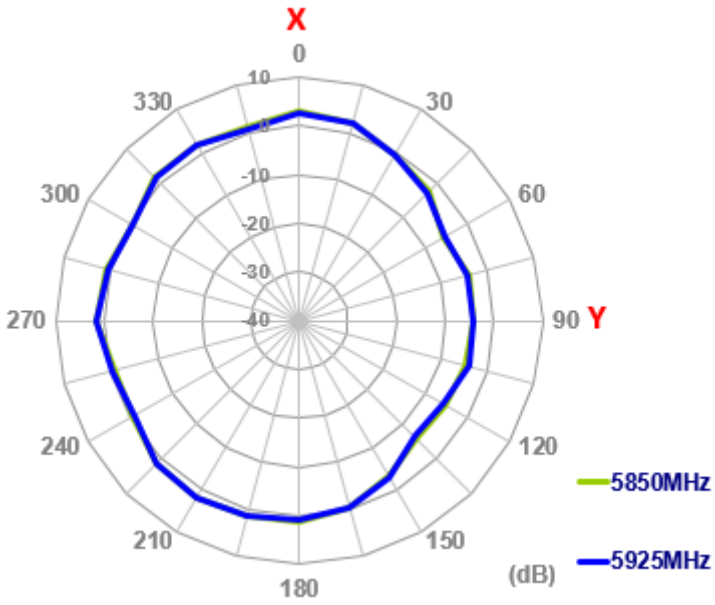



**YZ Plane**

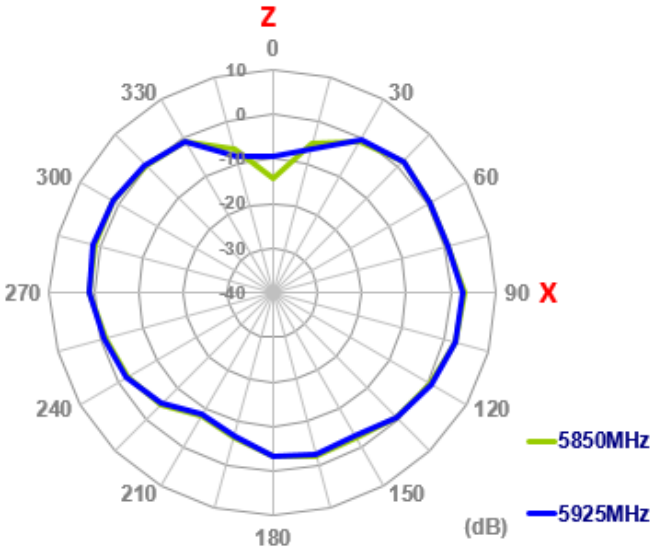


### 4.2.3 On 2mm ABS

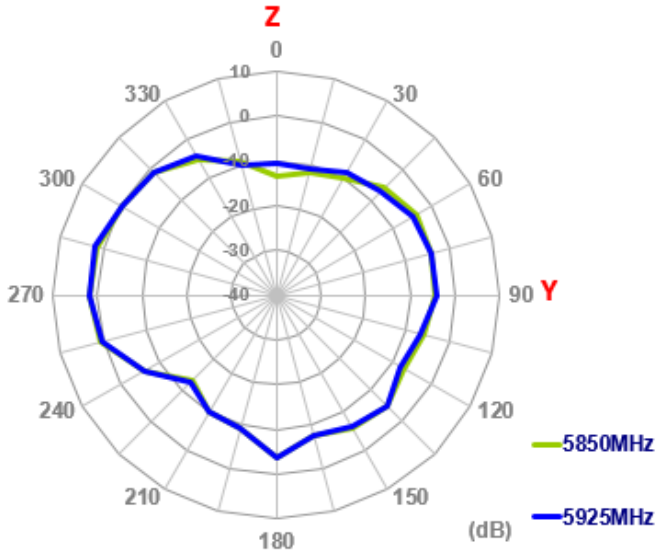
**XY Plane**




**XZ Plane**

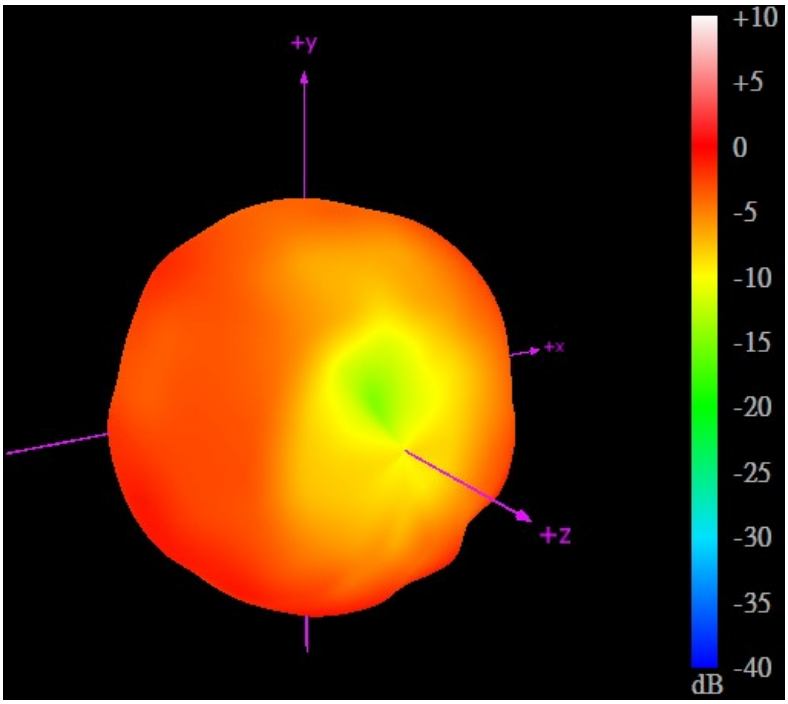



**YZ Plane**

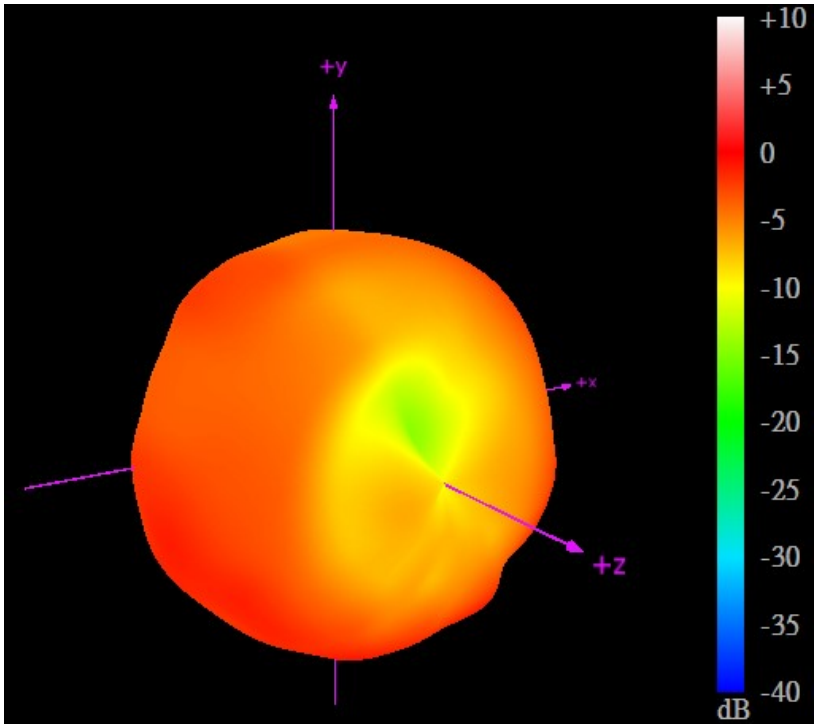


## 4.3 Antenna 3D Radiation Pattern

### 4.3.1 In Free Space

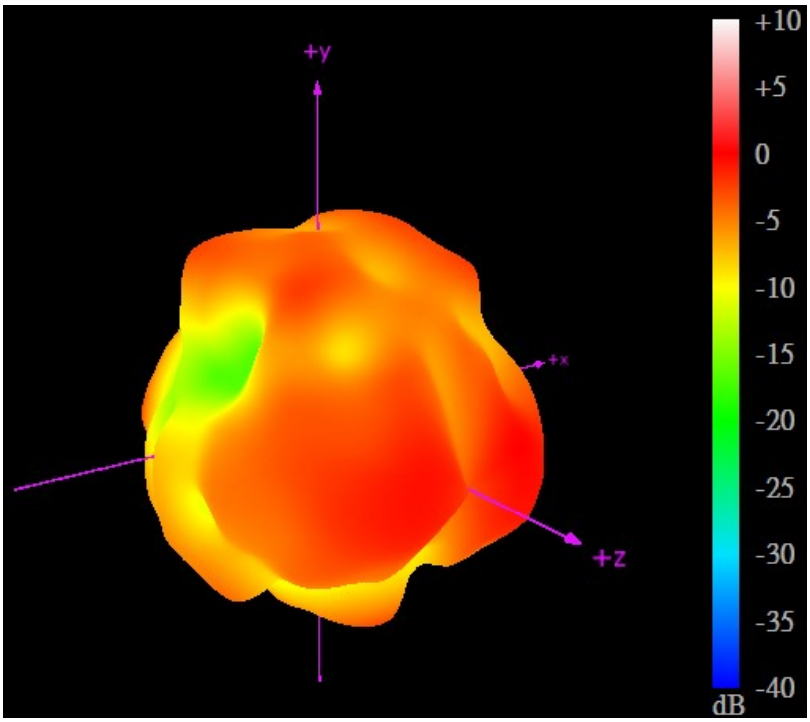



5850MHz

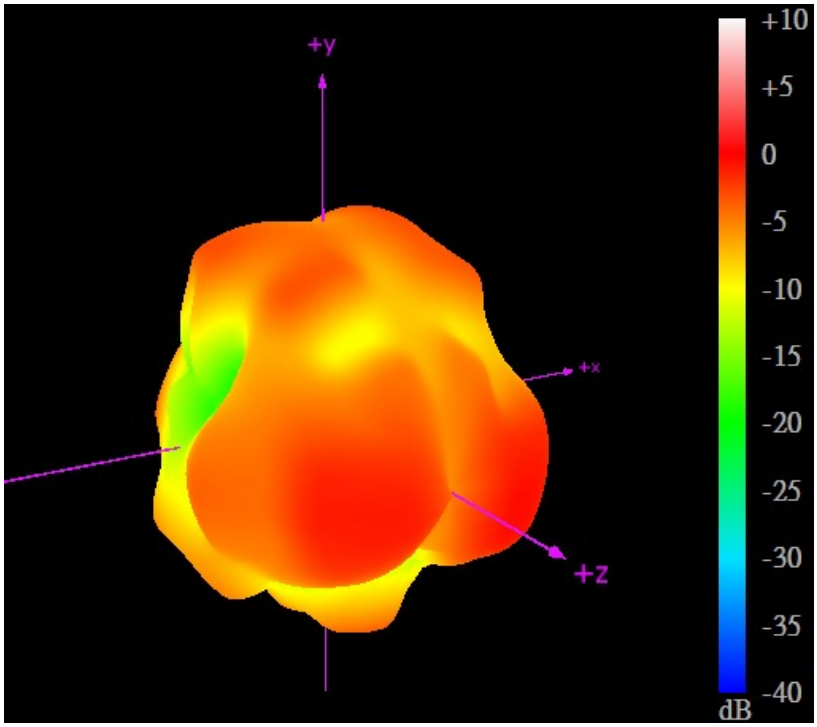



5925MHz

### 4.3.2 On Glass

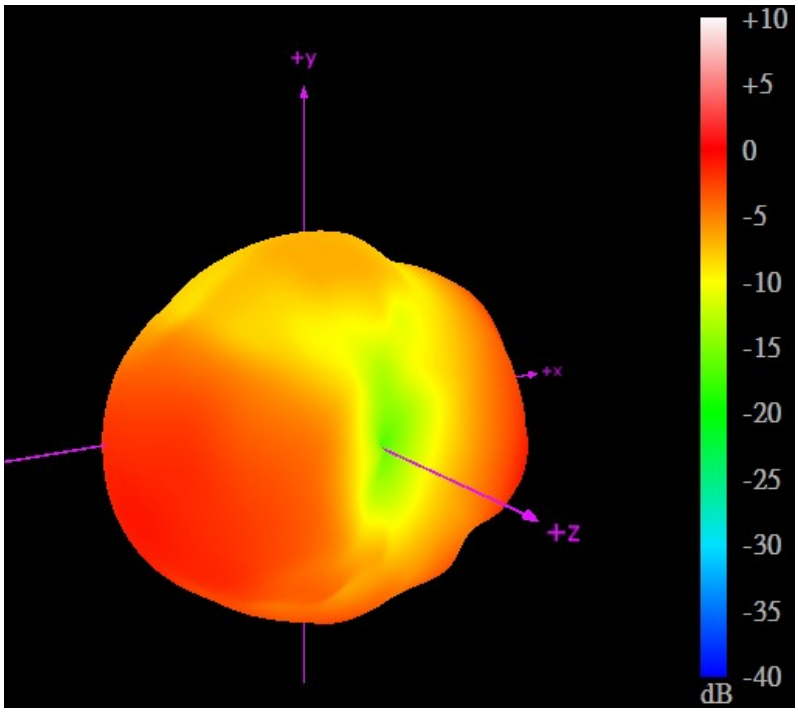



5850MHz

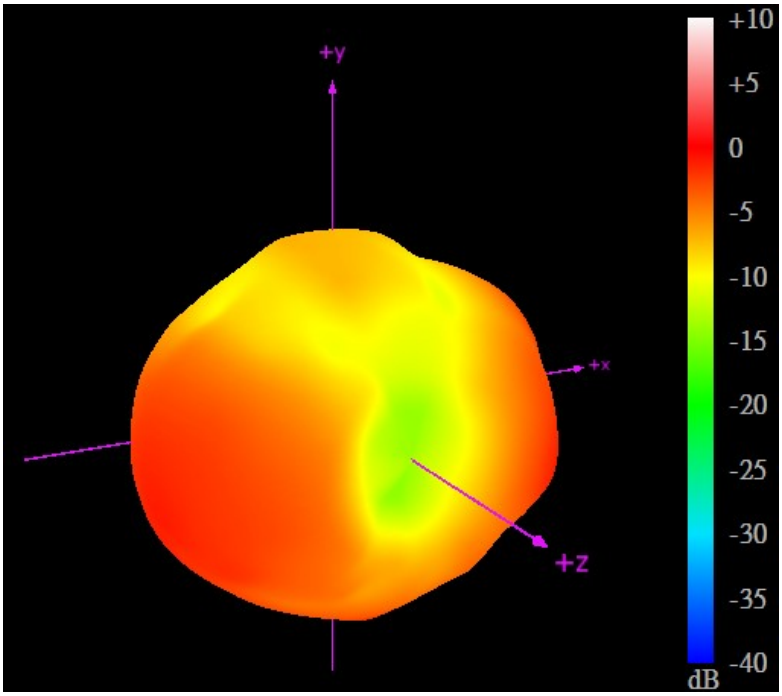



5925MHz

### 4.3.3 On 2mm ABS

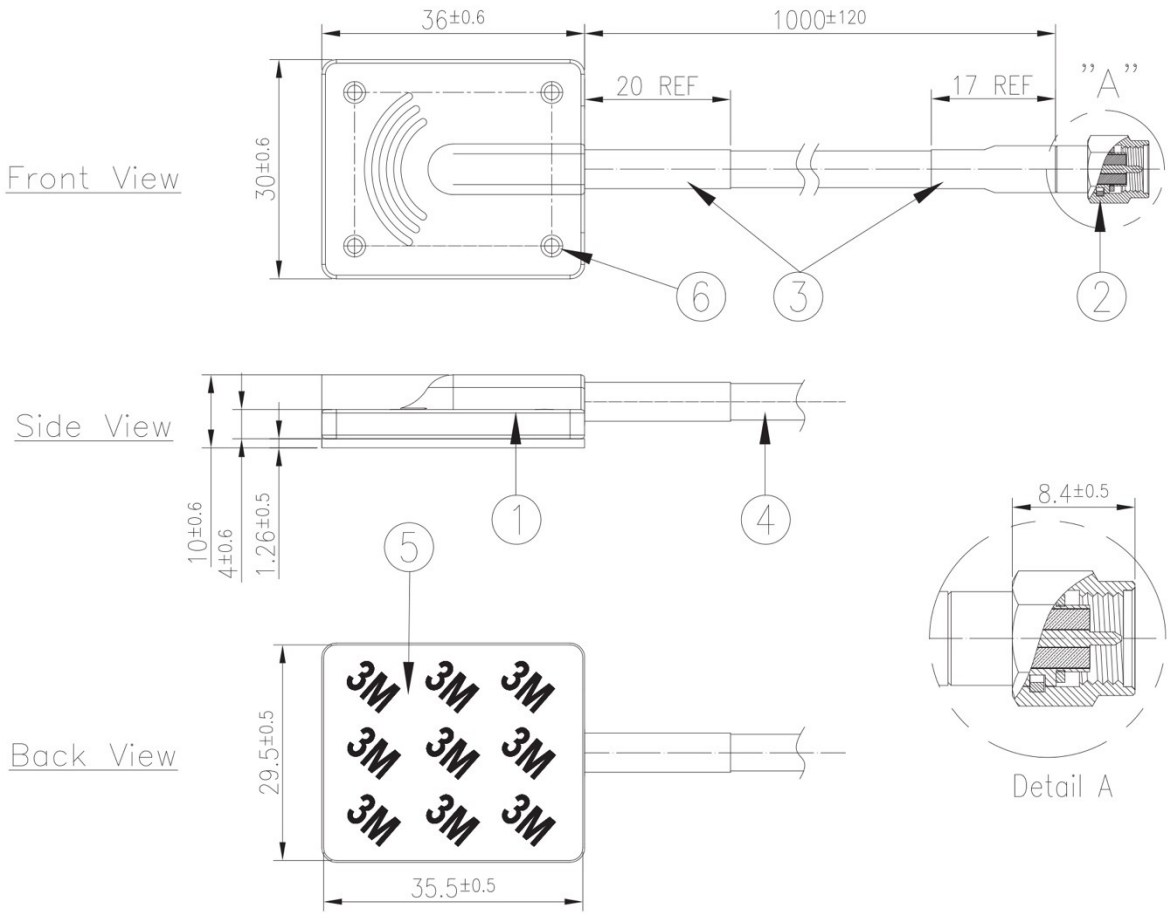



5850MHz




5925MHz

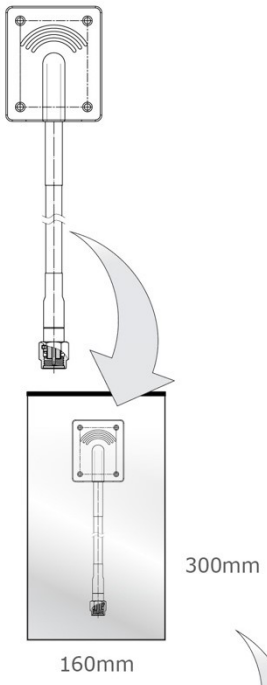
# 5. Drawing (Unit: mm)



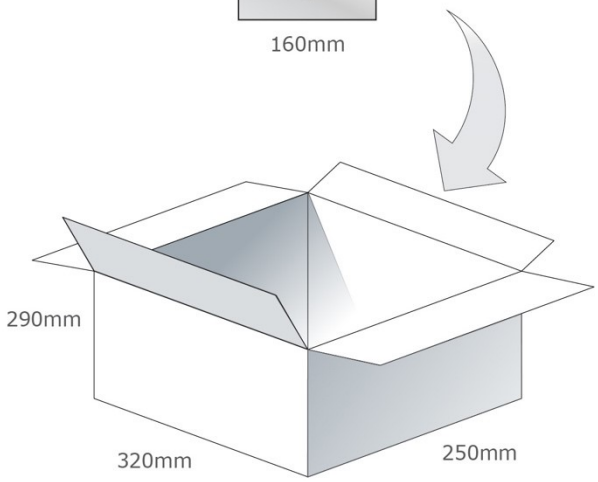

| | Name | Material | Finish | QTY |
|---|---|---|---|---|
| 1 | GSA.8859 Housing | PP | Black | 1 |
| 2 | SMA(M)ST | Brass | Au Plated | 1 |
| 3 | Heat Shrink Tube | PE | Black | 2 |
| 4 | CFD200 Coaxial Cable | PE | Black | 1 |
| 5 | Double-Side Adhesive With Gray Foam | VHB 4941 1.26t | White Liner | 1 |
| 6 | GSA.8859 PCB | FR4 1.0t | Black | 1 |

# 6. Packaging

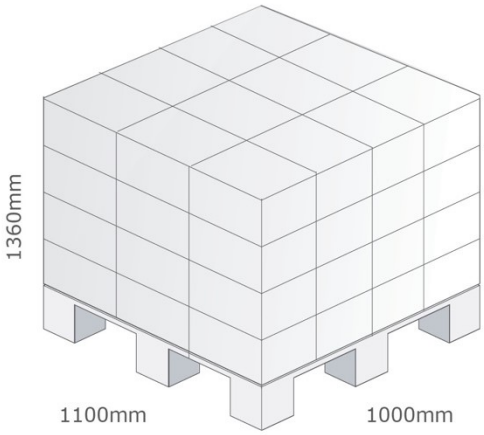
1pc GSA.8859.A.105111 per Small PE Bag
Bag Dimensions - 160*300 mm
Weight - 50g




50pcs GSA.8859.A.105111 per Carton
Carton Dimensions - 320*250*290mm
Weight - 2.6Kg




Pallet Dimensions:
1100mm*1000mm*1360mm
48 Cartons per Pallet
12 Cartons per Layer, 4 Layers

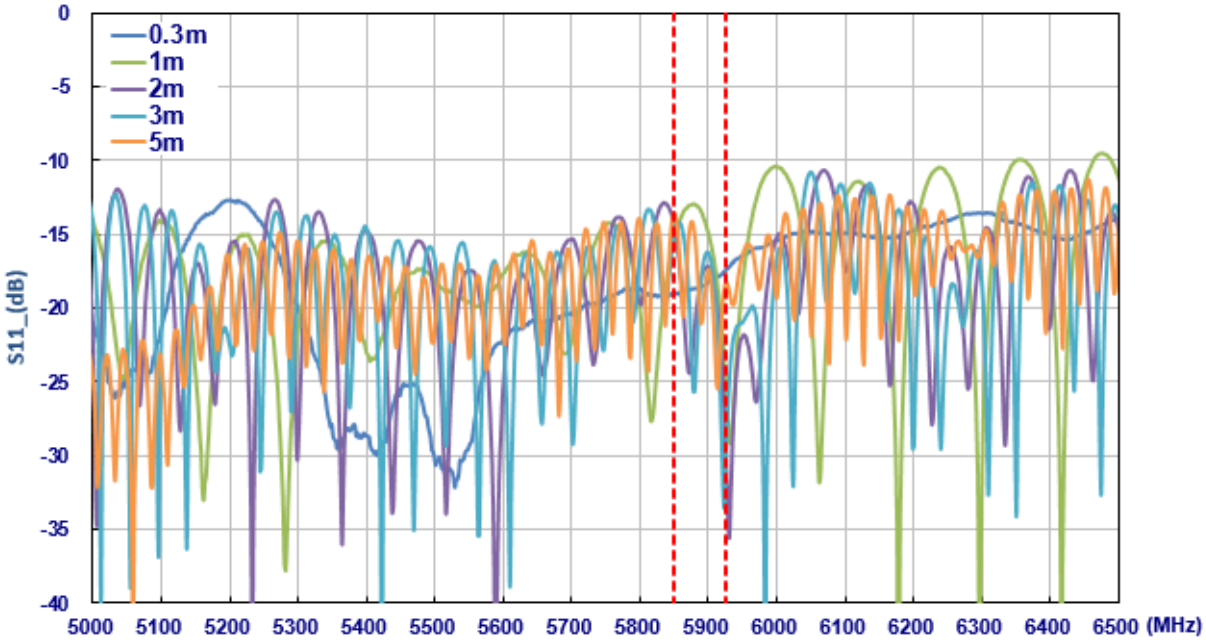


# 7. Application Note

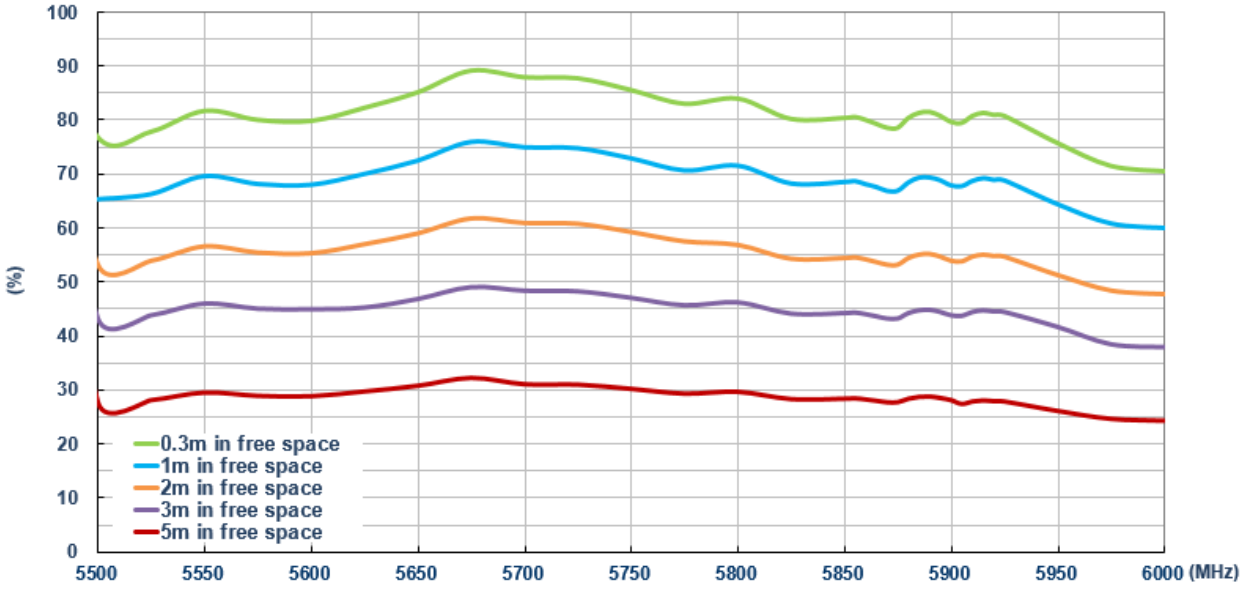
The WSA.2458 antenna performance with different cable lengths is shown below.

## 7.1 In free Space

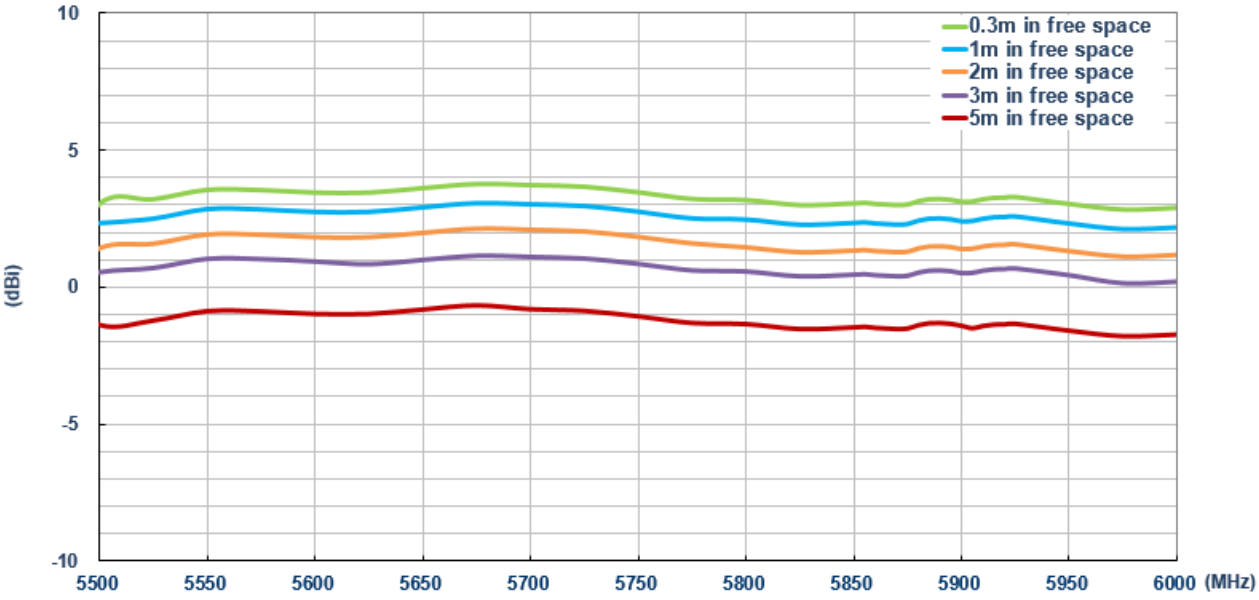
### 7.1.1 Return Loss



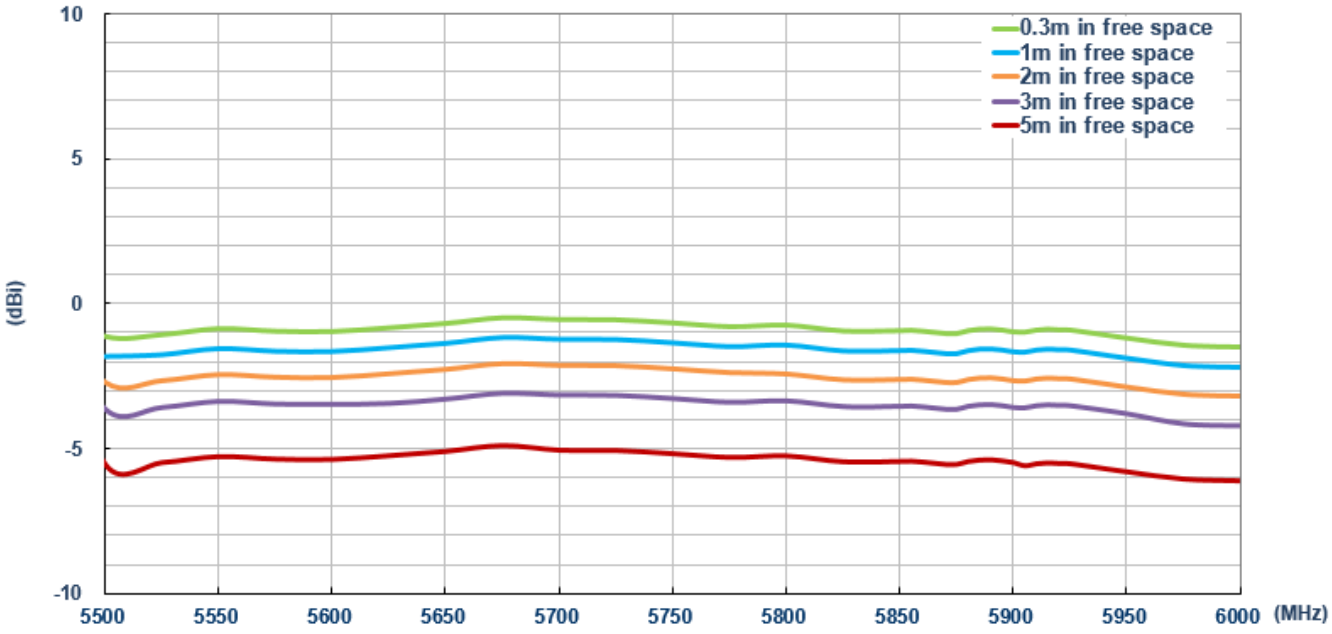
## 7.1.2 Efficiency




## 7.1.3 Peak Gain

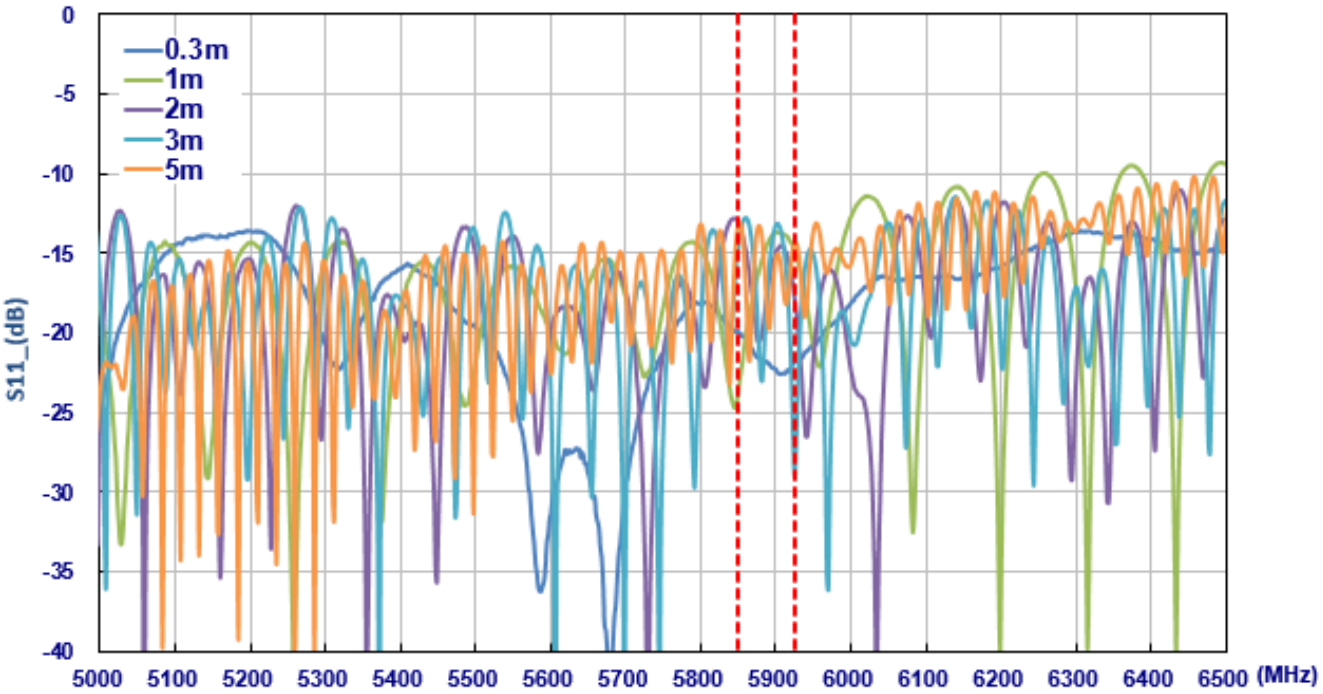


### 7.1.4 Average Gain

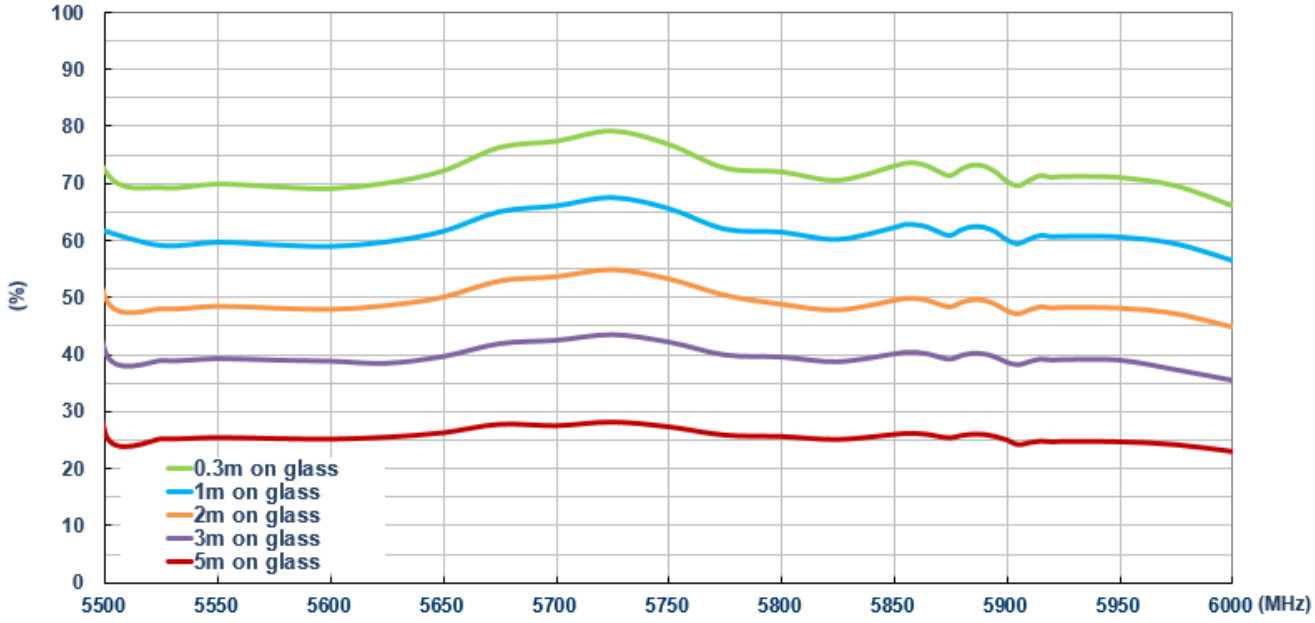



## 7.2 On Glass

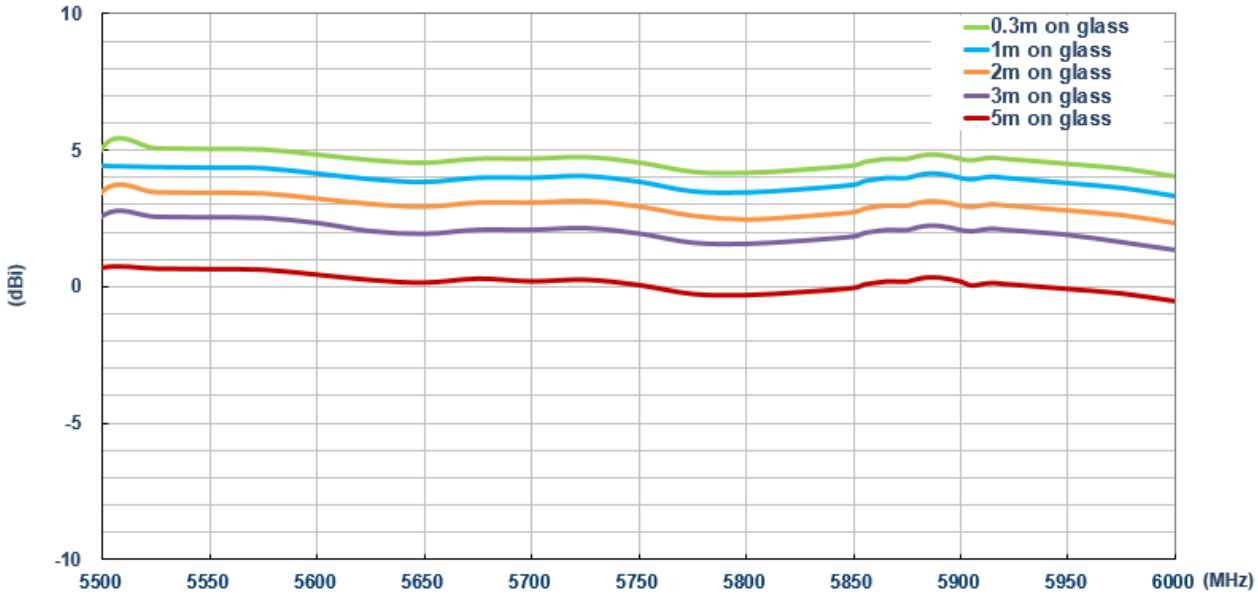
### 7.2.1 Return Loss



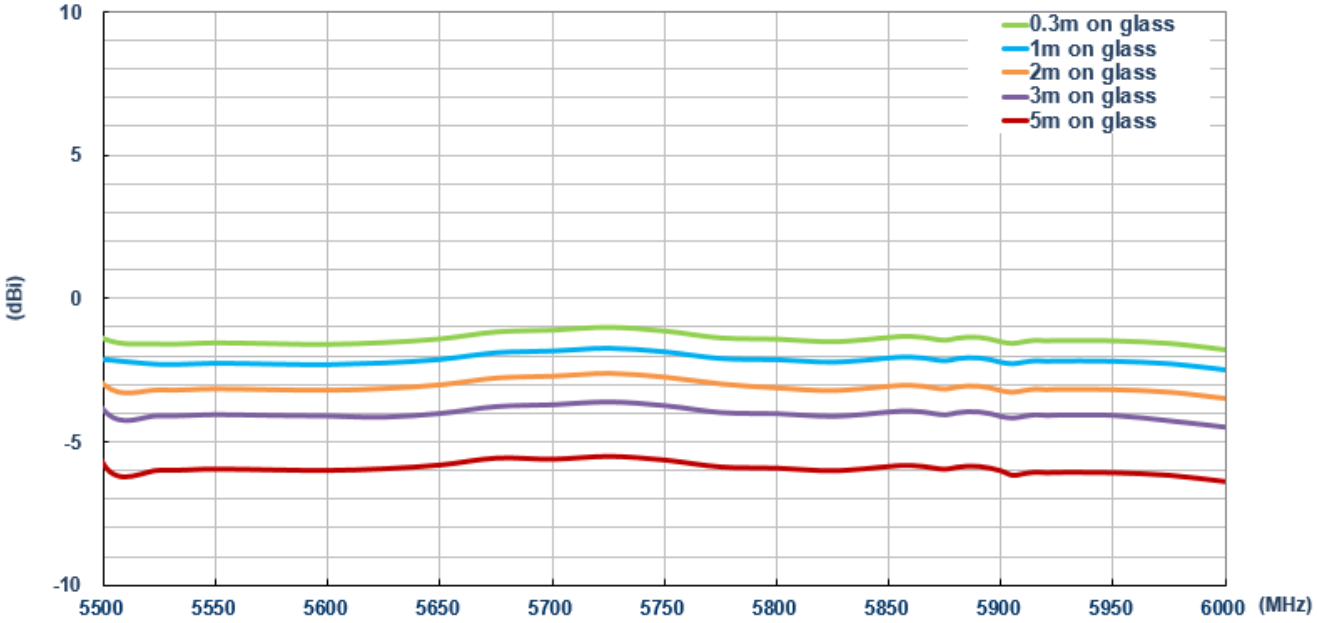
## 7.2.2 Efficiency




## 7.2.3 Peak Gain

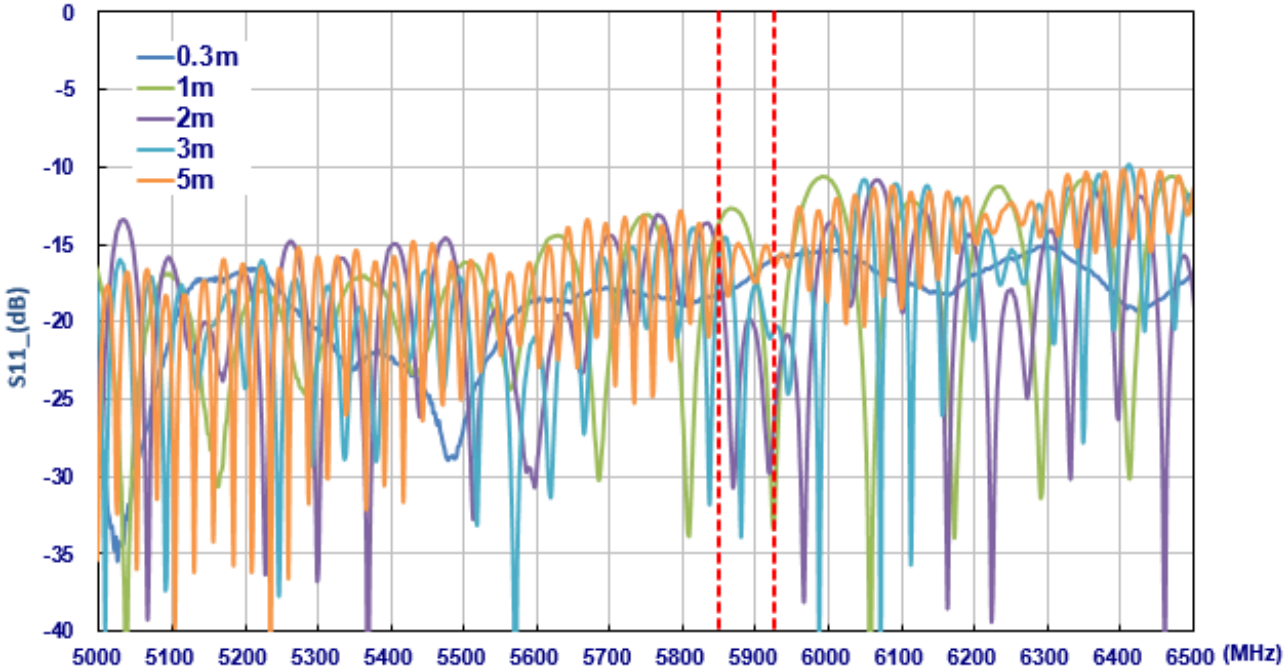


### 7.2.4 Average Gain

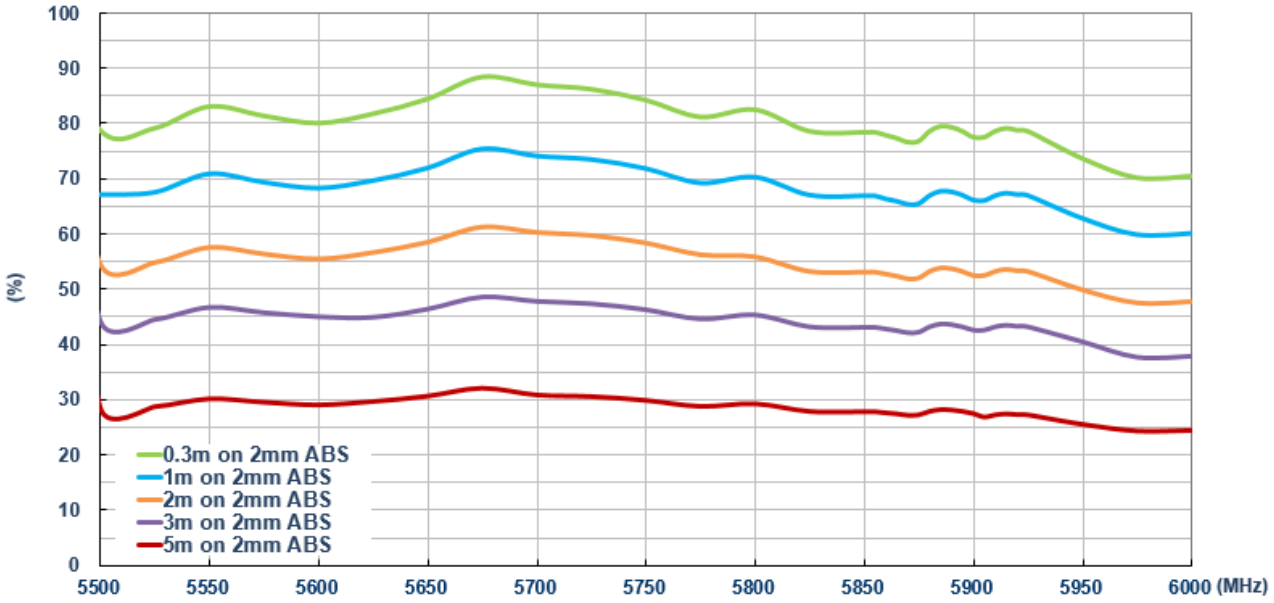



## 7.3 On 2mm ABS

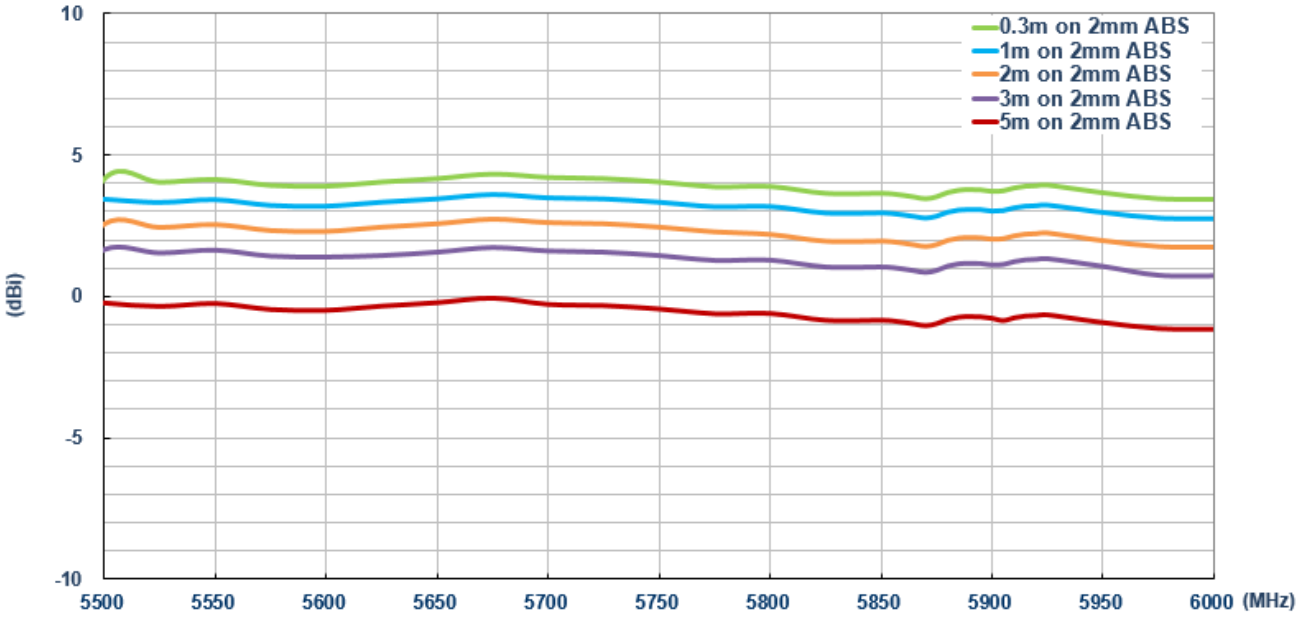
### 7.3.1 Return Loss



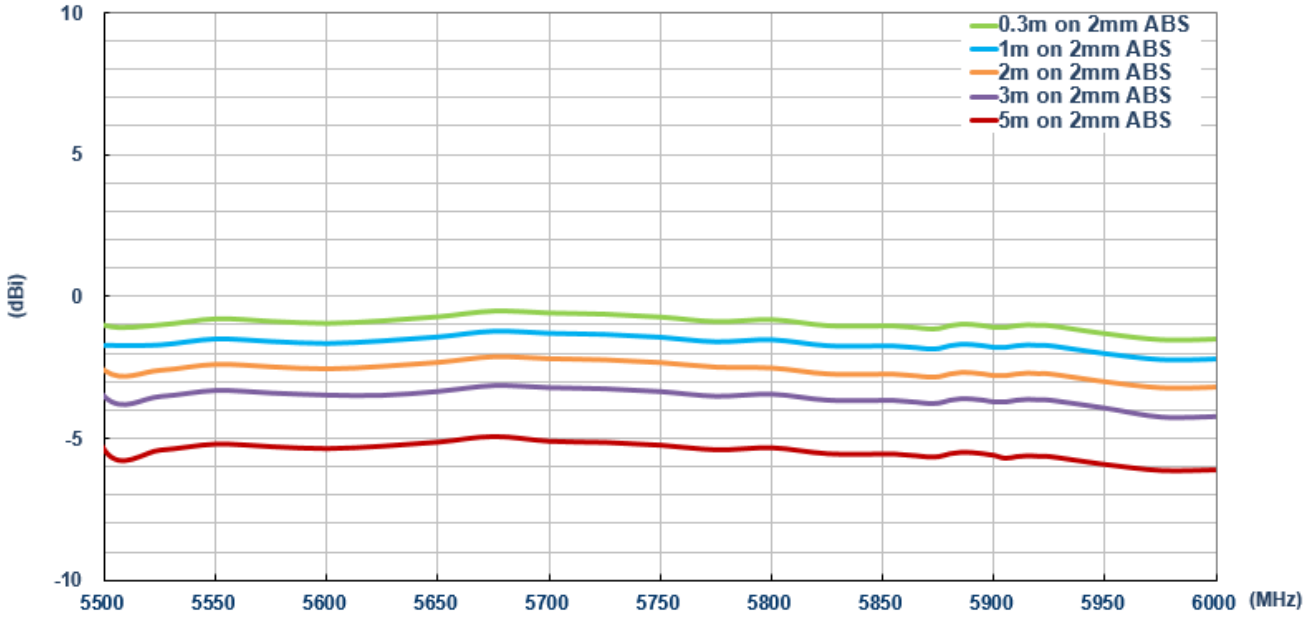
## 7.3.2 Efficiency




## 7.3.3 Peak Gain



### 7.3.4 Average Gain

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