



# TAOGLAS®



## Datasheet

### Adhesive LTE Antenna

**Part No:**  
GSA.8845.A.105111

#### Description:

Wideband 4G/3G/2G LTE Adhesive Mount I-Bar Antenna 1M TGC-200 SMA(M)

#### Features:

5G/4G/ Wi-Fi, Adhesive Mount Antenna

450-470MHz, 698-960MHz 1710-2700MHz, 4900-5850MHz

Cable: 1M TGC-200

Connector: SMA(M)

Dimension 176mm \* 59mm \* 11.6mm

RoHS & Reach Compliant

|                            |    |
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## 1. Introduction



The GSA.8845 Wideband Dipole Antenna has been designed to cover all Cellular, ISM and Wi-Fi working frequencies in the 450-6000 MHz spectrum. It has the highest wide-band efficiency in its range of any terminal antenna on the market today.

The GSA.8845 has been primarily designed for use with 4G LTE modules and devices that require the highest possible efficiency and peak gain to deliver best in class throughput on all major cellular (4G/3G/2G) bands worldwide, vital for applications such as high speed video and real-time streaming, or high capacity MIMO networks on public transportation.

It comes with 1-meter coaxial cable and SMA (M) connector, in a low profile compact format for mounting via high quality first tier automotive approved 3M adhesive foam.

The GSA.8845 exhibits high efficiency and is backward compatible with 3G and 2G cellular applications such as GSM, LTE, UMTS, Wi-Fi.

It is an ideal solution for any device requiring high, reliable performance. It is also guaranteed to meet any type approval or carrier certification requirements from an efficiency standpoint. The antenna also makes an excellent reference antenna for test purposes. It has been designed as an omnidirectional antenna, as can be seen in the radiation patterns, which is stable across all bands.

Contact your regional customer support team for further information.

## 2. Specifications

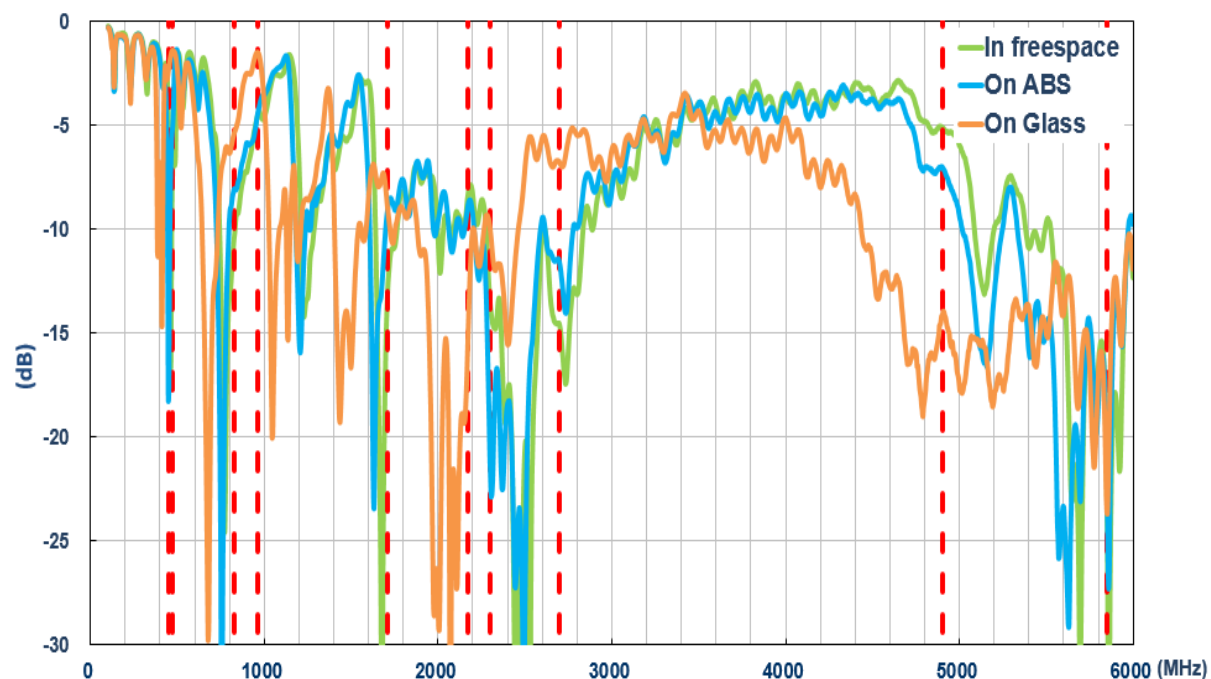
| Electrical        |         |         |         |         |           |           |           |           |           |           |       |
|-------------------|---------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|-----------|-------|
| Standard          | LTE 450 | LTE 700 | GSM 850 | GSM 900 | DCS       | PCS       | UMTS1     | LTE 2600  | C-Band    | WIFI 5G   |       |
| Frequency (MHz)   | 450~470 | 698~806 | 824~894 | 880~960 | 1710~1880 | 1850~1990 | 1920~2170 | 2300~2690 | 3400~3800 | 4900~5850 |       |
| Efficiency (%)    |         |         |         |         |           |           |           |           |           |           |       |
| In free space     | 0.3M    | 54.59   | 68.84   | 76.00   | 63.84     | 71.41     | 60.60     | 66.79     | 74.19     |           | 62.65 |
|                   | 1M      | 52.14   | 65.27   | 72.56   | 60.97     | 65.15     | 55.27     | 61.44     | 67.65     | 29.12     | 53.79 |
|                   | 2M      | 48.66   | 60.91   | 66.66   | 55.61     | 58.06     | 48.66     | 53.84     | 58.57     |           | 43.57 |
|                   | 3M      | 46.47   | 56.34   | 61.76   | 51.59     | 51.62     | 43.04     | 47.59     | 50.96     |           | 35.29 |
|                   | 5M      | 41.42   | 48.67   | 52.57   | 43.62     | 40.68     | 33.74     | 37.06     | 38.51     |           | 23.13 |
| On 2mm ABS Base   | 0.3M    | 35.95   | 68.97   | 66.19   | 56.81     | 61.27     | 56.23     | 59.11     | 59.92     |           | 59.13 |
|                   | 1M      | 34.34   | 65.24   | 63.20   | 54.25     | 55.89     | 51.26     | 54.34     | 54.64     | 33.6      | 50.80 |
|                   | 2M      | 32.05   | 60.88   | 58.05   | 49.48     | 49.81     | 45.13     | 47.62     | 47.33     |           | 41.16 |
|                   | 3M      | 30.61   | 56.40   | 53.79   | 45.90     | 44.29     | 39.90     | 42.10     | 41.20     |           | 33.36 |
|                   | 5M      | 27.28   | 48.74   | 45.78   | 38.81     | 34.91     | 31.30     | 32.80     | 31.13     |           | 21.88 |
| On Glass Base     | 0.3M    | 19.55   | 67.74   | 62.39   | 53.07     | 66.77     | 66.14     | 67.56     | 57.39     |           | 49.94 |
|                   | 1M      | 18.67   | 64.00   | 59.59   | 50.71     | 60.90     | 60.30     | 62.12     | 52.35     | 37.6      | 42.92 |
|                   | 2M      | 17.42   | 59.72   | 54.72   | 46.25     | 54.28     | 53.08     | 54.43     | 45.38     |           | 34.76 |
|                   | 3M      | 16.64   | 55.36   | 50.72   | 42.94     | 48.25     | 46.93     | 48.12     | 39.52     |           | 28.18 |
|                   | 5M      | 14.83   | 47.88   | 43.17   | 36.30     | 38.04     | 36.82     | 37.50     | 29.88     |           | 18.48 |
| Average Gain(dBi) |         |         |         |         |           |           |           |           |           |           |       |
| In free space     | 0.3M    | -2.70   | -1.78   | -1.21   | -1.96     | -1.46     | -2.20     | -1.80     | -1.32     |           | -2.10 |
|                   | 1M      | -2.90   | -2.02   | -1.41   | -2.16     | -1.86     | -2.60     | -2.17     | -1.72     | -4.96     | -2.76 |
|                   | 2M      | -3.20   | -2.32   | -1.78   | -2.56     | -2.36     | -3.16     | -2.74     | -2.34     |           | -3.67 |
|                   | 3M      | -3.40   | -2.65   | -2.11   | -2.89     | -2.87     | -3.69     | -3.27     | -2.95     |           | -4.58 |
|                   | 5M      | -3.90   | -3.28   | -2.81   | -3.62     | -3.91     | -4.74     | -4.36     | -4.17     |           | -6.41 |
| On 2mm ABS Base   | 0.3M    | -4.54   | -1.63   | -1.80   | -2.46     | -2.13     | -2.51     | -2.30     | -2.25     |           | -2.31 |
|                   | 1M      | -4.74   | -1.87   | -2.00   | -2.66     | -2.53     | -2.91     | -2.66     | -2.65     | -4.84     | -2.97 |
|                   | 2M      | -5.04   | -2.17   | -2.37   | -3.06     | -3.03     | -3.46     | -3.24     | -3.27     |           | -3.88 |
|                   | 3M      | -5.24   | -2.50   | -2.70   | -3.39     | -3.54     | -4.00     | -3.77     | -3.88     |           | -4.79 |
|                   | 5M      | -5.74   | -3.13   | -3.40   | -4.12     | -4.58     | -5.05     | -4.86     | -5.10     |           | -6.62 |
| On the Glass Base | 0.3M    | -7.63   | -1.70   | -2.05   | -2.82     | -1.76     | -1.80     | -1.71     | -2.47     |           | -3.04 |
|                   | 1M      | -7.83   | -1.95   | -2.25   | -3.02     | -2.16     | -2.20     | -2.07     | -2.87     | -4.28     | -3.69 |
|                   | 2M      | -8.13   | -2.25   | -2.62   | -3.42     | -2.66     | -2.76     | -2.65     | -3.50     |           | -4.61 |
|                   | 3M      | -8.33   | -2.58   | -2.95   | -3.75     | -3.17     | -3.29     | -3.18     | -4.10     |           | -5.52 |
|                   | 5M      | -8.83   | -3.21   | -3.65   | -4.47     | -4.20     | -4.34     | -4.27     | -5.32     |           | -7.35 |

| Peak Gain(dBi)    |      |         |         |         |         |           |           |           |           |           |            |
|-------------------|------|---------|---------|---------|---------|-----------|-----------|-----------|-----------|-----------|------------|
| Standard          |      | LTE 450 | LTE 700 | GSM 850 | GSM 900 | DCS       | PCS       | UMTS1     | LTE 2600  | C-Band    | WIFI 5G    |
| Frequency (MHz)   |      | 450~470 | 698~806 | 824~894 | 880~960 | 1710~1880 | 1850~1990 | 1920~2170 | 2300~2690 | 3400~3600 | 4900~ 5850 |
| In free space     | 0.3M | -0.03   | 2.76    | 2.85    | 2.13    | 2.83      | 2.71      | 4.25      | 3.95      |           | 6.02       |
|                   | 1M   | -0.23   | 2.56    | 2.65    | 1.93    | 2.43      | 2.31      | 3.85      | 3.55      | 0.59      | 5.32       |
|                   | 2M   | -0.53   | 2.26    | 2.35    | 1.53    | 1.93      | 1.81      | 3.35      | 2.95      |           | 4.42       |
|                   | 3M   | -0.73   | 1.86    | 1.95    | 1.23    | 1.43      | 1.31      | 2.75      | 2.25      |           | 3.52       |
|                   | 5M   | -1.23   | 1.26    | 1.25    | 0.53    | 0.43      | 0.21      | 1.65      | 1.05      |           | 1.72       |
| On 2mm ABS Base   | 0.3M | -0.76   | 2.19    | 2.42    | 1.66    | 2.24      | 2.60      | 3.65      | 2.95      |           | 5.63       |
|                   | 1M   | -0.96   | 1.99    | 2.22    | 1.46    | 1.84      | 2.20      | 3.34      | 2.55      | 1.76      | 4.93       |
|                   | 2M   | -1.26   | 1.69    | 1.92    | 1.06    | 1.34      | 1.68      | 2.75      | 1.95      |           | 4.03       |
|                   | 3M   | -1.46   | 1.29    | 1.52    | 0.76    | 0.84      | 1.10      | 2.15      | 1.35      |           | 3.13       |
|                   | 5M   | -1.25   | 0.69    | 0.82    | 0.06    | -0.26     | 0.10      | 1.05      | 0.15      |           | 1.33       |
| On Glass Base     | 0.3M | -1.88   | 1.73    | 2.09    | 1.78    | 4.94      | 5.34      | 5.34      | 4.51      |           | 4.94       |
|                   | 1M   | -2.08   | 1.53    | 1.89    | 1.58    | 4.54      | 4.94      | 4.94      | 4.11      | 3.22      | 4.24       |
|                   | 2M   | -2.38   | 1.23    | 1.59    | 1.18    | 4.04      | 4.40      | 4.36      | 3.41      |           | 3.34       |
|                   | 3M   | -2.58   | 0.83    | 1.19    | 0.88    | 3.44      | 3.84      | 3.84      | 2.81      |           | 2.44       |
|                   | 5M   | -1.99   | 0.23    | 0.49    | 0.18    | 2.44      | 2.84      | 2.84      | 1.51      |           | 0.64       |
| Impedance         |      |         |         | 50Ω     |         |           |           |           |           |           |            |
| Polarization      |      |         |         | Linear  |         |           |           |           |           |           |            |
| Radiation Pattern |      |         |         | Omni    |         |           |           |           |           |           |            |
| Input Power       |      |         |         | 5 W     |         |           |           |           |           |           |            |

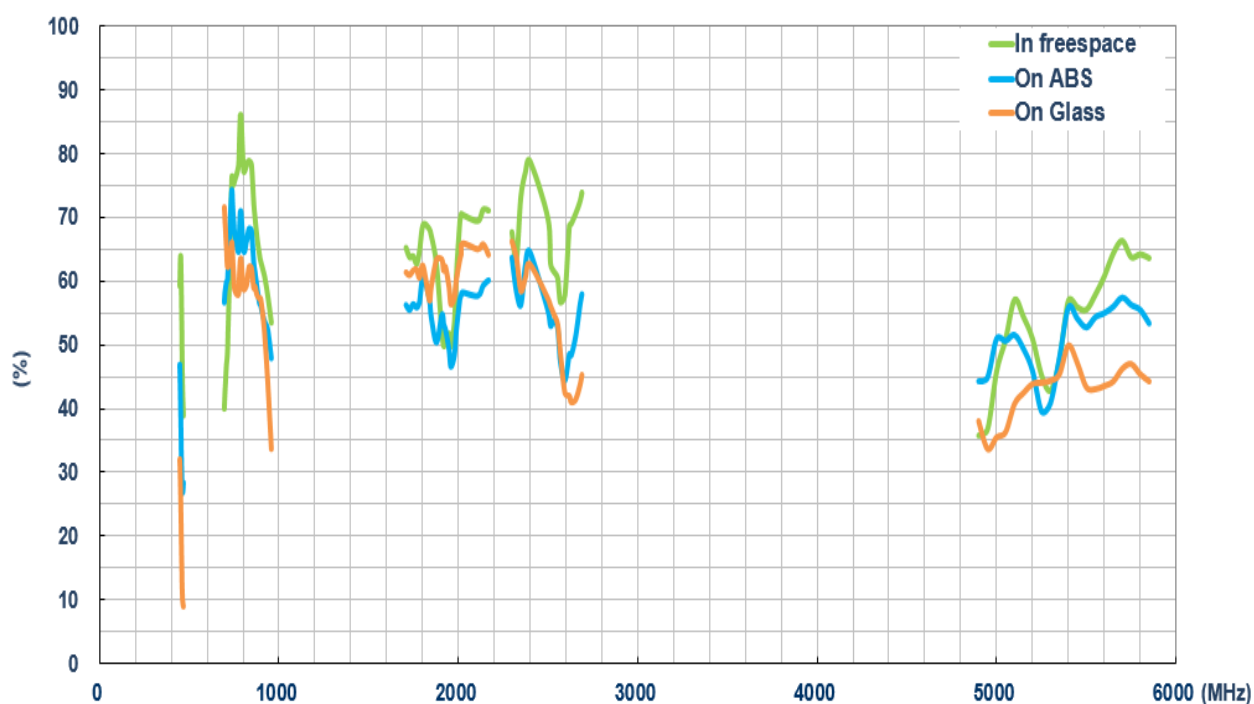
| Mechanical                  |                                       |
|-----------------------------|---------------------------------------|
| Casing                      | ABS                                   |
| Coaxial Cable               | TGC-200 Low Loss Cable                |
| Cable Length                | 1 Meter Standard, Fully Customizable  |
| Connector                   | SMA Male Standard, Fully Customizable |
| Adhesive                    | 3M9448+CR4305 Double Sided Adhesive   |
| Weight                      | 127g                                  |
| Environmental               |                                       |
| Operation Temperature Range | -40°C to 85°C                         |
| Storage Temperature Range   | -40°C to 85°C                         |
| Humidity                    | Non-condensing 65°C 95% RH            |

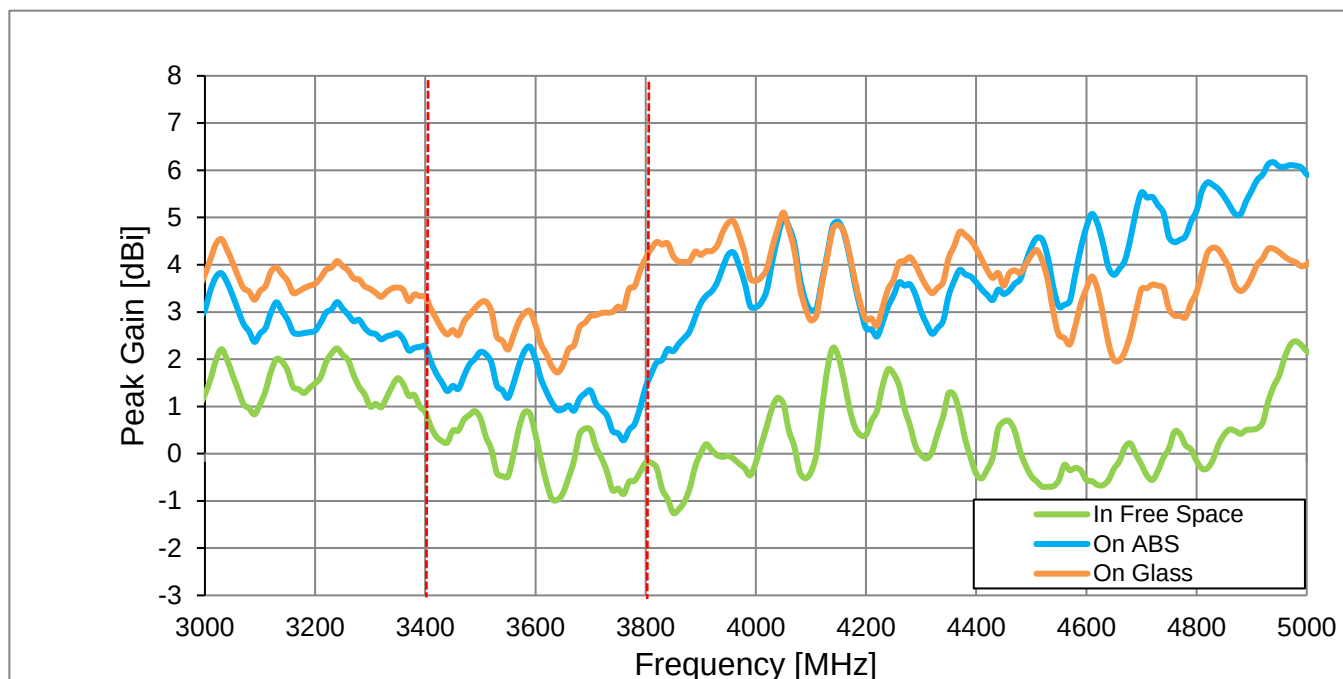
## 3. Antenna Characteristics

### 3.1 Return Loss

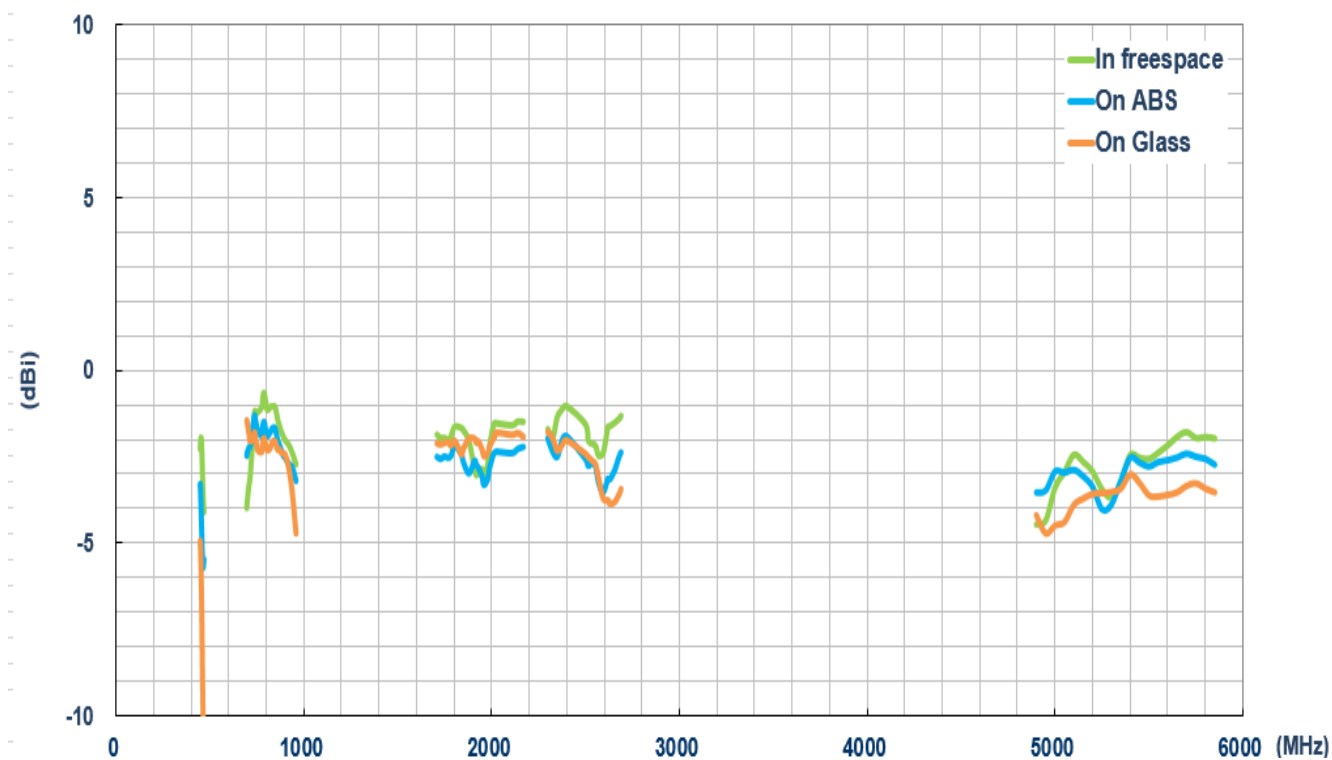


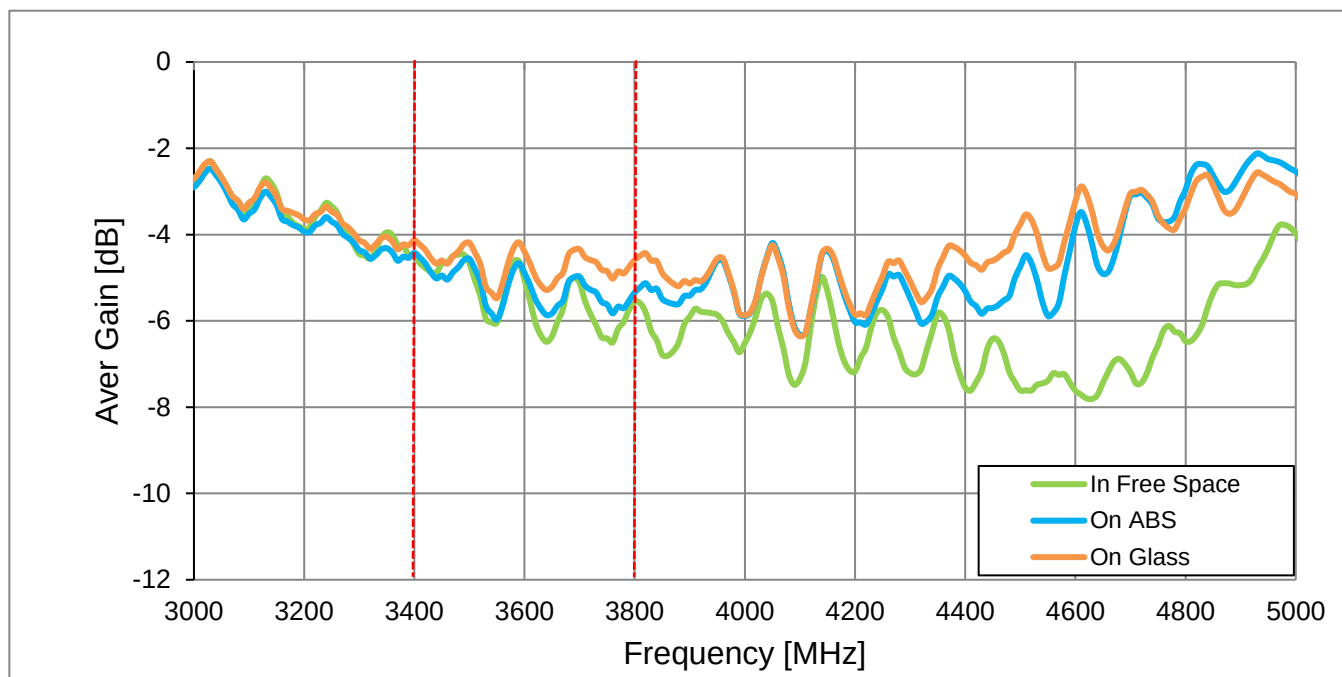
### 3.2 Efficiency



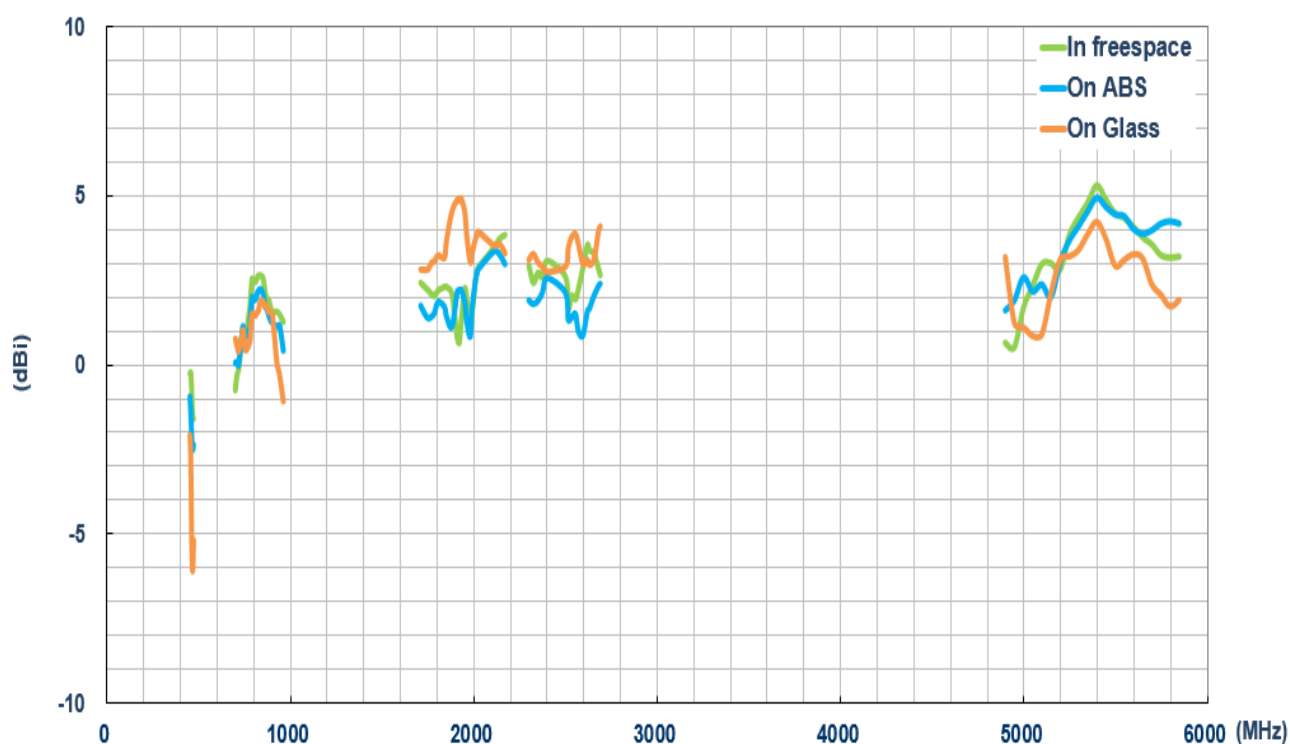


### 3.3 Average Gain

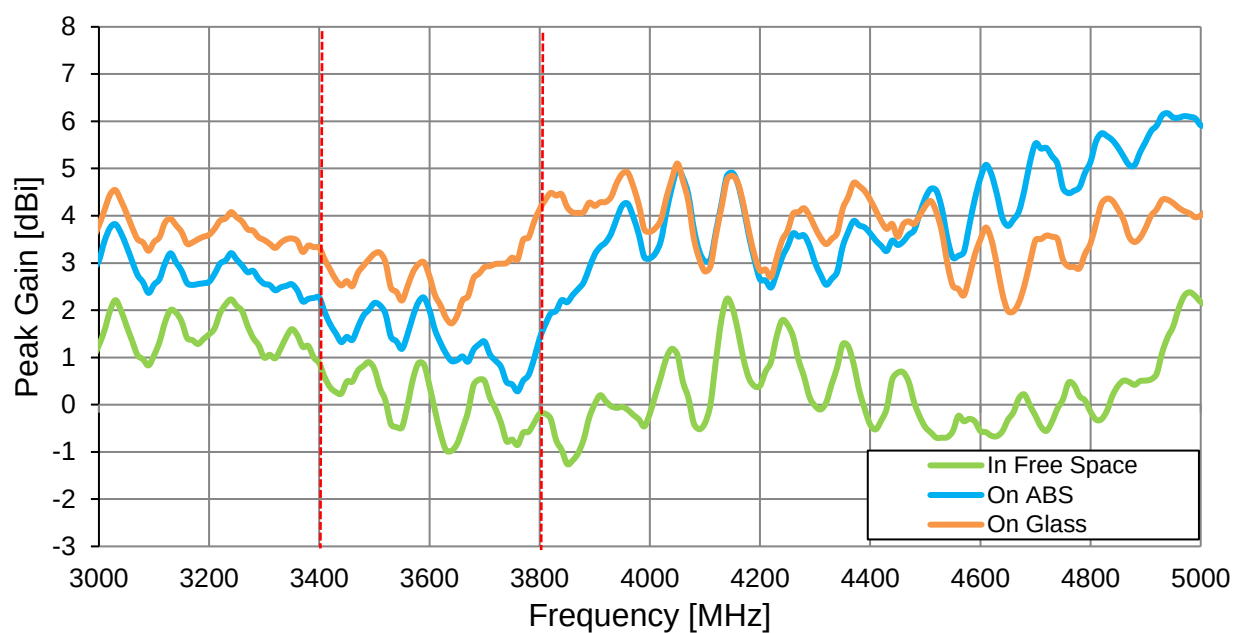




### 3.4 Peak Gain







## 4. 2D Radiation Patterns

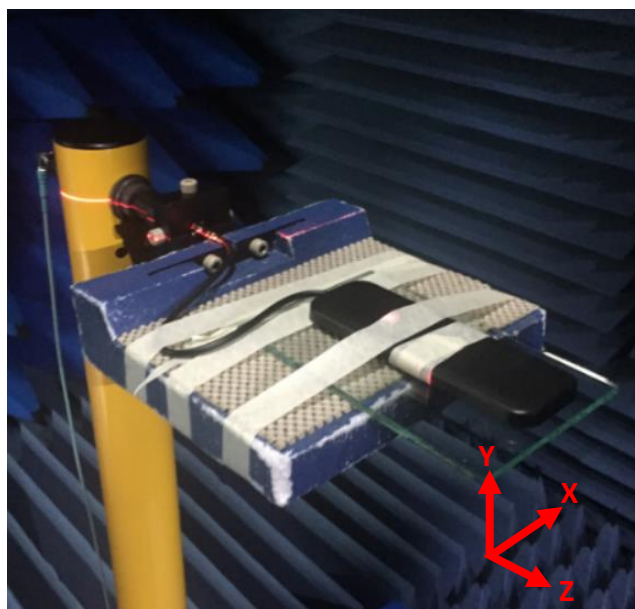
### 4.1 Test Setup



a) In free space



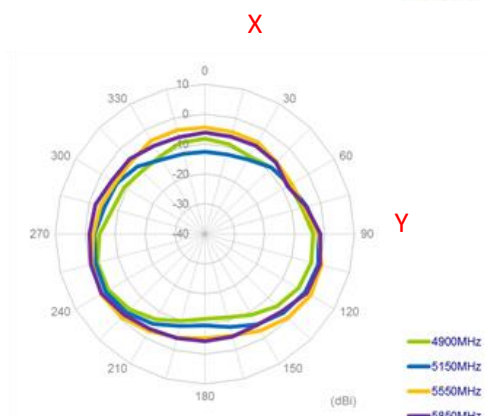
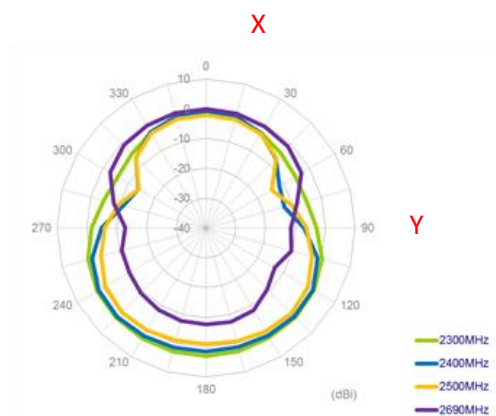
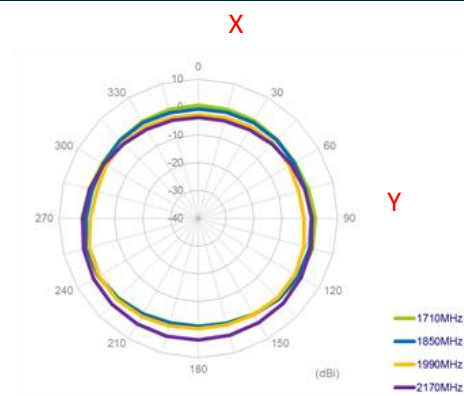
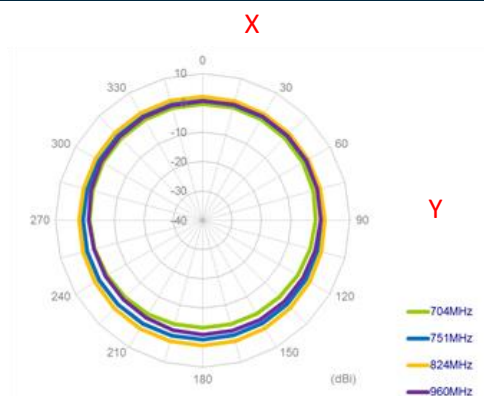
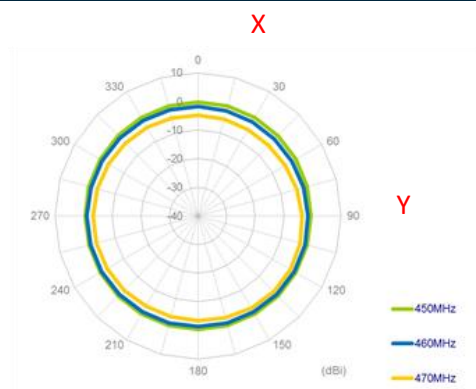
2) On 2mm ABS base



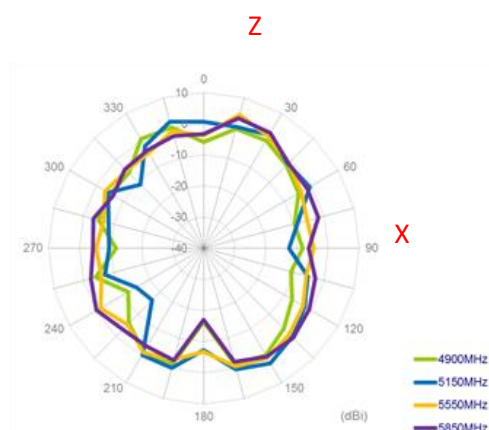
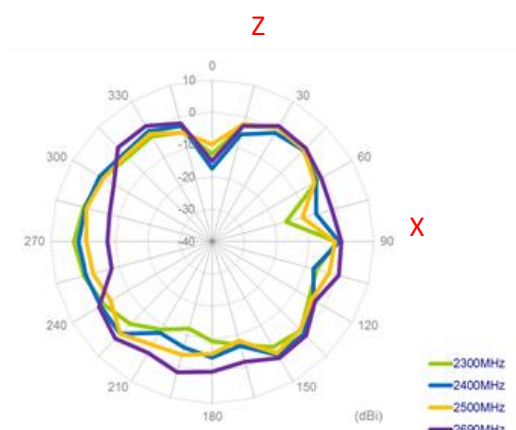
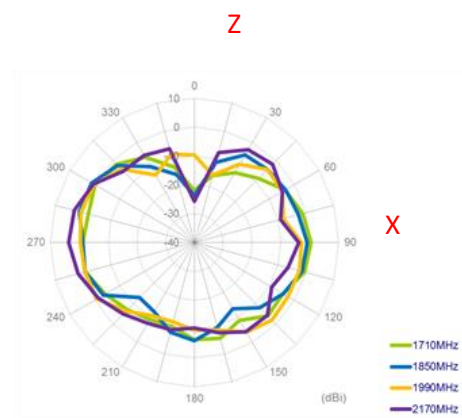
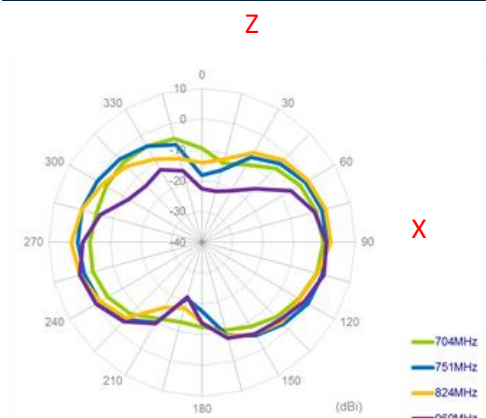
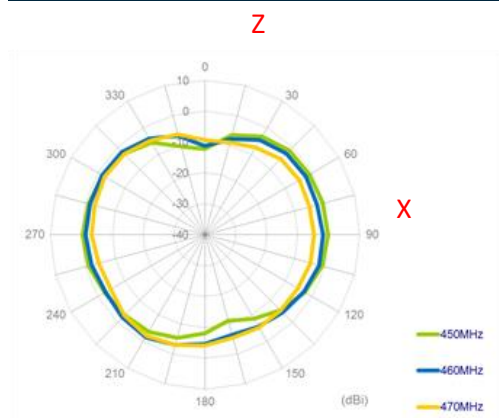
3) On the glass base

## 4.2 Antenna with 1 meter cable length in free space

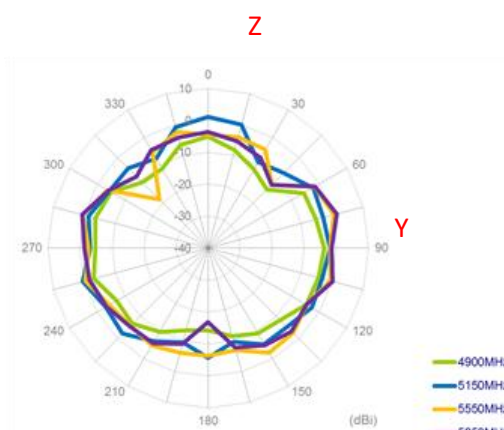
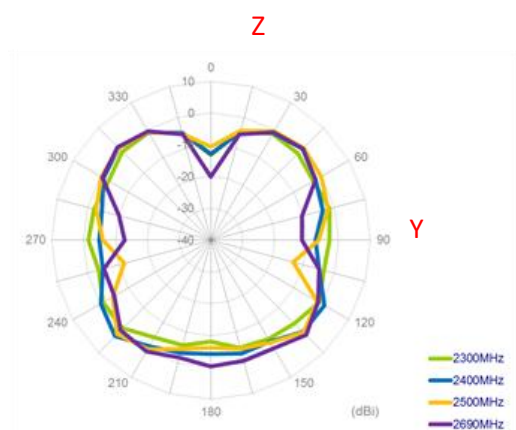
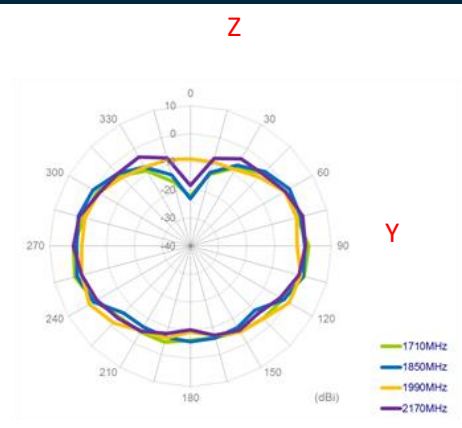
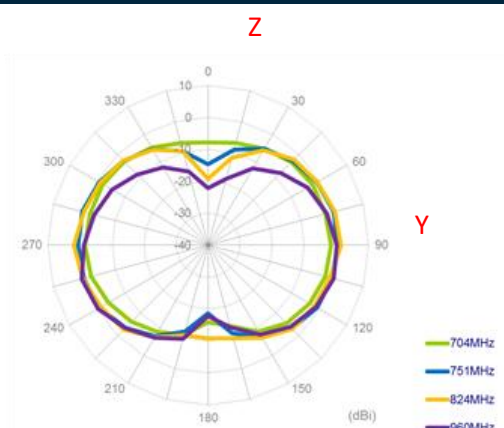
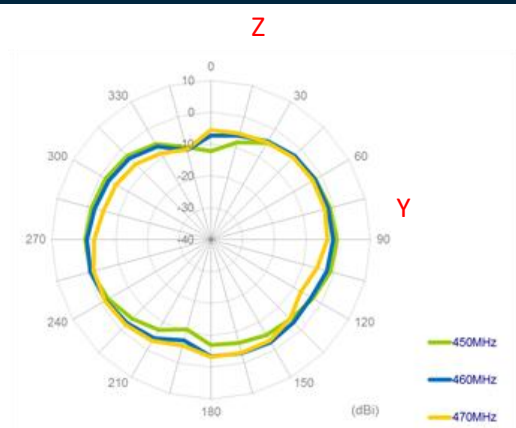
### XY Plane



## XZ Plane

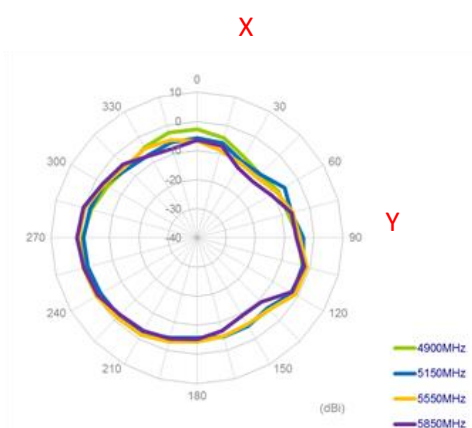
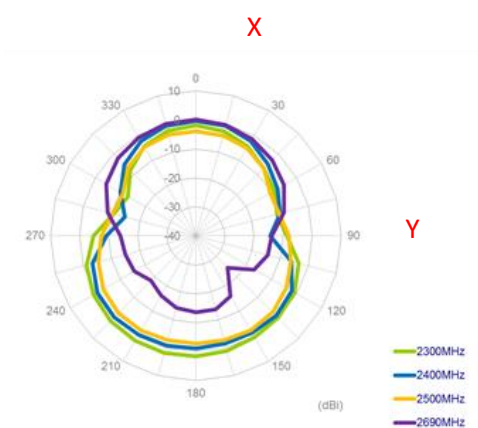
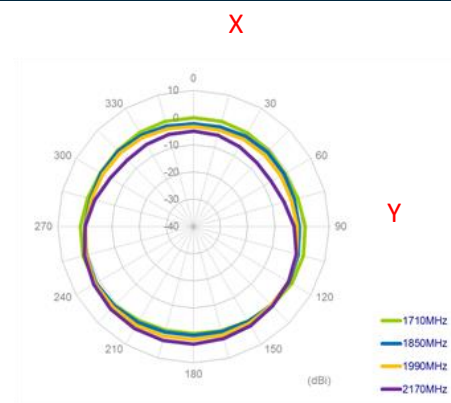
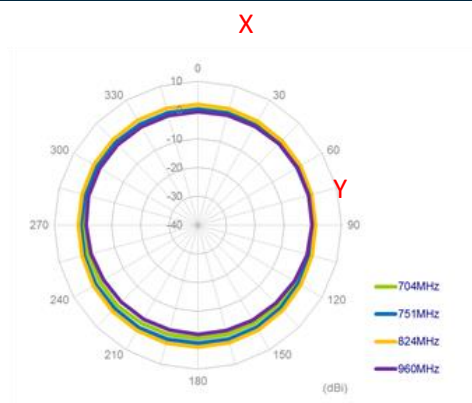
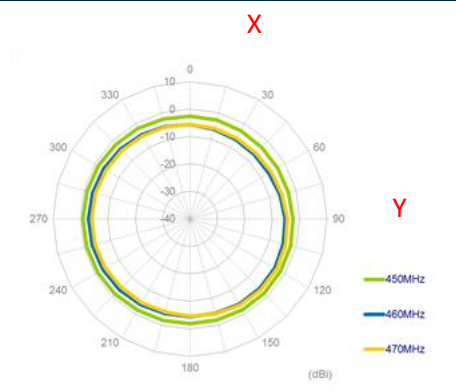


## YZ Plane



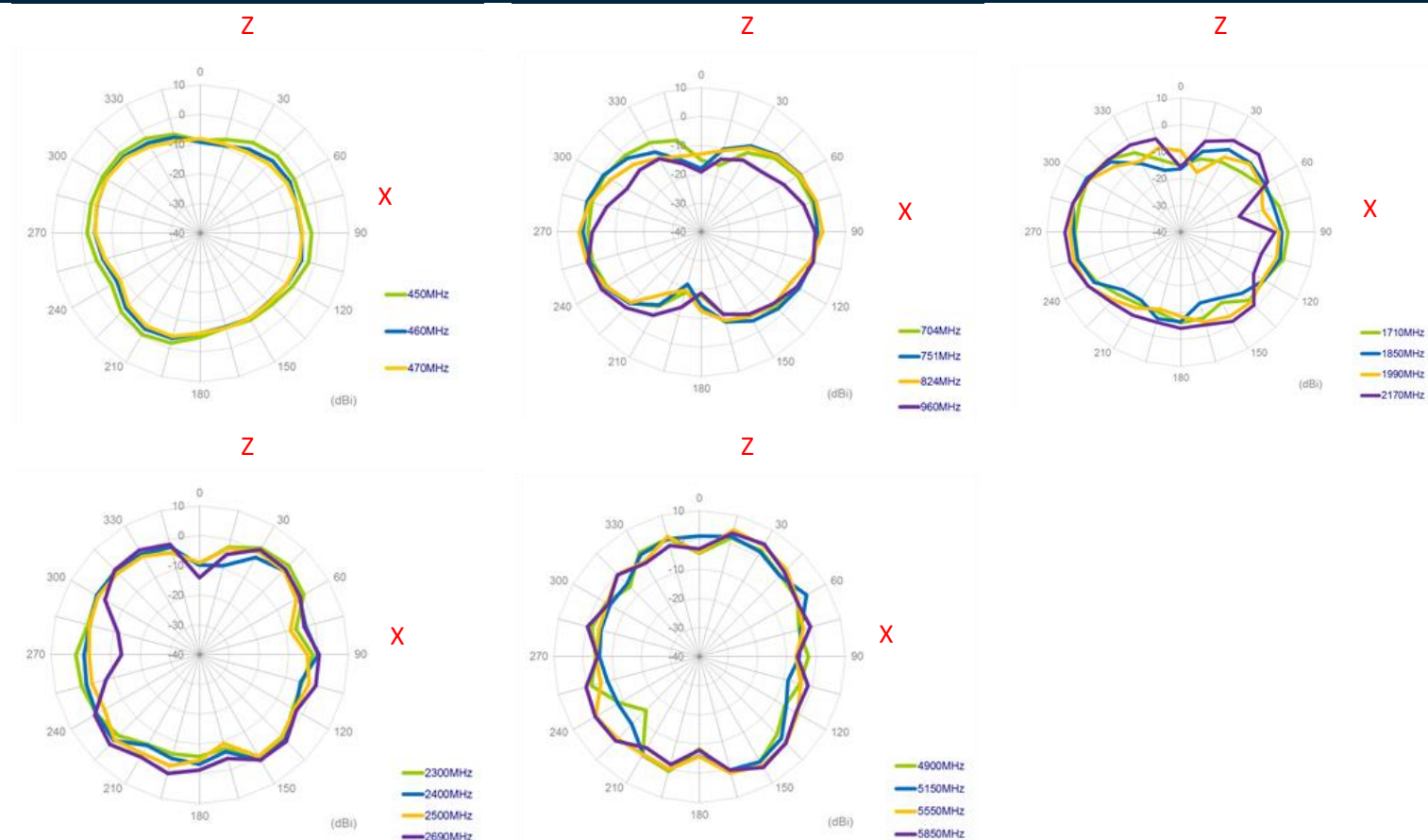
### 4.3 Antenna with 1 meter cable length on 2mm ABS

#### XY Plane

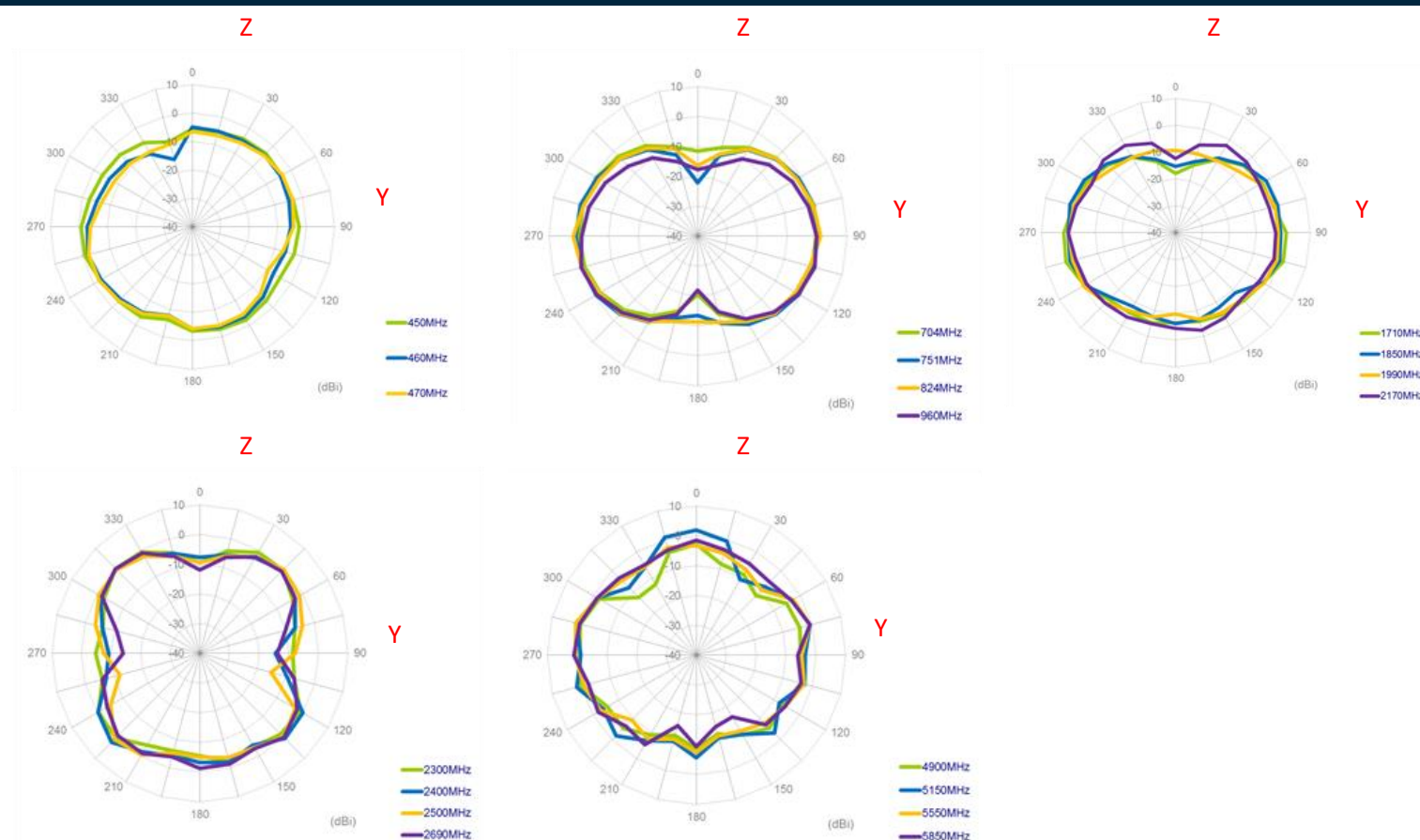




## XZ Plane

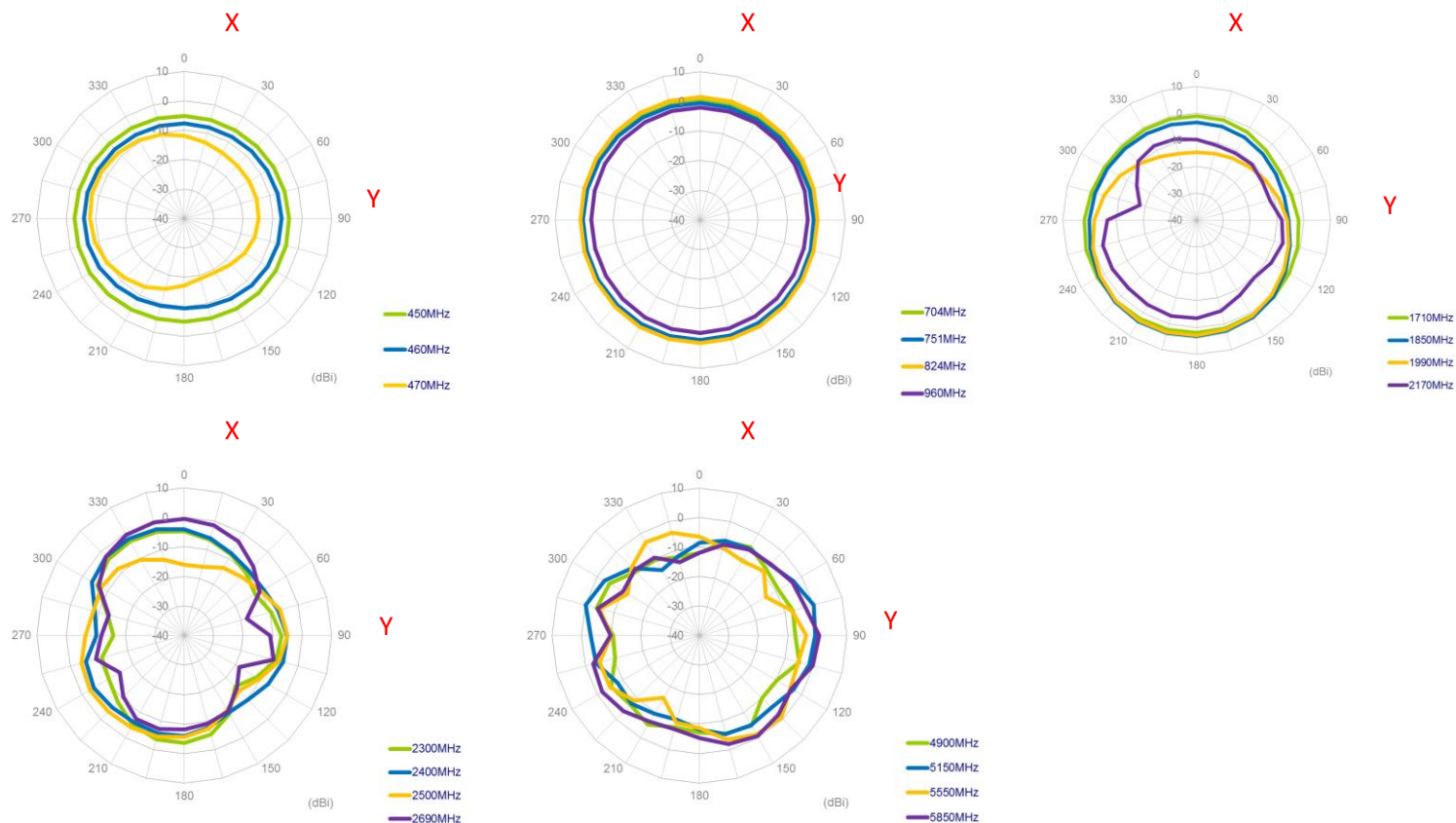


## YZ Plane

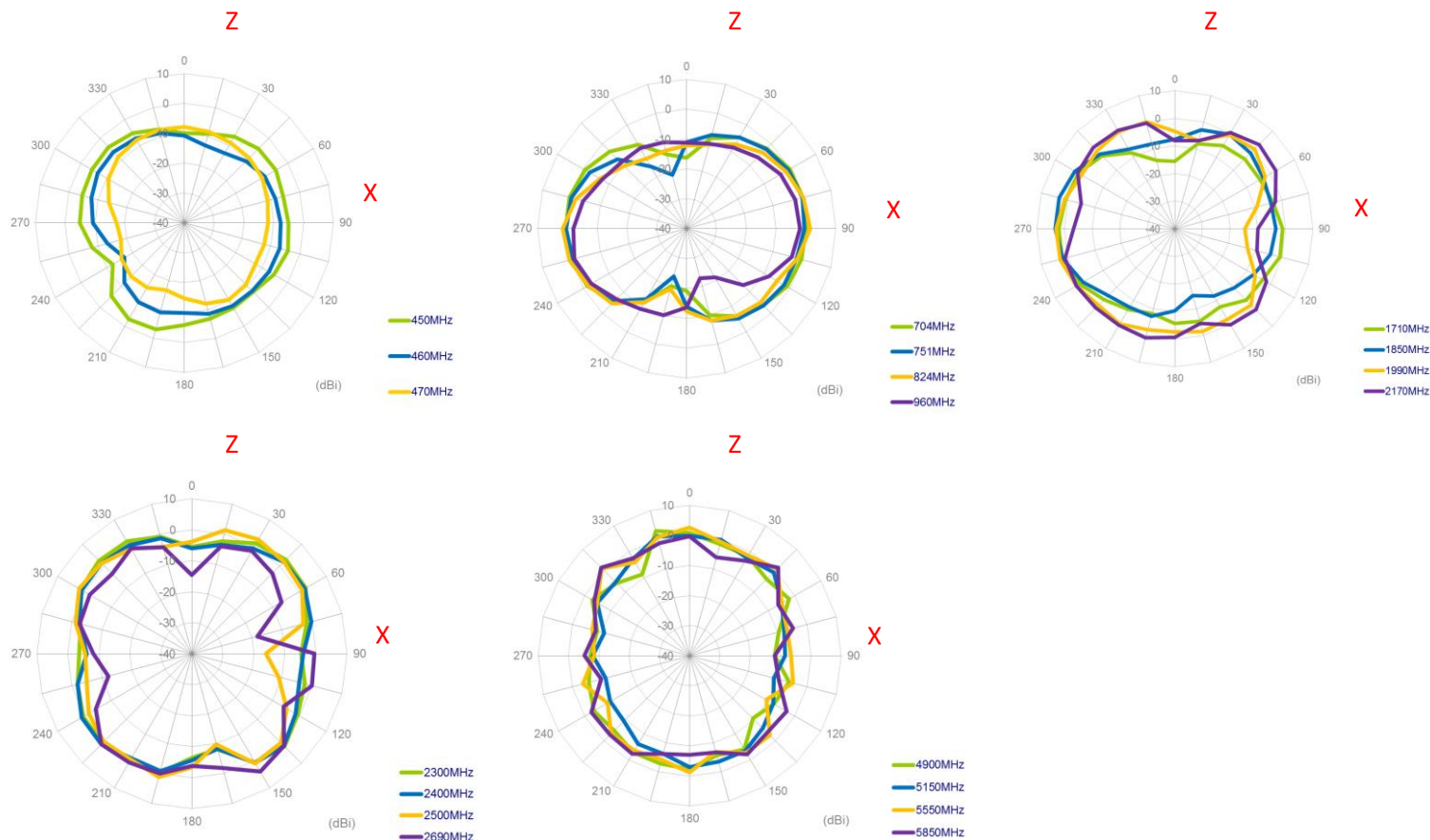


## 4.4 Antenna with 1 meter cable length on Glass Base

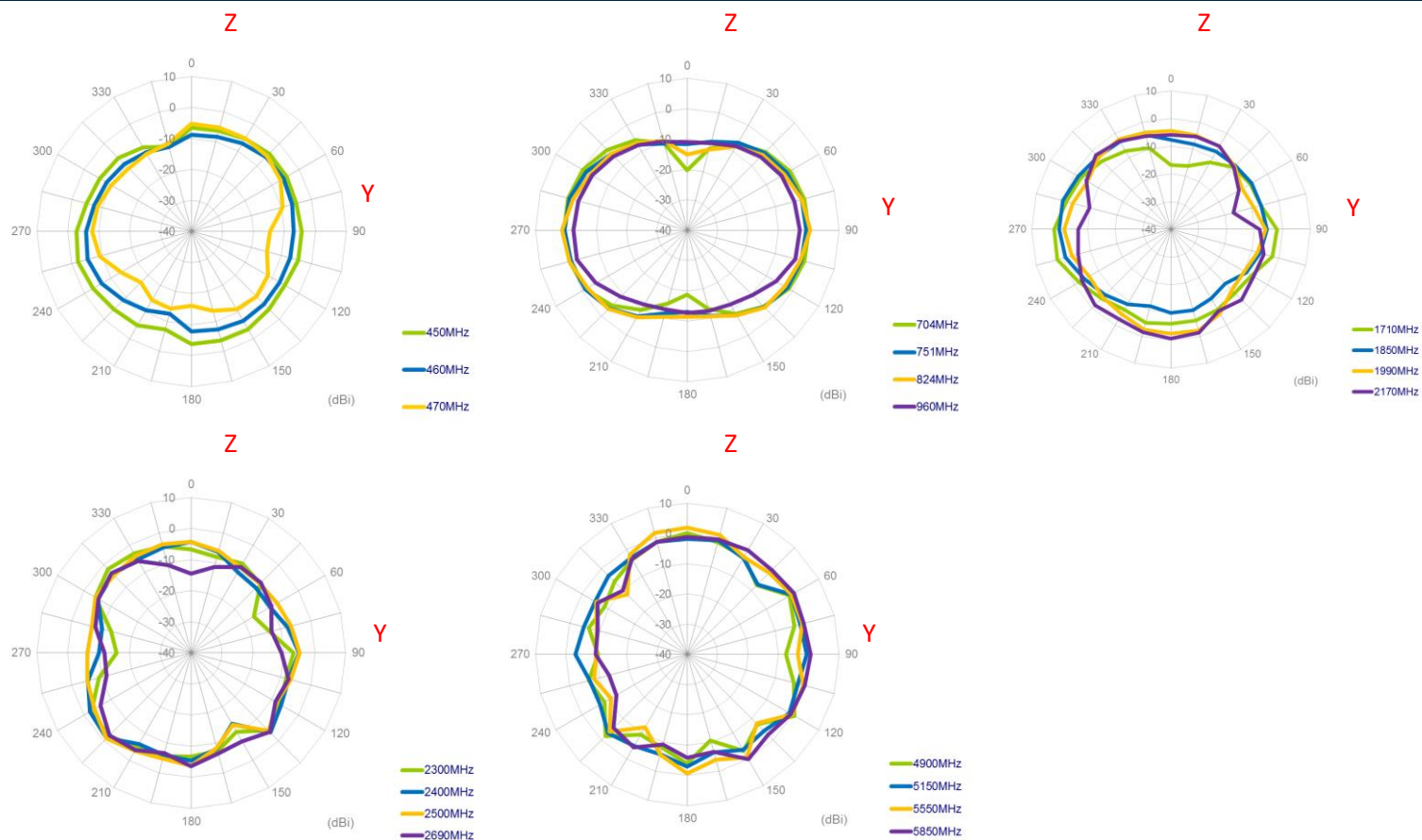
### XY Plane



## XZ Plane



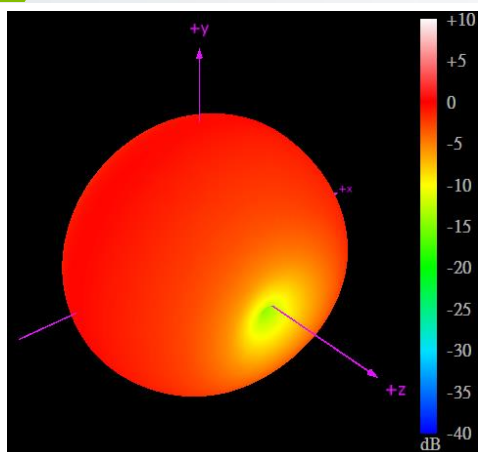
## YZ Plane



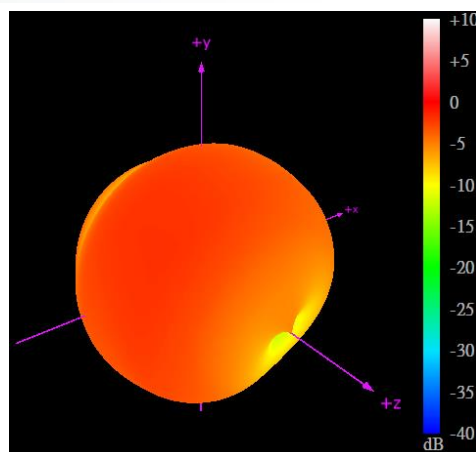


## 5. 3D Radiation Patterns

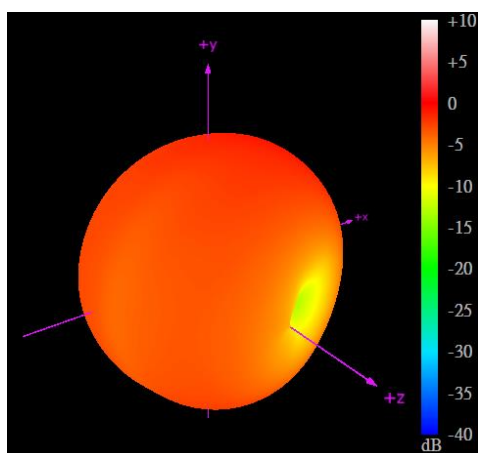
### 5.1 Free Space



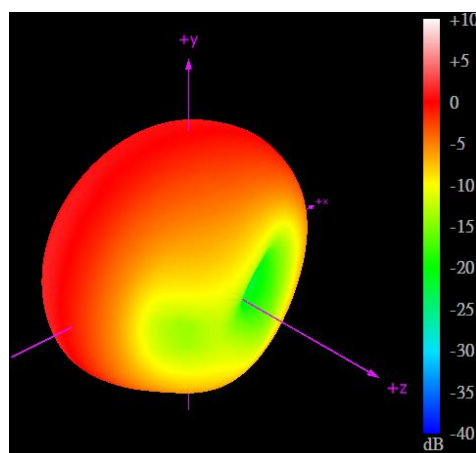
450MHz



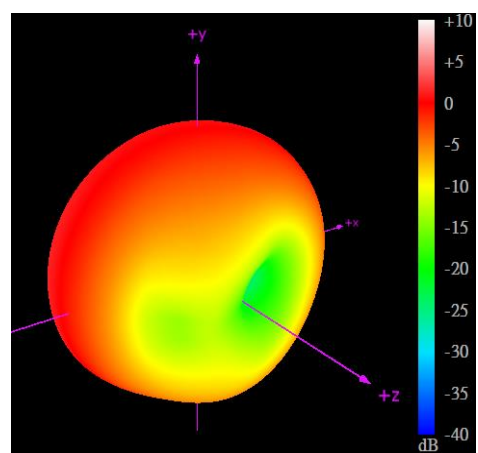
470MHz



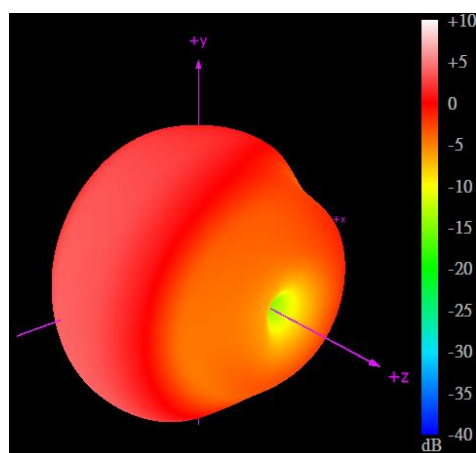
704MHz



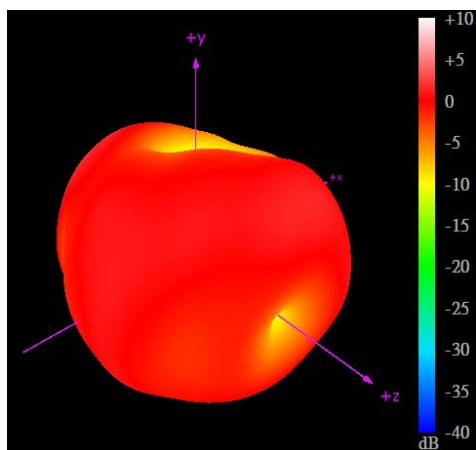
960MHz



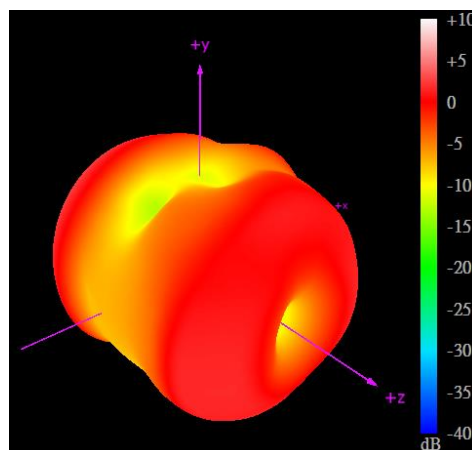
1710MHz



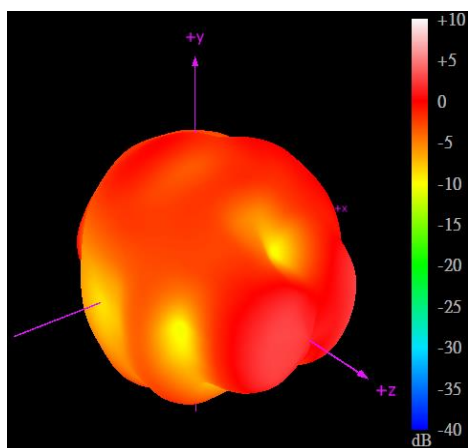
2170MHz



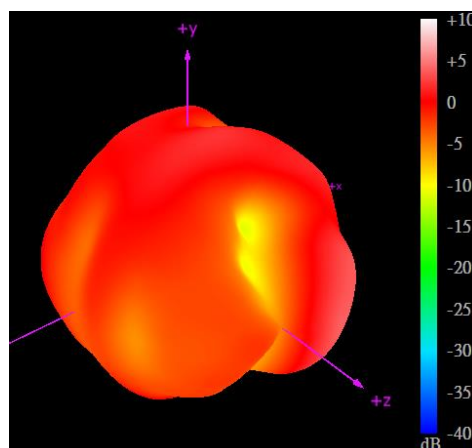
2500MHz



2690MHz

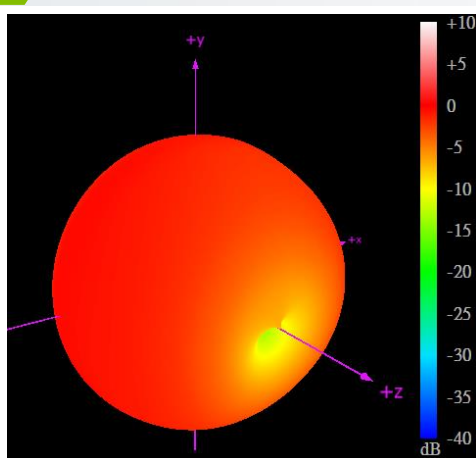


5150MHz

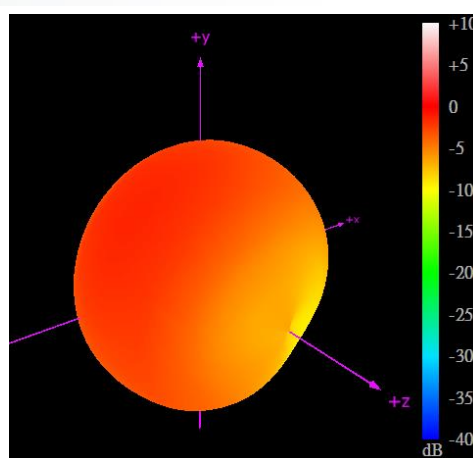


5850MHz

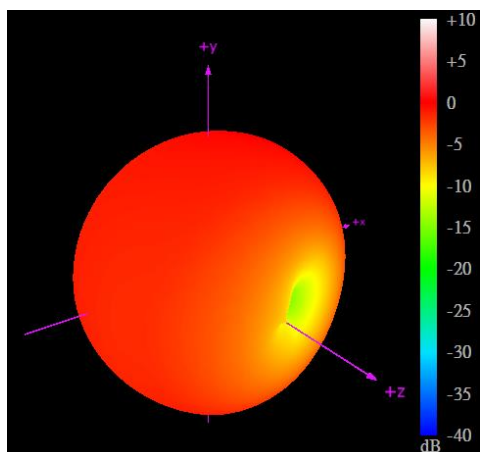
## 5.2 2mm ABS Base



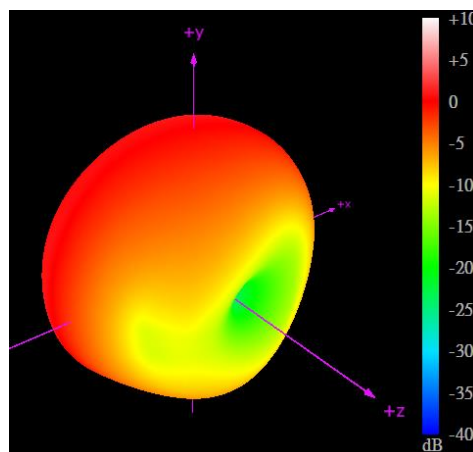
450MHz



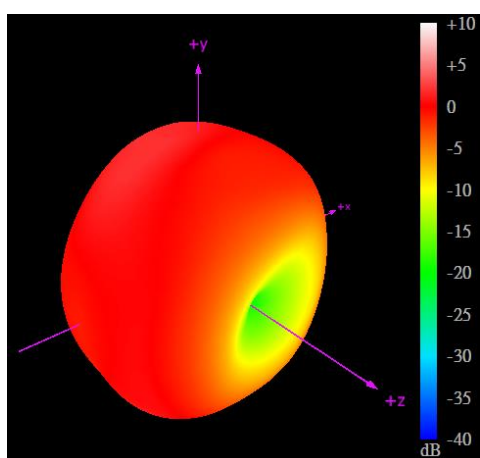
470MHz



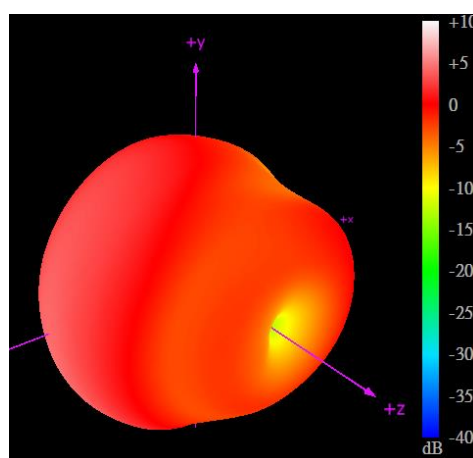
704MHz



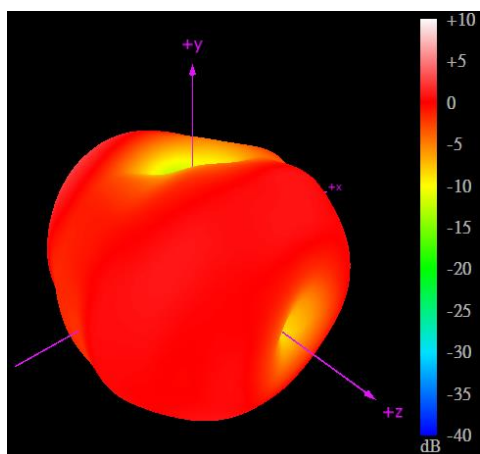
960MHz



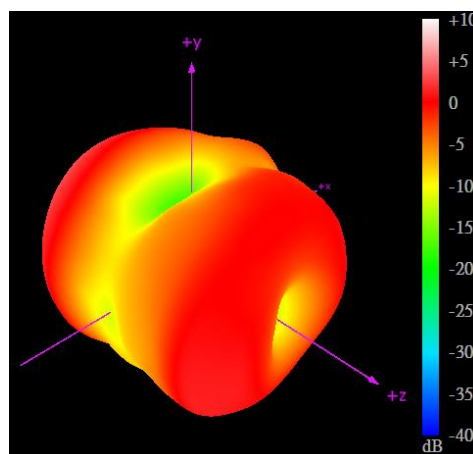
1710MHz



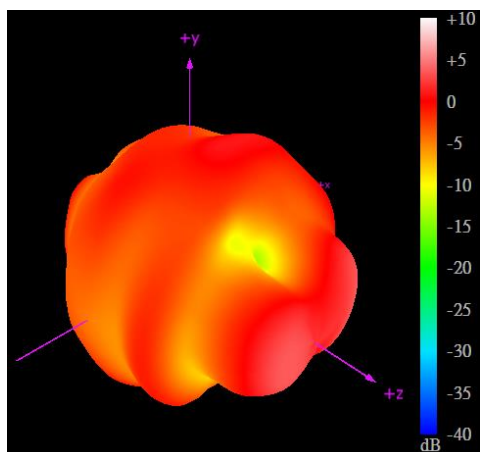
2170MHz



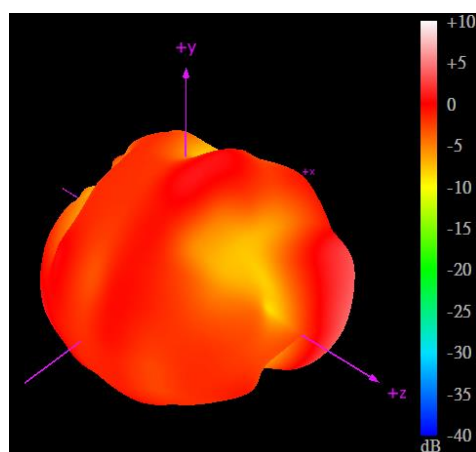
2500MHz



2690MHz

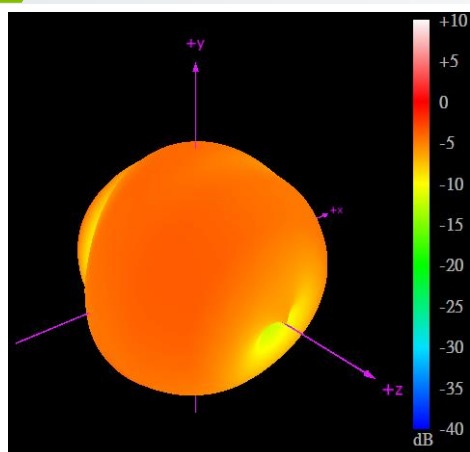


5150MHz

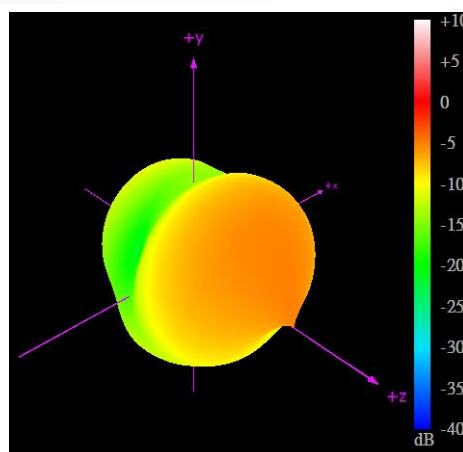


5850MHz

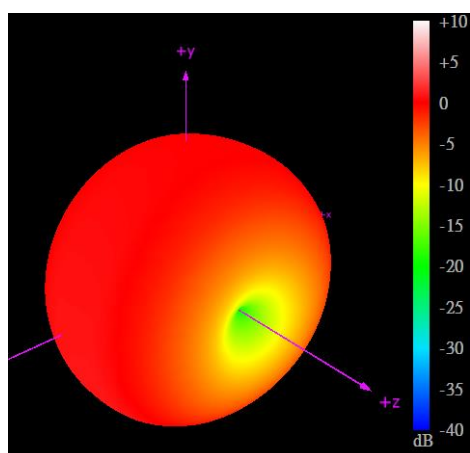
### 5.3 Glass Base



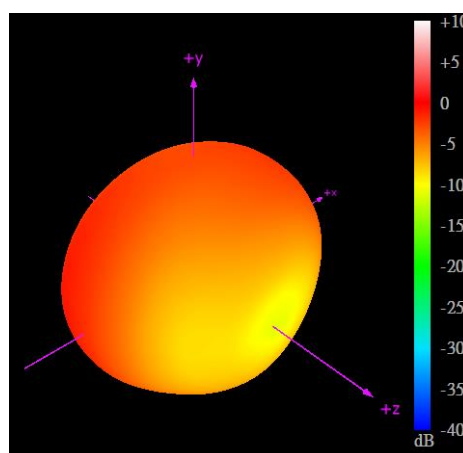
450MHz



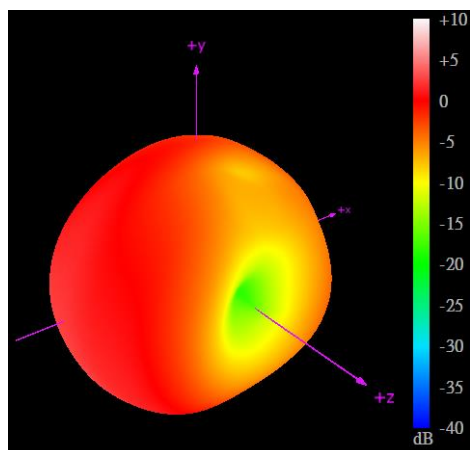
470MHz



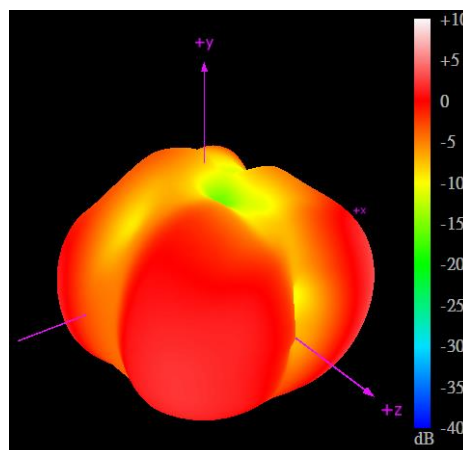
704MHz



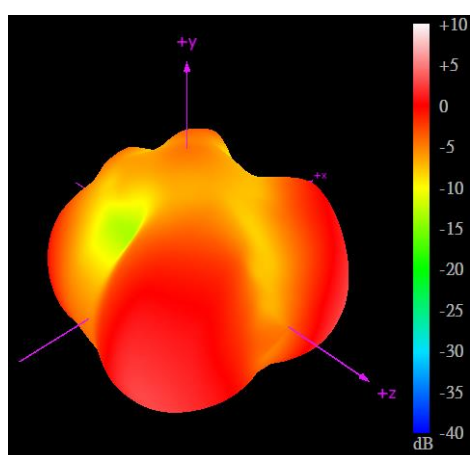
960MHz



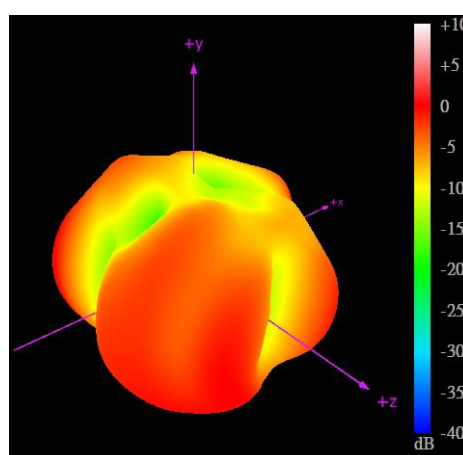
1710MHz



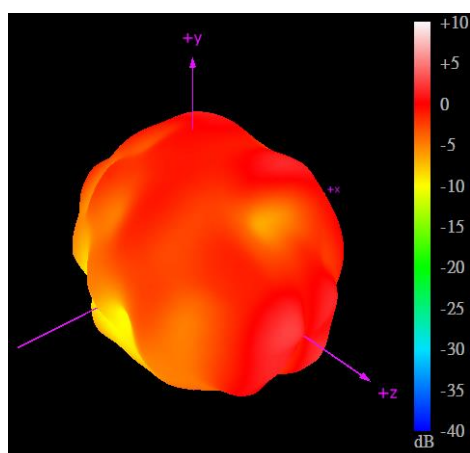
2170MHz



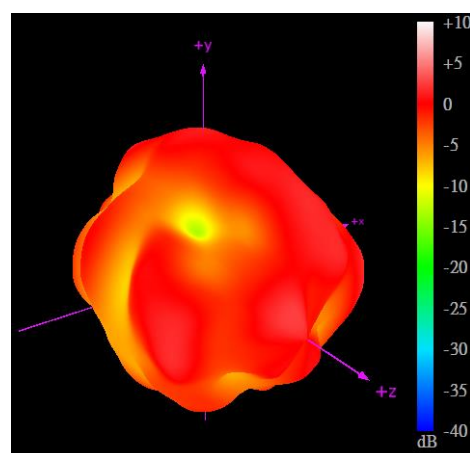
2500MHz



2690MHz

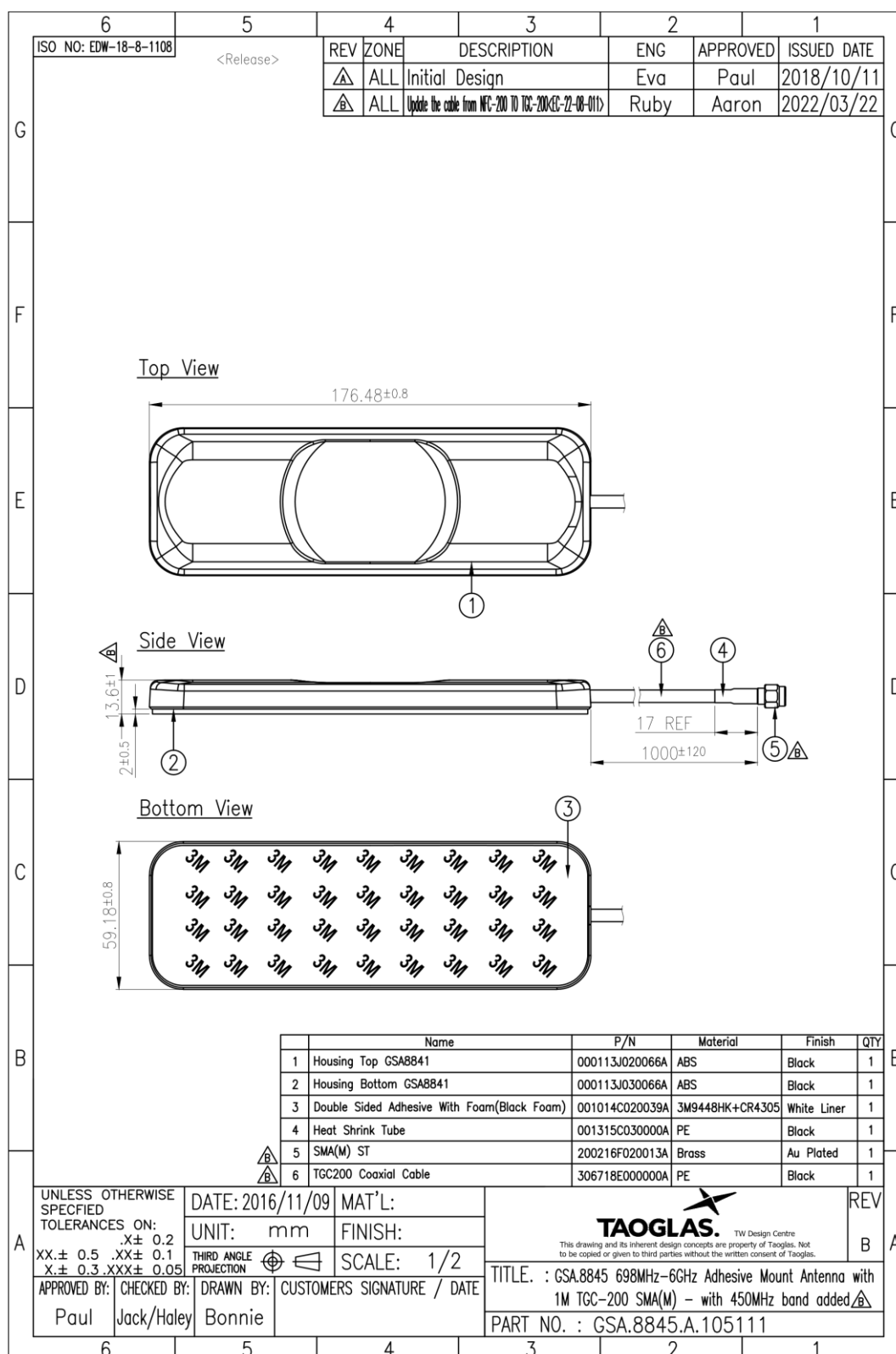


5150MHz



5850MHz

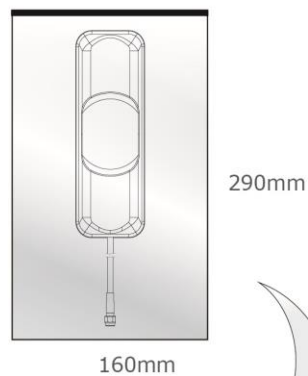
## 6. Mechanical Drawing (Units: mm)



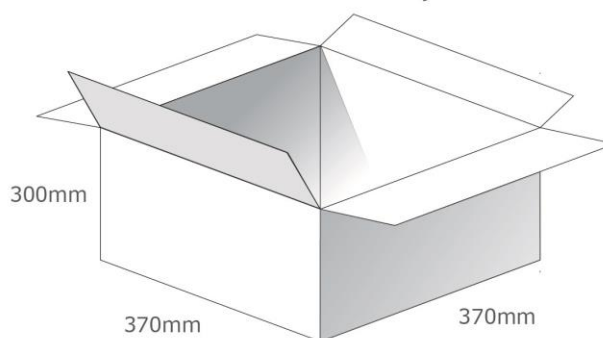


## 7. Packaging

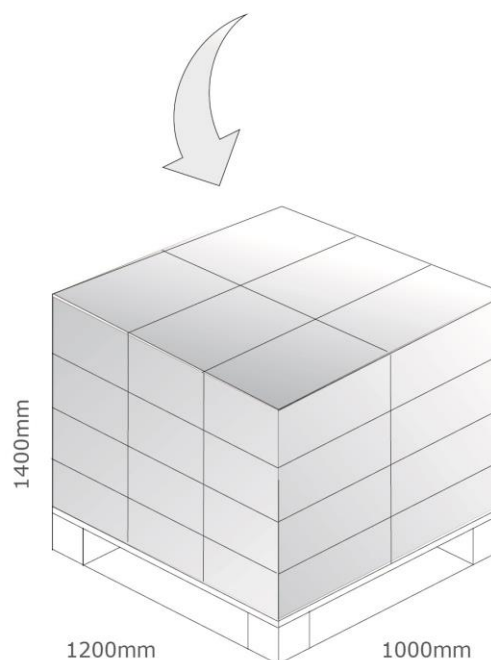
1pc GSA.8845.A.105111 per PE bag  
Bag Dimensions - 290\*160 mm  
Weight - 124g



40pcs GSA.8845.A.105111 per carton  
Carton Dimensions - 370\*370\*300 mm  
Weight - 6.4Kg



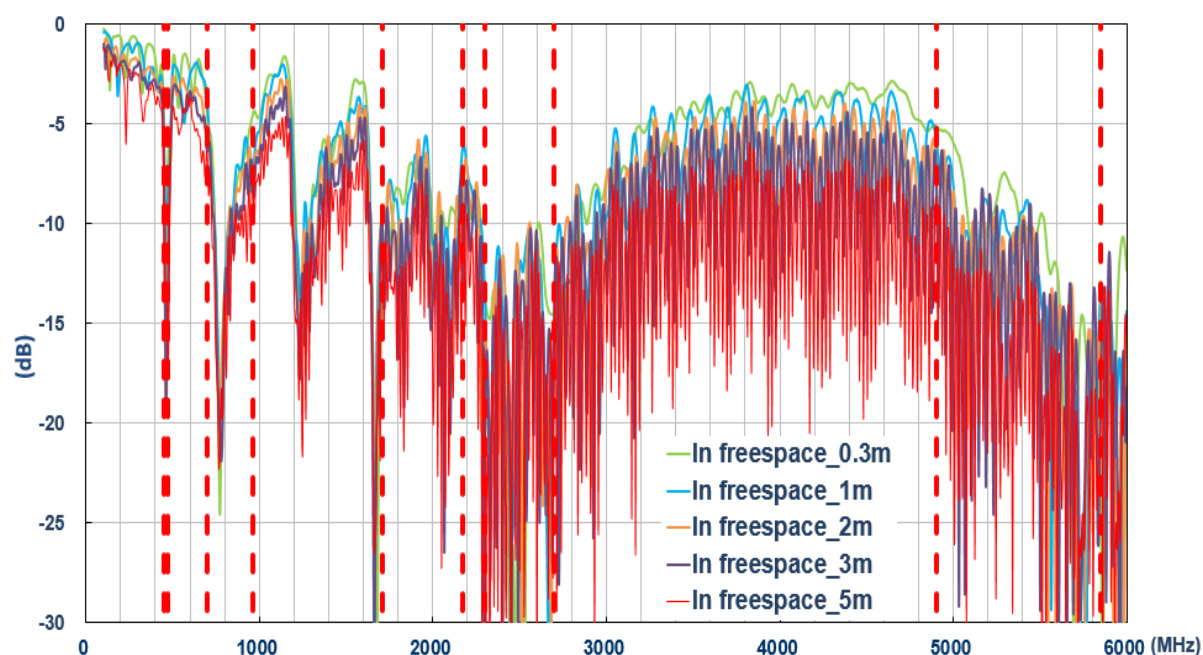
Pallet Dimensions 1200mm\*1000mm\*1400mm  
24 Cartons per Pallet  
6 Cartons per layer  
4 Layers



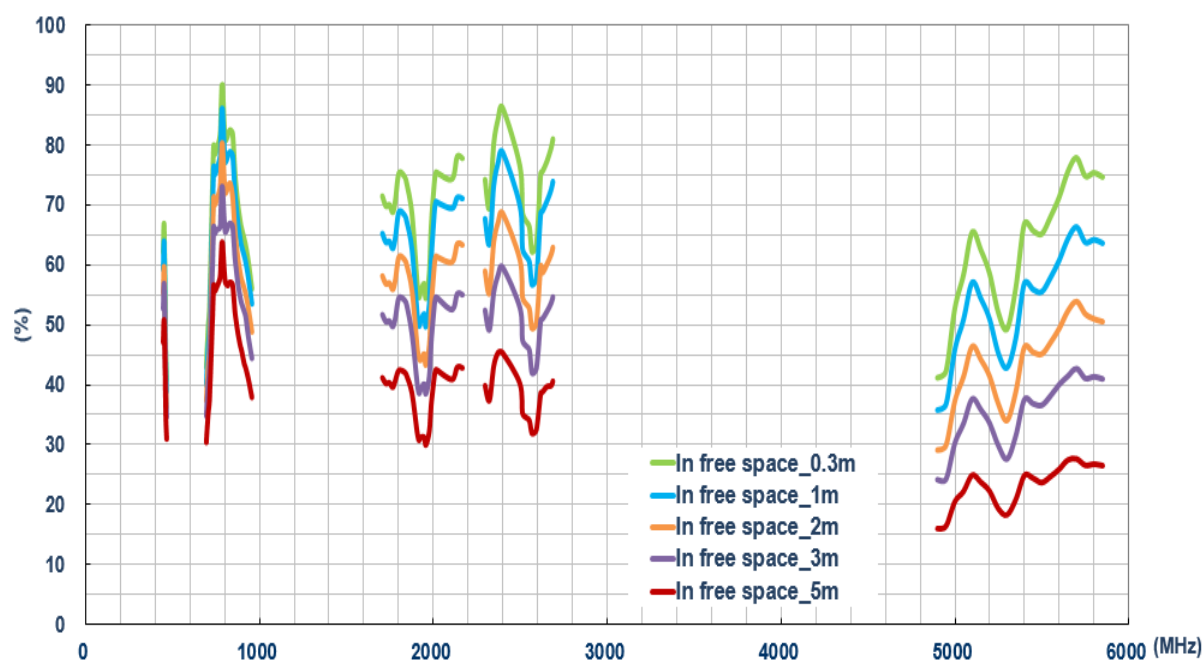
## 8. Application Note

The GSA.8845 antenna performance with different cable lengths and different mounting environments is shown below.

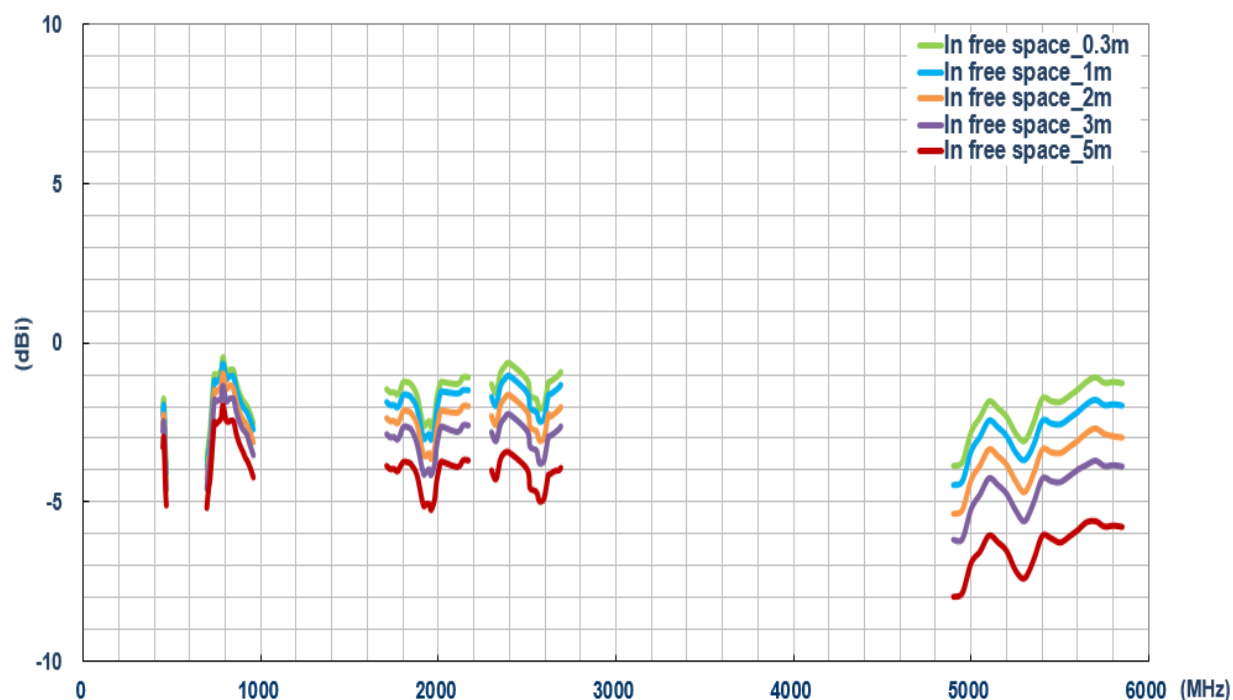
### 8.1 Return Loss – Free Space



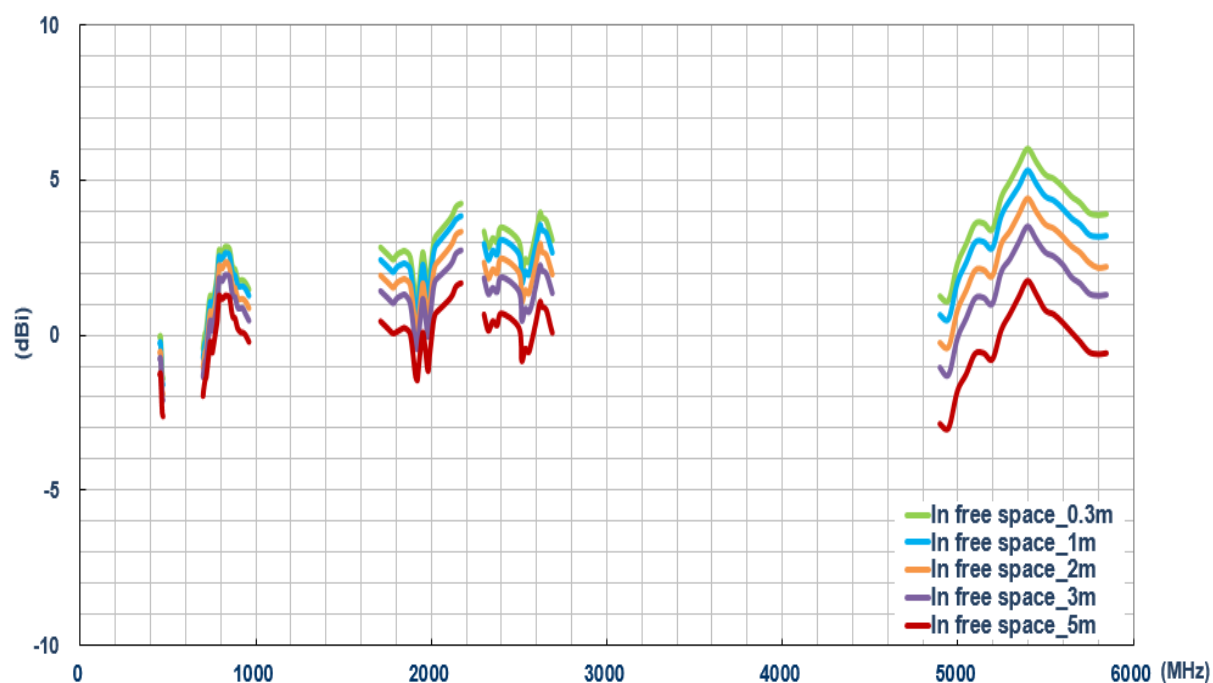
### 8.2 Efficiency – Free Space



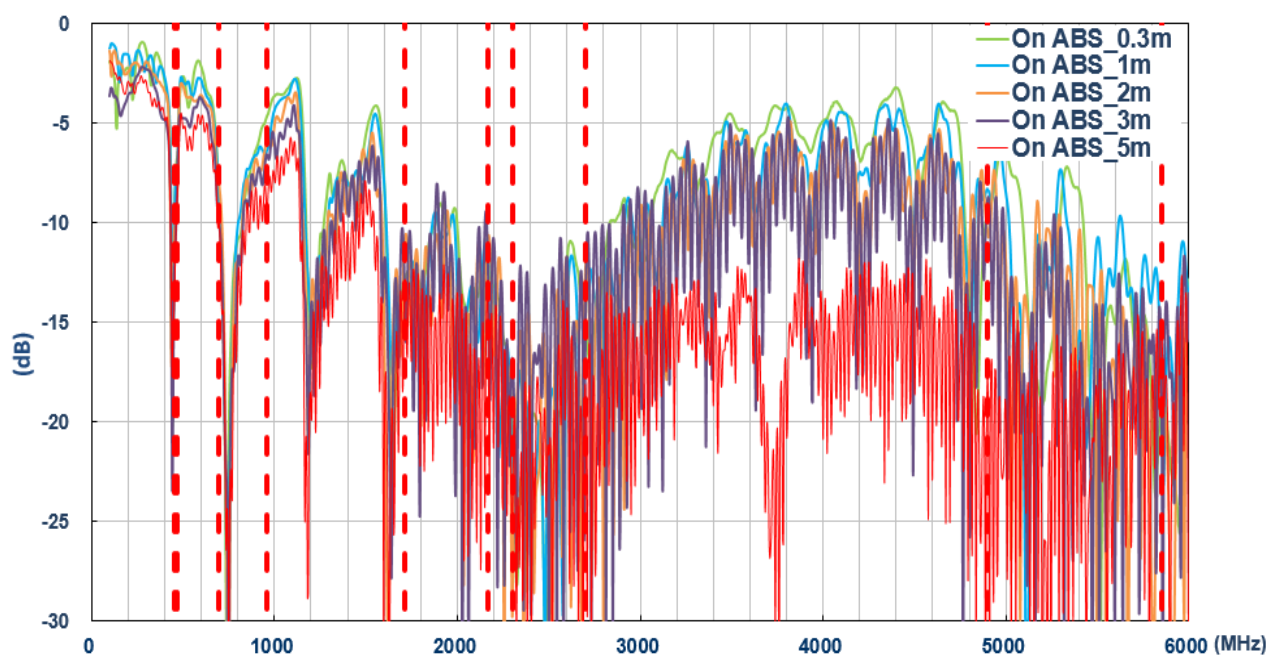
### 8.3 Average Gain – Free Space



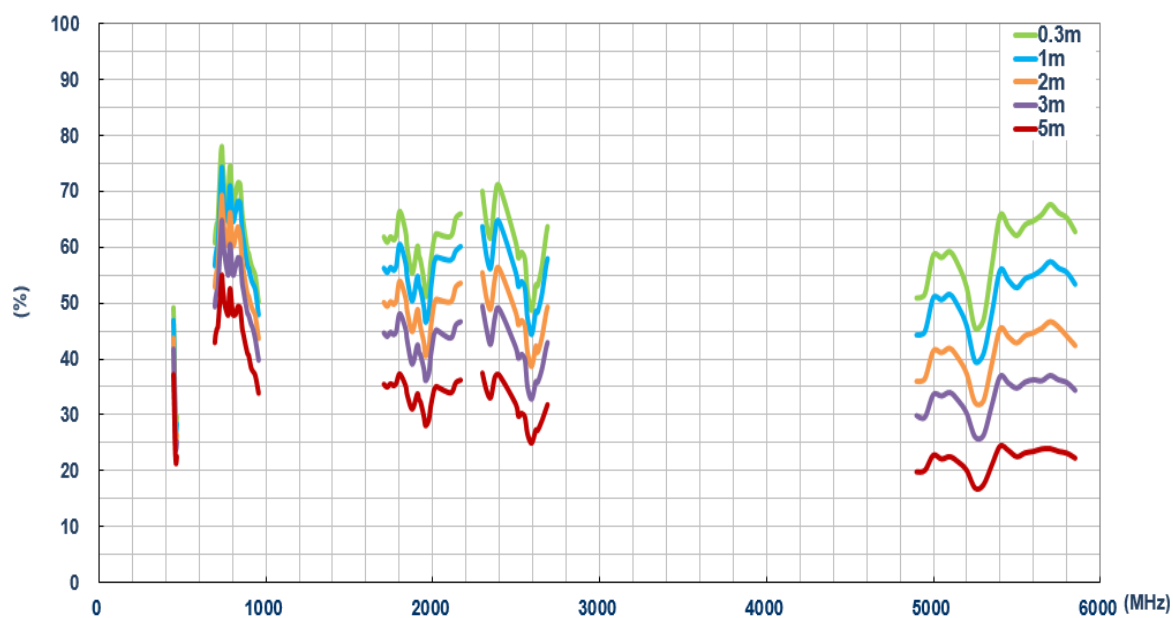
### 8.4 Peak Gain – Free Space



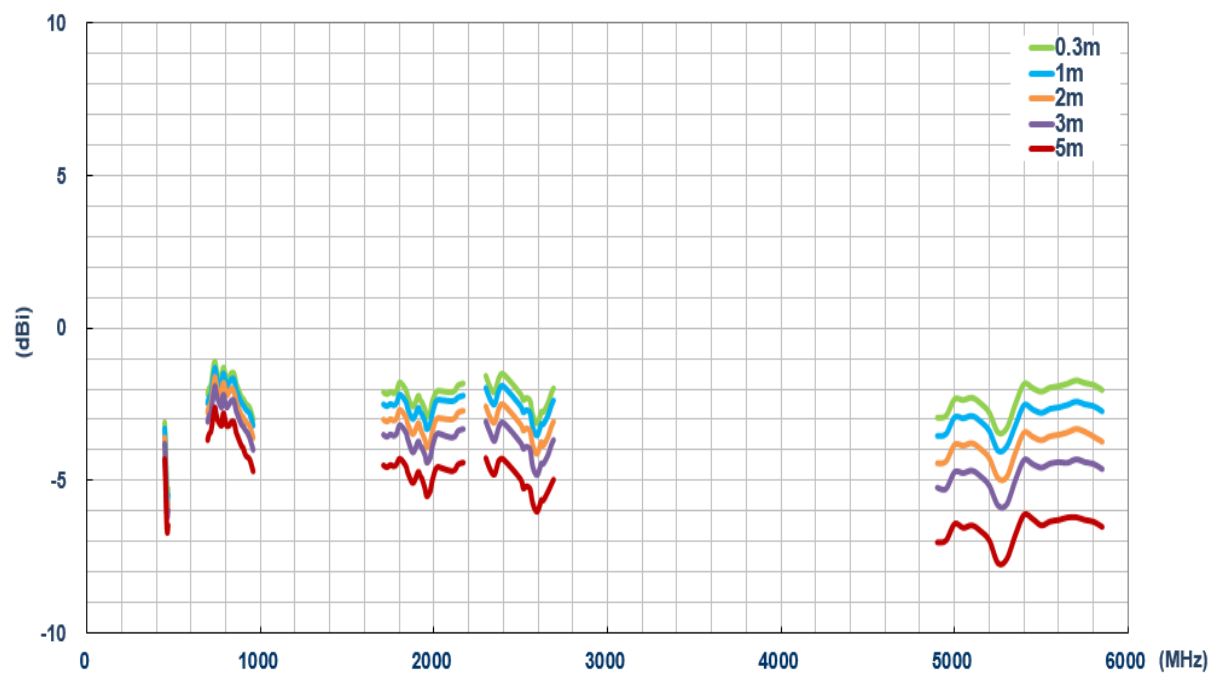
## 8.5 Return Loss – 2mm ABS



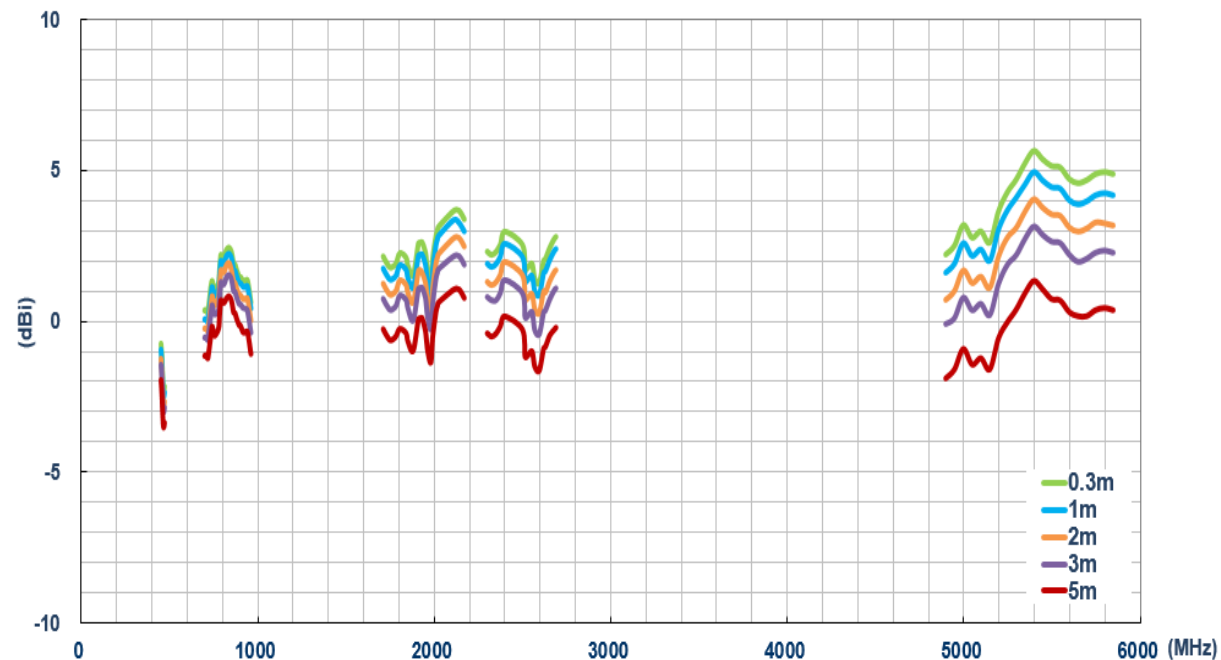
## 8.6 Efficiency – 2mm ABS



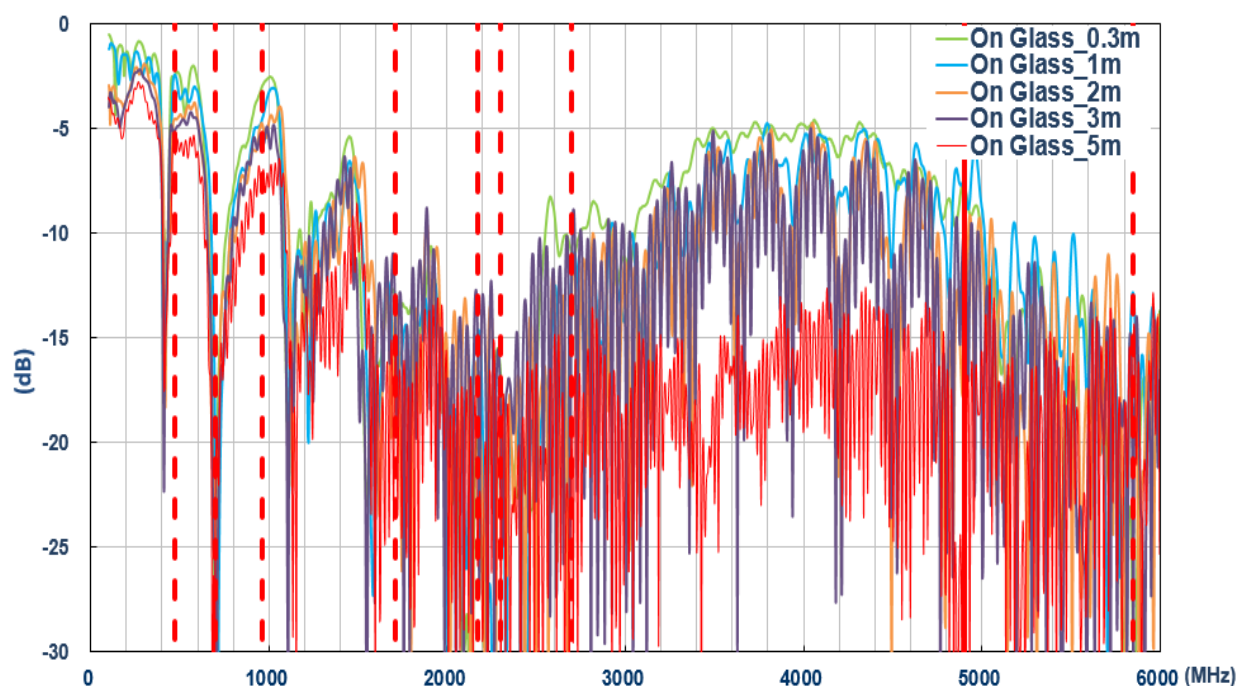
## 8.7 Average Gain – 2mm ABS



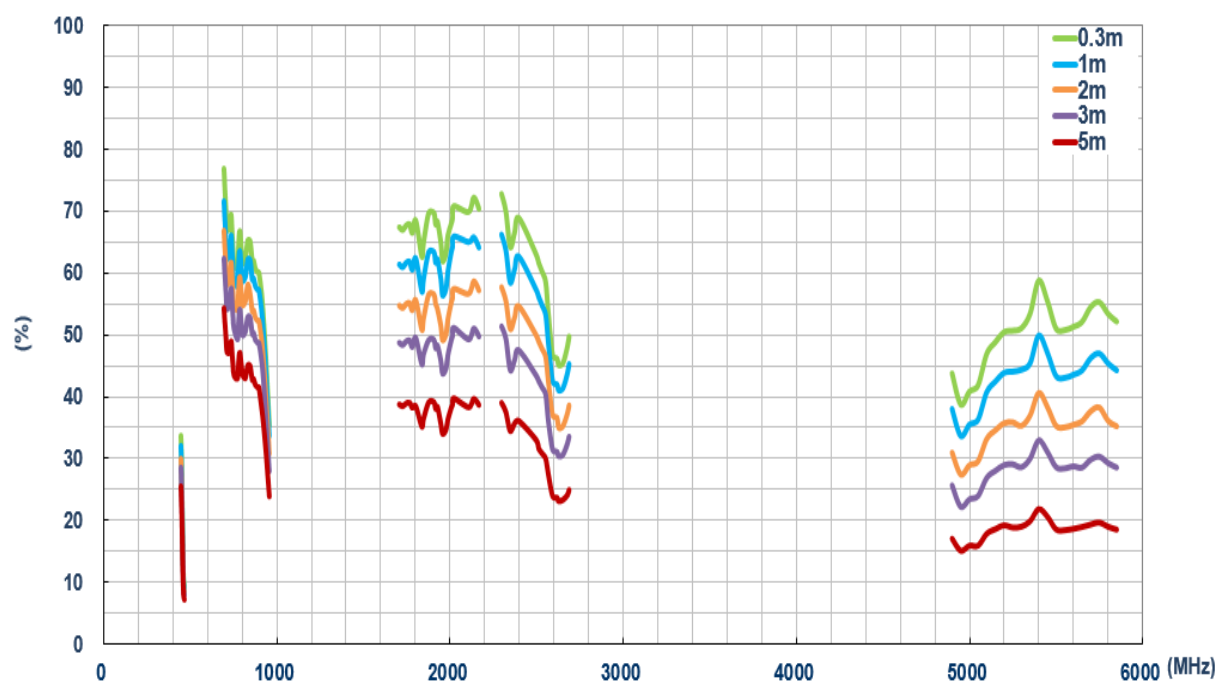
## 8.8 Peak Gain – 2mm ABS



## 8.9 Return Loss – Glass

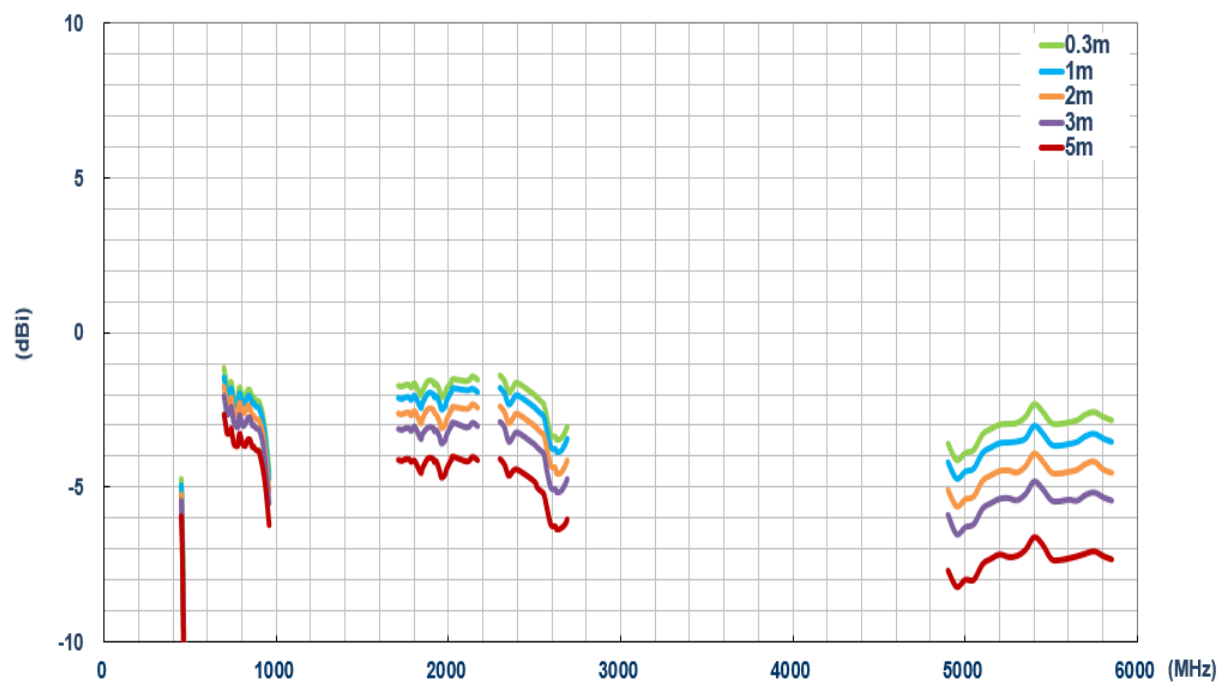


## 8.10 Efficiency – Glass

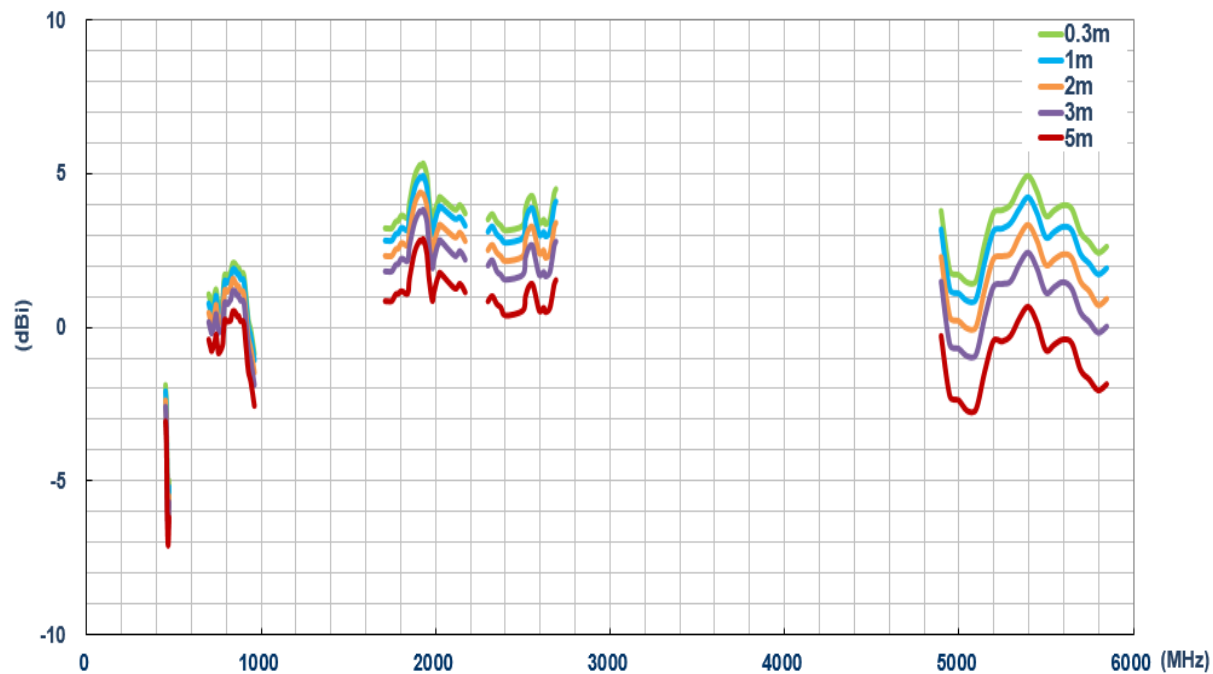




## 8.11 Average Gain – Glass



## 8.12 Peak Gain – Glass



## Changelog for the datasheet

### SPE-17-8-040 – GSA.8845.A.105111

#### Revision: F (Current Version)

|                  |                             |
|------------------|-----------------------------|
| Date:            | 2022-06-09                  |
| Changes:         | Updated cable specification |
| Changes Made by: | Cesar Sousa                 |

#### Previous Revisions

#### Revision: E (Current Version)

|                  |                   |
|------------------|-------------------|
| Date:            | 2021-10-26        |
| Changes:         | Removed IP Rating |
| Changes Made by: | Gary West         |

#### Revision: D

|                  |                                              |
|------------------|----------------------------------------------|
| Date:            | 2019-04-23                                   |
| Changes:         | Template amended and graphs for C-Band added |
| Changes Made by: | Jack Conroy                                  |

#### Revision: C

|                  |                                   |
|------------------|-----------------------------------|
| Date:            | 2017-03-08                        |
| Changes:         | Packaging & Photo Details Updated |
| Changes Made by: | Carol Faughnan                    |

#### Revision: B

|                  |                           |
|------------------|---------------------------|
| Date:            | 2017-10-23                |
| Changes:         | Packaging Details Updated |
| Changes Made by: | Carol Faughnan            |

#### Revision: A (Original First Release)

|         |                |
|---------|----------------|
| Date:   | 2017-08-09     |
| Notes:  |                |
| Author: | David Connolly |



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