

# Cellular 5G/4G + GNSS Combo Flexible PCB Antenna



**AANI-FB-0176**

Request Samples



Check Inventory



120 x 50 x 0.2 mm  
**RoHS/RoHS II Compliant**  
MSL Level = N/A

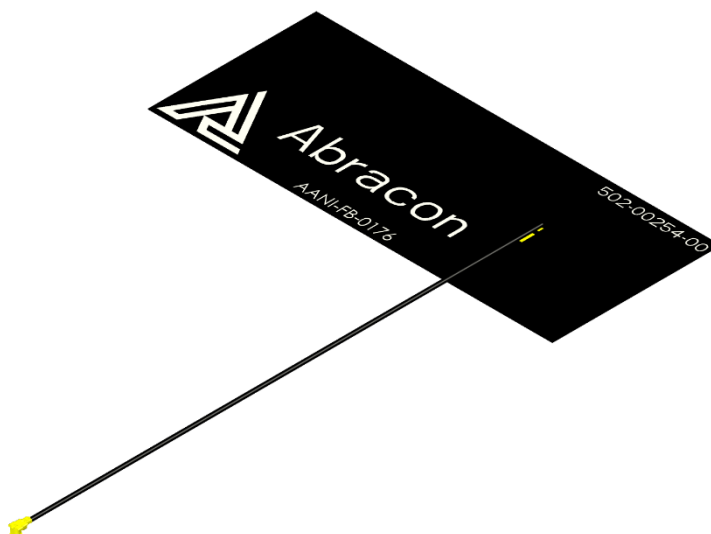
## Features

- Cellular Frequency: 698-960/1710-2690/3300-5925 MHz
- GNSS Frequency Range: 1565-1612 MHz
- Cellular / GNSS Peak Gain: 4.3 / 3.2 dBi
- Cellular / GNSS Efficiency: 84 % / 59 %
- Ground Plane Independent
- Flexible to Fit Inside Plastic Enclosures
- Fully Customizable Cable Length and Connector Options

## Applications

- GPS/GLONASS/BEIDOU/GALILEO
- CBRS and 5G Bands Supported
- LTE-M, Cat M, Cat M1, NB-IoT
- LTE CAT 1 up to CAT 20 Supported
- Smart Home Networking
- Networking & Telecommunication

## Product Image



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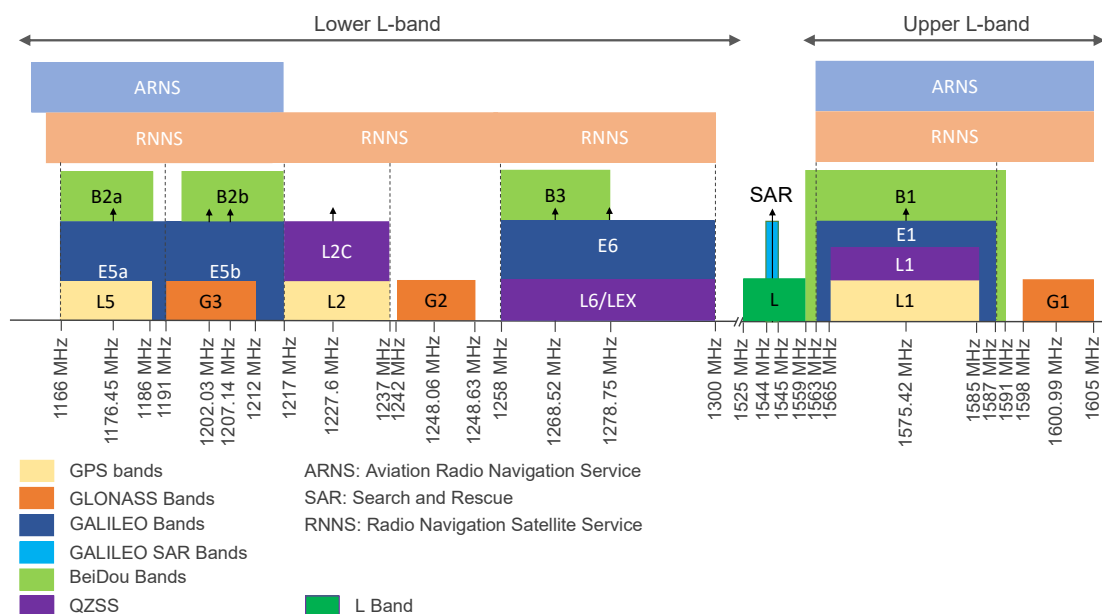
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**MSL Level = N/A**

## GNSS Frequency Bands Covered

|             |                          |                          |                          |                  |
|-------------|--------------------------|--------------------------|--------------------------|------------------|
| GPS         | L1<br>1575.42MHz         | L2<br>1227.6MHz          | L5<br>1176.45MHz         |                  |
|             | ■                        | □                        | □                        |                  |
| GLONASS     | G1<br>1598.06-1609.31MHz | G2<br>1242.93-1251.68MHz | G3<br>1202.025MHz        |                  |
|             | ■                        | □                        | □                        |                  |
| Galileo     | E1<br>1575.42MHz         | E5a<br>1176.45MHz        | E5b<br>1201.5MHz         | E6<br>1278.75MHz |
|             | ■                        | □                        | □                        | □                |
| BeiDou      | B1<br>1561MHz            | B2<br>1207.14MHz         | B3<br>1268.52MHz         |                  |
|             | □                        | □                        | □                        |                  |
| QZSS        | L1<br>1575.42MHz         | L2<br>1227.6MHz          | L5<br>1176.45MHz         | L6<br>1278.75MHz |
|             | ■                        | □                        | □                        | □                |
| IRNSS/NAVIC |                          |                          | L5<br>1176.45MHz         |                  |
|             |                          |                          | □                        |                  |
| SBAS        | L1/E1/B1<br>1575.42MHz   |                          | L5/B2a/E5a<br>1176.45MHz |                  |
|             | ■                        |                          | □                        |                  |



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## Electrical Specification

| Parameter                   | Specification                        |              |                                  |                   |                   | Unit     |
|-----------------------------|--------------------------------------|--------------|----------------------------------|-------------------|-------------------|----------|
| Operating Frequency         | 698-960                              | 1565-1612    | 1710-2690                        | 3300-5000         | 5150-5925         | MHz      |
| Band                        | 5,8,12,13,14,17,18,19,20,26,27,28,29 | GNSS (L1/G1) | 1,2,3,4,7,9,23,25,30,35,38,39,40 | 22,42,48,77,78,79 | LTE5200/Wi-Fi5800 | -        |
| VSWR                        | 3.2                                  | 2.65         | 2.0                              | 3.0               | 1.97              | :1       |
| Peak Gain                   | 3.2                                  | 3.2          | 4.3                              | 4.2               | 4.2               | dBi      |
| Maximum Efficiency          | 84                                   | 59           | 77                               | 73                | 59                | %        |
| Average Efficiency          | 70                                   | 53           | 58                               | 58                | 55                |          |
| Impedance                   | 50                                   |              |                                  |                   |                   | $\Omega$ |
| Polarization                | Linear                               |              |                                  |                   |                   | -        |
| Radiation Pattern (Azimuth) | Omni-directional                     |              |                                  |                   |                   | -        |
| Maximum Input Power         | 5                                    |              |                                  |                   |                   | W        |

## Mechanical Specification

| Parameter                    | Specification     |
|------------------------------|-------------------|
| Antenna Dimensions           | 120 x 50 x 0.2 mm |
| Antenna Type                 | Flexible PCB      |
| Mounting Type                | Adhesive Mount    |
| RF Connector <sup>(1)</sup>  | u.FL/IPEX-1/MHF1  |
| RF Cable Type <sup>(1)</sup> | Ø1.13 mm          |
| Cable Length <sup>(1)</sup>  | 128 mm            |

(1): Fully customizable RF Cable & Connector

## Environmental Specification

| Parameter             | Specification  |
|-----------------------|----------------|
| Operating Temperature | -40°C to +85°C |
| Storage Temperature   | -40°C to +85°C |
| RoHS Compliance       | Yes            |



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## Ordering Information

| Part Number    | Description                                                                                  | Connector Option |
|----------------|----------------------------------------------------------------------------------------------|------------------|
| AANI-FB-0176-1 | Cellular 5G/4G + GNSS Combo Flexible PCB Antenna with IPEX-1 connector & 128 mm cable length | u.FL/IPEX-1/MHF1 |
| AANI-FB-0176-2 | Cellular 5G/4G + GNSS Combo Flexible PCB Antenna with IPEX-4 connector & 128 mm cable length | w.FL/IPEX-4/MHF4 |
| AANI-FB-0176-3 | Cellular 5G/4G + GNSS Combo Flexible PCB Antenna with IPEX-1 connector & 150 mm cable length | u.FL/IPEX-1/MHF1 |
| AANI-FB-0176-4 | Cellular 5G/4G + GNSS Combo Flexible PCB Antenna with IPEX-4 connector & 150 mm cable length | w.FL/IPEX-4/MHF4 |
| AANI-FB-0176-5 | Cellular 5G/4G + GNSS Combo Flexible PCB Antenna with IPEX-1 connector & 200 mm cable length | u.FL/IPEX-1/MHF1 |
| AANI-FB-0176-6 | Cellular 5G/4G + GNSS Combo Flexible PCB Antenna with IPEX-4 connector & 200 mm cable length | w.FL/IPEX-4/MHF4 |

Note: Different cable and connector configurations that are not listed may be available upon request via [Abracon online support](#)



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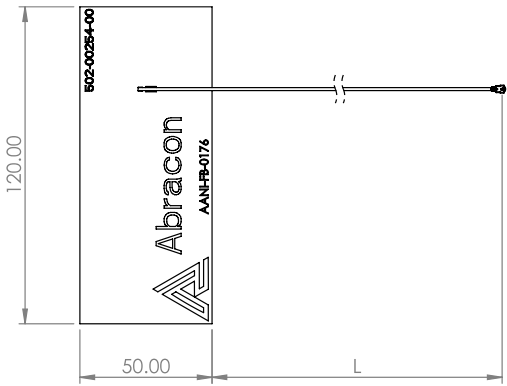


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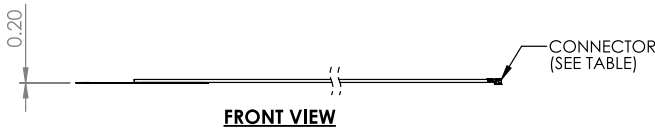


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RoHS/RoHS II Compliant  
MSL Level = N/A

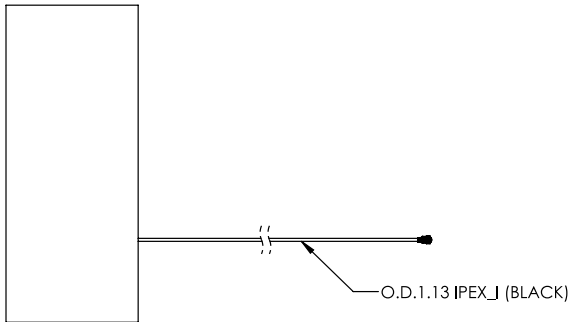
## Product Dimensions



TOP VIEW



FRONT VIEW



BOTTOM VIEW

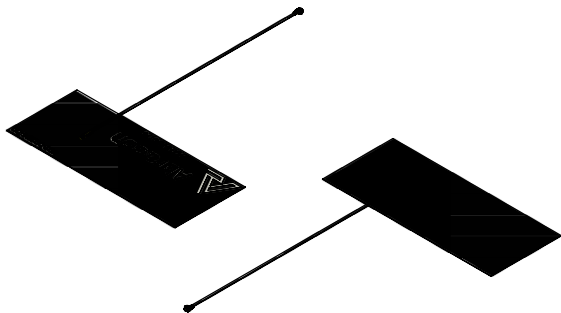
### CONNECTOR



u.FL/IPEX-1/MHF1



w.FL/IPEX-4/MHF4



| PART NUMBER    | CABLE LENGTH (L) | CONNECTOR        |
|----------------|------------------|------------------|
| AANI-FB-0176-1 | 128              | u.FL/IPEX-1/MHF1 |
| AANI-FB-0176-2 | 128              | w.FL/IPEX-4/MHF4 |
| AANI-FB-0176-3 | 150              | u.FL/IPEX-1/MHF1 |
| AANI-FB-0176-4 | 150              | w.FL/IPEX-4/MHF4 |
| AANI-FB-0176-5 | 200              | u.FL/IPEX-1/MHF1 |
| AANI-FB-0176-6 | 200              | w.FL/IPEX-4/MHF4 |

Unit: mm



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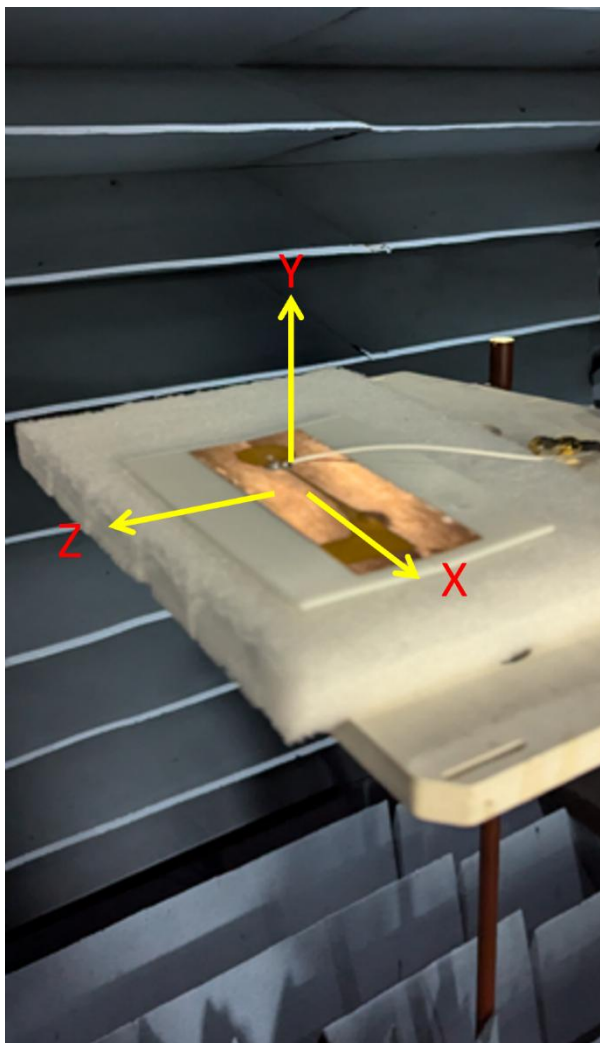


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## Measurement Setup photo



# Cellular 5G/4G + GNSS Combo Flexible PCB Antenna



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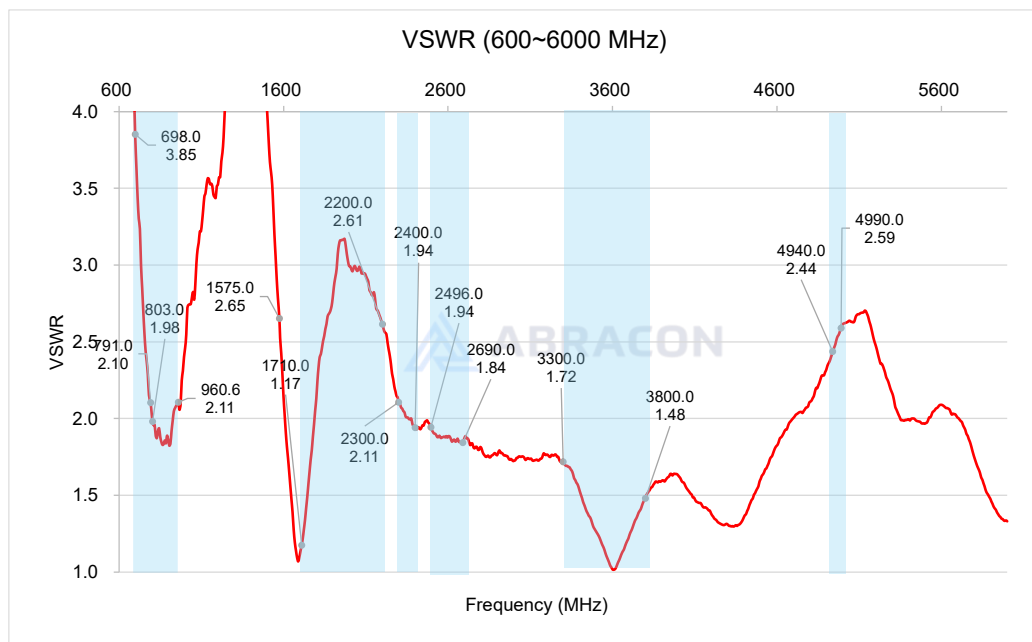
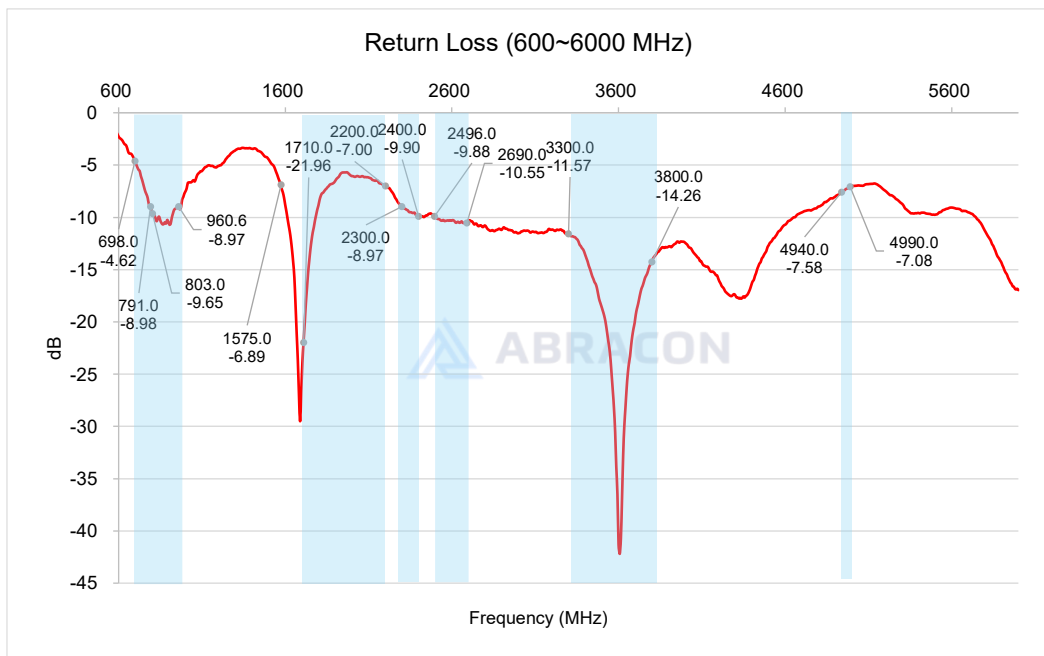


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MSL Level = N/A

## Reflection Characteristics – Return Loss & VSWR



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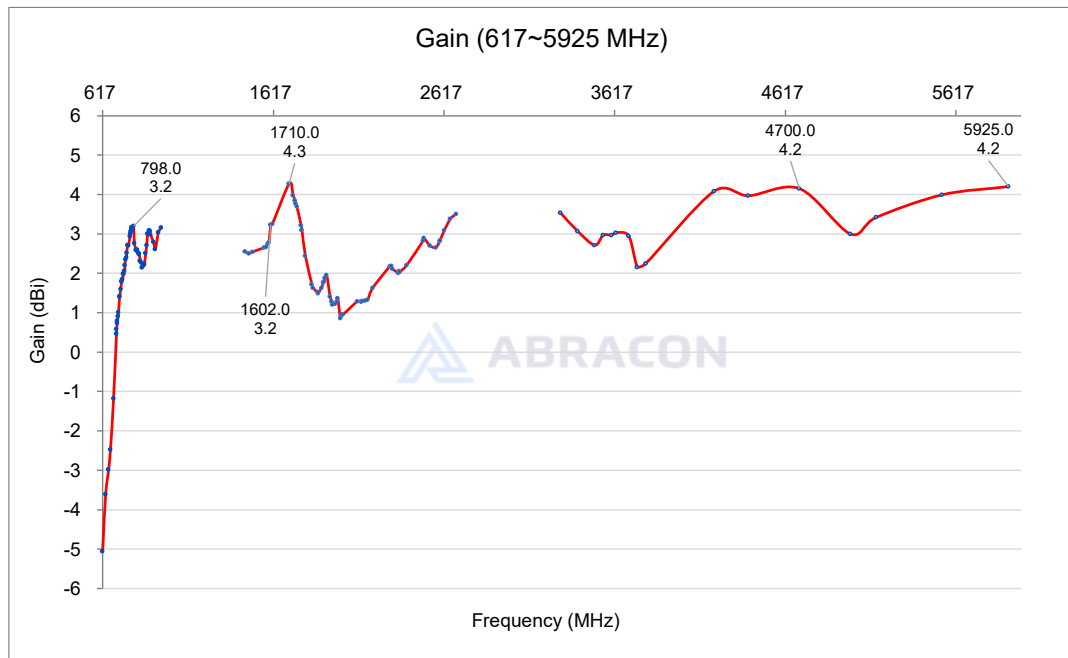


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120 x 50 x 0.2 mm  
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MSL Level = N/A

## Radiation Characteristics – Peak Gain



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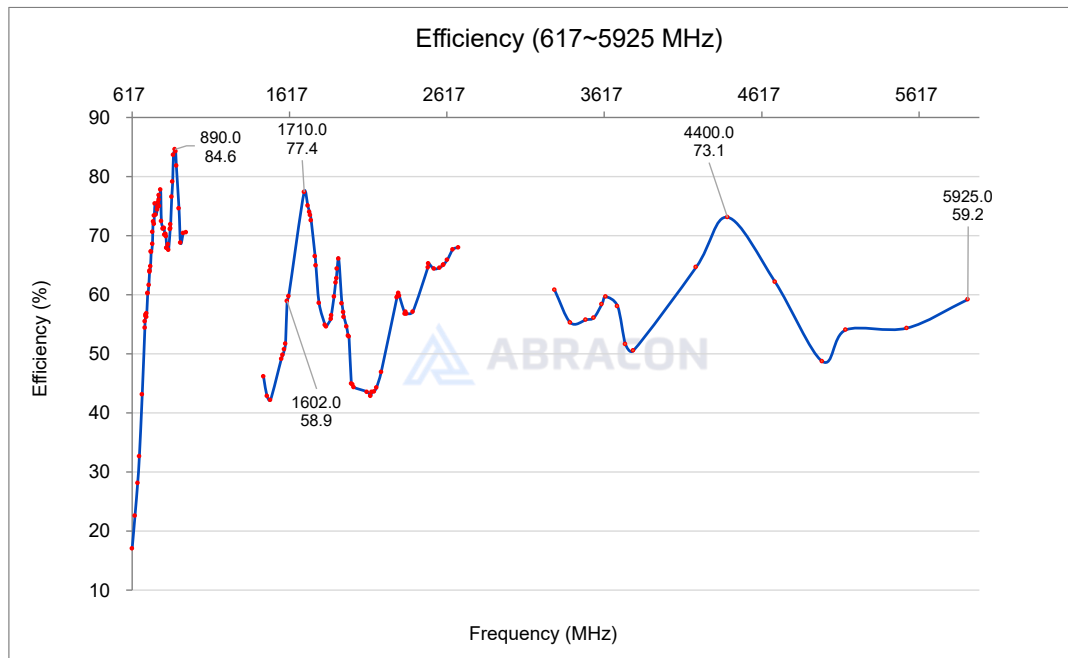


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**120 x 50 x 0.2 mm**  
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## Radiation Characteristics – Total Efficiency (%)



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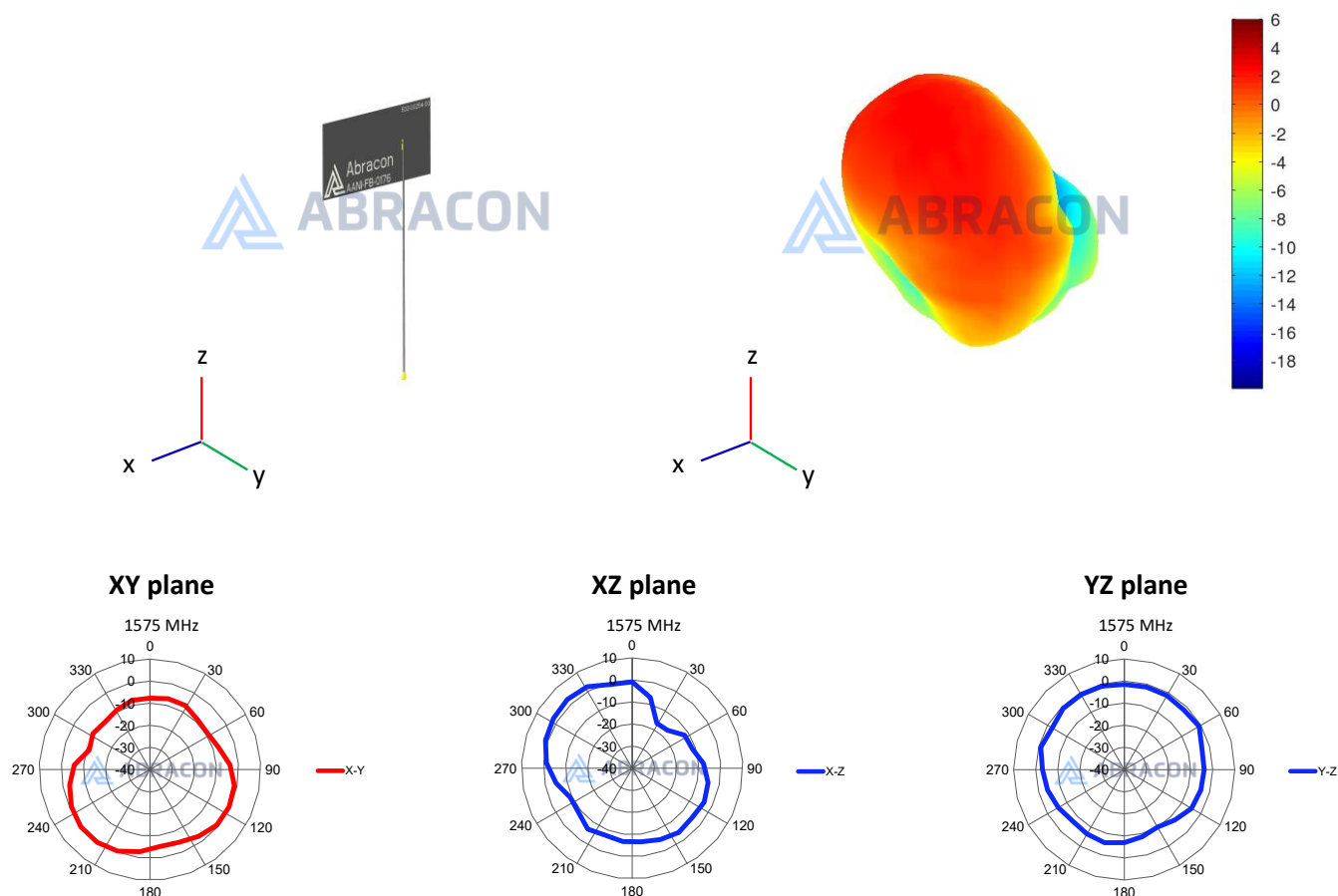
Check Inventory



120 x 50 x 0.2 mm  
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MSL Level = N/A

## Radiation Characteristics – 3D & 2D pattern

### 3D & 2D Pattern @ 1575 MHz



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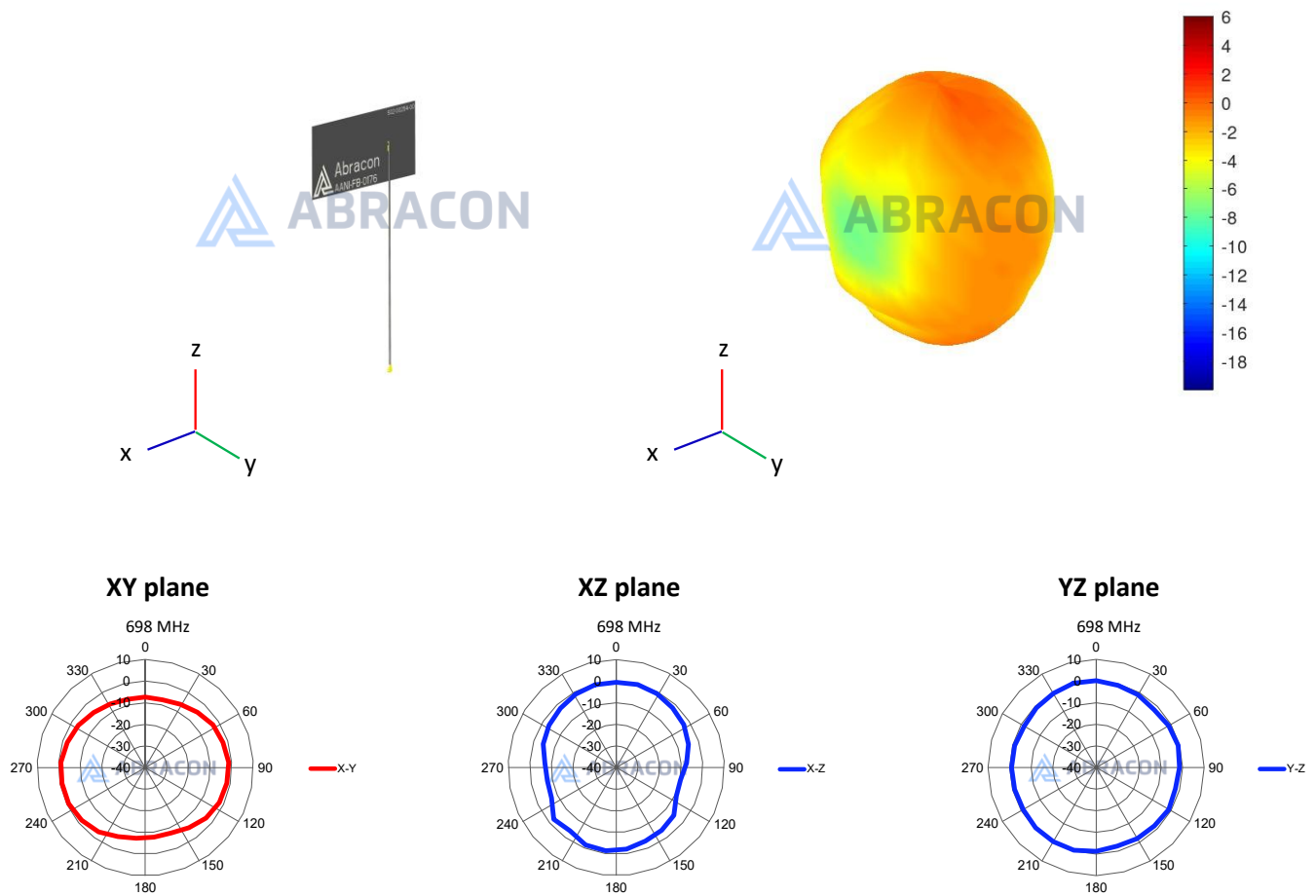


Check Inventory



120 x 50 x 0.2 mm  
RoHS/RoHS II Compliant  
MSL Level = N/A

## 3D & 2D Pattern @ 698 MHz



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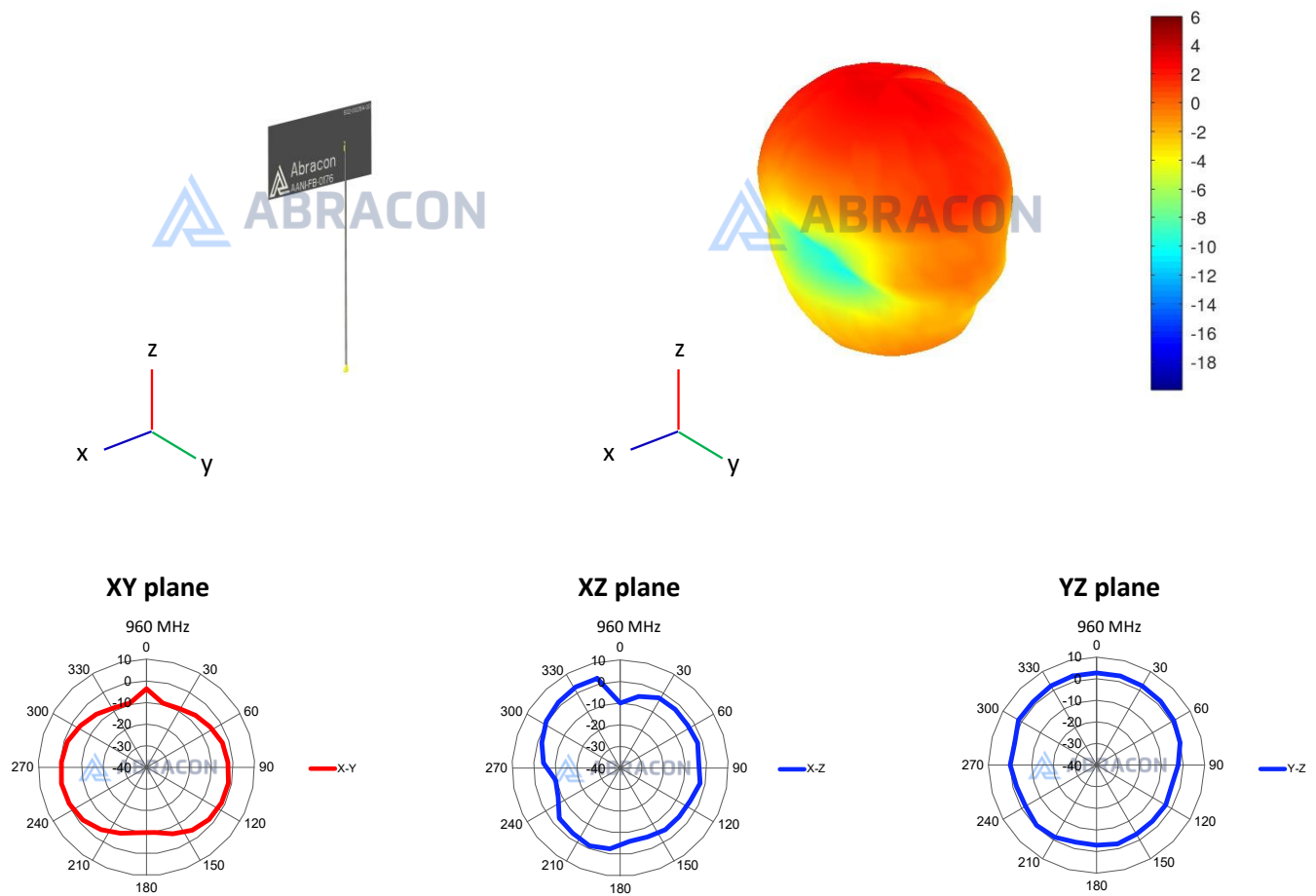


Check Inventory



120 x 50 x 0.2 mm  
RoHS/RoHS II Compliant  
MSL Level = N/A

## 3D & 2D Pattern @ 960 MHz



# Cellular 5G/4G + GNSS Combo Flexible PCB Antenna



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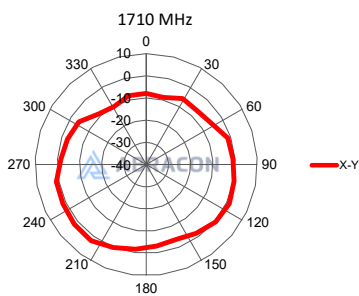


120 x 50 x 0.2 mm  
RoHS/RoHS II Compliant  
MSL Level = N/A

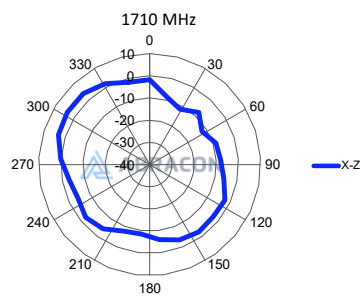
## 3D & 2D Pattern @ 1710 MHz



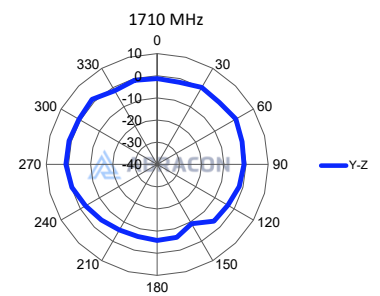
XY plane



XZ plane



YZ plane



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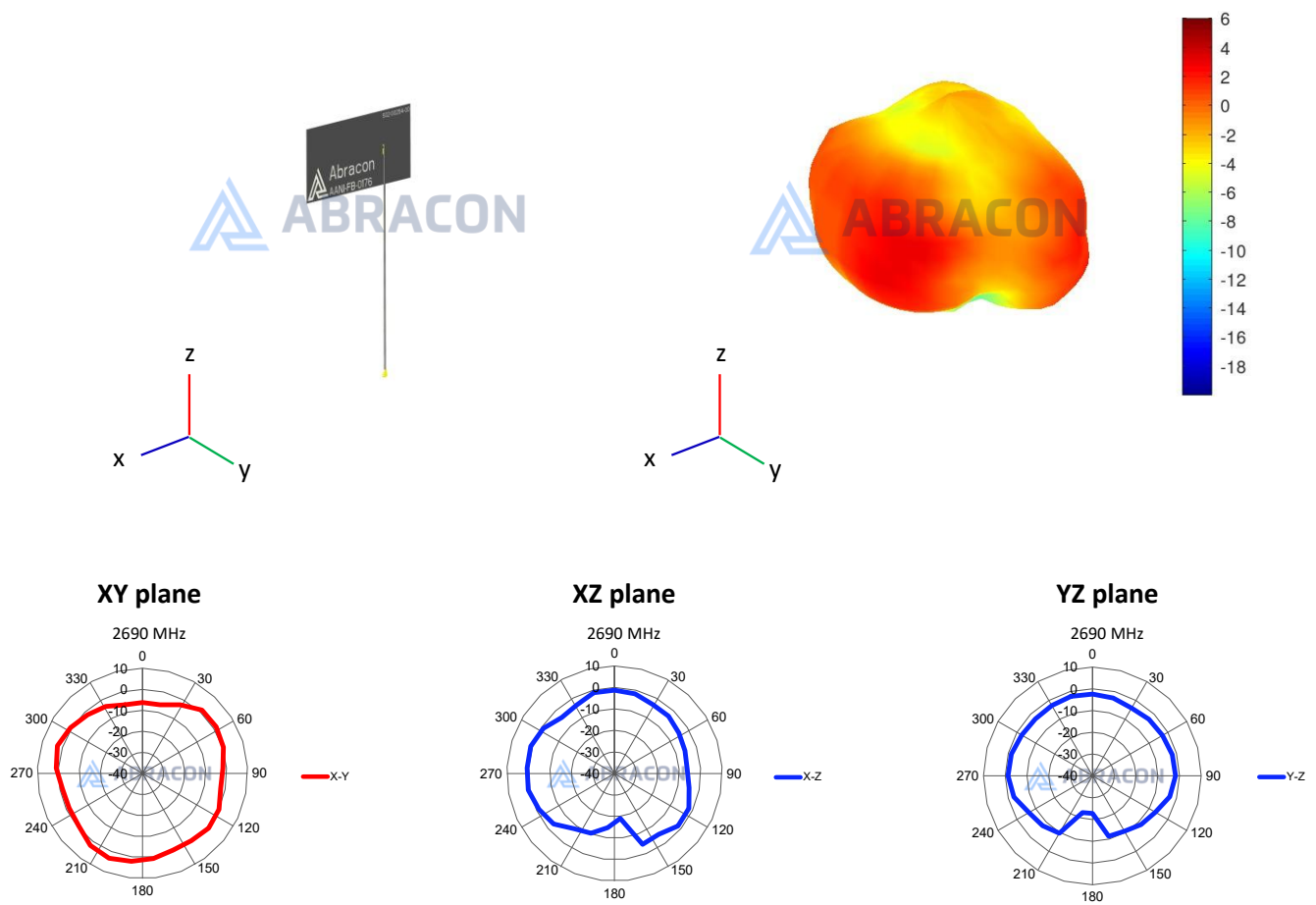


Check Inventory



120 x 50 x 0.2 mm  
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## 3D & 2D Pattern @ 2690 MHz



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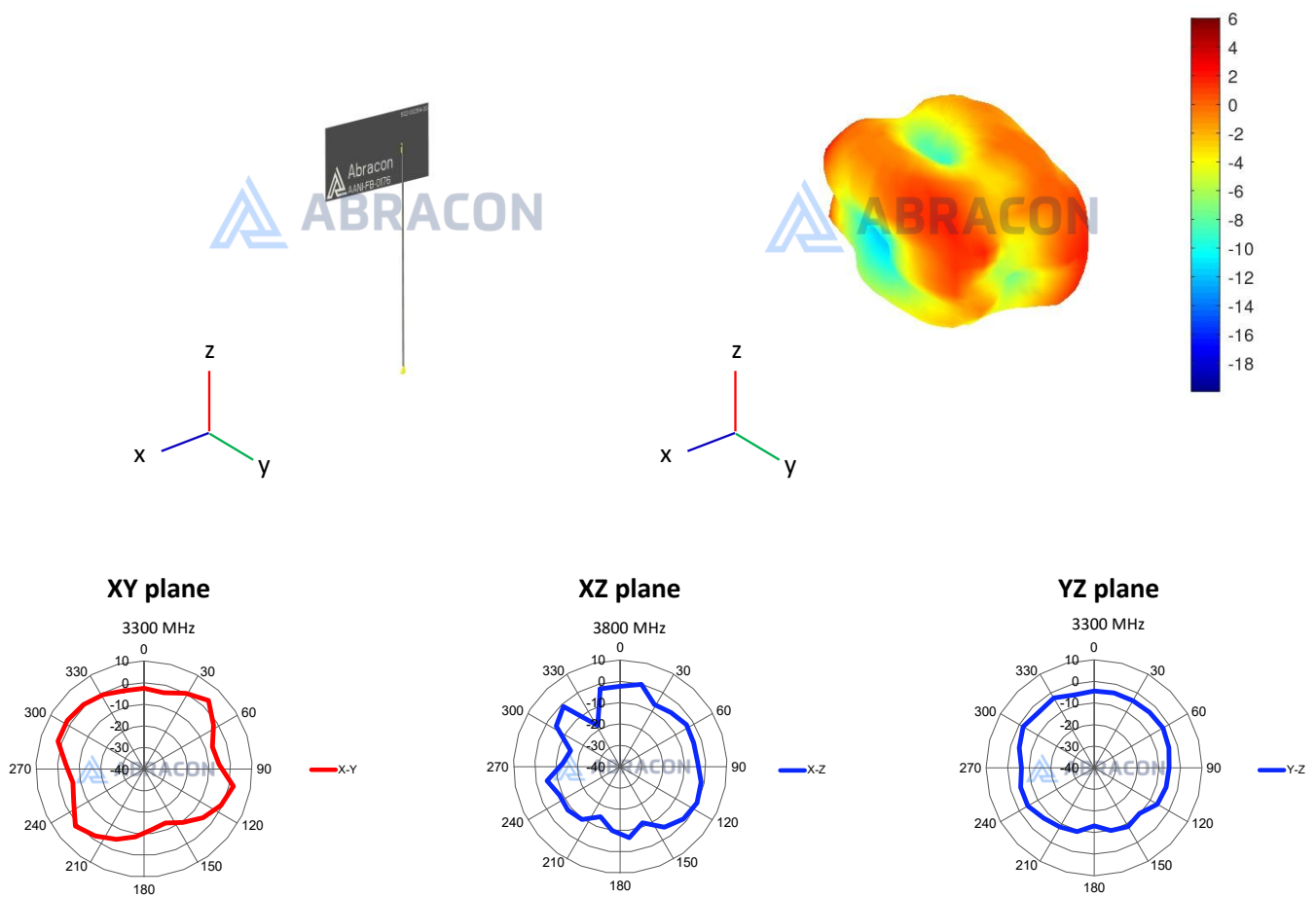


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120 x 50 x 0.2 mm  
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## 3D & 2D Pattern @ 3300 MHz



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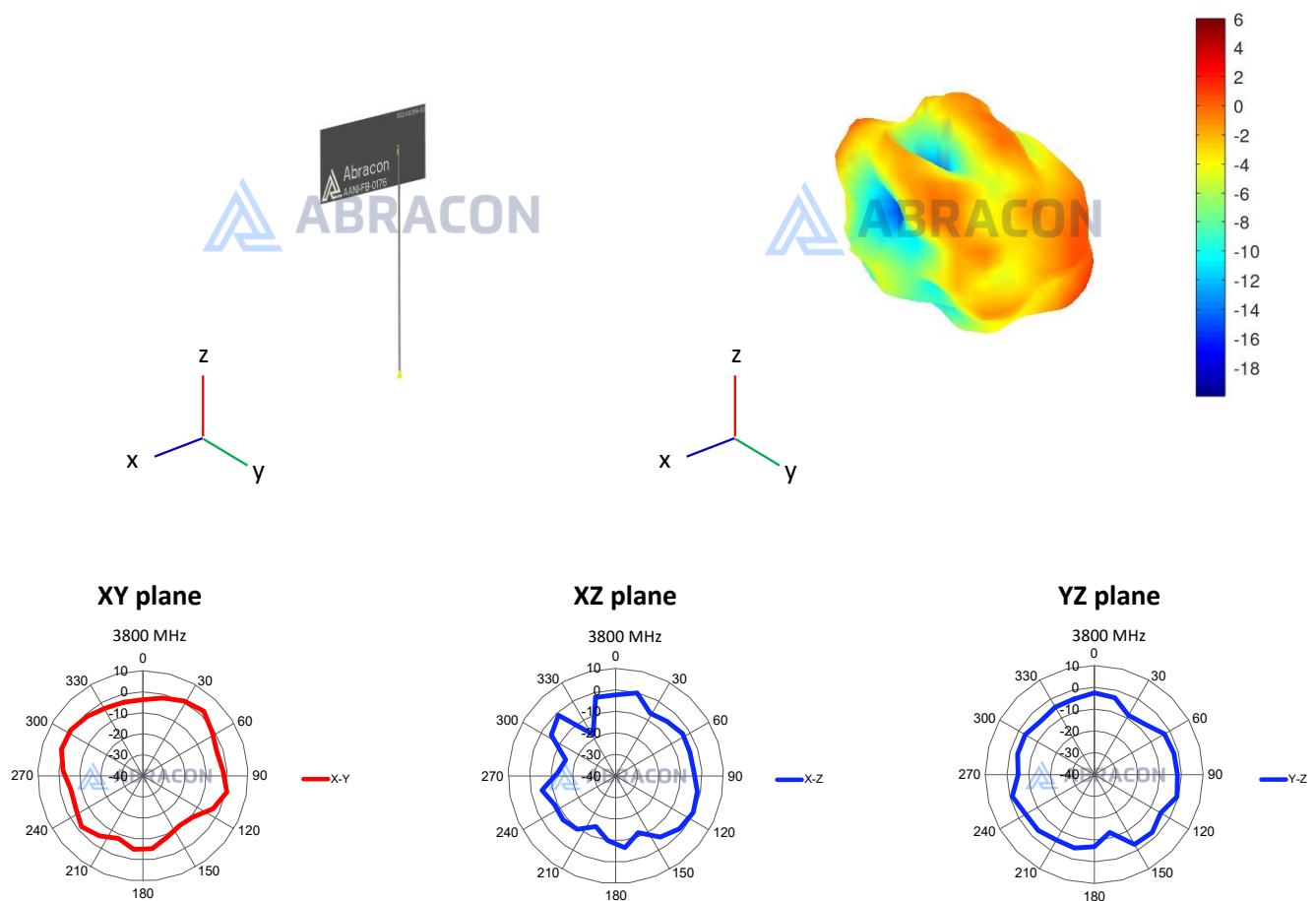


Check Inventory



120 x 50 x 0.2 mm  
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MSL Level = N/A

## 3D & 2D Pattern @ 3800 MHz





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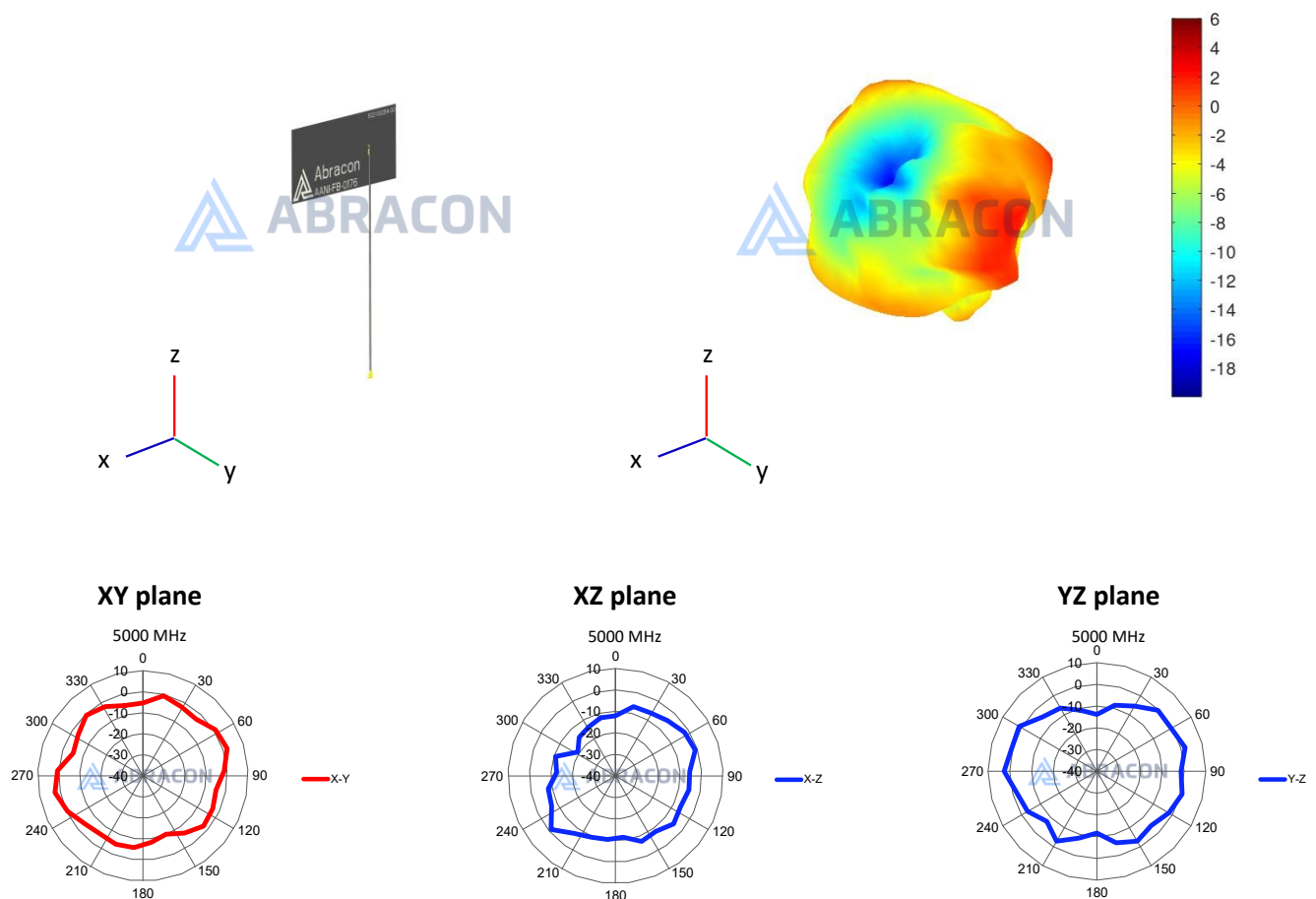


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120 x 50 x 0.2 mm  
RoHS/RoHS II Compliant  
MSL Level = N/A

## 3D & 2D Pattern @ 5000 MHz



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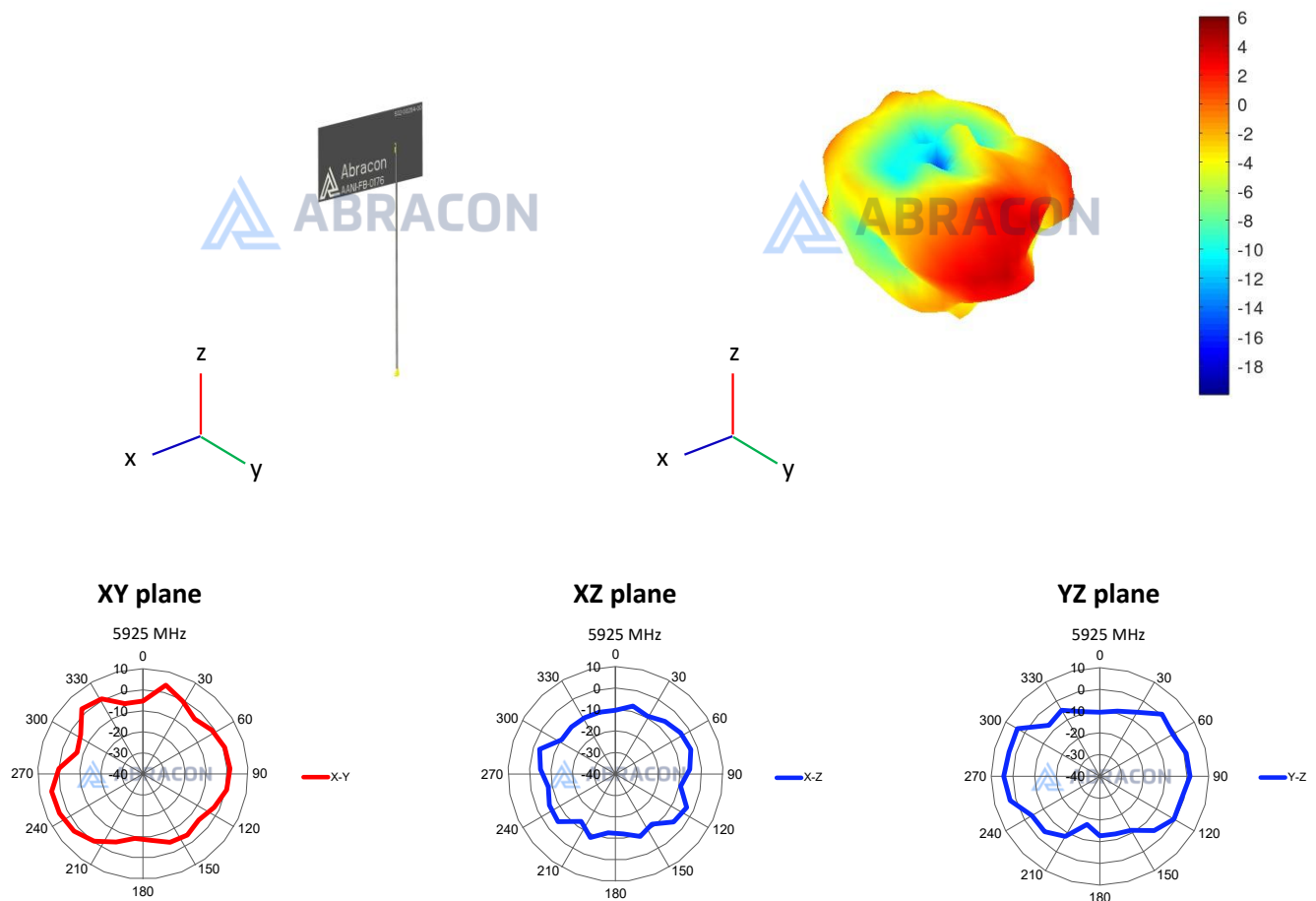


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120 x 50 x 0.2 mm  
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## 3D & 2D Pattern @ 5925 MHz



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**120 x 50 x 0.2 mm**  
**RoHS/RoHS II Compliant**  
**MSL Level = N/A**

## Packaging

1. Number of Antenna/ bags: 50 pcs
2. Total Pcs / package: 500 pcs

**ATTENTION:** Abracon LLC's products are Commercial-Off-The-Shelf ('COTS'), which are designed, intended, and validated for use in commercial, industrial, and automotive applications. The customer is responsible for testing and verifying the performance of an Abracon solution to meet their system-level requirements.



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