

**Description:** 824-960/1710-2170MHz 2G/3G  
Pentaband PCB antenna with coax feed

**Series:** Internal PCB Antenna

**PART NUMBER:** W3538XXXXX

## Features:

- Small form factor
- PCB size W x L x H (with adhesive): 40 [1.57] x 15 [0.59] x 0.7[0.028]mm [inch]
- Lead free materials
- RoHS Compliant Product
- Mounting with adhesive tape
- Various cable lengths available
- Connector options:
  - Hirose connector U.FL-series (I.PEX connector MHF-series compatible)
  - MMCX right angle jack (male)
  - Sunridge MCD series connector



## Applications:

- Penta band EU/US GSM/WCDMA
- Frequency range: 850 / 900 / 1800 / 1900/ 2100 MHz
- 824-960MHz/1710-2170MHz

All dimensions are in mm / inches

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For more information:

Pulse Worldwide Headquarters  
15255 Innovation Drive #100  
San Diego, CA 92128  
USA  
Tel:1-858-674-8100

Pulse/Larsen Antennas  
18110 SE 34<sup>th</sup> St Bldg 2 Suite 250  
Vancouver, WA 98683  
USA  
Tel: 1-360-944-7551

Europe Headquarters  
Pulse GmbH & Do, KG  
Zeppelinstrasse 15  
Herrenberg, Germany

Pulse (Suzhou) Wireless Products Co, Inc.  
99 Huo Ju Road(#29 Bldg,4<sup>th</sup> Phase  
Suzhou New District  
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**This document covers all product variants of the following product family:**

| P/N        | Cable length (mm/inch) | Connector | P/N        | Cable length (mm/inch) | Connector |
|------------|------------------------|-----------|------------|------------------------|-----------|
| W3538B0035 | 35/1.38                | U.FL      | W3538E0300 | 300/11.81              | MMCX      |
| W3538B0045 | 45/1.77                | U.FL      | W3538T0150 | 150/5.91               | MCD       |
| W3538B0075 | 75/2.95                | U.FL      | W3538T0200 | 200/7.87               | MCD       |
| W3538B0085 | 85/3.35                | U.FL      | W3538T0300 | 300/11.81              | MCD       |
| W3538B0100 | 100/3.94               | U.FL      | W3538M0085 | 85/3.35                | Murata    |
| W3538B0150 | 150/5.91               | U.FL      | W3538M0150 | 150/5.91               | Murata    |
| W3538B0200 | 200/7.87               | U.FL      | W3538M0200 | 200/7.87               | Murata    |
| W3538B0300 | 300/11.81              | U.FL      | W3538M0300 | 300/11.81              | Murata    |
| W3538E0075 | 75/2.95                | MMCX      | W3538G0500 | 500/19.69              | SMA       |
| W3538E0150 | 150/5.91               | MMCX      | W3538A0200 | 200/7.87               | N/A       |
| W3538E0200 | 200/7.87               | MMCX      |            |                        |           |

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**ELECTRICAL SPECIFICATIONS**

Typical free space performance, measured in test unit mechanics(position 1).

| Cable Length (mm) | P/N        | Frequency Range(MHz) | Max Gain (dBi) | Efficiency (%) | Return Loss min(dB) |
|-------------------|------------|----------------------|----------------|----------------|---------------------|
| 35                | W3538B0035 | 824-960              | -1.2           | 27             | -4                  |
|                   |            | 1710-1990            | 1.0            | 33             | -7                  |
|                   |            | 1920-2170            | 1.1            | 40             | -4                  |
| 45                | W3538B0045 | 824-960              | 0.78           | 44             | -3                  |
|                   |            | 1710-1990            | 1.73           | 49             | -5                  |
|                   |            | 1920-2170            | 1.84           | 50             | -5                  |
| 75                | W3538B0075 | 824-960              | -1.64          | 30             | -3                  |
|                   |            | 1710-1990            | 2.26           | 53             | -6                  |
|                   |            | 1920-2170            | 2.37           | 55             | -6                  |
| 85                | W3538B0085 | 824-960              | -2.38          | 25             | -3                  |
|                   |            | 1710-1990            | 2.3            | 57             | -6                  |
|                   |            | 1920-2170            | 1.96           | 58             | -6                  |
| 100               | W3538B0100 | 824-960              | -1.77          | 14             | -3                  |
|                   |            | 1710-1990            | 2.55           | 40             | -6                  |
|                   |            | 1920-2170            | 2.89           | 47             | -6                  |

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**ELECTRICAL SPECIFICATIONS**

| Cable Length (mm) | P/N        | Frequency Range(MHz) | Max Gain (dBi) | Efficiency (%) | Return Loss min. (dB) |
|-------------------|------------|----------------------|----------------|----------------|-----------------------|
| 150               | W3538B0150 | 824 - 960            | -1.05          | 37             | -3                    |
|                   | W3538E0150 | 1710 - 1990          | 2.27           | 47             | -6                    |
|                   | W3538T0150 | 1920 - 2170          | 2.04           | 53             | -6                    |
|                   | W3538M0150 |                      |                |                |                       |
| 200               | W3538B0200 | 824 - 960            | 0.53           | 40             | -6                    |
|                   | W3538E0200 | 1710 - 1990          | 4.18           | 56             | -6                    |
|                   | W3538T0200 |                      |                |                |                       |
|                   | W3538M0200 | 1920 - 2170          | 4.06           | 57             | -6                    |
|                   | W3538A0200 |                      |                |                |                       |
| 300               | W3538B0300 | 824 - 960            | 2.40           | 42             | -6                    |
|                   | W3538E0300 | 1710 - 1990          | 3.21           | 45             | -6                    |
|                   | W3538T0300 | 1920 - 2170          | 2.68           | 44             | -6                    |
|                   | W3538M0300 |                      |                |                |                       |
| 500               | W3538G0500 | 824 - 960            | 1.61           | 30             | -5                    |
|                   |            | 1710 - 1990          | 3.10           | 47             | -6                    |
|                   |            | 1920 - 2170          | 2.78           | 44             | -6                    |

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### MECHANICAL SPECIFICATIONS

|                |  |
|----------------|--|
| PCB size       | 40 [1.57] x 15 [0.59] x 0.7[0.028](with adhesive) mm[inch] |
| Connector type | Optional   |
| Cable type     | Optional   |
| Cable length   | Optional   |

### ENVIRONMENTAL SPECIFICATIONS

|                       |         |     |
|-----------------------|---------|-----|
| Operating Temperature | -40/+85 | ° C |
| Storage Temperature   | -40/+85 | ° C |
| RoHS Compliant        |         | Yes |

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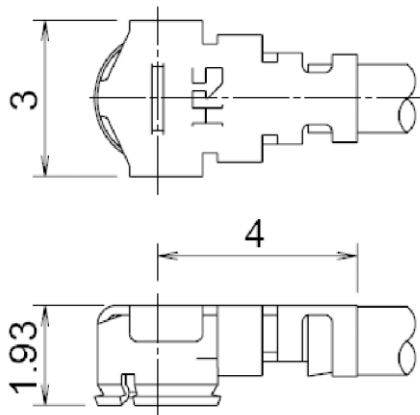
**OTHER SPECIFICATIONS**

**Cable and Connector Configuration**

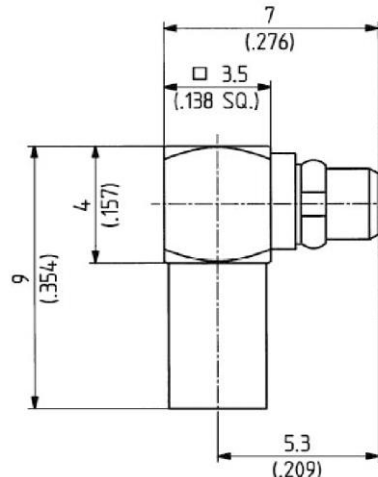
Antenna feed cable:

- 1.13mm OD with Hirose connector (U.FL series, MHF compatible)
- 1.13mm OD with MMCX right angle jack (male)
- 0.81mm OD with Murata GSC connector
- 0.81mm OD with Sunridge MCD connector
- 1.13mm OD with SMA male connector

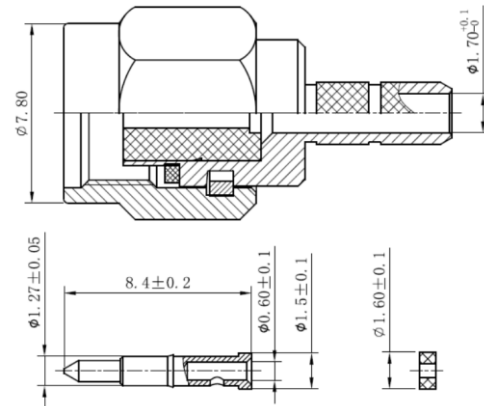
**Hirose U.FL connector**



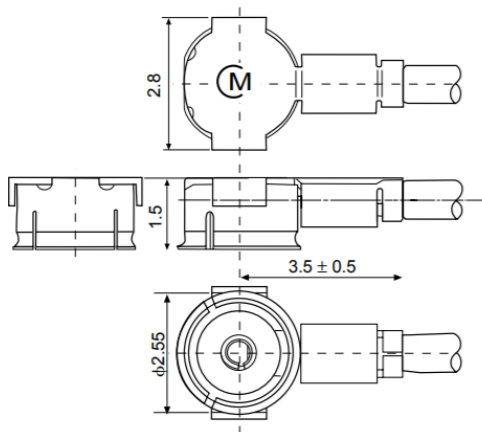
**MMCX right angle jack (male)**



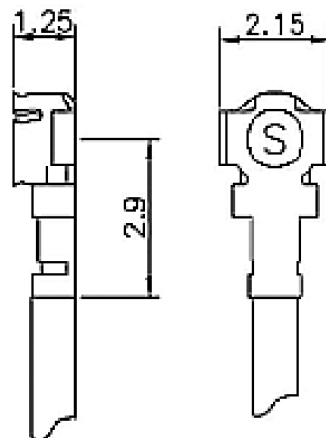
**SMA male connector**



**Murata GSC connector**



**Sunridge MCD connector**



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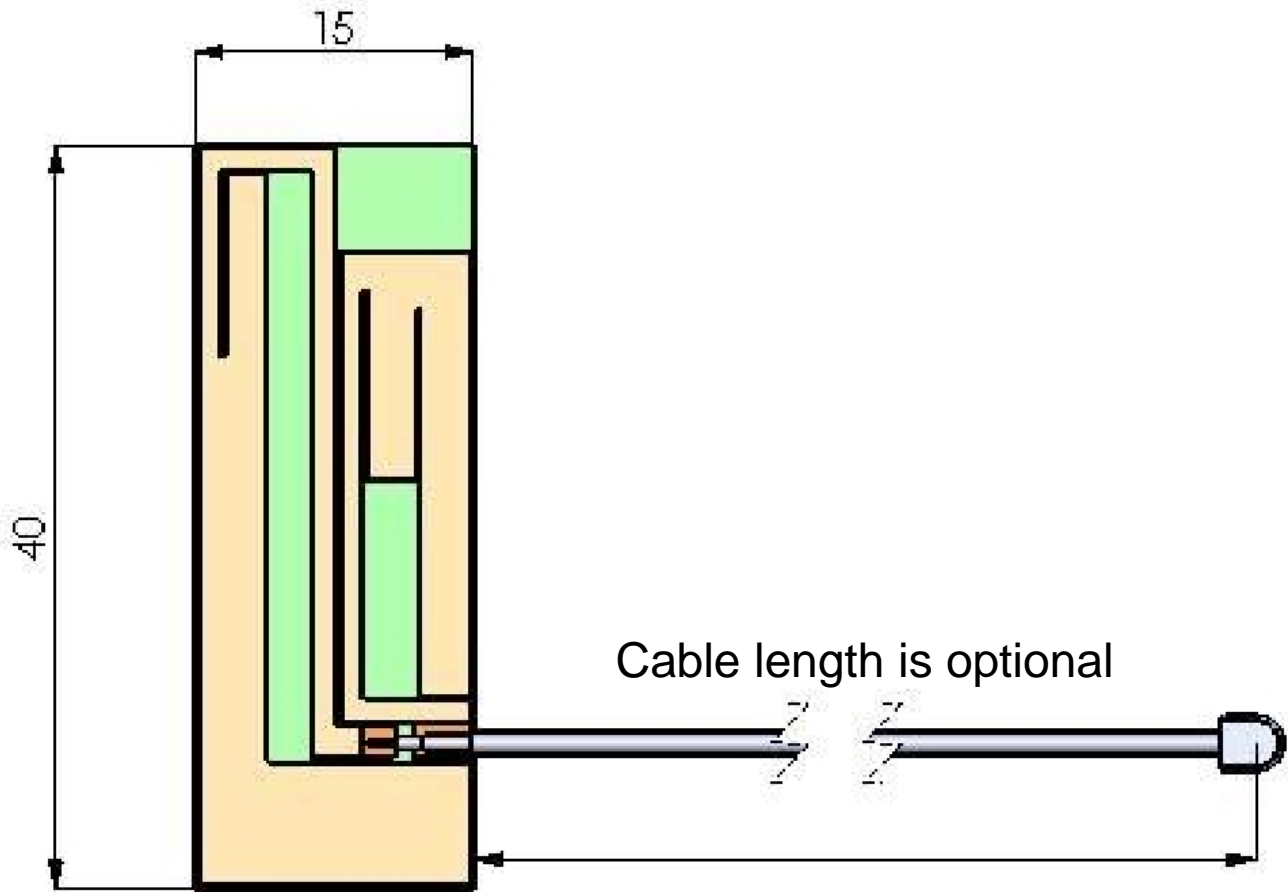
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MECHANICAL DRAWING



Dimension unit is mm

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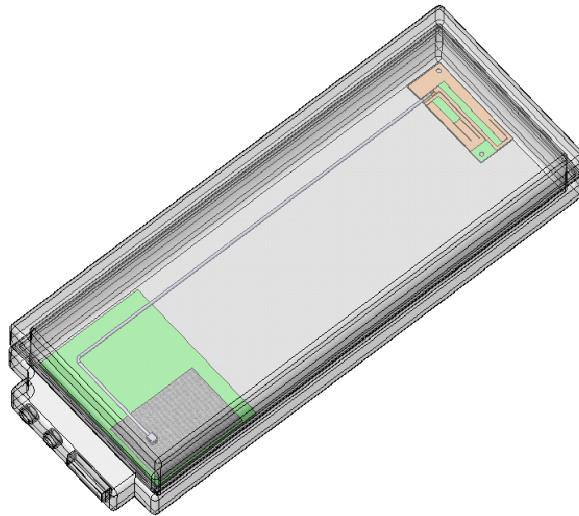
**Series:** Internal PCB Antenna    **PART NUMBER:** W3538XXXX

## TEST SETUP

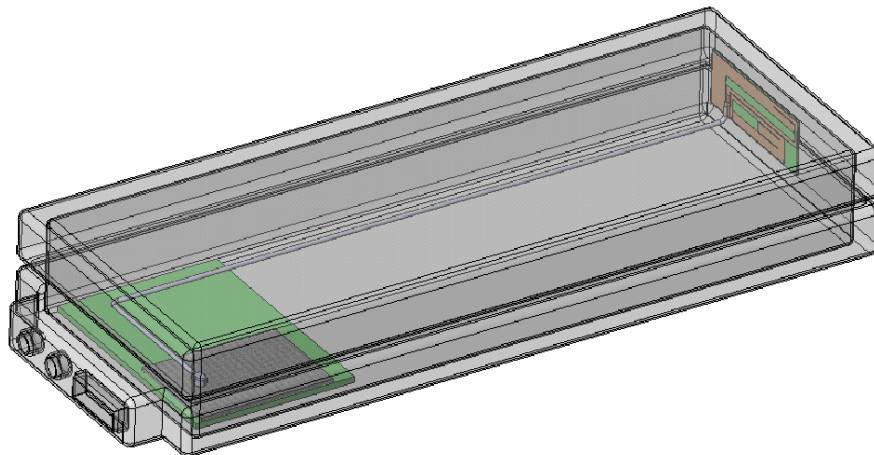
### Test Unit and Antenna Mounting Options

Test unit is illustrative and antenna does not need effective ground plane

Position 1. Antenna could be mounted at same plane and level as device board or a different level also



Position 2. Antenna could be mounted on upright position at bottom end of device



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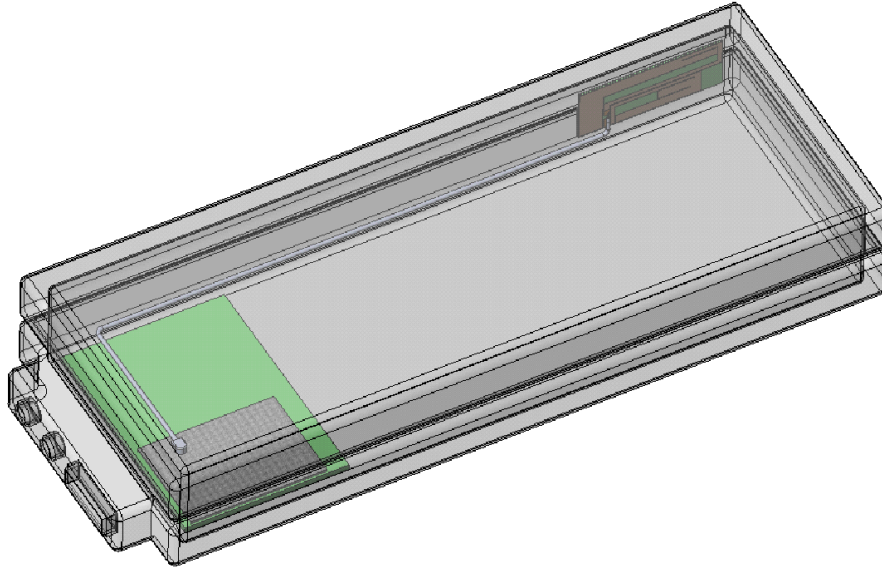


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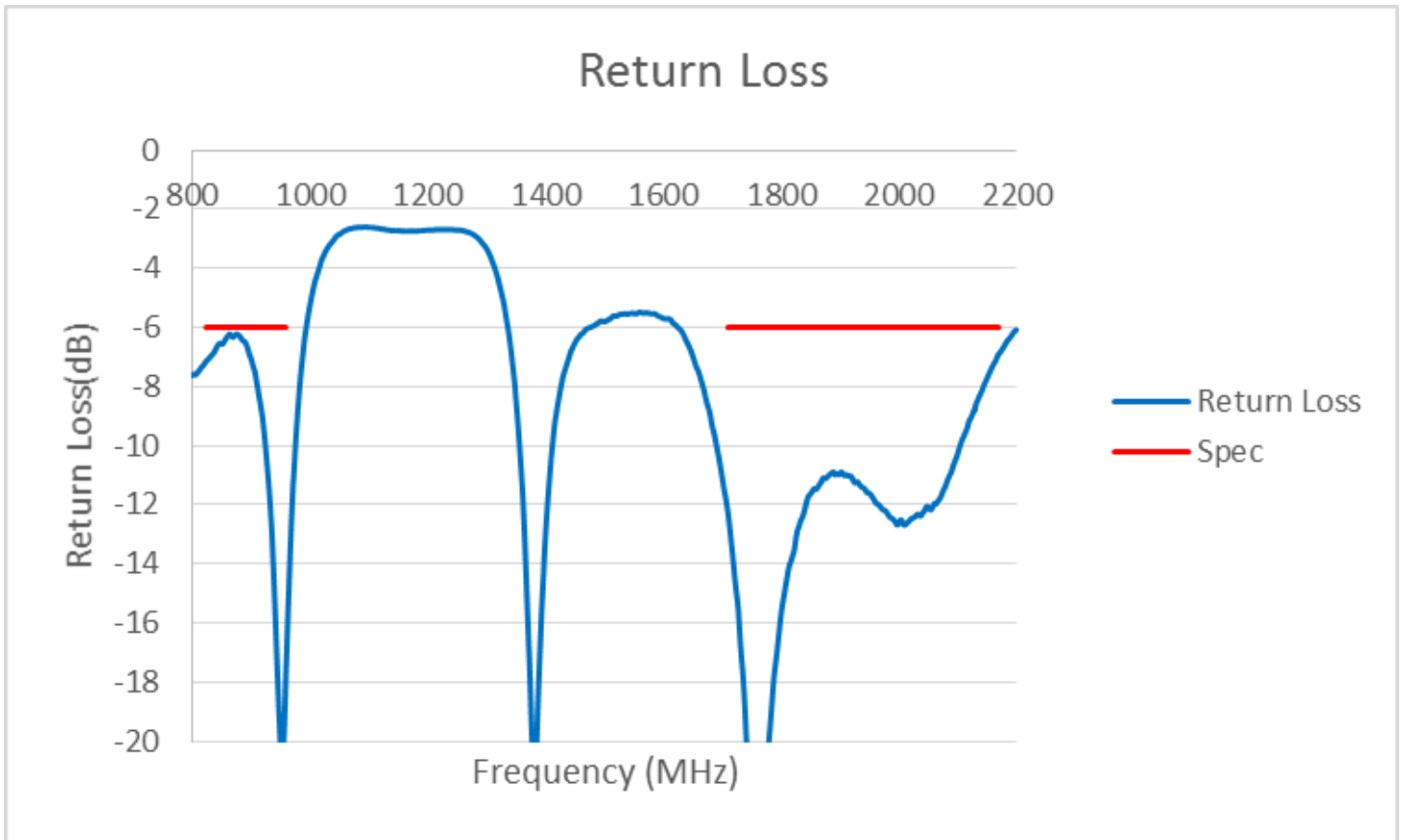
Position 3. Antenna could be mounted on upright position at long edge of device



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**CHARTS**



Note: Antenna tested on 2mm plastic plate with 200mm feed cable.

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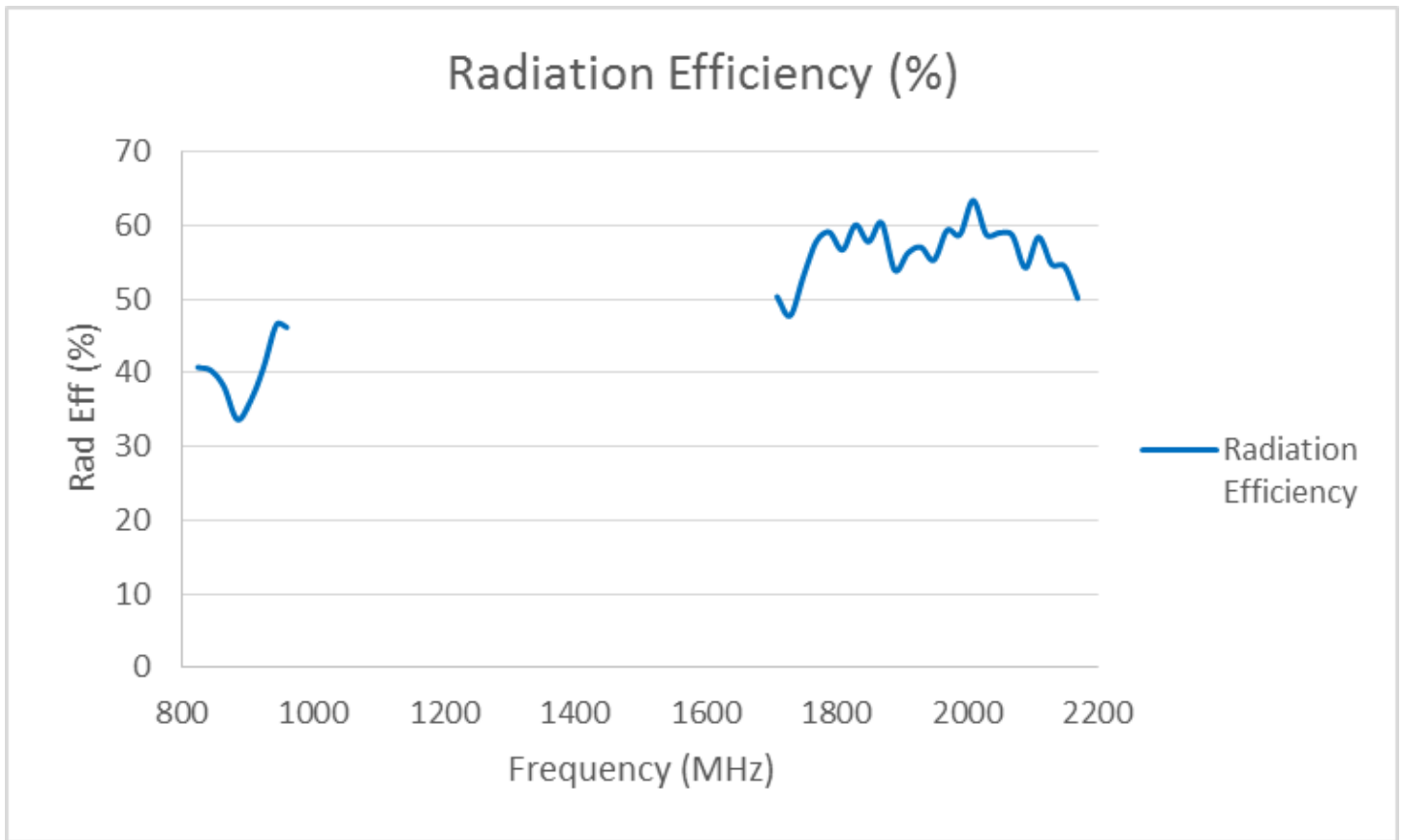
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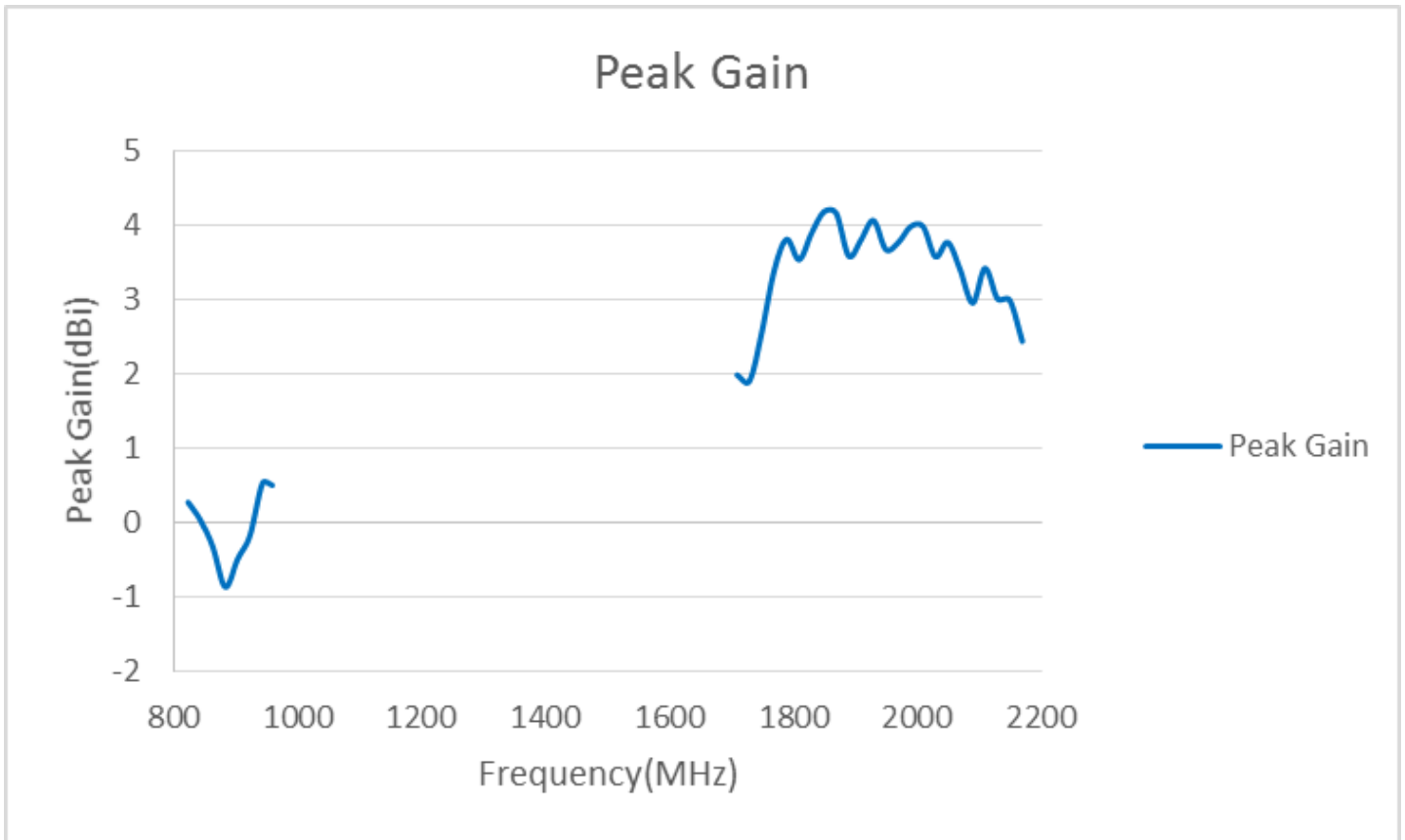
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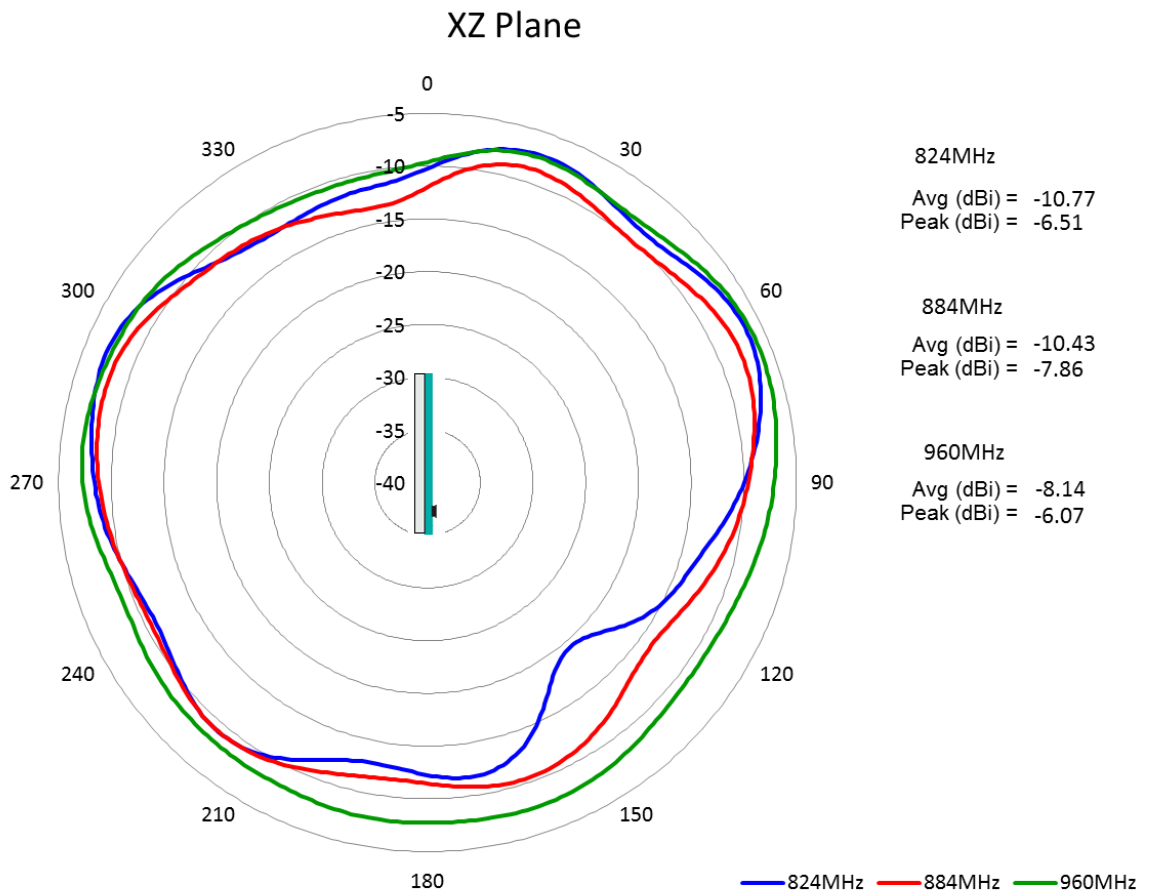
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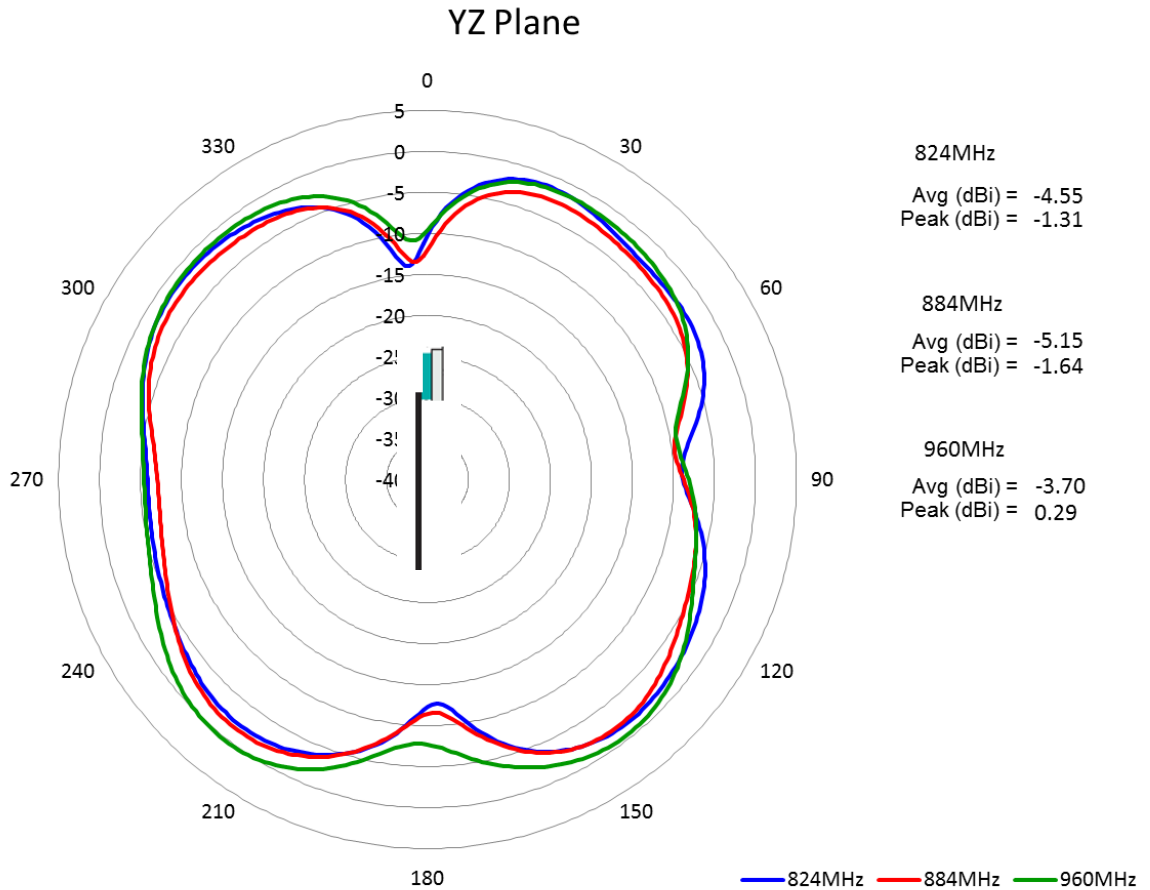
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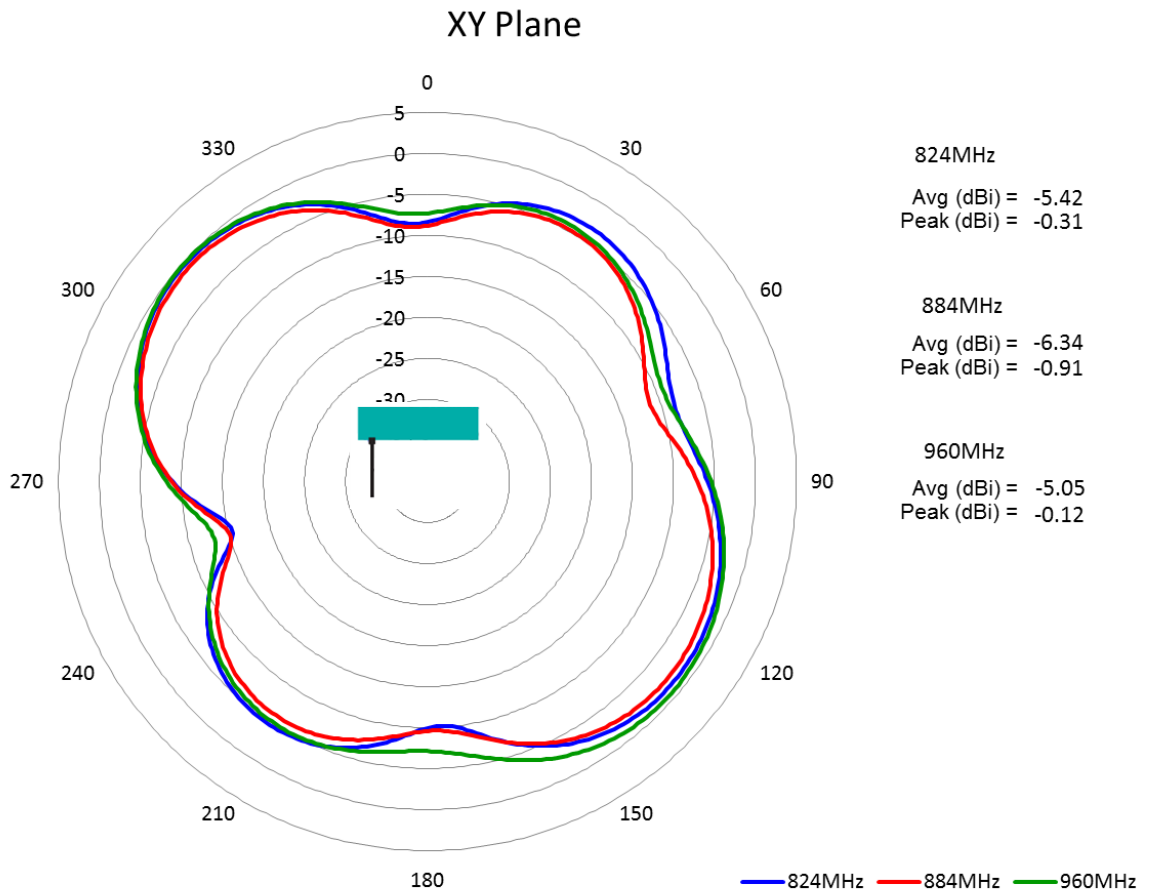
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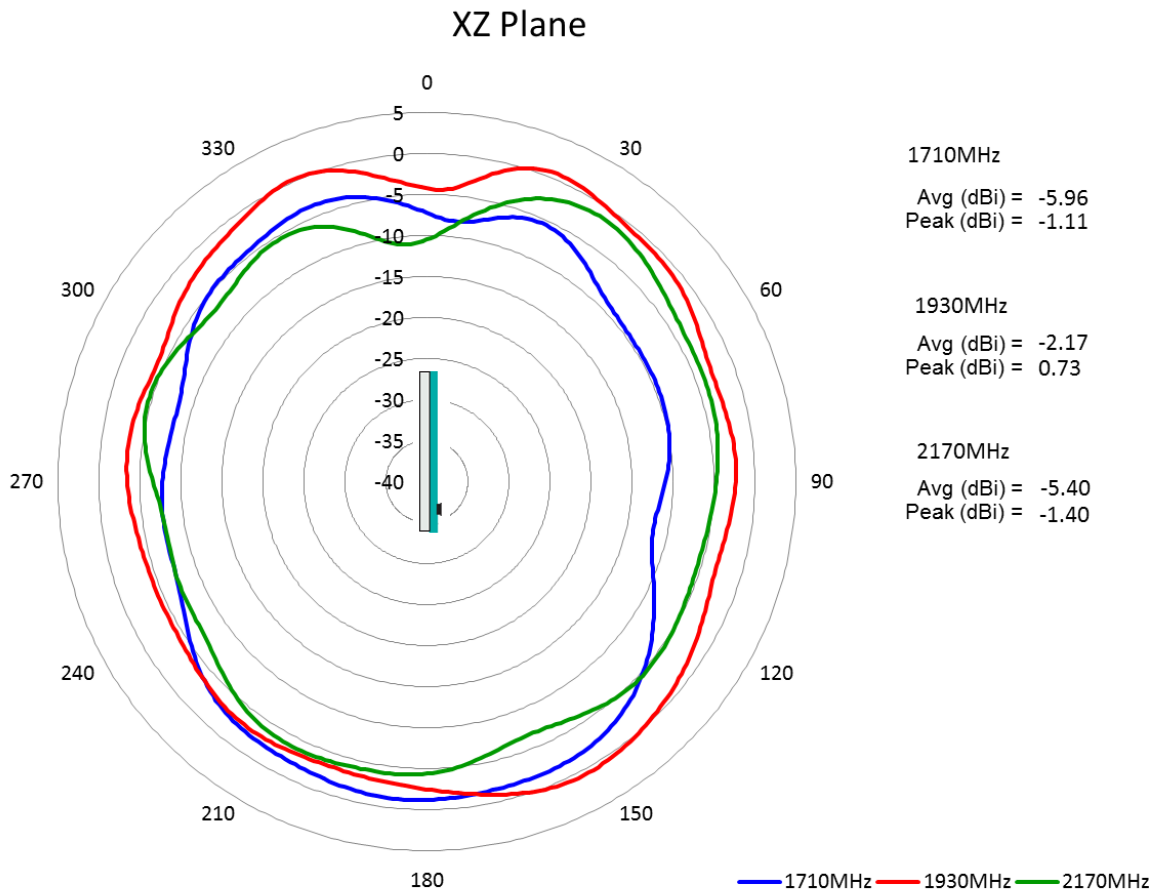
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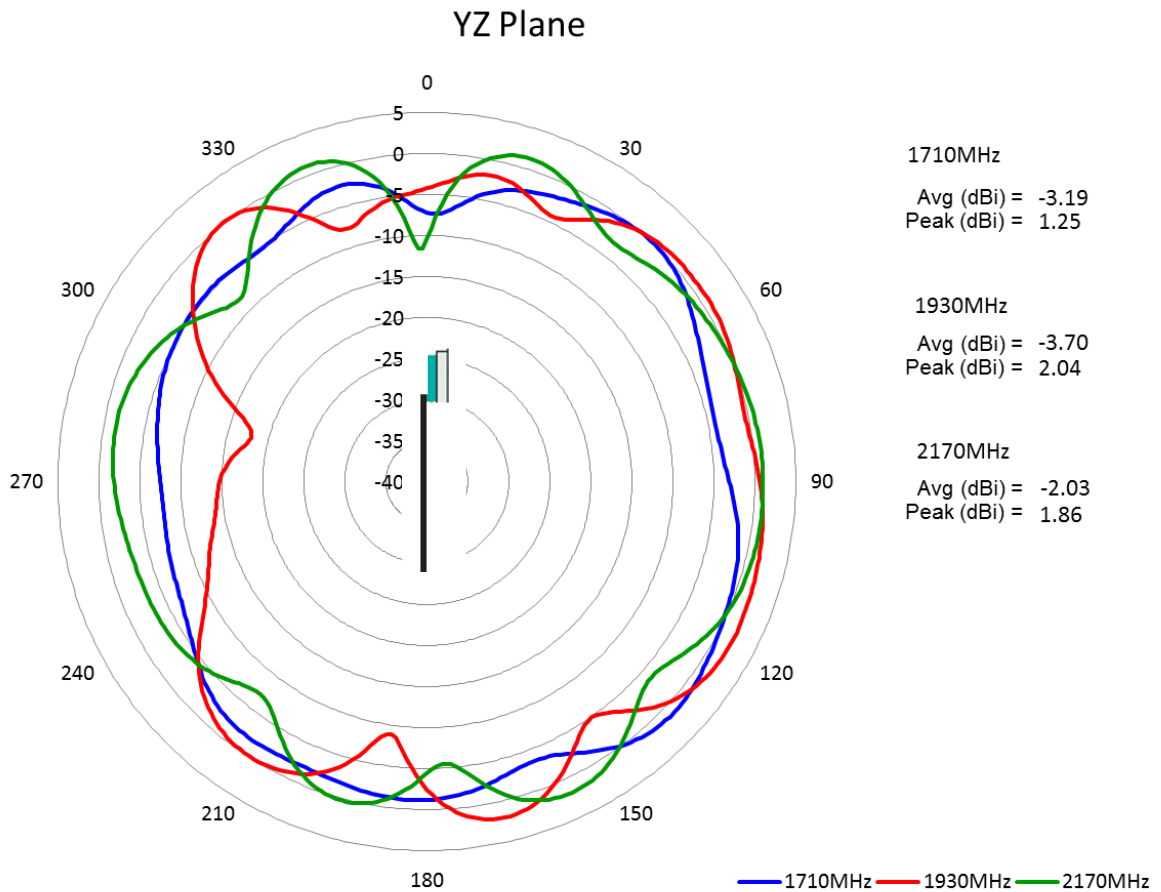
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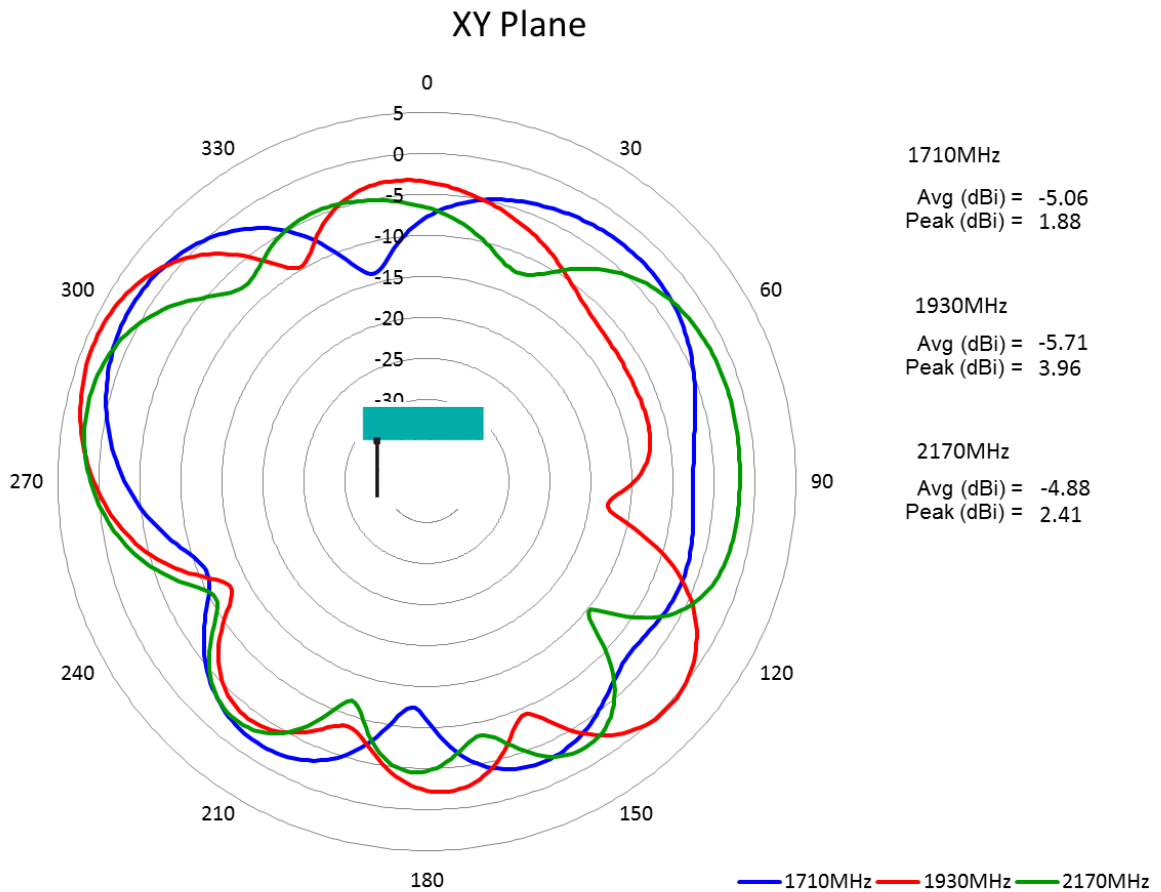
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## PACKAGING

10PCS/PE bag  
10PE bag/foam bag  
10 foam bag/ carton box  
Total 1000PCS/carton box



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