# Regulatory WLAN Antenna Information

| Platform information | | | | | |
|---|---|---|---|---|---|
| **Brand** | **ODM** | ******End product model name** | **Intel platform** (ex: Yes, No or NA) | **Platform type** (ex: regular NB, convertible PC, AIO…etc) | ***SAR minimum separation (mm)** |
| Framework | COMPAL | FRANPC0000 | Yes | Regular NB | 7.1mm (w/bumper)<br>4.3mm (w/o bumper) |

*******Please fill in exact product model name and make sure the model name is visible on product cover or any parts for end users recognize for authority inspection.**

| Antenna information | | | |
|---|---|---|---|
| **Vendor** | **Type** | **Antenna Part number** (Main) | **Antenna Part number** (Aux) |
| AWAN | PIFA | AYF6Y-200005<br>(DC33002SE00) | |

| Peak gain w/ cable loss (dBi)* | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|
| | **2.4GHz** 2400-2483.5 MHz | **5.2GHz** 5150-5250MHz | **5.3GHz** 5250-5350MHz | **5.6GHz** 5470-5725MHz | **5.8GHz** 5725-5850MHz | **6.2GHz** 5925-6425MHz | **6.5GHz** 6425-6525MHz | **6.7GHz** 6525-6875MHz | **7.0 GHz** 6875-7125MHz |
| **Main** | 2.72 | 1.31 | 1.17 | 1.03 | 0.88 | 0.87 | 0.81 | 0.92 | 0.91 |
| **Aux** | 1.62 | 1.67 | 1.76 | 0.36 | 2.30 | 2.34 | 0.10 | 0.08 | 0.13 |

**Intel Reference Gain/Type/ Separation distance**

| Antenna Type | Antenna Peak gain (In dBi)* | | | | | | | | | Distance to the end user (mm) |
|---|---|---|---|---|---|---|---|---|---|---|
| | **2.4GHz** 2400-2483.5 MHz | **5.2GHz** 5150-5250MHz | **5.3GHz** 5250-5350MHz | **5.6GHz** 5470-5725MHz | **5.8GHz** 5725-5850MHz | **6.2GHz** 5925-6425MHz | **6.5GHz** 6425-6525MHz | **6.7GHz** 6525-6875MHz | **7.0GHz** 6875-7125MHz | |
| **Design** | **3.00** | **5.00** | **5.00** | **5.00** | **5.00** | **5.00** | **5.00** | **5.00** | **5.00** | Generic: refer to modular FCC SAR report<br>Mid-power: ≥ 8 mm<br>Low power: ≥ 5 mm |
| **PIFA** | **3.24** | **3.64** | **3.73** | **4.77** | **4.97** | **4.83** | **4.30** | **5.37** | **5.59** | |
| **Dipole** | **2.89** | **2.92** | **3.19** | **4.41** | **4.22** | **4.83** | **4.30** | **4.49** | **5.34** | |

**Notes (marked with *)**

*** SAR minimum separation (mm)**

- Regular NB: Minimum antenna-to-body (from antenna bottom to the bottom of the device)

- Tablet / Convertible PC: Minimum antenna-to-edge (5 sides of the device)

- Mini-tablet: Minimum antenna-to-edge (6 sides of the device)

*** 3D Peak Antenna gain should be equal or greater than -2 dBi**
- If a host integrator plans to use a lower gain antenna of the same type, additional CBP(FCC)/EDT(EU) testing need to be performed while the module is installed in the host.

# Table of contents

1. **Applicable test methods**

A. The 3D chamber provides less than -40dB reflectivity from 600MHz to 8GHz and a 40cm diameter spherical quiet zone. The measurement results are calibrated using both dipoles and standard gain horns

B. The antenna under tested is arranged in the turned table and a decoupling sleeve is used to reduce feed line radiation

C. The measured results of the radiation patterns and antenna gain are obtained from the control system and showed on the monitor

**2. Test & System Description**

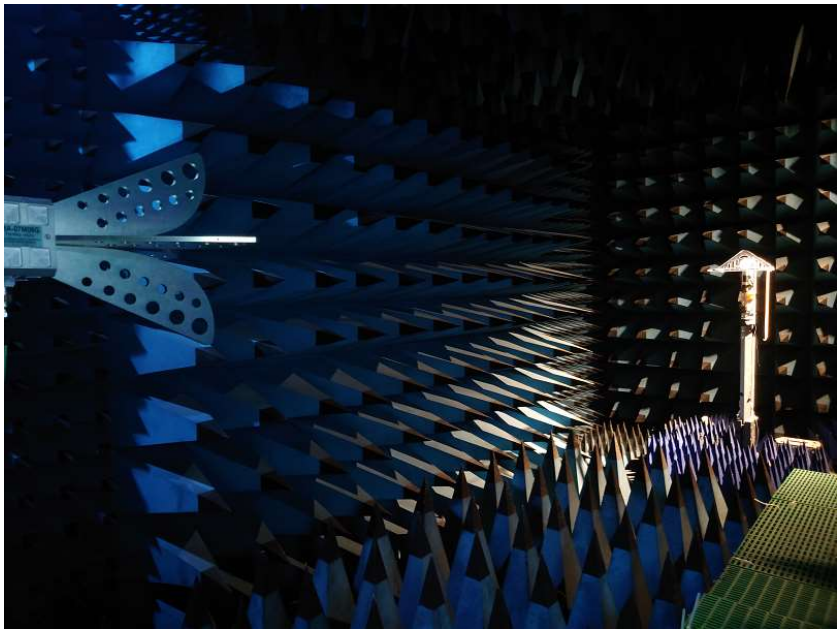
a. Test setup

**Size**：8M(L) X 4M(W) X 4M(H)

**Measurement property**：

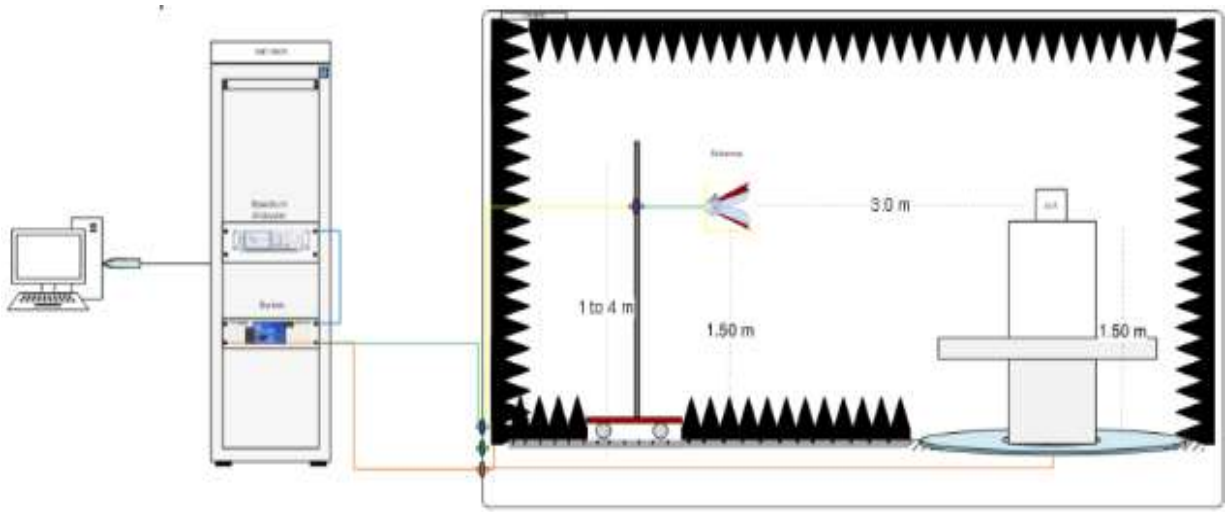
Passive Antenna Radiation Pattern / Gain.

Frequency range 600 MHz ~ 8000 MHz

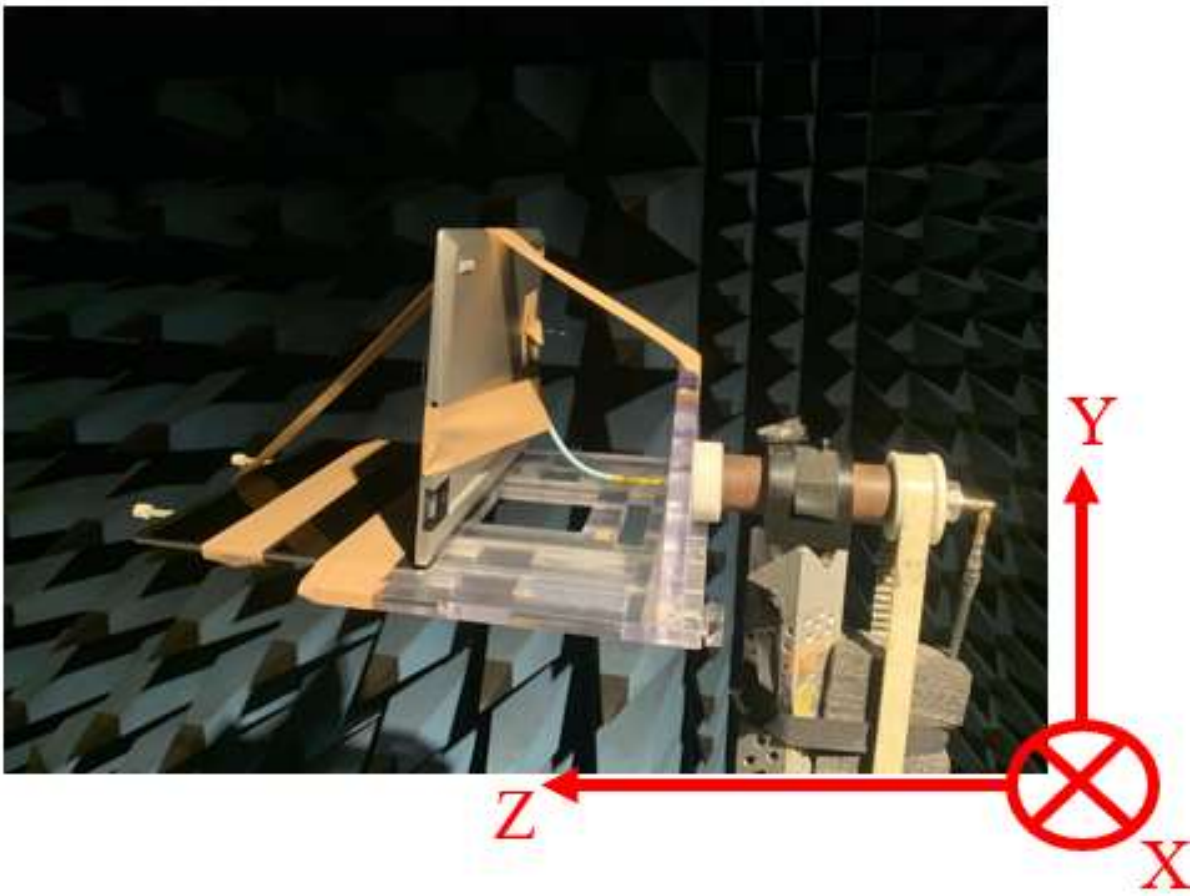


b. Equipment list

| Device | Type/Module | Manufacturer |
|---|---|---|
| Anechoic Chamber | | Topline System |
| Turn Table | Topline | Topline System |
| Rotate controller | TLS100 | Topline System |
| Horn Antenna | HA-07M06G | MTJ Cooperation |
| Vector Network Analyzer | ZVB 8 | Rohde & Schwarz |
| Cable 40cm DC-18 GHz | 201EH01201400 | MTJ Cooperation |



## 3. Setup photo



# Antenna Information

## Section 1. Antenna Assembly Specifications

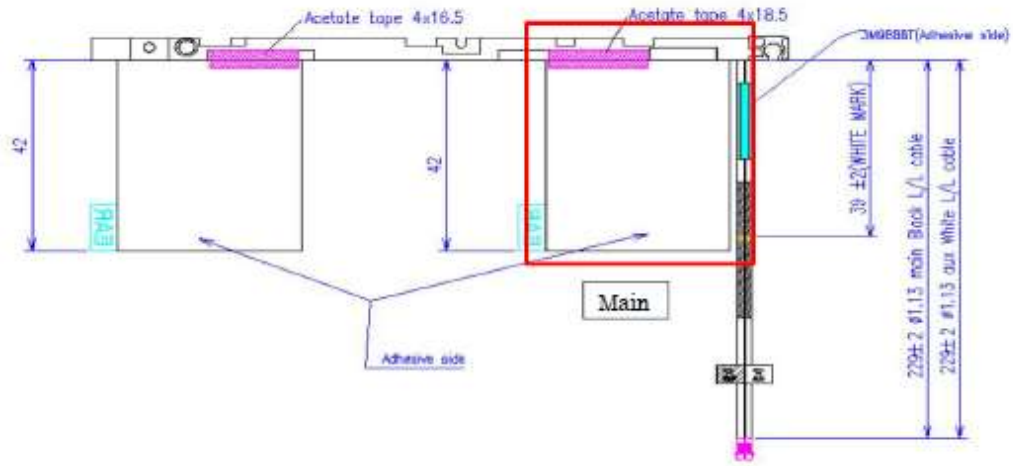
| 1A<br>Antenna Part Number | 1B<br>Manufacturer | 1C<br>Antenna Type | 1D<br>Cable Assembly Part Number and Information | Freq Range<br>MHz | 1E<br>* Peak Gain W/ Cable loss (dBi) | 1F<br>Peak Gain w/o Cable Loss (dBi) | 1G<br>Max VSWR | 1H<br>Cable Loss (dB) |
|---|---|---|---|---|---|---|---|---|
| AYF6Y-200005 (DC33002SE00) Main Antenna | AWAN | PIFA | 1)Shen-Yu/KAIBO 2)50ohm coaxial cable 3)length: 229 mm 4}Connector P/N: I-pex: 20565-001R-13 | 2400-2483.5 | 2.72 dBi(peak) | 3.29 dBi(peak) | 2 max | 0.57 dBi(peak) |
| | | | | 5150-5250 | 1.31 dBi(peak) | 2.25 dBi(peak) | 2 max | 0.94 dBi(peak) |
| | | | | 5250-5350 | 1.17 dBi(peak) | 2.12 dBi(peak) | 2 max | 0.95 dBi(peak) |
| | | | | 5470-5725 | 1.03 dBi(peak) | 1.99 dBi(peak) | 2 max | 0.96 dBi(peak) |
| | | | | 5725-5850 | 0.88 dBi(peak) | 1.85 dBi(peak) | 2 max | 0.97 dBi(peak) |
| | | | | 5925-6425 | 0.87 dBi(peak) | 1.85 dBi(peak) | 2 max | 0.98 dBi(peak) |
| | | | | 6425-6525 | 0.81 dBi(peak) | 1.79 dBi(peak) | 2 max | 0.98 dBi(peak) |
| | | | | 6525-6875 | 0.92 dBi(peak) | 1.91 dBi(peak) | 2 max | 0.99 dBi(peak) |
| | | | | 6875-7125 | 0.91 dBi(peak) | 2.01 dBi(peak) | 2 max | 1.10 dBi(peak) |
| AYF6Y-200005 (DC33002SE00) Aux Antenna | AWAN | PIFA | 1)Shen-Yu/KAIBO 2)50ohm coaxial cable 3)length: 229 mm 4}Connector P/N: I-pex: 20565-001R-13 | 2400-2483.5 | 1.62 dBi(peak) | 2.19 dBi(peak) | 2 max | 0.57 dBi(peak) |
| | | | | 5150-5250 | 1.67 dBi(peak) | 2.61 dBi(peak) | 2 max | 0.94 dBi(peak) |
| | | | | 5250-5350 | 1.76 dBi(peak) | 2.71 dBi(peak) | 2 max | 0.95 dBi(peak) |
| | | | | 5470-5725 | 0.36 dBi(peak) | 1.32 dBi(peak) | 2 max | 0.96 dBi(peak) |
| | | | | 5725-5850 | 2.30 dBi(peak) | 3.27 dBi(peak) | 2 max | 0.97 dBi(peak) |
| | | | | 5925-6425 | 2.34 dBi(peak) | 3.32 dBi(peak) | 2 max | 0.98 dBi(peak) |
| | | | | 6425-6525 | 0.10 dBi(peak) | 1.08 dBi(peak) | 2 max | 0.98 dBi(peak) |
| | | | | 6525-6875 | 0.08 dBi(peak) | 1.07 dBi(peak) | 2 max | 0.99 dBi(peak) |
| | | | | 6875-7125 | 0.13 dBi(peak) | 1.23 dBi(peak) | 2 max | 1.10 dBi(peak) |

- **3D Antenna Peak Gain required being test in system basis.**
- **The antenna gain was measured in Anechoic Chamber.**

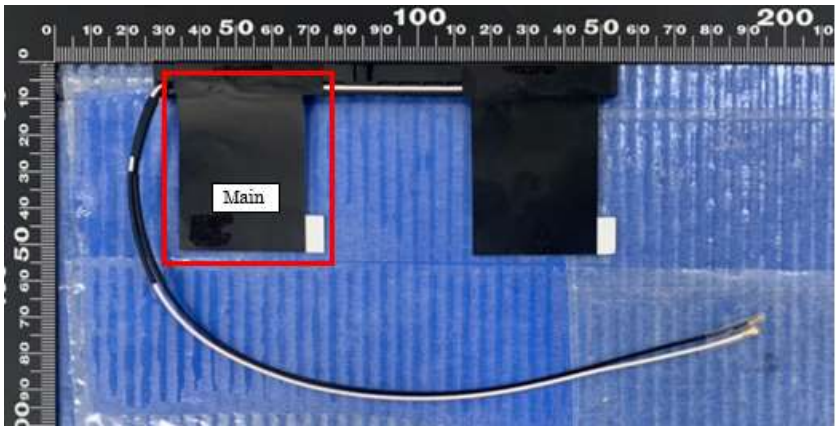
# Section 2. Dimensioned Photos and Drawings of Antennas

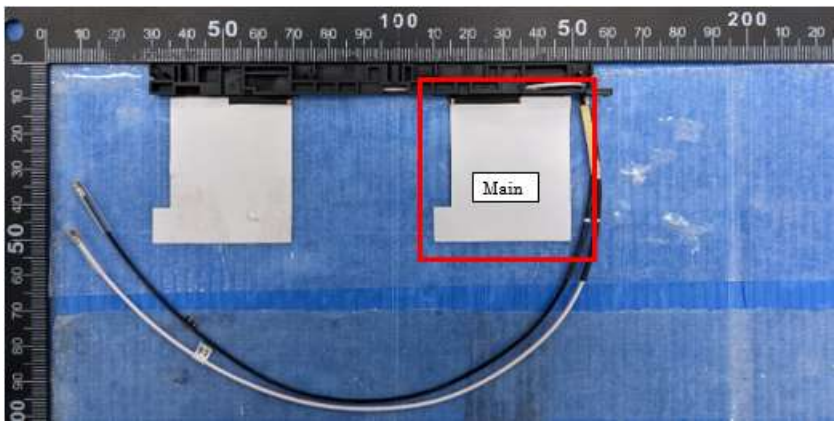
**Include the dimensioned photo and drawing of Main antenna here.**

## Main Antenna Drawing:




## Main Antenna Photo (Front/Back):

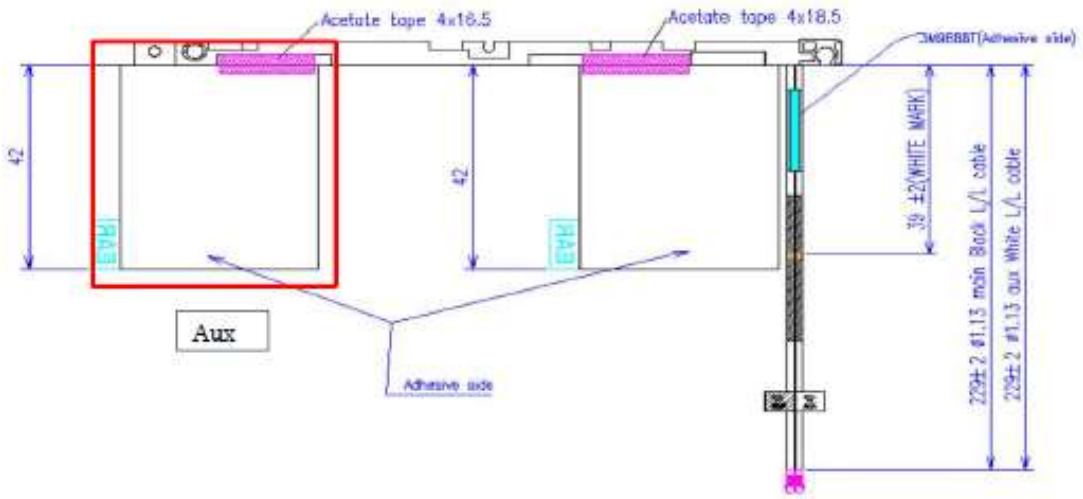


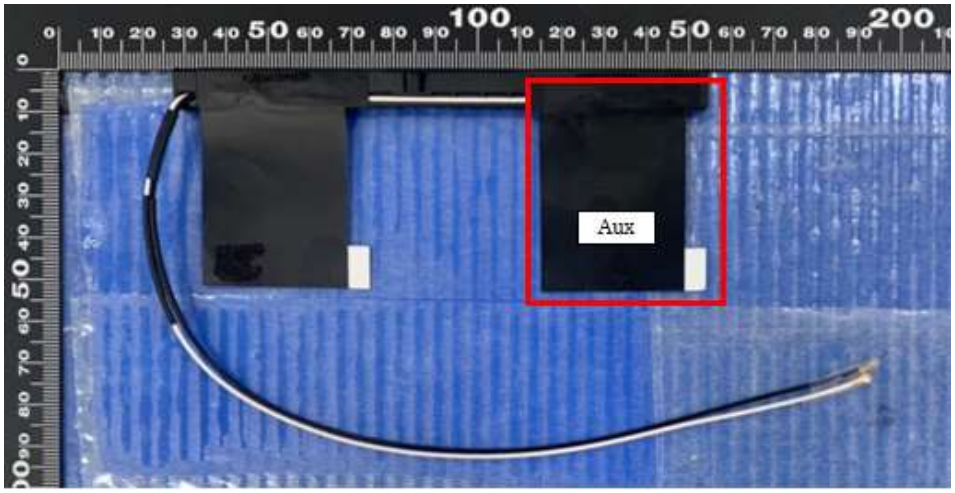

**Note: antenna photo should include L type ruler**

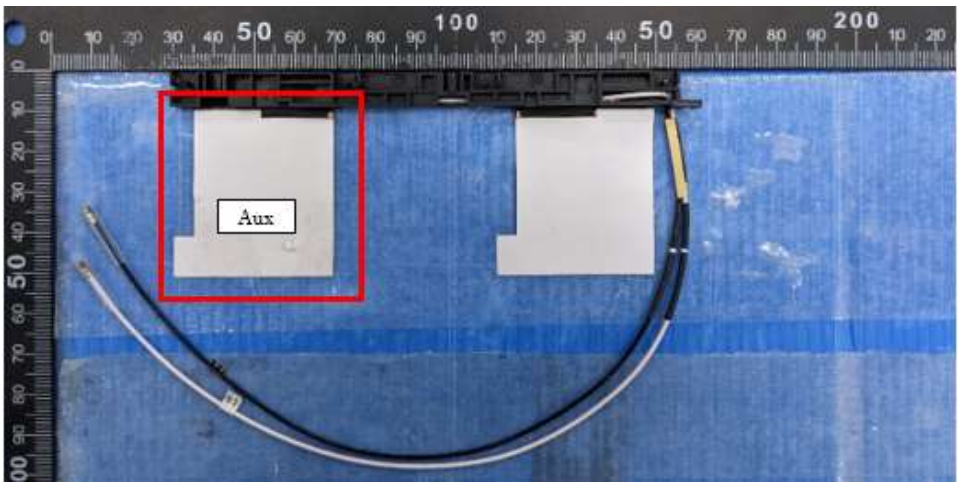
**Include the dimensioned photo and drawing of Aux antenna here.**

## Aux Antenna Drawing:




## Aux Antenna Photo (Front/Back):



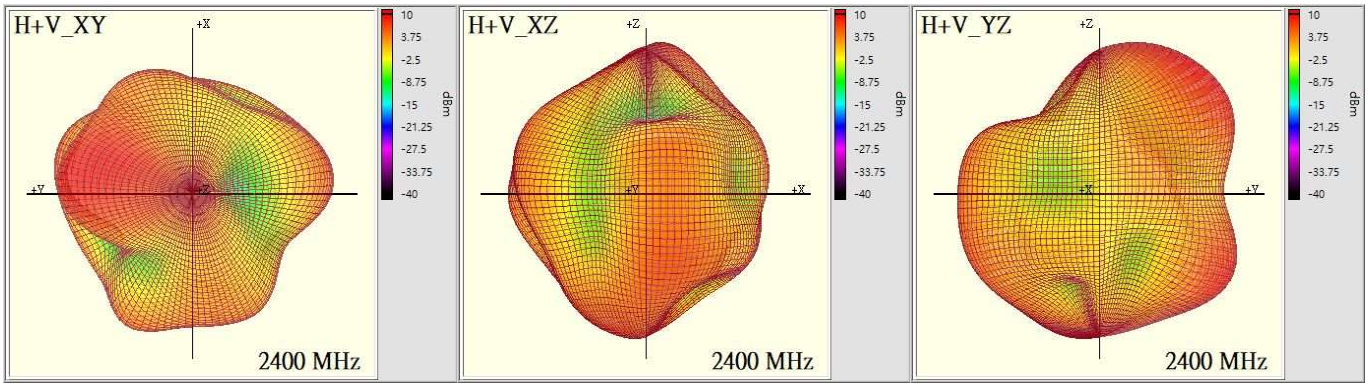

**Note: antenna photo should include L type ruler**

# Section 3. Radiation characteristics of antenna loaded in Host Platform

## Main Antenna

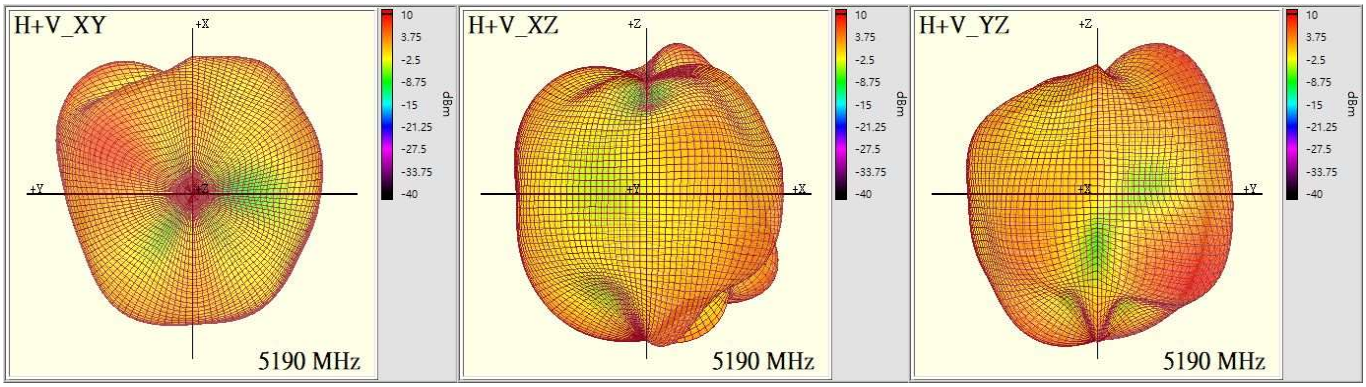
### Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 2400-2483.5 | 2.72 |



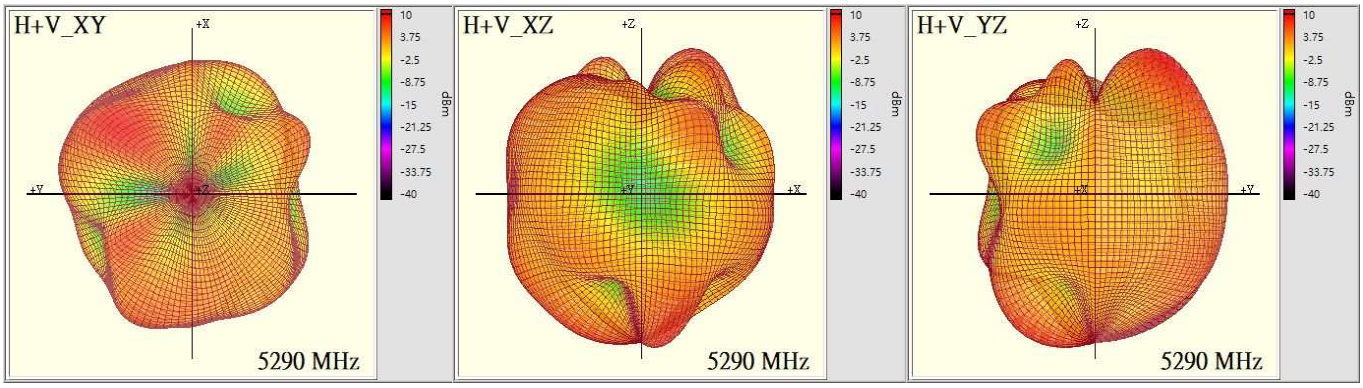

### Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5150-5250 | 1.31 |



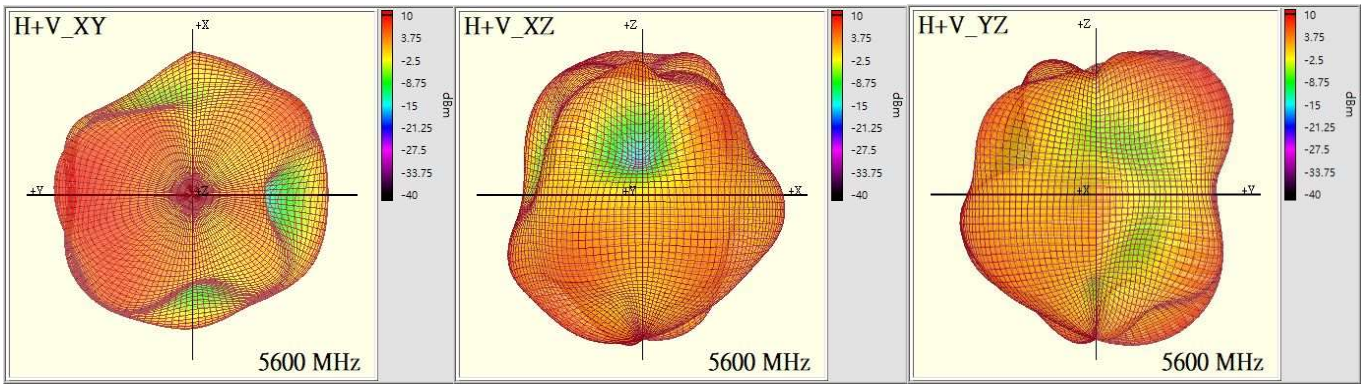
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5250-5350 | 1.17 |



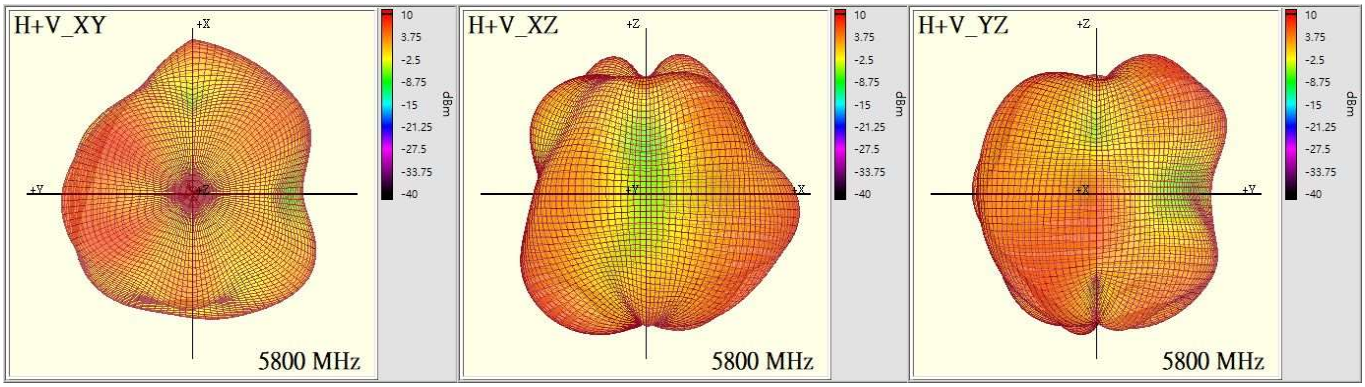

## Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5470-5725 | 1.03 |



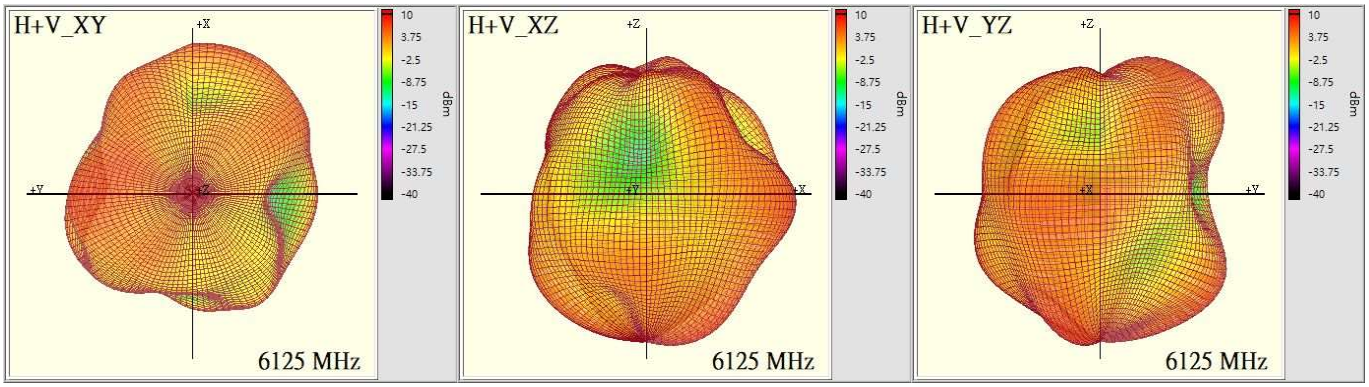
## Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5725-5850 | 0.88 |



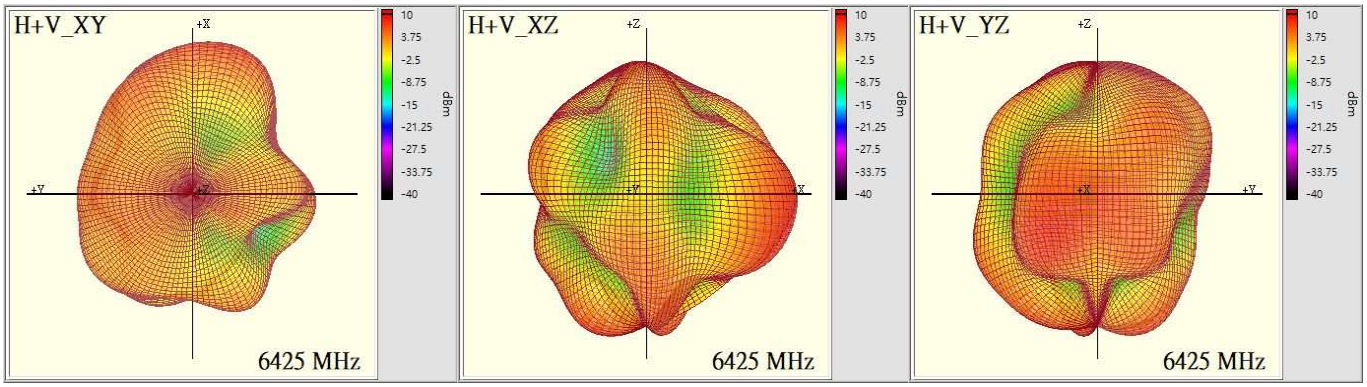

## Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5925-6425 | 0.87 |



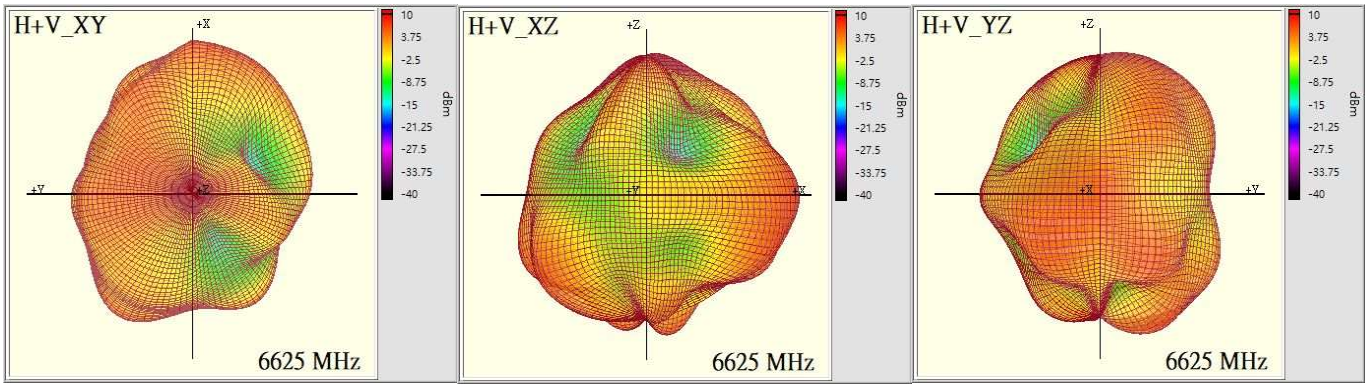
## Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 6425-6525 | 0.81 |



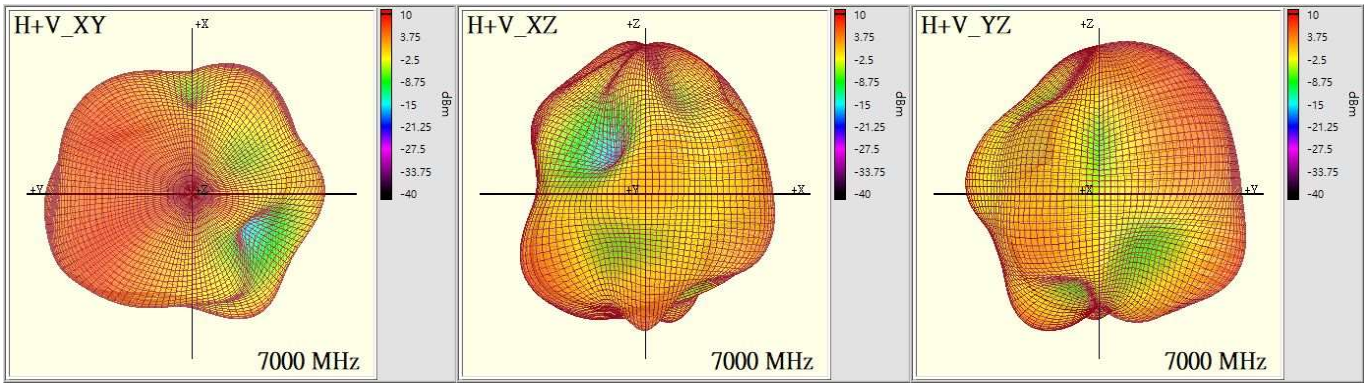

## Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 6525-6875 | 0.92 |




## Max Antenna 3D Radiation Pattern 6875-7125 MHz

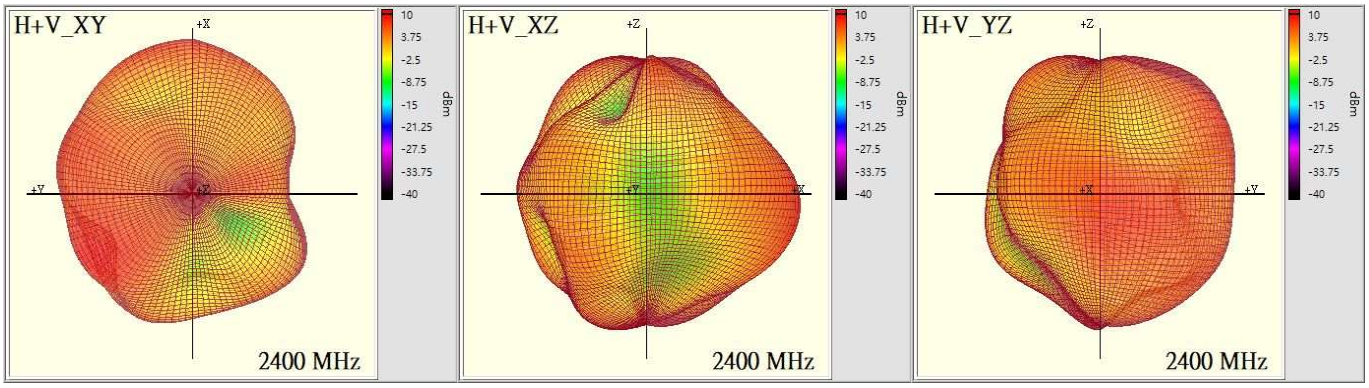
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 6875-7125 | 0.91 |



# Auxiliary Antenna

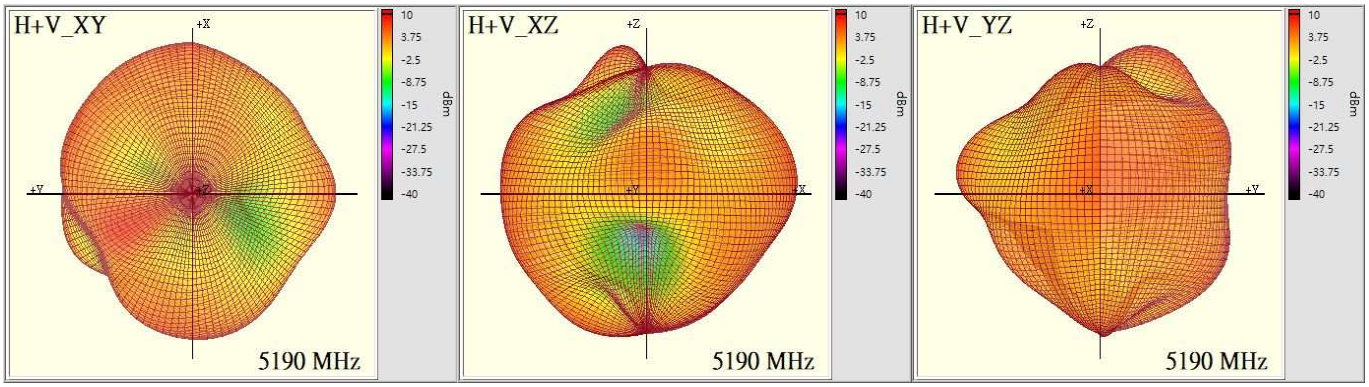
## Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 2400-2483.5 | 1.62 |



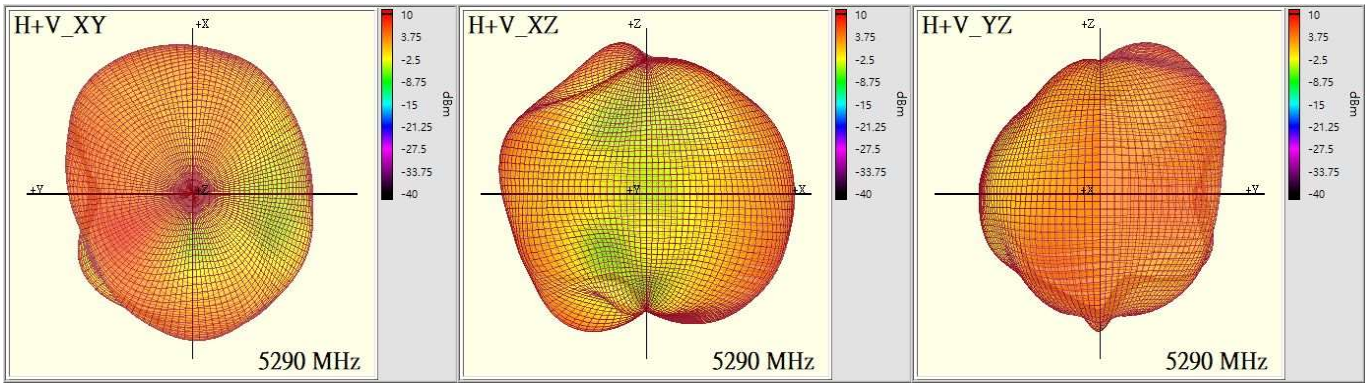

## Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5150-5250 | 1.67 |



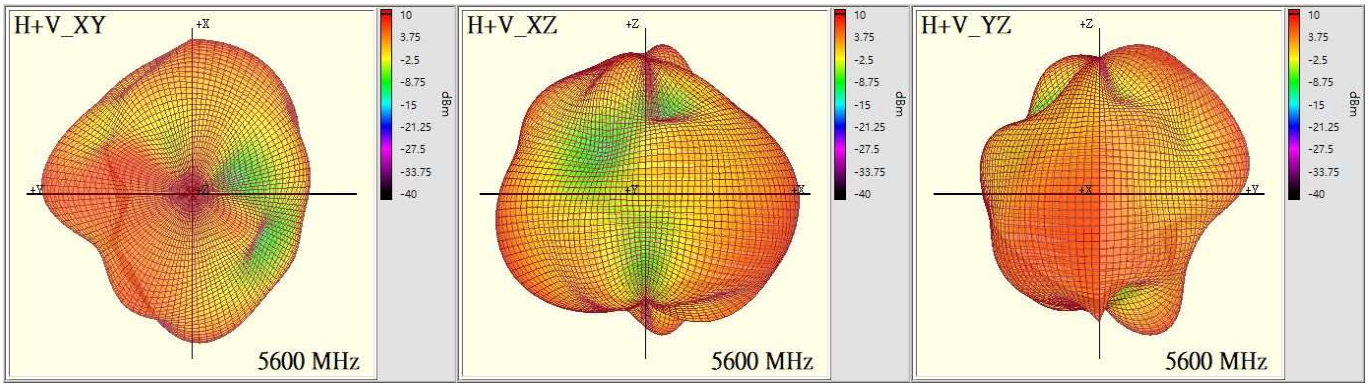
## Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5250-5350 | 1.76 |



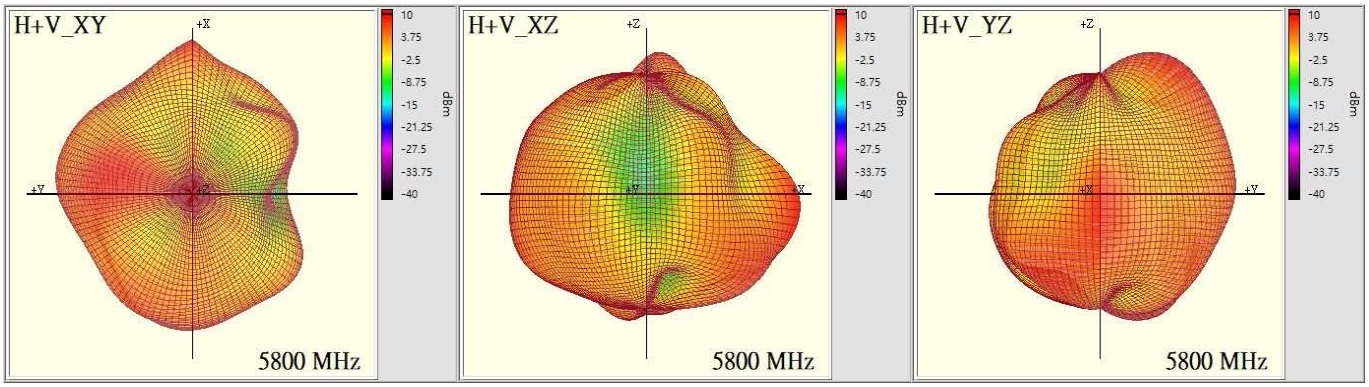

## Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5470-5725 | 0.36 |



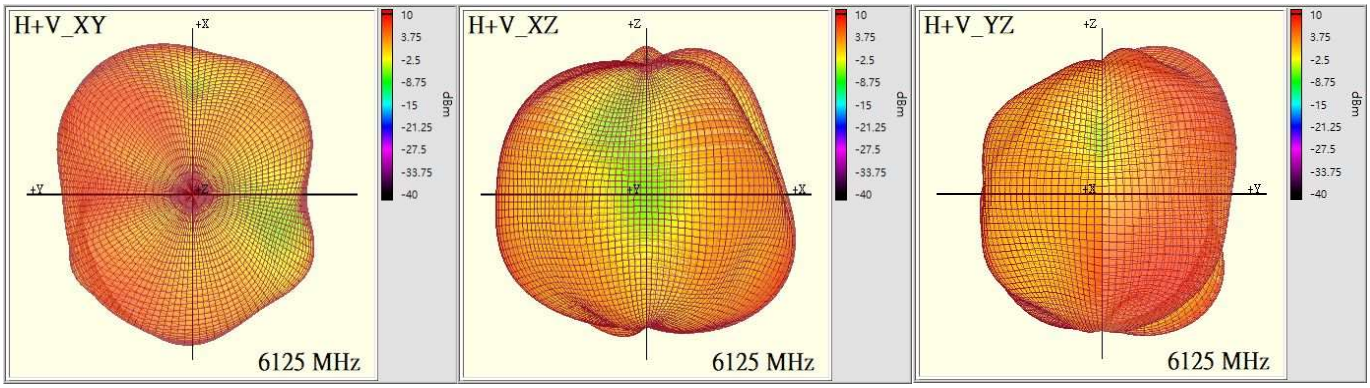
## Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5725-5850 | 2.30 |



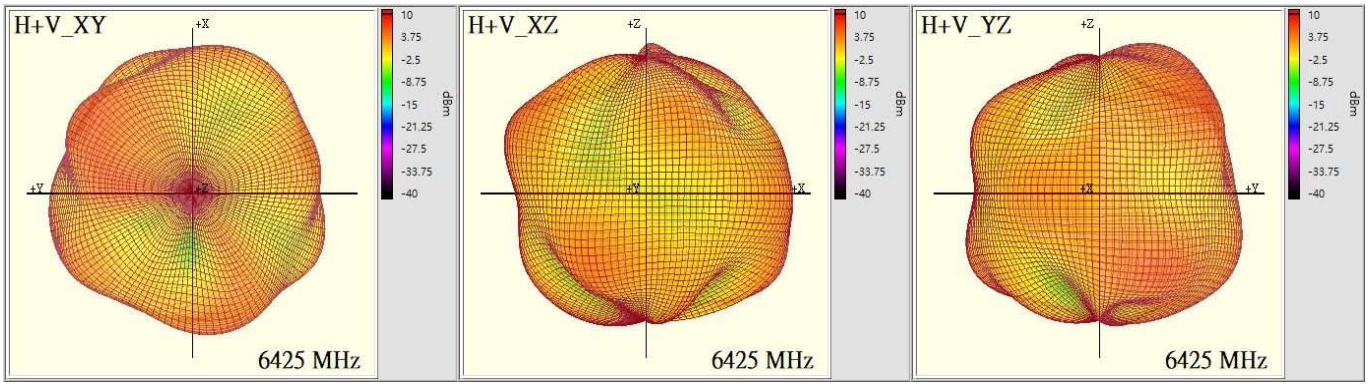

## Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 5925-6425 | 2.34 |



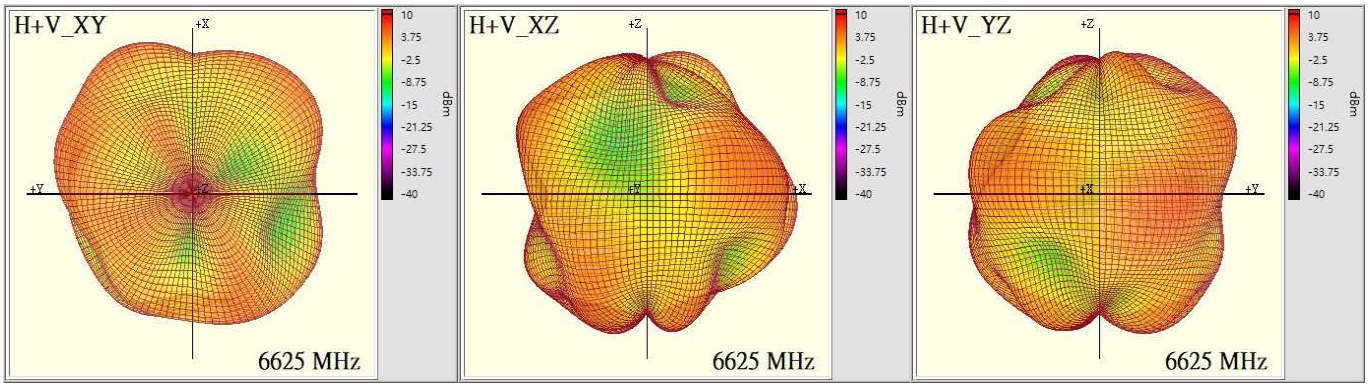
## Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 6425-6525 | 0.10 |



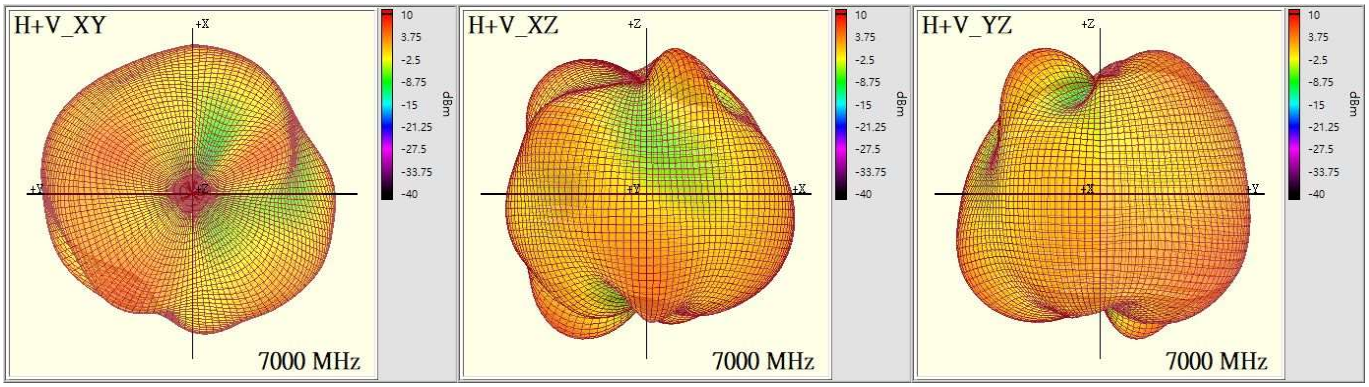

## Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 6525-6875 | 0.08 |




## Max Antenna 3D Radiation Pattern 6875-7125 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|---|---|
| 6875-7125 | 0.13 |

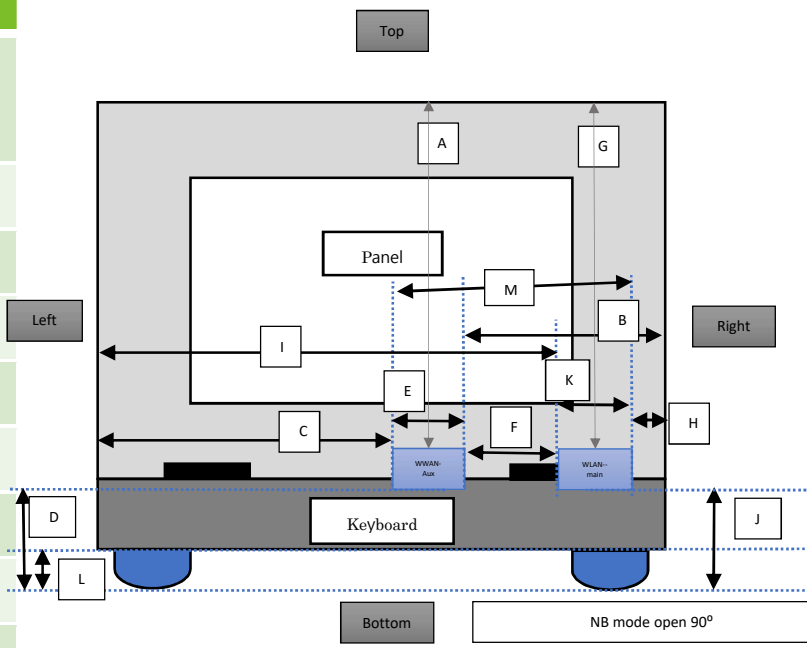


# Section 4. Antenna Host Platform Location Information

Include a **dimensioned photo(s) or dimensioned drawing(s)** of Main and Aux antenna placements (measurements are not required for receive-only antenna).

Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.

| Minimum Separation Distance | | | |
|---|---|---|---|
| **Item** | Antenna | Position | Distance (mm) |
| **A** | WLAN- Aux | to Top | 222.33 |
| **B** | WLAN- Aux | to Right | 137.92 |
| **C** | WLAN- Aux | to Left | 124.22 |
| **D** | WLAN- Aux | to Bottom | 7.1 |
| **E** | WLAN-Aux | Main Antenna Length | 34.5 |
| **F** | Main- Aux | Main to Aux | 45.5 |
| **G** | WLAN- Main | to Top | 222.33 |
| **H** | WLAN- Main | to Right | 57.92 |
| **I** | WLAN- Main | to Left | 204.22 |
| **J** | WLAN- Main | to Bottom | 7.1 |
| **K** | WLAN- Main | Aux Antenna Length | 34.5 |
| **L** | NB | Bumper thickness | 2.8 |
| **M** | Main + Aux | combi | 130.3 |



## Section 5. Antenna dimensional information for SAR evaluation

Include a **dimensioned photo(s) or dimensioned drawing(s)** showing the distance (mm) between the transmit antennas and the user. For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & secondary portrait, primary & secondary landscape positions. Include a description of any proximity sensors or power throttling implementations that limit or exclude use of any host orientation.