

# Regulatory WLAN Antenna Information (Template)

*English Language Required for Intel Regulatory Review / Approval*

**(OEM/ODM or antenna vendor is required to complete this document with platform antenna information.**

**Remove Intel references and make this your own document)**

| Platform information   |                             |   |                        |                        |                                       |  |                              |                                     |                        |                         |  |
|--|-----------------------------|---|------------------------|------------------------|---------------------------------------|--|------------------------------|-------------------------------------|------------------------|-------------------------|--|
| Brand  | ODM                         | ****End product model name                |                        |                        | Intel platform<br>(ex: Yes, No or NA) | Platform type<br>(ex: regular NB, convertible PC, AIO...etc) | *SAR minimum separation (mm) |                                     |                        |                         |  |
| LG   | Quanta                      | 16TD90R,<br>16TB90R ,<br>16TG90R, 16T90R* |                        |                        | Yes                                   | Convertible PC   | 2.35                         |                                     |                        |                         |  |
| ****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)           |                        |                         |  |
| CHILISIN   |                             | PIFA                                      |                        |                        | DQ600111500<br>(BTEA00111525GC1A01)   |  |                              | DQ600111500<br>(BTEA00111525GC1A01) |                        |                         |  |
| Peak gain w/ cable loss (dBi)*   |                             |   |                        |                        |                                       |  |                              |                                     |                        |                         |  |
|  | 2.4GHz<br>2400-2483.5 MHz   | 5.2GHz<br>5150-5250MHz                    | 5.3GHz<br>5250-5350MHz | 5.6GHz<br>5470-5725MHz | 5.8GHz<br>5725-5850MHz                | 5.9GHz<br>5850-5895MHz                                       | 6.2GHz<br>5925-6425MHz       | 6.5GHz<br>6425-6525MHz              | 6.7GHz<br>6525-6875MHz | 7.0 GHz<br>6875-7125MHz |  |
| Main   | 2.04                        | 1.84                                      | 1.53                   | 0.69                   | 0.50                                  | 0.73   | -0.08                        | -0.49                               | -1.58                  | -1.63                   |  |
| Aux  | 1.64                        | 1.02                                      | 0.78                   | 1.73                   | 1.62                                  | 0.92   | 2.06                         | 1.27                                | 0.84                   | 0.60                    |  |
| Intel Reference Gain/Type/ Separation distance   |                             |   |                        |                        |                                       |  |                              |                                     |                        |                         |  |
| Antenna Type   | Antenna Peak gain (In dBi)* |   |                        |                        |                                       |  |                              |                                     |                        |                         | Distance to the end user (mm)  |
|  | 2.4GHz<br>2400-2483.5 MHz   | 5.2GHz<br>5150-5250MHz                    | 5.3GHz<br>5250-5350MHz | 5.6GHz<br>5470-5725MHz | 5.8GHz<br>5725-5850MHz                | 5.9GHz<br>5850-5895MHz                                       | 6.2GHz<br>5925-6425MHz       | 6.5GHz<br>6425-6525MHz              | 6.7GHz<br>6525-6875MHz | 7.0GHz<br>6875-7125MHz  |  |
| Design   | 3.00                        | 5.00                                      | 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                                  | 4.72   | 4.83                         | 4.30                                | 5.37                   | 5.59                    |  |
| Dipole   | 2.89                        | 2.92                                      | 3.19                   | 4.41                   | 4.22                                  | 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. |                             |   |                        |                        |                                       |  |                              |                                     |                        |                         |  |

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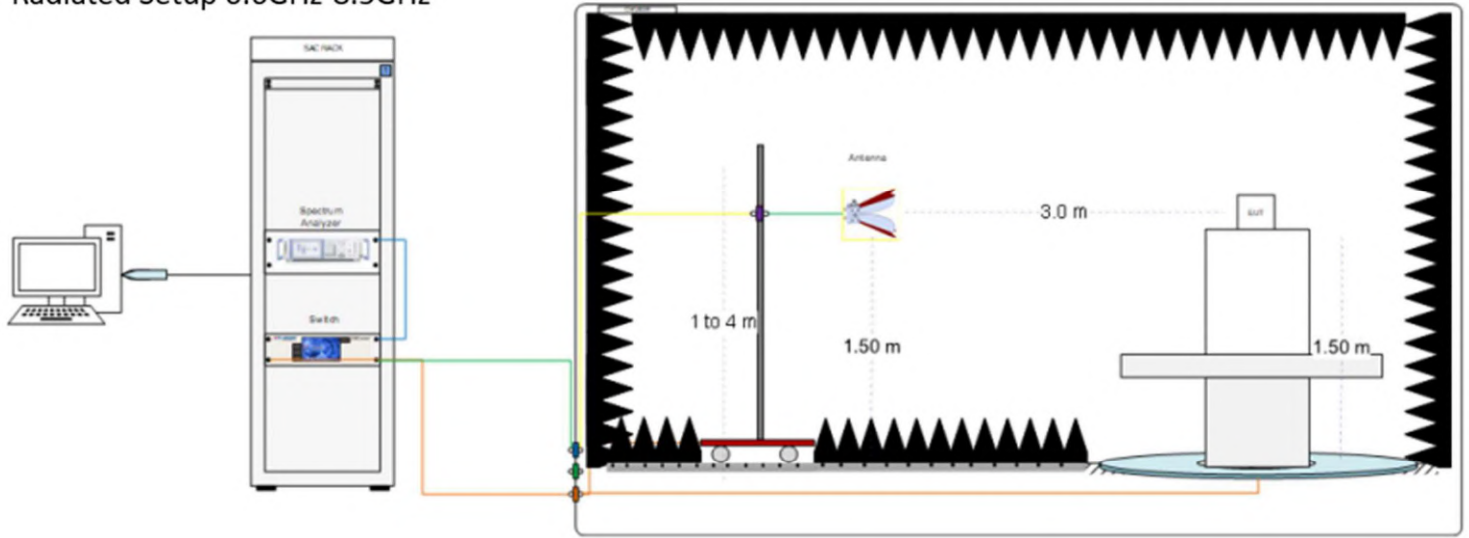
1. **Applicable test methods**

This test report is prepared for host antenna testing under a Full Anechoic Chamber.

2. **Test & System Description**

a. Test setup

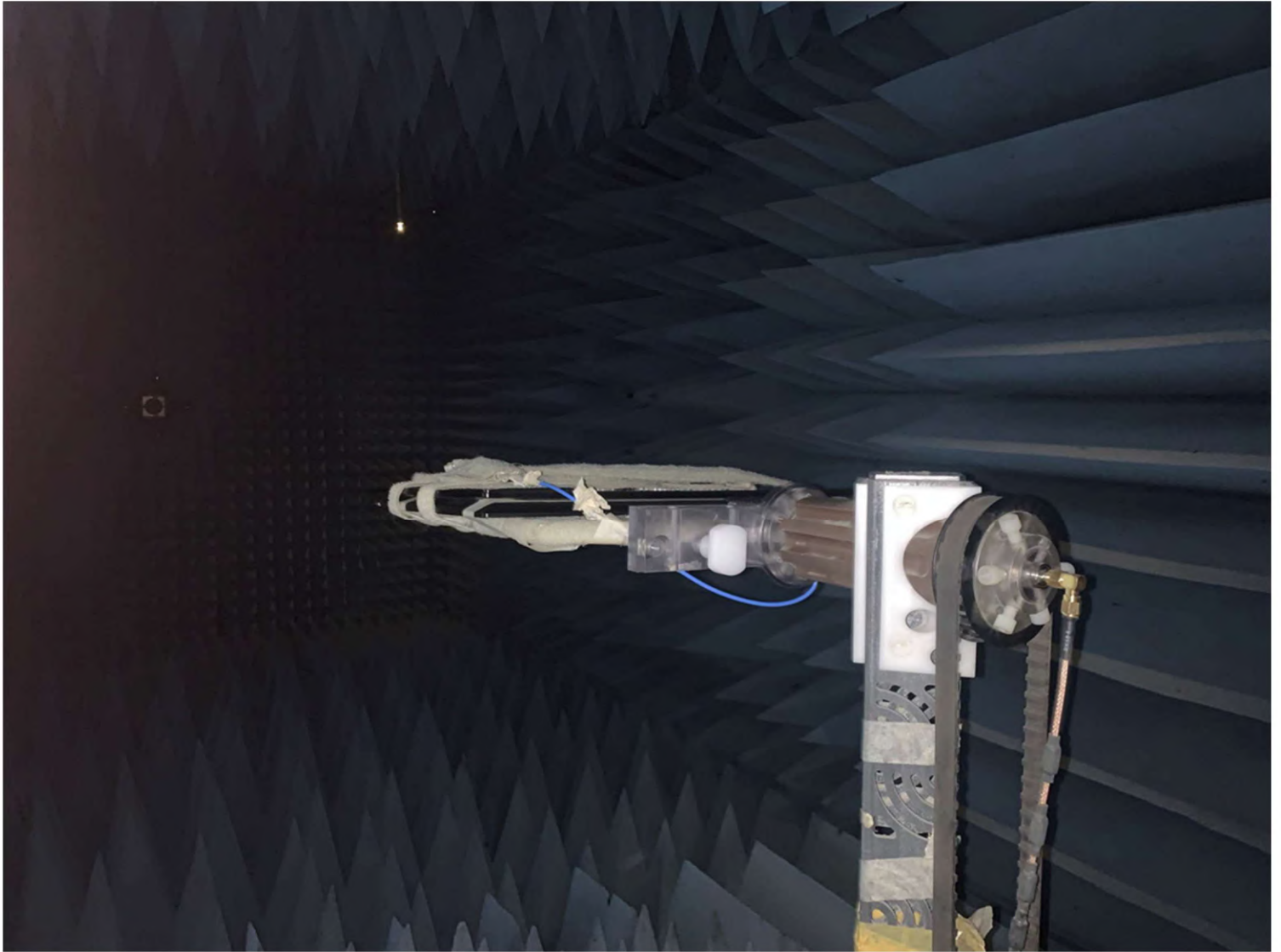
Radiated Setup 0.6GHz-8.5GHz



b. Equipment list

| ID# | Device                      | Type/Model | Serial#                          | Manufacturer | Cal. Date  | Cal. Due Date |
|-----|-----------------------------|------------|----------------------------------|--------------|------------|---------------|
| 1   | Anechoic Chamber            | AMS8500    | -                                | ETS-Lindgren | 2022-05-10 | 2023-05-10    |
| 2   | Turn Table                  | ETS        | -                                | ETS-Lindgren | N/A        | N/A           |
| 3   | Switch & Positioning system | 2090       | -                                | ETS-Lindgren | N/A        | N/A           |
| 4   | Horn Antenna                | 3164-08    | 99210                            | ETS-Lindgren | N/A        | N/A           |
| 5   | Network Analyzer            | E5071C     | MY46103999                       | Agilent      | 2022-05-10 | 2023-05-10    |
| 6   | Commercial test software    | EMQuest    | Version 1.14 Build 10265 SN:1156 | ETS-Lindgren | 2022-05-10 | 2023-05-10    |
| 7   | Test Operator               | JY Hsieh   |                                  | CEC          | 2022/11/24 |               |

### 3. Setup photo



# Antenna Information

## Section 1. Antenna Assembly Specifications

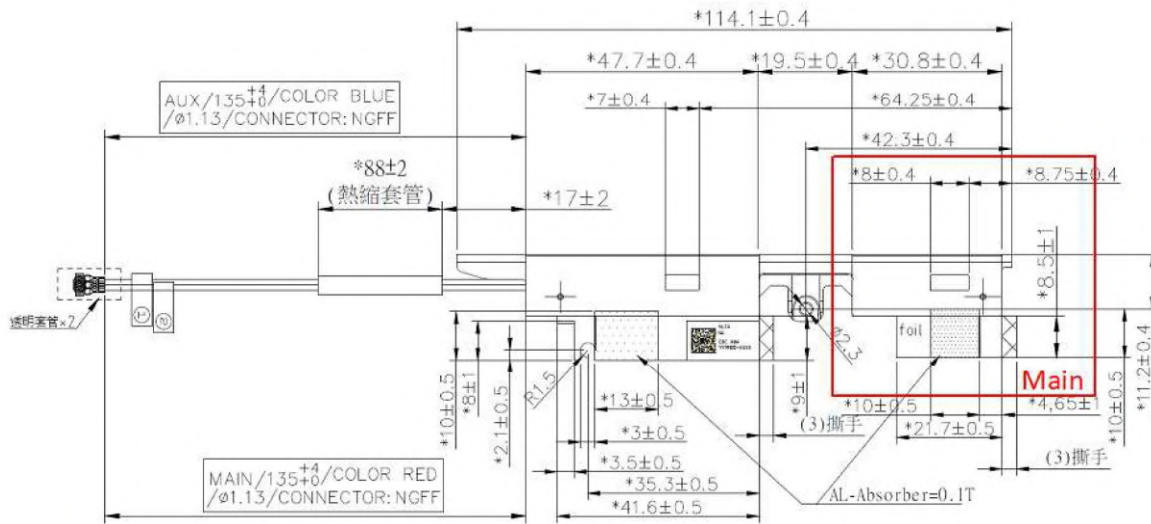
| 1A<br>Antenna Part Number                              | 1B<br>Manufacturer | 1C<br>Antenna Type | 1D<br>Cable Assembly Part Number and Information  | Freq RangeMHz | 1E<br>*Total Peak Gain W/ Cable loss (dBi) | 1F<br>Total Peak Gain w/o Cable Loss (dBi) | 1G<br>Max VSWR | 1H<br>Cable Loss (dB) |
|--|--------------------|--------------------|---|---------------|--|--|----------------|-----------------------|
| DQ600111500<br>(BTEA00111525GC1A01)<br>Main<br>Antenna | CHILISIN           | PIFA               | 50 ohm Coaxial length:<br>137cm diameter: 1.13 mm | 2400-2483.5   | 2.04                                       | 2.52                                       | 3.50 max       | 0.48                  |
|  |                    |                    |   | 5150-5250     | 1.84                                       | 2.56                                       | 3.50 max       | 0.72                  |
|  |                    |                    |   | 5250-5350     | 1.53                                       | 2.27                                       | 3.50 max       | 0.74                  |
|  |                    |                    |   | 5470-5725     | 0.69                                       | 1.48                                       | 3.50 max       | 0.79                  |
|  |                    |                    |   | 5725-5850     | 0.50                                       | 1.31                                       | 3.50 max       | 0.81                  |
|  |                    |                    |   | 5850-5895     | 0.73                                       | 1.56                                       | 5.50 max       | 0.83                  |
|  |                    |                    |   | 5925-6425     | -0.08                                      | 0.77                                       | 5.50 max       | 0.85                  |
|  |                    |                    |   | 6425-6525     | -0.49                                      | 0.37                                       | 5.50 max       | 0.86                  |
|  |                    |                    |   | 6525-6875     | -1.58                                      | -0.71                                      | 5.50 max       | 0.87                  |
|  |                    |                    |   | 6875-7125     | -1.63                                      | -0.74                                      | 5.50 max       | 0.89                  |
| DQ600111500<br>(BTEA00111525GC1A01)<br>Aux<br>Antenna  | CHILISIN           | PIFA               | 50 ohm Coaxial length:<br>134cm diameter: 1.13 mm | 2400-2483.5   | 1.64                                       | 2.11                                       | 3.50 max       | 0.47                  |
|  |                    |                    |   | 5150-5250     | 1.02                                       | 1.73                                       | 3.50 max       | 0.71                  |
|  |                    |                    |   | 5250-5350     | 0.78                                       | 1.50                                       | 3.50 max       | 0.72                  |
|  |                    |                    |   | 5470-5725     | 1.73                                       | 2.51                                       | 3.00 max       | 0.78                  |
|  |                    |                    |   | 5725-5850     | 1.62                                       | 2.42                                       | 3.00 max       | 0.80                  |
|  |                    |                    |   | 5850-5895     | 0.92                                       | 1.74                                       | 3.00 max       | 0.82                  |
|  |                    |                    |   | 5925-6425     | 2.06                                       | 2.90                                       | 5.50 max       | 0.84                  |
|  |                    |                    |   | 6425-6525     | 1.27                                       | 2.11                                       | 5.50 max       | 0.84                  |
|  |                    |                    |   | 6525-6875     | 0.84                                       | 1.69                                       | 5.50 max       | 0.85                  |
|  |                    |                    |   | 6875-7125     | 0.60                                       | 1.47                                       | 5.50 max       | 0.87                  |

- 3D Antenna Peak Gain required being test in system basis.

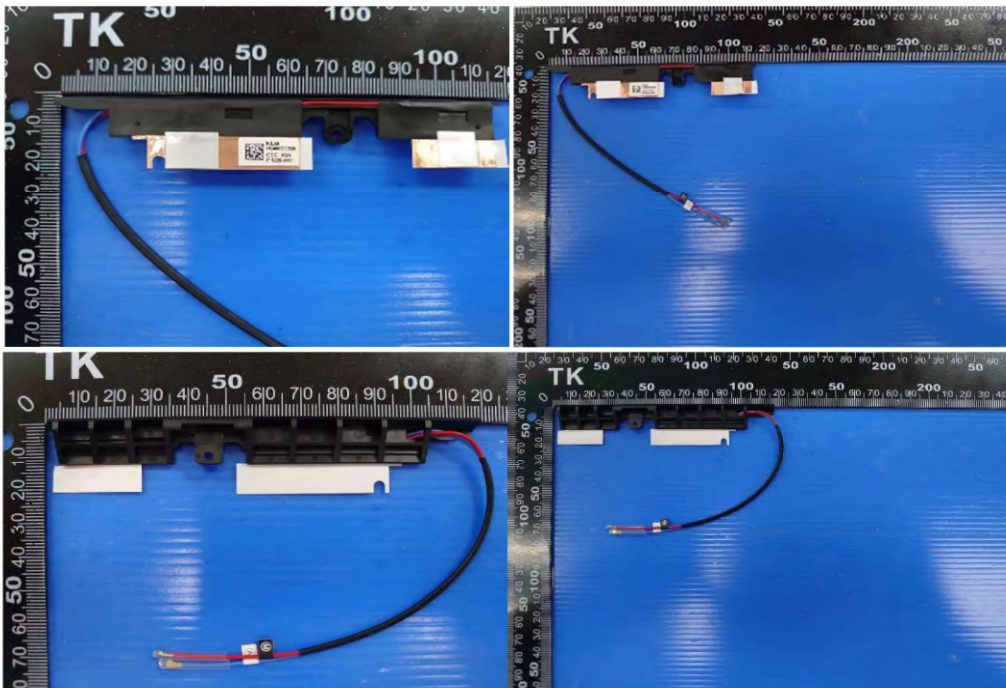
## Section 2. Dimensioned Photos and Drawings of Antennas

Include the dimensioned photo and drawing of Main antenna here.

Main Antenna Drawing:



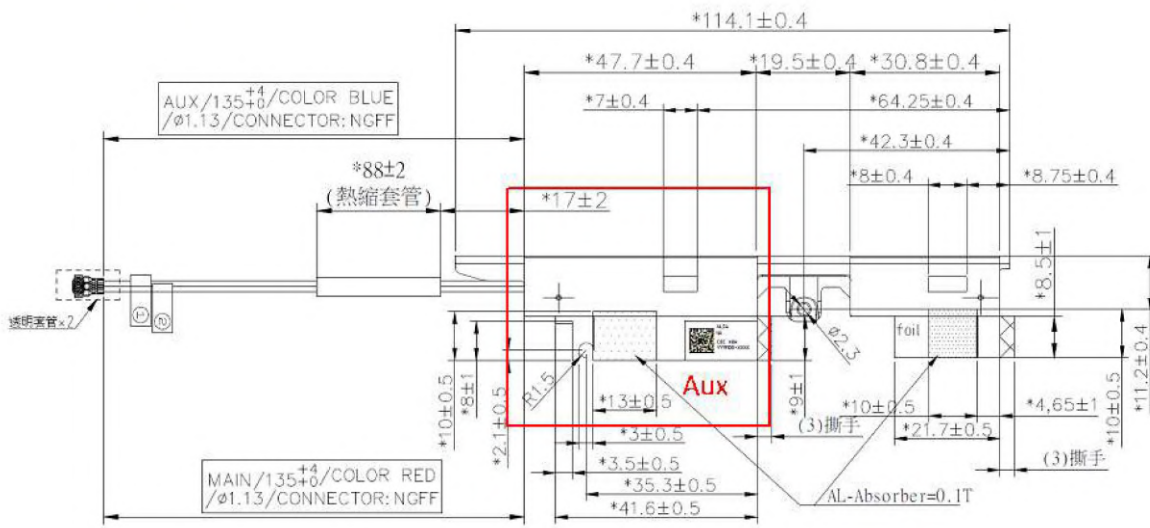
Main Antenna Photo (Front/Back):



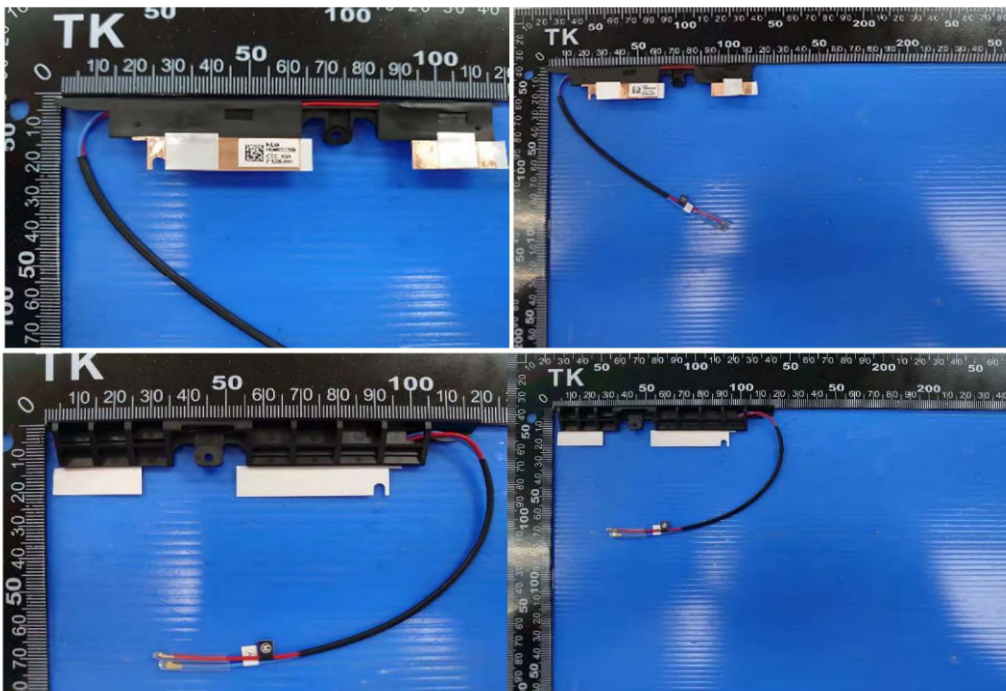
Note: antenna photo should include L type ruler

Include the dimensioned photo and drawing of Aux antenna here.

Aux Antenna Drawing:



Aux Antenna Photo (Front/Back):



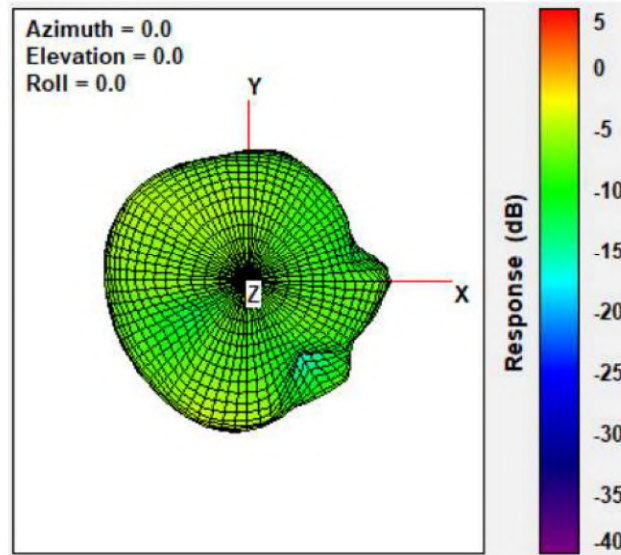
Note: antenna photo should include L type ruler

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

### Main Antenna

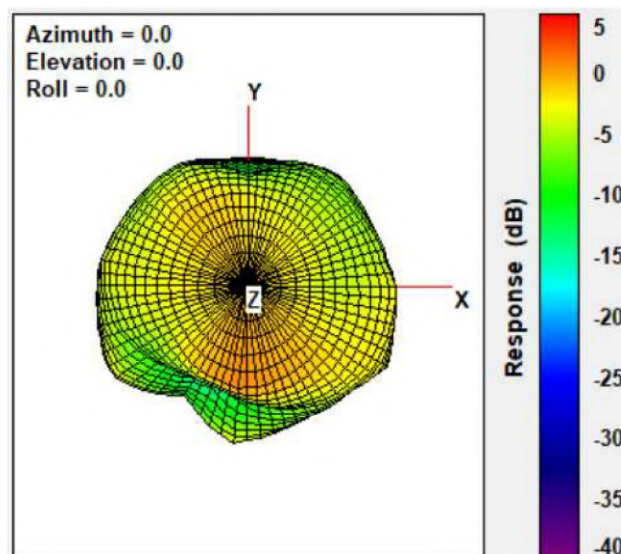
#### Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 2.04                          |



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

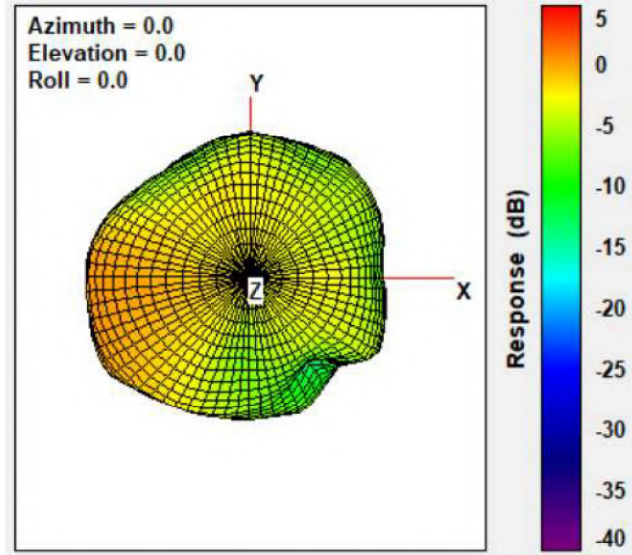
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 1.84                          |





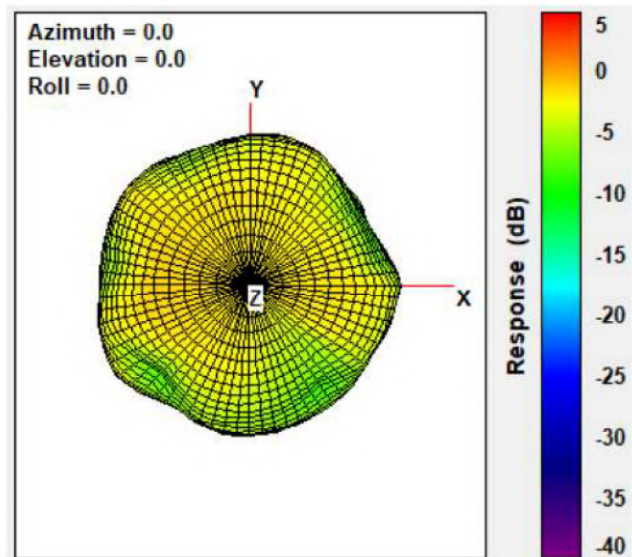
### Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 1.53                          |



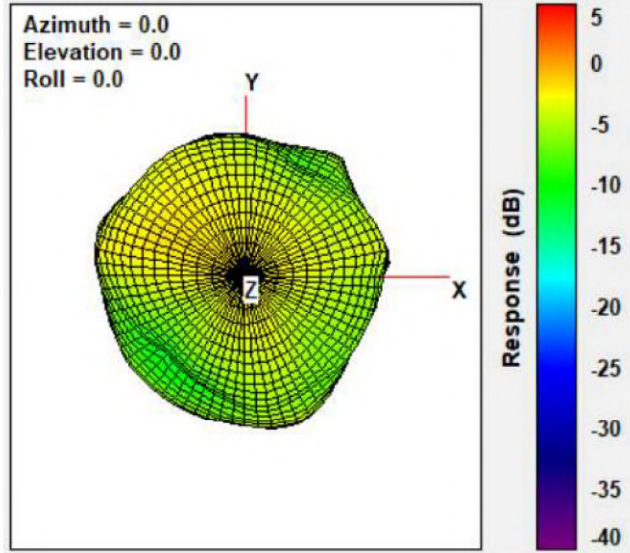
### Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 0.69                          |



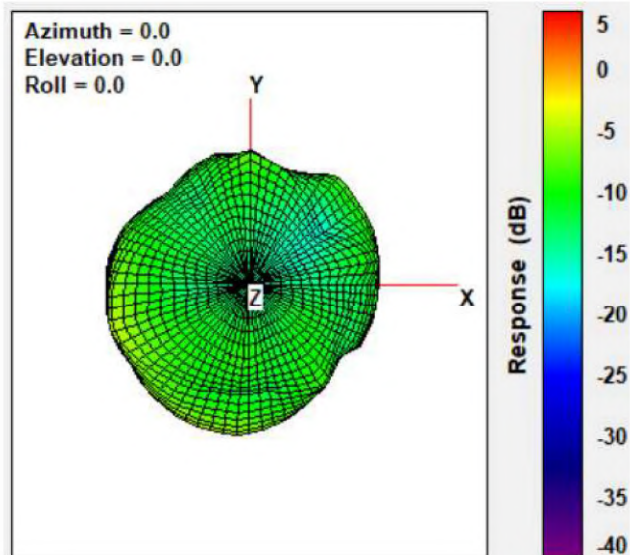
### Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 0.50                          |



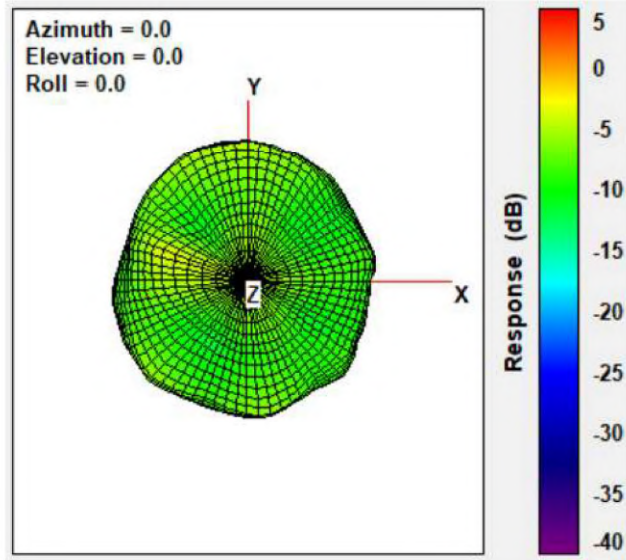
### Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 0.73                          |



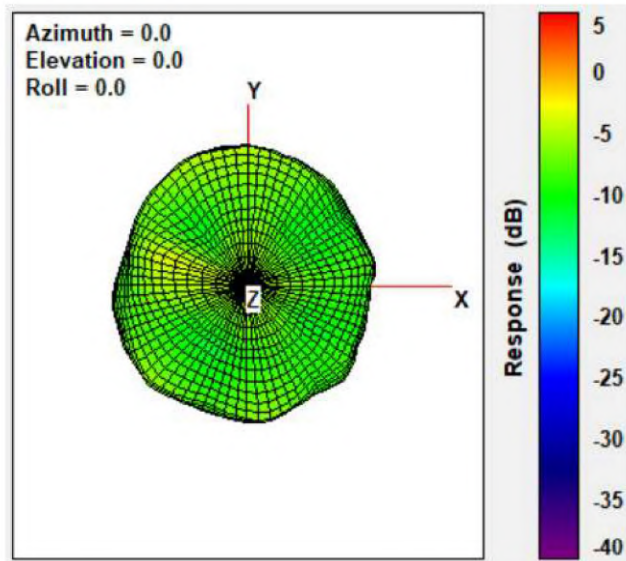
### Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | -0.08                         |



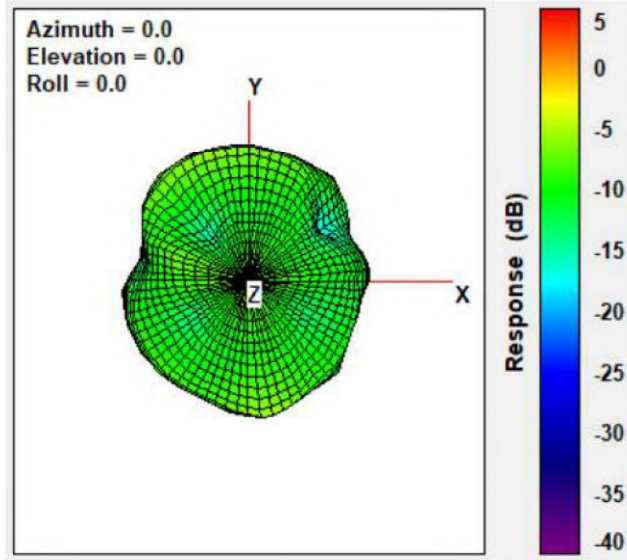
### Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | -0.49                         |



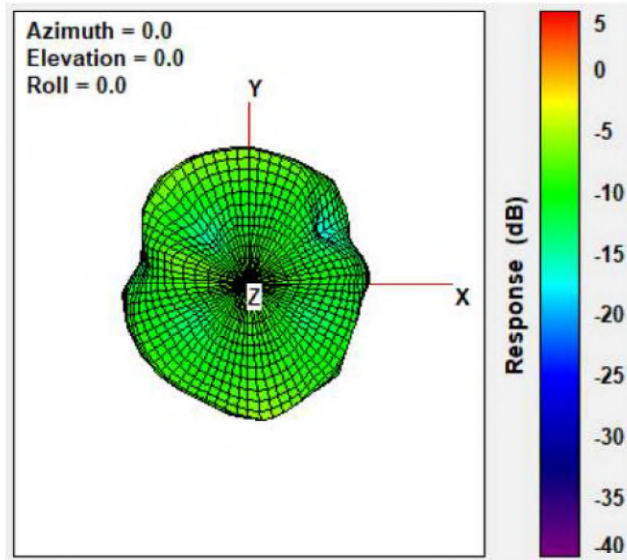
### Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | -1.58                         |



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

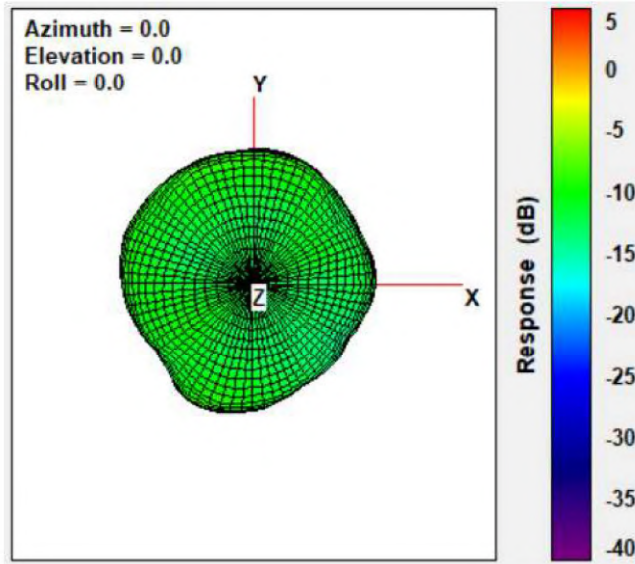
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | -1.63                         |



## Auxiliary Antenna

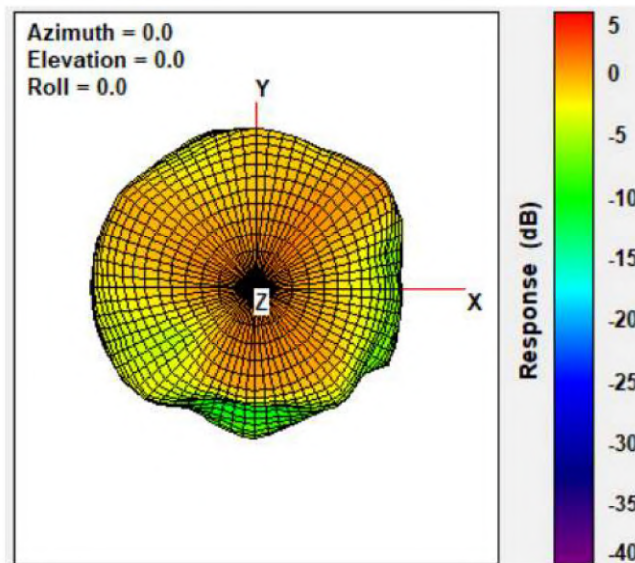
### Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 1.64                          |



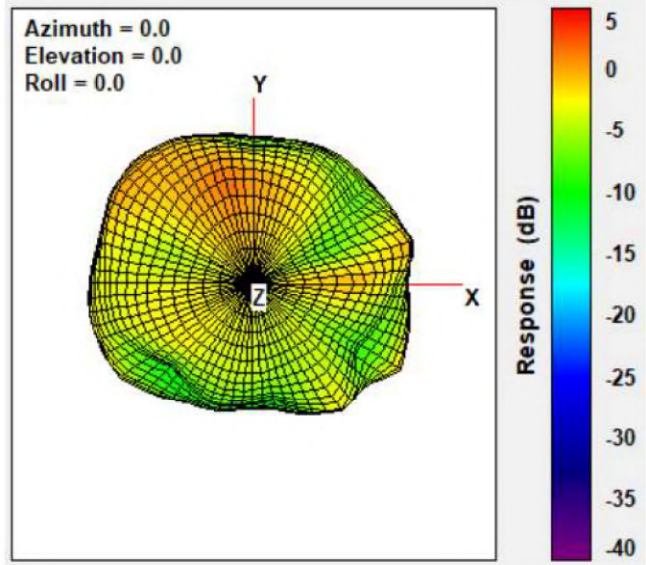
### Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 1.02                          |



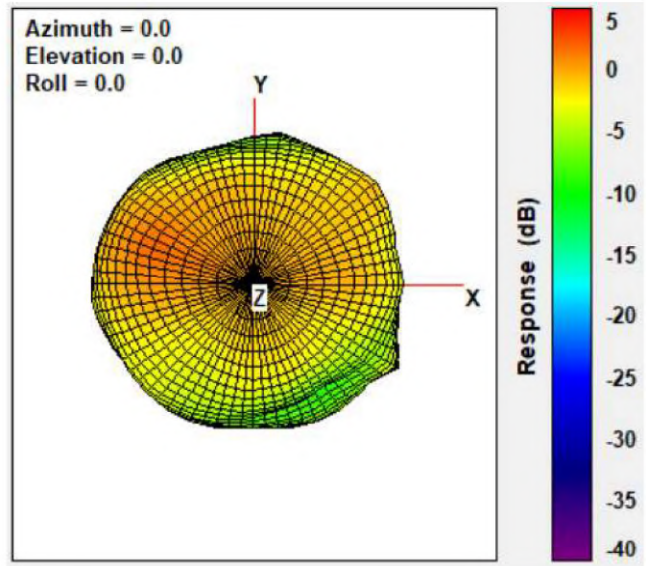
### Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 0.78                          |



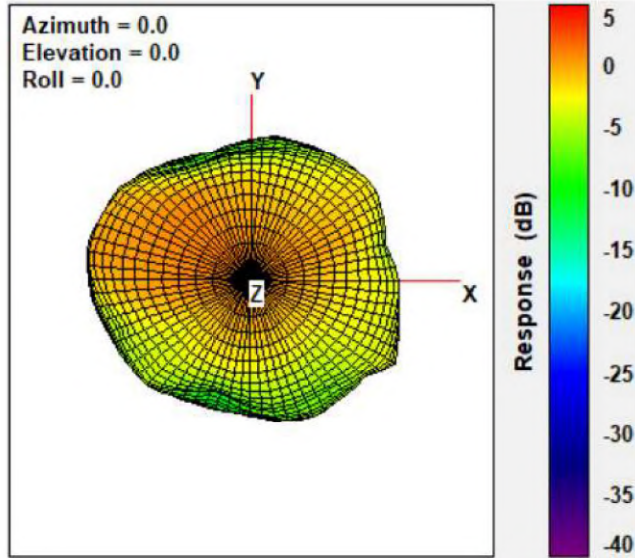
### Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 1.73                          |



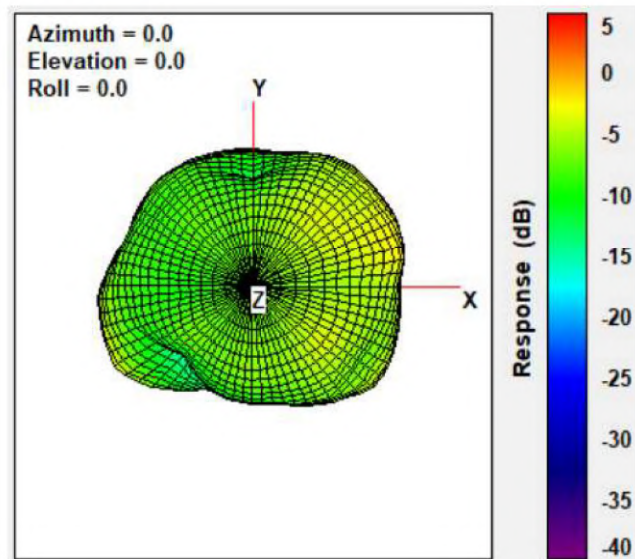
### Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 1.62                          |



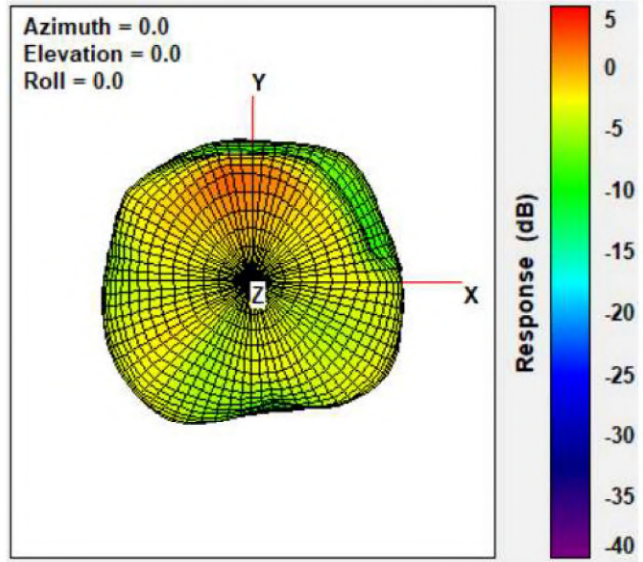
### Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 0.92                          |



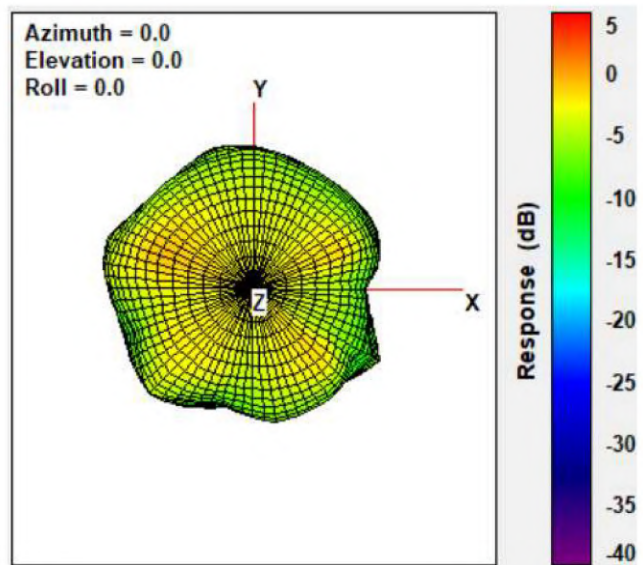
### Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 2.06                          |



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

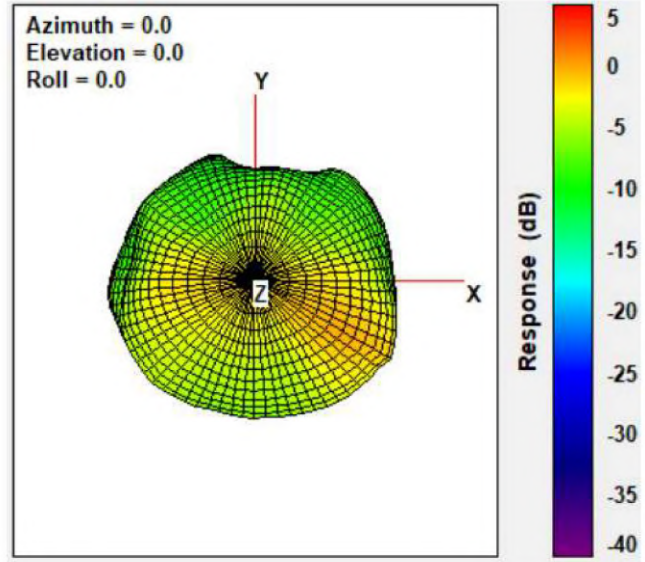
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 1.27                          |





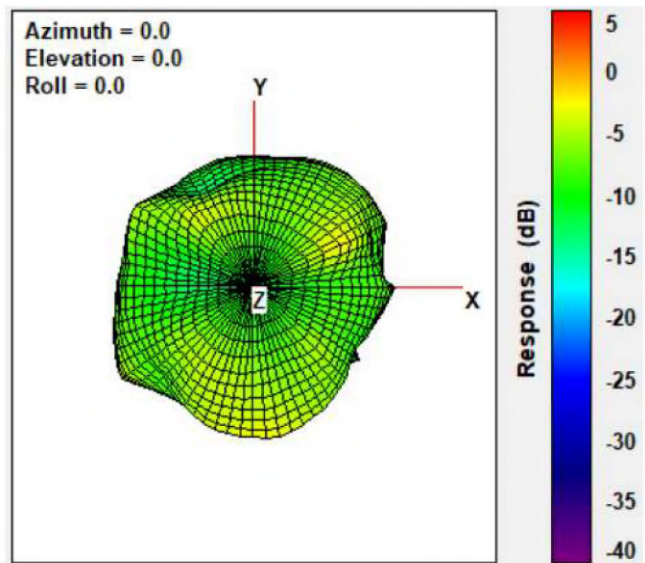
### Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 0.84                          |



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

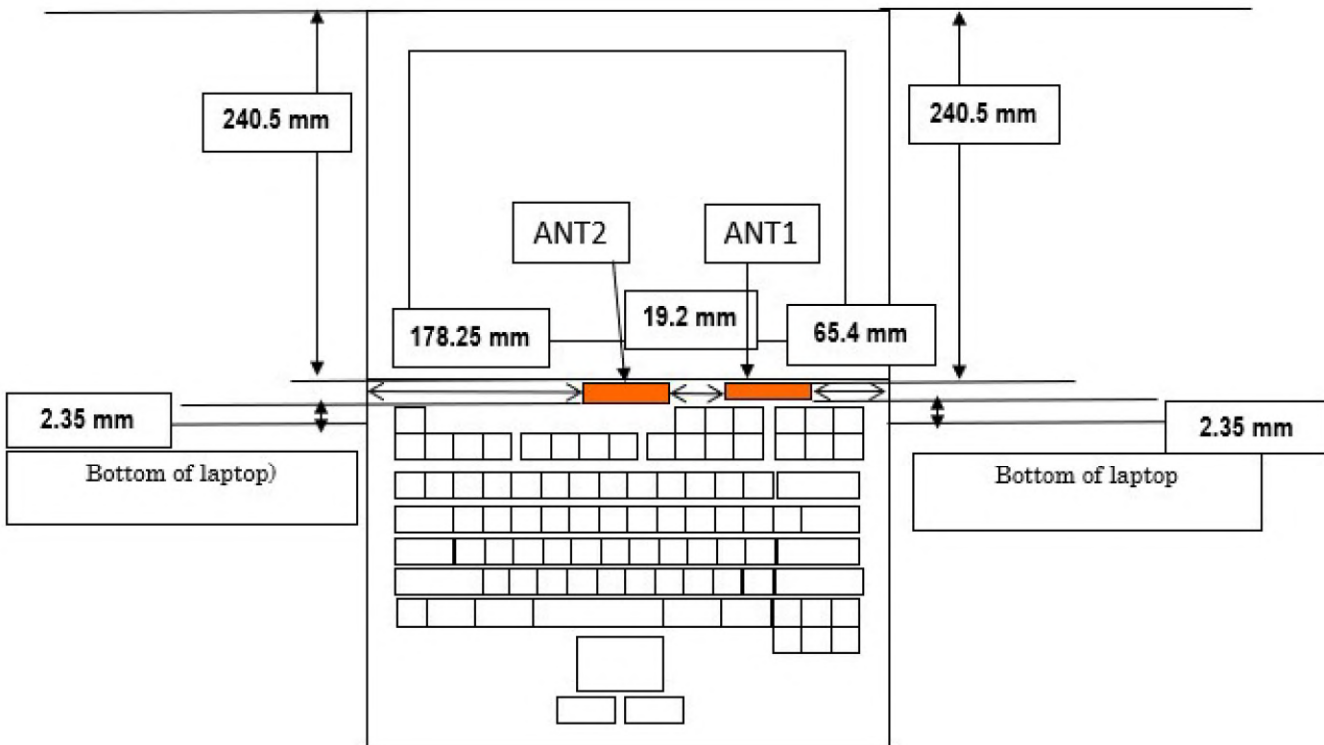
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 0.60                          |



## Section 4. Antenna Host Platform Location Information

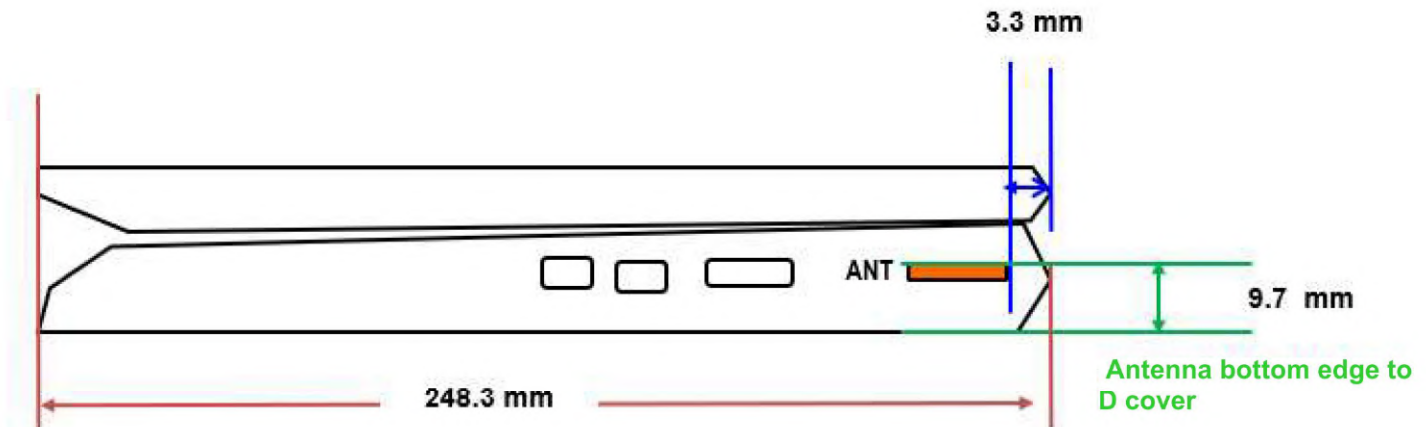
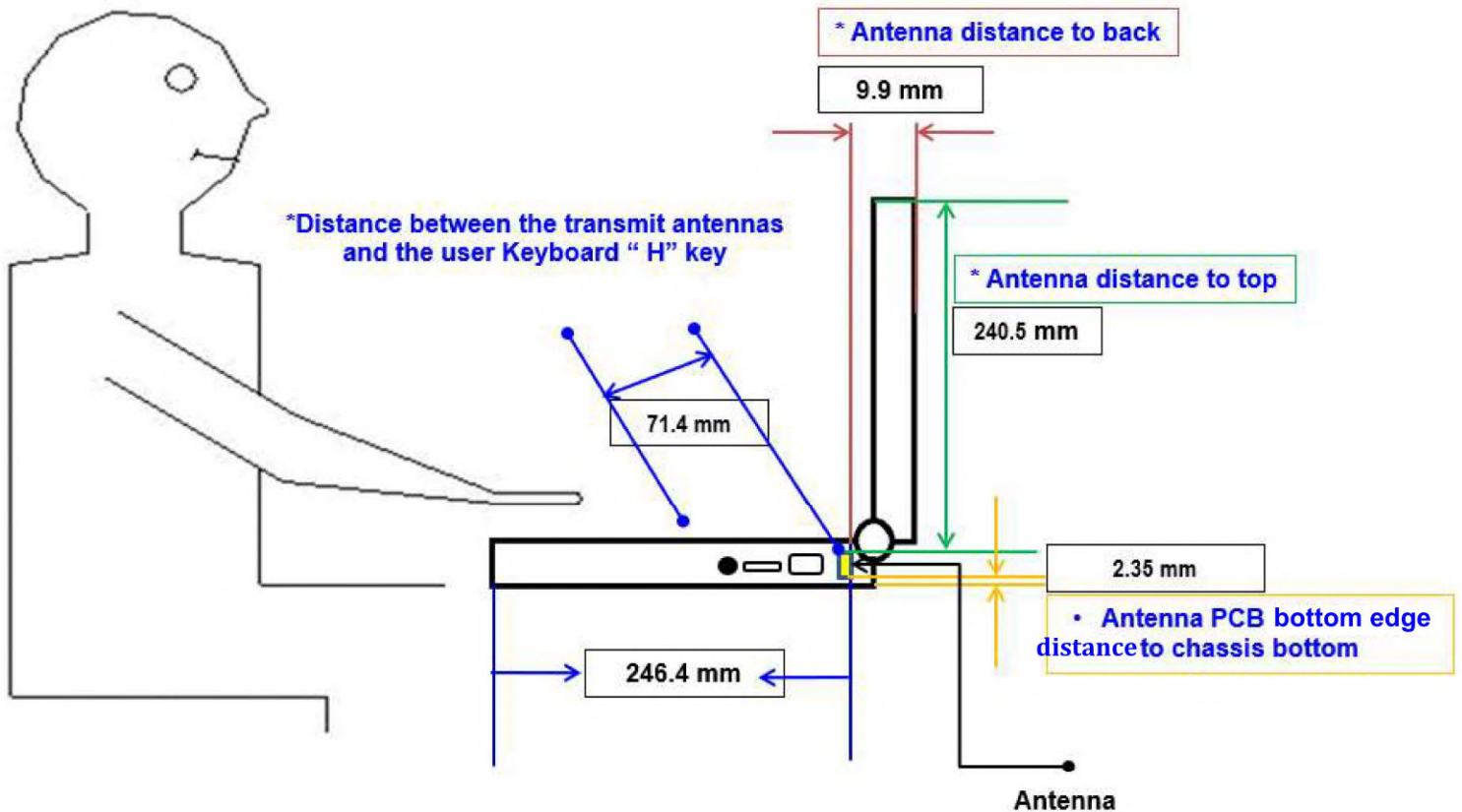
Include a **dimensioned photo(s) or dimensioned drawing(s)** of Main and Aux antenna placements (measurements are not required for receive-only antenna).

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.



## Section 5. Antenna dimensional information for SAR evaluation

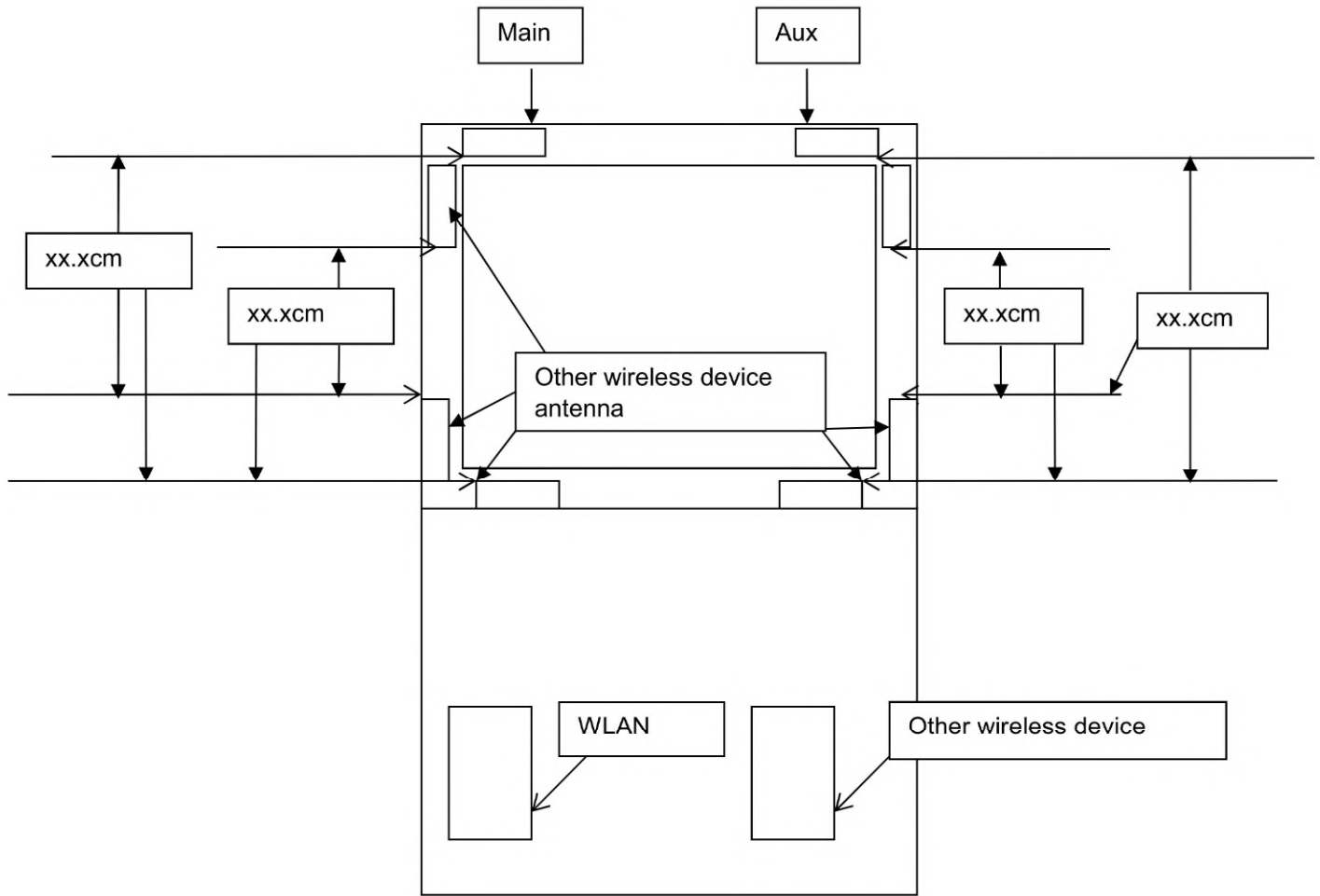
Include a **dimensioned photo(s) or dimensioned drawing(s)** showing the distance (mm) between the transmit antennas and the user. For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & secondary portrait, primary & secondary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



## Section 6. Diagram Example of Co-Location Antenna Separation

Include a **dimensioned photo or dimensioned drawing** showing the distance (mm) between **all WLAN transmit antennas** and other co-located radiator transmit antenna such as Bluetooth, WWAN,..

(Note: Due to the evolving rules regarding co-location, each platform will need to be reviewed on a case by case basis)



## Revision History

| Revision | Description  | Date               |
|----------|--|--------------------|
| 10.3     | Page2-5<br>Add Applicable test method, Test & System Description and Setup photo   | July 24, 2022      |
| 10.4     | Cover page<br>Add Intel 5.9GHz reference antenna gain<br>Cover page/Section1/Section3<br>Add 5.9GHz antenna gain information | September 15, 2022 |