

# Regulatory WLAN Antenna Information (Template)

English Language Required for Qualcomm Regulatory Review / Approval

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

| Platform information                                                                                                                                                           |                                          |                                       |                                                         |                                                                             |                                       |                                       |                                       |                                       |                                       |                                        |                                          |                   |
|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------|---------------------------------------|---------------------------------------------------------|-----------------------------------------------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|---------------------------------------|----------------------------------------|------------------------------------------|-------------------|
| Brand                                                                                                                                                                          | ODM                                      | ****End product model name            | Qualcomm platform<br><small>(ex: Yes, No or NA)</small> | Platform type<br><small>(ex: regular NB, convertible PC, AIO...etc)</small> | *SAR minimum separation (mm)          |                                       |                                       |                                       |                                       |                                        |                                          |                   |
| ASUS                                                                                                                                                                           | NO                                       | UX3407Q<br>UX3407R                    | Yes                                                     | Regular NB                                                                  | 8.38                                  |                                       |                                       |                                       |                                       |                                        |                                          |                   |
| *****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)             |                                       |                                       |                                       |                                        |                                          |                   |
| LUXSHARE-ICT                                                                                                                                                                   |                                          | PIFA                                  | 14008-06220000<br>LA9RF585-NB-H                         |                                                                             |                                       | 14008-06220100<br>LA9RF586-NB-H       |                                       |                                       |                                       |                                        |                                          |                   |
| Peak gain w/ cable loss (dBi)*                                                                                                                                                 |                                          |                                       |                                                         |                                                                             |                                       |                                       |                                       |                                       |                                       |                                        |                                          |                   |
|                                                                                                                                                                                | 2.4GHz<br><small>2400-2483.5 MHz</small> | 5.2GHz<br><small>5150-5250MHz</small> | 5.3GHz<br><small>5250-5350MHz</small>                   | 5.5GHz<br><small>5470-5725MHz</small>                                       | 5.8GHz<br><small>5725-5850MHz</small> | 5.9GHz<br><small>5850-5895MHz</small> | 6.2GHz<br><small>5925-6425MHz</small> | 6.5GHz<br><small>6425-6525MHz</small> | 6.7GHz<br><small>6525-6875MHz</small> | 6.9 GHz<br><small>6875-7125MHz</small> |                                          |                   |
| Main                                                                                                                                                                           | 2.72                                     | 2.74                                  | 2.77                                                    | 4.31                                                                        | 3.92                                  | 4.18                                  | 3.77                                  | 1.23                                  | 3.21                                  | 3.78                                   |                                          |                   |
| Aux                                                                                                                                                                            | 2.75                                     | 2.76                                  | 2.81                                                    | 4.34                                                                        | 3.95                                  | 4.39                                  | 4.52                                  | 4.14                                  | 4.1                                   | 3.83                                   |                                          |                   |
| Qualcomm Reference Gain/Type/ Separation distance                                                                                                                              |                                          |                                       |                                                         |                                                                             |                                       |                                       |                                       |                                       |                                       |                                        |                                          |                   |
| Antenna Type                                                                                                                                                                   | Antenna Peak gain (In dBi)*              |                                       |                                                         |                                                                             |                                       |                                       |                                       |                                       |                                       |                                        | Distance to the end user (mm)            |                   |
|                                                                                                                                                                                | 2.4GHz<br><small>2400-2483.5 MHz</small> | 5.2GHz<br><small>5150-5250MHz</small> | 5.3GHz<br><small>5250-5350MHz</small>                   | 5.5GHz<br><small>5470-5725MHz</small>                                       | 5.8GHz<br><small>5725-5850MHz</small> | 5.9GHz<br><small>5850-5895MHz</small> | 6.2GHz<br><small>5925-6425MHz</small> | 6.5GHz<br><small>6425-6525MHz</small> | 6.7GHz<br><small>6525-6875MHz</small> | 6.9GHz<br><small>6875-7125MHz</small>  | Generic: refer to modular FCC SAR report |                   |
|                                                                                                                                                                                | PIFA                                     | 3.53                                  | 3.06                                                    | 3.07                                                                        | 4.81                                  | 4.2                                   | 5.09                                  | 5.14                                  | 5.09                                  | 5.16                                   | 5.12                                     | Mid-power: ≥ 8 mm |
|                                                                                                                                                                                | Dipole                                   | 3.22                                  | 3.35                                                    | 3.42                                                                        | 4.77                                  | 4.72                                  | 4.71                                  | 4.75                                  | 4.29                                  | 4.81                                   | 4.74                                     | Low power: ≥ 5 mm |
| 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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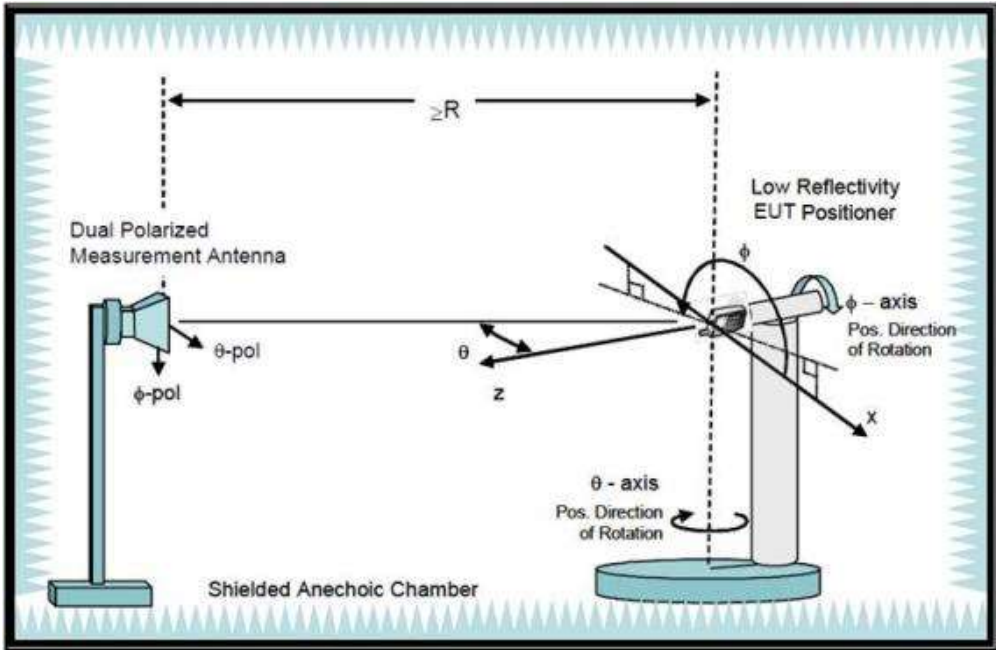
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1. Applicable test methods

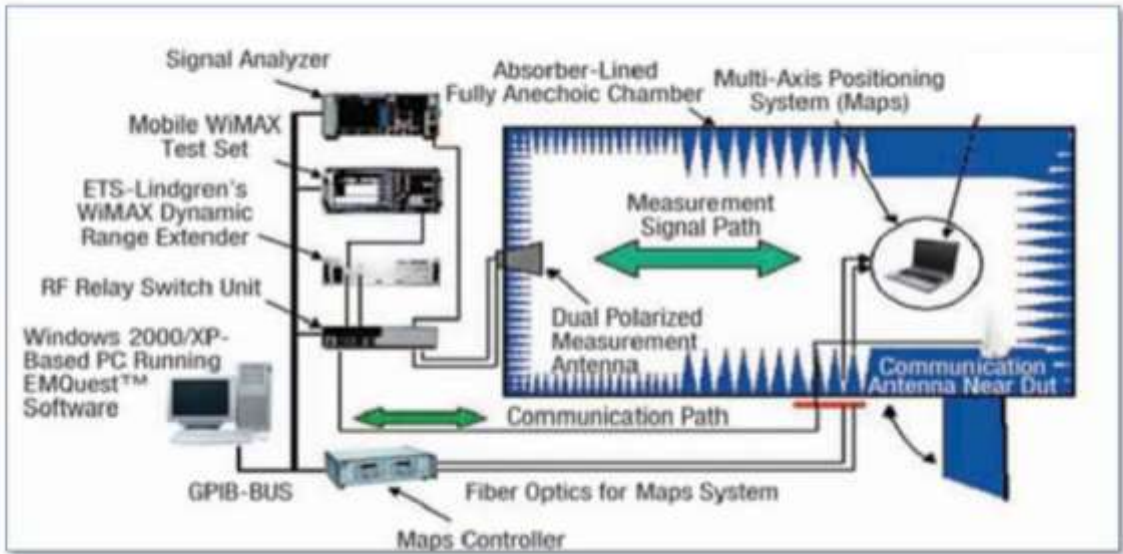


2. Test & System Description

a. Test setup

Typical Setup for Atenlab OTA-600:

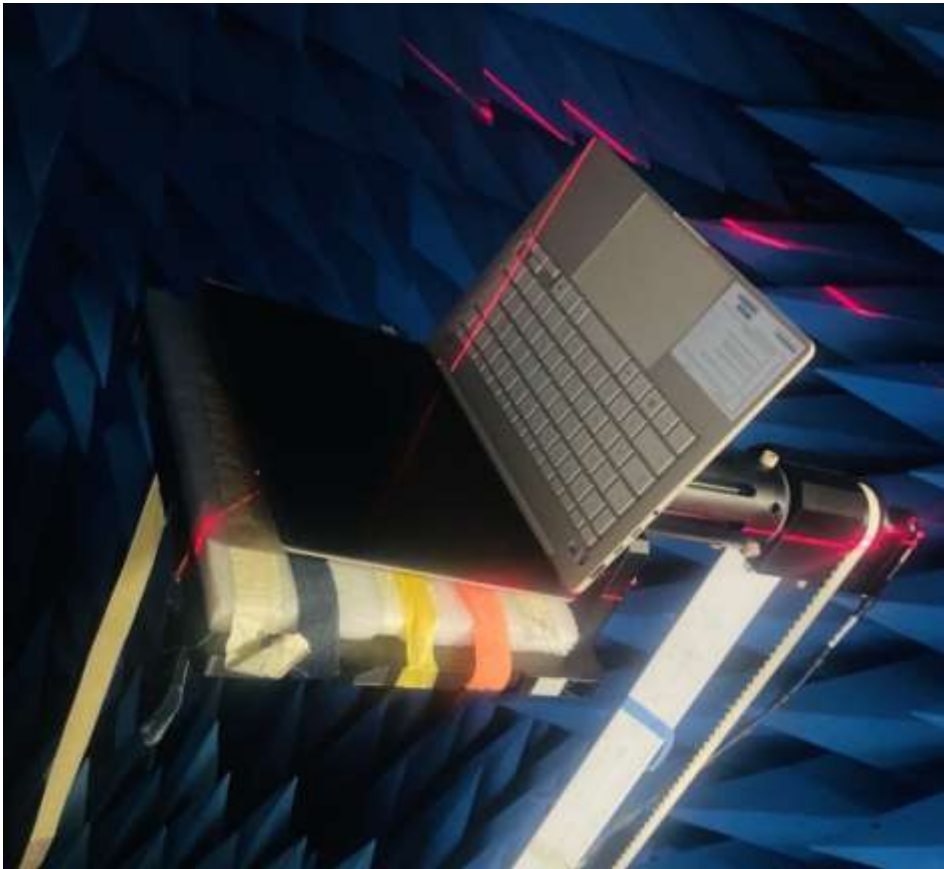
ETS 8500



b. Equipment list

| Device                            | Type/Model            | Manufacturer         | Serial#             | Calibration Date | Calibration Due Date |
|-----------------------------------|-----------------------|----------------------|---------------------|------------------|----------------------|
| Anechoic Chamber                  | OTA-600               | Atenlab              | -                   | 2024/5/7         | 2026/5/7             |
| Turn Table                        | -                     | Atenlab              | -                   | N/A              | N/A                  |
| Switch and Positioning System     | -                     | Atenlab              | -                   | N/A              | N/A                  |
| Measurement Software              | -                     | Atenlab              | -                   | N/A              | N/A                  |
| Boresight Antenna Mast            | -                     | Atenlab              | -                   | N/A              | N/A                  |
| Spectrum Analyzer                 | N9020A                | Agilent Technologies | X16-96096           | 2023/7/25        | 2025/7/25            |
| Horn antenna                      | 3164-08               | ETS-Lindgren         | 00143257            | 2024/4/3         | 2026/4/3             |
| Horn Antenna + Amplifier + HPF6.4 | 115195                | ETS-Lindgren         | 00117614            | 2023/8/18        | 2025/8/18            |
| Cable 2.5m – 30MHz to 18GHz       | 0500990992500KE       | Radial               | 19.23.395           | 2024/1/10        | 2026/1/10            |
| Cable 1.2m – 18 to 40GHz          | UFA147A-0-0480-200200 | Micro-coax           | MFR 64639223720-003 | 2024/1/10        | 2026/1/10            |
| Cable 1m – 1GHz to 18GHz          | UFA147A               | Utilitex             | -                   | 2024/1/10        | 2026/1/10            |
| Cable 2m – 26.5MHz to 18GHz       | 794-9191-200A         | Atem                 | E00327              | 2024/1/10        | 2026/1/10            |
| Cable 1m – 30MHz to 18GHz         | UFB311A-0-0590-50U50U | Micro-coax           | MFR 64639223230-001 | 2024/1/10        | 2026/1/10            |
| Cable 7m – DC - 18GHz             | 0501051057000GX       | Radial               | 19.35.850           | 2024/1/10        | 2026/1/10            |
| Cable 7m – 18 to 40GHz            | R286304009            | Radial               | -                   | 2024/1/10        | 2026/1/10            |
| Cable 1.5m – DC – 18GHz           | CBL-1.5M-SMSM+        | Mini-Circuits        | 202879              | 2024/1/10        | 2026/1/10            |
| Temp and Humidity Logger          | GM-108A               | -                    | -                   | 2023/5/2         | 2025/5/2             |

3. Setup photo



# Antenna Information

## Section 1. Antenna Assembly Specifications

| 1A                                              | 1B           | 1C           | 1D                                                                |                | 1E                              | 1F                             | 1G       | 1H              |
|-------------------------------------------------|--------------|--------------|-------------------------------------------------------------------|----------------|---------------------------------|--------------------------------|----------|-----------------|
| Antenna Part Number                             | Manufacturer | Antenna Type | Cable Assembly Part Number and Information                        | Freq Range MHz | * Peak Gain W/ Cable loss (dBi) | Peak Gain w/o Cable Loss (dBi) | Max VSWR | Cable Loss (dB) |
| 14008-06220000<br>LA9RF585-NB-H<br>Main Antenna | LUXSHARE-ICT | PIFA         | 50-ohm Coaxial<br>length: 170.5mm<br>diameter: 1.13mm<br>Low loss | 2400-2483.5    | 2.72                            | 3.19                           | 2.00     | 0.47            |
|                                                 |              |              |                                                                   | 5150-5250      | 2.74                            | 3.44                           | 3.00     | 0.70            |
|                                                 |              |              |                                                                   | 5250-5350      | 2.77                            | 3.47                           | 3.00     | 0.70            |
|                                                 |              |              |                                                                   | 5470-5725      | 4.31                            | 5.04                           | 3.00     | 0.73            |
|                                                 |              |              |                                                                   | 5725-5850      | 3.92                            | 4.66                           | 3.00     | 0.74            |
|                                                 |              |              |                                                                   | 5850-5895      | 4.18                            | 4.92                           | 3.00     | 0.74            |
|                                                 |              |              |                                                                   | 5925-6425      | 3.77                            | 4.54                           | 3.00     | 0.77            |
|                                                 |              |              |                                                                   | 6425-6525      | 1.23                            | 2.02                           | 3.00     | 0.79            |
|                                                 |              |              |                                                                   | 6525-6875      | 3.21                            | 4.02                           | 3.00     | 0.81            |
|                                                 |              |              |                                                                   | 6875-7125      | 3.78                            | 4.61                           | 3.00     | 0.83            |
| 14008-06220100<br>LA9RF586-NB-H<br>Aux Antenna  | LUXSHARE-ICT | PIFA         | 50-ohm Coaxial<br>length: 268mm<br>diameter: 1.13mm<br>Low loss   | 2400-2483.5    | 2.75                            | 3.49                           | 3.00     | 0.74            |
|                                                 |              |              |                                                                   | 5150-5250      | 2.76                            | 3.86                           | 3.00     | 1.10            |
|                                                 |              |              |                                                                   | 5250-5350      | 2.81                            | 3.92                           | 3.00     | 1.11            |
|                                                 |              |              |                                                                   | 5470-5725      | 4.34                            | 5.48                           | 3.00     | 1.14            |
|                                                 |              |              |                                                                   | 5725-5850      | 3.95                            | 5.11                           | 3.00     | 1.16            |
|                                                 |              |              |                                                                   | 5850-5895      | 4.39                            | 5.56                           | 3.00     | 1.17            |
|                                                 |              |              |                                                                   | 5925-6425      | 4.52                            | 5.72                           | 3.00     | 1.20            |
|                                                 |              |              |                                                                   | 6425-6525      | 4.14                            | 5.38                           | 3.00     | 1.24            |
|                                                 |              |              |                                                                   | 6525-6875      | 4.10                            | 5.37                           | 3.00     | 1.27            |
|                                                 |              |              |                                                                   | 6875-7125      | 3.83                            | 5.14                           | 3.00     | 1.31            |

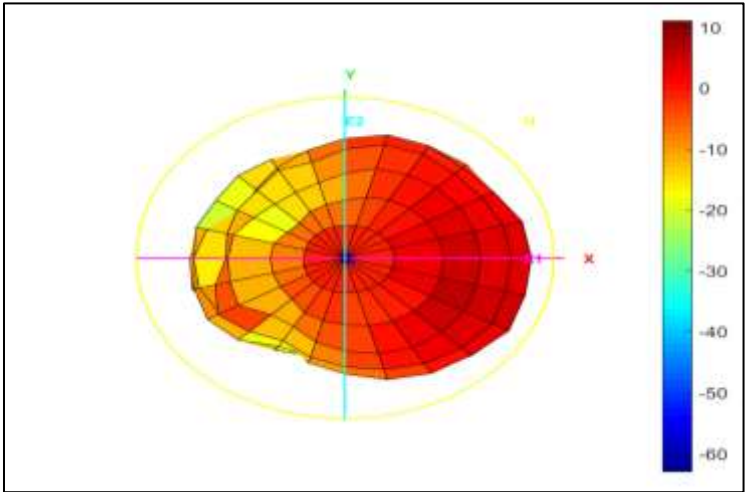
- 3D Antenna Peak Gain required being test in system basis.

Section 3. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

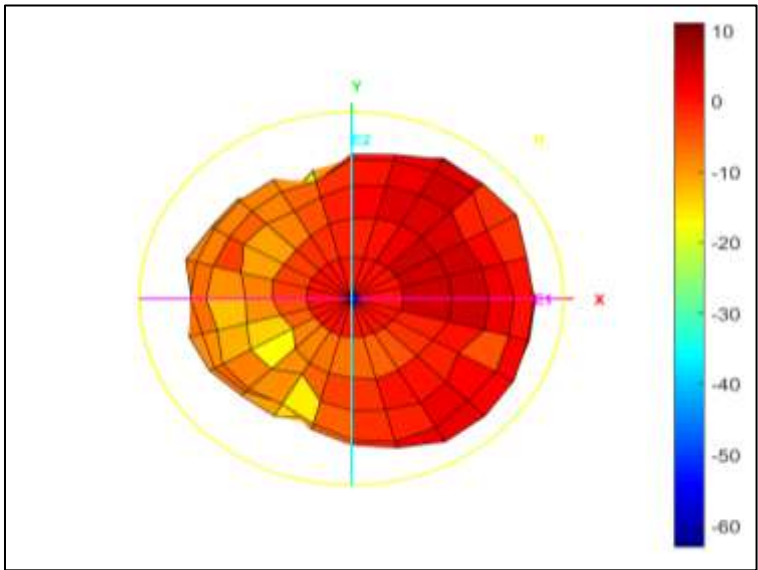
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

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



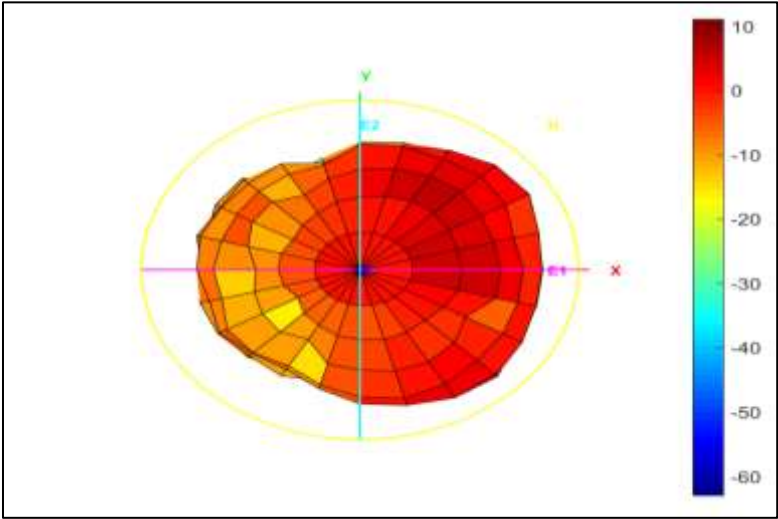
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 2.74                          |



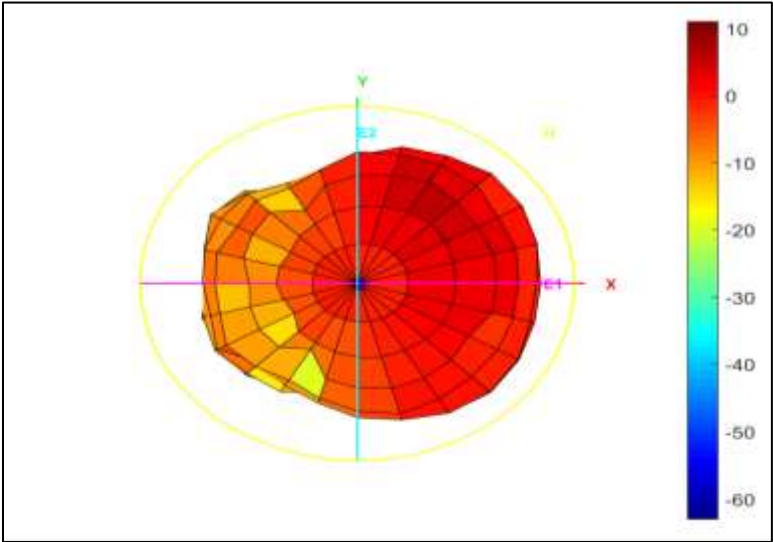
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.77                          |



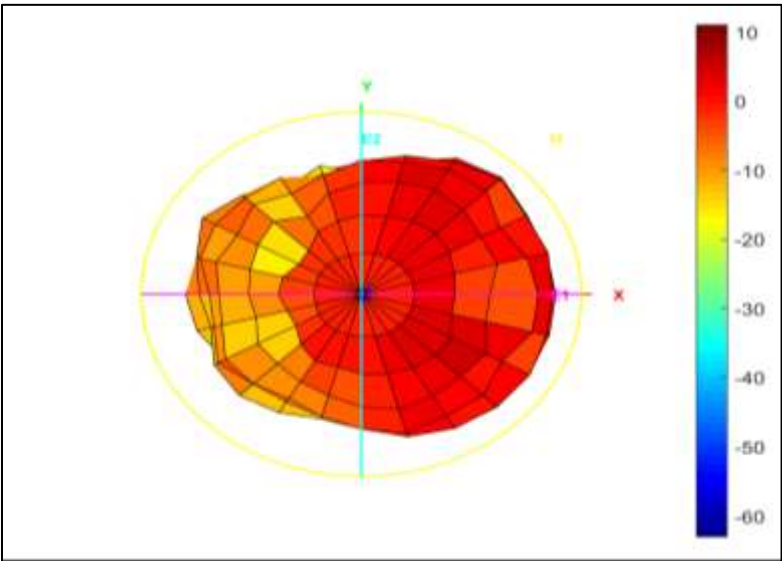
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 4.31                          |



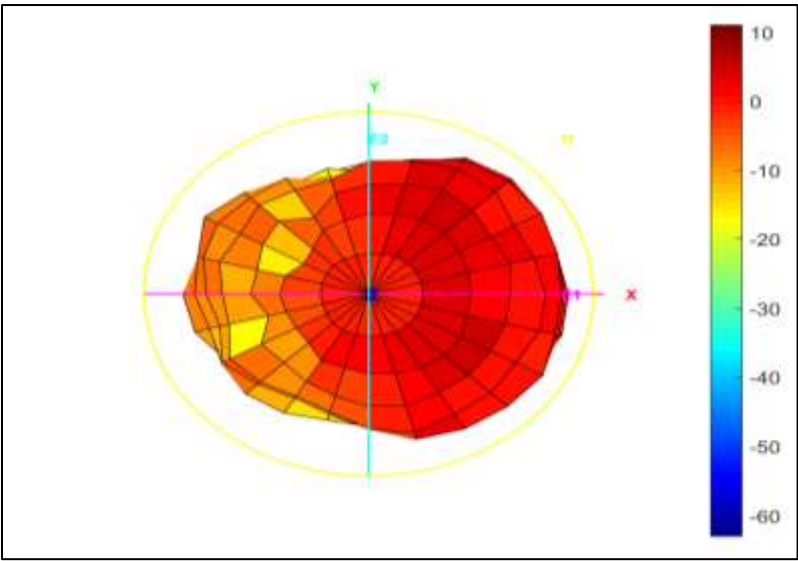
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 3.92                          |



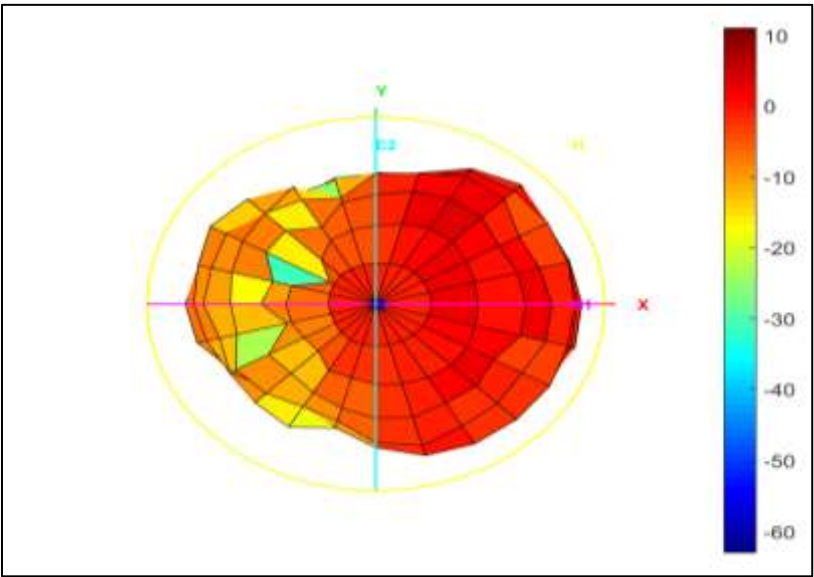
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 4.18                          |



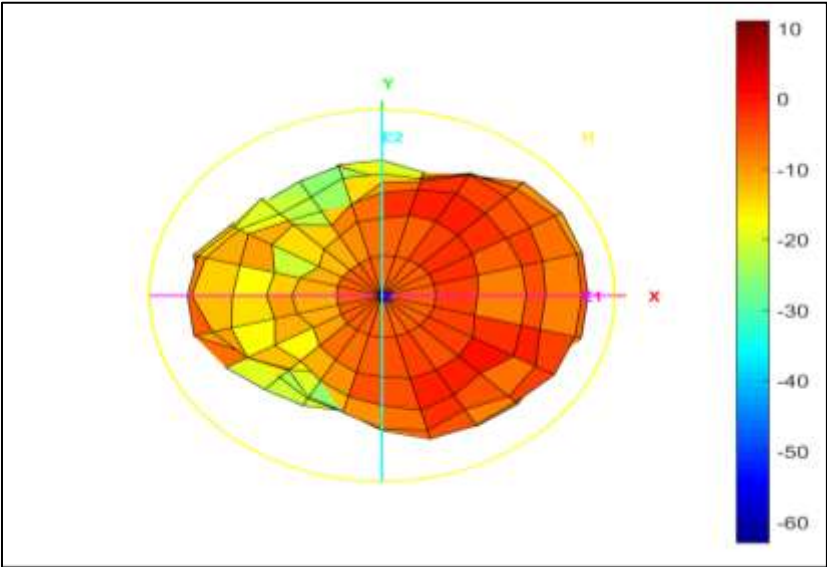
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 3.77                          |



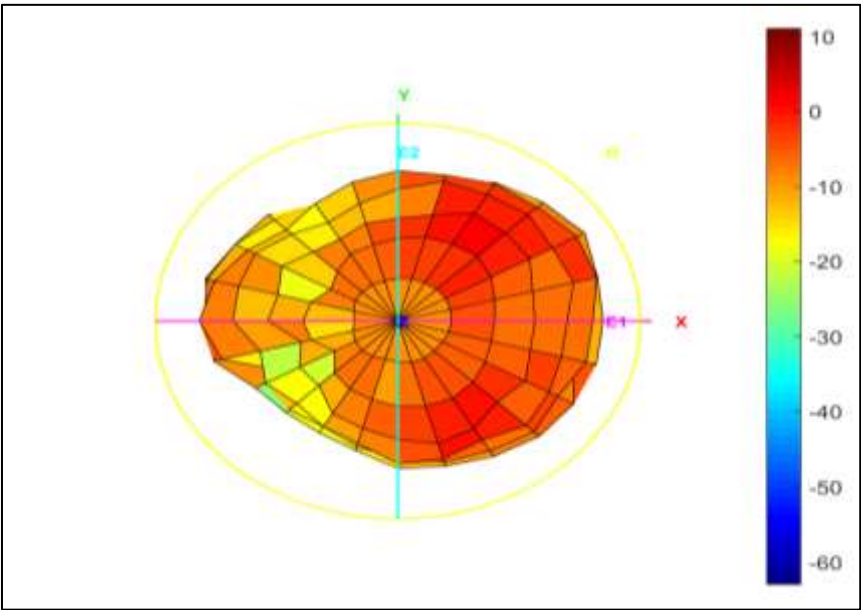
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 1.23                          |



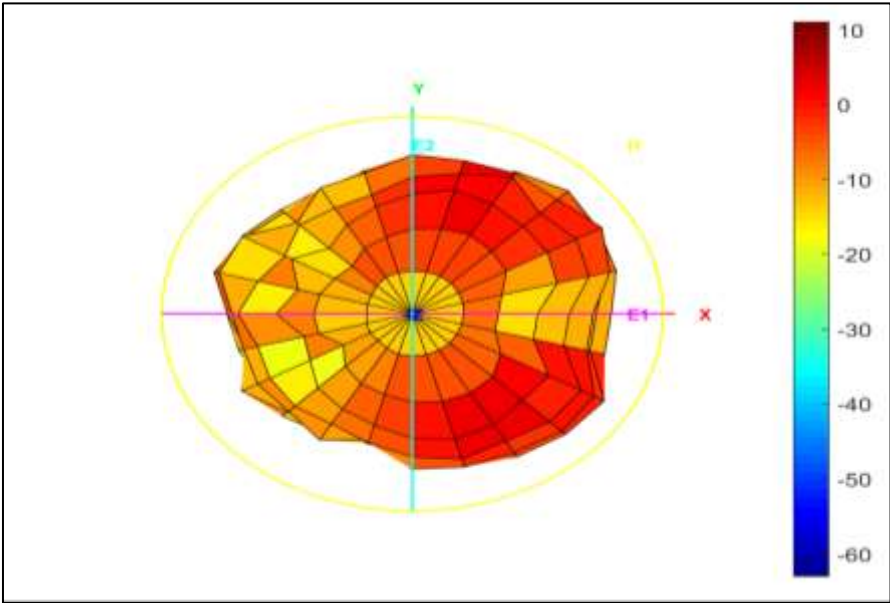
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 3.21                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

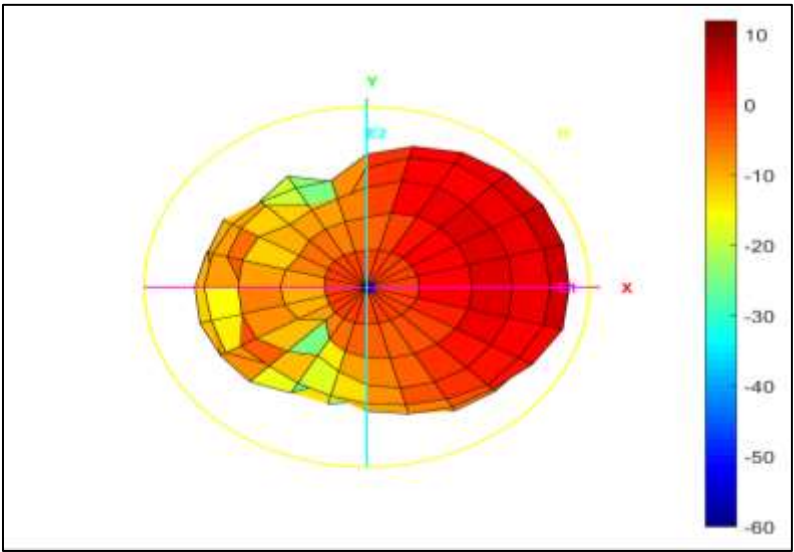
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 3.78                          |



Auxiliary Antenna

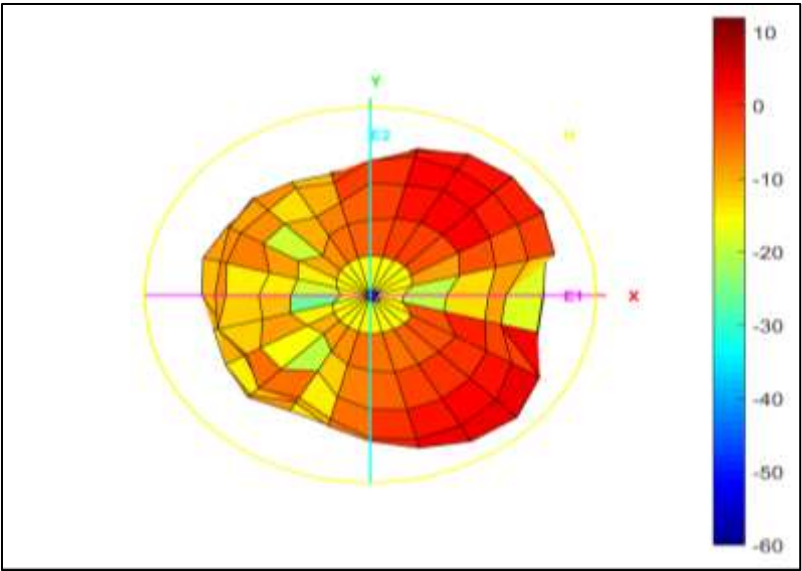
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 2400-2483.5        | 2.75                             |



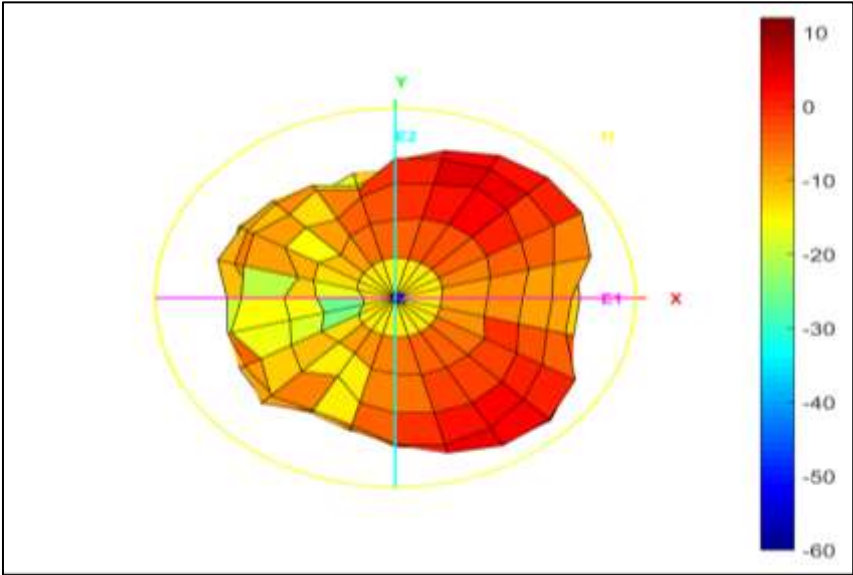
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 5150-5250          | 2.76                             |



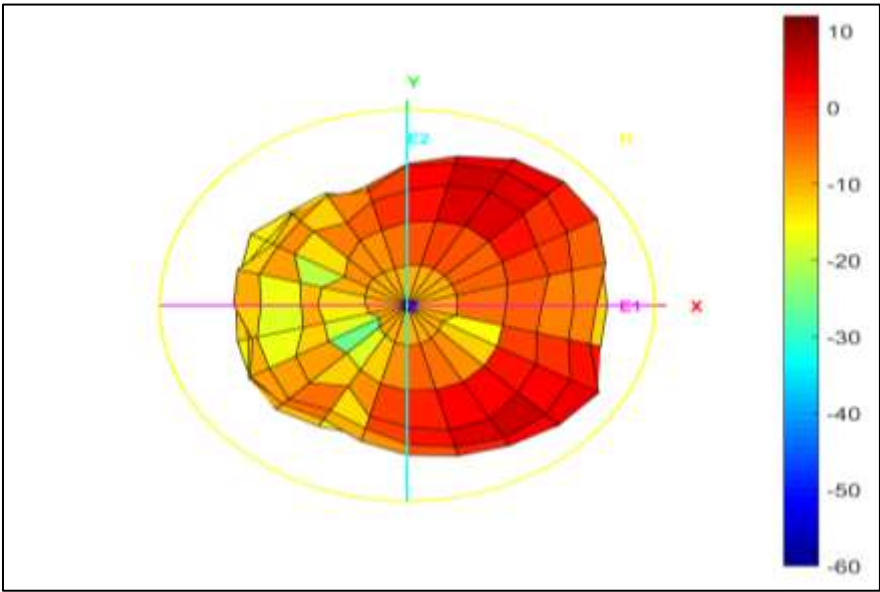
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 2.81                          |



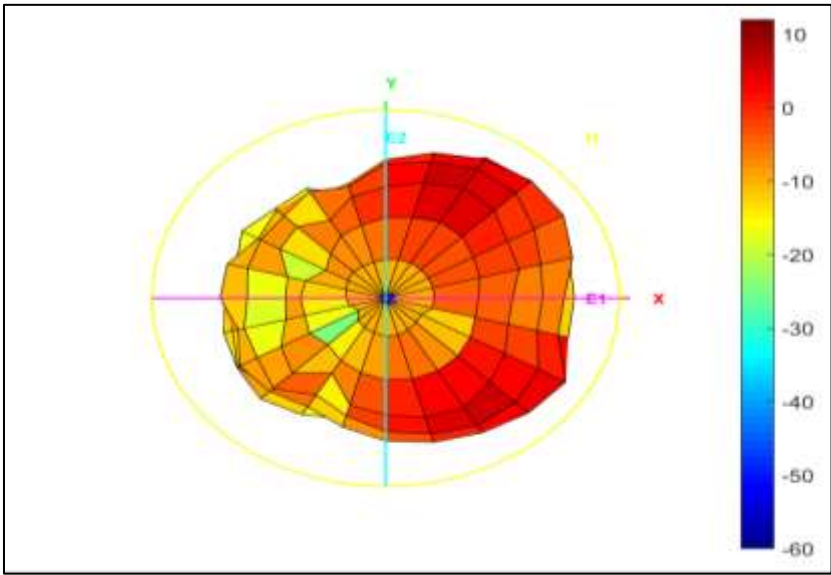
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 4.34                          |



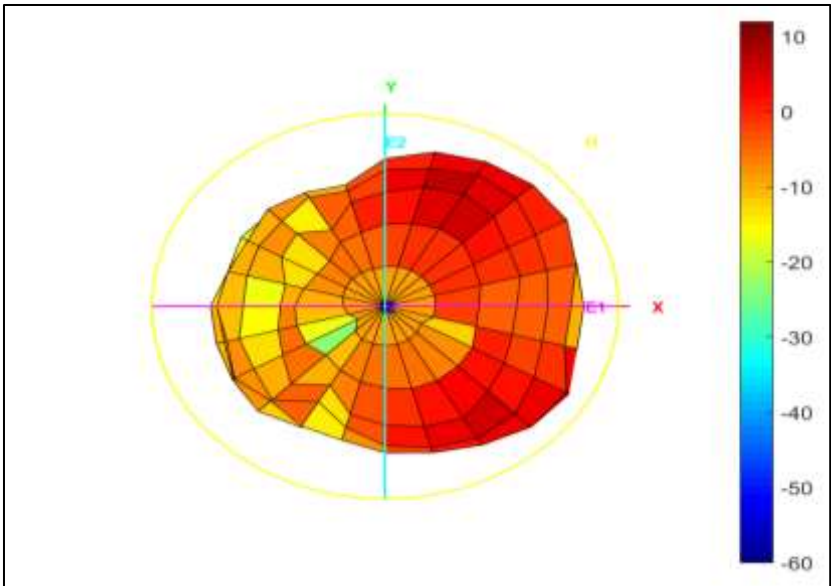
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 3.95                          |



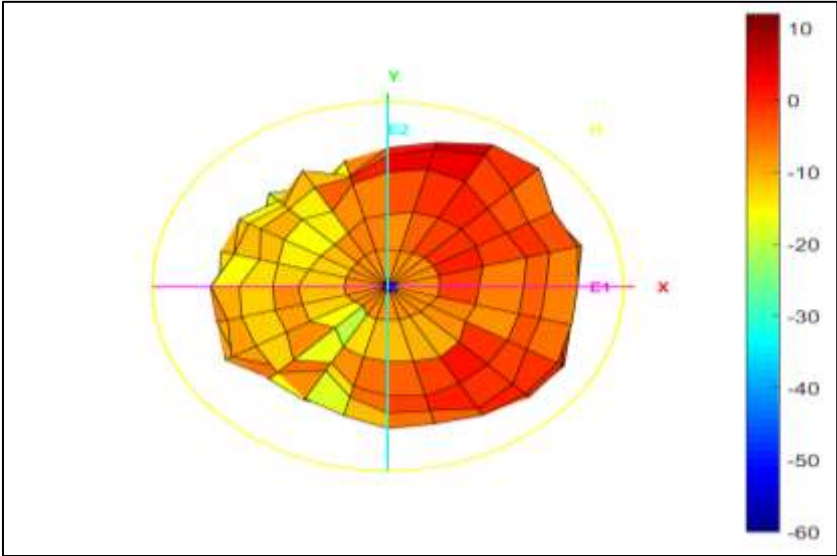
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 4.39                          |



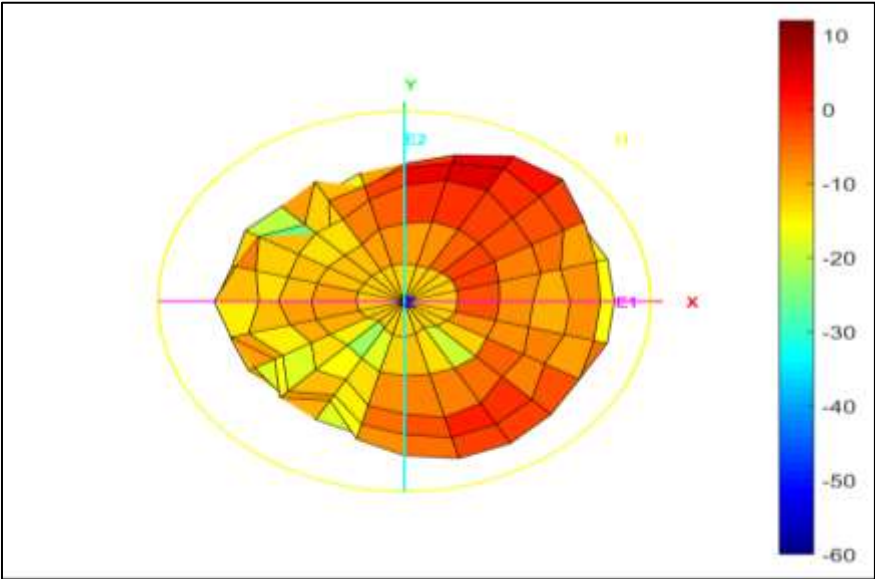
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 4.52                          |



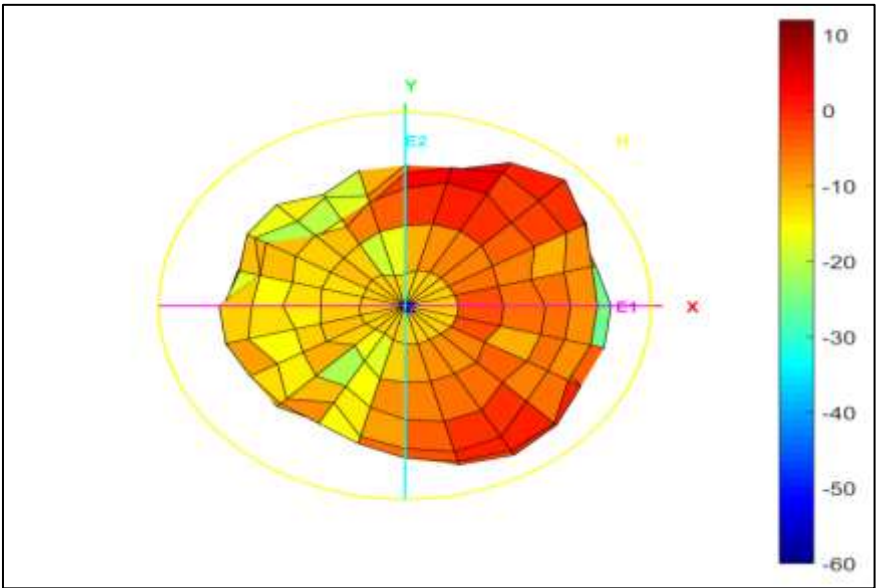
Max Antenna 3D Radiation Pattern 6425-6525 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 4.14                          |



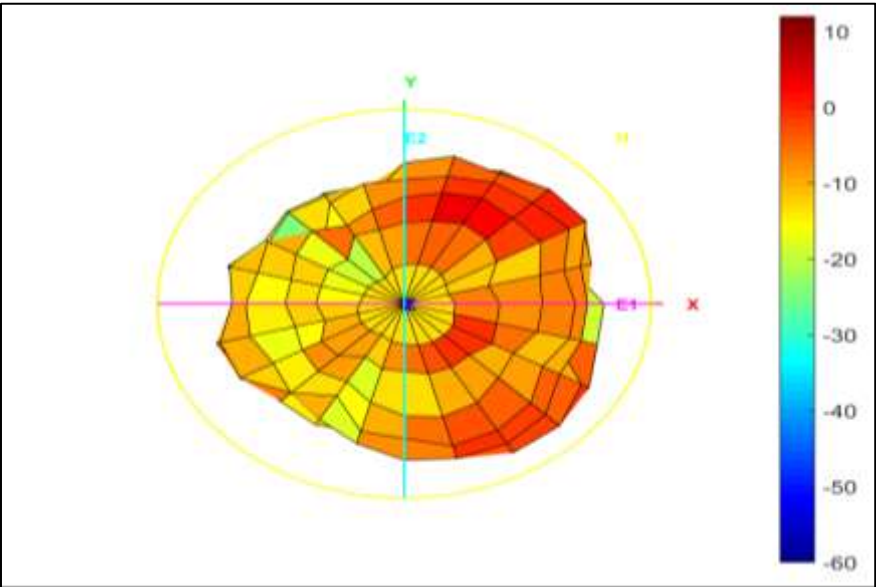
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 4.10                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

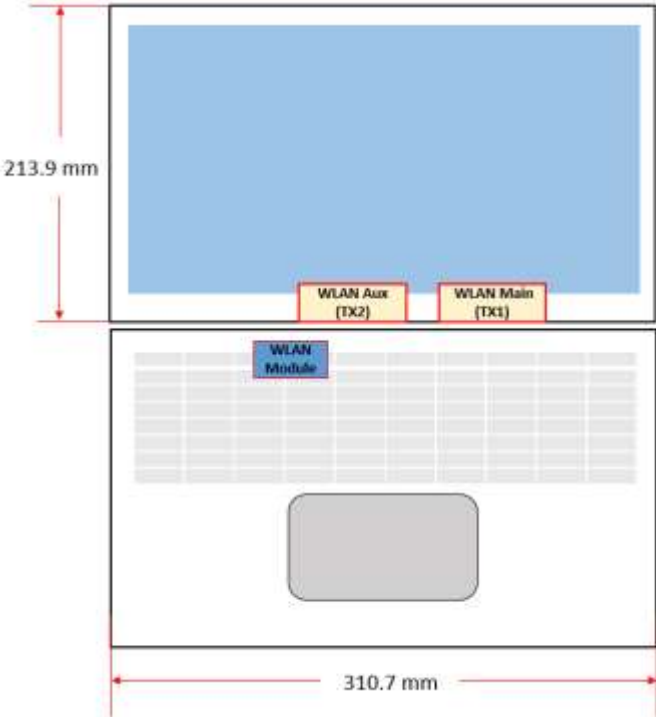
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 3.83                          |



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).

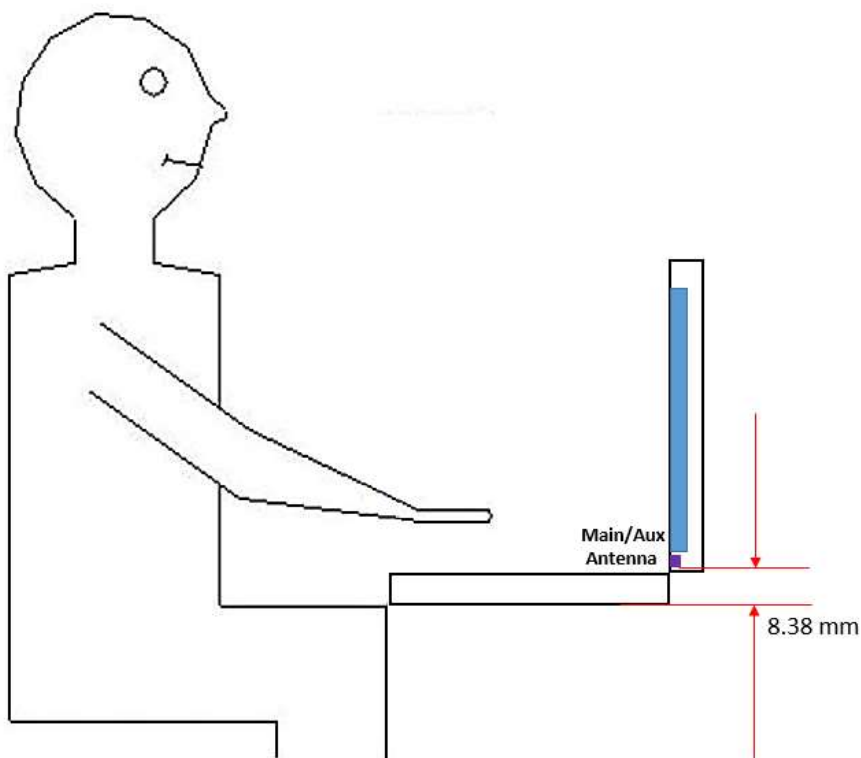
Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



| Antenna         | NB mode dimension to bottom (mm) | Material |
|-----------------|----------------------------------|----------|
| WLAN Main (Tx1) | 8.38                             | PCB      |
| WLAN Aux (Tx2)  | 8.38                             | PCB      |

## Section 5. Antenna dimensional information for SAR evaluation

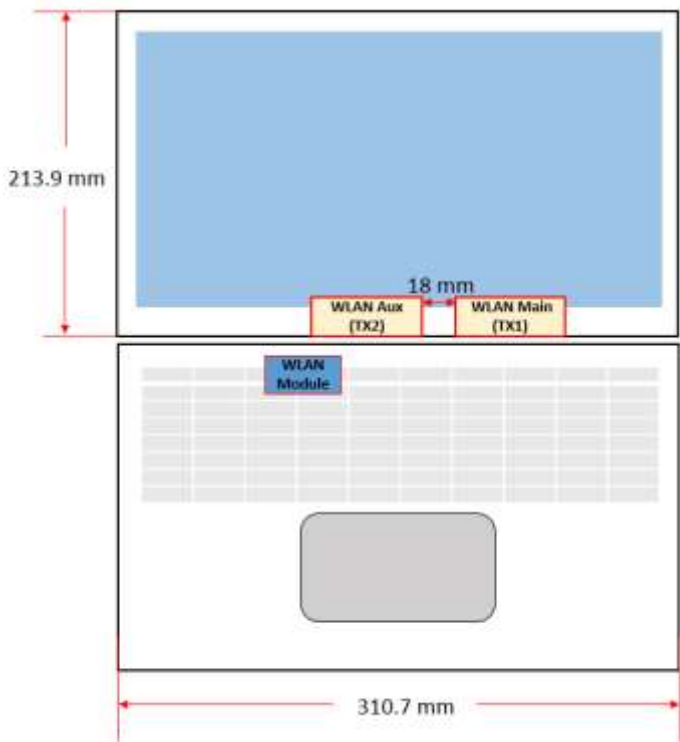
Include a **dimensioned photo(s) or dimensioned drawing(s)** showing the distance (mm) between the transmit antennas and the user. For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & secondary portrait, primary & secondary 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)



| Antenna         | WLAN Main (Tx1) | WLAN Aux (Tx2) |
|-----------------|-----------------|----------------|
| WLAN Main (Tx1) | NA              | 18.0 mm        |
| WLAN Aux (Tx2)  | 18.0 mm         | NA             |