

Regulatory WLAN Antenna Information

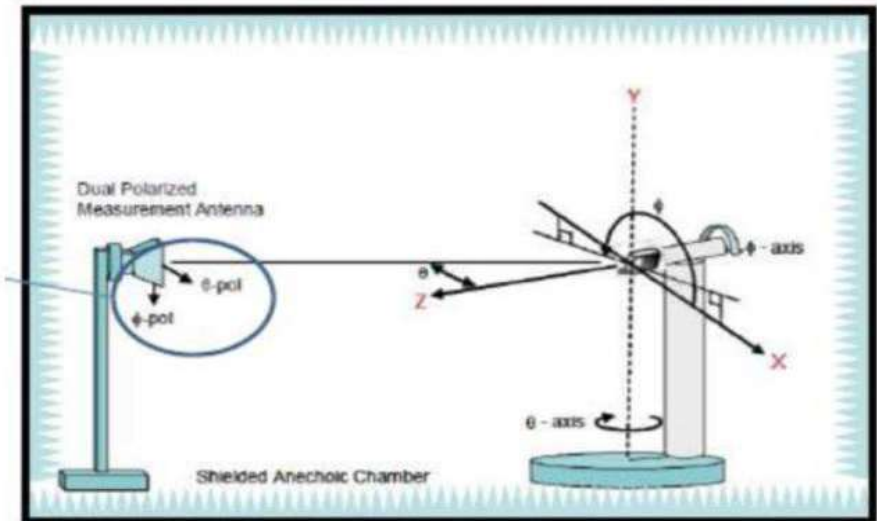
(English Language Required for Regulatory Review / Approval)

(OEM/ODM or antenna vendor is required to complete this document with platform antenna information.
Remove references and make this your own document)

| Platform information | | | | | | | | | | | | |
|--|----------------------------|----------------------------|------------------------|----------------------------|------------------------|--|---|---------------------------|------------------------|------------------------------|--|-------------------------------|
| Brand | ODM | ****End product model name | | | | Intel platform <small>(ex: Yes or No)</small> | Platform Type <small>(ex: regular NB, convertible PC, AIO...etc)</small> | | | *SAR minimum separation (mm) | | |
| ASUS | NO | NR2301L/X | | | | NO | Tablet | | | 4.88 | | |
| *****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(Main/Aux) | | Antenna Part number (Main) | | | | Antenna Part number (Aux) | | | | |
| AWAN | | PIFA | | AYP6Y-100377 | | | | AYP6Y-100378 | | | | |
| Peak gain w/ cable loss (dBi)* | | | | | | | | | | | | |
| | 2.4GHz 2400-2483.5MHz | 5.2GHz 5150-5250MHz | 5.3GHz 5250-5350MHz | 5.6GHz 5470-5725MHz | 5.8GHz 5725-5850MHz | 5.9GHz 5850-5895MHz | 6.2GHz 5925-6425MHz | 6.5GHz 6425-6525MHz | 6.7GHz 6525-6875MHz | 7GHz 6875-7125MHz | | |
| Main | 2.31 | 3.46 | 3.45 | 4.23 | 4.21 | 4.12 | 4.12 | 3.19 | 4.44 | 3.94 | | |
| Aux | 2.14 | 3.31 | 3.33 | 4.12 | 4.13 | 4.00 | 4.16 | 3.71 | 3.83 | 3.38 | | |
| | | | | | | | | | | | | |
| Reference Gain/Type/ Separation distance | | | | | | | | | | | | |
| Antenna Type | Antenna Peak gain (in dBi) | | | | | | | | | | | Distance to the end user(mm) |
| | 2.4GHz 2400-2483.5MHz | 5.2GHz 5150-5250MHz | 5.3GHz 5250-5350MHz | 5.6GHz 5470-5725MHz | 5.8GHz 5725-5850MHz | 5.9GHz 5850-5895MHz | 6.2GHz 5925-6425MHz | 6.5GHz 6425-6525MHz | 6.7GHz 6525-6875MHz | 7GHz 6875-7125MHz | | |
| Design | 3 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | 5 | Generic sku: refer to modular FCC SAR report Mid-power sku: ≥8 Low power sku: ≥5 | |
| PIFA | 3.24 | 3.64 | 3.73 | 4.77 | 4.97 | 4.72 | 4.83 | 4.3 | 5.37 | 5.37 | | 5.59 |
| Dipole | 2.89 | 2.92 | 3.19 | 4.41 | 4.22 | 4.22 | 4.83 | 4.3 | 4.49 | 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. | | | | | | | | | | | | |

1. Applicable test methods

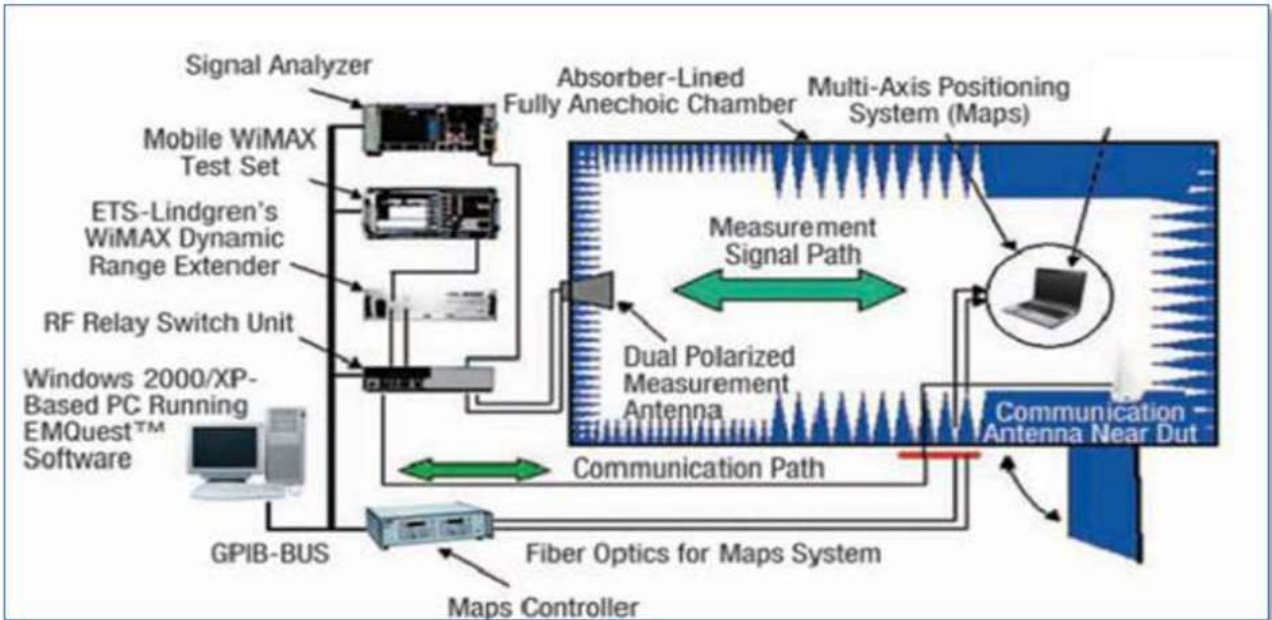
<insert test description here for test method>



2. Test & System Description

<insert test diagram here for test site utilized>

ETS 8500

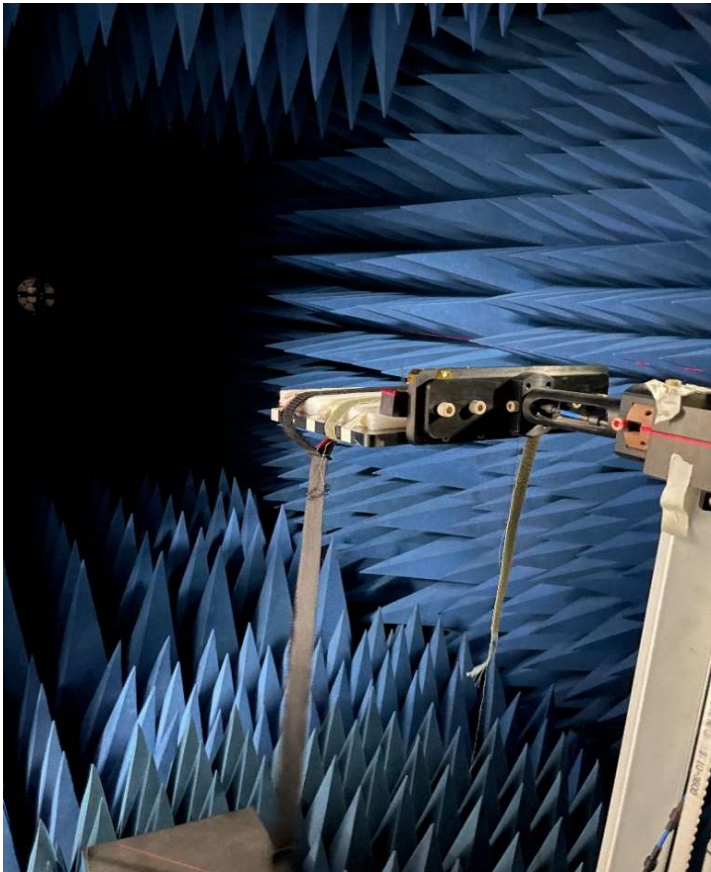


Equipment List

<insert test diagram here for test site utilized>

| Device | Type/Model | Serial# | Manufacturer | Cal. Date | Cal. Due Date |
|-----------------------------------|-----------------------|---------------------|----------------------|-----------|---------------|
| Anechoic Chamber | AMS-8500 | 1191 | ETS-Lindgren | 2022/3/9 | 2024/3/9 |
| Turn Table | 2090 | - | ETS-Lindgren | N/A | N/A |
| Switch & Positioning systems | 7001-002 | 116599 | ETS-Lindgren | N/A | N/A |
| Measurement SW | EMQuest v1.0.8 | 1352 | ETS-Lindgren | N/A | N/A |
| Boresight antenna mast | 2090 | - | ETS-Lindgren | N/A | N/A |
| Spectrum Analyzer | N9010A | X16-96096 | Agilent Technologies | 2021/7/25 | 2023/7/25 |
| Horn antenna | 3164-08 | 00143257 | ETS-Lindgren | 2022/4/3 | 2024/4/3 |
| Horn antenna + Amplifier + HPF6.4 | 115195 | 00117614 | ETS-Lindgren | 2021/8/18 | 2023/8/18 |
| Cable 2.5m - 30MHz to 18GHz | 0500990992500KE | 19.23.395 | Radial | 2022/1/10 | 2024/1/10 |
| Cable 1.2m - 18 to 40GHz | UFA147A-0-0460-200200 | MFR 64639223720-003 | Micro-caox | 2022/1/10 | 2024/1/10 |
| Cable 1m - 1GHz to 18GHz | UFA147A | - | Utiliflex | 2022/1/10 | 2024/1/10 |
| Cable 2m - 26.5MHz to 40GHz | 794-9191-200A | E00327 | Atem | 2022/1/10 | 2024/1/10 |
| Cable 1m - 30MHz to 18GHz | UFB311A-0-0590-50U50U | MFR 64639223230-001 | Micro-caox | 2022/1/10 | 2024/1/10 |
| Cable 7m - DC-18GHz | 0501051057000GX | 19.35.850 | Radial | 2022/1/10 | 2024/1/10 |
| Cable 7m - 18GHz to 40GHz | R286304009 | - | Radial | 2022/1/10 | 2024/1/10 |
| Cable 1.5m - DC-18GHz | CBL-1.5M-SMSM+ | 202879 | Mini-Circuits | 2022/1/10 | 2024/1/10 |
| Temp & Humidity Logger | GM-108A | - | | 2021/5/2 | 2023/5/2 |

3. Setup Photo



Antenna Sample / Antenna Data

Requirements for worldwide regulatory approval

| Section | Description of Required OEM / ODM Antenna Information | US / IC | EU | Japan | Taiwan | S Korea |
|---------|--|----------|----------|----------|-------------------|-------------------|
| 1A | Part Number for Antenna only | Required | Required | Required | Required | Required |
| 1B | Antenna Manufacturer Name | Required | Required | Required | Required | Required |
| 1C | Description of Antenna Type | Required | N/A | N/A | N/A | N/A |
| 1D | Part number of Antenna Assembly / cable impedance, length & diameter. | Required | Desired | Desired | Desired | Desired |
| 1E | 1E Main, Aux & Tx3 antenna (Peak Gain W/ cable loss) * | Required | Required | Required | Required | Required |
| | 1E OR 1F, 1G, 1H | | | | | |
| 1F | Main, Aux & Tx3 antenna (Peak Gain only) * | Required | Required | Required | Required | Required |
| 1G | VSWR of cable including connector | Required | Required | Required | Required | Required |
| 1H | Main, Aux & Tx3 antenna(Cable loss W/ connector) * | Required | Required | Required | Required | Required |
| 2 | Dimensioned Photographs and Drawings of Main, Aux, and Tx3 (or Rx3) antennas | Required | Required | Required | Required | Required |
| 3 | Radiation patterns of antennas loaded in the host platform. | Required | Desired | Required | Required | Required |
| 4 | Platform model name / number - correlated to antenna manufacturer and antenna part number | Required | Required | Desired | Required | Desired |
| 5 | Photograph(s) or Drawings showing location of antennas in platform. <u>(S. Korea requires photographs of antennas for approval submission). Taiwan requires pictures of each antenna type shown in the system.</u> | Required | Required | Desired | Required (Photos) | Required (Photos) |
| 6 | Mech. drawings / photos with dimensions of antenna locations and distance from end-user (For evaluation of SAR testing requirement). | Required | N/A | N/A | N/A | N/A |
| 7 | Photograph(s) or Drawings showing the location of all antennas (WLAN, other) and distance between those transmitting antennas. Information will be used to evaluate whether co-location testing is required. | Required | N/A | N/A | N/A | N/A |
| 8 | Local representative contact information for LMA/ PARS process. | Required | N/A | N/A | N/A | N/A |

Antenna Information

Section 1. Antenna Assembly Specifications

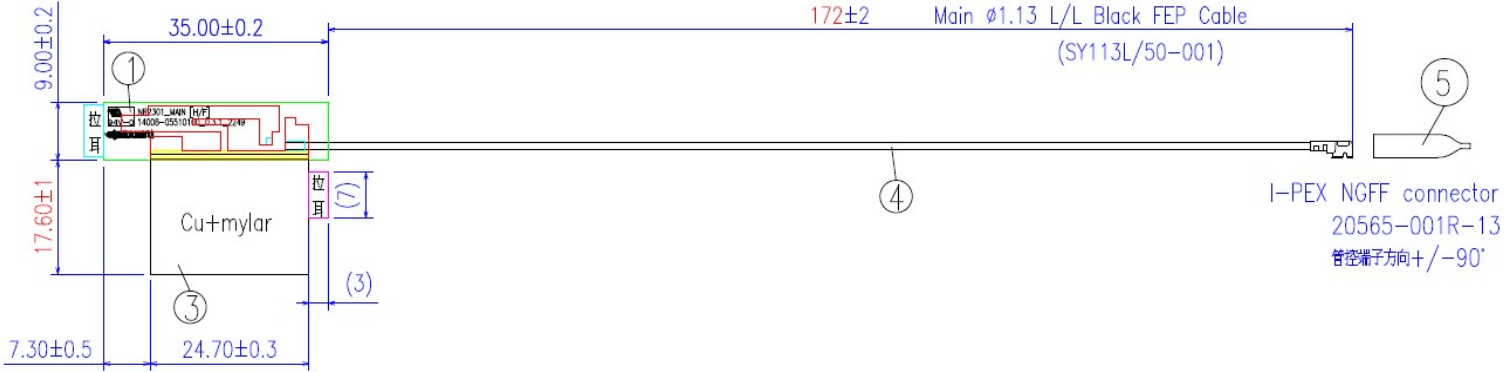
| 1A Antenna Part Number | 1B Manu- facture | 1C Antenna Type | 1D Cable Assembly Part Number and Information | Freq Range MHz | 1E *Peak Gain W/ Cable loss (dBi) | 1F Peak Gain w/o Cable Loss (dBi) | 1G VSWR | 1H Cable Loss (dBi) |
|----------------------------------|------------------------|-----------------------|--|-------------------|---|---|---------------|---------------------------|
| AYP6Y-100377 Main/Rx1 Antenna | AWAN | PIFA | 50 ohm Coaxial Length: 172 mm Diamter: 1.13 mm Low Loss Connector: IPEX 20565-001R-13 | 2400-2483.5 | 2.31 dBi, (peak) | 2.78 dBi, (peak) | 2 dBi, (peak) | 0.5 dBi, (peak) |
| | | | | 5150-5250 | 3.46 dBi, (peak) | 4.17 dBi, (peak) | 2 dBi, (peak) | 0.7 dBi, (peak) |
| | | | | 5250-5350 | 3.45 dBi, (peak) | 4.16 dBi, (peak) | 2 dBi, (peak) | 0.7 dBi, (peak) |
| | | | | 5470-5725 | 4.23 dBi, (peak) | 4.96 dBi, (peak) | 2 dBi, (peak) | 0.7 dBi, (peak) |
| | | | | 5725-5850 | 4.21 dBi, (peak) | 4.95 dBi, (peak) | 2 dBi, (peak) | 0.7 dBi, (peak) |
| | | | | 5850-5895 | 4.12 dBi, (peak) | 4.87 dBi, (peak) | 2 dBi, (peak) | 0.8 dBi, (peak) |
| | | | | 5925-6425 | 4.12 dBi, (peak) | 4.89 dBi, (peak) | 2 dBi, (peak) | 0.8 dBi, (peak) |
| | | | | 6425-6525 | 3.19 dBi, (peak) | 3.99 dBi, (peak) | 2 dBi, (peak) | 0.8 dBi, (peak) |
| | | | | 6525-6875 | 4.44 dBi, (peak) | 5.25 dBi, (peak) | 2 dBi, (peak) | 0.8 dBi, (peak) |
| | | | | 6875-7125 | 3.94 dBi, (peak) | 4.78 dBi, (peak) | 2 dBi, (peak) | 0.8 dBi, (peak) |
| 1A Antenna Part Number | 1B Manufacture | 1C Antenna Type | 1D Cable Assembly Part Number and Information | Freq Range MHz | 1E *Peak Gain W/ Cable loss (dBi) | 1F Peak Gain w/o Cable Loss (dBi) | 1G VSWR | 1H Cable Loss (dBi) |
| AYP6Y-100378 Aux/Rx2 Antenna | AWAN | PIFA | 50 ohm Coaxial Length: 127 mm Diamter: 1.13 mm Low Loss Connector: IPEX 20565-001R-13 | 2400-2483.5 | 2.14 dBi, (peak) | 2.49 dBi, (peak) | 2 dBi, (peak) | 0.3 dBi, (peak) |
| | | | | 5150-5250 | 3.31 dBi, (peak) | 3.83 dBi, (peak) | 2 dBi, (peak) | 0.5 dBi, (peak) |
| | | | | 5250-5350 | 3.33 dBi, (peak) | 3.86 dBi, (peak) | 2 dBi, (peak) | 0.5 dBi, (peak) |
| | | | | 5470-5725 | 4.12 dBi, (peak) | 4.66 dBi, (peak) | 2 dBi, (peak) | 0.5 dBi, (peak) |
| | | | | 5725-5850 | 4.13 dBi, (peak) | 4.68 dBi, (peak) | 2 dBi, (peak) | 0.5 dBi, (peak) |
| | | | | 5850-5895 | 4.00 dBi, (peak) | 4.55 dBi, (peak) | 2 dBi, (peak) | 0.6 dBi, (peak) |
| | | | | 5925-6425 | 4.16 dBi, (peak) | 4.73 dBi, (peak) | 2 dBi, (peak) | 0.6 dBi, (peak) |
| | | | | 6425-6525 | 3.71 dBi, (peak) | 4.30 dBi, (peak) | 2 dBi, (peak) | 0.6 dBi, (peak) |
| | | | | 6525-6875 | 3.83 dBi, (peak) | 4.43 dBi, (peak) | 2 dBi, (peak) | 0.6 dBi, (peak) |
| | | | | 6875-7125 | 3.38 dBi, (peak) | 4.00 dBi, (peak) | 2 dBi, (peak) | 0.6 dBi, (peak) |

• 3D Antenna Peak Gain required being test in system basis

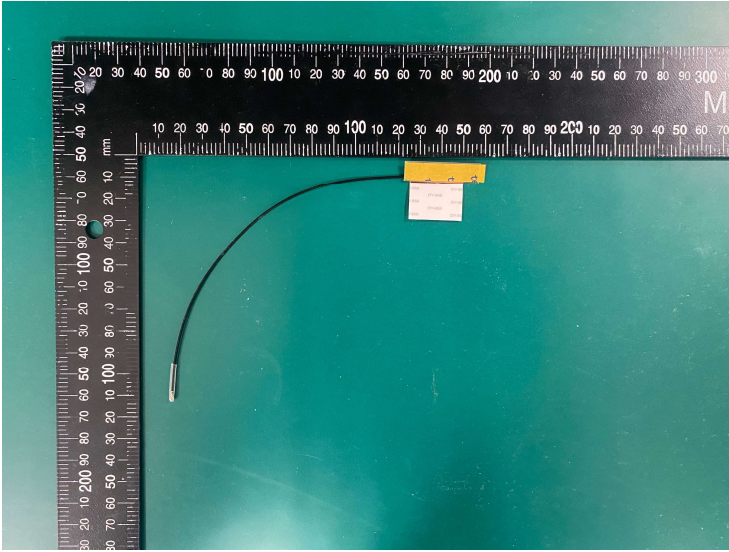
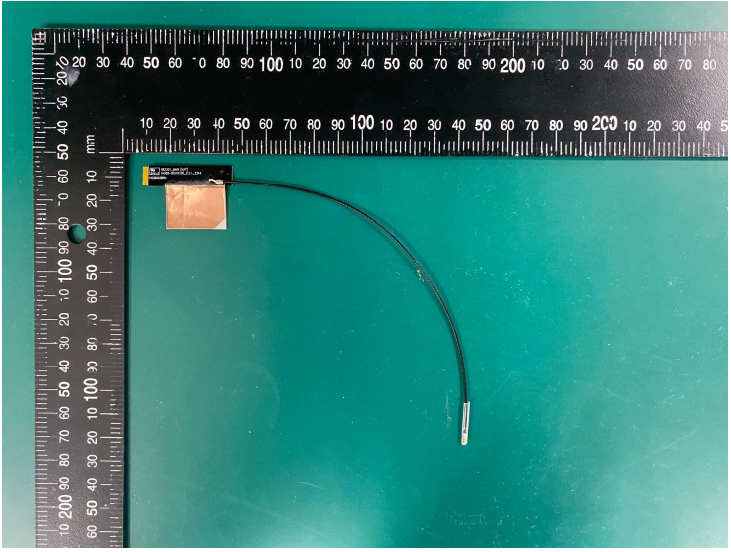
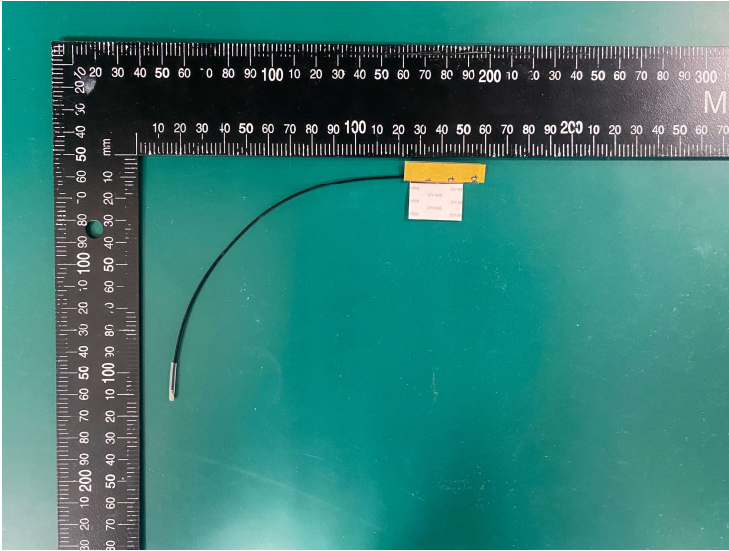
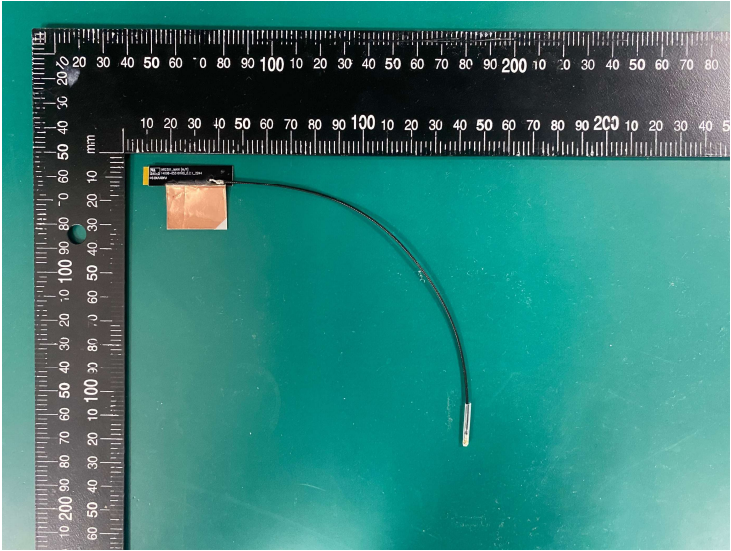
Section 2. Dimensioned Photos or Drawings of Antennas

Include a dimensioned photo and dimensioned drawing of Main antenna here

Main Antenna Dimensioned Drawing:

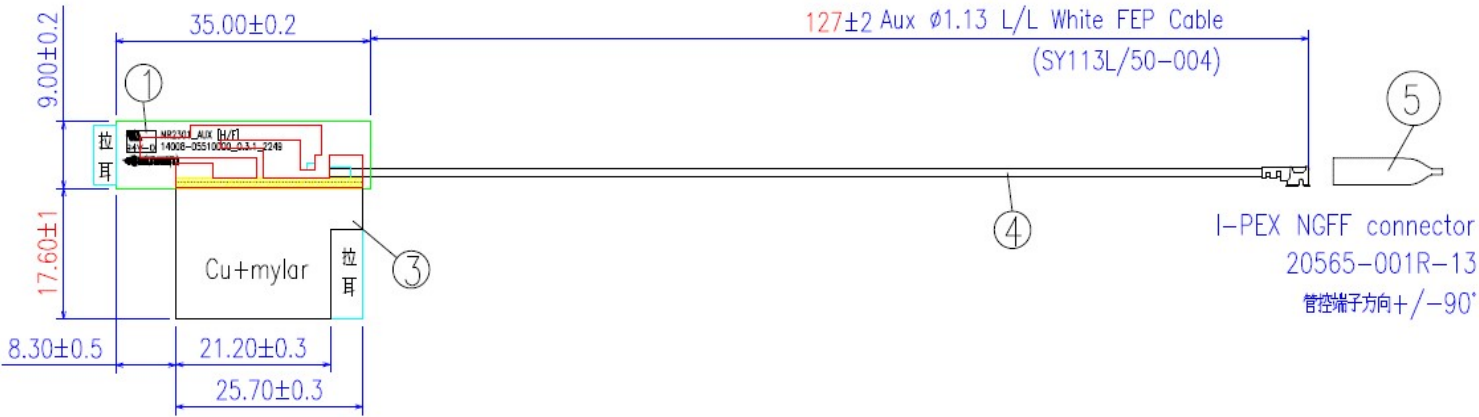


Main Antenna Photo :

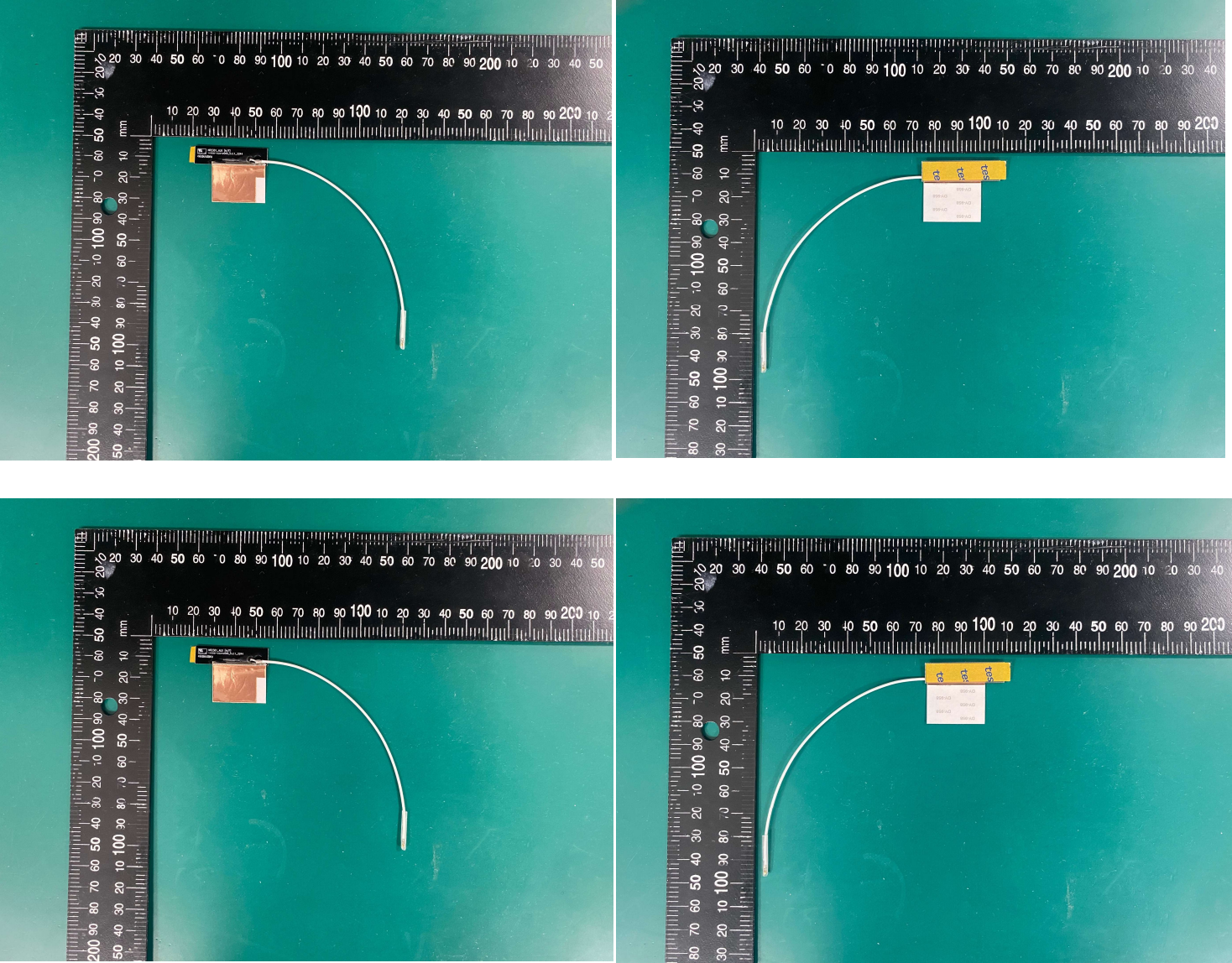


Include a dimensioned photo and dimensioned drawing of Aux/Rx2 antenna here.

Aux Antenna Dimensioned Drawing:



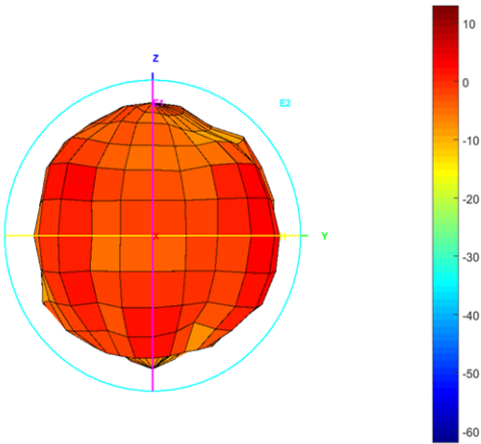
Aux Antenna Photo :



Section 3. Radiation characteristics of antennae Loaded in Host Platform

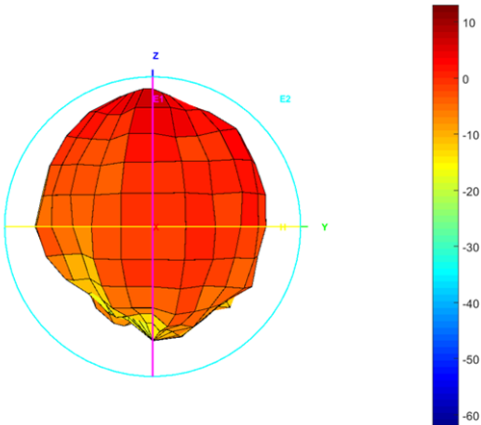
Max Antenna

Max Antenna 3D Radiation Pattern 2400-2483.5 MHz



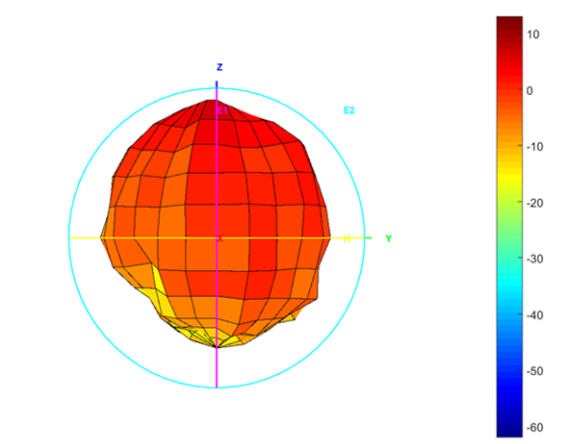
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5 | 2.31 |

Max Antenna 3D Radiation Pattern 5150-5250 MHz



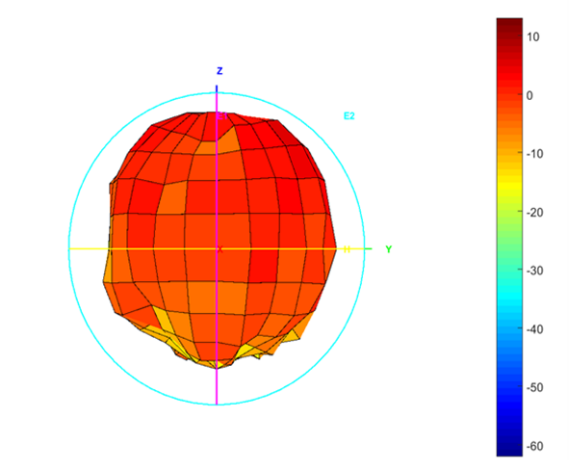
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250 | 3.46 |

Max Antenna 3D Radiation Pattern 5250-5350 MHz



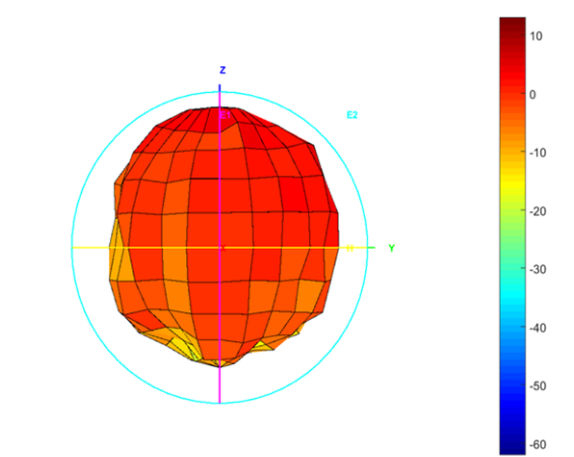
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350 | 3.45 |

Max Antenna 3D Radiation Pattern 5470-5725 MHz



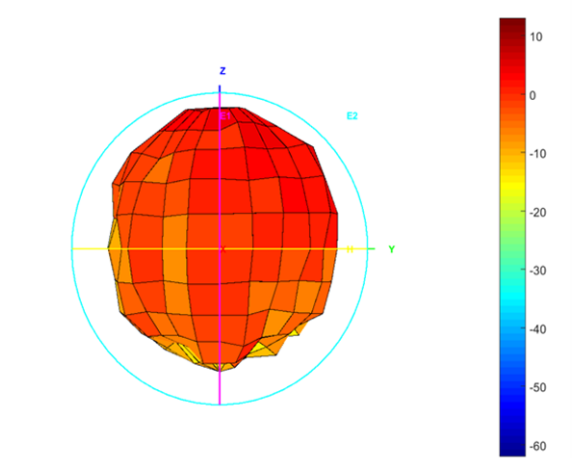
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725 | 4.23 |

Max Antenna 3D Radiation Pattern 5725-5850 MHz



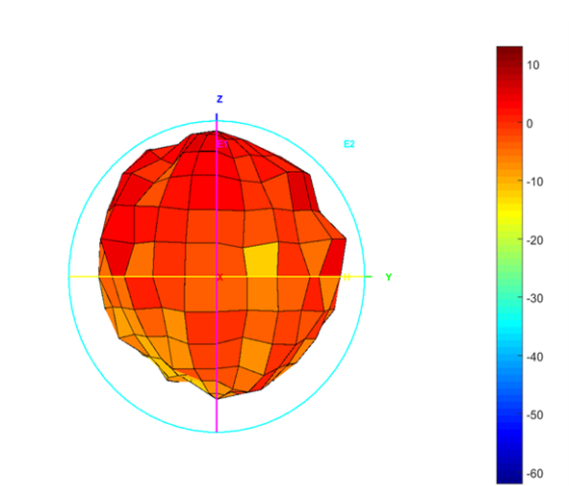
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850 | 4.21 |

Max Antenna 3D Radiation Pattern 5850-5895 MHz



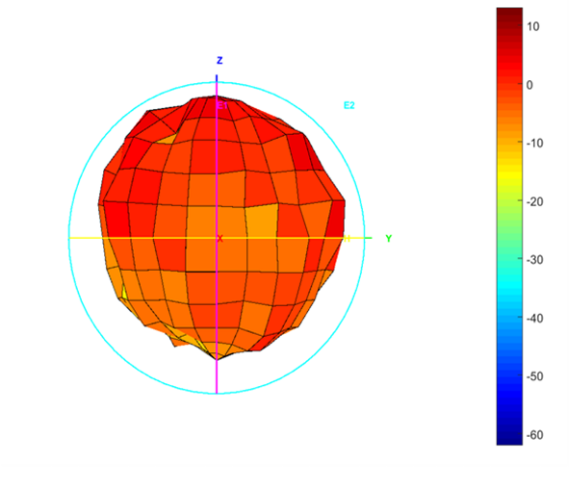
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895 | 4.12 |

Max Antenna 3D Radiation Pattern 5925-6425 MHz



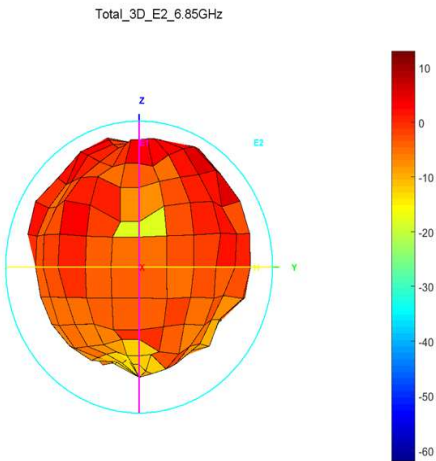
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425 | 4.12 |

Max Antenna 3D Radiation Pattern 6425-6525 MHz



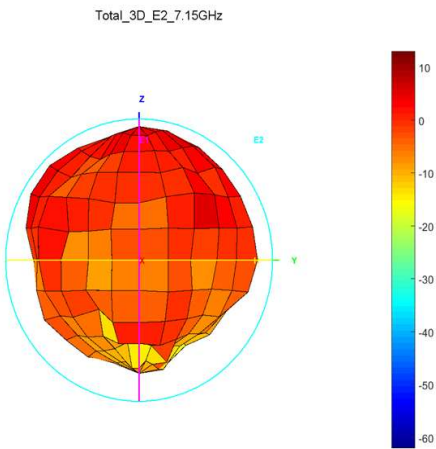
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525 | 3.19 |

Max Antenna 3D Radiation Pattern 6525-6875 MHz



| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875 | 4.44 |

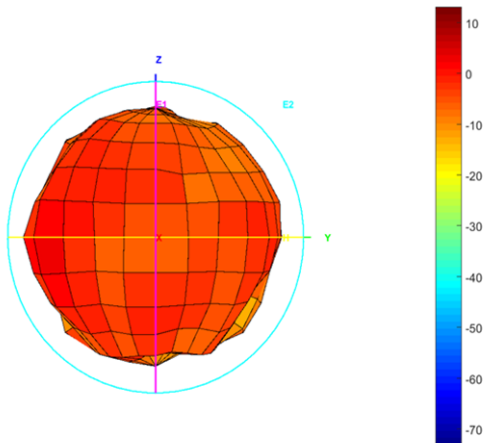
Max Antenna 3D Radiation Pattern 6875-7125 MHz



| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125 | 3.94 |

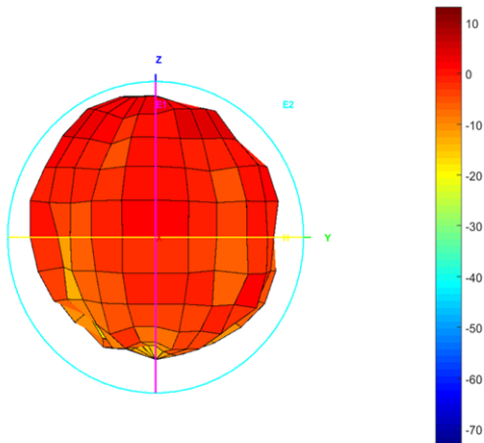
Auxiliary Antenna

Max Antenna 3D Radiation Pattern 2400-2483.5 MHz



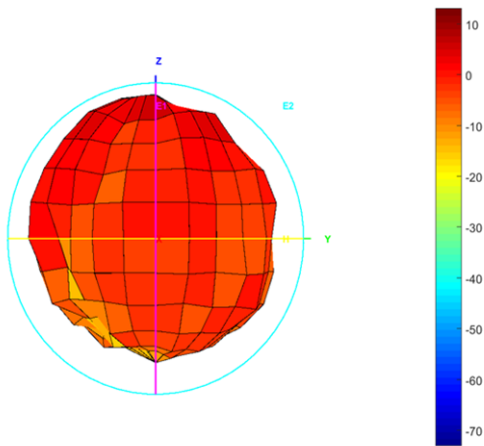
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5 | 2.14 |

Max Antenna 3D Radiation Pattern 5150-5250 MHz



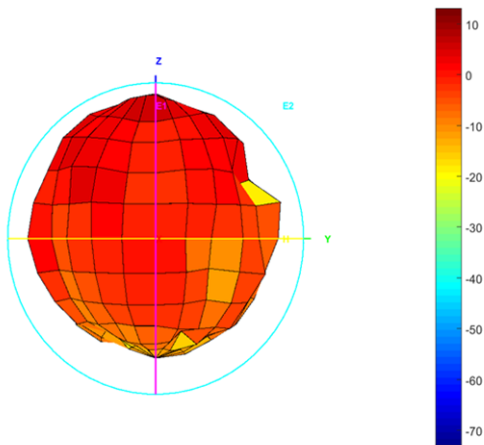
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250 | 3.31 |

Max Antenna 3D Radiation Pattern 5250-5350 MHz



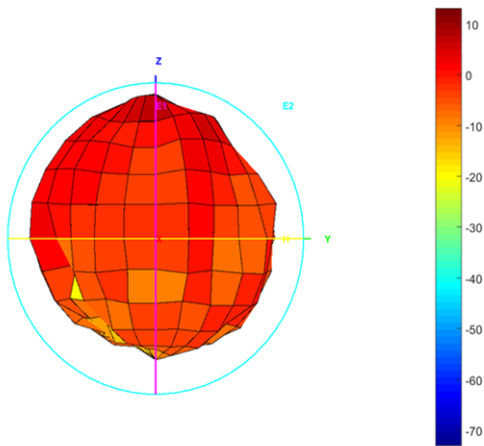
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350 | 3.33 |

Max Antenna 3D Radiation Pattern 5470-5725 MHz



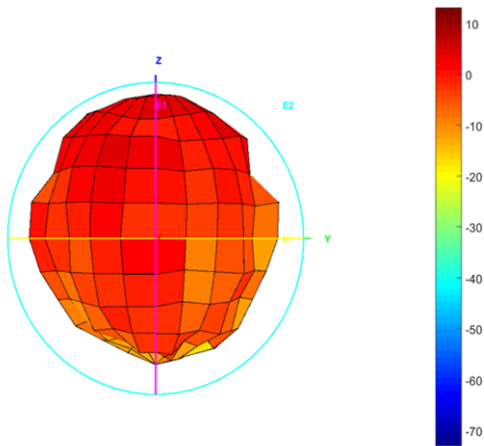
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725 | 4.12 |

Max Antenna 3D Radiation Pattern 5725-5850 MHz



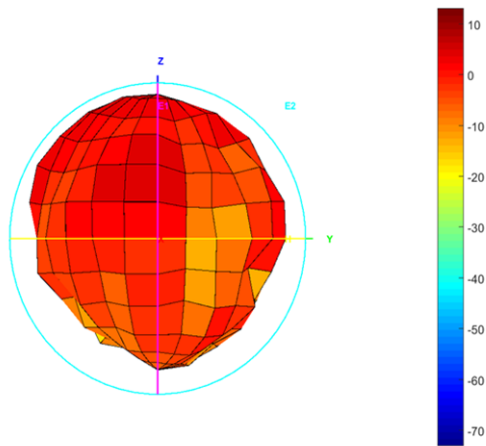
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850 | 4.13 |

Max Antenna 3D Radiation Pattern 5850-5895 MHz



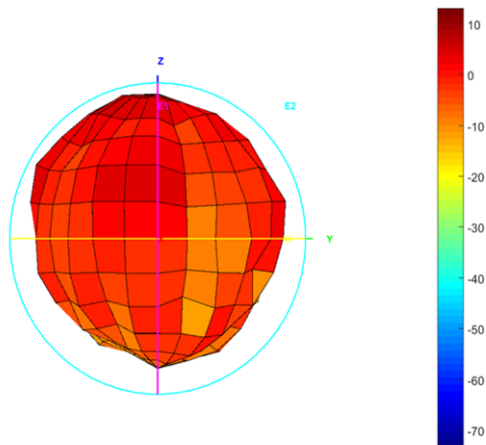
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895 | 4.00 |

Max Antenna 3D Radiation Pattern 5925-6425 MHz



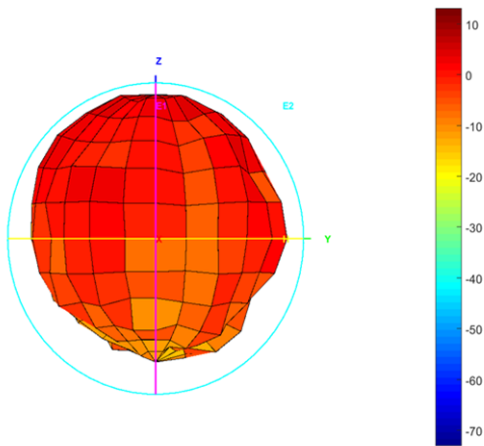
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425 | 4.16 |

Max Antenna 3D Radiation Pattern 6425-6525 MHz



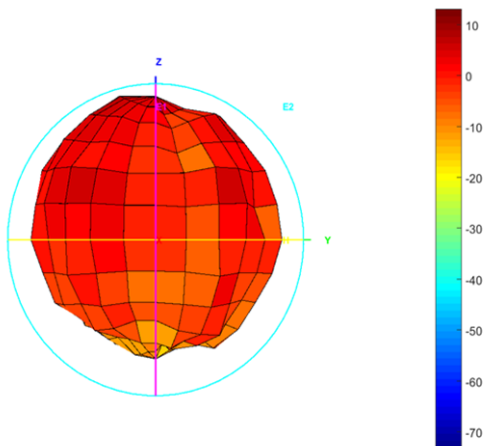
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525 | 3.71 |

Max Antenna 3D Radiation Pattern 6525-6875 MHz



| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875 | 3.83 |

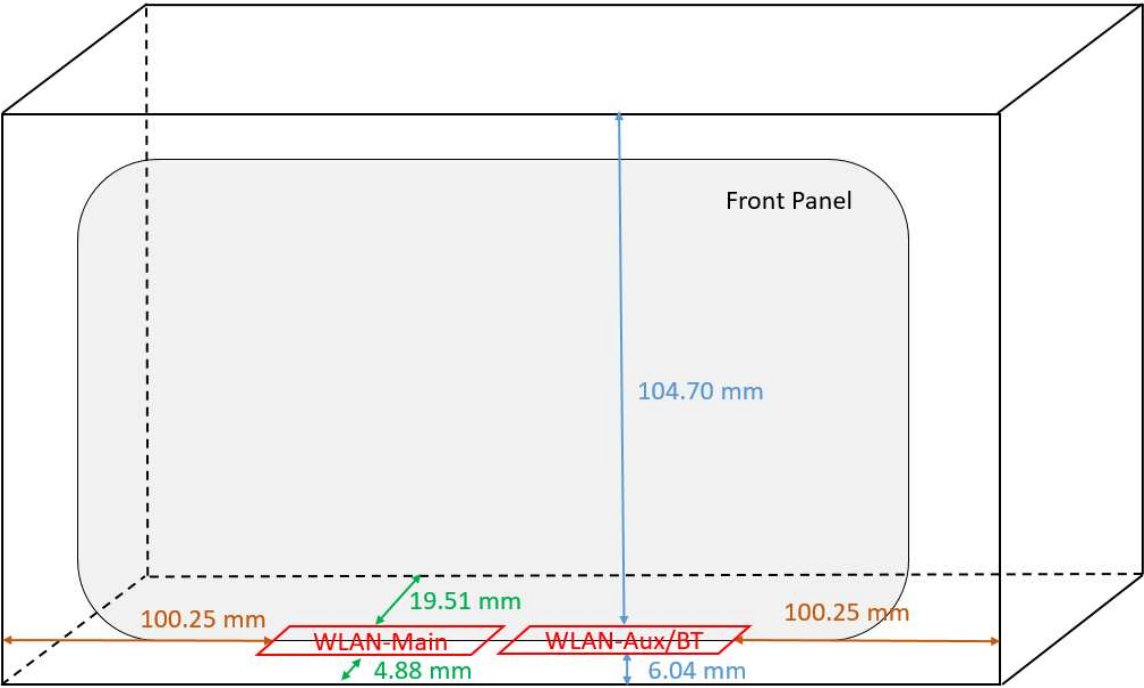
Max Antenna 3D Radiation Pattern 6875-7125 MHz



| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125 | 3.38 |

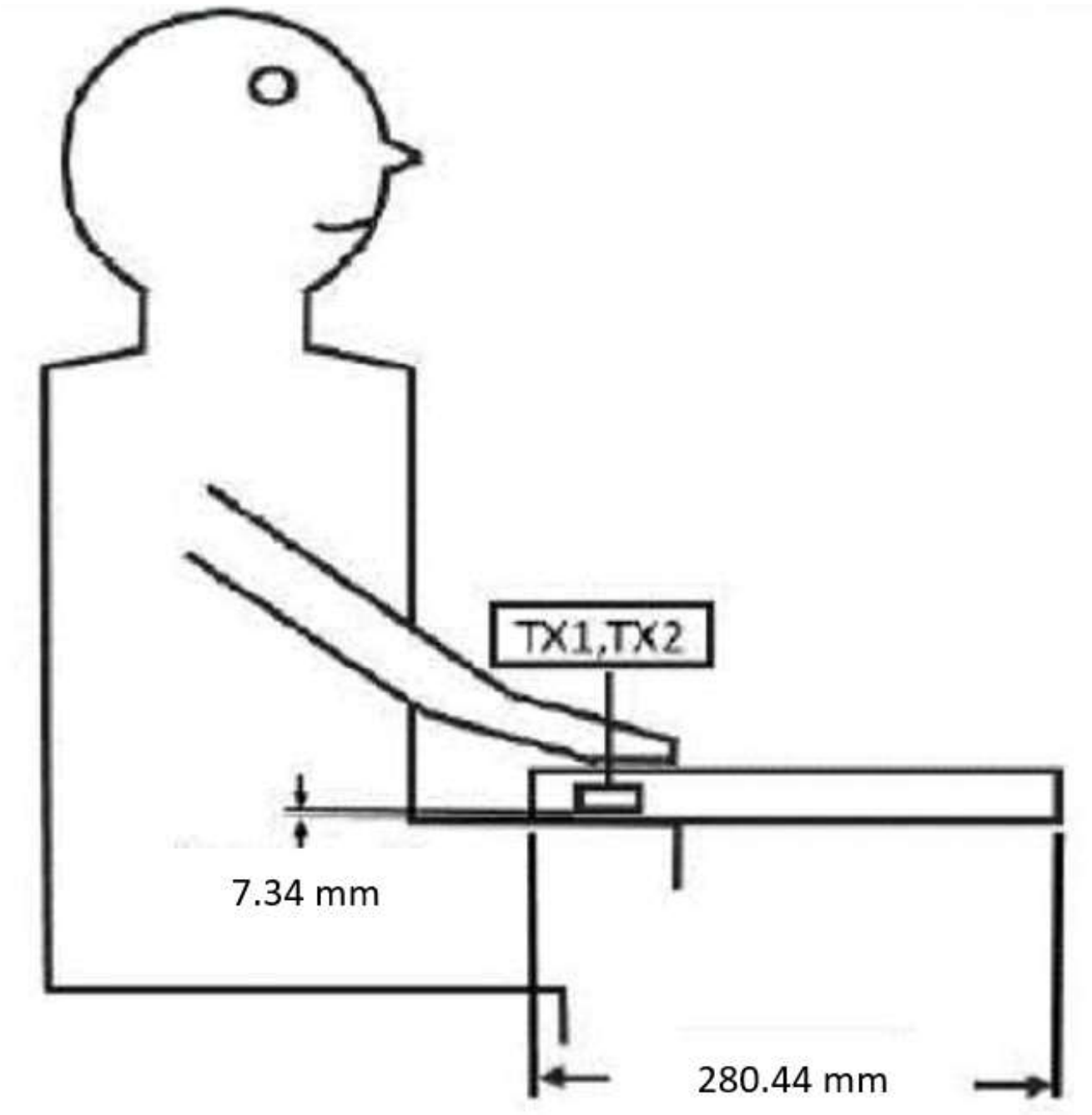
Section 4. Antenna Host Platform Location Information

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 (excluding hands, wrist, feet, and ankle). 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)

