

# Regulatory WLAN Antenna Information

| 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) |                                  |                        |                        |                        |                         |                                                                                            |
| Lenovo                                                                                                                                                                         | Wistron                     | Lenovo 300w Yoga Gen 4     | Yes                                   | convertible NB                                               | 3                            |                                  |                        |                        |                        |                         |                                                                                            |
| *****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                       | 025.90274.0011<br>(AYF5Y-100007)      |                                                              |                              | 025.90275.0011<br>(AYF5Y-100008) |                        |                        |                        |                         |                                                                                            |
| 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                                                                                                                                                                           | 2.41                        | 1.65                       | 1.16                                  | 2.24                                                         | 2.06                         | 2.72                             | 1.67                   | 1.05                   | 1.19                   | 1.47                    |                                                                                            |
| Aux                                                                                                                                                                            | -0.52                       | -1.12                      | -0.43                                 | 1.02                                                         | 2.35                         | 2.52                             | 1.97                   | 0.82                   | 0.86                   | 0.15                    |                                                                                            |
| 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  | Generic: refer to modular FCC SAR report<br><br>Mid-power: ≥ 8 mm<br><br>Low power: ≥ 5 mm |
|                                                                                                                                                                                | Design                      | 3.00                       | 5.00                                  | 5.00                                                         | 5.00                         | 5.00                             | 5.00                   | 5.00                   | 5.00                   | 5.00                    |                                                                                            |
|                                                                                                                                                                                | PIFA                        | 3.24                       | 3.64                                  | 3.73                                                         | 4.77                         | 4.97                             | 4.72                   | 4.83                   | 4.30                   | 5.37                    |                                                                                            |
| 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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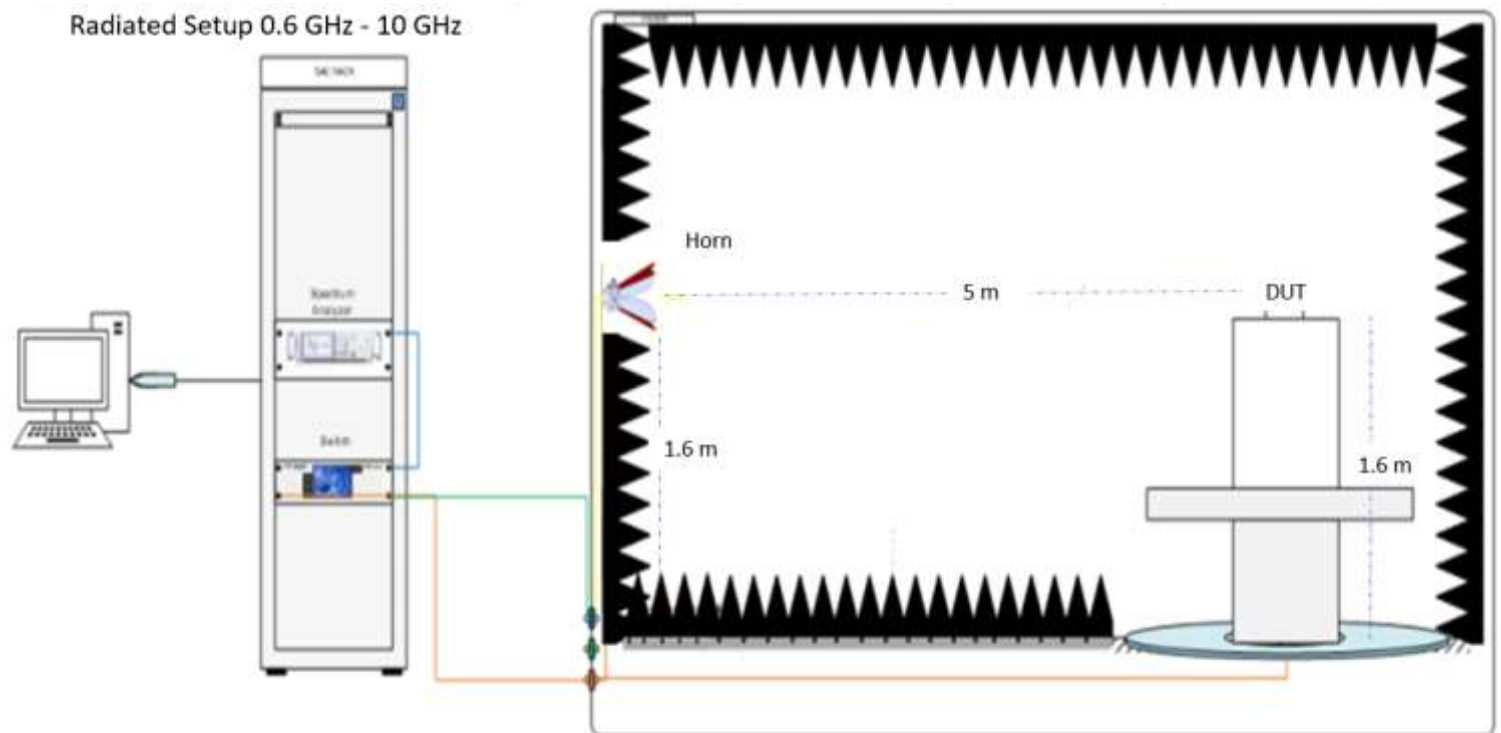
[Section 6. Diagram Example of Co-Location Antenna Separation](#)

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



# 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) |
| Main Antenna<br><br>(Customer P/N:025.90274.0011)<br><br>(AWAN P/N:AYF5Y-100007) | AWAN         | PIFA         | 1)cable p/n: GBE/Shen-Yu/YFC/KAIBO<br>2) 50 ohm LL OD 0.81 coaxial cable<br>3) length: 351 mm<br>4) Connector P/N: I-pex NGFF: 20572-001R-08 | 2400-2483.5    | 2.41                            | 3.65                           | 3.00     | 1.24            |
|                                                                                  |              |              |                                                                                                                                              | 5150-5250      | 1.65                            | 3.50                           | 3.00     | 1.85            |
|                                                                                  |              |              |                                                                                                                                              | 5250-5350      | 1.16                            | 3.05                           | 3.00     | 1.89            |
|                                                                                  |              |              |                                                                                                                                              | 5470-5725      | 2.24                            | 4.21                           | 3.00     | 1.97            |
|                                                                                  |              |              |                                                                                                                                              | 5725-5850      | 2.06                            | 4.06                           | 3.00     | 2.00            |
|                                                                                  |              |              |                                                                                                                                              | 5850-5895      | 2.72                            | 4.78                           | 3.00     | 2.06            |
|                                                                                  |              |              |                                                                                                                                              | 5925-6425      | 1.67                            | 3.80                           | 3.00     | 2.13            |
|                                                                                  |              |              |                                                                                                                                              | 6425-6525      | 1.05                            | 3.21                           | 3.00     | 2.16            |
|                                                                                  |              |              |                                                                                                                                              | 6525-6875      | 1.19                            | 3.42                           | 3.00     | 2.23            |
| Aux Antenna<br><br>(Customer P/N:025.90275.0011)<br><br>(AWAN P/N:AYF5Y-100008)  | AWAN         | PIFA         | 1)cable p/n: GBE/Shen-Yu/YFC/KAIBO<br>2) 50 ohm LL OD 0.81 coaxial cable<br>3) length: 502 mm<br>4) Connector P/N: I-pex NGFF: 20572-001R-08 | 2400-2483.5    | -0.52                           | 1.25                           | 3.00     | 1.77            |
|                                                                                  |              |              |                                                                                                                                              | 5150-5250      | -1.12                           | 1.53                           | 3.00     | 2.65            |
|                                                                                  |              |              |                                                                                                                                              | 5250-5350      | -0.43                           | 2.27                           | 3.00     | 2.70            |
|                                                                                  |              |              |                                                                                                                                              | 5470-5725      | 1.02                            | 3.84                           | 3.00     | 2.82            |
|                                                                                  |              |              |                                                                                                                                              | 5725-5850      | 2.35                            | 5.22                           | 3.00     | 2.87            |
|                                                                                  |              |              |                                                                                                                                              | 5850-5895      | 2.52                            | 5.47                           | 3.00     | 2.95            |
|                                                                                  |              |              |                                                                                                                                              | 5925-6425      | 1.97                            | 5.02                           | 3.00     | 3.05            |
|                                                                                  |              |              |                                                                                                                                              | 6425-6525      | 0.82                            | 3.91                           | 3.00     | 3.09            |
|                                                                                  |              |              |                                                                                                                                              | 6525-6875      | 0.86                            | 4.05                           | 3.00     | 3.19            |
|                                                                                  |              |              |                                                                                                                                              | 6875-7125      | 1.47                            | 3.76                           | 3.00     | 2.29            |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              | 2400-2483.5    | -0.52                           | 1.25                           | 3.00     | 1.77            |
|                                                                                  |              |              |                                                                                                                                              | 5150-5250      | -1.12                           | 1.53                           | 3.00     | 2.65            |
|                                                                                  |              |              |                                                                                                                                              | 5250-5350      | -0.43                           | 2.27                           | 3.00     | 2.70            |
|                                                                                  |              |              |                                                                                                                                              | 5470-5725      | 1.02                            | 3.84                           | 3.00     | 2.82            |
|                                                                                  |              |              |                                                                                                                                              | 5725-5850      | 2.35                            | 5.22                           | 3.00     | 2.87            |
|                                                                                  |              |              |                                                                                                                                              | 5850-5895      | 2.52                            | 5.47                           | 3.00     | 2.95            |
|                                                                                  |              |              |                                                                                                                                              | 5925-6425      | 1.97                            | 5.02                           | 3.00     | 3.05            |
|                                                                                  |              |              |                                                                                                                                              | 6425-6525      | 0.82                            | 3.91                           | 3.00     | 3.09            |
|                                                                                  |              |              |                                                                                                                                              | 6525-6875      | 0.86                            | 4.05                           | 3.00     | 3.19            |
|                                                                                  |              |              |                                                                                                                                              | 6875-7125      | 0.15                            | 3.42                           | 3.00     | 3.27            |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |
|                                                                                  |              |              |                                                                                                                                              |                |                                 |                                |          |                 |

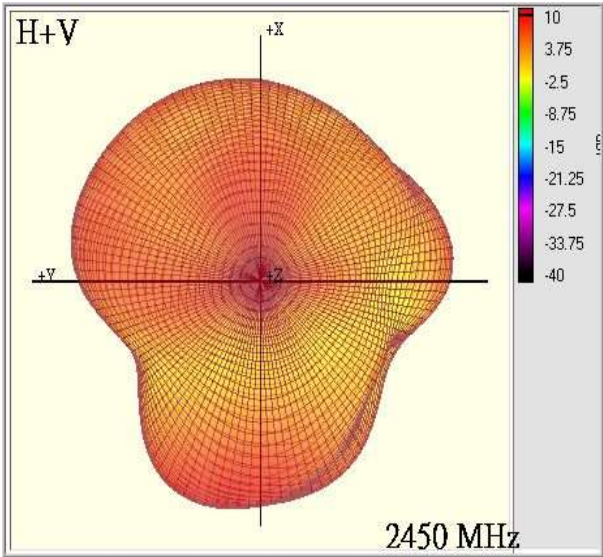
- 3D Antenna Peak Gain required being test in system basis.

Section 3. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

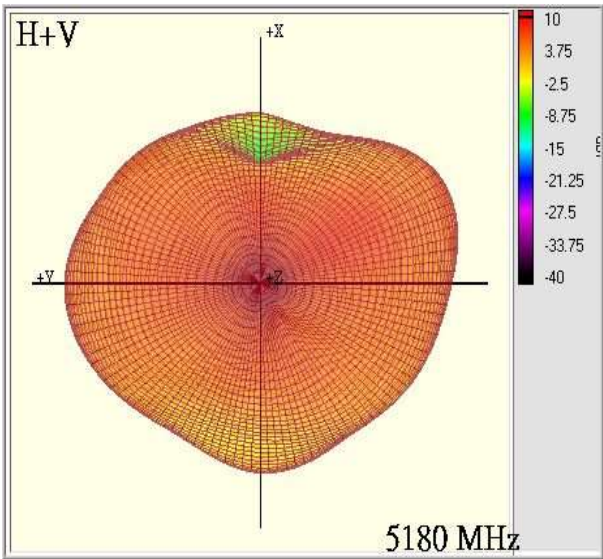
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | 2.41                          |



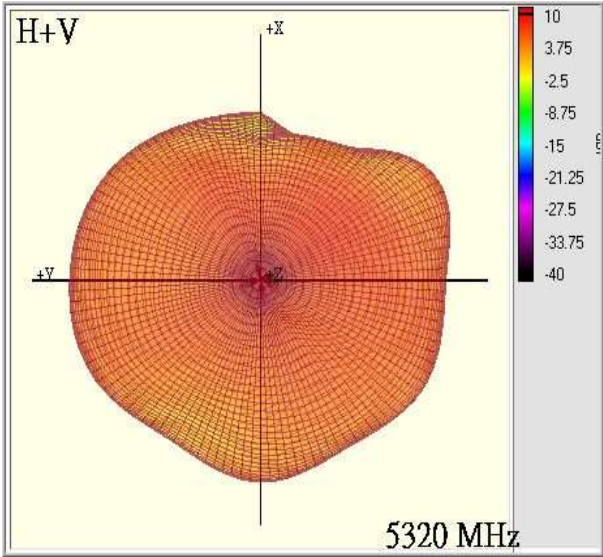
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | 1.65                          |



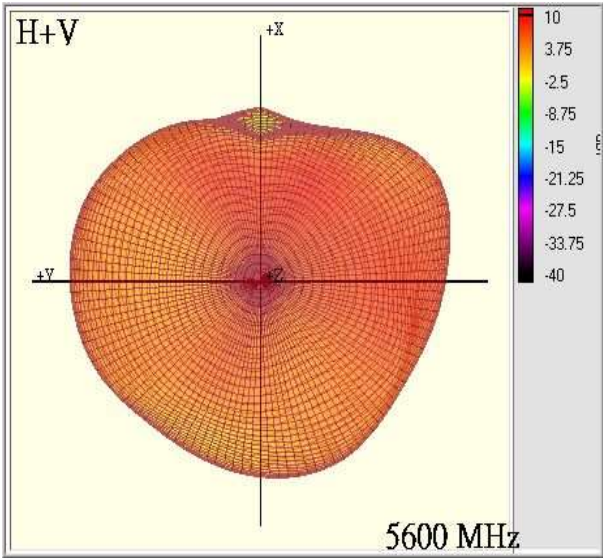
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | 1.16                          |



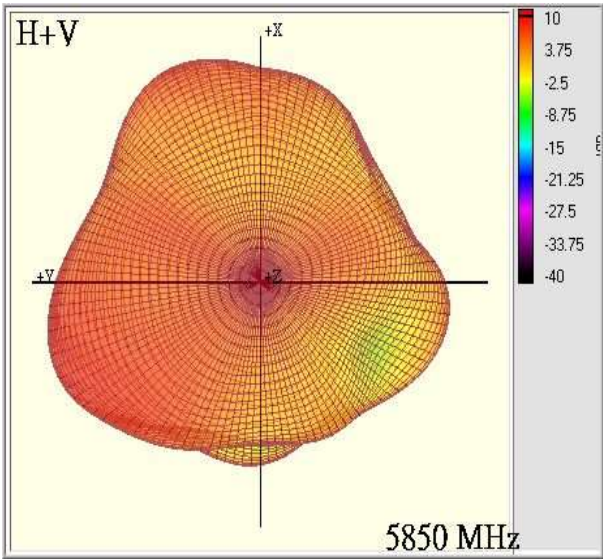
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 2.24                          |



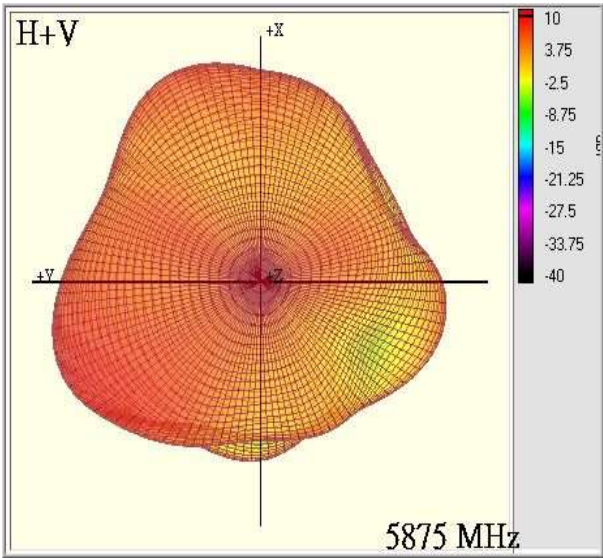
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 5725-5850          | 2.06                             |



Max Antenna 3D Radiation Pattern 5850-5895 MHz

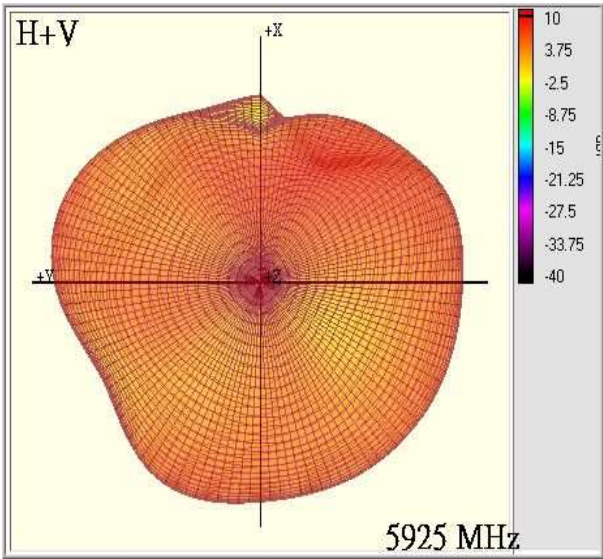
| Frequency<br>(MHz) | Peak Gain w/ Cable Loss<br>(dBi) |
|--------------------|----------------------------------|
| 5850-5895          | 2.72                             |





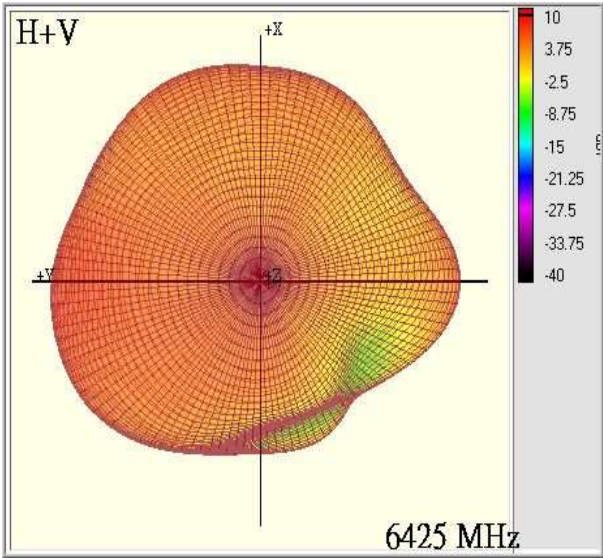
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 1.67                          |



Max Antenna 3D Radiation Pattern 6425-6525 MHz

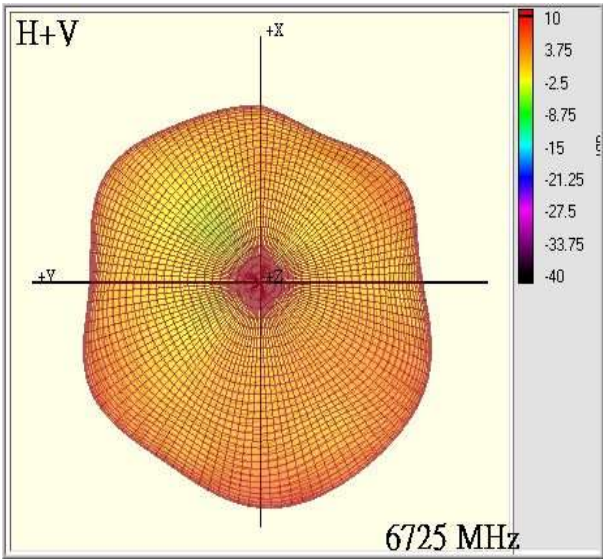
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 1.05                          |





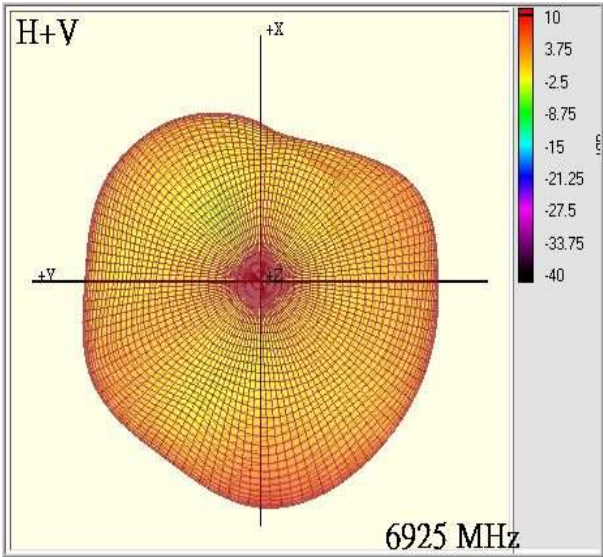
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 1.19                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

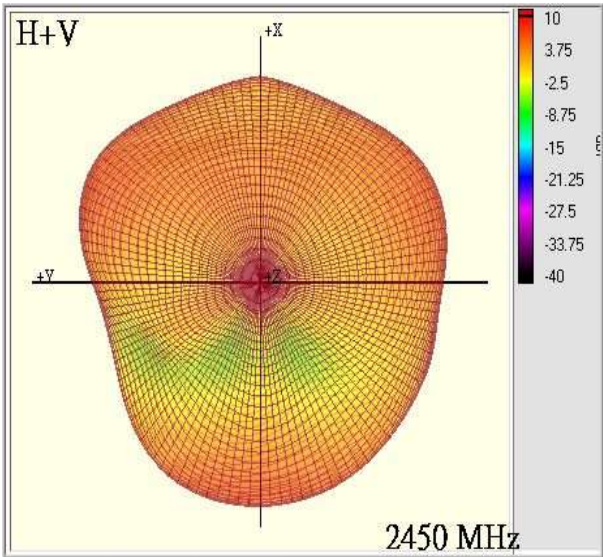
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 1.47                          |



Auxiliary Antenna

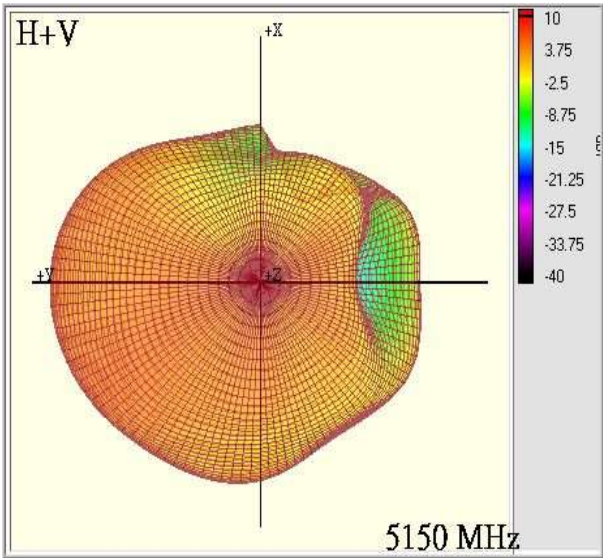
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 2400-2483.5     | -0.52                         |



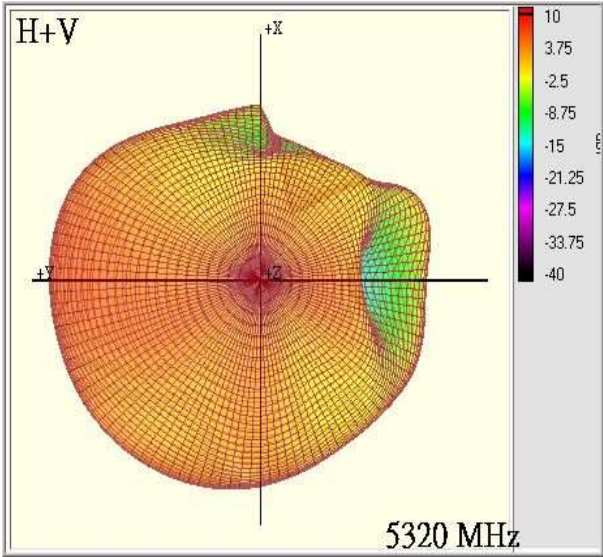
Max Antenna 3D Radiation Pattern 5150-5250 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5150-5250       | -1.12                         |



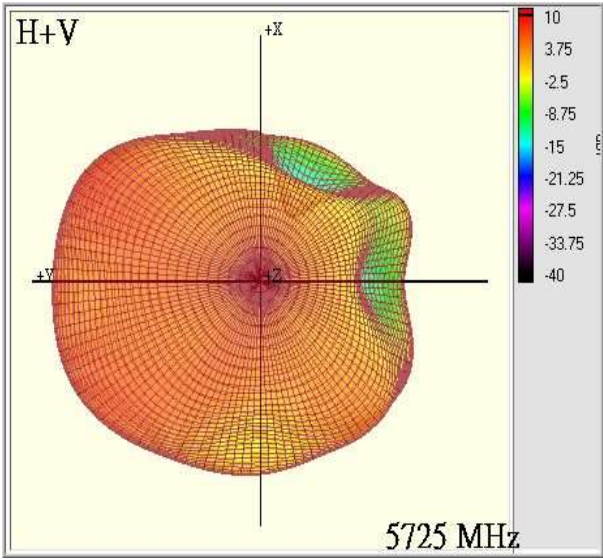
Max Antenna 3D Radiation Pattern 5250-5350 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5250-5350       | -0.43                         |



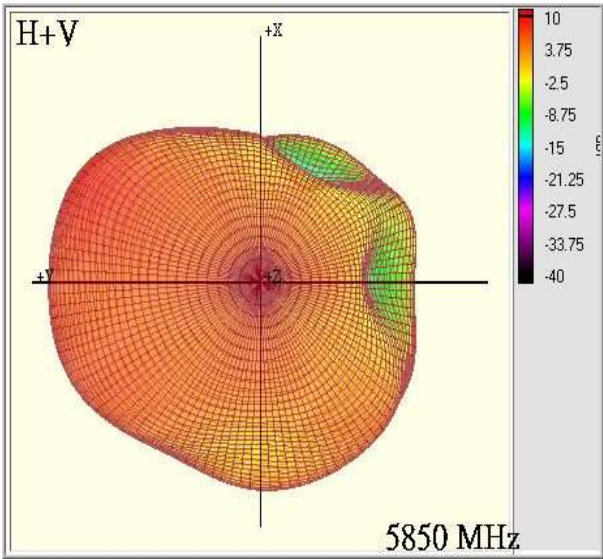
Max Antenna 3D Radiation Pattern 5470-5725 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5470-5725       | 1.02                          |



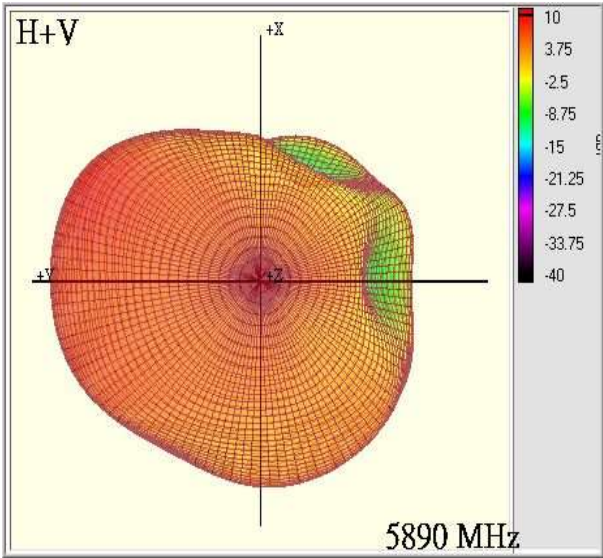
Max Antenna 3D Radiation Pattern 5725-5850 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5725-5850       | 2.35                          |



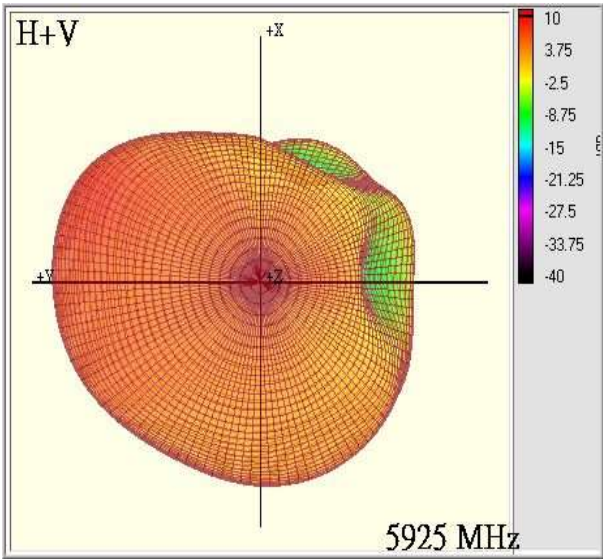
Max Antenna 3D Radiation Pattern 5850-5895 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5850-5895       | 2.52                          |



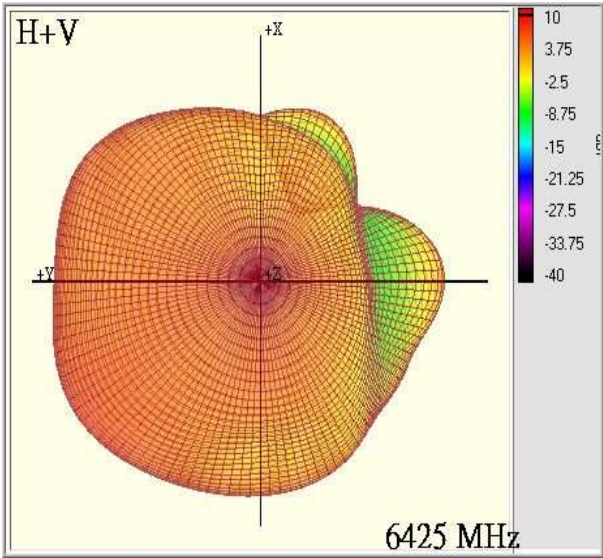
Max Antenna 3D Radiation Pattern 5925-6425 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 5925-6425       | 1.97                          |



Max Antenna 3D Radiation Pattern 6425-6525 MHz

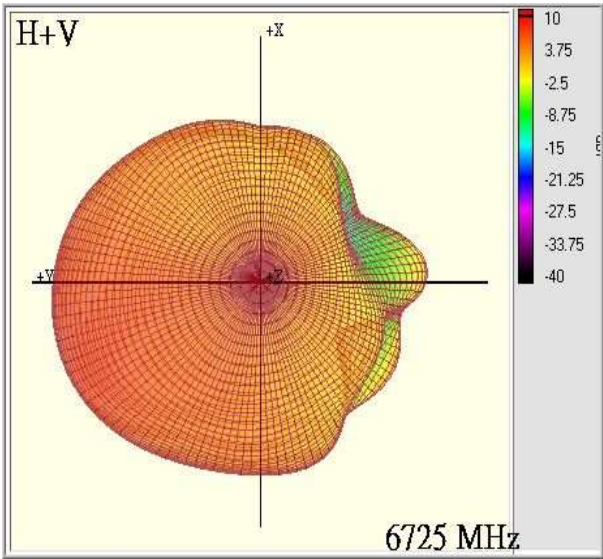
| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6425-6525       | 0.82                          |





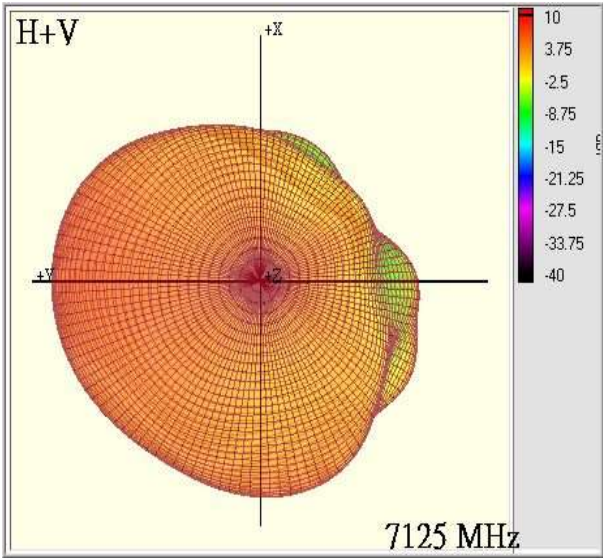
Max Antenna 3D Radiation Pattern 6525-6875 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6525-6875       | 0.86                          |



Max Antenna 3D Radiation Pattern 6875-7125 MHz

| Frequency (MHz) | Peak Gain w/ Cable Loss (dBi) |
|-----------------|-------------------------------|
| 6875-7125       | 0.15                          |



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