

Regulatory WLAN Antenna Information (TB mode)

| Platform information | | | | | | | |
|--|--|---------------------------|--|------------------------|------------------------|--------------------------------|------------------------|
| Brand | ODM | Platform model name (RMN) | Platform type (ex: Notebook PC, convertible PC, AIO...etc) | | | SAR minimum separation (mm) | |
| HP Inc. | Compal Corporation | Dashiell (TPN-C155) | Convertible PC | | | 3.3 | |
| Antenna information | | | | | | | |
| Vendor | | Type | Antenna Part number (Main/TX1) | | | Antenna Part number (Aux/ TX2) | |
| INPAQ | | PIFA | DC33002K3C0 (WA-P-LBLB-02-130) | | | DC33002K3C0 (WA-P-LBLB-02-130) | |
| Peak gain w/ cable loss (dBi) | | | | | | | |
| 2.4GHz 2400-2500MHz | 5.2&5.3GHz 5150-5350MHz | 5.5GHz 5470-5725MHz | 5.8GHz 5725-5850MHz | 6.2GHz 5925-6425MHz | 6.5GHz 6425-6525MHz | 6.7GHz 6525-6875MHz | 6.9GHz 6875-7125MHz |
| -0.63 | 1.55 | 0.73 | -0.22 | 1.88 | -1.06 | -0.32 | 0.45 |
| Module information | | | | | | | |
| Model | Form factor and suffixes (NGW/ HMW AND AN/ NB/ BN...) | | | | | | |
| AX211NGW (Garfield Peak 2) | Intel Garfield Peak 2 AX211 Wi-Fi 6e +Bluetooth 5.2 M.2 2230 160MHz CNVi WW WLAN | | | | | | |
| AX411NGW (Garfield Peak 4) | Intel Garfield Peak 4 AX411 Wi-Fi 6e +Bluetooth 5.2 M.2 2230 160MHz CNVi WW WLAN | | | | | | |
| | | | | | | | |
| | | | | | | | |
| | | | | | | | |
| Notes (marked with *) | | | | | | | |
| <p>* SAR minimum separation (mm)</p> <ul style="list-style-type: none"> - 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) <p>* 3D Peak Antenna gain should be equal or greater than -2 dBi</p> <ul style="list-style-type: none"> - 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. | | | | | | | |

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 | Tx1, Tx2 & Tx3 antenna (Peak Gain W/ cable loss) * | Required | Required | Required | Required | Required |
| | 1E OR 1F, 1G, 1H | | | | | |
| 1F | Tx1, Tx2 & Tx3 antenna (Peak Gain only) * | Required | Required | Required | Required | Required |
| 1G | VSWR of cable including connector | Required | Required | Required | Required | Required |
| 1H | Tx1, Tx2 & Tx3 antenna (Cable loss W/ connector) * | Required | Required | Required | Required | Required |
| 2 | Dimensioned Photographs <u>and</u> Drawings of Tx1, Tx2, and Tx3 (or Rx3) antennas | Required | Required | Required | Required | Required |
| 3 | Radiation patterns of antennas loaded in the host platform. | Required | Desired | Required | N/A | 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 | <u>Required (Photos)</u> | <u>Required (Photos)</u> |
| 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

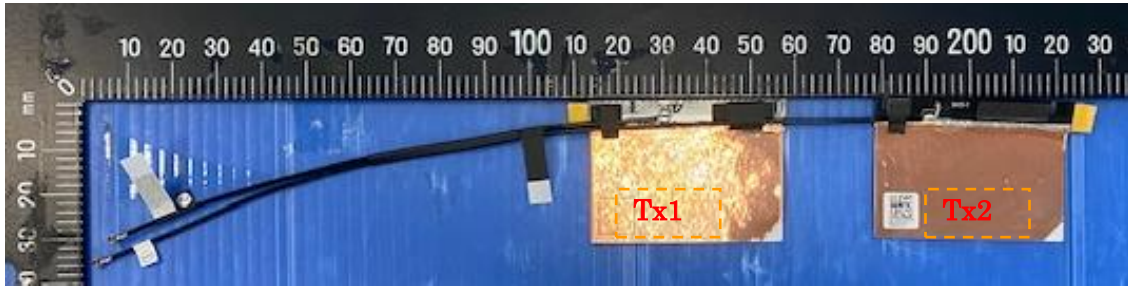
| 1A Antenna Part Number | 1B Manu-facturer | 1C Antenna Type | 1D Cable Assembly Part Number and Information | Freq Range MHz | 1E *Peak Gain W/ Cable loss (dBi) | 1F Peak Gain w/o Cable Loss (dBi) | 1G Max VSWR | 1H Cable Loss (dB) |
|--|---------------------|--------------------|---|----------------|--------------------------------------|--------------------------------------|----------------|-----------------------|
| P/N: DC33002K3C0 (Vendor P/N: WA-P-LBLB-02-130) Main Antenna | INPAQ | PIFA | 50 ohm Coaxial length: 110mm diameter: 1.13mm I-PEX MHF-4L | 2400-2500 | -1.07 | -0.76 | 3 | 0.31 |
| | | | | 5150-5250 | 1.55 | 1.99 | 3 | 0.44 |
| | | | | 5250-5350 | 1.55 | 2.01 | 3 | 0.46 |
| | | | | 5470-5725 | 0.73 | 1.20 | 3 | 0.47 |
| | | | | 5725-5850 | -0.22 | 0.26 | 3 | 0.48 |
| | | | | 5925-6425 | 1.88 | 2.38 | 3 | 0.50 |
| | | | | 6425-6525 | -1.89 | -1.38 | 3 | 0.51 |
| | | | | 6525-6875 | -0.32 | 0.20 | 3 | 0.52 |
| | | | | 6875-7125 | -0.55 | -0.01 | 3 | 0.54 |
| P/N: DC33002K3C0 (Vendor P/N: WA-P-LBLB-02-130) Aux Antenna | INPAQ | PIFA | 50 ohm Coaxial length:180mm diameter: 1.13mm I-PEX MHF-4L | 2400-2500 | -0.63 | -0.13 | 3 | 0.50 |
| | | | | 5150-5250 | 1.25 | 1.96 | 3 | 0.71 |
| | | | | 5250-5350 | 1.25 | 1.99 | 3 | 0.74 |
| | | | | 5470-5725 | -0.92 | -0.15 | 3 | 0.77 |
| | | | | 5725-5850 | -0.92 | -0.14 | 3 | 0.78 |
| | | | | 5925-6425 | 0.84 | 1.66 | 3 | 0.82 |
| | | | | 6425-6525 | -1.06 | -0.23 | 3 | 0.83 |
| | | | | 6525-6875 | -1.06 | -0.21 | 3 | 0.85 |
| | | | | 6875-7125 | 0.45 | 1.33 | 3 | 0.88 |

- Antenna Peak Gain required being test in system basis.
- 1E frame contend absolutely peak antenna gain include H/V

Include front view photo of all 2 antennas here.

Antenna Manufacturer: INPAQ

Antenna Part Number: DC33002K3C0 (WA-P-LBLB-02-130) (Tx1), DC33002K3C0 (WA-P-LBLB-02-130) (Tx2 or Rx2)

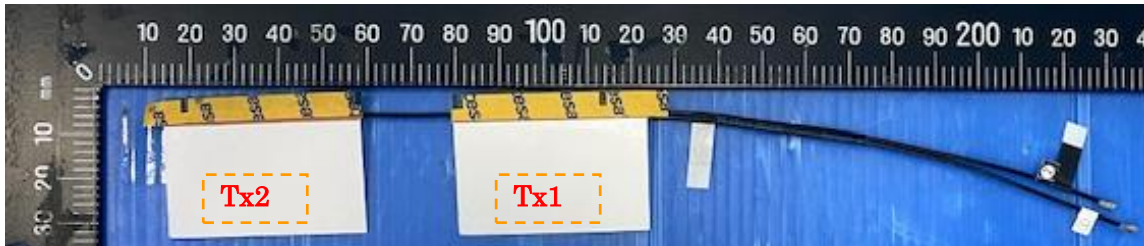


Note: antenna photo should include L type ruler

Include back view photo of all 2 antennas here.

Antenna Manufacturer: INPAQ

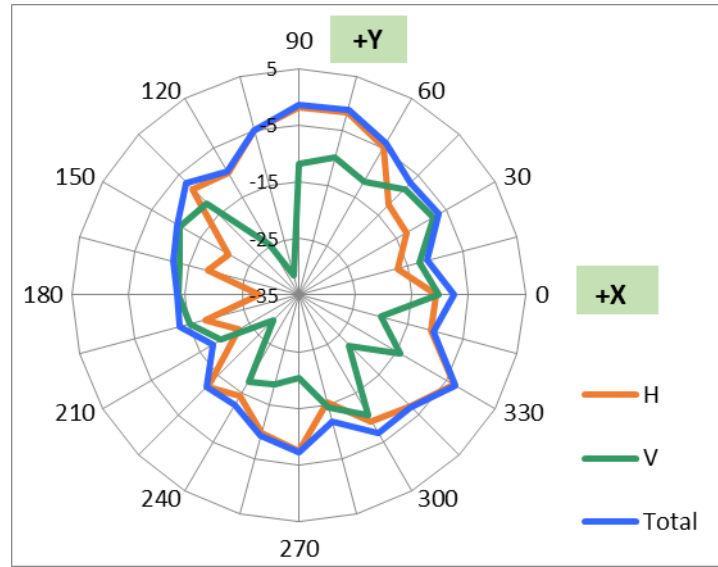
Antenna Part Number: DC33002K3C0 (WA-P-LBLB-02-130) (Tx1), DC33002K3C0 (WA-P-LBLB-02-130) (Tx2 or Rx2)



Section 3. Radiation characteristics of antennae Loaded in Host Platform

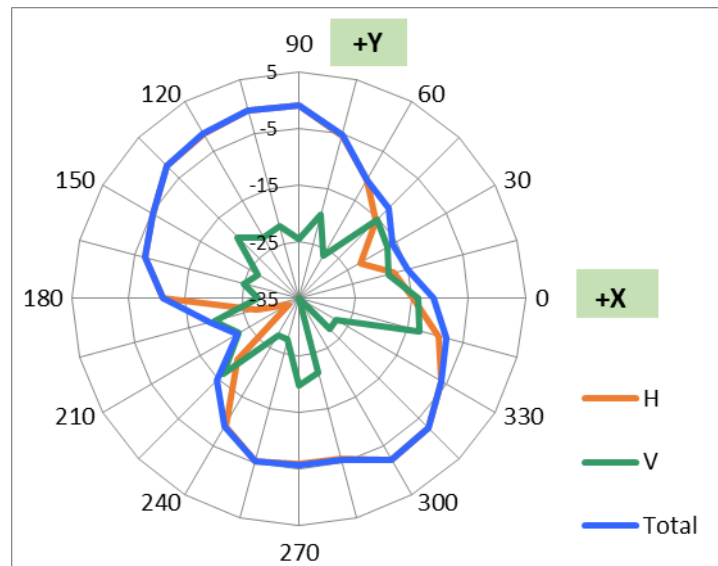
2400-2500MHz radiation characteristic (1E Peak Gain W/ Cable loss (dBi))

Main antenna:



| | |
|---------------------------------|----------------------|
| Center Frequency | 2400-2500 MHz |
| Horizontal+ Vertical (dBi) peak | -1.07 |

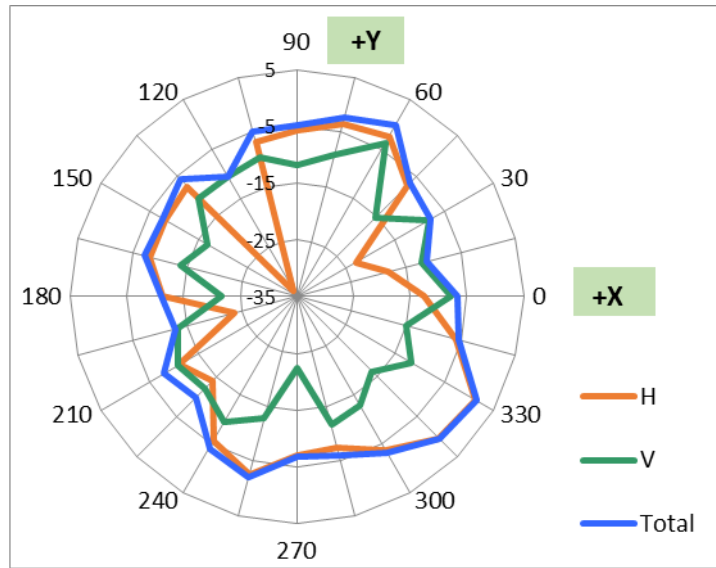
Aux antenna:



| | |
|---------------------------------|----------------------|
| Center Frequency | 2400-2500 MHz |
| Horizontal+ Vertical (dBi) peak | -0.63 |

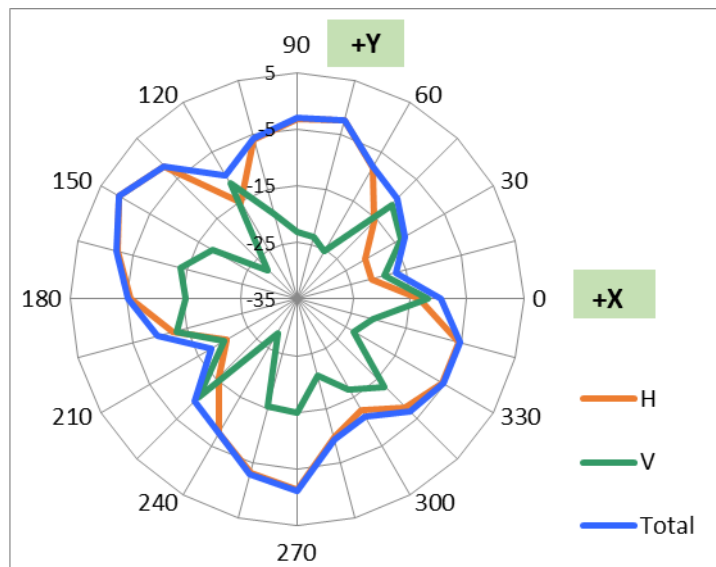
5150-5250MHz radiation characteristic

Main antenna:



| | |
|---------------------------------|------|
| Horizontal+ Vertical (dBi) peak | 1.55 |
|---------------------------------|------|

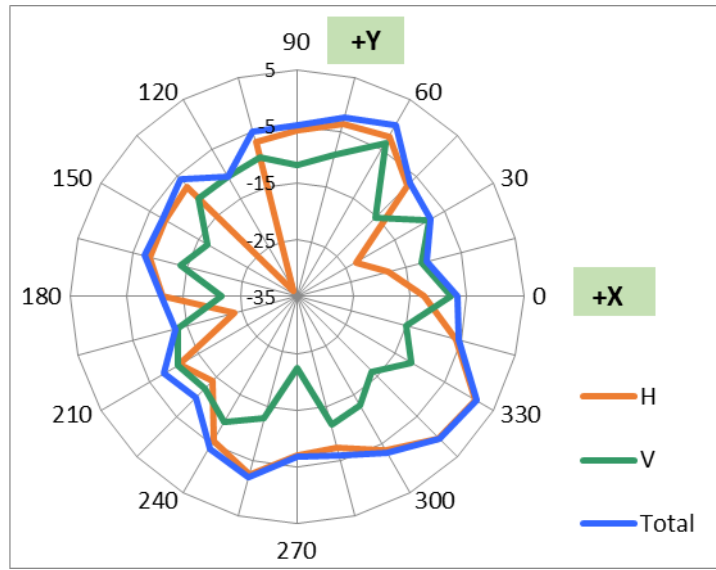
Aux antenna:



| | |
|---------------------------------|------|
| Horizontal+ Vertical (dBi) peak | 1.25 |
|---------------------------------|------|

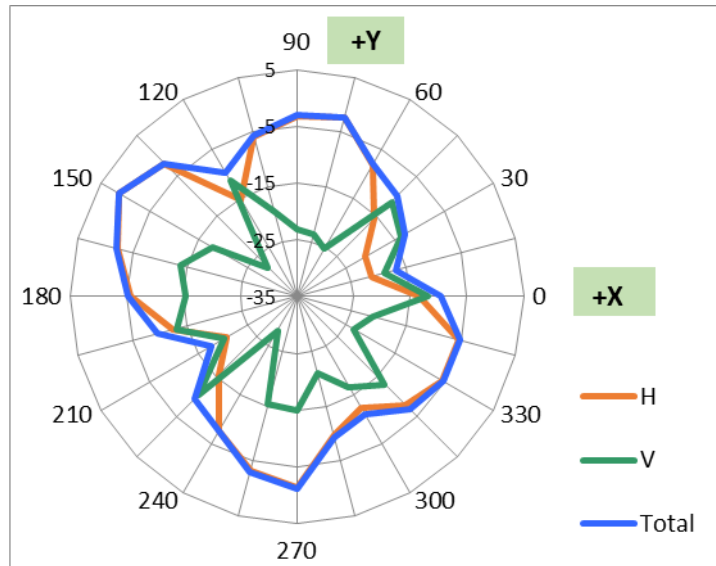
5250-5350MHz radiation characteristic

Main antenna:



| | |
|---------------------------------|------|
| Horizontal+ Vertical (dBi) peak | 1.55 |
|---------------------------------|------|

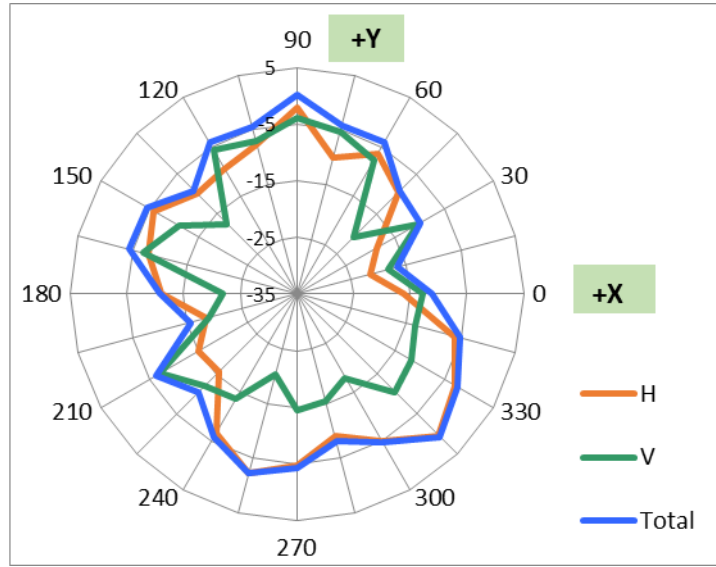
Aux antenna:



| | |
|---------------------------------|------|
| Horizontal+ Vertical (dBi) peak | 1.25 |
|---------------------------------|------|

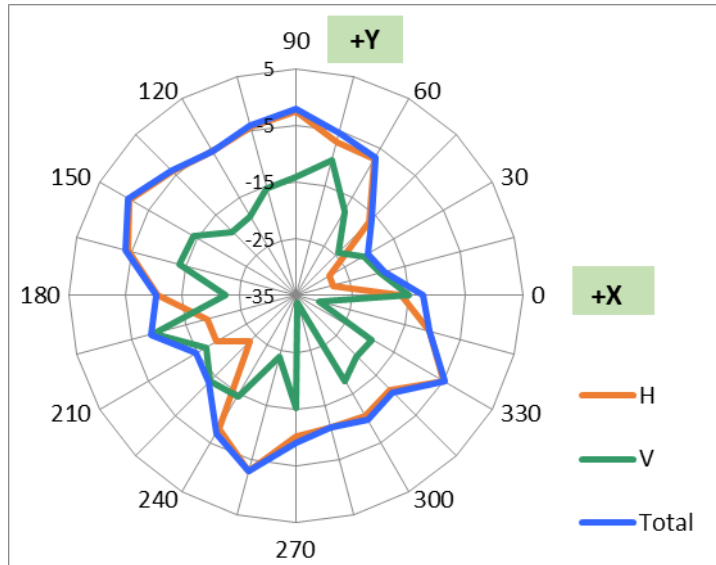
5470-5725MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



| | |
|---------------------------------|-------------|
| Horizontal+ Vertical (dBi) peak | 0.73 |
|---------------------------------|-------------|

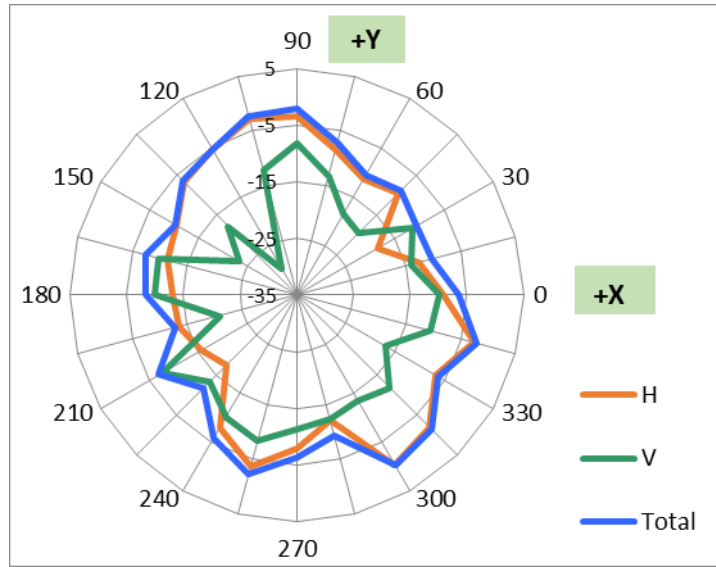
Aux antenna:



| | |
|---------------------------------|--------------|
| Horizontal+ Vertical (dBi) peak | -0.92 |
|---------------------------------|--------------|

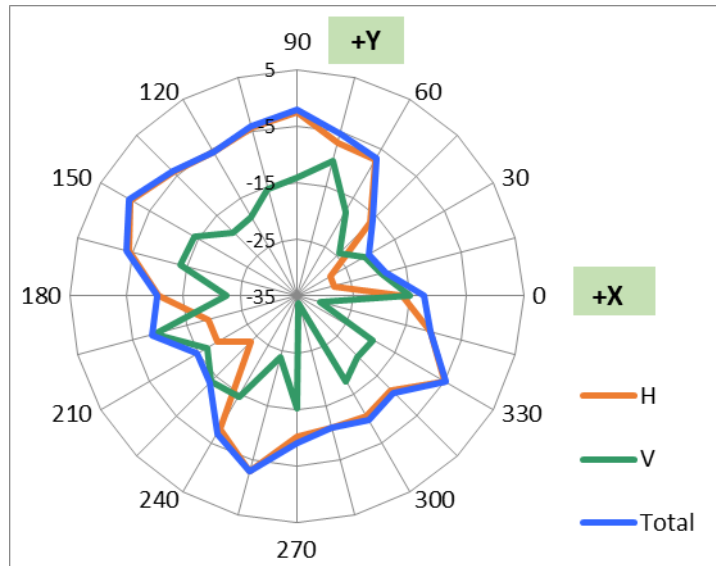
5725-5850MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



| | |
|---------------------------------|--------------|
| Horizontal+ Vertical (dBi) peak | -0.22 |
|---------------------------------|--------------|

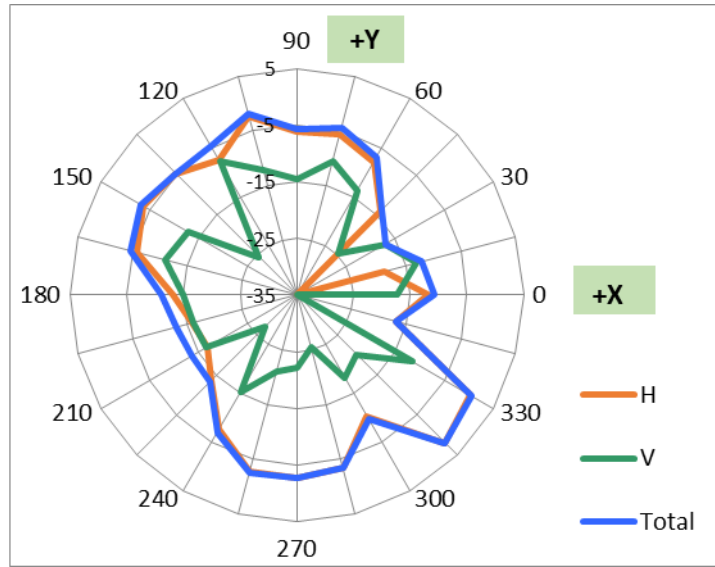
Aux antenna:



| | |
|---------------------------------|--------------|
| Horizontal+ Vertical (dBi) peak | -0.92 |
|---------------------------------|--------------|

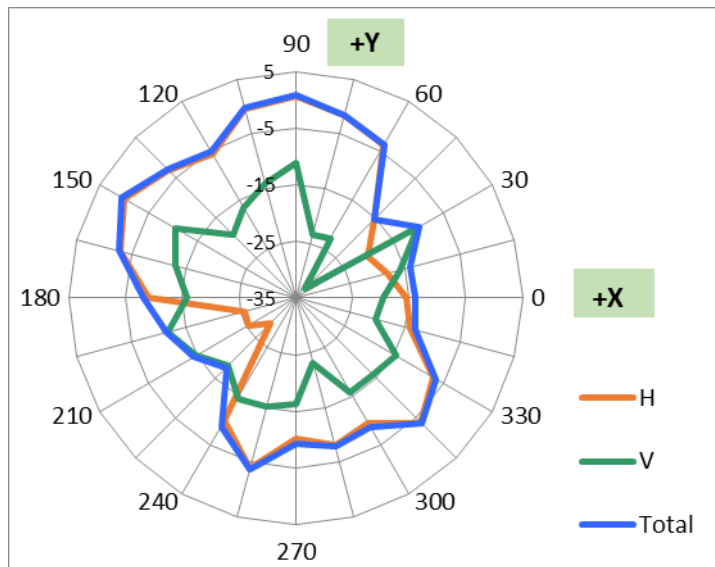
5925-6425MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



| | |
|---------------------------------|-------------|
| Horizontal+ Vertical (dBi) peak | 1.88 |
|---------------------------------|-------------|

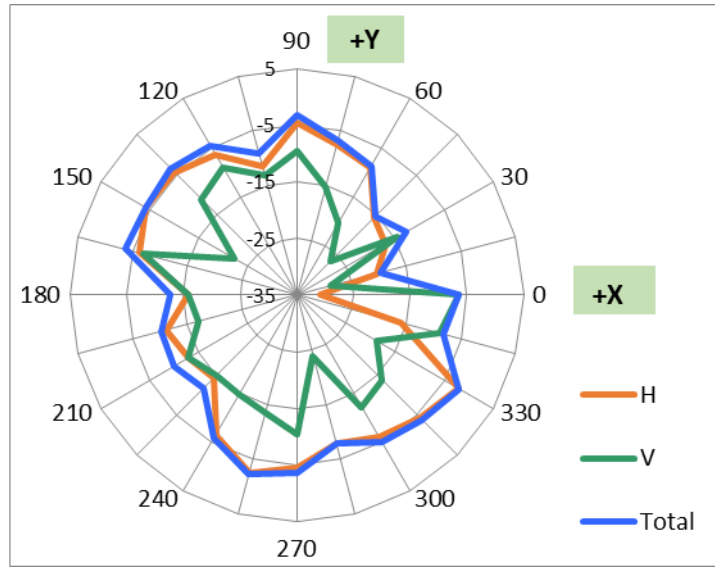
Aux antenna:



| | |
|---------------------------------|-------------|
| Horizontal+ Vertical (dBi) peak | 0.84 |
|---------------------------------|-------------|

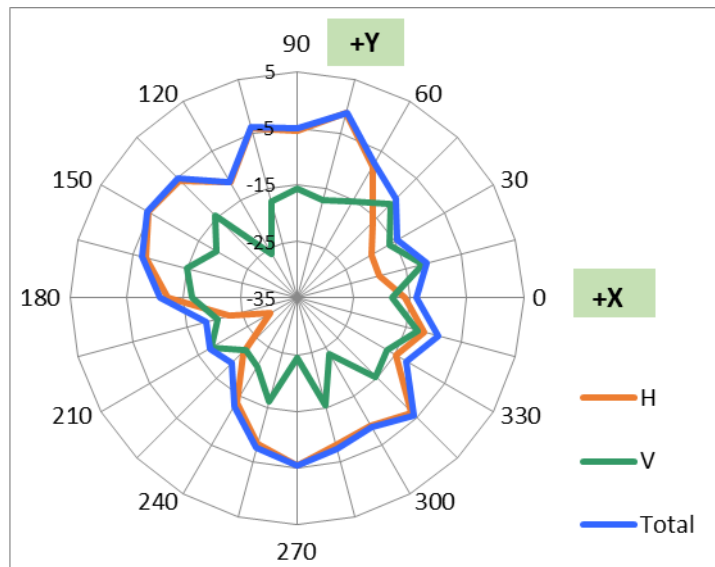
6425-6525MHz radiation characteristic (1E Peak Gain W/ Cable loss (dBi))

Main antenna:



| | |
|---------------------------------|-------|
| Horizontal+ Vertical (dBi) peak | -1.89 |
|---------------------------------|-------|

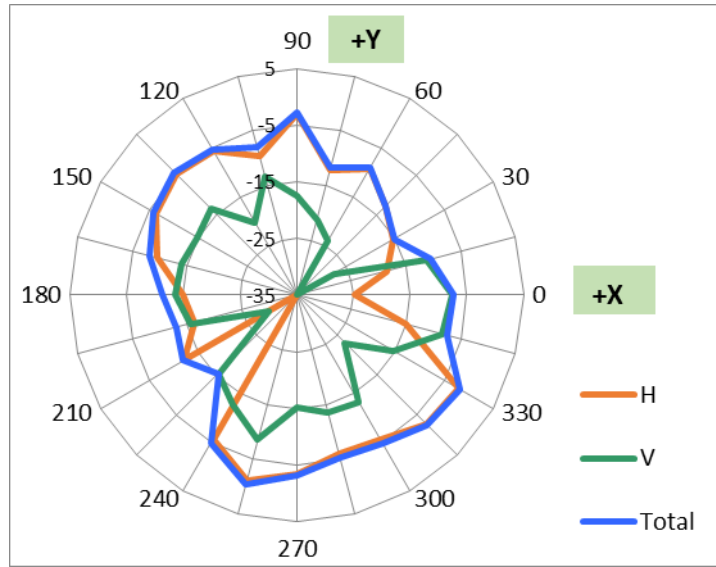
Aux antenna:



| | |
|---------------------------------|-------|
| Horizontal+ Vertical (dBi) peak | -1.06 |
|---------------------------------|-------|

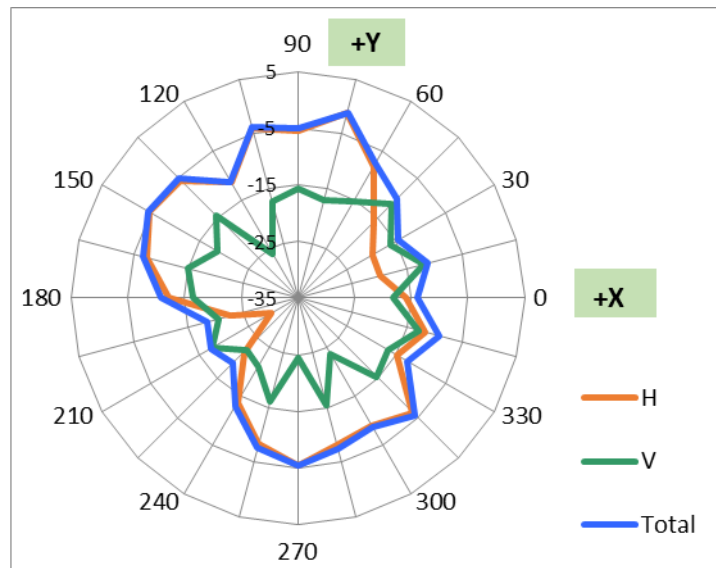
6525-6875MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



| | |
|---------------------------------|--------------|
| Horizontal+ Vertical (dBi) peak | -0.32 |
|---------------------------------|--------------|

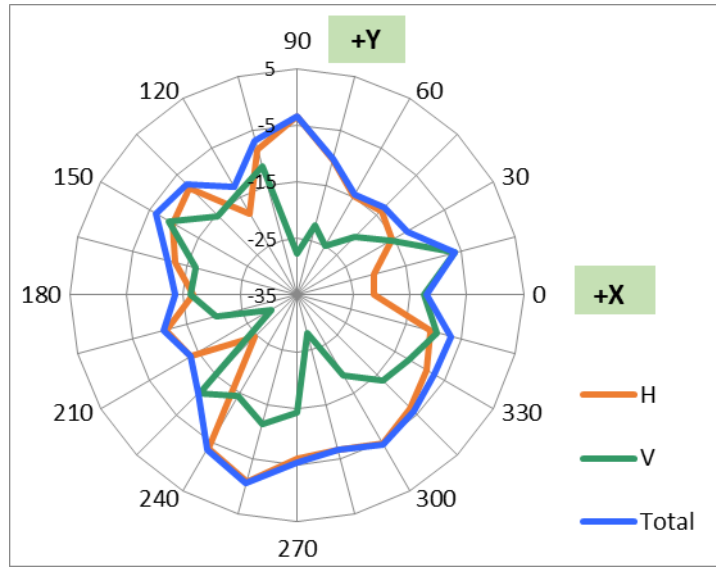
Aux antenna:



| | |
|---------------------------------|--------------|
| Horizontal+ Vertical (dBi) peak | -1.06 |
|---------------------------------|--------------|

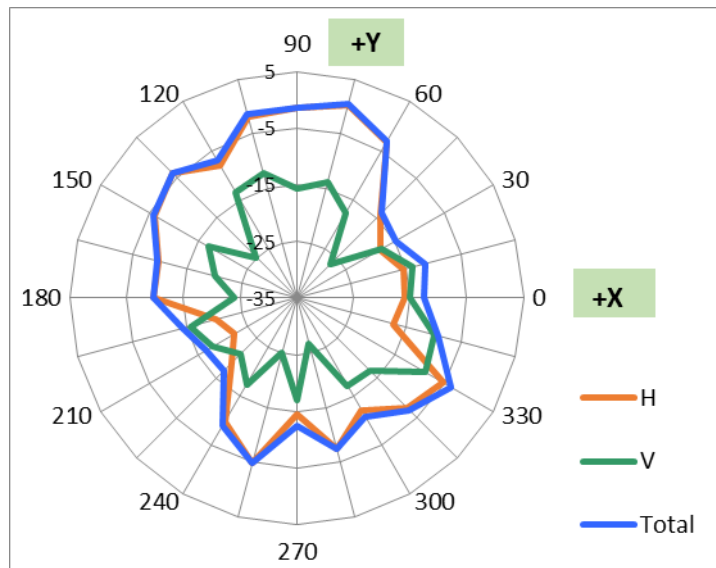
6875-7125MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



| | |
|---------------------------------|--------------|
| Horizontal+ Vertical (dBi) peak | -0.55 |
|---------------------------------|--------------|

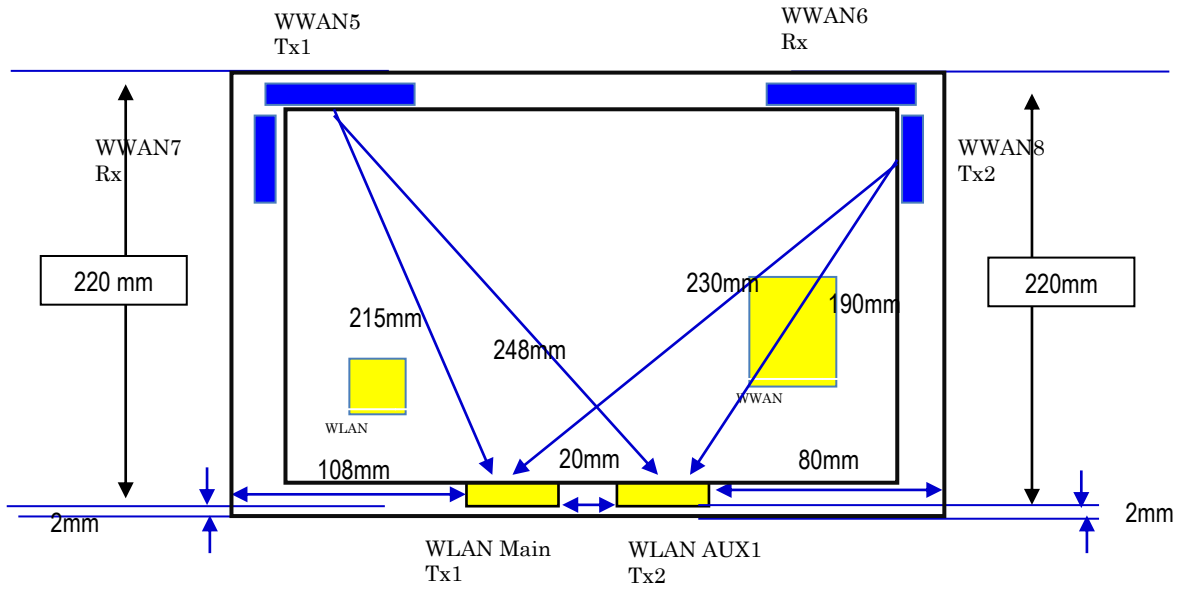
Aux antenna:



| | |
|---------------------------------|-------------|
| Horizontal+ Vertical (dBi) peak | 0.45 |
|---------------------------------|-------------|

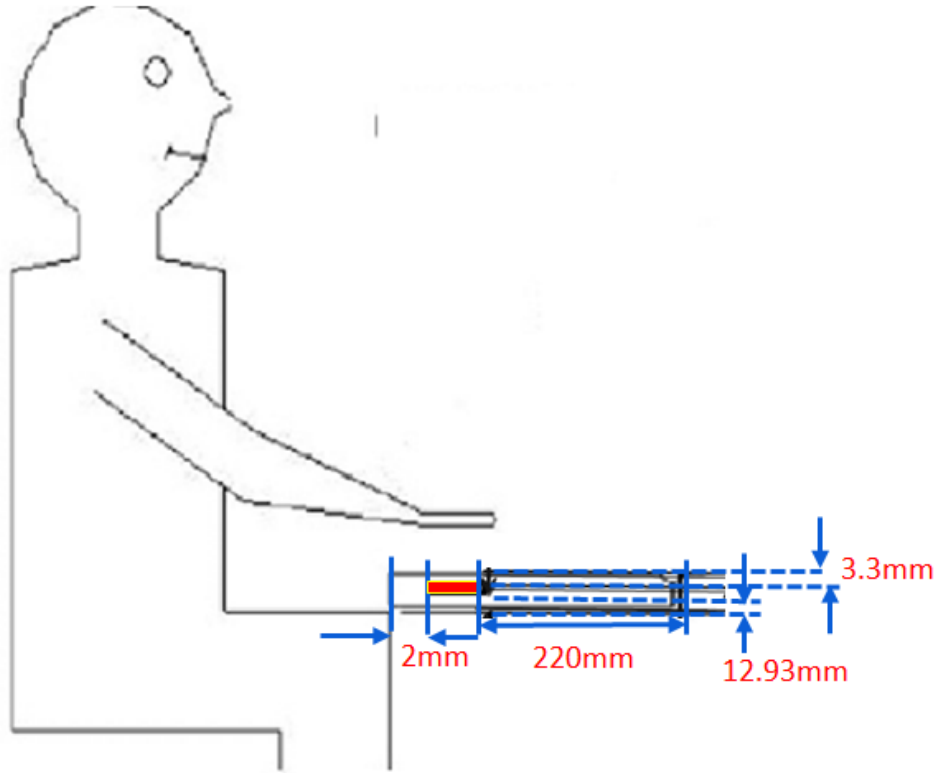
Section 4. Antenna Host Platform Location Information

Include a **dimensioned photo(s) or dimensioned drawing(s)** of Main and Aux antenna placements (measurements are not required for receive-only antenna). Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



Section 5. Antenna dimensional information for SAR evaluation

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



Section 6. Diagram Example of Co-Location Antenna Separation

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

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

