

## Regulatory WLAN Antenna Information

|         | Company Name              | Project Code |
|---------|---------------------------|--------------|
| ODM     | Quanta Computer.Inc       | ZB1          |
| Antenna | Wistron Neweb Corporation | EBQ-Q1       |
| P/N     | Wistron Neweb Corporation | 81.EBQ15.010 |

## 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      | Main & Aux antenna (Peak Gain W/ cable loss)                                                                                                                                                                       | Required | Required | Required | Required             | Required             |
|         | 1E OR 1F, 1G, 1H                                                                                                                                                                                                   |          |          |          |                      |                      |
| 1F      | Main & Aux antenna (Peak Gain only)                                                                                                                                                                                | Required | Required | Required | Required             | Required             |
| 1G      | VSWR of cable including connector                                                                                                                                                                                  | Required | Required | Required | Required             | Required             |
| 1H      | Main & Aux antenna (Cable loss W/ connector)                                                                                                                                                                       | Required | Required | Required | Required             | Required             |
| 2       | Dimensioned Photographs <b>and</b> Drawings of main & auxiliary 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. <b>(S. Korea requires photographs of antennas for approval submission). Taiwan requires pictures of each antenna type shown in the system.</b> | Required | Required | Desired  | Required<br>(Photos) | Required<br>(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, BT, 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                  |

# Antenna Information

## Section 1. Antenna Assembly Specifications

### Antenna Assembly Summary:

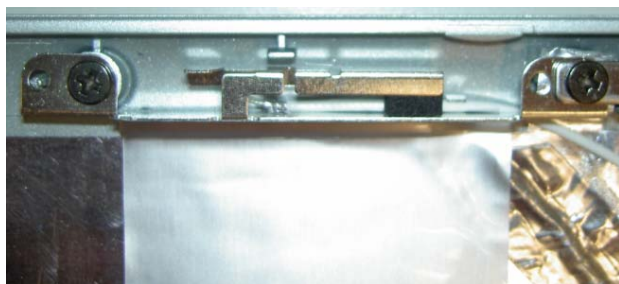
| 1A<br>Antenna Part Number                                      | 1B<br>Manufacture         | 1C<br>Antenna Type | 1D<br>Cable Assembly Part Number and Information                                                                 | 1E<br>Peak Gain W/ Cable loss (dBi)    | 1F<br>Peak Gain w/o Cable Loss (dBi)   | 1G<br>VSWR                     | 1H<br>Cable Loss (dBi)                 |
|----------------------------------------------------------------|---------------------------|--------------------|------------------------------------------------------------------------------------------------------------------|----------------------------------------|----------------------------------------|--------------------------------|----------------------------------------|
| Main Antenna<br>(WNC P/N:<br>81.EBQ15.010)<br>(customer P/N: ) | Wistron Neweb Corporation | PIFA               | P/N:1371300B(221)&1371350W(221)<br><br>50 ohm Coaxial.<br>length: 350 mm<br>diameter: 1.37 mm<br>Connector: IPEX | 2400-2500MHz<br><b>6.09</b> dBi (peak) | 2400-2500MHz<br><b>7.04</b> dBi (peak) | 2400-2500MHz<br><b>2.0</b> max | 2400-2500MHz<br><b>0.95</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  | 5150-5350MHz<br><b>4.11</b> dBi (peak) | 5150-5350MHz<br><b>5.57</b> dBi (peak) | 5150-5350MHz<br><b>2.5</b> max | 5150-5350MHz<br><b>1.46</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  | 5470-5725MHz<br><b>4.51</b> dBi (peak) | 5470-5725MHz<br><b>6.06</b> dBi (peak) | 5470-5725MHz<br><b>2.5</b> max | 5470-5725MHz<br><b>1.55</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  | 5725-5825MHz<br><b>2.58</b> dBi (peak) | 5725-5825MHz<br><b>4.14</b> dBi (peak) | 5725-5825MHz<br><b>2.5</b> max | 5725-5825MHz<br><b>1.57</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  |                                        |                                        |                                |                                        |
| AUX Antenna<br>(WNC P/N:<br>81.EBQ15.010)<br>(customer P/N: )  | Wistron Neweb Corporation | PIFA               | P/N:1371300B(221)&1371350W(221)<br><br>50 ohm Coaxial.<br>length: 300 mm<br>diameter: 1.37 mm<br>Connector: IPEX | 2400-2500MHz<br><b>4.45</b> dBi (peak) | 2400-2500MHz<br><b>5.29</b> dBi (peak) | 2400-2500MHz<br><b>2.0</b> max | 2400-2500MHz<br><b>0.84</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  | 5150-5350MHz<br><b>6.10</b> dBi (peak) | 5150-5350MHz<br><b>7.39</b> dBi (peak) | 5150-5350MHz<br><b>2.5</b> max | 5150-5350MHz<br><b>1.29</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  | 5470-5725MHz<br><b>5.27</b> dBi (peak) | 5470-5725MHz<br><b>6.63</b> dBi (peak) | 5470-5725MHz<br><b>2.5</b> max | 5470-5725MHz<br><b>1.36</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  | 5725-5825MHz<br><b>4.00</b> dBi (peak) | 5725-5825MHz<br><b>5.38</b> dBi (peak) | 5725-5825MHz<br><b>2.5</b> max | 5725-5825MHz<br><b>1.38</b> dBi (peak) |
|                                                                |                           |                    |                                                                                                                  |                                        |                                        |                                |                                        |

## Section 2. Dimensioned Photos or Drawings of Antennas

Include a dimensioned photo and dimensioned drawing of main antenna here.

### Main and Aux Antenna Dimensioned Drawing:

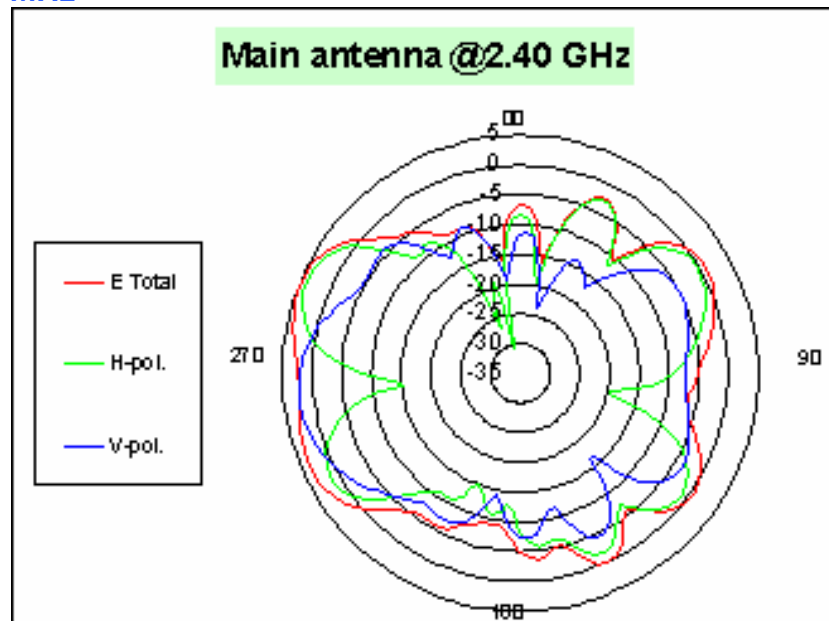
### Main and Aux Antenna Photo:



## Section 3. Radiation characteristics of antennae Loaded in Host Platform

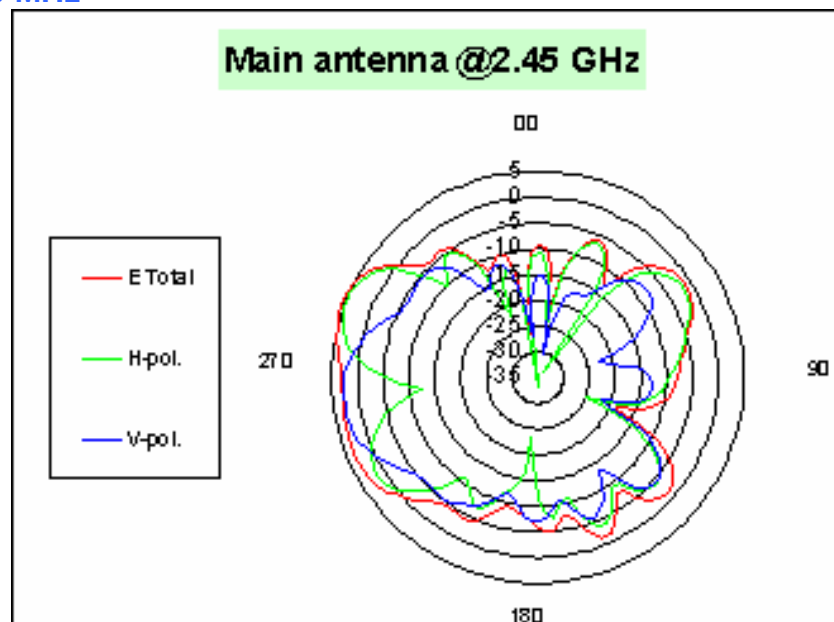
### 2400-2500MHz radiation characteristic

#### Main antenna: 2400 MHz



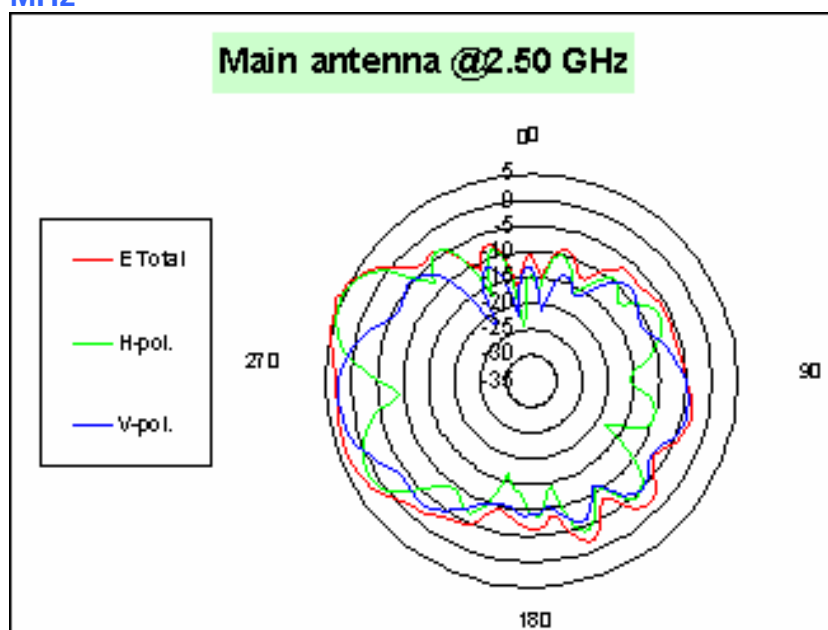
|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>4.86</b>  | <b>4.10</b>  | <b>2.27</b>  |
| <b>Average Gain</b> | <b>-1.91</b> | <b>-4.77</b> | <b>-5.86</b> |

#### Main antenna: 2450 MHz



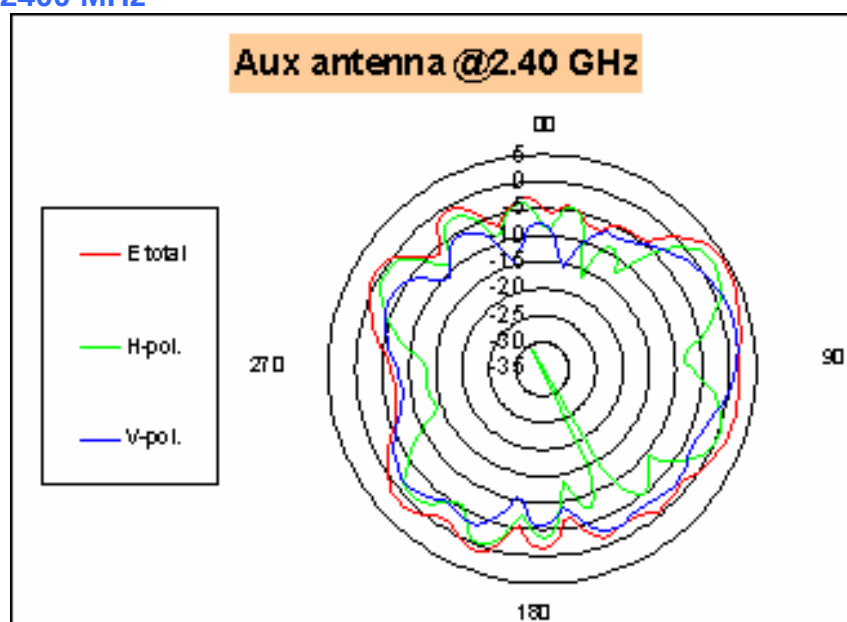
|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>5.48</b>  | <b>4.99</b>  | <b>2.79</b>  |
| <b>Average Gain</b> | <b>-2.84</b> | <b>-5.55</b> | <b>-7.08</b> |

## Main antenna: 2500 MHz



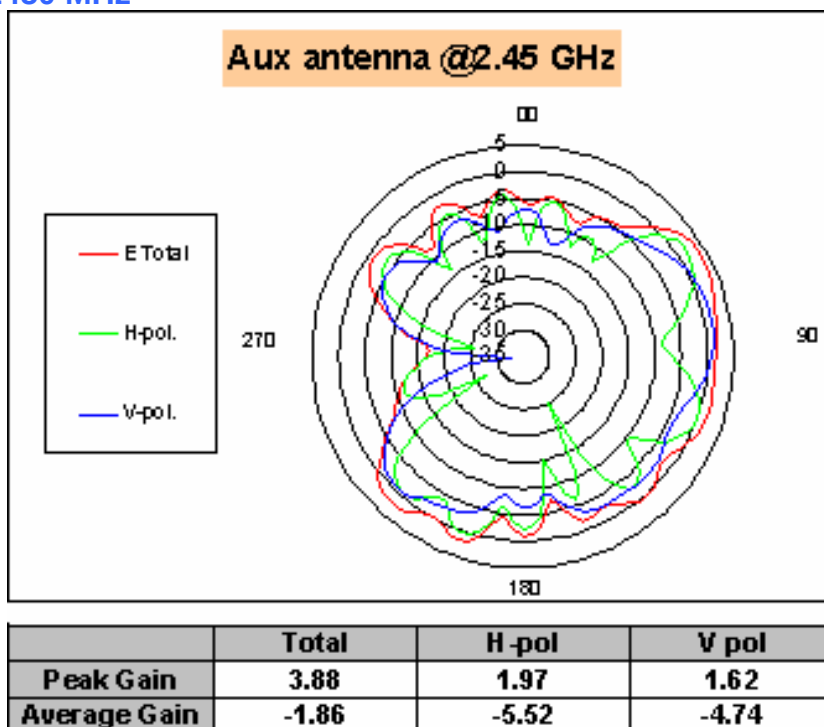
|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>6.09</b>  | <b>5.36</b>  | <b>2.63</b>  |
| <b>Average Gain</b> | <b>-2.68</b> | <b>-6.01</b> | <b>-6.12</b> |

## Auxiliary antenna: 2400 MHz

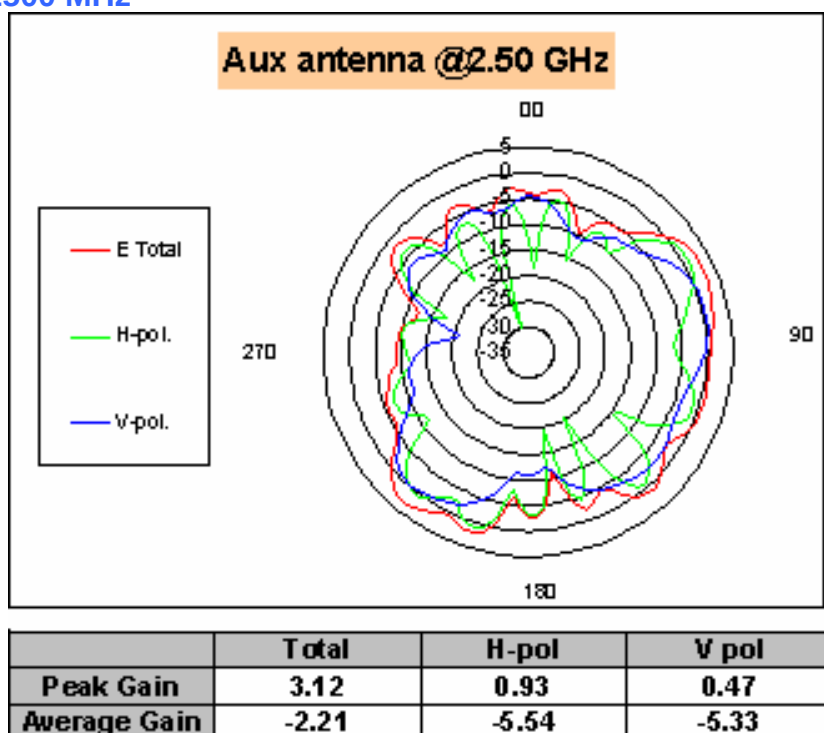


|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>4.45</b>  | <b>2.56</b>  | <b>1.85</b>  |
| <b>Average Gain</b> | <b>-1.16</b> | <b>-4.69</b> | <b>-4.17</b> |

## Auxiliary antenna: 2450 MHz

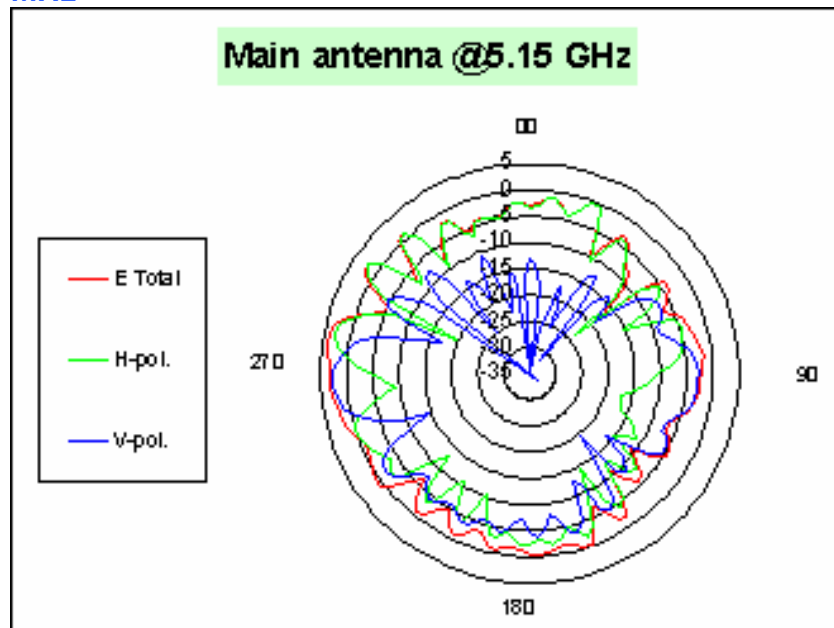


## Auxiliary antenna: 2500 MHz



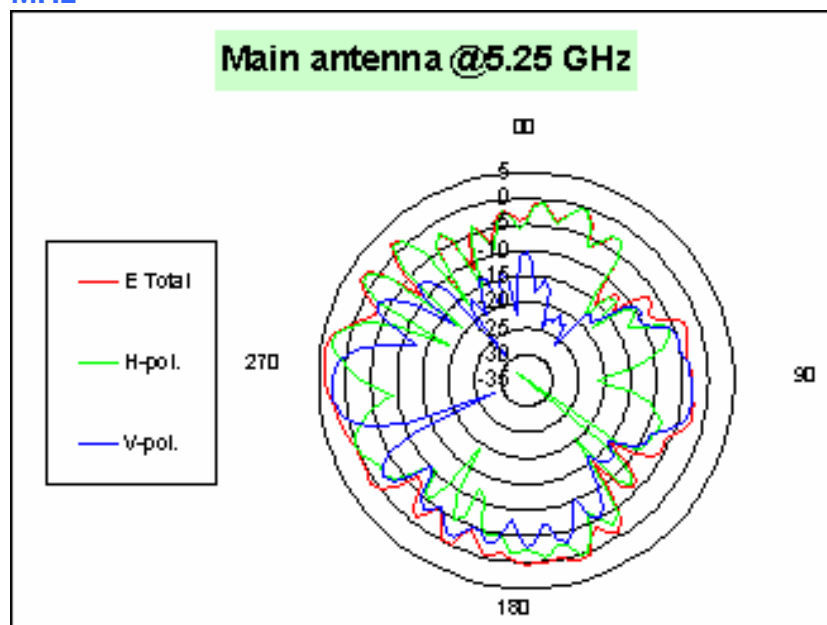
5150-5350 MHz radiation characteristic

## Main antenna: 5150 MHz

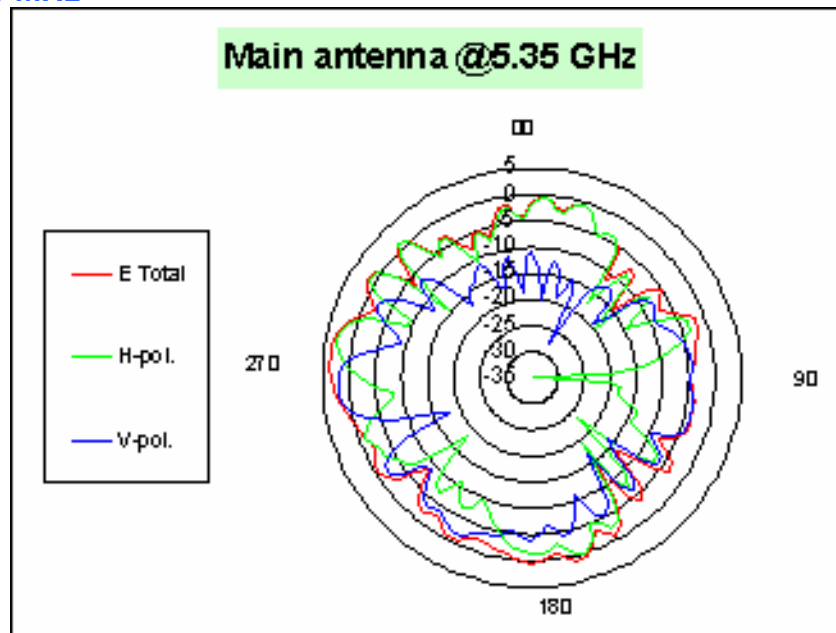


|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>4.07</b>  | <b>2.89</b>  | <b>2.62</b>  |
| <b>Average Gain</b> | <b>-2.23</b> | <b>-4.80</b> | <b>-7.20</b> |

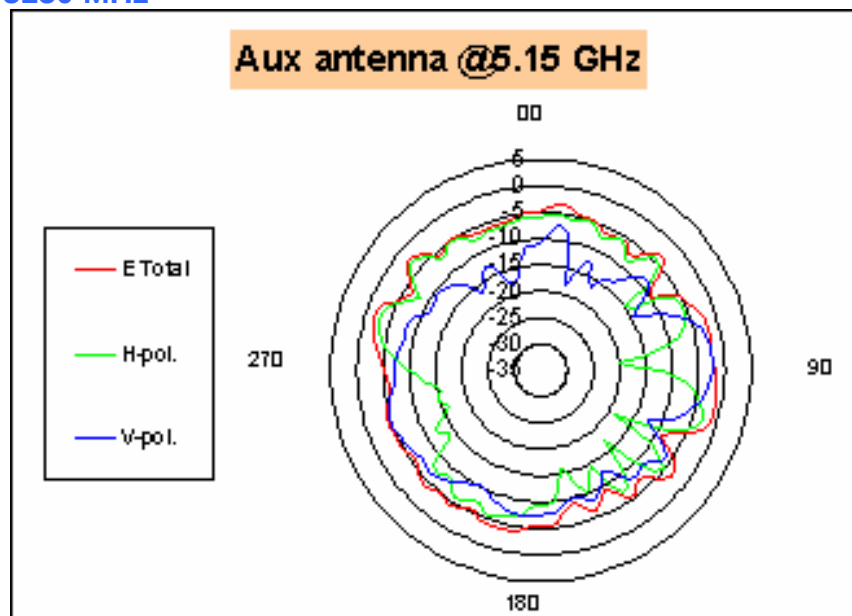
## Main antenna: 5250 MHz



|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>4.11</b>  | <b>2.93</b>  | <b>2.64</b>  |
| <b>Average Gain</b> | <b>-2.24</b> | <b>-4.91</b> | <b>-7.09</b> |

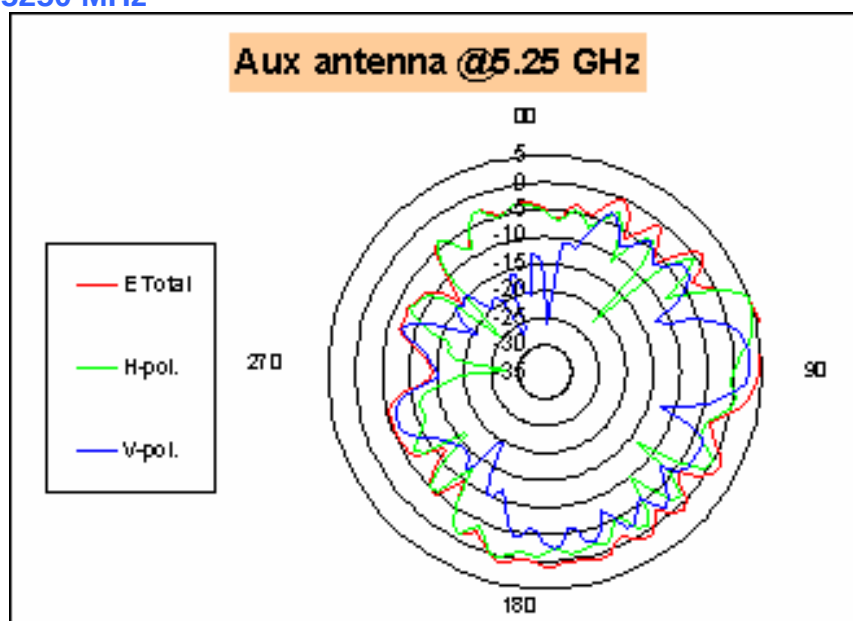
**Main antenna: 5350 MHz**

|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>3.84</b>  | <b>2.90</b>  | <b>2.10</b>  |
| <b>Average Gain</b> | <b>-2.30</b> | <b>-5.18</b> | <b>-6.76</b> |

**Auxiliary antenna: 5150 MHz**

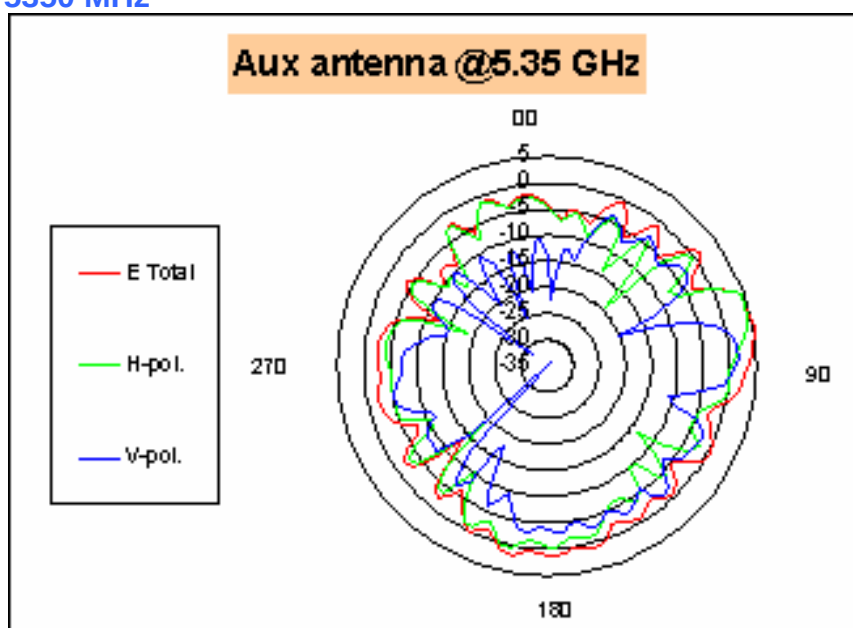
|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>-1.18</b> | <b>-2.77</b> | <b>-2.45</b> |
| <b>Average Gain</b> | <b>-4.69</b> | <b>-7.66</b> | <b>-8.58</b> |

## Auxiliary antenna: 5250 MHz

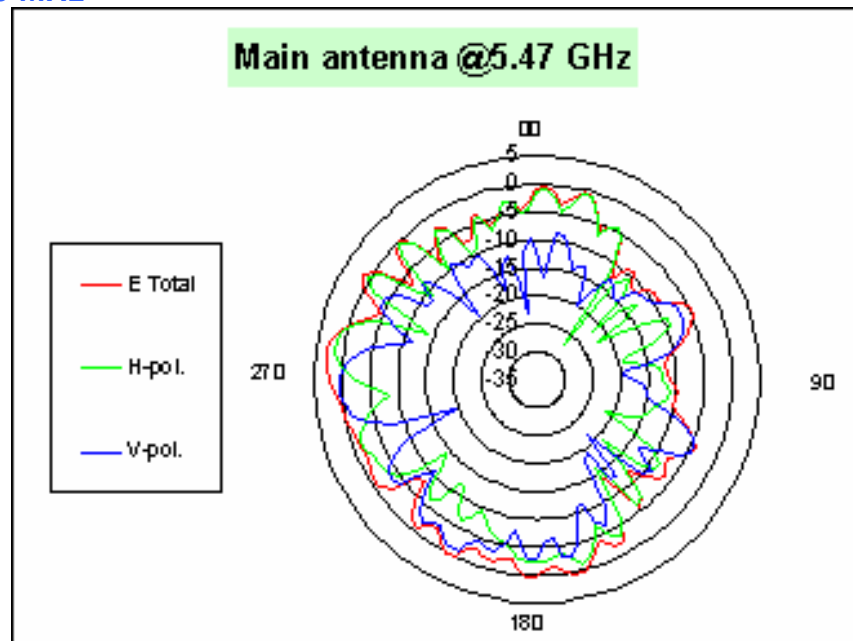


|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>6.10</b>  | <b>4.96</b>  | <b>2.79</b>  |
| <b>Average Gain</b> | <b>-2.02</b> | <b>-4.16</b> | <b>-7.00</b> |

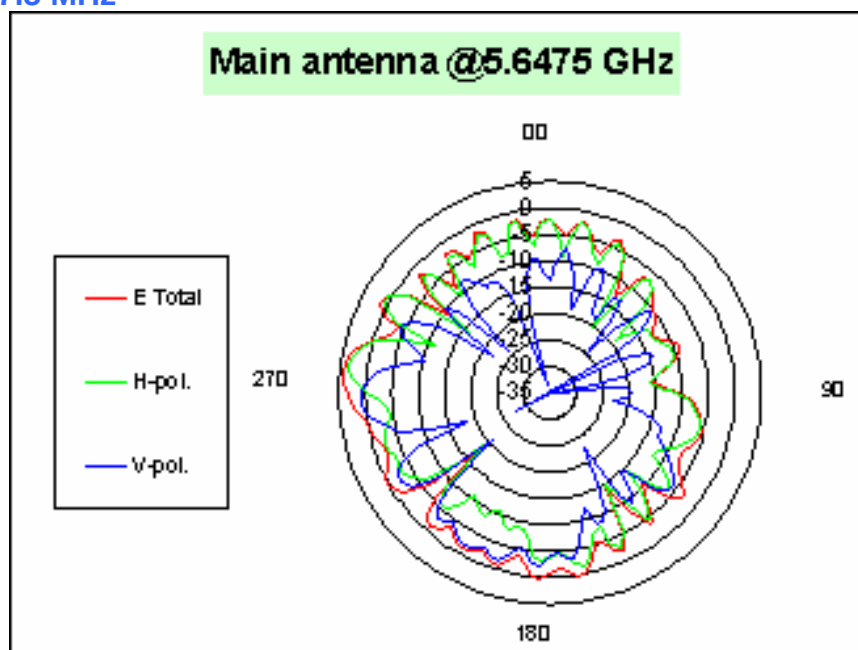
## Auxiliary antenna: 5350 MHz



|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>5.34</b>  | <b>4.45</b>  | <b>1.52</b>  |
| <b>Average Gain</b> | <b>-1.72</b> | <b>-3.75</b> | <b>-6.79</b> |

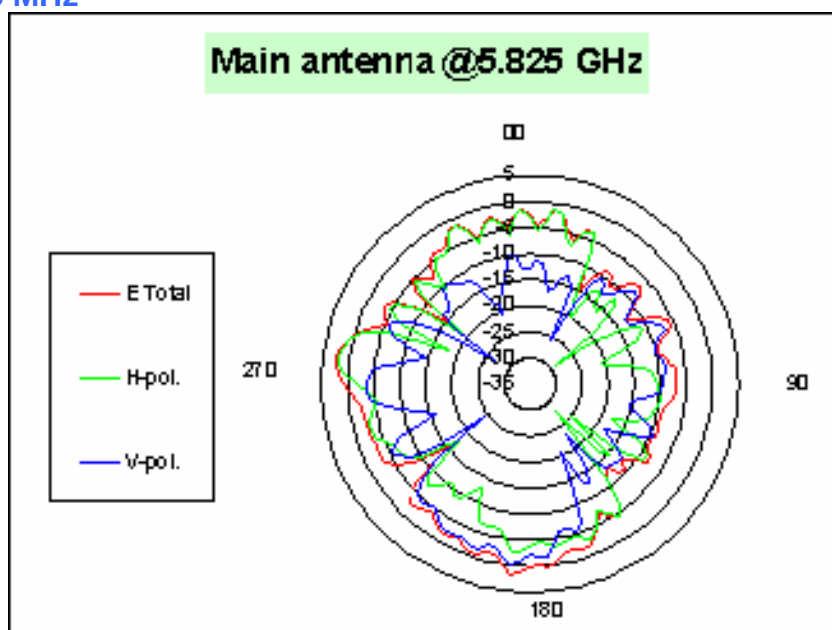
**5470-5725MHz radiation characteristic****Main antenna: 5470 MHz**

|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>3.04</b>  | <b>1.65</b>  | <b>0.57</b>  |
| <b>Average Gain</b> | <b>-3.30</b> | <b>-5.99</b> | <b>-7.78</b> |

**Main antenna: 5647.5 MHz**

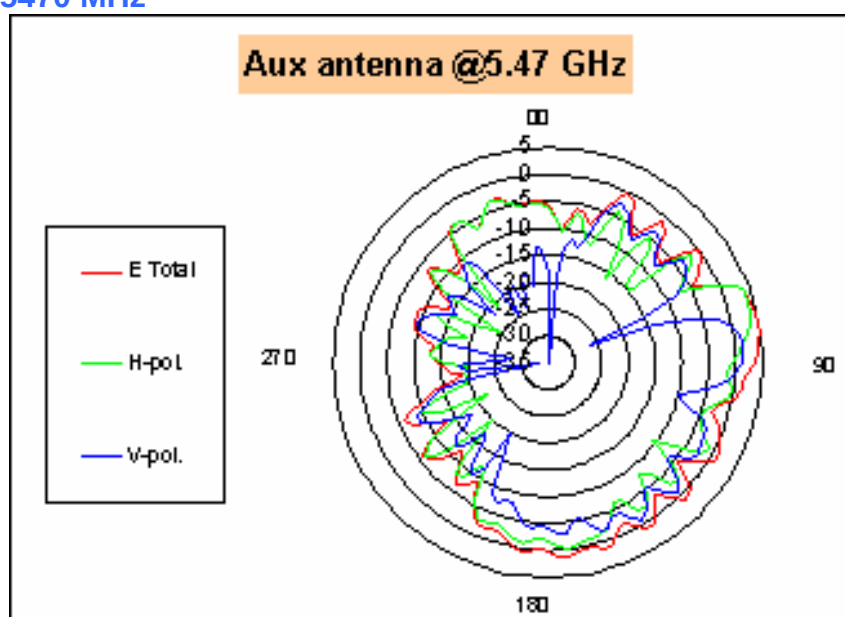
|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>4.51</b>  | <b>3.48</b>  | <b>0.96</b>  |
| <b>Average Gain</b> | <b>-3.49</b> | <b>-5.73</b> | <b>-8.52</b> |

## Main antenna: 5825 MHz



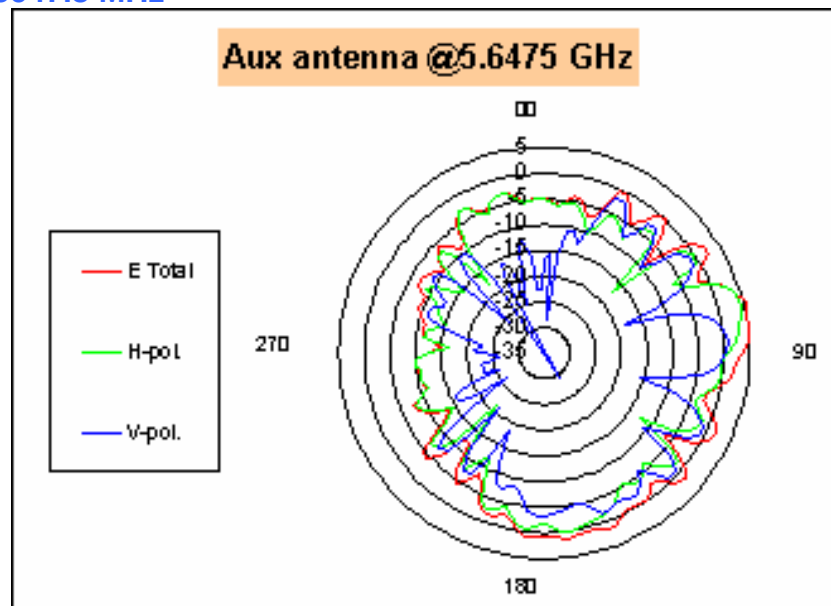
|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>2.58</b>  | <b>2.00</b>  | <b>-0.34</b> |
| <b>Average Gain</b> | <b>-4.27</b> | <b>-6.88</b> | <b>-8.94</b> |

## Auxiliary antenna: 5470 MHz



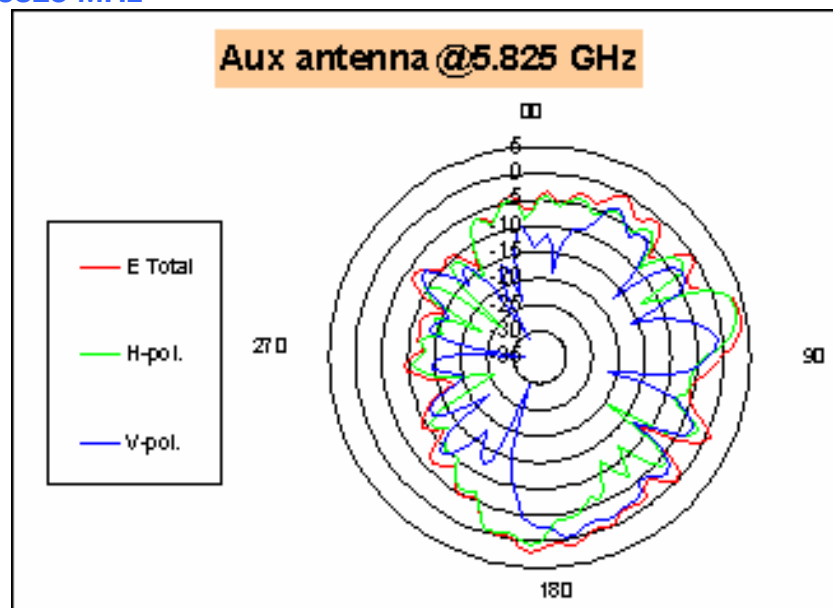
|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>5.07</b>  | <b>3.90</b>  | <b>1.45</b>  |
| <b>Average Gain</b> | <b>-2.97</b> | <b>-5.27</b> | <b>-7.70</b> |

## Auxiliary antenna: 5647.5 MHz



|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>5.27</b>  | <b>4.72</b>  | <b>0.71</b>  |
| <b>Average Gain</b> | <b>-2.54</b> | <b>-4.57</b> | <b>-7.66</b> |

## Auxiliary antenna: 5825 MHz



|                     | Total        | H-pol        | V pol        |
|---------------------|--------------|--------------|--------------|
| <b>Peak Gain</b>    | <b>4.00</b>  | <b>3.58</b>  | <b>-0.49</b> |
| <b>Average Gain</b> | <b>-3.77</b> | <b>-6.21</b> | <b>-8.38</b> |

## **Section 4. Host Platform Information**

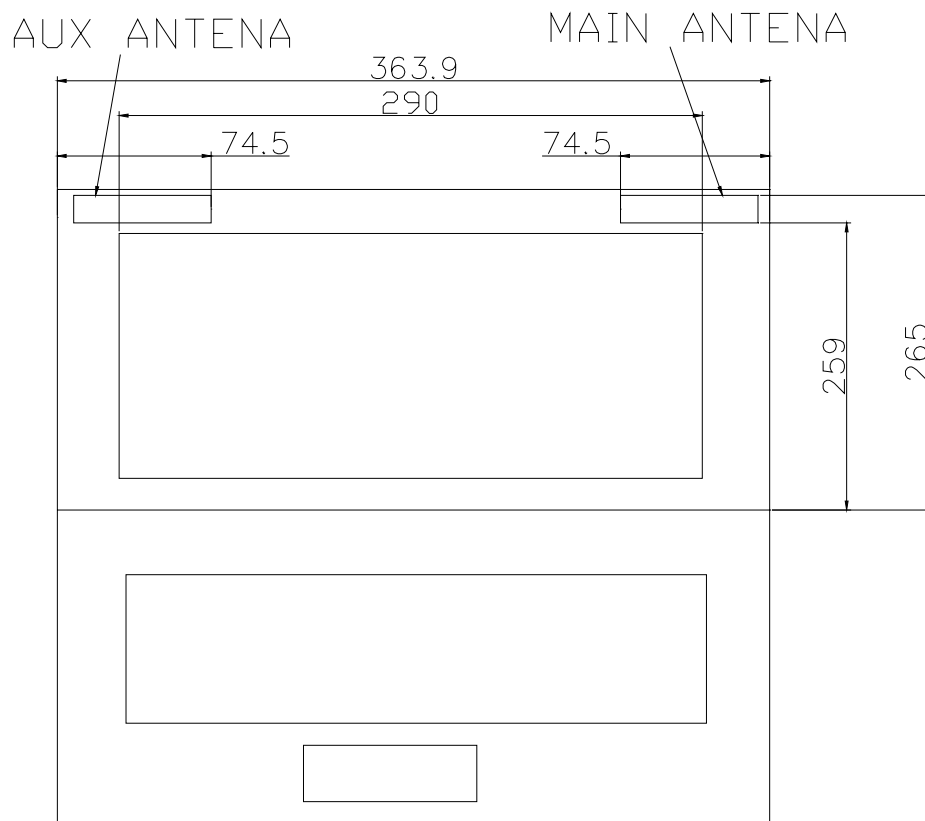
OEM / ODM Host platform: (XXXXXXX) platform correlated to antenna data

**Rating Label Photo:**

**Module Location Photo: (if Singapore required)**

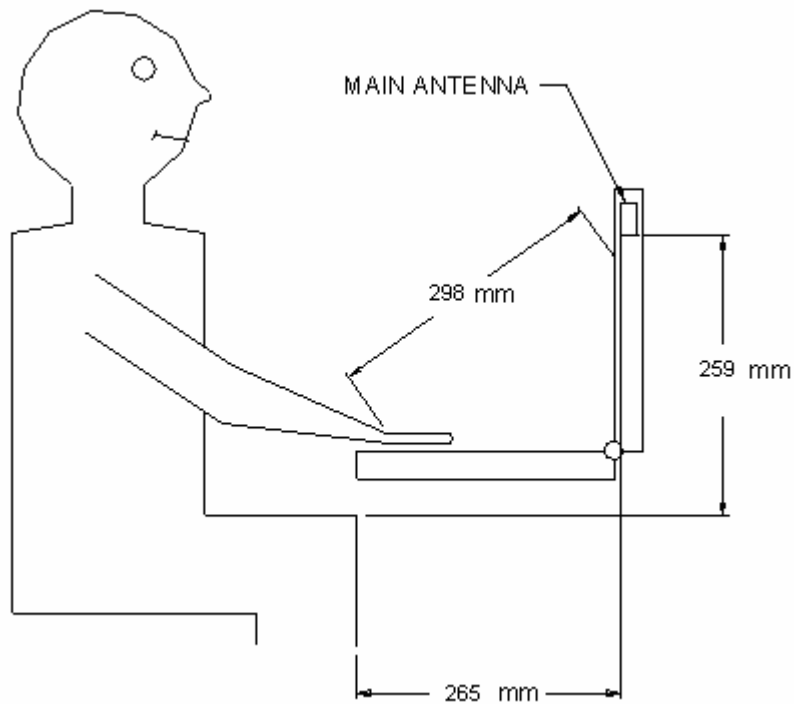
## Section 5. Antenna Host Platform Location Information

Include a dimensioned photos or dimensioned drawings of main and auxiliary antenna placements.



## Section 6. Antenna dimensional information for SAR evaluation

Include a dimensioned photos or dimensioned drawings showing the distance (mm) between the transmit (main) antenna and the user (excluding hands, wrist, feet, and ankle)



## Section 7. Diagram Example of Co-Location Antenna Separation

Indicate distance between WLAN module antennas and Bluetooth/other radio antenna element.

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

