

## Regulatory WLAN Antenna Information

Platform information							
Brand	ODM	Platform model name	Platform type (ex: regular NB, convertible PC, AIO...etc)	SAR minimum separation (mm)			
HP Inc.	Quanta Corporation	Kerbal 20C1 (TPN-Q237)	Notebook PC	4.93			
Antenna information				Peak gain w/ cable loss (dBi)			
Vendor	Type	Antenna Part number (Tx1)	Antenna Part number (Tx2)	2.4GHz	5.2GHz	5.5GHz	5.8GHz
High-Tek Electronics Co., Ltd	PIFA	DQ60ACQD061 (0ACQD019067N)	DQ60ACQD061 (0ACQD019067N)	-3.77	-0.95	-0.76	-0.93
Module information							
Model	Form factor and suffixes (NGW/ HMW AND AN/ NB/ BN....)						
AX201D2W	Intel Wi-Fi 6 AX201 + BT5 (non-vPro) (802.11ax 2x2, MU-MIMO, supporting gigabit file transfer speeds), Harrison Peak 2 (HrP2) (soldered down)						

## 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	VSW R 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 and 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. (S. Korea requires photographs of antennas for approval submission). Taiwan requires pictures of each antenna type shown in the system.	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 Manufacture	1C Antenna Type	1D Cable Assembly Part Number and Information	1E *Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G VSWR	1H Cable Loss (dBi)
DQ60ACQD061 (0ACQD019067N)  Tx1/ Rx1 Antenna	High-Tek Electronics Co., Ltd	PIFA	Connector: SpeedTech or compatible 50 ohm Coaxial Length: 178.5 mm diameter:1.37 mm	2400-2500MHz -3.77 dBi (peak)	2400-2500MHz -3.39 dBi (peak)	2400-2500MHz 3.0 max	2400-2500MHz 0.38 dBi (peak)
				5150-5350MHz -1 dBi (peak)	5150-5350MHz -0.46 dBi (peak)	5150-5350MHz 3.0 max	5150-5350MHz 0.54 dBi (peak)
				5470-5725MHz -0.76 dBi (peak)	5470-5725MHz -0.21 dBi (peak)	5470-5725MHz 3.0 max	5470-5725MHz 0.55 dBi (peak)
				5725-5850MHz -3.98 dBi (peak)	5725-5850MHz -3.41 dBi (peak)	5725-5850MHz 3.0 max	5725-5850MHz 0.57 dBi (peak)
DQ60ACQD061 (0ACQD019067N)  Tx2/ Rx2 Antenna	High-Tek Electronics Co., Ltd	PIFA	Connector: SpeedTech or compatible 50 ohm Coaxial Length: 256.5 mm diameter:1.37 mm	2400-2500MHz -3.95 dBi (peak)	2400-2500MHz -3.4 dBi (peak)	2400-2500MHz 3.0 max	2400-2500MHz 0.55 dBi (peak)
				5150-5350MHz -0.95 dBi (peak)	5150-5350MHz -0.17 dBi (peak)	5150-5350MHz 3.0 max	5150-5350MHz 0.78 dBi (peak)
				5470-5725MHz -1.23 dBi (peak)	5470-5725MHz -0.44 dBi (peak)	5470-5725MHz 3.0 max	5470-5725MHz 0.79 dBi (peak)
				5725-5850MHz -0.93 dBi (peak)	5725-5850MHz -0.12 dBi (peak)	5725-5850MHz 3.0 max	5725-5850MHz 0.81 dBi (peak)

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

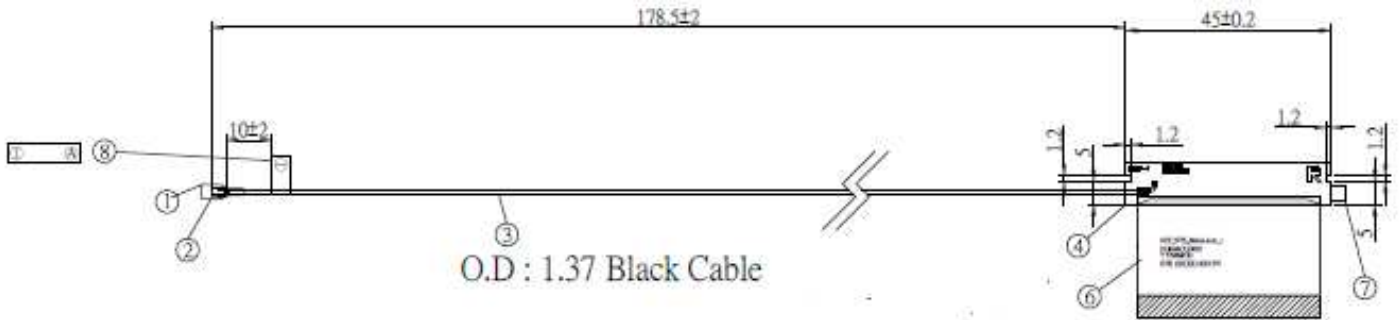
**Antenna Peak Gain Table:**

Frequency (MHz)	Tx1 antenna		Tx2 (or Rx2) Antenna	
	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)
2400	-4.23	-3.77	-4.13	-4.17
2450	-4.11	-3.8	-4.16	-4.24
2500	-3.96	-4.14	-4.28	-3.95
5150	-3.76	-4.05	-6.69	-2.48
5250	-2.95	-3.41	-7.58	-2.22
5350	-1	-1.21	-7.18	-0.95
5470	-1.03	-0.76	-5.49	-1.23
5600	-1.84	-2.46	-7.02	-1.38
5725	-4.91	-5.72	-7.14	-1.72
5785	-6.51	-3.98	-7.28	-0.93
5850	-6.48	-4.98	-7.52	-3.25

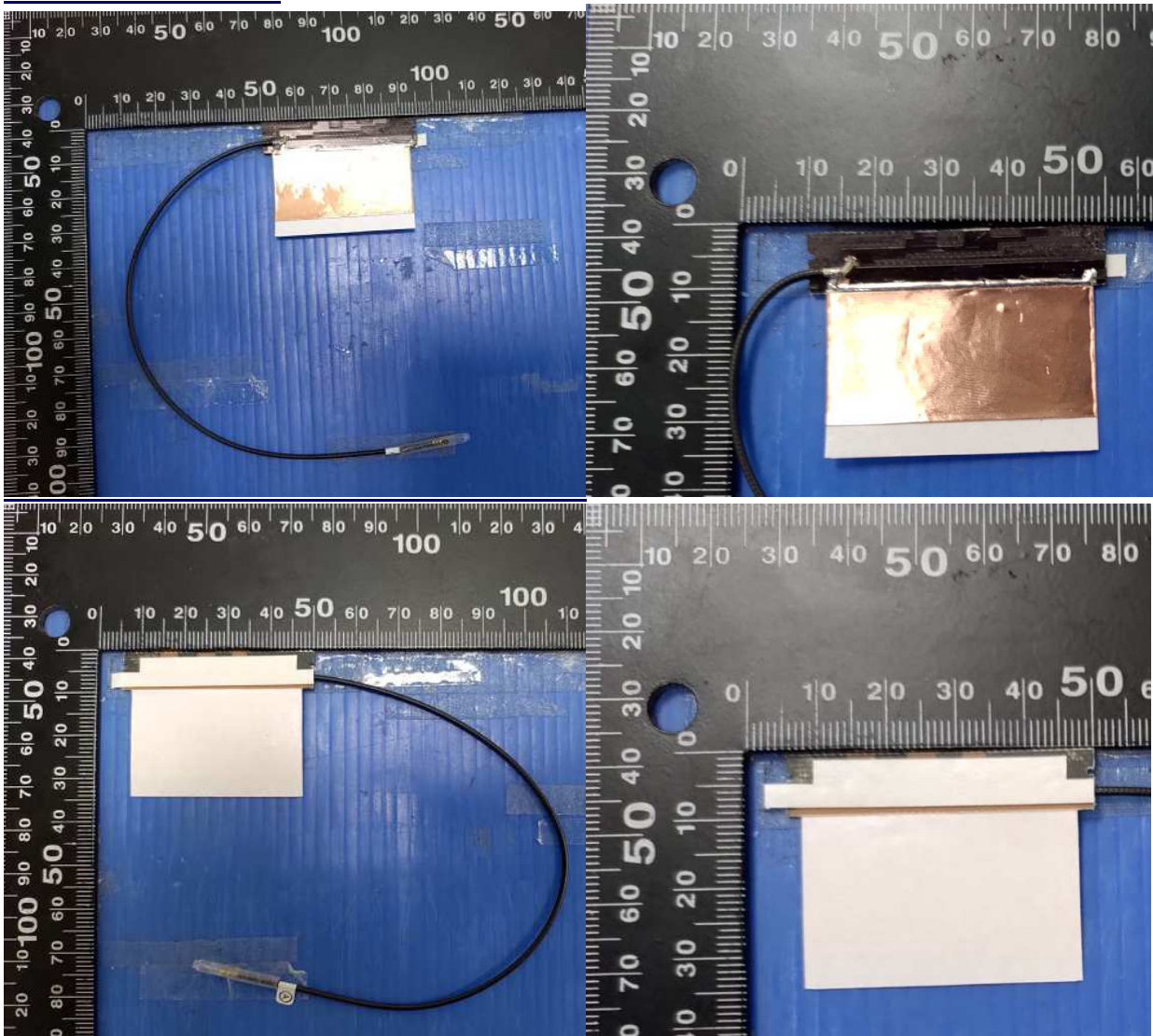
## Section 2. Dimensioned Photos or Drawings of Antennas

Include a dimensioned photo and dimensioned drawing of Tx1 antenna here.

### Tx1 Antenna Dimensioned Drawing:



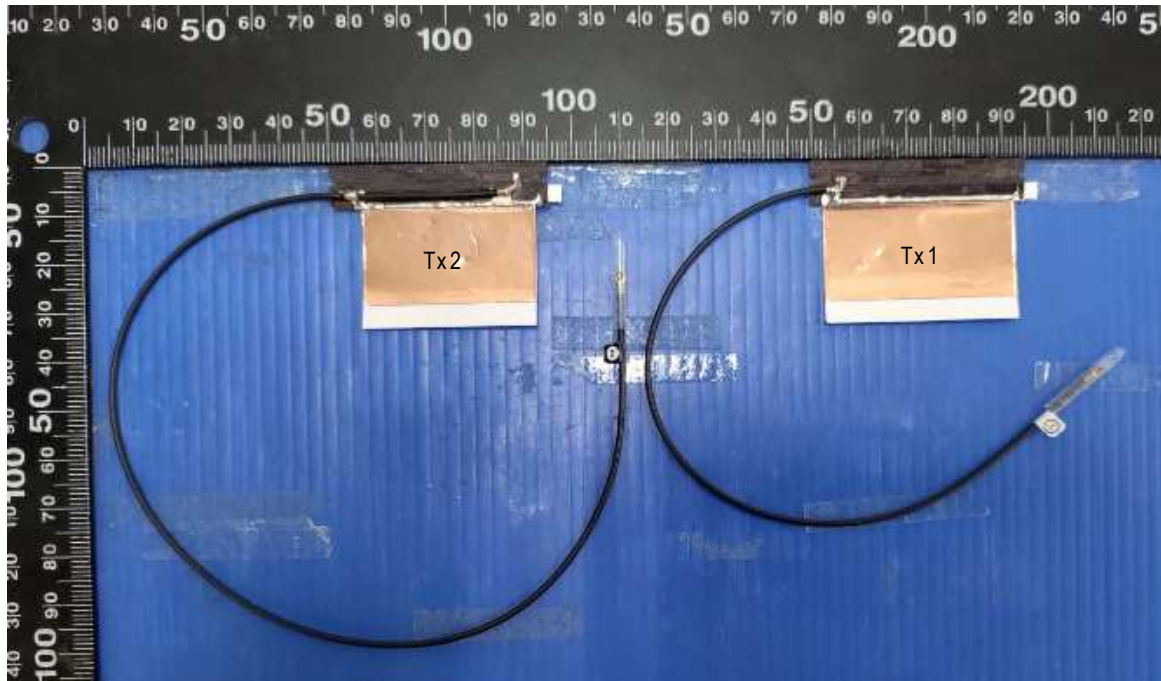
### Tx1 Antenna Photo:





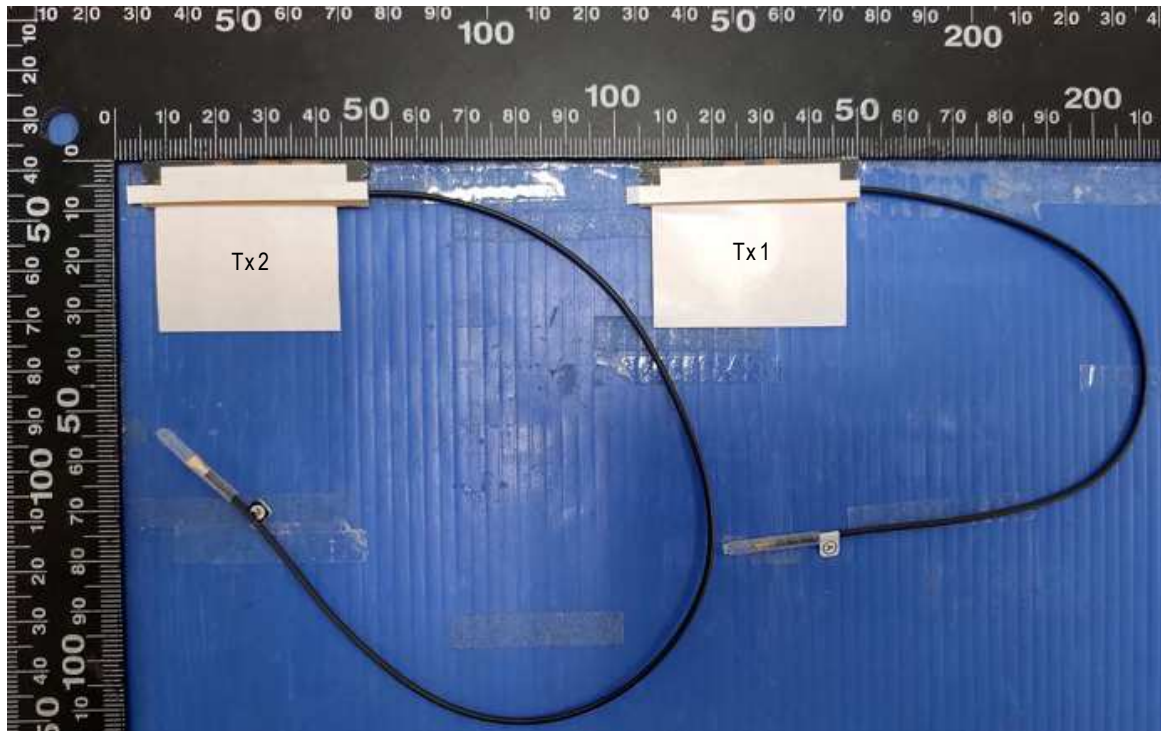
Include front view photo of all 2 antennas here.

Antenna Manufacturer: High-Tek Electronics Co., Ltd  
Antenna Part Number: DQ60ACQD061 (0ACQD019067N) (Tx1), DQ60ACQD061 (0ACQD019067N) (Tx2 or Rx2)



Include back view photo of all 2 antennas here.

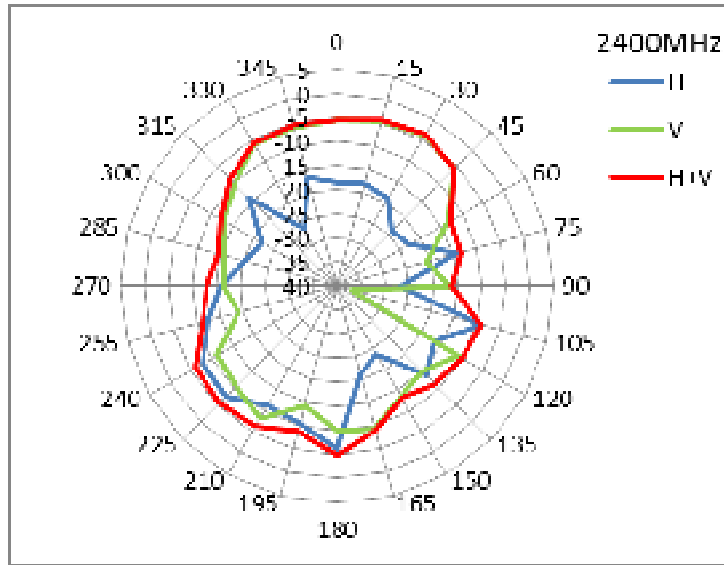
Antenna Manufacturer: High-Tek Electronics Co., Ltd  
Antenna Part Number: DQ60ACQD061 (0ACQD019067N) (Tx1), DQ60ACQD061 (0ACQD019067N) (Tx2 or Rx2)



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

### 2400-2500MHz radiation characteristic

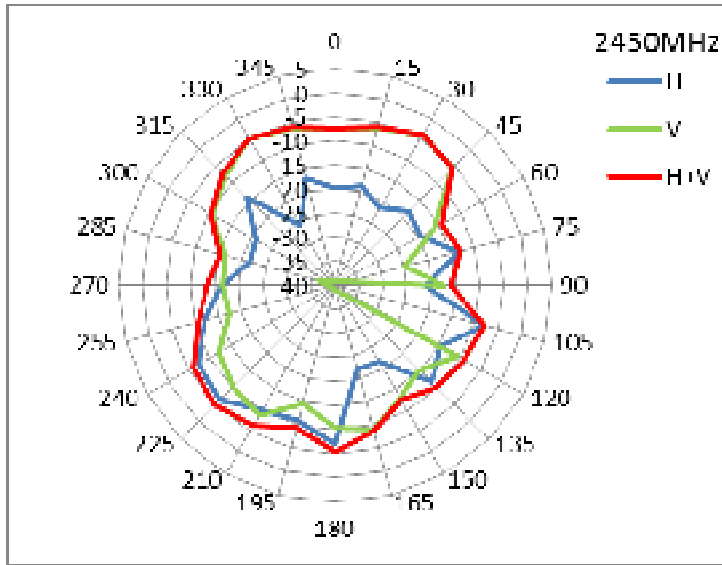
#### Tx1 antenna: 2400 MHz



Center Frequency	<b>2400 MHz</b>
Horizontal (dBi) peak	<b>-4.23</b>
Vertical (dBi) peak	<b>-3.77</b>

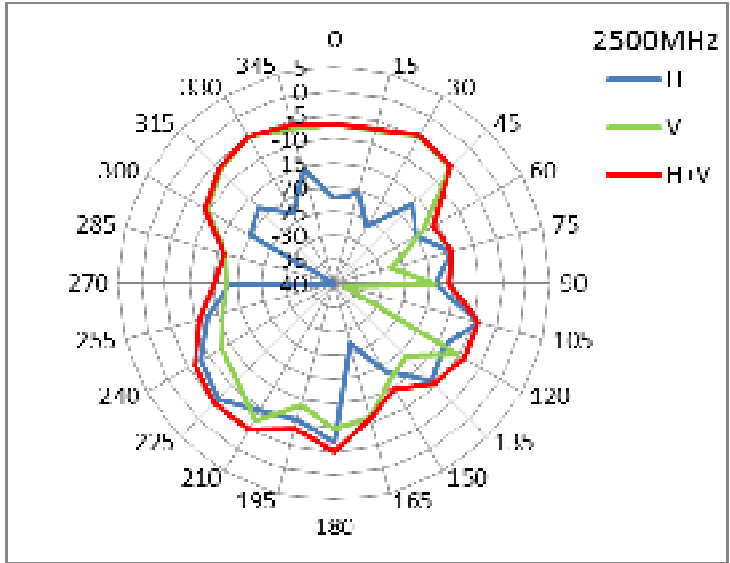


**Tx1 antenna: 2450 MHz**



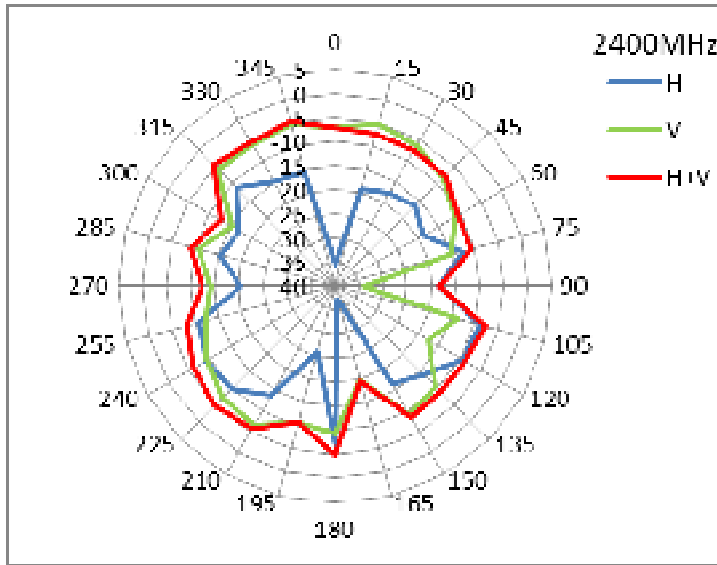
Center Frequency	<b>2450 MHz</b>
Horizontal (dBi) peak	<b>-4.11</b>
Vertical (dBi) peak	<b>-3.8</b>

**Tx1 antenna: 2500 MHz**



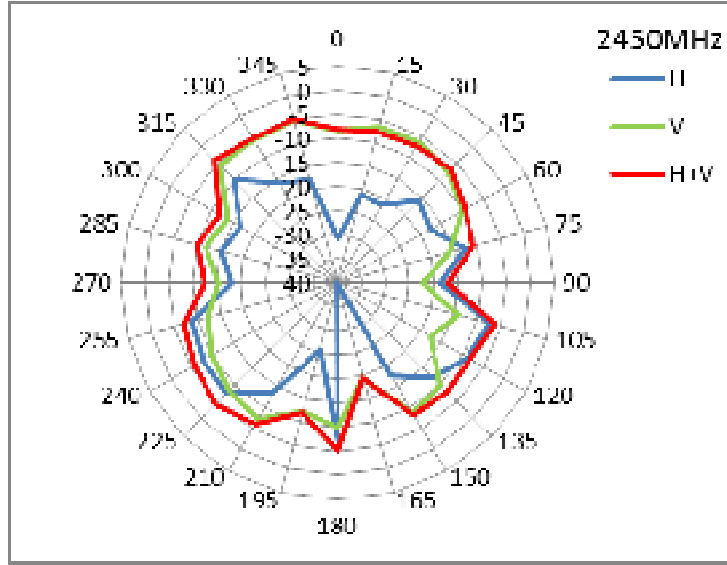
Center Frequency	<b>2500 MHz</b>
Horizontal (dBi) peak	<b>-3.96</b>
Vertical (dBi) peak	<b>-4.14</b>

**Tx2 (or Rx2) antenna : 2400 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



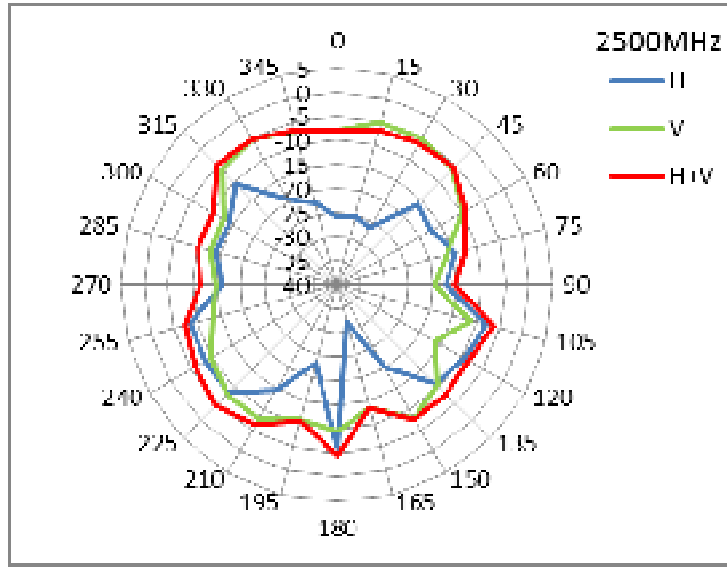
Center Frequency	<b>2400 MHz</b>
Horizontal (dBi) peak	<b>-4.13</b>
Vertical (dBi) peak	<b>-4.17</b>

**Tx2 (or Rx2) antenna : 2450 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>2450 MHz</b>
Horizontal (dBi) peak	<b>-4.16</b>
Vertical (dBi) peak	<b>-4.24</b>

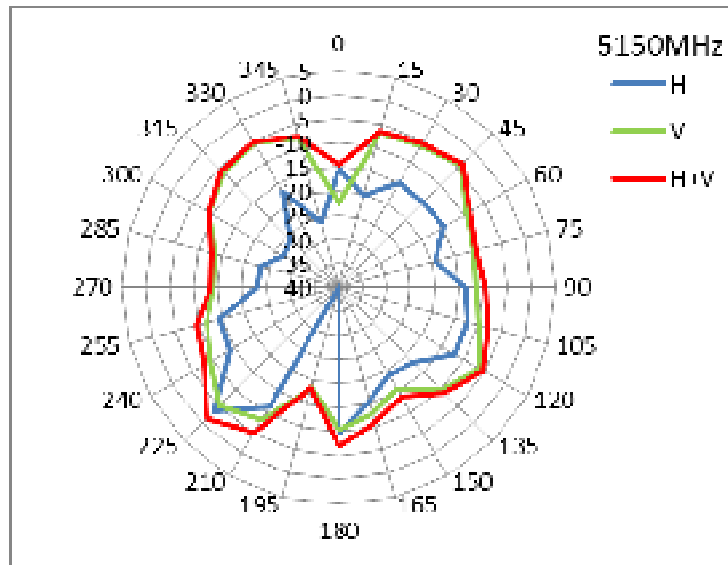
**Tx2 (or Rx2) antenna : 2500 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>2500 MHz</b>
Horizontal (dBi) peak	<b>-4.28</b>
Vertical (dBi) peak	<b>-3.95</b>

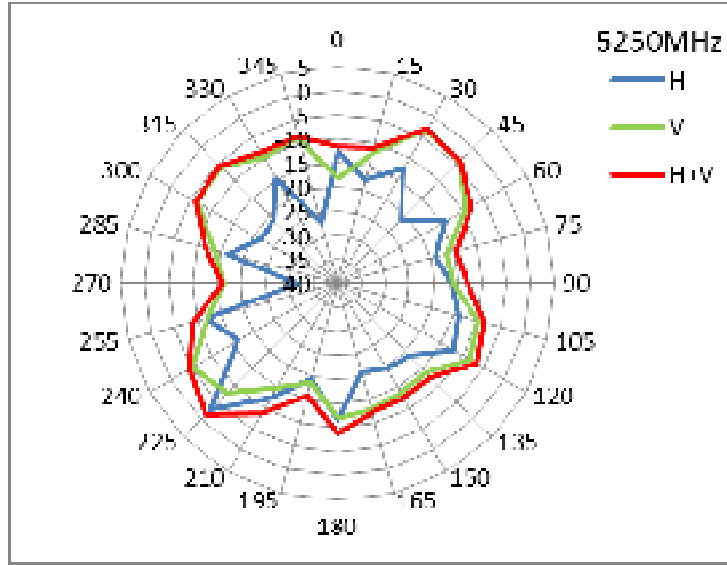
## 5150-5350 MHz radiation characteristic

### Tx1 antenna: 5150 MHz



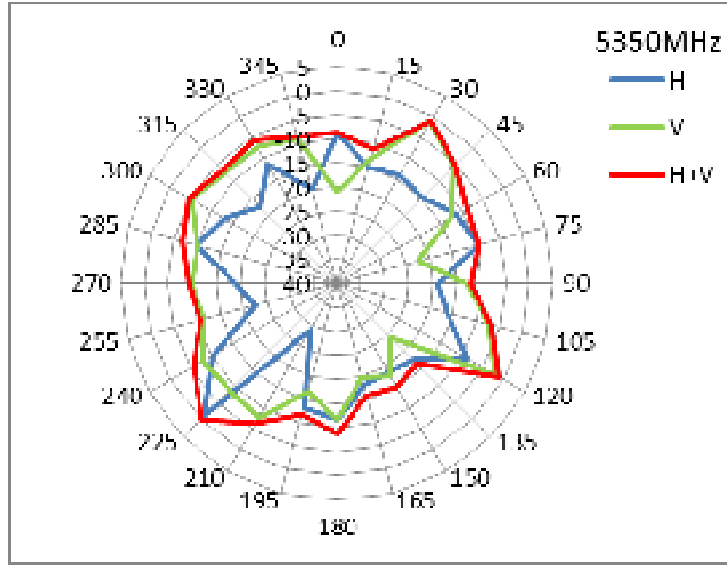
Center Frequency	<b>5150 MHz</b>
Horizontal (dBi) peak	<b>-3.76</b>
Vertical (dBi) peak	<b>-4.05</b>

**Tx1 antenna: 5250 MHz**



Center Frequency	<b>5250 MHz</b>
Horizontal (dBi) peak	<b>-2.95</b>
Vertical (dBi) peak	<b>-3.41</b>

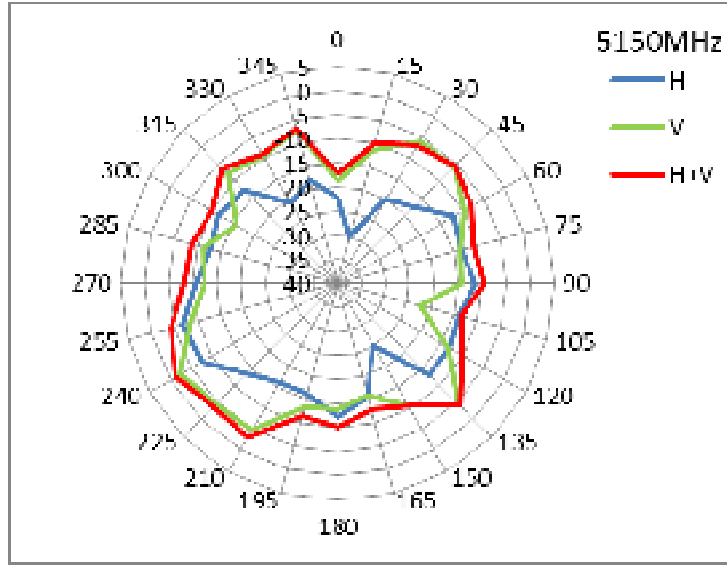
**Tx1 antenna: 5350 MHz**



Center Frequency	<b>5350 MHz</b>
Horizontal (dBi) peak	<b>-1</b>
Vertical (dBi) peak	<b>-1.21</b>

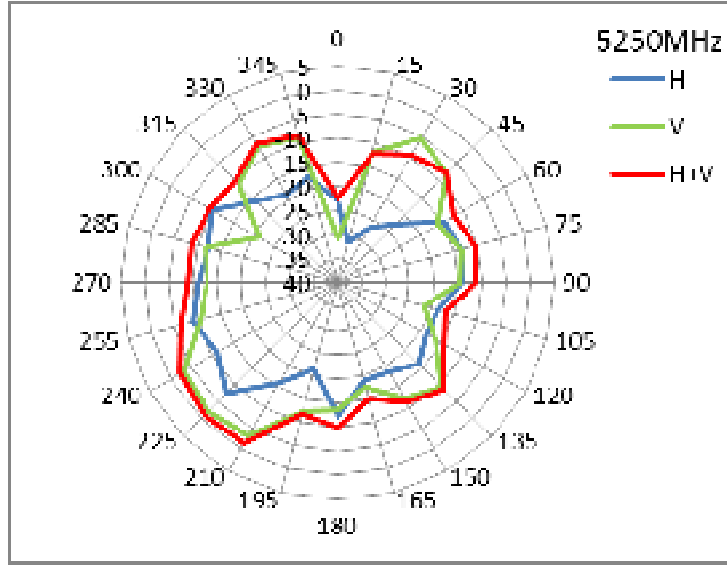


**Tx2 (or Rx2) antenna: 5150 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



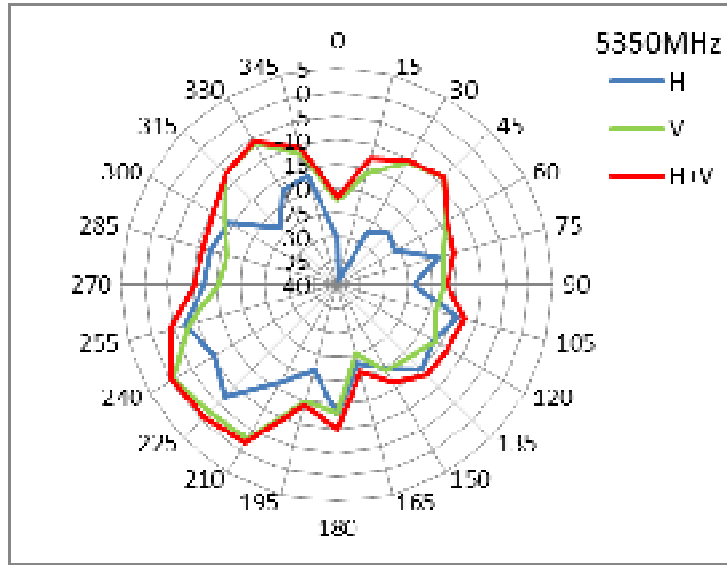
Center Frequency	<b>5150 MHz</b>
Horizontal (dBi) peak	<b>-6.69</b>
Vertical (dBi) peak	<b>-2.48</b>

**Tx2 (or Rx2) antenna :5250 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5250 MHz</b>
Horizontal (dBi) peak	<b>-7.58</b>
Vertical (dBi) peak	<b>-2.22</b>

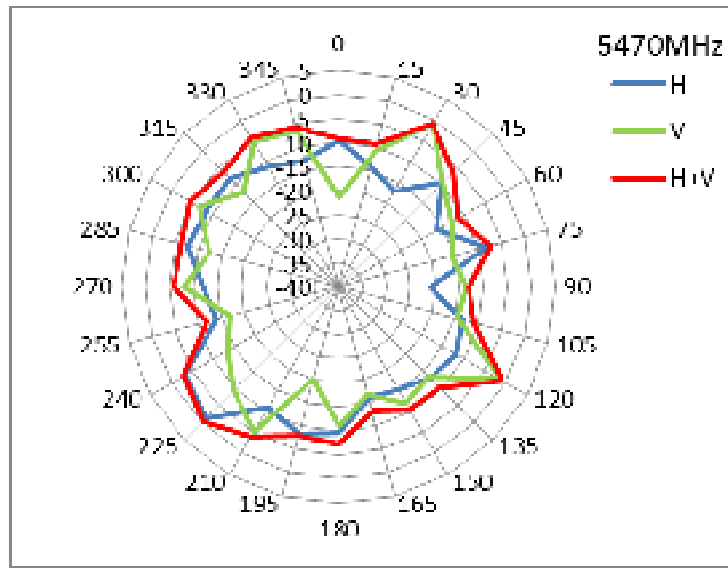
**Tx2 (or Rx2) antenna :5350 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5350 MHz</b>
Horizontal (dBi) peak	<b>-7.18</b>
Vertical (dBi) peak	<b>-0.95</b>

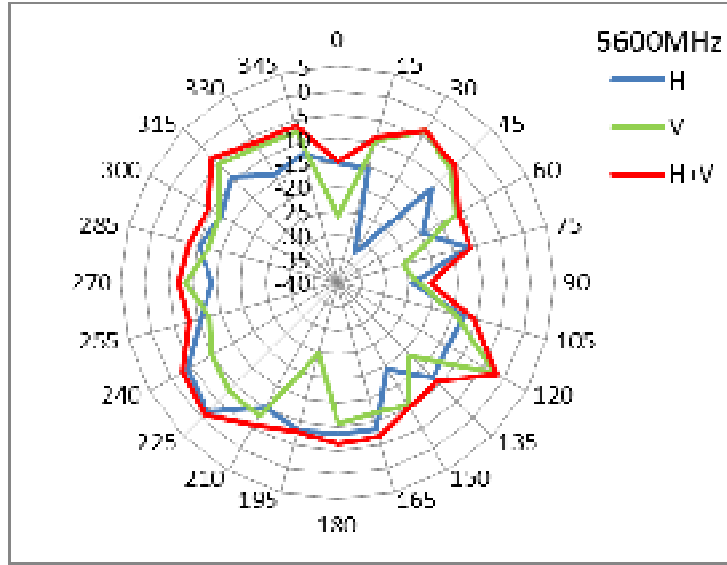
**5470-5725MHz radiation characteristic**

**Tx1 antenna: 5470 MHz**



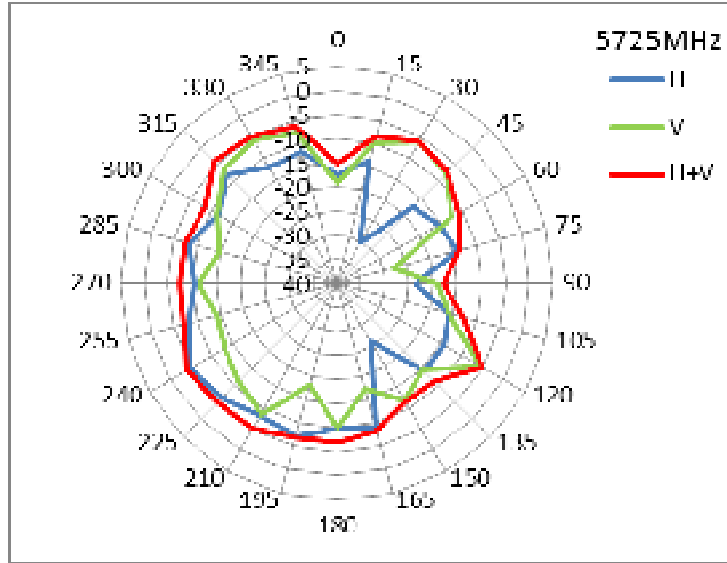
Center Frequency	<b>5470 MHz</b>
Horizontal (dBi) peak	<b>-1.03</b>
Vertical (dBi) peak	<b>-0.76</b>

**Tx1 antenna: 5600 MHz**



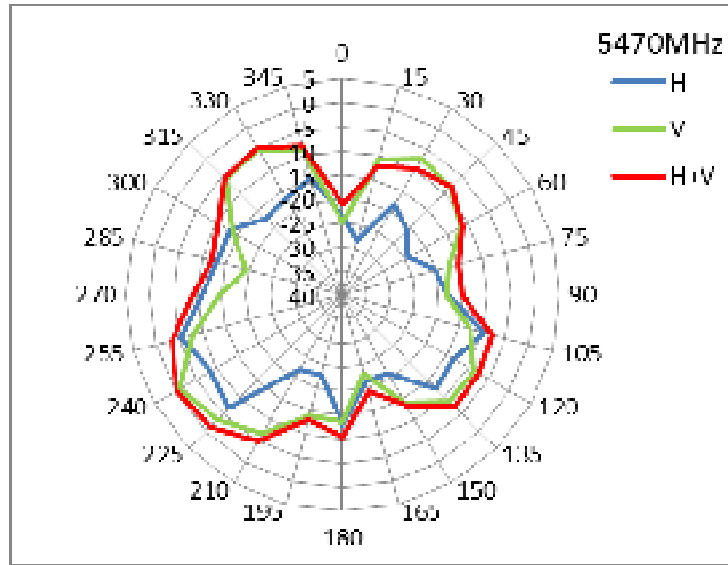
Center Frequency	<b>5600 MHz</b>
Horizontal (dBi) peak	<b>-1.84</b>
Vertical (dBi) peak	<b>-2.46</b>

### Tx1 antenna: 5725 MHz



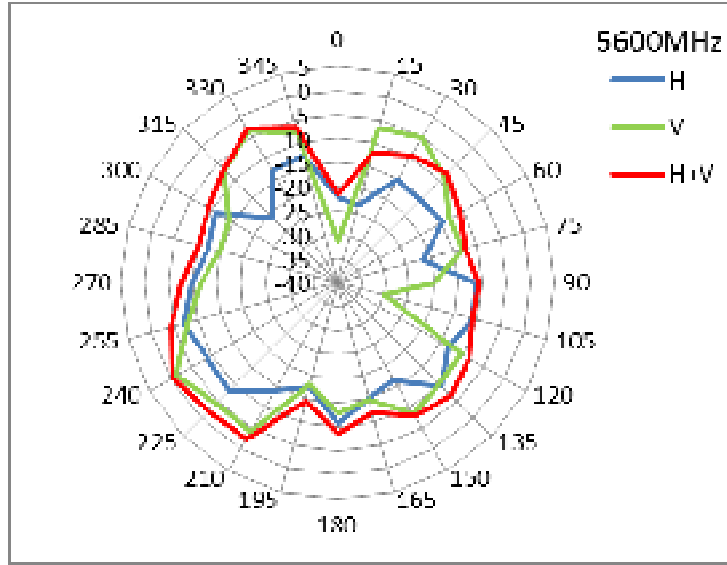
Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>-4.91</b>
Vertical (dBi) peak	<b>-5.72</b>

**Tx2 (or Rx2) antenna :5470 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5470 MHz</b>
Horizontal (dBi) peak	<b>-5.49</b>
Vertical (dBi) peak	<b>-1.23</b>

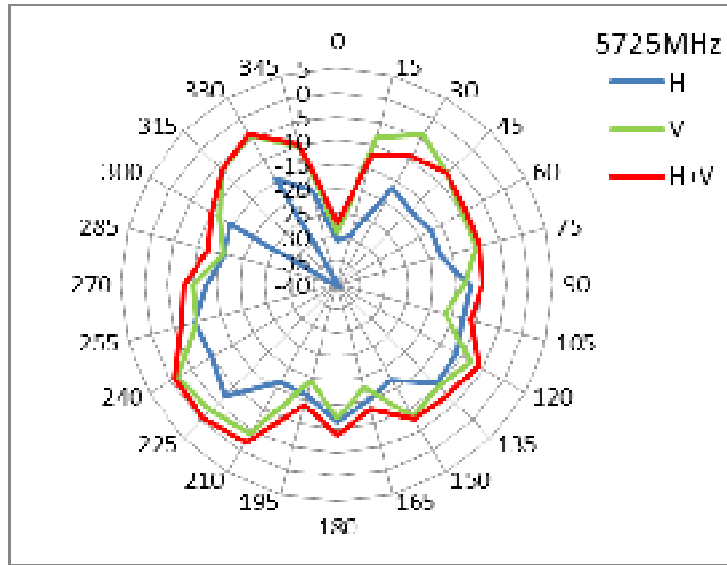
**Tx2 (or Rx2) antenna :5600 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5600 MHz</b>
Horizontal (dBi) peak	<b>-7.02</b>
Vertical (dBi) peak	<b>-1.38</b>



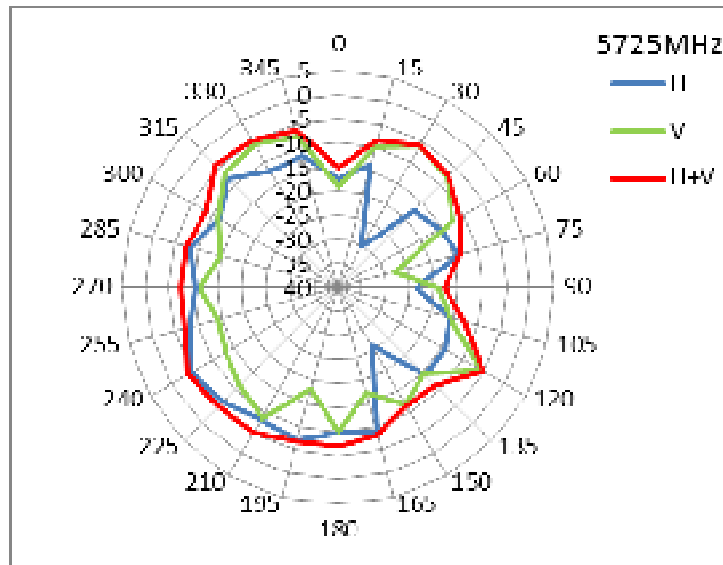
**Tx2 (or Rx2) antenna :5725 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>-7.14</b>
Vertical (dBi) peak	<b>-1.72</b>

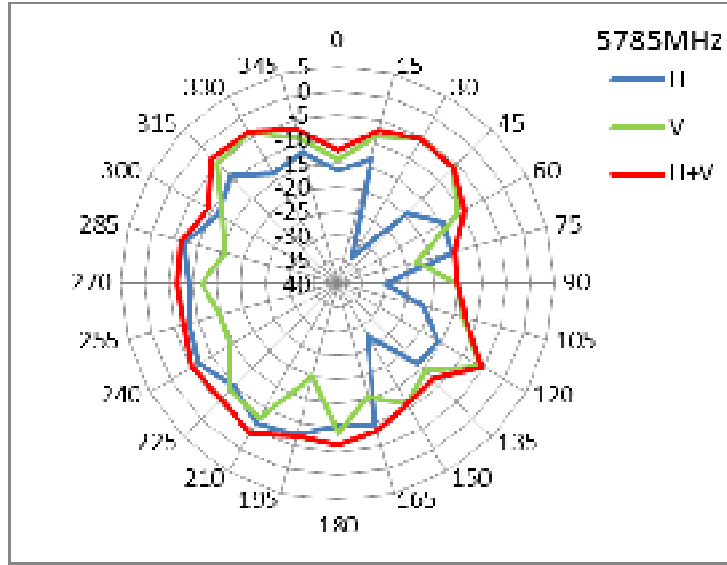
**5725-5850 MHz radiation characteristic**

**Tx1 antenna: 5725 MHz**



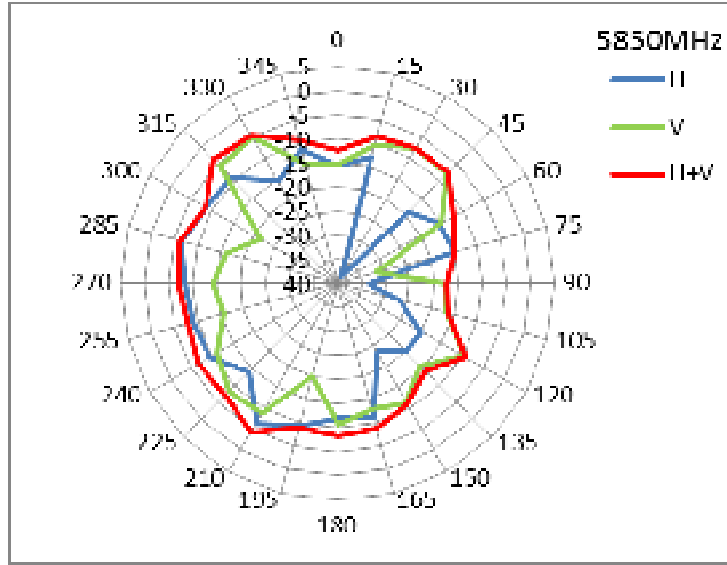
Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>-4.91</b>
Vertical (dBi) peak	<b>-5.72</b>

**Tx1 antenna: 5785 MHz**



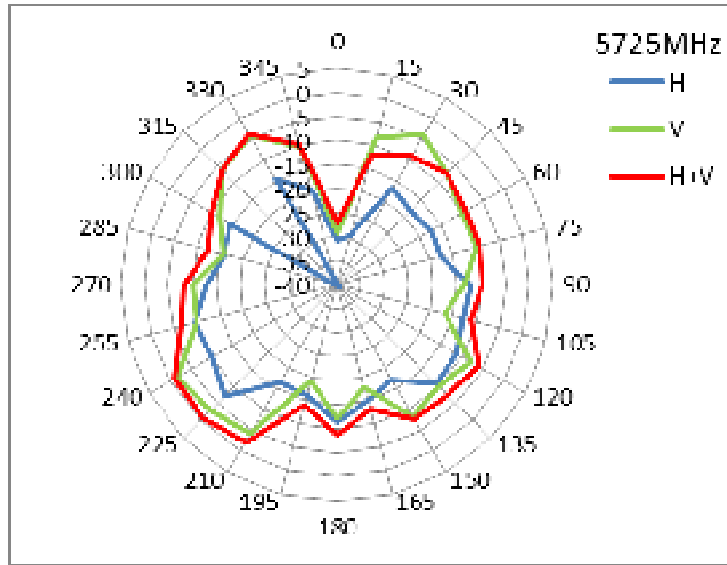
Center Frequency	<b>5785 MHz</b>
Horizontal (dBi) peak	<b>-6.51</b>
Vertical (dBi) peak	<b>-3.98</b>

**Tx1 antenna: 5850 MHz**



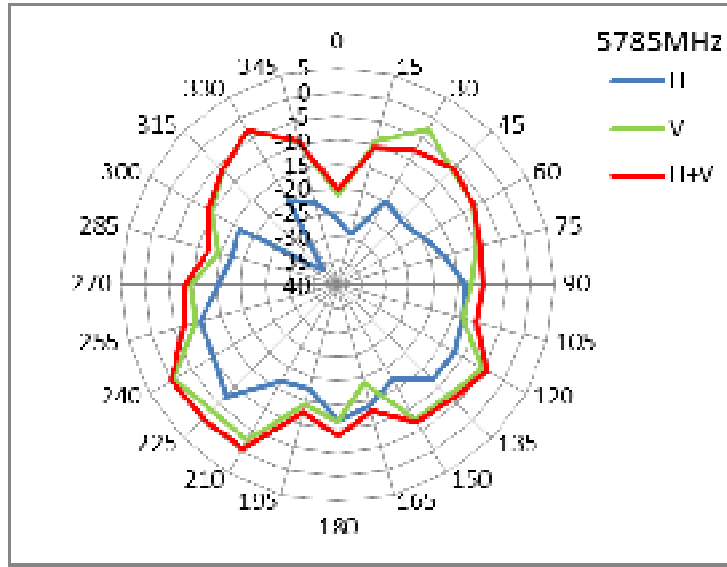
Center Frequency	<b>5850 MHz</b>
Horizontal (dBi) peak	<b>-6.48</b>
Vertical (dBi) peak	<b>-4.98</b>

**Tx2 (or Rx2) antenna :5725 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



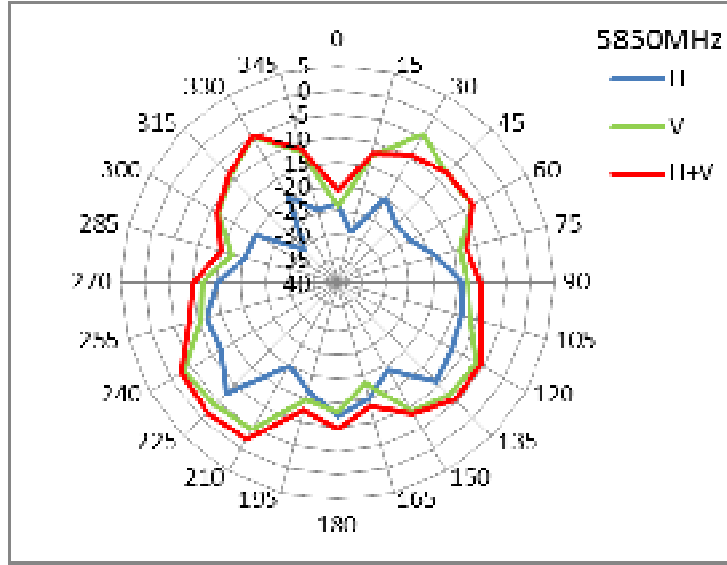
Center Frequency	<b>5725 MHz</b>
Horizontal (dBi) peak	<b>-7.14</b>
Vertical (dBi) peak	<b>-1.72</b>

**Tx2 (or Rx2) antenna :5785 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**



Center Frequency	<b>5785 MHz</b>
Horizontal (dBi) peak	<b>-7.28</b>
Vertical (dBi) peak	<b>-0.93</b>

**Tx2 (or Rx2) antenna :5850 MHz (Plot is not required if 2<sup>nd</sup> Antenna is receive only e.g. Rx2 for 512 family)**

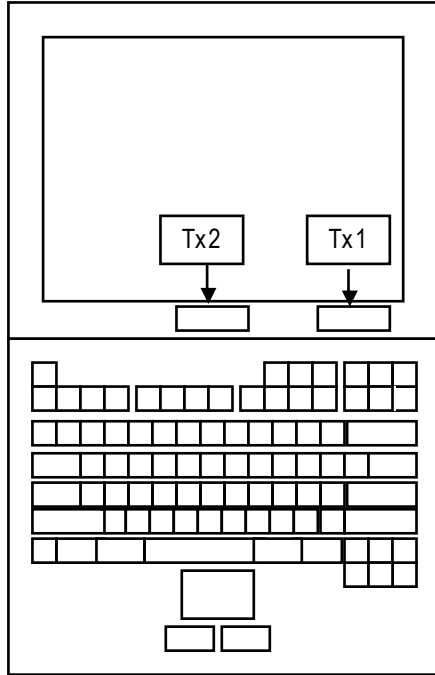


Center Frequency	<b>5850 MHz</b>
Horizontal (dBi) peak	<b>-7.52</b>
Vertical (dBi) peak	<b>-3.25</b>

## Section 4. Host Platform Information

OEM / ODM Host platform: (Quanta/Kerbal 20C1) platform correlated to antenna data

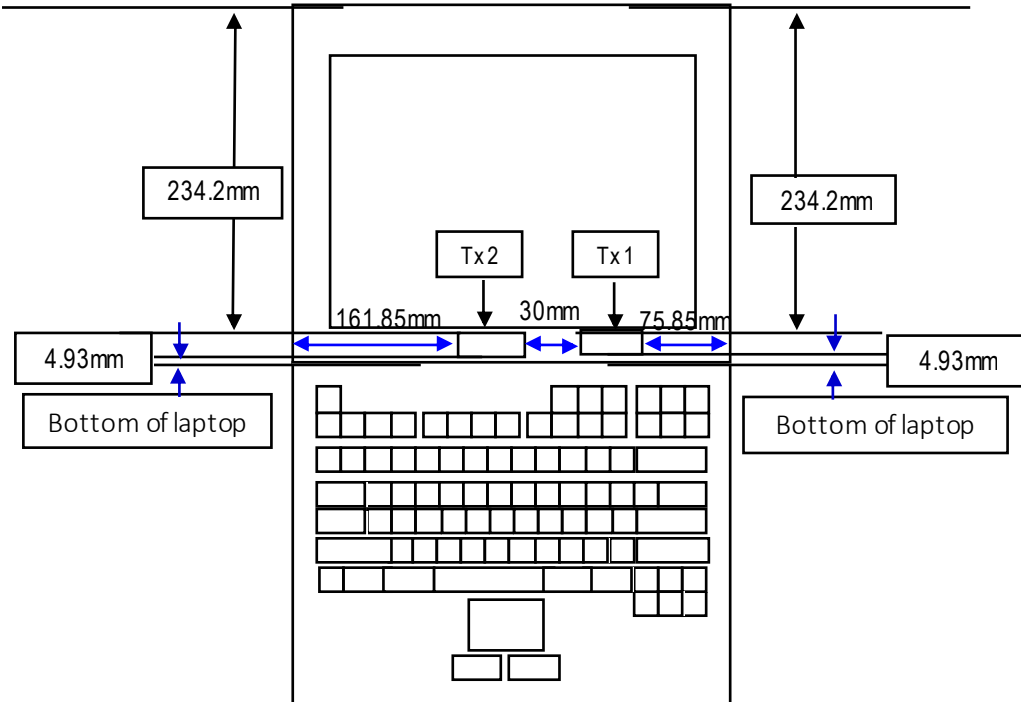
Rating Label Photo:





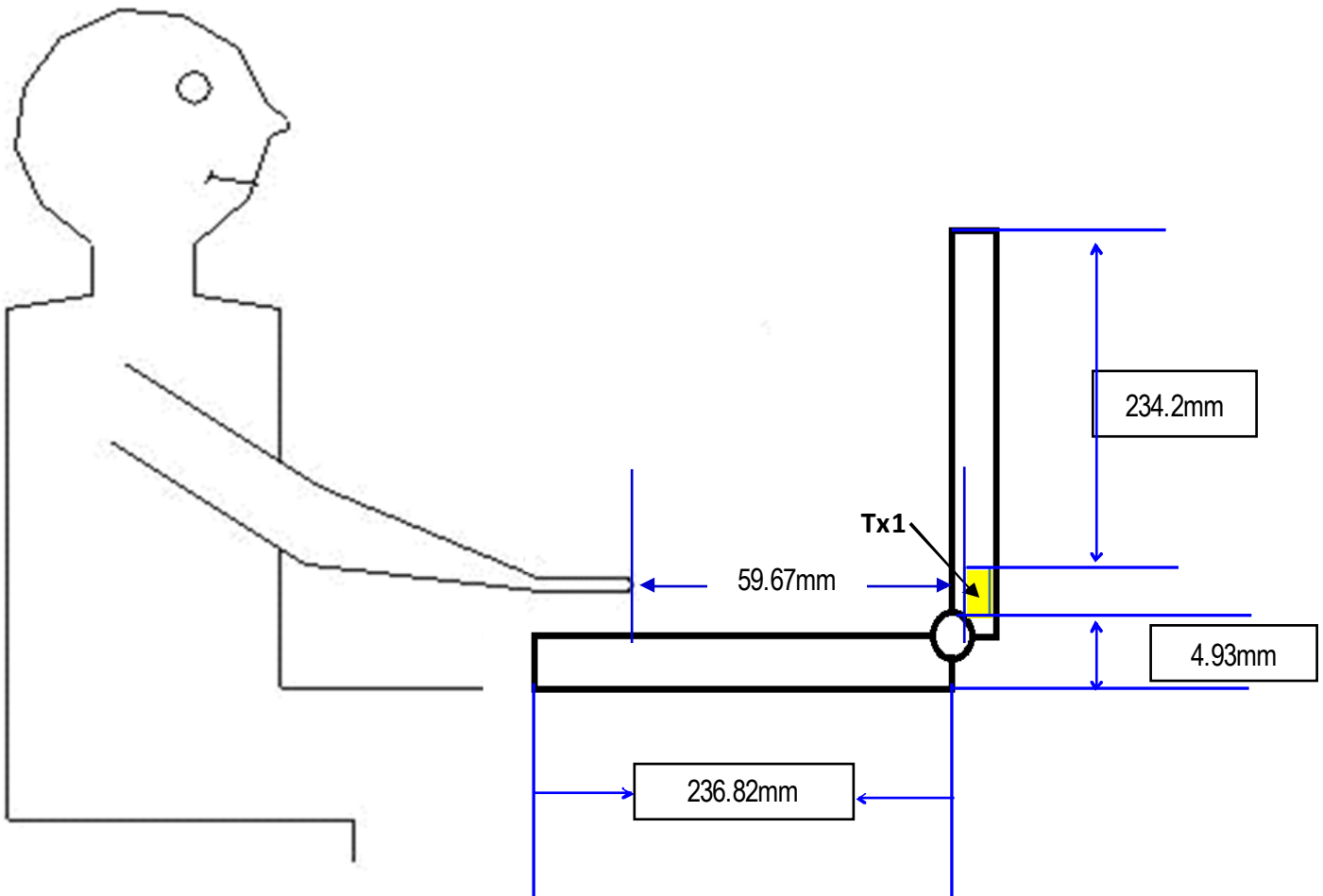
## Section 5. Antenna Host Platform Location Information

Include a **dimensioned photo(s) or dimensioned drawing(s)** of Tx1, Tx2 and Tx3 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 6. Antenna dimensional information for SAR evaluation

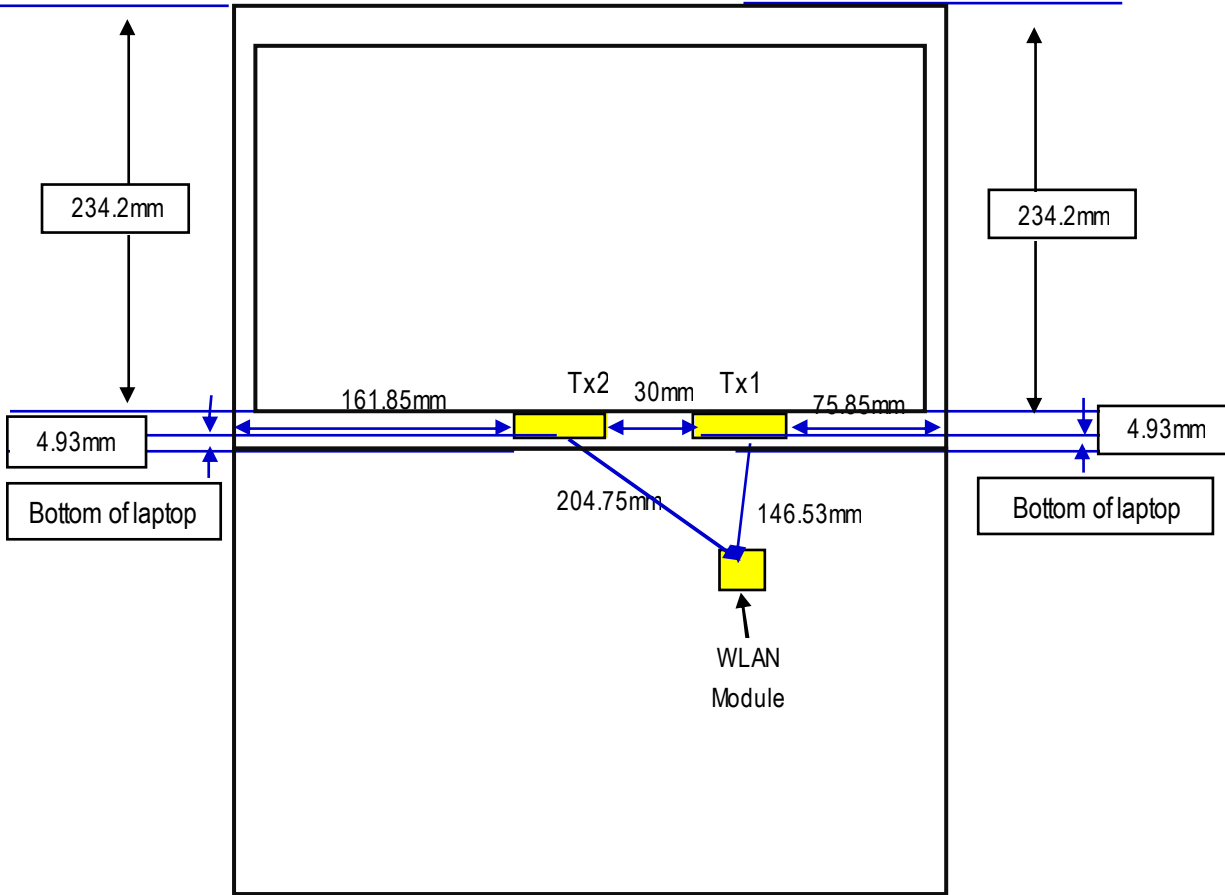
Include a **dimensioned photo(s) or dimensioned drawing(s)** showing the distance (mm) between the transmit antennas and the user (excluding hands, wrist, feet, and ankle). For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & 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 7. 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)



## Section 8. Local representative contact information

Local representative contact information is required for regulatory support for target countries below.

	Local company name	Contact name	Phone number	FAX Number	e-Mail Address	Notes
<b>Argentina</b>						
<b>Azerbaijan</b>						
<b>Cambodia</b>						
<b>Indonesia</b>						
<b>Israel</b>						
<b>Malaysia</b>						
<b>Philippines</b>						
<b>Singapore</b>						Telecommunication Equipment Dealer License Required
<b>South Africa</b>						
<b>USA, Canada</b>						
<b>Vietnam</b>						