Regulatory WLAN Antenna Information (Template)

(English Language Required for Intel Regulatory Review / Approval)
(OEM/ODM or antenna vendor is required to complete this document with platform antenna information.
Remove Intel references and make this your own document)

Platform information				
Brand	**ODM**	**Platform model name**	**Platform type (ex: regular NB, convertible PC, AIO…etc)**	**SAR minimum separation (mm)**
Lenovo	Quanta	Compliance ID: TP00066C ; Marketing Name: ThinkPad Yoga 11e 3rd Gen ; ThinkPad Yoga 11e Chromebook 3rd Gen;	**convertible PC**	6.21

Antenna information				Peak gain w/ cable loss (dBi)			
Vendor	**Type**	**Antenna Part number (Main)**	**Antenna Part number (Aux)**	**2.4GHz**	**5.2GHz**	**5.5GHz**	**5.8GHz**
Tongda	PIFA	DQ690210902	DQ690210903	0.86	0.42	-0.11	-0.10

Module information (Pls check with "x" when applies, or to fill-in proper model in empty column)

Model	Form factor and suffixes													
7265 (StP 2)	x	NGW		D2W				17265NGW (Maple Peak)						
		AN		NB		BN		18260NGW (Douglas Peak)						
3165 (StP 1)	x	NGW												
7260 (WP 2)		SDW												
3160 (WP 1)		SDW												
8260 (SfP)		NGW		D2W		NB								

Intel Reference Gain/Type/ Separation distance

Antenna Type	Antenna Peak gain (In dBi)				Distance to the end user (mm)
	2.4GHz	5.2GHz	5.5GHz	5.8GHz	
PIFA	3.24	3.64	4.77	4.97	>8 (generic sku) >5 (low power sku)

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)

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& Tx3antenna (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)
Quanta P/N DQ690210902 Main Antenna	TONGDA	PIFA	Connector: I-Pex:20565-001R or compatible. SY:SY113/50-064 or compatible. 50 ohm Coaxial. Length: 408 mm diameter:1.13 mm	2400-2500MHz -0.54dBi (peak)	2400-2500MHz 0.76dBi (peak)	2400-2500MHz 3.00 max	2400-2500MHz 1.27dBi (peak)
				5150-5350MHz 0.42dBi (peak)	5150-5350MHz 2.45dBi (peak)	5150-5350MHz 3.00 max	5150-5350MHz 2.03dBi (peak)
				5470-5725MHz -0.11dBi (peak)	5470-5725MHz 2.02dBi (peak)	5470-5725MHz 3.00 max	5470-5725MHz 2.13dBi (peak)
				5725-5850MHz -0.10dBi (peak)	5725-5850MHz 2.06dBi (peak)	5725-5850MHz 3.00 max	5725-5850MHz 2.16dBi (peak)
Quanta P/N DQ690210903 Aux Antenna	TONGDA	PIFA	Connector: I-Pex:20565-001R or compatible. SY:SY113/50-055 or compatible. 50 ohm Coaxial. Length: 515 mm diameter:1.13 mm	2400-2500MHz 0.86dBi (peak)	2400-2500MHz 2.46dBi (peak)	2400-2500MHz 3.00 max	2400-2500MHz 1.60dBi (peak)
				5150-5350MHz -0.45dBi (peak)	5150-5350MHz 2.11dBi (peak)	5150-5350MHz 3.00 max	5150-5350MHz 2.56dBi (peak)
				5470-5725MHz -0.26dBi (peak)	5470-5725MHz 2.43dBi (peak)	5470-5725MHz 3.00 max	5470-5725MHz 2.69dBi (peak)
				5725-5850MHz -1.42dBi (peak)	5725-5850MHz 1.31dBi (peak)	5725-5850MHz 3.00 max	5725-5850MHz 2.73dBi (peak)

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

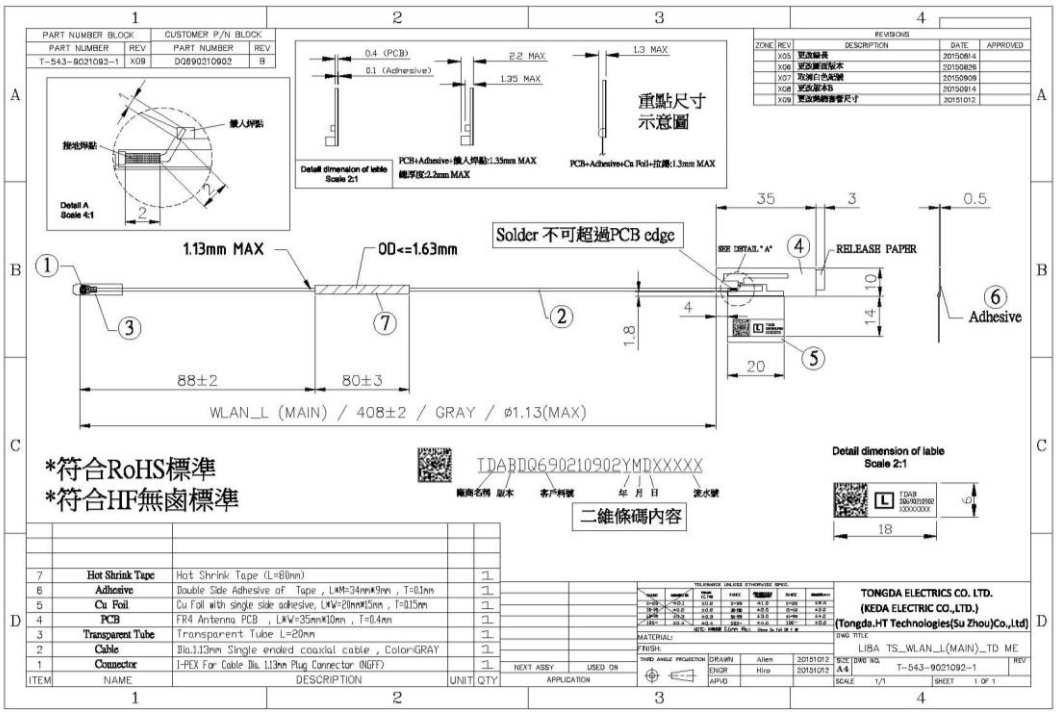
Antenna Peak Gain Table:

Frequency (MHz)	Tx1 antenna		Tx2 antenna	
	Horizontal (dBi)	Vertical (dBi)	Horizontal (dBi)	Vertical (dBi)
2400	-0.54	-1.06	0.10	-0.90
2450	-1.22	-0.81	0.86	-2.17
2500	-1.22	-1.25	-0.01	-2.49
5150	0.42	-5.07	-1.98	-5.53
5250	0.22	-3.75	-1.43	-5.28
5350	0.14	-1.46	-0.45	-4.91
5470	-0.25	-0.11	-0.26	-2.34
5600	-0.43	-1.60	-0.58	-2.72
5725	-0.42	-2.30	-1.67	-3.65
5785	-0.73	-3.21	-1.59	-3.79
5850	-0.10	-2.10	-1.42	-2.85

Section 2.Dimensioned Photos or Drawings of Antennas

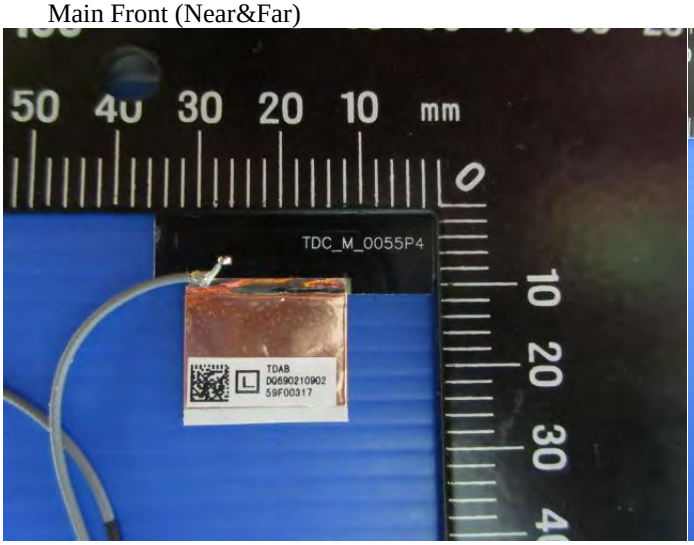
Include a dimensioned photo and dimensioned drawing of Tx1antenna here.

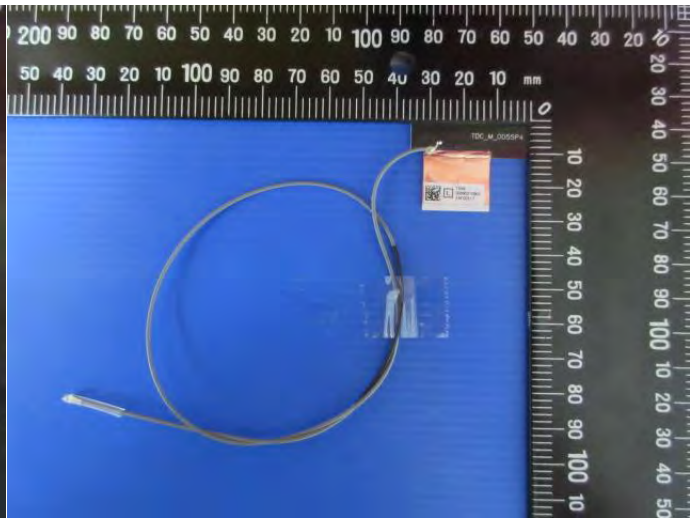
Tx1 Antenna Dimensioned Drawing:



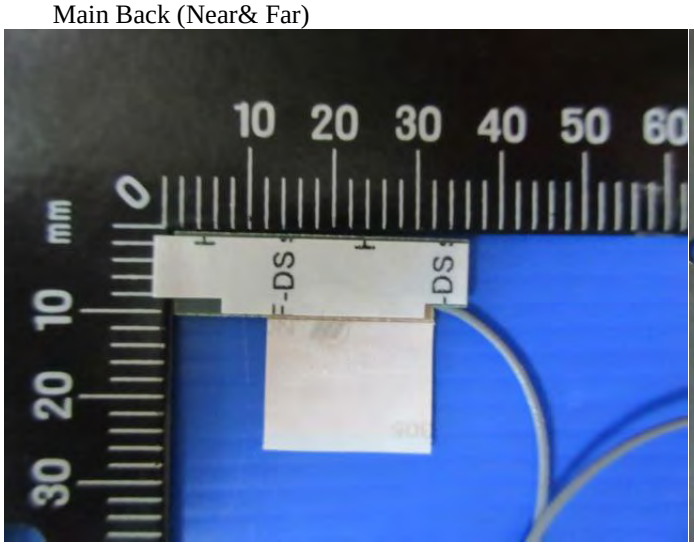
Tx1 Antenna Photo:

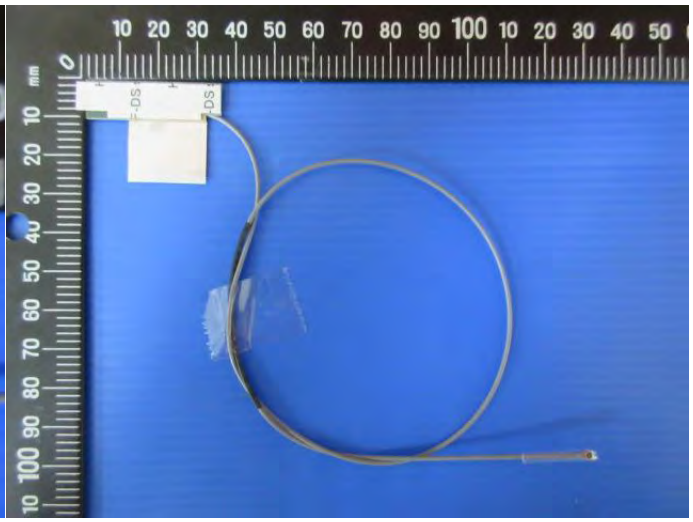
Main Front (Near&Far)





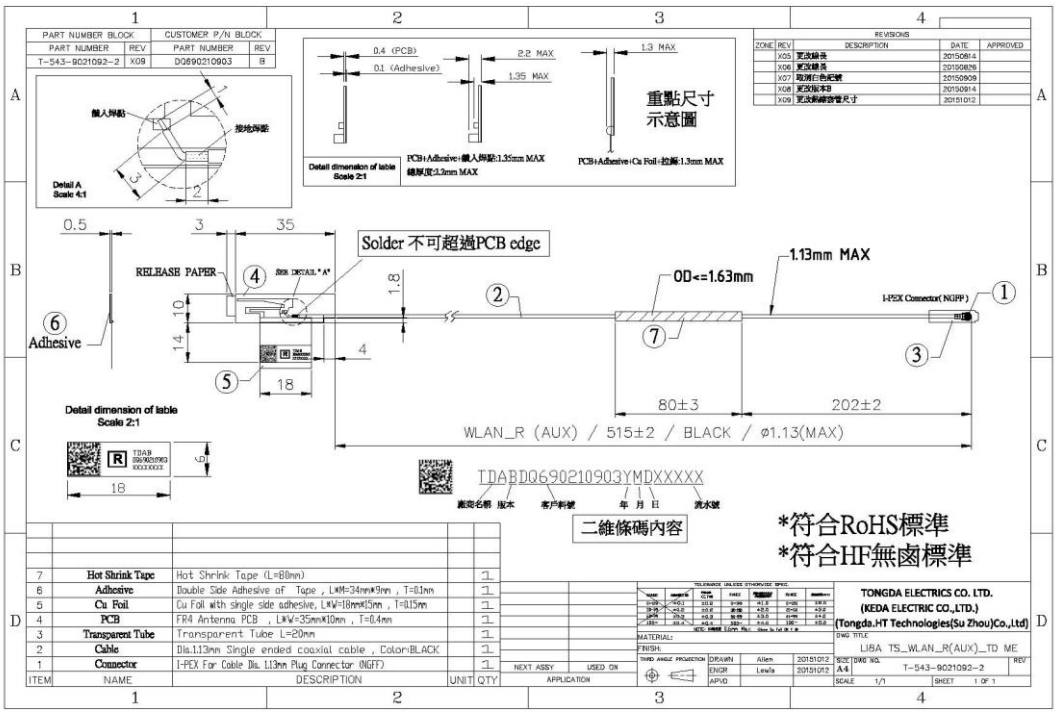
Main Back (Near& Far)





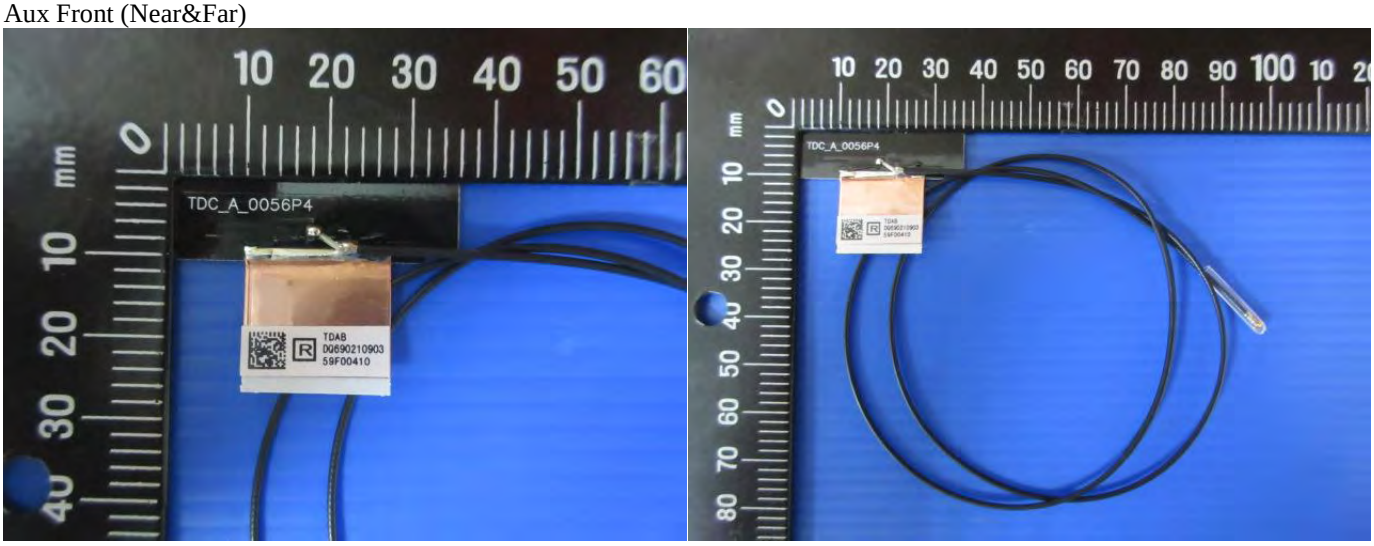
Include a dimensioned photo and dimensioned drawing of Tx2(or Rx2)antenna here.

Tx2(or Rx2) Antenna Dimensioned Drawing:

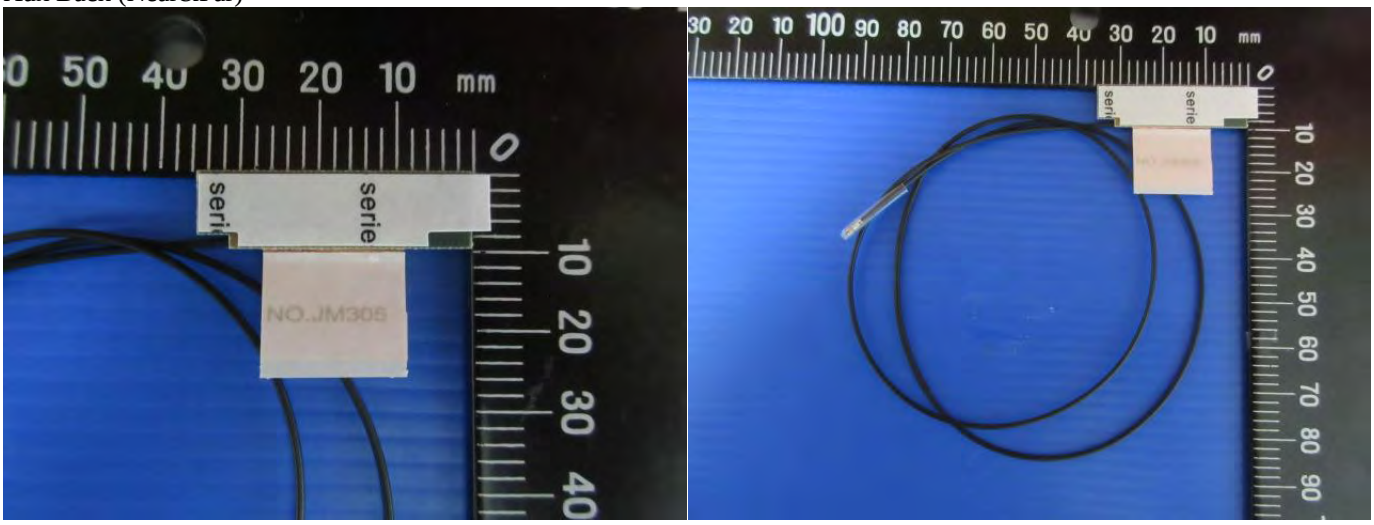


Tx2 Antenna Photo:

Aux Front (Near&Far)

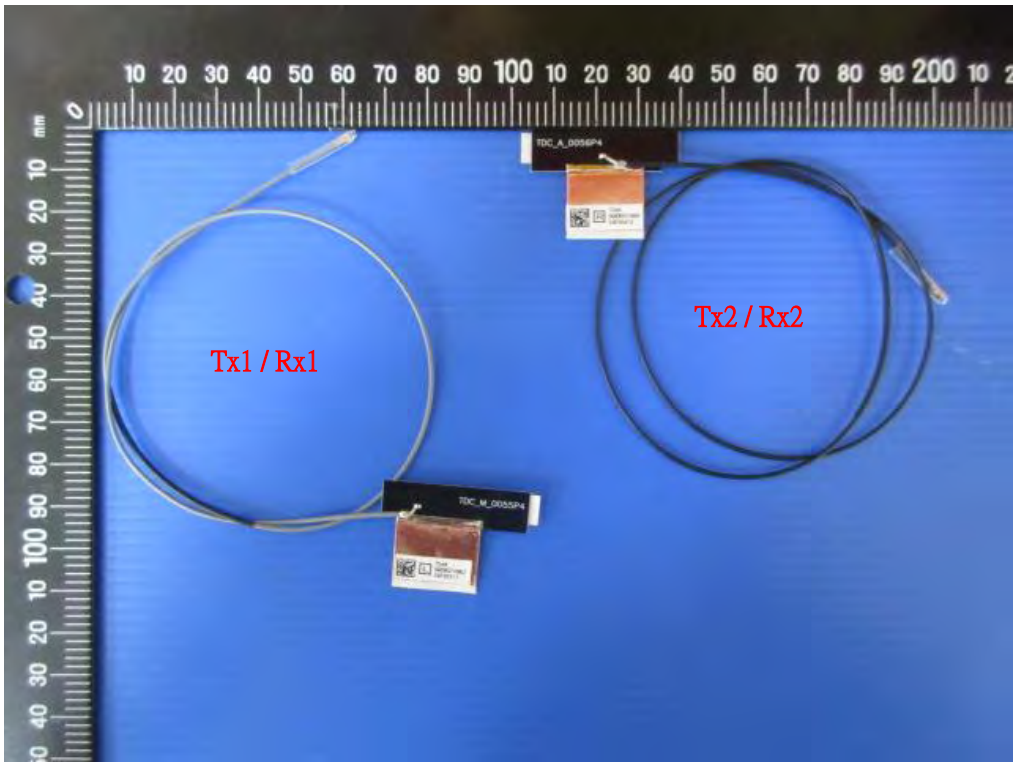


Aux Back (Near&Far)



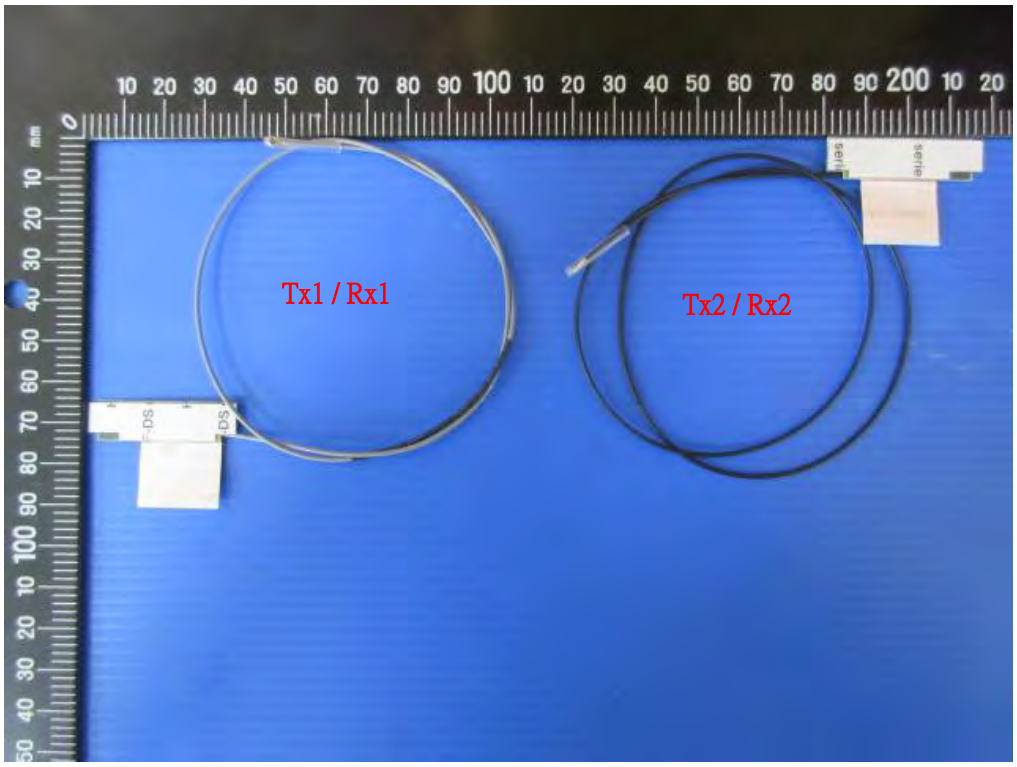
Include front view photo of all 2antennas here.

Antenna Manufacturer: TONGDA Corporation
Antenna Part Number: DQ690210902/ DQ690210903 (Tx1or Rx1)(Tx2or Rx2)



Include back view photo of all antennas here (below is an example for 2 antennas).

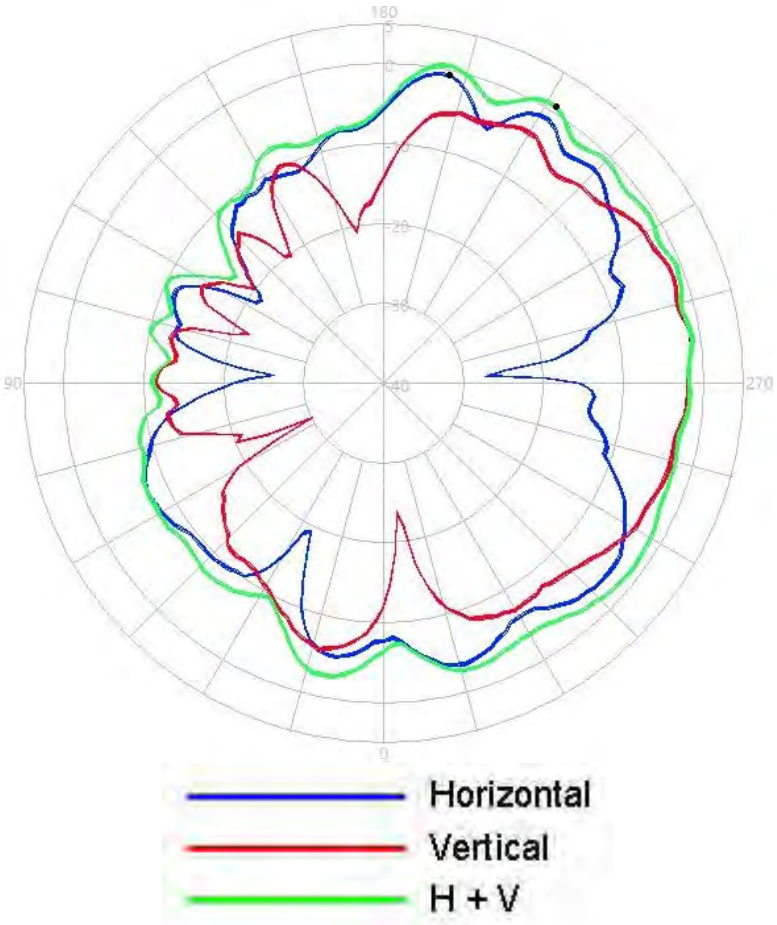
Antenna Manufacturer: TONGDA Corporation
Antenna Part Number: DQ690210902/ DQ690210903 (Tx1or Rx1)(Tx2or Rx2)



Section 3.Radiation characteristics of antennaLoaded in Host Platform

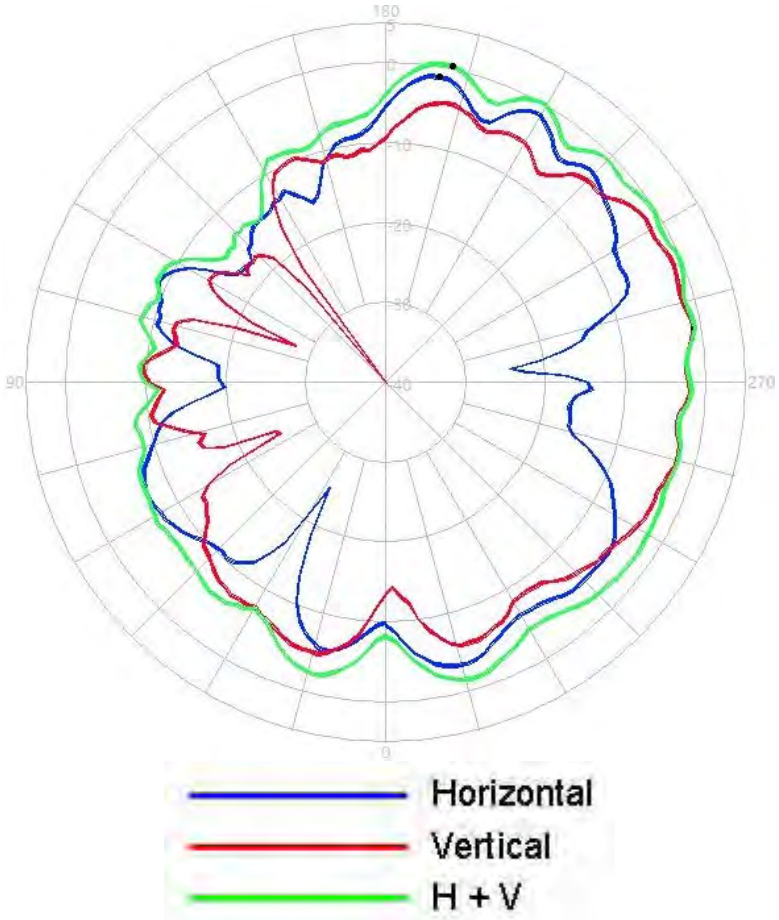
2400-2500MHz radiation characteristic

Tx1 antenna: 2400 MHz



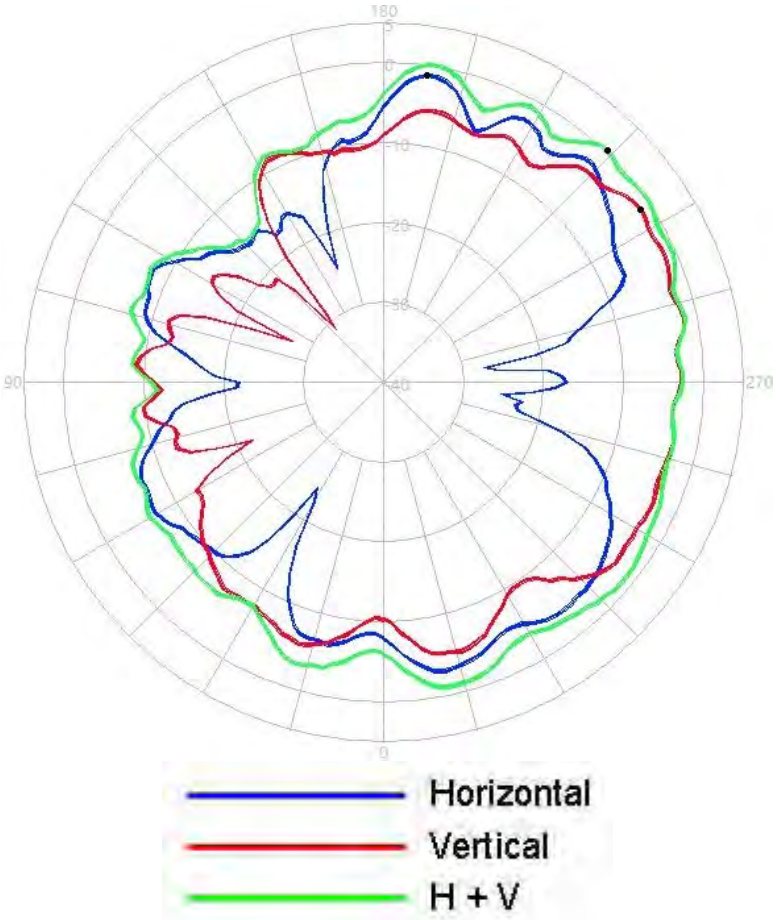
Center Frequency	**2400 MHz**
Horizontal (dBi) Peak	**-0.54**
Vertical (dBi) Peak	**-1.06**

Tx1 antenna: 2450 MHz



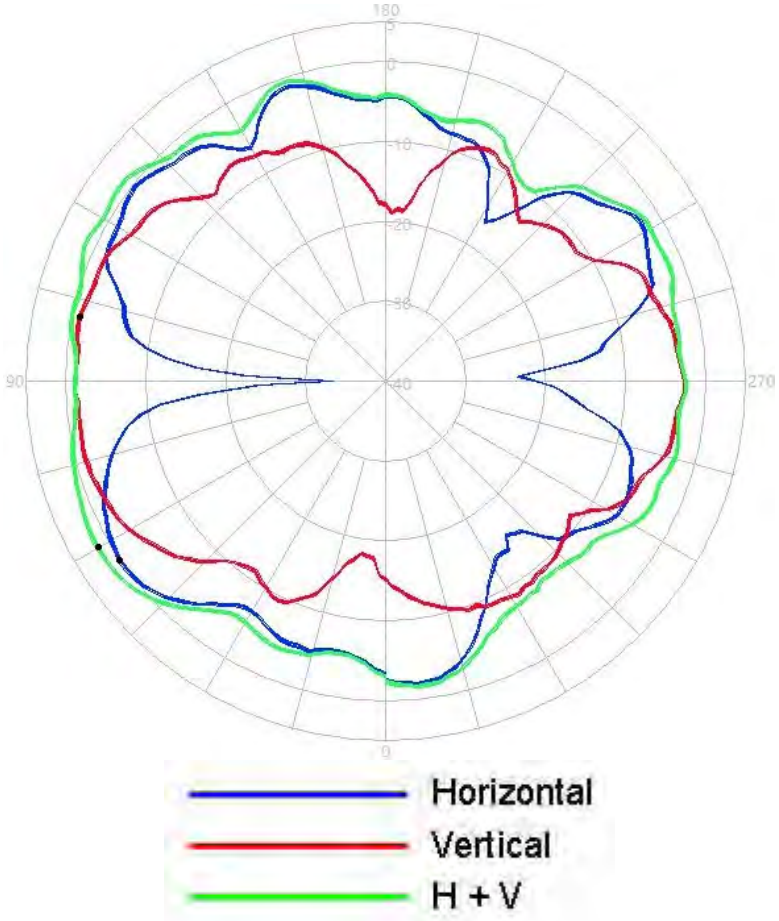
Center Frequency	**2450 MHz**
Horizontal (dBi) Peak	**-1.22**
Vertical (dBi) Peak	**-0.81**

Tx1 antenna: 2500 MHz



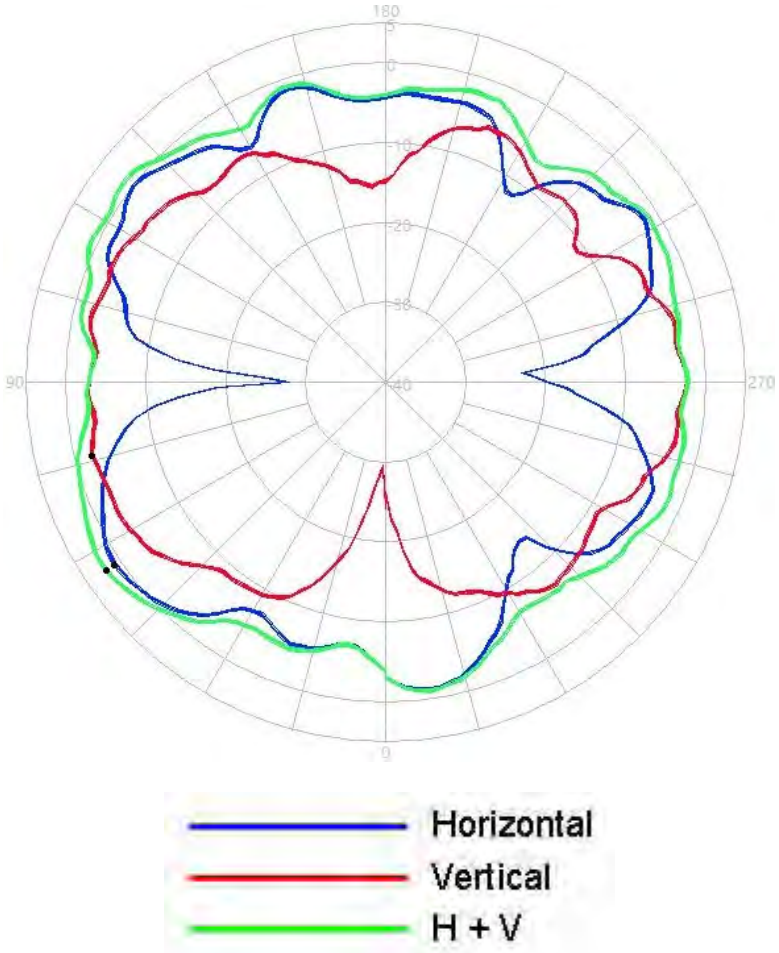
Center Frequency	**2500 MHz**
Horizontal (dBi) Peak	**-1.22**
Vertical (dBi) Peak	**-1.25**

Tx2 antenna: 2400 MHz



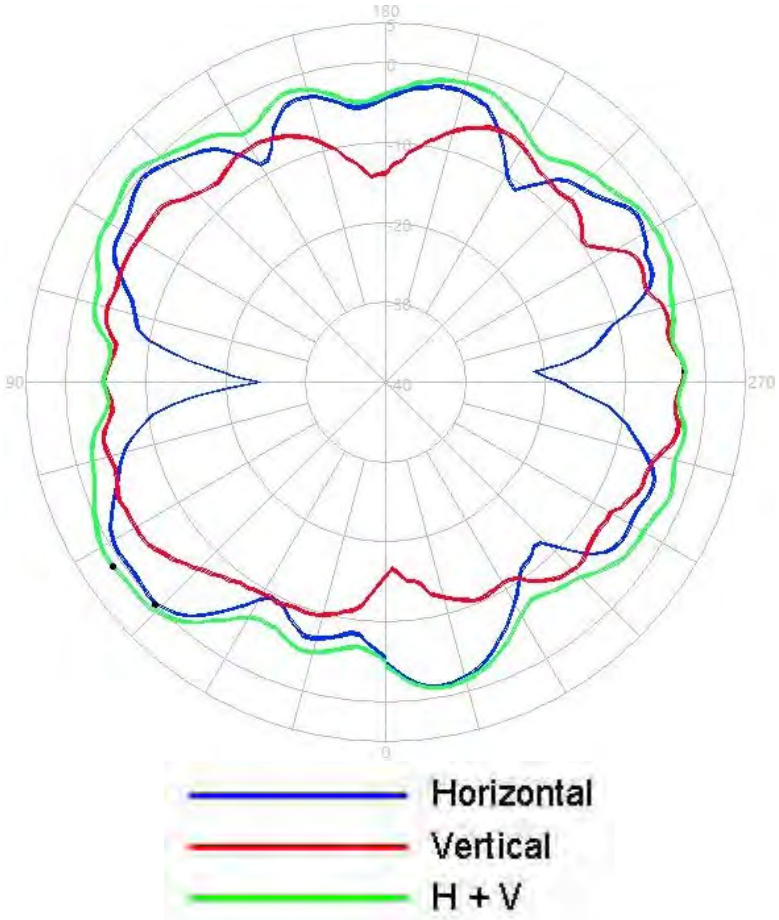
Center Frequency	**2400 MHz**
Horizontal (dBi) Peak	**0.10**
Vertical (dBi) Peak	**-0.90**

Tx2 antenna: 2450 MHz



Center Frequency	**2450 MHz**
Horizontal (dBi) Peak	**0.86**
Vertical (dBi) Peak	**-2.17**

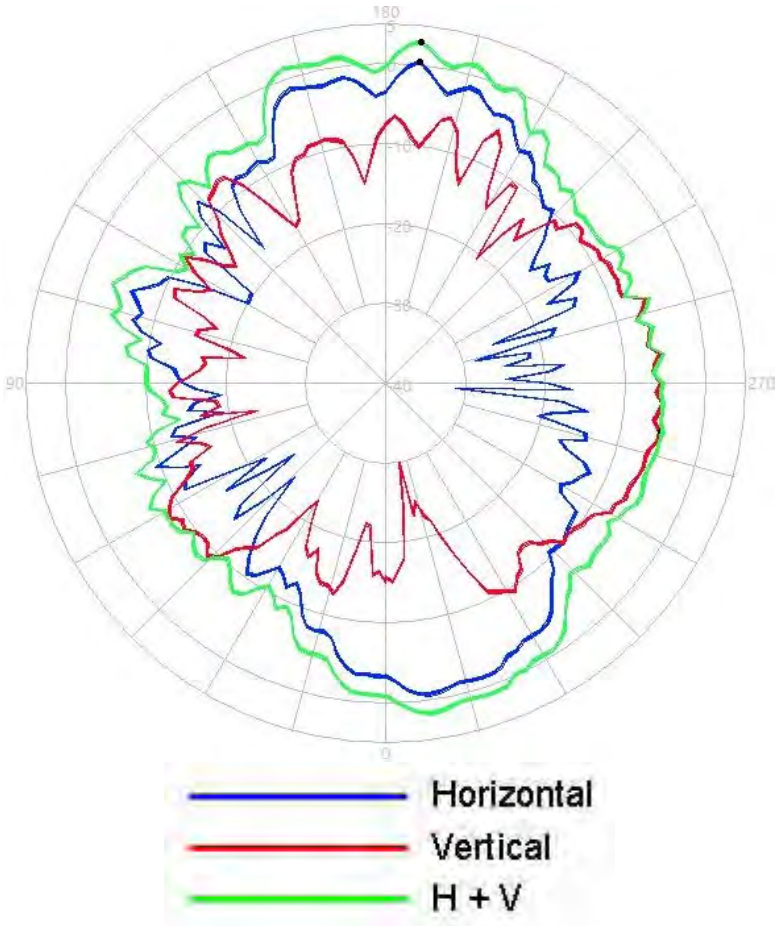
Tx2 antenna: 2500 MHz



Center Frequency	**2500 MHz**
Horizontal (dBi) Peak	**-0.01**
Vertical (dBi) Peak	**-2.49**

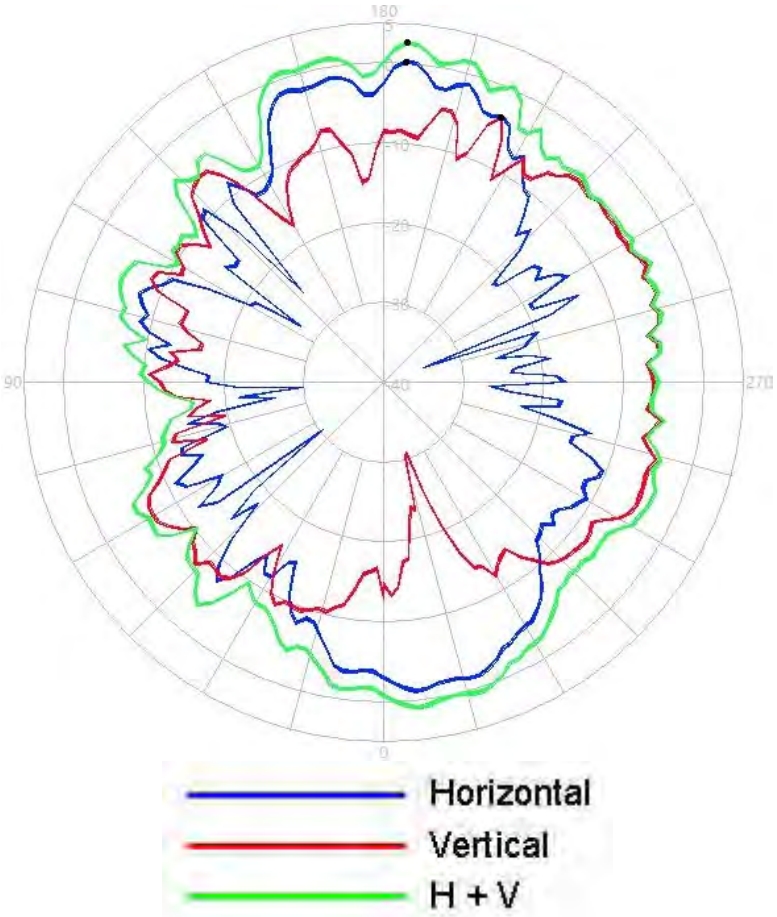
5150-5350 MHz radiation characteristic

Tx1 antenna: 5150 MHz



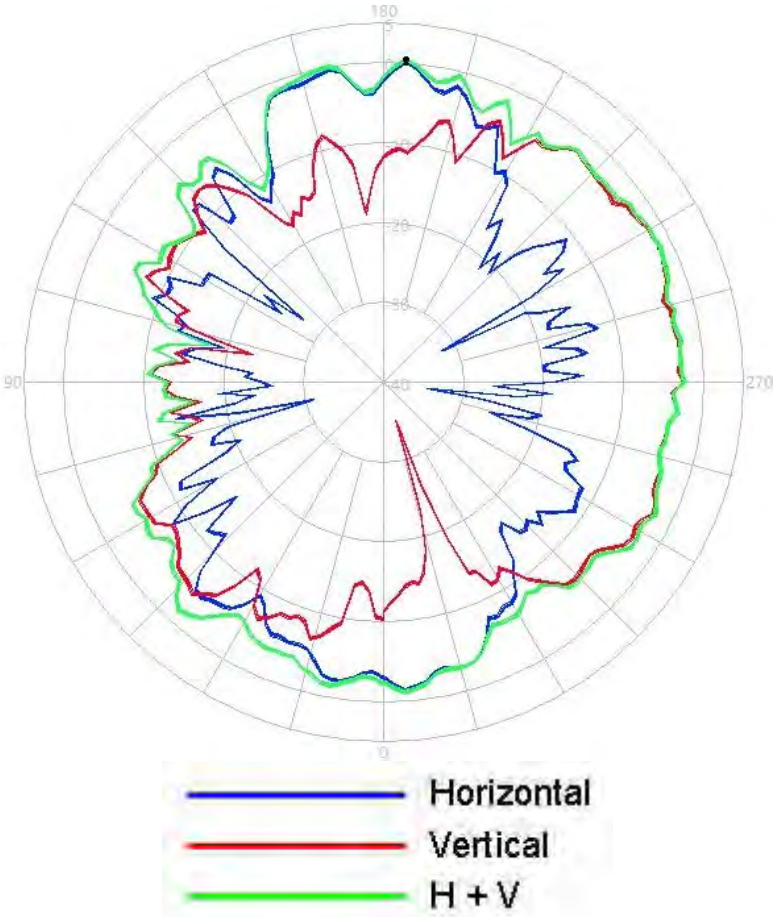
Center Frequency	**5150 MHz**
Horizontal (dBi) Peak	**0.42**
Vertical (dBi) Peak	**-5.07**

Tx1 antenna: 5250 MHz



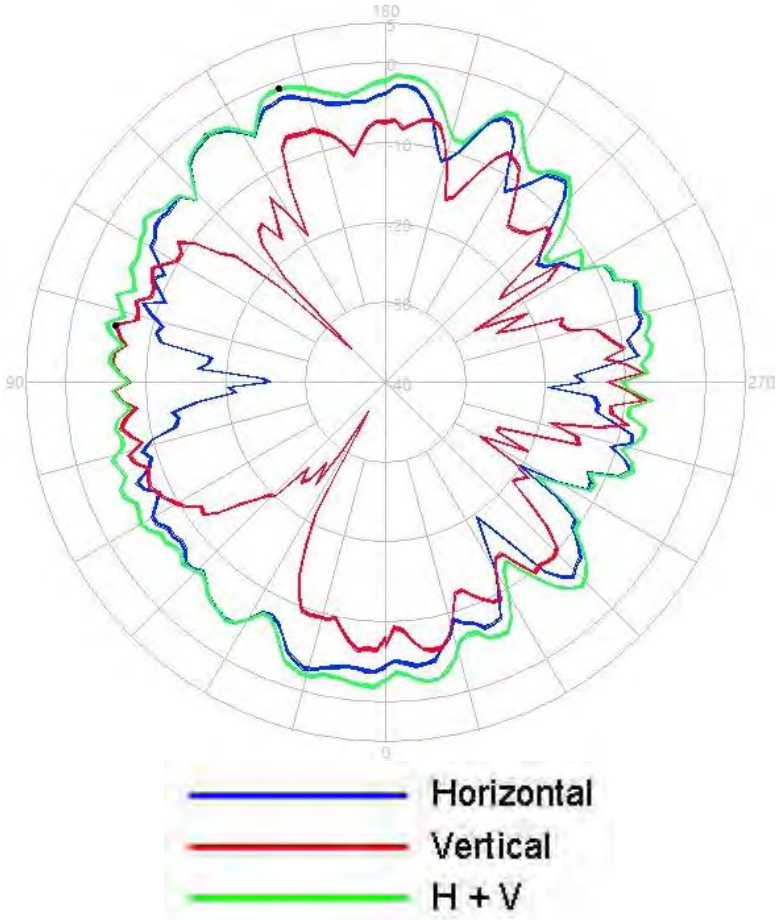
Center Frequency	**5250 MHz**
Horizontal (dBi) Peak	**0.22**
Vertical (dBi) Peak	**-3.75**

Tx1 antenna: 5350 MHz



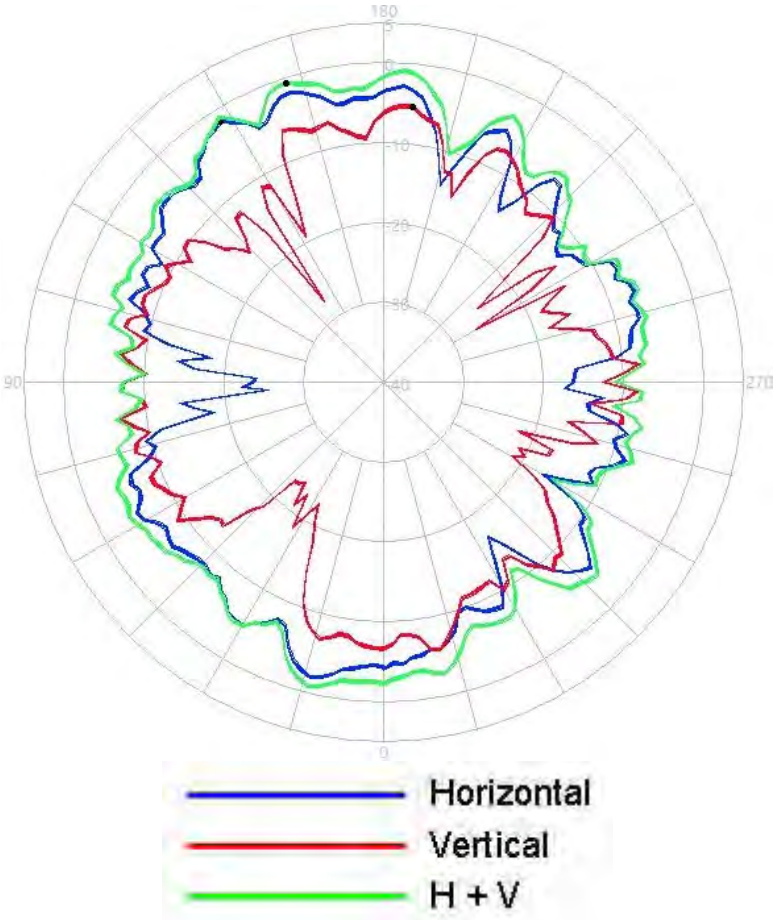
Center Frequency	**5350 MHz**
Horizontal (dBi) Peak	**0.14**
Vertical (dBi) Peak	**-1.46**

Tx2 antenna: 5150 MHz



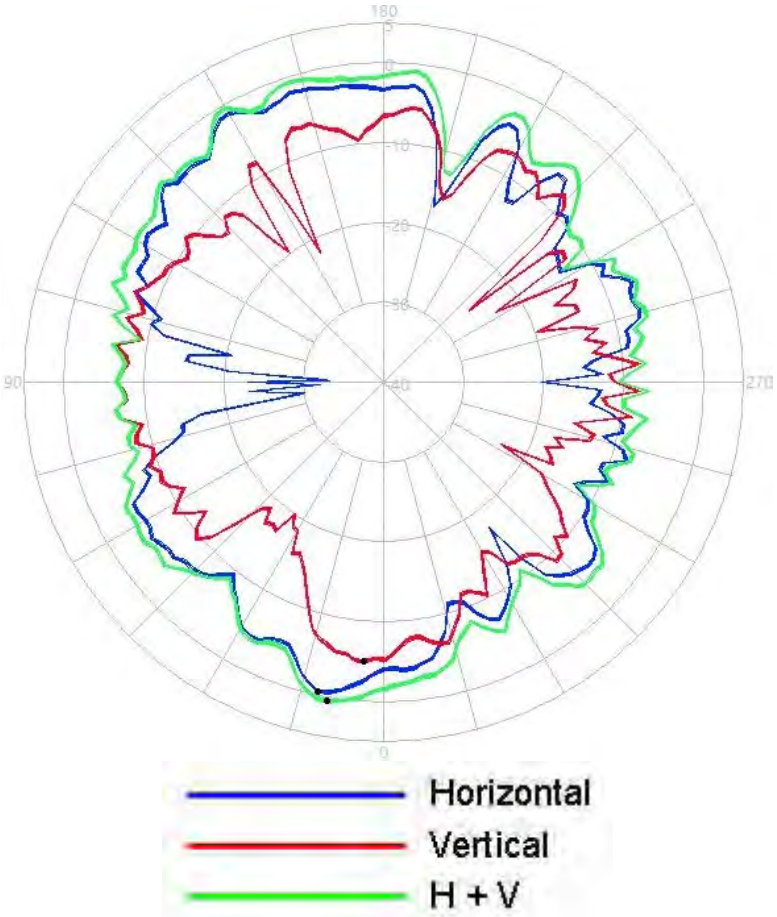
Center Frequency	**5150 MHz**
Horizontal (dBi) Peak	**-1.98**
Vertical (dBi) Peak	**-5.53**

Tx2 antenna: 5250 MHz



Center Frequency	**5250 MHz**
Horizontal (dBi) Peak	**-1.43**
Vertical (dBi) Peak	**-5.28**

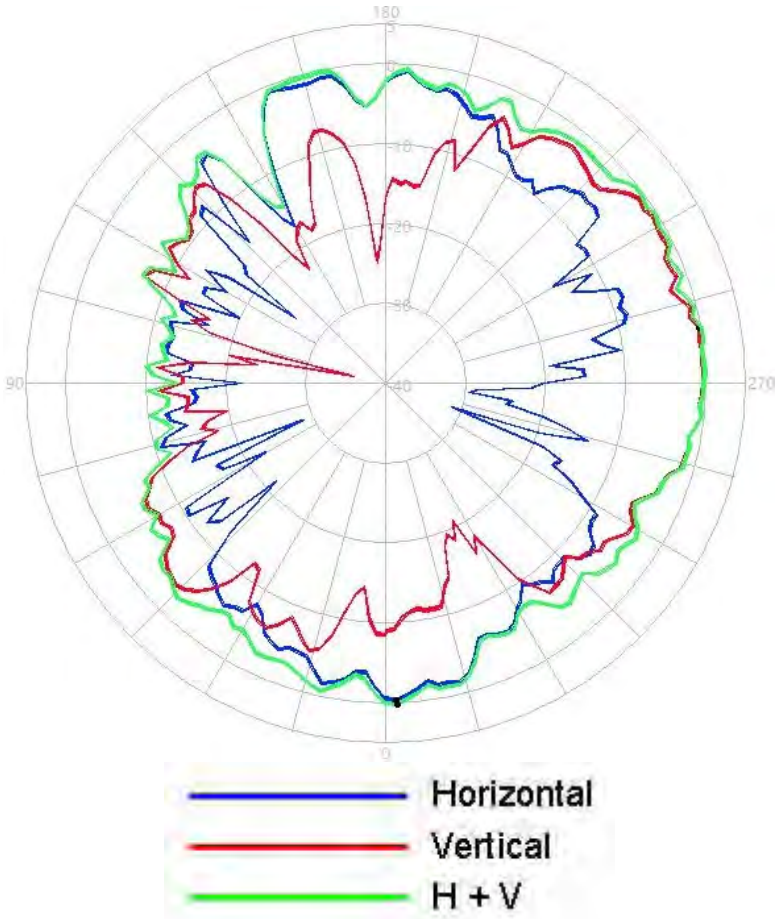
Tx2 antenna: 5350 MHz



Center Frequency	**5350 MHz**
Horizontal (dBi) Peak	**-0.45**
Vertical (dBi) Peak	**-4.91**

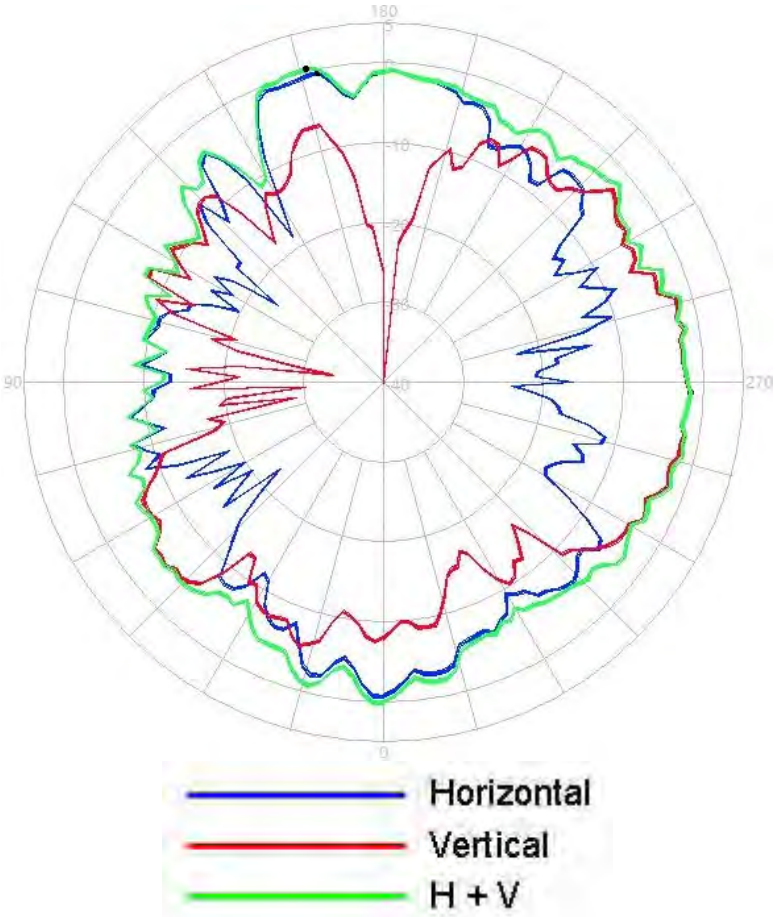
5470-5725MHz radiation characteristic

Tx1 antenna: 5470 MHz



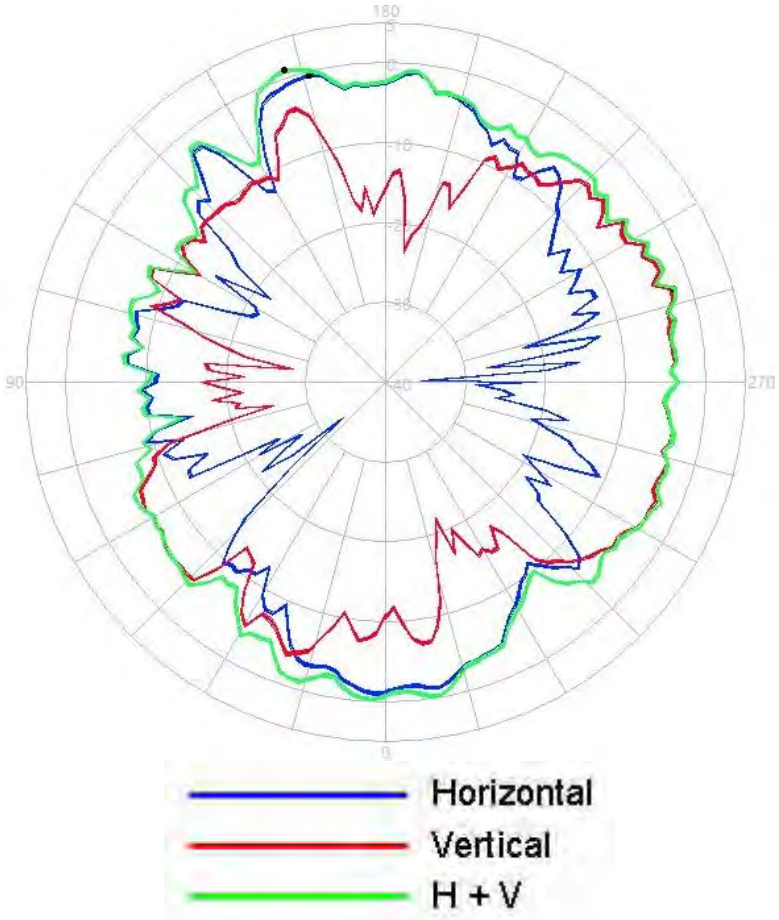
Center Frequency	**5470 MHz**
Horizontal (dBi) Peak	**-0.25**
Vertical (dBi) Peak	**-0.11**

Tx1 antenna: 5600 MHz



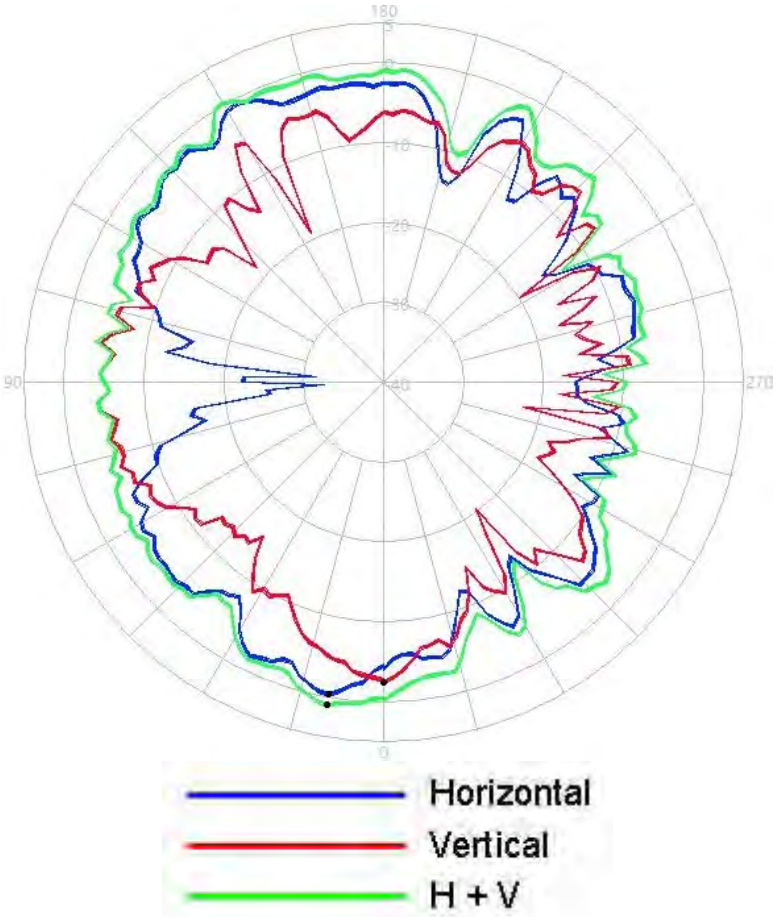
Center Frequency	**5600 MHz**
Horizontal (dBi) Peak	**-0.43**
Vertical (dBi) Peak	**-1.60**

Tx1 antenna: 5725 MHz



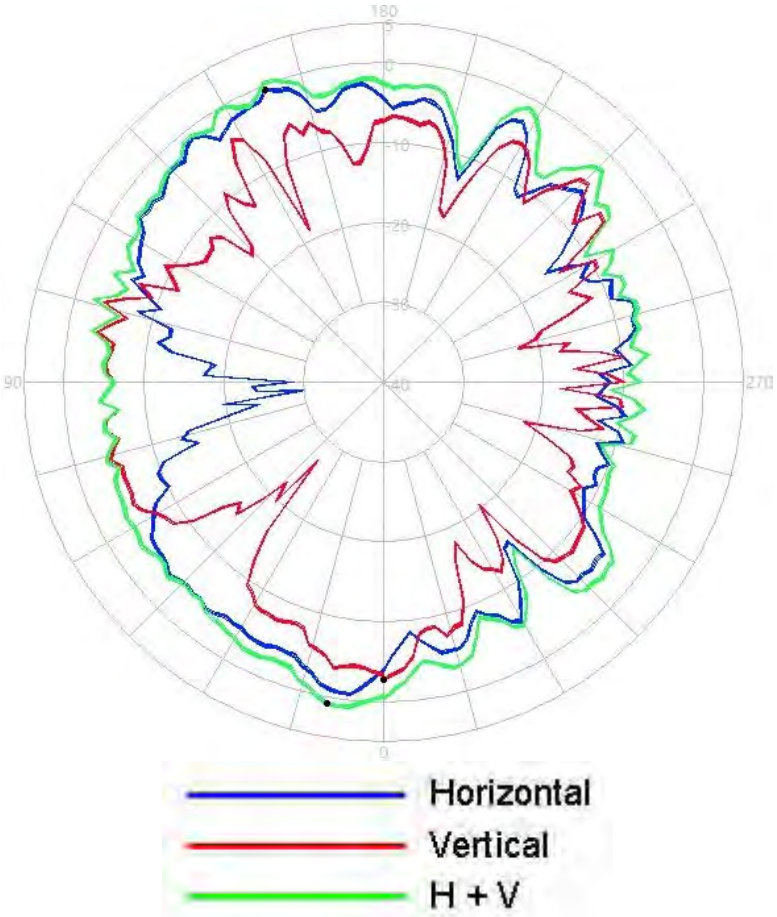
Center Frequency	**5725 MHz**
Horizontal (dBi) Peak	**-0.42**
Vertical (dBi) Peak	**-2.30**

Tx2 antenna: 5470 MHz



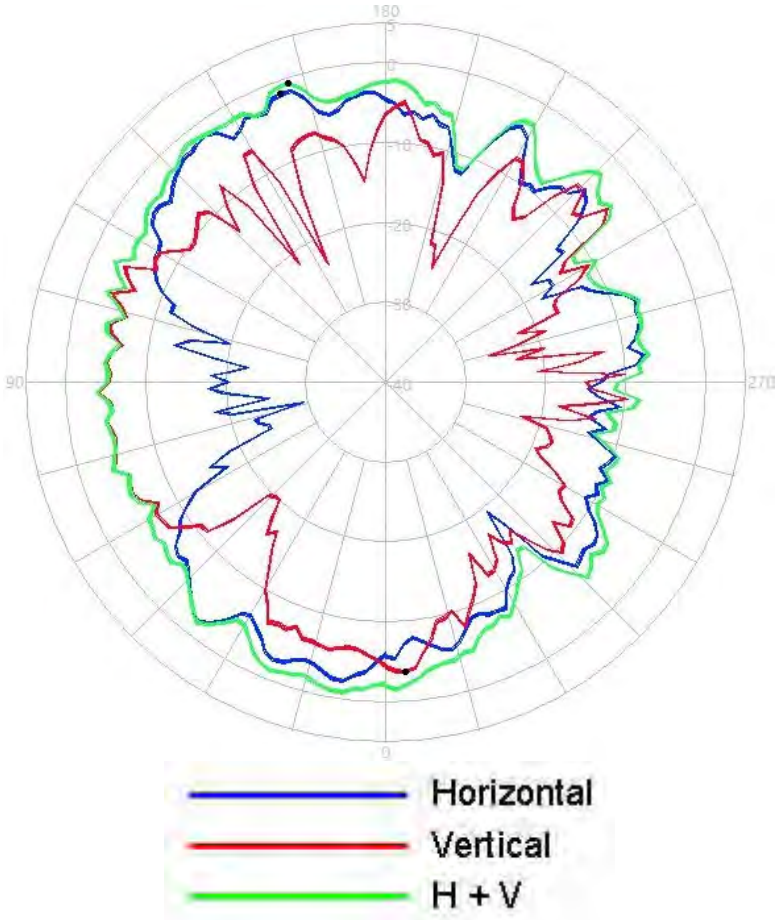
Center Frequency	**5470 MHz**
Horizontal (dBi) Peak	**-0.26**
Vertical (dBi) Peak	**-2.34**

Tx2 antenna: 5600 MHz



Center Frequency	**5600 MHz**
Horizontal (dBi) Peak	**-0.58**
Vertical (dBi) Peak	**-2.72**

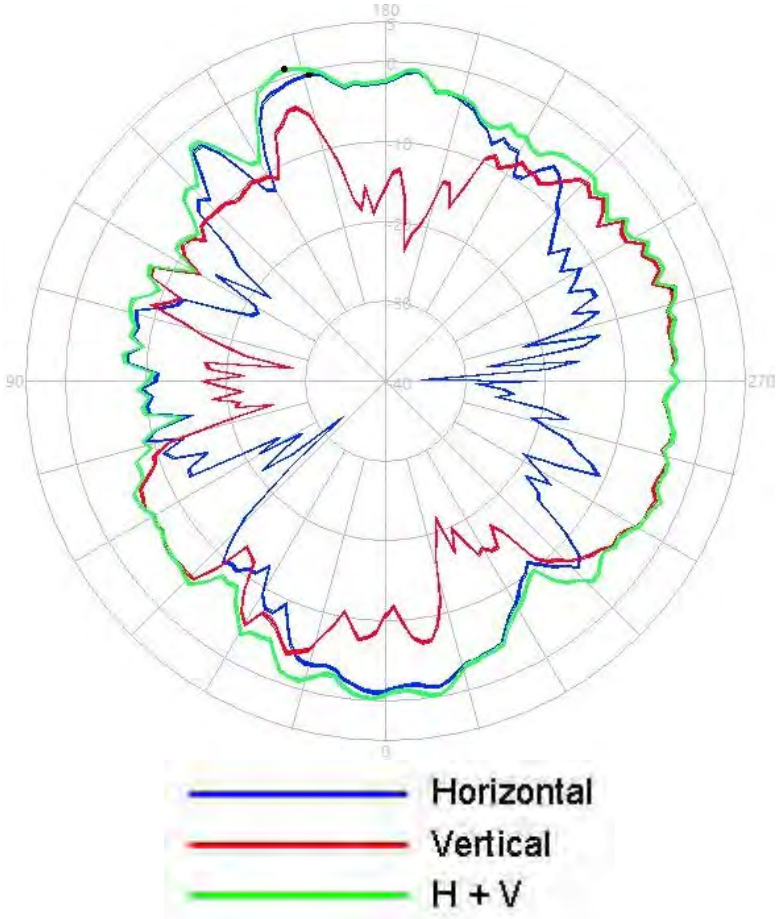
Tx2 antenna: 5725 MHz



Center Frequency	**5725 MHz**
Horizontal (dBi) Peak	**-1.67**
Vertical (dBi) Peak	**-3.65**

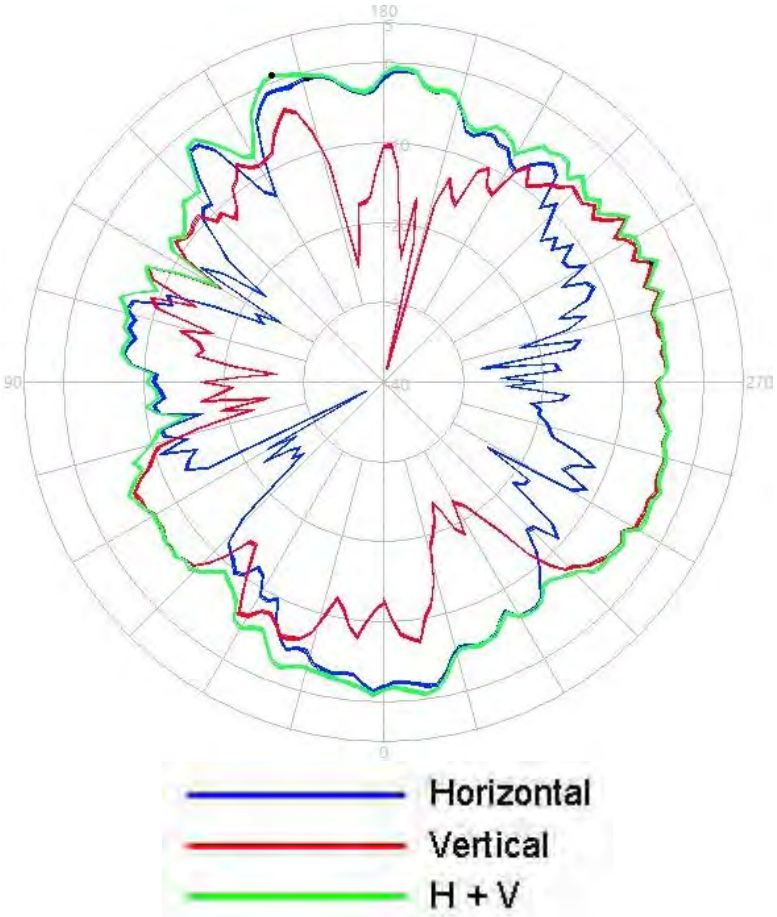
5725-5850 MHz radiation characteristic

Tx1 antenna: 5725 MHz



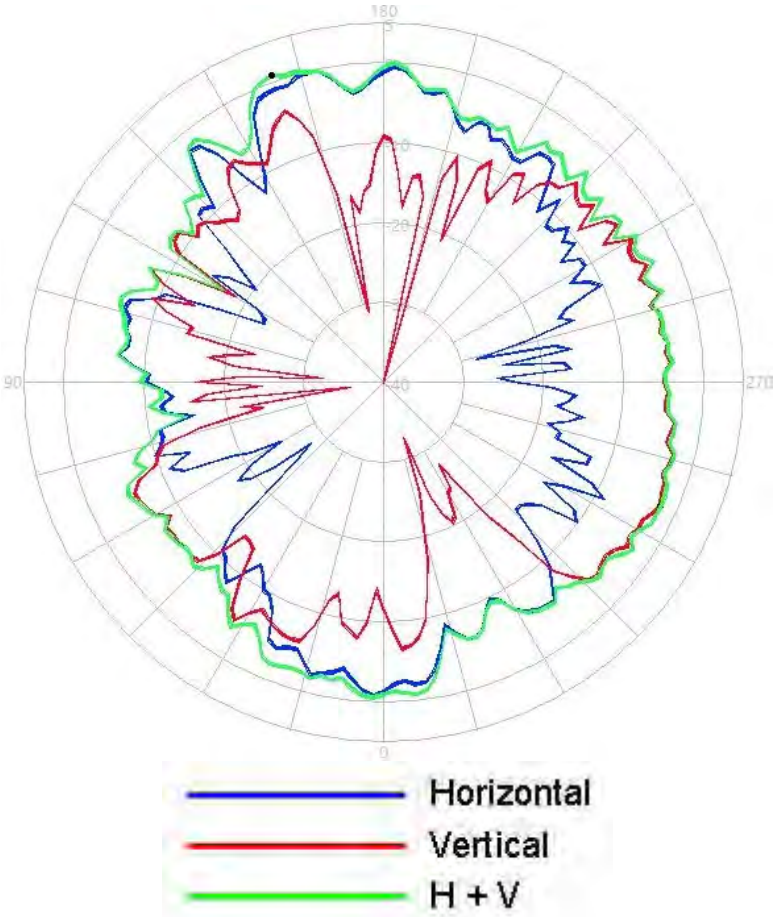
Center Frequency	**5725 MHz**
Horizontal (dBi) Peak	**-0.42**
Vertical (dBi) Peak	**-2.30**

Tx1 antenna: 5785 MHz



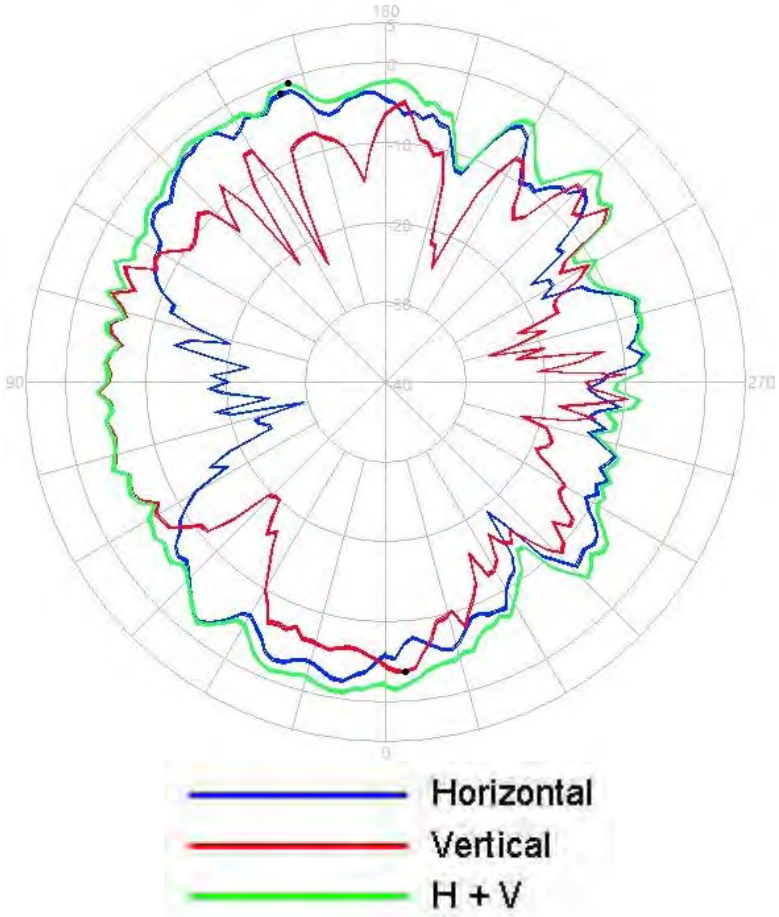
Center Frequency	**5785 MHz**
Horizontal (dBi) Peak	**-0.73**
Vertical (dBi) Peak	**-3.21**

Tx1 antenna: 5850 MHz



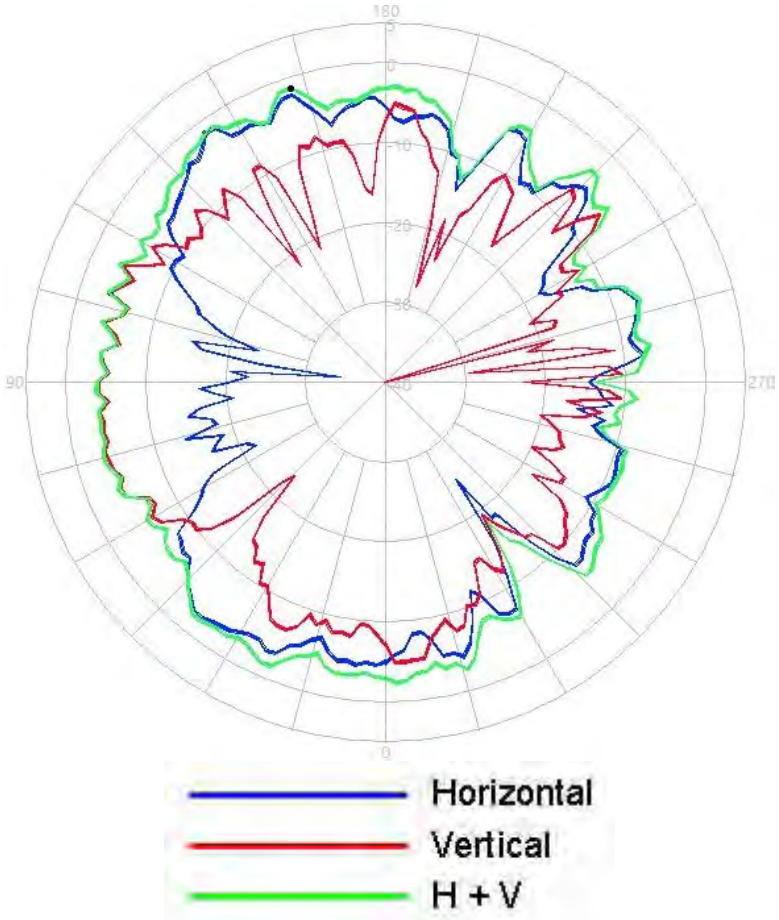
Center Frequency	**5850 MHz**
Horizontal (dBi) Peak	**-0.10**
Vertical (dBi) Peak	**-2.10**

Tx2 antenna: 5725 MHz



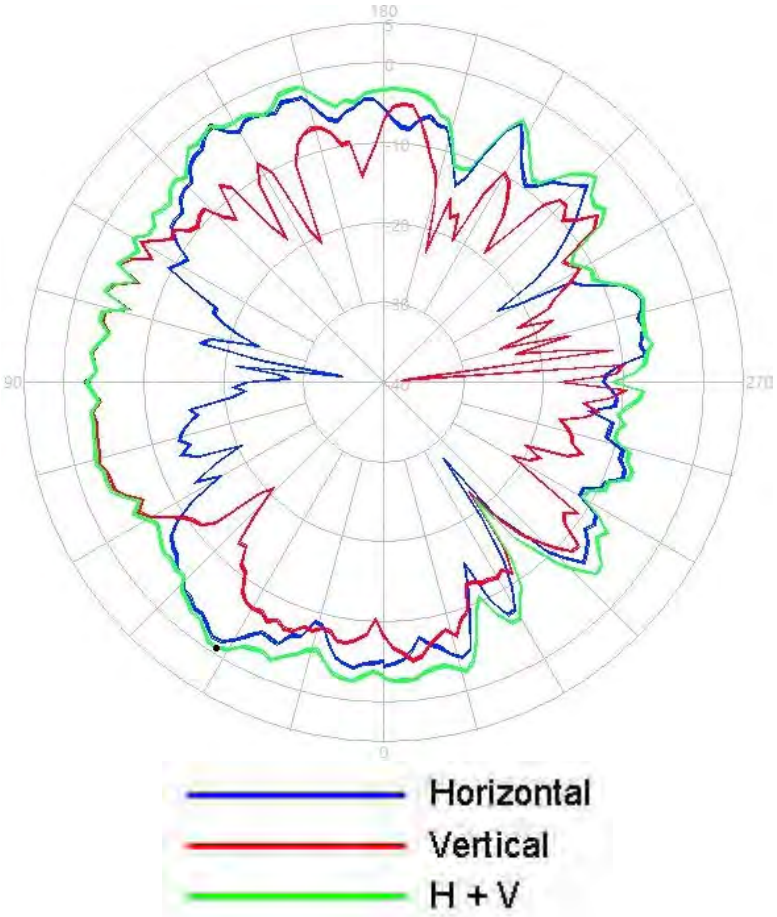
Center Frequency	**5725 MHz**
Horizontal (dBi) Peak	**-1.67**
Vertical (dBi) Peak	**-3.65**

Tx2 antenna: 5785 MHz



Center Frequency	**5785 MHz**
Horizontal (dBi) Peak	**-1.59**
Vertical (dBi) Peak	**-3.79**

Tx2 antenna: 5850 MHz

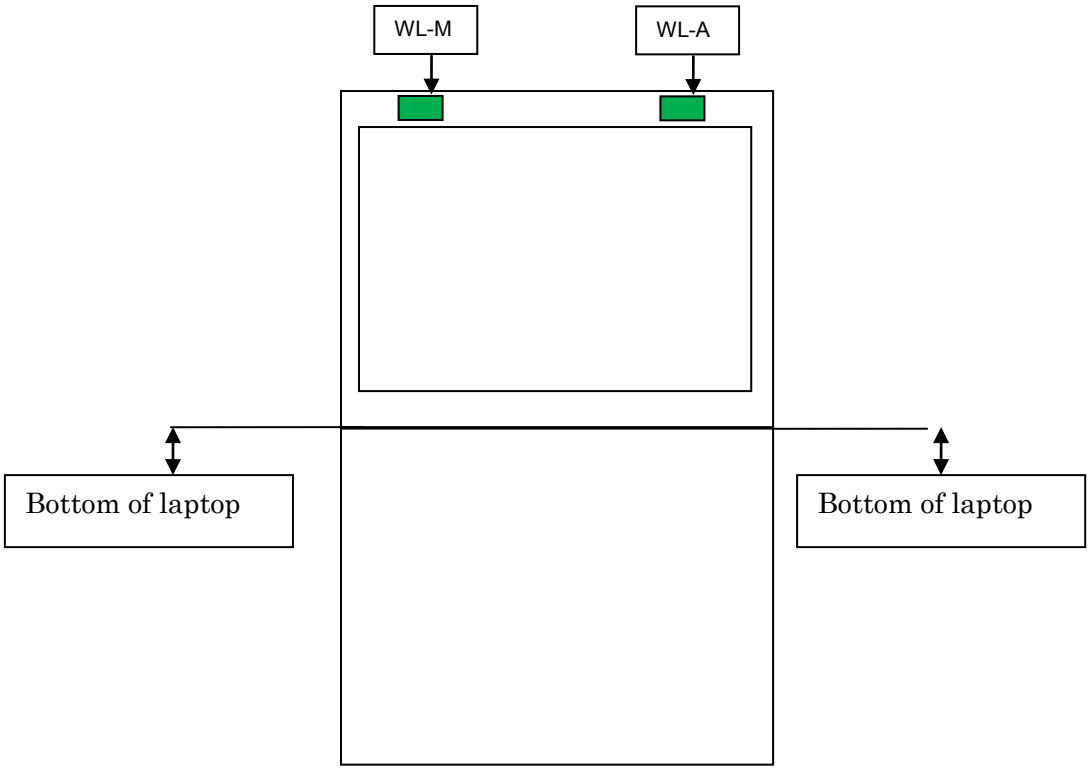


Center Frequency	**5850 MHz**
Horizontal (dBi) Peak	**-1.42**
Vertical (dBi) Peak	**-2.85**

Section 4. Host Platform Information

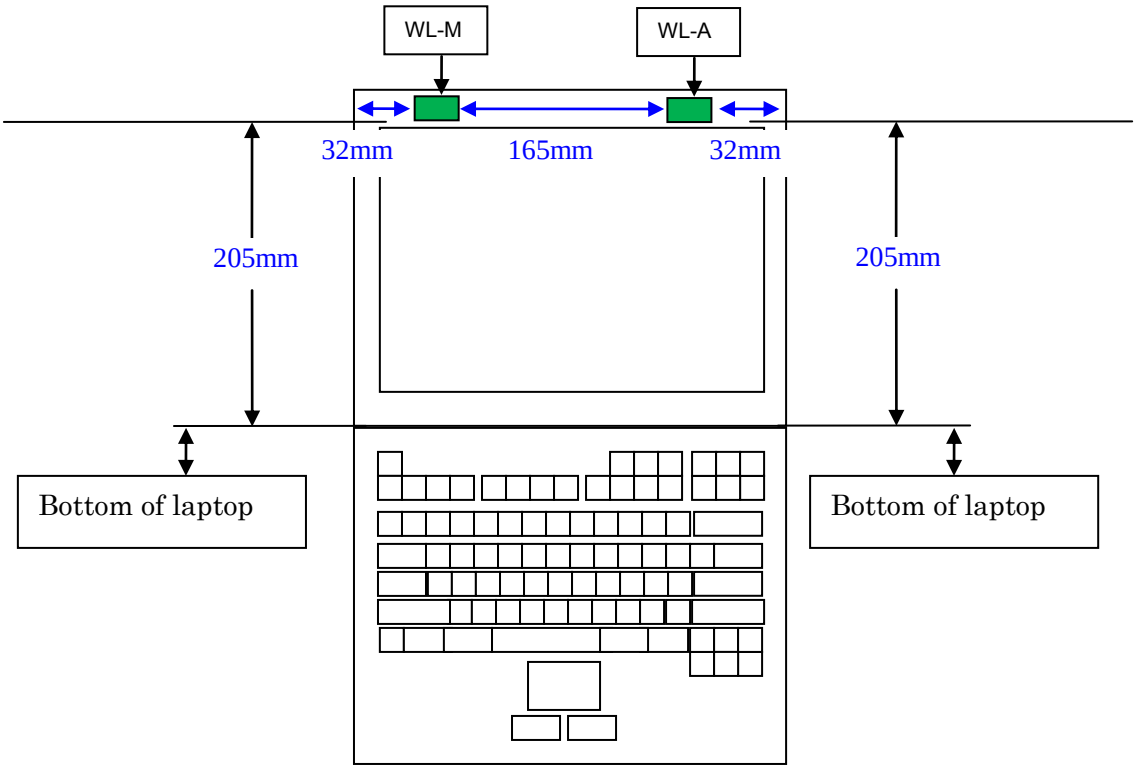
OEM / ODM Host platform: (Quanta /Compliance ID: TP00066C ; Marketing Name: ThinkPad Yoga 11e 3rd Gen ; ThinkPad Yoga 11e Chromebook 3rd Gen;)platform correlated to antenna data

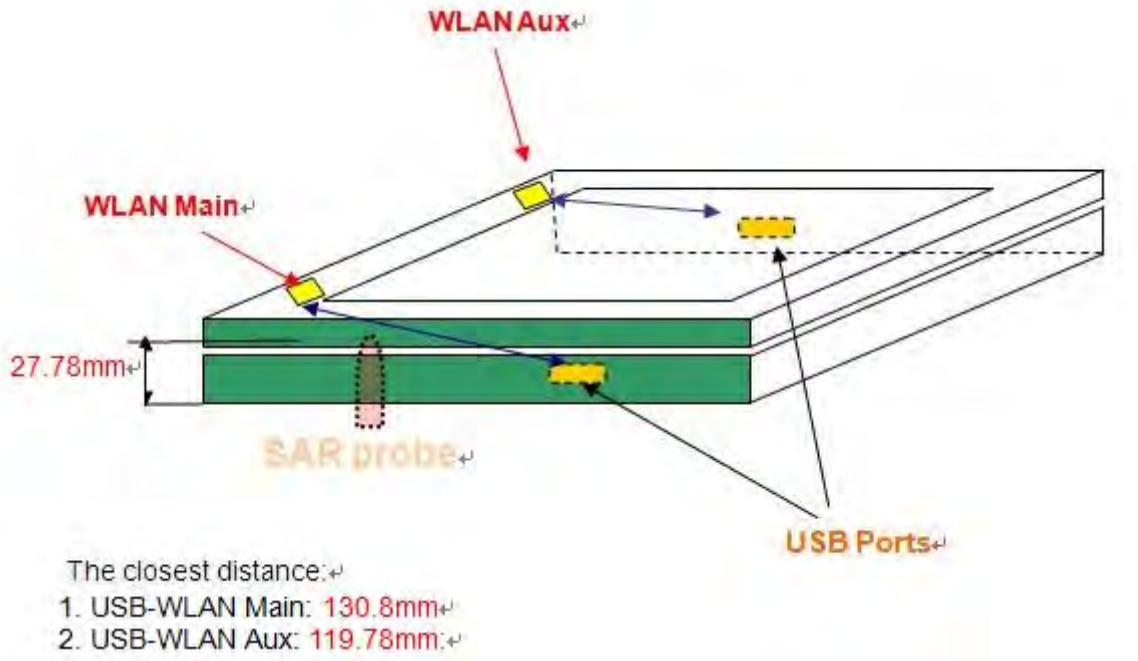
Rating Label Photo:



Section 5. Antenna Host Platform Location Information

Include a **dimensioned photo(s) or dimensioned drawing(s)** of Tx1, Tx2 and Tx3antennaplacements (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.

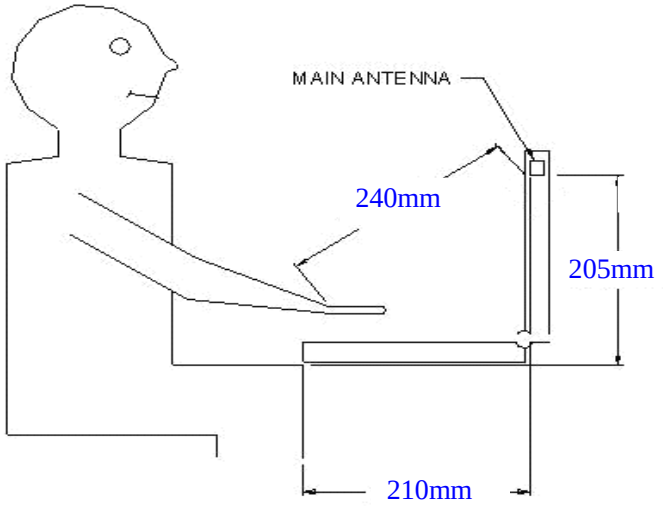


Figure-3:
Tablet PL (Primary Landscape)

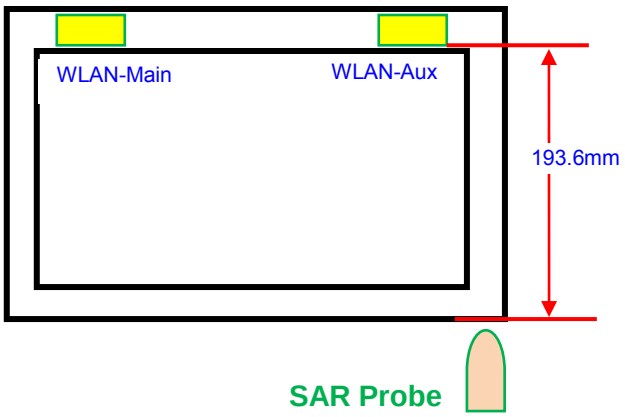


Figure-4:
Tablet PP (Primary Portrait)

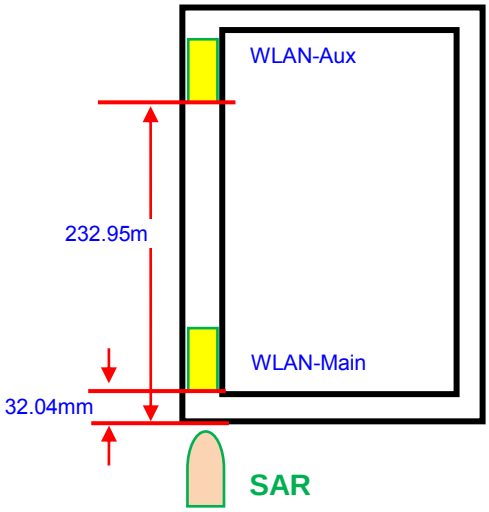


Figure-5:
Tablet SL (Secondary Landscape)

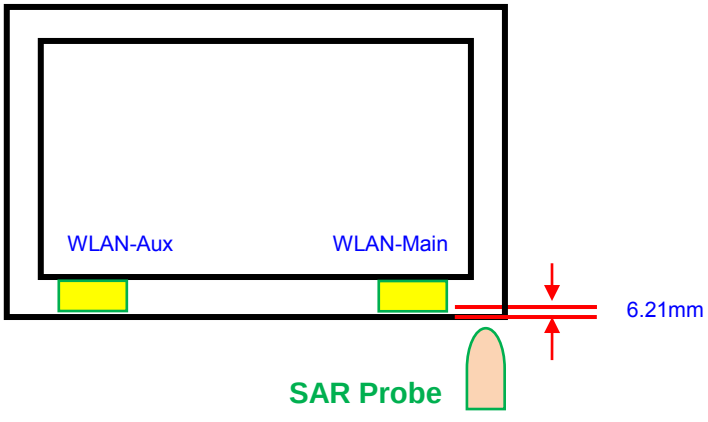
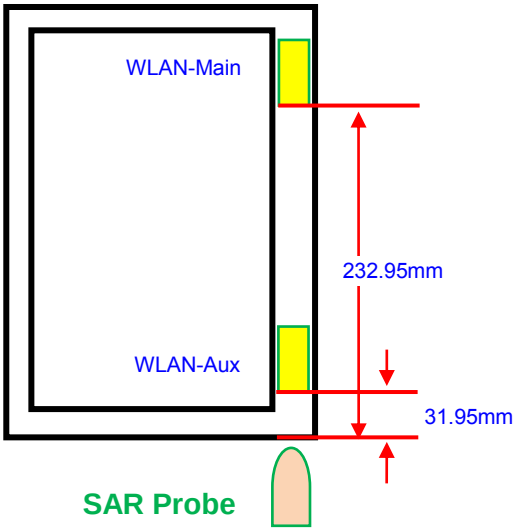


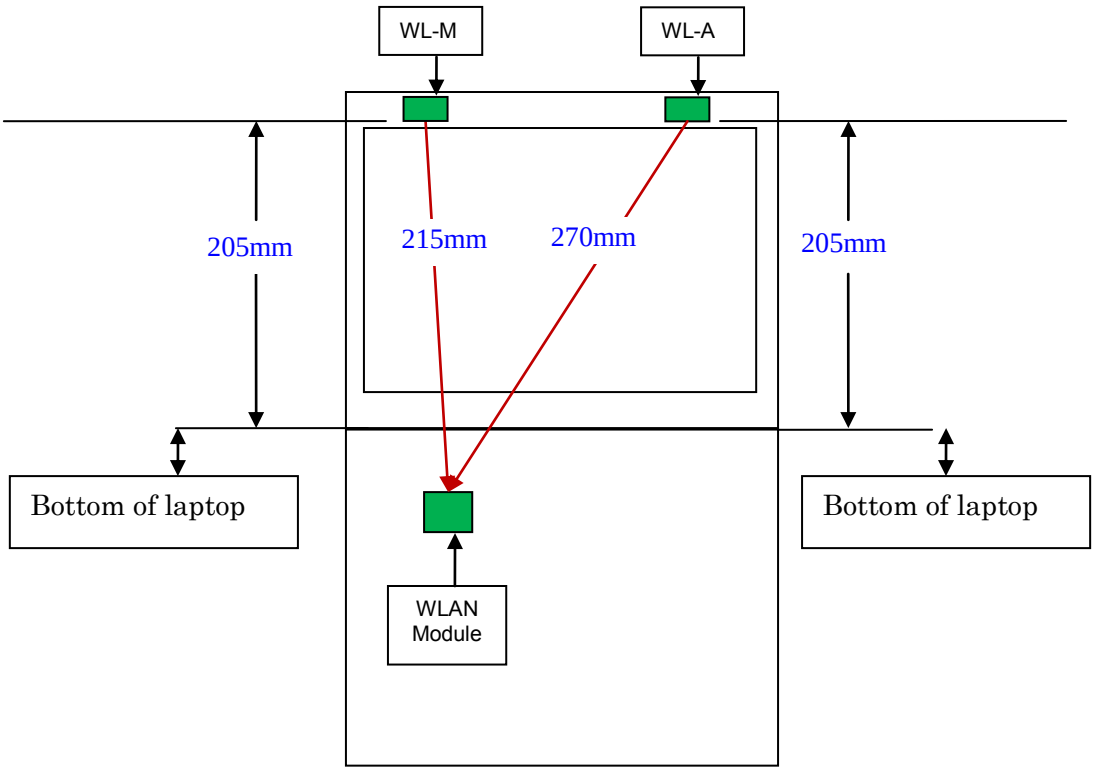
Figure-6:
Tablet SP (Secondary Portrait)



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)



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