

Regulatory WLAN Antenna Information (NB)

(English Language Required for Module Vendor 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 (RMN)	Platform type (ex: Notebook PC, convertible PC, AIO...etc)			SAR minimum separation (mm)	
HP Inc.	Wistron Corporation	TPN-W147	Notebook PC			221.97	
Antenna information							
Vendor	Type	Antenna Part number (Main/TX1)			Antenna Part number (Aux/ TX2)		
Inpaq	PIFA	025.901SO.0001 (WA-P-LE-02-005)			025.901SP.0001 (WA-P-LE-02-006)		
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
2.81	0.72	0.69	-0.17	1.88	0.14	0.14	1.15
Module information							
Model	Form factor and suffixes (NGW/ HMW AND AN/ NB/ BN....)						
AX211NGW (Garfield Peak 2)	Intel Wi-Fi 6E AX211 + BT5.2 (802.11ax 2x2, MU-MIMO, supporting gigabit data rate)						
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 & 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

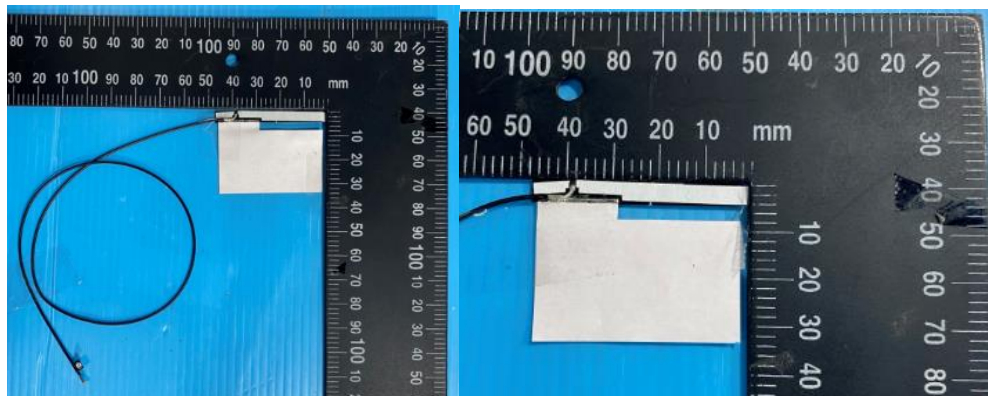
Antenna Information

Section 1. Antenna Assembly Specifications

1A Antenna Part Number	1B 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)
025.901SO.0001 (WA-P-LE-02-005) Tx1/ Rx1 Antenna	INPAQ Corporation	PIFA	50 ohm Coaxial length: 372mm diameter: 1.13mm Connector Type: IPEX	2400-2500	2.81	3.84	2.5	1.03
				5150-5250	-0.14	1.40	3.0	1.54
				5250-5350	0.72	2.28	3.0	1.56
				5470-5725	0.47	2.05	3.0	1.58
				5725-5850	-1.24	0.37	3.0	1.61
				5925-6425	1.88	3.57	3.0	1.69
				6425-6525	0.14	1.86	3.0	1.72
				6525-6875	0.14	1.90	3.0	1.76
				6875-7125	1.15	2.97	3.0	1.82
025.901SP.0001 (WA-P-LE-02-006) Tx2/ Rx2 Antenna	INPAQ Corporation	PIFA	50 ohm Coaxial length: 442mm diameter: 1.13mm Connector Type: IPEX	2400-2500	-1.64	-0.41	2.5	1.23
				5150-5250	-1.13	0.70	3.0	1.83
				5250-5350	-0.56	1.30	3.0	1.86
				5470-5725	0.69	2.57	3.0	1.88
				5725-5850	-0.17	1.74	3.0	1.91
				5925-6425	1.42	3.43	3.0	2.01
				6425-6525	-0.44	1.61	3.0	2.05
				6525-6875	-0.95	1.14	3.0	2.09
				6875-7125	0.69	2.85	3.0	2.16

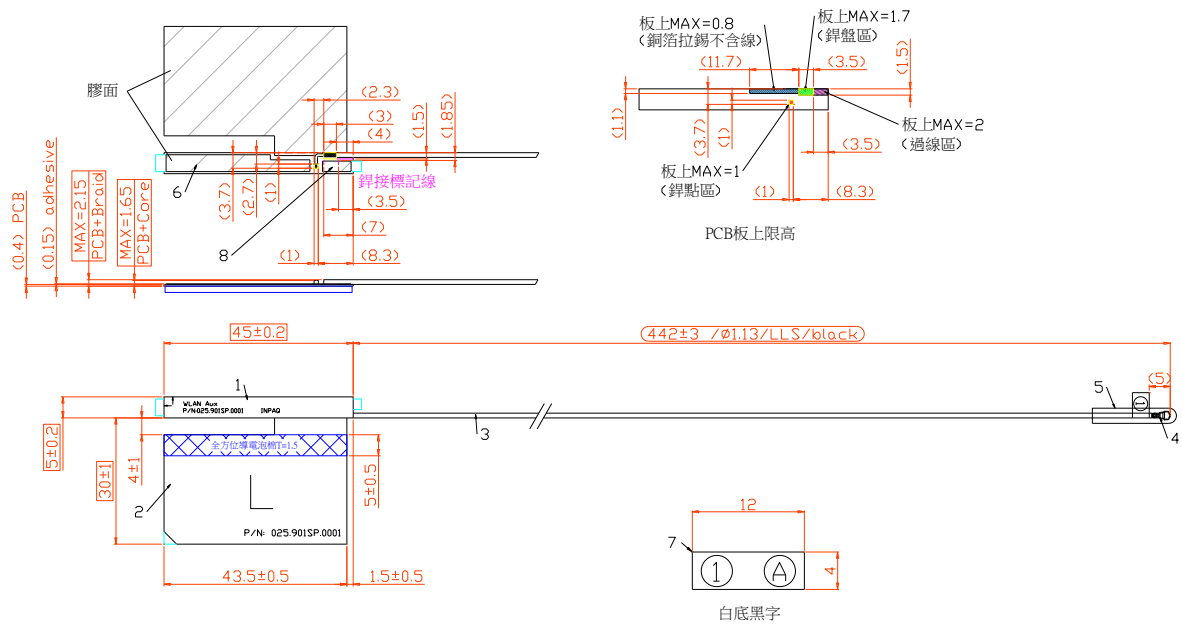
- Antenna Peak Gain required being test in system basis.
The antenna gain was measured in Anechoic Chamber.
- 1E frame contend absolutely peak antenna gain include H/V

Tx1 Antenna Dimensioned Drawing:

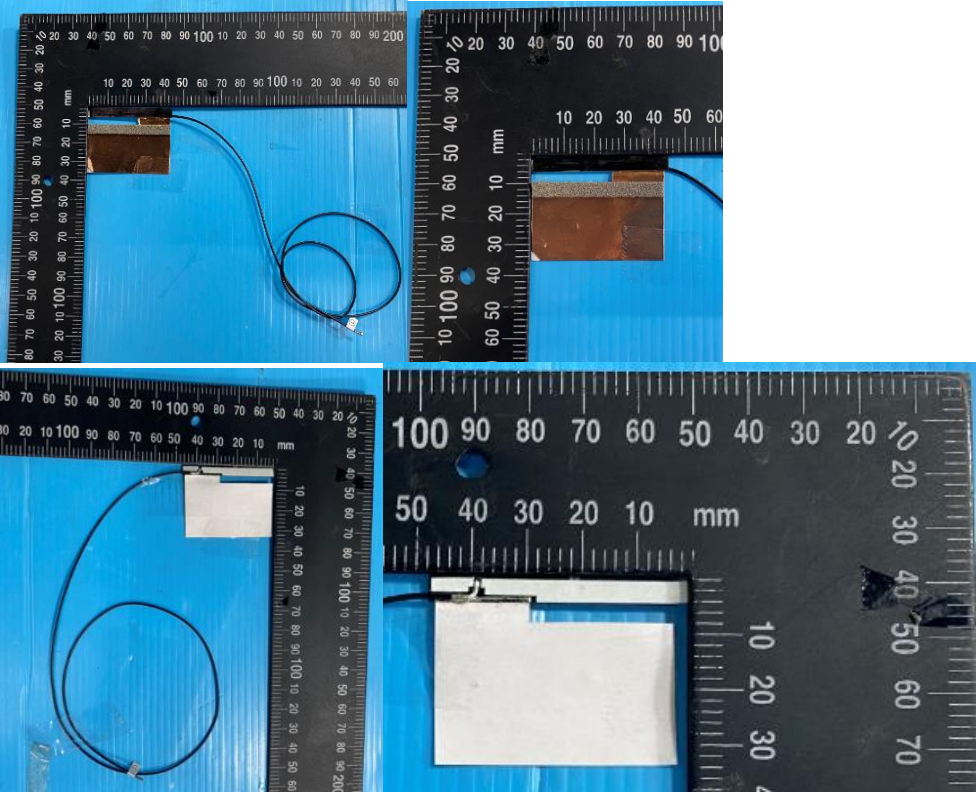


Include a dimensioned photo and dimensioned drawing of Tx2 (or Rx2) antenna here.

Tx2 (or Rx2) Antenna Dimensioned Drawing:



Tx2 (or Rx2) Antenna Photo:

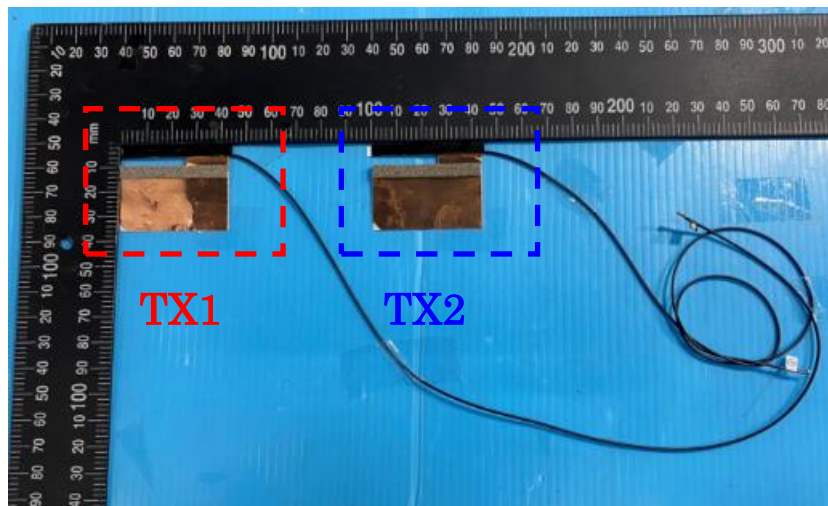


Note: antenna photo should include L type ruler

Include front view photo of all 2 antennas here.

Antenna Manufacturer: INPAQ Technology Corporation

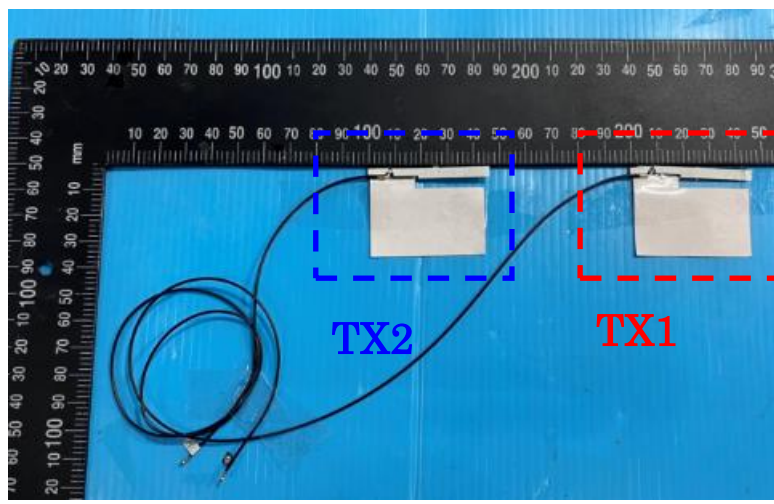
Antenna Part Number: 025.901SO.0001 (WA-P-LE-02-005) (Tx1), 025.901SP.0001 (WA-P-LE-02-006) (Tx2 or Rx2)



Include back view photo of all 2 antennas here.

Antenna Manufacturer: INPAQ Technology Corporation

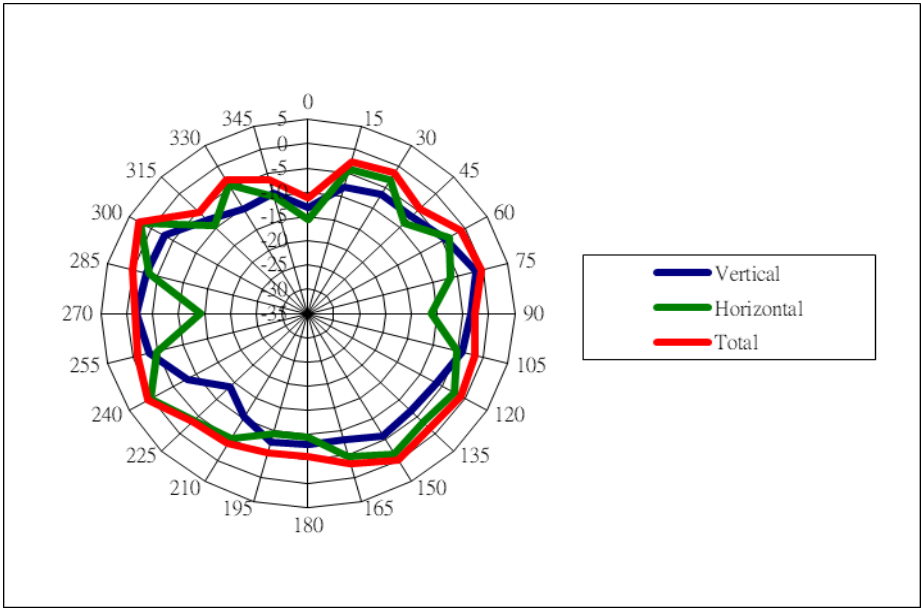
Antenna Part Number: 025.901SO.0001 (WA-P-LE-02-005) (Tx1), 025.901SP.0001 (WA-P-LE-02-006) (Tx2 or Rx2)



Section 3. Radiation characteristics of antennae Loaded in Host Platform

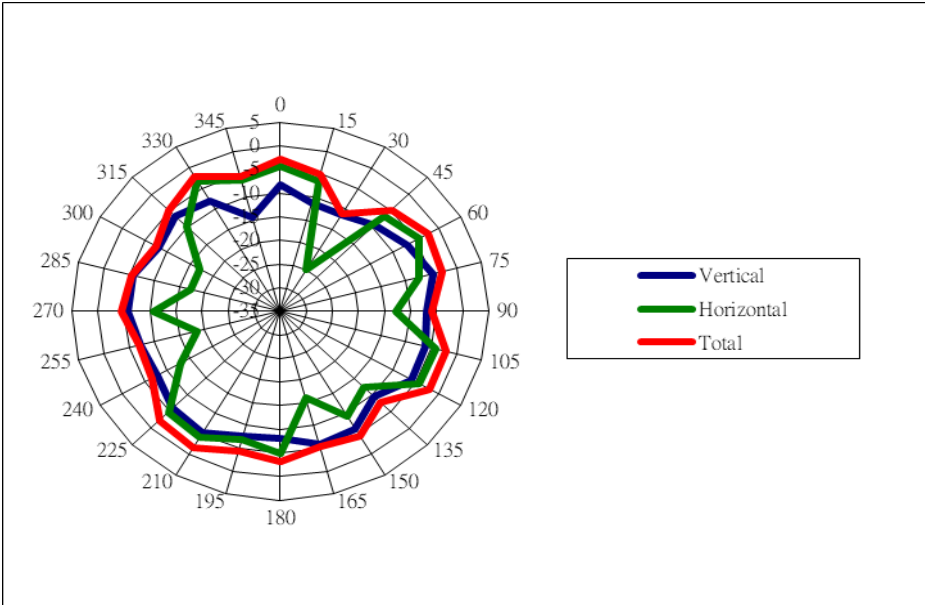
2400-2500MHz radiation characteristic (1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Center Frequency	2400-2500 MHz
Horizontal+ Vertical (dBi) peak	2.81

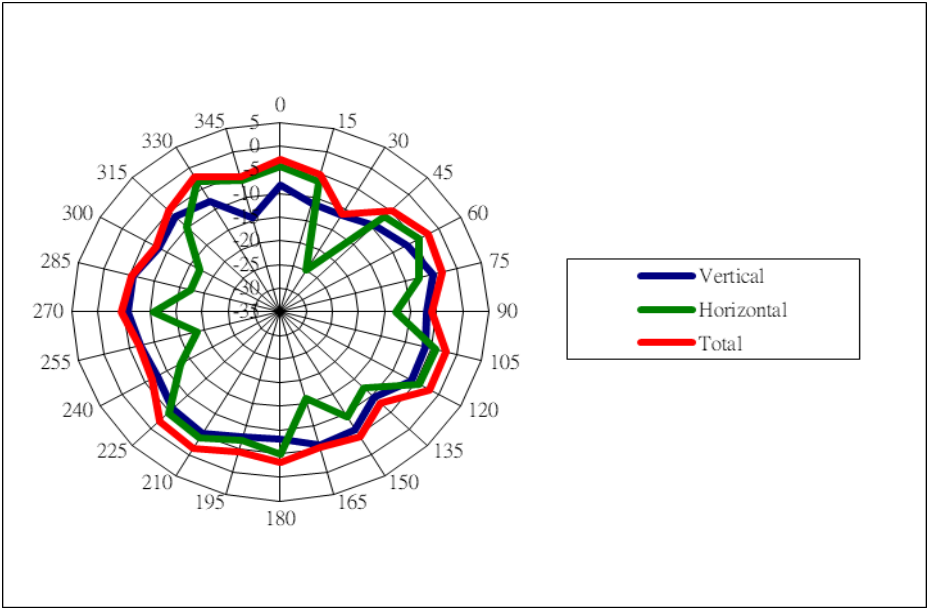
Aux antenna:



Center Frequency	2400-2500 MHz
Horizontal+ Vertical (dBi) peak	-1.64

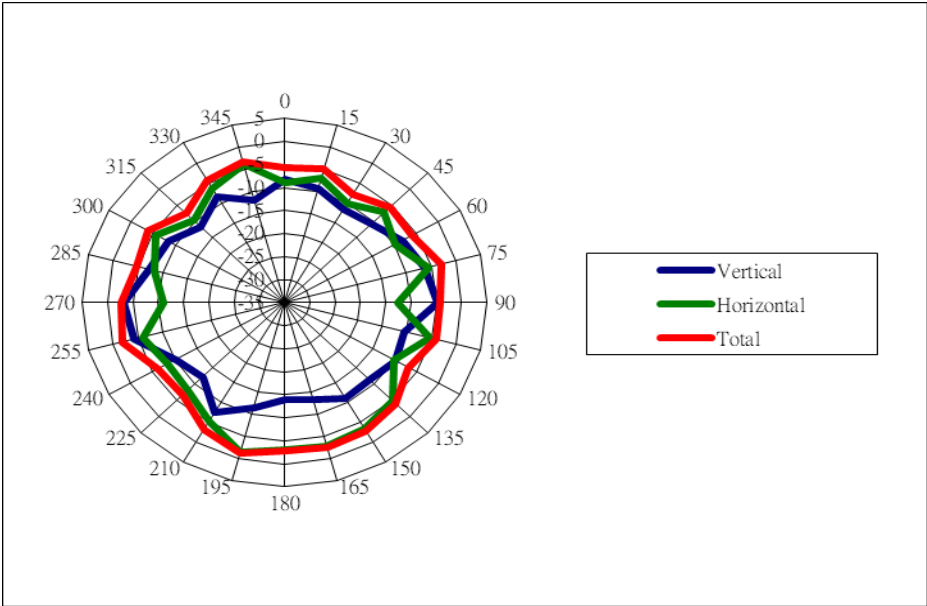
5150-5250MHz radiation characteristic

Main antenna:



Horizontal+ Vertical (dBi) peak	-0.14
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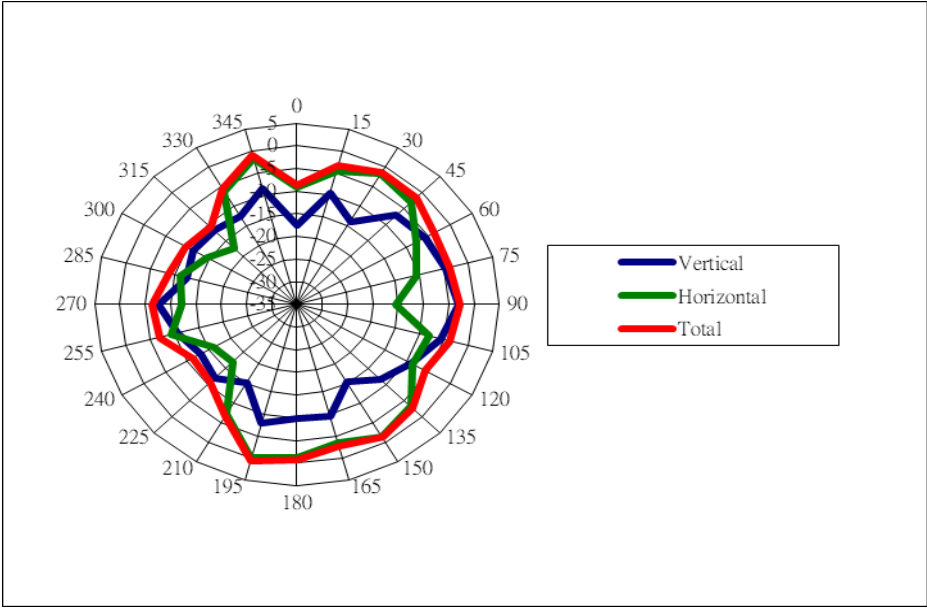
Aux antenna:



Horizontal+ Vertical (dBi) peak	-1.13
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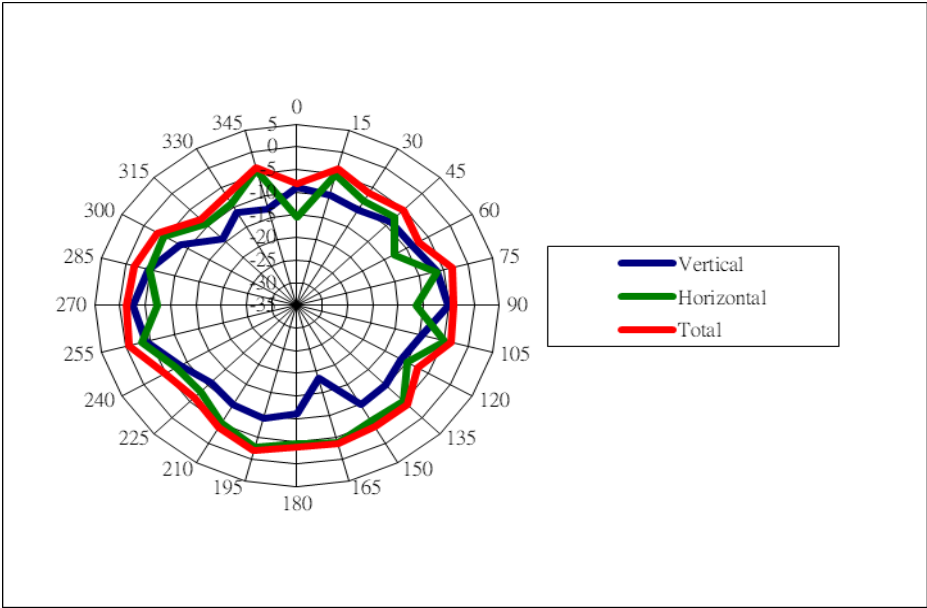
5250-5350MHz radiation characteristic

Main antenna:



Horizontal+ Vertical (dBi) peak	0.72
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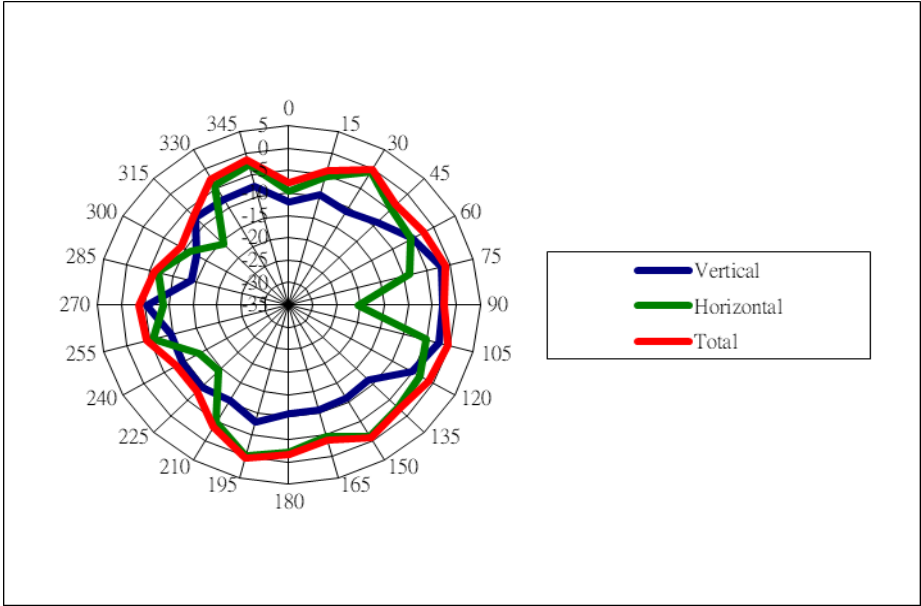
Aux antenna:



Horizontal+ Vertical (dBi) peak	-0.56
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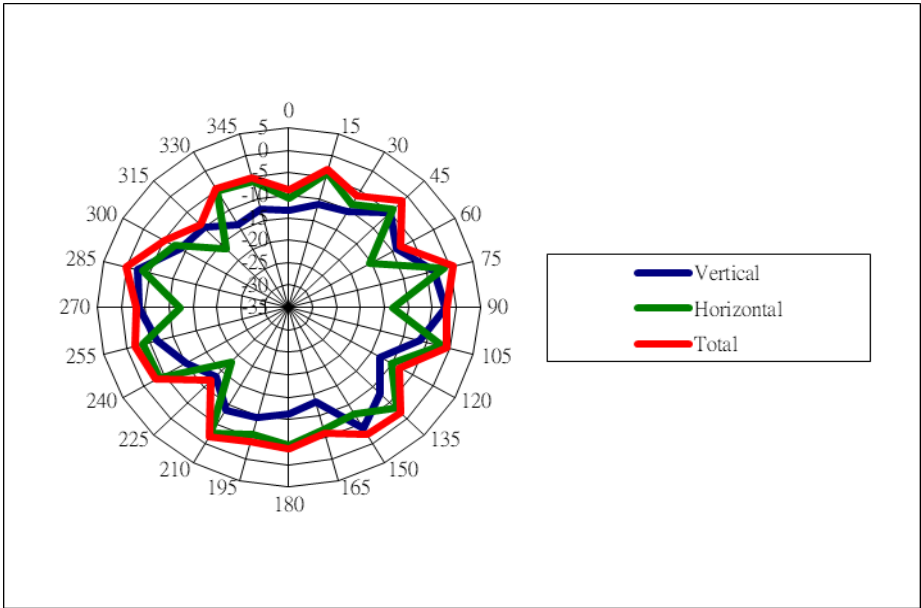
5470-5725MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Horizontal+ Vertical (dBi) peak	0.47
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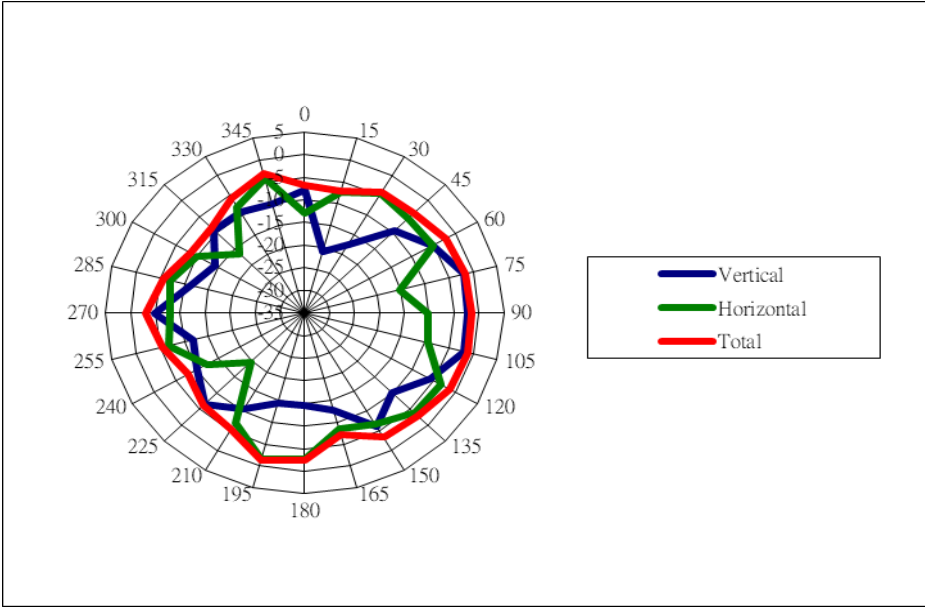
Aux antenna:



Horizontal+ Vertical (dBi) peak	0.69
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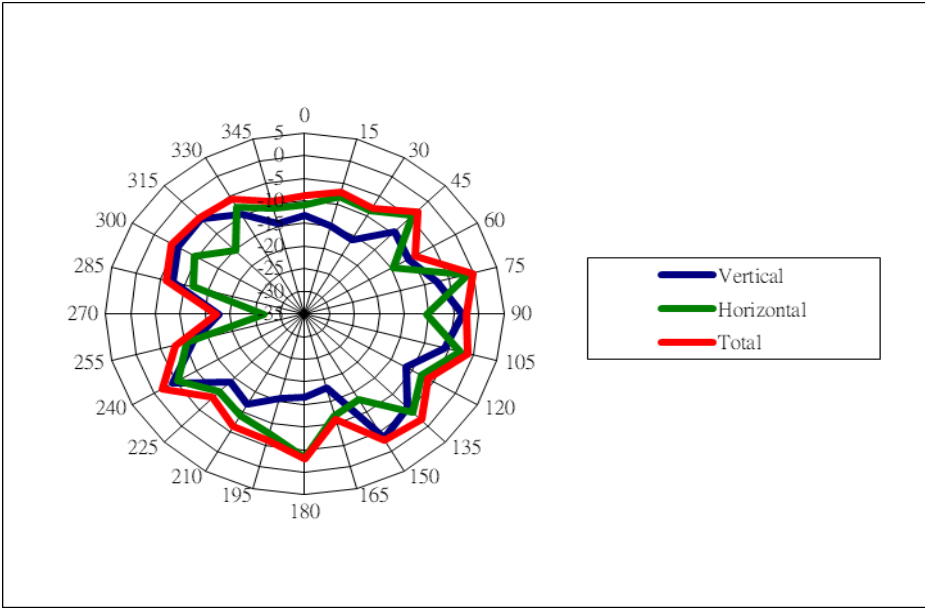
5725-5850MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Horizontal+ Vertical (dBi) peak	-1.24
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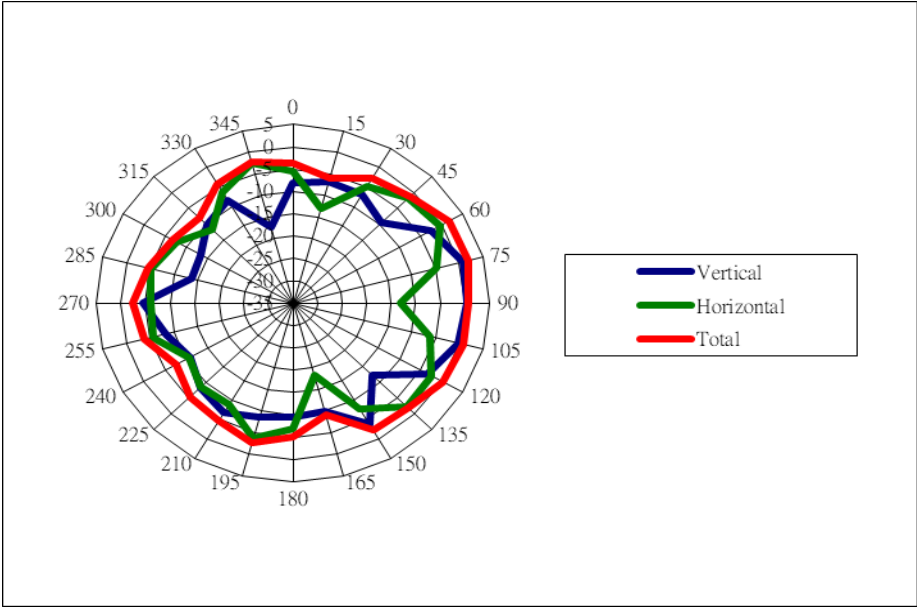
Aux antenna:



Horizontal+ Vertical (dBi) peak	-0.17
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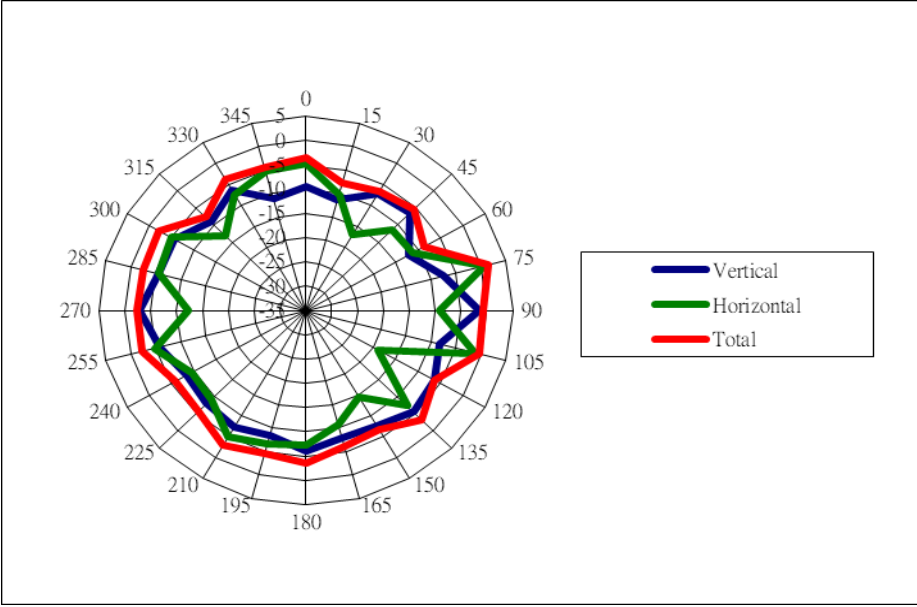
5925-6425MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Horizontal+ Vertical (dBi) peak	1.88
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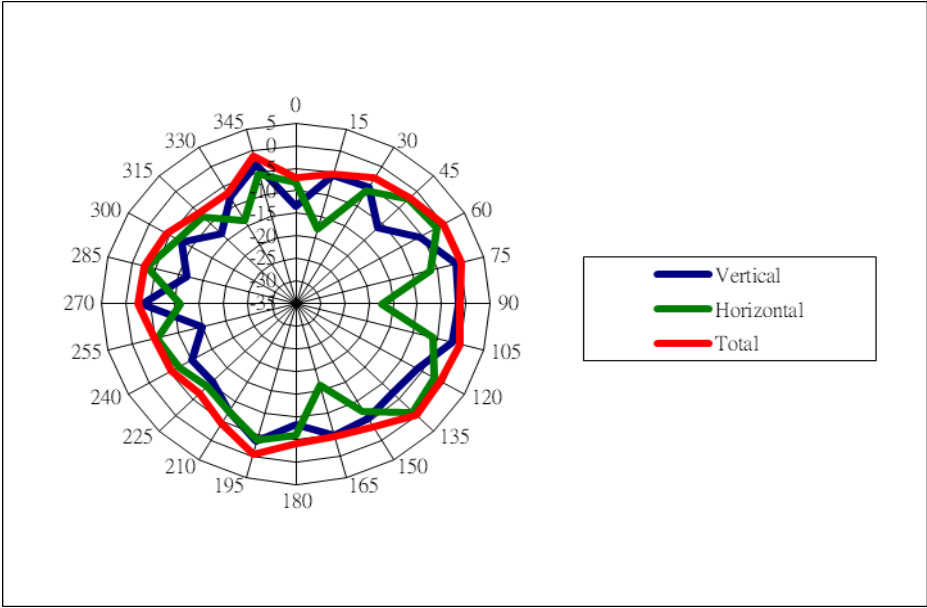
Aux antenna:



Horizontal+ Vertical (dBi) peak	1.42
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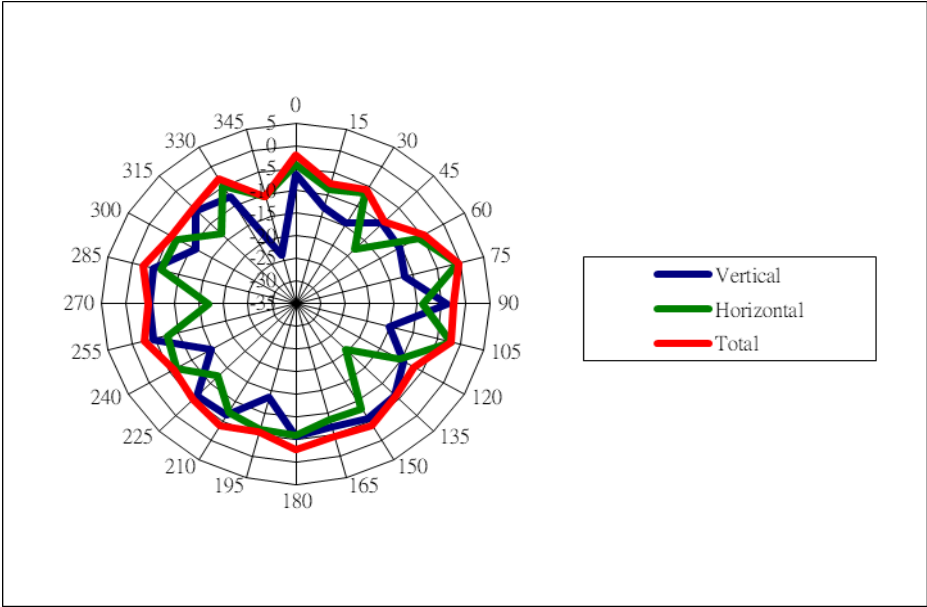
6425-6525MHz radiation characteristic (1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Horizontal+ Vertical (dBi) peak	0.14
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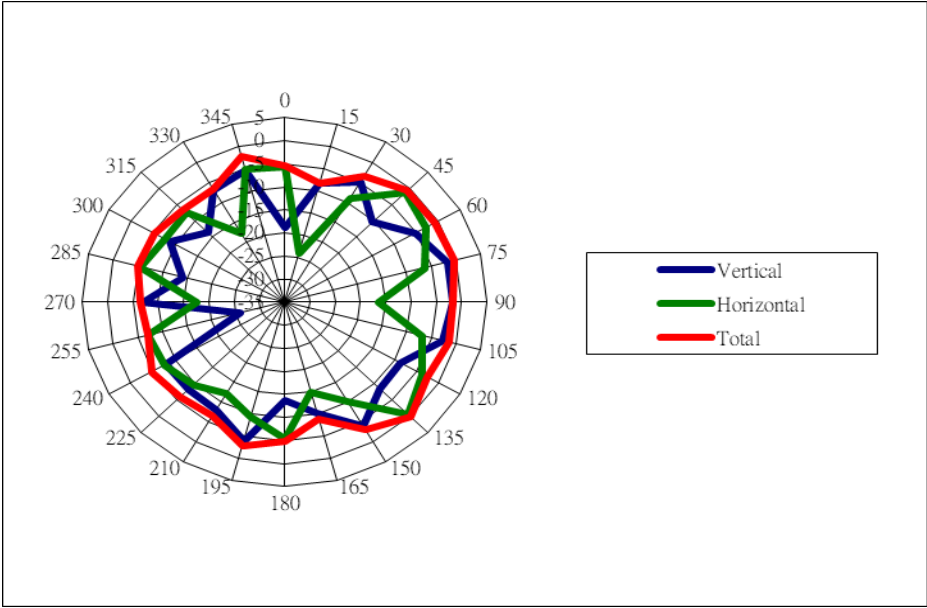
Aux antenna:



Horizontal+ Vertical (dBi) peak	-0.44
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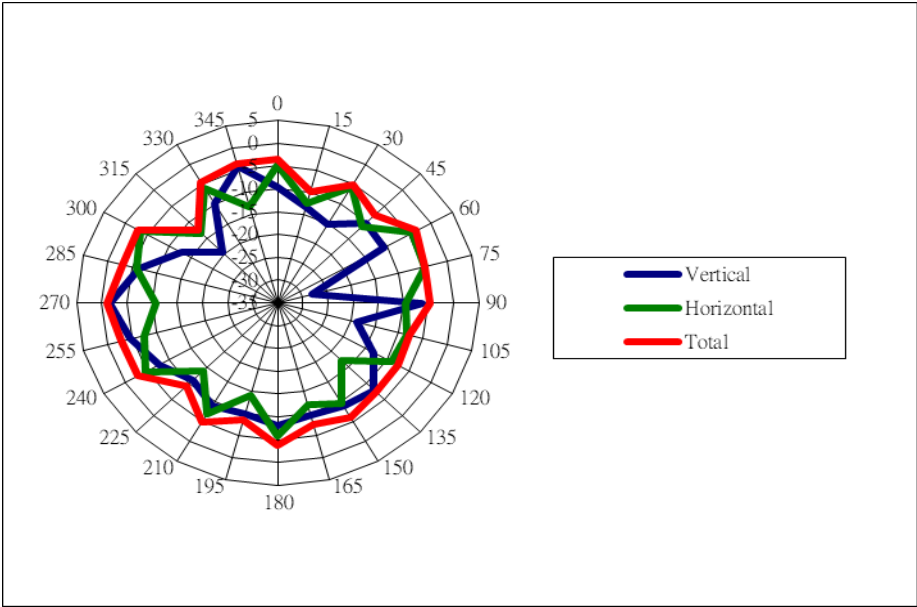
6525-6875MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Horizontal+ Vertical (dBi) peak	0.14
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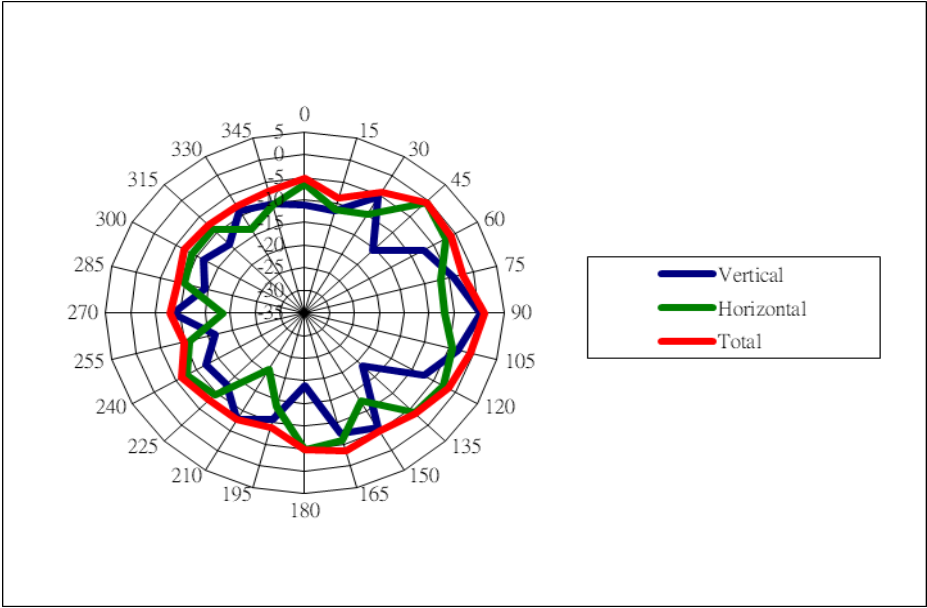
Aux antenna:



Horizontal+ Vertical (dBi) peak	-0.95
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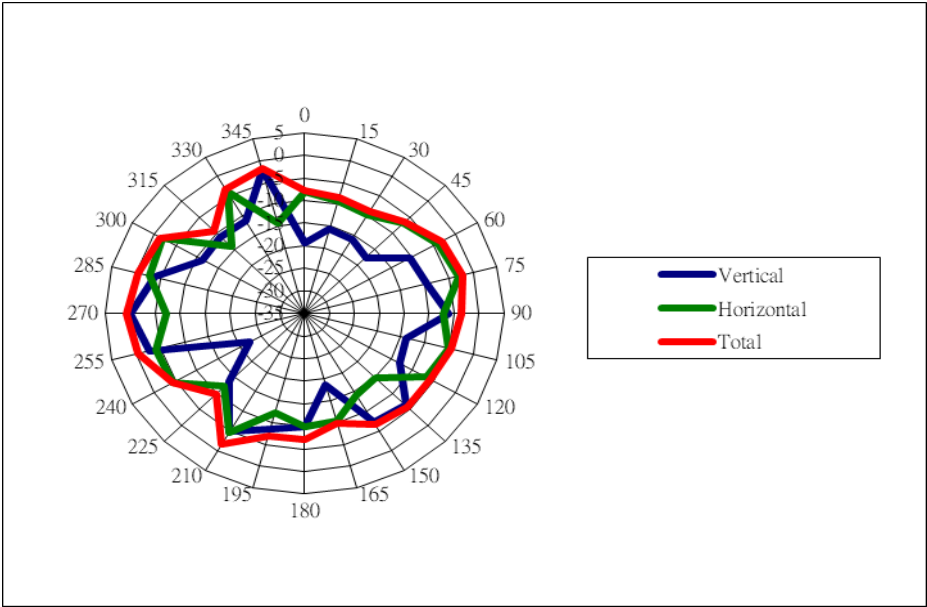
6875-7125MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Horizontal+ Vertical (dBi) peak	1.15
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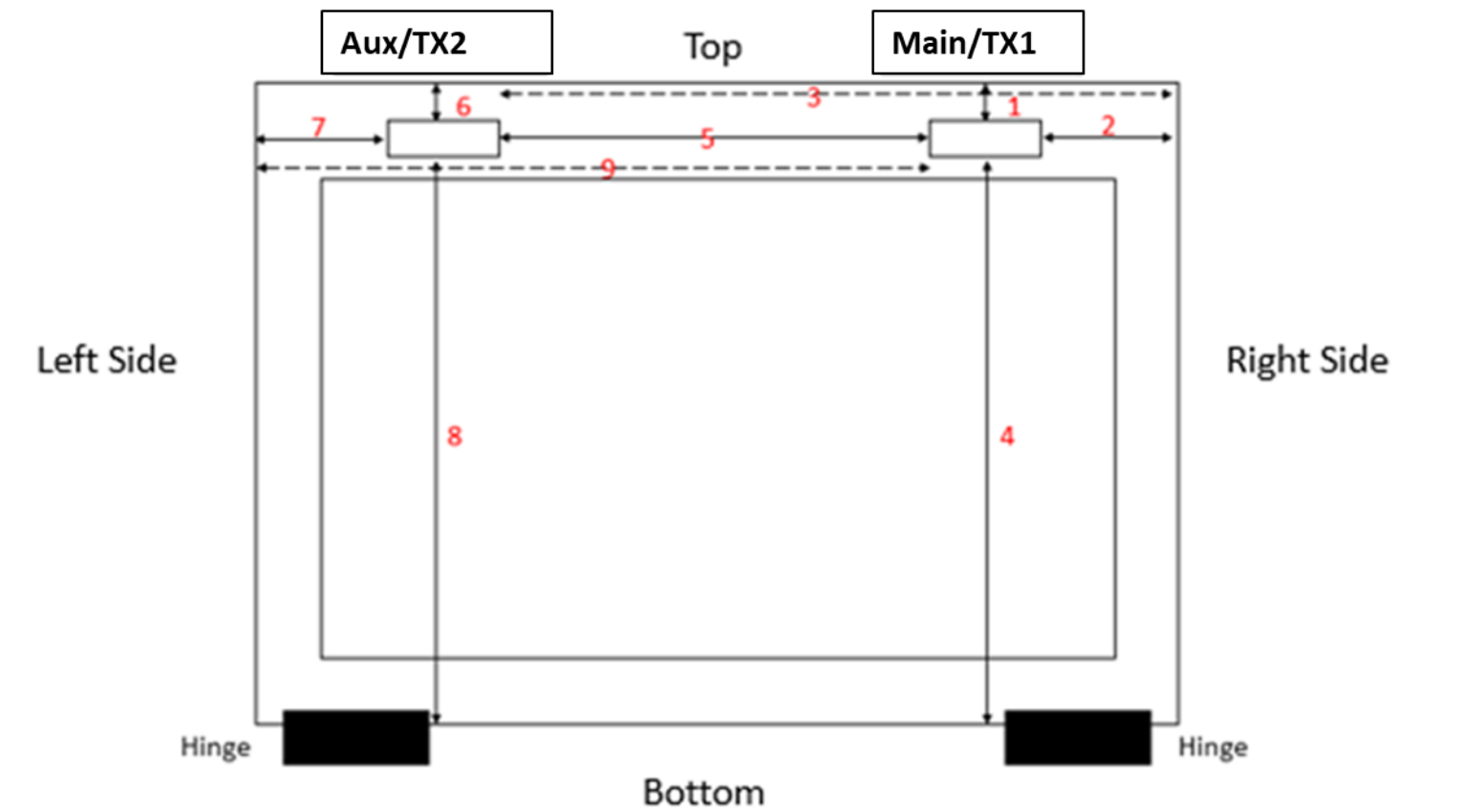
Aux antenna:



Horizontal+ Vertical (dBi) peak	0.69
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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.



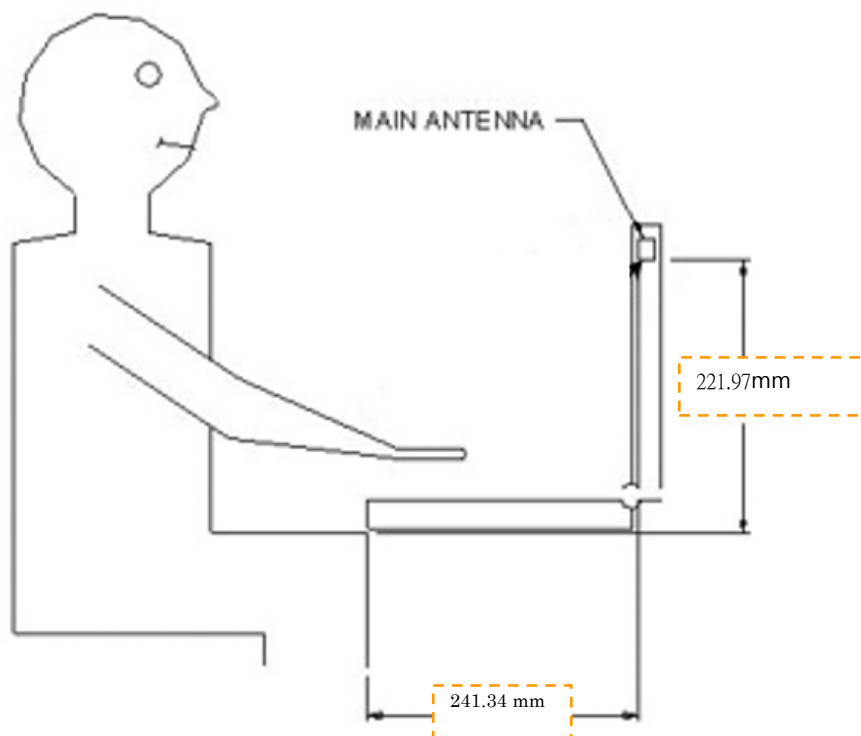
Dimension:	1	2	3	4	5	6	7	8	9
(mm)	2.6	56.8	225.8	221.4	154	2.6	56.8	221.4	255.8

$Tx1 \text{ to Right side}:(5)+Tx2 \text{ width}+(2) =(3)= 225.8mm$

$Tx2 \text{ to Left side}:(5)+Tx1 \text{ width} +(7)=(9)= 255.8mm$

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.



Without rubber foot: 221.97 mm

With rubber foot: 222.47mm

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)

