

Regulatory WLAN Antenna Information (NB 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	TPN-C161	Convertible PC			2.03	
Antenna information							
Vendor		Type	Antenna Part number (Main/TX2)			Antenna Part number (Aux/ TX1)	
HTK		PIFA	219HCTN12195			219HCTN12196	
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
-1.18	-0.12	-0.32	-0.13	-0.96	1.13	1.60	0.01
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						
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) - Mini-tablet: Minimum antenna-to-edge (6 sides of the device)							
* 3D Peak Antenna gain should be equal or greater than -2 dBi - 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

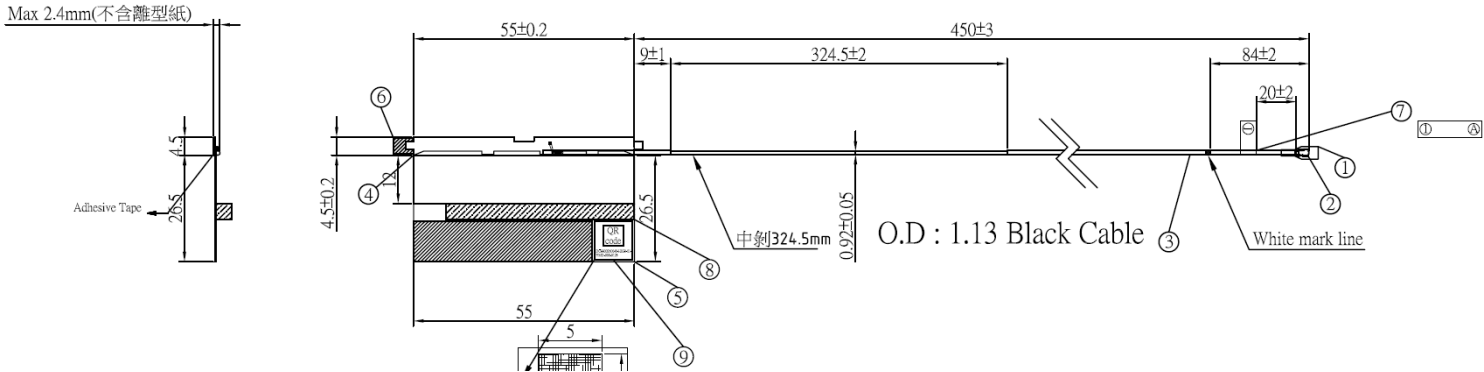
1A Antenna Part Number	1B Manu-facturer	1C Antenna Type	1D Cable Assembly Part Number and Information	Freq Range MHz	1E *Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G Max VSWR	1H Cable Loss (dB)
(P/N: 219HCTN12195) Tx2/ Rx2 Antenna	High-Tek Electronics Co., Ltd	PIFA	Connector: CaiMei 958-C413-W-B-Bu-A0 50 Ohm Coaxial Cable Length: 353mm Diameter:1.13mm	2400-2500	-1.18 dBi (peak)	-0.11 dBi (peak)	2400-2500MHz 3.00 max	1.07 dB (peak)
				5150-5250	-0.12 dBi (peak)	1.4 dBi (peak)	5150-5350MHz 3.00 max	1.52 dB (peak)
				5250-5350	-0.92 dBi (peak)	0.6 dBi (peak)	5150-5350MHz 3.00 max	1.52 dB (peak)
				5470-5725	-0.32 dBi (peak)	1.31 dBi (peak)	5470-5725MHz 3.00 max	1.63 dB (peak)
				5725-5850	-0.13 dBi (peak)	1.52 dBi (peak)	5725-5850MHz 3.00 max	1.65 dB (peak)
				5925-6425	-1.18 dBi (peak)	0.55 dBi (peak)	5925-6425MHz 3.00 max	1.73 dB (peak)
				6425-6525	1.13 dBi (peak)	2.88 dBi (peak)	6425-6525MHz 3.00 max	1.75 dB (peak)
				6525-6875	1.6 dBi (peak)	3.39 dBi (peak)	6525-6875MHz 3.00 max	1.79 dB (peak)
				6875-7125	-1.52 dBi (peak)	0.37 dBi (peak)	6875-7125MHz 3.00 max	1.89 dB (peak)
(P/N: 219HCTN12196) Tx1/ Rx1 Antenna	High-Tek Electronics Co., Ltd	PIFA	Connector: CaiMei 958-C413-W-B-Bu-A0 50 Ohm Coaxial Cable Length: 450mm Diameter:1.13mm	2400-2500	-1.3 dBi (peak)	0.06 dBi (peak)	2400-2500MHz 3.00 max	1.36 dB (peak)
				5150-5250	-0.41 dBi (peak)	1.53 dBi (peak)	5150-5350MHz 3.00 max	1.94 dB (peak)
				5250-5350	-0.71 dBi (peak)	1.23 dBi (peak)	5150-5350MHz 3.00 max	1.94 dB (peak)
				5470-5725	-0.87 dBi (peak)	1.21 dBi (peak)	5470-5725MHz 3.00 max	2.08 dB (peak)
				5725-5850	-1.06 dBi (peak)	1.05 dBi (peak)	5725-5850MHz 3.00 max	2.11 dB (peak)
				5925-6425	-0.96 dBi (peak)	1.24 dBi (peak)	5925-6425MHz 3.00 max	2.2 dB (peak)
				6425-6525	-0.96 dBi (peak)	1.26 dBi (peak)	6425-6525MHz 3.00 max	2.22 dB (peak)
				6525-6875	-1.49 dBi (peak)	0.79 dBi (peak)	6525-6875MHz 3.00 max	2.28 dB (peak)
				6875-7125	0.01 dBi (peak)	2.42 dBi (peak)	6875-7125MHz 3.00 max	2.41 dB (peak)

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

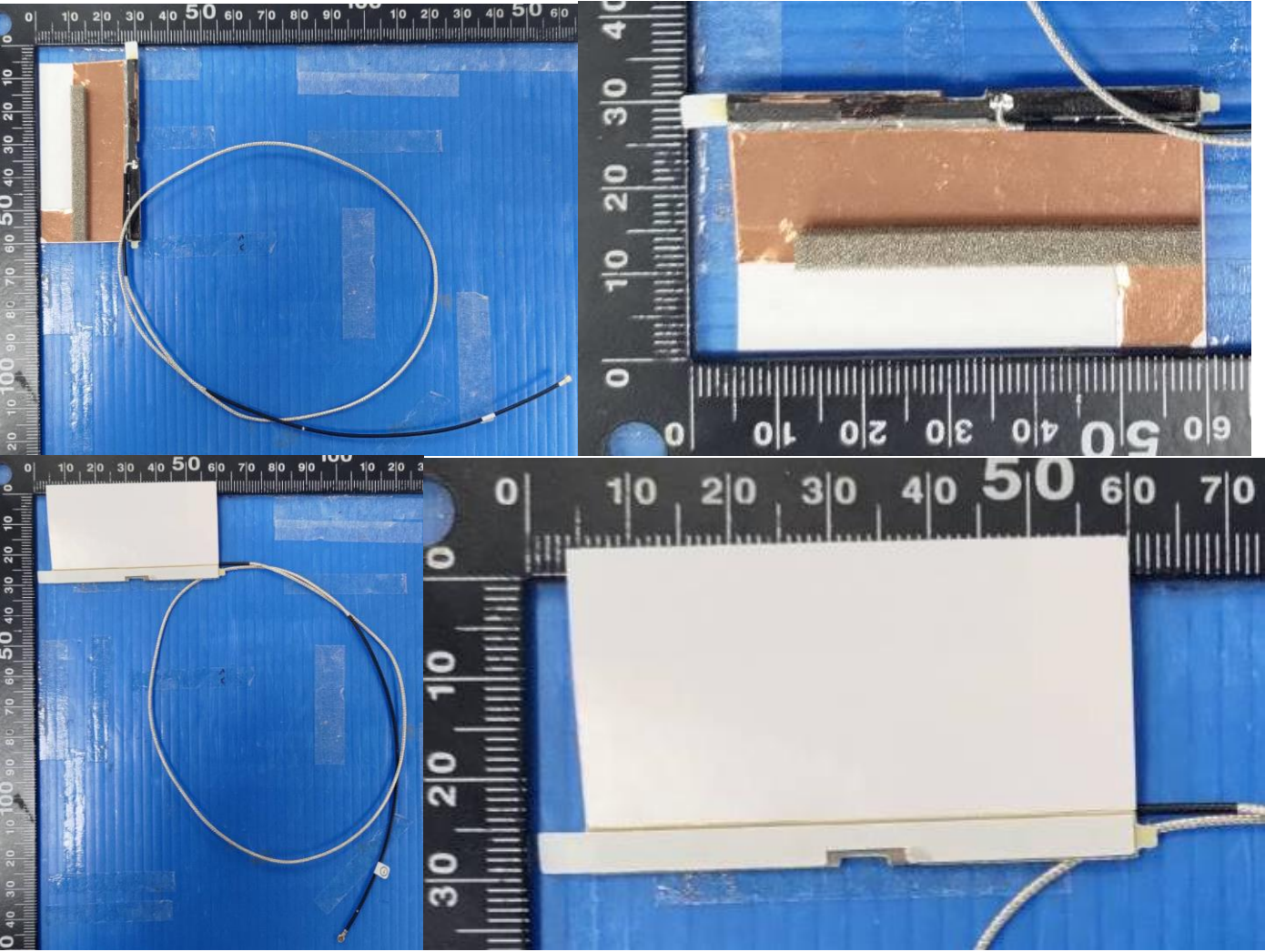
Section 2. Dimensioned Photos or Drawings of Antennas

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

Tx1 Antenna Dimensioned Drawing:

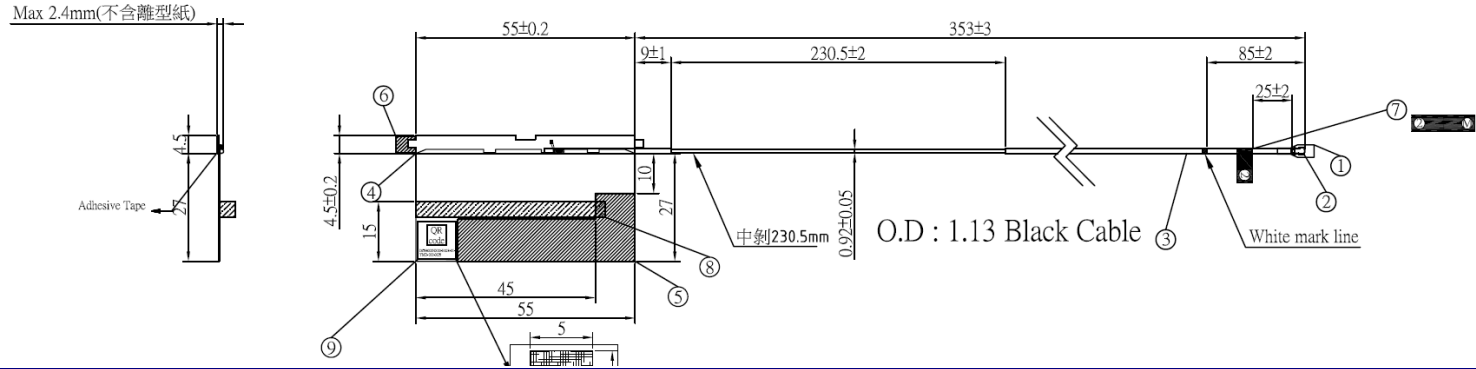


Tx1 Antenna Photo:

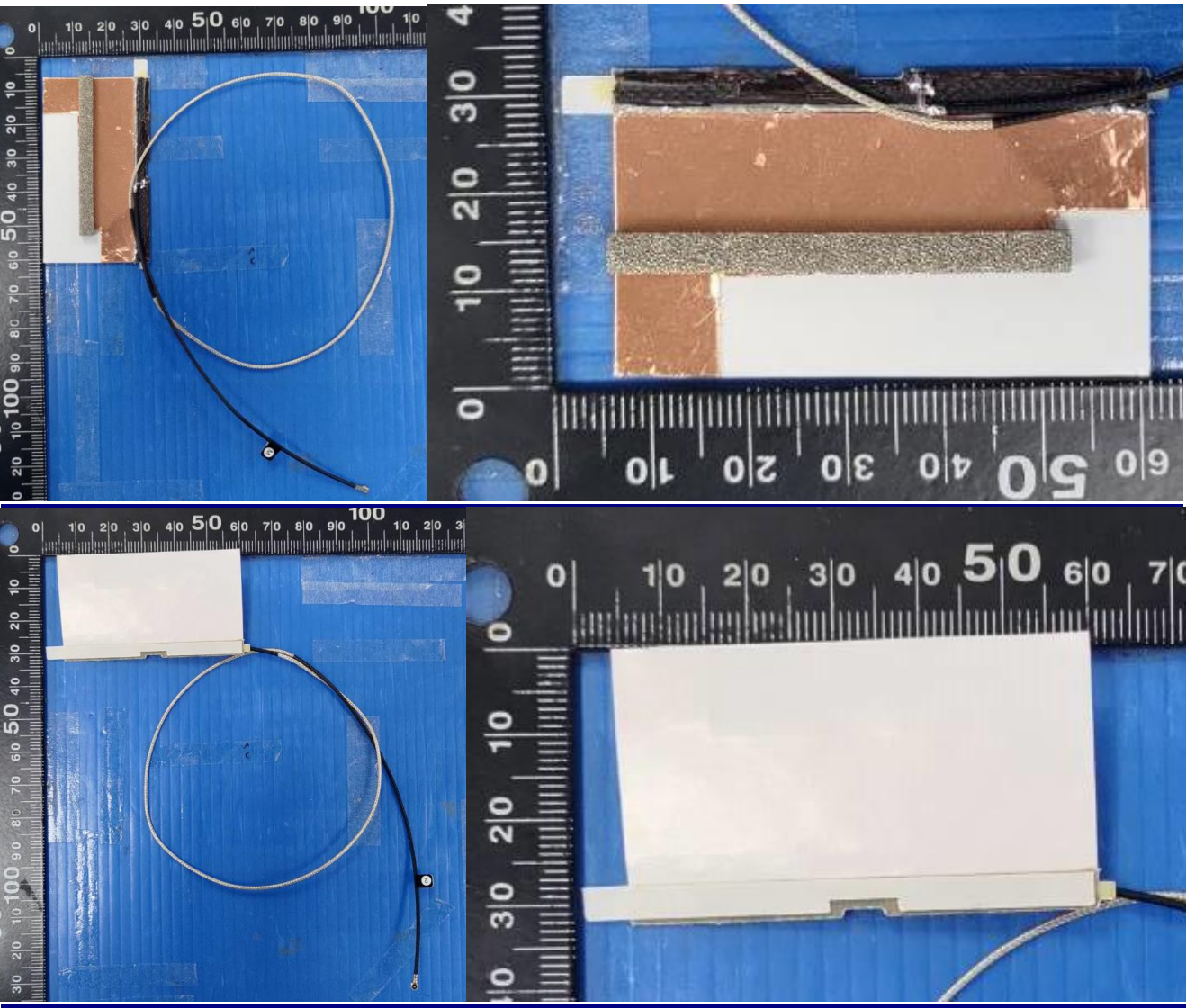


Include a dimensioned photo and dimensioned drawing of Tx2 (or Rx2) antenna here.

Tx2 (or Rx2) Antenna Dimensioned Drawing:



Tx2 (or Rx2) Antenna Photo:

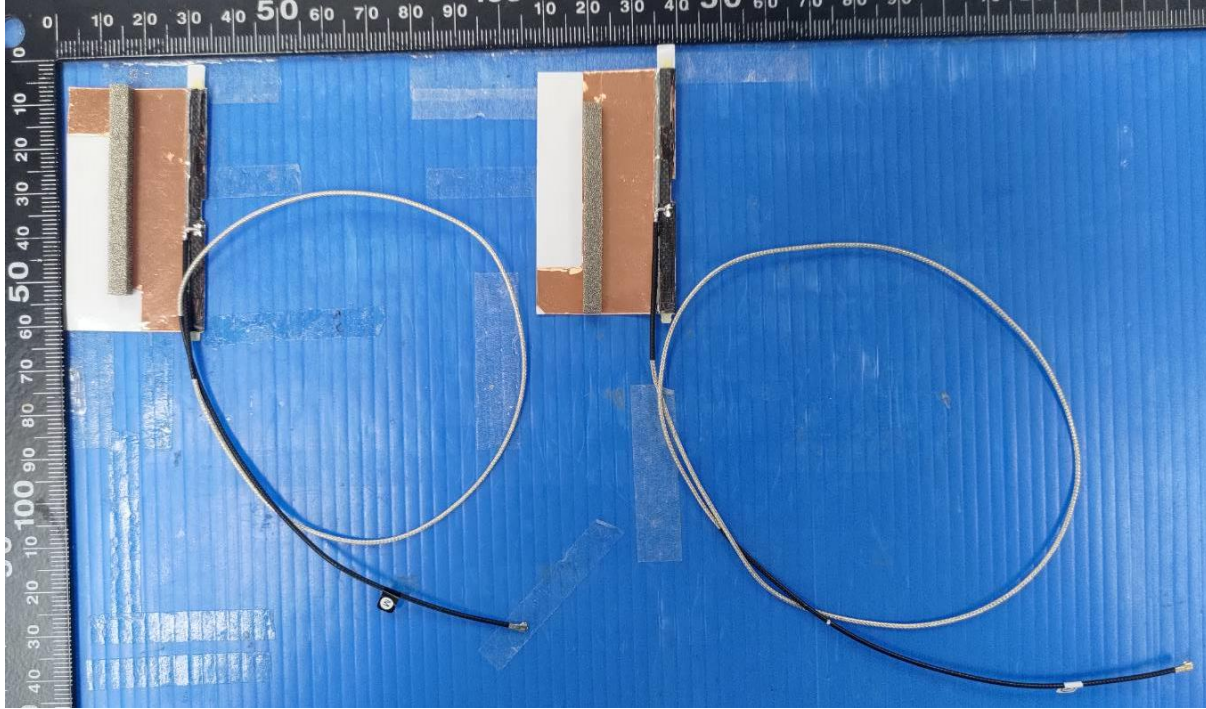


Note: antenna photo should include L type ruler

Include front view photo of all 2 antennas here.

Antenna Manufacturer: High-Tek Electronics Co., Ltd

Antenna Part Number: 219HCTN12196 (Tx1), 219HCTN12195 (Tx2 or Rx2)

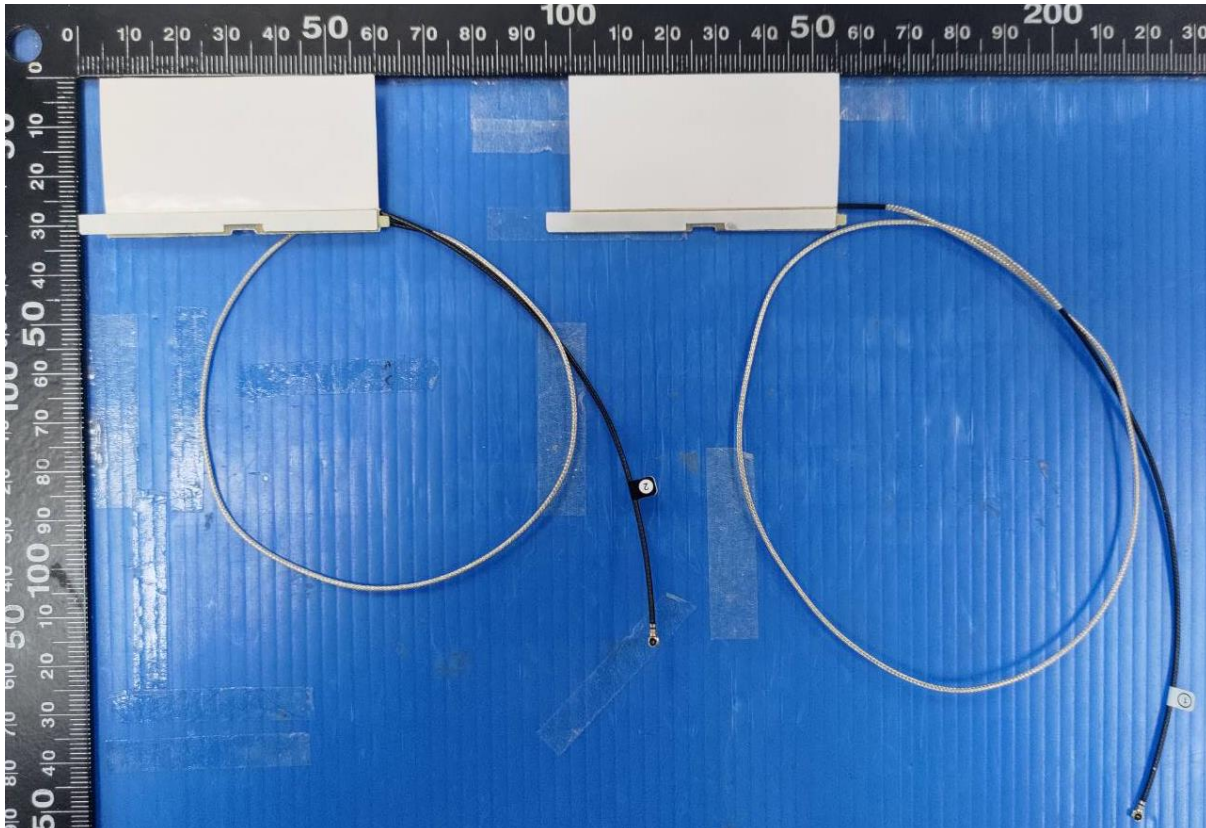


Note: antenna photo should include L type ruler

Include back view photo of all 2 antennas here.

Antenna Manufacturer: High-Tek Electronics Co., Ltd

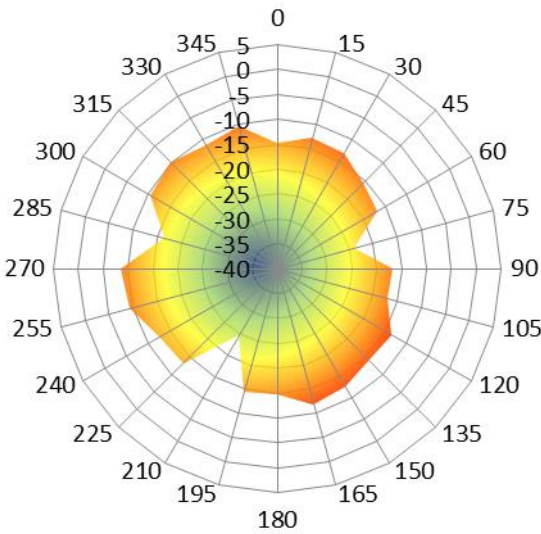
Antenna Part Number: 219HCTN12196 (Tx1), 219HCTN12195 (Tx2)



Section 3. Radiation characteristics of antennae Loaded in Host Platform

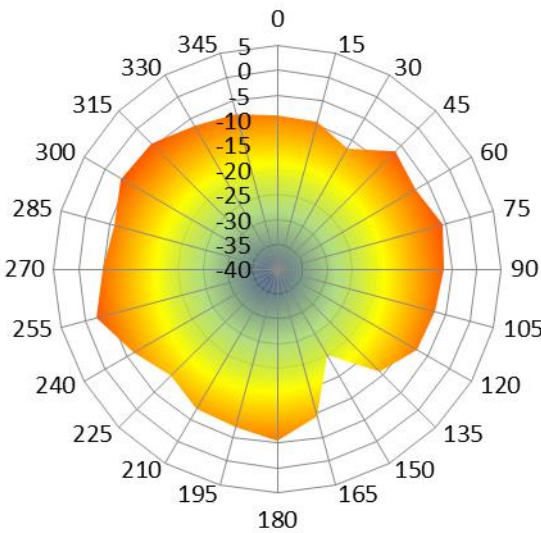
2400-2500MHz radiation characteristic (1E Peak Gain W/ Cable loss (dBi))

Main antenna:



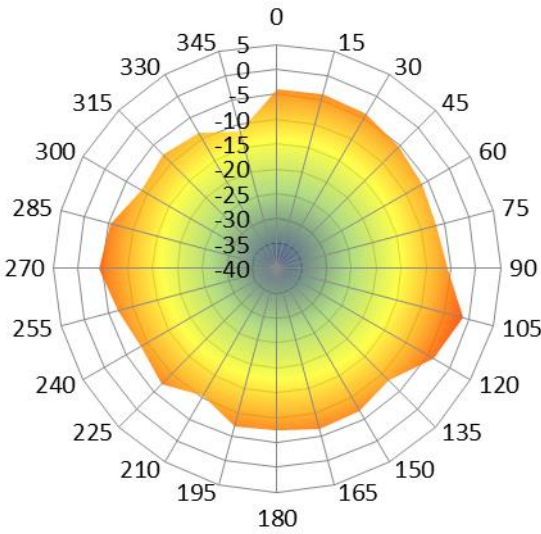
Center Frequency	2400-2500 MHz
Horizontal+ Vertical (dBi) peak	-1.18

Aux antenna:



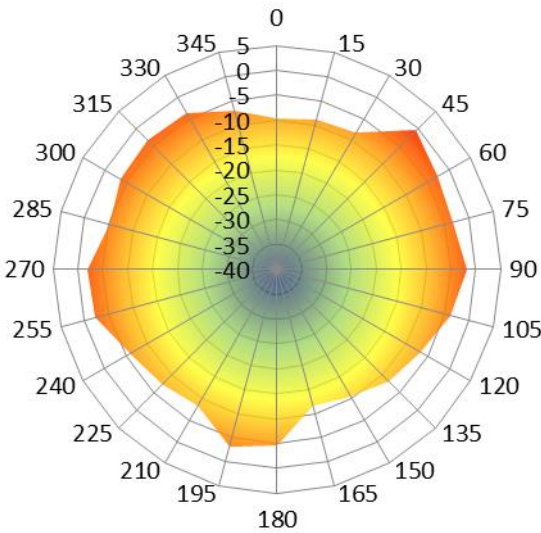
Center Frequency	2400-2500 MHz
Horizontal+ Vertical (dBi) peak	-1.30

5150-5250MHz radiation characteristic
Main antenna:



Horizontal+ Vertical (dBi) peak	-0.12
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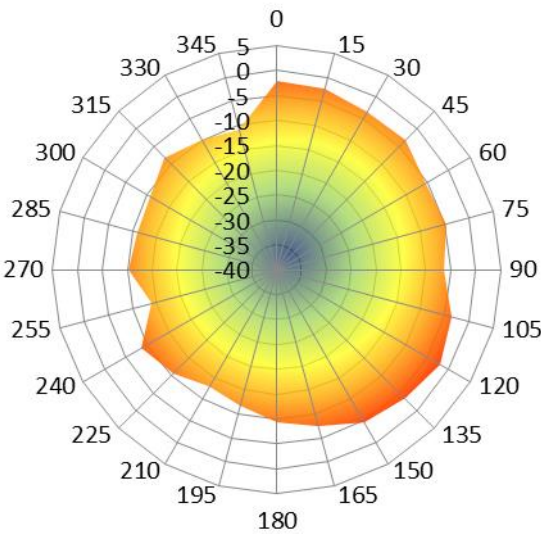
Aux antenna:



Horizontal+ Vertical (dBi) peak	-0.41
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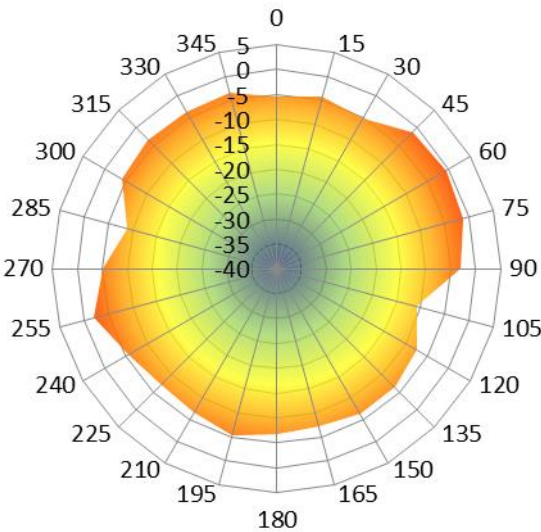
5250-5350MHz radiation characteristic

Main antenna:



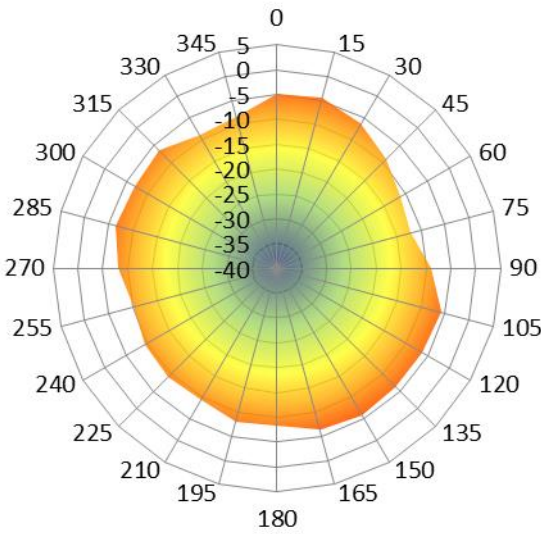
Horizontal+ Vertical (dBi) peak	-0.92
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Aux antenna:



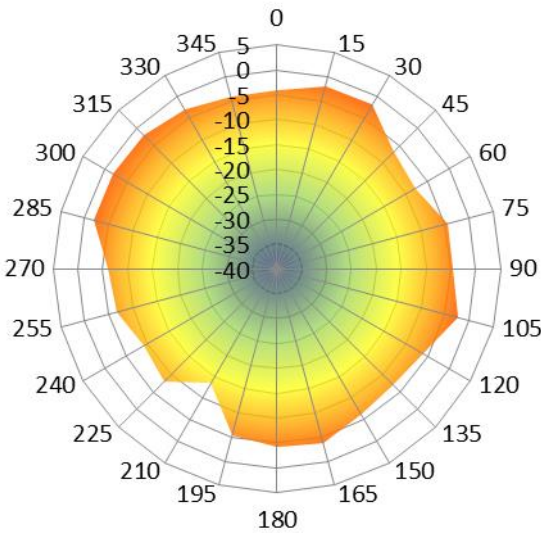
Horizontal+ Vertical (dBi) peak	-0.71
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5470-5725MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))
Main antenna:



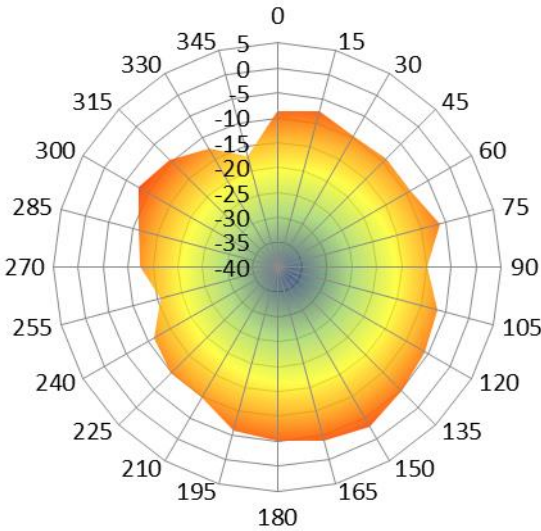
Horizontal+ Vertical (dBi) peak	-0.32
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Aux antenna:



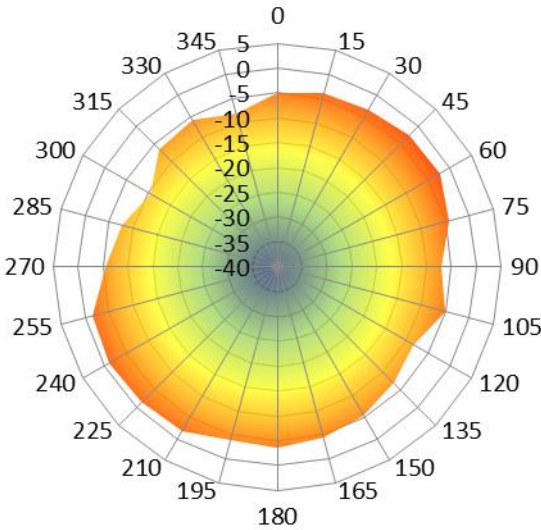
Horizontal+ Vertical (dBi) peak	-0.87
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5725-5850MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))
Main antenna:



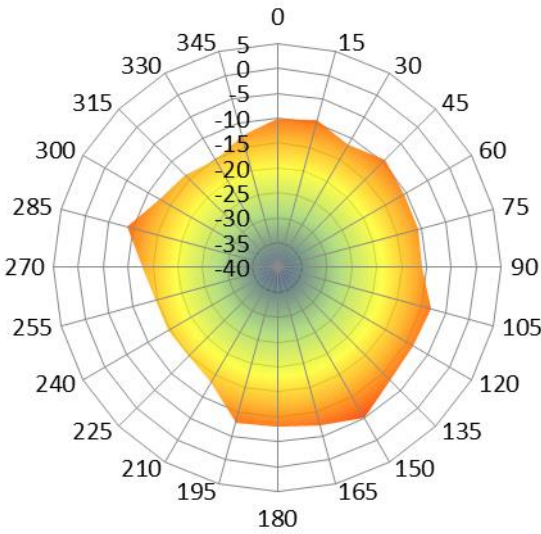
Horizontal+ Vertical (dBi) peak	-0.13
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Aux antenna:



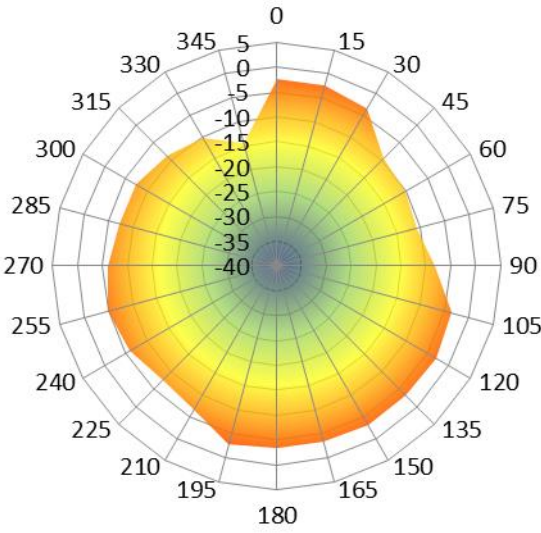
Horizontal+ Vertical (dBi) peak	-1.06
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5925-6425MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))
Main antenna:



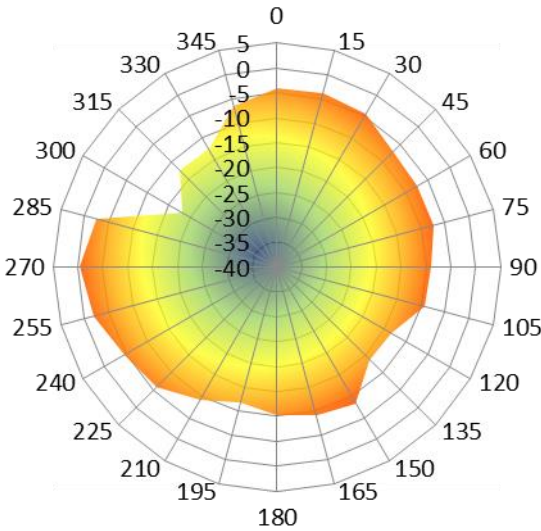
Horizontal+ Vertical (dBi) peak	-1.18
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Aux antenna:



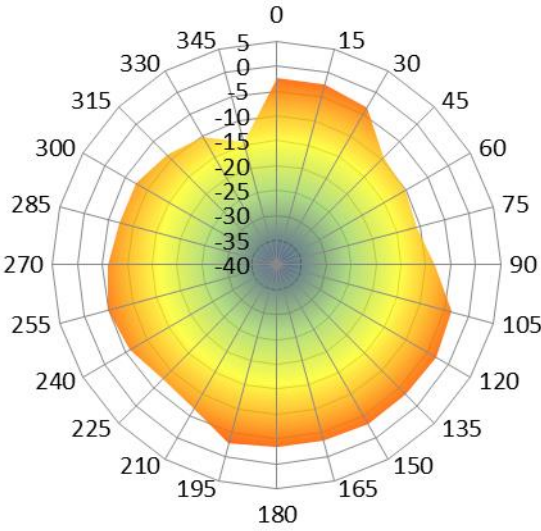
Horizontal+ Vertical (dBi) peak	-0.96
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6425-6525MHz radiation characteristic (1E Peak Gain W/ Cable loss (dBi))
Main antenna:



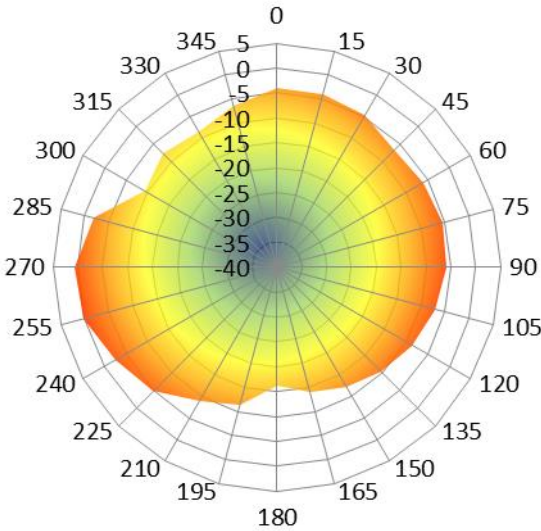
Horizontal+ Vertical (dBi) peak	1.13
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Aux antenna:



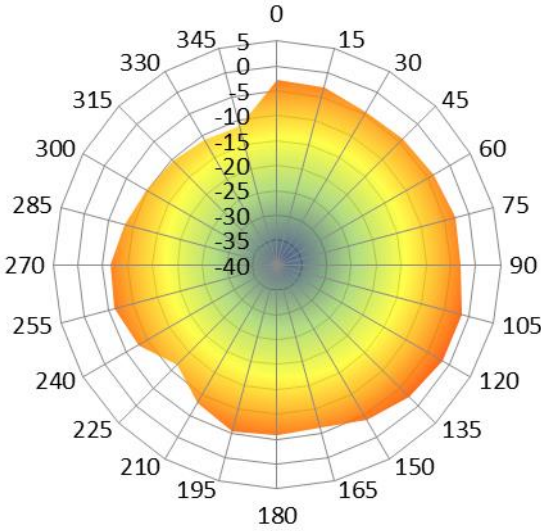
Horizontal+ Vertical (dBi) peak	-0.96
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6525-6875MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))
Main antenna:



Horizontal+ Vertical (dBi) peak	1.60
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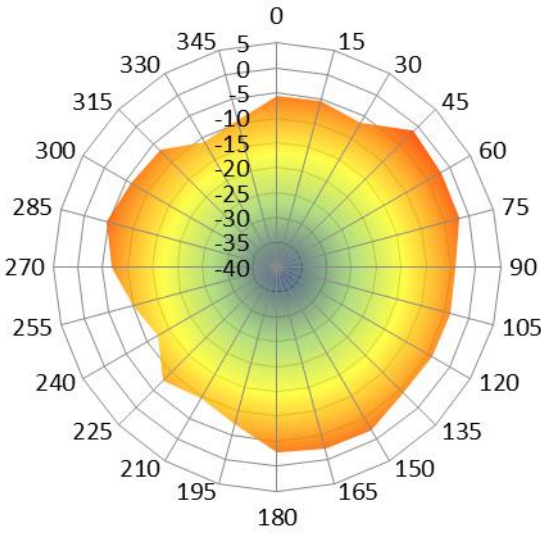
Aux antenna:



Horizontal+ Vertical (dBi) peak	-1.49
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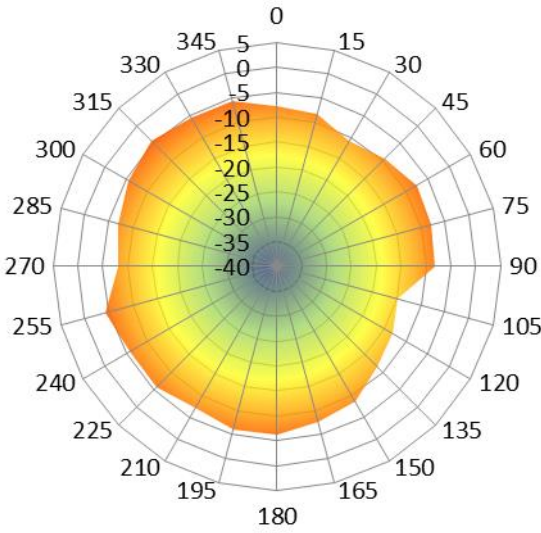
6875-7125MHz radiation characteristic(1E Peak Gain W/ Cable loss (dBi))

Main antenna:



Horizontal+ Vertical (dBi) peak	-1.52
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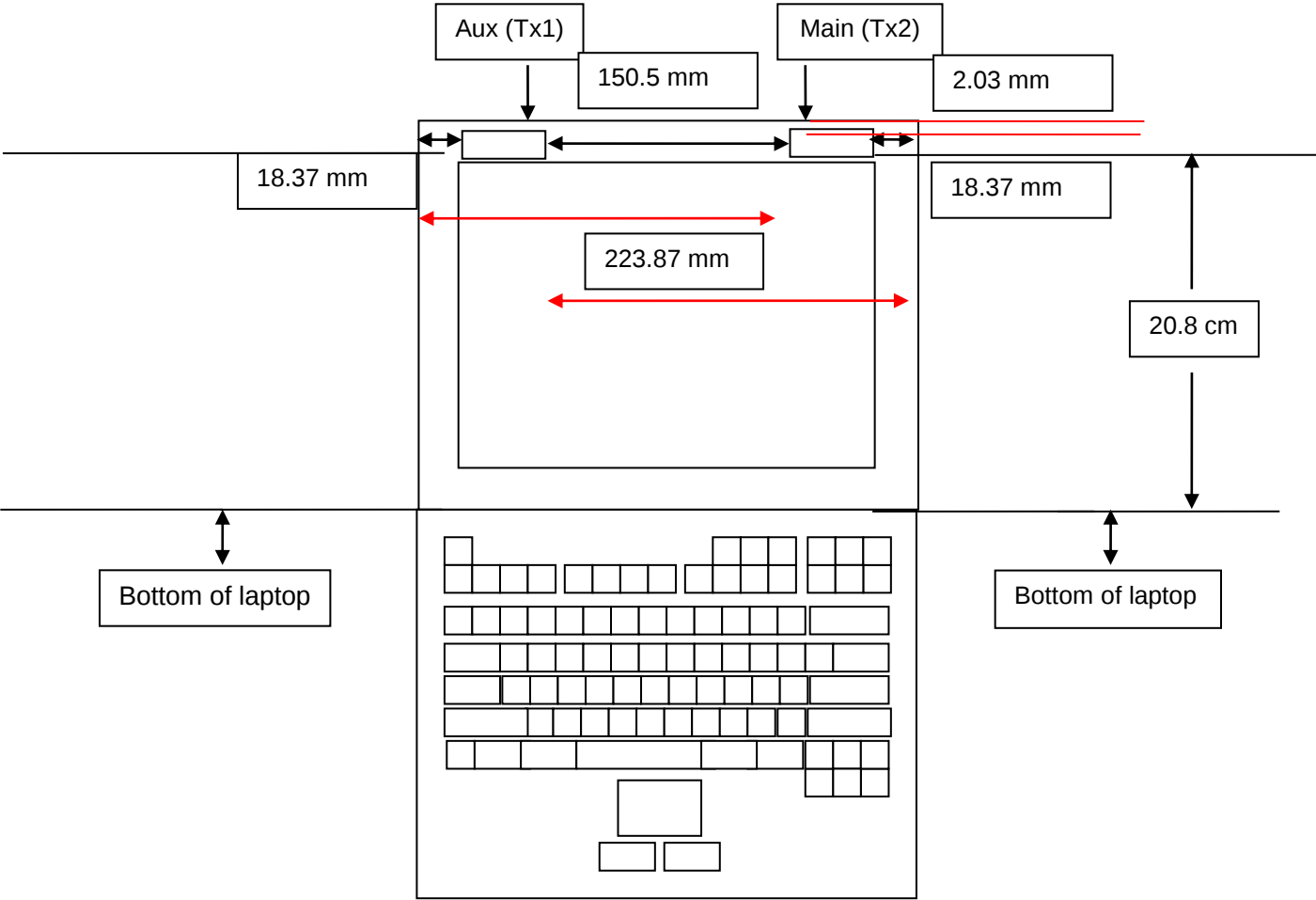
Aux antenna:



Horizontal+ Vertical (dBi) peak	0.01
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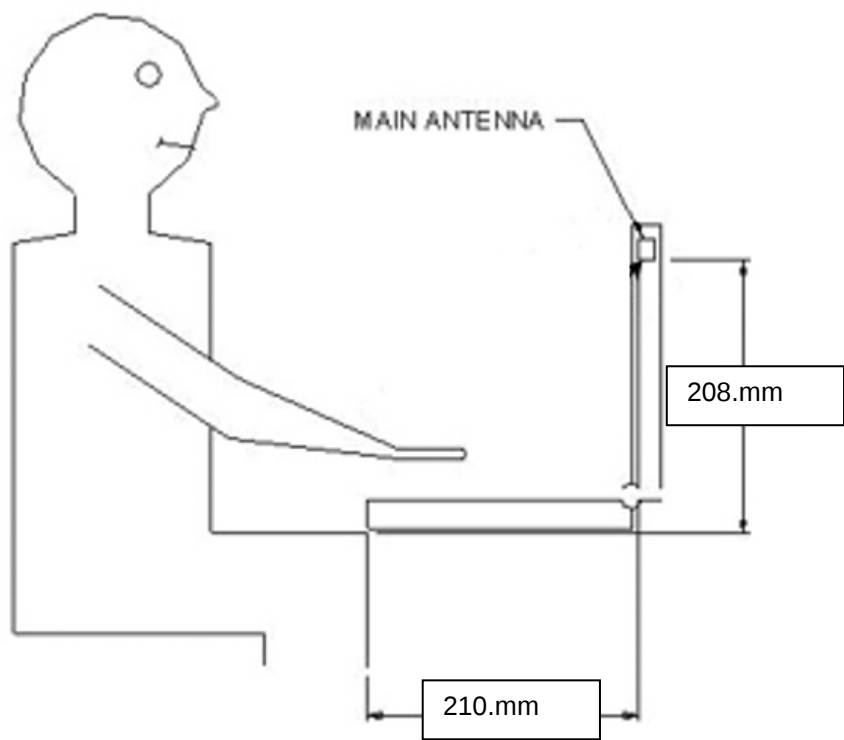
Section 4. Antenna Host Platform Location Information

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.



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)

