Regulatory WLAN Antenna Information (TB mode)

Platform information					
Brand	**ODM**	**RMN**	**Intel platform** (ex: Yes, No or NA)	**Platform type** (ex: regular NB, convertible PC, AIO…etc)	***SAR minimum separation (mm)**
HP Inc.	Compal Corporation	TPN-C155	Yes	Convertible PC	3.30

*******Please fill in exact product model name and make sure the model name is visible on product cover or any parts for end users recognize for authority inspection.**

Antenna information			
Vendor	**Type**	**Antenna Part number** (Main/Tx1)	**Antenna Part number** (Aux/Tx2)
INPAQ	PIFA	DC33002K3C0 (WA-P-LBLB-02-130)	DC33002K3C0 (WA-P-LBLB-02-130)

Peak gain w/ cable loss (dBi)*										
	2.4GHz 2400-2483.5 MHz	**5.2GHz** 5150-5250MHz	**5.3GHz** 5250-5350MHz	**5.6GHz** 5470-5725MHz	**5.8GHz** 5725-5850MHz	**5.9GHz** 5850-5895MHz	**6.2GHz** 5925-6425MHz	**6.5GHz** 6425-6525MHz	**6.7GHz** 6525-6875MHz	**7.0 GHz** 6875-7125MHz
Main	-1.07	1.55	1.55	0.73	-0.22	-0.22	1.88	-1.89	-0.32	-0.55
Aux	-0.63	1.25	1.25	-0.92	-0.92	-0.92	0.84	-1.06	-1.06	0.45

Module Information	
Model	**Form factor and suffixes**
AX211NGW (Garfield Peak 2)	Intel Garfield Peak 2 AX211 Wi-Fi 6e +Bluetooth 5.2 M.2 2230 160MHz CNVi WW WLAN

Table of contents

1. **Applicable test methods**

ETS-Lindgren AMS-8500 system is 3D fully anechoic chamber, it is applied to the “Conical Cut test method”, the detail description is described as below.

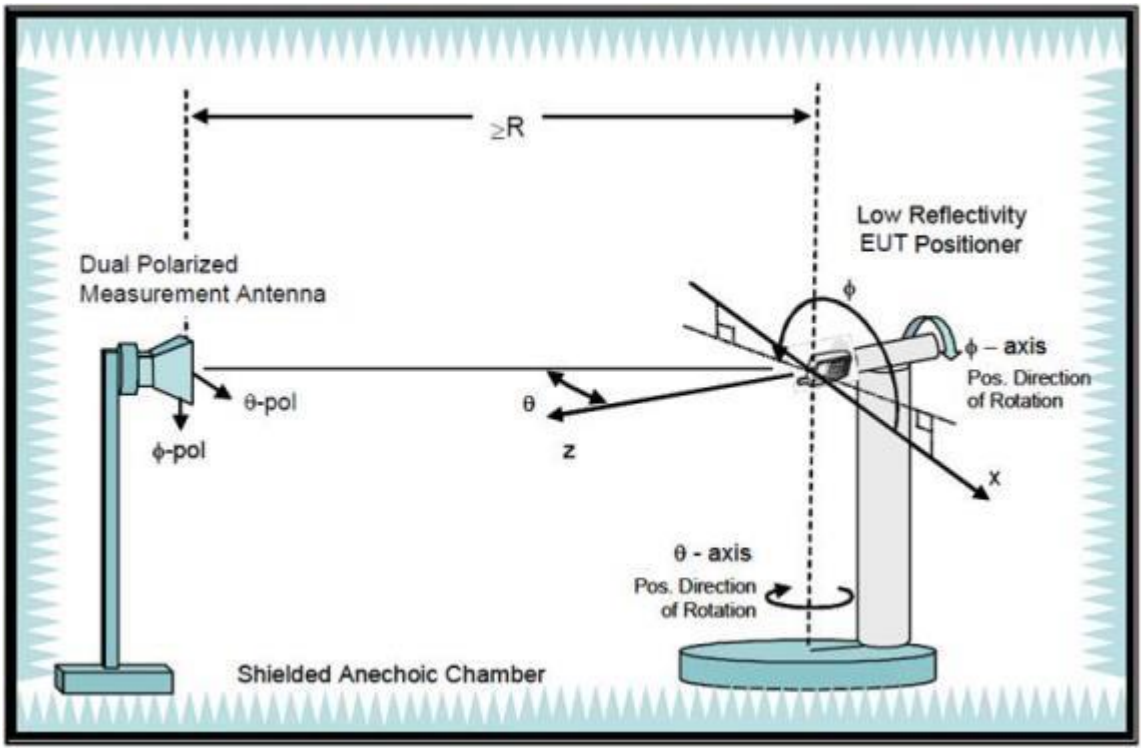
The Conical Cut method requires the ability of the Measurement Antenna to be physically rotated in the theta plane (overhead) of the EUT for implementations using a single Measurement Antenna, Eleven conical cuts are required to capture data at every 15 degrees from the EUT, with the top (0 degrees) and bottom (180 degrees) cuts not being measured. Typically, the EUT will remain affixed to a turntable during the entire measurement process. The Measurement Antenna will be positioned at a starting theta angle. The EUT will then be rotated around the full 360 degrees of phi rotation. The Measurement Antenna will then be positioned at the next theta angle, and the process repeated.

		θ -Axis	Φ-Axis
Passive	Step size	15º~165º step: 15º	0º~345º step: 15º
	N / M (Points)	12	24

2. Test & System Description

a. Test setup

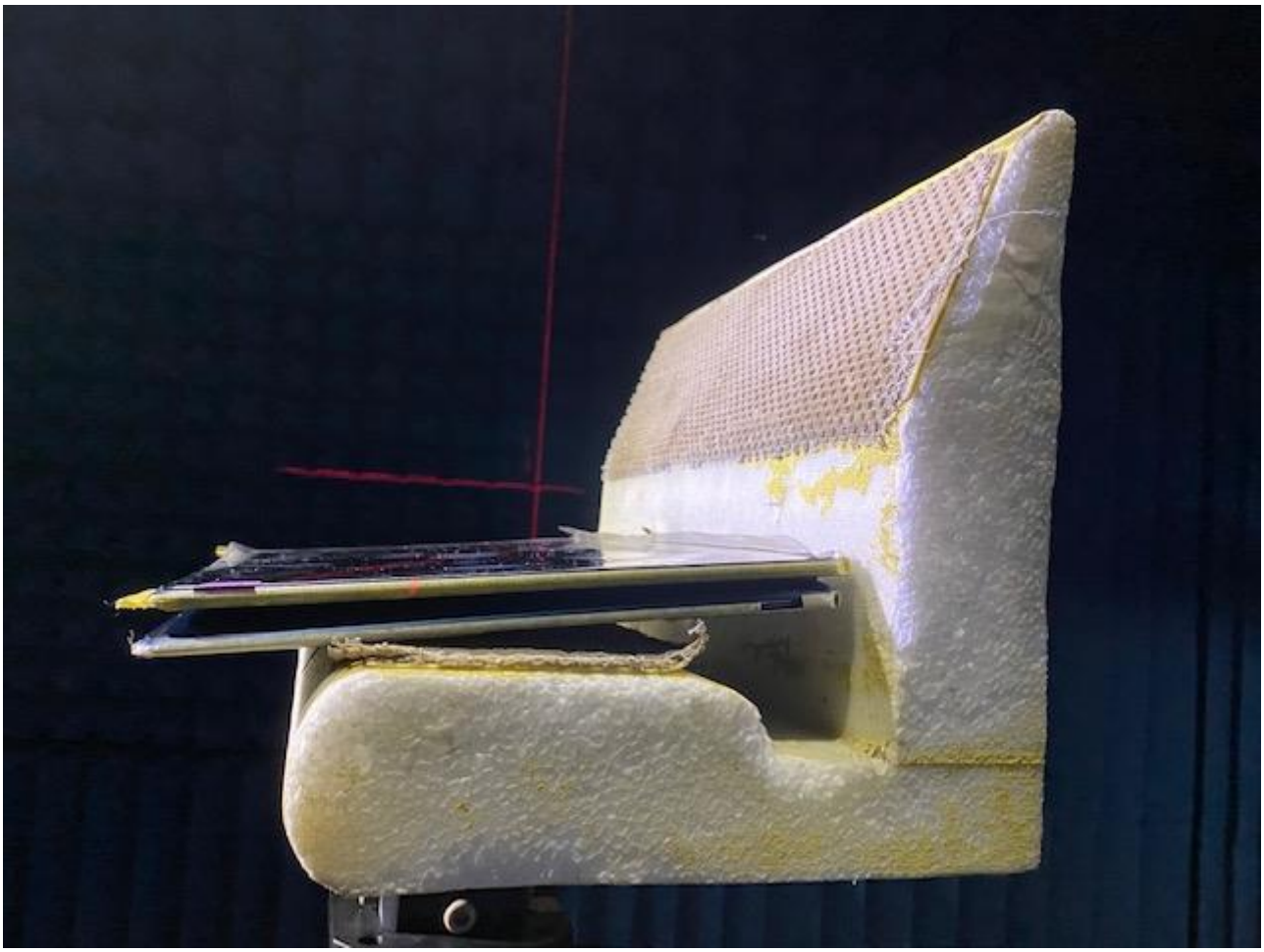
Typical Setup for ETS-Lindgren AMS-8500:



b. Equipment list

Equipment Description	Manufacturer	Identification no.	Current calibration date	Next calibration date
Network analyzer	Agilent	E5071C	2022/01/07	2023/01/06
Measurement software	ETS-Lindgren	EMQuest	2022/03/03	2023/03/03
Multi axis positioning system(MAPSTM)	ETS-Lindgren	EMCO 2115	2022/03/03	2023/03/03
Multi axis positioning system(MAPSTM)	ETS-Lindgren	EMCO 2110	2022/03/03	2023/03/03
MAPSTM controller	ETS-Lindgren	EMCO 2090	2022/03/03	2023/03/03
Horn antenna	ETS-Lindgren	3164-10	2022/03/03	2023/03/03
Cable 40cm 18 GHz	Jmtt	201EH012010400	2022/04/07	2023/04/07
Cable 6m 18 GHz	Jmtt	201EH012016000	2022/04/07	2023/04/07
Cable 6m 18 GHz	Jmtt	201EH012016000	2022/04/07	2023/04/07
Cable 3.5m 18 GHz	Jmtt	201EH012013500	2022/04/07	2023/04/07
Cable 1.5m 18 GHz	Jmtt	201EH012011500	2022/04/07	2023/04/07

3. Setup photo



Antenna Information

Section 1. Antenna Assembly Specifications

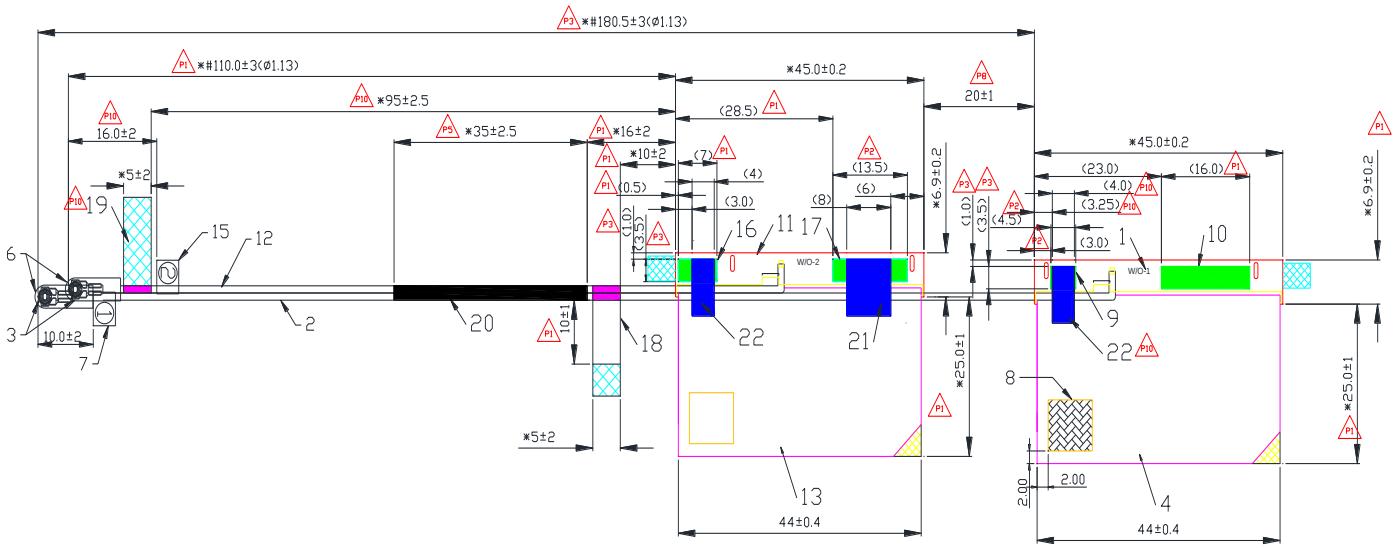
1A Antenna Part Number	1B Manufacturer	1C Antenna Type	1D Cable Assembly Part Number and Information	Freq Range MHz	1E * Peak Gain W/ Cable loss (dBi)	1F Peak Gain w/o Cable Loss (dBi)	1G Max VSWR	1H Cable Loss (dB)
P/N: DC33002K3C0 (Vendor P/N: WA-P-LBLB-02-130) Main Antenna	INPAQ	PIFA	50 ohm Coaxial length: 110mm diameter: 1.13mm I-PEX MHF-4L	2400-2495	-1.07	-0.76	3	0.31
				5150-5250	1.55	1.99	3	0.44
				5250-5350	1.55	2.01	3	0.46
				5470-5725	0.73	1.20	3	0.47
				5725-5850	-0.22	0.26	3	0.48
				5850-5895	-0.22	0.26	3	0.48
				5925-6425	1.88	2.38	3	0.50
				6425-6525	-1.89	-1.38	3	0.51
				6525-6875	-0.32	0.20	3	0.52
				6875-7125	-0.55	-0.01	3	0.54
P/N: DC33002K3C0 (Vendor P/N: WA-P-LBLB-02-130) Aux Antenna	INPAQ	PIFA	50 ohm Coaxial length:180mm diameter: 1.13mm I-PEX MHF-4L	2400-2495	-0.63	-0.13	3	0.50
				5150-5250	1.25	1.96	3	0.71
				5250-5350	1.25	1.99	3	0.74
				5470-5725	-0.92	-0.15	3	0.77
				5725-5850	-0.92	-0.14	3	0.78
				5850-5895	-0.92	-0.14	3	0.78
				5925-6425	0.84	1.66	3	0.82
				6425-6525	-1.06	-0.23	3	0.83
				6525-6875	-1.06	-0.21	3	0.85
				6875-7125	0.45	1.33	3	0.88

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

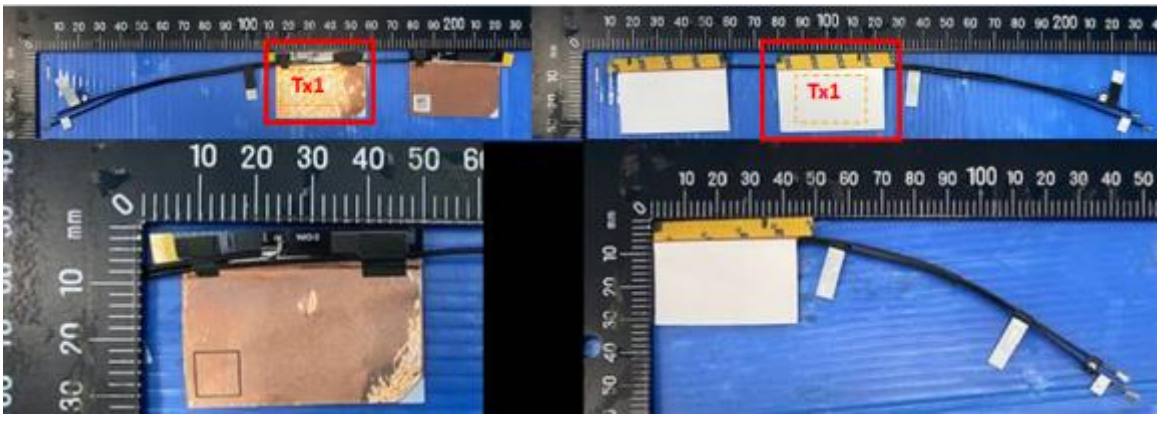
Section 2. Dimensioned Photos and Drawings of Antennas

Include the dimensioned photo and drawing of Tx1 antenna here.

Tx1 Antenna Drawing:



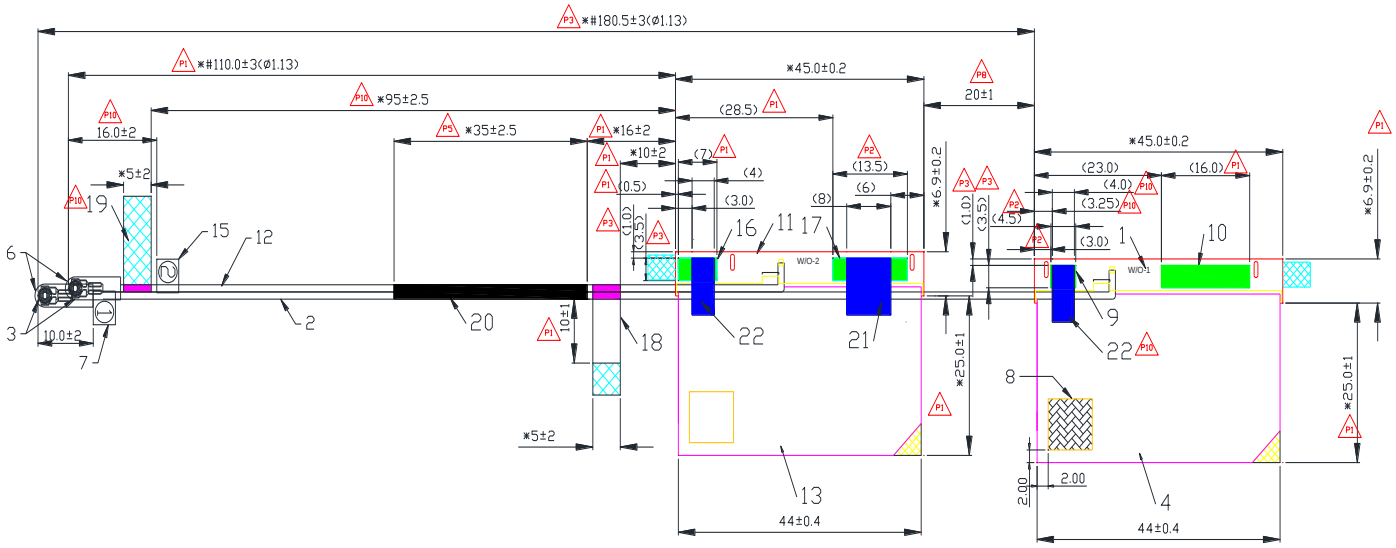
Tx1 Antenna Photo (Front/Back):



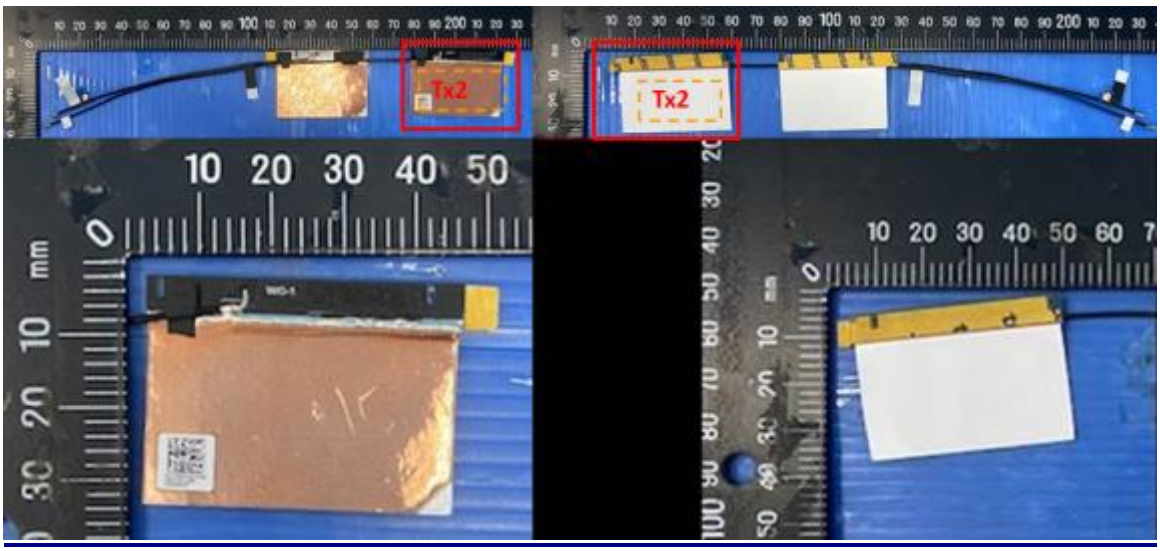
Note: antenna photo should include L type ruler

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

Tx2 (or Rx2) Antenna Drawing:



Tx2 (or Rx2) Antenna Photo (Front/Back):



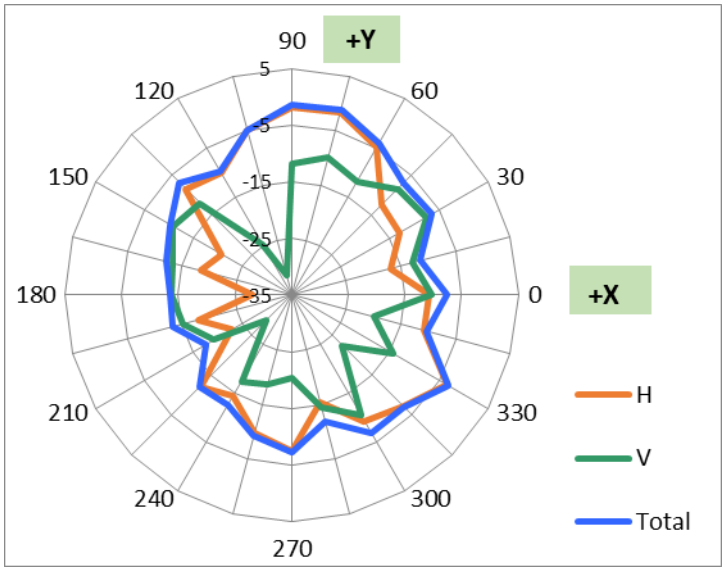
Note: antenna photo should include L type ruler

Section 3. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

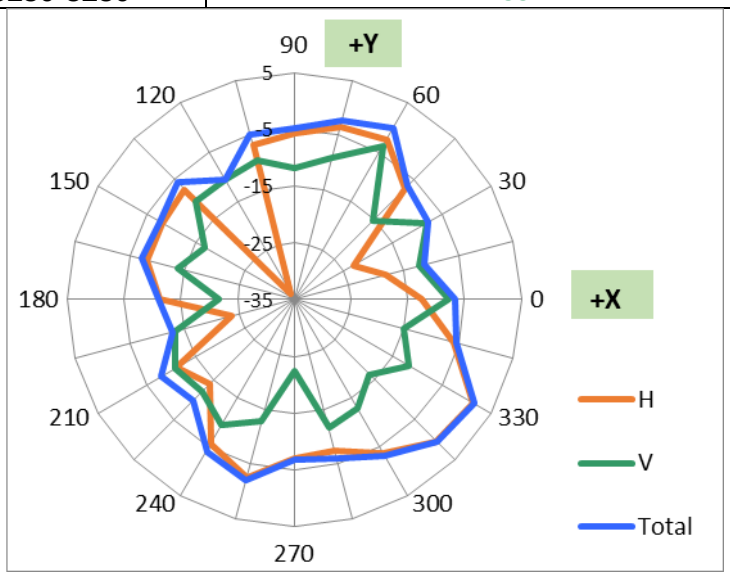
Max Antenna 2D Radiation Pattern 2400 – 2495 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
2400-2495	-1.07



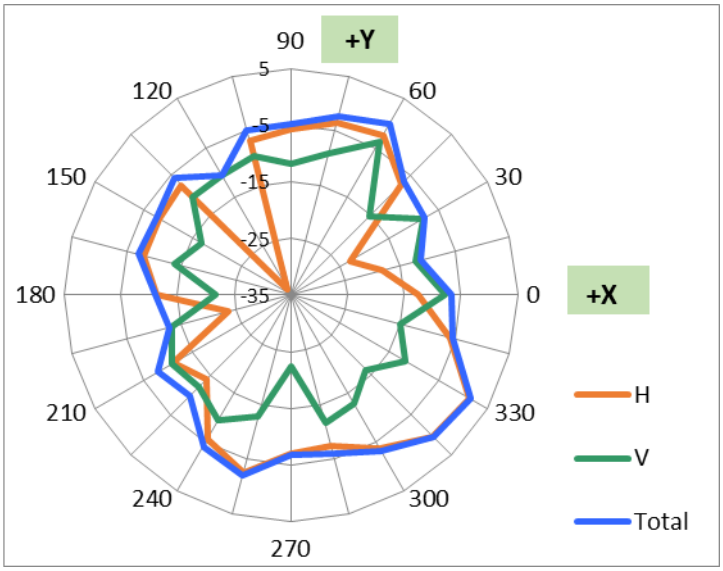
Max Antenna 2D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5150-5250	1.55



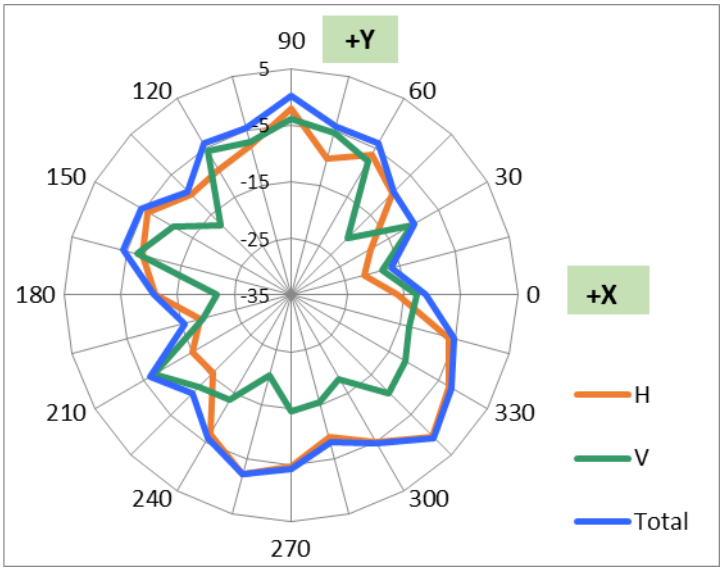
Max Antenna 2D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5250-5350	1.55



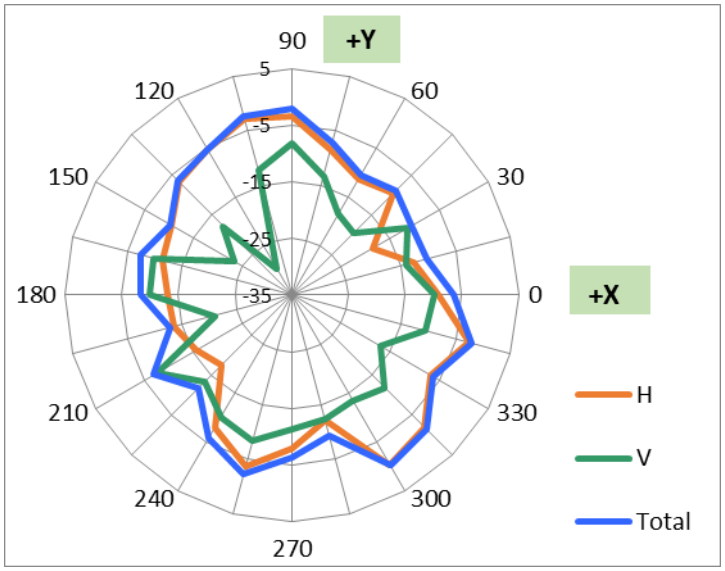
Max Antenna 2D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5470-5725	0.73



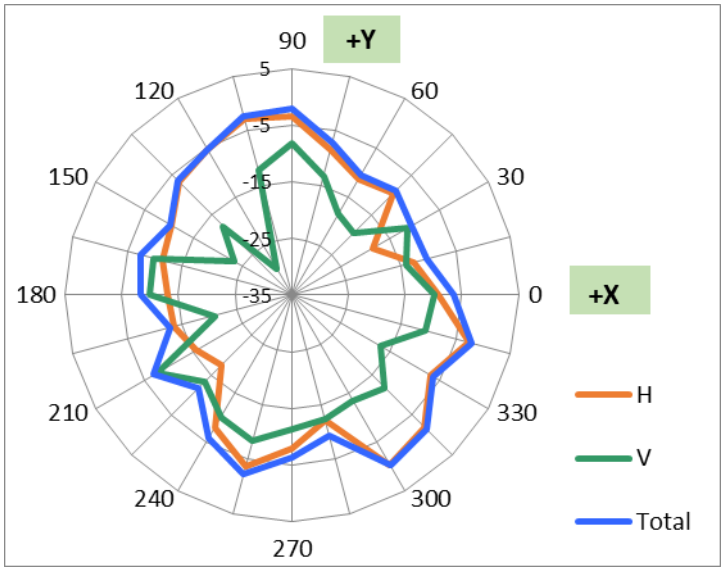
Max Antenna 2D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5725-5850	-0.22



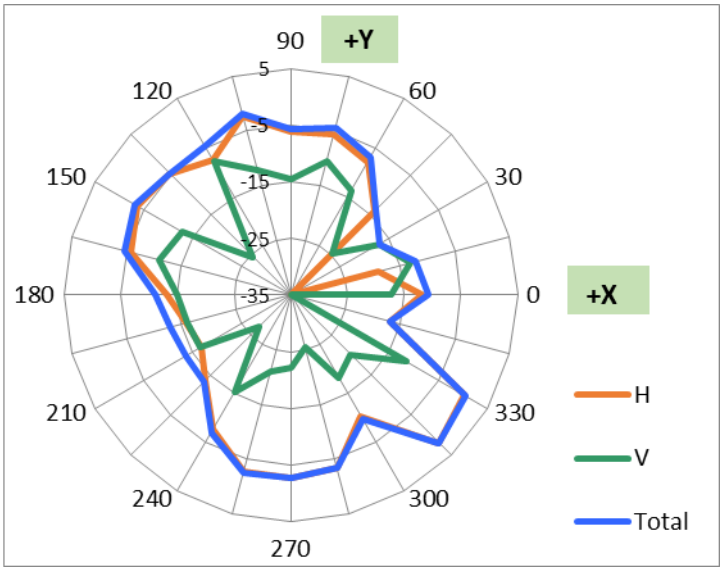
Max Antenna 2D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5850-5895	-0.22



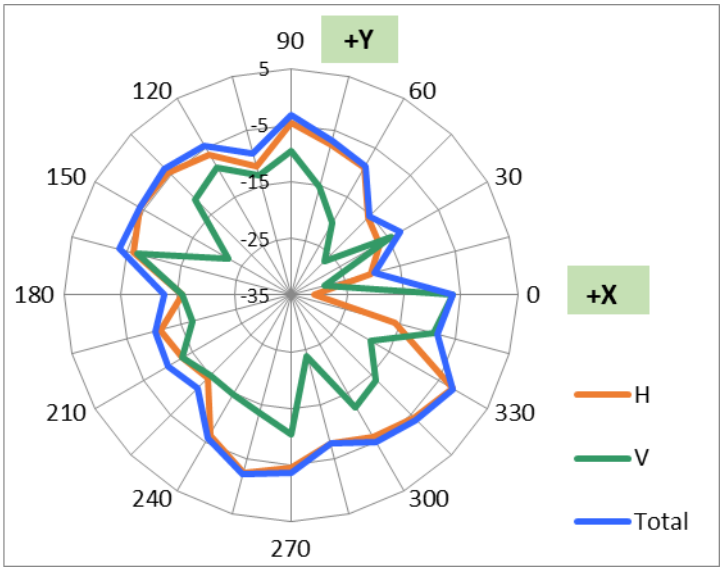
Max Antenna 2D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5925-6425	1.88



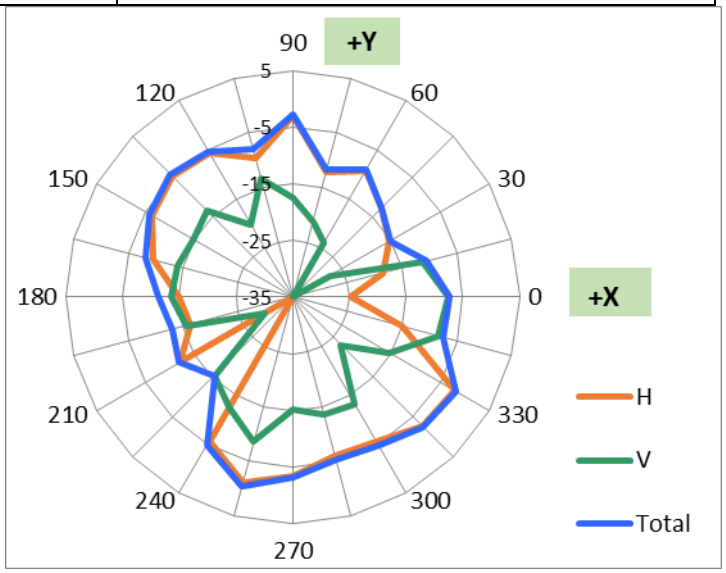
Max Antenna 2D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
6425-6525	-1.89



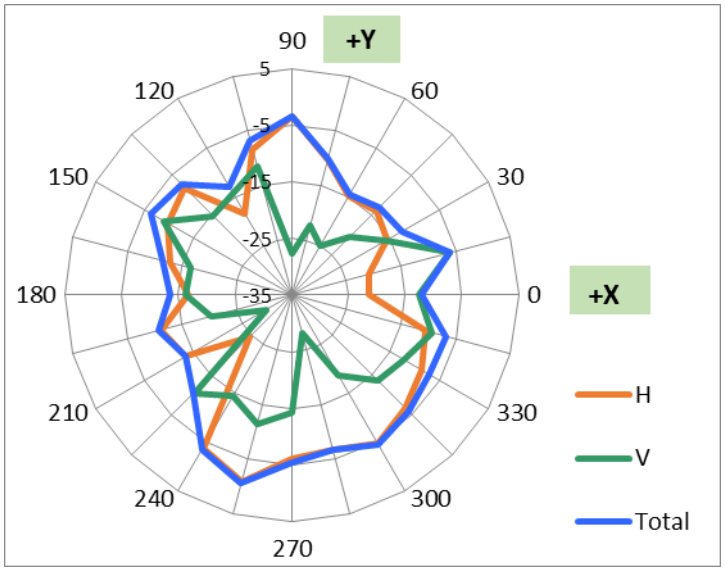
Max Antenna 2D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
6525-6875	-0.32



Max Antenna 2D Radiation Pattern 6875-7125 MHz

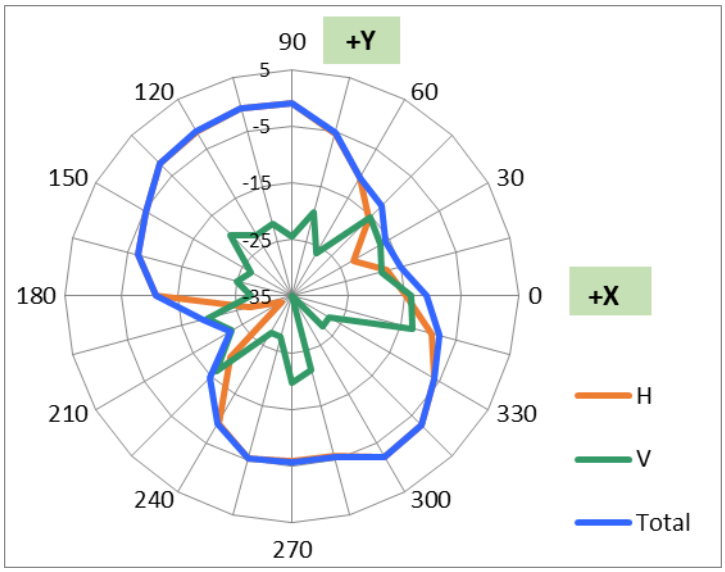
Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
6875-7125	-0.55



Auxiliary Antenna

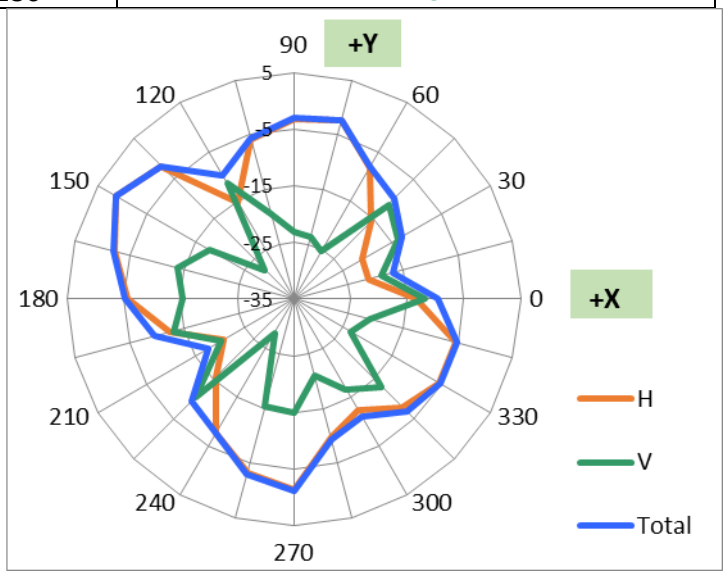
Max Antenna 2D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
2400-2483.5	-0.63



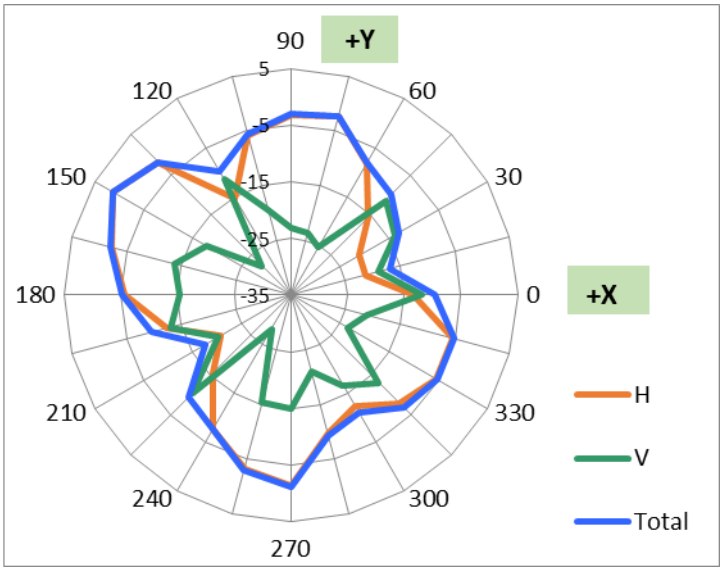
Max Antenna 2D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5150-5250	1.25



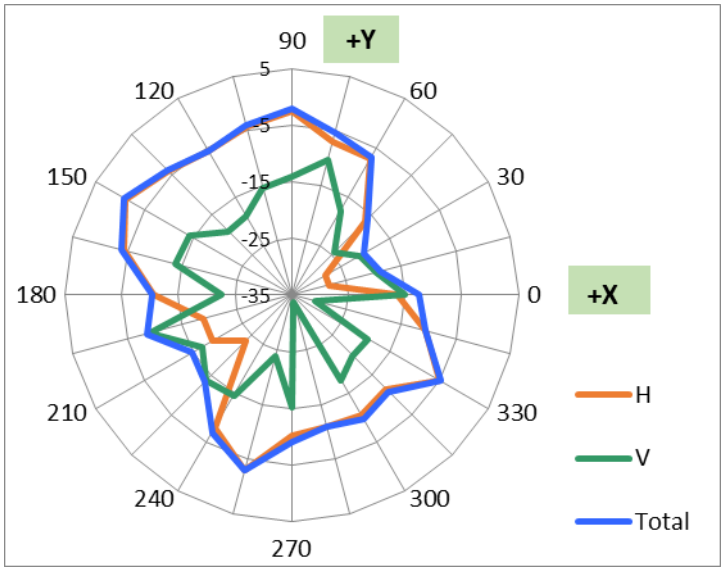
Max Antenna 2D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5250-5350	1.25



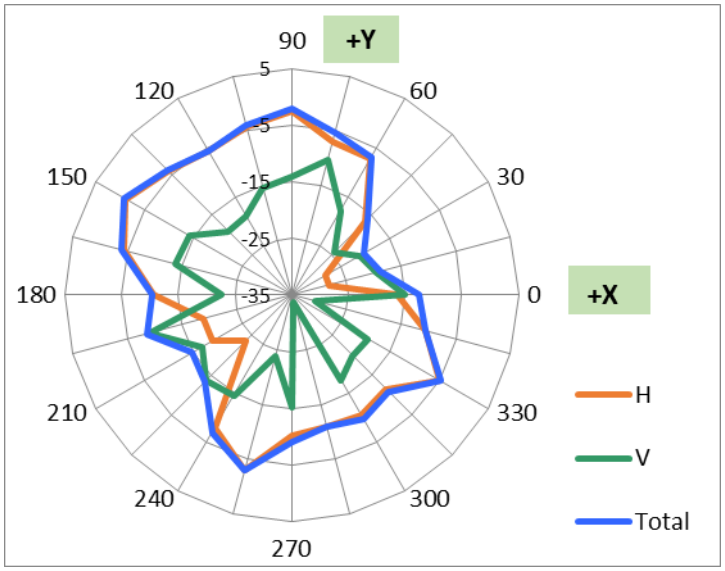
Max Antenna 2D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5470-5725	-0.92



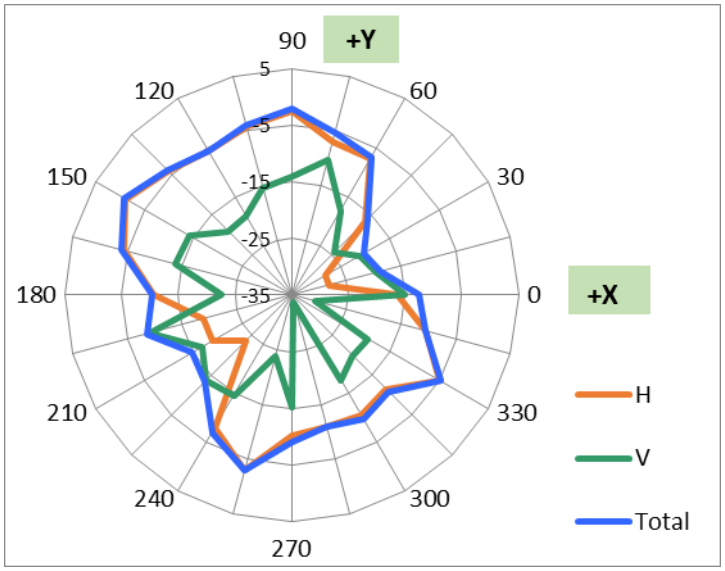
Max Antenna 2D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5725-5850	-0.92



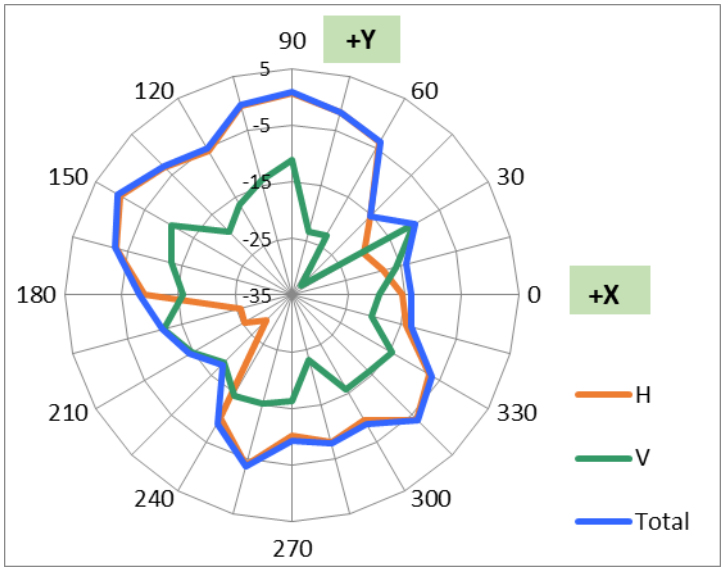
Max Antenna 2D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5850-5895	-0.92



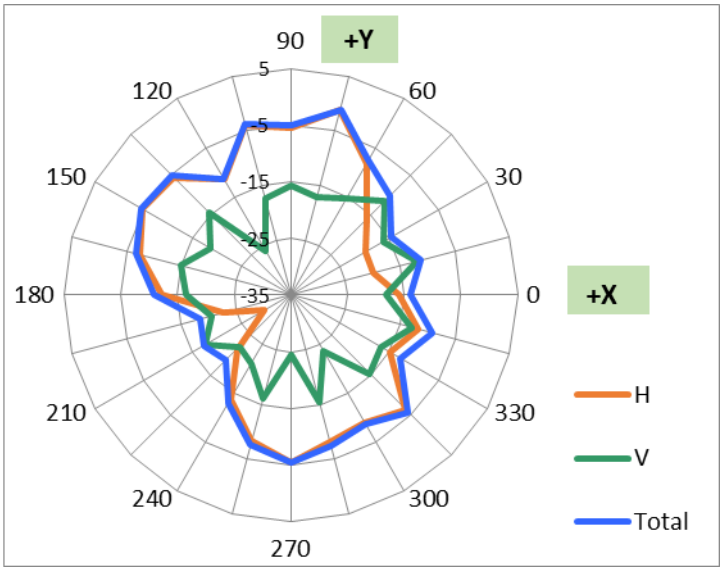
Max Antenna 2D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
5925-6425	0.84



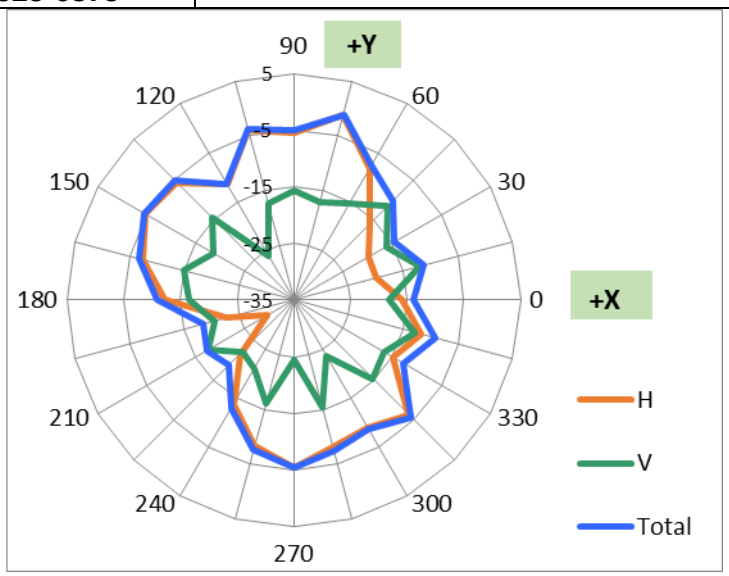
Max Antenna 2D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
6425-6525	-1.06



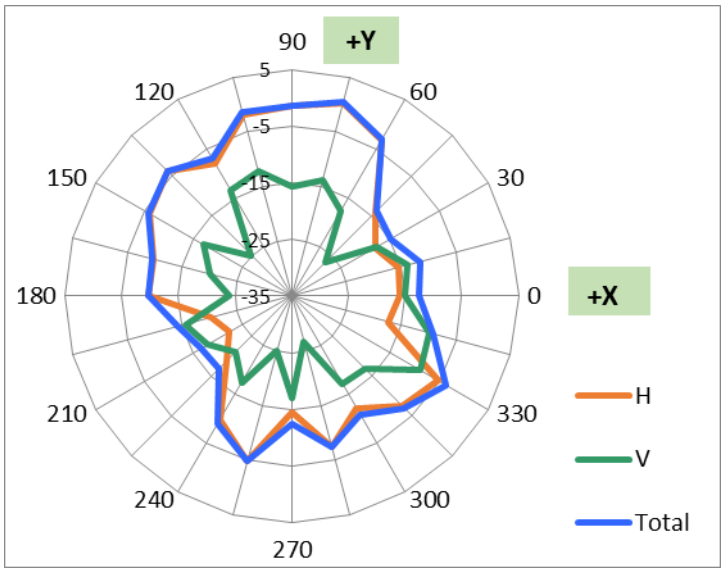
Max Antenna 2D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
6525-6875	-1.06



Max Antenna 2D Radiation Pattern 6875-7125 MHz

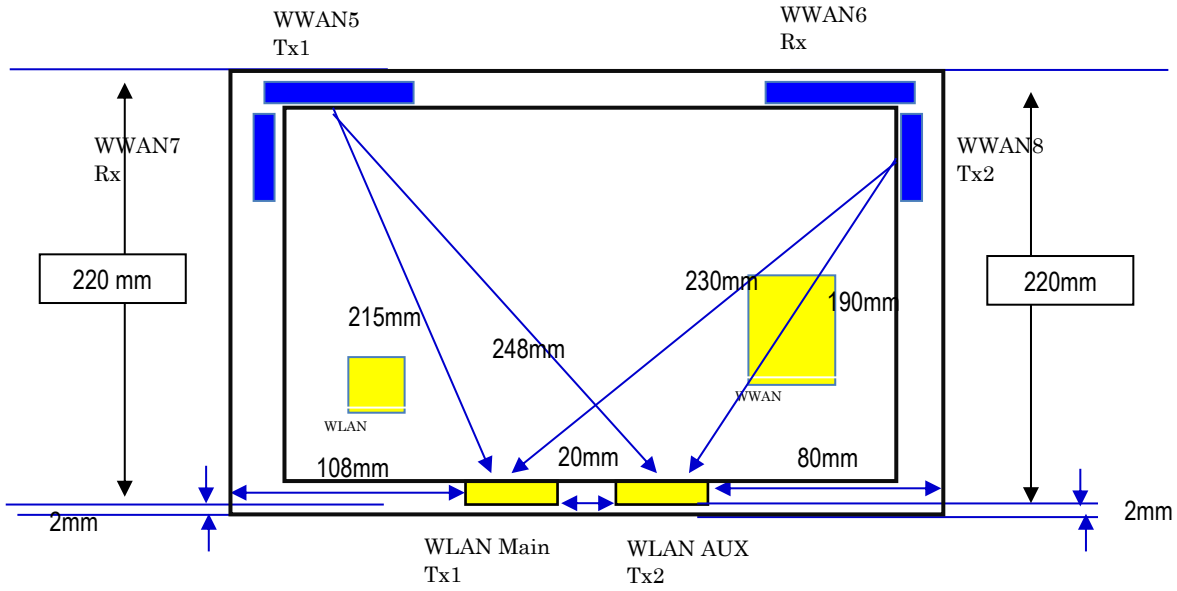
Frequency (MHz)	Horizontal+ Vertical (dBi) peak (dBi)
6875-7125	0.45



Section 4. Antenna Host Platform Location Information

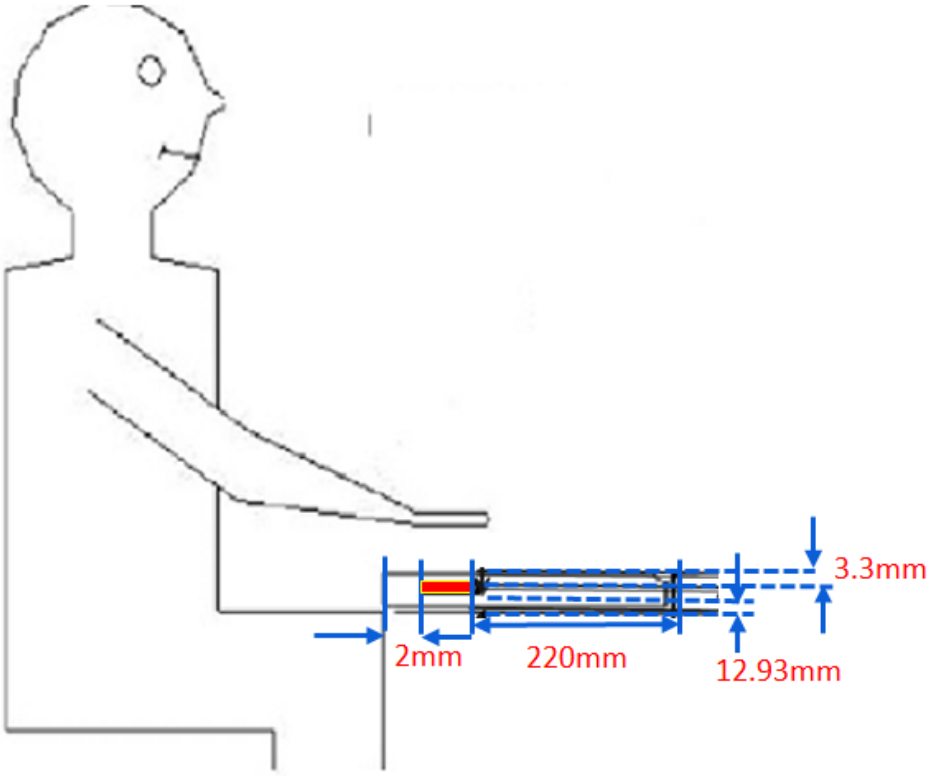
Include a **dimensioned photo(s) or dimensioned drawing(s)** of Main and Aux antenna placements (measurements are not required for receive-only antenna).

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)