

Regulatory WLAN Antenna Information

Platform information											
Brand	ODM	****End product model name	Intel platform (ex: Yes, No or NA)	Platform type (ex: regular NB, convertible PC, AIO...etc)	*SAR minimum separation (mm)						
Lenovo	Wistron	Lenovo 100w Gen 4	Yes	Regular NB							
*****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)			Antenna Part number (Aux)					
AWAN		PIFA	025.90276.0011			025.90277.0011					
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	2.17	0.87	0.87	1.62	2.94	2.94	2.42	2.42	1.69	0.61	
Aux	1.03	-0.87	-0.87	-0.03	1.60	1.60	2.27	0.54	-0.82	-1.78	
Intel Reference Gain/Type/ Separation distance											
Antenna Type	Antenna Peak gain (In dBi)*										Distance to the end user (mm)
	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	7.0GHz 6875-7125MHz	Generic: refer to modular FCC SAR report
Design	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	Mid-power: ≥ 8 mm Low power: ≥ 5 mm
PIFA	3.24	3.64	3.73	4.77	4.97	4.72	4.83	4.30	5.37	5.59	
Dipole	2.89	2.92	3.19	4.41	4.22	4.22	4.83	4.30	4.49	5.34	
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.											

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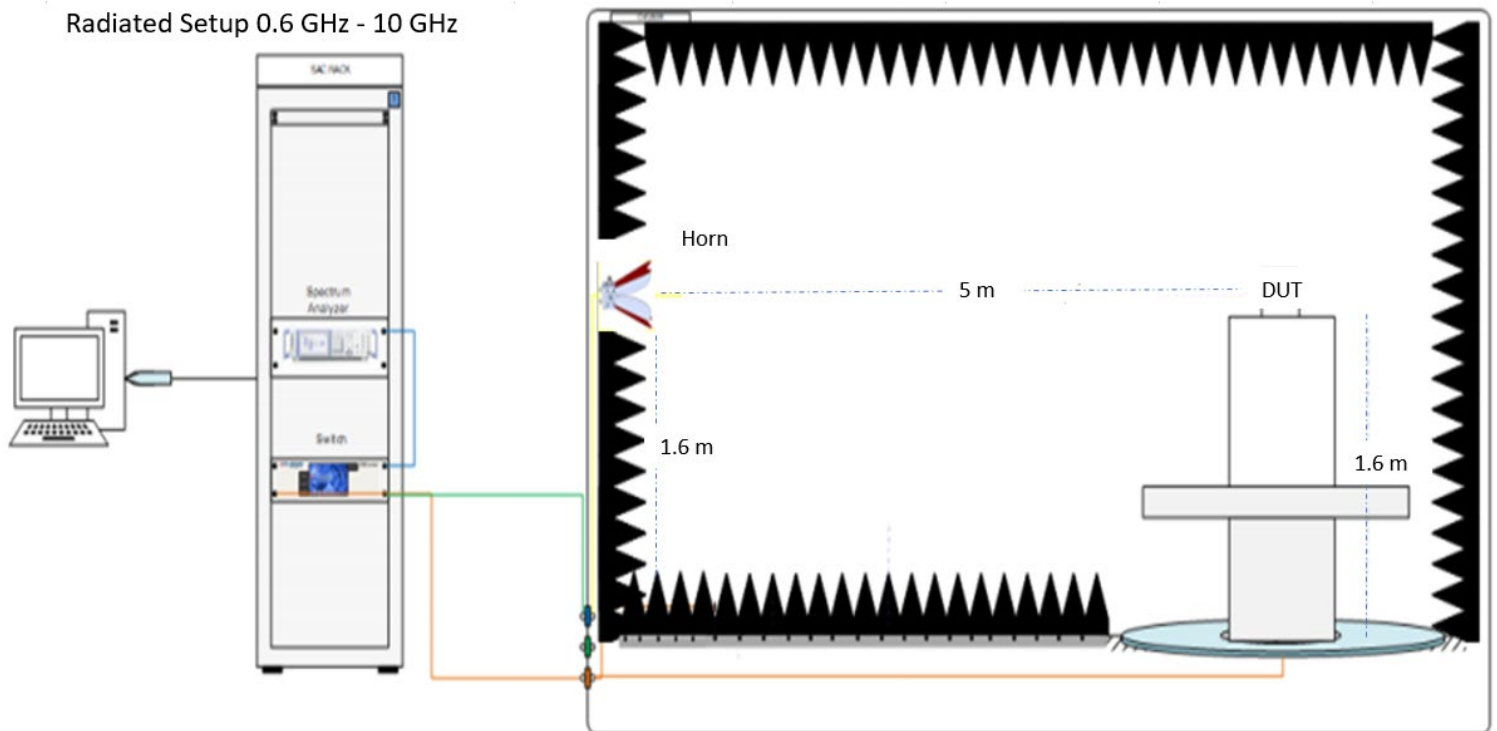
1. Applicable test methods

This test report is prepared for host antenna testing under a Full Anechoic Chamber.

2. Test & System Description

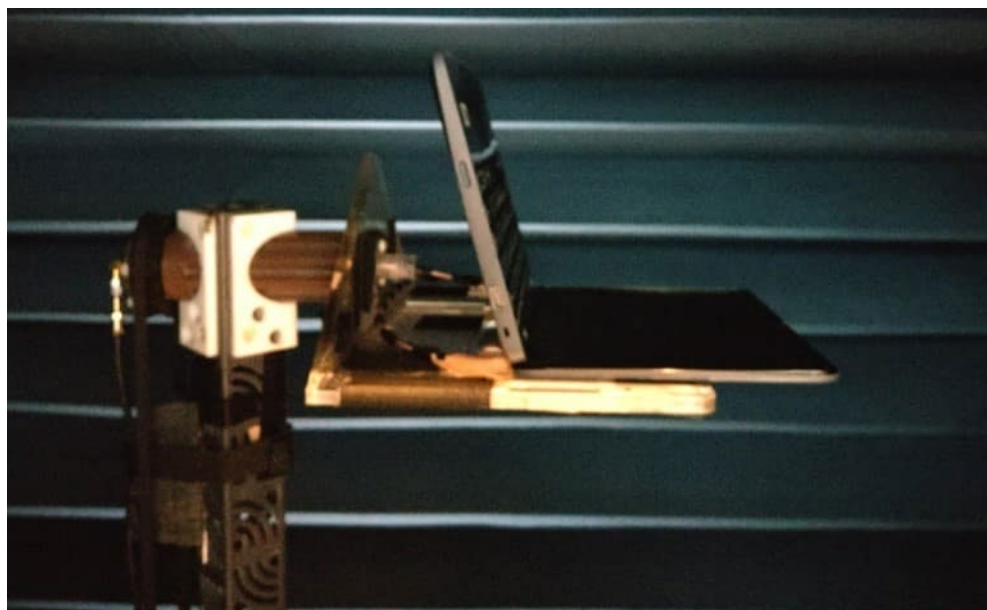
a. Test setup

Radiated Setup 0.6 GHz - 10 GHz



b. Equipment list

Device	Type/Module	Serial#	Manufacturer	Cal. Date	Cal. Due Date
Anechoic Chamber	AMS-8500	1047	ETS-Lindgren	2022/1/21	2023/7/22
Turn Table	ETS	-	ETS-Lindgren	N/A	N/A
Rotate controller	2090	SN 00035073	ETS-Lindgren	N/A	N/A
Horn Antenna	HAD-0710	111025-02	Bwant	2021/5/16	2023/5/16
Vector Network Analyzer	E5071C	MY46733781	Keysight	2022/1/21	2023/1/21
Cable 40cm 18 GHz	201EH012010400	201EH012010400#1	Jmtt	2022/3/27	2023/3/27
Cable 6m 18 GHz	201EH012016000	201EH012016000#3	Jmtt	2022/3/27	2023/3/27
Cable 6m 18 GHz	201EH012016000	201EH012016000#5	Jmtt	2022/3/27	2023/3/27
Cable 3.5m 18 GHz	201EH012013500	201EH012013500#3	Jmtt	2022/3/27	2023/3/27
Cable 1.5m 18 GHz	201EH012011500	201EH012011500#2	Jmtt	2022/3/27	2023/3/27

3. Setup photo

Antenna Information

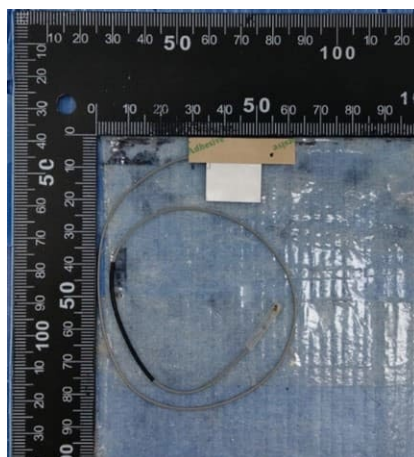
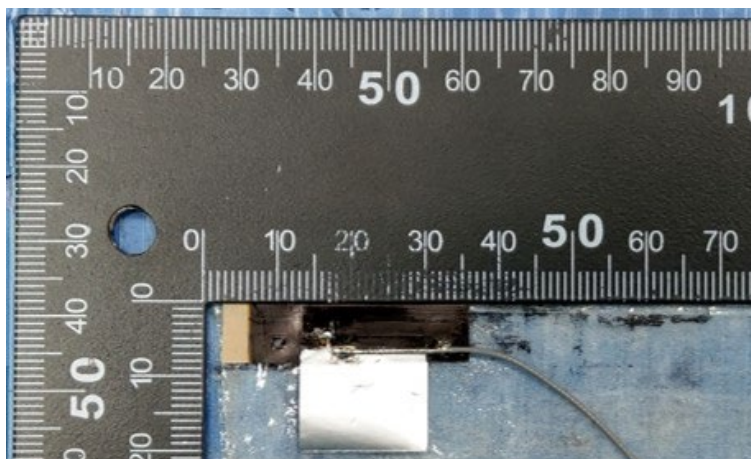
Section 1. Antenna Assembly Specifications

1A	1B	1C	1D		1E	1F	1G	1H
Antenna Part Number	Manufacturer	Antenna Type	Cable Assembly Part Number and Information	Freq Range MHz	* Peak Gain W/ Cable loss (dBi)	Peak Gain w/o Cable Loss (dBi)	Max VSWR	Cable Loss (dB)
Main Antenna (Customer P/N:025.90276.0011) (AWAN P/N:AYF5Y-100011)	AWAN	PIFA	1)Cable P/N: GBE/Shen-Yu/YFC/KAIBO 2) 50 ohm LL OD 0.81 coaxial cable 3) Length: 322 mm 4) Connector P/N: I-pex NGFF: 20572-001R-08	2400-2483.5	2400-2500MHz 2.17 dBi(peak)	2400-2500MHz 3.31 dBi(peak)	2400-2500MHz 3.00 max	2400-2500MHz 1.14 dBi(peak)
				5150-5250	5150-5250MHz 0.87 dBi(peak)	5150-5250MHz 2.57 dBi(peak)	5150-5250MHz 3.00 max	5150-5250MHz 1.70 dBi(peak)
				5250-5350	5250-5350MHz 0.87 dBi(peak)	5250-5350MHz 2.60 dBi(peak)	5250-5350MHz 3.00 max	5250-5350MHz 1.73 dBi(peak)
				5470-5725	5470-5725MHz 1.62 dBi(peak)	5470-5725MHz 3.43 dBi(peak)	5470-5725MHz 3.00 max	5470-5725MHz 1.81 dBi(peak)
				5725-5850	5725-5850MHz 2.94 dBi(peak)	5725-5850MHz 4.78 dBi(peak)	5725-5850MHz 3.00 max	5725-5850MHz 1.84 dBi(peak)
				5850-5895	5850-5895MHz 2.94 dBi(peak)	5850-5895MHz 4.83 dBi(peak)	5850-5895MHz 3.00 max	5850-5895MHz 1.89 dBi(peak)
				5925-6425	5925-6425MHz 2.42 dBi(peak)	5925-6425MHz 4.38 dBi(peak)	5925-6425MHz 3.00 max	5925-6425MHz 1.96 dBi(peak)
				6425-6525	6425-6525MHz 2.42 dBi(peak)	6425-6525MHz 4.43 dBi(peak)	6425-6525MHz 3.00 max	6425-6525MHz 2.01 dBi(peak)
				6525-6875	6525-6875MHz 1.69 dBi(peak)	6525-6875MHz 3.74 dBi(peak)	6525-6975MHz 3.00 max	6525-6875MHz 2.05 dBi(peak)
				6875-7125	6875-7125MHz 0.61 dBi(peak)	6875-7125MHz 2.71 dBi(peak)	6875-7125MHz 3.00 max	6875-7125MHz 2.10 dBi(peak)
Aux Antenna (Customer P/N:025.90277.0011) (AWAN P/N:AYF5Y-100012)	AWAN	PIFA	1)Cable P/N: GBE/Shen-Yu/YFC/KAIBO 2) 50 ohm LL OD 0.81 coaxial cable 3) Length: 535 mm 4) Connector P/N: I-pex NGFF: 20572-001R-08	2400-2483.5	2400-2500MHz 1.03 dBi(peak)	2400-2500MHz 2.92 dBi(peak)	2400-2500MHz 3.00 max	2400-2500MHz 1.89 dBi(peak)
				5150-5250	5150-5250MHz -0.87 dBi(peak)	5150-5250MHz 1.96 dBi(peak)	5150-5250MHz 3.00 max	5150-5250MHz 2.83 dBi(peak)
				5250-5350	5250-5350MHz -0.87 dBi(peak)	5250-5350MHz 2.01 dBi(peak)	5250-5350MHz 3.00 max	5250-5350MHz 2.88 dBi(peak)
				5470-5725	5470-5725MHz -0.03 dBi(peak)	5470-5725MHz 2.97 dBi(peak)	5470-5725MHz 3.00 max	5470-5725MHz 3.00 dBi(peak)
				5725-5850	5725-5850MHz 1.60 dBi(peak)	5725-5850MHz 4.65 dBi(peak)	5725-5850MHz 3.00 max	5725-5850MHz 3.05 dBi(peak)
				5850-5895	5850-5895MHz 1.60 dBi(peak)	5850-5895MHz 4.74 dBi(peak)	5850-5895MHz 3.00 max	5850-5895MHz 3.14 dBi(peak)
				5925-6425	5925-6425MHz 2.27 dBi(peak)	5925-6425MHz 5.52 dBi(peak)	5925-6425MHz 3.00 max	5925-6425MHz 3.25 dBi(peak)
				6425-6525	6425-6525MHz 0.54 dBi(peak)	6425-6525MHz 3.83 dBi(peak)	6425-6525MHz 3.00 max	6425-6525MHz 3.29 dBi(peak)
				6525-6875	6525-6875MHz -0.82 dBi(peak)	6525-6875MHz 2.58 dBi(peak)	6525-6975MHz 3.00 max	6525-6875MHz 3.40 dBi(peak)
				6875-7125	6875-7125MHz -1.78 dBi(peak)	6875-7125MHz 1.71 dBi(peak)	6875-7125MHz 3.00 max	6875-7125MHz 3.49 dBi(peak)

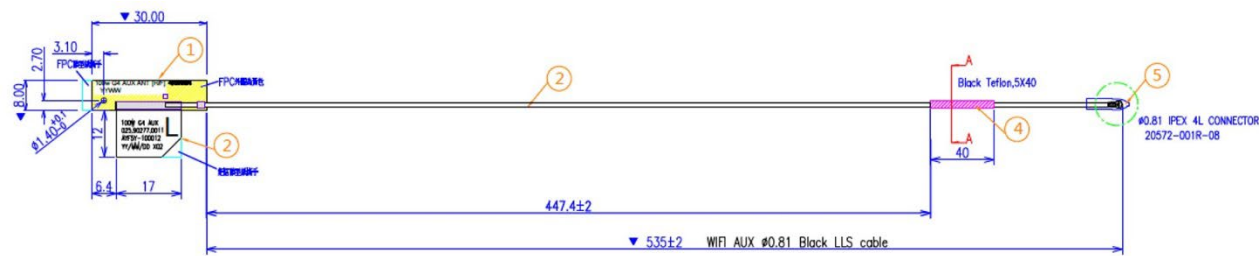
- 3D Antenna Peak Gain required being test in system basis.

Technical drawing of the antenna assembly showing dimensions and components. The drawing includes a side view and a top view. Key dimensions and components are labeled:

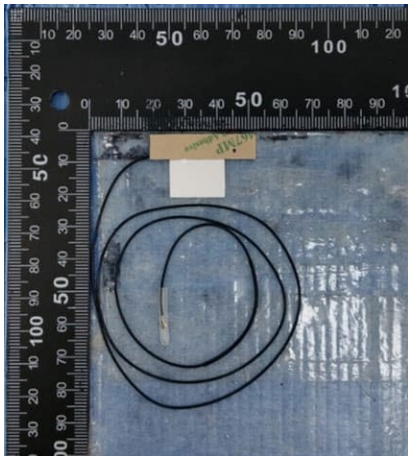
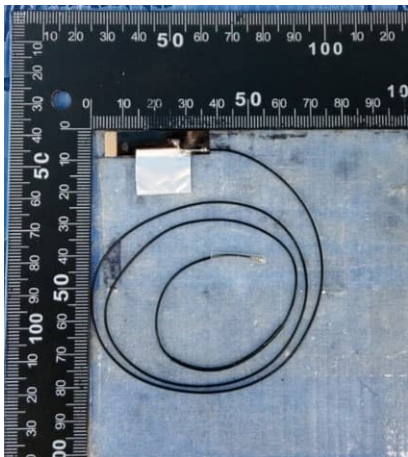
- Dimensions:**
 - Overall length: 322 ± 2 mm (WIFI MAIN $\phi 8.1$ Gray LLS cable).
 - Distance from mounting hole to center of main cable: 30.00 mm.
 - Distance from mounting hole to center of main cable (top view): 4.15 mm.
 - Distance from mounting hole to center of main cable (side view): 2.70 mm.
 - Distance from mounting hole to center of main cable (bottom view): 1.40 ± 0.1 mm.
 - Distance from mounting hole to center of main cable (bottom view): 12 mm.
 - Distance from mounting hole to center of main cable (bottom view): 7 mm.
 - Distance from mounting hole to center of main cable (bottom view): 17 mm.
 - Distance from mounting hole to center of main cable (bottom view): 240 ± 2 mm.
 - Distance from mounting hole to center of main cable (bottom view): 40 mm.
- Components:**
 - ①: FPC MAIN cable.
 - ②: FPC MAIN cable.
 - ③: FPC MAIN cable.
 - ④: Black Teflon, 5X40.
 - ⑤: $\phi 8.1$ IPEX 4L CONNECTOR 20572-001R-08.



Aux Antenna Drawing:



Aux Antenna Photo:

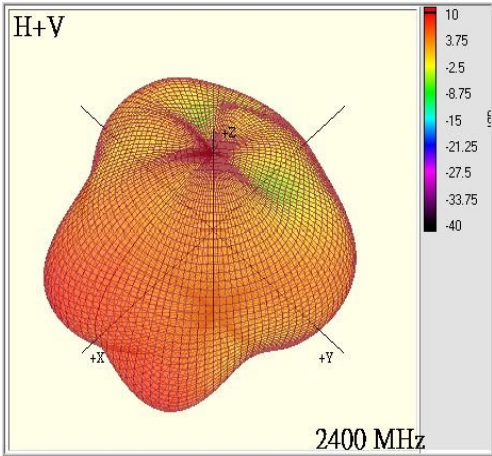


Section 3. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

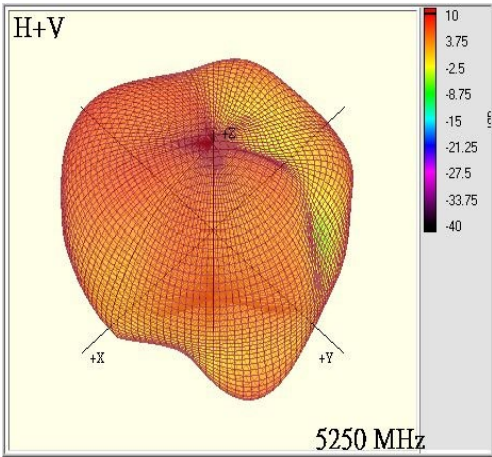
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	2.17



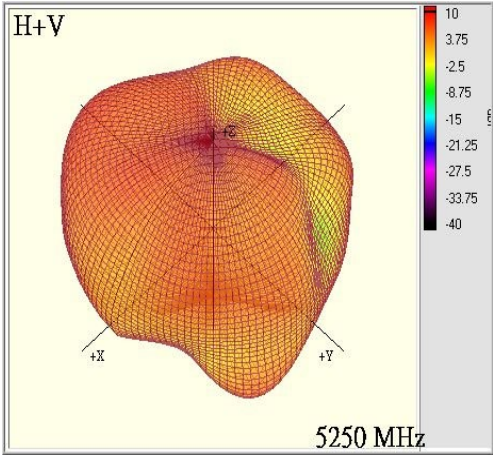
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	0.87



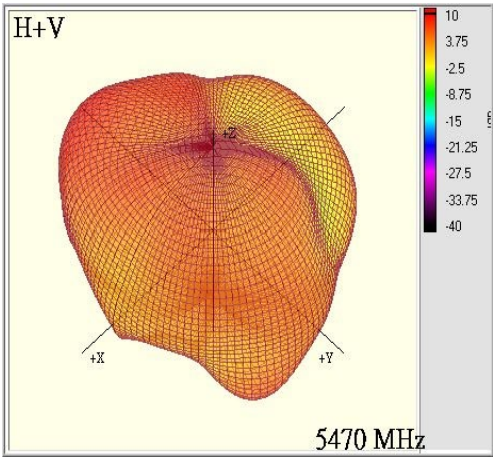
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	0.87



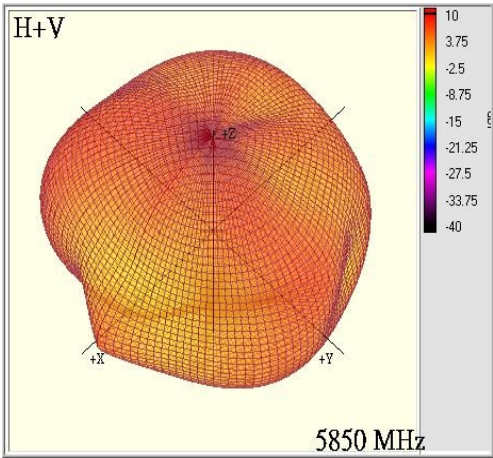
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	1.62



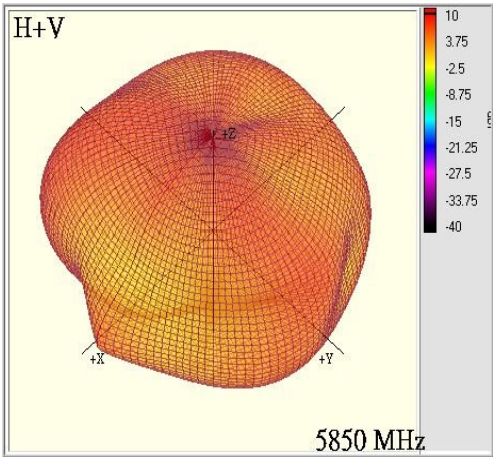
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	2.94



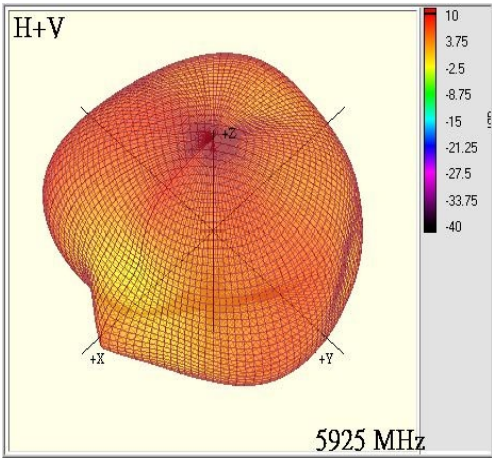
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	2.94



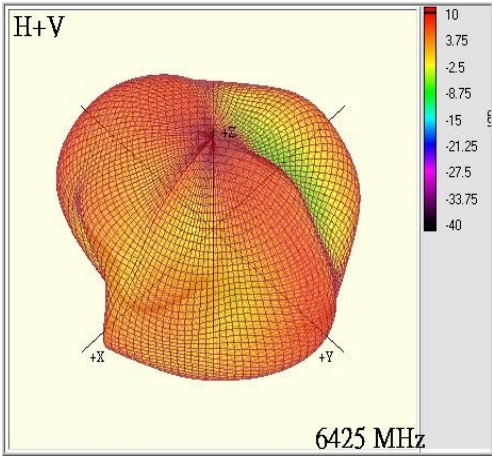
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	2.42



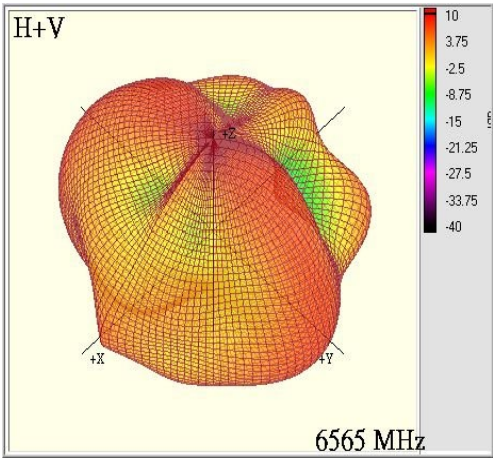
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	2.42



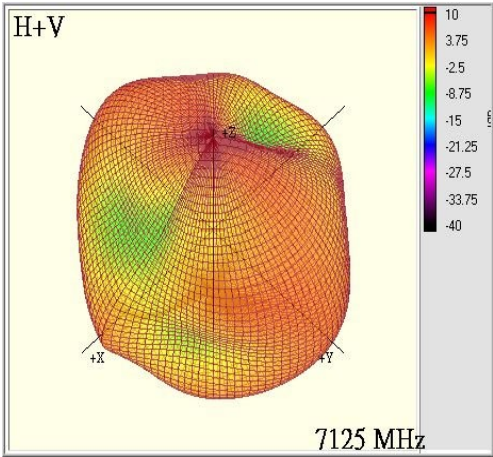
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	1.69



Max Antenna 3D Radiation Pattern 6875-7125 MHz

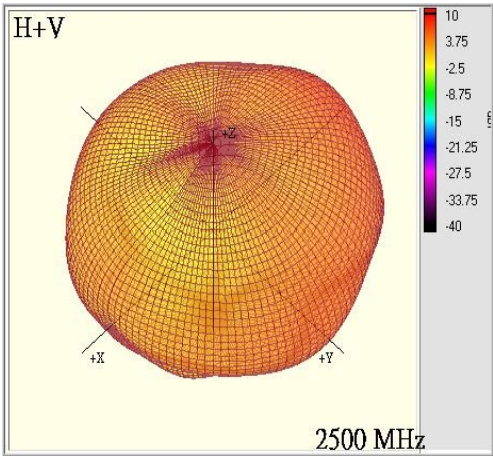
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	0.61



Auxiliary Antenna

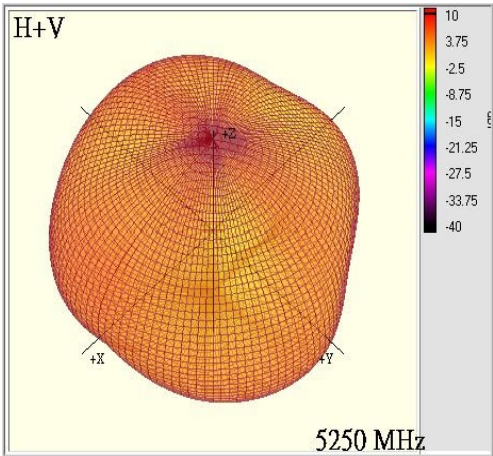
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.03



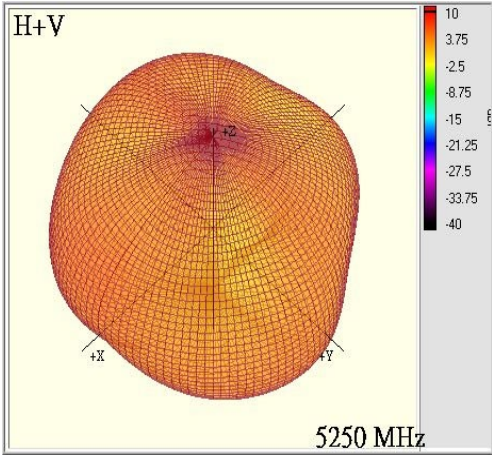
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	-0.87



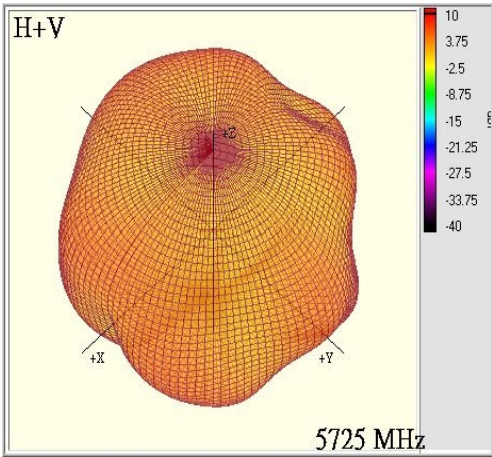
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	-0.87



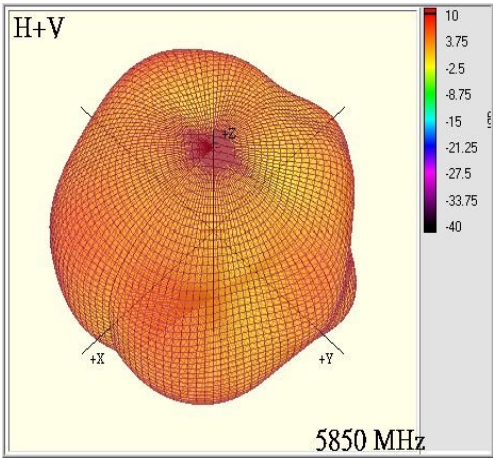
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	-0.03



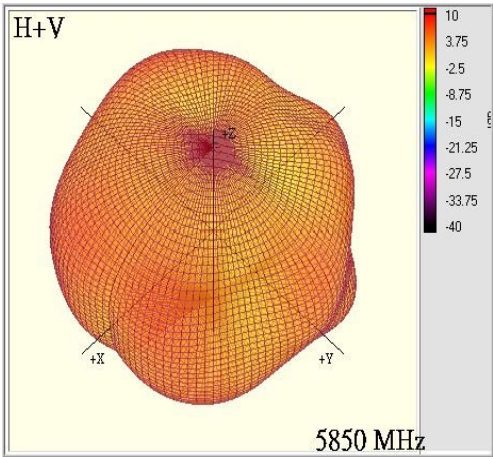
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	1.60



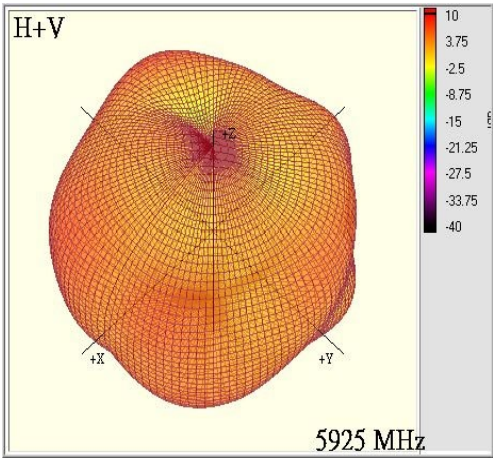
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	1.60



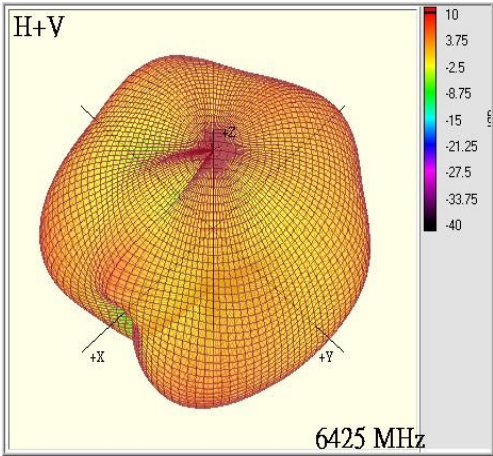
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	2.27



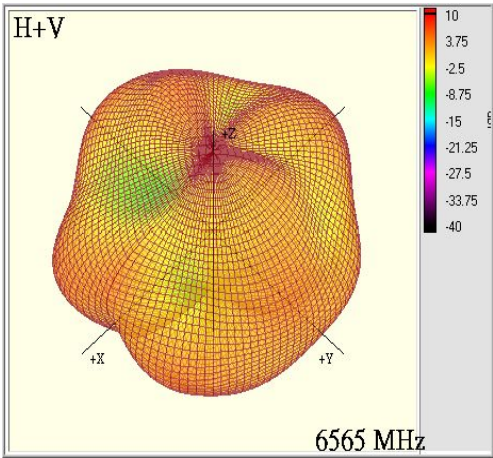
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	0.54



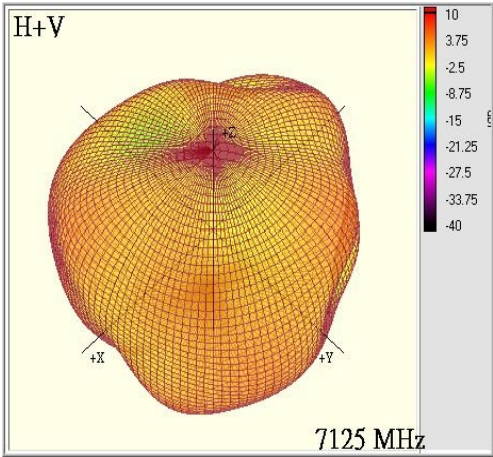
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	-0.82

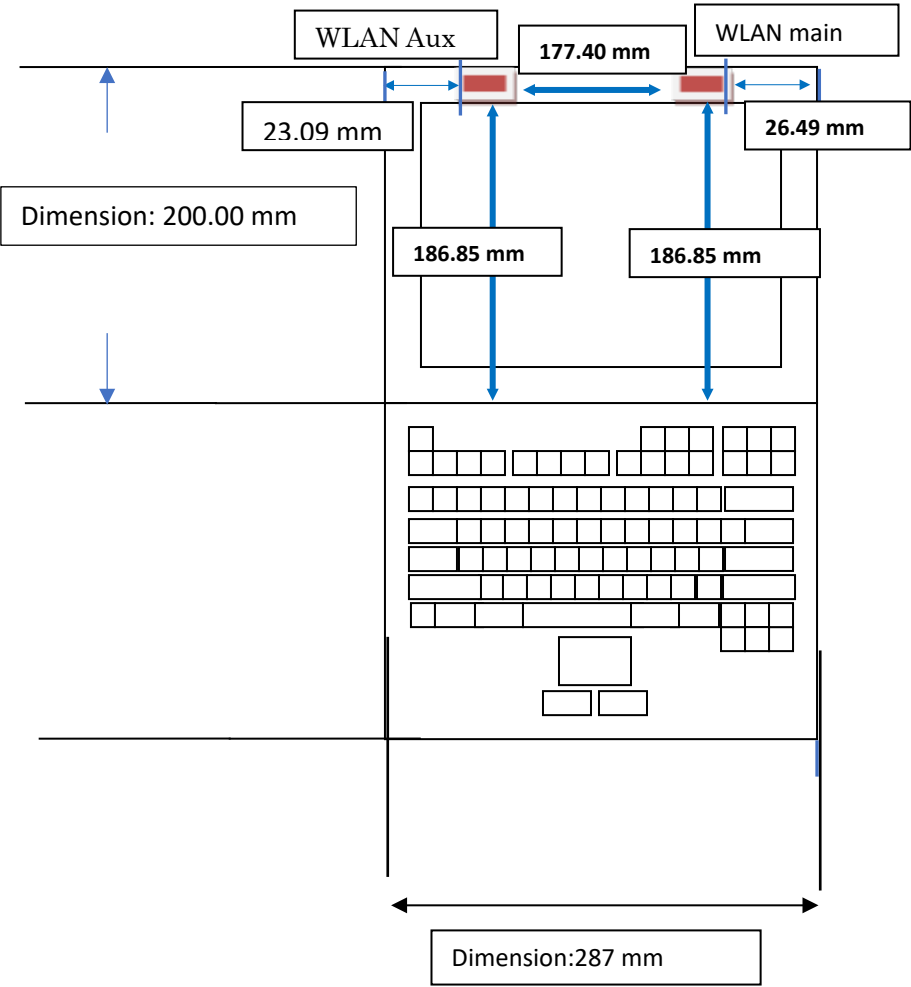


Max Antenna 3D Radiation Pattern 6875-7125 MHz

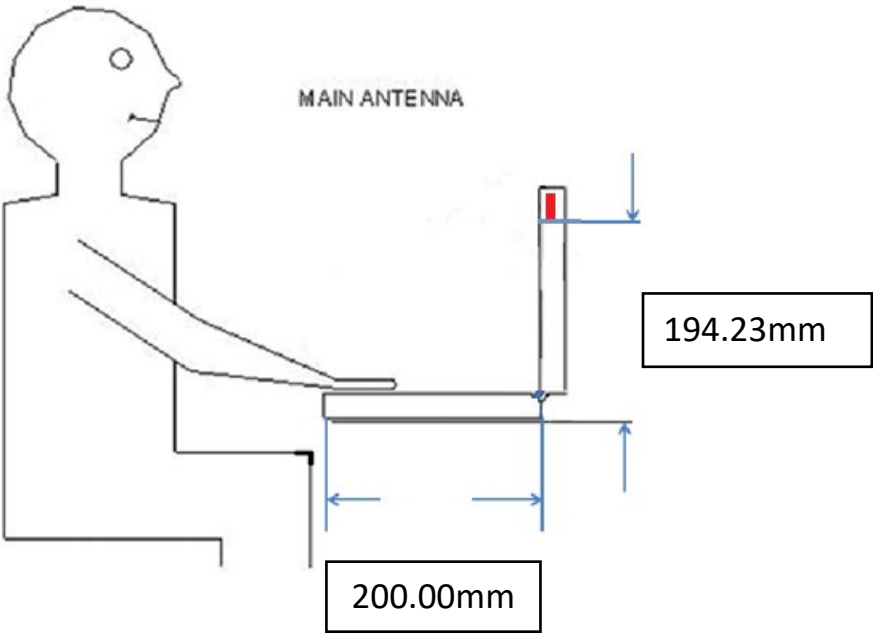
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	-1.78



Section 4. Antenna Host Platform Location Information



Section 5. Antenna dimensional information for SAR evaluation



Section 6. Diagram Example of Co-Location Antenna Separation

Figure-1 Notebook mode

