

ANTENNA INFORMATION

OEM	Lenovo
ODM	LCFC
Platform model name	LOQ 15IAX9E
Intel platform (ex: Yes, No or NA)	Yes
Platform type (ex: regular NB, convertible PC, AIO...etc)	regular NB
SAR minimum separation (mm)	FCC (1g) 13.8
	ISED (1g) 5.48
	ISED (10g) 1.8

Antenna manufacturer	Company name	Amphenol
	Address	No.689 Shen Nan Road, Xin Zhuang Industry Park, Shanghai, PR China 201108
Test location	Company name	Amphenol
	Address	No.689 Shen Nan Road, Xin Zhuang Industry Park, Shanghai, PR China 201108
Test Personnel	Name(Full name)	Tianmeng.Cui
	E-mail	Tianmeng.cui@amphenolmcp.com
	Tel/Mobile	13716434928
Testing date		20240708

Antenna Part number	Main	DC330025K00
	Aux	DC330025L10
Antenna type (ex: PIFA, Dipole...etc)		PIFA

Antenna 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	2.16	3.12	3.28	3.48	3.99	3.99	4.72	2.58	3.85	2.41
Aux	1.82	3.16	3.36	3.8	2.95	3.36	3.88	4.69	3.6	2.63

Cable Assembly Part Number and Information					
	Cable PN	Cable length(mm)	Cable diameter(mm)	Impedance(ohm)	Connector type
Main	R-H387-15-000-96	180	1.13	50	IPEX
Aux	R-H388-15-000-96	350	1.13	50	IPEX

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

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)
(P/N: DC330025K00) Main Antenna	Amphenol	PIFA	Connector type: IPEX Connector: Kangshuo (P/N: MHF-B13L-N-01) 50 ohm Coaxial length:180mm diameter:1.13mm	2400-2483.5	2.16	2.66	1.59	0.5
				5150-5250	3.12	3.93	1.35	0.81
				5250-5350	3.28	4.1	1.35	0.82
				5470-5725	3.48	4.32	1.77	0.84
				5725-5850	3.99	4.85	1.65	0.86
				5850-5895	3.99	4.86	1.63	0.87
				5925-6425	4.72	5.61	1.68	0.89
				6425-6525	2.58	3.5	1.37	0.92
				6525-6875	3.85	4.79	1.73	0.94
				6875-7125	2.41	3.39	1.42	0.98
(P/N : DC330025L10) Aux Antenna	Amphenol	PIFA	Connector type: IPEX Connector: Kangshuo (P/N: MHF-B13L-N-01) 50 ohm Coaxial length:350 mm diameter: 1.13mm	2400-2483.5	1.82	2.7	1.41	0.88
				5150-5250	3.16	4.59	1.52	1.43
				5250-5350	3.36	4.8	1.62	1.44
				5470-5725	3.8	5.27	1.89	1.47
				5725-5850	2.95	4.43	2.1	1.48
				5850-5895	3.36	4.85	2.1	1.49
				5925-6425	3.88	5.42	2.3	1.54
				6425-6525	4.69	6.3	2.3	1.61
				6525-6875	3.6	5.29	1.82	1.69
				6875-7125	2.63	4.36	2.15	1.73

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1. Document Revision History

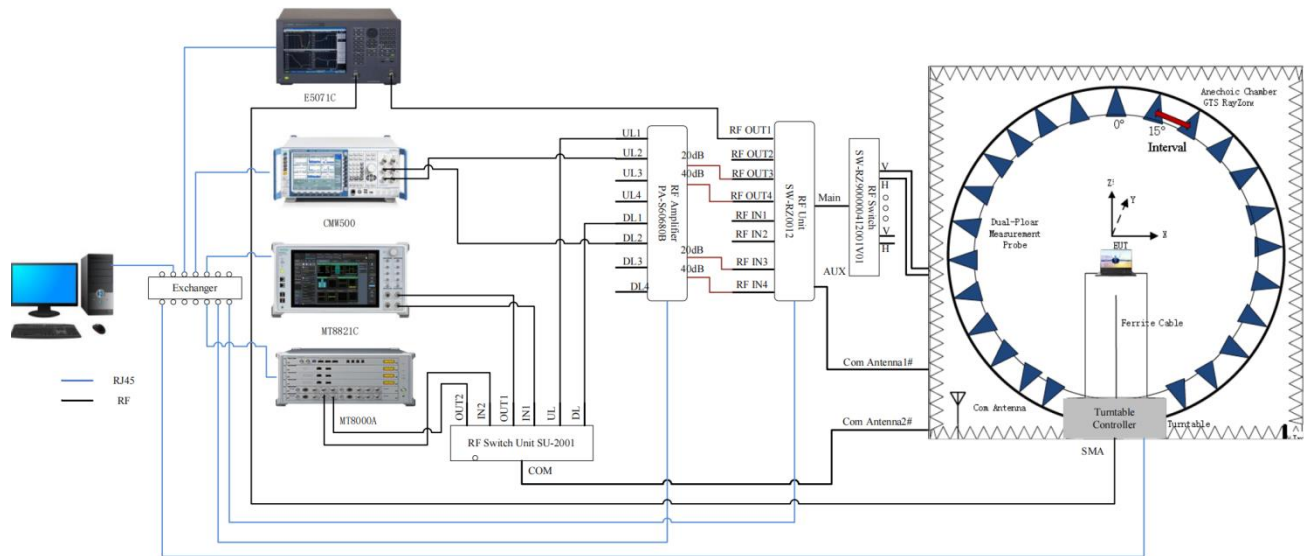
Revision #	Revision Details	Issued Date
Rev. 01	First Issue	2024-07-08

2. Test & System Description

3.1 Measurement Method and System

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

3.2 Test setup



3.3 Equipment list

Radiated Setup

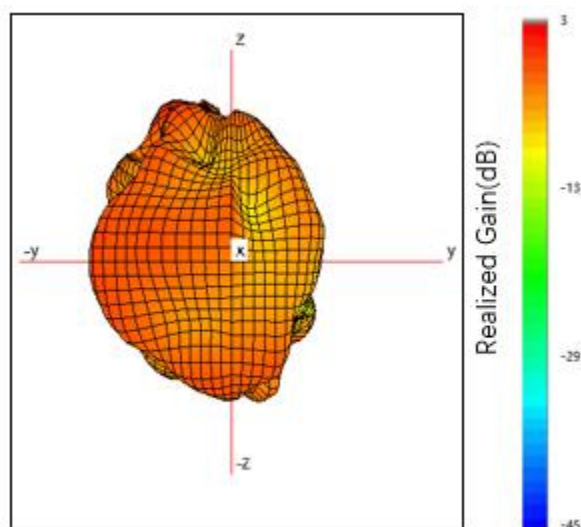
ID#	Device	Type/Model	Manufacturer	Cal.Date	Cal.Due Date
1	Anechoic Chamber	GTS Rayzone 2800	GTS	5-Jan-2024	5-Jan-2025
2	Network Analyzer	E5071C	Keysight	8-Oct-2023	8-Oct-2024
3	Communication Tester	E5515C	Agilent	5-Jan-2024	5-Jan-2025
4	Communication Tester	MT8000A	Anritsu	5-Jan-2024	5-Jan-2025
4	Communication Tester	MT8821C	Anritsu	5-Jan-2024	5-Jan-2025
4	Communication Tester	CMW500	R&S	5-Jan-2024	5-Jan-2025

3. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

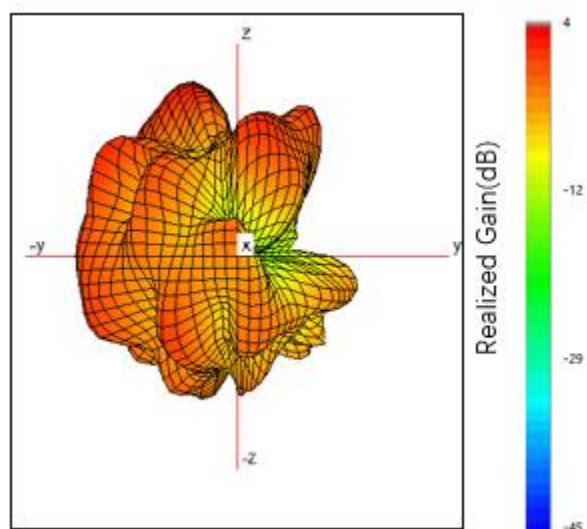
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	2.16



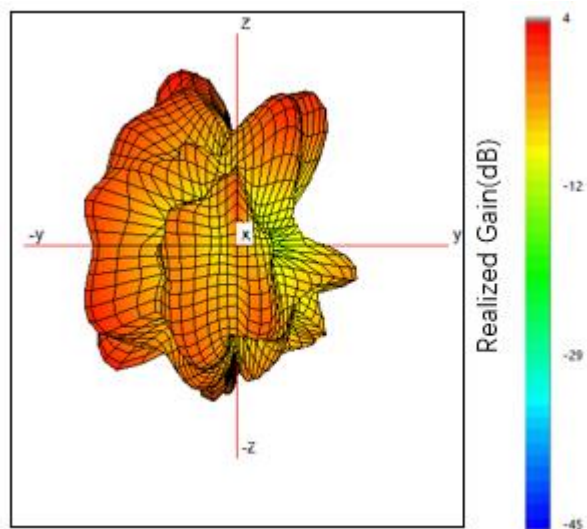
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	3.12



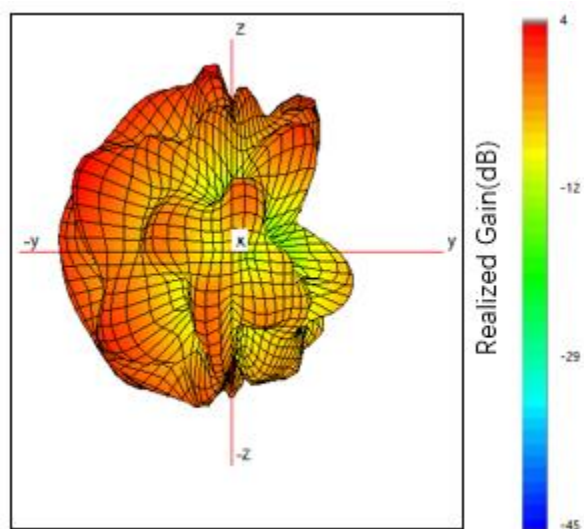
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	3.28



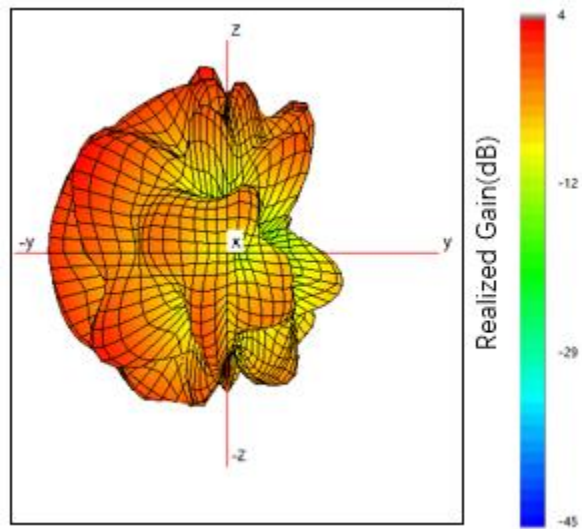
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	3.48



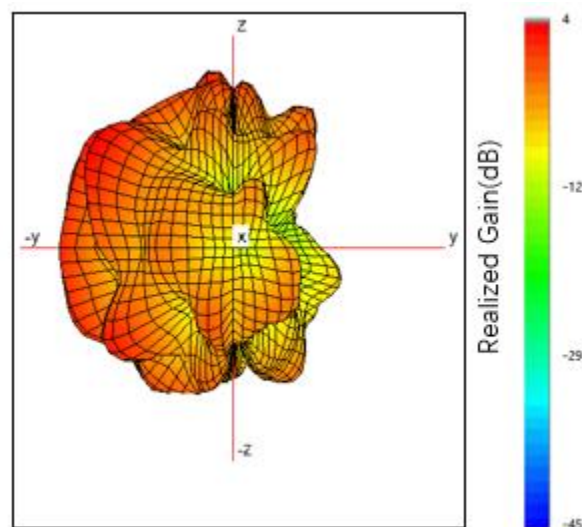
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	3.99



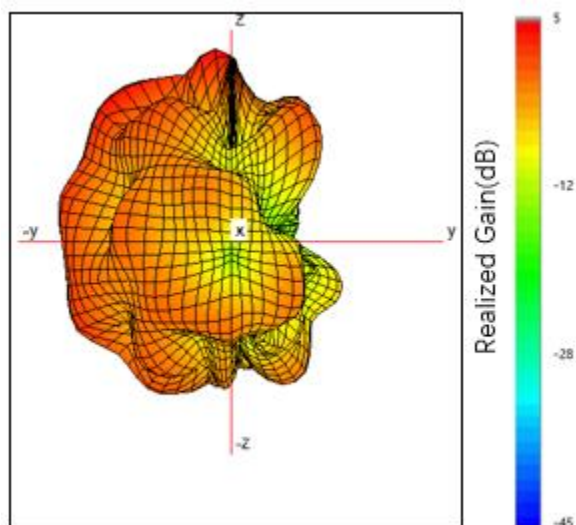
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	3.99



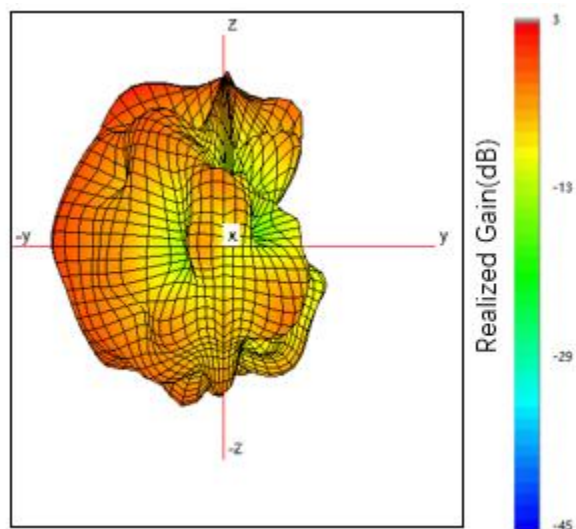
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	4.72



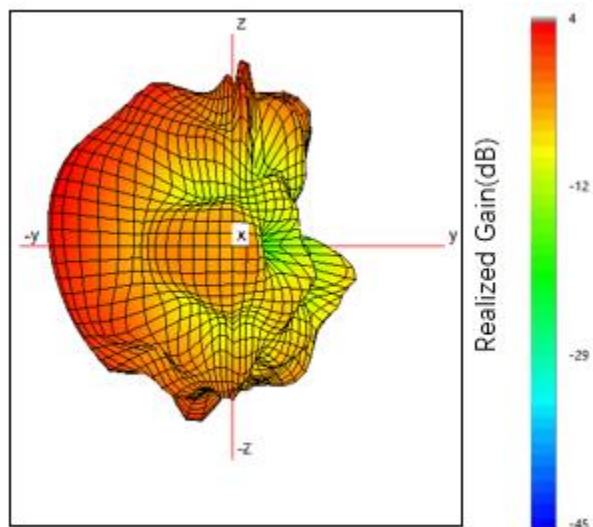
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	2.58



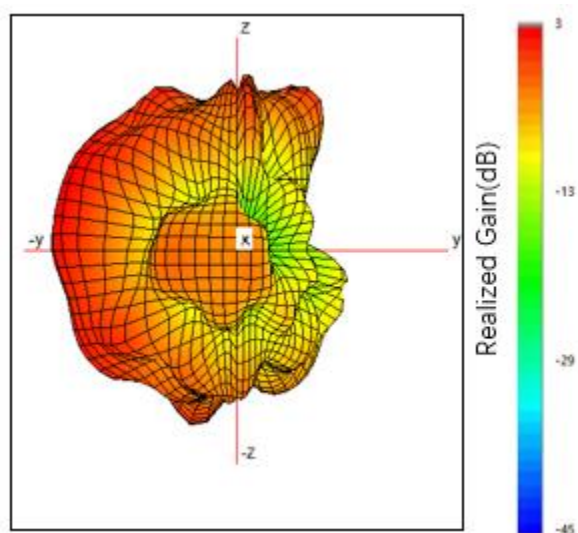
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	3.85



Max Antenna 3D Radiation Pattern 6875-7125 MHz

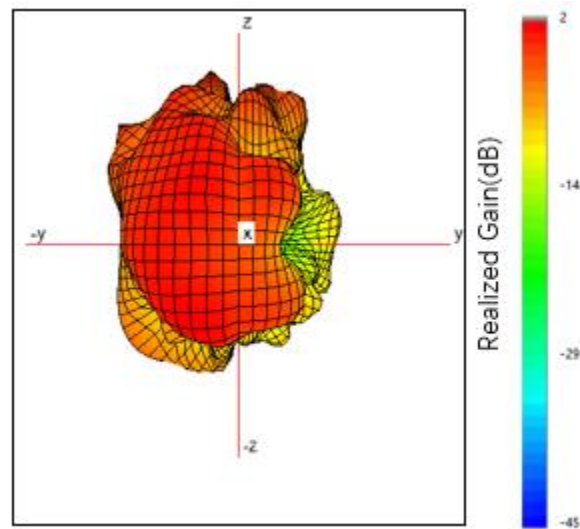
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	2.41



Auxiliary Antenna

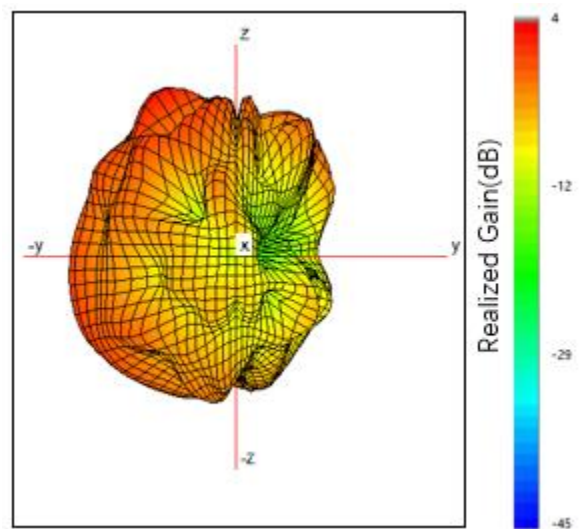
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.82



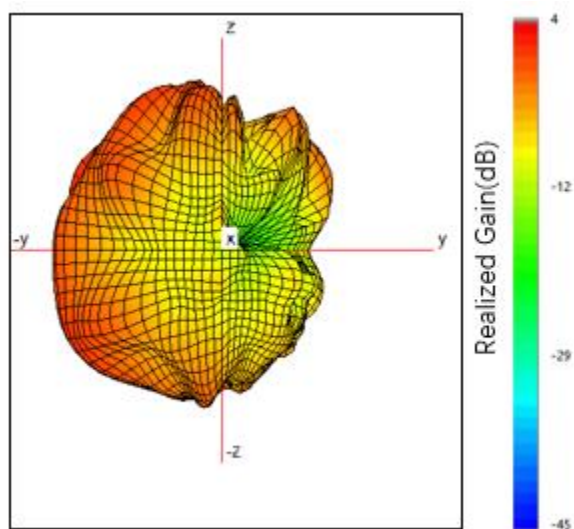
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	3.16



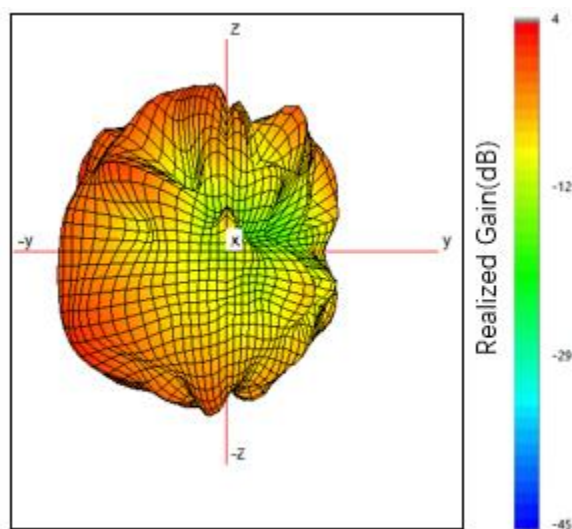
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	3.36



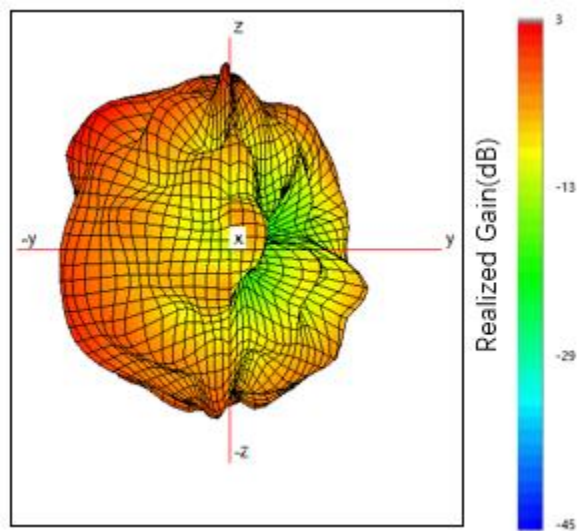
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	3.8



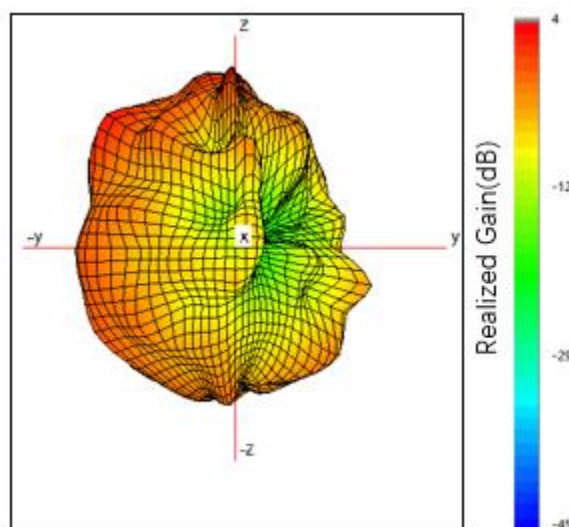
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	2.95



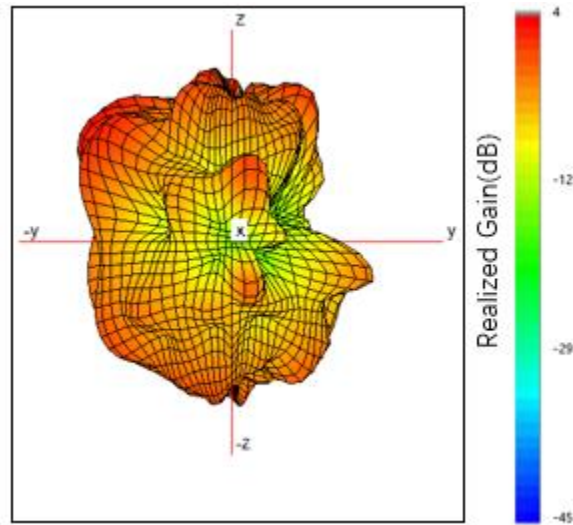
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	3.36



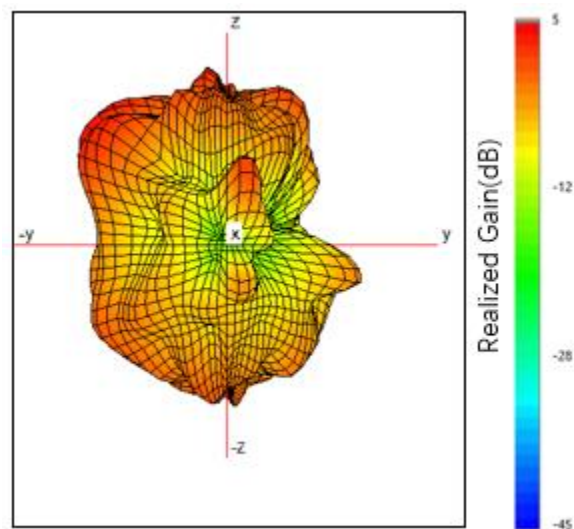
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	3.88



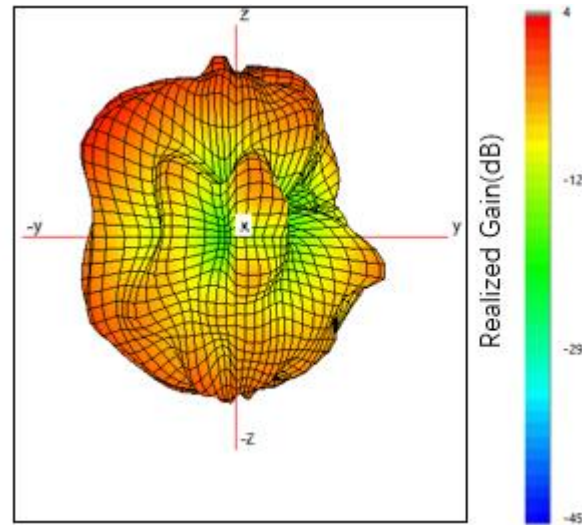
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	4.69



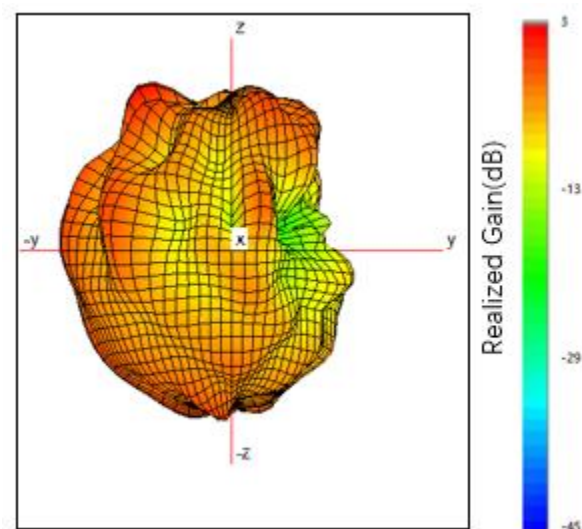
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	3.6



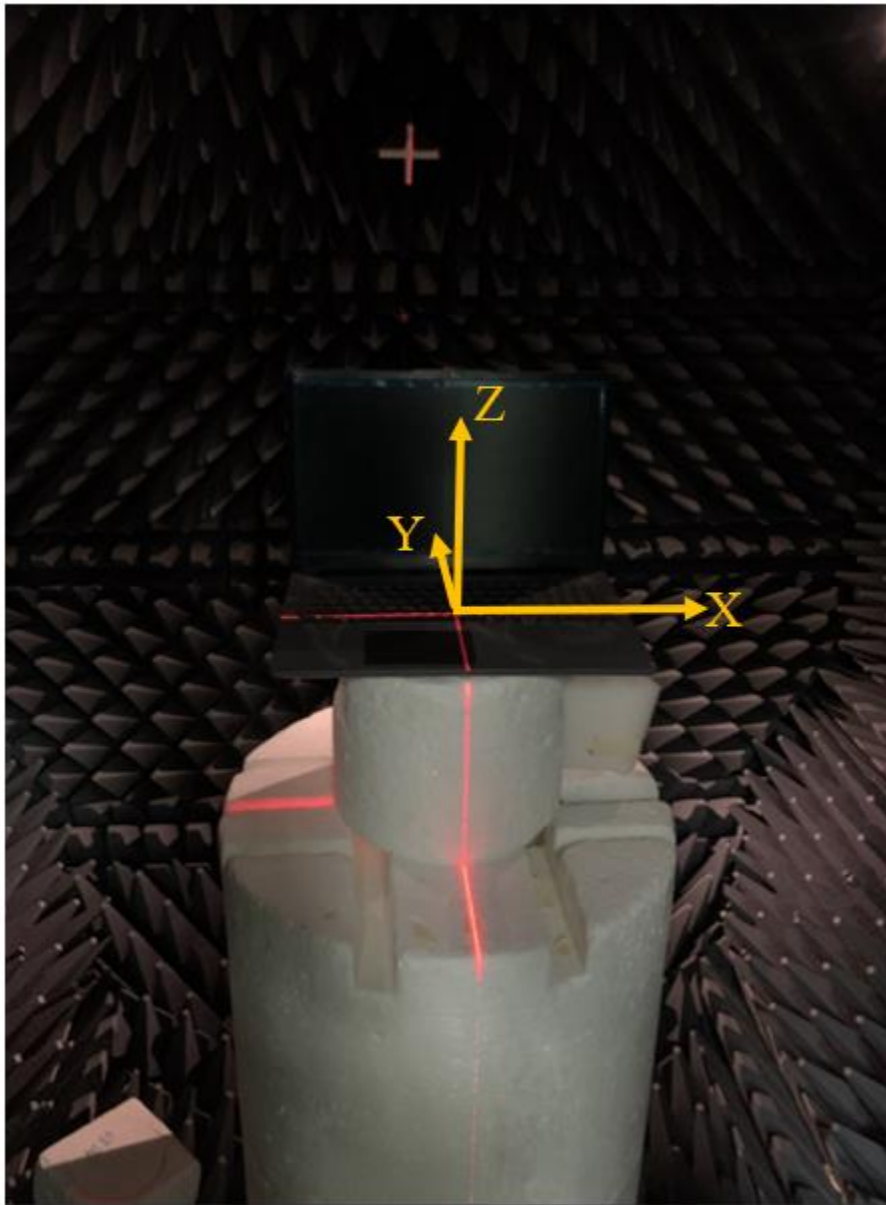
Max Antenna 3D Radiation Pattern 6875-7125 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	2.63



Annex A. Photographs

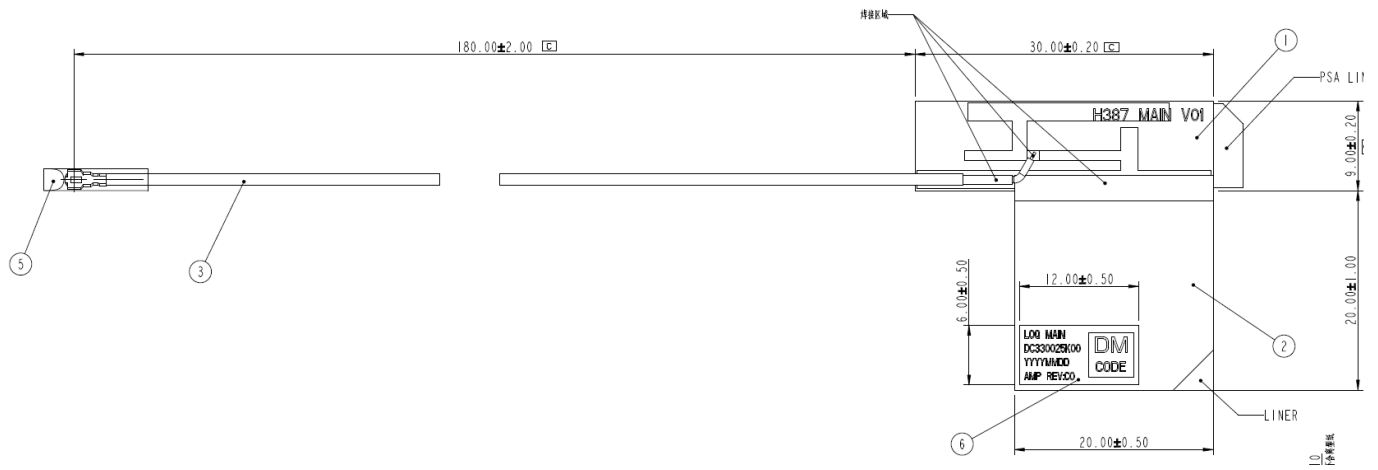
A.1 Setup Photo



A.2 Test sample

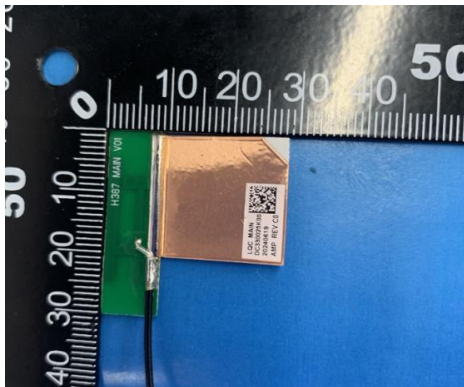
Main Antenna

Antenna Drawing

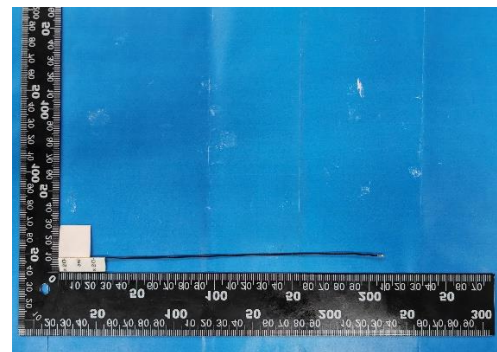
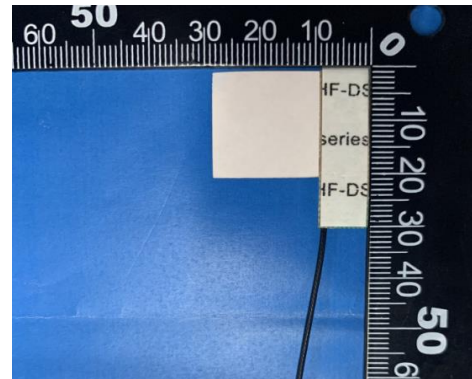


Antenna Photo

Front



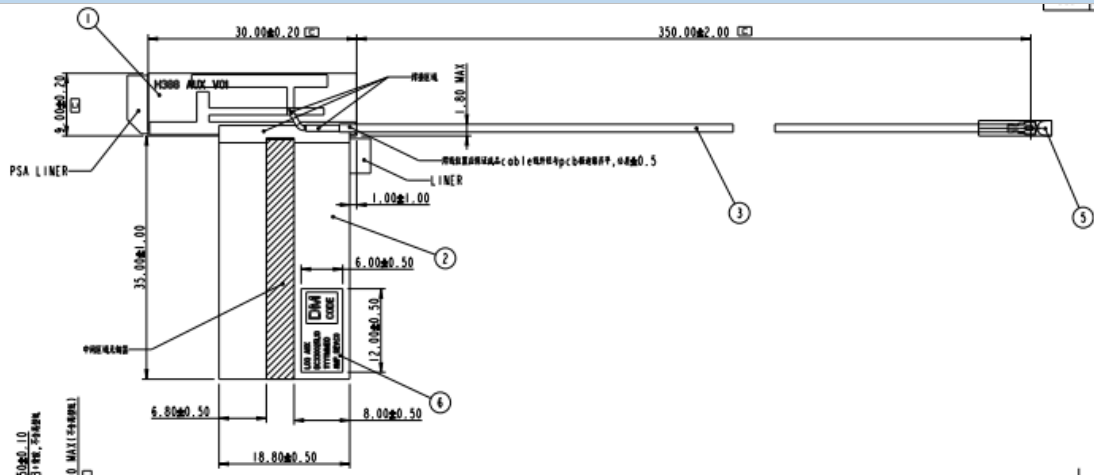
Back



Note: antenna photo should include L type ruler

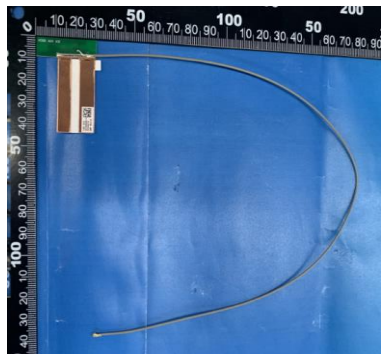
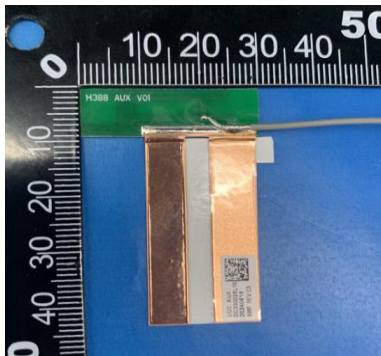
Aux Antenna

Antenna Drawing

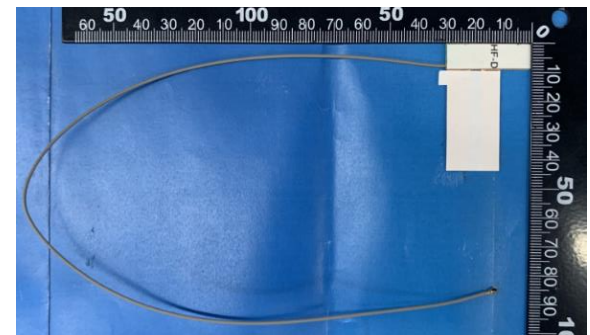
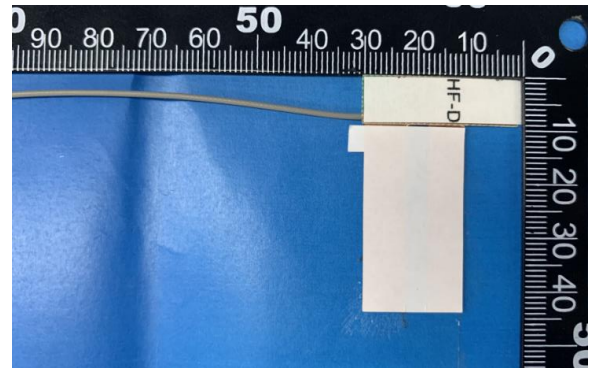


Antenna Photo

Front



Back



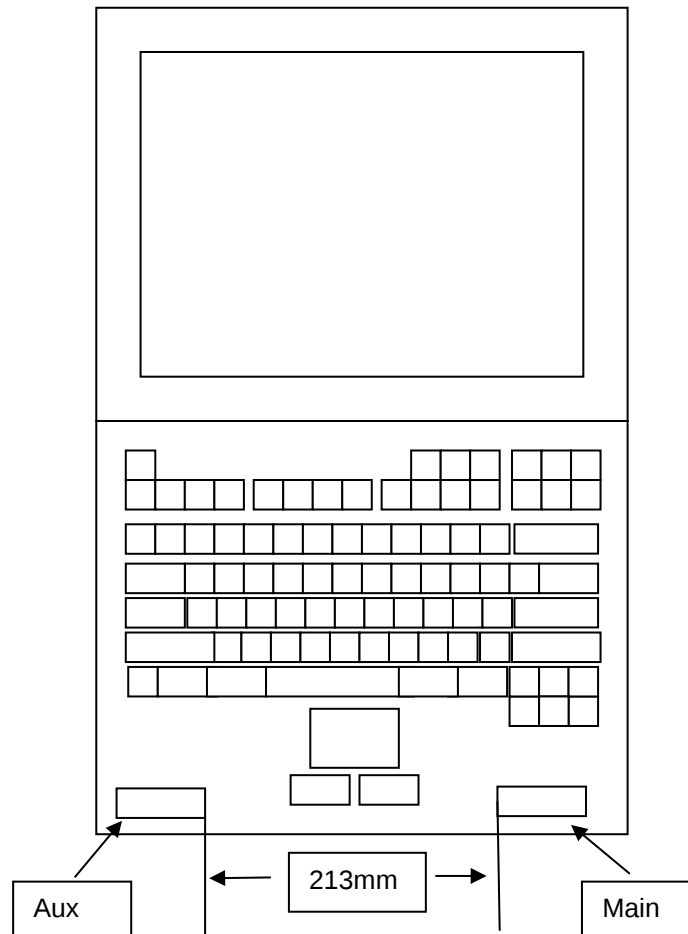
Note: antenna photo should include L type ruler

Annex B. Antenna Location

B.1 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).

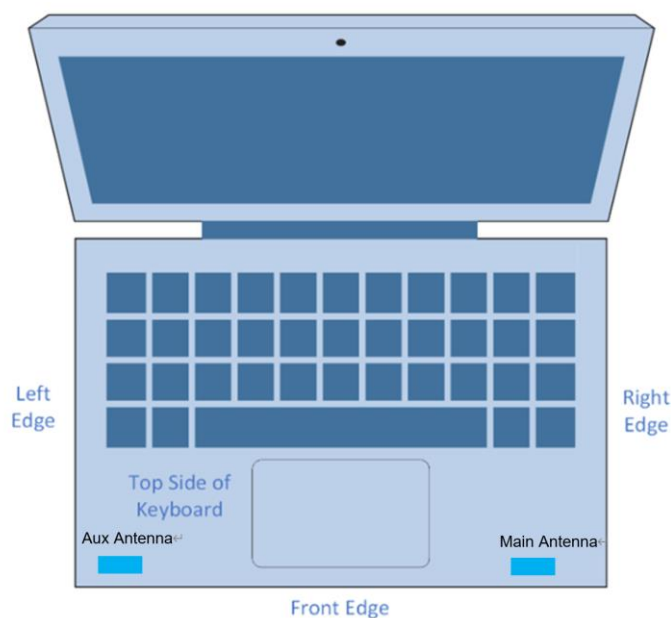
Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



B.2 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.

Antennas on the keyboard section



Measuring Surface	Antenna	Separation Distance(antenna-to-Surface)(mm)	1g or 10g SAR
Bottom Side	Main	13.8	1g (FCC/ISED)
	Aux	13.8	1g (FCC/ISED)
Front Edge	Main	5.48	1g (ISED)
	Aux	5.48	1g (ISED)
Left Edge	Main	267.4	10g (ISED)
	Aux	24.4	10g (ISED)
Right Edge	Main	61.8	10g (ISED)
	Aux	304.8	10g (ISED)
Top side of Keyboard	Main	1.8	10g (ISED)
	Aux	1.8	10g (ISED)