ANTENNA INFORMATION

OEM	Lenovo
ODM	Huaqin
Platform model name	IdeaPad5 2-in-1 14IRU9
Intel platform (ex: Yes, No or NA)	Yes
Platform type (ex: regular NB, convertible PC, AIO…etc)	Convertible PC
SAR minimum separation (mm)	NB: 6.45mm; PAD:5mm

Antenna manufacturer	South Star
Address	No.3 Chigang Nanfang 1st Road, Humen Town, Dongguan City, Guangdong Province
Antenna Part number	Main: 3.N201.0261 Aux: 3.N201.0262
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	1.89	2.42	2.48	2.96	3.06	3.17	2.88	3.17	2.79	2.28
Aux	2.29	2.37	2.61	2.22	2.83	3.08	3.18	2.62	2.89	2.18

Cable Assembly Part Number and Information					
	Cable PN	**Cable length**(cm)	**Cable diameter**(mm)	**Impedance**(ohm)	**Connector type**
Main	2.A01.1801	18.8	1.13	50	I-PEX-4
Aux	2.A01.1802	31.5	1.13	50	I-PEX-4

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

Table of Contents

1. Intel Reference Gain and Type

Antenna Peak gain w/ cable loss (dBi)											
Band/Frequency		**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
Design	EU/UK	3.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00	5.00
PIFA	For WiFi 6E and earlier	3.24	3.64	3.73	4.77	4.97	4.72	4.83	4.30	5.37	5.59
	From WiFi 7	2.95	5.11	4.55	5.15	5.13	4.45	5.02	5.02	4.96	4.96
Dipole	For WiFi 6E and earlier	2.89	2.92	3.19	4.41	4.22	4.22	4.83	4.30	4.49	5.34
	From WiFi 7	2.95	4.03	4.11	5.15	5.13	4.45	5.02	4.71	4.49	4.96

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.

Revision #	Revision Details	Issued Date
Rev. 00	First Issue	2023.11.1

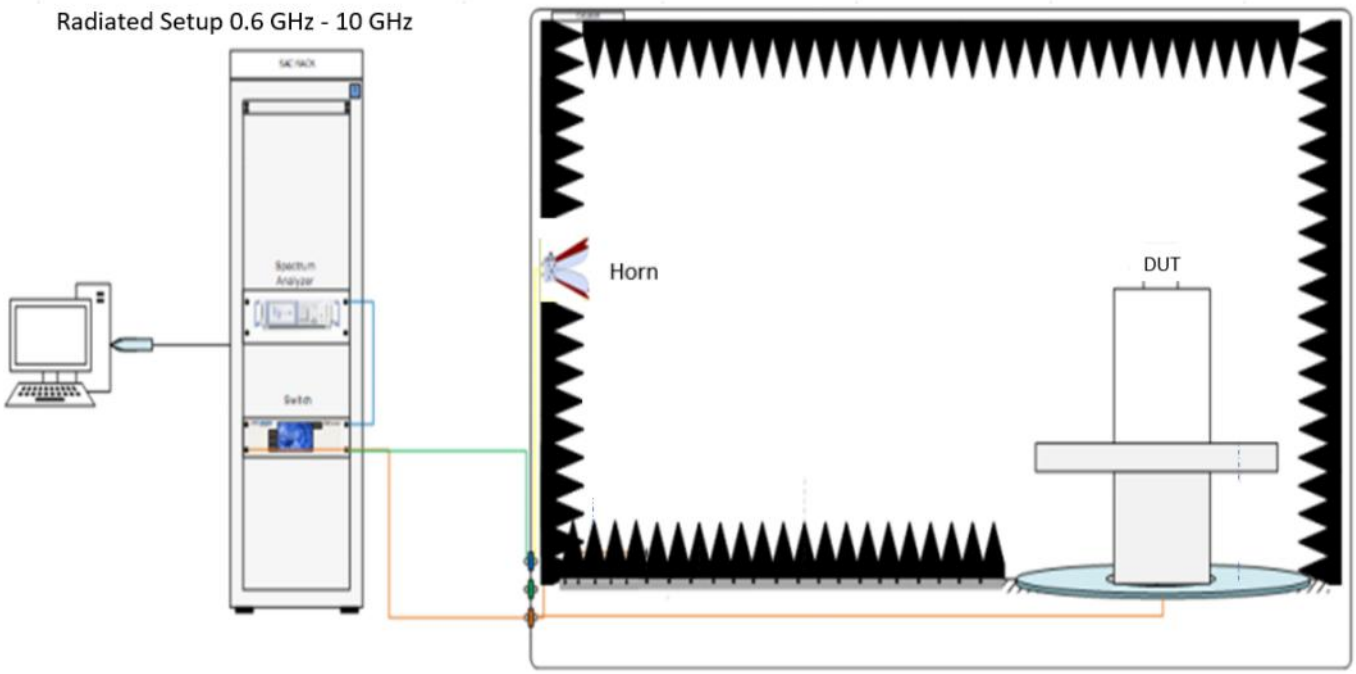
2. Document Revision History

3. Test & System Description

3.1 Measurement Method and System

1. Use a low-loss coaxial cable to connect the notebook fixture
2. Fix the notebook fixture on the turntable
3. Connect the jig to the network analyzer port, and use the antenna of the test probe to collect data.

3.2 Test setup



3.3 Equipment list

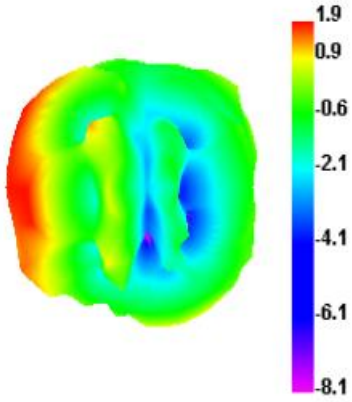
Number	Device	Type/Model	Serial	Manufacturer	Cal.Date	Cal.due.Date
1	Chamber	FATC3	5720	ETS-Lindgren	2023/5/15	2024/5/15
2	Turn table control box	ETS	-	ETS-Lindgren	N/A	N/A
3	Turn table control computer	Desktop	LPTPTOP-JQTTOKRA	LENOVO	N/A	N/A
4	Notwork Analyzer	5071C	5071C	Keysight	2023/5/18	2024/5/18
5	Hron Antenna	3117	E00157734	Bwant	2023/1/23	2024/1/23
6	Test system host	EMC Center	159757	ETS-Lindgren	N/A	N/A
7	RF Line TX	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/5/20	2024/5/20
8	RF Line RX	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/5/20	2024/5/20
9	Cable 2m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/5/20	2024/5/20
10	Optical fiber line	RXY-00727-1603	-	Jmtt	N/A	N/A
11	Cable 2.5m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/8/21	2024/8/21
12	Cable 1.2m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/8/21	2024/8/21
13	Cable 1m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/8/21	2024/8/21
14	Cable 2m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/8/21	2024/8/21
15	Cable 1m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2023/9/13	2024/9/13
16	Temp&Humidity Logger	RA12E-TH1-RAS	RA12-D0EB1A	Avtech	2023/3/20	2024/3/20

4. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

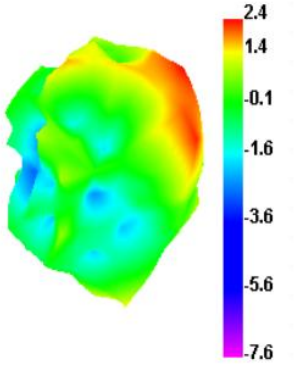
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.89



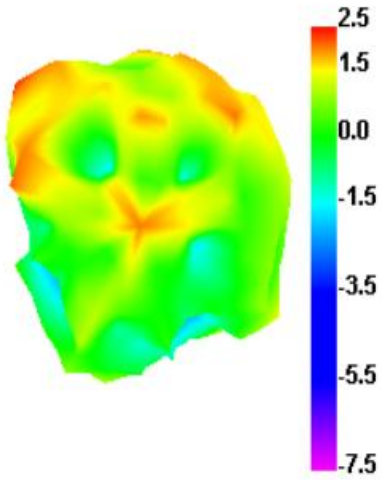
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	2.42



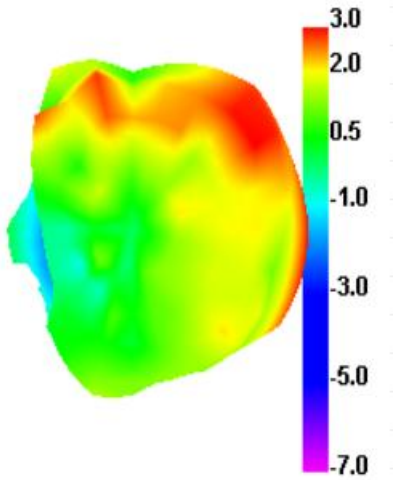
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	2.48



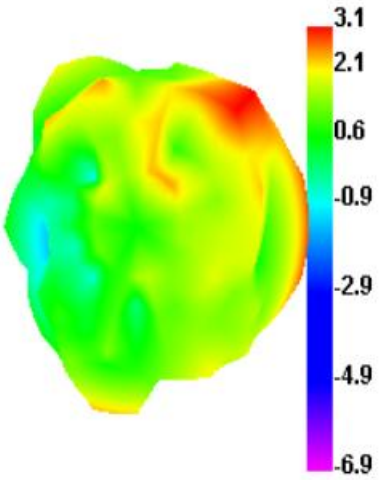
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	2.96



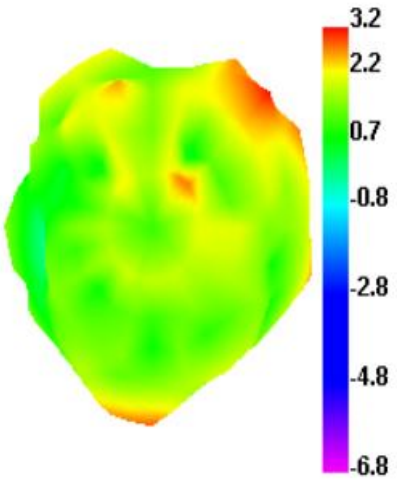
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	3.06



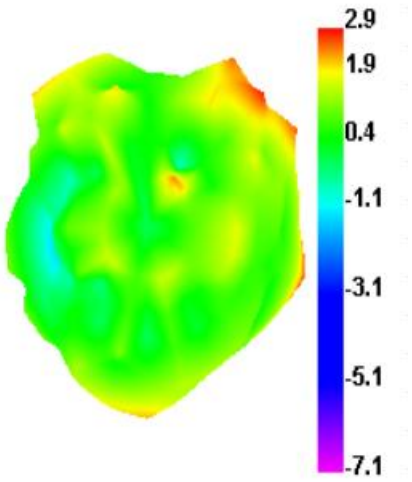
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	3.17



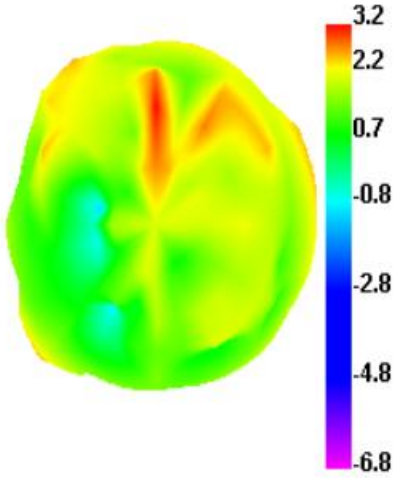
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	2.88



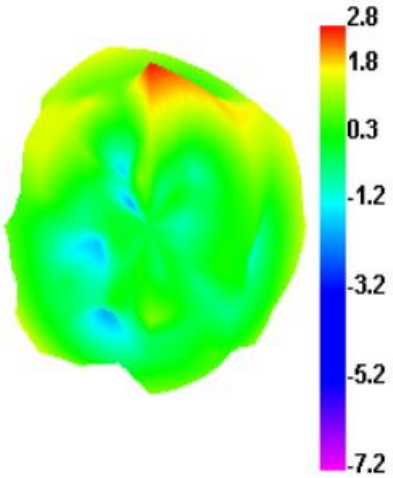
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	3.17



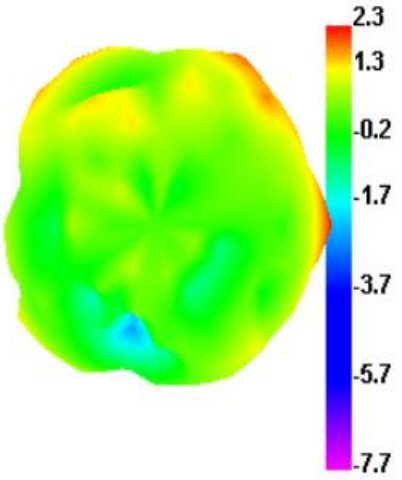
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	2.79



Max Antenna 3D Radiation Pattern 6875-7125 MHz

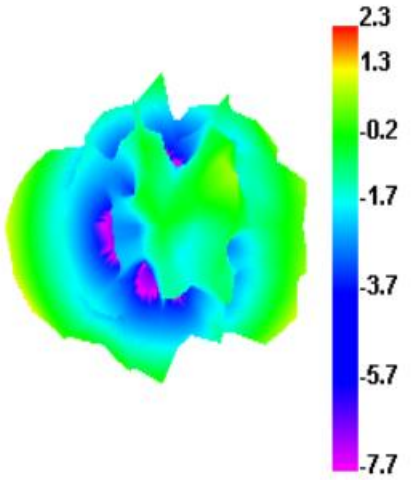
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	2.28



Auxiliary Antenna

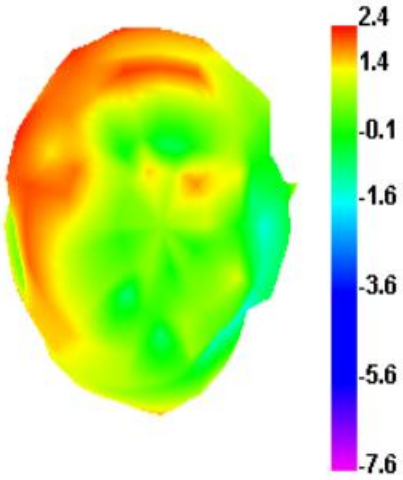
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	2.29



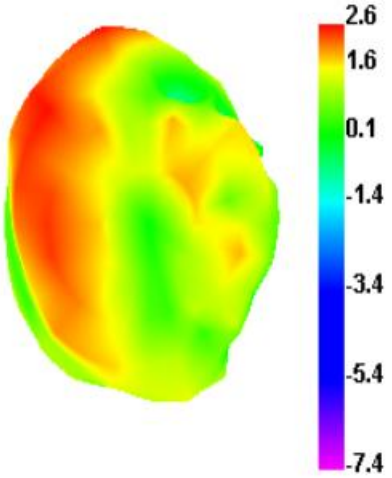
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	2.37



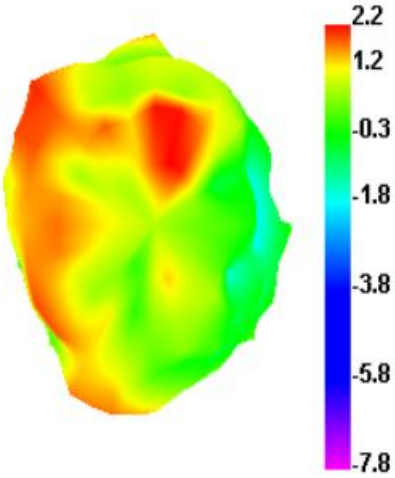
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	2.61



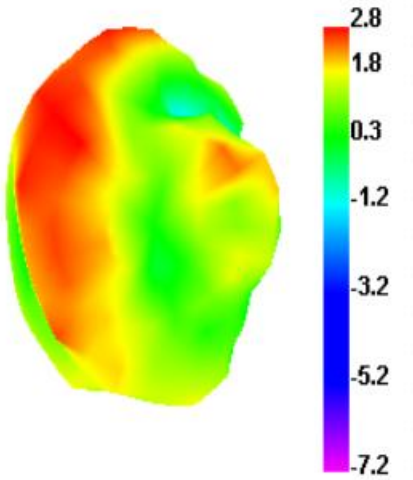
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	2.22



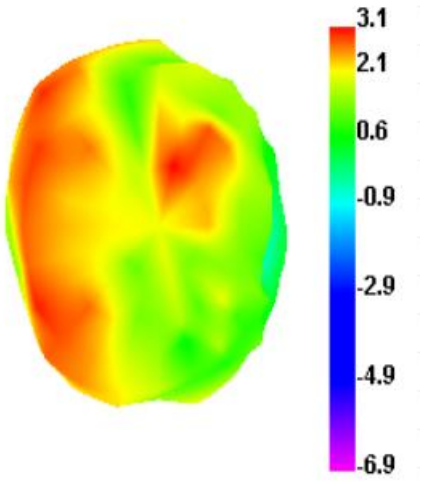
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	2.83



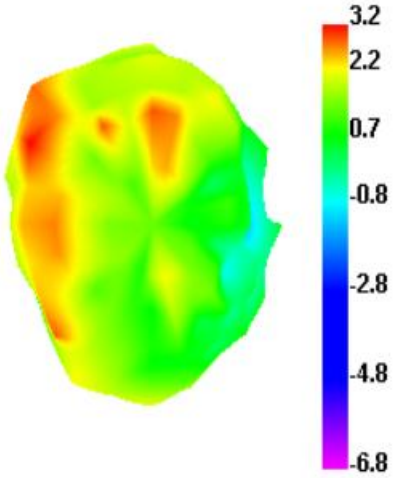
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	3.08



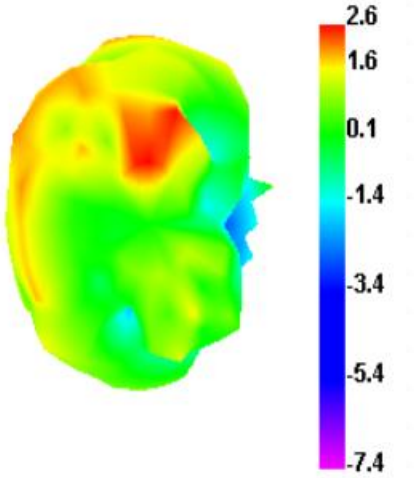
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	3.18



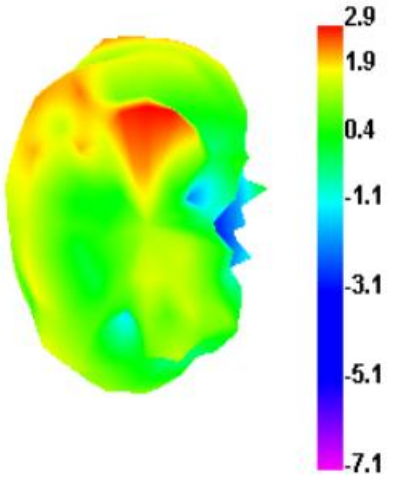
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	2.62



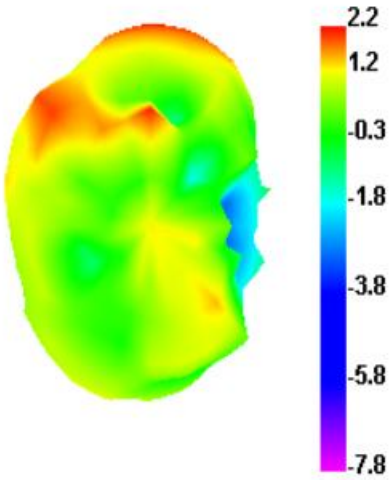
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	2.89



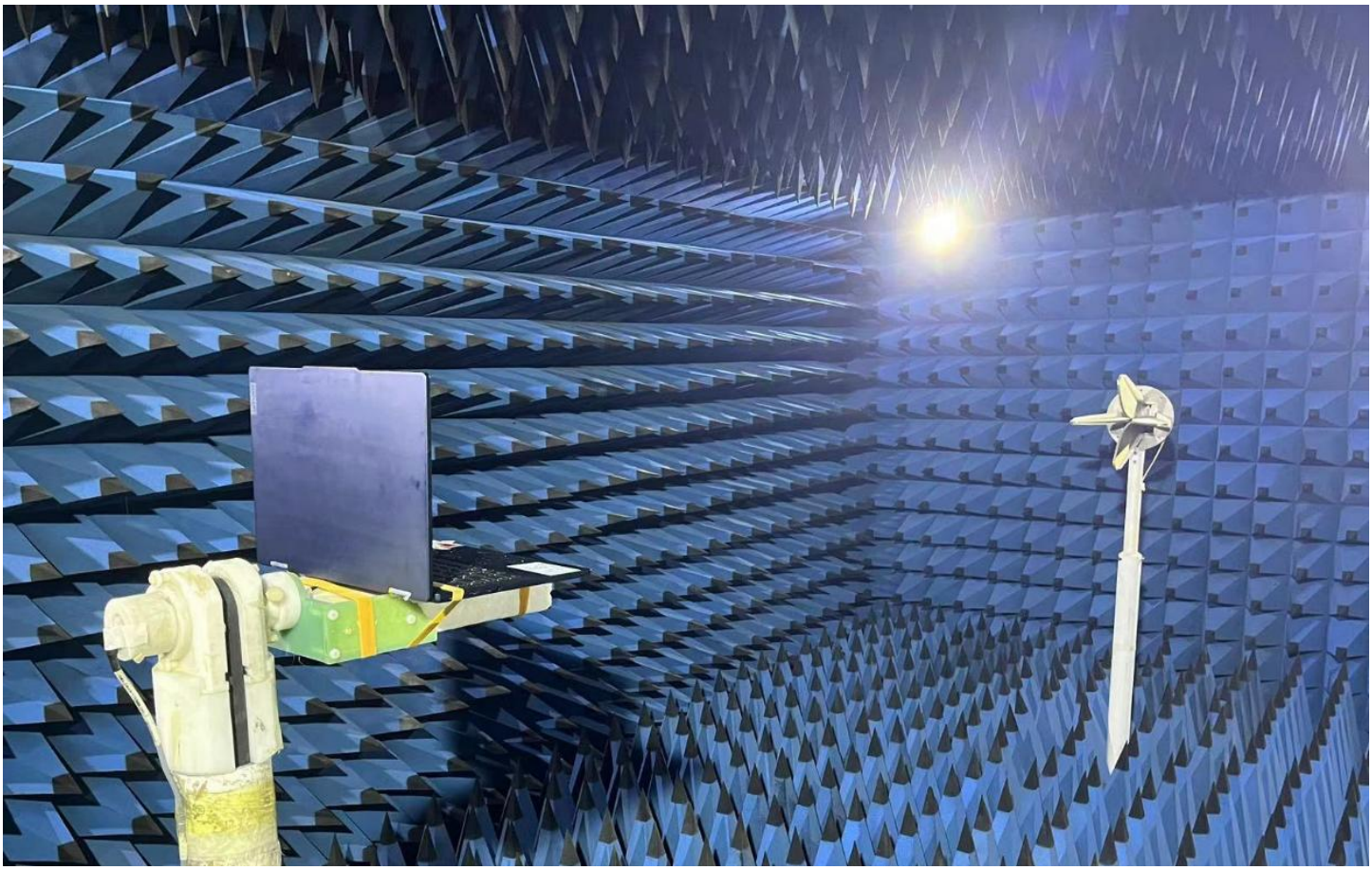
Max Antenna 3D Radiation Pattern 6875-7125 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	2.18



Annex A. Photographs

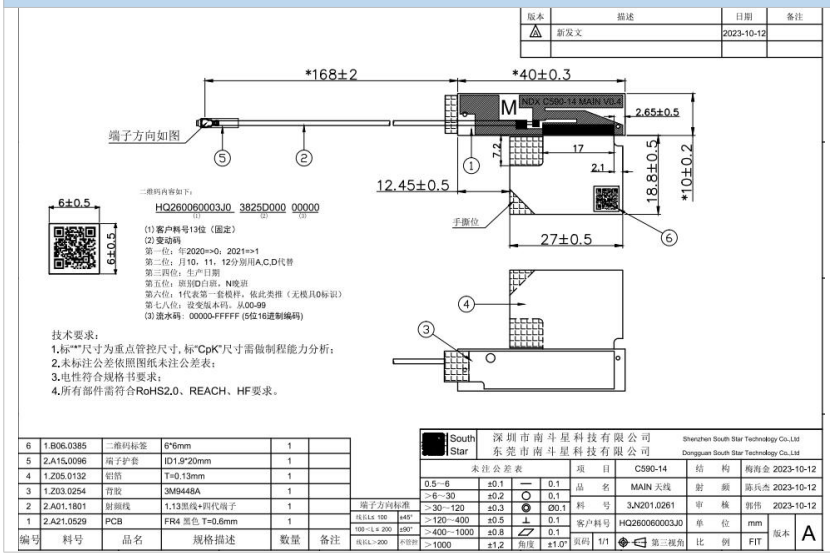
A.1 Setup Photo



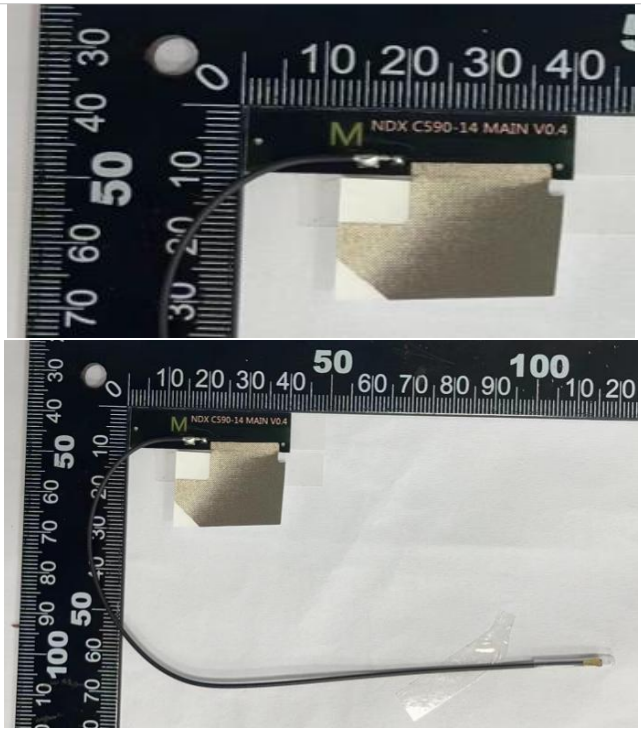
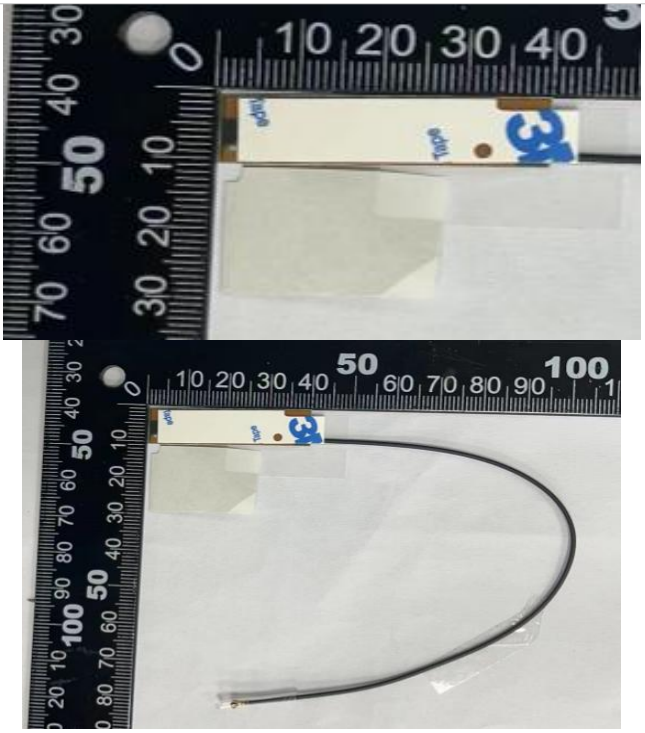
A.2 Test sample

Main Antenna

Antenna Drawing



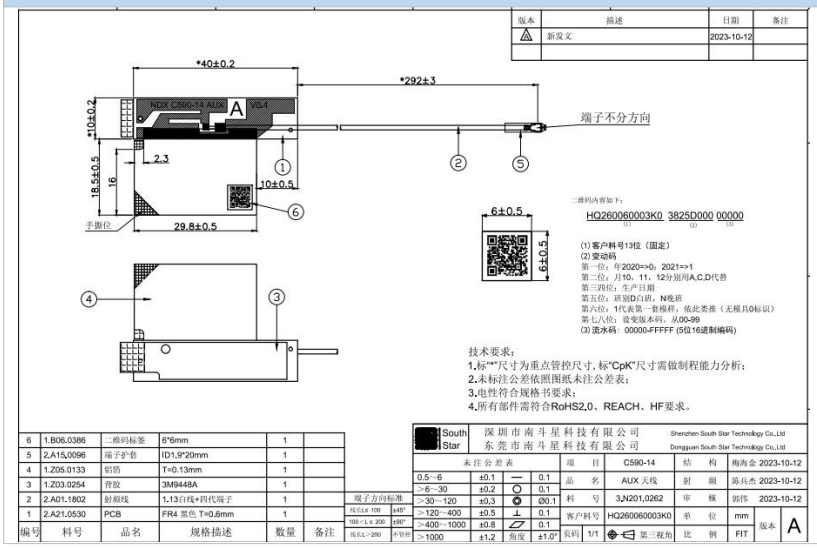
Antenna Photo

Front	Back
	

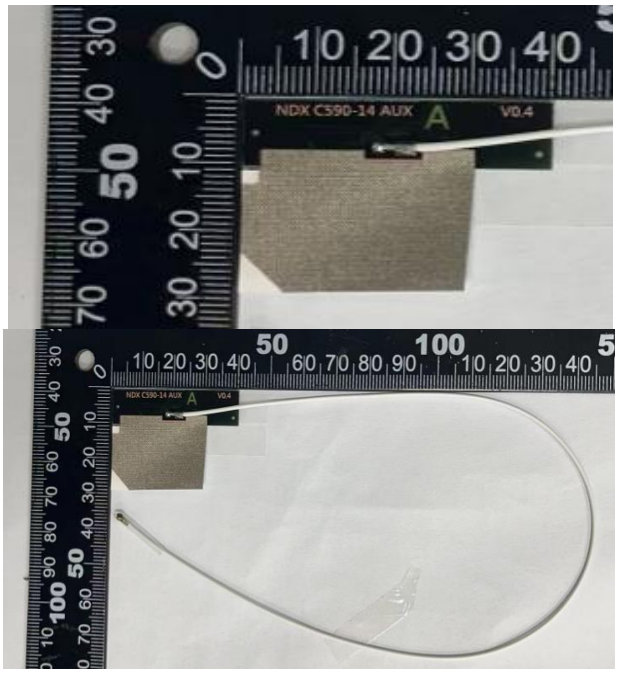
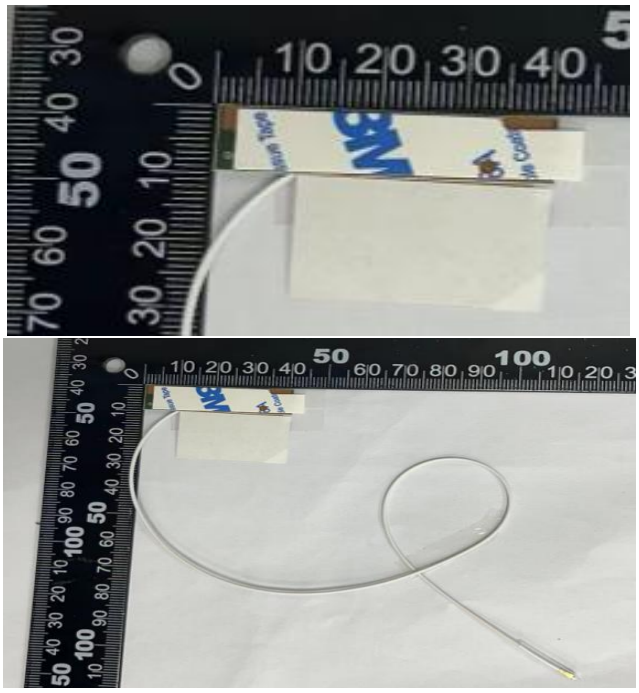
Note: antenna photo should include L type ruler

Aux Antenna

Antenna Drawing



Antenna Photo

Front	Back
	

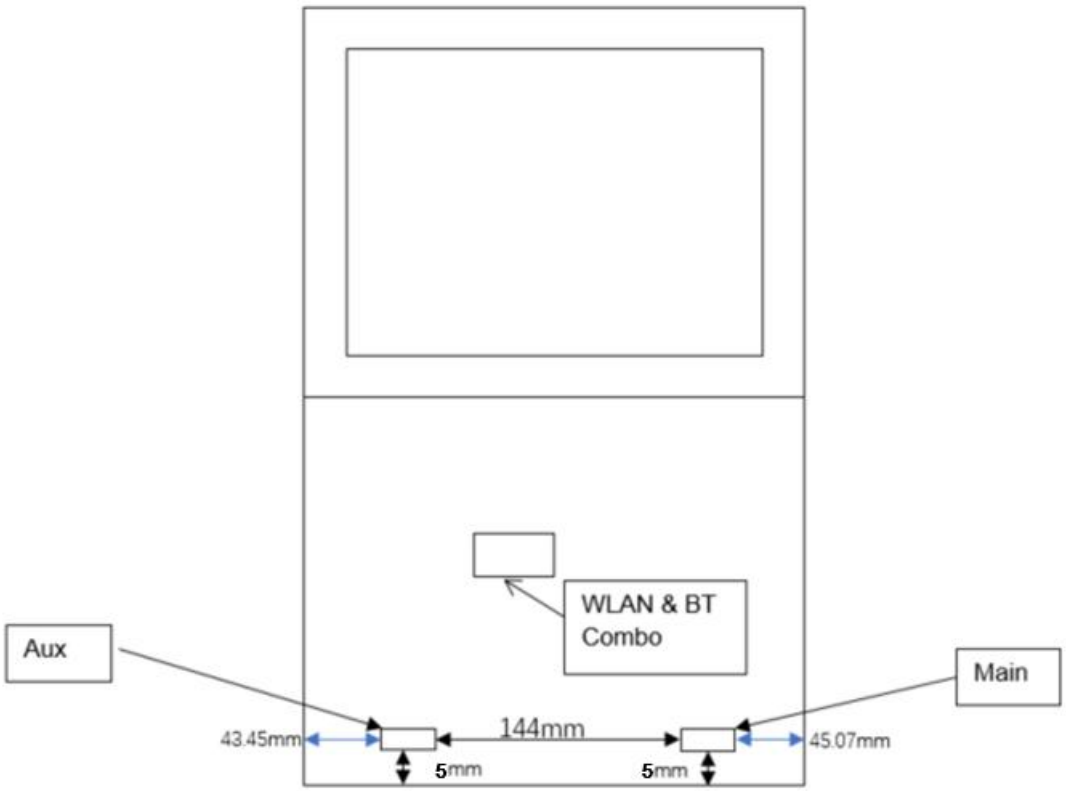
Note: antenna photo should include L type ruler

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).

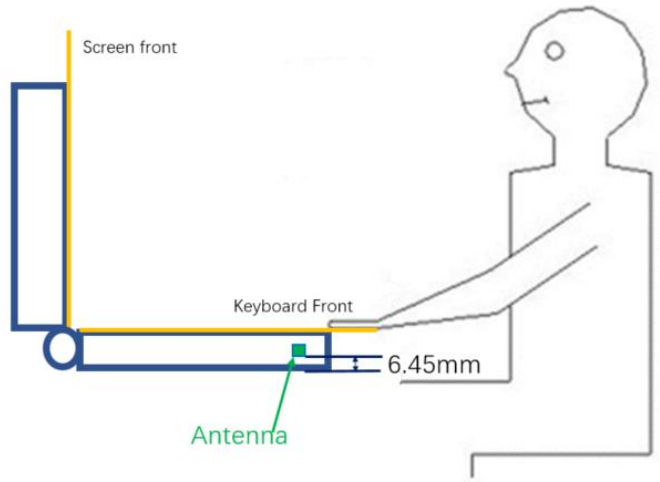
Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



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.

NB Mode SAR dimensioned photo:



Tablet Mode SAR dimensioned photo: