

ANTENNA INFORMATION

OEM		
ODM		
Platform model name		
Intel platform (ex: Yes, No or NA)		No
Platform type (ex: regular NB, convertible PC, AIO...etc)		Regular NB
SAR minimum separation (mm)	FCC (1g)	193mm
	ISED (1g)	193mm
	ISED (10g)	193mm

Antenna manufacturer	Company name	INNOWAVE
	Address	Building H, No. 55, Shengchuang Road, Yushan Town, Kunshan City, Jiangsu Province
Test location	Company name	INNOWAVE
	Address	Building H, No. 55, Shengchuang Road, Yushan Town, Kunshan City, Jiangsu Province
Test Personnel	Name(Full name)	Sunny
	E-mail	yexiangyang@innowave.cn
	Tel/Mobile	17603761603
Testing date		2026/04/02

Antenna Part number	Main	F001C4713190001
	Aux	F001C4713590001
Antenna type (ex: PIFA, Dipole...etc)		PIFA Antenna

Antenna Peak gain w/ cable loss (dBi)*						
		2.4GHz 2400-2483.5MHz	5.2GHz 5150-5250MHz	5.3GHz 5250-5350MHz	5.6GHz 5470-5725MHz	5.8GHz 5725-5850MHz
Main	Peak Gain	1.57	1.55	1.55	1.53	1.71
	Cable Loss	1.15	1.73	1.74	1.79	1.81
Aux	Peak Gain	1.13	1.11	1.11	1.57	1.35
	Cable Loss	1.45	2.18	2.20	2.26	2.28

Cable Assembly Part Number and Information					
	Cable PN	Cable length(mm)	Cable diameter(mm)	Impedance(ohm)	Connector type
Main	S001K5202111000	470	1.13	50Ω	fourth generation terminals
Aux	S001K5202531000	592	1.13	50Ω	fourth generation terminals

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

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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
Monopole	From WiFi 7	2.83	4.57	4.44	4.95	4.95	4.43	4.87	4.91	4.91	4.79

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.

2. Document Revision History

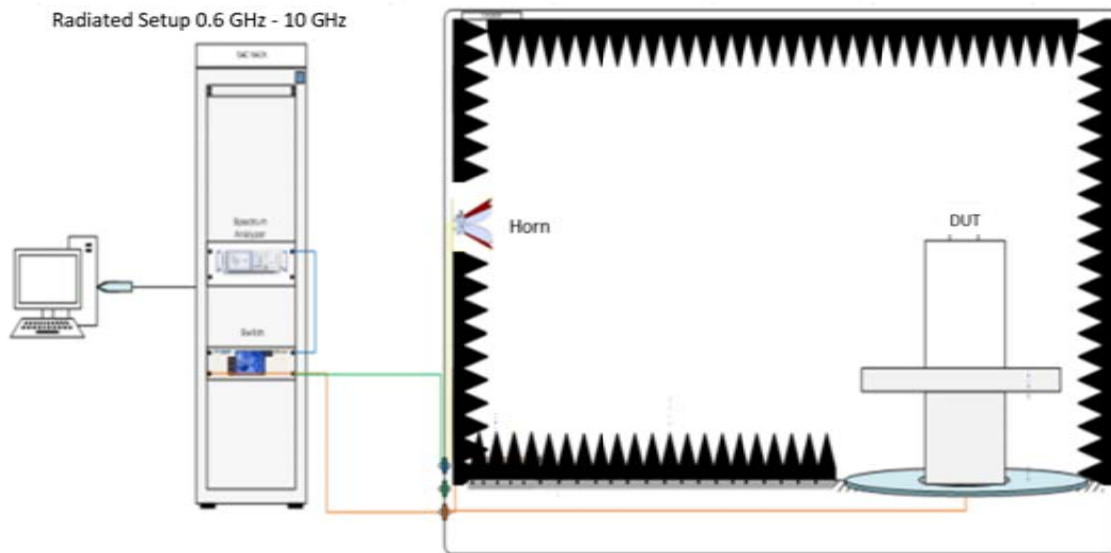
Revision #	Revision Details	Issued Date
Rev. 00	First Issue	2024.11.01

3. 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

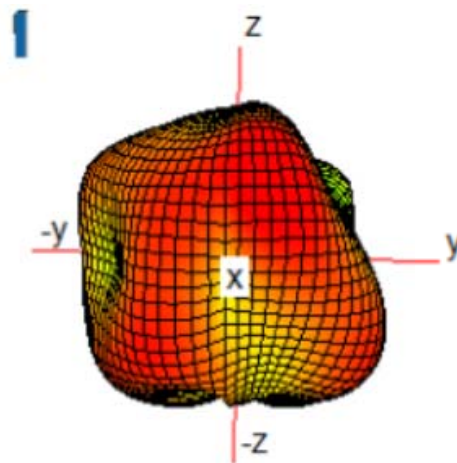
Number	Device	Type/Model	Serial	Manufacturer	Cal. Date	Cal. due. Date
1	Chamber	FATC3	5720	ETS-Lindgren	2025/12/14	2026/12/13
2	Turn table control box	ETS	—	ETS-Lindgren	N/A	N/A
3	Turn table control computer	Desktop	LPTPTOP-JQTTOKRA	LENOVO	N/A	N/A
4	Network Analyzer	5071C	5071C	Keysight	2025/12/14	2026/12/13
5	Hron Antenna	3117	E00157734	Bwant	2025/12/14	2026/12/13
6	Test system host	EMC Center	159757	ETS-Lindgren	N/A	N/A
7	RF Line TX	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2025/12/11	2026/12/10
8	RF Line RX	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2025/12/11	2026/12/10
9	Cable 2m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2025/12/11	2026/12/10
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	2025/12/14	2026/12/13
12	Cable 1.2m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2025/12/14	2026/12/13
13	Cable 1m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2025/12/14	2026/12/13
14	Cable 2m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2025/12/11	2026/12/10
15	Cable 1m 1GHz-8.5GHz	UFA147A-0-0480-200200	MFR64639223720	Micro-coax	2025/12/11	2026/12/10
16	Temp&Humidity Logger	RA12E-TH1-RAS	RA12-D0EB1A	Avtech	2025/12/11	2026/12/10

4. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

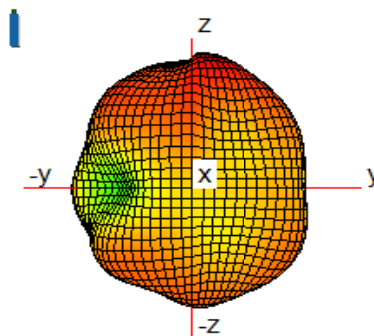
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.57



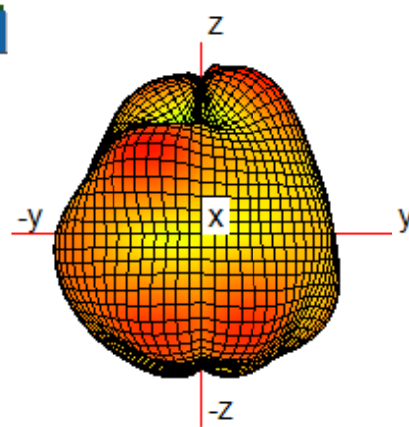
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	1.55



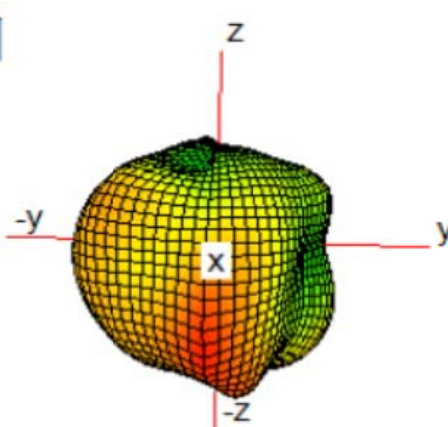
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	1.55



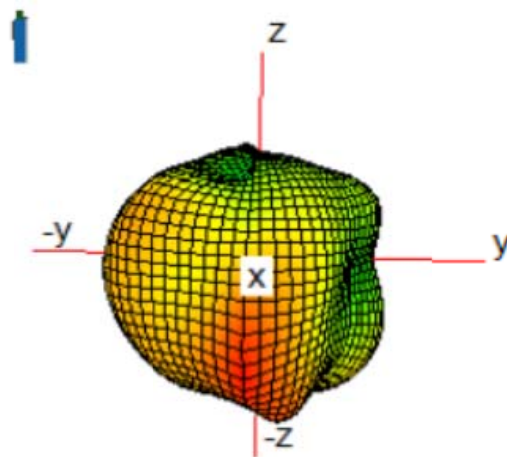
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	1.53



Max Antenna 3D Radiation Pattern 5725-5850 MHz

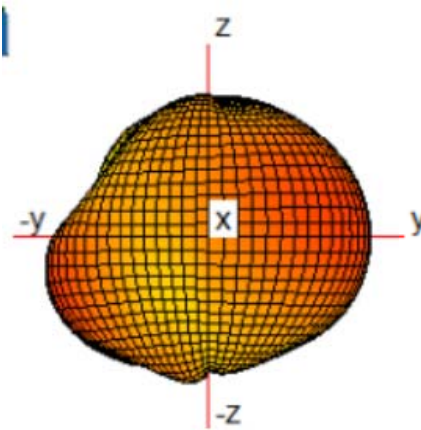
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	1.71



Auxiliary Antenna

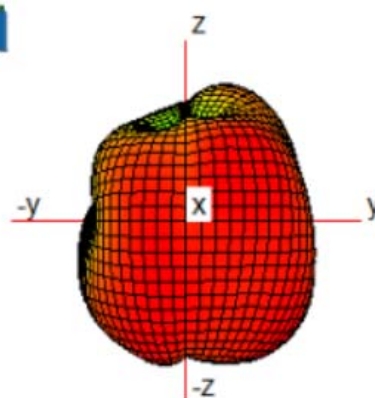
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.13



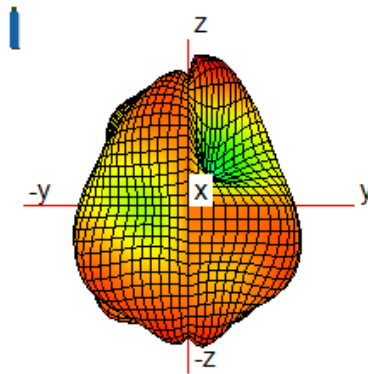
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	1.11



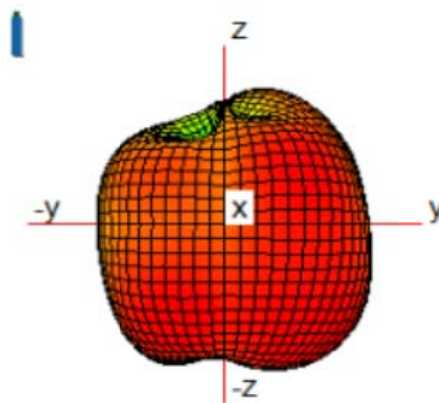
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	1.11



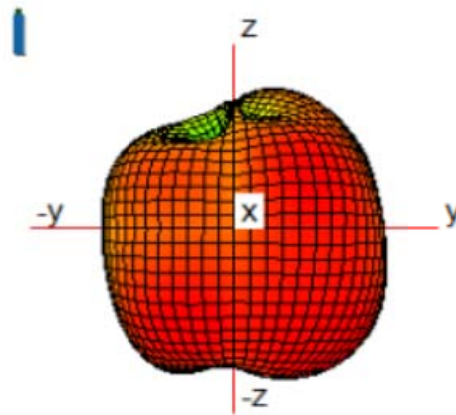
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	1.57



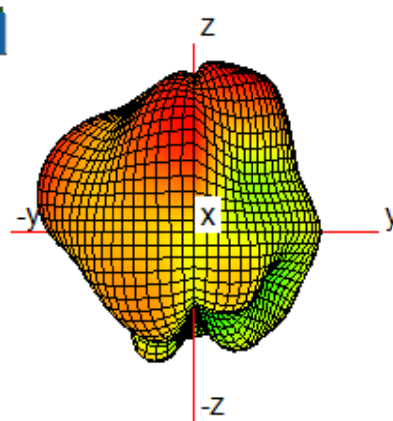
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	1.35



Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	3.25



Annex A. Photographs

A.1 Setup Photo

<insert test diagram here for test site utilized>

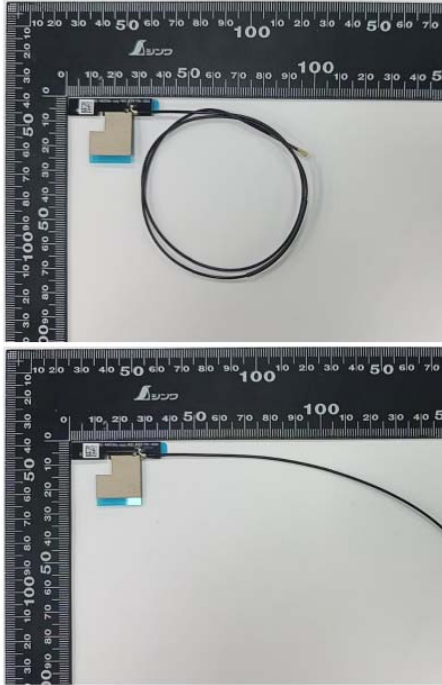


Antenna Drawing

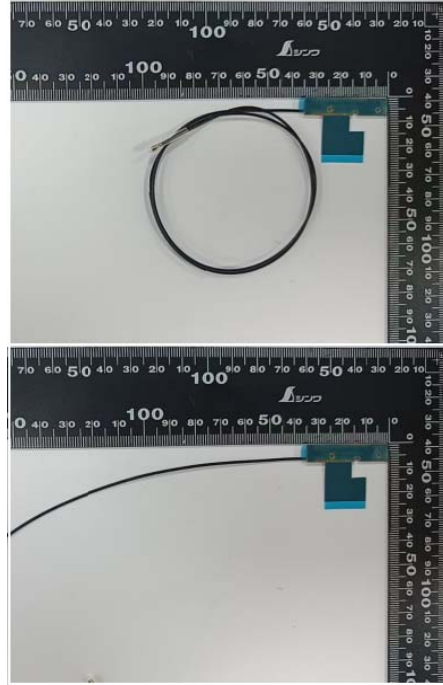
[illegible]

Antenna Photo

Front



Back

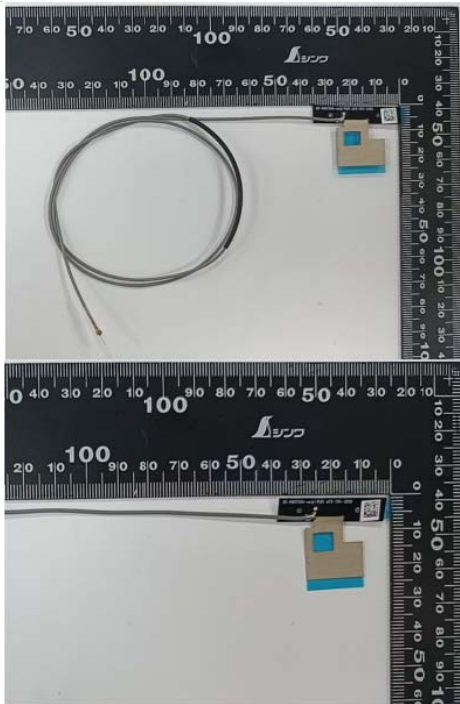


Note: antenna photo should include L type ruler

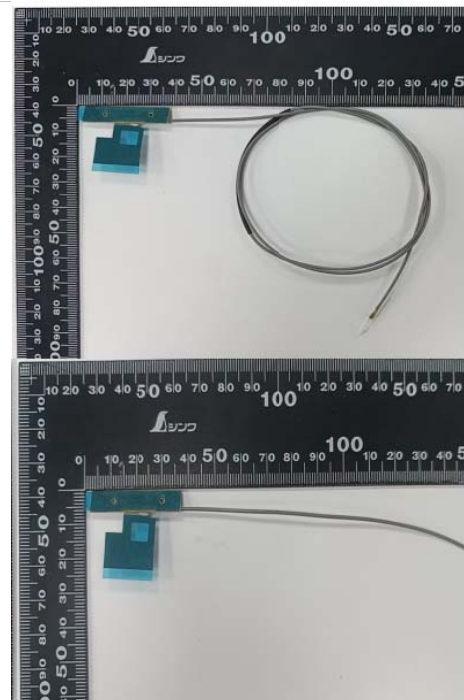
8	2	3	4	5	6	7	8																																																																	
Confidential						<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Version</th> <th>Marking</th> <th>Change the content</th> <th>Signature</th> <th>Date</th> </tr> <tr> <td>V01</td> <td></td> <td>Original draft drawing</td> <td>Ma Yunfei</td> <td>2023.06.08</td> </tr> <tr> <td>V02</td> <td></td> <td>Add the length of the heat spreader tabbing</td> <td>Ma Yunfei</td> <td>2023.06.08</td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> <tr> <td> </td> <td> </td> <td> </td> <td> </td> <td> </td> </tr> </table>		Version	Marking	Change the content	Signature	Date	V01		Original draft drawing	Ma Yunfei	2023.06.08	V02		Add the length of the heat spreader tabbing	Ma Yunfei	2023.06.08																																																		
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Terminal protection cover This terminal is facing leftward. Heat shrink tubing (using electrical and plug-in and electrical protection material) Conductive fabric pull handle The height of the solder joints should not exceed 1.5mm (excluding the thickness of the PCB)						Adhesive backing (Q380-003)																																																																		
QR Code Coding Rules (Total 26 Codes): HQ2600S00010D_XXXXXXXXXX Heat to 26th position: Heat sequence code Heat 10 codes from 0000 to 9999 (Heat 10th position): sequence code Heat 16 codes from 0000 to 9999 (Heat 16th position): sequence code 10th position: Heat, take the last digit of the current row 10th position: Heat, (Heat) is printed as "7", (Heat) is represented by the letter "C", (Heat) by the letter "V", and (Heat) by the letter "S". 10th position: Heat, (Heat) is printed as "7", (Heat) is represented by the letter "C", (Heat) by the letter "V", and (Heat) by the letter "S". 10th position: Heat, (Heat) is printed as "7", (Heat) is represented by the letter "C", (Heat) by the letter "V", and (Heat) by the letter "S". 10th position: Heat, (Heat) is printed as "7", (Heat) is represented by the letter "C", (Heat) by the letter "V", and (Heat) by the letter "S". 10th position: Heat, (Heat) is printed as "7", (Heat) is represented by the letter "C", (Heat) by the letter "V", and (Heat) by the letter "S".						<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <td>6</td> <td>Heat shrink tubing</td> <td>1/1000</td> <td>1</td> </tr> <tr> <td>5</td> <td>Label</td> <td>Q code 04</td> <td>1</td> </tr> <tr> <td>4</td> <td>Adhesive backing</td> <td>Adhesive backing</td> <td>1</td> </tr> <tr> <td>3</td> <td>Conductor fabric</td> <td>65 Conductive fabric</td> <td>1</td> </tr> <tr> <td>2</td> <td>WIFI Antenna</td> <td>WIFI Antenna</td> <td>1</td> </tr> <tr> <td>1</td> <td>Terminal protection cover</td> <td>Terminal protection cover</td> <td>1</td> </tr> </table>		6	Heat shrink tubing	1/1000	1	5	Label	Q code 04	1	4	Adhesive backing	Adhesive backing	1	3	Conductor fabric	65 Conductive fabric	1	2	WIFI Antenna	WIFI Antenna	1	1	Terminal protection cover	Terminal protection cover	1																																									
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During actual printing, no spaces or carriage returns are required. Just print continuously. Technical requirements: 1. "★" Size is the key dimension. With "C" The required dimensions for CPK calculation. 2. The solder joints should be smooth without protrusions or burrs, and there should be no cases of incomplete soldering, bridging, short circuits, etc. 3. The dimensions of the drawing are used to verify the shape function and assembly. 4. Meet the salt spray test / self-test and other reliability tests related requirements. Follow our company's internal RX-WI-QAC-014 reliability test standards. All materials must comply with our company's RX-WI-QAC-008 Product Environmental Substance Prohibition Management Standard. All materials must meet the requirements of HF, halogen-free, RoHS 2.0 and Reach. 5. The packaging is done in accordance with the packaging requirements provided by Ruixiang Engineering. 6. This file is a commercial secret and is restricted to the permitted individuals or organizations only. Without permission, it must not be disclosed to any third party.						<table border="1" style="width: 100%; border-collapse: collapse;"> <tr> <th>Serial Number</th> <th>Name</th> <th>Material Number</th> <th>Description</th> <th>Quantity</th> </tr> <tr> <td>6</td> <td>Heat shrink tubing</td> <td>1/1000</td> <td>1</td> <td>1</td> </tr> <tr> <td>5</td> <td>Label</td> <td>Q code 04</td> <td>1</td> <td>1</td> </tr> <tr> <td>4</td> <td>Adhesive backing</td> <td>Adhesive backing</td> <td>1</td> <td>1</td> </tr> <tr> <td>3</td> <td>Conductor fabric</td> <td>65 Conductive fabric</td> <td>1</td> <td>1</td> </tr> <tr> <td>2</td> <td>WIFI Antenna</td> <td>WIFI Antenna</td> <td>1</td> <td>1</td> </tr> <tr> <td>1</td> <td>Terminal protection cover</td> <td>Terminal protection cover</td> <td>1</td> <td>1</td> </tr> </table>		Serial Number	Name	Material Number	Description	Quantity	6	Heat shrink tubing	1/1000	1	1	5	Label	Q code 04	1	1	4	Adhesive backing	Adhesive backing	1	1	3	Conductor fabric	65 Conductive fabric	1	1	2	WIFI Antenna	WIFI Antenna	1	1	1	Terminal protection cover	Terminal protection cover	1	1																														
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1 2 3 4 5 6 7 8						INNOWAVE Kunshan Innowave Communication Technology Co., LTD.																																																																		

Antenna Photo

Front



Back



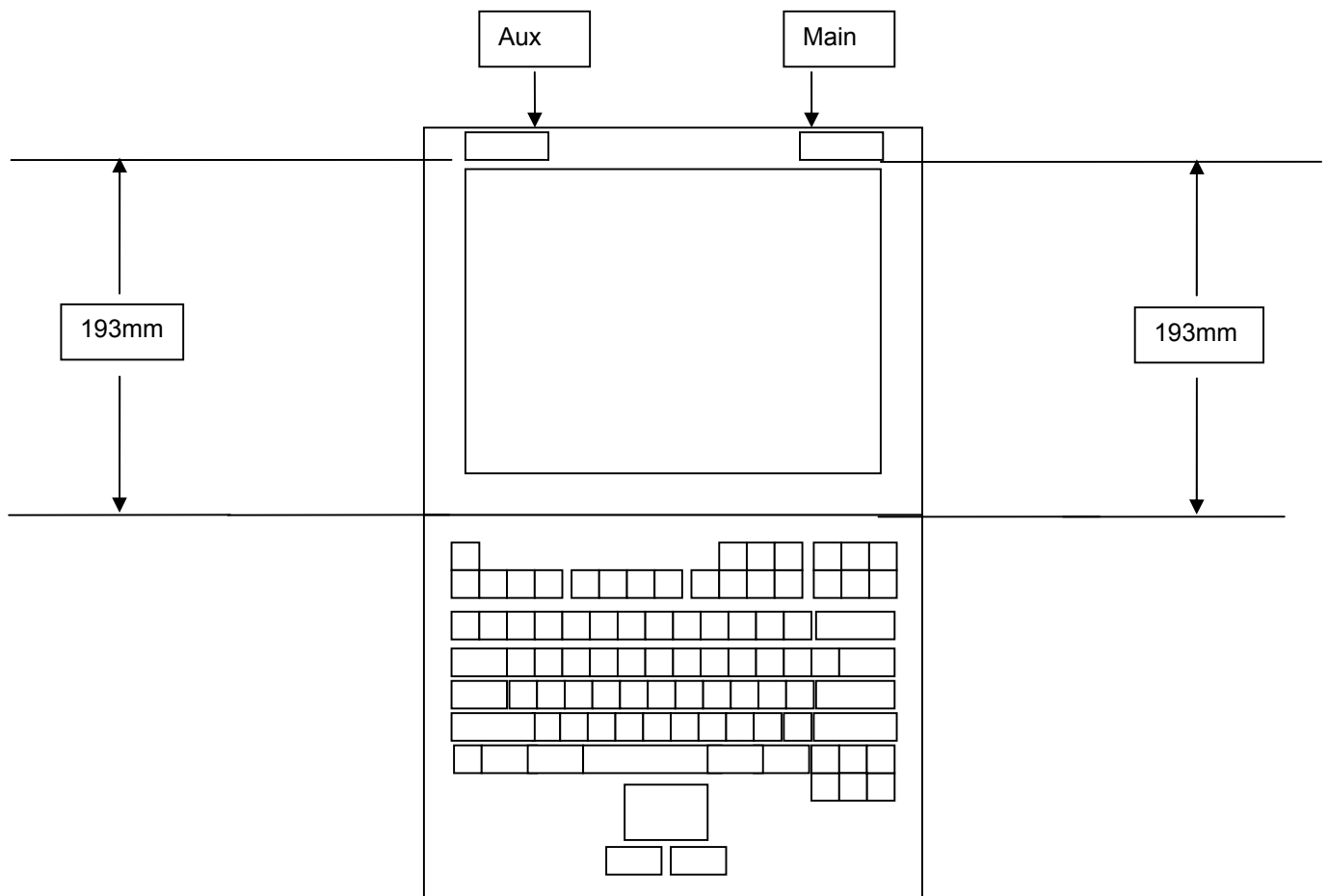
Note: antenna photo should include L type ruler

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).

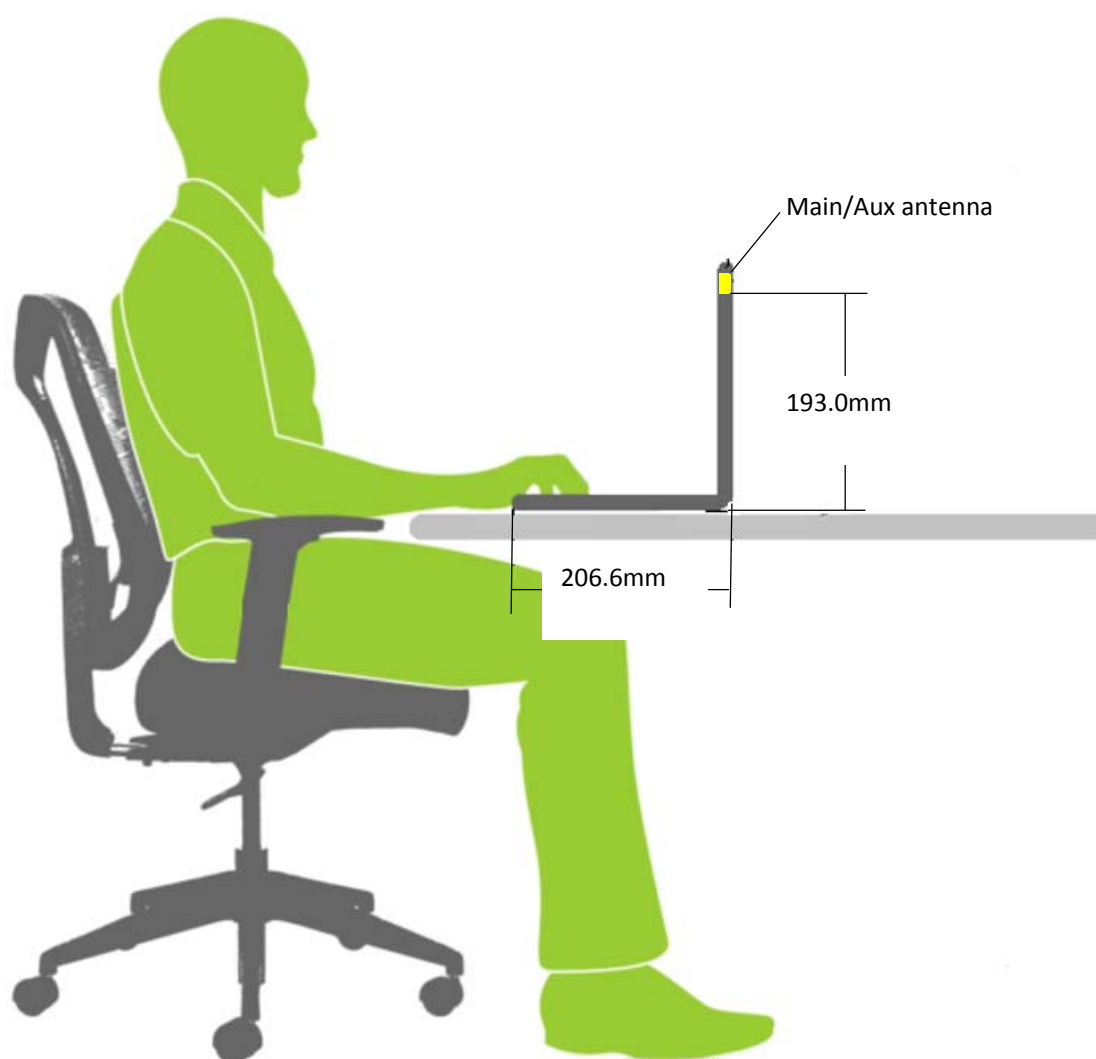
Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



B.2 Antenna dimensional information for SAR evaluation

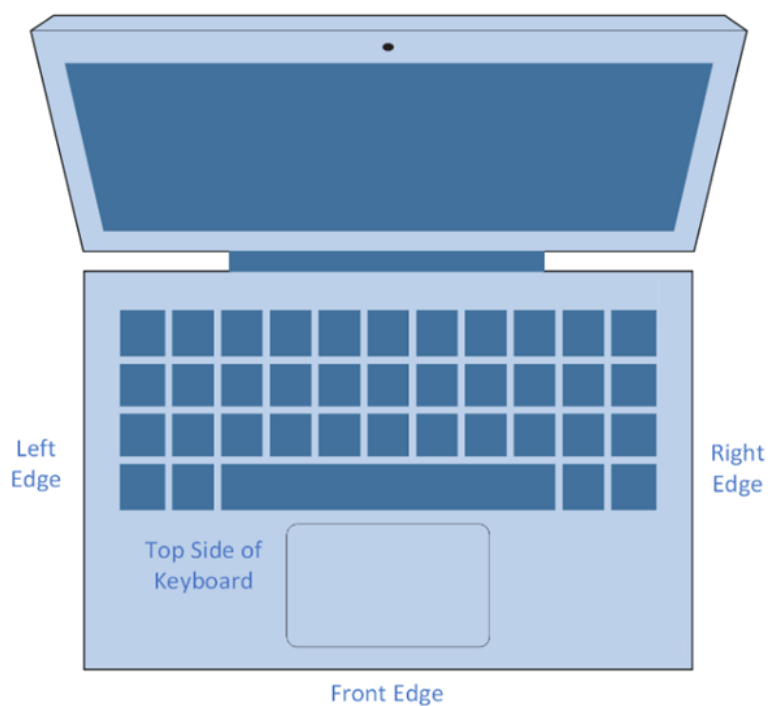
Include a dimensioned photo(s) or dimensioned drawing(s) showing the distance (mm) between the transmit antennas and the user. For notebook/laptop hosts show lapheld position (example below). For tablet hosts show all orientations including lapheld, primary & secondary portrait, primary & secondary landscape positions. Include a description of any proximity sensors or power throttling implementations that limit or exclude use of any host orientation.

Antennas on the panel section



Measuring Surface	Antenna	Separation Distance(antenna-to- Surface)(mm)	1g SAR
Bottom Side	Main	193mm	FCC/ISED
	Aux	193mm	FCC/ISED

Antennas on the keyboard section



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