

ANTENNA INFORMATION

OEM	Lenovo
ODM	Huaqin
Platform model name	IdeaPad 5 2-in-1 14AHP9
Intel platform (ex: Yes, No or NA)	NO
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.

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1. Reference Gain and Type

NA

2. Document Revision History

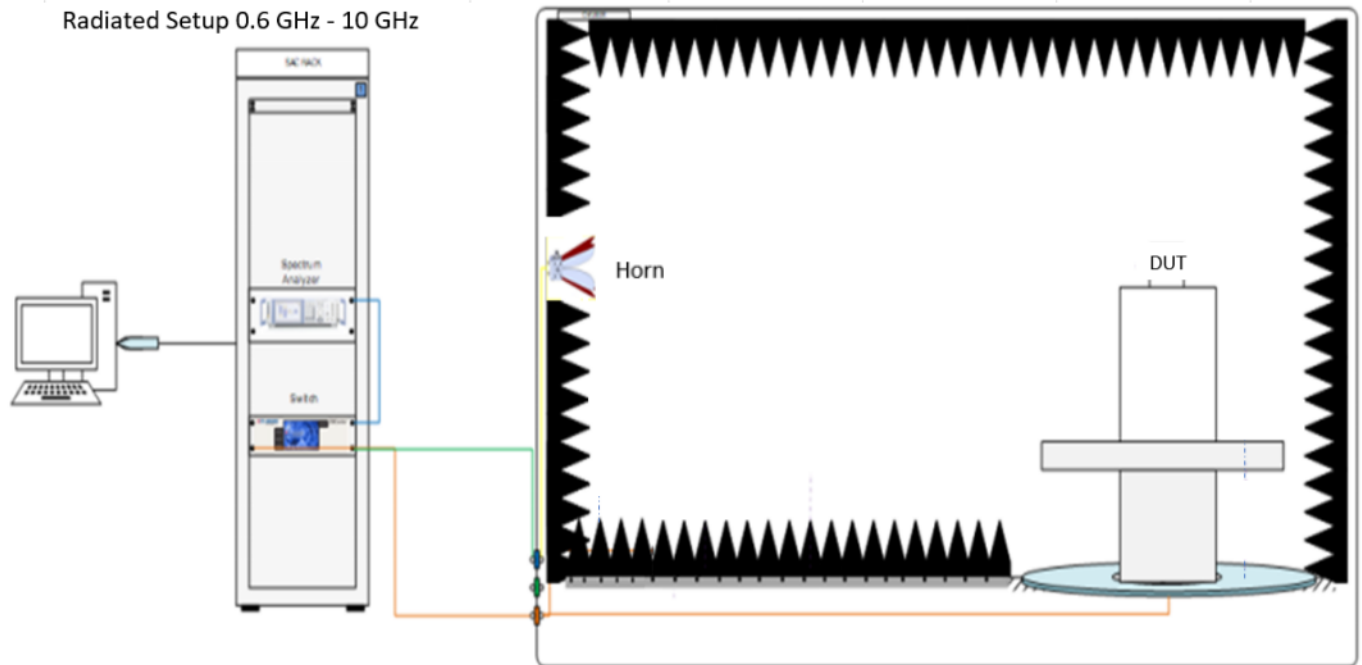
Revision #	Revision Details	Issued Date
Rev. 00	First Issue	2023.11.1

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

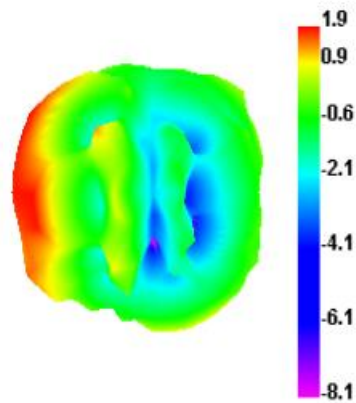
Number	Device	Type/Model	Serial	Manufacturer	Cal.Date	Cal.due.Date
1	Chamber	FATC3	5720	ETS-Lindgren	2023/5/15	2024/5/15
2	Turn table control box	ETS	-	ETS-Lindgren	N/A	N/A
3	Turn table control computer	Desktop	LPTPTOP-IQITOKRA	LENOVO	N/A	N/A
4	Network Analyzer	5071C	5071C	Keysight	2023/5/18	2024/5/18
5	Horn 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	RKY-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-DOEBIA	Avtech	2023/3/20	2024/3/20

4. Radiation characteristics of antenna loaded in Host Platform

Main Antenna

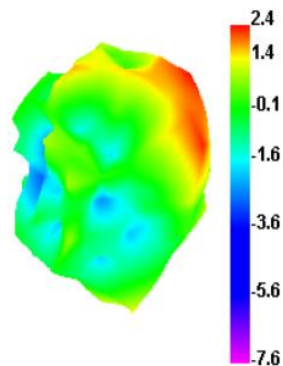
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

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



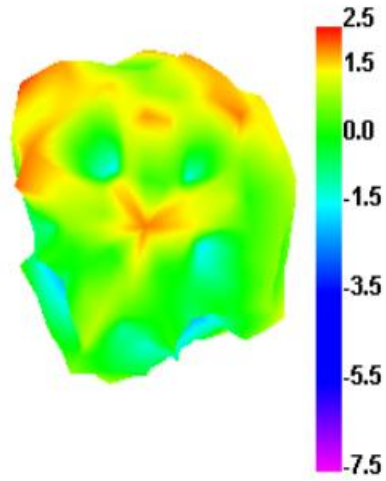
Max Antenna 3D Radiation Pattern 5150-5250 MHz

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



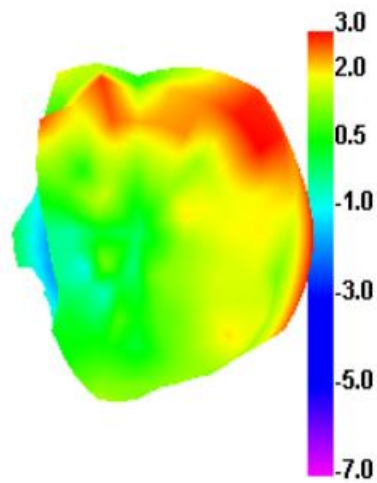
Max Antenna 3D Radiation Pattern 5250-5350 MHz

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



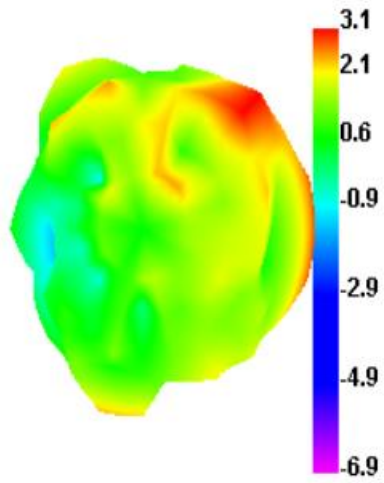
Max Antenna 3D Radiation Pattern 5470-5725 MHz

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



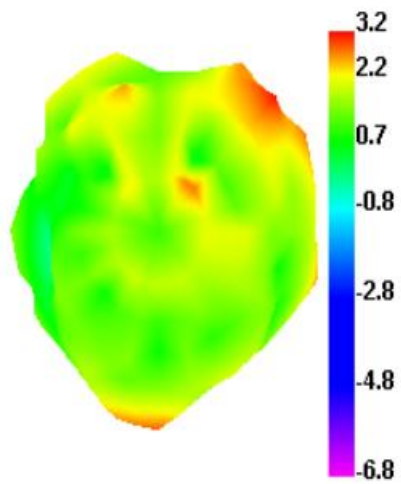
Max Antenna 3D Radiation Pattern 5725-5850 MHz

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



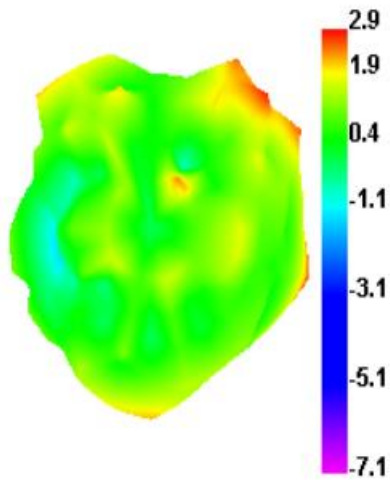
Max Antenna 3D Radiation Pattern 5850-5895 MHz

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



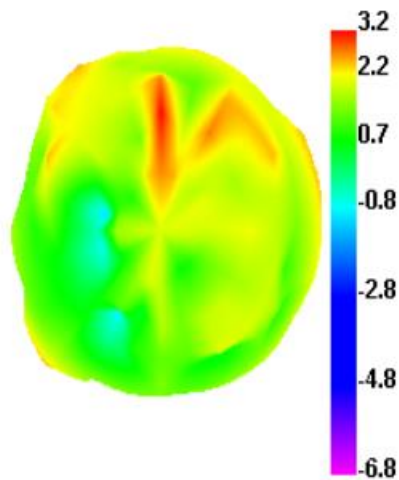
Max Antenna 3D Radiation Pattern 5925-6425 MHz

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



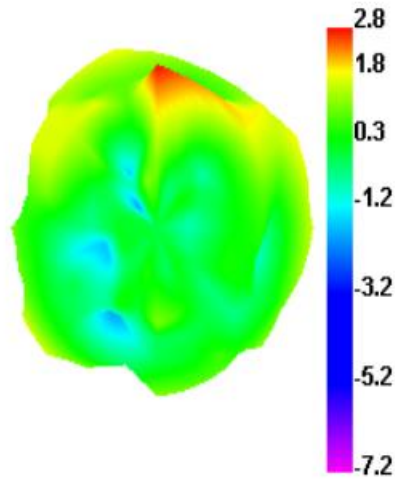
Max Antenna 3D Radiation Pattern 6425-6525 MHz

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



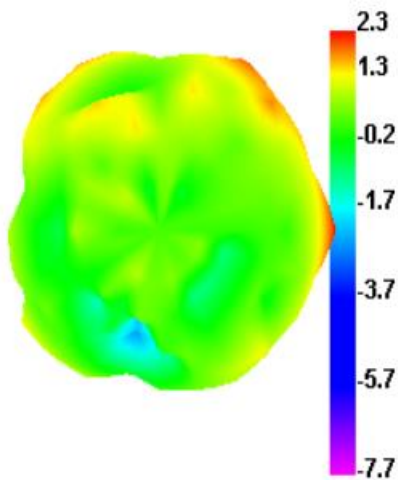
Max Antenna 3D Radiation Pattern 6525-6875 MHz

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



Max Antenna 3D Radiation Pattern 6875-7125 MHz

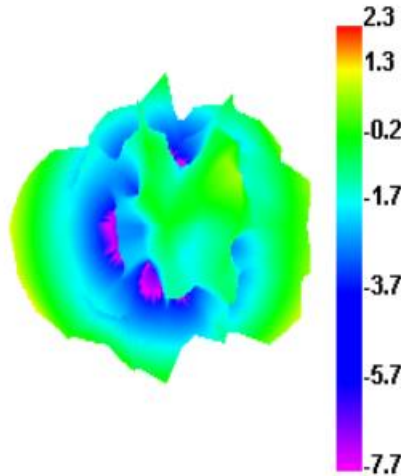
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	2.28



Auxiliary Antenna

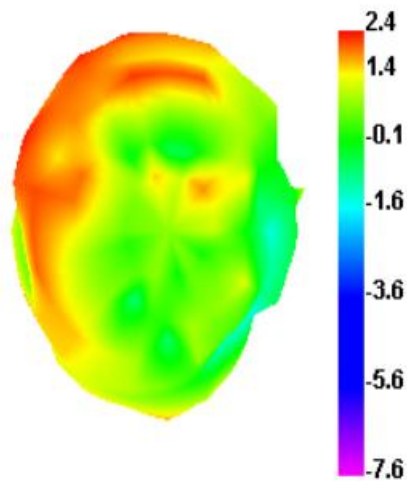
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

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



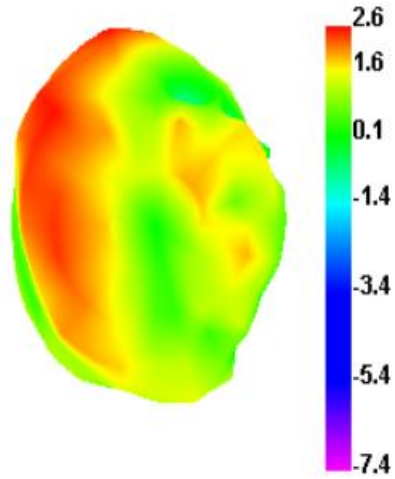
Max Antenna 3D Radiation Pattern 5150-5250 MHz

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



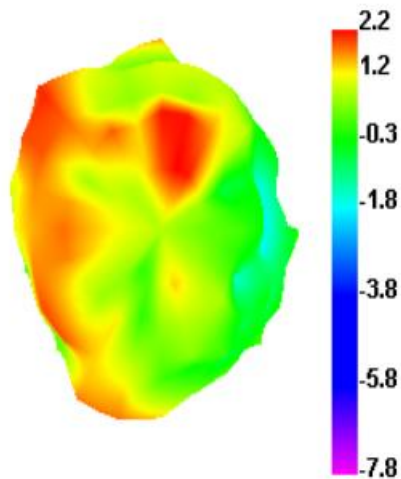
Max Antenna 3D Radiation Pattern 5250-5350 MHz

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



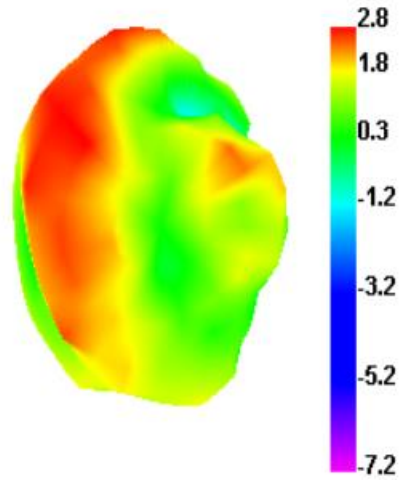
Max Antenna 3D Radiation Pattern 5470-5725 MHz

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



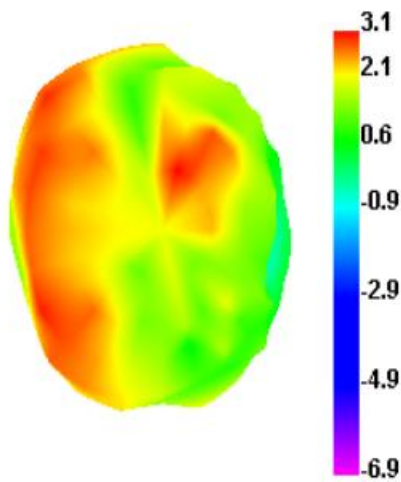
Max Antenna 3D Radiation Pattern 5725-5850 MHz

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



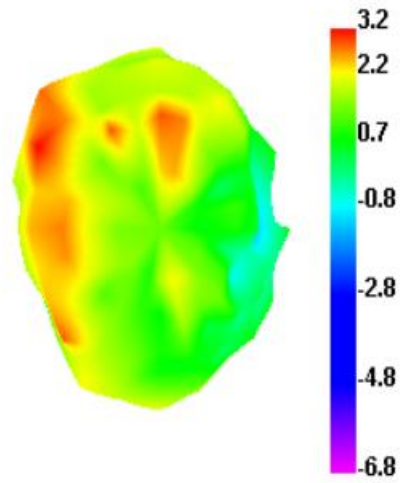
Max Antenna 3D Radiation Pattern 5850-5895 MHz

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



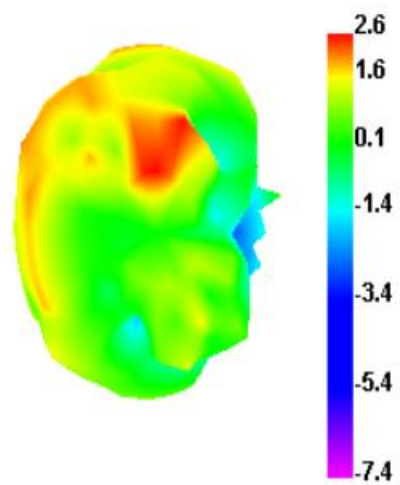
Max Antenna 3D Radiation Pattern 5925-6425 MHz

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



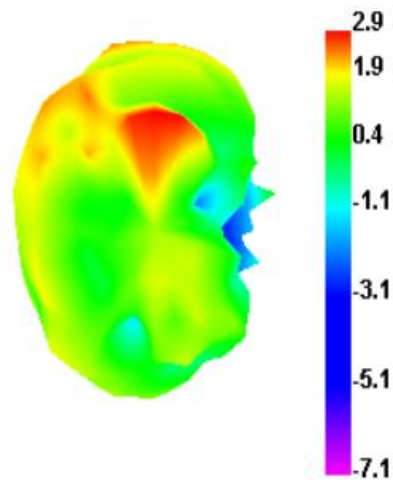
Max Antenna 3D Radiation Pattern 6425-6525 MHz

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



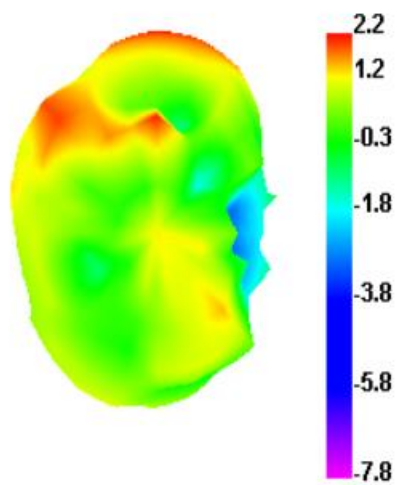
Max Antenna 3D Radiation Pattern 6525-6875 MHz

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



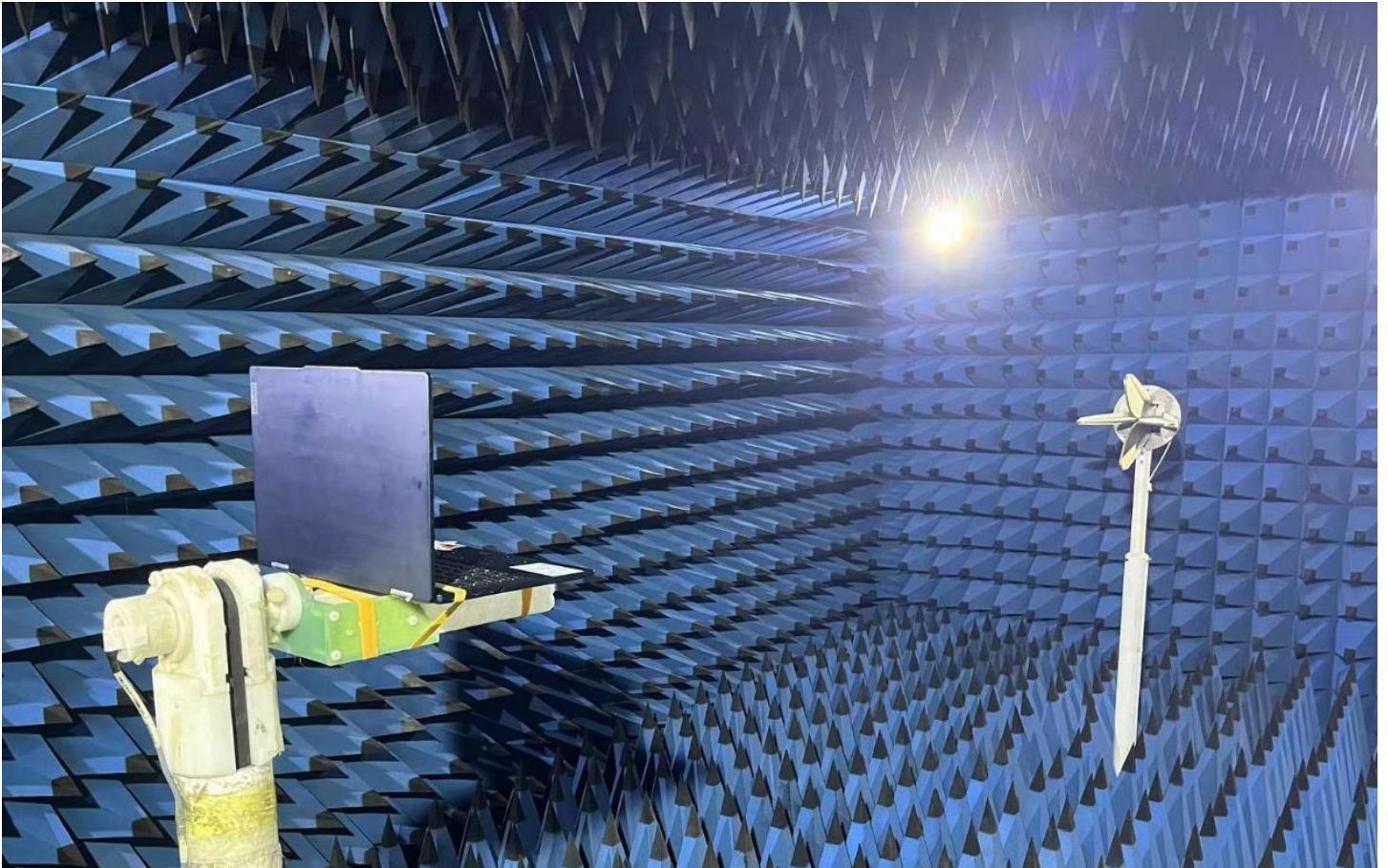
Max Antenna 3D Radiation Pattern 6875-7125 MHz

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

版本	描述	日期	备注
△	新发文	2023-10-12	

端子方向如图

二维码内容如下:
HQ260060003J0 3825D000 00000

(1)客户料号13位 (固定)
 (2)变码码
 第一位: 年2020=0, 2021=1
 第二位: 月10, 11, 12分别用A,C,D代替
 第三四位: 生产日期
 第五位: 批次ID1位, N=吨组
 第六位: 料代表第一套物料, 依此类推 (无吨组0标识)
 第七八位: 变更版本码, 从00-99
 (3)流水码: 00000-FFFFF (5位16进制编码)

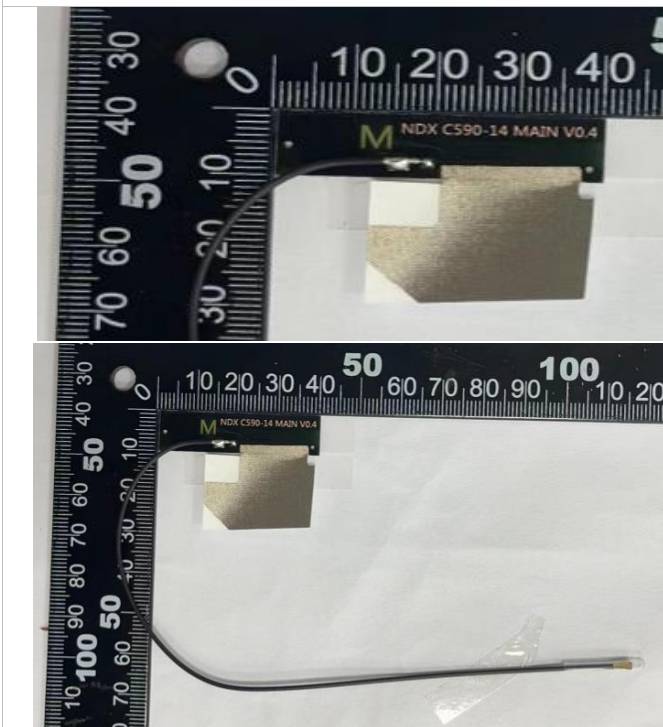
技术要求:
 1.标"尺寸"为重点管控尺寸,标"CPK"尺寸需做制程能力分析;
 2.未标注公差依照图纸未注公差表;
 3.电性符合规格书要求;
 4.所有部件需符合RoHS2.0、REACH、HF要求。

6	1.806.0385	二维码标签	6*6mm	1	
5	2.A15.0096	端子护套	ID1.5*20mm	1	
4	1.206.0132	铝箔	T=0.13mm	1	
3	1.203.0264	盲胶	3M9448A	1	
2	2.A01.1801	铜导线	1.13铜线+铜代端子	1	端子互防标准
1	2.A21.0529	PCB	FR4 黄色 T=0.6mm	1	4.5L4 100 445 100~1.4 200 55F 板厚 >200 6层板

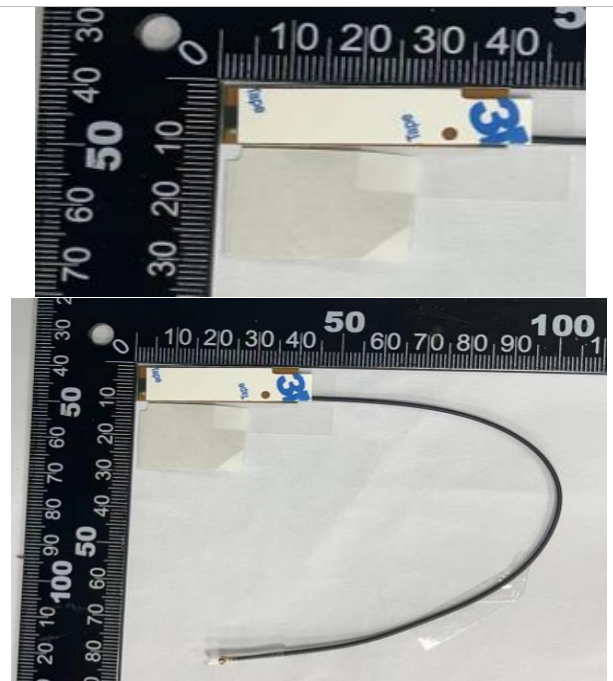
South Star		深圳市南斗星科技有限公司 东莞市南斗星科技有限公司		Shenzhen South Star Technology Co., Ltd Dongguan South Star Technology Co., Ltd	
本注公差表		项目	C990-14	结构	梅海全 2023-10-12
0.5-6	±0.1	品名	MAIN 天线	射测	郭兵全 2023-10-12
>6-30	±0.2	料号	3.NZ01.0261	审核	2023-10-12
>30-120	±0.3	客户料号	HQ260060003J0	单位	mm
>120-400	±0.5	比例	1:1	版本	A
>400-1000	±0.8	第三视角			
>1000	±1.2				

Antenna Photo

Front



Back



Note: antenna photo should include L type ruler

Aux Antenna

Antenna Drawing

版本	描述	日期	备注
1	新发文	2023-10-12	

端子不分方向

二维码内容如下:
 HQ260060003K0 3825D000 00000

技术要求:
 1.标**尺寸为重点管控尺寸,标**CpK**尺寸需做制程能力分析;
 2.未标注公差依照图纸未注公差表;
 3.电性符合规格书要求;
 4.所有部件需符合RoHS2.0、REACH、HF要求。

6	1.806.0386	二维码标签	6*6mm	1	
5	2.A15.0096	端子护套	ID1.9*20mm	1	
4	1.205.0133	铜箔	T=0.13mm	1	
3	1.203.0254	背胶	3M9448A	1	
2	2.A01.1802	铜线	1.13口径*带代端子	1	
1	2.A21.0530	PCB	FR4 颜色 T=0.8mm	1	

0.5-6	±0.1	—	0.1
>6-30	±0.2	○	0.1
>30-120	±0.3	⊙	0.1
>120-400	±0.5	⊕	0.1
>400-1000	±0.8	⊗	0.1
>1000	±1.2	⊘	0.1

客户料号	品名	结构	射照	日期
C590-14	AUX 天线	射照	2023-10-12	

客户料号	品名	单位	版本
3JN201.0262	射照	mm	2023-10-12

客户料号	品名	单位	版本
HQ260060003K0	射照	mm	A

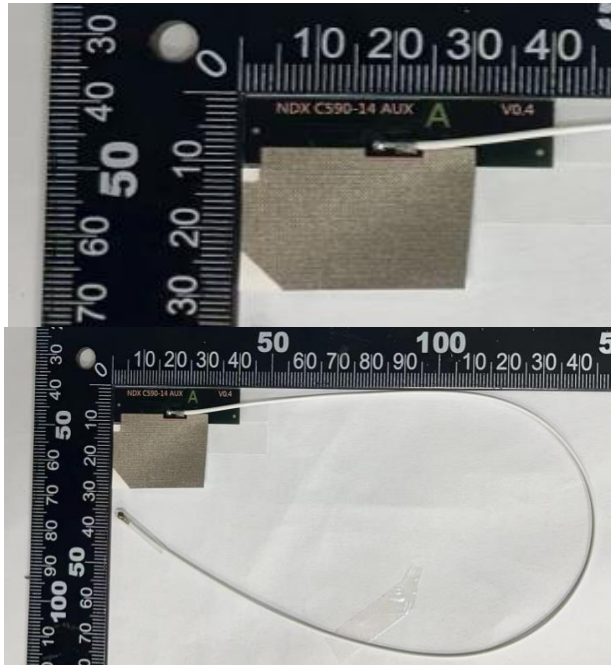
未注公差表	项目	C590-14	结构	射照	日期
0.5-6	±0.1	—	0.1		
>6-30	±0.2	○	0.1		
>30-120	±0.3	⊙	0.1		
>120-400	±0.5	⊕	0.1		
>400-1000	±0.8	⊗	0.1		
>1000	±1.2	⊘	0.1		

South Star	深圳市南斗星科技有限公司	Shenzhen South Star Technology Co., Ltd.
Star	东莞市南斗星科技有限公司	Dongguan South Star Technology Co., Ltd.

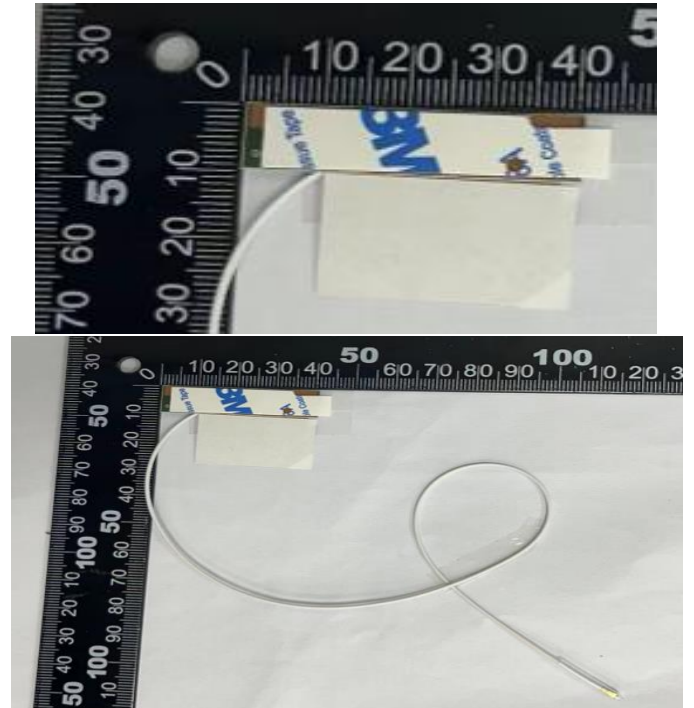
编号	料号	品名	规格描述	数量	备注
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Antenna Photo

Front



Back



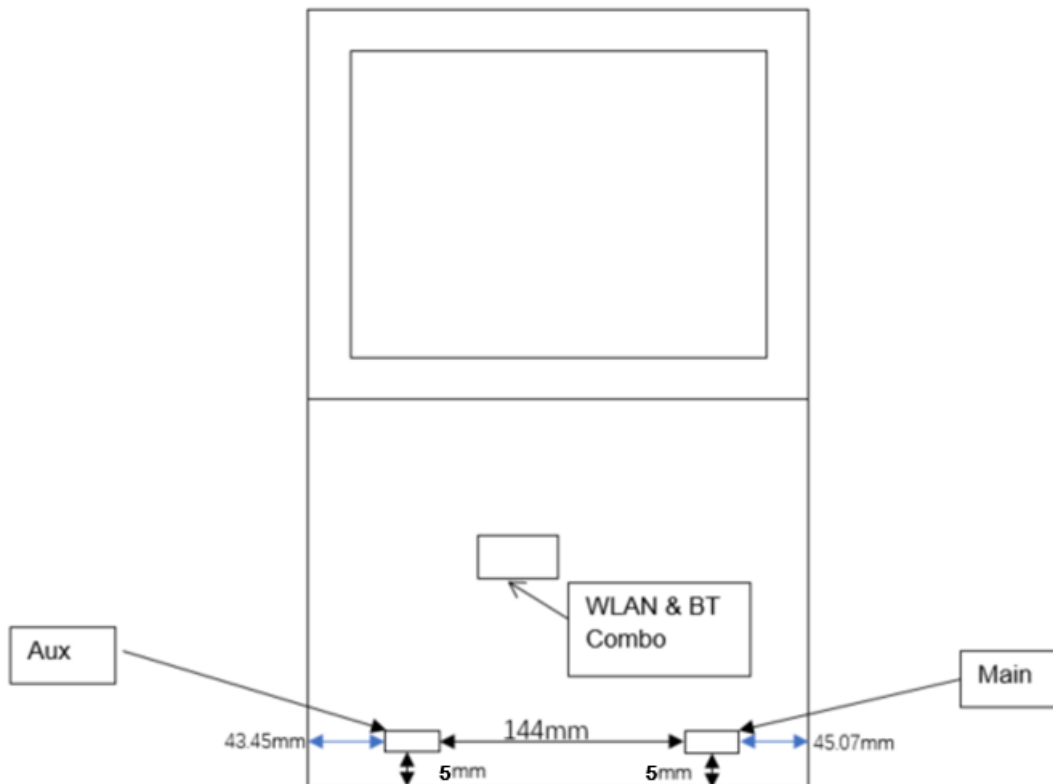
Note: antenna photo should include L type ruler

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).

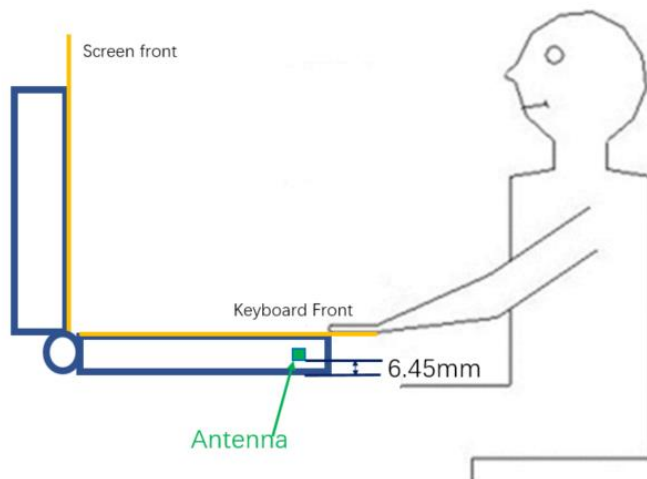
Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



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:

