

ANTENNA INFORMATION

OEM	Lenovo
ODM	Huaqin
Platform model name	IdeaPad 5 2-in-1 16AHP9
Intel platform (ex: Yes, No or NA)	NO
Platform type (ex: regular NB, convertible PC, AIO...etc)	Convertible PC
SAR minimum separation (mm)	NB:6.37mm ; PAD:4.9mm

Antenna manufacturer	South Star	
Address	No3 Chigang Nanfang 1st Road, Humen Town, Dongguan City, Guangdong Province	
Antenna Part number	Main: 3.N201.0263	Aux: 3.N201.0264
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	1.79	2.31	1.52	2.73	2.61	1.46	2.83	2.29	1.82	1.77
Aux	1.69	1.87	2.28	2.82	2.91	3.18	2.86	3.18	2.21	2.97

Cable Assembly Part Number and Information					
	Cable PN	Cable length(cm)	Cable diameter(mm)	Impedance(ohm)	Connector type
Main	2.A01.1803	23.4	1.13	50	I-PEX-4
Aux	2.A01.1804	31.2	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

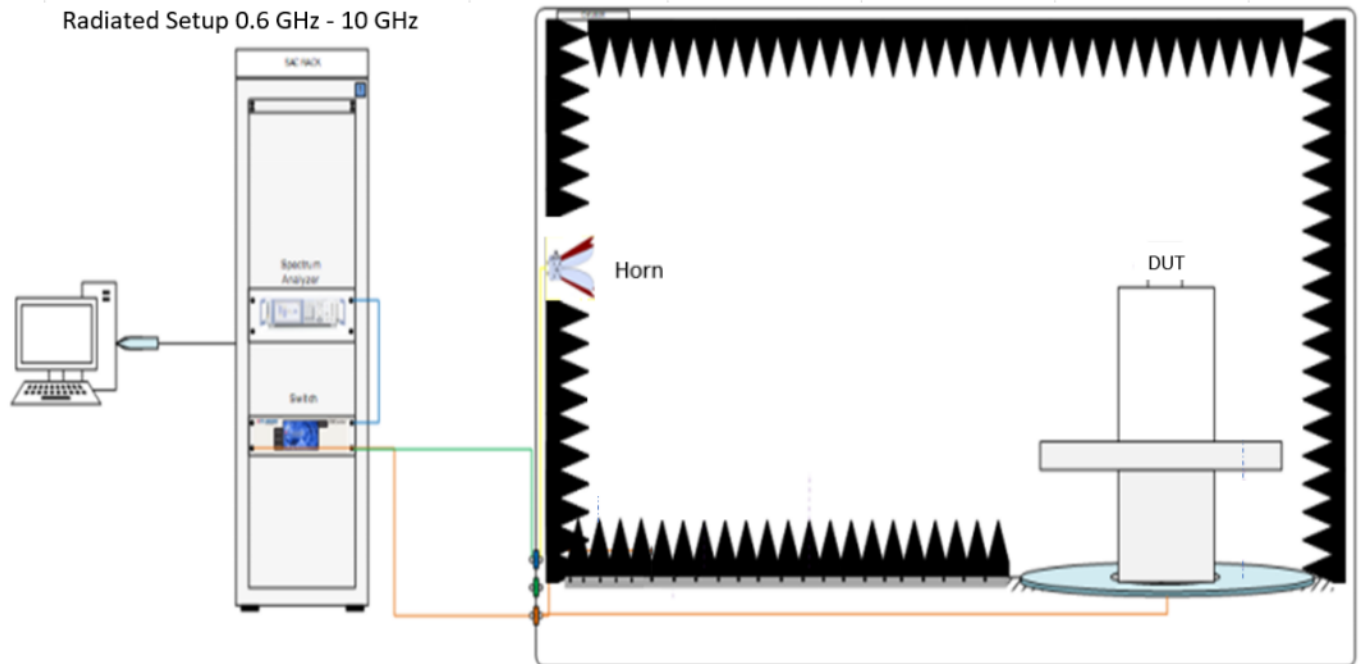
Revision #	Revision Details	Issued Date
Rev. 00	First Issue	2023.11.1

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

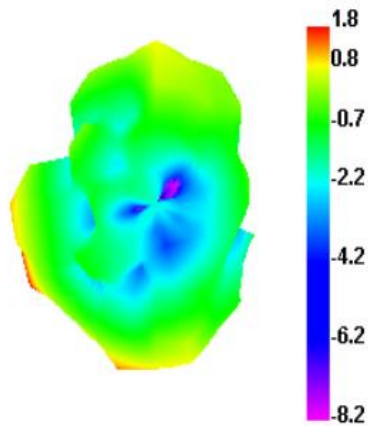
Number	Device	Type/Model	Serial	Manufacturer	Cal.Date	Cal.due.Date
1	Chamber	FATC3	5720	ETS-Lindgren	2023/5/15	2024/5/15
2	Turn table control box	ETS	-	ETS-Lindgren	N/A	N/A
3	Turn table control computer	Desktop	LPTPTOP-JQTTOKRA	LENOVO	N/A	N/A
4	Network Analyzer	5071C	5071C	Keysight	2023/5/18	2024/5/18
5	Horn Antenna	3117	E00157734	Bwant	2023/11/23	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

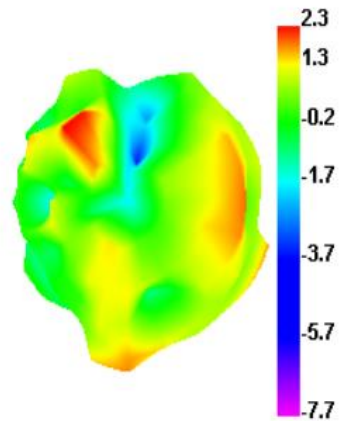
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.79



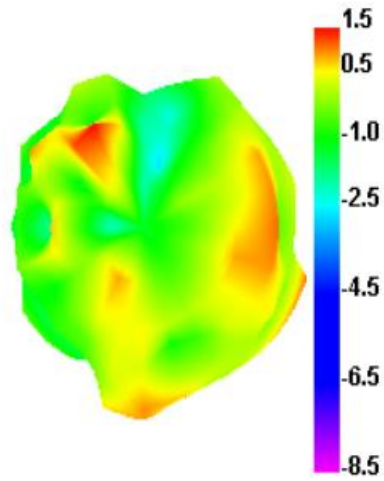
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	2.31



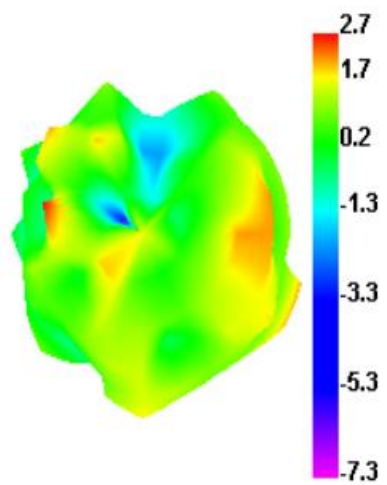
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	1.52



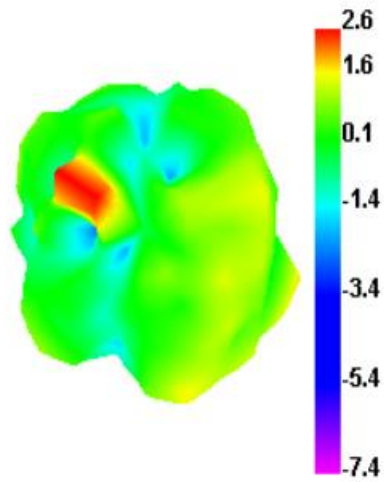
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	2.73



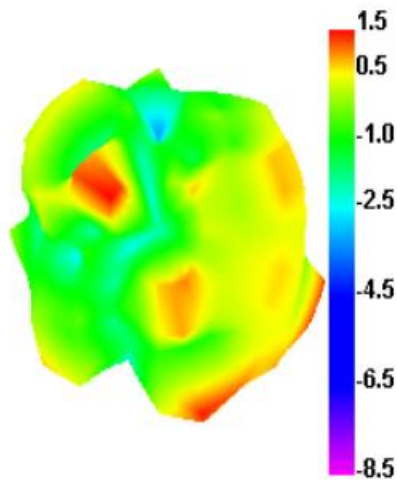
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	2.61



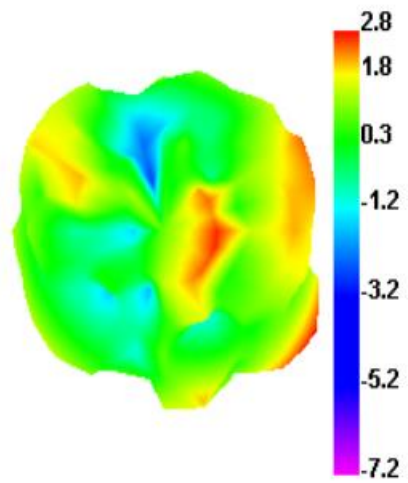
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	1.46



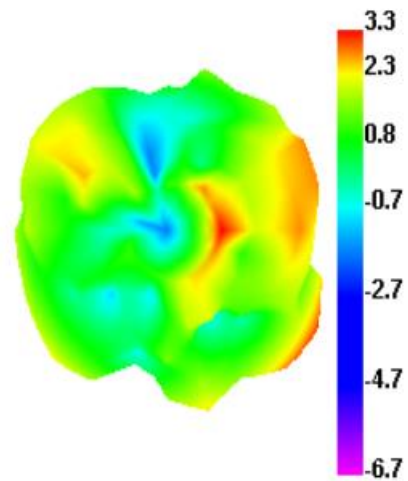
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	2.83



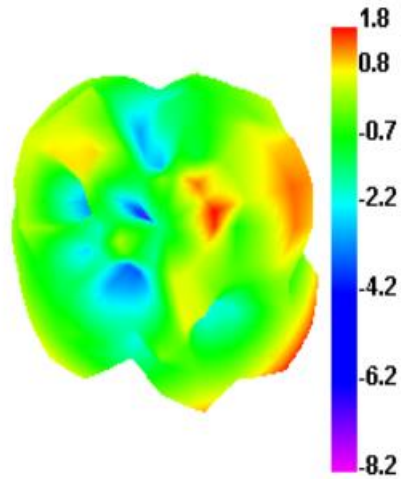
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	2.29



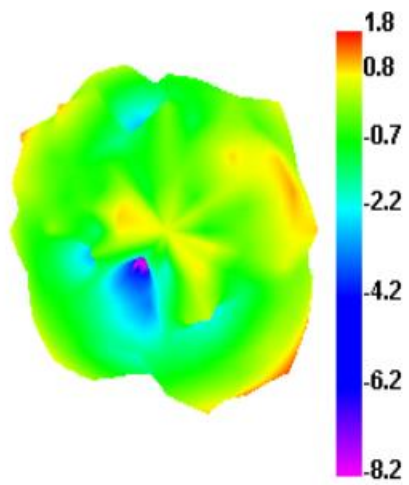
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	1.82



Max Antenna 3D Radiation Pattern 6875-7125 MHz

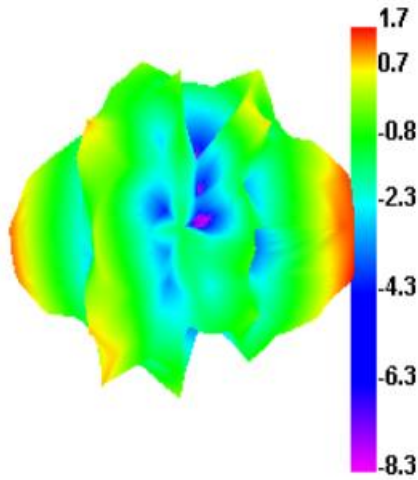
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	1.77



Auxiliary Antenna

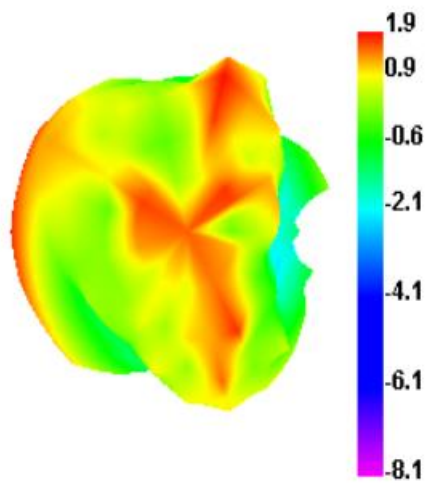
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	1.69



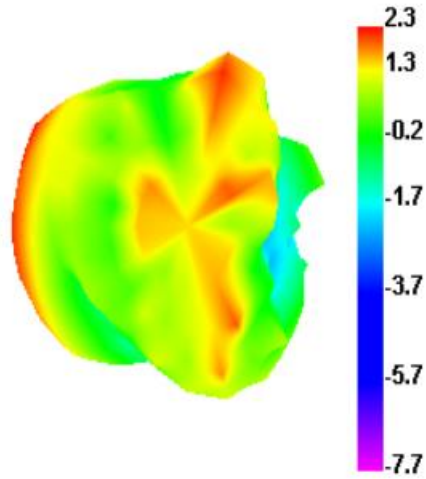
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	1.87



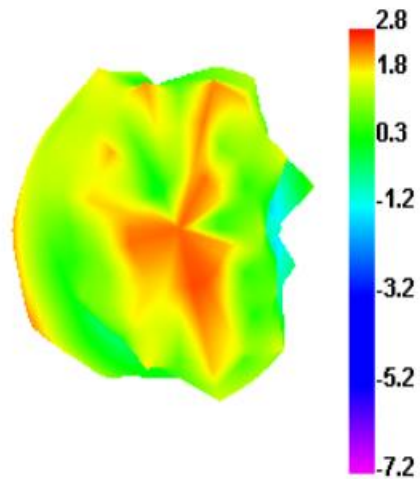
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	2.28



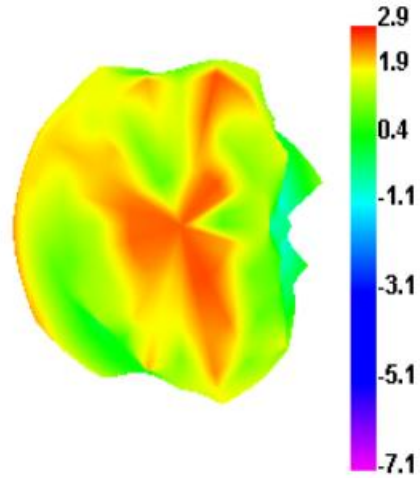
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	2.82



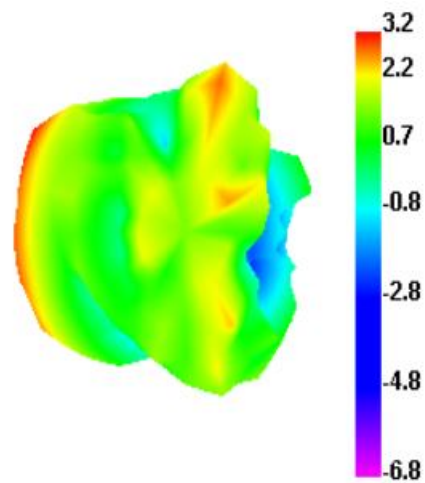
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	2.91



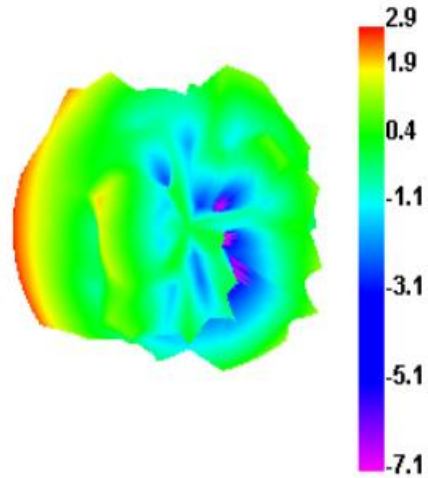
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	3.18



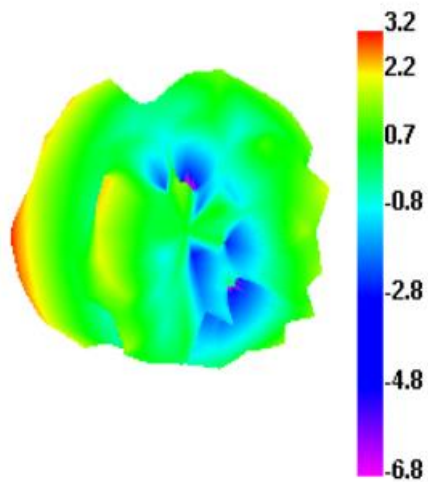
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	2.86



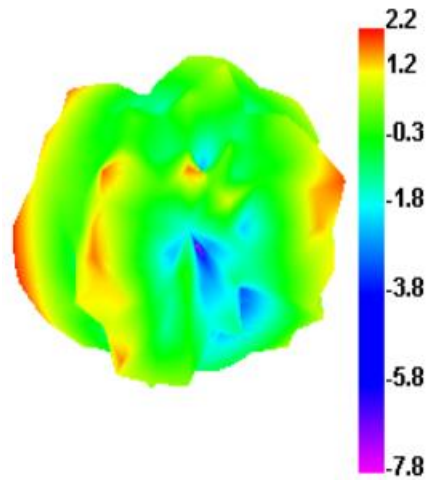
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	3.18



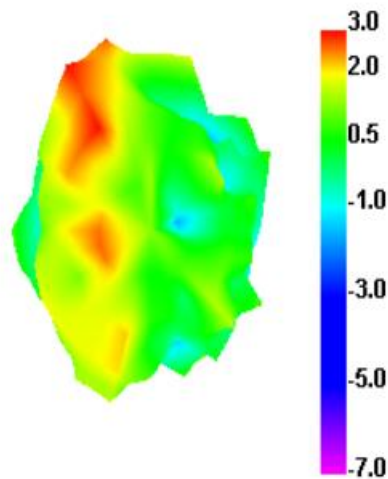
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	2.21



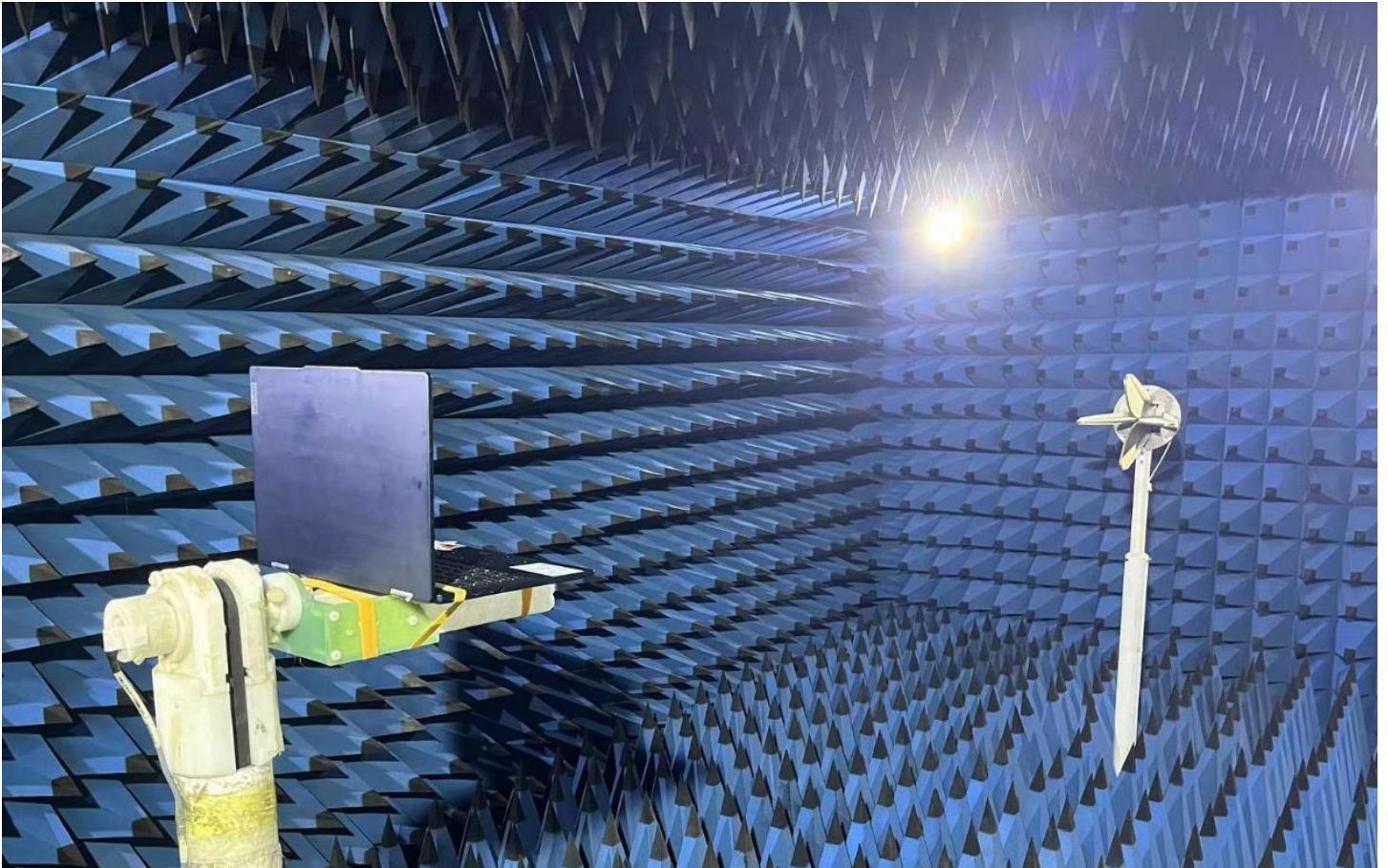
Max Antenna 3D Radiation Pattern 6875-7125 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	2.97



Annex A. Photographs

A.1 Setup Photo



A.2 Test sample

Main Antenna

Antenna Drawing

	版本	描述	日期	备注
	A	新发文	2023-10-12	

二、规格书如下:
 HQ260060003ED 3825D000 00000
 (1)客户料号13位(固定)
 (2)变动码
 第一位:年 2020=+0, 2021=+1
 第二位:月 10, 11, 12分别用A,C,D代替
 第三位:客户料号
 第四位:通规D打印, N码
 第六位:1代表第一包规格, 按此类推(无规具D标识)
 第七位:空或填字母, 如D09R
 (3)流水码: 0000-FFFF (5位16进制编码)

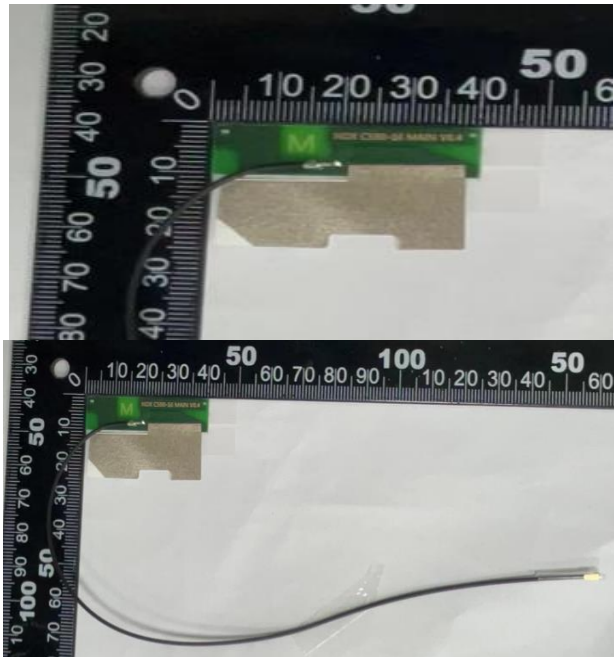
技术要求:
 1.标**尺寸为重点管控尺寸,标**CpK**尺寸需做制程能力分析;
 2.未标注公差依照图纸未注公差表;
 3.电性符合规格书要求;
 4.所有部件需符合RoHS2.0, REACH, HF要求.

6	1.806.0387	二、项目标准	Φ7mm	1	
5	2.A15.0098	电子字垫	101.9*20mm	1	
4	1.205.0134	铝箔	T=0.12mm	1	
3	1.203.0254	屏蔽	3M9448A	1	
2	2.A01.1803	封装线	1.13mm线+铝代端子	1	
1	2.A21.0531	PCB	FR4 绿色 T=0.6mm	1	

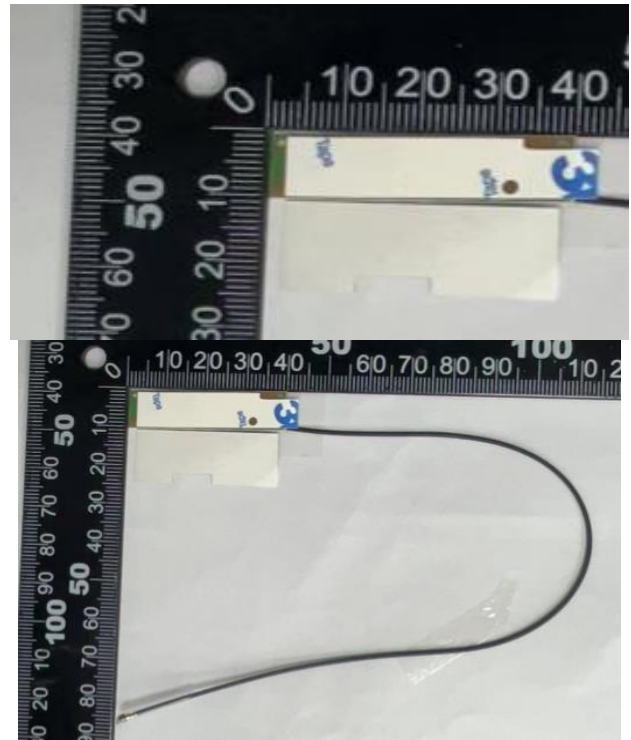
South Star	深圳市南斗星科技有限公司 东莞南斗星科技有限公司	Shenzhen South Star Technology Co., Ltd Dongguan South Star Technology Co., Ltd	
未注公差表	项目	C590-16	结构
0.5-6	±0.1	品名	MAN 天线
7-30	±0.2	料号	3JN01.0263
30-120	±0.3	客户料号	HQ260060003ED
120-400	±0.5	单位	mm
400-1000	±0.8	兵利	1/1
>1000	±1.2	精度	±1.0°

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	新发义	2023-10-12	

二通码内容如下:
 HQ260060003FO 3825D000 00000

(1)客户料号13位 (固定)
 (2)变体码
 第一位: 年2020~>0, 2021~>1
 第二位: 月10, 11, 12分别用A,C,D代替
 第三位: 生产日期
 第四位: 非固定位, N位码
 第六位: 1代表第一套规格, 依此类推 (无器具0标识)
 第七位: 设备编号, 000~99
 (3)流水码: 00000~FFFF (位位10进制编码)

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

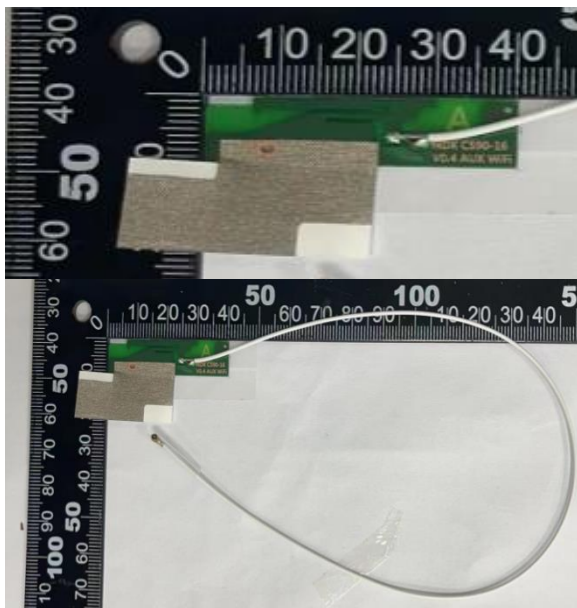
6	1.B06.0388	二通码标签	Φ9mm	1	
5	2.A1L0098	电子管	10.5*20mm	1	
4	1.225.0130	铝管	T=0.13mm	1	
3	1.203.0254	弹片	3M9448A	1	
2	2.A01.1804	耐焊线	1.13白线+替代端子	1	电子方向标准
1	2.A21.0532	PCB	FR4 绿色 T=0.6mm	1	0.05±0.005 mm 0.10±0.005 mm 0.20±0.005 mm 0.50±0.010 mm 1.00±0.015 mm 1.50±0.020 mm 2.00±0.025 mm 2.50±0.030 mm 3.00±0.035 mm 4.00±0.045 mm 5.00±0.055 mm 6.00±0.065 mm 8.00±0.085 mm 10.00±0.110 mm 12.00±0.130 mm 15.00±0.150 mm 20.00±0.200 mm 25.00±0.250 mm 30.00±0.300 mm 40.00±0.400 mm 50.00±0.500 mm 60.00±0.600 mm 80.00±0.800 mm 100.00±1.000 mm 120.00±1.200 mm 150.00±1.500 mm 200.00±2.000 mm 250.00±2.500 mm 300.00±3.000 mm 400.00±4.000 mm 500.00±5.000 mm 600.00±6.000 mm 800.00±8.000 mm 1000.00±10.000 mm

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

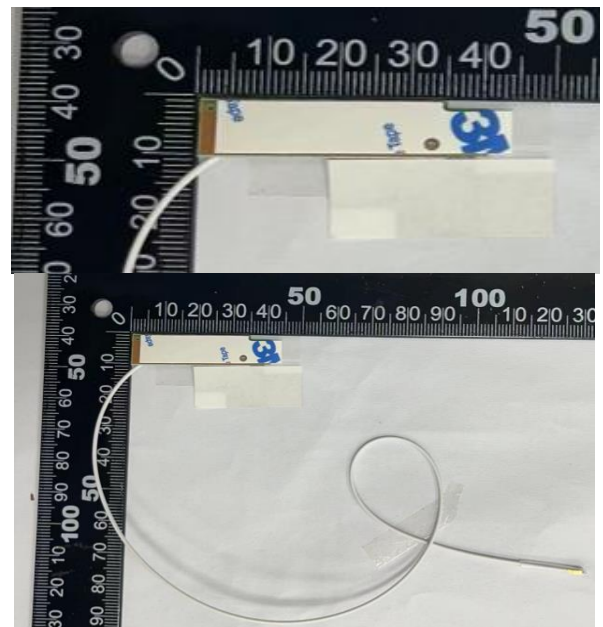
项目	C590-16	结构	相海金 2023-10-12
品名	AUX 天线	图号	图共金 2023-10-12
料号	3.N201.0264	审核	图信 2023-10-12
客户料号	HQ260060003FO	单位	mm
比例	1:1	版本	A

Antenna Photo

Front



Back



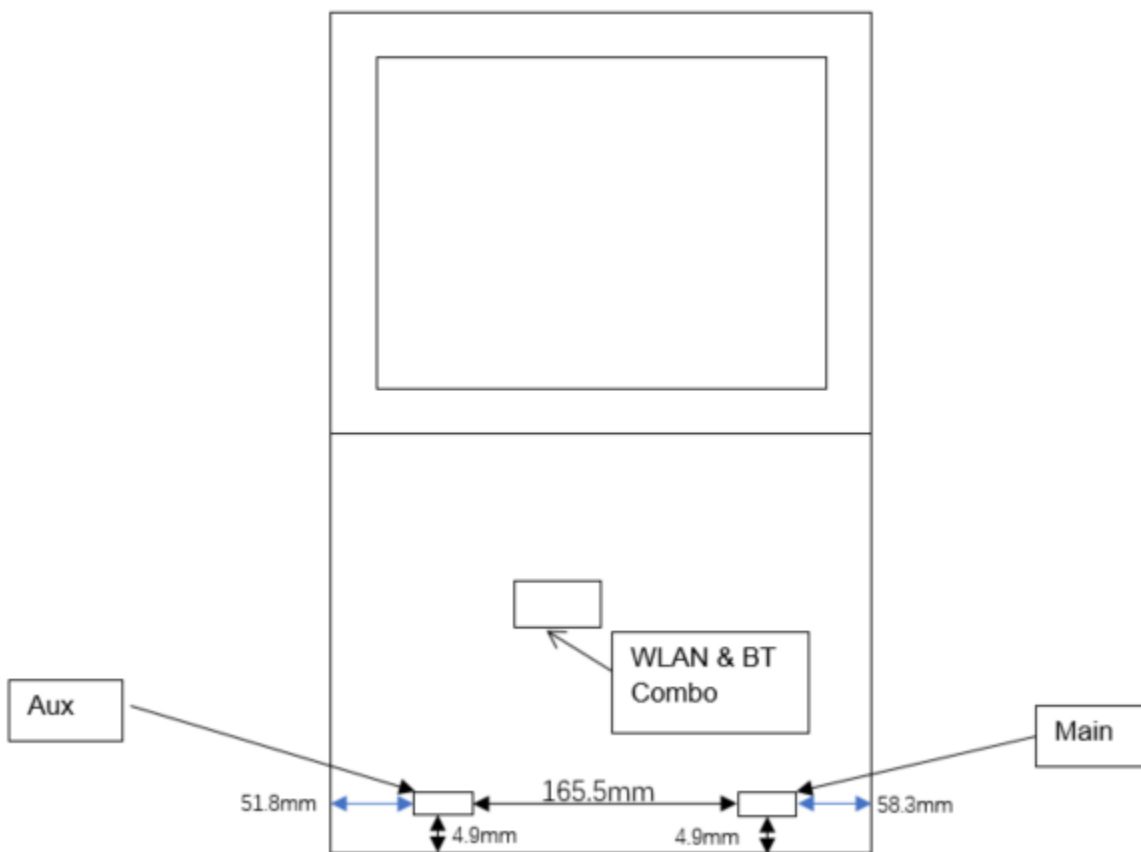
Note: antenna photo should include L type ruler

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).

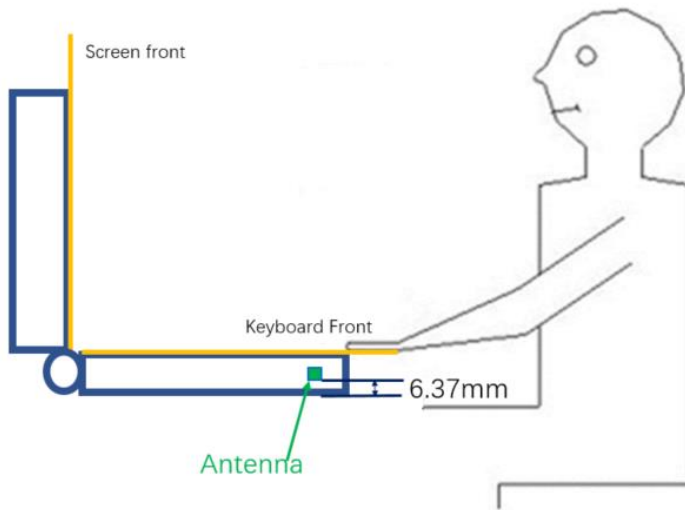
Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



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:

