

# ANTENNA INFORMATION

OEM	DELL
ODM	Compal
Platform model name	P190G
Intel platform (ex: Yes, No or NA)	No
Platform type (ex: regular NB, convertible PC, AIO...etc)	Regular NB
SAR minimum separation (mm)	5.1mm (w/bumper) 4.2mm (w/o bumper)

Antenna manufacturer	Hong-Bo	
Address	4F.,No.143,Xinhu 1 <sup>st</sup> Rd.,Neihu Dist,Taipei City 11494,Taiwan	
Antenna Part number	Main: 260-24452 (DC33002W00L)	Aux: 260-24452 (DC33002W00L)
Antenna type (ex: PIFA, Dipole...etc)	Main: PIFA	Aux: Monopole

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	2.94 dBi	2.78 dBi	2.93 dBi	2.69 dBi	2.68 dBi	2.68 dBi	2.78 dBi	3.97 dBi	3.98 dBi	3.91 dBi
Aux	2.91 dBi	2.97 dBi	2.97 dBi	2.85 dBi	2.78 dBi	2.50 dBi	2.86 dBi	2.79 dBi	3.55 dBi	3.39 dBi

Cable Assembly Part Number and Information					
	Cable PN	Cable length(mm)	Cable diameter(mm)	Impedance(ohm)	Connector type
Main	White 1.13SLLS SY113L/50-143	152.50	1.13 SLLS	50 ohm	I-PEX MHF- 4L(20565-001R-13)
Aux	Black 1.13SLLS SY113L/50-118	142.50	1.13 SLLS	50 ohm	I-PEX MHF- 4L(20565-001R-13)

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

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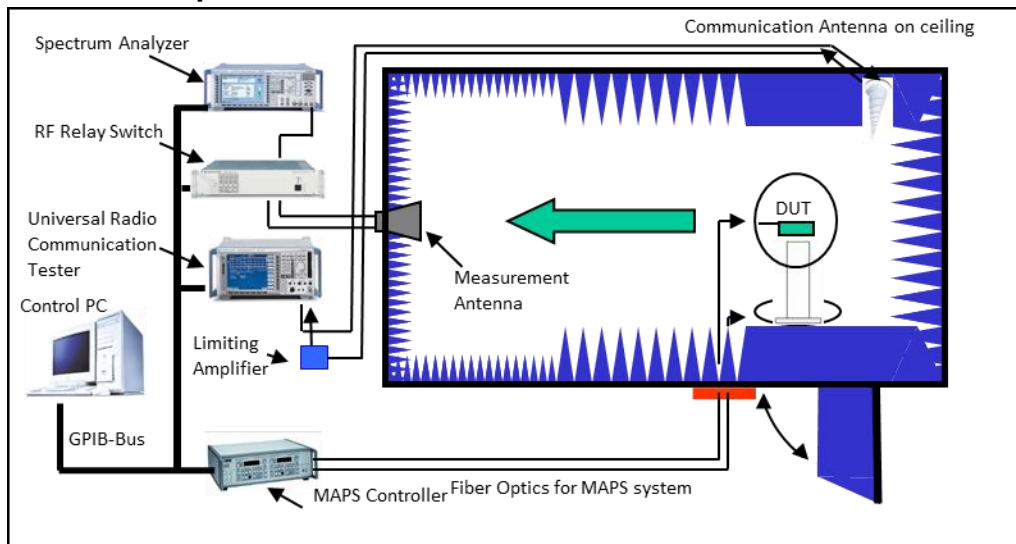
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# 1. Test & System Description

## 1.1 Measurement Method and System

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

## 1.2 Test setup



## 1.3 Equipment list

Equipment Description	Manufacturer	Identification no.	Current calibration date	Next calibration date
Base station	Anritsu	MT8821C	2024/1/18	2025/1/17
Spectrum analyzer	Agilent	N9010A	2024/1/11	2024/1/10
Network analyzer	Agilent	E5071C	2023/2/21	2024/2/20
Measurement software	ETS-Lindgren	EMQuest	N/A	N/A
Multi axis positioning system(MAPS™)	ETS-Lindgren	EMCO 2115	N/A	N/A
Multi axis positioning system(MAPS™)	ETS-Lindgren	EMCO 2110	N/A	N/A
MAPS™ controller	ETS-Lindgren	EMCO 2090	N/A	N/A
Horn antenna	ETS-Lindgren	3164-08	N/A	N/A

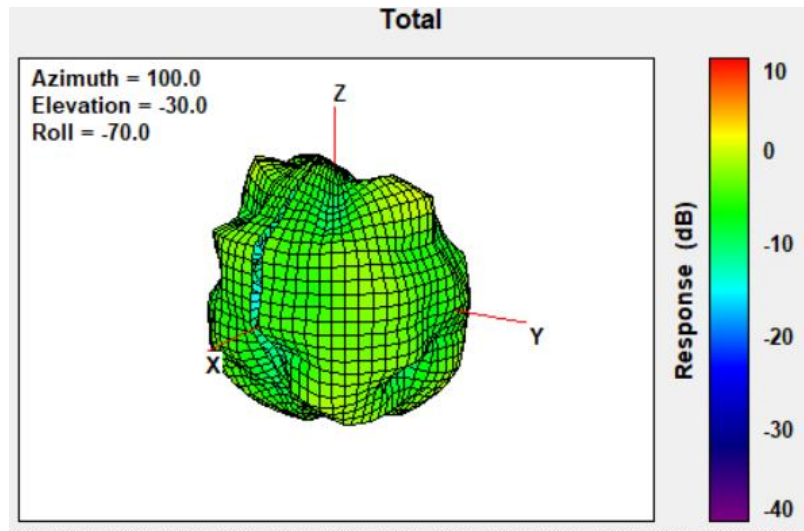
Note: Chamber calibration included full set of implement

## 2. Radiation characteristics of antenna loaded in Host Platform

### Main Antenna

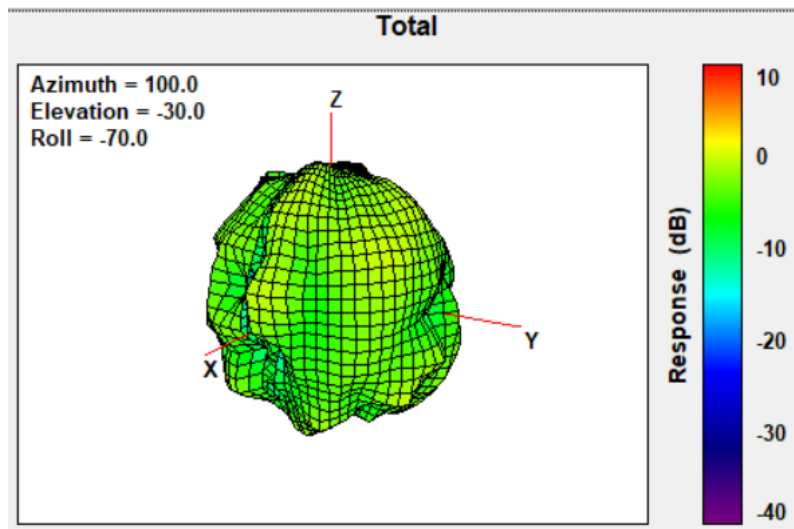
Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	2.94



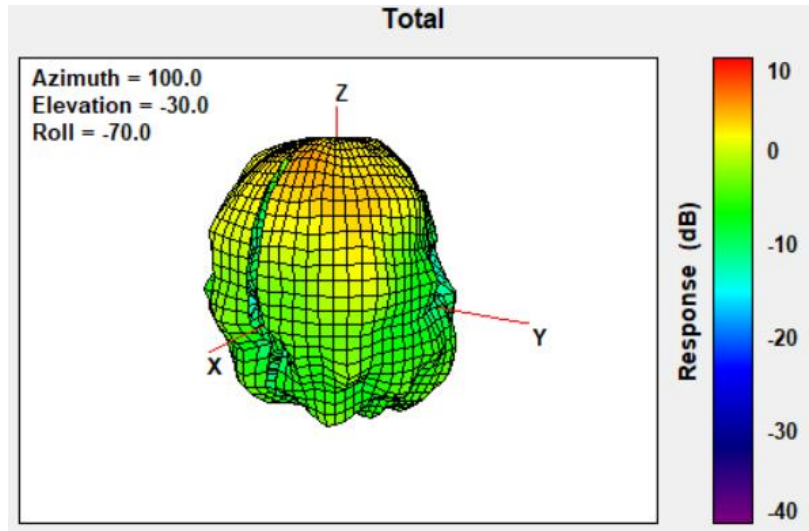
Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	2.78



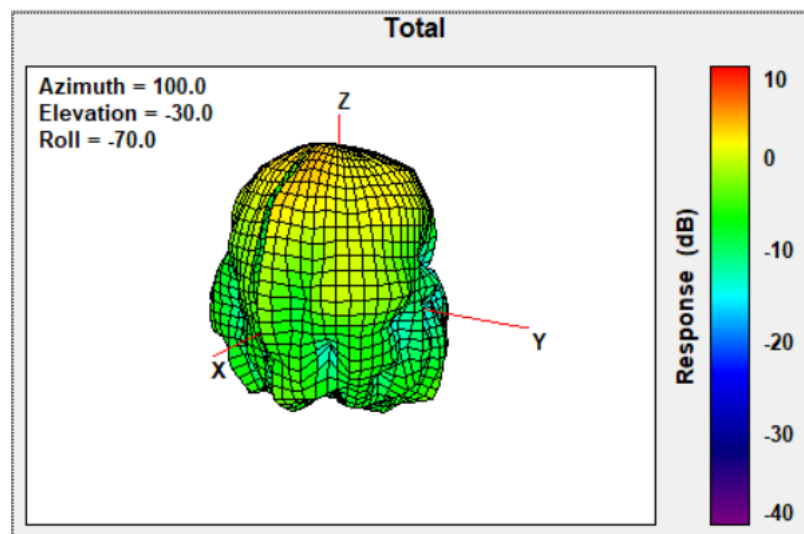
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	2.93



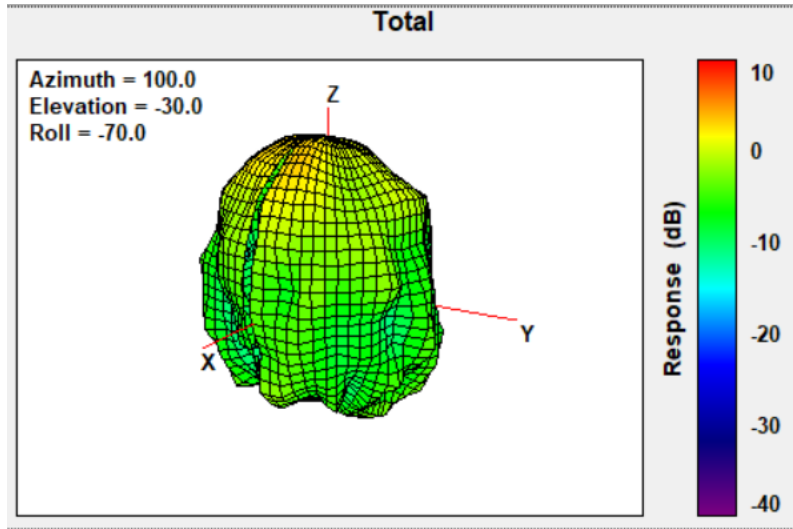
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	2.69



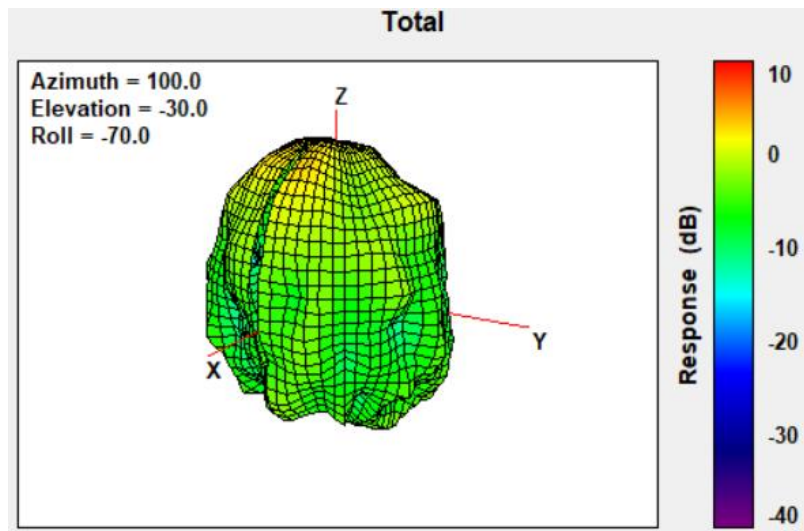
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	2.68



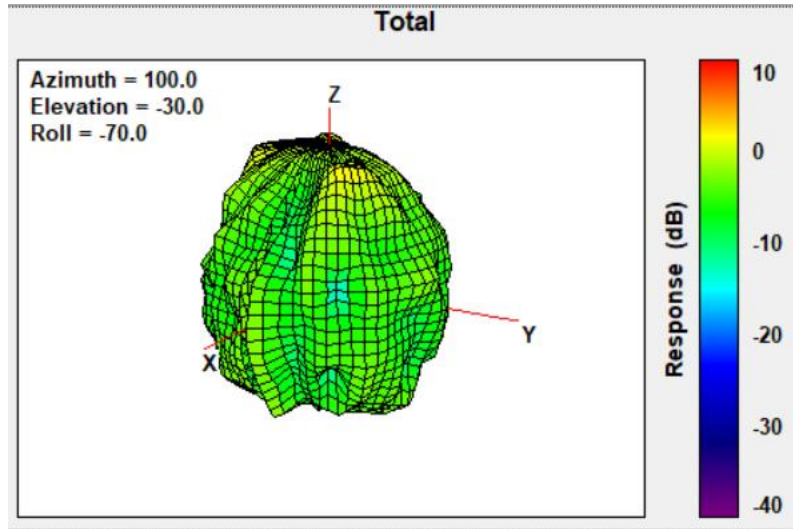
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	2.68



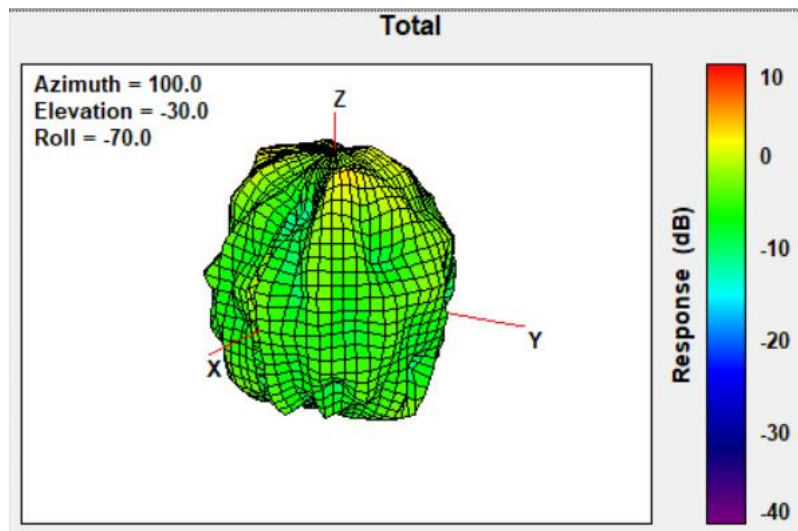
Max Antenna 3D Radiation Pattern 5925-6425 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5925-6425	2.78



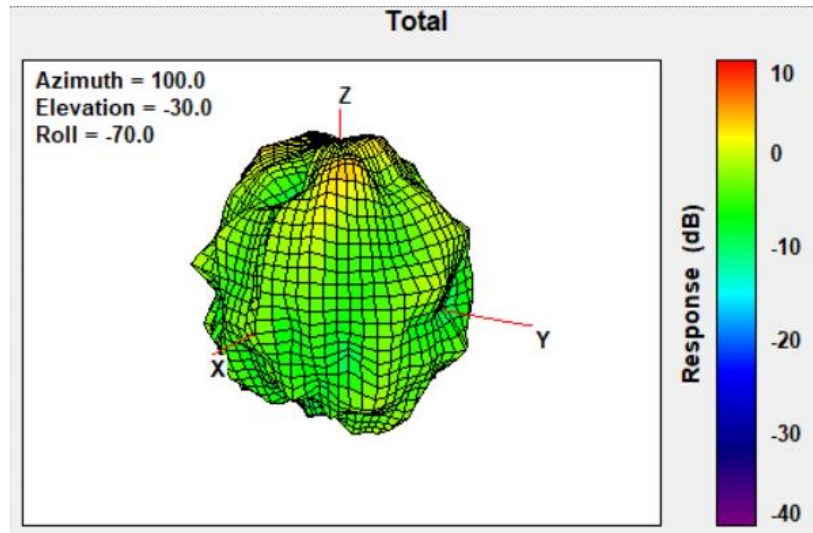
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	3.97



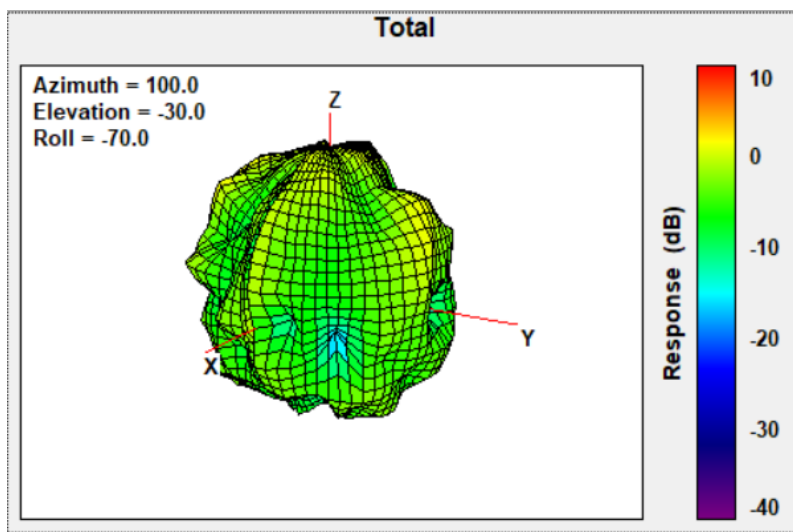
Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	3.98



Max Antenna 3D Radiation Pattern 6875-7125 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	3.91

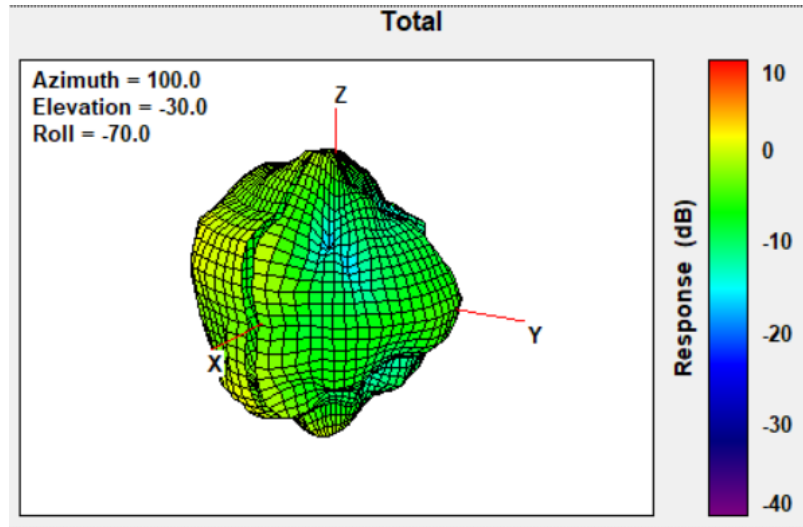




### Auxiliary Antenna

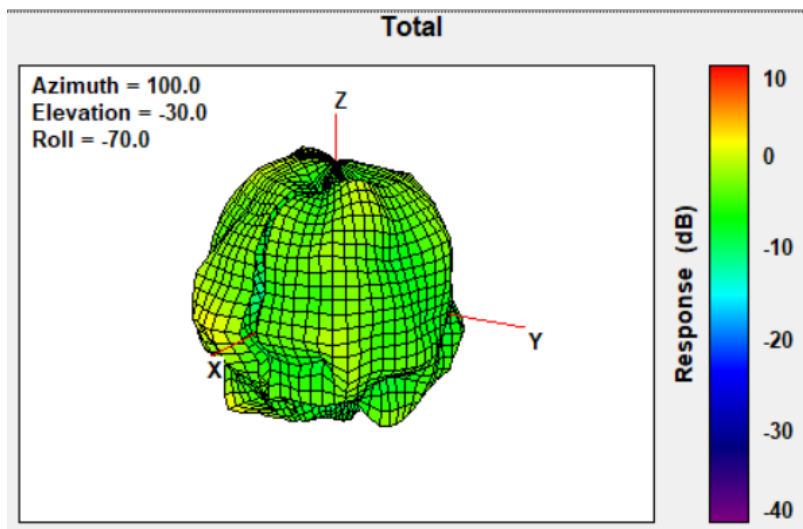
#### Max Antenna 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2400-2483.5	2.91



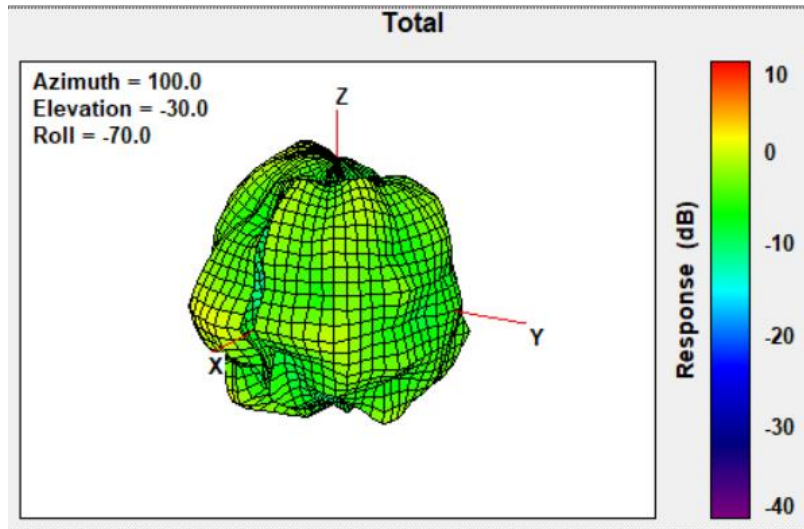
#### Max Antenna 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5150-5250	2.97



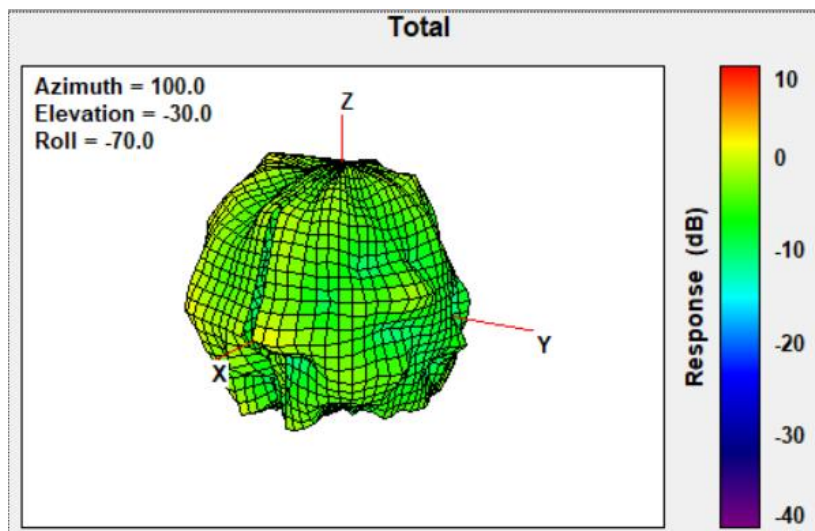
Max Antenna 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250-5350	2.97



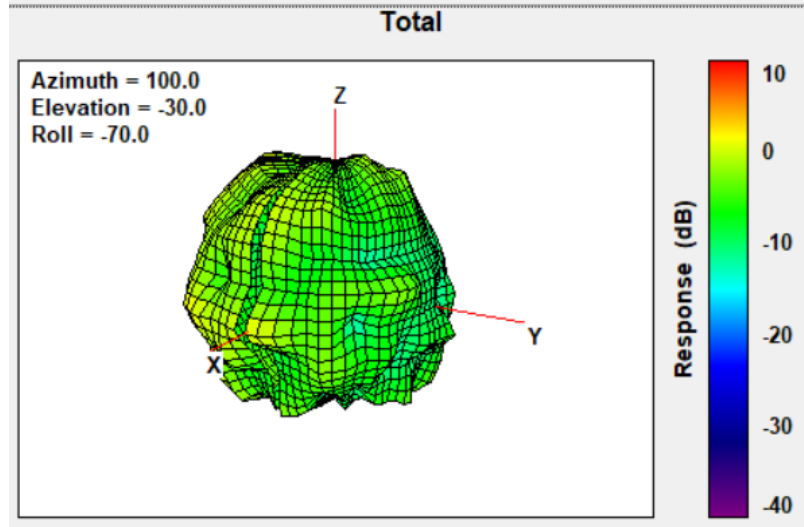
Max Antenna 3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5470-5725	2.85



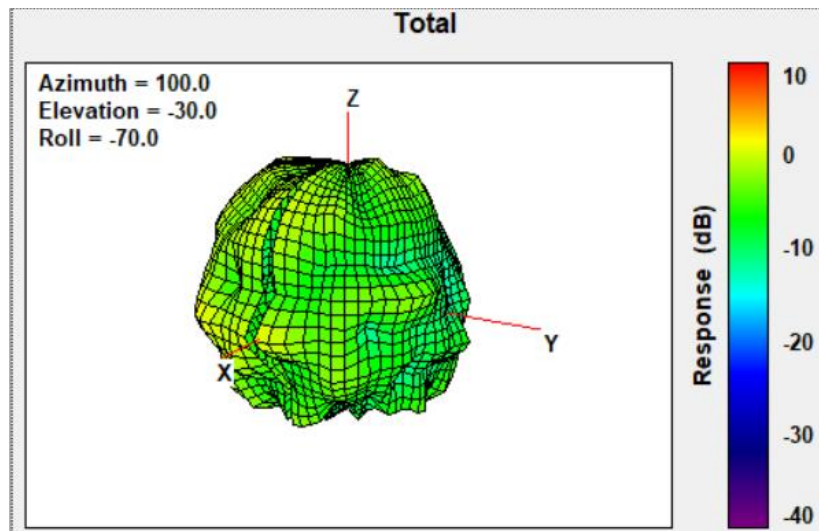
Max Antenna 3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5725-5850	2.78



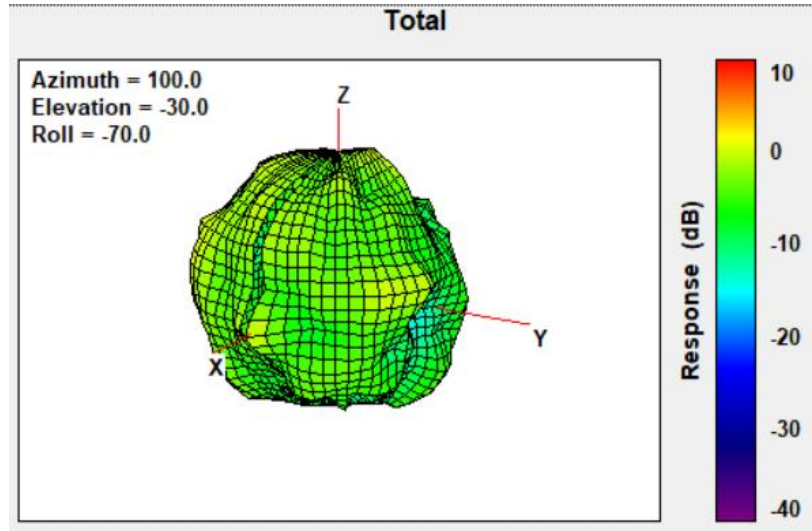
Max Antenna 3D Radiation Pattern 5850-5895 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5850-5895	2.50



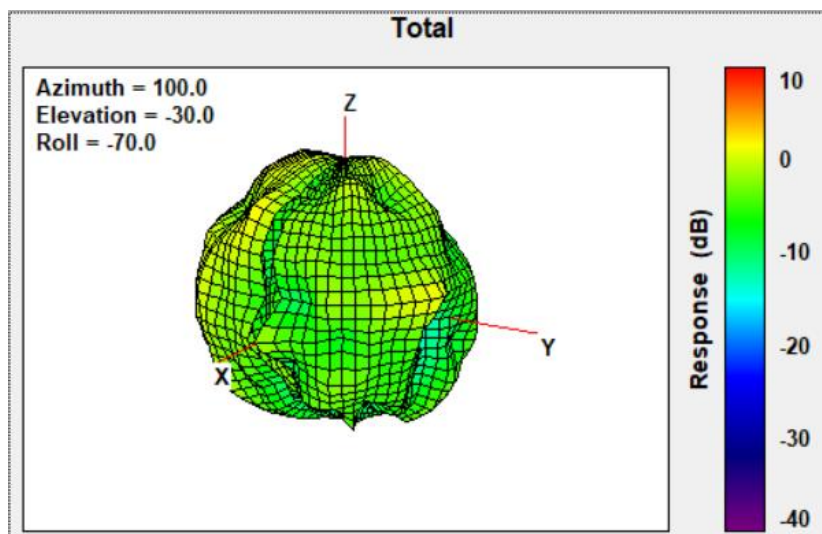
Max Antenna 3D Radiation Pattern 5925-6425 MHz

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



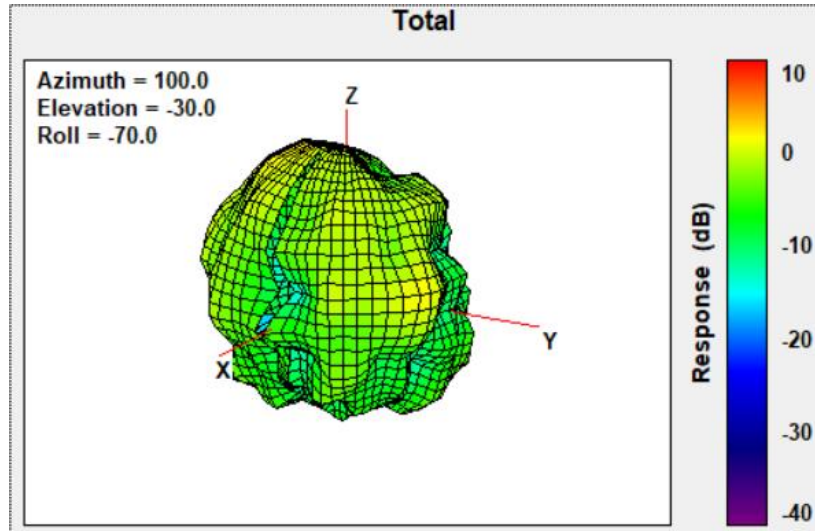
Max Antenna 3D Radiation Pattern 6425-6525 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6425-6525	2.79



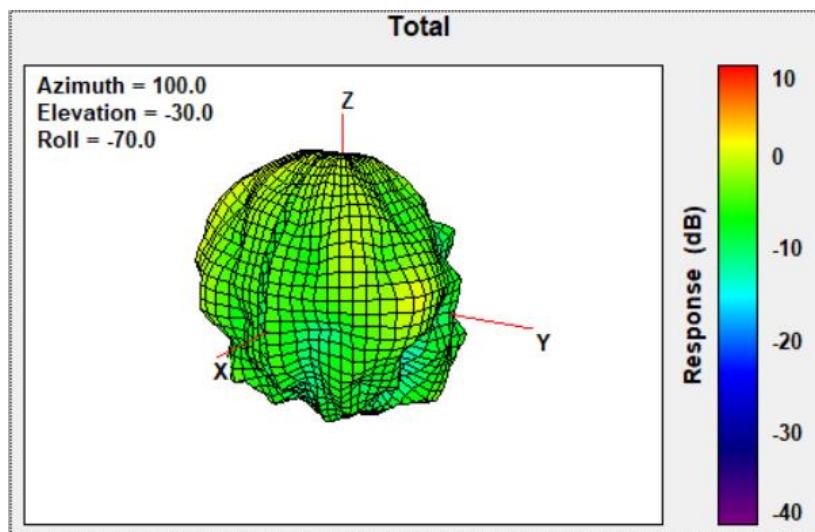
### Max Antenna 3D Radiation Pattern 6525-6875 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6525-6875	3.55



### Max Antenna 3D Radiation Pattern 6875-7125 MHz

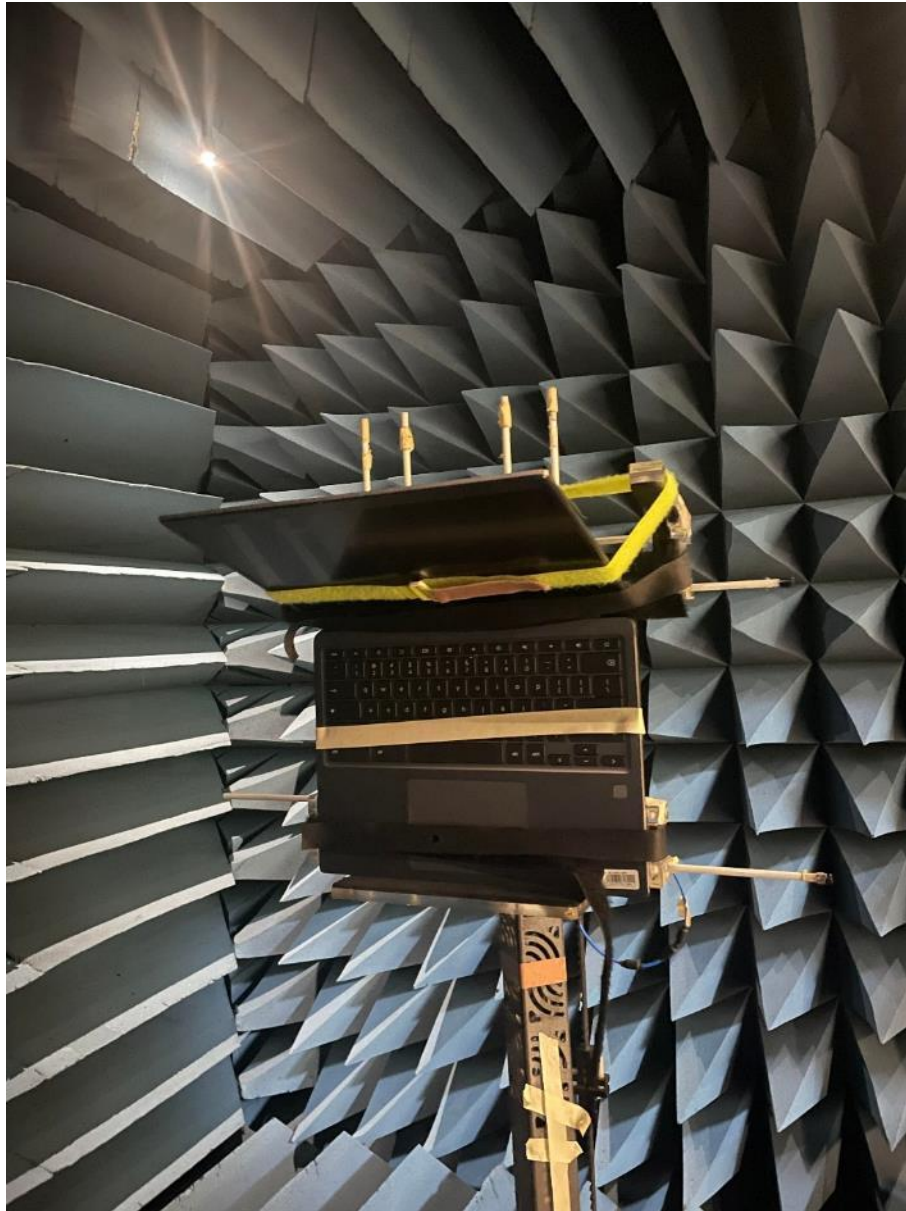
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
6875-7125	3.39



# Annex A. Photographs

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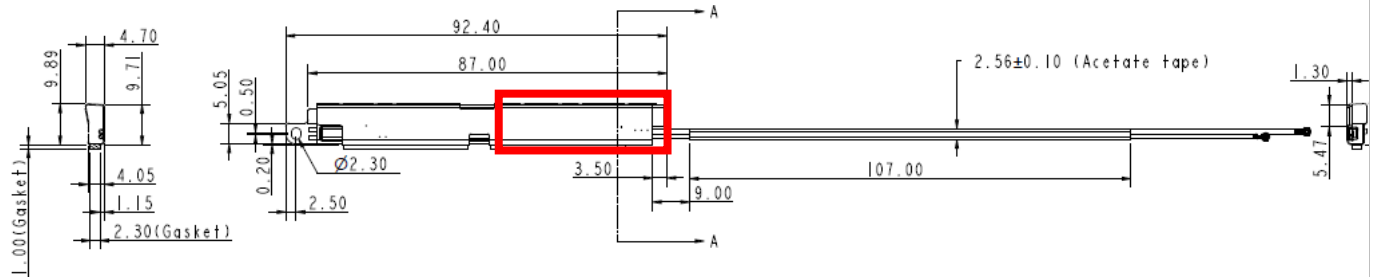
## A.1 Setup Photo



## A.2 Test sample

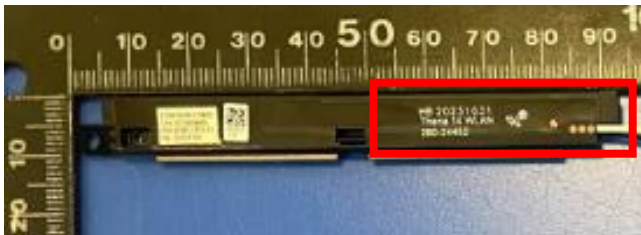
### Main Antenna

#### Antenna Drawing

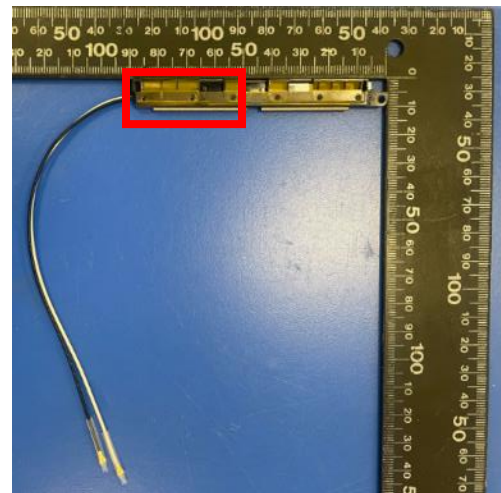
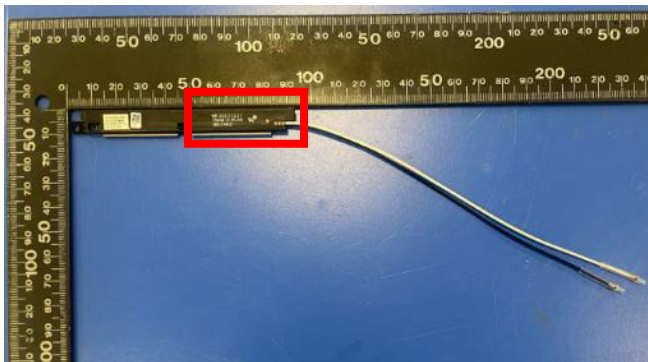
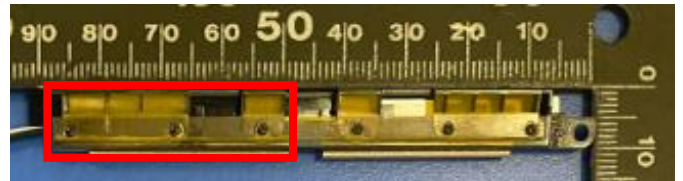


#### Antenna Photo

##### Front



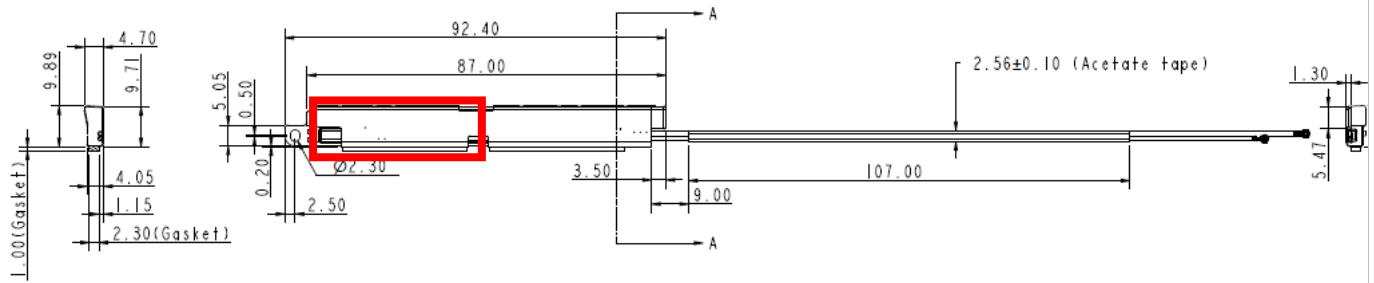
##### Back



Note: antenna photo should include L type ruler

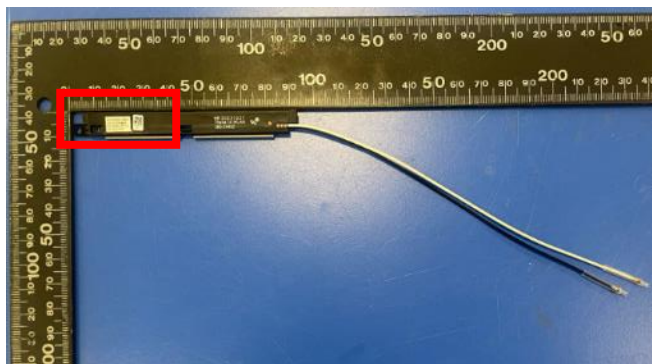
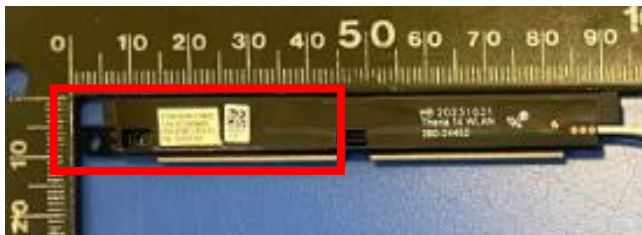
## Aux Antenna

### Antenna Drawing

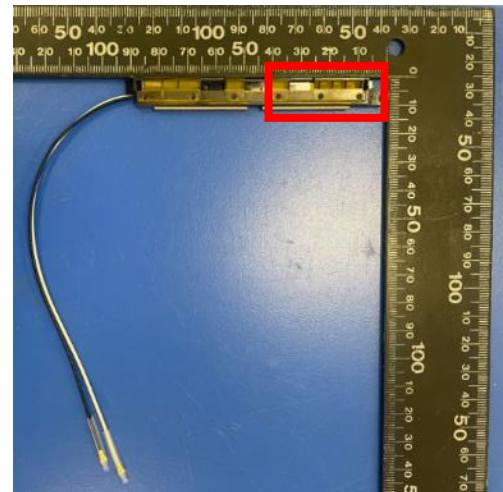
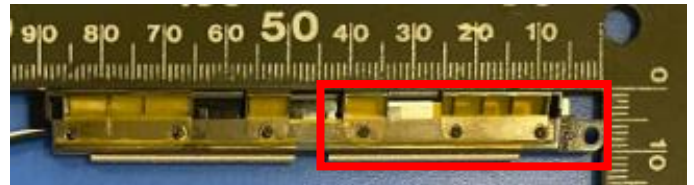


### Antenna Photo

#### Front



#### Back



Note: antenna photo should include L type ruler

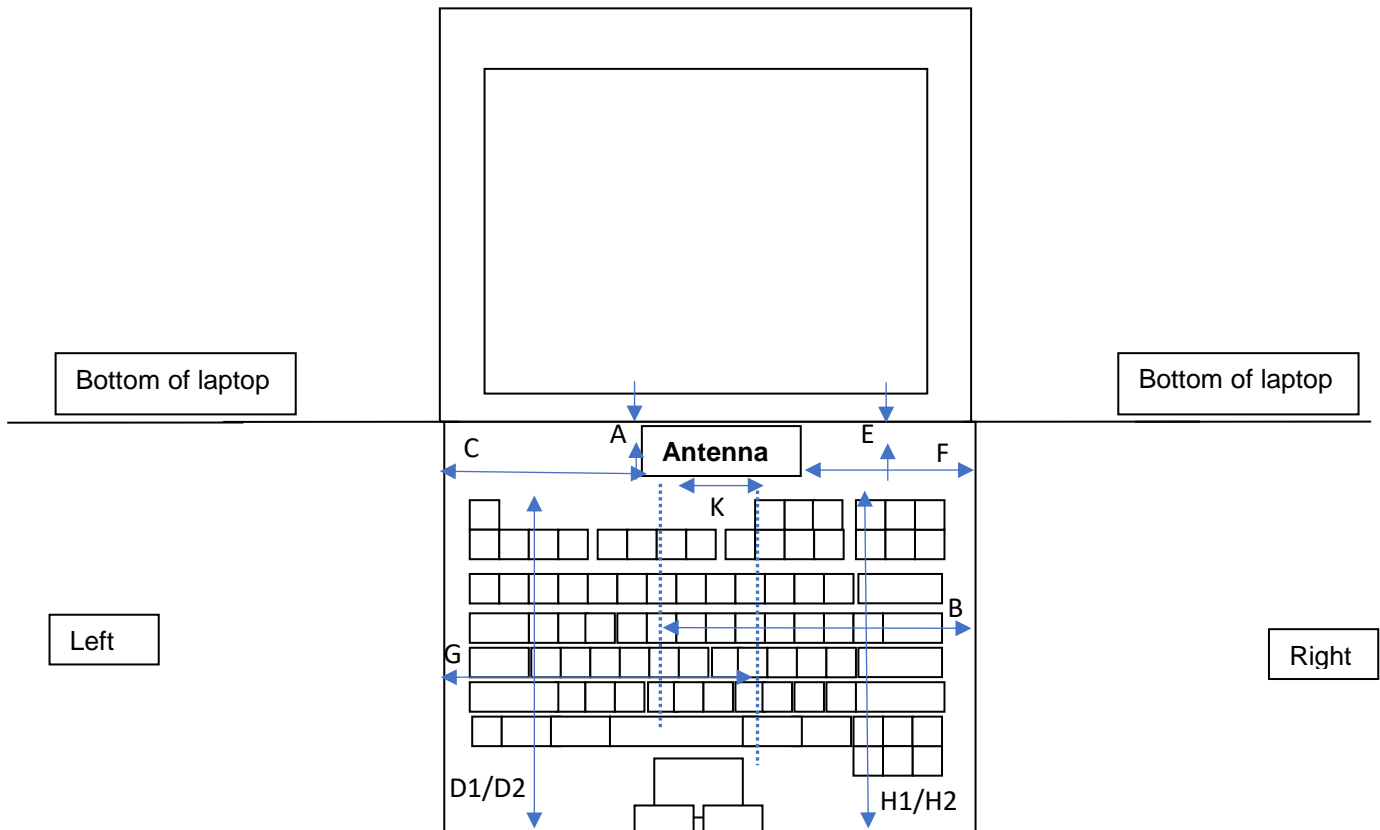


# Annex B. Antenna Location

## 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).

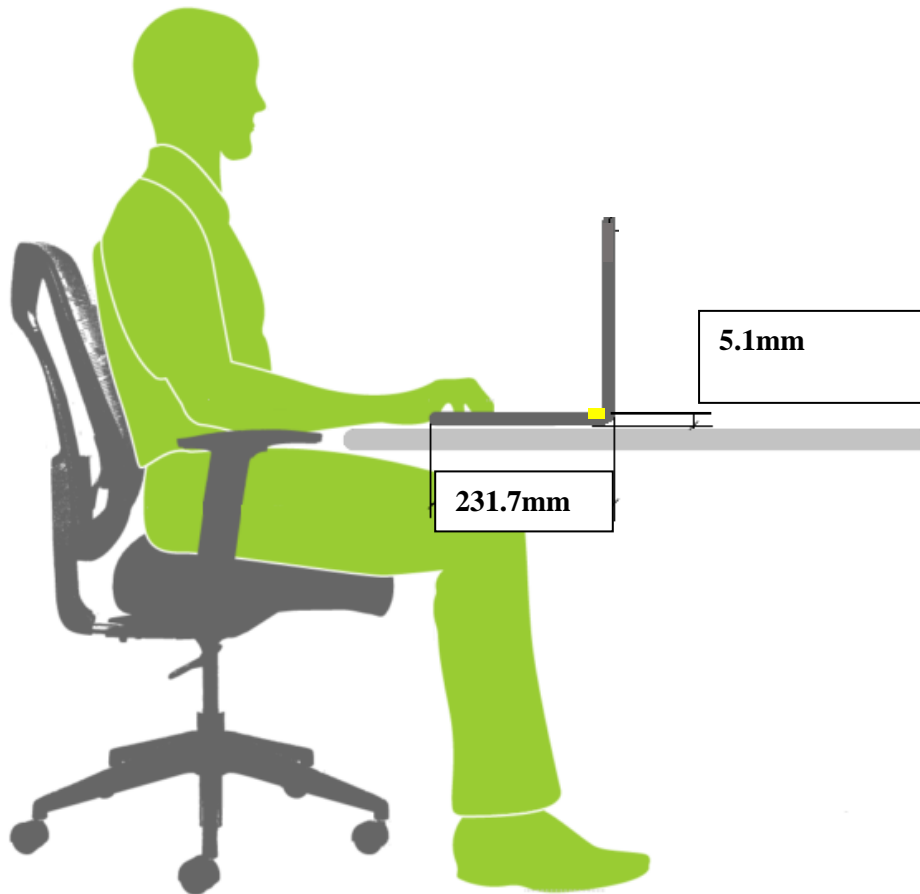
Any antenna that transmits must show dimensions to bottom of laptop. Provide a description of the materials that are used for supporting or surrounding transmit antennas; for example, non-conductive plastics vs. conductive coated plastic or metallic materials.



Minimum Separation Distance			
Item	Antenna	Position	Distance (mm)
<b>A</b>	WLAN-Main	to Top	4.2
<b>B</b>	WLAN-Main	to Right	149
<b>C</b>	WLAN-Main	to Left	84.5
<b>D-1</b>	WLAN-Main	to Bottom of Laptop (Include Bumper)	5.1
<b>D-2</b>	WLAN-Main	to Bottom of Laptop (NOT include Bumper)	4.2
<b>E</b>	WLAN-Aux	to Top	4.2
<b>F</b>	WLAN-Aux	to Right	149
<b>G</b>	WLAN-Aux	to Left	84.5
<b>H-1</b>	WLAN-Aux	to Bottom of Laptop (Include Bumper)	5.1
<b>H-1</b>	WLAN-Aux	to Bottom of Laptop (NOT include Bumper)	4.2
<b>K</b>	WLAN Main	to WLAN Aux	33.8

## 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.



# Annex C. Antenna Information

## C.1 Antenna Assembly Specifications

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)
Main: DC33002W00L(KDI44)	Hong-BO Co., Ltd	PIFA	50 ohm Coaxial. Length:152.50 mm Diameter: 1.13SLLS	2400-2483.5	2.94	3.27	2.5	0.33
				5150-5250	2.78	3.32	2.5	0.54
				5250-5350	2.93	3.48	2.5	0.55
				5470-5725	2.69	3.27	2.5	0.58
				5725-5850	2.68	3.28	2.5	0.60
				5850-5895	2.68	3.28	2.5	0.60
				5925-6425	2.78	3.40	2.5	0.62
				6425-6525	3.97	4.60	2.5	0.63
				6525-6875	3.98	4.64	2.5	0.66
				6875-7125	3.91	4.6	2.5	0.69
Aux: DC33002W00L (KDI44)	Hong-BO Co., Ltd	Monopole	50 ohm Coaxial. Length:142.50 mm Diameter: 1.13SLLS	2400-2483.5	2.91	3.21	2.5	0.30
				5150-5250	2.97	3.47	2.5	0.50
				5250-5350	2.97	3.48	2.5	0.51
				5470-5725	2.85	3.40	2.5	0.55
				5725-5850	2.78	3.34	2.5	0.56
				5850-5895	2.50	3.07	2.5	0.57
				5925-6425	2.86	3.46	2.5	0.60
				6425-6525	2.79	3.39	2.5	0.60
				6525-6875	3.55	4.17	2.5	0.62
				6875-7125	3.39	4.03	2.5	0.64