

ANTENNA INFORMATION

OEM	
ODM	
Model name	
SAR minimum separation (mm)	

Antenna manufacturer	Company name	Kunshan Innowave Communication Technology Co.,Ltd.
	Address	Building H, Jindi Zhizao Park, Shengchuang Road, Yushan Town, Kunshan City, Suzhou City, Jiangsu Province
Test location	Company name	Beijing Innowave Communication Technology Co.,Ltd.
	Address	Room 110, Building 1, No.27 Longgang Road, Haidian District, Beijing
Test Personnel	Name(Full name)	
	E-mail	
	Tel/Mobile	
Testing date		

Antenna Part number	WIFIA	
	WIFIB	
	BT	
Antenna type (ex: PIFA, Dipole...etc)		PIFA

Antenna Peak gain w/ cable loss (dBi)*										
	2.4GH Z 2400- 2483.5 MHz	5.2GH Z 5150- 5250M Hz	5.3GH Z 5250- 5350M Hz	5.6GH Z 5470- 5725M Hz	5.8GH Z 5725- 5850M Hz	5.9GH Z 5850- 5895M Hz	6.2GH Z 5925- 6425M Hz	6.5GH Z 6425- 6525M Hz	6.7GH Z 6525- 6875M Hz	7.0 GHz 6875- 7125M Hz
BT	0.96/0. 2									
WIFI-A	2.29/0. 2	2.47/0. 5	2.54/0. 5	2.79/0. 5	2.45/0. 5					
WIFI-B	1.52/0. 2	2.13/0. 5	2.7/0.5	2.76/0. 5	2.18/0. 5					

Antenna Size :

BT: 20.8*6.35 mm

WIFI-A: 21.04*6.17 mm

WIFI-B: 53*16 mm

Cable Assembly Part Number and Information					
	Cable PN	Cable length(mm)	Cable diameter(mm)	Impedance(ohm)	Connector type
BT					
WIFI-A					
WIFI-B					

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

WIFIA Efficiency/Gain

Freq(MHz)	Effi(%)	Effi(dB)	Gain(dBi)	Freq(MHz)	Effi(%)	Effi(dB)	Gain(dBi)
2400	30.22	-5.2	2.23	5150	35.36	-4.51	1.6
2410	31.85	-4.97	2.29	5200	42.9	-3.68	2.47
2420	34.29	-4.65	2.19	5250	42.16	-3.75	2.19
2430	35.94	-4.44	1.99	5300	37.86	-4.22	1.71
2440	37.16	-4.3	1.63	5350	44.92	-3.48	2.54
2450	38.81	-4.11	1.39	5400	48.03	-3.19	2.85
2460	39.89	-3.99	1.38	5450	43.59	-3.61	2.23
2470	40.64	-3.91	1.33	5500	43.84	-3.58	2.18
2480	41.99	-3.77	1.5	5550	49.16	-3.08	2.79
2490	43.15	-3.65	1.46	5600	42.28	-3.74	1.94
2500	41.8	-3.79	1.27	5650	39.28	-4.06	1.1
				5700	39.42	-4.04	0.75
				5750	42.05	-3.76	1.86
				5800	43.88	-3.58	2.45
				5850	42	-3.77	1.94

WIFIB Efficiency/Gain

Freq(MHz)	Effi(%)	Effi(dB)	Gain(dBi)	Freq(MHz)	Effi(%)	Effi(dB)	Gain(dBi)
2400	28.67	-5.43	-0.34	5150	39.64	-4.02	0.86
2410	31.25	-5.05	0.11	5200	50.55	-2.96	1.59
2420	34.19	-4.66	0.67	5250	49.07	-3.09	2.13
2430	36.7	-4.35	0.96	5300	46.63	-3.31	2.7
2440	38.72	-4.12	1.23	5350	53.06	-2.75	2.7
2450	41.2	-3.85	1.44	5400	51.4	-2.89	2.65
2460	42.71	-3.69	1.52	5450	48.86	-3.11	2.65
2470	43.32	-3.63	1.45	5500	48.87	-3.11	2.72
2480	43.59	-3.61	1.37	5550	52.63	-2.79	2.76
2490	43.72	-3.59	1.22	5600	47.81	-3.21	2.23
2500	40.95	-3.88	0.84	5650	45.83	-3.39	1.82
				5700	46.32	-3.34	1.88
				5750	51.4	-2.89	2.18
				5800	55.26	-2.58	2.18
				5850	53.39	-2.73	2.06

Freq(MHz)	Effi(%)	Effi(dB)	Gain(dBi)
2400	23.91	-6.21	-0.53
2410	24.26	-6.15	-0.66
2420	24.62	-6.09	-0.63
2430	24.74	-6.07	-0.7
2440	25.2	-5.99	-0.63
2450	26.37	-5.79	-0.27
2460	27.69	-5.58	0.05
2470	28.72	-5.42	0.48
2480	29.87	-5.25	0.96
2490	31.51	-5.02	0.92
2500	31.7	-4.99	0.88

BT Efficiency/Gain

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1. Reference Gain and Type

Antenna Peak gain w/ cable loss (dBi)											
Band/Frequency		2.4GHZ	5.2GHZ	5.3GHZ	5.6GHZ	5.8GHZ	5.9GHZ	6.2GHZ	6.5GHZ	6.7GHZ	7.0GHZ
		2400-2483.5 MHz	5150-5250 MHz	5250-5350 MHz	5470-5725 MHz	5725-5850 MHz	5850-5895 MHz	5925-6425 MHz	6425-6525 MHz	6525-6875 MHz	6875-7125 MHz
Design	EU/UK										
PIFA	For WiFi 6E and earlier	2.29/0.2	2.47/0.5	2.7/0.5	2.79/0.5	2.45/0.5					
	From WiFi 7										
Dipole	For WiFi 6E and earlier										
	From WiFi 7										
Mono pole	From WiFi 7										

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	

2. Document Revision History

3. Test & System Description

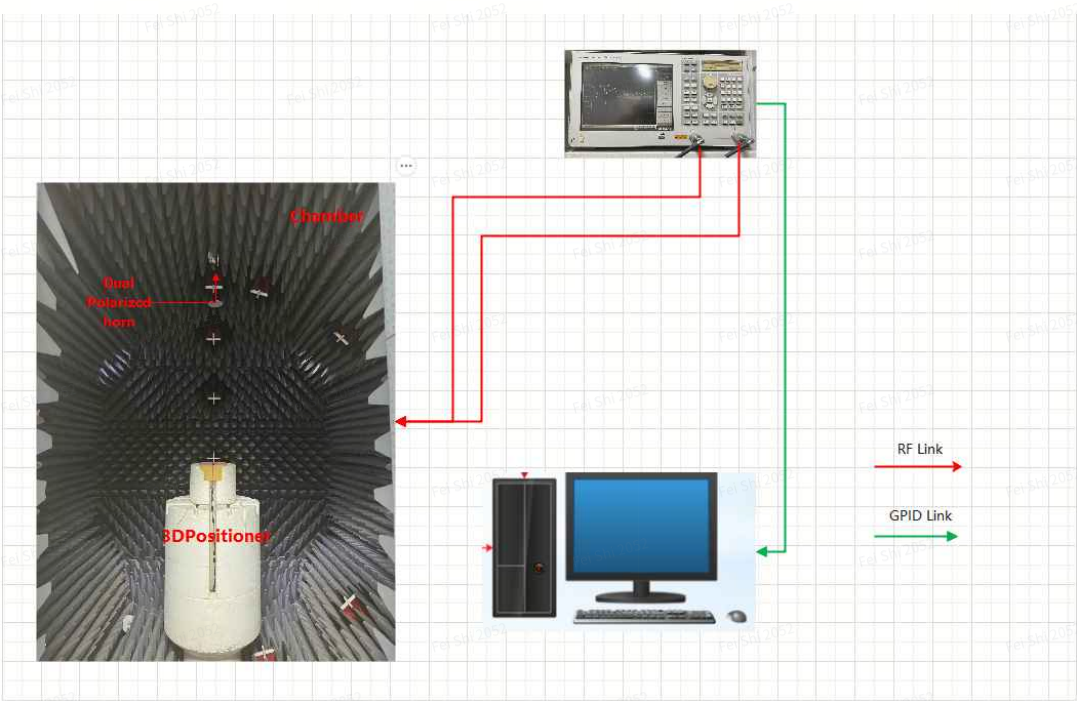
1. Measurement Method and System

<insert test description here for test method>

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

2. Test setup

<insert test diagram here for test site utilized>



3. Equipment list

<insert test diagram here for test site utilized>

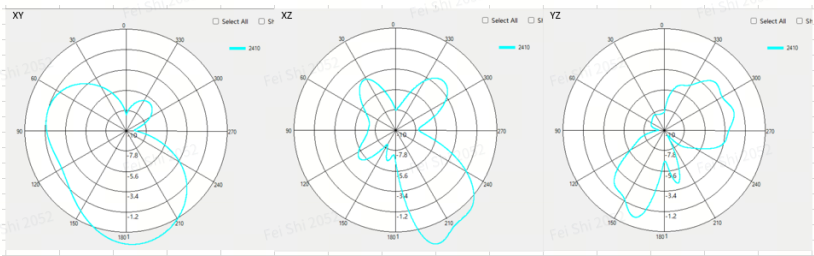
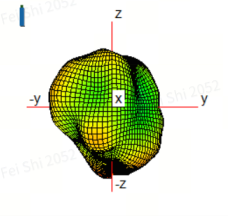
Number	Device	Type/ Model	Serial	Manufacturer	Cal. Date	Cal. due. Date
1	Turn table control box	GTS	-	General Test 2800	N/A	N/A
2	Turn table control computer	DESKTOP	DESKTOP-MNSUVR	LENOVO	N/A	N/A
3	Network Analyzer	5071B	5071B	Agilent Technologies	2023/7/15	2024/7/15

4. Radiation characteristics of antenna loaded in Host Platform

WIFIA Antenna

Max Antenna 2D、 3D Radiation Pattern 2400 – 2483.5 MHz

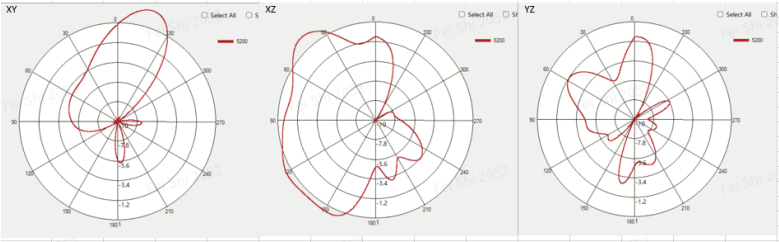
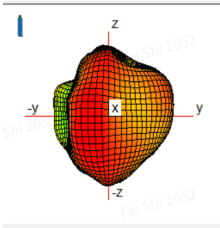
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2410	2.29/0.2



Max Antenna 2D、 3D Radiation Pattern 5150-5250 MHz

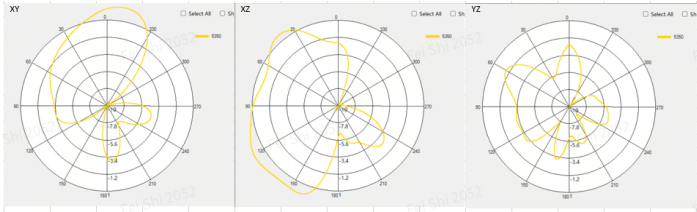
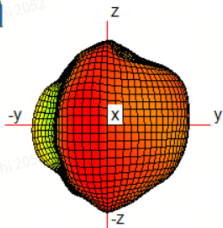
Frequency	Peak Gain w/ Cable Loss
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(MHz)	(dBi)
5200	2.47/0.5



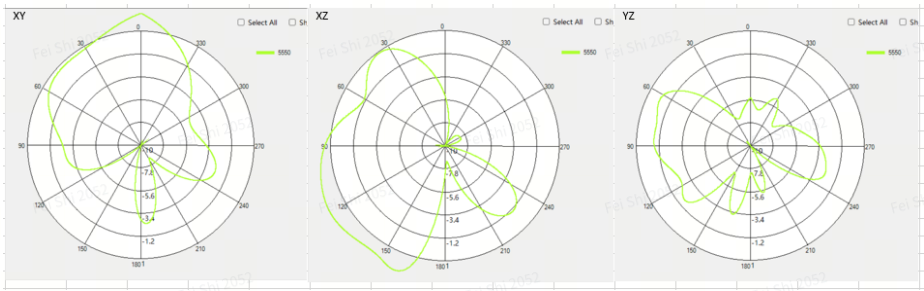
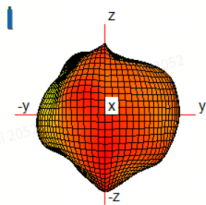
Max Antenna 2D、 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5350	2.54/0.5



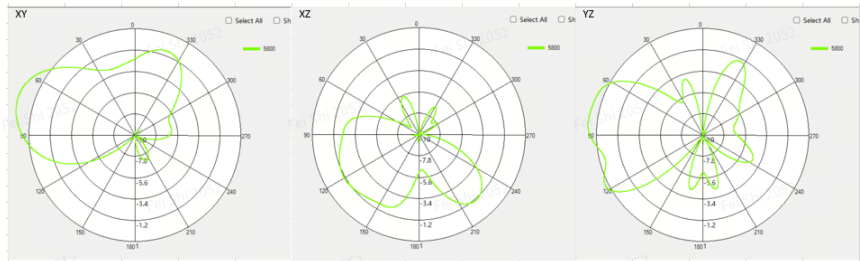
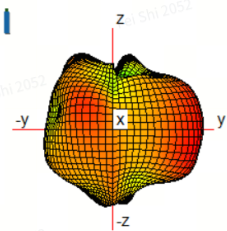
Max Antenna 2D、3D Radiation Pattern 5470-5725 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5550	2.79/0.5



Max Antenna 2D、3D Radiation Pattern 5725-5850 MHz

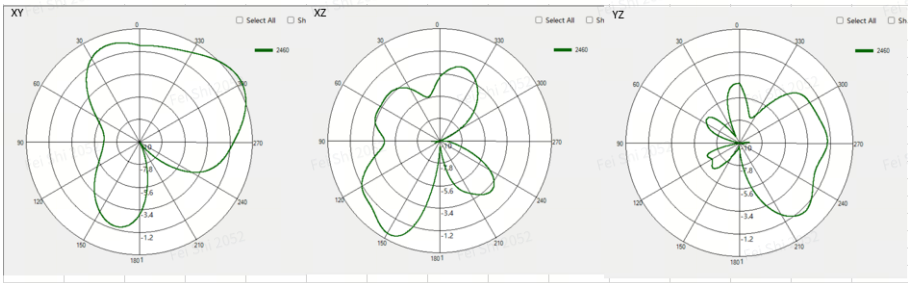
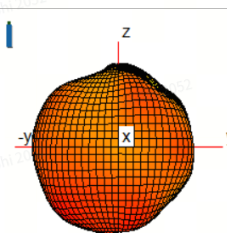
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5800	2.45/0.5



WIFIB Antenna

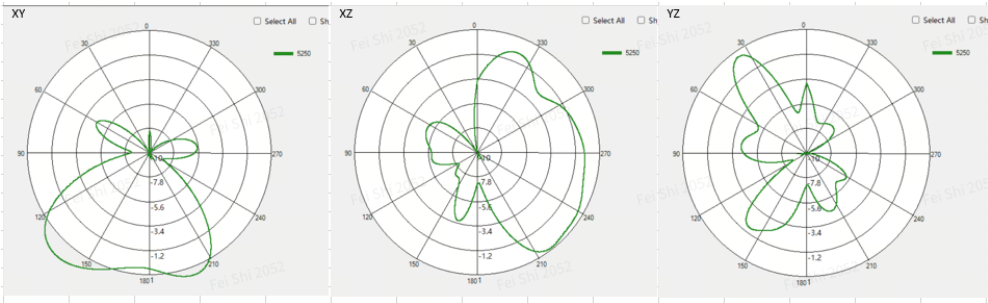
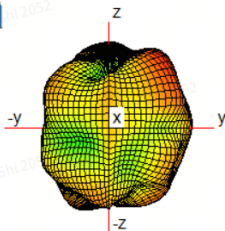
Max Antenna 2D、 3D Radiation Pattern 2400 – 2483.5 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
2460	1.52/0.2



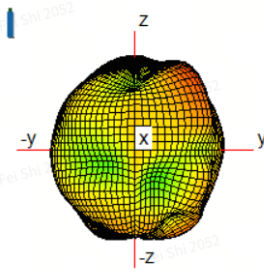
Max Antenna 2D、 3D Radiation Pattern 5150-5250 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5250	2.13/0.5



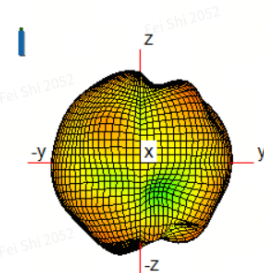
Max Antenna 2D、 3D Radiation Pattern 5250-5350 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5350	2.7/0.5



Max Antenna 2D、3D Radiation Pattern 5470-5725 MHz

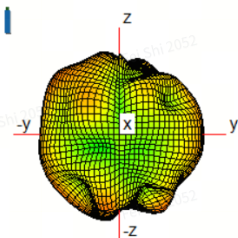
Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5550	2.76/0.5



Fei Shi 2052

Max Antenna 2D、3D Radiation Pattern 5725-5850 MHz

Frequency (MHz)	Peak Gain w/ Cable Loss (dBi)
5800	2.18/0.5

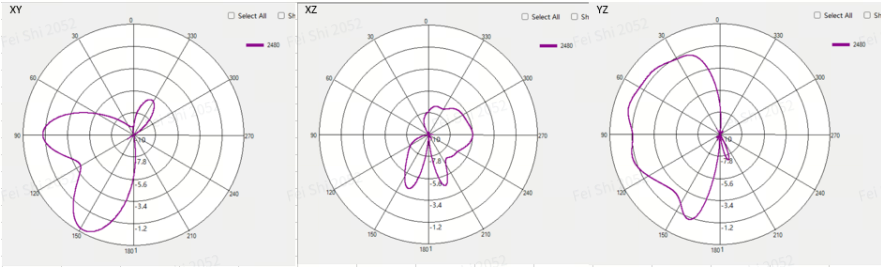
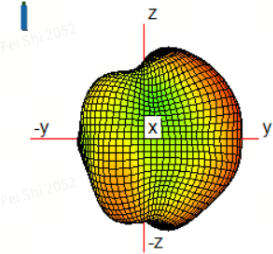


BT Antenna

Max Antenna 2D、3D Radiation Pattern 2400 – 2483.5 MHz

Frequency	Peak Gain w/ Cable Loss
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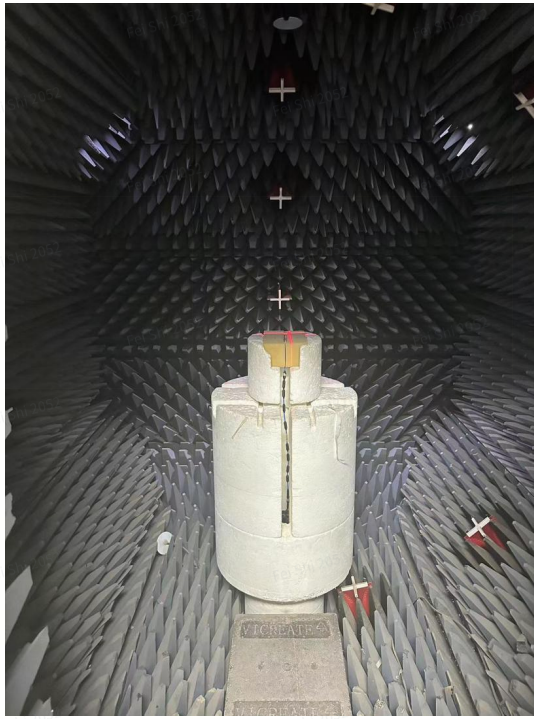
	(MHz)		(dBi)	
	2480		0.96/0.2	



Annex A. Photographs

A.1 Setup Photo

<insert test diagram here for test site utilized>



A.2 Test sample

WIFIA Antenna	Size: 21.04*6.17 mm
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Antenna Drawing

Antenna Photo	
Front	Back
See the antenna photo attachment 1: Picture 1	See the antenna photo attachment 1: Picture 2

Note: antenna photo should include L type ruler

WIFIB Antenna	Size: 53*16mm
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WIFIB Antenna	Size: 53*16mm
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Antenna Drawing	Fei Shi 2052	Fei Shi 2052	Fei Shi 2052	Fei Shi 2052	Fei Shi 2052
	Fei Shi 2052	Fei Shi 2052	Fei Shi 2052	Fei Shi 2052	Fei Shi 2052

Note: antenna photo should include L type ruler

BT Antenna

Size: 20.8*6.35 mm

Antenna Drawing

Antenna Photo

Front

See the antenna photo attachment 1: Picture 5

Back

See the antenna photo attachment 1: Picture 6

Bottom of laptop

Main

Aux

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.



Main antenna

XX.0mm

XX.0mm