

Product Specifications for Approval

Material part number: WF4221B-1131R-180 (Grey)

WF4221B-1131R-150 (Black)

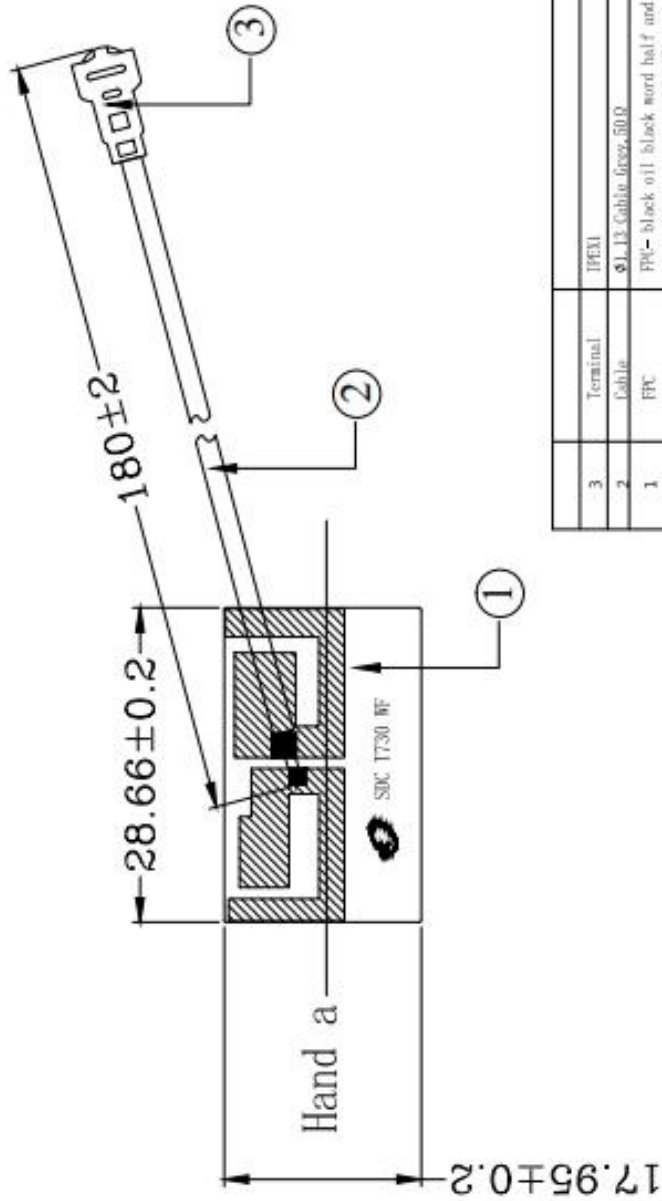
WF4221B-1131R-120 (Grey)

Customer name: ValueHD Corporation Model: APS100

Antenna frequency band: WIFI 2.4G/5.8G/BT

Revision: R-A

Production date: 2023-01-12



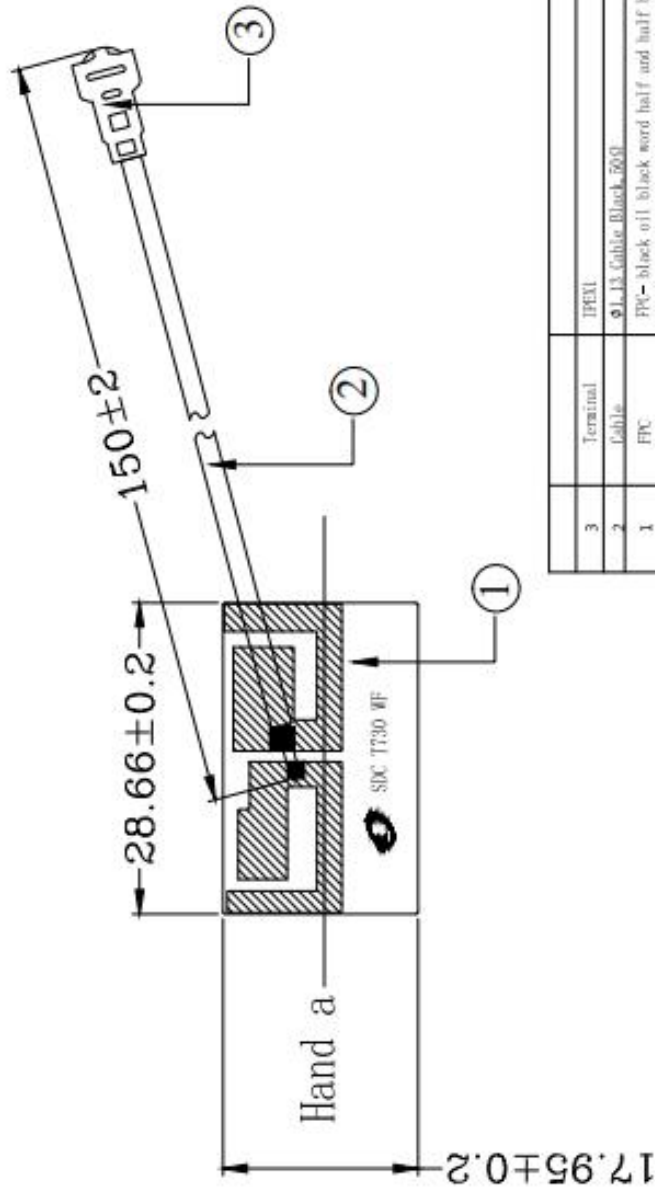
3	Terminal	IP6X1	1
2	Cable	φ 1.13 Cable Grey, 50Q	180
1	IPC	IPC- black oil black word half and half base material, do antioxidant treatment 3M 9471 back glue	1
NO	DESCRIPTION		QTY



Research and development of Shenzhen Ruifeng Electronic Technology Co., LTD

0 Name	WF antenna	Customer mode	T730			
Design	Li Yao Na	Finished material number	WF4221D-1131R-180 (Grey)			
Audit		proportion	1:1	Unit	mm	
Approve		FREE		Unit	mm	
				5	6	7
				5	6	8

XXX	±10.0	Name	WF antenna	Customer code	T730		
XX	±5.0			Finished material number	WF421B-1131R-180(Grey)		
X	±2.0	Design	Li Yao Na				
XX	±0.5	Audit		Inspection	Material	Drawn	Page number
XXX	±0.2						
		Approve		FREE	mm		I/I
4		5	6	7	8		



3	Terminal	TH4X1			1	C
2	Cable	Φ1.13 Cable Black 500			150	
1	FW	FW-black oil black word half and half base material, do antioxidant treatment 3M 9471 back glue			1	
NO			DESCRIPTION		QTY	

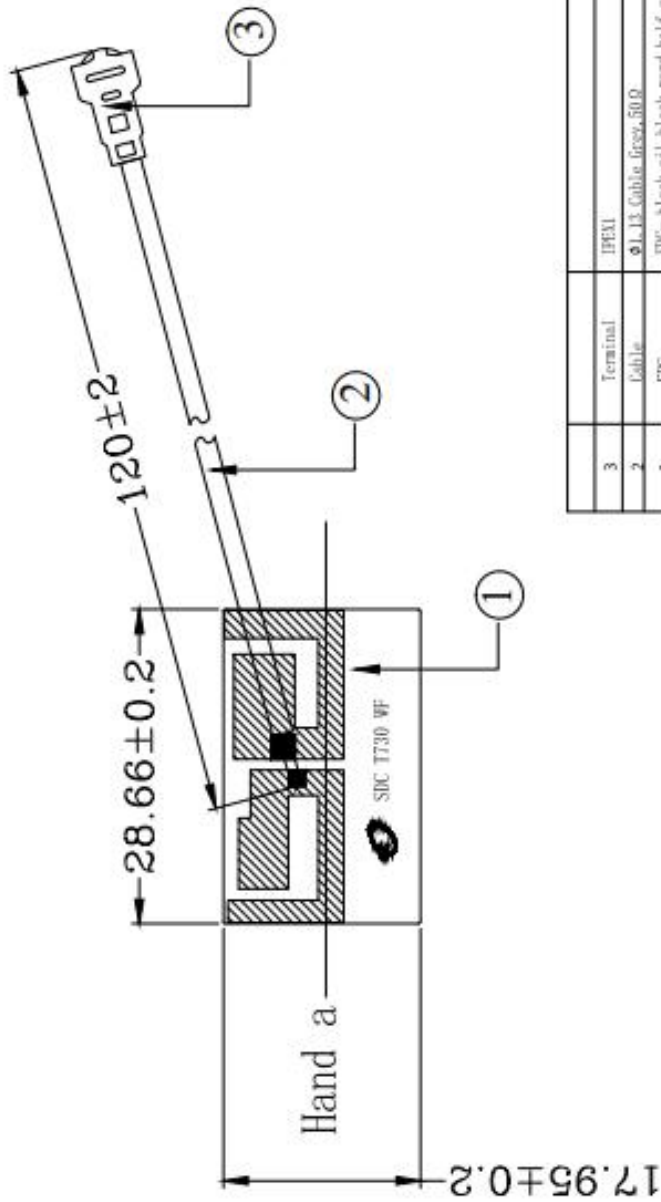


Research and development of Shenzhen Rui Feng Electronic Technology Co., Ltd

φ Name	WF antenna	Customer code	T730			
Design	Li Yao Na	Finished material number	WF4221B-1131R-150(Black)			
Audit		properties	Material	Unit	Yao	Design content
Approve		FREE	mm	mm	mm	mm
						1/1

5
6
7
8

xxx.	±10.0	Name	WF antenna	Customer code		T730		
xx.	±5.0	Design	Li Yao Na	Finished material number		WF4221B-131R-150(Black)		
x.	±2.0							
xx.	±0.5	Audit		proportion	Unit	View	Image content	Page number
xx.	±0.2	Approve		FREE	mm			1/1
								
4	5	6	7	8				



NO	DESCRIPTION	QTY
3	Terminal	1PFX1
2	Cable	Ø1.13 Cable 1922.500
1	FFC	FFC - black oil black word half and half base material, do antioxidant treatment 3M 9471 back glue

Research and development of Shenzhen Ruifeng Electronic Technology Co., LTD

XXX	±10.0	Name	WF antenna	Customer code	T730			
XX	±5.0	Design	Li Yao Na	Finished material number	WF4221B-1131R-120(Grey)			
X	±2.0							
X.X	±0.5	Audit		proportion	Initial	View	Drawing content	Page number
X.XX	±0.2							
		Approve	5	6	7	8		1/1
4								

1. Project information and Electrical Specification

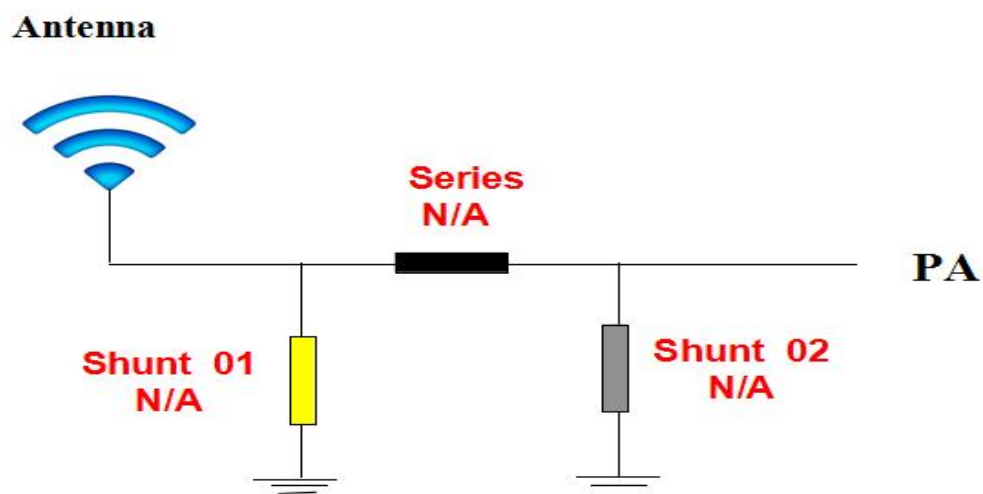
*Those specifications were specially defined for ValueHD Corporation **APS100**, **WIFI2.4G/5.8G/BT**, and all characteristics were measured under the model's handset testing jig .*

1-1 Antenna picture (See the drawings from page 2-4)

1-2 Frequency Band:

Frequency Band	MHz
WIFI2. 4G/5. 8G/BT	2400-5850 (MHz)

1-3 Impedance matching



2. VSWR

Measuring Method:

1. A 50 Ω coaxial cable is connected to the antenna. Then this cable is connected to a network analyzer to measure the VSWR,
2. Keeping this jig away from metal at least 20cm. **VSWR parameter value**



MHZ	2400	2450	2500	5150	5350	5550	5750	5850
Ω	35.9	42.6	51.5	67.8	50.2	55.6	54.2	56.4
VSWR	1.41	1.19	1.21	1.37	1.17	1.11	1.22	1.13
Return loss	-15.25	-21.24	-20.6	-15.97	-21.74	-25.34	-20.01	-24.01



MHZ	2400	2450	2500	5150	5350	5550	5750	5850
Ω	33.84	40.68	47.67	58.14	48.47	56.08	52.79	59.96
VSWR	1.62	1.27	1.08	1.25	1.04	1.14	1.16	1.2
Return loss	-12.45	-18.76	-27.62	-18.87	-32.71	-23.23	-22.48	-20.64



MHZ	2400	2450	2500	5150	5350	5550	5750	5850
Ω	29.48	34.43	46.56	55.31	53.26	47.55	39.5	39.29
VSWR	1.78	1.46	1.13	1.1	1.09	1.2	1.23	1.28
Return loss	-11.02	-14.69	-24.79	-25.94	-26.78	-20.77	-18.61	-18.17

3. Efficiency and Gain*measuring and test instruments:

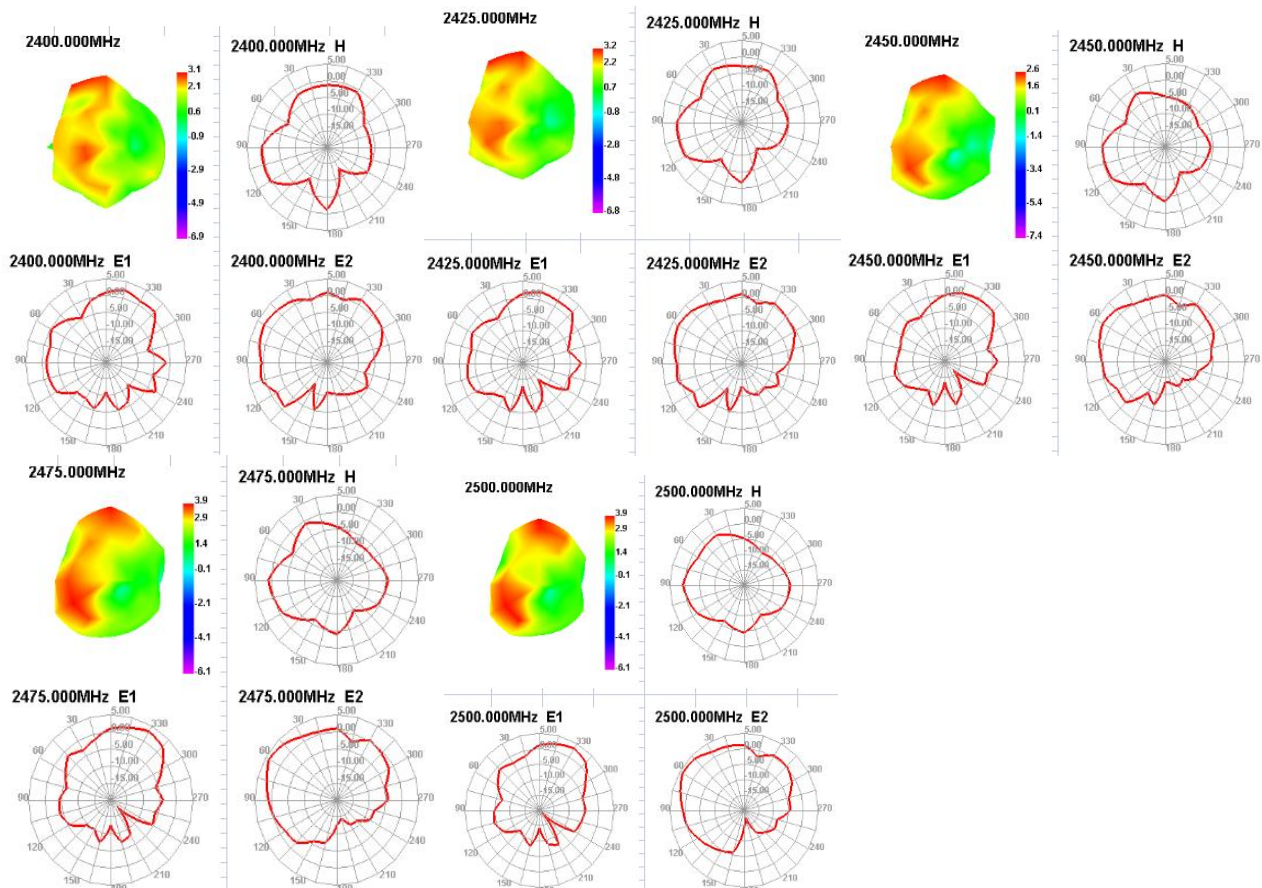
Microwave anechoic chamber, Agilent network analyzer, Agilent spectrum analyzer, 8960 comprehensive tester, standard antenna *test method:

The equipment is fixed on the center of the turntable with the H surface on the same horizontal line as the center of the horn antenna. Efficiency/Gain-

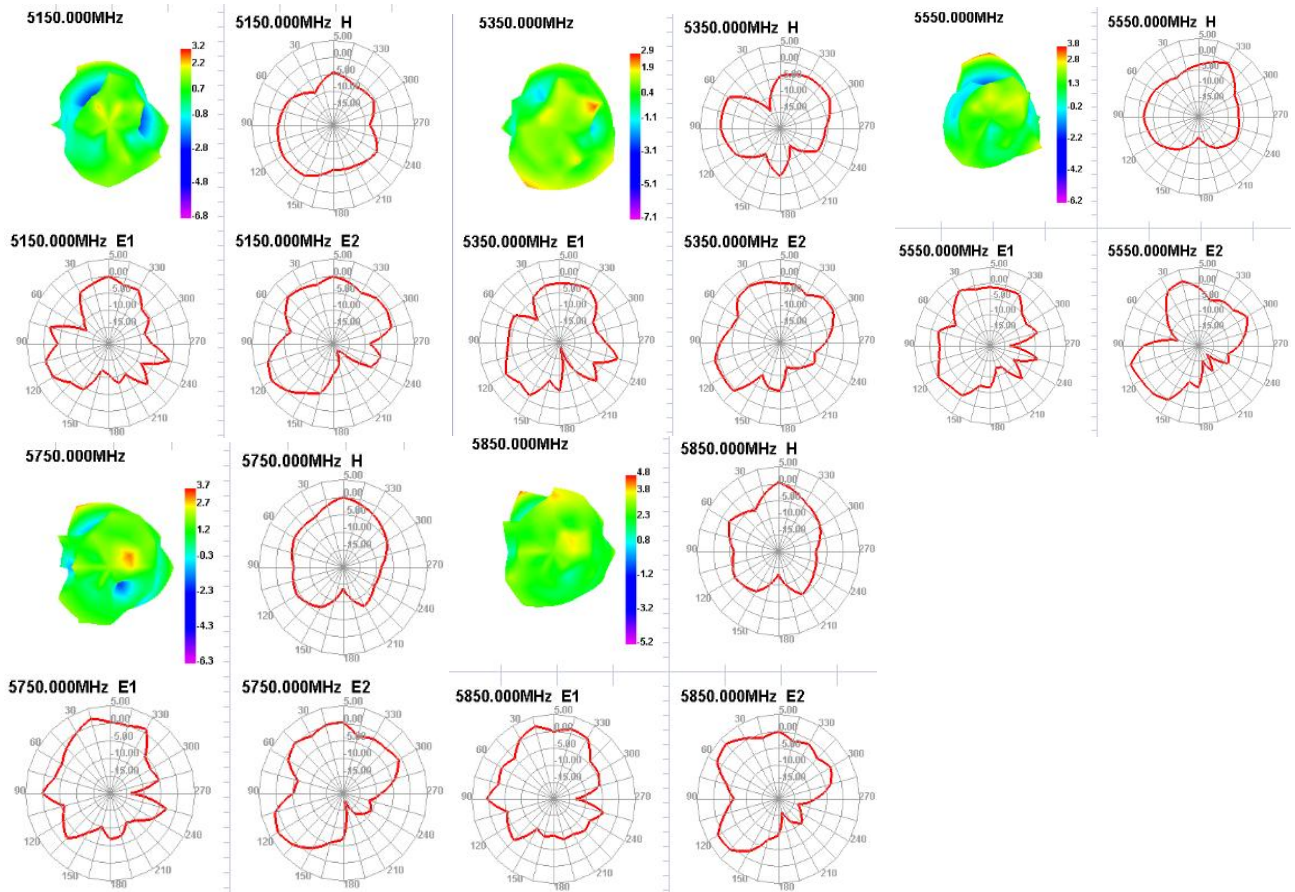
WIFI2. 4G/5. 8G/BT

WIFI 1

Passive Test For 2.4G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	irectivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	57.93	-2.37	3.14	0.99	41.66	16.268	3.14	-20.86	5.52	45	48.93	49.09
2425	57.93	-2.37	3.19	1.04	42.882	15.047	3.19	-17.77	5.56	45	49.1	49.23
2450	46.61	-3.32	2.6	0.45	35.563	11.046	2.6	-18.09	5.92	45	49.24	49.26
2475	58.55	-2.32	3.89	1.74	45.782	12.766	3.89	-21.98	6.22	45	49.98	49.91
2500	61.38	-2.12	3.94	1.79	48.037	13.342	3.94	-19.47	6.06	45	49.71	49.62



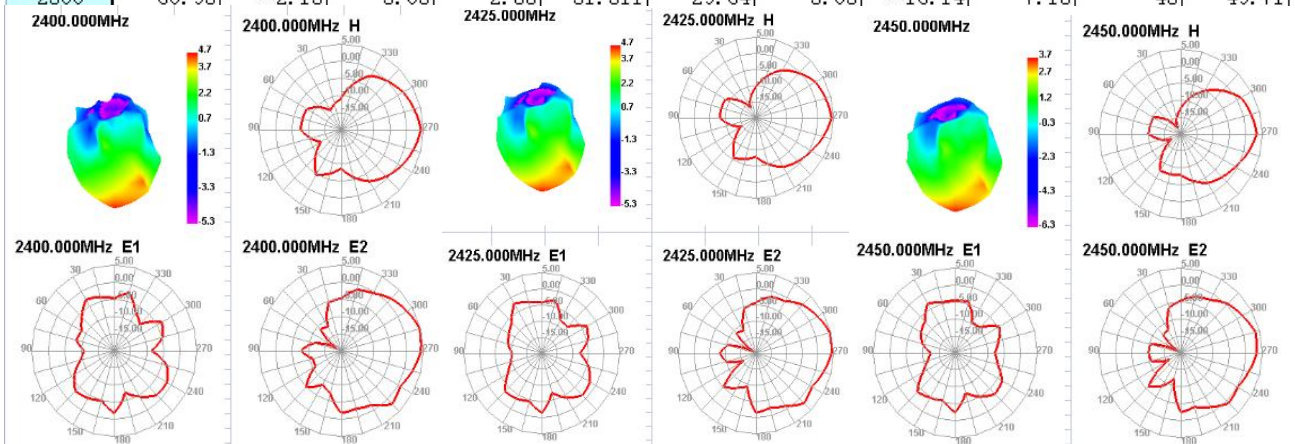
Passive Test For 5.8G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	irectivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	44.06	-3.56	3.22	1.07	21.838	22.221	3.22	-21.24	6.78	15	61.1	60.72
5250	51.42	-2.89	3.5	1.35	26.132	25.285	3.5	-17.17	6.39	15	61	60.69
5350	46.11	-3.36	2.93	0.78	24.225	21.883	2.93	-25.7	6.29	45	60.61	59.93
5450	58.08	-2.36	4.18	2.03	31.164	26.92	4.18	-15.68	6.54	45	62.77	61.52
5550	51.35	-2.89	3.82	1.67	25.862	25.487	3.82	-19.29	6.71	60	62.14	60.69
5650	55.81	-2.53	3.61	1.46	28.331	27.477	3.61	-30.26	6.15	75	64.09	62.89
5750	53.73	-2.7	3.75	1.6	28.387	25.344	3.75	-17.68	6.44	60	63.14	62.22
5850	61.39	-2.12	4.83	2.68	33.896	27.491	4.83	-21.75	6.95	60	64.81	63.97

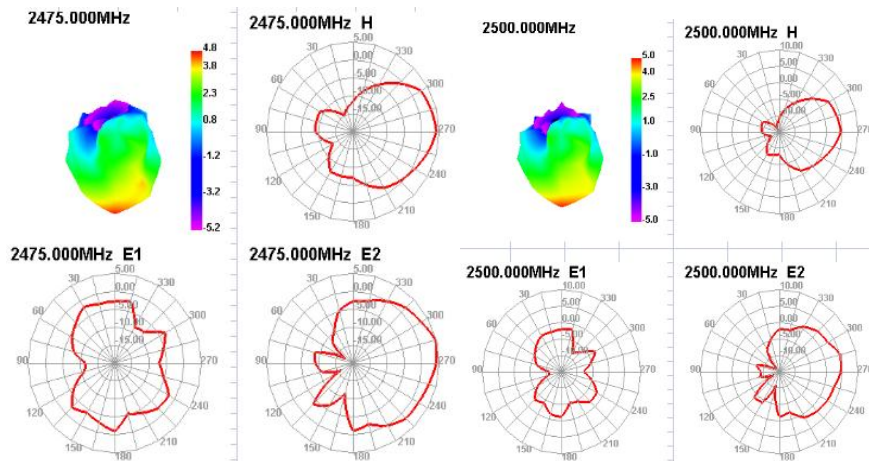


WIFI 2

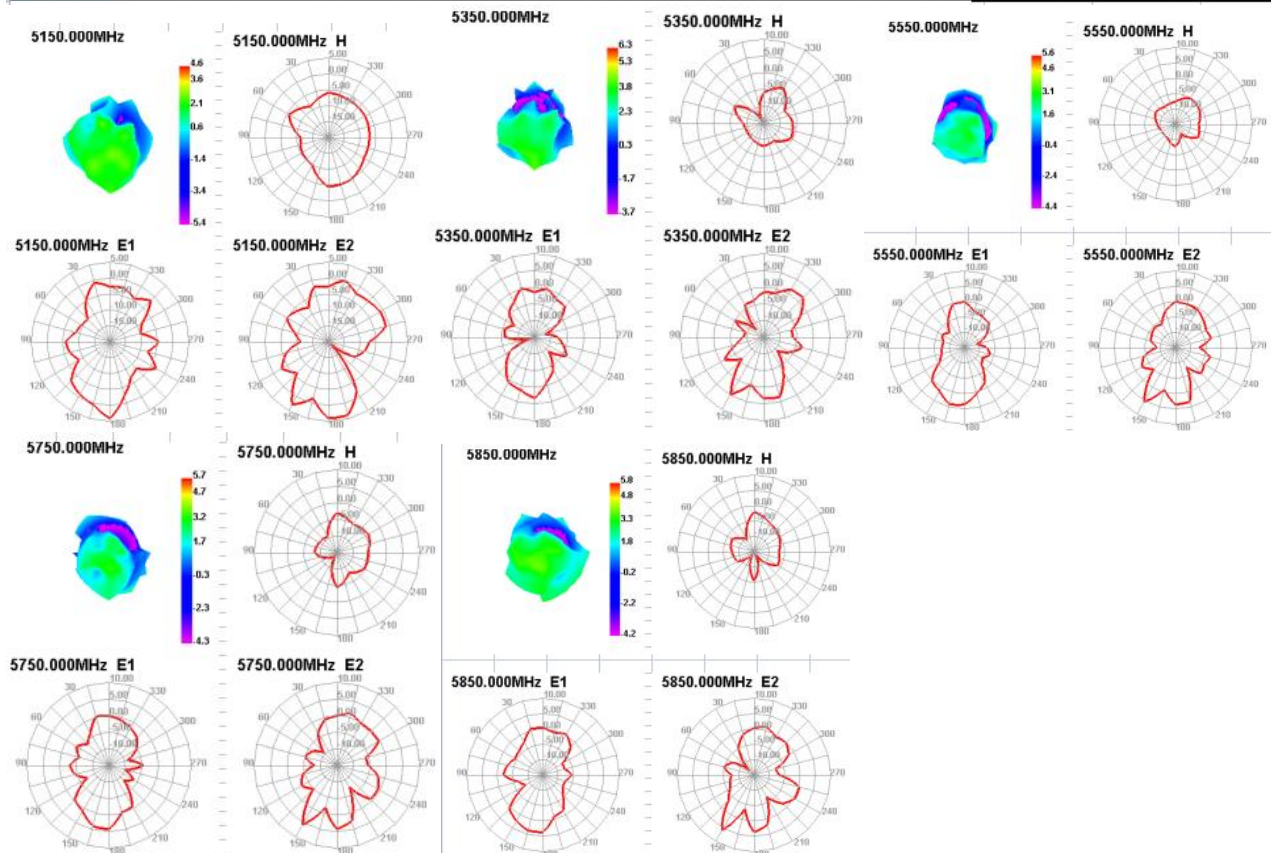
Passive Test For 2.4G

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	irectivit (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	55.14	-2.59	4.73	2.58	28.247	26.89	4.73	-18.86	7.32	45	48.93	49.09
2425	53.49	-2.72	4.68	2.53	27.535	25.954	4.68	-20.68	7.39	0	49.1	49.23
2450	41.74	-3.79	3.66	1.51	21.603	20.141	3.66	-22.74	7.46	45	49.24	49.26
2475	55.85	-2.53	4.83	2.68	28.852	27	4.83	-17.6	7.36	15	49.98	49.91
2500	60.95	-2.15	5.03	2.88	31.311	29.64	5.03	-16.14	7.18	45	49.71	49.62



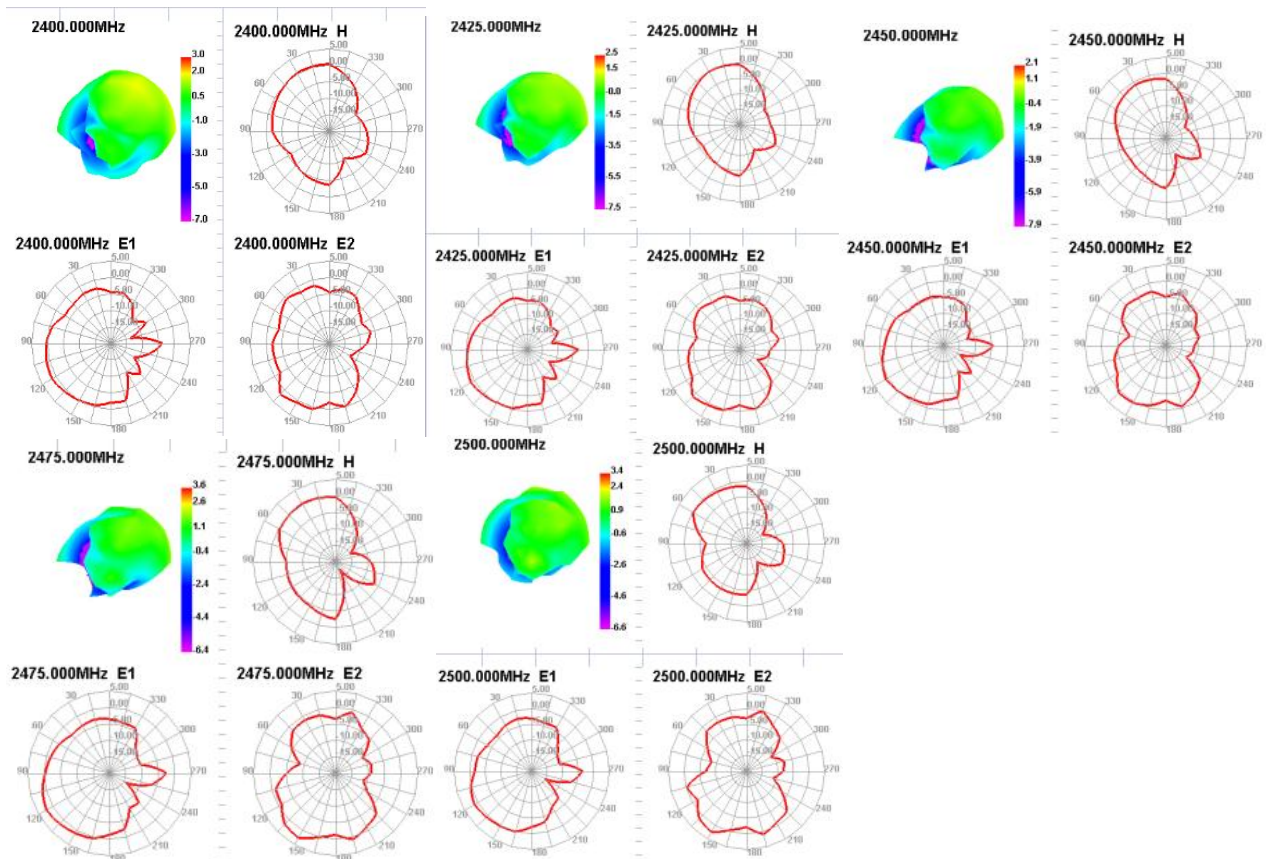


Passive Test For 5.8G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	irectivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	36.16	-4.42	4.59	2.44	15.218	20.94	4.59	-21.84	9.01	0	61.1	60.72
5250	43.6	-3.61	6.28	4.13	18.432	25.164	6.28	-17.15	9.89	15	61	60.69
5350	42.95	-3.67	6.25	4.1	18.377	24.572	6.25	-16.83	9.92	30	60.61	59.93
5450	48.83	-3.11	6.57	4.42	19.741	29.085	6.57	-14.64	9.69	45	62.77	61.52
5550	42.51	-3.72	5.59	3.44	16.446	26.063	5.59	-14.93	9.31	30	62.14	60.69
5650	45.08	-3.46	6.03	3.88	18.169	26.913	6.03	-15.29	9.49	15	64.09	62.89
5750	48.13	-3.18	5.66	3.51	19.419	28.709	5.66	-14.14	8.84	15	63.14	62.22
5850	49.03	-3.1	5.81	3.66	19.692	29.337	5.81	-18.73	8.9	30	64.81	63.97

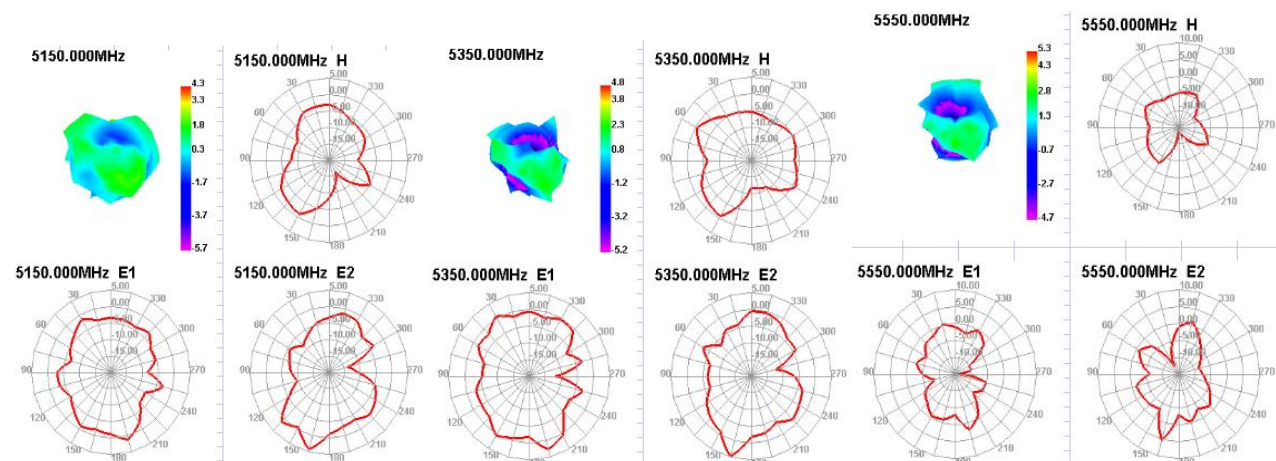


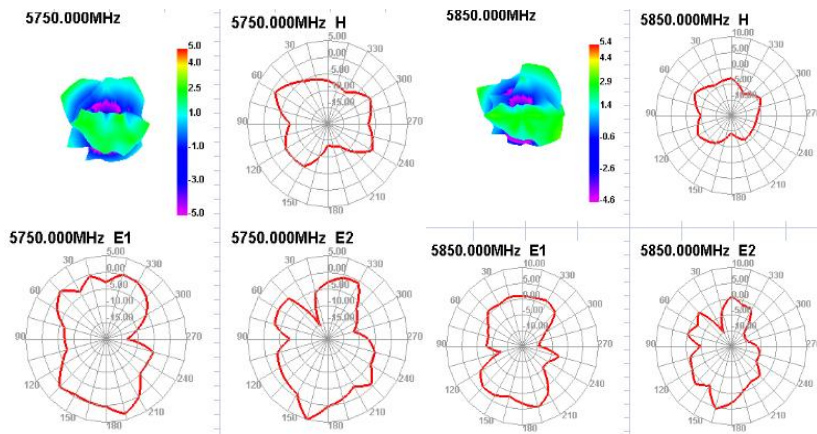
WIFI 3

Passive Test For 2.4G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	irectivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	47.7	-3.21	2.97	0.82	18.525	29.175	2.97	-23.67	6.19	90	48.93	49.09
2425	44.82	-3.49	2.49	0.34	17.288	27.532	2.49	-20.65	5.97	90	49.1	49.23
2450	42.8	-4.23	2.08	-0.07	14.14	23.657	2.08	-18.42	6.3	75	49.24	49.26
2475	53.21	-2.74	3.6	1.45	18.808	34.407	3.6	-18.14	6.34	75	49.98	49.91
2500	49.08	-3.09	3.35	1.2	17.399	31.683	3.35	-21.69	6.45	60	49.71	49.62



Passive Test For 5.8G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5150	40.81	-3.89	4.31	2.16	17.884	22.93	4.31	-18.55	8.2	15	61.1	60.72
5250	50.51	-2.97	5.26	3.11	23.038	27.474	5.26	-16.08	8.23	0	61	60.69
5350	46.96	-3.28	4.82	2.67	22.428	24.532	4.82	-12.17	8.11	15	60.61	59.93
5450	49.4	-3.06	5.54	3.39	22.505	26.898	5.54	-17.1	8.6	15	62.77	61.52
5550	43.3	-3.64	5.28	3.13	19.344	23.956	5.28	-13.98	8.91	15	62.14	60.69
5650	49.42	-3.06	5.94	3.79	21.21	28.21	5.94	-18.79	9	0	64.09	62.89
5750	46.08	-3.36	4.98	2.83	18.145	27.938	4.98	-15.59	8.35	15	63.14	62.22
5850	63.14	-2	5.37	3.22	25.274	37.866	5.37	-13.27	7.37	30	64.81	63.97





4.WIFI OTA Data

2. 4GWIFI	TRP			TIS		
Channel	CH1	CH6	CH12	CH1	CH6	CH12
802.11 b , 11M	19.79	19.63	19.24	-77.25	-76.43	-76.28
802.11 g , 54M	19.15	19.06	19	-66.11	-66.72	-67.09
802.11 n , MCS7 (65M)	19.46	19.14	18.73	-66.48	-66.61	-67.56

5. 8G	802.11A, (5.8G) 54M		
Channel	CH36	CH60	CH165
TRP	18.93	18.89	17.38
TIS	-74.11	-73.97	-73.38

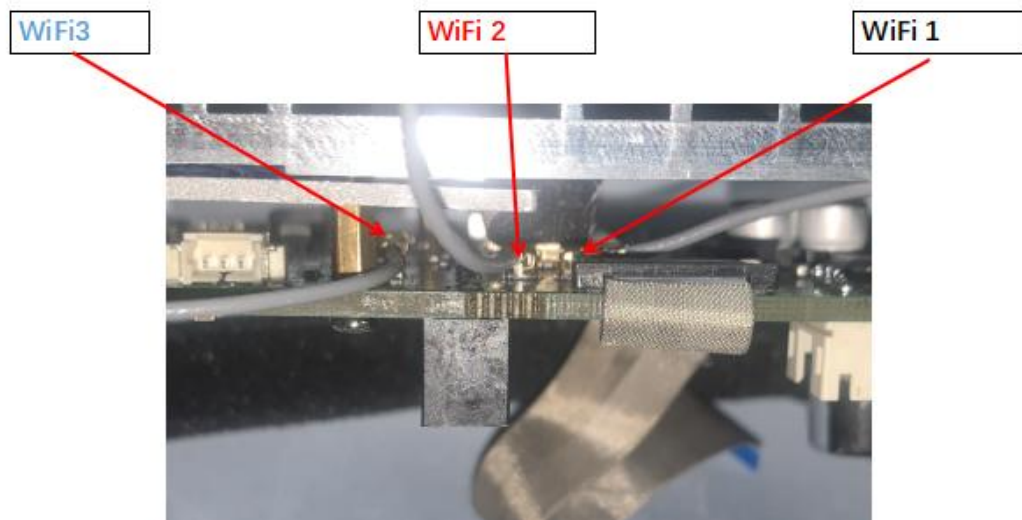
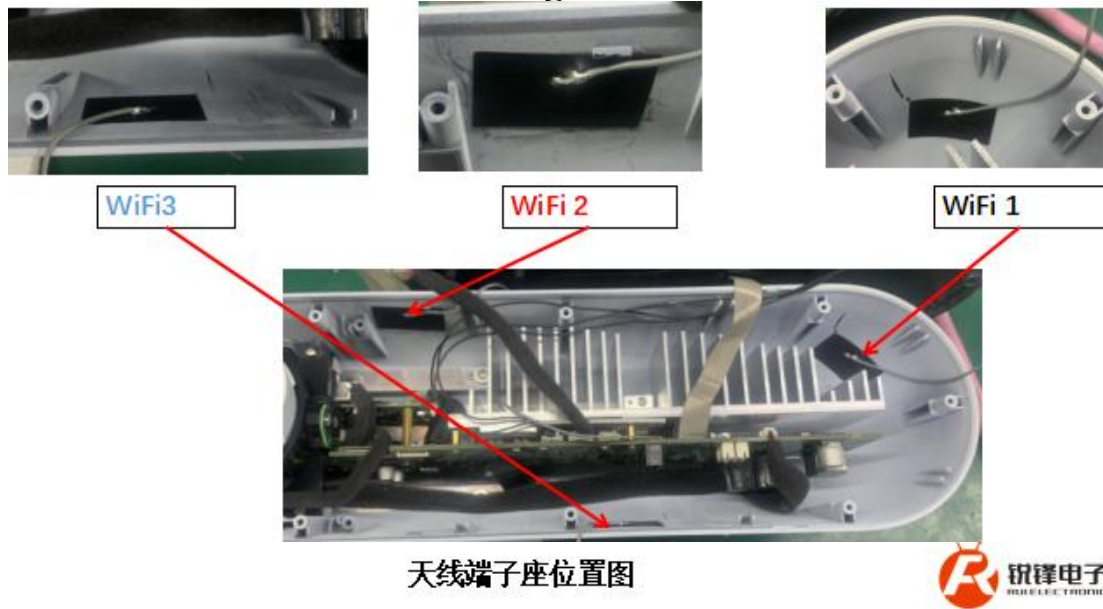
5.The production index

When the antenna is mass-produced, the VSWR is used as the mass-production test standard.

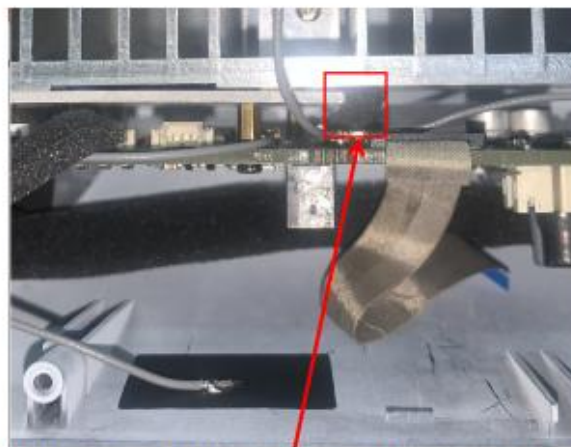
According to the differences of the project itself, the following standards are given:

Frequency	Mass production criteria
WIFI2. 4G/5. 8G/BT	VSWR (mass production product) < VSWR (design sample) +/-0.5

6. Antenna installation location diagram



7. Environmental treatment



WiFi模块上方区域贴导电泡棉跟金属散热片接地

‘The area above the Wifi module is pasted with conductive foam and metal heat sink for grounding’