

Antenna Test Report

Product name: Wireless transceiver module

Product model: WXT6FK1111D80

Frequency: 2.4GHz+5GHz

Test date: 2025.3.3

Test purpose: Antenna performance test

To be prepared: Chen Haomin

Review: Tang Hongjun

ratify : High light

test result :

Standing wave: WF 2.4G 1.1~2.1, 5G 2.2~2.4, BT 1.6~2.3
Isolation: The isolation levels of WF and BT range from 16.8 to 18.7 dB.
Direction pattern: All antenna direction patterns have slight angular deviations.
Efficiency: WF 2.4G ranges from 47% to 58%,5G from 41% to 46%, and BT from 48% to 56%.
Gain (MAX): 0.3~1.3dBi for WF 2.4G,1.4~2.8dBi for 5G, and 0.3~1.5dBi for BT

Revision history

Edition	Date	state
V1.0	2025-05-07	First edition
V1.1	2025-05-13	Add 3D graph
V1.2	2025-05-14	Add module coordinate chart indicator to test environment

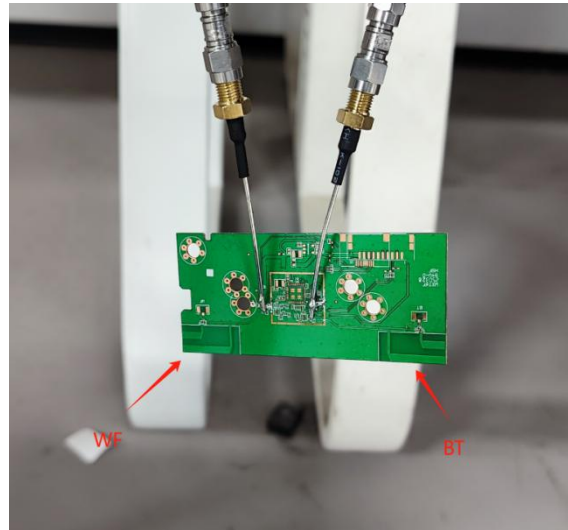
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1、 Antenna Position

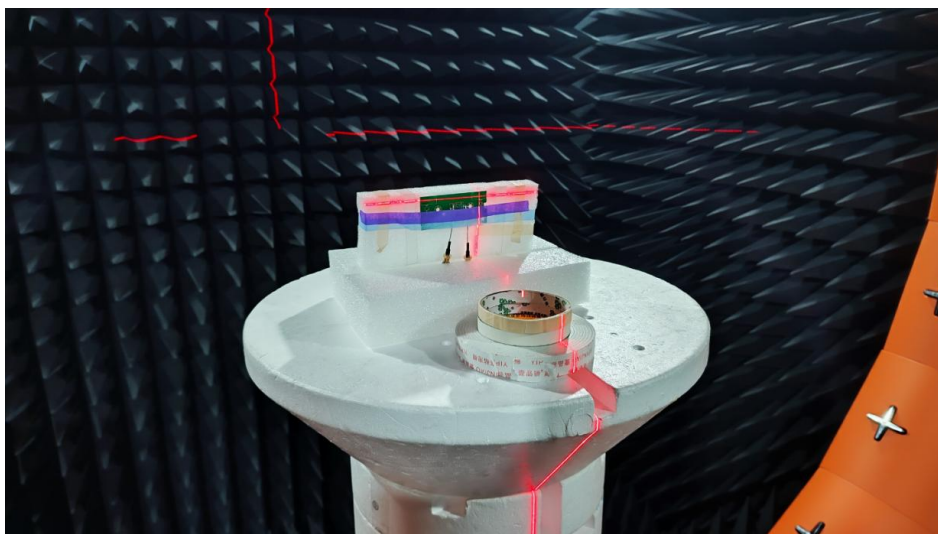
1.1 Module Placement Requirements

WIFI: PCB antenna; BT: PCB antenna, free space test

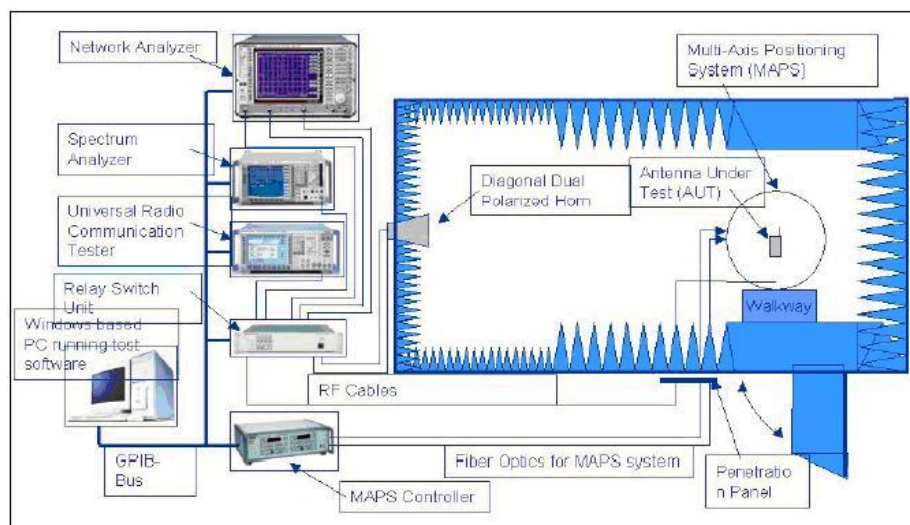
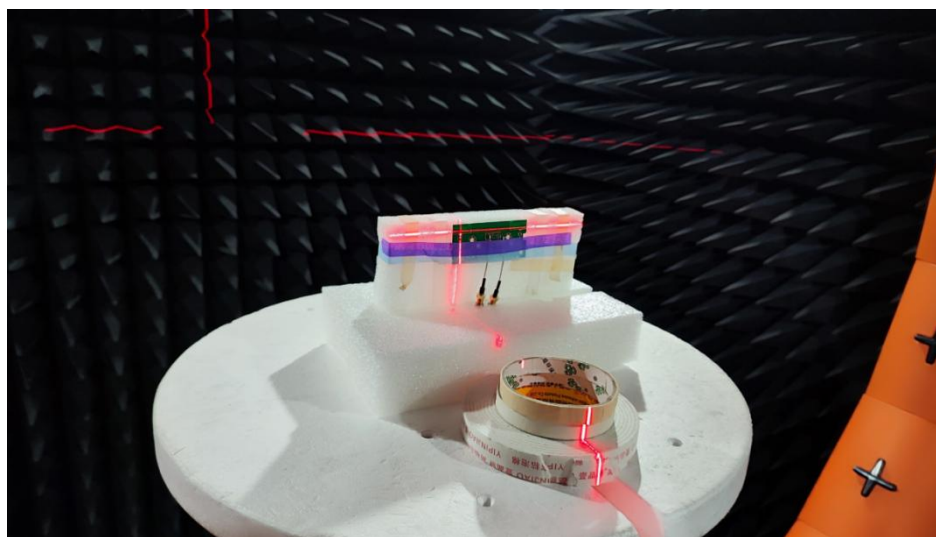


2、 Testing Environment

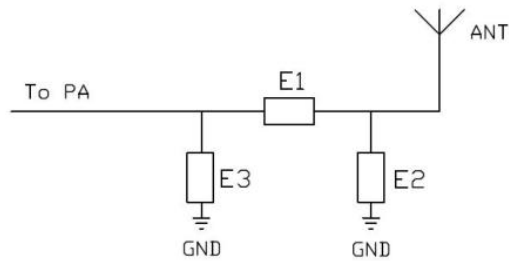
2.1 WF Antenna Test Environment



2.2 BT Antenna Test Environment



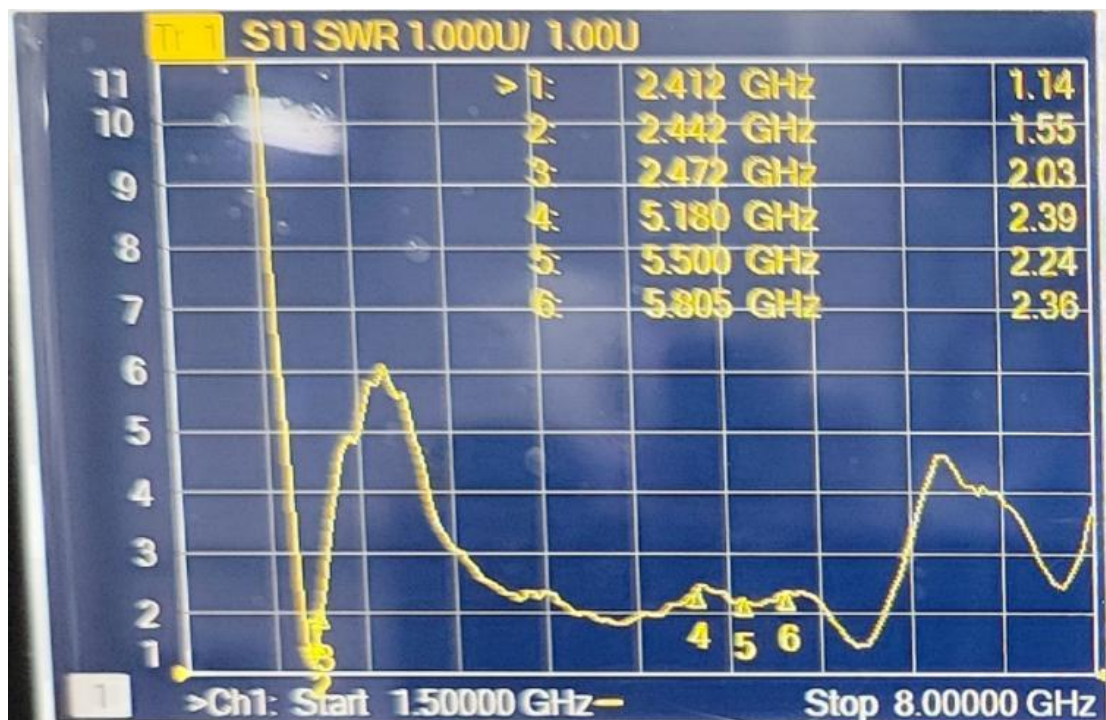
3 、 Antenna Loading Coil



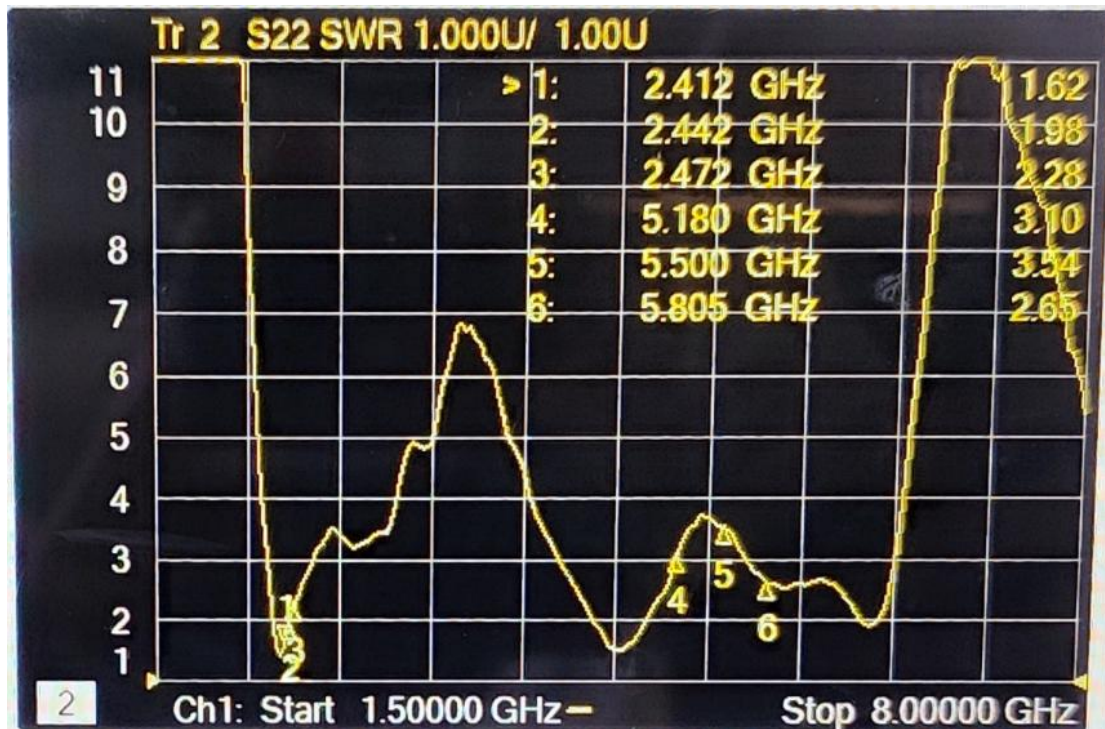
Match description	WF	BT
E1	0 Ω	0 Ω
E2	NC	NC
E3	NC	NC

4 、 Antenna Standing Wave Ratio

4.1 WF



4.2 BT



5、 Antenna Isolation

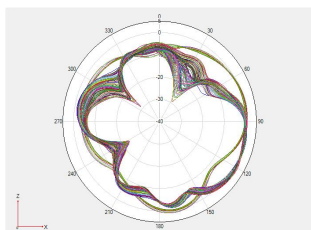
5.1 WF&BT



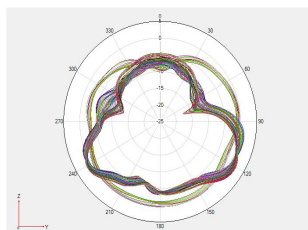
6 、 Directional Diagram

6.1 WF Directional Diagram

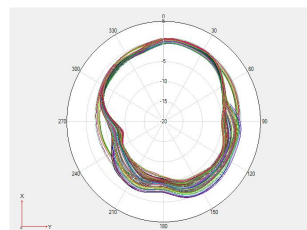
Phi 0 2D



Phi 90 2D

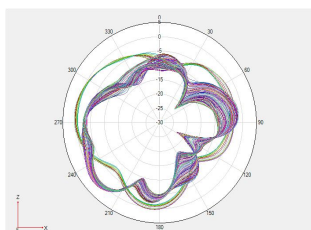


Theta 90 2D

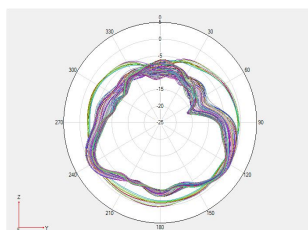


6.2 BT Directional Diagram

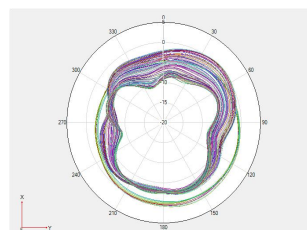
Phi 0 2D



Phi 90 2D

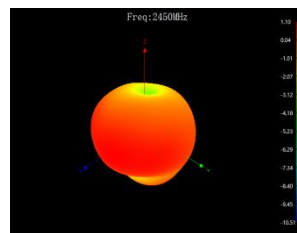
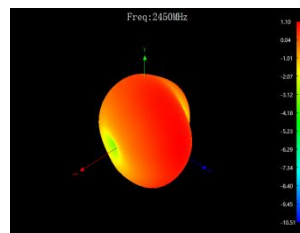
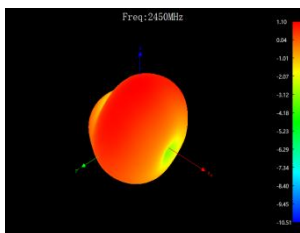


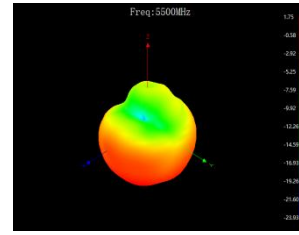
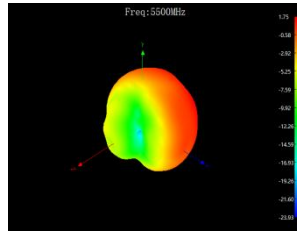
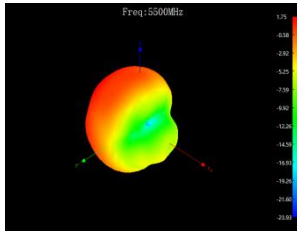
Theta 90 2D



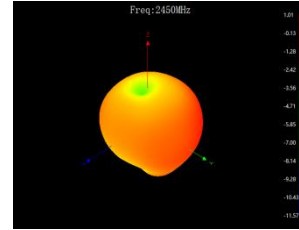
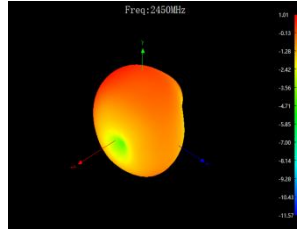
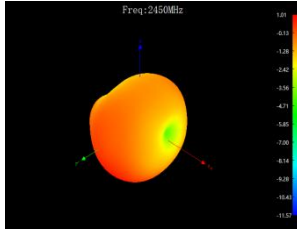
7、 3D Etotal

7.1 WF3D Graph





7.2 BT3D Graph



8、 Efficiency and Gain

8.1 WF Efficiency and Gain

Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi	AvgGain/dBi
2400	-2.34	58.34	1.36	-2.34
2410	-2.34	58.34	1.24	-2.34
2420	-2.3	58.88	1.22	-2.3
2430	-2.33	58.48	1.36	-2.33
2440	-2.47	56.62	1.33	-2.47
2450	-2.7	53.7	1.1	-2.7
2460	-2.92	51.05	0.89	-2.92
2470	-3.09	49.09	0.55	-3.09
2480	-3.21	47.75	0.34	-3.21
2490	-3.37	46.03	0.1	-3.37
2500	-3.43	45.39	0.09	-3.43
5000	-2.91	51.17	1.56	-2.91
5010	-2.94	50.82	1.44	-2.94
5020	-3.01	50	1.45	-3.01
5030	-3.08	49.2	1.36	-3.08
5040	-3.12	48.75	1.46	-3.12
5050	-3.05	49.55	1.44	-3.05
5060	-3.02	49.89	1.5	-3.02
5070	-3.03	49.77	1.39	-3.03
5080	-3.07	49.32	1.37	-3.07
5090	-3.07	49.32	1.28	-3.07
5100	-3.09	49.09	1.34	-3.09

5110	-3.19	47.97	1.24	-3.19
5120	-3.21	47.75	1.34	-3.21
5130	-3.22	47.64	1.4	-3.22
5140	-3.23	47.53	1.45	-3.23
5150	-3.32	46.56	1.41	-3.32
5160	-3.3	46.77	1.43	-3.3
5170	-3.29	46.88	1.49	-3.29
5180	-3.31	46.67	1.51	-3.31
5190	-3.39	45.81	1.48	-3.39
5200	-3.37	46.03	1.52	-3.37
5210	-3.33	46.45	1.6	-3.33
5220	-3.37	46.03	1.55	-3.37
5230	-3.32	46.56	1.75	-3.32
5240	-3.36	46.13	1.74	-3.36
5250	-3.4	45.71	1.72	-3.4
5260	-3.51	44.57	1.63	-3.51
5270	-3.59	43.75	1.61	-3.59
5280	-3.68	42.85	1.51	-3.68
5290	-3.58	43.85	1.68	-3.58
5300	-3.54	44.26	1.7	-3.54
5310	-3.5	44.67	1.76	-3.5
5320	-3.54	44.26	1.7	-3.54
5330	-3.65	43.15	1.55	-3.65
5340	-3.7	42.66	1.47	-3.7
5350	-3.68	42.85	1.45	-3.68
5360	-3.63	43.35	1.57	-3.63
5370	-3.73	42.36	1.47	-3.73
5380	-3.75	42.17	1.59	-3.75
5390	-3.77	41.98	1.58	-3.77
5400	-3.67	42.95	1.69	-3.67
5410	-3.73	42.36	1.57	-3.73
5420	-3.74	42.27	1.54	-3.74
5430	-3.8	41.69	1.47	-3.8
5440	-3.64	43.25	1.6	-3.64
5450	-3.68	42.85	1.59	-3.68
5460	-3.69	42.76	1.63	-3.69
5470	-3.7	42.66	1.71	-3.7
5480	-3.78	41.88	1.72	-3.78
5490	-3.79	41.78	1.79	-3.79
5500	-3.84	41.3	1.75	-3.84
5510	-3.78	41.88	1.89	-3.78

5520	-3.81	41.59	1.78	-3.81
5530	-3.73	42.36	1.91	-3.73
5540	-3.81	41.59	1.76	-3.81
5550	-3.67	42.95	1.94	-3.67
5560	-3.72	42.46	1.89	-3.72
5570	-3.69	42.76	1.95	-3.69
5580	-3.68	42.85	2	-3.68
5590	-3.64	43.25	2.07	-3.64
5600	-3.74	42.27	2.03	-3.74
5610	-3.83	41.4	1.94	-3.83
5620	-3.84	41.3	1.97	-3.84
5630	-3.8	41.69	1.95	-3.8
5640	-3.7	42.66	2.1	-3.7
5650	-3.76	42.07	1.98	-3.76
5660	-3.79	41.78	2.01	-3.79
5670	-3.86	41.11	1.95	-3.86
5680	-3.74	42.27	2.14	-3.74
5690	-3.67	42.95	2.18	-3.67
5700	-3.54	44.26	2.36	-3.54
5710	-3.6	43.65	2.33	-3.6
5720	-3.61	43.55	2.27	-3.61
5730	-3.65	43.15	2.26	-3.65
5740	-3.6	43.65	2.3	-3.6
5750	-3.56	44.06	2.36	-3.56
5760	-3.59	43.75	2.32	-3.59
5770	-3.58	43.85	2.42	-3.58
5780	-3.56	44.06	2.42	-3.56
5790	-3.49	44.77	2.56	-3.49
5800	-3.56	44.06	2.46	-3.56
5810	-3.45	45.19	2.65	-3.45
5820	-3.43	45.39	2.65	-3.43
5830	-3.33	46.45	2.8	-3.33
5840	-3.38	45.92	2.77	-3.38
5850	-3.4	45.71	2.72	-3.4
5860	-3.4	45.71	2.73	-3.4
5870	-3.3	46.77	2.77	-3.3
5880	-3.26	47.21	2.81	-3.26
5890	-3.19	47.97	2.79	-3.19
5900	-3.1	48.98	2.92	-3.1
5910	-3.14	48.53	2.79	-3.14
5920	-3.1	48.98	2.96	-3.1

5930	-3.1	48.98	2.99	-3.1
5940	-3.11	48.87	3.05	-3.11
5950	-3.21	47.75	2.95	-3.21
5960	-3.23	47.53	3	-3.23
5970	-3.23	47.53	2.98	-3.23
5980	-3.18	48.08	2.99	-3.18
5990	-3.18	48.08	2.92	-3.18
6000	-3.14	48.53	2.9	-3.14

8.2 BT Efficiency and Gain

Frequency/Mhz	Efficiency / dB	Efficiency / %	MaxGain/dBi	AvgGain/dBi
2400	-2.55	55.59	0.94	-2.55
2410	-2.57	55.34	1.13	-2.57
2420	-2.49	56.36	1.38	-2.49
2430	-2.5	56.23	1.54	-2.5
2440	-2.64	54.45	1.38	-2.64
2450	-2.87	51.64	1.01	-2.87
2460	-3.02	49.89	0.69	-3.02
2470	-3.08	49.2	0.45	-3.08
2480	-3.13	48.64	0.3	-3.13
2490	-3.29	46.88	0.24	-3.29
2500	-3.4	45.71	0.39	-3.4