

ShenZhen SWARD Communi cation Technology Co.Ltd

Project: MW100

Report Date: 2025. 04. 09

Project Introduction

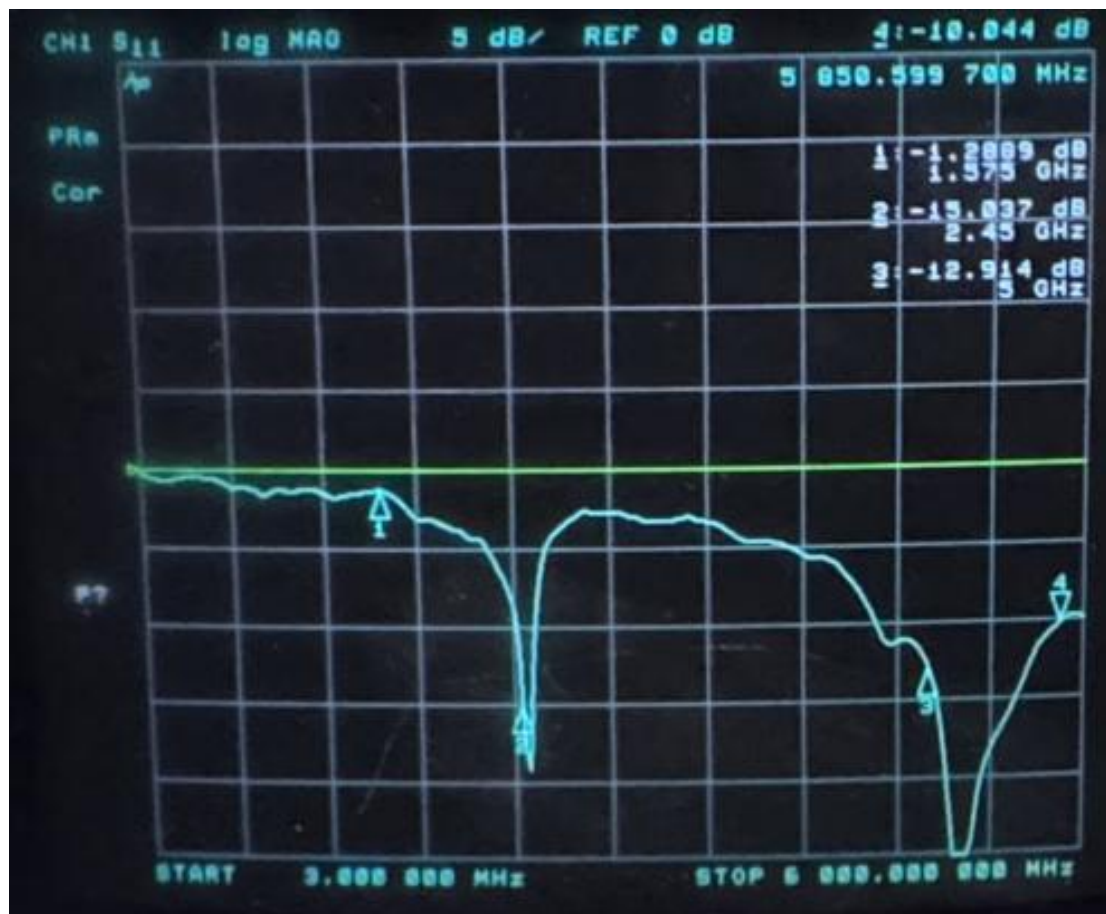
1. Project Overview

Number of project antennas	Machine type
2	tablet
Material of the whole machine shell: metal shell	

2. Antenna Overview

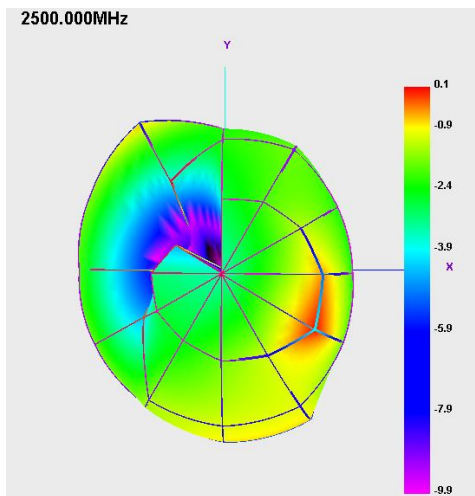
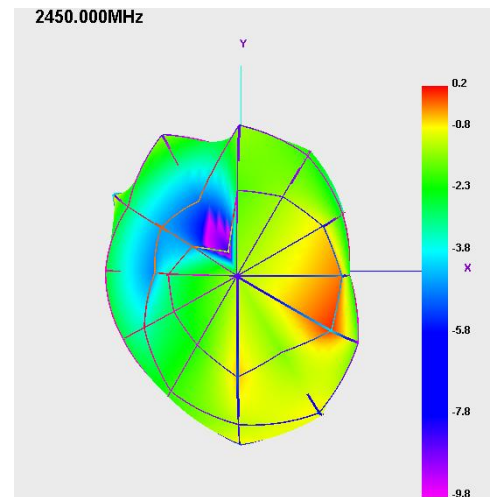
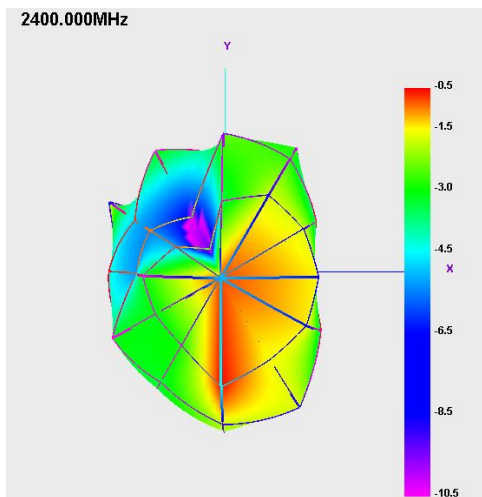
Antenna number	Name	Working frequency band/MHz	Material/Structure	Manufacturer
1	WIFI&BT&5Gwifi	2400MHz/2500MHz&5.8GHz	FPC	ShenZhen SWARD Communication Technology Co.Ltd
2	WIFI&BT&5Gwifi	2400MHz/2500MHz&5.8GHz	FPC	

WIFI&BT main antenna S11



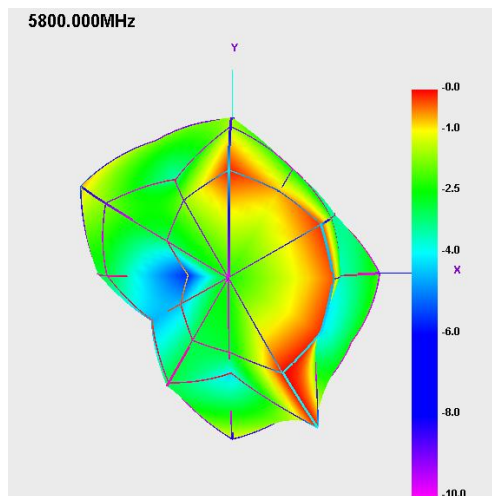
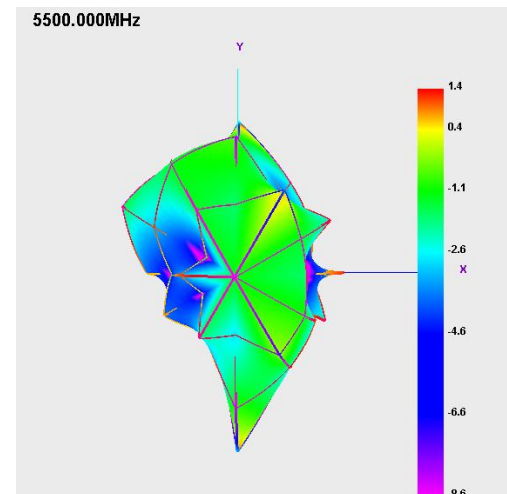
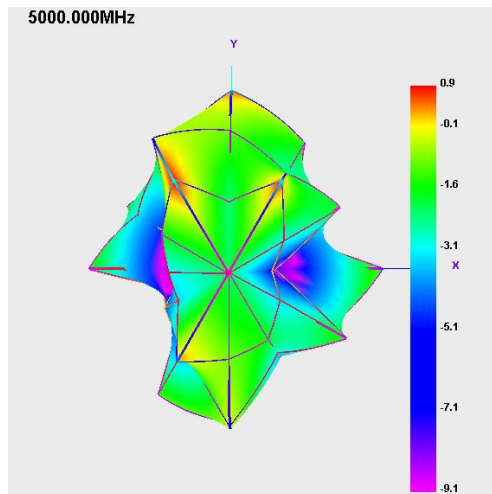
WIFI&BT main antenna efficiency

Passive Test For 2.4G			
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	39.32	-4.05	-0.5
2410	38.38	-4.16	-0.59
2420	38.89	-4.1	-0.62
2430	41.43	-3.83	-0.03
2440	42.58	-3.71	0.38
2450	40.73	-3.9	0.18
2460	40.25	-3.95	0.07
2470	35.51	-4.5	-0.4
2480	35.37	-4.51	-0.49
2490	37.4	-4.27	-0.31
2500	41.03	-3.87	0.1

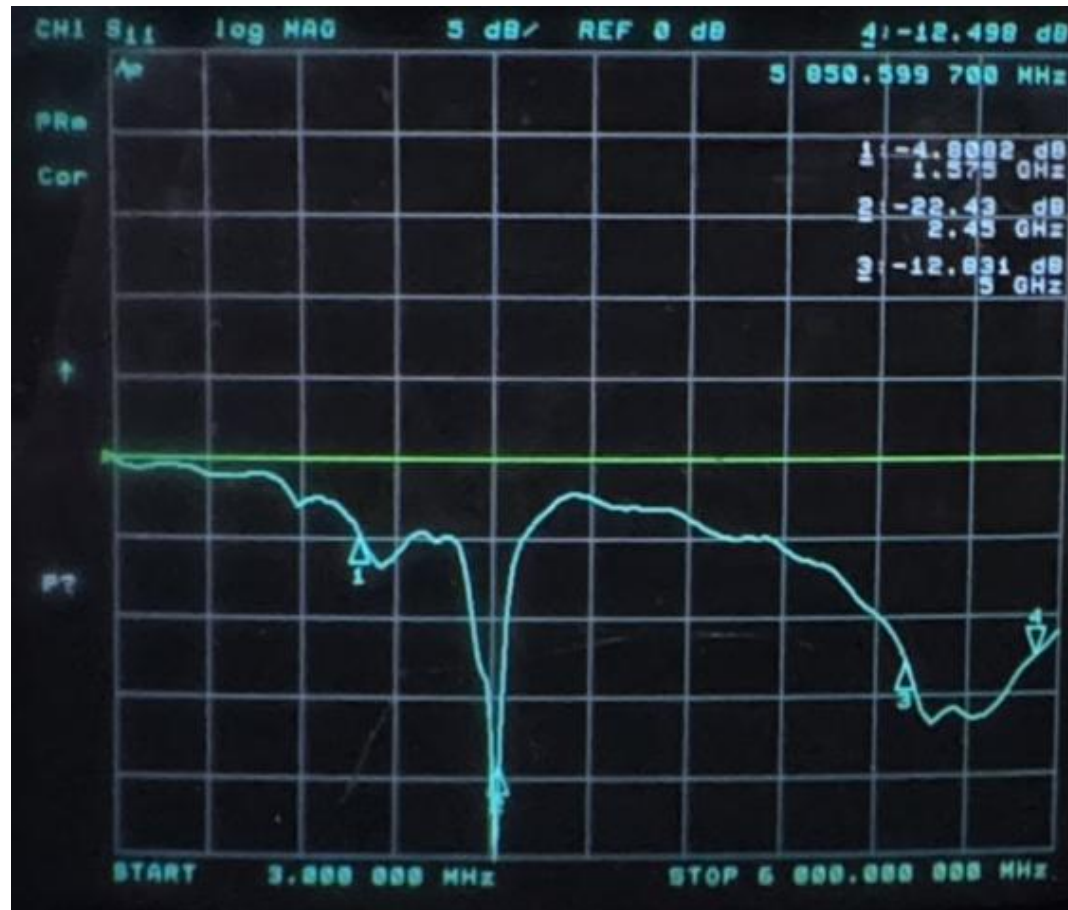


Efficiency of 5G WIFI main antenna

Passive Test For 5G-WIFI			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
5000	42.75	-3.69	0.87
5100	45.09	-3.46	1.2
5200	42.03	-3.76	1.5
5300	47.79	-3.21	1.54
5400	44.7	-3.5	0.7
5500	38.19	-4.18	1.43
5600	32.47	-4.89	0.7
5700	36.68	-4.36	0.79
5800	39.31	-4.06	-0.02
5900	32.98	-4.82	-0.35
6000	31.88	-4.96	-0.57



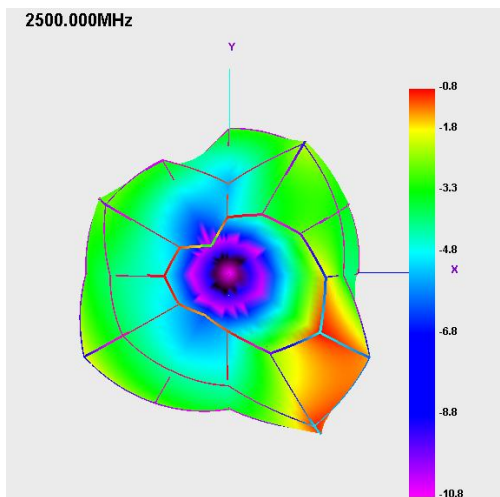
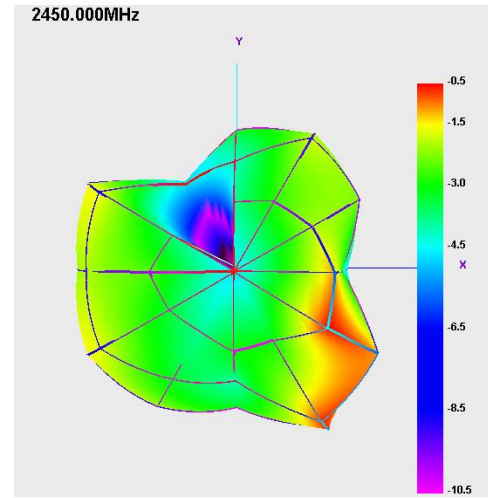
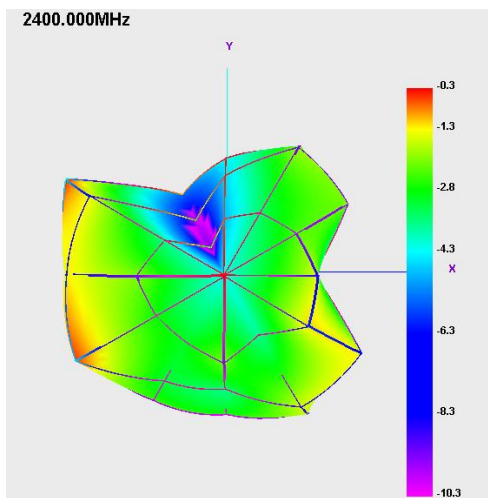
WIFI&BT&5Gwifi secondary antenna S11



WIFI&BT secondary antenna efficiency

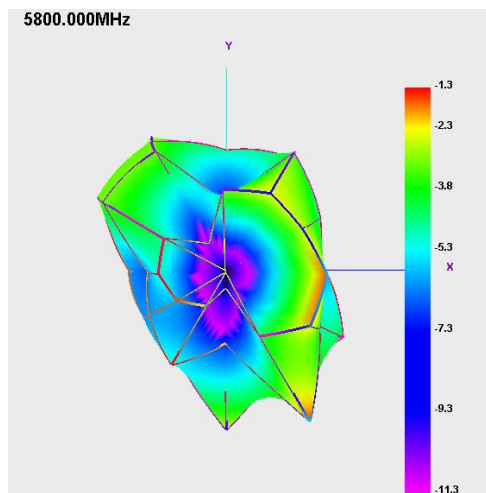
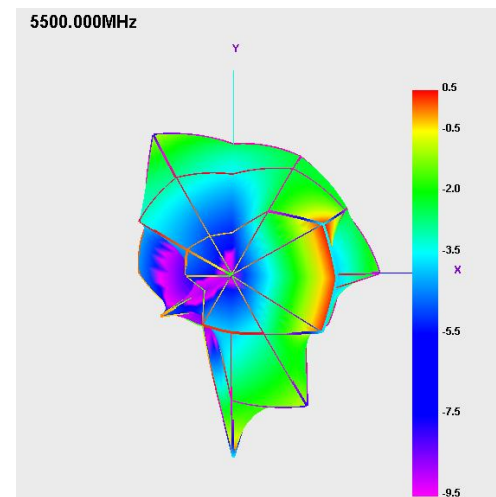
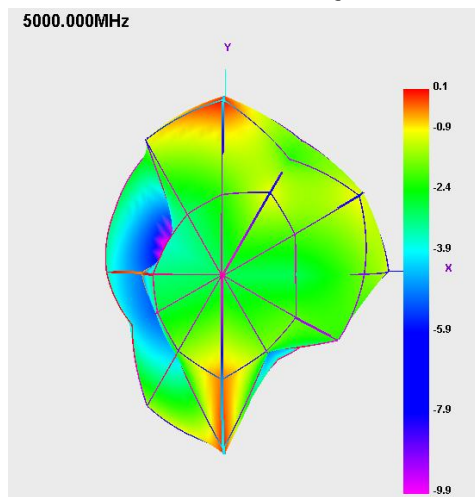
Passive Test For 2.4G

Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)
2400	39.9	-3.99	-0.33
2410	39.35	-4.05	-0.69
2420	40.34	-3.94	-0.75
2430	41.99	-3.77	-0.24
2440	41.84	-3.78	-0.01
2450	36.17	-4.42	-0.49
2460	34.19	-4.66	-0.6
2470	29	-5.38	-1.19
2480	29.2	-5.35	-1.04
2490	28.9	-5.39	-0.91
2500	28.51	-5.45	-0.81



Efficiency of 5G WIFI secondary antenna

Passive Test For 5G-WIFI			
Freq	Effi	Effi	Gain
(MHz)	(%)	(dB)	(dBi)
5000	42.08	-3.76	0.07
5100	40.31	-3.95	0.28
5200	37.67	-4.24	0.91
5300	45.77	-3.39	2.7
5400	40.77	-3.9	1.53
5500	33.5	-4.75	0.47
5600	24.43	-6.12	-0.99
5700	26.62	-5.75	-0.21
5800	25.51	-5.93	-1.35
5900	23.95	-6.21	-1.66
6000	25.68	-5.9	-2.13



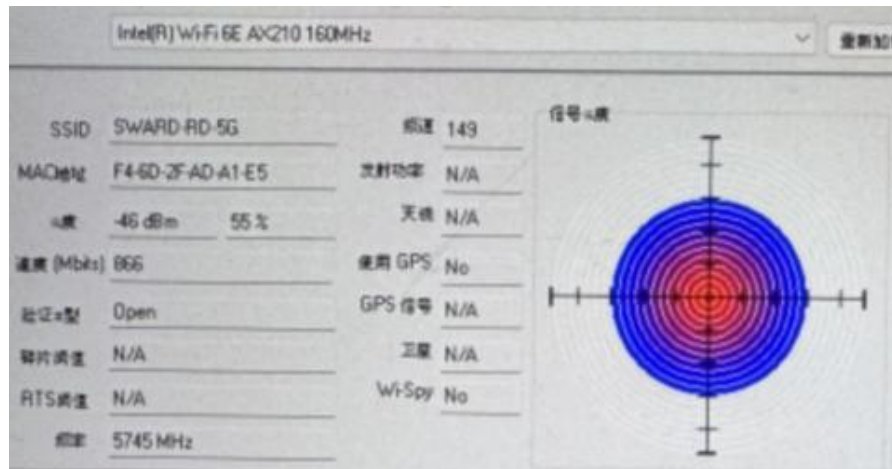
WIFI antenna throughput test

Iperf throughput test						
model		module		software version		
Model number	channel	distance	Test angle	Test data (TX) 1-minute mean	Test data (RX) 1-minute mean	Remarks (number of packet drops)
2.4GWIFI		15M	0°	68.3M/S	115M/S	0
			90°	66.9M/S	113M/S	
			180°	67.5M/S	114M/S	
			270°	62.8M/S	103M/S	
5GWIFI		15M	0°	252M/S	420M/S	0
			90°	260M/S	418M/S	
			180°	248M/S	425M/S	
			270°	255M/S	426M/S	

BT antenna measured distance

Actual test effect	
Model number	1
Testing Environment	Soward R&D Center
Test equipment	Huawei AM08
test distance	10 meters $\geq$

WIFI antenna signal strength measurement picture (data)



Test location: Our R&D office

Test time: 14:00-14:30

Test distance: 10-15 meters

Signal strength: -48dBm to -

39dBm

Note: 1. This report is based on the actual debugging and testing of the prototype, including environmental treatment, antenna position, and assembly position of each component

Cannot be changed arbitrarily;

If there are any changes in the materials used in the prototype, please promptly provide feedback to our company for further verification;

3. List of sensitive components:

TP (Material, Coating, Wiring, etc.)

Screen (amplifier circuit, LED, cable design, etc.)

Shell material (antenna assembly method, structural interference, shell material, antenna position height and area, etc.)

Motherboard (motherboard conduction, RF circuit matching, PA, dual power, filtering, etc.)

LNA, Power supply circuit, etc

Camera, battery, motor MIC、Fingerprint recognition module, etc

4. Due to the small number or only one sample testing machine, some probabilistic issues cannot be fully identified. It is recommended to conduct a small batch trial production before mass production to investigate the problem points (such as flashing screens, speaker noise, TP jump points, black screen crashes, signal drops, etc.)

