

Soward Antenna Debugging Report

Customer Name: Jixin Micro

entry name: Yellow Square M35
Motorcycle Recorder

Date: 2023. 11. 17

Project Contact Information

Customer contact person: Mr. Luo
mobile phone:
Email:

Soward Structure: Yang Wende
mobile phone:
Telephone:
Email:

Soward RF: Tang Liuxing
Mobile phone: 188 7591 1877
Phone: 0755-29985185
Email: tangliuxing@szsward.com

Project Introduction

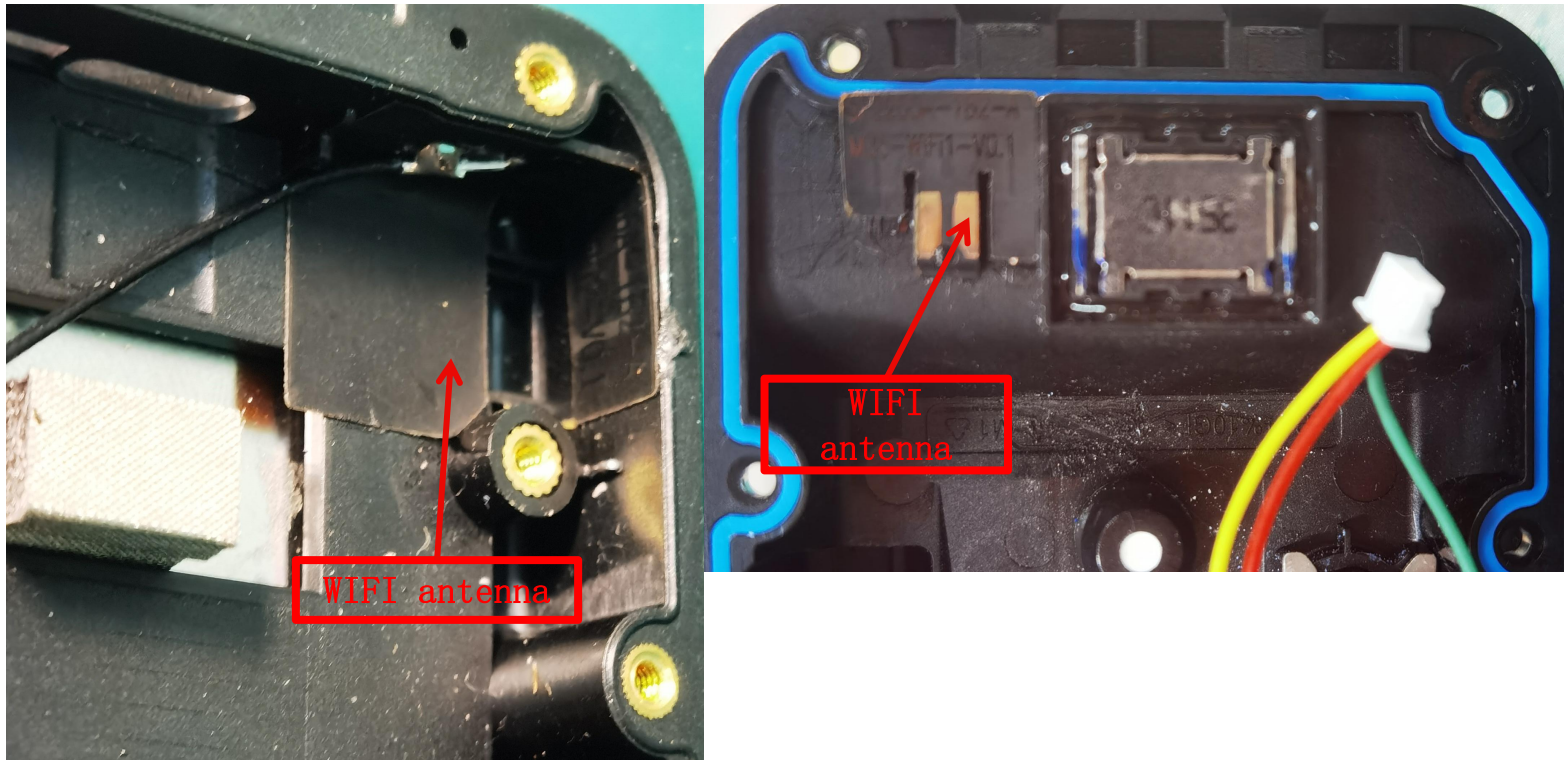
1. Project Overview

Number of project antennas	Machine type
3	Motorcycle recorder
Material of the whole machine shell: plastic shell, private mold	

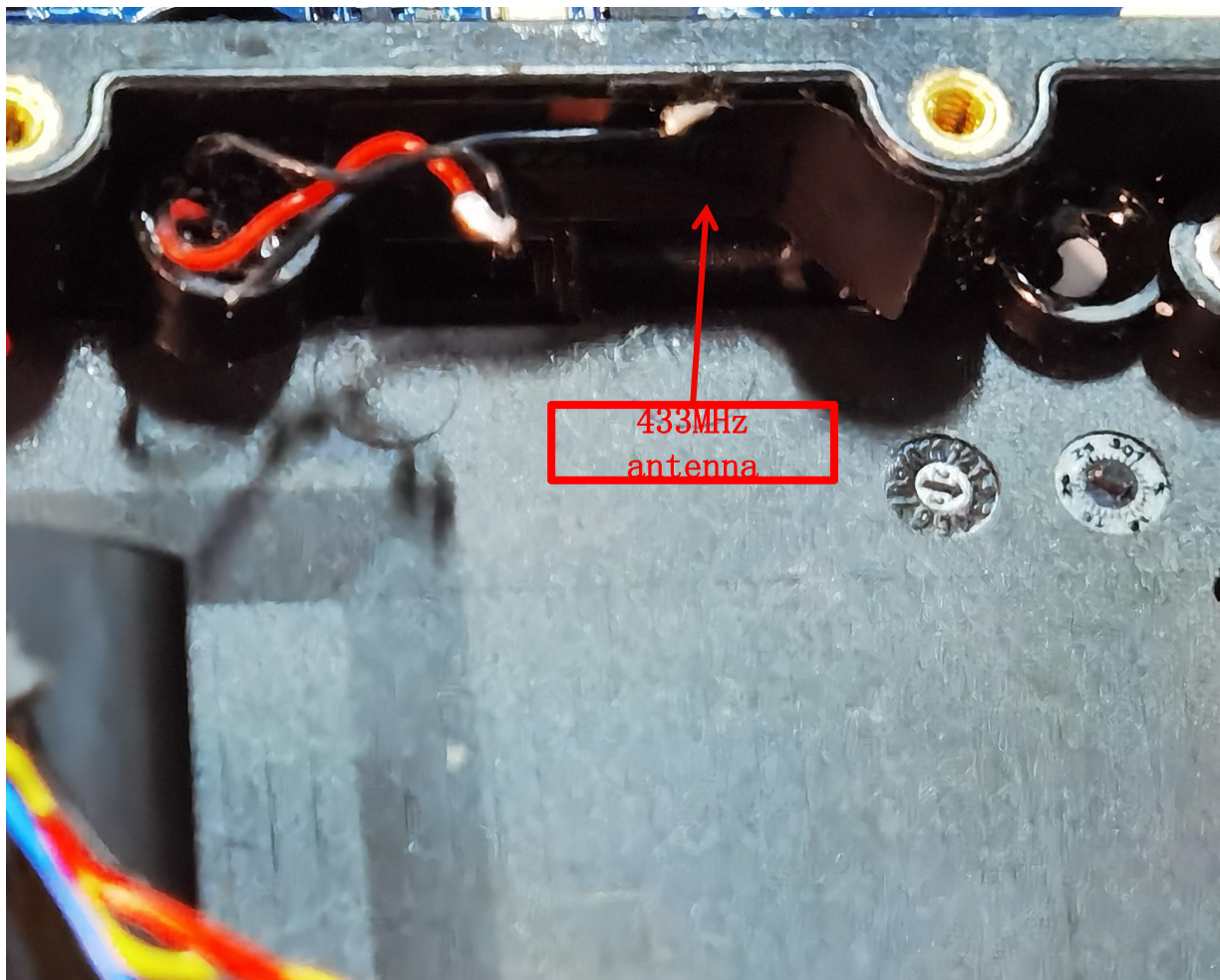
2. Antenna Overview

Antenna number	name	Working frequency band/MHZ	Material/Struct ure
1	WIFI&5Gwifi	2400-2500MHz/5180-5880MHz	FPC
2	WIFI&5Gwifi	2400-2500MHz/5180-5880MHz	FPC

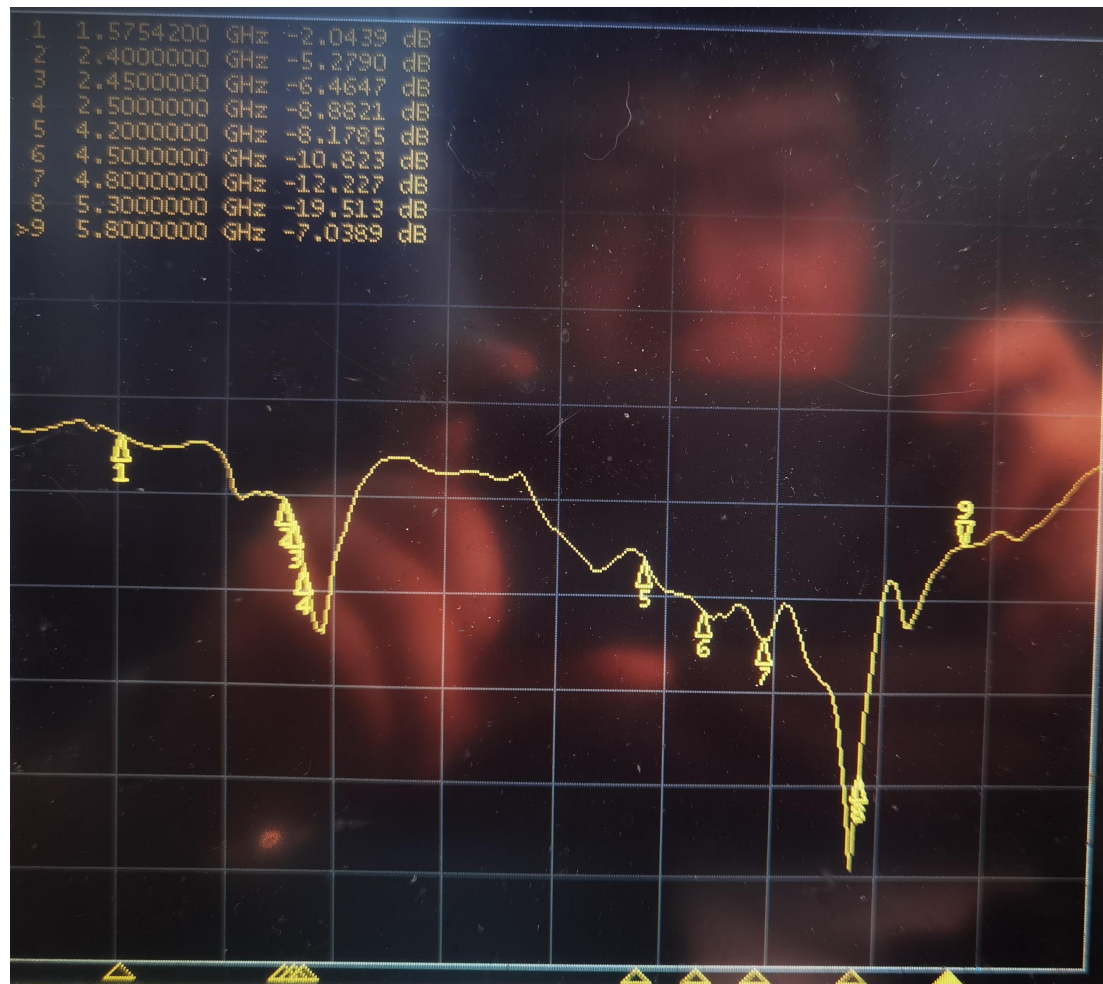
Antenna layout



天线布局



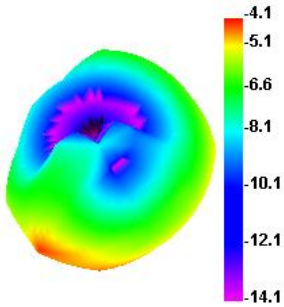
WIFI antenna (spring foot contact type)S11



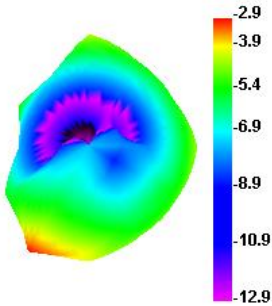
WIFI (pop-up contact) efficiency

Passive Test For 2.4G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHIS (%)	Max (dB)	Min (dB)	Directivi ty (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	18.15	-7.41	-4.09	-6.24	7.223	10.922	-4.09	-16.8	3.32	60	46.77	47.04
2410	18.4	-7.35	-4	-6.15	7.258	11.142	-4	-17.86	3.35	60	46.94	47.16
2420	21.5	-6.68	-3.3	-5.45	8.41	13.091	-3.3	-17.2	3.38	0	47.02	47.39
2430	24.05	-6.19	-2.63	-4.78	9.429	14.625	-2.63	-16.01	3.56	0	47.31	47.67
2440	22.36	-6.51	-2.9	-5.05	8.81	13.548	-2.9	-14.71	3.6	0	47.68	47.91
2450	21.51	-6.67	-2.9	-5.05	8.584	12.928	-2.9	-15.1	3.77	0	47.98	48.27
2460	22.14	-6.55	-2.92	-5.07	8.896	13.245	-2.92	-15.09	3.63	60	47.79	48.02
2470	23.08	-6.37	-2.81	-4.96	9.457	13.625	-2.81	-15.27	3.56	60	47.6	47.7
2480	25.71	-5.9	-2.73	-4.88	10.653	15.055	-2.73	-14.25	3.16	30	47.93	48.05
2490	28.37	-5.47	-2.15	-4.3	11.824	16.543	-2.15	-13.32	3.32	30	48.1	47.95
2500	30.25	-5.19	-1.89	-4.04	12.613	17.634	-1.89	-12.66	3.3	30	48.13	48.09

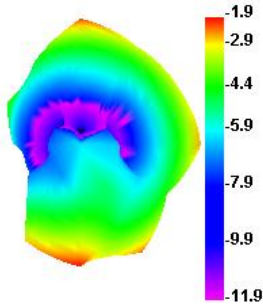
2400.000MHz



2450.000MHz



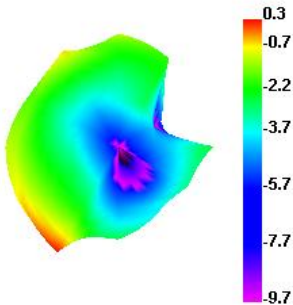
2500.000MHz



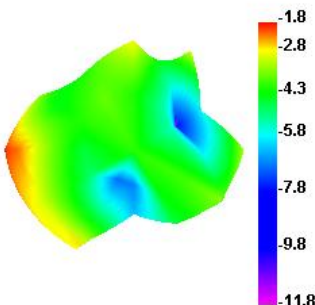
WIFI (pop-up contact) efficiency

Passive Test For 5G-WIFI												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivi ty (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5000	31.22	-5.06	0.33	-1.82	18.19	13.028	0.33	-16.67	5.39	60	57.34	57.35
5100	35.39	-4.51	0.37	-1.78	21.558	13.836	0.37	-23.32	4.88	30	57.81	57.76
5200	42.03	-3.76	0.78	-1.37	25.245	16.782	0.78	-14.39	4.55	30	56.99	56.81
5300	41.27	-3.84	0.58	-1.57	24.823	16.444	0.58	-20.13	4.43	30	56.76	56.86
5400	32.36	-4.9	-0.27	-2.42	21.108	11.252	-0.27	-20.01	4.63	30	56.69	56.95
5500	21.33	-6.71	-1.76	-3.91	13.305	8.021	-1.76	-18.38	4.95	30	57.35	58.31
5600	27.55	-5.6	-0.81	-2.96	13.451	14.104	-0.81	-18.9	4.79	0	58.6	59.56
5700	29.35	-5.32	-0.27	-2.42	14.43	14.921	-0.27	-17.95	5.05	0	59.11	59.81
5800	32.31	-4.91	0.02	-2.13	17.725	14.586	0.02	-21.29	4.93	30	59.62	60.26
5900	28.69	-5.42	-1.52	-3.67	16.674	12.015	-1.52	-14.51	3.9	60	60.04	61.12

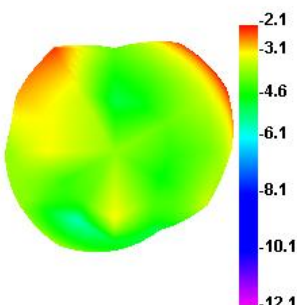
5000.000MHz



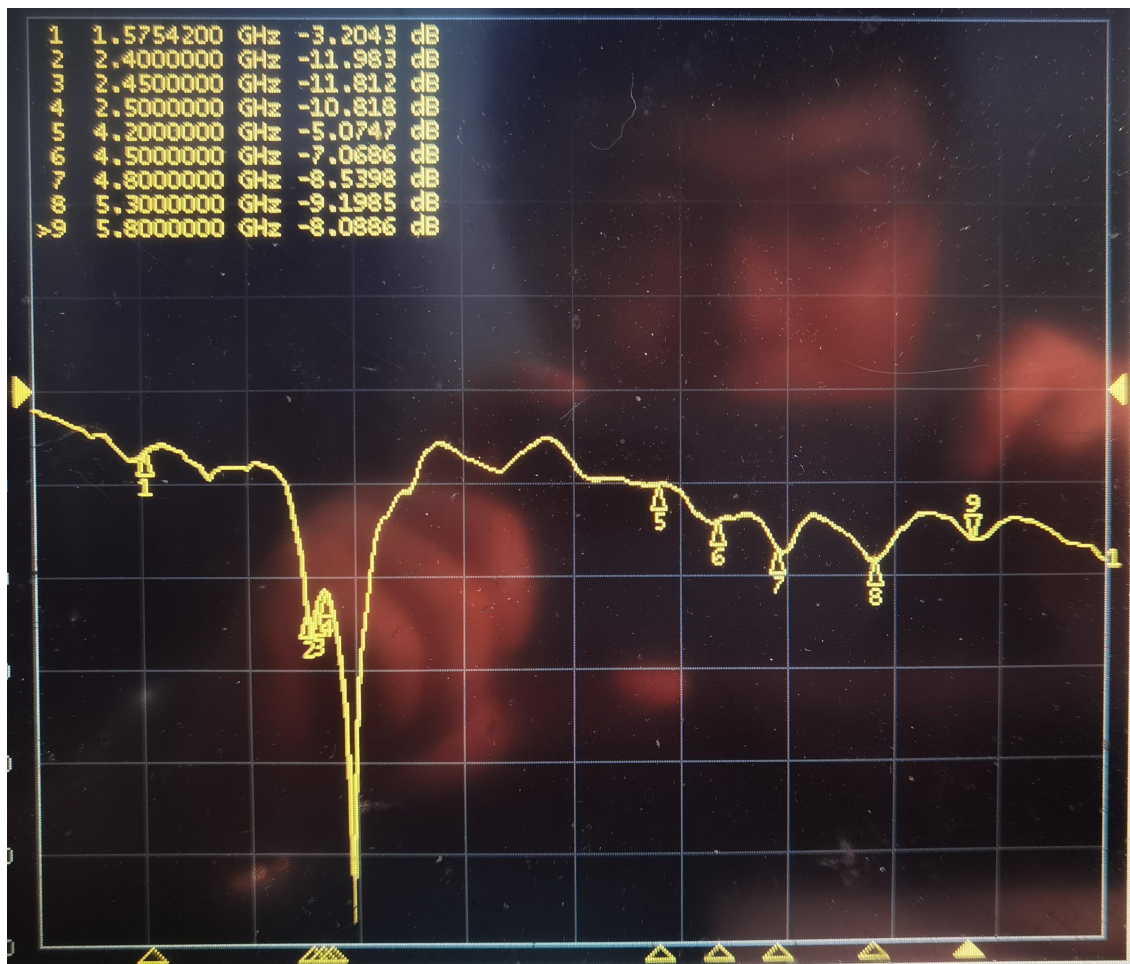
5500.000MHz



6000.000MHz



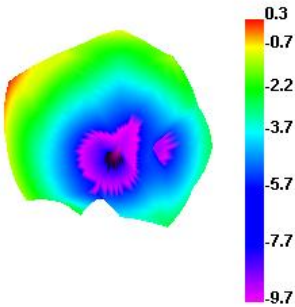
WIFI antenna (coaxial)S11



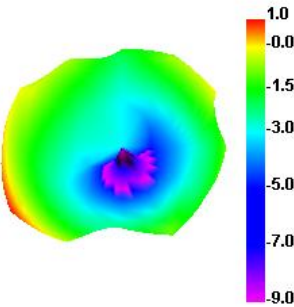
WIFI (coaxial) efficiency

Passive Test For 2.4G												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivi ty (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
2400	35.51	-4.5	0.33	-1.82	17.301	18.21	0.33	-13.43	4.82	30	46.77	47.04
2410	35.22	-4.53	-0.25	-2.4	17.49	17.727	-0.25	-12.31	4.29	30	46.94	47.16
2420	37.88	-4.22	-0.39	-2.54	19.22	18.663	-0.39	-12.31	3.83	60	47.02	47.39
2430	39.28	-4.06	-0.07	-2.22	20.38	18.898	-0.07	-12.69	3.99	30	47.31	47.67
2440	45.18	-3.45	0.65	-1.5	23.875	21.303	0.65	-11.94	4.1	30	47.68	47.91
2450	49.68	-3.04	0.95	-1.2	26.728	22.948	0.95	-11.89	3.99	30	47.98	48.27
2460	51.16	-2.91	0.94	-1.21	27.862	23.302	0.94	-14.44	3.85	30	47.79	48.02
2470	49.04	-3.09	0.52	-1.63	26.986	22.056	0.52	-16.44	3.62	30	47.6	47.7
2480	48.28	-3.16	0.75	-1.4	26.503	21.779	0.75	-18.07	3.91	30	47.93	48.05
2490	48.18	-3.17	0.96	-1.19	26.317	21.861	0.96	-19.23	4.13	30	48.1	47.95
2500	49.62	-3.04	1.09	-1.06	26.776	22.841	1.09	-18.66	4.13	30	48.13	48.09

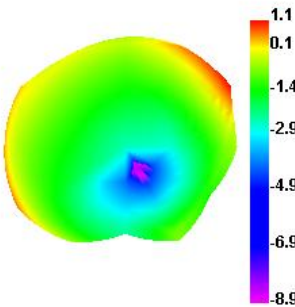
2400.000MHz



2450.000MHz



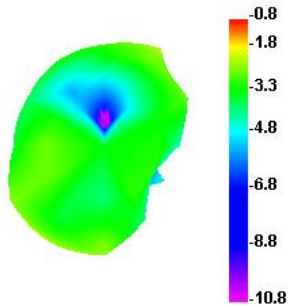
2500.000MHz



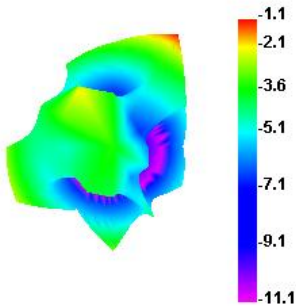
WIFI (coaxial) efficiency

Passive Test For 5G-WIFI												
Freq (MHz)	Effi (%)	Effi (dB)	Gain (dBi)	Gain (dBd)	UHS (%)	DHS (%)	Max (dB)	Min (dB)	Directivity (dBi)	Beamwidth (3dB)	AttH (dB)	AttV (dB)
5000	25. 1	-6	-0.81	-2. 96	13. 697	11. 406	-0. 81	-18. 02	5. 19	0	57. 34	57. 35
5100	25. 21	-5. 98	-3. 02	-5. 17	15. 354	9. 852	-3. 02	-15. 62	2. 96	180	57. 81	57. 76
5200	38. 49	-4. 15	-0. 12	-2. 27	23. 338	15. 151	-0. 12	-14. 41	4. 03	60	56. 99	56. 81
5300	41. 65	-3. 8	0. 66	-1. 49	22. 02	19. 63	0. 66	-8. 98	4. 47	0	56. 76	56. 86
5400	33. 64	-4. 73	0. 11	-2. 04	15. 227	18. 411	0. 11	-12. 34	4. 84	0	56. 69	56. 95
5500	29. 02	-5. 37	-1. 15	-3. 3	13. 401	15. 618	-1. 15	-13. 21	4. 23	60	57. 35	58. 31
5600	21. 54	-6. 67	-1. 91	-4. 06	11. 113	10. 423	-1. 91	-16. 97	4. 76	0	58. 6	59. 56
5700	28. 93	-5. 39	-0. 85	-3	17. 496	11. 436	-0. 85	-14. 15	4. 53	0	59. 11	59. 81
5800	27. 53	-5. 6	-1. 47	-3. 62	16. 315	11. 211	-1. 47	-15. 15	4. 13	30	59. 62	60. 26
5900	25. 95	-5. 86	-2. 62	-4. 77	13. 128	12. 824	-2. 62	-16. 84	3. 23	30	60. 04	61. 12
6000	38. 14	-4. 19	-0. 87	-3. 02	18. 455	19. 686	-0. 87	-13. 65	3. 31	0	61. 72	62. 72

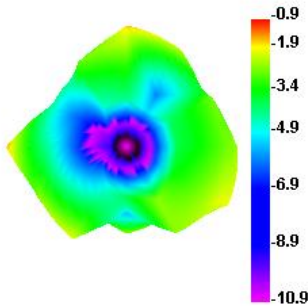
5000.000MHz



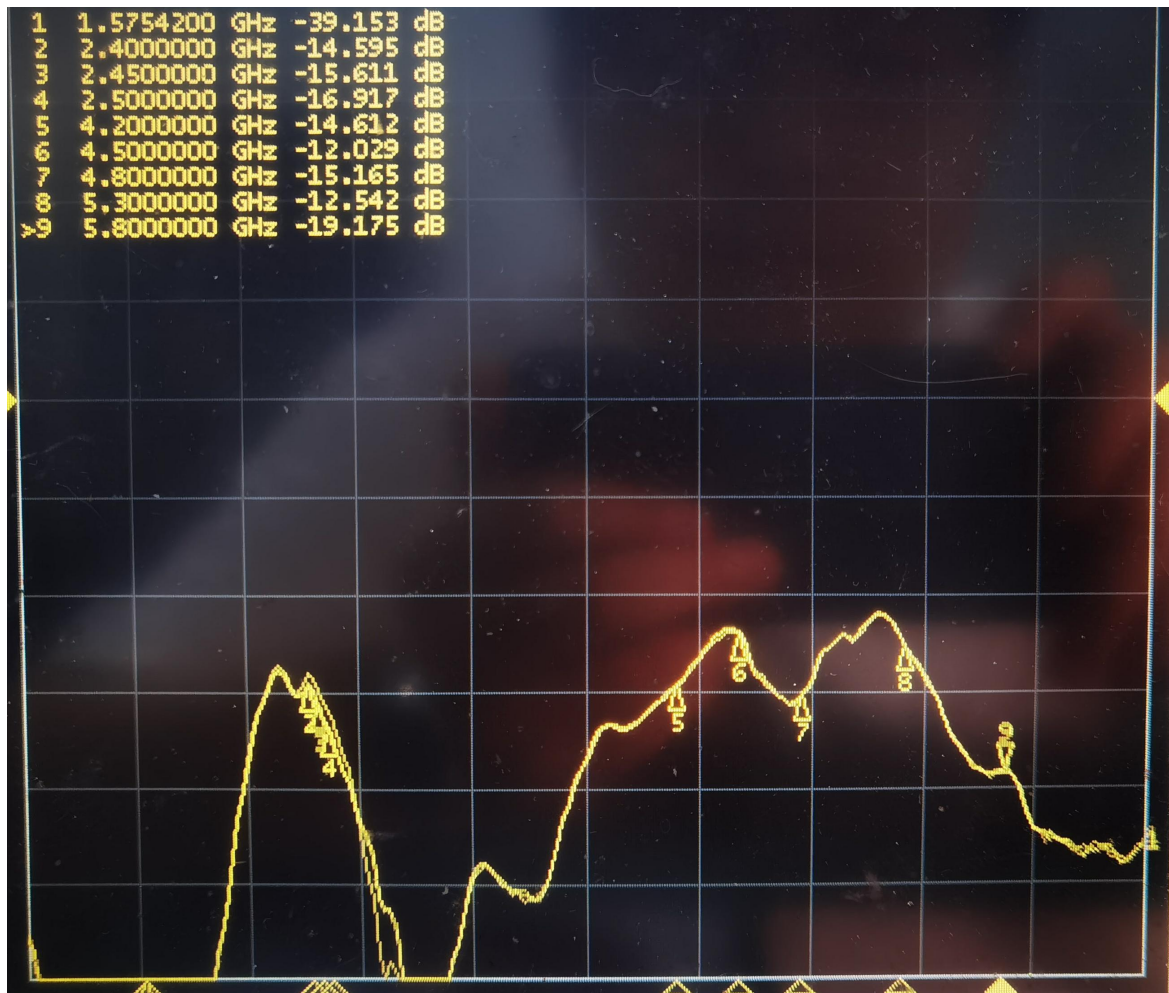
5500.000MHz



6000.000MHz

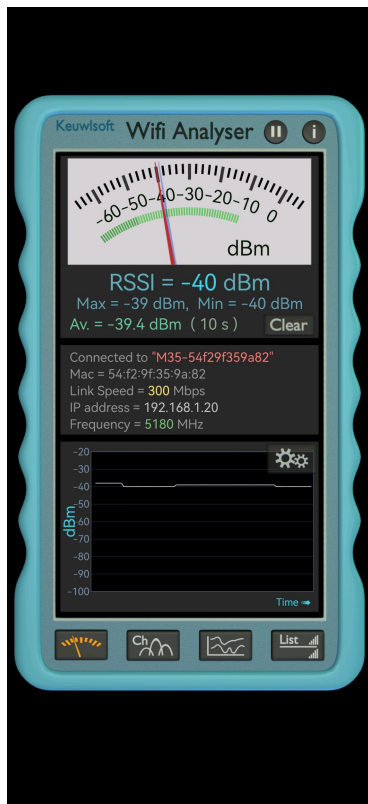


Isolation between two WiFi antennas



WIFI antenna signal strength measurement picture (data)

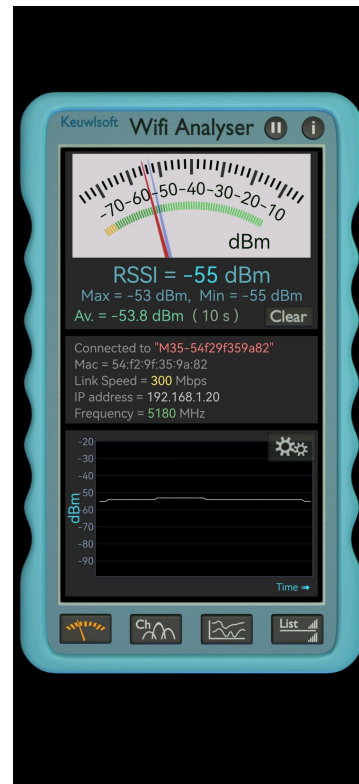
1m



5m

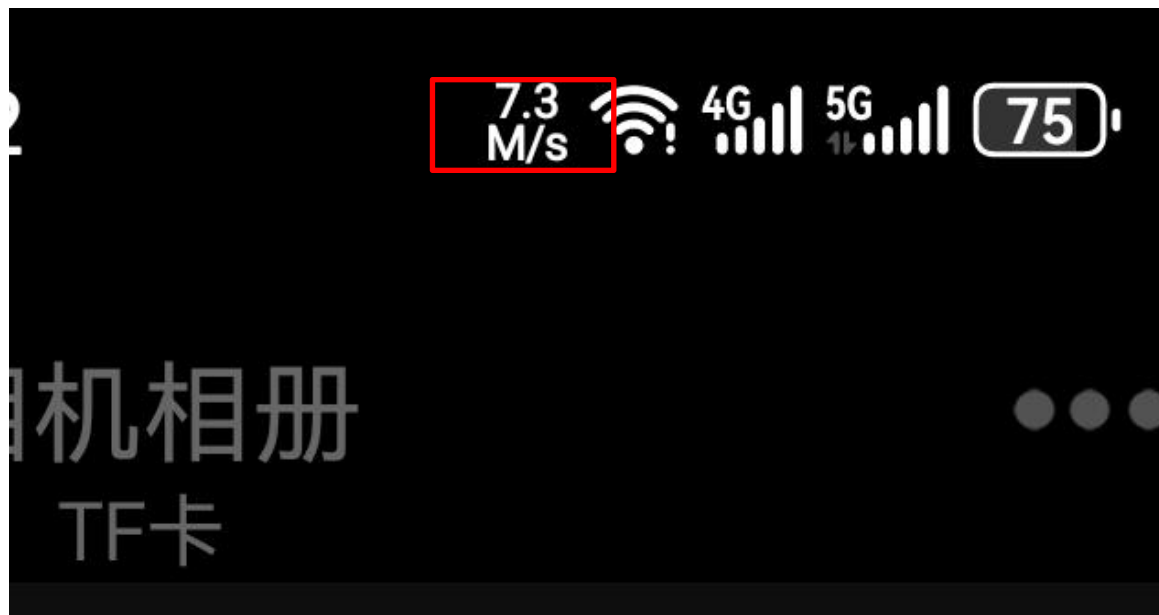
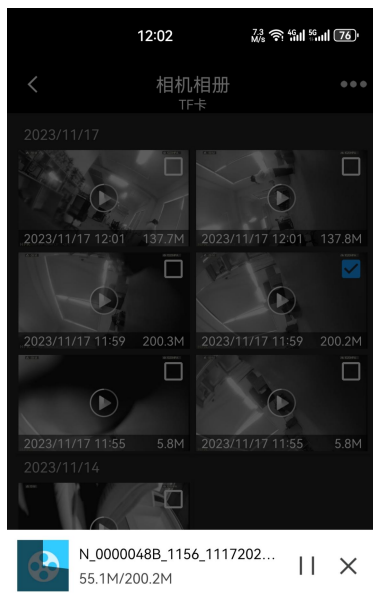


10m



WIFI download speed (data)

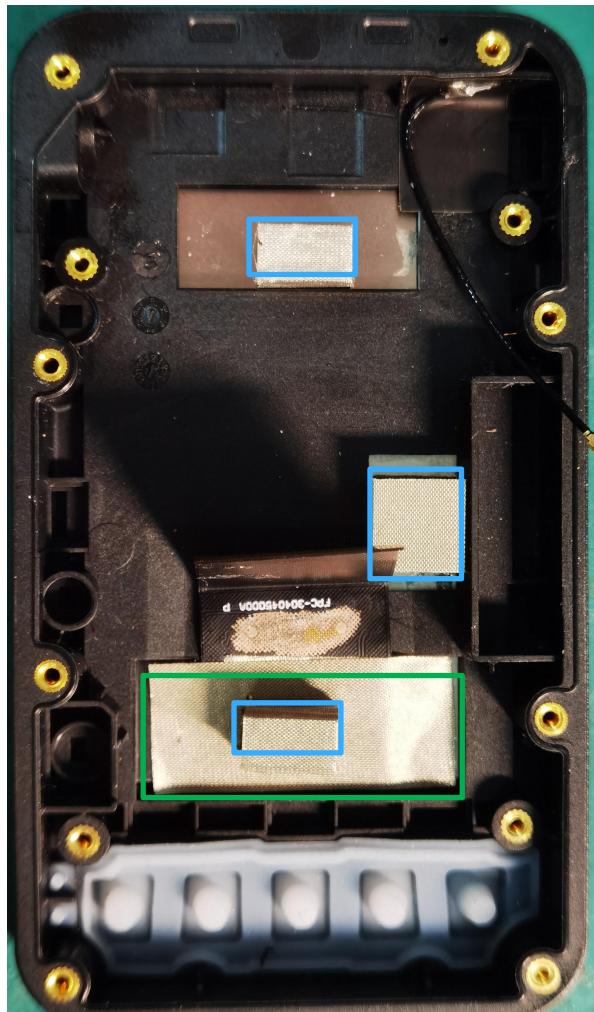
1m



暂停

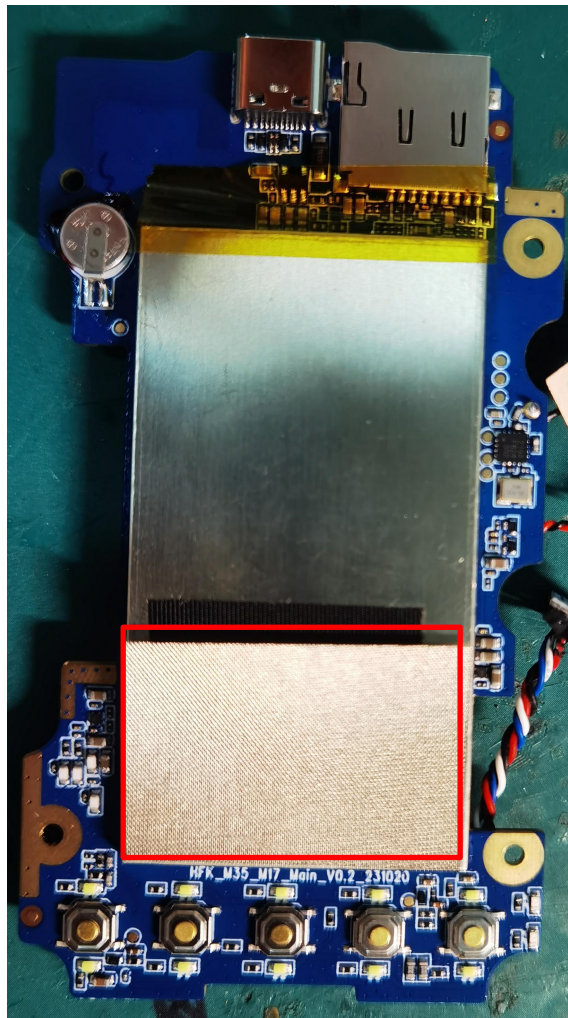
取消

Instructions for Handling the Whole Machine Environment



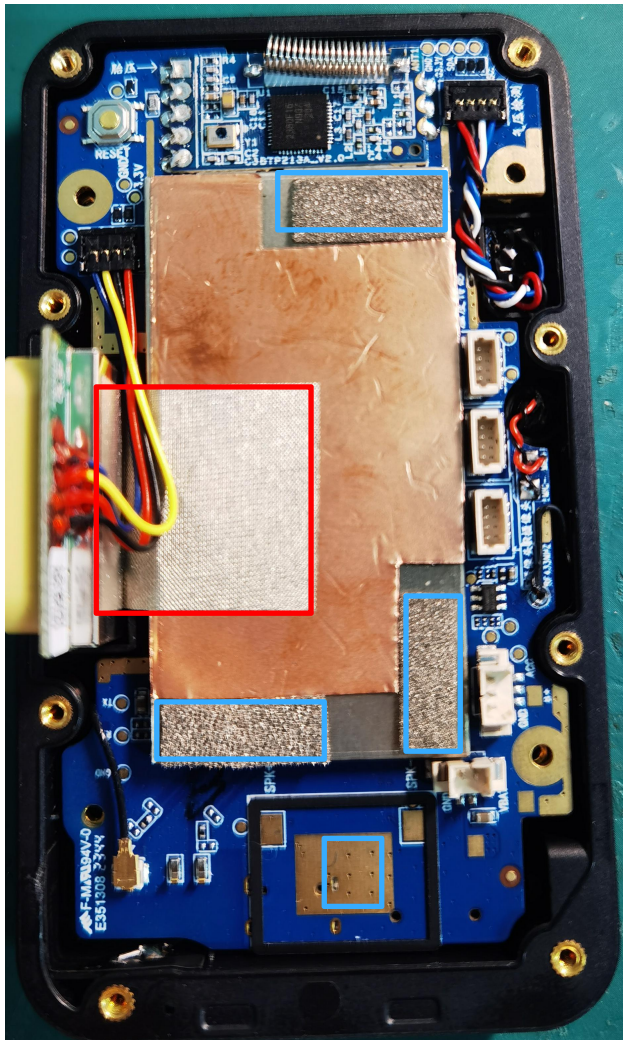
1. Stick conductive foam at the blue box position to ground the screen and motherboard.
2. Stick conductive cloth at the green box position to shield the screen cable.

Instructions for Handling the Whole Machine Environment



After connecting the screen cable to the motherboard, cover the socket with conductive cloth and perform shielding treatment. (Has a significant impact on GPS performance)

Instructions for Handling the Whole Machine Environment



5. Stick conductive sponge at the blue box position to ground the heat sink to the motherboard.

6. Stick conductive cloth at the red box position and connect the GPS antenna shielding cover to the motherboard shielding cover. (Has a significant impact on GPS performance)