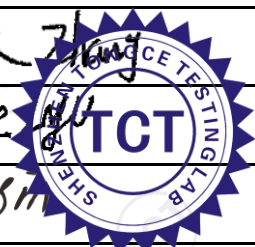


EMC TEST REPORT

Radio Frequency Devices - Unintentional Radiators

FCC ID.....:	2ATOA-ETOW-01	
Test Report No.:	TCT221123E036	
Date of issue	Jan. 09, 2023	
Testing laboratory.....:	SHENZHEN TONGCE TESTING LAB	
Testing location/ address.....:	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China	
Applicant's name	TAKUMA SAS	
Address.....:	96 impasse du Serpolet La Farlede 83210 France	
Manufacturer's name	OmniSpecial Technology Co., Ltd	
Address.....:	No.68, Yuhe Road, Yuanjiangyuan Village, Changping Town, Dongguan City, Guangdong Province, China	
Standard(s)	FCC 47 CFR Part 15 Subpart B	
Test item description.....:	eTow	
Trade Mark.....:	N/A	
Model/Type reference	ETOW-01	
Rating(s)	Battery Charger: MODEL: FY50408000 INPUT: AC 100-240 V, 50/60 Hz, 5 A, 500 VA OUTPUT: DC 50.4 V, 8.0 A, 403.2 W Battery: DC 43.2 V, 35 Ah, 1512 Wh Remote Control Wireless Charger: Input: DC 5 V, 1.0 A Remote Control Battery: DC 3.7 V, 500 mAh, 1.85 Wh	
Date of receipt of test item.....:	Nov. 23, 2022	
Date (s) of performance of test:	Nov. 23, 2022 - Jan. 09, 2023	
Tested by (+signature).....:	Mark ZHANG	
Check by (+signature)	Howie LYU	
Approved by (+signature)	Tomsin	



General disclaimer:

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1. General Product Information

1.1.EUT description

Test item description..... :	eTow
Model/Type reference..... :	ETOW-01
Rating(s)..... :	Battery Charger: MODEL: FY50408000 INPUT: AC 100-240 V, 50/60 Hz, 5 A, 500 VA OUTPUT: DC 50.4 V, 8.0 A, 403.2 W Battery: DC 43.2 V, 35 Ah, 1512 Wh Remote Control Wireless Charger: Input: DC 5 V, 1.0 A Remote Control Battery: DC 3.7 V, 500 mAh, 1.85 Wh
Highest internal frequency F_x :	☐ $F_x \leq 108 \text{ MHz}$ ☐ $108 \text{ MHz} < F_x \leq 500 \text{ MHz}$ ☐ $500 \text{ MHz} < F_x \leq 1 \text{ GHz}$ ☒ $F_x > 1 \text{ GHz}$

1.2.Model(s) list

None.

2. Test Information

2.1.EUT operation mode(s)

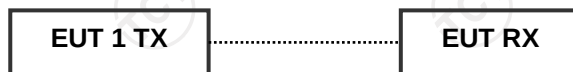
Mode #	Operating mode description	Test voltage
1	Working(High Gear)	RX: DC 43.2 V TX: DC 3.7 V
2	Working(Low Gear)	RX: DC 43.2 V TX: DC 3.7 V

Test worst operating mode	
Radiated emission(30 MHz to 1 GHz)	Mode 1
Radiated emission (above 1 GHz)	Mode 1
Remark: The worst measurement data and graphical presentation show in this report.	

2.2.Special accessories and auxiliary equipment

Product Type	Manufacturer	Model No.	Serial No.
/	/	/	/

2.3.Configuration of system under test



(EUT: eTow)

2.4. General test conditions

Environmental reference conditions

The climatic conditions during the tests are within the limits specified by the manufacturer for the operation of the EUT and the test equipment.

The climatic conditions during the tests were within the following limits:

Temperature	Humidity	Atmospheric pressure
15 °C – 35 °C	30 % - 60 %	86 kPa – 106 kPa

If explicitly required in the basic standard or applied product standard the climatic values are recorded and documented separately in this test report.

Measurement uncertainties

Test Item	Uncertainty
Uncertainty for Disturbance voltage at the mains terminals	3.10 dB
Uncertainty for Radiated emission (30 MHz to 1 GHz)	4.56 dB
Uncertainty for Radiated emission (above 1 GHz)	4.22 dB

The overall measurement uncertainty of a measurement is defined as the range of which can be supposed that it contains the true value with a specified probability.

This probability is 95 % for the generally specified measurement uncertainty (so-called expanded measurement uncertainty).

The limits for emission measurements and the Test levels for immunity tests in the applied standards were defined taking into consideration the accuracy limits for measurement and testing equipment required by the Basic standards.

All measurement and test results of the EMC laboratory of SHENZHEN TONGCE TESTING LAB fulfil the requirements for measurement uncertainties according to the standards applied.

Decision rule for statement(s) of conformity is based on accuracy method specified in Clause 4.4.3 in IEC Guide 115:2021.

3. Test Result Summary

FCC 47 CFR Part 15 Subpart B	
Requirement – Test case	Verdict
Classification Class (☐ A ☒ B)	—
Disturbance voltage at the mains terminals	N/A
Radiated emission	Pass
Remark:---	

Test case verdicts	
- Test case does not apply to the test object	N/A
- Test object does meet the requirement.....	P (Pass)
- Test object does not meet the requirement	F (Fail)

4. List of Test Equipment

Equipment	Manufacturer	Model No.	Serial No.	Cal. Due
Disturbance voltage at mains terminals				
EMI Test Receiver	R&S	ESCI3	100898	2023/07/03
Line Impedance Stabilisation Newtork(LISN)	Schwarzbeck	NSLK 8126	8126453	2023/02/24
Attenuator	N/A	10dB	164080	2023/07/03
844 Shielded room	SKET	8m*4m*4m	CR4	2023/03/02
Test software	EZ EMC	EMEC-3A1	/	/
Radiated emission (30 MHz to 1 GHz)				
Broadband Antenna	Schwarzbeck	VULB 9168	01197	2023/03/06
EMI Test Receiver	R&S	ESCI7	100529	2023/02/24
Test software	EZ EMC	FA-03A2 RE+	/	/
3m Anechoic Chamber	SKET	9m*6m*6m	SA01	2023/01/25
Radiated emission (above 1 GHz)				
Horn Antenna	Schwarzbeck	BBHA 9120 D	02372	2024/07/05
Horn Antenna	Schwarzbeck	BBHA 9170	00956	2024/07/05
Signal Analyzer	R&S	FSQ40	200061	2023/07/03
Pre-amplifier	SKET	LNPA_0118G-45	SK2021012102	2023/02/24
Pre-amplifier	SKET	LNPA_1840G-50	SK202109203500	2023/02/24
3m Anechoic Chamber	SKET	9m*6m*6m	SA03	2023/01/25
Test software	EZ EMC	FA-03A2 RE+	/	/

5. Test Conditions and Results

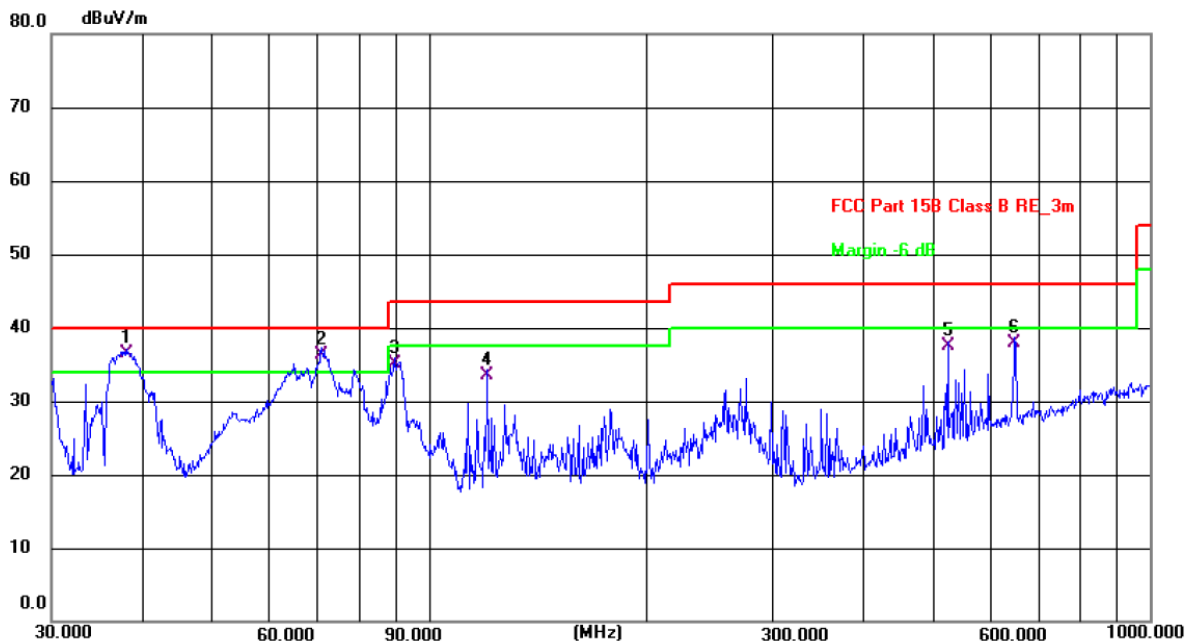
5.1. Disturbance voltage at mains terminals

Test requirement	FCC 47 CFR Part 15 Subpart B		
Basic standard	ANSI C63.4: 2014+A1:2017		
Test frequency range..	150 kHz to 30 MHz		
Limits	Limits for Class A		
	Frequency (MHz)	dB μ V Quasi-peak	dB μ V Average
	0.15 to 0.5	79	66
	0.5 to 30	73	60
	Limits for Class B		
	Frequency (MHz)	dB μ V Quasi-peak	dB μ V Average
	0.15 to 0.5	66 to 56	56 to 46
	0.5 to 5	56	46
	5 to 30	60	50
Test method	The AMN placed 0.8 m from the boundary of the unit under test and bonded to a ground reference plane. This distance was between the closest points of the AMN and the EUT. All other units of the EUT and associated equipment were at least 0.8 m from the AMN. All power was connected to the system through Artificial Mains Network (AMN).		
Ambient temperature..	/		
Relative humidity	/		
Test location	/		
Test model(s)	/		
EUT operation mode..	/		
Test results	N/A		
Remark	According to the electrical construction of the EUT, there is no AC terminal incorporated. Therefore this test is not applicable for this EUT.		

5.2. Radiated emission

Test requirement	FCC 47 CFR Part 15 Subpart B				
Basic standard	ANSI C63.4: 2014+A1:2017				
Test frequency range.:	30 MHz to 40 GHz				
Limits	Frequency (MHz)	3 m measurement distance			
		Quasi-peak (dBμV/m)			
		Class A		Class B	
	30 to 88	49		40	
	88 to 216	53.5		43.5	
	216 to 960	56.4		46	
	960 to 1000	59.5		54	
	Frequency (MHz)	3 m measurement distance			
		Class A		Class B	
		Peak (dBμV/m)	Average (dBμV/m)	Peak (dBμV/m)	Average (dBμV/m)
		Above 1000	79.5	59.5	74
Test method	Measurements were made in a 3-meter semi-anechoic chamber that complies to CISPR 16. Preliminary (peak) measurements were performed at an antenna to EUT separation distance of 3 meters with the receive antenna located at 1 to 4-meter height in both horizontal and vertical polarities. Final measurements (quasi-peak) were then performed by rotating the EUT 360° and adjusting the receive antenna height from 1 to 4-meters. All frequencies were investigated in both horizontal and vertical antenna polarity, where applicable.				
Ambient temperature.:	25.3 °C				
Relative humidity	50 %				
Test location	2101 & 2201, Zhenchang Factory Renshan Industrial Zone, Fuhai Subdistrict, Bao'an District, Shenzhen, Guangdong, 518103, People's Republic of China				
Test model(s)	ETOW-01				
EUT operation mode..:	Mode 1				
Test results	Pass				
Remark.....	/				

Measurement data and Graphical presentation of the result



Site: #1 3m Anechoic Chamber

Polarization: **Horizontal**

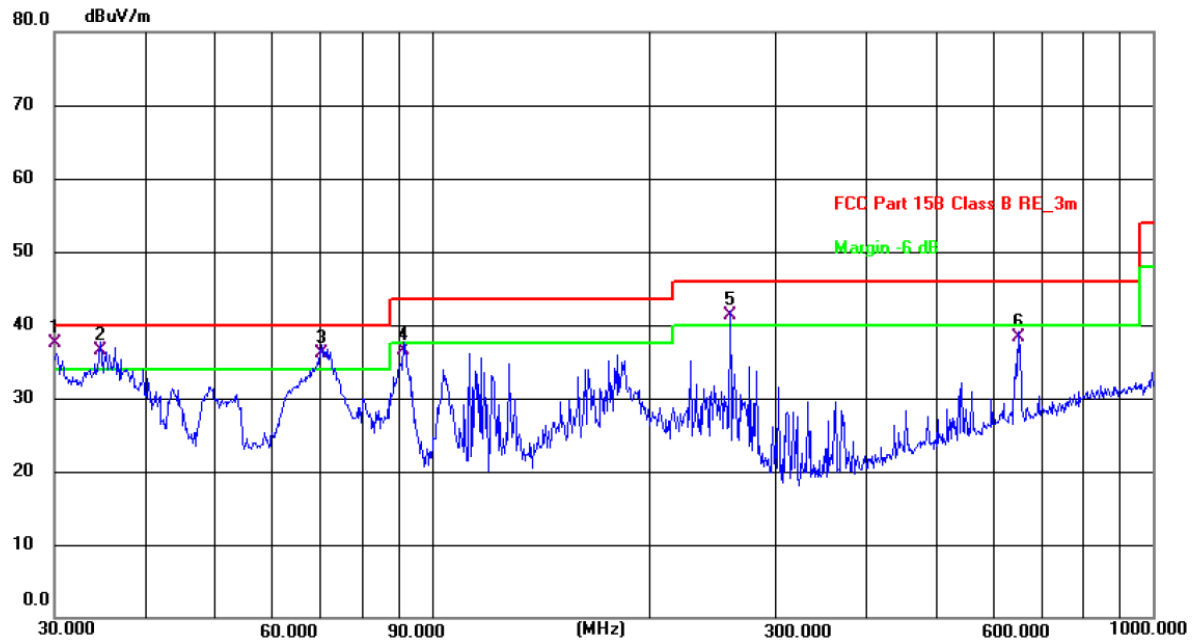
Temperature: 25.3(C) Humidity: 50 %

Limit: FCC Part 15B Class B RE_3m

Power: RX: DC 43.2V

Note: TX: DC 3.7V

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	38.0782	22.92	13.53	36.45	40.00	-3.55	QP	P	
2 !	71.0802	25.53	10.68	36.21	40.00	-3.79	QP	P	
3	89.5899	26.58	8.56	35.14	43.50	-8.36	QP	P	
4	120.6991	21.87	11.64	33.51	43.50	-9.99	QP	P	
5	524.5539	18.46	19.07	37.53	46.00	-8.47	QP	P	
6	649.6594	16.50	21.31	37.81	46.00	-8.19	QP	P	



Site: #1 3m Anechoic Chamber

Polarization: **Vertical**

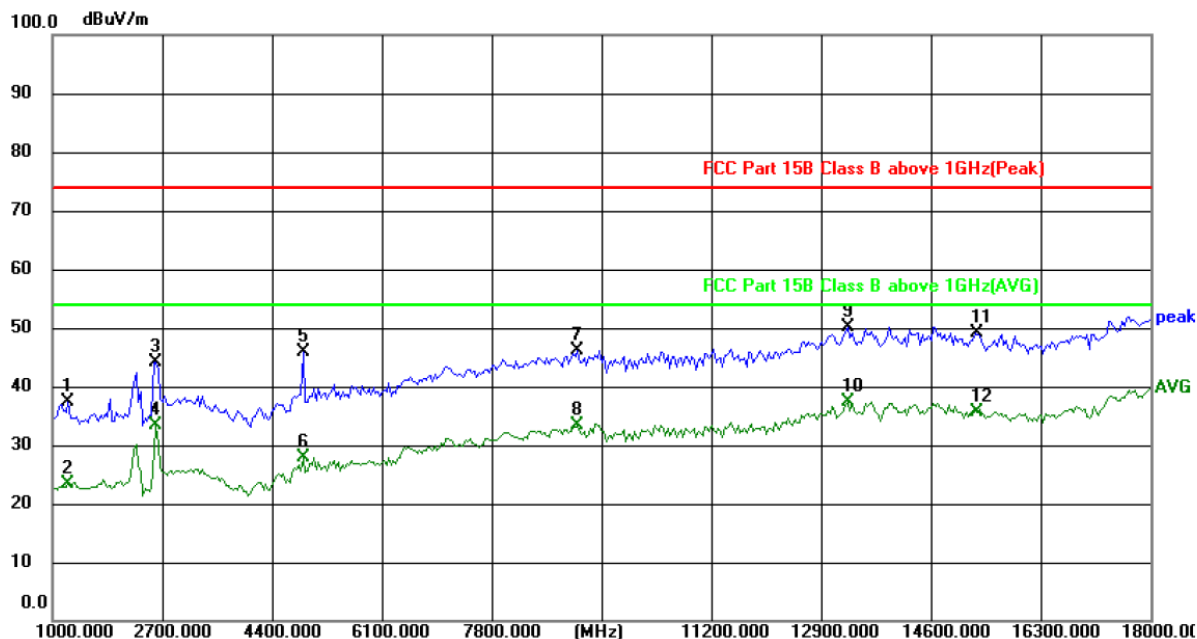
Temperature: 25.3(C) Humidity: 50 %

Limit: FCC Part 15B Class B RE_3m

Power: RX: DC 43.2V

Note: TX: DC 3.7V

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1 *	30.0000	25.11	12.40	37.51	40.00	-2.49	QP	P	
2 !	34.7601	23.28	13.17	36.45	40.00	-3.55	QP	P	
3 !	70.3365	25.34	10.84	36.18	40.00	-3.82	QP	P	
4	91.4946	27.77	8.74	36.51	43.50	-6.99	QP	P	
5 !	259.2336	28.93	12.35	41.28	46.00	-4.72	QP	P	
6	651.9415	17.00	21.34	38.34	46.00	-7.66	QP	P	



Site: #1 3m Anechoic Chamber

Polarization: **Horizontal**

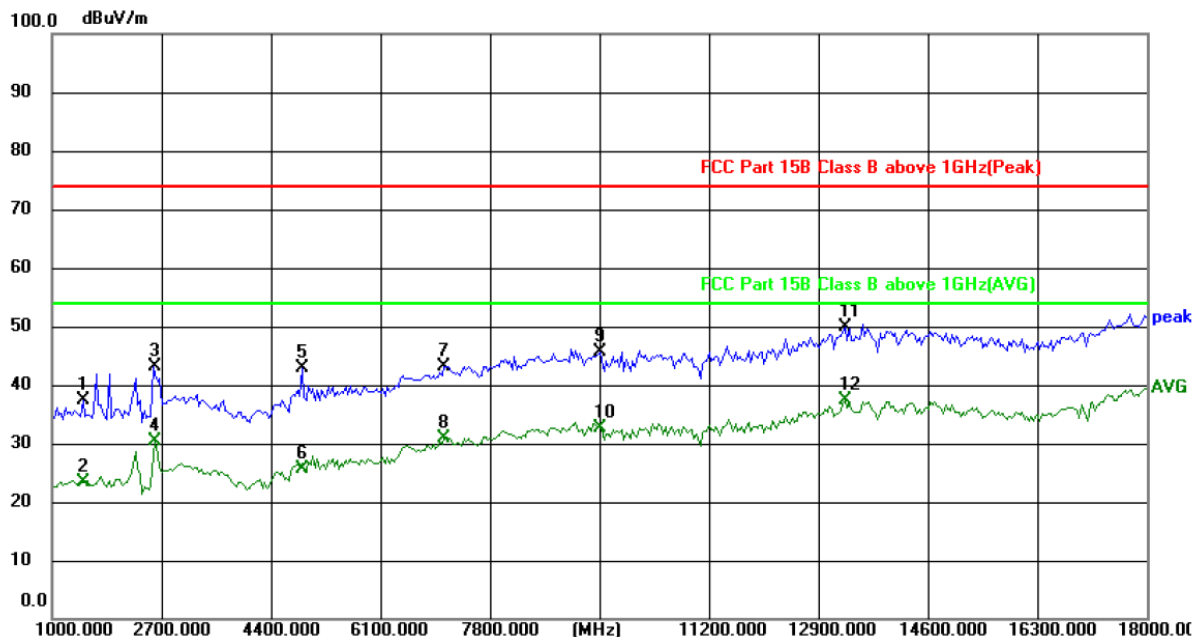
Temperature: 25.3(C) Humidity: 50 %

Limit: FCC Part 15B Class B above 1GHz(Peak)

Power: RX: DC 43.2V

Note: TX: DC 3.7V

No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1238.000	54.65	-17.32	37.33	74.00	-36.67	peak	P	
2	1238.000	40.68	-17.32	23.36	54.00	-30.64	AVG	P	
3	2598.000	59.11	-14.99	44.12	74.00	-29.88	peak	P	
4	2598.000	48.47	-14.99	33.48	54.00	-20.52	AVG	P	
5	4876.000	55.24	-9.47	45.77	74.00	-28.23	peak	P	
6	4876.000	37.26	-9.47	27.79	54.00	-26.21	AVG	P	
7	9126.000	47.56	-1.43	46.13	74.00	-27.87	peak	P	
8	9126.000	34.85	-1.43	33.42	54.00	-20.58	AVG	P	
9	13308.000	47.41	2.61	50.02	74.00	-23.98	peak	P	
10 *	13308.000	34.77	2.61	37.38	54.00	-16.62	AVG	P	
11	15314.000	46.63	2.61	49.24	74.00	-24.76	peak	P	
12	15314.000	33.14	2.61	35.75	54.00	-18.25	AVG	P	



Site: #1 3m Anechoic Chamber

Polarization: **Vertical**

Temperature: 25.3(C) Humidity: 50 %

Limit: FCC Part 15B Class B above 1GHz(Peak)

Power: RX: DC 43.2V

Note: TX: DC 3.7V

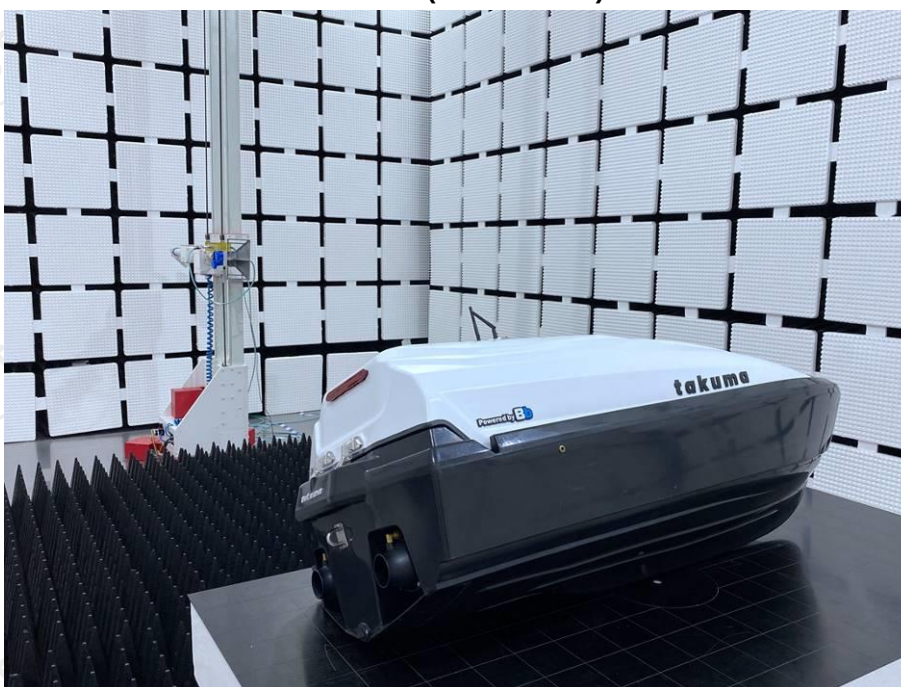
No.	Frequency (MHz)	Reading (dBuV)	Factor (dB/m)	Level (dBuV/m)	Limit (dBuV/m)	Margin (dB)	Detector	P/F	Remark
1	1476.000	54.76	-17.49	37.27	74.00	-36.73	peak	P	
2	1476.000	40.77	-17.49	23.28	54.00	-30.72	AVG	P	
3	2598.000	58.01	-14.99	43.02	74.00	-30.98	peak	P	
4	2598.000	45.32	-14.99	30.33	54.00	-23.67	AVG	P	
5	4876.000	52.23	-9.47	42.76	74.00	-31.24	peak	P	
6	4876.000	35.18	-9.47	25.71	54.00	-28.29	AVG	P	
7	7086.000	47.05	-3.89	43.16	74.00	-30.84	peak	P	
8	7086.000	34.89	-3.89	31.00	54.00	-23.00	AVG	P	
9	9500.000	47.00	-1.49	45.51	74.00	-28.49	peak	P	
10	9500.000	34.03	-1.49	32.54	54.00	-21.46	AVG	P	
11	13308.000	47.36	2.61	49.97	74.00	-24.03	peak	P	
12 *	13308.000	34.85	2.61	37.46	54.00	-16.54	AVG	P	

6. Test set-up photo

Radiated emission (30 MHz to 1 GHz) Test View



Radiated emission (above 1 GHz) Test View



7. Photo of the EUT

Outside View









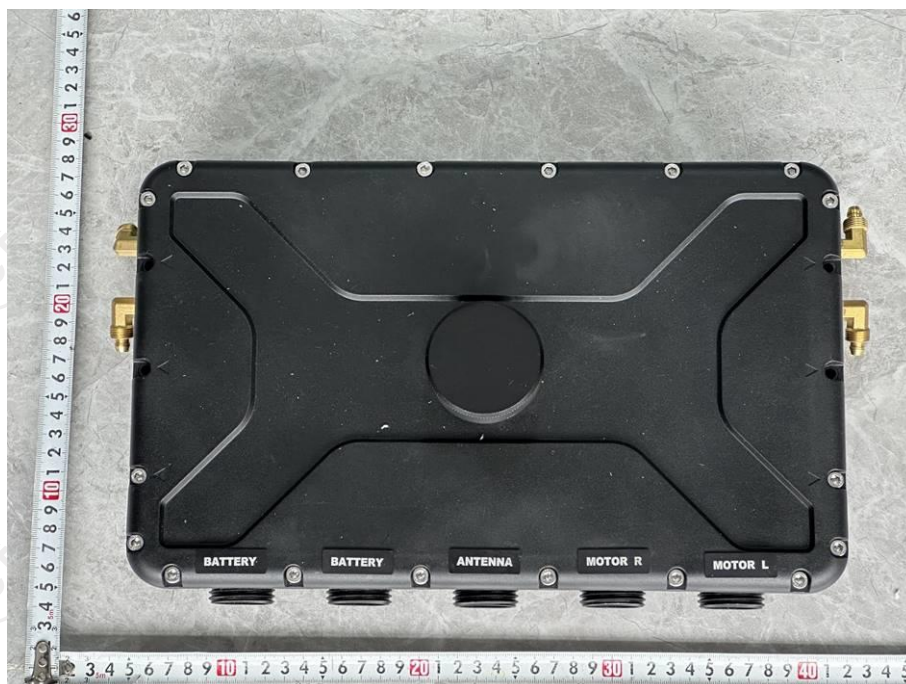




Inside View

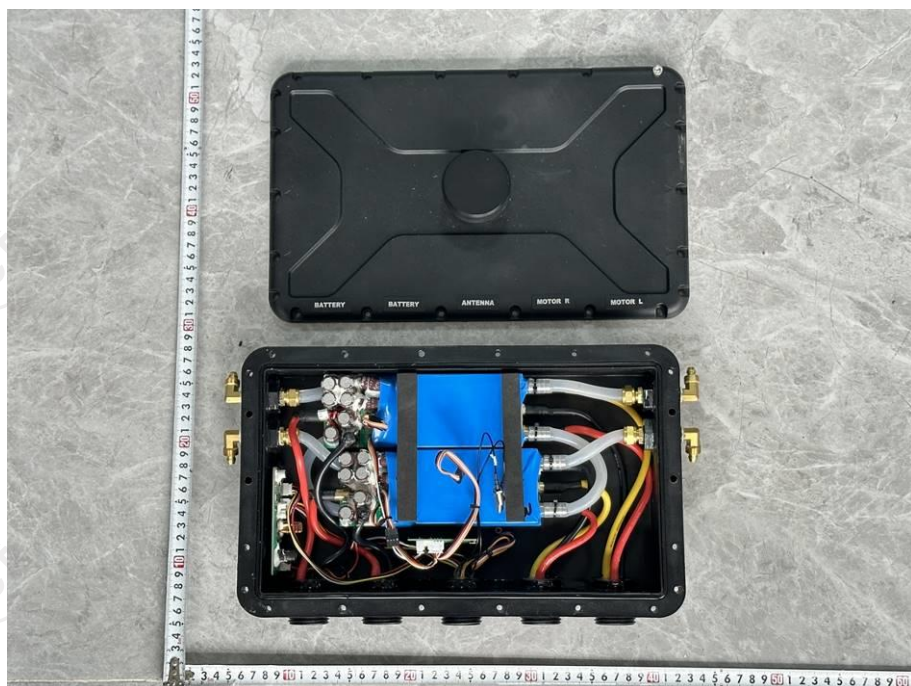


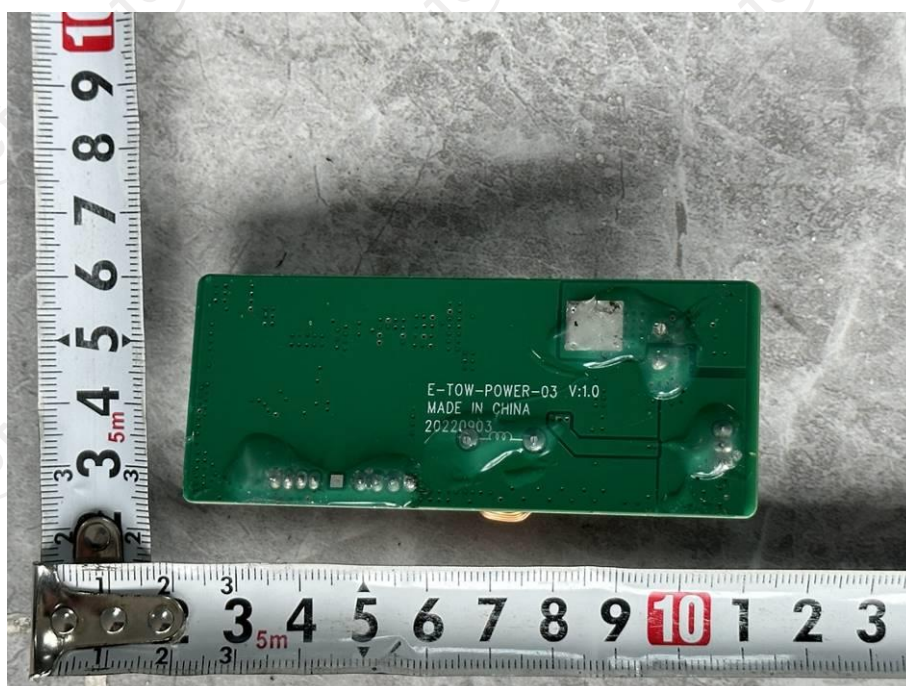
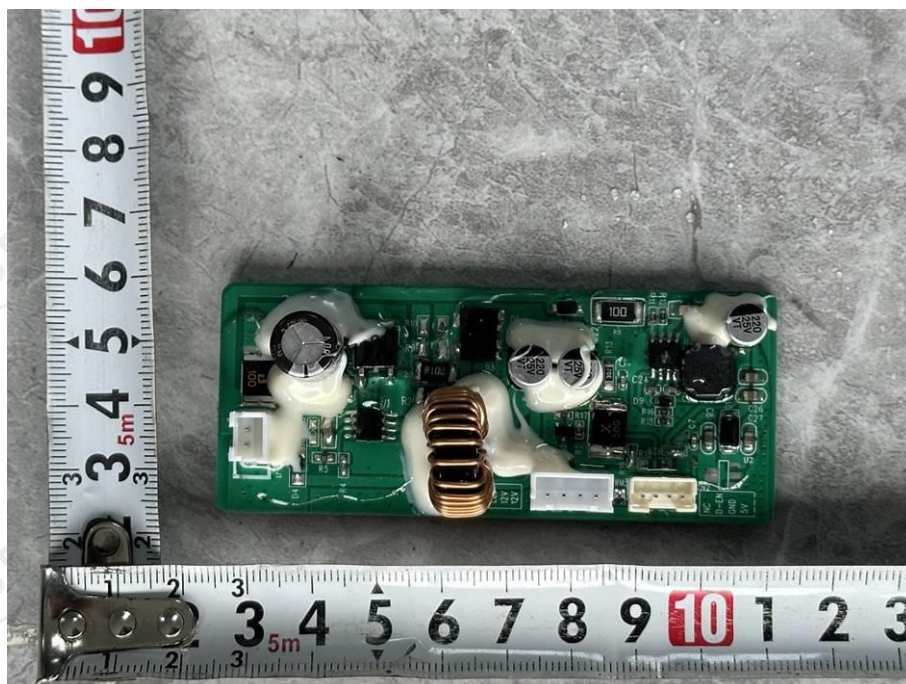


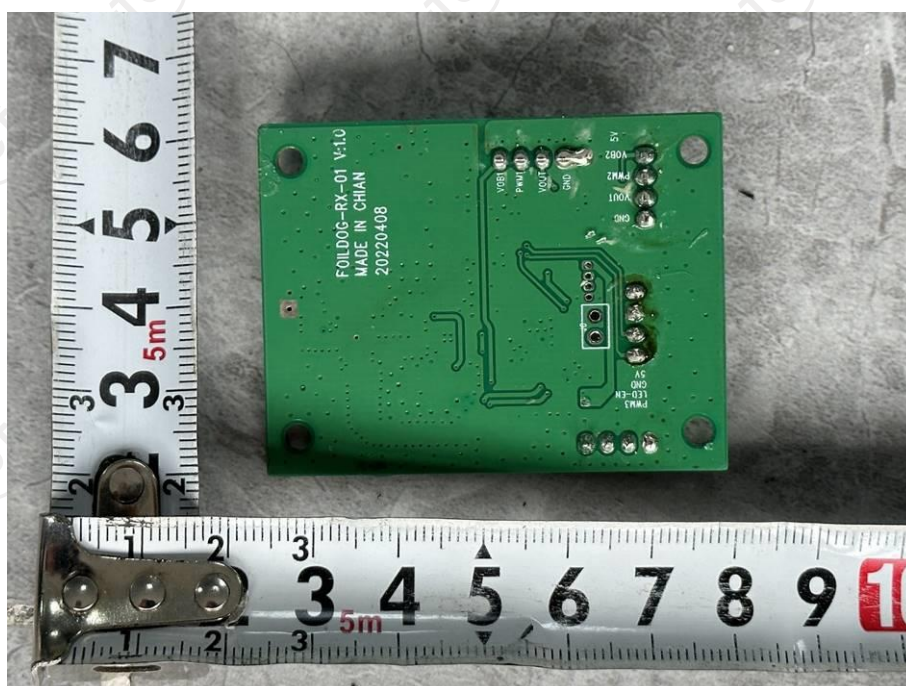
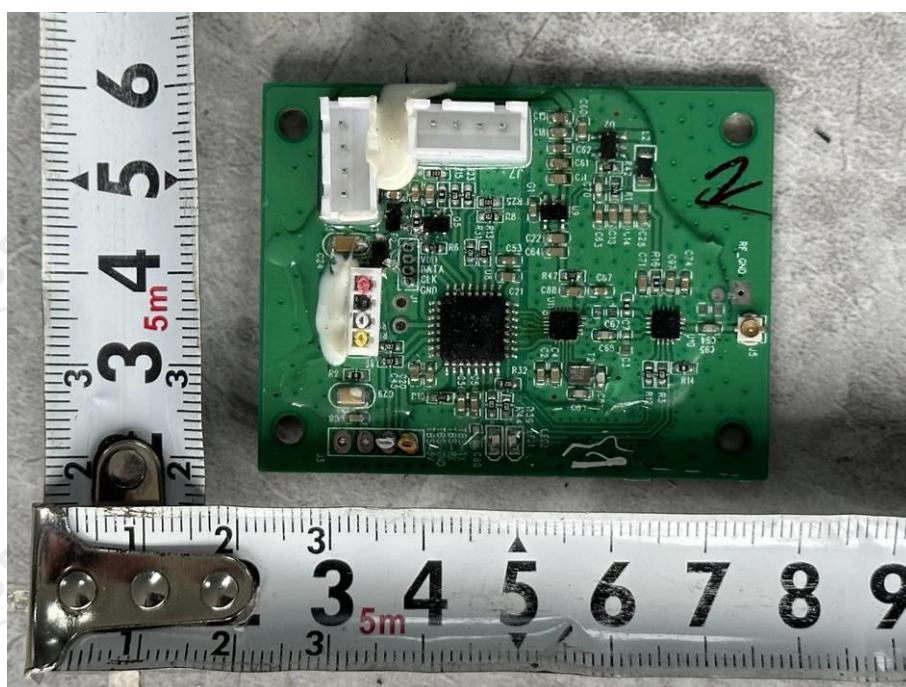


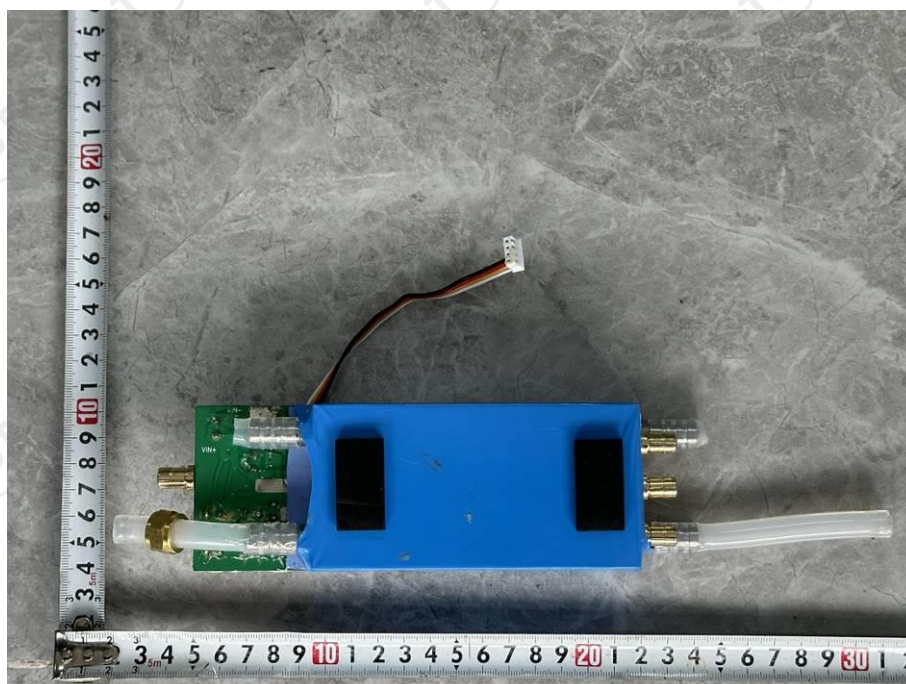
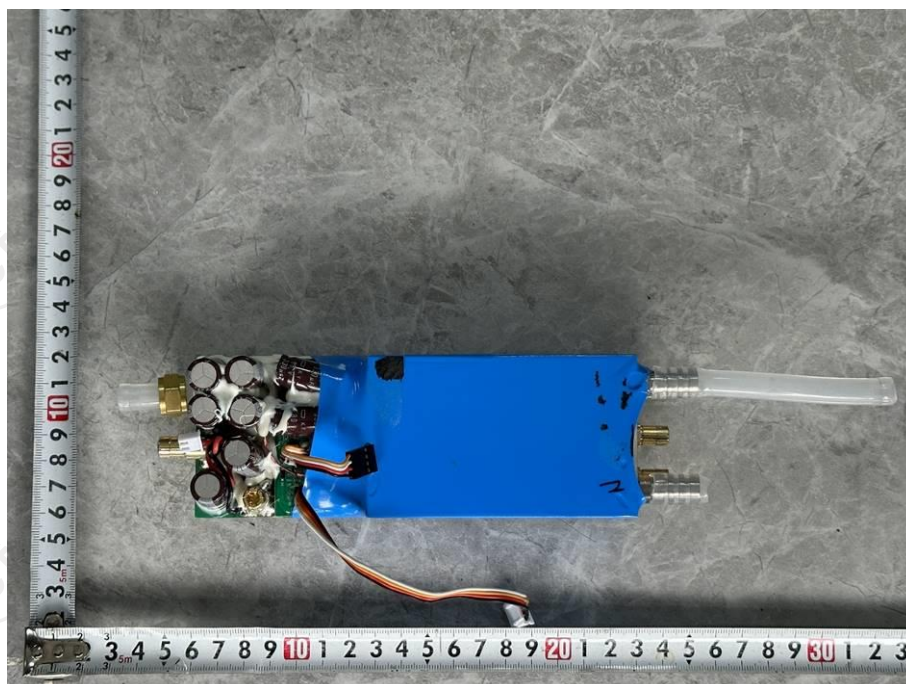


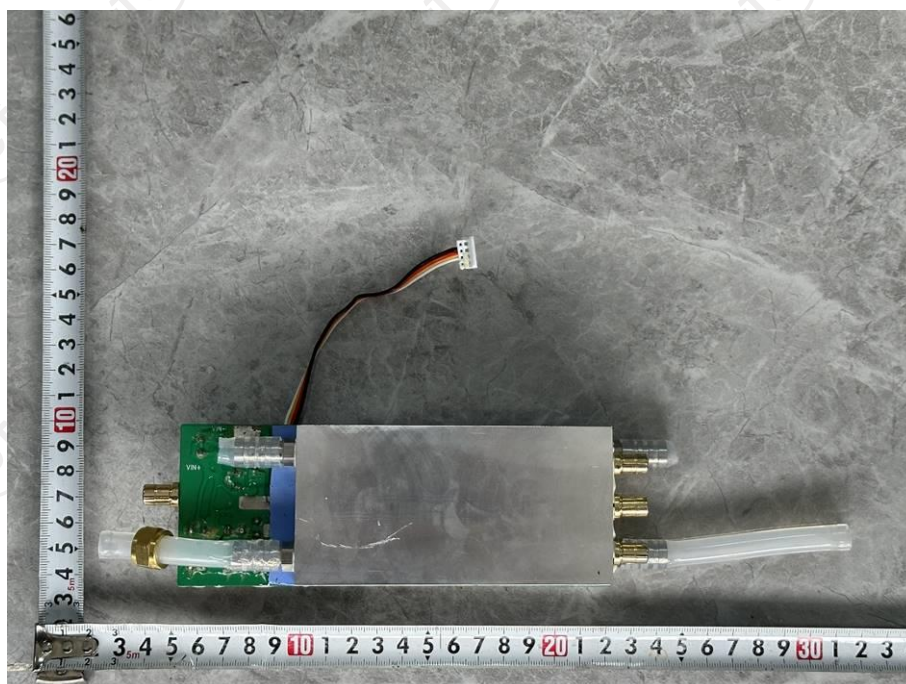
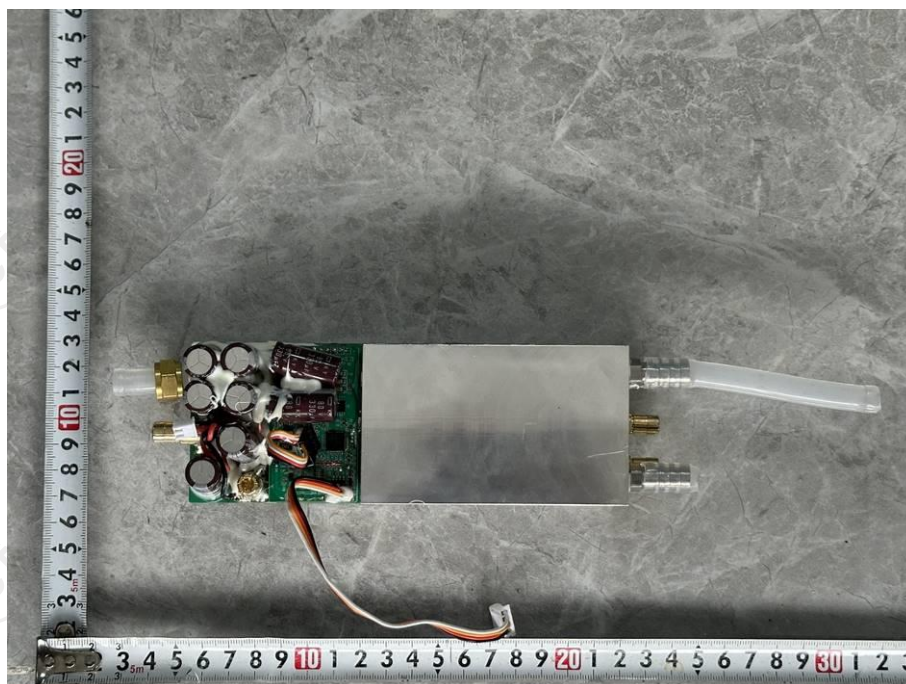


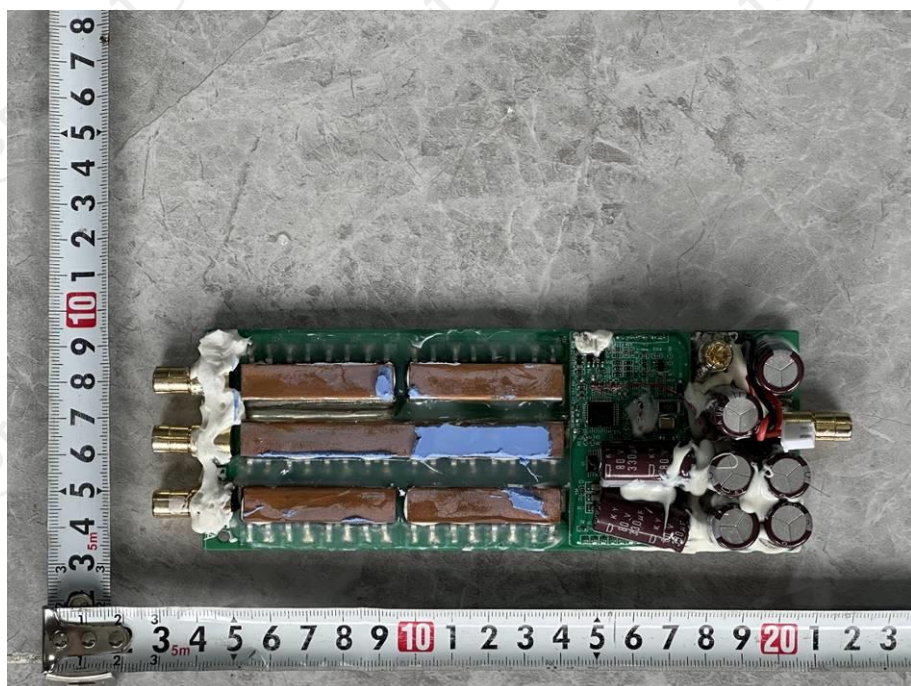


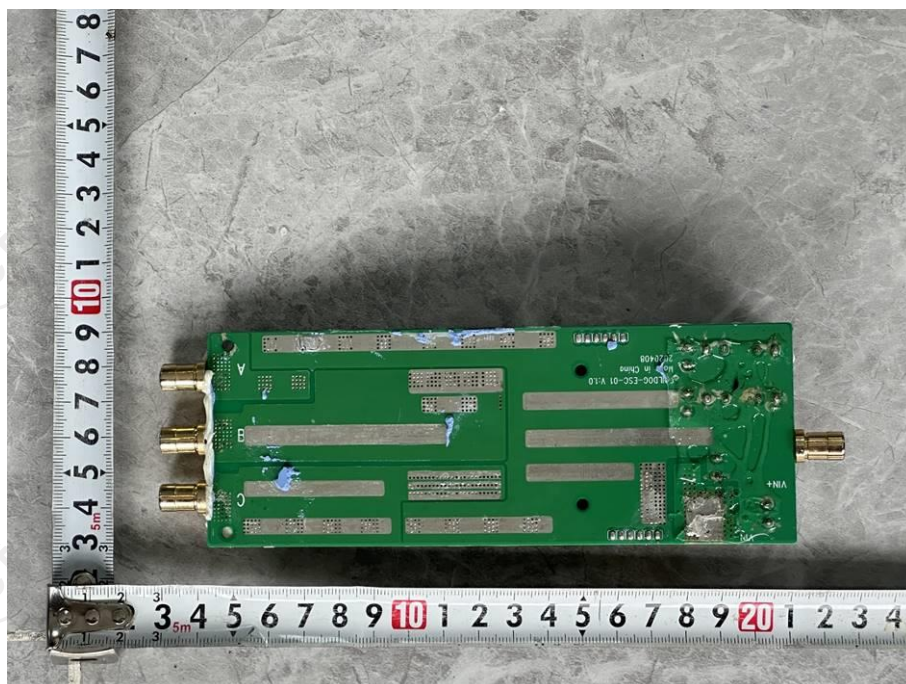


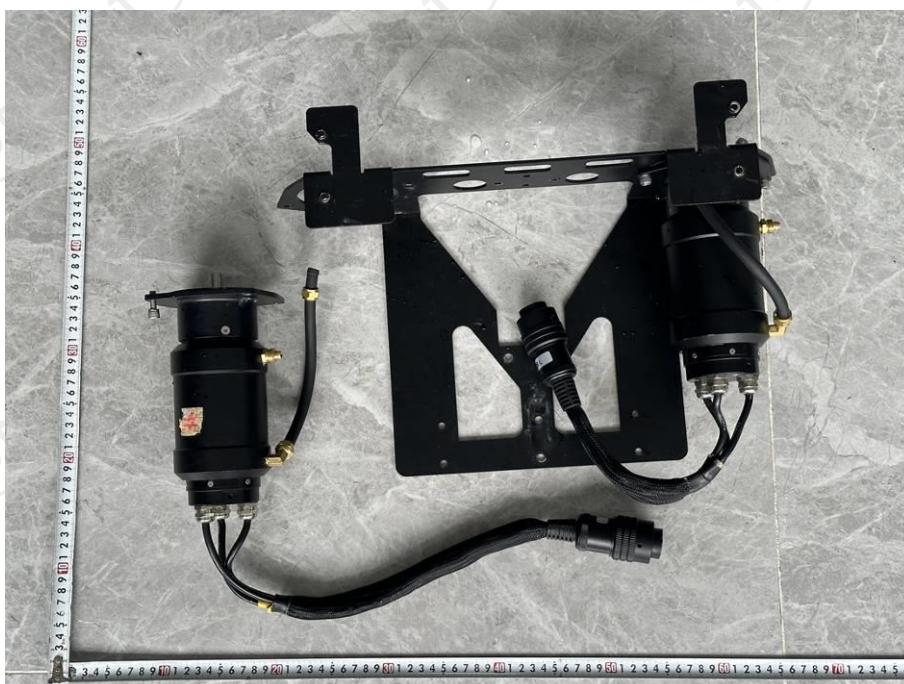




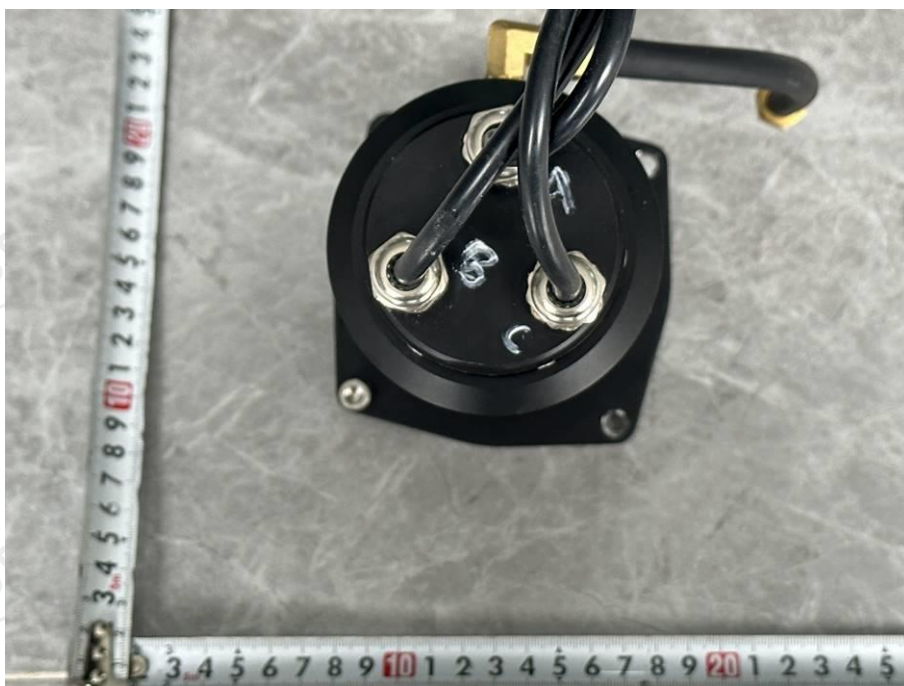












*******End of report*******