TEST REPORT

Report No.: SHATBL2410021W06

Applicant	:	Rapsodo Pte. Ltd.
Product Name	:	MLM2PRO™
Brand Name	:	Rapsodo
Model Name	:	MLM2.0P
FCC ID	:	2AH3O-MLM2PRO
Test Standard	:	FCC CFR Title 47 Part 15 Subpart C Section 15.247
Date of Test	:	2024.10.10~2024.10.31

Report Prepared by : Chris Xu

(Chris Xu)

Report Approved by : Guozheng Li

(Guozheng Li)

Authorized Signatory : Terry Yang

(Terry Yang)

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REVISION HISTORY

Rev.	Issue Date	Revisions	Revised by
A0	2024.11.01	Initial Release	Terry Yang

DECLARATION OF REPORT

1. The device has been tested by ATBL, and the test results show that the equipment under test (EUT) is in compliance with the requirements of 47 CFR Part 2.1091. And it is applicable only to the tested sample identified in the report.

2. This report shall not be reproduced except in full, without the written approval of ATBL, this document only be altered or revised by ATBL, personal only, and shall be noted in the revision of the document.

3. The general information of EUT in this report is provided by the customer or manufacture, ATBL is only responsible for the test data but not for the information provided by the customer or manufacture.

4. The results in this report is only apply to the sample as tested under conditions. The customer or manufacturer is responsible for ensuring that the additional production units of this model have the same electrical and mechanical components.

5. In this report, '☐' indicates that EUT does not support content after '☐', and '☑' indicates that it supports content after '☑'

1. GENERAL DESCRIPTION

1.1. Applicant

Name	:	SHENZHEN AONI ELECTRONIC CO.,LTD
Address	:	No.5,Bldg.,Honghui Industrial Park,2nd Liuxian Road,Xin'An streets, Bao'an District, ShenZhen, China

1.2. Manufacturer

Name	:	SHENZHEN AONI ELECTRONIC CO.,LTD
Address	:	No.5,Bldg.,Honghui Industrial Park,2nd Liuxian Road,Xin'An streets, Bao'an District, ShenZhen, China

1.3. Factory

Name	:	Aoni Intelligent Technology (Zhongshan) Co., LTD
Address	:	Floor 4,5,6,7,8,9, Building 2, NO. 138, Lefeng South Road, Lianfeng, Xiaolan Town, Zhongshan City, Guangdong Province

1.4. General Information of EUT

General Information			
Equipment Name	MLM2PRO™		
Brand Name	Rapsodo		
Model Name	MLM2.0P		
Series Model	N/A		
Model Difference	N/A		
Operation Frequency	Bluetooth&WiFi 2.4GHz:2400MHz - 2483.5MHz WiFi 5GHz:5150MHz - 5850MHz		
Modulation Type	Bluetooth BR&EDR:GFSK,π/4-DQPSK,8-DPSK Bluetooth LE:GFSK		
	WiFi 2.4GHz 802.11b: DSSS (DBPSK/DQPSK/CCK) 802.11g/n(HT): OFDM (BPSK/QPSK/16QAM/64QAM)		
	WiFi 5GHz 802.11a/n(HT): OFDM (BPSK/QPSK/16QAM/64QAM) 802.11ac(VHT): OFDM (BPSK/QPSK/16QAM/64QAM/256QAM)		
Antenna Information	☑SISO	Antenna Type:	FPC
		Antenna 0 Gain:	5dBi
		Antenna 1 Gain:	5dBi
	☑MIMO	Antenna Type:	FPC
		Antenna 0 Gain:	5dBi
		Antenna 1 Gain:	5dBi
		Directional Gain:	8.01dBi
Antenna Designation	FPC Antenna		
Battery	Rated Voltage：7.4V Charge Limit Voltage：8.4V Capacity：24.42Wh		
Hardware Version	G 1.11		
Software Version	3.0.0		

1.5. Laboratory Information

Company Name	:	Shanghai ATBL Technology Co., Ltd.
Address	:	Building 8,No.160 Basheng Road, Waigaoqiao Free Trade Zone, Pudong New Area, Shanghai
Telephone	:	+86(0)21-51298625

2. FCC 47CFR §2.1091 Requirement

2.1. Test Standards

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensures that the public is not exposed to radio frequency energy level in excess of the Commission's guidelines.

According to §1.1310 and §2.1091 RF exposure is calculated.

KDB447498 D01: Mobile and Portable Devices RF Exposure Procedures and Equipment Authorization Policies

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2.2. Limit

Limits for Maximum Permissible Exposure (MPE)/Controlled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	6
3.0 – 30	1842/f	4.89/f	($900/f^2$)*	6
30 – 300	61.4	0.163	1.0	6
300 – 1500	/	/	f/300	6
1500 – 100,000	/	/	5	6

Limits for Maximum Permissible Exposure (MPE)/Uncontrolled Exposure

Frequency Range(MHz)	Electric Field Strength(V/m)	Magnetic Field Strength(A/m)	Power Density (mW/cm^2)	Averaging Time (minute)
Limits for Occupational/Controlled Exposure				
0.3 – 3.0	614	1.63	(100) *	30
3.0 – 30	824/f	2.19/f	($180/f^2$)*	30
30 – 300	27.5	0.073	0.2	30
300 – 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

F=frequency in MHz

*=Plane-wave equivalent power density

2.3. MPE Calculation Method

Predication of MPE limit at a given distance

Equation from page 18 of OET Bulletin 65, Edition 97-01

$S=PG/4\pi R^2$

Where: S=power density

P=power input to antenna

G=power gain of the antenna in the direction of interest relative to an isotropic radiator

R=distance to the center of radiation of the antenna

2.4. Antenna Information

EUT can only use antennas certificated as follows provided by manufacturer;

Transmitter Circuit	Peak Gain (dBi)	Antenna Type
Chain 0	5.00	FPC
Chain 1	5.00	FPC

2.5. Manufacturing Tolerance

Function	Target (dBm)	Tolerance ± (dB)
SISO Transmit		
Bluetooth	12.00	1.00
BLE	6.50	1.00
WiFi 2.4GHz	23.50	1.00
WiFi 5GHz	13.50	1.00
MIMO Transmit		
WiFi 2.4GHz	24.50	1.00
WiFi 5GHz	15.00	1.00

Note: The target power has included the maximum transmission power and tolerance values.

2.6. Test Result

As declared by the Applicant, the EUT is a wireless device used in a Mobile application, at least 20 cm from any body part of the user or nearby persons; from the maximum EUT RF output power, the minimum separation distance, r =20cm, as well as the gain of the used antenna is refer to section 4, the RF power density can be obtained.

Modulation Type	Output power (Target)		Antenna Gain (dBi)	Antenna Gain (linear)	MPE (mW/cm^2)	MPE Limits (mW/cm^2)
	dBm	mW				
SISO Transmit						
Bluetooth	13.00	19.9526	5	3.1622	0.012559	1.0000
BLE	7.50	5.62341	5	3.1622	0.0035396	1.0000
WiFi 2.4GHz	24.50	281.838	5	3.1622	0.1773987	1.0000
WiFi 5GHz	14.50	28.1838	5	3.1622	0.017740	1.0000
MIMO Transmit						
WiFi 2.4GHz	25.50	354.813	8.01	6.324	0.4466325	1.0000
WiFi 5GHz	16.00	39.8107	8.01	6.324	0.0501130	1.0000

Note:

1. If nothing else, the report will only record the worstpower.
2. The Maxinum power is less than the limit, complies with the exemption requirements.
3. Output power including turn-up tolerance;
4. The calculated distance is 20 cm.
5. The BT and Wi-Fi can transmit simultaneously, but Wi-Fi 2.4G and Wi-Fi 5G can not transmit simultaneously, the formula of calculated the MPE is:
   CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
   CPD = Calculation power density
   LPD = Limit of power density
   Worst situation is (0.012559/1) + (0.4466325/1) = 0.4591915<1, which is less than the “1” limit.

※※※※※END OF THE REPORT※※※※※