

RF EXPOSURE REPORT

FOR

Applicant	:	Retro Manufacturing, LLC
Address	:	7470 Commercial Way, Henderson, NV 89011 USA
Equipment under Test	:	RADIO CONTROL BOX M1B RETRO SOUND
Model No.	:	MOTOR 1B, RetroRadio, Huntington, Apache, Redondo, Newport, Monterey, Santa Cruz, New York, Grand Prix, Denver, Daytona, Detroit, Wonder Bar 1, Wonder Bar 3
Trade Mark	:	RetroSound, RetroRadio, Retro Manufacturing
FCC ID	:	2AXWTMOTOR1B
Manufacturer	:	ACTION INDUSTRIES (M) SDN. BHD.
Address	:	2480, TINGKAT PERUSAHAAN ENAM, PRAI FREE TRADE ZONE, 13600, PERAI, PENANG, MALAYSIA

Issued By: Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City,
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REPORT

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TEST REPORT DECLARE

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Address	:	2480, TINGKAT PERUSAHAAN ENAM, PRAI FREE TRADE ZONE, 13600, PERAI, PENANG, MALAYSIA

Standard Used: KDB447498 D01 General RF Exposure Guidance v06

We Declare:

The equipment described above is assessed by Dongguan Dongdian Testing Service Co., Ltd and in the configuration assessed the equipment complied with the standards specified above. The assessed results are contained in this report and Dongguan Dongdian Testing Service Co., Ltd is assumed of full responsibility for the accuracy and completeness of these assess.

After evaluation, our opinion is that the equipment In Accordance with above standard.

Report No.:	DDT-R21121405-2E02		
Date of Receipt:	Dec. 20, 2021	Date of Test:	Dec. 20, 2021 ~ Jan. 10, 2022

Prepared By:

Ben Jin

Ben Jin/Engineer

Approved By:



Damon Hu/EMC Manager

Note: This report applies to above tested sample only. This report shall not be reproduced in parts without written approval of Dongguan Dongdian Testing Service Co., Ltd.

Revision history

Rev.	Revisions	Issue Date	Revised By
---	Initial issue	Jan. 10, 2022	

1. General information

1.1. Description of Equipment

EUT* Name	: RADIO CONTROL BOX M1B RETRO SOUND
Model Number	: MOTOR 1B, RetroRadio, Huntington, Apache, Redondo, Newport, Monterey, Santa Cruz, New York, Grand Prix, Denver, Daytona, Detroit, Wonder Bar 1, Wonder Bar 3
Model Difference	: Products is same, for those different selling countries or brands will create different models name
EUT Function Description	: Please reference user manual of this device
Power Supply	: DC 12V
Radio Specification	: Bluetooth V5.0
Operation Frequency	: 2402MHz-2480MHz
Modulation	: GFSK, $\pi/4$ -DQPSK, 8DPSK
Data Rate	: 1 Mbps, 2 Mbps, 3 Mbps
Antenna Gain	: Maximum PK gain: 0 dBi
Sample Type	: Series production
Serial number	: N/A

1.2. Assess laboratory

D Dongguan Dongdian Testing Service Co., Ltd.

Add.: No. 17, Zongbu Road 2, Songshan Lake Sci&Tech, Industry Park, Dongguan City, Guangdong Province, China, 523808.

Tel.: +86-0769-38826678, <http://www.dgddt.com>, Email: ddt@dgddt.com.

CNAS Accreditation No. L6451; A2LA Accreditation Number: 3870.01

FCC Designation Number: CN1182, Test Firm Registration Number: 540522

Innovation, Science and Economic Development Canada Site Registration Number: 10288A

Conformity Assessment Body identifier: CN0048

VCCI facility registration number: C-20087, T-20088, R-20123, G-20118

2. RF Exposure evaluation

2.1. Requirement

Systems operating under the provisions of FCC 47 CFR 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.

In accordance with 47 CFR FCC Part 2 Subpart J, section 2.1091 this device has been defined as mobile device whereby a distance of 0.2m normally can be maintained between the user and the device, and below RF Permissible Exposure limit shall comply with.

Limits for General Population/Uncontrolled Exposure

(B) Limits for General Population / Uncontrolled Exposure

Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500			F/1500	30
1500-100,000			1.0	30

Note: f = frequency in MHz ; *Plane-wave equivalent power density

2.2. Calculation Method

$$E(\text{V/m}) = \frac{\sqrt{30 \times P \times G}}{d} \quad \text{Power Density: } S(\text{mW/cm}^2) = \frac{E^2}{377}$$

E = Electric field (V/m)

P = Peak RF output power (mW)

G = EUT Antenna numeric gain (numeric)=

d = Separation distance between radiator and human body (m)

The formula can be changed to

We can change the formula to:

$$S = \frac{30 \times P \times G}{377 \times d^2} \quad \text{or, } d = \sqrt{\frac{30 \times P \times G}{377 \times S}}$$

From the peak EUT RF output power, the minimum mobile separation distance, d=0.2m, as well as the gain of the used antenna, the RF power density can be obtained.

2.3. Estimation Result

Manufacturing Tolerance

GFSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3	3	2
Tolerance $\pm$ (dB)	1	1	1
$\pi/4$ -DQPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3	3	2
Tolerance $\pm$ (dB)	1	1	1
8DPSK (Peak)			
Channel	Channel 0	Channel 39	Channel 78
Target (dBm)	3	3	2
Tolerance $\pm$ (dB)	1	1	1

Estimation Result

Mode	F (GHz)	Distance (cm)	RF output power		Antenna Gain (dBi)	Antenna Gain (linear)	MPE Values (mW /cm ²)	MPE Test Exclusion Threshold (mW/cm ²)	MPE Test Exclusion
			dBm	mW					
GFSK	2.450	20	4	2.51	0	1	0.00050	1	Yes
$\pi/4$ -DQPSK	2.450	20	4	2.51	0	1	0.00050	1	Yes
8DPSK	2.450	20	4	2.51	0	1	0.00050	1	Yes

Note: The estimation distance is 20cm

Conclusion: The measurement results comply with the FCC Limit per 47 CFR 2.1091 for the uncontrolled RF Exposure of mobile device.

END OF REPORT