Report No.: DDT-RE23042304-2E05

Issued Date: Jun. 06, 2023

RF EXPOSURE REPORT

FOR

Applicant	**:**	Formovie (Chongqing) Innovative Technology Co., Ltd.
Address	**:**	4-401, #2 Longgang Road, Guojiatuo Area, Jiangbei District, Chongqing, China
Equipment under Test	**:**	LCD Smart Projector
Model No.	**:**	XMM2101, XMM21**(*=0-9)
Trade Mark	**:**	Xming, WEWATCH
FCC ID	**:**	2AZNP-XMM2101
Manufacturer	**:**	Formovie (Chongqing) Innovative Technology Co., Ltd.
Address	**:**	4-401, #2 Longgang Road, Guojiatuo Area, Jiangbei District, Chongqing, China

Issued By: 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, **E-mail:** ddt@dgddt.com, http://www.dgddt.com

REPORT

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Test Report Declare

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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-RE23042304-2E05		
Date of Receipt:	May 08, 2023	**Date of Test:**	May 10, 2023~ Jun. 05, 2023

Prepared By:

Jacky Huang

Jacky Huang/Engineer

Approved By:

DONGGUAN DONGDIAN TESTING SERVICE CO., LTD. APPROVED

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	Jun. 06, 2023	

1. General Information

1.1. Description of equipment

EUT Name	:	LCD Smart Projector
Model Number	:	XMM2101, XMM21**(*=0-9)
Model Differences	:	The models used are the same in appearance, process material, hardware and software, just different model for different market or business purposes, therefore was tested on the model XMM2101.
EUT function description	:	Please reference user manual of this device
Power supply	:	DC 19V from external switching power supply
Radio Specification	:	Bluetooth V5.0, IEEE802.11b/g/n/a/ac
Operation frequency	:	Bluetooth: 2402MHz-2480MHz IEEE802.11b/g/n/a/ac: 2412MHz-2462MHz, 5180MHz-5320MHz, 5500MHz-5720MHz, 5745MHz-5825MHz
Modulation	:	Bluetooth: GFSK, π/4-DQPSK, 8DPSK IEEE 802.11b: DSSS (CCK, QPSK, BPSK) IEEE 802.11g: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11n HT20, HT40: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11a: OFDM (64QAM, 16QAM, QPSK, BPSK) IEEE 802.11ac: VHT20, VHT40, VHT80: OFDM (256QAM, 64QAM, 16QAM, QPSK, BPSK)
Transmitter rate	:	Bluetooth: 1Mbps, 2Mbps, 3Mbps IEEE 802.11b: up to 11 Mbps IEEE 802.11g/a: up to 54 Mbps IEEE 802.11n HT20: up to 144.4 Mbps IEEE 802.11n HT40: up to 300 Mbps IEEE 802.11ac VHT20: up to 173.4 Mbps IEEE 802.11ac VHT40: up to 400 Mbps IEEE 802.11ac VHT80: up to 866.6 Mbps
Antenna Gain		Bluetooth Antenna: maximum PK gain: 3.82 dBi WIFI Antenna 1: 2.4G band maximum PK gain: 2.36 dBi, 5G band maximum PK gain: 3.89 dBi WIFI Antenna 2: 2.4G band maximum PK gain: 3.21 dBi, 5G band maximum PK gain: 3.78 dBi
Sample Number	:	S23042304-01

Note: Serial model No.: XMM21** only apply for FCC ID.

Bluetooth:

Antenna information	
	Ant gain
GFSK	3.82
π/4-DQPSK	3.82
8DPSK	3.82

2.4G Band:

Antenna information			
	Ant1 gain	Ant2 gain	Directional gain
IEEE 802.11b	2.36	3.21	/
IEEE 802.11g	2.36	3.21	/
IEEE 802.11n HT20	2.36	3.21	2.91
IEEE 802.11n HT40	2.36	3.21	2.91

5G Band:

Antenna information			
	Ant1 gain	Ant2 gain	Directional gain
IEEE 802.11a	3.89	3.78	/
IEEE 802.11n HT20	3.89	3.78	3.42
IEEE 802.11n HT40	3.89	3.78	3.42
IEEE 802.11ac VHT20	3.89	3.78	3.42
IEEE 802.11ac VHT40	3.89	3.78	3.42
IEEE 802.11ac VHT80	3.89	3.78	3.42

Note: Directional gain = 10 log[(10G1 /10 + 10G2 /10 + … + 10GN /10)/NANT] dBi. The output signals of EUT are considered completely uncorrelated according to KDB 662911 D01, part F.

1.2. Assess laboratory

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, R-20155, 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 0.2 m 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

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

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= 0.2 m, as well as the gain of the used antenna, the RF power density can be obtained.

2.3. Estimation result

BT:

Mode	PK Output power (dBm)	Output power (mW)	tune up power (dBm)	tune up power (mW)	Antenna Gain (dBi)	Antenna Gain (linear)	MPE Values (mW/cm^2)	MPE Limit (mW/cm^2)
BT	8.21	6.62	10	10	3.82	2.41	0.0048	1
BLE	2.86	1.93	4	2.51	3.82	2.41	0.0012	1

2.4G WIFI:

Mode	PK Output power (dBm)		Output power (mW)		tune up power (dBm)	tune up power (mW)	Antenna Gain (dBi)		Antenna Gain (linear)		MPE Values (mW/cm^2)		MPE Limit (mW/cm^2)
	Ant1	Ant2	Ant1	Ant2					Ant1	Ant2	Ant1	Ant2	
802.11b	18.45	18.43	69.98	69.66	20	100	2.36	3.21	1.72	2.09	0.03	0.04	1
802.11g	16.43	17.21	43.95	52.60	18	63.10	2.36	3.21	1.72	2.09	0.02	0.03	1
802.11n20	13.58	13.49	22.80	22.34	15	31.62	2.36	3.21	1.72	2.09	0.01	0.01	1
802.11n40	12.67	12.71	18.49	18.62	14	25.12	2.36	3.21	1.72	2.09	0.01	0.01	1

5G WIFI:

Mode	PK Output power (dBm)		Output power (mW)		tune up power (dBm)	tune up power (mW)	Antenna Gain (dBi)		Antenna Gain (linear)		MPE Values (mW/cm^2)		MPE Limit (mW/cm^2)
	Ant1	Ant2	Ant1	Ant2					Ant1	Ant2	Ant1	Ant2	
802.11a	19.91	19.14	97.95	82.04	21	125.89	3.89	3.78	2.45	2.39	0.06	0.06	1
802.11n20	15.28	15.46	33.73	35.16	17	50.12	3.89	3.78	2.45	2.39	0.02	0.02	1
802.11n40	15.53	15.66	35.73	36.81	17	50.12	3.89	3.78	2.45	2.39	0.02	0.02	1
802.11ac20	15.29	15.56	33.81	35.97	17	50.12	3.89	3.78	2.45	2.39	0.02	0.02	1
802.11ac40	15.46	15.41	35.16	34.75	17	50.12	3.89	3.78	2.45	2.39	0.02	0.02	1
802.11ac80	16.13	16.32	41.02	42.85	18	63.10	3.89	3.78	2.45	2.39	0.03	0.03	1

Simultaneous (worst case):

Bluetooth+2.4G WIFI=0.0048/1+0.04/1=0.0448＜1

Bluetooth+5G WIFI=0.0048/1+0.06/1=0.0648＜1

Note: The estimation distance is 20 cm, EUT does not support simultaneous transmission of 2.4G WIFI and 5G WIFI.

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