

RF EXPOSURE REPORT

Applicant: ^{OF} Cal-Comp Big Data, Inc.
5F., No.99, Sec. 5, Nanjing E. Rd., Songshan Dist., Taipei
City 10571, Taiwan (R.O.C.)

Product Name: HiMirror Mini Premium X

Brand Name: HiMirror

Model No. / Type No.: BM688

Model Difference: N/A

Report Number: ER/2019/70031

FCC ID 2AJTF-BM688

IC 21978-BM688

FCC Rule Part Part 2.1091 & RSS-102

IC Rule Part RSS-102

Issue Date: Jul. 30, 2019

Date of Test: Jul. 11, 2019 ~ Jul. 22, 2019

Date of EUT Received: Jul. 11, 2019

We hereby certify that:

The above equipment was tested by SGS Taiwan Ltd. The test data, data evaluation in this report is in compliance with FCC Rules Part 2 & ISSED RSS-102.

The test results of this report relate only to the tested sample identified in this report.

Approved By: _____

John Yeh / Assistant Manager

John Yeh



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Revision History

Report Number	Revision	Description	Effected Page	Issue Date	Revised By
ER/2019/70031	Rev.00	Initial creation of document	All	Jul. 26, 2019	Yuri Tsai
ER/2019/70031	Rev.01	Updated antenna type at section 1, and description at section 2.3	4~5, 8	Jul. 30, 2019	Yuri Tsai

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

General:

Product Name:	HiMirror Mini Premium X	
Brand Name:	HiMirror	
Model No. / Type No.:	BM688	
Hardware Version:	N/A	
Software Version:	N/A	
Power Supply:	12Vdc from AC/DC Adapter	
	Adapter:	Model No.: WA-36A12FU Supplier: Asian Power Devices Inc.

BLE:

Radio Technology:	Bluetooth Low Energy
Channel number:	40 channels
Modulation type:	GFSK
Transmit Power:	0.38dBm
Antenna Designation:	PCB Antenna, Gain: 1.93dBi
Frequency Range:	2402 – 2480MHz

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2.4G WLAN:

Wi-Fi	Frequency Range	Channels	Rated Power in dBm (Peak)	Rated Power in dBm (EIRP)	Modulation Technology
802.11b	2412-2462	11	19.52	18.19	DSSS,
802.11g			21.19	14.24	OFDM
802.11n HT20			23.96	20.10	
Modulation type:		CCK, DQPSK, DBPSK for DSSS 64QAM, 16QAM, QPSK, BPSK for OFDM			
Antenna Designation:		PCB Antenna, Gain: 1.93dBi (Main) / 2.30dBi (Aux)			
Transition Rate:		802.11 b: 1/2/5.5/11 Mbps 802.11 g: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps			

FCC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. Power (dBm)	Modulation Technology
11a_20	5150~5250	4	13.91	OFDM
11n_HT 20M	5150~5250	4	12.55	OFDM
11n_HT40M	5150~5250	2	14.87	OFDM

IC WLAN 5GHz:

Wi-Fi	Frequency Range	Channels	Avg. or EIRP	Rated Power(dBm) (Worst Case)	Modulation Technology
11a	5150~5250	4	EIRP	18.72	OFDM
11n_HT20M	5150~5250	4	EIRP	20.22	OFDM
11n_HT40M	5150~5250	2	EIRP	22.54	OFDM

Modulation type	64QAM, 16QAM, QPSK, BPSK for OFDM
Antenna Designation:	PCB Antenna, Gain: 4.9dBi (Main) / 4.41dBi (Aux)
Transition Rate:	802.11 a: 6/9/12/18/24/36/48/54 Mbps 802.11 n_20MHz: 6.5 – 144.4Mbps 802.11 n_40MHz: 13.5 - 300.0Mbps

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2 FCC MAXIMUM PERMISSIBLE EXPOSURE (MPE)

2.1 FCC Standard Applicable

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

This is a Mobile device, the MPE is required.

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

Limits for Maximum Permissive Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm ²)	Averaging Time (minute)
Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f ²)	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-15000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equipment power density

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2.2 ISED Standard Applicable

This submittal(s) (test report) is intended to comply with RSS-102 issue 5 Radio frequency Radiation Exposure requirement.

This is a Mobile device, the MPE is required.

Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field (V/m rms)	Magnetic Field Strength (A/m rms)	Power Density (W/m ²)	Reference Period (minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	$0.73/f$	-	6**
1.1-10	$87/f^{0.5}$	-	-	6**
10-20	27.46	0.0728	2	6
20-48	$58.07/f^{0.25}$	$0.1540/f^{0.25}$	$8.944/f^{0.5}$	6
48-300	22.06	0.05852	1.291	6
300-6000	$3.142 f^{0.3417}$	$0.008335 f^{0.3417}$	$0.02619 f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	$616000/f^{1.2}$
150000-300000	$0.158 f^{0.5}$	$4.21 \times 10^{-4} f^{0.5}$	$6.67 \times 10^{-5} f$	$616000/f^{1.2}$

F = frequency in MHz

* = Based on nerve stimulation (NS).

** = Based on specific absorption rate (SAR)

Maximum Permissible Exposure (MPE) Evaluation

Prediction of MPE limit at a given distance

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

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

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2.3 Power Density Calculation (Worst Case)

FCC								ISED		
Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. output Power (dBm)	Output Power EIRP (mW)	Power Density (mW/cm ²)	Limit (mW/cm ²)	Pass / Fail	Power Density (W/cm ²)	Limit (W/cm ²)	Pass / Fail
BT	2402	20	0.1	1.60	0.000	1.000	Pass	0.003	5.351	Pass
WLAN 2.4G	2462	20	15.89	65.92	0.013	1.000	Pass	0.131	5.442	Pass
WLAN 5G	5190	20	14.87	179.47	0.036	1.000	Pass	0.357	9.059	Pass

~ End of Report ~

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