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RF Exposure Evaluation Report

Application No.: SZEM1410005724RF

Applicant: Sky Light Imaging Limited

Manufacturer: Sky Light Imaging Limited

Factory Sky Light Electronic (ShenZhen) Limited

Product Name: Car Camcorder

Model No.(EUT): MPC03G

Add Model No.: MPC03, MPC03P, MPC03A, MPC03B, MPC03C

FCC ID: MOTOR+

Standards: 47 CFR Part 1.1307(2013)

47 CFR Part 1.1310(2013)

Date of Receipt: 2014-10-21

Date of Test: 2014-10-22 to 2014-11-17

Date of Issue: 2014-11-21

Test Result : PASS*

Authorized Signature:



Jack Zhang EMC Laboratory Manager

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^{*} In the configuration tested, the EUT complied with the standards specified above.



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2 Version

Revision Record						
Version	Chapter	Date	Modifier	Remark		
00		2014-11-21		Original		

Authorized for issue by:		
Tested By	(Owen Zhou) /Project Engineer	2014-11-17 Date
Prepared By	Link Liang) /Clerk	2014-11-21 Date
Checked By	Emen _ L ₁	2014- Date

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4 General Information

4.1 Client Information

Applicant:	Sky Light Imaging Limited		
Address of Applicant:	Rm. 1009 Kwong Sang Hong Centre, 151-153 Hoi Bun Road, Kwun Tong, Kowloon, Hong Kong		
Manufacturer:	Sky Light Imaging Limited		
Address of Manufacturer:	Rm. 1009 Kwong Sang Hong Centre, 151-153 Hoi Bun Road, Kwun Tong, Kowloon, Hong Kong		
Factory:	Sky Light Electronic (ShenZhen) Limited		
Address of Factory:	Floor 1-2 No.1 Building, No.5 and 6 Building, JinBi Industrial Area, HuangTian, BaoAn, Shenzhen, China.		

4.2 General Description of EUT

Product Name:	Car Camcorder				
Model No.:	MPC03G, MPC03, MPC03P, MPC03A, MPC03B, MPC03C				
Trade Mark:	MOTOR+				
Operation Frequency:	IEEE 802.11	b/g/n(HT20): 2412MHz to 2462MHz			
Channel Numbers:	IEEE 802.11	b/g, IEEE 802.11n HT20: 11 Channels			
Channel Separation:	5MHz				
Type of Modulation:	IEEE for 802.11b: DSSS(CCK,DQPSK,DBPSK) IEEE for 802.11g: OFDM(64QAM, 16QAM, QPSK, BPSK)				
		2.11n(HT20) : OFDM (64QAM, 16QAM,			
	QPSK,BPSK)				
Sample Type:	fixed production				
Test Power Grade:	15 (manufacturer declare)				
Test Software of EUT:	art.exe (manufacturer declare)				
Antenna Type and Gain:	Type: Integral				
	Gain:-1.31dBi				
EUT power supply:	Adapter:	DC in			
	Battery:	185mAh Li-ion polymer			
DC IN Cable:	500cm				
USB Cable:	95cm				



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4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch E&E Lab

No. 1 Workshop, M-10, Middle section, Science & Technology Park, Shenzhen, Guangdong, China 518057

Telephone: +86 (0) 755 2601 2053 Fax: +86 (0) 755 2671 0594

No tests were sub-contracted.



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4.4 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

CNAS (No. CNAS L2929)

CNAS has accredited SGS-CSTC Standards Technical Services Co., Ltd. Shenzhen Branch EMC Lab to ISO/IEC 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories (CNAS-CL01 Accreditation Criteria for the Competence of Testing and Calibration Laboratories) for the competence in the field of testing.

VCCI

The 10m Semi-anechoic chamber and Shielded Room (7.5m x 4.0m x 3.0m) of SGS-CSTC Standards Technical Services Co., Ltd. have been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: G-823, R-4188, T-1153 and C-2383 respectively.

FCC – Registration No.: 556682

SGS-CSTC Standards Technical Services Co., Ltd., Shenzhen EMC Laboratory has been registered and fully described in a report filed with the (FCC) Federal Communications Commission. The acceptance letter from the FCC is maintained in our files. Registration No.: 556682.

Industry Canada (IC)

Two 3m Semi-anechoic chambers of SGS-CSTC Standards Technical Services Co., Ltd. have been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 4620C-1 & 4620C-2.

4.5 Deviation from Standards

None.

4.6 Abnormalities from Standard Conditions

None.

4.7 Other Information Requested by the Customer

None.



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5 RF Exposure Evaluation

5.1 RF Exposure Compliance Requirement

5.1.1 Limits

According to FCC Part1.1310: The criteria listed in the following table shall be used to evaluate the environment impact of human exposure to radio frequency (RF) radiation as specified in part1.1307(b)

Table 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field Magnetic field strength (V/m) (A/m)		Power density (mW/cm²)	Averaging time (minutes)			
(A) Limits for Occupational/Controlled Exposures							
0.3–3.0 3.0–30 30–300 300–1500 1500–100,000	614 1842/f 61.4	1.63 4.89/f 0.163	*(100) *(900/f²) 1.0 f/300 5	6 6 6 6			
(B) Limits for General Population/Uncontrolled Exposure							
0.3–1.34	614 824/f 27.5	1.63 2.19/f 0.073	*(100) *(180/f²) 0.2 f/1500 1.0	30 30 30 30 30			

F= Frequency in MHz

Friis Formula

Friis transmission formula: Pd = (Pout*G)/(4*Pi*R2)

Where

Pd = power density in mW/cm2

Pout = output power to antenna in mW

G = gain of antenna in linear scale

Pi = 3.1416

R = distance between observation point and center of the radiator in cm

Pd id the limit of MPE, 1 mW/cm2 . If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance r where the MPE limit is reached.



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5.1.2 Test Procedure

Software provided by client enabled the EUT to transmit and receive data at lowest, middle and highest channel individually.

5.1.3 4.1.3 EUT RF Exposure Evaluation

Antenna Gain: -1.31dBi

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 0.7396 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

Channel	Frequency (MHz)	Max Conducted Peak Output	Output Power to Antenna	Power Density at R = 20 cm	Limit	Result
	(2)	Power (dBm)	(mW)	(mW/cm ²)		
Middle	2437	19.83	96.1612	0.01415	1.0	PASS

Note: Refer to report No. SZEMxxxxxxxx for EUT test Max Conducted Peak Output Power value.

The distance r (4th column) calculated from the Fries transmission formula is far greater than 20 cm separation requirement.