



REPORT No. : SZ14090085S01

RF EXPOSURE EVALUATION REPORT

APPLICANT : Motic China Group Co., Ltd
PRODUCT NAME : Moticam T2 Smart Camera
MODEL NAME : MoticamT2
TRADE NAME : Motic
BRAND NAME : Motic
FCC ID : PVEMOTICAMT2
47CFR 2.1091
STANDARD(S) : KDB 447498 D01 General RF Exposure
Guidance v05r02
ISSUE DATE : 2014-10-20



SHENZHEN MORLAB COMMUNICATIONS TECHNOLOGY Co., Ltd.

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Change History		
Issue	Date	Reason for change
1.0	2014-10-20	First edition



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TEST REPORT DECLARATION

Applicant	Motic China Group Co., Ltd
Applicant Address	MOTIC BLDG, TORCH HI-TECH INDUSTRIAL DEV ZONE XIAMEN FUJIAN; 361006;CN
Manufacturer	Motic China Group Co., Ltd
Manufacturer Address	MOTIC BLDG, TORCH HI-TECH INDUSTRIAL DEV ZONE XIAMEN FUJIAN; 361006;CN
Product Name	Moticam T2 Smart Camera
Model Name	MoticamT2
Brand Name	Motic
HW Version	1.0.0.0
SW Version	4.2.2.0
Test Standards	47CFR 2.1091; KDB 447498 D01 General RF Exposure Guidance v05r02
Test Date	2014-09-28
SAR Evaluation	Not Required

Tested by : Liu Jun

Liu Jun

Reviewed by : Peng Huarui

Peng Huarui

Approved by : Zeng Dexin

Zeng Dexin



1. TECHNICAL INFORMATION

Note: the following data is based on the information by the applicant.

1.1. Identification of Applicant

Company Name:	Motic China Group Co., Ltd
Address:	MOTIC BLDG, TORCH HI-TECH INDUSTRIAL DEV ZONE XIAMEN FUJIAN; 361006;CN

1.2. Identification of Manufacturer

Company Name:	Motic China Group Co., Ltd
Address:	MOTIC BLDG, TORCH HI-TECH INDUSTRIAL DEV ZONE XIAMEN FUJIAN; 361006;CN

1.3. Equipment Under Test (EUT)

Model Name:	MoticamT2
Trade Name:	Motic
Brand Name:	Motic
Hardware Version:	1.0.0.0
Software Version:	4.2.2.0
Frequency Bands:	Wifi802.11b/g/n20:2412-2462MHz; Bluetooth:2402-2480MHz;
Modulation Mode:	WiFi802.11b:DSSS(2.4GHz);WiFi802.11g:OFDM(2.4GHz); WiFi802.11n20:OFDM(2.4GHz); Bluetooth: GFSK/ π /4-DQPSK/8-DPSK;
Antenna type:	Fixed Internal Antenna
Development Stage:	Identical prototype



1.3.1. Photographs of the EUT

1. EUT front view



2. EUT rear view





1.3.2. Identification of all used EUT

The EUT identity consists of numerical and letter characters, the letter character indicates the test sample, and the following two numerical characters indicate the software version of the test sample.

EUT Identity	Hardware Version	Software Version
1#	1.0.0.0	4.2.2.0

1.4. Applied Reference Documents

Leading reference documents for testing:

No.	Identity	Document Title
1	47 CFR§2.1091	Radiofrequency Radiation Exposure Evaluation: mobile devices
2	KDB 447498 D01v05r02	General RF Exposure Guidance



2. DEVICE CATEGORY AND RF EXPOSURE LIMIT

Per user manual, this device is a C-mount camera. Based on 47CFR 2.1091, this device belongs to mobile device category with General Population/Uncontrolled exposure.

Mobile Devices:47CFR 2.1091(b)

For purposes of this section, a mobile device is defined as a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 centimeters is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons. In this context, the term "fixed location" means that the device is physically secured at one location and is not able to be easily moved to another location. Transmitting devices designed to be used by consumers or workers that can be easily re-located, such as wireless devices associated with a personal computer, are considered to be mobile devices if they meet the 20 centimeter separation requirement.

GENERAL POPULATION / UNCONTROLLED EXPOSURE

The general population/uncontrolled exposure limits are applicable to situations in which the general public may be exposed or in which persons who are exposed as a consequence of their employment may not be made fully aware of the potential for exposure or cannot exercise control over their exposure. Members of the general public would come under this category when exposure is not employment-related; for example, in the case of a wireless transmitter that exposes persons in its vicinity. Warning labels placed on low-power consumer devices such as cellular telephones are not considered sufficient to allow the device to be considered under the occupational/controlled category, and the general population/uncontrolled exposure limits apply to these devices.

TABLE 1—LIMITS FOR MAXIMUM PERMISSIBLE EXPOSURE (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm ²)	Averaging time (minutes)
(B) 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
1500-100,000	-	-	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density



3. MEASUREMENT OF CONDUCTED PEAK OUTPUT POWER

1. Wifi 2.4G Conducted Peak Output Power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			802.11b (DSSS)	802.11g (OFDM)	802.11n20 (OFDM)
WiFi	1	2412	17.46	17.96	17.57
	6	2437	17.40	17.97	17.62
	11	2462	17.46	18.11	17.95

2. BT+EDR 2.1 peak output power

Band	Channel	Frequency (MHz)	Output Power(dBm)		
			GFSK	$\pi/4$ -DQPSK	8-DPSK
BT	0	2402	6.40	7.21	6.32
	39	2441	7.32	6.87	6.16
	78	2480	7.58	7.25	6.35



4. RF EXPOSURE EVALUATION

Standalone transmission MPE evaluation

Bands	Frequency (MHz)	Antenna Gain (dBi)	Conducted Peak Power (dBm)	Time-averaging EIRP (mW)	Power density (mW/cm ²)	Limit for MPE (mW/cm ²)
802.11g	2462	2.34	18.11	67.05	0.013	1.0
Bluetooth	2480	1.26	7.58	6.99	0.001	

1. MPE calculation method

$$\text{Power Density} = \text{EIRP}/4\pi R^2$$

Where: $\text{EIRP} = P \cdot G$

P = Peak out power

G = Antenna gain

R = Separation distance (20cm)

Simultaneous transmission MPE evaluation

Band (Simultaneous transmission)	Bluetooth Power density (mW/cm ²)	WiFi Power density (mW/cm ²)	∑ Power density (mW/cm ²)	Limit for MPE (mW/cm ²)
802.11g+Bluetooth	0.001	0.013	0.014	1.0

Note : 1. The device has a Bluetooth transmitter antenna and a WiFi transmitter antenna , and they can transmit simultaneously. So simultaneous transmission MPE evaluation is required.



ANNEX C GENERAL INFORMATION

1. Identification of the Responsible Testing Laboratory

Company Name:	Shenzhen Morlab Communications Technology Co., Ltd.
Department:	Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China
Responsible Test Lab Manager:	Mr. Su Feng
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2. Identification of the Responsible Testing Location

Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, Guangdong Province, P. R. China

3. Accreditation Certificate

Accredited Testing Laboratory: CNAS No. L3572
(Shenzhen Morlab Communications Technology Co., Ltd.)

***** END OF REPORT *****