

## 1 Cover Page

# **FCC MPE REPORT**

<b>Application No.:</b>	SHEM1607004659CR
<b>Applicant:</b>	MivaTek Limited
<b>FCC ID:</b>	2AE59IPC08

### **Equipment Under Test (EUT):**

**NOTE:** The following sample(s) was/were submitted and identified by the client as

<b>Product Name:</b>	Camera
<b>Model No.(EUT):</b>	IPC2203
<b>Standards:</b>	FCC Rules 47 CFR §2.1091 KDB447498 D01 General RF Exposure Guidance v05r02
<b>Date of Receipt:</b>	2016-03-16
<b>Date of Test:</b>	2016-03-22 to 2016-04-25
<b>Date of Issue:</b>	2016-07-28
<b>Test Result:</b>	<b>Pass*</b>

\* In the configuration tested, the EUT complied with the standards specified above.



Parlam Zhan  
E&E Section Manager  
SGS-CSTC (Shanghai) Co., Ltd.

The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report. If the product in this report is used in any configuration other than that detailed in the report, the manufacturer must ensure the new system complies with all relevant standards.

The report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the federal government. All test results in this report can be traceable to National or International Standards.

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## 2 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
00	/	2016-07-28	/	Original Base on SHEM160300101604

<b>Authorized for issue by:</b>				
<b>Engineer</b>		Eddy Zong		<i>Eddy Zong</i>
		<b>Print Name</b>		
<b>Clerk</b>		Susie Liu		<i>Susie Liu</i>
		<b>Print Name</b>		
<b>Reviewer</b>		Parlam Zhan		<i>Parlam Zhan</i>
		<b>Print Name</b>		

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## 4 General Information

### 4.1 Client Information

Applicant:	MivaTek Limited
Address of Applicant:	5/F SPA CTR 53-55 LOCKHART RD HONG KONG
Manufacturer:	MivaTek Limited
Address of Manufacturer:	5/F SPA CTR 53-55 LOCKHART RD HONG KONG
Factory:	MivaTek Limited
Address of Factory:	5/F SPA CTR 53-55 LOCKHART RD HONG KONG

### 4.1 General Description of E.U.T.

Product Description:	Fixed product with 2.4G WiFi function	
Brand Name:	MivaTek	
Rated Input:	DC 12V 1A	
Adapter:	Model:	ADS-12B-12 12012E
	Rated Input:	AC 100V-240V 50/60Hz Max. 0.3A
	Rated Output:	DC 12V 1.0A
	Cable length:	AC port: 2 wires DC port: 1500±50mm
	Test Voltage:	AC 230V 50Hz for adapter

### 4.2 Technical Specifications

Operation Frequency:	802.11 b/g/n(HT20): 2412MHz-2472MHz 802.11 n(HT40): 2422MHz-2462MHz
Modulation Type:	802.11 b DSSS(CCK, DQPSK, DBPSK) 802.11 g/n(HT20)/n(HT40) OFDM(64QAM, 16QAM, QPSK, BPSK)
Number of Channel:	802.11 b/g/n(HT20): 13 802.11 n(HT40) 9
Data Rate:	802.11b: 1/2/5.5/11Mbps, 802.11g: 6/9/12/18/24/36/48/54Mbps 802.11n(HT20): 13/26/39/52/78/104/117/135Mbps 802.11n(HT40): 27/54/81/108/162/216/243/270Mbps
Antenna Type:	Integral
Antenna Gain:	2.4 dBi

#### 4.3 Test Location

All tests were performed at:

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd.

588 West Jindu Road, Xinqiao, Songjiang, 201612 Shanghai, China

Tel: +86 21 6191 5666

Fax: +86 21 6191 5678

#### 4.4 Test Facility

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

- **CNAS (No. CNAS L0599)**

CNAS has accredited SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. 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. Date of expiry: 2017-07-14.

- **FCC – Registration No.: 402683**

SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered and fully described in a report filed with the Federal Communications Commission (FCC). The acceptance letter from the FCC is maintained in our files. Registration No.: 402683, Expiry Date: 2017-09-16.

- **Industry Canada (IC) – IC Assigned Code: 8617A**

The 3m Semi-anechoic chamber of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered by Certification and Engineering Bureau of Industry Canada for radio equipment testing with Registration No.: 8617A-1. Expiry Date: 2017-06-18.

- **VCCI (Member No.: 3061)**

The 3m Semi-anechoic chamber and Shielded Room of SGS-CSTC Standards Technical Services (Shanghai) Co., Ltd. has been registered in accordance with the Regulations for Voluntary Control Measures with Registration No.: R-3868, C-4336, T-2221, G-830 respectively. Date of Expiry: 2017-11-16.

## 5 Test Standards and Limits

### 5.1 FCC Radiofrequency radiation exposure limits:

According to §1.1310, the limit for general population/uncontrolled exposures

Frequency	Power density(mW/cm <sup>2</sup> )	Averaging time(minutes)
300MHz~1.5GHz	f/1500	30
1.5GHz~100GHz	1.0	30

### 5.2 IC Radiofrequency radiation exposure limits:

According to RSS-102 section 2.5.2, RF exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm, except when the device operates as follows:

below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance);

- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $4.49/f^{0.5}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance);
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than  $1.31 \times 10^{-2} f^{0.6834}$  W (adjusted for tune-up tolerance), where  $f$  is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 5 W (adjusted for tune-up tolerance).

For 2.4G device, the limit of worse case is 2.68 W

## 6 Measurement and Calculation

### 6.1 Maximum transmit power

The Power Data is based on the RF Test Report SHEM160700465901.

Test mode	Test Frequency (MHz)	Output Power (dBm)	Output Power (mW)
802.11b	2412	15.71	37.24
	2437	15.73	<b>37.41</b>
	2462	15.14	32.66
802.11g	<b>2412</b>	13.93	24.72
	2437	14.35	27.23
	2462	14.20	26.30
802.11 n(HT20)	2412	13.85	24.27
	2437	13.97	24.95
	2462	13.72	23.55
802.11 n(HT40)	2422	12.96	19.77
	2437	12.97	19.82
	2452	12.92	19.59

## 6.2 MPE Calculation

The Max Conducted Peak Output Power is 37.41mW(0.03741W) in lowest channel;

The best case gain of the antenna is 2.4dBi. 2.4dB logarithmic terms convert to numeric result is nearly 1.738.

For FCC:

According to the formula  $S = \frac{PG}{4R^2\pi}$ , we can calculate S which is MPE.

Note:

- 1)  $P$  (Watts) = Power Input to antenna =  $10^{\frac{dBm}{10}} / 1000$
- 2)  $G$  (Antenna gain in numeric) =  $10^{\frac{dBi}{10}}$  (Antenna gain in dBi /10)
- 3)  $R$  = distance to the center of radiation of antenna (in meter) = 20cm
- 4) MPE limit = 1mW/cm<sup>2</sup>

$$S = \frac{PG}{4R^2\pi} = \frac{37.41 \times 1.738}{4 \times 400 \times 3.14} = 0.0129 \text{ mW/cm}^2$$

For IC:

$$E.I.R.P. = P \times G = 0.03741 \times 1.738 = 0.065W < 2.68W$$

So the device is exclusion from SAR test.

## 7 EUT Constructional Details

Refer to the < IPC2203\_External Photos > & < IPC2203\_Internal Photos >.

**--End of the Report--**