RF EXPOSURE

EVALUATION REPORT

APPLICANT	:	Shenzhen ImagineVision Technology Limited
PRODUCT NAME	:	Z CAM E2c
MODEL NAME	:	E1504
BRAND NAME	:	Z CAM
FCC ID	:	2AENNE2C
STANDARD(S)	:	47CFR 2.1091 KDB 447498
RECEIPT DATE	:	2019-03-26
TEST DATE	:	2019-04-22
ISSUE DATE	:	2019-05-28

Edited by: Liang Yumei

Liang Yumei (Rapporteur)

Approved by:

Peng Huarui(Supervisor)

DIRECTORY

Change history		
Version	**Date**	**Reason of changed**
1.0	2019-05-28	Original

1. Technical Information

Note: Provide by manufacturer.

1.1 Applicant and Manufacturer Information

Applicant:	Shenzhen ImagineVision Technology Limited
Applicant Address:	1A, Block F5, TCL International E City, 1001 Zhong Shan Park Road, Nan Shan, Shenzhen, China
Manufacturer:	Shenzhen ImagineVision Technology Limited
Manufacturer Address:	1A, Block F5, TCL International E City, 1001 Zhong Shan Park Road, Nan Shan, Shenzhen, China

1.2 Equipment under Test (EUT) Description

EUT Type:	Z CAM E2c
Hardware Version:	ver1
Software Version:	20180522_0.55
Frequency Bands:	WLAN 2.4GHz: 2412 MHz ~2462 MHz
Modulation Mode:	802.11b: DSSS 802.11g/n-HT20: OFDM
Antenna Type:	Monopole Antenna
Antenna Gain:	2dBi

1.3 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#	ver1	20180522_0.55

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 D01v06	General RF Exposure Guidance

2. Device Category and RF Exposure Limit

Per user manual, 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. RF Output Power

<WLAN 2.4GHz >

	Mode	Channel	Frequency (MHz)	Average power (dBm)	Duty factor Calculated (dBm)	Tune-Up power (dBm)	Duty Cycle %
WLAN 2.4GHz	802.11b 1Mbps	CH 1	2412	14.81	14.81	15.50	100.00
		CH 6	2437	15.00	15.00	15.50	
		CH 11	2462	15.29	15.29	**15.50**	
	802.11g 6Mbps	CH 1	2412	13.95	14.02	14.50	98.47
		CH 6	2437	14.32	14.39	14.50	
		CH 11	2462	14.59	14.66	15.00	
	802.11n-HT20 MCS0	CH 1	2412	13.13	13.68	14.00	88.03
		CH 6	2437	13.35	13.90	14.00	
		CH 11	2462	13.67	14.22	14.50	

4. RF Exposure Evaluation

Standalone transmission evaluation:

Bands	Frequency (MHz)	Maximum Tune-up power (dBm)	Antenna Gain (dBi)	EIRP (mW)	Power density (mW/cm²)	Limit for MPE (mW/cm²)
WLAN 2.4GHz	2462	15.50	2.0	56.234	0.011	1.0

Note:

1. According to KDB 447498, SAR test exclusion conditions are based on source-based time-averaged maximum conducted output power of the RF channel requiring evaluation, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions.
2. MPE calculation method

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

Where: EIRP = P+G

P = Output Power (dBm)

G = Antenna Gain (dBi)

R = Separation Distance (20cm)

Simultaneous transmission evaluation:

The worst condition for WWAN & Bluetooth will be calculated for transmitting simultaneously.

Formula: Result=Power density 1/ limit 1 + power density 2/ limit 2

This only supports WLAN 2.4 GHz, therefore simultaneous transmission is not required.

Annex A General Information

1. Identification of the Responsible Testing Laboratory

Laboratory Name:	Shenzhen Morlab Communications Technology Co., Ltd. Morlab Laboratory
Laboratory Address:	FL.3, Building A, FeiYang Science Park, No.8 LongChang Road, Block 67, BaoAn District, ShenZhen, GuangDong Province, P. R. China
Telephone:	+86 755 36698555
Facsimile:	+86 755 36698525

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

END OF REPORT