

Shenzhen Zhilai Sci and Tech Co., Ltd.

MPE ASSESSMENT REPORT

Report Type:

FCC MPE assessment report

Model:

ZL-Android-IMX6D-1G8G-WIFI-04
ZL-Android-IMX6D-2G8G-WIFI-04
ZL-Android-IMX6Q-2G8G-WIFI-04
ZL-Android-IMX6Q-2G8G-WIFI-070-VGA-06
ZL-Android-IMX6Q-1G8G-WIFI-070-VGA-06

REPORT NUMBER:

181101420SHA-003

ISSUE DATE:

June 12, 2019

DOCUMENT CONTROL NUMBER:

TTRFFCCMPE-01_V1 © 2018 Intertek



TEST REPORT

Applicant: Shenzhen Zhilai Sci and Tech Co., Ltd.
Floor 15, C3 building, Nanshan Zhiyuan, Xueyuan road 1001,
Address of Applicant: Nanshan District, Shenzhen 518052, China.
Manufacturer: Shenzhen Zhilai Sci and Tech Co., Ltd.
Floor 15, C3 building, Nanshan Zhiyuan, Xueyuan road 1001,
Address of Manufacturer: Nanshan District, Shenzhen 518052, China.

FCC ID: 2ARP5-ZHILAI-IMX6DQ

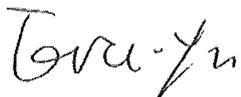
SUMMARY:

The equipment complies with the requirements according to the following standard(s) or Specification:

KDB447498 D01 General RF Exposure Guidance v06
FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b)

TESTED, PREPARED AND CHECKED BY :

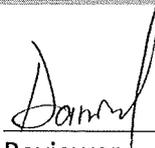
REVIEWED AND APPROVED BY :



Project Engineer

Eric Yu

Shenzhen UnionTrust Quality and
Technology Co., Ltd.



Reviewer

Daniel Zhao

Intertek Testing Services Shanghai

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Revision History

Report No.	Version	Description	Issued Date
181101420SHA-003	Rev. 01	Initial issue of report	June 12, 2019

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Embedded Industrial Computer
Type/Model:	ZL-Android-IMX6D-1G8G-WIFI-04 ZL-Android-IMX6D-2G8G-WIFI-04 ZL-Android-IMX6Q-2G8G-WIFI-04 ZL-Android-IMX6Q-2G8G-WIFI-070-VGA-06 ZL-Android-IMX6Q-1G8G-WIFI-070-VGA-06
Description of EUT:	NA
Rating:	Input: 12Vdc, 3.5A
Category of EUT:	Class A
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Software Version:	V5.2.2.4_25483.20171222
Sample received date:	October 25 ,2018
Date of test:	October 30 ,2018 to November 12,2018

1.2 Technical Specification

Frequency Range:	IEEE 802.11b/g/n-HT20: 2412MHz ~ 2462MHz IEEE 802.11n-HT40: 2422MHz ~ 2452MHz
Support Standards:	IEEE 802.11b, IEEE 802.11g, IEEE 802.11n-HT20, IEEE 802.11n-HT40
Type of Modulation:	IEEE 802.11b: DSSS (CCK, DQPSK, DBPSK) IEEE 802.11g: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT20: OFDM (64-QAM, 16-QAM, QPSK, BPSK) IEEE 802.11n-HT40: OFDM (64-QAM, 16-QAM, QPSK, BPSK)
Channel Number:	11 Channels for 802.11b, 802.11g and 802.11n(HT20) 9 Channels for 802.11n(HT40)
Data Rate:	IEEE 802.11b: Up to 11 Mbps IEEE 802.11g: Up to 54 Mbps IEEE 802.11n-HT20: Up to MCS7 IEEE 802.11n-HT40: Up to MCS7
Channel Separation:	5MHz
Antenna Information:	2dBi, Dipole antenna

1.3 Description of Test Facility

Name:	Intertek Testing Services Shanghai
Address:	Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China
Telephone:	86 21 61278200
Telefax:	86 21 54262353

The test facility is recognized, certified, or accredited by these organizations:	CNAS Accreditation Lab Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN1175
	IC Registration Lab Registration code No.: 2042B-1
	VCCI Registration Lab Registration No.: R-4243, G-845, C-4723, T-2252
	NVLAP Accreditation Lab NVLAP LAB CODE: 200849-0
	A2LA Accreditation Lab Certificate Number: 3309.02

2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

Frequency range	E-field strength (V/m)	H-field strength (A/m)	B-field (uT)	Equivalent plane wave power density S_{eq} (W/m ²)
0-1 Hz	-	$3,2 \times 10^4$	4×10^4	-
1-8 Hz	10 000	$3,2 \times 10^4/f^2$	$4 \times 10^4/f^2$	-
8-25 Hz	10 000	4 000/f	5 000/f	-
0,025-0,8 kHz	250/f	4/f	5/f	-
0,8-3 kHz	250/f	5	6,25	-
3-150 kHz	87	5	6,25	-
0,15-1 MHz	87	0,73/f	0,92/f	-
1-10 MHz	$87/f^{1/2}$	0,73/f	0,92/f	-
10-400 MHz	28	0,073	0,092	2
400-2 000 MHz	$1,375 f^{1/2}$	$0,0037 f^{1/2}$	$0,0046 f^{1/2}$	f/200
2-300 GHz	61	0,16	0,20	10

Mobile device exposure for simultaneous transmission operations: **the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0**

2.2 Assessment Results

Power density (S) is calculated according to the formula:

$$S = P / (4\pi R^2)$$

Where S = power density in mW/cm²

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 181101420SHA-003:

The maximum radiated power = 20.65dBm = 116.145 mW;

Here R is chosen to be 20cm,

$$S = P / (4\pi R^2) = 116.145 / (4 * 3.14 * 20 * 20) = 0.023 \text{ mW/cm}^2 < 1 \text{ mW/cm}^2$$

Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not recommended.

***** END *****