

RF EXPOSURE EVALUATION REPORT

Product Name: Android IPC
Trade Mark:  Connecting things
Hongdian
Model No. / HVIN: H9380S
Report Number: 200424008RFC-2
Test Standards: FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 5
FCC ID: 2ASR8H9380S
IC: 25827-H9380S
Test Result: PASS
Date of Issue: August 7, 2020

Prepared for:

Qingdao Haier Biomedical Co Ltd
HAIER INDUSTRIAL PARK ECONOMIC TECHNOLOGY
DEVELOPMENT ZONE, QINGDAO China

Prepared by:

Shenzhen UnionTrust Quality and Technology Co., Ltd.
16/F, Block A, Building 6, Baoneng Science and Technology Park,
Qingxiang Road No.1, Longhua New District, Shenzhen, China
TEL: +86-755-2823 0888
FAX: +86-755-2823 0886

Prepared by: 

Henry Lu
Team Leader

Reviewed by: 

Kevin Liang
Assistant Manager

Approved by: 

Billy Li

Technical Director

Date: August 7, 2020



Shenzhen UnionTrust Quality and Technology Co., Ltd.

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China
Tel: +86-755-28230888 Fax: +86-755-28230886 E-mail: info@uttlab.com

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**Shenzhen UnionTrust Quality and Technology Co., Ltd.**

Address: 16/F, Block A, Building 6, Baoneng Science and Technology Park, Qingxiang Road No.1, Longhua New District, Shenzhen, China

Tel: +86-755-28230888

Fax: +86-755-28230886

E-mail: info@uttlab.com<http://www.uttlab.com>UTTR-RF-RSS102-V1.0

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1. GENERAL INFORMATION

1.1 CLIENT INFORMATION

Applicant:	Qingdao Haier Biomedical Co Ltd
Address of Applicant:	HAIER INDUSTRIAL PARK ECONOMIC TECHNOLOGY DEVELOPMENT ZONE, QINGDAO China
Manufacturer:	Hongdian Corporation
Address of Manufacturer:	F14-16, Headquarter Economic Center Building, Zhonghaixin Science & Tech Park, Bulan Road, Longgang District, Shenzhen 518112, China

1.2 EUT INFORMATION

Product Name:	Android IPC	
Model No. / HVIN:	H9380S	
Trade Mark:		
DUT Stage:	Production Unit	
EUT Supports Function:	2.4 GHz ISM Band:	IEEE 802.11b/g/n
Sample Received Date:	May 25, 2020	
Sample Tested Date:	May 25, 2020 to June 29, 2020	

1.3 PRODUCT SPECIFICATION SUBJECTIVE TO THIS STANDARD

For 2.4 GHz ISM Band of Wi-Fi	
Frequency Band:	2400 MHz to 2483.5 MHz
Frequency Range:	2412 MHz to 2462 MHz
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)
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
Number of Channels:	IEEE 802.11b: 11 IEEE 802.11g: 11 IEEE 802.11n-HT20: 11 IEEE 802.11n-HT40: 7
Channel Separation:	5 MHz
Antenna Type:	External Antenna
Antenna Gain:	2.5 dBi
Maximum Peak Power:	IEEE 802.11b: 19.02 dBm IEEE 802.11g: 23.76 dBm IEEE 802.11n-HT20: 22.63 dBm IEEE 802.11n-HT40: 22.18 dBm

1.4 OTHER INFORMATION

Test channels for 2.4 GHz ISM Band of Wi-Fi				
Mode	Tx/Rx Frequency	Test RF Channel Lists		
		Lowest(L)	Middle(M)	Highest(H)
IEEE 802.11b	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11g	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11n-HT20	2412 MHz to 2462 MHz	Channel 1	Channel 6	Channel 11
		2412 MHz	2437 MHz	2462 MHz
IEEE 802.11n-HT40	2422 MHz to 2452 MHz	Channel 3	Channel 6	Channel 9
		2422 MHz	2437 MHz	2452 MHz

1.5 GENERAL DESCRIPTION OF APPLIED STANDARDS

The EUT is a RF product, according to the specifications of the manufacturers. It must comply with the requirements of the following standards:

FCC 47 CFR Part 1 Subpart I
RSS-102 Issue 5

All test items have been performed and recorded as per the above standards

1.6 DEVIATION FROM STANDARDS

None.

1.7 ABNORMALITIES FROM STANDARD CONDITIONS

None.

1.8 OTHER INFORMATION REQUESTED BY THE CUSTOMER

None.

2. EQUIPMENT LIST

Please refer to the RF test report.

3. MPE EVALUATION

3.1 REFERENCE DOCUMENTS FOR EVALUATION

No.	Identity	Document Title
1	FCC 47 CFR Part 1 Subpart I	PROCEDURES IMPLEMENTING THE NATIONAL ENVIRONMENTAL POLICY ACT OF 1969
2	RSS-102 Issue 5	Radio Frequency (RF) Exposure Compliance of Radiocommunication Apparatus (All Frequency Bands)
3	KDB 447498 D01 General RF Exposure Guidance v06	RF EXPOSURE PROCEDURES AND EQUIPMENT AUTHORIZATION POLICIES FOR MOBILE AND PORTABLE DEVICES

3.2 MPE COMPLIANCE REQUIREMENT

3.2.1 Limits

3.2.1.1 FCC 47 CFR Part 1 Subpart I

According to §1.1307(b)(1), system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

Limits for Occupational / Controlled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1842/f	4.89/f	(900/f)*	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	F/300	6
1500-100000	/	/	5	6

Limits for General Population / Uncontrolled Exposure

Frequency range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Times E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	(180/f)*	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	F/1500	30
1500-100000	/	/	1	30

Note: f = frequency in MHz: * = Plane-wave equivalents power density.

3.2.1.2 RSS-102 Issue 5

According to RSS-102 Issue 5, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

According to RSS-102 Issue 5, system operating under the provisions of this section shall be operating in a manner that the public is not exposed to radio frequency energy level in excess limit for maximum permissible exposure.

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 MHz⁶ 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).

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the e.i.r.p. was derived.

3.2.2 Test Procedure

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

3.3 MPE CALCULATION METHOD

FCC 47 CFR Part 1 Subpart I

$$S = PG/4\pi R^2 = EIRP/4\pi R^2$$

S = power density (in appropriate units, e.g., mw/cm²)

P = power input to the antenna (in appropriate units, e.g., mw)

G = power gain of the antenna in the direction of interest relative to an isotropic radiator, the power gain factor is normally numeric gain.

R = distance to the center of radiation of the antenna (in appropriate units, e.g., cm)

3.4 MPE CALCULATION RESULTS

Note: For the test results, the EUT had been tested with all conditions. But only the worst case was shown in test report.

3.4.1 For WLAN

For Wi-Fi function, operating at 2412MHz to 2462 MHz for IEEE802.11b/g/n and

3.4.1.1 Antenna Type:

External Antenna

3.4.1.2 Antenna Gain:

2412MHz to 2462 MHz: 2.5 dBi

3.4.1.3 Results for FCC 47 CFR Part 1 Subpart I

Operating Mode		Freq.	Declared maximum conducted peak output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	MPE Limit	MPE Value
		(MHz)	(dBm)		(dBi)	(dBm)	(mW)	(mW/cm ²)	
SSO	IEEE 802.11b	2412-2462	19	1	2.5	22.5	177.8279	1	0.0354
	IEEE 802.11g	2412-2462	23	1	2.5	26.5	446.6836	1	0.0889
	IEEE 802.11n-HT20	2412-2462	22	1	2.5	25.5	354.8134	1	0.0706
	IEEE 802.11n-HT40	2422-2452	22	1	2.5	25.5	354.8134	1	0.0706

3.4.1.4 Results for RSS-102 Issue 5

Operating Mode		Freq.	Declared maximum conducted peak output power	Max. positive tolerance according manufacturer	Antenna Gain	Calculated maximum EIRP	Declared maximum EIRP	Limit
		(MHz)	(dBm)		(dBi)	(dBm)	(W)	(W)
SSO	IEEE 802.11b	2412-2462	19	1	2.5	22.5	0.1778	5.53
	IEEE 802.11g	2412-2462	23	1	2.5	26.5	0.4467	5.53
	IEEE 802.11n-HT20	2412-2462	22	1	2.5	25.5	0.3548	5.53
	IEEE 802.11n-HT40	2422-2452	22	1	2.5	25.5	0.3548	6.53

APPENDIX 1 PHOTOS OF TEST SETUP

N/A

APPENDIX 2 PHOTOS OF EUT CONSTRUCTIONAL DETAILS

Refer to Appendix 2 for EUT external and internal Photos.

*** End of Report ***

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