

SAR TEST EXCLUSION REPORT

Applicant: Haier Information Technology(Shenzhen) Co., Ltd

Address of Applicant: ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING,
CHINESE TECHNOLOGY RESEARCH PARK, CHINA
TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN
SOUTH FIRST STREET NO.009, NANSHAN DISTRICT,
SHENZHEN CITY, GUANGDONG PROVINCE, CHINA

Equipment Under Test (EUT)

Product Name: laptop

Model No.: Y11C

Trade mark: Haier

FCC ID: 2ACZD-Y11C

Applicable standards: FCC 47 CFR Part 2.1093

Result: Pass

Authorized Signature:



Bruce Zhang
Laboratory Manager

This report details the results of the testing carried out on one sample. The results contained in this test report do not relate to other samples of the same product and does not permit the use of the CCIS product certification mark. The manufacturer should ensure that all products in series production are in conformity with the product sample detailed in this report.

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2 Version

Version No.	Date	Description
00	11 Jul., 2017	Original

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Date:

11 Jul., 2017

Report Clerk

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Date:

11 Jul., 2017

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4 General Information

4.1 Client Information

Applicant:	Haier Information Technology(Shenzhen) Co., Ltd
Address of Applicant:	ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING, CHINESE TECHNOLOGY RESEARCH PARK, CHINA TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN SOUTH FIRST STREET NO.009, NANSHAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA
Manufacturer:	Haier Information Technology(Shenzhen) Co., Ltd
Address of Manufacturer:	ROOM B4 OF FLOOR 21, NO.3 TOWER BUILDING, CHINESE TECHNOLOGY RESEARCH PARK, CHINA TECHNOLOGY EXPLOITATION INSTITUTE, GAOXIN SOUTH FIRST STREET NO.009, NANSHAN DISTRICT, SHENZHEN CITY, GUANGDONG PROVINCE, CHINA
Factory:	CHUNGHSIN INTERNATIONAL ELECTRONICS CO.,LTD.
Address of Factory:	618-2# Gongren West Road, Jiaojiang, Taizhou City, Zhejiang, PR.China

4.2 General Description of EUT

Product Name:	laptop	
Model No.:	Y11C	
Category of device	Portable device	
Operation Frequency:	Bluetooth: 2402 MHz ~ 2480 MHz Wi-Fi: 802.11b/g/n-HT20: 2412MHz ~ 2462 MHz 802.11n-HT40 :2422MHz~2452MHz 802.11a/n/ac: 5180MHz ~5240MHz	
Modulation technology:	Bluetooth: GFSK/ π /4DQPSK/8DPSK Wi-Fi: 802.11b: DSSS, 802.11a/ac/g/n: OFDM	
Antenna Type:	Internal Antenna	
Antenna Gain:	Ant1:2.4GHz WIFI: -3.46dBi, 5.2GHz WIFI: -3.46dBi, Ant2: 2.4GHz WIFI: -3.46dBi, 5.2GHz WIFI: -3.46dBi, BT: -4.0 dBi	
Dimensions (L*W*H):	295mm (L)× 198mm (W)× 21mm (H)	
Accessories information:	Adapter(1): Model: EE1230-105 Input: AC100-240V 50/60Hz 0.5A Output: DC 12.0V, 3.0A Adapter(2): Model: PS36A120Y3000H Input: AC100-240V 50/60Hz 1.0A Output: DC 12.0V, 3.0A Adapter(3): Model: SOY-1200300 Input: AC100-240V 50/60Hz 1.2A Output: DC 12.0V, 3.0A	Battery: Rechargeable Li-ion Battery DC7.6V-5000mAh

5 Conducted RF Output Power

5.1 WLAN 2.4 GHz Band Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	ANTS	802.11 b	802.11 g
CH 01	2412	ANT 1	15.04	13.20
		ANT 2	14.44	11.24
CH 06	2437	ANT 1	15.16	13.12
		ANT 2	14.70	11.67
CH 11	2462	ANT 1	15.15	13.17
		ANT 2	14.79	11.86

Average Power (dBm)				
Channel	Frequency (MHz)	ANTS	802.11n 20 (MIMO)	Total power (dBm)
CH 01	2412	ANT 1	8.63	11.23
		ANT 2	7.77	
CH 06	2437	ANT 1	8.68	11.53
		ANT 2	8.35	
CH 11	2462	ANT 1	8.82	11.73
		ANT 2	8.61	

Average Power (dBm)				
Channel	Frequency (MHz)	ANTS	802.11n 40 (MIMO)	Total power (dBm)
CH 03	2422	ANT 1	8.66	11.37
		ANT 2	8.03	
CH 06	2437	ANT 1	8.67	11.53
		ANT 2	8.37	
CH 09	2452	ANT 1	8.64	11.59
		ANT 2	8.52	

ANT 1 WIFI 2.4 GHz Max Tune-up (dBm)				
mode	802.11 b	802.11 g	802.11n (HT20)	802.11n (HT40)
Low	15.5	13.5	11.5	11.5
Middle	15.5	13.5	12.0	12.0
High	15.5	13.5	12.0	12.0

ANT 2 WIFI 2.4 GHz Max Tune-up (dBm)				
mode	802.11 b	802.11 g	802.11n (HT20)	802.11n (HT40)
Low	14.5	11.5	11.5	11.5
Middle	15.0	12.0	12.0	12.0
High	15.0	12.0	12.0	12.0

Note:

1. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
2. Per KDB 248227 D01v02r02, In the 2.4 GHz band, separate SAR procedures are applied to DSSS and OFDM configurations to simplify DSSS test requirements. SAR is not required for the following 2.4 GHz OFDM conditions:
 - 1) When KDB Publication 447498 SAR test exclusion applies to the OFDM configuration.
 - 2) When the highest reported SAR for DSSS is adjusted by the ratio of OFDM to DSSS specified maximum output power and the adjusted SAR is ≤ 1.2 W/kg.

3. Per KDB 248227 D01v02r02, for MIMO configurations, the aggregate maximum output power of all simultaneous transmitting antennas in all transmission chains may be used to determine SAR test exclusion for each frequency band and transmission mode configuration.
4. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.

5.2 WLAN 5.2GHz Band Conducted Power

802.11 a Average Power (dBm)			
Channel	Frequency (MHz)	ANTS	Conducted Output power (dBm)
CH 36	5180	ANT 1	12.58
		ANT 2	12.13
CH 40	5200	ANT 1	12.25
		ANT 2	12.39
CH 48	5240	ANT 1	11.63
		ANT 2	11.43

802.11n (HT20) (MIMO) Average Power (dBm)				
Channel	Frequency (MHz)	ANTS	Conducted Output power (dBm)	Total power (dBm)
CH 36	5180	ANT 1	9.30	11.85
		ANT 2	8.33	
CH 40	5200	ANT 1	8.65	11.39
		ANT 2	8.10	
CH 48	5240	ANT 1	8.30	11.18
		ANT 2	8.04	

802.11n (HT40) (MIMO) Average Power (dBm)				
Channel	Frequency (MHz)	ANTS	Conducted Output power (dBm)	Total power (dBm)
CH 38	5190	ANT 1	8.66	11.47
		ANT 2	8.24	
CH 46	5230	ANT 1	8.41	11.28
		ANT 2	8.12	

802.11ac (MIMO) Average Power (dBm)				
Channel	Frequency (MHz)	ANTS	802.11 a	802.11n (HT20) (MIMO)
CH 42	5210	ANT 1	8.00	11.09
		ANT 2	8.16	

ANT 1 WIFI 5.2 GHz Max Tune-up (dBm)				
mode	802.11 a	802.11n (HT20)	802.11n (HT40)	802.11 ac
Low	13.0	12.0	11.5	/
Middle	12.5	11.5	/	11.5
High	12.0	11.5	11.5	/

ANT 2 WIFI 5.2 GHz Max Tune-up (dBm)				
mode	802.11 a	802.11n (HT20)	802.11n (HT40)	802.11 ac
Low	12.5	12.0	11.5	/
Middle	12.5	11.5	/	11.5

High	11.5	11.5	11.5	/
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Note:

1. Per KDB 248227 D01v02r02, choose the highest output power channel to test SAR and determine further SAR exclusion.
2. Per KDB 248227 D01v02r02, for MIMO configurations, the aggregate maximum output power of all simultaneous transmitting antennas in all transmission chains may be used to determine SAR test exclusion for each frequency band and transmission mode configuration.
3. The output power of all data rate were pre-scan, just the worst case (the lowest data rate) of all mode were shown in report.

5.3 Bluetooth Conducted Power

Average Power (dBm)				
Channel	Frequency (MHz)	GFSK	$\pi/4$ -DQPSK	8DPSK
CH 01	2402	4.30	0.44	0.71
CH 39	2441	4.00	0.16	0.38
CH 78	2480	3.52	-0.36	-0.14

Bluetooth Max Tune-up dBm)			
mode	GFSK	$\pi/4$ -DQPSK	8DPSK
Low	4.5	0.5	1.0
Middle	4.5	0.5	0.5
High	4.0	0.0	0.0

Note:

1. The output power of all data rate were pre-scan, just the worst case of all mode were shown in report.

6 Exposure Positions Consideration

6.1 EUT Antenna Locations

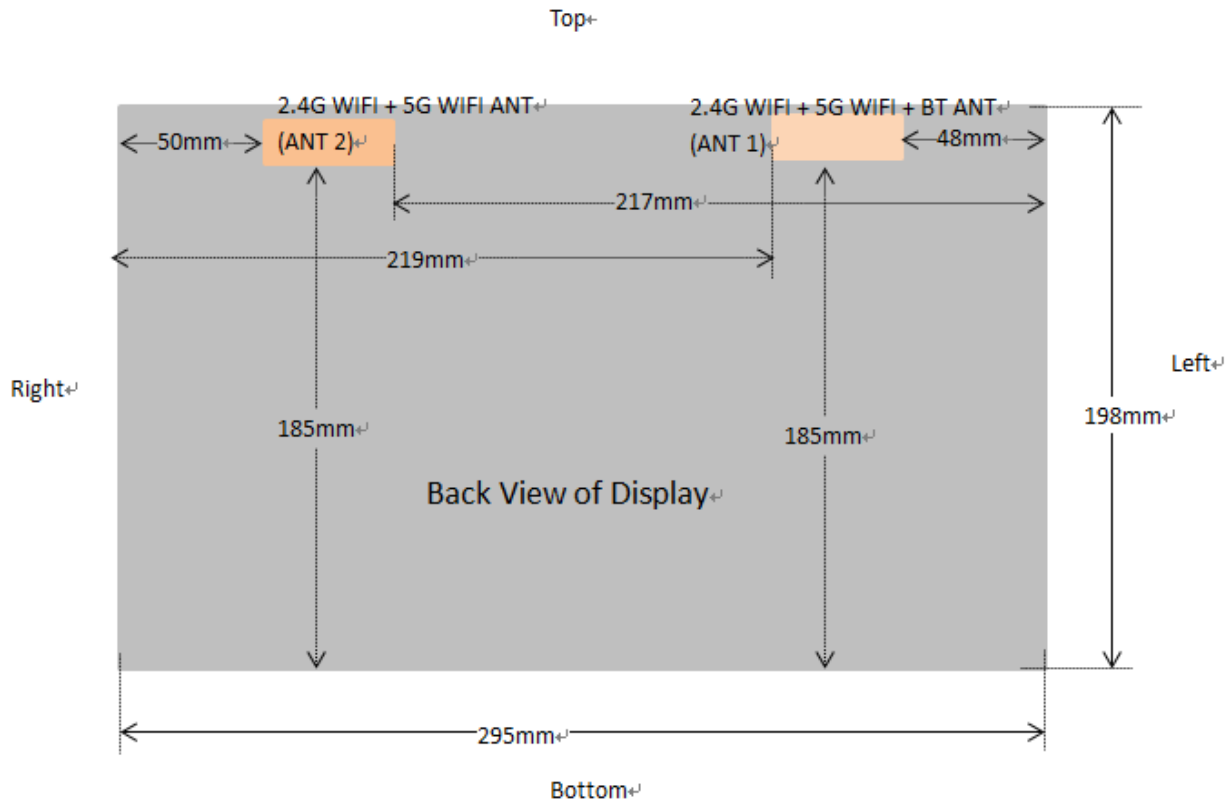


Fig.14.1 EUT Antenna Locations

6.2 SAR Test Exclusion Consideration

SAR exclusion calculations for antenna < 50mm from the user					
Antennas	Freq. (MHz)	Max. tune-up Power		Distance of Antennas to user (mm)	Calculated Threshold Value (≤ 3.0 SAR is not required)
		dBm	mW	Back of display	Back of display
2.4GHz 802.11b (ANT 1)	2437	15.5	35.48	25	2.21
2.4GHz 802.11b (ANT 2)	2462	15.0	31.62	25	1.99
2.4GHz 802.11g (ANT 1)	2412	13.5	22.39	25	1.39
2.4GHz 802.11g (ANT 2)	2462	12.0	15.85	25	1.00
5.2GHz 802.11a (ANT 1)	5180	13.0	19.95	25	1.82
5.2GHz 802.11a (ANT 2)	5200	12.5	17.78	25	1.62
Bluetooth	2402	4.5	2.82	25	0.17

Test Positions	
Antennas	Back of display
2.4GHz 802.11b (ANT 1)	No
2.4GHz 802.11b (ANT 2)	No
2.4GHz 802.11g (ANT 1)	No
2.4GHz 802.11g (ANT 2)	No
5.2GHz 802.11a (ANT 1)	No
5.2GHz 802.11a (ANT 2)	No
Bluetooth	No

Note:

- Per KDB 447498 D01v06, section 4.3.1, the 1-g SAR test exclusion thresholds for 100 MHz to 6 GHz at *test separation distances* ≤ 50 mm are determined by:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0$$
for 1-g SAR, where
 - f(GHz) is the RF channel transmit frequency in GHz
 - Power and distance are rounded to the nearest mW and mm before calculation
 - The result is rounded to one decimal place for comparison
- According to KDB 616217 D04 SAR for laptop and tablets v01r02, section 4.2, item e), when the SAR Test Exclusion Threshold in KDB Publication 447498 D01 applies, a minimum test separation distance of 25 mm is required to determine test exclusion for the display, and 5 mm for the keyboard compartment.
- Per KDB 616217 D04v01r02, SAR tests for bystander exposure from the edges of the keyboard and display screen of laptop computers are generally not required.

7 Conclusion

SAR test for this laptop is exclusion.

APPENDIX: DUT Photos









Display of DUT



ANTs located on display