



A D T

FCC SAR Evaluation Report

Report No. : SA130509C08
Applicant : Quanta Computer Inc.
Address : No. 188, Wen Hwa 2nd RD., Kuei Shan Hsiang, Tao Yuan Shien, Taiwan
Product : Laptop
FCC ID : HFS-Y
Model No. : CB2
Standards : FCC 47 CFR Part 2 (2.1093) / IEEE C95.1:1991 / IEEE 1528:2003
FCC OET Bulletin 65 Supplement C (Edition 01-01)
KDB 447498 D01 v05 / KDB 616217 D04 v01

CERTIFICATION: The above equipment have been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch - Taiwan HwaYa Lab**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's SAR characteristics under the conditions specified in this report. It should not be reproduced except in full, without the written approval of our laboratory. The client should not use it to claim product certification, approval, or endorsement by TAF or any government agencies.

Prepared By : Evonne Liu
Evonne Liu / Specialist

Approved By : Roy Wu
Roy Wu / Manager



This report is for your exclusive use. Any copying or replication of this report to or for any other person or entity, or use of our name or trademark, is permitted only with our prior written permission. This report sets forth our findings solely with respect to the test samples identified herein. The results set forth in this report are not indicative or representative of the quality or characteristics of the lot from which a test sample was taken or any similar or identical product unless specifically and expressly noted. Our report includes all of the tests requested by you and the results thereof based upon the information that you provided to us. You have 60 days from date of issuance of this report to notify us of any material error or omission caused by our negligence, provided, however, that such notice shall be in writing and shall specifically address the issue you wish to raise. A failure to raise such issue within the prescribed time shall constitute your unqualified acceptance of the completeness of this report, the tests conducted and the correctness of the report contents. Unless specific mention, the uncertainty of measurement has been explicitly taken into account to declare the compliance or non-compliance to the specification.



Table of Contents

Release Control Record	3
1. Summary of Maximum SAR Value	4
2. Description of Equipment Under Test	5
3. SAR Measurement Evaluation	6
3.1 EUT Testing Position	6
3.2 Maximum Output Power	8
3.2.1 Maximum Conducted Power	8
3.3 SAR Testing Results	8
3.3.1 SAR Results for Body	8
4. Information on the Testing Laboratories	9
Appendix A. Photographs of EUT and Setup	



Release Control Record

Issue No.	Reason for Change	Date Issued
R01	Initial release	Jun. 20, 2013



1. Summary of Maximum SAR Value

Equipment Class	Mode	Highest Reported Body SAR _{1g} (0.0 cm Gap) (W/kg)
DTS	2.4G WLAN	N/A
	5.8G WLAN	N/A
NII	5.2G WLAN	N/A
	5.3G WLAN	N/A
	5.6G WLAN	N/A
DSS	Bluetooth	N/A

Note:

1. The SAR limit (**Head & Body: SAR_{1g} 1.6 W/kg**) for general population / uncontrolled exposure is specified in FCC 47 CFR part 2 (2.1093) and ANSI/IEEE C95.1-1991.

2. Description of Equipment Under Test

EUT Type	Laptop
FCC ID	HFS-Y
Model Name	CB2
Tx Frequency Bands (Unit: MHz)	WLAN : 2412 ~ 2462, 5180 ~ 5240, 5260 ~ 5320, 5500 ~ 5700, 5745 ~ 5825 Bluetooth : 2402 ~ 2480
Uplink Modulations	802.11b : DSSS 802.11a/g/n : OFDM Bluetooth : GFSK
Maximum Tune-up Conducted Power (Unit: dBm)	WLAN 2.4G : 14.5 WLAN 5.2G : 11.3 WLAN 5.3G : 12.0 WLAN 5.6G : 13.7 WLAN 5.8G : 13.4 Bluetooth : 8.3
Antenna Type	PIFA Antenna
EUT Stage	Identical Prototype

Note:

1. The above EUT information is declared by manufacturer and for more detailed features description please refers to the manufacturer's specifications or User's Manual.

List of Accessory:

Li-ion Battery	Brand Name	SMP
	Model Name	SQU-1208
	Power Rating	11.1Vdc, 2700mAh
WLAN + Bluetooth	Brand Name	AZUREWAVE
	Model Name	AW-AH397
Camera	Brand Name	Lite-on
	Model Name	12P2SF004
11.6" LCD Panel	Brand Name	LG
	Model Name	LP116WH6
Battery Pack	Brand Name	SMP
	Model Name	SQU-1208
CPU	Brand Name	Samsung
	Model Name	Exynos 5250
Memory Capacity	Remark	2GB

3. SAR Measurement Evaluation

3.1 EUT Testing Position

According to KDB 447498, SAR testing for laptop PC is required for bottom surface. This EUT was tested in the base of EUT directly against the flat phantom.

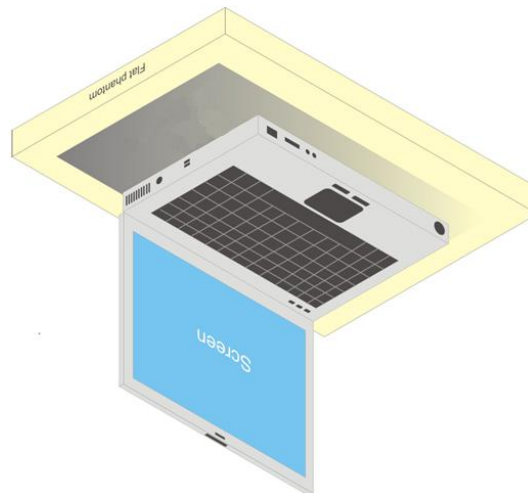


Fig-4.1 Illustration for Laptop Setup

FCC SAR Evaluation Report

According to KDB 447498 D01v05, the SAR test exclusion condition is based on source-based time-averaged maximum conducted output power, adjusted for tune-up tolerance, and the minimum test separation distance required for the exposure conditions. The SAR exclusion threshold is determined by the following formula.

1. For the test separation distance ≤ 50 mm

$$\frac{\text{Max. Tune up Power}_{(mW)}}{\text{Min. Test Separation Distance}_{(mm)}} \times \sqrt{f_{(GHz)}} \leq 3.0$$

When the minimum test separation distance is < 5 mm, a distance of 5 mm is applied to determine SAR test exclusion.

2. For the test separation distance > 50 mm, and the frequency at 100 MHz to 1500 MHz

$$\left[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times \left(\frac{f_{(MHz)}}{150} \right) \right]_{(mW)}$$

3. For the test separation distance > 50 mm, and the frequency at > 1500 MHz to 6 GHz

$$[(\text{Threshold at 50 mm in Step 1}) + (\text{Test Separation Distance} - 50 \text{ mm}) \times 10]_{(mW)}$$

Mode	Frequency (MHz)	Max. Tune-up Power (dBm)	Max. Tune-up Power (mW)	Rear Face		
				Ant. to Surface (mm)	Exclusion Threshold (mW)	Require SAR Testing?
WLAN 2.4G	2.462	14.5	28	78	376	No
WLAN 5.2G	5.24	11.3	13	78	346	No
WLAN 5.3G	5.32	12.0	16	78	345	No
WLAN 5.6G	5.7	13.7	23	78	343	No
WLAN 5.8G	5.825	13.4	22	78	342	No
BT	2.48	8.3	7	78	375	No



FCC SAR Evaluation Report

3.2 Maximum Output Power

3.2.1 Maximum Conducted Power

The maximum conducted power (Unit: dBm) including tune-up tolerance is shown as below.

Mode	Tx Antenna	2.4G WLAN	5.2G WLAN	5.3G WLAN	5.6G WLAN	5.8G WLAN
802.11b	0	13.2	N/A	N/A	N/A	N/A
	1	14.5	N/A	N/A	N/A	N/A
802.11g	0	9.0	N/A	N/A	N/A	N/A
	1	9.0	N/A	N/A	N/A	N/A
802.11a	0	N/A	8.0	8.0	10.1	10.0
	1	N/A	8.2	9.3	10.0	10.5
802.11n HT20	0	9.1	8.0	8.0	10.0	10.0
	1	9.0	8.2	9.1	10.0	10.5
	0+1	12.0	11.3	11.6	12.4	12.8
802.11n HT40	0	9.2	8.0	9.0	11.3	10.1
	1	9.3	9.0	10.3	11.2	10.7
	0+1	12.0	11.3	12.0	13.7	13.4

Mode	Bluetooth
All	8.3

3.3 SAR Testing Results

3.3.1 SAR Results for Body

Standalone SAR for this device is not required.

Test Engineer : Ulysses Liu



4. Information on the Testing Laboratories

We, Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch, were founded in 1988 to provide our best service in EMC, Radio, Telecom and Safety consultation. Our laboratories are accredited and approved according to ISO/IEC 17025.

If you have any comments, please feel free to contact us at the following:

Taiwan HwaYa EMC/RF/Safety/Telecom Lab:

Add: No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil., Kwei Shan Hsiang, Taoyuan Hsien 333, Taiwan, R.O.C.

Tel: 886-3-318-3232

Fax: 886-3-327-0892

Taiwan LinKo EMC/RF Lab:

Add: No. 47, 14th Ling, Chia Pau Vil., Linkou Dist., New Taipei City 244, Taiwan, R.O.C.

Tel: 886-2-2605-2180

Fax: 886-2-2605-1924

Taiwan HsinChu EMC/RF Lab:

Add: No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Vil., Chiung Lin Township, Hsinchu County 307, Taiwan, R.O.C.

Tel: 886-3-593-5343

Fax: 886-3-593-5342

Email: service.adt@tw.bureauveritas.com

Web Site: www.adt.com.tw

The road map of all our labs can be found in our web site also.

---END---