

RF EXPOSURE REPORT



Applicant: Quanta Computer Inc.
No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City
33377, Taiwan

Manufacturer: Quanta Computer Inc.
No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City
33377, Taiwan

Product Name: Clover Companion

Brand Name: Clover

Model No.: C800

Report Number: TESA2404000172E5

FCC ID HFS-C800

Issue Date: May 03, 2024

Date of EUT Received: Apr. 26, 2024

Approved By

John Yeh

We hereby certify that:

The above equipment was evaluated by SGS Taiwan Ltd. The evaluation in this report is in compliance with 47 CFR Part 2.1091, KDB 447498 D04 v01.

The results of this report relate to the specific sample identified in this report.

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Revision History

Report Number	Revision	Description	Issue Date	Revised By	Remark
TESA2404000172E5	00	Original	Apr. 26, 2024	Cindy Chou	
TESA2404000172E5	01	Modify comment	May 03, 2024	Cindy Chou	*

Note:

- 1、The remark "*" indicates modification of the report upon requests from certification body.

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1 DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)

1.1 Product Description

Product Name:	Clover Companion
Brand Name:	Clover
Model No.:	C800

1.2 Evaluation site

Laboratory		Site Address	FCC Designation number
SGS Taiwan Ltd. Central RF Lab. (TAF code 3702)	☐	No. 134, Wu Kung Road, New Taipei Industrial Park, Wuku District, New Taipei City, 24803, Taiwan.	TW0027
	☒	No. 2, Keji 1st Rd., Guishan Township, Taoyuan County, 333 Taiwan.	TW0028
	☐	1F, No. 8, Alley 15, Lane 120, Sec. 1, Nei Hu Road, Neihu District, Taipei City, 222 Taiwan.	TW0029

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1.3 Antenna Information:

1.3.1 BT / WLAN 2.4GHz

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)
PIFA	Advanced Wireless & Antenna INC.	ALF6Y-100004	2.4GHz	0.78

1.3.2 WLAN 5GHz

Antenna Type	Supplier	Antenna Part No.	Note
PIFA	Advanced Wireless & Antenna INC.	ALF6Y-100004	Ant 1

Operating Frequency (MHz)	Ant 1 Peak Gain (dBi)
5150.0 ~ 5250.0	2.33
5250.0 ~ 5350.0	2.33
5470.0 ~ 5725.0	2.33
5725.0 ~ 5850.0	2.33

Note: Antenna information is provided by the applicant.

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1.4 Rated Power

1.4.1 Bluetooth / WLAN 2.4GHz

Mode	Freq. Range (MHz)	Channels	Modulation Technology	Max Output Power (dBm)	Antenna Gain (dBi)	EIRP (dBm)	Worst Case
BR+EDR	2402-2480	79	GFSK + π / 4DQPSK + 8DPSK	6.91	0.78	7.69	
BLE	2402-2480	40	GFSK	0.67	0.78	1.45	
WLAN2.4GHz	2412-2462	11	DSSS & OFDM	13.28	0.78	14.06	V

1.4.2 WLAN 5GHz:

802.11	Freq. Range (MHz)	Modulation Technology	Max. Output Power Include Tolerance (dBm)	Antenna Gain (dBi)	Antenna Directional Gain (dBi)	EIRP (dBm)	Worst Case
a	5150~5250	OFDM	15.97	2.33	2.33	18.30	
	5250~5350		18.40	2.33	2.33	20.73	
	5470~5725		18.52	2.33	2.33	20.85	V
	5725~5850		18.44	2.33	2.33	20.77	
n HT20 ac VHT20	5150~5250		16.13	2.33	2.33	18.46	
	5250~5350		17.67	2.33	2.33	20.00	
	5470~5725		17.49	2.33	2.33	19.82	
	5725~5850		17.63	2.33	2.33	19.96	
n HT40 ac VHT40	5150~5250		16.47	2.33	2.33	18.80	
	5250~5350		16.24	2.33	2.33	18.57	
	5470~5725		16.59	2.33	2.33	18.92	
	5725~5850		16.48	2.33	2.33	18.81	
ac VHT80	5150~5250		10.16	2.33	2.33	12.49	
	5250~5350		9.23	2.33	2.33	11.56	
	5470~5725		15.56	2.33	2.33	17.89	
	5725~5850		15.43	2.33	2.33	17.76	

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2 DETERMINATION OF MPE EXEMPTION

2.1 Single RF Source

As per §1.1307(b)(3)(i),

- (A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);
- (B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold P_{th} (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). P_{th} is given by:

$$P_{th} \text{ (mW)} = \begin{cases} ERP_{20 \text{ cm}} (d/20 \text{ cm})^x & d \leq 20 \text{ cm} \\ ERP_{20 \text{ cm}} & 20 \text{ cm} < d \leq 40 \text{ cm} \end{cases}$$

Where

$$x = -\log_{10} \left(\frac{60}{ERP_{20 \text{ cm}} \sqrt{f}} \right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20 \text{ cm}} \text{ (mW)} = \begin{cases} 2040f & 0.3 \text{ GHz} \leq f < 1.5 \text{ GHz} \\ 3060 & 1.5 \text{ GHz} \leq f \leq 6 \text{ GHz} \end{cases}$$

d = the separation distance (cm);

Note: when 10-g extremity SAR applies, SAR test exemption may be considered by applying a factor of 2.5 to the SAR-based exemption thresholds.

- (C) Or using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least $\lambda/2\pi$, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of $\lambda/4$ or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

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Table 1 to § 1.1307(b)(3)(i)(C) –

Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)			Minimum Distance			Threshold ERP (W)
fL		fH	$\lambda L / 2\pi$		$\lambda H / 2\pi$	
0.3	-	1.34	159m	-	35.6m	1920 R ²
1.34	-	30	35.6m	-	1.6m	3450 R ² /f ²
30	-	300	1.6m	-	159mm	3.83 R ²
300	-	1500	159mm	-	31.8mm	0.0128 R ² f
1500	-	100000	31.8mm	-	0.5mm	19.2R ²

R= minimum separation distance in meter

f = frequency in MHz

2.2 Multiple RF Sources

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation.

$$\sum_{i=1}^a \frac{P_i}{P_{th,i}} + \sum_{j=1}^b \frac{ERP_j}{ERP_{th,j}} + \sum_{k=1}^c \frac{Evaluated_k}{Exposure Limit_k} \leq 1$$

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2.3 Single RF Source Evaluation Results

Chain 0	Frequency (MHz)	Max. tune-up power (dBm)	Peak gain (dBi)	ERP (dBm)	ERP (W)	Permissible Minimum separation distance ($\lambda/2\pi$) (m)	R = actual Minimum separation distance(m)	ERP _{th} (W)	ERP/ERP _{th}	Simultaneous transmission modes
										1
BT	2480	6.91	0.78	5.54	0.004	0.0193	0.200	0.768	0.005	V
WiFi 2.4GHz	2437	13.28	0.78	11.91	0.016	0.0196	0.200	0.768	0.021	V
WiFi 5GHz	5580	18.52	2.33	18.7	0.074	0.0086	0.200	0.768	0.096	V

NFC

Frequency (MHz)	E-FIELD dBuV/m	Test Distance (m)	EIRP (dBm)	EIRP (mW)
13.56	36.23	30	-38.92757	0.0001280

Note:

$$\text{EIRP (dBm)} = (\text{E-FIELD(dBuV/m)} + 20\log(d(m)) - 104.7$$

Note: For conservativeness, the lowest uplink frequency of each band is used to determine the minimum separation distance of that band. All the single RF source results (P or ERP) are less than their corresponding threshold (P_{th} or ERP_{th}), so they are exempt from RF exposure testing.

2.4 Multiple RF Sources Evaluation Results

Simultaneous transmission modes	Σ ERP/ERP _{th}	Criteria
1	0.122	1

Note:

1. $\Sigma(\text{ERP/ERP}_{th})$: This is a summation of [(ERP of RF source / exemption threshold ERP for RF source)].
Considering the collocated transmitters, the aggregated (ERP/ERP_{th}) is smaller than 1, and MPE of collocated transmitters is compliant

~ End of Report ~

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