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## RF EXPOSURE REPORT





Applicant: Quanta Computer Inc.

No. 188, Wenhua 2nd Road, Guishan District, Taoyuan City

33377, Taiwan

**Product Name:** Clover Mini

**Brand Name:** clover Model No.: C302U **HVIN:** C302W

**Model Difference:** N/A

**Report Number:** E2/2021/60029

FCC ID HFS-C302W

IC: 1787B-C302W

Issue Date: August 4, 2021

Date of EUT Received: June 10, 2021

Approved By

### We hereby certify that:

The above equipment was evaluate by SGS Taiwan Ltd. The evaluation in this report is in compliance with FCC Rule Part §2.1091 and RSS-102.

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

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Revision History									
Report Number	Revision	Description	Issue Date	Revised By					
E2/2021/60029	00	Original	August 4, 2021	Susan Lin					

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# **DESCRIPTION OF EQUIPMENT UNDER TEST (EUT)**

### **Product Description**

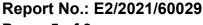
•	
Product Name:	Clover Mini
Brand Name:	clover
Model No.:	C302U
HVIN:	C302W
Model Difference:	N/A
Hardware Version:	C302W
Firmware Version:	N/A
EUT Series No.:	PJ216092003
Power Supply:	12V from AC/DC Adapter

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#### 1.2 **Antenna Information:**

#### 1.2.1 BT

Antenna Type	Supplier	Antenna Part No.	' Antonna I		Worst Antenna Gain
PIFA	SAA	GD9321-15-001-R	2402~2480	-0.20	
FIFA	Luxshare-ICT	LA81FP018-1H	2402~2480	0.9	V

#### 1.2.2 WLAN 2.4GHz

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Worst Antenna Gain
	SAA	GD9320-15-001-R	2402~2480	1.15	
DIEA	SAA	GD9321-15-001-R	2402~2480	-0.2	
PIFA	Luxshare-ICT	nare-ICT LA81FP017-1H		2.1	V
	Luxshare-ICT	LA81FP018-1H	2402~2480	0.9	

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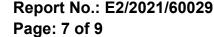


#### 1.2.3 **WLAN 5GHz**

Antenna Type	Supplier	Antenna Part No.	Freq. (MHz)	Peak Antenna Gain (dBi)	Worst Antenna Gain
			5150~5250	5.43	
	544	CD0220 45 004 D	5250~5350	5.61	V
	SAA	GD9320-15-001-R	5470~5725	5.86	V
			5725~5850	5.04	
			5150~5250	5.88	V
	SAA	GD9321-15-001-R	5250~5350	4.73	
		GD9321-13-001-R	5470~5725	4.16	
PIFA			5725~5850	4.28	
PIFA	Luxshare-ICT		5150~5250	3.5	
		LA81FP017-1H	5250~5350	4.8	
		LAOIFPUI/-IH	5470~5725	4.9	
			5725~5850	4.9	
			5150~5250	4.3	
	Luxshare-ICT	LA81FP018-1H	5250~5350	4.6	
	Luxsiiale-iC i	LAOIFFUIO-IH	5470~5725	4.8	_
			5725~5850	5.1	V

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# **MAXIMUM PERMISSIBLE EXPOSURE (MPE)**

#### 2.1 **FCC Standard Applicable**

According to §1.1307(b)(1), systems operating under the provisions of this section shall be operated in a manner that ensure that the public is not exposed to radio frequency energy level in excess of the Commission's guideline.

This is a Mobile device, the MPE is required.

According to §1.1310 and §2.1091 RF exposure is calculated.

Limits for Maximum Permissive Exposure (MPE)

Frequency Range	Electric Field	ic Field Magnetic Field Power Density		Averaging Time
(MHz)	Strength (V/m)	Strength (A/m)	(mW/cm <sup>2</sup> )	(minute)
	Limits for General Population/Uncontrolled Exposure			
0.3-1.34	614	614 1.63		30
1.34-30	824/f	24/f 2.19/f *(180/		30
30-300	27.5 0.073		0.2	30
300-1500	1	1	f/1500	30
1500-100000	1	/	1.0	30

f = frequency in MHz

Prediction of MPE limit at a given distance

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

Where: S = Power density

P = Power input to antenna

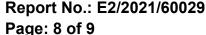
G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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<sup>\* =</sup> Plane-wave equipment power density





## 2.2 ISED Standard Applicable

This submittal(s) (test report) is intended to comply with RSS-102 issue 5 Radio frequency Radiation Exposure requirement.

This is a Mobile device, the MPE is required.

Limits for Maximum Permissive Exposure (MPE)

RF F	RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)								
Frequency Range (MHz)	Electric Field Magnetic Field Power Density F (V/m rms) Strength (W/m²) (A/m rms)		Reference Period (minutes)						
0.003-10	83	90	-	Instantaneous*					
0.1-10	-	0.73/ f	-	6**					
1.1-10	87/ f <sup>0.5</sup>	-	-	6**					
10-20	27.46	0.0728	2	6					
20-48	58.07/ f <sup>0.25</sup>	0.1540/ f <sup>0.25</sup>	8.944/ f <sup>0.5</sup>	6					
48-300	22.06	0.05852	1.291	6					
300-6000	3.142 f <sup>0.3417</sup>	$0.008335 f^{0.3417}$	$0.02619f^{0.6834}$	6					
6000-15000	61.4	0.163	10	6					
15000-150000	61.4	0.163	10	616000/ f <sup>1.2</sup>					
150000-300000	0.158 <i>f</i> <sup>0.5</sup>	4.21 x 10-4 f <sup>0.5</sup>	6.67 x 10-5 <i>f</i>	616000/ f <sup>1.2</sup>					

F = frequency in MHz

Maximum Permissible Exposure (MPE) Evaluation

Prediction of MPE limit at a given distance

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

Where: S = Power density

P = Power input to antenna

G = Power gain of the antenna in the direction of interest relative to an isotropic radiator

R = Distance to the center of radiation of the antenna

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<sup>\* =</sup> Based on nerve stimulation (NS).

<sup>\*\* =</sup> Based on specific absorption rate (SAR)



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#### 2.3 **Power Density Calculation (Worst Case)**

### **FCC Standalone MPE**

Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. output Power (dBm)	Antenna Gain (dBi)	Max. output Power EIRP (mW)	Power Density (PD) (mW/cm²)	Limit (mW/cm²)	Pass / Fail	Power Density / Limit
BT	2402.00	20	2.23	0.90	2.06	0.0004	1.000	Pass	0.0004
WLAN 2.4G	2412.00	20	18.47	4.53	199.53	0.040	1.000	Pass	0.0400
WLAN 5G	5320.00	20	18.97	8.19	520.00	0.104	1.000	Pass	0.1040

### **ISED Standalone MPE**

Operation Mode	Evaluation Frequency (MHz)	Operation Distance (cm)	Max. output Power (dBm)	Antenna Gain (dBi)	Output Power EIRP (mW)	Power Density (PD) (W/m²)	Limit (W/m²)	Pass / Fail	Power Density / Limit
BT	2402.00	20	2.23	0.90	2.06	0.004	5.351	Pass	0.0010
WLAN 2.4G	2412.00	20	18.47	4.53	199.53	0.397	5.366	Pass	0.0740
WLAN 5G	5320.00	20	18.97	8.19	520.00	1.035	9.213	Pass	0.1123

~ End of Report ~

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