

Report No.: SUHR/2021/A001203

Rev.: 01

Page: 1 of 8

## RF Exposure Evaluation Report

**Application No.:** HR/2021/A0012  
**Applicant:** SunPower Corporation  
**Address of Applicant:** 1414 Harbour Way South Suite 1901, Richmond CA 94804, USA  
**Manufacturer:** SunPower Corporation  
**Address of Manufacturer:** 1414 Harbour Way South Suite 1901, Richmond CA 94804, USA  
**EUT Description:** USB dongle  
**Model No.:** QDM023-BG95-M1  
**Trade Mark:** Sunpower  
**FCC ID:** YAW-539622  
**Standards:** 47 CFR Part 2.1091  
 FCC KDB 447498 D01 v06  
**Date of Receipt:** 2021/11/6  
**Date of Test:** 2021/11/8 to 2021/11/17  
**Date of Issue:** 2021/11/19

<b>Test Result:</b>	<b>PASS*</b>
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\* In the configuration tested, the EUT complied with the standards specified above.

Authorized Signature:

Panta Sun  
Wireless Laboratory Manager

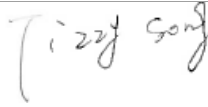
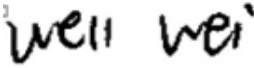


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# 1 Version

Revision Record				
Version	Chapter	Date	Modifier	Remark
01		2021/11/19		Original

Authorized for issue by:	
Prepared By	 _____ (Tizzy Song) / Engineer
Checked By	 _____ (Well Wei) /Reviewer



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## 2 General Information

### 2.1 Client Information

Applicant:	SunPower Corporation
Address of Applicant:	1414 Harbour Way South Suite 1901, Richmond CA 94804, USA
Manufacturer:	SunPower Corporation
Address of Manufacturer:	1414 Harbour Way South Suite 1901, Richmond CA 94804, USA

### 2.2 Test Location

Company:	SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd
Address:	South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone
Post code:	215000
Test engineer:	Tizzy song



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SGS-CSTC Standards Technical Services (Suzhou) Co., Ltd.  
 Wireless Laboratories Technical Services

South of No. 6 Plant, No. 1, Runsheng Road, Suzhou Industrial Park, Suzhou Area, China (Jiangsu) Pilot Free Trade Zone 215000  
 中国·苏州·中国(江苏)自由贸易试验区苏州片区苏州工业园区润胜路1号的6号厂房南面 邮编: 215000

t (86-512) 62992980 www.sgs.com.cn  
 t (86-512) 62992980 sgs.china@sgs.com

### 2.3 Test Facility

The test facility is recognized, certified, or accredited by the following organizations:

**• A2LA (Certificate No. 6336.01)**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. is accredited by the American Association for Laboratory Accreditation(A2LA). Certificate No. 6336.01.

**• Innovation, Science and Economic Development Canada**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized by ISED as an accredited testing laboratory.

CAB identifier: CN0120.

IC#: 27594.

**• FCC –Designation Number: CN1312**

SGS-CSTC STANDARDS TECHNICAL SERVICES (SUZHOU) CO., LTD. has been recognized as an accredited testing laboratory.

Designation Number: CN1312.

Test Firm Registration Number:0031225543



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## 2.4 General Description of EUT

EUT Description:	USB dongle			
Model No.:	QDM023-BG95-M1			
Trade Mark:	Sunpower			
Hardware Version:	V1.2			
Software Version:	BG95M1LAR02A04			
Antenna Type:	<input checked="" type="checkbox"/> External, <input type="checkbox"/> Integrated			
Antenna Gain*:	<input checked="" type="checkbox"/> Provided by applicant			
	4G:			
	LTE Band 2:	2.32dBi	LTE Band 4:	2.51dBi
	LTE Band 12:	-1.58dBi	LTE Band 13:	-1.31dBi
Remark:	<p>*Since the above data and/or information is provided by the applicant relevant results or conclusions of this report are only made for these data and/or information , SGS is not responsible for the authenticity, integrity and results of the data and information and/or the validity of the conclusion.</p>			



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### 3 RF Exposure Evaluation

#### 3.1 RF Exposure Compliance Requirement

##### 3.1.1 Limits

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(A) Limits for Occupational/Controlled Exposures</b>				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f <sup>2</sup> )	6
30-300	61.4	0.163	1.0	6
300-1500	/	/	f/300	6
1500-100,000	/	/	5	6
<b>(B) Limits for General Population/Uncontrolled Exposure</b>				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f <sup>2</sup> )	30
30-300	27.5	0.073	0.2	30
300-1500	/	/	f/1500	30
1500-100,000	/	/	1.0	30

F=frequency in MHz  
 \*=Plane-wave equivalent power density  
 RF exposure compliance will need to be determined with respect to 1.1307(c) and (d) of the FCC rules. The emissions should be within the limits at 300kHz in Table 1 of 1.1310(use the 300kHz limits for 150kHz:614V/m,1.63A/m).

Friis Formula

Friis transmission formula:  $P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = output power to antenna in mW

$G$  = gain of antenna in linear scale

$\pi$  = 3.1416

$R$  = distance between observation point and center of the radiator in cm

$P_d$  is the limit of MPE, 1 mW/cm<sup>2</sup>. If we know the maximum gain of the antenna and the total power input to the antenna, through the calculation, we will know the distance  $r$  where the MPE limit is reached.



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### 3.1.2 Test Procedure

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

### 3.1.3 EUT RF Exposure Evaluation

Antenna Gain: The maximum Gain measured in fully anechoic chamber is 2.0 / 2.0 in linear scale.

Output Power Into Antenna & RF Exposure Evaluation Distance:

This confirmed that the device comply with MPE limit.

Operating Band	Frequency (MHz)	Antenna Gain (dBi)	Max Conducted Average Output Power (dBm)	Output Power to Antenna (dBm)	EIRP(ERP) Limit (dBm)	Output Power to Antenna (mw)	Power Density at R = 20 cm (mW/cm2)	Limit (mW/cm2)	conclusion
LTE CatM1 B2	1880	2.32	22.00	24.32	33.00	158.4893	0.0538	1.0000	Pass
LTE CatM1 B4	1710.7	2.51	22.00	24.51	30.00	158.4893	0.0562	1.0000	Pass
LTE CatM1 B12	699.70	-1.58	22.00	18.27	34.77	158.4893	0.0219	0.4665	Pass
LTE CatM1 B13	779.50	-1.31	22.00	18.54	34.77	158.4893	0.0233	0.5197	Pass

The End



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