



# RF EXPOSURE EVALUATION REPORT

**FCC ID** : 2AEIM-WL18DBMOD  
**Equipment** : WiFi Module  
**Brand Name** : Tesla, Inc.  
**Model Name** : TSLA-WL18DBMOD  
**Applicant** : Tesla, Inc.  
3500 DEER CREEK ROAD PALO ALTO, CA 94304  
**Manufacturer** : Texas Instruments Incorporated  
12500 TI Boulevard, M/S 8751, Dallas, TX 75243, USA  
**Standard** : 47 CFR Part 2.1091

We, SPORTON INTERNATIONAL INC has been evaluated this product in accordance with 47 CFR Part2.1091 and it complies with applicable limit.

Sporton Lab is accredited to ISO 17025 by Taiwan Accreditation Foundation (TAF code: 1190) and the FCC designation No. TW1190 under the FCC 2.948(e) by Mutual Recognition Agreement (MRA) in FCC evaluation.

The results in this report apply exclusively to the tested model / sample. Without written approval of SPORTON INTERNATIONAL INC. Laboratory, the test report shall not be reproduced except in full

Approved by: Cona Huang / Deputy Manager



**SPORTON INTERNATIONAL INC. EMC & Wireless Communications Laboratory**  
No. 52, Huaya 1st Rd., Guishan Dist., Taoyuan City, Taiwan (R.O.C.)



## **Table of Contents**

<b>1. DESCRIPTION OF EQUIPMENT UNDER TEST (EUT) .....</b>	<b>4</b>
<b>2. MAXIMUM RF AVERAGE OUTPUT POWER AMONG PRODUCTION UNITS .....</b>	<b>5</b>
<b>3. DETERMINATION OF EXEMPTION .....</b>	<b>8</b>
<b>4. RF EXPOSURE EVALUATION .....</b>	<b>9</b>
4.1. Standalone assessment .....	9
4.2. Collocated assessment .....	10



### History of this test report

Report No.	Version	Description	Issued Date
FA221118001	Rev. 01	Initial issue of report	Dec. 16, 2022



**1. Description of Equipment Under Test (EUT)**

Host Information	
EUT Type	TESLA POWERALL ENERGY STORAGE SYSTEM GRID SUPPORT UTILITY INTERACTIVE & STANDALONE INVERTER
Brand Name	Tesla, Inc.
Model Name	1707000-XX-Y Note: For internal purposes, the X will be the style code and Y will be the revision. X and Y can be any from 0~9 or A~Z
WLAN Module	
EUT Type	WiFi Module
Brand Name	Tesla, Inc.
Model Name	TSLA-WL18DBMOD
FCC ID	2AEIM-WL18DBMOD
Wireless Technology and Frequency Range	WLAN 2.4GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.5GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8GHz Band: 5725 MHz ~ 5850 MHz
Mode	WLAN: 802.11a/b/g/n HT20/HT40
WWAN Module	
EUT Type	WWAN Module
Brand Name	Quectel
Model Name	BG95-M2
FCC ID	XMR2020BG95M2
Wireless Technology and Frequency Range (LTE)	LTE Band 2: 1850 MHz ~ 1910 MHz LTE Band 4: 1710 MHz ~ 1755 MHz LTE Band 5: 824 MHz ~ 849 MHz LTE Band 12: 699 MHz ~ 716 MHz LTE Band 13: 777 MHz ~ 787 MHz LTE Band 25: 1850 MHz ~ 1915 MHz LTE Band 26: 814 MHz ~ 849 MHz LTE Band 66: 1710 MHz ~ 1780 MHz LTE Band 85: 698 MHz ~ 716 MHz
Wireless Technology and Frequency Range (NB-IOT)	Band 2: 1850 MHz ~ 1910 MHz Band 4: 1710 MHz ~ 1755 MHz Band 5: 824 MHz ~ 849 MHz Band 12: 699 MHz ~ 716 MHz Band 13: 777 MHz ~ 787 MHz Band 25: 1850 MHz ~ 1915 MHz Band 66: 1710 MHz ~ 1780 MHz Band 71: 663 MHz ~ 698 MHz Band 85: 698 MHz ~ 716 MHz
Mode	LTE: QPSK, 16QAM, 64QAM

**Reviewed by: Jason Wang**

**Report Producer: Daisy Peng**



**2. Maximum RF average output power among production units**

**<WiFi 2.4GHz>**

2.4GHz Band				
Mod.	Data Rate	NTX	Freq.(MHz)	Tune-Up(dBm)
				SISO
11b	1Mbps	1	2412	16.00
11b	1Mbps	1	2437	16.00
11b	1Mbps	1	2462	16.00
11g	6Mbps	1	2412	12.00
11g	6Mbps	1	2437	16.50
11g	6Mbps	1	2462	12.00
HT20	MCS0	1	2412	12.00
HT20	MCS0	1	2437	16.00
HT20	MCS0	1	2462	12.00
HT40	MCS0	1	2422	11.00
HT40	MCS0	1	2437	13.50
HT40	MCS0	1	2452	11.00

**<WiFi 5GHz>**

FCC UNII-1				
Mod.	DataRate	NTX	Freq. (MHz)	Tune-Up (dBm)
				SISO
11a	6Mbps	1	5180	14.50
11a	6Mbps	1	5220	14.00
11a	6Mbps	1	5240	14.00
HT20	MCS0	1	5180	14.00
HT20	MCS0	1	5220	14.00
HT20	MCS0	1	5240	14.00
HT40	MCS0	1	5190	12.00
HT40	MCS0	1	5230	12.00

FCC UNII-2a				
Mod.	DataRate	NTX	Freq. (MHz)	Tune-Up (dBm)
				SISO
11a	6Mbps	1	5260	12.00
11a	6Mbps	1	5300	12.00
11a	6Mbps	1	5320	12.00
HT20	MCS0	1	5260	12.00
HT20	MCS0	1	5300	12.00
HT20	MCS0	1	5320	12.00
HT40	MCS0	1	5270	12.00
HT40	MCS0	1	5310	12.00



FCC UNII-2c				
Mod.	Data Rate	NTX	Freq. (MHz)	Tune-Up (dBm)
				SISO
11a	6Mbps	1	5500	14.00
11a	6Mbps	1	5580	18.00
11a	6Mbps	1	5700	12.00
HT20	MCS0	1	5500	14.00
HT20	MCS0	1	5580	18.00
HT20	MCS0	1	5700	12.00
HT40	MCS0	1	5510	12.00
HT40	MCS0	1	5550	12.00
HT40	MCS0	1	5670	12.00

FCC UNII-3				
Mod.	Data Rate	NTX	Freq. (MHz)	Tune-Up (dBm)
				SISO
11a	6Mbps	1	5745	13.00
11a	6Mbps	1	5785	16.50
11a	6Mbps	1	5825	13.00
HT20	MCS0	1	5745	13.00
HT20	MCS0	1	5785	18.00
HT20	MCS0	1	5825	14.00
HT40	MCS0	1	5755	10.00
HT40	MCS0	1	5795	10.00



**<WWAN>**

Mode		Maximum Average power(dBm)
LTE	Band 2	22
	Band 4	22
	Band 5	22
	Band 12	22
	Band 13	22
	Band 25	22
	Band 26	22
	Band 66	22
	Band 85	22

Mode		Maximum Average power(dBm)
NB-IOT	Band 2	22
	Band 4	22
	Band 5	22
	Band 12	22
	Band 13	22
	Band 25	22
	Band 66	22
	Band 71	22
	Band 85	22

### **3. Determination of exemption**

Per 1.1307(b)(3), (i) For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

- (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 Pth (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). Pth is given by:

$$P_{th} \text{ (mW)} = ERP_{20cm} (d / 20)^x \text{ for distance } d \leq 20cm$$

$$P_{th} \text{ (mW)} = ERP_{20cm} \text{ for distance } 20cm < d \leq 40cm$$

$$x = -\log_{10} \left( \frac{60}{ERP_{20cm} \sqrt{f}} \right)$$

$ERP_{20cm} \text{ (mW)}$	$0.3 \text{ GHz} \leq f < 1.5 \text{ GHz}:$	2040 f
	$1.5 \text{ GHz} \leq f \leq 6 \text{ GHz}:$	3060

- (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  $\lambda$  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).

Table 1 to § 1.1307(b)(3)(i)(C) - Single RF Sources Subject to Routine Environmental Evaluation

RF Source frequency (MHz)	Threshold ERP (watts)
0.3-1.34	$1,920 R^2.$
1.34-30	$3,450 R^2/f^2.$
30-300	$3.83 R^2.$
300-1,500	$0.0128 R^2f.$
1,500-100,000	$19.2R^2.$





4. RF Exposure Evaluation

4.1. Standalone assessment

General Note:

- 1. Pi is mean the available maximum time-averaged power or the ERP, whichever is greater, for fixed, mobile, or portable RF source i at a distance between 0.5 cm and 40 cm
2. Pth is mean the exemption threshold power (Pth) according to the § 1.1307(b)(3)(i)(B) formula for fixed, mobile, or portable RF source i.
3. In this report was used Part1.1307(b)(3)(i)(B) perform RF Exposure evaluation
4. The distance of 20cm is for this device

<WLAN>

Table with 11 columns: Band, Antenna Gain (dBi), Maximum Conducted Power (dBm), Maximum EIRP (dBm), Maximum ERP (dBm), Maximum EIRP (mW), Maximum ERP (mW), Pi (dBm), Pi (mW), Part1.1307 option(b) Threshold (mW), Part1.1307 option(b) Pi/Pth. Rows include WLAN2.4GHz Band and WLAN5GHz Band.

<WWAN\_LTE>

Table with 11 columns: Band, Antenna Gain (dBi), Maximum Conducted Power (dBm), Maximum EIRP (dBm), Maximum ERP (dBm), Maximum EIRP (mW), Maximum ERP (mW), Pi (dBm), Pi (mW), Part1.1307 option(b) Threshold (mW), Part1.1307 option(b) Pi/Pth. Rows include LTE Band 2, 4, 5, 12, 13, 25, 26, 66, 85.

<WWAN\_NB-IOT>

Table with 11 columns: Band, Antenna Gain (dBi), Maximum Conducted Power (dBm), Maximum EIRP (dBm), Maximum ERP (dBm), Maximum EIRP (mW), Maximum ERP (mW), Pi (dBm), Pi (mW), Part1.1307 option(b) Threshold (mW), Part1.1307 option(b) Pi/Pth. Rows include Band 2, 4, 5, 12, 13, 25, 66, 71, 85.



**4.2. Collocated assessment**

**General Note:**

- 1. Either MPE-based exemption may be considered for test exemption for fixed, mobile, or portable device exposure conditions; therefore, the contributions from each exemption in conjunction with the measured SAR (*Evaluated<sub>k</sub>* term) shall be used to determine exemption for simultaneous transmission according to Formula (C.1).
- 2. The sum of the ratios of the applicable terms for MPE-based and MPE shall be less than 1, to determine LTE + NR + WLAN + BT simultaneous transmission exposure compliance.

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

Maximum LTE/ NB-IOT P <sub>i</sub> /P <sub>th</sub> Ratio	WLAN P <sub>i</sub> /P <sub>th</sub> Ratio	Σ (P/P <sub>th</sub> Ratio) of LTE/ NB-IOT + WLAN
0.320	0.037	0.357

**Conclusion:**

According to 47 CFR §1.1307, the RF exposure analysis concludes that the RF Exposure is FCC compliant.