



# RF EXPOSURE EVALUATION REPORT

**FCC ID** : J9CQCARD7280P  
**Equipment** : QCARD7280P  
**Brand Name** : Qualcomm  
**Model Name** : QCARD7280P-3  
**Applicant** : Qualcomm Technologies, Inc.  
5775 Morehouse Drive, San Diego, California 92121, United State  
**Manufacturer** : Qualcomm Technologies, Inc.  
5775 Morehouse Drive, San Diego, California 92121, United State  
**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



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1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	QCARD7280P
Brand Name	Qualcomm
Model Name	QCARD7280P-3
FCC ID	J9CQCARD7280P
Wireless Technology and Frequency Range	WLAN 2.4 GHz Band: 2400 MHz ~ 2483.5 MHz WLAN 5.2 GHz Band: 5150 MHz ~ 5250 MHz WLAN 5.3 GHz Band: 5250 MHz ~ 5350 MHz WLAN 5.6 GHz Band: 5470 MHz ~ 5725 MHz WLAN 5.8 GHz Band: 5725 MHz ~ 5850 MHz WLAN 5.8G UNII4 Band: 5850 MHz ~ 5895 MHz WLAN 6E: 5925 MHz ~ 6425 MHz, 6425 MHz ~ 6525 MHz, 6525 MHz ~ 6875 MHz, 6875 MHz ~ 7125 MHz Bluetooth: 2400 MHz ~ 2483.5 MHz
Mode	WLAN:802.11a/b/g/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160 Bluetooth BR/EDR/LE
EUT Stage	Identical Prototype

Reviewed by: Jason Wang

Report Producer: Carlie Tsai

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

**Remark:**

In RF test, EUT TX power level was configured via the test mode and set slightly higher than the maximum power level to cover the range of TX power variation among units.

**<WLAN\_SU>**

Mode	Maximum Average Power (dBm)
2.4GHz WLAN	18.00
5GHz WLAN	16.50
6GHz WLAN	12.50

**<WLAN\_OFDMA>**

Mode	Maximum Average Power (dBm)
2.4GHz WLAN	16.00
5GHz WLAN	15.50
6GHz WLAN	12.50

**<Bluetooth>**

Mode	Maximum Average Power (dBm)
BR/EDR	21.00
BLE	5.00

### **3. RF Exposure Limit Introduction**

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	$0.0128 R^2 f.$
1,500-100,000	$19.2 R^2.$



### 4. RF Exposure Evaluation

**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\_SU>**

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
2.4GHz WLAN	6.54	18.00	24.54	22.39	284.45	173.38	22.39	173.38	3060.000	0.057
5GHz WLAN	7.82	16.50	24.32	22.17	270.40	164.82	22.17	164.82	3060.000	0.054
6GHz WLAN	8.17	12.50	20.67	18.52	116.68	71.12	18.52	71.12	3060.000	0.023

**<WLAN\_OFDMA>**

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
2.4GHz WLAN	6.54	16.00	22.54	20.39	179.47	109.40	20.39	109.40	3060.000	0.036
5GHz WLAN	7.82	15.50	23.32	21.17	214.78	130.92	21.17	130.92	3060.000	0.043
6GHz WLAN	8.17	12.50	20.67	18.52	116.68	71.12	18.52	71.12	3060.000	0.023

**<Bluetooth>**

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
Bluetooth	3.53	21.00	24.53	22.38	283.79	172.98	22.38	172.98	3060.000	0.057



4.1. 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 (Evaluatedk 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 WLAN + BT simultaneous transmission exposure compliance.

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

<WLAN (SU) + Bluetooth>

WLAN Pi/Pth Ratio	Bluetooth Pi/Pth Ratio	Σ (P/Pth Ratio) of WLAN + Bluetooth
0.057	0.057	0.114

<WLAN (OFDMA) + Bluetooth>

WLAN Pi/Pth Ratio	Bluetooth Pi/Pth Ratio	Σ (P/Pth Ratio) of WLAN + Bluetooth
0.043	0.057	0.100

Conclusion:

According to 47 CFR §2.1091, the RF exposure analysis concludes that the RF Exposure is FCC compliant.