RF EXPOSURE EVALUATION REPORT

FCC ID	**: N7NEM7455**
Equipment	**: PCI Express Mini Card**
Brand Name	**: AirPrime**
Model Name	**: EM7455**
Applicant	**: Sierra Wireless Inc. 13811 Wireless Way, Richmond, BC Canada V6V 3A4**
Manufacturer	**: Sierra Wireless Inc. 13811 Wireless Way, Richmond, BC Canada V6V 3A4**
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. EMC & Wireless Communications Laboratory, the test report shall not be reproduced except in full.

Approved by: Cona Huang / Deputy Manager

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History of this test report

Report No.	Version	Description	Issued Date
FA220812	Rev. 01	Initial issue of report	Mar. 22, 2022

1. Description of Equipment Under Test (EUT)

Product Feature & Specification	
EUT Type	PCI Express Mini Card
Brand Name	AirPrime
Model Name	EM7455
FCC ID	N7NEM7455
Wireless Technology and Frequency Range	LTE Band 8: 897.5MHz ~ 900.5MHz
Mode	LTE: QPSK, 16QAM

Reviewed by: Jason Wang

Report Producer: Daisy Peng

2. Maximum RF average output power among production units

Mode		Maximum Average power(dBm)
LTE	Band 8	24.0

3. RF Exposure Limit Introduction

According to ANSI/IEEE C95.1-1992, the criteria listed in Table 1 shall be used to evaluate the environmental impact of human exposure to radio frequency (RF) radiation as specified in §1.1310.

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposures				
0.3-3.0	614	1.63	*(100)	6
3.0-30	1842/f	4.89/f	*(900/f2)	6
30-300	61.4	0.163	1.0	6
300-1500			f/300	6
1500-100,000			5	6
(B) Limits for General Population/Uncontrolled Exposure				
0.3-1.34	614	1.63	*(100)	30
1.34-30	824/f	2.19/f	*(180/f2)	30
30-300	27.5	0.073	0.2	30
300-1500			f/1500	30
1500-100,000			1.0	30

The MPE was calculated at 20 cm to show compliance with the power density limit.

The following formula was used to calculate the Power Density:

$$S = \frac{PG}{4\pi R^2}$$

Where:
S = Power Density
P = Output Power at Antenna Terminals
G = Gain of Transmit Antenna (linear gain)
R = Distance from Transmitting Antenna

4. Radio Frequency Radiation Exposure Evaluation

4.1. Standalone Power Density Calculation

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum ERP (dBm)	Maximum ERP (W)	Maximum EIRP (dBm)	Maximum EIRP (W)	Maximum Output Power Limit (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)
LTE Band 8	10.50	24.00	32.350	1.718	34.500	2.818	3.000	2818.383	0.561	0.598

4.2. Collocated Power Density Calculation

Note:

1. This MPE analysis is applicable to any collocated transmitters with transmit EIRP power for 2.4GHz WLAN is less than or equal to 25dBm, for 5GHz WLAN is less than or equal to 27dBm, and for Bluetooth is less than or equal to 15dBm.

Band	Antenna Gain (dBi)	Maximum Power (dBm)	Maximum EIRP (dBm)	Maximum EIRP (W)	Average EIRP (mW)	Power Density at 20cm (mW/cm^2)	Limit (mW/cm^2)	Power Density / Limit
LTE Band 8	10.00	24.00	34.0	2.51	2511.89	0.500	0.598	0.836
WLAN2.4GHz Band	-	-	25.0	0.32	316.23	0.063	1.000	0.063
WLAN5GHz Band	-	-	27.0	0.50	501.19	0.100	1.000	0.100
Bluetooth	-	-	15.0	0.03	31.62	0.006	1.000	0.006

WWAN Power Density / Limit	WLAN Power Density / Limit	Bluetooth Power Density / Limit	∑(Power Density / Limit) of WWAN+WLAN+Bluetooth
0.836	0.100	0.006	0.942

Note:

1. ∑(Power Density / Limit): This is a summation of [(power density for each transmitter/antenna included in the simultaneous transmission)/ (corresponding MPE limit)], for WWAN + WLAN + Bluetooth.
2. Considering the WWAN module collocation with the WLAN and Bluetooth transmitter of the EIRP performance listed in the table above, the aggregated (power density /limit) is smaller than 1, and MPE of 3 collocated transmitters is compliant.

Conclusion:

Based on FCC 47 CFR §1.1307, the analysis concludes that this product when transmitting in standalone within a host device, is compliant with the FCC RF exposure requirements in mobile exposure condition, provided the conducted power and antenna gain do not exceed the limits for each given frequency band per wireless technology as follow table:

Device	Technology	Band	Frequency (MHz)	Maximum Conducted Power (dBm)	Stanalone Maximum Antenna Gain (dBi)	Collocated Maximum Antenna Gain (dBi)
EM7455	LTE	Band 8	897.5 ~ 900.5	24.0	10.5	10.0