RF Exposure Report

Report No.:	SA180425C07A
FCC ID:	N7NHL78M
Test Model:	HL7800-M
Received Date:	Jun. 14, 2018
Date of Evaluation:	Jul. 13, 2018
Issued Date:	Jul. 18, 2018
Applicant:	Sierra Wireless Inc.
Address:	13811 Wireless Way, Richmond, BC, Canada V6V3A4
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
Lab Address:	No. 47-2, 14th Ling, Chia Pau Vil., Lin Kou Dist., New Taipei City, Taiwan, R.O.C.
Test Location:	No. 19, Hwa Ya 2nd Rd, Wen Hwa Vil, Kwei Shan Dist., Taoyuan City 33383, Taiwan (R.O.C)
FCC Registration / Designation Number:	788550 / TW0003

Testing Laboratory
2021

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA180425C07A	Original Release	Jul. 18, 2018

1 Certificate of Conformity

Product:	Embedded Module
Brand:	AirPrime
Test Model:	HL7800-M
Sample Status:	ENGINEERING SAMPLE
Applicant:	Sierra Wireless Inc.
Date of Evaluation:	Jul. 13, 2018
Standards:	FCC Part 2 (Section 2.1091) KDB 447498 D01 General RF Exposure Guidance v06 IEEE C95.1-1992

The above equipment has been tested by **Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch**, and found compliance with the requirement of the above standards. The test record, data evaluation & Equipment Under Test (EUT) configurations represented herein are true and accurate accounts of the measurements of the sample's RF characteristics under the conditions specified in this report.

Prepared by : Gina Liu , **Date:** Jul. 18, 2018

Gina Liu / Specialist

Approved by : , **Date:** Jul. 18, 2018

Dylan Chiou / Project Engineer

2 RF Exposure

2.1 Limits for Maximum Permissible Exposure (MPE)

Frequency Range (MHz)	Electric Field Strength (V/m)	Magnetic Field Strength (A/m)	Power Density (mW/cm^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
0.3-1.34	614	1.63	(100)*	30
1.34-30	824/f	2.19/f	($180/f^2$)*	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

2.2 MPE Calculation Formula

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in mW/cm^2

Pout = 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

2.3 Classification

The antenna of this product, under normal use condition, is at least 20cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Base on 47 CFR Section 2.1091, 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 WWAN technology as follow table:

Antenna Type	Frequency Band (MHz)	Maximum Allowable Antenna Gain (dBi)
Dipole	LTE 2	8.5
	LTE 4	5.5
	LTE 5	9
	LTE 12	9
	LTE 13	9
	LTE 14	9
	LTE 17	9
	LTE 25	8.5
	LTE 26	9
	LTE 26	9
	LTE 66	5.5

2.5 Calculation Result of Maximum Conducted Power

Band	Frequency Band (MHz)	Max Power (dBm)	Maximum Allowable Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
LTE 2	1850-1910	24.5	8.5	20	0.397	1.00
LTE 4	1710-1755	24.5	5.5	20	0.199	1.00
LTE 5	824-849	24.5	9	20	0.445	0.55
LTE 12	699-716	24.5	9	20	0.445	0.47
LTE 13	777-787	24.5	9	20	0.445	0.52
LTE 14	788-798	24.5	9	20	0.445	0.53
LTE 17	704-716	24.5	9	20	0.445	0.47
LTE 25	1850-1915	24.5	8.5	20	0.397	1.00
LTE 26	814-824	24.5	9	20	0.445	0.54
LTE 26	824-849	24.5	9	20	0.445	0.55
LTE 66	1710-1780	24.5	5.5	20	0.199	1.00

Note:

1. By design, maximum LTE RF power of smaller supported bandwidth does not exceed the RF power of largest supported bandwidth; the information is included in “tune-up procedure”exhibit.
2. For conservativeness, the lowest frequency of each band is used to determine the MPE limit of that band.

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