

## RF Exposure Report

**Report No.:** SA181119C14

**Test Model:** CSG750

**Series Model:** CSG7xxxxxxxx (Where x can be 0-9, A-Z, a-z, any alphanumeric character or blank)

**Received Date:** Nov. 19, 2018

**Issued Date:** Dec. 12, 2018

**Applicant:** Sierra Wireless Inc.

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch

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**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



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## Table of Contents

|                                                            |          |
|------------------------------------------------------------|----------|
| <b>Release Control Record</b> .....                        | <b>3</b> |
| <b>1 Certificate of Conformity</b> .....                   | <b>4</b> |
| <b>2 RF Exposure</b> .....                                 | <b>5</b> |
| 2.1 Limits for Maximum Permissible Exposure (MPE).....     | 5        |
| 2.2 MPE Calculation Formula .....                          | 5        |
| 2.3 Classification .....                                   | 5        |
| <b>3 Calculation Result of Maximum Tune up Power</b> ..... | <b>6</b> |

### Release Control Record

| Issue No.   | Description      | Date Issued   |
|-------------|------------------|---------------|
| SA181119C14 | Original release | Dec. 12, 2018 |

## 1 Certificate of Conformity

**Product:** Cloud Services Gateway

**Brand:** Versa

**Test Model:** CSG750

**Series Model:** CSG7xxxxxxxx (Where x can be 0-9, A-Z, a-z, any alphanumeric character or blank)

**Sample Status:** Engineering sample

**Applicant:** Sierra Wireless Inc.

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

IEEE C95.1

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 :** Celine Chou , **Date:** Dec. 12, 2018  
Celine Chou / Senior Specialist

**Approved by :** Bruce Chen , **Date:** Dec. 12, 2018  
Bruce Chen / 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 <sup>2</sup> ) | 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 <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

### 2.2 MPE Calculation 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

### 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**.

### 3 Calculation Result of Maximum Tune up Power

For WWAN: (Base on WWAN module report (Model: MC7455, FCC ID: N7NMC7455))

| Function     | Frequency Band (MHz) | Max Power (dBm) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|--------------|----------------------|-----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| WCDMA Band 2 | 1852.4-1907.6        | 23.52           | 0.49               | 20            | 0.050                               | 1                           |
| WCDMA Band 4 | 1712.4-1752.6        | 23.45           | 0.55               | 20            | 0.050                               | 1                           |
| WCDMA Band 5 | 826.4-846.6          | 23.51           | 2.54               | 20            | 0.080                               | 0.550                       |
| LTE Band 4   | 1720.0-1745.0        | 23.97           | 0.33               | 20            | 0.054                               | 1                           |
| LTE Band 7   | 2502.5-2567.5        | 22.93           | -0.67              | 20            | 0.033                               | 1                           |
| LTE Band 12  | 699.7-715.3          | 23.99           | 0.83               | 20            | 0.060                               | 0.466                       |
| LTE Band 13  | 779.5-784.5          | 23.93           | 1.00               | 20            | 0.062                               | 0.521                       |
| LTE Band 25  | 1850.7-1914.3        | 23.99           | 0.49               | 20            | 0.056                               | 1                           |
| LTE Band 26  | 814.7-848.3          | 23.98           | 2.54               | 20            | 0.089                               | 0.546                       |
| LTE Band 30  | 2307.5-2312.5        | 22.95           | 0.27               | 20            | 0.042                               | 1                           |
| LTE Band 41  | 2498.5-2687.5        | 21.53           | -0.67              | 20            | 0.024                               | 1                           |

**Conclusion:**

The formula of calculated the MPE is:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

1. LTE Band 26 (WWAN Module 1) + WCDMA Band 5 (WWAN Module 2) =  $0.089 / 0.546 + 0.080 / 0.550 = 0.308$
2. LTE Band 26 (WWAN Module 1) + LTE Band 25 (WWAN Module 2) =  $0.089 / 0.546 + 0.056 / 1 = 0.219$
3. LTE Band 26 (WWAN Module 1) + LTE Band 12 (WWAN Module 2) =  $0.089 / 0.546 + 0.060 / 0.466 = 0.292$
4. WCDMA Band 5 (WWAN Module 1) + LTE Band 26 (WWAN Module 2) =  $0.080 / 0.550 + 0.089 / 0.546 = 0.308$
5. LTE Band 25 (WWAN Module 1) + LTE Band 26 (WWAN Module 2) =  $0.056 / 1 + 0.089 / 0.546 = 0.219$
6. LTE Band 25 (WWAN Module 1) + WCDMA Band 2 (WWAN Module 2) =  $0.056 / 1 + 0.050 / 1 = 0.106$
7. LTE Band 25 (WWAN Module 1) + LTE Band 12 (WWAN Module 2) =  $0.056 / 1 + 0.060 / 0.466 = 0.185$
8. LTE Band 25 (WWAN Module 1) + LTE Band 26 (WWAN Module 2) =  $0.056 / 1 + 0.089 / 0.546 = 0.142$
9. LTE Band 12 (WWAN Module 1) + LTE Band 26 (WWAN Module 2) =  $0.060 / 0.466 + 0.089 / 0.546 = 0.292$
10. LTE Band 12 (WWAN Module 1) + LTE Band 25 (WWAN Module 2) =  $0.060 / 0.466 + 0.056 / 1 = 0.185$
11. LTE Band 12 (WWAN Module 1) + LTE Band 4 (WWAN Module 2) =  $0.060 / 0.466 + 0.054 / 1 = 0.183$
12. LTE Band 12 (WWAN Module 1) + LTE Band 26 (WWAN Module 2) =  $0.060 / 0.466 + 0.089 / 0.546 = 0.292$
13. LTE Band 26 (WWAN Module 1) + WCDMA Band 5 (WWAN Module 2) =  $0.089 / 0.546 + 0.080 / 0.550 = 0.308$
14. LTE Band 26 (WWAN Module 1) + LTE Band 25 (WWAN Module 2) =  $0.089 / 0.546 + 0.056 / 1 = 0.219$
15. LTE Band 26 (WWAN Module 1) + LTE Band 12 (WWAN Module 2) =  $0.089 / 0.546 + 0.060 / 0.466 = 0.292$

Therefore the maximum calculations of above situations are less than the "1" limit.

**---END---**