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# Versa Networks

## MPE ASSESSMENT REPORT

**Report Type:**
FCC Part §2.1091, §2.1093 and §1.1307(b) assessment report

**Model:**
See page 2

**REPORT NUMBER:**
191201444SHA-002

**ISSUE DATE:**
March 30, 2020

**DOCUMENT CONTROL NUMBER:**
TTRFFCCMPE-01_V1 

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Report no.: 191201444SHA-002

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**TEST REPORT**

| | |
|---|---|
| **Applicant:** | Versa Networks |
| | 6001 America Center Dr, 4th floor, Suite 400, San Jose, CA 95002, USA |
| **Manufacturer:** | Versa Networks |
| | 6001 America Center Dr, 4th floor, Suite 400, San Jose, CA 95002, USA |
| **Manufacturing site:** | Jabil Circuit Sdn Bhd.<br>56, Hilir Sungai Keluang 1, Phase 4, Bayan Lepas Industrial Park, Penang 11900, Malaysia |
| **Product Name:** | Cloud Services Gateway |
| **Type/Model:** | CSG365-WLA, CSG365-2LA, CSG365-LA, CSG365-W, CSG365<br>CSG355-WLA, CSG355-2LA, CSG355-LA, CSG355-W, CSG355 |

**SUMMARY:**

| The equipment complies with the requirements according to the following standard(s) or Specification: |
|---|
| KDB447498 D01 General RF Exposure Guidance v06<br>FCC Part2.1091, FCC Part2.1093 FCC Part1.1307(b) |

| **PREPARED BY:** | **REVIEWED BY:** |
|---|---|
| Wade zhang | Daniel. |
| Project Engineer<br>Wade Zhang | Reviewer<br>Daniel Zhao |

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# Revision History

| Report No. | Version | Description | Issued Date |
|---|---|---|---|
| 191201444SHA-002 | Rev. 01 | Initial issue of report | March 30, 2020 |
| | | | |
| | | | |

# 1 GENERAL INFORMATION

## 1.1 Description of Equipment Under Test (EUT)

| | |
|---|---|
| Product name: | Cloud Services Gateway |
| Type/Model: | CSG365-WLA, CSG365-2LA, CSG365-LA, CSG365-W, CSG365<br>CSG355-WLA, CSG355-2LA, CSG355-LA, CSG355-W, CSG355 |
| Description of EUT: | The EUT is an SDN gateway, with Bluetooth BLE 4.2 for configuration. the EUT provide three slots for optional wireless modules. maximum two LTE modules or one LTE module + one WIFI module can be equipped. |
| Rating: | DC 12V 5A (Powered by external AC/DC power supply model: DA-60Z12) |
| Software Version: | / |
| Hardware Version: | / |
| Sample received date: | December 16, 2019 |
| Date of test: | December 16, 2019 ~ January 10, 2020 |

## 1.2 Technical Specification

| | |
|---|---|
| Frequency Range: | 2400MHz ~ 2483.5MHz |
| Support Standards: | Bluetooth 4.2 (BLE) |
| Type of Modulation: | GFSK |
| Channel Number: | 40 (0-39) |
| Data Rate: | 1Mbps |
| Power Class: | Class II |
| Channel Separation: | 2 MHz |

| Antenna information: | | | |
|---|---|---|---|
| No. | Antenna Type | Gain (dBi) | Note |
| 1 | Internal PCB antenna | 0.55dBi | / |

*Note: For LTE module and WIFI module, please refer its datasheet or user manual.*

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## 1.3 Description of Test Facility

| | |
|---|---|
| Name: | Intertek Testing Services Shanghai |
| Address: | Building 86, No. 1198 Qinzhou Road(North), Shanghai 200233, P.R. China |
| Telephone: | 86 21 61278200 |
| Telefax: | 86 21 54262353 |

| | |
|---|---|
| The test facility is recognized, certified, or accredited by these organizations: | CNAS Accreditation Lab<br>Registration No. CNAS L0139 |
| | FCC Accredited Lab<br>Designation Number: CN1175 |
| | IC Registration Lab<br>CAB identifier.: CN0051 |
| | VCCI Registration Lab<br>Registration No.: R-14243, G-10845, C-14723, T-12252 |
| | A2LA Accreditation Lab<br>Certificate Number: 3309.02 |

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# 2 MPE Assessment

**Test result: Pass**

## 2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

| Frequency range | E-field strength (V/m) | H-field strength (A/m) | B-field (uT) | Equivalent plane wave power density $S_{eq}$ ($W/m^2$) |
|---|---|---|---|---|
| 0-1 Hz | - | $3,2 \times 10^4$ | $4 \times 10^4$ | - |
| 1-8 Hz | 10 000 | $3,2 \times 10^4/f^2$ | $4 \times 10^4/f^2$ | - |
| 8-25 Hz | 10 000 | 4 000/f | 5 000/f | - |
| 0,025-0,8 kHz | 250/f | 4/f | 5/f | - |
| 0,8-3 kHz | 250/f | 5 | 6,25 | - |
| 3-150 kHz | 87 | 5 | 6,25 | - |
| 0,15-1 MHz | 87 | 0,73/f | 0,92/f | - |
| 1-10 MHz | $87/f^{1/2}$ | 0,73/f | 0,92/f | - |
| 10-400 MHz | 28 | 0,073 | 0,092 | 2 |
| 400-2 000 MHz | $1,375\ f^{1/2}$ | $0,0037\ f^{1/2}$ | $0,0046\ f^{1/2}$ | f/200 |
| 2-300 GHz | 61 | 0,16 | 0,20 | 10 |

Mobile device exposure for simultaneous transmission operations: **the sum of the MPE ratios for all simultaneously transmitting antennas incorporated in a host device is ≤ 1.0**

## 2.2 Assessment Results

Power density (S) is calculated according to the formula:

**$S = PG / (4\pi R^2)$**

Where S = power density in $mW/cm^2$
P = Radiated transmit power in mW
G = numeric gain of transmit antenna
R = distance (cm)

As we can see from the test report 191201444SHA-001 and WIFI module (FCC ID: 2ARF9CSG-W1), LTE module (FCC ID: N7NEM7455) reports:

For BT module:

| Frequency band | Power | | Antenna Gain | | R | S |
|---|---|---|---|---|---|---|
| (MHz) | dBm | mW | dBi | (Numeric) | (cm) | ($mW/cm^2$) |
| 2402 - 2480 | -10.41 | 0.09 | 0.55 | 1.14 | 20 | **0.00002** |

For WIFI module:

| Frequency band | Power | | Antenna Gain | | R | S |
|---|---|---|---|---|---|---|
| (MHz) | dBm | mW | dBi | (Numeric) | (cm) | ($mW/cm^2$) |
| 2412 - 2462 | 25.97 | 395.37 | 2.35 | 1.72 | 20 | **0.135** |
| 5180 - 5240 | 25.06 | 320.63 | 2.94 | 1.97 | 20 | 0.126 |
| 5260 - 5320 | 24.18 | 261.82 | 2.94 | 1.97 | 20 | 0.103 |
| 5500 - 5700 | 24.35 | 272.27 | 2.94 | 1.97 | 20 | 0.107 |
| 5745 - 5825 | 26.79 | 477.53 | 2.94 | 1.97 | 20 | **0.187** |

For LTE module:

| Operating Mode | TX Freq Range (MHz) | | Power | | Antenna Gain | Cable loss | Total Gain | Numeric | R | S |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | dBm | mW | dBi | dB | dBi | | (cm) | ($mW/cm^2$) |
| WCDMA Band II | 1850 | 1910 | 24 | 250 | 1.94 | 0.5 | 1.44 | 1.39 | 20 | 0.069 |
| WCDMA Band IV | 1710 | 1755 | 24 | 250 | 2.21 | 0.5 | 1.71 | 1.48 | 20 | 0.074 |
| WCDMA Band V | 824 | 849 | 24 | 250 | 1.86 | 0.3 | 1.56 | 1.43 | 20 | 0.071 |
| LTE Band 2 | 1850 | 1910 | 24 | 250 | 1.94 | 0.5 | 1.44 | 1.39 | 20 | 0.069 |
| LTE Band 4 | 1710 | 1755 | 24 | 250 | 2.21 | 0.5 | 1.71 | 1.48 | 20 | **0.074** |
| LTE Band 5 | 824 | 849 | 24 | 250 | 1.86 | 0.3 | 1.56 | 1.43 | 20 | 0.071 |
| LTE Band 7 | 2500 | 2570 | 23 | 200 | 2.94 | 0.6 | 2.34 | 1.71 | 20 | 0.068 |
| LTE Band 12 | 699 | 716 | 24 | 250 | 1.41 | 0.3 | 1.11 | 1.29 | 20 | 0.064 |
| LTE Band 13 | 777 | 787 | 24 | 250 | 0.05 | 0.3 | -0.25 | 0.94 | 20 | 0.047 |
| LTE Band 25 | 1850 | 1915 | 24 | 250 | 1.94 | 0.5 | 1.44 | 1.39 | 20 | 0.069 |

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|---|---|---|---|---|---|---|---|---|---|---|
| LTE Band 26 | 814 | 849 | 24 | 250 | 1.86 | 0.3 | 1.56 | 1.43 | 20 | 0.071 |
| LTE Band 30 | 2305 | 2315 | 23 | 200 | 1.25 | 0.6 | 0.65 | 1.16 | 20 | 0.046 |
| LTE Band 41 | 2496 | 2690 | 23 | 200 | 2.94 | 0.6 | 2.34 | 1.71 | 20 | 0.068 |

Note: 1 $mW/cm^2$ limit from 1.310 Table 1

Consider the simultaneous transmission for the EUT:

1: Max power density (LTE 1+ WIFI 2.4G + WIFI 5G + BT) = 0.074+0.135+0.187+0.00002 = 0.39602 $mW/cm^2$

2: Max power density (LTE 1+ LTE 2 + BT) = 0.074+0.074+0.00002 = 0.14802 $mW/cm^2$

**Conclusion:** therefore, the maximum calculations of the above simultaneous are less the limit.

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# Appendix I

Definition below must be outlined in the User Manual:

To satisfy FCC RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.
To ensure compliance, operations at closer than this distance is not recommended.

********** END **********