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Versa Networks

MPE ASSESSMENT REPORT

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

Model:
CSGXXXYYYZZZ

REPORT NUMBER:
221200531SHA-003

ISSUE DATE:
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Report no.: 221200531SHA-003

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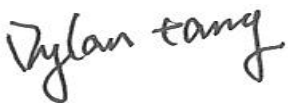
Applicant:	Versa Networks
	2550 GREAT AMERICA WAY SUITE 350 SANTA CLARA, CA 95054
Manufacturer:	Versa Networks
	2550 GREAT AMERICA WAY SUITE 350 SANTA CLARA, CA 95054
Product Name:	Cloud Services Gateway
Type/Model:	CSGXXXYYYZZZ
FCC ID:	2ARF9CSG3XX

SUMMARY:

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

PREPARED BY:	**REVIEWED BY:**
	
Project Engineer Dylan Tang	Reviewer Wakeyou Wang

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Revision History

Report No.	Version	Description	Issued Date
221200531SHA-003	Rev. 01	Initial issue of report	December 20, 2022

TEST REPORT

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Cloud Services Gateway
Type/Model:	CSGXXXYYYZZZ XXX=355,365 YYY=-WLA, -2LA, -W, -LA, or blank ZZZ=-4GP-120W, -4GF, -4DS, or blank
Description of EUT:	The EUT is an Cloud Services Gateway, with Bluetooth function. 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 AC Adapter Model No.: DA-60Z12 AC Input:100 -240V~, 50-60Hz, 1.5A Max DC Output:12V⎓5.0A 60.0W
EUT type:	☒ Table top ☐ Floor standing
Software Version:	21.2.2
Hardware Version:	Rev E
Serial numbers:	0221228-01-001(for radiation sample), 0221228-01-002(for conduction sample)
Sample received date:	November 25, 2022
Date of test:	November 25, 2022 ~ December 18, 2022

1.2 Technical Specification

Frequency Range:	2402-2480MHz
Support Standards:	IEEE 802.15.1
Type of Modulation:	GFSK
Channel Number:	40
Data Rate:	1Mbps, 2Mbps
Channel Separation:	2MHz
Antenna Information:	0.55dBi, PCB antenna

Frequency Range:	2400MHz ~ 2483.5MHz
Support Standards:	Bluetooth 4.2 (BR+EDR)
Modulation Technique:	Frequency Hopping Spread Spectrum(FHSS)
Type of Modulation:	GFSK, π/4 DQPSK, 8DPSK

TEST REPORT

Channel Number:	79 (0 - 78)
Data Rate:	1Mbps
Channel Separation:	1 MHz
Antenna:	0.55dBi, PCB antenna

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 Registration No. CNAS L0139
	FCC Accredited Lab Designation Number: CN0175
	IC Registration Lab CAB identifier.: CN0014
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

TEST REPORT

2 MPE Assessment

Test result: Pass

2.1 MPE Assessment Limit

Mobile device exposure for standalone operations:

According to§1.1310, the limit for general population/uncontrolled exposures

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging 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/f2)	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

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 221200531SHA-001&221200531SHA-002:

The calculations in the table below use the highest gain of antenna for client EUT. These calculations represent worst case in terms of the exposure levels.

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Working Mode	Frequency band	Power		Antenna Gain		R	S	Limits
	(MHz)	dBm	mW	dBi	(Numeric)	(cm)	(mW/cm2)	(mW/cm2)
BLE	2402-2480	-8.17	0.15	0.55	1.14	20	0.00003	1
BT	2402-2480	6.37	4.34	0.55	1.14	20	0.001	1

For WIFI module:

Frequency band	Power		Antenna Gain		R	S
(MHz)	dBm	mW	dBi	(Numeric)	(cm)	(mW/cm2)
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	mW	dB	dBi		(cm)	(mW/cm2)
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

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/cm2 from 1.310 Table 1.

BT/BLE , LTE and LTE can simultaneous transmitting, so the maximum rate of MPE is, 0.001/1+0.071/0.549 +0.071/0.549 =0.26<=1.0.

BT/BLE , LTE and WIFI can simultaneous transmitting, so the maximum rate of MPE is, 0.001/1+0.071/0.549 +0.187/1=0.317<=1.0.

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

TEST REPORT

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**********