

Versa Networks

MPE ASSESSMENT REPORT

Report Type:

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

Model:

CSGXXX-YYY-ZZZ

REPORT NUMBER:

220900385SHA-004

ISSUE DATE:

October 15, 2022

DOCUMENT CONTROL NUMBER:

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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: CSGXXX-YYY-ZZZ

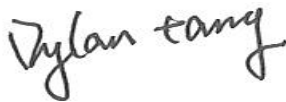
FCC ID: 2ARF9CSG-BT

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:



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REVIEWED BY:



Reviewer
Wakeyou Wang

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Revision History

Report No.	Version	Description	Issued Date
220900385SHA-004	Rev. 01	Initial issue of report	October 15, 2022

1 GENERAL INFORMATION

1.1 Description of Equipment Under Test (EUT)

Product name:	Cloud Services Gateway
Type/Model:	CSGXXX-YYY-ZZZ XXX=750,770 YYY= WLA, 2LA, W, LA, or blank ZZZ= 4GP-120W, 4GF, 8GE, 4DS, or blank
Description of EUT:	The EUT is an Cloud Services Gateway, with Bluetooth function. the EUT provide two slots for optional wireless modules. Maximum two LTE modules can be equipped. There have series models and they used the same main board PCB are electric identical. We choose CSG750-WLA-4GP-120W to test as representative.
Rating:	DC 12V 5A Switching Power Adapter Model No.: FSP060-DHAN3 AC Input:100 -240V~, 1.8A 50-60Hz DC Output:12V===5.0A 60.0W
EUT type:	<input checked="" type="checkbox"/> Table top <input type="checkbox"/> Floor standing
Software Version:	21.2.2
Hardware Version:	V1.0
Serial numbers:	0221019-45-003(for radiation sample), 0221019-45-004(for conduction sample)
Sample received date:	September 2, 2022
Date of test:	September 5, 2022 ~ October 15, 2022

Note:

1. ALL models are listed as below. Model CGS750 is the representative for final test.

Brand	Versa	
Series Models	CSGXXX-YYY-ZZZ XXX=750,770 YYY= WLA, 2LA, W, LA, or blank ZZZ= 4GP-120W, 4GF, 8GE, 4DS, or blank	
Series	CSG750	CGS770
CPU	ATOM C3558 2.2GHz/ 4 cores/FC-BGA 16W	ATOM C3708 1.7GHz/ 8 cores/FC-BGA 17W
LTE Module	Band: Sierra, Model: MC7455, FCC ID :N7NMC7455	
WLAN Module	Band: VERSA NETWORKS, Model: CSG-W1, FCC ID :2ARF9CSG-W1	
BT Module	Band: Qualcomm, Model: CSR8811A12-IQQD-R	
NIC Card	4 ports* 1G RJ45 for NIC-4GP-120W 4 ports* 1G SFP for 4GF 4 ports* RJ45(T1) for 4DS	

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	8 ports* 1G RJ45 for 8EG
RAM	SODIM DDR4 ECC 4GB SODIM DDR4 ECC 8GB SODIM DDR4 ECC 16GB

2. The EUT consumes power from the following adapter.

Adapter	
Brand	FSP GROUP INC.
Model	FSP060-DHAN3
Input Power	100-240Vac, 1.8A, 50-60Hz
Output Power	12.0Vac, 5.0A 60W
Power Line	1.15m non-shielded power cable with one core

POE Module Adapter	
Brand	DELTA ELECTRONICS, INC.
Model	ADP-150AR B
Input Power	100-240Vac, 2A, 50-60Hz
Output Power	54VDC, 2.78A
Power Line	1.45m DC cable

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:	-1.86dBi, 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, $\pi/4$ DQPSK, 8DPSK
Channel Number:	79 (0 - 78)
Data Rate:	1Mbps
Channel Separation:	1 MHz
Antenna:	-1.86dBi, 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.: CN0051
	VCCI Registration Lab Registration No.: R-14243, G-10845, C-14723, T-12252
	A2LA Accreditation Lab Certificate Number: 3309.02

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/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

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**

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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/cm²

P = Radiated transmit power in mW

G = numeric gain of transmit antenna

R = distance (cm)

As we can see from the test report 220900385SHA-001&220900385SHA-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	Peak Power		Antenna Gain	R	S	Limits
	(MHz)	dBm	mW	dBi	(cm)	(mW/cm ²)	(mW/cm ²)
BLE	2402-2480	-3.19	0.4797	-1.86	20	0.00006	1
BT	2402-2480	2.26	1.6827	-1.86	20	0.00022	1

For WIFI module(Model: CSG-W1, FCC ID :2ARF9CSG-W1)

Working Mode	Frequency band	Power	Antenna Gain	R	S	Limits
	(MHz)	dBm	dBi	(cm)	(mW/cm ²)	(mW/cm ²)
2.4 GHz WLAN	2412-2462	25.47	2.35	20	0.13512	1
5GHz WLAN	5150-5250 5250-5350 5470-5725 5725-5850	26.29	2.94	20	0.18695	1

For LTE module(Model:MC7455, FCC ID:N7NMC7455)

Operating Mode	TX Freq Range (MHz)		Power		Antenna Gain	R	S	Limits
			dBm	mW	dBi	(cm)	(mW/cm ²)	(mW/cm ²)
WCDMA Band II	1852.4	1907.6	23.52	224.91	1.26	20	0.060	1
WCDMA Band IV	1712.4	1752.6	23.45	221.31	1.99	20	0.070	1
WCDMA Band V	826.4	846.6	23.51	224.39	-0.87	20	0.037	0.55
LTE Band 4	1720.0	1745.0	23.97	249.46	1.99	20	0.078	1
LTE Band 7	2502.5	2567.5	22.93	196.34	2.85	20	0.075	1
LTE Band 12	699.7	715.3	23.99	250.61	0.21	20	0.052	0.466
LTE Band 13	779.5	784.5	23.93	247.17	-0.68	20	0.042	0.521
LTE Band 25	1850.7	1914.3	23.99	250.61	1.26	20	0.067	1
LTE Band 26	814.7	848.3	23.98	250.03	-0.87	20	0.041	0.546

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LTE Band 30	2307.5	2312.5	22.95	197.24	3.00	20	0.078	1
LTE Band 41	2498.5	2687.5	21.53	142.23	4.16	20	0.074	1

Note: 1 mW/cm² from 1.310 Table 1.

BT/BLE , 2.4G/5G WIFI and LTE can simultaneous transmitting, so the maximum rate of MPE is,
 $0.00022/1+0.18695/1 +0.052/0.466=0.2988\leq 1.0$.

BT/BLE , LTE and LTE can simultaneous transmitting, so the maximum rate of MPE is,
 $0.00022/1+0.052/0.466+0.052/0.466=0.2234\leq 1.0$.

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

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*****