RF Exposure Report

Report No.:	SA180524C28
FCC ID:	2AKCZ-0D1
Test Model:	APL46-0D1
Received Date:	May 04, 2018
Test Date:	May 04 ~ Jun. 20, 2018
Issued Date:	Jul. 17, 2018
Applicant:	SonicWall Inc.
Address:	1033 McCarthy Blvd., Milpitas, CA 95035, USA
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

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Release Control Record

Issue No.	Description	Date Issued
SA180524C28	Original release	Jul. 17, 2018

1 Certificate of Conformity

Product:	Wireless Access Point
Brand:	SONICWALL
Test Model:	APL46-0D1
Sample Status:	Engineering sample
Applicant:	SonicWall Inc.
Test Date:	May 04 ~ Jun. 20, 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 : Celine Chou , **Date:** Jul. 17, 2018

Celine Chou / Specialist

Approved by : Bruce Chen , **Date:** Jul. 17, 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^2)	Average Time (minutes)
Limits For General Population / Uncontrolled Exposure				
300-1500	…	…	F/1500	30
1500-100,000	…	…	1.0	30

F = Frequency in MHz

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 40cm away from the body of the user. So, this device is classified as Mobile Device.

3 Calculation Result of Maximum Conducted Power

Function	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN	Radio 1, Dipole Ant., CDD Mode					
	2412-2462	22.56	7.51	40	0.05054	1
	Radio 1, Dipole Ant., Beamforming Mode					
	2412-2462	19.22	7.51	40	0.02342	1
	Radio 1, Sector Ant., CDD Mode					
	2412-2462	21.72	15.61	40	0.26895	1
	Radio 1, Sector Ant., Beamforming Mode					
	2412-2462	18.47	15.61	40	0.12725	1
	Radio 2, Dipole Ant., CDD Mode					
	5180-5240	23.19	9.31	40	0.08844	1
	5745-5825	23.00	9.31	40	0.08466	1
	Radio 2, Dipole Ant., Beamforming Mode					
	5180-5240	20.16	9.31	40	0.04402	1
	5745-5825	19.96	9.31	40	0.04204	1
	Radio 2, Sector Ant., CDD Mode					
	5180-5240	14.13	17.61	40	0.07425	1
	5745-5825	21.35	17.61	40	0.39144	1
	Radio 2, Sector Ant., Beamforming Mode					
	5180-5240	11.12	17.61	40	0.03713	1
	5745-5825	18.34	17.61	40	0.19574	1
	Radio 3, PIFA Ant.					
	2412-2462	16.92	3.67	40	0.00570	1
BT LE	2402-2480	-4.25	3.69	40	0.00004	1

Note:
1. For Radio 1, Dipole Ant. 2.4G Directional gain = 4.50dBi + 10log(2) = 7.51dBi
2. For Radio 1, Sector Ant. 2.4G Directional gain = 12.60dBi + 10log(2) = 15.61dBi
3. For Radio 2, Dipole Ant. 5G Directional gain = 6.30dBi + 10log(2) = 9.31dBi
4. For Radio 2, Sector Ant. 5G Directional gain = 14.60dBi + 10log(2) = 17.61dBi

Frequency Band	Max Power (dBm)			Total Power (dBm)	Power Limit (dBm)
	Radio 1 WLAN	Radio 3 WLAN	BT LE		
2.4GHz	22.56	16.92	-4.25	23.62	30

Conclusion:
The formula of calculated the MPE is:
CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

Radio 1 WLAN 2.4GHz + Radio 2 WLAN 5GHz + Radio 3 WLAN 2.4GHz + BT LE = 0.26895 + 0.39144 + 0.00570 + 0.00004 = 0.66613 < 1

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