RF Exposure Report

Report No.:	SA160719C17H
FCC ID:	2AKCZ-0D0
Model:	APL45-0D0
Received Date:	Mar. 16, 2018
Test Date:	Mar. 28 ~ Apr. 03, 2018
Issued Date:	Apr. 19, 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.)

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Release Control Record

Issue No.	Description	Date Issued
SA160719C17H	Original release	Apr. 19, 2018

1 Certificate of Conformity

Product:	Wireless Access Point
Brand:	SONICWALL
Model:	APL45-0D0
Sample Status:	Engineering sample
Applicant:	SonicWall Inc.
Test Date:	Mar. 28 ~ Apr. 03, 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 EMC characteristics under the conditions specified in this report.

Prepared by : Pettie Chen , **Date:** Apr. 19, 2018

Pettie Chen / Senior Specialist

Approved by : Bruce Chen , **Date:** Apr. 19, 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				
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

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 30cm away from the body of the user. So, this device is classified as **Mobile Device**.

3 Calculation Result of Maximum Conducted Power

Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4GHz: CDD mode					
2412-2462	23.17	7.32	30	0.099	1
WLAN 2.4GHz: Beamforming mode					
2412-2462	19.81	7.32	30	0.046	1
WLAN 5GHz: CDD mode					
5180-5240	22.83	9	30	0.135	1
5745-5825	22.63	9	30	0.129	1
WLAN 5GHz: Beamforming mode					
5180-5240	19.77	9	30	0.067	1
5745-5825	19.49	9	30	0.062	1
BT LE					
2402-2480	2.95	3.51	30	0.0004	1

Note:
2.4GHz Band: Directional gain = 4.31+ 10log(2) = 7.32dBi
5GHz Band: Directional gain = 10 log[($10^{G1/20} + 10^{G2/20 + \ldots +} 10^{GN/20}$)^2/2]= 9 dBi

Frequency Band	Max Power (dBm)		Total Power (dBm)	Power Limit (dBm)
	WLAN	BT LE		
2.4GHz	23.17	2.95	23.21	30

Conclusion:

The WLAN 2.4G & WLAN 5G & BT LE can transmit simultaneously, the formula of calculated the MPE is:

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1

CPD = Calculation power density

LPD = Limit of power density

WALN 2.4GHz + WALN 5GHz + BT LE = 0.099 + 0.135 + 0.0004 = 0.2344

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

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