RF Exposure Report

Report No.:	SA170810E01B
FCC ID:	2AKCZ-0C3
Test Model:	APL43-0C3
Received Date:	June 01, 2017
Test Date:	Aug. 01, 2017
Issued Date:	Nov. 30, 2017
Applicant:	SonicWall Inc.
Address:	5455 Great America Parkway, Santa Clara, CA 95054 USA
Issued By:	Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch Hsin Chu Laboratory
Lab Address:	E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

Table of Contents

Release Control Record

Issue No.	Description	Date Issued
SA170810E01B	Original release.	Nov. 30, 2017

1 Certificate of Conformity

Product:	Wireless Access Point
Brand:	SONICWALL
Test Model:	APL43-0C3
Sample Status:	ENGINEERING SAMPLE
Applicant:	SonicWall Inc.
Test Date:	Aug. 01, 2017
Standards:	FCC Part 2 (Section 2.1091) KDB 447498 D01 General RF Exposure Guidance v06 IEEE C95.1

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 : _____ , **Date:** Nov. 30, 2017

Claire Kuan / Specialist

Approved by : _____ , **Date:** Nov. 30, 2017

May Chen / Manager

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 50cm away from the body of the user. So, this device is classified as Mobile Device.

2.4 Classification

Internal antenna										
Type	PIFA									
Connecter	IPEX									
Radio	1				2				3	4
Frequency	2.4GHz				5GHz				2.4GHz	BT-LE
Antenna	1	2	3	4	5	6	7	8	9	10
Gain (dBi)	3.15	3.52	3.39	4.57	4.92	5.87	5.47	5.95	2.91	3.13

3 Calculation Result of Maximum Conducted Power

Radio	Frequency Band (MHz)	Max Power (dBm)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
1	WLAN 2412~2462 (CDD mode)	27.55	9.7	50	0.16884	1
	WLAN 2412~2462 (Beamforming mode)	24.21	9.7	50	0.07830	1
2	WLAN 5180-5240 (CDD mode)	24.20	11.58	50	0.12056	1
	WLAN 5260-5320 (CDD mode)	18.54	11.58	50	0.03274	1
	WLAN 5500-5700 (CDD mode)	21.49	11.58	50	0.06457	1
	WLAN 5745-5825 (CDD mode)	27.54	11.58	50	0.25966	1
	WLAN 5180-5240 (Beamforming mode)	21.37	11.58	50	0.06279	1
	WLAN 5260-5320 (Beamforming mode)	16.60	11.58	50	0.02095	1
	WLAN 5500-5700 (Beamforming mode)	16.55	11.58	50	0.02071	1
	WLAN 5745-5825 (Beamforming mode)	21.48	11.58	50	0.06435	1
3	WLAN 2412~2462	20.66	2.91	50	0.00724	1
4	BT-LE 2402-2480	6.04	3.13	50	0.00026	1

Note:
For radio 1
2.4GHz: Directional gain $=10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 9.7$dBi
For radio 2
5GHz: Directional gain $=10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 11.58$dBi
For radio 3
2.4GHz: Directional gain = 2.91dBi
For radio 4
BT-LE: Directional gain = 3.13dBi

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 + Radio 2 + Radio 3 + Radio 4
= 0.16884 /1 + 0.25966 /1 + 0.00724 /1 + 0.00026 /1 = 0.43600 < 1

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

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