

## RF Exposure Report

**Report No.:** SA160719C17K

**FCC ID:** 2AKCZ-0D0

**Model:** APL45-0D0

**Received Date:** Mar. 16, 2018

**Test Date:** Mar. 28 ~ Apr. 04, 2018

**Issued Date:** Jun. 04, 2018

**Applicant:** SonicWall Inc.

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**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
SA160719C17K	Original release	Jun. 04, 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. 04, 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 :** Pettie Chen , **Date:** Jun. 04, 2018  
Pettie Chen / Senior Specialist

**Approved by :** Bruce Chen , **Date:** Jun. 04, 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 <sup>2</sup> )	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 <sup>2</sup> )*	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

$$P_d = (P_{out} * G) / (4 * \pi * r^2)$$

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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
5250-5350	22.81	9	30	0.134	1
5470-5725	22.39	9	30	0.122	1
5745-5825	22.63	9	30	0.129	1
WLAN 5GHz: Beamforming mode					
5180-5240	19.77	9	30	0.067	1
5250-5350	19.80	9	30	0.067	1
5470-5725	19.38	9	30	0.061	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 =  $4.31 + 10\log(2) = 7.32\text{dBi}$

5GHz Band: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + \dots + 10^{GN/20})^2/2] = 9\text{dBi}$

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:

$CPD1 / LPD1 + CPD2 / LPD2 + \dots \text{etc.} < 1$

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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