

## RF Exposure Report

**Report No.:** SA170313E12

**FCC ID:** 2ACTO-APX320

**Test Model:** APX 320

**Received Date:** Mar. 13, 2017

**Test Date:** Apr. 22 to May 04, 2017

**Issued Date:** Aug. 14, 2017

**Applicant:** Sophos Ltd

**Address:** The Pentagon, Abingdon Science Park, Abingdon, OX14 3YP, United Kingdom

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
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### Release Control Record

Issue No.	Description	Date Issued
SA170313E12	Original release.	Aug. 14, 2017

## 1 Certificate of Conformity

**Product:** Sophos Access Point

**Brand:** SOPHOS

**Test Model:** APX 320

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Sophos Ltd

**Test Date:** Apr. 22 to May 04, 2017

**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.

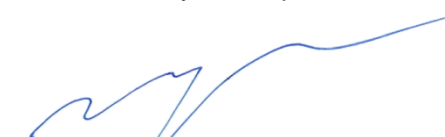
**Prepared by :**



**Date:** Aug. 14, 2017

Wendy Wu / Specialist

**Approved by :**



**Date:** Aug. 14, 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 <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

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

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**.

## 2.4 Antenna Gain

Radio 1							
WLAN - 2.4GHz + 5GHz							
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	Chain (0)	WNC	NA	3.48 6.79	2.4~2.4835 5.47~5.85	PIFA	i-pex(MHF)
2	Chain (1)	WNC	NA	3.74 6.16	2.4~2.4835 5.47~5.85	PIFA	i-pex(MHF)
Radio 2							
WLAN 5GHz							
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	Chain (0)	WNC	NA	4.87	5.15~5.35	PIFA	i-pex(MHF)
2	Chain (1)	WNC	NA	5.64	5.15~5.35	PIFA	i-pex(MHF)
Radio 3							
Bluetooth - 2.4GHz							
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type
1	Chain (0)	WNC	NA	1.87	2.4~2.4835	PIFA	i-pex(MHF)

## 2.5 Calculation Result of Maximum Conducted Power

### For WLAN (Radio 1):

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	398.107	6.62	30	0.16164	1
5745-5825	794.328	9.49	30	0.62452	1

NOTE:

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 6.62\text{dBi}$

5GHz:

UNII-3: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 9.49\text{dBi}$

### For WLAN (Radio 2):

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
5180-5240	251.189	8.27	30	0.14912	1

NOTE:

UNII-1: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 8.27\text{dBi}$

### For Bluetooth (Radio 3):

Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402-2480	5.012	1.87	30	0.00068	1

**NOTE:** 1. This power include tune-up tolerance range that specified in APX 320 Tune Up power table.

### Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz <Radio 1> + WLAN 5GHz (UNII-1) <Radio 2> + Bluetooth <Radio 3> =  $0.16164 / 1 + 0.14912 / 1 + 0.00068 / 1 = 0.31144$

WLAN 5GHz (UNII-3) <Radio 1> + WLAN 5GHz (UNII-1) <Radio 2> + Bluetooth <Radio 3> =  $0.62452 / 1 + 0.14912 / 1 + 0.00068 / 1 = 0.77432$

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

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