

## RF Exposure Report

**Report No.:** SA170619E02

**FCC ID:** 2ACTO-APX530

**Test Model:** APX 530

**Received Date:** June 22, 2017

**Test Date:** July 06, 2017

**Issued Date:** Sep. 06, 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
SA170619E02	Original release.	Sep. 06, 2017

## 1 Certificate of Conformity

**Product:** Sophos Access Point

**Brand:** SOPHOS

**Test Model:** APX 530

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Sophos Ltd

**Test Date:** July 06, 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.

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Wendy Wu / Specialist

**Approved by :** May Chen , **Date:** Sep. 06, 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 35cm away from the body of the user.

So, this device is classified as **Mobile Device**.

## 2.4 Antenna Gain

Radio 1								
2.4GHz								
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	*Cable Length
1	Chain (0)	NA	NA	4.71	2.4~2.4835	PIFA	i-pex(MHF)	48
2	Chain (1)	NA	NA	3.54	2.4~2.4835	PIFA	i-pex(MHF)	138
3	Chain (2)	NA	NA	4.6	2.4~2.4835	PIFA	i-pex(MHF)	145
Radio 2								
5GHz								
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	*Cable Length
1	Chain (0)	NA	NA	5.5	5.15~5.85	PIFA	i-pex(MHF)	42
2	Chain (1)	NA	NA	5.76	5.15~5.85	PIFA	i-pex(MHF)	140
3	Chain (2)	NA	NA	5.91	5.15~5.85	PIFA	i-pex(MHF)	145
Radio 3								
Bluetooth								
Antenna No.	Transmitter Circuit	Brand	Model No.	Antenna Net Gain (dBi)	Frequency Range (GHz)	Antenna Type	Connector Type	*Cable Length
1	Chain (0)	NA	NA	2.95	2.4~2.4835	PIFA	i-pex(MHF)	74

Note: For 1TX/2TX configuration mode, max gain was selected for the final test.

## 2.5 Calculation Result

### For WLAN:

Frequency (MHz)	Max. Tune-Up Power (dBm)	Max. Tune-Up Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	29	794.328	9.07	35	0.41654	1
5180-5240	17	501.187	10.50	35	0.36530	1
5745-5825	29	794.328	10.50	35	0.57897	1

NOTE:

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.07\text{dBi}$

5GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 10.50\text{dBi}$

### For Bluetooth:

Frequency (MHz)	Max. Tune-Up Power (dBm)	Max. Tune-Up Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402-2480	8	6.31	2.95	35	0.00081	1

**NOTE:** 1. This power includes tune-up tolerance range that specified in APX 530 Tune-Up power table.

### Conclusion:

The formula of calculated the MPE is:

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

CPD = Calculation power density

LPD = Limit of power density

WLAN 2.4GHz + WLAN 5GHz =  $0.41654 / 1 + 0.57897 / 1 = 0.99551$

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

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