

## RF Exposure Report

**Report No.:** SA170421E06A

**FCC ID:** 2ACTO-APX740

**Test Model:** APX 740

**Received Date:** Apr. 21, 2017

**Test Date:** May 12 to June 09, 2017

**Issued Date:** Oct. 13, 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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**FCC Registration /  
Designation Number:** 723255 / TW2022

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### Release Control Record

Issue No.	Description	Date Issued
SA170421E06A	Original release.	Oct. 13, 2017

## 1 Certificate of Conformity

**Product:** Sophos Access Point

**Brand:** SOPHOS

**Test Model:** APX 740

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** Sophos Ltd

**Test Date:** May 12 to June 09, 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 :** Wendy Wu , **Date:** Oct. 13, 2017  
Wendy Wu / Specialist

**Approved by :** May Chen , **Date:** Oct. 13, 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 43cm 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	4.99	2.4~2.4835	PIFA	i-pex(MHF)	176
2	Chain (1)	NA	NA	4.47	2.4~2.4835	PIFA	i-pex(MHF)	140
3	Chain (2)	NA	NA	3.71	2.4~2.4835	PIFA	i-pex(MHF)	98
4	Chain (3)	NA	NA	4.83	2.4~2.4835	PIFA	i-pex(MHF)	70
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	5.94	5.15~5.85	Dipole	i-pex(MHF)	79
2	Chain (1)	NA	NA	5.71	5.15~5.85	Dipole	i-pex(MHF)	117
3	Chain (2)	NA	NA	5.61	5.15~5.85	Dipole	i-pex(MHF)	157
4	Chain (3)	NA	NA	5.32	5.15~5.85	Dipole	i-pex(MHF)	189
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	2.75	2.4~2.4835	PIFA	i-pex(MHF)	121

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

## 2.5 Calculation Result of Maximum Conducted Power

For 2.4GHz, 5GHz (U-NII-1 & UNII-3 band) and BT-LE data was copied from the original test report (Report No.: SA170421E07)

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2412-2462	891.251	10.53	43	0.43336	1
5180-5240	630.957	11.67	43	0.39889	1
5260-5320	251.189	11.67	43	0.15880	1
5500-5720	251.189	11.67	43	0.15880	1
5745-5825	794.328	11.67	43	0.50217	1

NOTE:

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 10.53\text{dBi}$

5GHz:

Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20} + 10^{G4/20})^2 / 4] = 11.67\text{dBi}$

### For BT-LE:

Frequency Band (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
2402-2480	6.31	2.75	43	0.00051	1

**NOTE:** 1. This power include tune-up tolerance range that specified in APX 740 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

$WLAN\ 2.4GHz + WLAN\ 5GHz = 0.43336 / 1 + 0.50217 / 1 = 0.93553$

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

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