

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

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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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Table of Contents

Release Control Record	3
1 Certificate of Conformity	4
2 RF Exposure	5
2.1 Limits For Maximum Permissible Exposure (MPE)	5
2.2 MPE Calculation Formula	5
2.3 Classification	5
2.4 Antenna Gain	6
2.5 Calculation Result of Maximum Conducted Power	7

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
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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 ²)	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 ²)*	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/cm²

P_{out} = output power to antenna in mW

G = gain of antenna in linear scale

π = 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 ²)	Limit (mW/cm ²)
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 ²)	Limit (mW/cm ²)
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:

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

CPD = Calculation power density

LPD = Limit of power density

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

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

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