# RF Exposure Report

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|---|---|
| **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 Hsin Chu Laboratory |
| **Lab Address:** | E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C. |

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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)<br>KDB 447498 D01 General RF Exposure Guidance v06<br>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:** Sep. 06, 2017

Wendy Wu / Specialist

**Approved by :** _____ , **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 ($mW/cm^2$) | 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

$Pd = (Pout*G) / (4*pi*r^2)$

where

Pd = power density in $mW/cm^2$

Pout = 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 | Connecter 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 | Connecter 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 | Connecter 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 ($mW/cm^2$) | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|
| 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 = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 9.07$dBi
5GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G3/20})^2 / 3] = 10.50$dBi

**For Bluetooth:**

| Frequency (MHz) | Max. Tune-Up Power (dBm) | Max. Tune-Up Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density ($mW/cm^2$) | Limit ($mW/cm^2$) |
|---|---|---|---|---|---|---|
| 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:

CPD1 / LPD1 + CPD2 / LPD2 + ……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.**

**--- END ---**