

RF Exposure Report

Report No.: SA170421E06

FCC ID: 2ACTO-APX740

Test Model: APX 740

Received Date: Apr. 21, 2017

Test Date: May 12 to June 09, 2017

Issued Date: Sep. 29, 2017

Applicant: Sophos Ltd

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Release Control Record

| Issue No. | Description | Date Issued |
|-------------|-------------------|---------------|
| SA170421E06 | Original release. | Sep. 29, 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.

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Approved by : May Chen , **Date:** Sep. 29, 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/cm²

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 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 |

2.5 Calculation Result of Maximum Conducted Power

For WLAN:

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|----------------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462 | 859.613 | 10.53 | 43 | 0.41798 | 1 |
| 5180-5240 | 410.091 | 11.67 | 43 | 0.25926 | 1 |
| 5745-5825 | 759.756 | 11.67 | 43 | 0.48032 | 1 |

NOTE:

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

5GHz: Directional gain = $10 \log[(10^{G1/20} + 10^{G2/20} + 10^{G2/20} + 10^{G2/20})^2 / 4] = 11.67\text{dBi}$

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 | 5.07 | 2.75 | 43 | 0.00041 | 1 |

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 = $0.41798 / 1 + 0.48032 / 1 = 0.89830$

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

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