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RF Exposure Report

Report No.: SA160420E06

FCC ID: I88WAP6405

Test Model: WAP6405

Received Date: Apr. 20, 2016

Test Date: May. 05, 2016

Issued Date: May. 11, 2016

Applicant: ZyXEL Communications Corporation

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Issued By: Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch
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Release Control Record

| Issue No. | Description | Date Issued |
|-------------|-------------------|---------------|
| SA160420E06 | Original release. | May. 11, 2016 |



1 Certificate of Conformity

Product: Single-Band Wireless AC1750 HD Media Streaming Box

Brand: ZyXEL

Test Model: WAP6405

Sample Status: ENGINEERING SAMPLE

Applicant: ZyXEL Communications Corporation

Test Date: May. 05, 2016

Standards: FCC Part 2 (Section 2.1091)

KDB 447498 D01 General RF Exposure Guidance v06

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:** May. 11, 2016
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 | | | | |
| 300-1500 | ... | ... | F/1500 | 30 |
| 1500-100,000 | ... | ... | 1.0 | 30 |

F = Frequency in MHz

2.2 MPE Calculation Formula

$$Pd = (P_{out} * G) / (4 * \pi * r^2)$$

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 20cm away from the body of the user.

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

2.4 Antenna Gain Table

| Frequency | Antenna Gain (dBi) | | | Antenna Gain (dBi) | | |
|-----------|--------------------|--------|--------|--------------------|--------|--------|
| | ANT_0 | | | ANT_1 | | |
| | 20 MHz | 40 MHz | 80 MHz | 20 MHz | 40 MHz | 80 MHz |
| 5180 | 2.52 | -- | -- | 3.13 | -- | -- |
| 5190 | -- | 2.49 | -- | -- | 3.33 | -- |
| 5200 | 2.92 | -- | -- | 3.33 | -- | -- |
| 5210 | -- | -- | 2.77 | -- | -- | 3.48 |
| 5230 | -- | 2.27 | -- | -- | 2.91 | -- |
| 5240 | 1.96 | -- | -- | 2.66 | -- | -- |
| 5745 | 3.46 | -- | -- | 3.46 | -- | -- |
| 5755 | -- | 3.31 | -- | -- | 3.23 | -- |
| 5775 | -- | -- | 3.3 | -- | -- | 2.7 |
| 5785 | 3.42 | -- | -- | 2.69 | -- | -- |
| 5795 | -- | 3.55 | -- | -- | 2.47 | -- |
| 5825 | 3.33 | -- | -- | 2.92 | -- | -- |
| Frequency | Antenna Gain (dBi) | | | Antenna Gain (dBi) | | |
| | ANT_2 | | | ANT_3 | | |
| | 20 MHz | 40 MHz | 80 MHz | 20 MHz | 40 MHz | 80 MHz |
| 5180 | 2.55 | -- | -- | 3.03 | -- | -- |
| 5190 | -- | 2.35 | -- | -- | 3.18 | -- |
| 5200 | 2.69 | -- | -- | 3.39 | -- | -- |
| 5210 | -- | -- | 3.27 | -- | -- | 3.15 |
| 5230 | -- | 2.86 | -- | -- | 2.77 | -- |
| 5240 | 2.92 | -- | -- | 2.89 | -- | -- |
| 5745 | 4.51 | -- | -- | 3.12 | -- | -- |
| 5755 | -- | 3.83 | -- | -- | 3 | -- |
| 5775 | -- | -- | 3.11 | -- | -- | 3.24 |
| 5785 | 3.2 | -- | -- | 3.26 | -- | -- |
| 5795 | -- | 3.35 | -- | -- | 2.9 | -- |
| 5825 | 3.96 | -- | -- | 2.92 | -- | -- |

2.5 Directional Gain Table

| Frequency | Max Gain (dBi) for Non-TxBF (CDD) mode | | | Max Gain (dBi) for TxBF mode | | |
|-----------|--|--------|--------|------------------------------|--------|--------|
| | 1 Stream 4TX for Non-TxBF (CDD) mode | | | 2 Stream 4TX for TxBF mode | | |
| | 20 MHz | 40 MHz | 80 MHz | 20 MHz | 40 MHz | 80 MHz |
| 5180 | 6.83 | -- | -- | 3.82 | -- | -- |
| 5190 | -- | 6.65 | -- | -- | 3.64 | -- |
| 5200 | 6.8 | -- | -- | 3.79 | -- | -- |
| 5210 | -- | -- | 6.81 | -- | -- | 3.8 |
| 5230 | -- | 6.41 | -- | -- | 3.4 | -- |
| 5240 | 6.19 | -- | -- | 3.18 | -- | -- |
| 5745 | 6.61 | -- | -- | 3.6 | -- | -- |
| 5755 | -- | 6.4 | -- | -- | 3.39 | -- |
| 5775 | -- | -- | 6.01 | -- | -- | 3 |
| 5785 | 6.38 | -- | -- | 3.37 | -- | -- |
| 5795 | -- | 6.5 | -- | -- | 3.49 | -- |
| 5825 | 6.27 | -- | -- | 3.26 | -- | -- |

Note:

1. Non-TxBF mode & TxBF mode antenna gain refer to KDB 662911 F 2) f) (ii)

$$DirectionalGain = 10 \cdot \log \left[\frac{\sum_{j=1}^{N_{SS}} \left\{ \sum_{k=1}^{N_{ANT}} g_{j,k} \right\}^2}{N_{ANT}} \right]$$

where

Each antenna is driven by no more than one spatial stream;

N_{SS} = the number of independent spatial streams of data;

N_{ANT} = the total number of antennas

$g_{j,k} = 10^{G_k / 20}$ if the k th antenna is being fed by spatial stream j , or zero if it is not;

G_k is the gain in dBi of the k th antenna.

3 Calculation Result Of Conducted Power

CDD Mode

| Frequency Band (MHz) | Conducted Power (mW) | Directional Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|----------------------|----------------------|------------------------|---------------|-------------------------------------|-----------------------------|
| 5180-5240 | 767.523 | 6.8 | 20 | 0.73084 | 1 |
| 5745-5825 | 766.475 | 6.61 | 20 | 0.69860 | 1 |

NOTE:

1. For UNII-1: Directional gain of CDD mode (Nss=1) = 6.8dBi
2. For UNII-3: Directional gain of CDD mode (Nss=1) = 6.61dBi
3. Calculations for maximum RF exposure compliance are base on the directional gain and conducted power condition.

Beamforming Mode

| Frequency Band (MHz) | Conducted Power (mW) | Directional Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|----------------------|----------------------|------------------------|---------------|-------------------------------------|-----------------------------|
| 5180-5240 | 745.95 | 3.79 | 20 | 0.35517 | 1 |
| 5745-5825 | 752.811 | 3.6 | 20 | 0.34310 | 1 |

NOTE:

1. For UNII-1: Directional gain of beamforming mode (Nss=2) = 3.79dBi
2. For UNII-3: Directional gain of beamforming mode (Nss=2) = 3.6dBi
3. Calculations for maximum RF exposure compliance are base on the directional gain and conducted power condition.

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