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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

**Address:** No. 2, Gongye E. 9th Road Hsinchu Science Park, Hsinchu, Taiwan

**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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## Table of Contents

<b>Release Control Record .....</b>	<b>3</b>
<b>1     Certificate of Conformity .....</b>	<b>4</b>
<b>2     RF Exposure .....</b>	<b>5</b>
2.1   Limits for Maximum Permissible Exposure (MPE) .....	5
2.2   MPE Calculation Formula .....	5
2.3   Classification .....	5
2.4   Antenna Gain Table .....	6
2.5   Directional Gain Table .....	7
<b>3     Calculation Result Of Conducted Power .....</b>	<b>8</b>



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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.

**Prepared by :** Wendy Wu. , **Date:** May. 11, 2016  
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 <sup>2</sup> )	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/cm<sup>2</sup>

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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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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