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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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 : , **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

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

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 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 kth antenna is being fed by spatial stream j, or zero if it is not;

G_k is the gain in dBi of the kth 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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