

## RF Exposure Report

**Report No.:** SA160525E02A

**FCC ID:** I88WRE6606

**Test Model:** WRE6606

**Received Date:** May 25, 2016

**Test Date:** Oct. 14, 2016

**Issued Date:** Nov. 16, 2016

**Applicant:** Zyxel Communications Corporation

**Address:** No.2, Industry East Road IX, Science Park, Hsinchu, Taiwan

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

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### Release Control Record

| Issue No.    | Description       | Date Issued   |
|--------------|-------------------|---------------|
| SA160525E02A | Original release. | Nov. 16, 2016 |

## 1 Certificate of Conformity

**Product:** Dual-Band Wireless AC1300 Access Point  
**Brand:** **ZYXEL**  
**Test Model:** WRE6606  
**Sample Status:** ENGINEERING SAMPLE  
**Applicant:** Zyxel Communications Corporation  
**Test Date:** Oct. 14, 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 :** Cindy Hsin , **Date:** Nov. 16, 2016  
Cindy Hsin / Specialist

**Approved by :** May Chen , **Date:** Nov. 16, 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

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

where

$P_d$  = power density in mW/cm<sup>2</sup>

$P_{out}$  = 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

| Antenna No | Transmitter Circuit    | Brand  | Model              | Antenna Gain(dBi) | Antenna Type | Connector Type | Frequency (GHz to GHz) |
|------------|------------------------|--------|--------------------|-------------------|--------------|----------------|------------------------|
| 1          | Chain (0)<br>Tx/Rx     | Walsin | RFMTA351202IMLB301 | 3                 | PIFA         | i-pex(MHF)     | 2.4~2.4835             |
|            |                        |        |                    | 3.5               | PIFA         | i-pex(MHF)     | 5.15~5.85              |
| 2          | Chain (1)<br>Tx/Rx     | Walsin | RFMTA321204IMLB301 | 2                 | PIFA         | i-pex(MHF)     | 2.4~2.4835             |
|            |                        |        |                    | 3.5               | PIFA         | i-pex(MHF)     | 5.15~5.85              |
| 3          | Chain (2)<br>5GHz_RX_0 | Walsin | RFMTA161100NN5B001 | 3                 | PIFA         | i-pex(MHF)     | 5.15~5.85              |
| 4          | Chain (3)<br>5GHz_RX_1 | Walsin | RFMTA161100NN5B001 | 3                 | PIFA         | i-pex(MHF)     | 5.15~5.85              |

**Note:** For 5GHz: TX configuration mode will fix transmission on Chain (0) and Chain (1).

## 2.5 Calculation Result of Maximum Conducted Power

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|----------------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462            | 836.868        | 5.52               | 20            | 0.59345                             | 1                           |
| 5180-5240            | 122.309        | 6.51               | 20            | 0.10894                             | 1                           |
| 5745-5825            | 128.006        | 6.51               | 20            | 0.11401                             | 1                           |

NOTE:

2.4GHz: Directional gain =  $10 \log[(10^{G1/20} + 10^{G2/20})^2 / 2] = 5.52\text{dBi}$

5GHz: Directional gain =  $3.50\text{dBi} + 10\log(2) = 6.51\text{dBi}$

### Conclusion:

The formula of calculated the MPE is:

$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$\text{WLAN } 2.4\text{GHz} + \text{WLAN } 5\text{GHz} = 0.59345 / 1 + 0.11401 / 1 = 0.70746$

**Therefore the maximum calculations of above situations are less than the “1” limit.**

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