

RF Exposure Report

Report No.: SA170116E03

FCC ID: KA2IR882A1

Test Model: DIR-882

Received Date: Jan. 16, 2017

Test Date: Mar. 16, 2017

Issued Date: Mar. 29, 2017

Applicant: D-Link Corporation

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Release Control Record

| Issue No. | Description | Date Issued |
|-------------|-------------------|---------------|
| SA170116E03 | Original release. | Mar. 29, 2017 |

1 Certificate of Conformity

Product: AC2600 MU-MIMO Wi-Fi Gigabit Router

Brand: D-Link

Test Model: DIR-882

Sample Status: ENGINEERING SAMPLE

Applicant: D-Link Corporation

Test Date: Mar. 16, 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:** Mar. 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 38cm away from the body of the user.

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

2.4 Antenna Gain

The antennas provided to the EUT, please refer to the following table:

| Set 1 Antenna | | | | |
|---------------|--------------------|-----------------------|--------------|----------------|
| Chain No. | Antenna Gain (dBi) | Frequency range (GHz) | Antenna Type | Connector Type |
| Chain 0 | 2 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 2 | 5.15~5.85 | | |
| Chain 1 | 2 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 2 | 5.15~5.85 | | |
| Chain 2 | 2 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 2 | 5.15~5.85 | | |
| Chain 3 | 2 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 2 | 5.15~5.85 | | |
| Set 2 Antenna | | | | |
| Chain No. | Antenna Gain (dBi) | Frequency range (GHz) | Antenna Type | Connector Type |
| Chain 0 | 5 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 5 | 5.15~5.85 | | |
| Chain 1 | 5 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 5 | 5.15~5.85 | | |
| Chain 2 | 5 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 5 | 5.15~5.85 | | |
| Chain 3 | 5 | 2.4~2.4835 | Dipole | i-pex (MHF) |
| | 5 | 5.15~5.85 | | |

The Directional gain table:

| Frequency (MHz) | Max Gain (dBi) |
|-----------------|---|
| 2412-2462 | 7.39 (for Set 1 Antenna) 10.06 (for Set 2 Antenna) |
| 5180-5825 | 7.75 (for Set 1 Antenna) 10.90 (for Set 2 Antenna) |

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.

2. Above directional gain were calculated from actual measurement data.

2.5 Calculation Result of Maximum Conducted Power

For Antenna set 1

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|------------------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462 | 788.724 | 7.39 | 38 | 0.23831 | 1 |
| 5180-5240 5745-5825 | 995.277 | 7.75 | 38 | 0.32671 | 1 |

For Antenna set 2

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|------------------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462 | 788.724 | 10.06 | 38 | 0.44070 | 1 |
| 5180-5240 5745-5825 | 655.424 | 10.90 | 38 | 0.44437 | 1 |

NOTE:

For Antenna set 1

2.4GHz: Directional gain = 7.39dBi

5GHz: Directional gain = 7.75dBi

For Antenna set 2

2.4GHz: Directional gain = 10.06dBi

5GHz: Directional gain = 10.9dBi

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

For Antenna set 1

WLAN 2.4GHz + WLAN 5GHz = $0.23831/1 + 0.32671/1 = 0.56502$

For Antenna set 2

WLAN 2.4GHz + WLAN 5GHz = $0.44070/1 + 0.44437/1 = 0.88507$

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

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