

RF Exposure Report

Report No.: SA170829E16

FCC ID: KA2IR853A1

Test Model: DIR-853

Received Date: Aug. 29, 2017

Test Date: Nov. 28, 2017

Issued Date: Jan. 02, 2018

Applicant: D-Link 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 |
|-------------|-------------------|---------------|
| SA170829E16 | Original release. | Jan. 02, 2018 |

1 Certificate of Conformity

Product: AC1300 MU-MIMO Wi-Fi Gigabit Router

Brand: D-Link

Test Model: DIR-853

Sample Status: ENGINEERING SAMPLE

Applicant: D-Link Corporation

Test Date: Nov. 28, 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:** Jan. 02, 2018
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 29cm away from the body of the user.

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

2.4 Antenna Gain

| 2.4GHz | | | | |
|-------------|------------------------|----------------------|--------------|----------------|
| Antenna No. | Antenna Net Gain (dBi) | Frequency rang (GHz) | Antenna type | Connector type |
| 1 | 5 | 2.4 ~ 2.4835 | Dipole | i-pex(MHF) |
| 2 | 5 | 2.4 ~ 2.4835 | Dipole | i-pex(MHF) |
| 5GHz | | | | |
| Antenna No. | Antenna Net Gain (dBi) | Frequency rang (GHz) | Antenna type | Connector type |
| 1 | 5 | 5.15 ~ 5.85 | Dipole | i-pex(MHF) |
| 2 | 5 | 5.15 ~ 5.85 | Dipole | i-pex(MHF) |

2.5 Calculation Result

| Frequency (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm ²) | Limit (mW/cm ²) |
|-----------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462 | 876.611 | 8.01 | 29 | 0.52457 | 1 |
| 5180-5240 | 622.476 | 8.01 | 29 | 0.37249 | 1 |
| 5745-5825 | 232.946 | 8.01 | 29 | 0.13940 | 1 |

NOTE:

2.4GHz: Directional gain = 5dBi + 10log(2) = 8.01dBi

5GHz: Directional gain = 5dBi + 10log(2) = 8.01dBi

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

WLAN 2.4GHz + WLAN 5GHz = $0.52457 / 1 + 0.37249 / 1 = 0.89706$

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

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