

## 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

**Address:** 17595 Mt. Herrmann Street Fountain Valley, CA92708 USA

**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
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.

**Prepared by :**



**Date:**

Jan. 02, 2018

Cindy Hsin / Specialist

**Approved by :**



**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 <sup>2</sup> )	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 <sup>2</sup> )*	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

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

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