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 : Cindy Hsin , **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^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/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 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 + ……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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