RF Exposure Report

Report No.: SA180123E04C

FCC ID: KA2COVR2200A1

Test Model: COVR-2200

Received Date: Feb. 09, 2018

Test Date: June 15, 2018

Issued Date: July 02, 2018

Applicant: D-LINK Corporation

Address: 17595 Mt. Herrmann, Fountain Valley, California, United States 92708

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.

Test Location: E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300, Taiwan R.O.C.

FCC Registration / Designation Number: 723255 / TW2022

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Release Control Record

Issue No.	Description	Date Issued
SA180123E04C	Original release.	July 02, 2018

1 Certificate of Conformity

Product: Tri Band Whole Home Wi-Fi Extender

Brand: D-Link

Test Model: COVR-2200

Sample Status: ENGINEERING SAMPLE

Applicant: D-LINK Corporation

Test Date: June 15, 2018

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 : Phoenix Huang , **Date:** July 02, 2018
Phoenix Huang / Specialist

Approved by : ______________________ , **Date:** July 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 35cm away from the body of the user. So, this device is classified as **Mobile Device**.

2.4 Antenna Gain

Ant No.	Model	Antenna Gain (dBi)	Frequency rang (GHz)	Antenna type	Connector type
Dual-Ant 0	290-60110	5.23	2.4~2.4835	PCB	i-pex(MHF)
		3.76	5.15~5.25		
		3.04	5.25~5.35		
Dual-Ant 1	290-60111	4.76	2.4~2.4835	PCB	i-pex(MHF)
		5.45	5.15~5.25		
		5.31	5.25~5.35		
5g_Ant 1	290-60107	5.24	5.47~5.725	PCB	i-pex(MHF)
		5.23	5.725~5.85		
5g_Ant 1_B	290-60105	5.12	5.47~5.725	Dipole	i-pex(MHF)
		5.09	5.725~5.85		
5g_Ant 0	290-60108	3.84	5.47~5.725	PCB	i-pex(MHF)
		5.15	5.725~5.85		
5g_Ant 0_B	290-60106	3.45	5.47~5.725	Dipole	i-pex(MHF)
		3.48	5.725~5.85		

Condition	**Antenna No.**	
1	5g_Ant 1	5g_Ant 0
2	5g_Ant 1_B	5g_Ant 0_B
3	5g_Ant 1_B	5g_Ant 0
4	5g_Ant 1	5g_Ant 0_B

Note:
1. For Antenna Port Conducted Measurement, **Condition 1** was selected for final test.

2.5 Calculation Result of Maximum Conducted Power

For 2.4GHz and 5GHz (U-NII-1 band and U-NII-3 band) data was copied from the original test report (Report No.: SA180123E04)

Operation Mode	Evaluation Frequency (MHz)	Max Power (mW)	Antenna Gain (dBi)	Distance (cm)	Power Density (mW/cm^2)	Limit (mW/cm^2)
WLAN 2.4GHz	2437	694.376	8.01	35	0.28526	1
WLAN UNII-1	5240	620.455	7.66	35	0.23516	1
WLAN UNII-2A	5310	249.765	7.26	35	0.08633	1
WLAN UNII-2C	5610	247.429	7.58	35	0.09207	1
WLAN UNII-3	5785	993.819	8.20	35	0.42654	1

Note:
2.4GHz: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 8.01dBi$
5GHz:
U-NII-1: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.66dBi$
U-NII-2A: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.26dBi$
U-NII-2C: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 7.58dBi$
U-NII-3: Directional gain = $10 \log[(10^{Chain0/20} + 10^{Chain1/20})^2 / 2] = 8.20dBi$

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 (low band) + WLAN 5GHz (high band) = 0.28526 / 1 + 0.23516 / 1 + 0.42654 / 1 = 0.94696

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

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