

## 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

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**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
Hsin Chu Laboratory

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**Test Location:** E-2, No.1, Li Hsin 1st Road, Hsinchu Science Park, Hsinchu City 300,  
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**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  
Phoenix Huang / Specialist

**Date:**

July 02, 2018

**Approved by :**

May Chen  
May Chen / Manager

**Date:**

July 02, 2018

## 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

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

where

Pd = power density in mW/cm<sup>2</sup>

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 <sup>2</sup> )	Limit (mW/cm <sup>2</sup> )
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 =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 8.01\text{dBi}$

5GHz:

U-NII-1: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 7.66\text{dBi}$

U-NII-2A: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 7.26\text{dBi}$

U-NII-2C: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 7.58\text{dBi}$

U-NII-3: Directional gain =  $10 \log[(10^{\text{Chain0/20}} + 10^{\text{Chain1/20}})^2 / 2] = 8.20\text{dBi}$

### Conclusion:

The formula of calculated the MPE is:

$\text{CPD1} / \text{LPD1} + \text{CPD2} / \text{LPD2} + \dots \text{etc.} < 1$

CPD = Calculation power density

LPD = Limit of power density

$\text{WLAN 2.4GHz} + \text{WLAN 5GHz (low band)} + \text{WLAN 5GHz (high band)} = 0.28526 / 1 + 0.23516 / 1 + 0.42654 / 1 = 0.94696$

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

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