

## RF Exposure Report

**Report No.:** SA150428E01

**FCC ID:** KA2IR822A1

**Test Model:** DIR-822

**Received Date:** Apr. 28, 2015

**Test Date:** May 04, 2015

**Issued Date:** May 21, 2015

**Applicant:** D-Link Corporation

**Address:** No.289, Sinhu 3rd Rd., Neihu District, Taipei City 114, Taiwan, R.O.C.

**Issued By:** Bureau Veritas Consumer Products Services (H.K.) Ltd., Taoyuan Branch  
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**Test Location (1):** No. 81-1, Lu Liao Keng, 9th Ling, Wu Lung Tsuen, Chiung Lin Hsiang, Hsin  
Chu Hsien 307, Taiwan R.O.C.

**Test Location (2):** No. 49, Ln. 206, Wende Rd., Shangshan Tsuen, Chiung Lin Hsiang, Hsin  
Chu Hsien 307, Taiwan R.O.C.

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## Table of Contents

|                                                                  |          |
|------------------------------------------------------------------|----------|
| <b>Release Control Record .....</b>                              | <b>3</b> |
| <b>1     Certificate of Conformity .....</b>                     | <b>4</b> |
| <b>2     RF Exposure .....</b>                                   | <b>5</b> |
| 2.1   Limits for Maximum Permissible Exposure (MPE) .....        | 5        |
| 2.2   MPE Calculation Formula .....                              | 5        |
| 2.3   Classification .....                                       | 5        |
| <b>3     Antenna Gain .....</b>                                  | <b>5</b> |
| <b>4     Calculation Result of Maximum Conducted Power .....</b> | <b>6</b> |



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### Release Control Record

| Issue No.   | Description       | Date Issued  |
|-------------|-------------------|--------------|
| SA150428E01 | Original release. | May 21, 2015 |

## 1 Certificate of Conformity

**Product:** AC1200 Wi-Fi Router

**Brand:** D-Link

**Test Model:** DIR-822

**Sample Status:** ENGINEERING SAMPLE

**Applicant:** D-Link Corporation

**Test Date:** May 04, 2015

**Standards:** FCC Part 2 (Section 2.1091)

KDB 447498 D03

IEEE C95.1

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:** May 21, 2015  
Lori Chung / Specialist

**Approved by :** , **Date:** May 21, 2015  
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 |                               |                               |                                     |                        |
| 300-1500                                              | ...                           | ...                           | F/1500                              | 30                     |
| 1500-100,000                                          | ...                           | ...                           | 1.0                                 | 30                     |

F = Frequency in MHz

### 2.2 MPE Calculation Formula

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

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 24cm away from the body of the user.

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

## 3 Antenna Gain

The antenna provided to the EUT, please refer to the following table:

| 2.4GHz Band |                        |                                |           |                                          |                                 |                         |                 |                   |
|-------------|------------------------|--------------------------------|-----------|------------------------------------------|---------------------------------|-------------------------|-----------------|-------------------|
| No.         | Transmitter<br>Circuit | Brand                          | Model     | Ant. Gain(dBi)<br><Including cable loss> | Frequency range<br>(GHz to GHz) | Cable<br>Length<br>(mm) | Antenna<br>Type | Connector<br>Type |
| 1           | Chain (0)              | HL Technology<br>Group Limited | 290-20208 | 2.5                                      | 2.4~2.4835                      | 70                      | Dipole          | NA                |
| 2           | Chain (1)              |                                | 290-20210 | 2.5                                      | 2.4~2.4835                      | 260                     |                 |                   |
| 5GHz Band   |                        |                                |           |                                          |                                 |                         |                 |                   |
| No.         | Transmitter<br>Circuit | Brand                          | Model     | Ant. Gain(dBi)<br><Including cable loss> | Frequency range<br>(GHz to GHz) | Cable<br>Length<br>(mm) | Antenna<br>Type | Connector<br>Type |
| 3           | Chain (0)              | HL Technology<br>Group Limited | 290-20207 | 2.5                                      | 5.15~5.85                       | 70                      | Dipole          | NA                |
| 4           | Chain (1)              |                                | 290-20209 | 2.5                                      | 5.15~5.85                       | 280                     |                 |                   |

#### 4 Calculation Result of Maximum Conducted Power

| Frequency Band (MHz) | Max Power (mW) | Antenna Gain (dBi) | Distance (cm) | Power Density (mW/cm <sup>2</sup> ) | Limit (mW/cm <sup>2</sup> ) |
|----------------------|----------------|--------------------|---------------|-------------------------------------|-----------------------------|
| 2412-2462            | 726.158        | 5.51               | 24            | 0.35678                             | 1                           |
| 5180-5240            | 208.543        | 5.51               | 24            | 0.10246                             | 1                           |
| 5745-5825            | 264.383        | 5.51               | 24            | 0.12990                             | 1                           |

NOTE:

2.4GHz : Directional gain = 2.5dBi + 10log(2) = 5.51dBi

5GHz : Directional gain = 2.5dBi + 10log(2) = 5.51dBi

#### 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 = 0.35678 + 0.12990 = 0.487

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

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