# FCC RF EXPOSURE REPORT

## FCC ID: KA2APX1870A1

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|---|---|---|
| **Project No.** | : | 2007H040 |
| **Equipment** | : | AX1800 Mesh Wi-Fi Extender |
| **Brand Name** | : | D-Link |
| **Test Model** | : | DAP-X1870 |
| **Series Model** | : | N/A |
| **Applicant** | : | D-Link Corporation |
| **Address** | : | 17595 Mt. Herrmann, Fountain Valley, California United State 92708 |
| **Manufacturer** | : | D-Link Corporation |
| **Address** | : | 17595 Mt. Herrmann, Fountain Valley, California United State 92708 |
| **Date of Receipt** | : | Jul. 22, 2020 |
| **Date of Test** | : | Jul. 22, 2020~Sep. 04, 2020 |
| **Issued Date** | : | Sep. 24, 2020 |
| **Report Version** | : | R01 |
| **Test Sample** | : | Engineering Sample No.: SH20200721109 |
| **Standard(s)** | : | FCC Guidelines for Human Exposure IEEE C95.1 & FCC Part 2.1091<br>FCC Title 47 Part 2.1091, OET Bulletin 65 Supplement C |

The above equipment has been tested and found compliance with the requirement of the relative standards by BTL Inc.

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## REPORT ISSUED HISTORY

| Report Version | Description | Issued Date |
|---|---|---|
| R00 | Original Issue. | Sep. 23, 2020 |
| R01 | Correct the FCC ID in page1. | Sep. 24, 2020 |

## 1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

$$S = \frac{PG}{4\pi r^2} = \frac{EIRP}{4\pi r^2}$$

where:
S = power density
P = power input to the antenna
G = power gain of the antenna in the direction of interest relative to an isotropic radiator
R = distance to the center of radiation of the antenna

Table for Filed Antenna

For 2.4G

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) | Note |
|---|---|---|---|---|---|---|
| 1 | N/A | N/A | PCB | N/A | 3 | N/A |
| 2 | N/A | N/A | PCB | N/A | 3 | N/A |

Note:

(1) The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = $G_{ANT}$, that is Directional gain =3.

(2) The EUT incorporates beamforming Function, so Directional gain = $G_{ANT}$ + 10 log($N_{ANT}$) dBi, that is Directional gain =3+10 log(2)dBi =6.01 dBi. the output power limit is 30-6.01+6=29.99, the power spectral density limit is 8-6.01+6=7.99.

For 5G

| Ant. | Brand | Model Name | Antenna Type | Connector | Gain (dBi) | Note |
|---|---|---|---|---|---|---|
| 1 | N/A | N/A | PCB | N/A | 3 | N/A |
| 2 | N/A | N/A | PCB | N/A | 3 | N/A |

Note:

(1) The EUT incorporates a MIMO function. Physically, the EUT provides two completed transmitters and receivers (2T2R), all transmit signals are completely uncorrelated, then, Direction gain = $G_{ANT}$, that is Directional gain =3.

(2) The EUT incorporates beamforming Function, so Directional gain = GANT + 10 log(NANT) dBi, that is Directional gain =3+10 log(2)dBi =6.01 dBi. the output power limit is 30-6.01+6=29.99, the power spectral density limit is UNII-1:17-6.01+6=16.99. UNII-3: 30-6.01+6=29.99.

Table for Antenna Configuration:

For 2.4G

| Operating Mode / TX Mode | Ant. 1 | Ant. 2 | Ant. 1 + Ant. 2 |
|---|---|---|---|
| 802.11b | ✓ | ✓ | × |
| 802.11g | ✓ | ✓ | × |
| 802.11n(HT 20 MHz) | ✓ | ✓ | ✓ |
| 802.11n(HT 40 MHz) | ✓ | ✓ | ✓ |
| 802.11ax(HE 20 MHz) | ✓ | ✓ | ✓ |
| 802.11ax(HE 40 MHz) | ✓ | ✓ | ✓ |

For 5G:

| Operating Mode / TX Mode | Ant. 1 | Ant. 2 | Ant. 1 + Ant. 2 |
|---|---|---|---|
| IEEE 802.11a | ✓ | ✓ | × |
| IEEE 802.11n (HT20) | ✓ | ✓ | ✓ |
| IEEE 802.11n (HT40) | ✓ | ✓ | ✓ |
| IEEE 802.11ac (VHT20) | ✓ | ✓ | ✓ |
| IEEE 802.11ac (VHT40) | ✓ | ✓ | ✓ |
| IEEE 802.11ac (VHT80) | ✓ | ✓ | ✓ |
| IEEE 802.11ax (HE20) | ✓ | ✓ | ✓ |
| IEEE 802.11ax (HE40) | ✓ | ✓ | ✓ |
| IEEE 802.11ax (HE80) | ✓ | ✓ | ✓ |

## 2. TEST RESULTS

For 2.4GHz:

Non-Beamforming

| Antenna Gain (dBi) | Antenna Gain (numeric) | Max. tune up Power (dBm) | Max. tune up Power (mW) | Power Density (S) (mW/cm$^2$) | Limit of Power Density (S) (mW/cm$^2$) | Test Result |
|---|---|---|---|---|---|---|
| 3 | 1.99530 | 27 | 501.1872 | 0.18050 | 1 | Complies |

Beamforming

| Antenna Gain (dBi) | Antenna Gain (numeric) | Max. tune up Power (dBm) | Max. tune up Power (mW) | Power Density (S) (mW/cm$^2$) | Limit of Power Density (S) (mW/cm$^2$) | Test Result |
|---|---|---|---|---|---|---|
| 6.01 | 3.9902 | 25 | 316.2278 | 0.22770 | 1 | Complies |

For 5GHz :

Non-Beamforming

| Antenna Gain (dBi) | Antenna Gain (numeric) | Max. tune up Power (dBm) | Max. tune up Power Power (mW) | Power Density (S) (mW/cm$^2$) | Limit of Power Density (S) (mW/cm$^2$) | Test Result |
|---|---|---|---|---|---|---|
| 3 | 1.9953 | 30 | 1000.0000 | 0.36000 | 1 | Complies |

Beamforming

| Antenna Gain (dBi) | Antenna Gain (numeric) | Max. tune up Power (dBm) | Max. tune up Power Power (mW) | Power Density (S) (mW/cm$^2$) | Limit of Power Density (S) (mW/cm$^2$) | Test Result |
|---|---|---|---|---|---|---|
| 6.01 | 3.9902 | 30 | 1000.0000 | 0.72000 | 1 | Complies |

**For the max simultaneous transmission MPE:**

2.4G+5G

| Power Density (S) (mW/cm$^2$) | Power Density (S) (mW/cm$^2$) | Total | Limit of Power Density (S) (mW/cm$^2$) | Test Result |
|---|---|---|---|---|
| 2.4GHz | 5GHz | | | |
| 0.22770 | 0.72000 | 0.9477 | 1 | Complies |

Note: The calculated distance is 21 cm.
Output power including tune up tolerance.

**End of Test Report**