

FCC RF EXPOSURE REPORT

FCC ID: KA2APX1870A1

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
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 = $G_{ANT} + 10 \log(N_{ANT})$ 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 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 (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 (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