

FCC RF EXPOSURE REPORT

FCC ID: KA2IR822E1

Project No. : 2006H007
Equipment : AC1200 Wi-Fi Router
Brand Name : D-Link
Test Model : DIR-822
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. 06, 2020
Date of Test : Jul. 07, 2020~Aug. 12, 2020
Issued Date : Aug. 24, 2020
Report Version : R00
Test Sample : Engineering Sample No.: SH202007067 SH202007068
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.

Allen Wei

Prepared by : Allen Wei

Ryan Wang

Approved by : Ryan Wang



Certificate # 5123. 03

Add: No. 29, Jintang Road, Tangzhen Industry Park, Pudong New Area, Shanghai 201210, China

TEL: +86-021-61765666

Web: www.newbtl.com

REPORT ISSUED HISTORY

Report Version	Description	Issued Date
R00	Original Issue	Aug. 24, 2020

1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

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	Tenda	N/A	Dipole	N/A	5	N/A
2	Tenda	N/A	Dipole	N/A	5	N/A

Note:

All antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$,

For power spectral density measurements, $N_{ANT} = 2$, $N_{SS} = 1$.

So Directional gain = $G_{ANT} + \text{Array Gain} = 10\log(N_{ANT}/N_{SS}) \text{ dB} = 5 + 10\log(2/1) \text{ dBi} = 8.01$.

Then, the power density limit is $8 - (8.01 - 6) = 5.99$.

For power measurements, Array Gain = 0 dB ($N_{ANT} \leq 4$), so the Directional gain=5.

For 5G

Ant.	Brand	Model Name	Antenna Type	Connector	Gain(dBi)	Note
1	N/A	N/A	Dipole	N/A	5	N/A
2	N/A	N/A	Dipole	N/A	5	N/A

Note:

All antennas have the same gain, Directional gain = $G_{ANT} + \text{Array Gain}$,

For power spectral density measurements, $N_{ANT} = 2$, $N_{SS} = 1$.

So Directional gain = $G_{ANT} + \text{Array Gain} = 10\log(N_{ANT}/N_{SS}) \text{ dB} = 5 + 10\log(2/1) \text{ dBi} = 8.01$.

Then, the UNII-1 power density limit is $17 - (8.01 - 6) = 14.99$. the UNII-3 power density limit is $30 - 8.01 + 6 = 27.99$

For power measurements, Array Gain = 0 dB ($N_{ANT} \leq 4$), so the Directional gain=5.

Table for Antenna Configuration:

For 2.4G:

Operating Mode TX Mode	Ant. 1	Ant. 2	Ant. 1+2
802.11b	✓	✓	✗
802.11g	✓	✓	✓
802.11n(20 MHz)	✓	✓	✓
802.11n(40 MHz)	✓	✓	✓

For 5G:

Operating Mode TX Mode	Ant. 1	Ant. 2	Ant. 1+2
IEEE 802.11a	✓	✓	✓
IEEE 802.11n (HT20)	✓	✓	✓
IEEE 802.11n (HT40)	✓	✓	✓
IEEE 802.11ac (VHT20)	✓	✓	✓
IEEE 802.11ac (VHT40)	✓	✓	✓
IEEE 802.11ac (VHT80)	✓	✓	✓

1.1. TEST RESULTS

For 2.4GHz:

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
5	3.1623	30	1000	0.629115	1	Complies

For 5GHz :

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
5	3.1623	25	251.1886	0.198944	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			
0.629115	0.198944	0.828059	1	Complies

Note: The calculated distance is 20 cm.
Output power including tune up tolerance.

End of Test Report