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.

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REPORT ISSUED HISTORY

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

1. MPE CALCULATION METHOD

Calculation Method of RF Safety Distance:

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

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	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}+Array Gain,
For power spectral density measurements, N_{ANT} = 2, N_{SS} = 1.
So Directional gain = G_{ANT} + Array Gain =10log (N_{ANT}/ N_{SS}) dB =5+10log(2/1)dBi=8.01.
Then, the power density limit is 8-(8.01-6)=5.99.
For power measurements, Array Gain = 0 dB ($N_{ANT} \leqslant 4$), 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}+Array Gain,
For power spectral density measurements, N_{ANT} = 2, N_{SS} = 1.
So Directional gain = G_{ANT} + Array Gain =10log (N_{ANT}/ N_{SS}) dB =5+10log(2/1)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 ($N_{ANT} \leqslant 4$), 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 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