

MPE Report

Applicant : D-Link Corporation

Product Name : AX6000 Dual-Band Wi-Fi 6 Router (Single pack)
AX6000 Dual-Band Wi-Fi 6 Mesh System (Multi-pack)

Trade Name : D-Link

Model Number : M60

Applicable Standard : 47 CFR § 2.1091

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Approved By : _____

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Revision History

Version	Issued Date	Revisions	Revised By
00	Aug. 23, 2023	Initial Issue	Rowan Hsieh

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1. General Information

1.1 Reference Applicable Standard

Standard	Description	Version
IEEE C95.1	American National Standard safety levels with respect to human exposure to radio frequency electromagnetic fields, 300 KHz to 100 GHz, New York.	1992
47 CFR § 2.1091	Radiofrequency radiation exposure evaluation: mobile devices.	-
47 CFR § 1.1310	Radiofrequency radiation exposure limits.	-
KDB 447498 D04	RF exposure procedures and equipment authorization policies for mobile and portable devices	v01

1.2 Testing Location

Lab Name: Eurofins E&E Wireless Taiwan Co., Ltd.

Site Address: ☐ No. 140-1, Changan Street, Bade District, Taoyuan City 334025, Taiwan (R.O.C.)

Site Address: ☒ No. 2, Wuquan 5th Rd. Wugu Dist., New Taipei City, Taiwan (R.O.C.)

2. Description of Equipment under Test (EUT)

Applicant	D-Link Corporation 14420 Myford Road Suite 100 Irvine California United States 92606
Manufacturer	D-Link Corporation 14420 Myford Road Suite 100 Irvine California United States 92606
Product Name	AX6000 Dual-Band Wi-Fi 6 Router (Single pack) AX6000 Dual-Band Wi-Fi 6 Mesh System (Multi-pack)
Trade Name	D-Link
Model Number	M60
FCC ID	KA2M60A1
USE DISTANCE	30 cm
Antenna information	Brand: HONGBO Model: PCB Antenna Spec: Please refer to antenna report "Antenna Solution(泓博) for Amigo M60"

Note:

The above information of DUT was declared by manufacturer. Please refer to the specifications or user's manual for more detailed description.

2.1 RF Specification

Frequency Range	WLAN 2.4 GHz Band : 2412 - 2472 MHz WLAN 5.2 GHz Band : 5180 - 5320 MHz WLAN 5.6 GHz Band : 5500 - 5720 MHz WLAN 5.8 GHz Band : 5745 - 5825 MHz
Supported Modulations	WLAN 2.4 GHz : 802.11b/g/n/ax HT20/HT40/VHT20/VHT40/ HE20/HE40 WLAN 5 GHz : 802.11a/n/ac/ax HT20/HT40/VHT20/VHT40/VHT80/VHT160/HE20/HE40/HE80/HE160

3. RF Exposure Limit

For devices that operate at larger distances from persons, where there are minimal RF coupling interactions between a device and the user or nearby persons, RF exposure compliance using maximum permissible exposure (MPE) limits is applied. The limits for MPE is listed as below:

Limits for General Population / Uncontrolled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-1.34	614	1.63	(100)*	30
1.34-30	824 / f	2.19 / f	(180 / f ²)*	30
30-300	27.5	0.073	0.2	30
300-1500	-	-	F / 1,500	30
1,500-100,000	-	-	1.0	30
Limits for Occupational / Controlled Exposure				
Frequency Range (MHz)	Electric Field Strength (E) (V/m)	Magnetic Field Strength (H) (A/m)	Power Density (S) (mW/cm ²)	Averaging Time E ² , H ² or S (minutes)
0.3-3.0	614	1.63	(100)*	6
3.0-30	1,842 / f	4.89 / f	(900 / f ²)*	6
30-300	61.4	0.163	1.0	6
300-1,500	-	-	F / 300	6
1,500-100,000	-	-	5	6

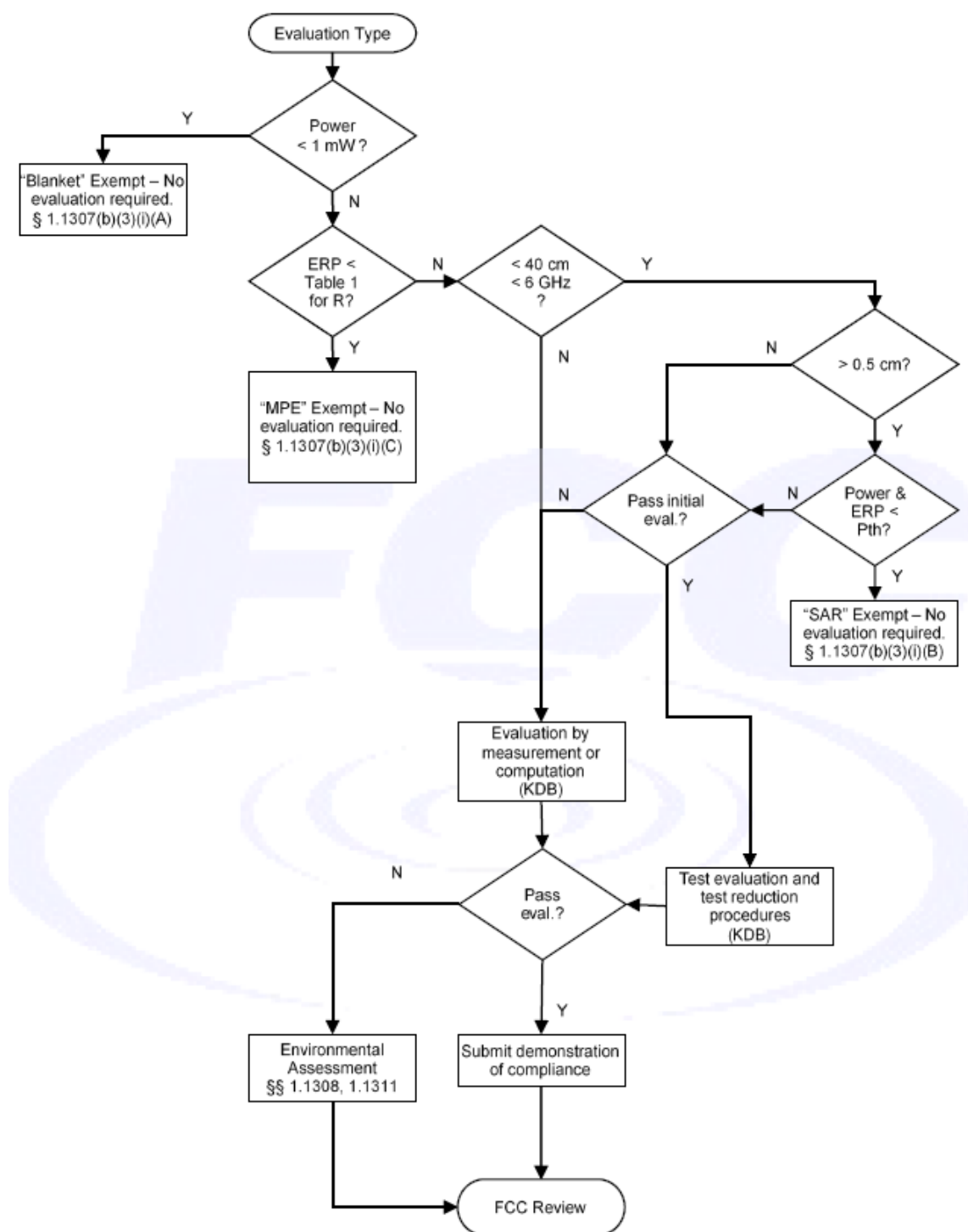
f = frequency in MHz. * = Plane-wave equivalent power density.

4. RF Exposure Assessment

4.1 Exemption Evaluation

Exemption evaluation was performed according to the appendix A and B in KDB447498 D04.

The General Sequence for Determination of Procedure demonstrated in Figure A.1 of KDB447498 D04 was applied.



4.2 Human Exposure Assessment

Due to the design and installation of this product, it is not possible to conduct SAR evaluation. This is because client either manufactures or supplies the antenna(s) that will be used in the installation of this product. Therefore, this product will be evaluated as a mobile device per 47 CFR § 1.1310 titled "Radiofrequency radiation exposure limits", generally referred to as MPE limits.

In 47 CFR § 2.1091, paragraph (b) defines a mobile device as "a transmitting device designed to be used in other than fixed locations and to generally be used in such a way that a separation distance of at least 20 cm is normally maintained between the transmitter's radiating structure(s) and the body of the user or nearby persons."

Exposure evaluation

$$S_{exp} = \frac{EIRP}{4\pi d^2} = \frac{PG}{4\pi d^2} (W / m^2)$$

Where

S: is the input power (W);

G: is the antenna gain;

d : is the distance between antennas and evaluation point (m).

5. Maximum Transmitting Mode Evaluation

Antenna transmission description
IEEE 802.11a : 4Tx/4Rx (Diversity) IEEE 802.11b : 4Tx/4Rx (Diversity) IEEE 802.11g : 4Tx/4Rx (Diversity) IEEE 802.11n : 4Tx/4Rx (MIMO) IEEE 802.11ac : 4Tx/4Rx (MIMO) IEEE 802.11ax : 4Tx/4Rx (MIMO)

6. Result

Band	Frequency (MHz)	Conducted Power (dBm) [P]	ANT Gain (dBi)	Numeric Gain [G]	Power with Duty cycle (mW) [P]x[G]	Power Density (mW/cm ²) [S]	Standalone Limit (W/m ²)	Antenna	Evaluated / Exposure Limit
2.4 GHz	2412 - 2472	26.60	9.19	8.30	3793.83	0.34	1.00	MIMO	0.34
5.2 GHz	5150 - 5250	26.63	9.36	8.63	3972.01	0.35	1.00	MIMO	0.35
5.3 GHz	5250 - 5350	22.62	9.36	8.63	1577.65	0.14	1.00	MIMO	0.14
5.6 GHz	5470 - 5725	20.73	9.40	8.71	1030.43	0.09	1.00	MIMO	0.09
5.8 GHz	5725 - 5850	26.51	9.40	8.71	3899.58	0.34	1.00	MIMO	0.34

Note:

1. Mobile or fixed location transmitters, minimum separation distance is 0.3 m, even if calculations indicate MPE distance is less.
2. The maximum power and directional gain were applied to evaluate MPE for multiple antennas transmitting. If all transmit signals are completely uncorrelated, directional gain = Gant.
3. The simultaneous transmission of device only operates in MIMO.

MAX MPE: 0.35 mW/cm²

Simultaneous Transmission :

WLAN 2.4 GHz + WLAN 5 GHz

TER: 0.69

7. Conclusion

The result shows that this device is compliance with the exposure limits in 47 CFR §1.1310.

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