RF Exposure Evaluation Report

FCC 47 CFR § 2.1091

for

AX3000 Wi-Fi 6 Range Extender

Model Name.: E30

Prepared for:

D-Link Corporation
14420 Myford Road Suite 100 Irvine California United States 92606

Prepared by

Compliance Certification Services Inc.
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Issue Date: July 27, 2023

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Revision History

Rev.	Issue Date	Revisions	Effect Page	Revised By
00	July 27, 2023	Initial Issue	ALL	Allison Chen

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Table of Contents

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1 Attestation of Test Results

Applicant Name	D-Link Corporation
Model Name	E30
Applicable Standards	FCC 47 CFR § 2.1091 FCC 47 CFR § 1.1307 FCC 47 CFR § 1.1310 Published RF exposure KDB procedures
Receive EUT Date:	April 13, 2023
Compliance Certification Services Inc. , tested the above equipment in accordance with the requirements set forth in the above standards. Determination of compliance is based on the results of the compliance measurement,not taking into account measurement instrumentation uncertainy.All indications of Pass/Fail in this report are opinions expressed by Compliance Certification Services Inc, based on interpretations and/or observations of test results. The test results show that the equipment tested is capable of demonstrating compliance with the requirements as documented in this report.	
Approved & Released By: 	
Sky Zhou Asst. Section Manager Compliance Certification Services Inc.	

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2 Test Specification, Methods and Procedures

The tests documented in this report were performed in accordance with FCC 47 CFR § 2.1091, the following FCC Published RF exposure KDB procedures:

- 447498 D04 Interim General RF Exposure Guidance v01
- 865664 D02 RF Exposure Reporting v01r02

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3 Device Under Test (DUT) Information

3.1 DUT Description

Product	AX3000 Wi-Fi 6 Range Extender
Trade Name	D-Link
Model No.	E30
Model Discrepancy	N/A
Hardware Version	A1
Software Version	1.00
Sample Stage	Identical prototype

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3.2 Wireless Technologies

Frequency bands	☐ Bluetooth: 2402MHz-2480MHz ☒ 802.11b/g/n HT20/ax (HE20): 2412MHz ~ 2462 MHz ☒ 802.11n HT40/ax (HE40): 2422MHz ~ 2452MHz ☒ 802.11a/n HT20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz / 5500MHz ~ 5700MHz / 5745MHz ~ 5825MHz ☒ 802.11ac VHT20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz / 5500MHz ~ 5700MHz / 5745MHz ~ 5825MHz ☒ 802.11ax HE20: 5180MHz ~ 5240MHz / 5260MHz ~ 5320MHz / 5500MHz ~ 5700 MHz / 5745MHz ~ 5825MHz ☒ 802.11n HT40: 5190MHz ~ 5230MHz / 5270MHz ~ 5310MHz / 5510MHz ~ 5690MHz / 5755MHz ~ 5795MHz ☒ 802.11ac VHT 40: 5190MHz ~ 5230MHz / 5270MHz ~ 5310MHz / 5510MHz ~ 5690MHz / 5755MHz ~ 5795MHz ☒ 802.11ax HE40: 5190MHz ~ 5230MHz / 5270MHz ~ 5310MHz / 5510MHz ~ 5710MHz / 5755MHz ~ 5795MHz ☒ 802.11ac VHT80: 5210MHz / 5290MHz / 5530MHz ~ 5610MHz / 5775MHz ☒ 802.11ax HE80: 5210MHz / 5290MHz / 5530MHz ~ 5610MHz / 5775MHz ☒ 802.11ac VHT160: 5250 MHz / 5570 MHz ☒ 802.11ax HE160: 5250 MHz / 5570 MHz ☐ Others
Exposure classification	☐ Occupational/Controlled exposure (S = 5mW/cm2) ☒ General Population/Uncontrolled exposure

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Antenna Specification

Type: Dipole Antenna

(1) WIFI 2.4GHz:
Chain 0: M.gear / C1958-510031-A
Chain 1: M.gear / C1958-510030-A

Frequency	Ant4-2/5G (Chain 0) Gain (dBi)	Ant3-2/5G (Chain 1) Gain (dBi)	Total Gain (dBi)
2412-2462 MHz	3.18	2.78	5.99

(2) WIFI 5GHz:
Ant2-5G (Chain 2): M.gear / C1958-510029-A
Ant3-2/5G (Chain 0): M.gear / C1958-510030-A
Ant4-2/5G (Chain 1): M.gear / C1958-510031-A

Band	Ant3-2/5G (Chain 0) Gain (dBi)	Ant4-2/5G (Chain 1) Gain (dBi)	Ant2-5G (Chain 2) Gain (dBi)	Total Gain (dBi)
Band I (U-NII 1) 5150-5250MHz	5.34	3.25	6.08	9.74
Band II (U-NII 2A) 5250-5350 MHz	5.21	3.73	6.07	9.83
Band III (U-NII 2C) 5470-5725 MHz	4.49	3.70	5.80	9.48
Band IV (U-NII 3) 5725-5850MHz	5.44	3.73	5.39	9.66

		Antenna Gain:		
2.4GHz:	Chain 0	3.18 dBi	(Numeric gain: 2.08)	Worst
2.4GHz:	Chain 1	2.78 dBi	(Numeric gain: 1.90)	Worst
2.4GHz:	Power Directional	5.99 dBi	(Numeric gain: 3.97)	Worst
		Antenna Gain:		
5GHz(Band 1)	Chain 0	5.34 dBi	(Numeric gain: 3.42)	Worst
5GHz(Band 1)	Chain 1	3.25 dBi	(Numeric gain: 2.11)	Worst
5GHz(Band 1)	Chain 2	6.08 dBi	(Numeric gain: 4.06)	Worst
	Power Directional	9.74 dBi	(Numeric gain: 9.42)	Worst
5GHz(Band 2)	Chain 0	5.21 dBi	(Numeric gain: 3.32)	Worst
5GHz(Band 2)	Chain 1	3.73 dBi	(Numeric gain: 2.36)	Worst
5GHz(Band 2)	Chain 2	6.07 dBi	(Numeric gain: 4.05)	Worst
	Power Directional	9.83 dBi	(Numeric gain: 9.62)	Worst
5GHz(Band 3)	Chain 0	4.49 dBi	(Numeric gain: 2.81)	Worst
5GHz(Band 3)	Chain 1	3.70 dBi	(Numeric gain: 2.34)	Worst
5GHz(Band 3)	Chain 2	5.80 dBi	(Numeric gain: 3.80)	Worst
	Power Directional	9.48 dBi	(Numeric gain: 8.87)	Worst
5GHz(Band 4)	Chain 0	5.44 dBi	(Numeric gain: 3.50)	Worst
5GHz(Band 4)	Chain 1	3.73 dBi	(Numeric gain: 2.36)	Worst
5GHz(Band 4)	Chain 2	5.39 dBi	(Numeric gain: 3.46)	Worst
	Power Directional	9.66 dBi	(Numeric gain: 9.25)	Worst

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Maximum tune up power

2.4GHz (Non-Beamforming)

IEEE 802.11b (Chain 0)	20.00 dBm
IEEE 802.11b (Chain 1)	19.50 dBm
IEEE 802.11g (Chain 0)	26.00 dBm
IEEE 802.11g (Chain 1)	26.50 dBm
IEEE 802.11n HT 20 (MIMO)	29.00 dBm
IEEE 802.11n HT 40 (MIMO)	27.50 dBm
IEEE 802.11ax HE 20 (MIMO)	29.00 dBm
IEEE 802.11ax HE 40 (MIMO)	27.50 dBm

5GHz U-NII 1 (Non-Beamforming)

IEEE 802.11a_Chain 0(SISO)	23.00 dBm
IEEE 802.11a_Chain 1(SISO)	23.50 dBm
IEEE 802.11a_Chain 2(SISO)	23.00 dBm
IEEE 802.11n HT 20(MIMO)	24.00 dBm
IEEE 802.11n HT 40(MIMO)	26.50 dBm
IEEE 802.11ac VHT 20(MIMO)	24.00 dBm
IEEE 802.11ac VHT 40(MIMO)	26.50 dBm
IEEE 802.11ac VHT 80(MIMO)	15.50 dBm
IEEE 802.11ax HE 20(MIMO)	24.00 dBm
IEEE 802.11ax HE 40(MIMO)	26.50 dBm
IEEE 802.11ax HE 80(MIMO)	17.50 dBm

5GHz U-NII 2A (Non-Beamforming)

IEEE 802.11a_Chain 0(SISO)	22.00 dBm
IEEE 802.11a_Chain 1(SISO)	21.00 dBm
IEEE 802.11a_Chain 2(SISO)	21.50 dBm
IEEE 802.11n HT 20(MIMO)	18.50 dBm
IEEE 802.11n HT 40(MIMO)	20.50 dBm
IEEE 802.11ac VHT 20(MIMO)	18.50 dBm
IEEE 802.11ac VHT 40(MIMO)	20.50 dBm
IEEE 802.11ac VHT 80(MIMO)	16.00 dBm
IEEE 802.11ac VHT 160(MIMO)	16.50 dBm
IEEE 802.11ax HE 20(MIMO)	18.50 dBm
IEEE 802.11ax HE 40(MIMO)	20.50 dBm
IEEE 802.11ax HE 80(MIMO)	18.00 dBm
IEEE 802.11ax HE 160(MIMO)	16.50 dBm

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Maximum tune up power

5GHz U-NII 2C (Non-Beamforming)

IEEE 802.11a_Chain 0(SISO)	22.50 dBm
IEEE 802.11a_Chain 1(SISO)	22.00 dBm
IEEE 802.11a_Chain 2(SISO)	22.00 dBm
IEEE 802.11n HT 20(MIMO)	19.50 dBm
IEEE 802.11n HT 40(MIMO)	21.00 dBm
IEEE 802.11ac VHT 20(MIMO)	19.50 dBm
IEEE 802.11ac VHT 40(MIMO)	21.00 dBm
IEEE 802.11ac VHT 80(MIMO)	21.00 dBm
IEEE 802.11ac VHT 160(MIMO)	17.50 dBm
IEEE 802.11ax HE 20(MIMO)	19.50 dBm
IEEE 802.11ax HE 40(MIMO)	21.00 dBm
IEEE 802.11ax HE 60(MIMO)	21.00 dBm
IEEE 802.11ax HE 80(MIMO)	17.50 dBm

5GHz U-NII 3 (Non-Beamforming)

IEEE 802.11a_Chain 0(SISO)	27.00 dBm
IEEE 802.11a_Chain 1(SISO)	26.00 dBm
IEEE 802.11a_Chain 2(SISO)	26.00 dBm
IEEE 802.11n HT 20(MIMO)	26.50 dBm
IEEE 802.11n HT 40(MIMO)	26.50 dBm
IEEE 802.11ac VHT 20(MIMO)	26.50 dBm
IEEE 802.11ac VHT 40(MIMO)	26.50 dBm
IEEE 802.11ac VHT 80(MIMO)	24.50 dBm
IEEE 802.11ax HE 20(MIMO)	26.50 dBm
IEEE 802.11ax HE 40(MIMO)	26.50 dBm
IEEE 802.11ax HE 80(MIMO)	24.50 dBm

2.4GHz (Beamforming)

IEEE 802.11n HT 20 (MIMO)	21.00 dBm
IEEE 802.11n HT 40 (MIMO)	18.50 dBm
IEEE 802.11ax HE 20 (MIMO)	21.00 dBm
IEEE 802.11ax HE 40 (MIMO)	18.50 dBm

5GHz U-NII 1 (Beamforming)

IEEE 802.11n HT 20(MIMO)	19.00 dBm
IEEE 802.11n HT 40(MIMO)	21.50 dBm
IEEE 802.11ac VHT 20(MIMO)	19.00 dBm
IEEE 802.11ac VHT 40(MIMO)	21.50 dBm
IEEE 802.11ac VHT 80(MIMO)	10.50 dBm
IEEE 802.11ax HE 20(MIMO)	19.00 dBm
IEEE 802.11ax HE 40(MIMO)	21.50 dBm
IEEE 802.11ax HE 80(MIMO)	12.00 dBm

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Maximum tune up power

5GHz U-NII 2A (Beamforming)

IEEE 802.11n HT 20(MIMO)	14.00 dBm
IEEE 802.11n HT 40(MIMO)	16.00 dBm
IEEE 802.11ac VHT 20(MIMO)	14.00 dBm
IEEE 802.11ac VHT 40(MIMO)	16.00 dBm
IEEE 802.11ac VHT 80(MIMO)	10.50 dBm
IEEE 802.11ac VHT 160(MIMO)	11.50 dBm
IEEE 802.11ax HE 20(MIMO)	14.00 dBm
IEEE 802.11ax HE 40(MIMO)	16.00 dBm
IEEE 802.11ax HE 80(MIMO)	13.00 dBm
IEEE 802.11ax HE 160(MIMO)	11.50 dBm

5GHz U-NII 2C (Beamforming)

IEEE 802.11n HT 20(MIMO)	14.00 dBm
IEEE 802.11n HT 40(MIMO)	16.00 dBm
IEEE 802.11ac VHT 20(MIMO)	14.00 dBm
IEEE 802.11ac VHT 40(MIMO)	16.00 dBm
IEEE 802.11ac VHT 80(MIMO)	15.50 dBm
IEEE 802.11ac VHT 160(MIMO)	12.50 dBm
IEEE 802.11ax HE 20(MIMO)	14.00 dBm
IEEE 802.11ax HE 40(MIMO)	16.00 dBm
IEEE 802.11ax HE 80(MIMO)	16.00 dBm
IEEE 802.11ax HE 160(MIMO)	12.50 dBm

5GHz U-NII 3 (Beamforming)

IEEE 802.11n HT 20(MIMO)	21.50 dBm
IEEE 802.11n HT 40(MIMO)	22.00 dBm
IEEE 802.11ac VHT 20(MIMO)	21.50 dBm
IEEE 802.11ac VHT 40(MIMO)	22.00 dBm
IEEE 802.11ac VHT 80(MIMO)	19.00 dBm
IEEE 802.11ax HE 20(MIMO)	21.50 dBm
IEEE 802.11ax HE 40(MIMO)	22.00 dBm
IEEE 802.11ax HE 80(MIMO)	19.50 dBm

Notes:

1. For more details, please refer to the User's manual of the EUT.
2. Disclaimer: Antenna information is provided by the applicant, test results of this report are applicable to the sample EUT received.
3. The tune up power referred the AVG power of the test report TMWK2304001000KR and TMWK2304001001KR for RF Exposure assessment purpose.

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4 Maximum Permissible Exposure

4.1 Limits for Maximum Permissible Exposure (MPE)

Table 1 - Limits for Maximum Permissible Exposure (MPE)

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm^2)	Averaging time (minutes)
(A) Limits for Occupational/Controlled Exposure				
0.3-3.0	614	1.63	* 100	6
3.0-30	1842/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
(B) Limits for General Population/Uncontrolled Exposure				
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
300-1,500			f/1500	30
1,500-100,000			1.0	30

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4.2 MPE Calculation Method

Calculation

Given $E = \frac{\sqrt{30 \times P \times G}}{d}$ & $S = \frac{E^2}{377}$

Where E = Field strength in Volts / meter
P = Power in Watts
G = Numeric antenna gain
d = Distance in meters
S = Power density in milliwatts / square centimeter

Combining equations and re-arranging the terms to express the distance as a function of the remaining variables yields:

$$S = \frac{30 \times P \times G}{377 d^2}$$

Changing to units of mW and cm, using:

P (mW) = P (W) / 1000 and

d (cm) = d(m) / 100

Yields

$$S = \frac{30 \times (P/1000) \times G}{377 \times (d/100)^2} = 0.0796 \times \frac{P \times G}{d^2}$$ **Equation 1**

Where d = Distance in cm
P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm^2

If, Substituting the MPE safe distance using d = 30 cm into Equation 1:

$$S = 0.000199 \times P \times G$$

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4.3 MPE EXEMPTION

(A) The available maximum time-averaged power is no more than 1 mW

(B) The available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold *Pth* (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). *Pth* is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

(C) Using Table 1 and the minimum separation distance (R in meters) from the body of a nearby person for the frequency (f in MHz) at which the source operates, the ERP (watts) is no more than the calculated value prescribed for that frequency. For the exemption in Table 1 to apply, R must be at least λ/2π, where λ is the free-space operating wavelength in meters. If the ERP of a single RF source is not easily obtained, then the available maximum time-averaged power may be used in lieu of ERP if the physical dimensions of the radiating structure(s) do not exceed the electrical length of λ/4 or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

Single RF Sources Subject to Routine Environmental Evaluation	
RF Source frequency (MHz)	**Threshold ERP (watts)**
0.3-1.34	1,920 R^2.
1.34-30	3,450 R^2/f^2.
30-300	3.83 R^2.
300-1,500	0.0128 R^2f.
1,500-100,000	19.2R^2.
Note: R is in meters, f is in MHz.	

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4.4 Multiple RF sources

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation),

$$\sum_{i=1}^{a} \frac{P_i}{P_{\mathrm{th},i}} + \sum_{j=1}^{b} \frac{ERP_j}{ERP_{\mathrm{th},j}} + \sum_{k=1}^{c} \frac{Evaluated_k}{Exposure\ Limit_k} \leq 1$$

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5 Radio Frequency Radiation Max Exposure Evaluation

Substituting the MPE safe distance using d = 30 cm into Equation 1:

$$S = 0.000199 \times P \times G$$

Where P = Power in mW
G = Numeric antenna gain
S = Power density in mW / cm^2

1. Non-Beamforming:

WIFI 2.4GHz (DTS)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11b_Chain 0(SISO)	2462.00	20.00	100.00	3.18	2.08	30.0	0.018	1.00
IEEE 802.11b_Chain 1(SISO)	2462.00	19.50	89.13	2.78	1.90	30.0	0.015	1.00
IEEE 802.11g_Chain 0(SISO)	2437.00	26.00	398.11	3.18	2.08	30.0	0.073	1.00
IEEE 802.11g_Chain 1(SISO)	2462.00	26.50	446.68	2.78	1.90	30.0	0.075	1.00
IEEE 802.11n HT 20(MIMO)	2437.00	29.00	794.33	5.99	3.97	30.0	0.279	1.00
IEEE 802.11n HT 40(MIMO)	2437.00	27.50	562.34	5.99	3.97	30.0	0.197	1.00
IEEE 802.11ax HE 20(MIMO)	2437.00	29.00	794.33	5.99	3.97	30.0	0.279	1.00
IEEE 802.11ax HE 40(MIMO)	2437.00	27.50	562.34	5.99	3.97	30.0	0.197	1.00

WIFI 5.2GHz (U-NII 1)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11a_Chain 0(SISO)	5240.00	23.00	199.53	5.34	3.42	30.0	0.060	1.00
IEEE 802.11a_Chain 1(SISO)	5240.00	23.50	223.87	3.25	2.11	30.0	0.042	1.00
IEEE 802.11a_Chain 2(SISO)	5240.00	23.00	199.53	6.08	4.06	30.0	0.072	1.00
IEEE 802.11n HT 20(MIMO)	5240.00	24.00	251.19	9.74	9.42	30.0	0.209	1.00
IEEE 802.11n HT 40(MIMO)	5230.00	26.50	446.68	9.74	9.42	30.0	0.372	1.00
IEEE 802.11ac VHT 20(MIMO)	5240.00	24.00	251.19	9.74	9.42	30.0	0.209	1.00
IEEE 802.11ac VHT 40(MIMO)	5230.00	26.50	446.68	9.74	9.42	30.0	0.372	1.00
IEEE 802.11ac VHT 80(MIMO)	5210.00	15.50	35.48	9.74	9.42	30.0	0.030	1.00
IEEE 802.11ax HE 20(MIMO)	5240.00	24.00	251.19	9.74	9.42	30.0	0.209	1.00
IEEE 802.11ax HE 40(MIMO)	5230.00	26.50	446.68	9.74	9.42	30.0	0.372	1.00
IEEE 802.11ax HE 80(MIMO)	5210.00	17.50	56.23	9.74	9.42	30.0	0.047	1.00

WIFI 5.3GHz (U-NII 2A)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11a_Chain 0(SISO)	5320.00	22.00	158.49	5.21	3.32	30.0	0.047	1.00
IEEE 802.11a_Chain 1(SISO)	5320.00	21.00	125.89	3.73	2.36	30.0	0.026	1.00
IEEE 802.11a_Chain 2(SISO)	5300.00	21.50	141.25	6.07	4.05	30.0	0.051	1.00
IEEE 802.11n HT 20(MIMO)	5320.00	18.50	70.79	9.83	9.62	30.0	0.060	1.00
IEEE 802.11n HT 40(MIMO)	5310.00	20.50	112.20	9.83	9.62	30.0	0.095	1.00
IEEE 802.11ac VHT 20(MIMO)	5320.00	18.50	70.79	9.83	9.62	30.0	0.060	1.00
IEEE 802.11ac VHT 40(MIMO)	5310.00	20.50	112.20	9.83	9.62	30.0	0.095	1.00
IEEE 802.11ac VHT 80(MIMO)	5290.00	16.00	39.81	9.83	9.62	30.0	0.034	1.00
IEEE 802.11ac VHT 160(MIMO)	5250.00	16.50	44.67	9.83	9.62	30.0	0.038	1.00
IEEE 802.11ax HE 20(MIMO)	5320.00	18.50	70.79	9.83	9.62	30.0	0.060	1.00
IEEE 802.11ax HE 40(MIMO)	5310.00	20.50	112.20	9.83	9.62	30.0	0.095	1.00
IEEE 802.11ax HE 80(MIMO)	5290.00	18.00	63.10	9.83	9.62	30.0	0.054	1.00
IEEE 802.11ax HE 160(MIMO)	5250.00	16.50	44.67	9.83	9.62	30.0	0.038	1.00

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WIFI 5.5GHz (U-NII 2C)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11a_Chain 0(SISO)	5700.00	22.50	177.83	4.49	2.81	30.0	0.044	1.00
IEEE 802.11a_Chain 1(SISO)	5700.00	22.00	158.49	3.70	2.34	30.0	0.033	1.00
IEEE 802.11a_Chain 2(SISO)	5580.00	22.00	158.49	5.80	3.80	30.0	0.053	1.00
IEEE 802.11n HT 20(MIMO)	5500.00	19.50	89.13	9.48	8.87	30.0	0.070	1.00
IEEE 802.11n HT 40(MIMO)	5670.00	21.00	125.89	9.48	8.87	30.0	0.099	1.00
IEEE 802.11ac VHT 20(MIMO)	5500.00	19.50	89.13	9.48	8.87	30.0	0.070	1.00
IEEE 802.11ac VHT 40(MIMO)	5670.00	21.00	125.89	9.48	8.87	30.0	0.099	1.00
IEEE 802.11ac VHT 80(MIMO)	5610.00	21.00	125.89	9.48	8.87	30.0	0.099	1.00
IEEE 802.11ac VHT 160(MIMO)	5570.00	17.50	56.23	9.48	8.87	30.0	0.044	1.00
IEEE 802.11ax HE 20(MIMO)	5500.00	19.50	89.13	9.48	8.87	30.0	0.070	1.00
IEEE 802.11ax HE 40(MIMO)	5670.00	21.00	125.89	9.48	8.87	30.0	0.099	1.00
IEEE 802.11ax HE 80(MIMO)	5610.00	21.00	125.89	9.48	8.87	30.0	0.099	1.00
IEEE 802.11ax HE 160(MIMO)	5570.00	17.50	56.23	9.48	8.87	30.0	0.044	1.00

WIFI 5.8GHz (U-NII 3)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11a_Chain 0(SISO)	5825.00	27.00	501.19	5.44	3.50	30.0	0.155	1.00
IEEE 802.11a_Chain 1(SISO)	5825.00	26.00	398.11	3.73	2.36	30.0	0.083	1.00
IEEE 802.11a_Chain 2(SISO)	5785.00	26.00	398.11	5.39	3.46	30.0	0.122	1.00
IEEE 802.11n HT 20(MIMO)	5825.00	26.50	446.68	9.66	9.25	30.0	0.365	1.00
IEEE 802.11n HT 40(MIMO)	5795.00	26.50	446.68	9.66	9.25	30.0	0.365	1.00
IEEE 802.11ac VHT 20(MIMO)	5825.00	26.50	446.68	9.66	9.25	30.0	0.365	1.00
IEEE 802.11ac VHT 40(MIMO)	5795.00	26.50	446.68	9.66	9.25	30.0	0.365	1.00
IEEE 802.11ac VHT 80(MIMO)	5775.00	24.50	281.84	9.66	9.25	30.0	0.230	1.00
IEEE 802.11ax HE 20(MIMO)	5825.00	26.50	446.68	9.66	9.25	30.0	0.365	1.00
IEEE 802.11ax HE 40(MIMO)	5795.00	26.50	446.68	9.66	9.25	30.0	0.365	1.00
IEEE 802.11ax HE 80(MIMO)	5775.00	24.50	281.84	9.66	9.25	30.0	0.230	1.00

2. Beamforming:

WIFI 2.4GHz (DTS)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11n HT 20(MIMO)	2437.00	21.00	125.89	5.99	3.97	30.0	0.044	1.00
IEEE 802.11n HT 40(MIMO)	2437.00	18.50	70.79	5.99	3.97	30.0	0.025	1.00
IEEE 802.11ax HE 20(MIMO)	2437.00	21.00	125.89	5.99	3.97	30.0	0.044	1.00
IEEE 802.11ax HE 40(MIMO)	2437.00	18.50	70.79	5.99	3.97	30.0	0.025	1.00

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WIFI 5.2GHz (U-NII 1)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11n HT 20(MIMO)	5240.00	19.00	79.43	9.74	9.42	30.0	0.066	1.00
IEEE 802.11n HT 40(MIMO)	5230.00	21.50	141.25	9.74	9.42	30.0	0.118	1.00
IEEE 802.11ac VHT 20(MIMO)	5240.00	19.00	79.43	9.74	9.42	30.0	0.066	1.00
IEEE 802.11ac VHT 40(MIMO)	5230.00	21.50	141.25	9.74	9.42	30.0	0.118	1.00
IEEE 802.11ac VHT 80(MIMO)	5210.00	10.50	11.22	9.74	9.42	30.0	0.009	1.00
IEEE 802.11ax HE 20(MIMO)	5240.00	19.00	79.43	9.74	9.42	30.0	0.066	1.00
IEEE 802.11ax HE 40(MIMO)	5230.00	21.50	141.25	9.74	9.42	30.0	0.118	1.00
IEEE 802.11ax HE 80(MIMO)	5210.00	12.00	15.85	9.74	9.42	30.0	0.013	1.00

WIFI 5.3GHz (U-NII 2A)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11n HT 20(MIMO)	5320.00	14.00	25.12	9.83	9.62	30.0	0.021	1.00
IEEE 802.11n HT 40(MIMO)	5310.00	16.00	39.81	9.83	9.62	30.0	0.034	1.00
IEEE 802.11ac VHT 20(MIMO)	5320.00	14.00	25.12	9.83	9.62	30.0	0.021	1.00
IEEE 802.11ac VHT 40(MIMO)	5310.00	16.00	39.81	9.83	9.62	30.0	0.034	1.00
IEEE 802.11ac VHT 80(MIMO)	5290.00	10.50	11.22	9.83	9.62	30.0	0.010	1.00
IEEE 802.11ac VHT 160(MIMO)	5250.00	11.50	14.13	9.83	9.62	30.0	0.012	1.00
IEEE 802.11ax HE 20(MIMO)	5320.00	14.00	25.12	9.83	9.62	30.0	0.021	1.00
IEEE 802.11ax HE 40(MIMO)	5310.00	16.00	39.81	9.83	9.62	30.0	0.034	1.00
IEEE 802.11ax HE 80(MIMO)	5290.00	13.00	19.95	9.83	9.62	30.0	0.017	1.00
IEEE 802.11ax HE 160(MIMO)	5250.00	11.50	14.13	9.83	9.62	30.0	0.012	1.00

WIFI 5.5GHz (U-NII 2C)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11n HT 20(MIMO)	5700.00	14.00	25.12	9.48	8.87	30.0	0.020	1.00
IEEE 802.11n HT 40(MIMO)	5670.00	16.00	39.81	9.48	8.87	30.0	0.031	1.00
IEEE 802.11ac VHT 20(MIMO)	5700.00	14.00	25.12	9.48	8.87	30.0	0.020	1.00
IEEE 802.11ac VHT 40(MIMO)	5670.00	16.00	39.81	9.48	8.87	30.0	0.031	1.00
IEEE 802.11ac VHT 80(MIMO)	5610.00	15.50	35.48	9.48	8.87	30.0	0.028	1.00
IEEE 802.11ac VHT 160(MIMO)	5570.00	12.50	17.78	9.48	8.87	30.0	0.014	1.00
IEEE 802.11ax HE 20(MIMO)	5700.00	14.00	25.12	9.48	8.87	30.0	0.020	1.00
IEEE 802.11ax HE 40(MIMO)	5670.00	16.00	39.81	9.48	8.87	30.0	0.031	1.00
IEEE 802.11ax HE 80(MIMO)	5610.00	16.00	39.81	9.48	8.87	30.0	0.031	1.00
IEEE 802.11ax HE 160(MIMO)	5570.00	12.50	17.78	9.48	8.87	30.0	0.014	1.00

WIFI 5.8GHz (U-NII 3)

Mode	Frequency (MHz)	Max Tune-up power(dBm)	Max Tune-up power(mW)	G(dBi)	G(num.)	D(cm)	Power Density in mW/cm^2	Limit (mW/cm^2)
IEEE 802.11n HT 20(MIMO)	5825.00	21.50	141.25	9.66	9.25	30.0	0.115	1.00
IEEE 802.11n HT 40(MIMO)	5795.00	22.00	158.49	9.66	9.25	30.0	0.130	1.00
IEEE 802.11ac VHT 20(MIMO)	5825.00	21.50	141.25	9.66	9.25	30.0	0.115	1.00
IEEE 802.11ac VHT 40(MIMO)	5795.00	22.00	158.49	9.66	9.25	30.0	0.130	1.00
IEEE 802.11ac VHT 80(MIMO)	5775.00	19.00	79.43	9.66	9.25	30.0	0.065	1.00
IEEE 802.11ax HE 20(MIMO)	5825.00	21.50	141.25	9.66	9.25	30.0	0.115	1.00
IEEE 802.11ax HE 40(MIMO)	5795.00	22.00	158.49	9.66	9.25	30.0	0.130	1.00
IEEE 802.11ax HE 80(MIMO)	5775.00	19.50	89.13	9.66	9.25	30.0	0.073	1.00

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6 Simultaneous Transmission Exempt

In the case of fixed RF sources operating in the same time-averaging period, or of multiple mobile or portable RF sources within a device operating in the same time averaging period, if the sum of the fractional contributions to the applicable thresholds is less than or equal to 1 as indicated in the following equation),

$$\sum_{i=1}^{a}\frac{P_i}{P_{\mathrm{th},i}}+\sum_{j=1}^{b}\frac{ERP_j}{ERP_{\mathrm{th},j}}+\sum_{k=1}^{c}\frac{Evaluated_k}{Exposure\ Limit_k}\leq 1$$

Simultaneous Transmission Condition

RF Exposure Condition	Item	Capable Transmit Configurations
	1	DTS + U-NII

6.1 Sum of the WIFI 2.4GHz & WIFI 5GHz

CPD1 / LPD1 + CPD2 / LPD2 + ……etc. < 1
CPD = Calculation power density
LPD = Limit of power density

WiFi 2.4GHz + WiFi 5GHz
Therefore, the worst-case situation is 0.279 / 1 + 0.372 / 1 = 0.651, which is less than “1”.

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7 Facilities

All measurement facilities used to collect the measurement data are located at

☒ No.11, Wugong 6th Rd., Wugu Dist., New Taipei City, Taiwan.

☐ No. 12, Ln. 116, Wugong 3rd Rd., Wugu Dist., New Taipei City, Taiwan.

END OF REPORT

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