RF Exposure Evaluation Report

Report No.: RWAP202400206C

Applicant: Dot Lighting (canada) Inc.

Address: 35 Riviera Dr Unit 16 Markham Ontario L3R 8N4 Canada

Product Name: Smart Dimmer

Product Model: QDIM-WF-01

Multiple Models: N/A

Trade Mark: N/A

FCC ID: 2BCMV-DIMWF

Standards: 47 CFR §1.1307
KDB 447498 D04 Interim General RF Exposure Guidance v01

Test Date: 2024-03-07

Test Result: Complied

Report Date: 2024-03-14

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Revision History

Version No.	Issued Date	Description
00	*2024-03-14*	*Original*

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1 General Information

1.1 Client Information

Applicant:	Dot Lighting (canada) Inc.
Address:	35 Riviera Dr Unit 16 Markham Ontario L3R 8N4 Canada
Manufacturer:	Dot Lighting (canada) Inc.
Address:	35 Riviera Dr Unit 16 Markham Ontario L3R 8N4 Canada

1.2 Product Description of EUT

The EUT is Smart Dimmer that contains 2.4G WLAN radio.

Sample Serial Number	6A-3 (assigned by WATC)
Sample Received Date	2024-02-23
Sample Status	Good Condition
Frequency Range	2.4G WLAN: 2412MHz - 2462MHz
Maximum Conducted Output Power	2412MHz - 2462MHz: 25.64dBm
Modulation Technology	DSSS, OFDM
Antenna Gain#	0.04dBi
Spatial Streams	SISO (1TX, 1RX)
Power Supply	AC 120V/60Hz
Operating temperature#	-40 deg.C to +85 deg.C
Adapter Information	N/A
Modification	Sample No Modification by the test lab

1.3 Laboratory Location

World Alliance Testing & Certification (Shenzhen) Co., Ltd

No. 1002, East Block, Laobing Building, Xingye Road 3012, Xixiang street, Bao'an District, Shenzhen, Guangdong, People's Republic of China

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The lab has been recognized as the FCC accredited lab under the KDB 974614 D01 and is listed in the FCC Public Access Link (PAL) database, FCC Registration No. : 463912, the FCC Designation No. : CN5040.

The lab has been recognized by Innovation, Science and Economic Development Canada to test to Canadian radio equipment requirements, the CAB identifier: CN0160.

2 RF Exposure Evaluation

2.1 Standard

According to §1.1307(b)(3)(i), For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or 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) Or 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).

Table 1 to § 1.1307(b)(3)(i)(C)—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.

According to §1.1307(b)(3)(ii), For multiple RF sources: Multiple RF sources are exempt if:

(A) The available maximum time-averaged power of each source is no more than 1 mW and there is a separation distance of two centimeters between any portion of a radiating structure operating and the nearest portion of any other radiating structure in the same device, except if the sum of multiple sources is less than 1 mW during the time-averaging period, in which case they may be treated as a single source (separation is not required). This exemption may not be used in conjunction with other exemption criteria other than those is paragraph (b)(3)(i)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(i)(A).

(B) 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.

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

2.2 Result

Single RF source:

Option C:

Radio	Frequency (MHz)	Distance (mm)	Exemption ERP (mW)	Maximum Conducted Power including Tune-up Tolerance (dBm)	Antenna Gain (dBi)	ERP		Result Option C
						dBm	mW	
2.4G WLAN	2412-2462	200	768	26.0	0.04	23.89	244.9	exempt

Note: The Maximum Conducted Power including Tune-up Tolerance was declared by manufacturer.

Multiple RF sources transmission simultaneously consider:

N/A

Result: Complied

---End of Report---