

# RADIO TEST REPORT – APFWL

Project ID  
**PRJ0030546**

Report ID  
**REP017507**

Type of assessment:

**MPE Exemption report**

Manufacturer:

**Define Design Deploy Corp. dba  
D3**

Equipment description:

**Short range radar**

Product Marketing Name (PMN):

**AWR1843 AOP Module**

Model Number:

**RS-1843AOPU**

FCC ID:

**2ASVZ-01**

ISED certification number:

**IC: 30644-01**

Specification:

- ◆ **FCC 47 CFR Part 1 Subpart I, §§1.1307, 1.1310**
- ◆ **FCC 47 CFR Part 2 Subpart J, §2.1091**
- ◆ **FCC KDB 447498 D04 Interim General RF Exposure Guidance v01**
- ◆ **ISED Canada RSS-102 Issue 6 (December 15, 2023)**

Declaration of RF exposure compliance for exemption from routine evaluation limits

## **RSS-102 Annex C - Attestation:**

I attest that the radiocommunication apparatus meets the exemption from the routine evaluation limits in Section 2.5 of RSS-102 standard; that the Technical Brief was prepared, and the information contained therein is correct; that the device evaluation was performed or supervised by me; that applicable measurement methods and evaluation methodologies have been followed; and that the device meets the SAR and/or RF field strength limits of RSS-102.

Date of issue: **June 17, 2024**

**Hossein Zamani, EMC/RF Lab Manager**

Prepared by



Signature

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ANAB File Number: AT-3195 (Ottawa/Almonte); AT-3193 (Pointe-Claire); AT-3194 (Cambridge)



## Lab locations

Company name	Nemko Canada Inc.			
Facilities	<i>Ottawa site:</i> 303 River Road Ottawa, Ontario Canada K1V 1H2  Tel: +1 613 737 9680 Fax: +1 613 737 9691	<i>Montréal site:</i> 292 Labrosse Avenue Pointe-Claire, Québec Canada H9R 5L8  Tel: +1 514 694 2684 Fax: +1 514 694 3528	<i>Cambridge site:</i> 1-130 Saltsman Drive Cambridge, Ontario Canada N3E 0B2  Tel: +1 519 650 4811	<i>Almonte site:</i> 1500 Peter Robinson Road West Carleton, Ontario Canada K0A 1L0  Tel: +1 613 256-9117
Test site identifier	<b>Organization</b>	<b>Ottawa/Almonte</b>	<b>Montreal</b>	<b>Cambridge</b>
	FCC:	CA2040	CA2041	CA0101
	ISED:	2040A-4	2040G-5	24676
Website	<a href="http://www.nemko.com">www.nemko.com</a>			

## Limits of responsibility

Note that the results contained in this report relate only to the items tested and were obtained in the period between the date of initial receipt of samples and the date of issue of the report.

This test report has been completed in accordance with the requirements of ISO/IEC 17025. All results contained in this report are within Nemko Canada's ISO/IEC 17025 accreditation.

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## Section 1 Evaluation summary

### 1.1 MPE exemption for standalone transmission

#### 1.1.1 References, definitions and limits

##### FCC §2.1091(c)

- (3) Unless otherwise specified in this chapter, any other single mobile or multiple mobile and portable RF source(s) associated with a device is exempt from routine environmental evaluation for RF exposure prior to equipment authorization or use, except as specified in § 1.1307(c) and (d) of this chapter.

##### 1.1307(b)(3)(i)(C)

A single RF source is exempt if using the table below 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 below to apply, R must be at least  $\lambda/2\pi$ , where  $\lambda$  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  $\lambda/4$  or if the antenna gain is less than that of a half-wave dipole (1.64 linear value).

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	$19.2R^2$ .

##### RSS-102, Section 6.6

Field reference level (FRL) exposure evaluation is required if the separation distance between the user and/or bystander and the device's radiating element is greater than 20 cm (i.e. mobile devices), except when the device operates as follows:

- below at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance)
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than  $4.49/f^{0.5}$  W (adjusted for tune-up tolerance), where f is in MHz
- at or above 48 MHz and below 300 MHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 0.6 W (adjusted for tune-up tolerance)
- at or above 300 MHz and below 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than  $0.0131 f^{0.6834}$  W (adjusted for tune-up tolerance), where f is in MHz
- at or above 6 GHz and the source-based, time-averaged maximum EIRP of the device is equal to or less than 5 W (adjusted for tune-up tolerance)

In these cases, the information contained in the RF exposure technical brief may be limited to information that demonstrates how the EIRP was derived.

### 1.1.2 EUT technical information

Operational frequency	76–81 GHz
Antenna type	Type – Patch Antenna Manufacturer – Texas Instruments (TI) Model – 1843 Antenna On Package (AOP)
Antenna gain	4 dBi
Number of antennas	1
Maximum transmitter EIRP	35.09 dBm
FCC power threshold	$19.2 \times 0.2^2$ (where 0.2 is the minimum distance in m) = 0.768 W Minimum R of 0.2 m is more than $\lambda/2\pi$ , which is 0.617 mm, where $\lambda$ for 77 GHz is approximately 3.88 mm

### 1.1.3 MPE exemption calculation

Fundamental transmit (prediction) frequency:	77081 MHz	
Maximum measured conducted peak output power:	31.09 dBm	
Cable and/or jumper loss:	0 dB	
Maximum peak power at antenna input terminal:	31.09 dBm	
Duty cycle (protocol based):	7 %	
Maximum calculated average power at antenna input terminal:	89.97007 mW	
Single Antenna gain (typical):	4 dBi	
Number of antennae:	1	
Total system gain:	4.00 dBi	1.86 dBd
	<u>ISED limit</u>	<u>FCC limit</u>
MPE exemption threshold limit:	5.0000 W	768.000 mW
Average EIRP/ERP at prediction frequency:	225.995 mW	138.070 mW
	0.226 W	0.138 W
Margin of Compliance:	13.45 dB	7.45 dB

### 1.1.4 Verdict

The calculation of EIRP is below the exemption limit; therefore, the product is passing the RF Exposure exemption requirements.

End of the test report