

# Assessment report

**435594-6ARFWL**

Date of issue: **May 26, 2021**

Applicant:

**Edge Networks, Inc.**

Product:

**TV Set Top Box**

Model

**EvocaScoutV2**

FCC ID:

**2AWBYENI-1VA**

Type of assessment:

**MPE Calculation Report**

Specifications:

- ◆ FCC 47 CFR Part 1 Subpart I, §§1.1307, 1.1310
- ◆ FCC 47 CFR Part 2 Subpart J, §2.1091
- ◆ KDB 447498 D01 General RF Exposure Guidance v06
- ◆ RSS-102 Issue 5 Amendment 1, (February 2021)

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**Lab and test locations**

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Reviewed by	Juan M Gonzalez, EMC & Wireless Divisions Manager
Review date	May 26, 2021
Reviewer signature	

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**Limits of responsibility**

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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 USA's ISO/IEC 17025 accreditation.

This report must not be used by the client to claim product certification, approval, or endorsement by NVLAP, NIST, or any agency of the U.S. Government.

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## Section 1 Declaration

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RSS-102 Annex B - Declaration of RF exposure compliance:

**Attestation:**

I attest that the information provided in Annex A is correct; that the Technical Brief was prepared, and the information contained therein is correct; that the device evaluation was performed and/or supervised by me; that the 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: **May 26, 2021**

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James Cunningham, EMC/MIL/WL Supervisor

Prepared by



Signature

## Section 2 Evaluation summary

### 2.1 MPE exemption for simultaneous transmission

#### 2.1.1 References, definition, and limits

FCC §2.1091(d)

(2) For operations within the frequency range of 300 kHz and 6 GHz (inclusive), the limits for maximum permissible exposure (MPE), derived from the whole-body SAR limits and listed in Table 1 in paragraph (e)(1) of this section, may be used instead of whole-body SAR limits as set forth in paragraphs (a) through (c) of this section to evaluate the environmental impact of human exposure to RF radiation as specified in §1.1307(b) of this part, except for portable devices as defined in §2.1093 of this chapter as these evaluations shall be performed according to the SAR provisions in §2.1093.

**Table 2.1-1: Table 1 to §1.1310(e)(1)—Limits for Maximum Permissible Exposure (MPE)**

Frequency range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power density (mW/cm <sup>2</sup> )	Averaging time (minutes)
<b>(i) Limits for Occupational/Controlled Exposure</b>				
0.3–3.0	614	1.63	*(100)	≤6
3.0–30	1842 / f	4.89 / f	*(900 / f <sup>2</sup> )	<6
30–300	61.4	0.163	1.0	<6
300–1500			f / 300	<6
1500–100000			5	<6
<b>(ii) Limits for General Population/Uncontrolled Exposure</b>				
0.3–1.34	614	1.63	*(100)	<30
1.34–30	824 / f	2.19 / f	*(180 / f <sup>2</sup> )	<30
30–300	27.5	0.073	0.2	<30
300–1500			f / 1500	<30
1500–100000			1.0	<30

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

RSS-102, Section 2.5.2

RF 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, except when the device operates as follows:

- below 20 MHz and the source-based, time-averaged maximum e.i.r.p. of the device is equal to or less than 1 W (adjusted for tune-up tolerance)
- at or above 20 MHz and below 48 MHz and the source-based, time-averaged maximum e.i.r.p. 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 e.i.r.p. 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 e.i.r.p. of the device is equal to or less than  $0.031f^{0.6834}$  W (adjusted for tune-up tolerance), where f is in MHz;
- at or above 6 GHz and the source-based, time-averaged maximum e.i.r.p. 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 e.i.r.p. was derived.

Equation from Page 18 of OET Bulletin 64, Edition 97-01:

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

where: S = power density (mW/cm<sup>2</sup> or W/m<sup>2</sup>)

P = power input to the antenna (mW or W)

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 (cm or m)

### 2.1.2 EUT technical information

	Transmitter 1 (Bluetooth Low Energy)	Transmitter 2 (Wi-Fi, 2.4 GHz)	Transmitter 3 (Wi-Fi, 5 GHz)
Operational frequency	2402 MHz	2412 MHz	5180 MHz
Antenna type	Embedded	Embedded	Embedded
Antenna gain	3.6 dBi	3.6 dBi	3.6 dBi
Number of antennas	1	2	2
Maximum transmitter conducted power <sup>1</sup>	8.72 dBm (7.45 mW)	22.14 dBm (163.68 mW) <sup>2</sup>	14.59 dBm (28.77 mW) <sup>2</sup>
Maximum EIRP	12.32 dBm (17.07 mW)	25.74 dBm (374.97 mW) <sup>2</sup>	21.20 dBm (131.83 mW) <sup>2</sup>

#### Notes:

1. Maximum transmitter conducted power data was taken from the FCC Grants associated with the original module certification (FCC ID: VPYLB1CQ).
2. Per antenna, worst case.

### 2.1.3 MPE exemption calculations

	Transmitter 1	Transmitter 2	Transmitter 3
Fundamental transmit (prediction) frequency:	2402 MHz	2412 MHz	5180 MHz
Maximum measured conducted peak output power:	8.72 dBm	22.14 dBm	14.59 dBm
Cable and/or jumper loss:	0 dB	1 dB	2 dB
Maximum peak power at antenna input terminal:	8.72 dBm	21.14 dBm	12.59 dBm
Tx On time:	0.650 ms	1.000 ms	1.000 ms
Tx period time:	1.000 ms	1.000 ms	1.000 ms
Average factor:	65 %	100 %	100 %
Calculated average power at antenna input terminal:	4.84 mW	130.02 mW	18.16 mW
Single Antenna gain (typical):	3.6 dBi	3.6 dBi	3.6 dBi
Number of antennae:	1	2	2
Total system gain:	3.60 dBi	6.61 dBi	6.61 dBi
Limit for uncontrolled exposure at prediction frequency:	0.535 mW/cm <sup>2</sup> 5.351 W/m <sup>2</sup>	1.000 mW/cm <sup>2</sup> 10.000 W/m <sup>2</sup>	0.905 mW/cm <sup>2</sup> 9.047 W/m <sup>2</sup>
Minimum calculated prediction distance for compliance:	20 cm	20 cm	20 cm
Typical (declared) distance:	20 cm	20 cm	20 cm
Average power density at prediction frequency:	0.00221 mW/cm <sup>2</sup> 0.02206 W/m <sup>2</sup>	0.00221 mW/cm <sup>2</sup> 0.02206 W/m <sup>2</sup>	0.11851 mW/cm <sup>2</sup> 1.18511 W/m <sup>2</sup>
Combined MPE compliance:			
Margin of Compliance:	23.85 dB	26.56 dB	9.26 dB
Maximum allowable antenna gain:	27.45 dBi	26.56 dBi	17.38 dB
Average power density to MPE limit ratio:	0.004	0.002	0.221
Total sum of ratios for FCC:	0.137		9.26 dB
Total sum of ratios for ISED:	0.243		0.119
Maximum allowed sum of ratios:	1		0.018

### 2.1.4 Verdict

The calculation is below the limit; therefore, the product is compliant with the RF exposure requirements for the declared distance.

End of test report