



Radio Frequency Exposure Evaluation Report

FOR:
Boulder Engineering Studio

Model Number:
GFI1011V1

Product Description:

This is a smart vaporizer product. The unit uses a mechanical knob to push specified quantities into an oven chamber. The oven chamber contains a coil which heats the material into a vapor. The unit also communicates with a cellular phone via Bluetooth.

FCC ID: 2AUA3GFI1011V1
IC ID: 25369-GFI1011V1

Applied Rules and Standards:

CFR 47 Part 2.1093 and RSS-102 Issue 5
FCC KDB 447498 D01 General RF Exposure Guidance v06

Test Report #: SAR_EX_BOULD_001_19001_FCC_ISED

DATE: 2019-10-01



A2LA Accredited
IC recognized #
3462B-1

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1. Assessment

The following device meets the limits of general population uncontrolled exposure specified in CFR 47 Part 2.1093 according to SAR evaluation exclusion requirements specified in FCC regulation as listed in KDB 447498 and the relevant ISED Canada standard RSS-RSS102, as it has been evaluated against the standards mentioned above under this section.

Responsible for Testing Laboratory:

2019-10-01	Compliance	Cindy Li (Lab Manager)	
Date	Section	Name	Signature

Responsible for the Report:

2019-10-01	Compliance	Yuchan Lu (Test Engineer)	
Date	Section	Name	Signature

The test results of this test report relate exclusively to the test item specified in Section3.

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2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
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Fax:	+1 (408) 586 6299
Compliance Manager:	Cindy Li
Responsible Project Manager:	Rami Saman

2.2. Identification of the Client

Client's Name:	Boulder Engineering Studio
Street Address:	3297 Walnut St
City/Zip Code	Boulder, Colorado 80301
Country	USA

2.3. Identification of the Manufacturer

Applicant's Name:	GoFire, Inc
Street Address:	955 Broadway
City/Zip Code	Denver, Colorado 80203
Country	USA

3. Equipment under Assessment

Model No:	GFI1011V1
HW Version :	126.02.002_p10
SW Version :	1.2.0-rc11
FCC-ID:	2AUA3GFI1011V1
IC-ID:	25369-GFI1011V1
HVIN:	GFI1011V1
PMN:	GoFire
Minimum distance of antenna or radiating parts to user	5mm
Power Supply/ Rated Operating Voltage Range:	Low 6.4VDC, Nominal 7.2VDC, High 8.4VDC
Operating Temperature Range:	Low 10° C, Nominal 25° C, High 45° C
Modes of Operation:	Bluetooth LE
Radios included in the device:	❖ <u>Bluetooth LE:</u> <ul style="list-style-type: none">Module name: CHIP DOWN: NRF52832SMD Antenna 1.5 dBi
EUT Dimensions [cm]:	13.64 x 6.71 x 2.19
Weight (grams) :	275
Co-located Transmitters/ Antennas:	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No
Exposure Category:	<input type="checkbox"/> Occupational/ Controlled <input checked="" type="checkbox"/> General Population/ Uncontrolled
Device Category:	<input type="checkbox"/> Fixed Installation <input type="checkbox"/> Mobile <input checked="" type="checkbox"/> Portable <input type="checkbox"/> Mixed Mobile and Portable
EUT Diameter:	<input checked="" type="checkbox"/> < 60 cm <input type="checkbox"/> Other _____
Sample Revision	<input type="checkbox"/> Prototype Unit; <input type="checkbox"/> Production Unit; <input checked="" type="checkbox"/> Pre-Production

4. FCC Exemption Limits for Routine Evaluation

4.1. FCC SAR test exclusions are set by KDB 447498 D01 General RF Exposure Guidance v06

KDB 447498 Section: 4.3.1. Standalone SAR test exclusion considerations

a) For 100 MHz to 6 GHz and test separation distances \leq 50 mm, the 1-g and 10-g SAR test exclusion thresholds are determined by the following:

$$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR, where}$$

- $f(\text{GHz})$ is the RF channel transmit frequency in GHz
- Power and distance are rounded to the nearest mW and mm before calculation
- The result is rounded to one decimal place for comparison
- The values 3.0 and 7.5 are referred to as *numeric thresholds* in step b) below

The test exclusions are applicable only when the minimum *test separation distance* is \leq 50 mm, and for transmission frequencies between 100 MHz and 6 GHz. When the minimum *test separation distance* is $<$ 5 mm, a distance of 5 mm according to 4.1 f) is applied to determine SAR test exclusion.

4.2. RSS-102

ISEDC RSS-102 Section: 2.5.1 Exemption Limits for Routine Evaluation — SAR Evaluation

SAR evaluation is required if the separation distance between the user and/or bystander and the antenna and/or radiating element of the device is less than or equal to 20 cm, except when the device operates at or below the applicable output power level (adjusted for tune-up tolerance) for the specified separation distance defined in Table 1. Output power level shall be the higher of the maximum conducted or equivalent isotropically radiated power (e.i.r.p.) source-based, time-averaged output power.

Table with limits for the frequencies off interest

Frequency (MHz)	d[mm]	Exemption Limits [mW]
450	5	52
835	5	17
1900	5	7
2450	5	4
3500	5	2

5. Stand-Alone SAR Evaluation Exclusion

5.1. Justification for using the 5 mm Distance

The conservative distance of 5 mm is an estimate of how close a human body can be to the device in its typical application.

5.2. SAR Exclusion Calculation Table

According to KDB 447498, SAR evaluation can be excluded if the following equation is satisfied:

$[(\text{max. power of channel, including tune-up tolerance, mW}) / (\text{min. test separation distance, mm})] \cdot [\sqrt{f(\text{GHz})}] \leq 3.0 \text{ for 1-g SAR, and } \leq 7.5 \text{ for 10-g extremity SAR}$

FCC Standalone Transmission SAR Exclusion Calculations								
Band	Frequency [GHz]	Max Output Power [mW]	Source Based Duty Cycle	Load based duty cycle based on Maximum payload	Distance [mm]	Effective Time Average Max Power [mW]	P/D*SQRT(F) at $\leq 5\text{mm}$	1-g ≤ 3.0
BTLE	2.48	3.55	0.29	1	5	1.03	0.33	Yes

- F: Frequency [GHz]
- P1: Max. Measured Output Power [mW]
- D: Distance [mm]
- SQRT(F): Square root(Frequency[GHz])

ISED Standalone Transmission SAR Exclusion Calculations							
Band	Frequency [GHz]	Max Output Power [mW]	Source Based Duty Cycle	Load based duty cycle based on Maximum payload	Distance [mm]	Effective Time Average Max Power [mW]	Limit ¹
BTLE	2.48	3.55	0.29	1	5	1.03	3.94

Note 1: Limit by applying linear interpolation according to RSS-102 Section 2.5.1

6. Revision History

Date	Report Name	Changes to report	Report prepared by
2019-10-01	SAR_EX_BOULD-001-19001_FCC_ISED	Initial Version	Yuchan Lu