Radio Frequency Exposure Evaluation Report

FOR:

I.D.Systems Inc.

Model Name:

MVAC3.0

Product Description:

OBDII Tracking Device

FCC ID: N5VMVAC30
IC ID: 3802A-MVAC30

Applied Rules and Standards:

CFR Part 1 (1.1307 & 1.1310), Part 2 (2.1091),
FCC KDB 447498 D01 General RF Exposure Guidance v06
Industry Canada RSS-102, Issue 5 of March 2015

Report number: EMC_IDSY1-002-17001_MPE
DATE: 11-20-2017

A2LA Accredited

IC recognized #
3462B-1

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1. Assessment

This RF Exposure evaluation report provides information about compliance of the below identified device with the RF Exposure limits for mobile devices as defined in FCC CFR Part 1 (1.1307 &1.1310), Part 2 (2.1091), and IC standard RSS-102, under given conditions (measured or rated RF output power, antenna gain, distance towards human body, multiple transmitter information as presented by the applicant). In addition, maximum antenna gain or minimum distance towards the human body is calculated, respectively, where relevant.

The device meets the limits as stipulated by the above given FCC rule parts based on available specifications.

Company Name	Product Description	Model
I.D.Systems Inc.	OBDII Tracking Device	MVAC3.0

Responsible for Testing Laboratory:

Date	Section	Name	Signature
2017-11-20	Compliance	James Donnellan (Lab Manager)	

Responsible for the Report:

Date	Section	Name	Signature
2017-11-20	Compliance	Kris Lazarov (EMC Engineer)	 Digitally signed by Kris Lazarov Date: 2017.11.20 16:25:16 -08'00'

Contents

2. Administrative Data

2.1. Identification of the Testing Laboratory Issuing the Test Report

Company Name:	CETECOM Inc.
Department:	Compliance
Street Address:	411 Dixon Landing Road
City/Zip Code	Milpitas, CA 95035
Country	USA
Telephone:	+1 (408) 586 6200
Fax:	+1 (408) 586 6299
Compliance Manager:	James Donnellan
Responsible Project Leader:	Kris Lazarov

2.2. Identification of the Client

Applicant's Name:	I.D.Systems Inc.
Street Address:	123 Tice Blvd, Suite 101
City/Zip Code	Woodcliff Lake, NJ 07677
Country	USA
Contact Person:	Gaurav Sheth
Phone No.	201-996-9000
e-mail:	gsheth@id-systems.com

2.3. Identification of the Manufacturer

Manufacturer's Name:	Creation Technologies
Manufacturers Address:	1001 Klein Suite 100
City/Zip Code	Plano, TX 75074
Country	USA

3. Equipment under Assessment

Model No	MVAC3.0
HW Version	900-00000466
SW Version	M1.25
FCC-ID	N5VMVAC30
IC-ID	3802A-MVAC30
Product Description	OBDII Tracking Device
Transceiver Technology / Type(s) of Modulation	LTE / WCDMA Module: Telit LE910-NA1 / QPSK/16QAM Bluetooth version 4.2, Low Energy / GFSK ISM 315 MHz / 433 MHz / FSK
Frequency Range	LTE Band 2 1850.7-1909.3 MHz LTE Band 4 1710.7-1754.3 MHz LTE Band 5 824.7-848.3 MHz LTE Band 12 699-716 MHz WCMA Band II 1852.4-1907.6 MHz WCDMA Band V 826.4-846.6 MHz Bluetooth 4.2 2400-2483.5 MHz ISM 315 MHz ISM 433 MHz
Max. declared antenna gain	LTE / WCDMA = -1 dBi Bluetooth 4.2 = 0.5 dBi ISM = -5.0 dBi
Co-located Transmitters/ Antennas?	LTE / BT / ISM WCDMA / BT / ISM
Power Supply/ Rated Operating Voltage Range	Vmin: 7.0 VDC/ Vnom: 12 VDC / Vmax: 16 VDC
Operating Temperature Range	-40 ºC to 85 ºC
Sample Revision	☐Prototype ■Production ☐ Pre-Production
Device Category	☐Fixed Installation ☐Mobile ■ Portable
Exposure Category	☐ Occupational/ Controlled ■ General Population/ Uncontrolled

4. RF Exposure Limits and FCC

For the specific described radio apparatus the following basic limits and rules apply

4.1. Power Density Limits acc. to FCC 1.1310(e)

Frequency Range (MHz)	Power density (mW/cm²)	Averaging time (minutes)
300 – 1500	f (MHz) /1500	30
1500 – 100.000	1.0	30

4.2. Routine Environmental Evaluation Categorical Exclusion Limits acc. to FCC 2.1091(c)

Mobile devices that operate in the Commercial Mobile Radio Services pursuant to part 20 of this chapter; the Cellular Radiotelephone Service pursuant to part 22 of this chapter; the Personal Communications Services pursuant to part 24 of this chapter; the Satellite Communications Services pursuant to part 25 of this chapter; the Miscellaneous Wireless Communications Services pursuant to part 27 of this chapter; the Maritime Services (ship earth station devices only) pursuant to part 80 of this chapter; the Specialized Mobile Radio Service, and the 3650 MHz Wireless Broadband Service pursuant to part 90 of this chapter; and the Citizens Broadband Radio Service pursuant to part 96 of this chapter are subject to routine environmental evaluation for RF exposure prior to equipment authorization or use if:
(i) They operate at frequencies of 1.5 GHz or below and their effective radiated power (ERP) is 1.5 watts or more, or
(ii) They operate at frequencies above 1.5 GHz and their ERP is 3 watts or more.

4.3. Exemption Limits for Routine Evaluation — RF Exposure Evaluation RSS-102

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:

- 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 1.31 x 10-2 f0.6834 W (adjusted for tune-up tolerance), where f is in MHz;

4.4. RF Exposure Estimation (MPE Estimation)

Having available the source based average output power and peak antenna gain or the ERP/EIRP of the specified device and for a known minimum distance of its radiating structures from the body of persons according to its use cases (at least 20cm) the power density at that distance can be estimated by the following formula for plane-wave equivalent conditions (far-field conditions), when ground reflection is neglected.

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

Where: S = power density (mW/cm² or W/m²)
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 centre of radiation of the antenna (cm or m)

5. Evaluations

5.1. Routine Environmental Evaluation Applicability Stand Alone transmission

Transmission Mode	EIRP dBm	Duty Cycle %	Limits for Routine Environmental Evaluation Applicability, EIRP dBm	Exempt from Routine evaluation (Yes/No)
LTE Band 2	22.42	100	< 34.80	Yes
LTE Band 4	22.12	100	< 34.80	Yes
LTE Band 5	21.90	100	< 31.80	Yes
LTE Band 12	21.85	100	< 31.80	Yes
FDD II	22.66	100	< 34.80	Yes
FDD V	22.59	100	< 31.80	Yes
BT LE	2.00	100	< 34.80	Yes
ISM	N/A	N/A	N/A	N/A - see Note 2

Note1: EIRP power calculation is based on the maximum conducted output power and antenna gain for each transmission band
Note2: The transmitter is categorically excluded from routine environmental evaluation for RF exposure prior to equipment authorization or use, per FCC 2.1091(c)(2)

5.2. Compliance with MPE (Power Density) limits

Power Density Calculation						
Band of Operation MHz	EIRP dBm	Maximum Duty Cycle %	Distance cm	Power Density mW/cm^2	Limit mW/cm^2	Verdict
LTE Band 2	22.42	100	20	0.035	< 1.000	Pass
LTE Band 4	22.12	100	20	0.032	< 1.000	Pass
LTE Band 5	21.90	100	20	0.031	< 0.566	Pass
LTE Band 12	21.85	100	20	0.030	< 0.566	Pass
FDD II	22.66	100	20	0.037	< 1.000	Pass
FDD V	22.59	100	20	0.036	< 0.566	Pass
BT LE	2.00	100	20	0.001	< 1.000	Pass

6. Routine Environmental Evaluation Applicability Simultaneous Transmission

Possible worst case simultaneous transmissions:

- LTE on Band 2 with BT LE
- WCDMA on Band II with BT LE

Transmission Mode	Ratio of Power Density to Applicable limit for Stand Alone Operation	Sum of the Ratios for the Highest Possible Simultaneous Operation	Limits for the Highest Combined Ratio	Exempt from Routine evaluation
LTE B2 + BT	0.035 + 0.001	0.036	< 1	Yes
FDD II + BT	0.037 + 0.001	0.038	< 1	Yes

Note: Power Density to Applicable limit for Stand Alone Operation are derived from table in section 5.2

7. Revision History

Date	Report Name	Changes to report	Report prepared by
11-20-2017	EMC_IDSY1-002-17001_MPE	Initial Version	Kris Lazarov