RF Exposure Report
(mobile devices)
47 CFR 2.1091
RSS-102 Issue 6

Report No.:	WIRS135654 – FCC & ISED RF Exposure
Test Model:	FBO-3001
Received Date:	05/22/2025
Test Date(s):	05/22/2025
Issued Date:	May 30, 2025
Applicant:	Trackonomy
Address:	214 Devcon Dr., San Jose, CA 95112
Issued By:	Eurofins Electrical and Electronic Testing NA, Inc.
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TESTING CERT #0591.02

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1. Certificate of Conformity

Product: Multifunctional IoT platform sensor device

Brand: Trackonomy

Test Model: FBO-3001

Sample Status: Pre-production

Applicant: Trackonomy

Test Date(s): 05/22/2025

Standard: 47 CFR FCC Part 2.1091 and FCC Part 1.1310
RSS-102 Issue 6

Chin Ming Lui
Senior Wireless Test Engineer

Engineering Statement: The measurements shown in this report were made in accordance with the procedures indicated, and the emissions from this equipment were found to be within the limits applicable. I assume full responsibility for the accuracy and completeness of these measurements, and for the qualifications of all persons taking them. It is further stated that upon the basis of the measurements made, the equipment tested is capable of operation in accordance with the requirements of Part 22 Subpart H and Part 24 Subpart E and Part 27 Subpart L of the FCC Rules under normal use and maintenance.

Brandon Quan
Brandon Quan
Senior Wireless Test Engineer

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Report Status Sheet

Revision	Report Date	Reason for Revision
∅	May 30, 2025	Initial Issue.
1	September 4, 2025	Change Company Name to Trackonomy.

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1. EUT General info

The FBO-3001 is a battery-powered multifunctional IoT platform sensor device with the following features:

- Cloud Computing
- OTA Updating
- Data Logging
- 3 Point NIST traceable temperature measurement
- Multi modal sensor option
- Operating Temperature of -40C to +69 C

Power Specification:

The FBO-3001 device is powered by a non-user accessible battery. The rating input voltage for the device is 3.0V.

Wireless Specification:

Bluetooth Low Energy:

RF Chipset	Nordic M/N: nRF52840
Modulation	GFSK
Frequency Bands	2400-2483.5MHz
Bandwidth	2MHz
Bluetooth Version	5.3
Antenna	PCB Antenna

Cellular:

RF Module	Nordic M/N: nRF9160
FCC ID	2ANPO00NRF9160
Cellular Technology	NB-IOT/LTE-M
Antenna	Embedded Antenna

GPS:

RF Module	Antenova M/N: M10578-A3
FCC ID	Not Applicable
Cellular Technology	GPS/GLONASS/GALILEO/BEIDOU
Antenna	Embedded Antenna

Note: The information in this section was supplied by the client. Eurofins did not verify the Transmit Power or Antenna Gain.

2. RF Exposure Limits

In this document, we evaluate the RF Exposure to human body due the intentional transmission from the transmitter (EUT). The limits for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 and RSS-102 issue 6 were followed.

2.1 FCC ID and IC

FCC ID: 2AXA8-FBO-3001

IC: 27299-FBO3001

2.2 FCC Limits

According to FCC 1.1310 Table 1: The criteria listed in the following table shall be used to evaluate the environmental impact of human exposure to Radio-Frequency (RF) radiation as specified in 1.1307(b)

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^2)	Average Time (minutes)
(A) Limits For Occupational / Control Exposures				
0.3 – 3.0	614	1.63	*100	6
3.0 – 30	1842/f	4.89/f	*900/f^2	6
30-300	61.4	0.163	1.0	6
300 - 1500	…	…	F/300	6
1500 - 100,000	…	…	5	6
(B) Limits For General Population / Uncontrolled Exposure				
0.3 – 1.34	614	1.63	*100	30
1.34 – 30	824/f	2.19/f	*180/f^2	30
30 – 300	27.5	0.073	0.2	30
300 - 1500	…	…	F/1500	30
1500 - 100,000	…	…	1.0	30

F = Frequency in MHz

* = plane wave equivalent density

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2.3 Industry Canada Limits

According to RSS-102, Industry Canada has adopted the SAR and RF field strength limits established in Health Canada's RF exposure guideline, Safety Code 6.

Table 4: RF Field Strength Limits for Devices Used by the General Public (Uncontrolled Environment)				
Frequency Range	Electric Field	Magnetic Field	Power Density	Reference Period
(MHz)	(V/m rms)	(A/m rms)	(W/m²)	(minutes)
0.003-10	83	90	-	Instantaneous*
0.1-10	-	0.73/ f	-	6**
1.1-10	87/ $f^{0.5}$	-	-	6**
10-20	27.46	0.0728	-2	6
20-48	58.07/ $f^{0.25}$	0.1540/ $f^{0.25}$	8.944/ $f0.5$	6
48-300	22.06	0.05852	1.291	6
300-6000	3.142 $f^{0.3417}$	0.008335 $f^{0.3417}$	0.02619 $f^{0.6834}$	6
6000-15000	61.4	0.163	10	6
15000-150000	61.4	0.163	10	616000/ $f^{1.2}$
150000-300000	0.158 $f^{0.5}$	4.21 x 10-4 $f^{0.5}$	6.67 x 10^{-5} f	616000/ $f^{1.2}$
Note: f is frequency in MHz. * Based on nerve stimulation (NS). ** Based on specific absorption rate (SAR).				

3   Test Results (Mobile Configuration)

3.1   Classification

Radio is installed inside a mobile host device. The antenna of the product, under normal use condition, is at least 20 cm away from the body of the user and accessible to the end user. Warning statement to the user for keeping at least 20 cm or more separation distance with the antenna should be included in user's manual.

3.2   Maximum RF Power

BLE Radio:

Modulation	Frequency Range (MHz)	Max. RF output power[1] (dBm)	Max. RF output Power with Tune Up[2] (dBm)	Max. Antenna Gain[3] (dBi)	Max. EIRP[4] (dBm)	Max. EIRP (mWatts)
GFSK	2400 – 2483.5	-0.98	0.02	2.07	2.09	1.618

[1]Note: Measured max conducted output power obtained from test report WIRS135654-FCC 15.247
[2]Note: Tune-up tolerance of +1 dB.
[3]Note: Max internal antenna gain obtained from "Antenna Report" by Trackonomy. The document is attached in Appendix A.
   Antenna Information:
   • Model number: FBO-3001-ANT,
   • Antenna Type: Inverted F
   • Max Gain: 2.07 dBi
[4]Note: Max. EIRP (dBm) = Max RF Output Power with Tune Up (dBm) + Max Antenna Gain (dBi)

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Cellular Radio:

Band	Frequency Range (MHz)	Max. RF output power (dBm)[1]	Max. RF output Power with Tune Up[2] (dBm)	Max. Antenna Gain[3] (dBi)	Max EIRP[4] (dBm)	Max EIRP (mWatts)
LTE CAT-M1 / NB-IoT B12/17	698 – 716	23	24	2.3	26.3	426.6
LTE CAT-M1 / NB-IoT B13	777 – 787	23	24	2.3	26.3	426.6
LTE CAT-M1 / NB-IoT B5/26	814 – 849	23	24	2.3	26.3	426.6
LTE CAT-M1 / NB-IoT B4/66	1710 – 1780	23	24	3.1	27.1	512.9
LTE CAT-M1 / NB-IoT B2/25	1850 – 1915	23	24	3.1	27.1	512.9

[1]Note: Maximum transmit power for LTE CAT-M1 and NB-IoT user equipment (UE) obtained from "Tune-up Process" document provided by Trackonomy. The document is attached in Appendix A.
[2]Note: Tune-up tolerance of +1 dB.
[3]Note: Max internal antenna gain obtained from "All mXTEND™: A Standard Antenna Solution for Mobile Frequency Bands" by Ignion". The document is attached in Appendix A.
[4]Note: Max. EIRP (dBm) = Max RF Output Power with Tune Up (dBm) + Max Antenna Gain (dBi)

3.3 RF Exposure Calculation

FCC limits

BLE Radio:

Modulation	Frequency Range (MHz)	Max. EIRP[1] (dBm)	Max. EIRP (mW)	Power Density (mW/cm^2) @20 cm	FCC Limit (mW/cm^2)	Results
GFSK	2400 – 2483.5	2.09	1.618	0.0003	1.0	Complies

[1]**Note:** Max. EIRP (dBm) = Max RF Output Power with Tune Up (dBm) + Max Antenna Gain (dBi)

Cellular Radio:

Calculations are based on highest power declared for each band by module manufacturer

Band	Frequency Range (MHz)	Max. EIRP[1] (dBm)	Max. EIRP (mW)	Power Density (mW/cm^2) @20 cm	FCC Limit (mW/cm^2)	Results
LTE CAT-M1 / NB -IoT B12/17	699 – 716	26.3	426.6	0.0849	0.466	Complies
LTE CAT-M1 / NB -IoT B13	777 – 787	26.3	426.6	0.0849	0.518	Complies
LTE CAT-M1 / NB -IoT B5	824 – 849	26.3	426.6	0.0849	0.549	Complies
LTE CAT-M1 / NB -IoT B4/66	1710 – 1780	27.1	512.9	0.1020	1.0	Complies
LTE CAT-M1 / NB -IoT B2/25	1850 – 1915	27.1	512.9	0.1020	1.0	Complies

[1]**Note:** Max. EIRP (dBm) = Max RF Output Power with Tune Up (dBm) + Max Antenna Gain (dBi)

ISED Limits

BLE Radio:

Modulation	Frequency Range (MHz)	Max. EIRP[1] (dBm)	Max. EIRP (mW)	Power Density (W/m^2) @20 cm	RSS Limit (W/m^2)	Results
GFSK	2400 – 2483.5	2.09	1.618	0.0030	5.348	Complies

[1]Note: Max. EIRP (dBm) = Max RF Output Power with Tune Up (dBm) + Max Antenna Gain (dBi)

Cellular Radio:

Calculations are based on highest power declared for each band by module manufacturer

Technology	Frequency Range (MHz)	Max. EIRP[1] (dBm)	Max. EIRP (mW)	Power Density (W/m^2) @20 cm	RSS Limit (W/m^2)	Results
LTE CAT-M1 / NB -IoT B12/17	699 – 716	26.3	426.6	0.849	2.302	Complies
LTE CAT-M1 / NB -IoT B13	777 – 787	26.3	426.6	0.849	2.474	Complies
LTE CAT-M1 / NB -IoT B5	824 – 849	26.3	426.6	0.849	2.576	Complies
LTE CAT-M1 / NB -IoT B4/66	1710 – 1780	27.1	512.9	1.020	4.242	Complies
LTE CAT-M1 / NB -IoT B2/25	1850 – 1915	27.1	512.9	1.020	4.476	Complies

[1]Note: Max. EIRP (dBm) = Max RF Output Power with Tune Up (dBm) + Max Antenna Gain (dBi)

Power Density Calculation

$P_d = (P_{out} * G) / (4 * \pi * R^2)$

Where:

P_d = Power density in W/m^2

P_{out} = Output power from the antenna in watts (W)

G = Gain of the antenna in linear scale

R = Distance between observation point and center of the radiator in meters (m)

4 Conclusion

As stated by Trackonomy, the BLE and cellular radios are not capable of simultaneous transmission.

This device is compliant with RF Exposure requirements of the limits for Maximum Permissible Exposure (MPE) specified in FCC 1.1310 and RSS-102 Issue 6 for General Public (Uncontrolled Environment).

Appendix A

Operational Description:

FBO-3001
Operation Description

Antenna Information:

BLE Antenna:

FBO-3001-ANT BLE
Antenna Info.pdf

Cellular Antenna:

Ignion NN02-220
Antenna Info.pdf

Tune-Up Process:

Tune-Up
Process.pdf

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