

RF Exposure Report

Report Number: 208729-6

Revision Level: 1

Client: Tractotomy Systems, Inc.

214 Devcon Dr. San Jose, CA 95112

Equipment Under Test: Multifunctional IoT Platform Sensor Device

Model Number: FBO-2005

FCC ID: 2AXA8-FBO-2005

Applicable Standards: 47 CFR § 2.1091

FCC KDB 447498 D01 General RF Exposure Guidance v06

Report issued on: 13 June 2024

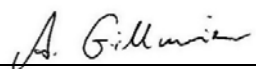
Result: Compliant



FOR THE SCOPE OF ACCREDITATION UNDER CERTIFICATE NUMBER: 1935.01

Report must not be used by the client to claim product certification, approval, or endorsement by A2LA, NIST, or any agency of the Federal Government.

Prepared by:


 Andreas Gillmeier, Sr. Engineer, Wireless

Reviewed by:



 Alex Chang, Sr. Regulatory Laboratory Manager –
 EMC/RF

TABLE OF CONTENTS

Remarks: This document is issued by the Company subject to its General Conditions of Service printed overleaf, available on request or accessible at <http://www.sgs.com/en/Terms-and-Conditions.aspx>. And for electronic format documents, subject to Terms and Conditions for Electronic Documents at <http://www.sgs.com/en/Terms-and-Conditions/terms-e-document.aspx>.

Attention is drawn to the limitation of liability, indemnification and jurisdiction issues defined therein. Any holder of this document is advised that information contained hereon reflects the Company's findings at the time of its intervention only and within the limits of Client's instructions, if any. The Company's sole responsibility is to its Client and this document does not exonerate parties to a transaction from exercising all their rights and obligations under the transaction documents. This document cannot be reproduced except in full, without prior written approval of the Company. Any unauthorized alteration, forgery or falsification of the content or appearance of this document is unlawful and offenders may be prosecuted to the fullest extent of the law. Unless otherwise stated the results shown in this test report refer only to the sample(s) tested and such sample(s) are retained for a maximum of 30 days only.



1 GENERAL INFORMATION..... 3

1.1 CLIENT INFORMATION 3

1.2 TEST LABORATORY 3

1.3 GENERAL INFORMATION OF EUT 3

1.4 OPERATING MODES AND CONDITIONS..... 4

2 RF EXPOSURE..... 4

2.1 TEST RESULTS 4

2.2 TEST METHOD..... 4

2.3 LIMITS 4

2.4 SINGLE TRANSMISSION RF EXPOSURE LEVELS (mW/cm²) PER FCC§2.1091..... 5

2.5 SIMULTANEOUS CONDITIONS 6

3 REVISION HISTORY..... 7

1 General Information

1.1 Client Information

Name: Trackonomy Systems, Inc.
Address: 214 Devcon Dr.
City, State, Zip, Country: San Jose, CA 95132

1.2 Test Laboratory

Name: SGS North America, Inc.
Address: 12310 World Trade Drive, Suite 106/107
City, State, Zip, Country: San Diego, CA 92128, USA
Accrediting Body: A2LA
Type of lab: Testing Laboratory
Certificate Number: 1935.01
Designation ID: US1346
CAB ID: US0236

1.3 General Information of EUT

Type of Product: Multifunctional IoT Platform Sensor Device
Model Number: FBO-2005
Serial Number: *Sample 1* (conducted sample x 1)
Frequency Ranges:

Technology	Band	Range
LTE	2	1850 MHz – 1910 MHz
	4	1710 MHz – 1755 MHz
	5/26	824 MHz– 849 MHz
	7	2500 MHz– 2570 MHz
	8	880 MHz– 915 MHz
	12	699 MHz– 716 MHz
	13	777 MHz– 787 MHz
	25	1850 MHz – 1915 MHz
GPRS	850	824.2 MHz – 848.8 MHz
	1900	1850.2 MHz – 1909.8 MHz
EGPRS	850	824.2 MHz – 848.8 MHz
	1900	1850.2 MHz – 1909.8 MHz
WCDMA	2	1850 MHz – 1910 MHz
	5	824 MHz – 849 MHz

Antenna Model: Ignion
Antenna Type: NN02-220
Antenna Gain*: 2.3dBi (698-960MHz)
 3.1dBi (1710-2690MHz)

*Data was not measured by SGS laboratory and therefore SGS is not responsible for accuracy. Data obtained via customer, specification sheet, previous filing or other.

1.4 Operating Modes and Conditions

Maximum power levels were utilized for all calculations. Single transmission only.

2 RF Exposure

2.1 Test Results

Test Description	Product Specific Standard	Test Result
RF Exposure	FCC Part 2.1091	Compliant

2.2 Test Method

The formula below calculates power density.

$$S = \frac{PG}{4\pi R^2} \quad \text{Or} \quad S = \frac{EIRP}{4\pi R^2}$$

Where;

S = Power density (mW/cm²)

P = Maximum sourced based average power delivered to antenna port (mW)

G = Maximum power gain of the antenna in the direction of interest relative to an isotropic radiator (dBi) (numerical value)

R = Distance between by-stander and antenna (cm)

EIRP = Equivalent (or effective) isotropically radiated power

2.3 Limits

The table below shows the limits applicable for equipment subject to §2.1091.

Limits for General Population/Uncontrolled Exposure

Frequency Range (MHz)	Electric field strength (V/m)	Magnetic field strength (A/m)	Power Density (mW/cm ²)	Averaging Time (Minutes)
0.3 – 1.34	614	20.4	*(100)	30
1.34 - 30	824/f	26.97	*(180/f ²)	30
30 - 300	27.5	33.62	0.2	30
300 - 1500	/	/	f/1500	30
1500 – 100,000	/	/	1.0	30

f = frequency in MHz

* = Plane-wave equivalent power density

2.4 Single transmission RF Exposure Levels (mW/cm²) per FCC§2.1091

LTE Band 2

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
1882.5	3.1	2.04	24	251.19	20	0.102	1

LTE Band 4

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
1732.5	3.1	2.04	24	251.19	20	0.102	1

LTE Band 5/26

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
829	2.3	1.7	24	251.19	20	0.085	0.55

LTE Band 7

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
2535	3.1	2.04	24	251.19	20	0.102	1

LTE Band 8

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
898.2	2.3	1.7	24	251.19	20	0.085	0.6

LTE Band 12

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
707.5	2.3	1.7	24	251.19	20	0.085	0.47

LTE Band 13

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
782	2.3	1.7	24	251.19	20	0.085	0.52

LTE Band 25

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
1882.5	3.1	2.04	24	251.19	20	0.102	1

GPRS 850

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
848.8	2.3	1.7	27.5	562.34	20	0.19	0.57

Note: The maximum tune-up output power + tolerance is 33.5dBm. However, the MPE was used the source based time average power value to calculated

GPRS 1900

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
1909.8	3.1	2.04	24.5	281.84	20	0.114	1

Note: The maximum tune-up output power + tolerance is 30.5dBm. However, the MPE was used the source based time average power value to calculated

EGPRS 850

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
824.2	2.3	1.7	22	158.49	20	0.054	0.55

Note: The maximum tune-up output power + tolerance is 28dBm. However, the MPE was used the source based time average power value to calculated

EGPRS 1900

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
1909.8	3.1	2.04	21	125.89	20	0.051	1

Note: The maximum tune-up output power + tolerance is 27dBm. However, the MPE was used the source based time average power value to calculated

WCDMA B2

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
1852.4	3.1	2.04	24.5	281.84	20	0.114	1

WCDMA B5

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm ²)	MPE Limit (mW/cm ²)
	(dBi)	numerical	(dBm)	(mW)			
836.6	2.3	1.41	24.5	281.84	20	0.095	0.55

2.5 Simultaneous Conditions

N/A

3 Revision History

Revision Level	Description of changes	Page Affected	Revision Date
1	Initial release	-	June 13, 2024