RF Exposure Report

Report Number:	208745-10 **Revision Level:** 1
Client:	Tractotomy Systems, Inc.
	214 Devcon Dr. San Jose, CA 95112
Equipment Under Test:	Multi-Functional IoT Platform Sensor Gateway
Model Number:	GBP-3001
FCC ID:	2AXA8-GBP-3001
Applicable Standards:	47 CFR § 2.1091
	FCC KDB 447498 D01 General RF Exposure Guidance v06
Report issued on:	June 25, 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.

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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: GBP-3001
Serial Number: 20121
Frequency Ranges:

Technology	Band	Range
LTE	2	1850 MHz – 1910 MHz
	4	1710 MHz – 1755 MHz
	5	824 MHz – 849 MHz
	12	699 MHz – 716 MHz
	13	777 MHz – 787 MHz
	66	1710 MHz – 1780 MHz
	71	663 MHz – 698 MHz
WCDMA	II	1850 MHz – 1910 MHz
	IV	1710 MHz – 1755 MHz
	V	824 MHz – 849 MHz

Data Modes: QPSK as worst case
Antenna Manufacturer: 2J-antennas
Antenna Model: 2J6C86BCFc
Antenna Gain*: 4G LTE/3G WCDMA: 2.5dBi (617-960MHz)
4G LTE/3G WCDMA: 5.0dBi (1427-2690MHz)

*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.

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

Where;
S = Power density (mW/cm^2)
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/cm^2) per FCC§2.1091*

LTE Band 2

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
1880	5.0	3.16	25	316.23	25	0.127	1

LTE Band 4

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
1753.5	5.0	3.16	25	316.23	25	0.127	1

LTE Band 5

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
836.5	2.5	1.78	25	316.23	25	0.072	0.56

LTE Band 12

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
714.5	2.5	1.78	25	316.23	25	0.072	0.48

LTE Band 13

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
782	2.5	1.78	25	316.23	25	0.072	0.52

LTE Band 66

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
1745	5.0	3.16	25	316.23	25	0.127	1

LTE Band 71

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
668	2.5	1.78	25	316.23	25	0.072	0.45

WCDMA B2

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
1852.4	5.0	3.16	25	316.23	25	0.127	1

WCDMA B4

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
1712.4	5.0	3.16	25	316.23	25	0.127	1

WCDMA B5

Freq. (MHz)	Antenna Gain		Conducted Power		Evaluation Distance (cm)	Power Density (mW/cm²)	MPE Limit (mW/cm²)
	(dBi)	numerical	(dBm)	(mW)			
826.4	2.5	1.78	25	316.23	25	0.072	0.55

2.5 *Simultaneous Conditions*

N/A

3 Revision History

Revision Level	Description of changes	Revision Date
1	Initial release	June 25, 2024