SENSUS METERING SYSTEMS INC.

RF EXPOSURE REPORT

SCOPE OF WORK
RF EXPOSURE CALCULATIONS – FLXI2102 RADIO MODULE

REPORT NUMBER
106182215ATL-005

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RF EXPOSURE REPORT

Report Number:	**106182215ATL-005**
Project Number:	**G106182215**
Report Issue Date:	**09 July 2025**
Model / HVIN:	**FLXI2102**
FCC ID:	**SDBFLXI2102**
IC:	**2220A-FLXI2102**
Standards:	**FCC Title 47 CFR Parts 1.1307, 2.1091** **RSS-102, Issue 6**

Test Location

Intertek
1950 Evergreen Blvd., Suite 100
Duluth, GA 30096 USA
FCC Designation: US1046
CAB Designator: US0128

Client

Sensus Metering Systems Inc.
639 Davis Drive
Morrisville, NC 27560 USA

Report prepared by:

Jeremy Pickens / Senior Staff Engineer

Report reviewed by:

Brian Lackey / EMC Staff Engineer

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1 Introduction and Conclusion

RF Exposure calculations were performed on the product constructed as described in Section 4. Information provided by the client including maximum output power, antenna gain(s), and minimum separation distance(s) was used to determine if the product under evaluation was exempt from routine evaluation. Any change in these stated values may invalidate these results. No additions, deviations, or exclusions have been made from the standard(s) unless specifically noted.

Based on the results of our investigation, we have concluded the product under evaluation is exempt from routine evaluation for each of the standard(s) indicated. The results obtained in this test report pertain only to the item(s) evaluated. Intertek does not make any claims of compliance for samples or variants which were not evaluated.

2 Evaluation Summary

Section	Test full name	Result
5	Routine Evaluation Exemption Criteria (FCC Title 47 CFR Part 1.1307, 2.1091)	Exempt
6	ISED Routine Evaluation Exemption Criteria (RSS-102 Issue 6)	Exempt

3 Client Information

This evaluation was performed at the request of:

Client: Sensus Metering Systems Inc.
639 Davis Drive
Morrisville, NC 27560 USA

Contact: Tyler Leeson

Email: Tyler.Leeson@xylem.com

4 Description of Equipment Under Test and Variant Models

Manufacturer: Sensus Metering Systems Inc.
639 Davis Drive
Morrisville, NC 27560 USA

Equipment Under Test			
Description	**Manufacturer**	**Model Number (HVIN)**	**Serial Number**
Transceiver Module	Sensus Metering Systems Inc.	FLXI2102	7300559

Receive Date:	27 May 2025
Received Condition:	Good
Type:	Production

Description of Equipment Under Test
The equipment under test was the FLXI2102 module that incorporates a Sensus FLEXNET 900MHz transceiver. The FLXI2102 is meant as a state-of-the-art endpoint supporting WAN and HAN communications. The electronics package is designed to be installed in the Aclara I210+c meter. The Aclara I210+c meter is Aclara's flagship residential meter supporting Demand, TOU, and LP as well as functioning as a service switch.

Certification Purpose
Class II Permissive Change: Sensus is updating the PCBA with a new Front End Module (FEM).

Equipment Under Test Power Configuration			
Rated Voltage	**Rated Current**	**Rated Frequency**	**Number of Phases**
4Vdc	1.1A	NA	NA

Radio/Receiver Characteristics	
Frequency Range	901-960MHz
Modulation Type(s)	7-FSK, 13-FSK, 2-GFSK, 4-GFSK, 2-SFSK, 4-SFSK, 8-SFSK
Maximum Rated Output Power (Conducted):	30 +/- 1dBm
MIMO Information (# of Transmit and Receive antenna ports)	1 (SISO)
Equipment Type	Full Module
Antenna Type and Gain	¼ Wave Printed Monopole (2.77dBi)
Device Category	Mobile
Environment	General Population/Uncontrolled Exposure

5 FCC Routine Evaluation Exemption Criteria

FCC Title 47 CFR Part 1.1307(3)(i)

For single RF sources (i.e., any single fixed RF source, mobile device, or portable device, as defined in paragraph (b)(2) of this section): A single RF source is exempt if:

(A) The available maximum time-averaged power is no more than 1 mW, regardless of separation distance. This exemption may not be used in conjunction with other exemption criteria other than those in paragraph (b)(3)(ii)(A) of this section. Medical implant devices may only use this exemption and that in paragraph (b)(3)(ii)(A);

(B) Or the available maximum time-averaged power or effective radiated power (ERP), whichever is greater, is less than or equal to the threshold Pth (mW) described in the following formula. This method shall only be used at separation distances (cm) from 0.5 centimeters to 40 centimeters and at frequencies from 0.3 GHz to 6 GHz (inclusive). Pth is given by:

$$P_{th}\ (\text{mW}) = \begin{cases} ERP_{20\ cm}(d/20\ \text{cm})^{x} & d \le 20\ \text{cm} \\ ERP_{20\ cm} & 20\ \text{cm} < d \le 40\ \text{cm} \end{cases}$$

Where

$$x = -\log_{10}\left(\frac{60}{ERP_{20\ cm}\sqrt{f}}\right) \text{ and } f \text{ is in GHz;}$$

and

$$ERP_{20\ cm}\ (\text{mW}) = \begin{cases} 2040f & 0.3\ \text{GHz} \le f < 1.5\ \text{GHz} \\ 3060 & 1.5\ \text{GHz} \le f \le 6\ \text{GHz} \end{cases}$$

d = the separation distance (cm);

5.1 Calculations

Channel (MHz)	Measured Conducted Power (dBm)	Max Tune Up Power		Antenna Gain		Separation Distance (m)	Result (mW/cm^2)	Limit (mW/cm^2)
		(dBm)	(W)	(dBi)	Numeric			
901.5	30.47	31	1.259	2.77	1.892	0.27	0.26	0.601
928.925	30.13	31	1.259	2.77	1.892	0.27	0.26	0.619
930.5	30.01	31	1.259	2.77	1.892	0.27	0.26	0.62
932.25	30.06	31	1.259	2.77	1.892	0.27	0.26	0.622
940.0125	29.92	31	1.259	2.77	1.892	0.27	0.26	0.627
941.4875	29.93	31	1.259	2.77	1.892	0.27	0.26	0.628
952.5	29.73	31	1.259	2.77	1.892	0.27	0.26	0.635
959.925	29.48	31	1.259	2.77	1.892	0.27	0.26	0.64

6 ISED Routine Evaluation Exemption Criteria

RSS-102 Issue 6 § 5.3.2: RF Exposure limits

The electric and magnetic field strength reference levels, power density reference levels, and associated reference period for devices employed by the general public (uncontrolled environment) and controlled-use devices (controlled environment) are specified in table 7 and table 8. Note that the power density limits specified in these tables apply to whole body exposure conditions.

Table 7: RF field strength and power density limits for devices used by the general public (uncontrolled environment)

Frequency range (MHz)	Electric field (V_{RMS}/m)	Magnetic field (A_{RMS}/m)	Power density (W/m^2)	Reference period (minutes)
10-20	27.46	0.0728	2	6
20-48	$58.07 / f^{0.25}$	$0.1540 / f^{0.25}$	$8.944 / f^{0.5}$	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	$0.158 f^{0.5}$	$4.21\times10^{-4} f^{0.5}$	$6.67\times10^{-5} f$	$616000/ f^{1.2}$

6.1 Calculations

Channel (MHz)	Measured Conducted Power (dBm)	Max Tune Up Power		Antenna Gain		Separation Distance (m)	Result (W/m^2)	Limit (W/m^2)
		(dBm)	(W)	(dBi)	Numeric			
901.5	30.47	31	1.259	2.77	1.892	0.27	2.6	2.739
928.925	30.13	31	1.259	2.77	1.892	0.27	2.6	2.795
930.5	30.01	31	1.259	2.77	1.892	0.27	2.6	2.799
932.25	30.06	31	1.259	2.77	1.892	0.27	2.6	2.802
940.0125	29.92	31	1.259	2.77	1.892	0.27	2.6	2.818
941.4875	29.93	31	1.259	2.77	1.892	0.27	2.6	2.821
952.5	29.73	31	1.259	2.77	1.892	0.27	2.6	2.844
959.925	29.48	31	1.259	2.77	1.892	0.27	2.6	2.859

7 Revision History

Revision Level	Date	Report Number	Prepared By	Reviewed By	Notes
0	09 July 2025	106182215ATL-005	JOP	BL	Original Issue