Certification Test Report

FCC ID: QZC-SNREM
IC: 4557A-SNREM

FCC Rule Part: 15.247
ISED Canada's Radio Standards Specification: RSS-247

TÜV SÜD Report Number: RD72154795.100

Manufacturer: Elster Solutions, LLC
Model: SNREM

Test Begin Date: December 2, 2019
Test End Date: December 6, 2019

Report Issue Date: December 12, 2019

A2LA Cert. No. 2955.18

FOR THE SCOPE OF ACCREDITATION UNDER LAB Code 2955.18

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

Prepared by:	**Reviewed by:**
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TÜV SÜD America Inc.	**TÜV SÜD America Inc.**

This report contains 18 pages

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1 GENERAL

1.1 Purpose

The purpose of this report is to demonstrate compliance with Part 15 Subpart C of the FCC's Code of Federal Regulations and ISED Canada's Radio Standards Specification RSS-247 Certification for an FCC Class II Permissive Change & ISED Canada Class IV Permissive Change for a limited modular approval to add two additional host devices.

The host devices are described as follows:

Form Factor 1: Black form factor. This is installed at ground level in water vaults. It communicates to the water meter via the AMR III interface

Form Factor 2: Off-white form factor. This is an integral mount device that interfaces with AC-250 form factor gas meters. It counts rotations of the meters shaft that is spun by a gas diaphragm.

1.2 Product description

The limited module SNREM Printed Circuit Board Assembly (PCBA) contains a frequency hopping spread spectrum (FHSS) radio operating in the 902-928MHz ISM frequency band. It also contains circuitry for application control and communications with an external metering device. The SNREM PCBA enables operation in an Advanced Metering Infrastructure (AMI) that uses a proprietary network architecture and protocol devised by Elster Electricity LLC.

The 900 MHz radio may operate in two modes: The Energy Axis (EA) mode or SynergyNet mode. The EA mode is Elster's legacy mode of operation, while the SynergyNet mode is compliant with the IEEE 802.15.4g standard for Smart Metering Utility Networks.

Technical Information:

Mode of Operation	Frequency Range (MHz)	Number of Channels	Data Rates Supported (kbps)
1 (EA Mode)	902.4 – 927.6	25	35.5, 142.2
1 (SynergyNet Mode)	902.4 – 927.6	64	50, 150, 200

Modulation Format: FSK
Antenna Type / Gain: Monopole / 1.36dBi
Operating Voltage: 3.6VDC

Manufacturer Information:

Elster Solutions, LLC
208 S. Rogers Lane
Raleigh, NC 27610

EUT Serial Numbers: RF Conducted: 04 (Limited module), Radiated: Host (Form Factor 1) 0015447872; Host (Form Factor 2) 0017231840

Test Sample Condition: The test samples were provided in good working order with no visible defects.

1.3 Test Methodology and Considerations

All modes of operation, including all available data rates were evaluated for each mode. The data presented in this report represents the worst case where applicable.

A DC power supply set to 3.6VDC was used to support testing due to the batteries being unable to support continuous transmit.

Based on radiated measurements of all data rates, the worst-case data rate for mode 1 (EA) was 142.2kbps and 50kbps for mode 2 (SynergyNet).

The module is designed to only operate with battery power devices. Therefore, AC Mains Conducted Emissions was not performed.

Software power settings during test for mode 1: 34 (Low Channel), 36 (Mid Channel), 35 (High Channel)
Software power settings during test for mode 2: 56 (Low Channel), 58 (Mid Channel), 58 (High Channel)

1.4 Modifications

The high channel power for mode 1 required to be lowered from 36 to 35 in the software settings to comply with the conducted peak power measurement.

2 TEST FACILITIES

2.1 Location

The radiated and conducted emissions test sites are located at the following address:

TÜV SÜD America Inc.
2320 Presidential Drive, Suite 101
Durham, NC 27703
Phone: 919-748-4615

2.2 Laboratory Accreditations/Recognitions/Certifications

TÜV SÜD America Inc. (Durham) is accredited to ISO/IEC 17025 by A2LA accreditation program, and has been issued certificate number 2955.18 in recognition of this accreditation. Unless otherwise specified, all tests methods described within this report are covered under the ISO/IEC 17025 scope of accreditation.

The Semi-Anechoic Chamber Test Site and Conducted Emissions Site have been fully described, submitted to, and accepted by the FCC and Innovation, Science and Economic Development (ISED) Canada.

FCC Designation Number: US1245
FCC Test Firm Registration Number: 238628
ISED Canada Company Number: 20446

2.3 Radiated Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The Semi-Anechoic Chamber Test Site consists of a 18' x 28' x 18' shielded enclosure. The chamber is lined with Samwha Electronics Co. LTD Ferrite Absorber, model number SFA300 (HSN-1). The ferrite tile is 10cm x 10 cm and weighs approximately 1.4lbs. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber. On top of the ferrite tiles is DMAS HT-45 (Dutch Microwave Absorber Solutions) hybrid absorber on all walls except the wall behind the antenna mast which has a shorter DMAS HT-25 absorber.

The turntable is 1.50m in diameter and is located 150cm from the back wall of the chamber. The chamber is grounded via 1 - 8' copper ground rod, installed at the center of the back wall, it is bound to the ground plane using short #6 copper wire. The turntable is all steel, flush mounted table installed in an all steel frame. The table is remotely operated from inside the control room located 25' from the turntable. The turntable is electrically bonded to the surrounding ground plane via steel fingers installed on the edge of the turn table. The steel fingers make constant contact with the ground plane.

Behind the turntable is a 2' x 6' x 1.5' deep shielded pit used for support equipment if necessary. The pit is equipped with 2 - 4" PVC chase from the turntable to the pit that allow for cabling to the EUT if necessary. The underside of the turntable can be accessed from the pit so cables can be supplied to the EUT from the pit.

A diagram of the Semi-Anechoic Chamber Test Site is shown in Figure 2.3-1 below:

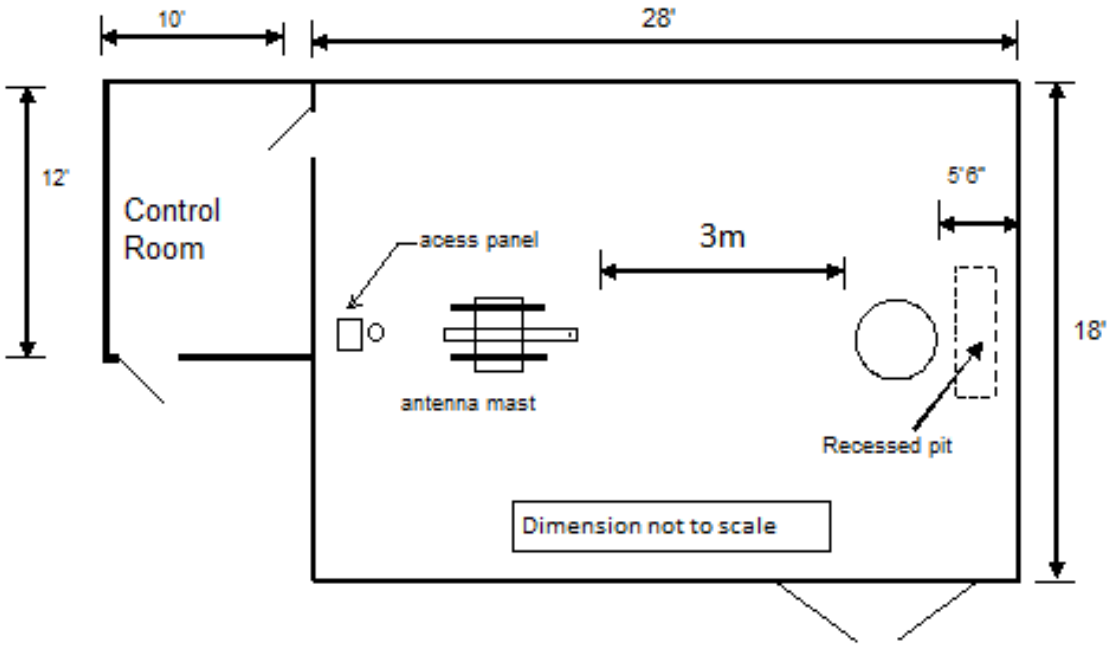


Figure 2.3-1: Semi-Anechoic Chamber Test Site

3 APPLICABLE STANDARD REFERENCES

The following standards were used:

- ANSI C63.4-2014: American National Standard for Methods of Measurement of Radio-Noise Emissions from low-voltage electrical and electronic equipment in the range of 9kHz to 40 GHz.
- ANSI C63.10-2013: American National Standard of Procedures for Compliance Testing of Unlicensed Wireless Devices
- US Code of Federal Regulations (CFR): Title 47, Part 2, Subpart J: Equipment Authorization Procedures, 2019
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2019
- FCC KDB 558074 D01 15.247 Meas Guidance v05r02 - Guidance for compliance measurements on digital transmission system, frequency hopping spread spectrum system, and hybrid systems devices operating under section 15.247 of the FCC rules, April 2, 2019
- ISED Canada Radio Standards Specification: RSS-247, Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and Licence-Exempt Local Area Network (LE-LAN) Devices, Issue 2, February 2017
- ISED Canada Radio Standards Specification: RSS-GEN – General Requirements for Compliance of Radio Apparatus, Issue 5, March 2019 Amendment 1

4 LIST OF TEST EQUIPMENT

The calibration interval of test equipment is annually or the manufacturer's recommendations. Where the calibration interval deviates from the annual cycle based on the instrument manufacturer's recommendations, it shall be stated below.

Table 4-1: Test Equipment

Asset ID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
DEMC3002	Rohde & Schwarz	ESU40	Receiver	100346	10/31/2018	1/31/2020
DEMC3006	Rohde & Schwarz	TS-PR18	Amplifier	122006	1/22/2019	1/22/2020
DEMC3008	Rohde & Schwarz	NRP2	Meter	103131	2/7/2019	2/7/2020
DEMC3009	Rohde & Schwarz	NRP-Z81	Meter	102397	2/7/2019	2/7/2020
DEMC3012	Rohde & Schwarz	EMC32-EB	Software	100731	NCR	NCR
DEMC3016	Fei Teng Wireless Technology	HA-07M18G-NF	Antenna	2013120203	2/7/2018	2/7/2020
DEMC3029	Micro-Tronics	HPM50108	900MHz HP Filter	134	1/15/2019	1/15/2020
DEMC3038	Florida RF Labs	NMSE-290AW-60.0-NMSE	Cable Set	1448	1/16/2019	1/16/2020
DEMC3039	Florida RF Labs	NMSE-290AW-396.0-NMSE	Cable Set	1447	1/16/2019	1/16/2020
DEMC3041	Aeroflex Inmet	18N10W-30	Attenuator	1447	1/15/2019	1/15/2020
DEMC3053	Fluke	115	Digital Multimeter	28840861	1/23/2019	1/23/2020
DEMC3055	Rohde & Schwarz	3005	Cable	3055	1/22/2019	1/22/2020
DEMC3161	TESEQ	CBL-6112D	Antenna	51323	1/31/2019	1/31/2020

NCR = No Calibration Required

DMAS MT-25 RF absorber material was used on the floor for all final measurements above 1 GHz.

Asset DEMC3002: Firmware Version: ESU40 is 4.73 SP4

Asset DEMC3012: Software Version: EMC32-B is 10.50.00

5 SUPPORT EQUIPMENT

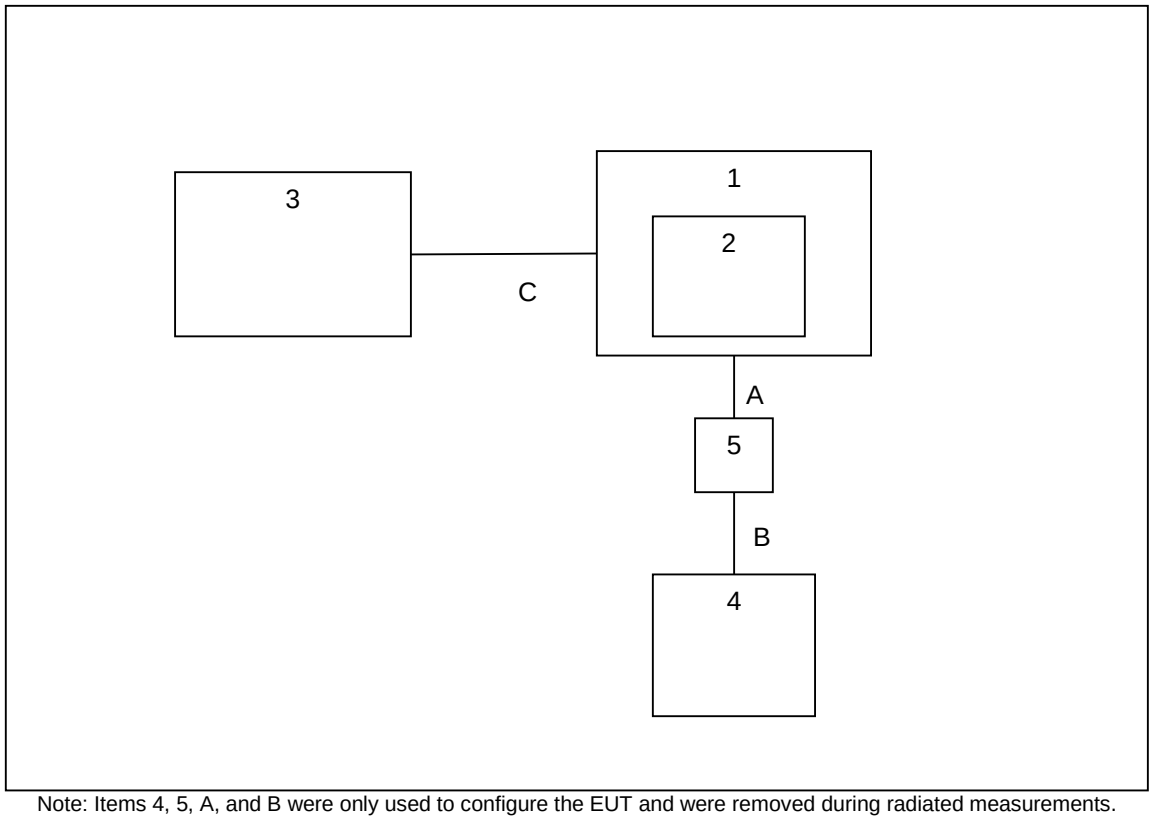
Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model Number	Serial Number
1	Host Form Factor 1	Elster Solutions	N/A	0015447872
	Host Form Factor 2	Elster Solutions	N/A	0017231840
2	EUT (Module)	Elster Solutions	SNREM	N/A
3	DC Power Supply	Sorensen	QRD20-4	2716
4	Computer	Dell	Precision 7510	5WRCRF2
5	TTL Converter	BB Electronics	232LPTTL33	0115484046

Table 5-2: Cable Description

Cable #	Cable Type	Length	Shield	Termination
A	3 wire Serial	20cm	No	1 - 5
B	USB to RS-232 Cable	40cm	No	4 - 5
C	Power	90cm	No	3 - 1

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM



Note: Items 4, 5, A, and B were only used to configure the EUT and were removed during radiated measurements.

Figure 6-1: Test Setup Block Diagram

7 SUMMARY OF TESTS

Along with the tabular data shown below, plots were taken of all signals deemed important enough to document.

7.1 Antenna Requirement – FCC: 15.203

The antenna is an integral antenna.

7.2 Power Line Conducted Emissions – FCC: 15.207; ISED Canada: RSS-Gen 8.8

7.2.1 Measurement Procedure

ANSI C63.10-2013 section 6 was the guiding document for this evaluation. Conducted emissions were performed from 150kHz to 30MHz with the spectrum analyzer's resolution bandwidth set to 9kHz and the video bandwidth set to 30kHz. The calculation for the conducted emissions is as follows:

Corrected Reading = Analyzer Reading + LISN Loss + Cable Loss
Margin = Applicable Limit - Corrected Reading

7.2.2 Measurement Results

The module will always operate while powered via a battery, therefore AC Mains Conducted Emissions is not required.

7.3 Peak Output Power – FCC: 15.247(b)(2); ISED Canada: RSS-247

7.3.1 Measurement Procedure (Conducted Method)

The RF output port of the EUT was directly connected to the input of a power meter using 29.8dB of passive attenuation. The device employs <50 channels at any given time in Mode 1 and is therefore the power is limited to 0.25W. The device employs >50 channels in Mode 2 and therefore the power is limited to 1 Watt.

7.3.2 Measurement Results

Performed by: Chris Gormley

Table 7.3.2-1: RF Output Power

Frequency (MHz)	Level (dBm)	Limit (dBm)	Data Rate (kbps)
902.4	23.71	23.98	35.5
902.4	23.70	23.98	142.2
902.4	26.38	30.00	50
902.4	26.38	30.00	150
902.4	26.36	30.00	200
915.2	23.95	23.98	35.5
915.2	23.95	23.98	142.2
915.2	26.40	30.00	50
915.2	26.40	30.00	150
915.2	26.40	30.00	200
927.6	23.88	23.98	35.5
927.6	23.88	23.98	142.2
927.6	26.37	30.00	50
927.6	26.37	30.00	150
927.6	26.37	30.00	200

7.3.3 Radiated Spurious Emissions – FCC: 15.205, 15.209; ISED Canada RSS-247, RSS-Gen 8.9/8.10

7.3.3.1 Measurement Procedure

Radiated emissions tests were made over the frequency range of 30MHz to 10GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1m to 4m so that the maximum radiated emissions level would be detected. For frequencies below 1000MHz, quasi-peak measurements were made using a resolution bandwidth RBW of 120 kHz and a video bandwidth VBW of 300 kHz. For frequencies above 1000MHz, peak and average measurements were made with RBW and VBW of 1 MHz and 3MHz respectively. The average emissions were further corrected by applying the duty cycle correction of the EUT for comparison to the average limit.

Each emission found to be in a restricted band as defined by section 15.205, including any emission at the operational band-edge, was compared to the radiated emission limits as defined in section 15.209.

7.3.3.2 Duty Cycle Correction

Mode 1:
No duty cycle correction was used.

Mode 2:
For average radiated measurements, using a 50% duty cycle, the measured level was reduced by a factor 6.02dB. The duty cycle correction factor is determined using the formula: 20log (50/100) = - 6.02dB.

A detailed analysis of the duty cycle timing is provided in the Theory of Operation accompanying the original application for certification.

7.3.3.3 Measurement Results

Performed by: Chris Gormley

Table 7.5.3.3-1: Radiated Spurious Emissions Tabulated Data – Mode 1 – Form Factor 1

Frequency	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	Pk	Qpk/Avg			Pk	Qpk/Avg	Pk	Qpk/Avg	Pk	Qpk/Avg
Low Channel										
979.29	16.4	12.6	V	27.56	---------	40.16	--------	54.0	---------	13.84
2707.2	47.10	43.50	V	-2.30	44.80	41.20	74.0	54.0	29.20	12.80
3609.6	38.60	27.30	V	1.01	39.61	28.31	74.0	54.0	34.39	25.69
4512	39.00	25.20	V	3.66	42.66	28.86	74.0	54.0	31.34	25.14
5414.4	38.40	26.90	V	4.58	42.98	31.48	74.0	54.0	31.02	22.52
8121.6	37.30	24.00	H	9.40	46.70	33.40	74.0	54.0	27.30	20.60
9024	36.90	23.20	V	10.30	47.20	33.50	74.0	54.0	26.80	20.50
Middle Channel										
992.02	17	13.4	V	27.20	---------	40.60	--------	54.0	---------	13.40
2745.6	45.40	41.10	V	-2.18	43.22	38.92	74.0	54.0	30.78	15.08
3660.8	38.20	25.20	H	1.23	39.43	26.43	74.0	54.0	34.57	27.57
4576	37.40	24.00	V	3.63	41.03	27.63	74.0	54.0	32.97	26.37
7321.6	35.30	21.00	V	8.55	43.85	29.55	74.0	54.0	30.15	24.45
8236.8	36.90	23.50	V	10.42	47.32	33.92	74.0	54.0	26.68	20.08
9152	37.10	23.20	H	10.53	47.63	33.73	74.0	54.0	26.37	20.27
High Channel										
965.89	20	16.8	V	26.92	---------	43.72	--------	54.0	---------	10.28
2782.8	43.70	38.00	V	-2.06	41.64	35.94	74.0	54.0	32.36	18.06
3710.4	39.30	27.50	H	1.45	40.75	28.95	74.0	54.0	33.25	25.05
4638	37.30	24.40	H	3.61	40.91	28.01	74.0	54.0	33.09	25.99
7420.8	33.90	20.60	H	8.86	42.76	29.46	74.0	54.0	31.24	24.54
8348.4	36.50	23.40	H	11.41	47.91	34.81	74.0	54.0	26.09	19.19

Table 7.5.3.3-2: Radiated Spurious Emissions Tabulated Data – Mode 2 – Form Factor 1

Frequency	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	Pk	Qpk/Avg			Pk	Qpk/Avg	Pk	Qpk/Avg	Pk	Qpk/Avg
Low Channel										
979.29	15.1	8.8	V	27.56	---------	36.36	--------	54.0	---------	17.64
2707.2	52.00	50.10	H	-2.30	49.70	41.78	74.0	54.0	24.30	12.22
3609.6	42.80	36.00	V	1.01	43.81	30.99	74.0	54.0	30.19	23.01
4512	40.50	30.40	V	3.66	44.16	28.04	74.0	54.0	29.84	25.96
5414.4	40.20	30.30	V	4.58	44.78	28.85	74.0	54.0	29.22	25.15
8121.6	39.70	29.20	H	9.40	49.10	32.58	74.0	54.0	24.90	21.42
9024	36.10	23.50	H	10.30	46.40	27.78	74.0	54.0	27.60	26.22
Middle Channel										
992.05	17.9	14.7	V	27.20	---------	41.90	--------	54.0	---------	12.10
2745.6	50.10	48.00	V	-2.18	47.92	39.80	74.0	54.0	26.08	14.20
3660.8	42.00	33.70	H	1.23	43.23	28.91	74.0	54.0	30.77	25.09
4576	38.00	26.70	V	3.63	41.63	24.31	74.0	54.0	32.37	29.69
7321.6	33.70	22.20	V	8.55	42.25	24.73	74.0	54.0	31.75	29.27
8236.8	39.60	29.40	H	10.42	50.02	33.80	74.0	54.0	23.98	20.20
9152	36.70	23.70	V	10.53	47.23	28.21	74.0	54.0	26.77	25.79
High Channel										
965.98	23.2	21	V	26.92	---------	47.92	--------	54.0	---------	6.08
2782.8	46.50	42.70	V	-2.06	44.44	34.62	74.0	54.0	29.56	19.38
3710.4	41.60	33.80	H	1.45	43.05	29.22	74.0	54.0	30.95	24.78
4638	40.00	29.80	H	3.61	43.61	27.39	74.0	54.0	30.39	26.61
7420.8	34.50	22.10	H	8.86	43.36	24.94	74.0	54.0	30.64	29.06
8348.4	38.20	24.00	V	11.41	49.61	29.39	74.0	54.0	24.39	24.61

Table 7.5.3.3-3: Radiated Spurious Emissions Tabulated Data – Mode 1 – Form Factor 2

Frequency	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	Pk	Qpk/Avg			Pk	Qpk/Avg	Pk	Qpk/Avg	Pk	Qpk/Avg
Low Channel										
979.1	16.80	13.20	146	27.55	---------	40.75	--------	54.0	---------	13.25
2707.2	53.30	51.20	100	-2.30	51.00	48.90	74.0	54.0	23.00	5.10
3609.6	38.40	25.80	100	1.01	39.41	26.81	74.0	54.0	34.59	27.19
4512	37.60	24.40	100	3.66	41.26	28.06	74.0	54.0	32.74	25.94
5414.4	37.90	24.40	100	4.58	42.48	28.98	74.0	54.0	31.52	25.02
8121.6	37.30	24.20	100	9.40	46.70	33.60	74.0	54.0	27.30	20.40
9024	36.40	23.40	100	10.30	46.70	33.70	74.0	54.0	27.30	20.30
Middle Channel										
2745.6	51.00	48.60	H	-2.18	48.82	46.42	74.0	54.0	25.18	7.58
3660.8	39.40	27.50	V	1.23	40.63	28.73	74.0	54.0	33.37	25.27
4576	39.10	24.60	V	3.63	42.73	28.23	74.0	54.0	31.27	25.77
7321.6	37.10	23.50	H	8.55	45.65	32.05	74.0	54.0	28.35	21.95
8236.8	37.40	24.10	H	10.42	47.82	34.52	74.0	54.0	26.18	19.48
9152	37.70	23.40	H	10.53	48.23	33.93	74.0	54.0	25.77	20.07
High Channel										
966.09	16.60	13.50	H	26.92	---------	40.42	--------	54.0	---------	13.58
2782.8	48.50	45.40	V	-2.06	46.44	43.34	74.0	54.0	27.56	10.66
3710.4	40.00	27.80	V	1.45	41.45	29.25	74.0	54.0	32.55	24.75
4638	38.30	25.10	V	3.61	41.91	28.71	74.0	54.0	32.09	25.29
7420.8	36.00	22.50	H	8.86	44.86	31.36	74.0	54.0	29.14	22.64
8348.4	37.50	24.30	H	11.41	48.91	35.71	74.0	54.0	25.09	18.29

Table 7.5.3.3-4: Radiated Spurious Emissions Tabulated Data – Mode 2 – Form Factor 2

Frequency	Level (dBuV)		Antenna Polarity (H/V)	Correction Factors (dB)	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	Pk	Qpk/Avg			Pk	Qpk/Avg	Pk	Qpk/Avg	Pk	Qpk/Avg
Low Channel										
2707.2	57.70	56.80	H	-2.30	55.40	48.48	74.0	54.0	18.60	5.52
3609.6	42.40	34.60	V	1.01	43.41	29.59	74.0	54.0	30.59	24.41
4512	39.90	29.40	V	3.66	43.56	27.04	74.0	54.0	30.44	26.96
5414.4	40.20	29.90	H	4.58	44.78	28.45	74.0	54.0	29.22	25.55
8121.6	39.80	29.10	H	9.40	49.20	32.48	74.0	54.0	24.80	21.52
9024	38.60	27.50	V	10.30	48.90	31.78	74.0	54.0	25.10	22.22
Middle Channel										
992.15	11	4.8	H	27.20	---------	32.00	--------	54.0	---------	22.00
2745.6	56.60	55.60	H	-2.18	54.42	47.40	74.0	54.0	19.58	6.60
3660.8	41.90	34.40	V	1.23	43.13	29.61	74.0	54.0	30.87	24.39
4576	39.80	29.00	V	3.63	43.43	26.61	74.0	54.0	30.57	27.39
7321.6	37.70	25.70	H	8.55	46.25	28.23	74.0	54.0	27.75	25.77
8236.8	39.30	29.30	H	10.42	49.72	33.70	74.0	54.0	24.28	20.30
9152	38.30	26.80	V	10.53	48.83	31.31	74.0	54.0	25.17	22.69
High Channel										
965.98	21.4	19.7	H	26.92	---------	46.62	--------	54.0	---------	7.38
2782.8	53.50	52.00	V	-2.06	51.44	43.92	74.0	54.0	22.56	10.08
3710.4	43.40	36.10	V	1.45	44.85	31.52	74.0	54.0	29.15	22.48
4638	39.90	29.90	V	3.61	43.51	27.49	74.0	54.0	30.49	26.51
7420.8	36.80	25.70	H	8.86	45.66	28.54	74.0	54.0	28.34	25.46
8348.4	39.50	29.20	H	11.41	50.91	34.59	74.0	54.0	23.09	19.41

Figure 7.5.3.3-1: Radiated Spurious Emissions Prescan – Mode 1 – 30MHz to 1GHz

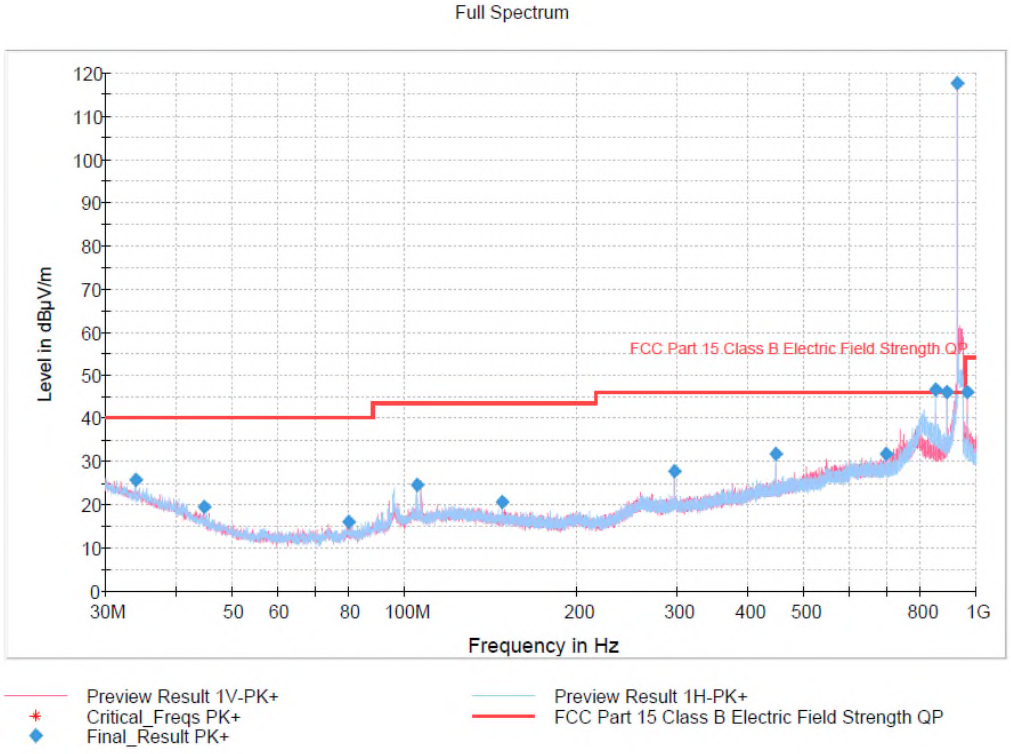


Figure 7.5.3.3-2: Radiated Spurious Emissions Prescan – Mode 1 – Above 1GHz

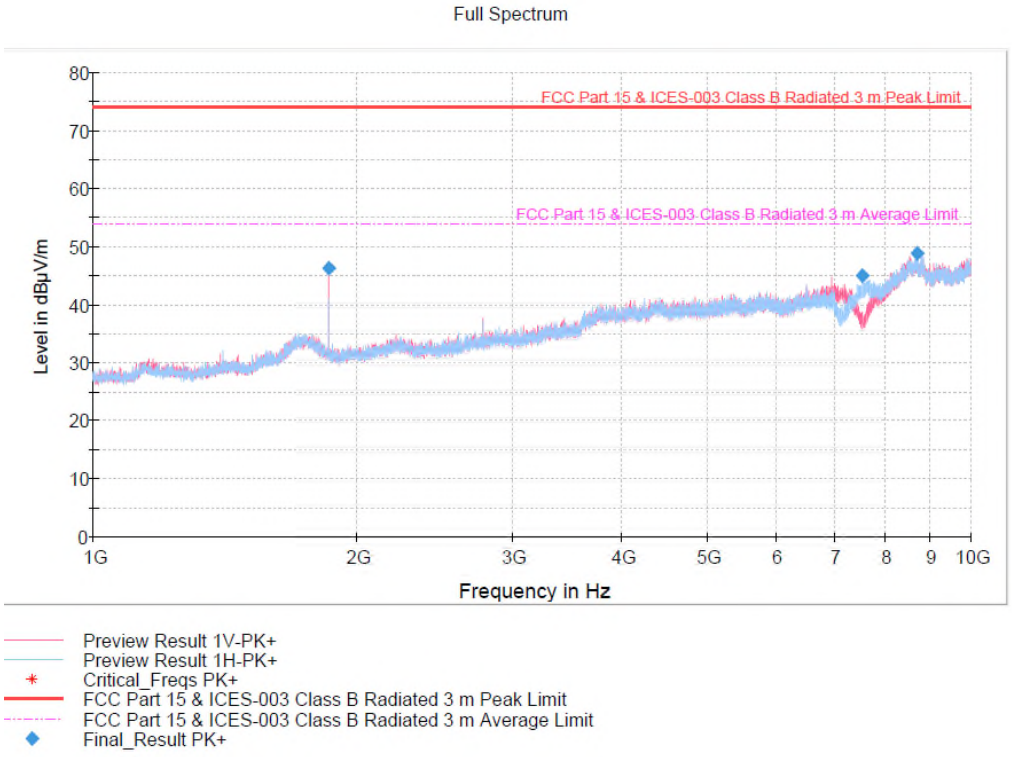


Figure 7.5.3.3-3: Radiated Spurious Emissions Prescan – Mode 2 – 30MHz to 1GHz

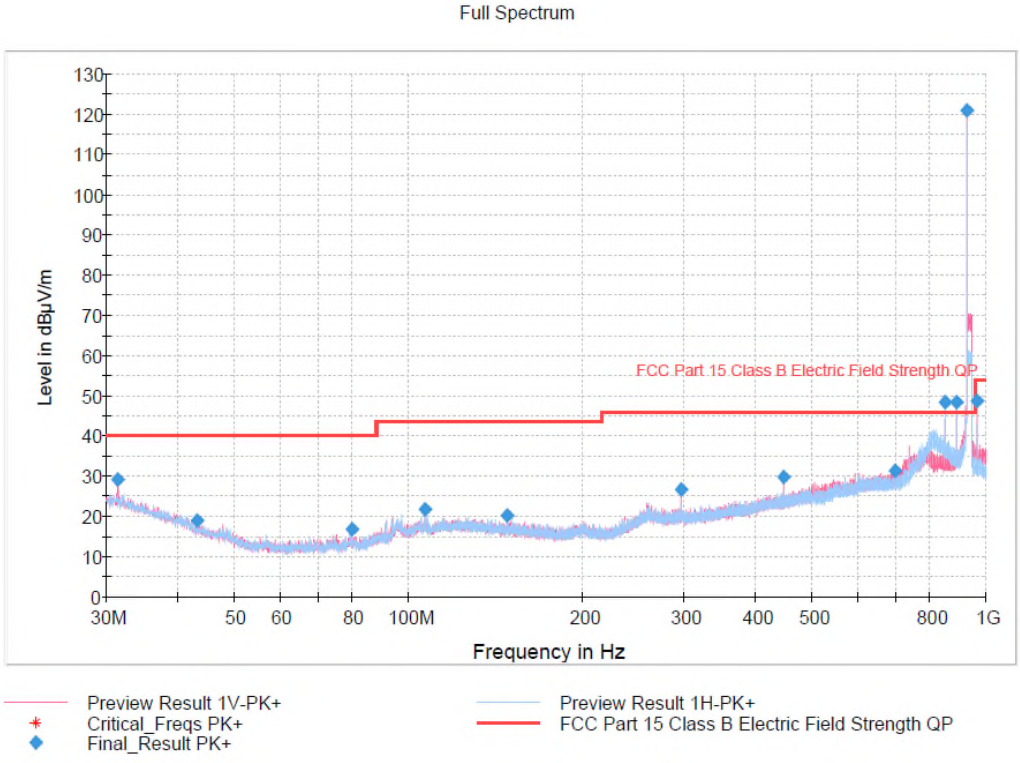
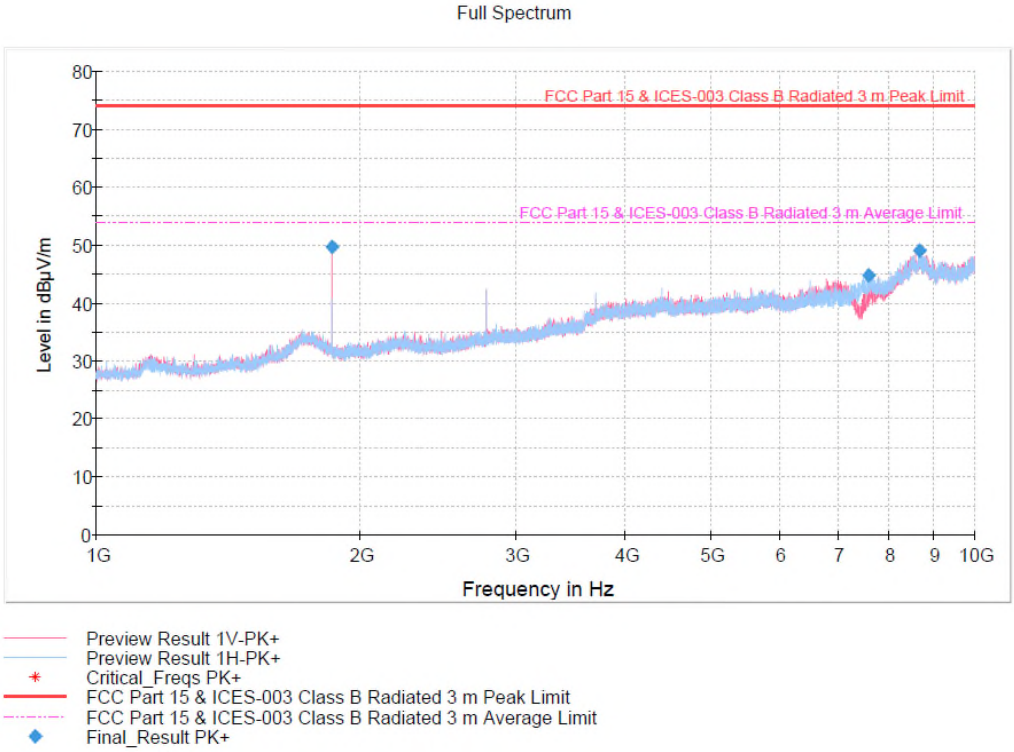


Figure 7.5.3.3-4: Radiated Spurious Emissions Prescan – Mode 2 – Above 1GHz



7.3.3.4 Sample Calculation:

$R_C = R_U + CF_T$

Where:

CF_T	=	Total Correction Factor (AF+CA+AG)-DC (Average Measurements Only)
R_U	=	Uncorrected Reading
R_C	=	Corrected Level
AF	=	Antenna Factor
CA	=	Cable Attenuation
AG	=	Amplifier Gain
DC	=	Duty Cycle Correction Factor

Example Calculation: Peak

Corrected Level: 38.60 - 1.01 = 39.61dBuV/m
Margin: 74dBuV/m – 39.61dBuV/m = 34.39dB

Example Calculation: Average

Corrected Level: 27.30 - 1.01 = 28.31dBuV
Margin: 54dBuV – 28.31dBuV = 25.69dB

8 MEASUREMENT UNCERTAINTY

The expanded laboratory measurement uncertainty figures (U_{Lab}) provided below correspond to an expansion factor (coverage factor) k = 1.96 which provide confidence levels of 95%.

Parameter	U_{lab}
Occupied Channel Bandwidth	**± 0.004%**
RF Conducted Output Power	**± 0.689 dB**
Power Spectral Density	**±0.5 dB**
Antenna Port Conducted Emissions	**± 2.717 dB**
Radiated Emissions	**± 5.877 dB**
Temperature	**± 0.860 °C**
Radio Frequency	**±2.832 x 10-8**
AC Power Line Conducted Emissions	**±2.85**

9 CONCLUSION

In the opinion of TÜV SÜD America Inc. the SNREM, manufactured by Elster Solutions LLC meets the requirements of FCC Part 15 subpart C and ISED Canada's Radio Standards Specification RSS-247 for the tests documented herein.

END REPORT