Certification Test Report

FCC ID: SK9ACT1
IC: 864G-ACT1

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

Report Number: 72124754-100

Manufacturer: Itron, Inc.
Model: ACT1

Test Begin Date: February 7, 2017
Test End Date: February 9, 2017

Report Issue Date: May 1, 2017

FOR THE SCOPE OF ACCREDITATION UNDER Certificate Number: AT-2021

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

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This report contains 16 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 Innovation, Science and Economic Development (ISED) Canada's Radio Standards Specification RSS-247 for a Class II Permissive Change Certification.

The purpose of this Class II Permissive Change is to add new antenna types/host combination to the 900MHz LAN frequency-hopping spread spectrum radio.

1.2 Product Description

The Itron ACT1 is an electricity metering module which includes a 902.4 MHz to 927.6 MHz transmitter as well as WiFi. The module operates on AC as well as DC voltage which is supplied by a host device.

This test report documents the compliance of the 902.4 MHz to 927.6 MHz transceiver mode of operation with the new antennas documented below only.

Technical Details:

Detail	Description
Frequency Range	902.4 – 927.6 MHz
Number of Channels	64
Modulation Format	FSK, OFDM, DSSS
Data Rates	FSK: 50kbps, 150kbps OFDM: 200kbps, 600kbps DSSS: 6.25kbps, 12.5kbps
Operating Voltage	120Vac to Host
Antenna Type(s) / Gain(s)	¼ Wave Embedded Slot Antenna / 2dBi Patch Antenna (External Adhesive Patch Coupler) – New to C2PC PCTEL, Inc. ASPG918 Whip Antenna / 3.0dBi – New to C2PC Larson LP800 Low Profile Radome (Puck) Antenna / 2.14dBi – New to C2PC Contelco A158192B Stub Antenna / 2.0dBi – New to C2PC

Manufacturer Information:
Itron, Inc.
313 N Hwy 11
West Union, SC 29696

EUT Serial Numbers: 9840001301 (Single Phase Meter), 9840004089 (Poly Phase Meter)

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

1.3 Test Methodology and Considerations

The Class II Permissive Change testing was to add additional antennas to the original certification, therefore only radiated emissions were performed.

The antennas included in this filing are connected to the EUT host via an adhesive patch antenna. The intention of the patch antenna is to couple the EUT 900MHz LAN antenna over-the-air. The coupled signal is then to be routed, via coax, to the antennas described in this filing. The ACT1 module was integrated into representative hosts for showing compliance with the new antenna configurations. See section 5 for information pertaining to the hosts used in this evaluation.

For radiated emissions, the EUT was temporarily modified with a USB cable to facilitate programming of the EUT for a continuously modulated signal on each channel evaluated only. The cable was removed from the programming computer during the evaluation. Based on the radiated emissions data collected on the original certification, the worst case data rate was evaluated to show compliance. The worst case data rate was DSSS at 6.25kbps.

Software power setting during test: (-2)

2 TEST FACILITIES

2.1 Location

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

TÜV SÜD America Inc.
5015 B.U. Bowman Drive
Buford, GA 30518
Phone: (770) 831-8048
Fax: (770) 831-8598

2.2 Laboratory Accreditations/Recognitions/Certifications

TÜV SÜD America Inc. is accredited to ISO/IEC 17025 by the ANSI-ASQ National Accreditation Board/ANAB accreditation program, and has been issued certificate number AT-2021 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, Open Area Test Site (OATS) and Conducted Emissions Site have been fully described, submitted to, and accepted by the FCC, ISED Canada and the Japanese Voluntary Control Council for Interference by information technology equipment.

FCC Registration Number: 391271
ISED Canada Lab Code: IC 4175A
VCCI Member Number: 1831

- VCCI OATS Registration Number R-1526
- VCCI Conducted Emissions Site Registration Number: C-1608

2.3 Radiated Emissions Test Site Description

2.3.1 Semi-Anechoic Chamber Test Site

The Semi-Anechoic Chamber Test Site consists of a 20' x 30' x 18' shielded enclosure. The chamber is lined with Toyo Ferrite Grid Absorber, model number FFG-1000. The ferrite tile grid is 101 x 101 x 19mm thick and weighs approximately 550 grams. These tiles are mounted on steel panels and installed directly on the inner walls of the chamber.

The turntable is 150cm in diameter and is located 160cm 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 3/4" stainless steel braided cable.

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 range. 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 during operation.

Behind the turntable is a 3' x 6' x 4' deep shielded pit used for support equipment if necessary. The pit is equipped with 1 - 4" PVC chases 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:

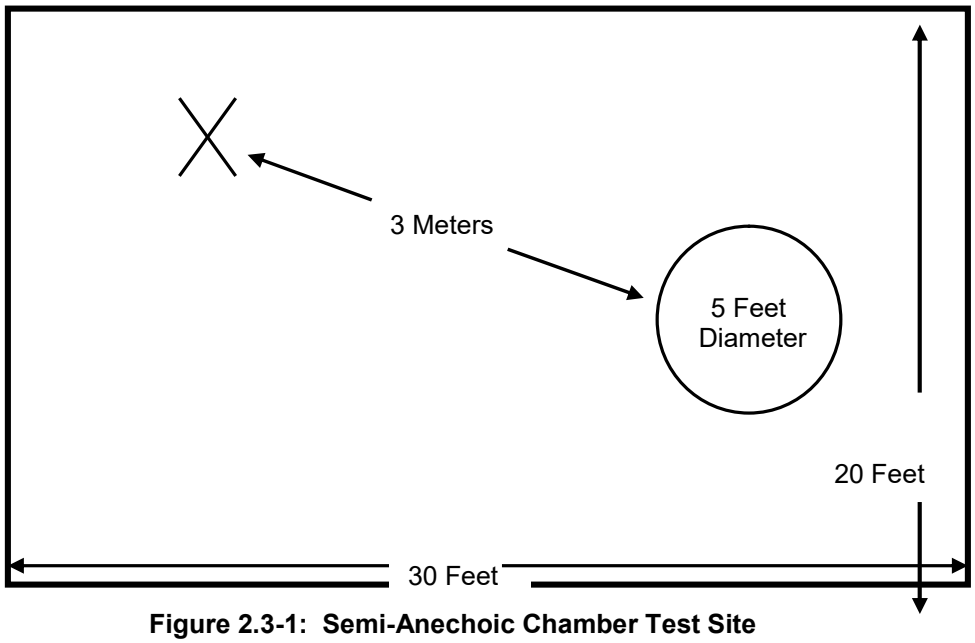

Figure 2.3-1: Semi-Anechoic Chamber Test Site

2.3.2 Open Area Tests Site (OATS)

The open area test site consists of a 40’ x 66’ concrete pad covered with a perforated electro-plated galvanized sheet metal. The perforations in the sheet metal are 1/8” holes that are staggered every 3/16”. The individual sheets are placed to overlap each other by 1/4” and are riveted together to provide a continuous seam. Rivets are spaced every 3” in a 3 x 20 meter perimeter around the antenna mast and EUT area. Rivets in the remaining area are spaced as necessary to properly secure the ground plane and maintain the electrical continuity.

The entire ground plane extends 12’ beyond the turntable edge and 16’ beyond the antenna mast when set to a 10 meter measurement distance. The ground plane is grounded via 4 - 8’ copper ground rods, each installed at a corner of the ground plane and bound to the ground plane using 3/4" stainless steel braided cable.

The turntable is an all aluminum 10’ flush mounted table installed in an all aluminum frame. The table is remotely operated from inside the control room located 40’ from the range. 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 during operation.

Adjacent to the turntable is a 7’ x 7’ square and 4’ deep concrete pit used for support equipment if necessary. The pit is equipped with 5 - 4” PVC chases from the pit to the control room 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. The pit is covered with 2 sheets of 1/4" diamond style re-enforced steel sheets. The sheets are painted to match the perforated steel ground plane; however the underside edges have been masked off to maintain the electrical continuity of the ground plane. All reflecting objects are located outside of the ellipse defined in ANSI C63.4.

A diagram of the Open Area Test Site is shown in Figure 2.3-2 below:

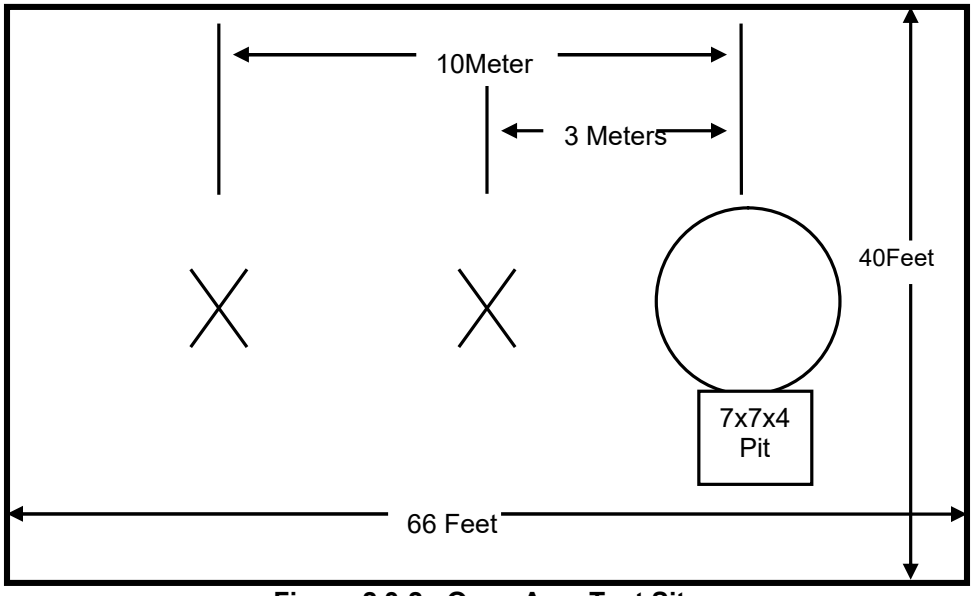

Figure 2.3-2: Open Area Test Site

2.4 Conducted Emissions Test Site Description

The AC mains conducted EMI site is located in the main EMC lab. It consists of an 8' x 8' solid aluminum horizontal ground reference plane (GRP) bonded every 3" to an 8' X 8' vertical ground plane.

The site is of sufficient size to test table top and floor standing equipment in accordance with ANSI C63.4.

A diagram of the room is shown below in figure 4.1.3-1:

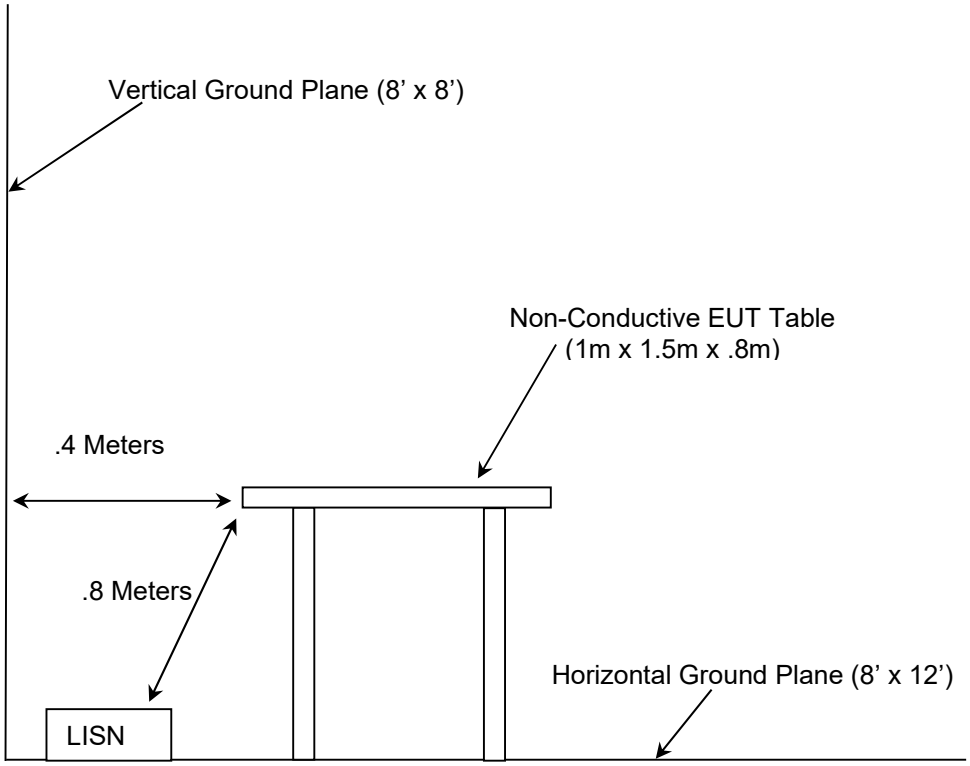

Figure 2.4-1: AC Mains Conducted EMI Site

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 9 kHz – 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, 2017.
- US Code of Federal Regulations (CFR): Title 47, Part 15, Subpart C: Radio Frequency Devices, Intentional Radiators, 2017.
- ISED Canada Radio Standards Specification: RSS-247 – Digital Transmission Systems (DTSs), Frequency Hopping Systems (FHSs) and License-Exempt Local Area Network (LE-LAN) Devices, Issue 1, May 2015
- ISED Canada Radio Standards Specification: RSS-GEN – General Requirements and Information for the Certification of Radiocommunication Equipment, Issue 4, Nov 2014.

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

AssetID	Manufacturer	Model #	Equipment Type	Serial #	Last Calibration Date	Calibration Due Date
30	Spectrum Technologies	DRH-0118	Antennas	970102	4/30/2015	4/30/2017
40	EMCO	3104	Antennas	3211	6/8/2016	6/8/2018
73	Agilent	8447D	Amplifiers	2727A05624	7/21/2016	7/21/2017
167	ACS	Chamber EMI Cable Set	Cable Set	167	9/30/2016	9/30/2017
331	Microwave Circuits	H1G513G1	Filters	31417	5/13/2016	5/13/2017
338	Hewlett Packard	8449B	Amplifiers	3008A01111	8/21/2015	8/21/2017
394	Florida RF Lab	IRE-200W-12.0-SM	Cables	N/A	1/9/2017	1/9/2018
412	Electro Metrics	LPA-25	Antennas	1241	8/8/2016	8/8/2018
422	Florida RF	SMS-200AW-72.0-SMR	Cables	805	10/27/2016	10/27/2017
616	Florida RF Cables	SMRE-200W-12.0-SMRE	Cables	N/A	9/2/2016	9/2/2017
654	Micro-Tronics	BRC50722	Filter	-10	4/27/2016	4/27/2017
676	Florida RF Labs	SMS-290AW-480.0-SMS	Cables	MFR2Y194	11/4/2016	11/4/2017
RE135	Rohde & Schwarz	FSP30	Spectrum Analyzers	835618/031	10/31/2016	10/31/2017

5 SUPPORT EQUIPMENT

Table 5-1: Support Equipment

Item	Equipment Type	Manufacturer	Model/Part Number	Serial Number
1	Electric Meter	Itron	CN2SRD (Single Phase) CP2SR (Poly Phase)	317 782 420 317 879 574
2	Electric Meter Box	Milbank MFG	N/A (Single Phase) Series 9700L (Poly Phase)	N/A

Table 5-2: Cable Description

Cable #	Cable Type	Length	Shield	Termination
A	RF Coaxial Cable	45 cm 565 cm 570 cm	Yes	Patch – Whip Antenna Patch – Puck Antenna Patch – Stubby Antenna
B	USB Programming Cable	200 cm	Yes	EUT – Unterminated
C	AC Power Cable	200 cm	No	1 – AC Mains

6 EQUIPMENT UNDER TEST SETUP BLOCK DIAGRAM

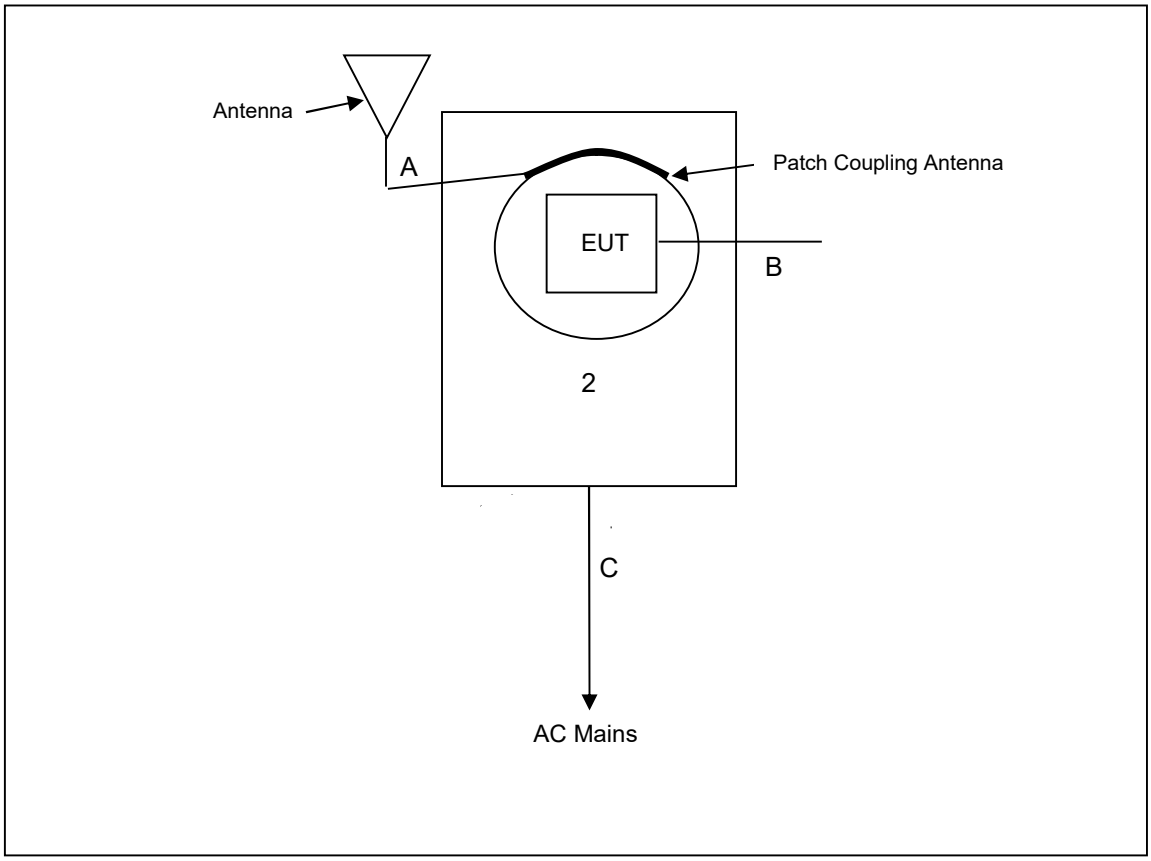

Figure 6-1: Test Setup Block Diagram

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: Section 15.203

The external antennas are connected to the EUT via an adhesive coupling patch antenna. Professional installation is utilized. The antennas are a PCTEL, Inc. ASPG918 whip antenna with a maximum gain of 3dBi, a Larson LP800 low profile radome (Puck) antenna with a maximum gain of 2.14dBi, and a Comtelco A158192B stub antenna with a maximum gain of 2.0dBi.

7.2 Band Edge and Spurious Emissions

7.2.1 Emissions into Restricted Frequency Bands – FCC: Section 15.205, 15.209; ISED Canada: RSS-Gen 8.9/8.10

7.2.1.1 Measurement Procedure

The unwanted emissions into restricted bands were measured radiated over the frequency range of 30 MHz to 10 GHz, 10 times the highest fundamental frequency.

The EUT was rotated through 360° and the receive antenna height was varied from 1 meter to 4 meters so that the maximum radiated emissions level would be detected. For frequencies below 1000 MHz, quasi-peak measurements were made using a RBW of 120 kHz and a VBW of 300 kHz. For frequencies above 1000 MHz, peak and average measurements were made with RBW and VBW of 1 MHz and 3 MHz respectively.

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.

7.2.1.2 Measurement Results

Table 7.2.1.2-1: Radiated Emissions Tabulated Data – Single Phase Host – Whip Antenna

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
1002	59.41	47.71	V	-13.13	46.28	34.58	74.0	54.0	27.7	19.4
1002	57.32	46.08	H	-13.13	44.19	32.95	74.0	54.0	29.8	21.0
2707.2	46.79	36.35	H	-3.74	43.05	32.61	74.0	54.0	30.9	21.4
2707.2	45.83	37.01	V	-3.74	42.09	33.27	74.0	54.0	31.9	20.7
3609.6	48.60	38.21	H	-0.81	47.79	37.40	74.0	54.0	26.2	16.6
3609.6	47.82	36.92	V	-0.81	47.01	36.11	74.0	54.0	27.0	17.9
4512	46.38	36.32	H	0.79	47.17	37.11	74.0	54.0	26.8	16.9
4512	46.92	36.62	V	0.79	47.71	37.41	74.0	54.0	26.3	16.6
5414.4	44.39	34.25	H	3.52	47.91	37.77	74.0	54.0	26.1	16.2
5414.4	45.06	34.09	V	3.52	48.58	37.61	74.0	54.0	25.4	16.4
Middle Channel										
1001	60.81	48.73	V	-13.14	47.67	35.59	74.0	54.0	26.3	18.4
1001	56.87	47.11	H	-13.14	43.73	33.97	74.0	54.0	30.3	20.0
2745.6	46.13	36.40	H	-3.63	42.50	32.77	74.0	54.0	31.5	21.2
2745.6	46.88	38.27	V	-3.63	43.25	34.64	74.0	54.0	30.8	19.4
3660.8	48.18	38.94	H	-0.62	47.56	38.32	74.0	54.0	26.4	15.7
3660.8	48.44	38.36	V	-0.62	47.82	37.74	74.0	54.0	26.2	16.3
4576	45.63	34.62	H	0.99	46.62	35.61	74.0	54.0	27.4	18.4
4576	48.40	39.19	V	0.99	49.39	40.18	74.0	54.0	24.6	13.8
High Channel										
1025	56.78	49.87	H	-12.94	43.84	36.93	74.0	54.0	30.2	17.1
1025	58.08	51.30	V	-12.94	45.14	38.36	74.0	54.0	28.9	15.6
2782.8	46.26	40.77	H	-3.54	42.72	37.23	74.0	54.0	31.3	16.8
2782.8	48.49	44.54	V	-3.54	44.95	41.00	74.0	54.0	29.0	13.0
3710.4	49.98	41.58	H	-0.45	49.53	41.13	74.0	54.0	24.5	12.9
3710.4	49.72	40.12	V	-0.45	49.27	39.67	74.0	54.0	24.7	14.3
4638	48.54	40.64	H	1.19	49.73	41.83	74.0	54.0	24.3	12.2
4638	49.78	41.16	V	1.19	50.97	42.35	74.0	54.0	23.0	11.7

Table 7.2.1.2-2: Radiated Emissions Tabulated Data – Single Phase Host – Puck Antenna

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
2707.2	47.15	41.56	H	-3.74	43.41	37.82	74.0	54.0	30.6	16.2
2707.2	47.97	40.55	V	-3.74	44.23	36.81	74.0	54.0	29.8	17.2
3609.6	48.29	40.13	H	-0.81	47.48	39.32	74.0	54.0	26.5	14.7
3609.6	48.23	39.48	V	-0.81	47.42	38.67	74.0	54.0	26.6	15.3
4512	46.44	38.08	H	0.79	47.23	38.87	74.0	54.0	26.8	15.1
4512	47.41	38.48	V	0.79	48.20	39.27	74.0	54.0	25.8	14.7
5414.4	47.32	37.33	H	3.52	50.84	40.85	74.0	54.0	23.2	13.1
5414.4	46.77	38.14	V	3.52	50.29	41.66	74.0	54.0	23.7	12.3
Middle Channel										
2745.6	52.29	47.56	H	-3.63	48.66	43.93	74.0	54.0	25.3	10.1
2745.6	46.21	41.42	V	-3.63	42.58	37.79	74.0	54.0	31.4	16.2
3660.8	49.38	40.19	H	-0.62	48.76	39.57	74.0	54.0	25.2	14.4
3660.8	50.10	39.95	V	-0.62	49.48	39.33	74.0	54.0	24.5	14.7
4576	48.37	38.84	H	0.99	49.36	39.83	74.0	54.0	24.6	14.2
4576	47.47	39.09	V	0.99	48.46	40.08	74.0	54.0	25.5	13.9
High Channel										
2782.8	47.65	42.99	H	-3.54	44.11	39.45	74.0	54.0	29.9	14.5
2782.8	47.21	41.52	V	-3.54	43.67	37.98	74.0	54.0	30.3	16.0
3710.4	49.57	41.25	H	-0.45	49.12	40.80	74.0	54.0	24.9	13.2
3710.4	49.54	40.32	V	-0.45	49.09	39.87	74.0	54.0	24.9	14.1
4638	48.21	39.35	H	1.19	49.40	40.54	74.0	54.0	24.6	13.5
4638	49.55	41.20	V	1.19	50.74	42.39	74.0	54.0	23.3	11.6

Table 7.2.1.2-3: Radiated Emissions Tabulated Data – Single Phase Host – Stubby Antenna

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
1000.4	57.38	47.74	H	-13.14	44.23	34.59	74.0	54.0	29.8	19.4
1000.4	57.15	45.53	V	-13.14	44.00	32.38	74.0	54.0	30.0	21.6
2707.2	47.51	41.44	H	-3.74	43.77	37.70	74.0	54.0	30.2	16.3
2707.2	49.46	42.00	V	-3.74	45.72	38.26	74.0	54.0	28.3	15.7
3609.6	49.12	40.61	H	-0.81	48.31	39.80	74.0	54.0	25.7	14.2
3609.6	48.24	39.62	V	-0.81	47.43	38.81	74.0	54.0	26.6	15.2
4512	47.87	38.64	H	0.79	48.66	39.43	74.0	54.0	25.3	14.6
4512	48.29	39.46	V	0.79	49.08	40.25	74.0	54.0	24.9	13.7
Middle Channel										
1002	58.81	47.58	H	-13.13	45.68	34.45	74.0	54.0	28.3	19.6
1002	56.59	45.31	V	-13.13	43.46	32.18	74.0	54.0	30.5	21.8
2745.6	47.87	42.35	H	-3.63	44.24	38.72	74.0	54.0	29.8	15.3
2745.6	48.32	42.64	V	-3.63	44.69	39.01	74.0	54.0	29.3	15.0
3660.8	49.11	40.50	H	-0.62	48.49	39.88	74.0	54.0	25.5	14.1
3660.8	47.58	39.56	V	-0.62	46.96	38.94	74.0	54.0	27.0	15.1
4576	47.76	39.13	H	0.99	48.75	40.12	74.0	54.0	25.2	13.9
4576	48.40	39.56	V	0.99	49.39	40.55	74.0	54.0	24.6	13.4
High Channel										
1012	55.52	45.51	H	-13.05	42.47	32.46	74.0	54.0	31.5	21.5
1012	59.23	48.16	V	-13.05	46.18	35.11	74.0	54.0	27.8	18.9
2782.8	47.40	37.64	H	-3.54	43.86	34.10	74.0	54.0	30.1	19.9
2782.8	48.12	40.84	V	-3.54	44.58	37.30	74.0	54.0	29.4	16.7
3710.4	49.19	38.88	H	-0.45	48.74	38.43	74.0	54.0	25.3	15.6
3710.4	48.75	37.85	V	-0.45	48.30	37.40	74.0	54.0	25.7	16.6
4638	46.79	37.33	H	1.19	47.98	38.52	74.0	54.0	26.0	15.5
4638	47.68	39.17	V	1.19	48.87	40.36	74.0	54.0	25.1	13.6

Table 7.2.1.2-4: Radiated Emissions Tabulated Data – Poly Phase Host – Whip Antenna

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
1016	54.08	47.46	H	-13.02	41.06	34.44	74.0	54.0	32.9	19.6
1016	56.36	48.73	V	-13.02	43.34	35.71	74.0	54.0	30.7	18.3
2707.2	49.39	45.96	H	-3.74	45.65	42.22	74.0	54.0	28.3	11.8
2707.2	50.60	46.25	V	-3.74	46.86	42.51	74.0	54.0	27.1	11.5
3609.6	48.31	37.84	H	-0.81	47.50	37.03	74.0	54.0	26.5	17.0
3609.6	47.48	37.05	V	-0.81	46.67	36.24	74.0	54.0	27.3	17.8
4512	48.31	39.96	H	0.79	49.10	40.75	74.0	54.0	24.9	13.2
4512	47.14	38.45	V	0.79	47.93	39.24	74.0	54.0	26.1	14.8
5414.4	46.19	36.06	H	3.52	49.71	39.58	74.0	54.0	24.3	14.4
Middle Channel										
1010	55.22	43.49	H	-13.06	42.15	30.42	74.0	54.0	31.8	23.6
1010	55.16	45.01	V	-13.06	42.09	31.94	74.0	54.0	31.9	22.1
2745.6	52.20	49.78	H	-3.63	48.57	46.15	74.0	54.0	25.4	7.9
2745.6	51.83	49.35	V	-3.63	48.20	45.72	74.0	54.0	25.8	8.3
4576	48.57	43.51	H	0.99	49.56	44.50	74.0	54.0	24.4	9.5
4576	46.09	41.23	V	0.99	47.08	42.22	74.0	54.0	26.9	11.8
High Channel										
1015	58.37	47.05	H	-13.02	45.34	34.02	74.0	54.0	28.7	20.0
1015	60.21	49.97	V	-13.02	47.18	36.94	74.0	54.0	26.8	17.1
2782.8	48.98	37.33	H	-3.54	45.44	33.79	74.0	54.0	28.6	20.2
2782.8	48.44	39.30	V	-3.54	44.90	35.76	74.0	54.0	29.1	18.2
4638	49.58	43.25	H	1.19	50.77	44.44	74.0	54.0	23.2	9.6
4638	48.55	41.41	V	1.19	49.74	42.60	74.0	54.0	24.3	11.4

Table 7.2.1.2-5: Radiated Emissions Tabulated Data – Poly Phase Host – Puck Antenna

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
2707.2	52.32	48.28	H	-3.91	48.41	44.37	74.0	54.0	25.6	9.6
2707.2	48.91	41.51	V	-3.91	45.00	37.60	74.0	54.0	29.0	16.4
4512	49.72	36.74	H	0.54	50.26	37.28	74.0	54.0	23.7	16.7
4512	48.86	34.80	V	0.54	49.40	35.34	74.0	54.0	24.6	18.7
Middle Channel										
1072	57.45	43.72	H	-12.60	44.85	31.12	74.0	54.0	29.1	22.9
1072	56.55	44.84	V	-12.60	43.95	32.24	74.0	54.0	30.0	21.8
2745.6	52.31	48.35	H	-3.80	48.51	44.55	74.0	54.0	25.5	9.4
2745.6	51.17	44.73	V	-3.80	47.37	40.93	74.0	54.0	26.6	13.1
4576	52.31	44.08	H	0.75	53.06	44.83	74.0	54.0	20.9	9.2
4576	49.69	40.05	V	0.75	50.44	40.80	74.0	54.0	23.6	13.2
High Channel										
1008	55.67	43.96	H	-13.08	42.58	30.87	74.0	54.0	31.4	23.1
1008	54.39	44.26	V	-13.08	41.30	31.17	74.0	54.0	32.7	22.8
2782.8	53.73	50.79	H	-3.69	50.04	47.10	74.0	54.0	24.0	6.9
2782.8	51.62	44.49	V	-3.69	47.93	40.80	74.0	54.0	26.1	13.2

Table 7.2.1.2-6: Radiated Emissions Tabulated Data – Poly Phase Host – Stubby Antenna

Frequency (MHz)	Level (dBuV)		Antenna Polarity	Correction Factors	Corrected Level (dBuV/m)		Limit (dBuV/m)		Margin (dB)	
	pk	Qpk/Avg	(H/V)	(dB)	pk	Qpk/Avg	pk	Qpk/Avg	pk	Qpk/Avg
Low Channel										
2707.2	50.54	45.36	H	-3.91	46.63	41.45	74.0	54.0	27.4	12.5
2707.2	50.71	45.10	V	-3.91	46.80	41.19	74.0	54.0	27.2	12.8
4512	51.15	42.54	H	0.54	51.69	43.08	74.0	54.0	22.3	10.9
4512	49.32	39.52	V	0.54	49.86	40.06	74.0	54.0	24.1	13.9
Middle Channel										
1067	56.03	44.07	H	-12.64	43.39	31.43	74.0	54.0	30.6	22.6
1067	53.84	42.78	V	-12.64	41.20	30.14	74.0	54.0	32.8	23.9
2745.6	50.96	47.39	H	-3.80	47.16	43.59	74.0	54.0	26.8	10.4
2745.6	50.83	46.29	V	-3.80	47.03	42.49	74.0	54.0	27.0	11.5
4576	50.38	41.77	H	0.75	51.13	42.52	74.0	54.0	22.9	11.5
4576	49.22	41.00	V	0.75	49.97	41.75	74.0	54.0	24.0	12.3
High Channel										
1023	55.66	44.79	H	-12.97	42.69	31.82	74.0	54.0	31.3	22.2
1023	55.36	44.03	V	-12.97	42.39	31.06	74.0	54.0	31.6	22.9
2782.8	48.46	36.54	H	-3.69	44.77	32.85	74.0	54.0	29.2	21.2
2782.8	49.40	39.43	V	-3.69	45.71	35.74	74.0	54.0	28.3	18.3

7.2.1.3 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 – Single Phase Host – Whip Antenna

Corrected Level: 59.41 - 13.13 = 46.28dBuV/m
Margin: 74.0dBuV/m – 46.28dBuV/m = 27.7dB

Example Calculation: Average – Single Phase Host – Whip Antenna

Corrected Level: 47.71 - 13.13 - 0 = 34.58dBuV
Margin: 54.0dBuV – 34.58dBuV =19.4dB

8 CONCLUSION

In the opinion of TÜV SÜD America Inc. the ACT1, manufactured by Itron, Inc. meets the requirements of FCC Part 15 subpart C and ISED Canada's Radio Standards Specification RSS-247 for a Class II Permissive Change Certification, for the tests detailed in this report.

END REPORT