ION Digital LLP
Micra D

Class 2 Permissive Change Test Report

per

FCC CFR47 Part 15/C Subpart 15.231
IC RSS 210-Issue 7

FCC ID-QNMICRAD

IC Certification Number: 4488A-MICRAD

Revision 1.0

February 28, 2011

	Approval	
Checked By:	Robert Stirling, P. Eng.	Mar. 1, 2011 Date

Protocol Data Systems Inc, EMC Lab, Abbotsford BC, Canada. SCC ISO/17025 (CAN-P-4E) Accredited Laboratory No. 631 FCC O.A.T.S. Registration Number 96437 Industry Canada O.A.T.S. Registration Number IC3384A-1

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Section I: Report of Measurements Testing Information

General Information

Applicant Company Name	ION Digital LLP
Address	Unit 2109, 1225 Kingsway Ave
	Port Coquitlam,BC V3C 1S2
	Phone: 800-407-4389
	Fax 800-407-4465
	Contact Person: Dean Schebel
	Email: dean.schebel@ion-digital.com
Product Name	Intrusion Detector Sensor – Plunger Plastic with wire Antenna
FCC ID#	QNMICRAD
IC Certification Number	4488A-MICRAD
Applicable Standard	FCC Part 15.231, ANSI C63.4:2003; Part 15.207, 15.209 IC RSS-210-Issue 7
Test Results	Pass
Related Report/s Approval	ION Digital RN 03330 Rev 0.1
Statement of Compliance	This equipment has been tested in accordance with the standards indentified in the referenced test report. To the best of our knowledge and belief, these tests were performed using the measurement procedures described in this report and demonstrate that the equipment complies with the appropriate standards. – Signature on Front Cover Page.

Equipment Under Test Specification

Manufacturer	ION Digital LLP
Product Description	Intrusion Detector Sensor – Plungger Plastic with wire Antenna
FCC ID#	QNMICRAD
IC Certification Number	4488A-MICRAD
Model Number	Micra D
Name	Intrusion Detector Sensor
Operating Frequency	433.9 MHz
Emission Designator	DXX
EUT Power Source	3Vdc Coin Cell Battery
Test Item	Production Unit
Type of Equipment	Fixed
Antennas	Wire Antenna
Antenna Connector	permanently attached
Test Voltage	3Vdc Coin Cell Battery

Test Environment

Test Facility	Protocol Data Systems Inc.
	4741 Olund Rd.
	Abbotsford, BC V4X 2E7
	Phone: 604-504-0091
	Fax: 604-554-0091
	Email: info@protocol-emc.com
	Website: www.protocol-emc.com
Test Facility ID's	SCC ISO/17025 (CAN-P-4E) Accredited Laboratory No. 631
	FCC O.A.T.S. Registration Number 627740
	Industry Canada O.A.T.S. Registration Number IC3384A
Date Tested	February 9, 20, 2011
Tested By	Rob Stirling

Test Setup

Test Supporting Equipment	None required
Test Conditions	Temperature and Humidity: 20°C, 56%
Test Exercise e.g. software description, test signal, etc.	The EUT was set for continuous transmit mode of operation. It only has 1 frequency. The options were for a CW and modulated frequency.
Deviation from Standard/s	No deviation from Standard
Modification to the EUT	No modifications was made.

Test Equipment List

Manufacturer	Model	Equipment Description	Serial No.	Next Cal
HP	85650A	CDN Quasi-Peak Adapter	2811A01080	12/08/11
HP	85662A	Spectrum Analyzer Display	2152A03569	11/08/11
HP	8566B	Spectrum Analyzer RF Section	2241A02102	11/08/11
HP	85685A	RF-Preselector	3107A01222	11/08/11
EMCO	3146	Ant Log Periodic 200-1000MHZ	9611-4699	08/08/11
EMCO	3110B	Ant Biconical 20-300MHz	9401-1850	08/08/11
EMCO	3115	Horn Antenna 1-18GHz	9403-4251	20/08/11
EMCO	3825/2	LISN	2470	20/07/11
Protocol EMC	Custom	Antenna Mast	N/A	N/A
Protocol EMC	Custom	Turntable	N/A	N/A

Measurement Uncertainty

Parameter	Uncertainty
Radio Frequency	±1 x 10-5
Total RF power, conducted	±1,5 dB
RF power density, conducted	±3 dB
Spurious emissions, conducted	±3 dB
All emissions, radiated	±3 dB
Temperature	±1□C
Humidity	±5 %
DC and low frequency voltages	±3 %

Section II: Spurious Radiated Emissions Measurements

DATE: Feb 9, 2011

TEST STANDARD: FCC CFR47, Part 15, Subpart C and IC RSS-210 Issue7

TEST VOLTAGE: 3Vdc, as noted in the individual test records

MINIMUM STANDARD: According to FCC Subpart C, 15.209(a) and RSS-210 Issue7, for an intentional radiator devices, the general required field strength of radiated emissions from intentional radiators at a distance of 3 meters shall not exceed the following values

Frequency (MHz)	Field Strength	
	uV/m @ 3-m	dBµV/m at 3m
30 - 88	100	40.0
88 - 216	150	43.5
216 - 960	200	46.0
Above 960	500	54.0

TEST SETUP: During performing the below 1GHz, the equipment was set up in a 3-meter open field test site. Emissions in both horizontal and vertical polarization were measured while rotating the EUT on a turntable to maximize the emissions signal strength.

During performing radiated emissions above 1GHz, the equipment was set 1 meter away from the interference-receiving horn antenna. The resolution bandwidth and video bandwidth of test receiver/spectrum analyzer is 1MHz for Peak detection and frequency above 1GHz.

The test-receiver system was set to Peak Detect Function and above specified bandwidth with Maximum Hold Mode. If the emissions level of the EUT in peak mode was 10dB lower than the limit specified, then testing could be stopped and the peak values of the EUT would be reported. All measurement performed for this EUT had the 10dB margin, so it did not need re-testing using Quasi-Peak or Average Detection method.

DEVICE DESCRIPTIONS: Refer to the Equipment Under Test Section for EUT Descriptions.

MODIFICATIONS: No modifications were made to the EUT to pass this test.

MEASUREMENTS PLOTS: Refer to Appendix A

PERFORMANCE: The radiated emissions for the EUT meet the requirements for FCC Part 15.231, 15.209 and IC RSS-210 Issue7 standards for Intentional Radiators. No emissions other than fundamental Harmonics were detected. The spectrum was checked from 30MHz –10 GHz.

Appendix A: Fundamental and Harmonics Emissions Data and Plots

MICRA D RPS

Fundamental

Polarizations	Frequency	Uncor-Pk	Uncor-Ave	Gain	Antenna factor	Total Correction Factors	Peak	Ave (no duty cycle)	Duty Cycle Correction Factors *	Corrected Pk Signal	Average Lmt	DelLim-Ave	DelLim-Pk
Ant / EUT	(MHz)	(dB)	(dB)	(dB)	dB/m	(dB)	(dBµV/m)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)	(dBµV/m)
Ant Vert, EUT Vert	433.919	87.1	52.9	-2.4	17.3	19.7	106.8	72.6	15.4	91.4	79.9	-7.3	11.5
Ant Vert, EUT Horz	433.919	77.9	45.0	-2.4	17.3	19.7	97.6	64.7	15.4	82.2	79.9	-15.2	2.3
Ant Horz, EUT Vert	433.919	69.2		-2.4	17.3	19.7	88.9		15.4	73.5	79.9		-6.4
Ant Horz, EUTHorz	433.919	79.9	41.7	-2.4	17.3	19.7	99.6	61.4	15.4	84.2	79.9	-18.5	4.3

Harmonics

Polarization	Frequency	Uncor-Pk	Gain	Antenna factor	Total Correction Factors	Peak	Duty Cycle Correction Factors *	Corrected Pk Signal	Average Lmt	DelLim-Pk
	(MHz)	(dB)	(dB)	dB/m	(dB)	(dBµV/m)	(dB)	(dBµV/m)	(dBµV/m)	(dBµV/m)
Horz	867.838	17.1	-5	21.7	26.7	43.8	15.4	28.4	46.6	-18.2
Vert	867.838	30.5	-5	21.7	26.7	57.2	15.4	35.9	46.6	-4.8
Vert	1301.757	23	4.9	25.9	21	44	15.4	22.7	61.94	-33.34
Horz	1301.757	20.2	4.9	25.9	21	41.2	15.4	25.8	61.94	-36.14
Vert	1735.676	22.2	4.2	28.9	24.7	46.9	15.4	25.6	61.94	-30.44
Horz	1735.676	20.8	4.2	28.9	24.7	45.5	15.4	30.1	61.94	-31.84
Vert	2169.595	50.5	25.1	29.4	4.3	54.8	15.4	33.5	61.94	-22.54
Horz	2169.595	50.6	25.1	29.4	4.3	54.9	15.4	39.5	61.94	-22.44
Vert	2603.514	49.4	22.6	30.6	8	57.4	15.4	36.1	61.94	-19.94
Horz	2603.514	50.4	22.6	30.6	8	58.4	15.4	43	61.94	-18.94
Vert	3037.433	46.6	20.7	30.9	10.2	56.8	15.4	35.5	61.94	-20.54
Horz	3037.433	46.7	20.7	30.9	10.2	56.9	15.4	41.5	61.94	-20.44
Vert	3471.352	44.3	20.1	31.6	11.5	55.8	15.4	34.5	61.94	-21.54
Horz	3471.352	44.3	20.1	31.6	11.5	55.8	15.4	40.4	61.94	-21.54
Vert	3905.271	42.3	29.1	31.6	2.5	44.8	15.4	23.5	61.94	-32.54
Horz	3905.271	42.6	29.1	31.6	2.5	45.1	15.4	29.7	61.94	-32.24
Vert	4339.19	41.4	17.9	31.6	13.7	55.1	15.4	33.8	61.94	-22.24
Horz	4339.19	41.3	17.9	31.6	13.7	55	15.4	39.6	61.94	-22.34

* Per Appendix C in original submission ION Digital RN 03330 Rev 0.1

MICRA D Magnet

Fundamental

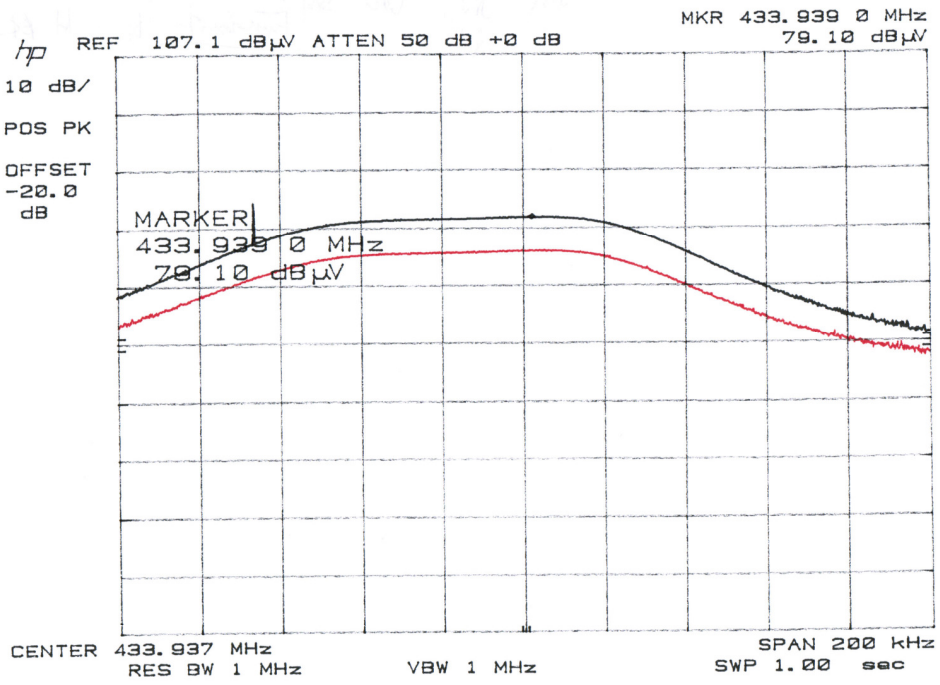
Polarizations Ant / EUT	Frequency (MHz)	Uncor-Pk (dB)	Uncor-Ave (dB)	Gain (dB)	Antenna factor dB/m	Total Correction Factors (dB)	Peak (dBµV/m)	Ave (no duty cycle) (dBµV/m)	Duty Cycle Correction Factors * (dB)	Corrected Pk Signal (dBµV/m)	Average Lmt (dBµV/m)	DelLim-Ave (dBµV/m)	DelLim-Pk (dBµV/m)
Ant Vert, EUT Vert	433.919	87.7	51.1	-2.4	17.3	19.7	107.4	70.8	21.3	86.1	79.9	-9.1	6.2
Ant Vert, EUT Horz	433.919	73.2		-2.4	17.3	19.7	92.9		21.3	71.6	79.9		-8.3
Ant Horz, EUT Vert	433.919	74.9	44	-2.4	17.3	19.7	94.6	60.6	15.4	79.2	79.9	-19.3	-0.7
Ant Horz, EUTHorz	433.919	79.1	42.9	-2.4	17.3	19.7	98.8	62.6	15.4	83.4	79.9	-17.3	3.5

Harmonics

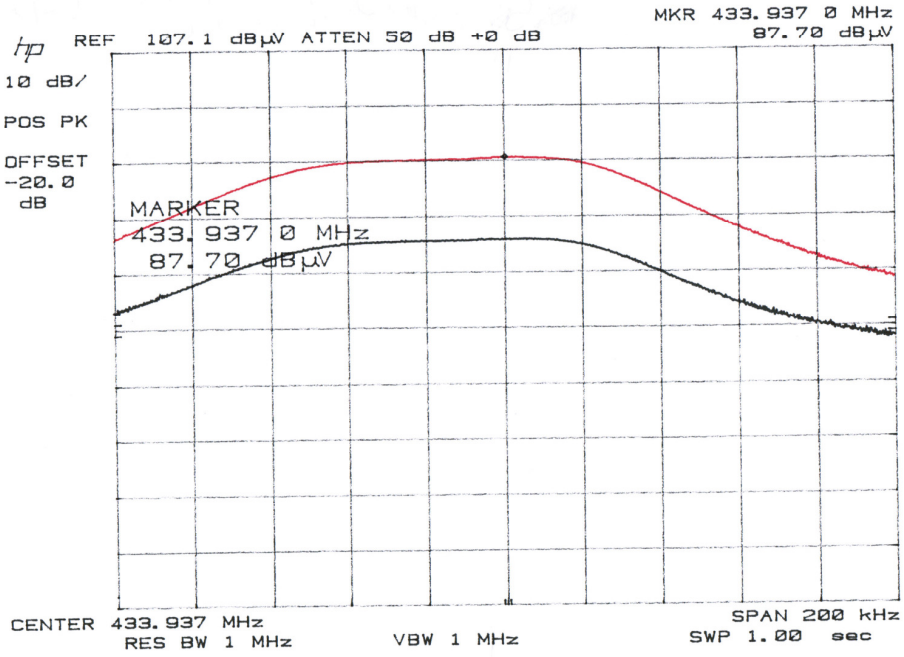
Polarization	Frequency (MHz)	Uncor-Pk (dB)	Gain (dB)	Antenna factor dB/m	Total Correction Factors (dB)	Peak (dBµV/m)	Duty Cycle Correction Factors * (dB)	Corrected Pk Signal (dBµV/m)	Average Lmt (dBµV/m)	DelLim-Pk (dBµV/m)
Vert	867.838	22	-5	21.7	26.7	48.7	15.4	33.3	46.6	-13.3
Horz	867.838	22.7	-5	21.7	26.7	49.4	15.4	34	46.6	-12.6
Vert	1301.757	25.5	4.9	25.9	21	46.5	15.4	31.1	61.94	-30.84
Horz	1301.757	20.6	4.9	25.9	21	41.6	15.4	26.2	61.94	-35.74
Vert	1735.676	26.9	4.2	28.9	24.7	51.6	15.4	36.2	61.94	-25.74
Horz	1735.676	21.2	4.2	28.9	24.7	45.9	15.4	30.5	61.94	-31.44
Vert	2169.595	65.4	25.1	29.4	4.3	69.7	15.4	54.3	61.94	-7.64
Horz	2169.595	53.7	25.1	29.4	4.3	58	15.4	42.6	61.94	-19.34
Horz	2603.514	53.2	22.6	30.6	8	61.2	15.4	45.8	61.94	-16.14
Vert	2603.514	61	22.6	30.6	8	69	15.4	53.6	61.94	-8.34
Vert	3037.433	46.8	20.7	30.9	10.2	57	15.4	41.6	61.94	-20.34
Horz	3037.433	48.9	20.7	30.9	10.2	59.1	15.4	43.7	61.94	-18.24
Horz	3471.352	46.1	20.1	31.6	11.5	57.6	15.4	42.2	61.94	-19.74
Vert	3471.352	48.9	20.1	31.6	11.5	60.4	15.4	45	61.94	-16.94
Horz	3905.271	42.9	29.1	31.6	2.5	45.4	15.4	30	61.94	-31.94
Vert	3905.271	42.4	29.1	31.6	2.5	44.9	15.4	29.5	61.94	-32.44
Horz	4339.19	40.9	17.9	31.6	13.7	54.6	15.4	39.2	61.94	-22.74
Vert	4339.19	41.9	17.9	31.6	13.7	55.6	15.4	40.2	61.94	-21.74

* Per Appendix C in original submission ION Digital RN 03330 Rev 0.1

MICRA D RPS

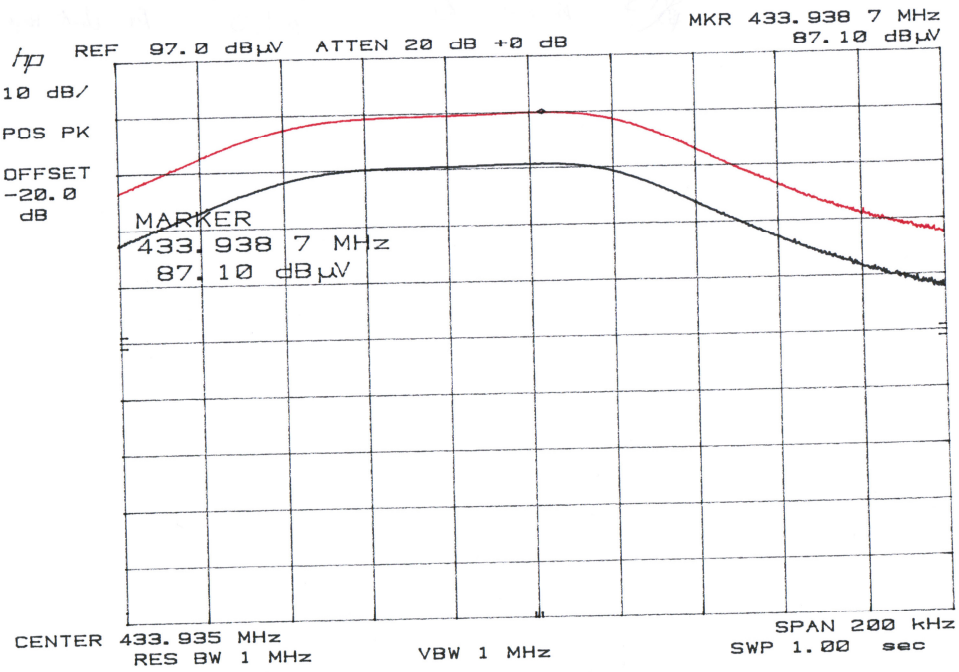


Antenna Horizontal

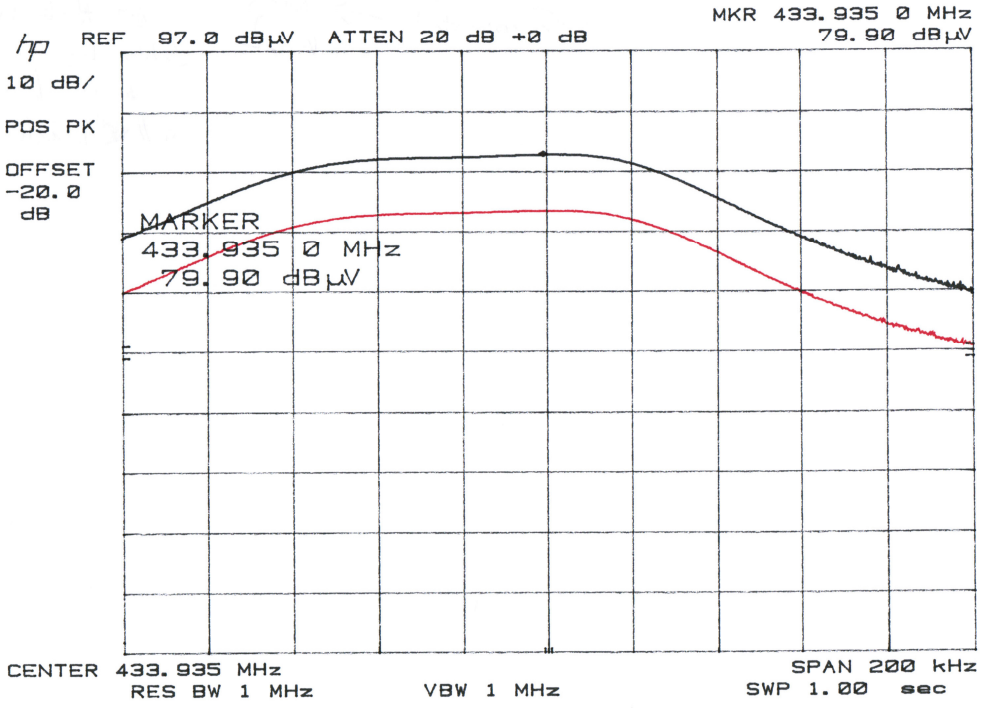


Antenna Vertical

MICRA G Magnet



Antenna Vertical



Antenna Horizontal

Note: Fundamerntal Plots (EUT Orientation: Horizonatal - Black Vertical - Red)

Appendix B: Test Set-Up Pictures

Test Setup MICRA D RPS

Test Setup MICRA D