



Canada

EMC / EMI Test Report

As per

FCC Part 15 Subpart B:2016 ICES-003:2016

VVSG 1.0 (2005) Volume 1

Clause 4.1.2.5 to 4.1.2.12

Emissions & Immunity for

Information Technology Class B Equipment
on the

**ICX DRE VVPAT
ICX DRE Report Printer
ICX BMD**

Issued by:

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Testing produced for



See Appendix A for full client &
EUT details.



Testing Laboratory
Certificate #2955.02



R-4023, G-506
C-4498, T-1246



Registration #
CA6844

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

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Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Report Scope

This report addresses the EMC verification testing and test results of the **ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD**, herein referred to as EUT (Equipment Under Test). The EUT was tested for emissions and immunity compliance against the following standards:

FCC Part 15 Subpart B:2016

ICES-003:2016

VVSG 1.0 (2005) Volume 1: Subsection 4.1.2.5 to 4.1.2.12

EN61000-4-2

EN61000-4-3

EN61000-4-4

EN61000-4-5

EN61000-4-6

EN61000-4-8

EN61000-4-11

Power line conducted emissions, radiated emissions, harmonics emissions, flicker emissions, and immunity testing was evaluated on the EUT. Test procedures, results, justifications, and engineering considerations, if any, follow later in this report.

For a more detailed list of the standards and the revision used, see the "Applicable Standards, Specifications and Methods" section of this report.

This report does not imply product endorsement by any government, accreditation agency, or TÜV SÜD Canada Inc.

Opinions or interpretations expressed in this report, if any, are outside the scope of TÜV SÜD Canada Inc. accreditations. Any opinions expressed do not necessarily reflect the opinions of TÜV SÜD Canada Inc., unless otherwise stated.

Client	Pro V&V	
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Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	



Summary

The results contained in this report relate only to the item(s) tested.

Equipment Under Test (EUT)	ICX DRE VVPAT ICX DRE Report Printer ICX BMD
EUT passed all tests performed	Yes
Testing conducted by	Jandrew Gonzales

For testing dates, see 'Testing Environmental Conditions and Dates'.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Results Summary

Standard/ Method	Description	Criteria	Class / Level	Result
FCC 15.107 ICES-003 VVSG 1.0 Vol. 1 4.1.2.9	Power Line Conducted Emissions	N/A	Class B	Pass
FCC 15.109 ICES-003 VVSG 1.0 Vol. 1 4.1.2.9	Radiated Emissions	N/A	Class B	Pass
EN 61000-4-11 VVSG 1.0 Vol. 1 4.1.2.5	Electrical Power Disturbance	Normal Operation & No Data Loss	Various	Pass
EN 61000-4-4 VVSG 1.0 Vol. 1 4.1.2.6	Electrical Fast Transient	Normal Operation & No Data Loss	$\pm 2\text{kV}$ - Mains	Pass
EN 61000-4-5 VVSG 1.0 Vol. 1 4.1.2.7	Lightning Surge	Normal Operation & No Data Loss	$\pm 2\text{kV}$ Line - Line $\pm 2\text{kV}$ Line - Ground	Pass
EN 61000-4-2 VVSG 1.0 Vol. 1 4.1.2.8	Electrostatic Disruption	Normal Operation & No Data Loss	$\pm 8\text{kV}$ Contact $\pm 15\text{kV}$ Air	Pass
EN 61000-4-3 VVSG 1.0 Vol. 1 4.1.2.10	Electromagnetic Susceptibility	Normal Operation & No Data Loss	10 V/m, 80 MHz – 1 GHz	Pass
EN 61000-4-6 VVSG 1.0 Vol. 1 4.1.2.11	Conducted RF Immunity	Normal Operation & No Data Loss	10 Vrms, 150 kHz – 80 MHz	Pass
EN 61000-4-8 VVSG 1.0 Vol. 1 4.1.2.12	Magnetic Fields Immunity	Normal Operation & No Data Loss	30 A/m	Pass
Overall Result				Pass

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If the product as tested complies with the specification or requirement, the EUT is deemed to comply and is issued a 'PASS' grade. If not, 'FAIL' grade is issued.

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Notes, Justifications, or Deviations

The following justifications for tests not performed or deviations from the above listed specifications apply:

No Electrical Fast Transients or Conducted RF Immunity tests were performed on any of the I/O cables of the EUTs. All cables are less than 3m.

The ICX BMD model required a ferrite on the Audio Input to pass Electrical Fast Transient testing. Please see Figure 45 for installation location. The spec for the ferrite is as follows:

Steward: 28A2029-0A2

A later revision of the standard may have been substituted in place of the previous dated referenced revision. The year of the specification used is listed under applicable standards. Using the later revision accomplishes the goal of ensuring compliance to the intent of the previous specification, while allowing the laboratory to incorporate the extensions and clarifications made available by a later revision.

Sample Calculation(s)

Radiated Emission Test

Margin = Limit – (Received Signal + Antenna Factor + Cable Loss – Pre-Amp Gain)

Margin = 50dB μ V/m – (50dB μ V + 10dB + 2.5dB – 20dB)

Margin = 7.5 dB (pass)

Power Line Conducted Emission Test

Margin = Limit – (Received Signal + Attenuation Factor + Cable Loss + LISN Factor)

Margin = 73.0dB μ V – (50dB μ V + 10dB + 2.5dB + 0.5dB)

Margin = 10.0 dB (pass)

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Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Applicable Standards, Specifications and Methods

- ANSI C63.4:2014 Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz
- CFR47 FCC Part 15 Subpart B:2016 Code of Federal Regulations - Radio Frequency Devices
- ICES-003, Issue 6 2016 Information Technology Equipment (ITE) - Limits and Methods of Measurement
- VVSG 1.0 (2005) Volume 1 United States Election Assistance Commission – Voluntary Voting System Guidelines – Version 1.0 Volume 1
- CISPR 16-2-3:2010/A2:2014 Specification for Radio Disturbance and Immunity Measuring Apparatus and Methods - Part 2-3: Methods of Measurement of Disturbances and Immunity - Radiated Disturbance Measurements
- IEC 61000-4-2:2008 Testing and Measurement Techniques -
EN 61000-4-2:2009 Electrostatic Discharge Immunity Test
- IEC/EN 61000-4-3:2006/ A2:2010 Testing and Measurement Techniques -
Radiated, Radio-Frequency, Electromagnetic Field Immunity Test
- IEC/EN 61000-4-4:2004 Testing and Measurement Techniques -
Electrical Fast Transient/Burst Immunity Test
- IEC 61000-4-5:2005 Testing and Measurement Techniques - Surge Immunity Test
EN 61000-4-5:2006
- IEC 61000-4-6:2008 Testing and Measurement Techniques - Immunity to Conducted Disturbances, Induced by Radio-Frequency Fields
EN 61000-4-6:2009
- IEC 61000-4-8:2009 Testing and Measurement Techniques -
EN 61000-4-8:2010 Power Frequency Magnetic Field Immunity Test
- IEC/EN 61000-4-11:2004 Testing and Measurement Techniques - Voltage Dips, Short Interruptions and Voltage Variations Immunity Tests
- ISO 17025:2005 General Requirements for the Competence of Testing and Calibration Laboratories

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Document Revision Status

Revision 0 September 27, 2017
Initial Release

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Definitions and Acronyms

The following definitions and acronyms are applicable in this report.
See also ANSI C63.14.

AM – Amplitude Modulation

CDN – Coupling Decoupling Network

EFT – Electrical Fast Transients

ESD – Electro-Static Discharge

HCP – Horizontal Coupling Plane

VCP – Vertical Coupling Plane

LISN – Line Impedance Stabilization Network

NCR – No Calibration Required

NSA – Normalized Site Attenuation

N/A – Not Applicable

RF – Radio Frequency

AE – Associated Equipment. Equipment needed to exercise and/or monitor the operation of the EUT.

Class A Device – A device that is marketed for use in a commercial, industrial or business environment. A 'Class A' device should not be marketed for use by the general public. A 'Class A' device should contain a warning notice in the user manual stating that it could cause radio interference. For example: "**Warning:** Operation of this equipment in a residential environment could cause radio interference."

Class B Device – A device that is marketed for use in a residential environment and may also be used in a commercial, business or industrial environments. NOTE: A residential environment is an environment where the use of broadcast radio and television receivers may be expected within a distance of 10m of the device concerned.

EMC – Electro-Magnetic Compatibility. The ability of an equipment or system to function satisfactorily in its electromagnetic environment without introducing intolerable electromagnetic disturbances to anything in that environment.

EMI – Electro-Magnetic Immunity. The ability to maintain a specified performance when the equipment is subjected to disturbance (unwanted) signals of specified levels.

EUT – Equipment Under Test. A device or system being evaluated for compliance that is representative of a product to be marketed.

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Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

ITE – Information Technology Equipment. Has a primary function of entry, storage, display, retrieval, transmission, processing, switching, or control of data and/or telecommunication messages and which may be equipped with one or more ports typically for information transfer.

Antenna Port – Port, other than a broadcast receiver tuner port, for connection of an antenna used for intentional transmission and/or reception of radiated RF energy.

Broadcast Receiver Tuner Port – Port intended for the reception of a modulated RF signal carrying terrestrial, satellite and/or cable transmissions of audio and/or video broadcast and similar services.

Optical Fiber Port – Port at which an optical fiber is connected to an equipment.

Signal/Control Port – Port intended for the interconnection of components of a EUT, or between a EUT and local AE and used in accordance with relevant functional specifications (for example for the maximum length of cable connected to it).
(Examples include: RS-232, USB, HDMI, Fire Wire)

Wired Network Port – Point of connection for voice, data and signaling transfers intended to interconnect widely dispersed systems by direct connection to a single-user or multi-user communication network.

(Examples include: CATV, PSTN, ISDN, xDSL, LAN and similar networks)

EMC Test Plan – An EMC test plan established prior to testing. See 'Appendix A – EUT & Client Provided Details'.

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Testing Facility

Testing for EMC on the EUT was carried out at TÜV SÜD Canada testing lab near Toronto, Ontario. The testing lab has a calibrated 3m semi-anechoic chamber which allows measurements on a EUT that has a maximum width or length of up to 2m and a height of up to 3m. The chamber is equipped with a turntable that is capable of testing devices up to 3300lb in weight. This facility is capable of testing products that are rated for 120Vac and 240Vac single phase, or devices that are rated for a 208Vac 3 phase input. DC capability is also available for testing. The chamber is equipped with a mast that controls the polarization and height of the antenna. Control of the mast occurs in the control room adjoining the shielded chamber. Radiated emission measurements are performed using a BiLog antenna and a Horn antenna where applicable. Conducted emissions, unless otherwise stated, are performed using a LISN and using the Vertical Ground plane if applicable.

Calibrations and Accreditations

The 3m semi-anechoic chamber is registered with Federal Communications Commission (FCC, CA6844), Industry Canada (IC, 6844A-3) and Voluntary Control Council for Interference (VCCI, R-4023, G-506, C-4498, and T-1246). This chamber was calibrated for Normalized Site Attenuation (NSA) using test procedures outlined in ANSI C63.4 "Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 kHz to 40 GHz". The chamber is lined with ferrite tiles and absorption cones to minimize any undesired reflections. The NSA data is kept on file at TÜV SÜD Canada. For radiated susceptibility testing, a 16 point field calibration has been performed on the chamber. The field uniformity data is kept on file at TÜV SÜD Canada. TÜV SÜD Canada Inc. is accredited to ISO 17025 by A2LA with Testing Certificate #2955.02. The laboratory's current scope of accreditation listing can be found as listed on the A2LA website. All measuring equipment is calibrated on an annual or bi-annual basis as listed for each respective test.

Client	Pro V&V	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD		
Standard(s)			

Testing Environmental Conditions and Dates

Following environmental conditions were recorded in the facility during time of testing:

ICX DRE VVPAT & ICX DRE Report Printer

Date	Test	Initials	Temperature (°C)	Humidity (%)	Pressure (kPa)
August 1, 2017	Power Line Conducted Emissions	JG	25.5	51.6	101.4
July 31, 2017	Radiated Emissions	JG	25.7	50.3	101.2
August 1, 2017	Electrostatic Disruption	JG	25.5	51.6	101.4
July 31, 2017	Electromagnetic Susceptibility	JG	25.7	50.3	101.2
July 31, 2017	Electrical Fast Transient	JG	25.7	50.3	101.2
August 2, 2017	Lightning Surge	JG	26.1	52.7	101.0
July 31, 2017	Conducted RF Immunity	JG	25.7	50.3	101.2
July 31, 2017	Magnetic Fields Immunity	JG	25.7	50.3	101.2
July 31, 2017 August 2, 2017	Electrical Power Disturbance	JG	25.7 26.1	50.3 52.7	101.2 101.0

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ICX BMD

Date	Test	Initials	Temperature (°C)	Humidity (%)	Pressure (kPa)
Sept. 26, 2017	Power Line Conducted Emissions	JG	26.3	53.7	101.0
Sept. 26, 2017	Radiated Emissions	JG	26.3	53.7	101.0
Sept. 26, 2017	Electrostatic Disruption	JG	26.3	53.7	101.0
Sept. 26, 2017	Electromagnetic Susceptibility	JG	26.3	53.7	101.0
Sept. 26, 2017	Electrical Fast Transient	JG	26.3	53.7	101.0
Sept. 26, 2017	Lightning Surge	JG	26.3	53.7	101.0
Sept. 26, 2017	Conducted RF Immunity	JG	26.3	53.7	101.0
Sept. 26, 2017	Magnetic Fields Immunity	JG	26.3	53.7	101.0
Sept. 26, 2017	Electrical Power Disturbance	JG	26.3	53.7	101.0

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Detailed Test Result Section

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Power Line Conducted Emissions – 4.1.2.9

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT's power line does not exceed the limits listed below as defined in the applicable test standard and measured from a LISN. This helps protect lower frequency radio services such as AM radio, shortwave radio, amateur radio, maritime radio, CB radio, and so on, from unwanted interference.

Limits & Method

The method is as defined in ANSI C63.4. The limits are as defined in FCC Part 15 Section 15.107 and ICES-003 Issue 6 Section 6.1:

CLASS B

Average Limits		Quasi-Peak Limits	
150 kHz – 500 kHz	56 to 46* dB μ V	150 kHz – 500 kHz	66 to 56* dB μ V
500 kHz – 5 MHz	46 dB μ V	500 kHz – 5 MHz	56 dB μ V
5 MHz – 30 MHz	50 dB μ V	5 MHz – 30 MHz	60 dB μ V

* Decreases linearly with the logarithm of the frequency

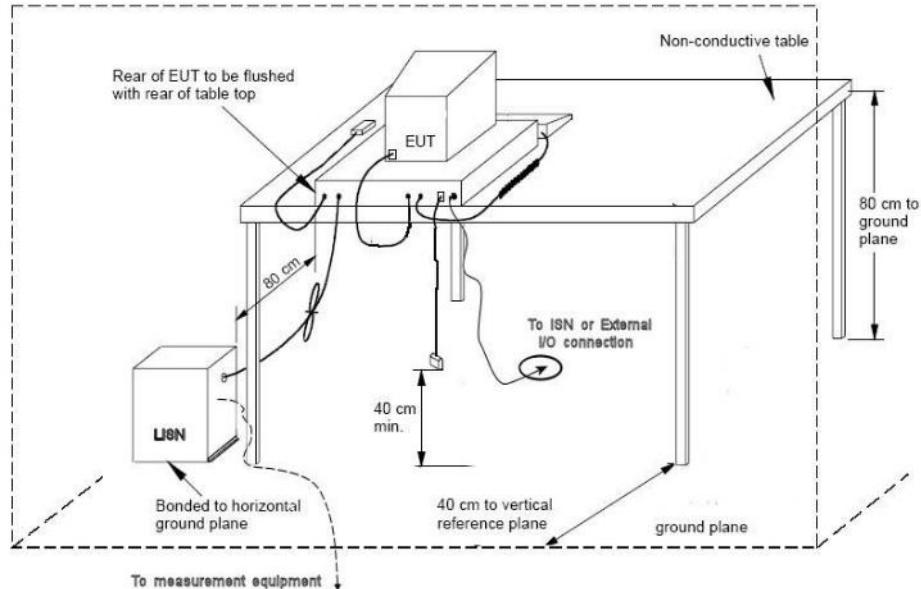
Both Quasi-Peak and Average limits are applicable and each is specified as being measured with a resolution bandwidth of 9 kHz. For Quasi-Peak, a video bandwidth at least three times greater than the resolution bandwidth is used.

Based on ANSI C63.4 Section 4.2, if the Peak or Quasi-Peak detector measurements do not exceed the Average limits, then the EUT is deemed to have passed the requirements.

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Typical Setup Diagram



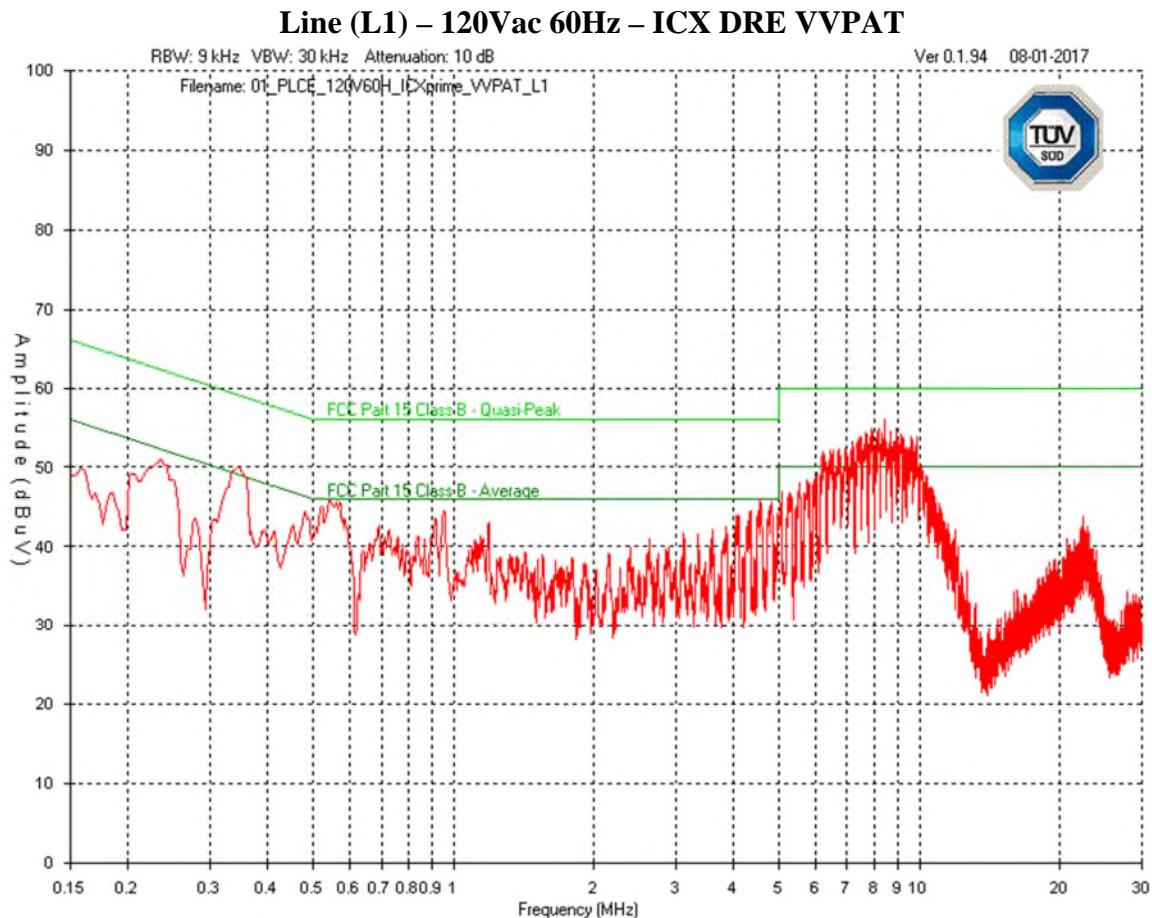
Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is $\pm 2.91\text{dB}$ with a 'k=2' coverage factor and a 95% confidence level.

Preliminary Graphs

The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under Final Measurements.

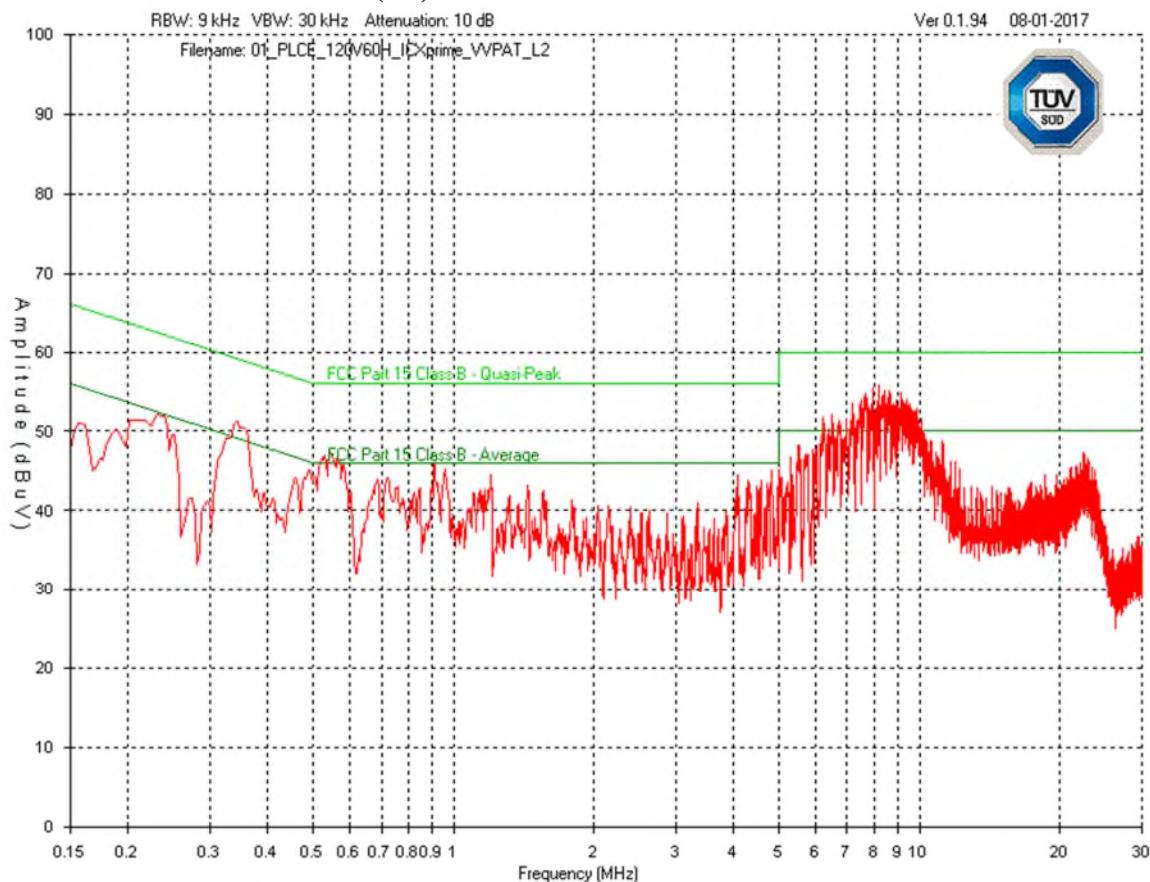
Client	Pro V&V
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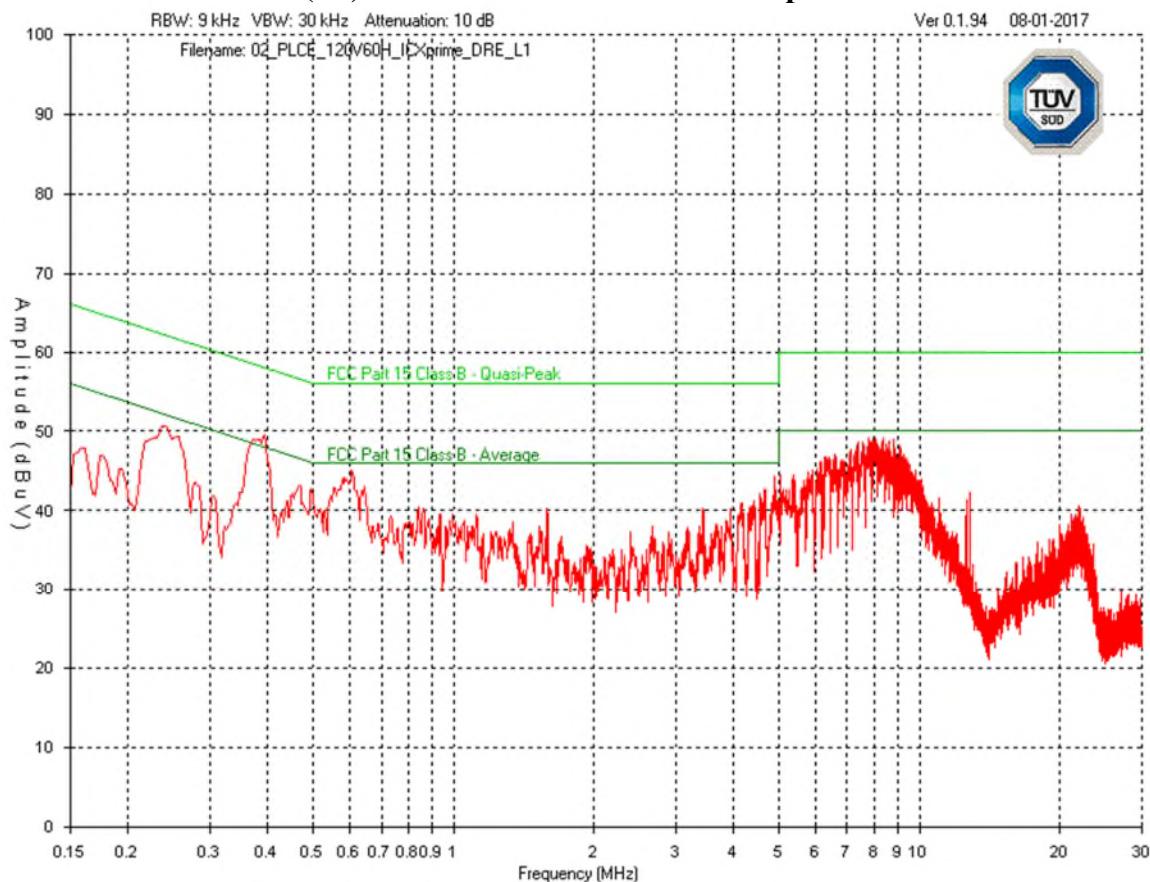
Neutral (L2) – 120Vac 60Hz - ICX DRE VVPAT



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Line (L1) – 120Vac 60Hz – ICX DRE Report Printer

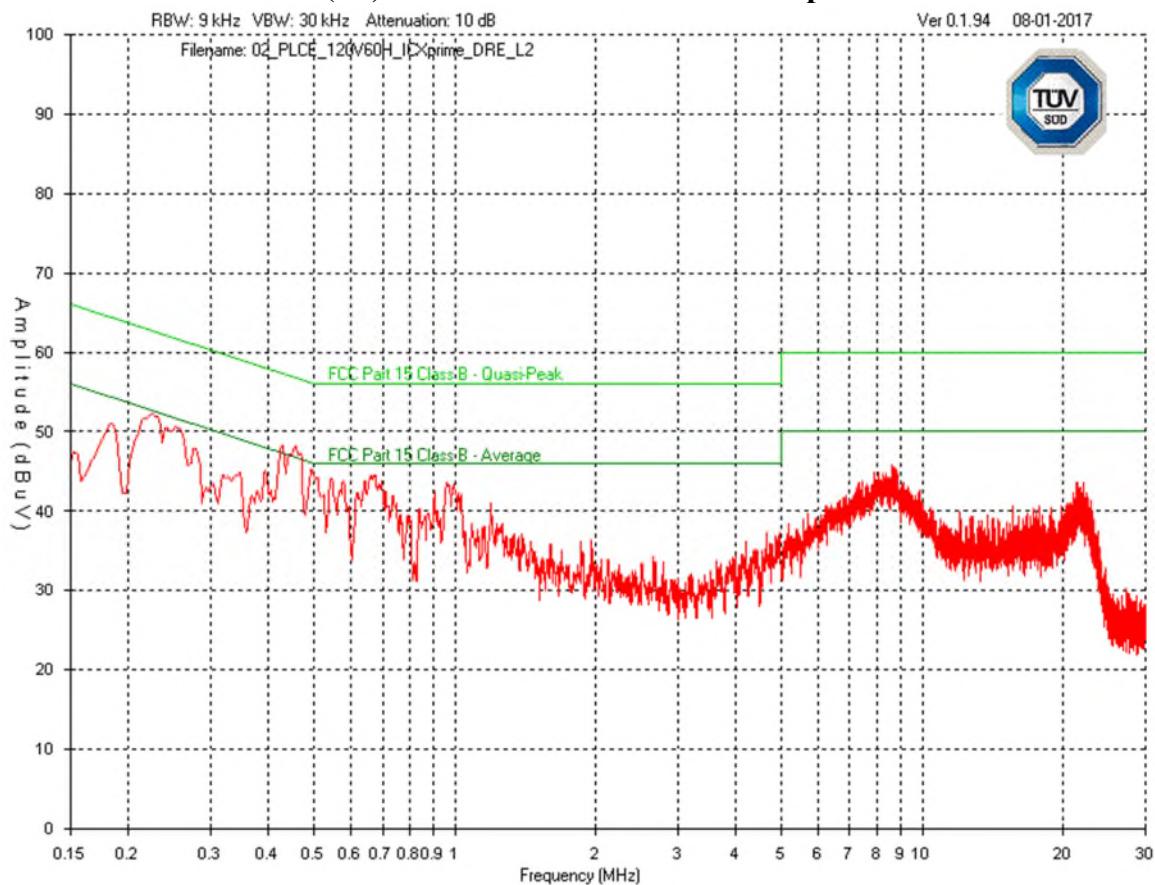


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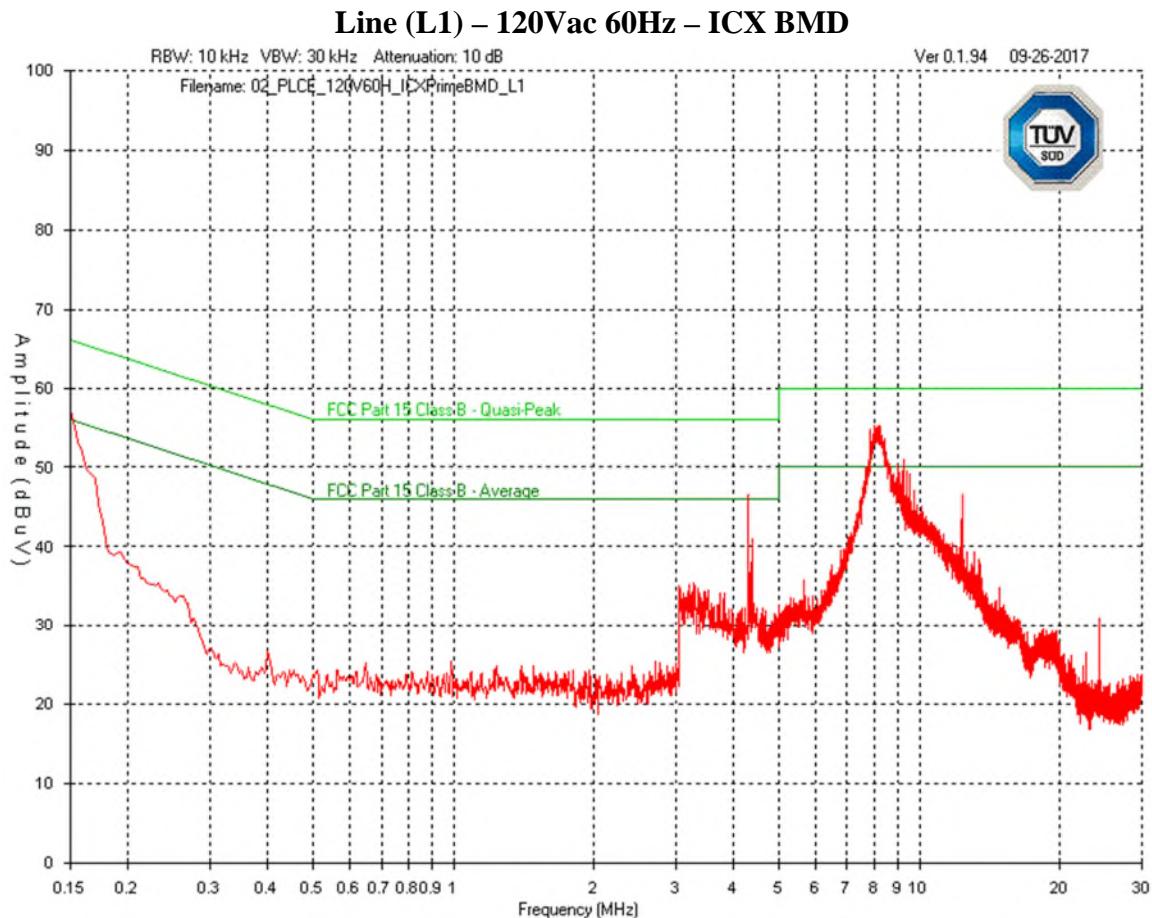


Canada

Neutral (L2) – 120Vac 60Hz – ICX DRE Report Printer



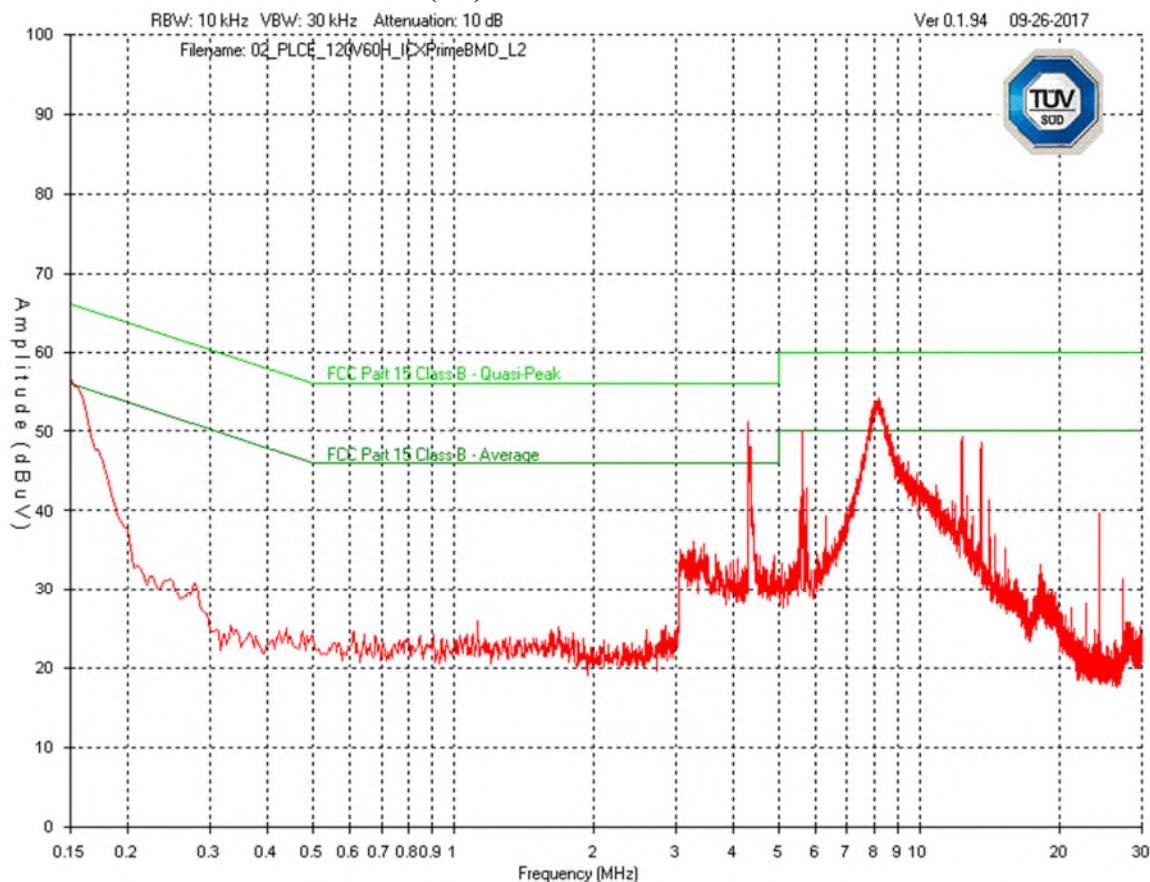
Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
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Client	Pro V&V
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Neutral (L2) – 120Vac 60Hz – ICX BMD



Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Final Measurements

Product Category			Class B									
EUT			ICX DRE VVPAT									
Supply			120Vac 60Hz									
Frequency (MHz)	Detector Peak/Avg/QP	Received Signal (dB μ V)	Atten Factor (dB)	Cable Factor (dB)	LISN Factor (dB)	Level (dB μ V)	QP Limit (dB μ V)	Avg Limit (dB μ V)	QP Margin (dB)	Avg Margin (dB)	Pass/Fail	
Line												
8.415	AVG	31.5	10.0	0.1	0.1	41.7	--	50.0	--	8.3	Pass	
8.188	AVG	30.6	10.0	0.1	0.1	40.8	--	50.0	--	9.2	Pass	
7.916	AVG	30.1	10.0	0.1	0.1	40.3	--	50.0	--	9.7	Pass	
6.945	AVG	26.8	10.0	0.1	0.1	37.0	--	50.0	--	13.0	Pass	
0.915	AVG	17.8	10.0	0.1	0.1	28.0	--	46.0	--	18.0	Pass	
0.344	AVG	26.7	10.0	0.1	0.1	36.9	--	49.1	--	12.2	Pass	
0.544	AVG	19.4	10.0	0.1	0.1	29.6	--	46.0	--	16.4	Pass	
0.234	AVG	32.3	10.0	0.0	0.1	42.4	--	52.3	--	9.9	Pass	
4.340	AVG	21.6	10.0	0.1	0.1	31.8	--	46.0	--	14.2	Pass	
8.415	PEAK	45.8	10.0	0.1	0.1	56.0	60.0	--	4.0	--	Pass	
8.188	PEAK	44.8	10.0	0.1	0.1	55.0	60.0	--	5.0	--	Pass	
7.916	PEAK	44.7	10.0	0.1	0.1	54.9	60.0	--	5.1	--	Pass	
8.914	PEAK	44.6	10.0	0.1	0.1	54.8	60.0	--	5.2	--	Pass	
8.693	PEAK	44.3	10.0	0.1	0.1	54.5	60.0	--	5.5	--	Pass	
7.662	PEAK	44.2	10.0	0.1	0.1	54.4	60.0	--	5.6	--	Pass	
Neutral												
8.194	AVG	31.3	10.0	0.1	0.1	41.5	--	50.0	--	8.5	Pass	
7.958	AVG	31.2	10.0	0.1	0.1	41.4	--	50.0	--	8.6	Pass	
8.594	AVG	28.5	10.0	0.1	0.1	38.7	--	50.0	--	11.3	Pass	
8.424	AVG	32.3	10.0	0.1	0.1	42.5	--	50.0	--	7.5	Pass	
0.341	AVG	28.6	10.0	0.1	0.1	38.8	--	49.2	--	10.4	Pass	
0.909	AVG	19.5	10.0	0.1	0.1	29.7	--	46.0	--	16.3	Pass	
0.544	AVG	20.7	10.0	0.1	0.1	30.9	--	46.0	--	15.1	Pass	
0.231	AVG	32.5	10.0	0.0	0.1	42.6	--	52.4	--	9.8	Pass	
8.194	PEAK	45.7	10.0	0.1	0.1	55.9	60.0	--	4.1	--	Pass	
7.958	PEAK	45.3	10.0	0.1	0.1	55.5	60.0	--	4.5	--	Pass	
8.594	PEAK	45.0	10.0	0.1	0.1	55.2	60.0	--	4.8	--	Pass	
8.424	PEAK	45.0	10.0	0.1	0.1	55.2	60.0	--	4.8	--	Pass	
9.159	PEAK	44.7	10.0	0.1	0.1	54.9	60.0	--	5.1	--	Pass	
7.650	PEAK	44.5	10.0	0.1	0.1	54.7	60.0	--	5.3	--	Pass	

Average and Quasi-Peak Emissions Table – ICX DRE VVPAT

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Product Category			Class B								
EUT			ICX DRE Report Printer								
Supply			120Vac 60Hz								
Frequency (MHz)	Detector Peak/Avg/QP	Received Signal (dBμV)	Atten Factor (dB)	Cable Factor (dB)	LISN Factor (dB)	Level (dBμV)	QP Limit (dBμV)	Avg Limit (dBμV)	QP Margin (dB)	Avg Margin (dB)	Pass/Fail
Line											
0.392	AVG	24.6	10.0	0.1	0.1	34.8	--	48.0	--	13.2	Pass
7.799	AVG	24.5	10.0	0.1	0.1	34.7	--	50.0	--	15.3	Pass
8.406	AVG	25.6	10.0	0.1	0.1	35.8	--	50.0	--	14.2	Pass
7.979	AVG	25.1	10.0	0.1	0.1	35.3	--	50.0	--	14.7	Pass
0.604	AVG	21.4	10.0	0.1	0.1	31.6	--	46.0	--	14.4	Pass
0.240	AVG	30.2	10.0	0.0	0.1	40.3	--	52.1	--	11.8	Pass
4.877	AVG	21.3	10.0	0.1	0.1	31.5	--	46.0	--	14.5	Pass
6.607	AVG	23.1	10.0	0.1	0.1	33.3	--	50.0	--	16.7	Pass
0.392	PEAK	39.3	10.0	0.1	0.1	49.5	58.0	--	8.5	--	Pass
7.799	PEAK	39.0	10.0	0.1	0.1	49.2	60.0	--	10.8	--	Pass
8.370	PEAK	38.9	10.0	0.1	0.1	49.1	60.0	--	10.9	--	Pass
7.979	PEAK	38.9	10.0	0.1	0.1	49.1	60.0	--	10.9	--	Pass
0.604	PEAK	34.8	10.0	0.1	0.1	45.0	56.0	--	11.0	--	Pass
8.824	PEAK	38.7	10.0	0.1	0.1	48.9	60.0	--	11.1	--	Pass
Neutral											
0.425	AVG	26.2	10.0	0.1	0.1	36.4	--	47.4	--	11.0	Pass
0.225	AVG	36.7	10.0	0.0	0.1	46.8	--	52.6	--	5.8	Pass
0.676	AVG	27.8	10.0	0.1	0.1	38.0	--	46.0	--	8.0	Pass
0.544	AVG	21.3	10.0	0.1	0.1	31.5	--	46.0	--	14.5	Pass
0.960	AVG	16.7	10.0	0.1	0.1	26.9	--	46.0	--	19.1	Pass
0.425	PEAK	38.1	10.0	0.1	0.1	48.3	57.4	--	9.1	--	Pass
0.225	PEAK	42.1	10.0	0.0	0.1	52.2	62.6	--	10.4	--	Pass
0.676	PEAK	34.4	10.0	0.1	0.1	44.6	56.0	--	11.4	--	Pass
0.544	PEAK	34.0	10.0	0.1	0.1	44.2	56.0	--	11.8	--	Pass
0.960	PEAK	33.3	10.0	0.1	0.1	43.5	56.0	--	12.5	--	Pass
0.183	PEAK	40.8	10.0	0.0	0.2	51.0	64.4	54.4	13.4	3.4	Pass

Average and Quasi-Peak Emissions Table – ICX DRE Report Printer

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Product Category			Class B								
EUT			ICX Prime BMD								
Supply			120Vac 60Hz								
Frequency (MHz)	Detector Peak/Avg/QP	Received Signal (dBμV)	Atten Factor (dB)	Cable Factor (dB)	LISN Factor (dB)	Level (dBμV)	QP Limit (dBμV)	Avg Limit (dBμV)	QP Margin (dB)	Avg Margin (dB)	Pass/Fail
Line											
8.166	AVG	33.9	10.0	0.1	0.1	44.1	--	50.0	--	5.9	Pass
9.239	AVG	25.1	10.0	0.1	0.1	35.3	--	50.0	--	14.7	Pass
4.294	AVG	11.1	10.0	0.1	0.1	21.3	--	46.0	--	24.7	Pass
9.409	AVG	24.6	10.0	0.1	0.1	34.8	--	50.0	--	15.2	Pass
0.153	AVG	39.1	10.0	0.0	0.2	49.3	--	55.8	--	6.5	Pass
9.509	AVG	23.7	10.0	0.1	0.1	33.9	--	50.0	--	16.1	Pass
12.357	AVG	15.7	10.0	0.1	0.1	25.9	--	50.0	--	24.1	Pass
8.166	PEAK	45.2	10.0	0.1	0.1	55.4	60.0	--	4.6	--	Pass
9.239	PEAK	40.8	10.0	0.1	0.1	51.0	60.0	--	9.0	--	Pass
4.294	PEAK	36.4	10.0	0.1	0.1	46.6	56.0	--	9.4	--	Pass
9.409	PEAK	39.3	10.0	0.1	0.1	49.5	60.0	--	10.5	--	Pass
0.153	PEAK	44.9	10.0	0.0	0.2	55.1	65.8	--	10.7	--	Pass
9.509	PEAK	38.9	10.0	0.1	0.1	49.1	60.0	--	10.9	--	Pass
Neutral											
4.291	AVG	11.5	10.0	0.1	0.1	21.7	56.0	46.0	34.3	24.3	Pass
8.212	AVG	32.6	10.0	0.1	0.1	42.8	60.0	50.0	17.2	7.2	Pass
5.607	AVG	10.7	10.0	0.1	0.1	20.9	60.0	50.0	39.1	29.1	Pass
0.153	AVG	39.2	10.0	0.0	0.2	49.4	65.8	55.8	16.4	6.4	Pass
12.370	AVG	16.4	10.0	0.1	0.1	26.6	60.0	50.0	33.4	23.4	Pass
13.583	AVG	11.9	10.0	0.1	0.1	22.1	60.0	50.0	37.9	27.9	Pass
4.291	PEAK	41.0	10.0	0.1	0.1	51.2	56.0	46.0	4.8	-5.2	Pass
8.212	PEAK	44.0	10.0	0.1	0.1	54.2	60.0	50.0	5.8	-4.2	Pass
5.607	PEAK	39.9	10.0	0.1	0.1	50.1	60.0	50.0	9.9	-0.1	Pass
0.153	PEAK	45.4	10.0	0.0	0.2	55.6	65.8	55.8	10.2	0.2	Pass
12.370	PEAK	39.2	10.0	0.1	0.1	49.4	60.0	50.0	10.6	0.6	Pass
13.583	PEAK	38.4	10.0	0.1	0.1	48.6	60.0	50.0	11.4	1.4	Pass

Average and Quasi-Peak Emissions Table – ICX BMD

Note:

Peak = Peak measurement

AVG = Average measurement

QP = Quasi-Peak measurement

See 'Appendix B – EUT, Peripherals and Test Setup Photos' for photos showing the test set-up for the highest line conducted emission

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESL 6	Rohde & Schwarz	Nov. 25, 2015	Nov. 25, 2017	GEMC 160
LISN	FCC-LISN-50-100-1-02-MS461F	FCC	Feb. 5, 2016	Feb. 5, 2018	GEMC 121
LISN	FCC-LISN-50-100-1-02-MS461F	FCC	Feb. 5, 2016	Feb. 5, 2018	GEMC 122
RF Cable 7m	LMR-400-7M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 28
RF Cable 1m	LMR-400-1M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 29
Attenuator 10 dB	612-10-1	Meca Electronics, Inc	NCR	NCR	GEMC 223
Emissions Software	0.1.94	Global EMC	NCR	NCR	GEMC 58

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Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	



Radiated Emissions – 4.1.2.9

Purpose

The purpose of this test is to ensure that the RF energy unintentionally emitted from the EUT does not exceed the limits listed below as defined in the applicable test standard and measured from a receiving antenna. This helps protect broadcast radio services such as television, FM radio, pagers, cellular telephones, emergency services, and so on, from unwanted interference.

Limit(s)

The method is as defined in ANSI C63.4:2014. The limits are as defined in FCC Part 15 Section 15.109 and ICES-003 Issue 6 Section 6.2:

CLASS B

FCC Part 15, Subpart B and ICES-003 Limits - 30MHz – 1GHz

Frequency Range ^a	Quasi-Peak Limits - 3m ^b
30 MHz – 88 MHz	40 dB μ V/m
88 MHz – 216 MHz	43.5 dB μ V/m
216 MHz – 960 GHz	46 dB μ V/m
960 MHz – 1 GHz	54 dB μ V/m

Frequency Range ^a	Average Limit - 3m ^c	Peak Limit - 3m ^d
1 GHz and Up	54 dB μ V/m	74 dB μ V/m

^aThe frequency range scanned is in accordance to FCC Part 15 Section 15.33(b).

^bLimit is with a resolution bandwidth of 120 kHz, a video bandwidth at least three times greater than the resolution bandwidth, and using a Quasi-Peak detector.

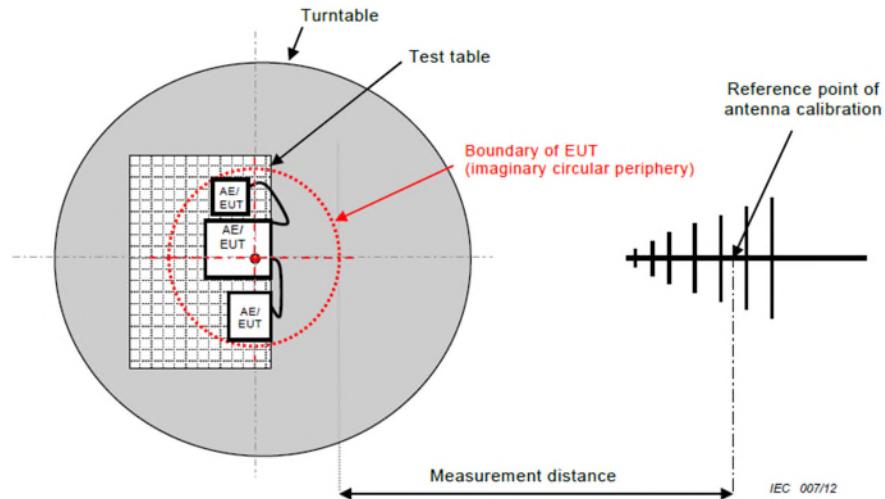
^cLimit is with a resolution bandwidth of 1 MHz and using an Average detector.

^dLimit is with a resolution bandwidth of 1 MHz, a video bandwidth at least three times greater than the resolution bandwidth, and using a Peak detector.

Based on ANSI C63.4 Section 4.2, if the Peak detector measurements do not exceed the Quasi-Peak limits, where defined, then the EUT is deemed to have passed the requirements.

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Typical Radiated Emissions Setup



Note: In accordance with FCC Part 15, section 15.31(f)(1), testing was performed at a 3 meter test distance and an extrapolation factor, if applicable, of 20 dB/decade was applied. For example, an extrapolation of 10m to 3m is $20\log(10/3) = 10.5$ dB.

Measurement Uncertainty

The expanded measurement uncertainty is calculated in accordance with CISPR 16-4-2 and is ± 4.25 dB for 30MHz – 1GHz and ± 4.93 dB for 1GHz – 18GHz with a 'k=2' coverage factor and a 95% confidence level.

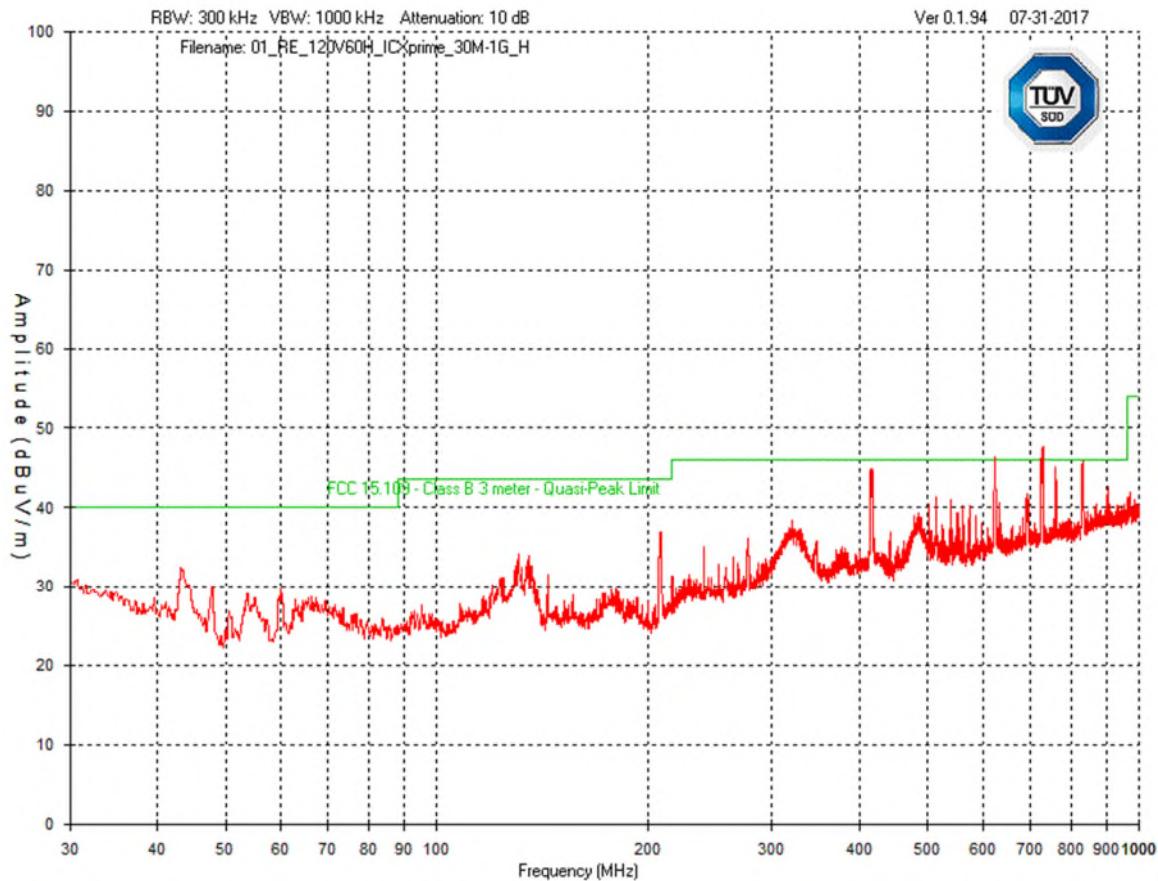
Preliminary Graphs

The graphs shown below are maximized peak measurement graphs measured with a resolution bandwidth greater than or equal to the final required detector over a full 0-360°. This peaking process is done as a worst case measurement and enables the detection of frequencies of concern for final measurement. For final measurements with the appropriate detector, where applicable, please refer to the tables under Final Measurements.

In accordance with FCC Part 15, Subpart A, Section 15.33, the device was scanned to a minimum of a 1 GHz. For devices containing clocks higher than 108 MHz, they were scanned above 1 GHz to meet the requirements of FCC Part 15, Section 15.33.

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

**Horizontal - Peak Emissions Graph – ICX DRE VVPAT
120Vac 60Hz – 30MHz - 1GHz**

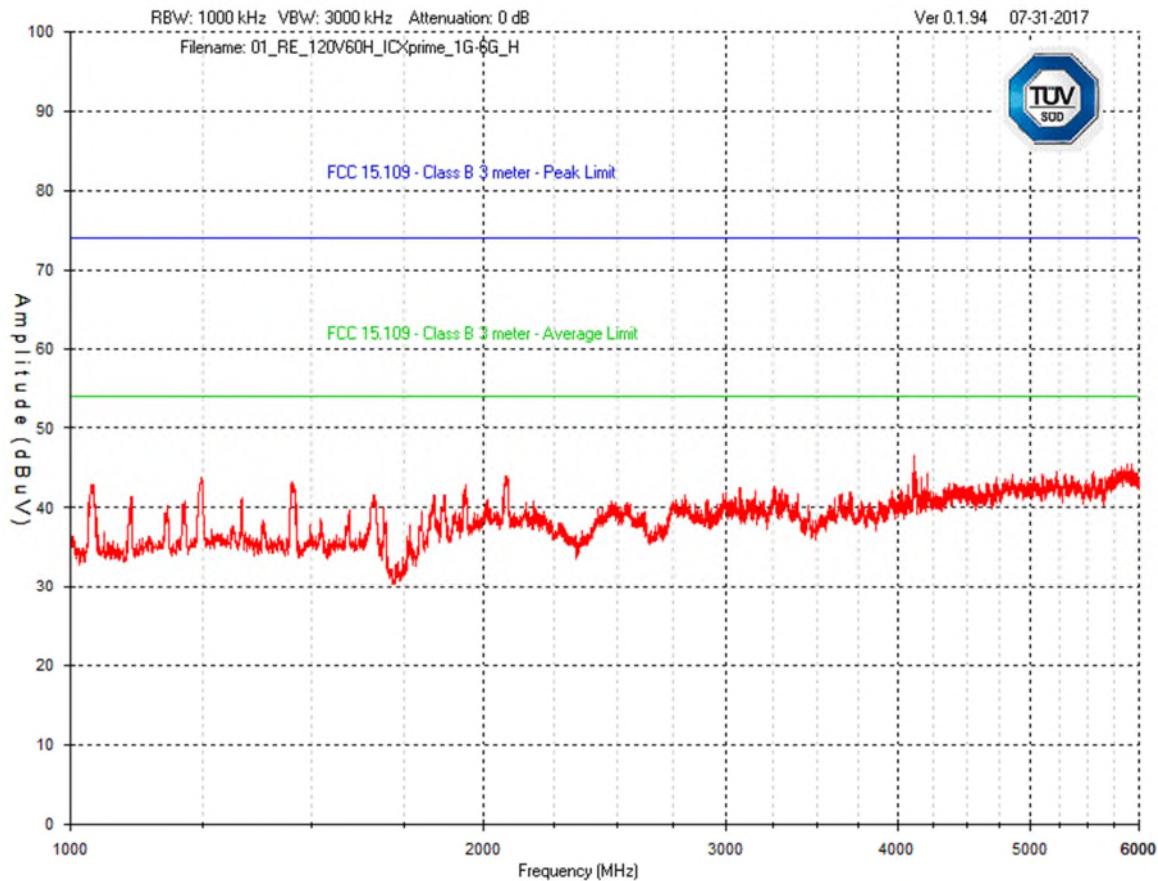


Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	



Canada

Horizontal - Peak Emissions Graph - ICX DRE VVPAT 120Vac 60Hz – 1GHz - 6GHz

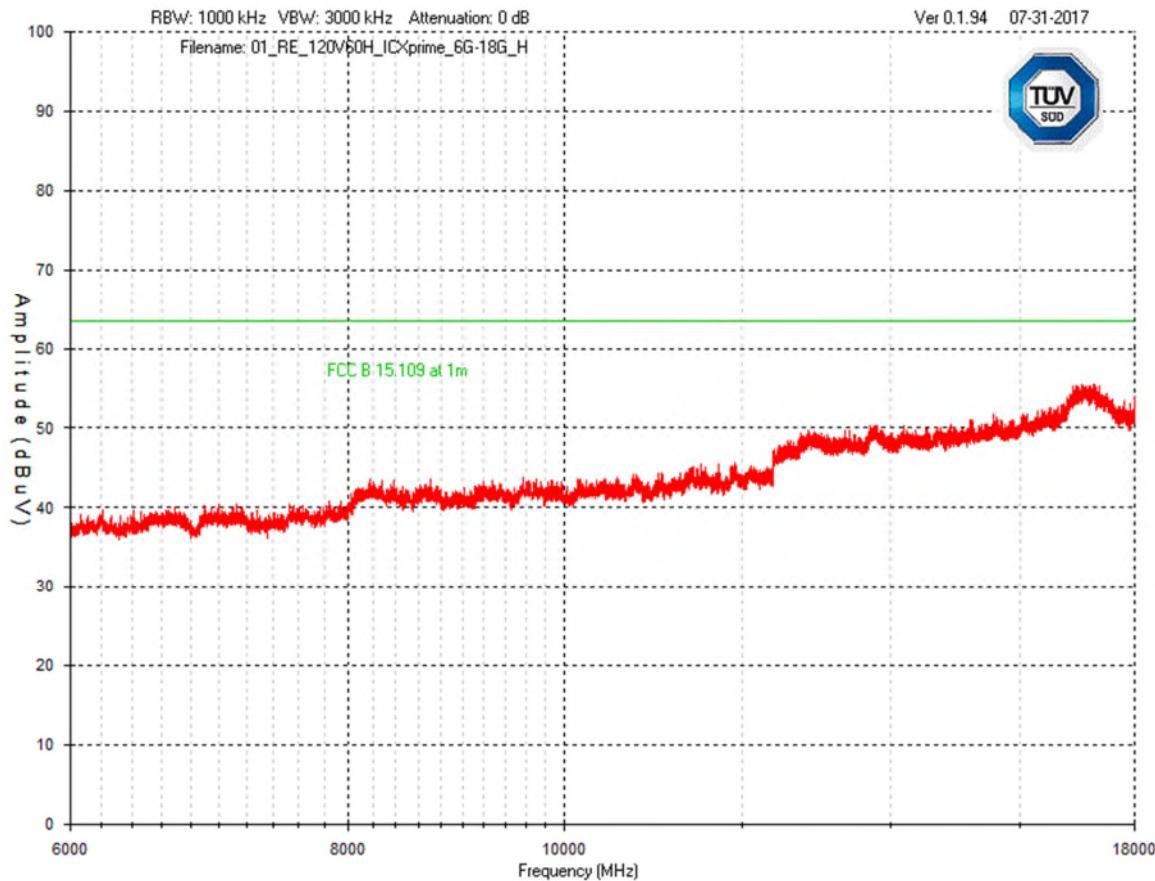


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



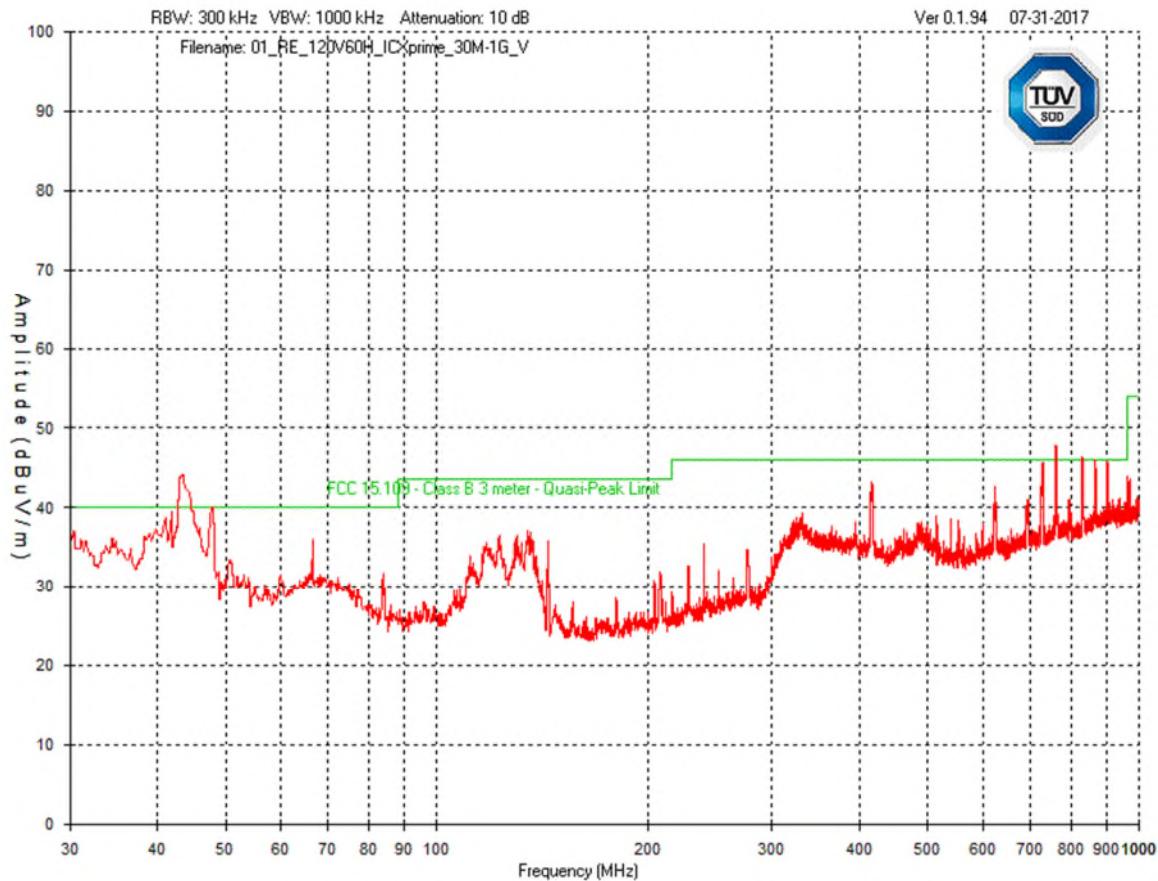
Canada

Horizontal - Peak Emissions Graph - ICX DRE VVPAT 120Vac 60Hz – 6GHz – 18GHz



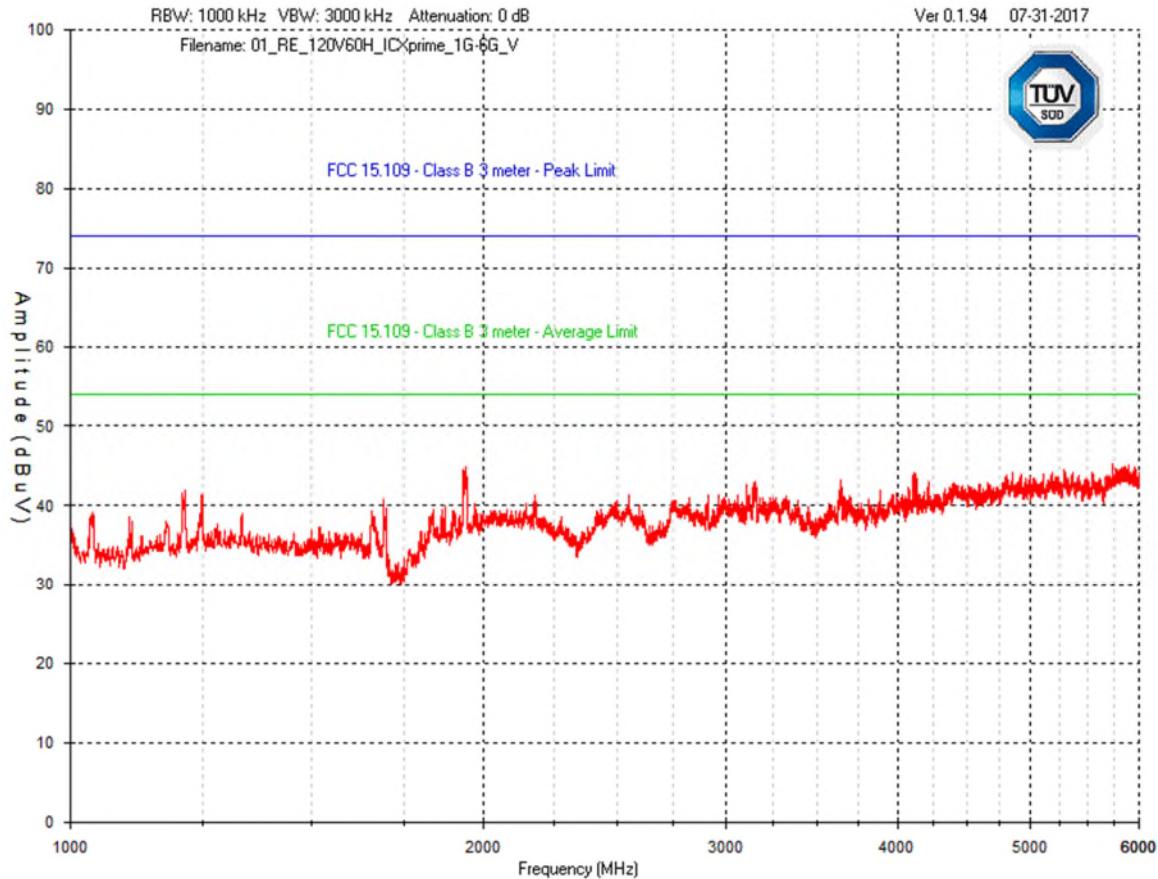
Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Vertical - Peak Emissions Graph - ICX DRE VVPAT
120Vac 60Hz – 30MHz - 1GHz



Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Vertical - Peak Emissions Graph - ICX DRE VVPAT
120Vac 60Hz – 1GHz - 6GHz

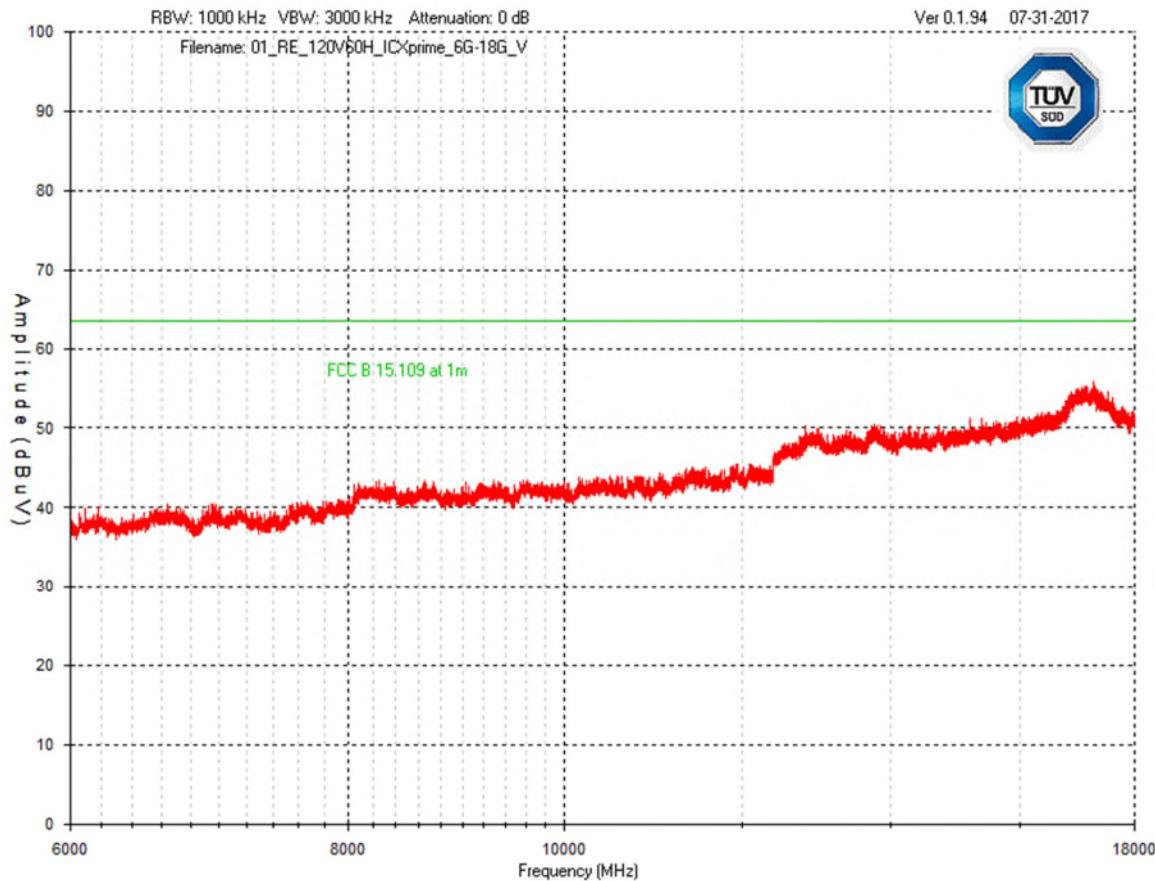


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



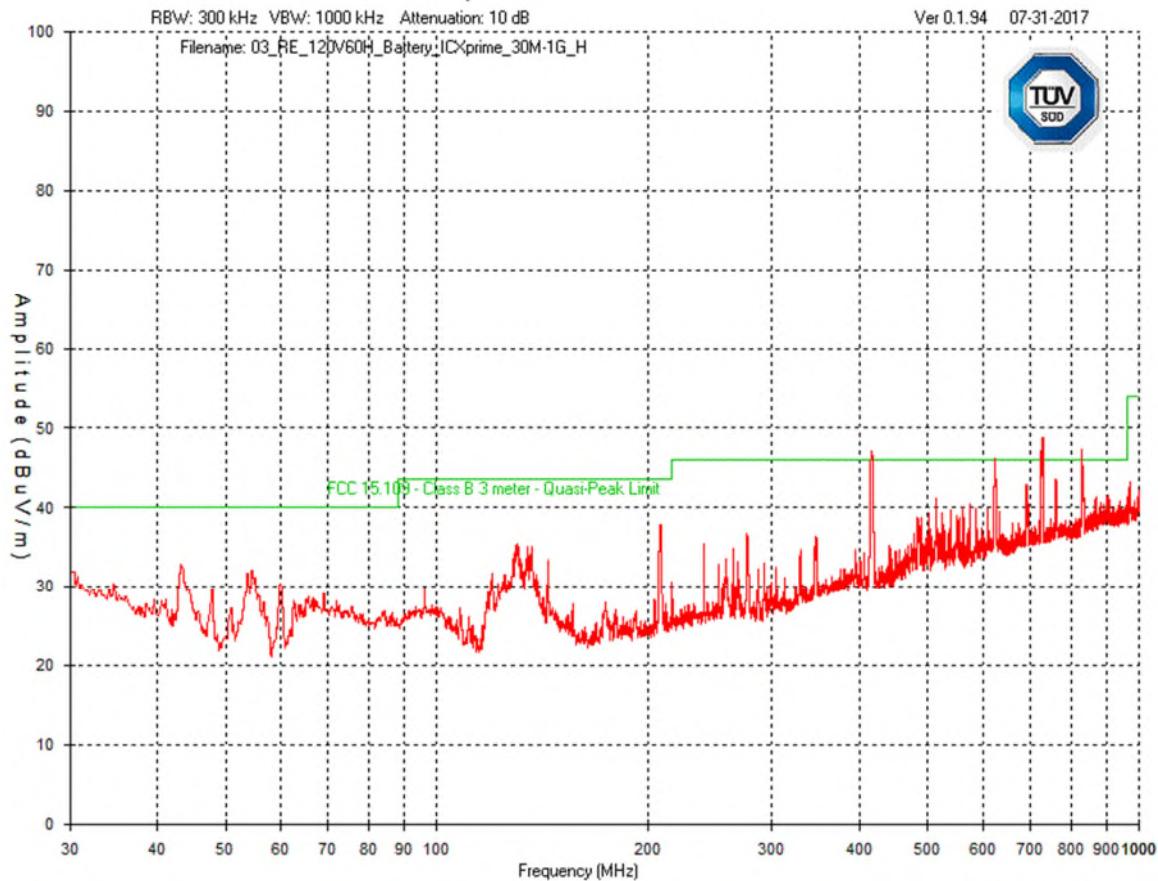
Canada

Vertical - Peak Emissions Graph - ICX DRE VVPAT 120Vac 60Hz – 6GHz – 18GHz



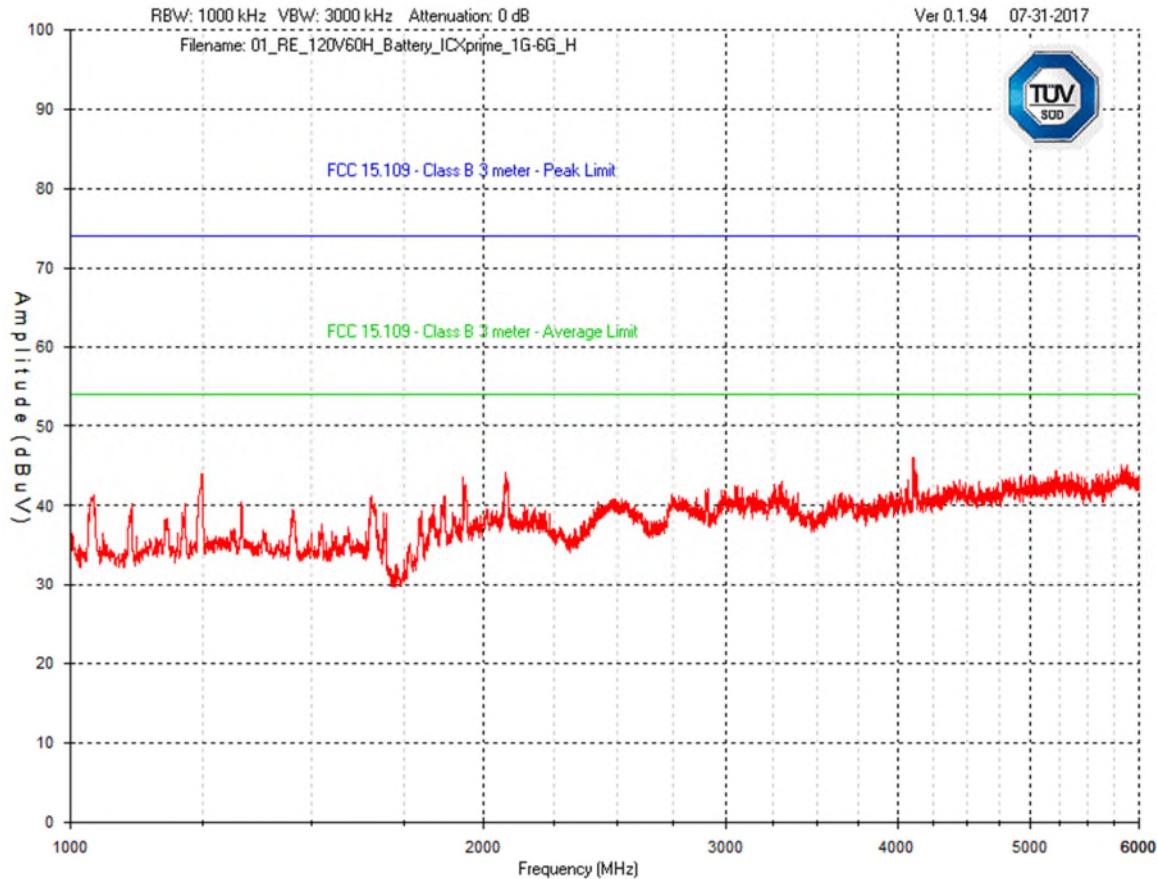
Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

**Horizontal - Peak Emissions Graph – ICX DRE VVPAT
Battery Mode – 30MHz - 1GHz**



Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Horizontal - Peak Emissions Graph - ICX DRE VVPAT Battery Mode – 1GHz - 6GHz

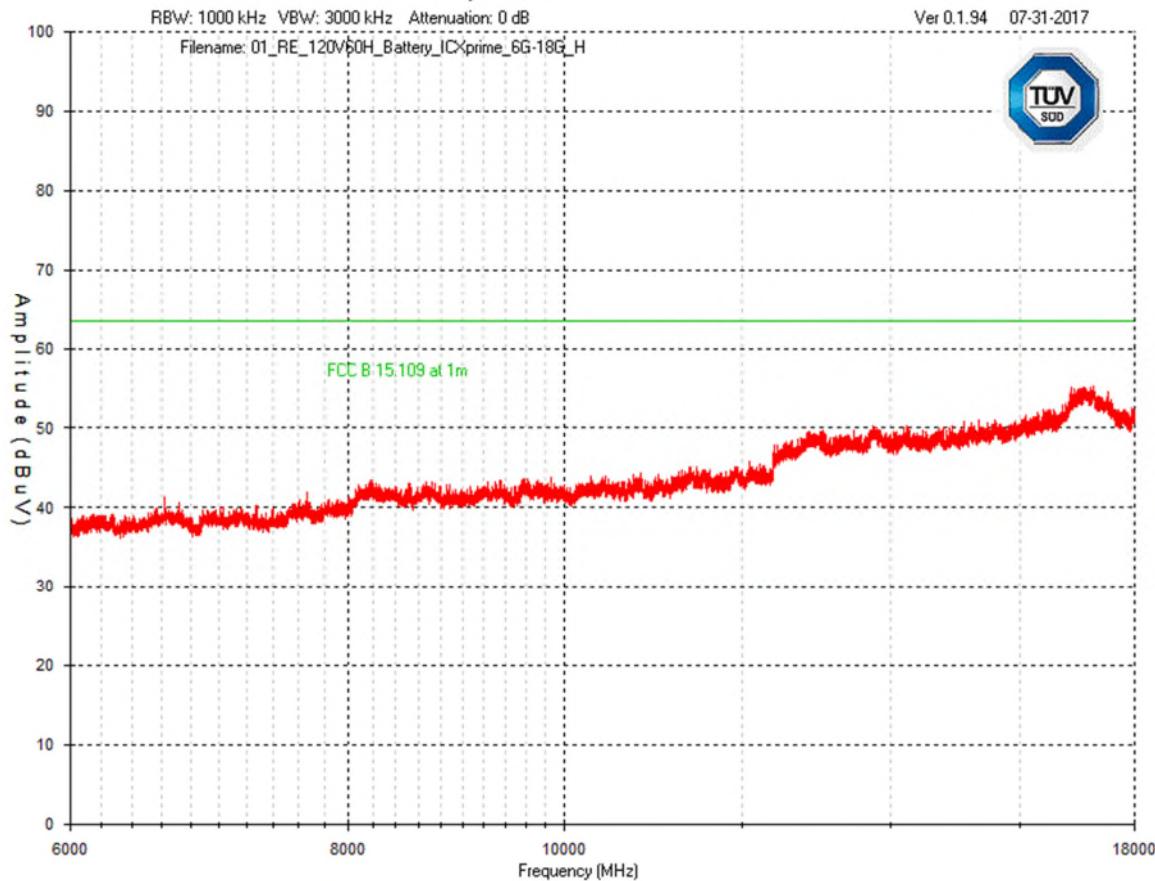


Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	



Canada

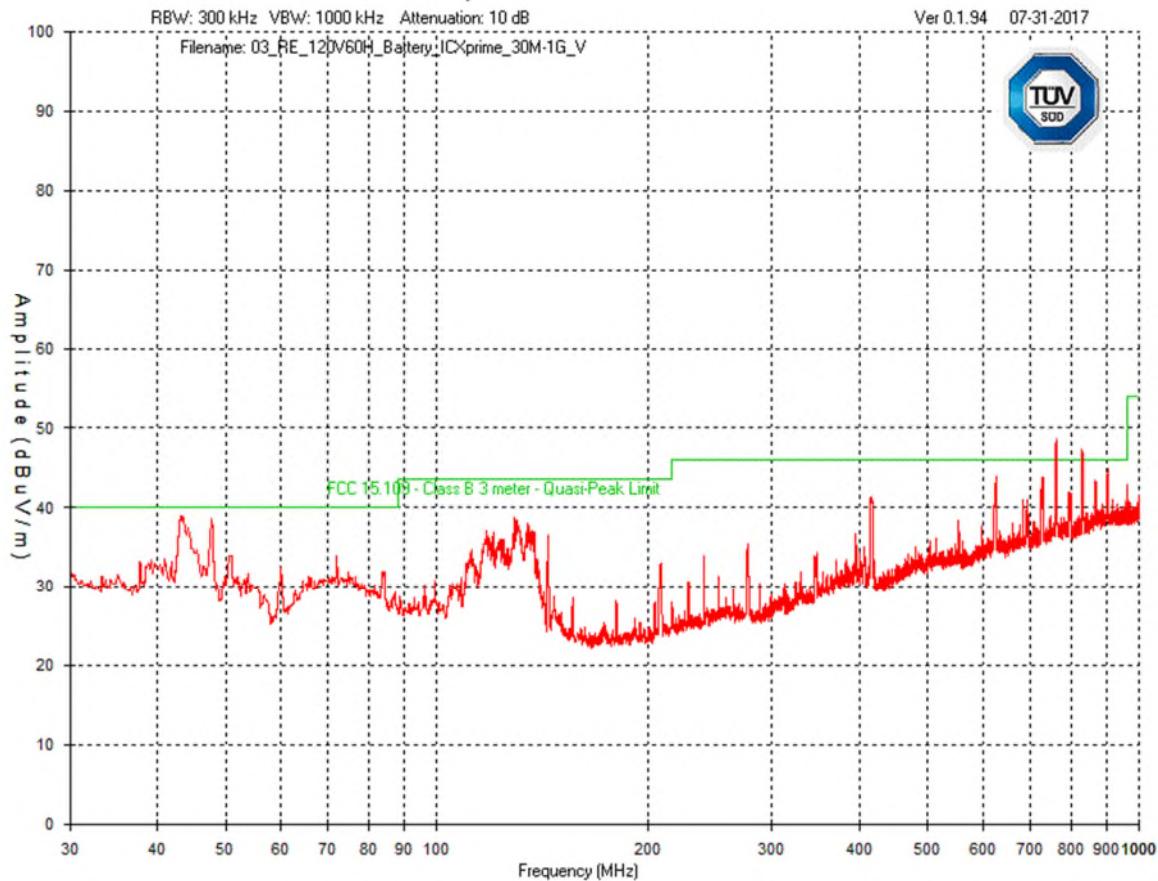
Horizontal - Peak Emissions Graph - ICX DRE VVPAT Battery Mode – 6GHz - 18GHz



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

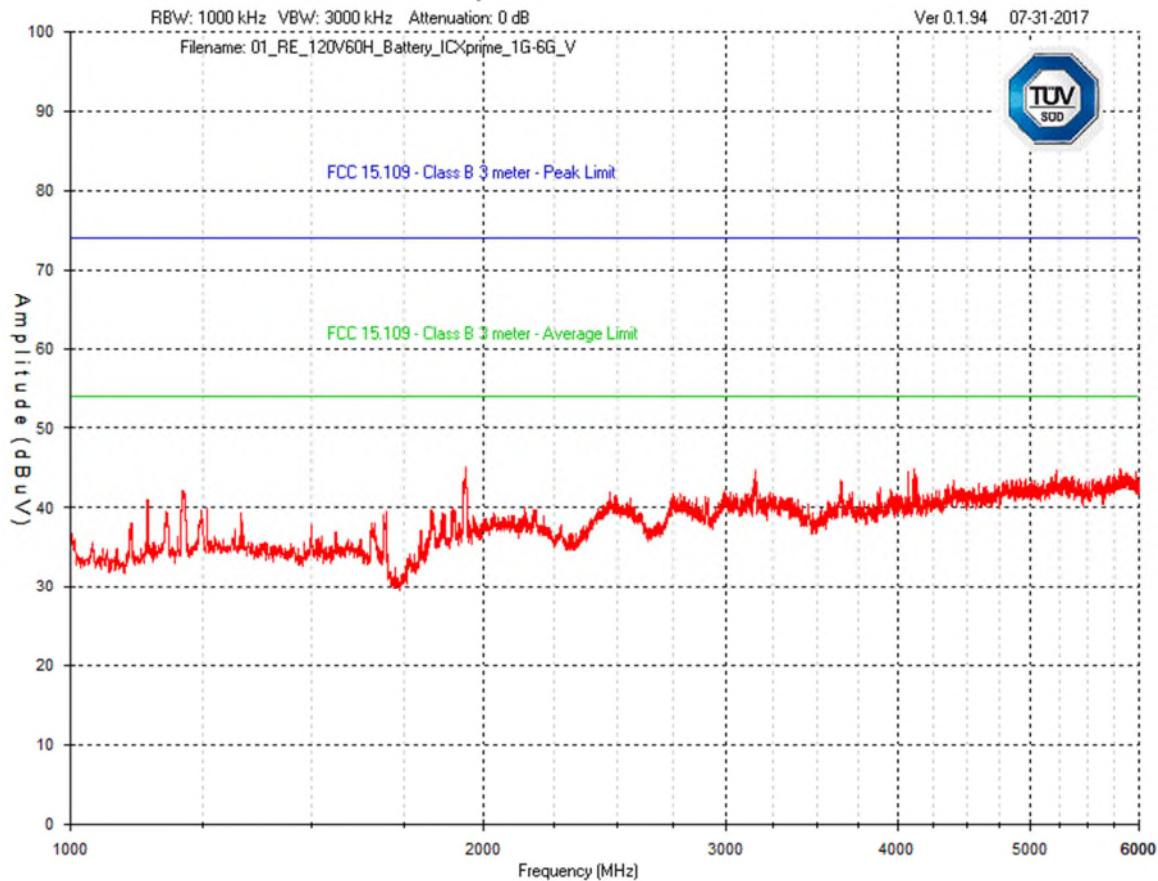


Vertical - Peak Emissions Graph - ICX DRE VVPAT Battery Mode – 30MHz - 1GHz



Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Vertical - Peak Emissions Graph - ICX DRE VVPAT Battery Mode – 1GHz - 6GHz

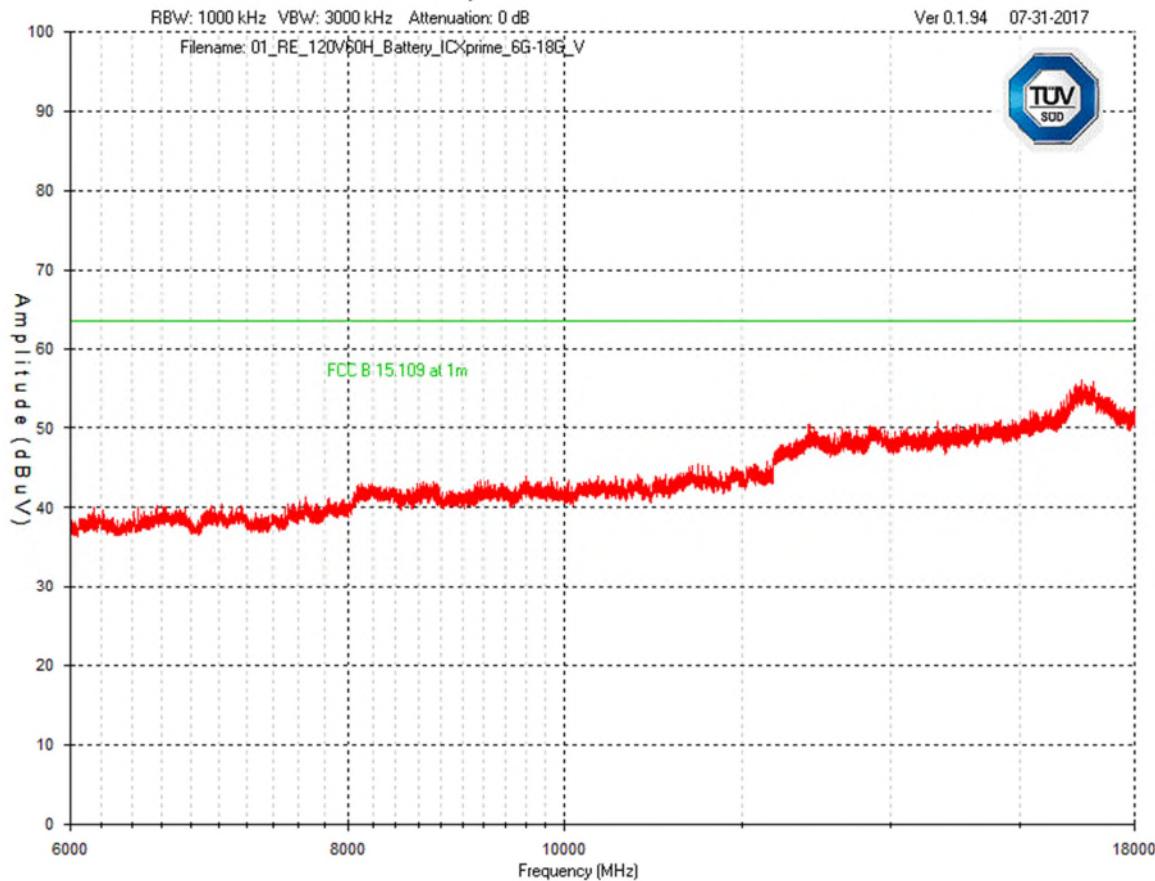


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Canada

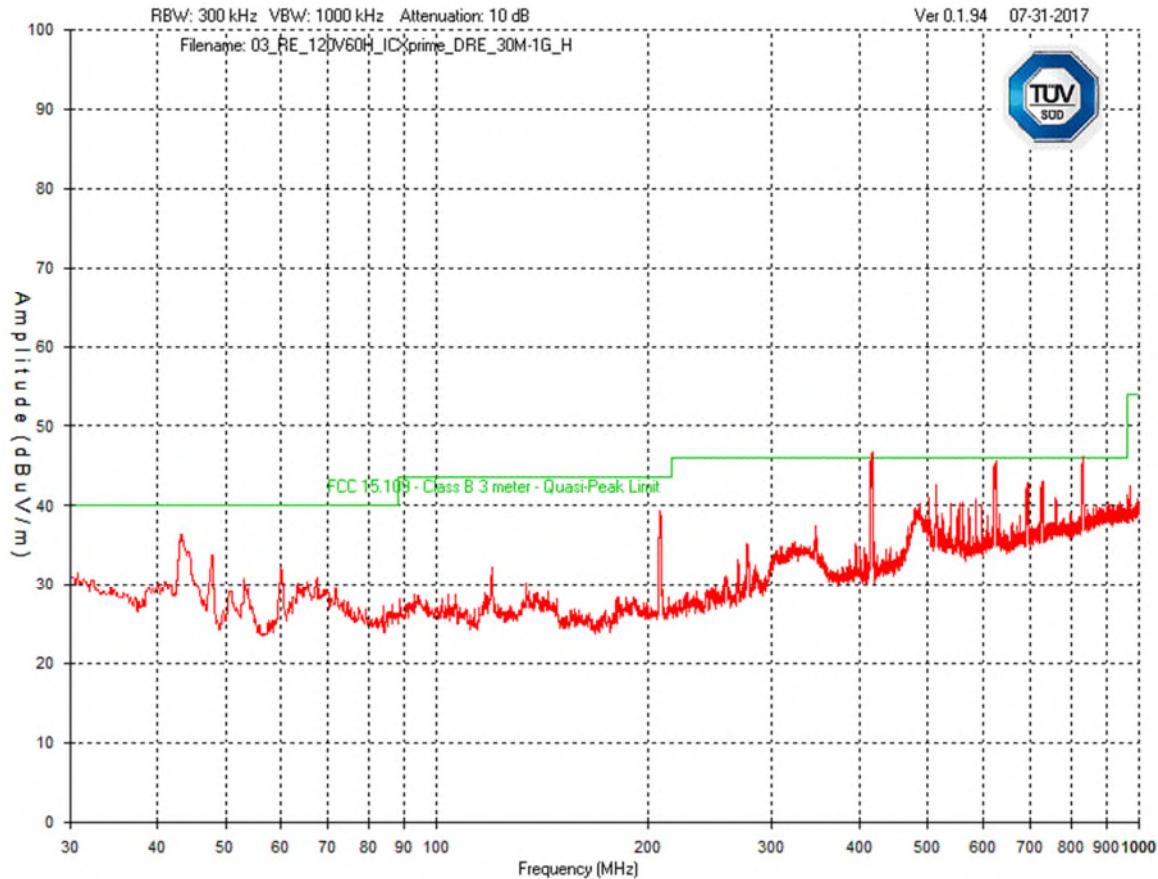
Vertical - Peak Emissions Graph - ICX DRE VVPAT Battery Mode – 6GHz - 18GHz



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

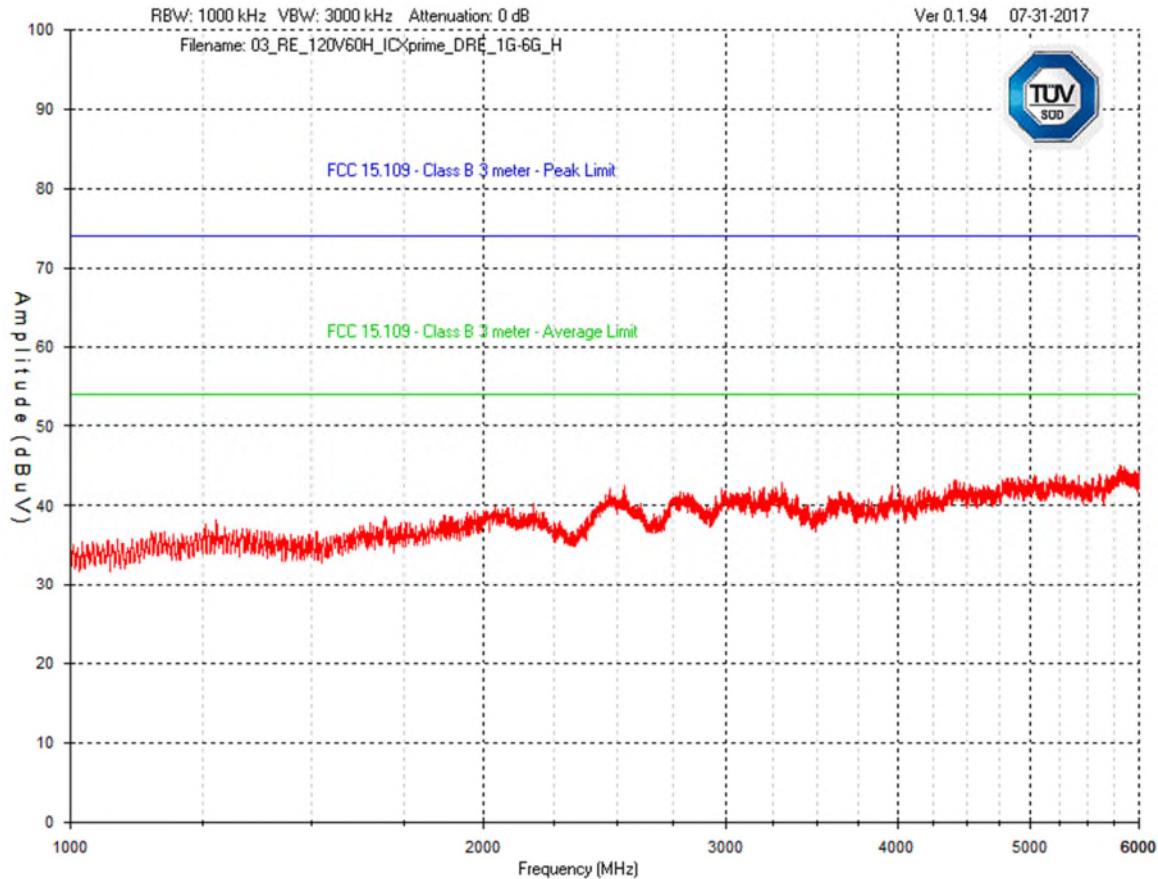


Horizontal - Peak Emissions Graph – ICX DRE Report Printer 120Vac 60Hz – 30MHz - 1GHz



Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

**Horizontal - Peak Emissions Graph - ICX DRE Report Printer
120Vac 60Hz – 1GHz - 6GHz**

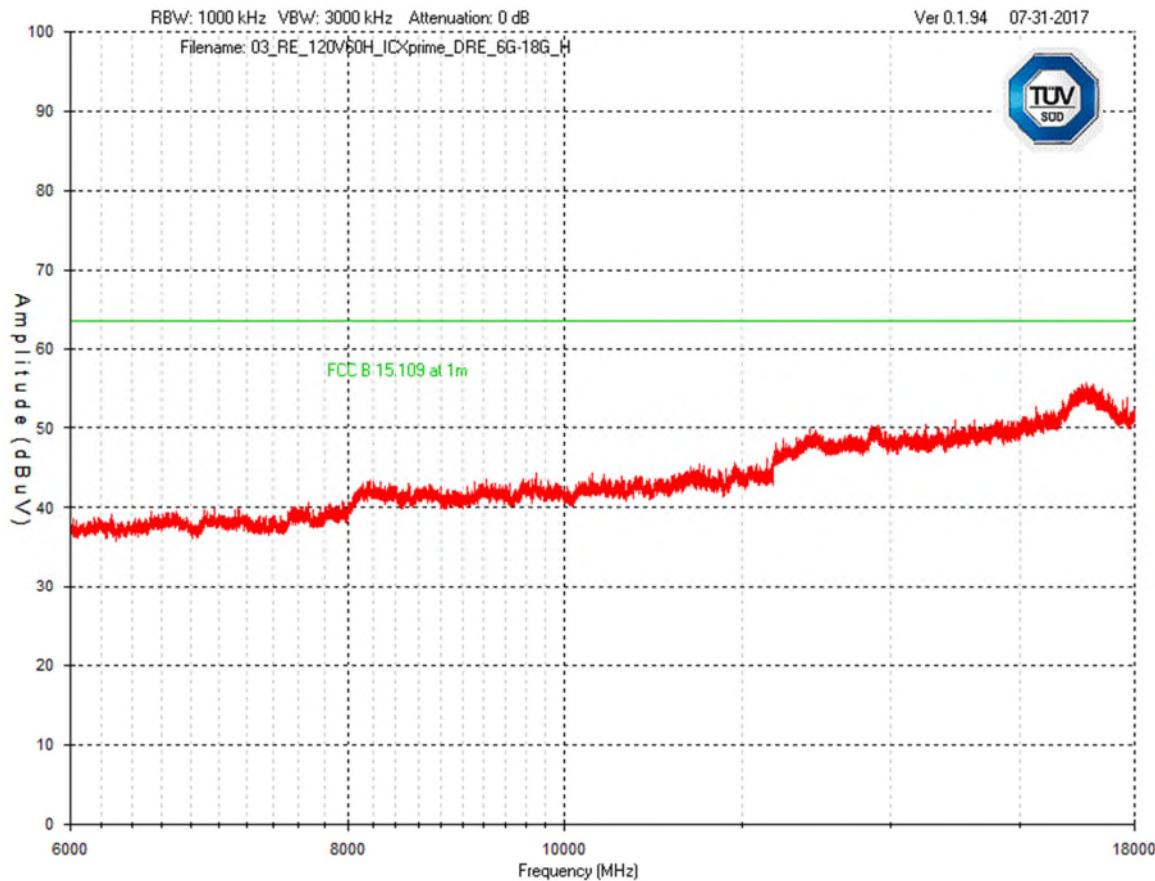


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Canada

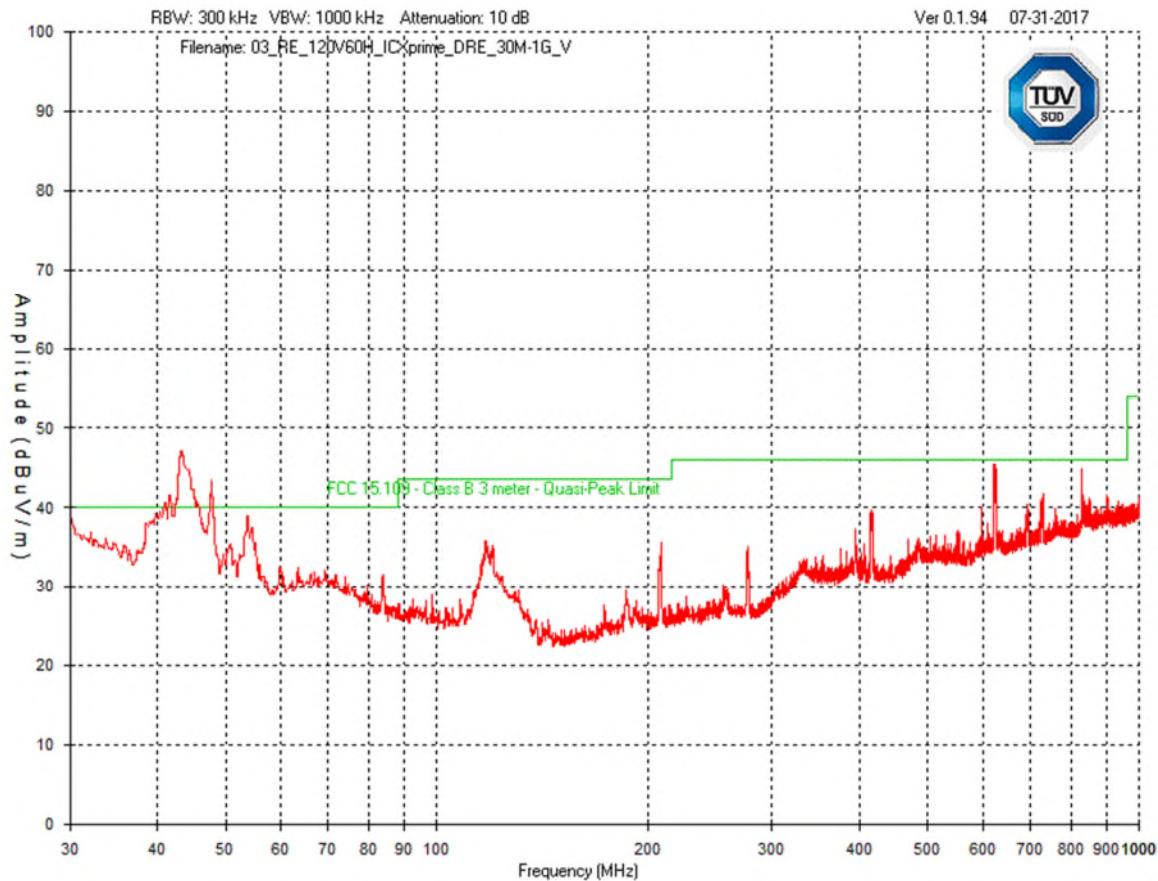
Horizontal - Peak Emissions Graph - ICX DRE Report Printer 120Vac 60Hz – 6GHz – 18GHz



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

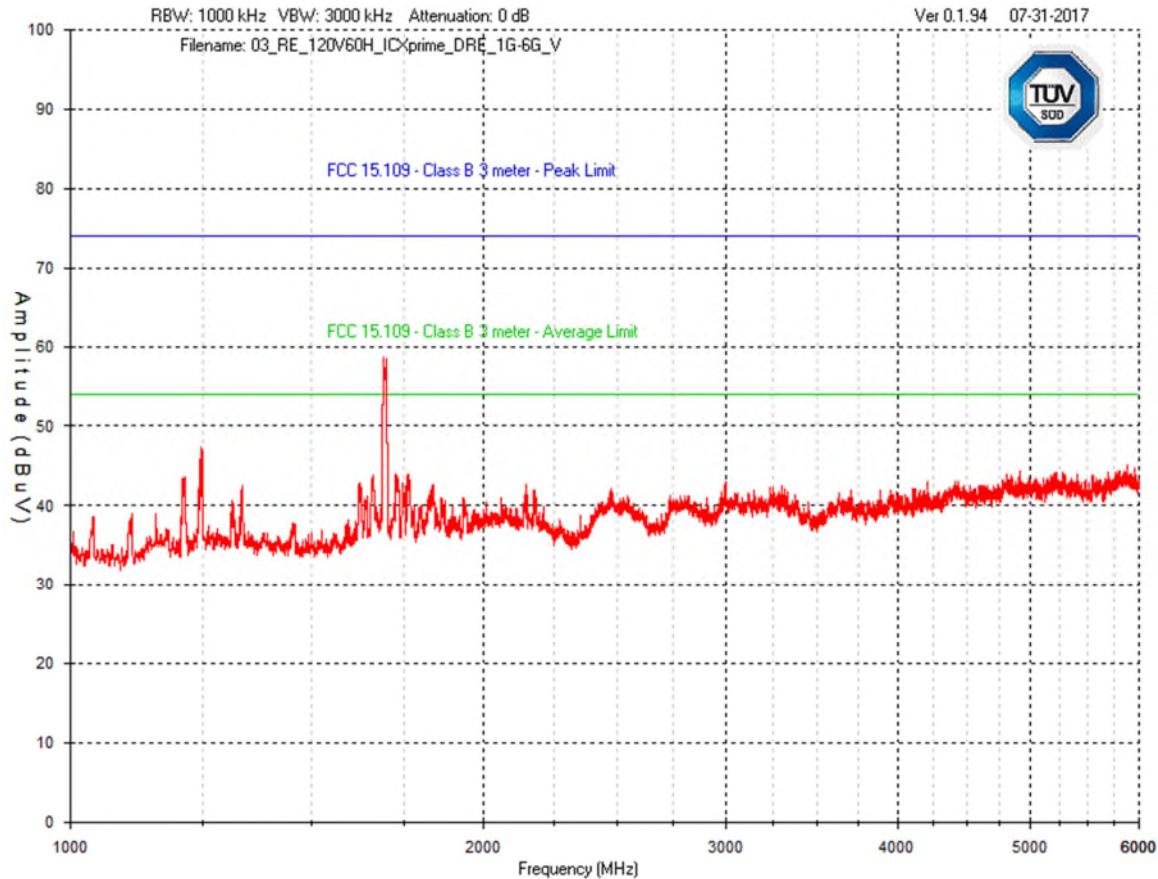


**Vertical - Peak Emissions Graph - ICX DRE Report Printer
120Vac 60Hz – 30MHz - 1GHz**



Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

**Vertical - Peak Emissions Graph - ICX DRE Report Printer
120Vac 60Hz – 1GHz - 6GHz**

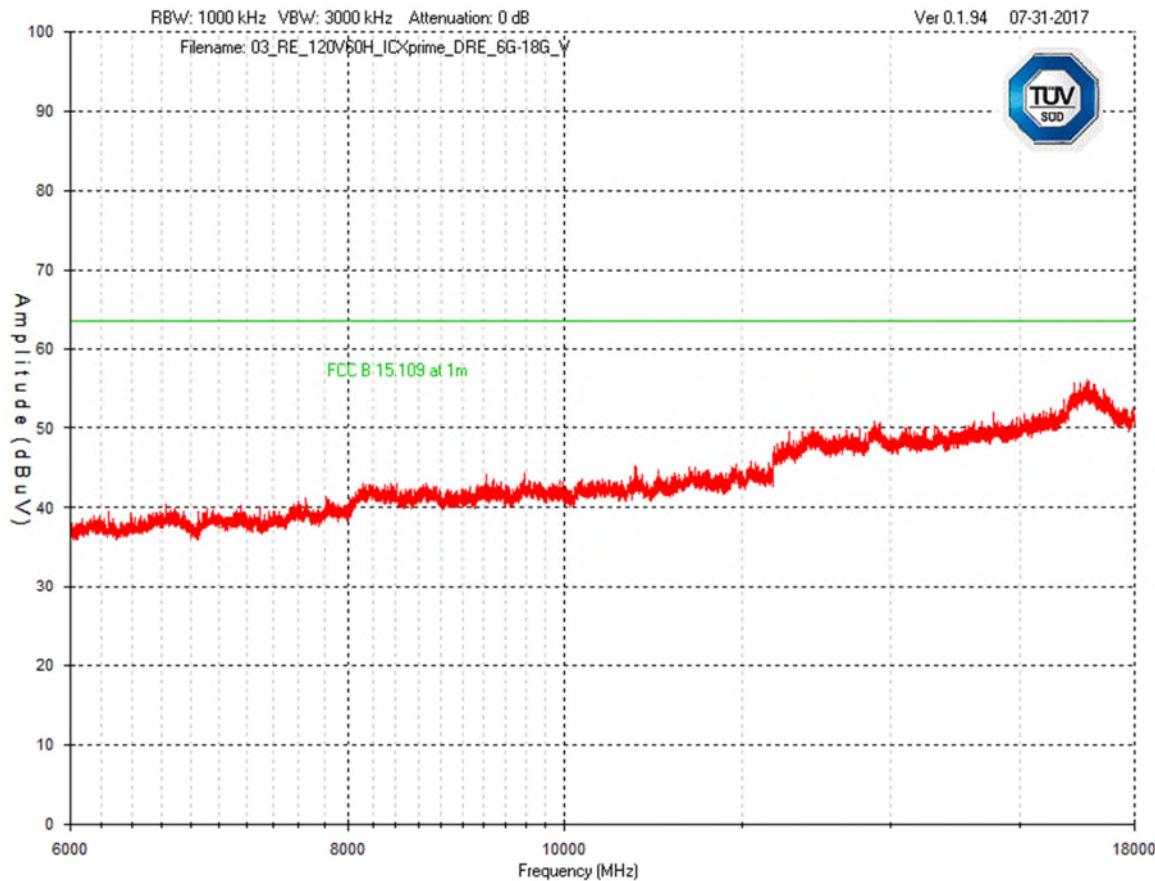


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Canada

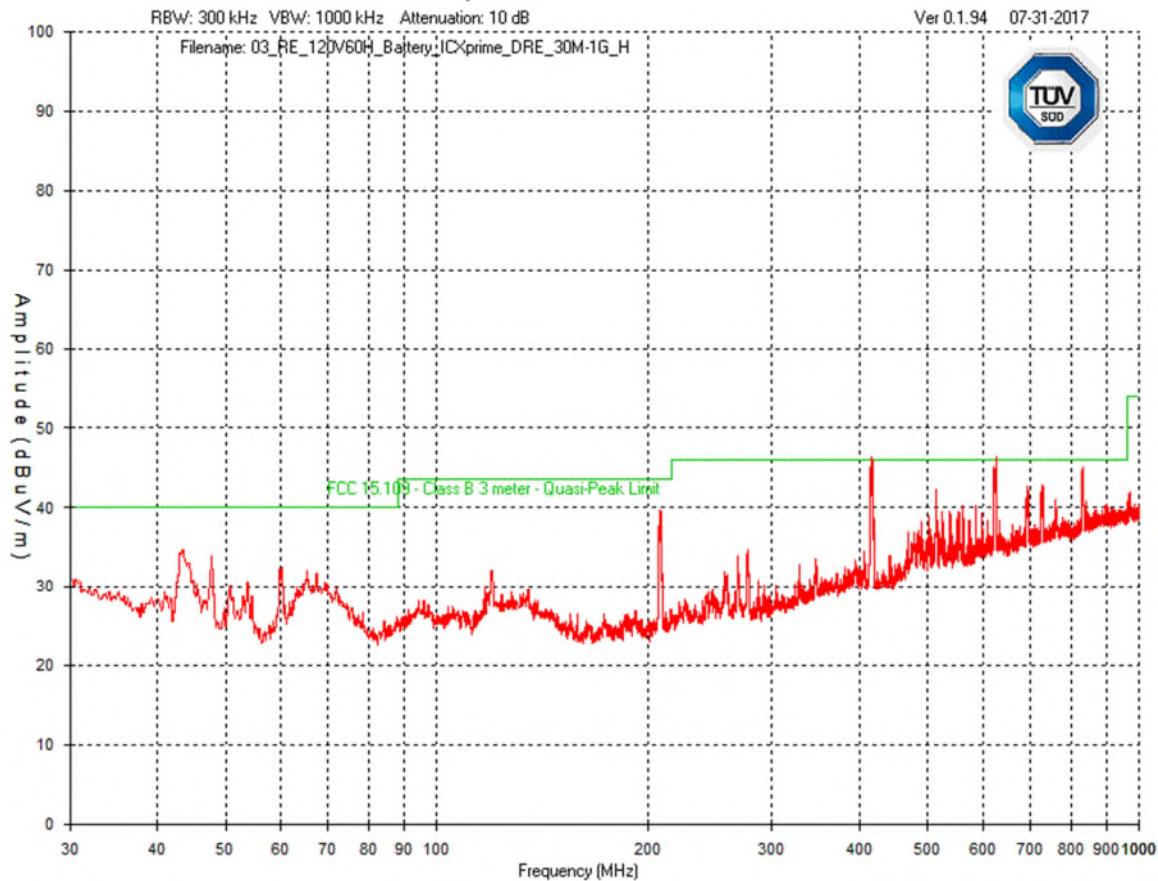
Vertical - Peak Emissions Graph - ICX DRE Report Printer 120Vac 60Hz – 6GHz – 18GHz



Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	



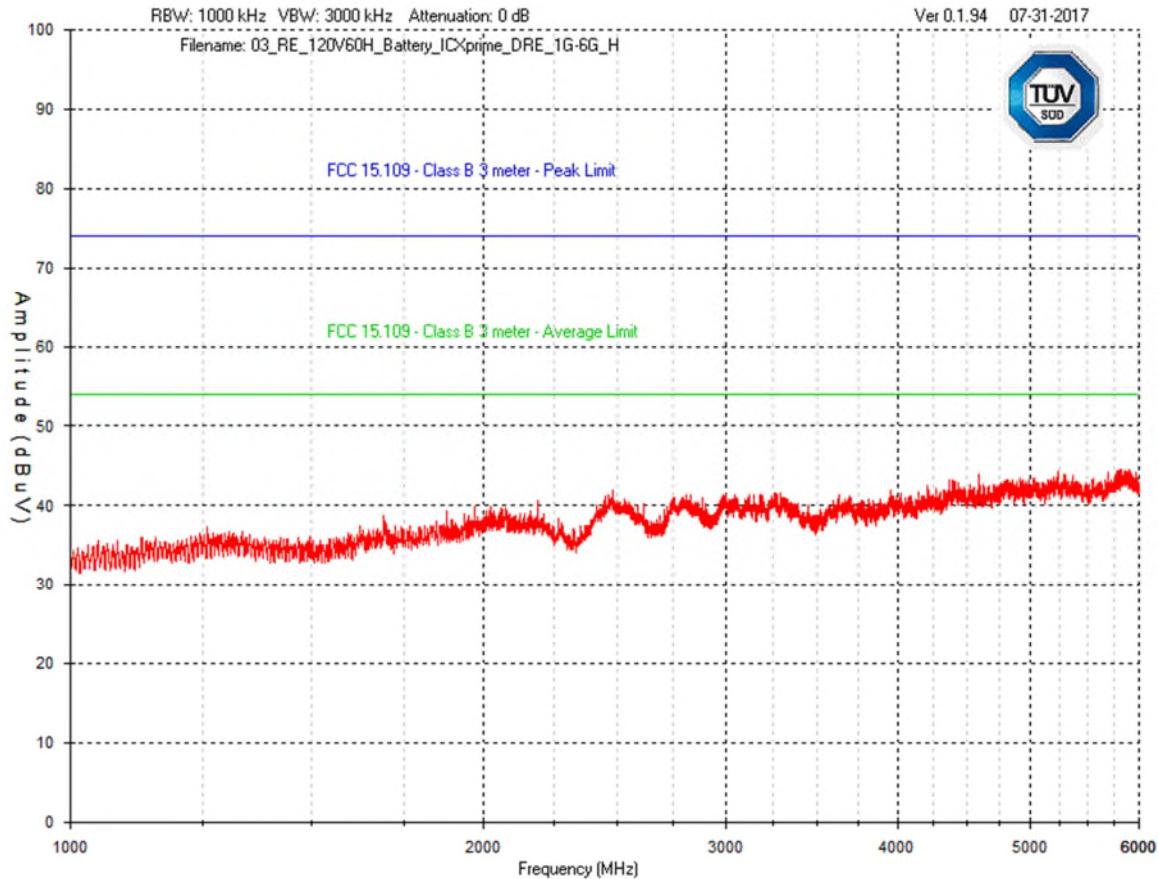
Horizontal - Peak Emissions Graph – ICX DRE Report Printer Battery Mode – 30MHz - 1GHz



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Horizontal - Peak Emissions Graph - ICX DRE Report Printer Battery Mode – 1GHz - 6GHz

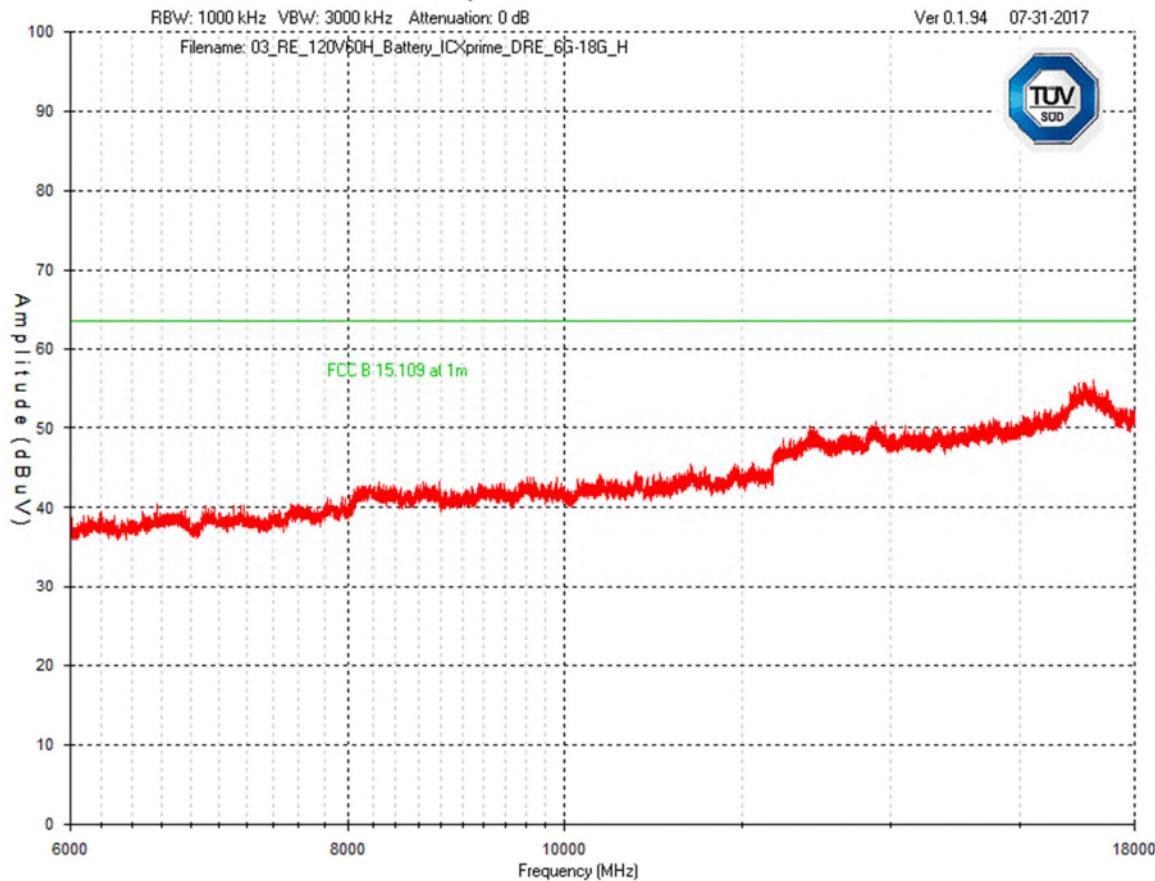


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



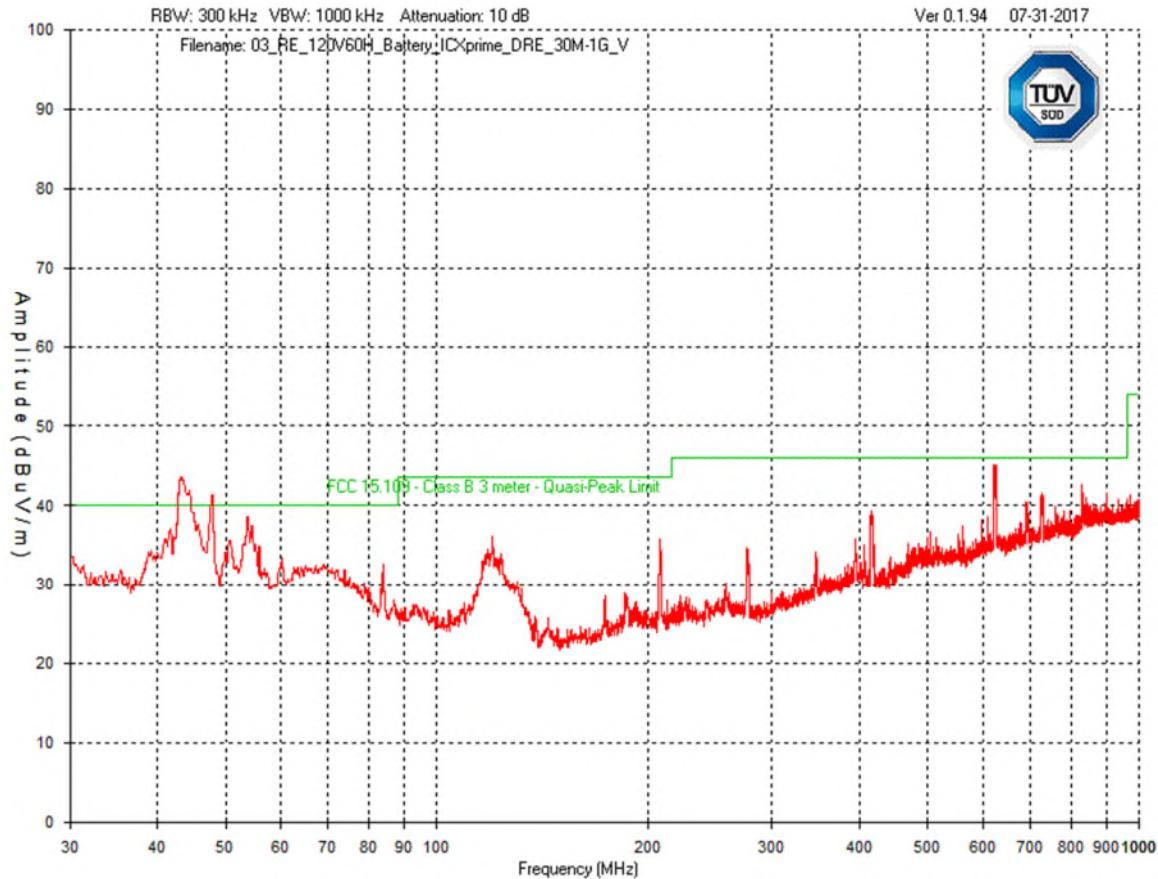
Canada

Horizontal - Peak Emissions Graph - ICX DRE Report Printer Battery Mode – 6GHz - 18GHz



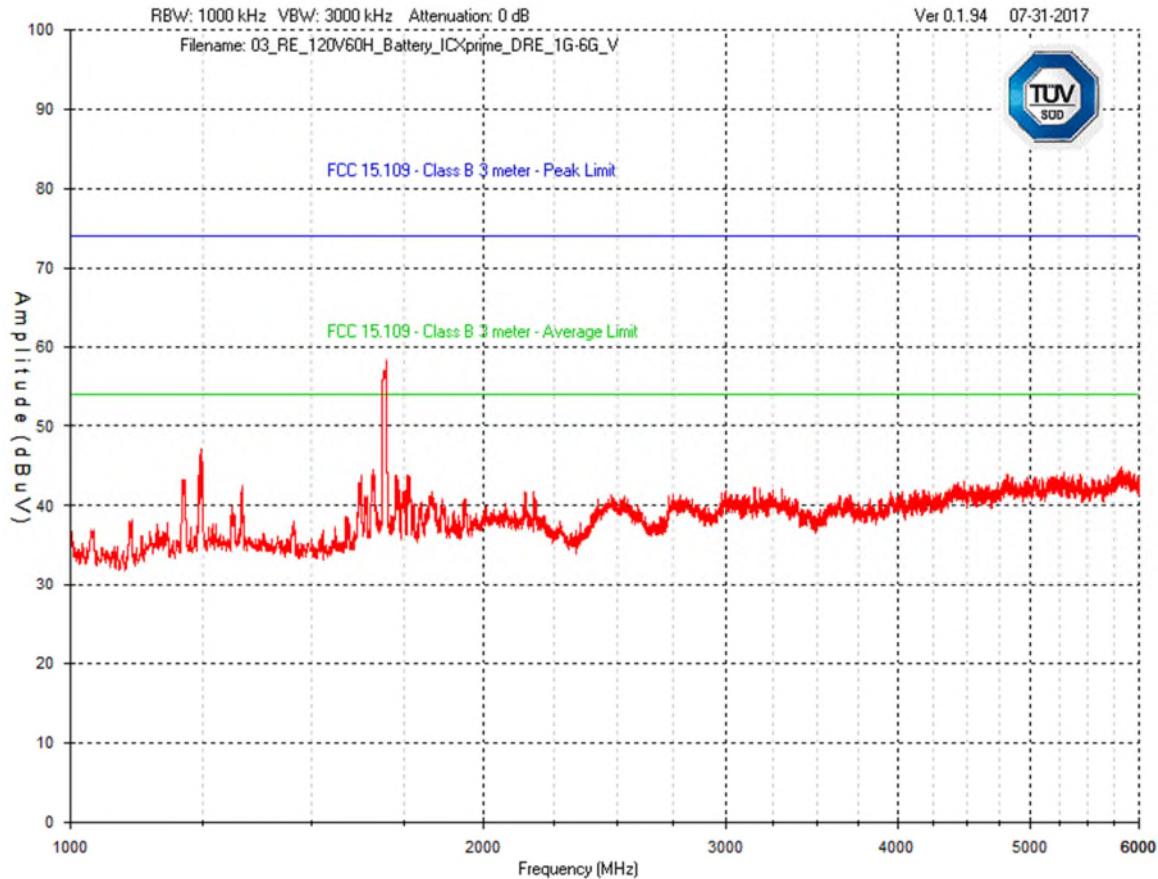
Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

**Vertical - Peak Emissions Graph - ICX DRE Report Printer
Battery Mode – 30MHz - 1GHz**



Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

**Vertical - Peak Emissions Graph - ICX DRE Report Printer
Battery Mode – 1GHz - 6GHz**

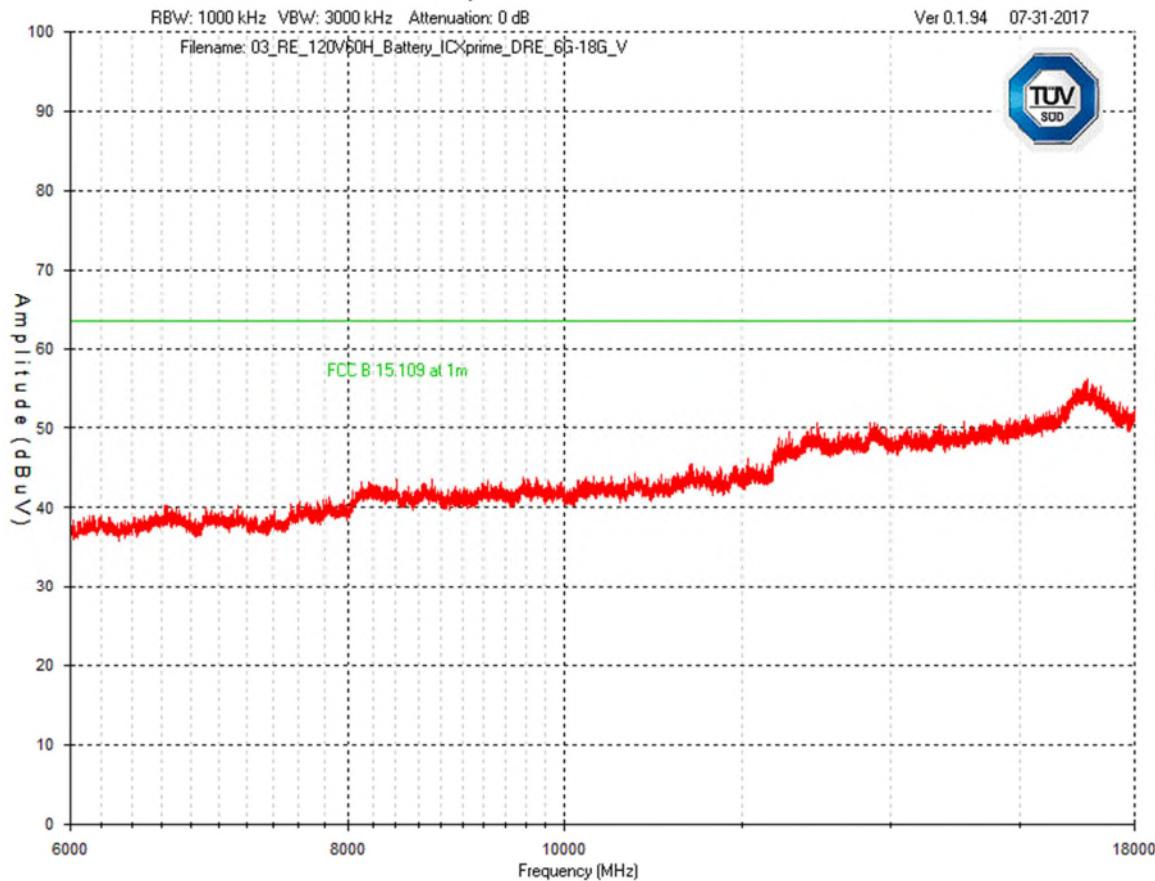


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



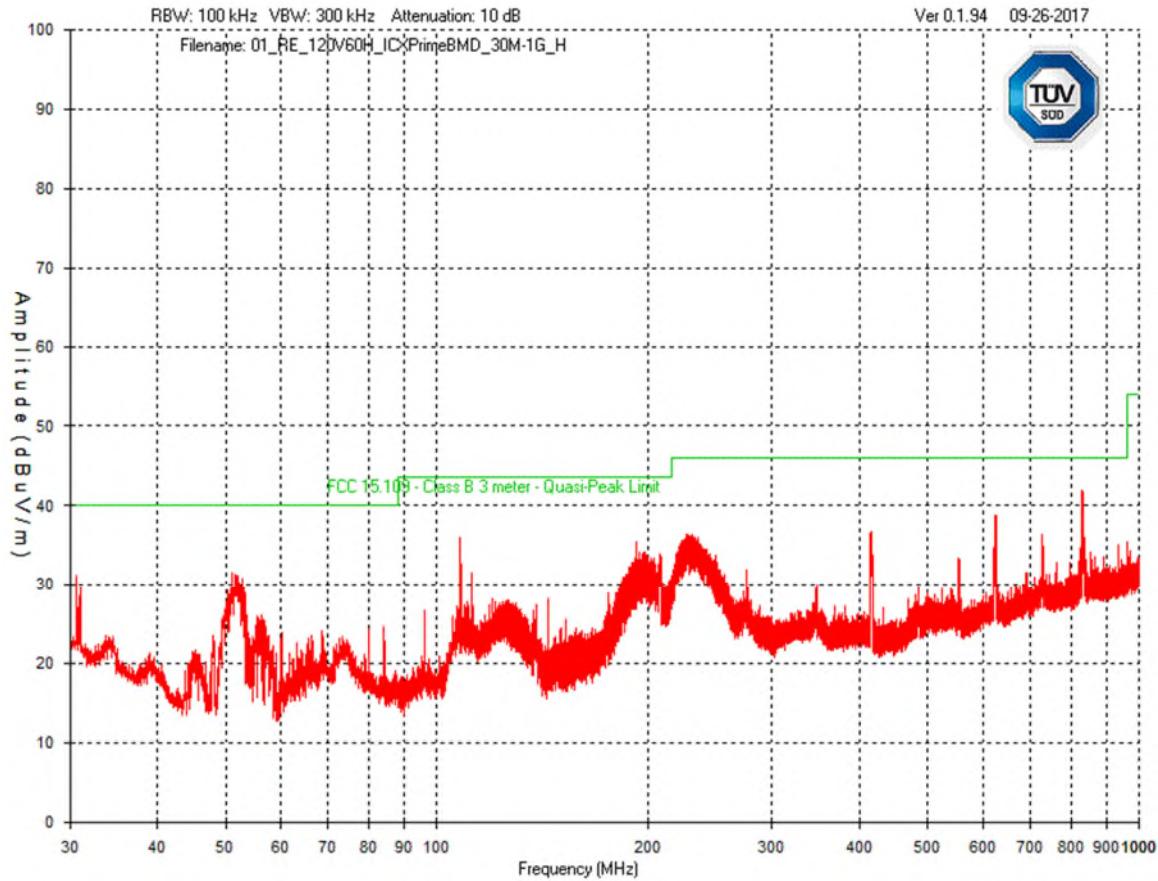
Canada

Vertical - Peak Emissions Graph - ICX DRE Report Printer Battery Mode – 6GHz - 18GHz



Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Horizontal - Peak Emissions Graph - ICX BMD
120Vac 60Hz – 30MHz - 1GHz

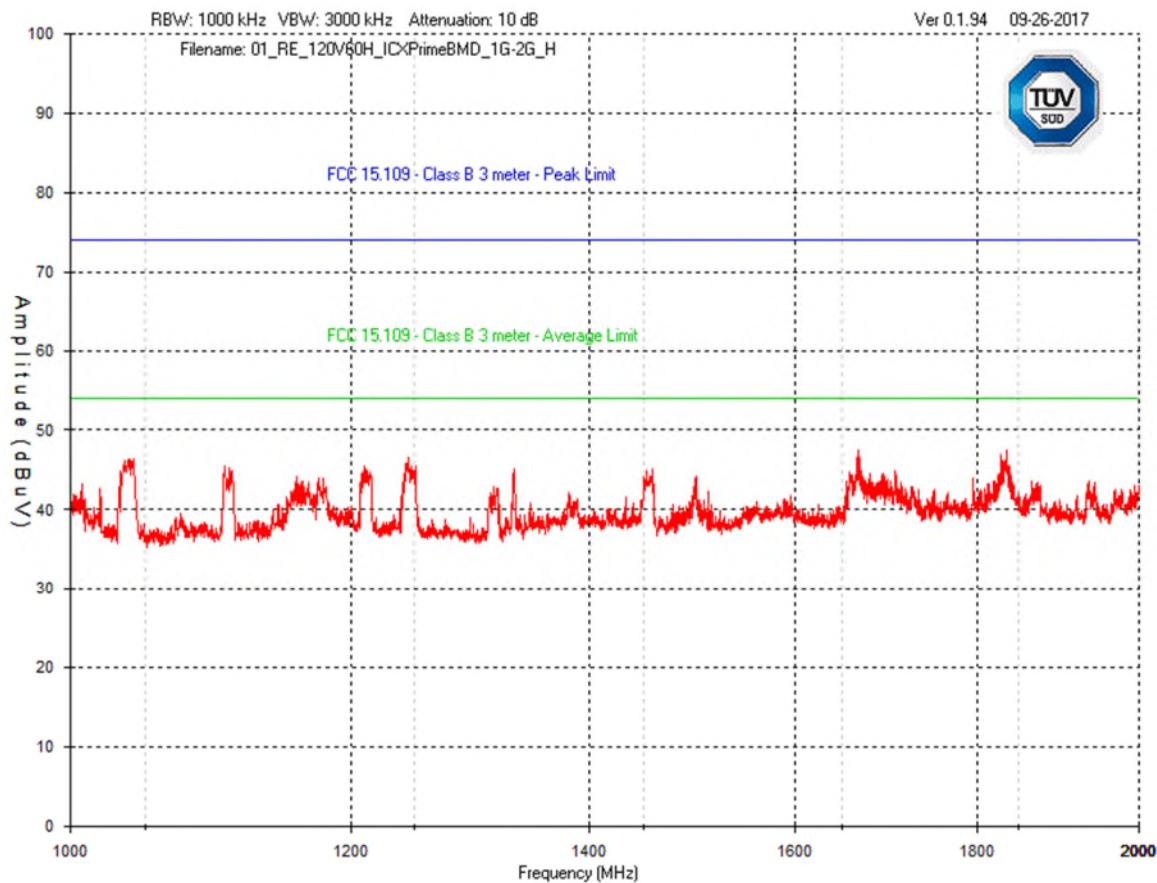


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Canada

Horizontal - Peak Emissions Graph - ICX BMD 120Vac 60Hz – 1GHz – 2GHz

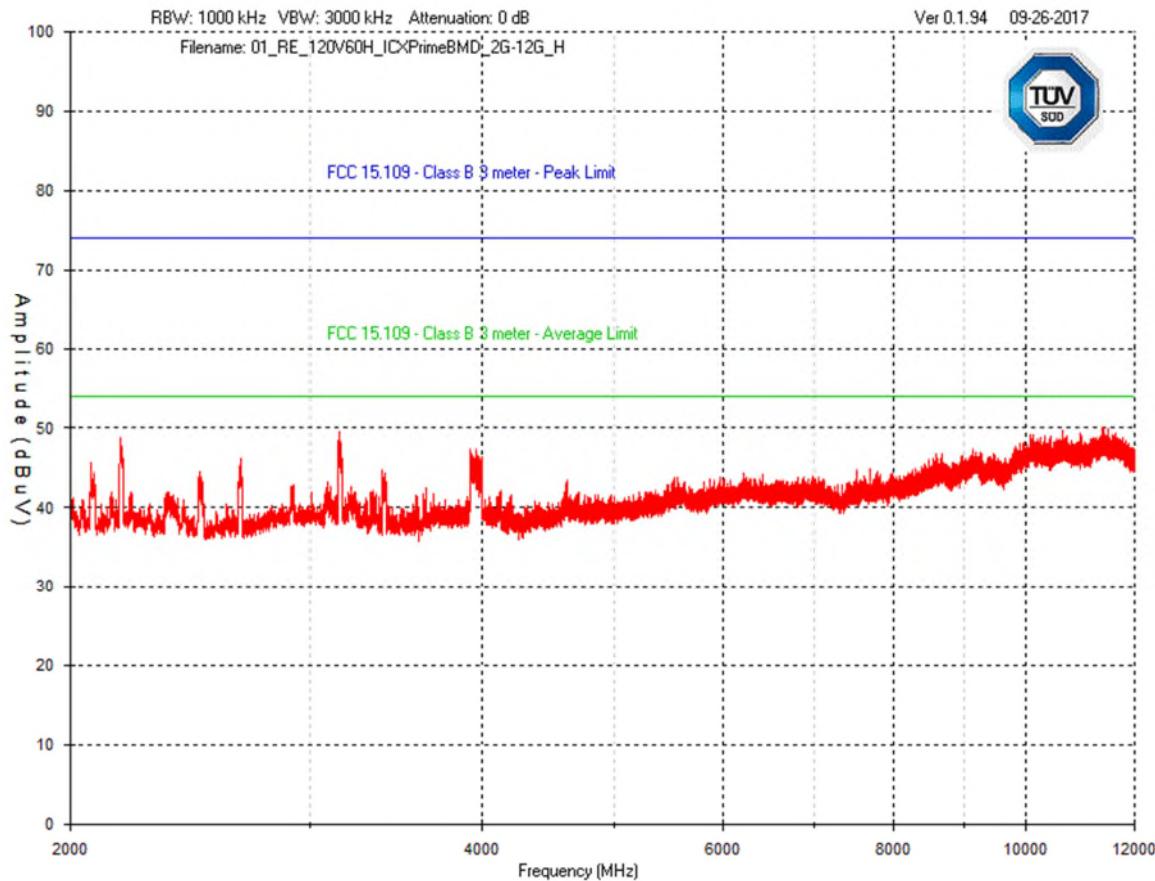


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

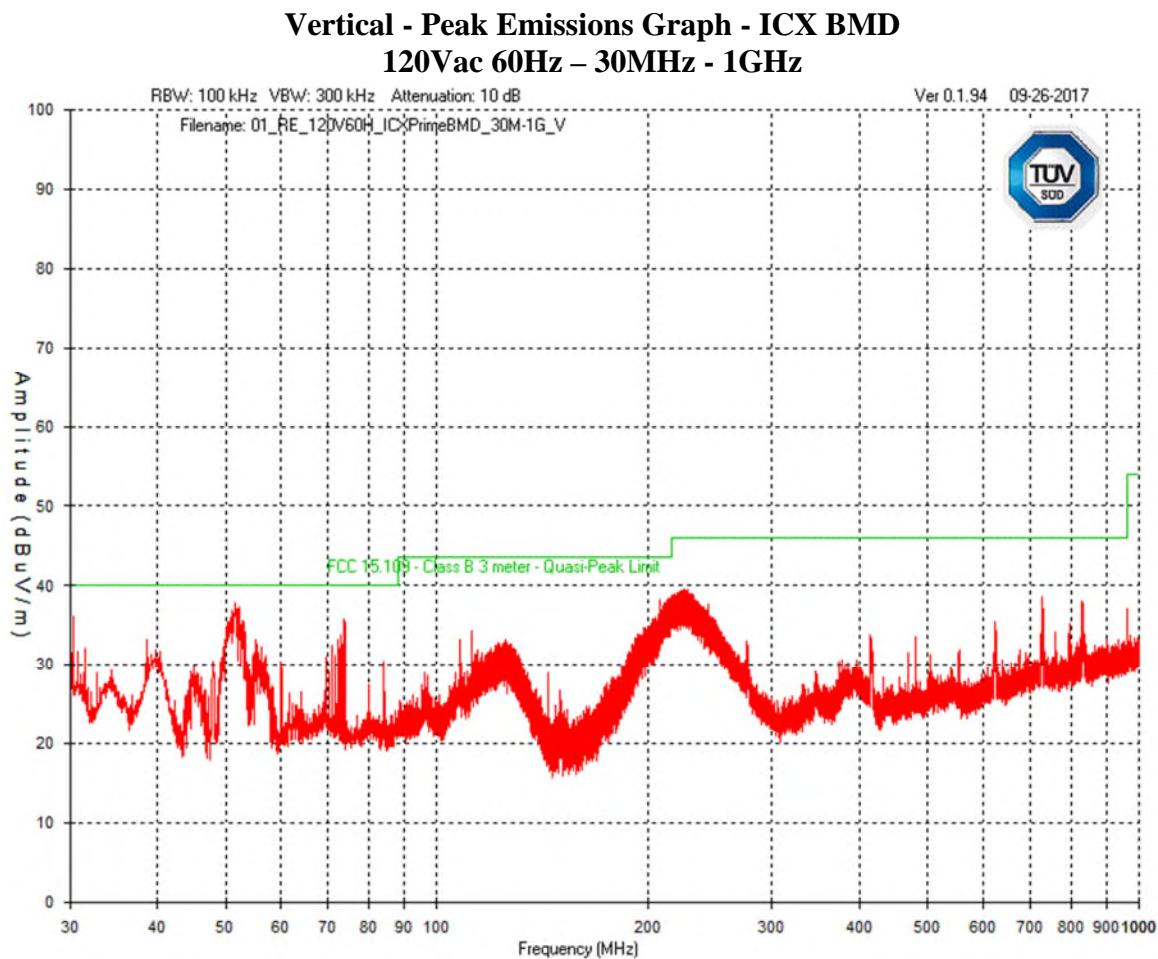


Canada

Horizontal - Peak Emissions Graph - ICX BMD 120Vac 60Hz – 2GHz - 12GHz



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

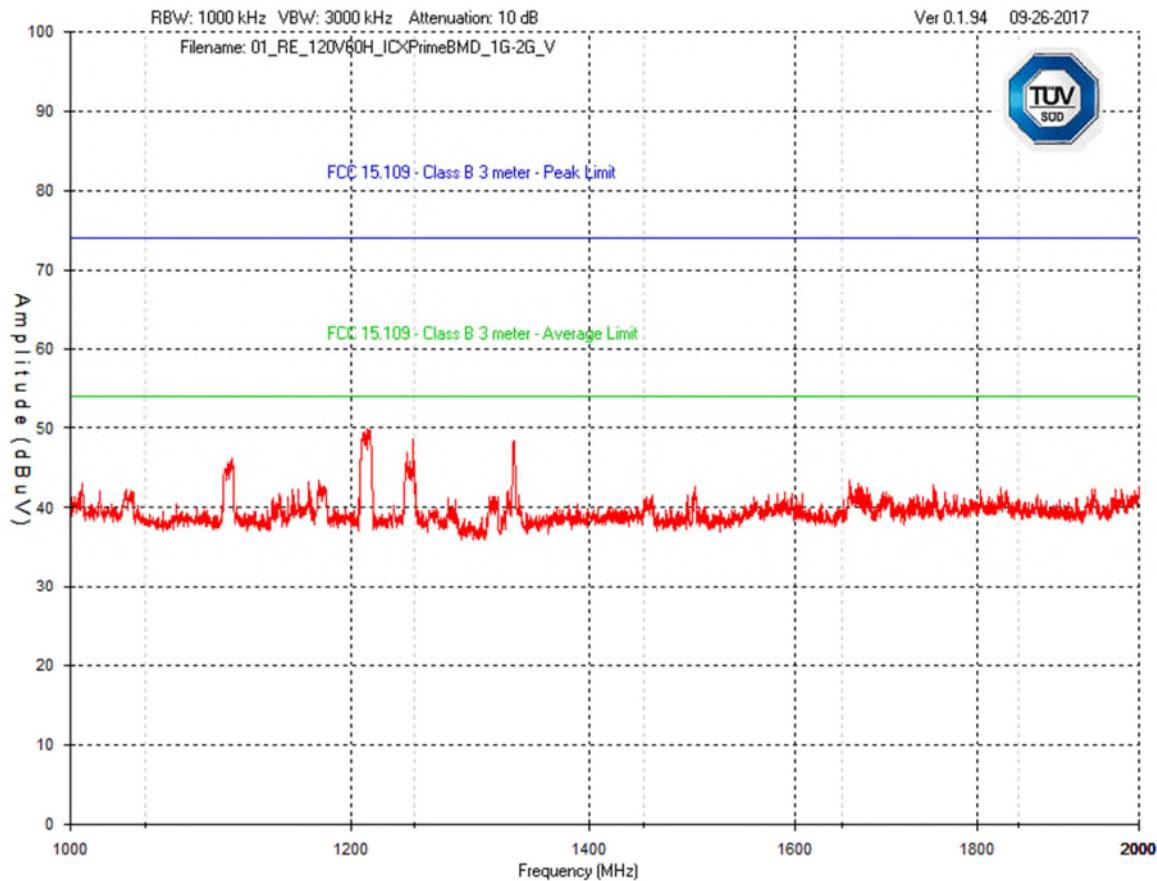


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Canada

Vertical - Peak Emissions Graph - ICX BMD 120Vac 60Hz – 1GHz – 2GHz

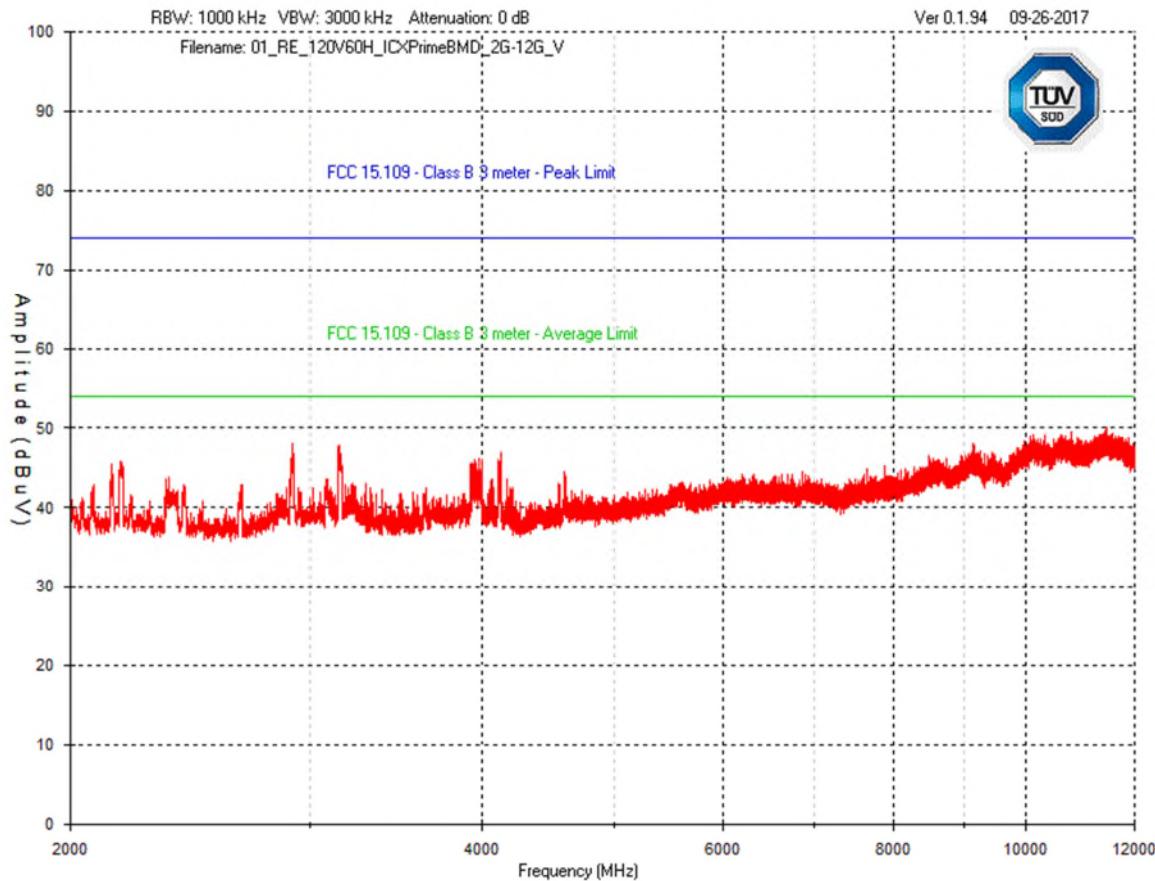


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

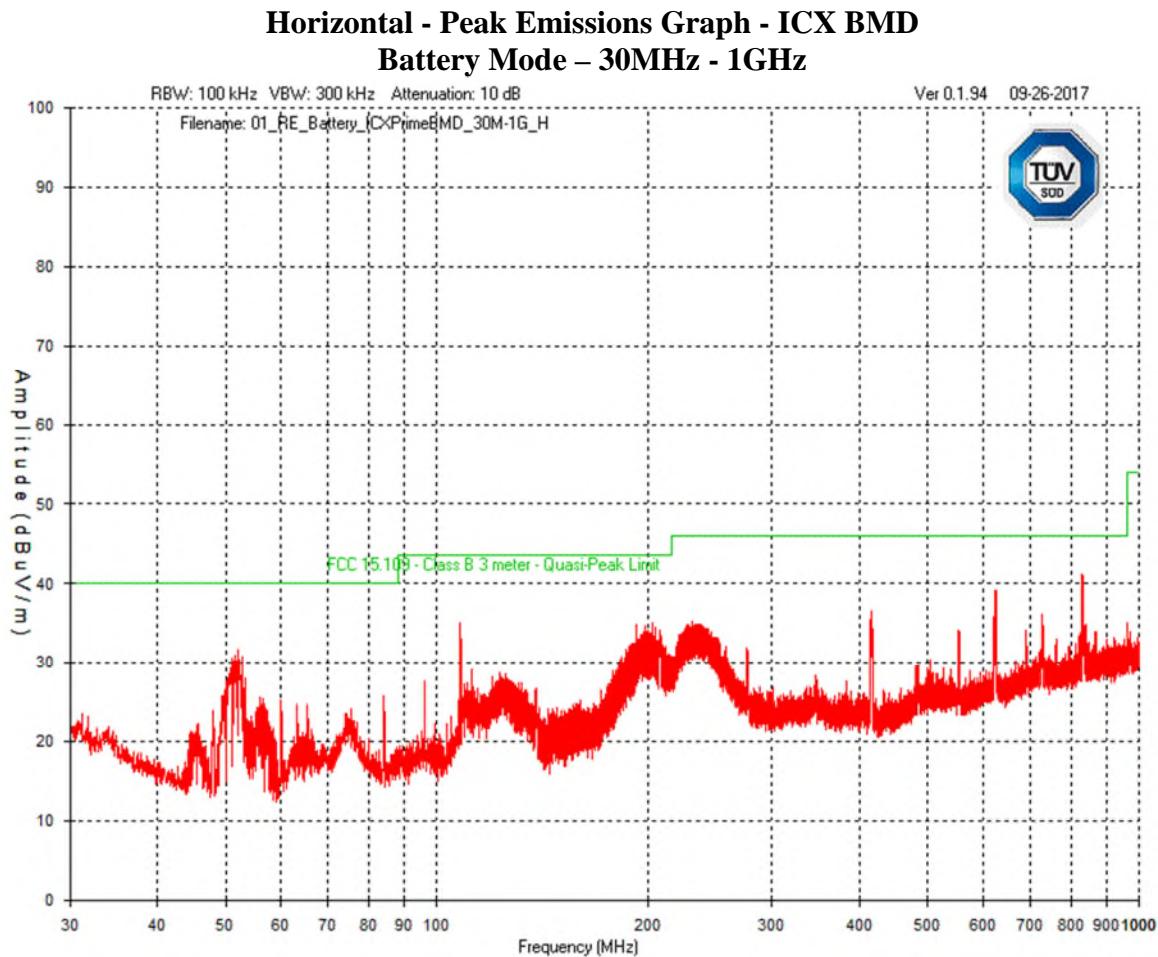


Canada

Vertical - Peak Emissions Graph - ICX BMD 120Vac 60Hz – 2GHz - 12GHz



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

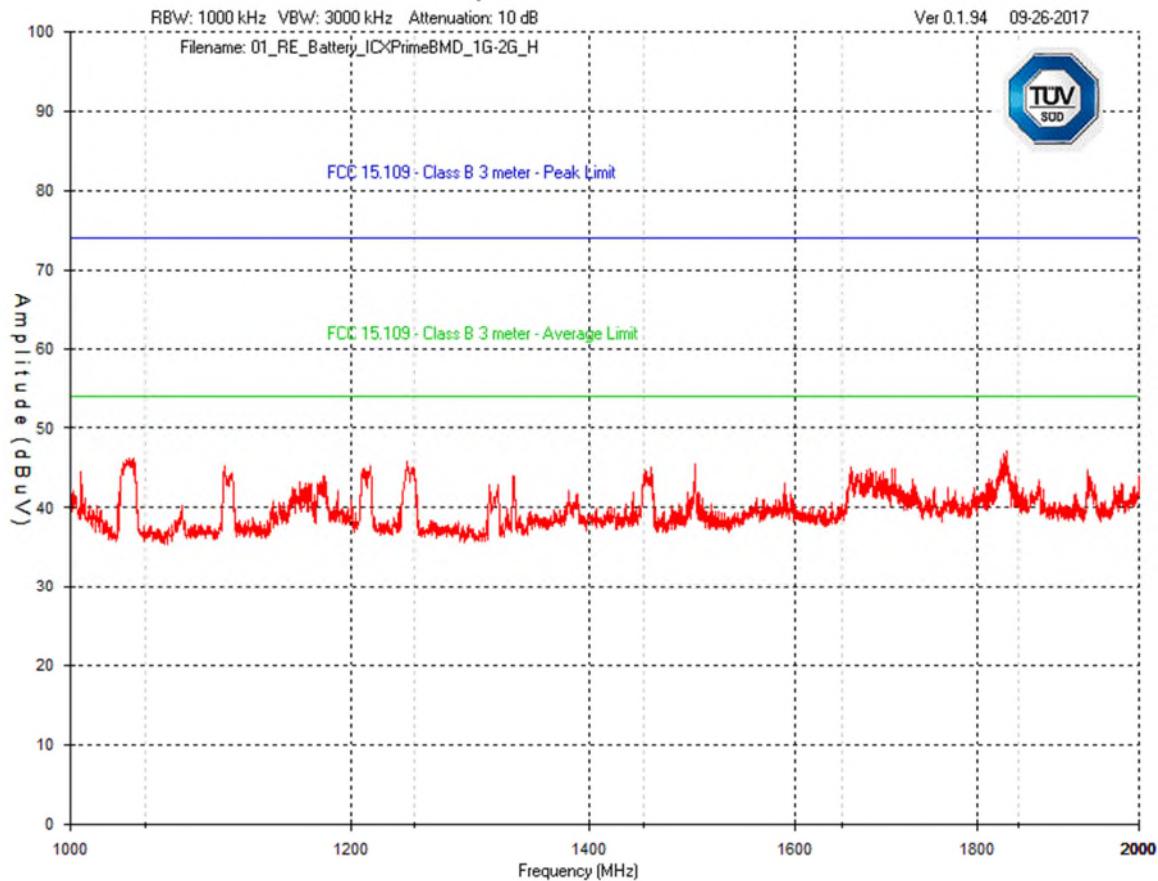


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Canada

Horizontal - Peak Emissions Graph - ICX BMD Battery Mode – 1GHz - 2GHz

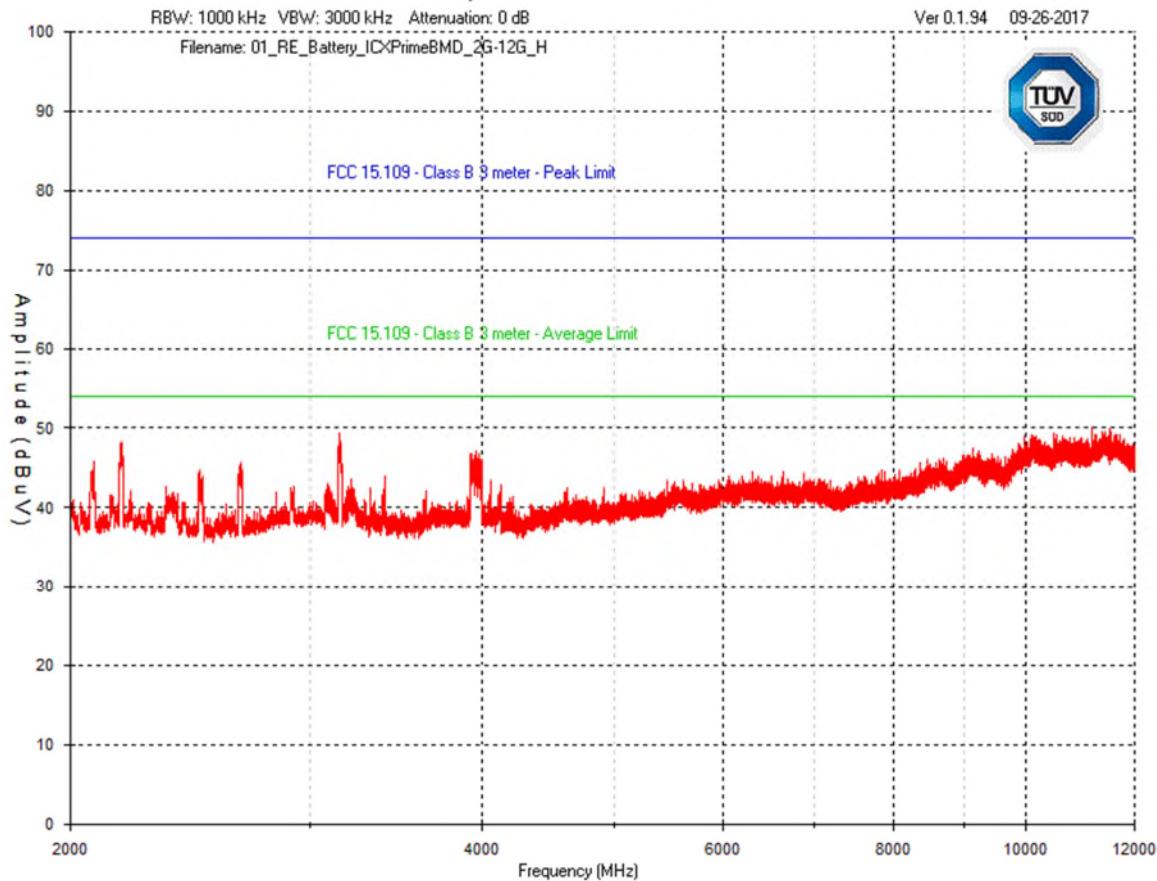


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



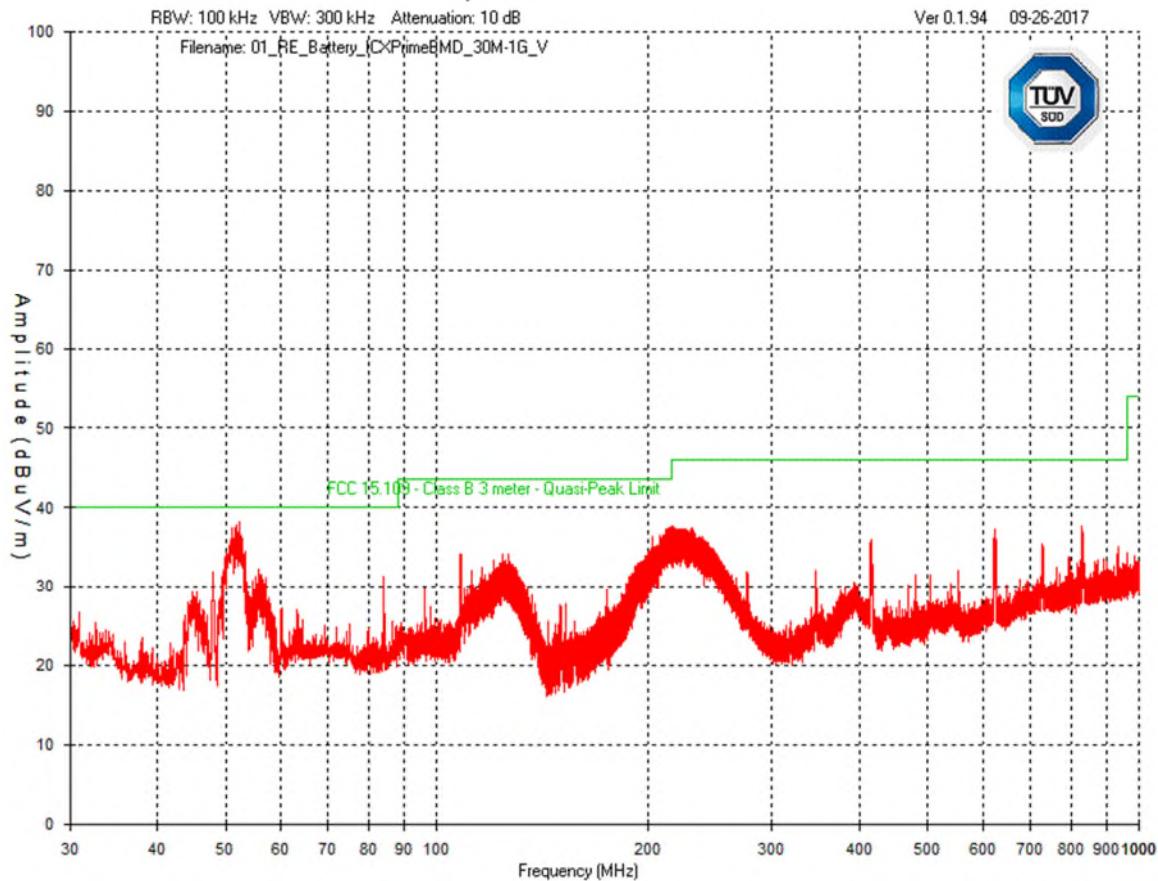
Canada

Horizontal - Peak Emissions Graph - ICX BMD Battery Mode – 2GHz - 12GHz



Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Vertical - Peak Emissions Graph - ICX BMD
Battery Mode – 30MHz - 1GHz

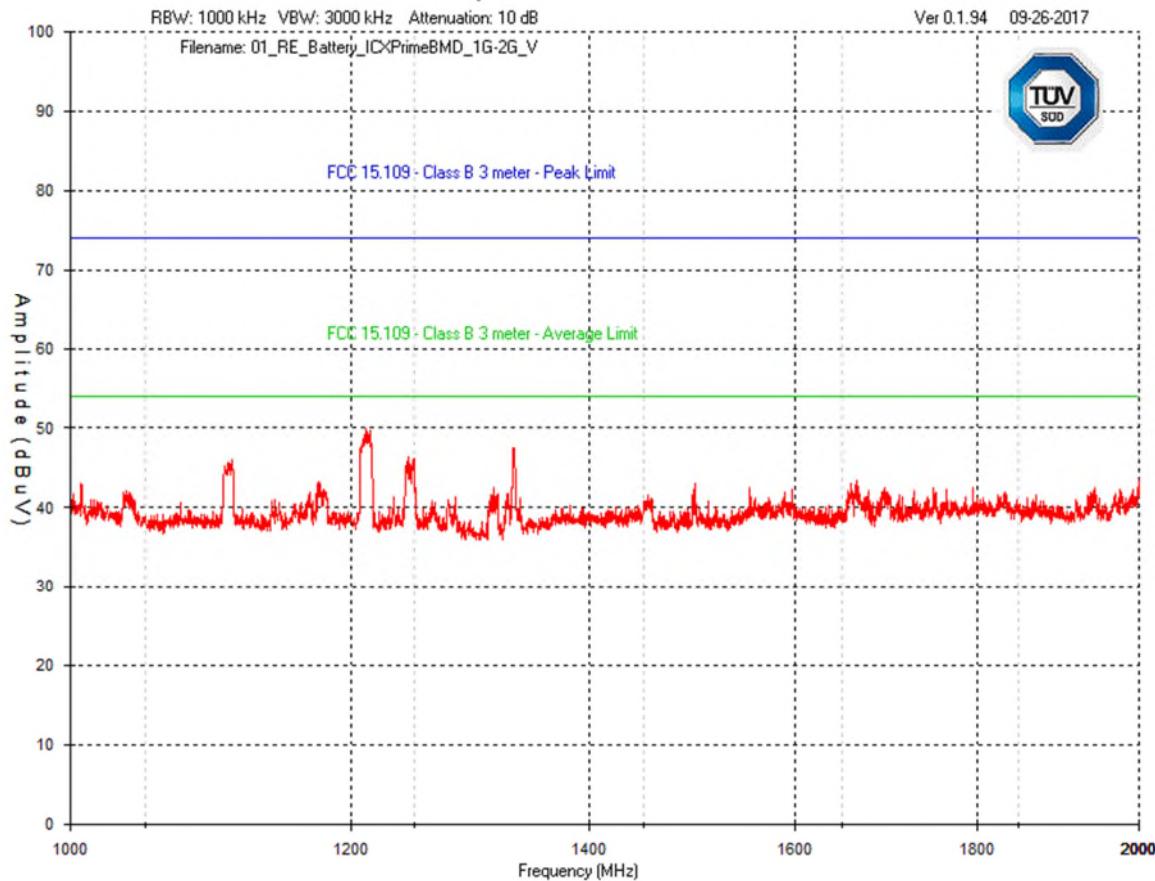


Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Canada

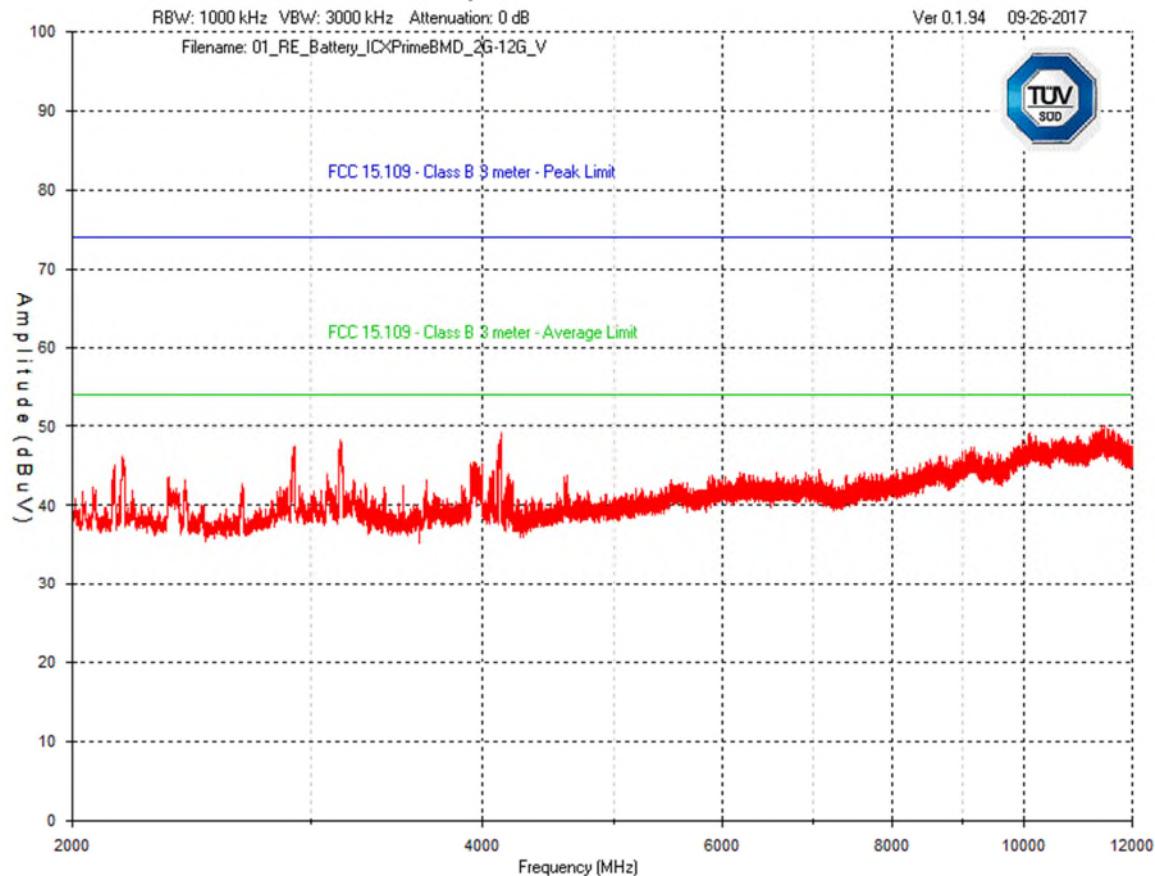
Vertical - Peak Emissions Graph - ICX BMD Battery Mode – 1GHz - 2GHz



Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Vertical - Peak Emissions Graph - ICX BMD Battery Mode – 2GHz - 12GHz



Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Final Measurements

The worst case measurement for the ICX DRE VVPAT, Report Printer and BMD, as listed in the table below appeared at a vertical antenna height of 100 cm and a table azimuth of 84 degrees.

Product Category			Class B							
EUT Name			ICX DRE VVPAT							
Supply			120Vac 60Hz							
Frequency (MHz)	Detector Peak/QP	Received Signal (dBμV)	Antenna Factor (dB/m)	Atten Factor (dB)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Pass/Fail
Horizontal Antenna Polarization										
728.71	QP	40.7	21.8	6.0	2.0	-28.6	41.9	46.0	4.1	Pass
624.39	QP	34.5	21.0	6.0	1.8	-28.7	34.6	46.0	11.4	Pass
831.20	QP	31.6	22.5	6.0	2.2	-28.4	33.9	46.0	12.1	Pass
759.93	QP	33.7	22.3	6.0	2.1	-28.5	35.6	46.0	10.4	Pass
414.79	QP	37.5	16.2	6.0	1.4	-28.7	32.4	46.0	13.6	Pass
693.77	PEAK	41.0	21.6	6.0	1.9	-28.6	41.9	46.0	4.1	Pass
Vertical Antenna Polarization										
43.25	QP	45.9	10.6	6.0	0.4	-28.5	34.4	40.0	5.6	Pass
760.97	QP	39.1	22.3	6.0	2.1	-28.5	41.0	46.0	5.0	Pass
829.07	QP	38.2	22.5	6.0	2.2	-28.4	40.5	46.0	5.5	Pass
863.63	QP	33.5	23.3	6.0	2.2	-28.3	36.7	46.0	9.3	Pass
898.15	QP	33.6	23.7	6.0	2.2	-28.3	37.2	46.0	8.8	Pass
728.69	QP	35.7	21.8	6.0	2.0	-28.6	36.9	46.0	9.1	Pass
414.36	QP	37.1	16.2	6.0	1.4	-28.7	32.0	46.0	14.0	Pass

Quasi-Peak Emissions Table – ICX DRE VVPAT

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Product Category			Class B							
EUT Name			ICX DRE VVPAT							
Supply			Battery Mode							
Frequency (MHz)	Detector Peak/QP	Received Signal (dBμV)	Antenna Factor (dB/m)	Atten Factor (dB)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Pass/Fail
Horizontal Antenna Polarization										
416.46	QP	44.7	16.2	6.0	1.4	-28.7	39.6	46.0	6.4	Pass
728.69	QP	40.8	21.8	6.0	2.0	-28.6	42.0	46.0	4.0	Pass
622.96	QP	33.2	21.0	6.0	1.8	-28.7	33.3	46.0	12.7	Pass
828.99	QP	32.1	22.5	6.0	2.2	-28.4	34.4	46.0	11.6	Pass
759.93	QP	33.9	22.3	6.0	2.1	-28.5	35.8	46.0	10.2	Pass
691.06	PEAK	42.1	21.5	6.0	1.8	-28.6	42.8	46.0	3.2	Pass
Vertical Antenna Polarization										
763.71	QP	39.9	22.3	6.0	2.1	-28.5	41.8	46.0	4.2	Pass
829.38	QP	38.3	22.5	6.0	2.2	-28.4	40.6	46.0	5.4	Pass
43.19	QP	46.1	10.6	6.0	0.4	-28.5	34.6	40.0	5.4	Pass
902.52	QP	33.9	23.7	6.0	2.2	-28.2	37.6	46.0	8.4	Pass
47.65	QP	45.9	9.0	6.0	0.4	-28.5	32.8	40.0	7.2	Pass
624.71	QP	41.9	21.0	6.0	1.8	-28.7	42.0	46.0	4.0	Pass

Quasi-Peak Emissions Table – ICX DRE VVPAT Battery Mode

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Product Category			Class B							
EUT Name			ICX DRE Report Printer							
Supply			120Vac 60Hz							
Frequency (MHz)	Detector Peak/QP	Received Signal (dBμV)	Antenna Factor (dB/m)	Atten Factor (dB)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Pass/Fail
Horizontal Antenna Polarization										
416.34	QP	44.0	16.2	6.0	1.4	-28.7	38.9	46.0	7.1	Pass
833.14	QP	32.1	22.6	6.0	2.2	-28.4	34.5	46.0	11.5	Pass
621.71	QP	42.3	21.0	6.0	1.8	-28.7	42.4	46.0	3.6	Pass
728.86	QP	32.7	21.8	6.0	2.0	-28.6	33.9	46.0	12.1	Pass
694.35	PEAK	42.0	21.6	6.0	1.9	-28.6	42.9	46.0	3.1	Pass
514.13	PEAK	44.9	18.9	6.0	1.6	-28.7	42.7	46.0	3.3	Pass
Vertical Antenna Polarization										
43.36	QP	49.2	10.6	6.0	0.4	-28.5	37.7	40.0	2.3	Pass
47.65	QP	46.3	9.0	6.0	0.4	-28.5	33.2	40.0	6.8	Pass
621.60	QP	37.2	20.9	6.0	1.8	-28.7	37.2	46.0	8.8	Pass
30.00	QP	32.1	17.9	6.0	0.3	-28.5	27.8	40.0	12.2	Pass
52.90	QP	38.8	7.8	6.0	0.4	-28.5	24.5	40.0	15.5	Pass
829.03	QP	33.1	22.5	6.0	2.2	-28.4	35.4	46.0	10.6	Pass

Quasi-Peak Emissions Table – ICX DRE Report Printer

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Product Category			Class B							
EUT Name			ICX DRE Report Printer							
Supply			Battery Mode							
Frequency (MHz)	Detector Peak/QP	Received Signal (dBμV)	Antenna Factor (dB/m)	Atten Factor (dB)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Pass/Fail
Horizontal Antenna Polarization										
624.71	QP	41.9	21.0	6.0	1.8	-28.7	42.0	46.0	4.0	Pass
416.55	QP	45.1	16.2	6.0	1.4	-28.7	40.0	46.0	6.0	Pass
833.06	QP	33.9	22.6	6.0	2.2	-28.4	36.3	46.0	9.7	Pass
725.59	PEAK	41.7	21.7	6.0	2.0	-28.6	42.8	46.0	3.2	Pass
693.97	PEAK	41.9	21.6	6.0	1.9	-28.6	42.8	46.0	3.2	Pass
514.13	PEAK	44.5	18.9	6.0	1.6	-28.7	42.3	46.0	3.7	Pass
Vertical Antenna Polarization										
43.19	QP	49.3	10.6	6.0	0.4	-28.5	37.8	40.0	2.2	Pass
47.65	QP	45.9	9.0	6.0	0.4	-28.5	32.8	40.0	7.2	Pass
624.71	QP	37.9	21.0	6.0	1.8	-28.7	38.0	46.0	8.0	Pass
53.67	QP	38.9	7.8	6.0	0.4	-28.5	24.6	40.0	15.4	Pass
416.35	PEAK	44.3	16.2	6.0	1.4	-28.7	39.2	46.0	6.8	Pass
83.84	PEAK	48.2	6.4	6.0	0.5	-28.5	32.6	40.0	7.4	Pass

Quasi-Peak Emissions Table – ICX DRE Report Printer Battery Mode

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Product Category			Class B								
EUT Name			ICX DRE Report Printer								
Supply			120Vac 60Hz								
Frequency (MHz)	Detector Peak/Avg	Received Signal (dBμV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	Avg Limit (dBμV/m)	Peak Limit (dBμV/m)	Avg Margin (dB)	Peak Margin (dB)	Pass/Fail
Horizontal Antenna Polarization											
5815.00	PEAK	41.8	33.7	1.4	-31.7	45.2	54.0	74.0	8.8	28.8	Pass
3298.00	PEAK	43.1	30.6	1.0	-31.8	42.9	54.0	74.0	11.1	31.1	Pass
2532.33	PEAK	45.6	29.2	0.8	-33.1	42.5	54.0	74.0	11.5	31.5	Pass
2175.67	PEAK	44.8	28.2	0.7	-33.5	40.2	54.0	74.0	13.8	33.8	Pass
1697.00	PEAK	46.0	26.2	0.6	-34.1	38.7	54.0	74.0	15.3	35.3	Pass
1278.33	PEAK	47.2	25.3	0.5	-34.7	38.3	54.0	74.0	15.7	35.7	Pass
Vertical Antenna Polarization											
1692.40	Avg	48.3	26.1	0.6	-34.1	40.9	54.0	--	13.1	--	Pass
1693.00	PEAK	66.1	26.1	0.6	-34.1	58.7	--	74.0	--	15.3	Pass
1247.67	PEAK	56.4	25.2	0.5	-34.8	47.3	54.0	74.0	6.7	26.7	Pass
1243.67	PEAK	55.0	25.2	0.5	-34.8	45.9	54.0	74.0	8.1	28.1	Pass
1726.33	PEAK	51.2	26.2	0.6	-34.0	44.0	54.0	74.0	10.0	30.0	Pass
1764.33	PEAK	50.9	26.3	0.6	-33.9	43.9	54.0	74.0	10.1	30.1	Pass
1661.00	PEAK	51.2	25.9	0.6	-34.0	43.7	54.0	74.0	10.3	30.3	Pass

Average Emissions Table – ICX DRE Report Printer

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Product Category			Class B								
EUT Name			ICX DRE Report Printer								
Supply			Battery Mode								
Frequency (MHz)	Detector Peak/Avg	Received Signal (dBμV)	Antenna Factor (dB/m)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	Avg Limit (dBμV/m)	Peak Limit (dBμV/m)	Avg Margin (dB)	Peak Margin (dB)	Pass/Fail
Horizontal Antenna Polarization											
5889.00	PEAK	41.1	33.9	1.4	-31.8	44.6	54.0	74.0	9.4	29.4	Pass
2483.67	PEAK	45.5	28.9	0.8	-33.3	41.9	54.0	74.0	12.1	32.1	Pass
3292.00	PEAK	41.8	30.5	1.0	-31.7	41.6	54.0	74.0	12.4	32.4	Pass
2193.00	PEAK	45.1	28.1	0.7	-33.4	40.5	54.0	74.0	13.5	33.5	Pass
1692.33	PEAK	46.1	26.1	0.6	-34.1	38.7	54.0	74.0	15.3	35.3	Pass
1260.33	PEAK	46.3	25.2	0.5	-34.7	37.3	54.0	74.0	16.7	36.7	Pass
Vertical Antenna Polarization											
1699.76	AVG	48.9	26.1	0.6	-34.1	41.5	54.0	--	12.5	--	Pass
1699.00	PEAK	65.6	26.1	0.6	-34.1	58.2	--	74.0	--	15.8	Pass
1247.67	PEAK	56.2	25.2	0.5	-34.8	47.1	54.0	74.0	6.9	26.9	Pass
1242.33	PEAK	55.6	25.2	0.5	-34.8	46.5	54.0	74.0	7.5	27.5	Pass
1661.00	PEAK	52.1	25.9	0.6	-34.0	44.6	54.0	74.0	9.4	29.4	Pass
1763.67	PEAK	50.7	26.3	0.6	-33.9	43.7	54.0	74.0	10.3	30.3	Pass
1727.67	PEAK	50.9	26.2	0.6	-34.0	43.7	54.0	74.0	10.3	30.3	Pass

Average Emissions Table – ICX DRE Report Printer Battery Mode

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Product Category			Class B							
EUT Name			ICX BMD							
Supply			120Vac 60Hz							
Frequency (MHz)	Detector Peak/QP	Received Signal (dBμV)	Antenna Factor (dB/m)	Atten Factor (dB)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Pass/Fail
Horizontal Antenna Polarization										
829.21	PEAK	39.3	22.5	6.0	2.5	-28.4	41.9	46.0	4.1	Pass
832.77	PEAK	39.2	22.5	6.0	2.5	-28.4	41.8	46.0	4.2	Pass
621.87	PEAK	38.6	20.8	6.0	2.0	-28.7	38.7	46.0	7.3	Pass
624.95	PEAK	38.5	20.9	6.0	2.0	-28.7	38.7	46.0	7.3	Pass
108.00	PEAK	49.9	7.8	6.0	0.8	-28.5	36.0	43.5	7.5	Pass
192.02	PEAK	47.1	9.8	6.0	1.0	-28.5	35.4	43.5	8.1	Pass
Vertical Antenna Polarization										
51.67	QP	45.4	8.2	6.0	0.5	-28.5	31.6	40.0	8.4	Pass
30.29	QP	30.1	16.5	6.0	0.4	-28.5	24.5	40.0	15.5	Pass
30.29	PEAK	41.8	16.5	6.0	0.4	-28.5	36.2	40.0	3.8	Pass
73.86	PEAK	51.9	5.7	6.0	0.6	-28.5	35.7	40.0	4.3	Pass
207.27	PEAK	49.5	10.3	6.0	1.0	-28.5	38.3	43.5	5.2	Pass
73.11	PEAK	49.8	5.8	6.0	0.6	-28.5	33.7	40.0	6.3	Pass

Quasi-Peak Emissions Table – ICX BMD

Client	Pro V&V	TÜV SÜD Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Product Category			Class B							
EUT Name			ICX Prime BMD							
Supply			Battery Mode							
Frequency (MHz)	Detector Peak/QP	Received Signal (dBμV)	Antenna Factor (dB/m)	Atten Factor (dB)	Cable Factor (dB)	Pre-Amp (dB)	Level (dBμV/m)	QP Limit (dBμV/m)	QP Margin (dB)	Pass/Fail
Horizontal Antenna Polarization										
828.95	PEAK	38.6	22.5	6.0	2.5	-28.4	41.2	46.0	4.8	Pass
833.19	PEAK	38.5	22.5	6.0	2.5	-28.4	41.1	46.0	4.9	Pass
624.88	PEAK	39.0	20.9	6.0	2.0	-28.7	39.2	46.0	6.8	Pass
621.87	PEAK	39.0	20.8	6.0	2.0	-28.7	39.1	46.0	6.9	Pass
52.11	PEAK	45.7	8.0	6.0	0.5	-28.5	31.7	40.0	8.3	Pass
203.03	PEAK	46.7	9.9	6.0	1.0	-28.5	35.1	43.5	8.4	Pass
Vertical Antenna Polarization										
52.14	QP	45.1	8.0	6.0	0.5	-28.5	31.1	40.0	8.9	Pass
203.09	PEAK	48.0	9.9	6.0	1.0	-28.5	36.4	43.5	7.1	Pass
55.83	PEAK	46.6	7.6	6.0	0.5	-28.5	32.2	40.0	7.8	Pass
49.58	PEAK	45.5	8.6	6.0	0.5	-28.5	32.1	40.0	7.9	Pass
47.96	PEAK	45.1	8.9	6.0	0.5	-28.5	32.0	40.0	8.0	Pass
829.11	PEAK	35.2	22.5	6.0	2.5	-28.4	37.8	46.0	8.2	Pass

Quasi-Peak Emissions Table – ICX BMD Battery Mode

Note:

Peak = Peak measurement

QP = Quasi-Peak measurement

See ‘Appendix B – EUT, Peripherals, and Test Setup Photos’ for photos showing the test set-up for the highest radiated emission.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Spectrum Analyzer	ESU 40	Rohde & Schwarz	Jan. 6, 2016	Jan. 6, 2018	GEMC 233
BiLog Antenna	3142-C	ETS	Feb. 22, 2017	Feb. 22, 2019	GEMC 137
Attenuator 6 dB	612-06-1	Meca Electronics, Inc	NCR	NCR	GEMC 286
Pre-Amp 9 kHz – 1 GHz	CPA9231A	Chase	Oct 12, 2016	Oct 12, 2018	GEMC 6403
Horn Antenna 2 – 18 GHz	WBH218HN	Q-par	Feb. 12, 2016	Feb. 12, 2018	GEMC 6375
Horn Antenna 1 – 18 GHz	AH-118	Com-Power Corporation	July 12, 2017	July 12, 2019	GEMC 214
Pre-Amp 1 – 26.5 GHz	HP 8449B	HP	Nov. 27, 2015	Nov. 27, 2017	GEMC 189
RF Cable 7m	LMR-400-7M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 28
RF Cable 10m	LMR-400-10M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 27
RF Cable 0.5m	LMR-400-0.5M-50Ω-MN-MN	LexTec	NCR	NCR	GEMC 31
Emissions Software	0.1.94	Global EMC	NCR	NCR	GEMC 58

FCC_ICES003_RE-CLASS-B_Rev1

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Electrical Power Disturbance – 4.1.2.5

Purpose

An AC powered device may be subjected to voltage dips, short interruptions or other voltage variations in the power line. Such conditions are mainly caused by faults or changes in the network due to sudden large changes in load, or when a brown out or a black out condition occurs. These voltage dips can also occur with power supplies that are not well regulated such as emergency diesel AC generators. This test simulates the occurrence of these conditions and subjects the EUT to this phenomenon.

Application Level Requirements

This test is performed in accordance with the methodology defined in IEC 61000-4-11. As per VVSG 1.0 (2005) Vol. 1, the following dip and interruption levels apply:

Voltage Dip Level	Duration	Duration @ 60Hz [Cycles]
30% (36 Vac)	0.01s	0.6
60% (72 Vac)	0.1s / 1.0s	6 / 60
100% (120 Vac)	0.5	300

Voltage Surge Level	Duration	Duration @ 60Hz [Cycles]
85% (102 Vac)	4 hours	14400
115% (138 Vac)	4 hours	14400

Surges of +15% line variations of nominal line voltage and electrical power increases of 7.5% and reductions of 12.5% of nominal specified power supply for a period of up to four hours at each level.

The voltage level in brackets is the residual voltage of the voltage dip applied and presumes a normal operating voltage of 120 Vac and a frequency of 60Hz.

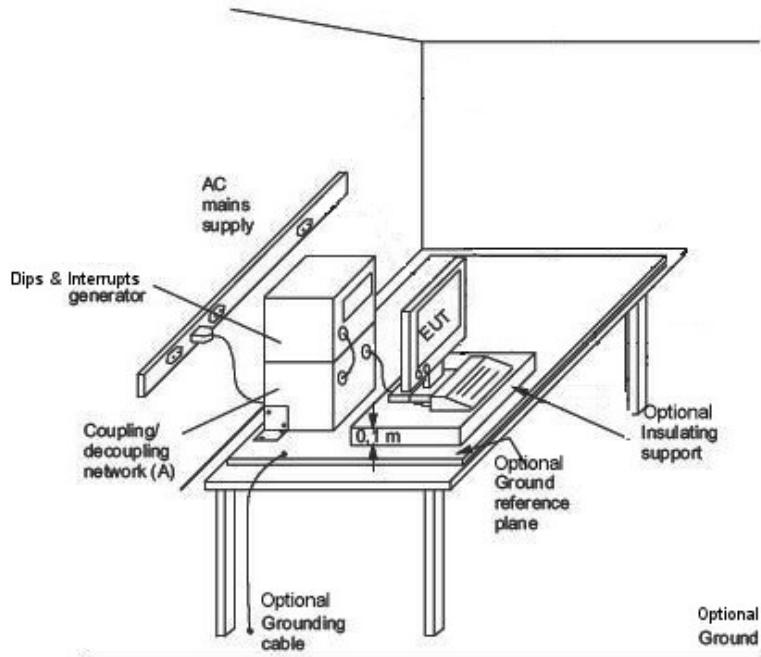
The test is carried out at phase angles of 0°, 90°, and 270° of the AC with 5 repetitions applied at each of the dips and interrupts listed in the table above.

No disruption of normal operation or loss of data is applied to this test.

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Typical Test Setup



Application Level Accuracy

As per IEC 61000-4-11, the voltage must be $\pm 5\%$ of the voltage stated to be applied. The frequency must be kept within $\pm 2\%$ of the stated frequency.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Results

The EUTs passed the requirements. The EUTs met the criteria's listed above in the application level requirements. At each voltage dip level the UPSs momentarily ran on battery mode and re-entered charging mode. During the 5 second interruption (0% for 300 cycles), the EUTs UPSs entered battery mode and returned to charging mode after 5 seconds. The EUTs maintained operation during the +/- 15% surges of voltages and increases of 7.5% and decreases of 12.5%.

No anomalies were observed for the surges and no disruption to operation or data loss occurred.

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Immunity Generator	CE Master	Keytek Thermo Corp.	Dec. 19, 2016	Dec. 19, 2018	GEMC 140
Immunity Generator	EMC Pro Plus	Keytek Thermo Corp.	Dec. 19, 2016	Dec. 19, 2018	GEMC 4
Immunity Software	CEWare 32 V4.1	Thermo Fisher Scientific	NCR	NCR	GEMC 182
Variac	PWRSTA 3PN126	Powerstat	NCR	NCR	GEMC 6032

IEC61000-4-11_DipsImmunity-C24_Rev3

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Electrical Fast Transients / Bursts – 4.1.2.6

Purpose

Electrical Fast Transients is a series of bursts consisting of a number of fast transients, which in a typical application environment, can be coupled into the supply and onto the I/O lines of the EUT. These transient signals usually arise from nearby switching circuitry such as a light switch, relay bounces, electric motor noise, interruption of inductive loads, etc. This test is to verify that the EUT is immune to such transient disturbances based on the applicable test levels. This test, however, does not guarantee that the EUT will not experience higher level burst impulses during its operation, which may cause the EUT to fail.

Application Level Requirement

This test is performed in accordance with the methodology defined in IEC 61000-4-4. The voltage waveform applied has the following characteristics:

- Pulse rise time: $5\text{ns} \pm 30\%$
- Pulse duration (to 50% value): $50\text{ns} \pm 30\%$
- Pulse repetition frequency 100kHz
- Burst duration should be $15\text{ms} \pm 20\%$
- Burst period should be $300\text{ms} \pm 20\%$

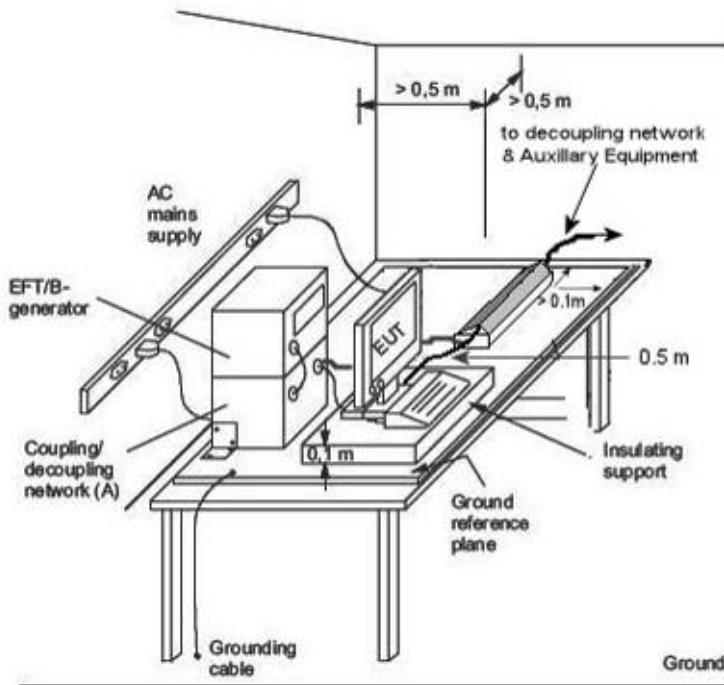
Bursts are applied for 1 minute each at the positive and the negative polarity to the mains power input (common mode) and to each applicable I/O line.

A test level of $\pm 2\text{kV}$ is applied to the power supply port(s) via a coupling and decoupling network and $\pm 1\text{kV}$ to each applicable I/O line via a Capacitive Coupling Clamp. No disruption of normal operation or loss of data is to occur during the performance of this test.

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Typical Test Setup



Application Level Accuracy

As per IEC 61000-4-4, the test level is specified as being within $\pm 10\%$ into a 50Ω load and $\pm 20\%$ into a 1000Ω load.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Results

The EUT passed the requirements. The ICX BMD required a ferrite to pass EFT. Ferrite information can be found in ‘Appendix A, Modifications for Compliance’. The EUTs were not disrupted from their normal operation and did not lose any data during the test.

ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD

Test Voltage	Repetition Rate	Coupling Lines	Result
±2kV	100kHz	L – N – PE	Pass
±2kV	100kHz	PE	Pass

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Immunity Generator	CE Master	Keytek Thermo Corp.	Dec. 19, 2016	Dec. 19, 2018	GEMC 140
Immunity Generator	EMC Pro Plus	Keytek Thermo Corp.	Dec. 19, 2016	Dec. 19, 2018	GEMC 4
Immunity Software	CEWare 32 V4.1	Thermo Fisher Scientific	NCR	NCR	GEMC 182

IEC61000-4-4_EFTB_Rev4

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Lightning Surge – 4.1.2.7

Purpose

Surge occurs when a high energy disturbance takes place on the power lines, or less frequently, I/O lines and can cause significant temporary increase in current and/or voltage. These disturbances can arise during a nearby lightning strike, circuit trips, short-circuits on the same power line that the equipment is connected to, etc. The sudden rise in voltage over a very short period of time could cause damage to the components of the EUT and this test assesses the immunity of the EUT to such transient waves. This test differs from Electrical Fast Transients / Bursts in that this waveform, characterized by the rapid increase of current and/or voltage followed by a slower decrease, has a longer wave duration that could allow damage to the EUT. This test does not guarantee that the EUT will not be exposed to a higher level of surge energy during its operation, which may cause the EUT to fail. This test also does not ensure operation of the EUT in the presence of direct lightning effects.

Application Level Requirement

This test is performed in accordance with the methodology defined in IEC 61000-4-5. Surges are simulated using a waveform generator and the characteristics of the waveform generated are as follows:

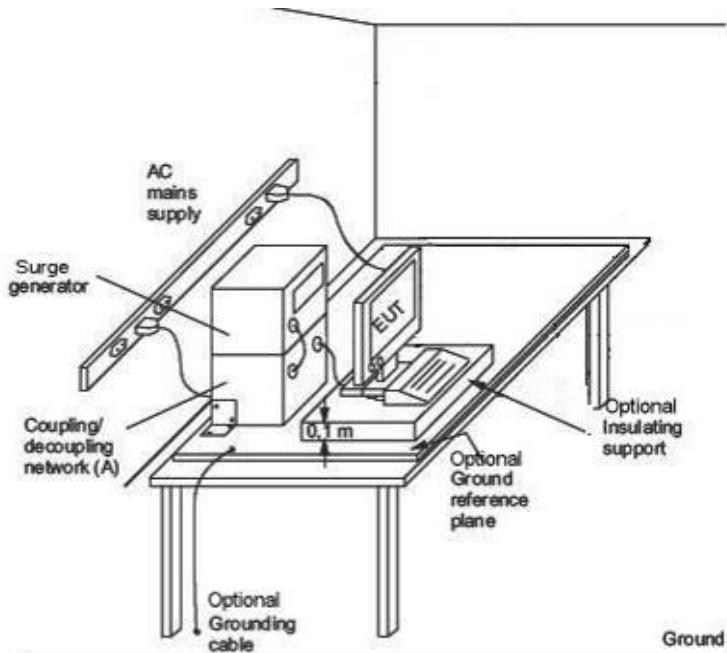
- Rise time of 1.2µs and wave duration of 50µs (to 50% value) into an open circuit.
- Rise time of 8µs and wave duration of 20µs (to 50% value) into a short circuit.
- Dwell time of 60 seconds between each surge.
- 5 surges in the positive and 5 surges in the negative polarity.
- For AC systems, the surge pulses are applied at 0°, 90°, 180° and 270°.
- For AC systems, Line to Ground is performed at the same amount as the Line to Line voltage.

For AC mains supply, a test level of $\pm 2\text{kV}$ Line to Line and $\pm 2\text{kV}$ Line to Ground is applied to the power supply port(s) via a coupling and decoupling network. Lower test levels are evaluated first before applying the required test level. No disruption of normal operation or data loss is allowed as applied to this test.

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Typical Test Setup



Application Level Accuracy

As per IEC 61000-4-5, the level is specified as being within $\pm 10\%$ for open circuit voltage calibration or $\pm 10\%$ for short circuit current calibration. The EUT's input impedance, or whether Line – PE or Line – Line is being performed, combined with the calibrated generators output impedance, will affect the timing and voltage/current of the waveform applied to the EUT.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Results

The EUT passed the requirements. The EUTs did not encounter any deviation from normal operation or data loss.

ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD

Test Voltages	Phase Angles	Number of Surges	Coupling Lines	Result
±0.5kV, ±1kV, ±2kV	0°, 90°, 180°, 270°	5 per polarity	L – GND	Pass
±0.5kV, ±1kV, ±2kV	0°, 90°, 180°, 270°	5 per polarity	N – GND	Pass
±0.5kV, ±1kV, ±2kV	0°, 90°, 180°, 270°	5 per polarity	L – N	Pass

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Immunity Generator	EMC Pro Plus	Keytek Thermo Corp.	Dec. 19, 2016	Dec. 19, 2018	GEMC 4
Immunity Generator	EMC Pro Plus	Keytek Thermo Corp.	Dec. 20, 2016	Dec. 20, 2018	GEMC 188
Immunity Software	CEWare 32 V4.1	Thermo Fisher Scientific	NCR	NCR	GEMC 182

IEC61000-4-5_Surge_Rev4

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Electrostatic Disruption – 4.1.2.8

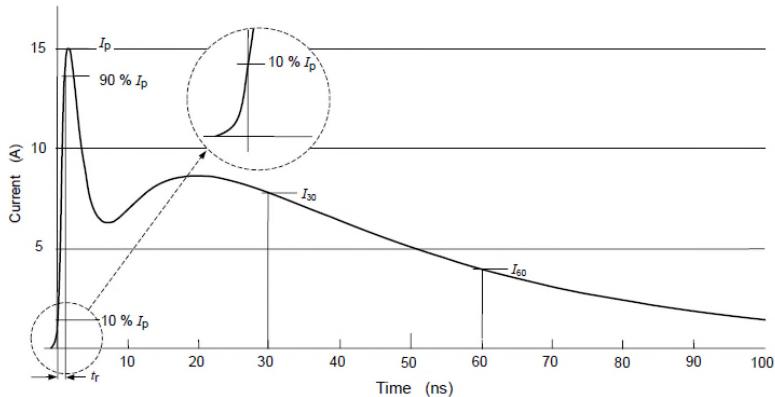
Purpose

The purpose of this immunity test is to apply a static electricity discharge from the operator to the EUT or create a nearby discharge field. An example of this discharge can be seen in low humidity conditions when a person touches an object and creates a small spark. This spark could potentially be harmful to the operation of the EUT. The contact method, with related reduced voltages, has been shown to be roughly equivalent to air discharges in severity and due to its reproducibility, contact is the preferred test method. Air discharge is used where contact discharge cannot be applied since the discharge point is significantly insulated and the insulation cannot be easily broken through. This test ensures a minimum level of immunity which is likely to occur in a normal usage environment. This test does not guarantee that the EUT will not be exposed to higher discharge levels which could cause it to fail.

Application Level Requirement

This test is performed in accordance with the methodology defined in IEC 61000-4-2. Ten hits in the positive and negative polarity are applied at each defined discharge point on the EUT. These are called direct discharges, regardless of contact or air being applied.

Horizontal Coupling Plane (HCP) and Vertical Coupling Plane (VCP) discharges are also applied and these are called indirect discharges. A typical test setup representation is shown on the following page. A photograph of the actual test setup is shown in Appendix B. See the results table under Test Results for the actual EUT discharge points.

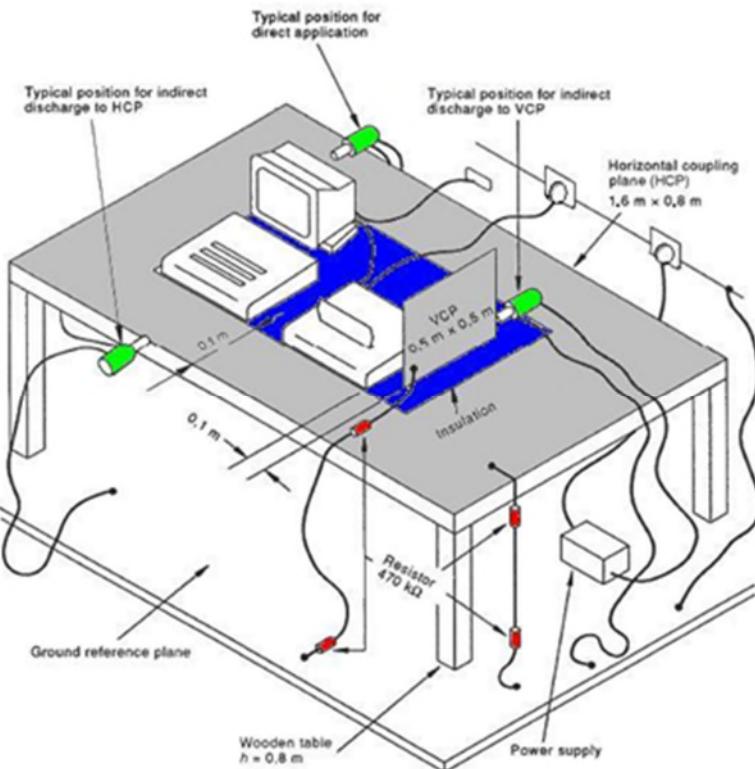


A level of $\pm 8\text{kV}$ contact or $\pm 15\text{kV}$ air, where applicable, is applied to each defined discharge point. For air discharge testing, the test is applied at the lower test levels first. No disruption to normal operation or loss of data is applied to this test. However, all anomalies, if any, are noted.

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Typical ESD Setup



Application Level Accuracy

Contact discharge: $\pm 15\%$ for the first peak current, $\pm 5\%$ for the output voltage and $\pm 25\%$ for the rise time as measured at the discharge electrode tip of ESD generator.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Results

The EUTs passed the requirements. The EUTs encountered no disruption of normal operation and no loss of data. No anomalies were observed.

ICX DRE VVPAT

Location	Test Voltage	Discharge Type	Pass / Fail
1. HCP	±8kV	Contact	Pass
2. VCP	±8kV	Contact	Pass
3. Ethernet Connector	±8kV	Contact	Pass
4. ICX Handle	±8kV	Contact	Pass
5. ICX Backrest	±8kV	Contact	Pass
6. Printer Keyhole	±8kV	Contact	Pass (No Discharge)
7. Touch Screen	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
8. Power Cable	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
9. Headphones	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
10. Touch Input	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
11. Device Sides	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
12. Printer Window	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
13. Printer Sides	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
14. Power Cables	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
15. Touch Input Cables	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

ICX DRE Report Printer

Location	Test Voltage	Discharge Type	Pass / Fail
1. HCP	±8kV	Contact	Pass
2. VCP	±8kV	Contact	Pass
3. Ethernet Connector	±8kV	Contact	Pass
4. ICX Handle	±8kV	Contact	Pass
5. ICX Backrest	±8kV	Contact	Pass
6. Touch Screen	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
7. Power Cable	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
8. Headphones	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
9. Touch Input	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
10. Device Sides	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
11. Power Cables	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
12. Touch Input Cables	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

ICX BMD

Location	Test Voltage	Discharge Type	Pass / Fail
1. HCP	±8kV	Contact	Pass
2. VCP	±8kV	Contact	Pass
3. Ethernet Connector	±8kV	Contact	Pass
4. ICX Handle	±8kV	Contact	Pass
5. ICX Backrest	±8kV	Contact	Pass
6. Touch Screen	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
7. Power Cable	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
8. Headphones	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
9. Touch Input	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
10. Device Sides	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
11. Power Cables	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
12. Touch Input Cables	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
13. Top Paper Tray	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
14. Paper Loading Tray	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)
15. On / Off Button Printer	±2kV, ±4kV, ±8kV, ±15kV	Air	Pass (No Discharge)

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
ESD Generator	NSG 437	Teseq	June 28, 2017	June 28, 2019	GEMC 130
ESD HCP	80CM x 160CM	Global EMC	NCR	NCR	GEMC 50
ESD VCP	50CM x 50CM	Global EMC	NCR	NCR	GEMC 51
ESD 470K A	2x470kΩ 100CM	Global EMC	NCR	NCR	GEMC 52
ESD 470K B	2x470kΩ 100CM	Global EMC	NCR	NCR	GEMC 53

IEC61000-4-2_ESD_Rev4

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



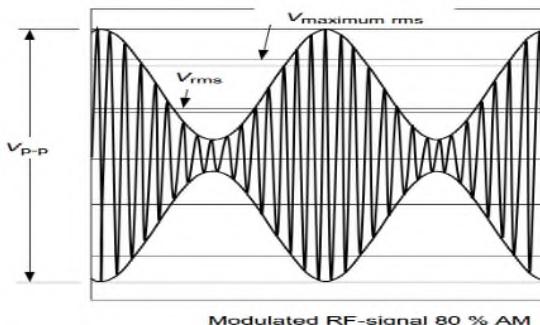
Electromagnetic Susceptibility – 4.1.2.10

Purpose

The EUT will likely be exposed to intentional sources of electromagnetic radiation during its regular application. Sources of such radiation can be cellular phones, FM radio, television, remote car alarms, garage door openers, and other broadcast transmissions. These sources of radiation are licensed or certified for broadcast and therefore, the EUT should be immune to their RF energy. This test assesses the immunity of the EUT to the applicable field strength test level. This test, however, does not guarantee that the EUT will not be exposed to higher level fields during its operation, which may cause it to fail.

Application Level Requirement

This test is performed in accordance with the methodology defined in IEC 61000-4-3. The immunity test is performed over the frequency range of 80MHz to 1.0GHz. As the frequency range is swept incrementally, the step size used is calculated at 1% of the preceding frequency value, rounded down to the nearest kHz. Known clock frequencies, local oscillators, etc. are analyzed separately, where applicable, and these are defined in "Appendix A – EUT & Client Provided Details". The field uniformity is calibrated at 10V/m and a modulation of 80% AM 1kHz sine wave is applied during the application of the RF energy at each frequency.

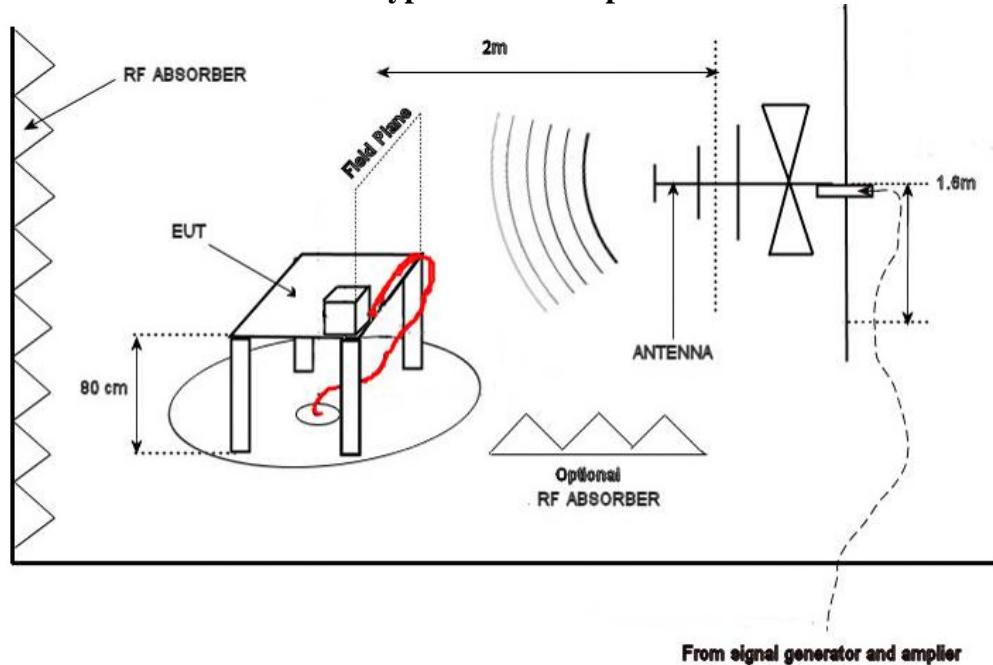


The RF field is applied in both horizontal and vertical antenna polarization and four sides of the EUT are subjected to this RF field. The dwell time used for each frequency is 3 seconds. Forward power is monitored and records are kept on file at TUV SUD Canada Inc. An isotropic field probe is also placed in near proximity of the EUT to verify the application of the RF field. Performance Criteria level A as defined in "Appendix A – EUT & Client Provided Details" is applied to this test.

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Typical Test Setup



From signal generator and amplifier

Application Level Accuracy

As per IEC 61000-4-3, the RF field is specified as 0dB to +6dB for at least 12 of the 16 calibration points. For a 10 V/m field, this allows for the EUT to be subjected to a field of 10 V/m to 20 V/m with at least 75% coverage at this level.

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

Test Results

The EUTs encountered no disruption of normal operation or data loss. No other anomalies were observed.

ICX DRE VVPAT, Report Printer & BMD

Input Voltage and Frequency	120V 60Hz & Battery Mode
Frequency Range and Field Strength	80MHz – 1GHz 10V/m (80% AM)
Sweep Step	1% of Fundamental
Dwell Time	3 sec.
Result	Pass

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Signal Generator	SMHU	Rohde & Schwarz	Feb. 1, 2017	Feb. 1, 2019	GEMC 155
BiLog Antenna	3142-C	ETS	Oct. 5, 2016	Oct. 5, 2018	GEMC 8
Power Amplifier	150W1000	AR	NCR	NCR	GEMC 179
Field Probe	FL 7018	AR	Sept. 21, 2016	Sept. 21, 2018	GEMC 164
Field Monitor	FM 7004	AR	NCR	NCR	GEMC 13
Power Head	PH 2000	AR	Feb. 1, 2017	Feb. 1, 2019	GEMC 15
Power Meter	PM 2002	AR	Feb. 1, 2017	Feb. 1, 2019	GEMC 16
Immunity Software	V221	Global EMC	NCR	NCR	GEMC 57

IEC61000-4-3_RadiatedImmunity_Rev4

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

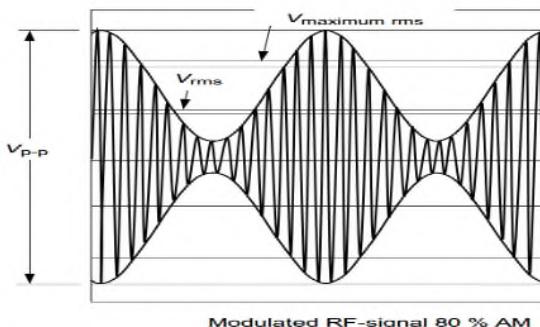
Conducted RF Immunity – 4.1.2.11

Purpose

The EUT will likely be exposed, in some way, to low frequency intentional sources of RF energy during its regular application. Sources of such radiations can be AM radio, shortwave radio, CB transmissions, and other low frequency broadcast transmissions. These sources of radiations are licensed or certified for broadcast and therefore, the EUT should be immune to their RF energy. Due to the properties of radio, the power or I/O lines on the EUT would likely be the passive receiving antenna that induces the disturbance to the EUT. Since this is the main method of coupling at this frequency range, the direct application of the RF energy to the line being tested is used. At this frequency range and level, this method is easier to produce and reproduce in a laboratory environment than subjecting the EUT to an equivalent RF field.

Application Level Requirement

This test is performed in accordance with the methodology defined in IEC 61000-4-6. I/O cables are tested using a bulk current injection probe and power lines are tested using a coupling and decoupling network. The immunity test is performed over the frequency range of 150kHz to 80MHz. As the frequency range is swept incrementally, the step size used is calculated at 1% of the preceding frequency value, rounded down to the nearest kHz. Known clock frequencies, local oscillators, etc. are analyzed separately, where applicable, and these are defined in "Appendix A – EUT & Client Provided Details". The test level is calibrated at 10Vrms and a modulation of 80% AM 1kHz sine wave is applied during the application of the RF energy at each frequency.

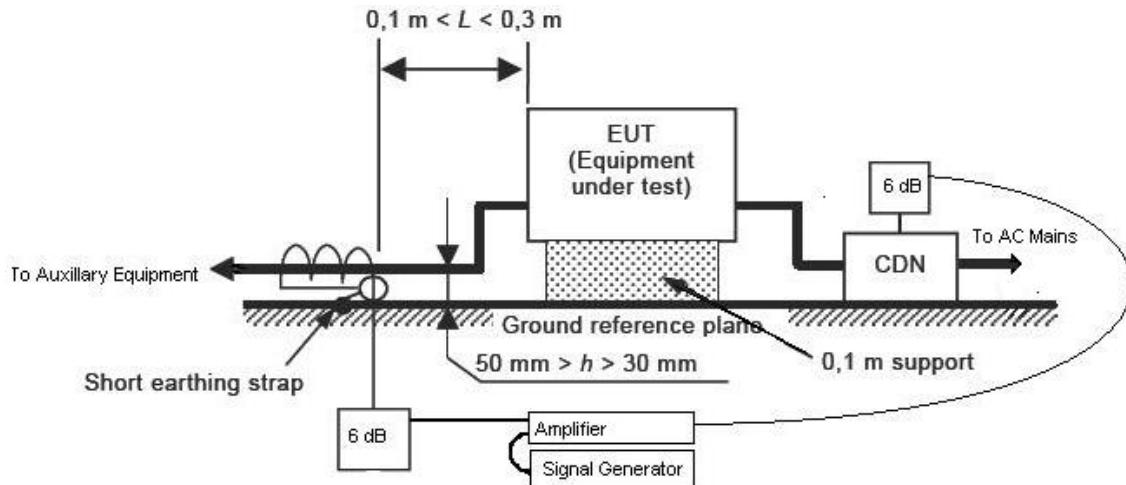


The dwell time used for each frequency is 3 seconds. A current probe is placed between the coupling device and the EUT to verify the application of the RF energy. No disruption to normal operation or data loss allowed is applied to this test.

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Typical Test Setup



Application Level Accuracy

As per IEC 61000-4-6, the CDN must meet a common mode impedance $|Z_{CE}| = 150\Omega \pm 20\Omega$ for 150kHz to 26MHz and $|Z_{CE}| = 150\Omega + 60\Omega$ or $150\Omega - 45\Omega$ for 26MHz to 80MHz. During tests using the bulk current injection probe, the impedance of each cable will affect the current injected and therefore, current was monitored. The calibration is performed according to IEC 61000-4-6 which allows for $\pm 2\text{dB}$.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Results

The EUTs passed the requirements. The EUTs met Criteria A as defined in "Appendix A – EUT & Client Provided Details". No anomalies were observed.

ICX DRE VVPAT, Report Printer & BMD

Input Voltage and Frequency	120Vac 60Hz
Frequency Range and Signal Strength	150kHz - 80MHz 10Vrms (80% AM)
Sweep Step	1% of Fundamental
Dwell Time	3 sec.
AC Mains	Pass
Result	Pass

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
Power Line CDN	FCC-801-M3-16A	FCC	Feb. 10, 2016	Feb. 10, 2018	GEMC 138
Power Amplifier	75A250A	AR	NCR	NCR	GEMC 14
RF Current Probe	F-33-2	FCC	Jan. 27, 2017	Jan. 27, 2019	GEMC 19
Signal Generator	SMHU	Rohde & Schwarz	Feb. 1, 2017	Feb. 1, 2019	GEMC 155
Power Attenuator 6dB	100-A-FFN-06	Bird	NCR	NCR	GEMC 48
Immunity Software	V221	Global EMC	NCR	NCR	GEMC 57

IEC61000-4-6_ConductedImmunity_Rev4

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Magnetic Fields Immunity – 4.1.2.12

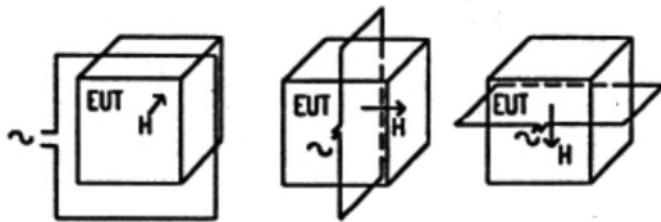
Purpose

A magnetic field with the frequency of the power line is generated around the EUT. In practice, the EUT will be subjected to power frequency magnetic fields from nearby power lines, transformers, or devices such as televisions or monitors. Since the EUT is usually used in conjunction with other electrical equipment, it is subjected to the steady state magnetic fields. These are magnetic fields that the device is exposed to under normal operating conditions. These fields have lower field strengths compared to typical transient magnetic fields.

Application Level Requirement

This test is performed in accordance with the methodology defined in IEC 61000-4-8. Three orthogonal axis of the EUT are subjected to the field within the magnetic loop. The transient magnetic field, if applicable, is tested for 1 minute while the steady state magnetic field is tested for 15 minutes. The frequency applied is 60 Hz. A magnetic field strength of 30 A/m is applied to the EUT in each orthogonal axis. No disruption to normal operation or loss of data is applied to this test.

Typical Setup Diagram



Application Level Accuracy

As per IEC 61000-4-8, the field over the area that the EUT occupies within the loop must be calibrated to be within ± 3 dB. For a field strength of 3 A/m, this means that the empty calibrated field strength can be between 2.1 A/m and 4.2 A/m over the area that the EUT occupies.

Test Results

The EUT passed the requirements. The EUT did not encounter any disruption of normal operation or loss of data. No anomalies were observed.

When a 60 Hz field was applied, the EUTs were powered at 120 Vac 60 Hz, battery mode and the field strength at 30 A/m.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Test Equipment List

Equipment	Model No.	Manufacturer	Last Calibration Date	Next Calibration Date	Asset #
80 Turn Magnetic Loop	1m x 1m	Global EMC	NCR	NCR	GEMC 136
Variac	PWRSTA 3PN126	Powerstat	NCR	NCR	GEMC 6032
Clamp Meter	365	Fluke	Nov. 23, 2016	Nov. 23, 2017	GEMC 260

IEC61000-4-8_MagneticImmunity_Rev3

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Appendix A – EUT & Client Provided Details

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

General EUT Description

Client Details	
Organization / Address	Pro V&V 700 Boulevard South – Suite 102 Huntsville, AL 35802 United States
Contact	Michael Walker
Phone	+1 256 713 1111
Email	mwalker@provandv.com
Manufacturer Details (if not same as above)	
Organization / Address	Dominion Voting Systems 215 Spadina Ave – Suite 200 Toronto, ON M5T 2C7 Canada
Contact	Aamer Chaudhry
Phone	+1 416 762 8683 ext. 227
Email	aamer.chaudhry@dominionvoting.com
EUT (Equipment Under Test) Details	
EUT Name	ICX DRE VVPAT ICX DRE Report Printer ICX BMD
EUT Model / SN	Refer to tester notes
EUT revision	New Product
Software version	N/A
Equipment category	Voting Machines
EUT is powered using	120VAC and back-up battery
Input voltage range(s) (V)	82 – 144V 50/60Hz ± 3Hz
Frequency range(s) (Hz)	Highest Frequency: 2.3GHz
Rated input current (A)	12A
Nominal power consumption (W)	1000W
Number of power supplies in EUT	1
Transmits RF energy? (describe)	N/A
Basic EUT functionality description	Voting Machine

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

EUT (Equipment Under Test) Details	
High level block diagram of EUT (attachment)	See Dominion Voting Notes
Modes of operation	AC mode and battery mode
Step by step instructions for setup and operation	See operator/customer
Customer to setup EUT on site?	Yes
EUT response time (ms)	5 min
EUT setup time (min)	5 min
Frequency of all clocks present in EUT	Highest Frequency: 2.3GHz
I/O cable description Specify length and type	Various – all less than 3m
Available connectors on EUT	Ethernet, Audio In/Out, USB 2.0, USB 3.0, DC Barrel, 24V output, Mini USB
Peripherals required to exercise EUT Ex. Signal generator	N/A
Method of monitoring EUT and description of failure for immunity.	Monitor automatic voting session on EUT to see if voting results (Selected candidates: A1, B1, C1 and QR code) are correctly printed at a set interval of 5 minutes.

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

EUT Functional Description

Three voting system configurations

EUT Configuration

Please see Appendix B for a picture of the unit running in normal conditions.

- Cables and earthing were connected as per manufacturer's specification.
- All Cables are less than 3m

Operational Setup

Peripheral devices were attached to the EUT for its test operation. However, this report does not represent compliance of these peripheral device(s) in any way.

- Turn on device, enter test mode using voter and admin cards

Modifications for Compliance

The following modifications were made during testing for the sample to achieve compliance with the testing requirements:

- ICX Prime VVPAT, DRE require no modifications to achieve compliance during the test program
- ICX Prime BMD required a ferrite by Steward Electronics, Part Number 28A2029-0A2, please see Figure 45 for installation location

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

EUT Serial Numbers

ICX DRE VVPAT & Report Printer Serial Numbers		
<u>Device</u>	<u>Model#</u>	<u>Serial Number</u>
ATI	181-000036	B104326-1-4-035
ATI	181-000036	B104326-1-4-040
AVALUE Tablet	HID-21V-BTX-01R	1707101710
AVALUE Tablet	HID-21V-BTX-01R	1707101725
AVALUE Tablet	HID-21V-BTX-01R	1707101731
Headphones	ACM-70	Dominion-HP-001
Headphones	ACM-70	Dominion-HP-002
Power Supply	9NA1802821	H7221000053
Power Supply	9NA1802821	H7221000039
Power Supply	9NA1802821	H72210000712
VVPAT	VRP3	KPR0000000711
VVPAT	VRP3	KPR0000000712

ICX BMD Serial Numbers			
<u>Device</u>	<u>Model#</u>	<u>Serial Number</u>	<u>Unit Configuration</u>
AVALUE Tablet	HID-21V-BTX-01R	1708100916	A
AVALUE Tablet	HID-21V-BTX-01R	1708100876	B
AVALUE Tablet	HID-21V-BTX-01R	1708100915	C
HP Laser Jet Pro	M402 dne	PHB5D00782	A
HP Laser Jet Pro	M402 dne	PHB5D04714	B
HP Laser Jet Pro	M402 dne	PHB4F04770	C
Smart UPS 1500	1500	351716X02289	A
Smart UPS 1500	1500	WS1530180004	B
Smart UPS 1500	1500	3S1536X06484	C
EMI Filter	1	H72210000712	A
EMI Filter	2	KPR0000000711	B
EMI Filter	3	KPR0000000712	C

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

ICX BMD Test Configurations

Configurations & Tests for ICX BMD	
<u>Configuration</u>	<u>Tests</u>
A	Electrical Fast Transients
	Electrical Power Disturbance Part 1
	Lightning Surge
	Magnetic Fields Immunity
B	Conducted Susceptibility
	Electrical Power Disturbance Part 2
	Conducted Emissions (UPS & Filter Only)
C	Radiated Susceptibility
	Radiated Emissions
	Conducted Emissions (Not UPS & Filter)
	Electrostatic Disruption

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Appendix B – EUT, Peripherals, and Test Setup Photos

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 1 – EUT Front Close Up – ICX DRE Tablet (VVPAT, Report Printer & BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 2 – EUT Rear Close Up – ICX DRE Tablet (VVPAT, Report Printer & BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 3 – EUT Close Up – ICX DRE Tablet Information

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 4 – EUT Close Up – ICX DRE Tablet Power Supply

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 5 – EUT Close Up – ICX DRE VVPAT Printer Label

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 6 – EUT Close Up – ICX BMD AC Filter Label

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 7 – EUT Close Up – ICX BMD UPS Front

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 8 – EUT Close Up – ICX BMD UPS Rear

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 9 – EUT Close Up – ICX BMD Printer Front

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 10 – EUT Close Up – ICX BMD UPS Rear

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 11 – EUT – Report Printer, Left / Right Paddles, Headphones, Binary Input

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 12 – Power Line Conducted Emissions Setup – Photo 1
(ICX DRE Report Printer)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

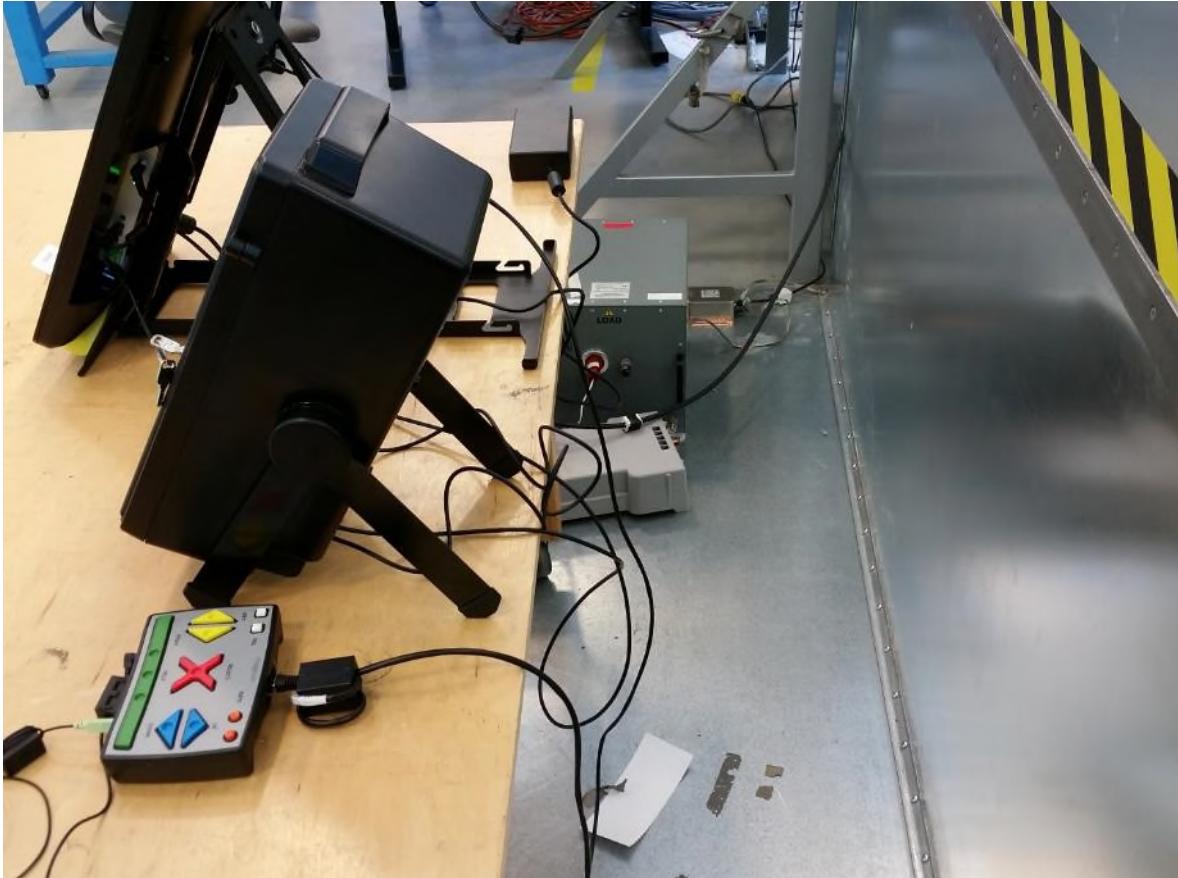


Figure 13 – Power Line Conducted Emissions Setup – Photo 2
(ICX DRE Report Printer)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 14 – Power Line Conducted Emissions Setup – Photo 1
(ICX DRE VVPAT)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

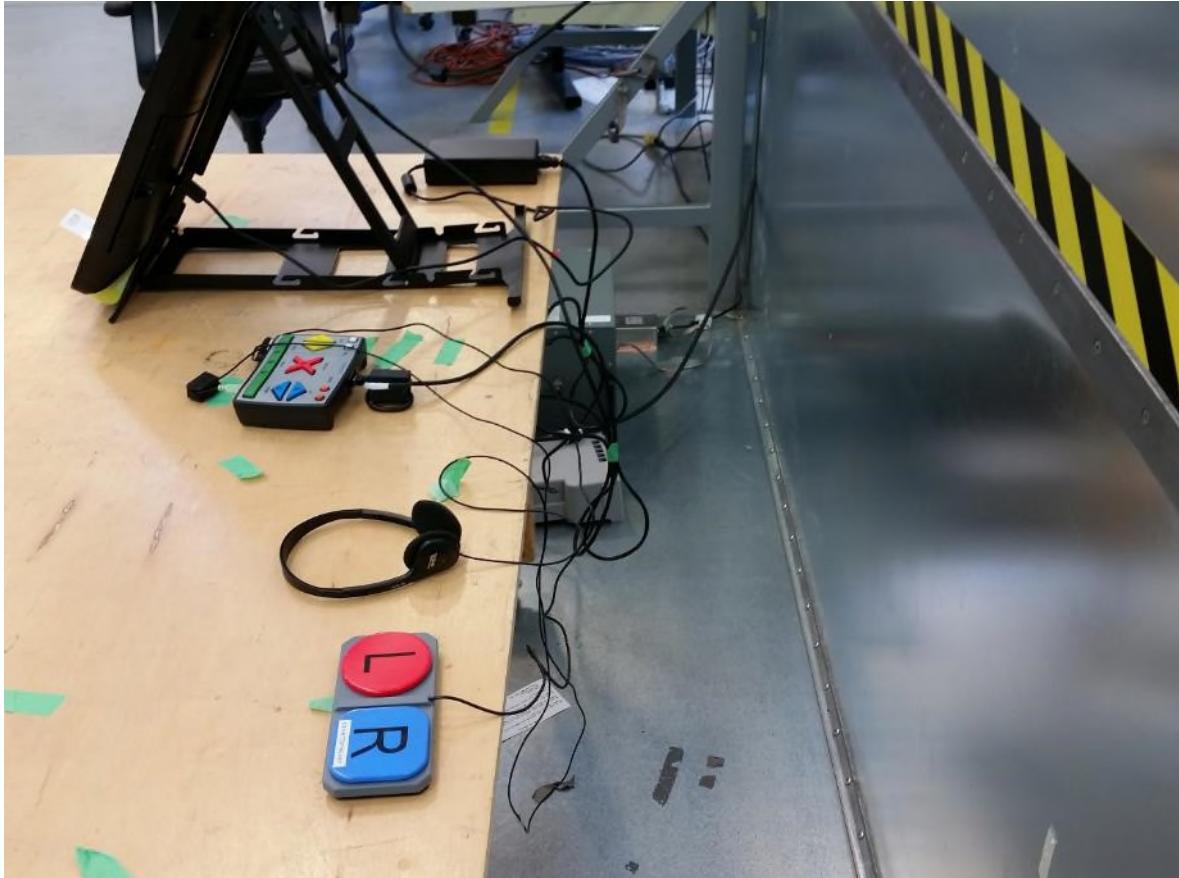


Figure 15 – Power Line Conducted Emissions Setup – Photo 2
(ICX DRE VVPAT)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 16 – Power Line Conducted Emissions Setup – Photo 1
(ICX BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 17 – Power Line Conducted Emissions Setup – Photo 2
(ICX BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

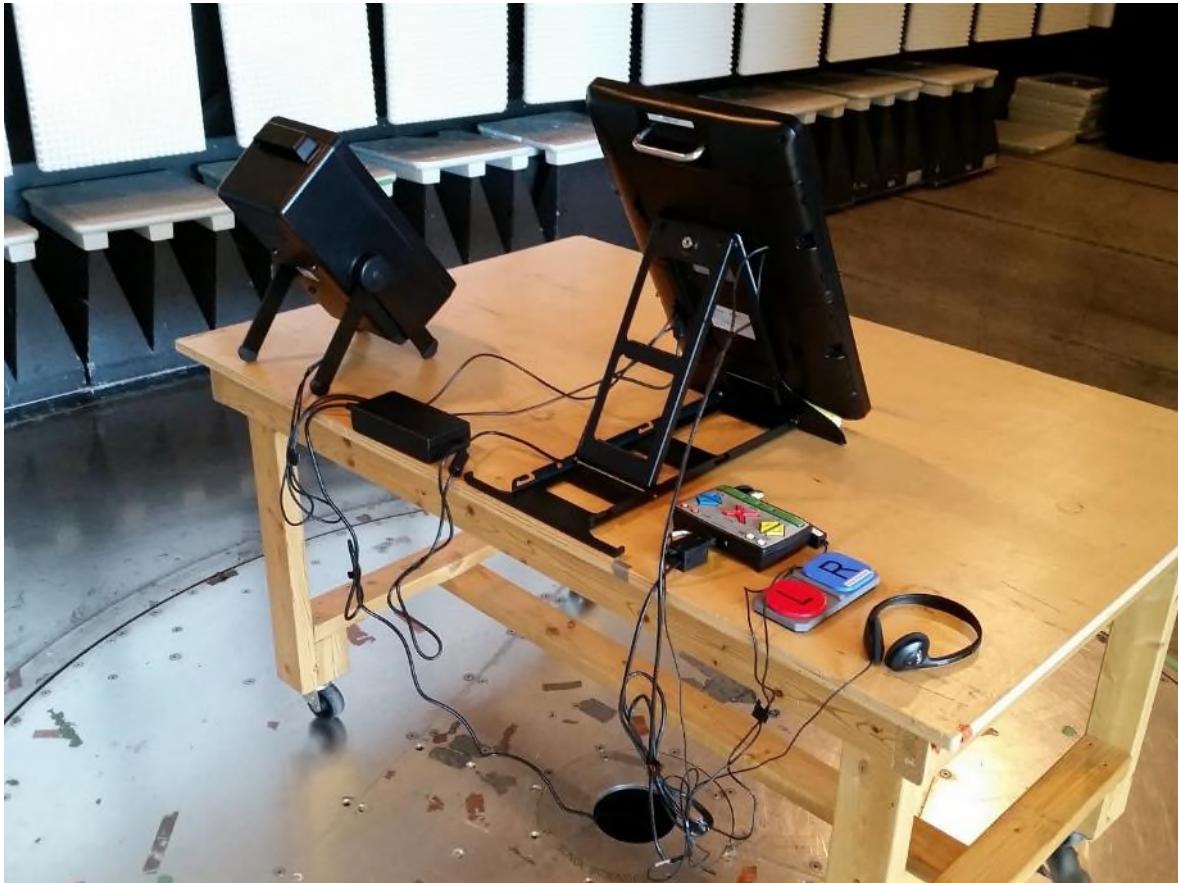


Figure 18 – Radiated Emissions Setup (ICX DRE Report Printer) – Photo 1

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 19 – Radiated Emissions Setup (ICX DRE Report Printer) – Photo 2
30MHz – 1GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 20 – Radiated Emissions Setup (ICX DRE Report Printer) – Photo 3
1GHz – 6GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 21 – Radiated Emissions Setup (ICX DRE Report Printer) – Photo 4
6GHz – 18GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

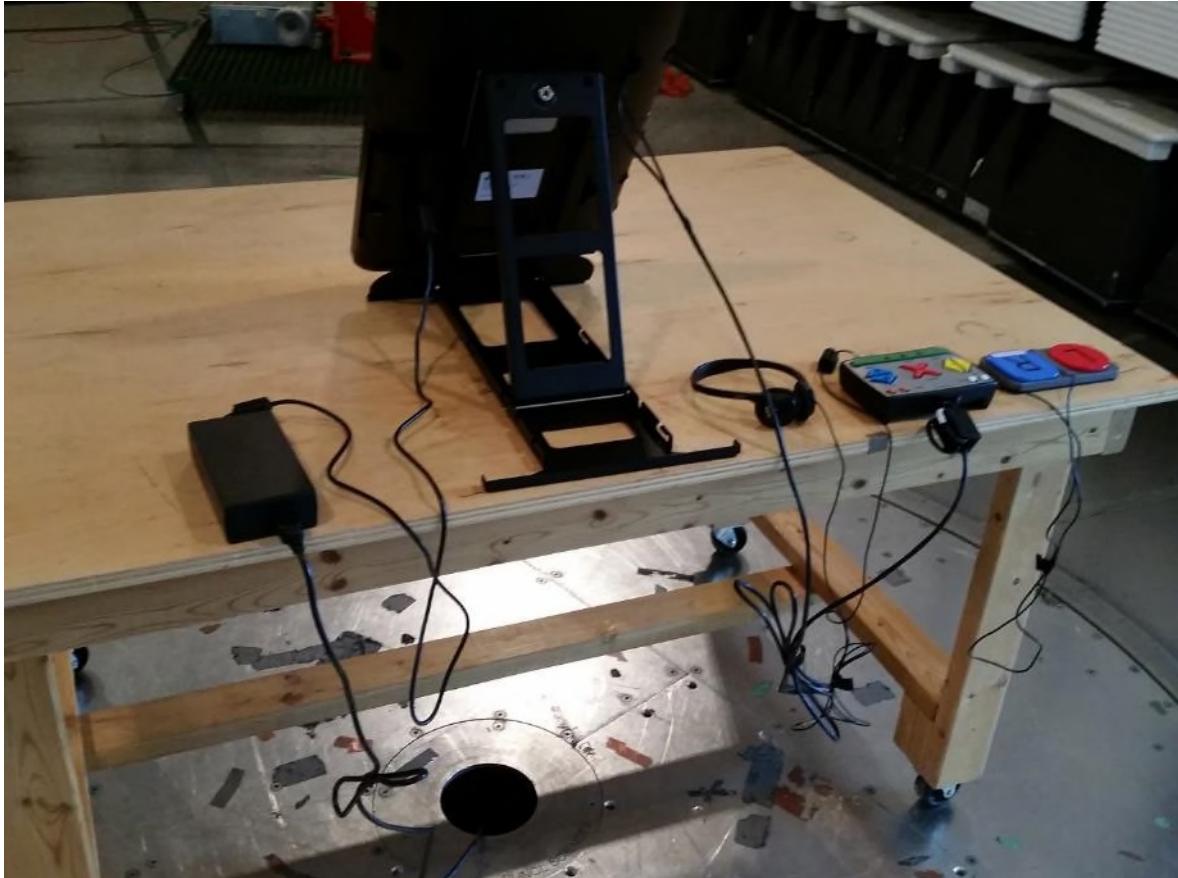


Figure 22 – Radiated Emissions Setup (ICX DRE VVPAT) – Photo 1

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

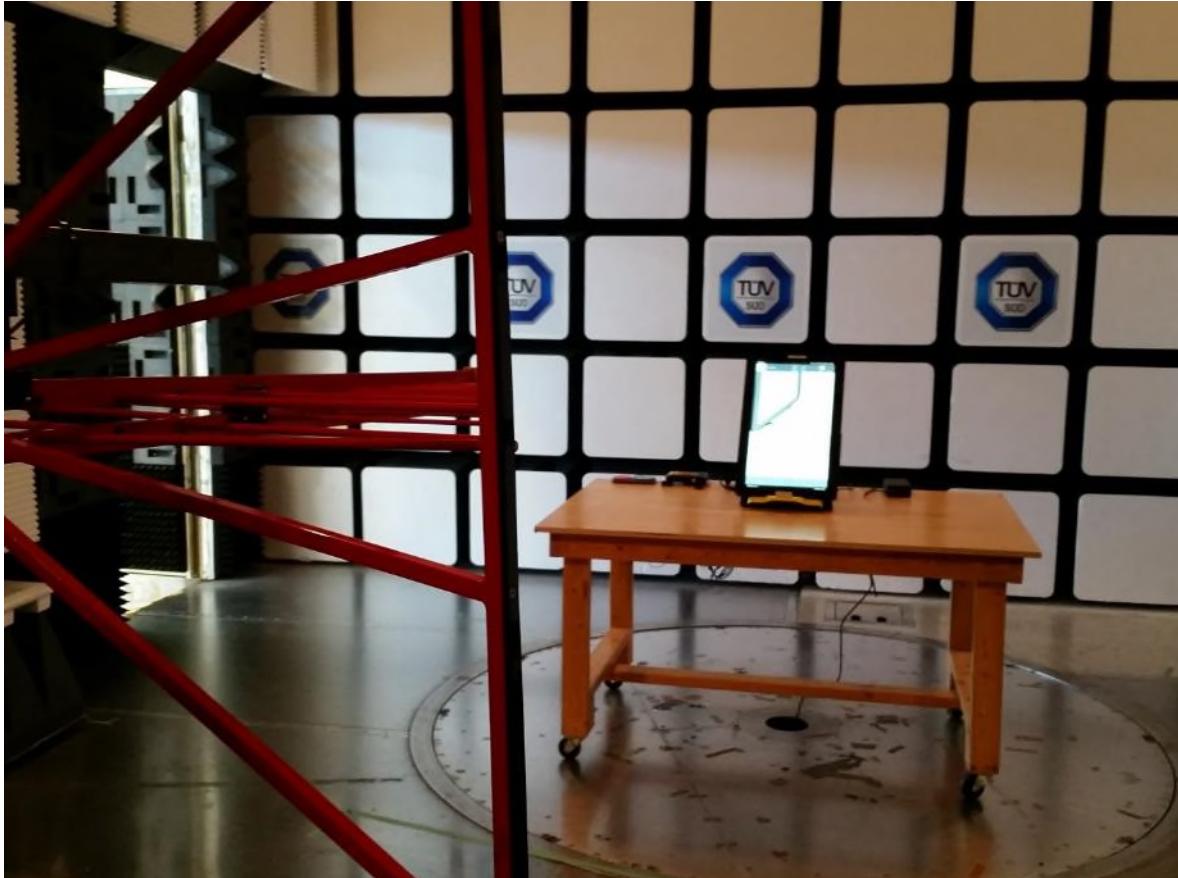


Figure 23 – Radiated Emissions Setup (ICX DRE VVPAT) – Photo 2
30MHz – 1GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

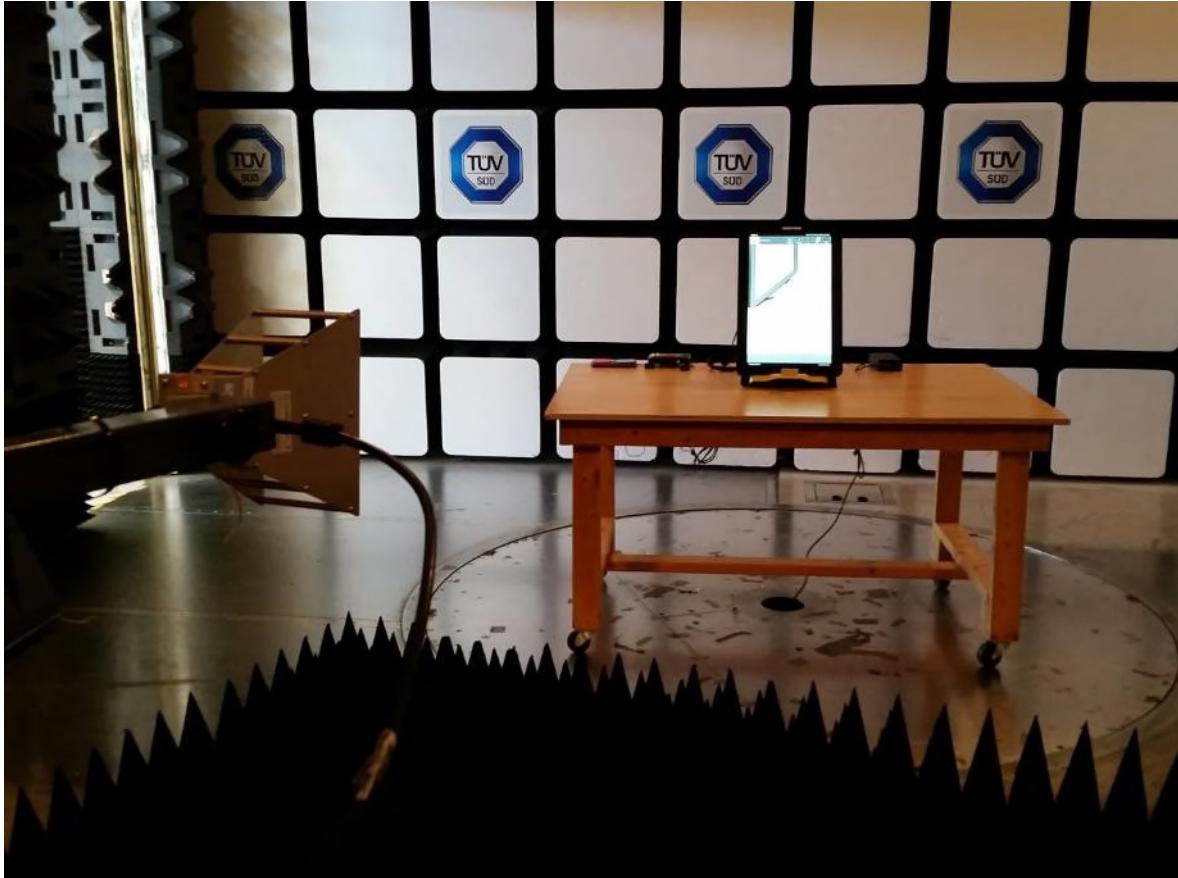


Figure 24 – Radiated Emissions Setup (ICX DRE VVPAT) – Photo 3
1GHz – 6GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 25 – Radiated Emissions Setup (ICX DRE VVPAT) – Photo 4
6GHz – 18GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 26 – Radiated Emissions Setup (ICX BMD) – Photo 1

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 27 – Radiated Emissions Setup (ICX BMD) – Photo 2
30MHz – 1GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

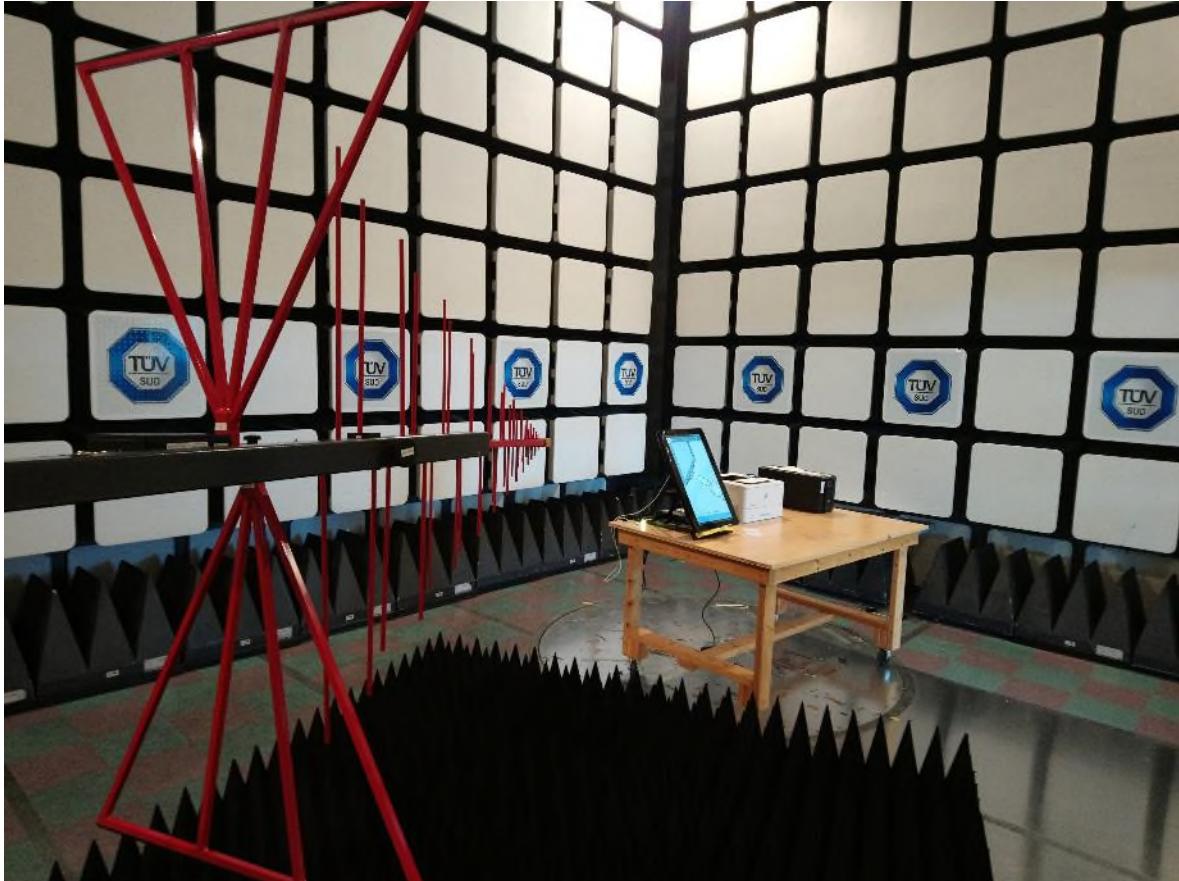


Figure 28 – Radiated Emissions Setup (ICX BMD) – Photo 3
1GHz – 2GHz

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada



Figure 29 – Radiated Emissions Setup (ICX BMD) – Photo 3
2GHz – 12GHz

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 30 – Electrical Power Disturbance Pt. 1 / Electrical Fast Transient / Lightning Surge (ICX DRE Report Printer)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 31 – Electrical Power Disturbance Pt. 1 / Electrical Fast Transient / Lightning Surge (ICX DRE VVPAT)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

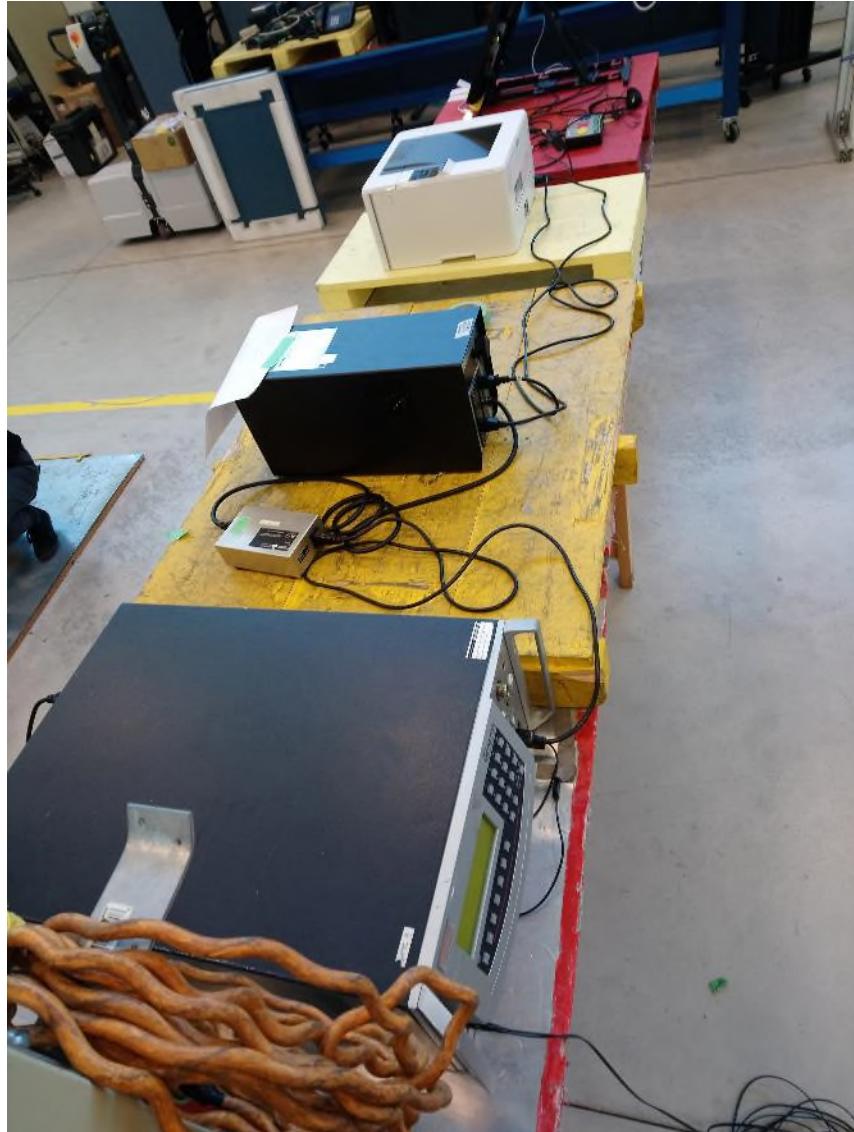


Figure 32 – Electrical Power Disturbance Pt. 1 / Electrical Fast Transient / Lightning Surge (ICX BMD)

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	



Figure 33 – Electrical Power Disturbance Pt. 2 (ICX DRE VVPAT & Report Printer)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 34 – Electrical Power Disturbance Pt. 2 (ICX BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

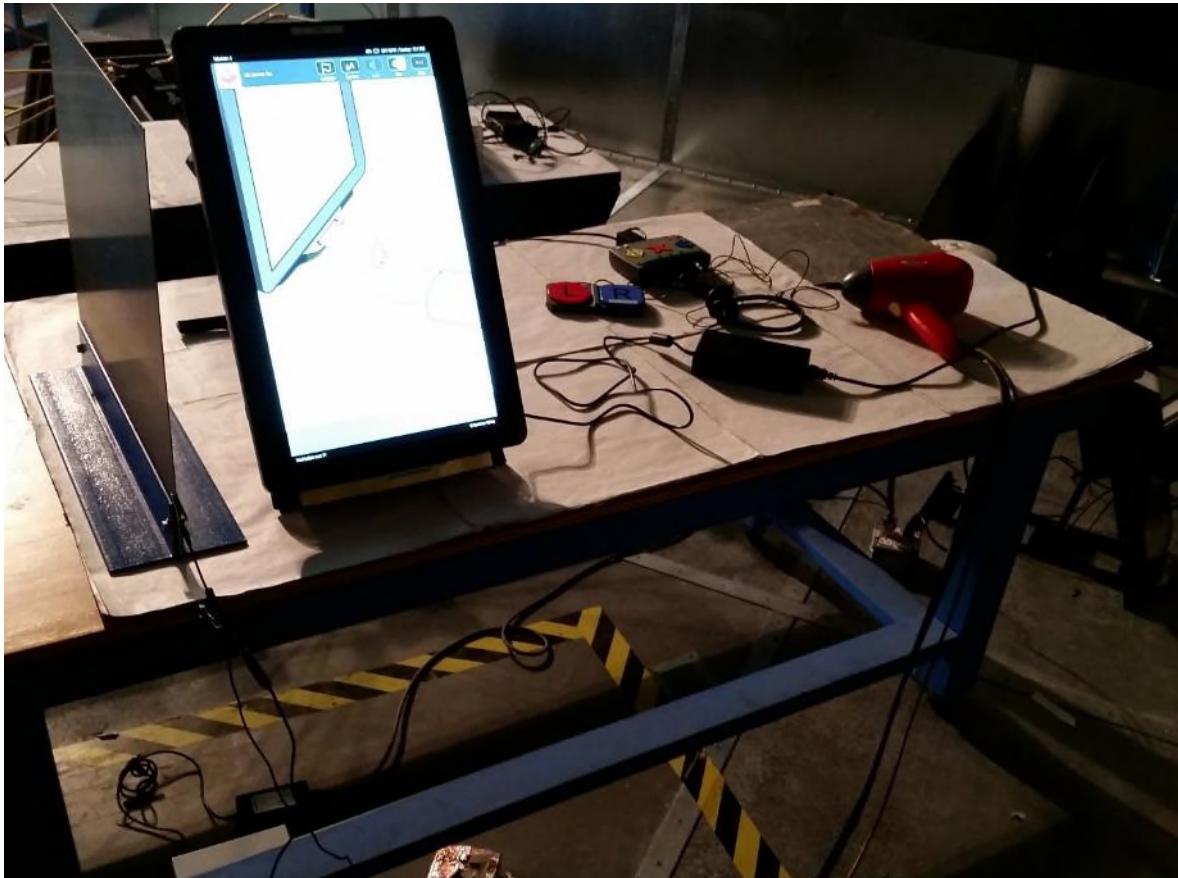


Figure 35 – Electrostatic Disruption Setup (ICX DRE VVPAT)
(ICX DRE Report Printer has an additional printer on the table)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 36 – Electrostatic Disruption Setup (ICX BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 37 – Electromagnetic Susceptibility Setup (ICX DRE VVPAT & Report Printer)

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	



Figure 38 – Electromagnetic Susceptibility Setup (ICX BMD)

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

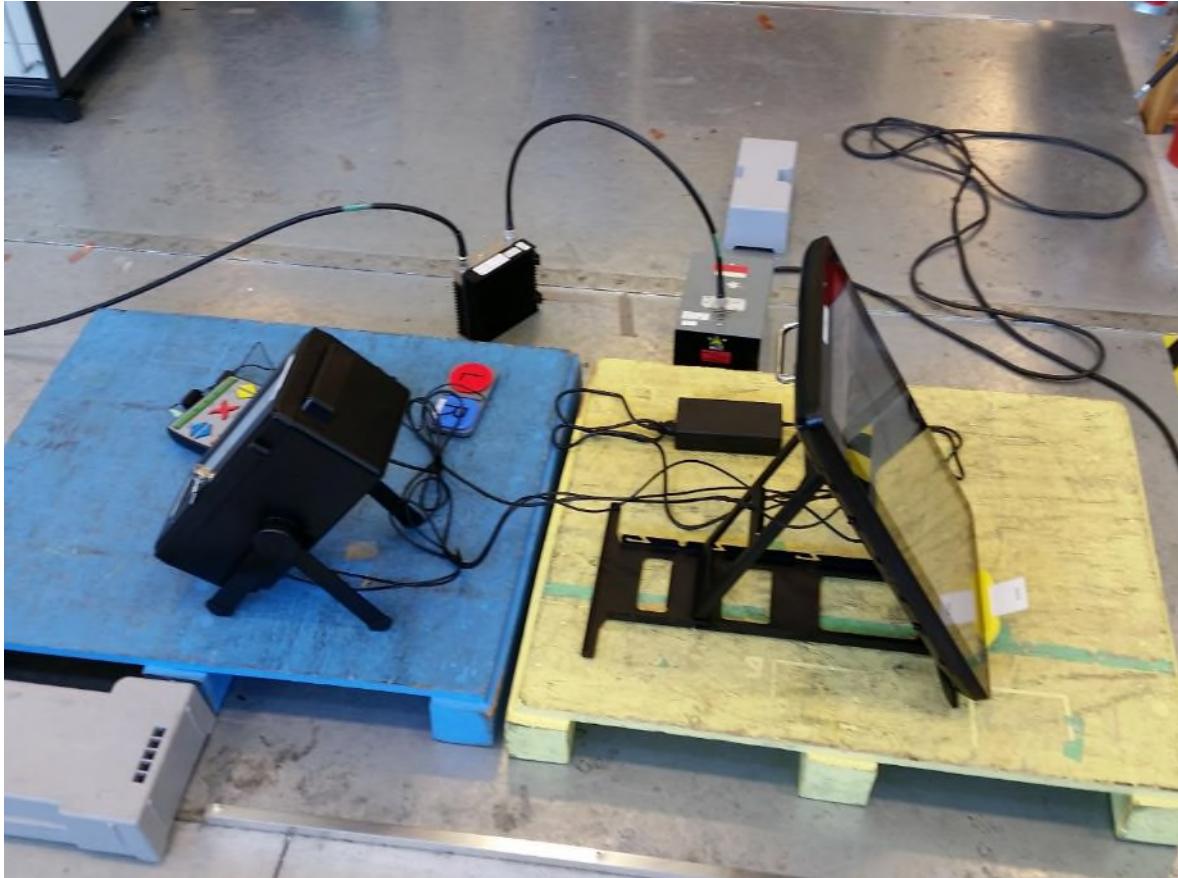


Figure 39 – Conducted RF Immunity Setup (ICX DRE Report Printer)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

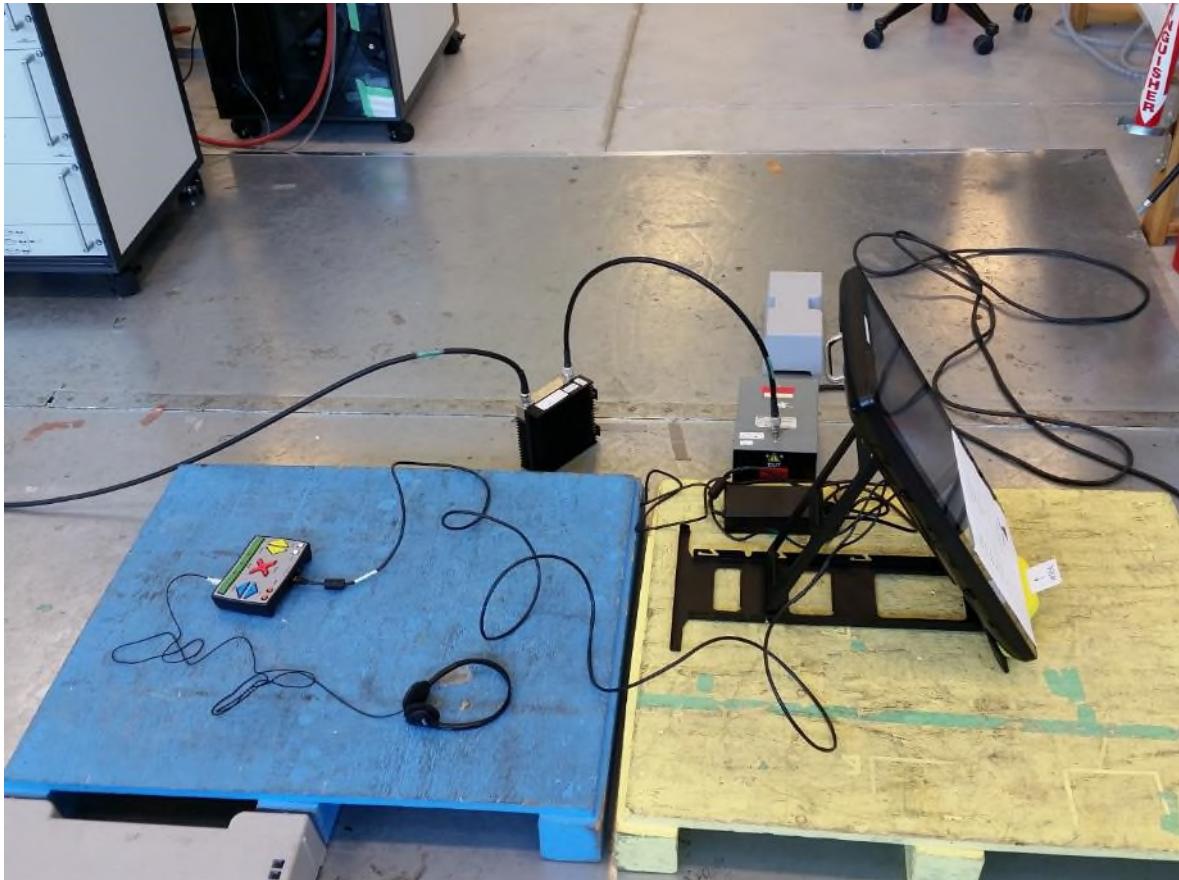


Figure 40 – Conducted RF Immunity Setup (ICX DRE VVPAT)

Client	Pro V&V	 Canada
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	

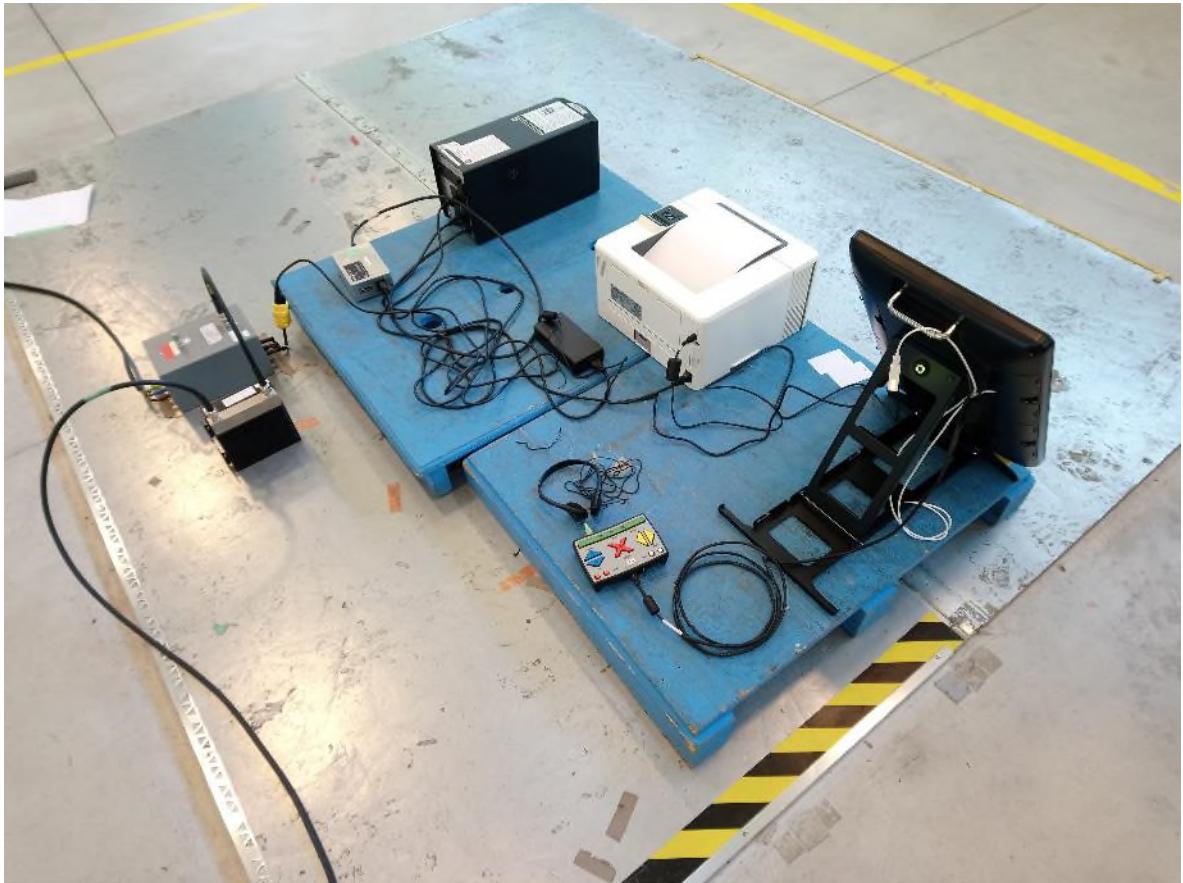


Figure 41 – Conducted RF Immunity Setup (ICX BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 42 – Magnetic Fields Immunity (ICX DRE Report Printer)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1

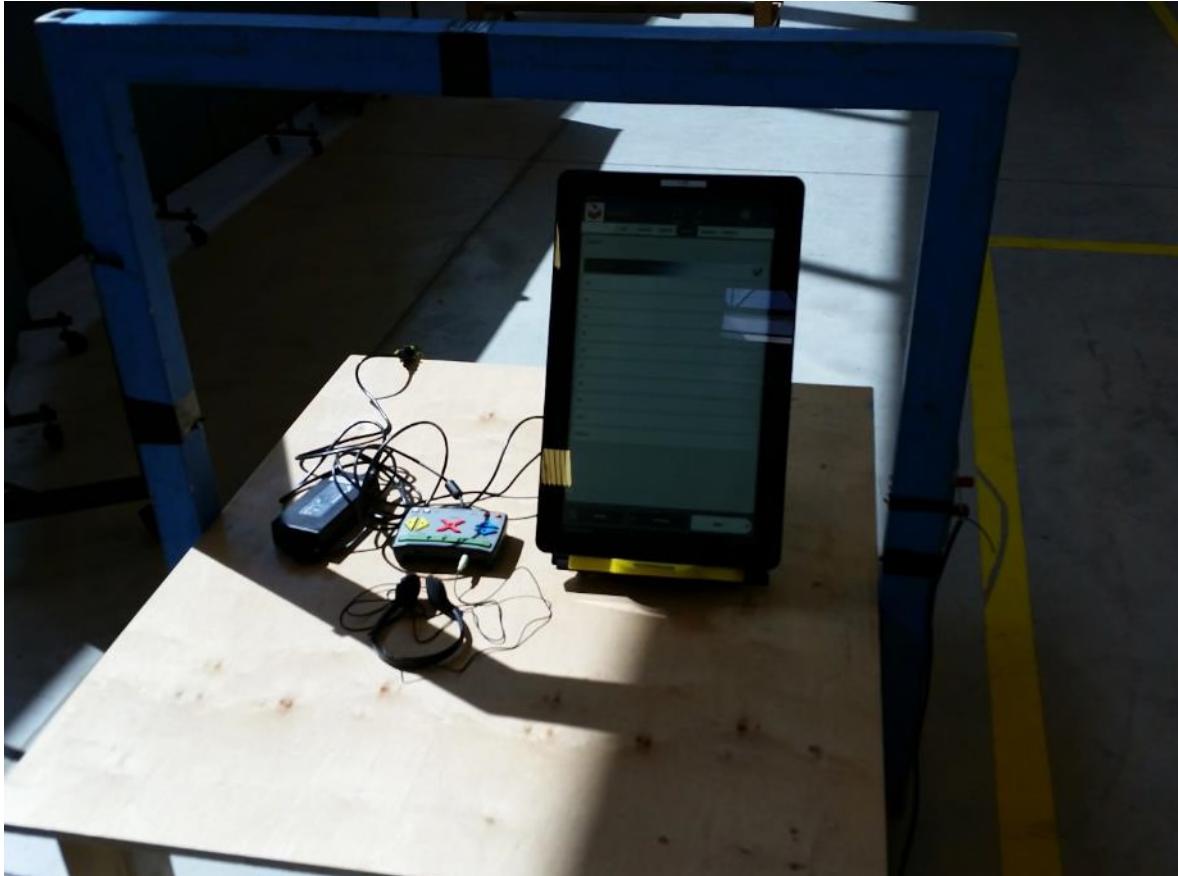


Figure 43 – Magnetic Fields Immunity (ICX DRE VVPAT)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 44 – Magnetic Fields Immunity (ICX BMD)

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Figure 45 – EFT Ferrite Placement for ICX BMD

Client	Pro V&V
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1



Appendix C – Product Marking

Client	Pro V&V	
Product	ICX DRE VVPAT, ICX DRE Report Printer, ICX BMD	
Standard(s)	FCC Part 15 Subpart B / ICES-003 VVSG V1.0 Volume 1	 Canada

Product Marking

Products marketed in the US:

For products that are not intentional radiators and are subject to the 'verification' procedure in the US, according to the FCC, the product shall bear the following statement in a conspicuous location on the device:

This device complies with Part 15 of the FCC Rules.

Operation is subject to the following two conditions:

- (1) this device may not cause harmful interference, and*
- (2) this device must accept any interference received, including interference that may cause undesired operation.*

Where a device is constructed in two or more sections connected by wires and marketed together, the statement specified is required to be affixed only to the main control unit.

When the device is so small or for such use that it is not practicable to place the statement specified on it, the information required by this paragraph shall be placed in a prominent location in the instruction manual or pamphlet supplied to the user or, alternatively, shall be placed on the container in which the device is marketed.

In this case, the following statement may accompany the product:

"This device complies with Part 15 of the FCC Rules. See manual for details"

Also, the FCC identifier or other unique identifier such as a model number and serial number, as appropriate, must be displayed on the device.

Products marketed within Canada:

According to Industry Canada, the following statement shall be permanently affixed to the ITE or displayed electronically and its text must be clearly legible. If the dimensions of the device are too small or if it is not practical to place the label on the device and electronic labeling has not been implemented, the label shall be, upon agreement with Industry Canada, placed in a prominent location in the user manual supplied with the ITE.

CAN ICES-3 ()/NMB-3(*)*

* Insert either "A" or "B" but not both to identify the applicable Class of ITE.