

UltraTech
Group of Labs

FCC TCB & IC CB



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1309



46390-2049



AT-1945



NVLAP LAB CODE 200093-0



SL2-IN-E-1119R



Korea KCC-RRL
CA2049



TL363_B



TPTDP DA1300

3000 Bristol Circle,
Oakville, Ontario,
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November 9, 2015

ELPROTRONIC INC.
35 Austin Rumble Crt,
King City, ON
Canada, L7B 0B2

Attn.: Mr. Gregory Czajkowski

**Subject: Verification Testing under CISPR 22:2008-09 / EN 55022:2010
+AC: 2011, Class B - Information Technology Equipment.**

**Product: XStream-Iso
Model No.: XS-ISO rev 1.0**

Dear Mr. Czajkowski,

The product sample, as provided by you, has been tested and found to comply with
**CISPR 22:2008-09 / EN 55022:2010+ AC: 2011, Class B - Information Technology
Equipment.**

Enclosed you will find a copy of the engineering report. If you have any queries, please
do not hesitate to contact us.

Yours truly,

Tri Minh Luu B.A.Sc.
V.P., Engineering

Encl

VERIFICATION CERTIFICATE



NOT TRANSFERABLE

This Verification Certificate is hereby issued to the named GRANTEE and is VALID ONLY for the equipment identified hereon for use under the rules and regulations listed below:

GRANTEE:	ELPROTRONIC INC.
Address:	35 Austin Rumble Crt King City, Ontario Canada, L7B 0B2
Contact Person:	Mr. Gregory Czajkowski Phone #: +905-539-0424 Fax #: +905 539 0474 Email Address Gregory@elprotronic.com
Equipment Type:	Class B - Information Technology Equipment
Product Name:	XStream-Iso
Model No.:	XS-ISO rev 1.0

The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:	European CISPR 22:2008-09 / EN 55022:2010+AC: 2011
Date of Authorization:	November 9, 2015

- Note(s):** See attached report, UltraTech's File No.:15ELP013_CISPR22B, dated November 9, 2015 for details and conditions of Verification Compliance.

Approved by: Tri M. Luu, BSc.
V.P. – Engineering

UltraTech

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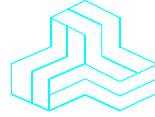


TL363_B



TPTDP
DA1300

ENGINEERING TEST REPORT



XStream-Iso Model No.: XS-ISO rev 1.0

Applicant: **ELPROTRONIC INC.**
35 Austin Rumble Crt
King City, Ontario
Canada, L7B 0B2

Tested in Accordance With

**INTERNATIONAL ELECTROTECHNICAL COMMISSION
(International Special Committee on Radio Interference)
CISPR 22:2008-09 / EN 55022:2010+AC:2011, CLASS B
Information Technology Equipment - Radio Disturbance Characteristics**

UltraTech's File No.: 15ELP013_CISPR22B

This Test report is Issued under the Authority of
Tri M. Luu B.A.Sc.
Vice President of Engineering
UltraTech Group of Labs

Date: November 9, 2015

Report Prepared by: Phuong Ho

Tested by: Mr. Hien Luu & Mr. Quan Ngo, EMI/EMC Technicians

Issued Date: November 9, 2015

Test Date: October 30, 2015

- *The results in this Test Report apply only to the sample(s) tested, and the sample tested is randomly selected.*
- *This report must not be used by the client to claim product endorsement by NVLAP or any agency of the US Government.*

UltraTech

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TL363_B



TPTDP
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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	CISPR 22:2008-09 / EN55022:2010+AC: 2011
Title	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
Purpose of Test:	To gain Verification Compliance with CISPR 22:2008-09 / EN55022:2010+AC: 2011 - Class B.
Test Procedures	Both conducted and Electromagnetic Radiation Disturbance measurements were conducted in accordance with the European Standards CISPR 22:2008-09 / EN55022:2010+AC: 2011 - Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement.
Class B Classification:	<p>Class B ITE is a category of apparatus which satisfies the Class B ITE disturbance limits.</p> <p>Class B is intended primarily for use in domestic environment; the environment where the use of broadcast radio and television receivers may be expected within a distance of 10m of the apparatus concerned, and may include:</p> <ul style="list-style-type: none"> • Equipment with no fixed place of use; for example portable equipment powered by built-in batteries. • Telecommunication terminal equipment powered by a telecommunication network. • Personal computers and auxiliary connected equipment.

The CISPR standard defines the acceptable levels of Conducted Disturbance at Mains Ports and Radiated Disturbance emanated from electronic products. Countries are known to require CISPR compliance are *Australia, Austria, Belgium, Ireland, France, Italy, Spain, Germany, Netherlands, Portugal, Denmark, Luxembourg, Switzerland, Finland, Norway, Sweden, Iceland, Greenland, New Zealand, Japan, United Kingdom, The United States, Canada and etc*

1.2. REVISION HISTORY

Document	Issue Date	Description
15ELP013_CISPR22B	Nov. 9, 2015	Original Document

1.3. RELATED SUBMITTAL(S)/GRANT(S)

None

1.4. NORMATIVE REFERENCES

Publication	Year	Title
CISPR 22 EN 55022 +AC	2008-09, Edition 6.0 2010 2011	Information Technology Equipment - Radio Disturbance Characteristics - Limits and Methods of Measurement
CISPR 16-1-1 +A1 +A2	2006 2006 2007	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-1: Measuring Apparatus
CISPR 16-1-2 +A1: 2004 +A2: 2006	2003	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-2: Conducted disturbances
ANSI C63.4	2009	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT:	
Name:	ELPROTRONIC INC.
Address:	35 Austin Rumble Crt, King City, ON, L7B0B2, Canada
Contact Person:	Gregory Czajkowski
Email Address:	Gregory@elprotronic.com
Telephone No.:	+905-539-0424
Fax No.:	+905 539 0474

MANUFACTURER:	
Name:	ELPROTRONIC INC.
Address:	35 Austin Rumble Crt, King City, ON, L7B0B2, Canada
Contact Person:	Gregory Czajkowski
Email Address:	Gregory@elprotronic.com
Telephone No.:	+905-539-0424
Fax No.:	+905 539 0474

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

The following information (with the exception of the Date of Receipt) has been supplied by the applicant.

Brand Name:	Elprotronic Inc.
Product Name:	XStream-Iso
Model Name or Number:	XS-ISO rev 1.0
Firmware Version Identification Number :	Rev 1.0
Serial Number:	20150002
Oscillator Frequencies:	12 MHz
CPU Frequencies:	120 MHz
Power input ratings:	120/230 VAC, 60/50 Hz
Equipment Environment / Type:	Information Technology Equipment

2.3. FUNCTION /APPLICATION OF THE EUT

2.4. LIST OF COMPONENTS/PARTS OF THE EUT

	Name, Make, Model of Component / Part	Short Description of Use
1	XSream-ISO adapter	-
2	USB cable	-
3	JTAG ribbon cable	-

2.5. LIST OF EUT'S PORTS

Port Number	EUT's Port Description	Number of Identical Ports	Port Type	Cable Type (Shielded/Non-shielded)
1	Power port	1	3 prong	Non-shielded
2	Ribbon port	1	Ribbon	Non-shielded
3	USB port	1	USB	Shielded

2.6. ANCILLARY EQUIPMENT

The EUT was tested while connected to the following representative configuration of ancillary equipment necessary to exercise the ports during tests:

Ancillary Equipment # 1	
Equipment Make and Name:	Acer Laptop Aspire 4830 series
Model Name or Number:	P4LJO
Cable Length & Type:	Shielded
Connected to EUT's Port:	USB

EXHIBIT 3. EUT OPERATING CONDITIONS AND CONFIGURATIONS DURING TESTS

3.1. CLIMATE TEST CONDITIONS

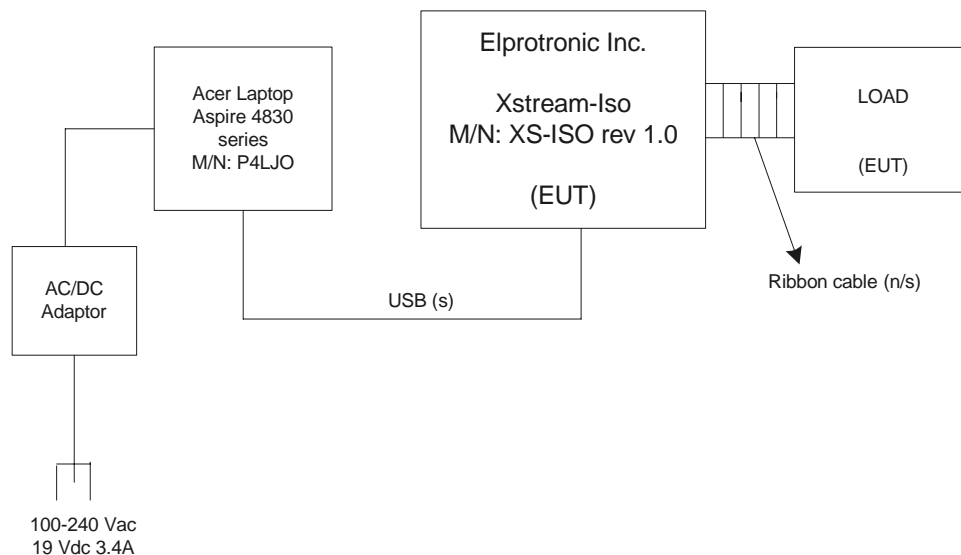
The climate conditions of the test environment are as follows:

Temperature:	23°C
Humidity:	35%
Pressure:	100 kPa
Power input source:	230 Vac

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

Connect XStream-Iso adapter to USB port in PC. Connect 14-wires ribbon cable between XStream-Iso and target device (any example that can be supplied by XStream-Iso). Run application software from PC – FlashPro-ARM and rub the test – e.g. verify – in loop.

3.3. BLOCK DIAGRAM OF TEST SETUP FOR AC POWERLINE CONDUCTED EMISSION & RADIATED EMISSION MEASUREMENTS

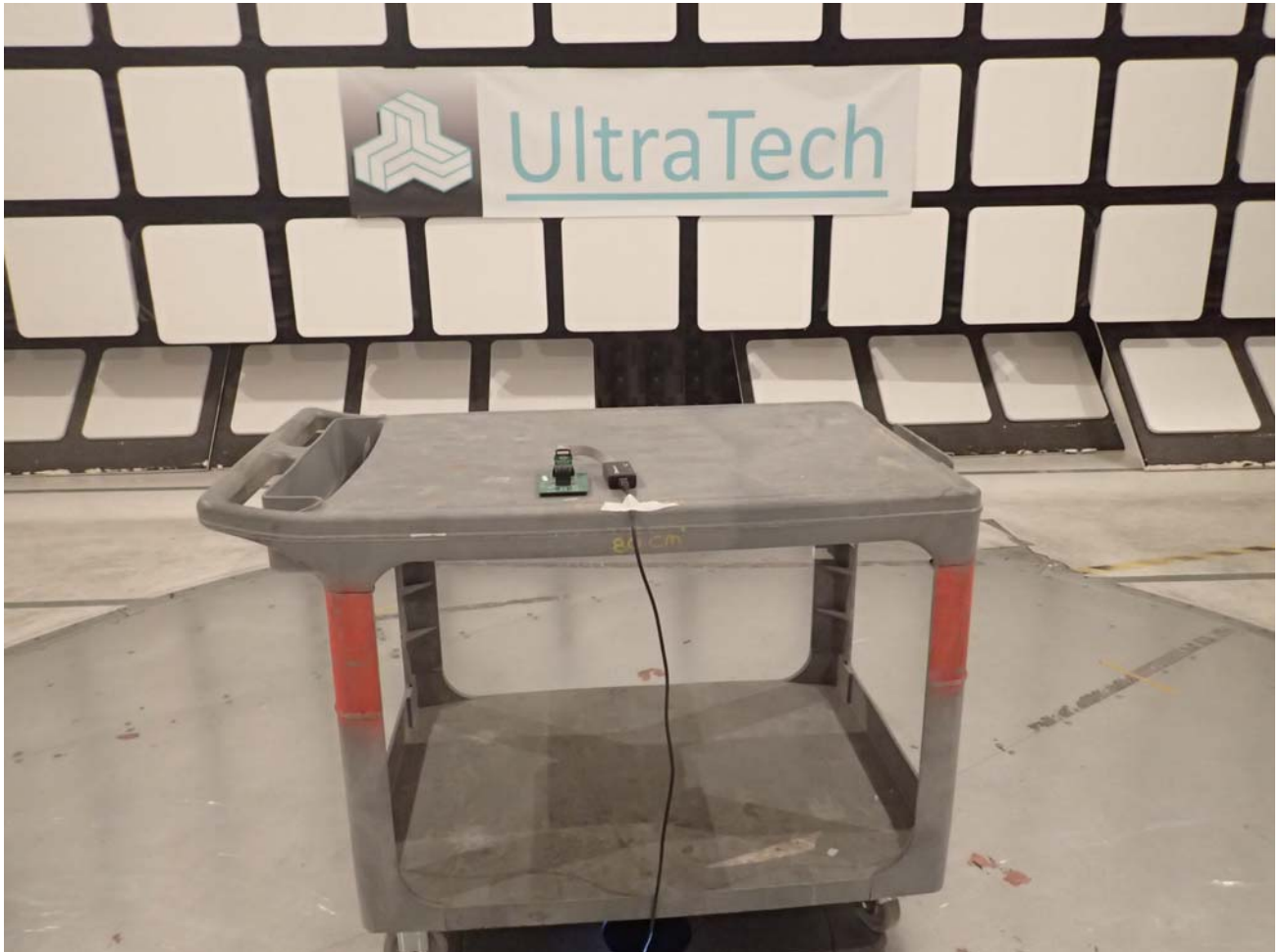


3.4. PHOTOGRAPHS OF TEST SETUP FOR AC CONDUCTED EMISSION MEASUREMENTS





3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS





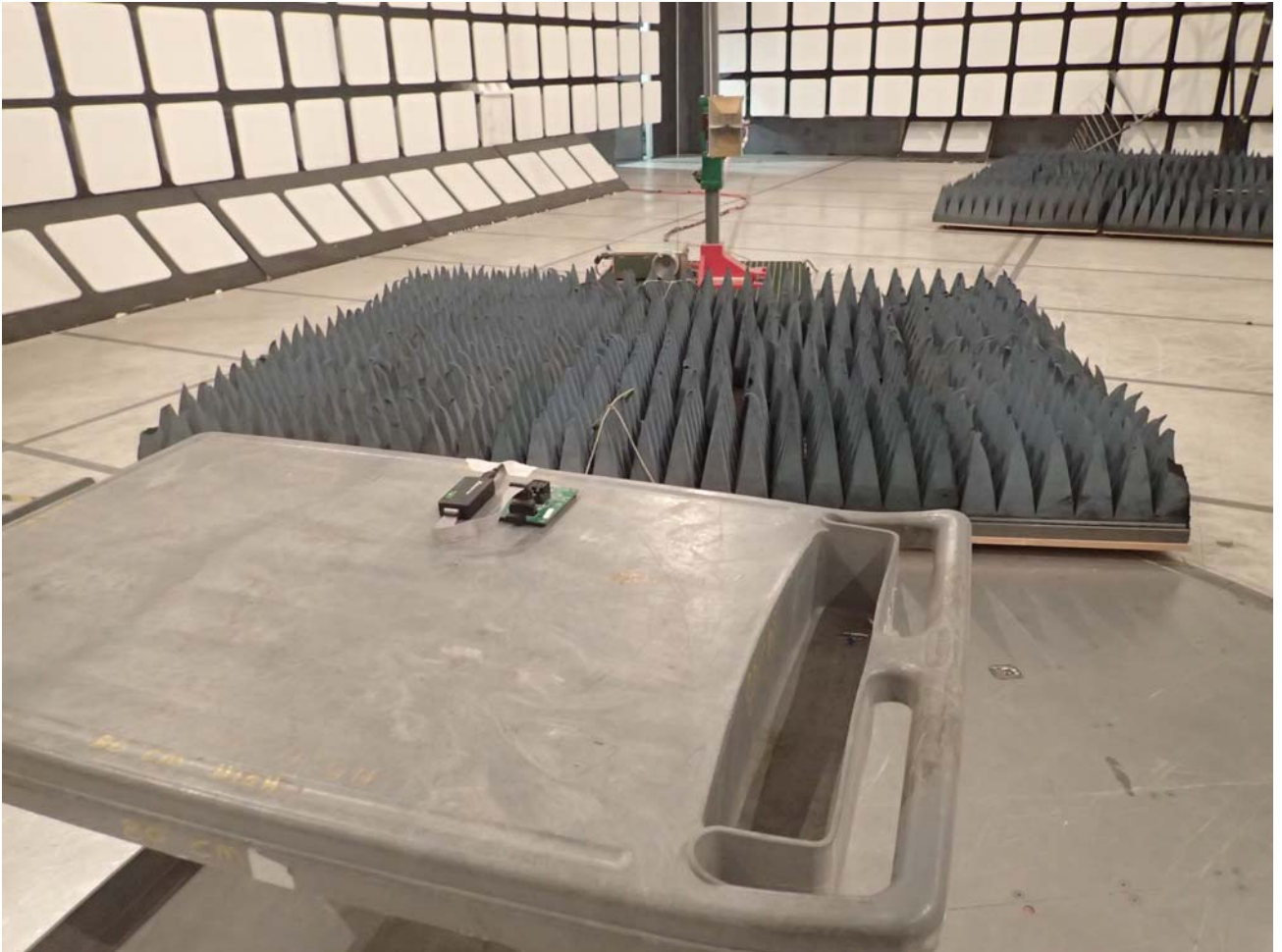


EXHIBIT 4. SUMMARY OF TEST RESULTS

4.1. LOCATION OF TESTS

All of the measurements described in this report were performed at Ultratech Group of Labs located in the city of Oakville, Province of Ontario, Canada.

- AC Power line Conducted Emissions were performed in UltraTech's shielded room, 16'(L) by 12'(W) by 12'(H).
- Radiated Emissions were performed at the Ultratech's 3-10 TDK Semi-Anechoic Chamber situated in the Town of Oakville, province of Ontario. This test site has been calibrated in accordance with ANSI C63.4, and found to be in compliance with the requirements of Sec. 2.948 of the FCC Rules. The descriptions and site measurement data of the Oakville 3-10 TDK Semi-Anechoic Chamber has been filed with FCC office (FCC File No.: 91038) and Industry Canada office (Industry Canada File No.: 2049A-3). Expiry Date: 2017-04-02.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

CISPR 22 EN 55022	TEST REQUIREMENTS	MARGIN BELOW (-) / ABOVE (+) THE LIMITS	COMPLIANCE (YES/NO)
5.1, Table 2, Class B	AC Mains Terminal Disturbance Voltage in the frequency band 150 KHz to 30 MHz	- 18.4 dB @ 1.995 MHz	Yes
5.2, Table 4, Class B	Conducted Common Mode (Asymmetric Mode) Disturbance at Telecommunication Ports in the frequency band 150 KHz to 30 MHz	-	N/A
6, Table 6, Class B	Electromagnetic Radiation Disturbance in the frequency band 30 to 2000 MHz	- 4.4 dB @ 33.90 MHz & 155.91 MHz	Yes

4.3. MODIFICATIONS REQUIRED FOR COMPLIANCE

None

4.4. DEVIATION OF THE STANDARD TEST PROCEDURES

None

EXHIBIT 5. MEASUREMENT DATA

5.1. AC MAINS TERMINAL DISTURBANCE VOLTAGE IN FREQUENCY BAND 150 KHZ TO 30 MHZ @ CISPR 22:2008-09 / EN55022:2010+AC: 2011 [5.1, TABLE 2]

5.1.1. Limits

The equipment shall meet the limits of the following table:

CISPR 22:2008-09 / EN55022:2010+AC: 2011 CLASS B LIMITS			
Test Frequency Range (MHz)	Quasi-Peak (dB μ V)	Average* (dB μ V)	Measuring Bandwidth
0.15 to 0.5	66 to 56*	56 to 46*	RBW = 9 KHz VBW \geq 9 KHz for QP VBW = 1 Hz for Average
0.5 to 5	56	46	RBW = 9 KHz VBW \geq 9 KHz for QP VBW = 1 Hz for Average
5 to 30	60	50	RBW = 9 KHz VBW \geq 9 KHz for QP VBW = 1 Hz for Average

- Decreasing linearly with logarithm of frequency

5.1.2. Method of Measurements

Refer to Test Procedures ULTR P001-2004, CISPR 22 / EN 55022, ANSI C63.4

Calculation of Conducted Emission Voltage (dB μ V):

This is calculated by adding the L.I.S.N factor, Cable loss factor, and Attenuator factor to the measured reading. The basic equation with a sample calculation is as follows:

$$\text{Voltage (dB}\mu\text{V)} = \text{RA} + \text{AF} + \text{CF} + \text{LF}$$

Where

RA	=	Receiver/Analyzer Reading in dB μ V
AF	=	Attenuation Factor in dB
CF	=	Cable loss Factor in dB
LF	=	L.I.S.N Factor in dB

5.1.3. Test Instruments

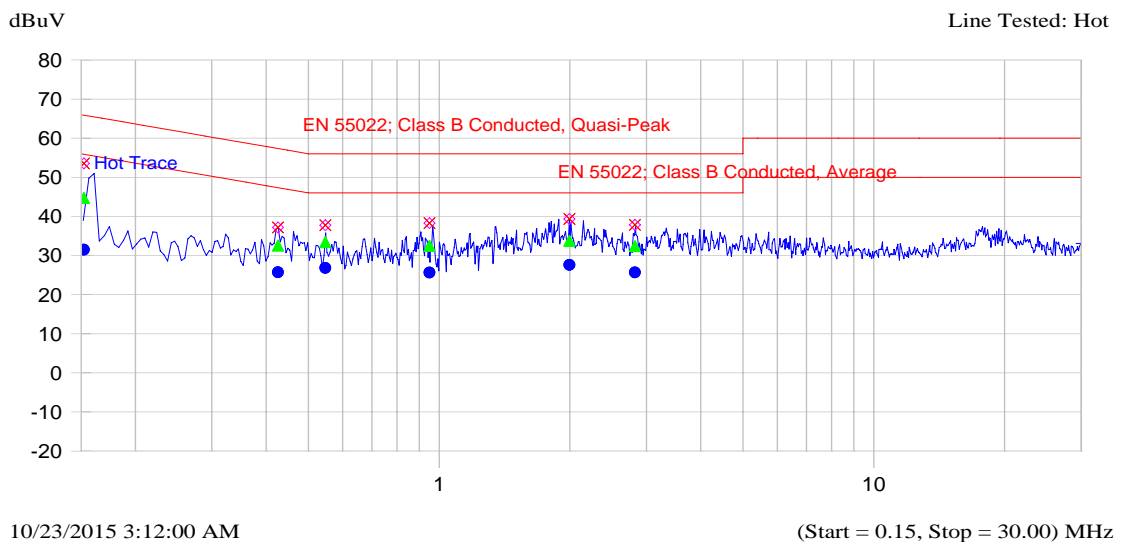
Please refer to Exhibit 6 for Test Instruments and Measurement Uncertainty

5.1.4. Test Results

The emissions were scanned from 150 KHz to 30 MHz at AC mains Terminal via a LISN, and all emissions less than 20 dB below the limits were recorded.

Description: Supply Voltage:230Vac
 Setup Name:EN55022 Class B
 Customer Name: ELPROTRONIC INC
 Project Number: ELP-013Q
 Operator Name: QUAN NGO
 EUT Name: XStream-Iso Adapter
 Date Created: 10/23/2015 2:52:13 AM
 Date Modified: 10/23/2015 3:10:17 AM

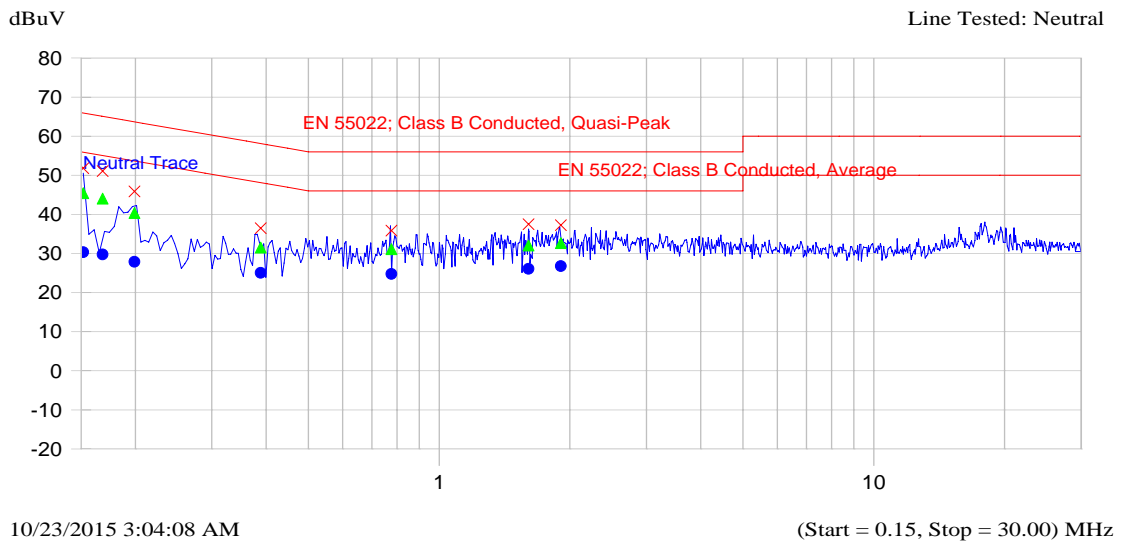
Plot # 1



Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.152	53.5	44.7	-21.2	31.5	-24.4	Hot Trace
0.426	37.2	32.5	-25.5	25.7	-22.4	Hot Trace
0.548	37.7	33.4	-22.6	26.8	-19.2	Hot Trace
0.950	38.3	32.5	-23.5	25.6	-20.4	Hot Trace
1.995	39.4	33.7	-22.3	27.6	-18.4	Hot Trace
2.820	37.8	32.4	-23.6	25.7	-20.3	Hot Trace

Description: Supply Voltage:230Vac
 Setup Name: EN55022 Class B
 Customer Name: ELPROTRONIC INC
 Project Number: ELP-013Q
 Operator Name: QUAN NGO
 EUT Name: XStream-Iso Adapter
 Date Created: 10/23/2015 2:52:13 AM
 Date Modified: 10/23/2015 3:00:28 AM

Plot # 2



Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.152	51.8	45.4	-20.5	30.3	-25.6	Neutral Trace
0.168	51.1	44.0	-21.4	29.7	-25.7	Neutral Trace
0.199	45.9	40.4	-24.2	27.9	-26.7	Neutral Trace
0.389	36.5	31.5	-27.6	25.1	-24.1	Neutral Trace
0.776	35.8	31.1	-24.9	24.7	-21.3	Neutral Trace
1.607	37.5	32.0	-24.0	26.0	-20.0	Neutral Trace
1.905	37.2	32.7	-23.3	26.8	-19.2	Neutral Trace

5.2. ELECTROMAGNETIC RADIATION DISTURBANCE FROM 30 TO 6000 MHZ @ CISPR 22:2008-09 / EN55022:2010+AC: 2011[6, TABLES 6 & 9]

5.2.1. Limits

Test Frequency Range (MHz)	Class B Limits (dB μ V/m)	EMI Detector Used	Measuring Bandwidth (KHz)	Measurement Distance (meters)
30 – 230	30.0	Quasi-Peak	RBW = 120 KHz, VBW \geq 120 KHz	10
230 – 1000	37.0	Quasi-Peak	RBW = 120 KHz, VBW \geq 120 KHz	10
1000 – 3000	70.0 50.0	Peak Average	RBW = 1 MHz, VBW \geq 1 MHz	3
3000 – 6000	74.0 54.0	Peak Average	RBW = 1 MHz, VBW \geq 1 MHz	3

5.2.2. Method of Measurements

Refer to Exhibit 7 of this report, CISPR 22:2008-09 / EN55022:2010+AC: 2011, CISPR 16-1-1 and ANSI C63.4. The EUT shall be scanned from 30 to 6000 MHz.

Calculation of Field Strength:

The field strength is calculated by adding the calibrated antenna factor and cable factor, and subtracting the Amplifier gain (if any) from the measured reading. The basic equation with a sample calculation is as follows:

$$FS = RA + AF + CF - AG$$

Where FS = Field Strength
 RA = Receiver/Analyzer Reading
 AF = Antenna Factor
 CF = Cable Attenuation Factor
 AG = Amplifier Gain

5.2.3. Test Instruments

Please refer to Exhibit 6 for Test Instruments and Measurement Uncertainty

5.2.4. Test Results

The emissions were scanned from 30 to 1000 MHz at 10 Meters distance and all emissions less than 20 dB below the limits were recorded.

FREQUENCY (MHz)	RF LEVEL (dBuV/m)	DETECTOR USED (PEAK/QP)	ANTENNA PLANE (H/V)	LIMIT (dBuV/m)	MARGIN (dB)	PASS/ FAIL
33.90	25.60	QP	V	30.0	-4.4	PASS
84.05	23.68	QP	V	30.0	-6.3	PASS
155.91	25.65	PEAK	V	30.0	-4.4	PASS

No significant Radiated Emissions was found in the frequency range from 1 to 2 GHz at 3 Meters distance.

EXHIBIT 6. TEST INSTRUMENTS & MEASUREMENT UNCERTAINTY (K=2, 95% CONFIDENCE LEVEL)

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC:2003 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

6.1. LINE CONDUCTED EMISSION MEASUREMENT UNCERTAINTY (0.15-30 MHZ)

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Calibration Due Date
Spectrum Analyzer	HP	E7401A	US40240432	9 kHz–26.5 GHz	Apr. 9, 2017
Attenuator	Pasternack	PE7010-20	-	DC–2 GHz	Feb. 3, 2017
LISN Used	EMCO	3825/2	8907-1531	10 kHz–100 MHz	Sep. 29, 2016

Test Software: Agilent (HP) designed E7415A EMI Test Measurement Software version A.01.40 is used for automated measurement.

Test Date: October 30, 2015

	Line Conducted Emission Measurement Uncertainty (9 kHz – 30 MHz):	Measured	Limit
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 1.44	± 1.8
U	Expanded uncertainty U: $U = 2u_c(y)$	± 2.89	± 3.6

6.2. RADIATED EMISSION MEASUREMENT UNCERTAINTY

Test Instruments	Manufacturer	Model No.	Serial No.	Frequency Range	Cal Due Date
EMI Receiver	Rohde & Schawrz	ESU40	100037	20 Hz to 40 GHz	May 8, 2017
Pre Amplifier	Com-Power	PAM-0118	551016	500 MHz to 18 GHz	Jan. 6, 2016
Biconilog Antenna	EMCO	3142C	00026873	26 – 3000 MHz	April 14, 2016
Horn Antenna	EMCO	3115	9911-5955	1GHz – 18 GHz	Mar. 26, 2016
Semi-Anechoic Chamber	TDK	FCC: 91038 IC: 2049A-3	--	--	April 2, 2017

Test Date: October 30, 2015

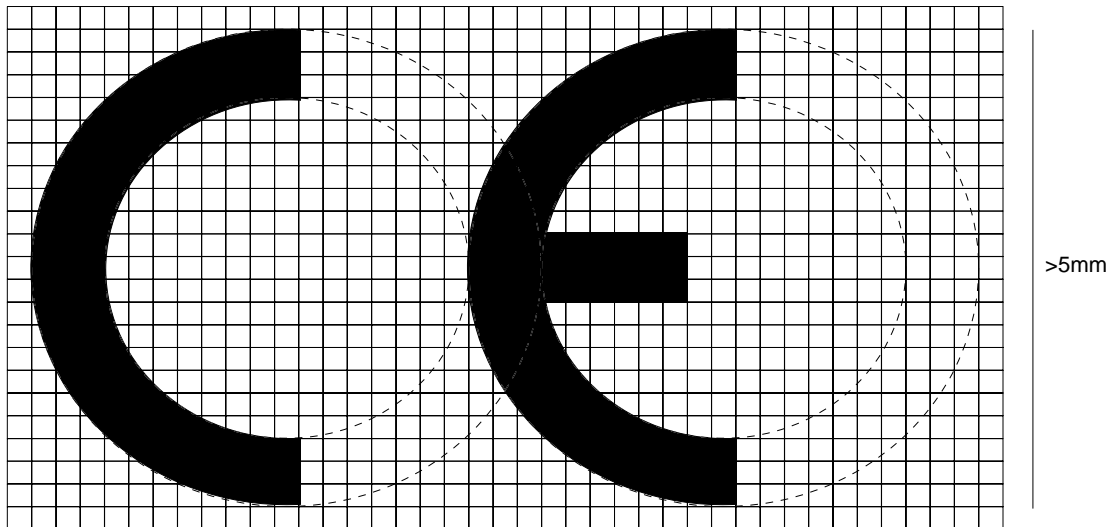
	Radiated Emission Measurement Uncertainty @ 10m, Horizontal (30-1000 MHz):	Measured (dB)	Limit (dB)
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 2.32	± 2.6
U	Expanded uncertainty U: $U = 2u_c(y)$	± 4.65	± 5.2

	Radiated Emission Measurement Uncertainty @ 10m, Vertical (30-1000 MHz):	Measured (dB)	Limit (dB)
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 2.32	± 2.6
U	Expanded uncertainty U: $U = 2u_c(y)$	± 4.64	± 5.2

	Radiated Emission Measurement Uncertainty @ 3 m, Horizontal & Vertical (1 – 18 GHz):	Measured (dB)	Limit (dB)
u_c	Combined standard uncertainty: $u_c(y) = \sqrt{\sum_{i=1}^m u_i^2(y)}$	± 1.87	Under consideration
U	Expanded uncertainty U: $U = 2u_c(y)$	± 3.75	Under consideration

EXHIBIT 7. LABELLING REQUIREMENTS

The CE Mark with respect to the EMC Directive 2014/30/EU



The CE mark shall consist of the initials “CE” taking the following form

- If the CE marking is reduced or enlarged, the proportions given in the above graduated drawing must be respected.
- Where apparatus is the subject of other Directives covering other aspects and which also provide for the CE conformity marking, the latter shall indicate that the appliances are also presumed to conform to those other Directives.
- However, where one or more of these Directives allow the manufacturer, during a transitional period, to choose which arrangements to apply, the CE mark shall indicate conformity only to the Directives applied by the manufacturer. In this case, particulars of the Directive applied, as published in the Official Journal of the European Communities, must be given in the documents, notices or instructions required by the Directives and accompanying such apparatus.

The various components of the CE marking must have substantially the same vertical dimension, which may not be less than 5mm.