UltraTech
Group of Labs

FCC TCB & IC CB

Ultratech's Accreditations:

0685

91038

1309

Industry Canada
Industrie Canada
Approved Test Facility
46390-2049

NVLAP LAB CODE 200093-0

SL2-IN-E-1119R

Korea KCC-RRA
CA2049

TL363_B

TPTDP DA1300

3000 Bristol Circle,
Oakville, Ontario,
Canada L6H 6G4

Tel.: (905) 829-1570
Fax.: (905) 829-8050

Website: www.ultratech-labs.com
Email: vic@ultratech-labs.com

July 6, 2015

Elprotronic Inc.
35 Austin Rumble Court,
King City, ON,
Canada, L7B 0B2

Attn.: **Mr. Grzegorz Czajkowski**

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

Product: **USB Isolator – Full speed**
Model No.: **USB-FS-ISO**

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 A - Information Technology Equipment.**

Note: Class A ITE is category of all other ITE which satisfies the Class A ITE limits but not the Class B ITE limits. Such equipment should not be restricted in its sales but the following warning shall be included in the instructions for use.

WARNING:
This is a class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

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

Yours truly,

Tri Minh Luu BASc.
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 Court, King City. Ontario, Canada, L7B 0B2
Contact Person:	Mr. Grzegorz Czajkowski Phone #: 905-539-0424, 416-436-2879 Fax #: 905-539-0474 Email Address: Gregory@elprotronic.com
Equipment Type:	Class A - Information Technology Equipment
Product Name:	USB Isolator-Full speed
Model No.:	USB-FS-ISO
The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:	European CISPR 22:2008-09 / EN55022:2010+AC: 2011
Date of Authorization:	July 6 2015

- **Note(s):** *See attached report, UltraTech's File No.:* 15ELP-011-CISPR22A, *dated* July 6, 2015 *for details and conditions of Verification Compliance.*

Approved by: Tri M. Luu BASc.
V.P. – Engineering

UltraTech

3000 Bristol Circle, Oakville, Ontario, Canada, L6H 6G4
Tel.: (905) 829-1570 Fax.: (905) 829-8050
Website: www.ultratech-labs.com Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com

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ENGINEERING TEST REPORT

USB Isolator-Full speed
Model No.: USB-FS-ISO

Applicant: ***Elprotronic Inc.***
35 Austin Rumble Court,
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, CLASS A
Information Technology Equipment - Radio Disturbance Characteristics

UltraTech's File No.: 15ELP-011-CISPR22A

This Test report is Issued under the Authority of Tri M. Luu BASc. Vice President of Engineering UltraTech Group of Labs Date: July 6, 2015	
Report Prepared by: Lien Trinh Issued Date: July 6, 2015	Tested by: Mr. Hien Luu, EMI/EMC Technician Test Dates: June 23, 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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91038	1309	46390-2049	NVLAP LAB CODE 200093-0	SL2-IN-E-1119R	CA2049	TL363_B	TPTDP DA1300

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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 A.
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 A Classification:	Class A ITE is category of all other ITE which satisfies the Class A ITE limits but not the Class B ITE limits. Such equipment should not be restricted in itS sales buT the following warning shall be included in the instructions for use. **WARNING:** **This is a class A product. In domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.**

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

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 Court, King City, ON, L7B0B2, Canada
Contact Person:	Mr. Gizegorz Czajkowski Phone #: 905-539-0424, 416-436-2879 Fax #: 905-539-0474 Email Address: Gregory@elprotronic.com

MANUFACTURER:	
Name:	Elprotronic Inc.
Address:	35 Austin Rumble Court, King City, ON, L7B0B2, Canada
Contact Person:	Mr. Gizegorz Czajkowski Phone #: 905-539-0424, 416-436-2879 Fax #: 905-539-0474 Email Address: Gregory@elprotronic.com

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:	USB Isolator – Full speed.
Model Name or Number:	USB-FS-ISO
Serial Number:	002
Type of Equipment:	Household, Appliance, Industrial. Scientific, Medical
Power input ratings:	5V 0.5A from USB port

2.3. FUCTION/ DESCRIPTION OF EQUIPMENT

The EUT is a device to monitor communication between PC and target device.

2.4. LIST OF COMPONENTS/PARTS OF THE EUT

Index Number	Parts Description	Parts Number/ Model Number
1	USB-FS-ISO	DUT power from PC (USB port)

2.5. LIST OF EUT'S PORTS

None

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	
Description:	Acer Laptop
Model Number:	Aspire
Serial Number:	4830T-6605
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:	21°C
Humidity:	51%
Pressure:	102 kPa
Power input source:	5 VDC, 0.5A from USB port

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

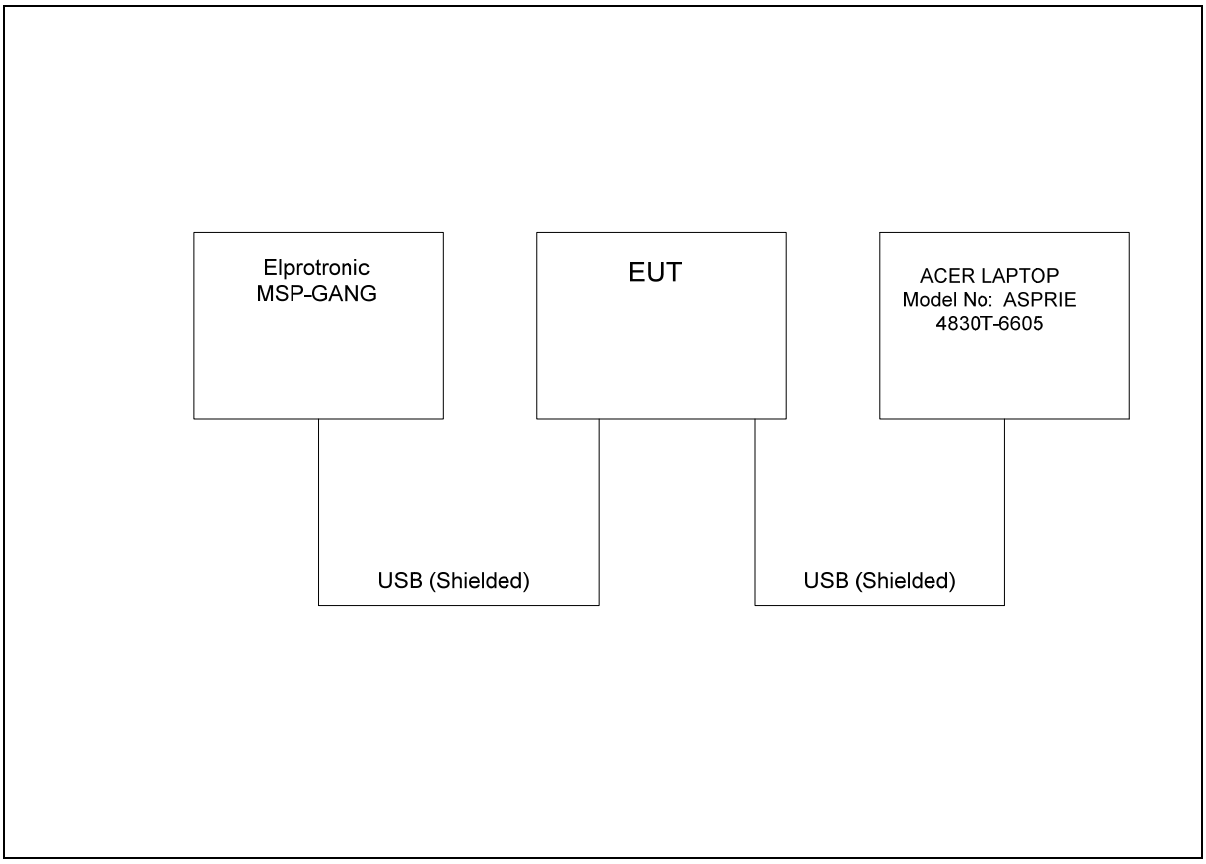
I) Equipment Setup / operating instructions:

Insert the USB-FS-ISO between PC and any other device to make a USB communication going via USB-FS-ISO to destination PC. Destination USB device is powered via USB-FS-ISO from PC-USB (5 VDC, 400mA only)

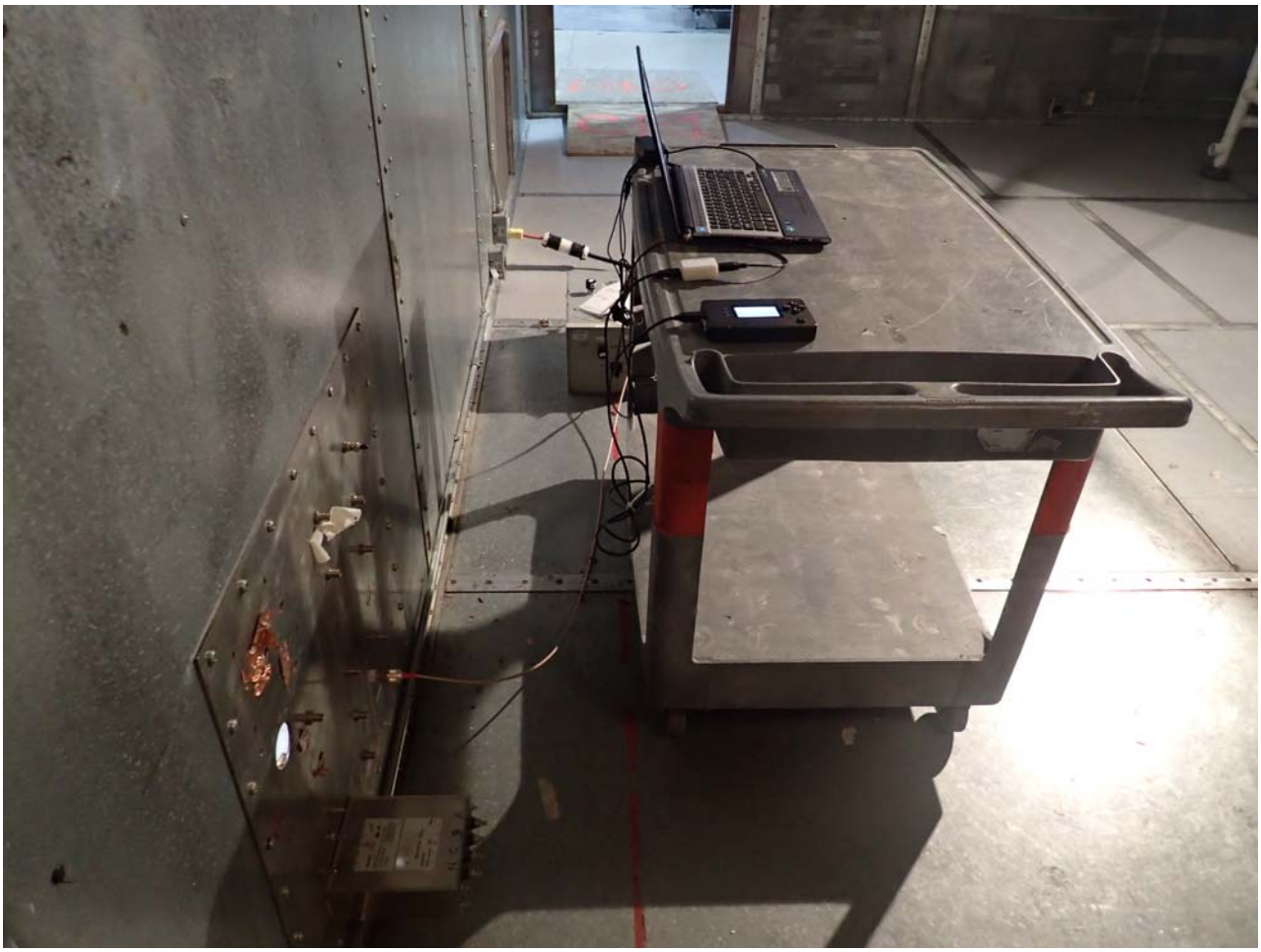
II) Description of normal operation during tests:

Make USB communication between PC and target device, then insert the USB-FS-ISO between PC and target device. Check the USB communication work between PC and target device via USB-FS-ISO.

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

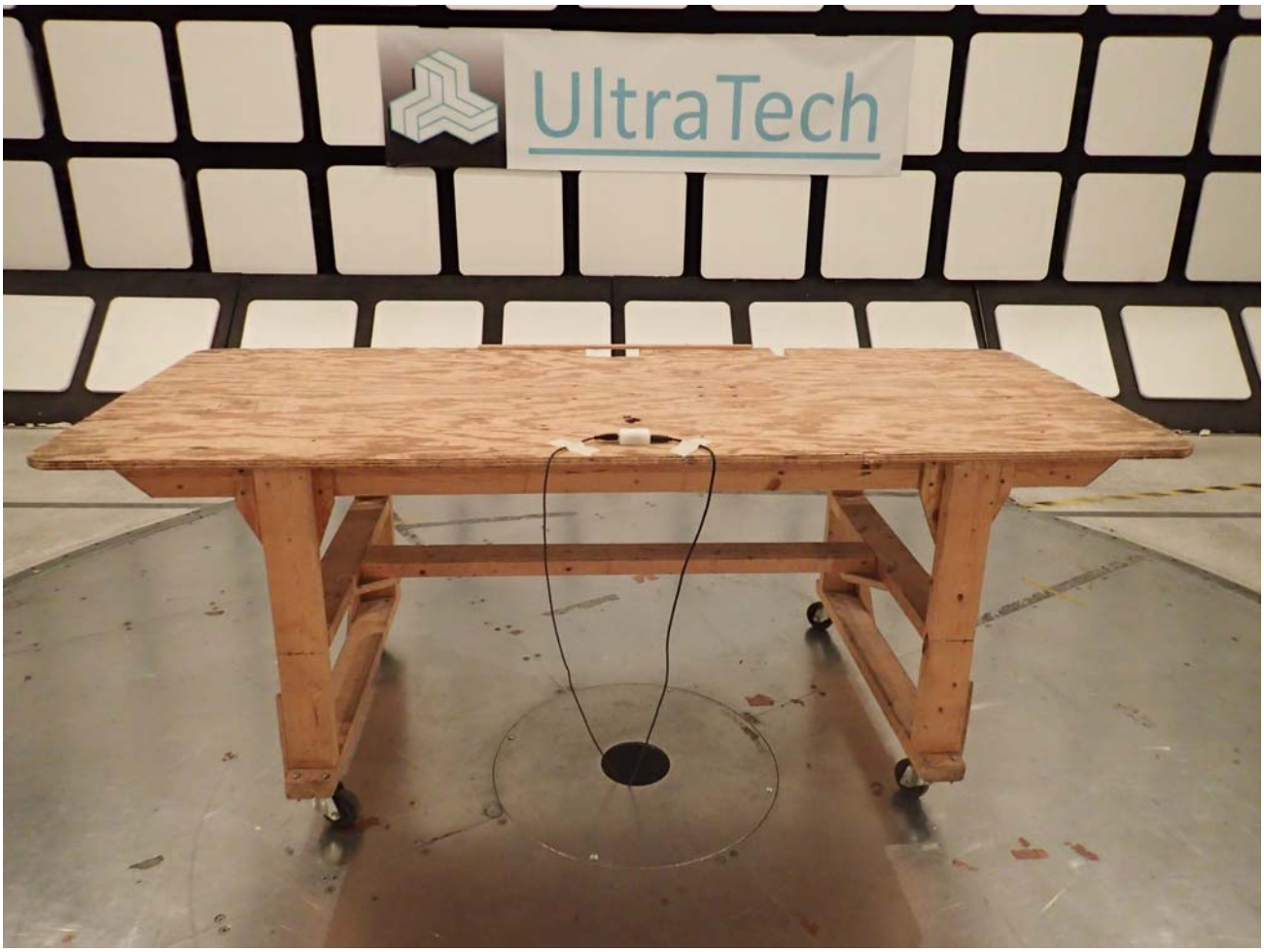


EXHIBIT 4. SUMMARY OF TEST RESULTS

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 Powerline 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	COMPLAINCE (YES/NO)
5.1, Table 1, Class A	AC Mains Terminal Disturbance Voltage in the frequency band 150 KHz to 30 MHz	-15.8 dB @ 27.385 MHz	Yes
6, Table 5, Class A	Electromagnetic Radiation Disturbance in the frequency band 30 to 6000 MHz	-3.0 dB @ 64.60 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 1]

5.1.1. Limits

The equipment shall meet the limits of the following table:

	CISPR 22:2008-09 / EN55022:2010+AC: 2011 CLASS A LIMITS		
Test Frequency Range (MHz)	**Quasi-Peak (dBµV)**	**Average* (dBµV)**	**Measuring Bandwidth**
0.15 to 0.5	79	66	RBW = 9 KHz VBW ≥ 9 KHz for QP VBW = 1 Hz for Average
0.5 to 30	73	60	RBW = 9 KHz VBW ≥ 9 KHz for QP VBW = 1 Hz for Average

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 (dBµV):

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:

Voltage (dBµV) = RA + AF + CF + LF

Where

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

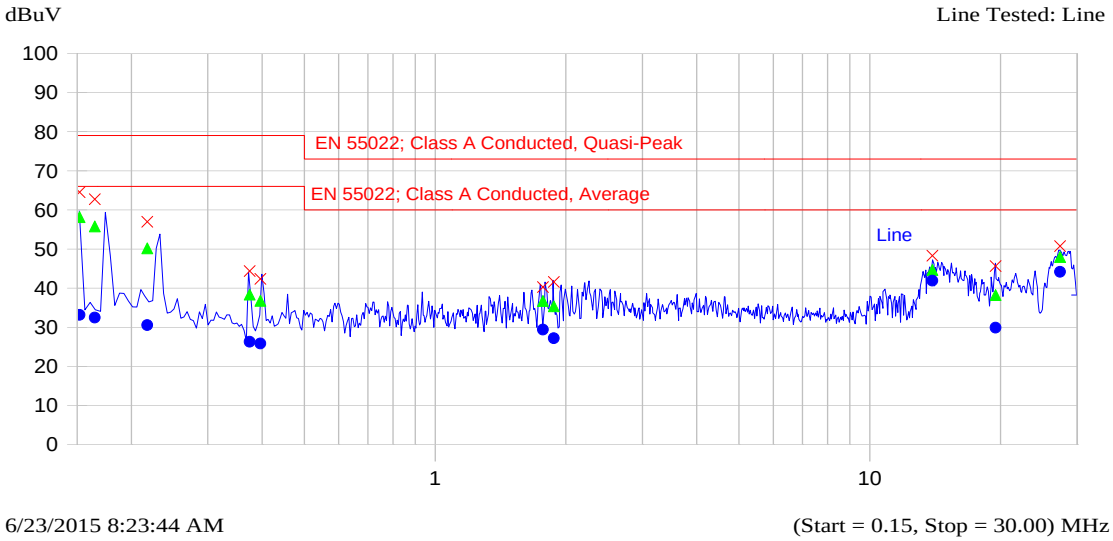
5.1.3. Test Instruments

Please refer to Exhibit 6 for Test Instruments and Measurement Uncertainty

5.1.4. Test Results

EN55022; Class A Power Line Conducted Emission

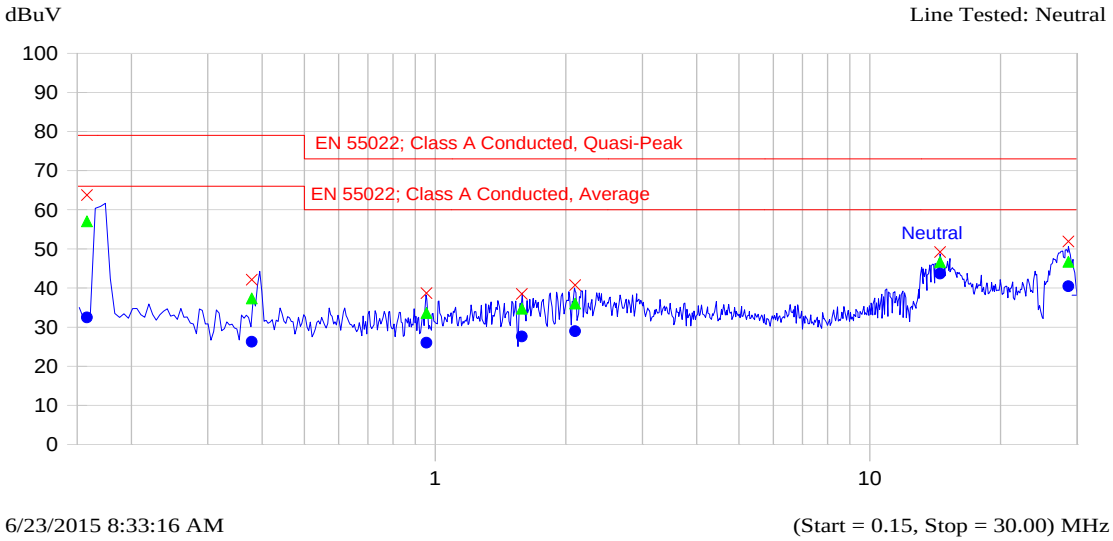
Description: AC 230V
Setup Name: EN55022, Class A
Customer Name: Elprotronic INC
Project Number: ELP-011Q
Operator Name: wei
EUT Name: USB-F5-ISO
Date Created: 6/23/2015 7:35:21 AM
Date Modified: 6/23/2015 8:04:47 AM



Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.152	64.5	58.2	-20.8	33.2	-32.8	Line
0.165	62.7	55.8	-23.2	32.4	-33.6	Line
0.218	57.0	50.2	-28.8	30.5	-35.5	Line
0.375	44.4	38.3	-40.7	26.3	-39.7	Line
0.396	42.4	36.7	-42.3	25.9	-40.1	Line
1.771	40.3	36.7	-36.3	29.4	-30.6	Line
1.875	41.6	35.4	-37.6	27.2	-32.8	Line
13.936	48.3	44.7	-28.3	41.9	-18.1	Line
19.469	45.6	38.2	-34.8	29.9	-30.1	Line
27.385	50.7	47.9	-25.1	44.2	**-15.8**	Line

EN55022; Class A Power Line Conducted Emission

Description: AC 230V
Setup Name: EN55022, Class A
Customer Name: Elprotronic INC
Project Number: ELP-011Q
Operator Name: wei
EUT Name: USB-F5-ISO
Date Created: 6/23/2015 7:35:21 AM
Date Modified: 6/23/2015 8:31:12 AM



Frequency MHz	Peak dBuV	QP dBuV	Delta QP-QP Limit dB	Avg dBuV	Delta Avg-Avg Limit dB	Trace Name
0.158	63.8	57.0	-22.0	32.5	-33.5	Neutral
0.379	42.1	37.3	-41.7	26.3	-39.7	Neutral
0.955	38.7	33.6	-39.4	26.0	-34.0	Neutral
1.584	38.5	34.7	-38.3	27.6	-32.4	Neutral
2.099	40.7	36.0	-37.0	28.9	-31.1	Neutral
14.512	49.2	46.6	-26.4	43.7	-16.3	Neutral
28.648	51.9	46.7	-26.3	40.5	-19.5	Neutral

5.2. ELECTROMAGNETIC RADIATION DISTURBANCE FROM 30 TO 6000 MHZ @ CISPR 22:2008-09 / EN55022:2010+AC: 2011 [6, TABLES 5 & 8]

5.2.1. Limits

Test Frequency Range (MHz)	Class A Limits (dBµV/m)	EMI Detector Used	Measuring Bandwidth (KHz)	Measurement Distance (meters)
30 – 230	40.0	Quasi-Peak	RBW = 120 KHz, VBW ≥ 120 KHz	10
230 – 1000	47.0	Quasi-Peak	RBW = 120 KHz, VBW ≥ 120 KHz	10
1000 – 3000	76.0 56.0	Peak Average	RBW = 1 MHz, VBW ≥ 1 MHz	3
3000 – 6000	80.0 60.0	Peak Average	RBW = 1 MHz, VBW ≥ 1 MHz	3

5.2.2. Method of Measurements

Refer to Test Procedures ULTR P001-2004, CISPR 22 / EN 55022, 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 MHz to 1 GHz 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
45.1	36.2	QP	V	40.0	-3.8	PASS
48.1	32.9	QP	V	40.0	-7.1	PASS
60.2	36.9	PEAK	V	40.0	-3.1	PASS
60.2	23.2	PEAK	H	40.0	-16.8	PASS
64.6	37.0	PEAK	V	40.0	**-3.0**	PASS
64.6	21.0	PEAK	H	40.0	-19.0	PASS
70.0	35.9	QP	V	40.0	-4.1	PASS
70.0	21.1	PEAK	H	40.0	-19.0	PASS
77.4	36.0	PEAK	V	40.0	-4.0	PASS
77.4	26.7	PEAK	H	40.0	-13.3	PASS
84.1	36.8	PEAK	V	40.0	-3.2	PASS
84.1	28.2	PEAK	H	40.0	-11.9	PASS
120.2	36.0	PEAK	V	40.0	-4.1	PASS
120.2	22.3	PEAK	H	40.0	-17.7	PASS
131.0	36.9	PEAK	V	40.0	-3.1	PASS
131.0	26.4	PEAK	H	40.0	-13.6	PASS
144.0	36.7	PEAK	V	40.0	-3.4	PASS
144.0	28.9	PEAK	H	40.0	-11.1	PASS
156.0	35.2	QP	V	40.0	-4.8	PASS
156.0	27.1	PEAK	H	40.0	-13.0	PASS
166.8	35.9	PEAK	V	40.0	-4.1	PASS
166.8	29.8	PEAK	H	40.0	-10.2	PASS
179.2	36.9	PEAK	V	40.0	-3.1	PASS
179.2	35.1	PEAK	H	40.0	-5.0	PASS
204.1	35.1	PEAK	V	40.0	-4.9	PASS
204.1	36.9	PEAK	H	40.0	-3.1	PASS
215.0	35.6	PEAK	V	40.0	-4.4	PASS
215.0	33.0	PEAK	H	40.0	-7.0	PASS
228.1	29.0	QP	V	40.0	-11.1	PASS
228.1	35.2	QP	H	40.0	-4.8	PASS

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	Hewlett Packard	HP 8593EM	3412A00103	9KHz-26.5 GHz	Apr 9, 2017
Attenuator	Pasternack	PE7010-20	N/A	DC to 2 GHz	Feb 03, 2016
L.I.S.N	EMCO	3825/2	2209	10kHz-100MHz	Sep 03, 2015

Test Date: June 23, 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 08, 2017
Biconilog Antenna	EMCO	3142C	00026873	26 – 3000 MHz	April 14, 2016
Semi-Anechoic Chamber	TDK	FCC: 91038 IC: 2049A-3	--	--	April 2, 2017

Test Date: June 23, 2015

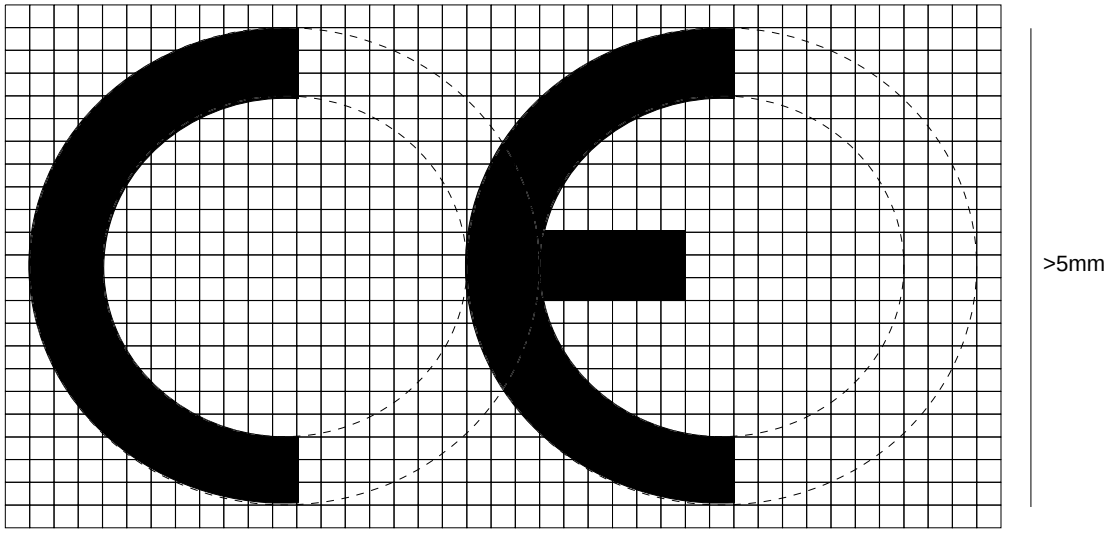
	Radiated Emission Measurement Uncertainty @ 10m, Horizontal (30-1000 MHz):	**Measured (dB)**	**Limit (dB)**
u_c	**Combined standard uncertainty:** $u_c(y) = \sqrt{\sum_{I=1}^{m} u_i^2(y)}$	**± 2.32**	**± 2.6**
U	**Expanded uncertainty U:** $U = 2u_c(y)$	**± 4.65**	**± 5.2**

	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.