UltraTech
Group of Labs

Accreditations:

Lab Code: 0685

APEC TEL CA0001

1309

CA 0001/2049

AT-1945

SL2-IN-E-1119R

Korea KCC-RRA
CA0001

3000 Bristol Circle,
Oakville, Ontario,
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Tel.: (905) 829-1570
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Website: www.ultratech-labs.com
Email: vic@ultratech-labs.com

January 8, 2025

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

Attn.: **Mr. Gregory Czajkowski**

Subject: **Verification Testing under CISPR 32:2015, +A1:2019 / EN 55032:2015, +A11:2020 - Multimedia Equipment.**

Product: **Universal Gang Programmer**
Model No.: **C-GANG**

Dear Mr. Czajkowski,

The product sample, as provided by you, has been tested and found to comply with **CISPR 32:2015, +A1:2019 / EN 55032:2015, +A11:2020, Class A - Multimedia Equipment.**

If the equipment is not Class B and meets only Class A, the following warning notice is required in the user manual. (For CLASS A ONLY)

Warning: Operation of this equipment in a residential environment could cause radio interference.

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 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
Equipment Type:	Multimedia Equipment
Product Name: Model No.:	**Universal Gang Programmer** **C-GANG**
The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:	CISPR 32:2015, +A1:2019 / EN 55032:2015, +A11:2020, Class A- Multimedia Equipment.
Date of Authorization:	January 8, 2025

- *Note(s): See attached report, UltraTech's File No.: 24ELP018_CISPR32A, dated: January 8, 2025 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
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0685 APEC TEL CA0001 1309 CA 0001/2049 AT-1945 SL2-IN-E-1119R CA0001

ENGINEERING TEST REPORT

Universal Gang Programmer
Model No.: C-GANG

Applicant: **Elprotronic Inc.**
35 Austin Rumble Court
King City, Ontario
Canada, L7B 0B2

Tested in Accordance With

INTERNATIONAL ELECTROTECHNICAL COMMISSION
CISPR 32:2015, +A1:2019 / EN55032:2015, +A11:2020
Electromagnetic Compatibility of Multimedia Equipment – Emission Requirements

UltraTech's File No.: 24ELP018_CISPR32A

This Test report is Issued under the Authority of Tri M. Luu BASc Vice President of Engineering UltraTech Group of Labs Date: January 8, 2025	
Report Prepared by: Phuong Ho Issued Date: January 8, 2025	Tested by: Kendrick Luu & Christian Luu Test Date: November 12, 2024

- *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 any agency of the US Government.*
- *This test report shall not be reproduced, except in full, without a written approval from UltraTech.*

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EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	CISPR 32:2015+A1:2019/ EN55032:2015+A11:2020
Title	Electromagnetic compatibility of multimedia equipment – Emission requirements
Purpose of Test:	To gain Verification Compliance with CISPR 32:2015+A1:2019/ EN55032:2015+A11:2020
Test Procedures	Both conducted and Electromagnetic Radiation Disturbance measurements were conducted in accordance with the European Standards CISPR 32:2015+A1:2019/ EN55032:2015+A11:2020 - Electromagnetic compatibility of multimedia equipment – Emission requirements
Class A/B Classification:	The Class B requirements for equipment are intended to offer adequate protection to broadcast services within the residential environment. Equipment intended primarily for use in a residential environment shall meet the Class B limits. All other equipment shall comply with the Class A limits. Broadcast receiver equipment is class B equipment. **NOTE Equipment meeting Class A requirements may not offer adequate protection to broadcast services within a residential environment and the following notice is required in user manual (<u>For class A equipment only</u>)** ***Warning: Operation of this equipment in a residential environment could cause radio interference.***

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
24ELP018_CISPR32A	January 8, 2025	Original document

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

None.

1.4. NORMATIVE REFERENCES

Publication	Year	Title
CISPR 32 + COR1 +A1 EN 55032 +A11	2015 2016 2019 2015 2020	Electromagnetic compatibility of multimedia equipment – Emission requirements
CISPR 16-1-1 +A1 +A2	2010 2010 2014	Specification for radio disturbance and immunity measuring apparatus and methods – Part 1-1: Radio disturbance and immunity measuring apparatus – Measuring apparatus
CISPR 16-1-2 +A1: +A2	2003 2004 2006	Specification for radio disturbance and immunity measuring apparatus and methods. Part 1-2: Conducted disturbances
ANSI C63.4	2014	American National Standard for Methods of Measurement of Radio-Noise Emissions from Low-Voltage Electrical and Electronic Equipment in the Range of 9 KHz to 40 GHz

EXHIBIT 2. PERFORMANCE ASSESSMENT

2.1. CLIENT INFORMATION

APPLICANT/ MANUFACTURER:	
Name:	**Elprotronic Inc.**
Address:	35 Austin Rumble Court King City, Ontario Canada, L7B 0B2

2.2. EQUIPMENT UNDER TEST (EUT) INFORMATION

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

Product Name	Universal Gang Programmer
Model Name or Number	C-GANG
Firmware Version Identification Number :	BS063X01-1.04, CS063X01-1.06
Serial Number:	SN: 630100523
CPU Frequencies:	12 MHz, 192 MHz, 480 MHz
Type of Equipment	Multimedia Equipment
Power input source:	5VDC Host device
Typical Equipment Usage:	Indoor

2.3. LIST OF ACCESSORIES OF THE EUT

	Name, Make, Model of Component / Part	Short Description of Use
1	C-GANG	Gang Programmer for MCUs

2.4. LIST OF EUT'S PORTS

Port #	EUT's Port Description	Number of Identical Ports	Connector/ Interface Type	Connected Cabling Length / Type	Cable Type
1	USB-C	1	USB-C	Not allow longer than 3m	Shielded
2	To Gang Splitter	1	56 pins	Not allow longer than 3m	Non-shielded
3	To single target device	1	10 pins	Not allow longer than 3m	Non-shielded

2.5. 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:	Gang splitter
Model Name or Number:	C-GANG-SP rev-0
Connected to EUT's Port #: *(See above table)*	To Gang Splitter

Ancillary Equipment # 2	
Equipment Make and Name:	PC
Connected to EUT's Port #: *(See above table)*	USB-C

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:	23.7°C
Humidity:	30%
Pressure:	100.9 kPa
Power input source:	5 VDC

3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

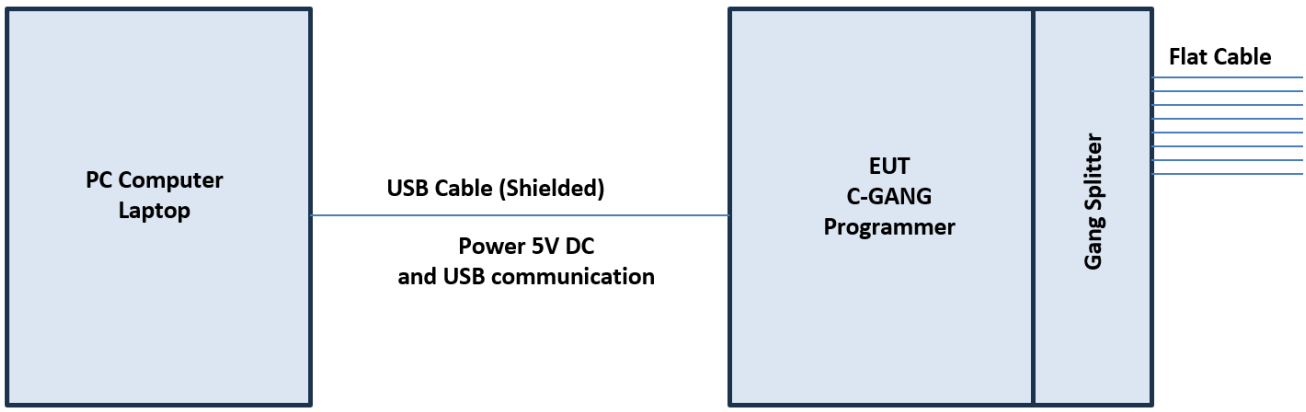
1) Equipment Setup / operating instructions:

Connect programmer via USB cable to PC. Connect target to be programmed via C-GANG. Run software on PC.

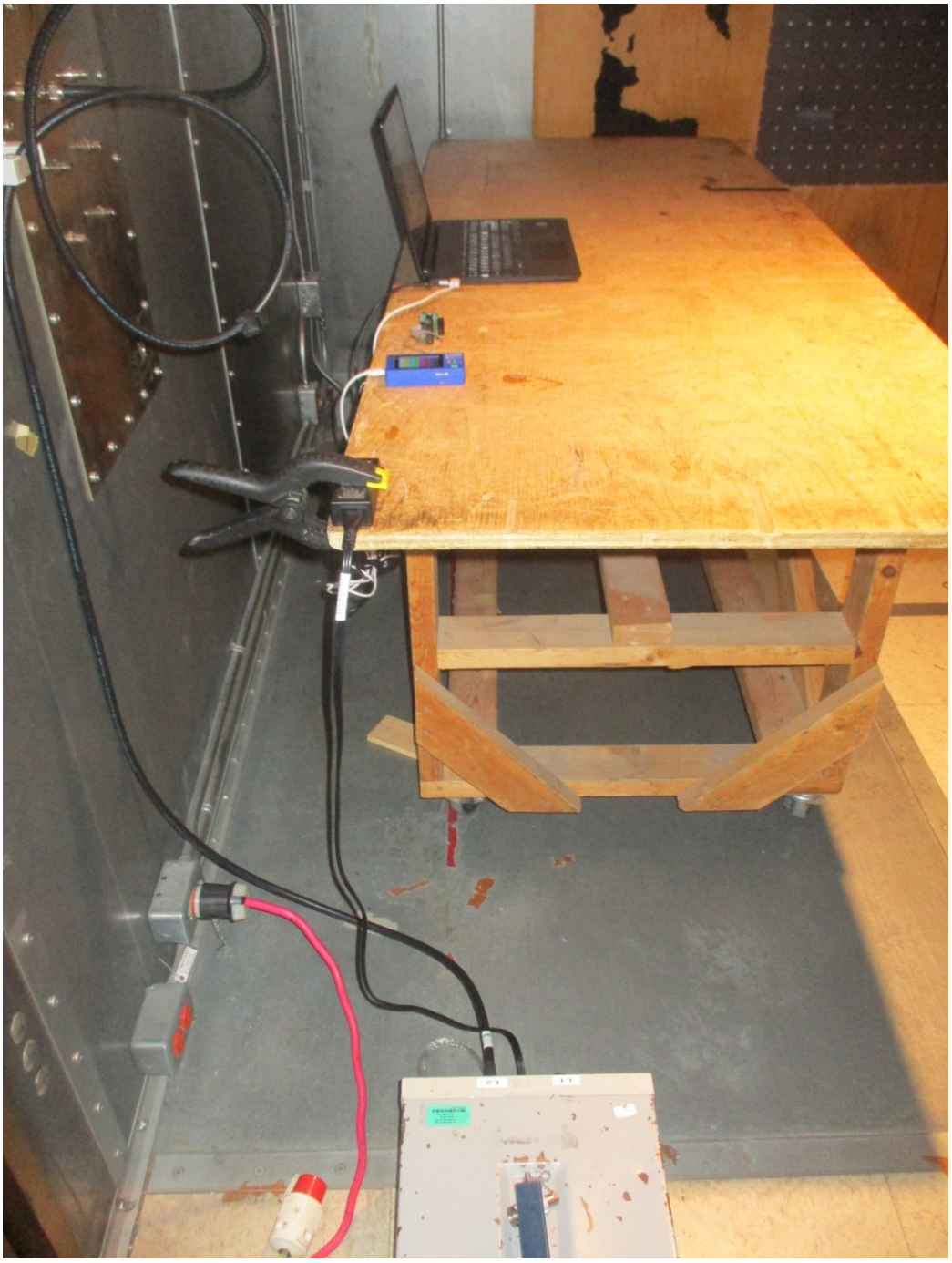
2) Description of normal operation during tests:

Connect programmer via USB cable to PC. Connect target to be programmed via C-GANG. Run software on PC.

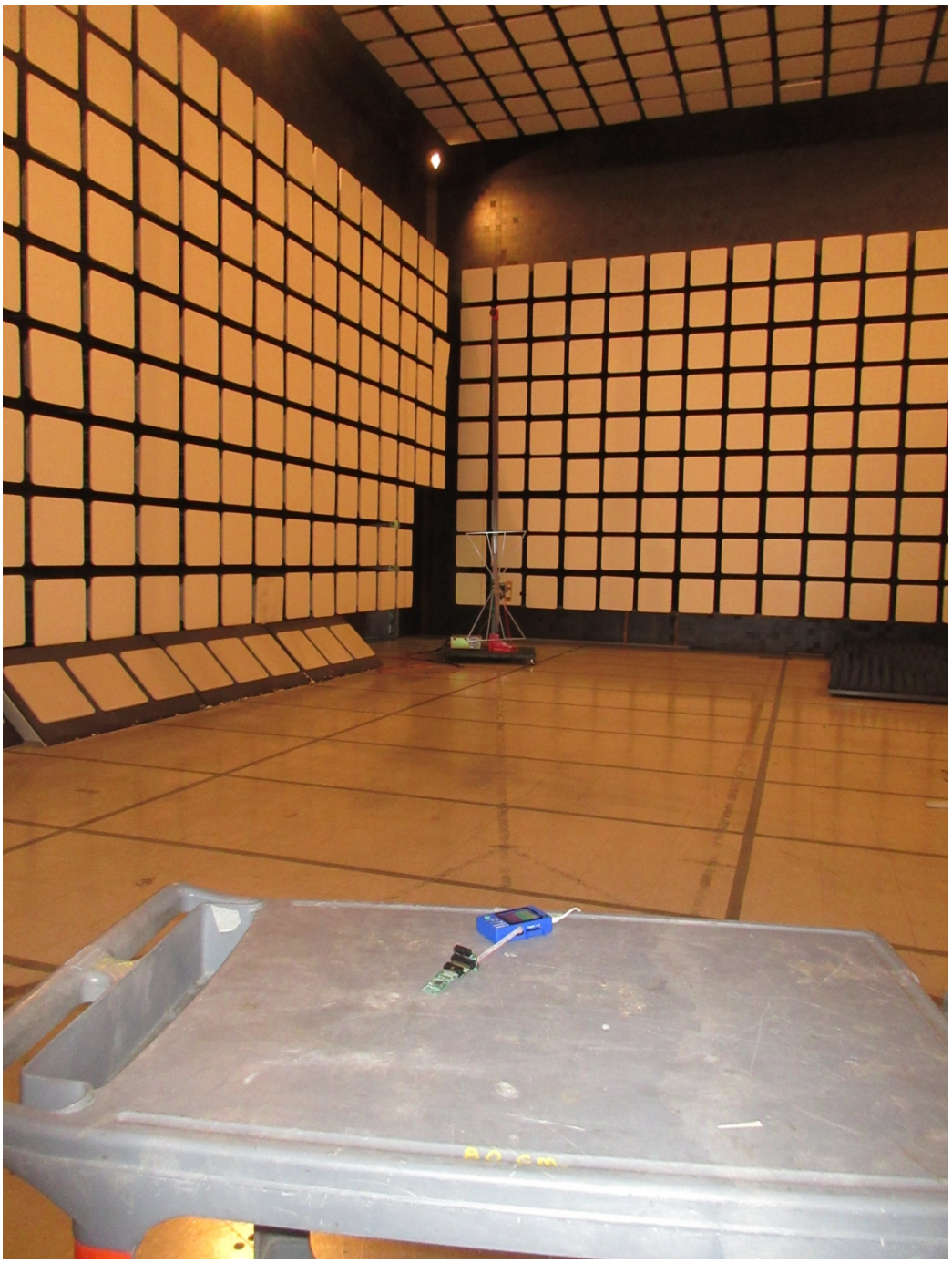
3.3. BLOCK DIAGRAM OF TEST SETUP



3.4. PHOTOGRAPHS OF TEST SETUP FOR AC CONDUCTED EMISSIONS



3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS




UltraTech

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 town of Oakville, Province of Ontario, Canada.

- AC Powerline Conducted Emissions were performed in UltraTech's shielded room, 24'(L) by 16'(W) by 8'(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 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 ANAB File No.: AT-1945.

4.2. APPLICABILITY & SUMMARY OF EMC EMISSION TEST RESULTS

Requirement – Test	Result/Margin	Verdict
Classification Class (A or B)	CLASS A	—
Limits of mains terminal disturbance voltage150 KHz to 30 MHz	- 24.6 dB @ 0.152 MHz	PASS
Limits of conducted common mode (asymmetric mode) disturbance150 KHz to 30 MHz	N/A	PASS
Limits of conducted differential voltage (RF modulator/ Receiver Tuner ports) disturbance 30MHz to 2150MHz	No applicable ports	N/A
Limits for Radiated disturbance from 30 MHz to 6GHz	- 8.3 dB @ 31.55 MHz	PASS
Outdoor units of home satellite receiving systems– Limits for radiated disturbance between 1 GHz to 18 GHz	Not Outdoor home satellite receiving system	N/A
Outdoor units of home satellite receiving systems – Limits of conducted disturbance between 1 GHz to 18 GHz	Not Outdoor home satellite receiving system	N/A
N/A- Not Applicable		

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

5.1.1. Limits

Frequency (MHz)	CLASS A Limit dB (µV)	
	Quasi-Peak	Average
0.15 to 0.50	79	66
0.50 to 30	73	60
Frequency (MHz)	**CLASS B Limit dB (µV)**	
	Quasi-Peak	**Average**
0.15 to 0.50	66 to 56	56 to 46
0.50 to 5	56	46
5 to 30	60	50

5.1.2. Method of Measurements

Refer to Test Procedures ULTR P001-2004, CISPR 32 / EN 55032, 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

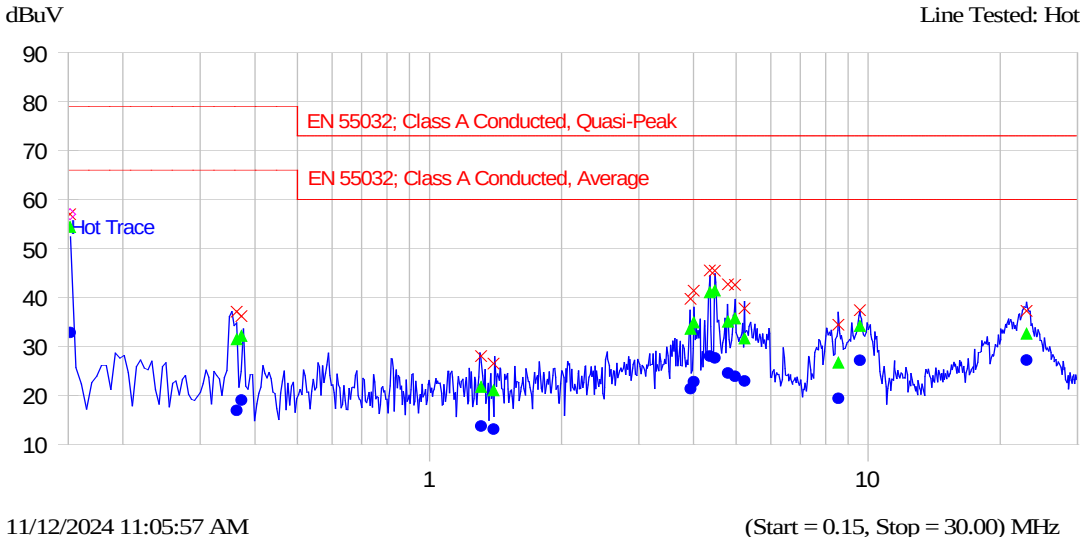
RA = Receiver/Analyzer Reading in dBµV
AF = Attenuation Factor in dB
CF = Cable loss Factor in dB
LF = L.I.S.N Factor in dB

5.1.3. Test Instruments

Please refer to Exhibit 6 for Test Instruments and Measurement Uncertainty.

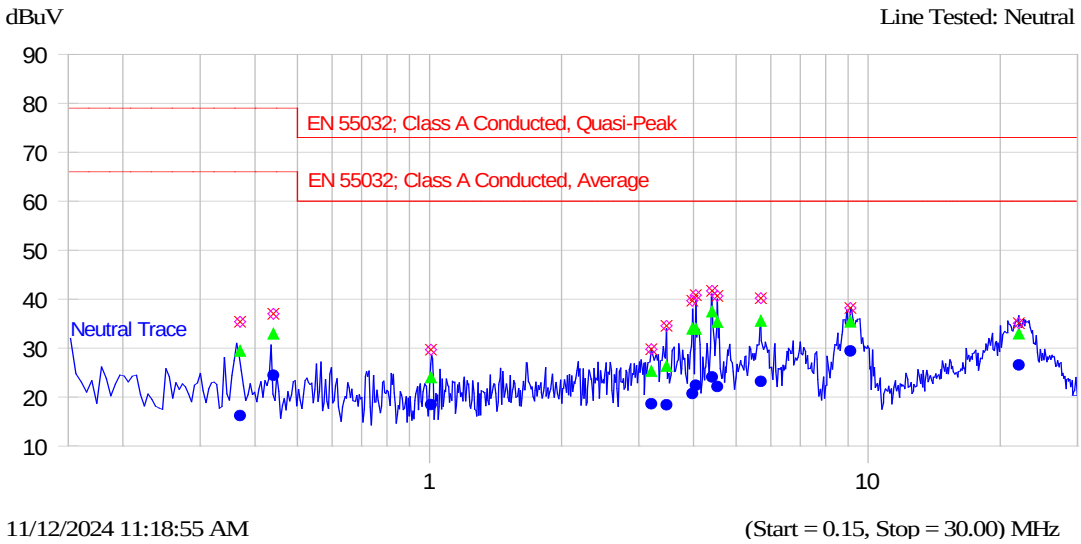
5.1.4. Test Results

Description: Line Voltage:230Vac
Mode Tested: Color Bar
Setup Name: EN-55032 Class A
Customer Name: Elprotronics
Project Number: ELP-018Q
Operator Name: Kendrick
EUT Name: Universal Gang Programmer, M/N: C-GANG



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.152	**57.0**	**54.4**	**-24.6**	32.9	-33.1	Hot Trace
0.364	37.1	31.4	-47.6	17.0	-49.0	Hot Trace
0.373	36.2	32.1	-46.9	19.1	-46.9	Hot Trace
1.311	28.0	21.7	-51.3	13.7	-46.3	Hot Trace
1.400	26.5	21.0	-52.0	13.1	-46.9	Hot Trace
3.935	39.7	33.6	-39.4	21.4	-38.6	Hot Trace
4.000	41.4	34.9	-38.1	22.8	-37.2	Hot Trace
4.357	45.5	41.0	-32.0	28.0	-32.0	Hot Trace
4.471	45.5	41.4	-31.6	27.7	-32.3	Hot Trace
4.792	42.7	35.0	-38.0	24.6	-35.4	Hot Trace
4.969	42.6	35.7	-37.3	23.9	-36.1	Hot Trace
5.227	37.8	31.6	-41.4	23.0	-37.0	Hot Trace
8.553	34.4	26.7	-46.3	19.4	-40.6	Hot Trace
9.580	37.4	34.1	-38.9	27.2	-32.8	Hot Trace
22.973	37.3	32.6	-40.4	27.2	-32.8	Hot Trace

Description: Line Voltage:230Vac
Mode Tested: Color Bar
Setup Name: EN-55032 Class A
Customer Name: Elprotronics
Project Number: ELP-018Q
Operator Name: Kendrick
EUT Name: Universal Gang Programmer, M/N: C-GANG



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.370	35.4	29.4	-49.6	16.2	-49.8	Neutral Trace
0.441	37.0	32.9	-46.1	24.5	-41.5	Neutral Trace
1.007	29.7	24.0	-49.0	18.5	-41.5	Neutral Trace
3.203	29.8	25.3	-47.7	18.6	-41.4	Neutral Trace
3.469	34.6	26.3	-46.7	18.4	-41.6	Neutral Trace
3.976	39.7	33.9	-39.1	20.7	-39.3	Neutral Trace
4.048	40.8	33.9	-39.1	22.4	-37.6	Neutral Trace
4.406	41.7	37.4	-35.6	24.1	-35.9	Neutral Trace
4.530	40.6	35.3	-37.7	22.2	-37.8	Neutral Trace
5.692	40.2	35.5	-37.5	23.2	-36.8	Neutral Trace
9.108	38.2	35.4	-37.6	29.4	-30.6	Neutral Trace
22.053	35.1	33.0	-40.0	26.6	-33.4	Neutral Trace

5.2. ELECTROMAGNETIC RADIATION DISTURBANCE FROM 30 MHZ TO 3 GHZ

5.2.1. Limits

Frequency (MHz)	CLASS A Limit dB (µV/m)	
	Detector	Distance
30 to 230	40 Quasi-Peak	10m
230 to 1000	47 Quasi-Peak	10m
1000 to 3000	56 Average, 76 Peak	3m
3000 to 6000	60 Average, 80 Peak	3m
Frequency (MHz)	**CLASS B Limit dB (µV/m)**	
	Detector	**Distance**
30 to 230	30 Quasi-Peak	10m
230 to 1000	37 Quasi-Peak	10m
1000 to 3000	50 Average, 70 Peak	3m
3000 to 6000	54 Average, 74 Peak	3m

Limit dB (µV/m) - FM Receiver			
Frequency (MHz)	Fundamental	Harmonics	
	Detector	Detector	Distance
30 to 230	50 Quasi-Peak	42 Quasi-Peak	10m
230 to 300		42 Quasi-Peak	10m
300 to 1000		46 Quasi-Peak	10m

5.2.2. Method of Measurements

Refer to Exhibit 7 of this report, CISPR 32 / EN55032, CISPR 16-1-1 and ANSI C63.4
The EUT shall be scanned from 30 MHz to 3 GHz.

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

Mode tested: Color Bar

The emissions were scanned from 30 MHz to 1 GHz at 10 Meters distance and all emissions 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**
31.55	31.7	QP	V	40.0	**-8.3**	PASS
62.64	34.4	PEAK	V	40.0	-5.6	PASS
79.74	33.7	PEAK	V	40.0	-6.3	PASS
117.05	28.06	PEAK	V	40.0	-11.9	PASS
145.03	27.08	PEAK	V	40.0	-12.9	PASS
376.65	31.8	PEAK	H	47.0	-15.2	PASS
640.91	39.85	PEAK	V	47.0	-7.2	PASS
640.91	36.51	PEAK	H	47.0	-10.5	PASS
682.88	37.87	PEAK	V	47.0	-9.1	PASS
682.88	34.22	PEAK	H	47.0	-12.8	PASS
720.19	35.76	PEAK	V	47.0	-11.2	PASS

The emissions were scanned from 1 to 3 GHz at 3 Meters distance and all emissions below the limits were recorded.						
FREQUENCY (MHz)	**RF LEVEL (dBuV/m)**	**DETECTOR USED (PEAK/AVG)**	**ANTENNA PLANE (H/V)**	**LIMIT (dBuV/m)**	**MARGIN (dB)**	**PASS/ FAIL**
1022	34.1	PEAK	H	56.0	-21.9	PASS
1080	32.8	PEAK	V	56.0	-23.2	PASS
1089	34.23	PEAK	H	56.0	-21.8	PASS
1147	33.9	PEAK	H	56.0	-22.1	PASS
1996	39.0	PEAK	V	56.0	-17.0	PASS
1996	36.6	PEAK	H	56.0	-19.4	PASS
2128	39.4	PEAK	V	56.0	-16.6	PASS

EXHIBIT 6. TEST INSTRUMENTS & MEASUREMENT UNCERTAINTY

6.1. MEASUREMENT UNCERTAINITY

The measurement uncertainties stated were calculated in accordance with the requirements of CISPR 16-4-2 @ IEC: 2011 and JCGM 100:2008 (GUM 1995) – Guide to the Expression of Uncertainty in Measurement.

Expanded measurement uncertainty is specified with a coverage factor of k=2 for a 95% Confidence level.

Test description	U_{LAB}	U_{CISPR}
Power Line Conducted Emission Uncertainty(150 KHz – 30 MHz)	±2.62	3.4
Radiated Emissions Measurement Uncertainty (30-1000 MHz)	± 4.82	6.3
Radiated Emissions Measurement Uncertainty (above 1 GHz)	± 3.43	5.2

6.2. TEST EQUIPMENT LIST

6.2.1. Line Conducted Emissions

Test Instruments	Manufacturer	Model No.	Serial No.	Cal Due Date
EMI Analyzer	Agilent	8593EM	3710A00223	9-May-2025
LISN	EMCO	3825/2	8907-1531	6-Mar-2025
Attenuator	Rohde & Schwarz	EZ-25	100064	9-Nov-2025
Test Software: Agilent (HP) E7415A EMI Test Measurement Software, version A.01.40				

Test Date: Nov. 12, 2024

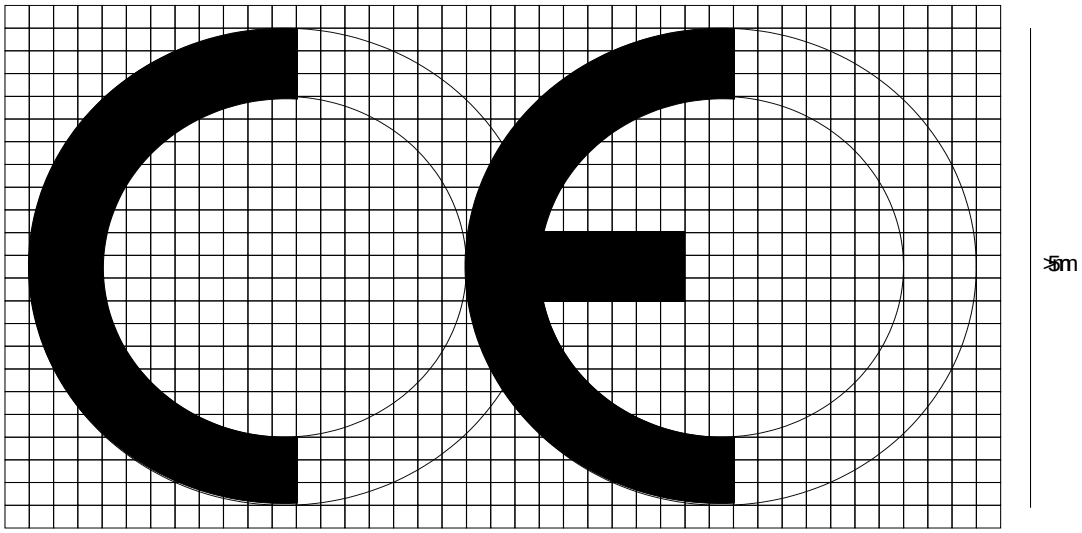
6.2.2. Radiated Emissions

Test Instruments	Manufacturer	Model No.	Serial No.	Freq. Range	Cal Due Date
EMI Receiver	Rohde & Schwarz	ESU40	100037	20 Hz to 40 GHz	18-Sep-25
Biconilog Antenna	EMCO	3142C	34792	26 – 3000 MHz	16-Dec-25
Pre-Amplifier	Com-Power	PAM-118A	550152	500 MHz to 18 GHz	07-Oct-25
Horn Antenna	EMCO	3115	9701-5061	1GHz – 18 GHz	4-Sep-26

Test Date: Nov. 12, 2024

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.

UKCA marking

Placing the UKCA marking

In most cases, you must apply the UKCA marking to the product itself or to the packaging. In some cases, it may be placed on the manuals or on other supporting literature. This will vary depending on the specific regulations that apply to the product.

The following general rules apply:

- UKCA markings must only be placed on a product by you as the manufacturer or your authorised representative (where allowed for in the relevant legislation)
- when attaching the UKCA marking, you take full responsibility for your product's conformity with the requirements of the relevant legislation
- you must only use the UKCA marking to show product conformity with the relevant UK legislation
- you must not place any marking or sign that may misconstrue the meaning or form of the UKCA marking to third parties
- you must not attach other markings on the product which affect the visibility, legibility or meaning of the UKCA marking
- the UKCA marking cannot be placed on products unless there is a specific requirement to do so in the legislation

Rules for using the UKCA image

You must make sure that:

- if you reduce or enlarge the size of your marking, the letters forming the UKCA marking must be in proportion to the version set out below
- the UKCA marking is at least 5mm in height for the whole logo, not individual letters – unless a different minimum dimension is specified in the relevant legislation
- the UKCA marking is easily visible, legible (from 1 January 2023 it must be permanently attached)

** END OF REPORT **