UltraTech
Group of Labs

Accreditations:

ANAB
ANSI National Accreditation Board
ACCREDITED
ISO/IEC 17065
PRODUCT CERTIFICATION BODY
Lab Code: 0685

APEC TEL CA0001

VCCI
1309

Canada
CA 0001/2049

ilac-MRA
ANAB
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ACCREDITED
ISO/IEC 17025
TESTING LABORATORY
AT-1945

BSMI
SL2-IN-E-1119R

KC
Korea KCC-RRA
CA0001

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

January 8, 2025

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

Attn.:	**Mr. Gregory Czajkowski**
Subject:	**Verification Testing under ISED CANADA ICES-003, ISSUE 7, Class A - Information Technology Equipment (Including Digital Apparatus).**
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 **ISED Canada ICES-003, Issue 7, Class A - Information Technology Equipment (Including Digital Apparatus),** the compliance is suggested by ISED Canada as follows:

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

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
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: Address:	**Elprotronic Inc** 35 Austin Rumble Court King City, Ontario Canada, L7B 0B2
Equipment Type:	Class A Information Technology Equipment (Including Digital Apparatus)
Product Name:	Universal Gang Programmer
Model :	C-GANG
The above product was tested by UltraTech Engineering Labs Inc. and found to comply with:	ISED Canada ICES-003, Issue 7 - Information Technology Equipment (Including Digital Apparatus)
Date of Authorization:	January 8, 2025

- **Note(s):** *See attached report, UltraTech's File No.:* 24ELP018_*ICE-S003A, dated* January 8, 2025 *for details and conditions of Verification Compliance.*

Approved by: Tri M. Luu
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

Universal Gang Programmer
Model No.: C-GANG

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

Tested in Accordance With

Innovation, Science and Economic Development, (ISED) Canada, ICES-003, ISSUE 7, CLASS A
Verification Authorization - Information Technology Equipment (Including Digital Apparatus)

UltraTech's File No.: 24ELP018_ICES-003A

This Test report is Issued under the Authority of
Tri M. Luu
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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UltraTech

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0685 APEC TEL CA0001 1309 CA 0001/2049 AT-1945 SL2-IN-E-1119R CA0001

TABLE OF CONTENTS

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

EXHIBIT 1. INTRODUCTION

1.1. SCOPE

Reference:	ISED Canada ICES-003, Issue 7
Title	Information Technology Equipment (Including Digital Apparatus)
Purpose of Test:	Verification of Compliance for a Class A Unintentional Radiator.
Test Procedures	Both conducted and radiated emissions measurements were conducted in accordance with American National Standards Institute ANSI C63.4 - 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 and ISED Canada ICES-003, Issue 7
Environmental Classification:	Light-industry, Commercial & Industry

1.2. REVISION HISTORY

Document	Issue Date	Description
24ELP018_ICES-003A	January 8, 2025	Original Document

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

None

1.4. NORMATIVE REFERENCES

Publication	Year	Title
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
ICES-003, Issue 7	2020-10	Information Technology Equipment (Including Digital Apparatus)

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

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	Information Technology Equipment (Including Digital Apparatus)
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

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

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

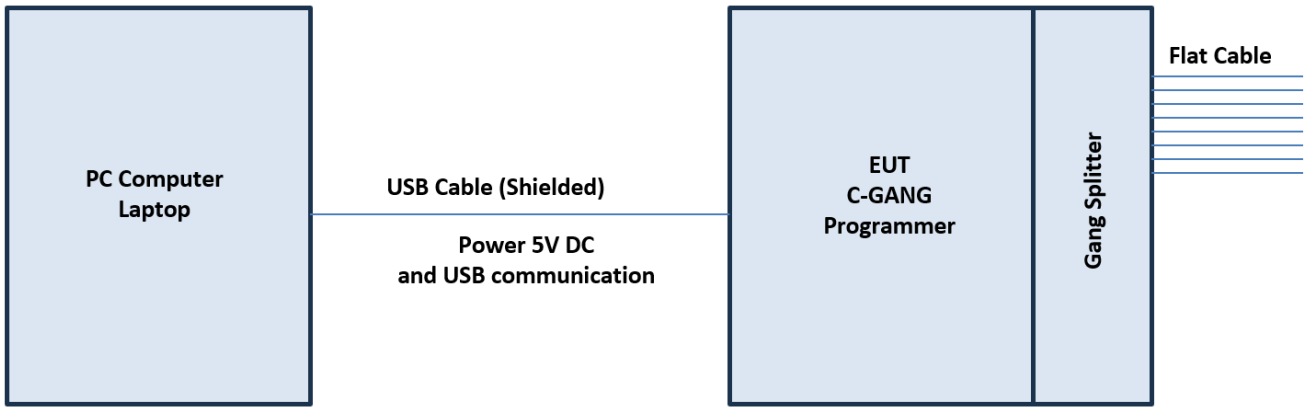
1) Equipment Setup / operating instructions:

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



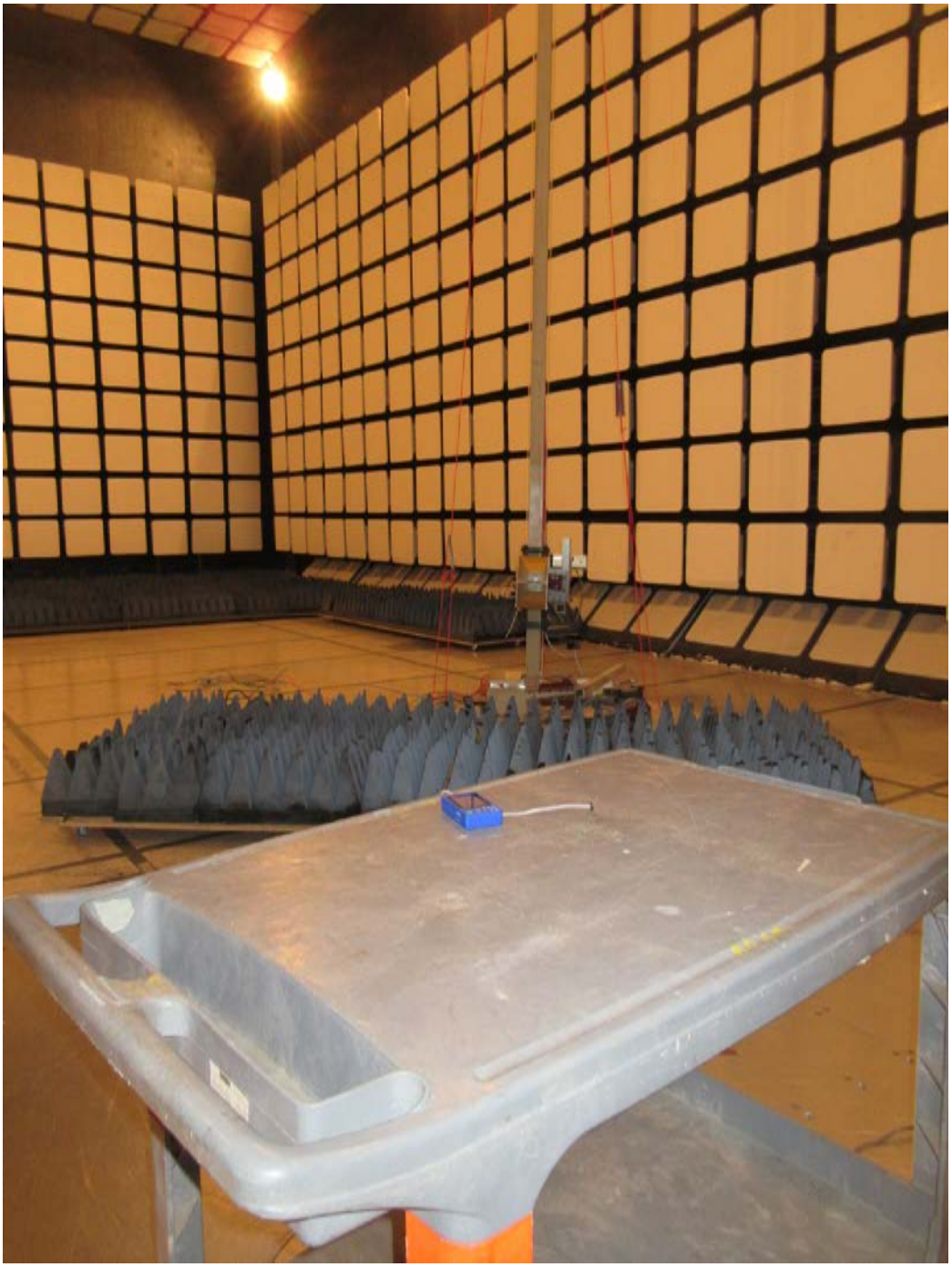
- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

3.4. PHOTOGRAPHS OF TEST SETUP FOR AC CONDUCTED EMISSIONS

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*



- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

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, 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

ICES-003, Issue 7	TEST REQUIREMENTS	MARGIN BELOW (-) / ABOVE (+) THE LIMITS	COMPLAINCE (YES/NO)
Class B Table 2	AC Power Line Conducted Emissions Measurements	- 35.0 dB @ 0.181 MHz	Yes
Class B Table 2 & 4	Radiated Emissions from Computing Devices (Digital Devices)	- 4.8 dB @ 79.74 MHz	Yes

4.3. MODIFICATIONS REQUIRED FOR COMPLIANCE

None

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

EXHIBIT 5. MEASUREMENT DATA

5.1. AC POWERLINE CONDUCTED EMISSIONS

5.1.1. Limits

The equipment shall meet the limits of the following table:

Frequency (MHz)	Limits (dBµV/m)	
	Quasi-Peak	Average
0.15-0.5	79	66
0.5-5.0	73	60
5.0-30	73	60

5.1.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-2004 & ANSI C63.4 for method of measurements.

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

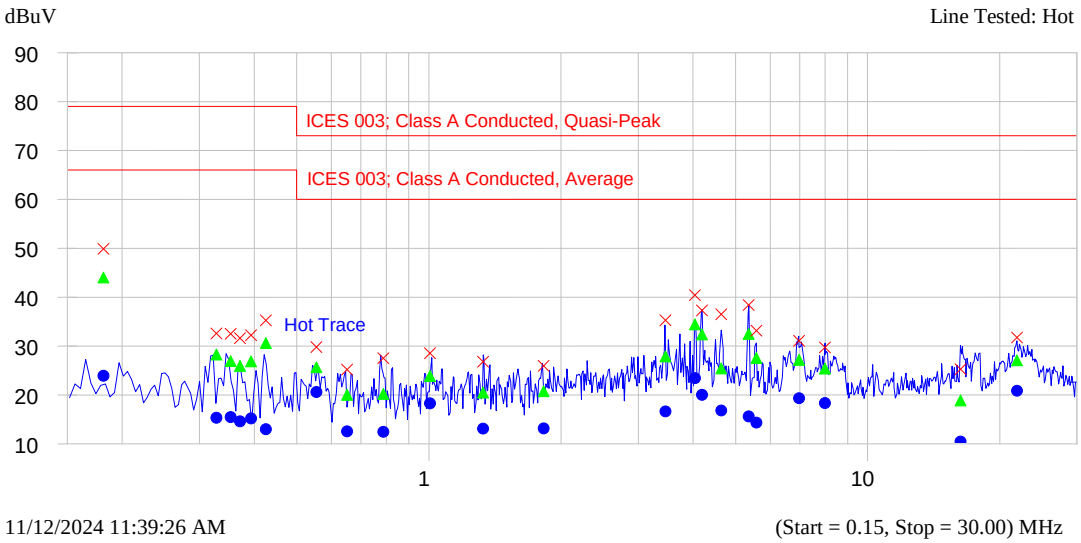
RA = Receiver/Analyzer Reading in dBµV
AF = Attenuation Factor in dB
CF = Cable loss Factor in dB
LF = L.I.S.N Factor in dB

5.1.3. Test Instruments

Refer to Exhibit 6 for Test Instruments & Measurement Uncertainty.

5.1.4. Test Results

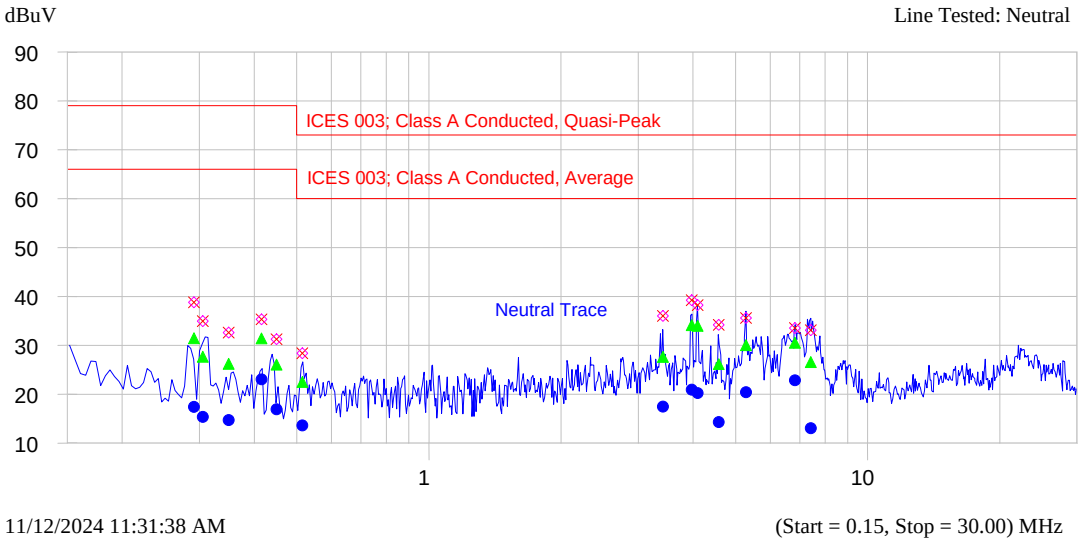
Description: Line Voltage:120Vac
Mode Tested: H pattern
Customer Name: Elprotronics
Project Number: ELP-018Q
Operator Name: Kendrick
EUT Name: Universal Gang Programmer, M/N: C-GANG



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.181	**49.9**	**44.0**	**-35.0**	23.9	-42.1	Hot Trace
0.328	32.6	28.3	-50.7	15.3	-50.7	Hot Trace
0.354	32.5	26.9	-52.1	15.5	-50.5	Hot Trace
0.371	31.6	25.9	-53.1	14.6	-51.4	Hot Trace
0.394	32.2	26.9	-52.1	15.2	-50.8	Hot Trace
0.425	35.2	30.6	-48.4	13.0	-53.0	Hot Trace
0.554	29.8	25.7	-47.3	20.6	-39.4	Hot Trace
0.651	25.2	20.0	-53.0	12.6	-47.4	Hot Trace
0.788	27.5	20.2	-52.8	12.5	-47.5	Hot Trace
1.007	28.5	23.9	-49.1	18.3	-41.7	Hot Trace
1.330	26.8	20.5	-52.5	13.1	-46.9	Hot Trace
1.827	25.9	20.8	-52.2	13.2	-46.8	Hot Trace
3.461	35.3	27.9	-45.1	16.7	-43.3	Hot Trace
4.041	40.4	34.4	-38.6	23.4	-36.6	Hot Trace
4.191	37.3	32.4	-40.6	20.0	-40.0	Hot Trace
4.640	36.5	25.4	-47.6	16.8	-43.2	Hot Trace
5.356	38.4	32.5	-40.5	15.6	-44.4	Hot Trace
5.576	33.1	27.6	-45.4	14.4	-45.6	Hot Trace
6.977	31.1	27.2	-45.8	19.3	-40.7	Hot Trace
7.996	29.7	25.4	-47.6	18.3	-41.7	Hot Trace
16.282	25.3	18.9	-54.1	10.5	-49.5	Hot Trace
21.911	31.7	27.1	-45.9	20.9	-39.1	Hot Trace

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*

Description: Line Voltage: 120Vac
Mode Tested: H pattern
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
0.291	38.8	31.5	-47.5	17.4	-48.6	Neutral Trace
0.305	34.9	27.7	-51.3	15.4	-50.6	Neutral Trace
0.350	32.6	26.2	-52.8	14.7	-51.3	Neutral Trace
0.416	35.3	31.4	-47.6	23.0	-43.0	Neutral Trace
0.450	31.2	26.1	-52.9	16.9	-49.1	Neutral Trace
0.515	28.4	22.5	-50.5	13.6	-46.4	Neutral Trace
3.416	36.0	27.6	-45.4	17.5	-42.5	Neutral Trace
3.974	39.2	34.1	-38.9	20.9	-39.1	Neutral Trace
4.101	38.2	34.0	-39.0	20.2	-39.8	Neutral Trace
4.577	34.2	26.2	-46.8	14.3	-45.7	Neutral Trace
5.281	35.6	30.0	-43.0	20.4	-39.6	Neutral Trace
6.830	33.5	30.5	-42.5	22.9	-37.1	Neutral Trace
7.424	33.1	26.6	-46.4	13.1	-46.9	Neutral Trace

5.2. RADIATED EMISSIONS

5.2.1. Limits

The equipment shall meet the limits of the following table:

Test Frequency Range (MHz)	Class A Limits (dBµV/m)	EMI Detector Used	Measurement Distance (meters)
30 – 88	40.0	Quasi-Peak	10
88 – 216	43.5	Quasi-Peak	10
216 – 230	46.4	Quasi-Peak	10
230 – 960	47.0	Quasi-Peak	10
960 – 1000	49.5	Quasi-Peak	10
Above 1000	60.0 80.0	Average Peak	3

Note: The limits above 1 GHz have been extrapolated to 3m as per section 3.2.2 of the standard.

5.2.2. Method of Measurements

Refer to Ultratech Test Procedures ULTR-P001-2004 & ANSI C63.4 for method of measurements.

The spectrum shall be investigated from the lowest radio frequency signal generated or used in the device, without going below the lowest frequency for which a radiated emission limit is specified, up to the frequency shown in the following table:

Highest frequency generated or used in the device (MHz)	Upper frequency of measurement range (MHz)
Below 1.705	No radiated tests required
1.705 – 108	1000
108 – 500	2000
500 -1000	5000
Above 1000	5^{th} harmonic of the highest frequency or 40 GHz, whichever is lower

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

Refer to Exhibit 6 for Test Instruments & Measurement Uncertainty.

5.2.4. Test Results

Mode tested: H Pattern

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	31.3	QP	V	39.0	-7.7	PASS
31.55	24.3	PEAK	H	39.0	-14.7	PASS
62.64	34.13	PEAK	V	39.0	-4.9	PASS
79.74	34.24	PEAK	V	39.0	**-4.8**	PASS
101.5	21.8	PEAK	H	43.5	-21.7	PASS
145.03	27.41	PEAK	V	43.5	-16.1	PASS
291.09	33.84	PEAK	H	46.4	-12.6	PASS
320.63	33.04	PEAK	H	46.4	-13.4	PASS
367.26	34.4	PEAK	H	46.4	-12.1	PASS
640.91	40.32	PEAK	V	46.4	-6.1	PASS
640.91	37.02	PEAK	H	46.4	-9.4	PASS
682.88	38.46	PEAK	V	46.4	-7.9	PASS
682.88	35.13	PEAK	H	46.4	-11.3	PASS
720.19	36.77	PEAK	V	46.4	-9.6	PASS
720.19	33.1	PEAK	H	46.4	-13.3	PASS
782.37	35.22	PEAK	V	46.4	-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**
1028	33.6	PEAK	H	60.0	-26.4	PASS
1083	35.2	PEAK	V	60.0	-24.8	PASS
1160	32.5	PEAK	H	60.0	-27.5	PASS
1996	38.0	PEAK	V	60.0	-22.0	PASS
1996	38.4	PEAK	H	60.0	-21.6	PASS
2128	41.1	PEAK	V	60.0	-18.9	PASS
2128	39.9	PEAK	H	60.0	-20.1	PASS

Note: The limits in the table below are the FCC Part 15, Class B limits as they are more stringent than the ICES-003 limits.

EXHIBIT 6. TEST INSTRUMENTS & MEASUREMENT UNCERTAINTY

6.1. MEASUREMENT UNCERTIANITY

The measurement uncertainties stated are 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.

Expanded uncertainty is stated as standard uncertainty multiplied by coverage factor, k=2 for a 95% Confidence level.

6.2. MEASUREMENT UNCERTAINTY

Test description	U_{LAB} (dB)	U_{CISPR} (dB)
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

6.3. TEST EQUIPMENT LIST

6.3.1. 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

6.3.2. 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

** END OF REPORT **

- *All test results contained in this engineering test report are traceable to National Institute of Standards and Technology (NIST)*