UltraTech
Group of Labs

Accreditations:

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

APEC TEL CA0001

1309

Canada
CA 0001/2049

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

BSMI
SL2-IN-E-1119R

Korea KCC-RRA
CA0001

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

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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.: **S-GANG-Iso**

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** **S-GANG-Iso**
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.: 24ELP017_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
Tel.: (905) 829-1570 Fax. (905) 829-8050
Website: www.ultratech-labs.com, Email: vic@ultratech-labs.com, Email: tri@ultratech-labs.com

ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17065 PRODUCT CERTIFICATION BODY		VCCI	Canada	ilac-MRA	ANAB ANSI National Accreditation Board ACCREDITED ISO/IEC 17025 TESTING LABORATORY	BSMI	Korea KCC-RRA
0685	APEC TEL CA0001	1309	CA 0001/2049		AT-1945	SL2-IN-E-1119R	CA0001

ENGINEERING TEST REPORT

Universal Gang Programmer
Model No.: S-GANG-Iso

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.: 24ELP017_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 Dates: September 16 & 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.*

UltraTech

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

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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
24ELP017_CISPR32A	Nov. 20, 2024	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	**S-GANG-Iso**
Firmware Version Identification Number :	BS053X01-1.02, CS053X01
Serial Number:	SN: 20240007
CPU Frequencies:	12 MHz, 192 MHz, 480 MHz
Type of Equipment	Multimedia Equipment
Power input source:	6-14 VDC, external AC/DC Adapter
Typical Equipment Usage:	Indoor

2.3. LIST OF ACCESSORIES OF THE EUT

	Name, Make, Model of Component / Part	Short Description of Use
1	S-GANG_Iso	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	Ethernet	1	Ethernet	Allow longer than 3m	Shielded
3	RS232	1	RS232	Allow longer than 3m	Shielded
4	DC 6-14V	1	DC	Not allow longer than 3m	Non-shielded
5	To Gang Splitter	1	100 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:	S-GANG-SP rev-0
Connected to EUT's Port #: *(See above table)*	To Gang Splitter

Ancillary Equipment # 2	
Equipment Make and Name:	AC/DC power adapter
Connected to EUT's Port #: *(See above table)*	DC 6-14V

Ancillary Equipment # 3	
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

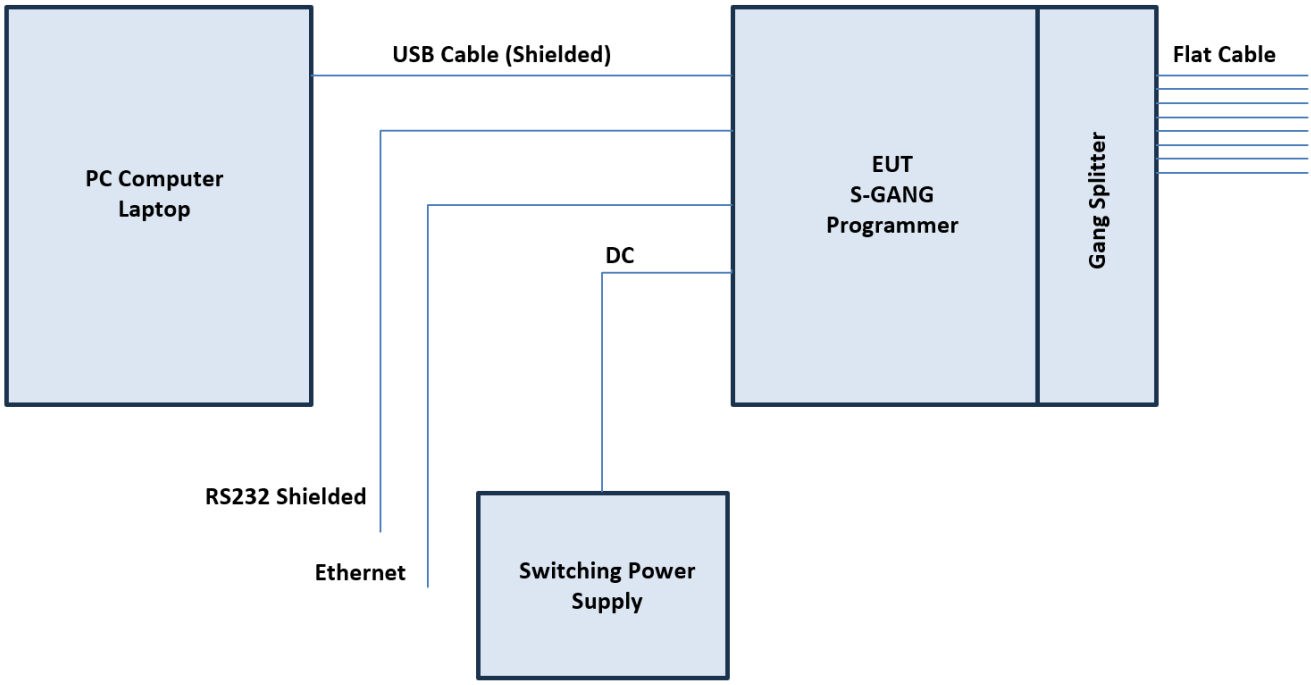
The climate conditions of the test environment are as follows:

Temperature:	24.5°C
Humidity:	30%
Pressure:	100.9 kPa
Power input source:	230 Vac to Adaptor

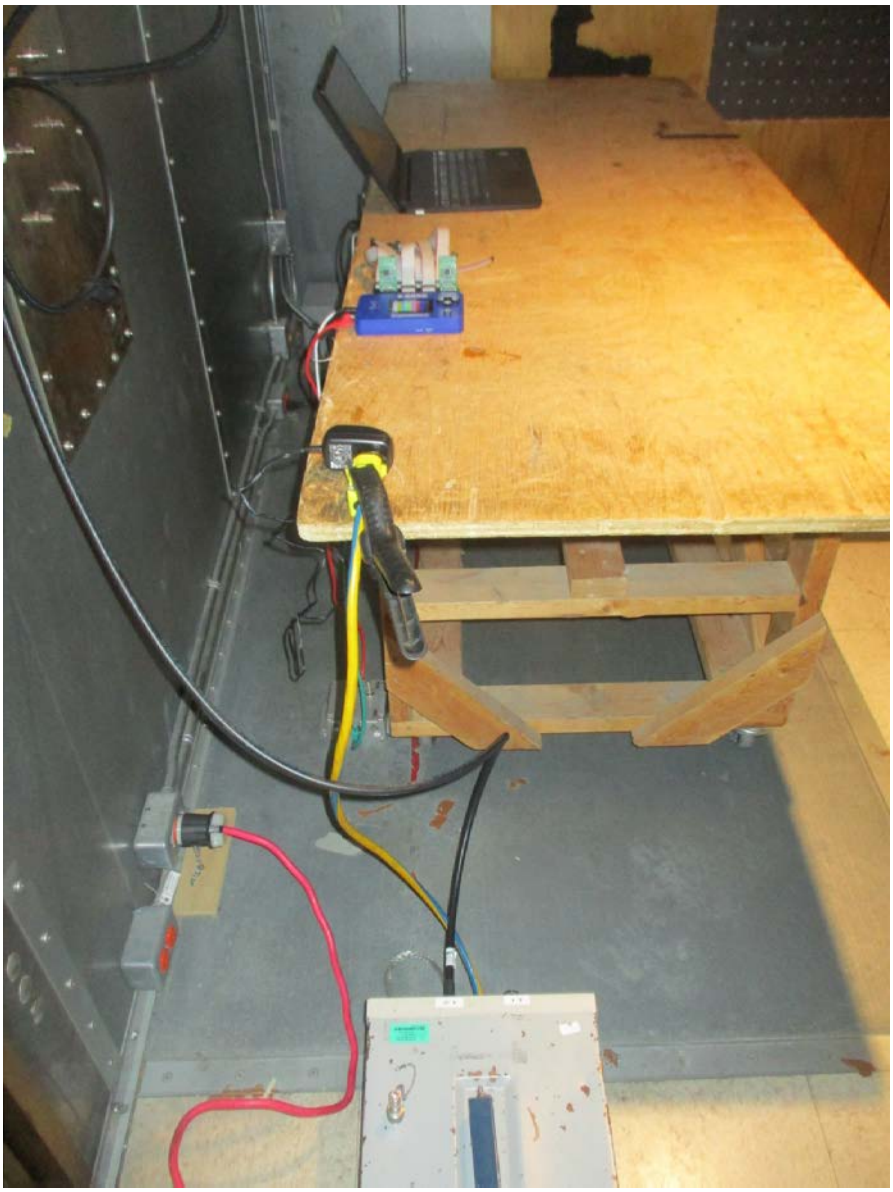
3.2. OPERATIONAL TEST CONDITIONS & ARRANGEMENT FOR TEST SIGNALS

Connect programmer to external AC/DC adapter (6-14V) and connect programmer via USB cable to PC. Connect target to be programmed via S_GANG_Iso. Run software on PC.

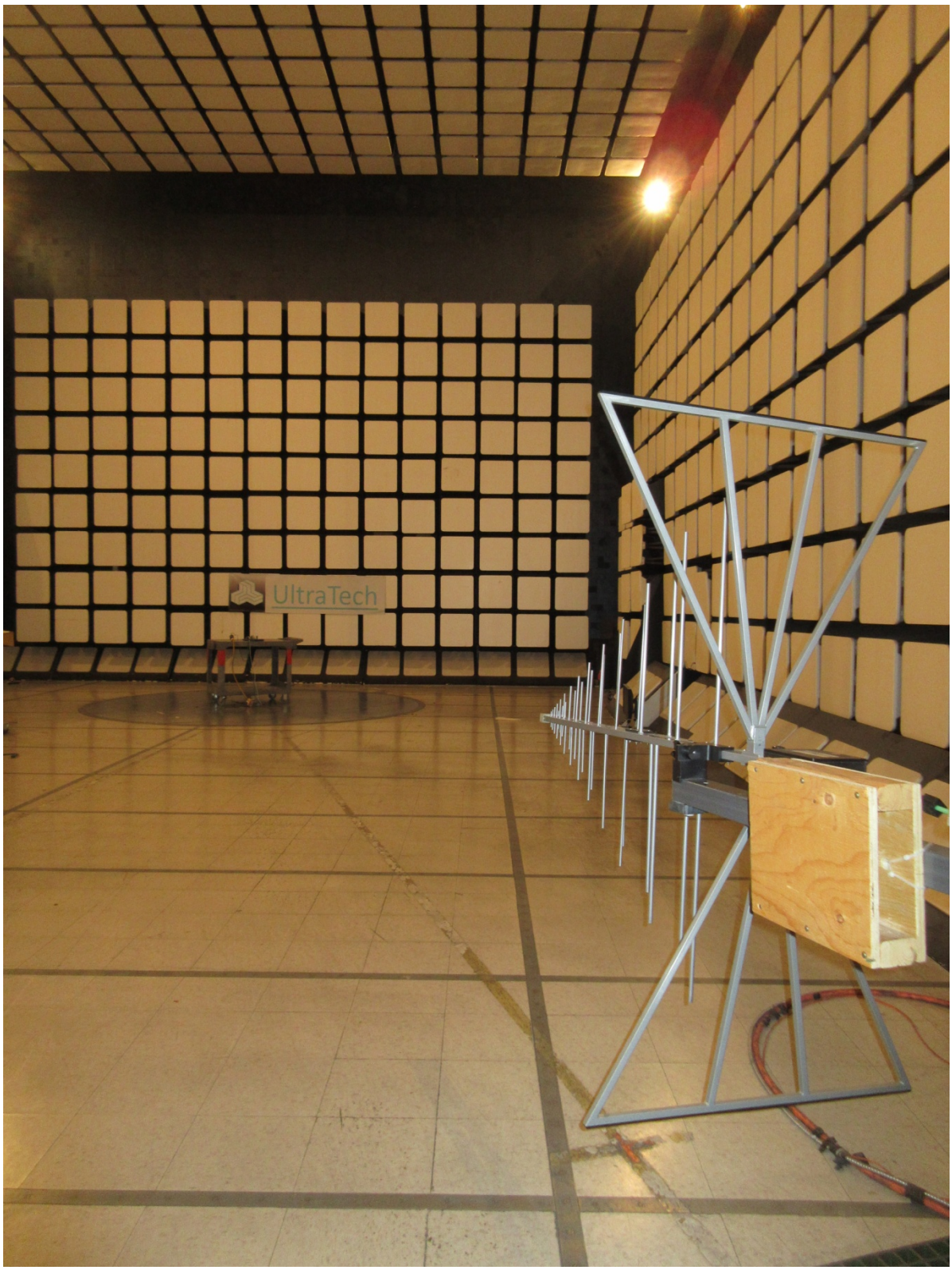
3.3. BLOCK DIAGRAM OF TEST SETUP



3.4. PHOTOGRAPHS OF TEST SETUP FOR AC CONDUCTED EMISSIONS



3.5. PHOTOGRAPHS OF TEST SETUP FOR RADIATED EMISSION MEASUREMENTS



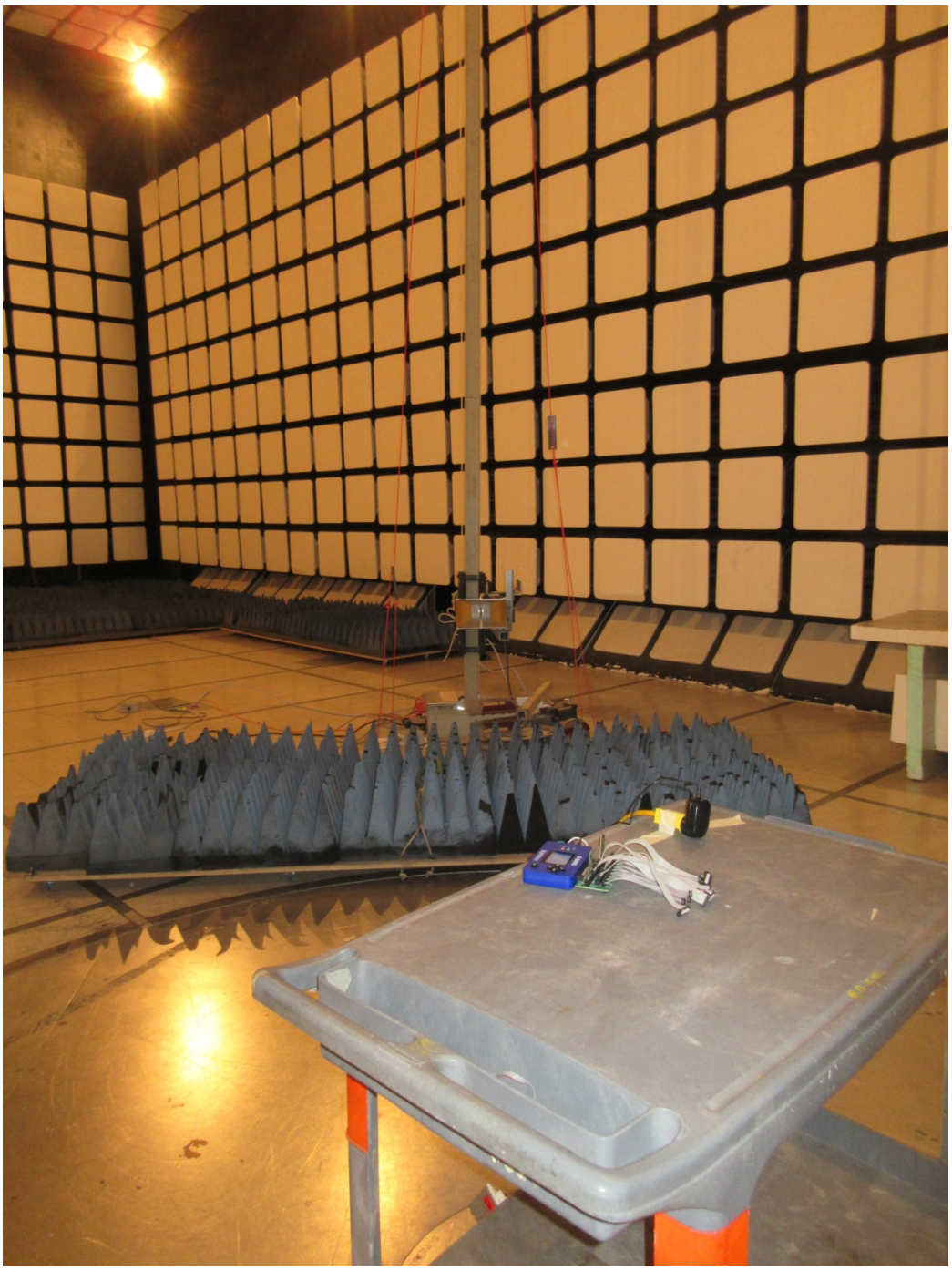


EXHIBIT 4. SUMMARY OF TEST RESULTS

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	- 27.5 dB @ 0.152 MHz	PASS
Limits of conducted common mode (asymmetric mode) disturbance150 KHz to 30 MHz	- 9.3 dB @ 0.346 MHz	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	- 7.6 dB @ 65.75 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

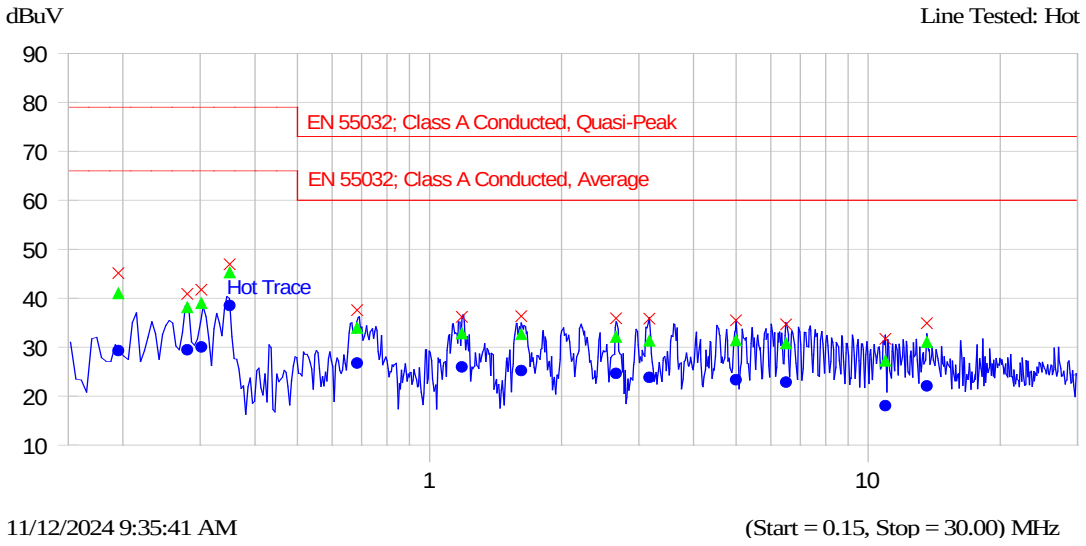
RA = Receiver/Analyzer Reading in dBµV
AF = Attenuation Factor in dB
CF = Cable loss Factor in dB
LF = L.I.S.N Factor in dB

5.1.3. Test Instruments

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

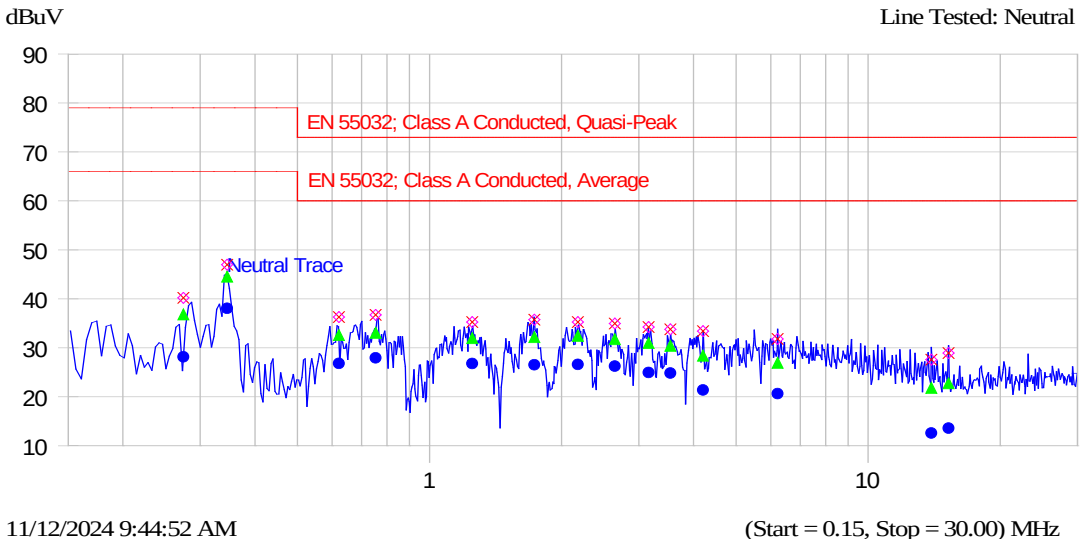
5.1.4. Test Results

Description: Line Voltage:230Vac
Mode Tested: Color Bar
Setup Name: EN55032; Class A
Customer Name: Elprotronics
Project Number: ELP-017Q
Operator Name: Kendrick
EUT Name: Universal Gang Programmer, M/N: S-GANG-Iso



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.195	45.1	41.0	-38.0	29.3	-36.7	Hot Trace
0.280	40.9	38.1	-40.9	29.5	-36.5	Hot Trace
0.302	41.7	38.9	-40.1	30.0	-36.0	Hot Trace
0.350	**46.9**	**45.2**	**-33.8**	**38.5**	**-27.5**	Hot Trace
0.683	37.6	33.9	-39.1	26.8	-33.2	Hot Trace
1.185	36.2	32.8	-40.2	26.0	-34.0	Hot Trace
1.619	36.3	32.6	-40.4	25.2	-34.8	Hot Trace
2.660	35.9	32.1	-40.9	24.6	-35.4	Hot Trace
3.172	35.8	31.3	-41.7	23.8	-36.2	Hot Trace
4.996	35.5	31.4	-41.6	23.3	-36.7	Hot Trace
6.498	34.7	30.7	-42.3	22.9	-37.1	Hot Trace
10.940	31.7	27.2	-45.8	18.1	-41.9	Hot Trace
13.603	34.9	31.0	-42.0	22.1	-37.9	Hot Trace

Description: Line Voltage:230Vac
Mode Tested: Color Bar
Setup Name: EN55032; Class A
Customer Name: Elprotronics
Project Number: ELP-017Q
Operator Name: Kendrick
EUT Name: Universal Gang Programmer, M/N: S-GANG-Iso



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.275	40.2	36.8	-42.2	28.2	-37.8	Neutral Trace
0.346	47.0	44.5	-34.5	38.1	-27.9	Neutral Trace
0.622	36.3	32.6	-40.4	26.8	-33.2	Neutral Trace
0.753	36.7	33.0	-40.0	28.0	-32.0	Neutral Trace
1.252	35.3	32.0	-41.0	26.8	-33.2	Neutral Trace
1.733	35.7	32.2	-40.8	26.5	-33.5	Neutral Trace
2.178	35.3	32.4	-40.6	26.6	-33.4	Neutral Trace
2.646	35.0	31.7	-41.3	26.3	-33.7	Neutral Trace
3.157	34.3	31.0	-42.0	25.0	-35.0	Neutral Trace
3.540	33.8	30.4	-42.6	24.9	-35.1	Neutral Trace
4.201	33.4	28.4	-44.6	21.4	-38.6	Neutral Trace
6.219	31.8	26.9	-46.1	20.7	-39.3	Neutral Trace
13.926	27.6	21.8	-51.2	12.6	-47.4	Neutral Trace
15.251	28.9	22.7	-50.3	13.6	-46.4	Neutral Trace

5.2. CONDUCTED COMMON MODE DISTURBANCE AT WIRED NETWORK PORTS

5.2.1. Limits

The equipment shall meet the limits of the following table:

Limits - Class A Applicable to wired network ports, optical-Fiber ports with metallic shield or tension members and antenna ports				
Frequency (MHz)	Voltage Limits dB (µV)		Current Limits dB (µA)	
	Quasi-Peak	Average	Quasi-Peak	Average
0.15 to 0.50	97 to 87	84 to 74	53 to 43	40 to 30
0.50 to 30	87	74	43	30

5.2.2. Method of Measurements

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

5.2.2.1. Calculation of Telecom conducted Emission Voltage and Current

Telecom conducted Emission-Voltage:

This is calculated by adding the 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 + IF + AF +CF

Where

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

Telecom conducted Emission-Current:

This is calculated by adding the Current clamp factor and Cable loss factor to the measured reading. The basic equation with a sample calculation is as follows:

Emissions (dBµA) = RA + CCF +CF

Where

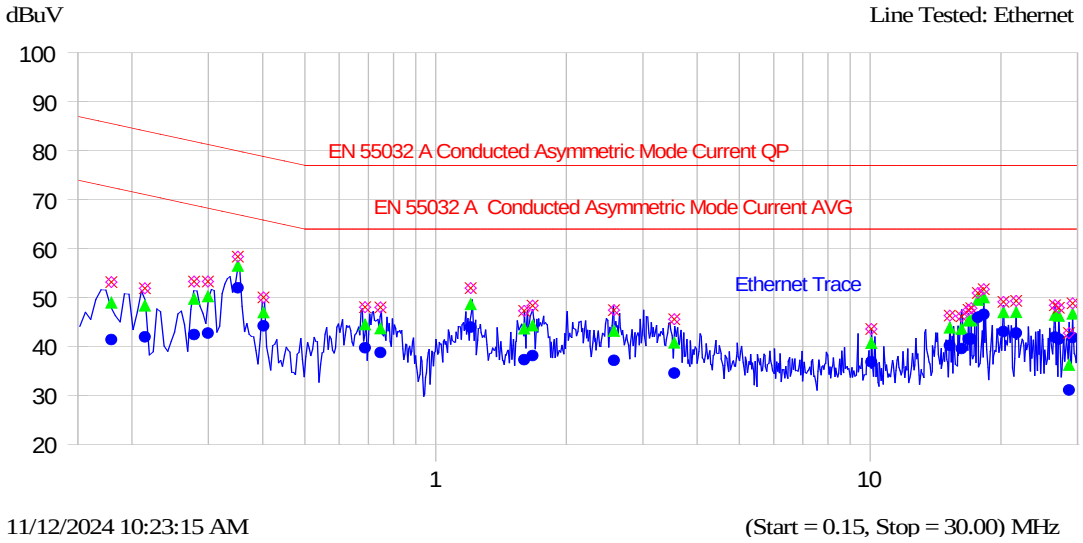
RA = Receiver/Analyzer Reading in dBµA
CCF = Current Clamp Factor in dB
CF = Cable loss Factor in dB

5.2.3. Test Instruments

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

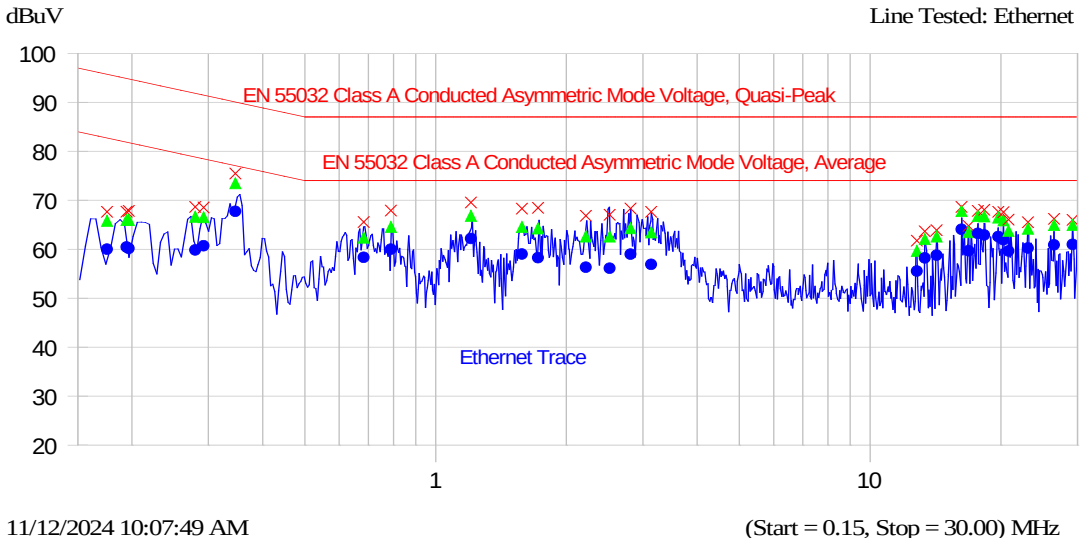
5.2.4. Test Results

Description: Line Voltage:230Vac
Mode Tested: Color Bar
Setup Name: EN55032; Class A
Customer Name: Elprotronics
Project Number: ELP-017Q
Operator Name: Kendrick
EUT Name: Universal Gang Programmer, M/N: S-GANG-Iso



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.179	53.2	48.9	-36.6	41.4	-31.1	Ethernet Trace
0.214	51.9	48.3	-35.7	42.0	-29.0	Ethernet Trace
0.278	53.3	49.7	-32.1	42.4	-26.4	Ethernet Trace
0.299	53.3	50.2	-31.0	42.7	-25.5	Ethernet Trace
0.351	58.3	56.5	-23.5	52.0	-14.9	Ethernet Trace
0.402	50.0	46.9	-31.9	44.2	-21.6	Ethernet Trace
0.688	48.0	44.5	-32.5	39.7	-24.2	Ethernet Trace
0.746	48.0	43.7	-33.3	38.8	-25.2	Ethernet Trace
1.204	51.9	48.6	-28.4	44.0	-20.0	Ethernet Trace
1.598	47.3	43.6	-33.3	37.3	-26.7	Ethernet Trace
1.671	48.3	44.3	-32.7	38.1	-25.8	Ethernet Trace
2.572	47.4	43.1	-33.8	37.2	-26.8	Ethernet Trace
3.541	45.6	40.8	-36.2	34.6	-29.4	Ethernet Trace
10.062	43.6	40.7	-36.3	36.9	-27.1	Ethernet Trace
15.252	46.3	43.8	-33.2	40.2	-23.8	Ethernet Trace
16.234	46.1	43.6	-33.4	39.6	-24.4	Ethernet Trace
16.840	47.5	45.3	-31.7	41.5	-22.5	Ethernet Trace
17.084	47.8	45.3	-31.7	41.5	-22.4	Ethernet Trace
17.696	50.9	49.5	-27.5	46.0	-18.0	Ethernet Trace
18.244	51.7	50.0	-27.0	46.6	-17.4	Ethernet Trace
20.259	49.1	47.0	-30.0	43.1	-20.9	Ethernet Trace
21.665	49.3	47.0	-30.0	42.8	-21.2	Ethernet Trace
26.613	48.4	46.5	-30.5	41.9	-22.0	Ethernet Trace
27.161	47.9	46.2	-30.7	41.5	-22.5	Ethernet Trace
28.694	42.7	36.2	-40.8	31.1	-32.9	Ethernet Trace
29.238	48.8	46.7	-30.3	41.8	-22.1	Ethernet Trace

Description: Line Voltage:230Vac
Mode Tested: Color Bar
Setup Name: EN55032; Class A
Customer Name: Elprotronics
Project Number: ELP-017Q
Operator Name: Kendrick
EUT Name: Universal Gang Programmer, M/N: S-GANG-Iso



Frequency MHz	Peak dBuV	QP dBuV	QP-QP Limit dB	Avg dBuV	Avg-Avg Limit dB	Trace Name
0.175	67.6	65.8	-29.9	60.0	-22.7	Ethernet Trace
0.194	67.7	65.9	-28.9	60.5	-21.4	Ethernet Trace
0.197	67.8	65.9	-28.8	60.2	-21.6	Ethernet Trace
0.280	68.6	66.6	-25.2	59.8	-19.0	Ethernet Trace
0.292	68.5	66.5	-24.9	60.7	-17.7	Ethernet Trace
0.346	**75.4**	**73.4**	**-16.6**	**67.7**	**-9.3**	Ethernet Trace
0.683	65.6	62.3	-24.7	58.3	-15.7	Ethernet Trace
0.789	67.9	64.5	-22.5	60.0	-14.0	Ethernet Trace
1.205	69.5	66.8	-20.2	62.2	-11.8	Ethernet Trace
1.579	68.3	64.5	-22.5	59.0	-15.0	Ethernet Trace
1.719	68.4	64.2	-22.8	58.3	-15.7	Ethernet Trace
2.217	66.8	62.6	-24.4	56.3	-17.7	Ethernet Trace
2.513	67.0	62.6	-24.4	56.1	-17.9	Ethernet Trace
2.810	68.3	64.3	-22.7	59.0	-15.0	Ethernet Trace
3.134	67.6	63.4	-23.6	56.9	-17.1	Ethernet Trace
12.809	61.8	59.6	-27.4	55.5	-18.5	Ethernet Trace
13.359	63.6	62.0	-25.0	58.2	-15.8	Ethernet Trace
14.214	63.9	62.6	-24.4	58.8	-15.2	Ethernet Trace
16.230	68.6	67.7	-19.3	64.1	-9.9	Ethernet Trace
16.841	64.8	63.4	-23.6	59.7	-14.3	Ethernet Trace
17.694	67.8	66.7	-20.3	63.2	-10.8	Ethernet Trace
18.306	68.1	66.7	-20.3	62.9	-11.1	Ethernet Trace
19.711	67.6	66.4	-20.6	62.6	-11.4	Ethernet Trace
20.261	67.6	65.9	-21.1	61.9	-12.1	Ethernet Trace
20.811	66.0	63.7	-23.3	59.6	-14.4	Ethernet Trace
23.069	65.5	64.2	-22.8	60.2	-13.8	Ethernet Trace
26.489	66.2	64.9	-22.1	60.9	-13.1	Ethernet Trace
29.238	66.0	64.9	-22.1	61.0	-13.0	Ethernet Trace

5.3. ELECTROMAGNETIC RADIATION DISTURBANCE FROM 30 TO 6000 MHZ

5.3.1. 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

5.3.2. 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 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

5.3.3. Test Instruments

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

5.3.4. Test Results

Mode tested: Color Bar

The emissions were scanned from 30 to 1000 MHz 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
65.75	31.4	QP	V	39.0	**-7.6**	PASS
124.82	33.18	PEAK	V	43.5	-10.3	PASS
137.8	25.67	PEAK	H	43.5	-17.8	PASS
191.66	28.21	PEAK	V	43.5	-15.3	PASS
191.66	28.93	PEAK	H	43.5	-14.6	PASS
246.61	29.58	PEAK	H	46.4	-16.8	PASS
292.7	37.73	PEAK	V	46.4	-8.7	PASS
292.7	34.22	PEAK	H	46.4	-12.2	PASS
560.08	32.92	PEAK	V	46.4	-13.5	PASS
560.08	33.34	PEAK	H	46.4	-13.1	PASS
640.91	38.5	PEAK	V	46.4	-7.9	PASS
678.22	36.38	PEAK	V	46.4	-10.0	PASS
720.19	34.94	PEAK	V	46.4	-11.5	PASS
720.19	36.05	PEAK	H	46.4	-10.4	PASS
801.02	33.7	PEAK	V	46.4	-12.7	PASS

The radiated emissions were scanned from 1 to 6 GHz at 3 meters distance, and no significant RF emissions were found.

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	Expanded Uncertainty (dB)	
	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	May-9-2025
LISN	EMCO	3825/2	8907-1531	Mar-6-2025
Attenuator	Rohde & Schwarz	EZ-25	100064	Nov-9-2025
Test Software: Agilent (HP) E7415A EMI Test Measurement Software, version A.01.40 is used for automated measurement.				

Test Date: Nov. 12, 2024

6.2.2. Wired Network Ports

Test Instruments	Manufacturer	Model No.	Serial No.	Cal Due Date
EMI Analyzer	Agilent	8593EM	3710A00223	May-9-2025
LISN	EMCO	3825/2	8907-1531	Mar-6-2025
Attenuator	Rohde & Schwarz	EZ-25	100064	Nov-9-2025
CDN	TESEQ	T8-Cat6	30952	Mar-18-2025
Test Software: Agilent (HP) E7415A EMI Test Measurement Software, version A.01.40 is used for automated measurement.				

Test Date: Nov. 12, 2024

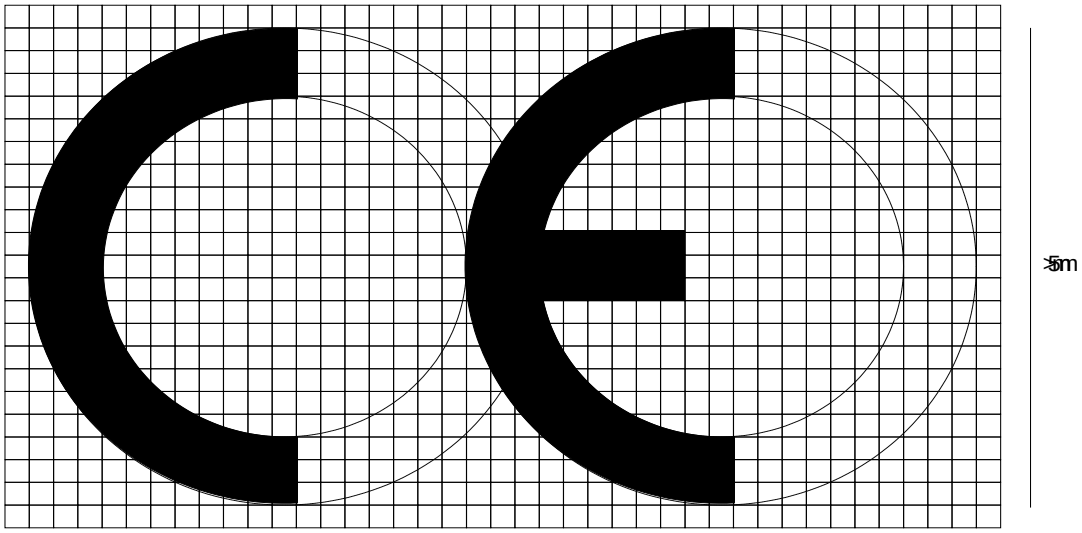
6.2.3. Radiated Emissions

Test Instruments	Manufacturer	Model No.	Serial No.	Freq. Range	Cal Due Date
EMI Receiver	Rohde & Schwarz	ESU40	100037	20 Hz to 40 GHz	21-Sep-24
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	5955	1GHz – 18 GHz	4-Nov-24

Test Date: Sept. 16, 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 **