

File E207943
Project 4788796378

December 24, 2018

REPORT

on

COMPONENT -Audio/Video, Information and Communication Technology Equipment

INNOLUX CORP
MIAOLI HSIEN, TAIWAN

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UL TEST REPORT AND PROCEDURE

Standard:	UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements) CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
Certification Type:	Recognized Component
CCN:	AZOT2, AZOT8 (Components – Audio/Video, Information and Communication Technology Equipment)
Complementary Certification CCN:	N/A
Product:	LCD Module
Model:	G104X1-L03, G104X1-L04, G104XGE-L0X, G104XCE-LXX (X can be 0-9, A-Z or Blank)
Rating:	(Optional) 3.45Vdc max., 0.61A max. or 3.6 Vdc max., 0.79 A max. (For Panel) 13.2Vdc max 0.7A or 17.0Vdc max., 0.35 A max (for DC/DC converter)
Applicant Name and Address:	INNOLUX CORP 160 KESYUE RD JHUNAN SCIENCE PARK MIAOLI HSIEN 350 TAIWAN

This is to certify that representative samples of the products covered by this Test Report have been investigated in accordance with the above referenced Standards. The products have been found to comply with the requirements covering the category and the products are judged to be eligible for Follow-Up Service under the indicated Test Procedure. The manufacturer is authorized to use the UL Mark on such products which comply with this Test Report and any other applicable requirements of UL LLC ('UL') in accordance with the Follow-Up Service Agreement. Only those products which properly bear the UL Mark are considered as being covered by UL's Follow-Up Service under the indicated Test Procedure.

The applicant is authorized to reproduce the referenced Test Report provided it is reproduced in its entirety.

Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL

*Prepared by: **Steven Huang**

Reviewed by: **Vincent Lai**

Supporting Documentation

The following documents located at the beginning of this Procedure supplement the requirements of this Test Report:

- A. Authorization - The Authorization page may include additional Factory Identification Code markings.
- B. Generic Inspection Instructions -
 - i. Part AC details important information which may be applicable to products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of this Test Report
 - ii. Part AE details any requirements which may be applicable to all products covered by this Procedure. Products described in this Test Report must comply with any applicable items listed unless otherwise stated in the body of each Test Report
- C. Listing Mark/Recognized Component Mark Data Page - details the requirements for the UL Certification Mark which is not controlled by the technical standard used to investigate these products. Products are permitted to bear only the Certification Mark(s) corresponding to the countries for which it is certified, as indicated in each Test Report.

Product Description

The equipment under test (EUT) is a building-in type LCD Module supplied by ES1 and PS3, and intended to build into audio/video, information and communication technology equipment. Electric components are mounted on PWB incorporated with a 10.4 inch TFT-LCD panel with a LED backlight unit.

Model Differences

All models are identical to each other except for model designation.

Test Item Particulars (NOT FOR FIELD REPRESENTATIVE'S USE)

Classification of installation and use by.....:	☐ Ordinary person ☐ Instructed person ☐ Skilled person ☐ Children likely to be present
Supply Connection.....:	☐ pluggable equipment ☐ type A ☐ type B ☐ permanent connection ☐ detachable power supply cord ☐ non-detachable power supply cord ☒ not directly connected to the mains
Equipment mobility	☐ movable ☐ hand-held ☐ transportable ☐ stationary ☒ for building-in ☐ direct plug-in ☐ rack-mounting ☐ wall-mounted
Over voltage category (OVC)	☐ OVC I ☐ OVC II ☐ OVC III ☐ OVC IV ☒ other: <u>not directly connected to the mains</u>
Fundamental Frequency.....:	☐ 50/60 Hz ☐ 50 Hz ☐ 60 Hz ☐ other_50-60_Hz
Class of equipment	☐ Class I ☐ Class II ☒ Class III ☐ Not classified
Access location	☐ restricted access location ☒ N/A
Pollution degree (PD)	☐ PD 1 ☒ PD 2 ☐ PD 3
IP protection class	☒ IP X0 ☐ IP ____
Tested for IT power systems	☐ Yes ☒ No
IT testing, phase-phase voltage (V)	☐ ____ ☒ N/A
Altitude during operation (m)	☒ Up to 2,000 ☐ Up to <u>5000</u>
Altitude of test laboratory (m)	☒ Less than 2,000 ☐ Approximately ____
Mass of equipment (kg)	0.43 kg (max.)

Technical Consideration (NOT FOR FIELD REPRESENTATIVE'S USE)

- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 50 °C (except configured panel control board (E),

model G104X1-L04 (b type), is 80 °C; **panel control board (F), model G104XCE-LXX, is 85°C).**

- LEDs provided in the product are considered low power devices: Yes.
- The unit is intended for build-in and supplied by a D.C. source (ES1 and PS3) which is separated from A.C. mains by double or reinforced insulation.

[X] Engineering Conditions of Acceptability (NOT FOR FIELD REPRESENTATIVE'S USE)

For use only in or with complete equipment where the acceptability of the combination is determined by UL LLC. When installed in an end-product, consideration must be given to the following:

- Safeguards for electrically-caused injury (for ES), electrically-caused fire (for PS), mechanical caused injury (for MS) and thermal burn injury (for TS) should be considered and evaluated in end product investigation.
- The accessibility for ordinary person shall be evaluated in the end product.
- The suitable Symbol/Markings/Instruction and Manual should be evaluated in end product investigation.
- The input and thermal related tests shall be conducted in the end-use product.
- The power supply terminals and/or connectors are: Suitable for factory wiring only.

Additional Information

N/A

Additional Standard

The product fulfils the requirements of: N/A

Markings, instructions and instructional safeguards						
Clause Title		Marking or Instruction Details				
		English			French	
Equipment identification marking – Manufacturer identification		Listee's or Recognized company's name, Trade Name, Trademark or File Number				
Equipment identification marking – model identification		Model Number				
Special Instructions to UL Representative						
N/A						
Production-Line Testing Requirements						
<u>Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.</u>						
Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
N/A						
<u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u>						
All models in this report						
<u>Electric Strength Test Exemptions - This test is not required for the following models:</u>						
All models in this report						
<u>Electric Strength Test Component Exemptions - The following solid-state components may be disconnected from the remainder of the circuitry during the performance of this test:</u>						
N/A						
<u>Sample and Test Specifics for Follow-Up Tests at UL</u>						
Model	Component	Material	Test	Sample(s)	Test Specifics	
N/A						

4.1.2	TABLE: list of critical components					Pass
Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
01. LCD Panel	--	--	10.4 inch, TFT- LCD, LED Backlight	--	--	--
02. Printed Wiring Board	Interchangeable	Interchangeable	V-1 minimum, 105 degree C.	ZPMV2	UL	--
03. Plastic Material of Flexible Printed Wiring (Optional)	Interchangeable	Interchangeable	Rated V-2 minimum or VTM-2 minimum, when no components mounted on surface.	QMFZ2, QMTS2	UL	--
03a. Plastic Material of Flexible Printed Wiring (Optional) (Alternate)	Interchangeable	Interchangeable	Rated V-1 minimum or VTM-1 minimum, when components mounted on surface	QMFZ2, QMTS2	UL	--
03b. Flexible Printed Wiring (Optional) (Alternate)	Interchangeable	Interchangeable	Rated V-2 minimum or VTM-2 minimum, when no components mounted on surface	ZPKX2, ZPMV2	UL	--
03c. Flexible Printed Wiring (Optional) (Alternate)	Interchangeable	Interchangeable	If components mounted on surface, it should be minimum V-1 or VTM-1, 90 degree C minimum	ZPKX2, ZPMV2	UL	--
04. Internal Plastic (Frame)	Interchangeable	Interchangeable	Rated V-2 minimum or VTM-2 minimum.	QMFZ2	UL	--
04a. Internal Plastic (frame) (Alternate)	--	--	Flammability level is ignored, when small parts (4g max. or 1750mm ³ max.) are separated from electrical parts (other than insulated wires and cables) by at least 13 mm of air or by a solid barrier of V-0 or VTM-0 class material	--	--	--
05. Connectors and	Interchangeable	Interchangeable	--	ECBT2	UL	--

Receptacles (Secondary ES1 circuits)						
05a. Connectors and Receptacles (Secondary ES1 circuits) (Alternate)	Interchangeable	Metal/Plastic	Copper alloy pins housed in bodies of plastic rated V-2 or VTM-2 minimum.	QMFZ2	UL	--
05b. Connectors and Receptacles (Secondary ES1 circuits) (Alternate)	--	--	Flammability level is ignored, when small parts (4g max. or 1750mm ³ max.) are mounted on V-1 or VTM-1 class material	--	--	--
05c. Connectors and Receptacles (secondary ES1 circuits) (Alternate)	--	--	Flammability level is ignored, when small parts (4g max. or 1750mm ³ max.) are separated from electrical parts (other than insulated wires and cables) by at least 13 mm of air or by a solid barrier of V-0 or VTM-0 class material	--	--	--
*06. Module Label	Interchangeable	Interchangeable	100 degree C if maximum Surface temperature no specified.	PGDQ2, or PGJ12	UL	--

ENCLOSURES

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	Figure-01	Overall View - top side-1 (G104X1-L03 (A))
Photographs	Figure-02	Overall View - bottom side-1 (G104X1-L03 (A))
Photographs	Figure-03	Overall View - bottom side-2 (G104X1-L03 (A))
Photographs	Figure-04	Overall View - bottom side-3 (G104X1-L03 (A))
Photographs	Figure-05	Overall View - top side-1 (G104X1-L04)
Photographs	Figure-06	Overall View - bottom side-1 (G104X1-L04)
Photographs	Figure-07	Top view of PWB (G104X1-L04)
Photographs	Figure-08	Bottom view of PWB (G104X1-L04)
Photographs	Figure-09	Overall View - top side-1 (G104X1-L03 (B))
Photographs	Figure-10	Overall View - bottom side-1 (G104X1-L03 (B))
Photographs	Figure-11	Overall rear view with control board (A) bottom side.
Photographs	Figure-12	Overall rear view with control board (A) top side (type
Photographs	Figure-13	Overall rear view with control board (A) bottom side
Photographs	Figure-14	Overall rear view
Photographs	Figure-15	Overall rear view with panel control board (E) top side: model G104X1-L04 (b type)
Photographs	Figure-16	Overall rear view with panel control board (E) bottom side: model G104X1-L04 (b type)
Photographs	Figure-17	Overall rear view with panel control board (F)
Photographs	Figure-18	Overall rear view with panel control board (F) top side: model G104XCE-LXX
Photographs	Figure-19	Overall rear view with panel control board (E) bottom side: model G104XCE-LXX

Test Record No. 1

The manufacturer submitted representative production sample of LCD Module, Model G104X1-L03, G104X1-L04, G104XGE-L0X (X can be 0-9, A-Z or Blank).

Unless otherwise noted, all clauses and tests were not considered necessary based upon previous evaluation under the CB scheme. The CB Scheme Test Certificate Ref. No. DK-79078-UL, dated 2018-12-12, and Report Ref. No. 345-00198-CB, dated 2018-12-10 was prepared by UL International Demko A/S.

Test results reported relate only to the items tested.

The following tests were conducted:

Test	Testing Location/Comments
--	--

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following tests were waived:

Test	Rationale for Waiving
5.4.1.4, 6.3.2, 9.0, B.2.6 TEMPERATURE MEASUREMENT	See CB Report
ANNEX B.2.5 INPUT TEST	See CB Report

The following supplements are provided as a part of this Test Record.

NOTE: These supplements are only available to the Applicant via the CDA system.

Type	Supplement Id	Description
Attachment	2-01	CRD

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the U.S. and Canadian (Bi-National) Standard for Safety of Audio/video, information and communication technology equipment - Part 1: Safety requirements CAN/CSA-C22.2 No.62368-1 2nd Edition, issued Date December, 2014, UL 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements, 2nd edition date December 1st, 2014. Any Information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Report by:

Cavy Chen / Eddie Chen
Engineer / Engineer Project Associate
Conformity Assessment Services

Reviewed by:

Steven Huang
Project Engineer
Conformity Assessment Services

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc.

Test Record No. 2

Samples:

The manufacturer submitted representative production sample of LCD Module, Model G104X1-L03, G104X1-L04, G104XGE-L0X, G104XCE-LXX (X can be 0-9, A-Z or Blank), employing:

- (1) Add one source of panel control board (F).
- (2) Add new Model G104XCE-LXX.
- (3) Add one input rating 3.45Vdc max., 0.61A max. for LCD Panel.

General:

Unless otherwise noted, all clauses and tests were not considered necessary based upon previous evaluation under the CB scheme. The CB Scheme Test Certificate Ref. No. DK-79078-M1-UL, dated 2021-08-27, and Report Ref. No. 345-00198-CB-1, dated 2018-08-25 was prepared by UL International Demko A/S.

Test results reported relate only to the items tested.

The following tests were conducted:

Test	Testing Location/Comments
--	--

Test results are valid only for the tested equipment. These tests are considered representative of the products covered by this Test Report. The test methods and results of the above tests have been reviewed and found to be in accordance with the requirements in the Standard(s) referenced at the beginning of this Test Report.

The following tests were waived:

Test	Rationale for Waiving
5.4.1.4, 6.3.2, 9.0, B.2.6 TEMPERATURE MEASUREMENT	See CB Report
ANNEX B.2.5 INPUT TEST	See CB Report

The following supplements are provided as a part of this Test Record.

NOTE: These supplements are only available to the Applicant via the CDA system.

Type	Supplement Id	Description
Attachment	2-01	CRD

Test Record Summary:

The results of this investigation, including construction review and testing, indicate that the products evaluated comply with the applicable requirements in the U.S. and Canadian (Bi-National) Standard for Safety of Audio/video, information and communication technology equipment - Part 1: Safety requirements CAN/CSA-C22.2 No.62368-1 2nd Edition, issued Date December, 2014, UL 62368-1 Audio/video, information and communication technology equipment - Part 1: Safety requirements, 2nd edition date December 1st, 2014. Any Information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Test Report by:

Steven Huang

Senior Project Engineer

Conformity Assessment Services

Reviewed by:

Vincent Lai

Project Engineer

Conformity Assessment Services

Any information and documentation provided to you involving UL Mark services are provided on behalf of Underwriters Laboratories Inc.

CONCLUSION

Samples of the product covered by this Report have been found to comply with the requirements covering the class and the products are judged to be eligible for Listing and Follow-Up Service. The manufacturer is authorized to use the Laboratories' Mark on such products which comply with the Follow-Up Service Procedure and any other applicable requirements of Underwriters Laboratories Inc. Only those products which properly bear the Laboratories' Mark are considered as Listed by Underwriters Laboratories Inc.

Report by:

Cavy Chen / Eddie Chen
Engineer / Engineer Project Associate
Conformity Assessment Services

Reviewed by:

Steven Huang
Project Engineer
Conformity Assessment Services

Project: 4788796378

File: E207943

Page 1 of 2

Compliance Review
Conducted by: Cavy Chen / Eddie Chen
Printed NameCavy Chen / Eddie Chen
Signature2018-12-21
Date**CONSTRUCTION COMPLIANCE REVIEW RECORD****SAMPLE IDENTIFICATION:**

Sample Card #	Date Received	Sample #	Manufacturer, Product Identification and Ratings
201811230007	2018-11-23	1	INNOLUX CORP LCD Module Model: G104X1-L04 Rating: (Optional) 3.6 Vdc max., 0.79 A max. (For Panel) 13.2Vdc max 0.7A or 17.0Vdc max., 0.35 A max (for DC/DC converter)
--	--	--	SCOPE: NEW PROJECT FOR FULL INVESTIGATION, BASED UPON PREVIOUS EVALUATION UNDER THE CB SCHEME. MOREOVER, THIS IS RECOGNIZED COMPONENT FOR BUILDING-IN USING. THE SAMPLE IS REVIEWED AT THE CLIENT SIDE.

[X] Indications of compliance apply to all samples identified with specific compliance included for construction differences of the different samples.

MEASUREMENT INSTRUMENT INFORMATION: (Ex. Micrometer, Calipers, Comparator)

Inst. ID #	Instrument Type	Function/Range	Last Cal. Date	Next Cal. Date
12	Caliper	0-150mm	02/01/2018	02/01/2019
63	Electronic Balance	0-75kg	04/12/2018	04/12/2019
64	Measure Tape	0-450cm	12/24/2015	N/A

The following additional information is required when using client's or rented equipment, or when a UL ID Number for an instrument number is not used. The Inst. ID # below corresponds to the Inst. ID # above.

Inst. ID #	Make / Model / Serial Number / Asset No.
12	MituToyo/500-196-20/08214528/--
63	EXCELL/SJAW931/A07135942/--
64	Shern Tiarn/KKA 5519/ISL-LT010/--

[] UL Measurement instrument information is recorded on Meter Use in UL's Laboratory Project Management (LPM) database

CONSTRUCTION COMPLIANCE REVIEW:

The sample was reviewed for compliance with the construction requirements in the standard(s) indicated below and a complete record including measurements to support compliance with those requirements is detailed in Report Reference Number E207943 Vol.3, Sec. New

- Standard(s):
- ☒ CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, information and communication technology equipment - Part 1: Safety requirements)
 - ☒ UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, information and communication technology equipment - Part 1: Safety requirements)
 - ☐ IEC 62368-1, 2nd Edition, 2014-02 (Audio/video, information and communication technology equipment - Part 1: Safety requirements)

Project No. 4788796378 File E207943 Page 2
 Compliance Review Conducted by: Cavy Chen / Eddie Chen Cavy Chen / Eddie Chen Date 2018-10-31
 Printed Name Signature

Standard SCC Requirements and Guidance – Product Certification Edition/ Revision Date 2016-04-06
 Body Accreditation Program

Clause/Par. Reference and Construction Requirement	Comply			Comments/Measurements	Inst. ID No.
	Yes	No	N/A		
9.2.3 CBs shall include dual language safety labeling within their product certification requirements, if so required by the standard or by the authority having jurisdiction.					
The manufacturer has confirmed they have the ability to include English and French safety labeling exactly as specified in the product standard; or, if NOT specified in the product standard, the ability to include English and French safety labelling consisting of markings associated with the signal words DANGER, WARNING, and CAUTION when required.			X	This is Recognized Component for building-in using. To be considered in end product investigation.	N/A
Manufacturer has a method to manage distribution of products, IF all products with the Canadian certification mark are NOT going to include the dual language.			X	This is Recognized Component for building-in using. To be considered in end product investigation.	N/A

Compliance Review	Steven Huang	Steven Huang	2021-08-26
Conducted by:	Printed Name	Signature	Date

CONSTRUCTION COMPLIANCE REVIEW RECORD

SAMPLE IDENTIFICATION:

Sample Card #	Date Received	Sample #	Manufacturer, Product Identification and Ratings
202108110025	2021-08-11	1	INNOLUX CORP., LCD MODULE: G104XCE-L01 LCD PANEL RATING: 3.45VDC MAX., 0.61A MAX. FOR LCD PANEL 13.2VDC MAX.; 0.7A MAX. FOR DC/DC CONVERTER

[] Indications of compliance apply to all samples identified with specific compliance included for construction differences of the different samples.

MEASUREMENT INSTRUMENT INFORMATION: (Ex. Micrometer, Calipers, Comparator)

Inst. ID #	Instrument Type	Function/Range	Last Cal. Date	Next Cal. Date
12	Caliper	0-150mm	01/04/2021	01/04/2022
63	Electronic Balance	0-75kg	03/19/2021	03/19/2022
64	Measure Tape	0-450cm	12/24/2015	ICO

Note : ICO is Initial Calibration Only

The following additional information is required when using client's or rented equipment, or when a UL ID Number for an instrument number is not used. The Inst. ID # below corresponds to the Inst. ID # above.

Inst. ID #	Make / Model / Serial Number / Asset No.
12	MituToyo/500-196-20/08214528/--
63	EXCELL/SJAW931/A07135942/--
64	Shern Tiarn/KKA 5519/ISL-LT010/--

[] UL Measurement instrument information is recorded on Meter Use in UL's Laboratory Project Management (LPM) database

CONSTRUCTION COMPLIANCE REVIEW:

The sample was reviewed for compliance with the construction requirements in the standard(s) indicated below and a complete record including measurements to support compliance with those requirements is detailed in Report Reference Number E207943 Vol.3, Sec. 31

- Standard(s):
- ☒ CAN/CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, information and communication technology equipment - Part 1: Safety requirements)
 - ☒ UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, information and communication technology equipment - Part 1: Safety requirements)

Project: 4790074918File: E207943

Page 2

Compliance Review
Conducted by: Steven Huang
Printed NameSteven Huang
Signature2021-08-26
Date

Standard SCC Requirements and Guidance – Product Certification Edition/
Body Accreditation Program Revision
Date 2021-03-19

Clause/Par. Reference and Construction Requirement	Comply			Comments/Measurements	Inst. ID No.
	Yes	No	N/A		
9.2.3 CBs shall include dual language safety labeling within their product certification requirements, if so required by the standard or by the authority having jurisdiction.					
The manufacturer has confirmed they have the ability to include English and French safety labeling exactly as specified in the product standard; or, if NOT specified in the product standard, the ability to include English and French safety labelling consisting of markings associated with the signal words DANGER, WARNING, and CAUTION when required.			X	The ability of the manufacturer to include these markings was verified by either (1) visual inspection of the markings on the actual product or (2) draft of labels that will be applied to the product or (3) written confirmation from the customer of the markings that will appear on the product. If the product standard provides the exact translation, the evidence must match the exact translation. If the product standard does NOT provide the exact translation, the evidence must simply include both the English and French text (no verification of translation is required).	N/A

Compliance Review Steven Huang Steven Huang 2021-08-26
 Conducted by: Printed Name Signature Date

Clause/Par. Reference and Construction Requirement	Comply			Comments/Measurements	Inst. ID No.
	Yes	No	N/A		
Manufacturer has a method to manage distribution of products, IF all products with the Canadian certification mark are NOT going to include the dual language.			X	Evaluation staff are to only verify that the manufacturer has a method to control distribution. Evaluation staff do not have to record the method of control nor are the evaluation staff expected to verify the effectiveness of the method of control. This requirement to verify that a method exists will be noted in the FUS Procedure. The UL Field Engineer will verify the method during surveillance. If the manufacturer is going to include the dual language on all products with the Canadian certification mark, then this item is N/A; no further action required.	N/A