

CERTIFICATE OF COMPLIANCE

Certificate Number 20191025-E204356
Report Reference E204356-20191024
Issue Date 2019-OCTOBER-25

Issued to: AU OPTRONICS CORP
1 LI-HSIN RD 2
HSINCHU SCIENCE PARK
HSINCHU
300 TAIWAN

**This certificate confirms that
representative samples of**

COMPONENT - AUDIO/VIDEO, INFORMATION AND
COMMUNICATION TECHNOLOGY EQUIPMENT
Refer to addendum for models

Have been investigated by UL in accordance with the
component requirements in the Standard(s) indicated on
this Certificate. UL Recognized components are incomplete
in certain constructional features or restricted in
performance capabilities and are intended for installation in
complete equipment submitted for investigation to UL LLC.

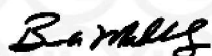
Standard(s) for Safety: UL 62368-1 and CAN / CSA C22.2 No. 62368-1-14 -
Audio/video, Information and Communication Technology
Equipment - Part 1: Safety Requirements

Additional Information: See the UL Online Certifications Directory at
<https://iq.ulprospector.com> for additional information.

This *Certificate of Compliance* does not provide authorization to apply the UL Recognized Component Mark. Only
the UL Follow-Up Services Procedure provides authorization to apply the UL Mark.

Only those products bearing the UL Recognized Component Mark should be considered as being UL Certified
and covered under UL's Follow-Up Services.

Look for the UL Recognized Component Mark on the product.



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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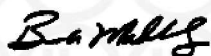


CERTIFICATE OF COMPLIANCE

Certificate Number 20191025-E204356
Report Reference E204356-20191024
Issue Date 2019-OCTOBER-25

This is to certify that representative samples of the product as specified on this certificate were tested according to the current UL requirements.

LCD Panel (LED Backlight)
G215HVNZZZZ, G215HANZZZZ, G215HVTZZZZ (Z may be any alphanumeric character or blank for marketing purpose only, and no impact safety related constructions and critical components)



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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File E204356
Project 4789196427

October 24, 2019

REPORT

on

Component Recognition - LCD Panel (LED Backlight)

AU OPTRONICS CORP
HSINCHU, 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) CAN / CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)
Certification Type:	Component Recognition - LCD Panel (LED Backlight) for built-in Audio/Video, Information and Communication Technology Equipment)
CCN:	AZOT2, AZOT8
Complementary Certification CCN	N/A
Product:	LCD Panel (LED Backlight)
Model:	G215HVNZZZZ, G215HANZZZZ, G215HVTZZZZ (Z may be any alphanumeric character or blank for marketing purpose only, and no impact safety related constructions and critical components)
Rating:	(Optional) 1. 12 Vdc, 2.08A Max. (for LED driver board P/N: 21G01-D00) 2. 12Vdc, 1.4A Max. (for LED driver board P/N: 21G03-C01) 3. 12Vdc, 1.36A typ. (for LED driver board P/N: 21G01-D0# (# maybe 1-9, A-Z) for models G215HVTZZZZ only)
Applicant Name and Address:	AU OPTRONICS CORP 1 LI-HSIN RD 2 HSINCHU SCIENCE PARK HSINCHU 300 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.

UL authorizes the applicant to reproduce the latest pages of the referenced Test Report consisting of this page through to the end of the Engineering Conditions of Acceptability.

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Prepared by: Slash Chang

Reviewed by: Scott Chen

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 Color TFT LCD module with LED type LCD Backlight unit, panel control board, with/without LED driver board and with/without touch function installed for backlight, intended to use in information technology equipment.

Model Differences

Model G215HVNZZZZ is similar with G215HANZZZZ except for without LED driver board.

Model G215HVTZZZZ is similar to G215HVNZZZZ except for model designation, input rating, LED driver board and with touch function.

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: Not Mains connected
Fundamental Frequency	☐ 50/60 Hz ☐ 50 Hz ☐ 60 Hz ☐ other : ☒ N/A
Class of equipment	☐ Class I ☐ Class II ☐ Class III ☒ Not classified ☐ Class II with functional earthing
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 5,000
Altitude of test laboratory (m)	☒ Less than 2,000 ☐ Approximately ____
Mass of equipment (kg)	2.3 (for models G215HVNZZZZ, G215HANZZZZ), 1.85 (for models G215HVTZZZZ)

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: 60°C
- The Risk Group of a lamp or lamp system (including LEDs) is: Exempt
- The following are available from the Applicant upon request: Product specification
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Fire, Mechanical
- The supply source shall be ES1.
- The following output circuits are at ES1 energy levels: Output of LED driver boards
- Classification of PIS has not been conducted. Therefore, all electrical components were assumed to be resistive PIS
- This component has been evaluated in "control of fire spread" method assuming appropriate fire enclosure is provided in end product.
- The touch temperature for Panel Surface should not exceed 60°C and all related tests shall be evaluated in end product.

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

- The power supply terminals and/or connectors are: Suitable for factory wiring only
- Safety Instruction Should be considered in end-product evaluation

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					
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
--	--	--	--	--	--	--
<u>Earthing Continuity Test Exemptions - This test is not required for the following models:</u>						
All models.						
<u>Electric Strength Test Exemptions - This test is not required for the following models:</u>						
All models.						
<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	--	--	--	--	--	

TABLE: list of critical components							Pass
4.1.2	Object/part or Description	Manufacturer/ trademark	type/model	technical data	Product Category CCN(s)	Required Marks of Conformity	Supplement ID
	01. Panel	Interchangeable	Interchangeable	TFT type, 21.5"	--	--	
	02. Enclosure / Chassis	Interchangeable	Interchangeable	Steel Metal or Aluminum	--	--	
	03. PWB	Interchangeable	Interchangeable	Minimum V-1 or better, 105 degree C min.	ZPMV2	UL	
	04. Internal Wirings (Optional)	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or rated VW-1; minimum 30 V, 105 degree C.	AVLV2	UL	
	05. Connectors and Receptacles (ES1 circuits)	Interchangeable	Interchangeable	--	ECBT2 or RTRT2	UL	
	05a. Connectors and Receptacles (ES1 circuits) (Alternate)	Interchangeable	Metal and Plastic	Copper alloy pins housed in bodies of plastic rated V-2 min.	QMFZ2	UL	
	06. Flexible PWB (Optional)	Interchangeable	Interchangeable	Rated V-2 minimum or VTM-2 minimum, when no components mounted on surface; If components mounted on surface, it should be minimum V-1 or VTM-1, 80 degree C	ZPKX2 or ZPMV2	UL	
	06a. Flexible PWB (Optional)	Interchangeable	Interchangeable	Rated V-2 minimum or VTM-2 minimum, when no components mounted on surface, 80 degree C	QMFZ2 or QMTS2	UL	
	07. Label	Interchangeable	Interchangeable	Min. 70 degree C if maximum surface temperature not specified.	PGDQ2 or PGJ12	UL	
	08. LED driver board (Optional)	AU Optronics Corp.	21G01-D00	Rating: 12 Vdc, 2.08 A Max.	--	--	
	08a. LED driver board (Optional)	AU Optronics Corp.	21G03-C01	Rating: 12 Vdc, 1.4 A Max.	--	--	

ULS-62368-1-QQJQ-Description-2002

Form Page 6

Form Issued: 2012-02-25

Form Revised:

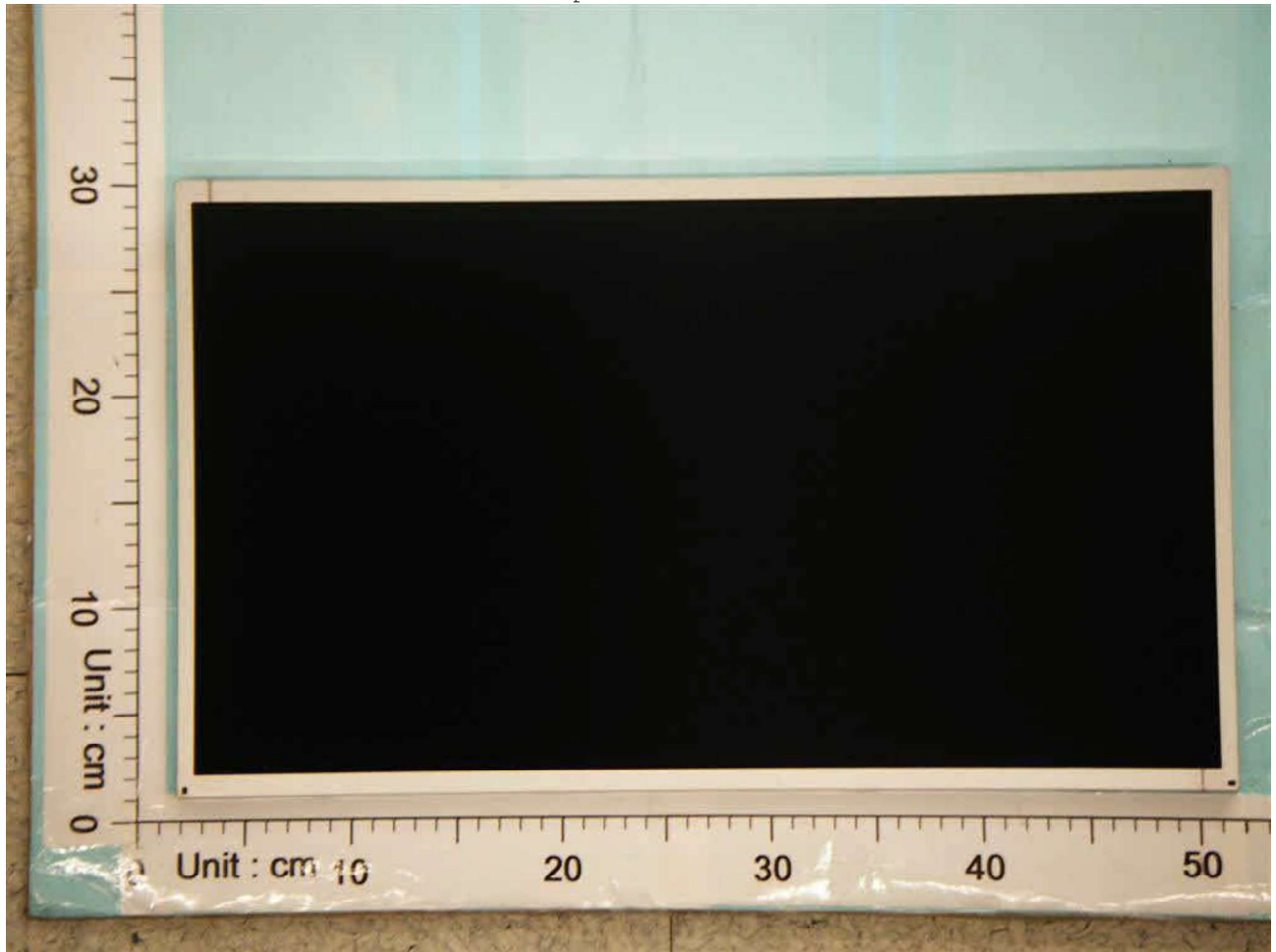
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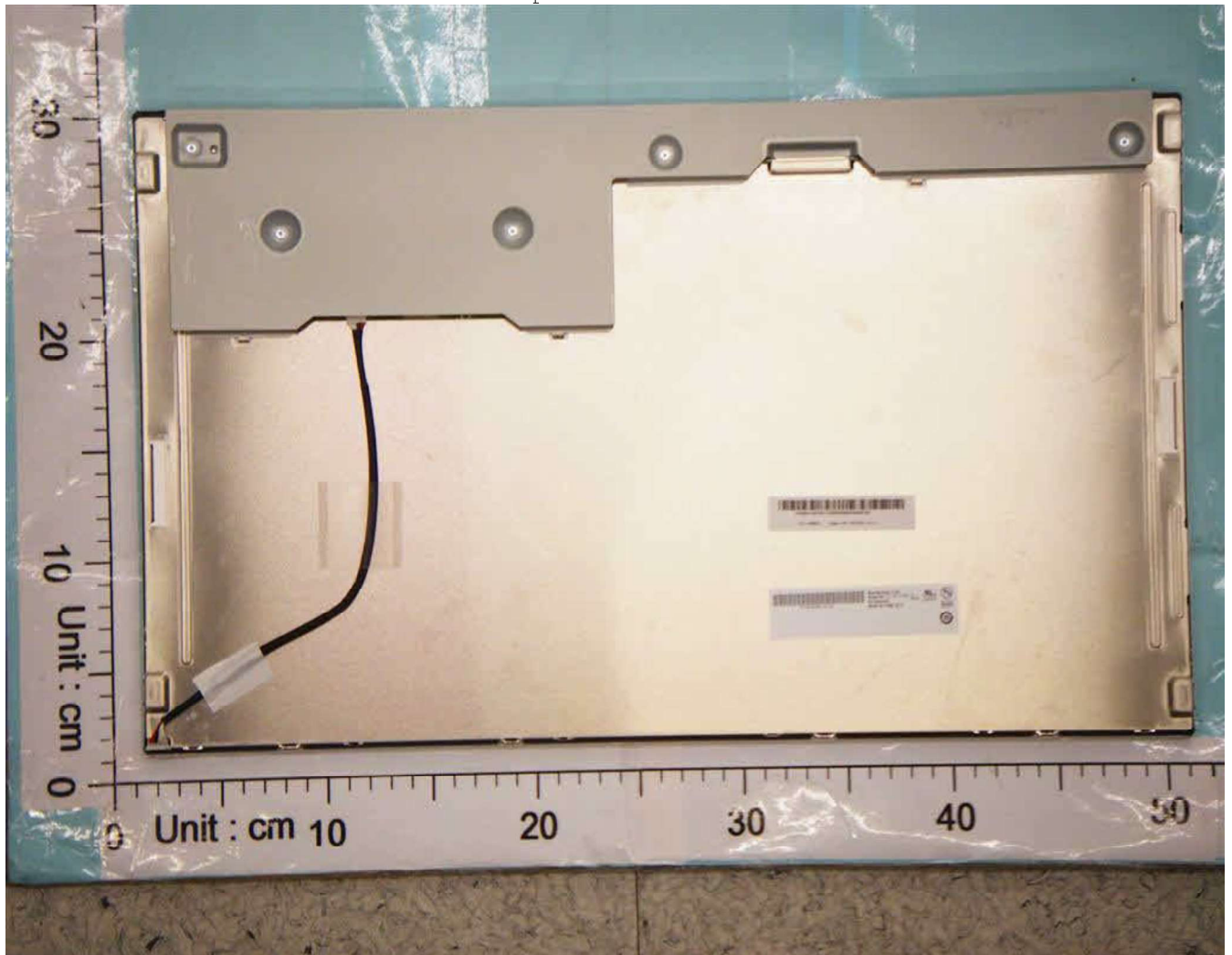
Only those products bearing the UL Mark should be considered as being covered by UL.

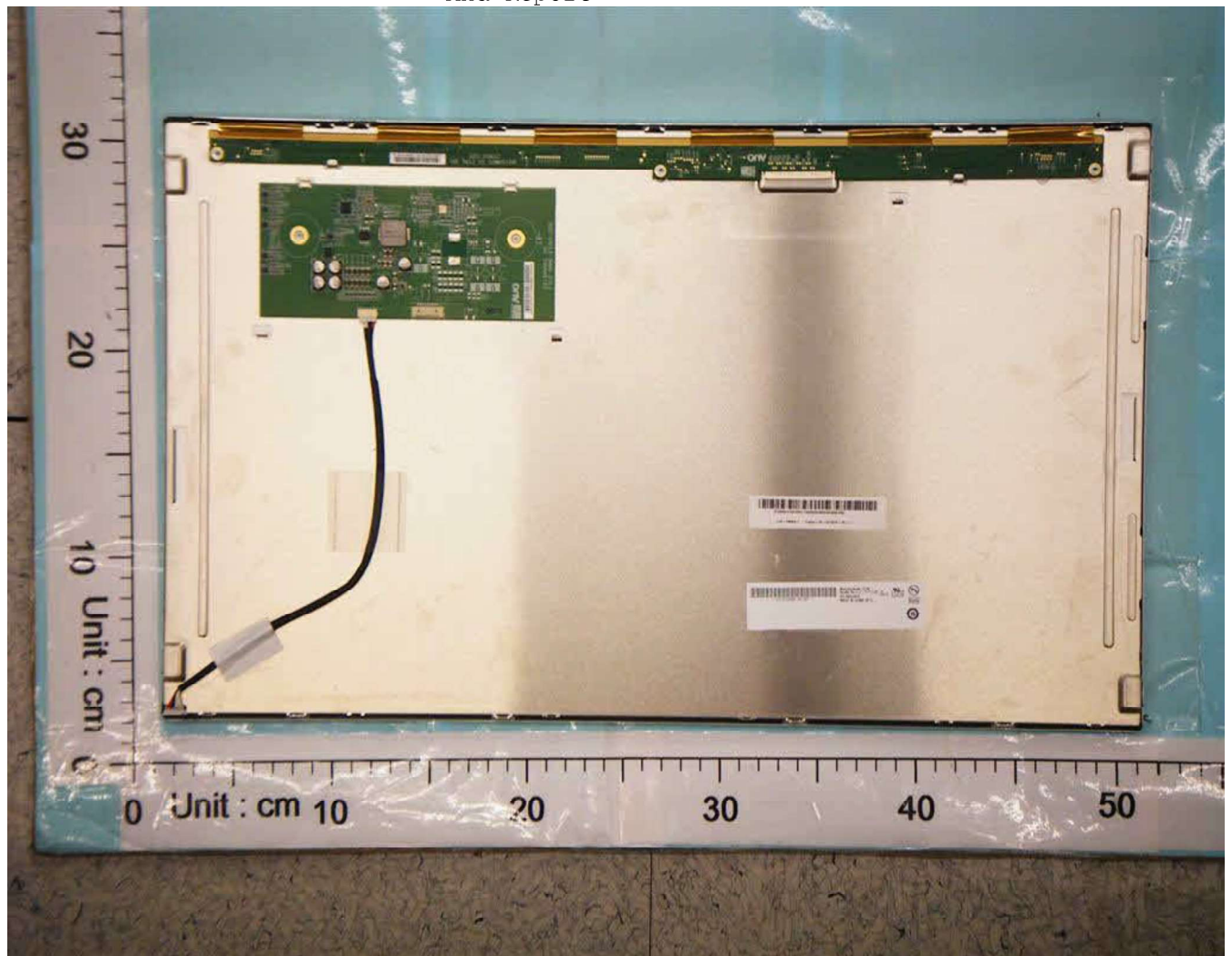
09. LED Driver Board (for G215HVT01.0)	AU Optronics Corp.	21G01-D0# (# maybe 1-9, A-Z)	Rating: 12 Vdc, 1.36 A Typ.	--	--	
09-1. Fuse (F1)	AEM COMPONENTS (SUZHOU) CO LTD	F0603HI	Rated 3A,32V	JDYX2	UL	

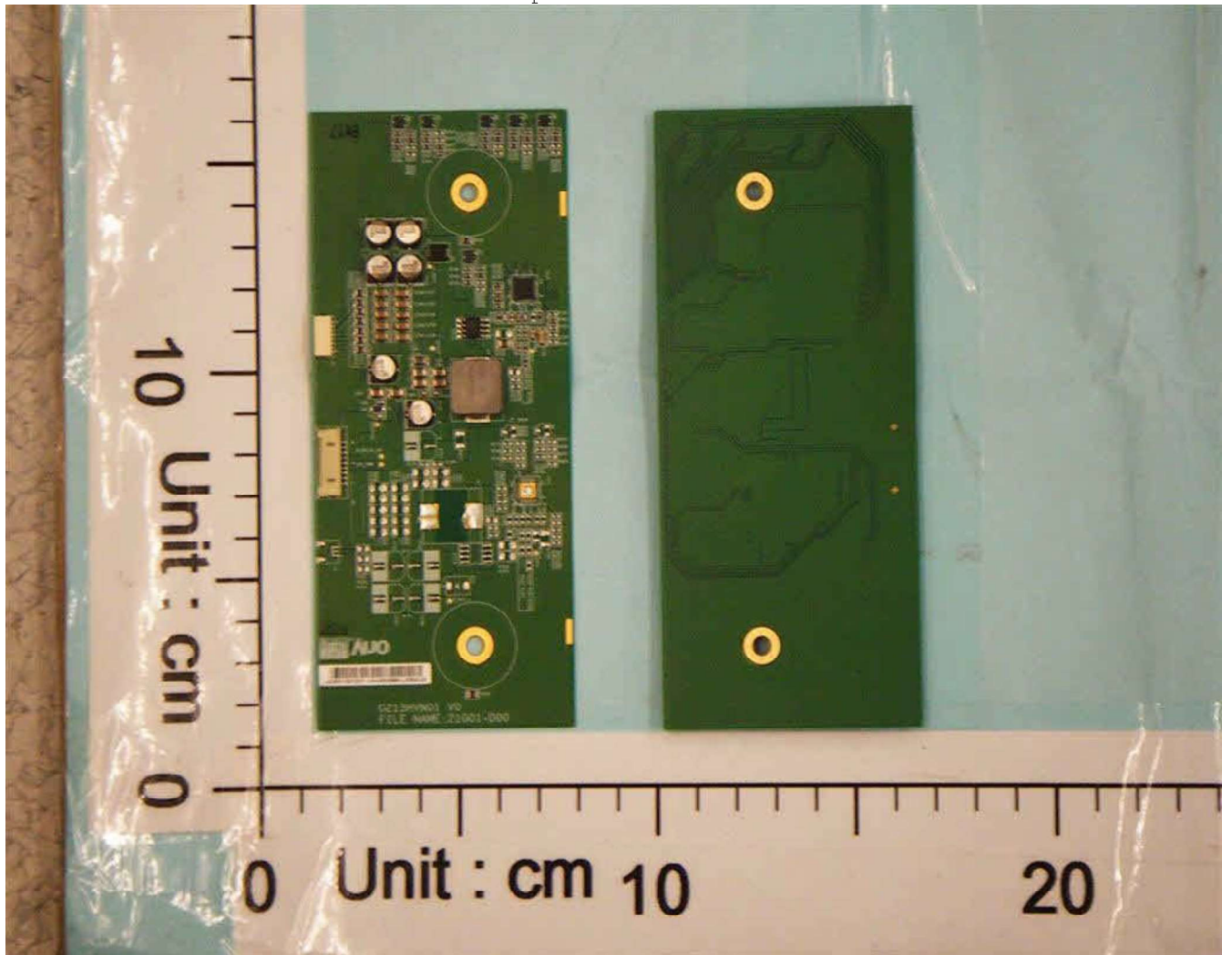
ENCLOSURES

<u>Type</u>	<u>Supplement ID</u>	<u>Description</u>
Figures	01	Model G215HVNZZZZ (G215HVN01.0), front view
Figures	02	Model G215HVNZZZZ (G215HVN01.0), rear view - 1, LED driver board P/N: 21G01-D00
Figures	03	Model G215HVNZZZZ (G215HVN01.0), rear view - 2, LED driver board P/N: 21G01-D00
Figures	04	LED driver board P/N: 21G01-D00
Figures	05	Model G215HANZZZZ, Rear View without driver board
Figures	06	Model G215HVNZZZZ (G215HVN01.0), front view
Figures	07	Model G215HVNZZZZ (G215HVN01.0), rear view - 1, LED driver board P/N: 21G03-C01
Figures	08	Model G215HVNZZZZ (G215HVN01.0), rear view - 2, LED driver board P/N: 21G03-C01
Figures	09	LED driver board P/N: 21G03-C01
Figures	10	Model G215HVTZZZZ (G215HVT01.0), front view
Figures	11	Model G215HVTZZZZ (G215HVT01.0), rear view - 1, LED driver board P/N: 21G01-D0# (21G01-D05)
Figures	12	Model G215HVTZZZZ (G215HVT01.0), rear view - 2, LED driver board P/N: 21G01-D0# (21G01-D05)
Figures	13	Model G215HVTZZZZ, touch FPCB
Figures	14	LED driver board P/N: 21G01-D0# (21G01-D05)
Illustrations	01	PCB layout - LED driver board P/N: 21G01-D00

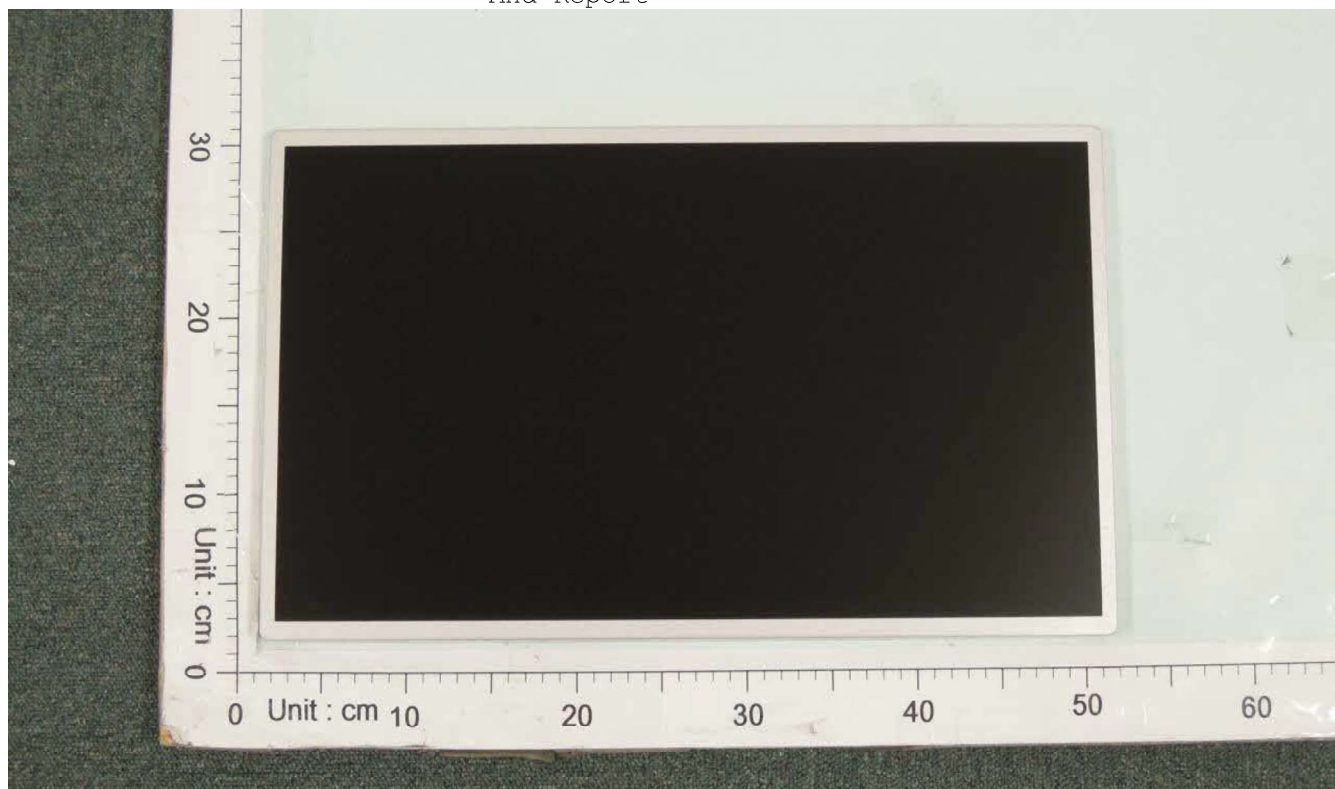


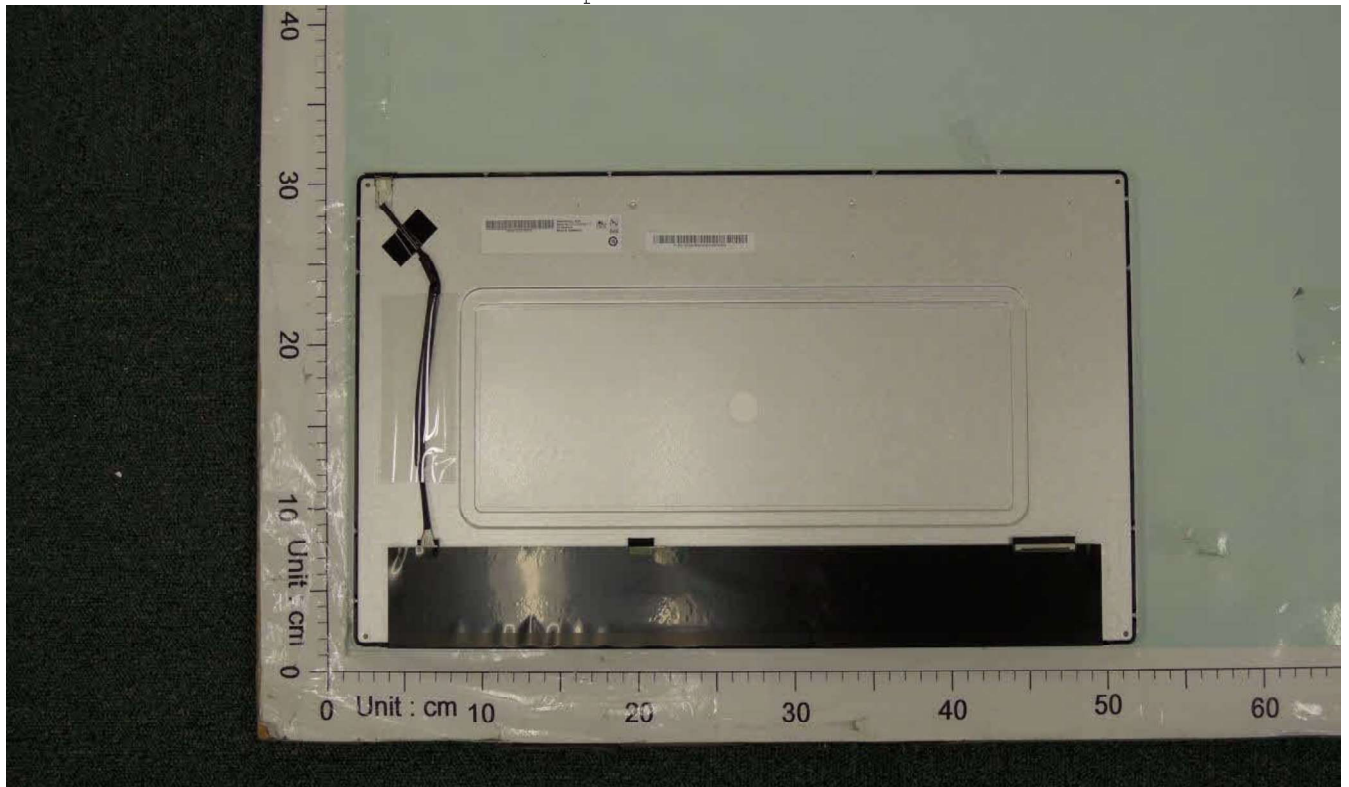


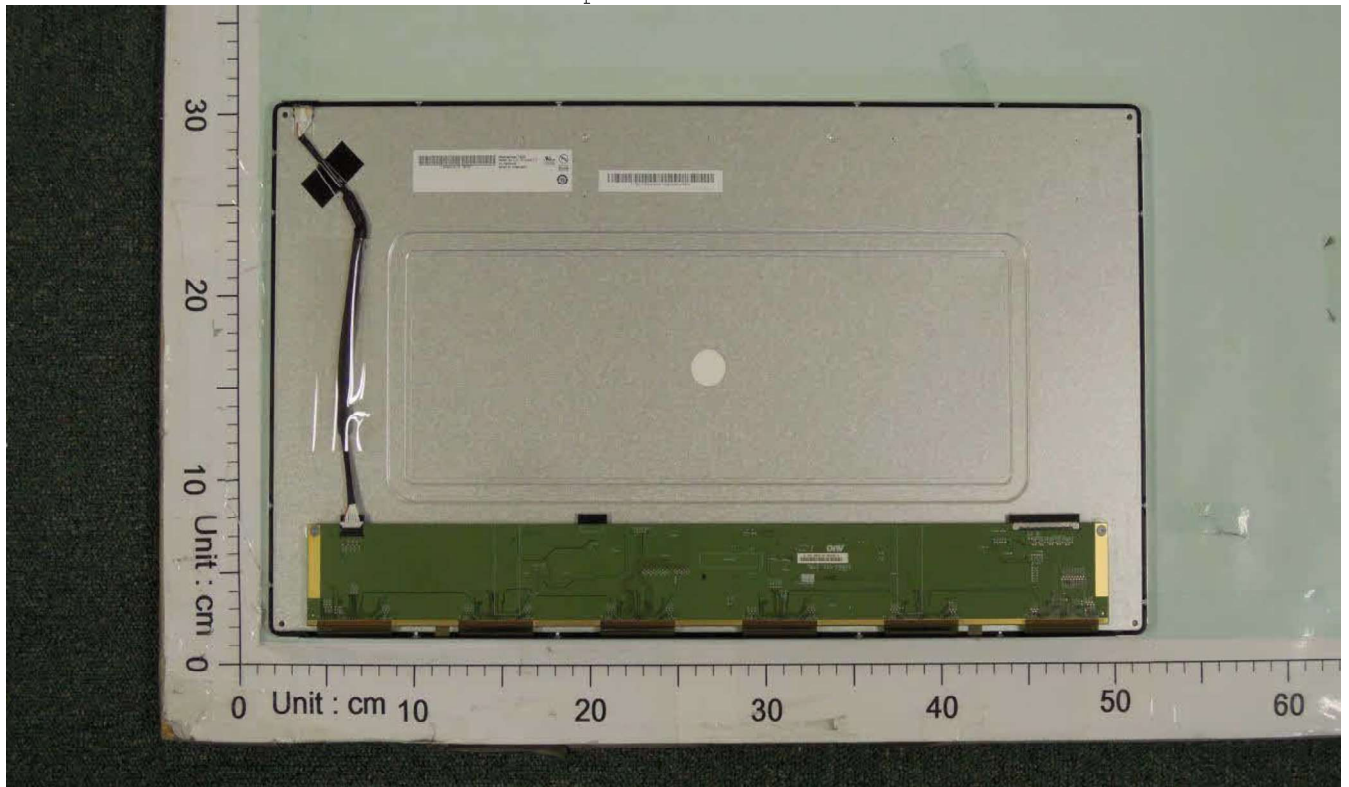


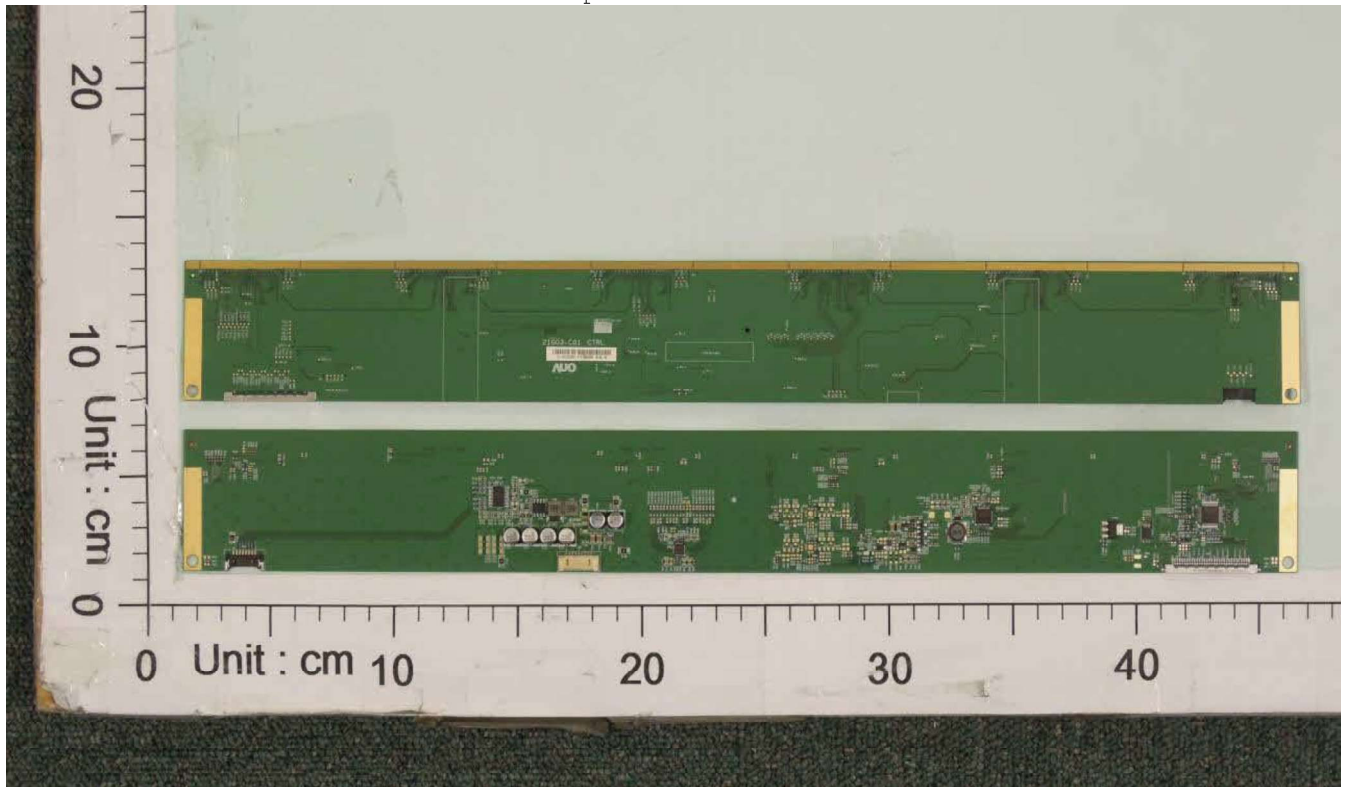


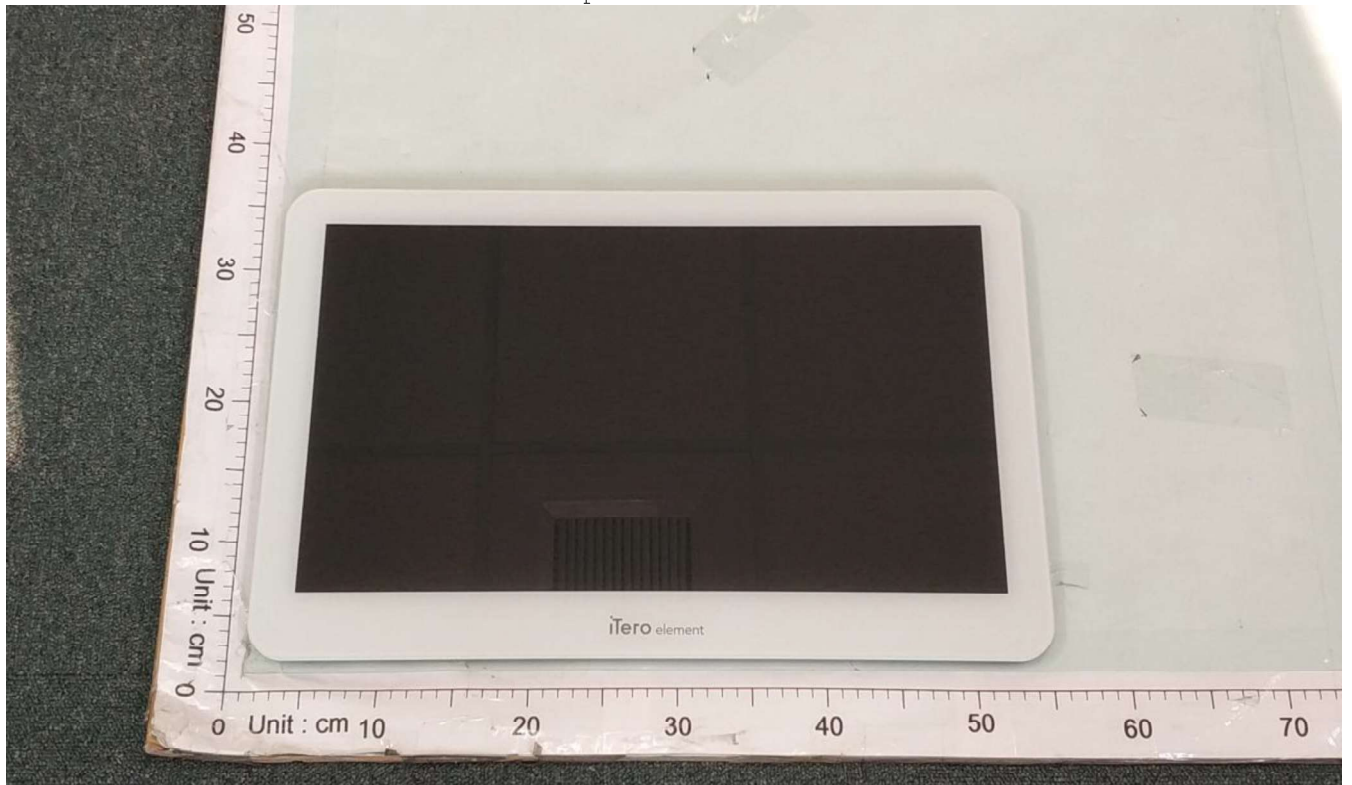




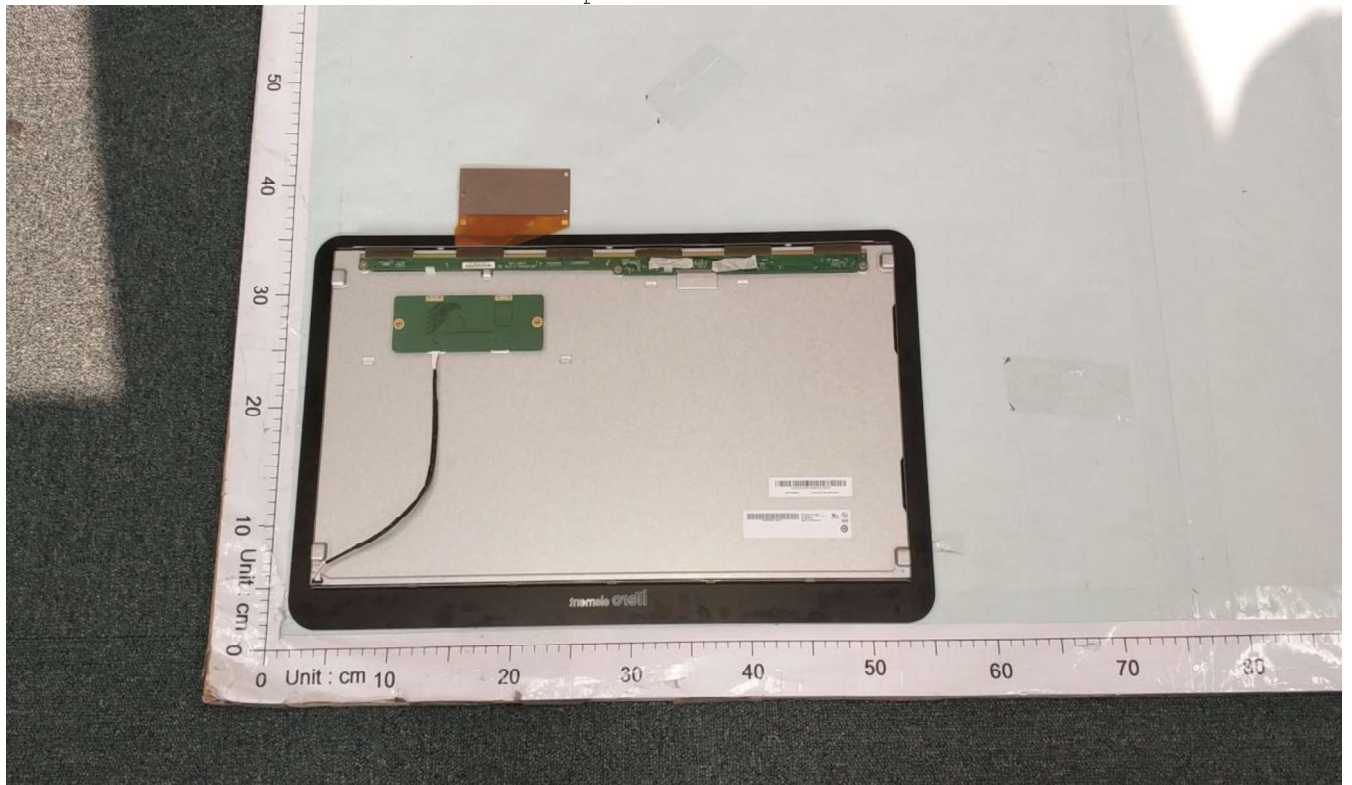


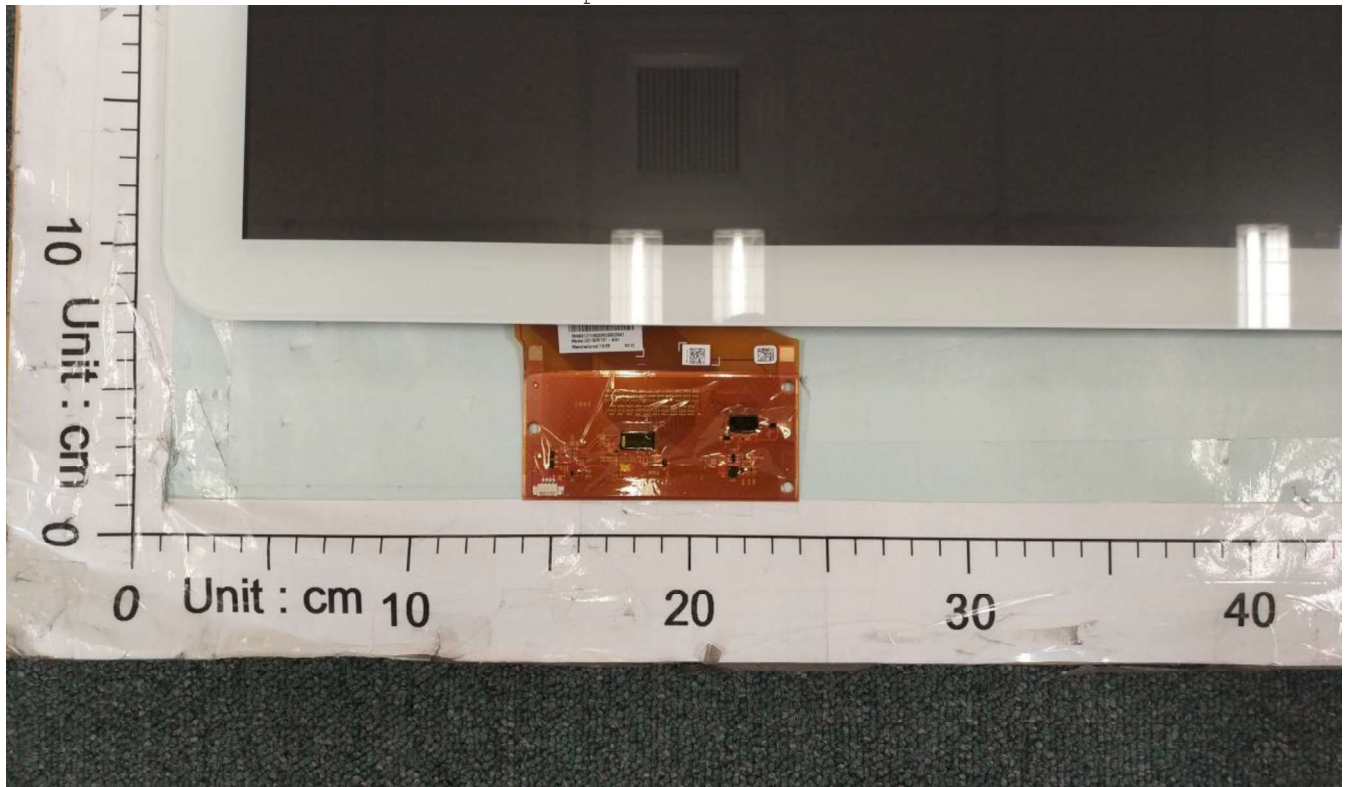


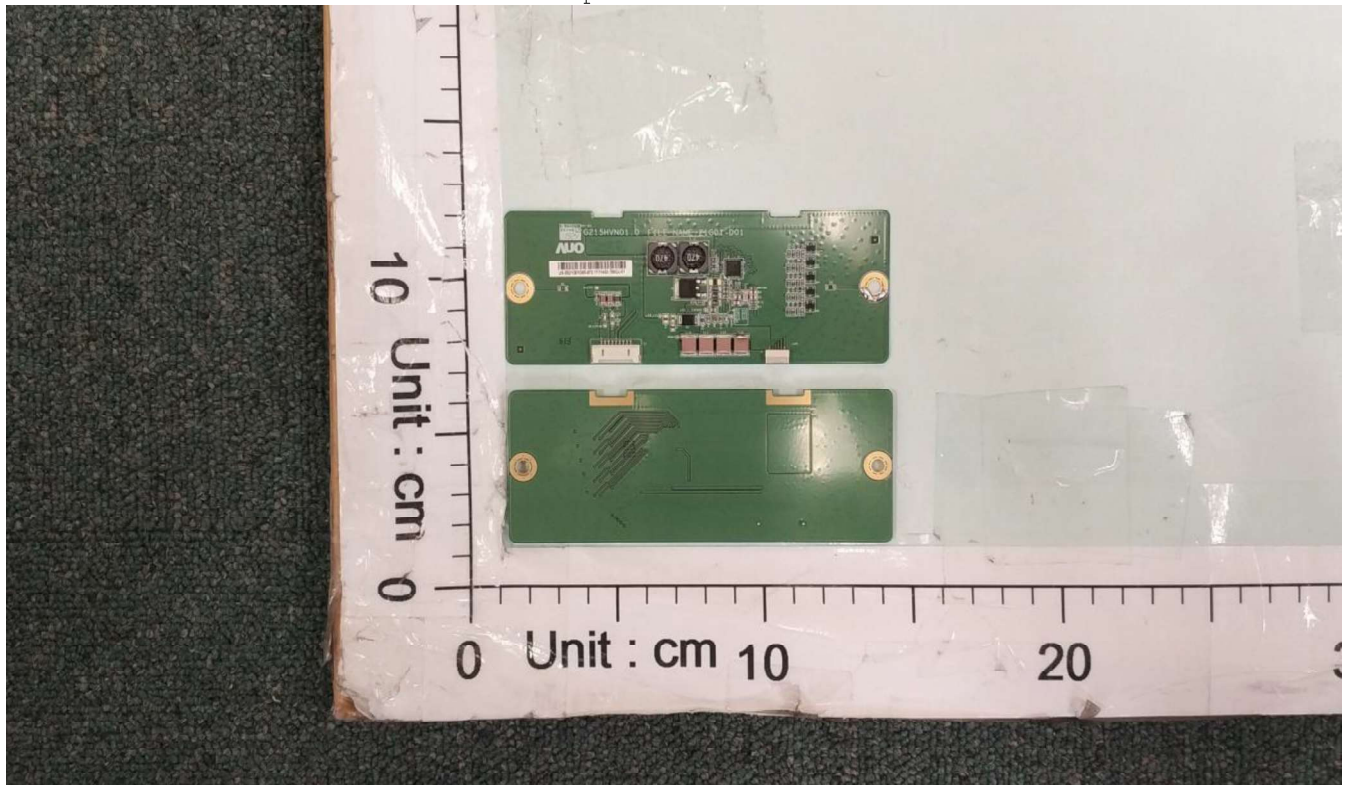












TEST RECORD NO. 1

SAMPLES:

Representative production samples of LCD Panel (LED backlight), Models G215HVNZZZZ, G215HANZZZZ, G215HVTZZZZ (Z may be any alphanumeric character or blank for marketing purpose only, and no impact safety related constructions and critical components) were submitted for review as outlined in the:

Standard for UL 62368-1, 2nd Edition, 2014-12-01 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements) and

CAN CSA C22.2 No. 62368-1-14, 2nd Edition, 2014-12 (Audio/video, Information and Communication Technology Equipment - Part 1: Safety Requirements)

GENERAL:

Testing of the LCD Panel (LED backlight), Models G215HVNZZZZ, G215HANZZZZ, G215HVTZZZZ (Z may be any alphanumeric character or blank for marketing purpose only, and no impact safety related constructions and critical components), were not considered necessary based on the results of previous investigations under CB Scheme. The CB Scheme Test Certificate No. DK-88853-UL, date 2019-10-24 and Report Ref. No. E204356-4789196427-1 Original, date 2019-10-21, were prepared by UL Demko.

- Steady State Voltage and Current conditions (5.2.2.2)
- INPUT TEST: SINGLE PHASE (B.2.5)
- NORMAL OPERATING CONDITIONS TEMPERATURE MEASUREMENT (5.4.1.4, 6.3.2, 9.0, B.2.6)
- SIMULATED SINGLE FAULT CONDITIONS (B.4)

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 standards noted below and, therefore, such products are judged eligible to bear UL's Mark as described on page one of this Report. Any information and documentation involving UL Mark services are provided on behalf of UL LLC (UL) or any authorized licensee of UL.

Report by:

Reviewed by:

Slash Chang
Senior Project Engineer

Scott Chen
Senior Project Engineer

CONCLUSION

A sample of the product covered by this Report has been found to comply with the requirements covering the category and the product is found to comply with UL's applicable requirements. The description and test result in this Report are only applicable to the sample(s) investigated by UL and does not signify UL certification or that the product(s) described are covered under UL's Follow-Up Service Program. When covered under UL's Follow-Up Service Program, the manufacturer is authorized to use the UL Listing Mark on such products which comply with UL's Follow-Up Service Procedure and any other applicable requirements of UL LLC. The Listing Mark of UL LLC on the product, or the UL symbol on the product and the Listing Mark on the smallest unit container in which the product is packaged, is the only method to identify products investigated by UL to published requirements and manufactured under UL's Listing and Follow-Up Service.

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Report by:

Reviewed by:

Slash Chang
Senior Project Engineer

Scott Chen
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