

CERTIFICATE OF COMPLIANCE

Certificate Number 20170406-E204356
Report Reference E204356-A371-UL
Issue Date 2017-APRIL-06

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

**This is to certify that
representative samples of**

COMPONENT - INFORMATION TECHNOLOGY
EQUIPMENT INCLUDING ELECTRICAL BUSINESS
EQUIPMENT

LCD Panel (LED backlight)- G133HANZZZZ (Where Z may
be any alphanumeric character or a dot or blank)

Have been investigated by UL in accordance with the
Standard(s) indicated on this Certificate.

Standard(s) for Safety: See Addendum page

Additional Information: See the UL Online Certifications Directory at
www.ul.com/database for additional information

Only those products bearing the UL Certification Mark should be considered as being covered by UL's
Certification and Follow-Up Service.

The UL Recognized Component Mark generally consists of the manufacturer's identification and catalog
number, model number or other product designation as specified under "Marking" for the particular
Recognition as published in the appropriate UL Directory. As a supplementary means of identifying products
that have been produced under UL's Component Recognition Program, UL's Recognized Component Mark:
 may be used in conjunction with the required Recognized Marks. The Recognized Component Mark is
required when specified in the UL Directory preceding the recognitions or under "Markings" for the individual
recognitions.

Recognized components are incomplete in certain constructional features or restricted in performance
capabilities and are intended for use as components of complete equipment submitted for investigation rather
than for direct separate installation in the field. The final acceptance of the component is dependent upon its
installation and use in complete equipment submitted to UL LLC.

Look for the UL Certification Mark on the product.



Bruce Mahrenholz, Director North American Certification Program

UL LLC

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contact a local UL Customer Service Representative at <http://ul.com/aboutul/locations/>



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

UL 60950-1, - (Information Technology Equipment - Safety - Part 1: General Requirements)
CAN/CSA C22.2 No. 60950-1-07- (Information Technology Equipment - Safety - Part 1: General Requirements)



Bruce Mahrenholz, Director North American Certification Program
UL LLC

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UL TEST REPORT AND PROCEDURE

Standard:	UL 60950-1, 2nd Edition, 2014-10-14 (Information Technology Equipment - Safety - Part 1: General Requirements) CAN/CSA C22.2 No. 60950-1-07, 2nd Edition, 2014-10 (Information Technology Equipment - Safety - Part 1: General Requirements)
Certification Type:	Component Recognition
CCN:	NWQG2, NWQG8 (Information Technology Equipment Including Electrical Business Equipment)
Product:	LCD Panel (LED backlight)
Model:	G133HANZZZZ (Where Z may be any alphanumeric character or a dot or blank)
Rating:	(Optional) 12Vdc, 1.25A max.
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 the first page of the Specific Technical Criteria through to the end of the Conditions of Acceptability.

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

Prepared by: Josh Liao

Reviewed by: Allen Huang

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.
 - iii. Part AF 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

(TFT) LCD Panel secured on metal chassis, and supplied by SELV. Boost with LED driver circuit.

Model Differences

N/A

Technical Considerations

- Equipment mobility : for building-in
- Connection to the mains : not directly connected to the mains
- Operating condition : continuous
- Access location : N/A
- Over voltage category (OVC) : not directly connected to the mains
- Mains supply tolerance (%) or absolute mains supply values : not directly connected to the mains
- Tested for IT power systems : No
- IT testing, phase-phase voltage (V) : N/A
- Class of equipment : Class III (supplied by SELV)
- Considered current rating of protective device as part of the building installation (A) : N/A
- Pollution degree (PD) : PD 2
- IP protection class : IP X0
- Altitude of operation (m) : Up to 2000
- Altitude of test laboratory (m) : Less than 2000 m
- Mass of equipment (kg) : Approximate 0.5 kg
- The product was submitted and evaluated for use at the maximum ambient temperature (Tma) permitted by the manufacturer's specification of: 70 °C
- The following are available from the Applicant upon request: Installation (Safety) Instructions / Manual
- LEDs provided in the product are considered low power devices: Yes

Engineering Conditions of Acceptability

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:

- The power supply terminals and/or connectors are: Suitable for factory wiring only
- The investigated Pollution Degree is: 2
- The following end-product enclosures are required: Fire
- The following LEDs operate within the exempt group per IEC 62471: Panel backlight
- The equipment is evaluated to be supplied by SELV circuit only.
- Safety Instructions shall be considered in the end-product evaluation.
- To be determined in end product. The Maximum temperature (Tmax) for Panel Surface should not exceed 95 degree C.

Additional Information

Maximum Normal Load is defined as following: With screen full raster, maximum brightness and contrast and operated continuously.

Additional Standards

The product fulfills the requirements of: --

Markings and instructions

Clause Title	Marking or Instruction Details
Power rating - Company identification	Listee's or Recognized company's name, Trade Name, Trademark or File Number
Power rating - Model	Model Number
Power rating - Ratings (Optional)	Ratings (voltage, frequency/dc, current)

Special Instructions to UL Representative

N/A

Production-Line Testing Requirements

Electric Strength Test Special Constructions - Refer to Generic Inspection Instructions, Part AC for further information.

Model	Component	Removable Parts	Test probe location	V rms	V dc	Test Time, s
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Earthing Continuity Test Exemptions - This test is not required for the following models:

All Models.

Electric Strength Test Exemptions - This test is not required for the following models:

All Models.

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:

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Sample and Test Specifics for Follow-Up Tests at UL

Model	Component	Material	Test	Sample(s)	Test Specifics
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1.5.1	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
S01. Internal Wirings (Optional)	Interchangeable	Interchangeable	FEP, PTFE, PVC, TFE, neoprene, polyimide or rated VW-1; minimum 30 V, 105 degree C.	AVLV2	UL	
S02. Connectors and Receptacles (Secondary ELV/SELV circuits)	Interchangeable	Interchangeable	--	ECBT2, RTRT2	UL	
S02a. Connectors and Receptacles (Secondary ELV/SELV circuits) (alternate)	Interchangeable	Metal/ Plastic	Copper alloy pins housed in bodies of plastic rated V-2 min.	QMFZ2	UL	
S03. Flexible PWB (Optional)	Interchangeable	Interchangeable	Min V-1 or VTM-1, 80 degree C for component mounted. Min V- 2 or VTM-2, 80 degree C for no component mounted.	ZPKX2 or ZPMV2 or QMFZ2 or QMTS2	UL	
01. Panel	Interchangeable	Interchangeable	TFT Type, 13.3 inch	--	--	
02. Chassis	Interchangeable	Interchangeable	Sheet metal or Aluminum See enclosure ID 4-01 for details.	--	--	
03. PWB	Interchangeable	Interchangeable	Minimum V-1 or better, 105 degree C.	ZPMV2	UL	
04. Label	Interchangeable	Interchangeable	Min. 90 degree C.	PGDQ2 or PGJI2	UL	
05. LED Drive Board	AU Optronics Corp.	13G01-CXX (X=0- 9, A-Z)	LED backlight rating: 12 Vdc, 1.25A max.	--	--	

Enclosures

<u>Type</u>	<u>Supplement Id</u>	<u>Description</u>
Photographs	3-01	Front View
Photographs	3-02	Rear View - 1
Photographs	3-03	Rear View - 2
Photographs	3-04	PCB
Diagrams	4-01	Enclosure Diagram

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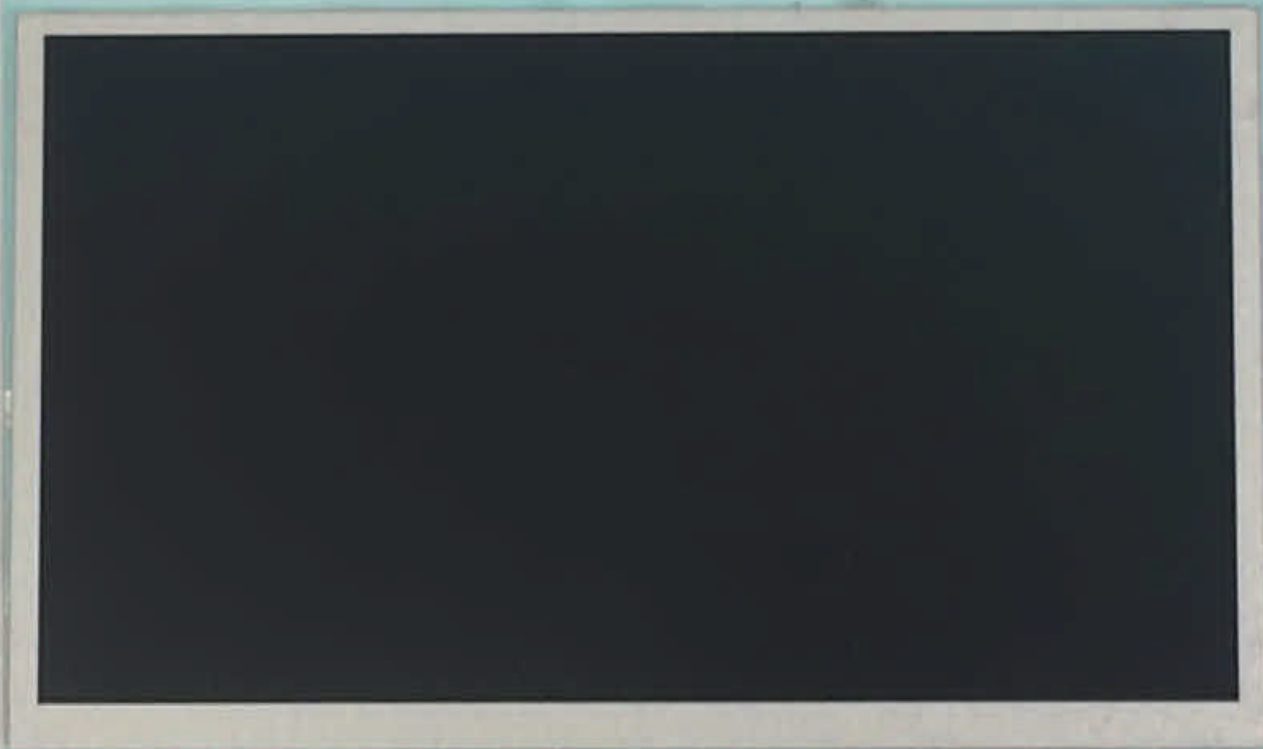
Unit : cm

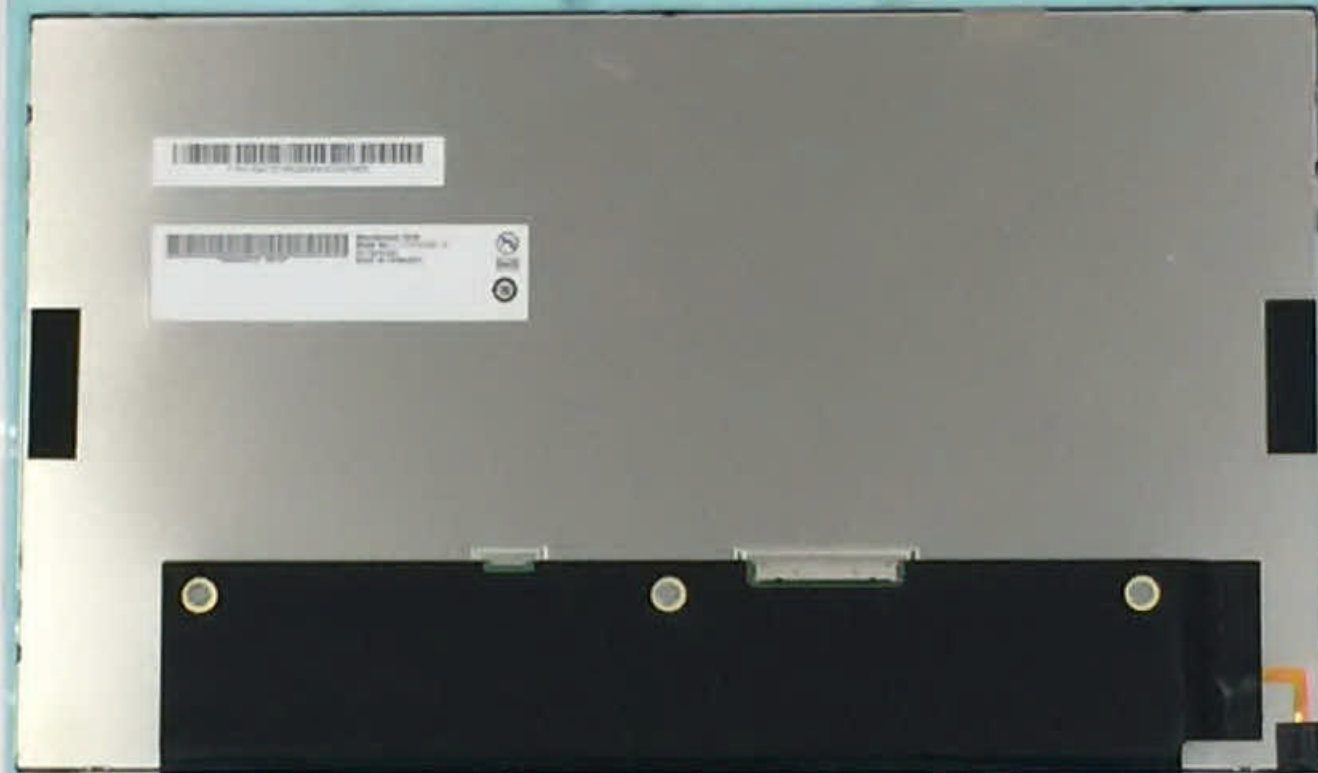
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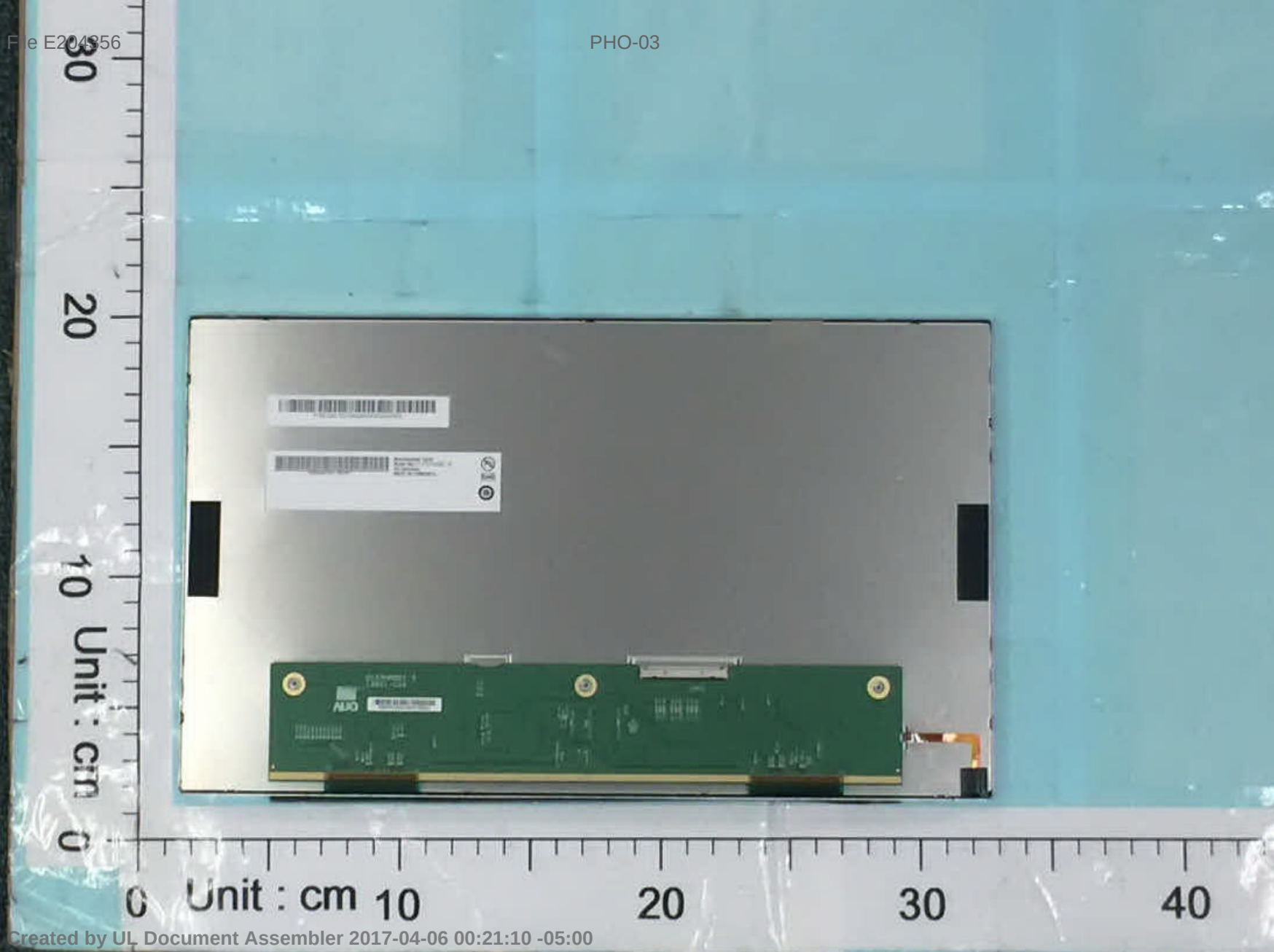
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30







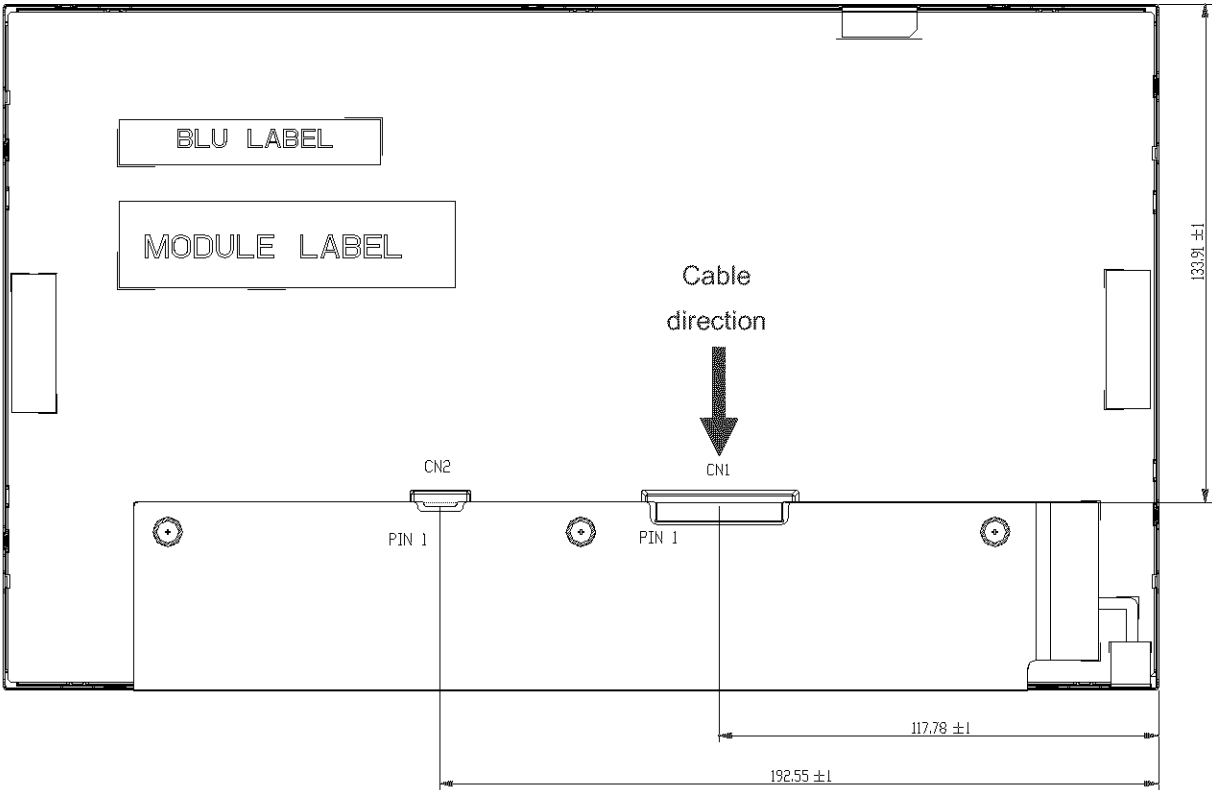
20
10 Unit : cm
0



0 Unit : cm 10 20 30



Product Specification
AU OPTRONICS CORPORATION



7.2 Backlight Unit

Physical interface is described as for the connector on module. These connectors are capable of accommodating the following signals and will be following components.

7.2.1 Connector (CN2)

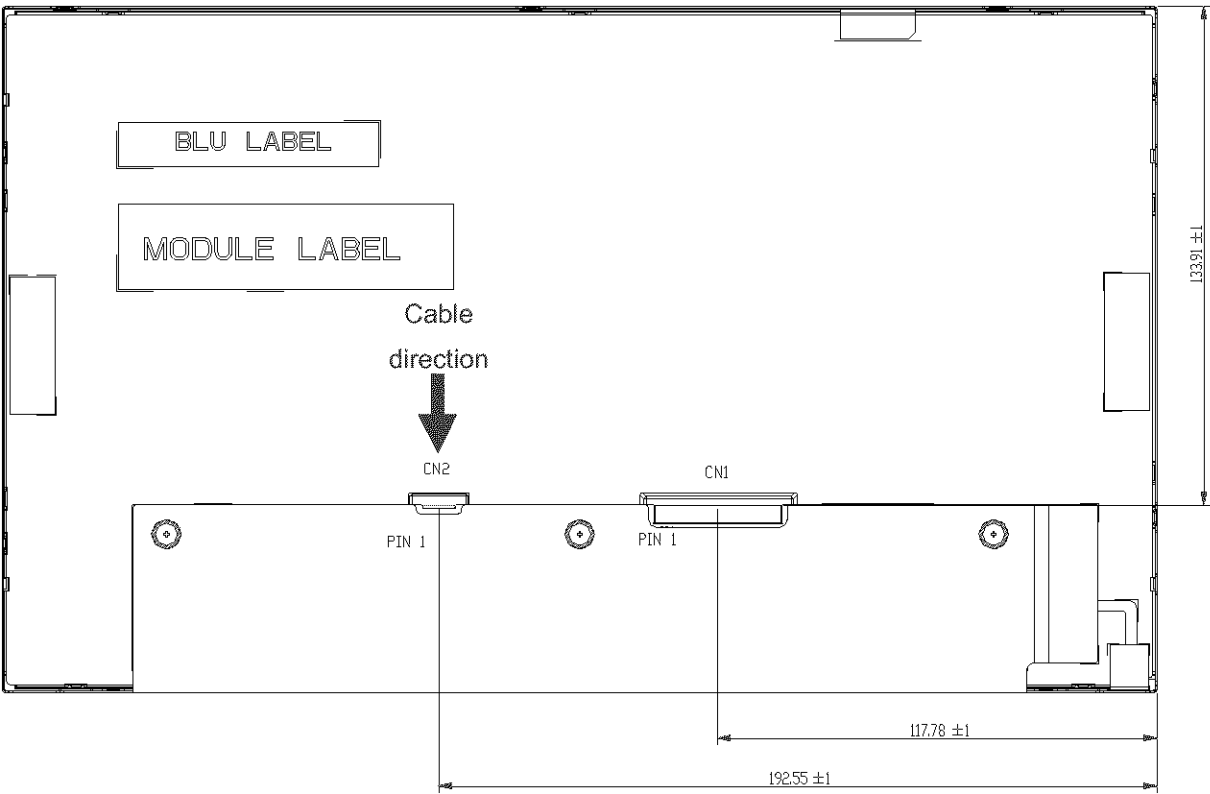
Connector Name / Designation	LED Connector
Manufacturer	Hirose
Type Part Number	DF19G-8P-1H(54)
Mating Housing Part Number	DF19G-8S-1C(05) DF19A-2830SCFA(41)



Product Specification
AU OPTRONICS CORPORATION

7.2.2 LED Driver Connector Pin Assignment (CN2)

Pin#	Symbol	Signal Name
1	LED_EN	LED enable pin
2	LED_PWM	System PWM Single Input
3	NC	No connect
4	VLED	+12V
5	VLED	+12V
6	NC	No connect
7	GND	Ground
8	GND	Ground



Test Record

Test Record No. 1

The manufacturer submitted a sample representing product of LCD Panel (LED backlight), model G133HANZZZZ for full investigation.

Unless otherwise noted in the list of tests, all tests were conducted by UL under the CB Scheme as detailed under CB certificate NO. DK-62505-UL, date 2017-04-05, CB Report reference No. E204356-A368-CB-1, date 2017-04-05.

The following tests were waived:

Test	Rationale for Waiving
Input: Single-Phase (1.6.2)	Refer to CBTR
SELV Reliability Test Including Hazardous Voltage Measurements (2.2.2, 2.2.3, 2.2.4, Part 22 6.1)	Refer to CBTR
Heating (4.5.1, 1.4.12, 1.4.13)	Refer to CBTR