AU Optronics Corporation	Engineering Change Request
Document No: DT-2020-0717 **Product Type:** All Model for ACMEPOINT **Model Name:** All Model for ACMEPOINT **Issued Date:** 2020/07/17	**Requested by** Signature Hannie Yeh Paul Huang Date 2020/07/17 Name Hannie Yeh Paul Huang Title SITDA0

1. Purpose

To respond ErP Lot5 regulation about "Cadmium (Cd) logo" effective by 2021/1/1. Display panel shall be labeled with "Cd inside" or "Cd free" logo based on concentration value of Cd by weight in homogeneous material as defined in Directive 2011/65/EU.

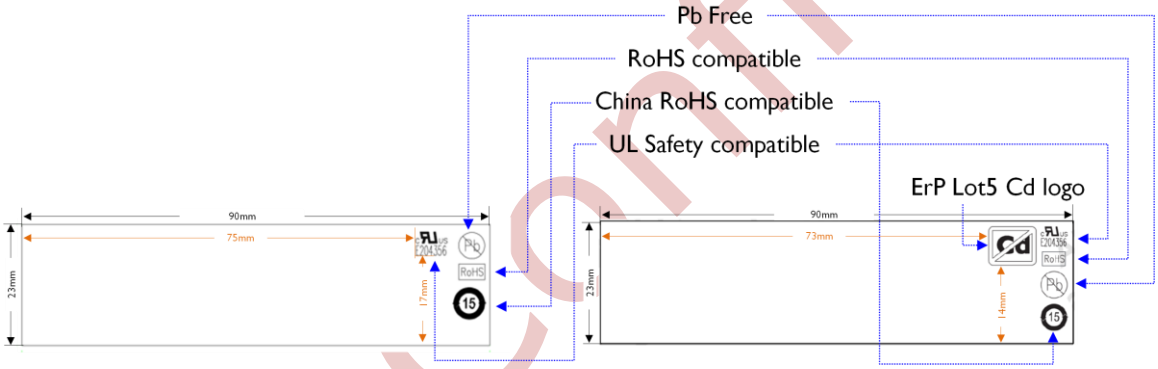
AUO will maintain current panel label size and scanning barcode to be the same and only adjust green logo typesetting to contain additional new "Cd logo".

Key parts and the rest of materials are kept the same in this change.

No sample offers initiatively unless ODM/Brand customer request.

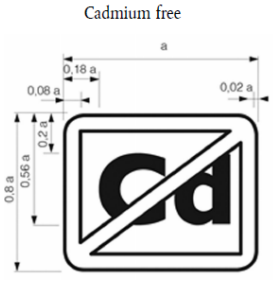
2. Change

Label Change (green logo typesetting)



The logo follows the form which COMMISSION REGULATION (EU) 2019/2021 of 1 October 2019 defines.

"The dimension of 'a' shall be greater than 9 mm and the typeface to be used is 'Gill Sans'."



3. Desired Implementation Method & Date

2020/9/1 ; RUNNING CHANGE

4. Attachment

All Model for ACMEPOINT

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Customer (HP) Feedback	
Disposition 【 】Agree 【 】Disagree, Comment: Note: Please kindly reply to AU within 14 calendar days after receiving. This ECR will be regarded as "Agree" if AU does not receive feedback within 14 calendar days.	**Agreed by:** Signature _____ Date _____ Name _____ Title _____

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AU OPTRONICS CORPORATION

Specification for Approval

INCOMING INSPECTION STANDARD FOR 24.0" TFT-LCD MODULES (A+ grade)

Model Name: G240UAN series

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Approved By	Prepared By
YenChun Fu	Jeffrey Chan

General Display Business Unit/AU Optronics

Customer	Checked and Approved by

Inspection criteria's change record				
Version/ Effective Date (Approval)	**Page**	**Inspection Item**	**Previous Inspection Spec**	**New Inspection Spec**
V0 2018/5/25	All	All	Initial Specification	
V1 2020/11/20	All	All		New Format

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1. Scope:

1.1 The incoming inspection standards shall be applied to TFT-LCD Modules (hereinafter called “buyer”) that are supplied by AU Optronics Corporation (hereinafter called “seller”).

1.2 Specifications contains

- Electrical inspection specifications
- Appearance specifications

2. Incoming inspection:

The buyer shall inspect the Modules within the inspection period (ninety calendar days starting from the date of delivery.) The results of the inspection (acceptance or rejection) shall be recorded in writing and a copy will be promptly sent to the seller.

The buyer may, under reasonable commercial rejection procedures, reject an entire lot in the delivery involved. Within the inspection period,if the Modules in the lot show a number of unacceptable defects in accordance with this Incoming Inspection Standards, the buyer must notify the seller in writing of any such rejection promptly, within three business days during the inspection period.

If the buyer fails to notify the seller within the inspection period, the buyer’s right to reject the Modules shall be lapsed and the Modules shall be deemed accepted by the buyer.

If any questions arise in regards to the judgement, the outcome shall be decided upon the consultation between both parties.

The buyer shall sign the IIS back to the seller once the buyer verifies the model completely and moves to the mass production stage. The seller has the right to follow internal specifications or ES (engineeering sample) performances if the buyer fails to sign back to the seller.

3. Inspection sampling method:

Unless otherwise agreed in writing, the method of incoming inspection shall be based on ANSI/ASQL Z1.4-2003.

3.1 Lot size: Quantity per shipment lot per model.

3.2 Sampling type: Normal inspection, single sampling.

3.3 Sampling level: Level II.

3.4 Acceptable quality level (AQL):

Major defect: AQL=1.0%.

Minor defect: AQL=2.5%.

Lot Size	General Inspection Levels			Specific Inspection Levels			
	I	II	III	S-1	S-2	S-3	S-4
2-8	A	A	B	A	A	A	A
9-15	A	B	C	A	A	A	A
16-25	B	C	D	A	A	B	B
26-50	C	D	E	A	B	B	C
51-90	C	E	F	B	B	C	C
91-150	D	F	G	B	B	C	D
151-280	E	G	H	B	C	D	E
281-500	F	H	J	B	C	D	E
501-1200	G	J	K	C	C	E	F
1201-3200	H	K	L	C	D	E	G
3201-10000	J	L	M	C	D	F	G
10001-35000	K	M	N	C	D	F	H
35001-150000	L	N	P	D	E	G	J
150001-500000	M	P	Q	D	E	G	J
500000 and over	N	Q	R	D	E	H	K

Sample size code letter	Sample size	Acceptance Quality Limits, *AQLs*, in Percent Nonconforming Items and Nonconformities per 100 Items (Normal Inspection)																													
		0.010		0.015		0.025		0.040		0.065		0.10		0.15		0.25		0.40		0.65		1.0		1.5		2.5		4.0		6.5		10	
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re
A	2		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓	0	1		↓
B	3		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓	0	1	↑		1	2
C	5		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓	0	1	↑		↓		↓	
D	8		↓		↓		↓		↓		↓		↓		↓		↓		↓		↓	0	1	↑		↓		1	2	2	3
E	13		↓		↓		↓		↓		↓		↓		↓		↓		↓	0	1	↑		↓		1	2	↑		2	3
F	20		↓		↓		↓		↓		↓		↓		↓		↓		↓	↑		↓		1	2	↑		↓		↓	
G	32		↓		↓		↓		↓		↓		↓		↓		↓	0	1		↓		↓		↓		↓		↓		↓
H	50		↓		↓		↓		↓		↓		↓	0	1		↓	↑		↑		↑		↑		↑		↑		↑		↑
J	80		↓		↓		↓		↓		↓		↓	↑		↑			↓		↓		↓		↓		↓		↓		↓
K	125		↓		↓		↓		↓		↓	0	1		↓		↓	1	2	2	3	3	4	5	6	7	8	10	11	14	15
L	200		↓		↓		↓		↓	0	1	↑		1	2	1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22
M	315		↓		↓		↓		↓	↑		↑		↑		↑		3	4	5	6	7	8	10	11	14	15	21	22	↑	
N	500		↓		↓	0	1		↓		↓	1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	↑			
P	800		↓	0	1	↑		1	2	1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	↑					
Q	1250	0	1	↑		1	2	2	3	3	4	4	5	5	6	7	8	10	11	14	15	21	22	↑							
R	2000	↑				1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	↑									

Sample size code letter	Sample size	Acceptance Quality Limits, *AQLs*, in Percent Nonconforming Items and Nonconformities per 100 Items (Normal Inspection)																													
		10		15		25		40		65		100		150		250		400		650		1000									
		Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re	Ac	Re								
A	2	↓		↓		1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31								
B	3	↓		1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31	44	45								
C	5	1	2	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31	44	45	↑									
D	8	2	3	3	4	5	6	7	8	10	11	14	15	21	22	30	31	44	45	↑											
E	13	3	4	5	6	7	8	10	11	14	15	21	22	30	31	44	45	↑													
F	20	↑		7	8	10	11	14	15	21	22	↑		↑		↑		↑		↑											
G	32	↓		10	11	14	15	21	22	↑		↑		↑		↑		↑		↑											
H	50	↑		14	15	21	22	↑		↑		↑		↑		↑		↑		↑											
J	80	↓		21	22	↑		↑		↑		↑		↑		↑		↑		↑											
K	125	21	22	↑		↑		↑		↑		↑		↑		↑		↑		↑											
L	200	↑		↑		↑		↑		↑		↑		↑		↑		↑		↑											
M	315	↑		↑		↑		↑		↑		↑		↑		↑		↑		↑											
N	500	↑		↑		↑		↑		↑		↑		↑		↑		↑		↑											
P	800	↑		↑		↑		↑		↑		↑		↑		↑		↑		↑											
Q	1250	↑		↑		↑		↑		↑		↑		↑		↑		↑		↑											
R	2000	↑		↑		↑		↑		↑		↑		↑		↑		↑		↑											

↓ = Use the first sampling plan below the arrow. If sample size equals, or exceeds, lot size, carry out 100 percent inspection.
↑ = Use the first sampling plan above the arrow.
Ac = Acceptance number.
Re = Rejection number.

4. Inspection instruments:

4.1 Pattern generator: LD-2000 or equivalent model.

4.2 Video board: AUO video board or equivalent. The output of the signal should comply with the specification provided by AUO.

4.3 Luminance colorimeter: follow product specification

5. Inspection environment conditions:

5.1 Room temperature : 20 ~ 25 °C

5.2.Humidity: 65±5% RH.

5.3 Distance: 35±5 cm in front of LCD unit with a viewing angle of θ=40°.(refer to figure 1)

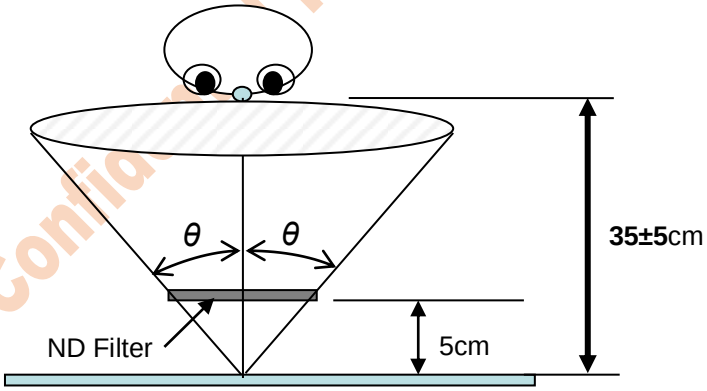

Fig. 1

5.4 Take off the protector of the polarizer while inspecting the display area.

5.5 If there is any question with the inspection, check the panel again when powered on.

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6. Classification of defects:

Defects are classified as major defects and minor defects according to the degree of defectiveness defined herein.

Major defects:

A major defect is a defect that is likely to result in failure, or to reduce materially the usability of the product for its intended purpose.

Minor defects:

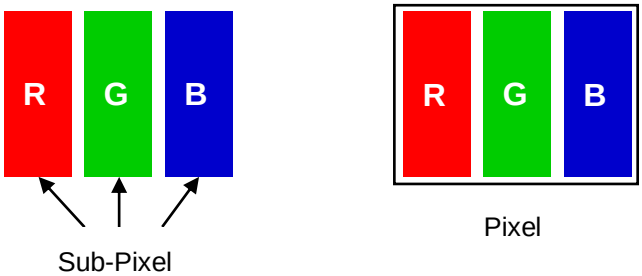
A minor defect is either a defect that is not likely to reduce materially the usability of the product for its intended purpose, or a deviation from an intended purpose with little bearing on the effective use or operation of the product.

6.1 Electrical inspection specification:

No.	Inspection Item		Max. acceptable number / Distance	Unit	Note
1	Bright dots	1 dot	0	dot	1, 2, 6
2		2 Adjacent dots	0	pair	4, 5, 6
3		3 Adjacent dots	0	pair	4, 5, 6
4		Over 3 Adjacent dots	0	pair	4, 5, 6
5		Distance between bright dots	-	mm	3
6		Total (1+2+3+4)	0	pcs	
7	Dark dots	1 dot	4	dot	1, 6
8		2 Adjacent dots	2	pair	4, 5, 6
9		3 Adjacent dots	0	pair	4, 5, 6
10		Over 3 Adjacent dots	0	pair	4, 5, 6
11		Distance between dark dots	≥ 15	mm	3
12		Total (7+8+9+10)	4	dot	
13	Bright dot and Dark dot	2 Adjacent dots	0	pair	4, 5, 6
14		Distance between dots	-	mm	3
15	Total amount of Dot Defects (1~13)		4		
16	Line defect		Not allowed		
17	Mura		Use 6% ND filter or judged by equivalent limit sample		6, 7, 8

Note 1) Definition of pixel and sub-pixel: refer to figure 2.

Fig.2



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Note 2) Bright dot and Small bright dot judgment criteria:

Judgment Criteria		Bright Dot Defect area	
		＞1/2 sub-pixel	≦1/2 sub-pixel
ND filter 10%	Visible	Bright Dot	Small Bright Dot
	Invisible	Small Bright Dot	Small Bright Dot

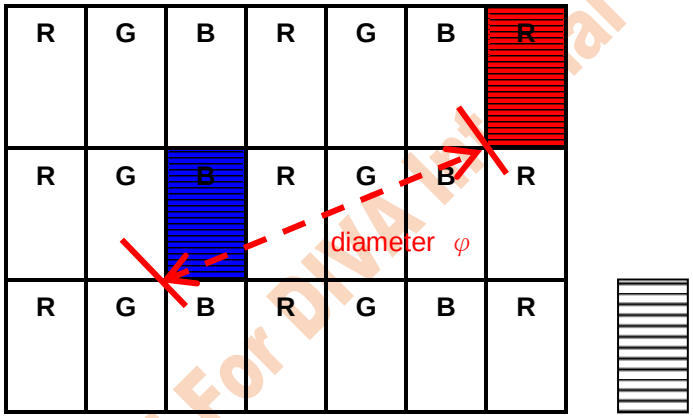
The drawing of 1/2 area sub-pixel definition: The 1/2 area sub-pixel can be defined as below one or more of specific shapes (Fig.3). The amount of small bright dots should be less or equal to 5.



Fig.3

Note 3) Definition of diameter φ as following:

Fig.4



Defect Dot

Note 4) Adjacent-dot defect should be observed under the same display pattern in any one of Black/Green/Blue/Red pattern.

Adjacent-dot defect : refer to Figure 5, dot 1,2,..,8 around A are all A's adjacent dots



Fig.5

Note 5) In three (or more) adjacent dot defect, for any 3rd dot that adjacent to 2 continuous defective dots (can be of any combination of bright dots and dark dots), the 3rd dot, no matter how large it may be, should be viewed as a dot.

Note 6) Inspection pattern: Standard inspection patterns of dot defect are listed below. AU uses these patterns as standard criteria for judging dot defect. Please inform AU if any other pattern is to be used to examine it.

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Defect type	Inspecting Pattern
Mura/ display un-uniformity	L0/255、L92/255、L255/255
Bright Dot / Small Bright Dot	L0/255
Dark Dot	L255/255、Monotone Red/Green/Blue
BL particle/Scracth	L0/255、L255/255
Polarizer particle/Scracth/Bubble	L0/255、L255/255

Note 7) Unless other specified written document or limit samples, Mura (display un-uniformity) should be inspected under the ND filter and be acceptable when it is invisible through ND filter.

ND filter use method: The inspection method of ND Filter - holding ND filter in front of the panel around 5 cm and examine the panel from 35**±5** cm in the front view for **3** seconds. (Fig.1)

Note 8) While operating over 50°C ambient temperature, there should be no function failure occur and Mura (display un-uniformity) should be invisible under 1 % ND filter applied.

Note 9) Image Retention : 5 seconds test pattern and image retention must be disappeared in 5 seconds after pattern changed.

6.2 Scratches, dent, extraneous substances and Appearance inspection specification

Judge area	**Judge item**		**Inspection specification**		**Judge criterion**	
					Major	**Minor**
Active area	Particles on the polarizer	Circular	**Average diameter: D (mm)**	**Numbers**		○
			D≦0.20	Disregarded		
			0.20＜D≦0.50	n≦3		
			0.50＜D	n＝0		
		Linear	**Width: W (mm)** **Length: L (mm)**	**Numbers**		○
			「W≦0.07 and L≦ 2.0」or 「W≦0.10 and L≦ 0.3」	Disregarded		
			0.07＜W≦0.10, 0.3＜L≦2.0	n≦3		
			0.10＜W or 2.0＜L	n＝0		
	Scratch/Dent on the polarizer	Circular	**Average diameter: D (mm)**	**Numbers**		○
			D≦0.50	n≦4		
			0.50＜D	n＝0		
		Linear	**Width: W (mm)** **Length: L (mm)**	**Numbers**		○
			W≦0.05 and L≦ 2.0	Disregarded		
			0.05＜W or 2.0＜L	n＝0		
	Bubble on the polarizer	Circular	**Average diameter: D (mm)**	**Numbers**		○
			D≦0.50	n≦4		
			0.50＜D	n＝0		
	Extraneous	Circular	**Average diameter: D (mm)**	**Numbers**		○
			D≦0.20	Disregarded		

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	Substances On back light		0.20＜D≦0.50	n≦3		
			0.50＜D	n＝0		
		Linear	**Width: W (mm)** **Length: L (mm)**	**Numbers**		
			「W≦0.07 and L≦ 2.0」or 「W≦0.10 and L≦ 0.3」	Disregarded		○
			0.07＜W≦0.10, 0.3＜L≦2.0	n≦3		
			0.10＜W or 2.0＜L	n＝0		
Bezel	Gap between front bezel and Polarizer on all sides		H≦1.50mm			○
	Scratches, Warp, Sunken and Color Difference		1. No sharp burr/edge to cause safety issue. 2.The bezel defect to be accepted if it is not affecting display performance.			○
	Assembly Fail		Not allowed		○	
Label (S/N, B/L, WEEK)	No label		Not allowed		○	
	Upside Down				○	
	Content Error				○	
	Dirt		Word can be read. Barcode can be scanned.			○
	Not clear					○
	Font Deformation					○
	Label Broken		No allowed			○
	Crease		Be attached on right position			○
	Label overlapping		Word can be read. Barcode can be scanned.			○
	Position		Be attached on right position			○
Screw	Missing screw		Not allowed		○	
	Loose		Not allowed		○	
Connector	Appearance		As long as no function issues CN can be allowed.		○	

Note 10 : Extraneous substances which can be wiped out, such as fingerprint and particles are not considered as a defect.

Note 11 : Defects on the Black Matrix (outside Active Area 0.3mm) are not considered as a defect.

Note 12 : Defect size definition: (Unit:mm). When L≧2W, defect count as liner defect.

D: Average Diameter; L: Length W: Width

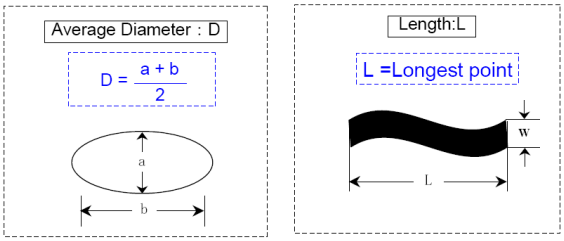

Fig.6

Note 13 : The gap between front bezel and Polarizer :

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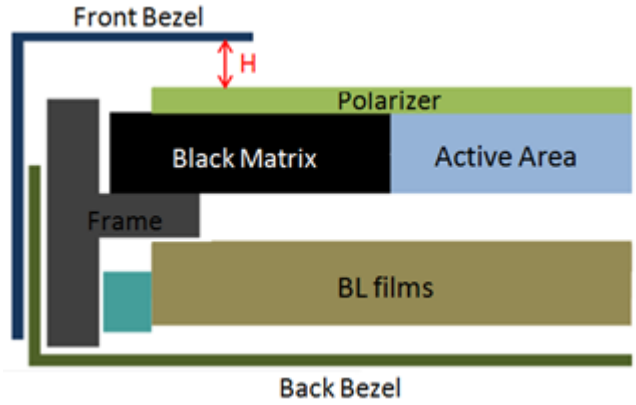

Fig.7

7. Inspection judgement:

7.1 The judgement of the shipped lot (acceptance or rejection) should follow the sampling plan of ANSI/ASQL Z1.4-2003, single sampling, normal inspection, level II.

7.2 If the number of defects is equal to or less than the applicable acceptance level, the lot shall be accepted.

7.3 If the number of defects is more than the applicable acceptance level, the lot shall be rejected and the buyer should inform the seller of the result of incoming inspection in writing.

8. Precaution:

Please pay attention to the following items when you use the LCD Module with back-light unit.

8.1 During the Module's assembly, do not twist, bend or add unsuitable external force to the Module.

8.2 Do not use an air gun or blower to clean the Module during the Module's assembly to avoid the contamination of external dust or particles.

8.3 Only operate the Modules in the specified temperature range and a ventilated environment.

8.4 Avoid dust or oil mist during Module assembly.

8.5 Follow the correct power sequence while operating the Module. Module will be damaged otherwise.

8.6 Avoid electrical magnetic interference for higher safety and lesser noise.

8.7 Operate the Module in the specified temperature range as the temperature will affect the response time and brigthness.

8.8 Avoid displaying the fixed pattern (especially the white pattern) for a long period of time as it will cause image sticking.

8.9 Be sure to turn off the power when connecting or disconnecting the circuit.

8.10 Avoid dirt and stain on the surface of modules. As it can easily scratch the surface polarizer.

8.11 Wipe off any moistures before operating the Modules as the dewdrop may damage the Modules.

8.12 Avoid drastic temperature changes, as the condensation or expansion reactions will damage (destroy) the polarizer.

8.13 Avoid exposing the modules under sunglight as the high temperature and humidity will degrade the performance.

8.14 Avoid any harmful materials/ components/ chemiclas on the modules, such as acid or chlorine.

8.15 Connect grounded devices while operating the Module as the static electricity will damage the Module.

8.16 Disassemble or reassemble the Modules are forbidden.

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8.17 Avoid direct contact on the rear side as the backlight's high voltage will cause electrical shocks.

8.18 Avoid strong vibration or shock on the Module as they will damage the Module.

8.19 Store the Modules in suitable environment with regular packing.

8.20 Do not press on the surface (either front or rear side) of the Module as it will lead to non-uniformity or other function issues. Be cautious of the broken Module to avoid damages.

8.21 Softly tear the sticking tape of the protective film to prevent bezel out of shape and non-uniform display.

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