TFT-LCD Module Incoming Inspection Standard

Customer: _____

Module Name: C2150FHF1ME01

Issue Date: 2025/4/8

Customer:

Approved by	Notes

TIANMA Confirmed:

Prepared by	Checked by	Approved by
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Revision History

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1. Scope

The incoming inspection standards shall be applied to TFT-LCD Modules (hereinafter called "Modules") that supplied by Tianma Microelectronics Co., Ltd..

2. Incoming Inspection

The customer shall inspect the modules within twenty calendar days of the delivery date (the “inspection period) at its own cost. The result of the inspection (acceptance or rejection) shall be recorded in writing, and a copy of this writing will be promptly sent to the seller, If the results of the inspecting from buyer does not send to the seller within twenty calendar days of the delivery date. The modules shall be regards as acceptance. Should the customer fail to notify the seller within the inspection period, the buyers right to reject the modules. Shall be lapsed and the modules shall be deemed to have been accepted by the buyer.

Any defects not mentioned in IIS shall be controlled according to the principle of not affecting functionality/customer use

3. Inspection Sampling Method

3.1 Lot size: Quantity per shipment lot per model

3.2 Sampling type: Normal inspection, Single sampling

3.3 Inspection level: II

3.4 Sampling table: GB/T 2828.1, test level II

3.5 Acceptable quality level (AQL)

Major defect: AQL=0.65

Minor defect: AQL=1.50

4. Inspection Criteria

4.1 Display specifications

(Note1)

Defect pattern	Condition		Criteria
Bright dots Note 2	Single defect dot		≦1 dot
	2 linked defect dots		0 set
	3 linked defect dots or more		0 set
Dark dots Note 3	Single defect dot		≤ 5 dots
	2 linked defect dots	Note 5	≤ 1 sets
	3 linked defect dots or more		0 set
Other defect dots Note 4	Single defect dot		10 dots
	2 linked defect dots		0 sets
	3 linked defect dots or more		0 set
Total	Distance between any two dot defect		≥5mm
	Half-bright dots + Dark dots		≤ 6 dots
1 pixel R, G, B ▯▯▯ 1 sub-pixel (= 1 dot)			
Stains Dust	Dot shape		0.2 mm ≤D ≤0.5 mm N ≤4 points
	Line shape		0.05 mm ≤W ≤0.1 mm 0.3 mm ≤L ≤5.0 mm N ≤4 points
Functional impairment	Line defect/abnormal display		Not allowed
Mura/ Light leak	Light leak		Invisible through 5%ND is allowed Or limit Sample
	Other mura		Invisible through 5%ND is allowed Or limit Sample

Note1: Inspection conditions are as follows.

Temperature	25 ± 5 °C
Inspection viewing distance	30-50cm (The distance between the inspector's eye and screen.)
Inspection direction	0° ≤ θR ≤ 30°, 0° ≤ θL ≤ 30°
	0° ≤ θU ≤ 20°， 0° ≤ θD ≤ 20°
Inspection illumination	0-150 lx (at a display surface)
Product luminance	/

Note2: Definition of bright dot

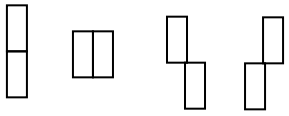
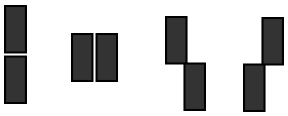
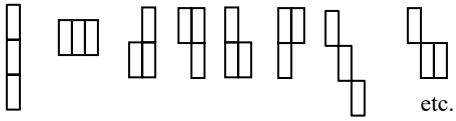
Bright dot which can be visible through 5% ND filter or bigger than 1/2 of sub-pixel size will counted as "1 dot" defect.

Note3: Definition of dark dot
Dark dot which can be recognized at 640/1023 gray scale is defined as a dark dot.

Note4: Definition of other defect dot
The defect dot which shows the following phenomena is defined as other defect.

Defect dot which can be invisible through 5% ND filter or smaller than 1/2 of sub-pixel size will not counted as "1 dot" defect.

Note 5: 2 linked defect dots/3 linked defect dots of half-bright dots/dark dots/other defect dots

Defect pattern	: Half-bright dot : Dark dot : Other defect dot	Criteria		
		Bright dots	Dark dots	Other defect dots
2 linked defect dots		≤ 0 sets	-	-
		-	≤ 1 sets	-
		-	-	-
3 linked defect dots	 etc.	0 set	-	-
	 etc.	-	0 set	-
	 etc.	-	-	0 set

4.2 Appearance specifications

(Note 2)

Defect pattern		Condition	Note1	Criteria
Impure ingredient Stains Dust	Dot shape	0.2 mm ≤D ≤0.5 mm N ≤4 points		
	Line shape	0.05 mm ≤W ≤0.1 mm 0.3 mm ≤L ≤5.0 mm N ≤4 points		
Bubbles, Wrinkles, Dent		0.2 mm ≤D ≤0.5 mm N ≤4 points		
Scratch (Surface of polarizer)		0.05 mm ≤W ≤0.1 mm 0.3 mm ≤L ≤5.0 mm N ≤4 points		
Connect	crack	Not allowed		
Label	No Label, Reversed Label	Not allowed		
	Split, Contamination, Vagueness	Legible character by character is allowed		

Note1: Definition of symbols is as follows.

d: Average diameter

(This diameter is the average length of a long axis and a short axis in each defect pattern.)

W: Width, L: Length, S: Area

Note2: Inspection conditions are as follows.

Temperature	25 ± 5 °C
Inspection viewing distance	30-50cm (The distance between the inspector's eye and screen.)
Inspection direction	0° ≤ θR ≤ 45°, 0° ≤ θL ≤ 45°
	0° ≤ θU ≤ 45°, 0° ≤ θD ≤ 45°
Illumination	600-1200 lx (at an inspection desk surface)

5. Mechanics specification

As for the outside dimension, weight of the modules, please refer to product specification for more details.

6. Precaution

Please pay attention to the following items when you use the LCD Modules:

6.1 Do not twist or bend the module and prevent the unsuitable external force for display module during assembly.

6.2 Adopt measures for good heat radiation. Be sure to use the module with in the specified temperature.

6.3 Avoid dust or oil mist during assembly.

6.4 Following the correct power sequence while operating. Do not apply the invalid signal, otherwise, it will cause improper shut down and damage the module.

6.5 Less EMI: it will be more safety and less noise.

6.6 Please operate module in suitable temperature. The response time & brightness will drift by different temperature.

6.7 Avoid to display the fixed pattern (exclude the white pattern) in a long period, otherwise, it will cause image stains.

6.8 Be sure to turn off the power when connection of disconnecting the circuit.

6.9 Polarizer scratches easily, please handle it carefully.

6.10 Display surface never likes dirt of stains.

6.11 A dewdrop may lead to destruction. Please wipe off and moisture before using module.

6.12 Sudden temperature changes cause condensation, and it will cause polarizer damaged.

6.13 High temperature and humidity may degrade performance. Please do not expose the module to the direct sunlight and so on.

6.14 Acetic acid or chlorine compounds are not friends with TFT display module.

6.15 Static electricity will damage the module, please do not touch the module without any grounded device.

6.16 Do not disassemble and reassemble the module by self.

6.17 Be careful do not touch the rear side directly.

6.18 Not strong vibration or shock. It will cause module broken.

6.19 Storage the modules in suitable environment with regular packing.

6.20 Be careful or injury from a broken display module.

6.21 Please avoid the pressure adding to the surface (front or rear side) of modules, because it will cause the display non-uniformity of other function issue.