



上海天马微电子有限公司  
SHANGHAI TIANMA MICROELECTRONICS CO., LTD.

Shanghai Tianma Micro-Electronics Corporation

## TFT-LCD Module Incoming Inspection Standard

|             |             |
|-------------|-------------|
| Customer    |             |
| Description |             |
| Model Name  | TM070JDHG30 |
| Date        |             |
| Version     | 1.0         |

| Customer Approval     |  |
|-----------------------|--|
| Checked & Approved by |  |
| Title                 |  |
| Name                  |  |
| Date                  |  |

|        | Prepared By | Checked by | Approved By |
|--------|-------------|------------|-------------|
| Title: |             |            |             |
| Name:  |             |            |             |
| Date:  |             |            |             |

### HISTORY OF REVISION

| REV NO. | REV DATE | CONTENTS | REMARKS |
|---------|----------|----------|---------|
|         |          |          |         |
|         |          |          |         |
|         |          |          |         |

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## **1. Scope:**

The incoming inspection standards shall be applied to TFT-LCD Modules (hereinafter called "Modules") that supplied by Shanghai Tianma Micro-Electronics Corporation.

## **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.

## **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: MIL-STD-105D
- 3.5. Acceptable quality level (AQL)
  - Major defect: AQL=0.65
  - Minor defect: AQL=1.00

## **4. Inspection Conditions**

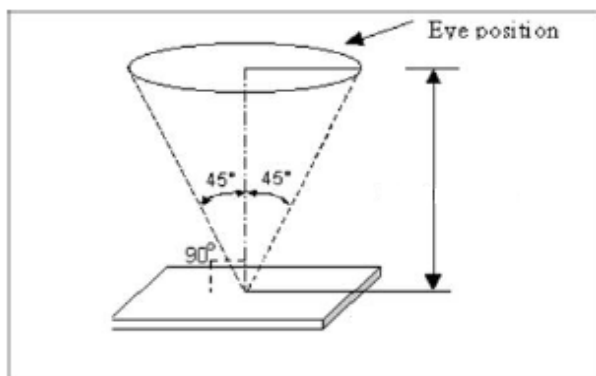
- 4.1 Ambient conditions:
  - a. Temperature: Room temperature  $25\pm 5^{\circ}\text{C}$
  - b. Humidity:  $(60\pm 10)\ \% \text{RH}$
  - c. Illumination: Single fluorescent lamp non-directive (600 to 800 Lux)

### **4.2 Viewing distance**

The distance between the LCD and the inspector's eyes shall be at least  $30\pm 5\text{ cm}$ .

### **4.3 Viewing Angle**

U/D:  $45^{\circ}/45^{\circ}$ , L/R:  $45^{\circ}/45^{\circ}$



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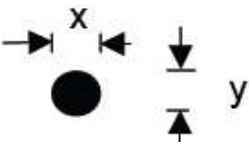
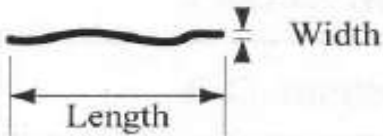
## 5. Inspection Criteria

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

### 5.1 Major defect

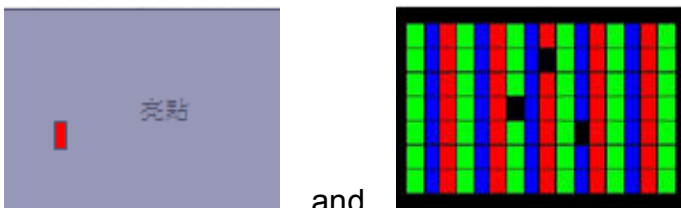
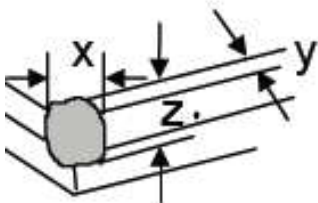
| Item No | Items to be inspected  | Inspection Standard                                                          |
|---------|------------------------|------------------------------------------------------------------------------|
| 5.1.1   | All functional defects | 1) No display<br>2) Display abnormally<br>3) Short circuit<br>4) line defect |
| 5.1.2   | Missing                | Missing function component                                                   |
| 5.1.3   | Crack                  | Glass Crack                                                                  |

### 5.2 Minor defect

| Item No | Items to be inspected                                                                                 | Inspection standard                                                                                                                           |                     |
|---------|-------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------|---------------------|
| 5.2.1   | Spot Defect<br>Including<br>Black spot<br>White spot<br>Pinhole<br>Foreign particle<br>Polarizer dirt | For dark/white spot is defined<br>$\varphi = (x + y) / 2$  |                     |
|         |                                                                                                       | Size $\varphi(\text{mm})$                                                                                                                     | Acceptable Quantity |
|         |                                                                                                       | $\varphi \leq 0.20$                                                                                                                           | Ignore              |
|         |                                                                                                       | $0.20 < \varphi \leq 0.50$                                                                                                                    | 3                   |
|         |                                                                                                       | $0.50 < \varphi$                                                                                                                              | Not allowed         |
| 5.2.2   | Line Defect<br>Including<br>Black line<br>White line<br>Scratch                                       | Define:<br>                                                |                     |

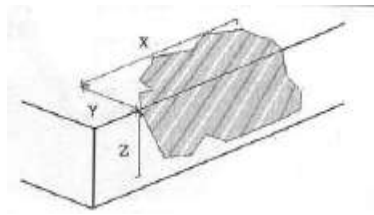
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|       |                          |                                                                                                          |                     |
|-------|--------------------------|----------------------------------------------------------------------------------------------------------|---------------------|
|       |                          | Width(mm) Length(mm)                                                                                     | Acceptable Quantity |
|       |                          | $W \leq 0.03$                                                                                            | Ignore              |
|       |                          | $0.03 < W \leq 0.05$ $L \leq 5.0$                                                                        | 4                   |
|       |                          | $0.05 < W$                                                                                               | Follow 5.2.1        |
| 5.2.3 | Polarizer<br>Dent/Bubble | Size $\phi$ (mm)                                                                                         | Acceptable Quantity |
|       |                          | $\phi \leq 0.25$                                                                                         | Ignore              |
|       |                          | $0.25 < \phi \leq 0.5$                                                                                   | 3                   |
|       |                          | $0.5 < \phi$                                                                                             | 0                   |
| 5.2.4 | Electrical Dot<br>Defect | Bright and Black dot define:                                                                             |                     |
|       |                          |                       |                     |
|       |                          | Inspection pattern: Full white、Full black、Red、green and blue screens                                     |                     |
|       |                          | Item                                                                                                     | Acceptable Quantity |
|       |                          | Black dot defect                                                                                         | 5                   |
|       |                          | Bright dot defect                                                                                        | 0                   |
| 5.2.5 | Glass defect             | 1. Corner Fragment:  |                     |
|       |                          | Size(mm)                                                                                                 | Acceptable Quantity |

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|-------|-------|------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------|
|       |       | $X \leq 3\text{mm}$<br>$Y \leq 3\text{mm}$<br>$Z \leq T$                                             | Ignore<br>T: Glass thickness<br>X: Length Y: Width<br>Z: thickness |
|       |       | 2. Side Fragment:  |                                                                    |
|       |       | Size(mm)                                                                                             | Acceptable Quantity                                                |
|       |       | $X \leq 5.0\text{mm}$<br>$Y \leq 1\text{mm}$<br>$Z \leq T$                                           | Ignore<br>T: Glass thickness<br>X: Length Y: Width<br>Z: thickness |
| 5.2.5 | Bezel | Dirt                                                                                                 | No harm                                                            |
|       |       | Wrap                                                                                                 |                                                                    |
|       |       | Sunken                                                                                               | No dangerous                                                       |
|       |       | Broken                                                                                               | No harm                                                            |
| 5.2.6 | FPC   | Broken                                                                                               | Not allowed                                                        |
|       |       | Crease                                                                                               | Can't resume is not allowed                                        |

- Note:
1. Dot defect is defined as the defective area of the dot area is larger than 50% of the dot area.
  2. The distance between black dot defects or black and bright dot defects should be more than 5mm apart. The distance between two bright dot defects should be more than 15mm apart
  3. Polarizer bubble is defined as the bubble appears on active display area. The defect of polarizer bubble shall be ignored if the polarizer bubble appears on the outside of active display area.
  4. Mura is checker by 6% ND filter.
  5. Foreign particle on the surface of the LCM should be ignore.

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## **6. Mechanics specification:**

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

## **7. Precaution**

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

- 7-1 Do not twist or bend the module and prevent the unsuitable external force for display module during assembly.
- 7-2 Adopt measures for good heat radiation. Be sure to use the module with in the specified temperature.
- 7-3 Avoid dust or oil mist during assembly.
- 7-4 Following the correct power sequence while operating. Do not apply the invalid signal, otherwise, it will cause improper shut down and damage the module.
- 7-5 Less EMI: it will be more safety and less noise.
- 7-6 Please operate module in suitable temperature. The response time & brightness will drift by different temperature.
- 7-7 Avoid to display the fixed pattern (exclude the white pattern) in a long period, otherwise, it will cause image stains.
- 7-8 Be sure to turn off the power when connection of disconnecting the circuit.
- 7-9 Polarizer scratches easily, please handle it carefully.
- 7-10 Display surface never likes dirt of stains.
- 7-11 A dew drop may lead to destruction. Please wipe off and moisture before using module.
- 7-12 Sudden temperature changes cause condensation, and it will cause polarizer damaged.
- 7-13 High temperature and humidity may degrade performance. Please do not expose the module to the direct sunlight and so on.
- 7-14 Acetic acid or chlorine compounds are not friends with TFT display module.
- 7-15 Static electricity will damage the module; please do not touch the module without any grounded device.
- 7-16 Do not disassemble and reassemble the module by self.
- 7-17 Be careful do not touch the rear side directly.
- 7-18 Not strong vibration or shock. It will cause module broken.
- 7-19 Storage the modules in suitable environment with regular packing.
- 7-20 Be careful or injury from a broken display module.
- 7-21 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.