

**AB-J550-TFV**

**Approval sheet**

**Customer:**

**Model name:**

**AB-J550-TFV**

**Spec NO:**

**Date:**

**Version:**

**V1.0**

**For Customer's Acceptance**

| Approved by | Content |
|-------------|---------|
|             |         |

| Approved by | Reviewed by | Prepared by |
|-------------|-------------|-------------|
|             |             |             |



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## **AB-J550-TFV**

## **2. General Specification**

This model is 5.5" color TFT-LCD (Thin Film Liquid Crystal Display) with Polarizer and integral Light Emitting Diode (LED) backlight system. The matrix compose a-Si Thin Film Transistor as a active element. It is a Trans-Reflective type display operating in the normally Black mode.

| No. | Item                    | Specification                     | Remark |
|-----|-------------------------|-----------------------------------|--------|
| 1   | LCD size                | 5.5 inch (Diagonal)               |        |
| 2   | Driver element          | a-Si TFT active matrix            |        |
| 3   | Display mode            | Normally Black, Trans-Reflective  |        |
| 4   | View direction          | ALL                               |        |
| 5   | Resolution              | 720 × 3(RGB) × 1440               |        |
| 6   | Module size             | 64.24(W) × 130.51(H) × 1.62(D) mm | Note 1 |
| 7   | Active area             | 60.48(W) × 120.96(H) mm           |        |
| 8   | Dot pitch               | 0.084(W) × 0.084(H) mm            |        |
| 9   | LCM Driver IC           | ST7703I-G5-DP                     |        |
| 10  | Interface Type          | MIPI                              |        |
| 11  | With/Without RTP/CTP    | --                                |        |
| 12  | CTP Driver IC           | --                                |        |
| 13  | Panel power consumption | TBD                               |        |
| 14  | Weight                  | TBD                               |        |

Note 1: Refer to Mechanical Drawing of Page 5.

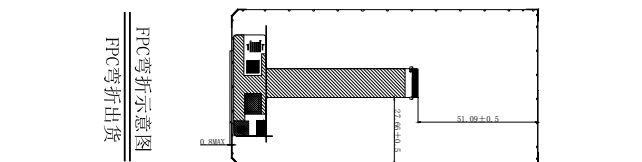
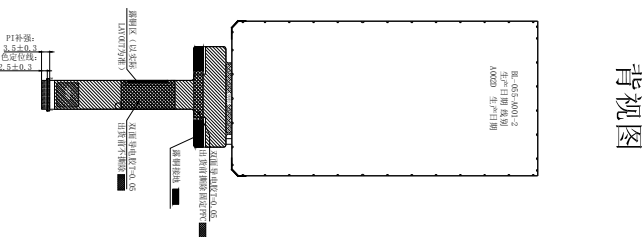
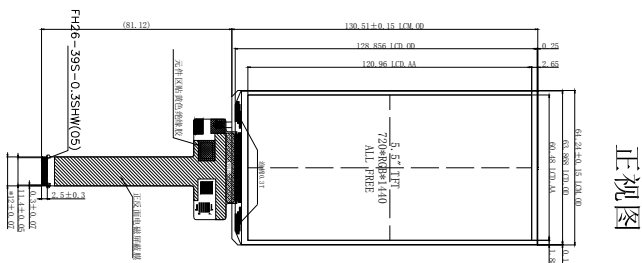


# AB-J550-TFV

### 3. MECHANICAL DRAWING

## NOTES:

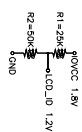
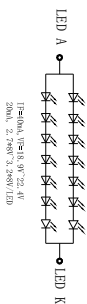
- 1.DISPLAY TYPE : A-SI TFT-LCD, 16.7M COLORS
- 2.DISPLAY MODE : Trans-Reflective, Normally black
- 3.VIEWING DIRECTION : ALL
- 4.VCI : 2.8/3.3V
- 5.OPERATING TEMP : -20 $^{\circ}$ ~ +70 $^{\circ}$ C
- STORAGE TEMP : -30 $^{\circ}$ ~+80 $^{\circ}$ C
- 6.DRIVER IC: ST7703I-G5-DP
- 7.BACK LIGHT:LED WHITE ,14 LED , IF=40mA VF=22.4V(TYP)
- LCM BRIGHTNESS: 80 cd/m $^2$  TYP (Transmissivemode only)
8. GENERAL TOLERANCE:  $\pm 0.2$
9. RoHS2.0 Compliant



| No. | PIN       | NAME |
|-----|-----------|------|
| 1   | GND       |      |
| 2   | D2P       |      |
| 3   | D2N       |      |
| 4   | D2M       |      |
| 5   | D1P       |      |
| 6   | D1N       |      |
| 7   | GND       |      |
| 8   | CLKPE     |      |
| 9   | CLKN      |      |
| 10  | GND       |      |
| 11  | D0P       |      |
| 12  | D0N       |      |
| 13  | GND       |      |
| 14  | D3P       |      |
| 15  | D3N       |      |
| 16  | GND       |      |
| 17  | I0        |      |
| 18  | RESET     |      |
| 19  | TE        |      |
| 20  | GND       |      |
| 21  | IOVCC1.8V |      |
| 22  | GND       |      |
| 23  | NC        |      |
| 24  | A0E       |      |
| 25  | ADD       |      |
| 26  | IOE       |      |
| 27  | IOE       |      |
| 28  | LEDK      |      |
| 29  | LEDK      |      |
| 30  | NC        |      |
| 31  | GND       |      |
| 32  | TP-RST    | 1.8V |
| 33  | TP-RST    | 1.8V |
| 34  | GND       |      |
| 35  | TP-SDA    | 1.8V |
| 36  | TP-SCL    | 1.8V |
| 37  | GND       |      |
| 38  | TP-VDD    | 2.8V |
| 39  | GND       |      |

| RECORD | DESCRIPTION | DATE       |
|--------|-------------|------------|
| 01     | FIRST ISSUE | 2025/12/05 |

| LED AMERICAN<br>BRIGHT |             |         |                                                                                                                                                                         | VER. | REVISION RECORD | DATE |
|------------------------|-------------|---------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------|-----------------|------|
| LCM NO.                | AB-J550-TFV | NO.1/1  |   | A    | FIRST ISSUE     |      |
| CUSTOMER NO.           | VERSION:A   | UNIT:MM |                                                                                                                                                                         |      |                 |      |
| APPROVED               | CHECKED     | DRAWN   |                                                                                                                                                                         |      |                 |      |



## **AB-J550-TFV**

### **4. Pin Descriptions**

| Pin No.<br>序号 | Symbol<br>符号 | I/O | Description<br>描述                                             |
|---------------|--------------|-----|---------------------------------------------------------------|
| 1             | GND          | P   | Power Ground                                                  |
| 2             | D2P          | I   | MIPI-DSI data lane 2 positive-end input pin                   |
| 3             | D2N          | I   | MIPI-DSI data lane2 negative-end input pin                    |
| 4             | GND          | P   | Power Ground                                                  |
| 5             | D1P          | I   | MIPI-DSI data lane 1 positive-end input pin                   |
| 6             | D1N          | I   | MIPI-DSI data lane1 negative-end input pin                    |
| 7             | GND          | P   | Power Ground                                                  |
| 8             | CLKP         | I   | MIPI-DSI data clock lane positive-end input pin               |
| 9             | CLKN         | I   | MIPI-DSI data clock lane negative-end input pin               |
| 10            | GND          | P   | Power Ground                                                  |
| 11            | D0P          | I/O | MIPI-DSI data lane 0 positive-end input pin                   |
| 12            | D0N          | I/O | MIPI-DSI data lane0 negative-end input pin                    |
| 13            | GND          | P   | Power Ground                                                  |
| 14            | D3P          | I   | MIPI-DSI data lane 3 positive-end input pin                   |
| 15            | D3N          | I   | MIPI-DSI data lane3 negative-end input pin                    |
| 16            | GND          | P   | Power Ground                                                  |
| 17            | ID           | I   | LCD ID                                                        |
| 18            | RESET        | I   | The signal will reset the LCM, Signal is active low.          |
| 19            | TE           | O   | Tearing effect outputsignal. If not used, please let this pin |
| 20            | GND          | P   | Power Ground                                                  |
| 21            | IOVCC 1.8    | P   | Power supply for logic circuits and IO pads(1.8V)             |
| 22            | GND          | P   | Power Ground                                                  |
| 23            | NC           | -   | No connected                                                  |
| 24            | AVEE         | P   | Negative input analog power for driver IC use                 |
| 25            | AVDD         | P   | Positive input analog power for driver IC use                 |
| 26            | NC           | -   | No connected                                                  |
| 27-28         | LEDK         | P   | Power supply for backlight cathode                            |
| 29            | LEDA         | P   | Power supply for backlight anode                              |
| 30            | NC           | -   | No connected                                                  |
| 31            | GND          | P   | Power Ground                                                  |
| 32            | TP-RST       | I   | The signal will reset the TP,Signal is active low             |
| 33            | TP-INT       | O   | Interrupt signals for TP                                      |
| 34            | GND          | P   | Power Ground                                                  |
| 35            | TP-SDA       | I   | I2C data signal for TP                                        |
| 36            | TP-SCL       | I   | I2C clock signals for TP                                      |
| 37            | GND          | P   | Power Ground                                                  |
| 38            | TP-VDD       | P   | Power supply for TP                                           |
| 39            | GND          | P   | Power Ground                                                  |

## **AB-J550-TFV**

## **5. ELECTRICAL SPECIFICATIONS**

### **5.1. TFT-LCD Panel Driving Section**

| Item<br>项目               | Symbol<br>符号      | Min.<br>最小值 | Typ.<br>典型值 | Max.<br>最大值 | Unit<br>单位 | Remark<br>备注 |
|--------------------------|-------------------|-------------|-------------|-------------|------------|--------------|
| Power Supply1 Voltage    | IOVCC             | 1.65        | 1.8         | 2           | V          | -            |
| Power Supply2 Voltage    | AVDD              | 4.5         | 5.8         | 6           | V          |              |
| Power Supply3 Voltage    | AVEE              | -6          | -5.8        | -4.5        | V          |              |
| Power Supply1 Current    | I <sub>VCI</sub>  |             | 16.5        |             | mA         |              |
| Power Supply2 Current    | I <sub>AVDD</sub> |             | 10.5        |             | mA         |              |
| Power Supply3 Current    | I <sub>AVEE</sub> |             | 9.7         |             | mA         |              |
| Logic Input High Voltage | V <sub>IH</sub>   | 0.7IOVCC    | -           | IOVCC       | V          | -            |
| Logic Input Low Voltage  | V <sub>IL</sub>   | VSSD        | -           | 0.3IOVCC    | V          | -            |

(Ta=+25°C,GND=0V)

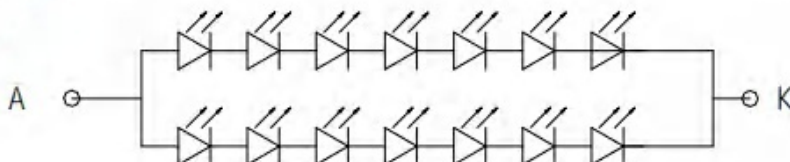
Note1:Measurement Conditions : Full Screen Red Pattern.IOVCC=1.8V,60Hz Refresh.

### **5.2 Back Light Driving Section**

| Item<br>项目                  | Symbol<br>符号    | Min.<br>最小值 | Typ.<br>典型值 | Max.<br>最大值 | Unit<br>单位 | Remark<br>备注 |
|-----------------------------|-----------------|-------------|-------------|-------------|------------|--------------|
| Forward Voltage             | V <sub>F</sub>  | -           | 21          | -           | V          | Note1        |
| Forward Current             | I <sub>F</sub>  | -           | 40          | -           | mA         | Note1        |
| Backlight Power consumption | P <sub>BL</sub> | -           | 0.84        | -           | Watt       | Note1        |
| LED life time               | -               | 30000       | -           | -           | Hours      | Note2        |
| LED Quantity                |                 |             | 14          |             | PCS        |              |

(Ta=+25°C,GND=0V)

Note1:The “LED life time” is defined as the module brightness decrease to 50% of original brightness at I<sub>LED</sub>=20mA(Per Led). The LED life time could be decreased if operating I<sub>LED</sub> is larger than 20mA.





## **AB-J550-TFV**

## **6. Optical Characteristic**

### **6.1 Reflective Mode**

| Parameter<br>参数                       | Symbol<br>符号                    | Condition<br>条件    | Min.<br>最小值 | Typ.<br>典型值 | Max.<br>最大值 | Unit<br>单位 | Remark<br>备注                              |
|---------------------------------------|---------------------------------|--------------------|-------------|-------------|-------------|------------|-------------------------------------------|
| White Reflectance<br>(with Polarizer) | R <sub>w</sub> (%)              | $\theta = 0$       |             | 8.5         |             | %          |                                           |
| Contrast Ratio                        | C/R                             | $\theta = 0^\circ$ | -           | 15:1        | -           | -          |                                           |
| NTSC Ratio                            | S                               | $\theta = 0^\circ$ | -           | 14          | -           | %          |                                           |
| Response Time                         | T <sub>R</sub> + T <sub>F</sub> | 25 °C              | -           | -           | 30          | ms         | 设备: DMS<br>Tr+Tf<br>W90%/B10%             |
| Viewing Angle                         | $\theta$ L                      | C/R>2              | -           | 55          | -           | Degree     | 设备: DMS<br>Source pad<br>Down<br><br>CR>2 |
|                                       | $\theta$ R                      |                    | -           | 55          | -           |            |                                           |
|                                       | $\theta$ U                      |                    | -           | 55          | -           |            |                                           |
|                                       | $\theta$ D                      |                    | -           | 55          | -           |            |                                           |

### **6.2 Transmissive Mode**

| Parameter<br>参数         | Symbol<br>符号                    | Condition<br>条件    | Min.<br>最小值 | Typ.<br>典型值 | Max.<br>最大值 | Unit<br>单位        | Remark<br>备注                                        |
|-------------------------|---------------------------------|--------------------|-------------|-------------|-------------|-------------------|-----------------------------------------------------|
| Contrast Ratio          | C/R                             | $\theta = 0^\circ$ |             | 45:1        | -           | -                 | SR-UL1<br>R                                         |
| NTSC Ratio              | S                               | $\theta = 0^\circ$ |             | 18          |             | %                 |                                                     |
| Luminance               | L                               | $\theta = 0^\circ$ |             | 100         | -           | cd/m <sup>2</sup> |                                                     |
| Luminance<br>uniformity | U <sub>w</sub>                  | $\theta = 0^\circ$ | 80          | -           | -           | %                 | Note(1)                                             |
| Response Time           | T <sub>R</sub> + T <sub>F</sub> | 25 °C              | -           | -           | 30          | ms                | Note(2)                                             |
| Color<br>Coordination   | W <sub>x</sub>                  | $\theta = 0^\circ$ | +0.04       | -           | +0.04       | NTSC<br>(x,y)     | Note(3)                                             |
|                         | W <sub>y</sub>                  |                    |             | -           |             |                   |                                                     |
| Viewing Angle           | $\theta$ L                      | C/R>2              | -           | 60          | -           | Degree            | 设备:<br>DMS<br><br>source<br>pad<br>down<br><br>CR>2 |
|                         | $\theta$ R                      |                    |             | 60          |             |                   |                                                     |
|                         | $\theta$ U                      |                    |             | 60          |             |                   |                                                     |
|                         | $\theta$ D                      |                    |             | 60          |             |                   |                                                     |

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Note:

1. The optical characteristics should be measured in darkroom (ambient luminance  $\leq 1\text{lux}$  and temperature =  $25^{\circ}\text{C}$ ). After 5 minutes operation, the optical properties are measured at the center point of LCD screen.

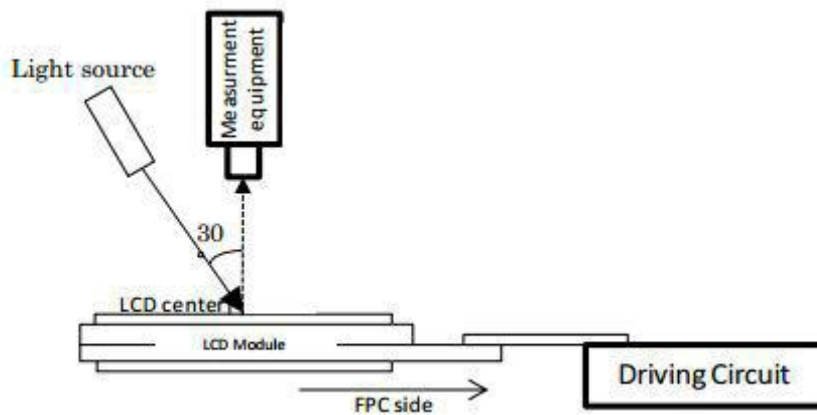
<1> Reflective Mode measurement system

a) Backlight is off

b) Light source

- D65 parallel light with 2 degree viewing angle
- Light source input direction: opposite side of FPC ( $30^{\circ}$ )
- Light source receive direction: at LCD center ( $0^{\circ}$ )

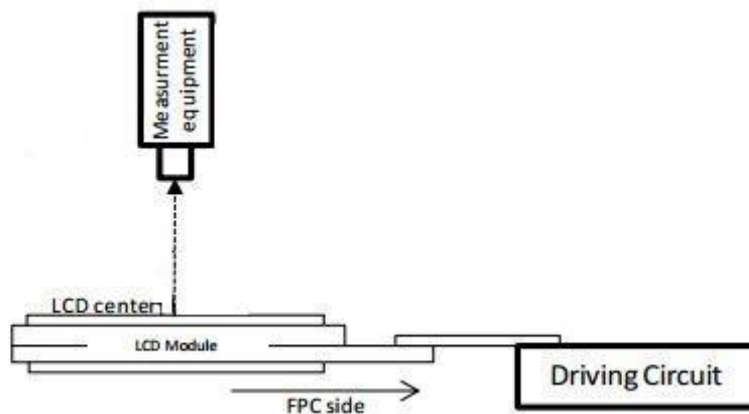
c) Measurement equivalent: DMS900



<2> Transmissive mode measurement system

a) Backlight is on, and Backlight current is 2.5mA for each LED.

b) Measurement equivalent: DMS900

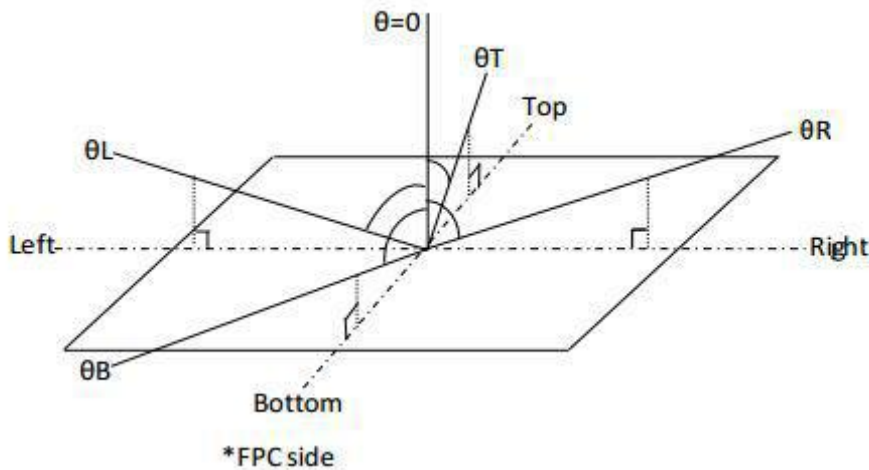


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2. Contrast Ratio is a ratio between the screen surface reflectance/luminance of the white raster and the black raster.

$$CR = \frac{\text{Reflectance/Luminance when displaying a white raster}}{\text{Reflectance/Luminance when displaying a black raster}}$$

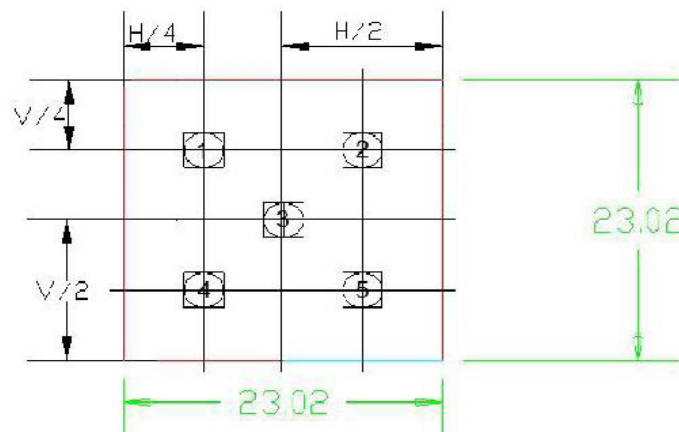
3. Viewing angle is a maximum angle  $\theta$  from the normal direction that keeps having the contrast more than 2.



4. The x-y coordinate of Red, Green, Blue and White measured at center point of LCD.

5. Uniformity measurement shall be taken at the locations shown in the following figure.

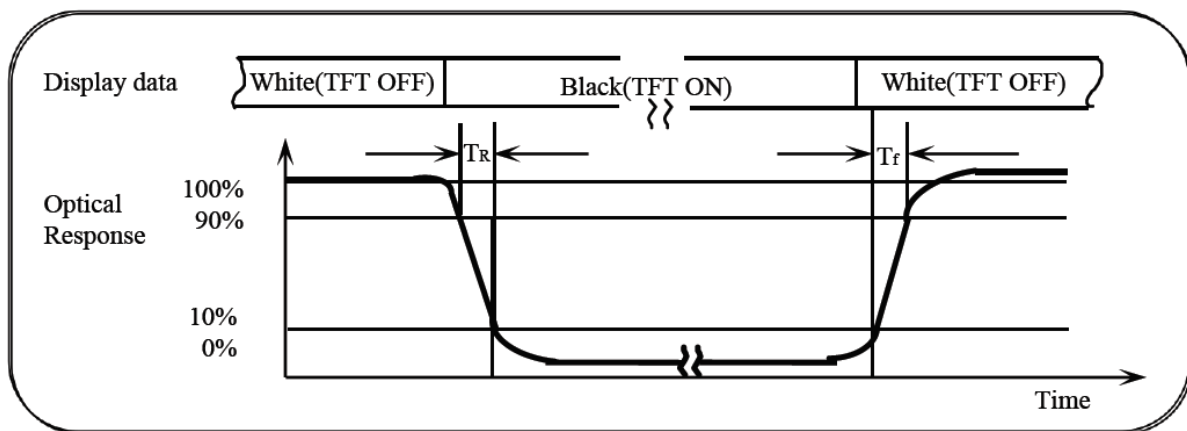
$$\text{Uniformity} = \frac{\text{Min Luminance among five points}}{\text{Max Luminance among five points}} \times 100\%$$



## **AB-J550-TFV**

6. Transmittance is the Value with APF and without CG.

7. The response time is defined as the LCD optical switching time interval between “White” state and “Black” state. Rise time (TON) is the time between photo detector output intensity changed from 90% to 10%. And fall time (TOFF) is the time between photo detector output intensity changed from 10% to 90%.



8. Flicker is measured by “White” pattern when backlight current is 20mA for LED bar.

## AB-J550-TFV

## 7. Timing Characteristics

### 7.1 AC Characteristics

High Speed Mode

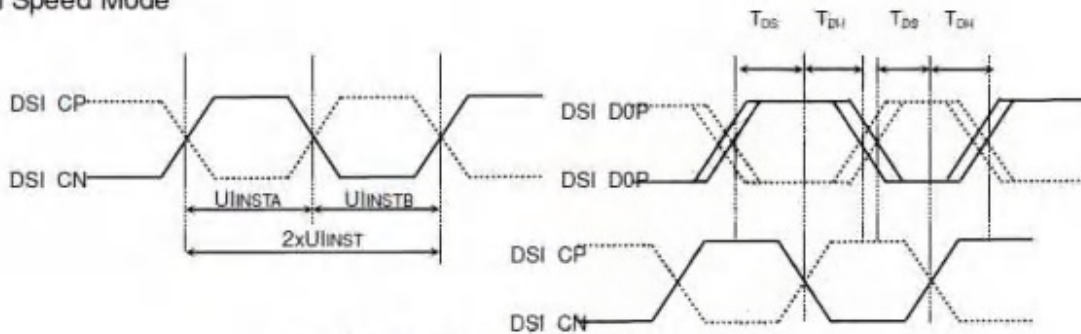


Figure 7.4: DSI clock timing Characteristics

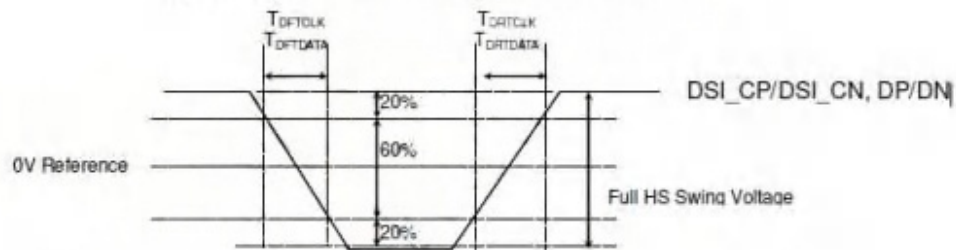


Figure 7.5: Rising and falling time on clock and data channel

(VSSA=0V, IOVCC=1.65V to 3.3V, VCI=2.5V to 3.3V, T<sub>A</sub> = -30 to 70°C)

| Signal            | Item                             | Symbol               | Spec.   |      |       | Unit |
|-------------------|----------------------------------|----------------------|---------|------|-------|------|
|                   |                                  |                      | Min.    | Typ. | Max.  |      |
| DSI_CP/<br>DSI_CN | Double UI instantaneous          | 2xUIINST             | TBD     | -    | 25    | ns   |
|                   | UI instantaneous                 | UIINSTA<br>UIINSTB   | TBD     | -    | 12.5  | ns   |
| DP/DN             | Data to clock setup time         | T <sub>DS</sub>      | 0.15xUI | -    | -     | ps   |
|                   | Data to clock hold time          | T <sub>CH</sub>      | 0.15xUI | -    | -     | ps   |
| DSI_CP/<br>DSI_CN | Differential rise time for clock | T <sub>DRCLK</sub>   | 150     | -    | 0.3UI | ps   |
|                   | Differential fall time for clock | T <sub>DFTCLK</sub>  | 150     | -    | 0.3UI | ps   |
| DP/DN             | Differential rise time for data  | T <sub>DRDATA</sub>  | 150     | -    | 0.3UI | ps   |
|                   | Differential fall time for data  | T <sub>DFTDATA</sub> | 150     | -    | 0.3UI | ps   |

Table 7.3: DSI High Speed Mode Characteristics



## AB-J550-TFV

### Low Power Mode

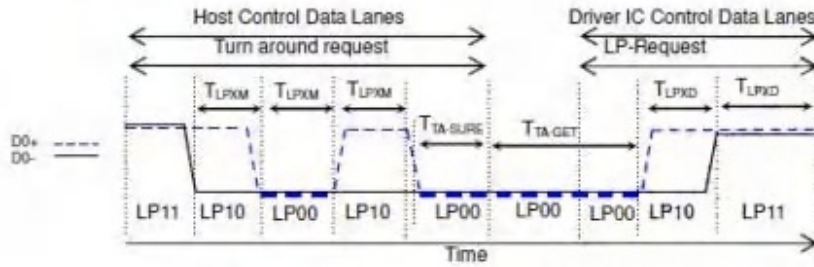


Figure 7.6: BTA from HOST to Display Module Timing

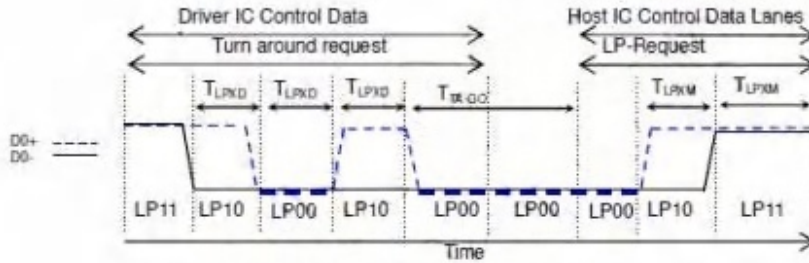


Figure 7.7: BTA from Display Module Timing to HOST

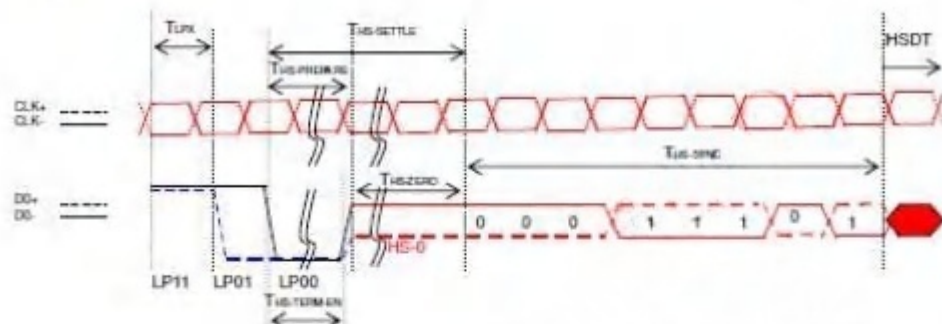
(VSSA=0V, IOVCC=1.65V to 3.3V, VCI=2.3V to 3.3V, T<sub>A</sub> = -30 to 70°C)

| Signal              | Item                                                    | Symbol               | Spec.               |      |                     | Unit |
|---------------------|---------------------------------------------------------|----------------------|---------------------|------|---------------------|------|
|                     |                                                         |                      | Min.                | Typ. | Max.                |      |
| DSI_D0P/<br>DSI_D0P | Length of LP-00/LP01/LP10/LP11<br>Host → Display module | T <sub>LPXM</sub>    | 50                  | -    | -                   | ns   |
|                     | Length of LP-00/LP01/LP10/LP11<br>Display module → Host | T <sub>LPXD</sub>    | 50                  | -    | -                   | ns   |
|                     | Time-out before the MPU start driver                    | T <sub>TA-SURE</sub> | T <sub>LPXD</sub>   | -    | 2xT <sub>LPXD</sub> | ns   |
|                     | Time to drive LP-00 by display module                   | T <sub>TA-GET</sub>  | 5xT <sub>LPXD</sub> | -    | -                   | ns   |
|                     | Time to drive LP-00 after turnaround request<br>Host    | T <sub>TA-GO</sub>   | 4xT <sub>LPXD</sub> | -    | -                   | ns   |

Table 7.4: DSI Low Power Mode Characteristics

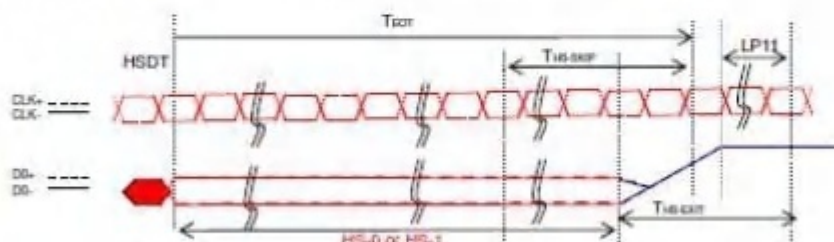
**AB-J550-TFV**

## DSI BURSTS



| Signal              | Item                                                | Symbol                  | Spec.   |      |         | Unit |
|---------------------|-----------------------------------------------------|-------------------------|---------|------|---------|------|
|                     |                                                     |                         | Min.    | Typ. | Max.    |      |
| DSI_D0P/<br>DSI_D0P | Length of LP-00/LP01/LP10/LP11                      | TLPX                    | 50      | -    | -       | ns   |
|                     | Time to Driver LP-00 to prepare for HS transmission | T <sub>HS.PREPARE</sub> | 40+4UI  | -    | 85+6UI  | ns   |
|                     | Time to enable data receiver line termination       | T <sub>HS.TERMIN</sub>  | -       | -    | 35+4xUI | ns   |
|                     | Time to drive LP-00 by display module               | T <sub>TA.GET</sub>     | 5xTLPXD | -    | -       | ns   |
|                     | Time to drive LP-00 after turnaround request Host   | T <sub>TAGO</sub>       | 4xTLPXD | -    | -       | ns   |

Table 7.5: DSI Low Power Mode to High Speed Mode Timing

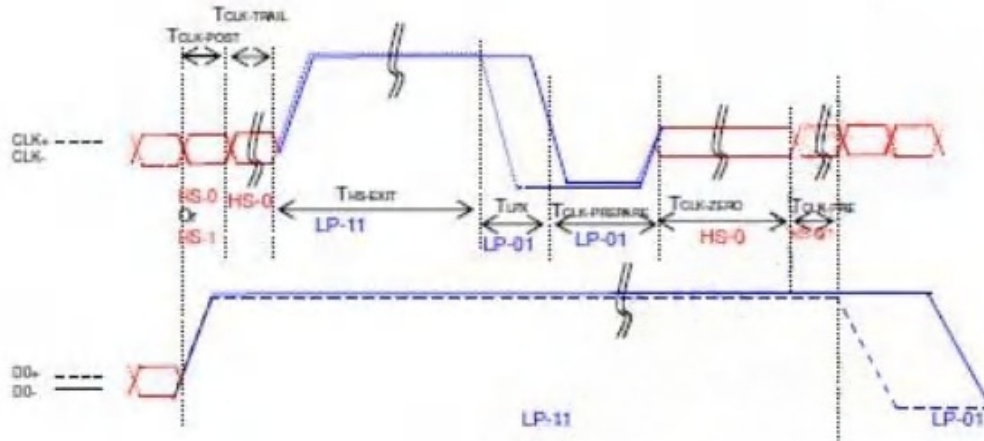


**NOTE:**  
If the last bit is HS-0, the transmitter changes from HS-0 to HS-1  
If the last bit is HS-0, the transmitter changes from HS-1 to HS-0

| Signal                          | Item                                                          | Symbol               | Spec. |      |         | Unit |
|---------------------------------|---------------------------------------------------------------|----------------------|-------|------|---------|------|
|                                 |                                                               |                      | Min.  | Typ. | Max.    |      |
| DSI_D0P <sub>i</sub><br>DSI_D0P | Time-Out at Display Module to ignore Transition Period of EoT | T <sub>HS-SKIP</sub> | 40    | -    | 55+4xUI | ns   |
|                                 | Time to Driver LP-11 after HS Burst                           | T <sub>HS-EXIT</sub> | 100   | -    | -       | ns   |

Table 7.6: DSI Low Power Mode to High Speed Mode Timing

## AB-J550-TFV



| Signal            | Item                                                                                                                 | Symbol                   | Spec.             |      |      | Unit |
|-------------------|----------------------------------------------------------------------------------------------------------------------|--------------------------|-------------------|------|------|------|
|                   |                                                                                                                      |                          | Min.              | Typ. | Max. |      |
| DSI_CP/<br>DSI_CN | Time that the MCU shall continue sending HS clock after the last associated Data Lane has transitioned to LP mode    | TCLK-POST                | $60+52 \times UI$ | -    | -    | ns   |
|                   | Time to drive HS differential state after last payload clock bit of a HS transmission burst                          | TCLK-TRAIL               | 60                | -    | -    | ns   |
|                   | Time to drive LP-11 after HS burst                                                                                   | THS-EXIT                 | 100               | -    | -    | ns   |
|                   | Time to drive LP-00 to prepare for HS transmission                                                                   | TCLK-PREPARE             | 38                | -    | 95   | ns   |
|                   | Time-out at Clock Lane Display Module to enable HS Termination                                                       | TCLK-TERM-EN             | -                 | -    | 38   | ns   |
|                   | Minimum lead HS-0 drive period before starting Clock                                                                 | TCLK-PREPARE + TCLK-ZERO | 300               | -    | -    | ns   |
|                   | Time that the HS clock shall be driven prior to any associated data Lane beginning the transition from LP to HS mode | TCLK-PRE                 | $8 \times UI$     |      |      |      |

Table 7.7: Clock Lanes High Speed Mode to/from Low Power Mode Timing

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### 7.2 Power On Timing of External Power IC

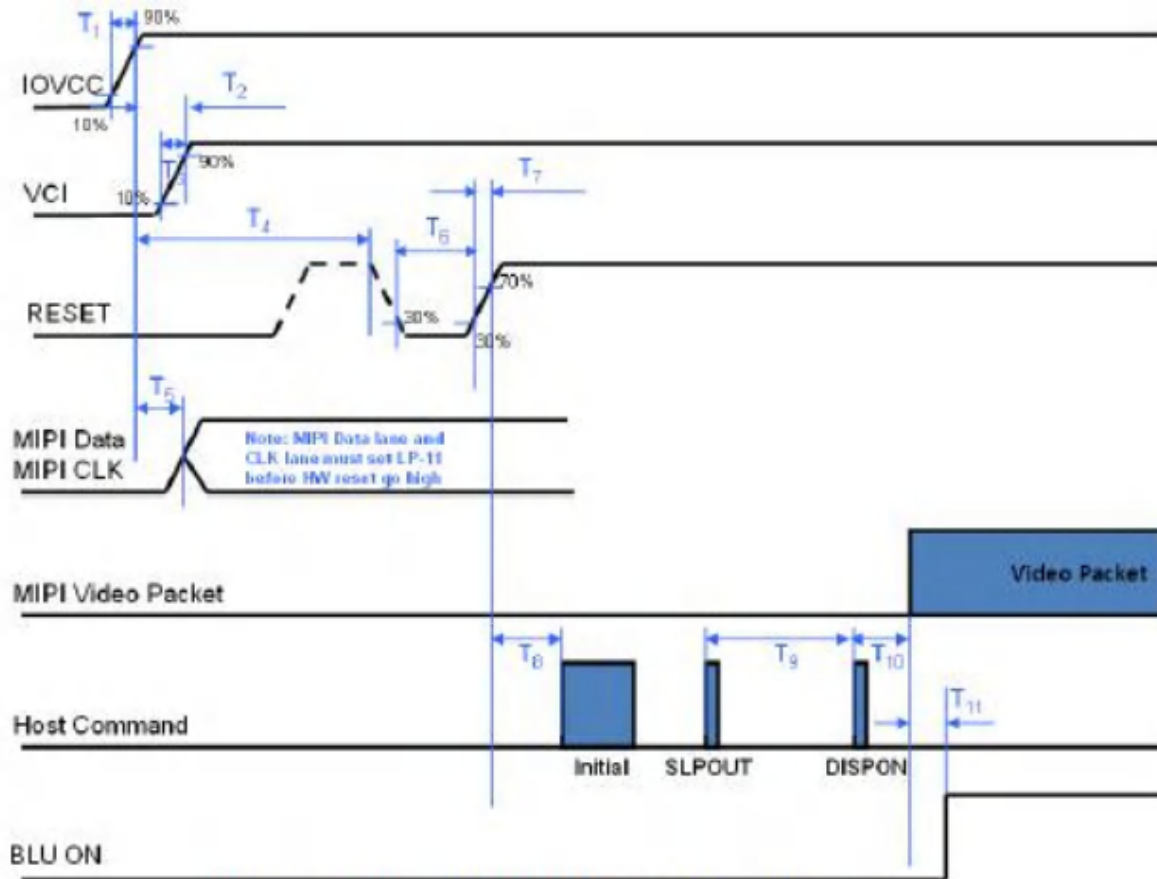


Figure 8-6: DSI Power On Sequence of Power IC Mode

|     | Min.     | Typ. | Max. | Unit |
|-----|----------|------|------|------|
| T1  | 0.01     | -    | 10   | ms   |
| T2  | No Limit |      |      | ms   |
| T3  | 0.01     | -    | 10   | ms   |
| T4  | 1        | -    | -    | ms   |
| T5  | 1        | -    | -    | ms   |
| T6  | 10       | -    | -    | us   |
| T7  | No Limit |      |      | ns   |
| T8  | 15       | -    | -    | ms   |
| T9  | 120      | -    | -    | ms   |
| T10 | No Limit |      |      | ms   |
| T11 | 100      | 150  | -    | ms   |

Table 8-1: DSI Power On Timing of Power IC Mode



### 7.3 Power On Timing of External Power IC

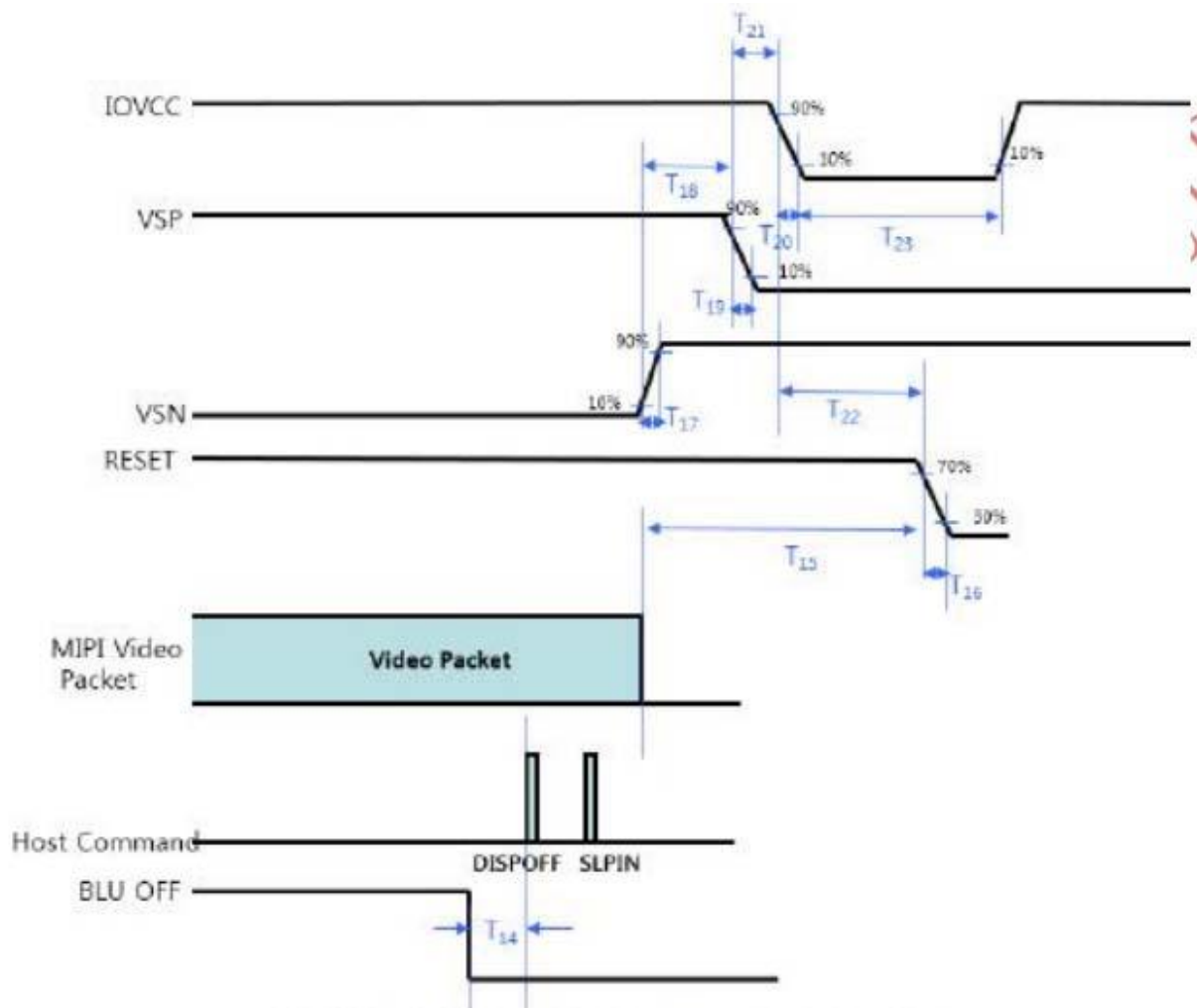


Figure 8-9: DSI Power Off Sequence of 3 Power Mode

|     | Min.     | Typ. | Max. | Unit |
|-----|----------|------|------|------|
| T14 | 40       | 100  | -    | ms   |
| T15 | 10       | -    | -    | ms   |
| T16 | No Limit |      |      | ms   |
| T17 | No Limit |      |      | ms   |
| T18 | 1        | -    | -    | ms   |
| T19 | No Limit |      |      | ms   |
| T20 | No Limit |      |      | ms   |
| T21 | 1        | -    | -    | ms   |
| T22 | 1        | -    | -    | ms   |
| T23 | 100      | -    | -    | ms   |

Table 8-4: DSI Power Off Timing of 3 Power Mode



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### **7.4 Timing parameters**

| ITEM                     | SYMBOL | CONDITION | MIN | TYP         | MAX | UNIT |
|--------------------------|--------|-----------|-----|-------------|-----|------|
| Vertical low pulse width | VS     | -         | -   | <b>4</b>    | -   | Line |
| Vertical front porch     | VFP    | -         | -   | <b>32</b>   | -   | Line |
| Vertical back porch      | VBP    | -         | -   | <b>16</b>   | -   | Line |
| Vertical active area     | VDISP  | -         | -   | <b>720</b>  | -   | Line |
| Vertical Refresh rate    | VRR    | -         | -   | <b>60</b>   | -   | Hz   |
| HS low pulse width       | HS     | -         | -   | <b>20</b>   | -   | DCK  |
| Horizontal back porch    | HBP    | -         | -   | <b>40</b>   | -   | DCK  |
| Horizontal front porch   | HFP    | -         | -   | <b>60</b>   | -   | DCK  |
| Horizontal active area   | HDISP  | -         | -   | <b>1440</b> | -   | DCK  |

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### **8. Reliability Test Items**

| No. | Test Item                  | Test Condition                                                                                                                                                                                           | Inspection after test                                                                                                                                                                                                                                                                                              |
|-----|----------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| 1   | High Temperature Storage   | $80 \pm 3^{\circ}\text{C}$ , 120 hours                                                                                                                                                                   | Inspection after 2~4hours<br>storage at room<br>temperature,the sample<br>shall be free from defects:<br>1.Air bubble in the LCD;<br>2.Seal leak;<br>3.Non-display;<br>4.Glass crack;<br>5.the surface shall be free<br>from damage.<br>6.The electrical<br>characteristics<br>requirements shall be<br>satisfied. |
| 2   | Low Temperature Storage    | $-30 \pm 3^{\circ}\text{C}$ , 120 hours                                                                                                                                                                  |                                                                                                                                                                                                                                                                                                                    |
| 3   | High Temperature Operating | $70 \pm 3^{\circ}\text{C}$ , 120 hours                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                    |
| 4   | Low Temperature Operating  | $-20 \pm 3^{\circ}\text{C}$ , 120hours                                                                                                                                                                   |                                                                                                                                                                                                                                                                                                                    |
| 5   | Temperature Cycle Storage  | $-30^{\circ}\text{C}$ (30min)~ $25^{\circ}\text{C}$ (5min)~ $80^{\circ}\text{C}$ (30min), 50 cycles                                                                                                      |                                                                                                                                                                                                                                                                                                                    |
| 6   | Damp proof Test Operating  | $55^{\circ}\text{C} \pm 3^{\circ}\text{C}$ , 90%RH, 120 hours                                                                                                                                            |                                                                                                                                                                                                                                                                                                                    |
| 7   | ESD Test                   | ESD air requirement: $\pm 6\text{KV}$ ;<br>ESD contact requirement: $\pm 4\text{KV}$<br>(R: $330\Omega$ C: 150pF, 10time)                                                                                | package                                                                                                                                                                                                                                                                                                            |
| 8   | Vibration test             | Test requirements: Simulate the transportation process<br>Test frequency: 10Hz ~ 55Hz ~ 10Hz<br>Test direction: three orthogonal axes;<br>Amplitude: 1.5mm;<br>Test time: 1 hours in each axis direction |                                                                                                                                                                                                                                                                                                                    |
| 9   | Drop test                  | Test requirements: Free fall to concrete ground at an initial<br>speed of 0;Drop height: 50cm<br>Number of drops: 10 corners, three sides and six sides, a<br>total of 10 times;                         |                                                                                                                                                                                                                                                                                                                    |

**Remark:**

- 1.The test samples should be applied to only one test item.
- 2.Sample size for each test item is 5~10pcs.
- 3.In case of malfunction defect caused by ESD damage, if it would be recovered to normal state after resetting, it would be judged as a good part.
- 4.Failure Judgment Criterion: Basic Specification, Electrical Characteristic, Mechanical Characteristic, Optical Characteristic.

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## **9. Inspection standards**

### **9.1 Purpose:**

Standardize the inspection items and judgment criteria for LCM color screen products to ensure that the products can meet customer requirements.

### **9.2 Scope of Application:**

This applies to the internal shipment inspection of LCM color screen products.

### **9.3 Responsibilities and Authorities:**

summary

### **9.4 Definition: (see Figure 1)**

Product area and size definition

Area A indicates the display area (character display area)

Zone B indicates the visible area (excluding Zone A)

C Area backlight

T denotes the thickness of the single-sided glass.

L denotes the glass pin length

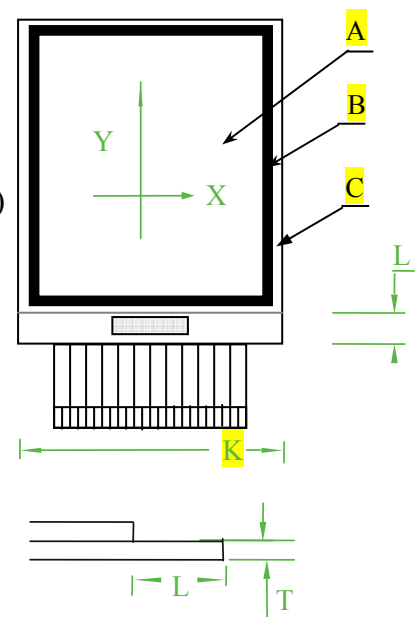
K represents the product width

X indicates the short side direction of the glass

Y represents the glass's long edge direction

Z represents the gap thickness

Refer to the product drawings for size specifications.



### **9.5 Tools, equipment, and materials:**

Test stand, prototype, sample, limit sample, dot-line film card, visual inspection mirror, multimeter, caliper

### **9.6 Content:**

#### **9.6.1 Visual inspection:**

9.6.1.1 Place the product at a distance of approximately 30cm from the 20W fluorescent lamp, with the eye positioned 30cm away from the test object.

9.6.1.2 The inspection perspective is defined as within  $\pm 45^\circ$  of the LCD plane's normal direction; defects are not considered visible from other angles (see Figure 2).

9.6.1.3 The appearance inspection time of each product is 5-10 seconds;

9.6.1.4 For semi-transparent and fully transparent products, the corresponding backlight source or reflector provided by the customer must be used during inspection.

#### **9.6.2 Electrical Inspection**

9.6.2.1 Set the electrical test parameters according to the requirements of the "Product Manufacturing Specification Table" corresponding to the tested product for electrical testing;

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9.6.2.2 Inspect according to the viewing direction specified in the Product Drawings;

9.6.3 Sampling plan and acceptance level:

Conduct normal inspection with single sampling, in accordance with GB/T2828-2003

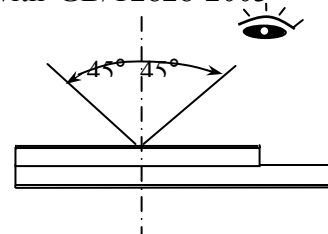
General Inspection Level II

Major defect (MA): AQL 0.25

Minor defect (MI): AQL 0.40

Total defects (MA+MI): AQL 0.40

Special sampling scheme to be determined



9.6.4 Units of measurement

Unless otherwise specified, the following standards are measured in mm.

**Figure**

9.6.5 Defect Definition:

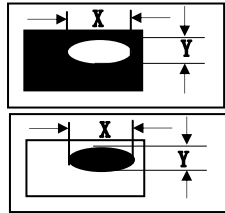
| Defect category     | Definition                                                                                                                   |
|---------------------|------------------------------------------------------------------------------------------------------------------------------|
| Severe defects (MA) | The display or functionality is defective, seriously deviates from specifications, and the customer cannot use it normally.  |
|                     | Severe visual defects and significant deviations from specifications prevent normal use                                      |
| Minor Injury (MI)   | The deviation from specifications is slight, which does not affect the product function, but affects the product appearance. |

9.6.6 Inspection criteria:

9.6.6.1 Functional inspection criteria:

|   | inspection item | requirement                                                                                                                                                                                                       | defect level | decision method |
|---|-----------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------|-----------------|
| 1 | display status  | No display, garbled text, extra or missing lines, reduced screen, wrong viewing angle, or flickering are not allowed.                                                                                             | Missing      | visual          |
|   |                 | For phenomena that cannot be described in words, limit templates should be established for reference when necessary. For example: uneven display, varying display intensity, diagonal patterns, etc.              |              |                 |
|   |                 | The display color effect is determined by development, engineering samples, or limit samples.                                                                                                                     |              |                 |
| 2 | voltage current | The current Idd and voltage Vop ranges are specified in the Product Manufacturing Specifications Table. For special cases, the criteria shall be determined by mutual agreement between the client and our party. | Missing      |                 |

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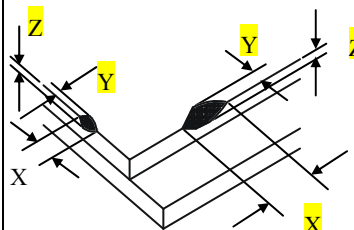
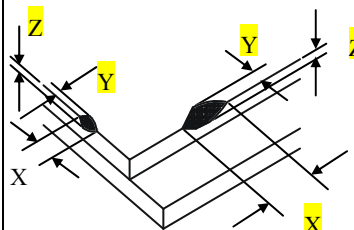
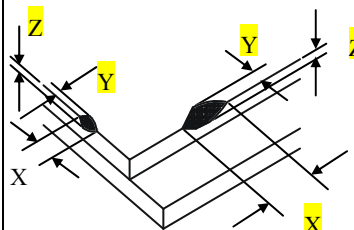
|   |                                              |                                                                                                                                                                          |                       |                     |                  |                                     |
|---|----------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------|---------------------|------------------|-------------------------------------|
| 3 | be in a poor light                           | LED lights are not allowed to be on;                                                                                                                                     |                       |                     | Missing          | Constant pressure and current limit |
|   |                                              | Backlight current: exceeds the specification range, not allowed;                                                                                                         |                       |                     |                  |                                     |
|   |                                              | No backlight light is allowed. Refer to the required reference limit sample.                                                                                             |                       |                     | Light deficiency | visual                              |
|   |                                              | Backlight color: determined according to the sample and specification;                                                                                                   |                       |                     | Light deficiency |                                     |
|   |                                              | Brightness and uniformity of light emission are determined by reference to development, engineering, or limit samples.                                                   |                       |                     | Light deficiency |                                     |
| 4 | Black dot, white dot, pinhole (When powered) | <div><div>graphic</div><div></div></div>                                               | diameter ( Φ )        | Total receipts      | Light deficiency | visual                              |
|   |                                              |                                                                                                                                                                          | Φ≤0.1                 | disregard           |                  |                                     |
|   |                                              |                                                                                                                                                                          | 0.1<Φ≤0.15            | 2                   |                  |                                     |
|   |                                              |                                                                                                                                                                          | 0.15<Φ≤0.2            | 1                   |                  |                                     |
|   |                                              |                                                                                                                                                                          | Φ>0.3                 | 0                   |                  |                                     |
|   |                                              |                                                                                                                                                                          | Note: Φ = (X + Y) / 2 |                     |                  |                                     |
|   |                                              | Note: 1. Includes: black spots, white spots, pinhole, foreign body<br>2、The product is not allowed to exceed 3<br>3、<br>4、The number of dots must be at least 5mm apart; |                       |                     |                  |                                     |
| 5 | Show black lines, white lines                | size                                                                                                                                                                     |                       | Acceptable quantity | Light deficiency | visual Viewfinder Filming           |
|   |                                              | L                                                                                                                                                                        | W                     |                     |                  |                                     |
|   |                                              | disregard                                                                                                                                                                | W<0.02                | disregard           |                  |                                     |
|   |                                              | L≤2                                                                                                                                                                      | 0.02≤W≤0.03           | 1                   |                  |                                     |
|   |                                              | -                                                                                                                                                                        | W > 0.03              | Judge by point      |                  |                                     |
|   |                                              | Note: 1. Includes: black lines, white lines, and linear foreign objects (L: line length; W: line width)<br>2. No more than two linear defects are allowed for a single   |                       |                     |                  |                                     |



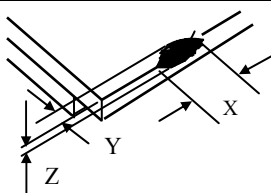
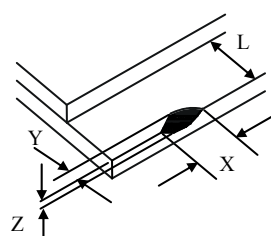
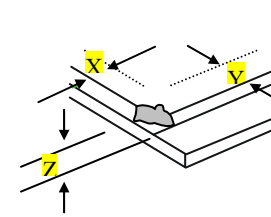
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|   |              |                                                                   |         |            |
|---|--------------|-------------------------------------------------------------------|---------|------------|
|   |              | product, and the distance between defects must be more than 5mm;  |         |            |
| 6 | touch screen | No conversion is allowed when tapping the touch screen test point | Missing | cotton bud |

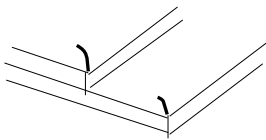
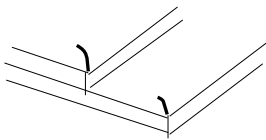
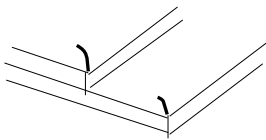
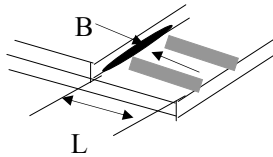
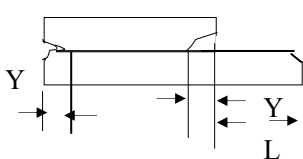
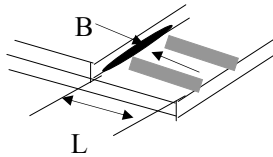
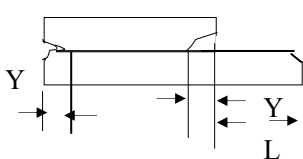
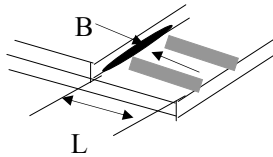
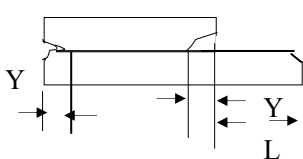
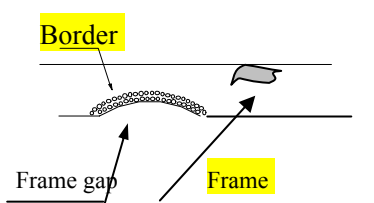
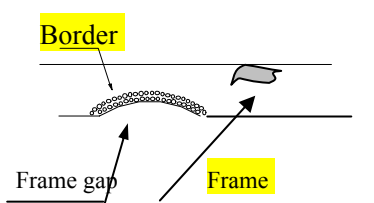
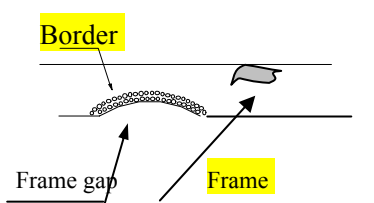
9.6.6.2 Appearance inspection criteria:

|                                                                                     | inspection item                                                            | requirement                                                                                                                                                                                                                                                                                                                                                                                                                                                                 | defect level     | decision method |  |  |         |   |   |   |                                                                                     |           |     |    |                                                                            |  |  |                                                        |  |  |                  |                           |
|-------------------------------------------------------------------------------------|----------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-----------------|--|--|---------|---|---|---|-------------------------------------------------------------------------------------|-----------|-----|----|----------------------------------------------------------------------------|--|--|--------------------------------------------------------|--|--|------------------|---------------------------|
| 1                                                                                   | burst apart                                                                | <table><tr><th colspan="4">A. Edge Blurring</th></tr><tr><th>graphic</th><th>X</th><th>Y</th><th>Z</th></tr><tr><td rowspan="3"></td><td>disregard</td><td>1.0</td><td>≤T</td></tr><tr><td colspan="3">Do not touch the border glue<br/>Do not affect the patch (bubbles, warping)</td></tr><tr><td colspan="3">No crack should expose more than 1/3 of the frame seal</td></tr></table> | A. Edge Blurring |                 |  |  | graphic | X | Y | Z |  | disregard | 1.0 | ≤T | Do not touch the border glue<br>Do not affect the patch (bubbles, warping) |  |  | No crack should expose more than 1/3 of the frame seal |  |  | Light deficiency | visual Viewfinder Filming |
| A. Edge Blurring                                                                    |                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                 |  |  |         |   |   |   |                                                                                     |           |     |    |                                                                            |  |  |                                                        |  |  |                  |                           |
| graphic                                                                             | X                                                                          | Y                                                                                                                                                                                                                                                                                                                                                                                                                                                                           | Z                |                 |  |  |         |   |   |   |                                                                                     |           |     |    |                                                                            |  |  |                                                        |  |  |                  |                           |
|  | disregard                                                                  | 1.0                                                                                                                                                                                                                                                                                                                                                                                                                                                                         | ≤T               |                 |  |  |         |   |   |   |                                                                                     |           |     |    |                                                                            |  |  |                                                        |  |  |                  |                           |
|                                                                                     | Do not touch the border glue<br>Do not affect the patch (bubbles, warping) |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                 |  |  |         |   |   |   |                                                                                     |           |     |    |                                                                            |  |  |                                                        |  |  |                  |                           |
|                                                                                     | No crack should expose more than 1/3 of the frame seal                     |                                                                                                                                                                                                                                                                                                                                                                                                                                                                             |                  |                 |  |  |         |   |   |   |                                                                                     |           |     |    |                                                                            |  |  |                                                        |  |  |                  |                           |

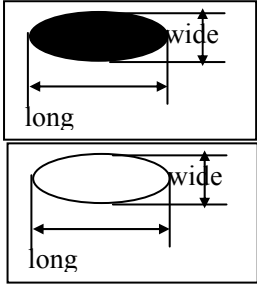
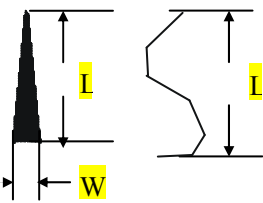
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|  |  |                                                                                                                                                         |                                                                                                                                                    |           |                                               |          |                  |                           |  |
|--|--|---------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------|-----------|-----------------------------------------------|----------|------------------|---------------------------|--|
|  |  | B. Backside of the pin, pin surface, and ITO lead section                                                                                               |                                                                                                                                                    |           |                                               |          |                  |                           |  |
|  |  | graphic                                                                                                                                                 | position                                                                                                                                           | X         | Y                                             | Z        |                  |                           |  |
|  |  |                                                                        | pin the back                                                                                                                                       | disregard | $\leq L/2$                                    | $\leq T$ |                  |                           |  |
|  |  |                                                                       | Pin surface (non-ITO lead)                                                                                                                         | disregard | Conductive tape:<br>$\leq L/4$ and $\leq 0.5$ | $\leq T$ | Light deficiency | visual Viewfinder Filming |  |
|  |  |                                                                                                                                                         |                                                                                                                                                    | disregard | COG glass: $\leq 1$                           | $\leq T$ |                  |                           |  |
|  |  |                                                                                                                                                         | ITO lead wire                                                                                                                                      | disregard | $\leq 0.3$                                    | $\leq T$ |                  |                           |  |
|  |  | Note: When the pin surface is not the ITO lead portion, the distance between the crack location and the nearest ITO lead must exceed the ITO pin width. |                                                                                                                                                    |           |                                               |          |                  |                           |  |
|  |  | C. Corners                                                                                                                                              |                                                                                                                                                    |           |                                               |          |                  |                           |  |
|  |  | graphic                                                                                                                                                 |                                                                                                                                                    | X         | Y                                             | Z        |                  |                           |  |
|  |  |                                                                      |                                                                                                                                                    | $\leq 3$  | $\leq 3$                                      | $\leq T$ | Light deficiency | visual Viewfinder Filming |  |
|  |  |                                                                                                                                                         | 1. Do not touch the frame glue;<br>2. The silver dot at the lead foot shall not be exposed;<br>3. Do not affect the patch (bubble, sheet lifting). |           |                                               |          |                  |                           |  |

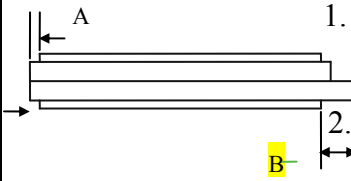
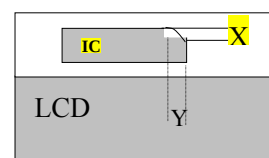
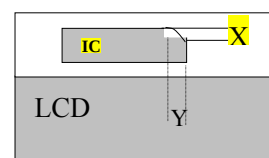
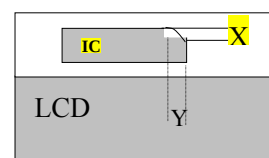
## AB-J550-TFV

|                                                                                     |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|-------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------|------------------|---------------------------------|
|                                                                                     |                                                                                                                                                                    | <table><tr><td colspan="2">D、 fissure</td></tr><tr><td>graphic</td><td>standard</td></tr><tr><td></td><td>No area cracks are allowed</td></tr></table>                                                                                                                                                                                                                                                                                                  | D、 fissure |                         | graphic                                                                             | standard                                                                                                                                                           |    | No area cracks are allowed                                                                       | Missing          | visual                          |
| D、 fissure                                                                          |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
| graphic                                                                             | standard                                                                                                                                                           |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
|    | No area cracks are allowed                                                                                                                                         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
| 2                                                                                   | Poor split                                                                                                                                                         | <table><tr><td>graphic</td><td></td></tr><tr><td></td><td>1. The edge length is not counted<br/>2、 B≤0.30<br/>3. The protruding edge causes the shape to exceed the specified dimensions.<br/>Note: B stands for width.</td></tr><tr><td></td><td>X and Y damage causing more than one-third of the frame adhesive to be exposed is not permitted.</td></tr></table> | graphic    |                         |    | 1. The edge length is not counted<br>2、 B≤0.30<br>3. The protruding edge causes the shape to exceed the specified dimensions.<br>Note: B stands for width.         |  | X and Y damage causing more than one-third of the frame adhesive to be exposed is not permitted. | Light deficiency | visual<br>Viewfinder<br>Filming |
| graphic                                                                             |                                                                                                                                                                    |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
|    | 1. The edge length is not counted<br>2、 B≤0.30<br>3. The protruding edge causes the shape to exceed the specified dimensions.<br>Note: B stands for width.         |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
|  | X and Y damage causing more than one-third of the frame adhesive to be exposed is not permitted.                                                                   |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
| 3                                                                                   | Bubbles in the box                                                                                                                                                 | rejection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Missing    | visual                  |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
| 4                                                                                   | weeping                                                                                                                                                            | rejection                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                | Missing    | visual                  |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
| 5                                                                                   | Poor frame seal                                                                                                                                                    | <table><tr><td>graphic</td><td>criterion for judgement</td></tr><tr><td></td><td>1. The frame adhesive must not have any gaps, impurities, or bubbles exceeding half of its width.<br/>2. The frame adhesive must not be offset into display area A.</td></tr></table>                                                                                                                                                                                | graphic    | criterion for judgement |  | 1. The frame adhesive must not have any gaps, impurities, or bubbles exceeding half of its width.<br>2. The frame adhesive must not be offset into display area A. | Light deficiency                                                                    | visual<br>Viewfinder<br>Filming                                                                  |                  |                                 |
| graphic                                                                             | criterion for judgement                                                                                                                                            |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
|  | 1. The frame adhesive must not have any gaps, impurities, or bubbles exceeding half of its width.<br>2. The frame adhesive must not be offset into display area A. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                          |            |                         |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |
| 6                                                                                   | outline dimension                                                                                                                                                  | The specified tolerance exceeds the required size                                                                                                                                                                                                                                                                                                                                                                                                                                                                                        | Missing    | vernier calipers        |                                                                                     |                                                                                                                                                                    |                                                                                     |                                                                                                  |                  |                                 |

## AB-J550-TFV

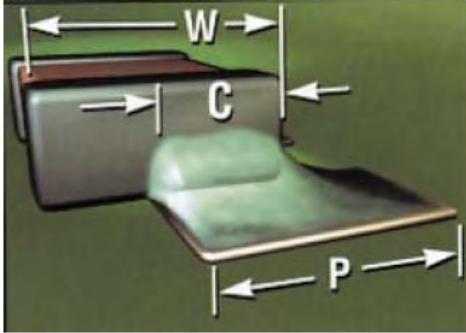
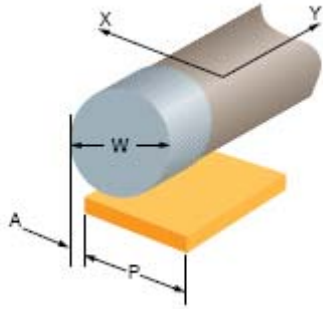
|   |                                                                      |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    |                                   |                     |                  |                           |
|---|----------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------|---------------------|------------------|---------------------------|
| 7 | LCD/polarizer/backlight/touchscreen dot defects (non-powered state)  | graphic                                                                                                                                                                                                                                   |                                                                                                                                                                                                                    | $\Phi$ price                      | Allowed number      | Light deficiency | visual Viewfinder Filming |
|   |                                                                      |                                                                                                                                                          |                                                                                                                                                                                                                    | $\Phi \leq 0.1$                   | disregard           |                  |                           |
|   |                                                                      |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    | $0.1 < \Phi \leq 0.15$            | 2                   |                  |                           |
|   |                                                                      |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    | $0.15 < \Phi \leq 0.2$            | 1                   |                  |                           |
|   |                                                                      |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    | $\Phi > 0.2$                      | 0                   |                  |                           |
|   |                                                                      |                                                                                                                                                                                                                                           |                                                                                                                                                                                                                    | $\Phi = (X + Y) / 2$              |                     |                  |                           |
|   |                                                                      | 1. Includes: black spots, color spots, foreign matter, polarizer (A/B zones), bubbles, scratches, abrasions, and impacts<br>2. The product must not have more than 3 spot defects, and the spacing between 2 defects must be at least 5mm |                                                                                                                                                                                                                    |                                   |                     |                  |                           |
| 8 | LCD/polarizer/backlight/touchscreen line defects (non-powered state) | graphic                                                                                                                                                                                                                                   | W                                                                                                                                                                                                                  | L                                 | Acceptable quantity | Light deficiency | visual Viewfinder Filming |
|   |                                                                      |                                                                                                                                                        | $w < 0.02$                                                                                                                                                                                                         | disregard                         | disregard           |                  |                           |
|   |                                                                      |                                                                                                                                                                                                                                           | $0.02 \leq w \leq 0.03$                                                                                                                                                                                            | $L \leq 4.0$                      | 1                   |                  |                           |
|   |                                                                      |                                                                                                                                                                                                                                           | $w > 0.03$                                                                                                                                                                                                         | Determine by point specifications |                     |                  |                           |
|   |                                                                      |                                                                                                                                                                                                                                           | 1. Includes: scratches, abrasions, black lines, fine hairs, fibers, etc.<br>2. For backlight color filter scratches, the condition is deemed acceptable if they remain invisible when the backlight is powered on. |                                   |                     |                  |                           |
| 9 | Assembly contaminants and fibers between touch screen and LCD        | 1. Dirt points: $\Phi \leq 0.1$ are not counted; $0.2 < \Phi$ allows 2 (distance more than 10MM).<br>2. Fiber: Not allowed.                                                                                                               |                                                                                                                                                                                                                    |                                   |                     | Light deficiency | visual Filming            |

## **AB-J550-TFV**

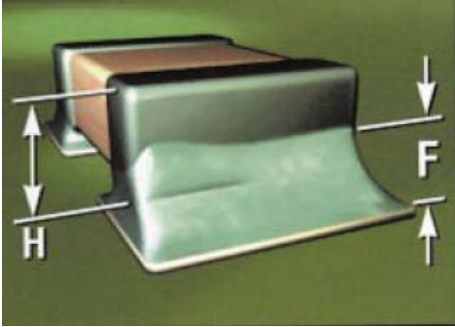
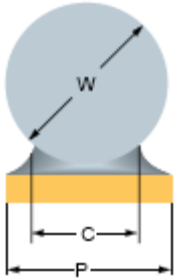
| 10                                                                                                                                  | Polarizer attachment requirements                                                                                                              | <div></div> <div><p>1. The polarizer must cover the frame adhesive</p><p>2. The tolerance for the adhesive is <math>\pm 0.5\text{mm}</math></p><p>(Note: All the above conditions are met)</p><p>3. Lift the polarizer and check for bubbles</p></div>                                                                                                                                                                                                                                                                                                              | Light deficiency | visual   |                                                                                                                                     |                                                                                                                                                |                  |            |
|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------|------------------|------------|
| 11                                                                                                                                  | resist film                                                                                                                                    | <div><p>1. The protective film is lifted and cannot enter the visible area;</p><p>2. The lifting of the polarizer will cause obvious dirt that cannot be wiped off, which is not allowed;</p><p>3. The dirt on the protective film must be immovable. If the dirt is movable, it will be rejected;</p><p>4. Protective film bubbles with a diameter <math>\leq 5\text{mm}</math> are acceptable, while those exceeding 5mm are rejected.</p></div>                                                                                                                                                                                                   | Light deficiency | visual   |                                                                                                                                     |                                                                                                                                                |                  |            |
| 12                                                                                                                                  | IC rounded corner                                                                                                                              | <table><tr><th>graphic</th><th>standard</th></tr><tr><td><div></div><p><math>\Phi = (X+Y) / 2</math></p></td><td>If electrical performance is acceptable, the IC may have only one corner damaged with a chamfer <math>\leq 0.5\text{mm}</math>; no cracks are permitted.</td></tr></table>                                                                                                                                                                                                                                                                       | graphic          | standard | <div></div> <p><math>\Phi = (X+Y) / 2</math></p> | If electrical performance is acceptable, the IC may have only one corner damaged with a chamfer $\leq 0.5\text{mm}$ ; no cracks are permitted. | Light deficiency | microscope |
| graphic                                                                                                                             | standard                                                                                                                                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |          |                                                                                                                                     |                                                                                                                                                |                  |            |
| <div></div> <p><math>\Phi = (X+Y) / 2</math></p> | If electrical performance is acceptable, the IC may have only one corner damaged with a chamfer $\leq 0.5\text{mm}$ ; no cracks are permitted. |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                      |                  |          |                                                                                                                                     |                                                                                                                                                |                  |            |
| 13                                                                                                                                  | FPC                                                                                                                                            | <div><p>1、The external dimensions must meet the engineering drawing requirements. Otherwise, it is not allowed.</p><p>2、The gold finger must not be oxidized, dirty, or have creases (refer to the limit sample when necessary)</p><p>3、Do not break, scrape, or damage positioning holes</p><p>4、Topical injuries and scratches that do not affect the substrate are judged according to the point and line standards</p><p>5、The FPC module folds onto the backlight side, causing the backlight/FPC to tear, preventing components from properly fitting into the backlight groove, or resulting in an unacceptable tilt after folding.</p></div> | Light deficiency | visual   |                                                                                                                                     |                                                                                                                                                |                  |            |



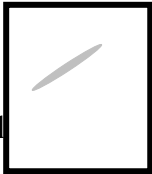
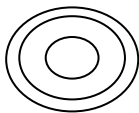
**AB-J550-TFV**

|    |                          |                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                         |                  |                   |
|----|--------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|
| 14 | soldered dot             | <p>1. The soldering area of the pin and soldering place should not be less than 75%</p> <p>2. The weld point shall not be smooth, and the surface shall not have white or black residue.</p> <p>3. The overlap length between the touch screen/backlight FPC gold fingers and module FPC pads during soldering must not exceed 1.0mm.</p>                                                                                                                                                                                               | Light deficiency | visual            |
| 15 | Surface Mount Components | <p>1. Missing parts, extra parts, missed soldering, damaged or deformed components, or broken parts are not allowed</p> <p>2. The diode must be assembled in the correct direction</p>                                                                                                                                                                                                                                                                                                                                                  | Missing          | visual            |
|    |                          | The gap between the surface mount component and the board surface must be greater than 0.2mm.                                                                                                                                                                                                                                                                                                                                                                                                                                           | Light deficiency | visual Viewfinder |
| 16 | Component Offset         |  <p>Square component end solder width C; component solderable width W; pad width P</p> <p>If W is greater than P, <math>C \geq 0.75P</math> is OK.</p> <p>If W is less than P, <math>C \geq 0.75W</math> is OK.</p>  <p>Cylindrical component side offset A; component diameter W; pad width P</p> <p>If W is greater than P, <math>A \leq 0.25P</math> is OK.</p> | Missing          | visual Viewfinder |

**AB-J550-TFV**

|    |                       |                                                                                                                                                                                                                                                                                                                                                                                                                                                  |                  |                   |
|----|-----------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|-------------------|
|    |                       | If W is less than P, $A \leq 0.25W$ is OK.                                                                                                                                                                                                                                                                                                                                                                                                       |                  |                   |
| 17 | Weld height/width     |  <p>Minimum solder joint height F; component height H <math>F \geq 0.25H</math> is OK</p> <p>Minimum solder joint height F; component height H <math>F \geq 0.25H</math> is OK</p>  <p>End solder width C; component diameter W; pad width P <math>C \geq 0.5P</math> OK</p> | Missing          | visual Viewfinder |
| 18 | assemble              | <ol style="list-style-type: none"> <li>1. The module assembly method does not match the assembly file requirements or sample.</li> <li>2. Loose connections between assembled components (e.g., normal handling may cause the glass to detach from the backlight) are not allowed</li> <li>3. LCM assembly tilt or misalignment exceeding specifications is not permitted</li> </ol>                                                             | Light deficiency | visual Viewfinder |
| 19 | adhesive and dispense | <ol style="list-style-type: none"> <li>1. The silicone must completely cover the ITO lead.</li> <li>2. The adhesive application height must not exceed the polarizer surface</li> <li>3. The sealant must be applied evenly and smoothly, with no continuous bubbles or layers.</li> </ol>                                                                                                                                                       | Light deficiency | visual            |
| 20 | gummed paper          | <ol style="list-style-type: none"> <li>1. The tape must not be lifted, tilted, wrinkled, or torn</li> <li>2. Colors, sizes, attachment positions, and specifications must</li> </ol>                                                                                                                                                                                                                                                             | Light            | visual            |

## **AB-J550-TFV**

|    |                             |                                                                                                                                                                                                                                                                    |                  |                           |
|----|-----------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------|---------------------------|
|    |                             | comply with drawing requirements.                                                                                                                                                                                                                                  | deficiency       |                           |
| 21 | tin sweat dross             | 1. Rosin on the surface of the solder pad is allowed, but solder residue is not allowed.<br>2. The thickness of tin slag must be $\leq 0.2\text{mm}$                                                                                                               | Light deficiency | visual                    |
| 22 | Lipstick                    | 1. Insufficient adhesion to lift the protective film<br>2. The attachment position does not meet the specification requirements.<br>3. The angle deviation between the tear-off adhesive and the glass edge from the vertical direction must not exceed 5 degrees. | Light deficiency | visual                    |
| 23 | Watermark                   | 1. The inkjet content does not meet the file requirements.<br>2. The inkjet font is not clear and cannot be recognized.                                                                                                                                            | Light deficiency | visual                    |
| 24 | Perspective Bias            | Judge by limit sample                                                                                                                                                                                                                                              | Light deficiency | visual                    |
| 25 | Touchscreen surface crease  |  Surface crease/press mark not allowed                                                                                                                                          | Missing          | visual                    |
| 26 | Newton's Rings/Interference |  Accept up to 1 item with a maximum of 5mm                                                                                                                                      | Light deficiency | Facing the light, looking |

## **AB-J550-TFV**

|    |                                                                                                                                                               |                                                                                                                                 |                                                              |                                                          |                                  |                                     |
|----|---------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------|----------------------------------------------------------|----------------------------------|-------------------------------------|
|    | Lines                                                                                                                                                         |                                                | $\leq 1/4$ of the touch screen area is acceptable for 1 item | iency<br>y                                               |                                  |                                     |
|    | Regardless of the size of the Newtonian rings or interference lines, text distortion or straight-line deformation is not allowed when backlight is turned on. |                                                                                                                                 |                                                              |                                                          |                                  |                                     |
| 27 | Touch Drum                                                                                                                                                    | Membrane bulge below 0.3mm is acceptable<br> |                                                              |                                                          | Ligh<br>t<br>defic<br>iency<br>y | eyepiece<br>male<br>gauge           |
| 28 | Film<br>surface:<br>Fish-eye,<br>bubbles                                                                                                                      | diameter                                                                                                                        | specifications                                               | remarks                                                  | Ligh<br>t<br>defic<br>iency<br>y | visual<br>Viewfind<br>er<br>Filming |
|    |                                                                                                                                                               | $\Phi \leq 0.1$                                                                                                                 | disregard                                                    | The distance<br>between two<br>bubbles is $\geq$<br>10mm |                                  |                                     |
|    |                                                                                                                                                               | $0.15 < \Phi \leq 0.2$                                                                                                          | Accept up to 2 items                                         |                                                          |                                  |                                     |
|    |                                                                                                                                                               | $\Phi > 0.2$                                                                                                                    | rejection                                                    |                                                          |                                  |                                     |

Note: If the customer has special requirements for the above standards, the agreement between our company and the customer shall prevail.

**AB-J550-TFV**

## **10. Precautions for using LCD modules.**

### **10.1 Safety**

- (1) Do not swallow any liquid crystal, even if there is no proof that liquid crystal is poisonous.
- (2) If the LCD panel breaks, be careful not to get liquid crystal to touch your skin.
- (3) If skin is exposed to liquid crystal, wash the area thoroughly with alcohol or soap.

### **10.2 Storage Conditions**

- (4) Store the panel or module in a dark place where the temperature is  $23\pm 5^{\circ}\text{C}$  and the humidity is below  $45\pm 20\%\text{RH}$ .
- (5) Store in anti-static electricity container.
- (6) Store in clean environment, free from dust, active gas, and solvent.
- (7) Do not place the module near organics solvents or corrosive gases.
- (8) Do not crush, shake, or jolt the module.

### **10.3 Handling Precautions**

- (9) Avoid static electricity, which can damage the CMOS LSI.
- (10) The polarizing plate of the display is very fragile, please handle it very carefully.
- (11) Do not give external shock.
- (12) Do not apply excessive force on the surface.
- (13) Do not wipe the polarizing plate with a dry cloth, as it may easily scratch the surface of plate.
- (14) Do not use tectonics solvent & Aromatic solvent, use with a soft cloth soaked with a cleaning naphtha solvent.
- (15) Do not operate it above the absolute maximum rating.
- (16) Do not remove the panel or frame from the module.

### **10.4 Warranty**

The period is within twelve months since the date of shipping out under normal using and storage conditions.

## **11. Package Drawing**

**TBD**