

**SPECIFICATION
FOR
TDV070A501O-R2
Customer Approval:**

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|--|
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|--|

| | SIGNATURE | DATE |
|-------------|-----------|------------|
| PREPARED BY | 高继府 | 2021.06.11 |
| CHECKED BY | 林钰 | 2021.06.11 |
| APPROVED BY | 吕庆喜 | 2021.06.11 |

Notes:

- 1、 Please contact GTK before assigning your product based on this module specification.
- 2、 To improve the quality of product, and this product specification is subject to change without any notice.

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1. Product Introduce

TDV070A5010-R2 is suitable for multiple market segments and display application, is perfect for retail self-service, POS kiosks, door entry, conditional access, casino, industrial automation, and embedded application.

2. LCD Specification

| No. | Item | Contents | Unit |
|-----|--------------------------------|---------------------------------|-------|
| 1 | LCD size | 7.0 inch (Diagonal) | / |
| 2 | LCD type | IPS/Normally Black/Transmissive | / |
| 3 | Viewing direction(eye) | FREE | / |
| 4 | Gray scale inversion direction | / | / |
| 5 | Resolution(H*V) | 1024*600 Pixels | / |
| 6 | Module size (L*W*H) | 164.90*100.00*3.45 | mm |
| 7 | Active area (L*W) | 154.21*85.92 | mm |
| 8 | Pixel pitch (L*W) | 0.1506*0.1432 | mm |
| 9 | Surface luminance | 250 (Typ) | cd/m2 |
| 10 | Contrast ratio | 800 (Typ) | |
| 11 | Interface type | HDMI | / |
| 12 | Power supply | Micro USB 5V | |
| 13 | Module power consumption | TBD | |
| 14 | Back light type | LED | / |
| 15 | Weight | TBD | g |

3. Touch Panel Specification

| No. | Item | Description |
|-----|------------------------|------------------|
| 1 | Type | Capacitive touch |
| 2 | Power Consumption | 5V/80mA |
| 3 | Support finger number | 5 Point |
| 4 | Touch System Interface | Micro USB |

4. Backlight Characteristics

(at Ta=25°C,RH=60%)

| Item | Symbol | Min. | Typ. | Max. | Unit | Note |
|-----------------------|--------|---------------------------|-------|------|------|----------|
| LED forward voltage | VF | 8.4 | 9.3 | 10.2 | V | IF=120mA |
| LED forward current | IF | - | 120 | - | mA | |
| LED power consumption | PLED | - | 1.116 | - | W | Note1 |
| Number of LED | - | | 18 | | PCS | |
| Connection mode | - | 3 in series 6 in parallel | | | / | |
| LED life-time | - | 20000 | - | - | Hrs | Note2 |

5. Interface Definition

5.1 Audio Socket



3.5mm earphone socket

5.2 Power Supply Interface



Micro USB

| Pin No. | Symbol | Description |
|---------|--------|-----------------|
| 1 | VBUS | Power supply 5V |
| 2 | NC | NC |
| 3 | NC | NC |
| 4 | NC | NC |
| 5 | GND | Ground |

5.3 Touch Panel Interface

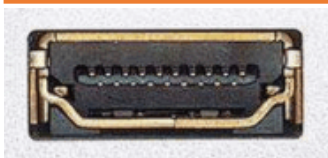


Micro USB

| Pin No. | Symbol | Description |
|---------|--------|-----------------|
| 1 | VBUS | Power supply 5V |
| 2 | D- | USB data- |
| 3 | D+ | USB data+ |
| 4 | NC | NC |
| 5 | GND | Ground |

5.4 HDMI Interface

| Pin No | Symbol | Pin No | Symbol |
|--------|--------------|--------|-----------------|
| 1 | TMDS Data 2+ | 11 | GND |
| 2 | GND | 12 | TMDS Clock - |
| 3 | TMDS Data 2- | 13 | CEC |
| 4 | TMDS Data 1+ | 14 | Reserved |
| 5 | GND | 15 | SCL |
| 6 | TMDS Data 1- | 16 | SDA |
| 7 | TMDS Data 0+ | 17 | GND |
| 8 | GND | 18 | +5V |
| 9 | TMDS Data 0- | 19 | Hot Plug Detect |
| 10 | TMDS Clock + | | |



HDMI TYPE-A

5.5 Key function

| No. | Key | Function |
|-----|-------|-------------------------------|
| 1 | POWER | Power on or off |
| 2 | MENU | Show setup menu |
| 3 | RIGHT | Setup item move right or down |
| 4 | LEFT | Setup item move left or up |
| 5 | EXIT | Exit setup menu |

6. Electronic Characteristics

| Item | Test condition | Min | Typ | Max | Unit |
|-----------------|----------------|-----|-----|-----|------|
| Working voltage | 25°C | 5 | 5 | 6 | V |
| Working current | 25°C | - | TBD | - | mA |

7. Environment Characteristics

| Item | Test Environmental | Min | Typ | Max | Unit |
|-----------------------|----------------------|-----|-----|-----|------|
| Operation temperature | VDD=5V, Humidity 60% | -20 | 25 | 70 | °C |
| Storage temperature | | -30 | 25 | 80 | |
| Humidity | 25 °C | 10% | 60% | 90% | RH |

8. ELECTRO-OPTICAL CHARACTERISTICS

| Item | Symbol | Condition | Min. | Typ. | Max. | Unit | Remark | Note |
|------|--------|-----------|------|------|------|------|--------|------|
|------|--------|-----------|------|------|------|------|--------|------|

| | | | | | | | | |
|------------------------|----------|--|--------------|------|--------------|-------------------|------------------|--------|
| Response time | Tr+ Tf | - | - | 25 | 40 | ms | FIG.1 | Note 4 |
| Contrast ratio | Cr | - | 600 | 800 | - | - | FIG.2 | Note 1 |
| Surface luminance | Lv | $\theta=0^\circ$ | 180 | 250 | - | cd/m ² | FIG.2 | Note 2 |
| Luminance uniformity | Yu | $\theta=0^\circ$ | 75 | 80 | - | % | FIG.2 | Note 3 |
| NTSC | - | $\theta=0^\circ$ | - | 50 | - | % | FIG.2 | Note 5 |
| Viewing angle | θ | $\varnothing=90^\circ$ | - | 85 | - | deg | FIG.3 | Note 6 |
| | | $\varnothing=270^\circ$ | - | 85 | - | deg | FIG.3 | |
| | | $\varnothing=0^\circ$ | - | 85 | - | deg | FIG.3 | |
| | | $\varnothing=180^\circ$ | - | 85 | - | deg | FIG.3 | |
| CIE (x,y) chromaticity | Red x | $\theta=0^\circ$ $\varnothing=0^\circ$ Ta=25°C | Typ -0.04 | 0.59 | Typ +0.04 | - | FIG.2 CIE1931 | Note 5 |
| | Red y | | | 0.35 | | - | | |
| | Green x | | | 0.32 | | - | | |
| | Green y | | | 0.57 | | - | | |
| | Blue x | | | 0.16 | | - | | |
| | Blue y | | | 0.09 | | - | | |
| | White x | | | 0.29 | | - | | |
| | White y | | | 0.31 | | - | | |

Note1.Definition of contrast ratio

Contrast ratio(Cr) is defined mathematically by the following formula.

For more information see FIG.2.

$$\text{Contrast ratio} = \frac{\text{Luminance measured when LCD on the "White" state}}{\text{Luminance measured when LCD on the "Black" state}}$$

Measured at the center area of the LCD

Note2.Definition of surface luminance

Surface luminance is the luminance with all pixels displaying white.

For more information see FIG.2.

$$L_v = \text{Average Surface Luminance with all white pixels}(P_1, P_2, P_3, \dots, P_n)$$

Note3.Definition of luminance uniformity

The luminance uniformity in surface luminance is determined by measuring luminance at each test position 1 through n, and then dividing the maximum luminance of n points luminance by minimum luminance of n points luminance.For more information see FIG.2.

$$Y_u = \frac{\text{Minimum surface luminance with all white pixels } (P_1, P_2, P_3, \dots, P_n)}{\text{Maximum surface luminance with all white pixels } (P_1, P_2, P_3, \dots, P_n)}$$

Note4. Definition of response time

The response time is defined as the LCD optical switching time interval between "White" state and "Black"state.Rise time (T_{ON}) is the time between photo detector output intensity changed from 90% to 10%.

And fall time (T_{OFF}) is the time between photo detector output intensity changed from 10% to 90%.

For additional information see FIG1.

Note5. Definition of color chromaticity (CIE1931)

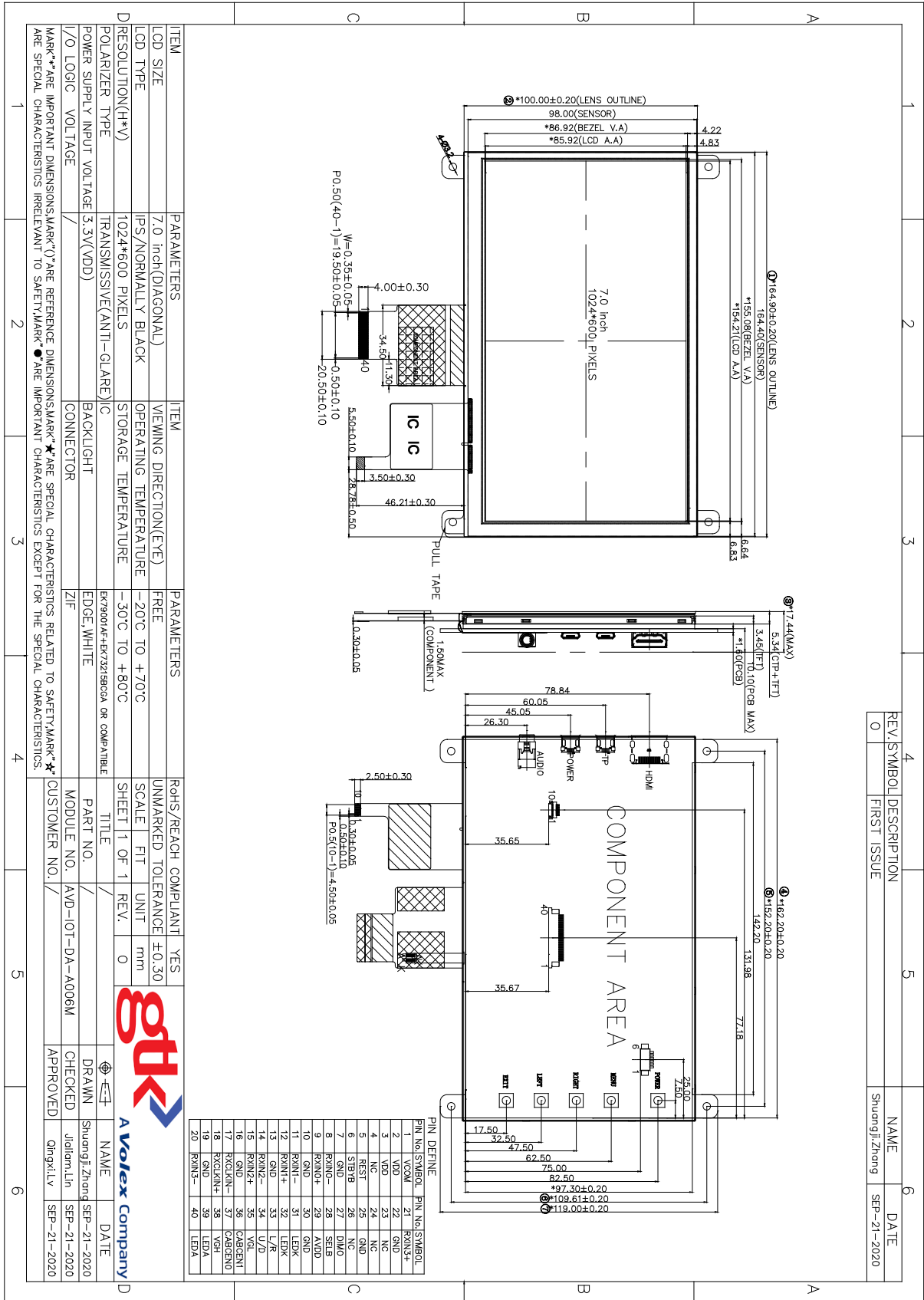
CIE (x,y) chromaticity,The x,y value is determined by screen active area center position P5.For more information see FIG.2.

Note6. Definition of viewing angle

Viewing angle is the angle at which the contrast ratio is greater than 10. angles are determined for the horizontal or x axis and the vertical or y axis with respect to the z axis which is normal to the LCD surface. For more information see FIG.3.

For viewing angle and response time testing, the testing data is base on Autronic-Melchers's ConoScope or DMS series Instruments or compatible. For contrast ratio, Surface Luminance, Luminance uniformity and CIE,the testing data is base on TOPCON's BM-5or BM-7 photo detector or compatible.

9. Mechanical Structure





10. RELIABILITY TEST CONDITIONS

| No. | Test item | Test condition | Inspection after test |
|------|-------------------------------------|--|---|
| 10.1 | High temperature storage test | +80C/240 hours | Inspection after 2~4hours storage at room temperature, the sample shall be free from defects : 1.Current changing value before test and after test is 50% larger; 2. Function defect : Non-display,abnormal-display,missing lines, Short lines,ITO corrosion; 3.Visual defect : Air bubble in the LCD,Seal leak,Glass crack. |
| 10.2 | Low temperature storage test | -30°C/240 hours | |
| 10.3 | High temperature operating test | +70°C/120 hours | |
| 10.4 | Low temperature operating test | -20°C/120 hours | |
| 10.5 | Temperature cycle storage test | -30°C ~ 25°C ~ +80°C/10cycles (30min.) (10min.) (30min.) | |
| 10.6 | High temperature high humidity test | +50°C*90% RH/120 hours | |
| 10.7 | Vibration test | Frequency : 250 r/min Amplitude : 1 inch Time: 45min | |
| 10.8 | Drop test | Drop direction: 1 corner/3 edges/6 sides 10 time | |
| | | Packing weight(kg) | |
| | | <11 | 80±1.6 |
| | | 11 ≤ G < 21 | 60±1.2 |
| | | 21 ≤ G < 31 | 50±1.0 |
| | | 31 ≤ G < 40 | 40±0.8 |
| 10.9 | ESD test | Air discharge: ±8KV, 10time Contact discharge: ±4KV, 10time | |

Remark :

- 1.The test samples should be applied to only one test item.
- 2.Sample size for each test item is 3~5pcs.
- 3.For High temperature high humidity test, Pure water(Resistance>10MΩ) should be used.
- 4.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.
- 5.B/L evaluation should be excepted from reliability test with humidity and temperature: Some defects such as black spot/blemish can happen by natural chemical reaction with humidity and Fluorescence B/L has.
- 6.Failure judgment criterion: Basic specification, Electrical characteristic, Mechanical characteristic, Optical characteristic.

11. INSPECTION CRITERION

11.1 Objective

The TFT test criterion are set to formalize TFT quality standards for AVD with reference to those of the customer for inspection, release and acceptance of finished TFT products in order to guarantee the quality of TFT products required by the customer.

11.2. Scope

The criterion is applicable to all the TFT products manufactured by AVD.

11.3. Equipment for Inspection

Electrical tester, electrical testing machines, vernier calipers, microscopes, magnifiers, anti-static wrist straps, finger cots, labels, tri-phase cold and hot shock machine, constant temperature and humidity chamber, backlight table, ovens for high-low temperature experiments, refrigerators, constant voltage power supply (DC), desk Lamps, etc.

11.4. Sampling Plan and Reference Standards

11.4.1 Sampling plan :

Refer to National Standard GB/T 2828.1---2012/ISO2859-1:1999, level II of normal levels :

Major defect: AQL 0.4

Minor defect: AQL 1.0

11.4.2 GB/T 2828.1---2012/ISO2859-1:1999 Sampling check procedure in count

11.4.3 GB/T 18910. Standard for LCM parts

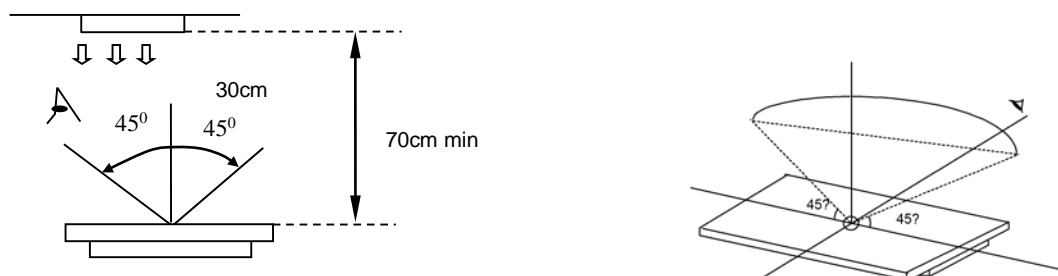
11.4.4 GB/T24213-2008 Basic Environmental Test Procedures for Electrical and Electronic Products

11.4.5 IPC-A-610E Acceptability of Electronic Assemblies

11.5. Inspection Conditions and Inspection Reference

11.5.1 Cosmetic inspection: shall be done normally at $23\pm 5^{\circ}\text{C}$ of the ambient temperature and 45~75% RH of relative humidity, under the ambient luminance between 500lux~1000lux and at the distance of 30cm apart between the inspector's eyes and the LCD panel and normally in reflected light. For backlight LCM, cosmetic inspection shall be done under the ambient luminance less than 100lux with the backlight on.

11.5.2 The TFT shall be tested at the angle of 45° left and right and 0- 45° top and bottom as the following picture showing:



11.5.3 Definition of viewing area(VA)

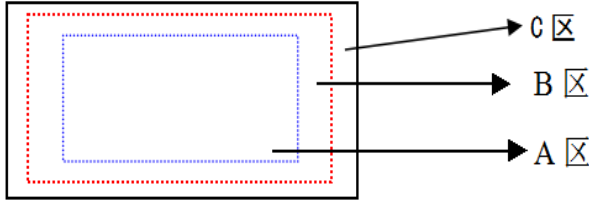
A area : Active area(AA area)

B area : Viewing area(VA area)

C area : Non-viewing area(not viewing after customer assembly)

If there is any appearance viewing defect which do not affect product quality and customer assembly in C area, it's accepted in generally.

The criteria apply to A and B area except chipping and crack.



11.5.4 Inspection with naked eyes(exclusive of the inspection of the physical dimensions of defects carried out with magnifiers)

11.5.5 ND card use method(refer to right conner image) and scope: Multi-bright dot; Mura(Black/Gray pattern uneven); dark line and so on.

11.5.6 Undefined items or other special items, refer to mutual agreement and limited sample.If criterion does not match product specifications/ technical requirement, both should be subject to special inspection criterion agreed by customer.




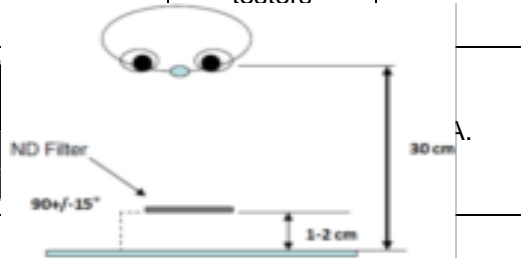
11.6. Defects and Acceptance Standards

11.6.1 Electrical properties test

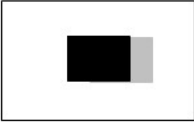

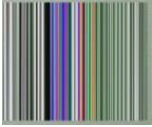

11.6.1.1 Test voltage(V) : Refer to the instruction of testers and the product specification or drawing and the display content and parameters and display effects shall conform to the product specification and drawing.

11.6.1.2 Current Consumption(I) : Refer to approved product specifications or drawings.

11.6.1.3 Function items(Defect category : MA.)

| No. | Defects | Descriptions | Pictures | Inspection method/tools | Defect category |
|------------|----------------------|---|--|-------------------------|-----------------|
| 11.6.1.3.1 | No display /reaction | shows no picture/display in normal connected situation. |  | Naked eyes/ testers | MA. |
| 11.6.1.3.2 | Missing segment | Shows missing lines in normal display |  | Naked eyes/ testers | MA. |
| 11.6.1.3.3 | Dark line | Only visible on gray pattern, 1 or more vertical/horizontal lines:5%ND,not visible,OK | / | Naked eyes/ testers | MA. |
| 11.6.1.3.4 | POL angle defect | Not accepted |   | | |



| | | | | | |
|-------------|----------------------------|---|--|---------------------------------|-----|
| 11.6.1.3.5 | Image retention (sticking) | Chess pattern stays for 30mins and change to 50% gray pattern, disappear time <10s, OK; if time>10s, NG |  | Naked eyes/ testers | MA. |
| 11.6.1.3.6 | Flicker | Refer to limit sample if essential or flicker value<-30dB(measured by CA310A); OK |  | Naked eyes/ CA310A | MA. |
| 11.6.1.3.7 | Display abnormal | Not accepted |  | Naked eyes/ testers | MA. |
| 11.6.1.3.8 | Cross-talk | Refer to limited sample |  | Naked eyes/ limited sample | MA. |
| 11.6.1.3.9 | Display dim/bright | Refer to limited sample | / | Naked eyes/ limited sample | MA. |
| 11.6.1.3.10 | Contrast | Refer to limited sample | / | Naked eyes/ limited sample | MA. |
| 11.6.1.3.11 | Huge current | Out of spec, not accepted | / | Ammeter | MA. |
| 11.6.1.3.12 | TP function defect | Not accepted | / | Naked eyes/ Touch/ test program | MA. |

11.6.2 LCD dot/line defect

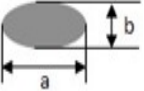

11.6.2.1 LCD pixel dot defect(defect category : MI.)

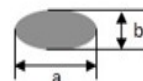
| Item | Inspection criterion | | |
|---------------------------------|----------------------|----------|-----------|
| | S<5" | 5"≤S<10" | 10"≤S<15" |
| Color pixel dot defect(RGB dot) | 1 | 2 | 2 |
| 2 connected bright dot | 0 | 1 | 1 |
| 3 connected bright dot or more | 0 | 0 | 1 |
| Bright dot quantity | 1 | 2 | 3 |
| Random dark dot quantity | 2 | 3 | 4 |
| 2 connected dark dot | 1 | 1 | 2 |
| 3 connected dark dot or more | 0 | 0 | 0 |
| Dark dot quantity | 3 | 4 | 5 |



| Item | Inspection criterion |
|--|----------------------|
| Multi-bright dot | ND 3%hidden, OK |
| Remark: 2 bright dots distance $DS \geq 15\text{mm}$ 2 dark dots distance $DS \geq 5\text{mm}$ | |
| 1) Bright dot: Power on TFT and RGB dot in black display | |
| 2) Dark dot: Power on TFT and gray or black dot in RGB display | |
| 3) Multi-bright dot: Power on TFT and fluorescent tiny dot in black display(only visible in black display) | |

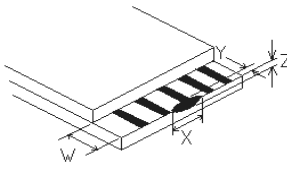
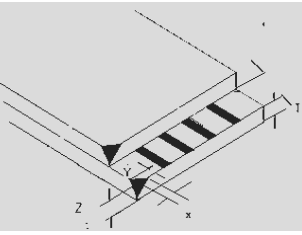
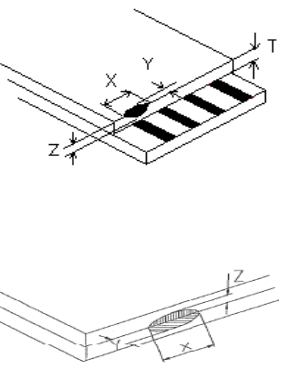
11.6.2.2 LCD appearance dot defect (defect category : MI.)

| No. | Item | Inspection criterion | | | | Picture | Inspection method/tools | |
|---|--|----------------------|-------------|-----------|------------|--|---|--|
| | | Size | S<5" | 5"≤S<10" | 10"≤S<15" | | | |
| 11.6.2.2.1 | Dot defect (black dot, white dot) | D≤0.15 | Not count | Not count | D≤0.2mm |  $D=(a+b)/2$ | Naked eyes /film card /magnifier | |
| | | 0.15<D≤0.25 | 3 | 3 | Not count | | | |
| | | 0.25<D≤0.30 | 1 | 2 | 0.2~0.35mm | | | |
| | | 0.30<D≤0.35 | 0 | 1 | Q'ty ≤ 4 | | | |
| | | 0.35<D≤0.50 | 0 | 0 | 1 | | | |
| | | D>0.5 | 0 | 0 | 0 | | | |
| Remark : D≤0.15mm, not count.Multi-dot as bulk is not accepted. Count dot quantity≤ 5 2 round dots or linear dots in 1 cm is judged as multi-dot. | | | | | | | | |
| 11.6.2.2.2 | Line defect (visible when power on) | Length (mm) | Width (mm) | S<5" | 5"≤S<10" | 10"≤S<15" |  | Naked eyes /film card /magnifier |
| | | Not count | W≤0.03 | Accepted | Accepted | Accepted | | |
| | | L≤5 | 0.03≤W<0.05 | 3 | 3 | Not count | | |
| | | L≤5 | 0.05≤W<0.08 | 0 | 1 | 3 | | |
| | | L≤8 | 0.05≤W<0.08 | 0 | 0 | 1 | | |
| | | L>8 | W>0.08 | 0 | | | | |
| Remark : Invisible when power on,only visible in special angle against light, show as watermark/folding/scratch but can not be touched, no control or refer to keeping sample. | | | | | | | | |
| 11.6.2.2.3 | | Size(mm) | S<5" | 5"≤S<10" | 10"≤S<15" | | Naked eyes | |



| | | | | | | | |
|--|-------------------------------|---------------------|-----------|-----------|-----------|--|--------------------------|
| | Polarizer | $D \leq 0.20$ | Not count | Not count | Not count | | /film card /magnifier |
| | convex- | $0.20 < D \leq 0.5$ | 2 | 2 | 3 | | |
| | concave | $0.50 < D \leq 0.8$ | 0 | 1 | | | |
| | dot defect, | $0.8 < D \leq 1.5$ | 0 | 0 | 1 | | |
| | polarizer bubble defect | $D > 1.5\text{mm}$ | 0 | 0 | 0 | | |

11.6.3 Chipping defect

| No. | Item | Accepted criterion(mm) | | | | MA. | MI. |
|----------|---|--|------------------------|--|------------|-----|-----|
| 11.6.3.1 | ITO conductive side  | X | / | $\leq 1/8L$ | / | | √ |
| | | Y | $Y \leq 1/6W$ | $1/6W < Y \leq 1/4W$ | $1/4W < Y$ | | |
| | | Accept | 2 | 2 | 0 | | |
| | | | | | | | |
| 11.6.3.2 | Corner chipping (ITO pins position)  | X | / | $\leq 1/6L$ | / | | √ |
| | | Y | $Y \leq 1/2W$ | $1/2W < Y \leq W$ | $W < Y$ | | |
| | | Accept | 2 | 1 | 0 | | |
| | | Corner chipping occurred in sealed edge position as per 6.3.3; at the same time it should not enter into black border of the frame and the corner chipping effect the electric connection position perform as per 6.3.1. | | | | | |
| 11.6.3.3 | Chipping in sealed area (outside chipping)  | X | / | $\leq 1/8L$ | / | | √ |
| | | Y(outside chipping) | Not enter into sealant | Enter $Y \leq H$ | $H < Y$ | | |
| | | Y(inside chipping) | | Enter $Y \leq 1/2H$ | $1/2H < Y$ | | |
| | | Z | $\leq T$ | $\leq 1/2T$ | / | | |
| | | Accept | 2 | 1 | 0 | | |
| | | | | The standards of inner and outer chipping on edge sealing area are same. When the chipping occurred in the opposite of stage, Y as per the chipping on the non-conduction side standard in 6.3.1 | | | |



| | | | | | | | |
|---|---|---|---------------|----------------------|------------|--|---|
| | Chipping in sealed area (inside chipping) | | | | | | |
| 11.6.3.4 | Conductive side (back side chipping) | X | / | $\leq 1/6L$ | / | | √ |
| | | Y | $Y \leq 1/3W$ | $1/3W < Y \leq 2/3W$ | $2/3W < Y$ | | |
| | | Accept | 2 | 2 | 0 | | |
| | | Chipping into ITO side, refer to 6.3.1 | | | | | |
| 11.6.3.5 | Protruding LCD poor cutting and LCD burrs | X | / | $\leq 1/8L$ | / | | √ |
| | | Y | $\leq 1/6W$ | $1/6W < Y \leq 1/5W$ | $1/5W < Y$ | | |
| | | Z | / | / | / | | |
| | | Accept | 1 | 1 | 1 | | |
| The outside protruding control as per the tolerance of drawing. | | | | | | | |
| 11.6.3.6 | Crack | Not allow to occur cracks without direction; the crack expand to inside is NG, but to outside is OK (confirmed as per the damaged standard) | | | | | √ |

Remark :

X means the length of chipping;

Y means the width;

Z means the thickness;

W means the step width of the two glasses;

H means the distance from the glass edge to the sealant inner edge;

T means glass thickness.

11.6.4 Backlight components

| No. | Item | Description | Accepted criterion | MA. | MI. |
|----------|--------------------------|--|-----------------------------|-----|-----|
| 11.6.4.1 | No backlight wrong Color | / | Rejected | √ | |
| 11.6.4.2 | Color deviation | When powered on, the LCD color differs from its sample and found that the color not conforming to the drawing after testing. | Refer to sample and drawing | | √ |



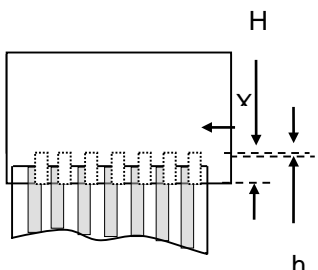
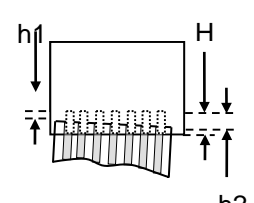
| | | | | | |
|----------|----------------------|---|-----------------------------|--|---|
| 11.6.4.3 | Brightness deviation | When powered on, the LCD brightness differs from its sample and is found after testing not conforming to the drawing; or if it conforms to the drawing but the brightness over $\pm 40\%$ than its typical value. | Refer to sample and drawing | | √ |
| 11.6.4.4 | Uneven brightness | Uneven on the same LCD and out of the specification of the drawing. The no specification evenness= (the max value-the min value)/ mean value $< 70\%$. | Refer to sample and drawing | | √ |
| 11.6.4.5 | Spot/line/scratch | When power on, it has dirty spot, scratches and so on spot and line defects. | Refer to 6.2.2 | | √ |

11.6.5 Metal frame (Metal Bezel)

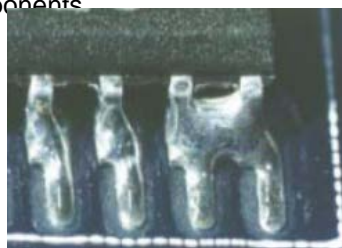
| No. | Item | Description | Accepted criterion | MA. | MI. |
|----------|---|--|--------------------|-----|-----|
| 11.6.5.1 | Material & surface treatment | Metal frame/surface treatment do not conform to the specifications. | Rejected | √ | |
| 11.6.5.2 | Tab twist Unconformity/ Tab not twisted | Wrong twist method or direction and twist tabs are not twisted as required. | Rejected | √ | |
| 11.6.5.3 | Bezel paint loss | 1.Front surface : Paint peel off and scratch to the bottom Dot:D $\leq 0.5\text{mm}$, exceeds 3; Line:L $\leq 3.0\text{mm}$,W $\leq 0.05\text{mm}$ exceeds 2; 2.Front dent, air bubble and side with paint peeling off scratch to the bottom Dot: D $\leq 1.0\text{mm}$, exceeds 3; Line:L $\leq 3.0\text{mm}$,W $\leq 0.05\text{mm}$, exceeds 2; | Rejected | | √ |
| 11.6.5.4 | Bezel scratch | | | | √ |
| 11.6.5.5 | Painting peel off, discoloration, dent, and scratch | | | | √ |
| 11.6.5.6 | Burr | Burr(s) on metal bezel is so long as to get into viewing area. | Rejected | | √ |

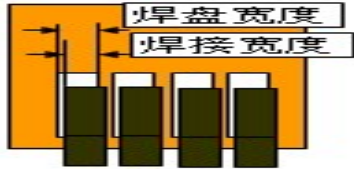
11.6.6 FPC

| No. | Item | Description | Accepted criterion | MA. | MI. |
|----------|------------|----------------------|--|-----|-----|
| 11.6.6.1 | Model &P/N | Material model & P/N | Keep the same with drawing and technical requirement | √ | |


| | | | | | |
|----------|--------------------------------|--|---|---|---|
| 11.6.6.2 | Dimension/ position | <p>Dimension in drawing spec</p>  <p>Remark: H=ITO pin length f=FPC width W=ITO pin width</p> | <p>$f \leq 1/3w$, $h \leq 1/3H$, dimension in drawing spec-> OK Conductive material and ITO/PDA connective area must over than 1/2. Entire dimension must be in spec tolerance.</p>  | | √ |
| 11.6.6.3 | FPC appearance | <p>Hot pressing material get broken, folding line open; FPC golden finger oxidate, broken ,scratch ,foreign material which cause line short</p> | <p>Broken length<2mm; FPC line is OK- > Accepted Crack and line broken->Rejected</p> | | √ |
| 11.6.6.4 | FPC burr | Burr near FPC edge area | <p>When cover line and burr length $\leq 1.0\text{mm}$->Accepted</p> | | √ |
| 11.6.6.5 | FPC falling off | FPC bonding area falling off ; silica gel breaking | Rejected | | √ |
| 11.6.6.6 | Sealant missing ITO line | Sealant is not covered all ITO line | Rejected | √ | |
| 11.6.6.7 | Missing sealant | No sealant | Rejected | √ | |
| 11.6.6.8 | Sealant | Sealant height ->product total height | Rejected | √ | |


11.6.7 SMT

| No. | Item | Description | Accepted criterion | MA. | MI. |
|----------|-----------------------|--|--------------------|-----|-----|
| 11.6.7.1 | Soldering bridge | <p>Solder between adjacent pads and components</p>  | Rejected | | √ |
| 11.6.7.2 | Solder ball/splash | Solder ball/tin dross causing short circuit at the solder point. There are active solder ball and splash. | Rejected | | √ |

| | | | | | |
|----------|---------------------------|--|----------|---|---|
| 11.6.7.3 | Soldering excursion | Soldering slant > 1/3 soldering pad  | Rejected | | √ |
| 11.6.7.4 | Component wrong attaching | Component on PCB differs with drawing: wrong one, extra one, lack one, opposite polarity | Rejected | √ | |
| | | JUMP short circuit on PCB: extra soldering, lack soldering. | Rejected | √ | |
| 11.6.7.5 | Component falling off | Soldering but component is missing | Rejected | √ | |
| 11.6.7.6 | Wrong component | Component model/spec differs from product specification | Rejected | √ | |

11.6.8 General Appearance

| No. | Item | Description | Accepted criterion | MA. | MI. |
|----------|---------------------------|--|---|-----|-----|
| 11.6.8.1 | Dimension | According to drawing | Accepted | √ | |
| 11.6.8.2 | Surface stain | Defect mark or label are not removed residual glue, and finger print, etc; | Rejected | | √ |
| 11.6.8.3 | Assembly foreign material | Dot/linear stain after assembly backlight and diffuse film TP assembly foggy stain | Invisible when power on->OK Refer to 6.2.2 dot/line spec | | √ |
| 11.6.8.4 | Mixture | Different model product in the same shipment | Rejected | √ | |
| 11.6.8.5 | Product mark | Missing, unclear, incorrect, or misplaced part | Rejected | | √ |
| 11.6.8.6 | Component mark | Silk screen mark clear, resistance measured value in spec | Accepted (Refer to customer special requirement) | | √ |
| 11.6.8.7 | Newton's rings | Area < 1/6 screen area quantity ≤ 1 | Accepted | | √ |
| 11.6.8.8 | Mura | 1. In black display ND 3% invisible ->OK; visible->NG 2. Naked eyes inspection RGB display invisible Black display, area < 1/4 screen area | Refer to limited sample  | | √ |

| | | | | | |
|-----------|------------|--|-------------------------|--|---|
| 11.6.8.9 | Light leak | <p>1.LCD edge(near backlight) shadow by LCD lamps irregular illuminate</p> <p>2.Judge in black/white/gray display (slight leaky is yellowish,greenish, Tape 浮起漏光</p>  <p>Panel 側邊漏光</p> | Refer to limited sample | | √ |
| 11.6.8.10 | Polarizer | <p>1.Polarizer slant.Cover VA and not over LCD edge</p> <p>2.No unmovable stain or finger print in polarizer VA</p> <p>3.Bubble/warped but not enter VA</p> | Accepted | | √ |
| 11.6.8.11 | TP defect | <p>1.TP crack</p> <p>2.TP stain(fogy& unremovable)</p> <p>3.TP glue overflow to VA</p> | Rejected | | √ |

Remark :

Anything which is not clearly defined in 6.5~6.8 should refer to IPC-A-610E.Consumer Electronics, Non-consumer Electronics refer to I grade and Industrial,Automobile refer to II grade.

11.7 Others

Items not specified in this document or released on compromise should be inspected with reference to mutual agreement and limit samples.