Standard Delivery Specification For LCD Panels

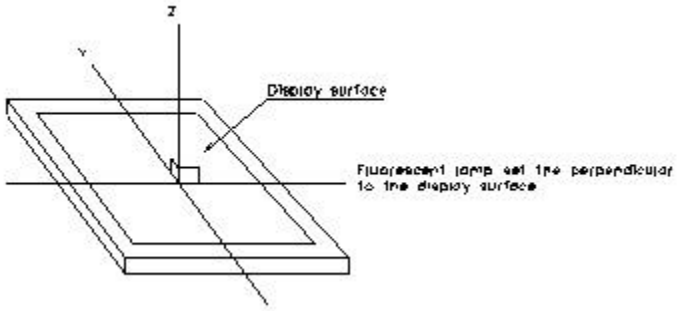
Quality level

1.1 Inspection conditions

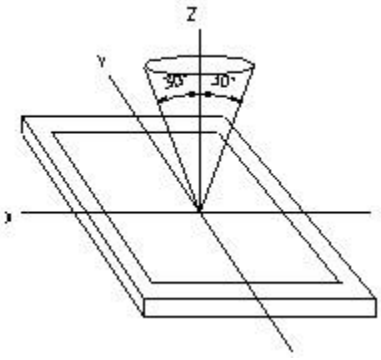
1.1.1The environmental conditions for inspection shall be as follows
Room temperature: 22±5℃
Humidity : 65±20%RH

1.1.2 The external visual inspection
The inspection shall be performed by using a single 20W fluorescent lamp for illumination and the distance from LCD to eyes of the inspector should be 30±5cm.

1.1.3 Light method



1.1.4 Inspection distance and angle



Inspection should be performed within Φ(Φ is usually 30°) from Z axis to each X and Y axis. Inspection distance of any direction within Φ must be kept 30±5cm to the display surface.

1.2 Sampling procedures for each item's acceptance level table

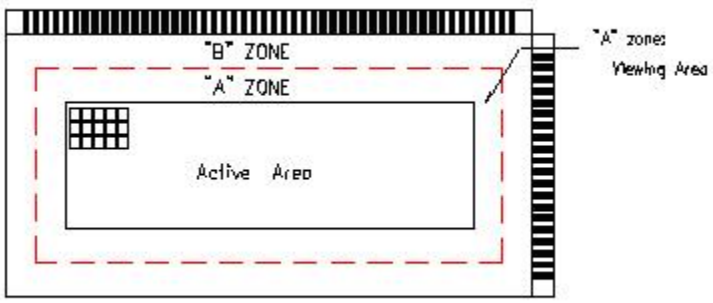
Defect type	Sampling procedures	AQL
Major defect	GB2828-87 single sampling plans for normal inspection.	0.65
Minor defect	GB2828-87 single sampling plans for normal inspection.	1.5

1.3 Classification of defects

1.3.1 Major defect
A major defect refers to a defect that is considered to substantially degrade usability for product applications.

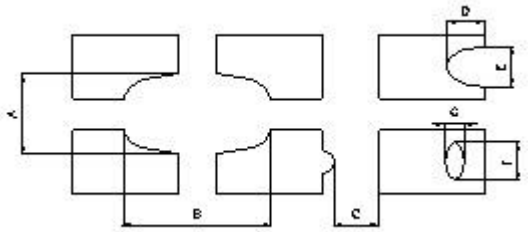
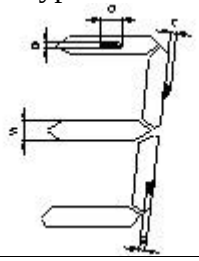
1.3.2 Minor defect
A minor defect refers to a defect that is not considered to substantially degrade product application, or a defect that deviates from existing standards almost unrelated to the effective use of the product or its operation.

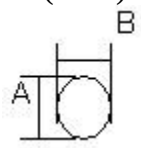
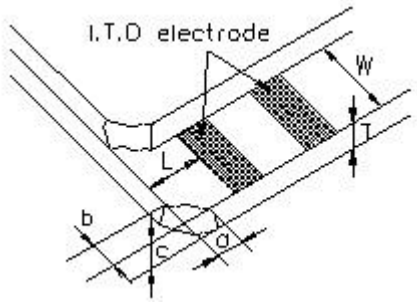
1.3.3 Defect application zone



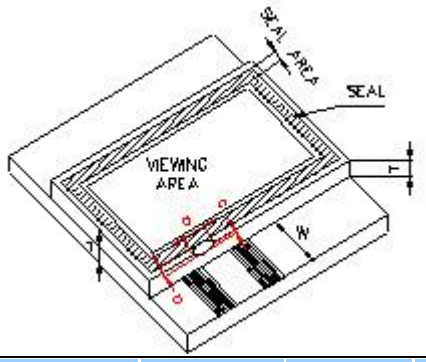
1.4 Inspection standards

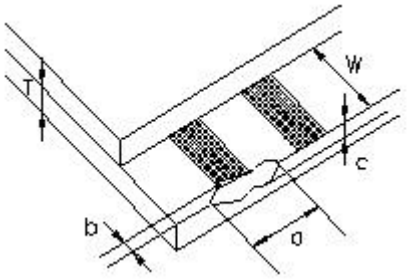
ITEM	Criterion for defects	Classification of defects
(1)Open segment and open common	Any segment or common patterns that does not activate when they should are rejected.	Major
(2)Short	. No shorts are allowed.	Major

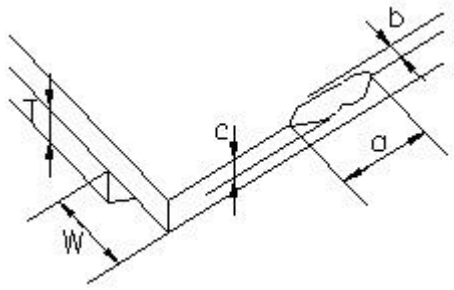
	. Segment-to-segment shorts are when two or more segment electrodes are bridged together; they cause the shorted segment to activate together when they should not. (They may not be as dark as other segments) . Segment-to-common shorts are caused by some conductive foreign materials in the fluid bridging between a segment and back plane electrodes.	
(3)High current	The total current required to activate all segments shall not exceed the limit specified in the specification for approval for the tested voltage.	Major
(4)Weak segment(Dim segment)	Segments that only partially activate are rejected; they are not as dark as other segments.	Major
(5)Display Pattern	⑴Dot type  	Minor
	Unit: mm (A+B)/2≤0.25 C≥0 (D+E)/2≤0.25 (F+G)/2≤0.25 Note: 1) Acceptable up to 3 damages. 2) If there're two or more pinholes per digit, it is rejected.	
	2) Segment type:  	
	Unit: mm c≤w/4 d≤w/4 Note: 1) Acceptable up to 3 damages. 2) If there're two or more pinholes per digit, it is rejected.	

<table>
<tr><td></td><td>
<table>
<tr><td>Size D (mm)</td><td>Acceptable number</td></tr>
<tr><td>D=(a+b)/2</td><td>A zone</td></tr>
<tr><td>D < 0.15</td><td>Ignore</td></tr>
<tr><td>0.15≤D < 0.25</td><td>2</td></tr>
<tr><td>0.18 < D < 0.25</td><td>1</td></tr>
<tr><td>0.25≤D</td><td>0</td></tr>
</table>
</td><td></td></tr>
<tr><td>(6)Blemishes or Foreign MattersSize: D=(A+B)/2
 
</td><td>
<table>
<tr><td rowspan="2">Size D (mm)</td><td colspan="2">Acceptable number</td></tr>
<tr><td>A zone</td><td>B zone</td></tr>
<tr><td>D≤0.15</td><td>Ignore</td><td>Ignore</td></tr>
<tr><td>0.15 < D≤0.20</td><td>2</td><td>Ignore</td></tr>
<tr><td>0.2 < D≤0.25</td><td>1</td><td>-</td></tr>
<tr><td>0.2 < D≤0.3</td><td>-</td><td>2</td></tr>
<tr><td>0.25 < D≤0.3</td><td>0</td><td>1</td></tr>
<tr><td>0.5 < D</td><td>0</td><td>0</td></tr>
</table>
</td><td></td></tr>
<tr><td>(7)Dark lines and scratches</td><td>
<table>
<tr><td rowspan="2">Width (mm)</td><td rowspan="2">Length(mm)</td><td colspan="2">Acceptable number</td></tr>
<tr><td>A zone</td><td>B zone</td></tr>
<tr><td>W≤0.03</td><td>L≤3.0</td><td>3</td><td>Ignore</td></tr>
<tr><td>0.03<W≤0.05</td><td>L≤2.0</td><td>2</td><td>3</td></tr>
<tr><td>0.05<W≤0.08</td><td>L≤2.0</td><td>1</td><td>2</td></tr>
<tr><td>0.08<W≤0.1</td><td>L≤3.0</td><td>0</td><td>1</td></tr>
<tr><td>0.1<W</td><td>L>3.0</td><td>0</td><td>0</td></tr>
</table>
</td><td>Minor</td></tr>
<tr><td>(8)Air bubble in polarizer</td><td>
<table>
<tr><td rowspan="2">Size D (mm)</td><td colspan="2">Acceptable number</td></tr>
<tr><td>A zone</td><td>B zone</td></tr>
<tr><td>D≤0.20</td><td>Ignore</td><td>Ignore</td></tr>
<tr><td>0.20 < D≤0.40</td><td>3</td><td>Ignore</td></tr>
<tr><td>0.40 < D≤0.60</td><td>2</td><td>Ignore</td></tr>
<tr><td>0.2 < D≤0.3</td><td>0</td><td>0</td></tr>
</table>
</td><td>Minor</td></tr>
<tr><td>(9)Dirt</td><td colspan="2">Products pass if the dirt can be wiped off easily</td></tr>
<tr><td>(10)Chip in corner</td><td>


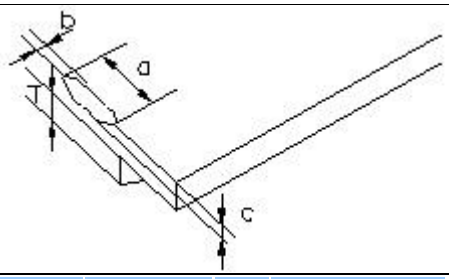
<table>
<tr><td>a</td><td>b</td><td>c</td><td>Acceptable number</td></tr>
</table>
</td><td>Minor</td></tr>
</table>

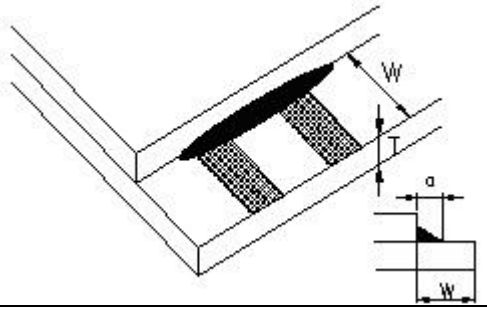
<table>
<tr><td></td><td><table><tr><td>a < 4mm</td><td>b≤W</td><td>C≤T</td><td>3</td></tr></table></td><td></td></tr>
<tr><td>(11)Chip in seal area</td><td> 

<table><tr><td>a</td><td>b</td><td>c</td><td>Acceptable number</td></tr><tr><td>a < 3mm</td><td>b≤1.5mm</td><td>c≤1/2T</td><td>3</td></tr></table>
Chip is rejected, if c is greater than 50% of the glass thickness or the seal area is damaged.</td><td>Minor</td></tr>
<tr><td>(12)Chip in pad(1)</td><td> 

<table><tr><td>a</td><td>b</td><td>c</td><td>Acceptable number</td></tr><tr><td>a≤2mm</td><td>b≤W/4</td><td>c≤T</td><td>ignore</td></tr><tr><td>a≤3mm</td><td>b≤W/4</td><td>c≤T</td><td>3</td></tr></table></td><td>Minor</td></tr>
<tr><td>(13)Chip in pad(2)</td><td> 

<table><tr><td>a</td><td>b</td><td>c</td><td>Acceptable number</td></tr><tr><td>a≤2mm</td><td>b≤W/3</td><td>c≤T</td><td>ignore</td></tr><tr><td>a≤4mm</td><td>b≤W/2</td><td>c≤T</td><td>3</td></tr></table></td><td>Minor</td></tr>
</table>

<table>
<tr><td>(14)Chip in other sides</td><td> 

<table>
<tr><th>a</th><th>b</th><th>c</th><th>Acceptable number</th></tr>
<tr><td>a≤3mm</td><td>b≤1mm</td><td>c≤T</td><td>ignore</td></tr>
<tr><td>a≤4mm</td><td>b≤1.5mm</td><td>c≤T</td><td>3</td></tr>
</table></td><td>Minor</td></tr>
<tr><td>(15)Glass rest</td><td> 

a≤1/4W</td><td>Minor</td></tr>
</table>

Reliability

2.1 Items of reliability

All test result items should be judged after 4 hours recovery time at room temperature and under the state of not operating.

ITEM	Condition	Criterion
(1)High temperature operating		Total current consumption should be below double of initial value. Cosmetic defects should not be happened.
(2)Low temperature operating		
(3)Humidity (without polarizer)	60±2℃ 95±5%RH 96hours	
(4)High temperature storage	60℃ 96hours	
(5)Low temperature storage	-10℃ 24hours	
(6)Thermal shock storage	-20℃→25℃→70℃ 30min 5min 30min 5cycle	

(7)Vibration	50Hz amplitude :0.7mm 30min for each direction (X.Y.Z)	

Note: No cosmetic failure means there must be no permanent cosmetic defect and does not include any recoverable defect after 24 hours or more.