

Control No. :	T-RS-084
Version No. :	V0.0

SPECIFICATIONS

PRODUCT : LCD MODULE

MODEL NO. : T240320-64

CUSTOMER			GW GROUP INC.		
APPROVED	CHECKED	CHECKED	APPROVED	CHECKED	PREPARED
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☐ APPROVAL FOR SPECIFICATIONS ONLY

☒ APPROVAL FOR SPECIFICATIONS AND SAMPLE

GW GROUP INC.

RECORDS OF REVISION

[illegible]

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1. GENERAL SPECIFICATIONS :

1-1 SCOPE:

This specification covers the delivery requirements for the liquid crystal display delivered by GW GROUP INC. to Customer.

1-2 PRODUCTS:

Liquid Crystal Display Module (LCM)

1-3 MODULE NAME:

T240320-64

2. FEATURES :

- (1) Display Type: TFT-LCD, TN, Transmissive, 9 o'clock, Normally With
- (2) Driving Method: 1/320 duty
- (3) Built-in controller: SSD1289
- (4) With LED Backlight

3. MECHANICAL SPECIFICATIONS :

ITEM	SPECIFICATIONS	UNIT
OUTLINE DIMENSIONS	55.04 (W) x 103.42 (H) x 3.10 (T)	mm
ACTIVE AREA	48.60 (W) x 64.80 (H)	mm
RESOLUTION	240RGB(H) x 320(V)	pixel
PIXEL ARRANGEMENT	RGB Vertical Stripe	-
PIXEL PITCH	0.2025(H) x 0.2025(V)	mm
DISPLAY COLOR	262 K	color
BACKLIGHT	LED BACKLIGHT (WHITE)	-
WEIGHT	Approx. 32	g

4. ABSOLUTE MAXIMUM RATING

ITEM	SYMBOL	STANDARD VALUE			UNIT
		MIN	TYP	MAX	
INPUT VOLTAGE RANGE	VCC-GND	-0.3	-	+4.6	V
OPERATION TEMPERATURE	TOPR	- 20	-	+70	°C
STORAGE TEMPERATURE	TSTG	- 30	-	+80	°C

5. ELECTRICAL CHARACTERISTICS

(Ta=-25±2°C)

ITEM	SYMBOL	CONDITIONS	STANDARD VALUE			UNIT
			MIN	TYP	MAX	
INPUT VOLTAGE RANGE	VCC-GND	-	-	2.8	-	V
INPUT VOLTAGE "H" LEVEL	VIH	-	0.8*VCC	-	VCC	V
INPUT VOLTAGE "L" LEVEL	VIL	-	-0.3	-	0.2*VDDIO	V
OUTPUT VOLTAGE "H" LEVEL	VOH	IOH=-100uA	0.8VDDIO	-	-	V
OUTPUT VOLTAGE "H" LEVEL	VOL	IOL=100uA	-	-	0.2VCC	V
CURRENT CONSUMPTION	IF	NOTE	-	10	15	mA

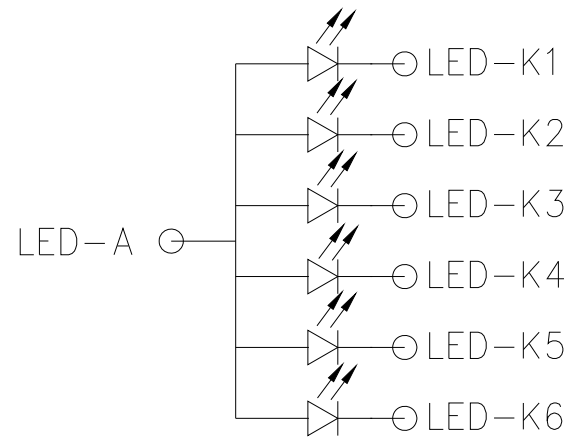
NOTE :

- 1.The measure without backlight.
- 2.The test screen:



6. LED BACKLIGHT CHARACTERISTICS

6-1 POWER SUPPLY FOR LED BACKLIGHT



6-2 ABSOLUTE MAXIMUM RATING AT $T_a=25\text{ }^{\circ}\text{C}$

PARAMETER	SYMBOL	SPECIFICATIONS	UNIT
FORWARD VOLTAGE	V_F	3.2	V
FORWARD CURRENT	I_F	120	mA

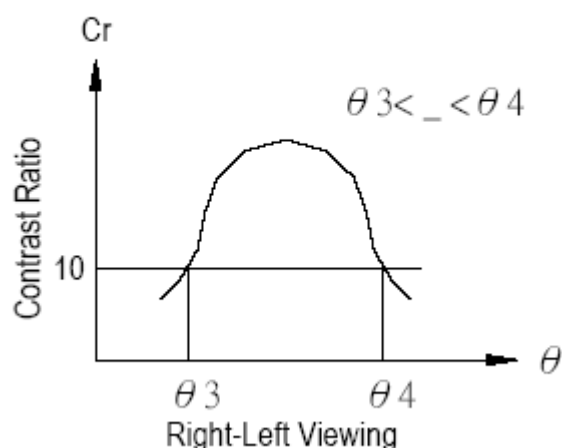
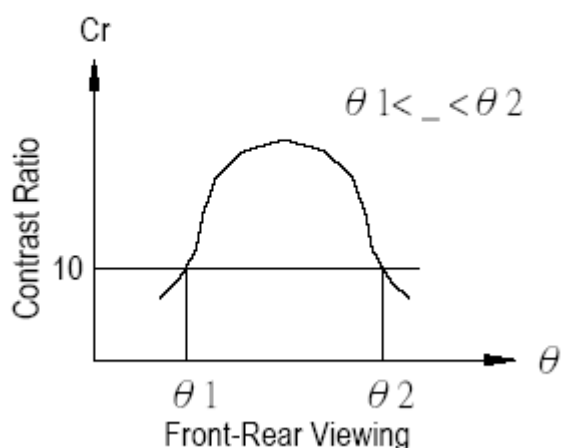
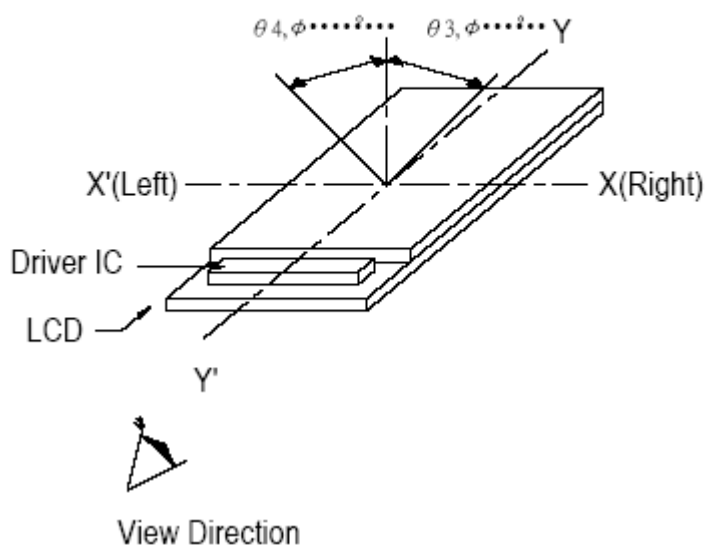
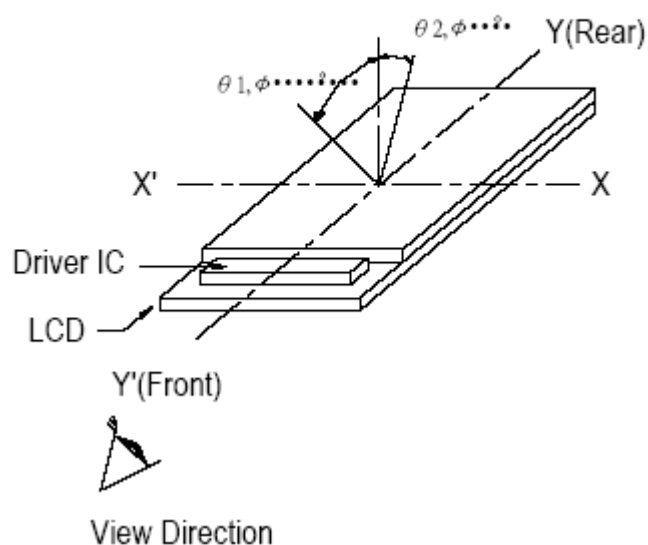
8. ELECTRO-OPTICAL CHARACTERISTICS

(Ta=25°C)

ITEM	SYMBOL		CONDITIONS	MIN	TYP	MAX	UNIT	NOTE
VIEWING ANGLE	θ1		Cr ≥ 10 B/L ON	—	60	—	deg.	(1)
	θ2			—	60	—		
	θ3			—	40	—		
	θ4			—	60	—		
Brightness @ White (CENTER POINT)	BL		If≥120mA	200	—	—	Cd/m²	*1
CONTRAST RATIO	Cr		NormalViewing Angle B/L ON	150	180	—	—	(2)
RESPONSE TIME(rise)	Tr			—	10	—	ms	(3)
RESPONSE TIME(fall)	Tf			—	15	—		
Color chromaticity	White	Wx		0.29	0.31	0.33	—	CIE
		Wy		0.31	0.33	0.35		
	Red	Rx		0.62	0.64	0.66		
		Ry		0.30	0.32	0.34		
	Green	Gx		0.26	0.28	0.30		
		Gy		0.55	0.57	0.59		
	Blue	Bx		0.11	0.13	0.15		
		By		0.08	0.10	0.12		

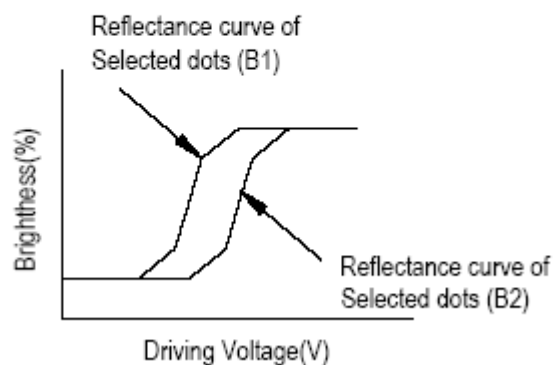
*1: Measure at the condition of displaying ALL ON mode.

(1) DEFINITION OF VIEWING ANGLE

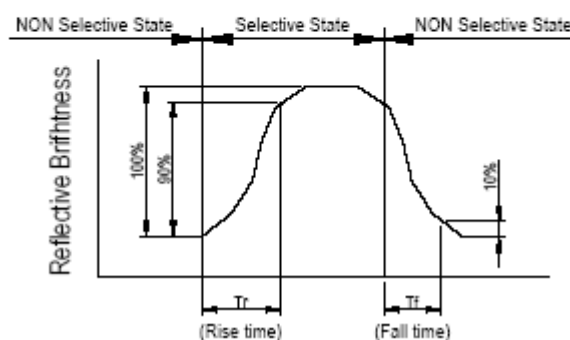
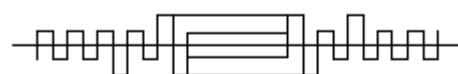


(2) DEFINITION OF VIEWING CONTRAST

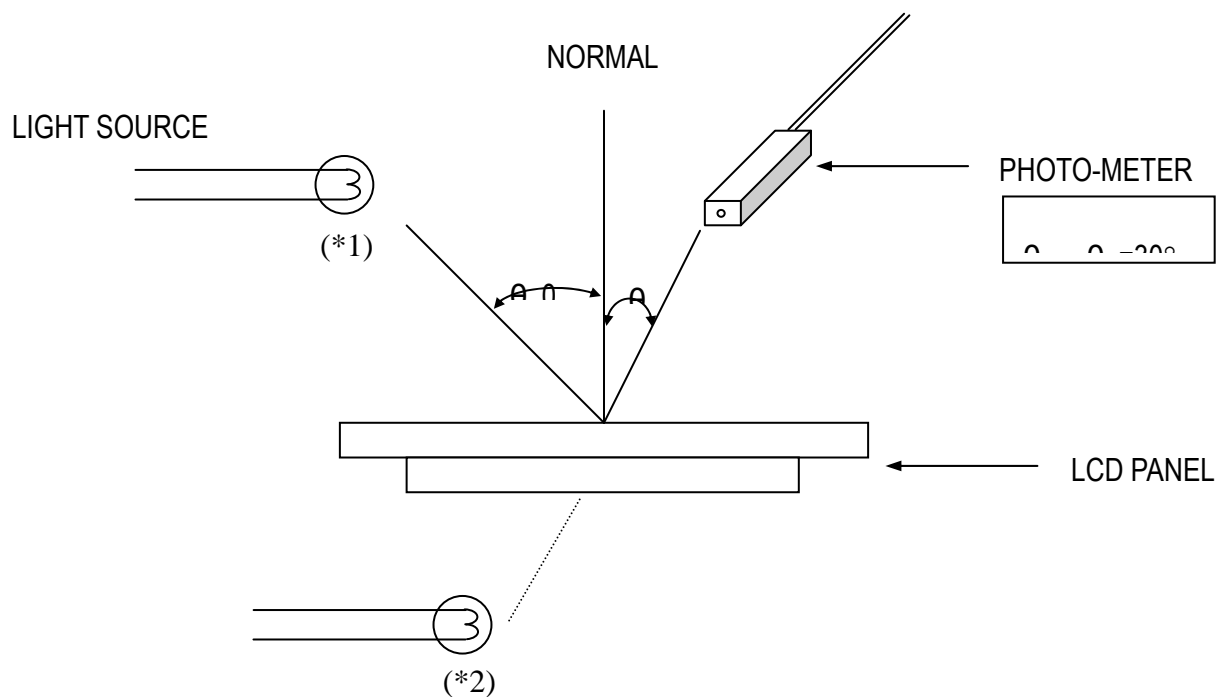
$$CR = \frac{\text{Reflectance at all pixels "White"(B1)}}{\text{Reflectance at all pixels "Black"(B2)}}$$



(3) DEFINITION OF RESPONSE



(4) Measuring Instruments For Electro-optical Characteristics



*1.Light source position for measuring the reflective type of LCD panel

*2.Light source position for measuring the transfective / transmissive types of LCD panel

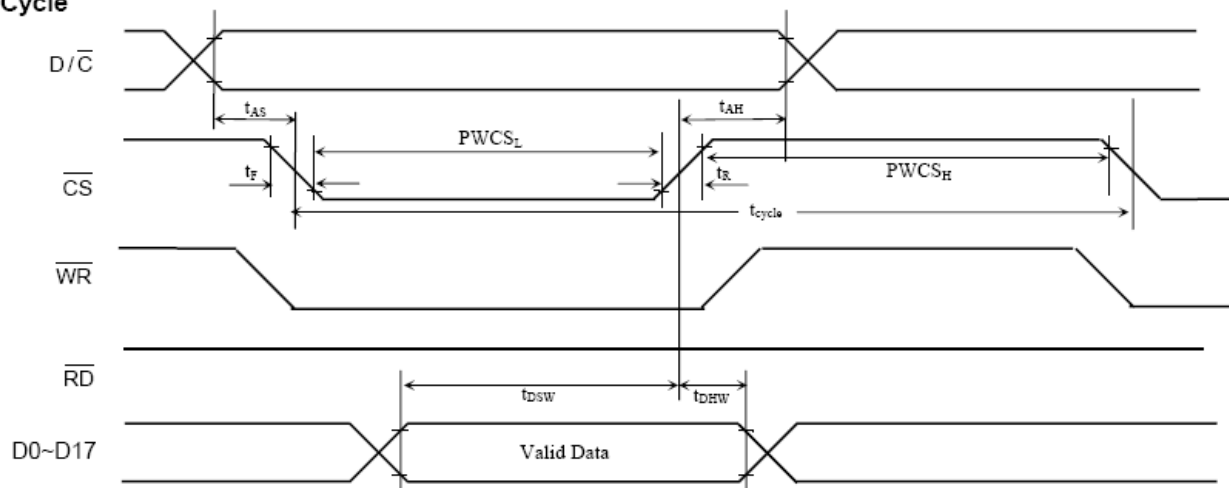
9. TIMING CHARACTERISTICS

9-1 Parallel Write Interface Characteristics (80 Mode)

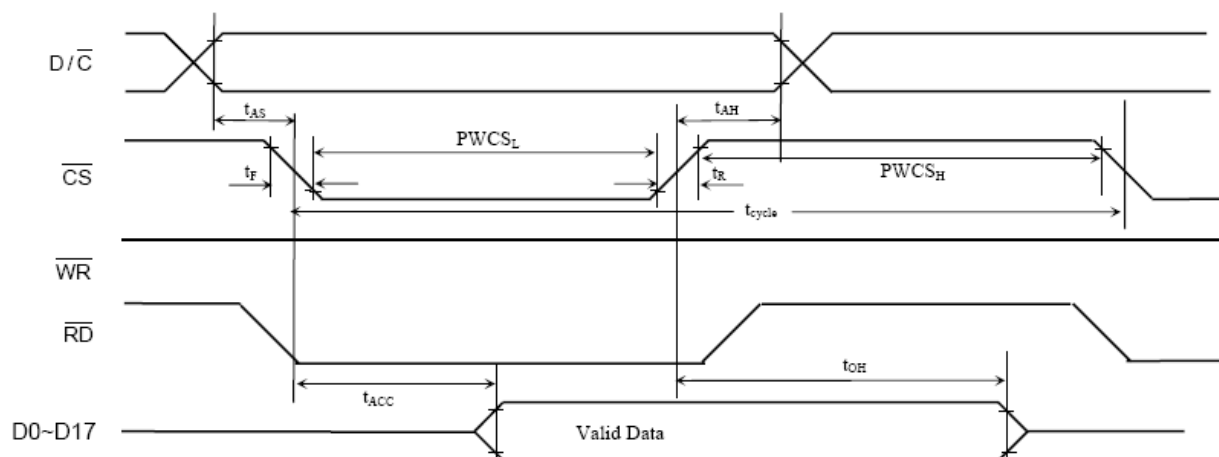
(TA = -20 to 70°C, VDDIO = 1.65V to 3.6V, VDDEXT = 1.65V to 1.95V, REGVDD = 'L')

Symbol	Parameter	Min	Typ	Max	Unit
t _{cycle}	Clock Cycle Time (write cycle)	100	-	-	ns
t _{cycle}	Clock Cycle Time (read cycle)	1000	-	-	ns
t _{AS}	Address Setup Time	0	-	-	ns
t _{AH}	Address Hold Time	0	-	-	ns
t _{DSW}	Data Setup Time	5	-	-	ns
t _{DHW}	Data Hold Time	5	-	-	ns
t _{ACC}	Data Access Time	250	-	-	ns
t _{OH}	Output Hold time	100	-	-	ns
PWCSL	Pulse Width /CS low(write cycle)	50	-	-	ns
PWCSH	Pulse Width /CS high (write cycle)	50	-	-	ns
PWCSL	Pulse Width /CS low (read cycle)	500	-	-	ns
PWCSH	Pulse Width /CS high (read cycle)	500	-	-	ns
t _R	Rise time	-	-	4	ns
t _F	Fall time	-	-	4	ns

Write Cycle



Read Cycle



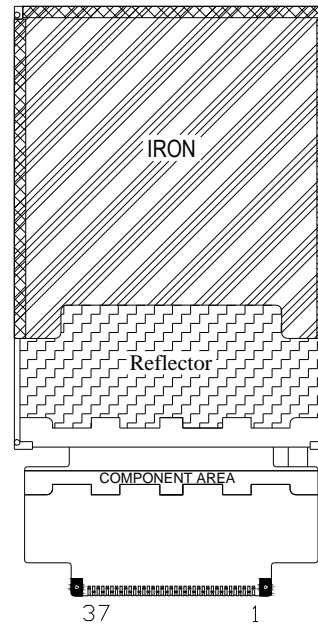
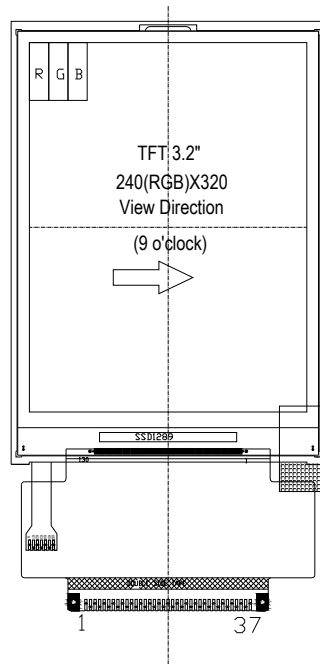
8080-series Interface Timing Characteristics

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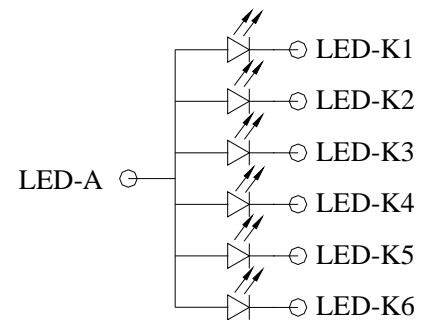
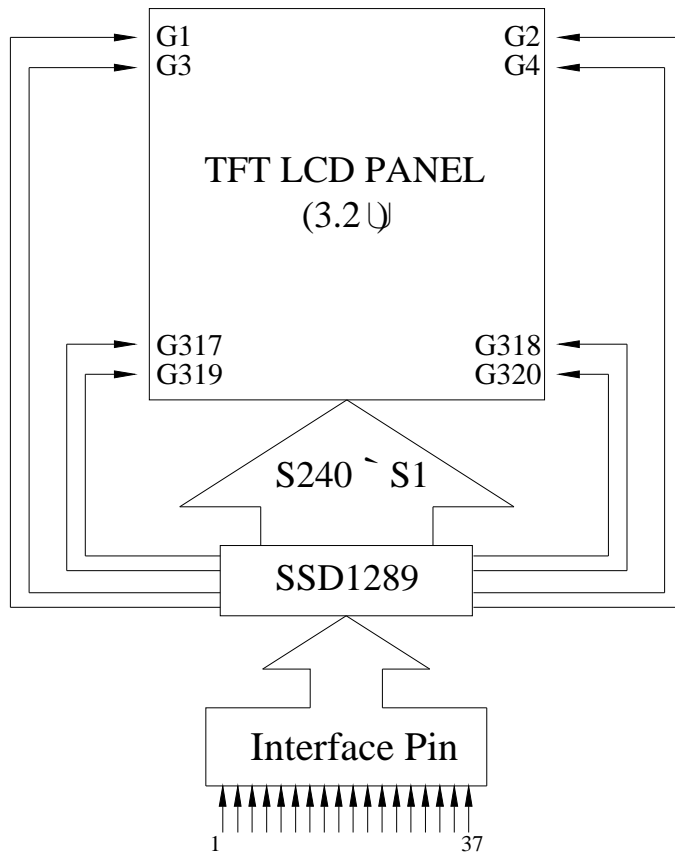
10. PIN ASSIGNMENT

PIN NO.	FUNCTION DESCRIPTIONS	SYMBOL
1	DATA BUS	DB8
2	DATA BUS	DB9
3	DATA BUS	DB10
4	DATA BUS	DB11
5	GROUND	GND1
6	POWER SUPPLY	VCC1
7	CHIP SELECT SIGNAL	/CS
8	DATA / COMMAND CONTROL SIGNAL	RS
9	WRITE CONTROL SIGNAL	/WS
10	READ CONTROL SIGNAL	/RD
11	NC	NC
12	NC	NC
13	NC	NC
14	NC	NC
15	BACK LIGHT LED+	LED-A
16	BACK LIGHT LED1-	LED-1
17	BACK LIGHT LED2-	LED-2
18	BACK LIGHT LED3-	LED-3
19	BACK LIGHT LED4-	LED-4
20	BACK LIGHT LED5-	LED-5
21	BACK LIGHT LED6-	LED-6
22	DATA BUS	DB12
23	DATA BUS	DB0
24	DATA BUS	DB1
25	DATA BUS	DB2
26	DATA BUS	DB3
27	DATA BUS	DB4
28	DATA BUS	DB5
29	DATA BUS	DB6
30	DATA BUS	DB7
31	RESET SIGNAL INPUT	/RESET
32	POWER SUPPLY	VDD
33	POWER SUPPLY	VDD
34	GROUND	GND
35	DATA BUS	DB13
36	DATA BUS	DB14
37	DATA BUS	DB15

11. PIN NO.

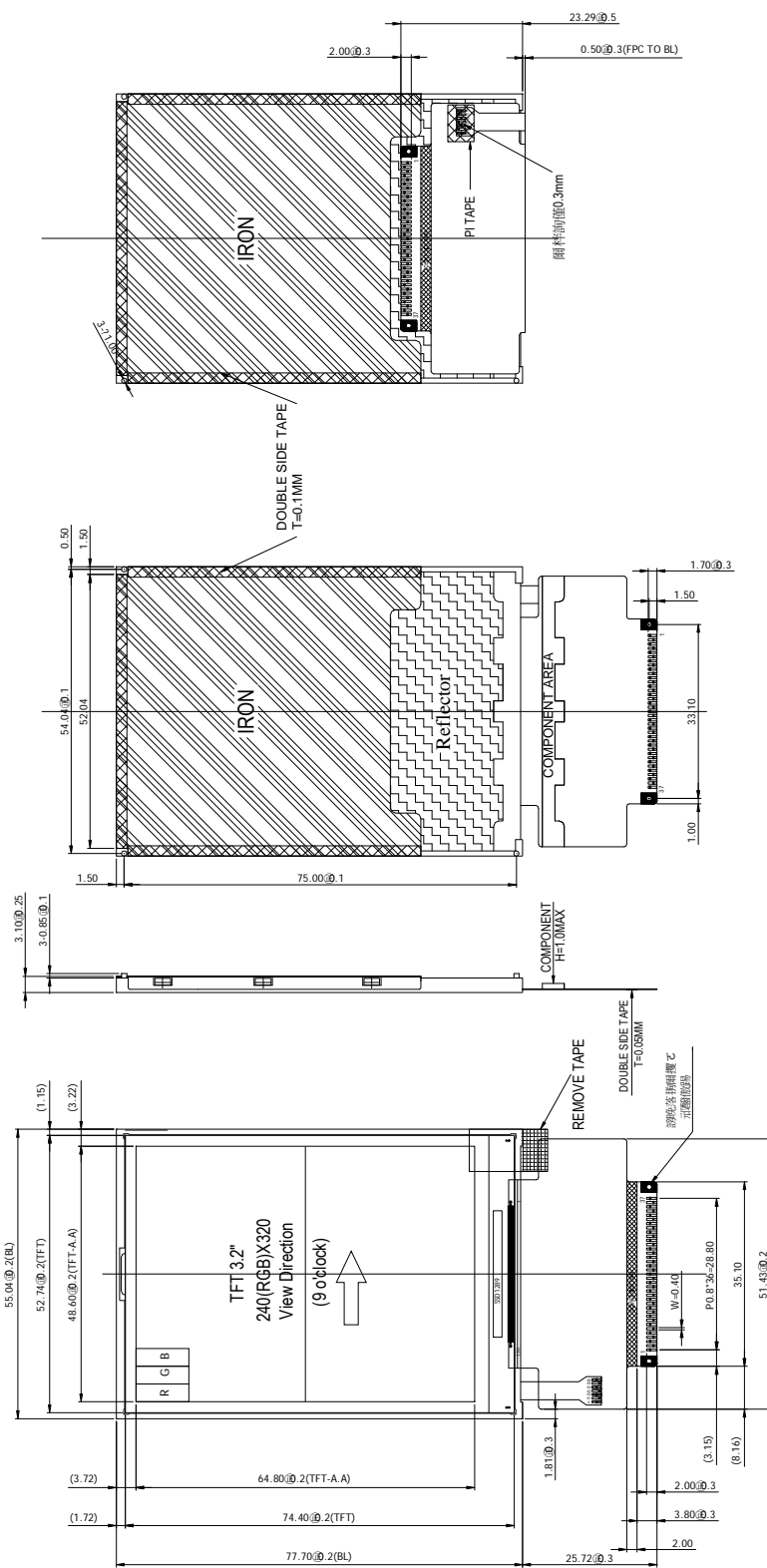


12. BLOCK DIAGRAM



CIRCUIT DIAGRAM

13.OUTLINE DIMENSIONS



14. ENVIRONMENTAL ABSOLUTE MAXIMUM RATINGS

ITEM	SYMBOL	CONDITIONS	CRITERION
OPERATING TEMPERATURE	T _{OPR}	-20°C ~ +70°C	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
STORAGE TEMPERATURE	T _{STG}	-30°C ~ +80°C	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
HUMIDITY	-	See Note	WITHOUT CONDENSATION

Note:

(1) $T_a \leq 40^\circ\text{C}$, 90%RH Max.

(2) $T_a > 40^\circ\text{C}$, Absolute humidity must be lower than the humidity of 90%RH at 40°C

15. RELIABILITY

14-1 RELIABILITY TEST

ITEM	CONDITIONS	CRITERION
OPERATING TEMPERATURE	HIGH TEMPERATURE +70°C 96HRS	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
	LOW TEMPERATURE - 20°C 96HRS	
STORAGE TEMPERATURE	HIGH TEMPERATURE +80°C 96HRS	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
	LOW TEMPERATURE - 30°C 96HRS	
HUMIDITY	40°C 90%RH 96HRS	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
VIBRATION	<ul style="list-style-type: none"> Operating Time: thirty minutes exposure for each direction (X,Y,Z) Sweep Frequency: 10 ~ 55Hz (1 min) Amplitude: 1.5mm 	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION
THERMAL SHOCK	-30°C(30mins) \leftrightarrow +80°C(30mins) 10 cycles	NO DEFECT IN DISPLAYING AND OPERATIONAL FUNCTION

*NOTE:

Every test items shall meet following criteria:

- (1) Sample subjected to the tests shall be "Not operating" condition.
- (2) Evaluation should be made 4 hours after return to the room temperature(at 25±5°C, 60±5%RH).
- (3) The samples subject to the tests must not have dew condensation.
- (4) All of the dots should not be blurred.
- (5) All dots should be usually displayed.
- (6) The Current Consumption should be Twice than initial value or less.
- (7) The Contrast Ratio should be more than 50% of initial value.

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<p>16. Code System of Production Lot The production lot of module is specified on the back of FPC as follows;</p> <div style="margin-left: 40px;"> <div style="display: flex; justify-content: space-around; width: 100%;"> □□□□□□ </div> <div style="margin-left: 100px;"> <div style="display: flex; justify-content: space-between; width: 100%;"> <div style="width: 15%; border-top: 1px solid black; border-bottom: 1px solid black; height: 10px;"></div> <div style="width: 15%; border-top: 1px solid black; border-bottom: 1px solid black; height: 10px;"></div> <div style="width: 15%; border-top: 1px solid black; border-bottom: 1px solid black; height: 10px;"></div> <div style="width: 15%; border-top: 1px solid black; border-bottom: 1px solid black; height: 10px;"></div> <div style="width: 15%; border-top: 1px solid black; border-bottom: 1px solid black; height: 10px;"></div> <div style="width: 15%; border-top: 1px solid black; border-bottom: 1px solid black; height: 10px;"></div> </div> <div style="margin-left: 100px;"> <div style="display: flex; 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Caution

- (1) Dangerous. Do not shock glass because glass can break.
- (2) If module breaks, do not touch it directly.
(Glass could stick or cut skin.)
- (3) Do not swallow Liquid Crystal.
(In case of broken LCD panel, do not swallow liquid crystal even if there is no proof that liquid crystal is poisonous.)
- (4) If liquid crystal is exposed to skin, wash the area thoroughly with alcohol or soap.
- (5) When disposing of the product, please observe industrial waste disposal laws in each country and district.
- (6) In case of injury, give immediate treatment and consult with a doctor.
- (7) This product is constructed precisely. Don't disassemble or modify.

※ Neglecting this mark can cause injury to humans and damage to materials.

標準編號 Number L-QA-113	制定年月日 Date 2002.4.23
主管部署 Executive Dept. 品保部 QC Dept.	制定權者 Authorized by 品保部 QC Dept.

▼ **COG LCM 製成品檢查基準書** ▼
Finished Product Checking Approval for
COG LCM

客戶承認 Customer approval			GW GROUP INC.		
承認 Approved	審查 Checked	作成 Manufa- ctured	承認 Approved	審查 Checked	作成 Manufa- ctured

GW GROUP INC.

標準變更來歷表

[illegible]

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1・目的：Purpose

為確保 COG LCM 製成品品質能符合水準所訂定之檢查規格。

To confirm the quality of the finished product for COG LCM.

2・範圍：Scope

依COG LCM適用機種表。

All LCM for COG type

3・檢查條件：Checking condition

3・1 檢查環境溫濕度條件為一般室溫條件。

The environmental temperature is based on the general temperature.

3・2 電源電壓/驅動電壓以圖面規定實施。

Both power and drive voltages are based on what the drawing has required.

3・3 外觀檢查以眼睛與實物成 $30^{\circ}\sim 150^{\circ}$ ，眼睛與實物距離以不大於30cm為原則。

As to the appearance check ,the angle between the eye and product is $30^{\circ}\sim 150^{\circ}$. The distance should be less than 30 cm.

3・4 機能檢查以圖面規定之視角方向檢查。

Inspection condition is based on the viewing direction on the drawing.

3・5 成品有加背光時，須量測其輝度，每機種每週抽測 2 p c s 。

LCM with backlight is needed to check the brightness. Every week we will check 2 pcs for each model.

3・6 封膠線內 $> 0.4\text{ mm}$ 為可視區，封膠線內 $\leq 0.4\text{ mm}$ 為非可視區。

To inward the seal line with 0.4mm is so called viewing area. As to the rest, it is so called non-viewing area.

4・檢查基準：Checking Standard

4・1 檢查適用基準：MIL-STD-105D表、一般檢驗水準Ⅱ、單次抽樣計劃。

Appropriate standards: MIL-STD-105D List, General Checking Standard II, Random Checking Plan.

4・2 缺點分類：Defects Category

4・2・1 輕缺點依AQL 1.5判定。

Minor defects are based on AQL 1.5

4・2・2 重缺點依AQL0.65判定。

Major defects are based on AQL 0.65

4・2・3 嚴重缺點依AQL0.4判定。

Serious defects are based on AQL 0.4

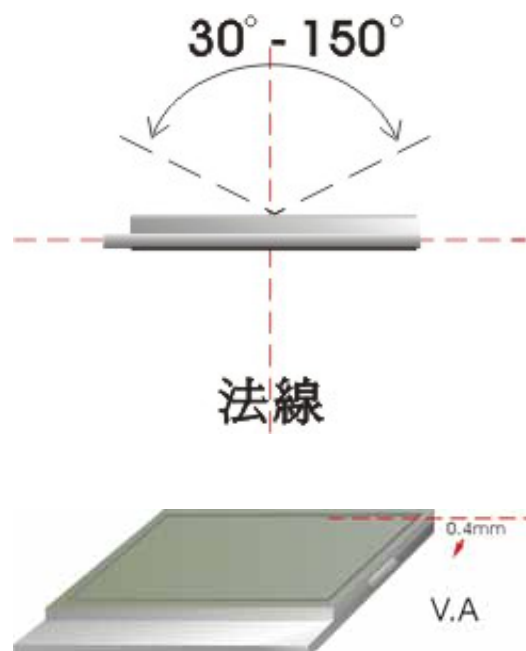
4・2・4 綜合缺點依A Q L 1.5判定。

Synthetic defects are based on AQL 1.5


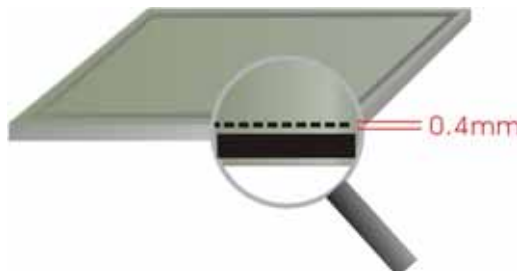

5・附件：Attachment

5・1 COG LCM適用機種表


Model list for COG LCM



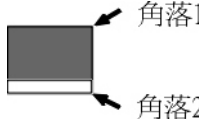
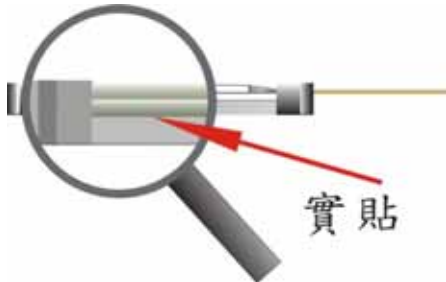
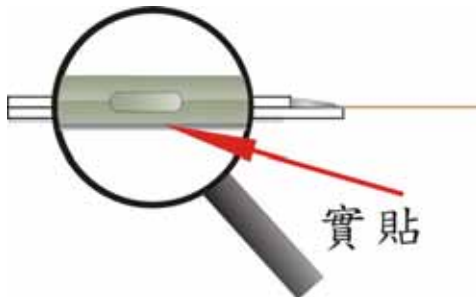
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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category									
1	外觀檢查 Appearance	<div>1-1 污點、黑點：Dirt</div> <table><tr><th>NO</th><th>尺寸 (ϕ) Size</th><th>容 許 個 數 Acceptable Quantity</th></tr><tr><td>1</td><td>$\phi < 0.3 \text{ mm}$</td><td>不計(同 1PCS 中不可超過 2 點) No limit (Each LCM only allows 2 spots)</td></tr><tr><td>2</td><td>$\phi \geq 0.2 \text{ mm}$</td><td>0</td></tr></table> <div>* ϕ 大小依照污點表判定 The ϕ size is based on the Spot List.</div> <div></div>	NO	尺寸 (ϕ) Size	容 許 個 數 Acceptable Quantity	1	$\phi < 0.3 \text{ mm}$	不計(同 1PCS 中不可超過 2 點) No limit (Each LCM only allows 2 spots)	2	$\phi \geq 0.2 \text{ mm}$	0	輕缺 Minor defect
		NO	尺寸 (ϕ) Size	容 許 個 數 Acceptable Quantity								
1	$\phi < 0.3 \text{ mm}$	不計(同 1PCS 中不可超過 2 點) No limit (Each LCM only allows 2 spots)										
2	$\phi \geq 0.2 \text{ mm}$	0										
<div>1-2 毛邊：Black spots next to the seal line</div> <div>1-2-1 封膠線上出現毛邊而用治具嵌合後， 經目視明顯者不可允收。 The black spots next to the seal line have to been set with customer's device. If these spots are obvious, the LCM is not acceptable.</div> <div>1-2-2 未使用治具嵌合之判斷：The approval before setting customer's device</div> <div>1-2-2-1 以污點表之 0.4 mm線段對準封膠線上，$\leq 0.4 \text{ mm}$內者可允收。 According to the Spot List, it is not acceptable if the spot's width is more than 0.4mm.</div> <div></div> <div></div>	輕缺 Minor defect											


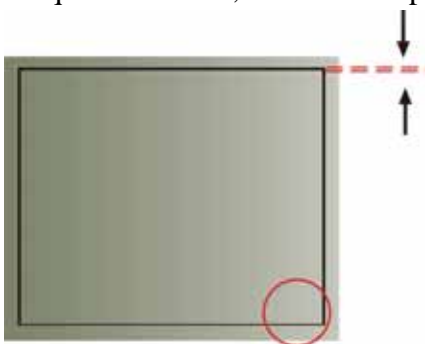
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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category												
1	外觀檢查 Appearance	1-3 氣泡：Bubble <table border="1"> <tr> <th rowspan="2">尺寸 Size</th> <th colspan="2">容許個數 Acceptable Quantity</th> </tr> <tr> <th>可視區 V.A</th> <th>封膠線上 On the seal line</th> </tr> <tr> <td>$\phi \leq 0.4 \text{ mm}$</td> <td>3</td> <td rowspan="3">不計 No limit</td> </tr> <tr> <td>$0.4 \text{ mm} < \phi \leq 0.6 \text{ mm}$</td> <td>1</td> </tr> <tr> <td>$\phi > 0.6 \text{ mm}$</td> <td>0</td> </tr> </table>	尺寸 Size	容許個數 Acceptable Quantity		可視區 V.A	封膠線上 On the seal line	$\phi \leq 0.4 \text{ mm}$	3	不計 No limit	$0.4 \text{ mm} < \phi \leq 0.6 \text{ mm}$	1	$\phi > 0.6 \text{ mm}$	0	輕缺 Minor defect
		尺寸 Size		容許個數 Acceptable Quantity											
可視區 V.A	封膠線上 On the seal line														
$\phi \leq 0.4 \text{ mm}$	3	不計 No limit													
$0.4 \text{ mm} < \phi \leq 0.6 \text{ mm}$	1														
$\phi > 0.6 \text{ mm}$	0														
		1-4 偏光板刺破：Polarizer penetration <p>1-4-1 上、下偏光板刺傷呈點狀，由正面依污點表判定 0.2 mm以下可允收，但污點間距離大於 5 mm 才可。</p> <p>Front and rear polarizers are penetrated. In this case, polarizers will have some black spot. According to Spot List, the size should be less than 0.2 mm and the distance between spots needs to be more than 5 mm.</p> <div>  </div>	輕缺 Minor defect												

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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category
1	外觀檢查 Appearance	1-5 指紋、髒污：Fingerprint 玻璃表面不可有指紋或髒污，不可擦拭者，則不可允收，若於封膠線上可允收。 Fingerprint on the panel should be cleaned away. The fingerprint on the seal line is acceptable.	輕缺 Minor defect
		1-6 玻璃破損：Panel indentation  1-6-1 破損程度不可超過 1 mm。 The panel indentaion can not be more than 1 mm. 1-6-2 一般破損長不可超過 4 mm，寬不可超過 0.7 mm。 General broken length can not be more than 4 mm and the width can not be more than 0.7 mm. 1-7 背光板、導光板：EL backlight and light guide 1-7-1 須實貼，無實貼者不可允收。 Incomplete attach is not acceptable. 1-7-2 有髒污、污點者，不可允收。 Any spot or dirt is not acceptable. 1-7-3 B/L 貼付後間距檢查一有間隙不可。 Any gap between backlight and panel is not acceptable.  	輕缺 Minor defect

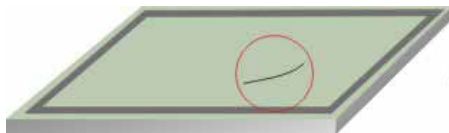


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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category
1	外觀檢查 Appearance	<p>1-8 凹凸：Rough and uneven in the panel surface 玻璃邊緣起 2 mm以內，無視；若在 2 mm以外， $\varphi \leq 0.4$ 容許一個。 Any rough and uneven on the scope with 2 mm from the edge of the panel is acceptable. Over this scope, only one rough or uneven which its is less than or equal to 0.4 mm is acceptable.</p> 	輕缺 Minor defect
		<p>1-9 封膠線：Seal line 1-9-1 封膠線須完整顯示，不見不可。 Seal line should be fully displayed. 1-9-2 封膠線規格≤ 0.4 mm，≥ 1.5 mm則拒收。 Seal line should be less than or equal to 0.4mm. If it is more than or equal to 1.5mm, it is not acceptable.</p> 	輕缺 Minor defect

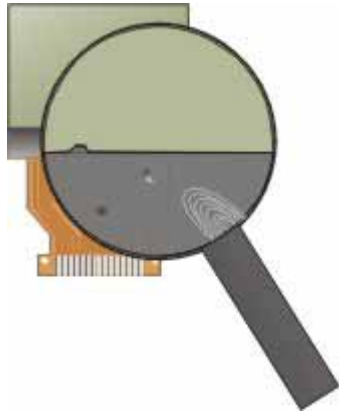
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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category
1	外觀檢查 Appearance	<p>1-10 保護膜：Protection film</p> <p>1-10-1 下保護膜面積不可大於玻璃面積。 The size of rear protection film can not be bigger than that of panel's.</p> <p>1-10-2 上保護膜與玻璃間不可有髒污、異物；貼付不可偏移。 Any spot or dirt between the front protection film and panel is not acceptable. Correct attachment is needed.</p>	輕缺 Minor defect
		<p>1-11 偏光板貼付不良：</p> <p>Unsuccessful attachment for polarizer</p> <p>1-11-1 上、下偏光板不可錯置；偏移以不可超過重疊部份 1.2 mm為原則。 Incorrect attachment for both front and rear polarizer is not acceptable. Overlap size should be less than 1.2mm.</p> <p>1-11-2 上、下偏光板貼付不可超過玻璃邊緣；磨損不可允收。 Both polarizers should be correctly attached on the panel. Its whole size can not be over the panel. Meanwhile, any wear-down on the polarizer is not acceptable.</p>	輕缺 Minor defect

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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category								
1	外觀檢查 Appearance	1-12 刮傷、水痕、纖維： Scratch, water vestige and fiber <table><tr><th>L</th><th>容許個數 Acceptable Quantity</th></tr><tr><td>—</td><td>不計 No limit</td></tr><tr><td>3 mm≤L</td><td>1</td></tr><tr><td>3 mm≤L≤2 mm</td><td>2</td></tr></table> <div></div>	L	容許個數 Acceptable Quantity	—	不計 No limit	3 mm≤L	1	3 mm≤L≤2 mm	2	輕缺 Minor defect
		L	容許個數 Acceptable Quantity								
—	不計 No limit										
3 mm≤L	1										
3 mm≤L≤2 mm	2										
1-13 Silicon 塗佈：Silicon coating 1-13-1 Silicon 薄以不透光為原則。 Silicon should be as thin as it can and not pervious to light. 1-13-2 上偏光板上不可有 Silicon 殘留。 The front polarizer can not have any silicon.	輕缺 Minor defect										

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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category
1	外觀檢查 Appearance	<p>1-13-3 Silicon 塗佈不可有指紋、髒污、缺陷。 Silicon coating can not have any fingerprint, dirt or imperfection.</p> <p>1-13-4 Silicon 塗佈高度不可高於上偏光板。 Silicon coating's height can not be more than front polarizer's.</p> 	輕缺 Minor defect
		<p>1-14 FPC :</p> <p>1-14-1 FPC 排線斷裂、翹起不可允收。 FPC broken circuit or warp is not acceptable.</p> <p>1-14-2 FPC 上有異物、髒污不可允收。 Any dirt on FPC is not acceptable.</p> <p>1-14-3 FPC 對位孔斷裂、銳角折痕不可允收。 Broken attaching hole and folded vestige on FPC is not acceptable.</p> <p>1-14-4 FPC 凹凸 $\phi \leq 0.5\text{mm}$ 容許一個。 The ϕ of FPC's rough or uneven can not be more than 0.5mm</p> <p>1-14-5 FPC PIN 厚度不良不可，依圖面為主。 Pin's thickness is based on the drawing.</p> <p>1-14-6 FPC 上之被動原件依圖面為主，欠缺不可允收。 All the passive components on FPC are based on the drawing. Any lack of these components is not acceptable.</p>	輕缺 Minor defect

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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category
1	外觀檢查 Appearance	1-15 捺印：Lot number 1-15-1 批號號碼捺印不清晰、髒污不可允收。 Unclear lot number is not acceptable	輕缺 Minor defect
		1-16 引拔膠帶：Peeling tape 若有引拔膠帶不貼不可，須可同時拔起保護膜。 If you do not want to have peeling tape be attached, you also have to take away the protection film.	輕缺 Minor defect
2	點燈檢查 Display check	2-1 原預定文字/圖案未能顯示或欠缺。 The original character or icons can not be displayed.	嚴重 Serious defect
		2-2 橫向/縱向/十字之表示線路欠缺。 The lack of vertical, horizontal or cross circuit.	嚴重 Serious defect
		2-3 無法點燈動作。 No display.	嚴重 Serious defect

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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard			分 類 Category
2	點燈檢查 Display check	2-4 機能異常。 Abnormal display			嚴重 Serious defect
		2-5 點燈時畫面顏色不均。 The color-irregularity during light-on process			嚴重 Serious defect
		2-6 畫素（DOT）變形：Deformed dot			重缺 Major defect
		NO	尺 寸 Size	容許個數 Acceptable Quantity	
		1	$\phi \leq 0.1 \text{ mm}$	不計 No limit （密集不可）	
2	$0.1 < \phi \leq 0.2 \text{ mm}$	2			
		3	$\phi > 0.2 \text{ mm}$	0	
3	尺寸量測	3-1 外觀尺寸不合者不可允收。 Incorrect module size is not acceptable. 3-2 尺寸依各圖面尺寸規定。 The size based on the drawing.			嚴重 Serious defect

標準名 Standard Item	COG LCM 製成品檢查基準書 Finished Product Checking Approval for COG LCM	標準編號 Number	L-QA-113	頁數 Page	1 1
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N O.	檢查項目 Checking Item	判 斷 基 準 Checking Standard	分 類 Category
4	電壓量測 Voltage measurement	<p>4-1 電壓量測以主畫面電壓為準。 Voltage test is based on that of the main screen.</p> <p>4-2 各量測電壓值依各圖面規定。 All of the voltages are based on the drawings.</p> <p>4-3 電壓值誤差比率以圖面或 QC 工程圖為主，超過或不足電壓值則不可允收。 The voltage tolerance is based on the drawing or QC Engineering Chart. If the voltage is over or less than the standard, it is not acceptable.</p>	重缺 Major defect
5	消耗電流 Current consumption	<p>5-1 依圖面或 QC 工程圖規格標示，若無標示者不列入檢驗項目。 We will follow the instruction of the drawing and QC Engineering Chart. If it is not listed on the drawing and QC Engineering Chart, we will not check it.</p>	嚴重 Serious defect
6	輝度檢查 Brightness check	<p>6-1 有背光者其輝度量測值，依圖面之標示規格為主，無標示者不列入檢驗項目。 The brightness test value for the LCM with backlight is based on the drawing. If the drawing does not list it, we will not check it.</p> <p>6-2 E/L、B/L 不亮，不可允收。 It is not acceptable if EL and LED backlight can not be lighted on.</p>	嚴重 Serious defect
7	其他 Others	<p>7-1 組裝不良、部品欠缺不可允收，(依圖面之規格) 若無標示者不列入檢驗項目。 According to the drawing, it is not acceptable for the unsuccessful assembly or the lack the any component. If the drawing does not list any requirement, we will not have the check.</p> <p>7-2 數量不合，不可允收。 If the quantity is incorrect, it is not acceptable.</p>	嚴重 Serious defect