

Doc. Number:

- Tentative Specification
 □ Preliminary Specification
 □ Approval Specification

MODEL NO.: F035A07-601

Customer :	
APPROVED BY	SIGNATURE
Name / Title	
Note	
Please return 1 copy for your confirmation with your signature and comments.	

Approved By	Checked By	Prepared By
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REVISION HISTORY

Version	Date	Page (New)	Section	Description
Ver 0.0	2015/11/2	All	All	Product Specification was first issued.

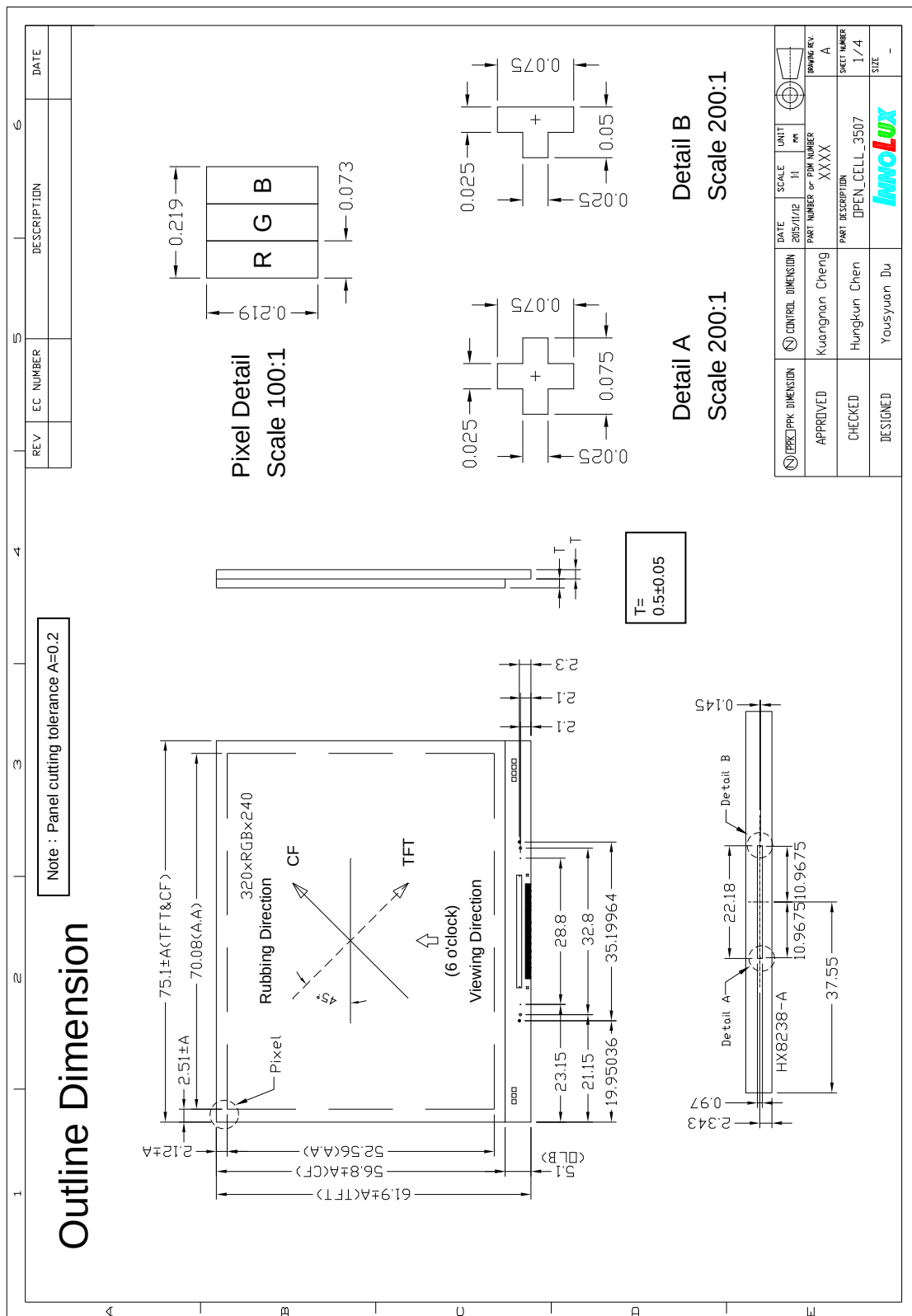
1. PURPOSE

The specification F035A07-601 is a 3.5" a-Si TFT Liquid Crystal Display ODF cell. The ODF cell has been designed by INX, and manufactured by INX under the agreement of customer. The a-Si TFT-LCD cell will be applied to a high transmittance operating in the normally white mode a-Si TFT-LCD product.

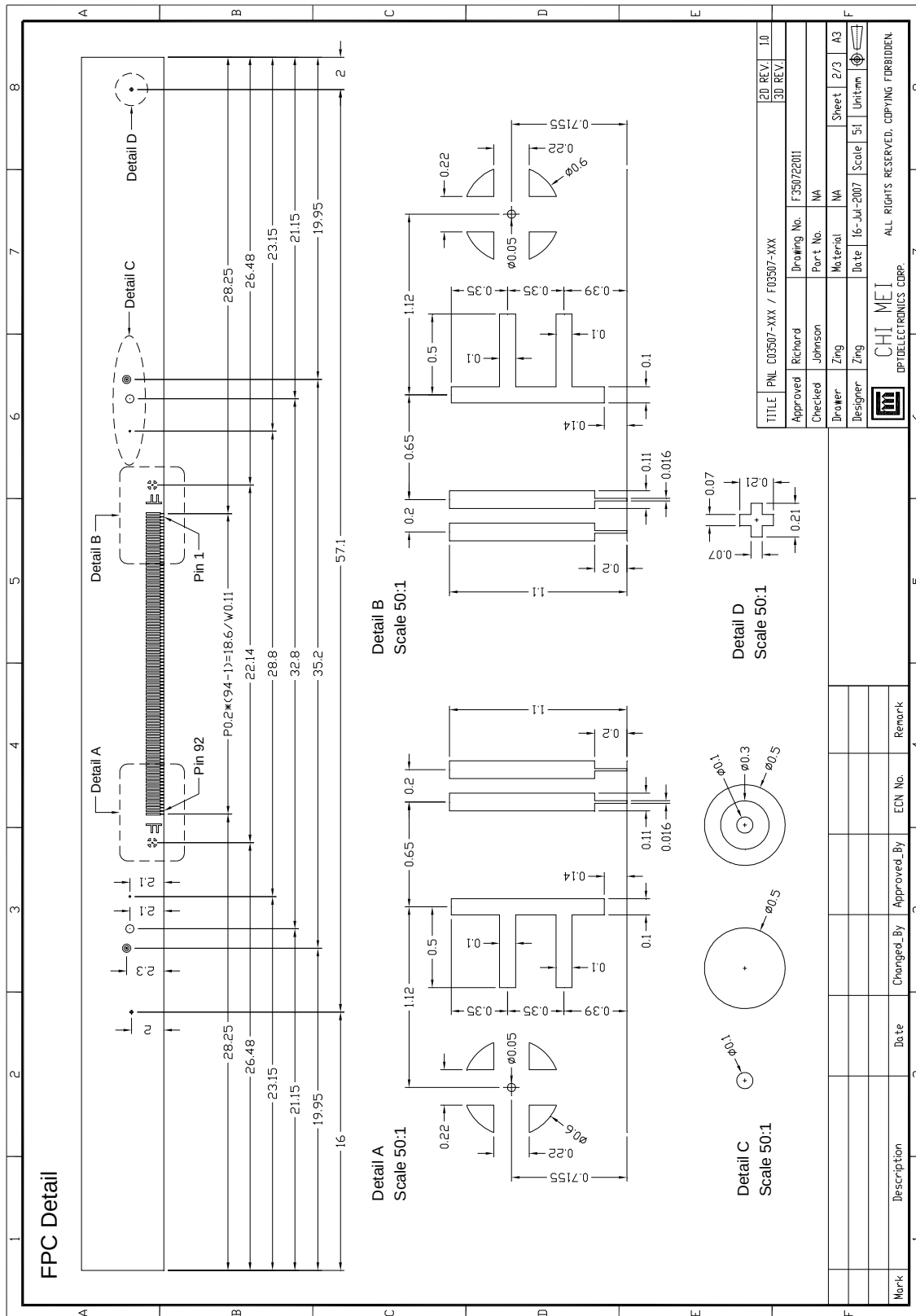
2. GENERAL RULES OF SINGLE PANEL

No.	Item		Specification	unit
1	Glass thickness	TFT	0.5	mm
		CF	0.5	
2	Shipping mode		ODF cut	-
3	Shipping size		399.45 (H) x 340 (V) x 1.0 (D)	mm
4	Panel outline dimension		75.1 (H) x 61.9 (V) x 1.0 (D)	mm
5	Active screen size		3.5" diagonal	-
6	Resolution		320RGB x 240	pixel
7	Pixel driving element		a-Si TFT	-
8	Sub pixel size		73 x 219	um
9	Pixel arrangement		RGB-stripe	-
10	View direction (Gray inversion)		6 o'clock	-
11	Cell gap		4.7 ± 0.3	um
12	Driver IC		HX8238-A	-
13	Weight without POL		341±10%	g
14	Scanning Method		-	-

2.1 OUTLINE DIMENSION



2.2 FPC DETAIL



2.3 FPC PIN ASSIGNMENT

FPC PIN ASSIGNMENT

HX8238-A single chip			
IC Pad No	IC Pad Name	FPC PinOut Name	FPC PinOut NumBer
1	THROUGH4		
2	THROUGH3		
3	DUMMY		
4	VCOM	—	—
5	VCOM	—	—
6	VCOM	—	—
7	VCOM	—	—
8	DUMMY		
9	AVSS	AVSS	1
10	AVSS		
11	AVSS		
12	AVSS		
13	AVSS		
14	AVSS		2
15	AVSS		
16	AVSS		
17	AVSS		
18	AVSS	EXVR	3
19	EXVR		
20	EXVR		
21	EXVR		
22	EXVR	VSS	4
23	VSS		
24	VSS		
25	VSS		
26	VSS		5
27	VSS		
28	VSS		
29	VSS		
30	VSS		
31	DUMMY		
32	TEST15		

33	TEST14		
34	TEST13		
35	TEST12		
36	TEST11		
37	TEST10		
38	TEST9		
39	TEST8		
40	TEST7		
41	TEST6		
42	TEST5		
43	TEST4		
44	DUMMY		
45	QXH	QXH	6
46	POL	POL	7
47	SDO	SDO	8
48	SDO		
49	RESB	RESB	9
50	RESB		
51	CSB	CSB	10
52	CSB		
53	SCK	SCK	11
54	SCK		
55	SDI	SDI	12
56	SDI		
57	BB0	BB0	13
58	BB0		
59	BB1	BB1	14
60	BB1		
61	BB2	BB2	15
62	BB2		
63	BB3	BB3	16
64	BB3		
65	BB4	BB4	17
66	BB4		
67	BB5	BB5	18
68	BB5		
69	BB6	BB6	19
70	BB6		

71	BB7	BB7	20
72	BB7		
73	GG0	GG0	21
74	GG0		
75	GG1	GG1	22
76	GG1		
77	GG2	GG2	23
78	GG2		
79	GG3	GG3	24
80	GG3		
81	GG4	GG4	25
82	GG4		
83	GG5	GG5	26
84	GG5		
85	GG6	GG6	27
86	GG6		
87	GG7	GG7	28
88	GG7		
89	RR0	RR0	29
90	RR0		
91	RR1	RR1	30
92	RR1		
93	RR2	RR2	31
94	RR2		
95	RR3	RR3	32
96	RR3		
97	RR4	RR4	33
98	RR4		
99	RR5	RR5	34
100	RR5		
101	RR6	RR6	35
102	RR6		
103	RR7	RR7	36
104	RR7		
105	DEN	DEN	37
106	DEN		
107	HSYNC	HSYNC	38
108	HSYNC		

109	VSYN	VSYN	39
110	VSYN		
111	DOTCLK	DOTCLK	40
112	DOTCLK		
113	SHUT	SHUT	41
114	SHUT		
115	VSS		
116	TB	TB	42
117	VDDIO		
118	REV	REV	43
119	VSS		
120	REGVDD	REGVDD	44
121	VDDIO		
122	RL	RL	45
123	VSS		
124	CM	CM	46
125	VDDIO		
126	BGR	BGR	47
127	VSS		
128	SEL0	SEL0	48
129	SEL1	SEL1	49
130	SEL2	SEL2	50
131	VDDIO	—	—
132	SWD0	—	—
133	VSS		
134	SWD1	—	—
135	VDDIO	—	—
136	SWD2	—	—
137	VSS		
138	CPE	CPE	51
139	PINV	PINV	52
140	DUMMY		
141	VCIM	VCIM	53
142	VCIM		
143	VCIM		
144	VCIM		
145	VCIM		
146	C1P	C1P	54

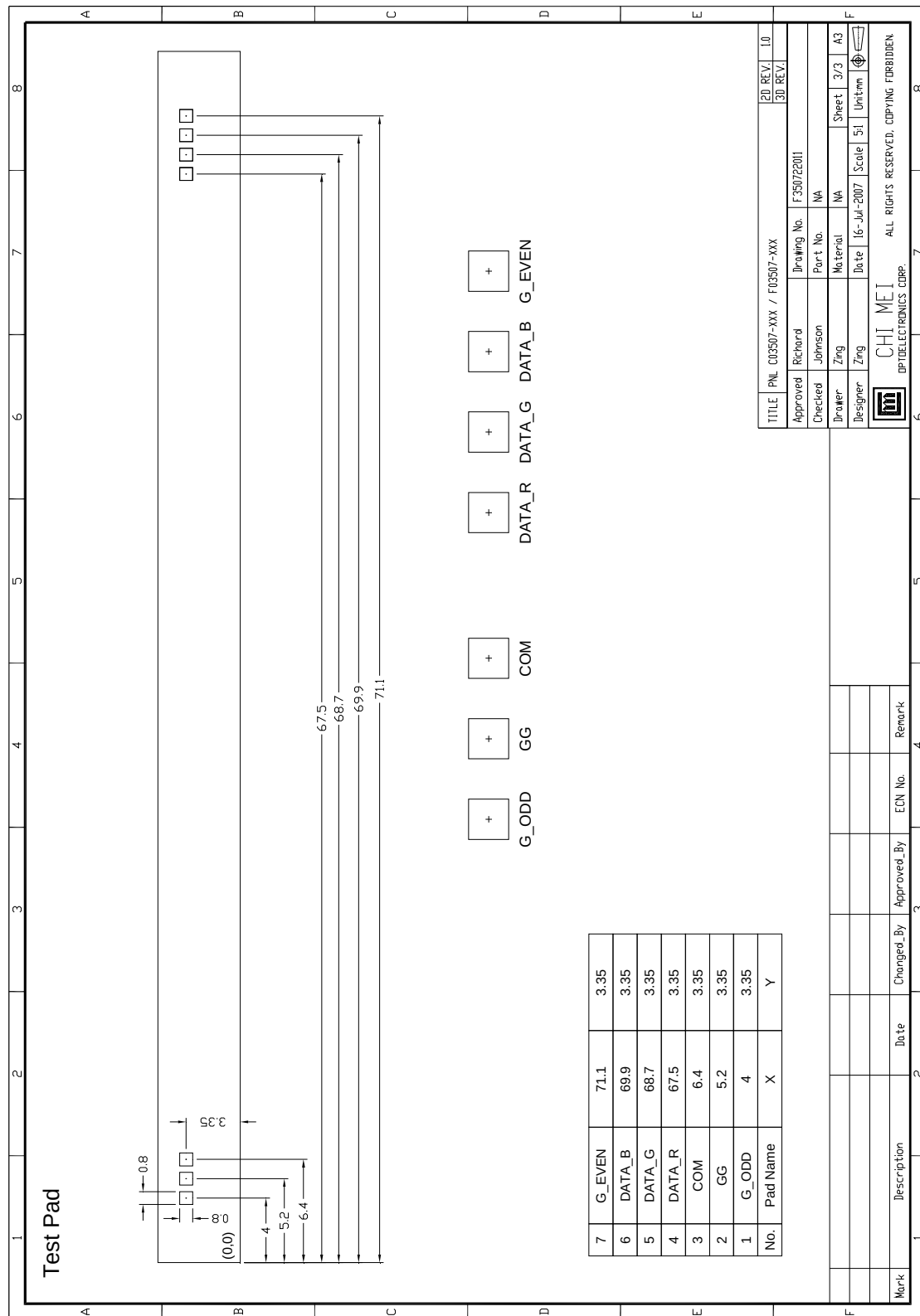
147	C1P		
148	C1P		
149	C1P		
150	C1P		
151	C1N	C1N	55
152	C1N		
153	C1N		
154	C1N		
155	C1N		
156	VLCD63	VLCD63	56
157	VLCD63		
158	VLCD63		
159	VLCD63		
160	VLCD63		
161	VLCD63		
162	VCIX2J	VCIX2J	57
163	VCIX2J		
164	VCIX2J		
165	VCIX2J		58
166	VCIX2J		
167	VCIX2J		
168	VCIX2	VCIX2	59
169	VCIX2		
170	VCIX2		
171	VCIX2		
172	VCIX2		
173	VCIX2		
174	CYN	CYN	60
175	CYN		
176	CYN		
177	CYN		
178	CYN		
179	CYN		
180	CYP	CYP	61
181	CYP		
182	CYP		
183	CYP		
184	CYP		

185	CYP		
186	CXN	CXN	62
187	CXN		
188	CXN		
189	CXN		
190	CXN		
191	CXN		
192	CXP	CXP	63
193	CXP		
194	CXP		
195	CXP		
196	CXP		
197	CXP		
198	VDDIO	VDDIO	64
199	VDDIO		
200	VDDIO		65
201	VDDIO		
202	VDDIO		
203	VDDIO		
204	VCIP	VCIP	66
205	VCIP		
206	VCIP		
207	VCIP		
208	VCI	VCI	67
209	VCI		
210	VCI		
211	VCI		
212	VCI		68
213	VCI		
214	VCI		
215	VCI		69
216	VCI		
217	VCI		
218	VDD	VDD	70
219	VDD		71
220	VDD		
221	VDD		
222	VDD		72

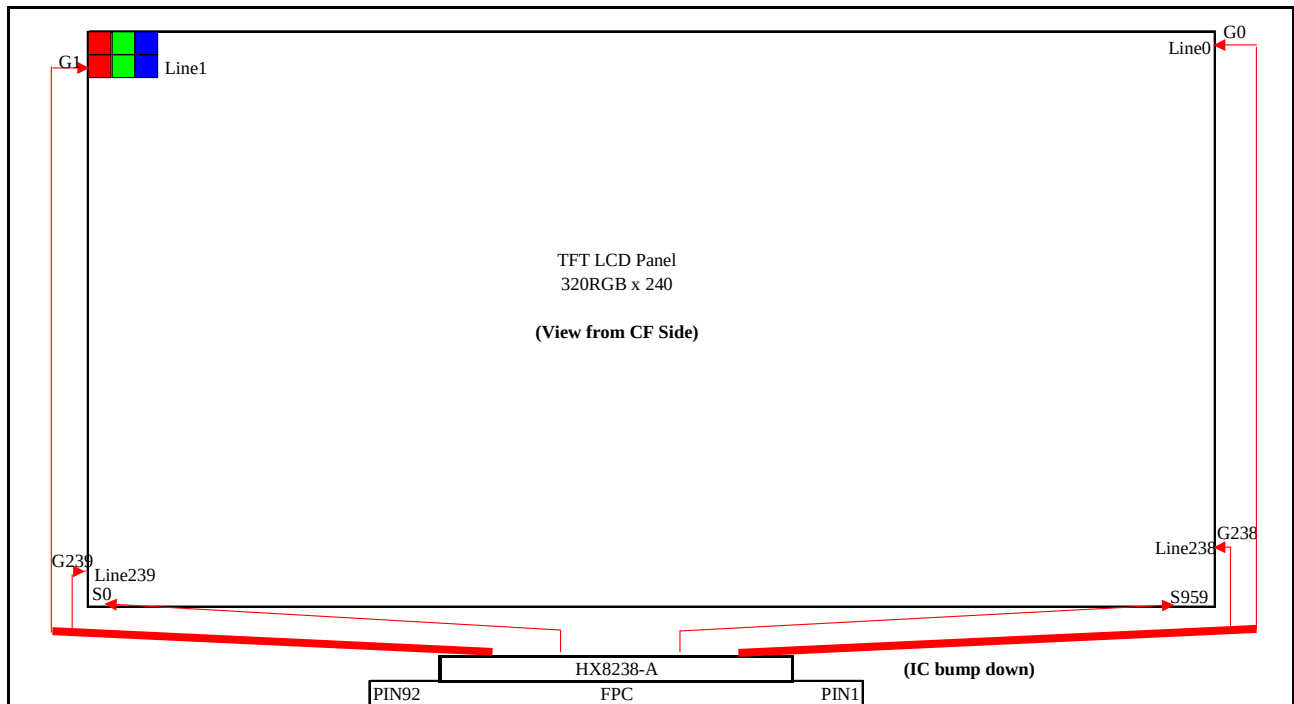
223	VDD		
224	DUMMY		
225	CN	CN	73
226	CN		
227	CN		
228	CP	CP	74
229	CP		
230	CP		
231	VGL	VGL	75
232	VGL		
233	VGL		
234	VGL		
235	VGL		
236	C2N	C2N	76
237	C2N		
238	C2N		
239	C2P	C2P	77
240	C2P		
241	C2P		
242	C3N	C3N	78
243	C3N		
244	C3N		
245	C3P	C3P	79
246	C3P		
247	C3P		
248	VGH	VGH	80
249	VGH		81
250	VGH		
251	VGH		
252	VGH		
253	TEST17		
254	TEST16		
255	VCOMR	VCOMR	82
256	VCOMR		
257	VCOML	VCOML	83
258	VCOML		
259	VCOML		
260	VCOML		

261	VCOMH	VCOMH	84
262	VCOMH		
263	VCOMH		
264	VCOMH		
265	VCOM	FPC	85
266	VCOM		86
267	VCOM		
268	VCOM		
269	VSSRC	VSSRC	87
270	VSSRC		
271	VSSRC		
272	VSSRC		
273	VSSRC		88
274	VSSRC		
275	VSSRC		
276	VSSRC		
277	VCHS	VCHS	89
278	VCHS		
279	VCHS		
280	VCHS		
281	VCHS		
282	VCHS		90
283	VCHS		
284	VCHS		
285	VCHS		
286	VCHS		
287	DUMMY		
288	VFB	VFB	91
289	VFB		
290	DRV	DRV	92
291	DRV		

2.4 TEST PAD

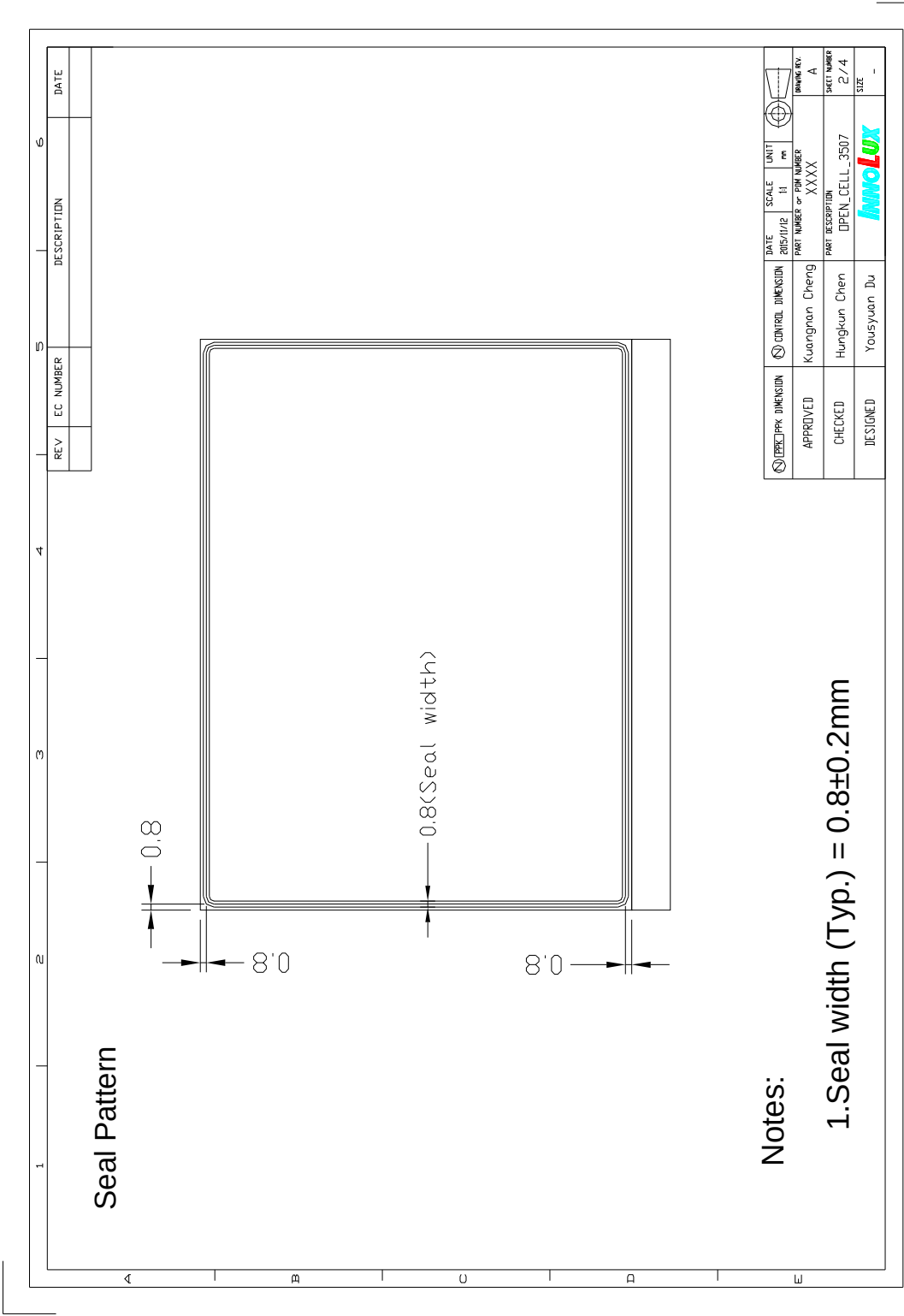


2.5 Schematic Panel layout

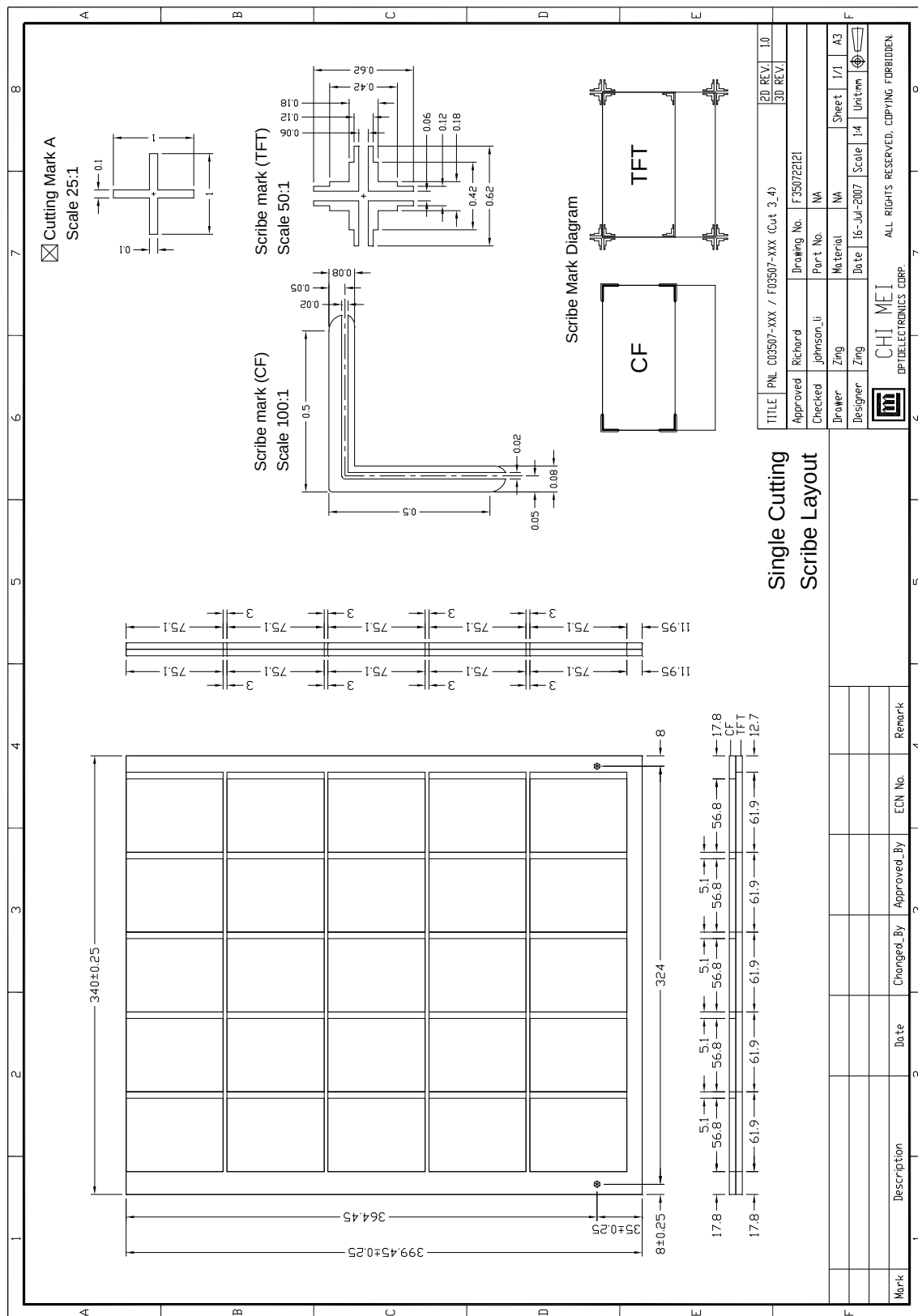


3. CELL PROCESS RULES

3.1 SEAL PATTERN / AU PATTERN



3.2 CELL SCRIBE LAYOUT



4. ELECTRICAL SPECIFICATION

Item	Symbol	Specification			Unit
		Min.	Typ	Max.	
TFT gate on voltage	V_{GH}	-	+15	-	V
TFT gate off voltage	V_{GL}	-	-10	-	V
TFT common electrode voltage	V_{comH}	2.5	(3.6)	4.5	V
	V_{comL}	-3	(-2.4)	0	

Note: (1) Vcom must be adjusted to optimize display quality: cross talk, contrast ratio and etc.

(2) VGH is TFT gate operating voltage

(3) VGL is TFT gate operating voltage

(4) Environmental condition: 25±5°C

5. OPTICAL SPECIFICATION

Item		Symbol	Conditions	Specifications			Unit	Note
				Min.	Typ.	Max.		
Transmittance		T%	Viewing normal angle $\theta_x = \theta_y = 0^\circ$		7.4		%	All left side data are based on CMO's following condition –T6 NTSC: 60% LC:5091 Light : C light (Machine:BM5A) Normal Polarizer Without DBEF “Simulation Data Reference Only”
Contrast Ratio		CR		200	300		--	
Response Time		T _R			15	30	ms	
		T _F			35	50	ms	
Chromaticity	Red	X _R		0.609	0.639	0.669		
		Y _R		0.314	0.344	0.374		
	Green	X _G		0.264	0.294	0.324		
		Y _G		0.557	0.587	0.617		
	Blue	X _B		0.102	0.132	0.162		
		Y _B		0.106	0.136	0.166		
	White	X _W		0.282	0.312	0.342		
		Y _W		0.319	0.349	0.379		
Viewing Angle	Hor.	θ _{x+}	Center CR≥10		45		deg.	
		θ _{x-}			45			
	Ver.	θ _{y+}			15			
		θ _{y-}			35			

*Note (1) Definition of Contrast Ratio (CR):

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{63} / L_0$$

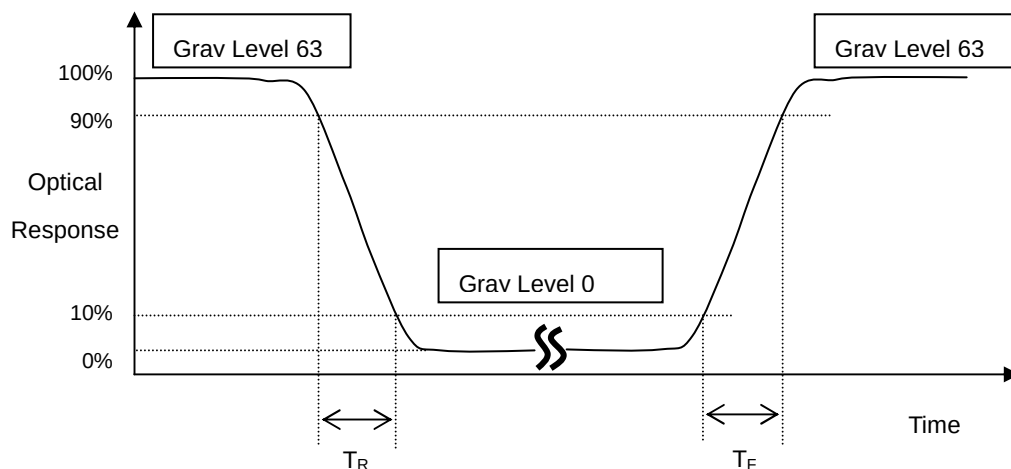
L63: Luminance of gray level 63

L 0: Luminance of gray level 0

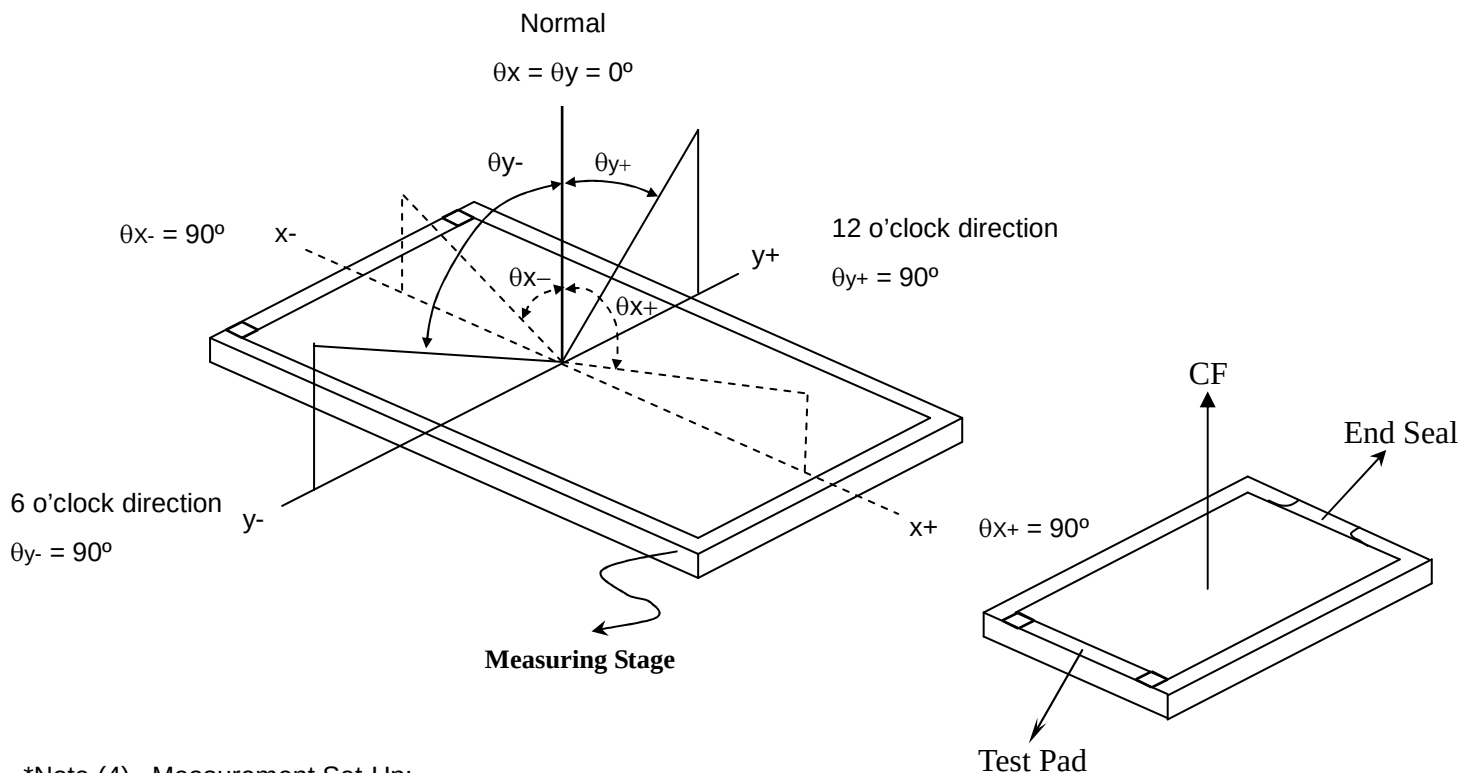
$$CR = CR(10)$$

CR (X) is corresponding to the Contrast Ratio of the point X at Figure in Note (5).

*Note (2) Definition of Response Time (T_R , T_F):

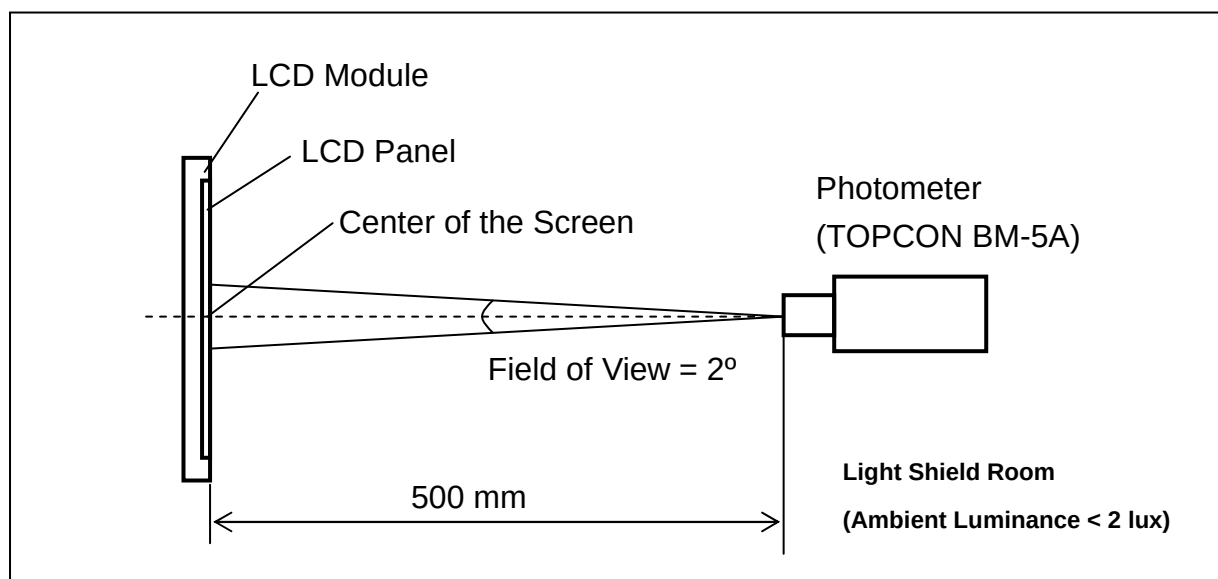


*Note(3) Definition of Viewing Angle

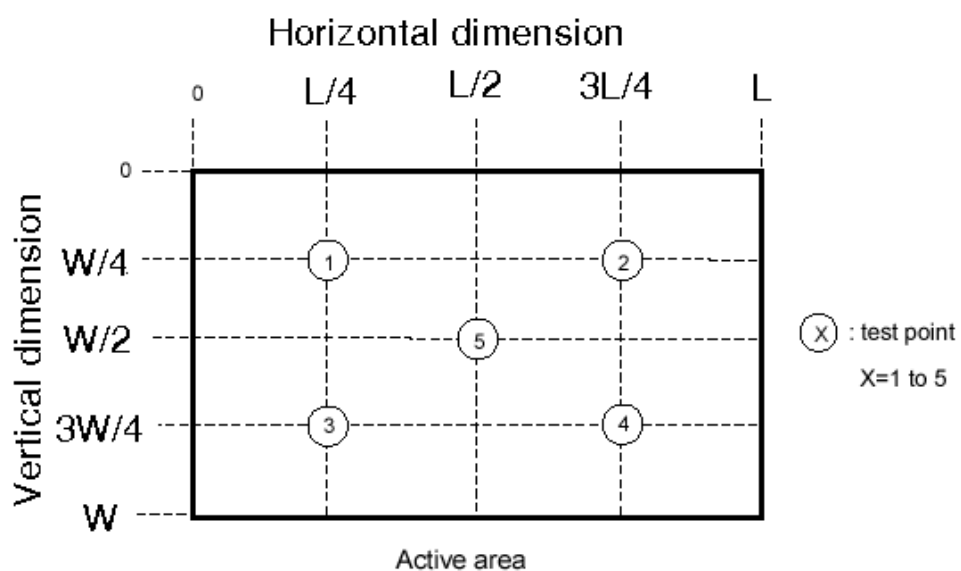


*Note (4) Measurement Set-Up:

The LCD module should be stabilized at a given temperature for 20 minutes to avoid abrupt temperature change during measuring. In order to stabilize the luminance, the measurement should be executed after lighting Backlight for 20 minutes in a windless room.



Note (5)



6. RELIABILITY SPECIFICATION

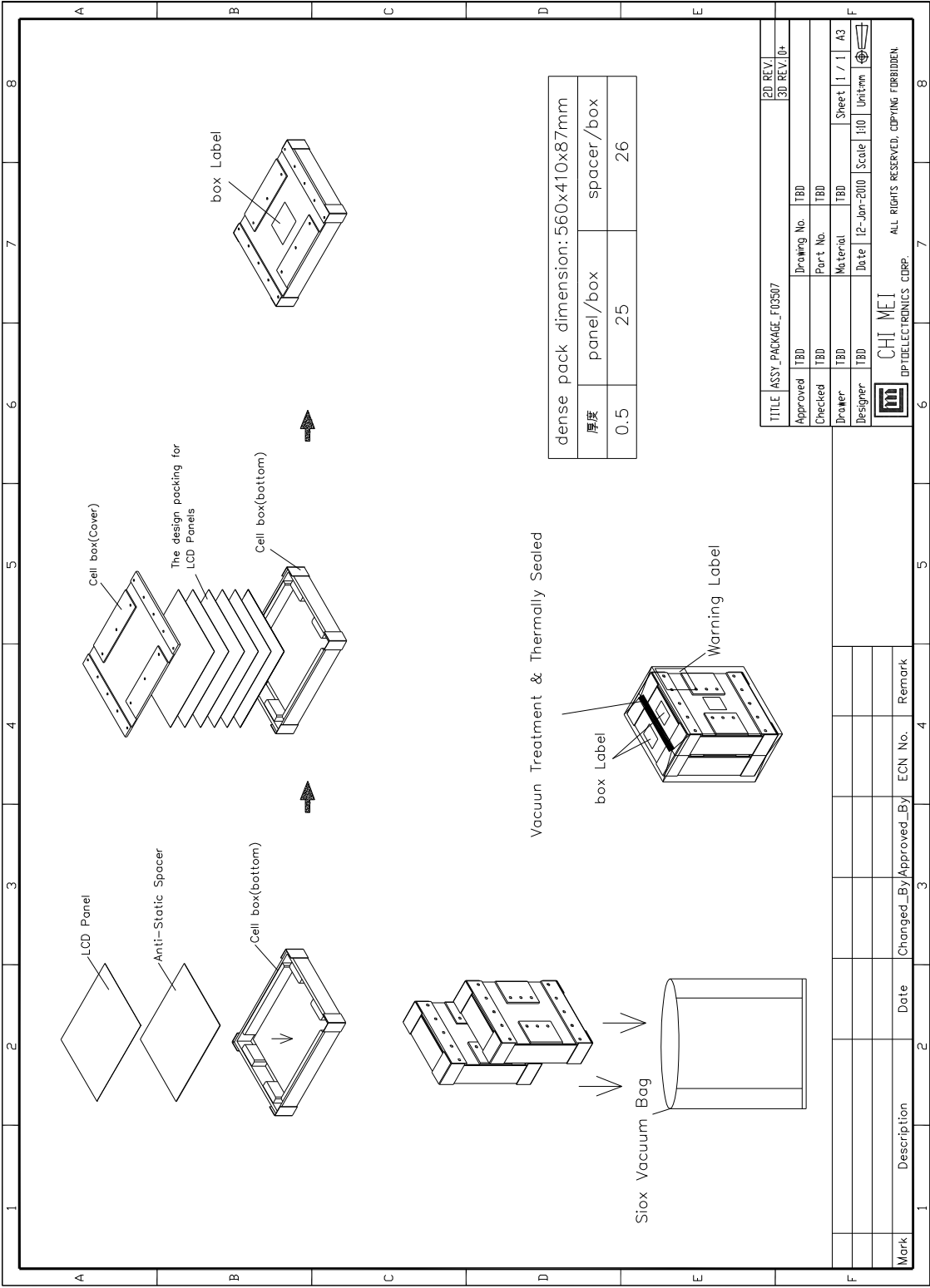
No.	Test Item	Test Condition	Check Time
1	High temp storage	T= 80°C	240 hrs
2	Low temp storage	T= -30°C	240 hrs
3	High temp operation	T= 70°C	240 hrs
4	Low temp operation	T= -20°C	240 hrs
5	High temp & High humidity	T=60°C H=90%	240 hrs

Reliability Test Criteria:

Display function should be no change under normal operating condition.

7. PACKAGE FORM

7.1 PACKAGE



7.2 SHIPPING

