



PRODUCT SPECIFICATION

Doc. Number:

- ☐ Tentative Specification
☐ Preliminary Specification
☒ Approval Specification

MODEL NO : F070A51-601**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
Jay Hsu	Sophie Chang	Panny Chang



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REVISION HISTORY

Version	Date	Page (New)	Section	Description
Ver. 0.0	2017/10/13	All	All	Product spec was first issued for LCD cut.
Ver. 1.0	2018/1/22	All	All	Product spec was changed to Ver. 1.0
Ver. 1.1	2018/2/06	All	All	Product spec was changed to Ver. 1.1
Ver. 2.0	2018/5/03	All	All	Product spec was changed to Ver. 2.0
Ver. 2.1	2018/5/07	All	All	Product spec was changed to Ver. 2.1
Ver. 2.2	2018/6/06	All	All	Product spec was changed to Ver. 2.2
Ver. 2.3	2019/03/5	All	All	Product spec was changed to Ver. 2.3
Ver. 2.4	2020/09/17	All	All	Product spec was changed to Ver. 2.4



PRODUCT SPECIFICATION

1. PURPOSE

The specification F070A51-601 is a 7" a-Si TFT Liquid Crystal Display ODF cell. The ODF cell has been designed by Innolux, and manufactured by Innolux 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

2.1 GENERAL SPECIFICATION

	Item		Specification	unit
1	Glass thickness	TFT	0.5	mm
		CF	0.5	
2	Shipping mode		cut	-
3	Shipping size		489.1 (H) x 874.6 (V) x 1.0 (D)	mm
4	Panel outline dimension		162.5 (H) x 96.62 (V) x 1.0 (D)	mm
5	Active screen size		154.08(H) x 85.92(V)	mm
6	Resolution		800RGB x 480	pixel
7	Pixel driving element		a-Si TFT	-
8	Sub pixel size		64.2 x 179	um
9	Pixel arrangement		RGB- Stripe	-
10	View direction (Gray inversion)		6 o'clock	-
11	Cell gap		4.0±0.2	um
12	Driver IC		Source IC : ILI6137A Gate IC : ILI5960-9G	-
13	Weight without POL		1017 g ± 10%	g

<Note> 1. Compatible IC : Source IC : NT39419B / Gate IC : NT52001 ;
 Source IC : ILI6122M-9G / Gate IC : ILI5960-9G
 Source IC : HX8264-E / Gate IC : HX8664-B
 Source IC : EK9713B / Gate IC : EK73002A

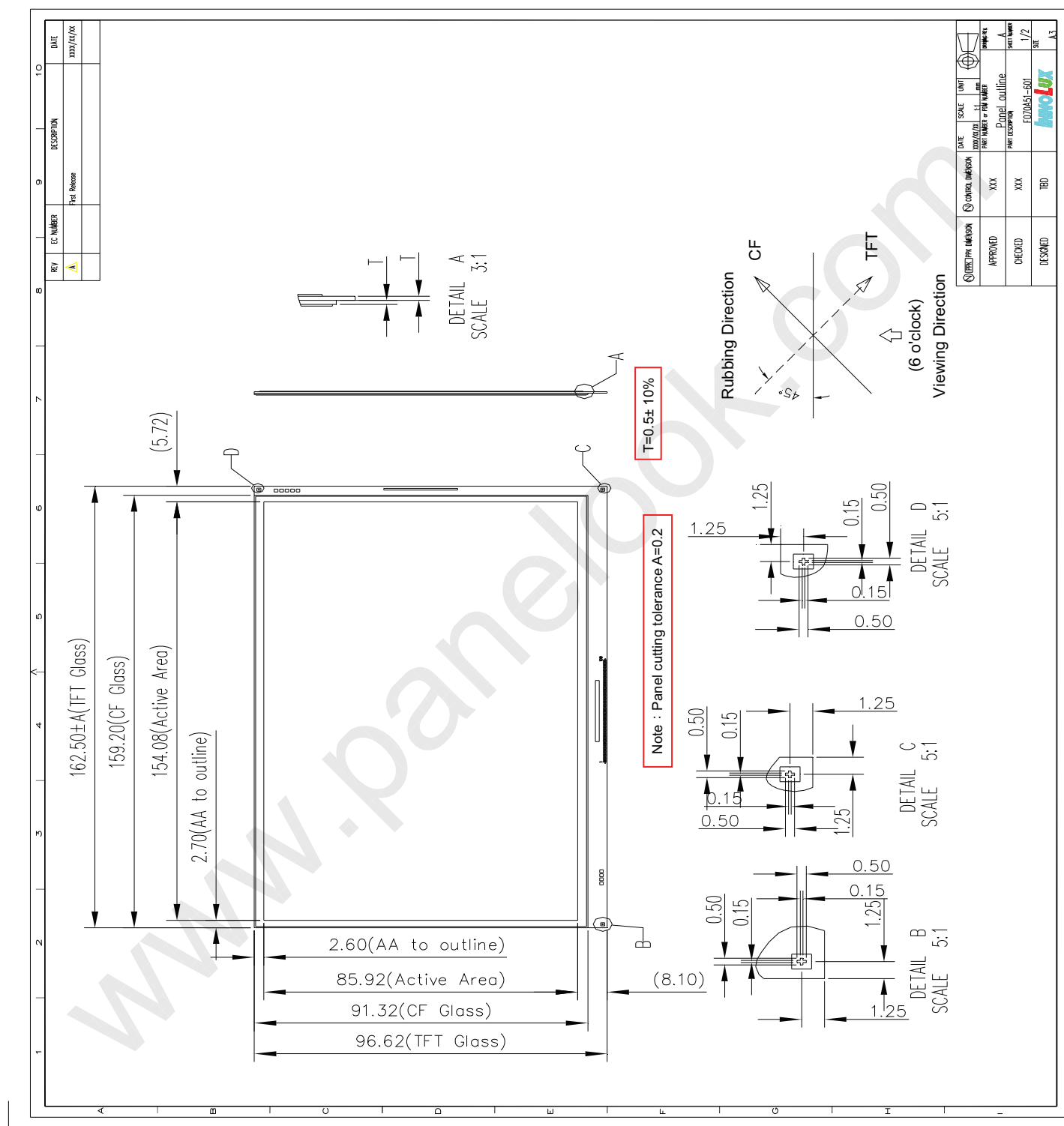
The other compatible IC are also considered for the design of pad locations.

- Those compatible IC should be verified for panel performance. Please refer to the IC datasheet (AP note) respectively.
- This model is designed by the driver IC with bumping compensation.

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2.2 DIMENSION

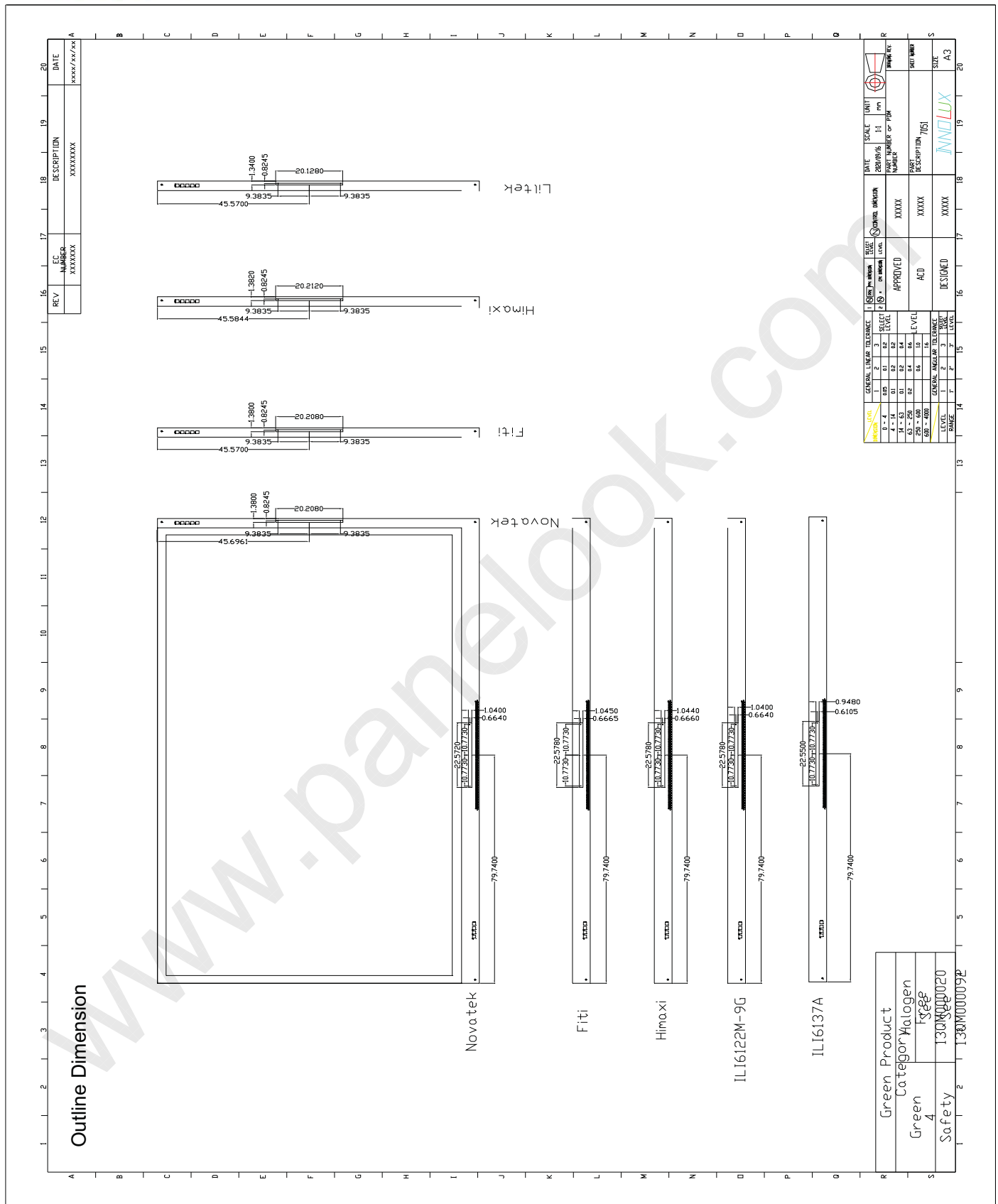
2.2.1 OUTLINE DIMENSION



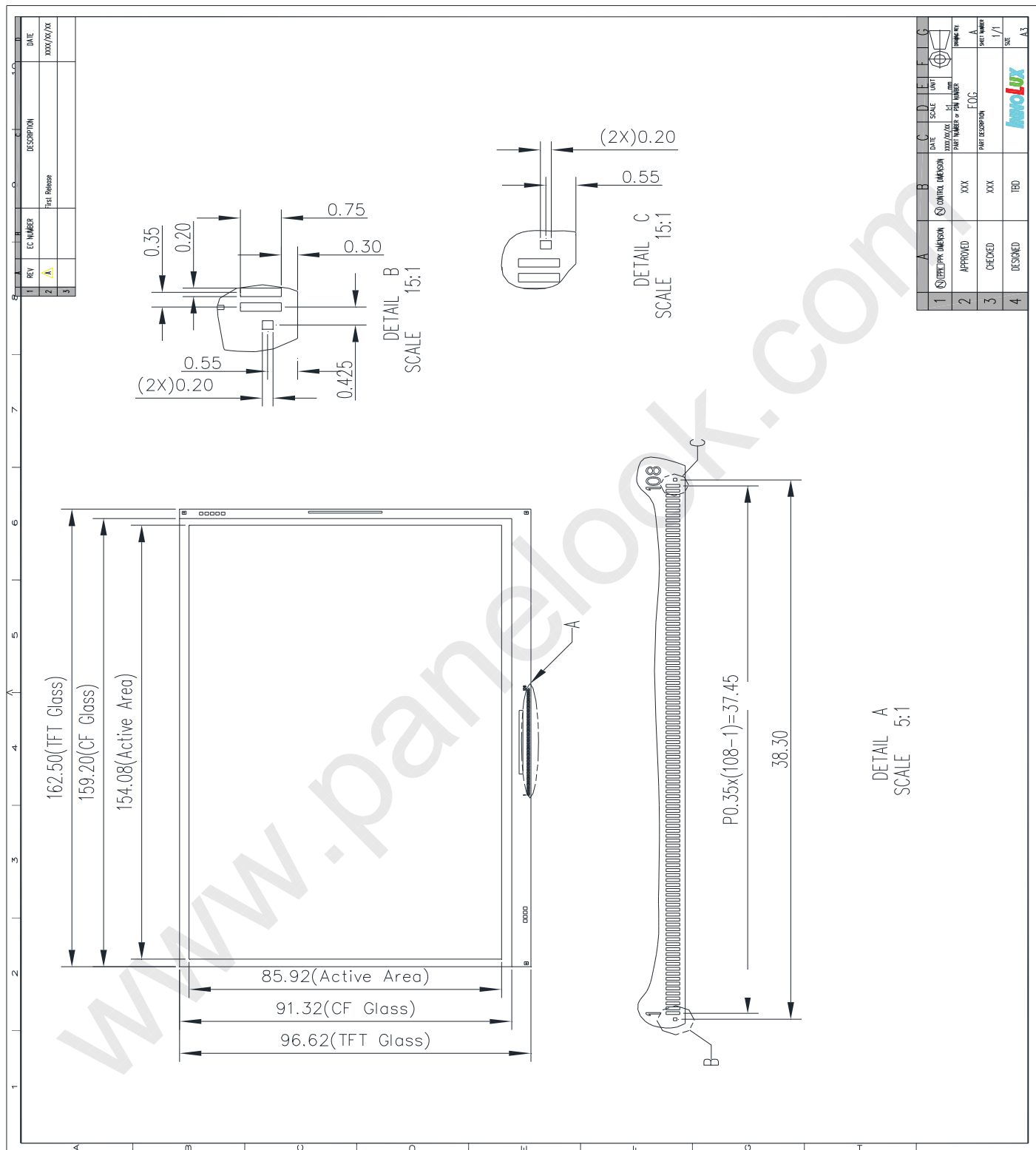
Note: (1) panel outline dimension tolerance ± 0.2 mm



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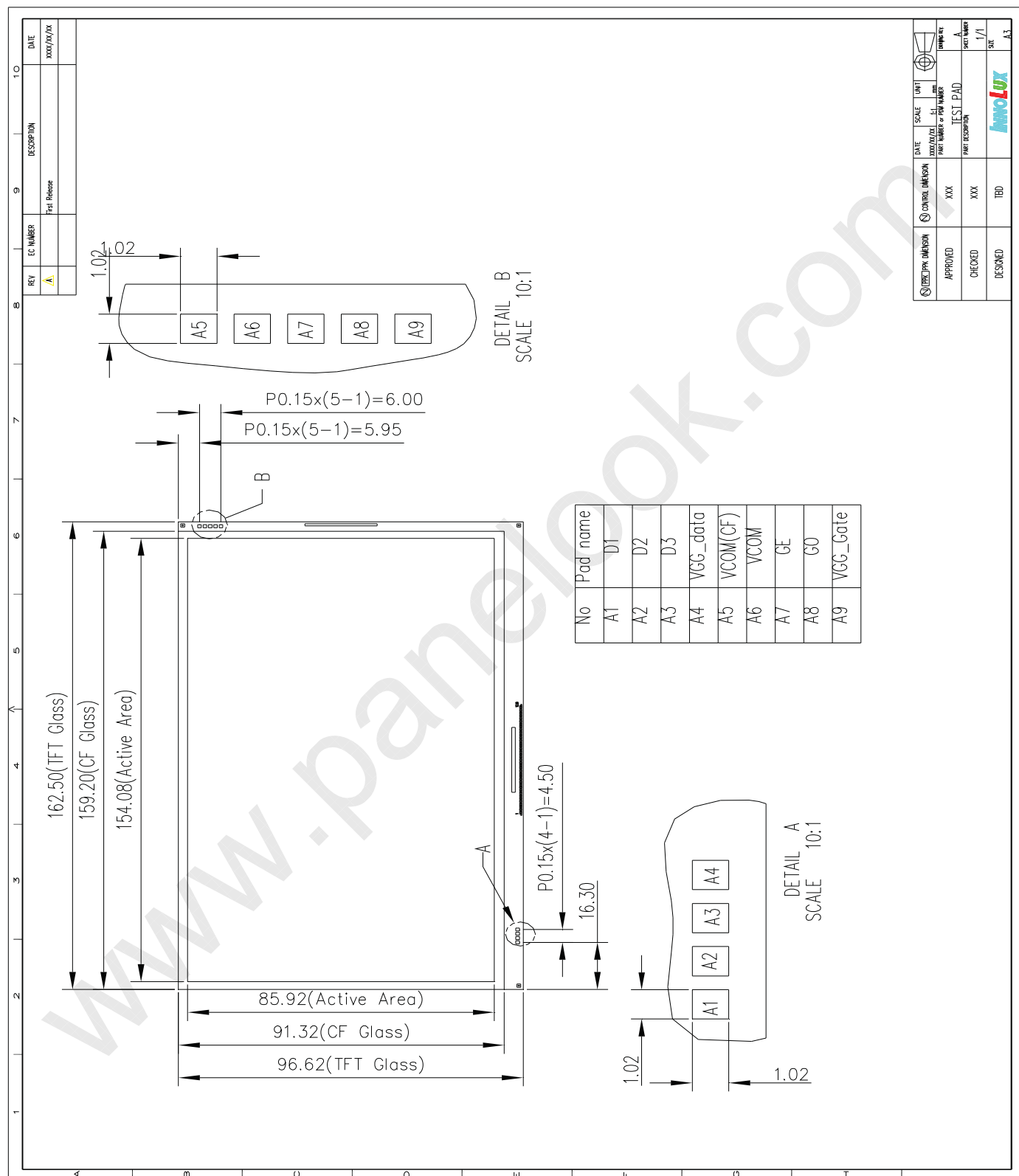


2.2.2 FPC DETAIL



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2.2.3 TEST PAD





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3. PIN ASSIGNMENT

3.1 FPC/IC PIN ASSIGNMENT TABLE

ILI6137A		ILI5960-9G			ILI6137A	
IC Pad No	IC Pad Name	IC Pad No	IC Pad Name	Connect to	FPC Pin Out Name	FPC Pin Out Number
				DUMMY	DUMMY	108
		194	VSS	IC TO FPC	GND	107
		195	VSS			
		196	VSS	IC TO FPC	GND	106
		197	VSS			
		198	VEE	IC TO FPC	VGL	105
		199	VEE			
		200	VEE		VGL	104
		201	VDD	IC TO FPC	VCC	103
		202	VDD			
		203	VDD		VCC	102
		204	VGH	IC TO FPC	VGH	101
		205	VGH			
		206	VGH		VGH	100
				PANEL TO FPC	VCOM_CF	99
1	SHIELDING					
2	SHIELDING					
3	SHIELDING					
4	SHIELDING					
5	COM1_B			IC TO FPC	VCOM_TFT	98
6	COM1_B					97
7	SHIELDING					
8	SHIELDING					
9	AGND			IC TO FPC	AGND	96
10	AGND					
11	AGND			IC TO FPC	AGND	95



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12	AGND					
13	SHIELDING					
14	SHIELDING					
15	SHIELDING					
16	SHIELDING					
17	SHIELDING					
18	SHIELDING					
19	TP0					
20	TB0					
21	TP1					
22	TB1					
23	TP2					
24	TB2					
25	TP3					
26	TP3					
27	TP4					
28	TP4					
29	TP5					
30	REV					
31	SHIELDING					
32	TB3					
33	TB4					
34	SHIELDING					
35	CABC_EN			IC TO FPC	TB1	94
36	CABC_EN					
37	SHIELDING					
38	SHIELDING					
39	SHIELDING					
40	SHIELDING					
41	CSX			IC TO FPC	TB2	93



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42	CSX					
43	SHIELDING					
44	SCL			IC TO FPC	TB3	92
45	SCL					
46	SHIELDING					
47	SDA			IC TO FPC	TB4	91
48	SDA					
49	SHIELDING					
50	SHIELDING					
51	GOSEQ			IC TO FPC	GOSEQ	90
52	GOSEQ					
53	SHIELDING					
54	BIST			IC TO FPC	BIST	89
55	BIST					
56	SHIELDING					
57	RES0			IC TO FPC	RES0	88
58	RES0					
59	SHIELDING					
60	DBC3			IC TO FPC	CFSEL	87
61	DBC3					
62	SHIELDING					
63	CLKPOL			IC TO FPC	CLKPOL	86
64	CLKPOL					
65	SHIELDING					
66	DITHB			IC TO FPC	DITHB	85
67	DITHB					
68	SHIELDING					
69	MODE			IC TO FPC	MODE	84
70	MODE					
71	SHIELDING					



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72	SHLR			IC TO FPC	SHLR	83
73	SHLR					
74	SHIELDING					
75	UPDN			IC TO FPC	UPDN	82
76	UPDN					
77	SHIELDING					
78	STBYB			IC TO FPC	STBYB	81
79	STBYB					
80	SHIELDING					
81	RSTB			IC TO FPC	RSTB	80
82	RSTB					
83	SHIELDING					
84	BLKEN			IC TO FPC	BLKEN	79
85	BLKEN					
86	SHIELDING					
87	VSET			IC TO FPC	VSET	78
88	VSET					
89	TP6					
90	TP6					
91	TP7					
92	TP7					
93	TP8					
94	TP8					
95	TP9					
96	TP9					
97	TP9					
98	DGND			IC TO FPC	GND	77
99	DCMP_EN			IC TO FPC	DCMP_EN	76
100	DVDD			IC TO FPC	VDD	75
101	SHIELDING					



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102	AVDD			IC TO FPC	AVDD	74
103	AVDD					
104	AVDD					
105	AVDD					
106	AVDD			IC TO FPC	AVDD	73
107	AVDD					
108	AVDD					
109	AVDD					
110	SHIELDING					
111	V1			IC TO FPC	V1	72
112	V1					
113	SHIELDING					
114	V2			IC TO FPC	V2	71
115	V2					
116	SHIELDING					
117	V3			IC TO FPC	V3	70
118	V3					
119	SHIELDING					
120	V4			IC TO FPC	V4	69
121	V4					
122	SHIELDING					
123	V5			IC TO FPC	V5	68
124	V5					
125	SHIELDING					
126	V6			IC TO FPC	V6	67
127	V6					
128	SHIELDING					
129	V7			IC TO FPC	V7	66
130	V7					
131	SHIELDING					



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132	V8			IC TO FPC	V8	65
133	V8					
134	SHIELDING					
135	V9			IC TO FPC	V9	64
136	V9					
137	SHIELDING					
138	V10			IC TO FPC	V10	63
139	V10					
140	SHIELDING					
141	V11			IC TO FPC	V11	62
142	V11					
143	SHIELDING					
144	V12			IC TO FPC	V12	61
145	V12					
146	SHIELDING					
147	V13			IC TO FPC	V13	60
148	V13					
149	SHIELDING					
150	V14			IC TO FPC	V14	59
151	V14					
152	SHIELDING					
153	AGND			IC TO FPC	AGND	58
154	AGND					
155	AGND					
156	AGND					
157	AGND			IC TO FPC	AGND	57
158	AGND					
159	AGND					
160	AGND					
161	SHIELDING					



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162	SHIELDING					
163	DGND			IC TO FPC	GND	56
164	DGND					
165	DGND			IC TO FPC	GND	55
166	DGND					
167	SHIELDING					
168	SHIELDING					
169	DVDD			IC TO FPC	VDD	54
170	DVDD					
171	DVDD			IC TO FPC	VDD	53
172	DVDD					
173	DASHD				GND	52
174	VSD			IC TO FPC	VSD	51
175	VSD					
176	DASHD				GND	50
177	HSD			IC TO FPC	HSD	49
178	HSD					
179	DASHD				GND	48
180	DEN			IC TO FPC	DEN	47
181	DEN					
182	DASHD				GND	56
183	CLKIN			IC TO FPC	CLKIN	45
184	CLKIN					
185	DASHD				GND	44
186	D27			IC TO FPC	D27	43
187	D27					
188	D26			IC TO FPC	D26	42
189	D26					
190	DASHD				GND	41
191	D25			IC TO FPC	D25	40



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192	D25					
193	D24			IC TO FPC	D24	39
194	D24					
195	DASHD				GND	38
196	D23			IC TO FPC	D23	37
197	D23					
198	D22			IC TO FPC	D22	36
199	D22					
200	DASHD				GND	35
201	D21			IC TO FPC	D21	34
202	D21					
203	D20			IC TO FPC	D20	33
204	D20					
205	DASHD				GND	32
206	D17			IC TO FPC	D17	31
207	D17					
208	D16			IC TO FPC	D16	30
209	D16					
210	DASHD				GND	29
211	D15			IC TO FPC	D15	28
212	D15					
213	D14			IC TO FPC	D14	27
214	D14					
215	DASHD				GND	26
216	D13			IC TO FPC	D13	25
217	D13					
218	D12			IC TO FPC	D12	24
219	D12					
220	DASHD				GND	23
221	D11			IC TO FPC	D11	22



PRODUCT SPECIFICATION

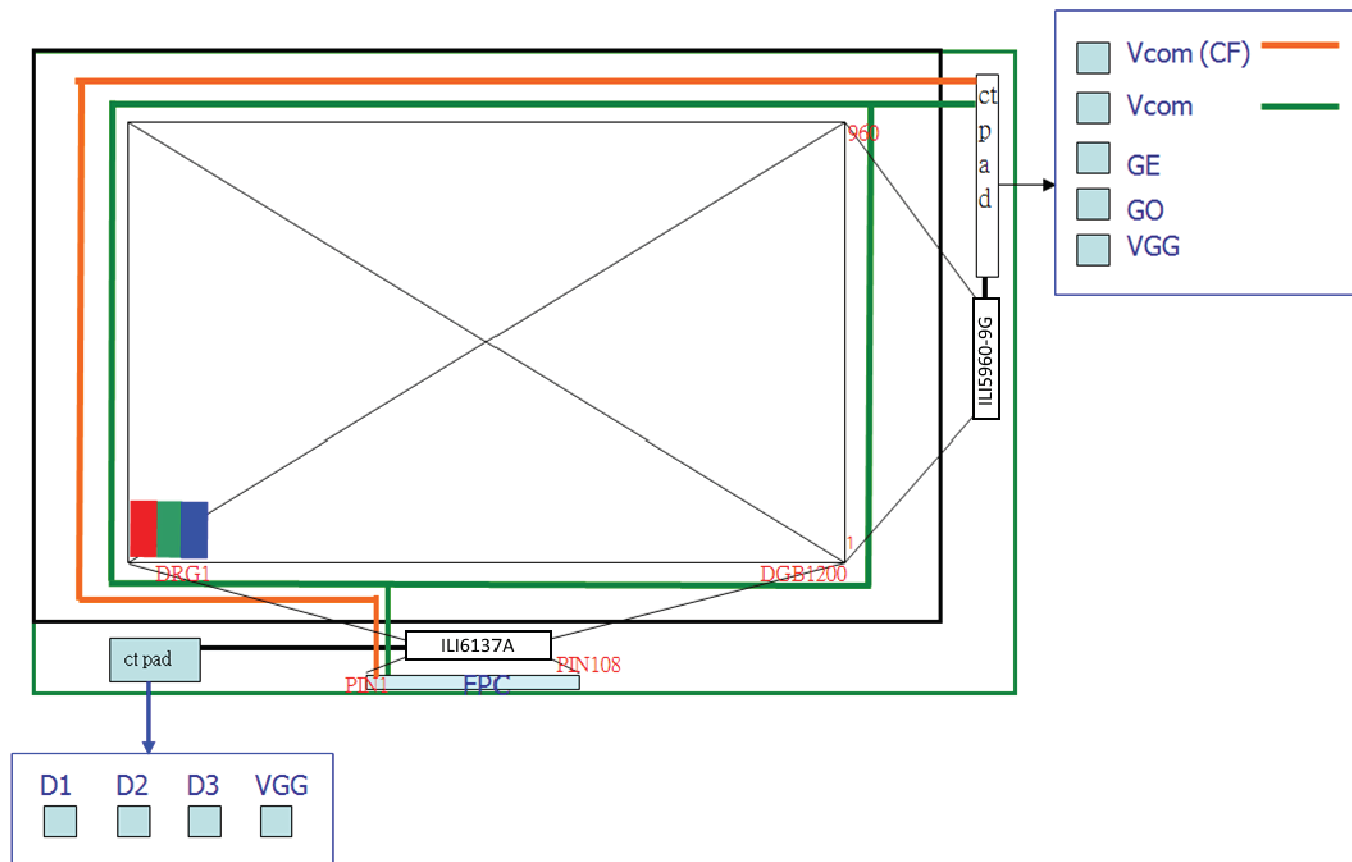
222	D11					
223	D10			IC TO FPC	D10	21
224	D10					
225	DASHD				GND	20
226	D07			IC TO FPC	D07	19
227	D07					
228	D06			IC TO FPC	D06	18
229	D06					
230	DASHD				GND	17
231	D05			IC TO FPC	D05	16
232	D05					
233	D04			IC TO FPC	D04	15
234	D04					
235	DASHD				GND	14
236	D03			IC TO FPC	D03	13
237	D03					
238	D02			IC TO FPC	D02	12
239	D02					
240	DASHD				GND	11
241	D01			IC TO FPC	D1	10
242	D01					
243	D00			IC TO FPC	D0	9
244	D00					
245	DASHD			DUMMY	GND	8
246	SHIELDING					
247	SHIELDING					
248	SHIELDING					
249	SHIELDING					
250	AVDD			IC TO FPC	AVDD	7
251	AVDD					



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252	AVDD			IC TO FPC	AVDD	6
253	AVDD					
254	SHIELDING					
255	SHIELDING					
256	COM2_B					
257	COM2_B					
258	SHIELDING					
259	SHIELDING					
260	SHIELDING					
261	SHIELDING					
				PANEL TO FPC	VCOM_TFT	5
						4
				PANEL TO FPC	VCOM_CF	3
						2
					DUMMY	1

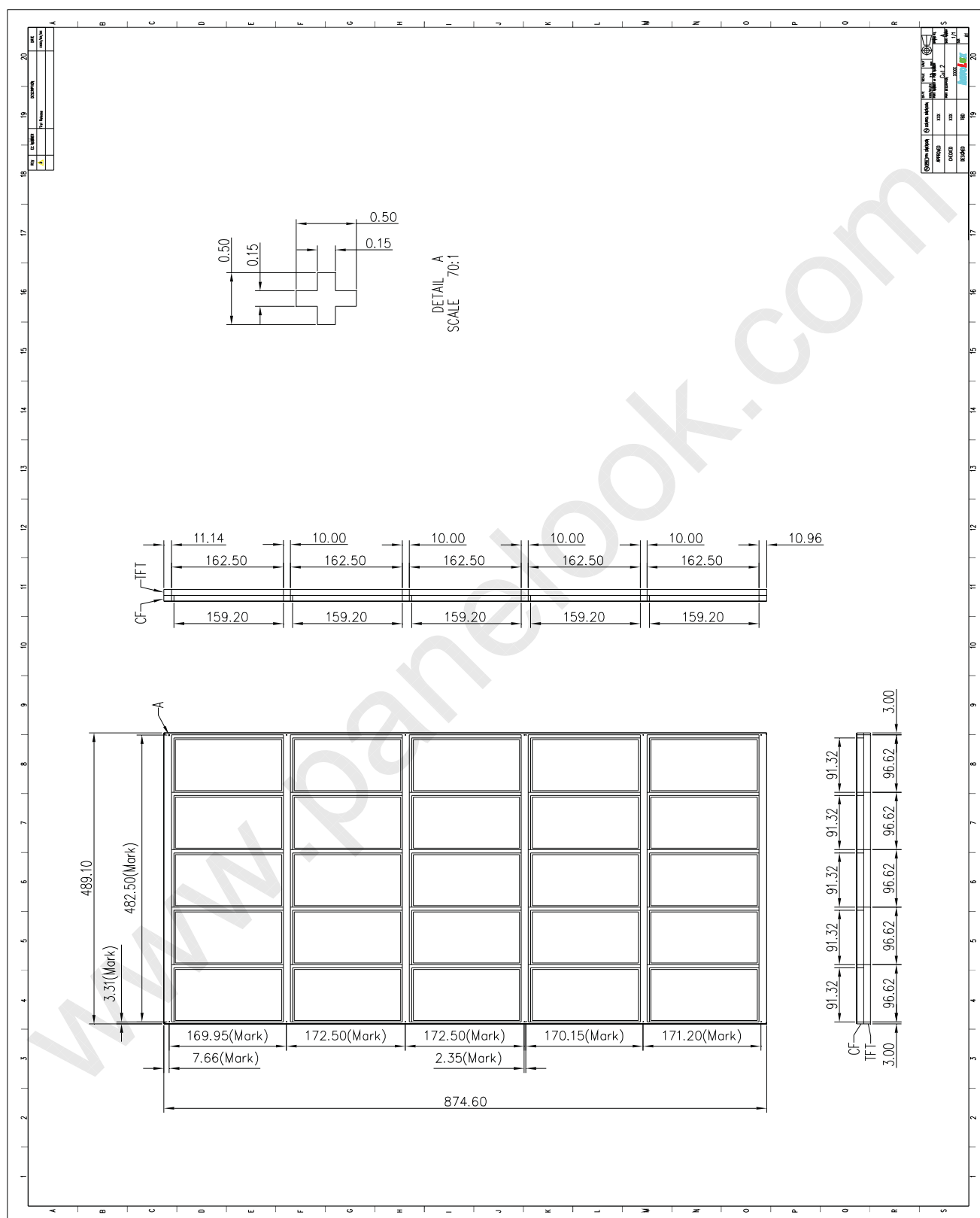
3.2 SCHEMATIC PANEL LAYOUT





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4. CELL SCRIBE



Version 2.4

17 Sep 2020

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5.ELECTRICAL SPECIFICATION

Item	Symbol	Specification			Unit
		Min.	Typ.	Max.	
Power voltage	VCC	3.0	3.3	3.6	V
	AVDD	10.2	10.4	10.6	V
TFT gate on voltage	VGH	14.5	15	15.5	V
TFT gate on voltage	VGL	-10.5	-10	-9.5	V
TFT common electrode voltage	Vcom(DC)	3.54	4.04	4.54	V

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

(5) Reference waveform for panel light on is as below: (release after sample output)

Item	SPEC(v)	Item	SPEC(v)	Item	SPEC(v)
Vgh	15	Vgl	-10	Vcom	4.04
Vsh (Black)	9.9	Vsh (Gray)	7.4	Vsh (White)	5.3
Vsl (Black)	0.1	Vsl (Gray)	2.6	Vsl (White)	4.7

PRODUCT SPECIFICATION

6. OPTICAL SPECIFICATION (light source: C light)

Item		Symbol	Conditions	Specifications			Unit	Note	
				Min.	Typ.	Max.			
Transmittance (w/o DBEF)		T%	Viewing normal angle $\theta_x = \theta_y = 0^\circ$	4.42%	5.02%	--	%	All left side data are based on Innolux's following condition – 1.LC : TN 2.Light Source : C-Light 3. Polarizer : CF: NWF-LNSWQAGS1 TFT: NWF-LNSWQ 4.Machine : DMS 900 5. By quick VLC dark ≥ 4.9 V, VLC white =0.3 V	
Contrast Ratio		CR		500	800	--	--		
Response Time		T _{on} + T _{off}		-	25	50	ms		
Viewing Angle	Hor.	θ_{x+} (3 o'clock)	Center CR>10	60	70	--	deg.		
		θ_{x-} (9 o'clock)		60	70	--			
	Ver.	θ_{y+} (12 o'clock)		60	70	--			
		θ_{y-} (6 o'clock)		50	60	--			
CF only Color Chromaticity (CIE 1931)	Red	Rx	Viewing normal angle $\theta_x = \theta_y = 0^\circ$	0.561	0.581	0.601	-		Under C light Simulation
		Ry		0.291	0.311	0.331	-		
	Green	Gx		0.291	0.311	0.331	-		
		Gy		0.535	0.555	0.575	-		
	Blue	Bx		0.116	0.136	0.156	-		
		By		0.099	0.119	0.139	-		
	White	Wx		0.290	0.310	0.330	-		
		Wy		0.310	0.330	0.350	-		
	Color Gamut				41	51	--	%	

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

The contrast ratio can be calculated by the following expression.

$$\text{Contrast Ratio (CR)} = L_{255} / L_0$$

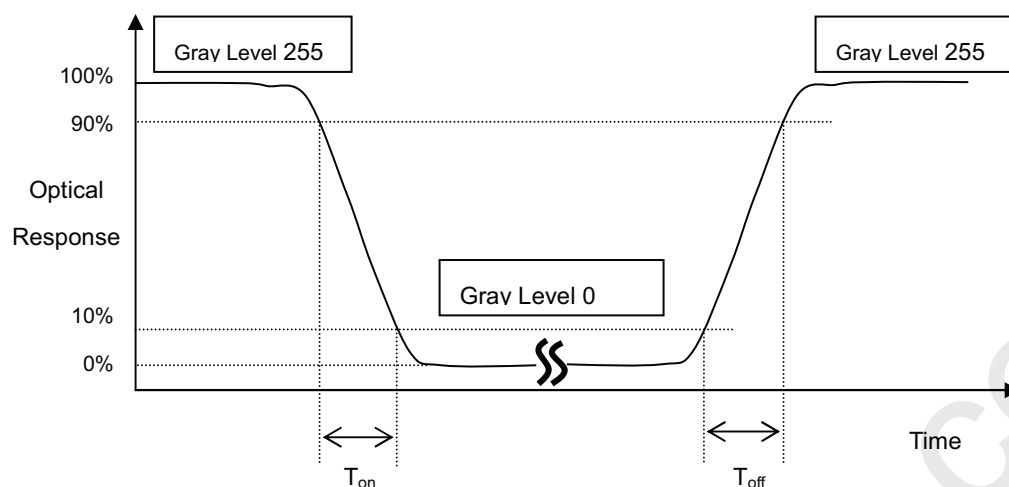
L255 : Luminance of gray level 255

L 0: Luminance of gray level 0

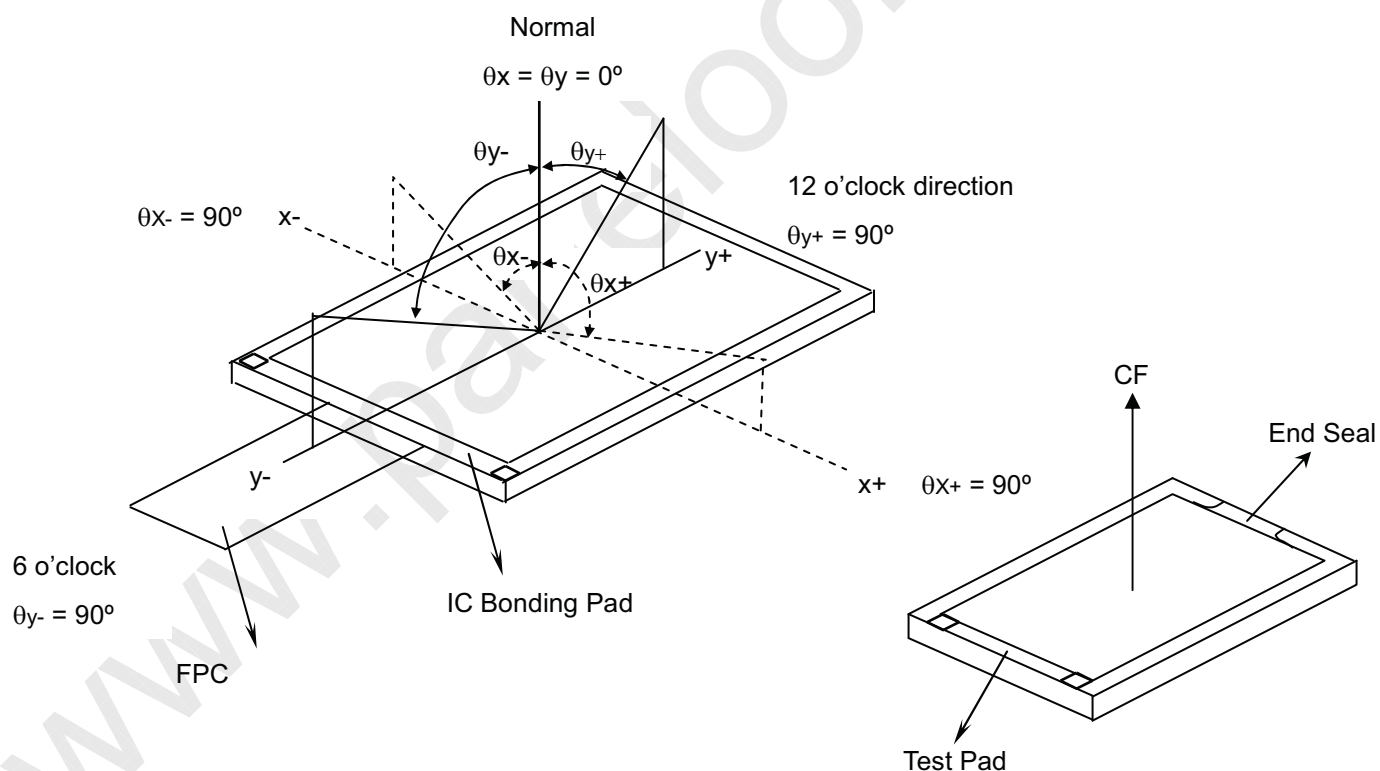
$$CR = CR(5)$$

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

*Note (2) Definition of Response Time (T_{on} , T_{off}):

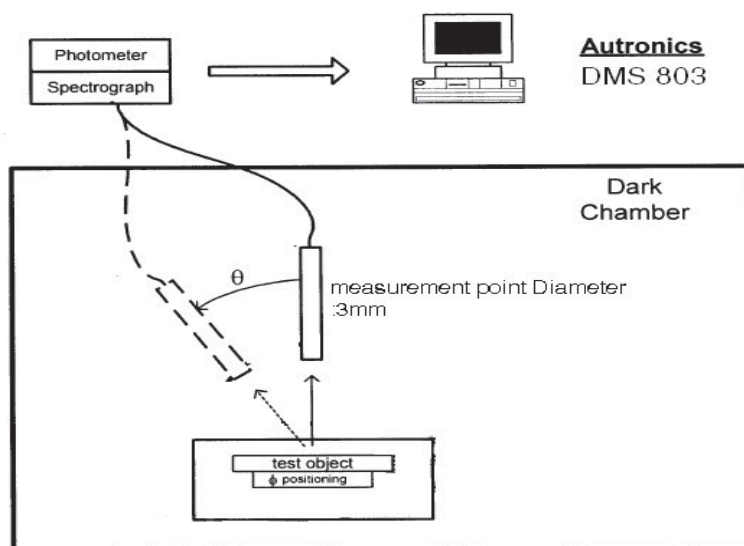


*Note(3) Definition of Viewing Angle

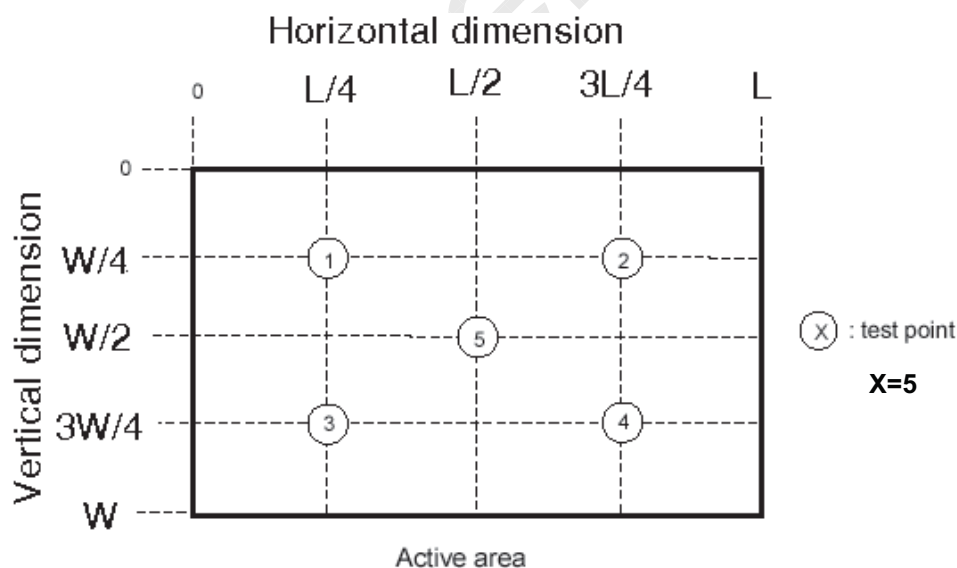


*Note (4) Measurement Set-Up:

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)





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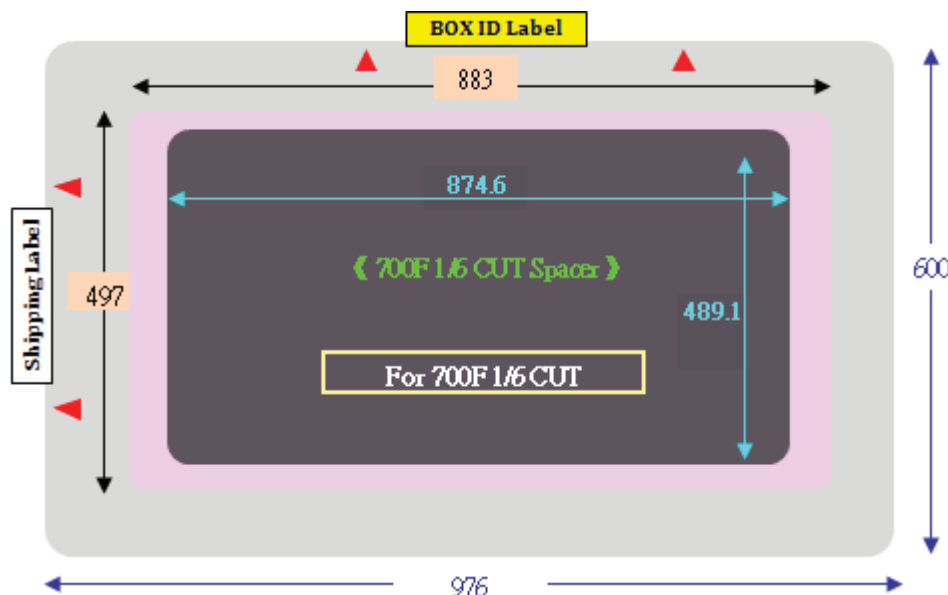
7. RELIABILITY SPECIFICATION

No.	Test Item	Test Condition	Check Time	Note
1	High Temp Storage	T= 90°C	240 hrs	(1), (2), (4)
2	Low Temp Storage	T= -40°C	240 hrs	(1), (2), (4)
3	High Temp Operation	T= 85°C	240 hrs	(1), (2), (4)
4	Low Temp Operation	T= -30°C	240 hrs	(1), (2), (4)
5	High Temp & High Humidity Operation	+60°C H=90%	240 hrs	(1), (3), (4)

Note:

- (1) In the standard condition, there shall be no practical problem that may affect the display function. After the reliability test, the product only guarantees operation, but doesn't guarantee all the cosmetic specification.
- (2) Before cosmetic function test, the product must have enough recovery time, at least 2 hours at room temperature.
- (3) Before cosmetic function test, the product must have enough recovery time, at least 24 hours at room temperature.
- (4) Reliability test items follow Cisco L1 test requirement (EDCS#432619).

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8. PACKAGE FORM**8.1 CELL PACKAG****7.0" 1/6 CUT**

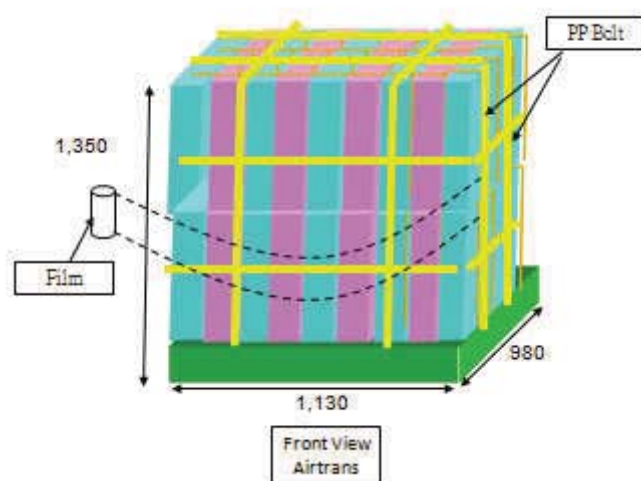
No.	Item	Mateial No.	Dimension(mm)	Unit	Weight(Kg)	Qunaty	Remark
1	7.0" 1/6 Cut	2420S0705102H	489.1*874.6*1	CUT	1.017	30	
2	39.5" EPS Dense	8701B000J2000	976*600*123	EA	1.6	1	
3	700F 1/6 Cut PP Spacer	8301B003DY000	875.5*490*0.5	Pcs	0.15	31	
4	真空袋	8401B000NN000	1330*800*0.08	Pcs	0.1	1	
5	RFID Box ID Label	8D01B000LA000	90*50	Pcs	NA	1	
6	Shipping Label	R16020102OV0	90*50	Pcs	NA	1	

8.2 PALLET PACKAGE

Trans type	Box / Top Pallet	Box / Bottom Pallet
Air	0	16
Sea	0	16
Sea for HQ	0	16

Destination	Material	Pallet size
Customer	Plywood	L1130 Xw980 xH150

空運包材:



海運包材:

