



Customer: _____
Model Name: T-CON Board
(TTL TCB for 8"D 4:3 LCM)
SPEC NO.: _____
Date: 2006/10/17
Version: 01

- Preliminary Specification
 Final Specification

For Customer's Acceptance

Approved by	Comment

Approved by	Reviewed by	Prepared by

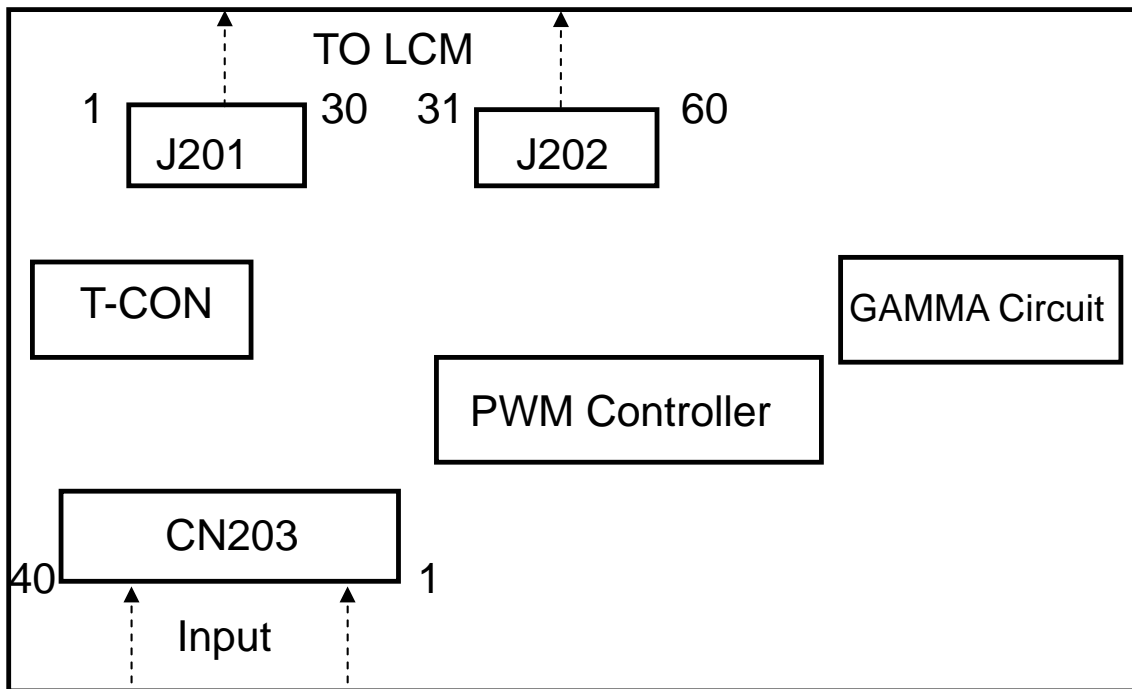
Record of Revision

Version	Revise Date	Page	Content
Final Spec. 01	2006/10/17		Initial Release

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1.1. T-CON Board Block Drawing



1.2. Pin Assignment

1.2.1. Input section (Connector 203:F09-40 2R)

Pin No.	Symbol	I/O	Function	Remark
1	GND	P	Power ground	
2	GND	P	Power ground	
3	NC		NC	
4	VCC	I	Power supply for digital circuit(3.3V)	Note1
5	VCC	I	Power supply for digital circuit(3.3V)	Note1
6	VCC	I	Power supply for digital circuit(3.3V)	Note1
7	VCC	I	Power supply for digital circuit(3.3V)	Note1
8	NC		NC	
9	DE	I	Date enable	
10	GND	P	Power ground	
11	GND	P	Power ground	
12	GND	P	Power ground	
13	BI5	I	Blue data input (MSB)	
14	BI4	I	Blue data input	
15	BI3	I	Blue data input	
16	GND	P	Power ground	
17	BI2	I	Blue data input	
18	BI1	I	Blue data input	
19	BI0	I	Blue data input(LSB)	

20	GND	P	Power ground	
21	GI5	I	Green data input(MSB)	
22	GI4	I	Green data input	
23	GI3	I	Green data input	
24	GND	P	Power ground	
25	GI2	I	Green data input	
26	GI1	I	Green data input	
27	GI0	I	Green data input(LSB)	
28	GND	P	Power ground	
29	RI5	I	Red data input(MSB)	
30	RI4	I	Red data input	
31	RI3	I	Red data input	
32	GND	P	Power ground	
33	RI2	I	Red data input	
34	RI1	I	Red data input	
35	RI0	I	Red data input(LSB)	
36	GND	P	Power ground	
37	GND	P	Power ground	
38	DCLK	I	Sample clock	
39	GND	P	Power ground	
40	GND	P	Power ground	

Note: I: input, O: output, P: Power

Note1: Typ. Vcc=3.3V, Min. Vcc=3.0V, Max. Vcc=3.6V

1.2.2. TFT LCD Panel Driving Section

Connector J201(F51-130-6222-1)

Pin No.	Symbol	I/O	Function	Remark
1	POL	I	Polarity selection	
2	STVD	I/O	Vertical start pulse input when U/D= H	Note 1
3	OEV	I	Output enable	
4	CKV	I	Vertical clock	
5	STVU	I/O	Vertical start pulse input when U/D= L	Note 1
6	GND	P	Power ground	
7	EDGSL	I	Select rising edge or falling edge	
8	V _{CC}	P	Power supply for digital circuit	
9	V ₉	I	Gamma voltage level 9	
10	V _{GL}	P	Gate OFF voltage	
11	V ₂	I	Gamma voltage level 2	
12	V _{GH}	P	Gate ON voltage	
13	V ₆	I	Gamma voltage level 6	
14	U/D	I	Up/down selection	Note 1, 2
15	V _{COM}	I	Common voltage	
16	GND	P	Power ground	
17	AV _{DD}	P	Power supply for analog circuit	
18	V ₁₄	I	Gamma voltage level 14	
19	V ₁₁	I	Gamma voltage level 11	
20	V ₈	I	Gamma voltage level 8	
21	V ₅	I	Gamma voltage level 5	
22	V ₃	I	Gamma voltage level 3	

23	GND	P	Power ground	
24	R5	I	Red data(MSB)	
25	R4	I	Red data	
26	R3	I	Red data	
27	R2	I	Red data	
28	R1	I	Red data	
29	R0	I	Red data(LSB)	
30	GND	P	Power ground	

Connector J202(F51-130-6222-1)

31	GND	P	Power ground	
32	G5	I	Green data(MSB)	
33	G4	I	Green data	
34	G3	I	Green data	
35	G2	I	Green data	
36	G1	I	Green data	
37	G0	I	Green data(LSB)	
38	STHL	I/O	Horizontal start pulse input when R/L = L	
39	REV	I	Control signal are inverted or not	
40	GND	I	Power ground	
41	DCLK	I	Sample clock	
42	V _{cc}	P	Power supply for digital circuit	
43	STHR	I/O	Horizontal start pulse input when R/L =H	
44	LD	I	Latches the polarity of outputs and switches the new data to outputs	
45	B5	I	Blue data (MSB)	

46	B4	I	Blue data	
47	B3	I	Blue data	
48	B2	I	Blue data	
49	B1	I	Blue data	
50	B0	I	Blue data (LSB)	
51	R/L	I	Right/ left selection	
52	V1	I	Gamma voltage level 1	
53	V4	I	Gamma voltage level 4	
54	V7	I	Gamma voltage level 7	
55	V10	I	Gamma voltage level 10	
56	V12	I	Gamma voltage level 12	
57	V13	I	Gamma voltage level 13	
58	AV _{DD}	P	Power supply for analog circuit	
59	GND	P	Power ground	
60	V _{COM}	I	Common voltage	

Note: When REV="L", normally
REV="H", these data will be inverted.

1.3. Absolute Maximum Rating

Item	Symbol	Max.	Unit	Remark
Operating Temperature	Top	-20~70	°C	
Storage Temperature	Tstg	-30~80	°C	
Relative Humidity	RH	90	%	

1.4. Current Consumption

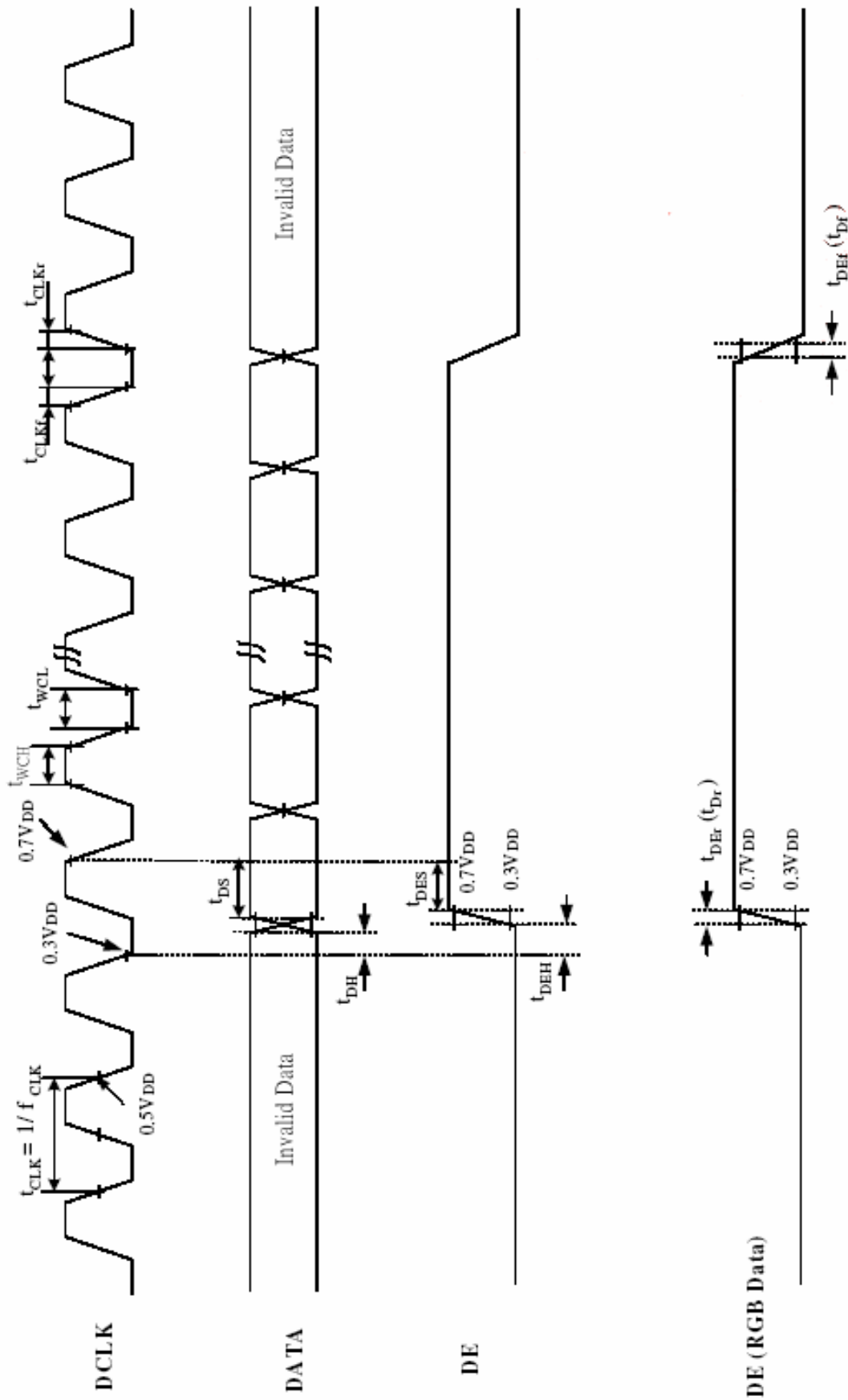
Item	Symbol	Values			Unit	Remark
		Min.	Typ.	Max.		
Current for Driver	I _{VCC}	200	230	280	mA	V _{VCC} =3.3V

1.5. Timing Characteristics

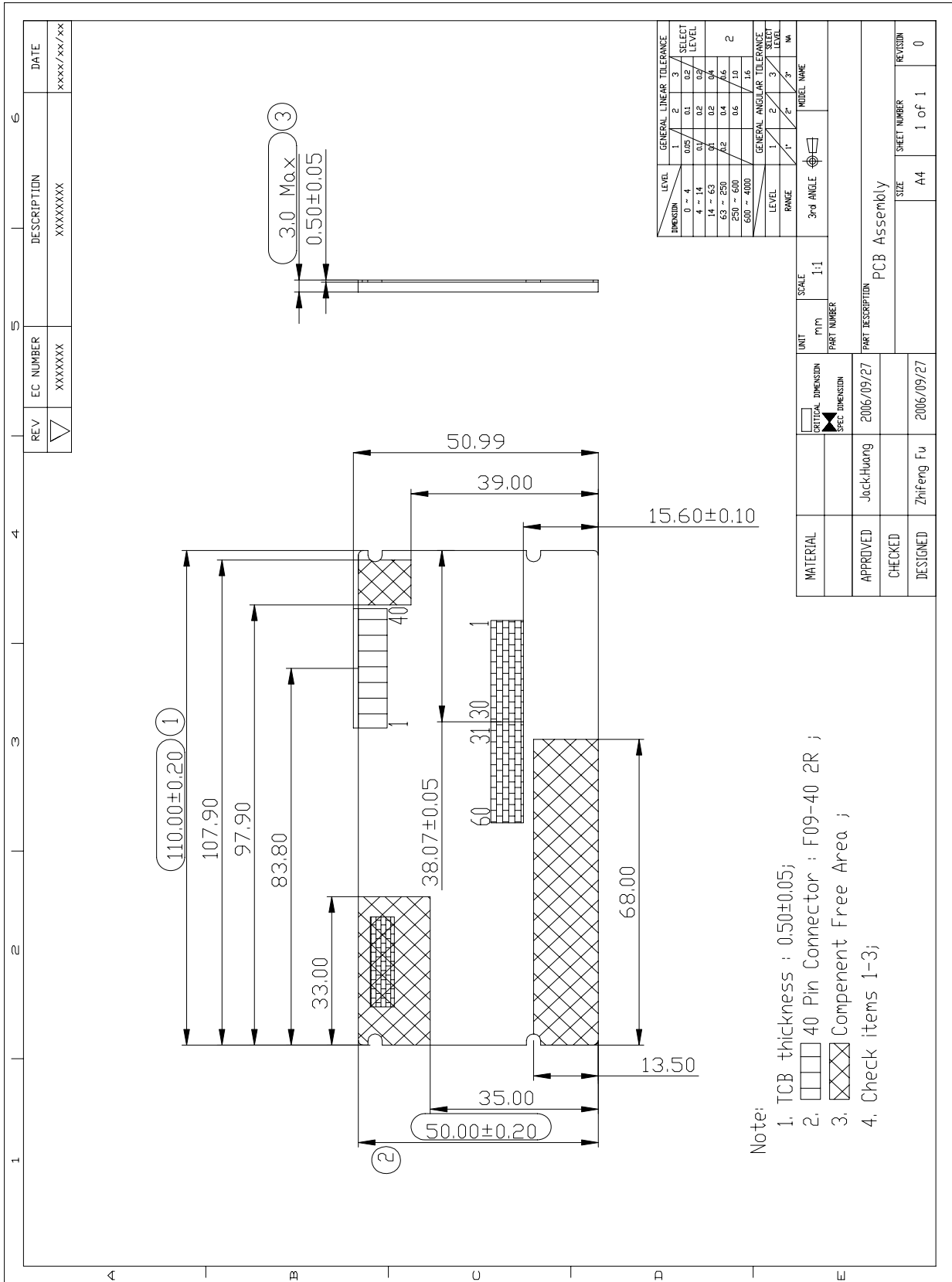
1.5.1. Timing Condition

	Parameter	Symbol	Values			Unit	Remark
			Min.	Typ.	Max.		
DCLK	Period	t_{CLK}	-	25	25	ns	
	Frequency	f_{CLK}	-	40	40	MHz	
	Low Level Width	t_{WCL}	6	-	-	ns	
	High Level Width	t_{WCH}	6	-	-	ns	
	Rise, Fall Time	t_{CLKr}, t_{CLKf}	-	-	3	ns	
	Duty	-	0.45	0.50	0.55	-	t_{CLKL} / t_{CLK}
DE (Data Enable)	Setup Time	t_{DES}	5	-	-	ns	
	Hold Time	t_{DEH}	10	-	-	ns	
	Rise, Fall Time	t_{DEr}, t_{DEf}	-	-	16	ns	
	Horizontal Period	t_{HP}	-	1000	-	t_{CLK}	
	Horizontal Valid	t_{HV}		800			
	Horizontal Blank	t_{HBK}		$t_{HP} - t_{HV}$			
	Vertical Period	t_{VP}	-	660	-	t_{HP}	
	Vertical Valid	t_W		600			
	Vertical Blank	t_{VBK}		t_{VP}, t_W			
Data	Setup Time	t_{DS}	5	-	-	ns	
	Hold Time	t_{DH}	10	-	-	ns	
	Rise, Fall Time	t_{Dr}, t_{Df}	-	-	3	ns	

1.5.2. Timing Diagram



1.6. Mechanical Drawing (T-CON Board)



Note:

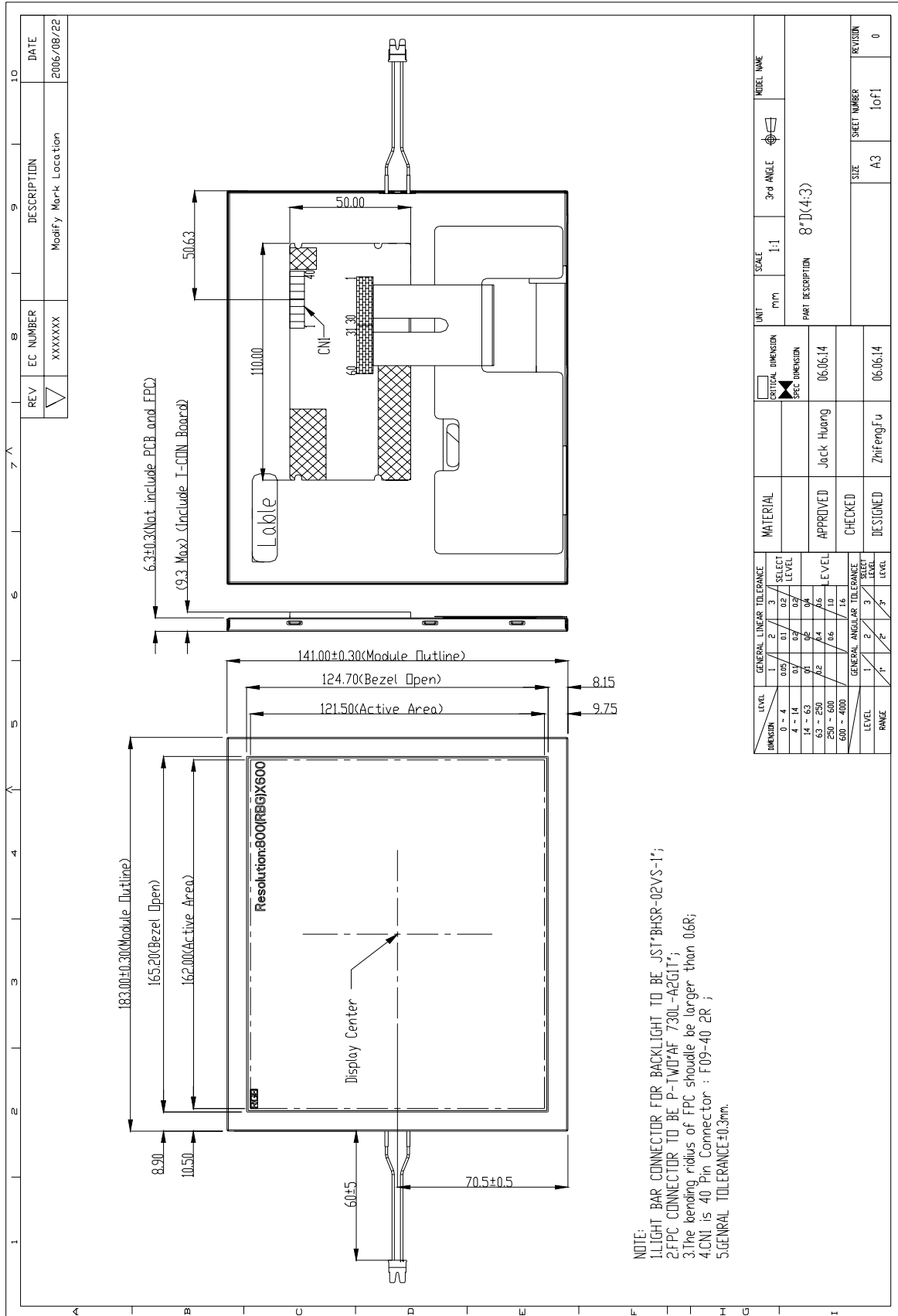
1. TCB thickness : 0.50±0.05;
2. 40 Pin Connector : F09-40 2R ;
3. Component Free Area ;
4. Check items 1-3;

GENERAL LINEAR TOLERANCE		
DIMENSION	LEVEL	SELECT LEVEL
0 - 4	0.25	0.2
4 - 14	0.37	0.25
14 - 63	0.4	0.4
63 - 250	0.2	0.4
250 - 600	0.6	1.0
600 - 4000	1.6	1.6

GENERAL ANGULAR TOLERANCE				
LEVEL	1	2	3	SELECT LEVEL
RANGE	1'	2'	3'	1M

MATERIAL	UNIT	SCALE	MODEL NAME
	P/PT	1:1	
APPROVED	CRITICAL DIMENSION	PART NUMBER	
CHECKED	2006/09/27		
DESIGNED	2006/09/27		
PCB Assembly			
SIZE	SHEET NUMBER	REVISION	
A4	1 of 1	0	

1.7. Mechanical Drawing (LCM+ T-CON Board)



REV	EC NUMBER	DESCRIPTION	DATE
▽	XXXXXX	Modify Mark Location	2006/08/22

UNIT		SCALE	3° ANGLE	MODEL NAME
mm		1:1		
CRITICAL DIMENSION		PART DESCRIPTION 8"D(4:3)		
SPEC DIMENSION		06.06.14		
APPROVED		Jack Huang		
CHECKED		Zhi Feng Fu		
DESIGNED		Zhi Feng Fu		
SIZE		A3	SHEET NUMBER	1 of 1
REVISION		0		

DIMENSION	GENERAL LINEAR TOLERANCE			SELECT LEVEL
	1	2	3	
0 - 4	0.05	0.1	0.2	
4 - 14	0.1	0.2	0.4	
14 - 63	0.2	0.4	0.8	
63 - 250	0.4	0.8	1.6	
250 - 600	0.8	1.6	3.2	
600 - 4000	1.6	3.2	6.4	
LEVEL	GENERAL ANGULAR TOLERANCE			SHEET LEVEL
	1	2	3	
RANGE	1°	2°	5°	