

## Product Service Manual – Level 2

**Service Manual for BenQ:  
G700  
P/N: 9J.0BV72.ISx/IBx**

**Applicable for All Regions**



**Version: 001  
Date:07/06/12**

**Notice:**

**- For RO to input specific “Legal Requirement” in specific NS regarding to responsibility and liability statements.**

**- Please check BenQ’s eSupport web site, <http://esupport.benq.com>, to ensure that you have the most recent version of this manual.**

**First Edition (June, 2006)**

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## 1. Precautions & Safety Notices

### 1.1 Safety Precaution

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper used or installation may cause damage to the monitor as well as to the user.

#### WARNINGS:

- This monitor should be operated only at the correct power sources indicated on the label on the rear of the monitor. If you're unsure of the power supply in you residence, consult your local dealer or Power Company.
- Do not try to repair the monitor by yourself, as it contains no user-serviceable parts. This monitor should only be repaired by a qualified technician.
- Do not remove the monitor cabinet. There is high-voltage parts inside that may cause electric shock to human bodies.
- Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.
- Put your monitor only in a lean, cool, dry environment. If it gets wet, unplug the power cable immediately and consult your closed dealer.
- Always unplug the monitor before cleaning it. Clean the cabinet with a clean, dry cloth. Apply non-ammonia based cleaner onto the cloth, not directly onto the class screen.
- Do not place heavy objects on the monitor or power cord.

### 1.2 PRODUCT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety visual inspections and the protection afforded by them cannot necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. Before replacing any of these components read the parts list in this manual carefully. The use of substitute replacement parts, which do not have the same safety characteristics as specified in the parts list, may create shock, fire, or other hazards.

### 1.3 SERVICE NOTES

- When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
- Keep wires away from high voltage, high temperature components and sharp edges.
- Keep wires in their original position so as to reduce interference.
- Adjustment of this product please refers to the user' manual.

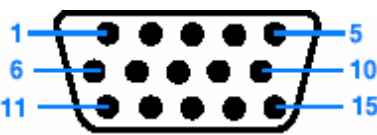
## 2. Product Overview

### 2.1 Power supply

Item	condition	Spec	OK	NA	Remark
Input Voltage range	Universal input full range	100~240V AC	√		
Input Current range	100Vac 240Vac	1.5A (max.) 0.6A (max.)	√		
Power consumption	normal "on" operation	≤38W	√		LED: Green
DMPS		<2W	√		LED: Orange
In rush Current	100Vac,cold star,25°C;	40A (max)	√		

	240Vac,cold star,25°C	60A(max)		
Earth Leakage Current				
Hi-pot				
Power Line Transient				
CCFL Operation range				
Power cord				To be determined by the business country.

2.2 Signal interface



Pin	Symbol	Pin	Symbol	Pin	Symbol
1	Red+	6	Red_GND	11	GND
2	Green+	7	Green_GND	12	DDC_DAT
3	Blue+	8	Blue_GND	13	Hsync
4	NC	9	5V_VGA	14	Vsync
5	Cable Detect	10	GND	15	DDC_CLK

2.3 Video Performance

Item	condition	Spec	OK	NA	Remark
Max. support Pixel rate		135.000MHz	√		
Max. Resolution		1280x1024	√		
Rise time+Fall time		<25% of minimum pixel clock period	√		Refer to VESA VSIS Standard V1R2
Setting Time after overshoot/undershoot		<5% final full-scale value	√		Refer to VESA VSIS Standard V1R2
Overshot/undershoot		<12% of step function voltage level over the full voltage range	√		Refer to VESA VSIS Standard V1R2

**BenQ G700****Service Manual****2.4 Scan range**

Item	condition	Spec	OK	NA	Remark
Horizontal	Sync polarity: (+) or (-)	31.0~83KHz	√		
Vertical	Sync polarity: (+) or (-)	56~76Hz	√		

**2.5 Plug & Play DDC2B DDC-CI Support**

Item	condition	Spec	OK	NA	Remark
DDC channel type		DDC2B	√		
EDID		Version 1.3	√		

**2.6 Support Timing**

Preset	Pixel Format	Horz Freq(kHz)	Horz Polarity	Vert Freq (Hz)	Vert Polarity	Pixel Clk (MHz)
1	640x350	31.47	-	70.09	-	25.18
2	640x400	31.47	-	70.09	-	25.18
3	640x480	35.00	-	66.67	-	30.24
4	640x480	31.47	-	59.94	+	25.17
5	640x480	37.86	+	72.81	+	31.50
6	640x480	37.50	+	75.00	+	31.50
7	720x400	31.47	+	70.08	+	28.32
8	832x624	49.71	±	74.53	±	57.27
9	800x600	35.16	-	56.25	-	36.00
10	800x600	37.88	-	60.32	-	40.00
11	800x600	48.08	-	72.19	+	50.00
12	800x600	46.88	-	75.00	-	49.50
13	848x480	31.02	+	60.00	+	33.75
14	848x480	29.83	-	59.66	+	31.50
15	848x480	35.00	-	70.00	+	37.52
16	848x480	36.07	±	72.00	±	39.25
17	848x480	37.68	±	74.77	±	41.00
18	720x576	35.83	+	60.00	-	32.71
19	1024x768	48.36	+	60.00	-	65.00
20	1024x768	56.48	±	70.07	±	75.00
21	1024x768	57.67	+	72.00	+	78.43
22	1024x768	60.24	+	74.93	+	80.00
23	1024x768	60.02	+	75.03	+	78.75
24	1152x720	44.86		60		66.75
25	1152x864	63.85		70.01		94.50
26	1152x864	67.50		75.00		108.00
27	1152x870	68.68		75.06		100.00
28	1152x900	61.80		65.95		92.94
29	1152x900	71.73		76.07		105.59
30	1280x720	45.00		59.94		74.25
31	1280x720	44.77		59.86		74.50
32	1280x720	56.46		74.78		95.75
33	1280x768-R	47.40		60.00		68.25
34	1280x768	47.78		59.87		79.50

Preset	Pixel Format	Horz Freq(kHz)	Horz Polarity	Vert Freq (Hz)	Vert Polarity	Pixel Clk (MHz)
35	1280x768	60.29		74.89		102.25
36	1280x800	61.648		59.81		83.50
37	1280x800	62.8		75		106.5
38	1280x960	60.00		60.00		108.00
39	1280x1024	63.98		60.02		108.00
40	1280x1024	74.88		69.85		126.99
41	1280x1024	74.40		70.00		124.90
42	1280x1024	77.90		72.00		134.60
43	1280x1024	79.98		75.02		135.00
44	1280x1024	81.18		76.16		135.09

## 2.7 Operational & Function Specification

### 2.7.1 Video Performance

\* All Spec. of monitor need to warm up at lease 1hr

Item	condition	Spec	OK	NA	Remark
Resolution	Any input resolution modes which are list in the timing table (under 1280x1024).	Max. resolution 1280x1024	√		
Contrast ratio		700:1	√		
Brightness		300 cd/m2 (Typ.)	√		
Response time		5ms(typ.)	√		
Viewing angle	CR>10	160	√		
	CR>10	160	√		
CIE coordinate of white		x--0.313 ± 0.015; y--0.329 ± 0.015	√		
Display colors		16.7M (6bit+Hi-FRC)	√		



2.7.2 Brightness Adjustable Range

Item	condition	Spec	OK	NA	Remark
Brightness adjustable range	At default contrast level (saturate point)& Full-white color pattern	$\geq 100 \text{ cd/m}^2$ (Setting brightness max. value 100%; Min brightness value)	√		

2.7.3 Acoustical Noise

Item	condition	Spec	OK	NA	Remark
Acoustical Noise	At 1 meter distance& audio function disable	$\leq 40\text{dB/A}$	√		

2.7.4 Environment

Item	condition	Spec	OK	NA	Remark
Temperature	Operating	0°C to 40°C	√		
	Non-operating	-20°C to 60°C	√		
Humidity	Operating	20% to 80%	√		
	Non-operating	10% to 80%	√		
Altitude	Operating	0 to 3048 M (10000 ft)	√		
	Non-operating	0 to 12192M (40000 ft)	√		

2.7.5 Transportation

Item	condition	Spec	OK	NA	Remark
Vibration	Package, Non-operating	1. Sweep frequency :5~200Hz 2. Amplitude: 1.47 Grms 3. Duration Time: 20 minute each axis, total is 60 Min :4. Direction: 3 mutually perpendicular axes (x, y, z) 5. Fix direction : Only fix top&bottom	√		
Unpackage vibration	Unpackage , Non-operating			√	
Drop	Package, Non-operating	1. Test Height: 106 cm. 2. Test Freqence: 1C-3E-6F	√		
shock	Wooden package , Non-operating			√	

## 2.7.6 Electrostatic discharge Requirements

Item	condition	Spec	OK	NA	Remark
Electrostatic discharge	IEC61000-4-2(EN 55024)	Contact discharge : 4KV	√		

## 2.7.7 Reliability

Items	Condition	Spec	Note
MTBF		≥ 50,000 Hours	Excluding the LCD, CCFL
CCFL Life time	Luminance becomes 50%	≥ 40,000 Hours(min)	

Note: Display an all WHITE field at mid Brightness and Contrast settings

## 2.7.8 Audio performance

Items	Specification
Speaker	NA
Input impedance	NA
Frequency response range	NA
Signal to noise ratio	NA
Output power	NA

## 2.8. LCD Characteristics

## 2.8.1 The physical definition &amp; technology summary of LCD panel

Item	condition	Spec	OK	NA	Remark
LCD panel supplier		InnoLux & CPT	√		
Panel type of supplier		MT170EN01 V.9 & CLAA170 EA07P-V1	√		
Screen diagonal		17 inch diagonal	√		
Display area		304.1x228mm	√		
Pixel pitch		0.264	√		
Pixel arrangement		RGB vertical stripe	√		
Display mode		Normally White	√		
Support color		16.7M (6bit+Hi-FRC)	√		

2.9 User Controls

User's hardware control definition:

Item	condition	Spec	OK	NA	Remark
Monitor power button			√		
Enter button			√		
Right/Inc.button			√		
Left/Dec. button			√		
I-key button			√		
Mode selection button			√		
Input Select key			√		
Mute button				√	
Input source select button			√		

2.10 Mechanical characteristics

2.10.1 Dimension

Item	condition	Spec	OK	NA	Remark
Bezel opening	Lx W	272.1X339.7mm	√		
Monitor without stand	L×W×Hmm	370x365.9x60.83mm	√		
Monitor with stand	L×W×Hmm	370x380.91x93.7mm	√		
Carton Box(outside)	L×W×Hmm	440x434x120mm	√		
Tilt and Swivel range		Tilt:-5~21degree Swivel: 0 degree	√		

2.10.2 Weight

Item	condition	Spec	OK	NA	Remark
Monitor (Net)		3.7±0.3 Kg ( Net )	√		
Monitor with packing(Gross)		4.7±0.3Kg( Gross / with packing )	√		

2.10.3 Plastic

Item	condition	Spec	OK	NA	Remark
Flammability		94-HB	√		
Heat deflection to	ABS	80°C	√		
UV stability	ABS	Delta E<12	√		
resin	ABS	ABS	√		

Texture	2007/10/01	MT11000&MT11010&MT11020 & polishing2000& polishing3000& polishing6000 Special Texture	√	1.BEZEL: MT11000 & MT11010& polishing2000 2.BACK COVER: MT11000 & MT11020& polishing2000 3.STAND: MT11010& polishing2000 4.POWER KEY BUTTON: polishing2000 5.LED: polishing6000 Others:MT11020
Color	2007/10/01	BCS-7015A(BLACK)/BCS-T8110C(SILVER)	√	Bezel painting

**2.10.4 Carton**

Carton:Item	condition	Spec	OK	NA	Remark
Color		Kraft	√		
Material		C Flute	√		
Compression strength		440 KGF	√		
Burst strrngth		15 KGF/cm2	√		
Stacked quantity		7 Layers	√		

**2.11. Pallet & Shipment**

**2.11.1 Container Specification**

Stowing Type	Containter	Quantity of Produces (sets) (Every container)	Quantity of Produces (sets) (Every Pallet)	Quantity of Pallet (sets) (Every container)
With Pallet	20'	1140	Pallet A:106 Pallet B:76 Pallet C:24	Pallet A:6 Pallet B:6 Pallet C:2
	40'	2414	Pallet A:106 Pallet B:76 Pallet C:24	Pallet A:13 Pallet B:13 Pallet C:2
	20'	N/A	N/A	N/A

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Without Pallet	40'	N/A	N/A	N/A

## 2.11.2 Carton Specification

Product:

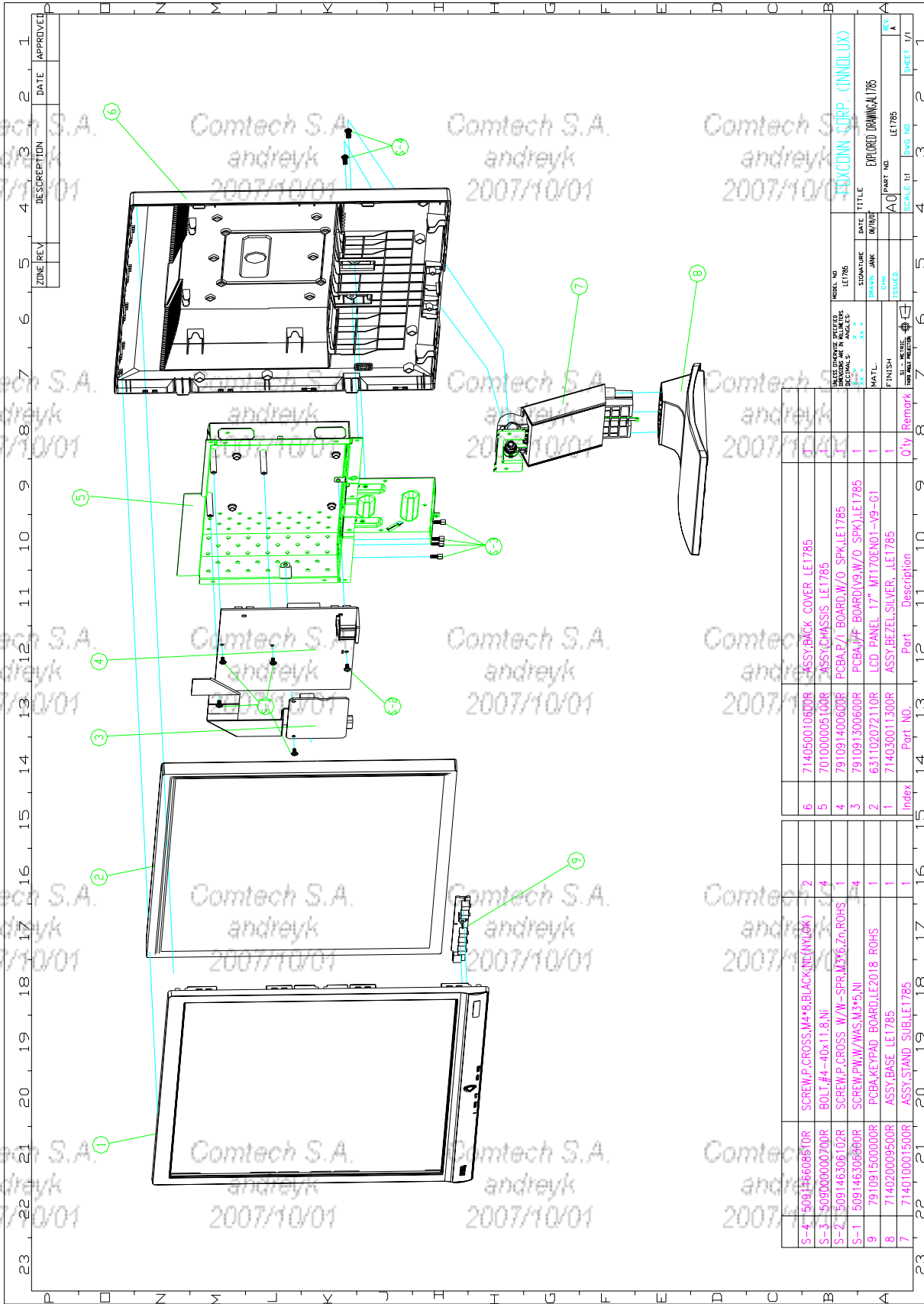
Net Weight (Kg)	Gross Weight(Kg)	Dimension w/o Base LxWxH (mm)	Dimension w/ Base LxWxH (mm)
3.7±0.3 Kg ( Net)	4.7±0.3Kg	370x365.9x93.7mm	370x371.35x137.91mm

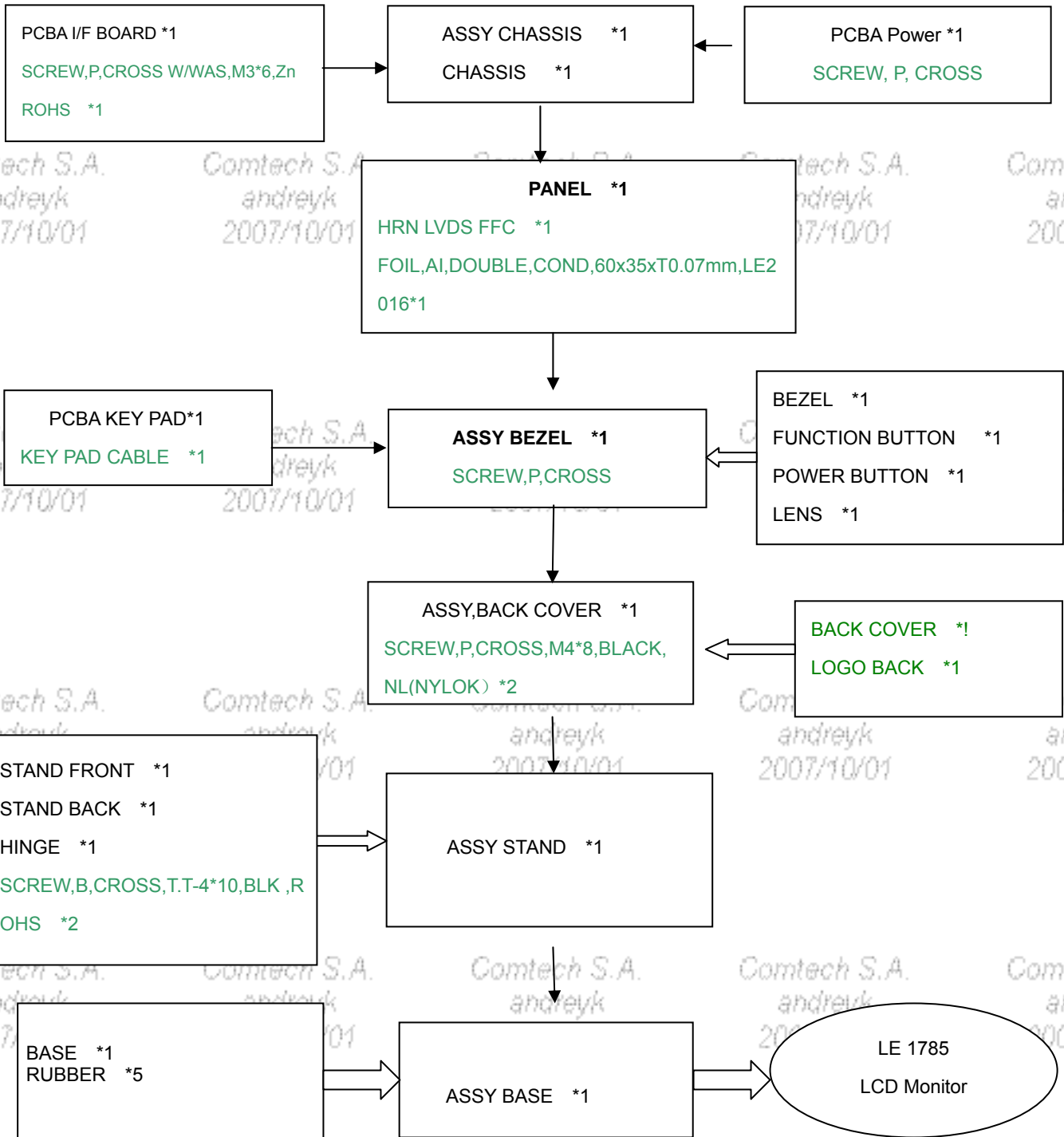
Package:

Carton Interior Dimension (mm) LxWxH	Carton External Dimension (mm) LxWxH
429x416x110mm	440x434x120mm

3. Disassembly & Assembly

3.1 Exploded Diagram





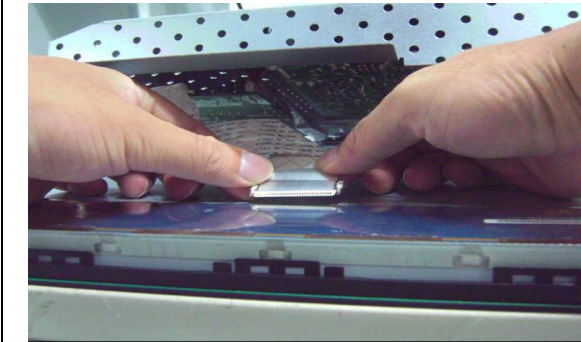
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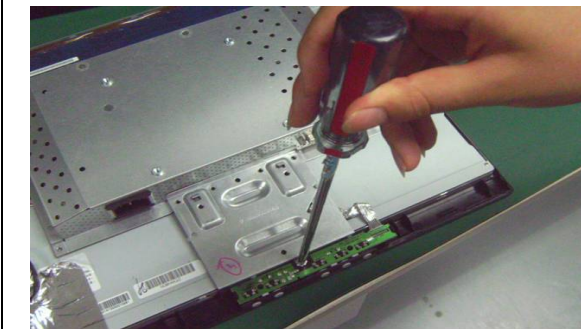
1 Assemble the panel with front-bezel



2 Assemble chassis & Plug in the LVDS



3 Keypad assembly



4 Plug in the lamp lines



5 Back cover assembly





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6 Assemble the stand



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7 Lock screw

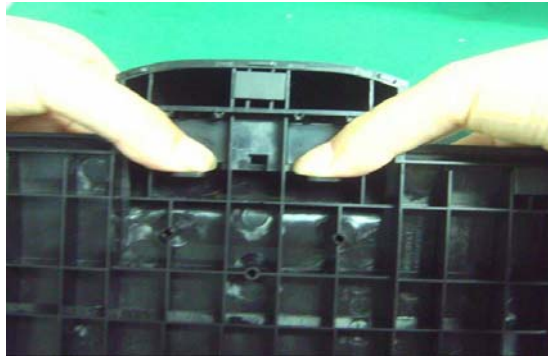


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10 Base assembly



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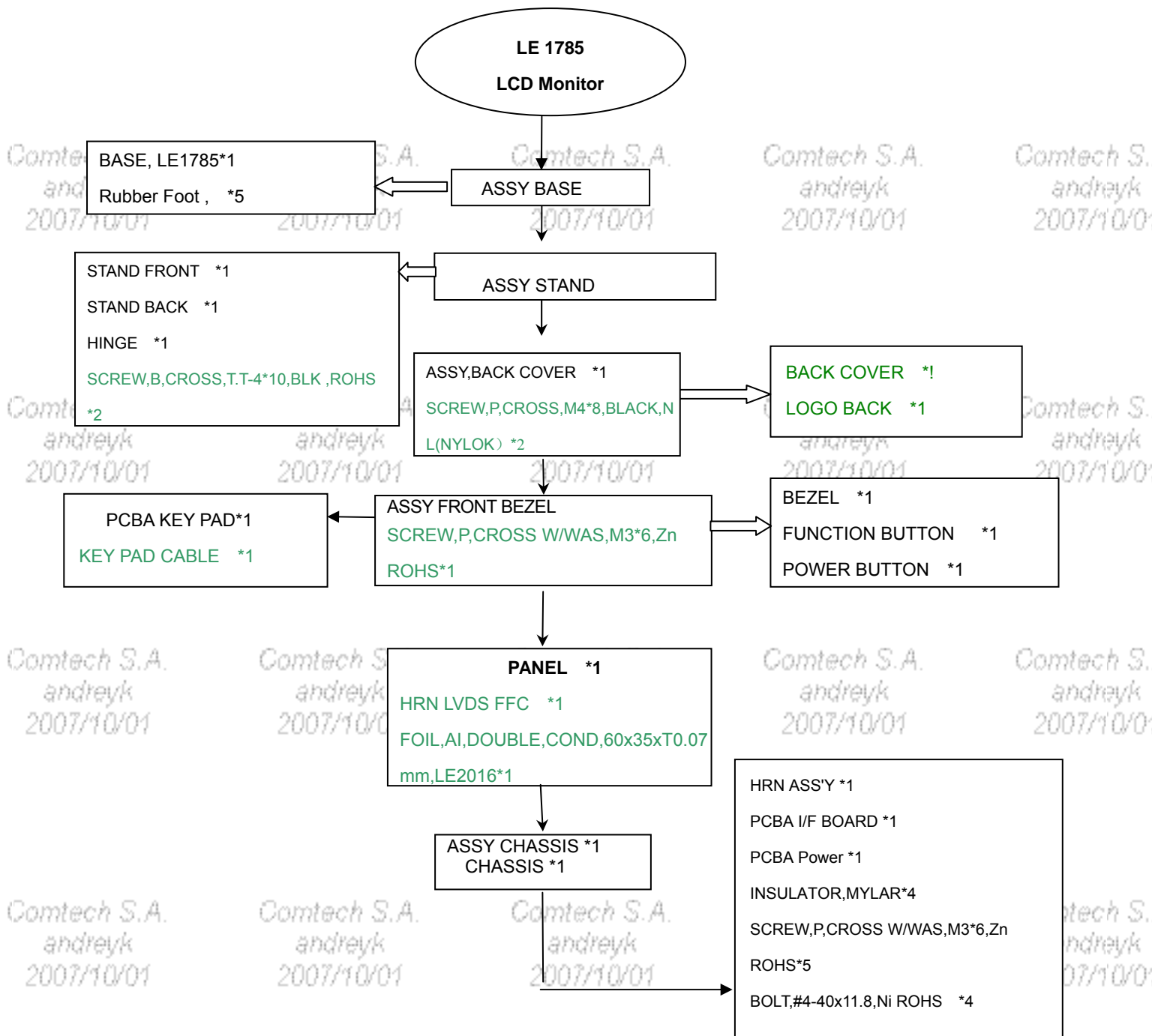
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3.3 Disassembly Block



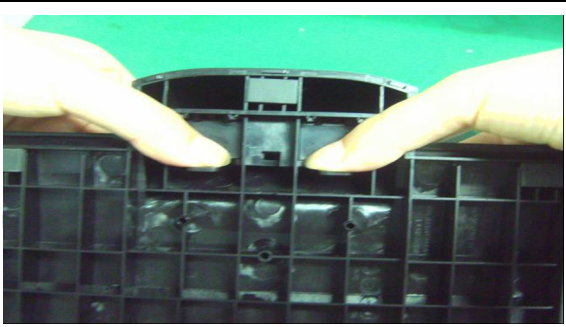
Note:

The disassembly direction please following direction of arrowhead

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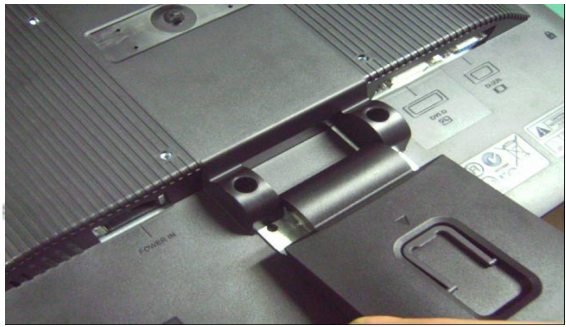
1 Disassemble the base (press two points as photo showing)



2 Disassemble the stand (take out screw)



3 Move out the stand

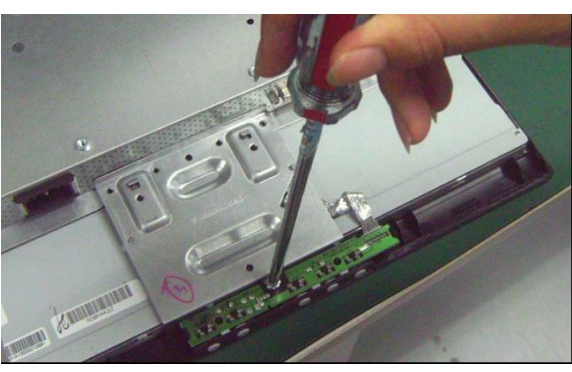
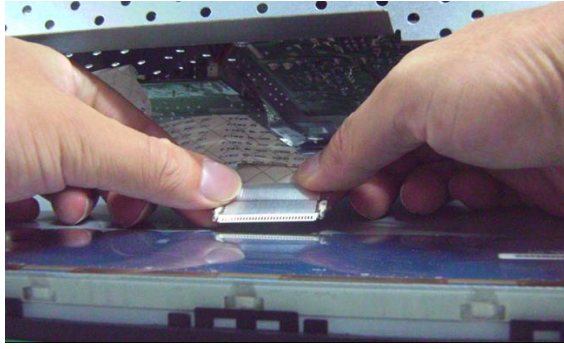
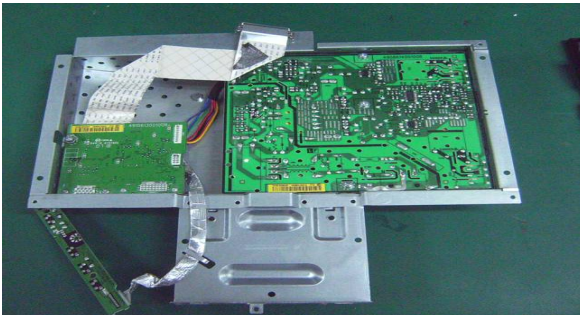


4 Disassemble back cover



5 Move out LVDS



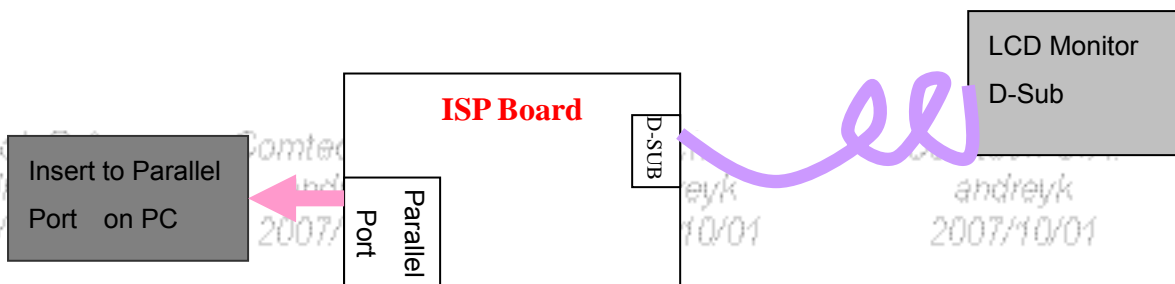
<p>6</p> <p>Take out screw and disassemble keypad</p>	
<p>7</p> <p>Disassemble the LVDS</p>	
<p>8</p> <p>Take apart the chassis aside</p>	

**4 Level 1 Cosmetic / Appearance / Alignment Service**

**4.1 Software / Firmware Upgrade Process**

Upload firmware to MCU via VGA Cable

1. Connect ISP board between monitor and PC as below configuration.



2. Press the "connect" button in ISP.exe, and select the device type, which is used in this monitor. Choose the

corresponding firmware version, and load to MCU.

3. After finish, please plug out power cable and re-start monitor again.

**4.2 Alignment procedure (for function adjustment)**

4.2.1 Preparation:

1. Setup input timing VESA to 1280\*1024@60Hz,32-Grays pattern.
2. Setup units and keep it warm up for at least 30 minutes.

4.2.2 Timing adjustment

1. Enter to factory mode setting area (by pressing “ENTER”+ “MENU” + “POWER” at the same time during power off).
2. Check the settings to following values:

- Contrast =50;
- Brightness=100;
- Color enhancement=general;

3. Then turn off the monitor power.

4.2.3 Function key Definitions

4.2.3.1 Control buttons on the Back bezel

- “UP”
  - Activate the Brightness/Contrast Control menu
  - View the next function in the OSD Main menu
  - Increase the value of the specific function which has been selected
- “MENU”
  - Activate the Control Button Description menu
  - Activate the OSD Main menu
  - View the next function in the OSD Main menu
- “DOWN”
  - Activate the Theme Mode menu
  - View the previous function in the OSD Main menu
  - Decrease the value of the specific function which has been selected
- “AUTO”
  - Activate the Auto Adjustment function
  - Go back to the OSD Main menu from the sub-menus
  - Exit from the OSD Main menu
- “ENTER”
  - Perform function of menu icon that is highlight or enter next level menu
  - Enter the OSD item

- Change the source input
- “POWER”
  - Turn on/off the monitor

4.2.3.2 OSD Control

The On-Screen Display (OSD) shall be an easy to use icon based menu through keypad OSD buttons or remote control unit. The unit shall leave the factory with all OSD controls set to their default values

Level 1	Level 2	Level 3	Level 4	Default	
DISPLAY	Auto Adjustment			-	
	H. Position	(0~100)	-	50	
	V. Position	(0~100)	-	50	
	Pixel Clock	(0~100)	-	50	
	Phase	(0~63)	-	-	
PICTURE	Brightness	(0~100)		90	
	Contrast	(0~100)	-	50	
	Sharpness	(1~5)		3	
	Color	*Color temperature	Normal		Normal
			Bluish		-
			Reddish		-
			User Mode		100
		<ul style="list-style-type: none"> <li>➢ Red (0~100)</li> <li>➢ Green (0~100)</li> <li>➢ Blue (0~100)</li> </ul>			
	Reset Color		(YES/NO)		
	Dynamic Contrast	*Dynamic Contrast		(YES/NO)	
PICTURE ADVANCED	**Picture Mode	Standard		Standard	
		Movie	Sharpness 不可调节	1.任一项模式下 Senseye Demo 设为 ON 另外两个模式下 的 Senseye Demo 自 动变为 ON  2. Senseye Demo 处 于 ON 时,做 Auto 自 动变为 OFF	
		Dynamics	Sharpness 不可调节		
		Photo	Sharpness 不可调节		
			sRGB	Sharpness 不可调节	
		Senseye Demo	(ON/OFF)	OFF	

SYSTEM	Input	(D-sub/DVI)		
	OSD Settings	Language	-EU version: 14 languages (English/Français/Deutsch/Italiano/Espanol/Polish/Czech/Hungarian/Serbo-croatian/Romanian/Netherlands/Russian/Swedish/Protuguese) -Asian version: 8 languages (English/Francais/Deutsch/Italiano/Espanol/日本語/繁體中文/简体中文)	English
OSD Settings DDC/CI Information	Reset All	H. Position	(0~100)	50
		V. Position	(0~100)	50
		Display Time	(5, 10, 15, 20, 25, 30)	15
		OSD Lock	(YES/NO)	No
		(ON/OFF)	-	Yes
		-	-	
		(YES/NO)	-	

4.2.3.3. Factory Mode Introduction

When signal is input, press “power key” to turn off the monitor. Press “ENTER”+“MENU” +“Power” together to turn on the monitor. After power on, press “MENU” to call out Main Menu, then press “-“for select the “F” item, then press “power/menu”, you can go into Factory mode.

EXIT: Escape from Factory menu.

PANEL: Display panel information.

AUTO COLOR: Automatically calibrate chip ADC parameter by using chip internal DAC.

GAIN: ADC gain value

OFFSET: ADC offset value

9300K: Set color temperature 9300K

6500K: Set color temperature 6500K

USER: Set user preferred color temperature

LANGUAGE: Country language

Reset BL Hr: the time of backlight

Reset Total Hr: the total time when connect power

Return: exit the factory menu

4.2.3.4 After repair, to ensure the quality you should do the following test and adjustment

Item	Content	Equipment
Test OSD function	1.Signal is set as1280×1024@60Hzunder General-1 2.Checking whether each single function key and compound function key can be worked.	Chroma Signal Generator

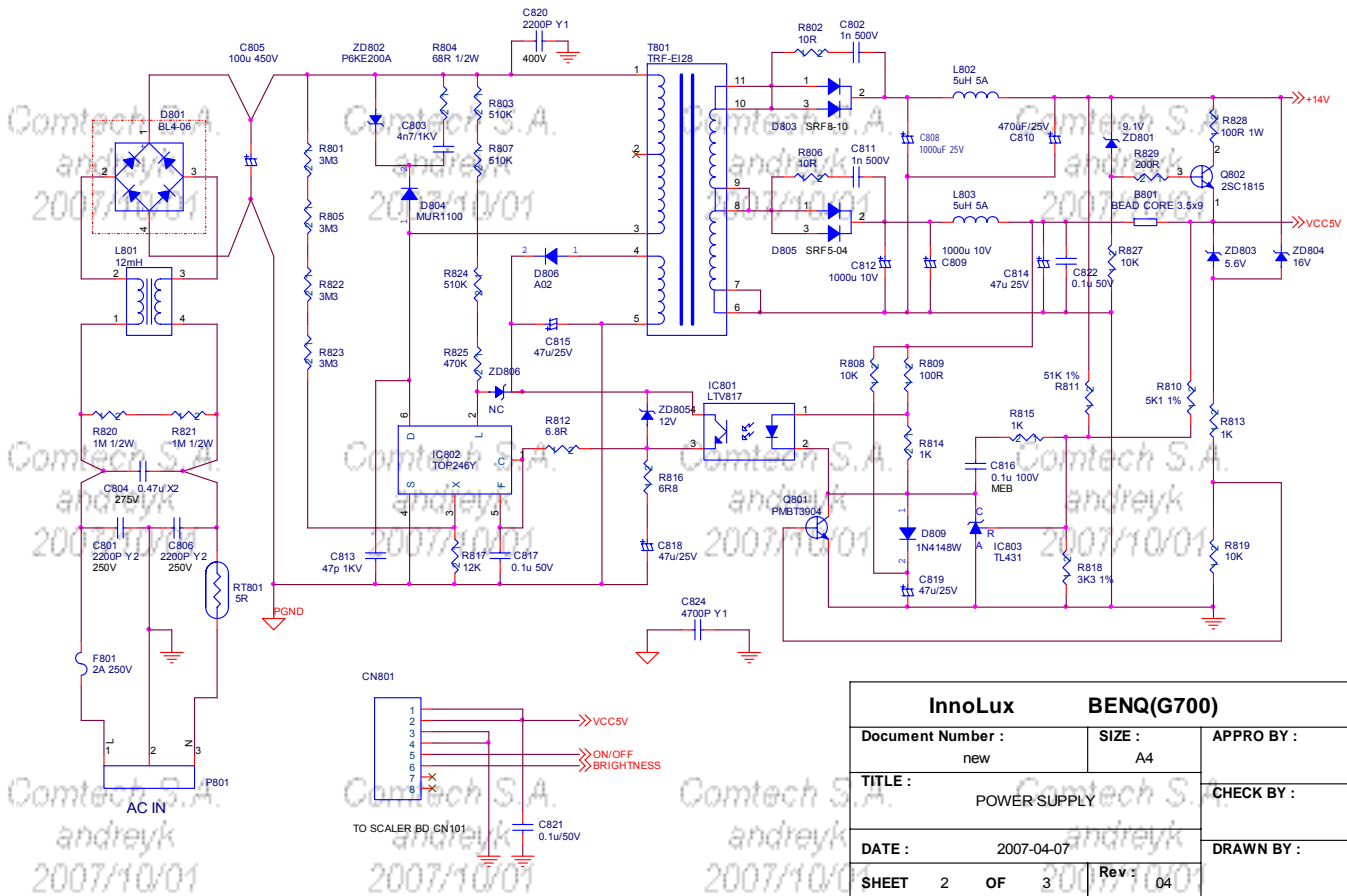
<p>Contrast Check</p>	<p>1. Set input mode to 1280×1024@60Hz 2. Set Pattern to 32 gray shades 3. Set contrast to the max. The brightest 5~8 shades brightness cannot be distinguished.</p>	<p>Chroma Signal Generator</p>										
<p>Color Temperature</p>	<p>1. Do "Auto color Balance" at 1280×1024@60Hz, 32gray shades 2. Measure color temperature, check it complies with the following temperature :  6500K x = 0.313 +/- 0.03, y = 0.329+/-0.03</p>	<p>Chroma Signal Generator and color analyzer</p>										
<p>Modes switching check</p>	<p>1. Use Chroma Pattern Generator to make sequence. VESA (640x480 800x600 1024x768 1280x1024), and power saving signal,etc. 2. Confirm the above timing modes must be full screen and the picture must be normal.</p>	<p>Chroma Signal Generator</p>										
<p>VGA cable detector</p>	<p>When VGA cable is not plugged, the monitor will work in power saving mode.</p>	<p>Visual check Chroma Signal Generator</p>										
<p>Panel Flicker check</p>	<p>1. Mode:1280×1024@60Hz 2. Set Brightness&amp; contrast to default value 3. Do "Auto Adjustment" 4. Shut down PC to check whether there's glitter on the center of the picture.</p>	<p>Chroma signal generator &amp; PC</p>										
<p>Power saving</p>	<p>1. Mode:1280×1024@60Hz 2. Pattern: full white 3. Brightness: Max. 4. Contrast: Default</p>	<table border="1"> <tr> <td data-bbox="683 1422 962 1637"> <p>Comtech S.A. andreyk 2007/10/01</p> <p>at each modes</p> </td> <td data-bbox="962 1422 1129 1890"> <p>Chroma signal generator</p> </td> </tr> <tr> <td data-bbox="683 1637 962 1704"> <p>State</p> </td> <td data-bbox="962 1637 1129 1704"> <p>Power Consumption</p> </td> </tr> <tr> <td data-bbox="683 1704 962 1771"> <p>Normal</p> </td> <td data-bbox="962 1704 1129 1771"> <p>LED color green</p> </td> </tr> <tr> <td data-bbox="683 1771 962 1839"> <p>Stand By</p> </td> <td data-bbox="962 1771 1129 1839"> <p>amber</p> </td> </tr> <tr> <td data-bbox="683 1839 962 1890"> <p>Power Key Off</p> </td> <td data-bbox="962 1839 1129 1890"> <p>no</p> </td> </tr> </table>	<p>Comtech S.A. andreyk 2007/10/01</p> <p>at each modes</p>	<p>Chroma signal generator</p>	<p>State</p>	<p>Power Consumption</p>	<p>Normal</p>	<p>LED color green</p>	<p>Stand By</p>	<p>amber</p>	<p>Power Key Off</p>	<p>no</p>
<p>Comtech S.A. andreyk 2007/10/01</p> <p>at each modes</p>	<p>Chroma signal generator</p>											
<p>State</p>	<p>Power Consumption</p>											
<p>Normal</p>	<p>LED color green</p>											
<p>Stand By</p>	<p>amber</p>											
<p>Power Key Off</p>	<p>no</p>											



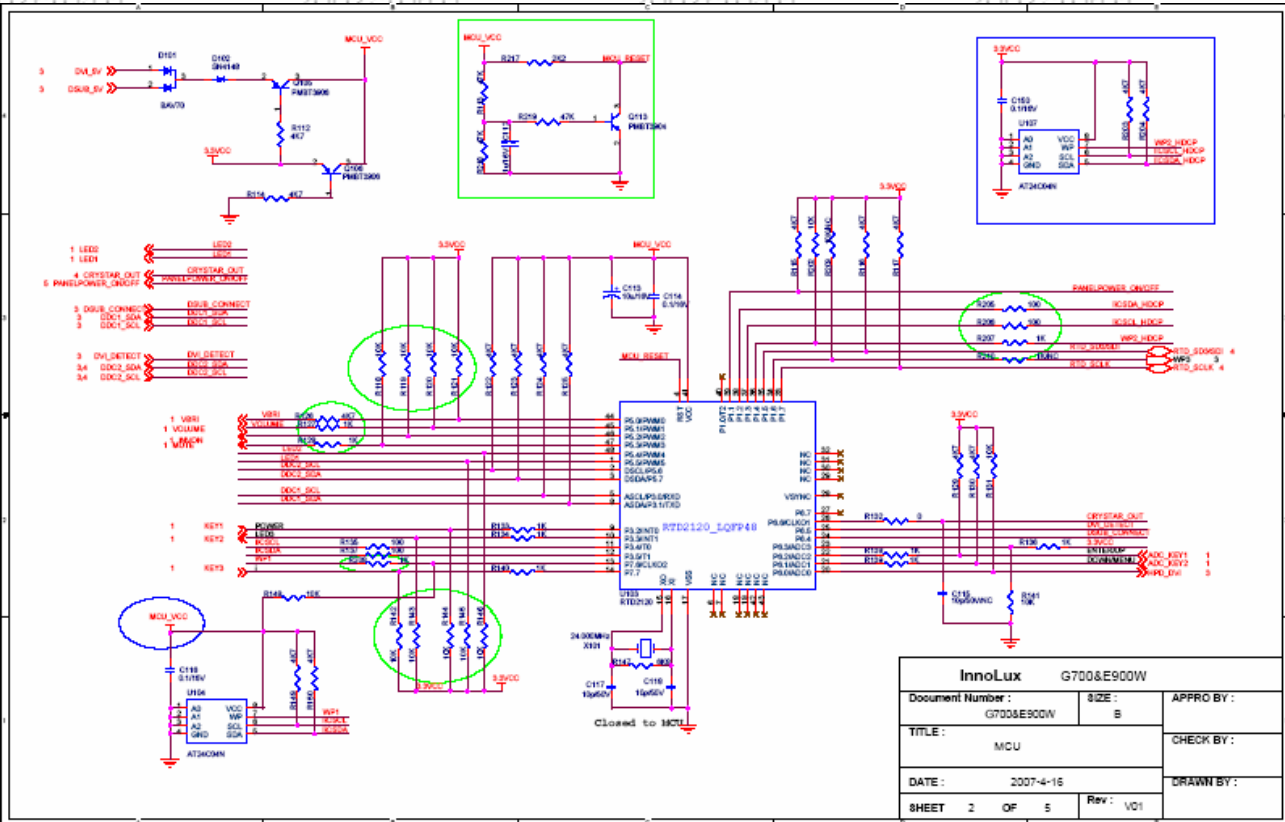
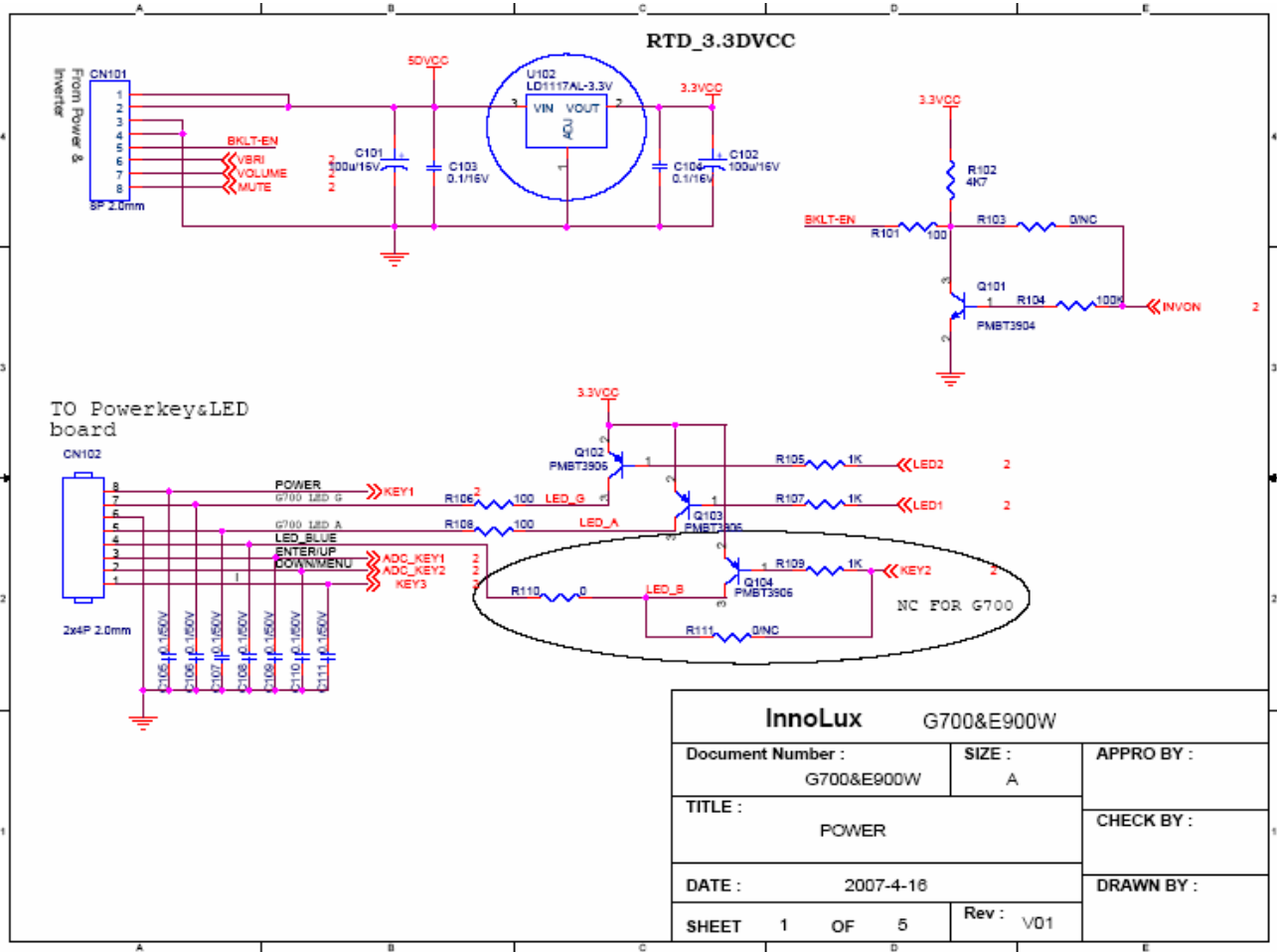
5. Level 2 Circuit Board and Standard Parts Replacement

5.1. Block diagram

Power Board



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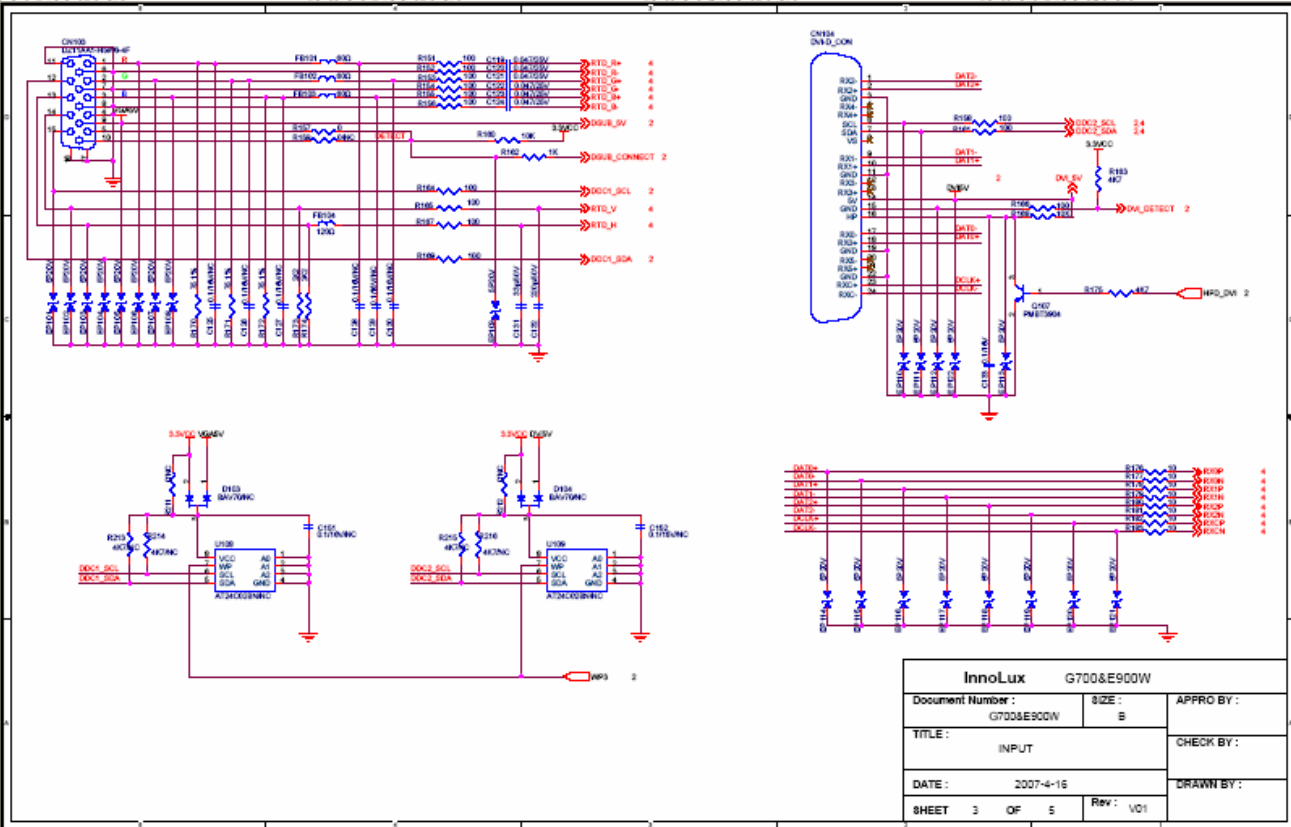
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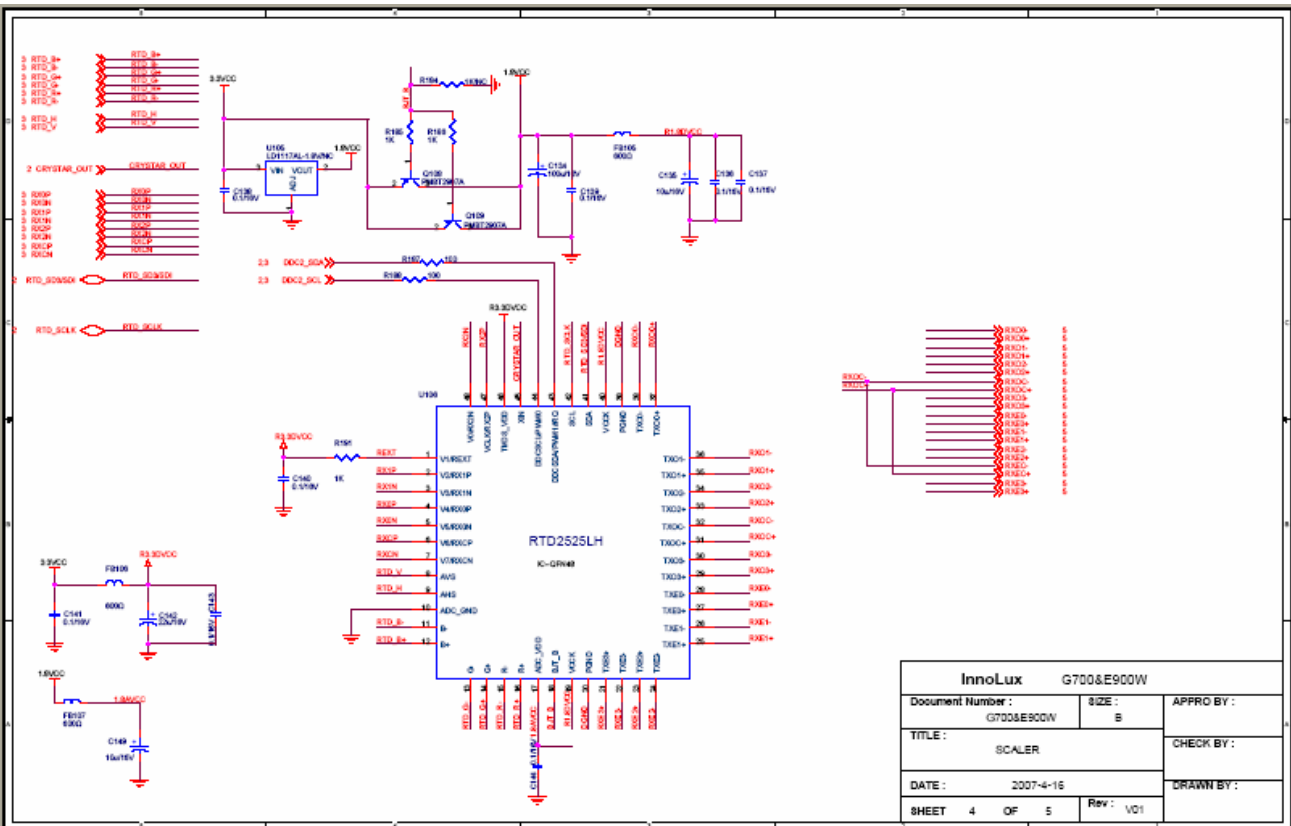


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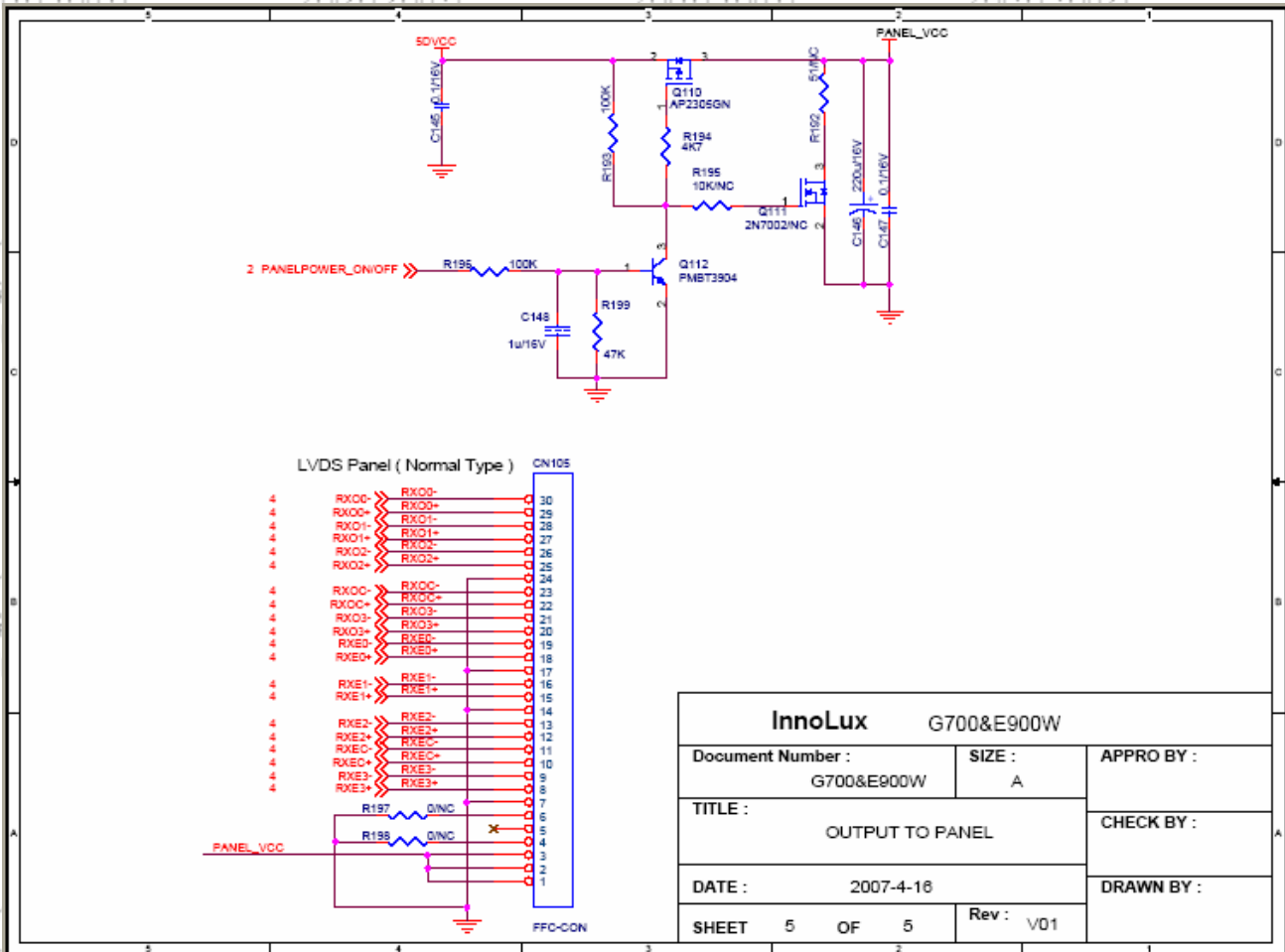
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5.2 Circuit operation theory

5.2.1. Electronic Circuit Theory

Switching Mode Power Supply theory

2.1.1 AC Current Input Circuit

P801 is a connector for connecting AC Power. F801 is a fuse to protect all the circuit. AC input voltage is from 90V to 264V. R820 and R821 joined between two inputting main circuit to prevent man from shock. L801 is used to clear up low frequency wave. C801 and C806 are used to discharge the waves that L801 produced. High frequency waves are damped by C801 and C806. D801 is a rectifier which composed of 4 build-in diodes, it inverts AC to DC.

2.1.2 High Voltage to Low Voltage Control Circuit

C805 is used to smooth the wave from rectifier. IC802 is a highly integrated PWM controller, which build-in a power MOSFET. When rectified DC high voltage is applied to the DRAIN pin during start-up, the MOSFET is off initially, and the CONTROL pin capacitor is charged through a switched high voltage current source connected internally between the DRAIN and CONTROL pins. When the CONTROL pin voltage Vc reaches approximately 5.8V, the control circuitry is activated and the soft-start begins. The soft-start circuit gradually increases the duty cycle of the MOSFET from zero to the maximum value over approximately 10ms. If no external feedback/supply current is fed into the CONTROL pin by the end of

the soft-start, the high voltage current source is turned off and the CONTROL pin will start discharging in response to the supply current drawn by the control circuitry.

Resistor R803, R807, R824 and R825 are for line over voltage shut-down (OVP) and line under-voltage detection (UVP). Resistors R801, R805, R822, and R823 are for external current limit adjustment, and used to reduce the current limit externally to a value close to the operating peak current of primary about 1.35A. The mean is power will protected when the primary current over about 1.35A.

When PWM is turned off, the main current flow will be consumed through D804 and ZD802, This will prevent MOSFET which built-in IC802 from being damaged under large current impulse and voltage spike.

D806 and C815 provide internal Auxiliary current to CONTROL pin during normal operation. In addition, error amplifier and feedback current to the CONTROL pin are for duty cycle control.

### 2.1.3 DC 5V and DC 12V Output Circuit

For DC 5V, D805 is used to rectify the inducted current. R806 and C811 are used to store energy when current is reversed. The parts including C812, C814, C822, C821, B801 and L803 are used to smooth the current waves.

For DC 12V, D803 is used to rectify the inducted current. R802 and C802 are used to store energy when current is reversed. The parts including C808, C810 and L802 are used to smooth the current waves.

### 2.1.4 Feedback and OVP Protect Circuit

Pin R of IC803 is supplied 2.5V stable voltage. It is connected to 5V and 12V output through R811, R810 and R818. R811, R810 and R818 are output sampling resistor. When the sampling voltage more than 2.5V or less than 2.5V, feedback current of IC802 will change, this can change the voltage from transformer T801.

For 5V<sub>DC</sub> output OVP, ZD803 is a zener diode, when 5V output voltage becomes up to 5.6V, the zener current cause R819 voltage become up to 0.7V, Q801 is triggered and OVP starts. For 12V<sub>DC</sub> output OVP, ZD804 is a Zener Diode, when 12V output voltage becomes up to 15V, the zener current cause R819 voltage become up to 0.7V, Q801 is triggered and OVP starts. The collector current of Q801 is used to make build-in diode light. FB Current of IC802 will be changed; it can change the voltage from T801.

Q802, R827, R828 and ZD801 make up of dummy loading circuit. For start-up sequence, during 5V output take place high loading first, this dummy loading circuit operated to insure 12V not be increased.

### **Low voltage to high voltage circuit**

14VDC provides the power for IC501; the control signals Brightness and ON/OFF come from I/F board. ON/OFF signal connect to pin10 of IC501 and makes IC501 enable. Brightness signal connect to pin4 of IC501 and regulates the panel brightness, R501, R518, C518 make up a network of delaying time circuit and R512, R514 make up a divided voltage network, C510 is used to dump noise. The operation frequency is determined by the external Resistor R508 and capacitor C512 connected to pin13 of IC501. BURST MODE regulated

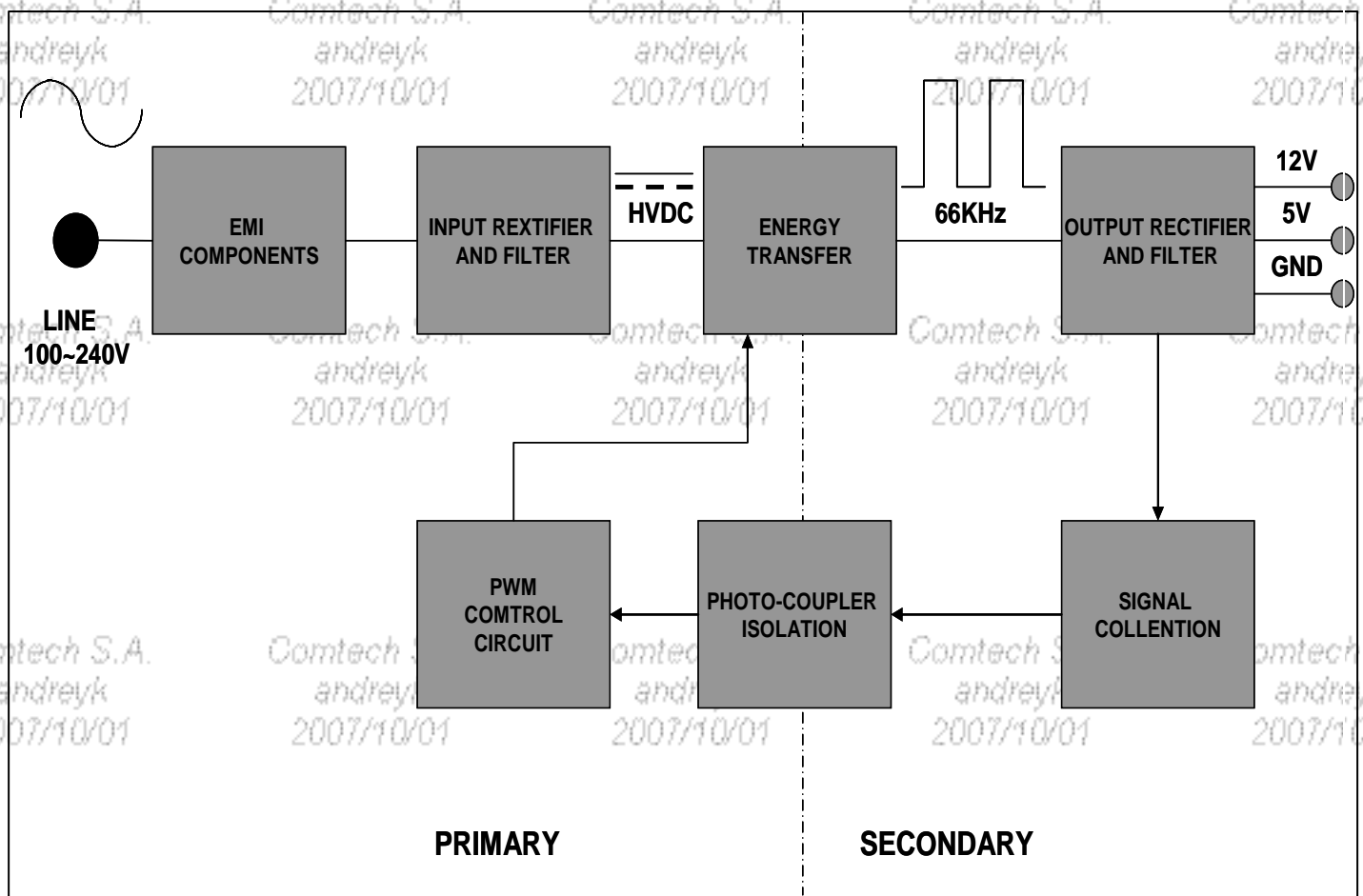
dimming frequency is determined by the external resistor R507 and capacitor C516 connected to pin11 of IC501. C511 is used for soft start and compensation, C507, C518 are used for dump noise.

The output drives, include DRV1, DRV2 (pins1,15 respectively) output square pulses to drive MOSFET U501, U502, and each of U501, U502 , is consist of a N channel MOSFET. U501,OR U502 work as Push-Pull- topology, it is high efficient, PWM switching.

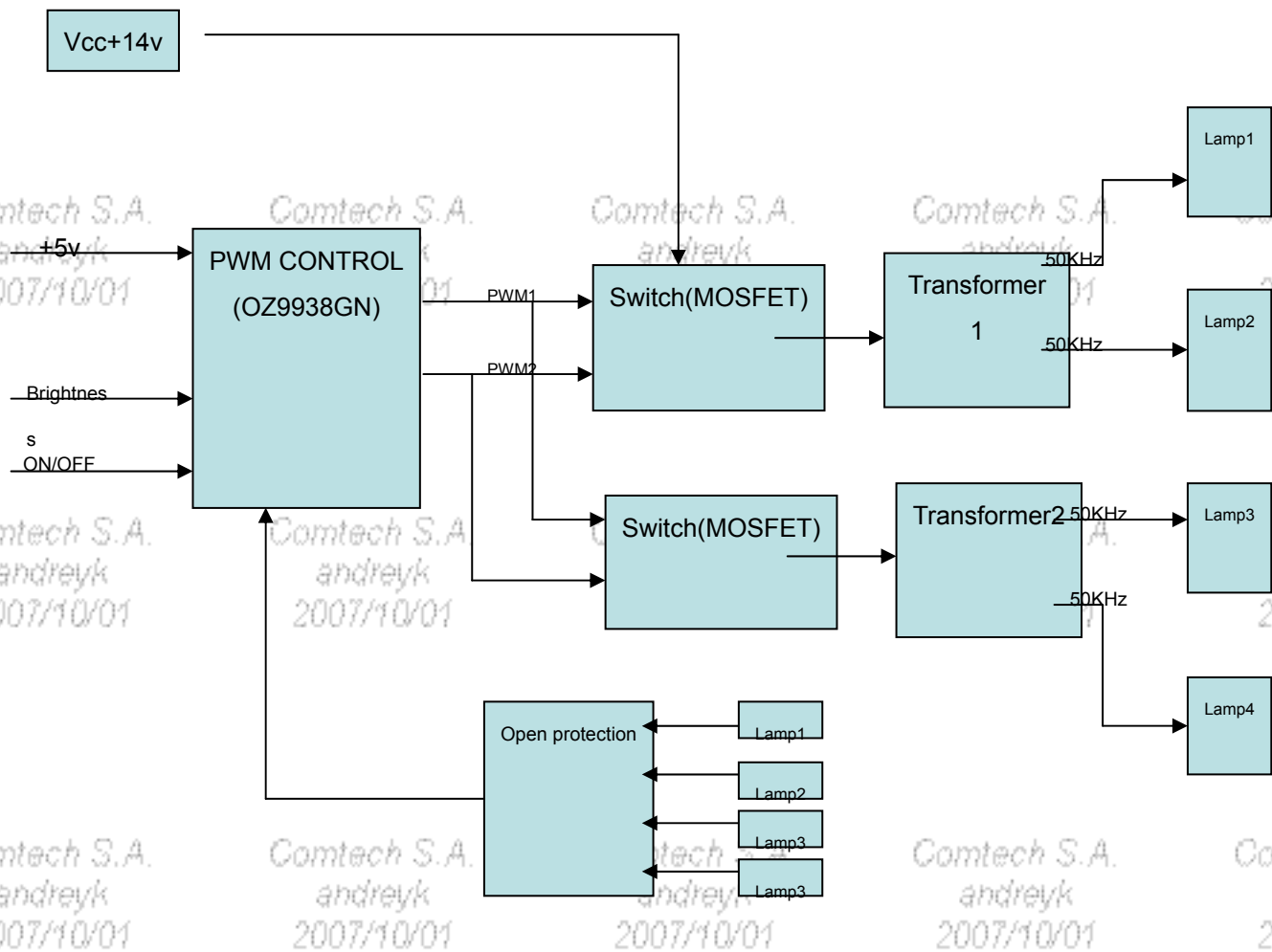
During start up, VSEN (pin6) senses the voltage at the transformer secondary. When VSEN reaches 3.0V, the output voltage is regulated. If no current is sensed approximately 2seconds IC501 shut off.

The current flowing through CCFL is sensed and regulated through sense resistor R509, R534. The feedback voltage connected to Pin5 (ISEN), then compared with a reference voltage (1.5V) via a current amplifier, resulting in PWM drive outputs to PUSH-PULL switches

5.2.2 Power board diagram:



5.3 Inverter board diagram:



PUSH-PULL INVERTER

5.3.1 I/F Circuit

5.3.1.1 RGB CAPTURE

- Signal RED, GREEN, BLUE input through CN103 #1, #2, #3, Stop DC via C119, C121 and C123, and then enter into U106 (scaler) analog input terminal #12, #14, #16, and then scaler deals with signal internally.
- Signal DDC\_SCL (series clock) inputs via CN103#15, and then passes through ZD101 Zener for ESD protection, goes into U103#5.
- Signal DDC\_SDA (series data) inputs via CN103#12, and then passes through ZD104 Zener for ESD protection, goes into U103 #8.
- Signal TTL vertical sync. (Vsync) inputs via CN103 #14, and then clamped by ZD102 Zener, passes through R165, and then goes into IC U106 (scaler) #8.
- Signal TTL horizontal sync. (Hsync) inputs via CN103 #13, and then clamped by ZD103 Zener, passes through FB104, R167, and then goes into IC U106 (scaler) #9.
- CN103#5 is defined as cable detect pin, this detector realize passes through R160 Pull high, go

into U103#24.

- U108 power is supplied by PC via CN103#9, or supplied by Monitor self via D103.
- U108 is an EEPROM IC which is memory and EDID data saved in it.

### 5.3.1.2 Buttons Control

- Button "Power" on bottom side bezel connects to U103 (scaler) # 9 through R133, via CN102#8.
- Button "UP" "DOWN" "MENU" "ENTER" on bottom side bezel connects to U103 (scaler) #21,#22,#14 through R138,R139,R140 via CN102 #1, #2,#3
- U104 is an EEPROM IC which memory OSD setting and save the value adjusted by user.
- LED Indicator on Front Bezel
  - a. When press button "power", U103 (scaler) #48 sends out a low potential, via R105, flow to CN102 #7 on keypad, LED Green ON.
  - b. When in "Suspend" mode, U103 (scaler) #1 sends out a low potential, via R107, flows to CN102 #5 on keypad, LED Amber ON.

### 5.3.1.3 Realtek CHIP U106 (scaler), and U103(MCU)

- U106 (RTD2525LH ) #29. #30. #31~#38 output 8 bit even LVDS digital data to panel control circuit through CN104.
- U106 (RTD2525LH) #21~#30 output 8 bit odd LVDS digital data to panel control circuit through CN104.
- U103 (RTD2120\_LQFP48 ) #44 outputs Brightness "PWM" signals to control CCFL brightness.
- U103 (RTD2120\_LQFP48 ) #39 output PANELPOWER ON/OFF to make Q112 conducted, and then make Q110 conducted, +5V flow to CN105#1~#3 as Panel VDD .
- U103 (RTD2120\_LQFP48 ) #46 output CCFL\_ON/OFF "H" and "L" potential to control Inverter on/off.

Please refer to RTD2120\_LQFP48 Pin Assignments table in IC spec.

### 5.3.1.4 Regulator Circuit

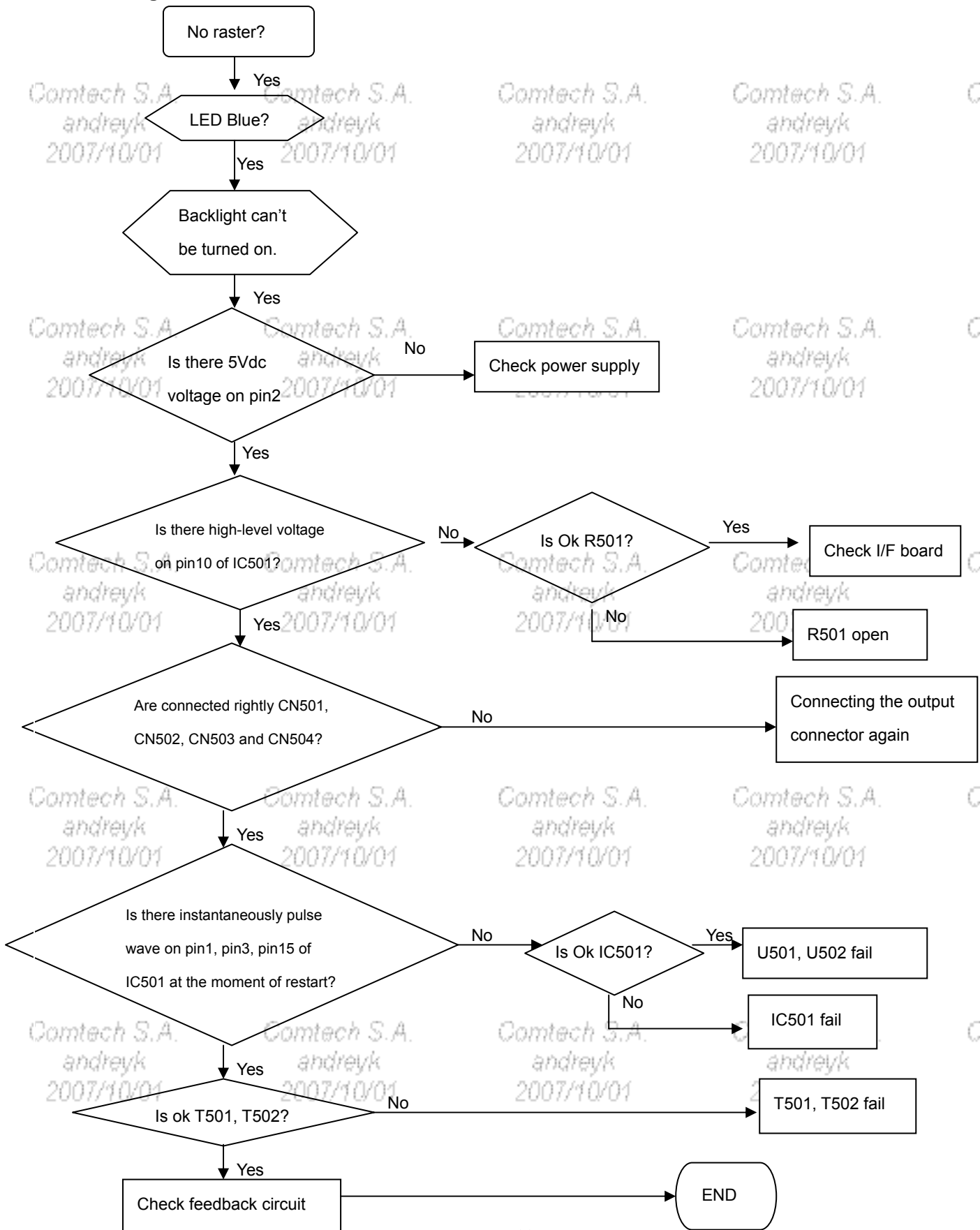
- +5V is from switching mode power supply for Panel used.
- +3.3V generates from +5V through C103 filtering and U102 which is output +3.3V LDO for U105, U106,U103 and U104 used.
- +1.8V generates from +3.3V through C138 filtering and U105 which is output +1.8V LDO.



5.3.2 Trouble Shooting Guide

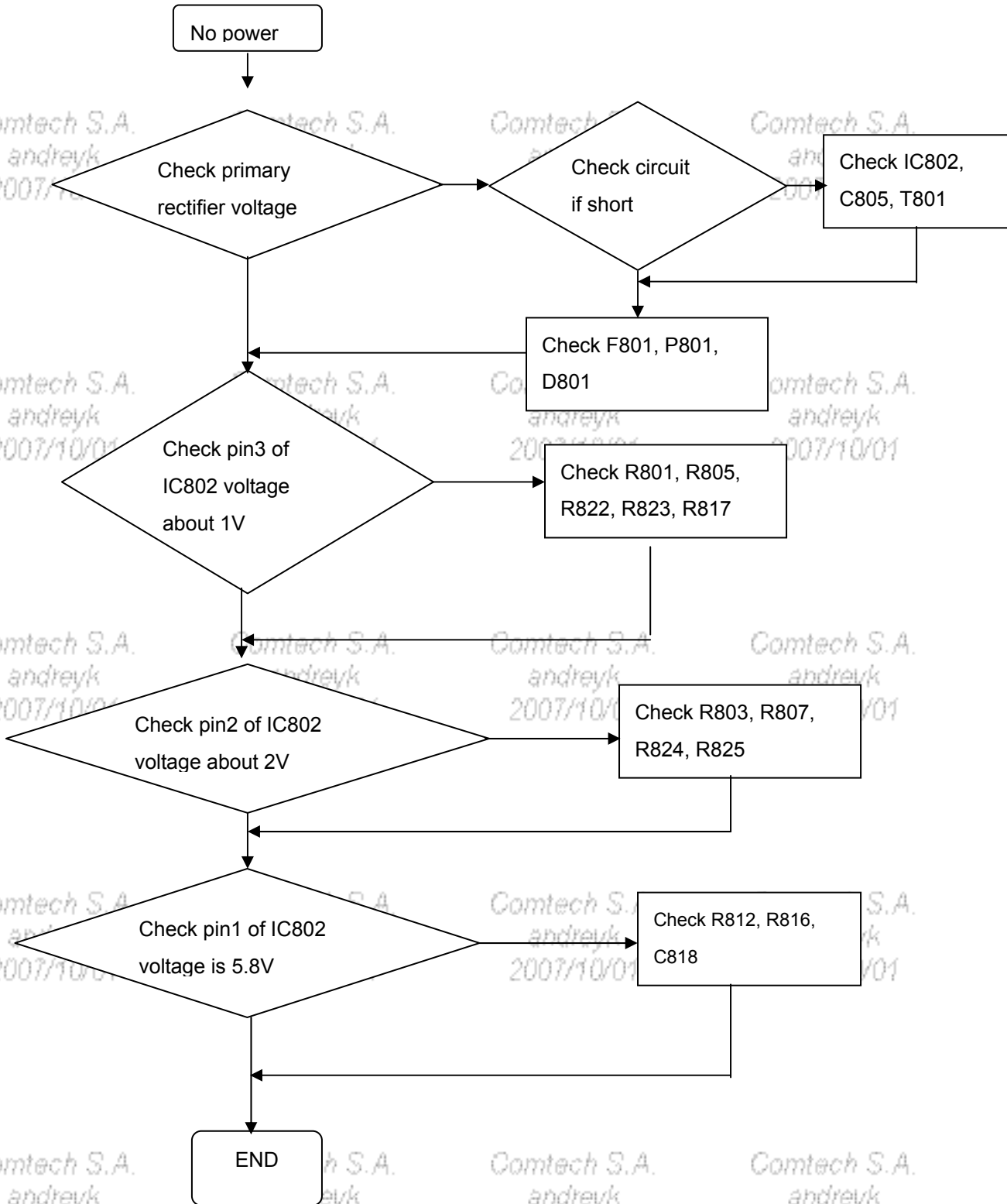
Inverter trouble shooting

1. Backlight can't be turned on

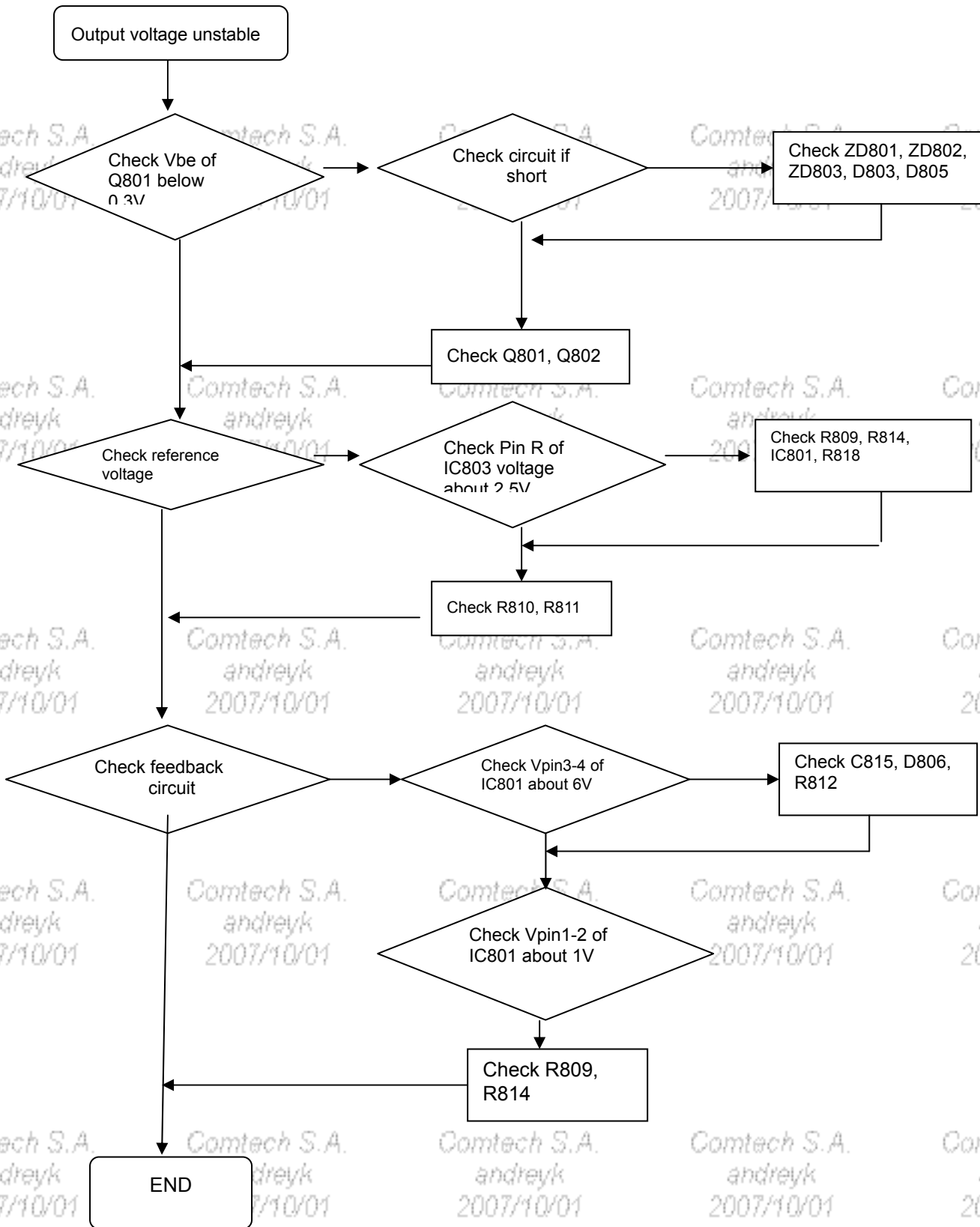


2. No power & Power LED Off

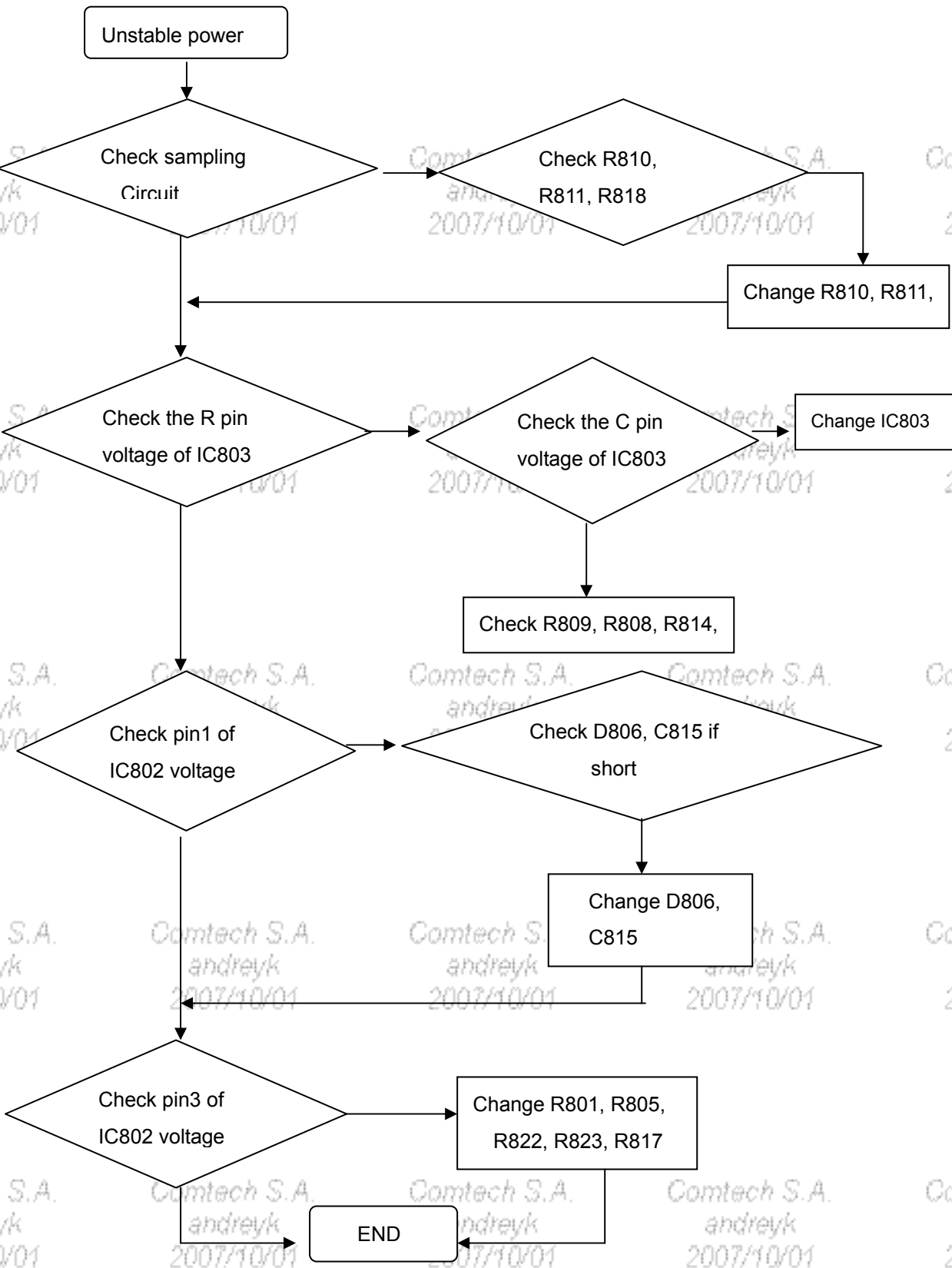
Power trouble shooting\_1

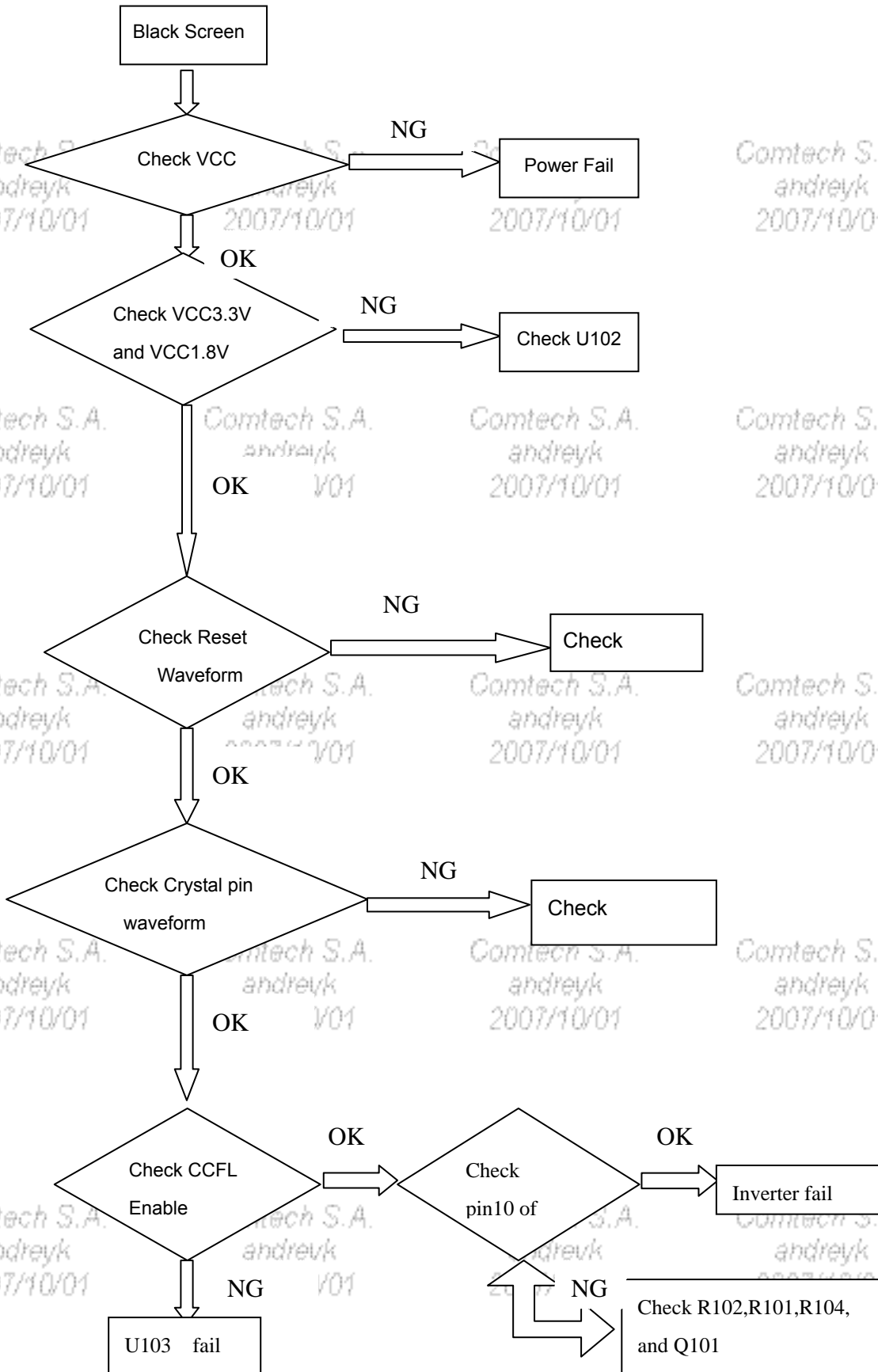


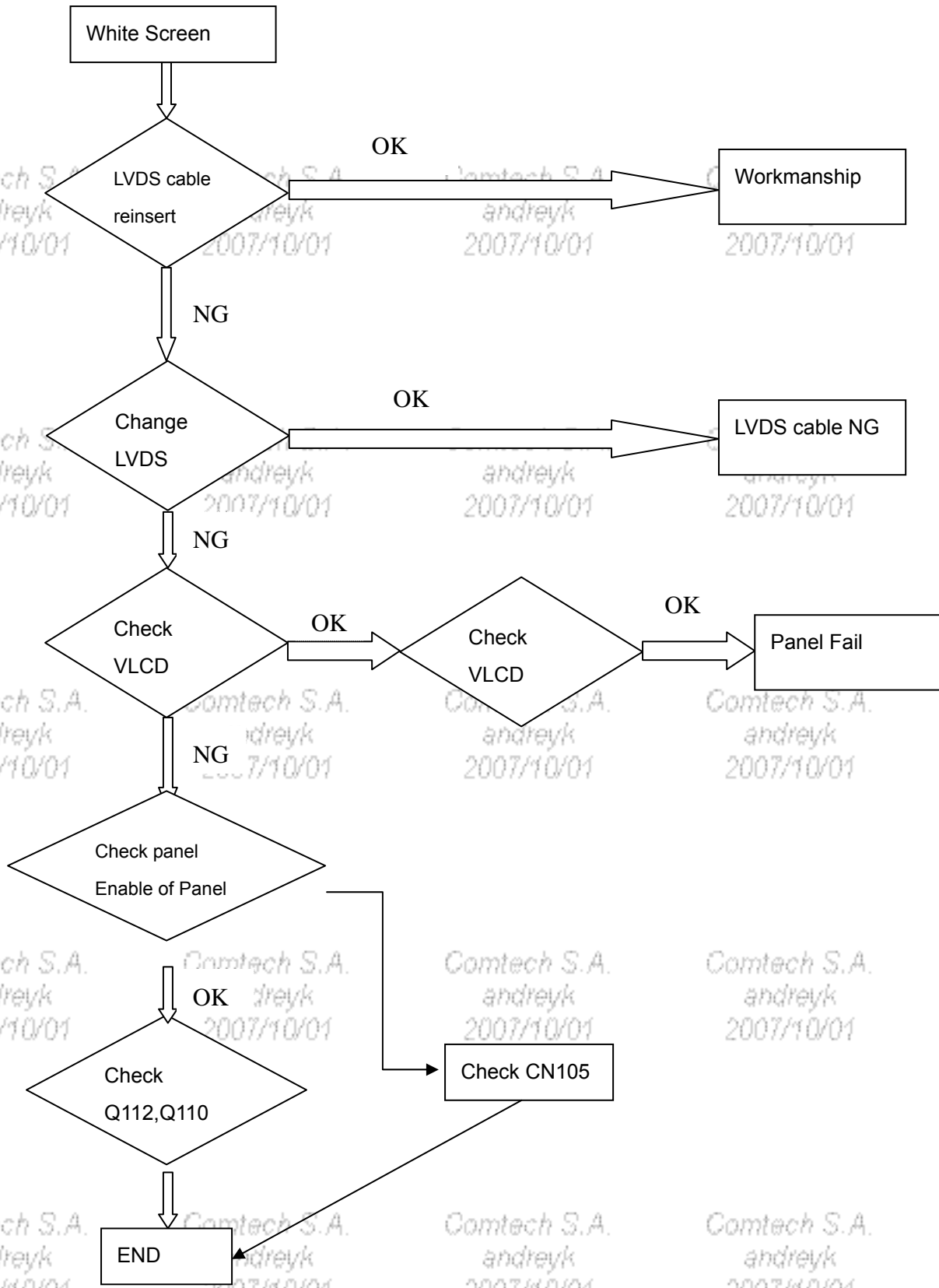
Power trouble shooting\_2



Power trouble shooting\_3



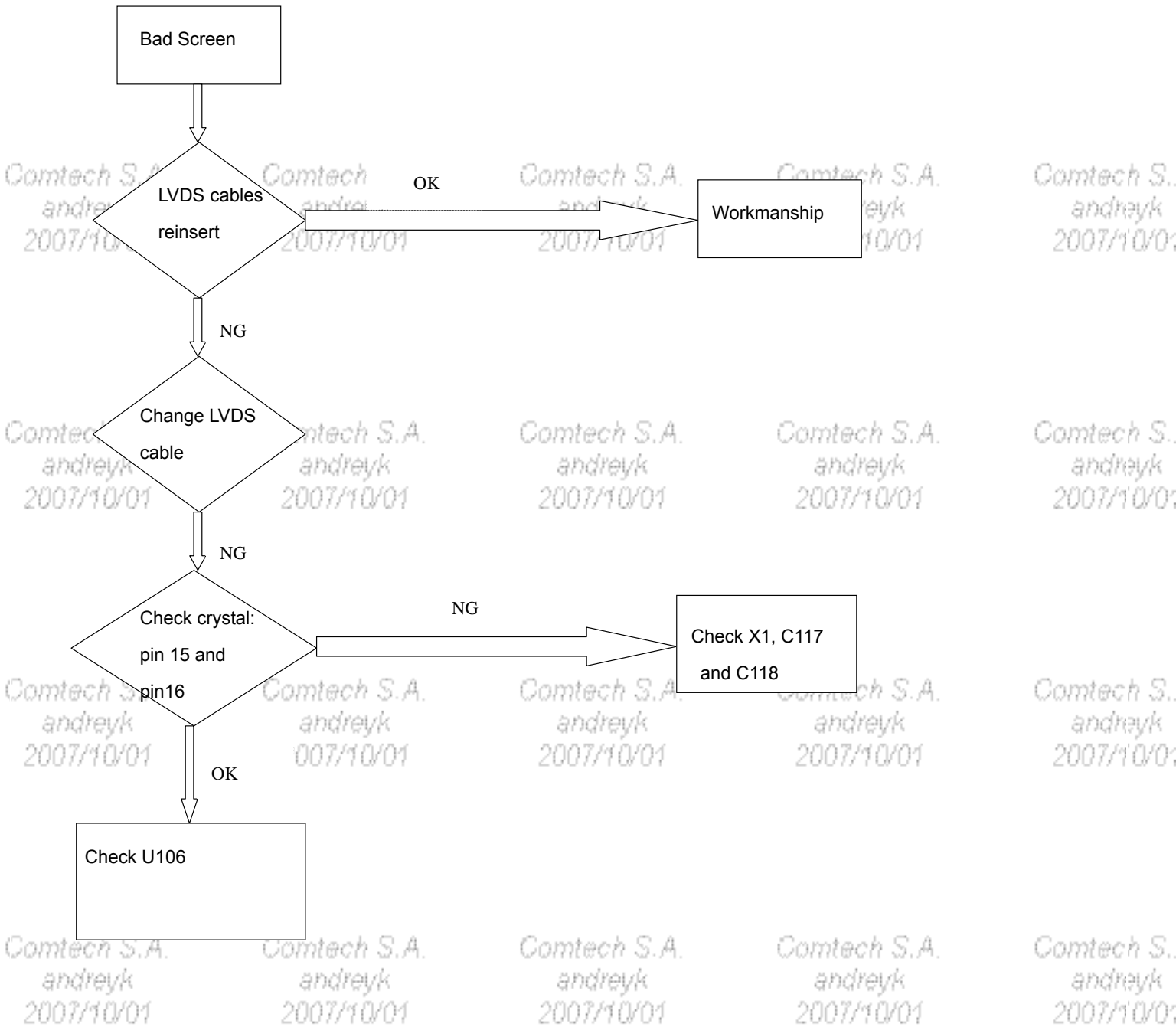




# BenQ G700

# Service Manual

## Bad Screen



5.4 Spare Parts List

**\* THIS PARTS LIST MAY BE SUBJECT TO CHANGE WITH PRIOR NOTICE BY SPM OF BENQ CC TEAM.**

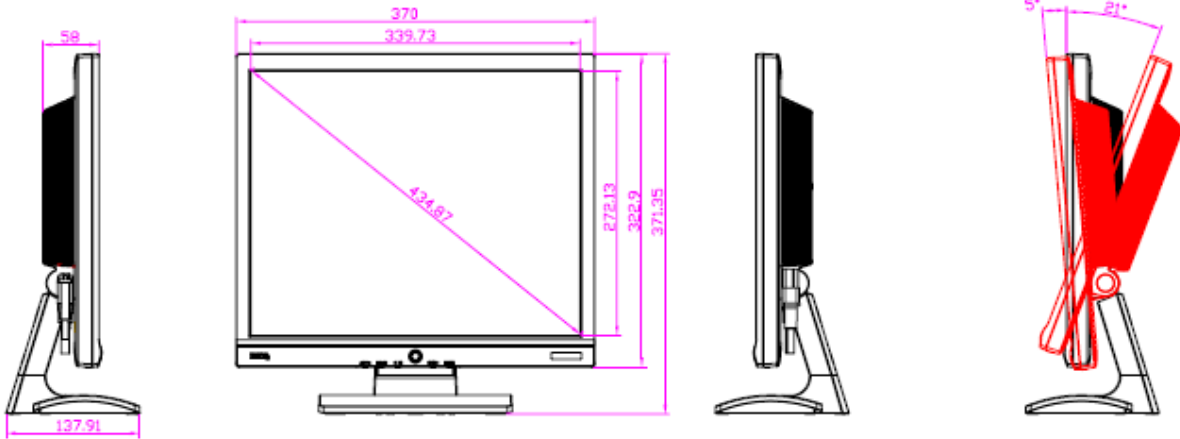
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Released Date	23-Jul-07	
Ship To Area	99 Part Number	Description
EU, VN	9H.0BVLN.ISE	17 LCD MNT G700-ISE
Asia Pacific	9H.0BVLN.IBP	17 LCD MNT G700-IBP
Australia	9H.0BVLN.IBW	17 LCD MNT G700-IBW

Category	BenQ Part Number	BenQ Parts Description
Panel	CS.5FL1C.011	LCDM 17 CLAA170EA07P-040 CPT
	CS.5FL1C.001	LCDM 17 MT170EN01 V9 G1
PCBA	CS.5D0BV.001	PCBA I/F BOARD CPT PANEL
	CS.5D0BV.011	PCBA I/F BOARD INNOLUX PANEL
	CS.5D0BV.021	PCBA P/I BOARD G700
	CS.5D0BV.031	PCBA KEYPAD BOARD G700
Cover	CS.6E0BV.001	ASSY BACK COVER G700
	CS.6E0BV.011	ASSY BEZEL SILVER G700
	CS.6E0BV.031	ASSY BASE G700
	CS.6E0BV.041	ASSY STAND SUB G700
Cable	2G.02718.051	CORD H05VV-3G 10A250V 1500 EUR
	5K.L9005.501	CABLE SIGNAL15/15P CORE*1 1.5M
	CS.5K0BV.001	CABLE LVDS 30P 214MM G700
	CS.5K0BV.011	CABLE IFBD/KEYPAD 8P170MM G700
KIT	CS.6E0BV.051	ASSY KIT EU VN G700
Package	CS.4D0BV.001	CARTON ENGLISH WORLD WILD G700
	CS.4G0BV.001	CUSHION EPS-L G700
	CS.4G0BV.011	CUSHION EPS-R G700

Appendix: Dimensional Drawing

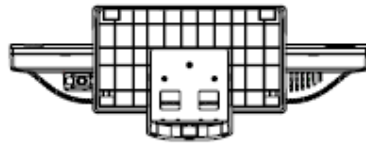


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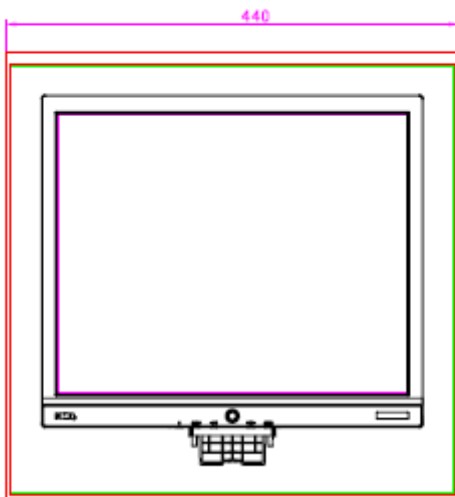
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## Carton Box Dimension

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