

Service Manual

ViewSonic VX2450W/WM-LED-1

Model No. VS13518-1W/2W

24" Wide LCD Monitor

(VX2450W_WM-LED-1 SM Rev. 1a Jul. 2010)

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Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	07/21/10		Initial Release	Sophia Kao

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1. Precautions and Safety Notices

1. SAFETY PRECAUTIONS

This monitor is manufactured and tested on a ground principle that a user's safety comes first. However, improper use 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 your residence, consult your local dealer or Power Company.
- Use only the special power adapter that comes with this monitor for power input.
- Do not try to repair the monitor by yourself, as it contains no user-serviceable parts. Only the qualified technician can repair it.
- Do not remove the monitor cabinet. There are 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 glass screen.
- Do not place heavy objects on the monitor or power cord.

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.

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's manual.

4 HANDLING AND PLACING METHODS

Correct Methods:	Incorrect Methods:
Only touch the metal of the LCD panel or the front cover of the monitor. Do not touch the surface of the polarizer. 	Surface of the LCD panel is pressed by fingers and that may cause "Mura". 
Take out the monitor with cushions. 	Taking out the monitor by grasping the LCD panel. That may cause "Mura". 

Correct Methods:	Incorrect Methods:
Place the monitor on a clean and soft foam pad. 	Placing the monitor on foreign objects, That could scratch the surface of the panel or cause "Mura".  The panel is placed facedown on the lap. That may cause "Mura". 

2. Specification

2.1 Introduction

1	LCD PANEL (1 st source)	Panel Display Area Optimum Resolution Pixel Pitch Glass Treatment Contrast Ratio Dynamic Contrast Viewing Angle LR,UD Colors Luminance Response Time Backlight Backlight Life Mercury	(CR>=10)	CMO M236H3-LA2 521.28mm(H)x293.22mm(V) 23.547" diagonal color active matrix TFT LCD 1920x1080 0.2715 mm (H) x 0.2715mm (V) Anti-Glare type, Hard-coating (3H) 1000 :1 (Typ.) 700:1(min) 10,000,000:1 170 Deg H and 160 Deg V (Typ.) 16.7 M (6-bits + Hi FRC) 300 cd/m2 (Typ.) / 250 cd/m2 (min) Tr+Tf: 5ms (Typ.) / 8ms (Max.) One light bar with White-LED 15000 Hrs (Min) N/A (Typ.)
2	INPUT SIGNAL	Video Sync		RGB Analog (0.7 / 1.0 Vp-p , 75 ohms), DVI-D (TMDS, 100ohms) Separate Sync / Composite Sync / SOG Fh = 24 – 83 kHz ; Fv = 50 – 75 Hz
3	COMPATIB ILITY	PC Mac		PC Compatibles (from VGA up to 1920x1080 Non Interlaced) Power Mac (up to 1920x1080)
4	RESOLUTI ON	Recommende d Supported		1920x1080 @ 60Hz 640 x 350 @ 70Hz 640 x 400 @ 60, 70Hz 640 x 480 @ 50, 60, 67, 72, 75Hz 720 x 400 @ 70Hz 720 x 480 @ p60, i60Hz 720 x 576 @ p50, i50Hz

				800 x 600 @ 56, 60, 72, 75Hz 832 x 624 @ 75Hz 1024 x 768 @ 50, 60, 70, 72, 75, 75Hz 1152 x 864 @ 75Hz 1152 x 870 @ 75Hz 1152 x 900 @ 67Hz 1280 x 720 @ p50, p60Hz 1280 x 768 @ 50, 60, 75Hz 1280 x 960 @ 50, 60, 75Hz 1280 x 1024 @ 50, 60, 75Hz 1360 x 768 @ 60Hz 1440 x 900 @ 60, 75Hz 1400 x 1050 @ 60Hz 1600 x 1200 @ 60Hz 1680 x 1050 @ 60Hz 1920x1080 @ i50, p50, i60, p60Hz
5	CONNECTORS	Video Audio Power	Analog Digital Audio In	D-sub DVI (Supported HDMI ver. 1.3 /Display port 1.1 spec) 3.5 mm jack (green) for VX2450wm-LED Internal Power Adapter, 3-pin plug (CEE22)
6	AUDIO	Speaker		2.5Wx2 for VX2450wm-LED only
7	POWER	Voltage		AC 100-240V (Universal); 50/60 Hz
8	ERGONOMICS	Tilt Swivel Rotation Height Adjust		20 ~ -5 degrees N/A N/A N/A

10	BANDWIDTH			Analog : 185 MHz Digital : 165 MHz
11	OPERATING CONDITION	Temperature Humidity		32°F to 104°F (0°C to 40°C) 20% to 90% (no condensation)
12	STORAGE / SHIPPING CONDITION	Temperature Humidity		-4°F to 140°F (-20°C to 60°C) 5% to 90% (no condensation)
13	DIMENSIONS	Physical: (W x H x D) Packing (W x H x D)	Display w/ Stand Wall Mount	521.21 mm (W) x 403.71 mm (H) x 189.98mm (D) 20.52" (W) x 15.89" (H) x 7.48" (D) 521.21 mm (W) x 339.44 mm (H) x 49mm (D) 20.52" (W) x 13.36" (H) x 2.63" (D) 569 mm (W) x 495 mm (H)x126 mm (D) 22.4" (W) x19.5" (H) x4.9" (D)
14	WEIGHT		Net Net (w/o stand) Gross	4.5 kg 4.05 kg 6.2 kg
15	REGULATIONS			UL, CUL, FCC-B (ICES), CB, CE, CES-003B, ISO13406-2, TUV/GS, ERGO, TUV-S, NOM, GOST-R, HYGIENIC (20 copies), CCC, BSMI, PSB, C-TICK, MIC(KCC), SASO, WEEE, RoHS, SASO, Ukraine
16	RELIABILITY	MTBF		100,000 Hr (Excluding Panel).
17	POWER SAVING FUNCTION	"On" "Active Off" "Off"	Blue AMBER	Normal ≤ 0.1 W ≤ 0.1 W
18	LOGISTICS	Container Load (20' / 40')	Standard	20': 560 pieces 40': 1176 pieces for VSA only 20': 656 pieces 40': 1344 pieces for WW. 56 sets

		Pallet Load	VX2450w	
		UPC Code	-led	
			VX2450w	76690747961 4
			m-led	76690748002 3
		Serial Format	VX2450w	
			-led	S4Y
			VX2450w	S4Z
		EDID Code	m-led	
		Country of origin		Byte 10 – 0 x 25 , Byte 11 – 0 x CB
				Made in China
19	Wall Mount	VESA		100mm x 100mm
20	OTHERS			DDC/2B, DDC/CI, HDCP, Detachable Base, KENSINGTON MicroSaver Security Compatible, WorldWide Model, Windows XP, Vista Premium, Windows 7,
21	Package Contents	LCD Display Power Cable VGA Cable DVI Cable Audio Cable for VX2450wm-LED only Quick Start Guide ViewSonic Wizard CD-ROM		

Notes:

The Input Signal and Resolution spec above might be different from segment 4.5.

The display shall fulfill all the criteria in segment 4.5.

2.2 product definition and specification

Product Name	ViewSonic VX2450w/wm-LED
Oracle P/N	VX2450W/WM-LED
Model Number	VS 13518
OSD Languages	English French German Spanish Italian Finnish Russian Japanese Korean Traditional Chinese Simplified Chinese
TFT LCD Panel and Model #	1 st panel: CMO M236H3-LA2
Scalar	Novatek NT68668UFG
Input Signal	D-Sub /DVI
Sync Compatibility	Separate Sync / Composite Sync / SOG
Adapter	Internal Power Board
Power Cable (Refer to APPENDIX B)	Yes
15 pin mini D-SUB Analog Cable (1.8 m, black), with PC 2001. (Detached cable; refer the Appendix A)	Yes
DVI-D Cable(1.8m, black) with PC 2001 (refer to Appendix A)	Yes
Audio Cable(1.8m, black) with PC 2001	Yes for VX2450wm-LED
MIC Cable(1.8m, black) with PC 2001	No
USB Cable (V2.0) (1.8m, black) with PC 2001	No

ViewSonic CD Wizard	English	French
	German	Dutch
	Finnish	Swedish
	Italian	Spanish
	Greek	Russian
	Czech	Hungarian
	Turkish	Polish
	Romania	Bulgaria
	Slovakia	Croatia
	Serbia	Slovenia
	Portuguese	Arabic
	Japanese	Traditional Chinese
	Korean	Simplified Chinese
	Ukraine	
ViewSonic Quick Start Guide	English	French
	German	Dutch
	Finnish	Swedish
	Italian	Spanish
	Greek	Russian
	Czech	Hungarian
	Turkish	Polish
	Romania	Bulgaria
	Slovakia	Croatia
	Serbia	Slovenia
	Portuguese	Arabic
	Japanese	Traditional Chinese
	Korean	Simplified Chinese
Screen Protector Mylar	Yes	
Service Insert (Refer to Segment 5.9.3)	For Region code = M units only	
SRS Insert	No	
Energy Star Sticker	Yes	
POP Sticker (Refer to Segment 5.8.3)	No	
Warranty Card	For Region code = G units only	
Warranty Carton Sticker (refer to F8.1)	For Region code = G units only	
PE bag of Carton	For Region code = G units only	
MPR label	For India drop shipment only	

2.3 General Specification

Test Resolution & Frequency	1920x1080@ 60Hz
Test Image Size	Full Size
Contrast and Brightness Controls	Factory Default: Contrast = 70%, Brightness = 100%

2.4 Video Interface

Input Connector (refer the Appendix A)	Analog = DB-15 (Analog) Digital = DVI-D (Digital)
Default Input Connector	Defaults to the first detected input
Video Cable Strain Relief	Equal to twice the weight of the monitor for five minutes
Video Cable Connector Pin out	Refer to Appendix A; Compliant DDC/2B and DDC/CI
Video Signals	Video RGB (Analog) Separate Sync / Composite Sync / SOG TMDS (Digital)
Video Impedance	75 Ohms (Analog), 100 Ohms (Digital)
Maximum PC Video Signal	950 mV with no damage to monitor
Maximum Mac Video Signal	1250 mV with no damage to monitor
Sync Signals	TTL
DDC/2B	Compliant with version 1.3; The DDC communication shall not interrupt when power off.
DDC/CI	Compliant with Revision 1.1; The DDC communication shall not interrupt when power off.
Digital link protection	HDCP
Support	HDMI 1.3 and Display Port 1.1 spec.
Sync Compatibility	Separate Sync / Composite Sync / SOG
Video Compatibility	Shall be compatible with all PC type computers, Macintosh computers, and after market video cards
Resolution Compatibility	Refer to Segment 4-5
Exclusions	Not compatible with interlaced video

2.5 USB Interface

No USB interface

2.6 Power Supply

Internal Power Supply	TBD
Input Voltage Range	90 to 264 VAC
Input Frequency Range	47 to 63 Hertz
Short Circuit Protection	Output can be shorted without safety issue
Over Current Protection	5.0A typical at 24VDC (Protect when short circuit)
Leakage Current	3.5MA (MAX) AT 264VAC / 60HZ
Efficiency (at 115VAC Full Load)	Typical: 80% Minimum: 75%
Fuse	Internal and not user replaceable
Power Output	TBD Watts (typ)
Ripple and Noise	Ripple: <3% Noise: <1%
Max Input AC Current	1.5A (MAX)
Inrush Current (Cold Start)	80 A MAX./ 240V _{AC} / 50HZ (COLD START AT 25°C, FULL LOAD)
Power Supply Cold Start	Shall start and function properly when under full load, with all combinations of input voltage, input frequency, and operating temperature.
Power Supply Transient Immunity	Shall be able to withstand an ANSI/IEEE C62.41-1980 6000V 200 ampere ring wave transient test with no damage.
Power Supply Line Surge Immunity	Shall be able to withstand ±1KV (L-L) and ±2KV (L-PE) (Refer to EN55024:1998 / CISPR24.1997 / IEC1000-4-5: 1995 / EN61000-4-5: 1995)
Power Supply Missing Cycle Immunity	Shall be able to function properly, without reset or visible screen artifacts, when ½ cycle of AC power is randomly missing at nominal input.

Power Supply Acoustics	The power supply shall not produce audible noise that would be detectable by the user. Audible shall defined to be in compliance with ISO 7779 (DIN EN27779:1991) Noise measurements of machines acoustics. Power Switch noise shall not be considered.			
Power Saving Operation(Method)	VESA DPMS Signaling			
Power Consumption				
	Mode	LED	Power Consumption	
	On	Blue	TBDW (typ)	TBDW (typ) w/o Audio
			TBDW (max)	TBD W (Max) w/o Audio
	ECO Mode	Blue	TBD W (Optimize)	TBD W (Optimize) w/o Audio
			TBD W (Conserve)	TBD W (Conserve) w/o Audio
	Active off	Amber	≤ 0.1 W	
	Off		≤ 0.1 W	
Recovery Time	On Mode = N/A, Active Off < 3 sec			

2.7 Electrical Requirement

Item	Condition	Spec		Remark
Electrostatic Discharge	InnoLux SPEC	Contact discharge : 4KV		150pF/330ohm.
		Contact discharge : 8KV	●	Each point 20
		Air discharge : 8KV		times.
		Air discharge : 15KV	●	1 time/Sec

Note: ESD test **does not** include VGA, DVI pin.

Timing Table

Item	Timing	Analog			Digital - TMDS	Remark
		Separated	Composite	SOG		
1.	640 x 350 @ 70 Hz, 31.5 KHz	v	v	v	v	DMT. For Separated 、 SOG and Composite sync, switch 640x350@70,640x400@70, and 720x400@70 by [1]+[2] short cut key (primary = 720x400@70)
2.	640 x 400 @ 60 Hz, 31.5 KHz	v	v	v	v	DMT For Separate, Composite and SOG sync, switch 640x400@60Hz and 640x480@60Hz and 720x480@60Hz by [1]+[2] short cut key (primary = 640x480@60Hz)
3.	640 x 400 @ 70 Hz, 31.5 KHz	v	v	v	v	DMT For Separated 、 SOG and Composite sync, switch 640x350@70,640x400@70, and 720x400@70 by [1]+[2] short cut key (primary = 720x400@70)
4.	640 x 480 @ 50 Hz, 24.7 KHz	v	v	v		CVT
5.	640 x 480 @ 60 Hz, 31.5 KHz	v	v	v	v	DMT For Separate, Composite and SOG sync, switch 640x400@60Hz and 640x480@60Hz and 720x480@60Hz by [1]+[2] short cut key (primary = 640x480@60Hz)
6.	640 x 480 @ 67 Hz, 35 KHz	v	v	v	v	For MAC
7.	640 x 480 @ 72 Hz, 37.9 KHz	v	v	v	v	DMT

8.	640 x 480 @ 75 Hz, 37.5 KHz	v	v	v	v	DMT
9.	720 x 400 @ 70 Hz, 31.5 KHz	v	v	v	v	DMT For Separated 、SOG and Composite sync, switch 640x350@70,640x400@70, and 720x400@70 by [1]+[2] short cut key (primary = 720x400@70).
10.	720 x 480 @ 60 Hz, 31.5 KHz	v	v	v	v	1. DTV, For Analog sync, the information OSD shows 640x480. 2. For Separate, Composite and SOG sync, switch 640x400@60Hz and 640x480@60Hz and 720x480@60Hz by [1]+[2] short cut key (primary = 640x480@60Hz)
11.	720 x 576 @ 50 Hz, 31.3 KHz	v	v	v	v	DTV
12.	800 x 600 @ 56 Hz, 35.2 KHz	v	v	v	v	DMT
13.	800 x 600 @ 60 Hz, 37.9 KHz	v	v	v	v	DMT
14.	800 x 600 @ 72 Hz, 48.1 KHz	v	v	v	v	DMT
15.	800 x 600 @ 75 Hz, 46.9 KHz	v	v	v	v	DMT
16.	832 x 624 @ 75 Hz, 49.7 KHz	v	v	v	v	MAC
17.	1024 x 768 @ 50 Hz, 39.6 KHz	v	v	v	v	CVT For Separate, Composite and SOG sync, Switch 1024x768@50Hz and 1280x768@50Hz by [1]+[2] short cut key (primary = 1024x768@50Hz)
18.	1024 x 768 @ 60 Hz, 48.4 KHz	v	v	v	v	DMT; For Separate, Composite and SOG sync, Switch 1024x600@60Hz and 1024x768@60Hz by

						[1]+[2] short cut key (primary = 1024x768@60Hz)
19.	1024 x 768 @ 70 Hz, 56.5 KHz	v	v	v	v	DMT
20.	1024 x 768 @ 72 Hz, 58.1 KHz	v	v	v	v	DMT
21.	1024 x 768 @ 75 Hz, 60 KHz	v	v	v	v	DMT; For Separated , Composite and SOG, Switch 1280x768@75Hz and 1024x768@75Hz by [1]+[2] short cut key (primary = 1280x768@75Hz)
22.	1024 x 768 @ 75 Hz, 60.2 KHz	v	v	v	v	For MAC
23.	1152 x 864 @ 75 Hz, 67.5 KHz	v	v	v	v	DMT
24.	1152 x 870 @ 75 Hz, 68.7 KHz	v	v	v	v	For MAC
25.	1152 x 900 @ 67 Hz, 62.5 KHz	v	v	v	v	For SUN
26.	1280 x 720 @ 50 Hz, 37.5 KHz	v	v	v	v	DTV
27.	1280 x 720 @ 60 Hz, 45 KHz	v	v	v	v	DTV
28.	1280 x 768 @ 50 Hz, 39.6 KHz	v	v	v	v	DMT For Separated and Composite sync, Switch 1024x768@50Hz and 1280x768@50Hz by [1]+[2] short cut key (primary = 1024x768@50Hz)
29.	1280 x 768 @ 60 Hz, 47.8 KHz	v	v	v	v	DMT; For Separate, Composite and SOG sync, Switch 1280x768@60Hz and 1360x768@60Hz and 1366x768@60Hz by [1]+[2] short cut key (primary = 1280x768@60Hz)
30.	1280 x 768 @ 75 Hz, 60.3 KHz	v	v	v	v	DMT; For Separated , Composite and SOG, Switch 1280x768@75Hz

						and 1024x768@75Hz by [1]+[2] short cut key (primary = 1280x768@75Hz)
31.	1280 x 800 @ 60 Hz, 49.7 KHz	v	v	v	v	DMT
32.	1280 x 800 @ 75 Hz, 62.8 KHz	v	v	v	v	DMT
33.	1280 x 960 @ 50 Hz, 49.4 KHz	v	v	v	v	DMT
34.	1280 x 960 @ 60 Hz, 60.0 KHz	v	v	v	v	DMT
35.	1280 x 960 @ 75 Hz, 75.2 KHz	v	v	v	v	DMT
36.	1280 x @ 50 Hz, 52.7 KHz 1024	v	v	v	v	DMT
37.	1280 x @ 60 Hz, 64 KHz 1024	v	v	v	v	DMT
38.	1280 x @ 75 Hz, 80 KHz 1024	v	v	v	v	DMT
39.	1360 x 768 @ 60 Hz, 47.7 KHz	v	v	v	v	DMT; For Separate, Composite and SOG sync, Switch 1280x768@60Hz and 1360x768@60Hz and 1366x768@60Hz by [1]+[2] short cut key (primary = 1280x768@60Hz)
40.	1366 x 768 @ 59.79 Hz, 47.7 KHz	v	v	v	v	DMT; For Separate, Composite and SOG sync, Switch 1280x768@60Hz and 1360x768@60Hz and 1366x768@60Hz by [1]+[2] short cut key (primary = 1280x768@60Hz)
41.	1440 x 900 @ 60 Hz 55.9 KHz	v	v	v	v	DMT
42.	1440 x 900 @ 75 Hz 70.6 KHz	v	v	v	v	DMT
43.	1400 x @ 60 Hz 65.3 KHz 1050	v	v	v	v	DMT; For Separated , Composite and SOG, Switch 1400x1050@60Hz and 1680x1050@60Hz by

								[1]+[2] short cut key (primary = 1680x1050@60Hz)	
44.	1400 x 1050	@	75 Hz	82.3 KHz	v	v	v	v	DMT
45.	1600 x 1200	@	60 Hz	75.0 KHz	v	v	v	v	DMT
46.	1680 x 1050	@	60 Hz	64.7 KHz	v	v	v	v	DMT
47.	1680 x 1050	@	60 Hz	65.3 KHz	v	v	v	v	DMT; For Separated , Composite and SOG, Switch 1400x1050@60Hz and 1680x1050@60Hz by [1]+[2] short cut key (primary = 1680x1050@60Hz)
48.	1920x1080	@	60 Hz	67.5 KHz	v	v	v	v	DMT
49.	480i	@	60 Hz					✓	
50.	480p	@	60 Hz		✓	✓	✓	✓	
51.	576i	@	50 Hz					✓	
52.	576p	@	50 Hz		✓	✓	✓	✓	
53.	720p	@	50 Hz		✓	✓	✓	✓	
54.	720p	@	60 Hz		✓	✓	✓	✓	
55.	1080i	@	50 Hz					✓	
56.	1080i	@	60 Hz					✓	
57.	1080p	@	50 Hz		✓	✓	✓	✓	
58.	1080p	@	60 Hz		✓	✓	✓	✓	

*1. Tolerance $\geq \pm 2\text{KHz}$ (if no overlapping issue)

*2. Any timing not in the list, it should display as normal or show on "OUT OF RANGE" OSD message without blanking.

*3. The image quality of 50Hz mode might be worse than 60Hz.

Primary Presets

1920x1080 @ 60Hz

User Presets

Number of User Presets (recognized timings) Available: 10 presets total in FIFO configuration

Changing Modes

- Maximum Mode Change Blank Time for image stability : 5 seconds (Max), excluding “Auto Adjust” time
- It should recall factory setting when execute Auto Image Adjust function by following conditions,
 1. Memory recall under DOS mode (640 x 350, 720 x 400 & 640 x 400).
 2. New timing mode detected under DOS mode (640 x 350, 720 x 400 & 640 x 400).
- The monitor needs to do “Auto Adjust” the first time a new mode is detected (see section “O-Touch™ Function Actions”)
- While running Change Mode, Auto Adjust or Memory Recall, the image shall blank

3. Front Panel Function Control Description

3.1 Front Panel Hardware Controls

Power Switch	AC Power Switch on the back cover Soft Power Switch on the front bezel
Power LED (Front Head)	Blue – ON Amber – Active Off Dark = Soft Power Switch OFF
Front Panel Controls (Head) [1][2][⏻][▲][▼]	[⏻] Power [1] BUTTON 1 [2] Button 2 [▲] UP ARROW BUTTON [▼] DOWN ARROW BUTTON Note: Power Button, Button 1 and Button 2 must be one-shot logic operation. (i.e. there should be no cycling)
Reaction Time	OSD must fully appear within 0.5s after pushing Button 1

3.2 Short Cuts Function from the button(s)

[1]		Main Menu
[2]		Input toggle (Analog or DVI; refer to Appendix D)
For VX2450w	[▼]	To immediately activate Contrast and Brightness OSD Menu.
	[▲]	To immediately activate Contrast and Brightness OSD Menu.
	[▼]+ [▲]	Recall Contrast and Brightness to default in its menu without OSD message.(Under Contrast or Brightness adjust sub-menu, recall Contrast or Brightness to its default without OSD message.)
For VX2450wm	[▼]	To immediately activate Audio Adjust menu.
	[▲]	To immediately activate Contrast / Brightness OSD Menu.
	[▼]+ [▲]	1. In the Audio mode, recall both of Volume and Mute to default without OSD message.(Under Volume adjust sub-menu, recall Volume to default without OSD message.) 2. In the BT / CR mode, recall both Contrast and Brightness to default in its menu without OSD message. (Under Contrast or Brightness adjust sub-menu, recall Contrast or Brightness to its default without OSD message.) * While OSD menu off, recall CR/ BT/ Audio volume and mute to default without OSD

	message
[1] + [2]	1. Toggle 640x350@70Hz, 720x400@70Hz and 640x400@70Hz mode when input 640x350@70Hz or 720x400@70Hz or 640x400@70Hz mode 2. Toggle 640x400@60Hz, 720x480@60Hz and 640x480@60Hz mode when input 640x400@60Hz or 720x480@60Hz or 640x480@60Hz mode 3. Toggle 1024x768@75Hz and 1280x768@75Hz mode when input 1024x768@75Hz or 1280x768@75Hz mode 4. Toggle 1280x768@60Hz 1360x768@60Hz and 1366x768@60Hz mode when input 1280x768@60Hz 、1360x768@60Hz or 1366x768@60Hz mode 5. Toggle 1400x1050@60Hz and 1680x1050@60Hz mode when input 1400x1050@60Hz or 1680x1050@60Hz mode
[1] + [▼] + [▲] (Keep pushing 5 sec)	White Balance 1. It will not shown on user's guide 2. OSD message as below, (Image = no blanking) 3. Recommend environment 3.1. Optical (Best) input timing = 640 x 480 @ 60Hz; Following timing modes also recommended, 800 x 600 @ 60 Hz 1024 X 768 @ 60 Hz 3.2. Pattern as below,
[1] + [▲]	OSD Lock (refer to segment 4-6-4)
[1] + [▼]	Power Lock

	(refer to segment 4-6-5)
[2] + [▼]	Toggle DDC/CI and DDC/2B (DDC/CI enable/disable) and show following message for 3 seconds, When switch to DDC/CI  When switch to DDC/2B  Default = DDC/CI
Signal + [2] + [U]	Factory Mode
Remark : All the short cuts function are only available while OSD off	

3.3 Factory Defaults

Item	Defaults	Item	Defaults
Contrast	70%	Input Priority	N/A
Brightness	100%	Resolution Notice	On
Color Temperature	6500K	Volume	50% (for VX2450wm)
Sharpness	50%	Balance	N/A
OSD H. Position	50%	Treble	N/A
OSD V. Position	50%	Bass	N/A
OSD Time Out	15	720x400@70Hz / 640x400@70Hz / 640x350@70Hz	720x400@70Hz
DCR	OFF	720x480@60Hz / 640x480@60Hz / 640x400@60Hz	640x480@60Hz
OSD Background	On	1280x768@60Hz / 1360x768@60Hz / 1366x768@60Hz	1366x768@60Hz
ECO mode	Standard	1024x768@75Hz / 1280x768@75Hz	1280X768@75Hz
Aspect ratio	Full screen		

3.4 AUDIO Interface (SPEAKER SPECIFICATION, For VX2450WM-LED only)

Line input connection	3.5 mm stereo jack
Line input signal	1.0 Vrms
Line input impedance	10k Ohm
Maximum power output	2.5±10% W /ch
Signal to Noise Ratio	50 dB
Frequency response	FO – 20 Khz
Distortion	< 10 % THD (@1kHz)
Vibration	There should be no audible vibration with volume at 100% and treble / bass at default
Screen image	There should be no affect on the screen image stability under any conditions
Connector PC99 requirement Audio in	Lime Green pantone # 577C
Cable type / length	3.5mm stereo cable / 1.8m length

Audio DPMS	Speakers stay off when the rest of the monitor is in power saving
------------	---

3.5 TFT LCD Panel

Panel Characteristics :

1st Source Panel

Supplier	CMO
Model name	M236H3-LA2
Display Area	521.28(H) X 293.22(V)
Pixel Pitch	0.2715(H) X 0.2715(V)
Display Colors	16.7M (6 bit with HI- FRC)
Number of Pixel	1920(H) X 1080(V),
Brightness	250cd/m2 (Min.), 300m2 (Typical)
Contrast Ratio	Min: 700:1 Typical: 1000:1
Viewing Angle	Hor: 170°, Ver: 160° (Typical, CR>10)
Display Mode	Normally White
Frame rate	60Hz
Response Time	5 ms(Typical), 8ms (Max.)
Surface Treatment	Anti-glare, Haze=25%,Hard Coating (3H)
Lamp	one LED
Outline Dimension	544.8(W) X 320.5(H) X 11.4(D) (typ.)
Brightness uniformity	1.33(Max)

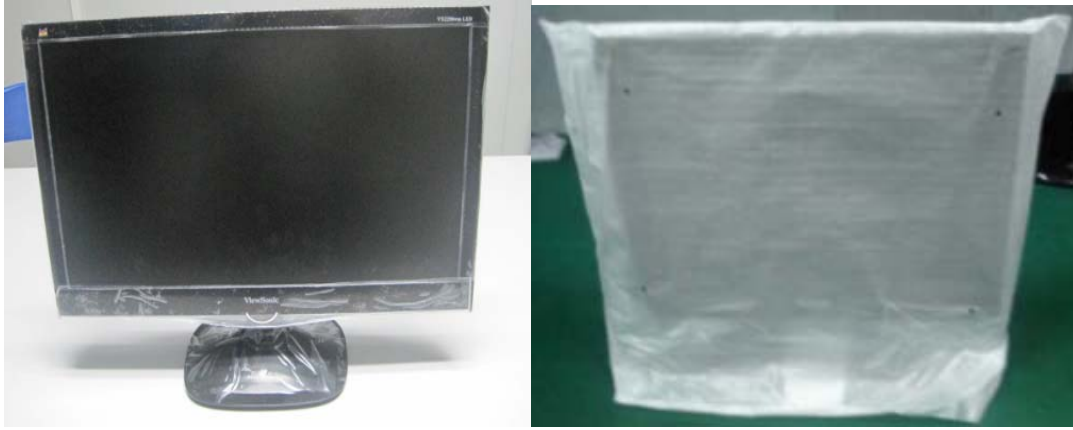
*The average of measured value from monthly shipment shall be equal or better than the Typical value above.

Packing For Shipping And Disassembly Procedure Packing For Shipping

1. Packing Procedure

1.1 Paste protection film to protect the monitor. (Figure 1)

1.2 Put the monitor in the PE bag and seal the bag with tape.(Figure 2)



1.3 Put the cushions on the monitor

1.4 Place the monitor into the carton and then put all the accessories into the carton.

At last, close the carton and seal it with tape.(Figure3)

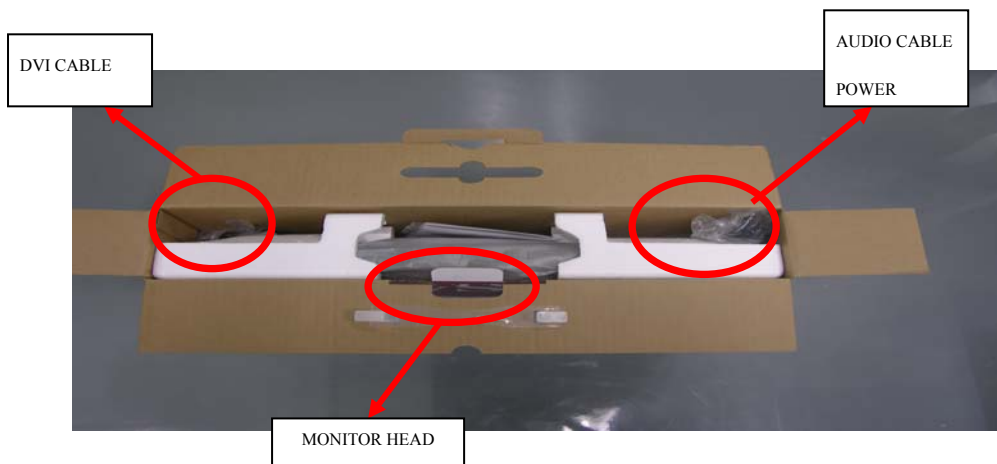
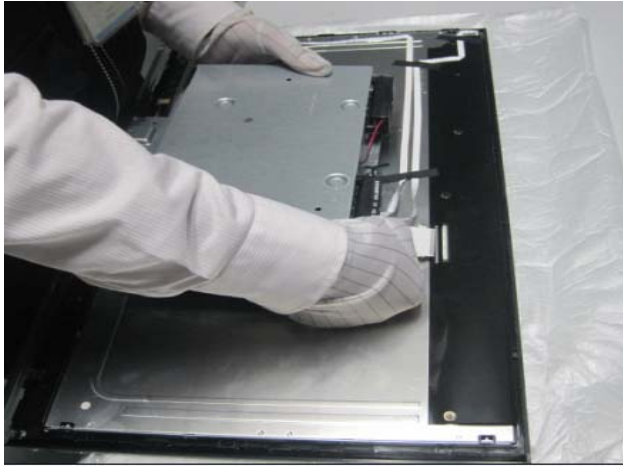


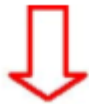
Figure 3

Disassembly Procedure





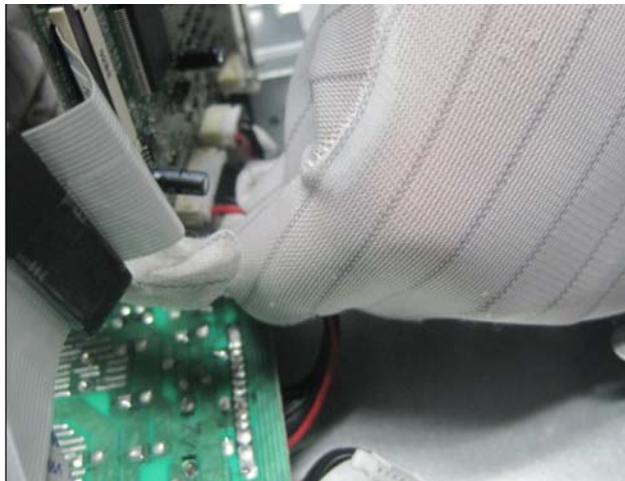


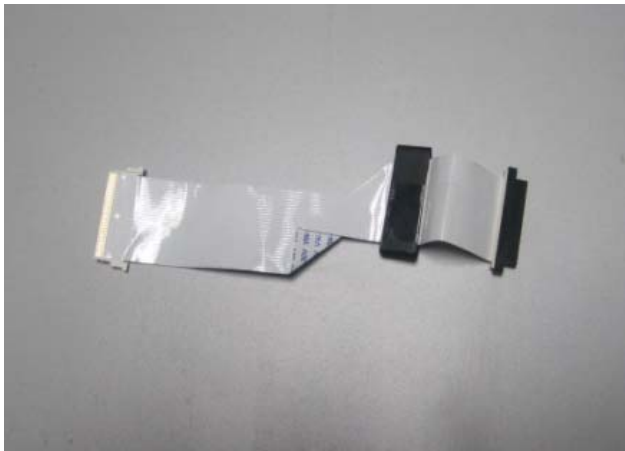


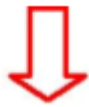
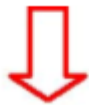


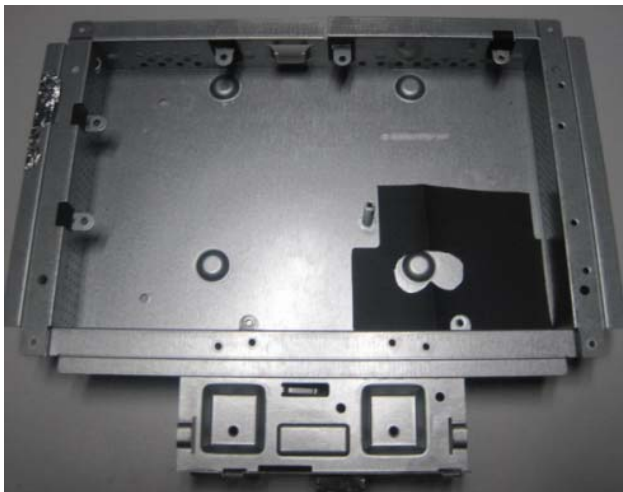












4. Electronic Circuit Theory

4.1 Switching Mode Power Supply

4.1.1 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. R801 and R802 joined between two inputting main circuit to prevent man from shock. L801 is used to clear up low frequency wave. C801 and C802 are used to discharge the waves that L801 produced. High frequency waves are damped by C801 and C802. D801 is a rectifier which composed of 4 build-in diodes, it inverts AC to DC.

4.1.2 High Voltage to Low Voltage Control Circuit

C804 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 V_c 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. Resistors R814 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 D802 and ZD802, This will prevent MOSFET which built-in IC802 from being damaged under large current impulse and voltage spike. IC801 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.

4.1.3 DC_5V and DC_19V Output Circuit

For DC 5V, D807, D808 and D809 is used to rectify the inducted current. C817 C818 C830 and L802 C820 are used to store energy when current is reversed. The parts including C817 C818 C830 and L802 C820 are used to smooth the current waves. For DC 19V, D804 and D805 is used to rectify the inducted current. C816 and C825 are used to store energy when current is reversed. The parts including C816, C825 are used to smooth the current waves.

4.1.4 Feedback and OVP Protect Circuit

Pin R of IC803 is supplied 2.5V stable voltage. It is connected to 5V and 19V output through R830, R831 and R823. and R824 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. Q804, R822, 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 19V not be increased.

4.2 LED Circuit

4.2.1 Low voltage to high voltage circuit

19VDC 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 pin1 of IC501 and regulates the panel brightness, The operation frequency is determined by the external Resistor R522 and capacitor R505 connected to pin13 of IC501. BURST MODE regulated dimming frequency is determined by the external resistor R505 connected to pin13 of IC501. C508 is used for soft start and compensation, C506, R508 are used for dump noise. The output drives, (pins16 respectively) output square pulses to drive MOSFET U501, U501 is N channel MOSFET. U501 work as Boost topology, it is high efficient, PWM switching.

During start up, OVP (pin11) senses the voltage at the output voltage. When OVP reaches 1V, the output voltage is regulated.

The current flowing through LED is sensed and regulated through sense resistor R515, R516, R517, R518, R519, R520. The feedback voltage connected to Pin2~Pin5 and Pin7~Pin10 (ISEN).

4.3 I/F Board Circuit

4.3.1 Power Input

+5V is from the power board and supply for the panel and for the LDO. +3.3V is from the LDO output used for U105 (Scaler IC: NT68668UFG), and then 3.3V output is generated from +5V through C101, C104 and C102 filtering, and U101 outputs. +3.3V is only used for U105.

4.3.2 MCU & Scaler(TSUM1PLR-LF)

The frequency of XTAL1 is 12.000MHz. U105 # 65 is defined as panel_enable. When the I/O port is high, Q101 and Q104 are conducted. And then after C108 and C109 filtering, obtain the voltage of VLCD, which will be connected to CN105. U105 # 29 is defined as VGA_DET connected with CN102 #5. U105 # 1 is a pin of hardwire reset. U105 # 79-#

80, #81-#82, #83-#84, #85-#86, #87-#88 output LVDS digital data of 8 bit to panel control circuit through CN105. U105 # 117 generates a PWM waveform by regulating the duty to control the brightness of the backlights. U103 is EEPROM used for saving EDID data, which is connected by SCL and SDA pins with #35 and #34 of NT68668FG. U108 is a flash memory, U106 # 6, # 5 are the communications with U105 #49-#50. U106 is EEPROM used for saving user's OSD setting.

4.3.3 VGA Input

Signal R, G, B input through CN102 #1, #2, #3, and C116, C117 and C118 filtering the high frequency noise. Signal HSYNC and VSYNC input through CN102 #13 and #14, and C129, R135, C130, R136 filtering. Then the analog signal enters U105, and then U108 deals with it internally. In addition, EP112, EP107, EP104, EP105, EP106, EP108, EP109, EP110, EP111, are ESD protector. Signal DDC-SCL inputs via CN102 #15, and then passes through EP108 for ESD protection, goes into EDID EEPROM IC U103. Signal DDC-SDA inputs via CN102 #12, and then passes through EP111 for ESD protection, goes into EDID EEPROM IC U103. CN102 #5 is defined as cable detect pin, this detector realizes via R121 and U105 #29, The PC-5V of U103 is supplied by PC via CN102 #9 with EP107 for ESD protection, or supplied by Monitor self via D106. U103 is an EEPROM IC, which is a kind of memory and used for saving EDID data.

4.3.4 Button Control

Button "Key-Power" is defined as power on/off, which is connected to U105 #122 through CN104 #6. Button "Key-2" is defined as two functions of selecting and adjustment, which is connected to U105 #125 through CN104 #2.

Button "Key-Up" is defined as plus, which is connected to U105 # 67 through CN104 #10. Button "Key-Down" is defined as minus, which is through connected to U105 #126 through CN104 # 5.

Button "Key-1" is defined as two functions of menu and exit, which is connected to U105 # 66 through CN104 # 1.

LED indicator on the front bezel is defined as follows:

- a. When press button "Key-Power", U105 # 124 is pulled high and U105 # 123 is pulled Low, so Q108 is conducted and the LED indicator is Blue.
- b. When in power-saving mode, U105 # 123 is pulled high and U105 #124 is pulled down, so Q106 is conducted and the LED indicator is orange.

4.4 Power On/Off Sequence

4.4.1 Hardware Power ON

When power cord is plugged into AC socket, SMPS starts work and provides U105 with

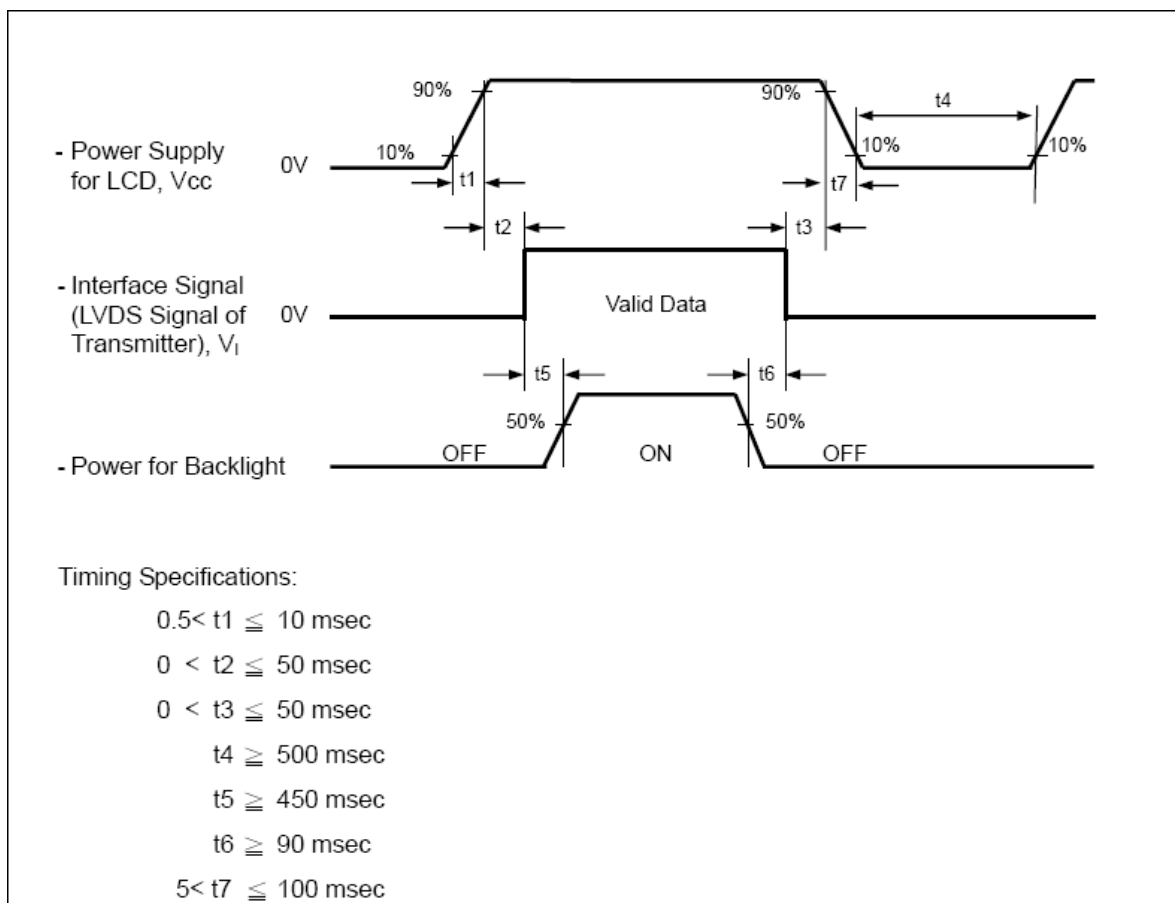
VCC3.3V. When VCC5V inputs, U105 resets circuit active, sets U105 all registers to preset modes, and then monitor goes into stand-bymode. That means hardware power on has been completed.

4.4.2 Software Power ON/OFF

When press power key, U105 # 122 receives low pulse, and then U105 will do the power on/off.

- If Power ON, U105 # 123(LED Green) will send out Low potential, and then LED Blue on.
- If Power OFF, U105 # 123(LED Blue) will send out High potential, and then LED Off.

The Panel_Vcc, Backlight_En, CLK/DATA output to panel will follow the following sequence.



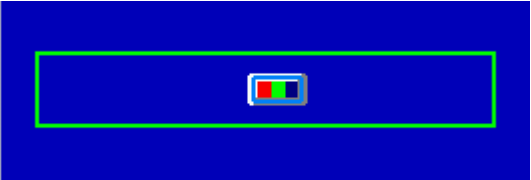
5. Adjustment Procedure

5.1 Key Function Description

CONTROL KEY	KEYS FUNCTION
[AUTO] [2]	By pressing [AUTO] key, "Auto Image Adjust" is performed
[MENU] [1]	By pressing [MENU] key, Main menu display
[▼] [▲]	A. When "MENU OSD" display, press these keys to change the contents of an adjustment item, or change an adjustment value B. When "MENU OSD" is un-display, press these keys to change brightness and contrast
[POWER] [⏻]	Power on or power off the monitor

5.2 Hot Key Operation

[1]	Main Menu
[2]	Auto Image Adjust
[▼]	To immediately activate Audio menu.
[▲]	To immediately activate Contrast menu. It should be change to Brightness OSD by push button [2]
[▼]+ [▲]	1. In the Audio mode, recall both of Volume and Mute to default without OSD message. 2. In the BT / CR mode, recall Contrast or Brightness to default in its menu without OSD message.
[1] + [2]	1. Toggle 720x400@70Hz 、 640x350@70Hz and 640x400@70Hz mode when input 720x400@70Hz 、 640x350@70Hz or 640x400@70Hz mode 2. Toggle 640x400@60HZ , 720x480@60Hz,640x480@60 mode when input 640x400@60HZ , 720x480@60Hz,640x480@60 mode 3. Toggle 1024x768@50Hz and 1280x768@50Hz mode when input 1024x768@50Hz or 1280x768@50Hz mode 4. Toggle 1024x768@75/60Hzand 1280x768@75/60Hz mode when input 1024x768@75/60Hz or 1280x768@75/60Hz mode 5. Toggle 1600x900@60Hz(Reduced) and 1280x960@60Hz mode when input 1600x900@60Hz

	(Reduced)or 1280x960@60Hz mode 6. Toggle 1600x900@60Hz and 1440x900@60Hz mode when input 1600x900@60Hz or 1440x900@60Hz mode
[1] + [▼] + [▲] (Keep pushing 5 sec)	White Balance 1. It will not shown on user's guide 2. OSD message as below,  (Image = no blanking)
[1] + [▲]	OSD Lock (refer to segment 4-6-4)
[1] + [▼]	Power Lock (refer to segment 4-6-5)
No signal + [2] + power	Burning mode
[2] + power	Factory Mode
Remark : All the short cuts function are only available while OSD off	

5.3 OSD Control

5.3.1 OSD Table

Main Menu	
	1. Key button definition: [1]: OSD off [2]: Execute the selected function [Up]: Rolling up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Rolling down the slider (When push the button on the bottom position, the

Level 1	Level 2	Level 3
Auto Image Adjust  1. Background = blanking 2. The message OSD position is at the center. 3. After auto tune, OSD shall be off 4. Only for analog mode		
Contrast/Brightness 	Contrast 1. Adjust range = 0 to 100 2. Default = 70 3. Key button definition: [1] = Back to Main Menu or OSD off (depend on previous status) [Up] = Increase the OSD value setting [Dn] = Decrease the OSD value setting [Up]+[Dn]: Recall to default	

Key button definition:

[1]: Back to previous OSD status

[2]: select to adjust value setting.

[Up]: Move up the slider

[Dn]: Move down the slider

Brightness



1. Adjust range = 0 to 100

2. Default = 100

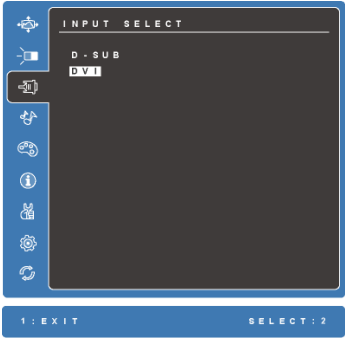
3. Key button definition:

[1] = Back to Main Menu or OSD off
(depend on previous status)

[Up]: Increase the OSD value setting

[Dn]: Decrease the OSD value

[Up]+[Dn]: Recall to default

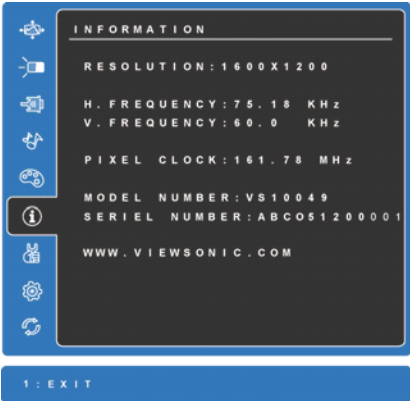
Input Select  1. Show on existing input port by white-background color 2. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected input port [Up]: Move up the slider [Dn]: Move down the slider	D-SUB Step 1: Turn off OSD. Step 2: 1. Target video input port = Analog 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
	DVI Step 1: Turn off OSD. Step 2: 1. Target video input port = Digital 2. If signal detected from target port, change to target port. 3. If no signal detected from target port, keep existing input port. Step 3: Show on Input Message OSD at the right-top corner of screen for 1 second. 	
Color Adjust	sRGB Change Color setting to sRGB	
	9300K Change Color setting to 9300K	

 1. Show on existing input port by white-background color 2. Default = 6500K 3. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected color setting [Up]: Move up the slider [Dn]: Move down the slider 4. Under DCR mode (Dynamic Contrast = On), SRGB shall be disabled with fate-out color. And it should not be selected.	7500K Change Color setting to 7500K	
	6500K Change Color setting to 6500K	
	5000K Change Color setting to 5000K	
	User Color Change Color setting to user color 	Red  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: selected setting. [Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting

Green



1. Adjust range = 0 to 100
2. Default = 100
3. Key button definition:
 - [1]: Back to Color Adjust OSD
 - [2]: selected setting.
 - [Up]: Increase the OSD value setting
 - [Dn]: decrease the OSD value setting

		Blue  1. Adjust range = 0 to 100 2. Default = 100 3. Key button definition: [1]: Back to Color Adjust OSD [2]: selected setting. [Up]: Increase the OSD value setting [Dn]: decrease the OSD value setting
Information  Key button definition: [1]: Back to Main Menu OSD		

Manual Image Adjust



1. Key button definition:

- [1]: Back to previous OSD status
- [2]: Execute the selected function
- [Up]: scroll up the slider
(When push the button on the top position, the slider shall go down to the bottom item)
- [Dn]: Scroll down the slider
(When push the button on the

H/V Position

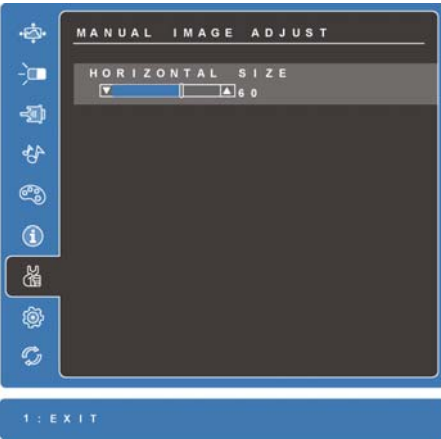


Horizontal Position

1. Adjust range = 0 to 100
2. Key button definition:
 - [1]: Back to Manual Image Adjust OSD
 - [2]: Change to Vertical Position OSD
 - [Up]: Increase the OSD value setting
 - [Dn]: Decrease the OSD value

Vertical Position

1. Adjust range = 0 to 100
2. Key button definition:
 - [1]: Back to Manual Image Adjust OSD
 - [2]: Change to Horizontal Position OSD
 - [Up]: Increase the OSD value setting
 - [Dn]: Decrease the OSD value

bottom position, the slider shall go down to the top item 2. Under Digital mode, all the H./V. Position, Horizontal Size and Fine Tune shall be disabled with fate-out color. And it should not be selected. 3. Under native mode, Sharpness shall be disabled with fate-out color. And it should not be selected. 4. Under SRGB mode, Dynamic Contrast shall be disabled with fate-out color. And it should not be selected.	Horizontal Size  1. Adjust range = 0 to 100 2. Key button definition: [1]: Back to Manual Image Adjust OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value	
	Fine Tune  1. Adjust range = 0 to 100 2. Key button definition: [1]: Back to Manual Image Adjust OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value	

Sharpness  1. Adjust range = {0 / 25 / 50 / 75 / 100} 2. Default = 50 3. Key button definition: [1]: Back to Manual Image Adjust OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value	
Dynamic Contrast Swap on and off the Dynamic Contrast function Default = Off ☒ = On ☐ = Off When Dynamic Contrast is on, below functions will be disabled: 1. Brightness/Contrast menu 2. SRGB selection in Color Adjust 3. White balance hot key 4. DDC/CI BR/CT adjustment	
Aspect Ratio	4:3 Change aspect ratio to 4:3



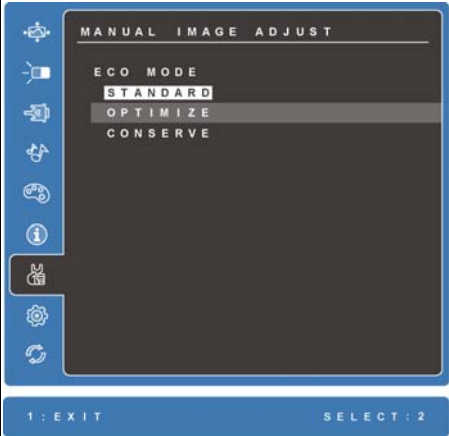
Full Screen

Fill screen with panel native aspect ratio.

1. Show on existing Aspect Ratio setting by white-background color
2. Key button definition:
 - [1]: Back to previous OSD status
 - [2]: Change to the selected Display Mode setting.
 - [Up]: Scroll up the slider
(When push the button on the top position, the slider shall go down to the bottom item)
 - [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item)
3. Default = full screen

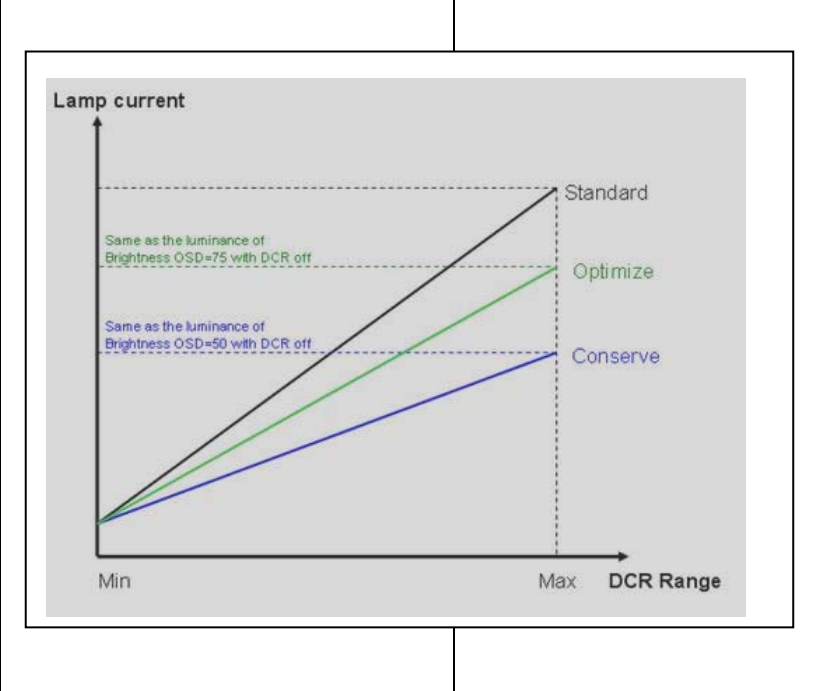
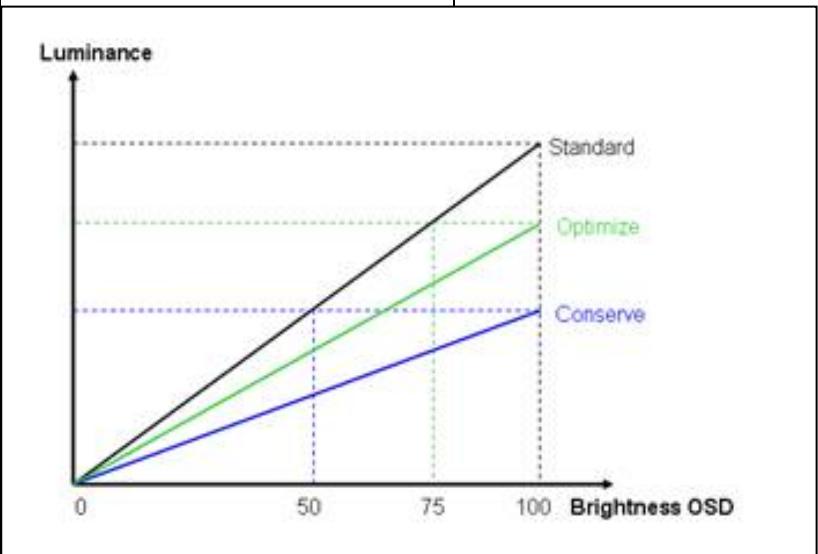
Note : 1. When input signals are wide format, this function is disable.

2. When input signals are non-wide format. this function is enable.

	ECO Mode  1. This function toggles ECO mode. 2. Show on existing ECO Mode setting by white-background color 3. Key button definition: [1]: Back to previous OSD status [2]: Change to the selected Display Mode setting. [Up]: Scroll up the slider (When push the button on the top position, the slider shall go down to the bottom item) [Dn]: Scroll down the slider (When push the button on the bottom position, the slider shall go up to the top item) 4. Default = Standard 5. Under sRGB mode, ECO Mode shall be disabled with fate-out color. And it should not be selected. 6. No matter DCR on or off, lamp current will be changed by ECO mode change. 7. While ECO or DCR setting changed, the lamp current shall be updated to new setting immediately. 8. Do not lock Contrast or Brightness OSD for ECO function	Standard OSD adjust range = 0 to 100
		Optimize OSD adjust range = 0 to 100

9. Following is the lamp current chart,

Conserve
OSD adjust range = 0 to 100



Setup Menu



Language Select

English
Set OSD language to English and keep in Language Select OSD

French
Set OSD language to French and keep in Language Select OSD

German
Set OSD language to German and keep in Language Select OSD

1. Key button definition:

[1]: Back to Main Menu OSD

[2]: Execute the selected function

[Up]: Scroll up the slider

(When push the button on the top position, the slider shall go down to the bottom item)

[Dn]: Scroll down the slider

(When push the button on the bottom position, the slider shall go down to the top item)



1. Show on existing by white-background color

2. Key button definition:

[1]: Back to previous OSD status

[2]: Change to the selected language setting

[Up]: Scroll up the slider

(When push the button on the top position, the slider shall go down to the bottom item)

[Dn]: Scroll down the slider

(When push the button on the bottom position, the slider shall go down to the top item)

Spanish

Set OSD language to Spanish and keep in Language Select OSD

Italian

Set OSD language to Italian and keep in Language Select OSD

Finnish

Set OSD language to Finnish and keep in Language Select OSD

Russian

Set OSD language to Russian and keep in Language Select OSD

Japanese

Set OSD language to Japanese and keep in Language Select OSD

Korean

Set OSD language to Korean and keep in Language Select OSD

Traditional Chinese

Set OSD language to Simplified Chinese and keep in Language Select OSD

Simplified Chinese

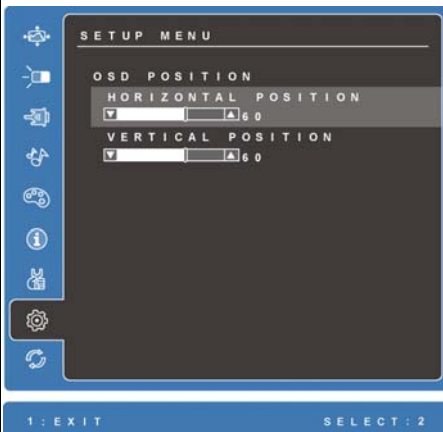
Set OSD language to Traditional Chinese and keep in Language Select OSD

Resolution Notice

Swap on and off the Resolution Notice function



OSD Position



OSD H. Position

1. Adjust range = 0 to 100
2. Default = 50
3. Key button definition:
 - [1]: Back to Setup Menu OSD
 - [2]: selected setting
 - [Up]: Increase the OSD value setting (move OSD right)
 - [Dn]: Decrease the OSD value setting (move OSD left)
 - [Up]+[Dn]: Recall to default value

		OSD V. Position 1. Adjust range = 0 to 100 2. Default = 50 3. Key button definition: [1]: Back to Setup Menu OSD [2]: selected setting [Up]: Increase the OSD value setting (move OSD up) [Dn]: Decrease the OSD value setting (move OSD down) [Up]+[Dn]: Recall to default value
	OSD Time Out 	5 Set OSD Time Out to 5 Seconds
		15 Set OSD Time Out to 15 Seconds
		30 Set OSD Time Out to 30 Seconds
		60 Set OSD Time Out to 60 Seconds
	1. Adjust range = 5, 15, 30, 60 2. Default = 15 3. Key button definition: [1]: Back to Setup Menu OSD [Up]: Increase the OSD value setting [Dn]: Decrease the OSD value setting [Up]+[Dn]: Recall to default value	

	OSD Background Swap on and off the OSD Background ☒ = Non-transparent ☐ = Transparent	
	Auto Power Off Swap on and off the Auto Power Off function Power off the display automatically when no signal is detected for 3 minutes. ☒ = On ☐ = Off Note : 1. When no signal input with Auto Power Off = ON, the display will go into power saving first. After 3 minutes, the display will turn off automatically. 2. When no signal input with Auto Power Off = OFF, the display will go into power saving as normal display. 3. Default = Off 4. Memory Recall will call back the setting to default. 5. When push Power Lock hot key under Auto Power Off = On, the message OSD will show on for 3 seconds (Power Lock function is disabled), 6. The function will be disabled when power button locked.	
Memory Recall		

1. Background = blanking
2. Recall white balance to factory setting
3. Recall all the OSD setting to the default. (include the R/G/B in User Color)
4. Show the message OSD position is at the center for 3 seconds.
5. Clean FIFO timing mode buffer
6. Execute Auto Image Adjust

Note: Memory Recall should not effect on Language, Power Lock Settings or Input Priority

5.3.2 OSD Lock short cuts function for the buttons

The OSD lock will be activated by pressing the front panel control buttons [1] + [▲] for 10 seconds ^{*1}. If the user then tries to access the OSD by pressing any of the buttons, a message will appear on the screen for 3 seconds showing "OSD Locked" ^{*2}. The OSD lock will be deactivated by pressing the front panel control buttons [1] + [▲] again for 10 seconds ^{*3}.

*1 The OSD Lock message as below,



Range = 0 to 10

*2 The OSD Locked message as below,



*3 The OSD Unlock message as below,



Range = 0 to 10

*4 When the OSD is locked will lock all functions, including "Volume", "Mute" and others.

*5 Status bar indicating OSD Lock or Unlock is in progress and when complete it will indicate "OSD Locked" or "OSD Unlocked" for 3 seconds as below,

OSD Locked



OSD Unlocked



*6 When OSD appears on screen, the OSD Lock/Unlock short cut key will be disabled.

5.3.3 Power Lock short cuts function for the buttons

The Power lock will be activated by pressing the front panel control buttons [1] + [▼] for 10 seconds ^{*1}. Locking the power button means that the user won't be able to turn off the LCD while the power button is locked. If the user presses the power button while it is locked, a message will appear on the screen for 3 seconds showing "Power Button Locked" ^{*2}. It also means that with the power button locked, the LCD would automatically turn back "On" when power is restored after a power failure. If the power button is not in the locked mode, then power should return to it's previous state when power is restored after a power failure. The Power lock will be deactivated by pressing the front panel control buttons [1] + [▼] again for 10 seconds ^{*3}.

*1 The Locking Power Button message as below,



Range = 0 to 10

*2 The Power Button Locked message as below,



*3 The Unlocking Power Button message as below,



Range = 0 to 10

*5 Status bar indicating Power Button Lock or Unlock is in progress and when complete it will indicate "Power Button Locked" or "Button Unlocked" for 3 seconds as below,

Power Button Locked



Button Unlocked



*6 When OSD appears on screen, the OSD Lock/Unlock short cut key will be disabled.

5.3.4 Resolution notice Action

1. Resolution Notice OSD should show on screen after changing to non-native mode for 30 sec.



2. Key button definition:
 - [1]: Turn off the OSD message.
 - [2]: Turn off the OSD message and disable Resolution Notice function
3. The OSD should disappear after 10 sec or by pushing button [1] or [2]

4. After the OSD turns off, it will not show on again before next timing change, input change or power off.
5. Resolution Notice function should be disabled when push button [2] under Resolution Notice OSD
6. The “1440x900” will be replaced by actual panel resolution.

5.3.5 0-Touch™ Function Actions

1. Execute Auto Image Adjust when new mode detected, and save the settings to buffer for further use
2. It should be reset by Memory Recall function
(Should not reset by power off, power unplug and others)

5.3.6 OSD Auto Save

The OSD shall save new settings when it is turned off by the user or when it times out. There shall not be a separate save

5.3.7 Out of range

While non-defined timing is detected, following OSD message will keeps showing on,



1. If the timing is over spec (Fh, Fv or dot clock), the image shall be blanking, and OSD background shall be non-transparent.
2. If the timing is inspect but not defined, the image shall be non-blanking.

5.3.8 No signal

While no signal is detected for D-Sub and DVI, the following OSD message shall shows on 3 seconds then go in to power saving.



OSD Background = Non-transparent
Image = Blanking

5.4 EDID (Rewrite EDID data to EEPROM)

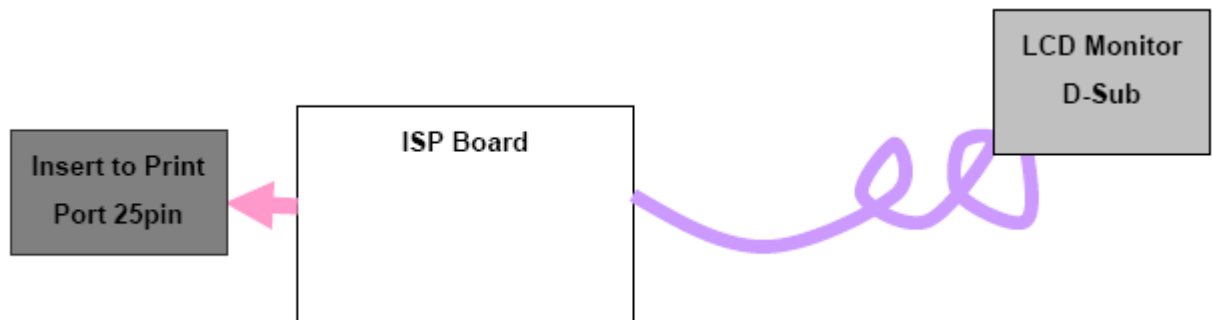
If we need to rewrite the EEPROM data, please confirm the following steps.

1. Plug in VGA Cable; we can rewrite the EDID data to EEPROM by using “EDID Rewrite” program.

2. If the “EDID Rewrite” process finished, please pull out VGA cable and press “2”+”▲” at the same time.
3. Pull out AC power cable or press power key to restart.

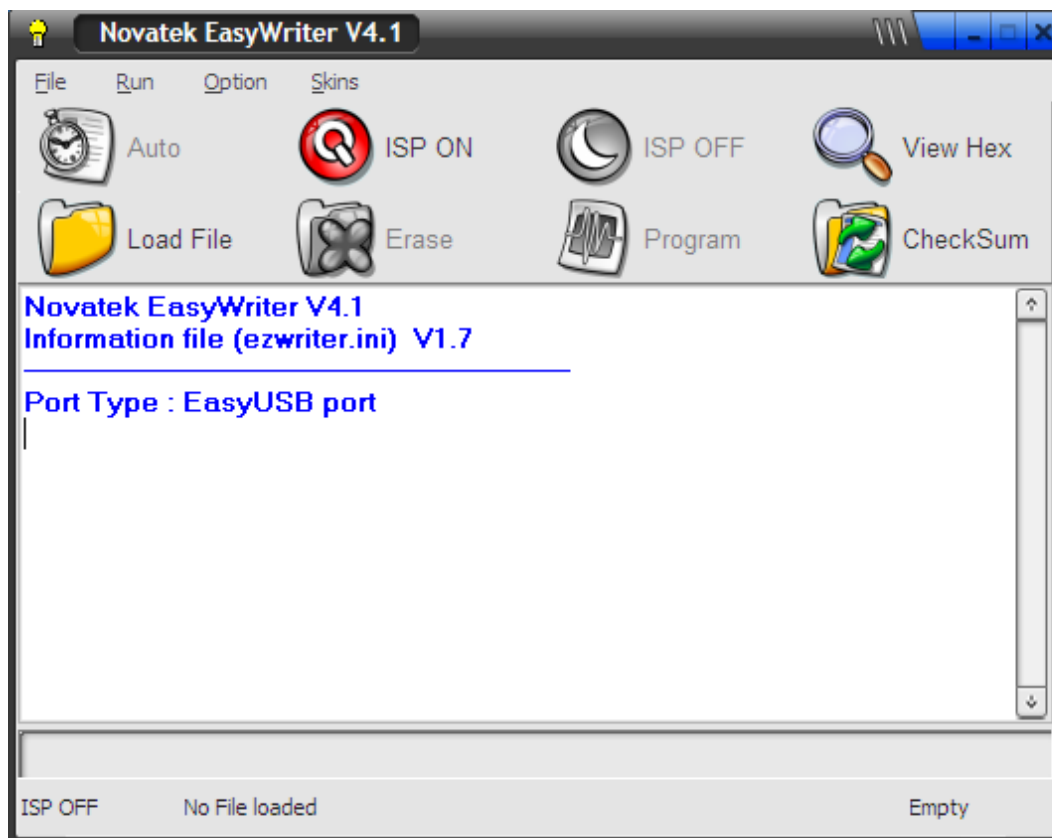
5.5 Upload firmware to MCU via VGA Cable

Connect ISP board between monitor and PC as below configure



Using novatek ISP Tool Update FW:

(1). System Frame



(2) Function Description

A. ISP ON

Set In-System Programming Enable

B. ISP OFF

Set In-System Programming Enable

C. Load File

Load Hex File to Buffer

D. Erase

Erase MCU Fash Rom

E. Program

Write Buffer Data to MCU Flash Rom

F. Auto

ISP ON→Erase→Promgram→ISP OFF

G. View Hex

View Hex File in Buffer

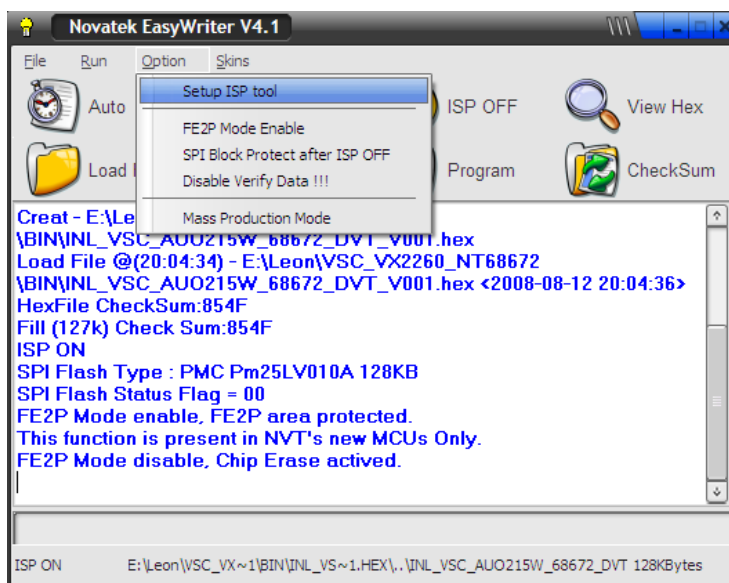
H. CheckSum

Read Data from MCU

(3). Initial Setting

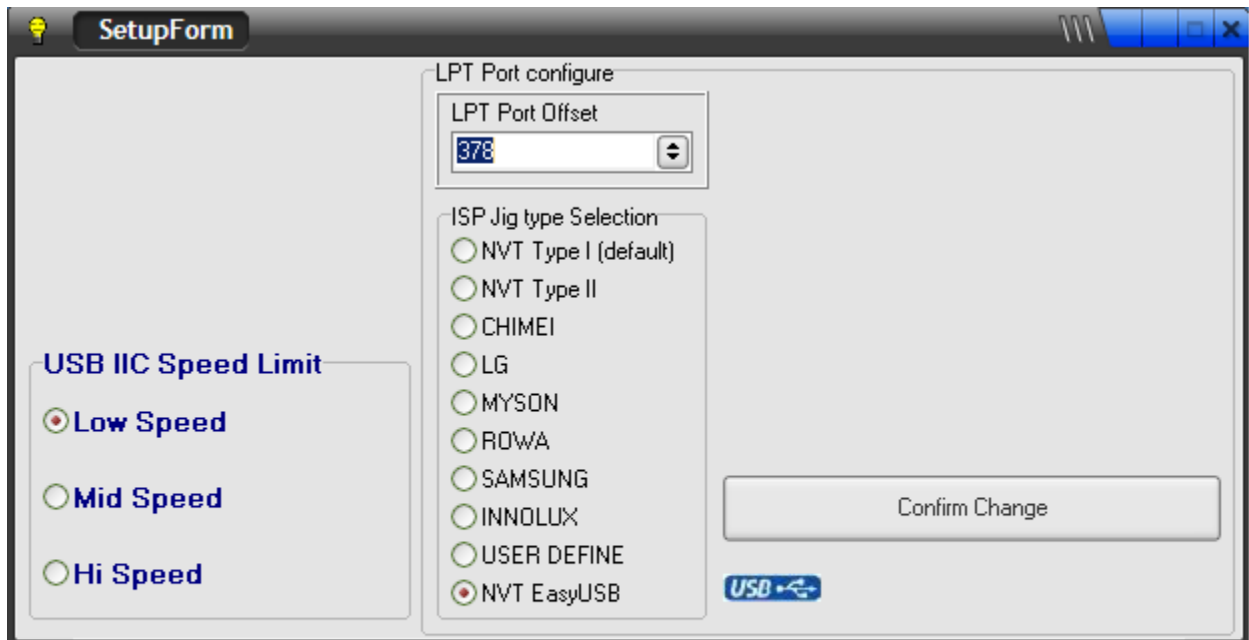
a. After Setup EasyWriter, We must set EasyWriter settings according our environment.

b. In “Option”, Select “Setup ISP tool”



C.How to Setting

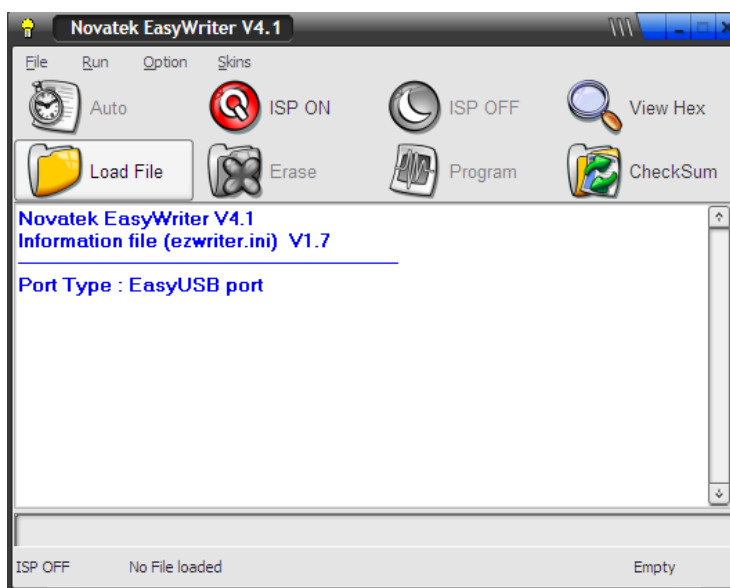
- Connect to Novatek ISP Board by USB, Select “NVT EasyUSB”.
- USB IIC Speed Limit, Suggestion : Select “Low Speed”.
- After Setting, Select “Comfirm Change” to confirm your change.



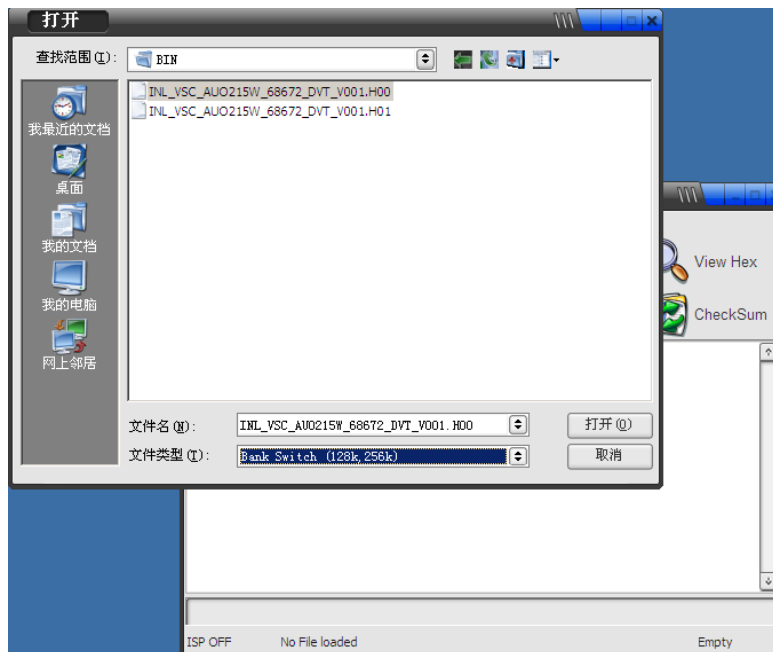
D.How to Program File to MCU Flash Rom

Step 1. Load Hex File to Buffer

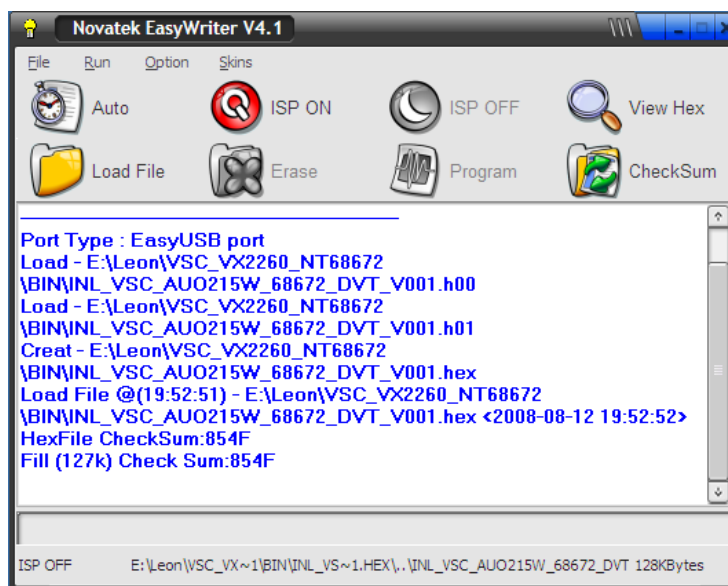
- Select “Load File” Button



- Select File Type “Bank Switch(128k, 256k)”
- Select *.H00(* = FW Project Name(define in KeilC))

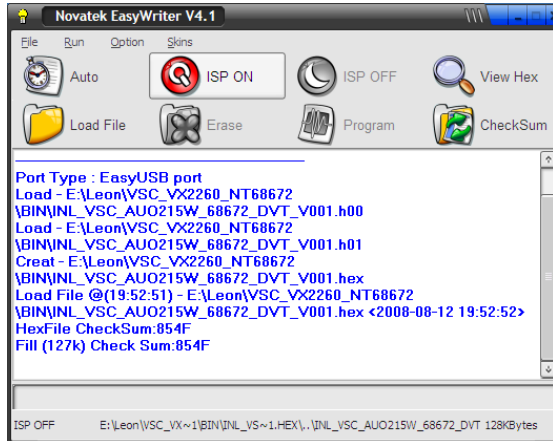


- Select Confirm, Load File OK



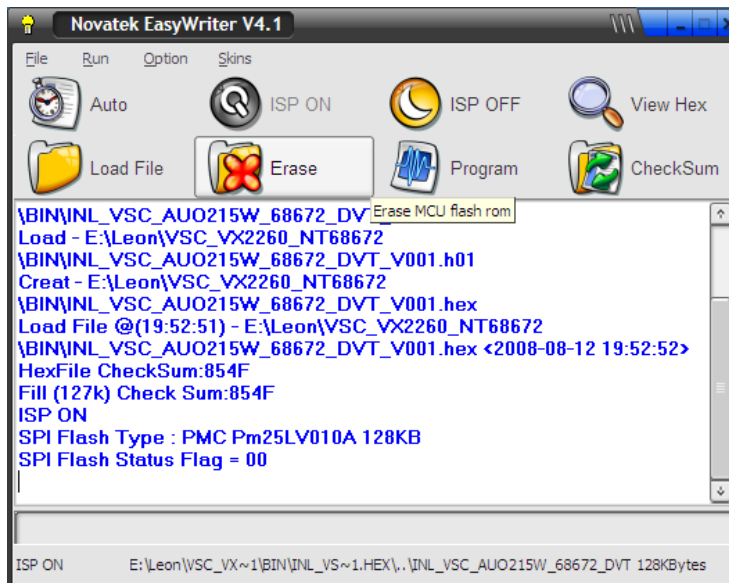
Step 2. Set In-System Programming Enable

- Select “ISP ON”, Enable ISP



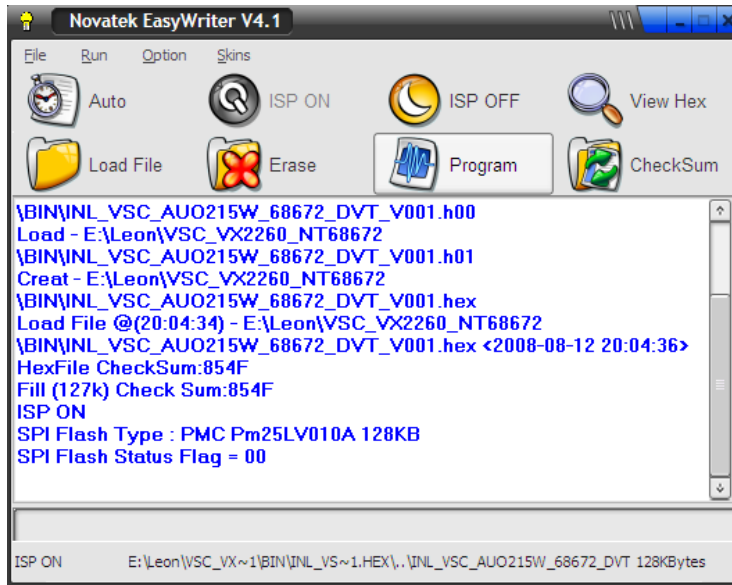
Step 3. Erase MCU Fash Rom

- Select “Erase”, Erase Flash,Avoid Conflict



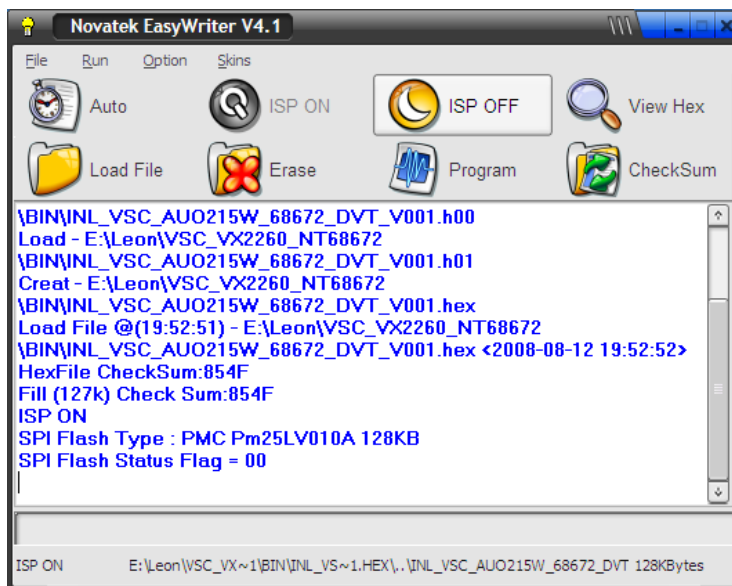
Step 4. Write Buffer Data to MCU Flash Rom

- Select “Program”, Program Buffer Data to Flash



Step 5. Set In-System Programming Disable

- Disable ISP, Start MCU

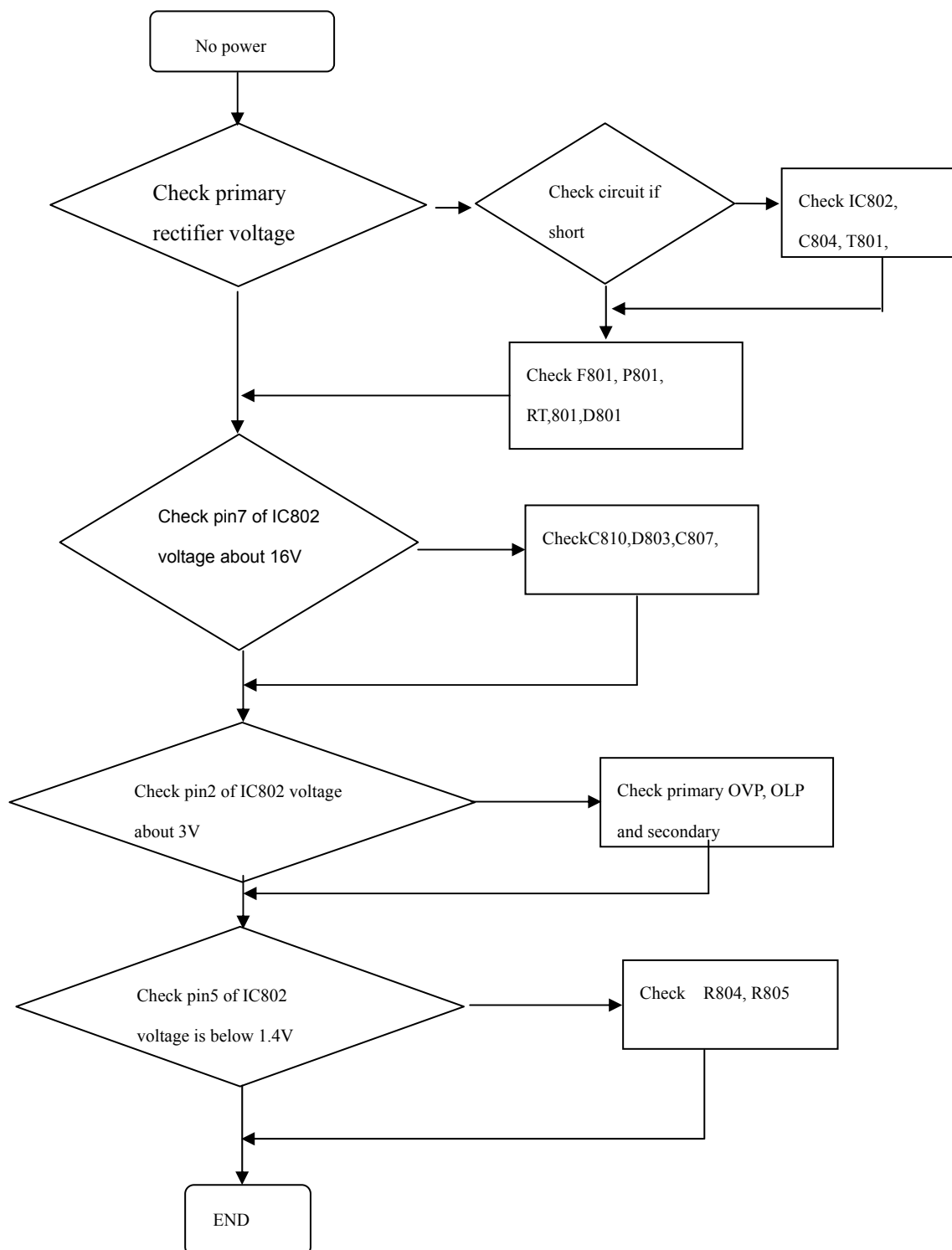


Auto Mode

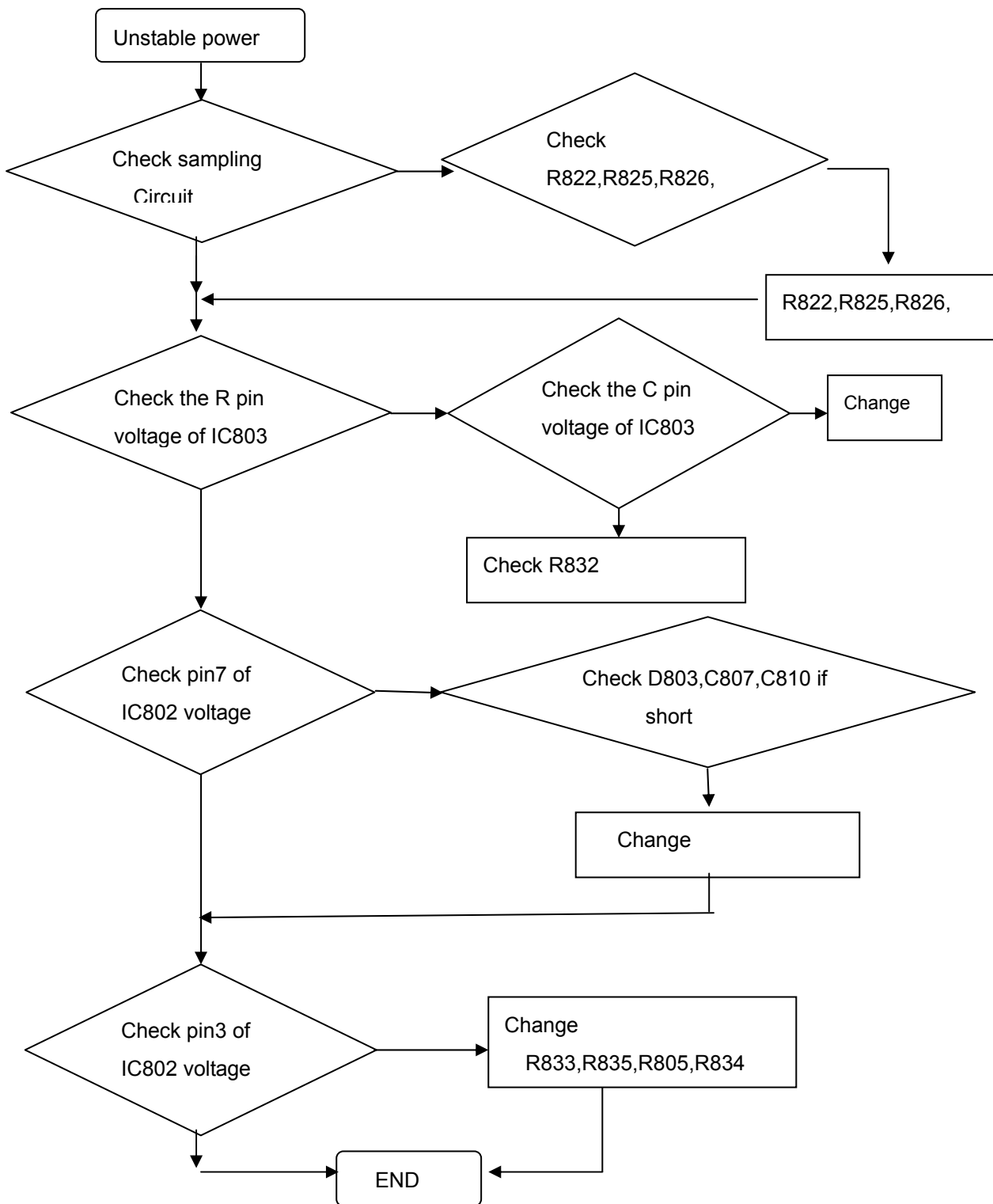
- Step2 ~ Step5 = "Auto"
- After Step 1, we can select "Auto" directly, to run Program File to MCU Flash Rom

6. Troubleshooting Flow Chart

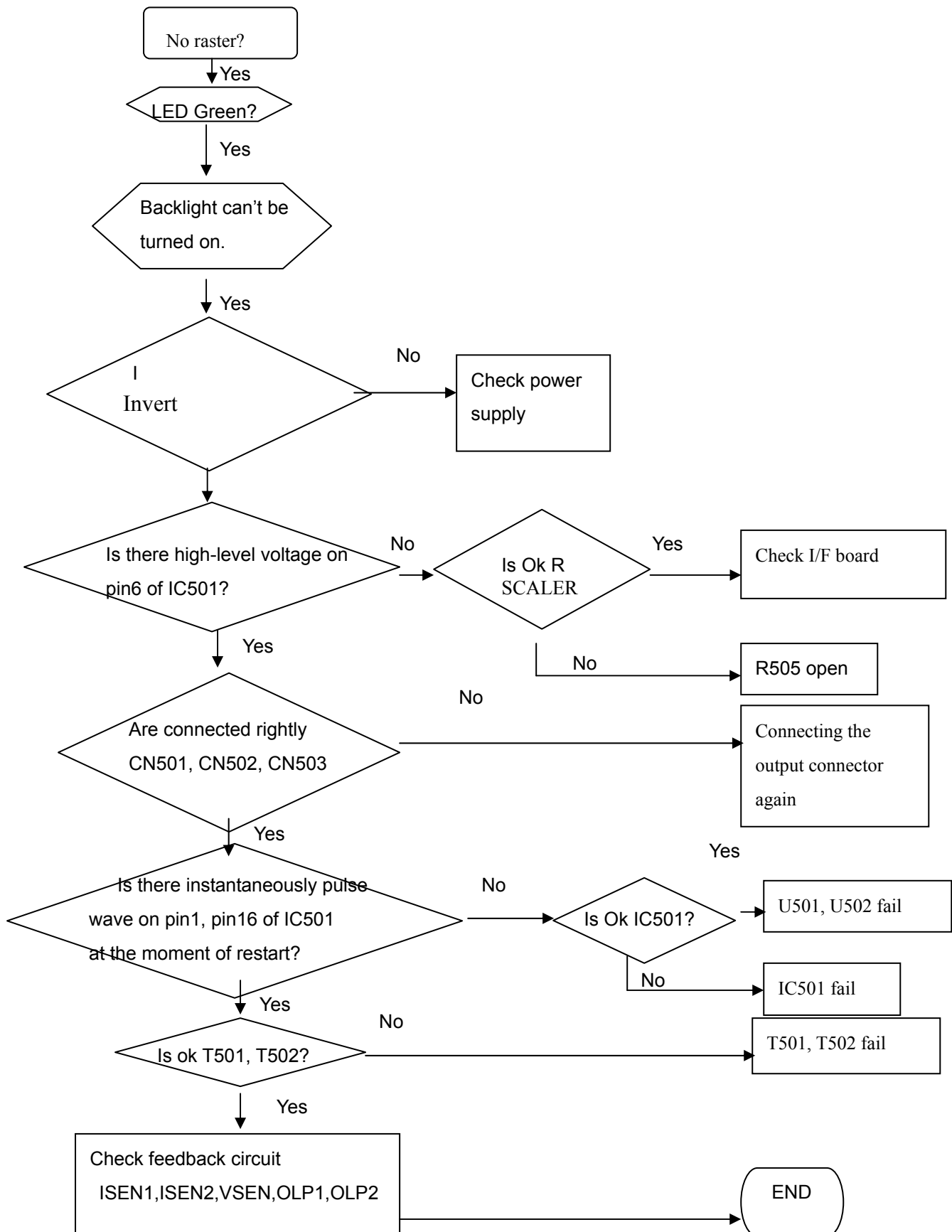
6.1 No Power & Power LED Off



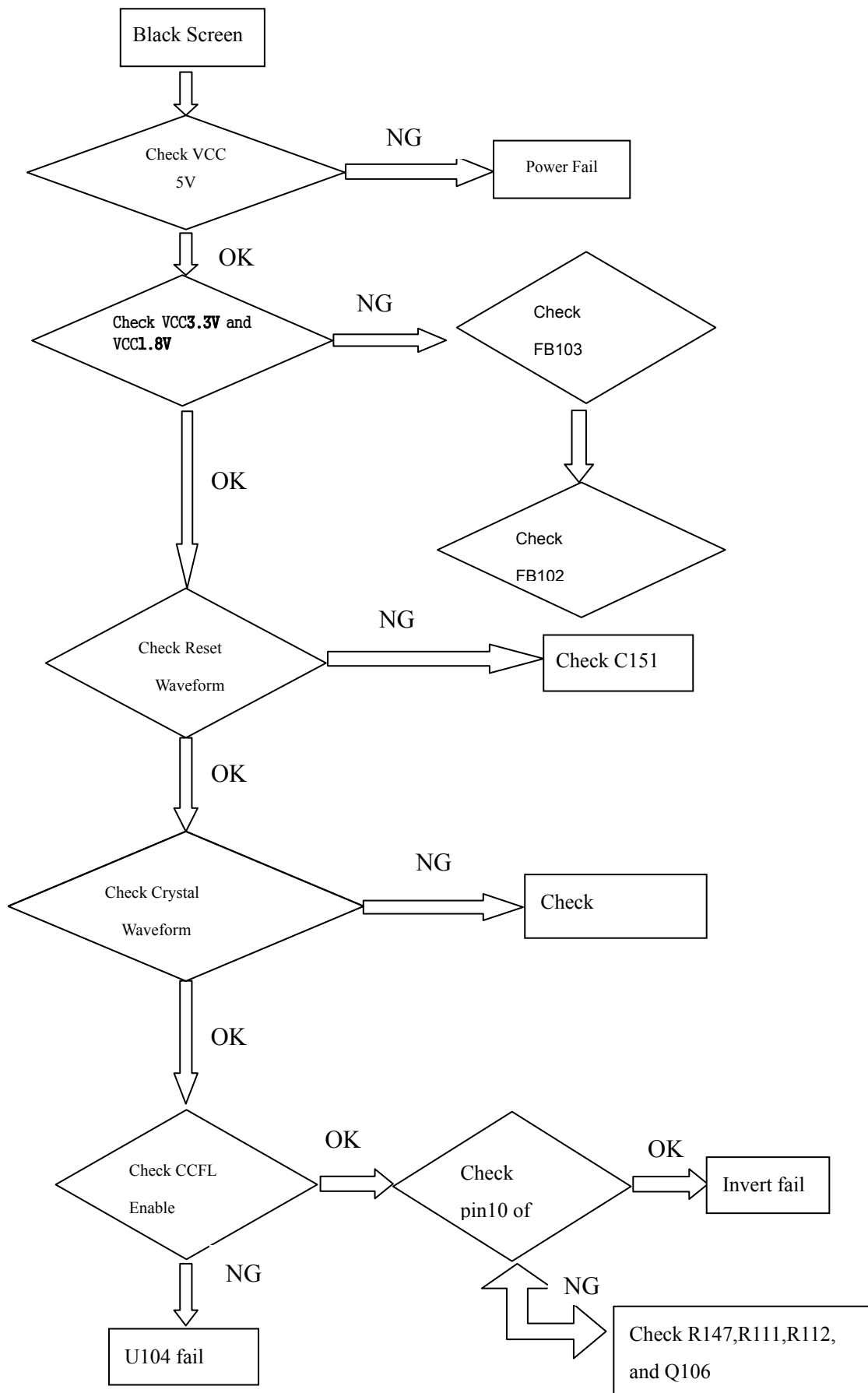
6.2 DC output voltage is unstable



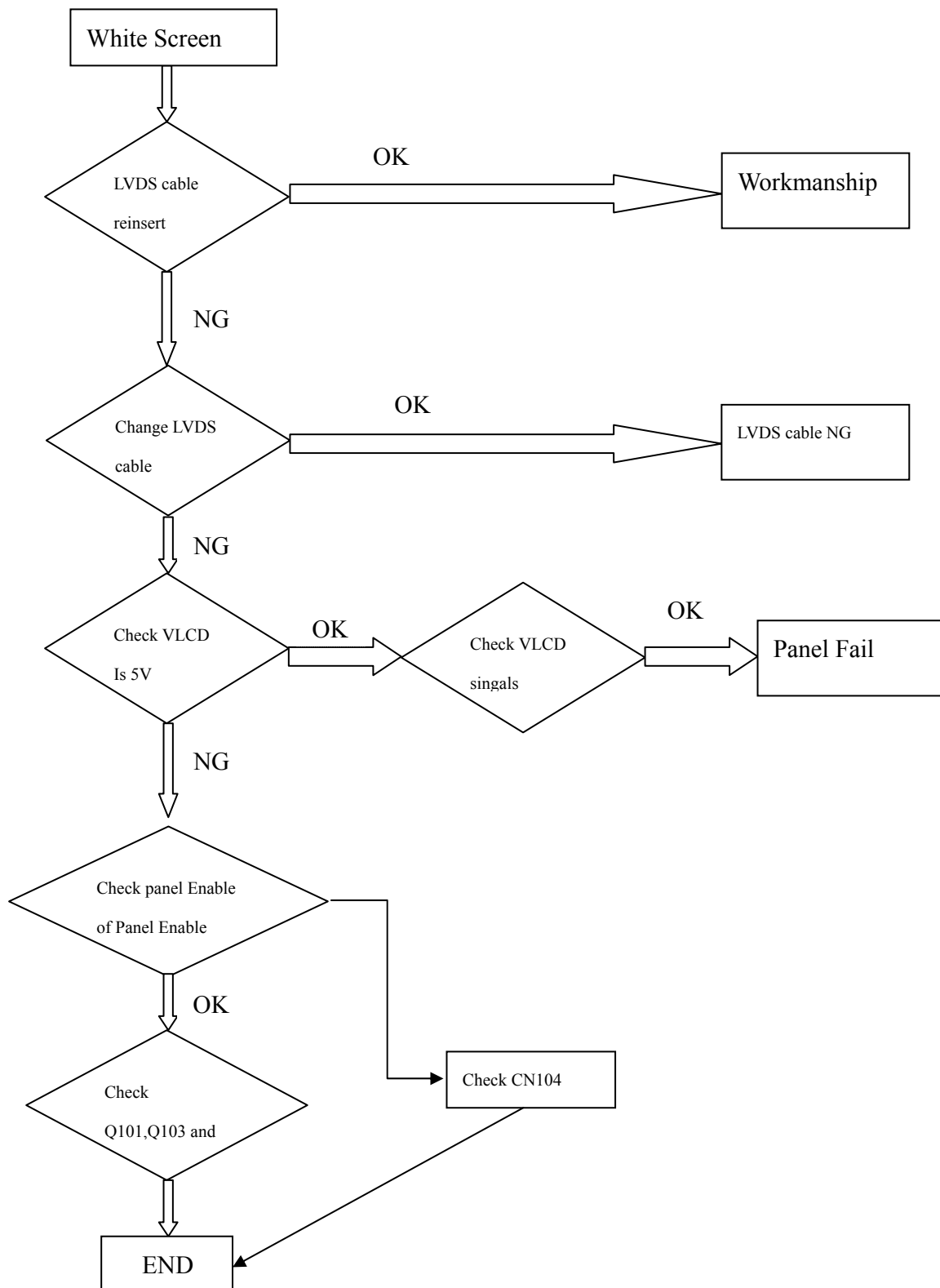
6.3 Output power is unstable



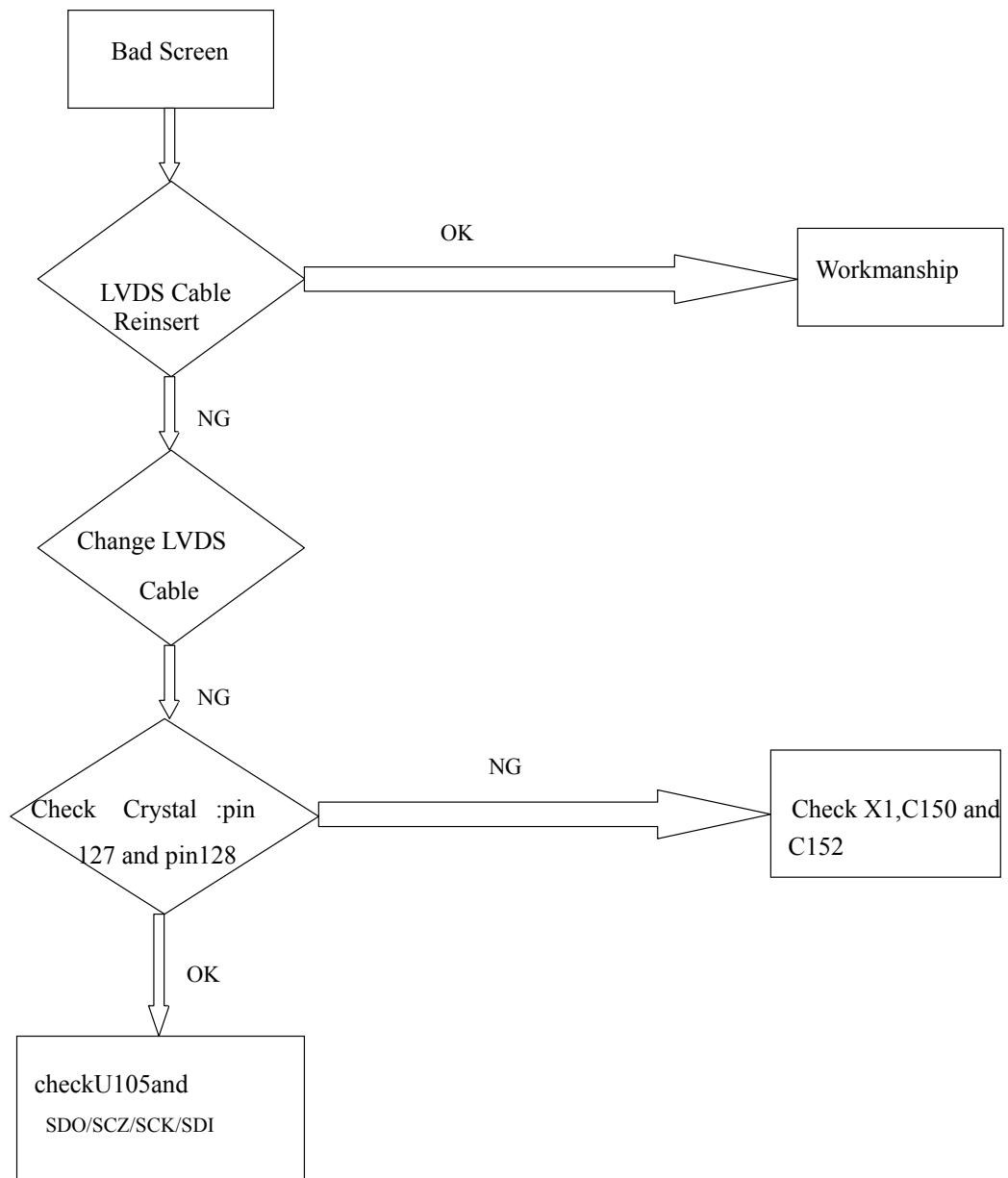
6.4 Backlight can't be turned on



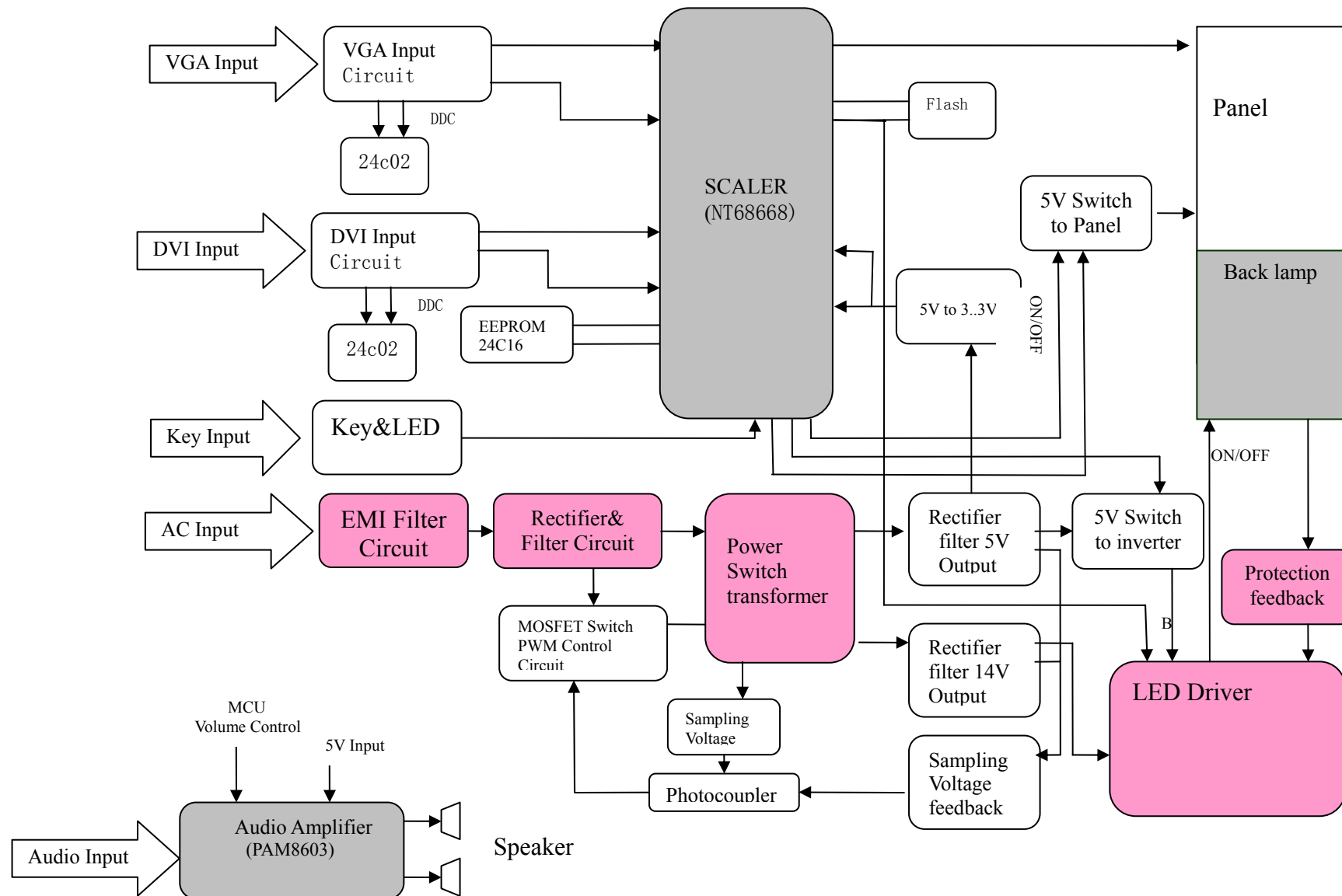
6.5 White Screen



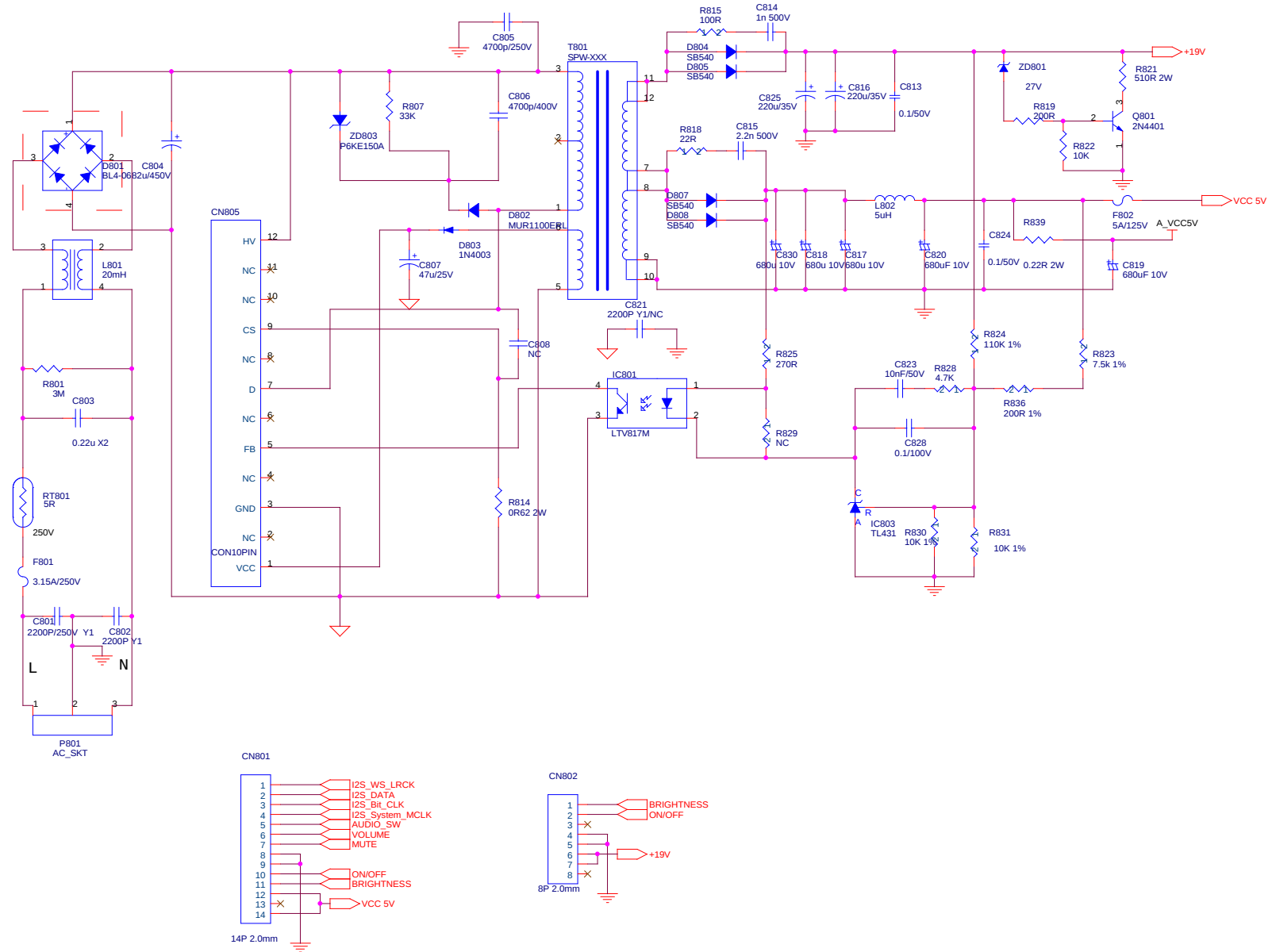
6.6 Bad Screen

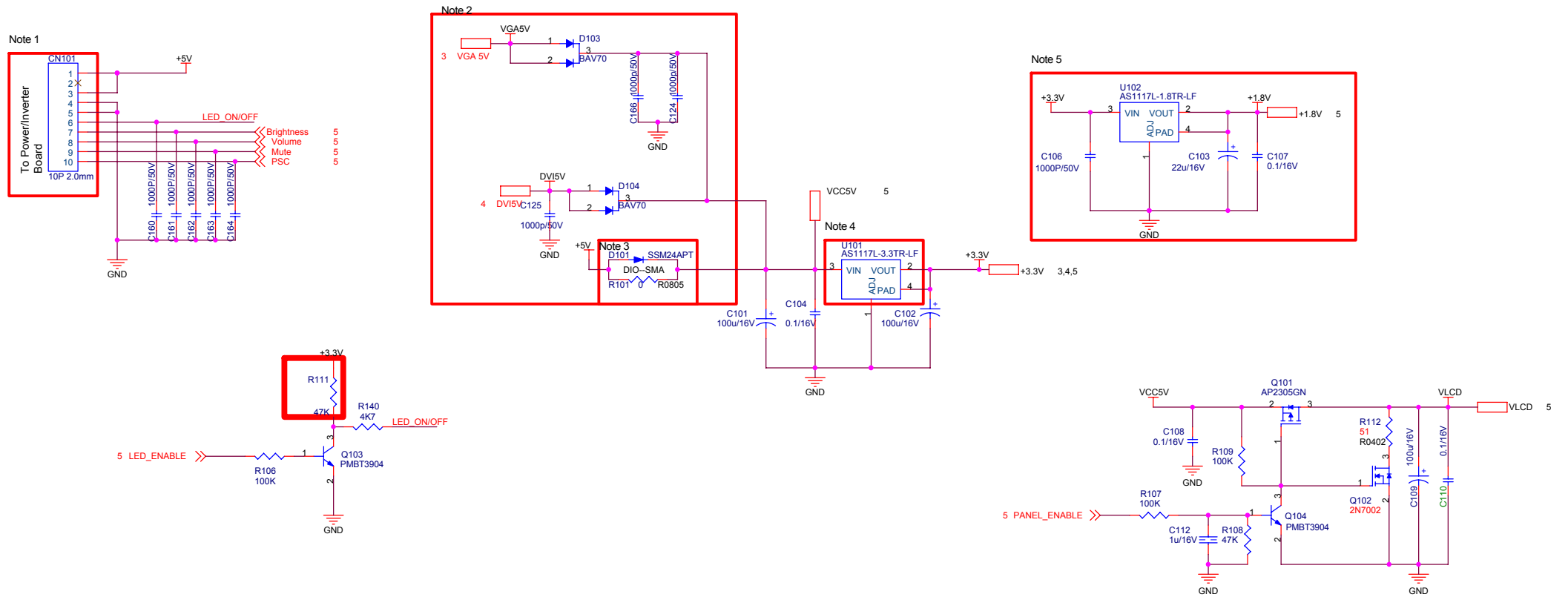


7. Block Diagram

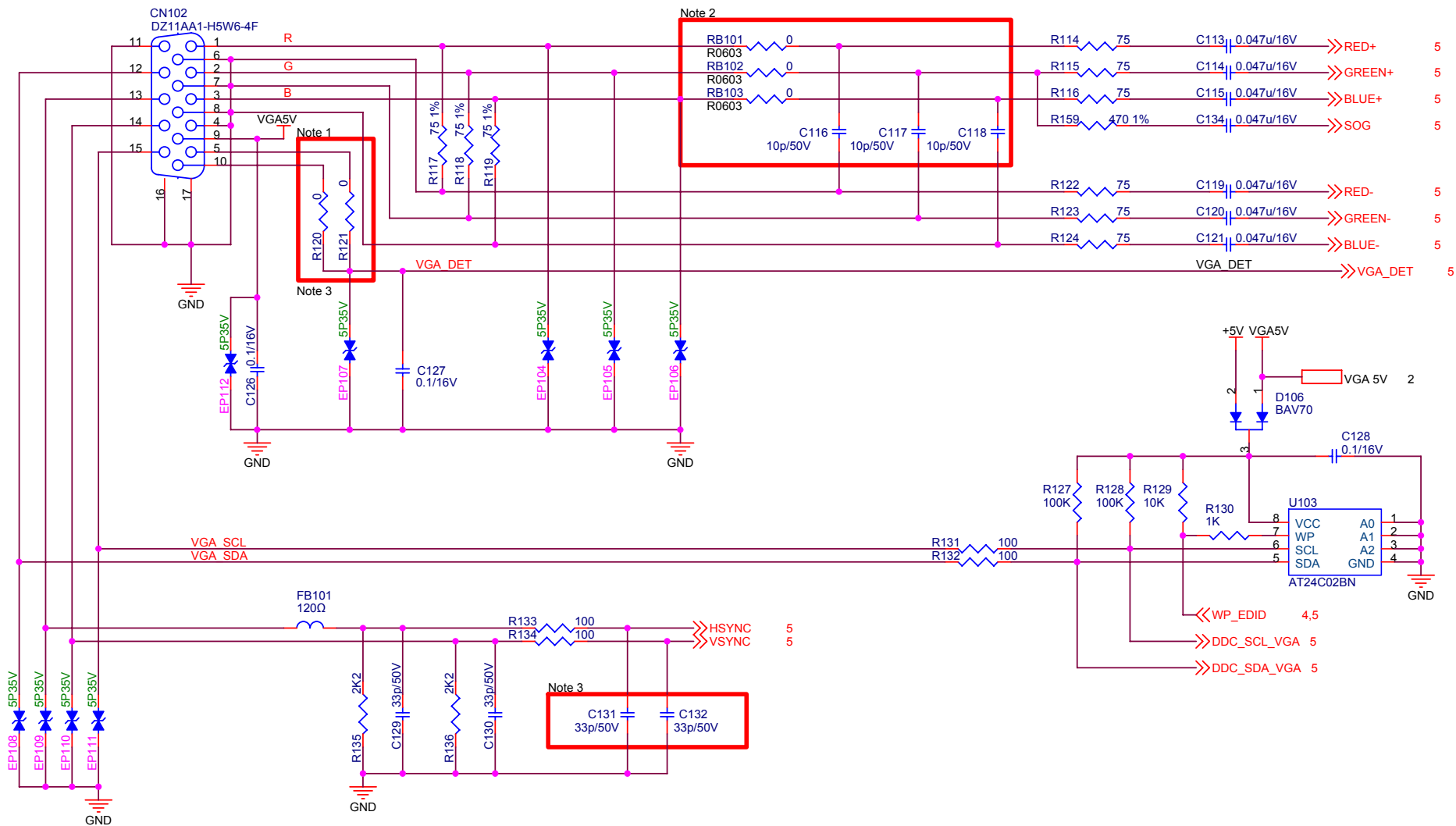


8. Schematic Diagrams



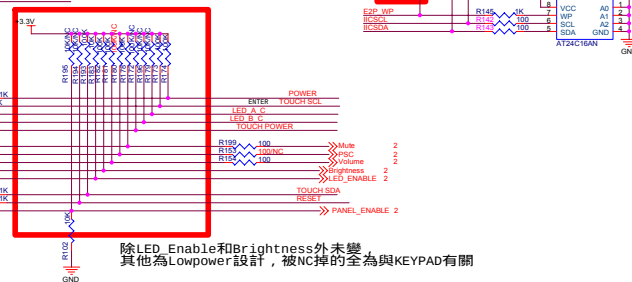
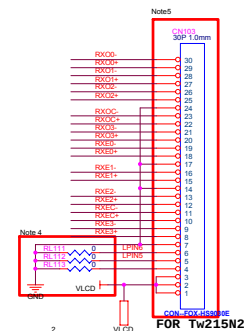


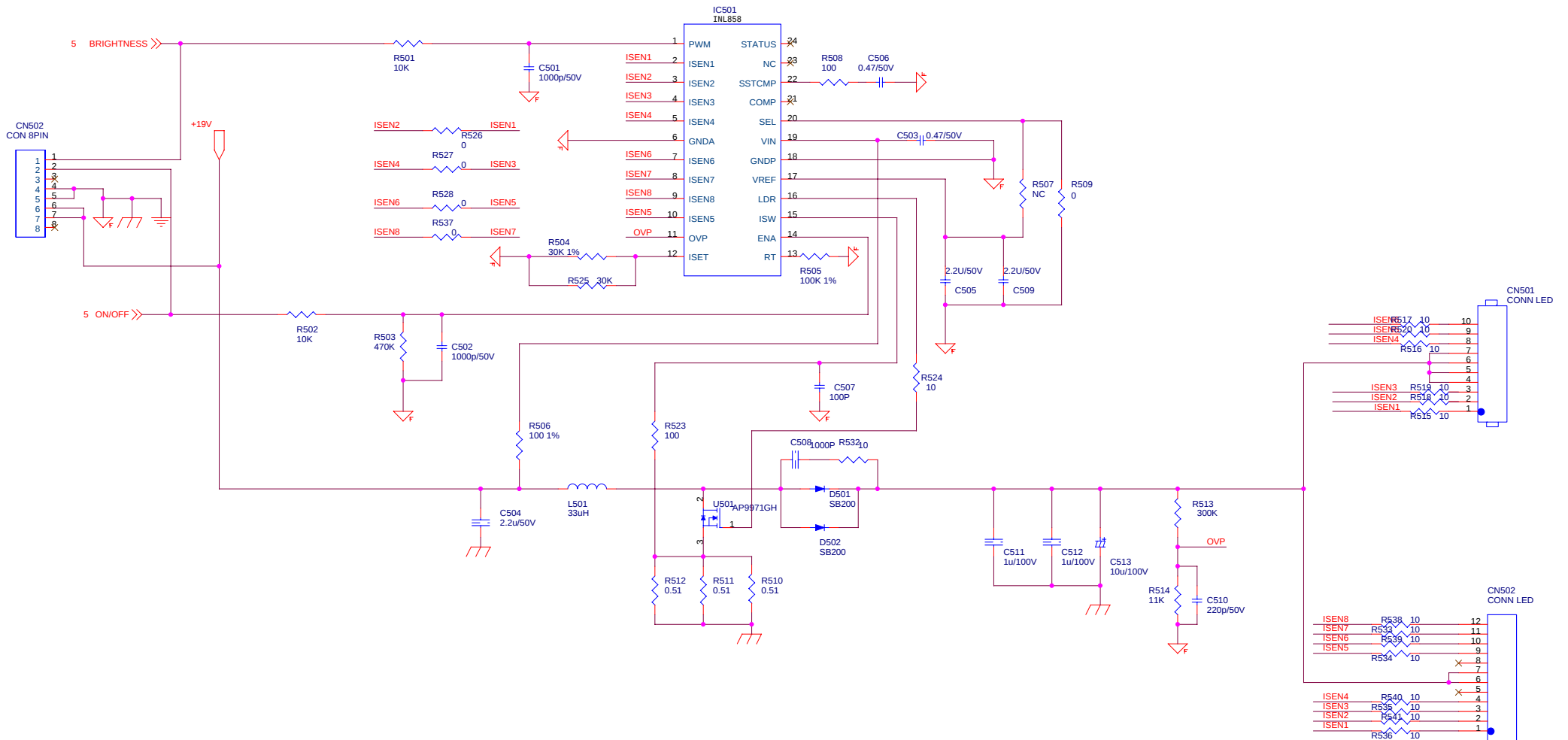
- Note:
1. Pin2 of CN101 need to NC for PCBA use.
 2. PC5V can be used for scaler on power saving mode.
 3. D101 must be co-layered with R101. D101 is used for ESD back drive.
 4. U101 must contain TO263, TO252 and SOT223 package.
 5. Using embedded 3.3 to 1.8 LDO NC U102 ,C106 ,C107 and C103



Note:

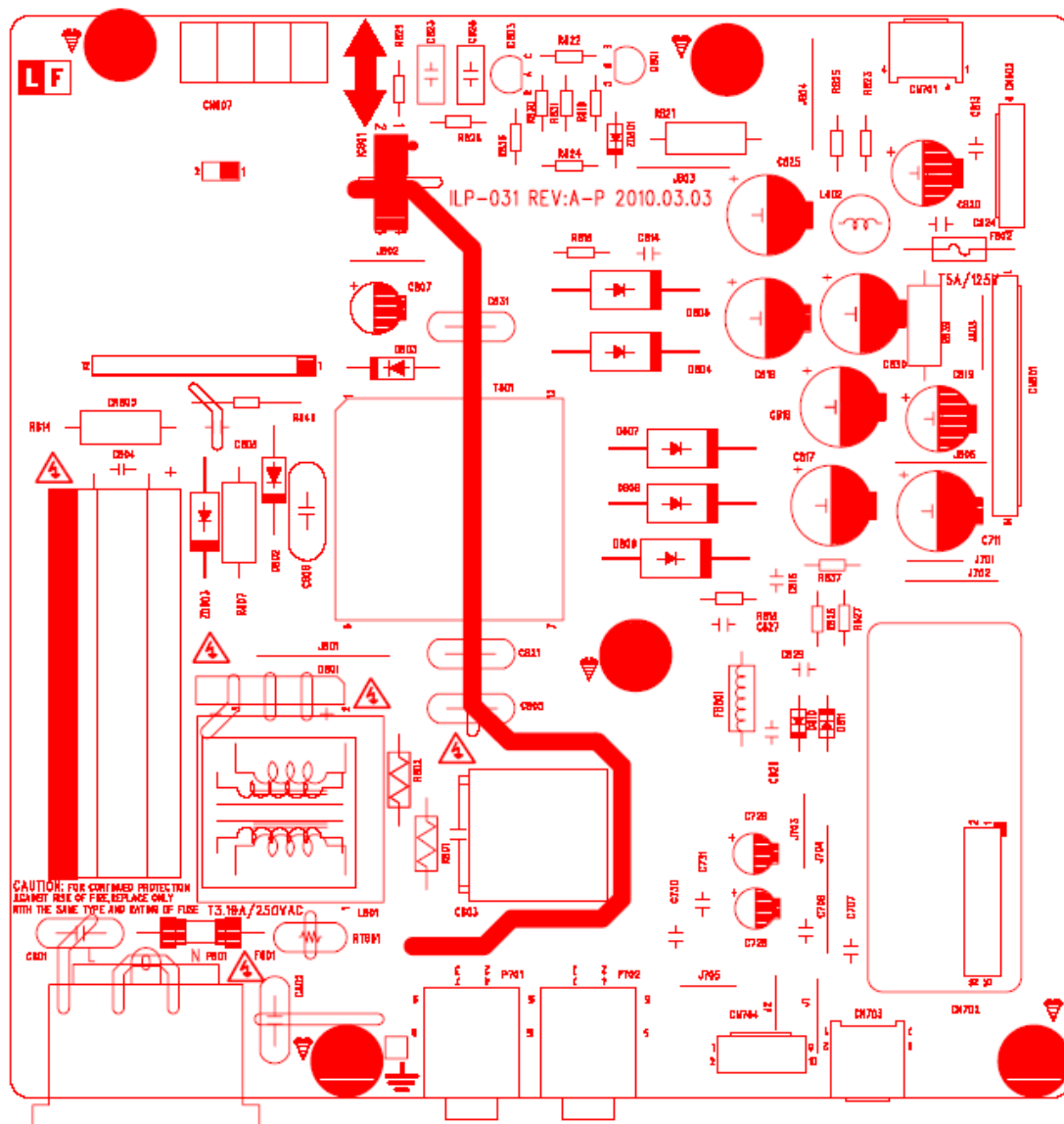
1. R120 is reserved for Samsung model.
2. R0603 package for Bead. C116,C117,C118 are reserved for EMI or performance issue.
3. C131,C132 are reserved for tuning performance issue.



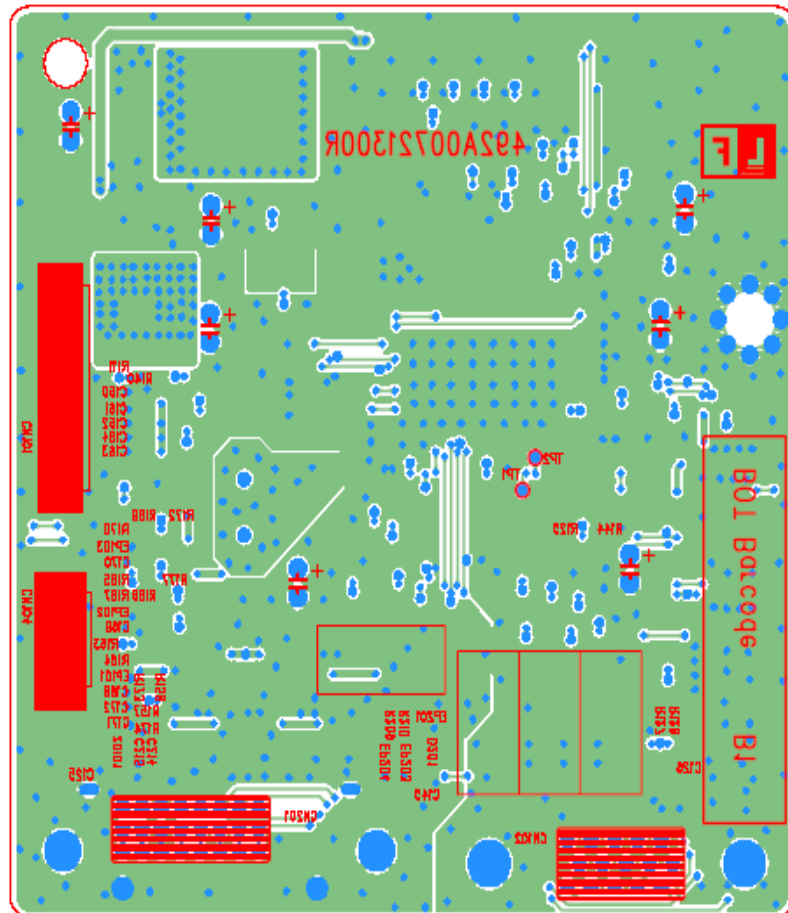


9. PCB Layout Diagrams

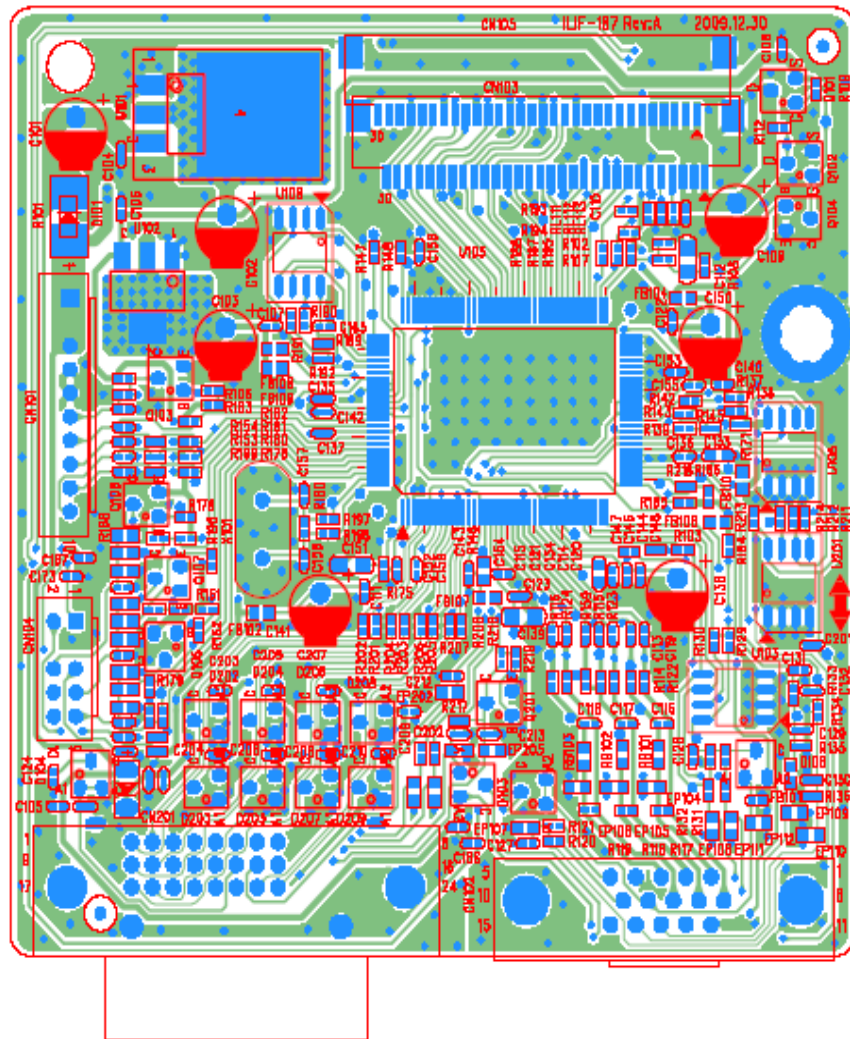
491A01021400R



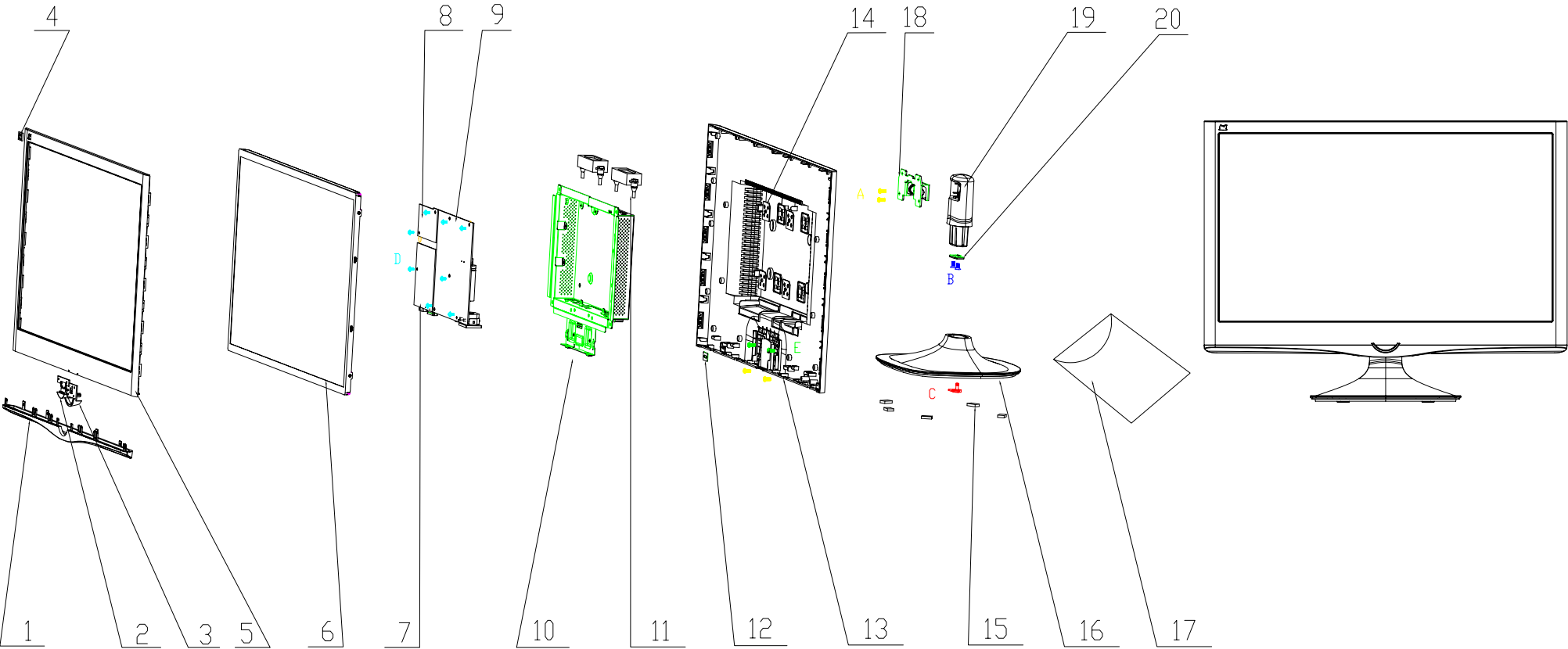
492A00721300R



492A00721300R



10. Exploded Diagram And Spare Parts List



EXPLODED PARTS LIST (VX2450W-LED)

ViewSonic Model Number: VS13518-1W

Rev: 1a

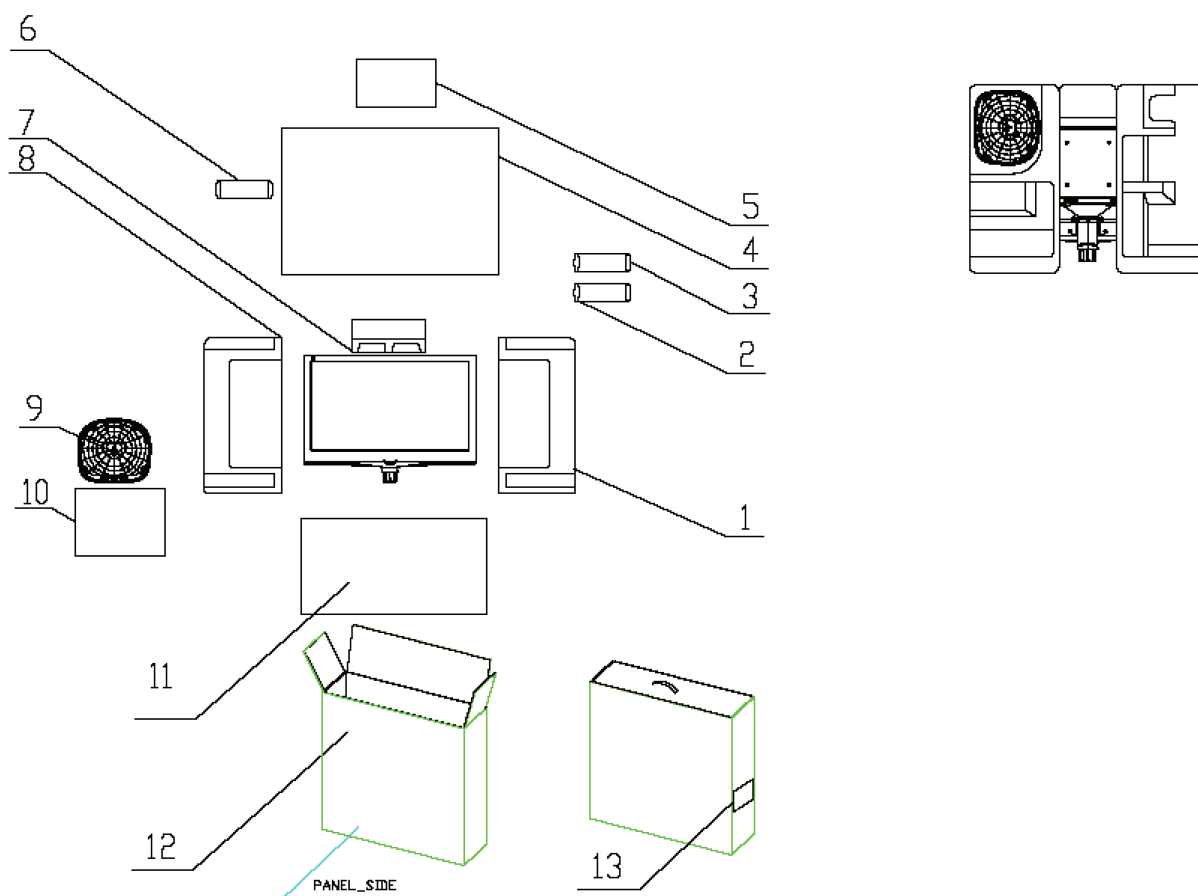
Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	NA	50118P23B200R	TRANSPARENT DECORATION VX2450	1
2	NA	75003P21A801R	SUB-ASSY,POWER BUTTON,LP21A8	1
3	NA	75003P21A800R	SUB-ASSY,POWER BUTTON RING,LP21A8	1
4	NA	501110601000R	LOGO THREE BRIDS 7.9MM LE2082	1
5	NA	50102P23B200R	BACK COVER W/SPK W/DVI VX2450	1
6	E-00010229	631102240500H	LCP 23.6"M236H3-LA2-902(A)(CMO) HF	1
7	B-00010488	795620500600R	PCBA,LED CON/B,LP23B2-622 ROHS	1
8	NA	795361400600R	PCBA,PI/B,W/SPK,LP21A8-622 ROHS	1
9	NA	79P231300500R	PCBA,IF/B,LA2,W/SPK,LP23B2-522 ROHS	1
10	NA	70106P23B200R	ASSY CHASSIS W/SPK W/DVI VX2450	1
11	NA	502020100700R	LOCK SHEET,LP2259	1
12	NA	50102P23B200R	BACK COVER W/SPK W/DVI VX2450	1
13	NA	502090105600R	VESA,LE23W2	1
14	NA	503020006300R	RUBBER FOOT L14.8*W9.6*T3.5mm ,LE19E3	4
15	NA	50124P23B200R	BASE VX2450	1
16	NA	06120303000R	BAG EPE+PE W330xL300xT0.3mm CYCLE PRINTE	1
17	NA	71411P23B200R	ASSY HINGE VX2450	1
18	NA	50126P23B200R	STAND VX2450	1
19	NA	50202P21A801R	BRACKET,STAND,INL,LP21A8	1

EXPLODED PARTS LIST (VX2450WM-LED)

ViewSonic Model Number: VS13518-2W

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	NA	50118P23B200R	TRANSPARENT DECORATION VX2450	1
2	NA	75003P21A801R	SUB-ASSY,POWER BUTTON,LP21A8	1
3	NA	75003P21A800R	SUB-ASSY,POWER BUTTON RING,LP21A8	1
4	NA	501110601000R	LOGO THREE BRIDS 7.9MM LE2082	1
5	NA	50102P23B200R	BACK COVER W/SPK W/DVI VX2450	1
6	E-00010229	631102240500H	LCP 23.6"M236H3-LA2-902(A)(CMO) HF	1
7	B-00010488	795620500600R	PCBA,LED CON/B,LP23B2-622 ROHS	1
8	B-00010261	795361400600R	PCBA,PI/B,W/SPK,LP21A8-622 ROHS	1
9	B-00010489	79P231300500R	PCBA,IF/B,LA2,W/SPK,LP23B2-522 ROHS	1
10	NA	70106P23B200R	ASSY CHASSIS W/SPK W/DVI VX2450	1
11	E-00010090	618100200790R	Speaker 2.5W 4Ω 50&70mm R/B/G W/CASE	1
12	NA	502020100700R	LOCK SHEET,LP2259	1
13	NA	50102P23B200R	BACK COVER W/SPK W/DVI VX2450	1
14	NA	502090105600R	VESA,LE23W2	1
15	NA	503020006300R	RUBBER FOOT L14.8*W9.6*T3.5mm ,LE19E3	4
16	NA	50124P23B200R	BASE VX2450	1
17	NA	06120303000R	BAG EPE+PE W330xL300xT0.3mm CYCLE PRINTE	1
18	NA	71411P23B200R	ASSY HINGE VX2450	1
19	NA	50126P23B200R	STAND VX2450	1
20	NA	50202P21A801R	BRACKET,STAND,INL,LP21A8	1

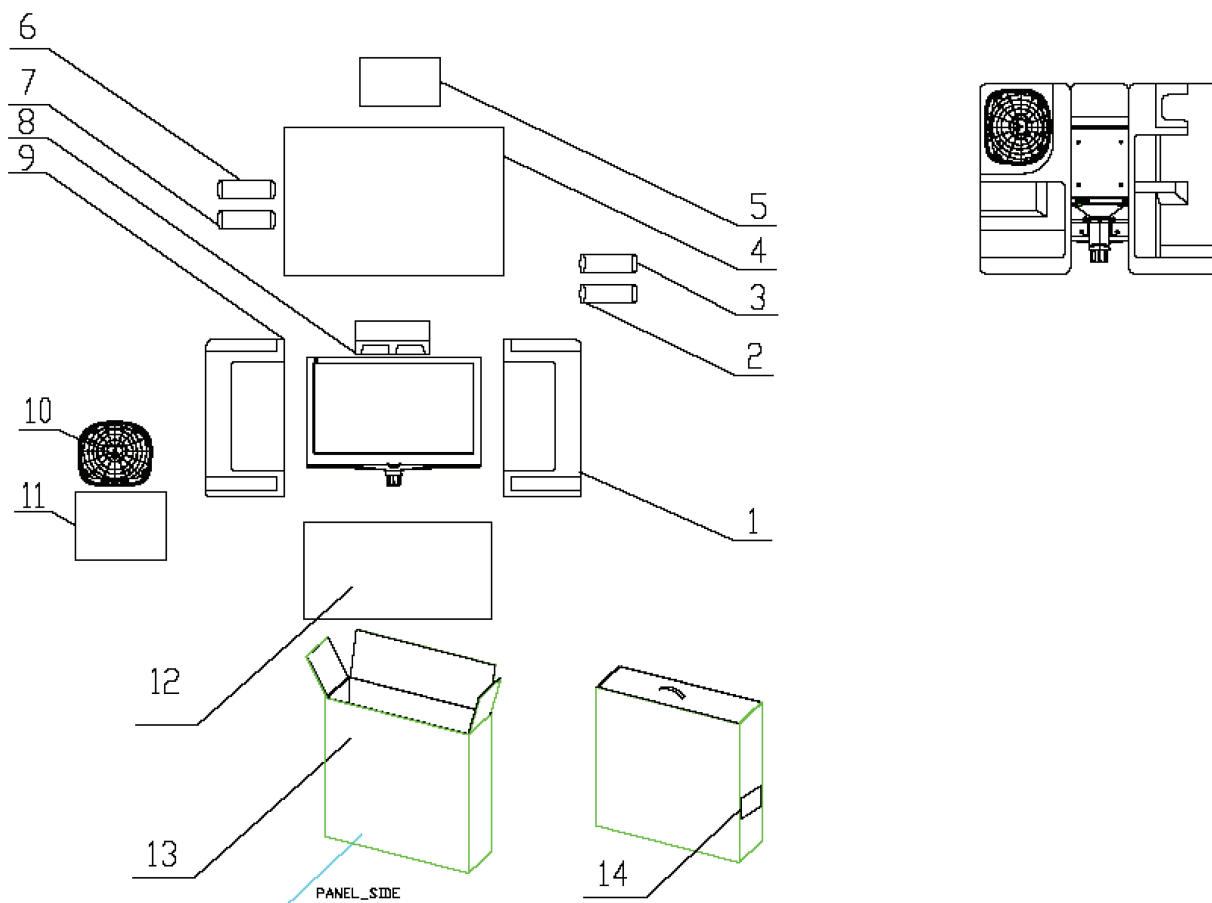


PACKING PART LIST (VX2450W-LED)

ViewSonic Model Number: VS13518-1W

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	P-00010438	50610LP23B02R	CUSHION, EPS-R , LP23B2	1
2	CB-00008190	453030300370R	CABLE, DVI-D 18+1P MALE 6FT BLACK , ROHS	1
3	CB-00008437	453010100380R	CABLE, D-SUB 15P MALE 6FT BLACK/BLOCK, ROH	1
4	P-00009399	506120010900R	BAG, PLASTIC , EPE+PE, L500xW670xT0.55mm, LP	1
5	DC-00010471	703010003100R	KIT ASSY WW VX2450W-LP23B2	1
6	A-00008111	453070800150R	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3Cx	1
7	P-00010439	50610LP23B00R	CUSHION, EPS-M , LP23B2	1
8	P-00010437	50610LP23B01R	CUSHION, EPS-L , LP23B2	1
9	PL-00008888	71402P23B200R	ASSY BASE VX2450	1
10	NA	506120303000R	BAG EPE+PE W330xL300xT0.3mm CYCLE PRINTE	1
11	NA	506431008200R	FILM, PROTECTION, UNPRINTED, 555x327x0.1mm,	1
12	P-00010436	50602P23B200R	CARTON, VX2450W-LP23B2	1
13	NA	506440002300R	LABEL, BLANK, 76.2x76.2mm, LE1709(UPC)	1



PACKING PART LIST (VX2450WM-LED)

ViewSonic Model Number: VS13518-2W

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	P-00010438	50610LP23B02R	CUSHION, EPS-R , LP23B2	1
2	CB-00008190	453030300370R	CABLE, DVI-D 18+1P MALE 6FT BLACK , ROHS	1
3	CB-00008437	453010100380R	CABLE, D-SUB 15P MALE 6FT BLACK/BBLUE, ROH	1
4	NA	506120010900R	BAG, PLASTIC , EPE+PE, L500xW670xT0.55mm, LP	1
5	DC-00010472	703010003200R	KIT ASSY WW VX2450WM-LP23B2	1
6	A-00008111	453070800150R	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3Cx	1
7	CB-00008002	453030300120R	CABLE AUDIO 1P 6FT BLACK/GREEN CP03B06P0	1
8	P-00010439	50610LP23B00R	CUSHION, EPS-M , LP23B2	1
9	P-00010437	50610LP23B01R	CUSHION, EPS-L , LP23B2	1
10	PL-00008888	71402P23B200R	ASSY BASE VX2450	1
11	NA	506120303000R	BAG EPE+PE W330xL300xT0.3mm CYCLE PRINTE	1
12	NA	506431008200R	FILM, PROTECTION, UNPRINTED, 555x327x0.1mm,	1
13	P-00010440	50602P23B201R	CARTON, VX2450WM-LP23B2	1
14	NA	506440002300R	LABEL, BLANK, 76.2x76.2mm, LE1709(UPC)	1

11. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VX2450W-LED)

ViewSonic Model Number: **VS13518-1W**

Rev:1a

Serial No. Prefix: **S4Y**

Item	Category	Part Name	Description	ECR/EC	ViewSonic	Ref. P/N	Ref. NO	Compatibility
1	Accessories: [Adapter, Remote Controller, Power Cord, External Cables]	Power Cord	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3Cx(USA)		A-00008111	453070800150R	6	Main Source
2		Power Cord	PWRCORD 7A/125V BLK 6FT CNS VCTF 3Gx0.75(TWN)		A-00006733	453070800480R		Main Source
3		Power Cord	PWR CORD 16A/250V BLK 6FT VDE,H05VV-F 3G(Europe)		A-00008279	453070801190R		Main Source
4		Power Cord	PWRCORD 10A/250V BLACK 6FT SAA,H05W-F/3G(Australia)		A-00003671	453070800420R		Main Source
5		Power Cord	PWRCORD 16A/250V BLK 6FT KTL,H05VV-F 3Gx(Korea)		A-00006734	453070800500R		Main Source
6		Power Cord	PWRCORD 10A/250V BLK 6FT CHINA.RVV 3Gx0.(China)		A-00005255	453070800170R		Main Source
7		Power Cord	PWRCORD 5A/250V BLK 6FT UK3Gx.75mm(SP60/(Singapore)		A-00003675	453070800230R		Main Source
8		Signal Cable	CABLE,D-SUB 15P MALE 6FT BLACK/BLUE, ROH		CB-00008437	453010100380R	3	Main Source
9	PC Board Assembly: [All boards or PCBA]	Signal Cable	CABLE,DVI-D 18+1P MALE 6FT BLACK, ROHS		CB-00008190	453030300370R	2	Main Source
10		Main Board	PCBA,IF/B,LA2,W/O SPK,LP23B2-522 ROHS		B-00010487	79P231300501R		Main Source
11		Power Board	PCBA,PI/B,W/O SPK,LP21A8-622 ROHS		B-00010256	795361400601R		Main Source
12		Key Pad	PCBA,KEYPAD/B,LP21A8-622 ROHS		B-00010257	795361500600R		Main Source
13		Key Pad	PCBA,FUNTION KEY/B,LP21A8-622 ROHS		B-00010258	795361500601R		Main Source
14		LED Board	PCBA,LED CON/B,LP23B2-622 ROHS		B-00010488	795620500600R		Main Source
15		Front Bezel	ASSY BEZEL W/SPK VX2450		C-00010372	71403P23B200R	1	Main Source
16		Back Cover	ASSY BACK CVOER W/O SPK W/DVI VX2450		C-00010373	71405P23B201R		Main Source
17	[Front Bezel, All Covers, Base/Stand Assembly]	Base Assembly	ASSY BASE VX2450		C-00010374	71402P23B200R	3	Main Source
18		Stand Assembly	ASSY STAND VX2450		C-00010375	71401P23B200R	4	Main Source
19		Flat Cable	HRN LVDS FFC 30P 237mm W/CORE		CB-00009568	4303030040U0R		Main Source
20	Cables: [All internal Cables/wires]	Wire	HRN ASSY 2x4P to 8P 90mm UL1571#28 CTD		CB-00009569	4303008044E0R		Main Source
21	Documentation:[Qui ck Start Guide, CD Rom, Label/Sticker]	Quick Start Guide (QSG)	KIT ASSY WW VX2450W-LP23B2		DC-00010471	703010003100R	5	Main Source
22	Electronic Components:[LCD Panel, Speaker, and all Electronic	Panel	LCP 23.6"M236H3-LA2-902(A)(CMO) HF(CMO 902)		E-00010229	631102240500H		Main Source
23	Packing Material: [Box, Foam, Bags]	Carton	CARTON,VX2450W-LP23B2		P-00010436	50602P23B200R	12	Main Source
24		Cushion	CUSHION.EPS-L, LP23B2		P-00010437	50610LP23B01R	8	Main Source
25		Cushion	CUSHION.EPS-R, LP23B2		P-00010438	50610LP23B02R	1	Main Source
26		Cushion	CUSHION.EPS-M, LP23B2		P-00010439	50610LP23B00R	7	Main Source
27		Plastic Bag	BAG,PLASTIC, EPE+PE,L500xW670xT0.55mm,LP		P-00009399	506120010900R	4	Main Source
29	Plastics: [Pedestal, stand/neck, Plate, Button, etc.]	Pedestal	ASSY BASE VX2450		PL-00008888	71402P23B200R	3	Main Source

Remark 1: Above listed items are examples, supplier can expand the rows to add more necessary items.

Remark 2: All revised RSPLs with newly added items or any change made should be highlighted and correlated with the ECN/ECR approved by ViewSonic Corporation. This is to eliminate repeated cross checks of each item between this version and prior versions.

- Notice:
1. For some special parts, some photos for identification purpose may be asked by request
 2. For all internal cables, there must be some wordings on the "Description" column about where the cable is used (connecting to which two parts)
 3. All internal cables/wires should be put in the "Cables" category
 4. All external cables should be put in the "Accessories" category
 5. Parts relationship (Main/Second source or 1/2/3/4) should be added in the "Compatibility" column
 6. If any part for certain product isn't listed in the form, supplier/PE can add it themselves and keep the part name unified.

RECOMMENDED SPARE PARTS LIST (VX2450WM-LED)

ViewSonic Model Number: **VS13518-2W**

Rev:1a

Serial No. Prefix: **S4Z**

Item	Category	Part Name	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Ref. NO	Compatibility
1	Accessories: [Adapter, Remote Controller, Power Cord, External Cables]	Power Cord	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3Cx(USA)		A-00008111	453070800150R	6	Main Source
2		Power Cord	PWRCORD 7A/125V BLK 6FT CNS VCTF 3Gx0.75(TWN)		A-00006733	453070800480R		Main Source
3		Power Cord	PWR CORD 16A/250V BLK 6FT VDE.H05VV-F 3G(Europe)		A-00008279	453070801190R		Main Source
4		Power Cord	PWRCORD 10A/250V BLACK 6FT SAA.H05W-F/3G(Australia)		A-00003671	453070800420R		Main Source
5		Power Cord	PWRCORD 16A/250V BLK 6FT KTL.H05VV-F 3Gx(Korea)		A-00006734	453070800500R		Main Source
6		Power Cord	PWRCORD 10A/250V BLK 6FT CHINA.RVV 3Gx(China)		A-00005255	453070800170R		Main Source
7		Power Cord	PWRCORD 5A/250V BLK 6FT UK3Gx.75mm(SP60/(Singapore)		A-00003675	453070800230R		Main Source
8		Signal Cable	CABLE,D-SUB 15P MALE 6FT BLACK/BLUE, ROH		CB-00008437	453010100380R	3	Main Source
9		Signal Cable	CABLE,DVI-D 18+1P MALE 6FT BLACK , ROHS		CB-00008190	453030300370R	2	Main Source
10		Signal Cable	CABLE AUDIO 1P 6FT BLACK/GREEN CP03B06P0		CB-00008002	453030300120R	7	Main Source
11	PC Board Assembly: [All boards or PCBA]	Main Board	PCBA,IF/B,LA2,W/SPK,LP23B2-522 ROHS		B-00010489	79P231300500R		Main Source
12		Power Board	PCBA,PI/B,W/SPK,LP21A8-622 ROHS		B-00010261	795361400600R		Main Source
13		Key Pad	PCBA,KEYPAD/B,LP21A8-622 ROHS		B-00010257	795361500600R		Main Source
14		Key Pad	PCBA,FUNTION KEY/B,LP21A8-622 ROHS		B-00010258	795361500601R		Main Source
15		LED Board	PCBA,LED CON/B,LP23B2-622 ROHS		B-00010488	795620500600R		Main Source
16	Cabinets: [Front Bezel, All Covers, Base/Stand]	Front Bezel	ASSY BEZEL W/SPK VX2450		C-00010372	71403P23B200R	1	Main Source
17		Back Cover	ASSY BACK CVOER W/SPK W/DVI VX2450		C-00010378	71405P23B200R	7	Main Source
19		Stand Assembly	ASSY STAND VX2450		C-00010375	71401P23B200R	4	Main Source
20	Cables: [All internal Cables/wires]	Flat Cable	HRN LVDS FFC 30P 237mm W/CORE		CB-00009568	4303030040U0R		Main Source
21		Wire	HRN ASS'Y 2x4P to 8P 90mm UL1571#28 CTD		CB-00009569	4303008044E0R		Main Source
22	Documentation: [Quick Start Guide, CD Rom, Label/Sticker]	Qucik Start Guide (QSG)	KIT ASSY WW VX2450WM-LP23B2		DC-00010472	703010003200R	5	Main Source
23	Electronic Components: [LCD Panel]	Speaker	Speaker 2.5W 4Ω 50&70mm R/B/G W/CASE		E-00010090	618100200790R		Main Source
24		Panel	LCP 23.6" M236H3-LA2-902(A)(CMO) HF(CMO 902)		E-00010229	631102240500H		Main Source
25	Packing Material: [Box, Foam, Bags]	Carton	CARTON,VX2450WM-LP23B2		P-00010440	50602P23B201R	13	Main Source
26		Cushion	CUSHION,EPS-L , LP23B2		P-00010437	50610LP23B01R	9	Main Source
27		Cushion	CUSHION,EPS-R , LP23B2		P-00010438	50610LP23B02R	1	Main Source
28		Cushion	CUSHION,EPS-M , LP23B2		P-00010439	50610LP23B00R	8	Main Source
29		Plactic Bag	SEALED BAG ADHESIVE 330x230mm LE1918		P-00010441	506120100500R		Main Source
29	Plastics: [Pedestal, stand/neck, Plate, Button, etc.]	Pedestal	ASSY BASE VX2450		PL-00008888	71402P23B200R	3	Main Source

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- Notice:
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BOM LIST (VX2450W-LED)

ViewSonic Model Number: VS13518-1W

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty	
1	A-00008111	453070800150R	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3C _x			100	PC
2	CB-00008190	453030300370R	CABLE,DVI-D 18+1P MALE 6FT BLACK , ROHS			100	PC
3	CB-00008437	453010100380R	CABLE,D-SUB 15P MALE 6FT BLACK/BLUE, ROH			100	PC
4	NA	71300P23B200R	ASSY,PACKING,VSA,VX2450W-LP23B2			100	PC
5	P-00010437	50610LP23B01R	CUSHION,EPS-L , LP23B2			100	PC
6	P-00010438	50610LP23B02R	CUSHION,EPS-R , LP23B2			100	PC
7	P-00010439	50610LP23B00R	CUSHION,EPS-M , LP23B2			100	PC
8	NA	506431008200R	FILM,PROTECTION,UNPRINTED,555x327x0.1mm,			100	PC
9	P-00009399	506120010900R	BAG,PLASTIC · EPE+PE,L500xW670xT0.55mm,LP			100	PC
10	P-00010436	50602P23B200R	CARTON,VX2450W-LP23B2			100	PC
11	NA	50642P23B200R	LBL RATING,VX2450W-LP23B2			100	PC
12	NA	506440002300R	LABEL,BLANK,76.2x76.2mm,LE1709(UPC)			100	PC
13	NA	506440002400R	LABEL,BLANK,50x25mm,LE1709(S/N)			100	PC
14	NA	506440002600R	LABEL,BLANK,210x65mm,LE1709(PALLET)			5	PC
15	DC-00010471	703010003100R	KIT ASSY WW VX2450W-LP23B2			100	PC
16	NA	50653P23B200R	MNL USER'S(CD) ,VX2450WM-W LP23B2			100	PC
17	NA	50652E18DB04R	QSG WW-VA1931w ,LE18DB			100	PC
18	NA	50650P21A800R	BASE ATTCHMENT,VX2250wm-LP21A8			100	PC
19	NA	506420405200R	INSERT SHEET, 1920*1080,LE21N1			100	PC
20	NA	71301P23B202R	ASSY,PACK,SEA,20&40STD,USA,VX2450WM-LP23			100	PC
21	NA	506150014800R	PALLET,L1219xW1016xH120mm,LE23R2			2.5	PC
22	NA	506039010470R	CORNER PAPER 2080x40x40xT5mm			10	PC
23	NA	506039000100R	CORNER PAPER,1000X50X50XT5MM			5	PC
24	NA	506039005400R	CORNER PAPER 800x50x50xT5mm LE1512			5	PC
25	NA	506036005140R	CARDBOARD, L1100*W 890*T5MM, LF15F9			2.5	PC
26	NA	506036006600R	CARDBOARD,L1200XW 1000XT7 LE22M1			2.5	PC
27	NA	506431000300R	FILM,PE 500mmx900M ROHS			0.36	ROL
28	NA	506380002100R	TAPE WRAPPING TYPE(VIEWSONIC) 50mmx75M L			0.88	ROL
29	NA	506120100500R	SEALED BAG ADHESIVE 330x230mm LE1918			2.5	PC
30	NA	50677P248400R	INSERT CARTON 655*95*497(H)mm,LP2484			20	PC
31	NA	50677P248401R	INSERT CARTON 655*50*497(H)mm,LP2484			20	PC
32	NA	71301P23B203R	ASSY,PACK,AIR,20&40STD,USA,VX2450WM-LP23			0	PC
33	NA	506150014800R	PALLET,L1219xW1016xH120mm,LE23R2			0	PC
34	NA	506039000100R	CORNER PAPER,1000X50X50XT5MM			0	PC
35	NA	506039005400R	CORNER PAPER 800x50x50xT5mm LE1512			0	PC
36	NA	506036005140R	CARDBOARD, L1100*W 890*T5MM, LF15F9			0	PC
37	NA	506036006600R	CARDBOARD,L1200XW 1000XT7 LE22M1			0	PC
38	NA	506431000300R	FILM,PE 500mmx900M ROHS			0	ROL
39	NA	506380002100R	TAPE WRAPPING TYPE(VIEWSONIC) 50mmx75M L			0	ROL
40	NA	506120100500R	SEALED BAG ADHESIVE 330x230mm LE1918			0	PC
41	NA	50677P248400R	INSERT CARTON 655*95*497(H)mm,LP2484			0	PC
42	NA	50677P248401R	INSERT CARTON 655*50*497(H)mm,LP2484			0	PC
43	NA	71407P23B202R	ASSY FINAL(B,LA2-902/A/Z)W/O S,LP23B2-52			100	PC
44	C-00010373	71405P23B201R	ASSY BACK CVOER W/O SPK W/DVI VX2450			100	PC
45	NA	50102P23B201R	BACK COVER W/O SPK W/DVI VX2450			100	PC
46	NA	502020100700R	LOCK SHEET,LP2259			100	PC
47	NA	502090105600R	VESA,LE23W2			400	PC
48	C-00010372	71403P23B200R	ASSY BEZEL W/SPK VX2450			100	PC
49	NA	75001P23B200R	SUB-ASSY BEZEL W/SPK VX2450			100	PC
50	NA	50101P23B200R	BEZEL VX2450			100	PC
51	NA	50118P23B200R	TRANSPARENT DECORATION VX2450			100	PC
52	NA	75003P21A801R	SUB-ASSY,POWER BUTTON,LP21A8			100	PC
53	NA	50103P21A800R	POWER BUTTON,LP21A8			100	PC
54	NA	75003P21A800R	SUB-ASSY,POWER BUTTON RING,LP21A8			100	PC

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty	
55	NA	50119P21A800R	POWER BUTTON RING,LP21A8			100	PC
56	NA	50683LP23B00R	PROTECT-FILM,BEZEL,LP23B2			100	PC
57	C-00010375	71401P23B200R	ASSY STAND VX2450			100	PC
58	NA	50126P23B200R	STAND VX2450			100	PC
59	NA	71411P23B200R	ASSY HINGE VX2450			100	PC
60	NA	50202P21A801R	BRACKET,STAND,INL,LP21A8			100	PC
61	NA	509212606110R	SCREW,F,CROSS,T4*6,Zn,ROHS(5.8~6.2)			200	PC
62	NA	509412610500R	SCREW,B,CROSS,T.T-4*10,BLK ,ROHS			200	PC
63	PL-00008888	71402P23B200R	ASSY BASE VX2450			100	PC
64	NA	50124P23B200R	BASE VX2450			100	PC
65	NA	509012306800R	SCREW,M4*9,Zn (WITH MANUAL),LP2479			100	PC
66	NA	503020006300R	RUBBER FOOT L14.8*W9.6*T3.5mm ,LE19E3			500	PC
67	NA	509412610500R	SCREW,B,CROSS,T.T-4*10,BLK ,ROHS			200	PC
68	NA	509416608500R	SCREW,B,CROSS,M4*8,BLK			200	PC
69	NA	71408P23B202R	ASSY PANEL(LA2-902/A/Z)W/O S,LP23B2-522(			100	PC
70	NA	70106P23B201R	ASSY CHASSIS W/O SPK W/DVI INL VX2450			100	PC
71	NA	50209P21A800R	CHASSIS,DUAL,W/O SPK ,INL,LP21A8			100	PC
72	NA	51103P21A800R	INSULATOR,MYLAR,17x13xT0.3mm,LP21A8			100	PC
73	NA	51103P21A801R	INSULATOR,MYLAR,25x14xT0.3mm,LP21A8			400	PC
74	NA	50202P23B200R	BRACKET HINGE VX2450			100	PC
75	NA	509000000700R	BOLT,#4-40x11.8,Ni FOR D-SUB/DVI CONN.RO			400	PC
76	NA	509146306200R	SCREW,P,CROSS,W/WAS,M3*6,Zn-Cc			800	PC
77	NA	506381000700R	TAPE,ACE,45mmx30M(PC=10x45mm)			300	PC
78	B-00010487	79P231300501R	PCBA,IF/B,LA2,W/O SPK,LP23B2-522 ROHS			100	PC
79	B-00010256	795361400601R	PCBA,PI/B,W/O SPK,LP21A8-622 ROHS			100	PC
80	B-00010257	795361500600R	PCBA,KEYPAD/B,LP21A8-622 ROHS			100	PC
81	B-00010258	795361500601R	PCBA,FUNTION KEY/B,LP21A8-622 ROHS			100	PC
82	B-00010488	795620500600R	PCBA,LED CON/B,LP23B2-622 ROHS			100	PC
83	E-00010229	631102240500H	LCP 23.6"M236H3-LA2-902(A)(CMO) HF			100	PC
84	NA	631102240501H	LCP 23.6"M236H3-LA2-902(Z)(CMO) HF			0	PC
85	CB-00009568	4303030040U0R	HRN LVDS FFC 30P 237mm W/CORE			100	PC
86	NA	4303012003P0R	HRN FFC 12P 0.5Pitch 653mm			100	PC
87	CB-00009569	4303008044E0R	HRN ASS'Y 2x4P to 8P 90mm UL1571#28 CTD			100	PC
88	NA	430300600770R	HRN ASS'Y 5P to 6P 140mm UL1571#28 CTD			100	PC
89	NA	4303010020G0R	HRN ASS'Y 2*5P to 2*5P 80mm UL1571#28			100	PC
90	NA	511150103300R	FOIL,AL.,DOUBLE COND.,30x12x0.07mm, LE19			100	PC
91	NA	511150101800R	FOIL,AL.,DOUBLE COND.,60x35xT0.07mm, LE2			100	PC
92	NA	51103P21A802R	INSULATOR,MYLAR,100x100xT0.3mm,LP21A8			100	PC

BOM LIST (VX2450WM-LED)

ViewSonic Model Number: VS13518-2W

Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty	
1	A-00008111	453070800150R	PWR CORD 10A/125V BLK 6FT UL/CSA SVT 3Cx			100	PC
2	CB-00008190	453030300370R	CABLE,DVI-D 18+1P MALE 6FT BLACK , ROHS			100	PC
3	CB-00008002	453030300120R	CABLE AUDIO 1P 6FT BLACK/GREEN CP03B06P0			100	PC
4	CB-00008437	453010100380R	CABLE,D-SUB 15P MALE 6FT BLACK/BLUE, ROH			100	PC
5	NA	71300P23B207R	ASSY,PACKING,VSA,VX2450WM-LP23B2			100	PC
6	P-00010437	50610LP23B01R	CUSHION,EPS-L , LP23B2			100	PC
7	P-00010438	50610LP23B02R	CUSHION,EPS-R , LP23B2			100	PC
8	P-00010439	50610LP23B00R	CUSHION,EPS-M , LP23B2			100	PC
9	NA	506431008200R	FILM,PROTECTION,UNPRINTED,555x327x0.1mm,			100	PC
10	NA	506120010900R	BAG,PLASTIC , EPE+PE,L500xW670xT0.55mm,LP			100	PC
11	P-00010440	50602P23B201R	CARTON,VX2450WM-LP23B2			100	PC
12	NA	50642P23B201R	LBL RATING,VX2450WM-LP23B2			100	PC
13	NA	506440002300R	LABEL,BLANK,76.2x76.2mm,LE1709(UPC)			100	PC
14	NA	506440002400R	LABEL,BLANK,50x25mm,LE1709(S/N)			100	PC
15	NA	506440002600R	LABEL,BLANK,210x65mm,LE1709(PALLET)			5	PC
16	DC-00010472	703010003200R	KIT ASSY WW VX2450WM-LP23B2			100	PC
17	NA	50653P23B200R	MNL USER'S(CD) , VX2450WM-W LP23B2			100	PC
18	NA	50652E18DB06R	QSG WW-VA1931wm ,LE18DB			100	PC
19	NA	50650P21A800R	BASE ATTCHMENT,VX2250wm-LP21A8			100	PC
20	NA	506420405200R	INSERT SHEET, 1920*1080,LE21N1			100	PC
21	NA	71301P23B202R	ASSY,PACK,SEA,20&40STD,USA,VX2450WM-LP23			100	PC
22	NA	506150014800R	PALLET,L1219xW1016xH120mm,LE23R2			2.5	PC
23	NA	506039010470R	CORNER PAPER 2080x40x40xT5mm			10	PC
24	NA	506039000100R	CORNER PAPER,1000X50X50XT5MM			5	PC
25	NA	506039005400R	CORNER PAPER 800x50x50xT5mm LE1512			5	PC
26	NA	506036005140R	CARDBOARD, L1100*W 890*T5MM, LF15F9			2.5	PC
27	NA	506036006600R	CARDBOARD,L1200XW 1000XT7 LE22M1			2.5	PC
28	NA	506431000300R	FILM,PE 500mmx900M ROHS			0.36	ROL
29	NA	506380002100R	TAPE WRAPPING TYPE(VIEWSONIC) 50mmx75M L			0.88	ROL
30	P-00010441	506120100500R	SEALED BAG ADHESIVE 330x230mm LE1918			2.5	PC
31	NA	50677P248400R	INSERT CARTON 655*95*497(H)mm,LP2484			20	PC
32	NA	50677P248401R	INSERT CARTON 655*50*497(H)mm,LP2484			20	PC
33	NA	71301P23B203R	ASSY,PACK,AIR,20&40STD,USA,VX2450WM-LP23			0	PC
34	NA	506150014800R	PALLET,L1219xW1016xH120mm,LE23R2			0	PC
35	NA	506039000100R	CORNER PAPER,1000X50X50XT5MM			0	PC
36	NA	506039005400R	CORNER PAPER 800x50x50xT5mm LE1512			0	PC
37	NA	506036005140R	CARDBOARD, L1100*W 890*T5MM, LF15F9			0	PC
38	NA	506036006600R	CARDBOARD,L1200XW 1000XT7 LE22M1			0	PC
39	NA	506431000300R	FILM,PE 500mmx900M ROHS			0	ROL
40	NA	506380002100R	TAPE WRAPPING TYPE(VIEWSONIC) 50mmx75M L			0	ROL
41	P-00010441	506120100500R	SEALED BAG ADHESIVE 330x230mm LE1918			0	PC
42	NA	50677P248400R	INSERT CARTON 655*95*497(H)mm,LP2484			0	PC
43	NA	50677P248401R	INSERT CARTON 655*50*497(H)mm,LP2484			0	PC
44	NA	71407P23B203R	ASSY FINAL(B,LA2-902/A/Z)W/S,LP23B2-522(			100	PC
45	C-00010378	71405P23B200R	ASSY BACK CVOER W/SPK W/DVI VX2450			100	PC
46	NA	50102P23B200R	BACK COVER W/SPK W/DVI VX2450			100	PC
47	NA	502020100700R	LOCK SHEET,LP2259			100	PC
48	NA	502090105600R	VESA,LE23W2			100	PC
49	C-00010372	71403P23B200R	ASSY BEZEL W/SPK VX2450			100	PC
50	NA	75001P23B200R	SUB-ASSY BEZEL W/SPK VX2450			100	PC
51	NA	50101P23B200R	BEZEL VX2450			100	PC
52	NA	50118P23B200R	TRANSPARENT DECORATION VX2450			100	PC
53	NA	75003P21A801R	SUB-ASSY,POWER BUTTON,LP21A8			100	PC
54	NA	50103P21A800R	POWER BUTTON,LP21A8			100	PC
55	NA	75003P21A800R	SUB-ASSY,POWER BUTTON RING,LP21A8			100	PC

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty	
56	NA	50119P21A800R	POWER BUTTON RING,LP21A8			100	PC
57	NA	50683LP23B00R	PROTECT-FILM,BEZEL,LP23B2			100	PC
58	C-00010375	71401P23B200R	ASSY STAND VX2450			100	PC
59	NA	50126P23B200R	STAND VX2450			100	PC
60	NA	71411P23B200R	ASSY HINGE VX2450			100	PC
61	NA	50202P21A801R	BRACKET,STAND,INL,LP21A8			100	PC
62	NA	509212606110R	SCREW,F,CROSS,T4*6,Zn,ROHS(5.8~6.2)			200	PC
63	NA	509412610500R	SCREW,B,CROSS,T.T-4*10,BLK ,ROHS			200	PC
64	PL-00008888	71402P23B200R	ASSY BASE VX2450			100	PC
65	NA	50124P23B200R	BASE VX2450			100	PC
66	NA	509012306800R	SCREW,M4*9,Zn (WITH MANUAL),LP2479			100	PC
67	NA	503020006300R	RUBBER FOOT L14.8*W9.6*T3.5mm ,LE19E3			500	PC
68	NA	509412610500R	SCREW,B,CROSS,T.T-4*10,BLK ,ROHS			200	PC
69	NA	509416608500R	SCREW,B,CROSS,M4*8,BLK			200	PC
70	NA	71408P23B203R	ASSY PANEL(LA2-902/A/Z)W/S,LP23B2-522(VX			100	PC
71	NA	70106P23B200R	ASSY CHASSIS W/SPK W/DVI INL VX2450			100	PC
72	NA	50209P21A801R	CHASSIS,DUAL,W/SPK INL,LP21A8			100	PC
73	NA	51103P21A800R	INSULATOR,MYLAR,17x13xT0.3mm,LP21A8			100	PC
74	NA	51103P21A801R	INSULATOR,MYLAR,25x14xT0.3mm,LP21A8			400	PC
75	NA	50202P23B200R	BRACKET HINGE VX2450			100	PC
76	NA	509000000700R	BOLT,#4-40x11.8,Ni FOR D-SUB/DVI CONN.RO			400	PC
77	NA	509146306200R	SCREW,P,CROSS,W/WAS,M3*6,Zn-Cc			800	PC
78	NA	506381000700R	TAPE,ACE,45mmx30M(PC=10x45mm)			300	PC
79	B-00010489	79P231300500R	PCBA,IF/B,LA2,W/SPK,LP23B2-522 ROHS			100	PC
80	B-00010261	795361400600R	PCBA,PI/B,W/SPK,LP21A8-622 ROHS			100	PC
81	B-00010257	795361500600R	PCBA,KEYPAD/B,LP21A8-622 ROHS			100	PC
82	B-00010258	795361500601R	PCBA,FUNTION KEY/B,LP21A8-622 ROHS			100	PC
83	B-00010488	795620500600R	PCBA,LED CON/B,LP23B2-622 ROHS			100	PC
84	E-00010229	631102240500H	LCP 23.6"M236H3-LA2-902(A)(CMO) HF			100	PC
85	NA	631102240501H	LCP 23.6"M236H3-LA2-902(Z)(CMO) HF			0	PC
86	CB-00009568	4303030040U0R	HRN LVDS FFC 30P 237mm W/CORE			100	PC
87	NA	4303012003P0R	HRN FFC 12P 0.5Pitch 653mm			100	PC
88	CB-00009569	4303008044E0R	HRN ASS'Y 2x4P to 8P 90mm UL1571#28 CTD			100	PC
89	NA	430300600770R	HRN ASS'Y 5P to 6P 140mm UL1571#28 CTD			100	PC
90	NA	4303010020G0R	HRN ASS'Y 2*5P to 2*5P 80mm UL1571#28			100	PC
91	NA	511150101800R	FOIL,AL.,DOUBLE COND.,60x35xT0.07mm, LE2			100	PC
92	NA	511150103300R	FOIL,AL.,DOUBLE COND.,30x12x0.07mm, LE19			100	PC
93	E-00010090	618100200790R	Speaker 2.5W 4Ω 50&70mm R/B/G W/CASE			100	PC
94	NA	51103P21A802R	INSULATOR,MYLAR,100x100xT0.3mm,LP21A8			100	PC

* Reader's Response*

Dear Readers:

Thank you in advance for your feedback on our Service Manual, which allows continuous improvement of our products. We would appreciate your completion of the Assessment Matrix below, for return to ViewSonic Corporation.

Assessment

A. What do you think about the content of this Service Manual?

Unit	Excellent	Good	Fair	Bad
1. Precautions and Safety Notices				
2. Specification				
3. Front Panel Function Control Description				
4. Electronic Circuit Theory				
5. Adjustment Procedure				
6. Troubleshooting Flow Chart				
7. Block Diagrams				
8. Schematic Diagrams				
9. PCB Layout Diagrams				
10. Exploded Diagram and Exploded Parts List				
11. Recommended Spare Parts List				

B. Are you satisfied with this Service Manual?

Item	Excellent	Good	Fair	Bad
1. Service Manual Content				
2. Service Manual Layout				
3. The form and listing				

C. Do you have any other opinions or suggestions regarding this service manual?

Reader's basic data:

Name:		Title:	
Company:			
Add:			
Tel:		Fax:	
E-mail:			

After completing this form, please return it to ViewSonic Quality Assurance in the USA at facsimile 1-909-839-7943.