

Service Manual

**ViewSonic VA1616w-8
Model No VSXXXXX
16" Color TFT LCD Display**



(VA1616w-8 SM Rev. 1a Feb. 2009)

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Product disposal at end of product life

The lamp in this product contains mercury. Please dispose of in accordance with local, state or federal laws.

Revision History

Revision	SM Editing Date	ECR Number	Description of changes	TPV Model	Approval
1a	Feb-3-09		Initial Release	T69MM5DY9WVSNN	

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1. Precautions And Safety Notices

1.1 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 the user. Carefully go over the following WARNINGS before installing and keep this guide handy.

WARNINGS

- . This monitor should be operated only at the correct power sources indicated on the label on the rear end 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 your self 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, even when the power cord is unplugged.
- . Stop using the monitor if the cabinet is damaged. Have it checked by a service technician.
- . Put your monitor only in a clean, dry environment. If it gets wet, unplug the power cable immediately and consult your service technician.
- . 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.
- . Keep the monitor away from magnetic objects, motors, TV sets, and transformer.
- . Do not place heavy objects on the monitor or power cord.

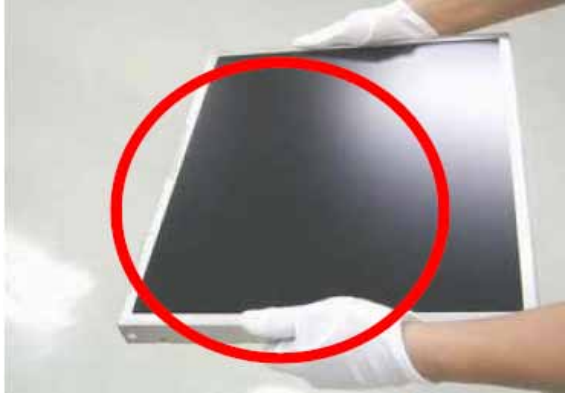





1.2 PRODUCT SAFETY NOTICE

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 voltages, 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

1. When replacing parts or circuit boards, clamp the lead wires around terminals before soldering.
2. When replacing a high wattage resistor(more than 1W of metal oxide film resistor) in circuit board, keep the resistor about 5mm away from circuit board.
3. Keep wires away from high voltage, high temperature components and sharp edges.
4. Keep wires in their original position so as to reduce interference.
5. Usage of this product please refer to also user's manual.

1.4 HANDING AND PLACING METHODS

Correct Methods:	Incorrect Methods:
<p>Only touch the metal frame of the LCD panel or the front cover of the monitor. Do not touch the surface of the polarizer.</p>	<p>Surface of the LCD panel is pressed by fingers and that may cause "Mura."</p>
	
	
<p>Take out the monitor with cushions</p>	<p>Taking out the monitor by grasping the LCD panel. That may cause "Mura."</p>
	
<p>Place the monitor on a clean and soft foam pad.</p>	<p>Placing the monitor on foreign objects. That could scratch the surface of the panel or cause "Mura."</p>



Place the monitor on the lap, the panel surface must be upwards.



The panel is placed facedown on the lap. That may cause "Mura."



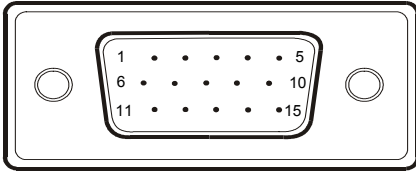
2. Specification

2.1 PRODUCT SPECIFICATIONS

LCD	Type	16.0" (full 15.6" wide viewable diagonal area), TFT(Thin Film Transistor), Active Matrix WXGA lcd, 0.252mm pixel pitch
	Color Filter	RGB vertical stripe
	Glass Surface	Anti-Glare
Input Signal	Video Sync	RGB analog(0.7/1.0 Vp-p, 75ohms) Separate Sync, Fh:24-82 kHz, Fv:50-75 Hz
Compatibility	PC Macintosh	Up to 1366 x 768 Non-interlaced Power Macintosh up to 1366 x 768
Resolution	Recommended and supported	1366 x 768 @ 60 Hz 1280 x 1024 @ 60 Hz 1024 x 768 @ 60, 70, 72, 75 Hz 800 x 600 @ 56, 60, 72, 75 Hz 640 x 480 @ 60, 75 Hz 720 x 400 @ 70 Hz
Power	Voltage	100V~240 VAC, 50/60Hz (auto switch)
Display area	Full Scan	347.5mm(H) x 196.8mm(V) 13.7"(H) x 7.7"(V)
Operating conditions	Temperature Humidity Altitude	32°F to + 104°F(0°C to + 40°C) 20% to + 80%(non-condensing) To 10,000 feet
Storage conditions	Temperature Humidity Altitude	-4°F to + 140°F(-20°C to + 60°C) 5% to + 90%(non-condensing) To 40,000 feet
Dimensions	Physical	376.23mm(W) x 327.42mm(H) x 165mm(D) 14.8"(W) x 12.8"(H) x 5.6"(D)
Weight	Physical	5.84 lb(2.65 kg)
Regulations		BSMI, CCC, PSB, C-Tick, CE, GS, MIC, VCCI, Ergo, Gost-R/Hygienic, SASO, TCO'03, Ukraine, UL/cUL, FCC-B, ICES-B, ENERGY STAR [®] TUV-S/IRAM/UL-AR S Mark,
Power saving modes	On Off	16W (Typical) (blue LED) <1W
<p>Preset Timing Mode (pre-adjusted to VESA[®] 1366 x 768 @ 60 Hz) Warning: Do not set the graphics card in your computer to exceed these refresh rates; doing so may result in permanent damage to the LCD display.</p>		
<p>¹ Macintosh computers older than G3 require a ViewSonic[®] Macintosh adapter. To order an adapter, contact ViewSonic.</p>		

2.2 INTERFACE DESCRIPTION

D-SUB 15 PIN CONNECTOR

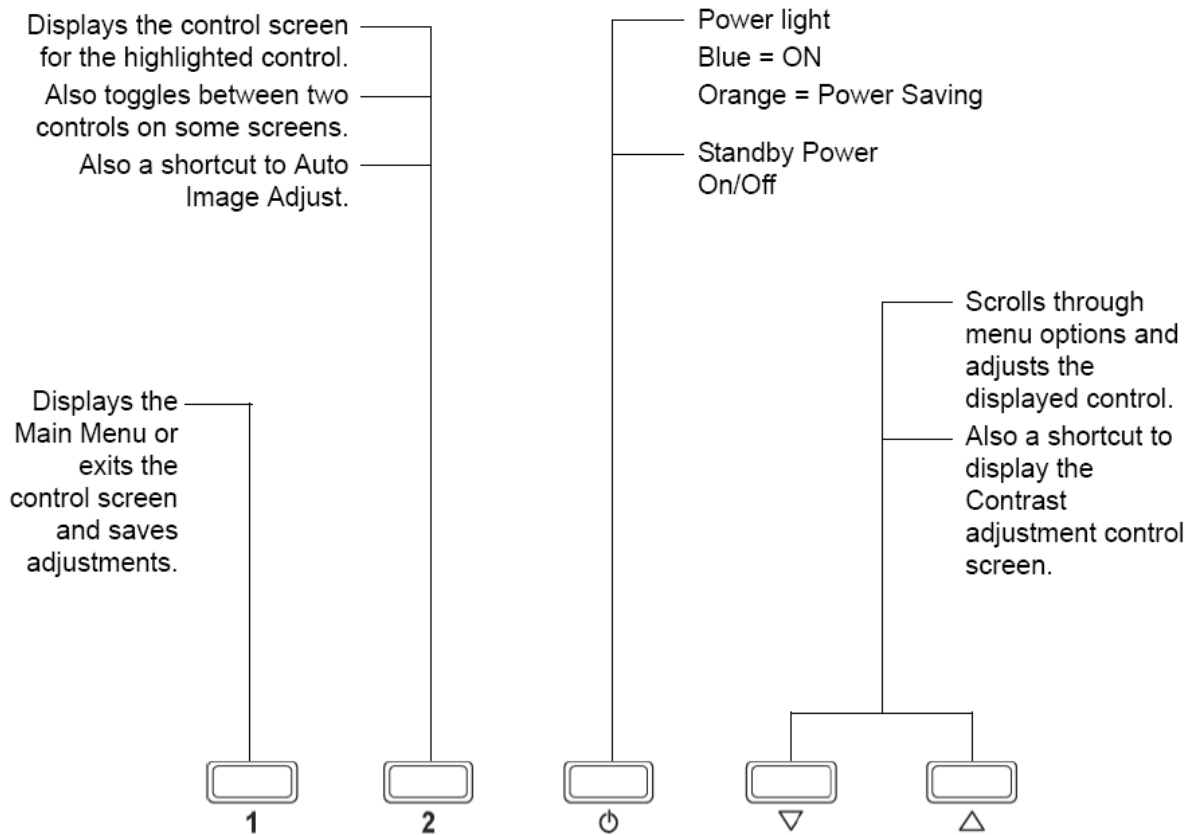
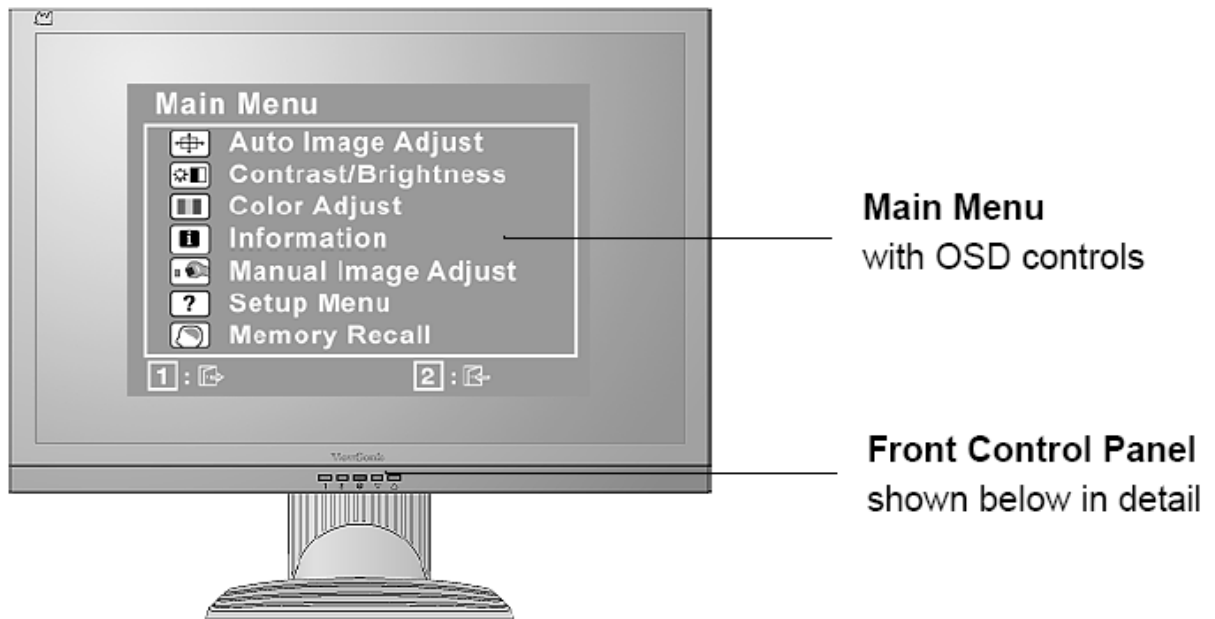


Pin Number	Pin Function
1	Red video input
2	Green video input
3	Blue video input
4	No Connection
5	Ground
6	Red video ground
7	Green video ground
8	Blue video ground
9	+5V
10	H/V sync ground
11	No connection
12	(SDA)
13	Horizontal sync (Composite sync)
14	Vertical sync
15	(SCL)

SIGNAL LEVEL

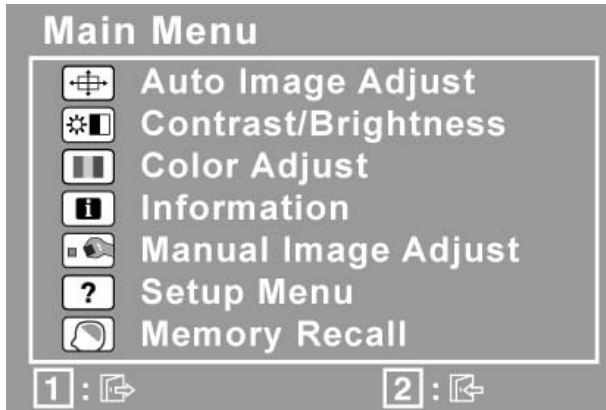
CONNECTOR	SIGNAL	DESCRIPTION
R	RED	0.7vp-p(VIDEO)
G	GREEN	0.7vp-p(VIDEO)
B	BLUE	0.7vp-p(VIDEO)
H	H/SYNC	TTL positive or negative
V	V/SYNC	TTL positive or negative
SDA	DDC1/2B	TTL
SCL	DDC1/2B	TTL

3. Front Panel Function Controls And Indicators



Do the following to adjust the display setting:

1. To display the Main Menu, press button [1].



NOTE: All OSD menus and adjustment screens disappear automatically after about 15 seconds. This is adjustable through the OSD timeout setting in the setup menu.

2. To select a control to adjust, press ▲ or ▼ to scroll up or down in the Main Menu.
3. After the desired control is selected, press button [2]. A control screen like the one shown below appears.



The line at the bottom of the screen shows the current functions of buttons 1 and 2: Exit or select the Brightness control.

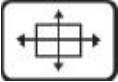



4. To adjust the control, press the up ▲ or ▼ down buttons.
5. To save the adjustments and exit the menu, press button [1] *twice*.


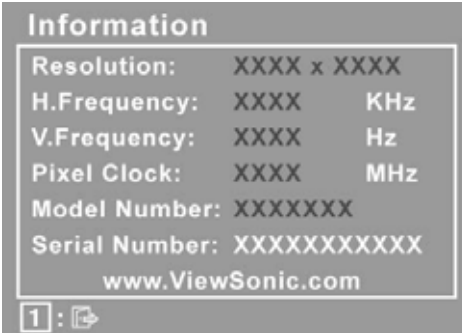

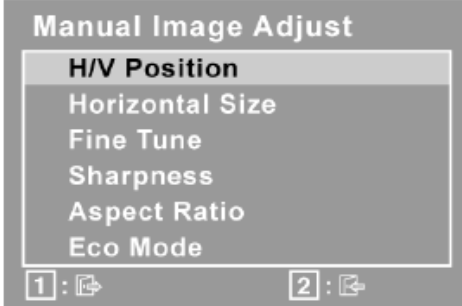
The following tips may help you optimize your display:

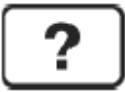
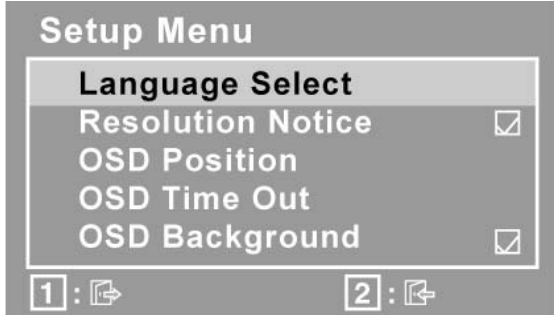

- Adjust the computer's graphics card so that it outputs a 1366 x 768 @ 60Hz video signal to the LCD display. (Look for instructions on "changing the refresh rate" in the graphics card's user guide.)
- If necessary, make small adjustments using H. POSITION and V. POSITION until the screen image is completely visible. (The black border around the edge of the screen should barely touch the illuminated "active area" of the LCD display.)

Main Menu Controls

Adjust the menu items shown below by using the up ▲ and down ▼ buttons.




Control	Explanation						
	<p>Auto Image Adjust automatically sizes, centers, and fine tunes the video signal to eliminate waviness and distortion. Press the [2] button to obtain a sharper image.</p> <p>NOTE: Auto Image Adjust works with most common video cards. If this function does not work on your LCD display, then lower the video refresh rate to 60 Hz and set the resolution to its pre-set value.</p>						
	<p>Contrast adjusts the difference between the image background (black level) and the foreground (white level).</p>						
	<p>Brightness adjusts background black level of the screen image.</p>						
	<p>Color Adjust provides several color adjustment modes, including preset color temperatures and a User Color mode which allows independent adjustment of red (R), green (G), and blue (B). The factory setting for this product is 6500K (6500 Kelvin).</p> <div data-bbox="395 1070 914 1397" style="border: 1px solid black; padding: 5px; margin: 10px 0;"> <p style="text-align: center;">Color Adjust</p> <table style="width: 100%; border-collapse: collapse;"> <tr><td style="border: 1px solid black; padding: 2px;">sRGB</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">9300K</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">7500K</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">6500K</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">5400K</td></tr> <tr><td style="border: 1px solid black; padding: 2px;">User Color</td></tr> </table> <p style="font-size: small; margin-top: 5px;">[1] : [↩] [2] : [↩]</p> </div> <p>sRGB-This is quickly becoming the industry standard for color management, with support being included in many of the latest applications. Enabling this setting allows the LCD display to more accurately display colors the way they were originally intended. Enabling the intended. Enabling the sRGB setting will cause Contrast and Brightness adjustments to be disabled.</p> <p>9300K-Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting).</p> <p>6500K-Adds red to the screen image for warmer white and richer red.</p> <p>5400K-Adds green to the screen image for a darker color.</p> <p>User Color Individual adjustments for red (R), green (G), and blue (B).</p> <ol style="list-style-type: none"> 1. To select color (R, G or B) press button [2]. 2. To adjust selected color, press ▲ and ▼. <p>Important: If you select RECALL from the Main Menu when the product is</p>	sRGB	9300K	7500K	6500K	5400K	User Color
sRGB							
9300K							
7500K							
6500K							
5400K							
User Color							

	set to a Preset Timing Mode, colors return to the 6500K factory preset.
	<p>Information displays the timing mode (video signal input) coming from the graphics card in the computer, the LCD model number, the serial number, and the ViewSonic® website URL. See your graphics card's user guide for instructions on changing the resolution and refresh rate (vertical frequency). NOTE: VESA 1366 x 768 @ 60Hz (recommended) means that the resolution is 1366 x 768 and the refresh rate is 60 Hertz.</p> 
	<p>Manual Image Adjust display the Manual Image Adjust menu</p>  <p>H./V. Position (Horizontal/Vertical Position) moves the screen image left or right and up or down.</p> <p>H./Size (Horizontal Size) adjusts the width of the screen image.</p> <p>Fine Tune sharpens the focus by aligning text and/or graphics with pixel boundaries. NOTE: Try Auto Image Adjust first.</p> <p>Sharpness adjusts the clarity and focus of the screen image.</p> <p>Aspect ratio Selects the image size for 4:3 and full screen.</p> <p>ECO Mode provides the lower power consumption by reducing the brightness.</p> <p>Standard: The default brightness setting.</p> <p>Optimize: Decreases the brightness by 25%.</p>

	<p>Conserve: Decreases the brightness by 50%.</p> <p>NOTE: When the ECO Mode is set to “Optimize” or “Conserve”, the Brightness, Contrast, and Dynamic Contrast cannot be adjusted.</p>
	<p>Setup Menu displays the menu shown below:</p>  <p>Language Select allows the user to choose the language used in the menus and control screens.</p> <p>Resolution Notice advises the optimal resolution to use.</p> <p>OSD Position allows the user to move the OSD menus and control screens.</p> <p>OSD Timeout sets the length of time the OSD screen is displayed. For example, with a “15 second” setting, if a control is not pushed within 15 seconds, the display screen disappears.</p> <p>OSD Background allows the user to turn the OSD background On or Off.</p>
	<p>Memory Recall returns the adjustments back to factory settings if the display is operating in a factory Preset Timing Mode listed in the Specifications of this manual.</p>
	<p>Exception: This control does not affect changes made with the User Color control, Language Select or Power Lock setting.</p>

SHORT CUTS FUNCTION FROM THE BUTTONS

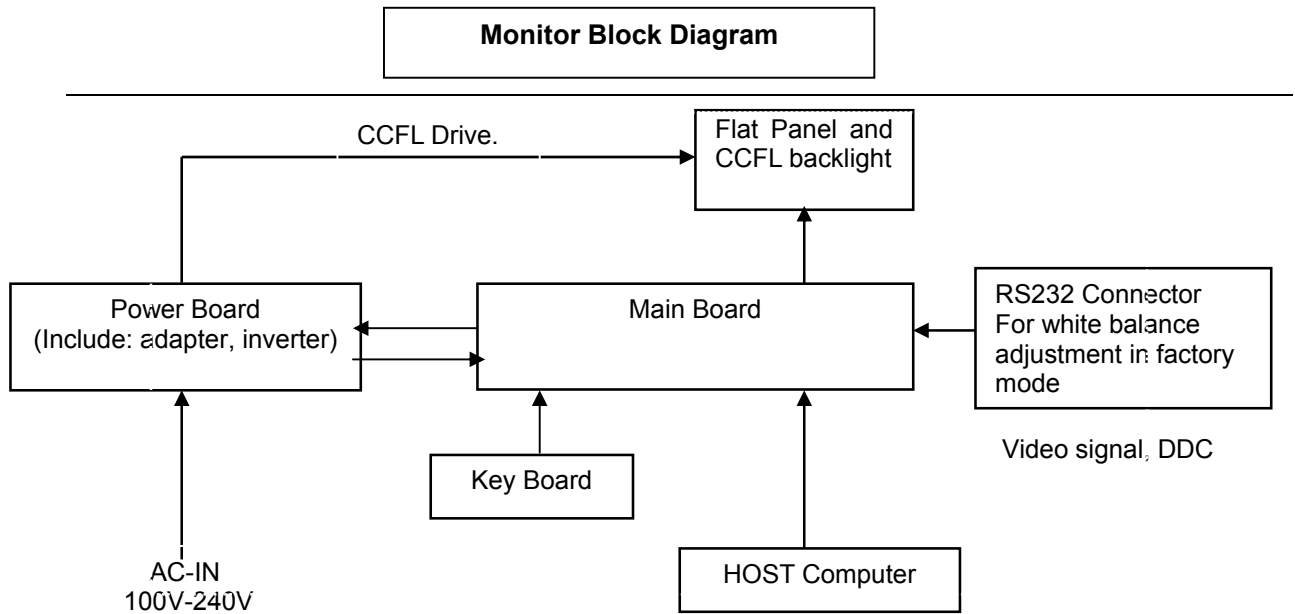
[1]	Main Menu
[2]	Auto Image Adjust
[▼]	To immediately activate Brightness and menu. It should be change to Contrast OSD by push button[2]
[▲]	To immediately activate Contrast menu. It should be change to Brightness OSD by push button[2]

[▼] + [▲]	Recall both of Contrast and Brightness to default without OSD message.
[1] + [2]	Toggle 720x400 and 640x400 mode when input 720x400 or 640x400 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
[1] + [▼]	Power Lock
[▲]	1. Long Press [up] key 3 seconds to switch DCR On/Off, 2. Loop: DCR On <=> DCR Off When switch to DCR ON  When switch to DCR OFF  3. DCR Off in Factory mode. 4. Reset to default when re-power on/off 5. Message will appear only after Hot Key is pressed
No signal + [1] + [⏻]	Burning mode
[1] + [⏻]	Factory Mode
Remark : All the short cuts function are only available while OSD off	

4. Circuit Description

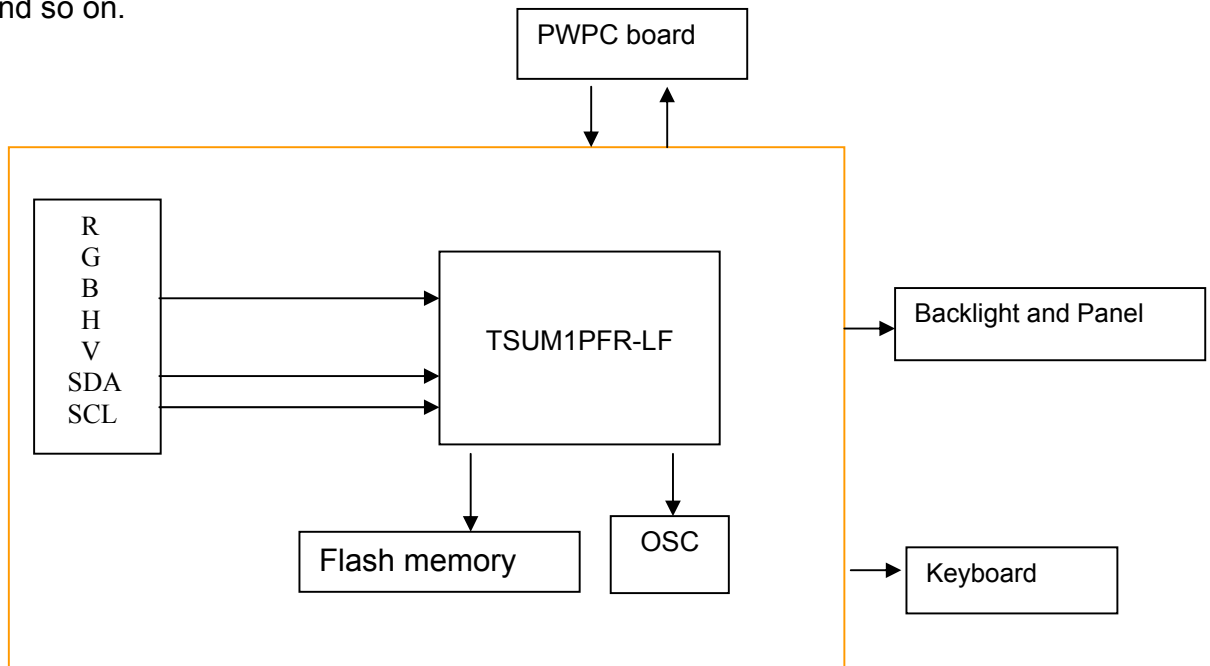
4.1 LCD MONITOR DESCRIPTION

The LCD MONITOR will contain a Main Board, an Power Board, Key Board which house the flat panel control logic, brightness control logic and DDC.



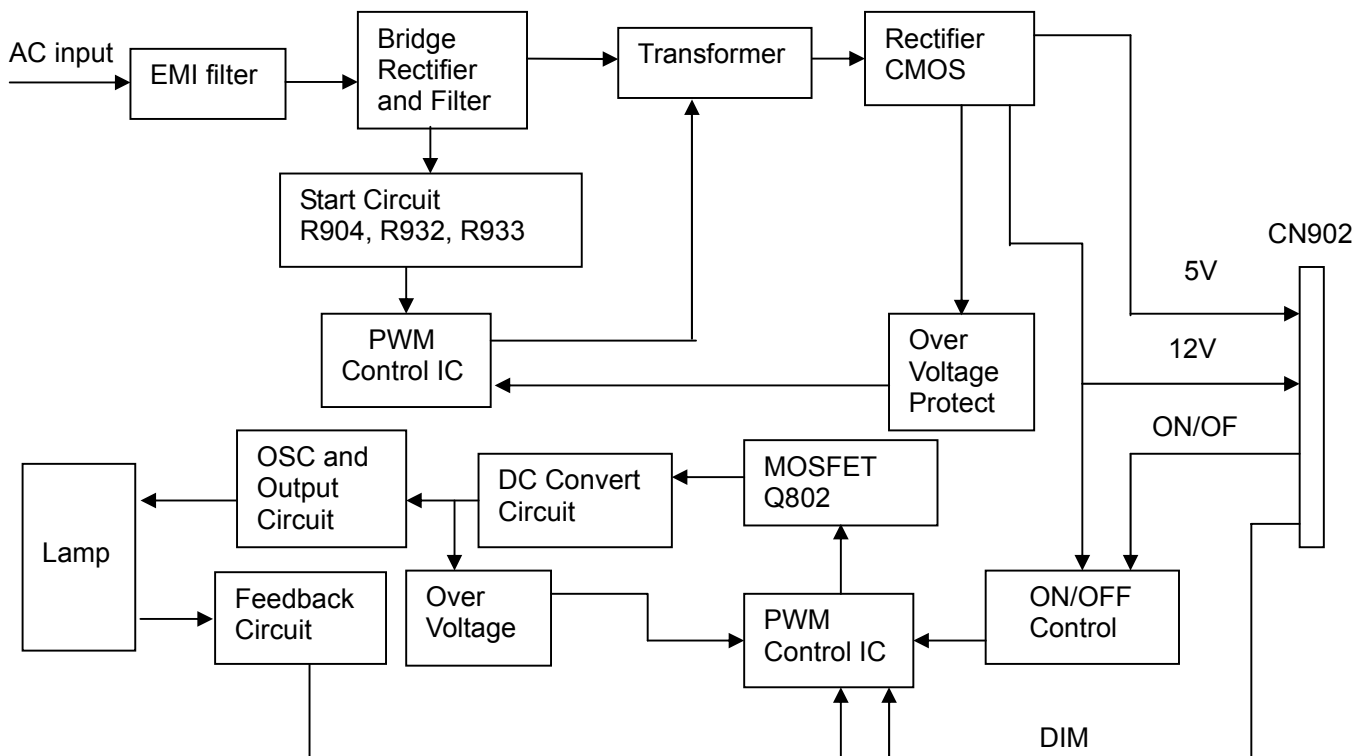
4.2 MAIN BOARD BLOCK FUNCTION DESCRIPTION

The main board contains panel control logic, brightness control logic, DDC and DC convert DC circuit and so on.



4.3 PWPC BOARD BLOCK FUNCTION DESCRIPTION

PWPC board combines to adapter and inverter, Adapter which commonly consists of bridge rectifier and filter, start circuit, PWM control circuit, protection circuits and convert to 12V, 5V DC voltage by input 90V-240V AC voltage that provide power supply for each chips in the main board and inverter. Inverter is DC TO AC circuit. It changes the 12v DC of power supply to about 600-800v AC that drives the backlight. It mostly consists of starting circuit, PWM controller, DC changing circuit, LC surging circuit, output circuit and protection circuit etc.



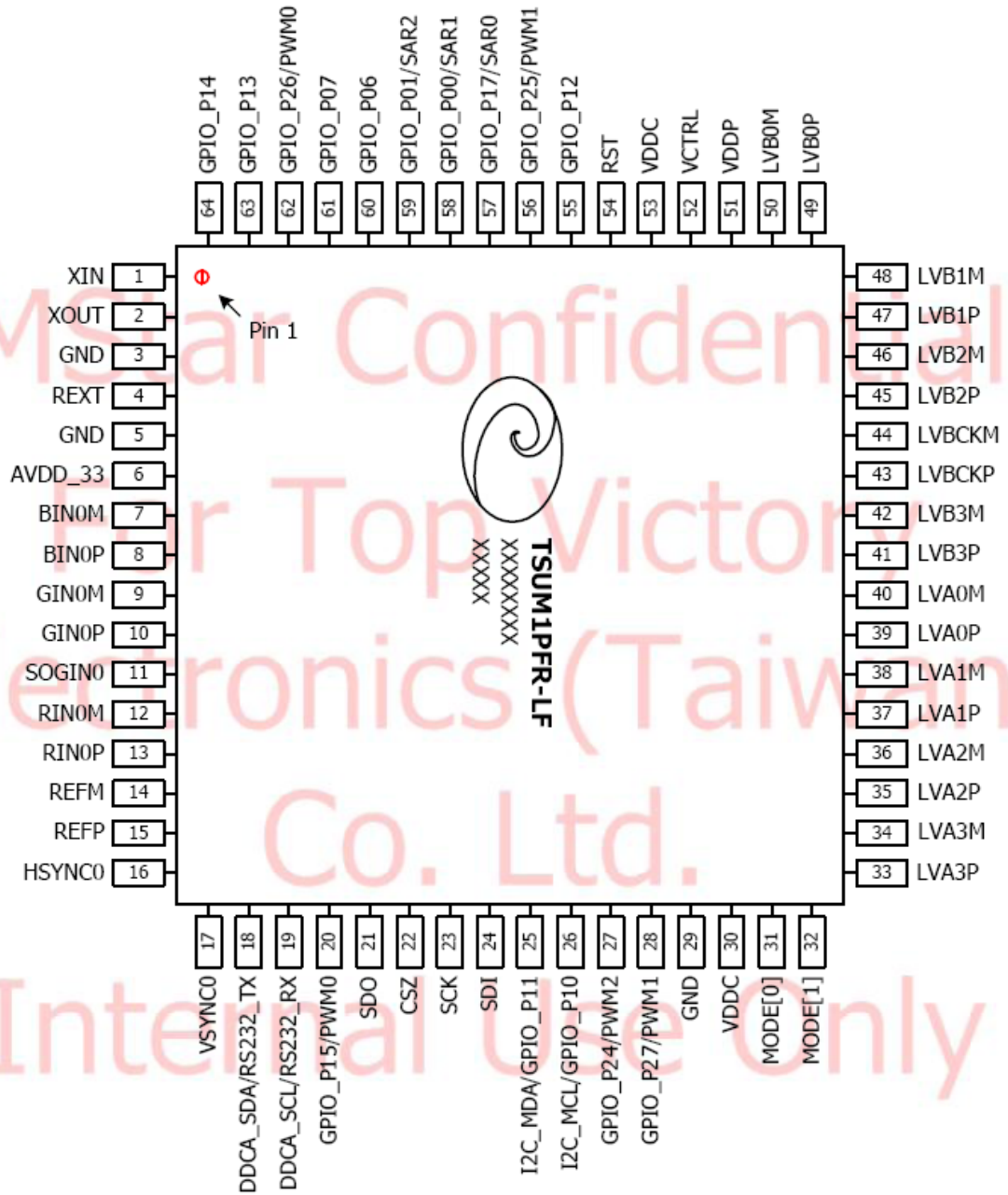
4.4 INTRODUCTION OF IC

TSUM1PFR-LF(U401): integrate ADC, OSD, SCALER, MCU, LVDS, convert analog RGB into digital and room and shrink scaling output to LCD panel.

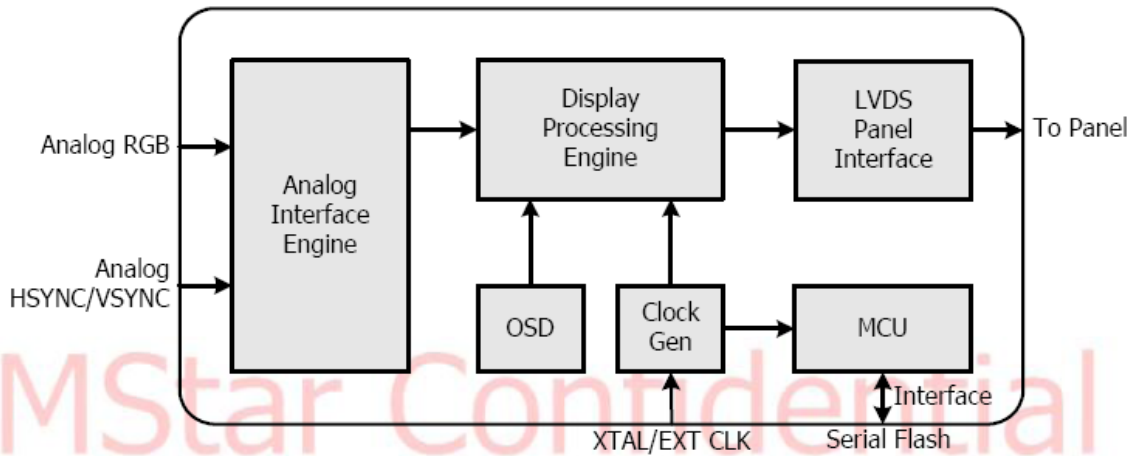
PIN Function:

Pin	Symbol	Description
21	SDO	SPI flash serial data output
22	CSZ	SPI flash chip select
23	SCK	SPI flash serial select
24	SDI	SPI flash serial data input
18	DDCA_SDA/RS232_TX	DDC Data for analog interface/ UART Ttransmitter / General Purpose Input/Output; 4mA driving strength
19	DDCA_SCL/RS232_RX	DDC Clock for analog interface/ UART Receiver / General Purpose Input/Output; 4mA driving strength
54	RST	Chip reset; High reset
52	VCTRL	Regulator control
16	HSYNCO	Analog HSYNC input
17	VSYNCO	Analog VSYNC input
15	REFP	Internal ADC top de-coupling pin
14	REFM	Internal ADC bottom de-coupling pin
4	REXT	External resistor 390 ohm to AVDD_33
32、31	MODE[1: 0]	Input
		Chip Configuration Input
		MODE[1:0]
		00
		Chip Operation
		Normal Operation
1	XIN	Xin; Crystal Oscillator Input
2	XOUT	Xout; Crystal Oscillator Output
6	AVDD_33	ADC Power 3.3V
51	VDDP	Digital Output Power 3.3V
30、53	VDDC	Digital Core Power 1.8V
3、5、29	GND	Ground

PIN DIAGRAM (TSUM1PFR)



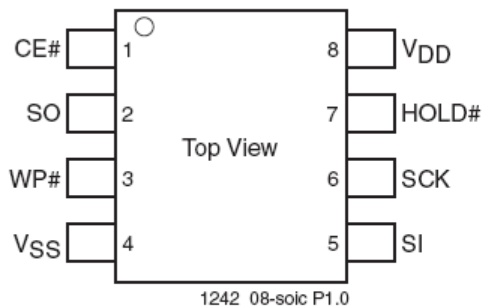
BLOCK DIAGRAM



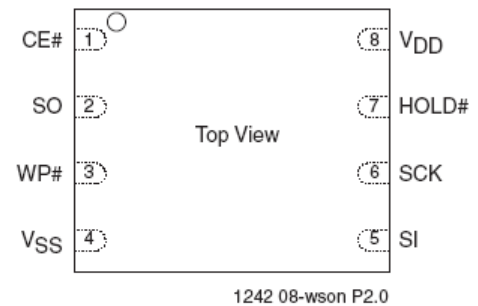
AP1117D33LA(U404): DC power convert, convert to 3.3v.

SST25LF020A-33-4C-SAE(U403): SST's serial flash family features a four-wire, SPI-compatible interface that allows for a low pin-count package occupying less board space and ultimately lowering total system costs. The SST25LF020A/040A devices significantly improve performance, while lowering power consumption. The total energy consumed is a function of the applied voltage, current, and time of application. The SST25LF020A/040A devices operate with a single 3.0-3.6V power supply. The SST25LF020A devices are offered in an 8-lead SOIC 150 mil body width (SA) package.

Pin Diagram:



8-LEAD SOIC

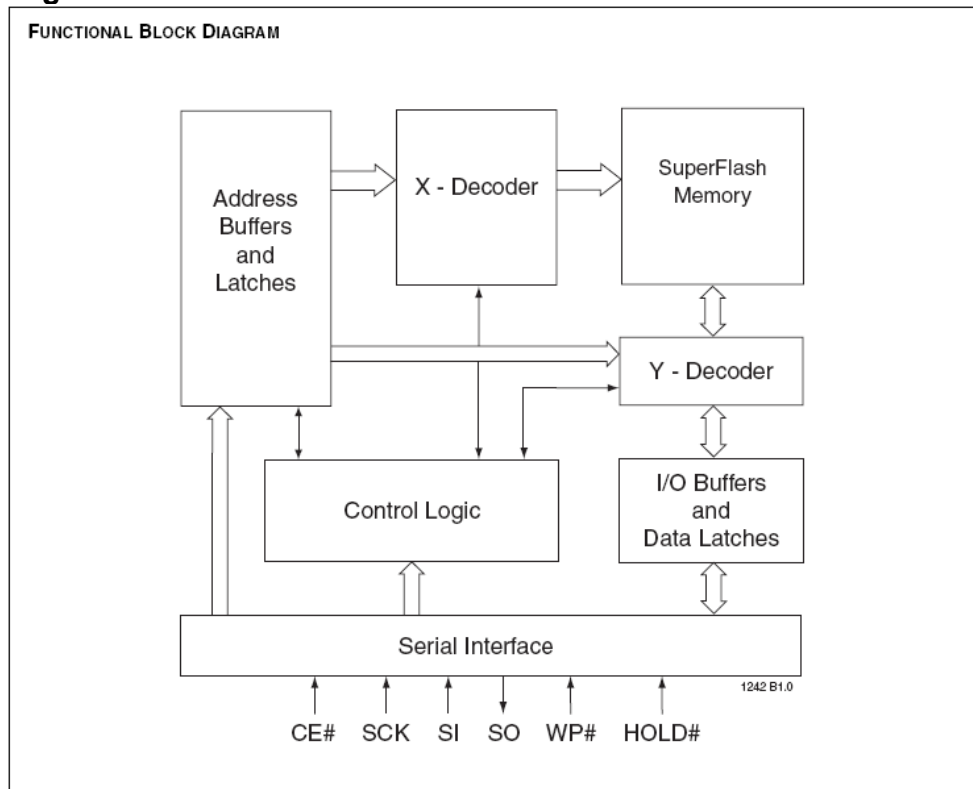


8-CONTACT WSON

PIN Descriptions:

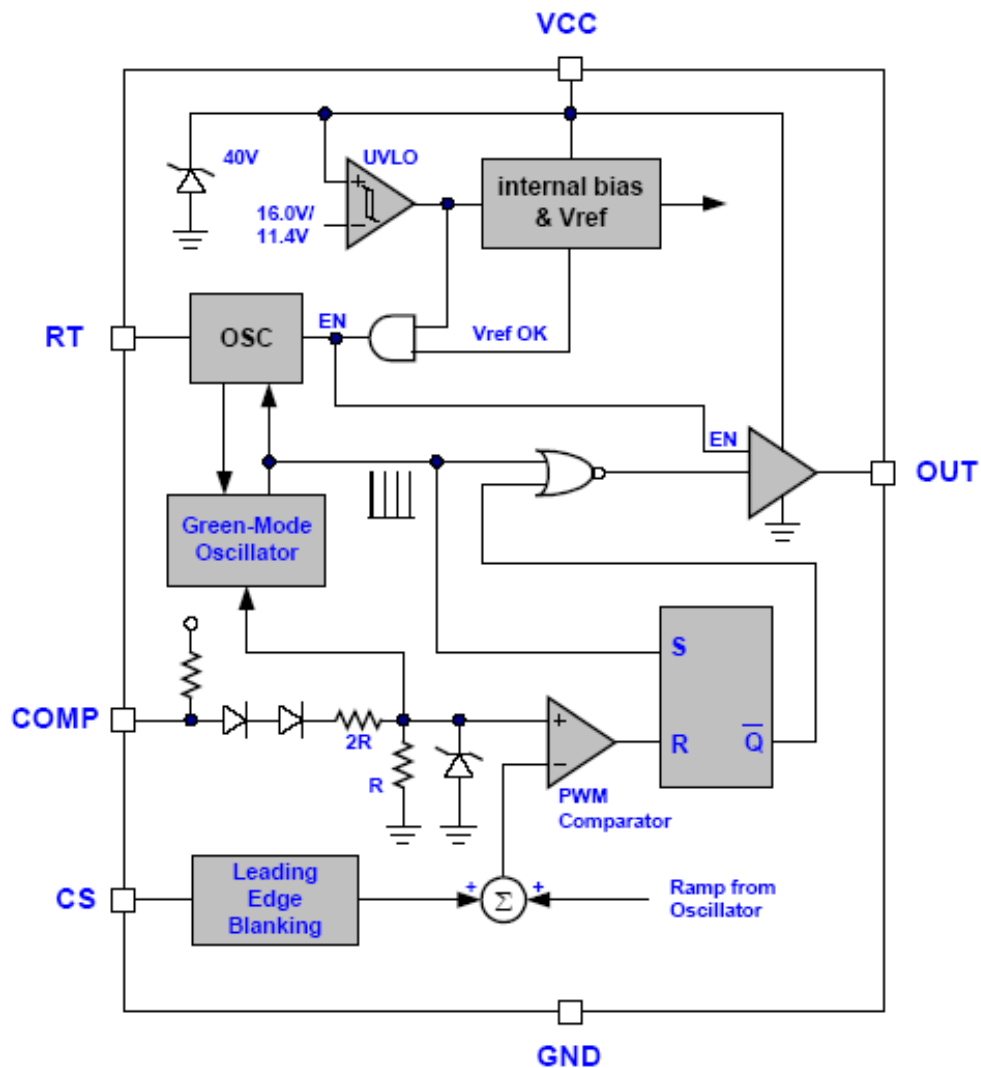
Symbol	Pin Name	Functions
SCK	Serial Clock	To provide the timing of the serial interface. Commands, addresses, or input data are latched on the rising edge of the clock input, while output data is shifted out on the falling edge of the clock input.
SI	Serial Data Input	To transfer commands, addresses, or data serially into the device. Inputs are latched on the rising edge of the serial clock.
SO	Serial Data Output	To transfer data serially out of the device. Data is shifted out on the falling edge of the serial clock.
CE#	Chip Enable	The device is enabled by a high to low transition on CE#. CE# must remain low for the duration of any command sequence.
WP#	Write Protect	The Write Protect (WP#) pin is used to enable/disable BPL bit in the status register.
HOLD#	Hold	To temporarily stop serial communication with SPI flash memory without resetting the device.
V _{DD}	Power Supply	To provide power supply(3.0-3.6V)
V _{SS}	Ground	

Circuit Diagram



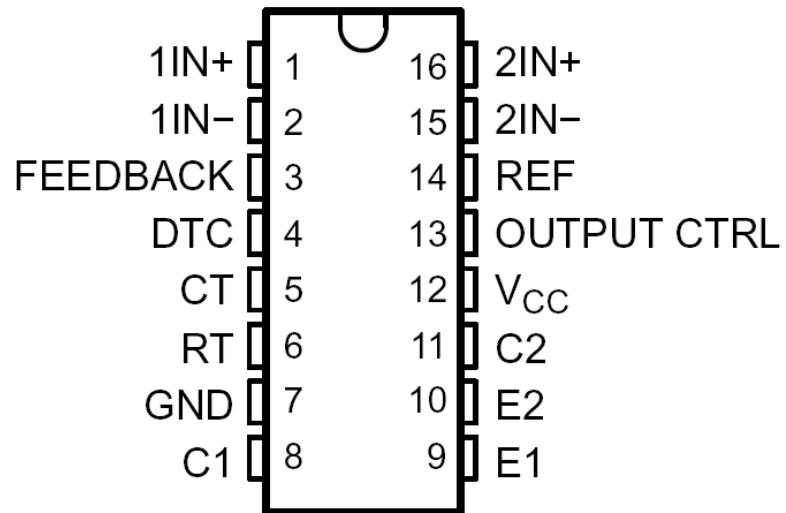
LD7552BPS (IC901): PWM control, high-voltage startup current. The circuit unit has functions such as over-current protection, over-voltage protection, output short-circuit protection and etc. The function of each pin and the inside circuit diagram are as follows:

Pin	Name	Function
1	GND	Ground
2	COMP	Voltage feedback pin (same as the COMP pin in UC384X), By connecting a photo-coupler to close the control loop and achieve the regulation
3	VCC	Supply voltage pin
4	RT	This pin is to program the switching frequency. By connecting a resistor to ground to set the switching frequency.
6	NC	Unconnected pin
7	VCC	Supply voltage pin
8	OUT	Gate drive output to drive the external MOSFET

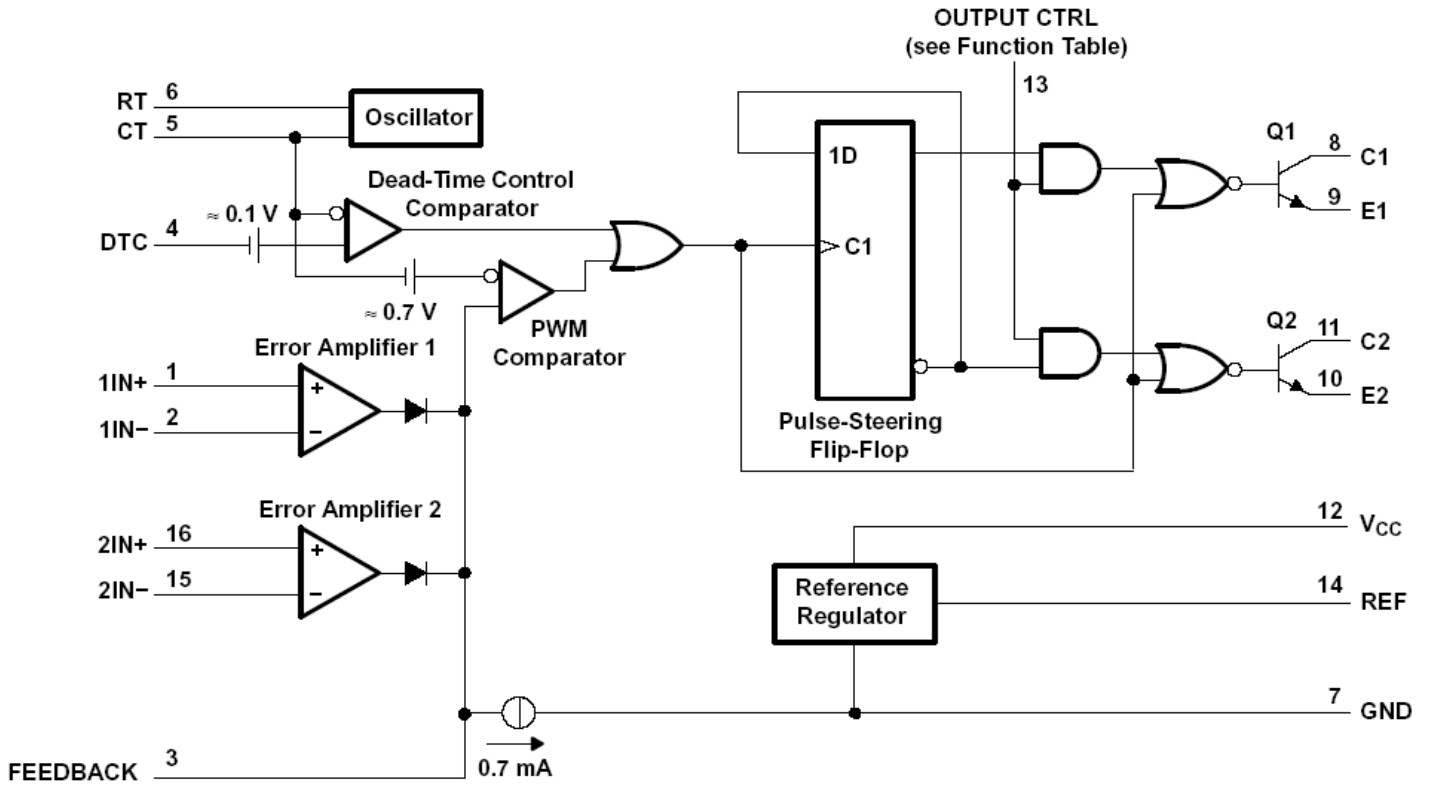


TL494(IC801): The TL494 incorporates all the functions required in the construction of a pulse-width-modulation (PWM) control circuit on a single chip. Designed primarily for power-supply control, this device offers the flexibility to tailor the power-supply control circuitry to a specific application.

PIN Descriptions:



FUNCTIONAL BLOCK DIAGRAM



5. Adjustment Procedure

5.1 ADJUSTMENT CONDITIONS AND PRECAUTIONS

1. Approximately 30 minutes should be allowed for warm up before proceeding.
2. Adjustments should be undertaken only on those necessary elements since most of them have been carefully preset at the factory.
3. ESD protection is needed before adjustment.

5.2 MAIN ADJUSTMENTS

NO.	FUNCTIONS	DESIGNATION
1.	White Balance	Function Key
2.	Geometry	Function Key

5.3 ALIGNMENT PROCEDURES

Approximately 30 minutes should be allowed for warm up before proceeding White-Balance adjustment.

1. Adjust of White Balance

1.) How to do the CA-210 MEM .Channel setting

A、 Reference to CA-210 user guide

B、 Use “ **MODE**” key to modify **x**、 **y**、 **Lv** value and use “**MEMORY CH**” key to modify the TEXT description Following is the procedure to do white-balance adjust

2.) Setting the color temp. You want

A、 MEM.CHANNEL1 (9300 color):

9300 color temp. parameter is $x = 0.283 \pm 0.003$; $y = 0.298 \pm 0.003$;
 $L_v \geq 147 \text{ cd/m}^2$.

B、 MEM.CHANNEL1 (6500 color):

6500 color temp. parameter is $x = 0.313 \pm 0.003$; $y = 0.329 \pm 0.003$;
 $L_v \geq 179 \text{ cd/m}^2$.

C、 MEM.CHANNEL 1 (5400 color):

5400 color temp. parameter is $x = 0.335 \pm 0.003$; $y = 0.350 \pm 0.003$;
 $L_v \geq 168 \text{ cd/m}^2$.

D、 MEM.CHANNEL1 (SRGB color):

SRGB color temp. parameter is $x=0.313 \pm 0.003$; $y=0.329 \pm 0.003$; $L_v \geq 179 \text{ cd/m}^2$.

3.) Into factory mode of VA1616:

First Power off, then press Switch 1 button along with press Power button will activate the factory mode, then MCU will do AUTO LEVEL automatically. Meanwhile press MENU the OSD screen will located at **LEFT TOP OF PANEL**.

4.) Bias adjustment :

Set the **Contrast** to 70, Adjust the **Brightness** to 100.

5.) Gain adjustment :

Move cursor to “-F-” and press MENU key

A. Adjust 9300 color-temperature

- (1) 、 Switch the CA-210 to **x、 y、 Lv -Mode** (with press “MODE” button)
- (2) 、 Switch the MEM .channel to Channel 1 (with up or down arrow on CA-210)
- (3) 、 The LCD-indicator on CA-210 will show $x=0.283\pm 0.003$, $y=0.298\pm 0.003$, $Lv\geq 147\text{cd/m}^2$
- (4) Adjust the R G B of color3 on factory window until CA210 indicator reached $x=0.283\pm 0.003$, $y=0.298\pm 0.003$, $Lv\geq 147\text{cd/m}^2$

B. Adjust 6500 color-temperature

- (1)、 Switch the CA-210 to **x、 y、 Lv -Mode** (with press “MODE” button)
- (2)、 Switch the MEM .channel to Channel 1 (with up or down arrow on CA-210)
- (3) 、 The LCD-indicator on CA-210 will show $x=0.313\pm 0.003$, $y=0.329\pm 0.003$, $Lv\geq 179\text{cd/m}^2$
- (4) Adjust the R G B of color3 on factory window until CA210 indicator reached $x=0.313\pm 0.003$, $y=0.329\pm 0.003$, $Lv\geq 179\text{cd/m}^2$

C. Adjust 5400 color-temperature

- (1)、 Switch the CA-210 to **x、 y、 Lv -Mode** (with press “MODE” button)
- (2)、 Switch the MEM .channel to Channel 1(with up or down arrow on CA-210)
- (3) 、 The LCD-indicator on CA-210 will show $x=0.335\pm 0.003$, $y=0.350\pm 0.003$, $Lv\geq 168\text{cd/m}^2$
- (4)、 Adjust the R G B of color3 on factory window until CA210 indicator reached $x = 0.335\pm 0.003$; $y = 0.350\pm 0.003$; $Lv\geq 168\text{cd/m}^2$

D. Adjust SRGB color-temperature

- (1)、 Switch the CA-210 to **x、 y、 Lv -Mode** (with press “MODE” button)
- (2)、 Switch the MEM .channel to Channel 1 (with up or down arrow on CA-210)
- (3) 、 The LCD-indicator on CA-210 will show $x=0.313\pm 0.003$, $y=0.329\pm 0.003$, $Lv\geq 179\text{cd/m}^2$
- (4)、 Adjust the R G B of color3 on factory window until CA210 indicator reached $x=0.313\pm 0.003$, $y=0.329\pm 0.003$, $Lv\geq 179\text{cd/m}^2$

F、 Press reset key and Turn the Power-button “off to on” to quit from factory mode。

2. **Geometry**

- 1).Set cross-hatch pattern and preset timing as timing table listed.
- 2).Change to each mode in turn and wait for the monitor finish auto-alignment and save press before change to next mode.
- 3).Until all of modes are adjusted, exit OSD menu and press POWER OFF to exit factory mode.

5.4 Factory Defaults

Item	Defaults	Item	Defaults
Contrast	70%	Input Priority	N/A
Brightness	100%	Resolution Notice	On
Color Temperature	6500K	Volume	N/A
Sharpness	100%	Balance	N/A
OSD H. Position	50%	Treble	N/A
OSD V. Position	50%	Bass	N/A
OSD Time Out	15	720x400 / 640x400	720x400
OSD Background	On	DCR	ON : For Region code = E/G/P/A/S/K/U/J units only OFF: For Region code = M units only

5.5 Function Test

1 Product: 16" LCD Monitor

2 Test Equipment: Color Video Signal & Pattern (or PC with SXGA resolution)

3 Test Condition: Before function test and alignment, each LCD Monitor should be warmed up for at least 30 minutes with the following conditions:

- (a) In room temperature,
- (b) With full-white screen, RGB, and Black
- (c) With cycled display modes,
640*480 (H=43.27kHz, V=75Hz)
800*600 (H=53.7kHz, V=75Hz)
1024*768 (H=68.67kHz, V=60Hz)
1280*1024 (H=79.97kHz, V=60Hz)
1366*768 (H=55.9kHz, V=60Hz)

4 Test Display Modes & Pattern

Compatible Modes

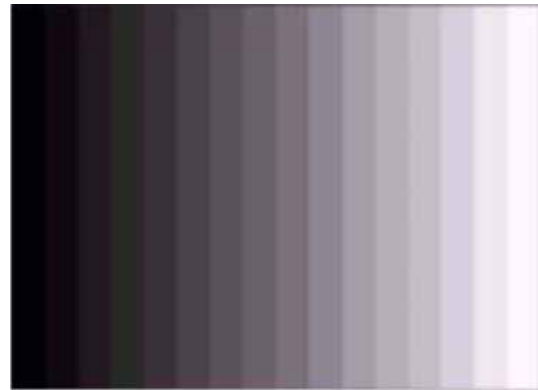
Item	Timing	Analog
1	640 x 480 @ 60Hz, 31.5kHz	Yes
2	640 x 480 @ 75Hz, 31.5kHz	Yes
3	720 x 400 @ 70Hz, 31.5kHz	Yes
4	800 x 600 @ 56Hz, 35.1kHz	Yes
5	800 x 600 @ 60Hz, 37.9kHz	Yes
6	800 x 600 @ 72Hz, 48.1kHz	Yes
7	800 x 600 @ 75Hz, 46.9kHz	Yes
8	1024 x 768 @ 60Hz, 48.4kHz	Yes
9	1024 x 768 @ 70Hz, 56.5kHz	Yes
10	1024 x 768 @ 72Hz, 58.1kHz	Yes
11	1024 x 768 @ 75Hz, 60.0kHz	Yes
12	1280 x 1024 @ 60Hz, 48.4kHz	Yes
13	1366 x 768 @ 60Hz, 60.0kHz	Yes

Function Test Display Pattern

Item	Test Content	Pattern	Specification	Remark
1	Frequency & Tracking	Fine Line Moire	Eliminate visual wavy noise.	Figure 1
2	Contrast/Brightness	16 Gray Scale	16 gray levels sh should be distinguishable.	Figure 2
3	Boundary	Horizontal & Vertical Thickness	Horizontal and Vertical position of video should be adjustable to be within the screen frame.	Figure 3
4	RGB Color Performance	RGB Color Intensities	Contrast of each R, G, B, color should be normal.	Figure 4,5,6
5	Screen Uniformity & Flicker	Full White	Should be compliant with the spec.	Figure 7
6	Dead Pixel/Line	White Screen & Dark Screen	The numbers of dead pixels should be compliant with the spec.	Figure 7,8
7	White Balance	White & Black Pattern	The screen must have the pure white and black pattern, no other color.	Figure 9



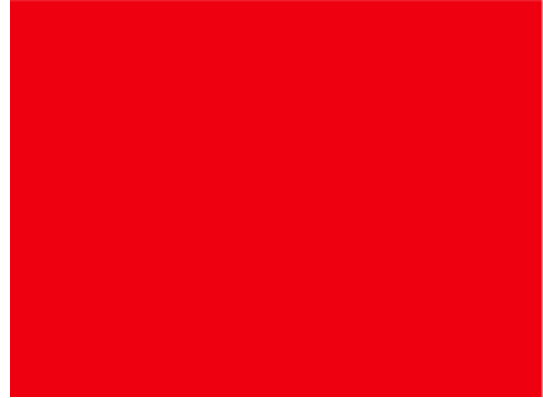
Fine Line Moire Pattern (Figure1)



Gray Scale Pattern (Figure2)



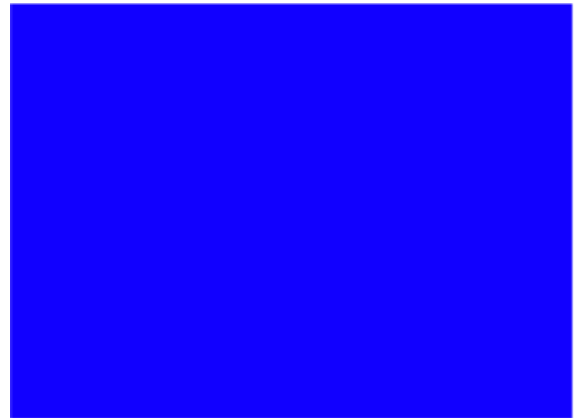
Horizontal & Vertical Thickness Pattern (Figure 3)



R. Color Pattern (Figure 4)



G. Color Pattern (Figure 5)



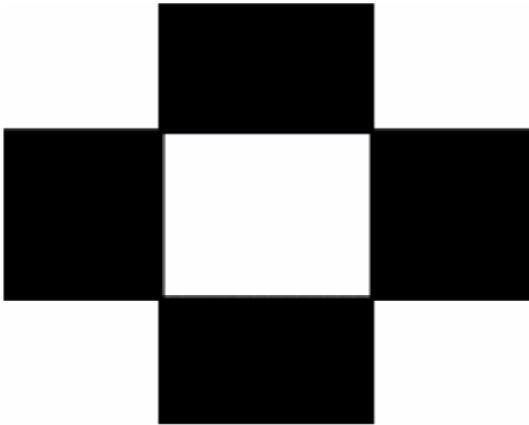
B. Color Pattern (Figure 6)



Full White Pattern (Figure 7)



Dark Screen Pattern (Figure 8)



Black-White Pattern (Figure 9)

4.3 Function Test and Alignment Procedure

All Modes Reset

You should do “All Mode Reset” (Refer to Chapter III-3. Hot Keys for Function Controls) first. This action will allow you to erase all end-user’s settings and restore the factory defaults.

Auto Image Adjust

Please select and enter “Auto Image Adjust” function on Main Menu to see if it is workable. The “Auto Image Adjust” function is aimed to offer a better screen quality by built-in ASIC. For optimum screen quality, the user has to adjust each function manually.

Firmware

Test Pattern: Burn In Mode (Refer to Chapter III-3. Hot Keys for Function Controls)

- Make sure the F/W is the latest version.

DDC

Test Pattern: EDID program
Make sure it can pass test program.

Fine Tune and Sharpness

Test Signal: 1366*768@60Hz
Test Pattern: Line Moire Pattern
Check and see if the image has noise and focus performs well. Eliminate visual line bar.
If not, readjust by the following steps:
(a) Select and enter “Fine Tune” function on “Manual Image Adjust” to adjust the image to eliminate visual wavy noise.
(b) Then, select and enter “Sharpness” function to adjust the clarity and focus of the screen image.

Boundary

Test Signal: 1366*768@60Hz
Test Pattern: Horizontal & Vertical Line Thickness Pattern
Check and see if the image boundary is within the screen frame.
If not, readjust by the following steps:
(a) Select and enter “Manual Image Adjust” function on OSD Main Menu.

(b)Then, select and enter “Horizontal Size” or “Horizontal/Vertical Position” function to adjust the video boundary to be full scanned and within screen frame.

White Balance

Test Signal: 1366*768@60Hz

Test Pattern: White and Black Pattern

1.5.8 R, G, B, Colors Contrast

Test Signal: 1366*768@60Hz

Test Pattern: R, G, B, Color Intensities Pattern and 16 Gray Scale Pattern

- Check and see if each color is normal and distinguishable.
- If not, please return the unit to repair area.

Screen Uniformity and Flicker

Test Signal: 1366*768@60Hz

Test Pattern: Full White Pattern

- Check and see if it is in normal condition.

1.5.10 Dead Pixel and Line

Test Signal: 1366*768@60Hz

Test Pattern: Dark and White Screen Pattern

- Check and see if there are dead pixels on LCD panel with shadow gauge and filter film.
- The total numbers and distance of dead pixels should be compliant with the spec.

Mura

Test Pattern: White, RGB, Black, & Grey

Test Tool: 10% ND Filter

- Check if the Mura can pass 10% ND Filter.

Audio

Test Signal: Voice signal (optional, depend on model)

Test Pattern: liberty

- Make sure there is audio output.
- Make sure that audio function (volume 80%) is working without noise and resonance.
- Make sure that the sound of right and left speakers are in balance.

Check for Secondary Display Modes

Test Signal:

Analog: 640*480@60/75Hz;

720*400@70Hz; 800*600@56/60/72/75Hz;

1024*768@60/70/72/75Hz; 1280*1024@60Hz

1366*768@60Hz

- Normally when the primary mode 1366*768@60Hz is well adjusted and compliant with the specification, the secondary display modes will also be compliant with the spec. But we still have to check with the general test pattern to make sure every secondary is compliant with the specification.

All Modes Reset

After final QC step, we have to erase all saved changes again and restore the factory defaults. You should do “All Mode Reset” again.

Power Off Monitor

Turn off the monitor by pressing “Power” button.

5.6 Firmware Upgrade Procedure

When you receive the returned monitor, please check whether the firmware version is the latest. If not, please do the following procedures to upgrade it to the latest version.

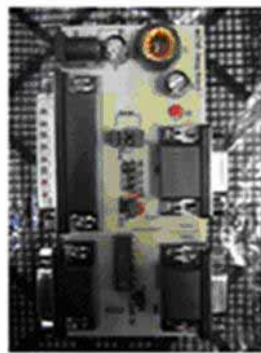
1 Equipment Needed

- Monitor(TSUM Series)
- Fixture for Firmware Upgrade
- Power Adapter (P/N: 47.58201.001) *1 for Fixture
- VGA Cable (P/N: 42.59901.003) *1(Pin 4, 11 should be connected to GND)
- PC (Personal Computer)
- LPT Cable (P/N: 42.59906.001) *1
- Firmware Upgrade Program
- One additional monitor for checking the program execution



Printer Port

PC



Fixture



VA1616W



Power Adapter for Fixture
(P/N: 47.58201.001)



LPT Cable
(P/N: 42.59906.001)



VGA Cable
(P/N: 42.59901.003)

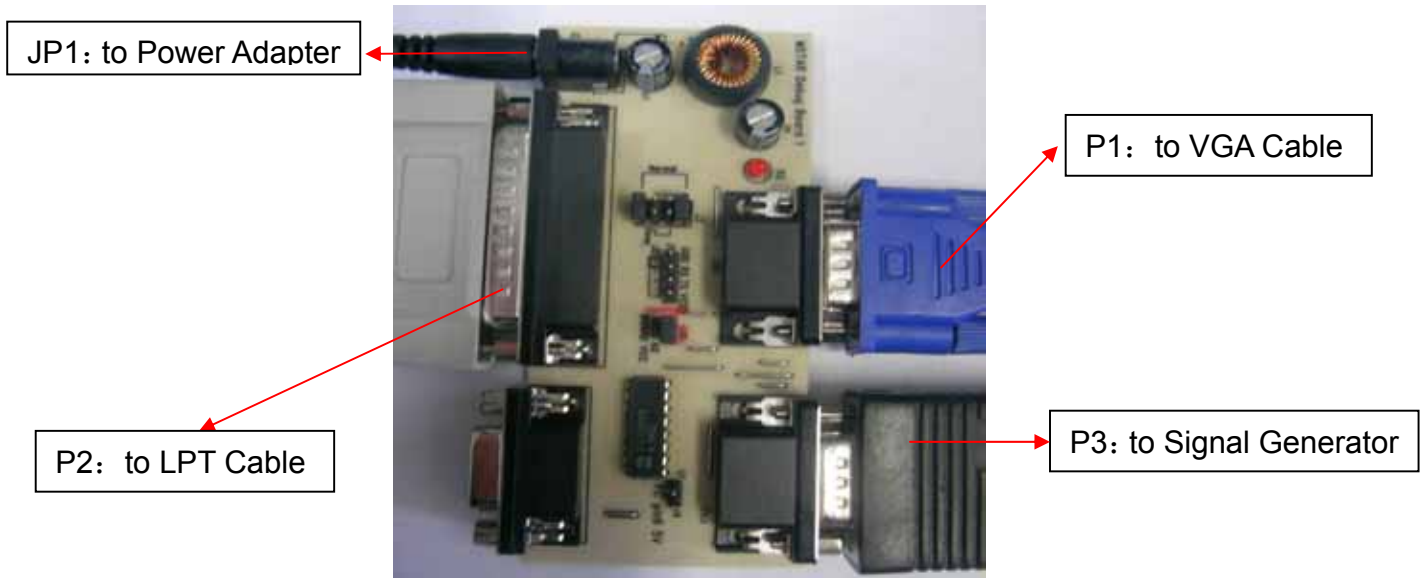
2 Setup Procedure

- 2.1 Connect P2 of Fixture with printer port of PC by LPT Cable.
- 2.2 Connect P1 of Fixture with Monitor(TSUM series) by VGA Cable.
- 2.3 Plug Power Adapter to Fixture.

2.4 Connect Power Cord to Monitor(TSUM series).

2.5 Connect P3 to the Signal Generator (eg.Chroma2326) for verifying it after the operation being completed.

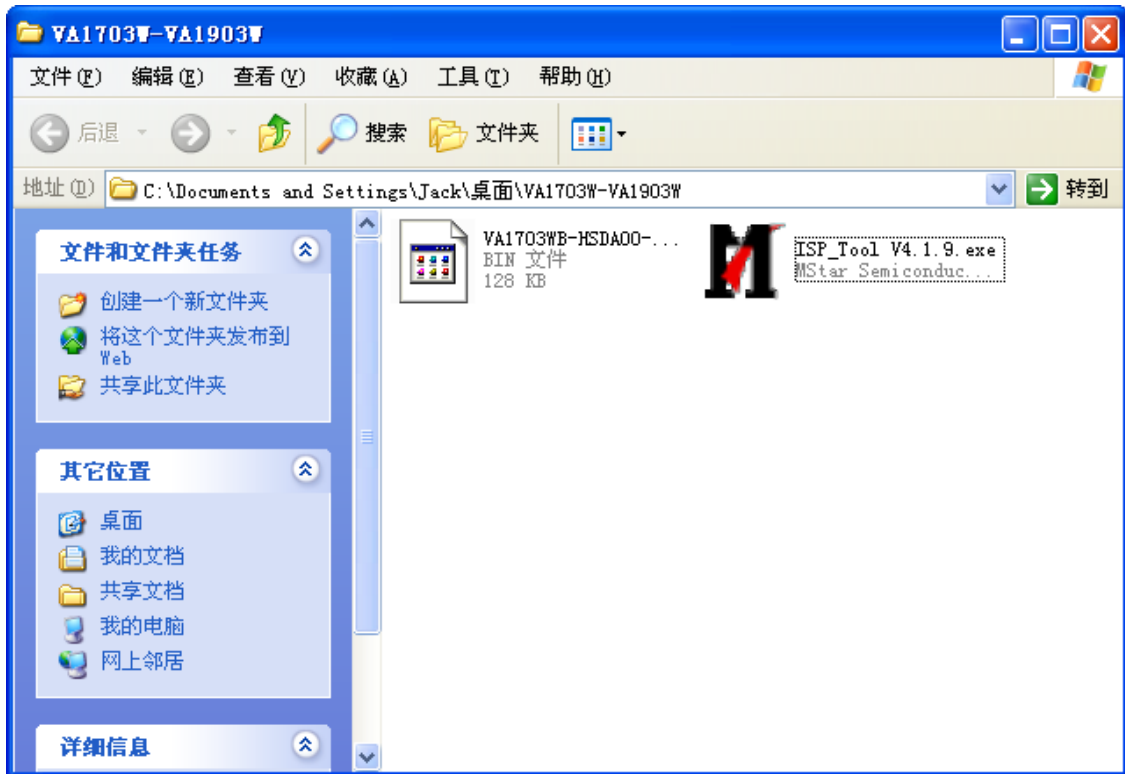
2.6 Connect PC to the additional monitor.



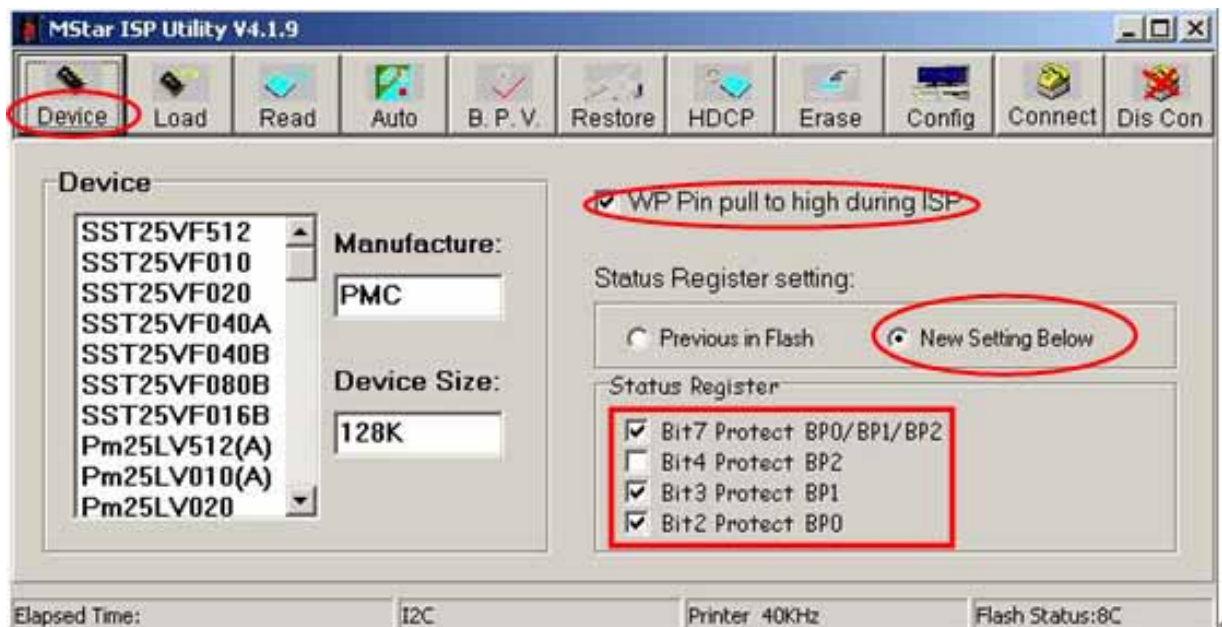
3 Firmware Upgrade Procedure

Step 1. Let Monitor(TSUM series) set to be connected with AC cable and VGA cable.

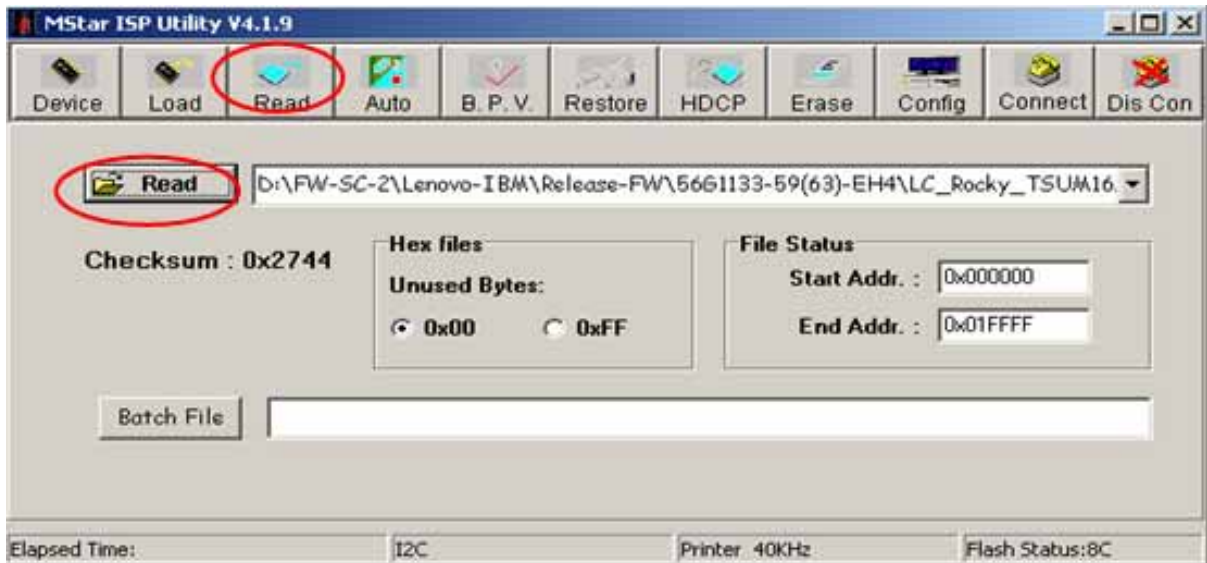
Step 2. Execute the MSstar ISP tool.



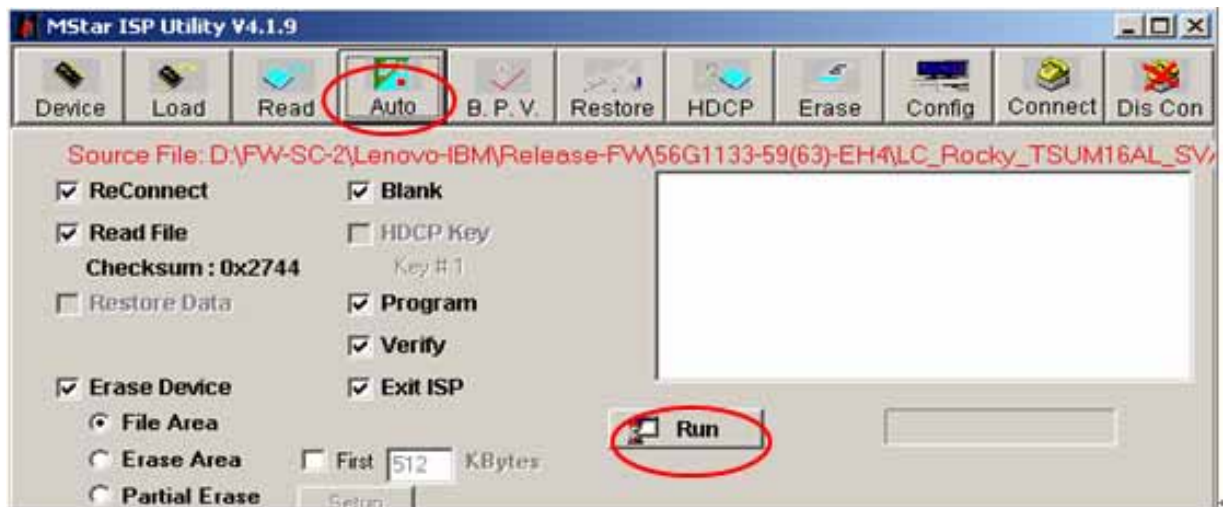
Step 3. Click “Device” button . Make sure that parameters relative to WP# is followed below.



Step 4. Click “Read” button. Select the object bincode on your corresponding directory.



Step 5. Click “Auto” button. Be sure that function of Erase Device (File Area), Blank, Program and Verify is selected, then execute the flashing action by clicking the “Run” button.



Step 6. If the flashing F/W has been completed, “Verify Ok” message will be shown on the right TextBox and Flash Status will be “8C” in the right-bottom of window.



Step 7. Unplug and replug power cord of Monitor(TSUM series) set and then check the OSD operation and image on screen.

Step 8. At last, do “Memory Recall.”

3.2 Setup Procedure

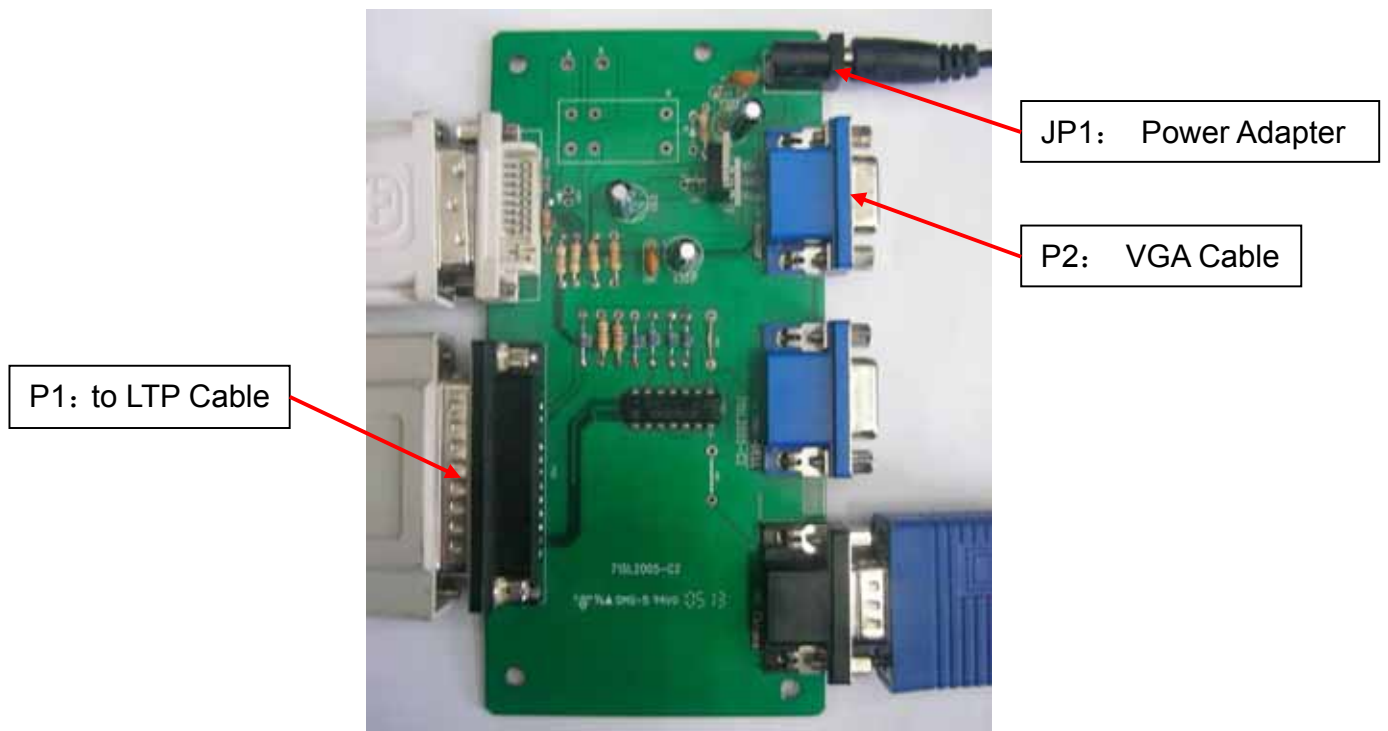
3.2.1 Connect P2 and monitor of Fixture with VGA ports of Monitor (TSUM Series) by VGA Cable.

3.2.2 Connect P1 of Fixture with Printer port of PC by LPT Cable.

3.2.3 Plug Power Adapter to Fixture.

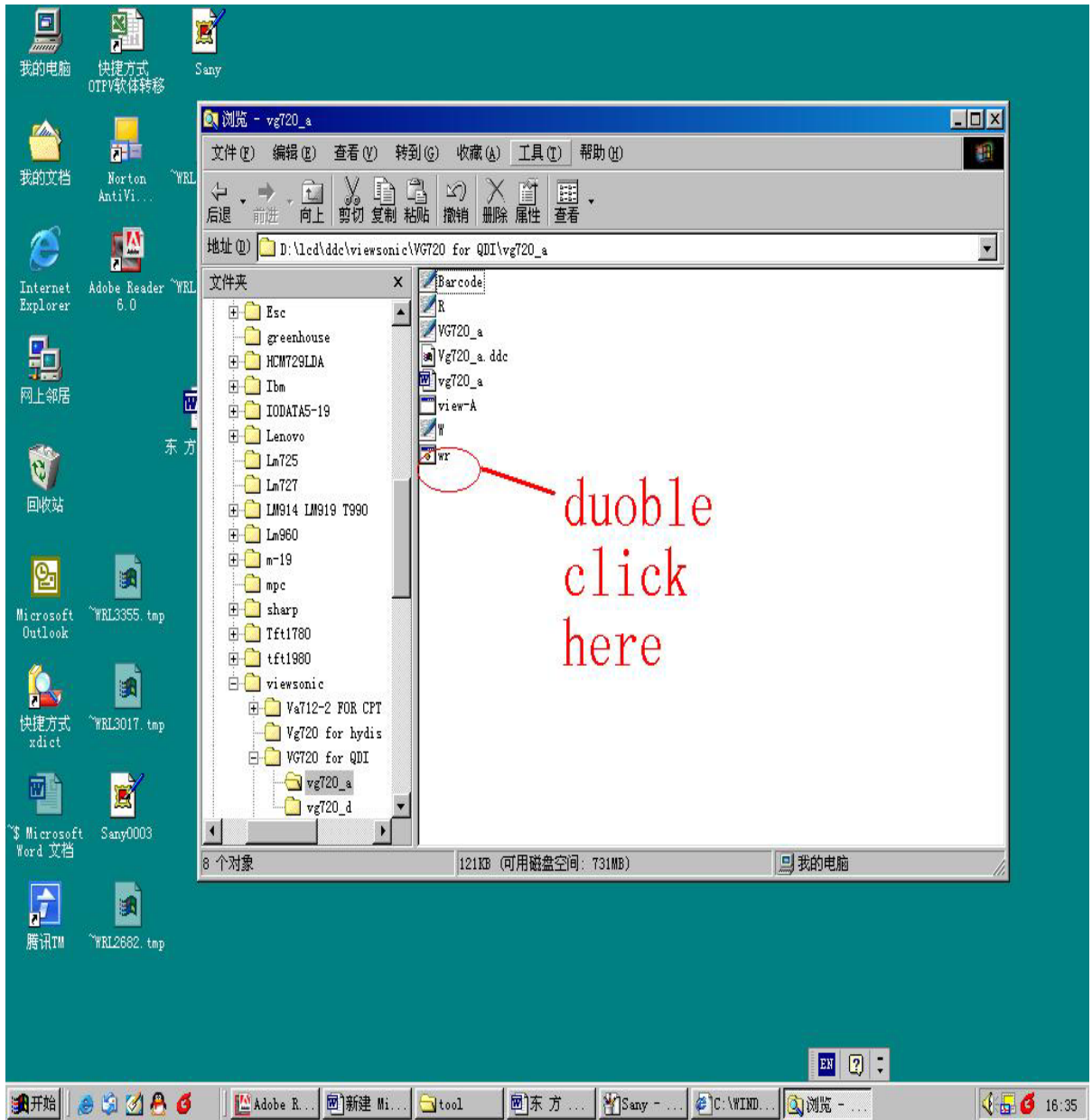
3.2.4 Connect Power Cord to Monitor (TSUM Series).

3.2.5 Connect PC to the additional monitor.

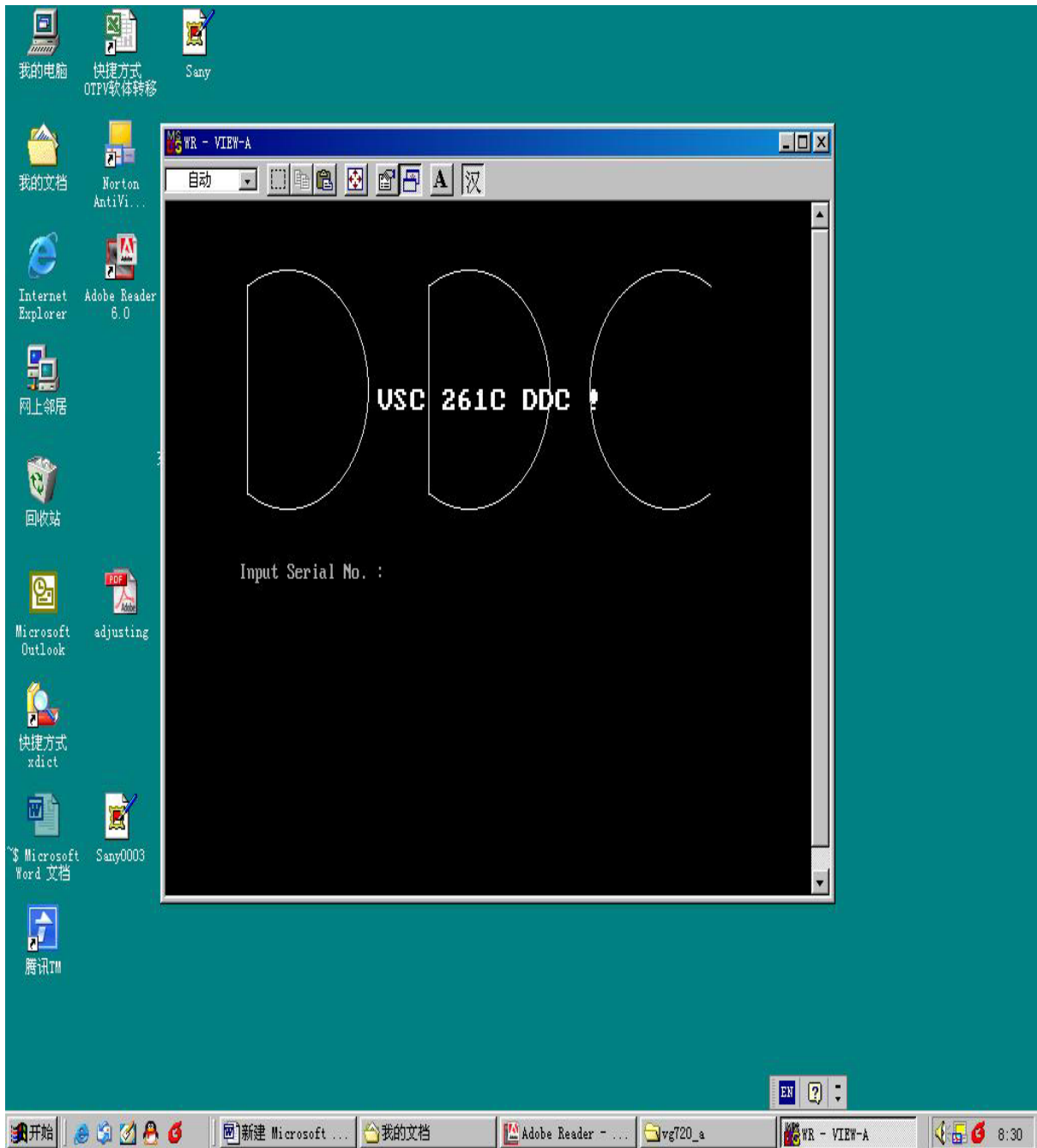


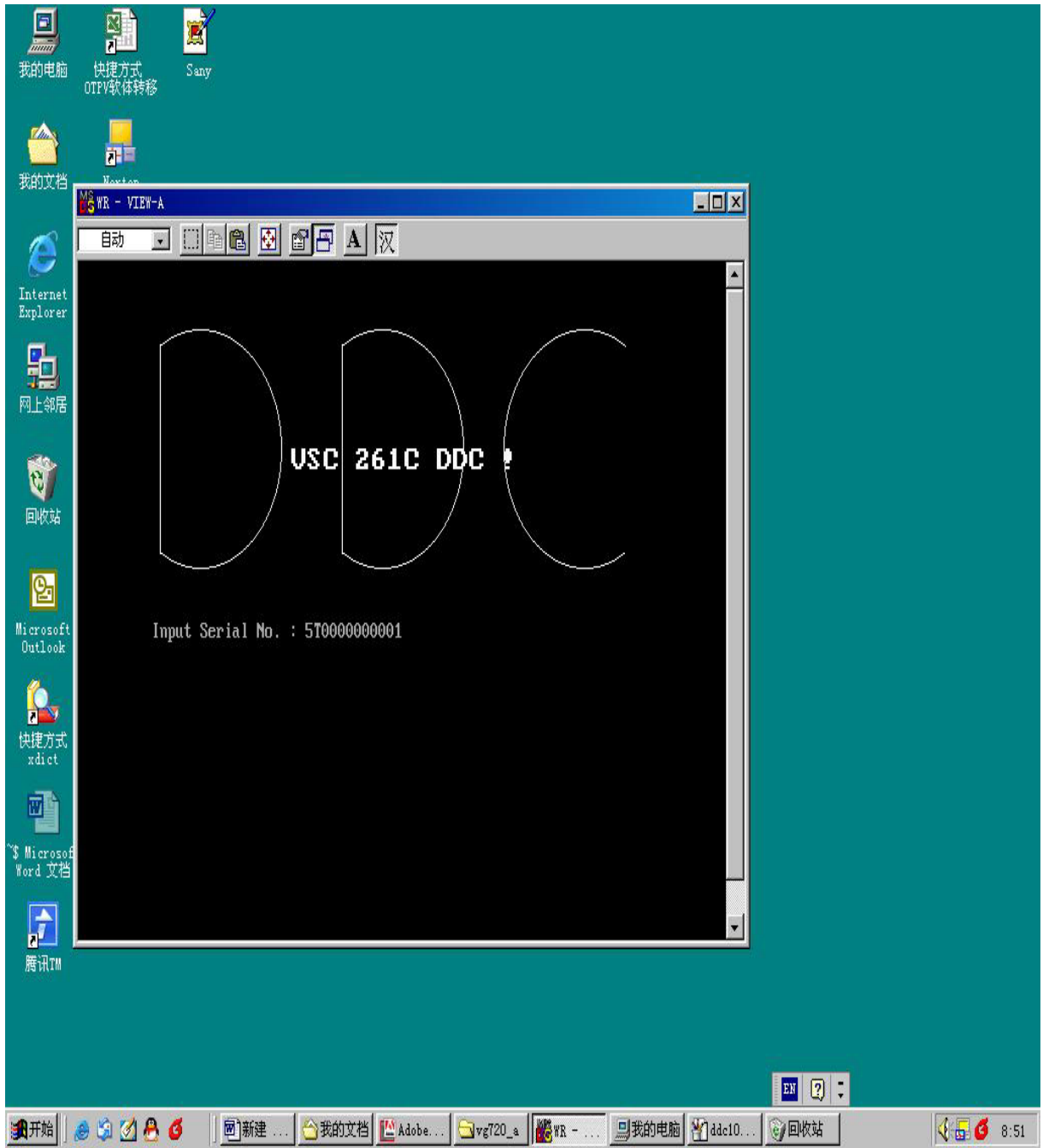
3.3 DDC Key In Procedure

Sep1. Select and execute DDC Key In program

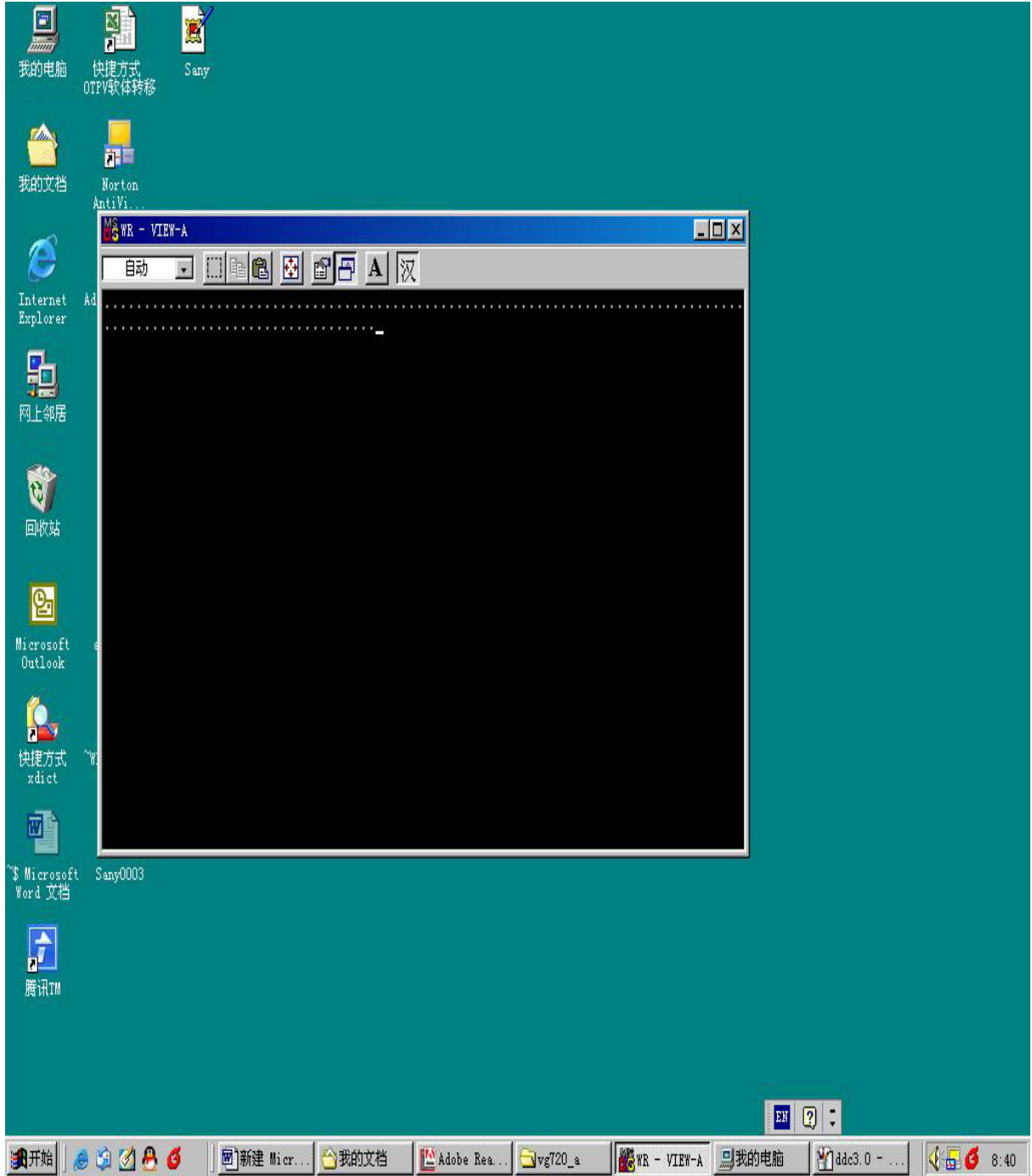


Sep2:Inpute the S/N and execute “Enter”

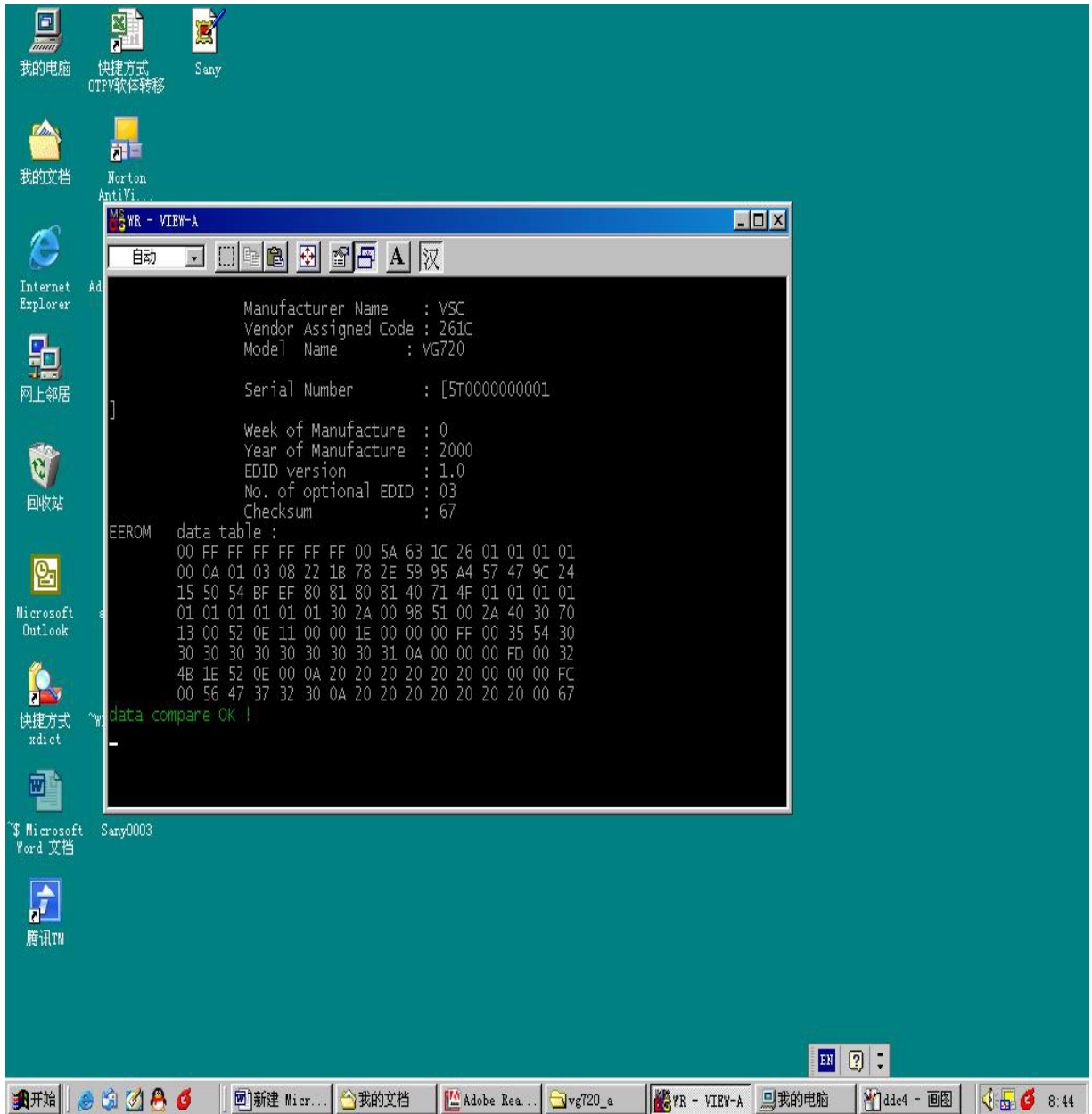




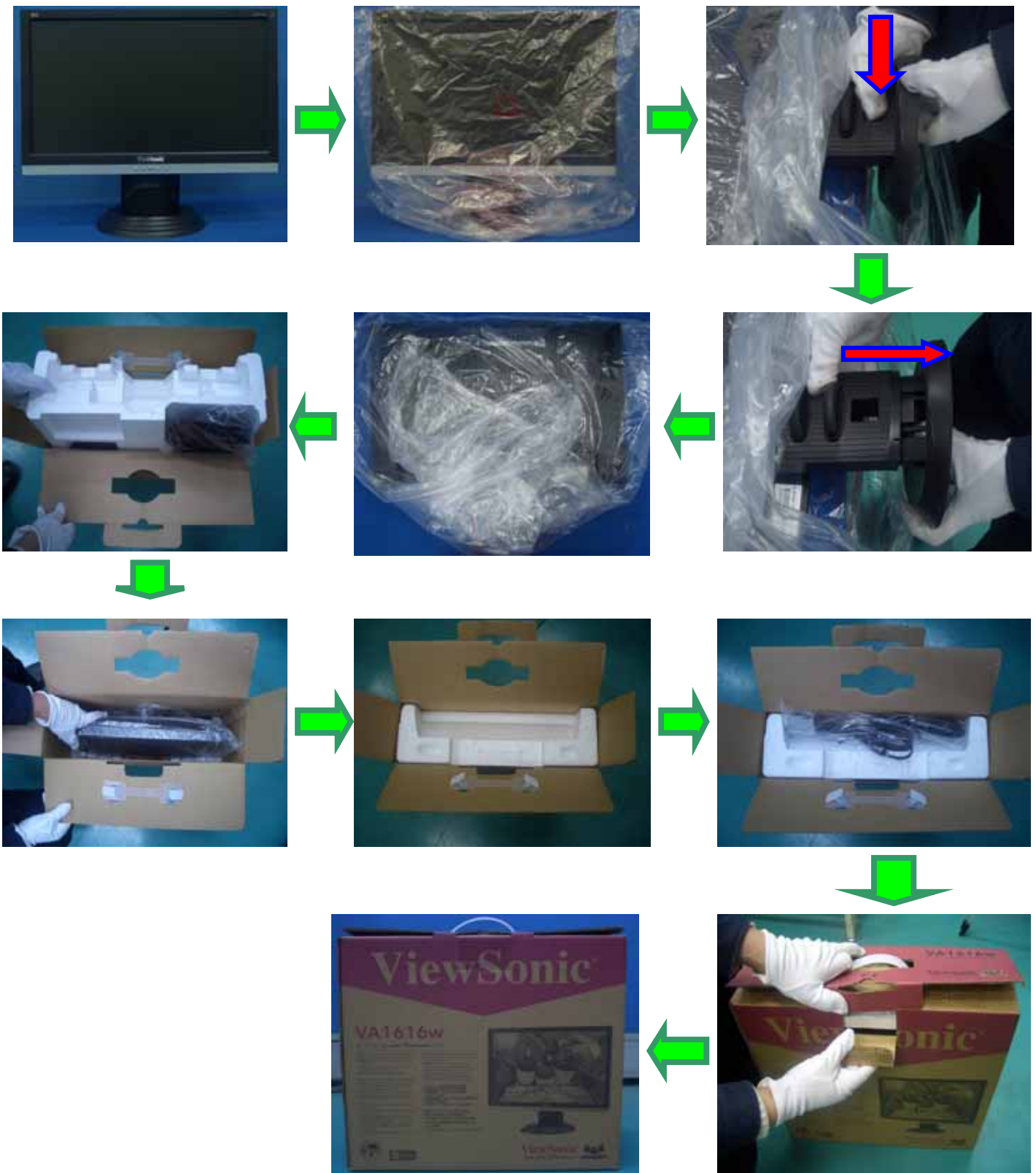
Sep3:Key the “Enter” and write the data



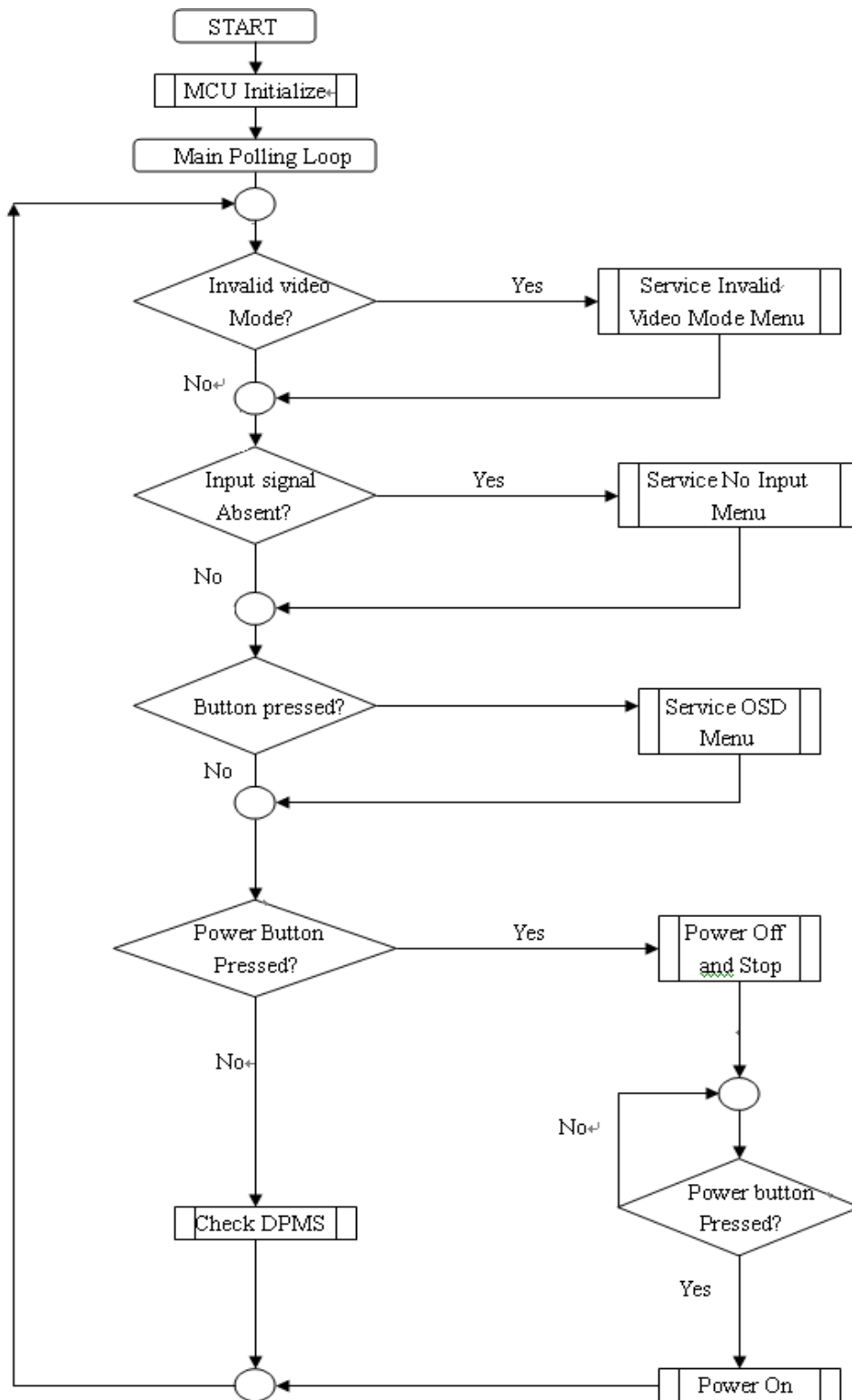
Sep4:If ddc program OK and show “data compare ok”



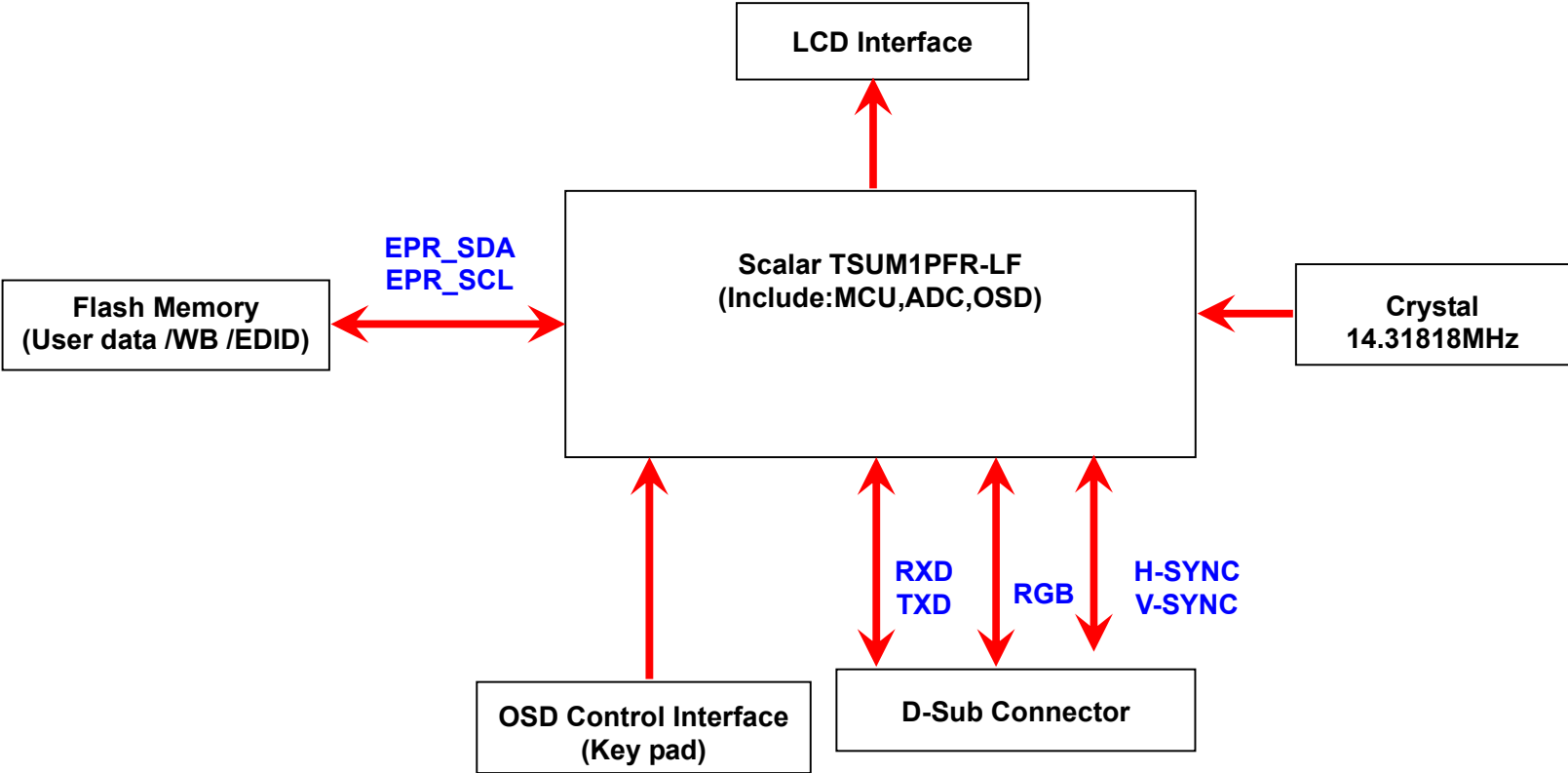
5.7 Packing Procedure



6. Troubleshooting Flow Chart



7. Block Diagram

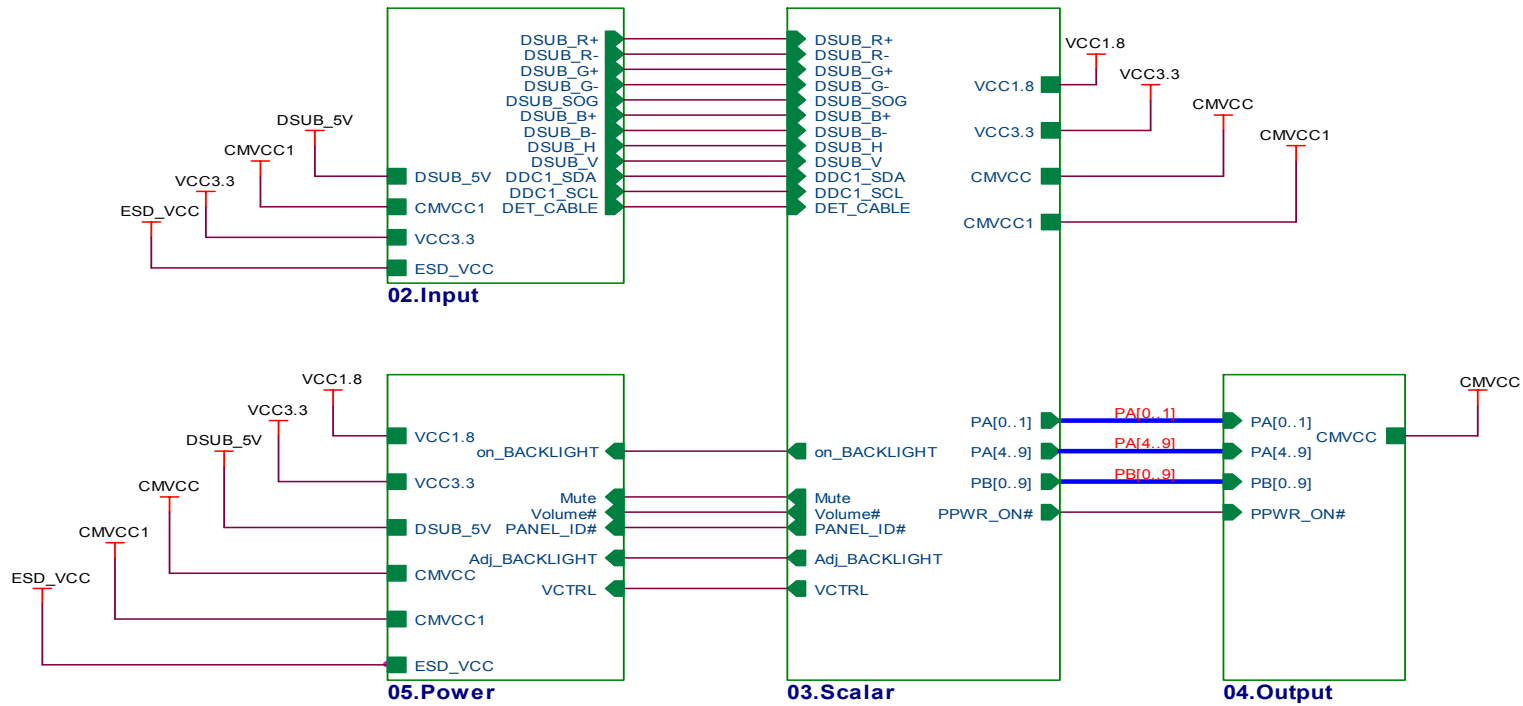


8. Schematic Diagram
8.1 Main Board

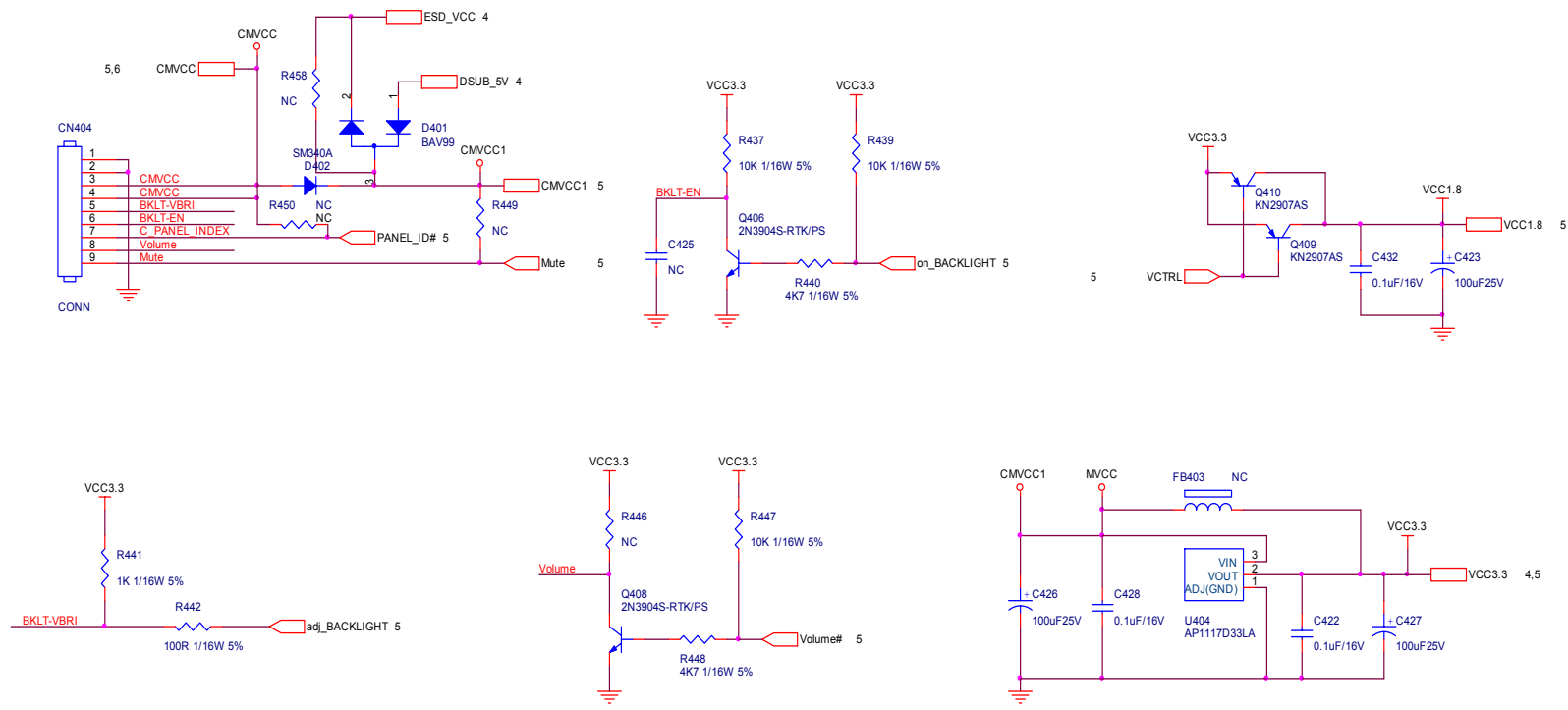
TSUM16FWR SCHEMATIC

XGA/SXGA

LVDS OUTPUT



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	VSC VA1616W	Size	A
錫隔瓜網版	G2904-C-2-VSC-1-071218	TPV MODEL	CBPC7MM5VSQ1	Rev
Key Component	01_TOP	PCB NAME	715G2904-C-2	称爹
Date	Thursday, January 24, 2008	Sheet	3 of 7	<称爹>

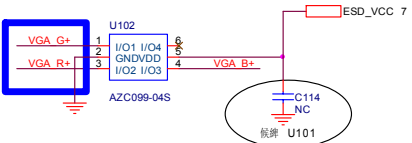
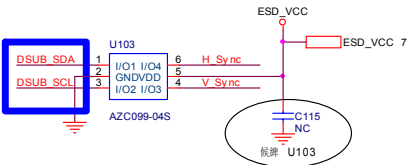
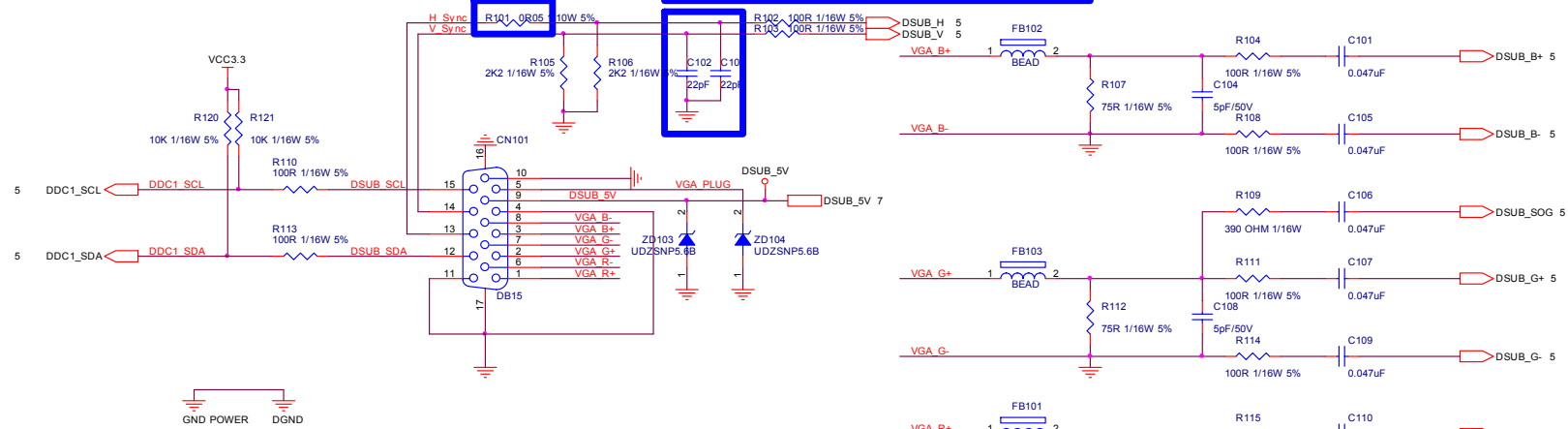


U404 can use package 232 or 252.

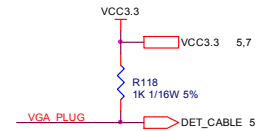
TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	VSC VA1616W	Size	B
蘇 隔 瓜 網 眼	G2904-D-2-VSC-1-080124	TPV MODEL	CBPC7MM5V5Q1	Rev
Key Component	05.power	PCB NAME	715G2904-D-2	蘇 蒙
Date	Thursday, January 24, 2008	Sheet	7 of 7	<蘇蒙>

According to NDS's request to change type of R101 from 0402 to 0603.

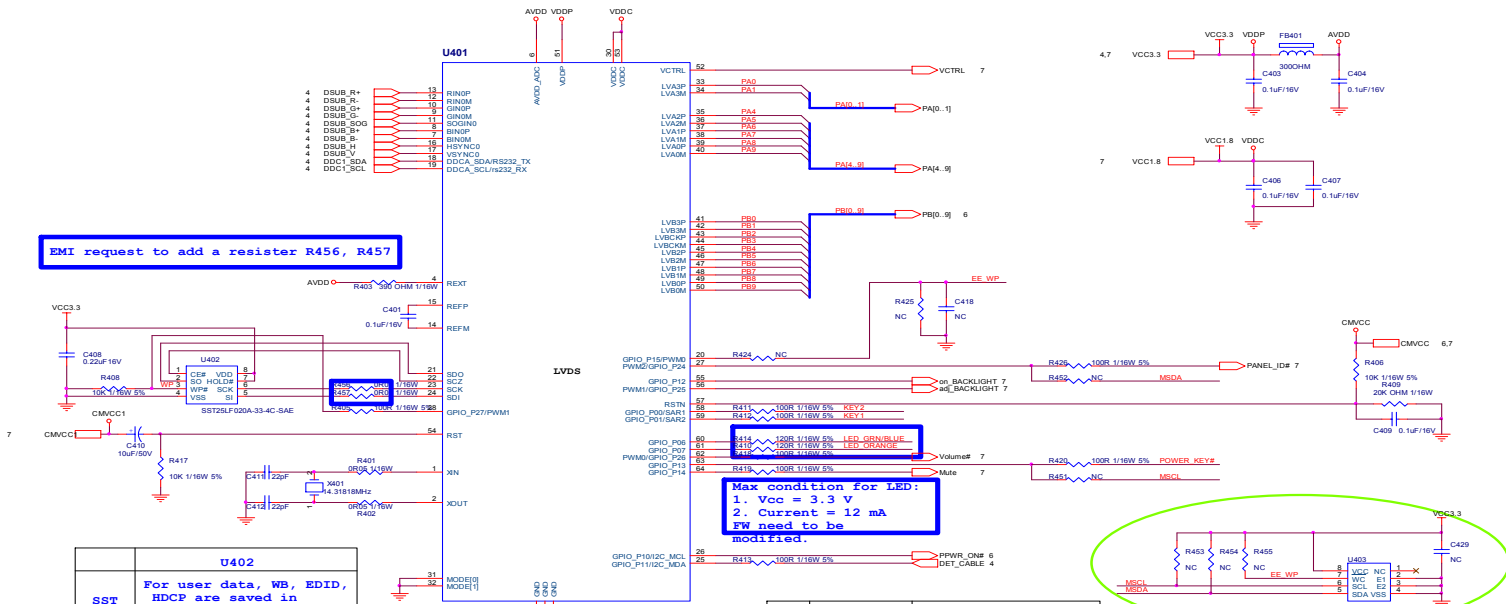
According to NDS's request to move the capacitors (C102, C103).



Swap VGA G+ and VGA R+ for ESD GND.



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	VSC VA1616W	Size	B
話隔瓜瀝腹	G2904-D-2-VSC-1-080124	TPV MODEL	CBPC7MM5VSQ1	Rev
Key Component	02_input	PCB NAME	715G2904-D-2	修參
Date	Thursday, January 24, 2008	Sheet	4 of 7	<修參>



EMI request to add a resistor R456, R457

Max condition for LED:
 1. Vcc = 3.3V
 2. Current = 12 mA
 EW need to be modified.

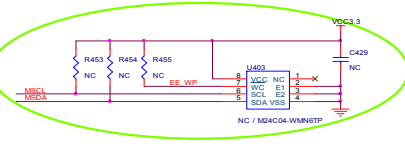
	U402
SST	For user data, WB, EDID, HDCP are saved in Flash.

	U402
010A	Befor AOC ID2007 OSD
020A	For ID2008

X'TAL
 Normal Function : CL = Cs + ((Cg*Cd)/(Cg+Cd))
 P.S : Assume Cs = 4 pF

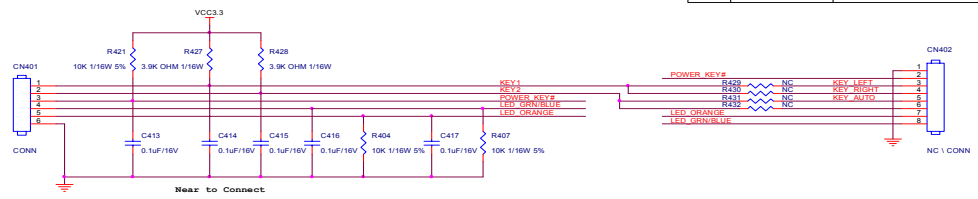
X401	CL of SPEC	Cs and Cd (C411, C412)
瑞 (93G 22-53B-H)	18 pF	27 pF
瑞紅 (93G 22-53-J)	32 pF	56 pF

	For NVRAM	Without NVRAM
U403	M24C04-WRN6TP	NC
C419	0.22uF16V	NC
R424	100R 1/16W 5%	NC
R451	100R 1/16W 5%	NC
R452	100R 1/16W 5%	NC
R453	10K 1/16W 5%	NC
R454	10K 1/16W 5%	NC
R455	10K 1/16W 5%	NC
R426	NC	NC or 100R 1/16W 5%
R420	NC	NC or 100R 1/16W 5%



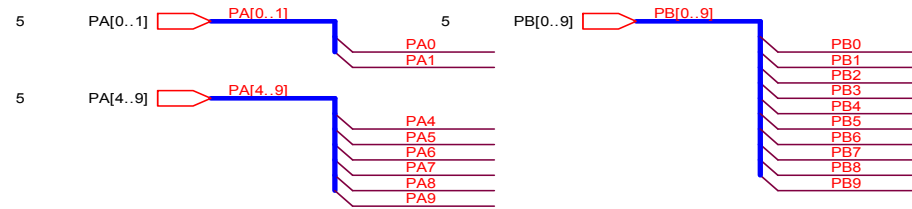
When NVRAM is used, POWER_KEY# and PANEL_ID# will not be used at same time.
 R425, C418 depend on case.

PANEL_ID# and POWER_KEY# could be optional.

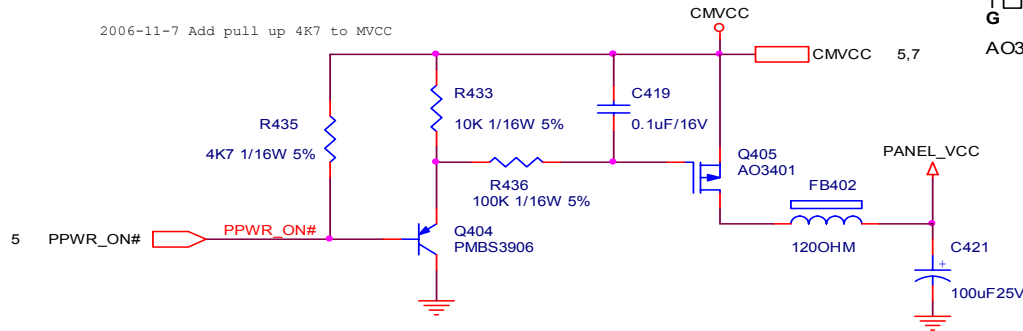
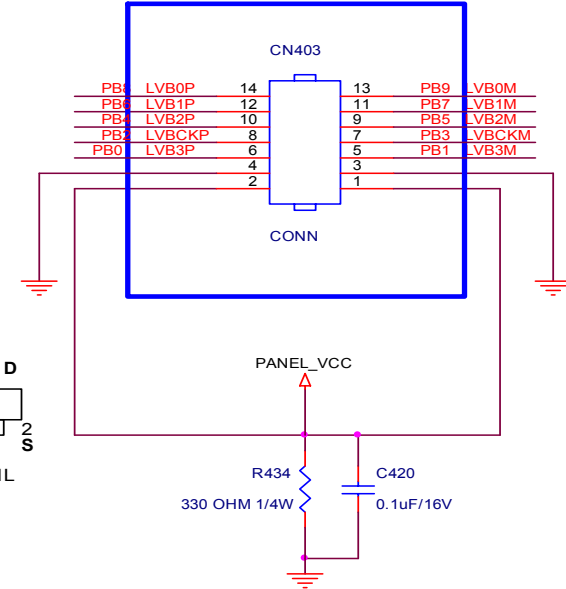


T.P.V (Top Victory Electronics Co., Ltd.)	OEM MODEL	VSC VA1616W	Sta	C
规格书编号	TPV MODEL	CBPCT7MMVSG1	Rev	D
Key Component	03.Scalar	PCB NAME	71502904-D-2	##
Date	Thursday, January 24, 2008	Sheet	5 of 7	

R434 has to be changed from 0805 to 1206

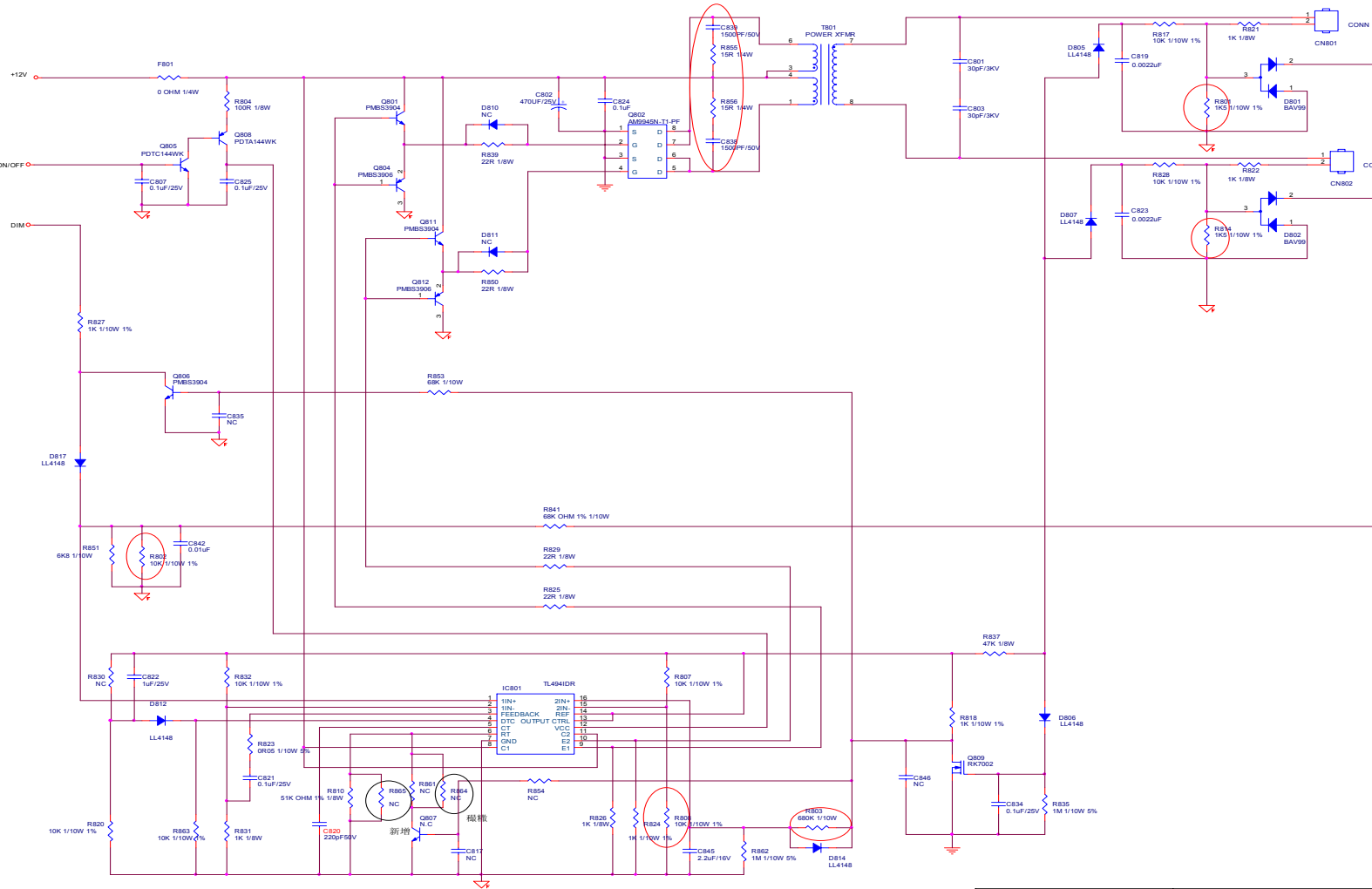


CN403 change to 14P Dip connector based on 715G2904-D

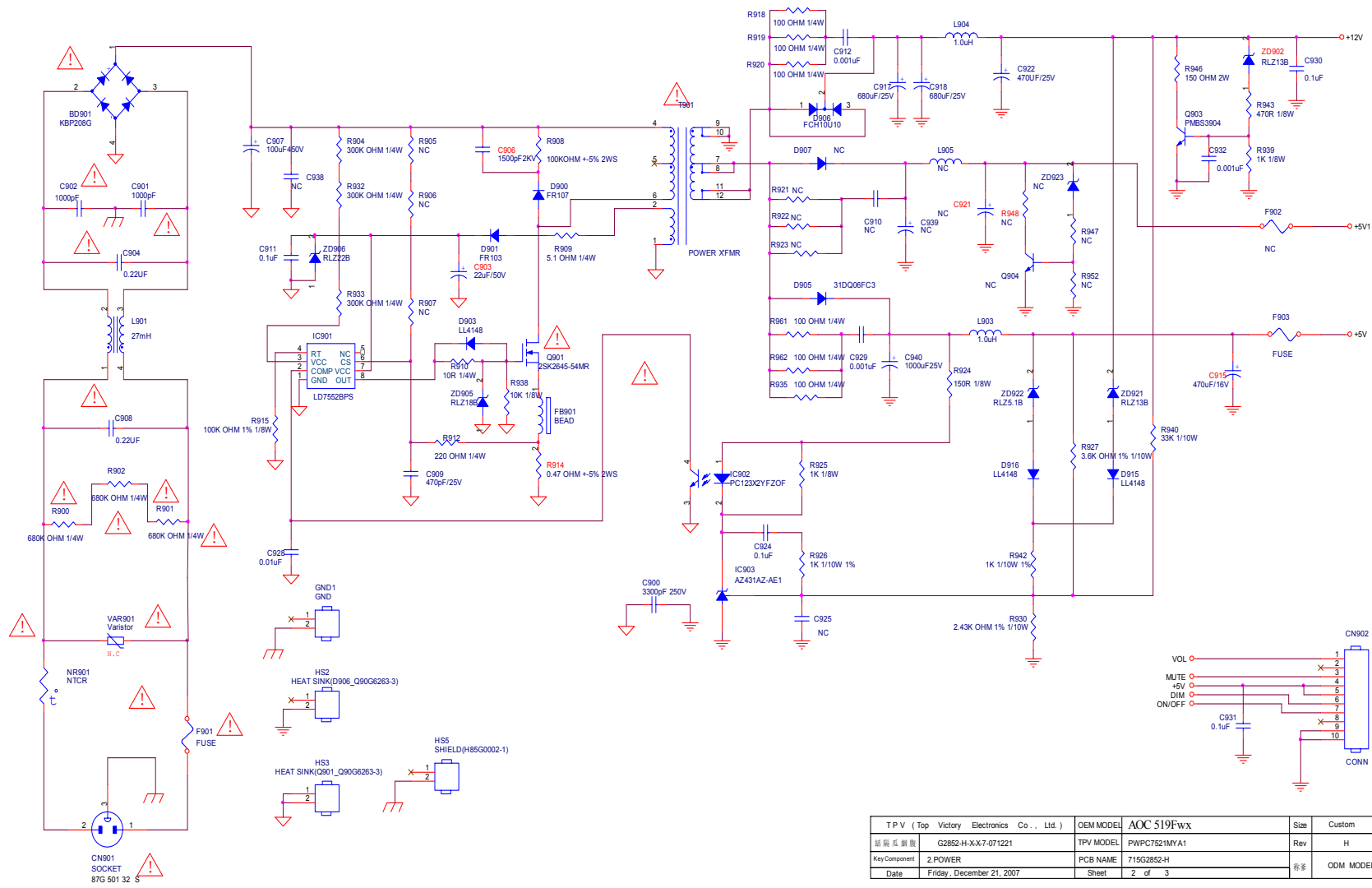


TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	VSC VA1616W	Size	A
紙隔瓜網版	G2904-D-2-VSC-1-080124	TPV MODEL	CBPC7MM5VSQ1	Rev
Key Component	04.output	PCB NAME	715G2904-D-2	称爹
Date	Thursday, January 24, 2008	Sheet	6 of 7	<称爹>

8.2 Power Board

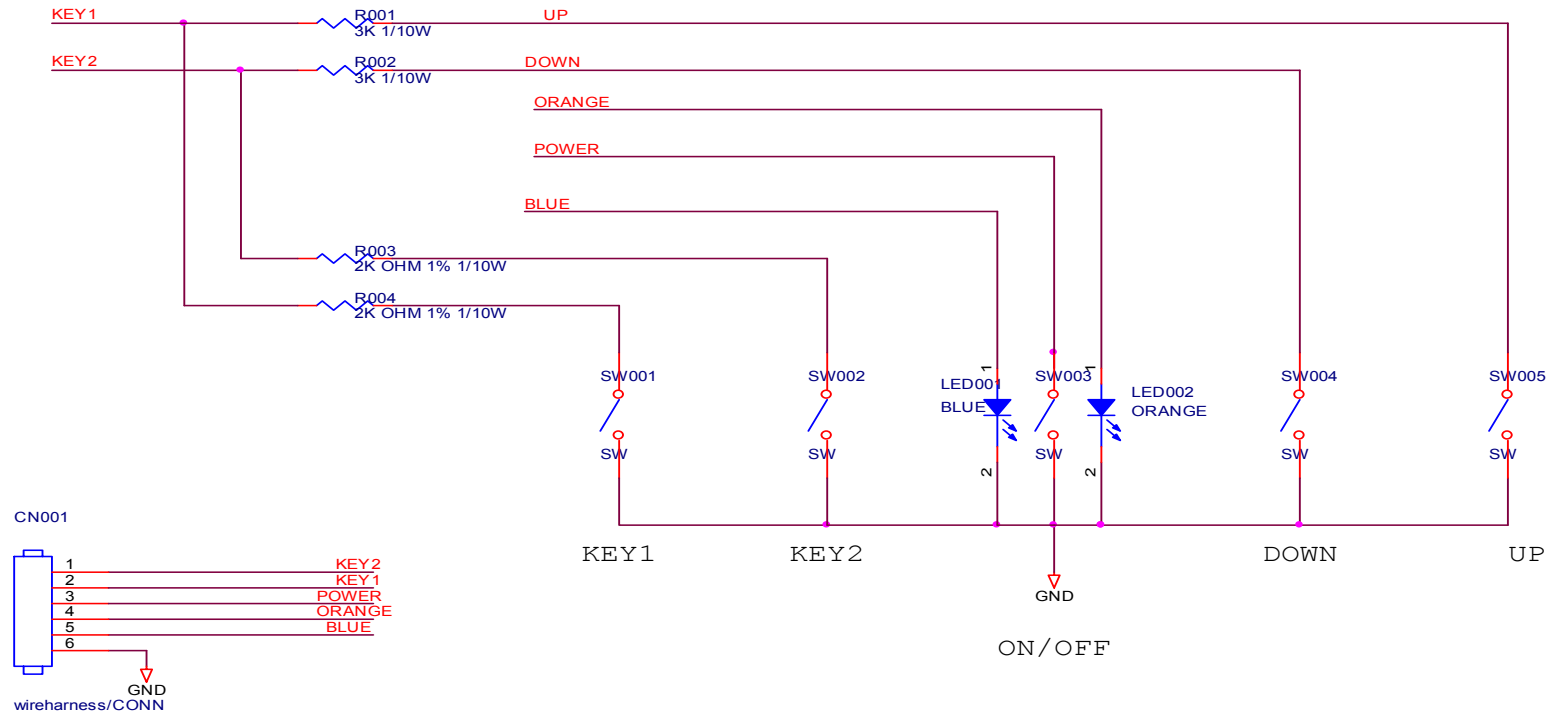


TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	AOC 519FWX	Size	Custom
冠捷电子股份有限公司	TPV MODEL	pynng7521MYA1	Rev	H
Key Component	3 INVERTER	PCB NAME	71502852-H	@@
Date	Friday, December 21, 2007	Sheet	3 of 3	ODM MODEL



TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	AOC519Fwx	Size	Custom
板框尺寸	G2852-H-X-X7-071221	TPV MODEL	PWPC7521MYA1	Rev
Key Component	2.POWER	PCB NAME	715G2852-H	H
Date	Friday, December 21, 2007	Sheet	2 of 3	ODM MODEL

8.3 Key Board

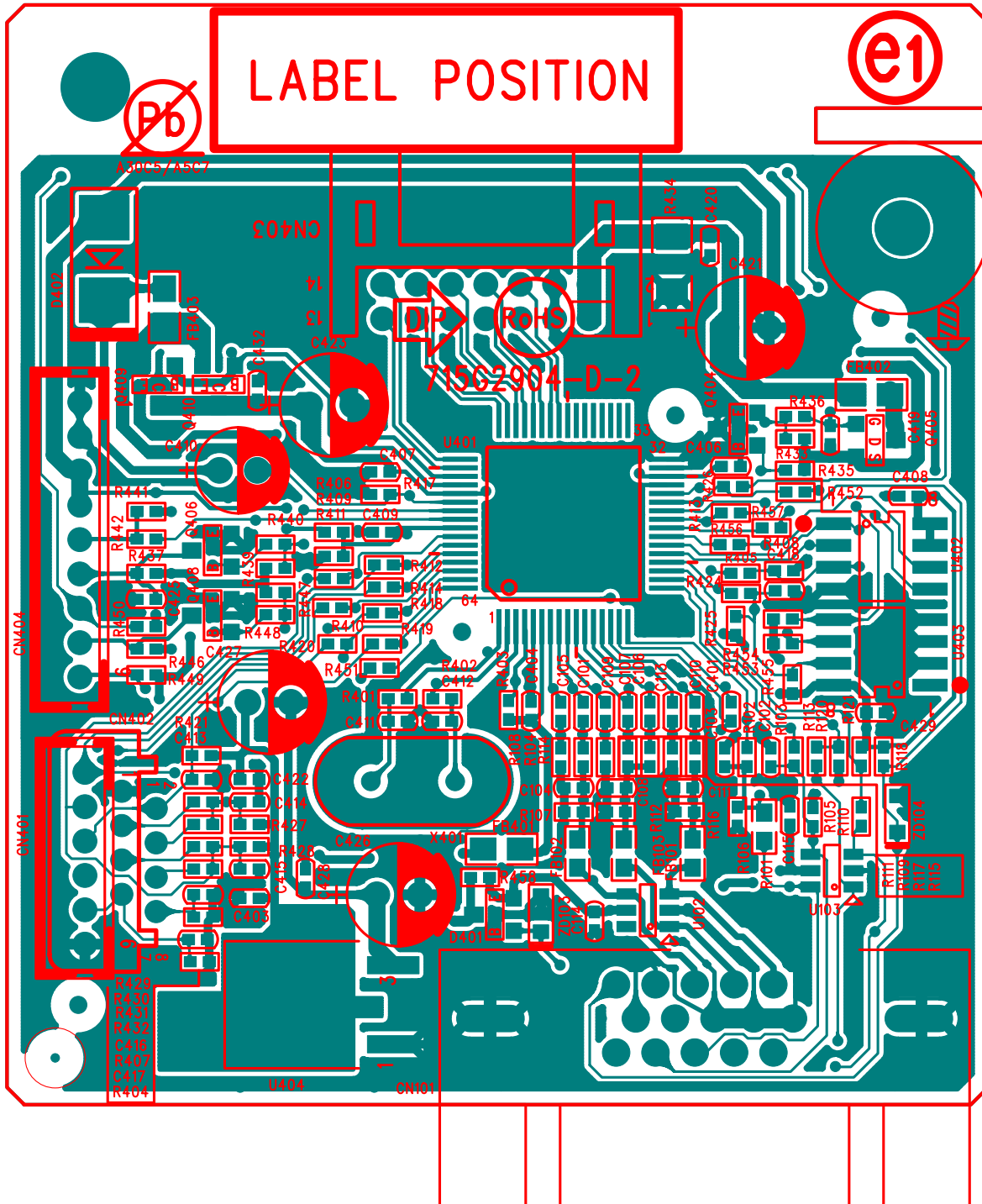


CN101 use wire harness dip.

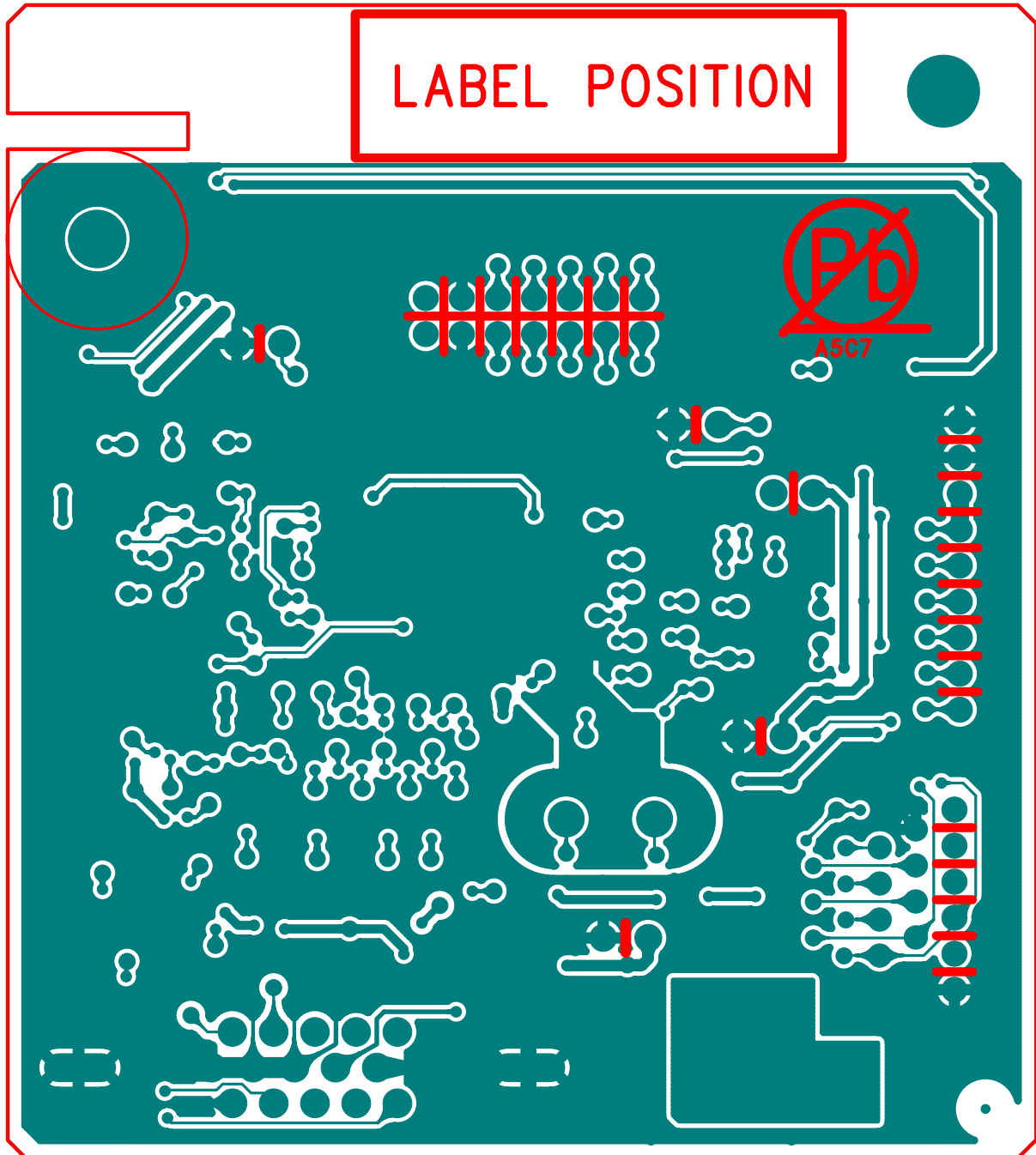
TPV (Top Victory Electronics Co., Ltd.)	OEM MODEL	VSC VA1616W	Size	A	
紙隔瓜網版	G2622-2B-VSC-X-1-071213	TPV MODEL	KEPC7QH5	Rev	2
Key Component	1. Key board	PCB NAME	715G2622-2B	称爹	N/A
Date	Thursday, December 13, 2007	Sheet	2 of 2		

9. PCB Layout Diagram

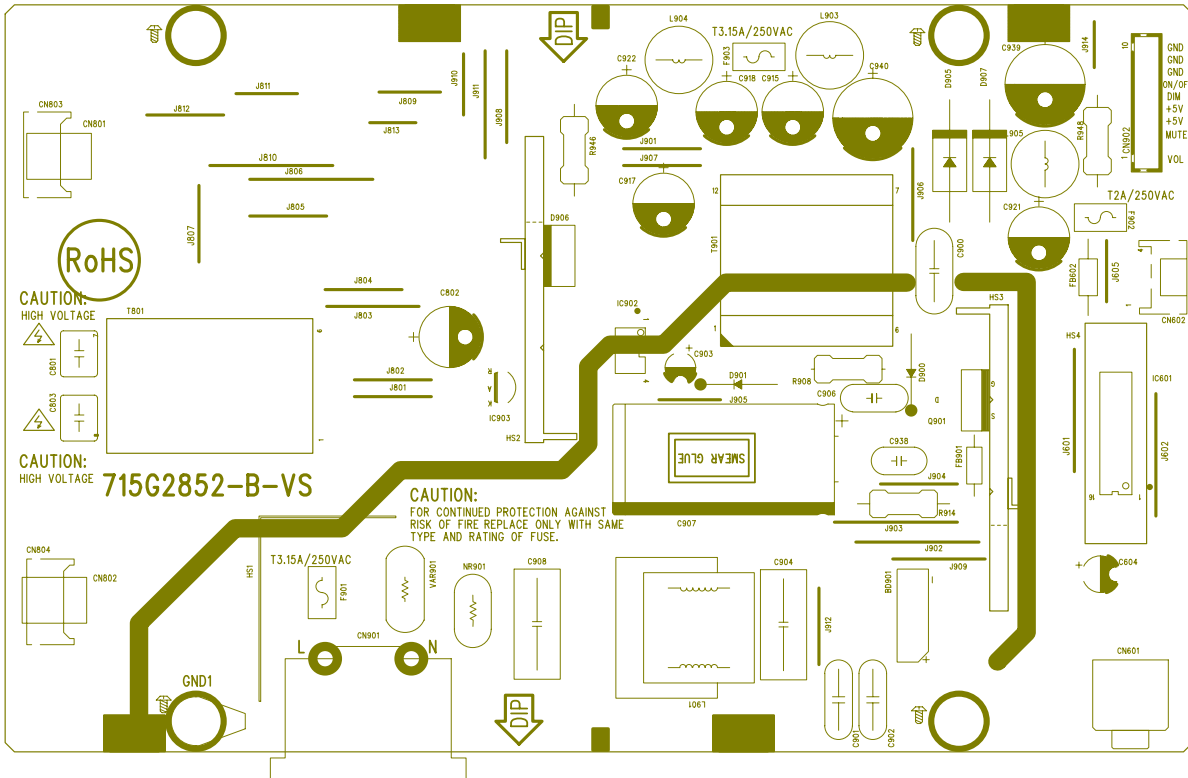
9.1 MAIN BOARD PCB TOP VIEW



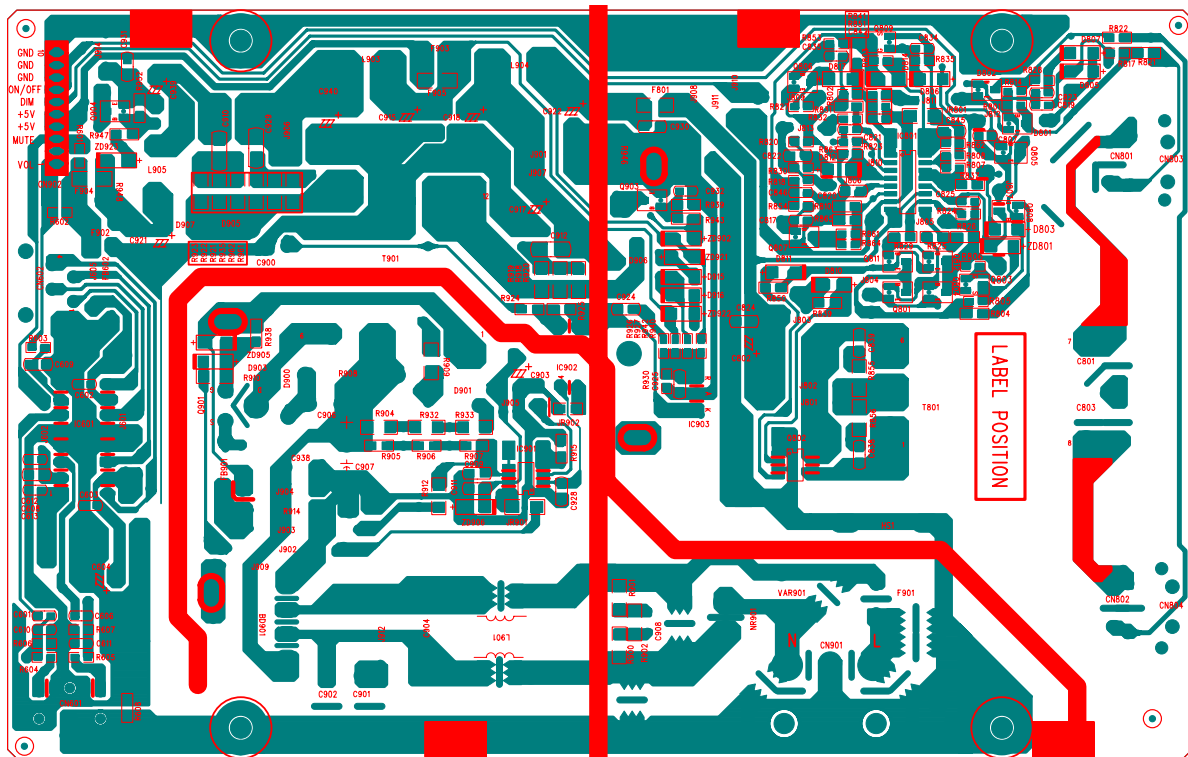
MAIN BOARD PCB BUTTON VIEW



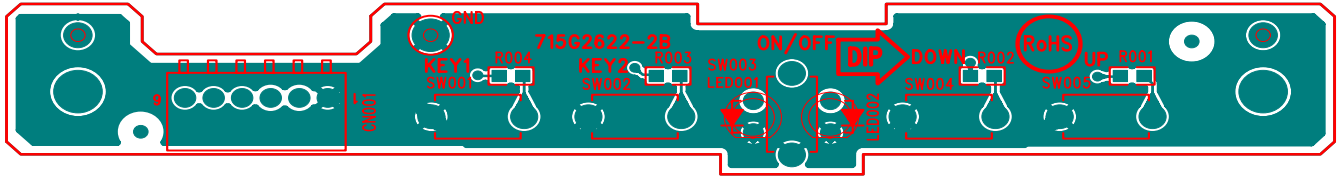
9.2 POWER BOARD TOP VIEW



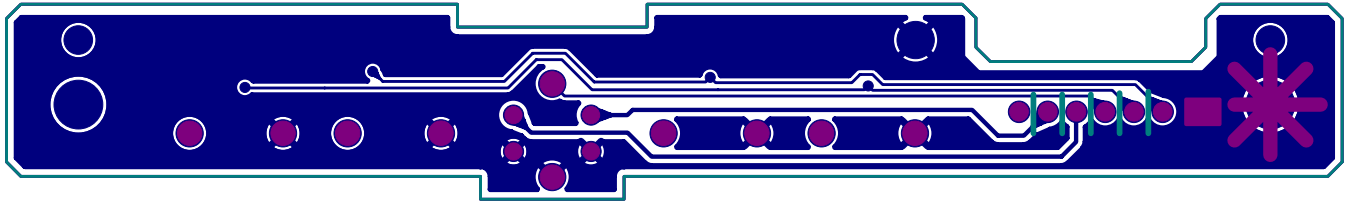
POWER BOARD BUTTON VIEW



9.3 KEY BOARD TOP VIEW

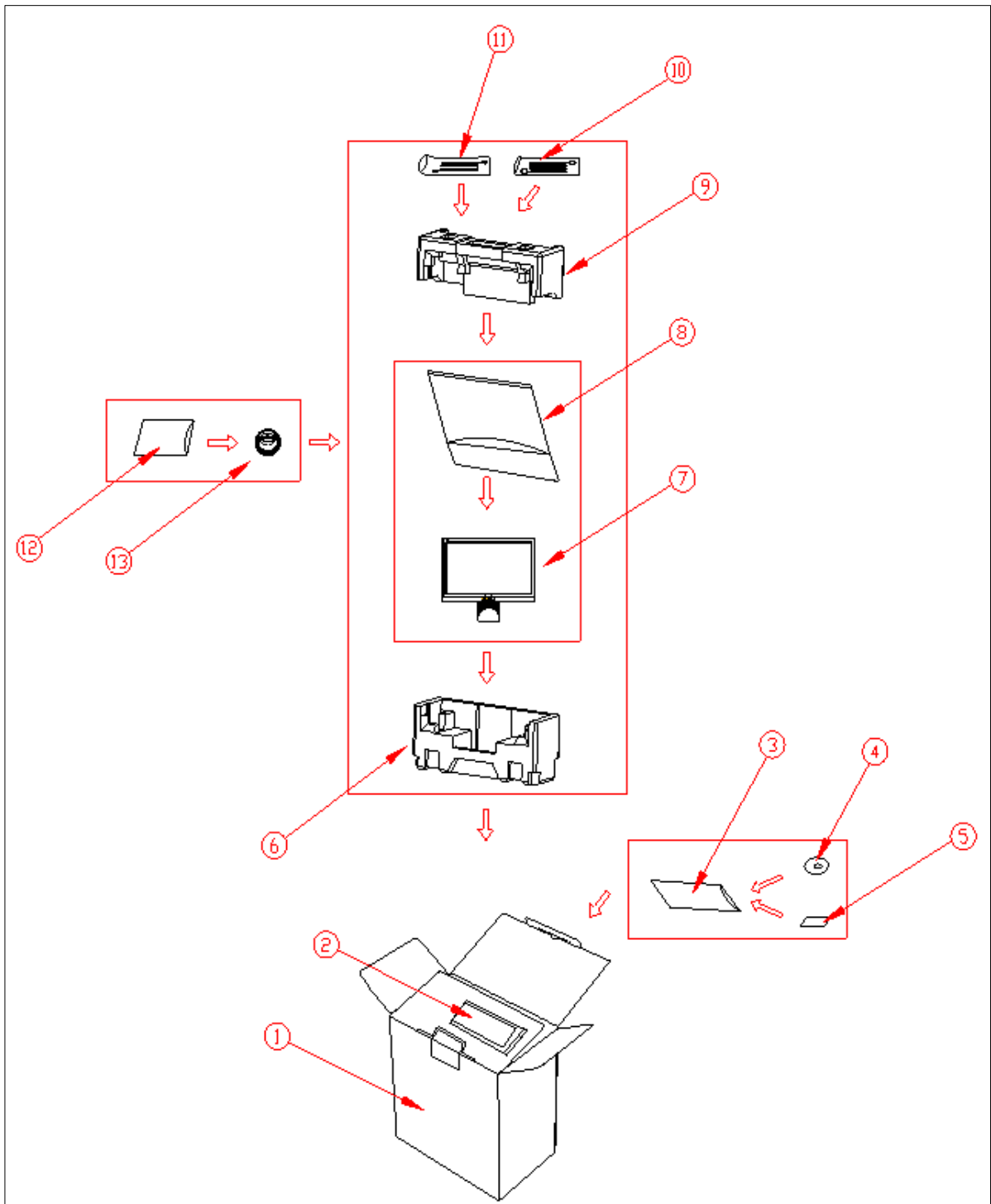


KEY BOARD BUTTON VIEW



Item	Description	Part Number	Q'ty
1	DECORATION	Q34G0332EB7	1
2	BEZEL	Q34G0330 KSA1L0130	1
3	KEY_PAD	A33G0216EB7 2B	1
4	LENS_POWER	A33G0217 2	1
5	MAINFRAME	J15G8B15 1	1
6	REAR COVER	Q34G0331 KR 1L	1
7	HINGE	Q37G0073011	1
8	RUBBER VESA	J12G 808 1	4
9	STAND	Q34G0333 KR 1L	1
10	CABLE CLIP	A33G0246 KR 1B	2
11	BASE	Q34G0334 KR 1L0133	1
12	FOOT	Q12G6600 6	4
13	COVER-HINGE	Q34G0335 KR 1L	1
14	VSC17-LCD FRONT LOGO	023G3178709 3A	1
15	VSC17-LCD FRONT LOGO	023G3178709 4A	1
16	PANEL M156B1-L01 NB CMO	750GLM56B1112N	1
17	KEY BOARD	KEPC8QH8	1
18	POWER BOARD	PWPC8521MQW1	1
19	MAIN BOARD	756GQ8CB VV067	1
20	SCREW 3X8MM	0Q1G 330 8120	1
21	SCREW,42-D020523	0M1G1730 6120	5
22	SCREW	0M1G 130 5120	4
23	SCREW	0Q1G1740 10120	1
24	SCREW FOR GROUND 42-D000649	0M1G1740 8 47 CR3	2
25	SCREW FOR GROUND 42-D000649	0M1G1740 8 47 CR3	4

Packing For Shipping



Item	Description	Part Number	Q'ty
1	CARTON	Q44G5021709 1A	1
2	HANDLE1/ HANDLE2	050G 600 2/050G 600 3	1
3	PE BAG FOR MANUAL	Q45G 76 28 RN R	1
4	CD MANUAL	Q70G5000709 2A	1
5	QSG	Q41G5000709 3A	1
6	EPS	Q44G5021201	1
7	MONITOR	T69*	1
8	PE BAG FOR MONITOR	Q45G 88607 R	1
9	EPS	Q44G5021101	1
10	D-SUB CABLE	089G 728HAA DB	1
11	POWER CORD	089G414A18N YH	1
12	PE BAG FOR BASE	Q45G 88606 R	1
13	BASE	Q34G0334 KR 1L0133	1

11.Recommended Spare Part List
VA1616W-8 BOM list—T69MM5DY9WVSNN

Item	ViewSonic P/N	Ref. P/N	Description	Universal number#	Q'ty
1		019G6014 1	TIE FOR STRAP		0.1
2		023G3178709 3A	LOGO		1
3		023G3178709 4A	VSC17-LCD FRONT LOGO		1
4		041G 68508 A	CONTROL CARD		0.1
5		050G 600 2	HANDLE1		1
6		050G 600 3	HANDLE2		1
7		052G 1185 24	VSC TAPE		51
8		052G 1186	SMALL TAPE		8
9		052G 1211 B	Conductive Tape 85mm *40mm *0.09mm		1
10		089G 728CAA DB	D-SUB CABLE---2ND SOURCE		1
11		089G 728GAA DB	D-SUB CABLE---2ND SOURCE		1
12		089G 728HAA DB	D-SUB CABLE		1
13		095G8018B3X516	LVDS CABLE		1
14		0M1G 130 5120	SCREW		4
15		0M1G1730 6120	SCREW,42-D020523		5
16		0M1G1740 8 47 CR3	SCREW FOR GROUND 42-D000649		4
17		0Q1G 330 8120	SCREW 3X8MM 42A9930017/ 42-D002093		1
18		705GQ834613	15.6"STAND/BASE ASS'Y		1
19		0M1G1740 8 47 CR3	SCREW FOR GROUND 42-D000649		2
20		0Q1G1740 10120	SCREW		1
21		A33G0246 KR 1B	CABLE CLIP		2
22		Q12G6600 6	FOOT		4
23		Q34G0333 KR 1L	STAND		1
24		Q34G0334 KR 1L0133	BASE		1
25		Q37G0073011	HINGE		1
26		750GLM56B1112N	PANEL M156B1-L01 NB CMO		1
27		756GQ8CB VV067	MAIN BOARD-CBPCRM5VSQ1		1
28		100GVMM6001N11	MCU ASS'Y-056G1133 81		1
29		056G1133 81	SST25LF020A-33-4C-SAE		1
30		A33G0216EB7 2B	KEY_PAD		1
31		A33G0217 2	LENS_POWER		1
32		040G 45762412B	CBPC LABEL		1
33		033G3802 6	WAFER		1
34		033G3802 9	WAFER 9P RIGHT ANELE PITCH		1
35		033G8027 14 H	WAFER 14P 2.0MM DIP		1
36		067G 3151014KV	EC 105°C CAP 100UF M 25V		1
37		067G 3151014KV	EC 105°C CAP 100UF M 25V		1

38		067G 3151014KV	EC 105°C CAP 100UF M 25V		1
39		067G 3151014KV	EC 105°C CAP 100UF M 25V		1
40		067G215V100 7R	LOW E.S.R 10UF M 50V		1
41		088G 35315F HD	D-SUB CONN F ATTACHED SCREW		1
42		093G 22 53 H	14.31818MHZ/30PF/49US		1
43		056G 562557	IC TSUM1PFR-LF		1
44		056G 563 52	IC AP1117D33L-13 TO252-3L DIODES		1
45		056G 662 13	IC AZC099-04S SOT23-6L		1
46		056G 662 13	IC AZC099-04S SOT23-6L		1
47		056G1133 81	SST25LF020A-33-4C-SAE		1
48		057G 417 22 T	TRA KN2907AS -60V/-0.6A SOT-23		1
49		057G 417 22 T	TRA KN2907AS -60V/-0.6A SOT-23		1
50		057G 417511	MMBT3904		1
51		057G 417512	MMBT3906		1
52		057G 763 1	A03401 SOT23 BY AOS(A1)		1
53		061G0402000	RST CHIP MAX 0R05 1/16W		1
54		061G0402000	RST CHIP MAX 0R05 1/16W		1
55		061G0402000	RST CHIP MAX 0R05 1/16W		1
56		061G0402000	RST CHIP MAX 0R05 1/16W		1
57		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
58		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
59		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
60		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
61		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
62		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
63		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
64		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
65		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
66		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
67		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
68		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
69		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
70		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
71		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
72		061G0402101	RST CHIPR 100 OHM +-5% 1/16W		1
73		061G0402102	RST CHIPR 1 KOHM +-5% 1/16W		1
74		061G0402102	RST CHIPR 1 KOHM +-5% 1/16W		1
75		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
76		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
77		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
78		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
79		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
80		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1

81		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
82		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
83		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
84		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
85		061G0402103	RST CHIPR 10 KOHM +-5% 1/16W		1
86		061G0402104	RST CHIPR 100 KOHM +-5% 1/16W		1
87		061G0402121	RST CHIP 120R 1/16W 5%		1
88		061G0402203	RST CHIP 20K 1/16W 5%		1
89		061G0402220	RST CHIPR 22 OHM +-5% 1/16W		1
90		061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W		1
91		061G0402222	RST CHIPR 2.2 KOHM +-5% 1/16W		1
92		061G0402390 0F	RST CHIP 390R 1/16W 1%		1
93		061G0402390 0F	RST CHIP 390R 1/16W 1%		1
94		061G0402390 1F	RST CHIPR 3.9KOHM +-1% 1/16W		1
95		061G0402390 1F	RST CHIPR 3.9KOHM +-1% 1/16W		1
96		061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W		1
97		061G0402472	RST CHIPR 4.7 KOHM +-5% 1/16W		1
98		061G0402750	RST CHIPR 75 OHM +-5% 1/16W		1
99		061G0402750	RST CHIPR 75 OHM +-5% 1/16W		1
100		061G0402750	RST CHIPR 75 OHM +-5% 1/16W		1
101		061G0603000	RST CHIP MAX 0R05 1/10W		1
102		061G1206331	RST CHIPR 330 OHM +-5% 1/4W		1
103		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
104		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
105		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
106		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
107		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
108		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
109		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
110		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
111		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
112		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
113		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
114		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
115		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
116		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
117		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
118		065G0402104 15	MLCC 0402 0.1UF K 16V X5R		1
119		065G0402220 31	CHIP 22PF 50V NPO		1
120		065G0402220 31	CHIP 22PF 50V NPO		1
121		065G0402220 31	CHIP 22PF 50V NPO		1
122		065G0402220 31	CHIP 22PF 50V NPO		1
123		065G0402224 17	CAP CER 0.22UF -20%-80%		1

124		065G0402473 12	CHIP 0.047UF 16V X7R		1
125		065G0402473 12	CHIP 0.047UF 16V X7R		1
126		065G0402473 12	CHIP 0.047UF 16V X7R		1
127		065G0402473 12	CHIP 0.047UF 16V X7R		1
128		065G0402473 12	CHIP 0.047UF 16V X7R		1
129		065G0402473 12	CHIP 0.047UF 16V X7R		1
130		065G0402473 12	CHIP 0.047UF 16V X7R		1
131		065G0402509 31	CHIP 5PF 50V NPO		1
132		065G0402509 31	CHIP 5PF 50V NPO		1
133		065G0402509 31	CHIP 5PF 50V NPO		1
134		071G 56K121 M GP	120 OHM 6A		1
135		071G 56V301 M	CHIP BEAD 2012 300 OHM		1
136		071G 59K190 B	19 OHM BEAD		1
137		071G 59K190 B	19 OHM BEAD		1
138		071G 59K190 B	19 OHM BEAD		1
139		093G 64 33	DIO SIG SM BAV99 (PHSE)R		1
140		093G 39S 34 T	UDZSNP5.6B ROHM		1
141		093G 39S 34 T	UDZSNP5.6B ROHM		1
142		093G3004 3	SM340A		1
143		715G2904 1 2	MAIN PCB FR-4 57X64X1.6MM DS		1
144		056G 563916	IC LD1117DT33TR DPAK		1
145		709G2904 QS001	CONSUMPTIVE ASS'Y		1
146		052G 2191 A	PAPER TAPE		3.562
147		052G6026 3	MESH PRINTTING PAPER		3.352
148		055G 23520	IPA		0.314
149		055G 100610	TIN CREAM W/O PB		0.265
150		Q05G6054 1	SHEET		0.042
151		Q09G6012 1	PIN		0.008
152		709G2904 QM001	CONSUMPTIVE ASS'Y		1
153		049G 51 1A	ERADICATOR		0.116
154		052G 2191 A	PAPER TAPE		0.140
155		055G 2	ALCOHOL		1.161
156		055G 23524	WELDING FLUX WITHOUT PB		1.077
157		Q55G 100622	TIN STICK(SAC0507)		0.013
158		Q55G 100625	TIN STICK_LOW ARGENTUM		1.363
159		J12G 808 1	RUBBER VESA		4
160		J15G8B15 1	MAINFRAME		1
161		KEPC8QH8	KEY BOARD		1
162		077G 603 2C TO	TACT SWITCH		1
163		077G 603 2C TO	TACT SWITCH		1
164		077G 603 2C TO	TACT SWITCH		1
165		077G 603 2C TO	TACT SWITCH		1

166		077G 603 2C TO	TACT SWITCH		1
167		081G 13 B GH	LED GHB713A GUANGHONG		1
168		081G 13 Y GH	LED GHY713C GUANGHONG		1
169		095G820H 6D506	WIRE HARNESS 6P(SANW)-6P(PH) 100MM		1
170		061G0603200 1F	RST CHIPR 2 KOHM +-1% 1/10W		1
171		061G0603200 1F	RST CHIPR 2 KOHM +-1% 1/10W		1
172		061G0603300 1F	RST CHIPR 3 KOHM +-1% 1/10W		1
173		061G0603300 1F	RST CHIPR 3 KOHM +-1% 1/10W		1
174		715G2622 3	KEPC PCB		1
175		PWPC8521MQW1	POWER BOARD		1
176		040G 45762412B	CBPC LABEL		
177		033G8021 2E F	WAFER		1
178		033G8021 2E F	WAFER		1
179		033G8021 2E U	INVERT CONNECTOR		1
180		033G8021 2E U	INVERT CONNECTOR		1
181		056G 139 7 1	IC EL817MA M-TYPE		1
182		056G 139 3A	IC PC123Y22FZ0F		1
183		061G 58120 WT	NTCR 12OHM 20% 2A SCK-122		1
184		063G 10722410S	CAP 0.22UF 275VAC		1
185		063G107K104 6	0.1UF +-10%		1
186		063G107K104 U	0.1UF/275V		1
187		063G107K2246S1	X2 CAP 0.22UF K 275VAC		1
188		065G 3J3006ET	30PF 5% SL 3KV TDK		1
189		065G 3J3006ET	30PF 5% SL 3KV TDK		1
190		065G305M1022BP	Y2 1000PF M 250VAC Y5P		1
191		065G305M1022BP	Y2 1000PF M 250VAC Y5P		1
192		065G306M2222BP	2200PF +-20% 250VAC		1
193		067G 40Z10115K	CAP 105°C 100UF M 450V		1
194		067G215D4714KV	E.C 105°C CAP 470UF M 25V ED SERIES		1
195		067G215D4714KV	E.C 105°C CAP 470UF M 25V ED SERIES		1
196		067G215D6814KV	CAP 105°C 680UF M 25V		1
197		067G215D6814KV	CAP 105°C 680UF M 25V		1
198		067G215S1024KV	EC 105°C CAP 1000UF M 25V		1
199		067G215Y4714HV	EC 105°C CAP 470UF M 25V		1
200		067G215Y4714HV	EC 105°C CAP 470UF M 25V		1
201		073G 253 91 H	CHOKE COIL		1
202		073G 253 91 H	CHOKE COIL		1
203		073G 253191 H	IND CHOKE 1.1UH DADON		1
204		073G 253191 H	IND CHOKE 1.1UH DADON		1
205		073L 174 26H2G	INE FILTER 27MH		1
206		073L 174 26S2G	LINE FILTER 27MH		1
207		080GL17T 40 H	XFMR INVERTER DADON		1

208		080GL17T 40 DN	X'FMR TK.2001U.101		1
209		080GL19T 26 T	X'FMR 610UH SRW24LQL-T15H016		1
210		087G 501 32 S	AC SOCKET		1
211		087G 501 32 S	AC SOCKET		1
212		087G 501 32 DL	AC SOCKET DIP 3PIN+2PIN GROUND		1
213		093G 50460 28	BRIDGE DIODE KBP208G LITEON		1
214		093G3006 1 1	31DQ06FC3 NIHON INTER		1
215		095G 82010D508	WIRE HARNESS 10P(SAN)-9P(PH) 100MM		1
216		095G 82010E508	WIRE HARNESS 10P(SAN)-9P(PH) 100MM		1
217		095G 82010X508	WIRE HARNESS 10P(SAN)-9P(PH) 100MM		1
218		705GQ757011	Q901 ASS'Y		1
219		057G 667 30	2SK2645		1
220		057G 724 11	STP9NK65ZFP		1
221		0M1G1730 8120	SCREW		1
222		Q90G6263 3	HEAT SINK		1
223		705GQ793053	D906 ASS'Y		1
224		093G 60250	FCH10U10		1
225		093G 60267	SP10100		1
226		0M1G1730 8120	SCREW		1
227		Q90G6263 3	HEAT SINK		1
228		056G 379 22	IC TL494IDR SOIC-16		1
229		056G 379 76	IC LD7552BPS SOP-8		1
230		057G 417 4	PMBS3904/PHILIPS-SMT(04)		1
231		057G 417 4	PMBS3904/PHILIPS-SMT(04)		1
232		057G 417 4	PMBS3904/PHILIPS-SMT(04)		1
233		057G 417 4	PMBS3904/PHILIPS-SMT(04)		1
234		057G 417 6	PMBS3906/PHILIPS-SMT(06)		1
235		057G 417 6	PMBS3906/PHILIPS-SMT(06)		1
236		057G 417 12 T	KEC 2N3904S-RTK/PS		1
237		057G 600 55	P5506 HVG SO-8		1
238		057G 759 2	RK7002FD5T116 SOT-23 BY ROHM		1
239		057G 760 4B	PDTA144WK SOT346		1
240		057G 760 5B	PDTC144WK SOT346		1
241		061G0603000	RST CHIP MAX 0R05 1/10W		1
242		061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W		1
243		061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W		1
244		061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W		1
245		061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W		1
246		061G0603100 1F	RST CHIPR 1 KOHM +-1% 1/10W		1
247		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1
248		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1
249		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1
250		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1

251		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1
252		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1
253		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1
254		061G0603100 2F	RST CHIPR 10K OHM +-1% 1/10W		1
255		061G0603105	RST CHIPR 1M OHM +-5% 1/10W		1
256		061G0603105	RST CHIPR 1M OHM +-5% 1/10W		1
257		061G0603150 1F	RST CHIPR 1.5 KOHM +-1% 1/10W		1
258		061G0603150 1F	RST CHIPR 1.5 KOHM +-1% 1/10W		1
259		061G0603243 1F	RST CHIPR 2.43K OHM +-1% 1/10W		1
260		061G0603330 2F	RST CHIPR 33K OHM +-1% 1/10W		1
261		061G0603360 1F	RST CHIPR 3.6K OHM +-1% 1/10W		1
262		061G0603680 1F	RST CHIPR 6.8 KOHM +-1% 1/10W		1
263		061G0603680 2F	RST CHIPR 68K OHM +-1% 1/10W		1
264		061G0603683	RST CHIPR 68K OHM +-5% 1/10W		1
265		061G0603684	RST CHIPR 680 KOHM +-5% 1/10W		1
266		061G0805000	RST CHIP MAX 0R05 1/8W		1
267		061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W		1
268		061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W		1
269		061G0805100 1F	RST CHIPR 1K OHM +-1% 1/8W		1
270		061G0805100 3F	RST CHIPR 100KOHM +-1% 1/8W		1
271		061G0805101	1ST CHIPR 100 OHM +-5% 1/8W		1
272		061G0805102	RST CHIPR 1K OHM +-5% 1/8W		1
273		061G0805102	RST CHIPR 1K OHM +-5% 1/8W		1
274		061G0805102	RST CHIPR 1K OHM +-5% 1/8W		1
275		061G0805103	RST CHIPR 10K OHM +-5% 1/8W		1
276		061G0805151	RST CHIPR 150 OHM +-5% 1/8W		1
277		061G0805220	RST CHIPR 22 OHM +-5% 1/8W		1
278		061G0805220	RST CHIPR 22 OHM +-5% 1/8W		1
279		061G0805220	RST CHIPR 22 OHM +-5% 1/8W		1
280		061G0805220	RST CHIPR 22 OHM +-5% 1/8W		1
281		061G0805471	RST CHIPR 470 OHM +-5% 1/8W		1
282		061G0805473	RST CHIPR 47K OHM +-5% 1/8W		1
283		061G0805510 2F	RST CHIPR 51K OHM +-1% 1/8W		1
284		061G1206000	RST CHIP MAX 0R05 1/4W		1
285		061G1206000	RST CHIP MAX 0R05 1/4W		1
286		061G1206000 4	RST CHIP MAX 0R05 1/4W		1
287		061G1206100	RST CHIPR 10 OHM +-5% 1/4W		1
288		061G1206101	RST CHIPR 100 OHM +-5% 1/4W		1
289		061G1206101	RST CHIPR 100 OHM +-5% 1/4W		1
290		061G1206101	RST CHIPR 100 OHM +-5% 1/4W		1
291		061G1206101	RST CHIPR 100 OHM +-5% 1/4W		1
292		061G1206101	RST CHIPR 100 OHM +-5% 1/4W		1
293		061G1206101	RST CHIPR 100 OHM +-5% 1/4W		1

294		061G1206150	RST CHIPR 15 OHM +-5% 1/4W		1
295		061G1206150	RST CHIPR 15 OHM +-5% 1/4W		1
296		061G1206221	RST CHIPR 220 OHM +-5% 1/4W		1
297		061G1206304	RST CHIPR 300K OHM +-5% 1/4W		1
298		061G1206304	RST CHIPR 300K OHM +-5% 1/4W		1
299		061G1206304	RST CHIPR 300K OHM +-5% 1/4W		1
300		061G1206519	RST CHIPR 5.1 OHM +-5% 1/4W		1
301		061G1206684	RST CHIPR 680K OHM +-5% 1/4W		1
302		061G1206684	RST CHIPR 680K OHM +-5% 1/4W		1
303		061G1206684	RST CHIPR 680K OHM +-5% 1/4W		1
304		065G0603102 32	1000PF +-10% 50V X7R		1
305		065G0603103 32	CAP CHIP 0603 0.01UF K 50V X7R		1
306		065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R		1
307		065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R		1
308		065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R		1
309		065G0603104 22	CAP CHIP 0603 0.1UF K 25V X7R		1
310		065G0603222 22	CHIP 2200PF 25V X7R		1
311		065G0603222 22	CHIP 2200PF 25V X7R		1
312		065G0805103 32	CAP CHIP 0805 10NF K 50V X7R		1
313		065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R		1
314		065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R		1
315		065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R		1
316		065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R		1
317		065G0805104 32	CAP CHIP 0805 0.1UF K 50V X7R		1
318		065G080510522K T	CAP CHIP 0805 1UF K 25V X7R		1
319		065G0805152 31	1.5NF/50V		1
320		065G0805152 31	1.5NF/50V		1
321		065G080522131G	CAP CHIP 0805 220PF G 50V NPO		1
322		065G0805225 12	CAP CHIP 0805 2.2UF K 16V X7R		1
323		065G0805471 21	CAP CHIP 0805 470PF J 25V NPO		1
324		065G1206102 72	CAP CHIP 1206 1000PF K 500V X7R		1
325		065G1206102 72	CAP CHIP 1206 1000PF K 500V X7R		1
326		093G 6432P	LL4148		1
327		093G 6432P	LL4148		1
328		093G 6432P	LL4148		1
329		093G 6432P	LL4148		1
330		093G 6432P	LL4148		1
331		093G 6432P	LL4148		1
332		093G 6432P	LL4148		1
333		093G 6432P	LL4148		1
334		093G 6432P	LL4148		1
335		093G 6433P	BAV99		1

336		093G 6433P	BAV99		1
337		093G 39S 20 T	RLZ22B LLDS		1
338		093G 39S 25 T	RLZ5.1B LLDS		1
339		093G 39S 40 T	RLZ 13B LLDS		1
340		093G 39S 40 T	RLZ 13B LLDS		1
341		093G 39S 44 T	RLZ18B LLDS		1
342		006G 31500	EYELET		2
343		056G 158 10 T	IC AS431AZTR-E1 TO-92		1
344		061G152M10452T	RST MOFR 100KOHM +-5% 2WS		1
345		061G152M15152T	RST MOFR 150 OHM +-5% 2WS		1
346		061G152M47852T	RST MOFR 0.47 OHM +-5% 2WS		1
347		065G 2K152 1T6213	CAP CER 1500PF K 2KV		1
348		067G 2152207NT	KY50VB22M-TP5 5*11		1
349		067G215S4713KT	470UF 16V		1
350		071G 55 29	FERRITE BEAD		1
351		084G 56 3W	FUSE		1
352		093G 6026T52T	RECTIFIER DIODE FR107		1
353		093G 6038T52T	FR103		1
354		095G 90 23	JUMPER		1
355		095G 90 23	JUMPER		1
356		095G 90 23	JUMPER		1
357		095G 90 23	JUMPER		1
358		095G 90 23	JUMPER		1
359		095G 90 23	JUMPER		1
360		095G 90 23	JUMPER		1
361		095G 90 23	JUMPER		1
362		095G 90 23	JUMPER		1
363		095G 90 23	JUMPER		1
364		095G 90 23	JUMPER		1
365		095G 90 23	JUMPER		1
366		095G 90 23	JUMPER		1
367		095G 90 23	JUMPER		1
368		095G 90 23	JUMPER		1
369		095G 90 23	JUMPER		1
370		095G 90 23	JUMPER		1
371		095G 90 23	JUMPER		1
372		095G 90 23	JUMPER		1
373		095G 90 23	JUMPER		1
374		095G 90 23	JUMPER		1
375		095G 90 23	JUMPER		1
376		095G 90 23	JUMPER		1
377		095G 90 23	JUMPER		1

378		095G 90 23	JUMPER		1
379		715G2852 1 VS	POWER-PCB FR-1 193X122X1.6MM SS		1
380		067G215Y2207KT	CAP 105°C 22UF M 50V KINGNICH		1
381		084G 56 3 B	FUSE 3.15A 250V		1
382		056G 158 12	KIA431A-AT/P TO-92		1
383		084G 56 3 B	FUSE 3.15A 250V		1
384		709G2852 QA001	CONSUMPTIVE ASS'Y		1
385		052G 2191 A	PAPER TAPE		0.335
386		095G 90 23	JUMPER		1.255
387		057G 417 12 T	KEC 2N3904S-RTK/PS		1
388		057G 417 12 T	KEC 2N3904S-RTK/PS		1
389		057G 417 12 T	KEC 2N3904S-RTK/PS		1
390		057G 417 13 T	KEC 2N3906S-RTK/PS		1
391		057G 417 13 T	KEC 2N3906S-RTK/PS		1
392		057G 763 14	AM9945N		1
393		093G 6433S	DIODE BAV99 SEMTECH		1
394		093G 6433S	DIODE BAV99 SEMTECH		1
395		093G 64S522SEM	LL4148		1
396		093G 64S522SEM	LL4148		1
397		093G 64S522SEM	LL4148		1
398		093G 64S522SEM	LL4148		1
399		093G 64S522SEM	LL4148		1
400		093G 64S522SEM	LL4148		1
401		093G 64S522SEM	LL4148		1
402		093G 64S522SEM	LL4148		1
403		093G 64S522SEM	LL4148		1
404		709G2852 QS001	CONSUMPTIVE ASS'Y		1
405		052G 2191 A	PAPER TAPE		2.244
406		Q05G6054 1	SHEET		0.026
407		Q09G6012 1	PIN		0.005
408		Q51G 100502	GLUE_RED_MALER		0.045
409		S80GL19T26V1	TRANSFORMER ASS'Y		1
410		071FPL24108 04	PC47 LQ2425 A315		1
411		709G2852 QM001	CONSUMPTIVE ASS'Y		1
412		049G 51 1A	ERADICATOR		0.164
413		052G 2191 A	PAPER TAPE		0.140
414		055G 2	ALCOHOL		1.675
415		055G 23524	WELDING FLUX WITHOUT PB		2.142
416		Q51G 6 4509	GLUE_RTV		0.500
417		Q55G 100622	TIN STICK(SAC0507)		0.037
418		Q55G 100625	TIN STICK_LOW ARGENTUM		4.334
419		705GQ851002	OIL FOR DISAPPEAR ASS'Y		1
420		051G 200 1	OIL FOR DISAPPEAR		0.020

421		Q07G 1 5V60	WOODEN PALLET		0.011
422		Q34G0330 KSA1L0130	BEZEL L156W-7VSC3		1
423		Q34G0331 KR 1L	REAR COVER		1
424		Q34G0332EB7 1L	DECORATION		1
425		Q34G0335 KR 1L	COVER-HINGE		1
426		Q40G 15N709 2A	RATING LABEL		1
427		Q40G 58170931A	HT POT LABEL		1
428		Q40G0001624 4A	PALLET LABEL		0.050
429		Q40G0001709 2A	SN LANEL		1
430		Q40G000270927A	EPA LABEL		1
431		Q44G5021101	EPS		1
432		Q44G5021201	EPS		1
433		Q44G5021709 1A	15 LCD VSC CARTON		1
434		Q44G6000 213A	EMPTY CARTON FOR LOADING		0.011
435		Q44G6000 214A	EMPTY CARTON FOR LOADING		0.011
436		Q44G6002112 94	PAPER BOARD		0.022
437		Q44G6002CP1A24	PAPER CAP		0.011
438		Q44G9003208	CORNER PAPER		0.045
439		Q45G 88606 R	PE BAG FOR BASE		1
440		Q45G 88607 R	PE BAG FOR MONITOR		1
441		Q52G6020114	PROTECT FILM		1
442		Q41G2401709 4A	WARRANTY CARD		1
443		Q41G5000709 3A	VA1616 QSG FOR CHINA		1
444		Q45G 76 28 RN R	PE BAG FOR MANUAL		1
445		Q70G5000709 2A	VA1616W CD MANUAL		1
446		040G 581 26704	SHIPPING LABEL		0.010
447		040G 58162435A	P/N LABEL FOR MANUAL PE BAG		1
448		Q40G 581709 1B	CARTON LABEL		1
449		Q50G 4 10	TIE		30.000
450		045G 77501	BARCODE RIBBON		0.350
451		Q40G 58170930A	LABEL		1
452		Q40G000270938A	CARTON STICK+CEL LABEL FOR VA1616W		1
453		Q40G000270926A	MANUFACTURE ADDRESS STICKER		1
454		089G414A18N YH	POWER CORD(32E1818021)		1
455		089G414A18N IS	POWER CORD 32E1818021---2ND SOURCE		1
456		Q41G5000709 4A	ROHS CARD		1
457		052G6019 1	INSULATING TAPE		30.000
458		052G 2191 A	PAPER TAPE		10.000
459		052G 1185	MIDDLE TAPE		20.000
460		Q45G2007C0103A	PE BAG FOR CARTON		1

*** 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 after reading **VA1616w-8** Service Manual?

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

B. Are you satisfied with the **VA1616w-8** 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 opinion and suggestion about 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. You may also e-mail any suggestion to the Director, Quality System & Process (marc.maupin@viewsonic.com)