

Service Manual

ViewSonic VG921m-4

Model No. VS11369

19" Color TFT LCD Display

(VG921m-4_SM Rev. 1a Nov. 2006)

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Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	11/1/2006		Initial Release	Jamie Chang

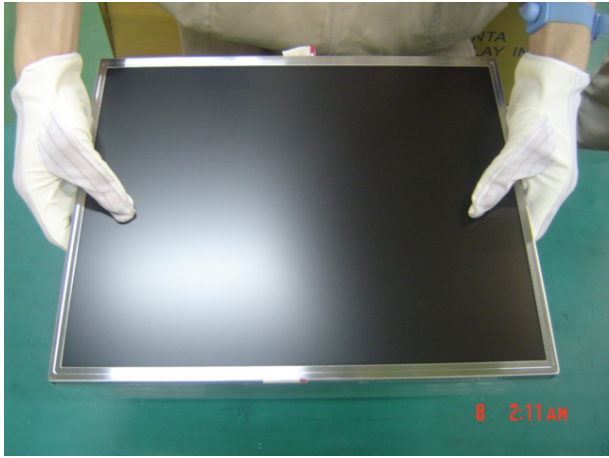
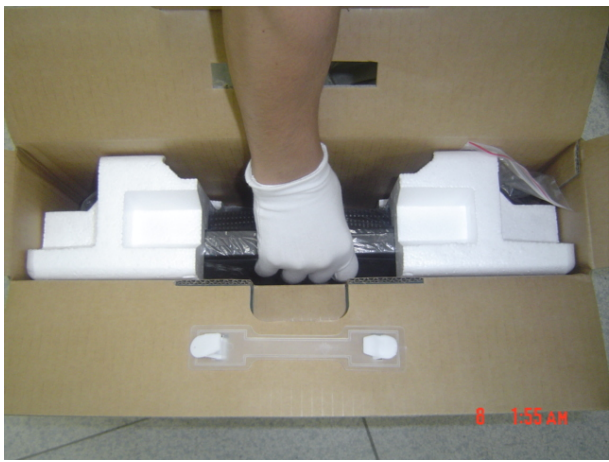
TABLE OF CONTENTS

1. Precautions and Safety Notices	1
2. Specification	4
3. Front Panel Function Control Description	18
4. Circuit Description	24
5. Adjustment Procedure	31
6. Troubleshooting Flow Chart	55
7. Recommended Spare Parts List	63
8. Exploded Diagram and Exploded Parts List	66
9. Block Diagram	68
10. Schematic Diagrams	69
11. PCB Layout Diagrams	75

1. Precautions and Safety Notices

1. Please carefully read this manual before operating the device and keep it available for future reference.
2. To avoid the danger of the monitor falling and thereby possibly causing injury and/or serious damage to the monitor itself, do not place it on unstable cars or desks. Be careful to avoid placing any stress on the LCD screen during handling.
3. Do not place this monitor in areas that are wet or where water or other liquids may come in contact with it, such as bathrooms, kitchens, wet floors, near washing machines or by swimming pools.
4. Remove the power plug from the electrical socket before cleaning. No water-containing cleaning agent should be used to clean the screen, but only cleaning agents formulated specifically for cleaning LCD screens. Do not put any liquid cleaning agent directly on the screen, but put it on a soft cloth first and then gently apply the cloth to the screen.
5. In order to guarantee reliable operation and adequate heat dissipation, do not cover or block vent holes on the monitor. Do not put the monitor close to heat sources. Do not place the monitor on furniture such as a bookshelf, unless sufficient ventilation is available.
6. A 3-pin grounding plug is provided for this monitor. In order to guarantee normal operation and safety of this unit, this plug should be used with a matching grounded power socket.
7. Please follow all warnings and instructions that accompany the monitor.
8. Please pay special attention to power supply overloads, as electrical shock or fire may occur.
9. Do not place anything on the power cord. Do not hang the power cord over an area where people or objects may pass.
10. In case the monitor is not be used for an extended period, turn off power to avoid the possibility of short circuits caused by lightning.
11. In order to avoid electrical shock or fire risks, do not insert any object through any openings in the monitor's enclosure. Do not allow any liquid to come in contact with the monitor.
12. In case of any abnormal noise or odor caused by incorrect operation, turn off power immediately and contact a professional technician. Do not attempt to repair this monitor by yourself, as electrical shock may occur when opening the back cover or accessing internal components.
13. If any of the following conditions occurs, turn off power and contact a repair service provider:
 - 1) the power cord is damaged or worn;
 - 2) liquid has gotten into the monitor, or the monitor has experienced immersion or wetting;
 - 3) the monitor has fallen;
 - 4) the monitor's performance shows obvious changes;
 - 5) the monitor fails to work normally when correct procedures are followed. In that case, please make any adjustments in accordance with instructions supplied with the monitor; do not attempt any changes to established procedures, as further damage may occur, making successful repair of the monitor more difficult.
14. In case parts need to be replaced, you must use identical parts or those supplied by our certified manufacturers. Any other parts used without our authorization may result in electrical shock or fire risk.

Handing and Placing methods

Correct methods	Incorrect methods
Only touch the metal frame of the LCD panel or the front cover of the monitor, DO not touch the surface of the POL	Surface of the LCD panel is pressed by fingers and that may cause "mura"
 A person wearing white gloves is holding a monitor by its metal frame. The screen is black and reflects light. The background is a green surface. A red timestamp "8 2:10 AM" is visible in the bottom right corner.	 A person wearing white gloves is holding a monitor by touching the screen surface with their fingers. The screen is black and reflects light. The background is a green surface. A red timestamp "8 2:11 AM" is visible in the bottom right corner.
 A monitor is being lifted out of a box using white foam cushions. The monitor is black and has a silver frame. The background is a red surface. A red timestamp "8 2:12 AM" is visible in the bottom right corner.	 A person wearing white gloves is grasping the LCD panel of a monitor. The monitor is black and has a silver frame. The background is a red surface. A red timestamp "8 2:13 AM" is visible in the bottom right corner.
Take out the monitor with cushions	Taking out the monitor by grasping the LCD panel, that May cause "mura"
 A person wearing white gloves is placing a monitor on a clean and soft foam pad. The monitor is black and has a silver frame. The background is a cardboard box. A red timestamp "8 1:55 AM" is visible in the bottom right corner.	 A person wearing white gloves is placing a monitor on a foreign object. The monitor is black and has a silver frame. The background is a cardboard box. A red timestamp "8 1:55 AM" is visible in the bottom right corner.
Place the monitor on a clean and soft foam pad	Placing the monitor on a foreign objects, that could scratch The surface of the "Panel" or cause "mura"



The panel is placed facedown the lap,that may cause "mura"



2. Specification

Introduction

1	LCD PANEL (1 st source)	Panel: Size Pixel Arrange Glass Treatment Contrast Ratio Viewing Angle Colors Luminance Response Time Backlight Backlight Life Mercury	CR >= 10 CR >= 5 On/Off	HSD190ME13-A16 19" Color a-Si TFT Active Matrix 1280x1024 LCD 0.294 mm x 0.294 mm Anti-Glare, Hard coating (3H) 700 :1 150/135 (degrees; typ) 160/155 (degrees; typ) 16.2 million colors (6+2 bit panel) 300 cd/m2 8 ms 4 CCFL 50000 Hrs (Min) 3 mg per lamp
2	INPUT SIGNAL	Video Sync		RGB Analog (75 ohms, 0.7 / 1.0 Vp-p), Separate Sync / Composite Sync / SOG Fh = 24 – 82 kHz ; Fv = 50 – 75 Hz
3	COMPATIBILITY	PC Mac		PC Compatibles (from VGA up to 1280x1024 Non Interlaced) Power Mac (up to 1280X1024)
4	RESOLUTION	Recommended		1280x1024 @ 60Hz 640 x 350 @ 70Hz 640 x 400 @ 60, 70Hz 640 x 480 @ 60, 67, 72, 75Hz 720 x 400 @ 70Hz 720 x 480 @ 60Hz 800 x 600 @ 56, 60, 72, 75Hz 832 x 624 @ 75Hz 1024 x 768 @ 60, 70, 75Hz 1152 x 864 @ 75Hz 1152 x 870 @ 75Hz 1152 x 900 @ 67Hz 1280 x 720 @ 60Hz 1280 x 768 @ 60, 75Hz 1280 x 960 @ 60, 75Hz 1280 x 1024 @ 60, 75Hz
5	AUDIO	Speaker		1.5W x2
6	CONNECTORS	Video	Analog	DB-15 Internal Power Adapter, 3-pin plug (CEE22)

		Power		
7	POWER	Voltage Consumption	Typ/Max	AC 100-240V (Universal); 50-60 Hz 32 W / 36 W
8	ERGONOMICS	Tilt		20±2 ~ -5±2 degrees
9	CONTROLS	Physical OSD Function	Key buttons Main Menu Short cut key	[PW], [Mute], [2], [Up], [Dn], [1] Auto Image Adjust Contrast/Brightness Color Adjust sRGB, 9300K, 7500K, 6500K, 5400K, User Color [R, G, B] Information Manual Image Adjust Horizontal Size, H/V Position, Fine Tune, Sharpness Setup Menu Language Select, Resolution Notice, OSD Position, OSD Time Out, OSD Background Memory Recall [1] : Main Menu [2] : Auto Image Adjust [Up] or [Dn] : Contrast / Brightness [Up] + [Dn] : Recall both of Contrast and Brightness to default [1] + [2] : Toggle 720x400 and 640x400 mode [1] + [Up] + [Dn] : Auto White Balance [1] + [Dn] : Power Lock [1] + [Up] : OSD Lock
10	BANDWIDTH			135 MHz
11	OPERATING CONDITION	Temperature Humidity		32°F to 104°F (0°C to 40°C) 10% to 90% (no condensation)
12	STORAGE / SHIPPING CONDITION	Temperature Humidity		-4°F to 140°F (-20°C to 60°C)° 10% to 90% (no condensation)
13	DIMENSIONS	Physical: (W x H x D)	Display w Stand Wall Mount	425.4 mm (W) x 457.2 mm (H) x 205 mm (D) 16.75" (W) x 18" (H) x 8.1" (D) 425.4 mm (W) x 397 mm (H) x 66 mm (D) 16.75" (W) x 15.6" (H) x 2.6" (D)

		Packing (W x H x D)		497 mm (W) x 516 mm (H) x 158 mm (D) 19.6" (W) x 20.3" (H) x 6.2" (D)
14	WEIGHT		Net Gross	5.3Kg (11.7 磅) 6.6kg(14.6 磅)
15	REGULATIONS			UL/CUL, FCC (include ICES-003B), CB, CE, TCO'03 TUV/GS, TUV Ergo(covers ISO13406-2 & MPRII), IRAM, VCCI, GOST-R, HYGIENIC (20 copies), Energy Star(only test report), CCC, BSMI, PSB, C-TICK, SASO,MIC, WEEE, RoHS
16	RELIABILITY	MTBF		100,000 Hr (Excluding Panel).
17	POWER SAVING FUNCTION	"On" " Active Off" "Off"	Blue Amber Off	Normal ≤ 1 W ≤ 1 W
18	LOGISTICS	Container Load (20' / 40') Pallet Load UPC Code Serial Format EDID Code Country of origin	Standard	640 / 1280 pieces 64 pieces 766907224924 QB9 Byte 10 – 0 x 1E, Byte 11 – 0 x 30 China
19	Wall Mount	VESA		100mm x 100mm
20	OTHERS			DDC/2B, KENSINGTON MicroSaver Security Compatible, WorldWide Model.
21	Package Contents	LCD Display Power CableVideo Cable Audio Cable Quick Start Guide ViewSonic Wizard CD-ROM		
22	Packaging Information	Carton -- One piece construction with signal wall, 0.65 Kg Plastic Handle -- PE-LD, 12g Poly Foam -- EPS, 207g, 2 pices Accessory Plastic Bags -- PE-LD, 2g The PE bag that cover monitor -- PE-LD, 18g Pallet (M Model) -- Fumigation wood, 22.5Kg Pallet (Others) -- Poplar, 22.5Kg		

Product definition and specification

Product Name	ViewSonic VG921m
Oracle item#	VG921M-4
Model Number	VS11369
OSD Languages	English, French, German, Italian, Spanish, Finnish, Japanese, Traditional Chinese, Simplified Chinese
TFT LCD Panel and Model #	HSD190ME13-A16
Scalar	Realtek RTD2023L
Input Signal	Analog x1
Sync Compatibility	Separate Sync / Composite Sync / SOG
Adapter	Internal Power Board
Power Cable	Yes, refer to APPENDIX B: Power Cable
Analog Cable (1.8 m, black), with PC 2001 and Hot Plug Detect &DDC	Yes (Detached cable; refer the Appendix A)
DVI-D Cable(1.8m, black) with PC 2001	No
Audio Cable(1.8m, black) with PC 2001	Yes
MIC Cable(1.8m, black) with PC 2001	No
USB Cable (V2.0)	No
ViewSonic CD Wizard	Arabic, English, Finnish, Spanish, German, Italian, Japanese, Swedish, Polish, Korean, Portuguese, Russian, Turkish , French, Czech, Hungarian, Simplified Chinese, Traditional Chinese
ViewSonic Quick Start Guide	
PerfectSuite CD	No
Screen Protector Mylar	Yes
Foot Protector plastic	No
Service Insert	For Region code = M units only
Warranty Sticker	For Region code = G units only
Warranty Card	For Region code = G units only
Carton Sticker	For Region code = G units only
PE bag of Carton	For Region code = G units only

4-1 GENERAL specification

Test Resolution & Frequency	1280x1024 @ 60Hz
Test Image Size	Full Size
Contrast and Brightness Controls	Factory Default: Contrast = 70%, Brightness = 100%

4-2 VIDEO INTERFACE

Input Connector (refer the Appendix A)	DB-15
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
Video Signals	Video RGB (Analog) Separate Sync / Composite Sync / SOG
Video Impedance	75 Ohms (Analog)
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
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

4-3 USB INTERFACE

No USB interface

4-4 POWER SUPPLY

Internal Power Supply	Part Number:PI-SB03
Input Voltage Range	100to 240VAC
Input Frequency Range	50 to 60 Hertz
Short Circuit Protection	OUTPUT CAN BE SHORTED WITHOUT DAMAGE
Over Current Protection	6 A TYPICAL AT 5 VDC
Leakage Current	1.0 MA (MAX) AT 264VAC / 60HZ
Efficiency	80 % TYPICAL AT 115VAC FULL LOAD
Fuse	INTERNAL AND NOT USER REPLACEABLE
Power Dissipation	32 WATTS (TYP)
Max Input AC Current	1.2 ARMS @ 90VAC, 0.8 ARMS @180VAC
Inrush Current (Cold Start)	30 A @ 90 VAC, 60 A(MAX) @ 264 VAC
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 1.5 times nominal line voltage for one cycle with no damage
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 define to be in compliance with ISO 7779 (DIN EN27779:1991) Noise measurements of machines acoustics. Power Switch noise shall not be considered
US Type Power Cable	Length = 1.8m. Connects to AC/DC Power Color = Black
Power Saving Operation(Method)	VESA DPMS Signaling
Power Consumption	On Mode <36 W (max) Saving Mode< 1W Off Mode <1 W
Recovery Time	On Mode = N/A, Active Off < 3 sec

4-5 ELECTRICAL REQUIREMENT

Horizontal / Vertical Frequency

Horizontal Frequency	24 – 82 kHz
Vertical Refresh Rate	50 – 75 Hz
Maximum Pixel Clock	135 MHz
Sync Polarity	Independent of sync polarity

Timing Table

Item	Timing	Analog			Digital - TMDS	Remark
		Separated	Composite	SOG		
1	640 x 350 @ 70 Hz, 31.5 KHz	✓	✓	✓		DMT
2	640 x 400 @ 60 Hz, 31.5 KHz	✓	✓	✓		
3	640 x 400 @ 70 Hz, 31.5 KHz	✓	✓	✓		
4	640 x 480 @ 50 Hz, 24.7 KHz					
5	640 x 480 @ 60 Hz, 31.5 KHz	✓	✓	✓		DMT
6	640 x 480 @ 67 Hz, 35 KHz	✓	✓	✓		For MAC
7	640 x 480 @ 72 Hz, 37.9 KHz	✓	✓	✓		DMT
8	640 x 480 @ 75 Hz, 37.5 KHz	✓	✓	✓		DMT
9	720 x 400 @ 70 Hz, 31.5 KHz	✓	✓	✓		
10	720 x 480 @ 60 Hz, 31.5 KHz	✓	✓	✓		DTV
11	720 x 576 @ 50 Hz, 31.3 KHz					DTV
12	800 x 600 @ 56 Hz, 35.1 KHz	✓	✓	✓		DMT
13	800 x 600 @ 60 Hz, 37.9 KHz	✓	✓	✓		DMT
14	800 x 600 @ 72 Hz, 48.1 KHz	✓	✓	✓		DMT
15	800 x 600 @ 75 Hz, 46.9 KHz	✓	✓	✓		DMT
16	832 x 624 @ 75 Hz, 49.7 KHz	✓	✓	✓		MAC
17	1024 x 768 @ 50 Hz, 39.6 KHz					
18	1024 x 768 @ 60 Hz, 48.4 KHz	✓	✓	✓		DMT
19	1024 x 768 @ 70 Hz, 56.5 KHz	✓	✓	✓		DMT
21	1024 x 768 @ 75 Hz, 60 KHz	✓	✓	✓		DMT
23	1152 x 864 @ 75 Hz, 67.5 KHz	✓	✓	✓		DMT
24	1152 x 870 @ 75 Hz, 68.7 KHz	✓	✓	✓		For MAC
25	1152 x 900 @ 67 Hz, 62.5 KHz	✓	✓	✓		For SUN
26	1280 x 720 @ 50 Hz, 37.5 KHz					DTV
27	1280 x 720 @ 60 Hz, 45 KHz					DTV
28	1280 x 768 @ 50 Hz, 39.6 KHz					
29	1280 x 768 @ 60 Hz, 47.8 KHz	✓	✓	✓		DMT;
30	1280 x 768 @ 75 Hz, 60.3 KHz	✓	✓	✓		DMT;

31	1280 x 960 @ 50 Hz, 49.4 KHz					
32	1280 x 960 @ 60 Hz, 59.7 KHz	✓	✓	✓		DMT
33	1280 x 960 @ 75 Hz, 75.2 KHz	✓	✓	✓		
34	1280 x 1024 @ 50 Hz, 52.7 KHz					
35	1280 x 1024 @ 60 Hz, 64 KHz	✓	✓	✓		DMT
36	1280 x 1024 @ 75 Hz, 80 KHz	✓	✓	✓		DMT

*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 85Hz mode might be worse than 75Hz.

Primary Presets

1280x1024 @ 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
- Under DOS mode (640 x 350, 720 x 400 & 640 x 400), it should recall factory setting when execute “Auto Adjust”
- The monitor needs to do “Auto Adjust” the first time a new mode is detected (see section “0-Touch™ Function Actions”)
- While running Change Mode, Auto Adjust or Memory Recall, the image shall blank

4-6 FRONT PANEL CONTROLS AND INDICATORS

Front Panel Hardware Controls

Power Switch (Front Head)	Power Control, soft Power Switch.
Power LED (Front Head)	Green – ON Orange – Power Saving Mode Dark = Soft Power Switch OFF
Front Panel Controls (Head) [⏻] [1] [2] [▲] [▼]	[X] Mute [⏻] 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

Short Cuts Function from the button(s)

[1]	Main Menu
[2]	Auto Image Adjust
[▼]	Brightness adjust
[▲]	Contrast adjust
[▼] + [▲]	recall both of Contrast and Brightness to default
[1] + [2]	1. toggle 720x400@70Hz/640x400@70Hz mode when input one of the two mode 2. toggle 640x480@60Hz/640x400@60Hz mode when input one of the two mode
[1] + [▼] + [▲]	White Balance. (Not shown on user's guide)
[1] + [▼]	Power Lock
[1] + [▲]	OSD Lock
No signal + [2] + [⏻]	Burning mode
Signal + [2] + [⏻]	Factory Mode
Remark : All the short cuts function are only available while OSD off	

Function descriptions

Main Menu Controls

The Main Menu OSD includes most of control functions.

Please refer to APPENDIX C (Main Menu OSD Table) for the detail.

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. If the user then tries to access the OSD by pressing any of the buttons "1", "▼", "▲", "2" a message will appear on the screen for 3 seconds showing "OSD Locked". The OSD lock will be deactivated by pressing the front panel control buttons "(1), & (▲)" again for 10 seconds.

Note1: When the OSD is locked will lock all functions, including "Volume" and "Mute"

Note 2: Status bar indicating OSD Lock or Unlock is in progress and when complete it will indicate "OSD Locked"

Note 3: OSD Lock should not lock Power Button and Power Lock function

Power Lock short cuts function for the buttons

The power button lock will be activated by pressing the front panel control buttons "(1), & (▼)" for 10 seconds. 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". 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 button lock will be deactivated by pressing the front panel control buttons "(1), & (▼)" again for 10 seconds.

Note 1: Status bar indicating Power Button lock or unlock is in progress and when complete it will indicate "Power Button Locked"

Note 2: Power should only be lockable in the "On State"

Memory Recall Actions

Memory Recall action as below

1. Recall white balance to factory setting
2. Set the factory defaults as shown in Section 4-8
3. Clean all the mode setting buffer
4. Execute Auto Image Adjust

Note: Memory Recall should have no effect for Language, Power Lock, User Color Settings or Input Priority

Input Signal Notice Actions

1. The Input Signal Notice OSD appears 3 seconds when power turns on or change input signal.
2. The Input Signal Notice OSD position is on the right-bottom side of image. And the OSD background shall be transparent. (OSD Background = off).

Resolution Notice Actions

1. Resolution Notice OSD should show on screen after changing to non-native mode for 30 sec
2. For auto input select function, it shall meet the requirement in Appendix D.
3. The OSD should disappear after 10 sec or by pushing button [1] or [2]

Resolution Notice function should be disabled when push button [2] under Resolution Notice OSD

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)

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

Factory Defaults

Item	Defaults	Item	Defaults
Contrast	70%	Input Priority	N/A
Brightness	100%	Resolution Notice	On
Color Temperature	6500K	Volume	50%
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 (@70Hz)	720x400
OSD Background	On	640x480 / 640x400 (@60Hz)	640x480

4-7 AUDIO INTERFACE (SPEAKER SPECIFICATION)

Speaker specification

Line input connection	3.5 mm stereo jack
Line input signal	1.0 Vrms
Line input impedance	10 kOhm
Maximum power output (Electric)	1.5 W / ch
Signal to Noise Ratio	50 dB
Frequency response	200 Hz – 20 KHz(-10db)
Distortion	< 15 % 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 should be off when the rest of the monitor is in power saving.

* No any sympathetic or abnormal noise allowed.

4-8 TFT LCD PANEL

Panel Characteristics :

1st Source Panel

Model number	HSD190ME13-A16
Type	Active Matrix TFT, TN technology
Active Size	19" (337.8mm x 301mm)
Pixel Arrangement	RGB Vertical Stripe
Pixel Pitch	0.294 mm
Glass Treatment	Anti-Glare, Hard coating (3H)
# of Backlights	4 CCFL
Backlight Life	50000 Hrs (Min)
Luminance (Center) – CT = 6500K, Contrast/ Brightness = Max	300 cd/m2 (Typ after 30 minute warm up) 240 cd/m2 (Min after 30 minute warm up)
Brightness Uniformity (13 points)	80 % (Typ) / 75 % (Min)
Contrast Ratio	700 :1 (Typ) 450 : 1 (Min)
Color Depth	16.2 million colors (6+2 bit panel)
Horizontal Viewing Angle	150 degrees (Typ) / 130 degrees (Min) @ CR>10 160 degrees (Typ) / TBD (Min) @ CR>5
Vertical Viewing Angle	135 degrees (Typ) / 110 degrees (Min) @ CR>10 TBD degrees (Typ) / TBD (Min) @ CR>5
Response Time 10%-90% @ Ta=25°C	On-Off 8ms (Typ) / 16ms (Max)
Mercury	3.0 mg per lamp
Panel Defects	Please see Panel Quality Specifications.

*Over 50% units of shipment shall be equal or better than the Typical value above.

4-9 IMAGE PERFORMANCE

Display Size

Horizontal Display Size, Primary Preset	Full Screen
Vertical Display Size, Primary Preset	Full Screen

Luminance

Lv (Max) –Condition: Brightness / Contrast = 100% CCT = USER COLOR (R/G/B=100%)	Lv (Max) = The Luminance requirement of section 4-6 “TFT LCD PANEL”
Lv (Def) –Condition: Brightness / Contrast = 100% Color Temperature = 6500K / sRGB	$Lv (Def) / Lv (Max) \times 100\% > 95\%$
Lv (sRGB/6500K) –Condition: Brightness / Contrast = Default CCT = 6500K / sRGB	$Lv (sRGB/6500K) / Lv (Max) \times 100\% > 85\%$
Lv (9300K) –Condition: Brightness / Contrast = Default CCT = 9300K	$Lv (9300K) / Lv (Def) \times 100\% > 70\%$
Lv (7500K) –Condition: Brightness / Contrast = Default CCT = 7500K	$Lv (7500K) / Lv (Def) \times 100\% > 80\%$
Lv (5400K) –Condition: Brightness / Contrast = Default CCT = 5400K	$Lv (5400K) / Lv (Def) \times 100\% > 85\%$
Lv (Brightness) –Condition: Contrast = 100%	$Lv(Brightness=0\%) / Lv(Brightness=100\%) \times 100\% \leq 55\%$
Lv (Contrast) –Condition: Brightness = 100%	$Lv(Contrast=0\%) / Lv(Contrast=100\%) \times 100\% \leq 30\%$

Contrast Ratio

CR(Max) –Condition: Contrast / Brightness = 100% CCT = USER COLOR (R/G/B=100%)	Same as the Contrast Ratio in section 4-6 “TFT LCD PANEL”
CR(6500K) –Condition: Contrast / Brightness = Default CCT = 6500K	$CR(6500K) / CR(Max) \geq 85\%$

Saturation

Contrast = Default Brightness = Default Test pattern = 128-gray	NO VISIBLE SATURATION * $\geq 50\%$ UNITS OF SHIPMENT SHALL BE EQUAL OR BETTER THAN TYPICAL CR SPEC.
Contrast = 100% Brightness = 100% Test pattern = 64-gray	6~8 - LEVEL SATURATION

Preset Color Temperatures

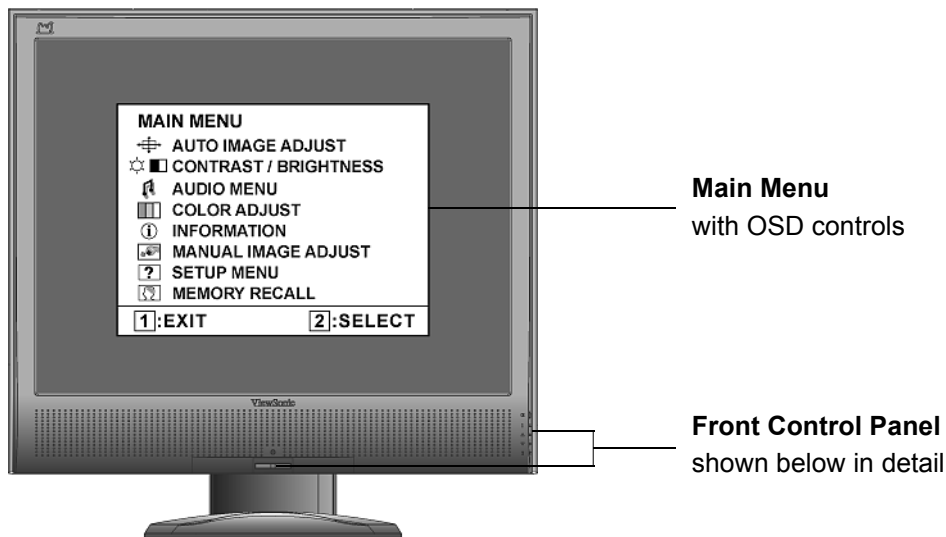
sRGB	It should meet IEC 61966-2-1 (1999-10) standard.
Preset 1	CCT (typ) = 9300K ($u'_{CCT}=0.1888$; $v'_{CCT}=0.4457$) CCT (max) = 10250K, CCT (min) = 8500K $\Delta u'v' < 0.01$ (@ Full White pattern)
Preset 2	CCT (typ) = 7500K ($u'_{CCT}=0.1935$; $v'_{CCT}=0.4586$) CCT (max) = 8100K, CCT (min) = 6980K $\Delta u'v' < 0.01$ (@ Full White pattern)
Preset 3 (Primary)	CCT (typ) = 6500K ($u'_{CCT}=0.1978$; $v'_{CCT}=0.4684$) CCT (max) = 6950K, CCT (min) = 6100K $\Delta u'v' < 0.01$ (@ Full White pattern)
Preset 4	CCT (typ) = 5400K ($u'_{CCT}=0.2044$; $v'_{CCT}=0.4808$) CCT (max) = 6185K, CCT (min) = 4935K $\Delta u'v' < 0.01$ (@ Full White pattern)
Preset Color Temperature Adjustability	Each color preset shall be adjustable. Red, Green, and Blue shall be individually controlled.

* Any gray level and Contrast/Brightness should not get reddish, greenish or bluish.

3. Front Panel Function Control Description

Adjusting the Screen Image

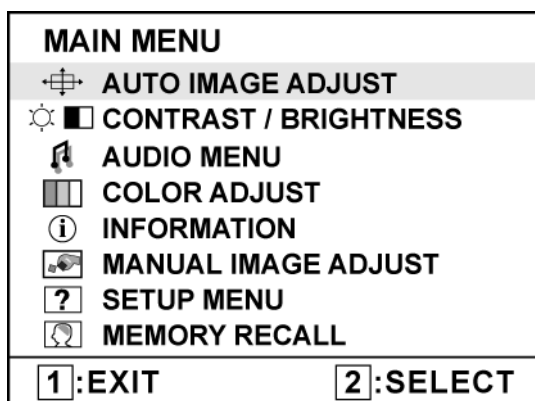
Use the buttons on the front control panel to display and adjust the OSD controls which display on the screen. The OSD controls are explained at the top of the next page and are defined in “Main Menu Controls” on page 10.



-  Standby Power On/Off
Power light
Blue = ON
Orange = Power Saving
-  Audio Mute button turns the sound off
- 1 Displays the Main Menu or exits the control screen and saves adjustments.
-  Scrolls through menu options and adjusts the displayed control.
Also a shortcut to display the Contrast adjustment control screen.
- 
- 2 Displays the control screen for the highlighted control.
Also a shortcut to Auto Image Adjust.

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 command line at the bottom of the control screen tells what to do next from this screen. You can toggle between control screens, adjust the selected option, or exit the screen.

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

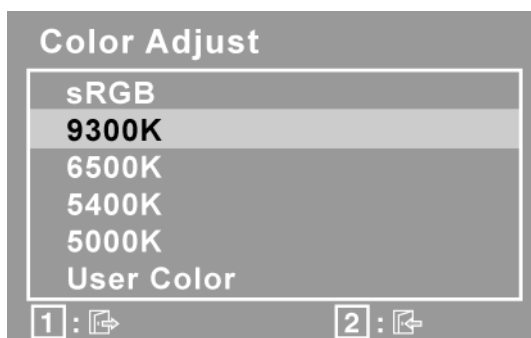
The following tips may help you optimize your display:

- Adjust the computer's graphics card so that it outputs a 1280 x 1024 @ 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
	Auto Image Adjust sizes and centers the screen image automatically.
	Contrast adjusts the difference between the image background (black level) and the foreground (white level).
	Brightness adjusts background black level of the screen image.
	Audio Adjust Volume increases the volume, decreases the volume, and mutes the audio. Mute temporarily silences audio output.
	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).



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 sRGB setting will cause the Contrast and Brightness adjustments to be disabled.

9300K-Adds blue to the screen image for cooler white (used in most office settings with fluorescent lighting).

6500K-Adds red to the screen image for warmer white and richer red.

5400K-Adds green to the screen image for a darker color.

5000K-Adds blue and green to the screen image for a darker color.

User Color Individual adjustments for red (R), green (G), and blue (B).

1. To select color (R, G or B) press button [2].

2. To adjust selected color, press▲and▼.

Important: If you select RECALL from the Main Menu when the product is set to a Preset Timing Mode, colors return to the 6500K factory preset.



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 1280 x 1024 @ 60Hz (recommended) means that the resolution is 1280 x 1024 and the refresh rate is 60 Hertz.

Information		
H. Frequency:	XX	kHz
V. Frequency:	XX	Hz
Resolution:	XXX	
Pixel Clock:	XXXXXXXXX	MHz
Serial Number: XXXXXXXXXXXXX		
Model Number: XXXXXXXXXXXXX		
www.ViewSonic.com		1: Exit



Manual Image Adjust

Manual Image Adjust	
	H. Size
	H./V. Position
	Fine Tune
	Sharpness
1: Exit 2: Select	



H. Size (Horizontal Size) adjusts the width of the screen image.



H./V. Position (Horizontal/Vertical Position) moves the screen image left or right and up or down.

H./V. Position	
H. Position	
V. Position	
- : ↓	+ : ↑
1: Exit 2: Select	

Control	Explanation
---------	-------------



Fine Tune sharpens the focus by aligning text and/or graphics with pixel boundaries.

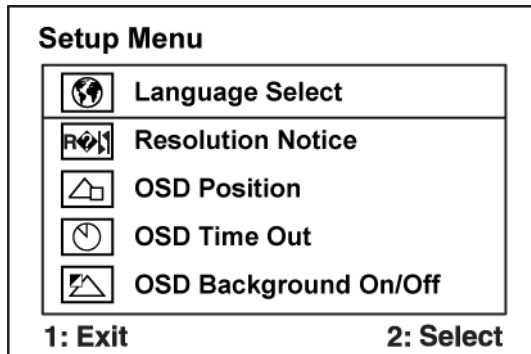
NOTE: Try Auto Image Adjust first.



Sharpness adjusts the clarity and focus of the screen image.



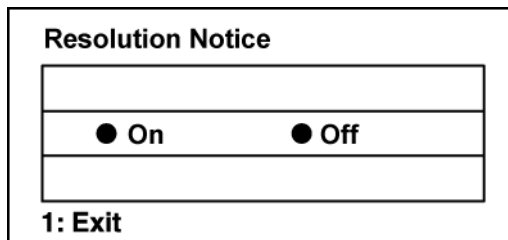
Setup Menu displays the menu shown below:



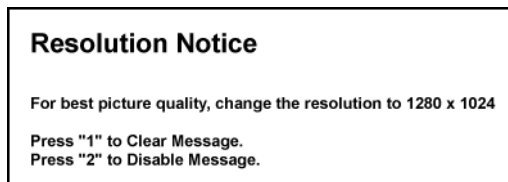
Language Select allows the user to choose the language used in the menus and control screens.



Resolution Notice allows the user to enable or disable this notice.



If you enable the Resolution Notice shown above and your computer is set at a resolution other than 1280 x 1024, the following screen appears.



Control	Explanation
	OSD Position allows the user to move the OSD menus and control screens.
	OSD Timeout sets the length of time the OSD screen is displayed. For example, with a “30 second” setting, if a control is not pushed within 30 seconds, the display screen disappears.
	OSD Background allows the user to turn the OSD background On or Off.
	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.

4. Circuit Description

A. AC-DC CONVERTER

The power supply with a high-integrated green-mode PWM controller provides several features to enhance the performance of power flyback converters.

U801 is a PWM controller and provides many protection functions.

U802 is a photo couple to transfer the feedback signal from the second side which U803 detected both of the output DC voltage on 5V and 24V.

Z802 detected the working voltage on U801 and Q802 would pull down the voltage on U801 pin5 to shut down U801 if feedback loop was failed.

R828 would be a dynamic load which was active while backlight was turned off and system still working on, this kept 24V output voltage under 32V to protect the panel. After system went to power saving mode, the R828 would no loaded. This was detected by Z803 active the R828 to load or not.

B, Scaling Controller

Overview

Realtek RTD2523B series products are all-in-one LCD monitor controllers support up to SXGA/XGA(optional), and integrate Realtek high performance ADC, TMDS Rx(optional), scaling engine, OSD engine, LVDS TX, RSDS TX and so on. Moreover, all products are pin compatible in low pin count package to save cost and make the design easier

General

- Embedded dual DDC support DDC1, DDC2B, DDC/CI
- Zoom scaling up and down
- Embedded Pattern Generator
- No external memory required.
- Require only one crystal to generate all timing
- Embedded reset control output
- Embedded crystal output to MICROP
- 3 channels 8 bits PWM output, and selectable PWM clock frequency.

Pin Description

(I/O Legend: A = Analog, I = Input, O = Output, P = Power, G = Ground)

■ ADC: 15 pins

Name	I/O	Pin No	Description	Note
ADC_GND	AG	27	ADC ground	
ADC_REFIO	AP	28	ADC band-gap voltage de-coupling	1.20V
ADC_VDD	AP	29	Analog power	(3.3V)
BLUE+	AI	30	Analog input from BLUE channel	
BLUE-	AI	31	Analog input ground from BLUE channel	
ADC_GND	AG	32	ADC ground	
SOG/ADC_TEST	AIO	33	SOG in/ADC test pin	

GREEN+	AI	34	Analog input from GREEN channel	
GREEN-	AI	35	Analog input ground from GREEN channel	
ADCB_VDD	AP	36	Analog power	(3.3V)
RED+	AI	37	Analog input from RED channel	
RED-	AI	38	Analog input ground from RED channel	
ADC_GND	AG	39	Analog ground	
ADC_GND	AG	40	Analog ground	
ADC_VDD	AP	41	Analog power	(3.3V)
AHS	AI	42	Analog HS input	(10), (4), (5)
AVS	AI	43	Analog VS input	(2), (4), (5)

■ PLL: 8 pins

Name	I/O	Pin No	Description	Note
XO	AI	1	Reference clock output	
XI	AO	2	Reference clock input	
DPLL_GND	AG	3	Ground for digital PLL	
DPLL_VDD	AP	4	Power for digital PLL	(3.3V)
APLL_VDD	AP	5	Power for multi-phase PLL	(3.3V)
PLL_TEST1	AIO	6	Test Pin 1 / IRQ#	
PLL_TEST2	AIO	7	Test Pin 2/Power-on-latch for crystal out Frequency	
APLL_GND	AG	8	Ground for multi-phase PLL	

■ Control Interface: 7 pins

Name	I/O	Pin No	Description	Note
SDIO [0]	IO	54	Serial control I/F data in / Parallel port data [0]	(2), (3), / 2mA
SDIO [1] / TCON [4] / BBLU [0]	IO	53	Parallel port data [1] / TCON [4] / TTL BBLU [0]	(1), (2), (3), / 2mA
SDIO [2] / TCON [3] / BBLU [1]	IO	52	Parallel port data [2] / TCON [3] / TTL BBLU [1]	(1), (2), (3), / 2mA
SDIO [3] / PWM2 / TCON [2]	IO	51	Parallel port data [1] / TCON [4] / PWM2	(1), (2), (3), / 2mA
SCLK	I	50	Serial control I/F clock	(2), (3), (5)
SCSB	I	111	Serial control I/F chip select	(2), (3), (5)
RESET	O	56	RESET output for Micron	(2), (5), (6) / 2mA

■ **Display & TCON/VIDEO-8 Port: 54 pins**

■:LVDS+RSDS+TTLO ■:RSDS+TTLO ■:RSDS+TTLIO ■:TTLO ■:TTLIO

Pin NO.	6-bits Dual RSDS	6 bits Single RSDS	8/6 bits Dual/Single LVDS	8 bits Dual/Single TTL	6 bits Dual/Single TTL	Note
51	S[3] / TCON[2] / PWM2	S[3] / TCON[2] / PWM2	S[3] / TCON[2] / PWM2	S[3] / TCON[2] / PWM2	S[3] / TCON[2] / PWM2	(1), (2), (3)/ 2mA
52	S[2] / TCON[3]	S[2] / TCON[3]	S[2] / TCON[3]	S[2] / BBLU[1] / TCON[3]	S[2] / TCON[3]	(1), (2), (3)/ 2mA
53	S[1] / TCON[4]	S[1] / TCON[4]	S[1] / TCON[4]	S[1] / BBLU[0] / TCON[4]	S[1] / TCON[4]	(1), (2), (3)/ 2mA
55	PWM2 / COUT / TCON[13]	PWM2 / COUT / TCON[13]	PWM2 / COUT / TCON[13]	PWM2 / COUT / TCON[13]	PWM2 / COUT / TCON[13]	(1), (2), (3)/ 2mA
59	BB3P	BB3P	NC	BBLU [7]	BBLU [7]	
60	BB3N	BB3N	NC	BBLU [6]	BBLU [6]	
61	BB2P	BB2P	NC	BBLU [5]	BBLU [5]	
62	BB2N	BB2N	NC	BBLU [4]	BBLU [4]	
63	BB1P	BB1P	NC	BBLU [3]/T0	BBLU [3]	
64	BB1N	BB1N	NC	BBLU [2]/T1	BBLU [2]	
65	BCLKP	BCLKP	NC	BGRN [1]/T2	TCON [6]	
66	BCLKN	BCLKN	NC	BGRN [0]/T3	TCON [5]	
67	BG3P	BG3P	NC	BGRN [7]	BGRN [7]	
68	BG3N	BG3N	NC	BGRN [6]	BGRN [6]	
73	BG2P	BG2P	TODP	BGRN [5]/T4	BGRN [5]	
74	BG2N	BG2N	TODN	BGRN [4]/T5	BGRN [4]	
75	BG1P	BG1P	TOCLKP	BGRN [3]/T6	BGRN [3]	
76	BG1N	BG1N	TOCLKN	BGRN [2]/T7	BGRN [2]	
77	BR3P	BR3P	TOCP	BRED [7]/T8	BRED [7]	
78	BR3N	BR3N	TOCN	BRED [6]/T9	BRED [6]	
79	BR2P	BR2P	TOBP	BRED [5]/T10	BRED [5]	
80	BR2N	BR2N	TOBP	BRED [4]/T11	BRED [4]	
81	BR1P	BR1P	TOAP	BRED [3]/T12	BRED [3]	
82	BR1N	BR1N	TOAP	BRED [2]/T13	BRED [2]	
85	AB3P	NC	TEDP	ABLU [7]/T14	ABLU [7]	
86	AB3N	NC	TEDN	ABLU [6]/T15	ABLU [6]	
87	AB2P	NC	TECLKP	ABLU [5]/T16	ABLU [5]	

88	AB2N	NC	TECLKN	ABLU [4]/T17	ABLU [4]	
89	AB1P	NC	TECP	ABLU [3]/T18	ABLU [3]	
90	AB1N	NC	TECN	ABLU [2]/T19	ABLU [2]	
91	ACLKP	NC	TEBP	ABLU [1]/T20	TCON [1]	
92	ACLKN	NC	TEBN	ABLU [0]/T21	TCON [0]	
93	AG3P	NC	TEAP	AGRN [7]/T22	AGRN [7]	
94	AG3N	NC	TEAN	AGRN [6]/T23	AGRN [6]	
99	AG2P	TCON [11]	NC	AGRN [5]/T24	AGRN [5]	
100	AG2N	TCON [10]	NC	AGRN [4]/T25	AGRN [4]	
101	AG1P	TCON [9]	NC	AGRN [3]/T26	AGRN [3]	
102	AG1N	TCON [8]	NC	AGRN [2]/T27	AGRN [2]	
103	AR3P	TCON [7]	NC	ARED [7]/T28	ARED [7]	
104	AR3N	TCON [6]	NC	ARED [6]/T29	ARED [6]	
105	AR2P	TCON [5]	NC	ARED [5]/TH	ARED [5]	
106	AR2N	TCON [1]	NC	ARED [4]/TV	ARED [4]	
107	AR1P	TCON [0]	NC	ARED [3]/TE	ARED [3]	
108	AR1N	NC	NC	ARED [2]/TK	ARED [2]	
113	PWM2 / COUT / TCON[12]	PWM2 / COUT / TCON[12]	PWM2 / COUT / TCON[12]	ARED [1]	PWM2 / COUT / TCON[12]	(9)
114	TCON [11] /V[0]	V [0]	V [0]	ARED [0]	TCON [11]	(1), (7), (8)
115	TCON [10] /V[1]	V [1]	V [1]	BRED [1]	TCON [10]	(1), (7), (8)
116	TCON [9] / V[2]	V [2]	V [2]	BRED [0]	TCON [9]	(1), (7), (8)
117	TCON [8] / V[3]	V [3]	V [3]	AGRN [1]	TCON [8]	(1), (7), (8)
118	TCON [7] / V[4]	V [4]	V [4]	AGRN [0]	TCON [7]	(1), (7), (8)
119	TCON [6] / V[5]	V [5]	V [5]	DHS	DHS	(1), (7), (8)
122	TCON [5] / V[6]	V [6]	V [6]	DVS	DVS	(1), (7), (8)
123	TCON [1] / V[7]	V [7]	V [7]	DENA	DENA	(1), (7), (8)
124	TCON [0] / VCLK	VCLK	VCLK	DCLK / TCLK	DCLK / TCLK	(1), (7), (8)

■ TMDS: 18 pins

Name	I/O	Pin No	Description	Note
TMDS_TST/ PWM1	AIO	9	TMDS_TEST Pin / PWM1 / Power-on-latch for serial / parallel port	
TMDS_GND	G	10		
TMDS_VDD	P	11		(3.3V)
EXT_RES	A	12	Impedance Match Reference.	
TMDS_VDD	P	13		(3.3V)
RX2P	I	14	Differential Data Input	
RX2N	I	15	Differential Data Input	
TMDS_GND	G	16		
RX1P	I	17	Differential Data Input	
RX1N	I	18	Differential Data Input	
TMDS_VDD	P	19		(3.3V)
RX0P	I	20	Differential Data Input	
RX0N	I	21	Differential Data Input	
TMDS_GND	G	22		
RXCP	I	23	Differential Data Input	
RXCN	I	24	Differential Data Input	
TMDS_GND	G	25		
TMDS_VDD	P	26		(3.3V)

■ PWM Interface: 3-2=1 pin (PWM1, PWM2 can be selected from 1 of 3 possible pins.)

Name	I/O	Pin No	Description	Note
PWM2 / TCON [2] / S [3]	O	51	PWM2 / TCON [2] / SDIO [3]	(1), (2), (3), (5), (8),
PWM2 / TCON [13] / COUT	O	55	PWM2 / TCON [13] / Crystal out	(2), (8), (9)
PWM2 / TCON [12] / COUT	O	113	PWM2 / TCON [12] / Crystal out	(2), (8), (9)
PWM1 / TMDS_TST	AIO	9	PWM1/ TMDS_TEST Pin / Power-on-latch for serial / parallel port	(2), (7), (8)
PWM1 / DDCSDA / TCON [1] / BBLU [0]	IO	47	PWM1 / DDC serial control I/F data input / output / TCON [4]	(1), (2), (3), (5), (8),
PWM1 / DDCSDA2 (HDCP) / TCON [7]	IO	125	PWM1 / DDC serial control I/F data input / output / TCON [7]	(1), (2), (3), (5), (8),
PWM0 / REFCLK	IO	112	PWM0 / (In / out) test pin for DCLK / Video8 even-odd signal	(2), (9)

■ DDC Channel: 4 pins

Name	I/O	Pin No	Description	Note
DDCSCL / TCON [0] / BBLU [1]	I	46	DDC serial control I/F clock / TCON [0] / TTL BBLU [1]	(2), (3), (5)

DDCSDA / TCON [1] / PWM1 / BBLU [0]	IO	47	DDC serial control I/F data input / output / TCON [1] / PWM1 / TTL BBLU [0]	(1), (2), (3), (5), (6), (8)/ 8mA /no slew
DDCSCL2 (HDCP) / TCON [5]	I	126	DDC serial control I/F clock / TCON [5]	(2), (3), (5)
DDCSDA2 (HDCP) / TCON [7] / PWM1	IO	125	DDC serial control I/F data input / output / TCON [7] / PWM1	(1), (2), (3), (5), (6), (8)/ 8mA /no slew

■ Power & Ground: 22 pins

Name	I/O	Pin No	Description
3.3V Power	P	49,121	VCCIO: 2
3.3V Ground	G	48,120	GNDIO: 2
3.3V Power	P	58,71,83,95,110	PVCC: 5
3.3V Ground	G	57,72,84,96,109	PGND: 5
2.5V Power	P	45,69,98,127	VCCK: 4
2.5V Ground	G	44,70,97,128	GNDIK: 4

Note: (1) TTL compatible CMOS Input ($V_t=1.7V$); VCC=3.3V;
(2) 5V tolerance pad;
(3) Internal 75K Ohms pull high resistor.
(4) Internal 75K Ohms pull low resistor.
(5) Schmitt trigger CMOS Input ($V_t=1.4\sim 2.2V$);
(6) Open-Drain, Output Drive low & Pull-high.
(7) Bi-directional input/output
(8) Programmable driving current (2~10mA)
(9) TTL output 5V & 3.3V
(10) 4V tolerance pad

C, MTV512M

The MTV512M micro-controller is an 8051 CPU core embedded device especially tailored for flat panel display applications. It includes an 8051 CPU core, 768-byte SRAM, 4 channels of 6-bit ADC, 3 external counters/timers, 6 channels of PWM DAC, VESA DDC interface, and a 64K-byte internal program Flash-ROM memory in 44-pin PLCC package

FEATURES

- 8051 core, 12MHz operating frequency with single/double CPU clock option
- 0.35um process; 3.3V power supply
- 768-byte RAM; 64K-byte program Flash memory
- Maximum 6 channels of PWM DAC
- Compliant with VESA DDC1/2B/2Bi/2B+ standard
- Dual slave IIC addresses; two H/W auto transfer DDC1/DDC2x data for both D-sub and DVI interfaces
- Watchdog timer with programmable interval

- Support external counters/timers, 1 & 2
- Single/double frequency clock output
- Two external interrupts, INT1 is shared with Slave IIC interrupt source.
- Maximum 4 channels of 6-bit ADC
- Flash-ROM code protection selection
- 44-pin PLCC package

D. INVERTER

In order to drive the CCFLs embedded in the panel module, there is a push-pull inverter to convert by the controller. from input 24V up to hundreds of AC voltage output peak to peak.

The inverter is formed by symmetric in order to drive the separate lamp modules.

The input stage consists of a PWM controller, push-pull inverter, and switching MOSFET to convert DC input into AC output.

The output stage consists of a tuning capacitor, transformer, and push-pull MOSFET pair to boost AC output up to hundreds of voltage peak to peak.

And one resistor is serial to lamp for output voltage feedback.

There are two signals which control the inverter come from system to turn on the inverter and control brightness.

Logic "low" level which send to U901 is turn on the inverter.

BL-ADJ signal control brightness by DC level which was integral from PWM signal.

5. Adjustment Procedure

1. Function test

1.1 products: 19" LCD Monitor

1.2 test equipment: Color video Signal& pattern (Or PC with SXGA resolution and a sound card)

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

A: in room temperature

B with full white screen ,RGB ,and black

C. with cycled display model: 1280 x 1024 @ 60Hz

1.4 Test display& Pattern

1.4.1 Compatible model

Item	Timing	Analog
1	640 x 350 @ 70Hz, 31.5kHz	Yes
2	640 x 480 @ 50Hz, 24.68KHZ	Yes
3	640 x 480 @ 60Hz, 31.5kHz	Yes
4	MAC 640 x 480 @ 67Hz, 35.0kHz	Yes
5	640 x 480 @ 72Hz, 37.9kHz	Yes
6	640 x 480 @ 75Hz, 37.5kHz	Yes
7	640 x 480 @ 85Hz, 43.27kHz	Yes
8	720 x 400 @ 70Hz, 31.5kHz	Yes
9	800 x 600 @ 56Hz, 35.1kHz	Yes
10	800 x 600 @ 60Hz, 37.9kHz	Yes
11	800 x 600 @ 72Hz, 48.1kHz	Yes
12	800 x 600 @ 75Hz, 46.9kHz	Yes
13	800 x 600 @ 85Hz, 53.7kHz	Yes
14	MAC 832 x 624 @ 75Hz, 49.7kHz	Yes
15	1024 x 768 @ 60Hz, 48.4kHz	Yes
16	1024 x 768 @ 70Hz, 56.5kHz	Yes
17	1024 x 768 @ 72Hz, 58.1kHz	Yes
18	1024 x 768 @ 75Hz, 60.0kHz	Yes
19	1024 x 768 @ 85Hz, 68.67KHZ	Yes
20	1152 x 864 @ 75Hz, 67.5KHZ	Yes
21	MAC 1152x870@75HZ, 68.68KHZ	Yes
22	1280 x 960 @ 60Hz, 44.93KHZ	Yes
23	1280 x 960 @75Hz, 56.25KHZ	Yes
24	1280 x 1024 @ 60Hz, 63.98KHZ	Yes
25	1280 x 1024 @ 75Hz, 79.97KHZ	Yes

*1. Tolerance $\geq \pm 2\text{kHz}$.

*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 85Hz mode might be worse than 75Hz.

1.4.2 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 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)

1.5 Function Test and Alignment Procedure

1.5.1 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.

1.5.2 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.

1.5.3 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.

1.5.4 DDC

Test Pattern: EDID program

- Make sure it can pass test program.

1.5.5 Fine Tune and Sharpness

Test Signal: 1280*1024@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.

1.5.6 Boundary

Test Signal: 1280*1024@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.

1.5.7 White Balance

Test Signal: 640*480@60Hz

Test Pattern: White and Black Pattern

1. DDC Key In Procedure

Note: After having assembled the monitor, please do the DDC Key In procedure.

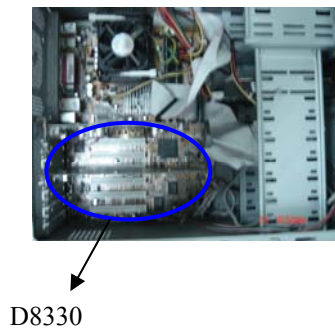
If you find the DDC does not conform to the monitor, please do the DDC Key In again.

1.1 Equipment Needed

- VG921M Series Monitor
- RS232-VGA Cable*1
- RS232-DVI Cable*1
- AC POWER Cable*1
- TEST PC with Windows XP
- Display Data Channel (D8330 DDC Card) to plug PC_PCI_Slot
- DYNACOLOR DDC Tester System software
- Barcode Scanner *1
- AC POWER Source
- One additional monitor for Test System displaying



PC



D8330

DDC CORD



Barcode Scanner



Monitor_VG921M



RS232-VGA Cable



AC POWER Cable



RS232-DVI Cable



DDC TESTER SOFT

1.2 Setup Procedure

1.2.1 Open computer's box cover, plug D8330 CORD in PCI slot, close cover and connect AC power, Monitor, Barcode Scanner, Mouse, Keyboard with PC

1.2.2.1 Connect RS232-VGA cable to DDC RS232 OUT port of PC (if you do DDC Key In for D_SUB)

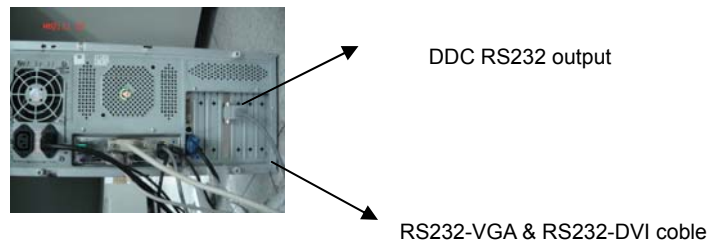
1.2.2.2 Connect RS232-DVI cable to DDC RS232 OUT port of PC (if you do DDC key In for D_DVI)

1.2.3 Turn on PC power, choose DDC Tester System application, run it

1.2.4 Connect AC power, RS232-VGA with VG930 Monitor.

1.2.5 DDC Key In

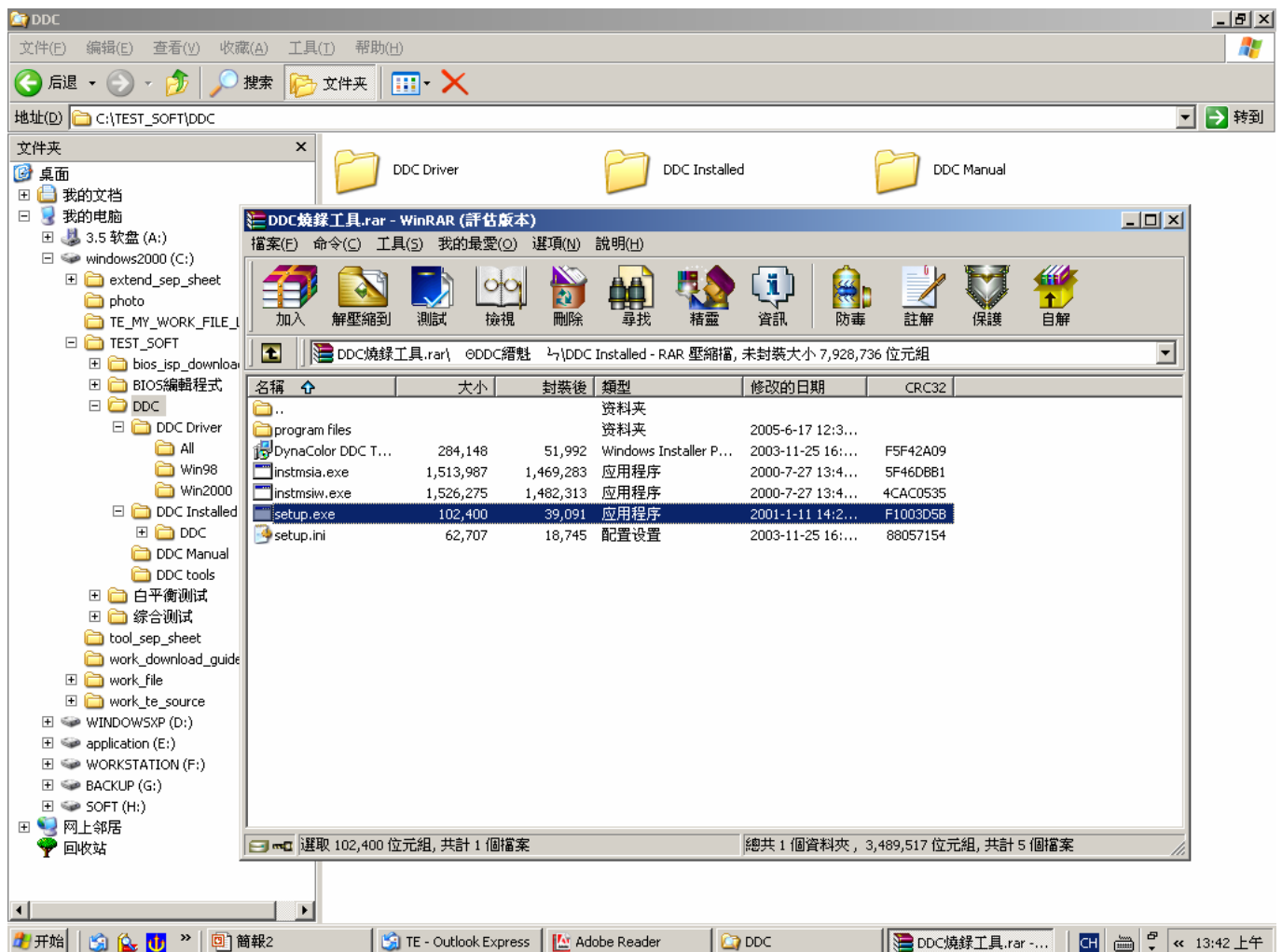
NOTE: Barcode Scanner and Keyboard can plug in Keyboard port of computer together

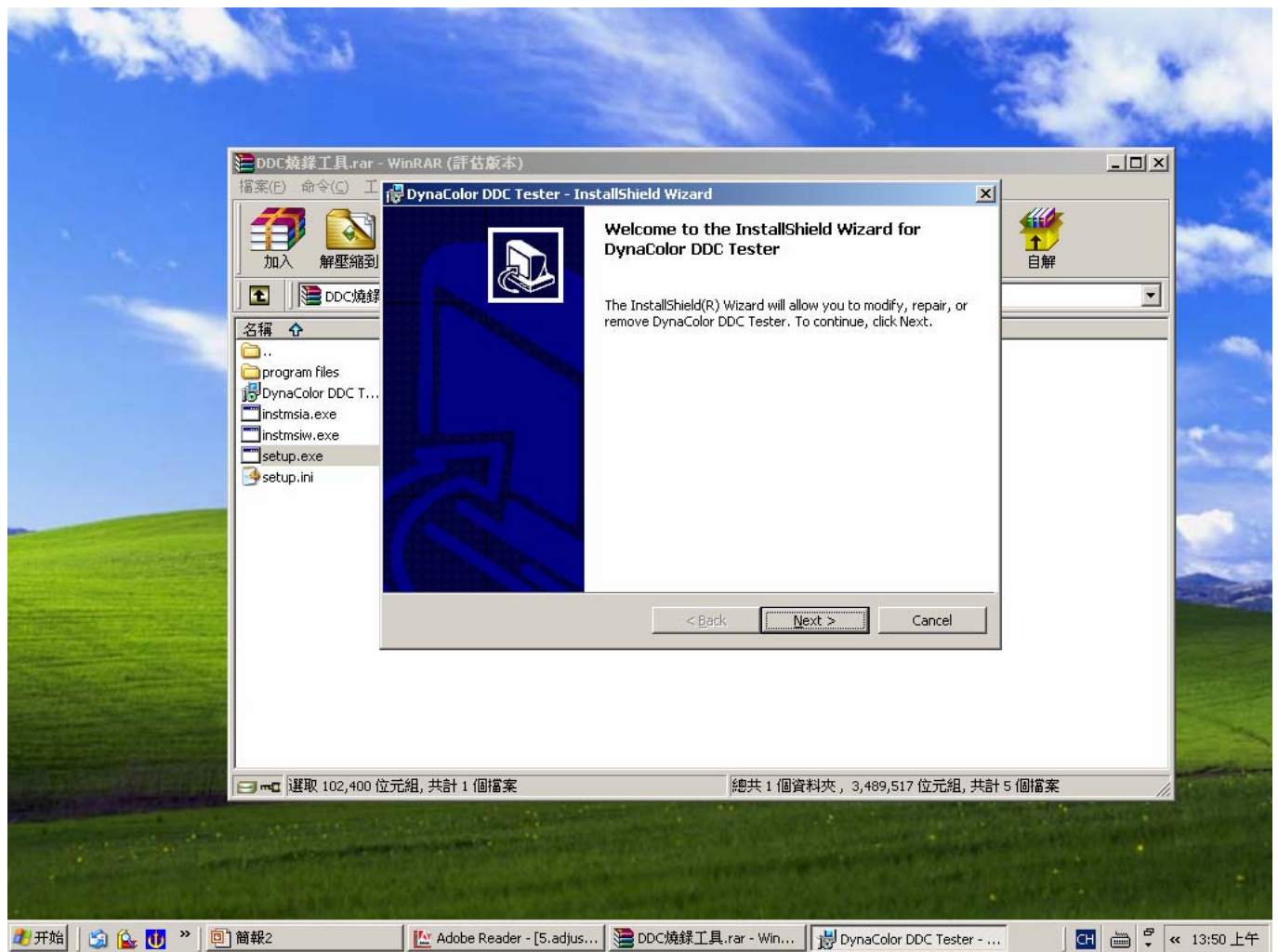


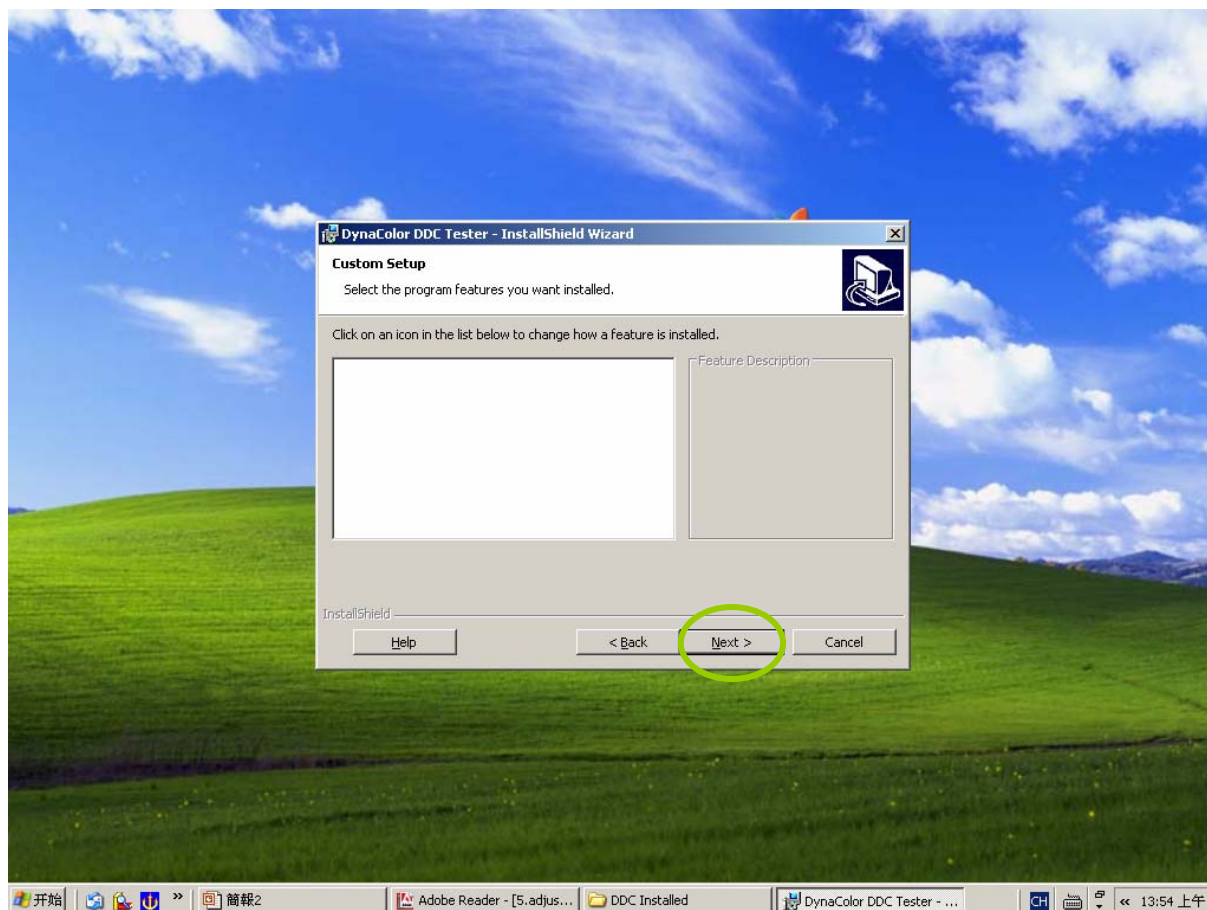
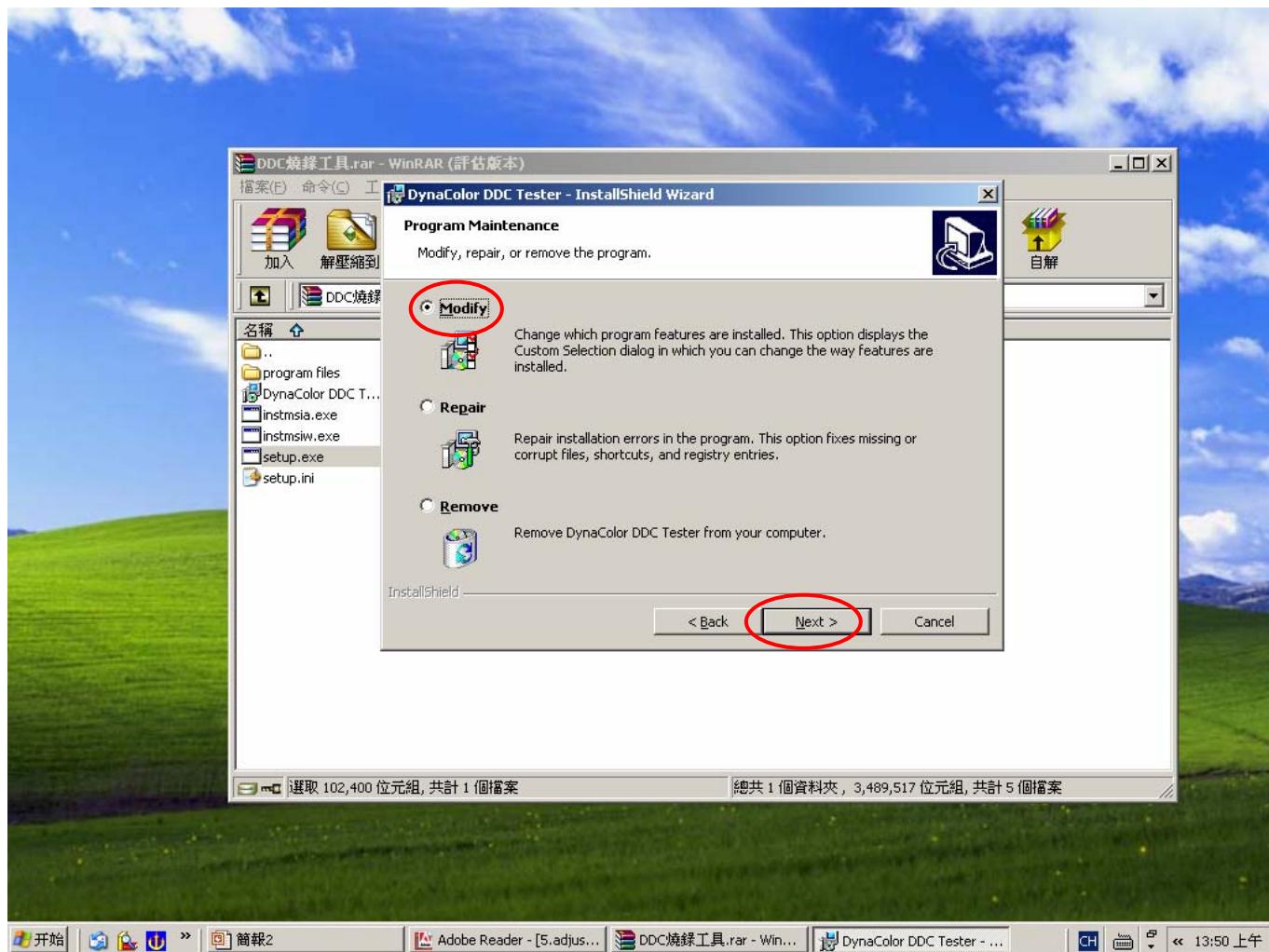
1.3 DDC TESTER SYSTEM SOFT SETUP(from disk file)

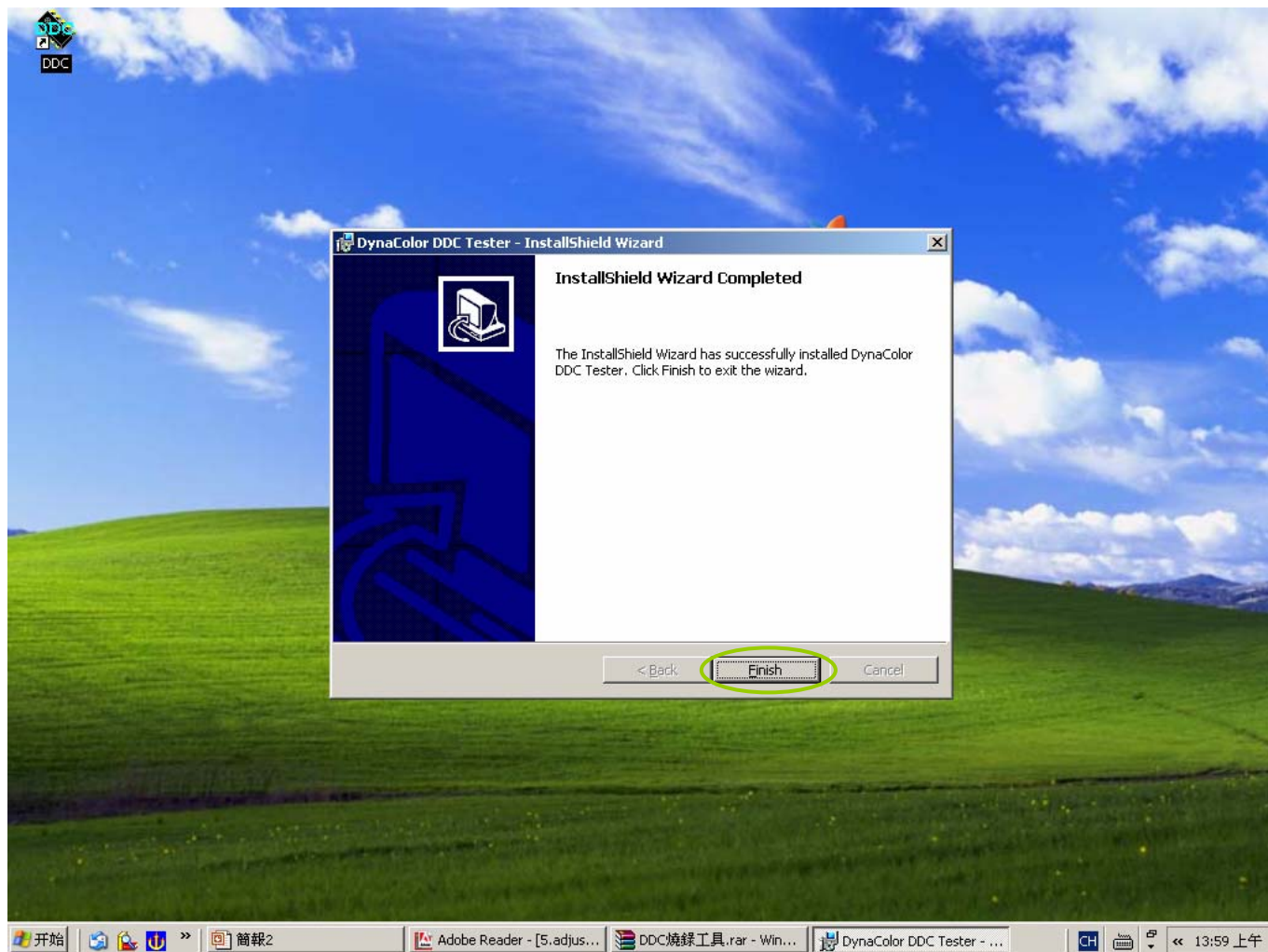
NOTE: Before install DDC Tester System soft, please check that the D8330 CORD is plugged. Or the DDC Tester application couldn't be run.

1.3.1 Install DDC Tester System by selecting and checking "setup.exe" icon. Press "YES" or "NEXT" Buttons until the installation is completed.



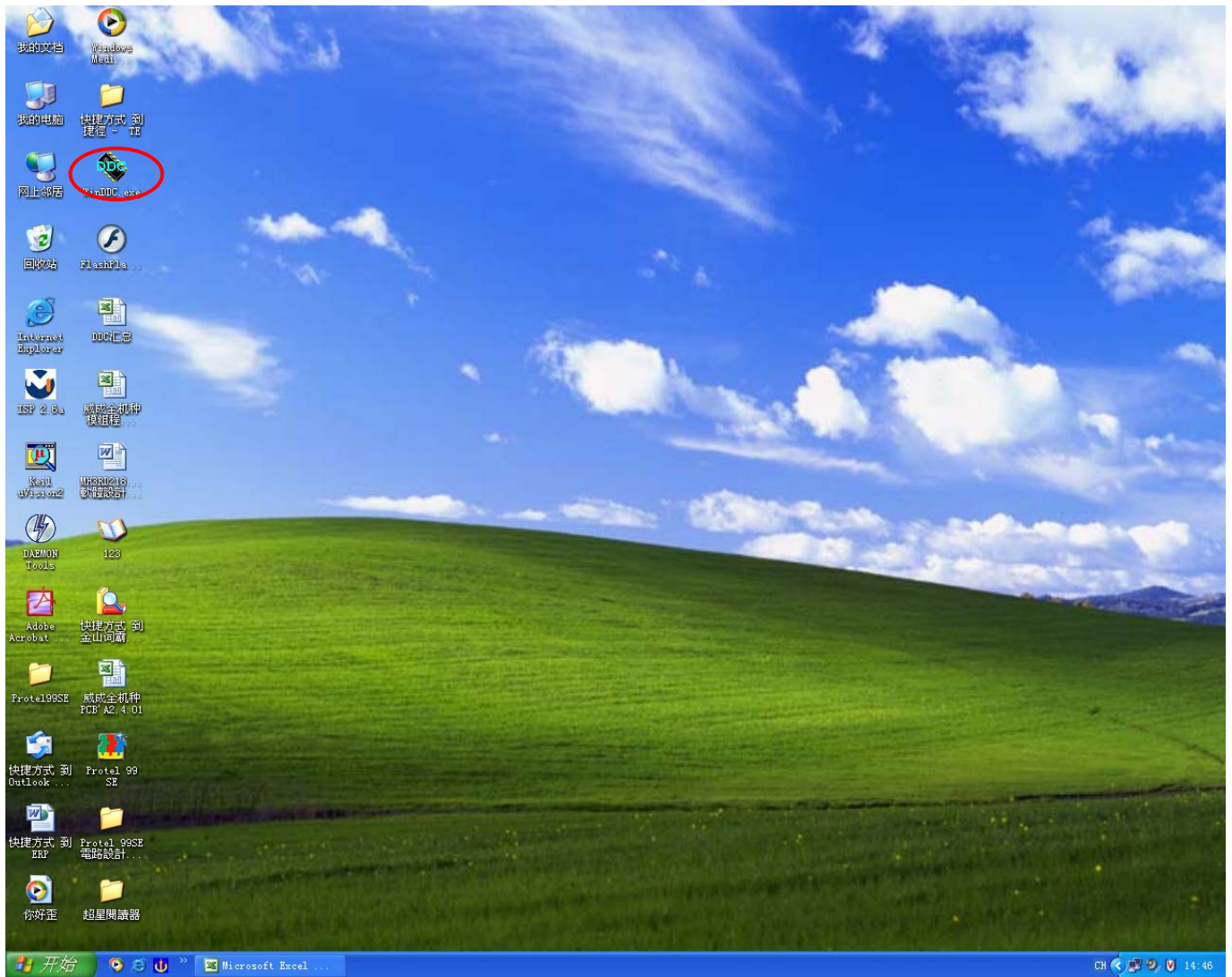






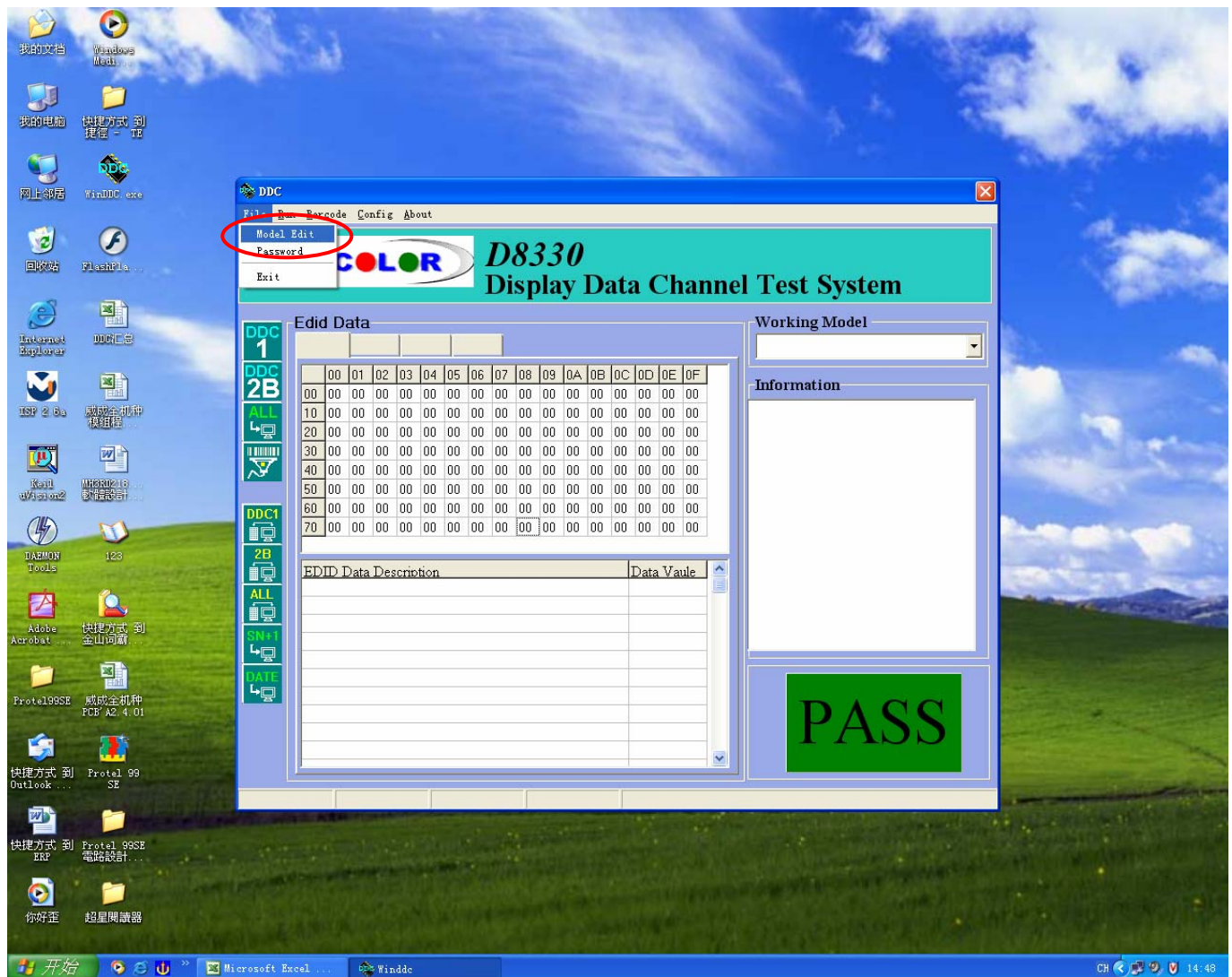
1.4.0 DDC Key In Procedure

Step 1 select and execute DDC Key In program (winDDC.exe icon on desktop)

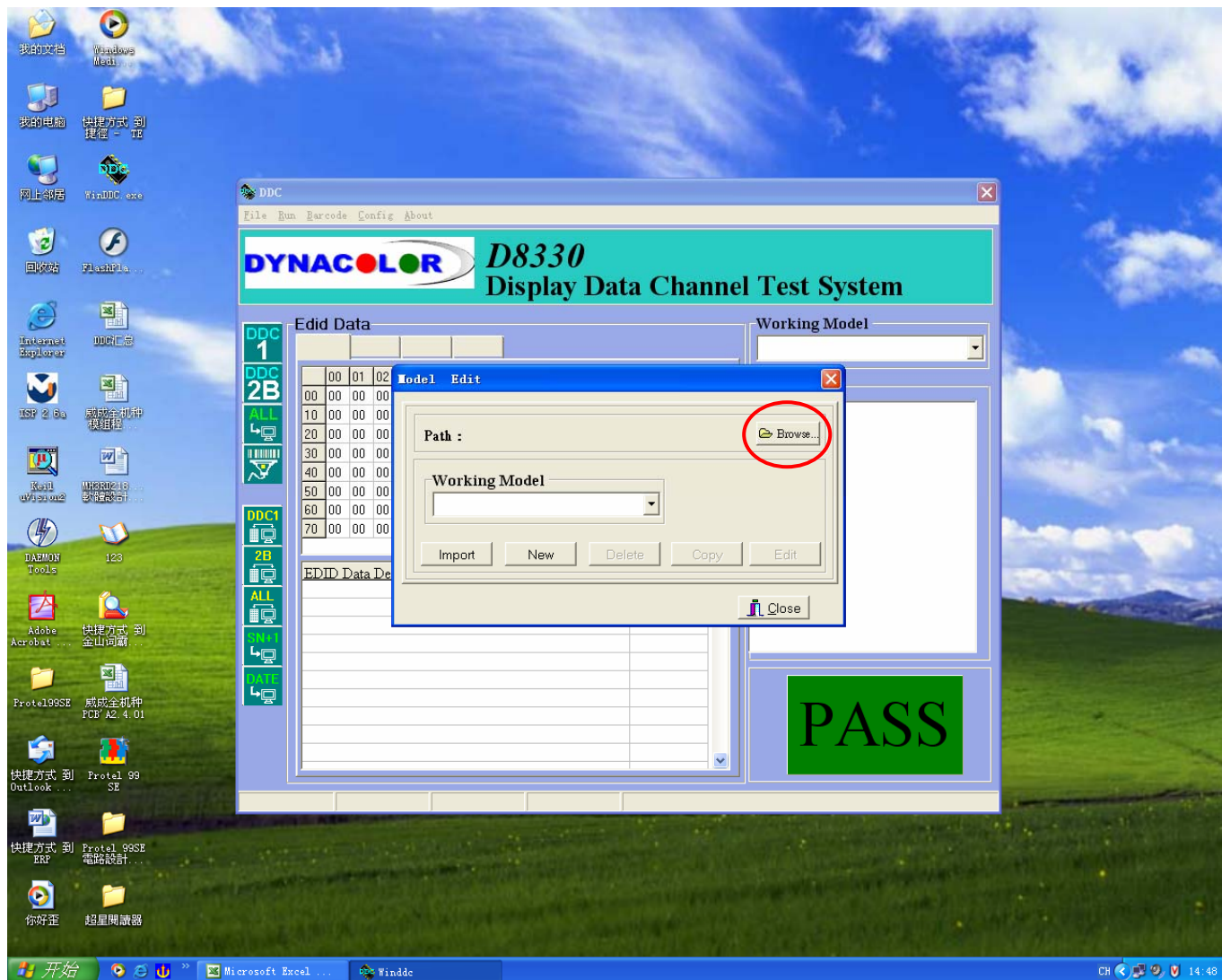


Step 2 Load DDC source file

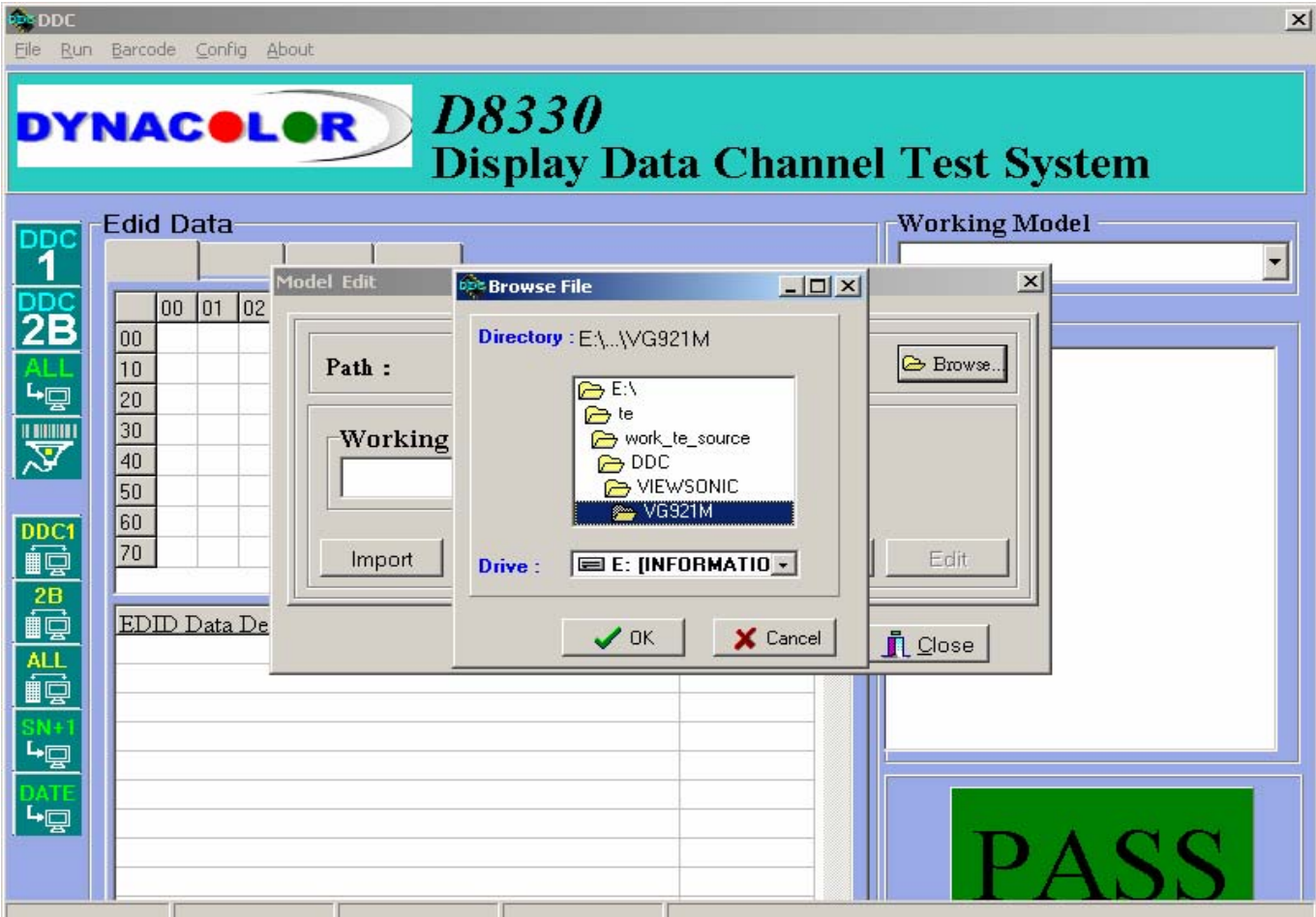
Step2.1 Choose “File “menu, click “Model Edit “button into ” model edit “ dialog



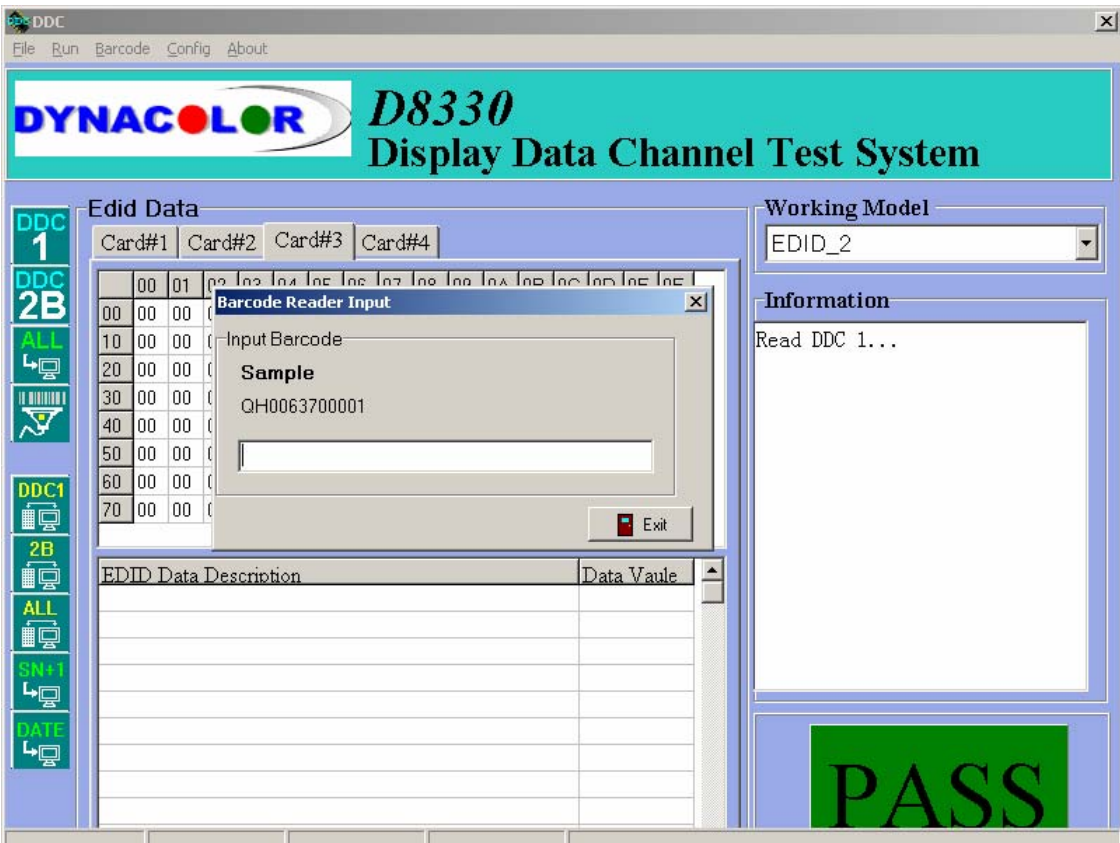
Step2.2 Press "Brower" button set current DDC_LOAD_FILE working path



Step2.3 click “working Model”, select Model in list box



Step3 Double click the “input barcode” icon at the toolbar, Key in the serial number or Use Barcode Scanner to scan the barcode of the monitor. And press the “enter” key.

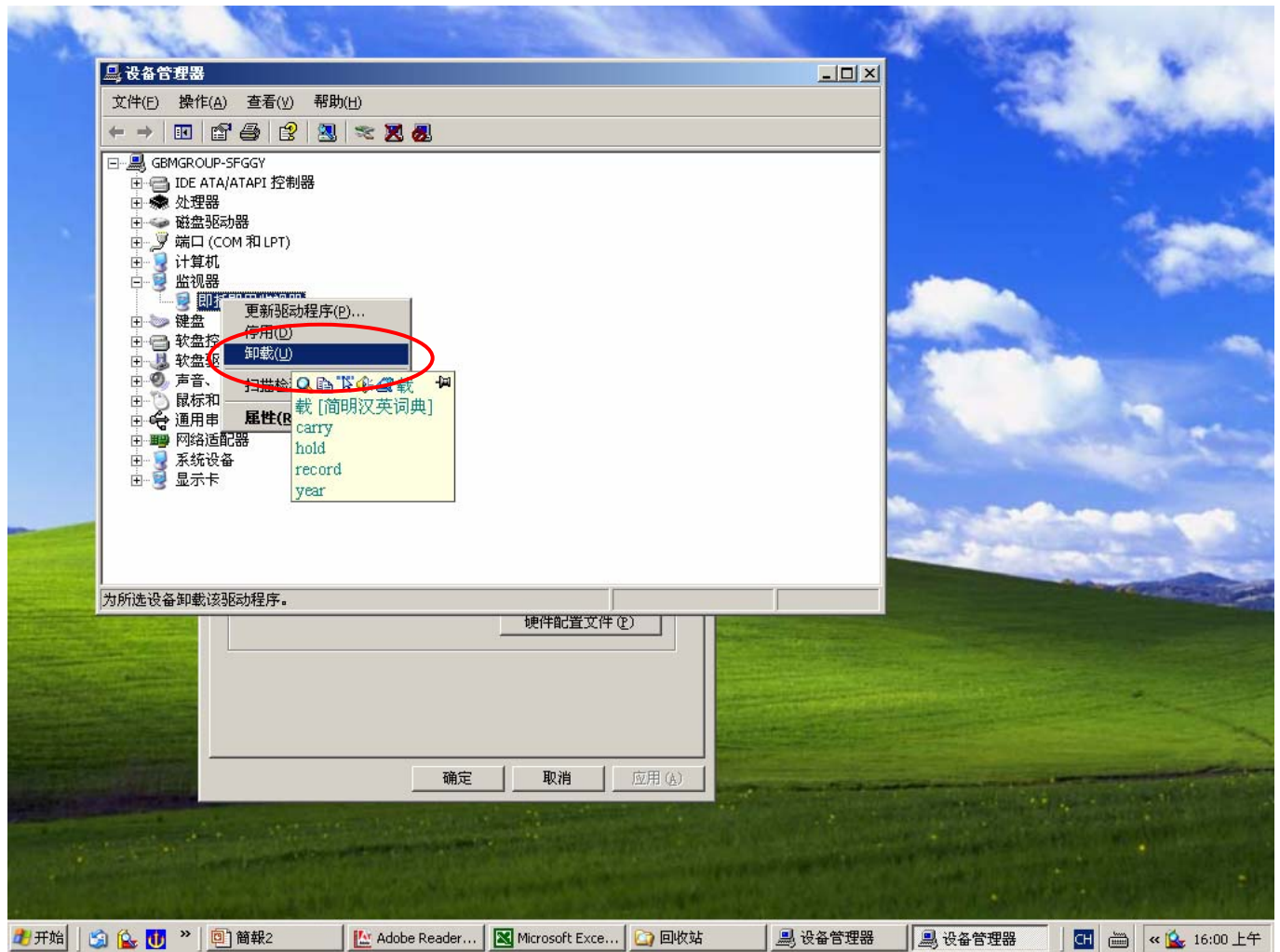


Step 4 Checking Methods

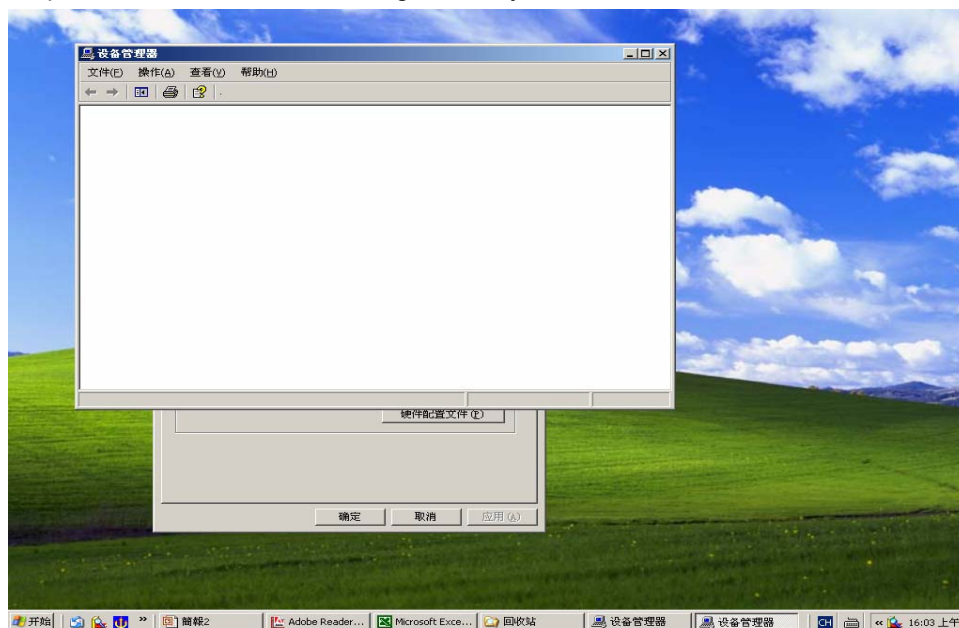
Step5.1 exit "winddc.exe", take RS232-VGA cable out of the monitor, connect the monitor with a computer

By the VGA cable

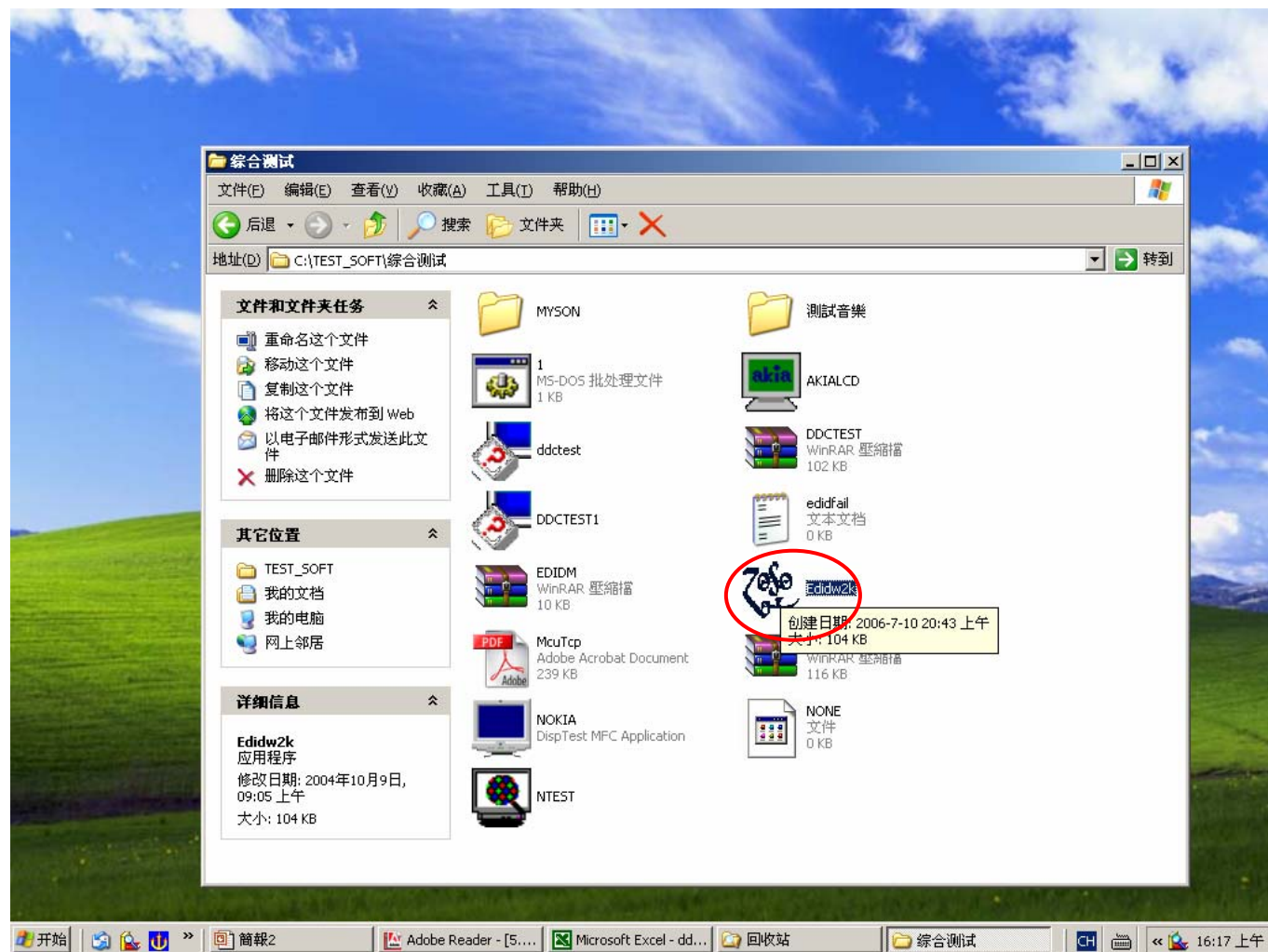
Step5.2 open up the "my computer" attribute dialog box, select the "hardware" option, open "drive management". Below the monitor catalog, uninstall the monitor.



Step4.1 Scan the hardware change, until system find the new monitor driver



Step4.2 Select and click the “EDIDW2K.EXE” file, the EDID information will show on the screen



Setp4.3 Check the DDC

```

EDIDW2K
View Test Refresh Rate Options

/////////Displaying Monitor EDID/////////

128 bytes EDID Data (Hex):

  0  1  2  3  4  5  6  7  8  9
0: 00 FF FF FF FF FF FF 00 5C A9
10: 01 00 49 07 00 00 0D 0F 01 03
20: 00 26 1E 78 2E 6D 55 A2 5A 4E
30: 9B 23 16 50 54 BF EF 80 81 80
40: 71 4F 00 00 00 00 00 00 00 00
50: 00 00 00 00 30 2A 00 98 51 00
60: 2A 40 30 70 13 00 78 2D 11 00
70: 00 1E 00 00 00 00 00 00 00 00
80: 00 00 00 00 00 00 00 00 00 00
90: 00 00 00 FD 00 38 4B 1F 53 0E
100: 00 0A 20 20 20 20 20 20 00 00
110: 00 FC 00 0A 20 20 20 20 20 20
120: 20 20 20 20 20 20 00 AF

Decoded EDID data

<---Header--->
Header:          00 FF FF FF FF FF FF 00
<-x-Header-x->

<---Vendor/Product Identification--->
ID Manufacturer Name:  WEI
ID Product Code:       1
ID Serial Number:      00000749
Week of Manufacture:   13
Year of Manufacture:   2005
<-x-Vendor/Product Identification-x->

<---EDID Structure Version/Revision--->
EDID Version#:        1
EDID Revision#:       3
<-x-EDID Structure Version/Revision-x->

<---Basic Display Parameters/Features--->
Video i/p definition:  Analog
Setup:                 Blank-to-Black not expected
Seperate Syncs. support: No
Composite Sync. support: No
Vsync. Pulse:         serration not required
Max Horz Image Size:   38 cm.
Max Vert Image Size:   30 cm.
Display Gamma:         2.2
Display Type:          RGB color display
Standard Default Color Space: Yes

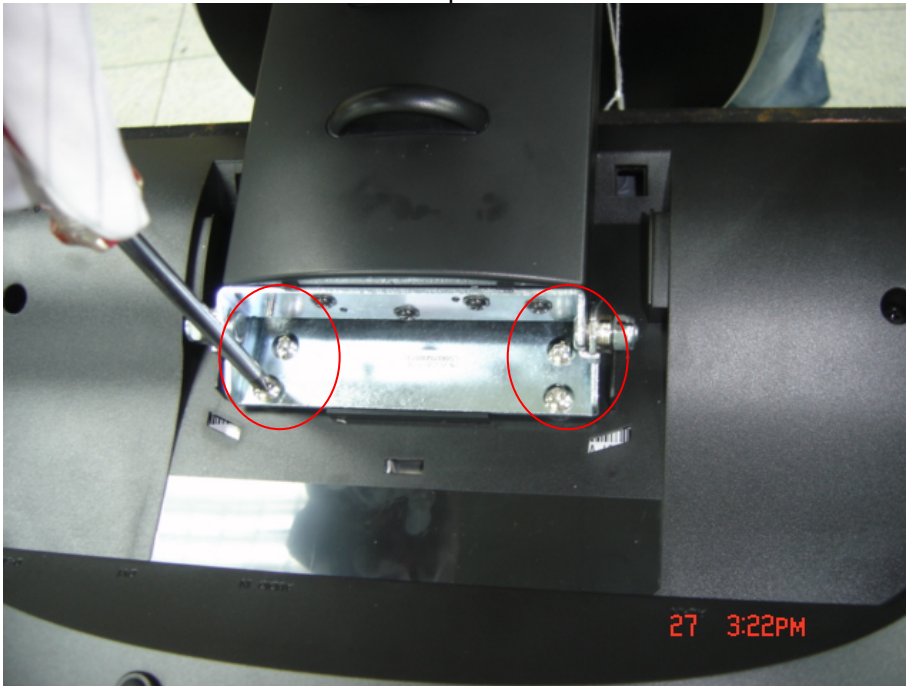
```

Packing For Shipping and Disassembly Procedure

1. Take off the cover of the Bracket



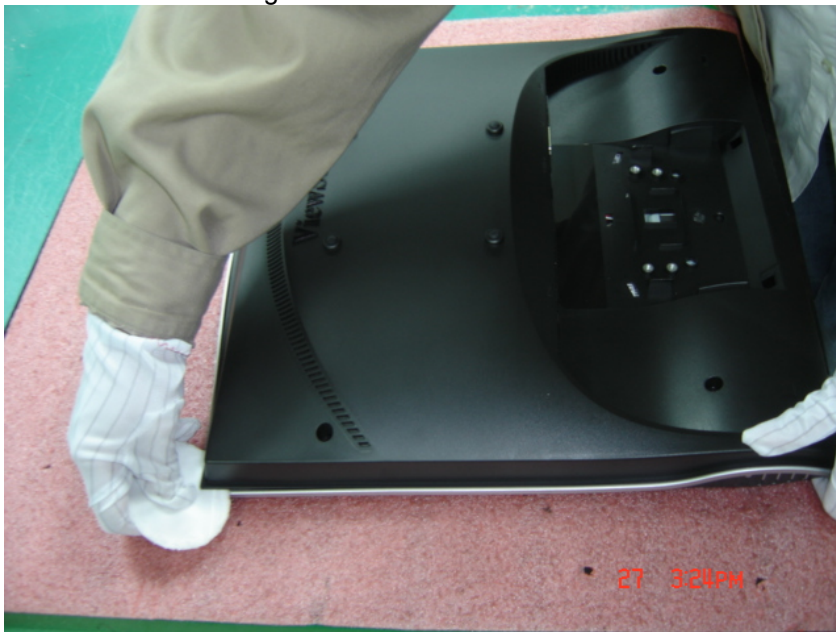
2. Pull the four screws which can fix up the Bracket



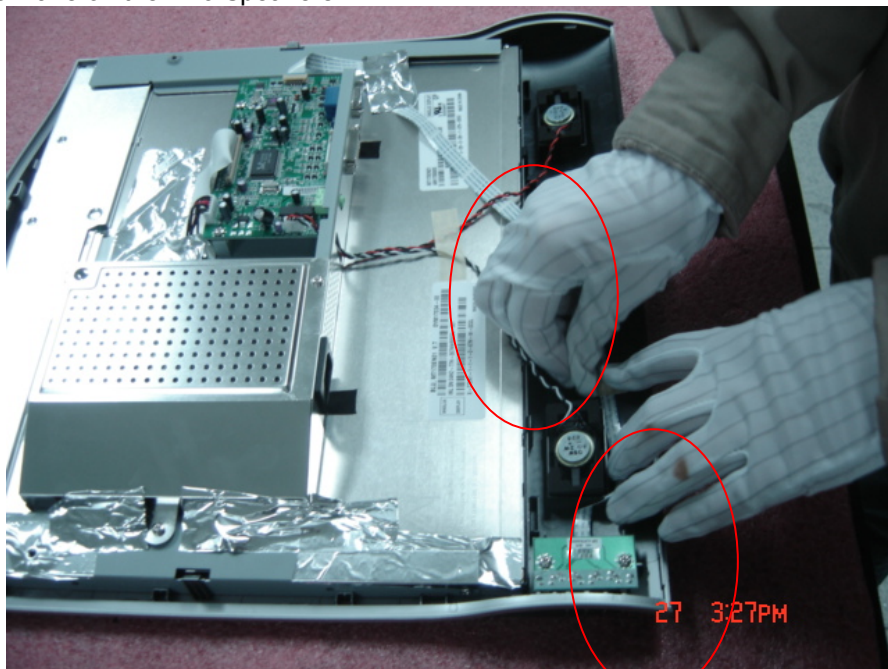
3. Take off the three screws from the housing



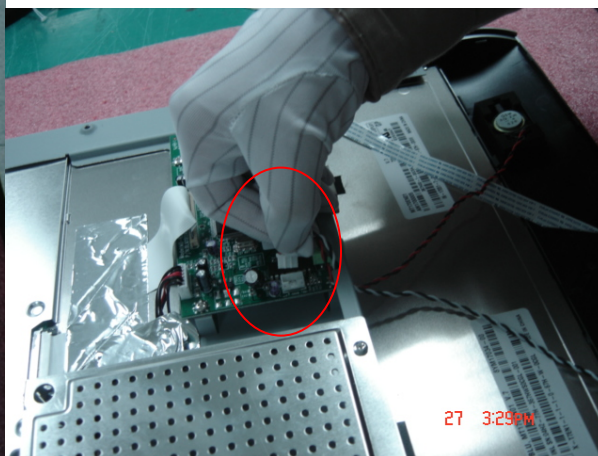
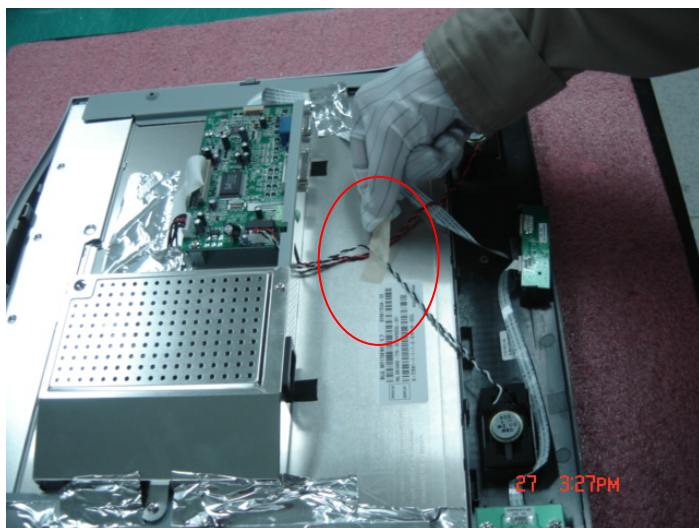
4. Remove the housing



5. Take off the Two Speakers



6. Pull off the cables which can fix up the speakers and then pull out the speaker cables



7. tear off the AL foil from the key board and then pull out the cables



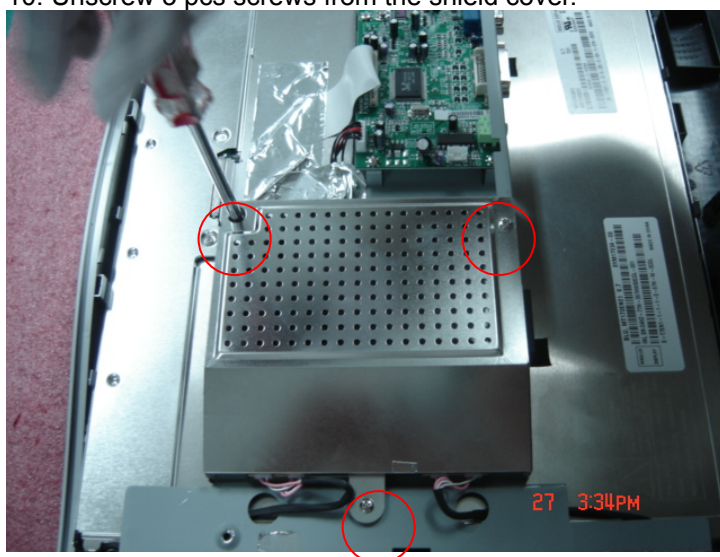
8. Take out the screws from the key board



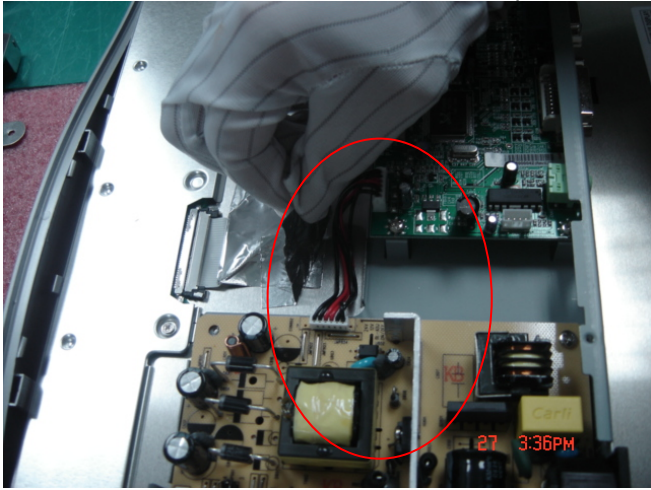
9. take off the AL foil (4pcs) from the lamp cable



10. Unscrew 3 pcs screws from the shield cover.



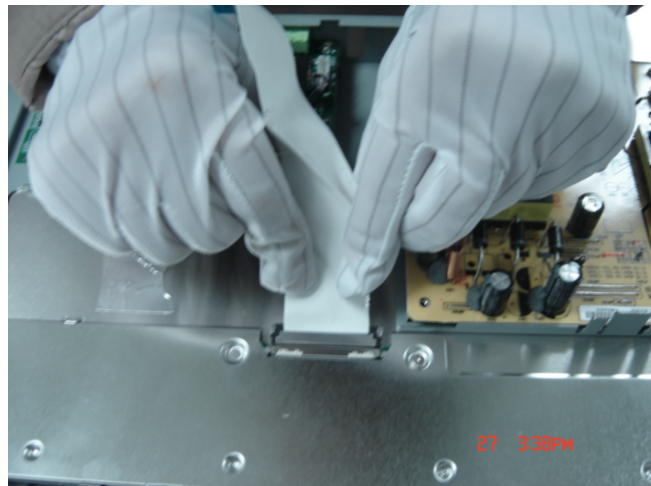
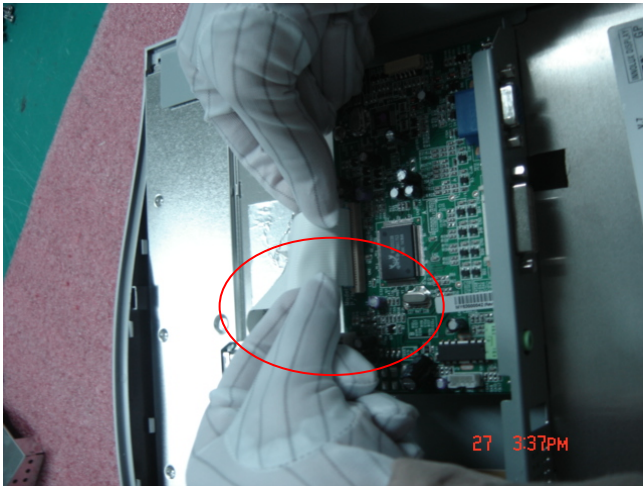
11 Take out the AL foil which connector the power board and main board



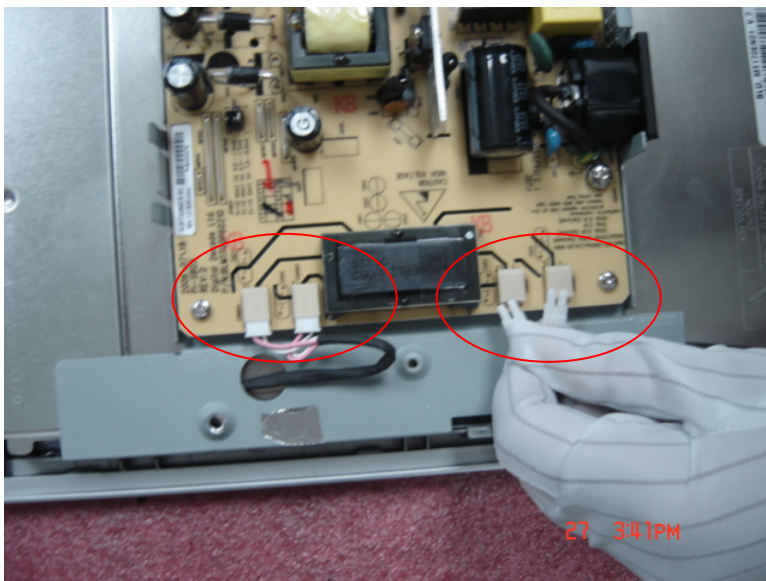
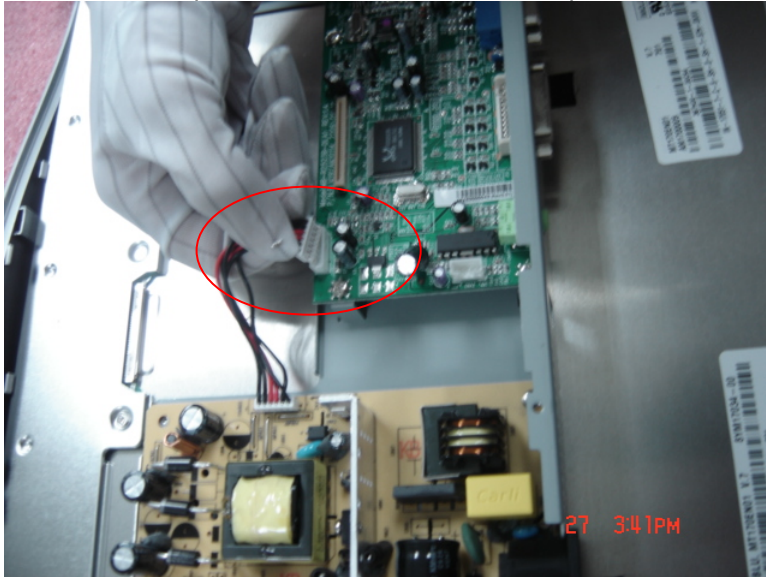
11. Tear off the aluminum foil from the FFC cable



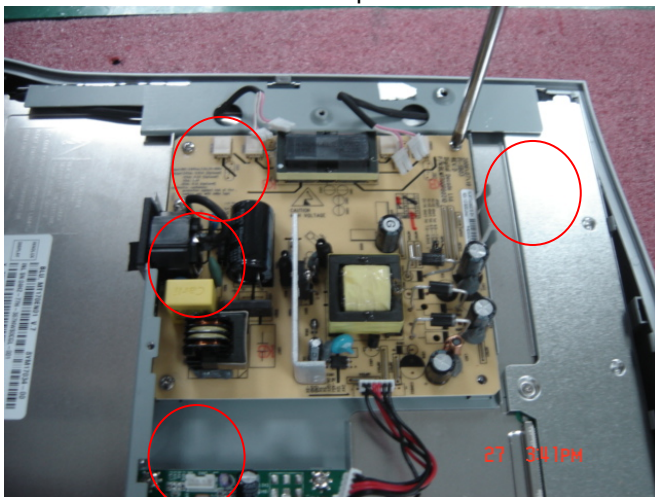
11. Take off the FCC Cable



12 Take out the power board connector and lamp wire



13. Unscrew screws from the power board and take off Power board



14. Unscrew screws from the main board and take off the screws

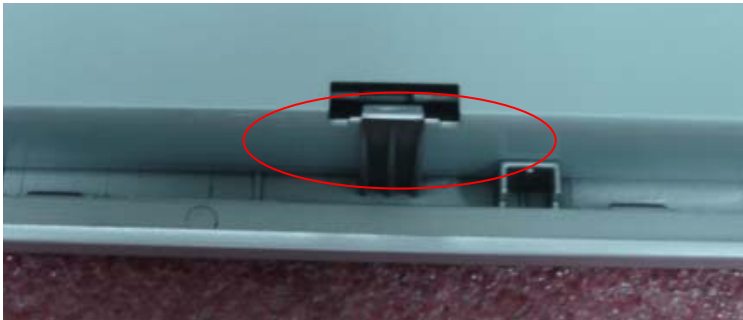


15. Unscrew the six corner screws(4pcs)and then take off the main board





16. Take off the bezel

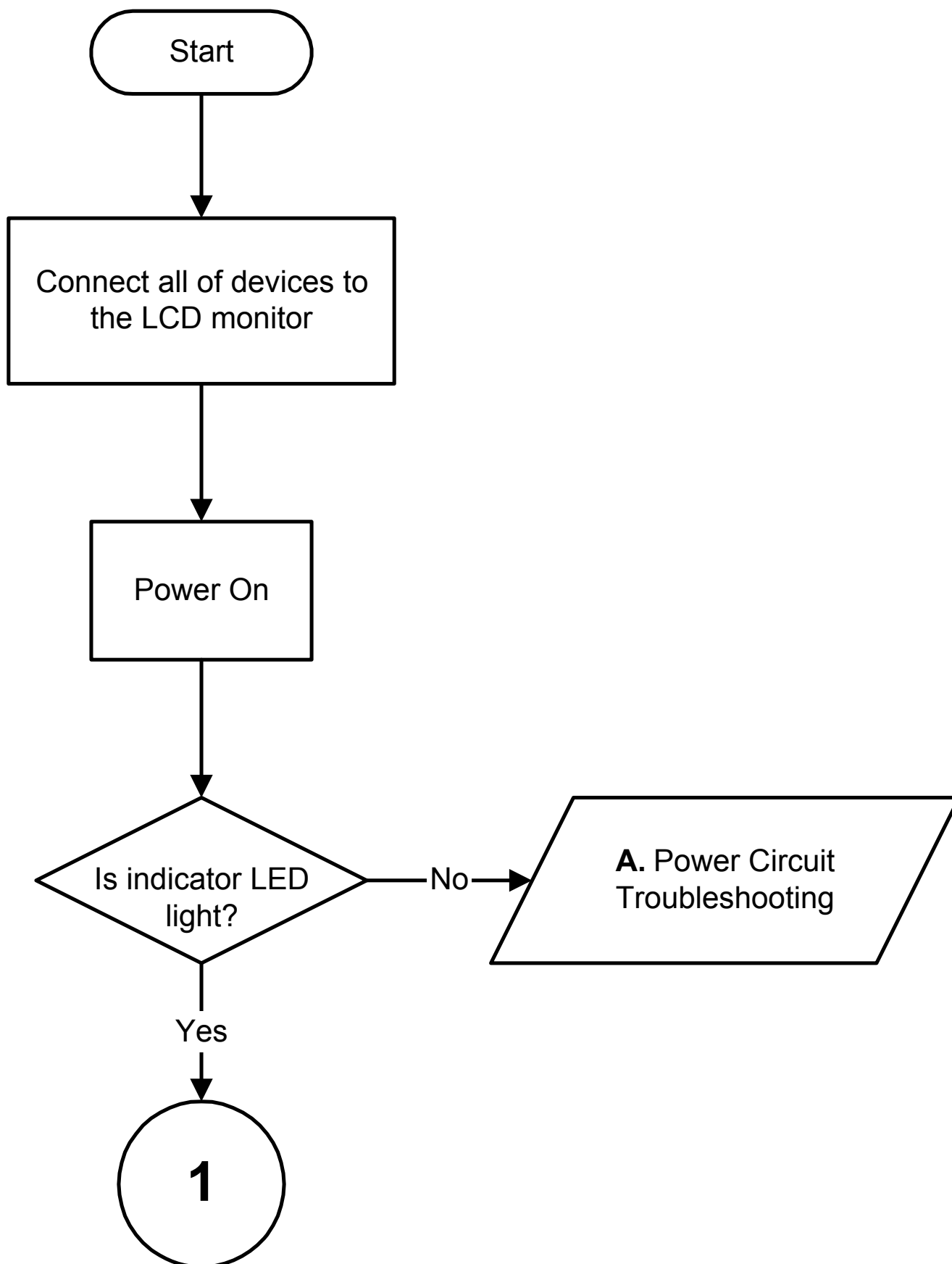


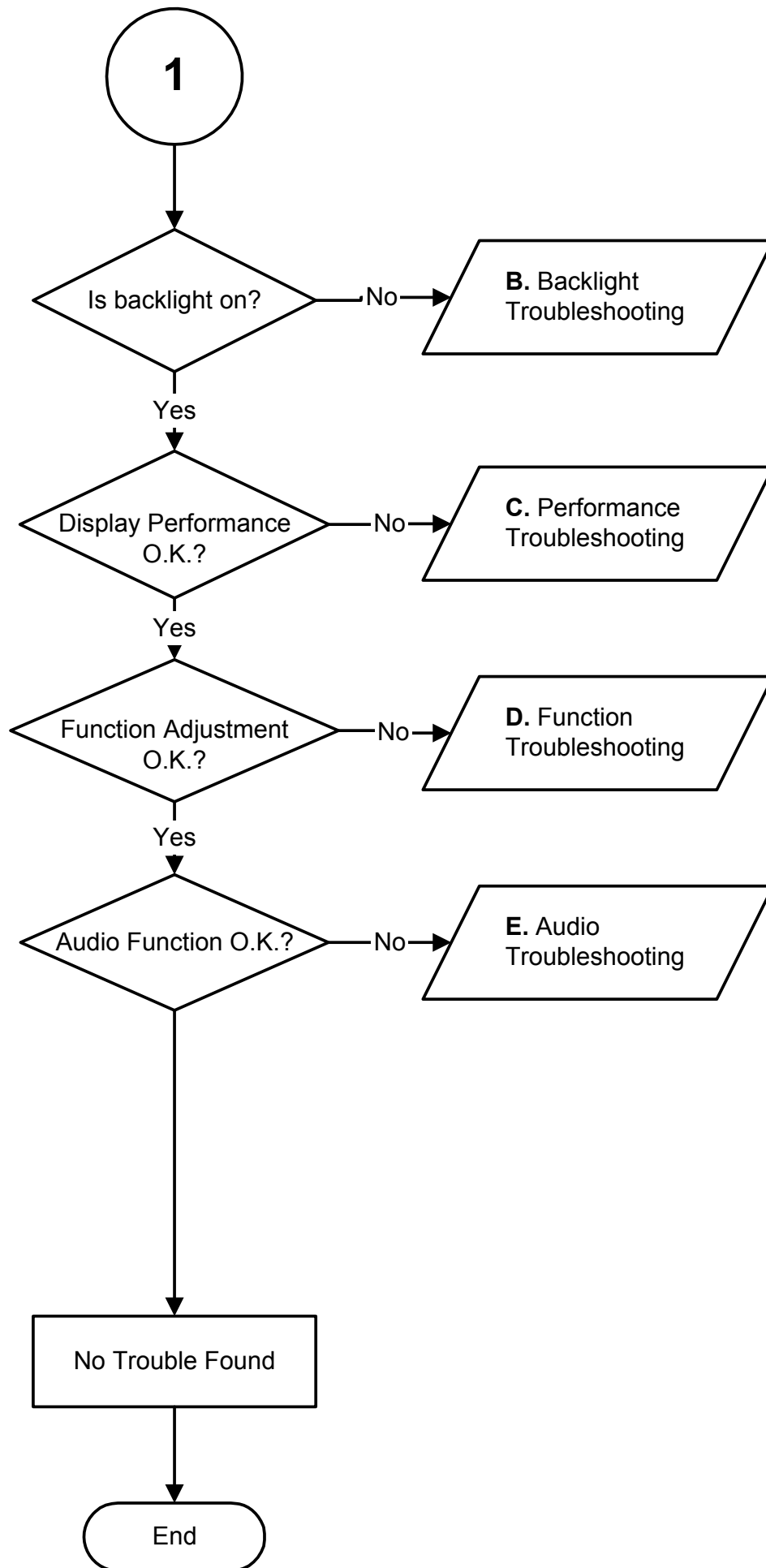
17. Unscrew the screws(4pcs) from the frame and then take off the frame



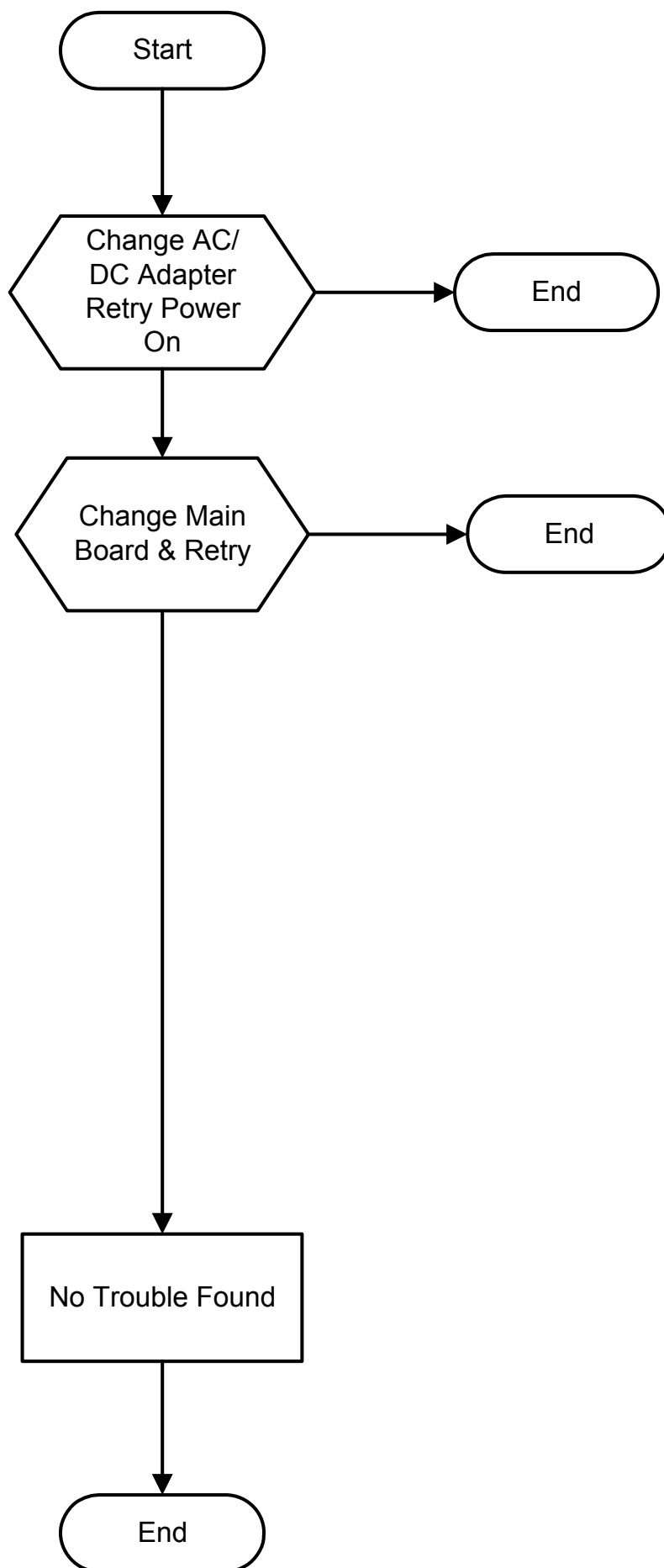
6. Troubleshooting Flow Chart

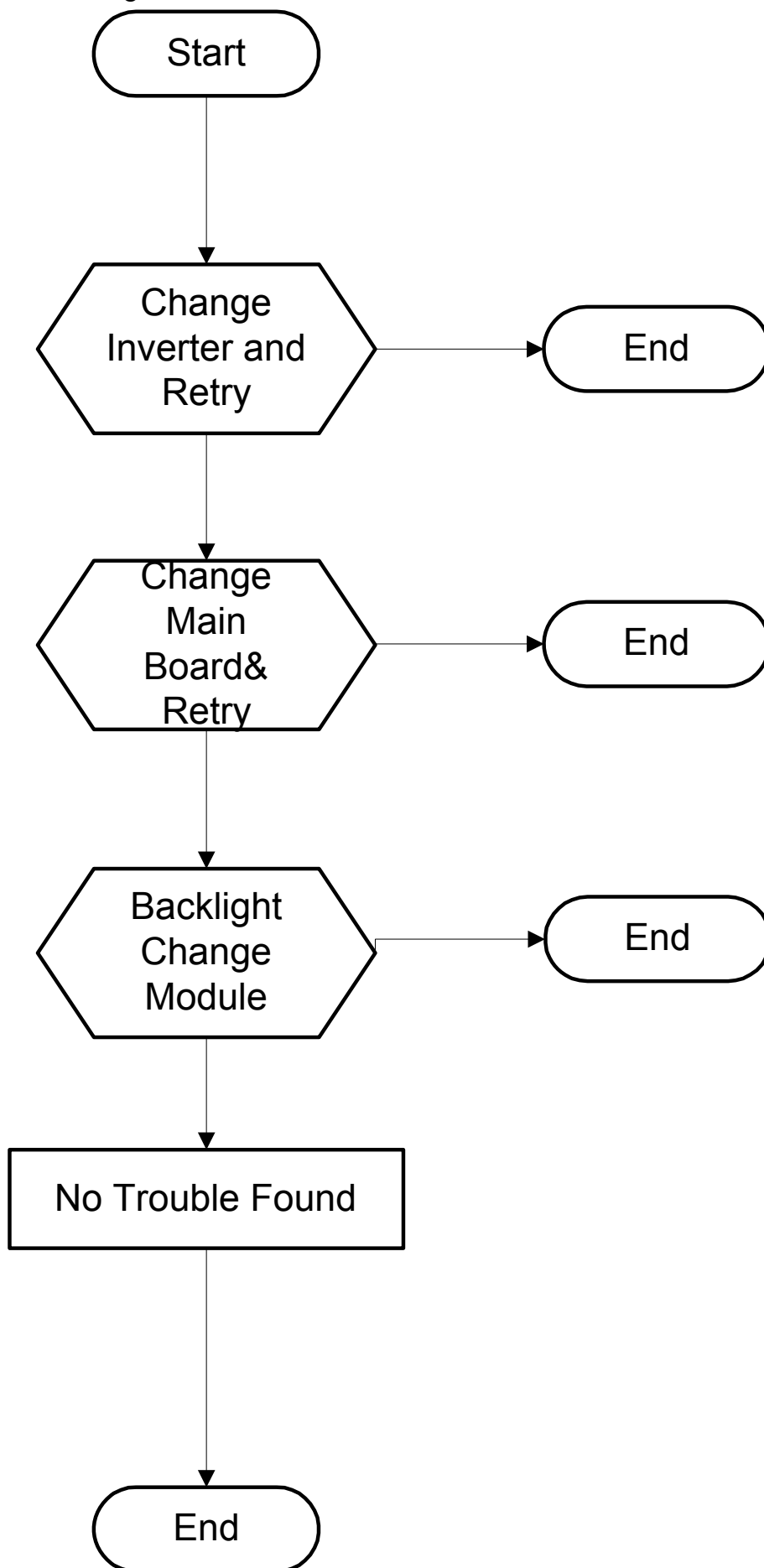
Main Procedure



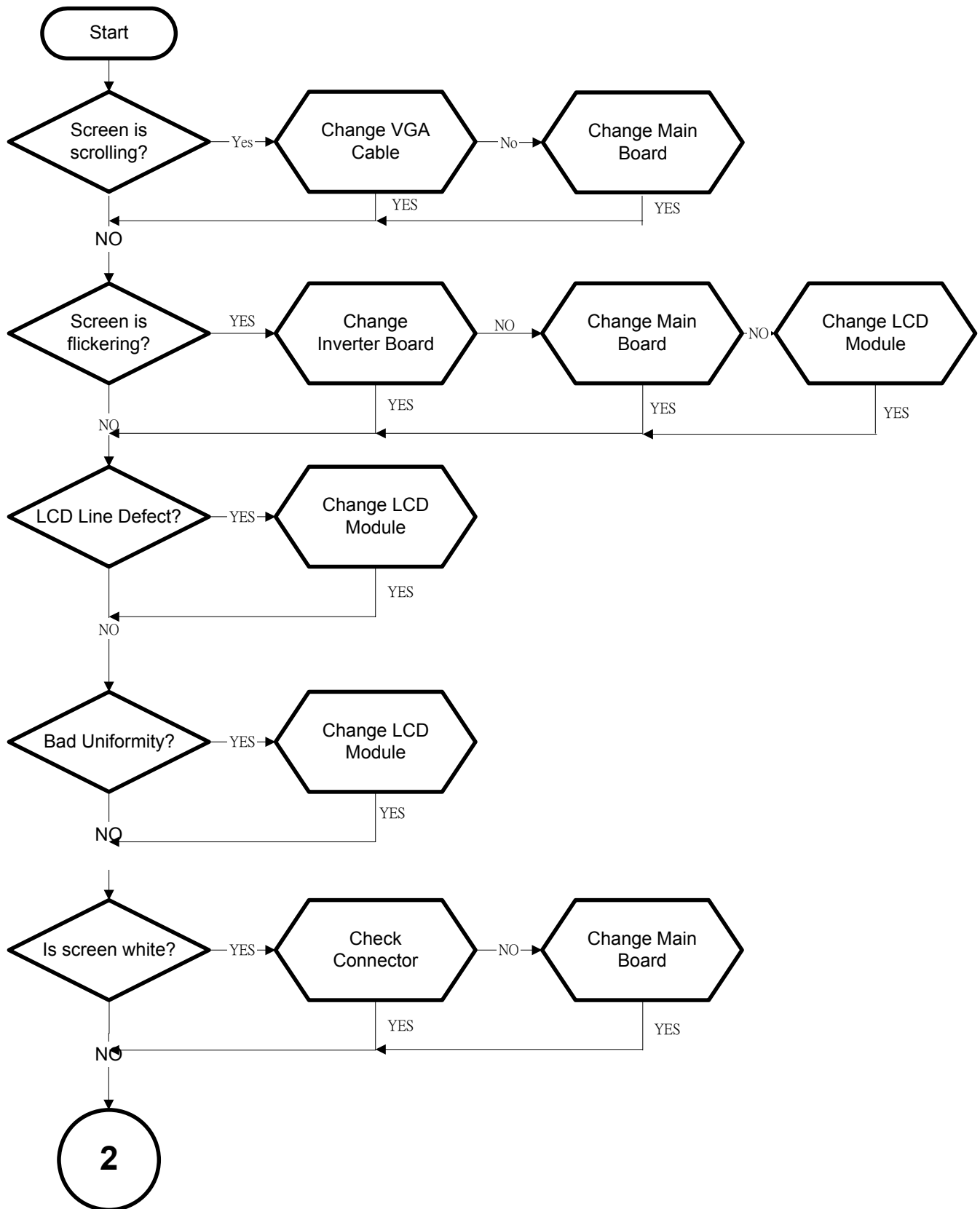


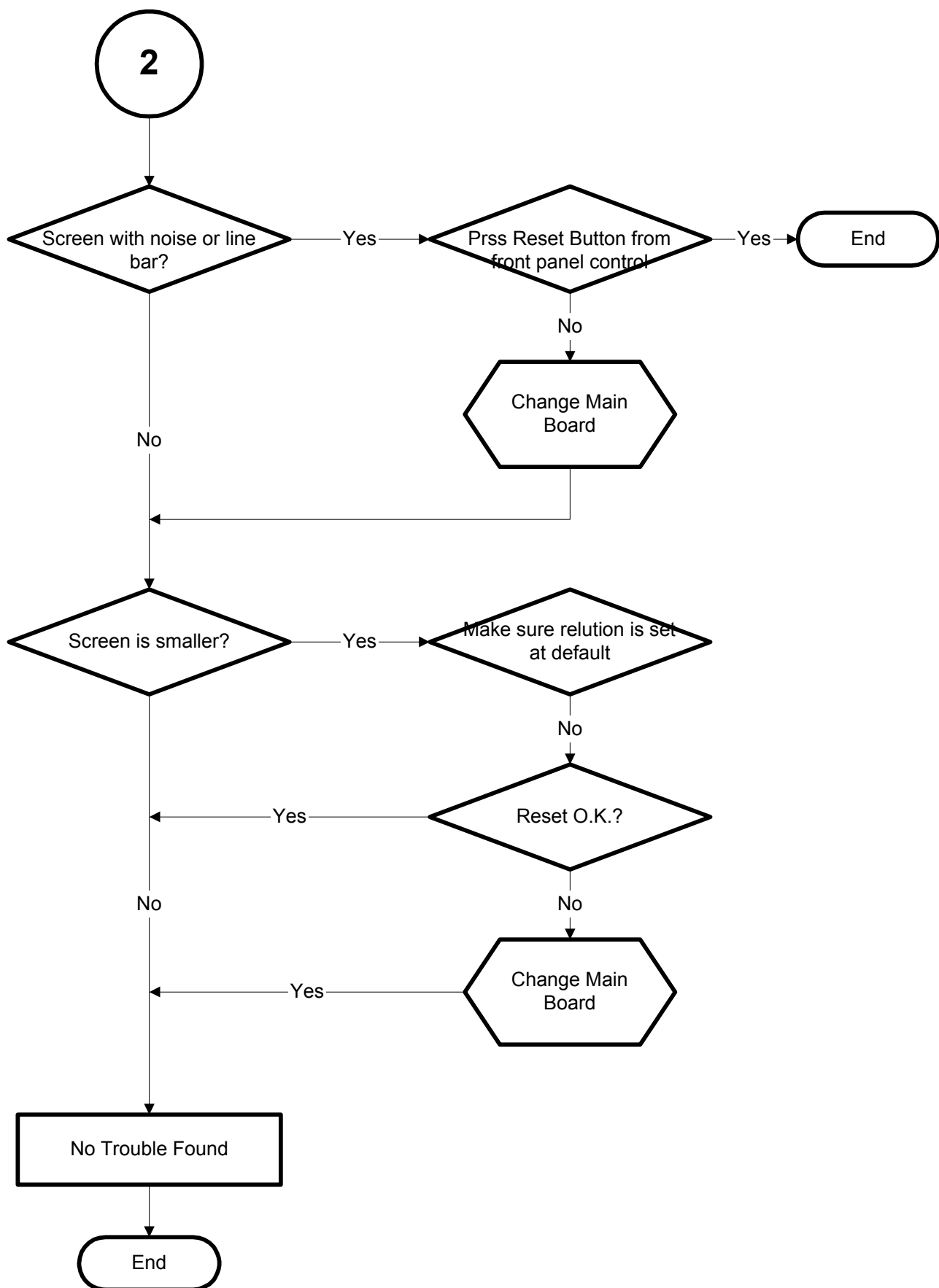
A. Power Circuit Troubleshooting

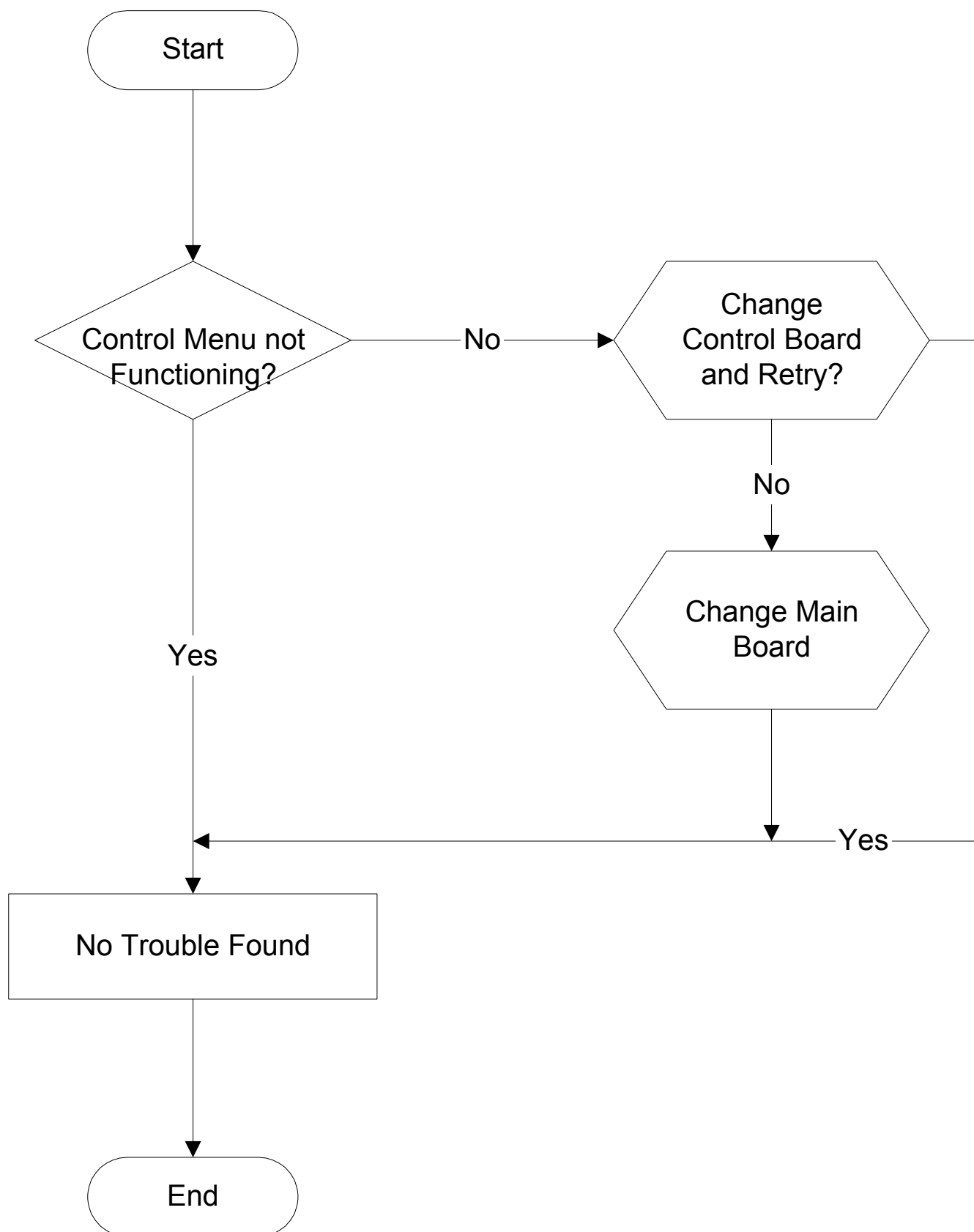




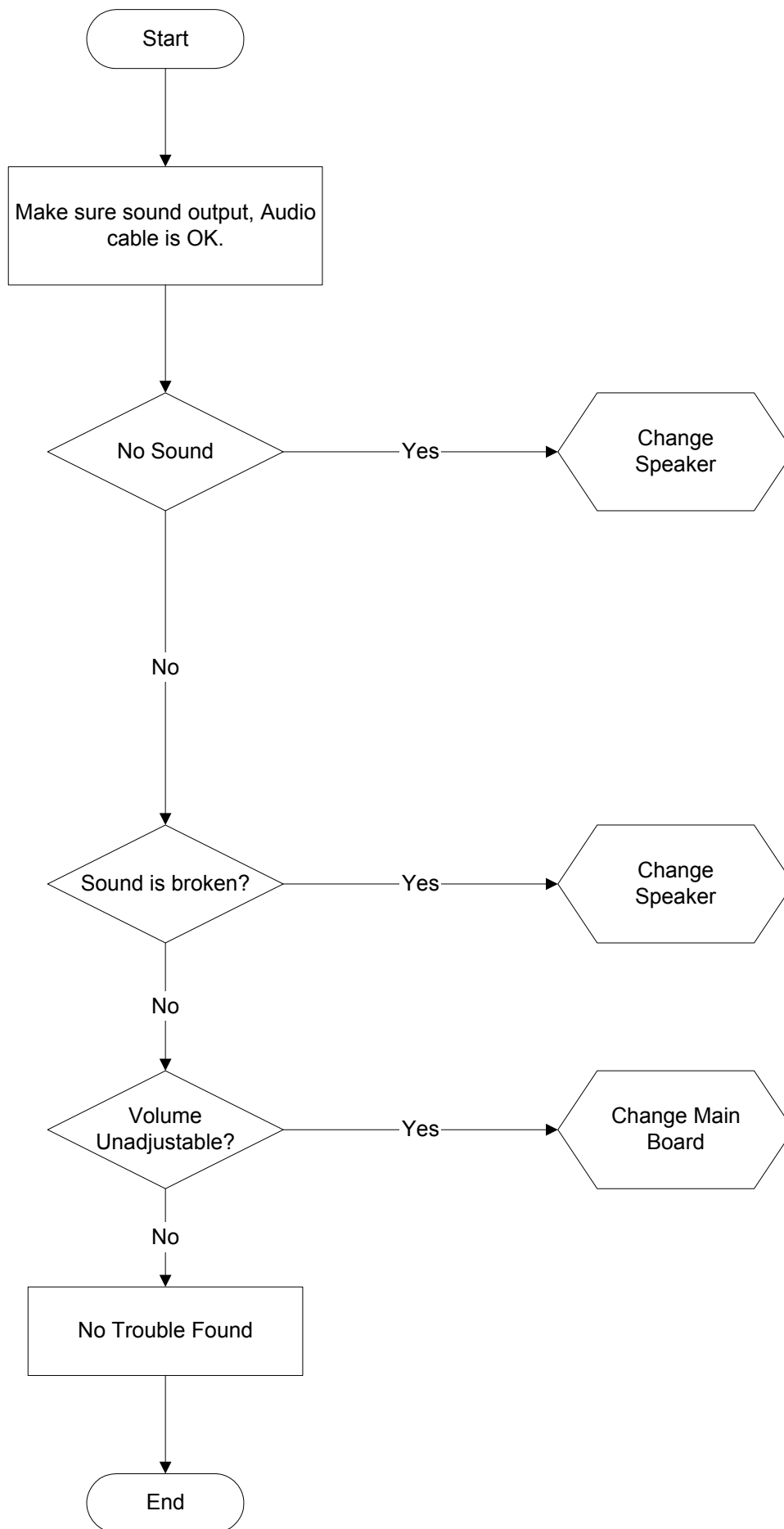
C. Performance Troubleshooting







E. Audio Troubleshooting



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VG921m-4)

ViewSonic Model Number: VS11369

Serial No. Prefix: QB9

Rev: 1a

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal number#
1	Accessories:		A-00008026	W402091809531		
2	PC Board Assembly:		B-00008052	XML19VA050001		
3			B-00008166	XML19VA040005		
4			B-00008167	XML19VA050002		
5			B-00008168	XML1700390021-SF		
6	Cabinets:		C-00008184	XML19VA280001		
7			C-00008185	XML19VA100003		
8			C-00008186	XML19VA110002		
9	Cables:		CB-00005758	W0026918A0142		
10			CB-00006504	W0926418AQ951		
11	Documentation:		DC-00008146	F103015170401		
12			DC-00008147	F10250619VA06		
13			DC-00008148	F000417VAK001		
14	Electronic		E-00005792	E34862190H303-A		
15	Components:		E-00008035	XML19VA030001		
16	Hardware:		HW-00008052	XML19VA200001		
17	Packing Material:		P-00008173	F2013319VA002		
18			P-00008174	F2014319VA002		
19			P-00008175	F4007K419VA01		
20			P-00001347	30833		
21			P-00002515	20653		
22			P-00008176	F300257605251		

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.

BOM LIST (VG921m-4)

ViewSonic Model Number: VS11369

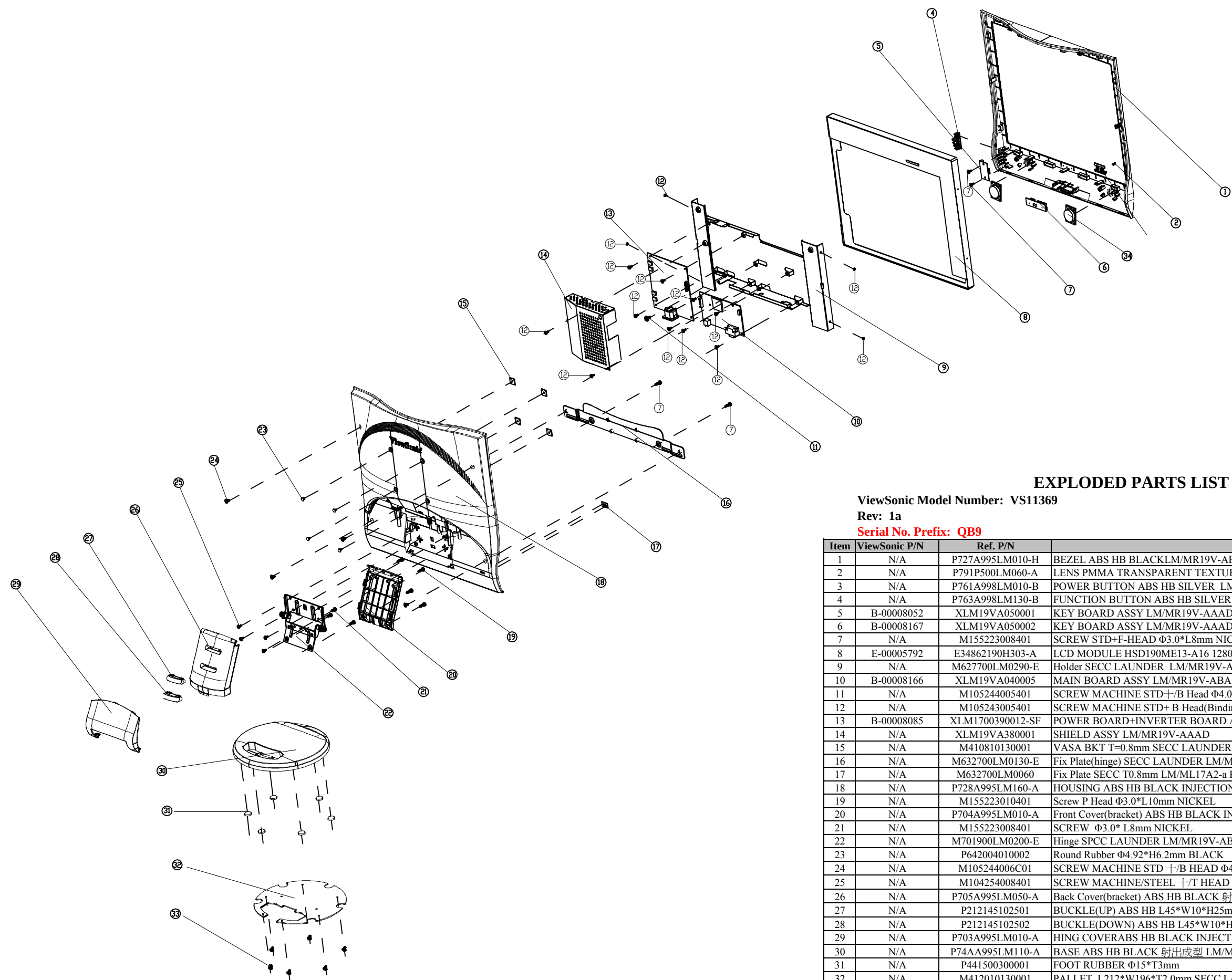
Rev: 1a

Serial No. Prefix: QB9

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	N/A	E015-006-W	(10mm*14mm) Bird logo			1
2	N/A	E015-016-L-W	VIEWSONIC AL38MM			1
3	E-00005792	E34862190H303-A	LCD MODULE HSD190ME13-A16 1280×1024 [SX] 19" LVDS HANNSTAR(8B0/G0/A0 "A" FOR VA/VG)			1 2
4	N/A	F000419VAK001	Quick Install Manual LM/MR19V-ABA L190*W127mm for viewsonicVG921m REV:0			1
5	N/A	F001019VA3001	Installation diagram LM/MR19V-ABA ENGLISH L190*W127mm for viewsonic VG921m REV:0			1
6	N/A	F001217043001	USER'S GUIDE LM/LM1704 ENGLISH L210*W148mm for Viewsonic REV:0			1
7	N/A	F101415170401	MARK LM/LM1704 L11*W11mm energy star			1
8	N/A	F10250619VA04	Safety Label LM/MR19V-ABAD L149.5*W29.5mm for viewsonic VG921m HSD A16			1
9	DC-00008146	F103015170401	Blank Label LM/LM1704 L50*W25mm			1
10	DC-00008065	F103015171A01	Blank Label LM/MR171-AAA L36*W9mm for viewsonic china			1
11	N/A	F103915170401	CARTON LABEL(UPC) LM/LM1704 L76*W76mm FOR VIEWSONIC			1
12	N/A	F103915171A01	CARTON LABEL LM/MR171-AAA L89*W58mm for viewsonic 8ms			1
13	N/A	F104515170401	RATING LABEL LM/LM1704 L7*W7mm for Viewsonic			1
14	P-00008173	F2013319VA002	POLYETHYLENE-L EPS LM/MR19V-ABA L500*W160*H145mm			1
15	P-00008174	F2014319VA002	POLYETHYLENE-R EPS LM/MR19V-ABA L500*W160*H145mm			1
16	P-00008176	F300257605251	PLASTIC BAG PE L760*W525*T0.08mm			1
17	N/A	F300272501501	PLASTIC BAG LDPE L250*W150*T0.08mm			1
18	P-00008175	F4007K419VA01	CARTON K4K LM/MR19V-ABAD L498*W156*H520mm for viewsonic VG921m			1
19	N/A	F401422LM0001	PARTITION SUPPORT BC Flute(Craft) LM/MONITOR L800*W50*H50*T5mm			0.032
20	N/A	F401422LM0003	PARTITION SUPPORT BCFlute(Craft) LM/MONITOR SERIES L2000*W50*H50*T5mm			0.065
21	N/A	F40191619VA01	CARTONK3K(C Flute) LM/MR19V-ABA L1129*W1129*H60mm			0.032
22	N/A	F5030119VA001	PALLET SMOKE WOOD LM/MR19V-ABA L1129*W1129*H120mm			0.0156
23	N/A	F801190000035	CD MANUAL LM/MR19V-ABA for viewsonica VG921 HSD A16 REV:0			1
24	N/A	F900181000001	PE LIMPID W500*T0.03mm 1500m/roll			0.00024
25	N/A	F900381000004	Pallete Wrap Film, PE LIMPID L1200*W1200*T0.15mm			0.0156
26	N/A	F9008G2000002	PACKTHREAD PP WHITE W14.5mm*T0.8mm 1300m/roll			0.00028
27	N/A	M101082807401	Screw, Machine Copper Hexagonal head L5mm Φ2.8*L7mm Nickel plate			2
28	N/A	M104254008401	SCREW MACHINE/STEEL +/T headΦ4xL8mm NICKEL			4
29	N/A	M105243005401	SCREW MACHINE low carbon steel + Binding head Φ3.0mm L5mm NICKEL			14
30	N/A	M105244005401	SCREW MACHINE low carbon steel +/Binding head Φ4.0*L5mm NICKEL with toothed lock washers			1
31	N/A	M105244006C01	SCREW MACHINE low carbon steel +/Binding Φ4.0*L6mm black anti-release			4
32	N/A	M15523008401	SCREW P head Φ3.0* L8mm NICKEL			4
33	N/A	M155363008401	SCREW Φ3.0*L8mm NICKEL			6
34	N/A	M412010130001	Plate L212*W196*T2.0mm SECC LAUNDER For LM/MR19V-ABAD UNDER BASE			1
35	N/A	M627700LM0290-E	Holder SECC LAUNDER LM/MR19V-ABA RGB+AUDIO REV:0			1
36	N/A	M632700LM0130-E	Fix Plate(hinge) SECC LAUNDER LM/MR19V-ABAD REV:0			1
37	N/A	P36D1C2010001	MYLAR L410*W320*T0.12mm LIMPID			1
38	N/A	P703A995LM010-A	Cover, ABS HB BLACK LM/MR19V-AAAD REV:0			1
39	N/A	V300800000001	GLUE 50g/PES (: - 60℃~+200℃)			0.01
40	N/A	V5004AP150201	ADHESIVE TAPE L25000*W15*T0.25mm 25m/ROLL(YW0910300002)			0.01
41	N/A	V5011A5150101	ADHESIVE TAPE L50000*W8*T0.1mm			0.0064
42	N/A	V501275024801	ADHESIVE TAPE L75mm*W48*T0.045mm FOR VIEWSONEC			0.0133
43	N/A	V900505020003	AL FOIL L50×W30×T0.10mm			1
44	N/A	V900505030001	AL FOIL L100xW40xT0.07mm			1
45	N/A	V900505030007	AL FOIL L100xW30*T0.35mm(Y784000004G*1)			4
46	CB-00005758	W0026918A0142	AUDIO CABIE 26AWG UL2547 L=1800mm 6C BLACK			1
47	CB-00006504	W0926418AQ951	VGA CABLE 30AWG UL20276 L1800mm 15PIN BLACK			1
48	A-00008026	W402091809531	AC POWER CORD UL RVV 300/500V 3G S0.75mm2 L180cm BLACK YISHENG			1
49	CB-00008033	W47A103015003	FFC WIRE CY050408001 P=1.0mm 30PIN L150mm HANQUAN			1
50	N/A	W47A103015004	FFC WIRE CY050408001 P=1.0mm 30PIN L150mm LOCK HUNG FU			1
51	N/A	W47B100620001	FFC WIRE FFCC0605T2350EC P=1.0mm 6TO 6PIN L200mm HANQUAN			1
52	CB-00008043	W47B101030001	FFC WIRE FFCC0605T2350EC P=1.0mm 10PIN L300mm HANQUAN			1
53	B-00008168	XLMI700390021-SF	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19" LCD MONITOR(PWM CONTROL)(PHIHONG)			1
54	N/A	XLMI700390021-SH	POWER BOARD+INVERTER BOARD ASSY PI-SB03 24V+5V LM/17"/19" LCD MONITOR(PWM CONTROL)(UMEC)			1
55	E-00008035	XLMI9VA030001	SPEAKER ASSY LM/MR19V-AAAD			1
56	N/A	E231080200020	SPEAKER 4020CPC OBLONG 8Ω 2W 4PIN*1 孔 L+R/L330mm Y&G LEAD FREE			1
57	N/A	P392522A40001	SPEAKER SPONGE L25*W22.25*H14.1mm EVA(25°)			4
58	B-00008166	XLMI9VA040005	MAIN BOARD ASSY LM/MR19V-ABA For PWM Control			1
59	B-00008052	XLMI9VA050001	KEY BOARD ASSY LM/MR19V-AAAD			1
60	N/A	BLMI9VAB10213	BARE PCB LM/MR19V-AAAD BUTTON BOARD 1SIDE FR-1 T1.0mm REV:1.3			1
61	N/A	J4509100065H1	FFC CONN ,6 PIN,1.0,DIP 90°,1 ROW,Cvilux CF16071D0T0 or compatible			1
62	N/A	P764P281LM010-A	SWITCH PA66 WHITE 22051 LM/MR17D-AAAD REV:0			5
63	B-00008167	XLMI9VA050002	KEY BOARD ASSY LM/MR19V-AAAD 2SIDES			1
64	N/A	BLMI9VAB10112	BARE PCB LM/MR19V-AAAD BUTTON BOARD 2SIDES FR-4 T1.0mm REV:1.2			1
65	N/A	D062103810001	LED BLUE+ORANGE KPB-3025 TAPING LEAD FREE (SMD)			1
66	N/A	J4509100065H1	FFC CONN ,6 PIN,1.0,DIP 90°,1 ROW,Cvilux CF16071D0T0 or compatible			1
67	N/A	J4509100102H1	FFC CONNECTOR P=1mm 10PIN 90° YELLOW CF16061D0T0 HANQUAN (DIP)			1
68	N/A	P764P295LM010	SWITCH PA66 BLACK LCD MONITOR SERIES REV:0			1
69	C-00008185	XLMI9VA100003	BEZEL ASSY LM/MR19VA-ABA BEZEL BLACK+BUTTON KEY 877C FOR VIEWSONIC			1
70	N/A	P727A995LM010-H	BEZEL ABS HB BLACK +SILVER Paint LM/MR19V-ABAD REV:0			1
71	N/A	P761A998LM010-B	POWER BUTTON ABS HB SILVER Paint LM/MR19V-AAAD REV:0			1
72	N/A	P763A998LM130-B	FUNCTION BUTTON ABS HB SILVER Paint LM/MR19V-AAAD REV:0			1
73	N/A	P791P500LM060-A	LENS PMMA Transparent LM/MR19V-AAAD Texturized REV:0			1
74	C-00008186	XLMI9VA110002	HOUSING ASSY LM/MR19V-ABA BLACK RGB+AUDIO			1
75	N/A	M410810130001	VASA BKT T=0.8mm SECC			4
76	N/A	M632700LM0060	Fix Plate SECC T0.8mm LM/ML17A2-a REV:0			1
77	N/A	P642004010001	Rubber Cap Round Φ4.84*H5.5mm BLACK			4
78	N/A	P728A995LM160-A	HOUSING ABS HB BLACK INJECTION LM/MR19V-ABA RGB+AUDIO REV:0			1
79	HW-00008052	XLMI9VA200001	BRACKET ASSY LM/MR19V-ABA BLACK			1

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
80	N/A	M155223008401	SCREW STD +/- P HEAD Φ3.0* L8mm NICKEL			3
81	N/A	M155223010401	SCREW STD +/- P HEAD Φ3.0*L10mm NICKEL			4
82	N/A	M701900LM0200-E	Hinge SPCC LAUNDER LM/MR19V-ABAD REV:0			1
83	N/A	P212145102501	BUCKLE(UP) ABS HB L45*W10*H25mm BLACK FOR LM/MR19V-ABAD(FOR Viewsonic)			1
84	N/A	P212145102502	BUCKLE (DOWN) ABS HB L45*W10*H25mm BLACK FOR LM/MR19V-ABAD(FOR Viewsonic)			1
85	N/A	P704A995LM010-A	Front Cover(bracket) ABS HB BLACK INJECTION LM/MR19V-ABAD REV:0			1
86	N/A	P705A995LM050-A	Back Cover(bracket) ABS HB BLACK INJECTION LM/MR19V-ABAD REV:0			1
87	C-00008184	XLM19VA280001	BASE ASSY LM/MR19V-ABA BLACK Round			1
88	N/A	P441500300001	RUBBERΦ15*T3mm(RUB-IY151-1503)			6
89	N/A	P74AA995LM110-A	BASE ABS HB BLACK INJECTION LM/MR19-ABAD REV:0			1
90	N/A	XLM19VA380001	SHIELD ASSY LM/MR19V-AAAD W/Mylar			1
91	N/A	M711200LM0150-E	Shielding cover, SPTE LM/MR19V-AAAD REV:0			1
92	N/A	P369579010001	MYLAR L95*W79.5*T0.1mm WHITH ADHESIVE			1

8. Exploded Diagram and Exploded Parts List



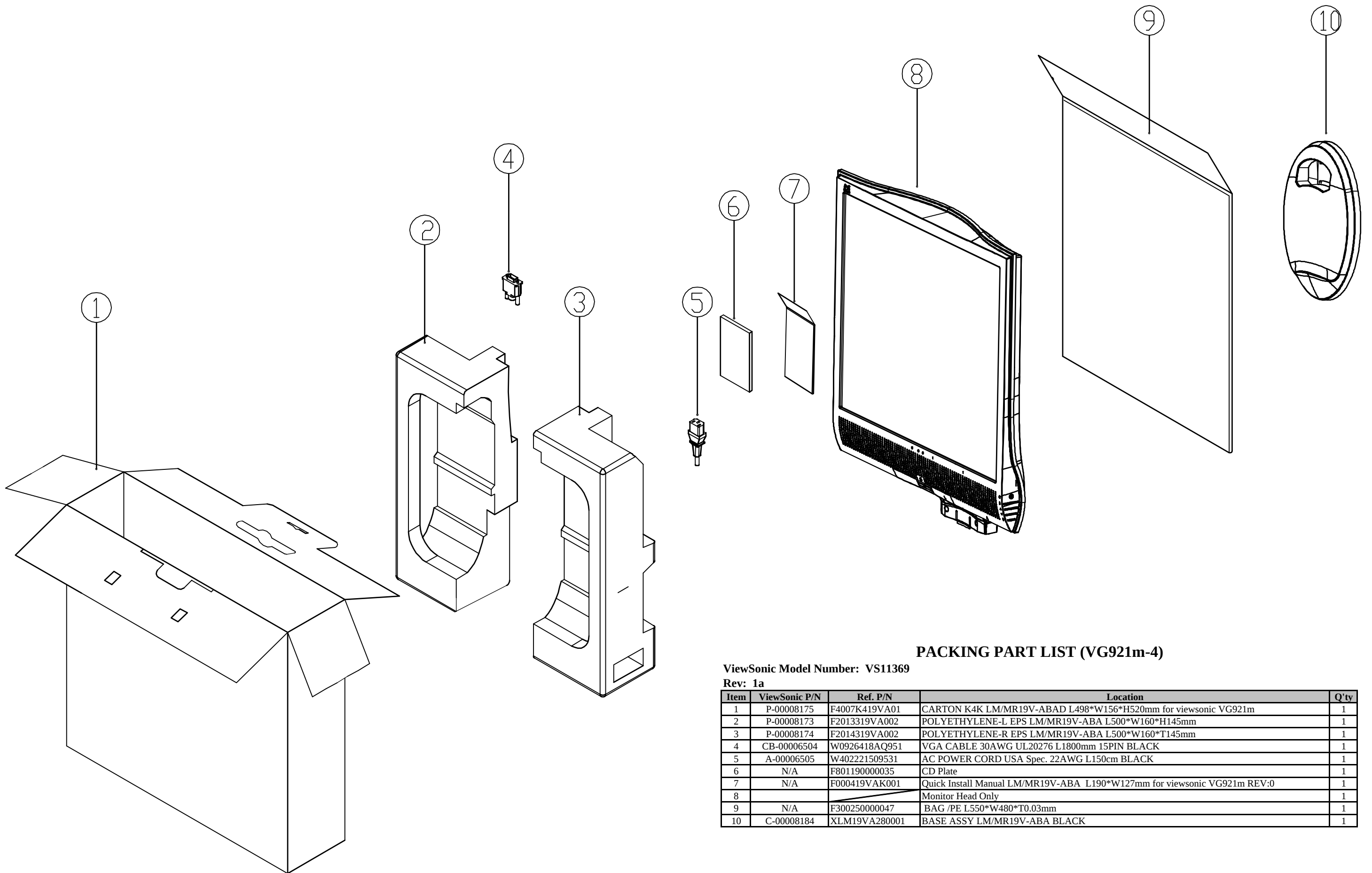
EXPLODED PARTS LIST (VG921m-4)

ViewSonic Model Number: VS11369

Rev: 1a

Serial No. Prefix: QB9

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	N/A	P727A995LM010-H	BEZEL ABS HB BLACKLM/MR19V-ABAD REV:0	1
2	N/A	P791P500LM060-A	LENS PMMA TRANSPARENT TEXTURIZED	1
3	N/A	P761A998LM010-B	POWER BUTTON ABS HB SILVER LM/MR19V-AAAD REV:0	1
4	N/A	P763A998LM130-B	FUNCTION BUTTON ABS HB SILVER LM/MR19V-AAAD REV:0	1
5	B-00008052	XLM19VA050001	KEY BOARD ASSY LM/MR19V-AAAD	1
6	B-00008167	XLM19VA050002	KEY BOARD ASSY LM/MR19V-AAAD 2SIDES	1
7	N/A	M155223008401	SCREW STD+F-HEAD Φ3.0*L8mm NICKEL	4
8	E-00005792	E34862190H303-A	LCD MODULE HSD190ME13-A16 1280×1024 [SX] 19" LVDS HANNSTAR(8B0/G0/A0	1
9	N/A	M627700LM0290-E	Holder SECC LAUNDER LM/MR19V-ABA RGB+AUDIO REV:0	1
10	B-00008166	XLM19VA040005	MAIN BOARD ASSY LM/MR19V-ABA For PWM Control	1
11	N/A	M105244005401	SCREW MACHINE STD +/B Head Φ4.0*L5mm NICKEL with toothed lock washers	1
12	N/A	M105243005401	SCREW MACHINE STD+ B Head(Binding) Φ3.0mm L5mm NICKEL	14
13	B-00008085	XLM1700390012-SF	POWER BOARD+INVERTER BOARD ASSY LM/17"&19"LCD MONITOR +5V +24V	1
14	N/A	XLM19VA380001	SHIELD ASSY LM/MR19V-AAAD	1
15	N/A	M410810130001	VASA BKT T=0.8mm SECC LAUNDER	4
16	N/A	M632700LM0130-E	Fix Plate(hinge) SECC LAUNDER LM/MR19V-ABAD REV:0	1
17	N/A	M632700LM0060	Fix Plate SECC T0.8mm LM/ML17A2-a REV:0	1
18	N/A	P728A995LM160-A	HOUSING ABS HB BLACK INJECTION LM/MR19V-ABA RGB+AUDIO REV:0	1
19	N/A	M155223010401	Screw P Head Φ3.0*L10mm NICKEL	4
20	N/A	P704A995LM010-A	Front Cover(bracket) ABS HB BLACK INJECTION LM/MR19V-ABAD REV:0	1
21	N/A	M155223008401	SCREW Φ3.0* L8mm NICKEL	3
22	N/A	M701900LM0200-E	Hinge SPCC LAUNDER LM/MR19V-ABAD REV:0	1
23	N/A	P642004010002	Round Rubber Φ4.92*H6.2mm BLACK	4
24	N/A	M105244006C01	SCREW MACHINE STD +/B HEAD Φ4.0*L6mm	4
25	N/A	M104254008401	SCREW MACHINE/STEEL +/T HEAD Φ4xL8mm NICKEL	4
26	N/A	P705A995LM050-A	Back Cover(bracket) ABS HB BLACK 射出成型 LM/MR19V-ABAD REV:0	1
27	N/A	P212145102501	BUCKLE(UP) ABS HB L45*W10*H25mm BLACK	1
28	N/A	P212145102502	BUCKLE(DOWN) ABS HB L45*W10*H25mm BLACK	1
29	N/A	P703A995LM010-A	HING COVERABS HB BLACK INJECTION LM/MR19V-AAAD REV:0	1
30	N/A	P74AA995LM110-A	BASE ABS HB BLACK 射出成型 LM/MR19-ABAD REV:0	1
31	N/A	P441500300001	FOOT RUBBER Φ15*T3mm	6
32	N/A	M412010130001	PALLET L212*W196*T2.0mm SECC LAUNDER	1
33	N/A	M155363008401	SCREW STD+F-HEAD Φ3.0*L8mm NICKEL	6
34	E-00008035	XLM19VA030001	SPEAKER ASSY LM/MR19V-AAAD	1



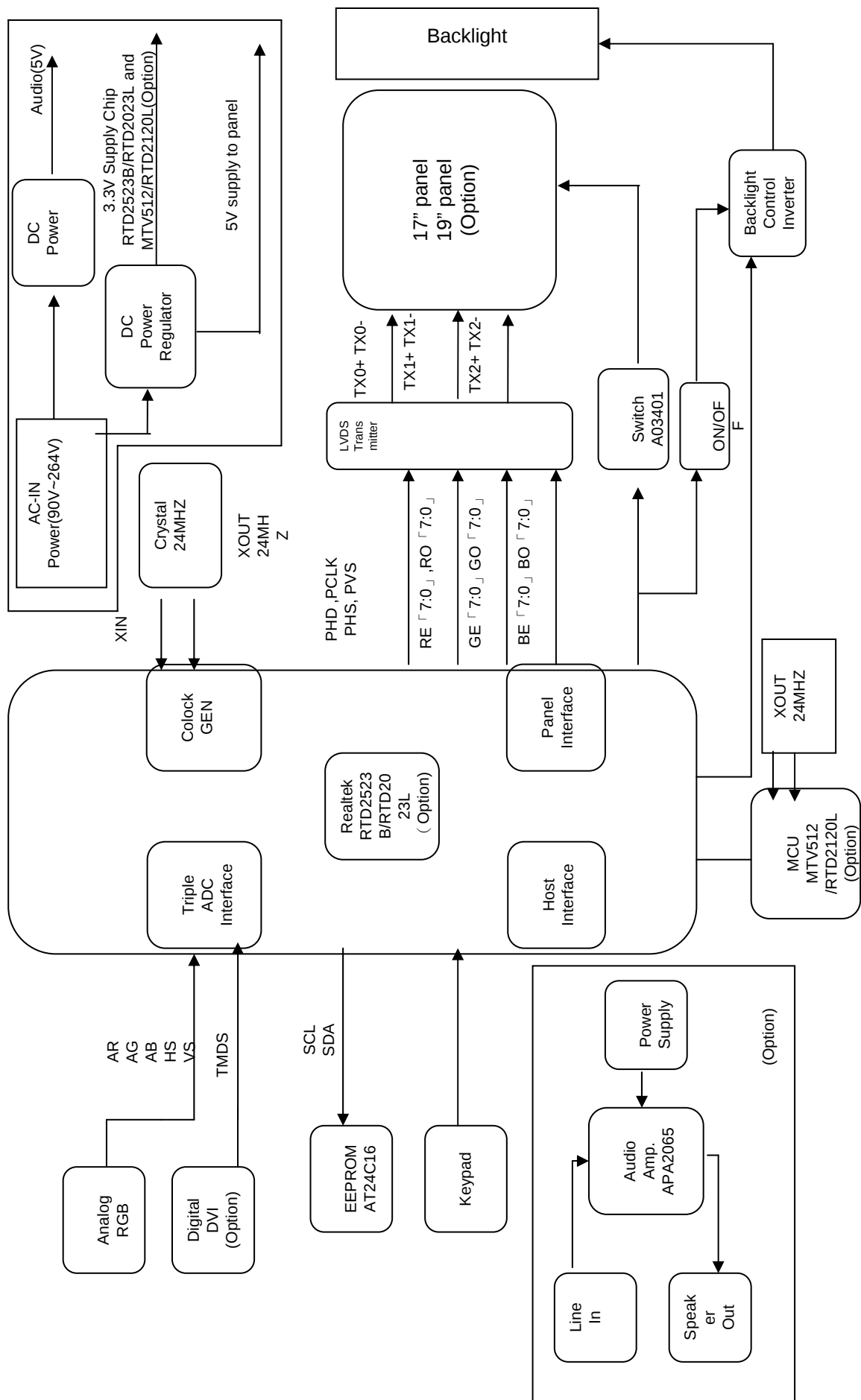
PACKING PART LIST (VG921m-4)

ViewSonic Model Number: VS11369

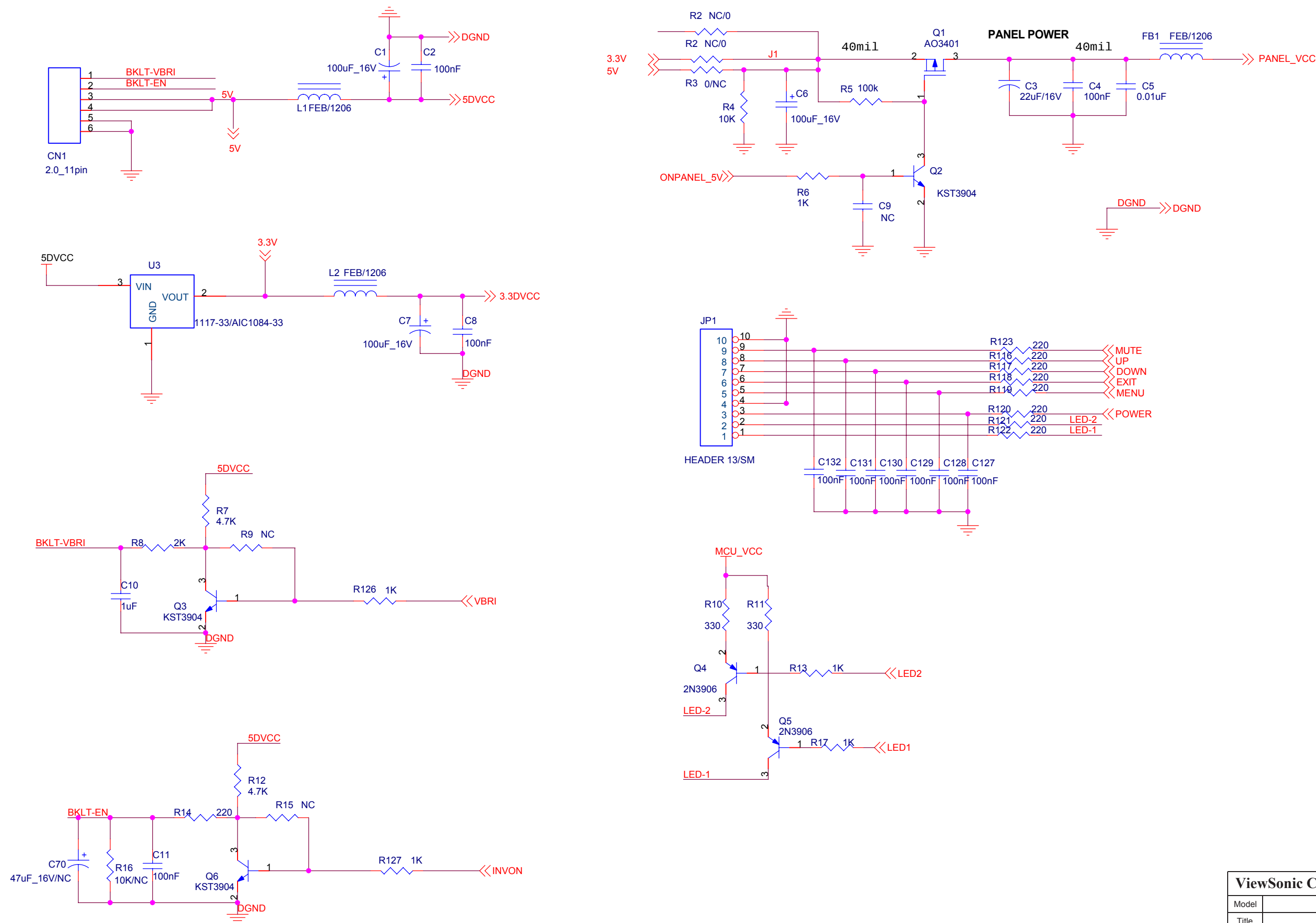
Rev: 1a

Item	ViewSonic P/N	Ref. P/N	Location	Q'ty
1	P-00008175	F4007K419VA01	CARTON K4K LM/MR19V-ABAD L498*W156*H520mm for viewsonic VG921m	1
2	P-00008173	F2013319VA002	POLYETHYLENE-L EPS LM/MR19V-ABA L500*W160*H145mm	1
3	P-00008174	F2014319VA002	POLYETHYLENE-R EPS LM/MR19V-ABA L500*W160*H145mm	1
4	CB-00006504	W0926418AQ951	VGA CABLE 30AWG UL20276 L1800mm 15PIN BLACK	1
5	A-00006505	W402221509531	AC POWER CORD USA Spec. 22AWG L150cm BLACK	1
6	N/A	F801190000035	CD Plate	1
7	N/A	F000419VAK001	Quick Install Manual LM/MR19V-ABA L190*W127mm for viewsonic VG921m REV:0	1
8	N/A		Monitor Head Only	1
9	N/A	F300250000047	BAG /PE L550*W480*T0.03mm	1
10	C-00008184	XLM19VA280001	BASE ASSY LM/MR19V-ABA BLACK	1

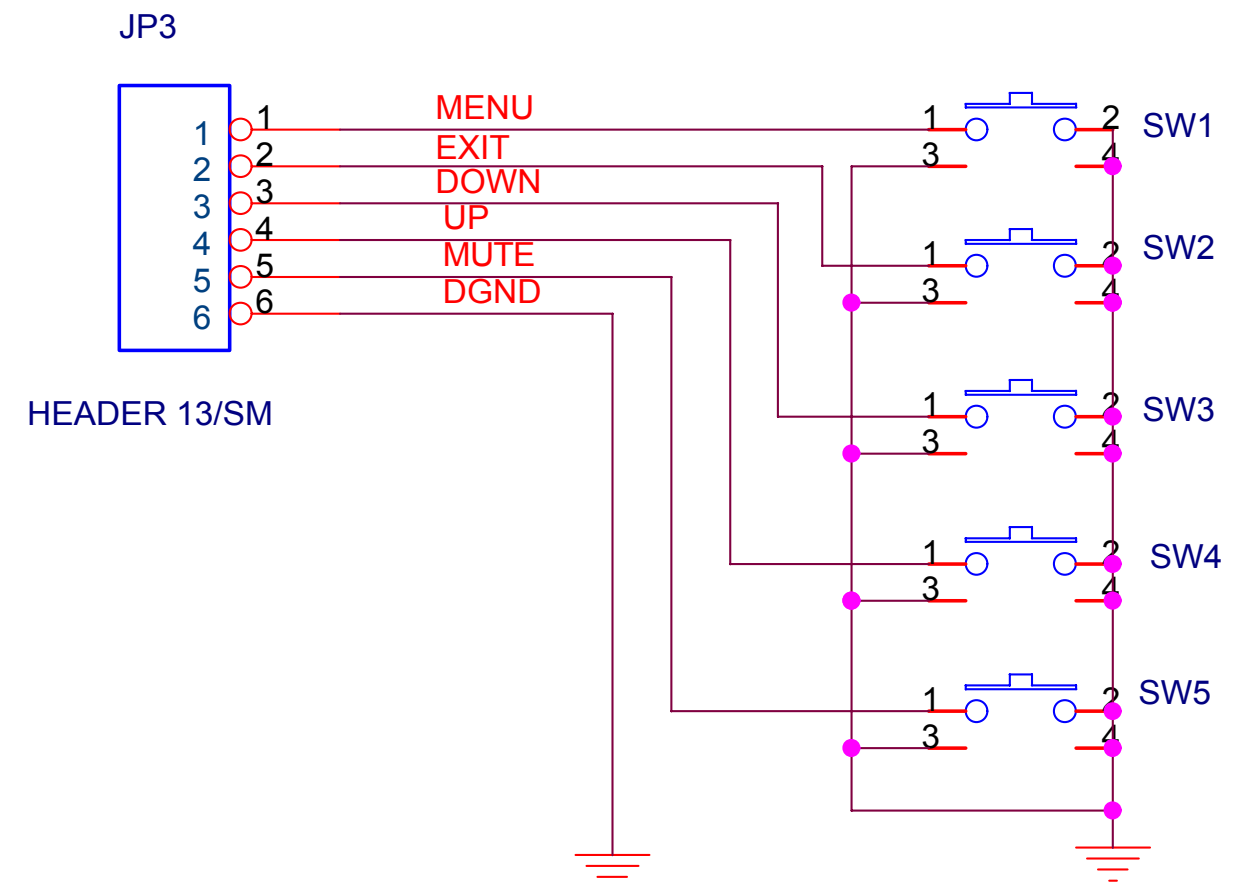
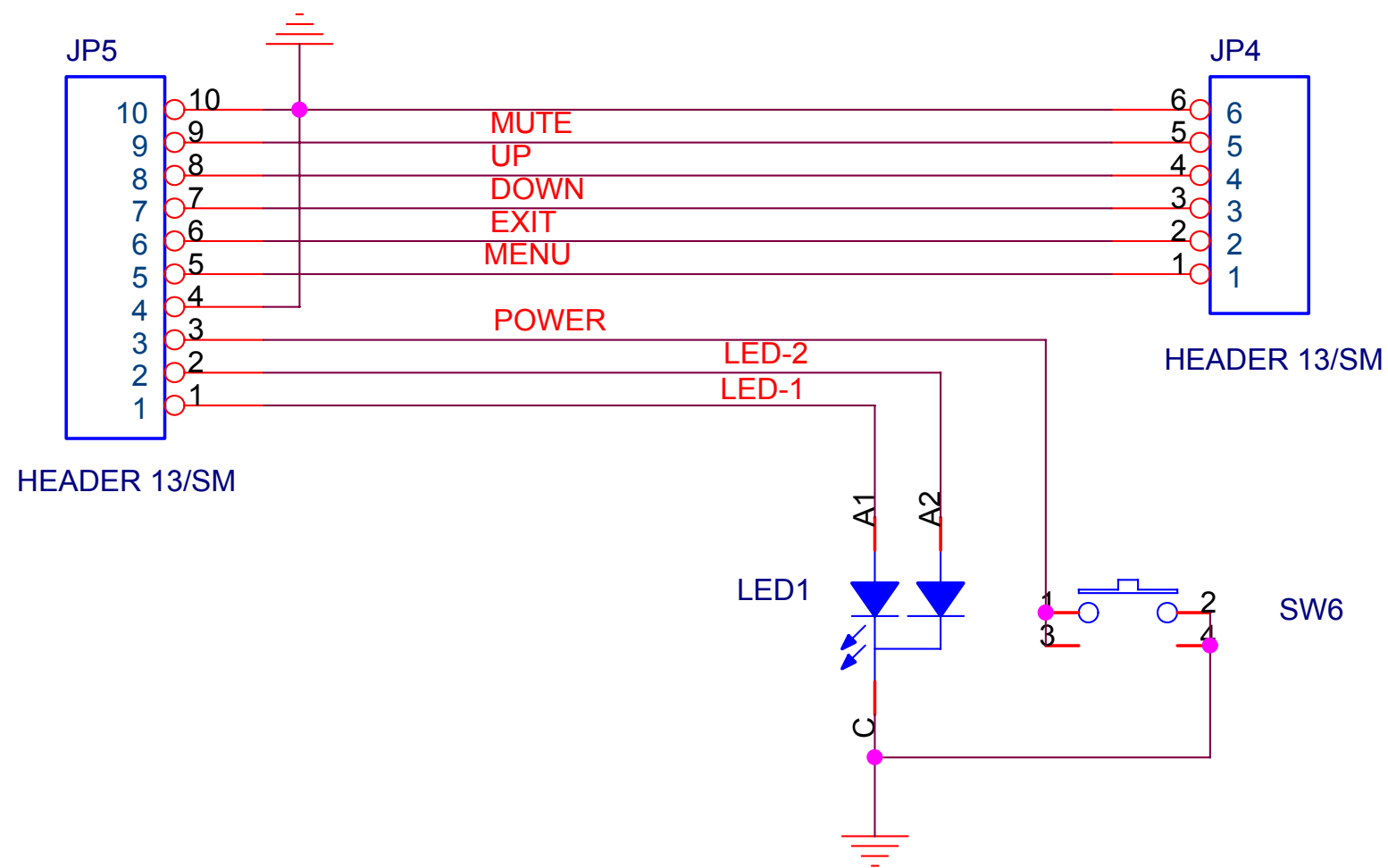
9. Block Diagram



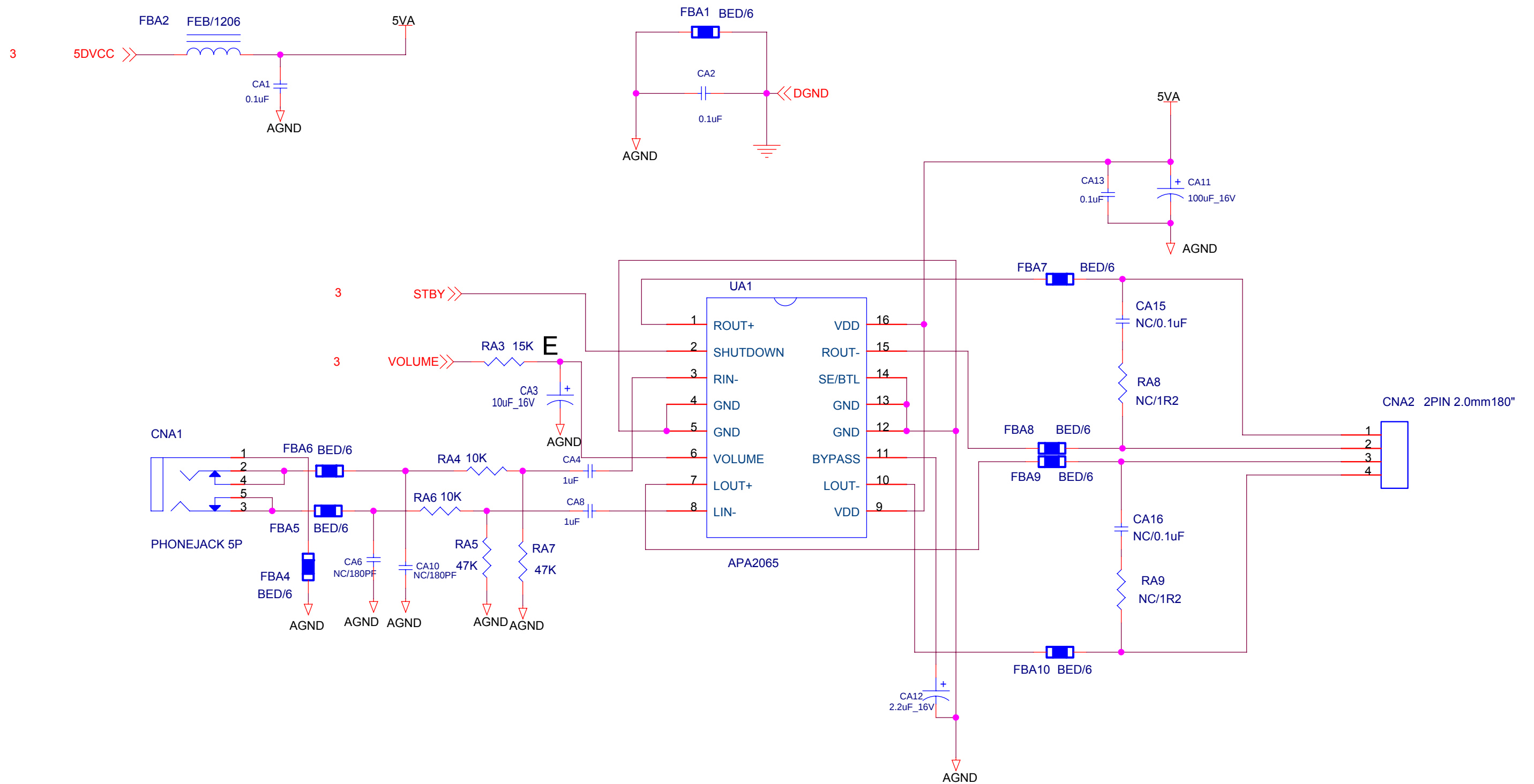
10. Schematic Diagrams



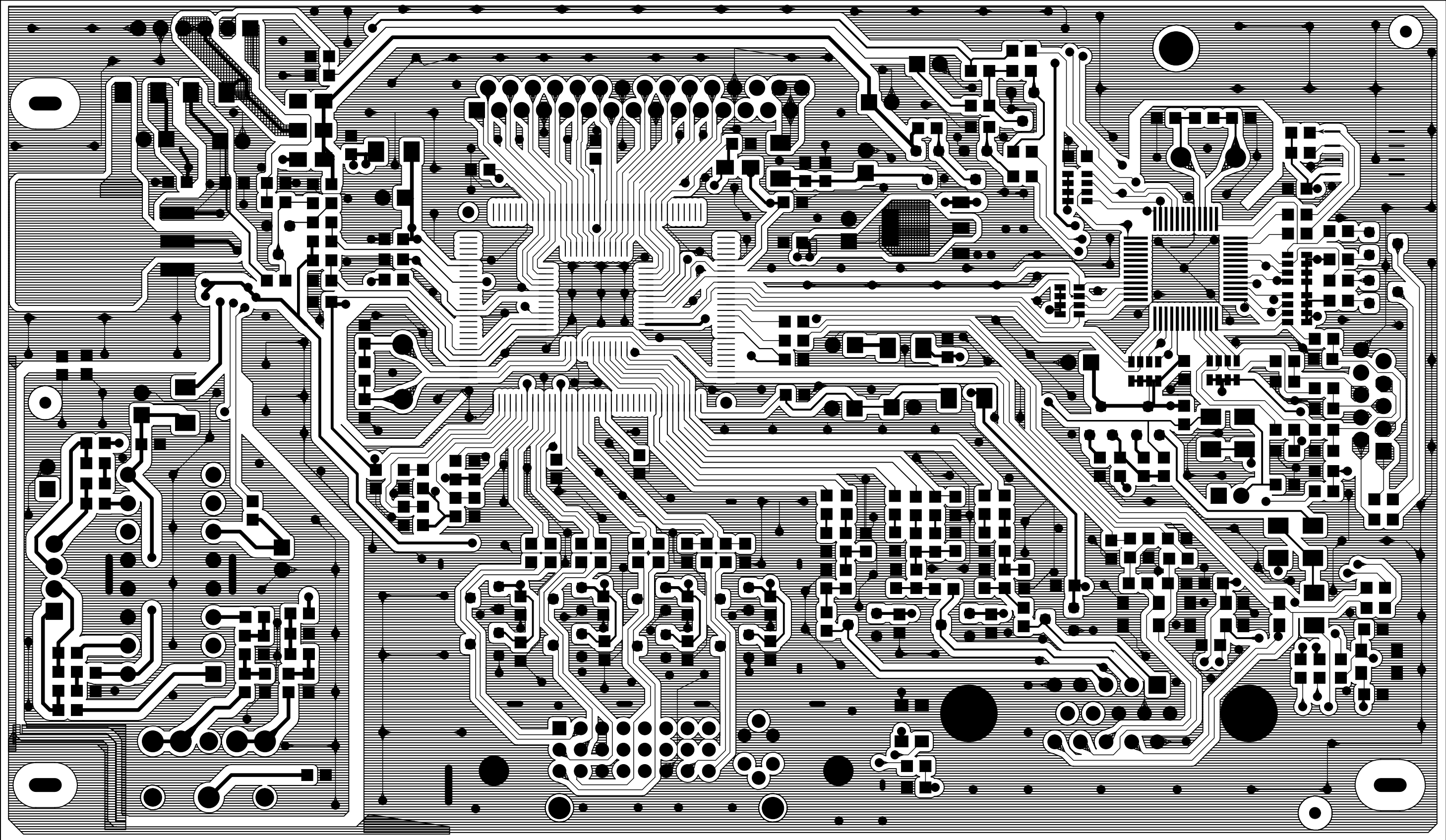
ViewSonic Corporation		
Model		
Title		
Date		Rev:

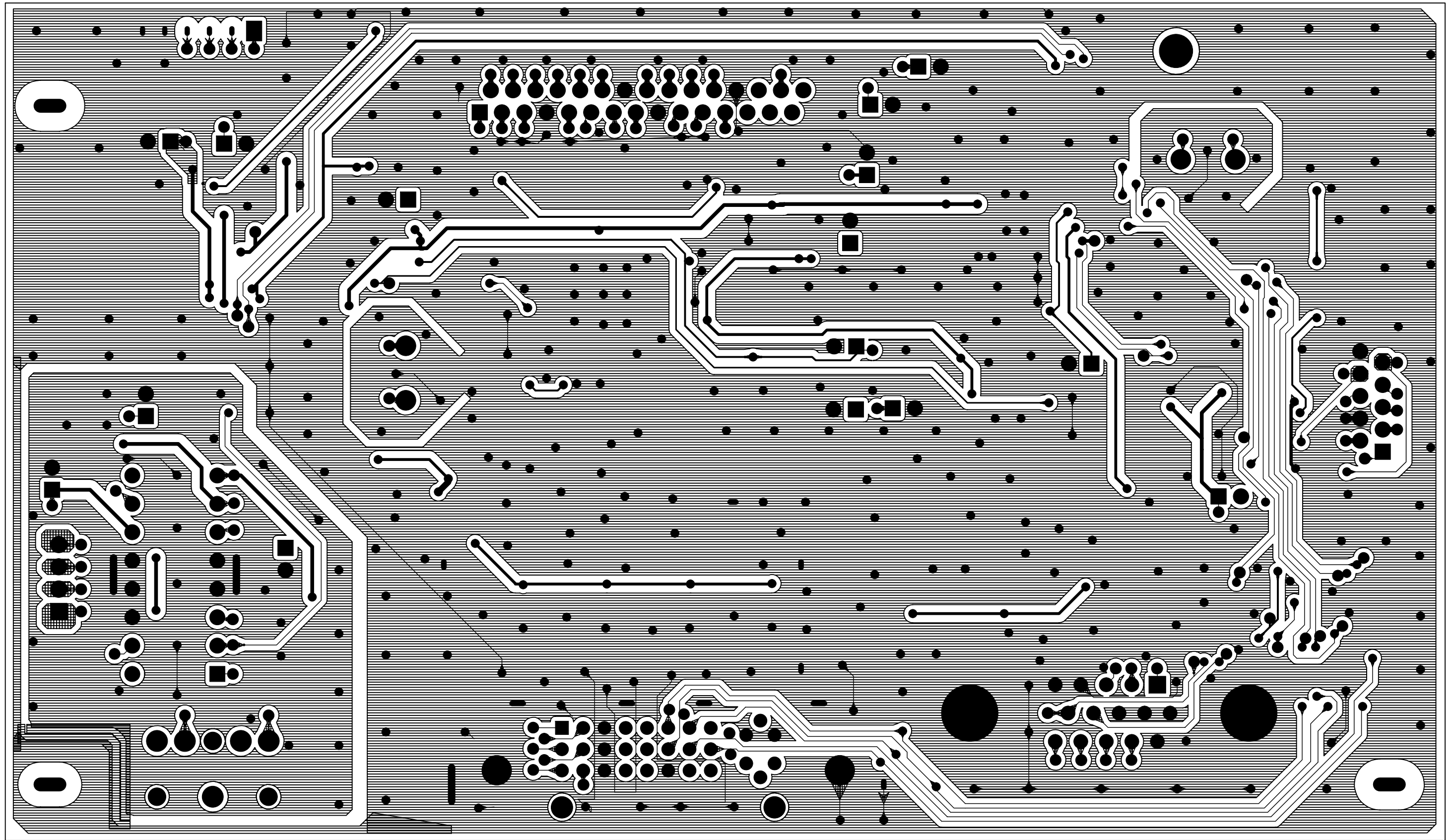


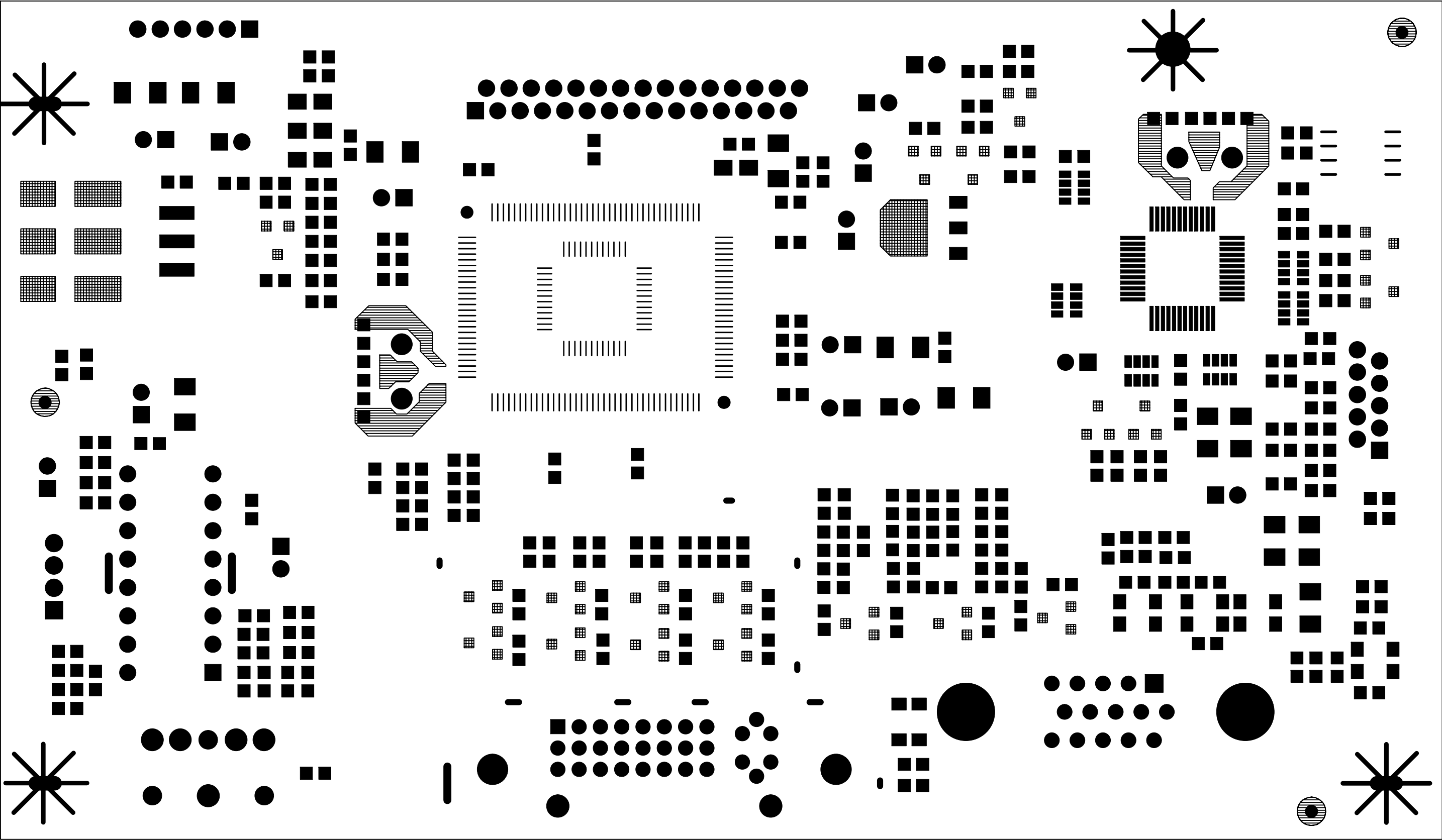
ViewSonic Corporation		
Model		
Title		
Date		Rev:

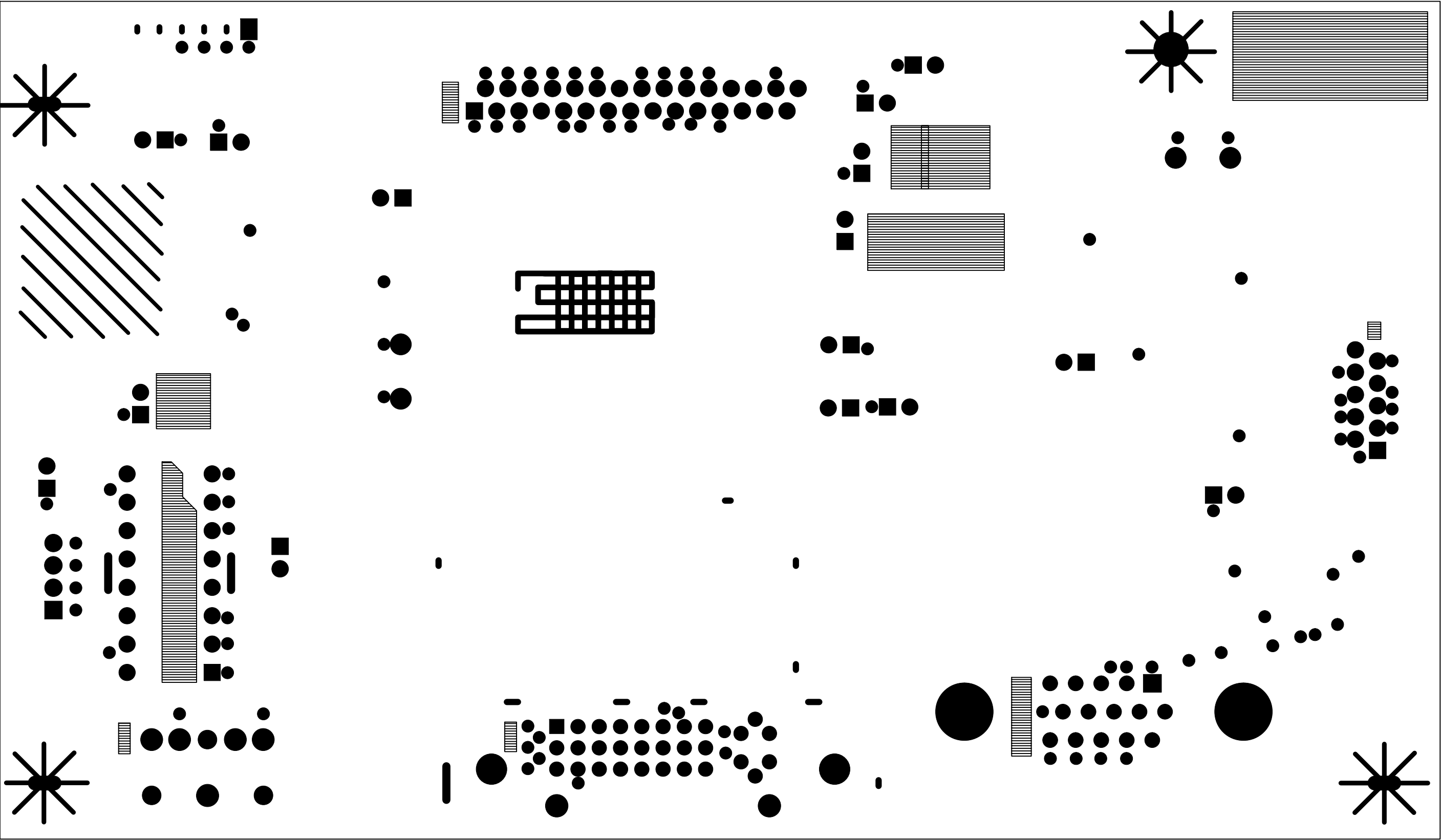


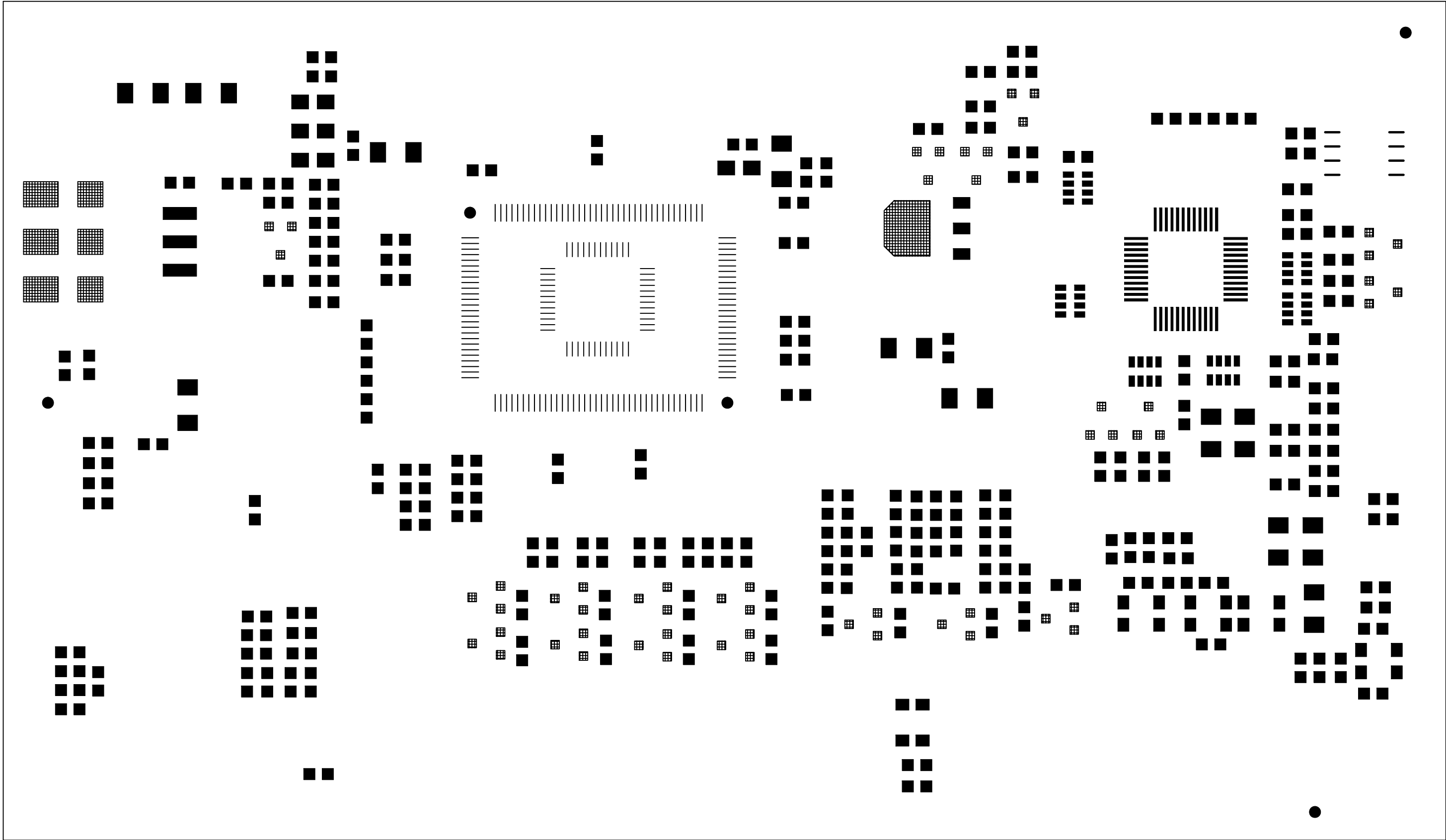
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Title		
Date		Rev:



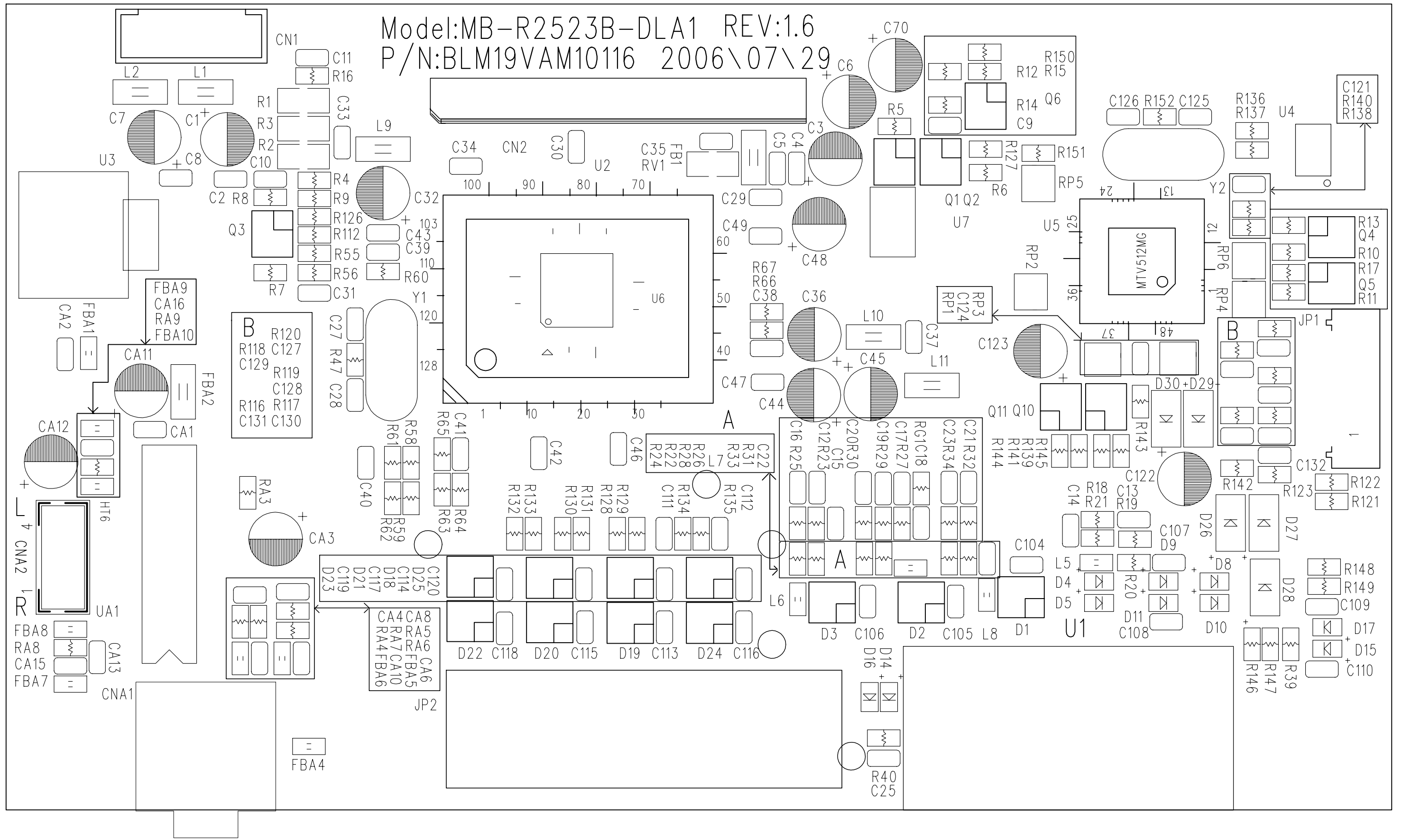


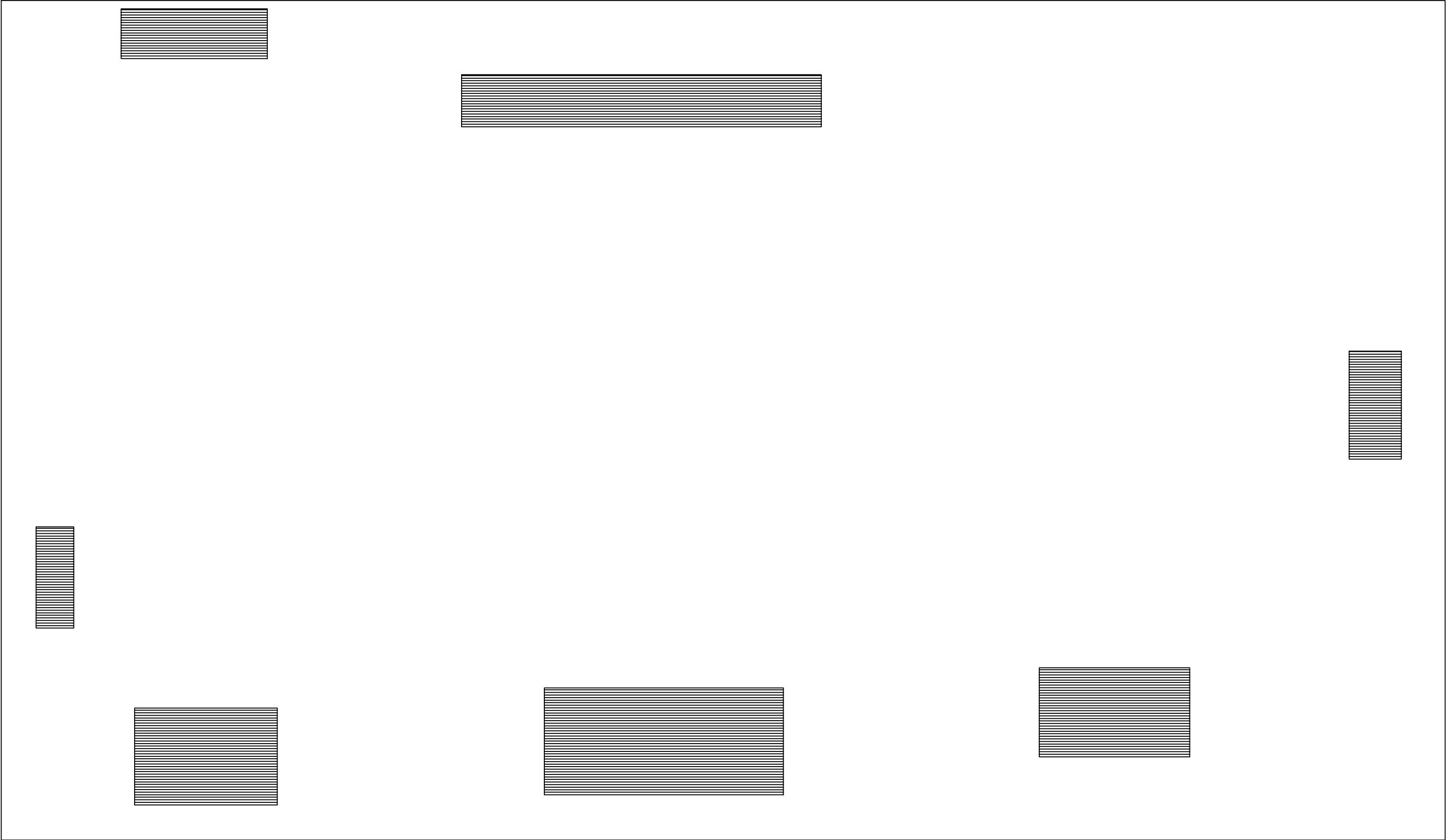






Model:MB-R2523B-DLA1 REV:1.6
P/N:BLM19VAM10116 2006\07\29





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Assessment

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

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

B. Are you satisfied with this Service Manual?

<i>Item</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
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?

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