

Service Manual

ViewSonic VX912-4

Model No. VS10162

19" Color TFT LCD Display

(VX912-4_SM Rev. 1a Jun. 2006)

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Revision History

Revision	SM Editing Date	ECR Number	Description of Changes	Editor
1a	06/07/2006		Initial Release	J. Chang

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1. Precautions and Safety Notices

1. Caution :

No modification of any circuit should be attempted . Service work should only be performed after you are thoroughly familiar with all of the following safety checks and servicing guide line

2. Safety Check :

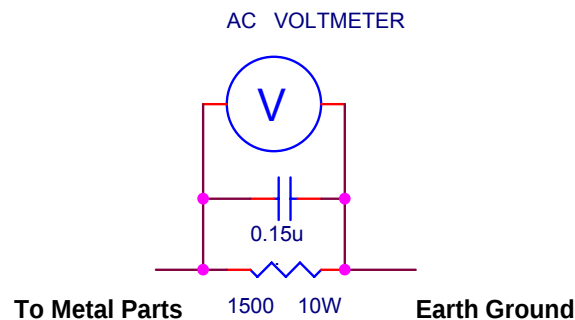
Care should be taken while servicing this LCD display. Because of the high voltage used in the inverter circuit. These voltage are exposed in such areas as the associated transformer circuits .

3. POWER SUPPLY REQUIREMENTS

The external power converter for this display utilizes AC and DC cords , AC cord is detachable , but DC cord is permanently attached . Any attempt to replace another adapter could result in serious problem on the display .

4. LEAKAGE CURRENT HOT CHECK

- 4-1 Plug the AC cord directly into the AC outlet. Do not use an isolation transformer during this check.
- 4-2 Connect a 1500 ohm , 10 watt resistor , paralleled by a 0.15uF capacitor between each metallic part and a good earth ground
- 4-3 Use an AC voltmeter with 1000 ohm / volt or more sensitivity and measure the AC voltage across the combination 1500 ohm resistor and 0.15uF capacitor.
- 4-4 Move the resistor connection to each exposed metallic part and measure the voltage.
- 4-5 Reverse the polarity of the AC plug in the AC outlet and repeat the above measurement.
- 4-6 Voltage measured must not exceed 1.5 volt RMS, from any exposed metallic part to the ground. A leakage current tester may be used in the above hot check, in which case any circuit measured must not exceed 1.0 milliamp. In the case of a measurement exceeding the 1.0 milliamp value, a rework is required to eliminate the chance of a shock hazard .



Correct methods :	Incorrect Methods :
Only touch the metal-frame of the panel or the front cover of the monitor . Do not touch the surface of the polarizer .	Surface of the panel is pressed by fingers & this may cause “ MURA “
	
	
Take out the monitor with cushion	Take out the monitor by grasping the LCD panel. That may cause “ MURA “.
	

Correct Methods :	Incorrect Methods :
Place the monitor on a clean & soft foam pad .	Place the monitor on foreign objects . That could scratch the surface of panel
	

2. Specification

GENERAL specification

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

VIDEO INTERFACE

Analog Input Connector	DB-15 (Analog), refer the appendix A
Digital Input Connector	DVI-I (Digital), refer the appendix B
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 DB-15 Pin out	Compliant DDC 1/2B
Video Signals	1. Video RGB (Analog) Separate, Composite, and Sync on Green 2. TMDS (Digital)
Video Impedance	75 Ohms (Analog), 100 Ohms (Digital)
Maximum PC Video Signal	950 mV with no damage to monitor
Maximum Mac Video Signal	1250 mV with no damage to monitor
Sync Signals	LVDS
DDC 1/2B	Compliant with Revision 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	640 x 350*, 640 x 480, 720 x 400* (640 x 400*), 800 x 600, 832 x 624, 1024 x 768, 1152 x 864, 1152 x 870, 1280 x 720, 1280 x 960, 1280 x 1024 * The image vertical size might not be full screen. But the image vertical position should be at the center.
Exclusions	Not compatible with interlaced video

POWER SUPPLY

Internal Power Supply	Part Number: FSP035-1PI01
Input Voltage Range	90 to 264 VAC
Input Frequency Range	47.5 to 63 Hertz
Short Circuit Protection	Output can be shorted without damage
Over Current Protection	3.5 A typical at 12.0 VDC (Protect when short circuit)
Leakage Current	0.75mA (Max) at 264VAC / 50Hz
Efficiency	77 % typical at 115VAC Full Load
Fuse	Internal and not user replaceable
Power Dissipation	35 Watts (typ)
Max Input AC Current	1.2 Arms @ 90VAC, 0.7 Arms @265VAC

Audio interface(SPEAKER SPECIFICATION)

Line input connection	3.5mm stereo jack
Line input signal	1.3Vrms
Line input impedance	10Kohm
Maximum Power output	1W@<5% distortion
Signal to Noise Ratio	72dB
Frequency response	200Hz – 20K
Distortion	<5% THD @1K
Vibration	There should be no audio vibration with Volume at 100% and treble/bass at default
Screen image	There should be no affect on the screen Image stability under any conditions.
Connector PC99 requirement Audio in	Lime Green pantone # 577C
Cable type / length	3.5mm stereo cable / 1.8m length
Audio DPMS	Speakers stay on where the rest of the monitor is in power –saving. Note: There us no guarantee <1w power consumption in active off mode when the Audio cable is connected.

ELECTRICAL REQUIREMENT

Horizontal / Vertical Frequency

Horizontal Frequency	30 – 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
1	640 x 350 @ 70Hz, 31.5kHz	Yes	Yes
2	640 x 400 @ 60Hz, 31.5kHz	Yes	Yes
3	640 x 400 @ 70Hz, 31.5kHz	Yes	Yes
4	640 x 480 @ 50Hz, 24.7kHz	Yes	No
5	640 x 480 @ 60Hz, 31.5kHz	Yes	Yes
6	640 x 480 @ 67Hz, 35.0kHz	Yes	Yes
7	640 x 480 @ 72Hz, 37.9kHz	Yes	Yes
8	640 x 480 @ 75Hz, 37.5kHz	Yes	Yes
9	640 x 480 @ 85Hz, 43.27kHz	Yes	Yes
10	720 x 400 @ 70Hz, 31.5kHz	Yes	Yes
11	800 x 600 @ 56Hz, 35.1kHz	Yes	Yes
12	800 x 600 @ 60Hz, 37.9kHz	Yes	Yes
13	800 x 600 @ 75Hz, 46.9kHz	Yes	Yes
14	800 x 600 @ 72Hz, 48.1kHz	Yes	Yes
15	800 x 600 @ 85Hz, 53.7kHz	Yes	Yes
16	832 x 624 @ 75Hz, 49.7kHz	Yes	Yes
17	1024 x 768 @ 60Hz, 48.4kHz	Yes	Yes
18	1024 x 768 @ 70Hz, 56.5kHz	Yes	Yes
19	1024 x 768 @ 72Hz, 58.1kHz	Yes	Yes
20	1024 x 768 @ 75Hz, 60.0kHz	Yes	Yes
21	1024 x 768 @ 85Hz, 68.67kHz	Yes	Yes
22	1152 x 864 @ 75Hz, 67.5kHz	Yes	Yes
23	1152 x 870 @ 75Hz, 68.7kHz	Yes	Yes
24	1280 x 1024 @ 60Hz, 63.4kHz	Yes	Yes
25	1280 x 1024 @ 75Hz, 79.97kHz	Yes	Yes
26	1280x 720 @ 60Hz, 45kHz (HDTV)	Yes	Yes

TFT LCD PANEL

1st Source Panel

Model number	HSD HSD190ME13-D10
Type	TN type with LVDS interface
Active Size	376.3 (H) x 301.1 (V)
Pixel Arrangement	RGB Vertical Stripe
Pixel Pitch	0.294 mm
Glass Treatment	Anti Glare (Hard coating 3H)
# of Backlights	4 CCFL edge-light (2 top / 2 bottom)
Backlight Life	40000 Hours (Min)
Luminance (Center) – Condition: CT = 6500K, Contrast = Max, Brightness = Max	300 cd/m2 (Typ after 30 minute warm up) 240 cd/m2 (Min after 30 minute warm up)
Brightness Uniformity	70% (min) δW = Max Luminance of 9 points/Min Luminance of 9 points
Contrast Ratio	700:1 (typ), 450:1 (min)
Color Depth	16.2 million colors (6 bits + 2 bits FRC)
Viewing Angle (Horizontal)	@ CR>10 Typical: 150 Minimum: 130 @ CR>5 Typical: 160 Minimum: N/A
Viewing Angle (Vertical)	@ CR>10 Typical: 135 Minimum: 115 @ CR>5 Typical: 150 MINIMUM: N/A
Response Time 10%-90% @ Ta=25°C	5 ms (Tr= 1,5 ms, Tf = 3.5 ms) (typ) 10 ms (Tr= 3 ms, Tf = 7 ms) (max)
Panel Defects	Please see Panel Quality Specifications.

MECHANICAL

Dimension (Desktop)

Width	431 mm (17 inch)
Height	468 mm (18.4 inch)
Depth	201 mm (7.9 inch)
Monitor Weight	6.7 Kg (14.8 lbs)

Dimension (Head Only / Wall Mount)

Width	431 mm (17 inch)
Height	370 mm (14.6 inch)
Depth	66 mm (2.6 inch)
Monitor Weight	5.3 Kg (11.7 lbs)

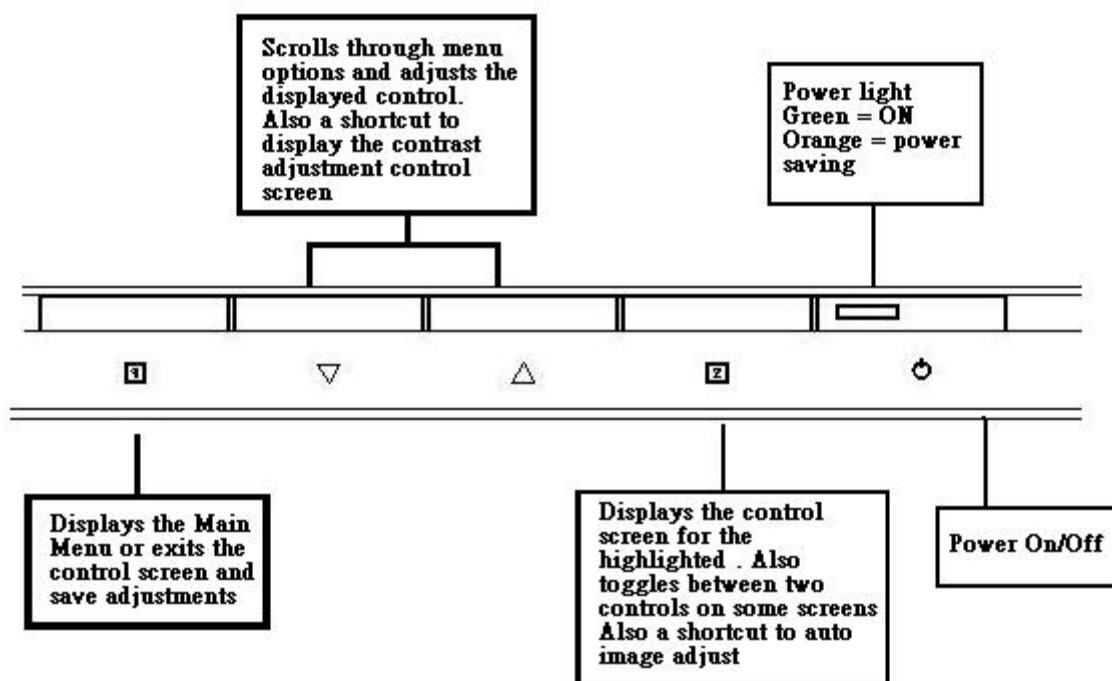
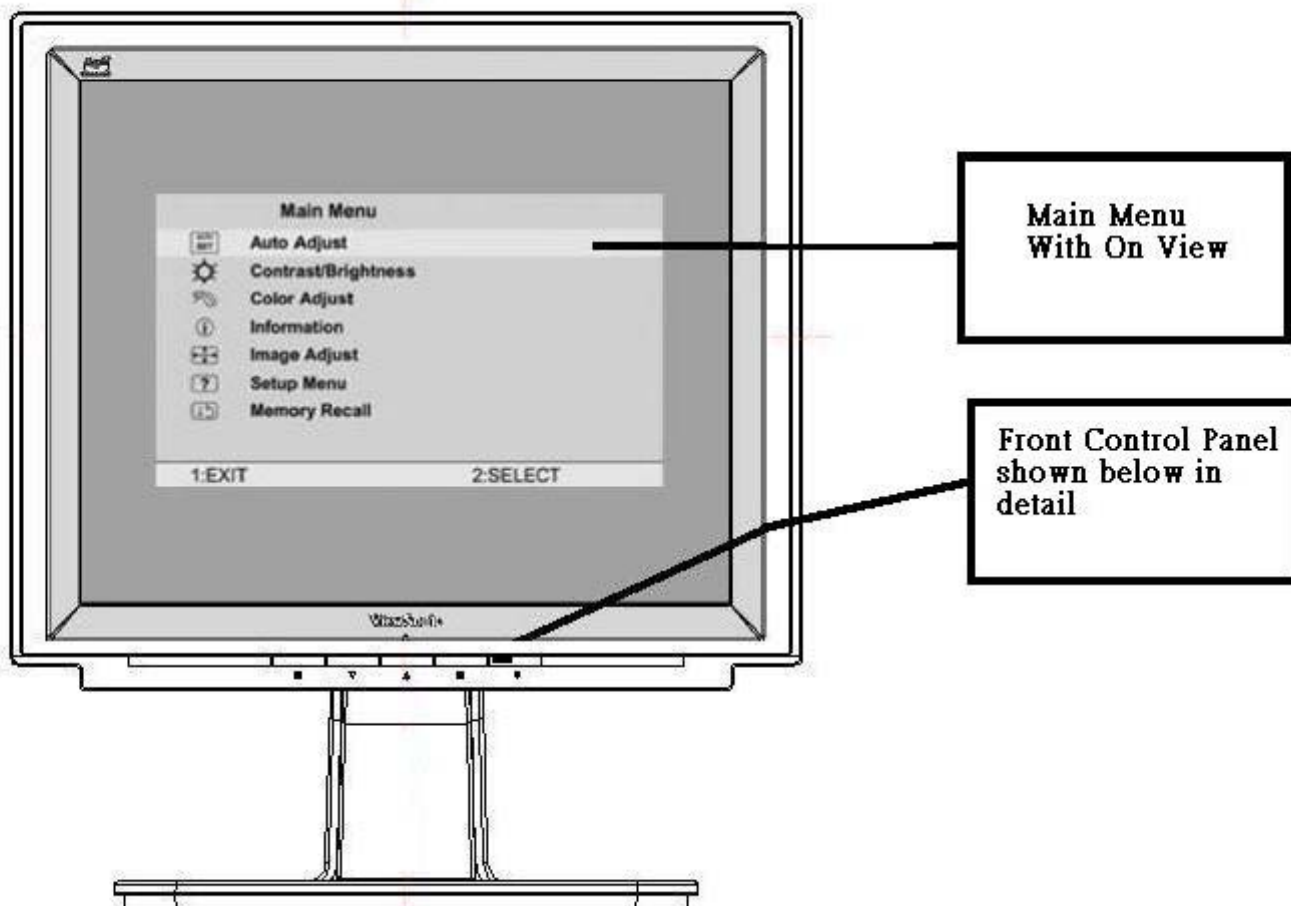
Ergonomics

Tilt Up	From 0° up to $\geq 20^\circ$
Tilt Down	From 0° down to $-3^\circ \sim -5^\circ$

ENVIRONMENTAL

- Operating Temperature : 0°C to +40°C
- Storage Temperature : -20°C to +60°C
- Operating Relative Humidity : 20% to 90% RH Non-Condensing
- Storage Relative Humidity : 5% to 90% RH Non-Condensing
- Operating Altitude : 0 to +3,000 meters
- Storage Altitude : 0 to +12,000 meters

3. Front Panel Function Control Description



ViewSonic VX912-4

Main Menu Controls

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

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.

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.

Contrast adjusts the difference between the image background (black level) and the foreground (white level).

Brightness adjusts the lamps current to control the screen brightness.

Color Adjust provides several color options: preset color temperatures and Custom User Color which allows you to adjust red (R), green (G), and blue (B). The factory setting for this product is 6500K (6500° Kelvin).

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

5400K — Adds red to the screen image for warmer white and richer red.

Custom User Color — Individual adjustments for red, green, and blue.

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

2 To adjust selected color, press ▼ or ▲ .

3 When you are finished making all color adjustments, press button [1] twice.

Information displays the timing mode (video signal input) coming from the graphics card in your computer. See your graphic card's user guide for instructions on changing the resolution and refresh rate (vertical frequency). VESA 1280 x 1024 @ 60 Hz (recommended) means that the resolution is 1280 x 1024 and the refresh rate is 60 Hertz.

Manual Image Adjust controls are explained below:

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

NOTE: Vertical size is automatic with your LCD display.

H./V. Position adjusts horizontal and vertical position of the screen image. You can toggle between Horizontal and Vertical by pressing button [2]. Horizontal moves the screen image to the left or to the right. Vertical moves the screen image up and down.

Fine Tune sharpens focus by aligning the illuminated text and/or graphic characters.

Sharpness adjusts the clarity and focus of the screen image.

Setup Menu controls are explained below:

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

Resolution Notice displays the recommended resolution for this LCD display.

Enable allows the Resolution Notice to appear on-screen.

Disable will not allow the Resolution Notice to appear on-screen.

OSD Timeout sets the length of time an on-screen display screen is displayed. For example, with a "15 second" setting, if a control is not pushed within 15 seconds, the display OSD disappears.

OSD Position allows you to move the on-screen display menus and control screens.

Memory Recall returns adjustments to the original factory settings if the display is operating in a factory Preset Timing Mode listed in this user guide.

4. Circuit Description

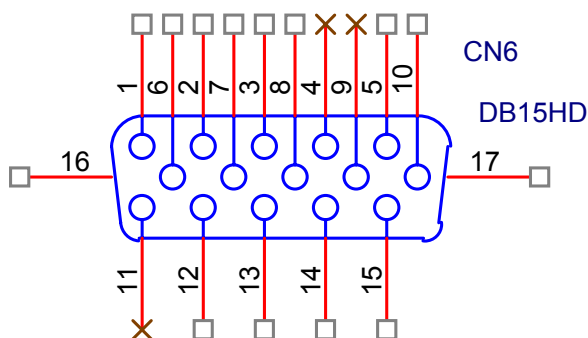
1. Outline

- 3.1. POWER On/Off , LED, Button"2" , Up arrow- button , Down arrow button , Button"1" , button , Down arrow button , Button"1" , on the front panel.
- 3.2. Video signal connector, and AC-IN are located on the back side of the cabinet.
- 3.3. OSD menu includes the following function;
AUTO IMAGE ADJUST
CONTRAST / BRIGHTNESS
COLOR ADJUST
INFORMATION
MANUAL IMAGE ADJUST
SETUP MENU
MEMORY RECALL
- 3.4. CONTRAST and BRIGHTNESS can be directly controlled with UP / DN key.

2. CONNECTORS

2.1 AC inlet : CEE22 typed connector

2.2 Video signal connector 14P + Mini D-Sub



PIN	MNEMONI	SIGNAL
1	RV	Red Video
2	GV	Green Video
3	BV	Blue Video
4	NC	None
5	GND	Ground(DDC return)
6	RG	Red GND
7	GG	Green GND
8	BG	Blue GND
9	+5V	+ 5V (for DDC)
10	SG	Sync GND
11	NC	None
12	SDA	DDC Data
13	HS	Horizontal Sync
14	VS	Vertical Sync
15	SCL	DDC Clock

3. ELECTRICAL SPECIFICATIONS

3.1. Standard conditions

Display Area	338 x 270 mm
Video Signal	0.7 Vpp
Contrast	70%
Brightness	Max.
Ambient	20 +/- 5 °C
Input	AC
Warming up	> 30 min
Display	1280 x 1024

3.2. POWER

3.2.1. Power supply

Input Voltage	90 -240 ~Volts
Power Frequency	50/ 60 Hz +/-3Hz
Input current	<1.5Arms @ 90Vac <0.75Arms@240Vac
Inrush current	90A(max.) at 230Vac
Power consumption	50Watt
Output Voltage	@0-3.0A load 12Vdc +/-5%

3.2.2. Power Management

State	Power	Indicator
On	40Watt	Green
Standby	<1Watt	Amber
Off	<1Watt	

3.3. Acceptable timing

If your timing is within following specification, this LCD display can automatically function with a certain position.

Horizontal: Sync frequency : 30~81 kHz

Vertical: Sync frequency : 56~85Hz(1280x1024,75Hz)

3.4. Signal level and input impedance

3.4.1. Video Signal level This LCD display is adjusted at the factory using 0,7 Vp-p Video signal.

3.4.2. Sync Signal level

H/V Separate : TTL level

3.4.3. Input impedance

Video input : 75 ohms

Sync input : > 1 k ohms

4. SIGNAL CABLE : Signal cable with Mini D-Sub 15P connectors at both ends. Length : 1.8 meter.

5. EDID data

Analog EDID

VIEWSONIC CORPORATION
EDID Version # 1, Revision # 3
DDCTest For: ViewSonic VX912-3

128 BYTES OF EDID CODE:

	0	1	2	3	4	5	6	7	8	9
0		00	FF	FF	FF	FF	FF	FF	00	5A 63
10		1C	D7	01	01	01	01	01	0F	01 03
20		0E	26	1E	78	2E	57	45	A4	57 47
30		9D	25	17	50	54	BF	EF	80	81 80
40		81	40	71	4F	01	01	01	01	01 01
50		01	01	01	01	30	2A	00	98	51 00
60		2A	40	30	70	13	00	78	2D	11 00
70		00	1E	00	00	00	FF	00	50	5A 38
80		30	35	30	31	30	30	30	30	31 0A
90		00	00	00	FD	00	32	4B	1E	52 0E
100		00	0A	20	20	20	20	20	20	00 00
110		00	FC	00	56	58	39	31	32	2D 33
120		0A	20	20	20	20	00	49		

- (08-09) ID Manufacturer Name _____ = VSC
(11-10) Product ID Code _____ = D71C
(12-15) Last 5 Digits of Serial Number _____ = Not Used
(16) Week of Manufacture _____ = 01
(17) Year of Manufacture _____ = 2005
(10-17) Complete Serial Number _____ = See Descriptor Block
(18) EDID Version Number _____ = 1
(19) EDID Revision Number _____ = 3
(20) VIDEO INPUT DEFINITION:
Analog Signal
0.700, 0.300 (1.000 Vp-p)
Separate Syncs, Composite Sync, Sync on Green
(21) Maximum Horizontal Image Size _____ = 380 mm
(22) Maximum Vertical Image Size _____ = 300 mm
(23) Display Gamma _____ = 2.20
(24) Power Management and Supported Feature(s):
Active Off/Very Low Power, Standard Default Color Space,

Preferred Timing Mode
Display Type = R/G/B Color

(25-34) CHROMA INFO:

Red X - 0.642 Green X - 0.278 Blue X - 0.146 White X - 0.313
Red Y - 0.341 Green Y - 0.616 Blue Y - 0.090 White Y - 0.329

(35) ESTABLISHED TIMING I:

720 X 400 @ 70Hz (IBM,VGA)
640 X 480 @ 60Hz (IBM,VGA)
640 X 480 @ 67Hz (Apple,Mac II)
640 X 480 @ 72Hz (VESA)
640 X 480 @ 75Hz (VESA)
800 X 600 @ 56Hz (VESA)
800 X 600 @ 60Hz (VESA)

(36) ESTABLISHED TIMING II:

800 X 600 @ 72Hz (VESA)
800 X 600 @ 75Hz (VESA)
832 X 624 @ 75Hz (Apple,Mac II)
1024 X 768 @ 60Hz (VESA)
1024 X 768 @ 70Hz (VESA)
1024 X 768 @ 75Hz (VESA)
1280 X 1024 @ 75Hz (VESA)

(37) Manufacturer's Reserved Timing:

1152 X 870 @ 75Hz (Apple,Mac II)

(38-53) Standard Timing Identification:

1280 X 1024 @60Hz
1152 X 864 @75Hz
1024 X 768 @85Hz
800 X 600 @85Hz
640 X 480 @85Hz
Not Used
Not Used
Not Used

(54-71) Detailed Timing / Descriptor Block 1:

1280x1024 Pixel Clock: 108.00 MHz

Horizontal Image Size: 376 mm	Vertical Image Size: 301 mm
Refreshed Mode: Non-Interlaced	Normal Display - No Stereo

Horizontal:

Active Time: 1280 pixels	Blanking Time: 408 pixels
Sync Offset: 48 pixels	Sync Pulse Width: 112 pixels
Border: 0 pixels	Frequency: 63.98 KHz

Vertical:

Active Time: 1024 lines	Blanking Time: 42 lines
Sync Offset: 1 lines	Sync Pulse Width: 3 lines
Border: 0 lines	Frequency: 60.02 Hz

Digital Separate, Horizontal Polarity (+) Vertical Polarity (+)

(72-89) Detailed Timing / Descriptor Block 2:

Monitor Serial Number:
PZ8050100001

(90-107) Detailed Timing / Descriptor Block 3:

Monitor Range Limits:
Min Vertical Freq - 50 Hz
Max Vertical Freq - 85 Hz
Min Horiz. Freq - 30 KHz
Max Horiz. Freq - 82 KHz
Pixel Clock - 140 MHz
Secondary GTF - Not Supported

(108-125) Detailed Timing / Descriptor Block 4:

Monitor Name:
VX912-3

(126) No Extension EDID Block(s)
(127) CheckSum OK

Digital EDID

VIEWSONIC CORPORATION
EDID Version # 1, Revision # 3
DDCTest For: ViewSonic VX912

128 BYTES OF EDID CODE:

	0	1	2	3	4	5	6	7	8	9
0		00	FF	FF	FF	FF	FF	FF	00	5A 63
10		1C	D7	01	01	01	01	01	0F	01 03
20		80	26	1E	78	2E	57	45	A4	57 47
30		9D	25	17	50	54	BF	EF	80	81 80
40		81	40	71	4F	31	0A	01	01	01 01
50		01	01	01	01	30	2A	00	98	51 00
60		2A	40	30	70	13	00	78	2D	11 00
70		00	1E	00	00	00	FF	00	50	5A 38
80		30	35	30	31	30	30	30	30	31 0A
90		00	00	00	FD	00	32	4B	1E	52 0E
100		00	0A	20	20	20	20	20	20	00 00
110		00	FC	00	56	58	39	31	32	2D 33
120		0A	20	20	20	20	20	00	49	

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Analog Signal
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(21) Maximum Horizontal Image Size _____ = 380 mm
(22) Maximum Vertical Image Size _____ = 300 mm
(23) Display Gamma _____ = 2.20
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Active Off/Very Low Power, Standard Default Color Space,
Preferred Timing Mode
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(35) ESTABLISHED TIMING I:

720 X 400 @ 70Hz (IBM,VGA)

640 X 480 @ 60Hz (IBM,VGA)

640 X 480 @ 67Hz (Apple,Mac II)

640 X 480 @ 72Hz (VESA)

640 X 480 @ 75Hz (VESA)

800 X 600 @ 56Hz (VESA)

800 X 600 @ 60Hz (VESA)

(36) ESTABLISHED TIMING II:

800 X 600 @ 72Hz (VESA)

800 X 600 @ 75Hz (VESA)

832 X 624 @ 75Hz (Apple,Mac II)

1024 X 768 @ 60Hz (VESA)

1024 X 768 @ 70Hz (VESA)

1024 X 768 @ 75Hz (VESA)

1280 X 1024 @ 75Hz (VESA)

(37) Manufacturer's Reserved Timing:

1152 X 870 @ 75Hz (Apple,Mac II)

(38-53) Standard Timing Identification:

1280 X 1024 @60Hz

1152 X 864 @75Hz

1024 X 768 @85Hz

800 X 600 @85Hz

640 X 480 @85Hz

Not Used

Not Used

Not Used

(54-71) Detailed Timing / Descriptor Block 1:

1280x1024 Pixel Clock: 108.00 MHz

Horizontal Image Size: 376 mm	Vertical Image Size: 301 mm
Refreshed Mode: Non-Interlaced	Normal Display - No Stereo

Horizontal:

Active Time: 1280 pixels	Blanking Time: 408 pixels
Sync Offset: 48 pixels	Sync Pulse Width: 112 pixels
Border: 0 pixels	Frequency: 63.98 KHz

Vertical:

Active Time: 1024 lines	Blanking Time: 42 lines
Sync Offset: 1 lines	Sync Pulse Width: 3 lines
Border: 0 lines	Frequency: 60.02 Hz

Digital Separate, Horizontal Polarity (+) Vertical Polarity (+)

(72-89) Detailed Timing / Descriptor Block 2:

Monitor Serial Number:
PZ8050100001

(90-107) Detailed Timing / Descriptor Block 3:

Monitor Range Limits:
Min Vertical Freq - 50 Hz
Max Vertical Freq - 85 Hz
Min Horiz. Freq - 30 KHz
Max Horiz. Freq - 82 KHz
Pixel Clock - 140 MHz
Secondary GTF - Not Supported

(108-125) Detailed Timing / Descriptor Block 4:

Monitor Name:
VX912-3

(126) No Extension EDID Block(s)

(127) CheckSum OK

6. THEORY OF OPERATION

This section describes the function of the LCD monitor per functional block.

This monitor includes MB board, power board and button board.

6.1 MB BOARD

The MB board is a two-layer, single-landed design with ground and internal planes provided. DC power from the power board enter the board through a 6P connector. Other connector on the board is for button board .The VGA cable is a signal cable that contains video signal, sync signal and DDC signal from PC VGA adapter. This system board consists of 4 functional areas : flat panel controller, MCU with flash ROM , power regulator .

6.1.1 Flat panel controller... MST8131A (U3)

The heart of the system board is MStart MST8131A. The MST8131A is a graphics processing IC for LCD monitor. It provides all key IC functions required for LCD panel. On-chip functions include a high-speed triple-ADC , PLL, high scaling engine, OSD controller.

a) Clock Generation :

Crystal Input Clock (TCLK and XTAL). This is the input pair to an internal crystal oscillator and corresponding logic. A 14.318 MHz crystal is recommended.

b) Analog to Digital Converter:

The MST8131A chip has three ADC's (analog-to-digital converters), one for each color (red, green and blue) .The analog RGB signals are connected to MST8131A as described below

Pin Name	Pin Number
Red +	63
Red -	62
Green +	60
Green -	59
Blue +	58
Blue -	57

- c). OSD : The MST8131A has a fully programmable ,high-quality OSD controller. The on-chip static RAM(4096 words by 24 bits) stores the cell map and the cell definitions..
- d). MTV312 Micro controller: The MTV312 micro controller(MCU) serves as the system micro controller. It's programs the MST8131A and manages other devices in the system such as the keypad, the backlight, LED, audio and non-volatile RAM. using general purpose input/output (GPIO) pins.

Pin number	Pin Name	Pin Number Usage
21	P1.3	Key / Power on ,off
13	P3.4	NV_RAM (U4) SDA
14	P3.5	NV_RAM (U4) SCL
25	P1.7	Key_down
9	P6.3	Key_right
24	P1.6	Key_up
16	P6.2	Key_left
37	P4.1	Key_mute
34	P5.6	VGA connector
23	P1.5	Key_select
42	P5.3	LED_red
41	P5.4	LED_green
32	P6.6	LCD panel power1 on / off control
3	P5.0	LCD panel power2 on / off control
36	P4.0	Backlight on / off control

- e). Panel Power Sequencing (VDDCTRL1, 2) (Pin 32, 3) : The MTV312 has two dedicated outputs VDDCTRL1 and 2 (Pin32 and Pin3) to control LCD power sequencing once data and control signals are stable.
- f). Panel interface (Pin 1~25, Pin75~128) : The MTV312 driver interface is highly programmable. It supports dual bus / dual port for SXGA drivers.

6.1.2 Power Regulator MC34063A (U6),AIC1739 (Q4) : The MC34063A is a monolithic control IC containing the primary functions required for DC to DC converters. The device consists of an internal temperature compensated reference, comparator, controlled duty cycle.

Oscillator with an active current sense circuit. Desired output voltage are determined by the equation,

$Volt = 1.25 \left(1 + R67 / R66 \right)$, In this case, the output voltage are 3.3 Volts

The AIC1739 is a low dropout positive adjustable regulator with minimum of 300mA output current capability.

So it is well suited for 3.3 V and 2.5 V Regulator.

6.1.3 Power Regulator MC34063A (U7) : The MC34063A is a monolithic control IC containing the primary functions required for DC to DC converters. The device consists of an internal temperature compensated reference, comparator, controlled duty cycle.

Oscillator with an active current sense circuit. Desired output voltage are determined by the equation,

$Volt = 1.25 \left(1 + R85 / R86 \right)$, In this case, the output voltage are 5.0 Volts for panel power.

6.3 Power(Inverter) Board

This is a specific power(inverter) power board for VE912 monitor 40W 12V 3.5A output power and backlight which converts 12 Vdc to drive four cold cathode fluorescence tubes.

6.3.1 Inverter Electrical specification described as below.

Input	Rated Input Voltage	12Vdc
	Input Voltage Range	11.4 ~ 12.6 Vdc
	Input Current	<2A
	On / Off control Voltage	2~3.3 for on , 0~1 for off
Output	Rated Output Strike-on Voltage	1500Vrms
	Rated Output Voltage	912Vrms at 7mA
	Rate Output Frequency	40~50KHz
	Rated Ourput Current	7~8 mA

6.3.2 power

This is a general purpose AC / DC adapter which converter 90~240 Vac to a stabilized DC voltage 12 V with rated output current of 4.16A . Electrical specification described as below.

	Rated Input Voltage	90~240 Vac , 50 / 60Hz
	Operation Input Voltage	90~260 Vac , 47 ~ 63Hz
	Input Current	<1.5A
	Inrush Current	<100A@120Vac
	Standby Input Voltage	12Vdc
	Output Voltage Regulation	+/-5%
	Output Ripple & Noise	120mVp-p
	Rate Output Current	<3.5A
	Turn-on delay	<3secs

5. Adjustment Procedure

Function test

(1) Test equipment

Color video Signal & pattern generator (or PC with SXGV resolution)

(2) Test condition

Warm-up at least 30mins is necessary under following condition before function test & alignment :

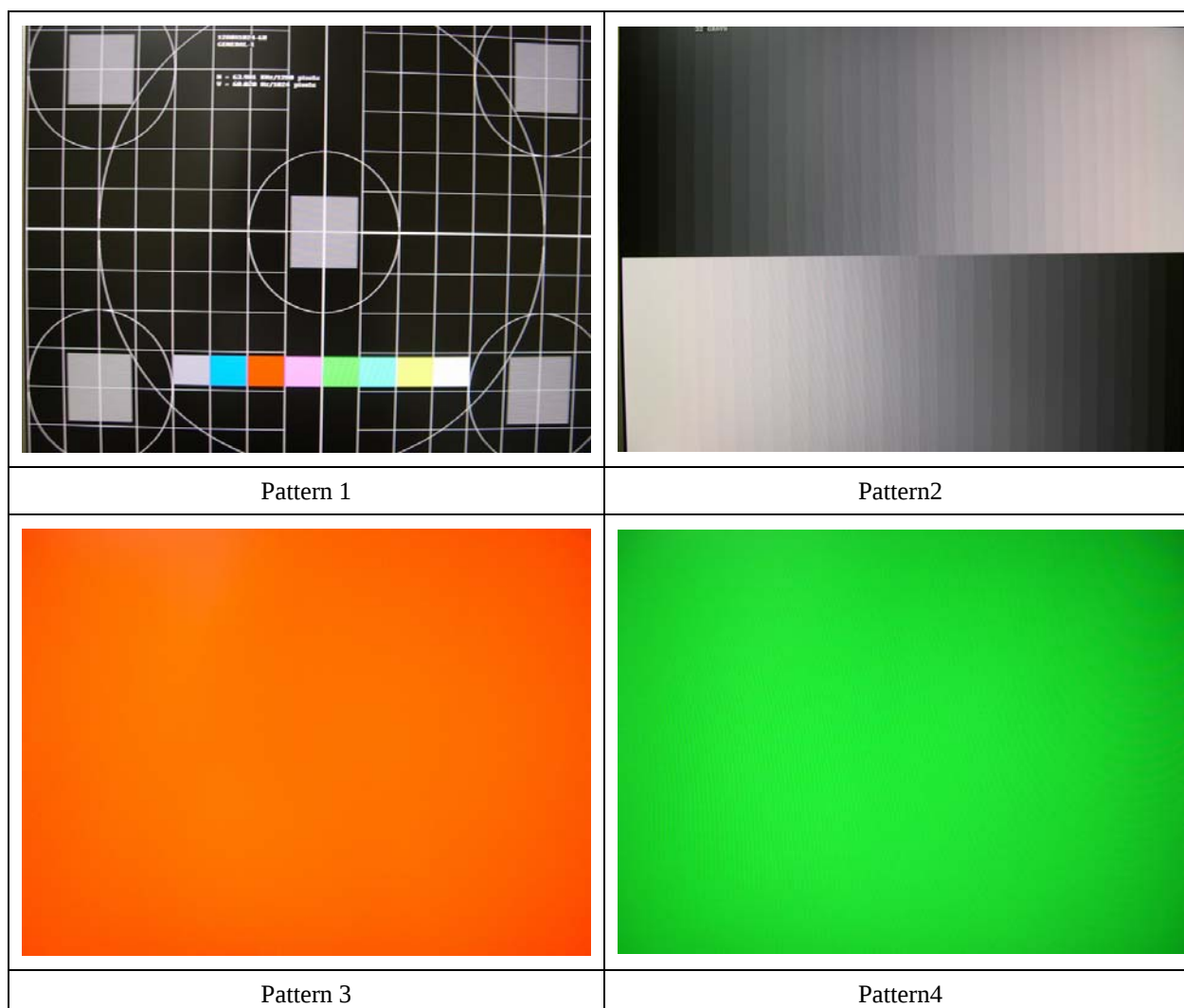
- A. room temperature
- B. With full-white screen , RGB , black pattern
- C. with cycled display modes.

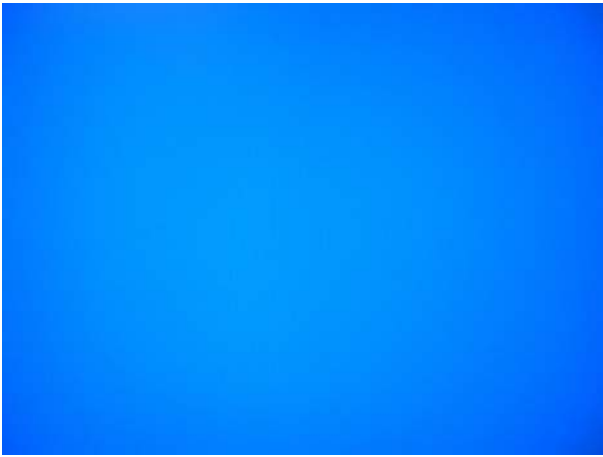
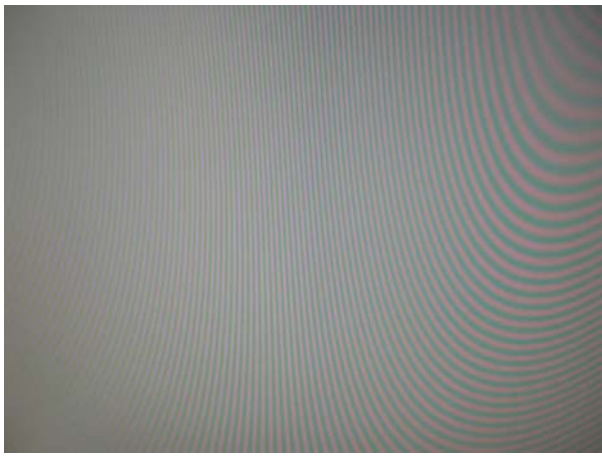
Test display modes

Item	Timing	Analog	Digital
1	640 x 350 @ 70Hz, 31.5kHz	Yes	Yes
2	640 x 400 @ 60Hz, 31.5kHz	Yes	Yes
3	640 x 400 @ 70Hz, 31.5kHz	Yes	Yes
4	640 x 480 @ 60Hz, 31.5kHz	Yes	Yes
5	640 x 480 @ 67Hz, 35.0kHz	Yes	Yes
6	640 x 480 @ 72Hz, 37.9kHz	Yes	Yes
7	640 x 480 @ 75Hz, 37.5kHz	Yes	Yes
8	640 x 480 @ 85Hz, 43.27kHz	Yes	Yes
9	720 x 400 @ 70Hz, 31.5kHz	Yes	Yes
10	800 x 600 @ 56Hz, 35.1kHz	Yes	Yes
11	800 x 600 @ 60Hz, 37.9kHz	Yes	Yes
12	800 x 600 @ 75Hz, 46.9kHz	Yes	Yes
13	800 x 600 @ 72Hz, 48.1kHz	Yes	Yes
14	800 x 600 @ 85Hz, 53.7kHz	Yes	Yes
15	832 x 624 @ 75Hz, 49.7kHz	Yes	Yes
16	1024 x 768 @ 60Hz, 48.4kHz	Yes	Yes
17	1024 x 768 @ 70Hz, 56.5kHz	Yes	Yes
18	1024 x 768 @ 72Hz, 58.1kHz	Yes	Yes
19	1024 x 768 @ 75Hz, 60.0kHz	Yes	Yes
20	1024 x 768 @ 85Hz, 68.67kHz	Yes	Yes
21	1152 x 864 @ 75Hz, 67.5kHz	Yes	Yes
22	1152 x 870 @ 75Hz, 68.7kHz	Yes	Yes
23	1280 x 1024 @ 60Hz, 63.4kHz	Yes	Yes
24	1280 x 1024 @ 75Hz, 79.97kHz	Yes	Yes
25	1280x 720 @ 60Hz, 45kHz (HDTV)	Yes	Yes

Test pattern

Item	Test condition	Pattern	Specification	Remark
1	Frequency & performance	Cross-hatch pattern	No noise is allow & all color is clear	Pattern 1
2	Monitor saturation	16-gray scale pattern	3~4 level need to saturated when brightness & contrast is 100%	Pattern 2
3	RGB color performance	RGB color	Check the color temperature of RGB signal color	Pattern 3, 4, 5
4	Sub-pixel defect	RGB color	Check the sub-pixel defect	Pattern 3, 4 , 5
5	Full white	Full white	Check the brightness ,CR & bright pixel defect	Pattern 6
6	Full black	Full black		Pattern 7
7.	5-cycle pattern	5-cycle pattern	Check the BU	Pattern 8
8.	1-dot pattern	1-dot pattern	Check the flicker	Pattern 9



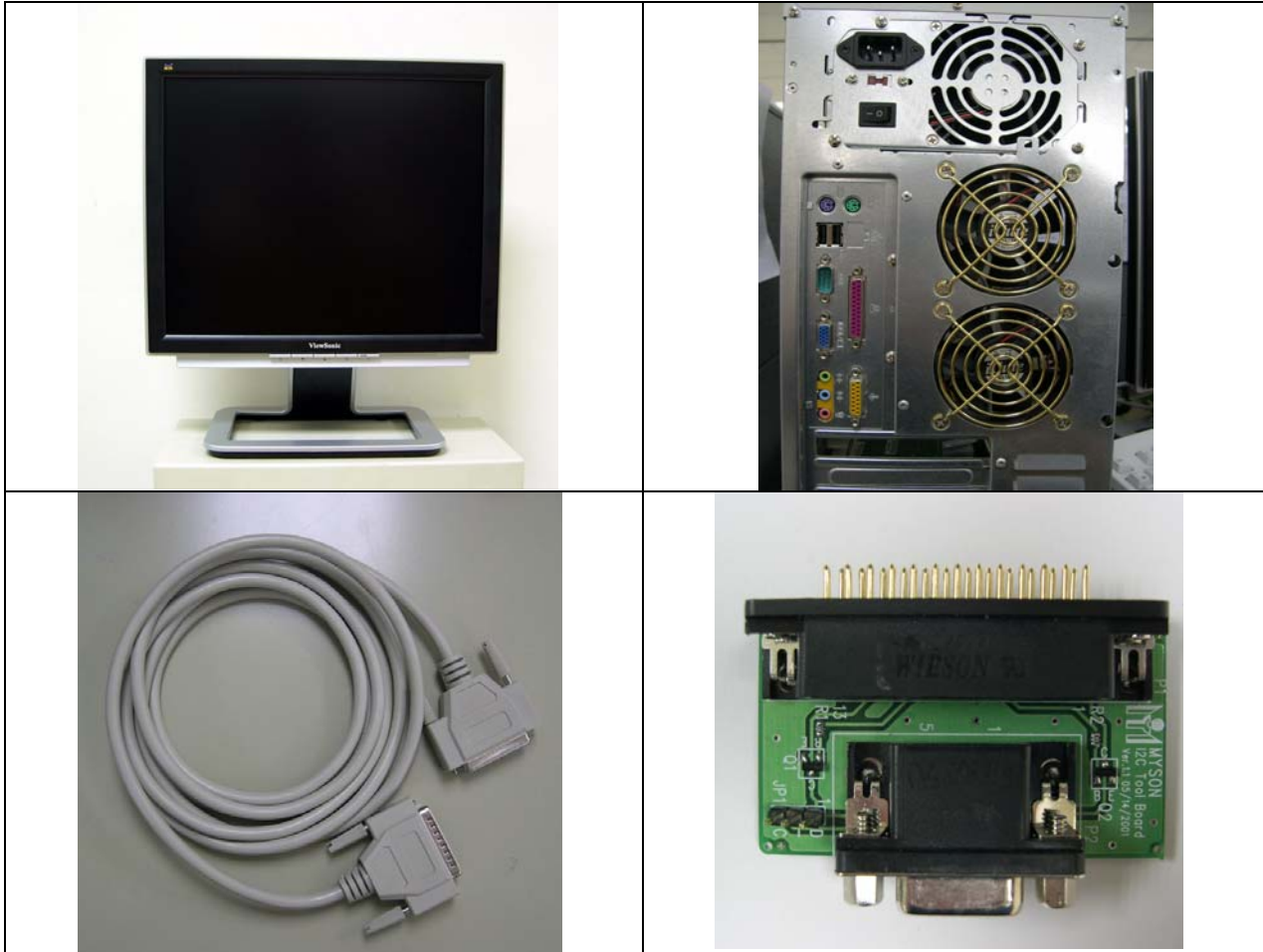
	
Pattern 5	Pattern6
	
Pattern 7	Pattern 8
	
Pattern 9	

Firmware update procedure :

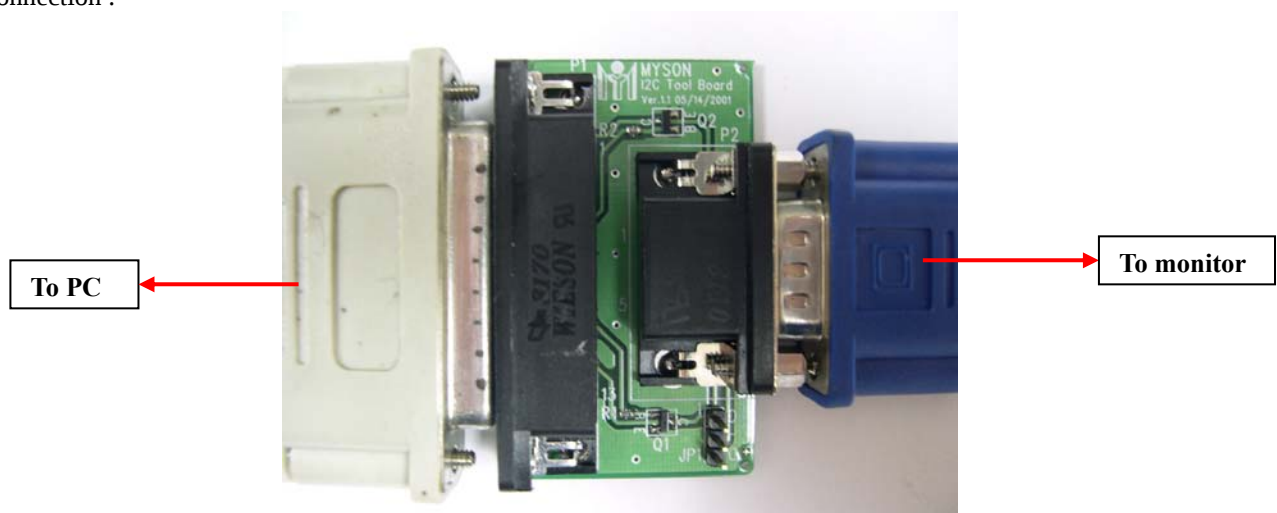
When you received a received monitor , please check whether the firmware version. If not , please following procedure to upgrade to the latest version .

1. Equipment needed :

- VX912-4
- PC (Personal computer)
- LPT cable
- Fixture (for LM5ISP)
- Firmware upgrade program
-



2. Connection :



Appendix A : How to install the software for ISP :

0. To setup ISP environment :

Hardware:

PC or notebook, parallel(printer) cable, ISP tooling.

Software:

If OS was Win2000 or WinXP , please install “PORT95NT.exe”

In order to ensure can execute ISP program, please set BIOS in PC or Notebook as Fig 0.0

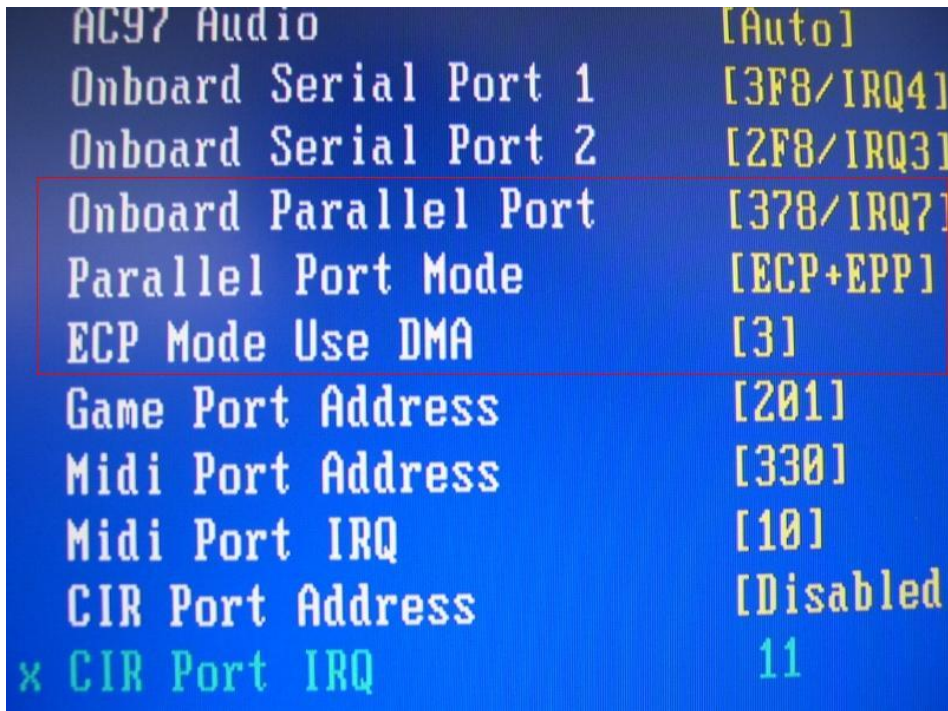


Fig 0.0

0.1 Double-click the “ PORT95NT.exe” in Windows & install the program. , see Fig 0.1

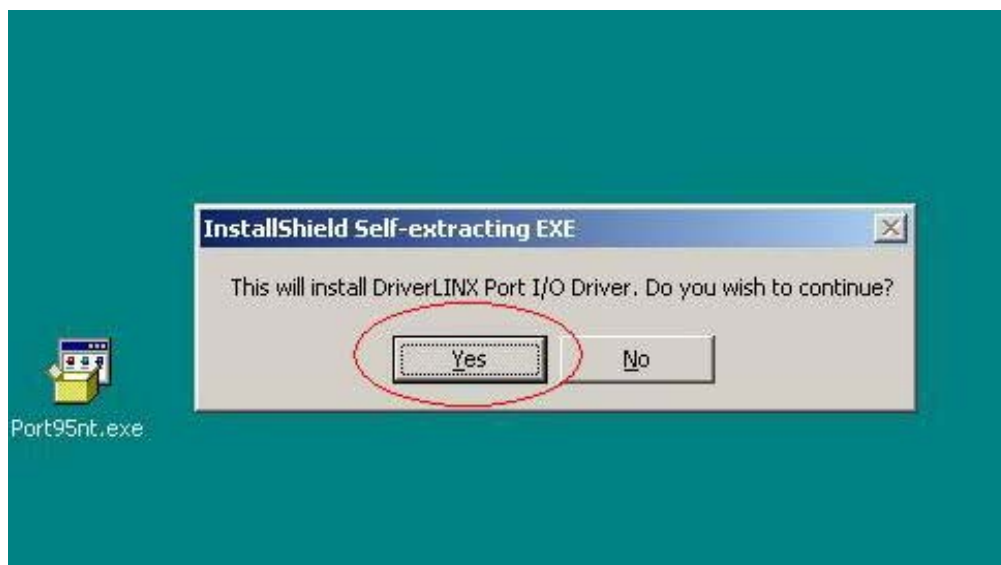


Fig 0.1

0.2 Keep on press “ Next “ 4 times to go through the installation processes, see Fig. 0.2

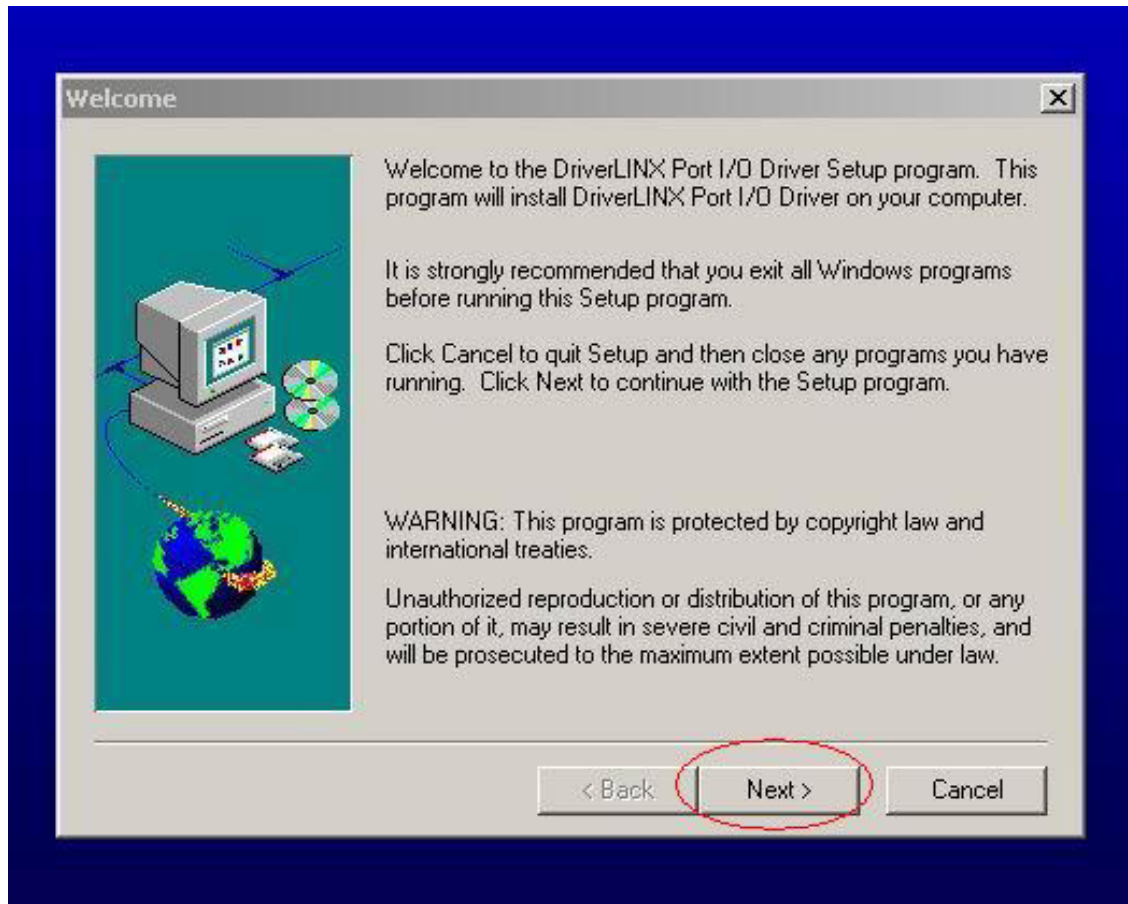


Fig. 0.2

0.3 Choose “ Typical “ then press “ Next “ , see Fig. 0.3

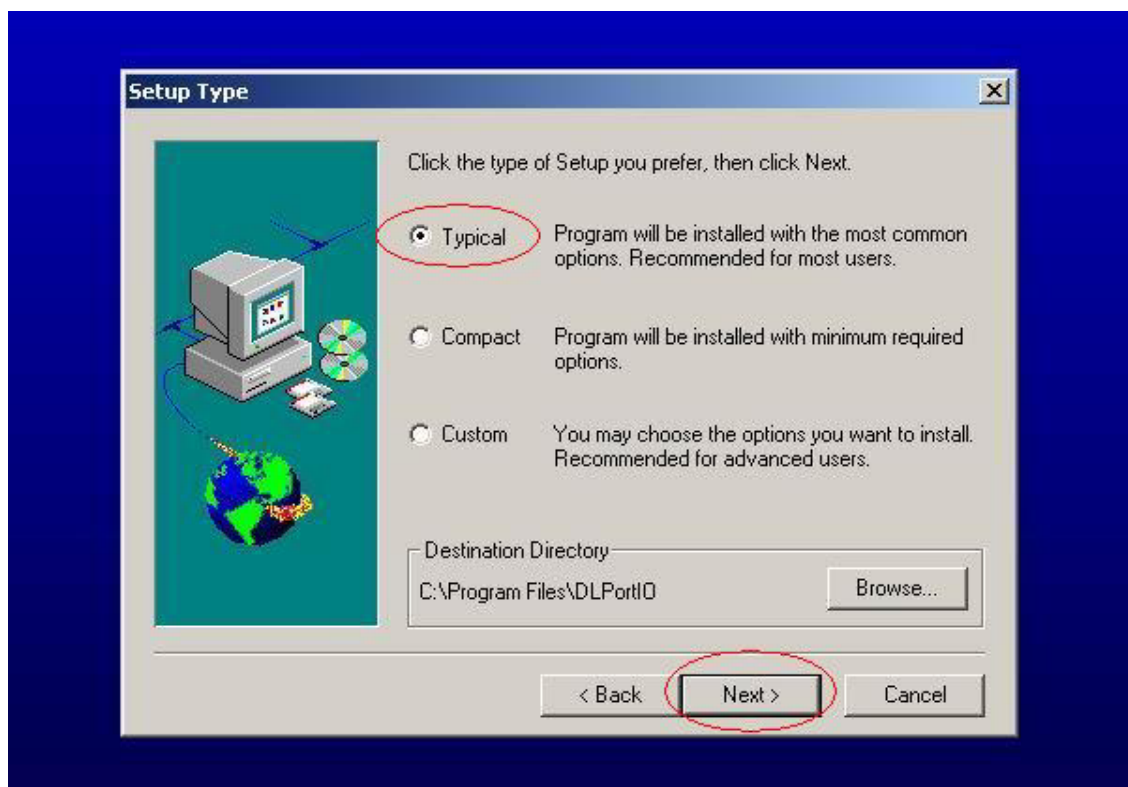


Fig. 0.3

0.4 Keep on press “ Next “ 4 times to go through the installation processes, see Fig. 0.4



Fig. 0.4

0.5 Install completed , restart the PC or notebook. See Fig 0.5



Fig. 0.5

1. Install ISP
 - 1.1 User could download ISP driver and PORT95NT install from Myson Century website (www.myson.com.tw)
 - 1.2 After extracting the ZIP file , the total files list as Fig 1.0 , and double click the file of setup.exe to install.

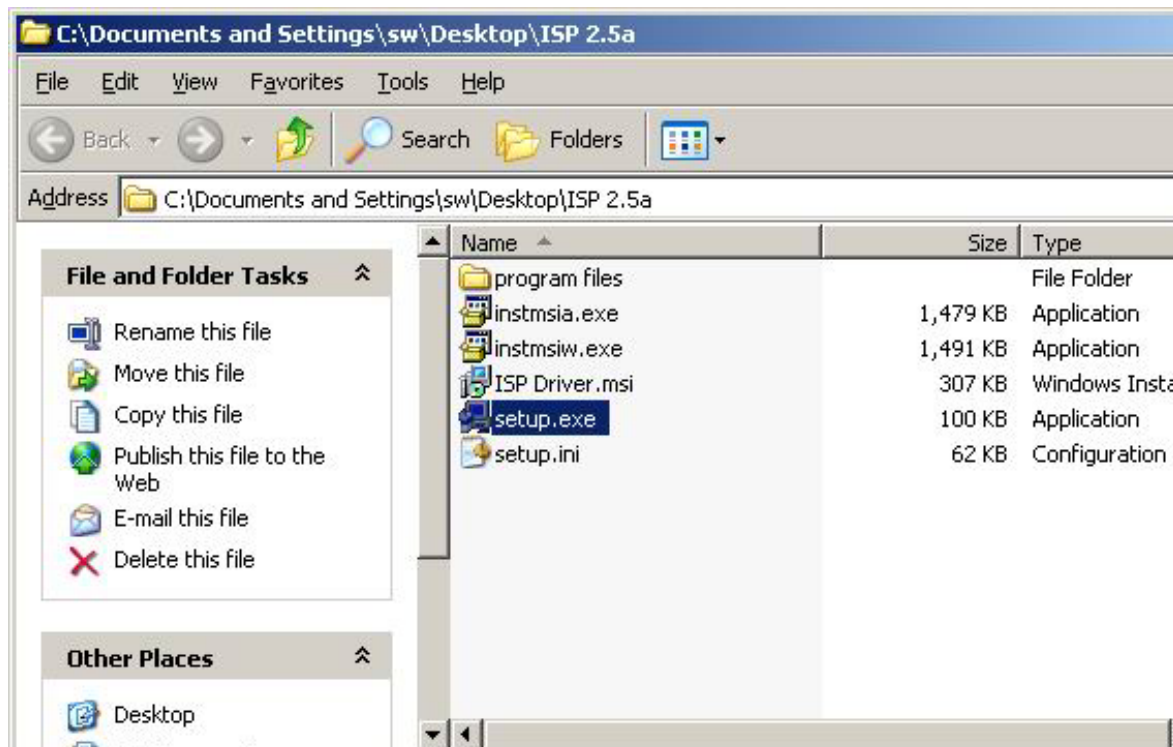


Fig 1.0

- 1.3 Press “ Next “ button to continue., see Fig 1.1



Fig 1.1

1.4 Keep default setting or press “ Change “ button for selecting the path that you want , and then press “ Next “ button to continue , see Fig 1.2



Fig 1.2

1.5 Press “ Install “ button to continue , see Fig 1.3

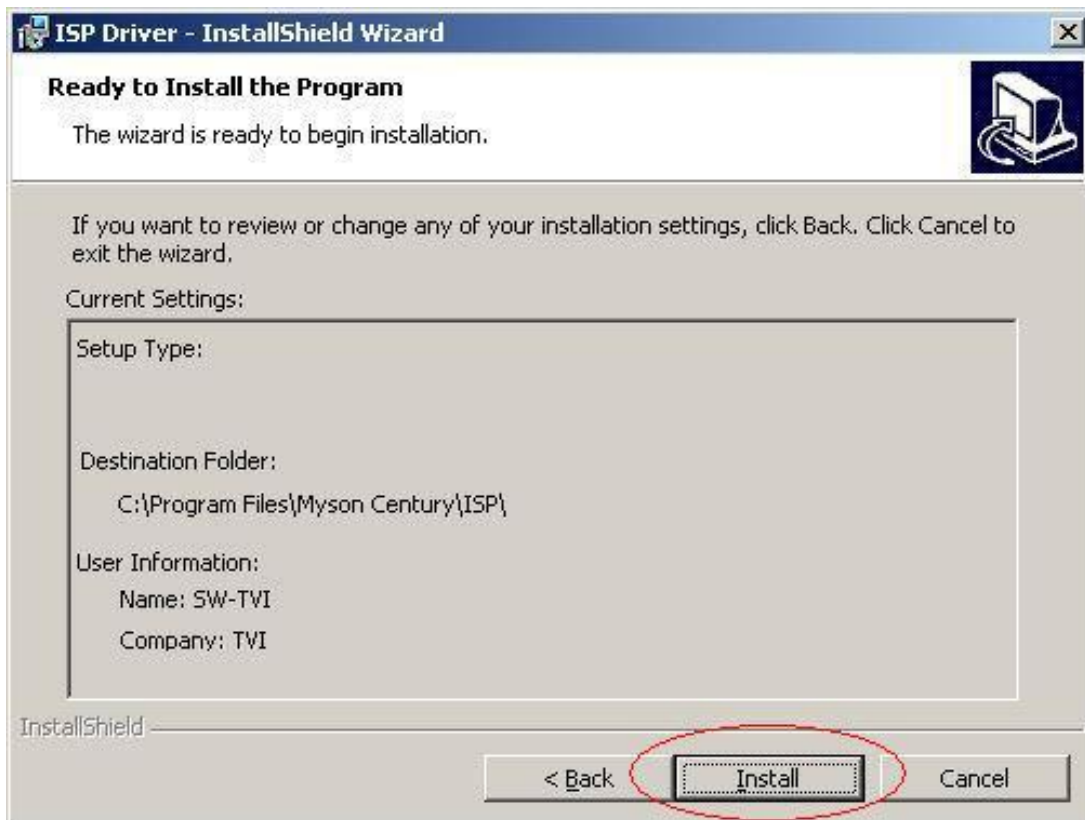


Fig. 1.3

1.6 Installation has finished , press “ Finish “ button , see Fig 1.4

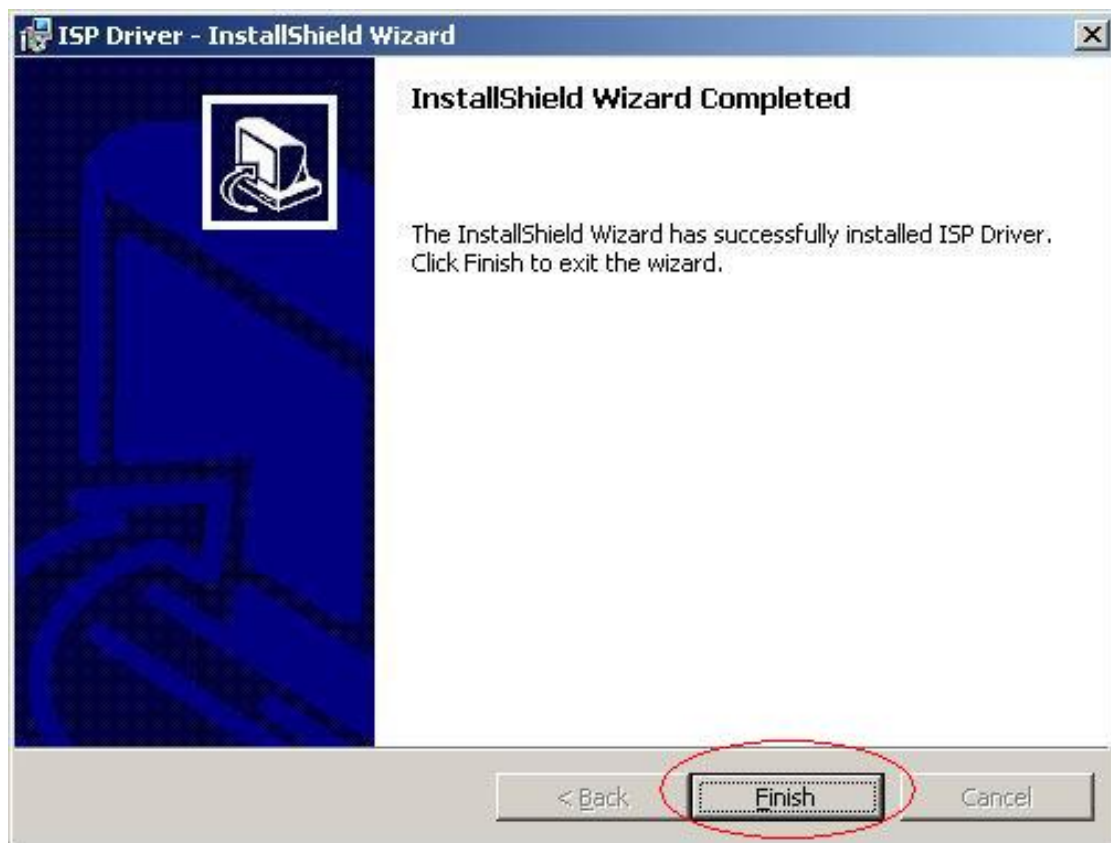


Fig. 1.4

Appendix B : How to use software to upgrade the BIOS :

2.1 After installation , we could find the shortcut in the setting path or the program bar (default setting) , see Fig 2.1



Fig. 2.1

2.2 Security file is a key to use ISP function , press “ OK “ button , see Fig 2.2



Fig. 2.2

- 2.3 The warning is used to remind user of that different CPU rate may cause ISP function fail. (it's limited by IIC protocol) , press “ OK “ button , see Fig 2.3



Fig. 2.3

- 2.4 Press “ Create Security File “ button to key in Security code . Adjusting bar to decrease speed of IIC bus , See Fig. 2.4 .

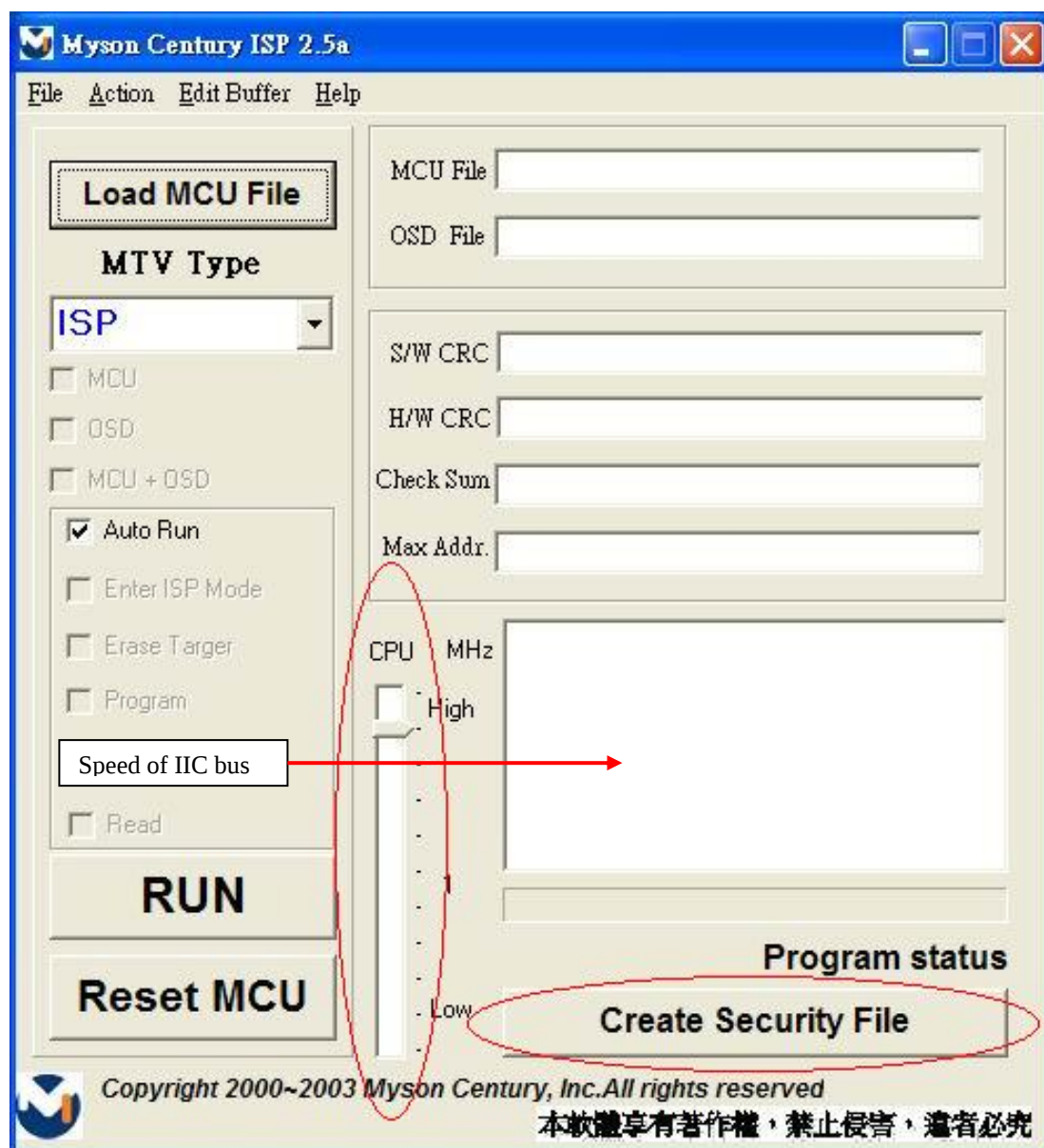


Fig. 2.4

2.5 Fig 2.5 shows the setting for security code of software ISP . it needs 2 command No. and key in command sequentially for 7C , 4C , 77. The command No. and command must be set by user while coding. About the detailed of setting , please refer to section 6 boot code of ISP .

The figure shows a 'Security' configuration window with the following fields and values:

Field	Value	Range
ISP Slave Add.	7c	0x00 - 0xFF
SlaveB Add.	4c	0x00 - 0xFF
Command 1	77	0x00 - 0xFF
Command 2		0x00 - 0xFF
Command 3		0x00 - 0xFF
Command 4		0x00 - 0xFF
Command 5		0x00 - 0xFF
Command 6		0x00 - 0xFF
Command 7		0x00 - 0xFF
Command 8		0x00 - 0xFF
Command 9		0x00 - 0xFF
Command 10		0x00 - 0xFF
Command 11		0x00 - 0xFF
Command 12		0x00 - 0xFF
Command 13		0x00 - 0xFF
Command 14		0x00 - 0xFF
Command 15		0x00 - 0xFF

Command No: 2

Buttons: OK, CLEAR

Fig. 2.5

Appendix C : Use ISP to program MCU

3.1 Select MTV type first , load the binary or intel hex file that you want to program into the MCU , and select “ AUTO” item , then press “ RUN “ button , see fig3.1

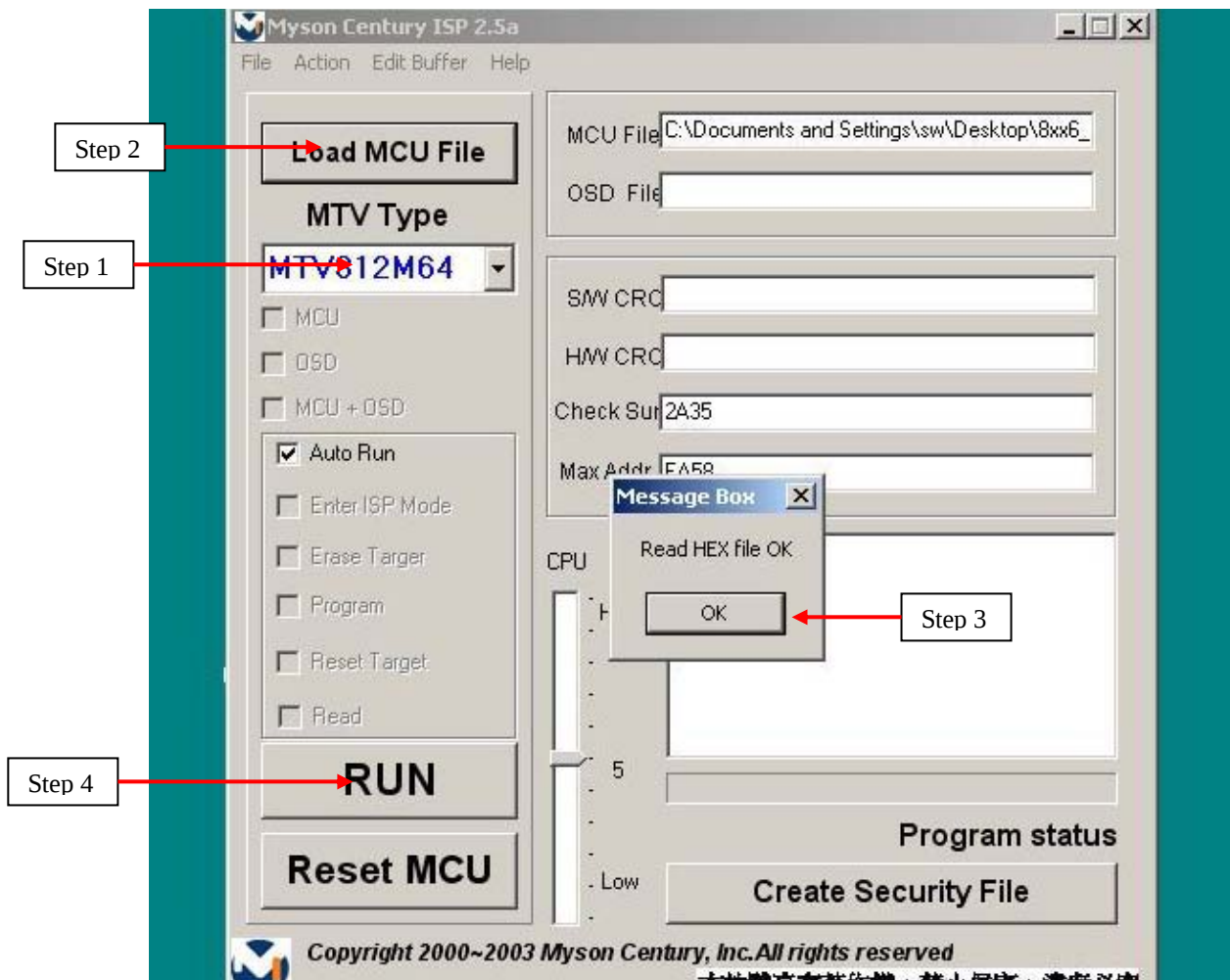


Fig. 3.1

3.2 If user change the MTV type , it must load file again , or the buffer of load file will be cleared .

3.3 CRC (cyclic redundancy check) : the host can check CRC register's result instead of reading every byte in flash .

The message of **Check MCU CRC OK** means that the host verify OK for the progress of program , see Fig.3.2

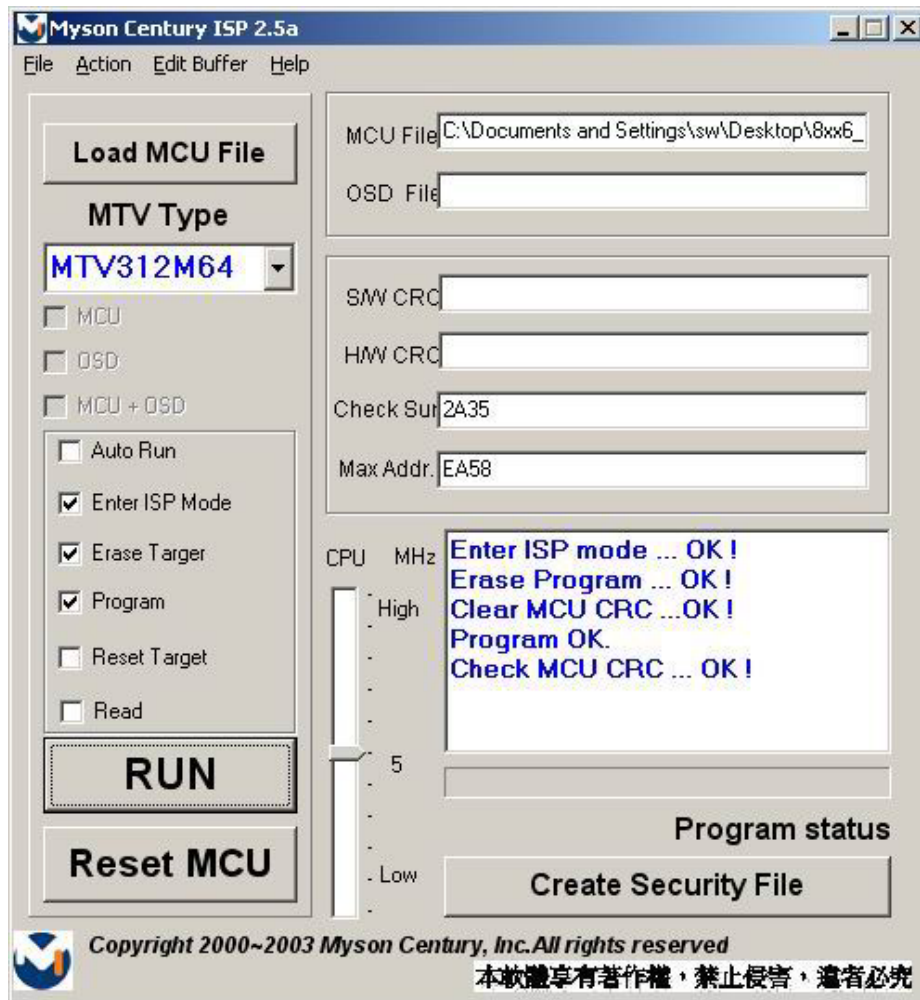


Fig. 3.2

1. Packing procedure

- 1.1 Paste protection film to protect the monitor (Figure.1)
- 1.2 Put the monitor in EPE bag & seal the with tape . (Figure.2)



Figure.1

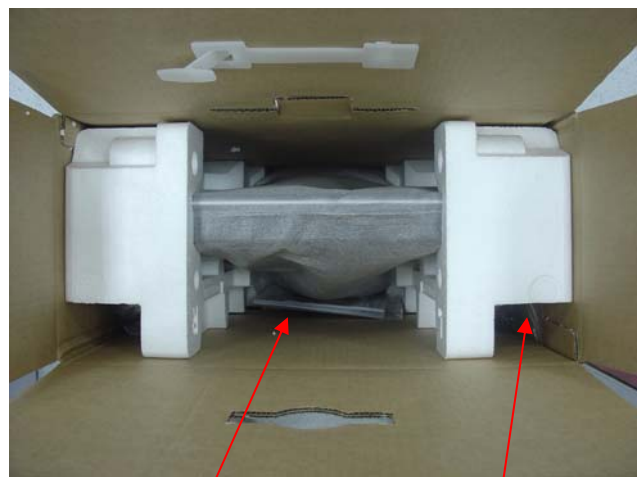


Figure.2

- 1.3 Put the cushion on the monitor (Figure.3)
- 1.4 Put the monitor into carton & put all the accessories into the carton .Then close the carton . (Figure.4)



(Figure 3)



(Figure 4)

QSG

Power cord

2. Disassemble monitor

- 2.1 Turn the monitor , face to back-side & take the I/O cover off. (Figure 5)
- 2.2 Remove the stand back cover (Figure 6)



(Figure 5)



(Figure 6)

- 2.3 Remove the 4pcs of black hinge screw & separate the stand & head part (Figure 7)
- 2.4 Face-down & put the monitor on soft surface of desktop (Figure 8)



Figure 7



Figure 8

Screws

Screws

- 2.5 Remove the 4 black screw on 4 corners .& separate the cover & front-bezel (Figure 9)
- 2.6 Remove the screws which for fixed the B/B & pull the cable out from the connector on M/B (Figure 10)



Figure 9



Figure 10

- 2.7 Remove the B/B (Figure 11)
- 2.8 Remove the screws on PCB shield & remove it . (Figure 12)



Figure 11

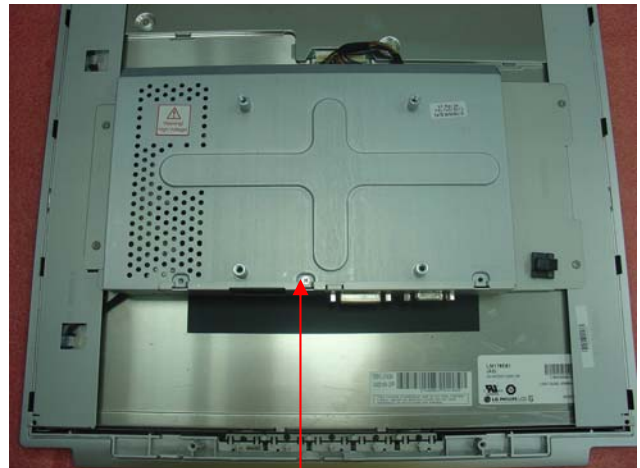


Figure 12

Screws

2.9 Remove the MB-LCD connector & loosen the 4 screws on PCB holder . (Figure 13)

2.10 Separate the PCB holder & panel . (Figure 14)



Figure 13

Screws



Figure 14

2.11 Loosen the 4 screws on the sides of panel (Figure 15)

2.12 Remove the front bezel & panel (Figure 16)



Figure 15



Figure 16

2.13 Remove the 4 hexagon screws beside the DVI & D-sub connector . (Figure 17)

2.14 Remove the screws which fixed the power board & Mainboard (Figure 18)



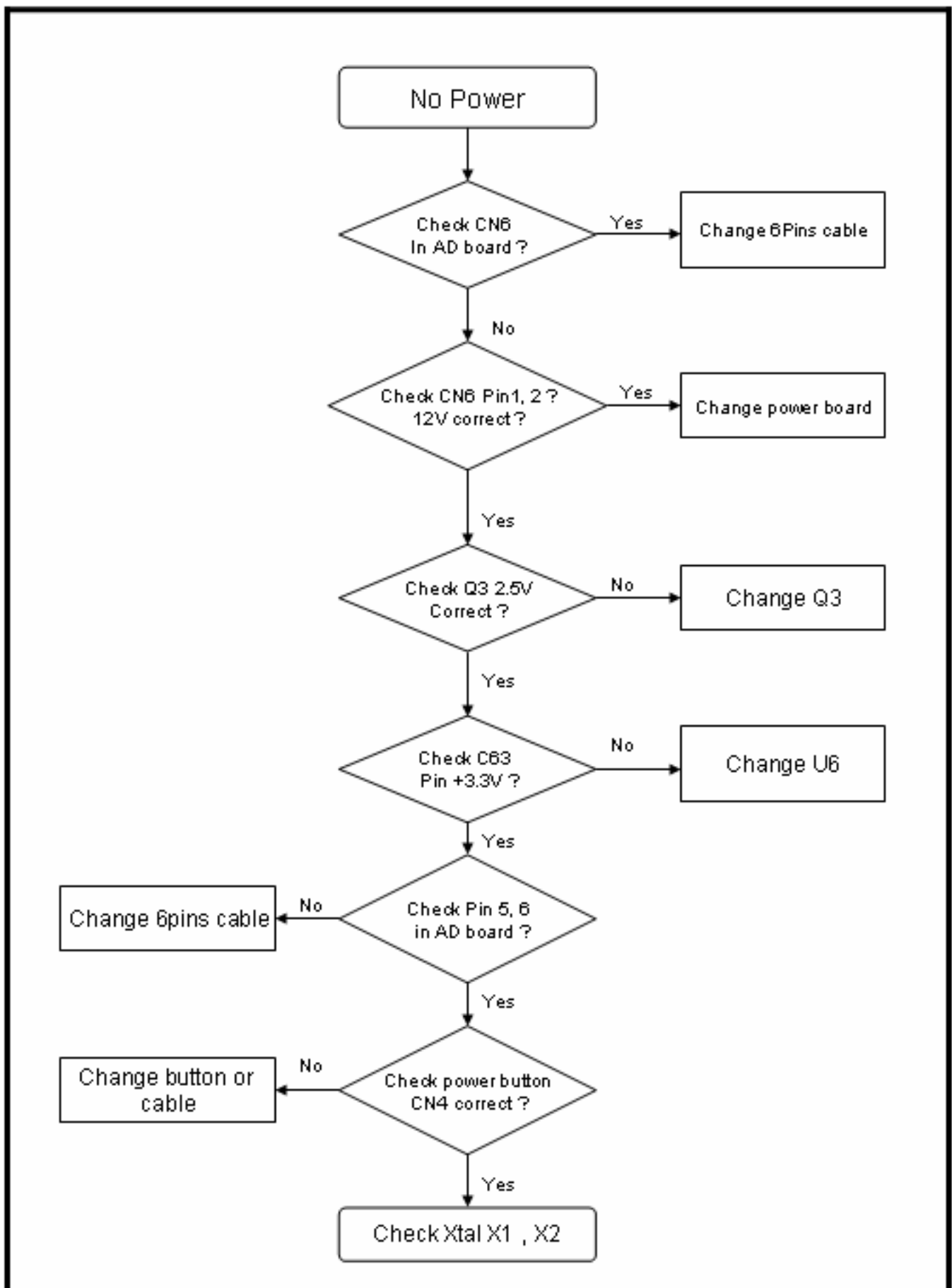
Figure 17



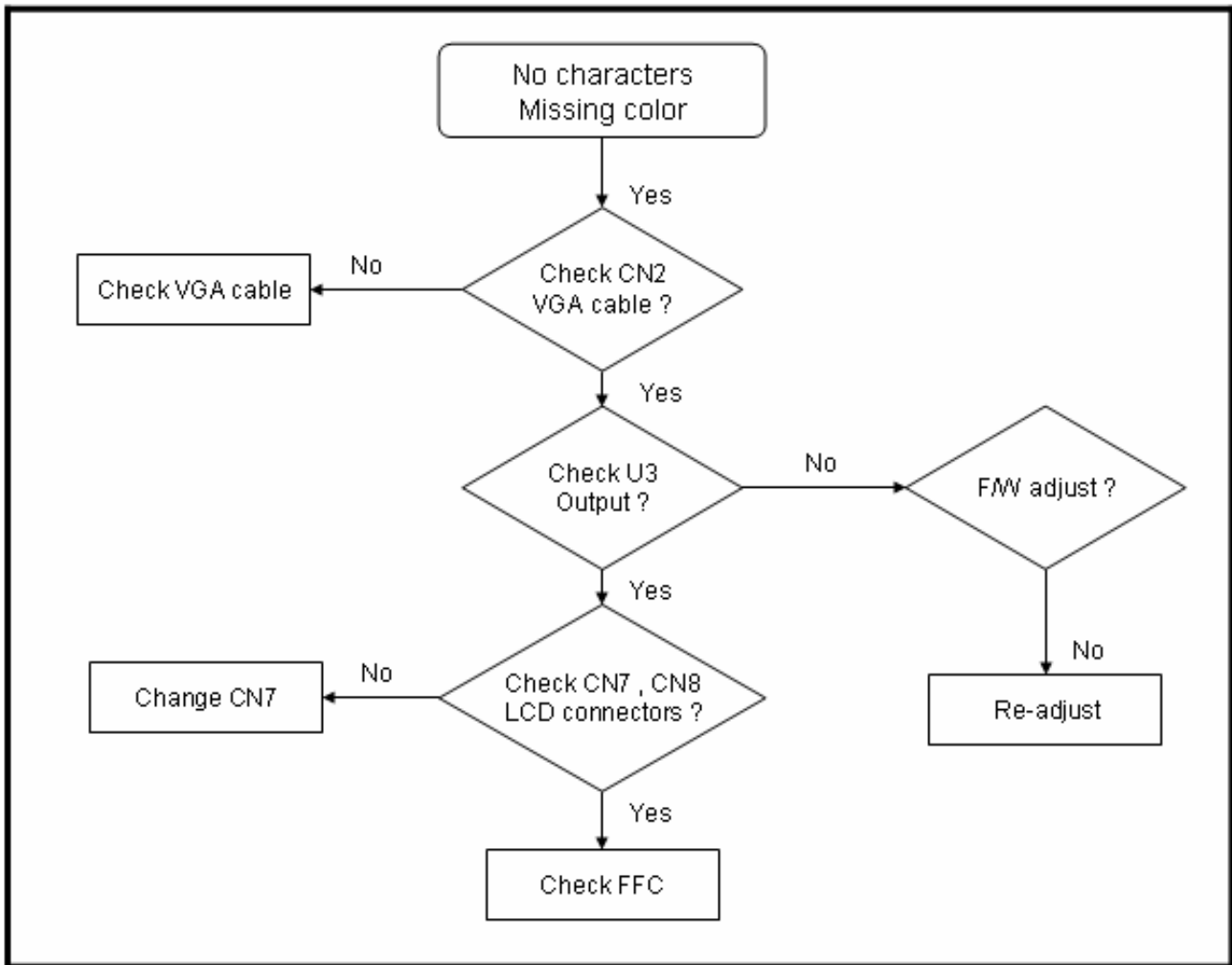
Figure 18

6. Troubleshooting Flow Chart

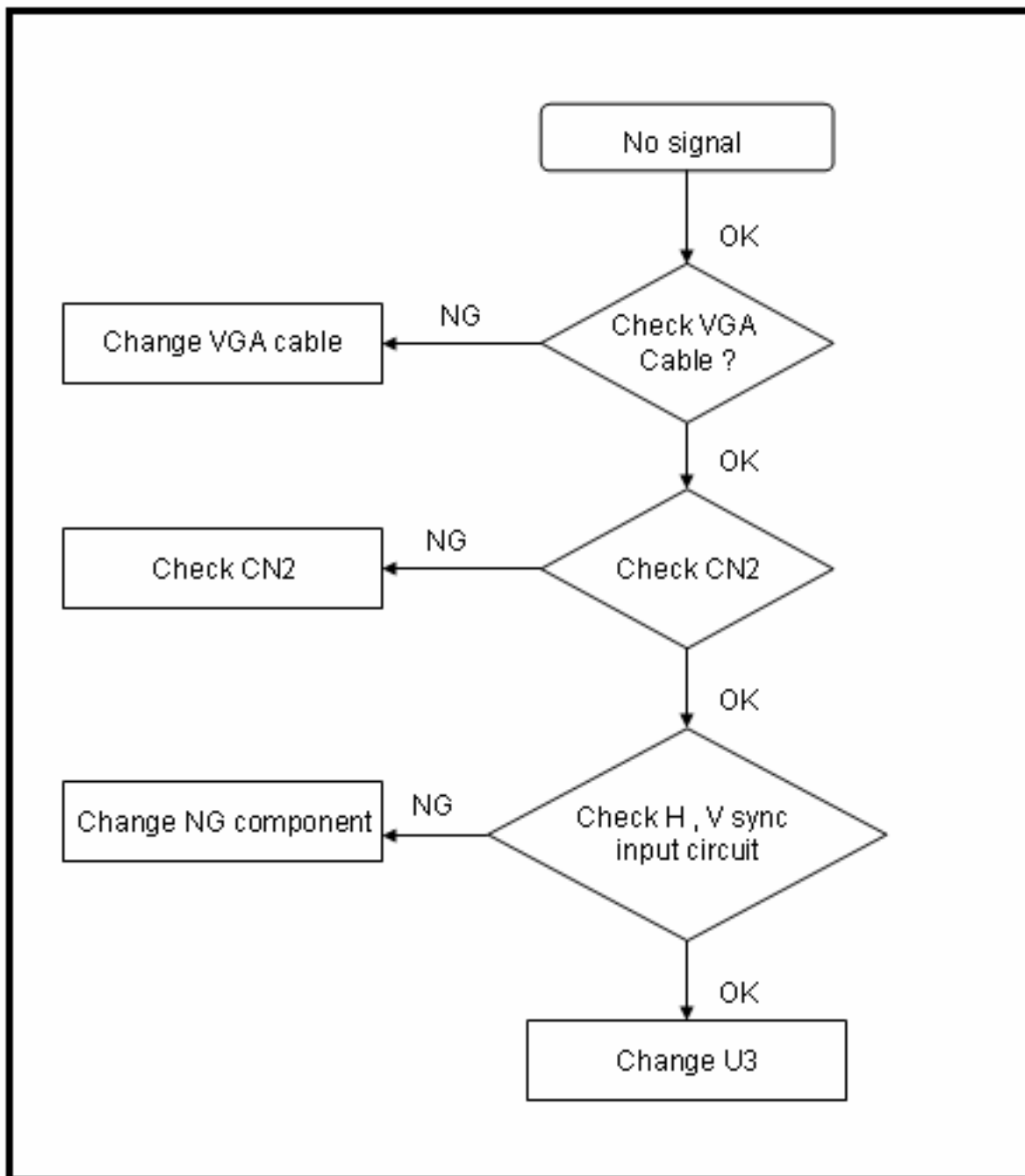
No Power



No Characters , Missing Color



Always show NO SIGNAL



7. Recommended Spare Parts List

RECOMMENDED SPARE PARTS LIST (VX912-4)

ViewSonic Model Number: VS10162

Rev: 1A

Serial No. Prefix: Q8D

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal Number#	Qt'y
1	Board Assembly:		B-00003993	AS05B312D00	power board		1
2			B-00005431	1SL9V0MB041	main board		1
3			B-00005207	1SL9V0BB003	button board		1
4	Cabinets:		C-00001778	EBL9V002015	STAND COVER		1
5			C-00005372	37L9V0SU002	stand		1
6			C-00005432	34L9V0LB018	front bezel assembly		1
7			C-00005376	35L9V0LS009	back cover assembly		1
8	Cables:		CB-00002602	DDL7VDPC005	VGA cable		1
9			CB-00003440	DD0L0TTH108	DVI cable		1
10			CB-00004152	DD0L9VLC023	MB-LCD cable		1
11			CB-00005211	DDW9ZAPA009	audio cable		1
12			CB-00005371	DD0W0ETH002	cable Button-MB		1
13	Electronic Components:		E-00005213	DN0TE230F06	speaker assembly		1
14			E-00005370	AA90ME130F5	LCD panel		1
15	Hardware:		HW-00005216	3FL9V0HS002	hinge cover		1
16			M-SCW-0824-6800	MM30060IBJ8	panel to L/R bracket		4
17			M-SCW-0824-0813	MF30060BBJ6	PCBAs to metal shielding		7
18	Miscellaneous:		M-MS-0808-8986	MBL11004018	DVI&D-SUB to shielding		4
19			M-MS-0808-9682	JXL9V001010	LCD film		1
20			M-MS-0808-9815	GAL9V002014	rubber plug		4
21	Documentation:		DC-00005433	HGL9V023017	user guide		1
22			DC-00005434	HCL9V022017	5MS sticker		1
23	Packing Material:		P-00001432	HFL9V005018	carton		1
24			P-FM-0602-0896	HBL9V001019	cushion		1
25			P-FM-0602-0897	HBL9V002015	cushion		1
26			M-MS-0808-9817	HAL9V002014	EPE bag		1

M-Model (VX912-4M)

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal Number#	Qt'y
1	Accessories:		A-PC-0106-0224	DM333181G97	power cord		1

P-Model (VX912-4P)

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal Number#	Qt'y
1	Accessories:		A-00003642	DM33T181004	power cord		1

G-Model (VX912-4G)

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal Number#	Qt'y
1	Accessories:		A-PC-0106-0306	DM333181S01	power cord		1
2	Documentation:		DC-00003444	HCL7V026017	Qc-Pass Label		1
3			DC-00003445	HDL7V005011	Warranty Card		1
4			M-00003446	HCL7V023018	Warranty Sticker		1
5			DC-00003443	HCL7V024014	Address Label		1

E-Model (VX912-4E)

Item	Description	ECR/ECN	ViewSonic P/N	Ref. P/N	Location	Universal Number#	Qt'y
1	Accessories:		A-PC-0106-0227	DM333181B01	power cord		1
			A-00003644	DM333181703	power cord		1

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 (VX912-4)

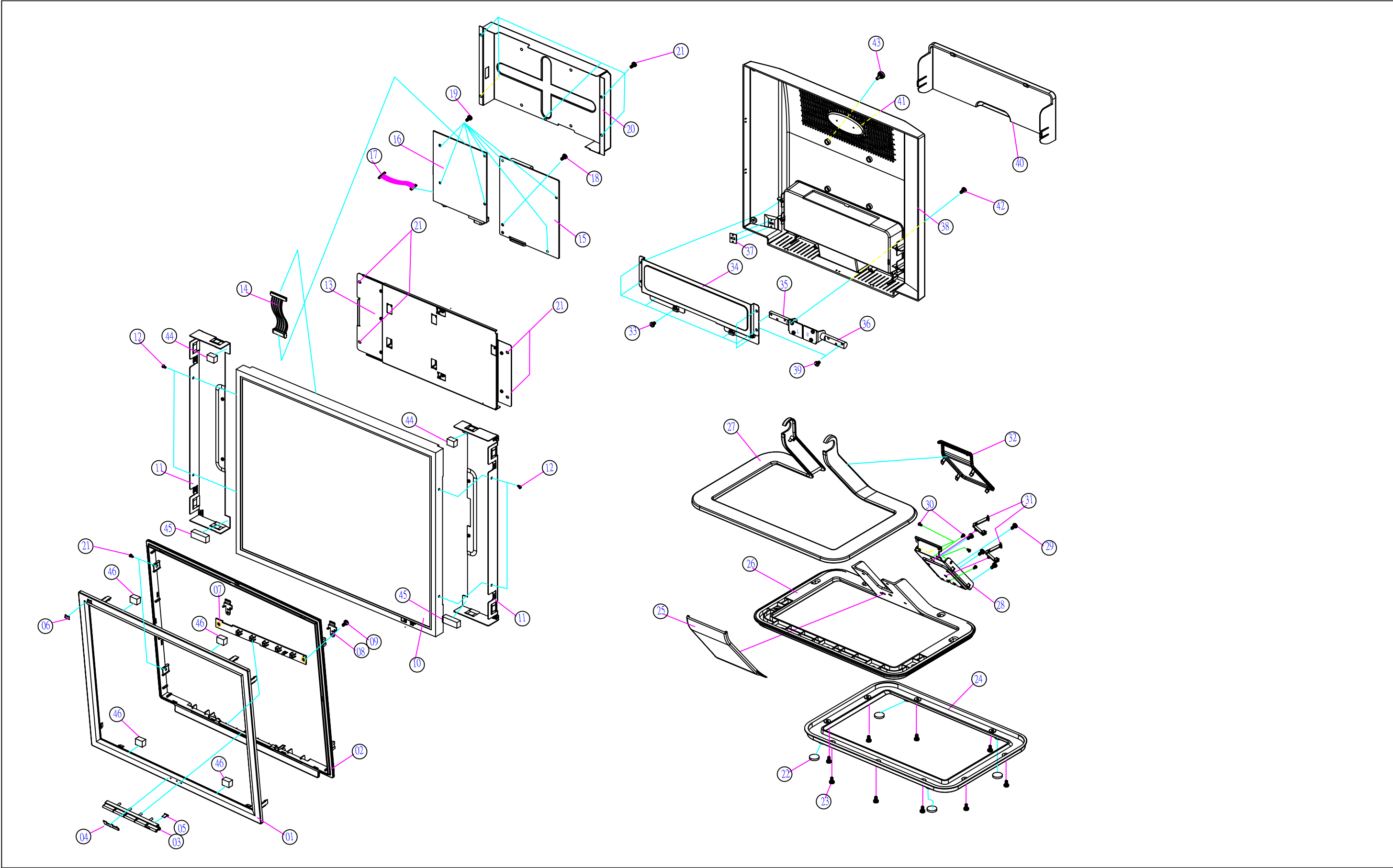
ViewSonic Model Number: VS10162

Rev: 1a

Serial No. Prefix: Q8D

Item	ViewSonic P/N	Ref. P/N	Description	Location	Universal number#	Q'ty
1	N/A	1L9VZHXVS40	L9V LCD MONITOR(L9VD-H,VX912-4)USA GP			
2	B-00004169	21L9TAMB090	L9TA M/B ASSY(RTD2523-LF) GP			1
3	N/A	31L9TASS079	L9TA M/B S/S ASSY(RTD2523-LF) GP			1
4	N/A	23L7VDBB001	L7VD BUTTON/B ASSY GP			1
5	N/A	DFHD08MR319	CONN DIP HEADER 8P 1R MR(P2.0,H4.1) GP	CN1		1
6	N/A	BEYG0014DA0	LED(DIP) YELLOW/GREEN(L-3WYGW-F01) GP	LED1		1
7	N/A	DAL7VDTB113	PCB(BUTTON) L7VD TL(1L,180*15,REV4) GP			1
8	N/A	DHP0002B205	SWITCH PUCH BUTTON(PT-002-B2,50MA,12V)GP	SW1,SW2,SW3,SW4,SW5		5
9	B-00003993	AS05B312D00	ADP/INV,FSP043-2P101 90~264V REV:D GP			1
10	N/A	24L9V0LB042	L9VD-H LCD BEZEL ASSY GP			1
11	N/A	36L9V0PS006	L9VDQ-1A PCB SHIELDING ASSY SPK GP			1
12	N/A	FAL9V004017	PCB SHDING L9VDQ-4(FAL9V004,R3A)SPK GP			1
13	N/A	FCL9V001010	SHIELDING MYLAR L9VDQ-4(FCL9V001,R3A)GP			1
14	N/A	FCL9V003012	I/O MYLAR L9VDQ-4(FCL9V003,REV3A) GP			1
15	C-00005432	34L9V0LB018	L9VDQ-1A LCD BEZEL SUB ASSY GP			1
16	N/A	EAL9V009019	LCD BEZEL(SPK) L9VDQ-1A(EAL9V009,R3A) GP			1
17	N/A	EAL9V006010	LCD MASK L9VDQ-4(EAL9V006,REV3A) GP			1
18	N/A	EBL9V004018	CONTROL BUTTON L9VDQ-4(EBL9V004,R3A) GP			1
19	M-MS-0808-9401	EBL7V028019	LENS L7VD(EBL7V028,REV3A)GP			1
20	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38MM L7VC(REV3A)GP			1
21	M-MS-0808-9402	FEL7V007014	BIRD LOGO L7VD(FEL7V007,REV3A)GP			1
22	N/A	FBL9V011014	LCD PANEL LOCK METAL L9VDQ(R3A)GP			2
23	N/A	FCL9V002016	POWER MYLAR L9VDQ-4(FCL9V002,REV3A) GP			1
24	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(NI) GP			8
25	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)GP			5
26	M-SCW-0824-0726	MF30080BBJ5	SCREW F3.0*8L,B,NI GP			4
27	M-SCW-0824-6799	MM35080BBW2	SCREW M3.5*8-B (NI,WASHER)GP			1
28	M-MS-0808-8986	MBL1I004018	IO NUT LI1(MBL1I004,REV3A)GP			4
29	N/A	GAL5T002012	RUBBER-HOLDER L5TL-N(GAL5T002,REV3B)GP			4
30	PL-00001806	GAL5T001016	RUBBER-HOLDER L5TL-E(GAL5T001,REV3B)GP			2
31	CB-00002525	DD0L9VLC015	CABLE MB-LCD(30P,140MM)L9V-5 GP			1
32	CB-00004152	DD0L9VLC023	CABLE LVDS(30P,140MM,LINKTEC,AU)L9VA GP			1
33	CB-00005371	DD0W0ETH002	CABLE MB-BUTTON(10P/8P,240MM)W0E GP			1
34	E-00005213	DN0TE230F06	SPEAKER ASSY L9VDQ FG-TE230 GP			1
35	N/A	FCL9V005015	AL FOIL L9VDQ-4(FCL9V005,R3A)100*80 GP			1
36	N/A	FCM7T004014	AL FOIL M7T(FCM7T004,REV3A) GP			3
37	N/A	FCL7G001016	AL FOIL L7G(FCL7G001,REV3A)HAN GP			1
38	M-MS-0808-9248	FCL7A001014	AL FOIL L7A(FCL7A001,REV3A) GP			1
39	N/A	FCL9ZA01019	MYLAR L9ZA(FCL9ZA01,REV3A)GP			2
40	N/A	FCL7C004011	PANEL MYLAR LEFT L7C(FCL7C004,REV3A)GP			2
41	N/A	GAL7TA02012	RUBBER-10*20*6.8 L7TA(GAL7TA02,R3A)GP			2
42	N/A	25L9V0LC007	L9VDQ-4 LCD COVER ASSY GP			1
43	C-00005376	35L9V0LS009	L9VDQ-4 LCD COVER SUB ASSY GP			1
44	N/A	EAL9V008012	LCD COVER L9VDQ-4(EAL9V008,REV3B) GP			1
45	M-MS-0808-9253	FEL7V005011	LOGO PLATE ELLIPSE L7VC(REV3A)GP			1
46	M-MS-0808-9411	FBL70008014	LOCK METAL L70B(FBL70008,REV3A) GP			1
47	N/A	FAL9V003011	HINGE BKT L9VDQ-4(FAL9V003,REV3A) GP			1
48	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(NI)GP			4
49	N/A	26L9V0SA008	L9VDQ-4 STAND ASSY GP			1
50	C-00005372	37L9V0SU002	L9VDQ-4 STAND SUB ASSY GP			1
51	N/A	FAL9V006010	STAND BASE L9VDQ-4(FAL9V006,REV3A) GP			1
52	N/A	FAL9V005013	HINGE L9VDQ-4(FAL9V005,REV3A) GP			1
53	C-BS-0303-0553	EAL9V004017	STAND BASE L9V(EAL9V004,REV3A)GP			1
54	M-CV-0830-2589	EAL9V005013	STAND BKT COVER L9V(EAL9V005,REV3A)GP			1
55	M-MS-0808-9811	GAL5M002011	RUBBER FOOT L5M(GAL5M002,REV3B)GP			4
56	N/A	MM40060BC16	SCREW M4.0* 6-B(NI,NYLOK) GP			4
57	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)GP			11
58	N/A	FCL9V004019	STAND EVA L9VDQ-4(FCL9V004,REV3A) GP			2
59	M-MS-0808-9812	EBL9V001019	STAND COVER F L9V(EBL9V001,REV3A)GP			1
60	N/A	2AL9V0PTU08	L9VD-H(VX912-4) PANEL KIT ASSY(HSD) GP			1
61	E-00005370	AA90ME130F5	LCD(TFT)19" HSD190ME13-D10 5MS GP			1
62	N/A	AZL9VDBU006	L9VD-H(VX912-4) SW BIOS IMAGE 2523(HSD)			1
63	HW-00001807	FBL9V009010	LCD BKT L-R L9VD-1(FBL9V009,REV3B)GP			2
64	M-SCW-0824-6800	MM30060IBJ8	SCREW M3.0*6.0-I(NI) GP			4
65	N/A	27L9V0CS014	L9VDQ-1A CHASSIS ASSY GP			1
66	HW-00005216	3FL9V0HS002	L9VDQ-4 HINGE COVER SUB ASSY GP			1
67	C-00001778	EBL9V002015	STAND COVER R L9V(EBL9V002,REV3A)GP			1
68	M-CV-0830-2593	EBL9V003011	I/O COVER L9V(EBL9V003,REV3B)GP			1
69	M-MS-0808-9815	GAL9V002014	RUBBER PLUG VESA L9V(GAL9V002,REV3A)GP			4
70	M-SCW-0824-6859	MM40060IL69	SCREW M4*6-I (BNJ)(NYLOK))GP			4
71	M-SCW-0824-0795	MM40080BC15	SCREW M4.0*8-B(NI,NYLOK)GP			4
72	M-SCW-0824-6894	MF30060BJ28	SCREW F3.0*6-B(BNJ)GP			2
73	N/A	28L9V0PK0A1	L9VD-H PACKING ASSY(VX912-4) GP			1
74	CB-00002602	DDL7VDP0005	CABLE MB-VGA (15/15P,1.8M)L7VD GP			1
75	CB-00003440	DD0L0TTH108	CABLE DVI L0T BLACK 1800(24P) GP			1
76	CB-00005211	DDW9ZAPA009	CABLE AUDIO(ST,1.8M)BLACK W9ZA GP			1
77	PL-00005198	JXLM5003011	HANDLE LM5S(JXLM5003,REV 3B) GP			1
78	P-FM-0602-0897	HBL9V002015	END CAP-R L9V(HBL9V002,REV3A)GP			1
79	P-FM-0602-0896	HBL9V001019	END CAP-L L9V(HBL9V001,REV3A)GP			1
80	M-MS-0808-9817	HAL9V002014	EPE BAG L9VD(HAL9V002,REV3A)GP			1
81	M-LB-0813-0747	HCL7V004013	CORE LABEL(HCL7V004,REV3A)GP			1
82	N/A	HCL9V014014	ID LABEL VX912 L9VDQ-1A(HCL9V014,R3A)GP			1
83	M-LB-0813-0745	HCL7V002011	SERIAL LABEL L7V(HCL7V002,REV3A) GP			1
84	P-00001432	HFL9V005018	CARTON VX912 L9VD(HFL9V005,REV3A)GP			1
85	DC-00005433	HGL9V023017	CD+QSG(VX912-4) L9VD-H(HGL9V023,R3A)GP			1
86	M-MS-0808-9682	JXL9V001010	LCD FILM L9V(JXL9V001,REV3A) GP			1
87	M-LB-0813-1043	HCL70021011	HI-POT LABEL L70L(HCL70021,REV3A)GP			1
88	N/A	HFL9V002019	SPACE PLATE L9V(HFL9V002,REV3A)GP			0.05
89	DC-00005434	HCL9V022017	5MS VX912-4 L9VD-H(HCL9V022,REV3A) GP			1
90	N/A	HCL5VC02019	ROHS LABEL(W) 27*27 L5VC(HCL5VC02,R3A)GP			1
91	N/A	HCL9VA02011	CARTON LABEL(4) L9VA(HCL9VA02,R3A) GP			1
92	N/A	HDL7VC02015	(B)17-19"SERV.PAPER L7VC(HDL7VC02,R3A)GP			1
93	A-PC-0106-0224	DM333181G97	POWER CORD SP-30+IS-14 3P 1.8M(USA)B GP			1

8. Exploded Diagram and Exploded Parts List



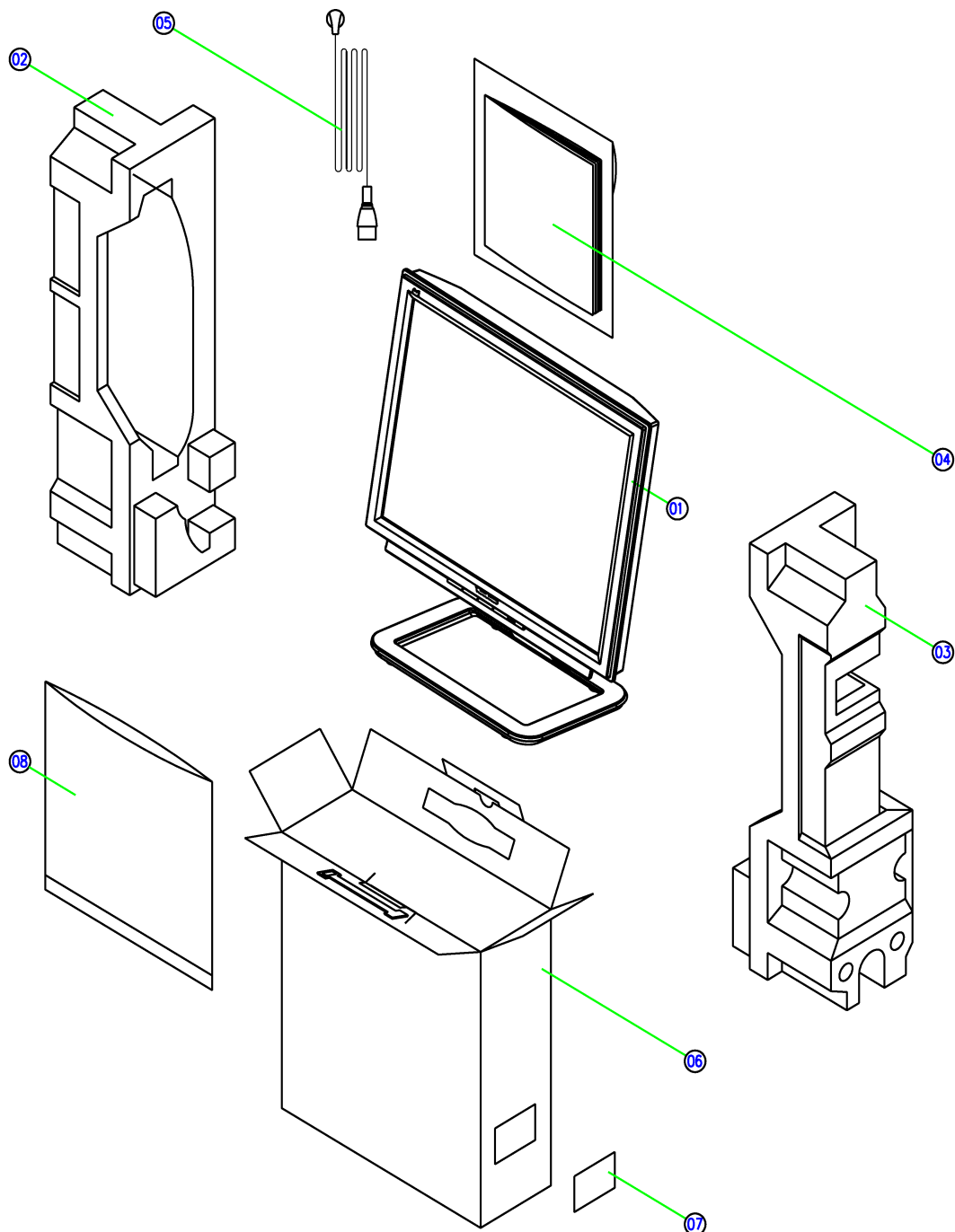
EXPLODED PARTS LIST (VX912-4)

ViewSonic Model Number: VS10162

Rev: 1a

Serial No. Prefix: Q8D

Item	ViewSonic P/N	Ref. P/N	Description	Q'ty
1	N/A	EAL9V009019	BEZEL L9V	1
2	N/A	EAL9V006010	MIDDLE BEZEL L9V	1
3	N/A	EBL9V004018	CONTROL BUTTON	1
4	M-MS-0808-9243	FEL7V003019	LOGO FRONT-VSC-38CM L7VC(FEL7V003,REV3A)	1
5	M-MS-0808-9401	EBL7V028019	LENS L7VD(EBL7V028,REV3A)	1
6	M-MS-0808-9402	FEL7V007014	BIRD LOGO L7VD(FEL7V007,REV3A)	1
7	N/A	23L7VDBB006	BUTTON/B ASSY	1
8	N/A	FBL9V011014	LCD PANEL LOCK METAL L9V	2
9	M-SCW-0824-0726	MF30080BBJ5	SCREW F3.0*8L,B,NI	2
10	E-00005370	AA90ME130F5	LCD(TFT)19" HSD190ME13-D10 5MS GP	1
11	HW-00001807	FBL9V009010	LCD BKT L9V(FBL9V004,REV3A)	2
12	M-SCW-0824-6802	MM30040IBJ9	SCREW M3.0*4.0-I(NI) GP	4
13	M-BK-0805-0079	FAL7V014017	PCB BKT L7VD(FAL7V014,REV3A)	1
14	CB-00002525	DD0L9VLC015	CABLE MB-LCDL9V-5 GP	1
15	B-00003993	AS05B312D00	ADP/INV,FSP043-2PI01 90~264V GP	1
16	B-00004169	21L9TAMB090	L9TA M/B ASSY(RTD2523-LF) GP	1
17	CB-00005371	DD0W0ETH002	CABLE ASSY L7VD BUTTON-MB (8P-10P)	1
18	M-SCW-0824-6799	MM35080BBW2	SCREW M3.5*8-B (NI,WASHER)	1
19	M-SCW-0824-6800	MM30060IBJ8	SCREW M3.0*6.0-I(NI)	7
20	M-MS-0808-9405	FAL7V015013	PCB SHIELDING L7VD(FAL7V015,REV3A)	1
21	HW-00000989	MM30040IBJ8	SCREW M3.0*4.0-I(NI)	10
22	M-MS-0808-9811	GAL5M002011	RUBBER FOOT L5M(GAL5M002,REV3B)	4
23	M-SCW-0824-0813	MF30060BBJ6	SCREW F3.0*6-B(NI)	1
24	M-CV-0830-2589	EAL9V005013	STAND BKT COVER L9V(EAL9V005,REV3A)	1
25	M-MS-0808-9812	EBL9V001019	STAND COVER F L9V(EBL9V001,REV3A)	1
26	M-BK-0805-0110	FBL9V005014	STAND BKT L9V(FBL9V005,REV3A)	4
27	C-BS-0303-0553	EAL9V004017	STAND BASE L9V(EAL9V004,REV3A)	1
28	M-MS-0808-9813	FBL9V006011	STAND PLATE L9V(FBL9V006,REV3A)	1
29	M-SCW-0824-6859	MM40060IL69	SCREW M4*6-I (BNI)(NYLOCK))	4
30	M-SCW-0824-6894	MF30060BJ28	SCREW F3.0*6-B(BNI)	4
31	M-MS-0808-9404	EBL7V029015	WIRE CLAMP L7VD(EBL7V029,REV3A)	2
32	C-00001778	EBL9V002015	STAND COVER R L9V(EBL9V002,REV3A)	1
33	M-SCW-0824-6895	MF40080IBJ1	SCREW F4.0*8-I(NI)	8
34	M-BK-0805-0111	FBL9V002015	HNGE-BKT L9V(FBL9V002,REV3A)	1
35	M-CV-0830-2590	FBL9V001019	HINGE-L L9V(FBL9V001,REV3A)	1
36	M-CV-0830-2591	FBL9V003011	HINGE-R L9V(FBL9V003,REV3A)	1
37	M-MS-0808-9411	FBL70008014	LOCK METAL L70B(FBL70008,REV3A)	1
38	N/A	EAL9V008012	LCD COVER L9V(EAL9V008,REV3A)	1
39	M-SCW-0824-6859	MM40060IL69	SCREW M4.0x6 (BNI)NYLOCK	6
40	M-CV-0830-2593	EBL9V003011	I/O COVER L9V(EBL9V003,REV3A)	1
41	M-MS-0808-9253	FEL7V005011	LOGO PLATE	1
42	M-SCW-0824-0870	MS40070B808	SCREW M4.0x7 (BMC)NYLOCK	4
43	M-MS-0808-9815	GAL9V002014	RUBBER PLUG VESA L9V	4
44	PL-00001804	GAL70002015	RUBBER HOLDER	2
45	PL-00001805	GAL70005014	RUBBER BKT	2
46	PL-00001806	GAL5T001016	RUBBER HOLDER	4



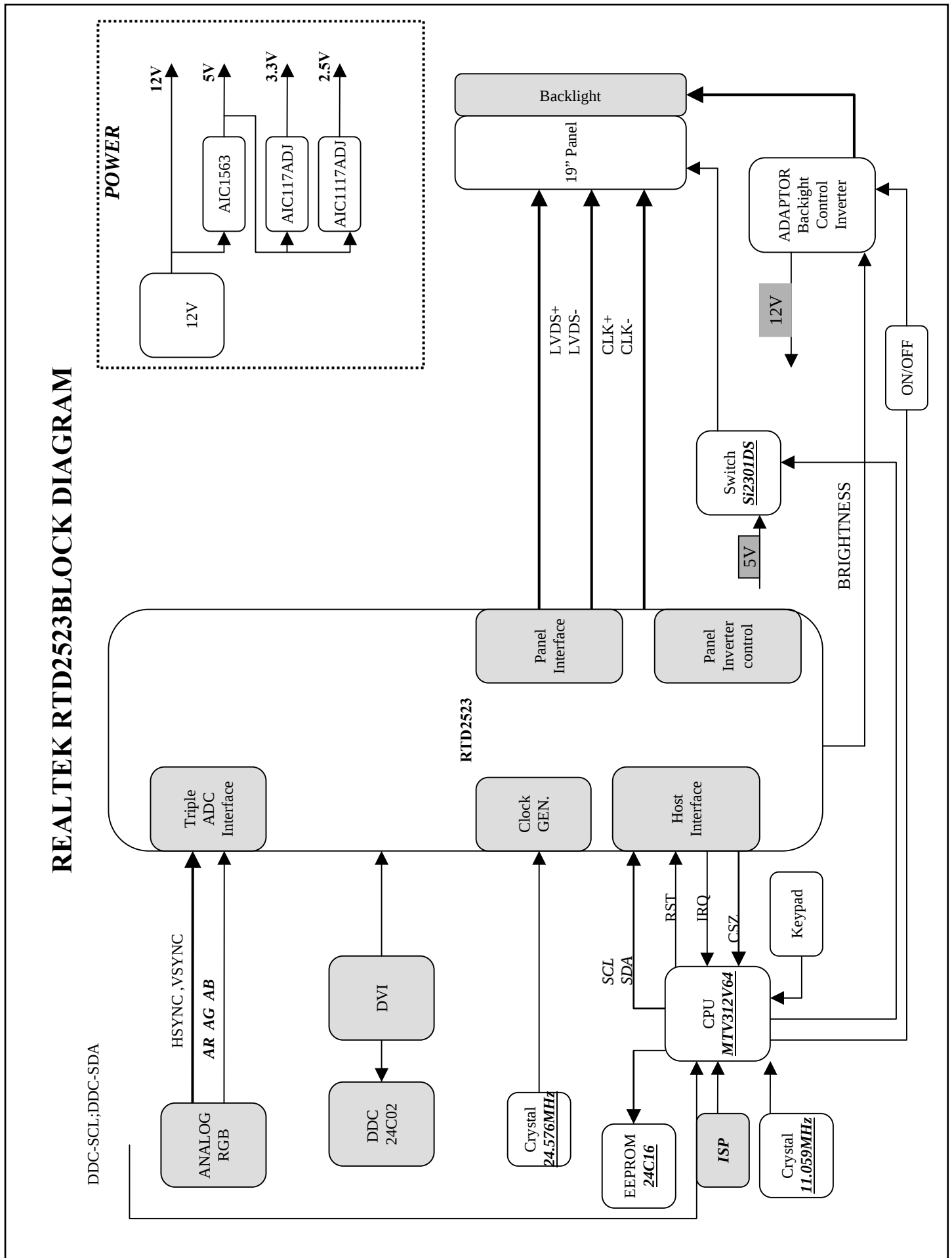
PACKING PART LIST (VX912-4)

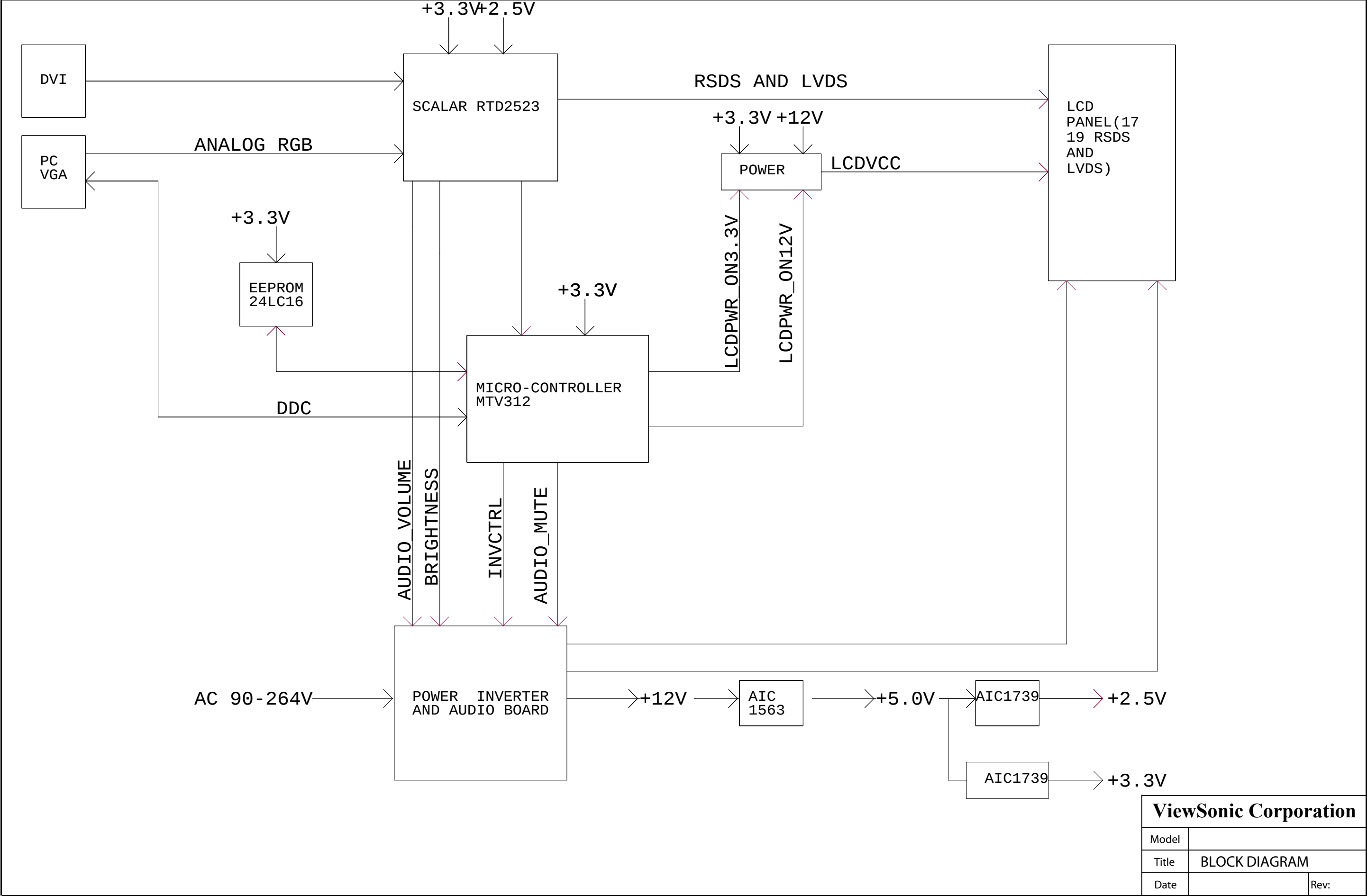
ViewSonic Model Number: VS10162

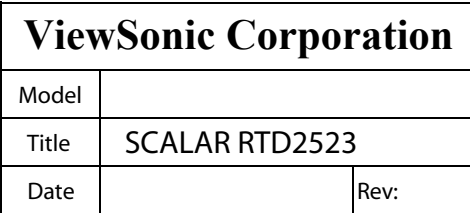
Rev: 1a

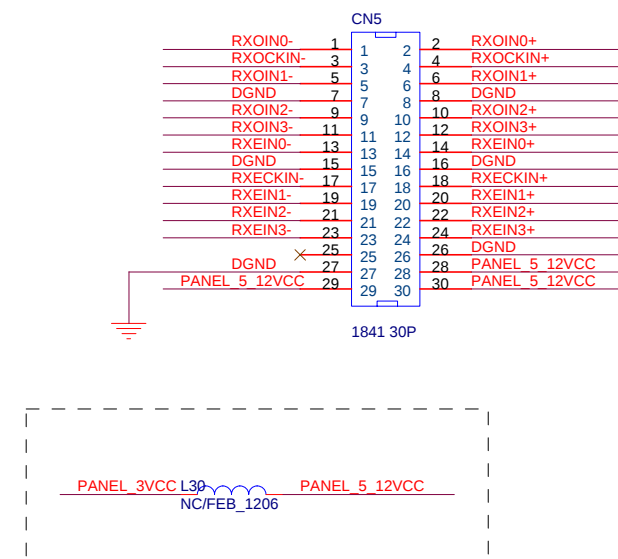
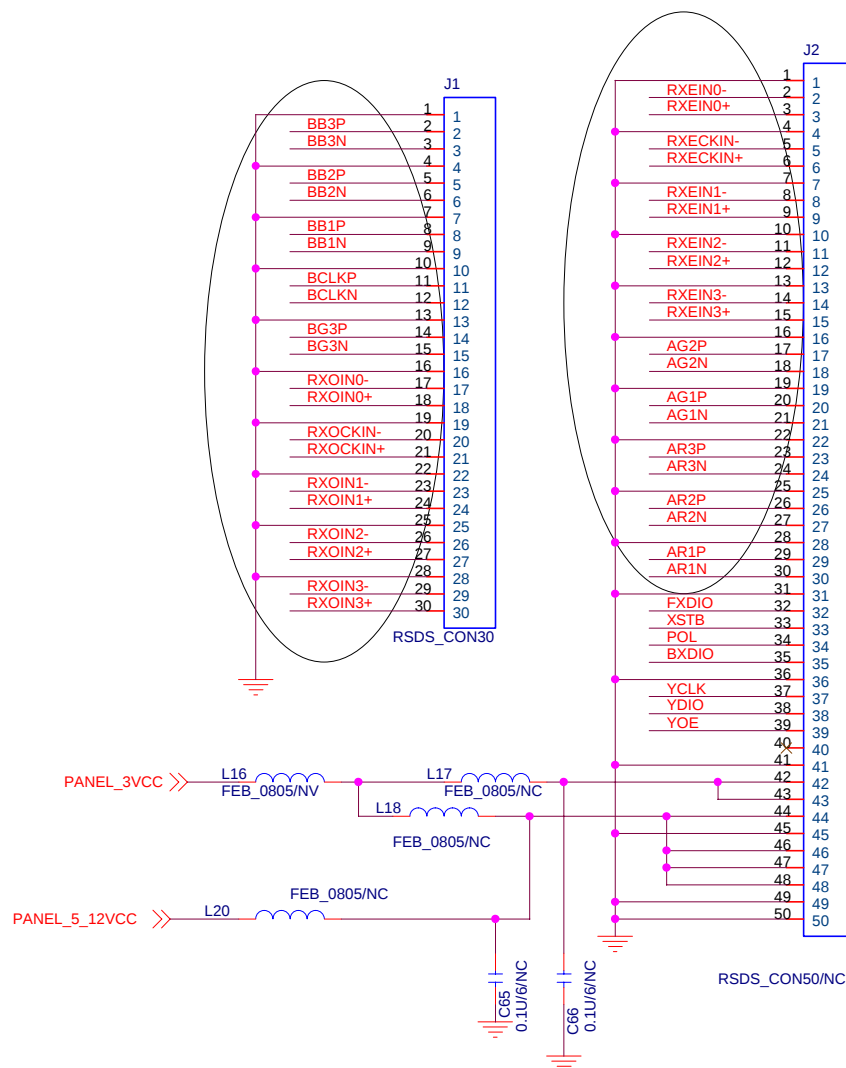
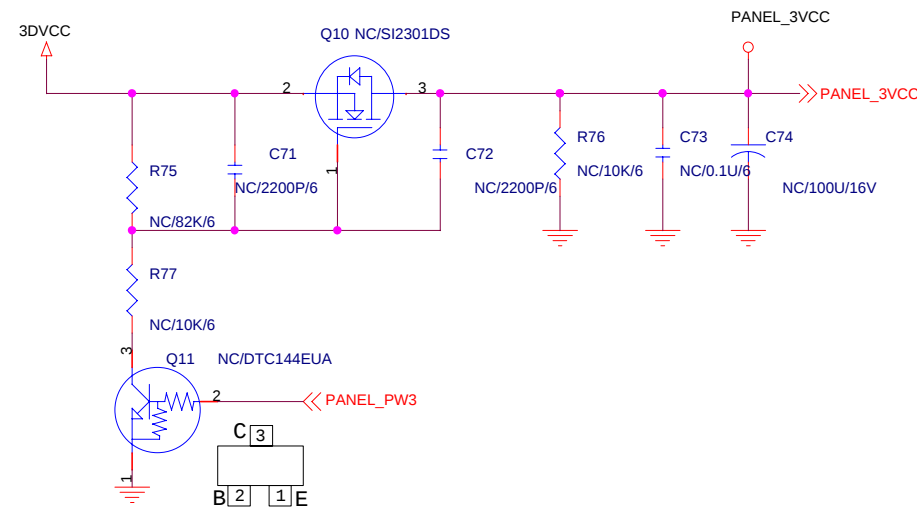
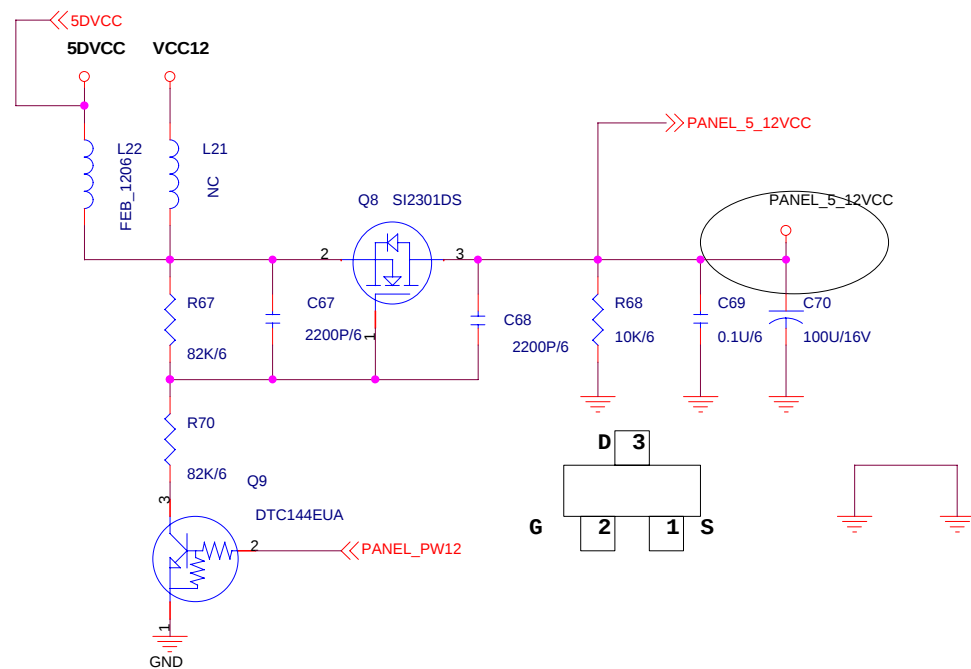
Item	ViewSonic P/N	Ref. P/N	Location	Q'ty
1	N/A	1L9VZHXVS40	VX912-4 unit	1
2	P-FM-0602-0896	HBL9V001019	END CAP(L)	1
3	P-FM-0602-0897	HBL9V002015	END CAP(R)	1
4	DC-00005433	HGL9V023017	CD+QSG(VX912-4)	1
5	A-PC-0106-0227	DM333181801	Power cord 3P 1.8M	1
6	P-00001432	HFL9V005018	CARTON VX912	1
7	M-LB-0813-1042	HCL7V019011	Carton label	1
8	M-MS-0808-9817	HAL9V002014	EPE bag	1

9. Block Diagram





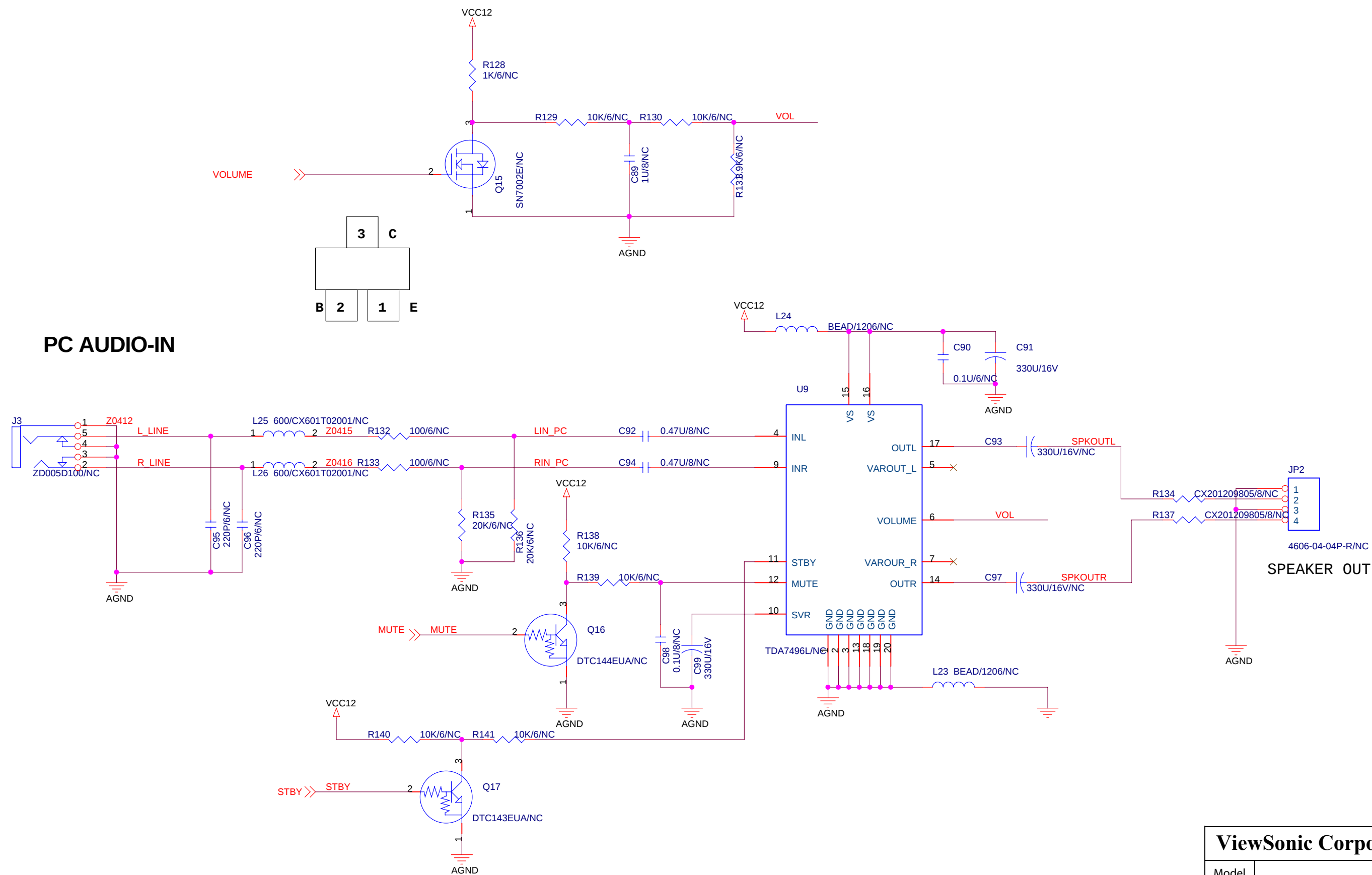




If panel is 3.3V LVDS IF, L30 must add the part 2004/4/14

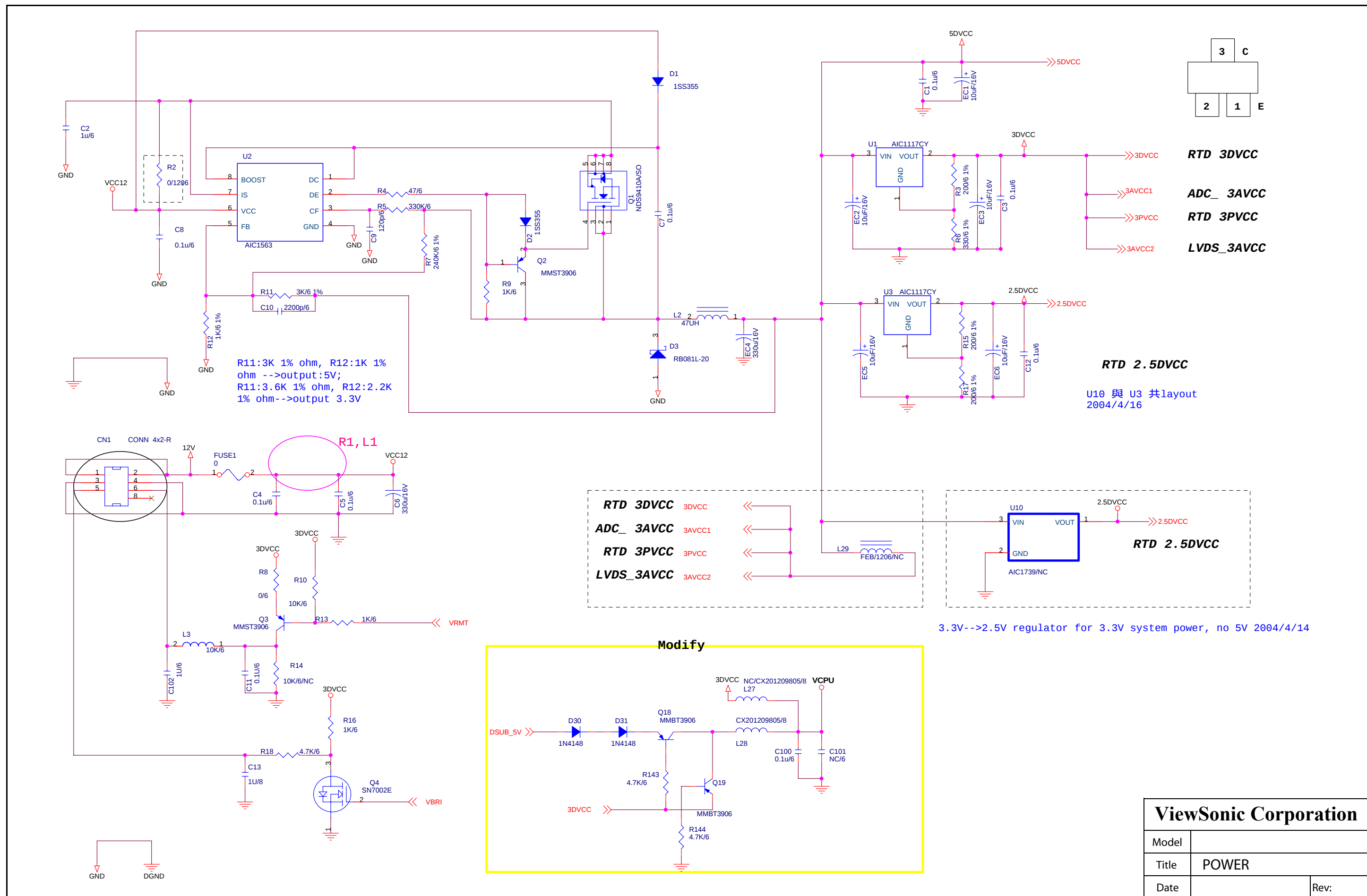
ViewSonic Corporation		
Model		
Title	PANEL INTERFACE	
Date		Rev:

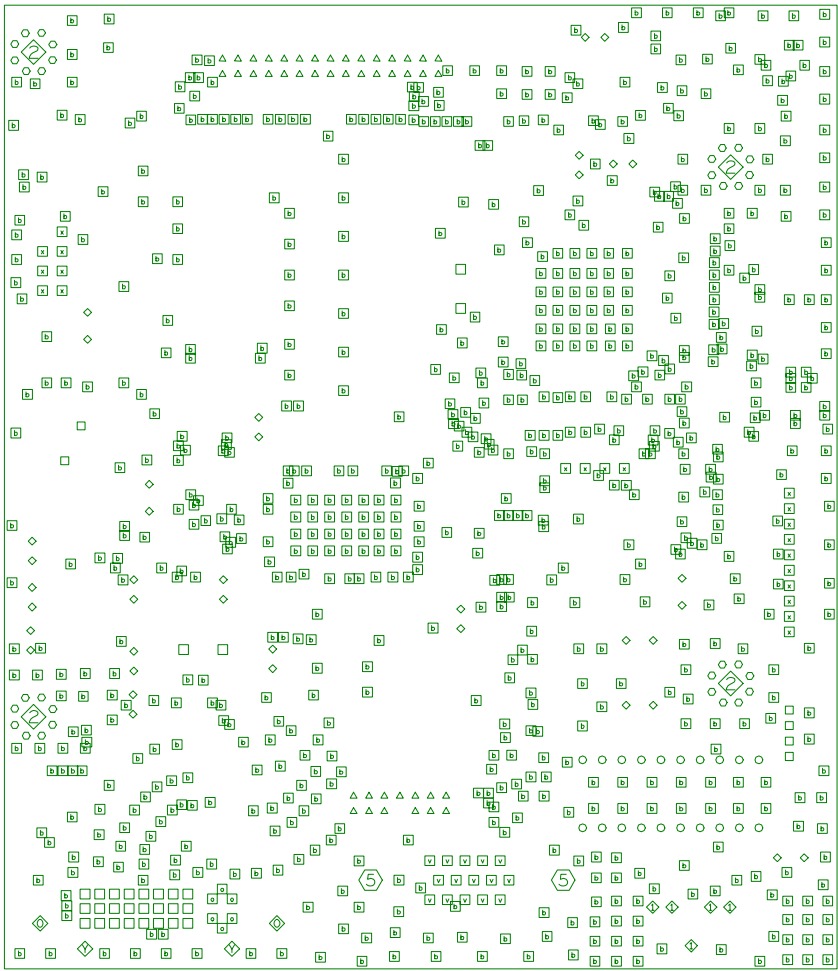
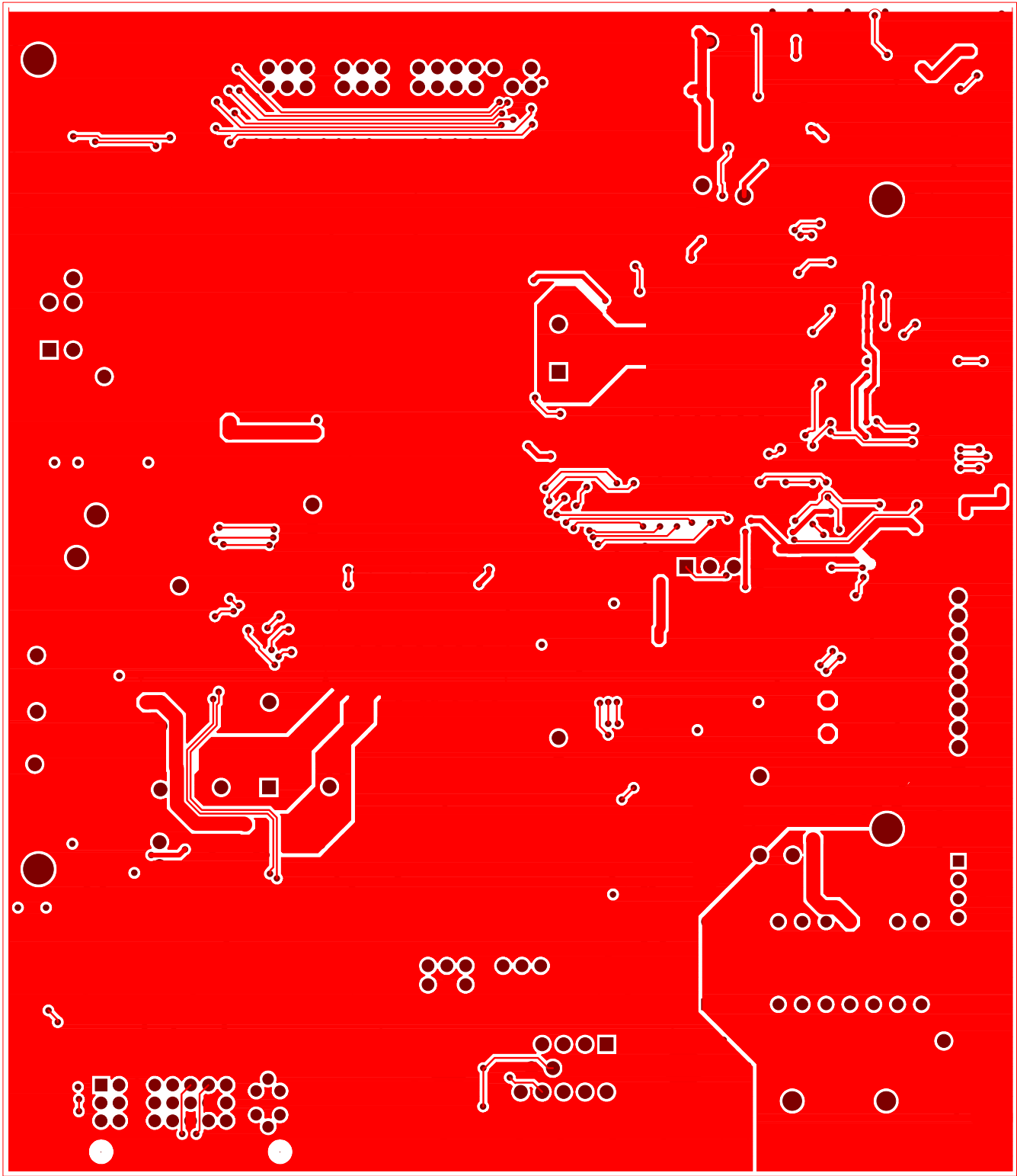
PC AUDIO-IN



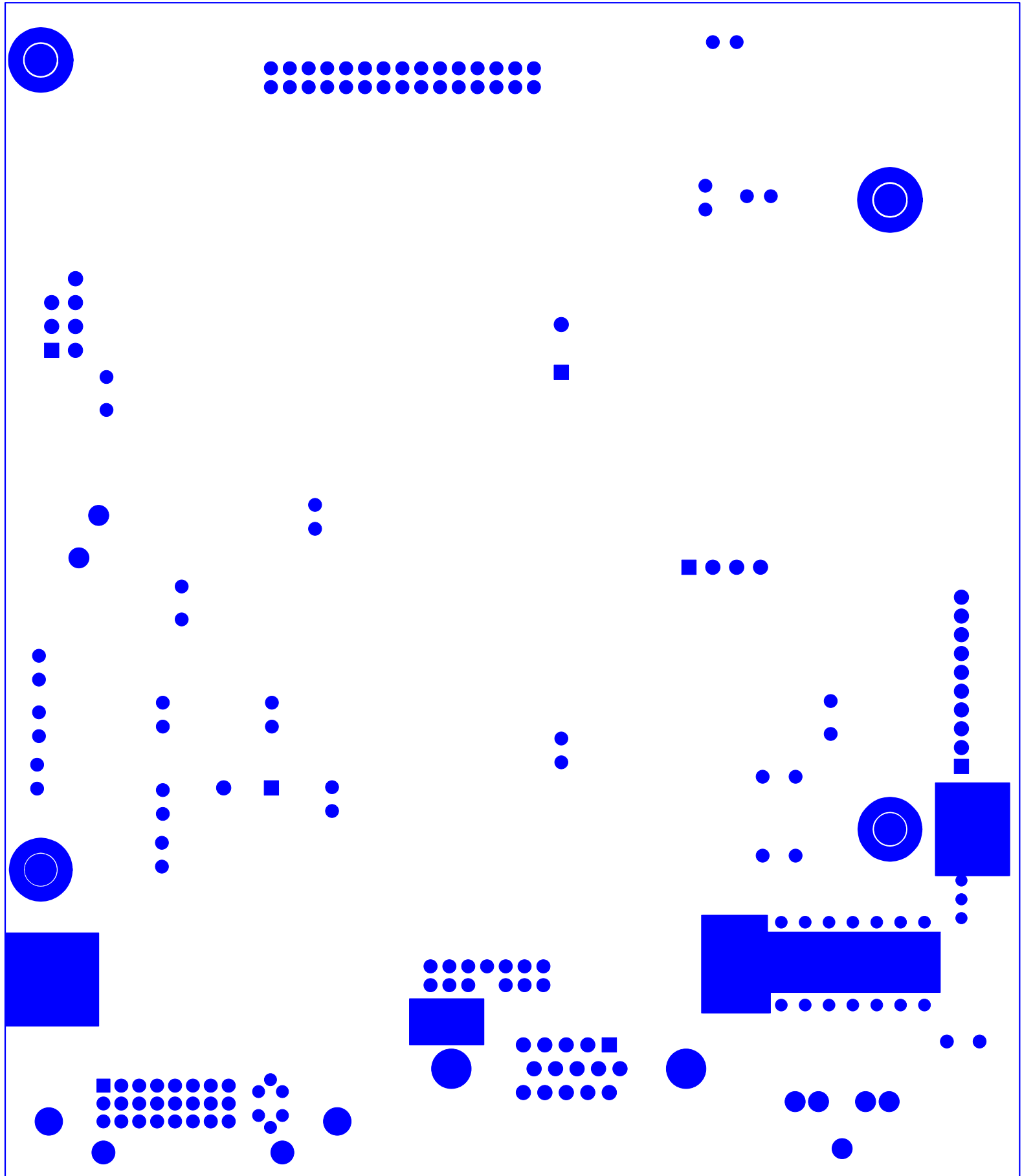
ViewSonic Corporation

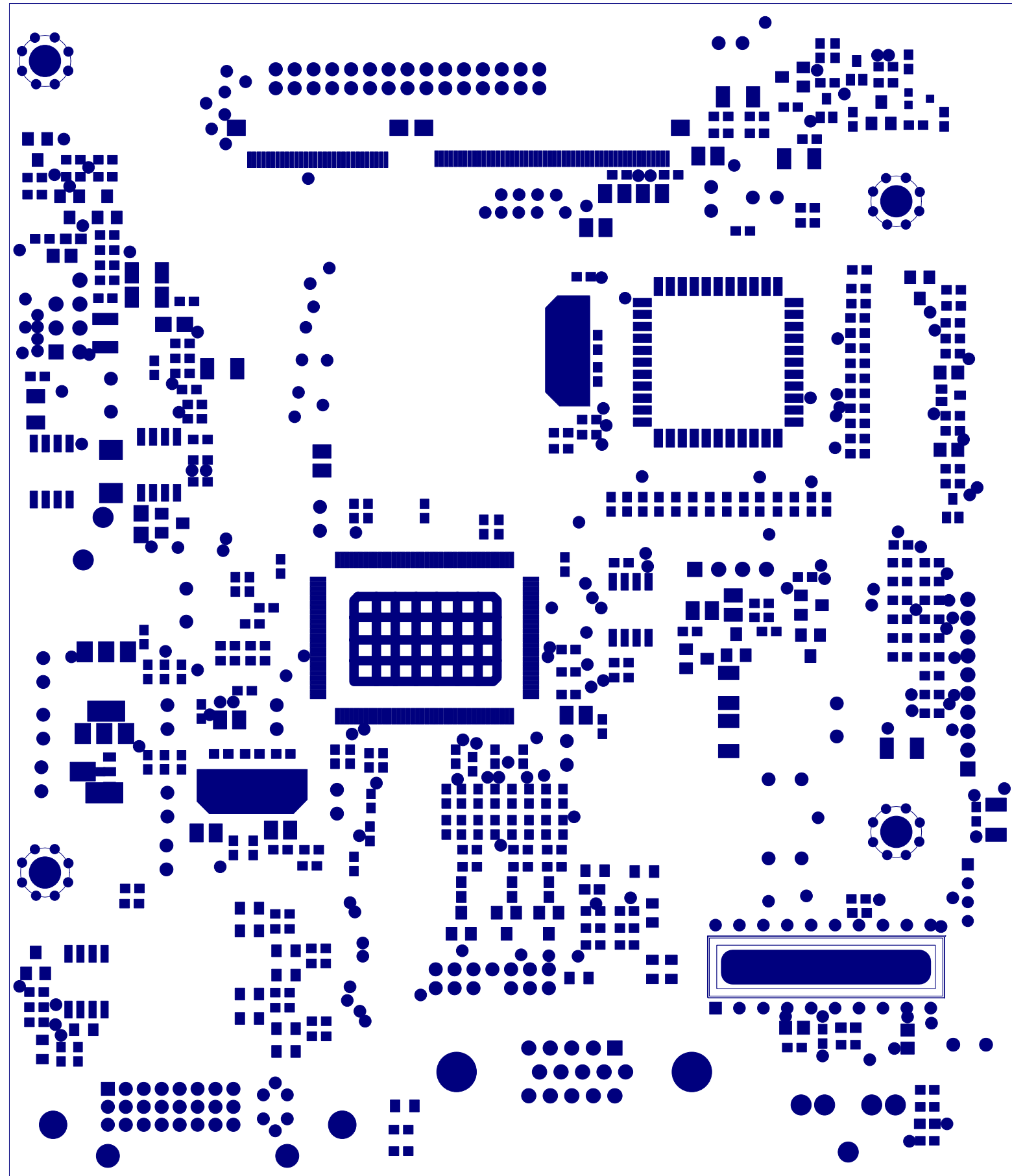
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Title	Audio
Date	Rev:

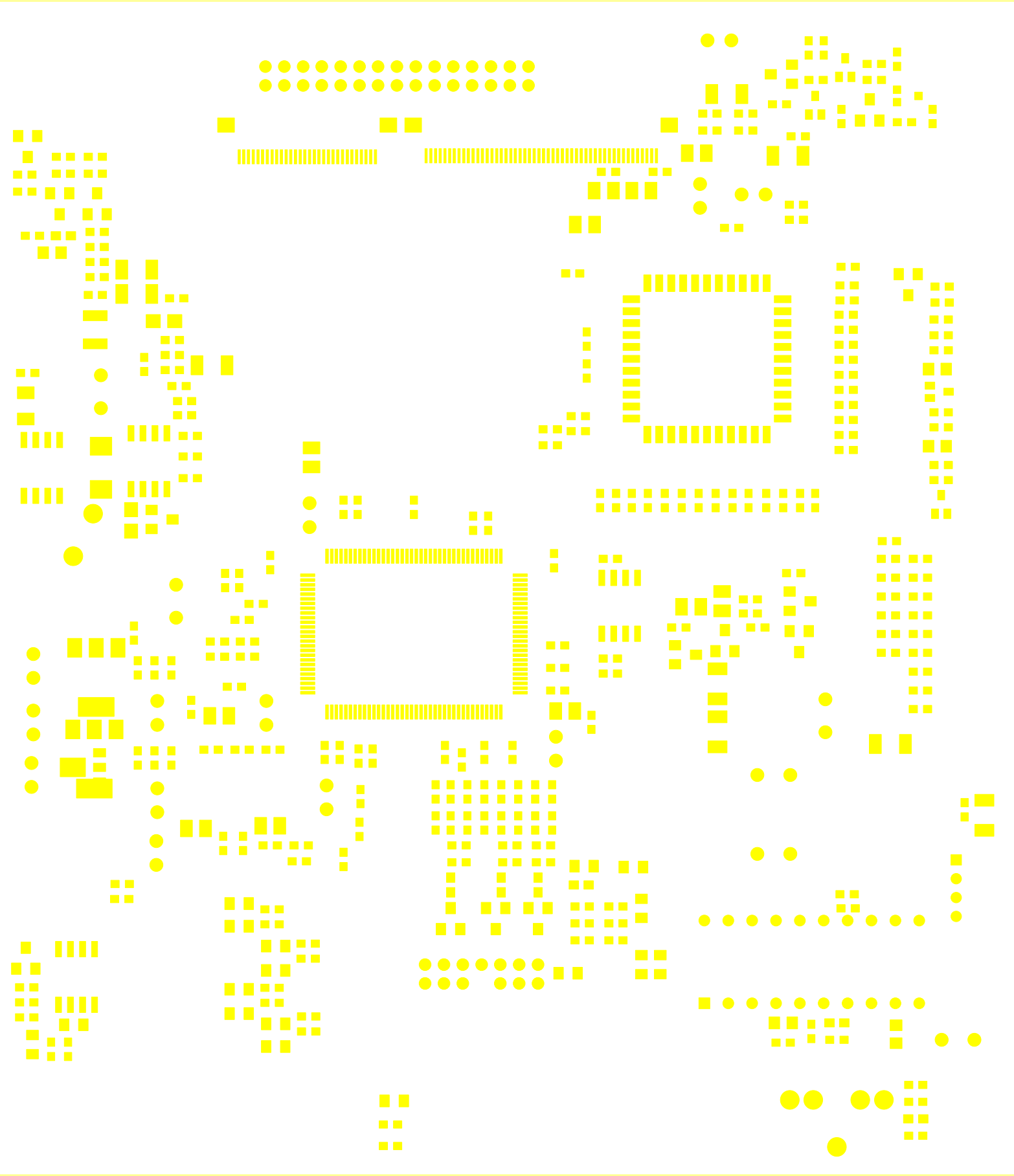


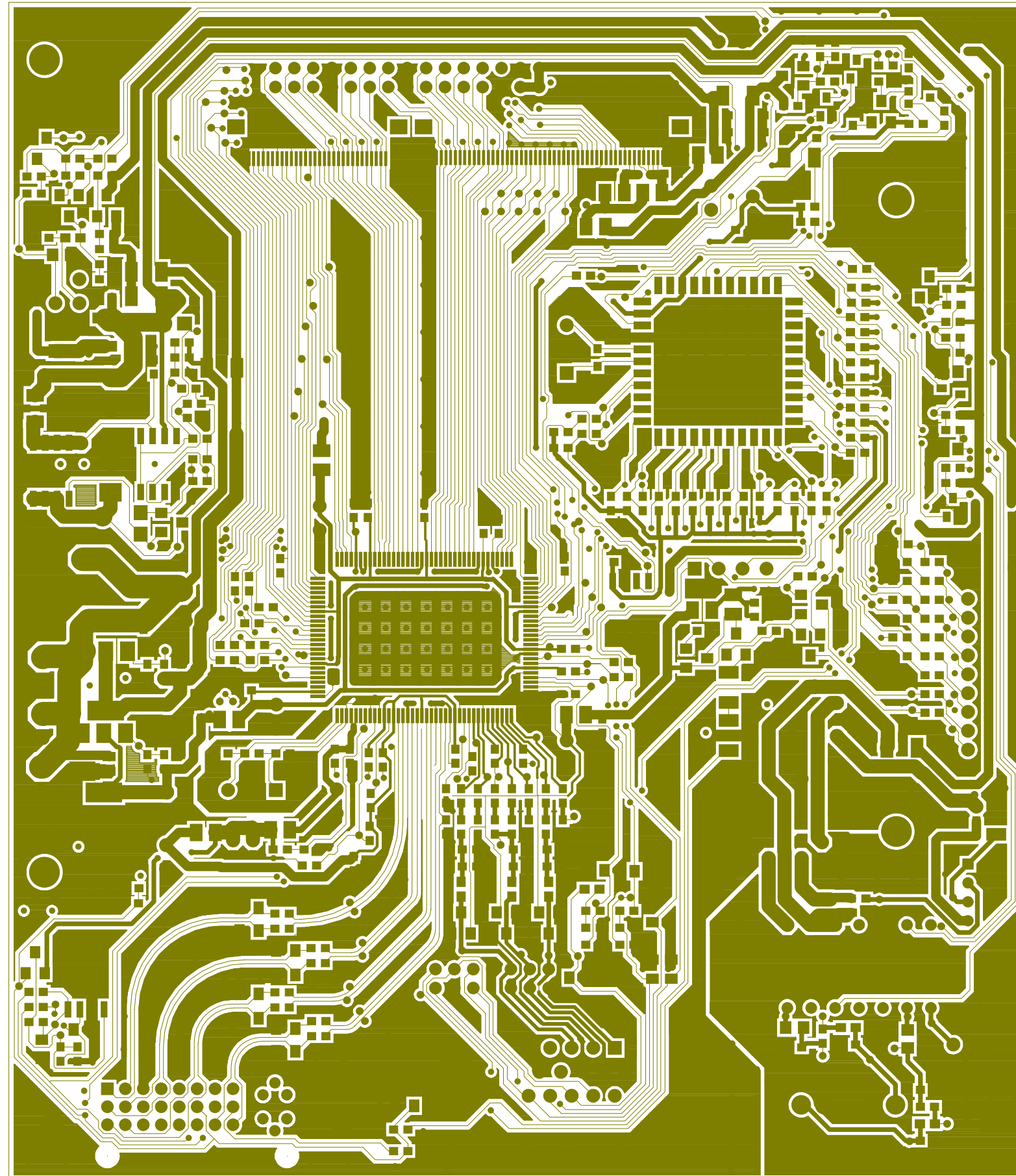


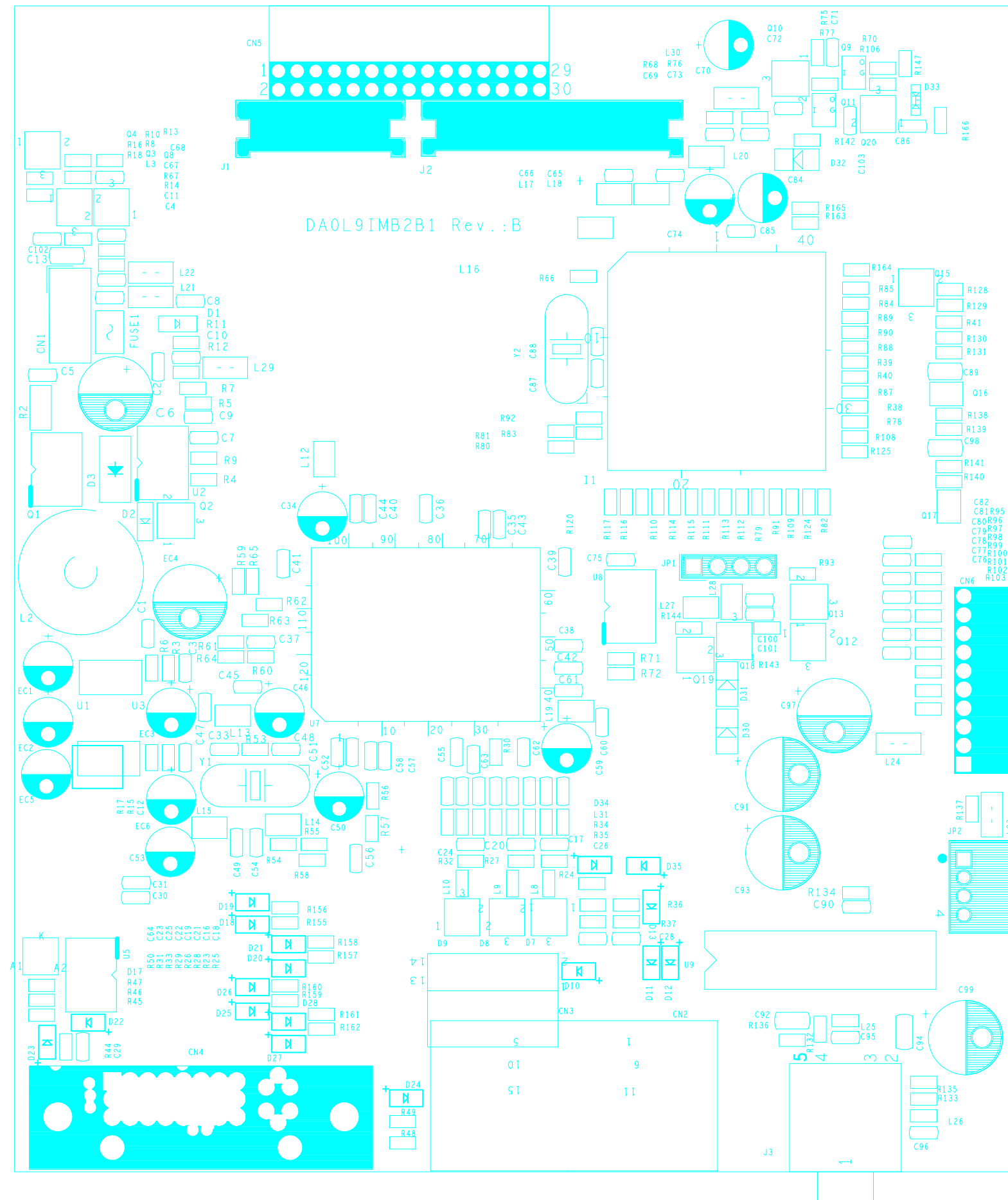
DRILL CHART			
ALL UNITS ARE IN MILLIMETERS			
FIGURE	SIZE	PLATED	QTY
	0.4	PLATED	774
	0.51	PLATED	32
	0.71	PLATED	6
	0.74	PLATED	6
	0.76	PLATED	20
	0.81	PLATED	43
	0.91	PLATED	38
	0.91	PLATED	28
	0.94	PLATED	15
	0.99	PLATED	21
	1.6	PLATED	5
	2.01	PLATED	2
	3.51	PLATED	2
	1.96	NON-PLATED	2
	3.2	NON-PLATED	4

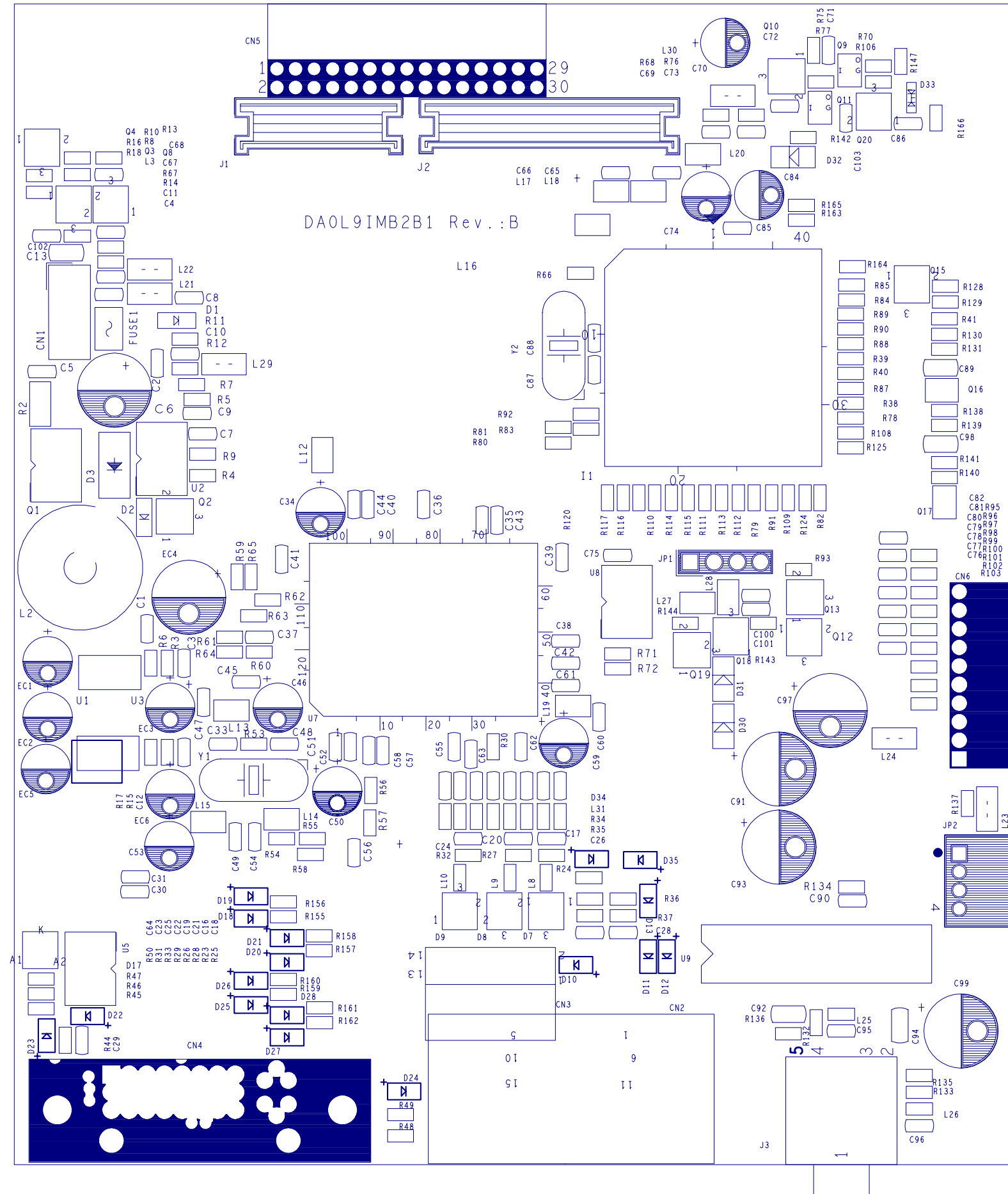


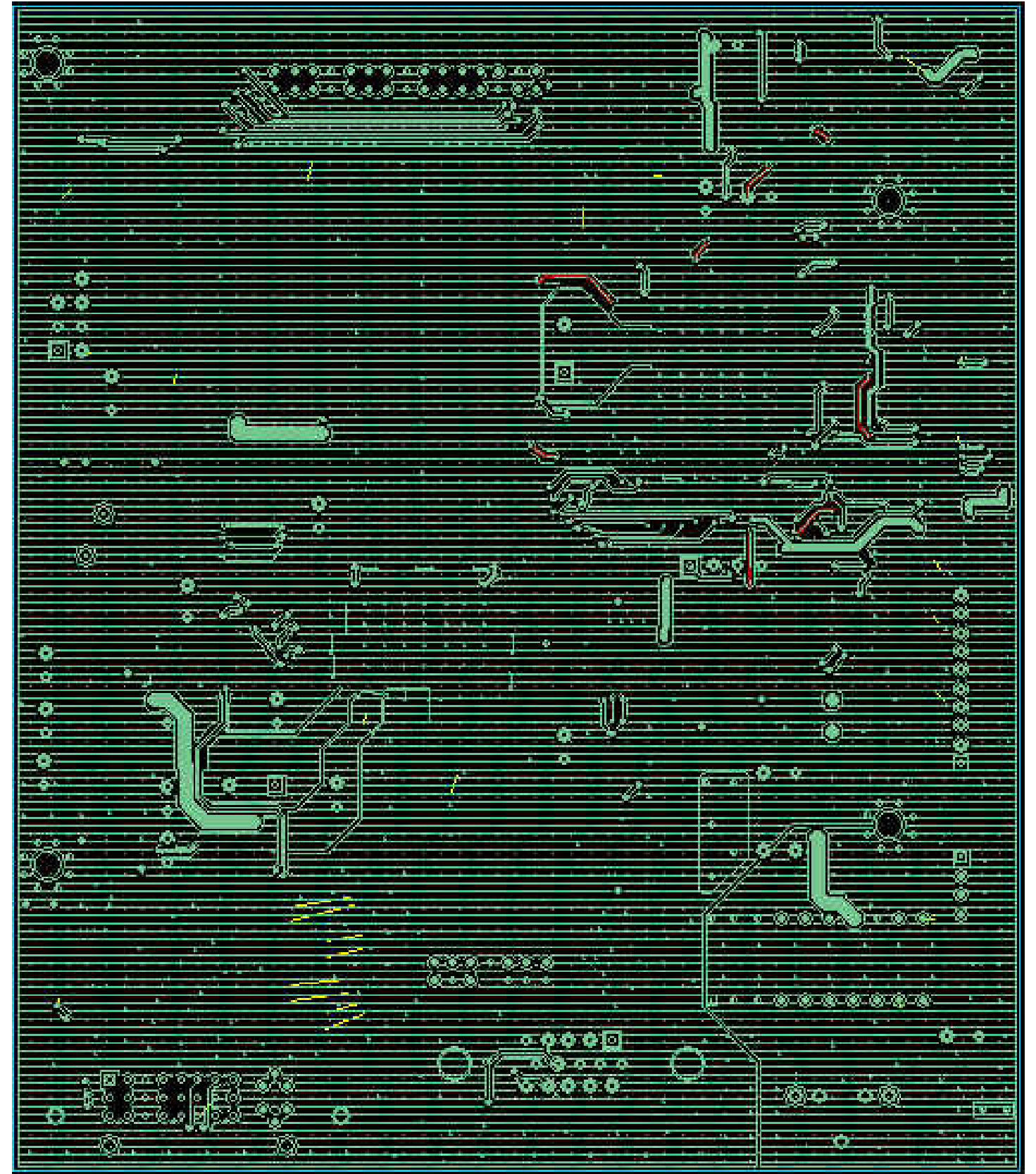
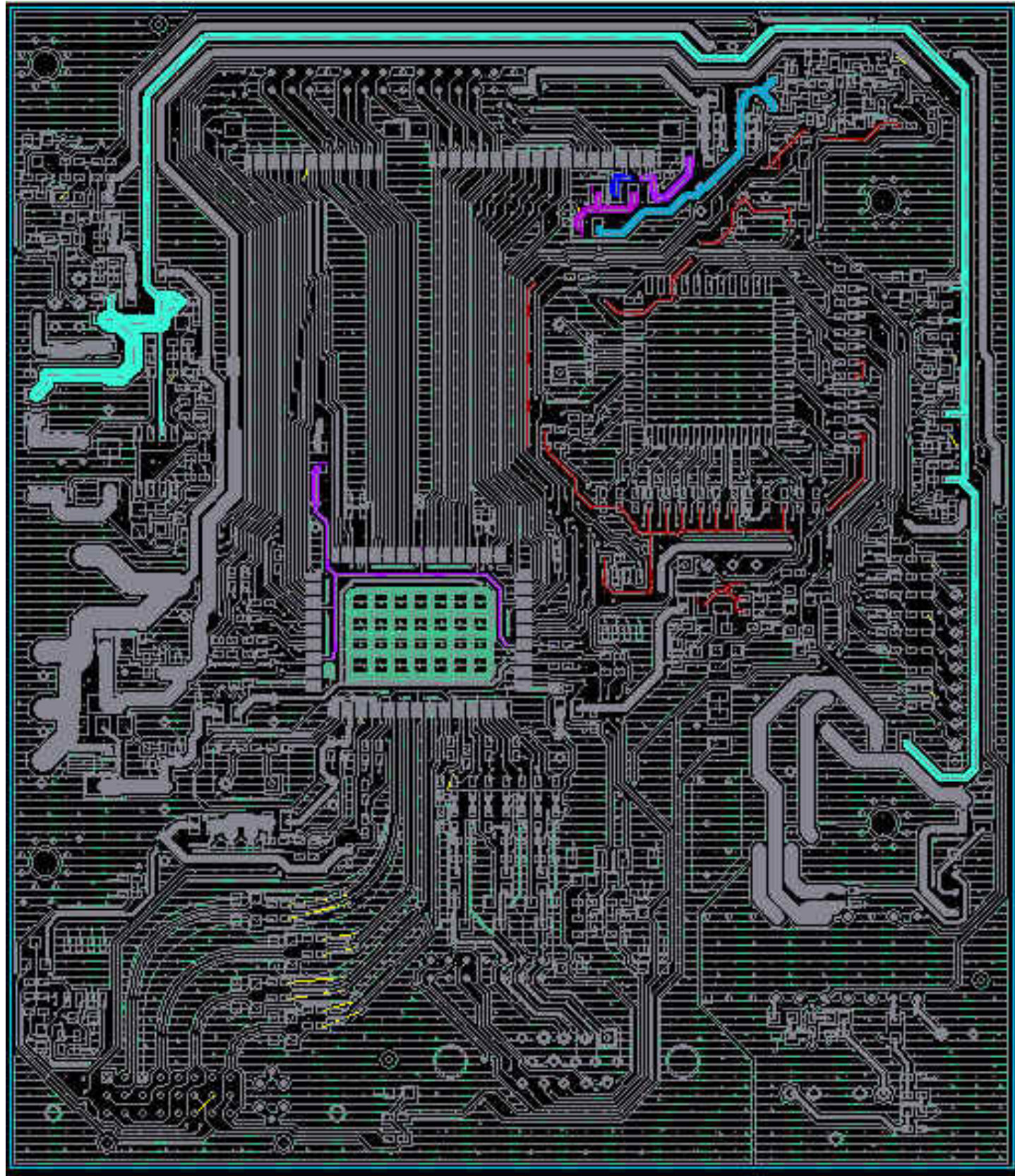


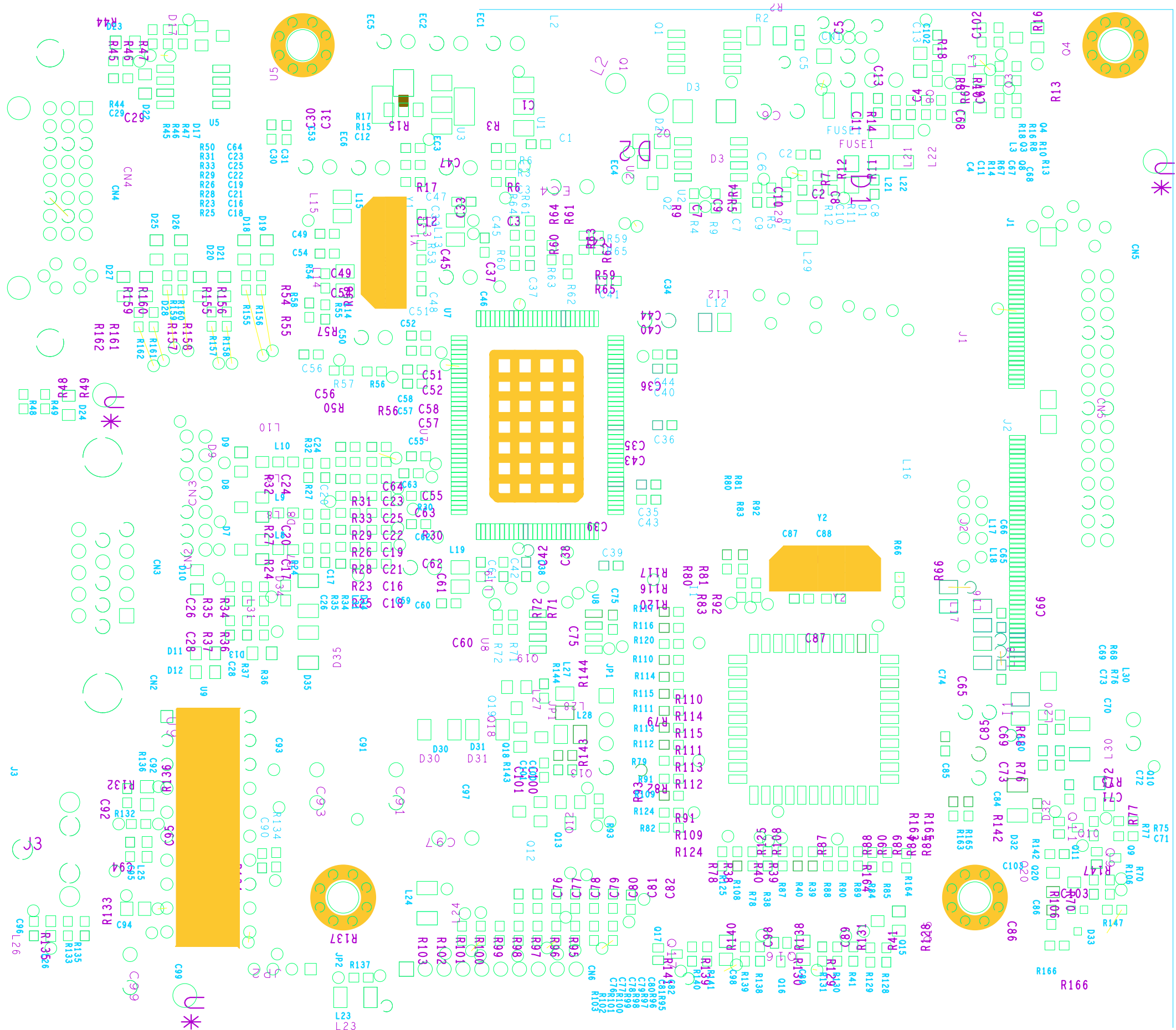


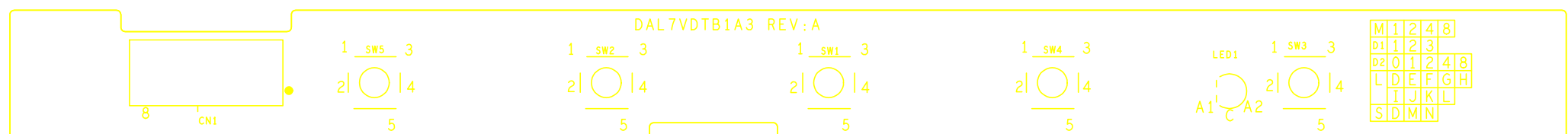












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<i>Unit</i>	<i>Excellent</i>	<i>Good</i>	<i>Fair</i>	<i>Bad</i>
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2. Specification				
3. Front Panel Function Control Description				
4. Circuit Description				
5. Adjustment Procedure				
6. Troubleshooting 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				

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