

Service Manual

Model ID: RG215AC-CAU-AN02



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Safety Notice

Any person attempting to service this chassis must familiarize with the chassis and be aware of the necessary safety precautions to be used when serving electronic equipment containing high voltage.

Product Announcement:

This product is certificated to meet RoHS Directive and Lead-Free produced definition. Using approved critical components only is recommended when the situation to replace defective parts. Vender assumes no liability express or implied, arising out of any unauthorized modification of design or replacing non-RoHS parts. Service providers assume all liability.

! Using Lead-Free solder to well mounted the parts.

! The fusion point of Lead-Free solder requested in the degree of 220°C.

Qualified Repairability:

Proper service and repair is important to the safe, reliable operation of all series products. The service providers recommended by vender should being aware of notices listed in this service manual in order to minimize the risk of personal injury when perform service procedures. Furthermore, the possible existed improper repairing method may damage equipment or products. It is recommended that service engineers should have repairing knowledge, experience, as well as appropriate product training per new model before performing the service procedures.

NOTICE:

! To avoid electrical shocks, the products should be connect to an authorized power cord, and turn off the master power switch each time before removing the AC power cord.

! To prevent the product away from water or exposed in extremely high humidity environment.

! To ensure the continued reliability of this product, use only original manufacturer's specified parts.

! To ensure following safety repairing behavior, put the replaced part on the components side of PWBA, not solder side.

! To ensure using a proper screwdriver, follow the torque and force listed in assembly and disassembly procedures to screw and unscrew screws.

1. Product Specification

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This model combine with three platforms. See below explanation.

1. Scaler IC: RTD2482D used in VGA, DVI and HDMI port.
Using simply word to define it.(1A1D1H)
2. Scaler IC: RTD2281 used in VGA and DVI port. Using simply word to define it.(1A1D)
3. Scaler IC: RTD2280L used in VGA port. Using simply word to define it.(1A)

1.1 Scope:

This document defines the design and performance requirements for the 21.5" wide flat panel monitor. The display elements shall be a 21.5" inch diagonal, UXGA (1920 x1080) resolution TFT-LCD display .Video input signals include D-sub and digital DVI-D , HDMI and DP(DisplayPort) depends on different model. Power saving function complies with the VESA DPMS (Display Power Management Standard).

General display parameters:

Display Area	21.5" diagonal 476.64mm(H)x268.11mm(V)
Resolution	1920 x 1080 pixels
Display Color Number	16.7M colors(6bit Hi FRC)
Display Type	a-Si TFT active-matrix
Contrast Ratio	1000 : 1 typ.
Brightness	250cd/m2 typ.
Response Time	(Ton + Toff) 5 ms typ.
Pixel Pitch	0.248mm(H) x 0.248mm(W)
Vertical Viewing	160 degrees typ, CR>10
Horizontal Viewing	170 degrees typ, CR>10

1.2 General Requirements:

1.2.1 Test Condition:

Normal test condition is that brightness level set at Max. and contrast level set default. Test pattern is full white pattern. The warm up time is more than 30 minutes. Ambient light should be less than 1 Lux.

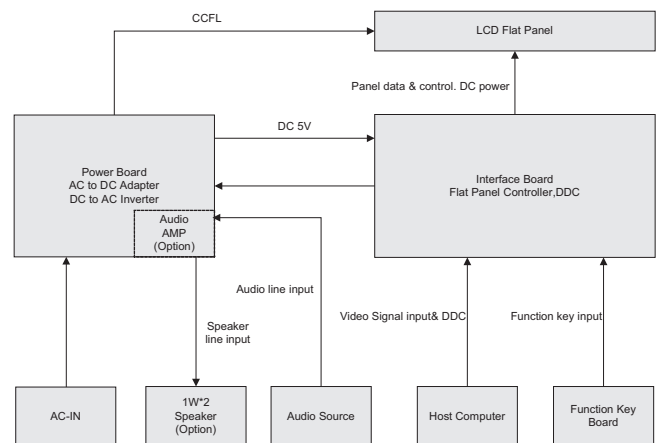
1.2.2 Test Equipment:

The reference signal source is a calibrated Chroma 2326 or Quantum 801GD video generator. The use of compatible generators during qualification and production is acceptable.

Luminance meter is Minolta CA210, TOPCON BM7 or compatible equipment.

1.3 Electrical:

This section describes the electrical requirement of the monitor. Below is the block diagram.



This LCD monitor includes an interface board, a power board and a function key board.

The interface board controls the TFT panel control logic, brightness control logic, and DC-DC conversion to supply the appropriate power to the whole board and LCD panel. The LVDS signals transmit video data to LCD Module to drive the LCD display circuit.

The power board will provide the DC power to the interface board, LCD panel and inverter board.

The function key board is used for OSD control, monitor power ON/OFF and the LED indicator for power status.

This monitor meets Energy Efficiency grade 2 of China.

ITEM		SPEC
Analog Signal Input (VGA)	Frequency Ranges	H 31kHz ~ 82kHz V 56Hz ~ 75Hz
	Max Pixel clock	210MHz
	Video input	0.7Vp-p
	RGB Input Impedance	75Ω
	Sync Input Signal	Separate SYNC, Composite Sync
	Sync Input Impedance	2.4KΩ(1A1D1H), 50Ω(1A1D1A)
Digital Signal Input (DVI&HDMI)	Frequency Ranges	H 31kHz ~ 82kHz V 56Hz ~ 75Hz
	Max Pixel clock	165MHz
	Input Level	150mV≤Vp-p≤1560mV
	Input Impedance	Input Impedance 100Ω per pair
Connectors	AC power	AC 100V ~ AC 240V ± 10% 50/60Hz, 3 pin AC power cord
	Input connectors	D-SUB 15pin, DVI-D 24pin, HDMI 19pin
	Audio Jack (OPTIONAL)	Audio input 3.5Φ
Power Consumption	AC IN 100~240V	30W Max(with audio)
	Normal Operation	
	Power Saving	
	Power Off	
User's Control	Front Panel Buttons	Right, Left, MENU, AUTO, E, Power
	Dimming control range (max-min/max) x100%	35%typical, 65%min
Pre-Defined Timing	Preset Timing	13
	User's Timing	9
Plug and Play		VESA DDC2B
Power Saving		VESA DPMS
Input Signal Counter tolerance		H ±1kHz, V ±1 Hz

1.3.1 Interface Connectors:

1.3.1.1 Power Connector and Cable:

The AC inlet connector shall be an IEC/CEE-22 type male power receptacle for connection to mains power. The power cord shall be black/white depending on the color of machine with length of 1.8±0.05 meters. The power cord type is different from regions.

1.3.1.2 Analog Connector and Cable:

These signal input connector shall be 15 D-sub capable of receiving VGA analog signal. The VGA signal cable shall be black and with length of 1.8meter. The D-sub cable shall be a molded-over, shielded, triple row, 15 pins and blue color D type connector.

1.3.1.3 DVI-D digital Connector and Cable:

These signal input connector shall be 24 DVI-D capable of receiving TMDS digital signal. The DVI cable shall be black and with length of 1.8meter. The DVI cable shall be a molded-over, shielded, triple row, 24 pins, and white color DVI-D connector.

1.3.1.4 HDMI digital video and audio Connector and Cable:

These input connector shall be capable of receiving digital video and audio signal per HDMI requirement. The optional HDMI cable shall be black and with length of 1.8 meter.

Connector Pin Assignment:

A. D-SUB

Pin	Signal	Description
1	Red-Video	Red video signal input
2	Green-Video	Green video signal input
3	Blue-Video	Blue video signal input
4	GND	Ground
5	Self Test	Detect VGA Cable have connected or not
6	Red-GND	Analog signal ground for the Red video
7	Green-GND	Analog signal ground for the Green video
8	Blue-GND	Analog signal ground for the Blue video
9	+ 5V	+5 input from host system for the VESA DDC2Bi function
10	DDC-GND	Signal ground
11	GND	Ground
12	DDC-SDL	SDA signal input for the VESA DDC2Bi function
13	H-SYNC	Horizontal signal input from host system
14	V-SYNC	Vertical signal input from the host system
15	DDC-SCL	SCL signal input for the VESA DDC2Bi function

B. DVI-D (Digital TMDS) Connector

Pin	Signal	Pin	Signal
1	TMDS Data 2-	13	NC
2	TMDS Data 2+	14	+5V POWER
3	TMDS Data GND	15	Self Test
4	NC	16	Hot Plug Detect
5	NC	17	TMDS Data 0-
6	DDC Clock	18	TMDS Data 0+
7	DDC Data	19	TMDS Data GND
8	NC	20	NC
9	TMDS Data 1-	21	NC
10	TMDS Data 1+	22	TMDS Clock GND
11	TMDS Data GND	23	TMDS Clock +
12	NC	24	TMDS Clock -

C. HDMI Connector

Pin	Signal	Pin	Signal
1	TMDS Data 2+	11	TMDS Clock Shield
2	TMDS Data 2 Shield	12	TMDS Clock-
3	TMDS Data 2-	13	CEC
4	TMDS Data 1+	14	Reserved
5	TMDS Data 1 Shield	15	SCL
6	TMDS Data 1-	16	SDA
7	TMDS Data 0+	17	DDC/CEC Ground
8	TMDS Data 0 Shield	18	+5V Power
9	TMDS Data 0-	19	Hot Plug Detect
10	TMDS Clock+		

D. Flat Panel Connector

PIN NO	SYMBOL	FUNCTION
1	RXOIN0-	Negative LVDS differential data input(Odd Data)
2	RXOIN0+	Positive LVDS differential data input(Odd Data)
3	RXOIN1-	Negative LVDS differential data input(Odd Data)
4	RXOIN1+	Positive LVDS differential data input(Odd Data)
5	RXOIN2-	Negative LVDS differential data input(Odd Data, DSPTMG)
6	RXOIN2+	Positive LVDS differential data input(Odd Data, DSPTMG)
7	GND	Power Ground
8	RXOCLK-	Negative Sampling Clock input (ODD clock)
9	RXOCLK+	Positive Sampling Clock input(ODD clock)
10	RXOIN3-	Negative LVDS differential data input(Odd data)
11	RXOIN3+	Positive LVDS differential data input(Odd data)
12	RXEIN0-	Negative LVDS differential data input(Even data)
13	RXEIN0+	Positive LVDS differential data input(Even data)
14	GND	Power Ground
15	RXEIN1-	Negative LVDS differential data input(Even data)
16	RXEIN1+	Positive LVDS differential data input(Even data)
17	GND	Power Ground
18	RXEIN2-	Negative LVDS differential data input(Even data)
19	RXEIN2+	Positive LVDS differential data input(Even data)
20	RXECLK-	Negative Sampling clock input(Even clock)
21	RXECLK+	Positive Sampling clock input(Even clock)
22	RXEIN3-	Negative LVDS differential data input(Even data)
23	RXEIN3+	Positive LVDS differential data input(Even data)
24	GND	Power Ground
25	NC	No connection(For AUO test only. Do not connect)
26	NC	No connection(For AUO test only. Do not connect)
27	VDD	Power Supply: +5V
28	VDD	
29	VDD	
30	VDD	

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1.3.2 Input Signals:

1.3.2.1 Video Signal Amplitudes:

The video inputs consist of Red, Green and Blue signals each has its own coaxial cable terminated at the monitor. These video signals are analog levels, where 0V corresponds to black, and 700mV is the maximum signal amplitude for the respective color. The video signal is terminated with 75 ohms.

1.3.2.2 Video Signal Termination Impedance:

The analog video signal termination shall be 75 ohm +/- 2%.

1.3.2.3 Synchronization (Sync) Signals:

The Horizontal Sync (HS) TTL signal is used to initiate the display of a horizontal line. HS may be either active high or active low according to the timing. The Vertical Sync (VS) TTL signal is used to initiate the display of a new frame. VS may be either active high or active low according to the timing.

1.3.2.4 Sync Signal Levels:

The monitor must accept sync signals from both 3.3 and 5 volt TTL logic families. The inputs shall sense a logic 0 when the input is 0.8 volt or less and shall sense a logic 1 when the input is 2.0 volts or greater. In addition to these level requirements, there shall also be a minimum of 0.3 volt hysteresis provided for noise immunity (typically by using a Schmitt Trigger input). That is, the input level at which the monitor actually detects a logic 0 shall be at least 0.3 volt lower than the level at which it actually detects a logic 1. If the monitor sync processing circuits were designed with 3.3 volt logic family, then the sync inputs must be 5 volt tolerant.

1.3.2.5 Sync Signal Loading:

TTL input loading shall be equivalent to one TTL input load. When logic 0 is asserted by a sync input, the maximum current source from any single monitor sync input to the driver is 1.6 mA. When logic 1 is asserted, the maximum current source from the driver to any single monitor sync input is 400 uA.

1.3.2.6 Abnormal Signal Immunity:

The monitor shall not be damaged by improper sync timing, pulse duration, absence of sync, abnormal input signal amplitude, or any other anomalous behavior of a graphics card.

1.3.2.7 Digital TMDS Input (DVI and HDMI signal input):

These video inputs consist of TX0+/- to TX2+/- and CLK+/- signals, each with its own shielded twisted pair. These video signals are digital levels. Each signal pair is terminated by a normal 100 ohms.

1.3.2.8 Audio Function (optional):

This monitor integrated with stereo audio.

Speakers: 2 x 1W

Amplifier: Output 1W with 500mVrms Sine wave input.

Input impedance: >22K Ohms.

THD: <10%.

1.3.3 User Controls and Indicators:

1.3.3.1 Power On/Off Switch:

The monitor shall have a power control switch visible and accessible on the side of monitor.

1.3.3.2 Power Indicator LED:

The monitor shall have LED indicators located on the front of the monitor. Table 1 is the LED color for the power indicator.

	LED Color
Power-ON Mode:	Blue
Power Saving Mode:	Amber

1.3.3.3 On-Screen Display:

On Screen Display system shall be used to control the monitor. Current setting will be saved and OSD will be tuned off when the keys are not touched for a period of time. (Please see OSD timeout section)

- A) Key Function Overview: All functions are controlled by OSD buttons on the front cover. Press the function button to open the shortcut menu. The shortcut menu lets you quickly select the most commonly accessed settings.

Shortcut menu	Content	OSD Display
	Input change function	Use Input key to select from different video sources that may be connected to your monitor.
	Speaker Volume control function	Press this button to activate the Volume menu.
	OSD Function	Press this button to activate the OSD menu.
	Auto Adjust Function	Press this button to activate the Auto Adjustment function. The Auto Adjustment function is used to set the HPos, VPos, Clock and Focus.
	Empowering	Press the Empowering Key to open the Acer eColor Management OSD and access the scenario modes.

B) Menu Operation:

Pressing the MENU button brings up the first level menu. This menu button is used to enter the second OSD menu also.

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ITEM	Content
Volume	To increase or decrease the sound level
Brightness	Adjust backlight luminance of the LCD panel
Contrast	Adjust gain of R,G,B signal
Clock	Adjust the ratio of dividing frequency of the dot clock
Focus	Adjust the phase of the dot clock
H.Position	The active screen is horizontally move right and left
V.Position	The active screen is vertically move up and down
Color temp	Select three kinds of modes(Warm, Cool, User)
OSD Language	1.USA-select the language among English, French, Italian, Deutsch, Spanish, 繁體中文, 簡體中文, 日本語 2.EMEA-select the language among English, French,Italian, Deutsch, Spanish, Russian, Dutch, Finnish
OSD Position	Adjust the OSD menu position
OSD Timeout	The OSD menu show time
Setting	The setting of Input Source, Wide Mode, DDC/CI
Information	It will show resolution, the frequency of horizontal/vertical synchronizing and S/N
Reset	All data copy from shipment factory data

C) OSD Function:

Power Saving Mode Menu	This function gives a warning message when selected input signal is not active. When the Monitor detected that the VGA or DVI is suspend or standby mode. The Monitor shall display a message, "No Signal" for 4 seconds and the LED shall be blue, and to alert the user that input signal is not active. Then the monitor shall go into sleep mode and the LED shall be Amber.
Out of range Menu	This function gives warning message about input resolution or refresh rate that the monitor cannot support. When an input signal which is out of the normal operation range defined in Section 3.2. Then the monitor will display "Input not supported" message: 1. Pixel clock frequency : Fc>165(Digital) Fc>205 (Analog) 2. V-sync frequency: 50Hz>FV>=76Hz 3. H-sync frequency: 30KHz>FH>83KHz (Analog); 30KHz>FH>83KHz(Digital)
Check Signal cable Menu	This function gives warning message when the VGA cable is not connected. When the Monitor detected that the VGA cable is not connected to the monitor. The OSD shall display a message "Cable not connected" all the time to alert the user that the video cable is not plugged in. The LED shall be blue. The monitor shall use a method of a pull-up resistor on a ground pin to determine if the video cable is connected to the PC.

D) OSD Control Factory Default Values:

The OSD controls shall have the following factory default values:

Brightness: 77

Contrast: 50

Color Temperature:

Warm(6500)/Cool(9300)/User (R/G/B all are 100)

Horizontal Position of Screen: 50

Vertical Position: 50

OSD Time: 10 seconds

OSD Language: English

1.3.4 Monitor Modes and Timing Capability:

1.3.4.1 Format and Timing:

The monitor shall synchronize with any vertical frequency from 55 to 76 Hz, and with any horizontal frequency from 30 to 83 KHz for analog input and from 30 to 83 KHz for DVI input. If the input frequency is beyond the specified range, the

monitor shall display a warning screen indicating that the input frequency is out of range. Under no circumstances shall any combination of input signals cause any damage to the monitor.

1.3.4.2 Factory Assigned Display Modes:

There are 13 factory pre-set video modes. Pre-defined mode parameters will be recalled if the operating mode is one of those pre-set modes. If the operating mode is not one of those stored in memory, the monitor CPU will select the PRESET timing for a mode that is the next lowest in horizontal scanning frequency. The screen parameters can be adjusted by the front bezel control buttons and then saved as a user defined mode. The monitor shall include all the preset video timings shown in the following page.

Preset Timing Chart:

Resolution (active dot)	Horizontal Frequency (kHz)	Vertical Frequency (Hz)	Nominal Pixel Clock (MHz)	User Manual description	EDID
640x480@60Hz	31.469	59.941	25.175	Yes	Established Timing
640x480@72Hz	37.861	72.809	31.5	No	N/A
640x480@66.66Hz	35	66.66	30.24	Yes	Established Timing
720x400@70Hz	31.469	70.087	28.322	Yes	Established Timing
800x600@56Hz	35.156	56.25	36	Yes	Established Timing
800x600@60Hz	37.879	60.317	40	Yes	Established Timing
800x600@72Hz	48.077	72.188	50	No	N/A
1024x600@60Hz	37.32	60	48.964	No	N/A
1024x768@60Hz	48.363	60.004	65	Yes	Established Timing
1024x768@70Hz	56.476	70.069	75	Yes	Established Timing
1152x864@75Hz	67.5	75	108	Yes	Standard Timing
1280x960@60Hz	60	60	108	No	N/A
1280x1024@60Hz	63.981	60.02	108	Yes	Standard Timing
1280x720@60Hz	44.76	60	74.481	No	N/A
1280x800@60Hz	49.702	59.81	83.5	Yes	Standard Timing
1360x768@60Hz	47.712	60.015	85.5	No	N/A
1440x900@60Hz	55.935	59.887	106.5	Yes	Standard Timing
1680x1050@60Hz	65.29	59.954	146.25	No	N/A
1600x1200@60Hz	75	60	162	No	N/A
1920x1080@60Hz	67.158	59.963	173	Yes	Standard Timing
1920x1080@60Hz	67.5	60	148.5	Yes	Detail timing
1920x1080@60Hz	66.587	59.934	138.5	No	

Preset video timings (digital inputs)

Primary Video Format Timings	Cable	Remark
640x480p@59.94/60Hz	Cat1	CEA Timming
720x480p@59.94/60Hz	Cat1	
1280x720p@59.94/60Hz	Cat1	
720x576p@50Hz	Cat1	
1280x720p@50Hz	Cat1	
1920x1080i@59.94/60Hz	Cat1	
1920x1080i@50Hz	Cat1	
1920x1080p	Cat2	
1920x1080p	Cat2	

1.3.4.3 Mode Recognition Pull-in:

The monitor shall recognize preset modes within a range of +/- 1 KHz for horizontal and within a range of +/- 1Hz for vertical.

1.3.5 Controller Requirements:

1.3.5.1 General Requirements:

The monitor shall include a controller which is capable of converting the analog RGB signal or

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DVI digital signal to the panel. The controller will include a PLL, A/D converters, TMDS receiver and other circuitry necessary to perform its function. The PLL shall be stable enough to ensure a stable image.

1.3.5.2 Video Stretching:

The monitor shall have the function to “stretch” the video signal, so that an input signal from the computer in any resolution smaller than 1920 x 1080 is automatically expanded to fill the entire screen.

1.3.5.3 Panel Timing and Interface:

The controller supplied with the monitor shall control all panel timing. This controller shall adequately insulate the monitor from the computer, so that no possible combination of input signals from the computer shall cause damage to the flat panel or any other component of the monitor.

1.3.6 DC - AC Inverter Requirements:

The frequencies used by the DC - AC inverter should be carefully selected to prevent any noticeable effects on the screen (such as a rolling effect). The Inverter specification detail information in Table 2:

Inverter specification for M215HW01 V7				
Item	Min.	Typ.	Max.	Unit
Output Current	3	7.5	8	mArms
Output Voltage		791		Vrms
Operation frequency	40	55	60	KHz
Striking Voltage	---	---	1780	Vrms

1.3.7 Power Supply Requirements:

The AC to DC power supply for this monitor shall be an integrated power supply. This power supply shall have an IEC receptacle for mains power input and provide sufficient power for backlight assembly, interface board and panel. And it should meet all requirements specified in the following Table.

Input Voltage Range	The operating range shall be from 90 to 264 VA sinusoidal for all models specified.
Input Frequency Range	Input power frequency range shall be from 47 to 63Hz.
Power Consumption	Power consumption for the monitor shall be less than 30W over the specified voltage and frequency ranges. In power off mode the power consumption will be less than 1W (at 90VAC~264VAC).
Line Fuse	The AC input shall be fused and become electrically open as a result on an unsafe current level. The fuse may not be user replaceable.
Initial Cold Start	The power supply shall start and function properly when under full load, with worst case conditions of input voltage, input frequency, operating temperature, and cold backlight lamps.
Inrush Current	The inrush current must be limited to 35A when operated at 120VAC, and 80A when operated at 220VAC. In - rush current is measured at an ambient temperature of 25°C, with the unit temperature stabilized in the power - off.

Hot Start Cycle	The power supply shall not be damaged when switched ON for one second and OFF for one second for seven consecutive times after operating for one hour at full load, 25°C, and nominal input line voltage.
Under Voltage	The power supply shall contain protection circuitry such that the application of an input voltage below the minimum specified in this table shall not cause damage to the power supply unit nor cause failure of the input.
Line Transient	The power supply shall operate within IEC 801-4 (+/-1KV) and IEC 801 -5 (+/-2KV) for the domestic U.S. Version. The UPS power supply shall operate and comply with CE mark.
DC Output	5.15+/-0.2V (1.85A); 22+/-2V (0.75A)

1.3.8 Display Communications Channel:

The monitor shall provide a display communications channel that conforms to VESA DDC2B hardware requirements. This configuration shall contain the 128-byte EDID file as specified by VESA E-EDID Standard. Once the EDID is programmed the write protection function will be enabled. So the EEPROM data cannot be overwritten.

1.4 Flat Panel:

1.4.1 General Requirements:

The panel shall be a Full HD resolution 21.5” diagonal TFT-LCD.

1.4.2 Panel Timings:

The controller in the monitor shall translate video timings from the PC to meet the timing requirements listed in Panel specification. Under no circumstances may the controller supply the panel with timings that may result in damage. The controller shall insulate the panel from the PC, so that the panel shall always be driven according to its specification regardless of the timings being sent from the PC.

1.4.3 Polarizer Hardness:

The outer face of the front polarizer panel shall be covered with a coating with a 3H hardness value.

1.4.4 Backlight Requirements:

The backlight assembly shall be designed to support field replacement at the customer site or authorized service center. The backlight module shall have a continuous operating life of at least 30,000 hours at 25°C. The operating life is defined as having ended when the illumination of light has reached 50% of the initial value. The backlight module shall extend a sufficient amount from the edge of the light guide that sputtering over the life of the backlight shall not cause degradation of the luminance uniformity (such as non-illuminated bands along the edges of the display).

1.4.5 Defects:**1.4.5.1 Visual Inspection:**

The LCD panel shall be inspected with all pixels set to white, black, red, green and blue. The color variation, brightness variation, and overall appearance must meet the SPEC.

1.4.5.2 Display Degradation:

Over the life of the product, variation of the parameters specified in Panel specification shall be maintained within reasonable limits. The panel must not exhibit any significant defects while in operation (excluding the lamp operation).

This does not in any way change the warranty given by the panel manufacturer.

1.4.5.3 Light Leakage:

Except for the active display area, there shall be no light emission visible from any angle from any other part of the display. For this test, the ambient illumination will follow the panel specification 300 to 700 lux .

1.4.5.4 Allowable Defects:

No cosmetic defects are allowed except those specified below. The conditions of visual inspections are as follows:

- Viewing distance: 35 ~ 50cm.
- Ambient illumination: 300 to 700 lux.
- Viewing angle shall be at 90 degree.
- Defects not apparent within one minute shall be ignored.

1.4.5.5 Defect Terminology:

The following gives the descriptive terms used in classifying defects

Dark Spots / Lines:

Spots or lines that appear dark in the display patterns and are usually the result of contamination. Defects do not vary in size or intensity (contrast) when contrast voltage is varied. Contrast variation can be achieved through the use of varying gray shade patterns.

Bright Spots / Lines:

Spots or lines that appears light in the display patterns. Defects do not vary in size or intensity (contrast) when contrast voltage is varied.

Contrast variation can be achieved through the use of varying gray shade patterns.

Polarizer Scratch:

When the unit lights, lines appear light (white)

with display patterns dark and do not vary in size.

Physical damage to the polarizer does not damage the glass.

Polarizer Dent:

When the unit lights, spots appear light (white) with display patterns dark and do not vary in size. Physical damage to the polarizer does not damage the glass.

Rubbing Line:

Horizontal or diagonal lines that appear gray with the display patterns dark and may have resulted from an "out of control" rubbing process on the polyimide or "waves" on the BEFs or prism sheets .

Newton Ring:

The "rainbow" effect caused by non-uniform cell thickness.

Mottling:

When the unit lights, variation / non - uniformity(splotch) appears light (white) with the display and might vary in size.

Dim Line:

When the unit lights, line(s) in the minor (vertical) or major (horizontal) axis appear dim, but not completely on or off.

Cross Lines Off:

When the unit lights , lines in both the minor and major axis do not appear.

Bright/Dark Dot:

A sub - pixel (R, G, B dot) stuck off / on (electrical).

1.4.5.6 Smudges, Streaks and Smears:

When viewing the panel oriented so as to maximize reflected light, there shall be no visible smudging, streaking, smearing or other non-uniformity from contaminants, fingerprints, or defects in any of the visible surfaces. This is independent of whether the unit is operating or off.

1.4.5.7 Other Defects:

Undefined defects that are considered to be rejectable by Acer will be reviewed by Wistron as they become apparent. These panels will be referred to the Wistron Corporate / Manufacturer Purchasing Agreement for disposition

1.4.5.8 LCD Inspection:

Put LCD panel on inspection table and illuminate the panel with a daylight fluorescent lamp located above the panel surface such that the luminance at the LCD panel is between 1000 lux. and 1500 lux. Defect limits are given in Table 4 .

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Table 4. Descriptive Terms

Average Diameter Smaller of (L+W)/2 or L/20 + 2W	Acceptable Number	Minimum Separation
< 0.1mm	Non countable	N / A
0.1mm - 0.3mm	10	15mm
0.31mm - 0.5mm	10	15mm
0.51mm - 1.25mm	5	15mm
1.26mm - 2.5mm	3	25.4mm
2.51mm - 0.3mm	3	25.4mm
Greater than 3.75mm	None	Not applicable

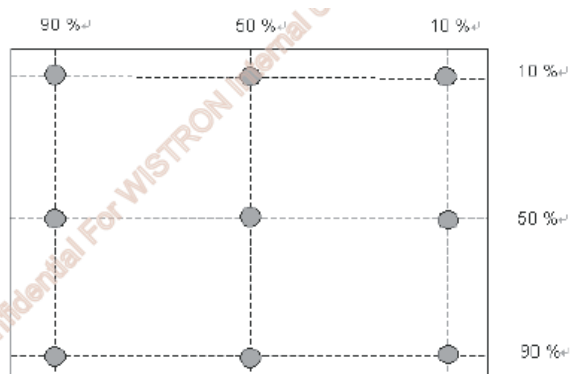
Allowable distance between spots of two sizes is the minimum separation number for the smaller spot. Therefore, if there are two spots, 1.30 mm and 0.4 mm in diameter, they must be at least 15 mm apart.

1.5 Optical Characteristics:

1.5.1 Brightness uniformity:

The uniformity is determined by using a photometer (CA-210) to measure the 9 points luminance in front of monitor after at least 30 minutes warm up. It shall be test at 1920x1080/60Hz mode and full white square pattern with contrast / brightness in default value. The values specified are at an approximate distance 20 cm from the LCD surface and at 0 viewing angle.

The 9 test points are defined as below:



The brightness uniformity is calculated as below:

$$\text{Uniformity} = \frac{\text{Minimum Luminance in 9 points (1-9)}}{\text{Maximum Luminance in 9 Points (1-9)}}$$

Brightness uniformity $\geq 75\%$

Remark: The black luminance non-uniformity are no defined by panel spec, therefore, we don't define the spec. for black luminance non-uniformity.

1.5.2 Contrast ratio (CR) :

1.5.2.1 General CR:

The contrast ratio is determined by using a photometer (CA-210) to measure the maximum and minimum luminance in front of monitor after at least 30 minutes warm up. It shall be test at 1920x1080/60Hz mode and full white/full black square pattern with contrast/brightness in default value. The values specified are at an approximate distance 20 cm from the LCD surface and at 0 viewing angle.

The contrast ratio is calculated as below:

$$\text{CR} = (\text{Max. full white luminance}) / (\text{Max. full black luminance})$$

$$\text{CR} = 600:1 (\text{min.}), \text{CR} = 1000:1 (\text{typ.})$$

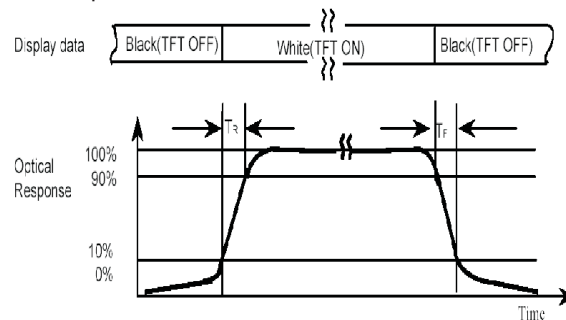
1.5.2.2 ACM (Auto Contrast Management):

The input image signal source may be various levels of illumination, and this ACM unit can analyze it as histogram for the various levels of illumination, according to the analyzed result, when input a low-luminance level image, display brightness will be adopted to corresponding low level, so that enhance the contrast rate, this facilitates visual ergonomics enhancement.

The monitor should me CR >50000:1 when ACM function is active.

1.5.3 Response time:

The response time is defined as below:

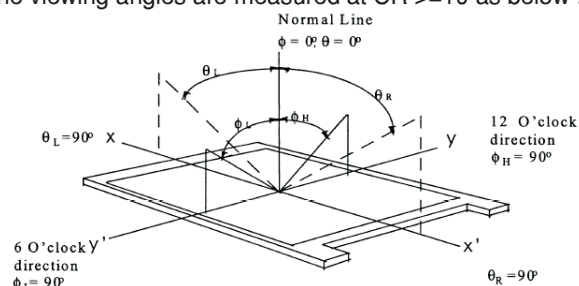


$Tr + Tf : 5 \text{ msec typ.}$

Remark: Optical response time vs gray scale. Test condition: brightness set to max, and contrast set to default.

1.5.4 Viewing angles:

The viewing angles are measured at CR ≥ 10 as below :



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Horizontal	Left: 85 degrees typ.
	Right: 85 degrees typ.
Vertical	Up: 80 degrees typ.
	Down: 80 degrees typ.

1.5.5 Chromaticity:

The color chromaticity is measured by a photometer (CA-210) at 1920x1080/60Hz mode and full white square pattern with contrast/brightness in default value. The x and y co-ordinates for Reddish, Bluish and User preset mode shall be as below:

Reddish Preset (6500K):

x=0.313 +/- 0.020

y=0.329 +/- 0.020

Bluish Preset (9300K):

x=0.283 +/- 0.020

y=0.297 +/- 0.020

1.5.6 Brightness:

The uniformity is determined by using a photometer (CA-210) to measure luminance on the center of screen after at least 30 minutes warm up. It shall be test at 1920x1080/60Hz mode and the brightness and contrast OSD setting for 100%. The values specified are at an approximate distance 20 cm from the LCD surface and at 0 viewing angle. The full screen white center luminance at User mode color temperature shall be 250 cd/m² typ. And > 200 cd/m² min. Full screen black pattern luminance at center should be < 1cd/m².

1.6 Environmental Requirements:

1.6.1 Temperature Ranges:

Operating Temperature: 5°C to 35°C

Shipping Temperature: -20°C to 60°C

Storage Temperature: -20°C to 60°C

1.6.2 Humidity:

Operating (non-condensing): 5% to 90%

Shipping (non-condensing): 5% to 90%

Storage (non-condensing): 5% to 90%

1.6.3 Altitude:

Operating 0 to +12,000 feet [3,658m].

Equivalent to 14.7 to 10.1 psia.

Shipping (Non-Operating) 0 to +40,000 feet [12,192m].

Equivalent to 14.7 to 4.4 psia.

1.7 Mechanical Specification:

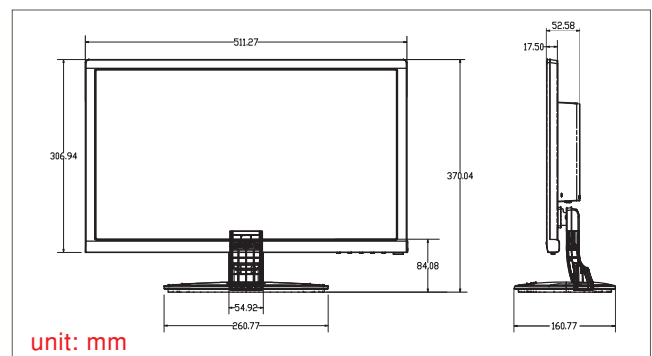
1.7.1 Mechanical Summary Table:

Height (including stand)	370mm
Depth (including stand)	161 mm /52.5mm(without base cover)
Width	511.3mm
Pack Dimensions (H x W x L)	570(L)x114(W)x396(H)mm
Packaged Weight	4.95kg
Unpacked Unit Weight	3.49 kg
40" container loading, palletized	2000 units
Maximum Stacking Height	5 layers, 2103 mm

1.7.2 Stand:

Mounting Method	100 x 100 mm VESA Mount
Attachment Method	(4) Screws ,M4 x 10mm flat head Phillips socket
Tilt Range	-5+/- 1.5 degree, +15+/- 1.5 degree
Swivel Range	-0degree, +0 degree
Lift Range	0mm
Pivot	NO 0degree, clockwise
Stand base(attached or detached for shipping)	detached
Stand Tilt/Swivel/Lift/Torque	Backward
Tilt	Backward: 1.4+/-0.3 kgf Backward(pivot): 0kgf Forward: 1.4+/-0.3 kgf Forward(pivot): 0 kgf 3000 times still within spec
Swivel	0kgf/3500 times still with spec
Lift	Upward: 0 kgf/3500 times still within spec Downward: 0kgf/3500 times still within spec
Pivot	0kgf/3500 times still within spec
Head Unit Squareness	A-B <= 5.0mm C-D <= 5.0mm
Head Unit Stability (Wobble Resistance)	Time <= 5 seconds, Displacement <= 7 mm
Cable Management	No
Kensington lock hole	Yes
Normal Temperature Drop Height (Packaged)	760 mm, 30 inches
Cold Drop Height (Packaged)	
Sequence	1 corner (Corner: corner2-3-5) -> 3 edges -> 6 sides

1.7.3 Dimension(cm):



1.8 SHIPPING AND PACKING:

Packaging and wrapping shall be sufficient to protect the product against damage or loss during shipment from the supplier to the destination specified in the purchase order. All packaging materials are subject to be tested and evaluated. The container loading is 2000sets/40'. The outside dimension of carton box is 570(L)x114(W)x396(H)mm.

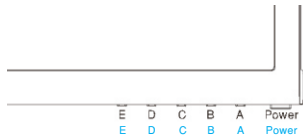
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2.1 Function Menu:

- 1). Display Function Menu while user press any function button.
- 2). Layout as following figure:



2.2 Key Definition:



Key	Function Description
Power	Power on/off monitor
A	Input Switch
B	Volume Management OSD
C	Main Menu OSD
D	Auto Config
E	Trigger the Acer eColor Management

2.3 Main OSD Menu:

2.3.1. OSD layout:

- 1). Display OSD menu when user press “C” button in Function Menu.
- 2). Layout as following figure.



OSD layout for main menu

a. OSD layout for each function page



Picture

OSD

Settings

Information

b. Icons introduction

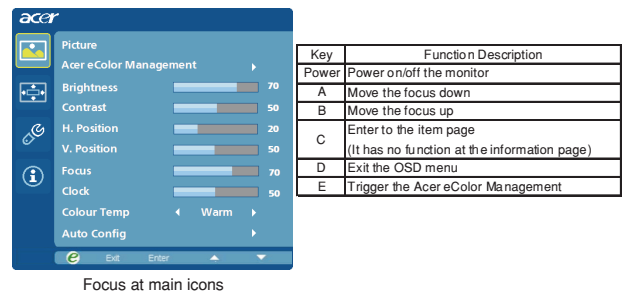
Function Status	Picture	OSD	Setup	Information
Non Focus				
Focus				
Focus on Item page				

c. Item page status

Status	Display type
Non focus	
Item focused	
Item selected	

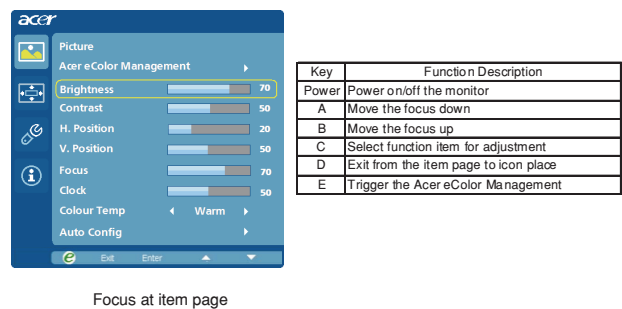
2.3.2 Key operation:

a. Key operation at function icon.



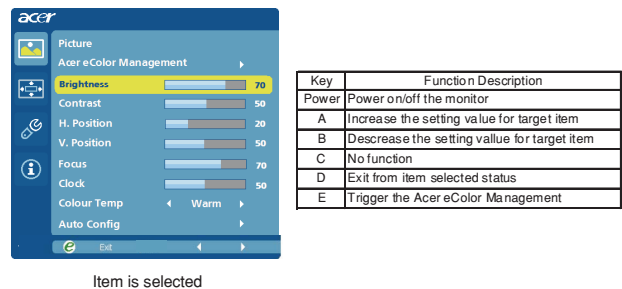
Focus at main icons

b. Key operation at items page, no item selected.



Focus at item page

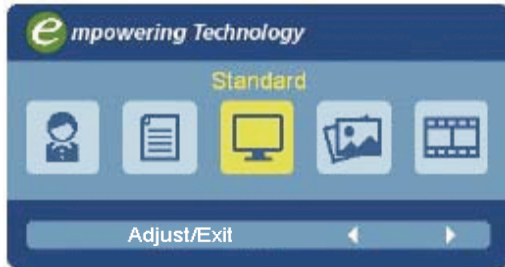
c. Key operation at items page, item selected.



Item is selected

2.4 Acer eColor management:

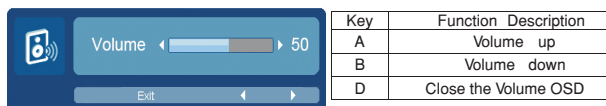
- Display Acer eColor management OSD when user press “e” button at Function menu or trigger this function in OSD menu/picture page.
- Layout as following figure.



OSD layout for the acer eColor management

2.5 Volume management OSD:

- Display volume management OSD, when user press “<” or “>” button on the front bezel.
- Layout as following figure, key operation at items page.
(No item selected)



OSD layout for volume management

2.6 Acer logo:

When the monitor is turned on, the LOGO will be showed in the center.



Acer logo

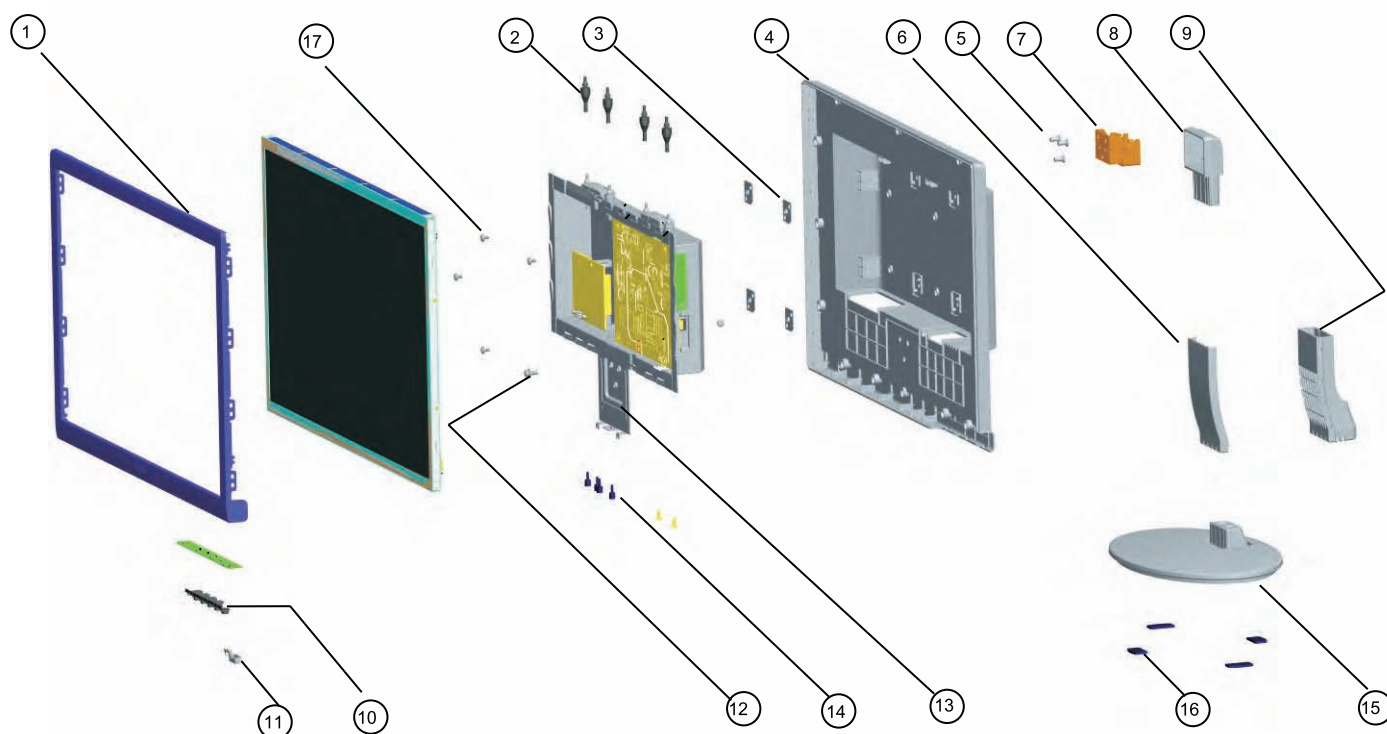
2.7 OSD Message:

Item	Description
Auto Config Please Wait	When user press hot key "Auto" will show this message, and the monitor do the Auto config function.
Input Not Support	When the Hsync Frequency, Vsync Frequency or Resolution is out of the monitor support range, will show this message. The message will be flying.
Cable Not Connected	When the video cable is not connected, will show this message. This message will be flying.
No Signal	When the video cable is connected, but there is no active signal input, will show this message, then enter power saving.
Please Wait	After user trigger the reset function, system will show this message notice user the reset is in proceeding.

3. Exploded Diagram

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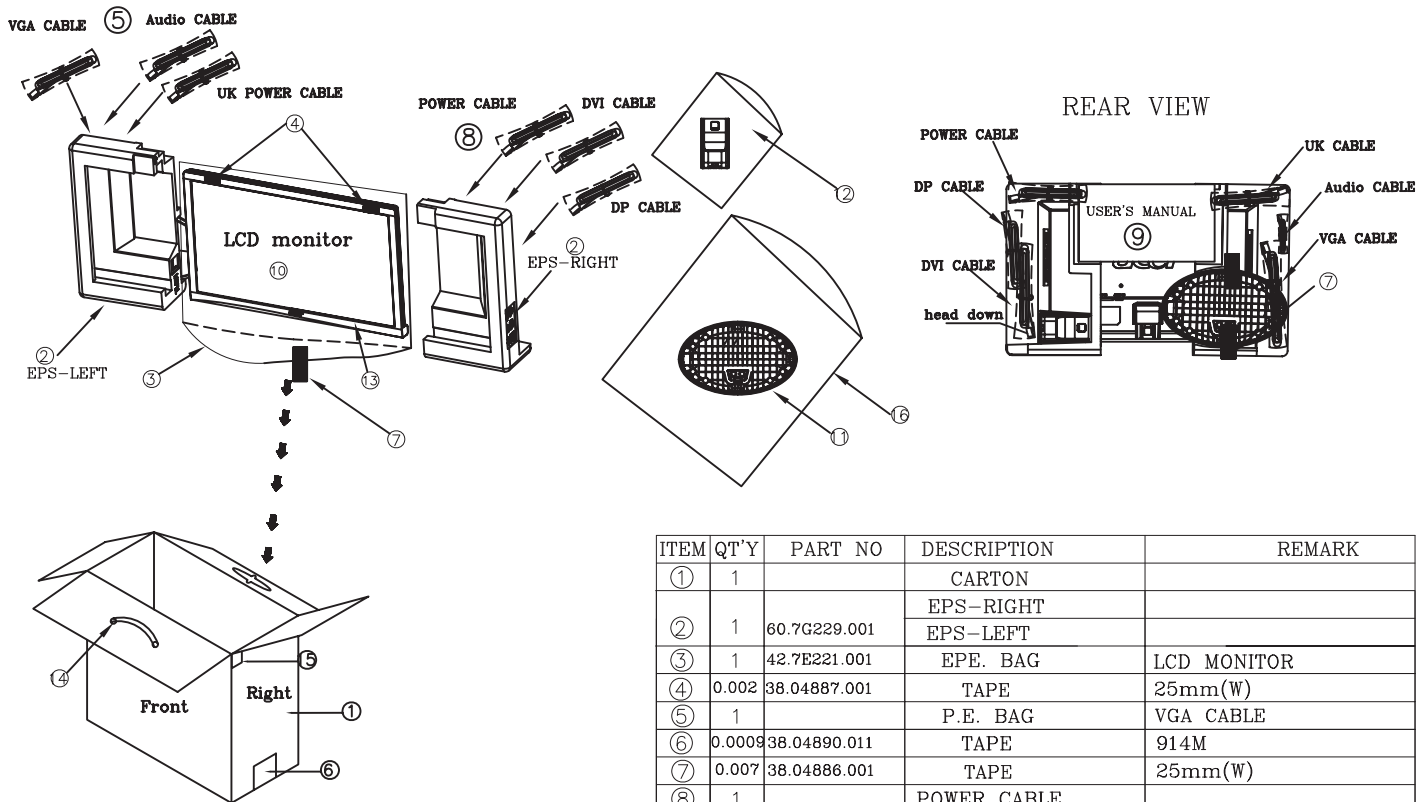
3.1 Product Exploded Diagram:



17	screw	86.0H544.6R0	5	
16	RUBBER	47.7G701.001	4	
15	BASE COVER	42.7G704.001	1	ABS
14	screw	86.00K43.248	4	
13	Main Chassis	34.7G102.001	1	ABS
12	screw	86.7HJ26.8R0	1	
11	Power cover	42.7G207.001	1	ABS
10	Function KEY	42.7G208.001	1	ABS
9	ARM BACK	42.7G703.001	1	ABS
8	ARM TOP	42.7G701.001	1	ABS
7	Hinge	34.7G701.001	1	SGCC
6	ARM FRONT	42.7G702.001	1	SGCC
5	SCREW	86.LA536.9R0	3	
4	Rear Cover	42.7G103.001	1	ABS
3	wall_mount_metal	33.7A502.001	4	SGCC
2	speaker support	47.7G102.001	4	
1	FRONT COVER	41.7G701.001	1	ABS+PMMA
Item	Discription	Part number	Quatity	Material

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3.2 Packing Exploded Diagram:



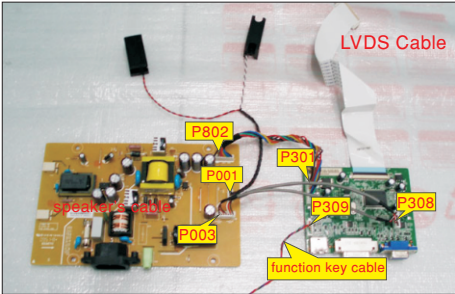
ITEM	QT'Y	PART NO	DESCRIPTION	REMARK
①	1		CARTON	
②	1	60.7G229.001	EPS-RIGHT	
③	1	42.7E221.001	EPS-LEFT	
④	0.002	38.04887.001	EPE. BAG	LCD MONITOR
⑤	1		TAPE	25mm(W)
⑥	0.0009	38.04890.011	P.E. BAG	VGA CABLE
⑦	0.007	38.04886.001	TAPE	914M
⑧	1		TAPE	25mm(W)
⑧	1		POWER CABLE	
⑨	1		USER'S MANUAL	
⑩	1		LCD MONITOR	
⑪	1		BASE	
⑫	1	42.7E208.001	P.E. BAG	Stand(L250xW250)
⑬	1		Screen protector	
⑭	1	34.7B114.001	Plastic handle_white	
⑮	0.004	38.04889.011	TAPE	50M
⑯	1	42.7G022.001	P.E. BAG	Stand(L200xW130)

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4.1 Assembly procedures:

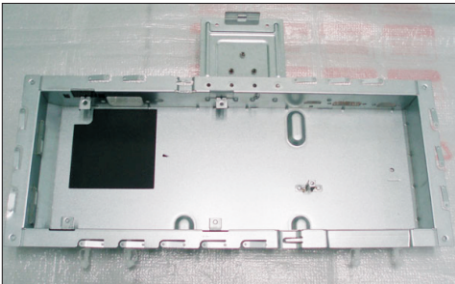
S1

Connect P802 of power board with P301 of interface board. Connect P003 of power board with P308 of interface board. Connect function key cable with P309 of interface board. Connect the speakers' cable to P001 of power board.



S2

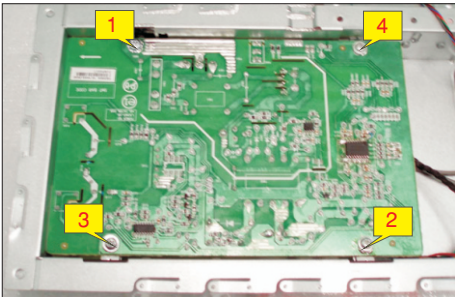
Place a bracket chassis base on a protective cushion. Turn over the circuit boards and put them into the bracket chassis base.



S3

Use a Phillips-head screwdriver to tighten four screws till the power board and bracket chassis base be firmly attached.

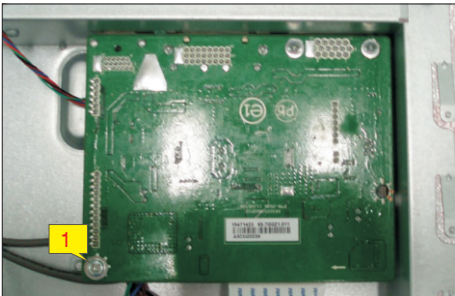
(No.1 screw size=M4x8, Torque=6~8kgfxcn;
 No.2~4 screw size=M3x6, Torque=6~8kgfxcn)



S4

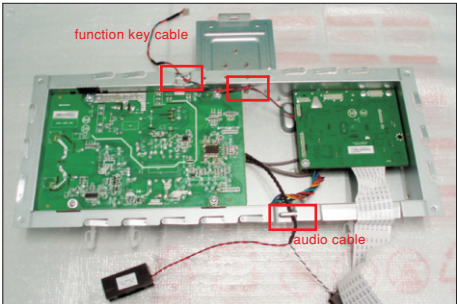
Use a Phillips-head screwdriver to tighten one screw till the interface board and the bracket chassis base be firmly attached.

(No.1 screw size=M3x6, Torque=6~8kgfxcn)



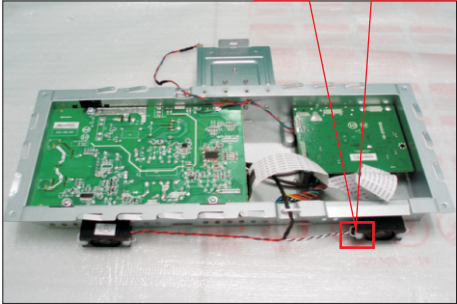
S5

Locate the function key cable and audio cable in the hooks shown as photo.



S6

Fix two speakers on the probes of speaker holders with caps.



S7

Turn over the bracket chassis module. Use a Hex-head screwdriver to tighten four screws for locking the DVI and D-Sub connectors.

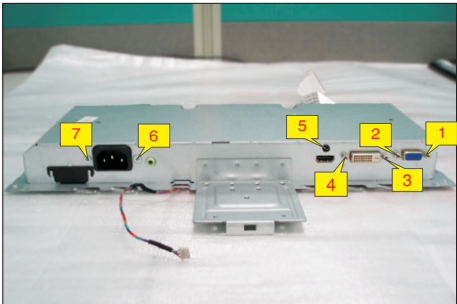
(No.1~4 screw size=M3x8, Torque=5±1kgfxcn)

Use a Phillips-head screwdriver to tighten one screw for locking the HDMI or DP connector.

(No.5 screw size=M3x8, Torque=5±1kgfxcn)

Use a Phillips-head screwdriver to tighten two screws for locking the AC power outlet.

(No.6~7 screw size=M3x10, Torque=5±1kgfxcn)



S8

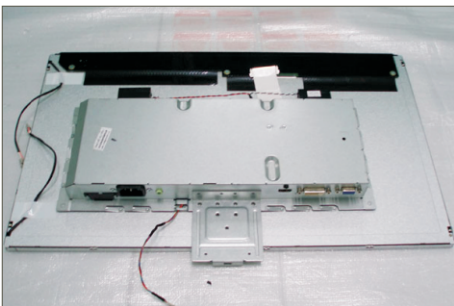
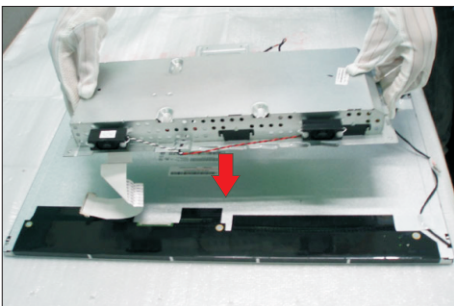
Panel preparation: Examine the panel surface according to inspection criteria. Turn over the panel to place the screen faced down for later assembling.

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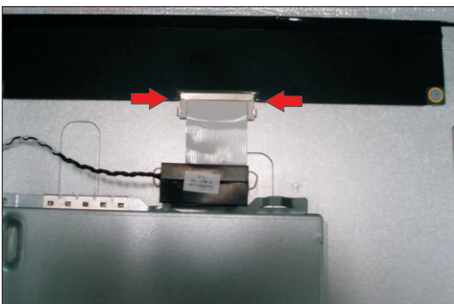
S9

Put the bracket chassis module on the back of LCD panel module.



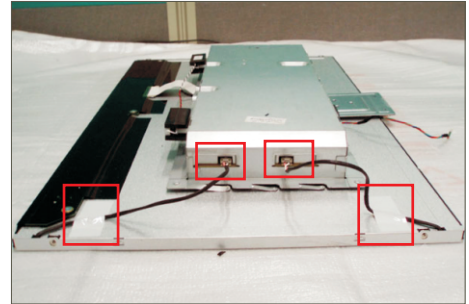
S10

Connect FFC cable to LVDS connector, fix the cable with double faced adhesive tape which is stuck on the back of cable.



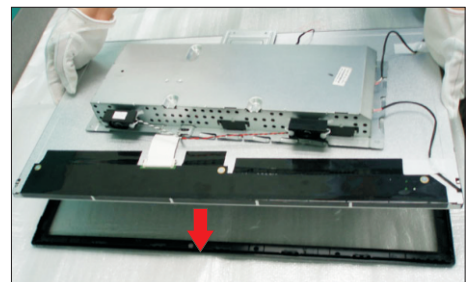
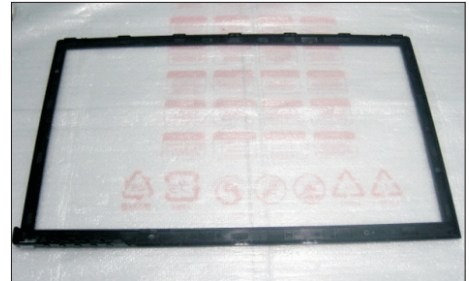
S11

Plug lamp cables to the connectors of power board, then fix the lamp cables with tapes.



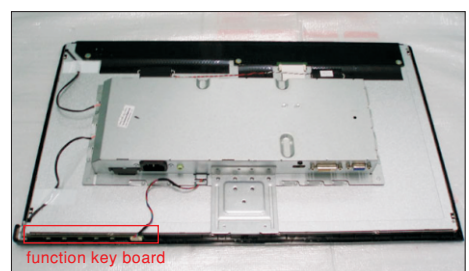
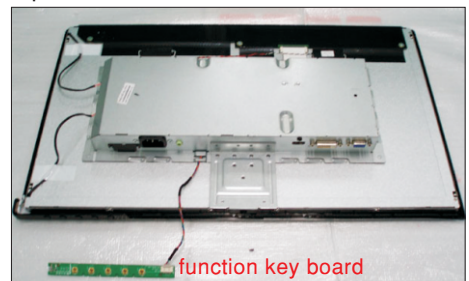
S12

Place a front bezel on a protective cushion, put the bracket chassis module into the front bezel. Adjust the position of bracket chassis module till it is firmly attached to the front bezel.



S13

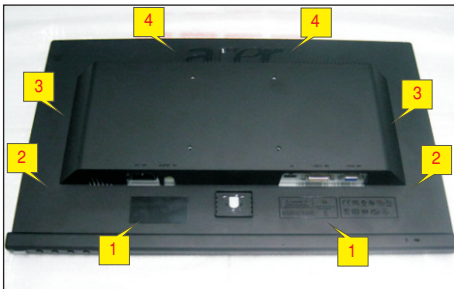
Take a function key board, then connect the function key cable with the function key board. Locate the function board in the hook of the front bezel, then fix the function key cable with PVC tapes.



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S14

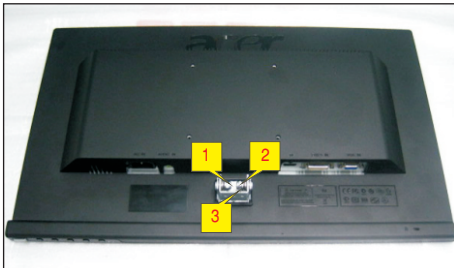
Put a rear cover on the assembled unit and push the rear cover on the positions marked as No.1~4 in priority order for mechanisms engagement.



S15

Use a Phillips-head screwdriver to tighten three screws for fixing hinge with the rear cover.

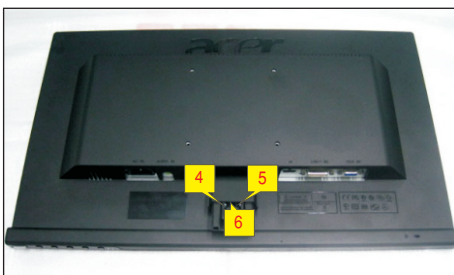
(No.1~3 Screw size=M4x9, Torque=12±1kgfxcn)



S16

Use a Phillips-head screwdriver to tighten three screws for fix hinge cover with the hinge.

(No.4~6 Screw size=M4x8; Torque=6-7kgfxcn)



S17

Take a arm, then install the arm to the hinge cover following the direction as the picture below.



S18

Assemble the hinge covers as the below picture. Align the base cover with the stand and push the base cover towards the top of the monitor for assembling the base.



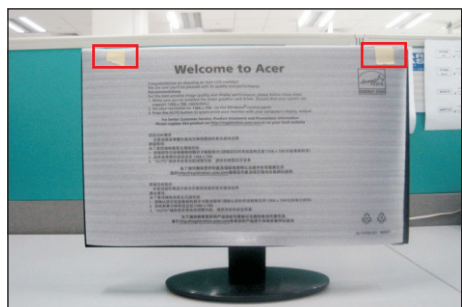
S19

Lift up the LCD module, check the acer logo if it is firmly attached to the front bezel, connect a video cable and power cord with the monitor and turn on the monitor for functionality check.



S20

Turn off the monitor and remove the video cable and power cord from the monitor. Stick a screen protector on the front bezel with adhesive tapes.



S21

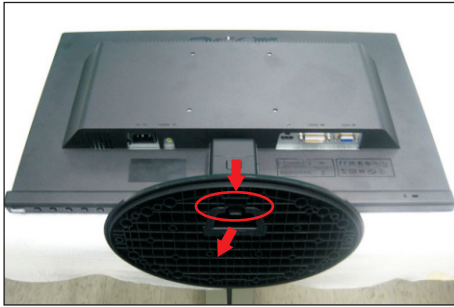
Take a EPE bag to cover the LCD monitor, put the monitor face down on the table.



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S22

Depress the release hook as indicated first before removing the base and follow the arrow direction to remove it.



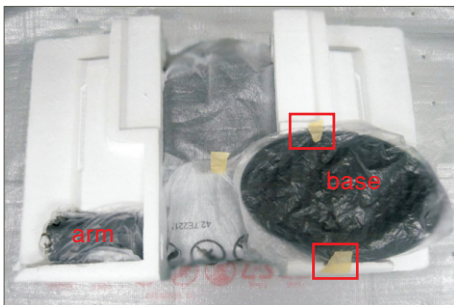
S23

Depress the release button as indicated, then remove the arm follow the arrow direction.



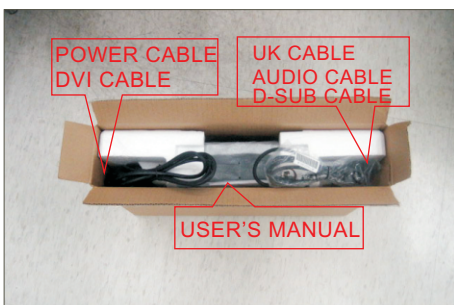
S24

Pack the base and arm with PE bags. Take two cushion foams to hold the LCD monitor, put the base and arm on the specific positions as the below picture. Fix the base with adhesive tapes.



S25

Move the whole unit into a carton and put accessories including user's manual, D-Sub cable, audio cable, power cable and UK cable on specific positions as the photo below. Seal the carton.



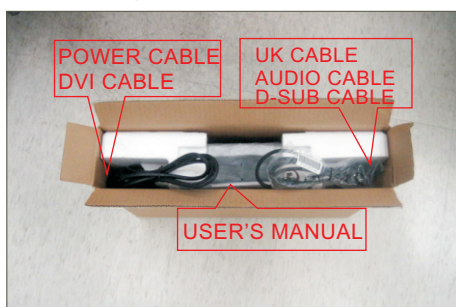
◀◀ Go to contents page

4.2 Disassembly procedures:

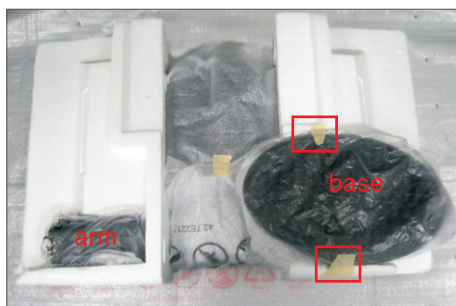
S1 Open the carton with a proper tool.



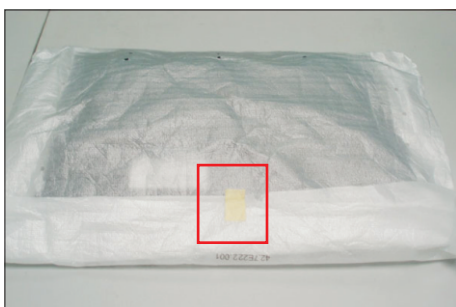
S2 Take out all accessories including user's manual, power cable, D-Sub cable, DVI cable, audio cable and other packing materials from the carton.
(Note: It depends on whether users return the accessories.)



S3 Take out the whole cushion foams from the carton and remove base and arm.



S4 Remove two cushion foams, tear off the adhesive tape, take out the LCD monitor from the EPE bag, remove the screen protector, then put the LCD monitor on a protective cushion.

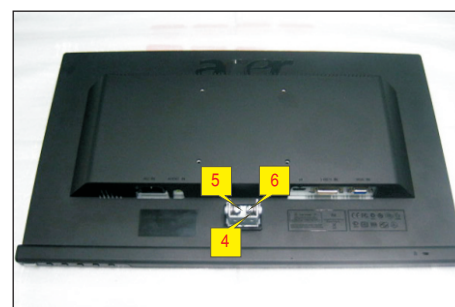


S5 Use a Phillips-head screwdriver to remove three screws for releasing the hinge cover.
(No.1 Screw size=M4x8; Torque=6-7kgfxcM)



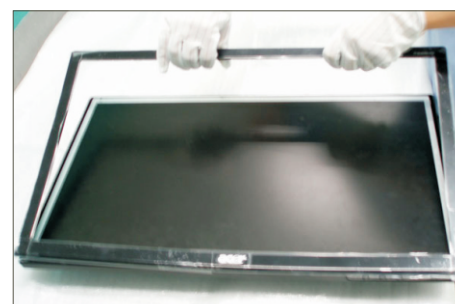
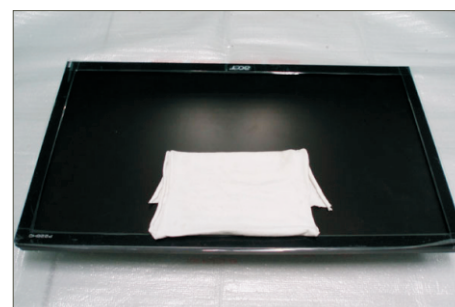
S6

Use a Phillips-head screwdriver to remove three screws for releasing hinge.
(No.4~6 screw size=M4x9, Torque=11~13kgfxcM)



S7

Turn over the LCD monitor to let the screen faced up. Place a cloth on the panel where you are working on to protect the panel. Then wedge your fingers between the front bezel and the panel for unlocking the mechanisms.



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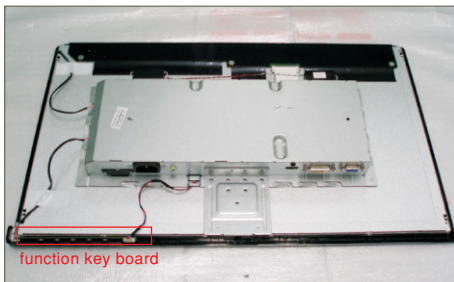
S8

Turn over the LCD monitor to let the screen faced down and then remove the rear cover.



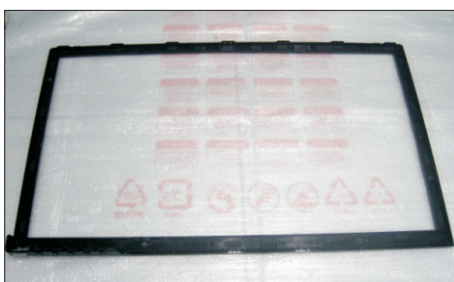
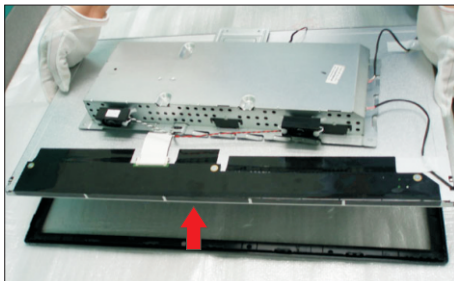
S9

Tear off the PVC tape, release the function key board from the hook of the front bezel, then disconnect the function key cable from the connector of the function key board. Put the function key board aside.



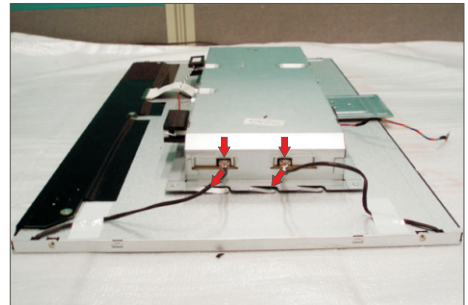
S10

Lift up the bracket chassis module for removing the front bezel and then put the bracket chassis module on a working table with protective cushion for later disassembly.



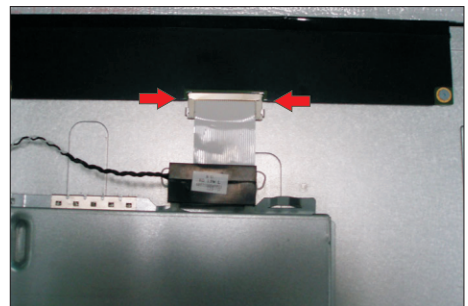
S11

Unplug lamp cables follow the direction as the below picture.



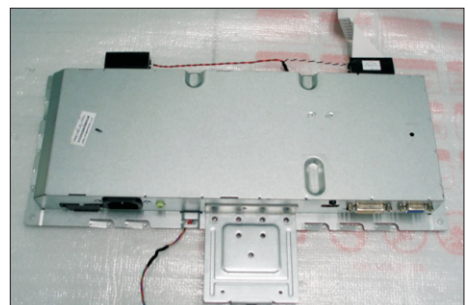
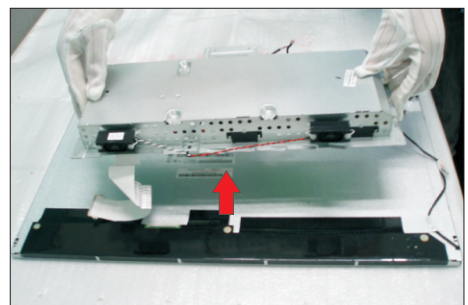
S12

Move the bracket chassis module down, push the earring-lock, then remove the FFC cable from the LVDS connector.



S13

Lift up the bracket chassis module for taking away the panel module, then put the bracket chassis module on a protective cushion .



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S14

Use a Hex-head screwdriver to remove 4 screws for unlocking mechanisms of the DVI and D-SUB connectors.

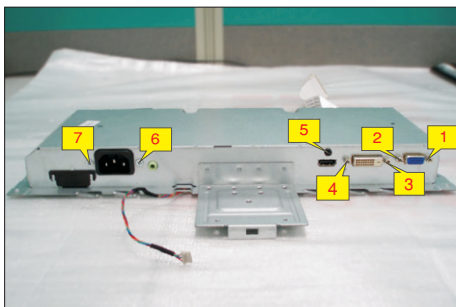
(No.1~4 screw size=M3x8, Torque=5±1kgfxcn)

Use a Phillips-head screwdriver to remove one screw for unlocking the HDMI or DP connector.

(No.5 screw size=M3x8, Torque=5±1kgfxcn)

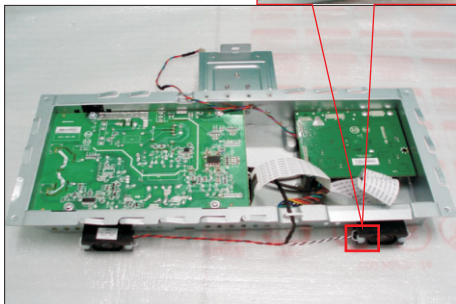
Use a Phillips-head screwdriver to remove two screws for unlocking the AC power outlet.

(No.6~7 screw size=M3x10, Torque=5±1kgfxcn)



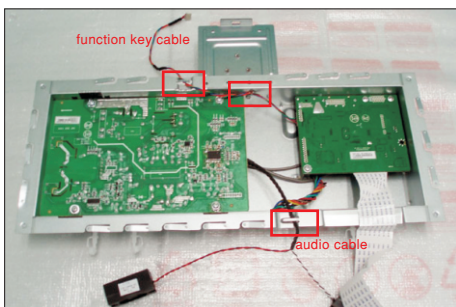
S15

Turn over the bracket chassis module, and then remove both of the speakers from the bracket chassis module by pulling out the caps of the speaker holder.



S16

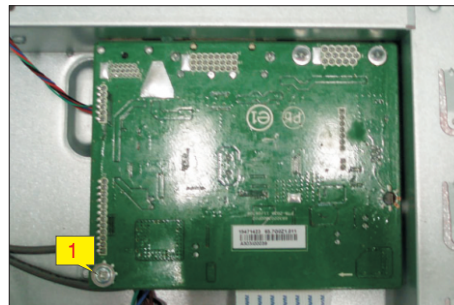
Release the speakers' cable and the function cable from the hooks of the bracket chassis base.



S17

Use a Phillips-head screwdriver to remove one screw for unlocking the interface board with the bracket chassis base.

(No.1 screw size=M3x6, Torque=6~8kgfxcn)

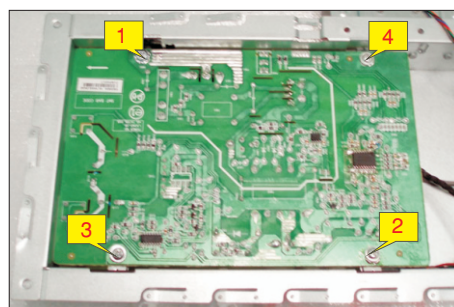


S18

Use a Phillips-head screwdriver to remove four screws for unlocking the power board.

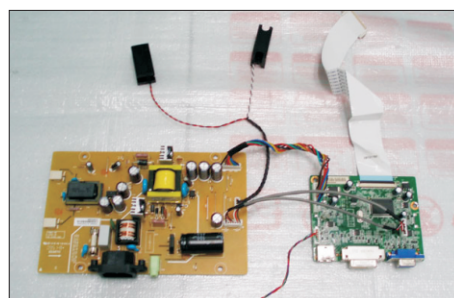
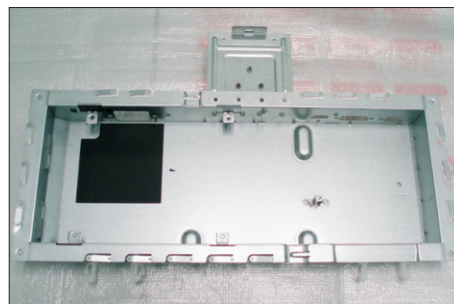
(No.1 screw size=M4x8, Torque=6~8kgfxcn;

No.2~4 screw size=M3x6, Torque=6~8kgfxcn)



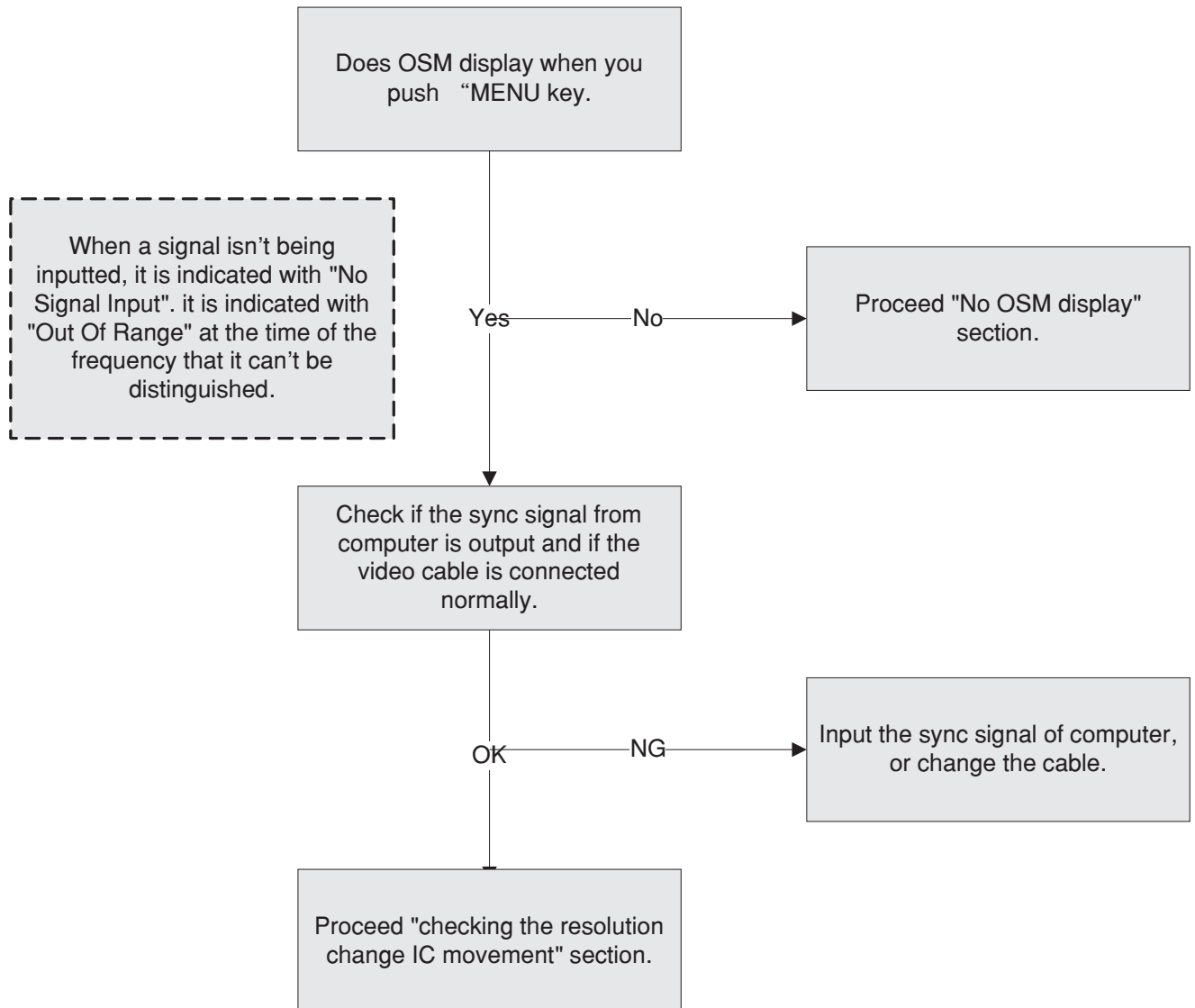
S19

Remove the bracket chassis base and put the circuit boards on a protect cushion, then disconnect all of the cables.



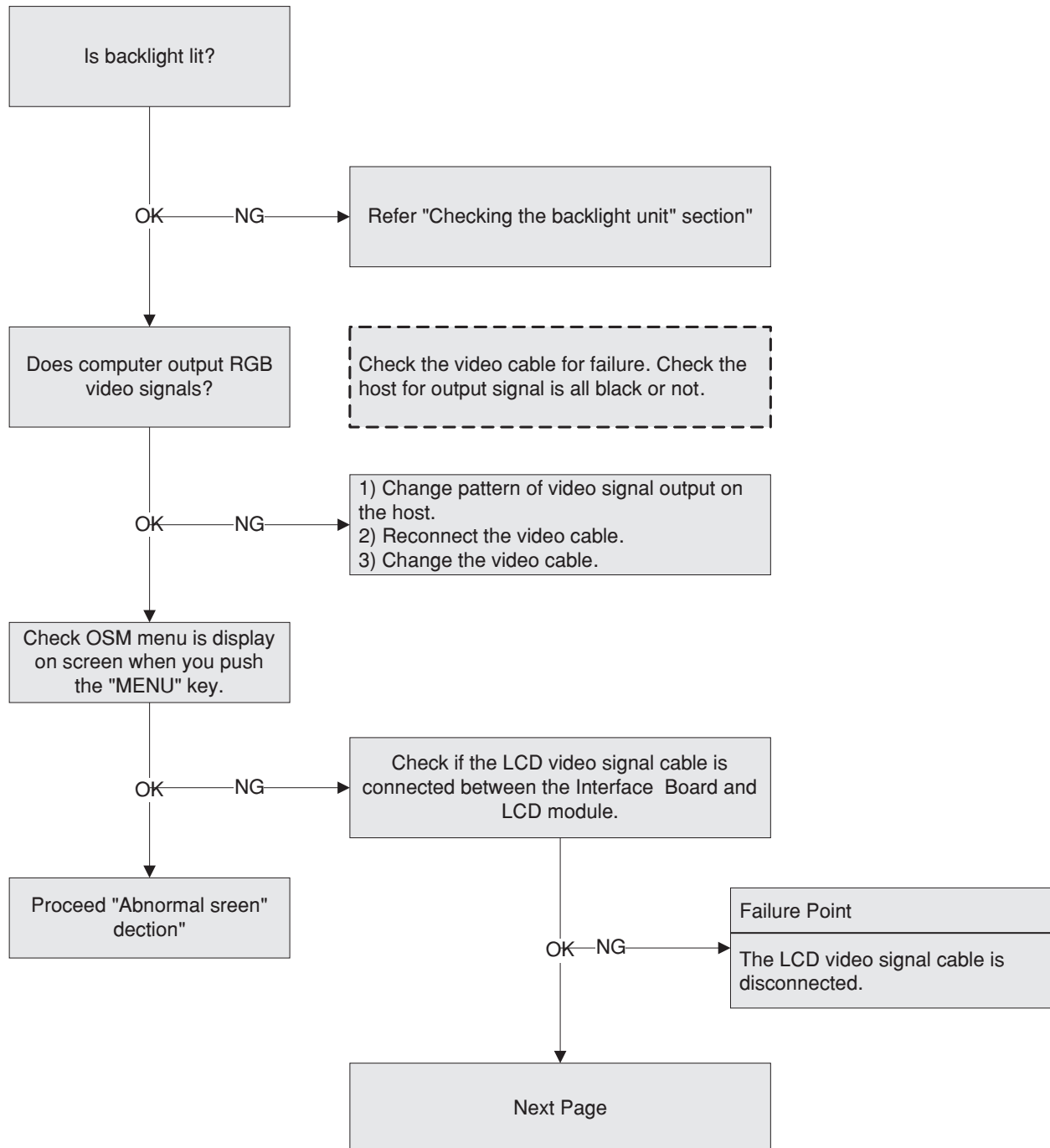
5.1 Troubleshooting for Acer A211H/A221HQ(1A1D1H):

5.1.1 No display on the screen (Screen is black and colour of LED is amber):

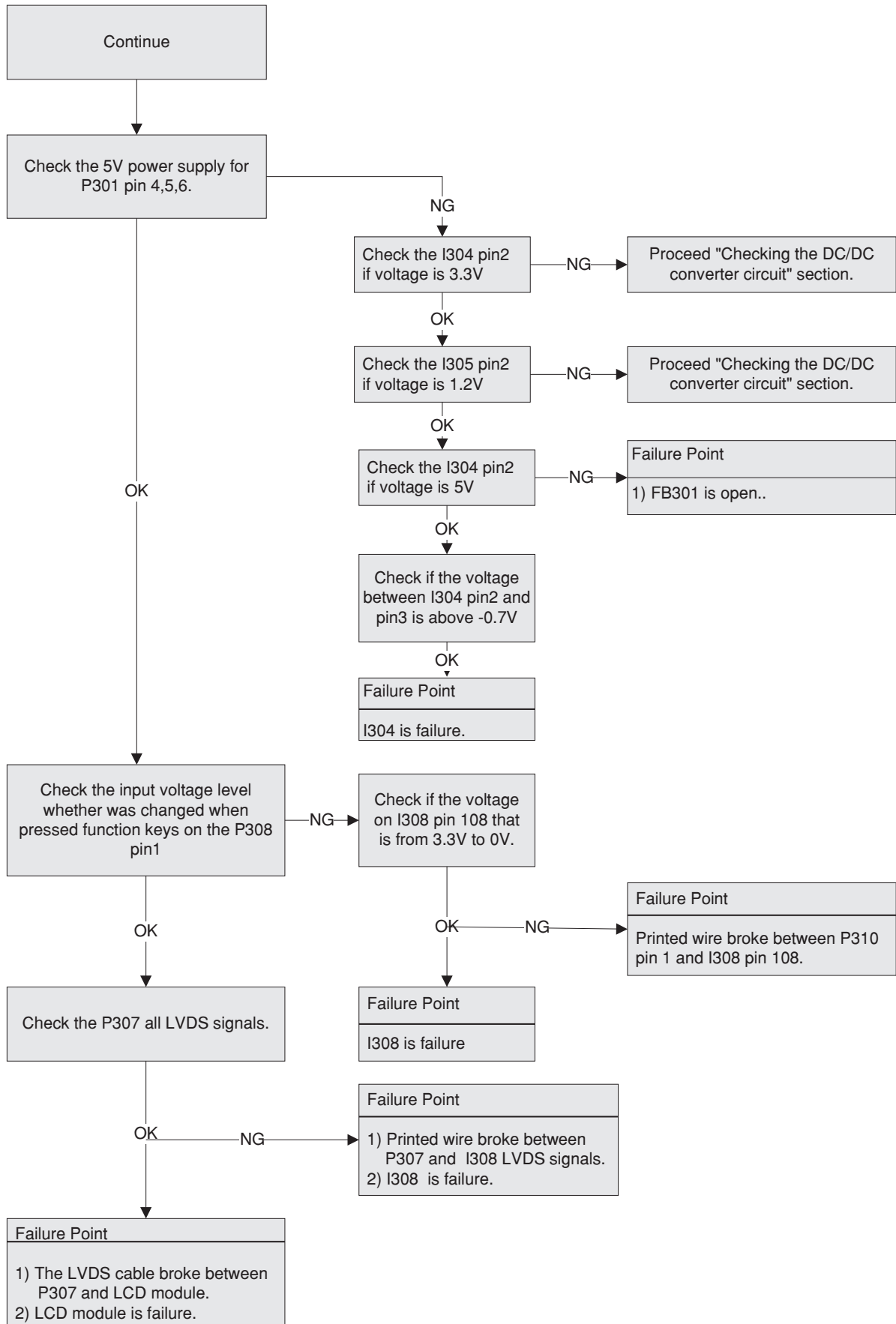


◀◀ [Go to contents page](#)

5.1.2 Nothing displays on the screen (Screen is black and colour of LED is blue):

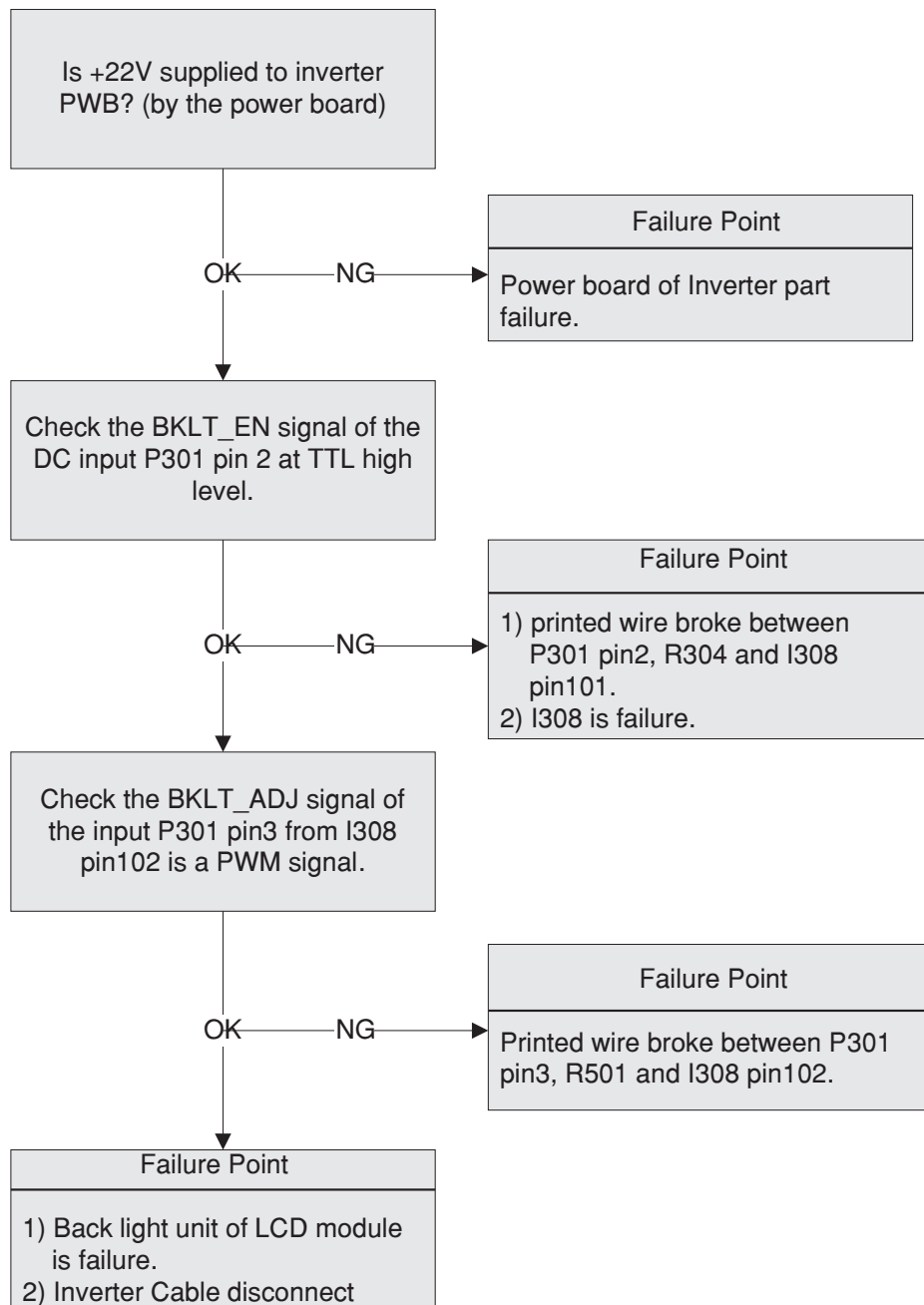


5.1.2 Nothing displays on the screen (Screen is black and colour of LED is blue)continued:

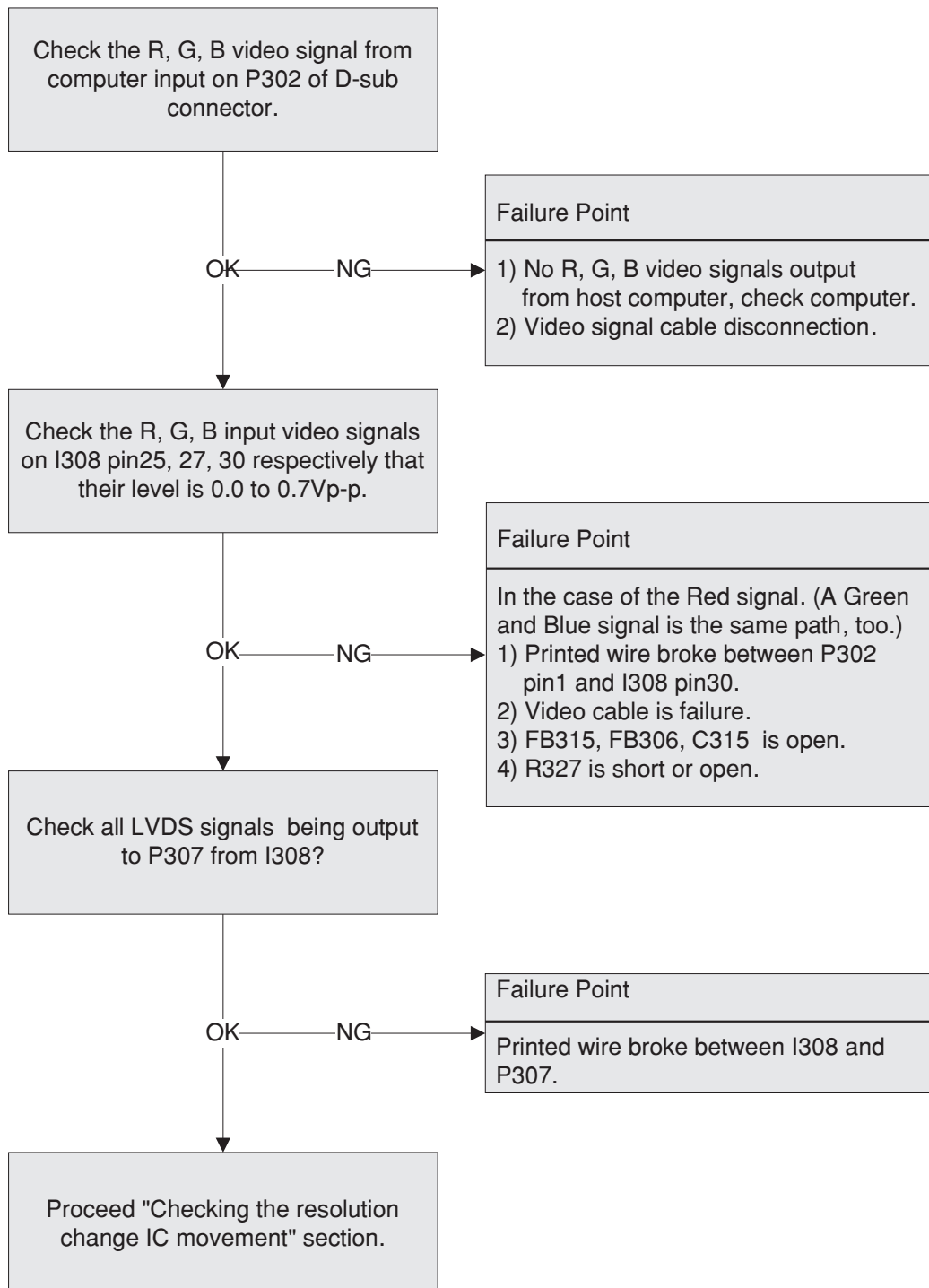


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5.1.3 Checking the back light unit:

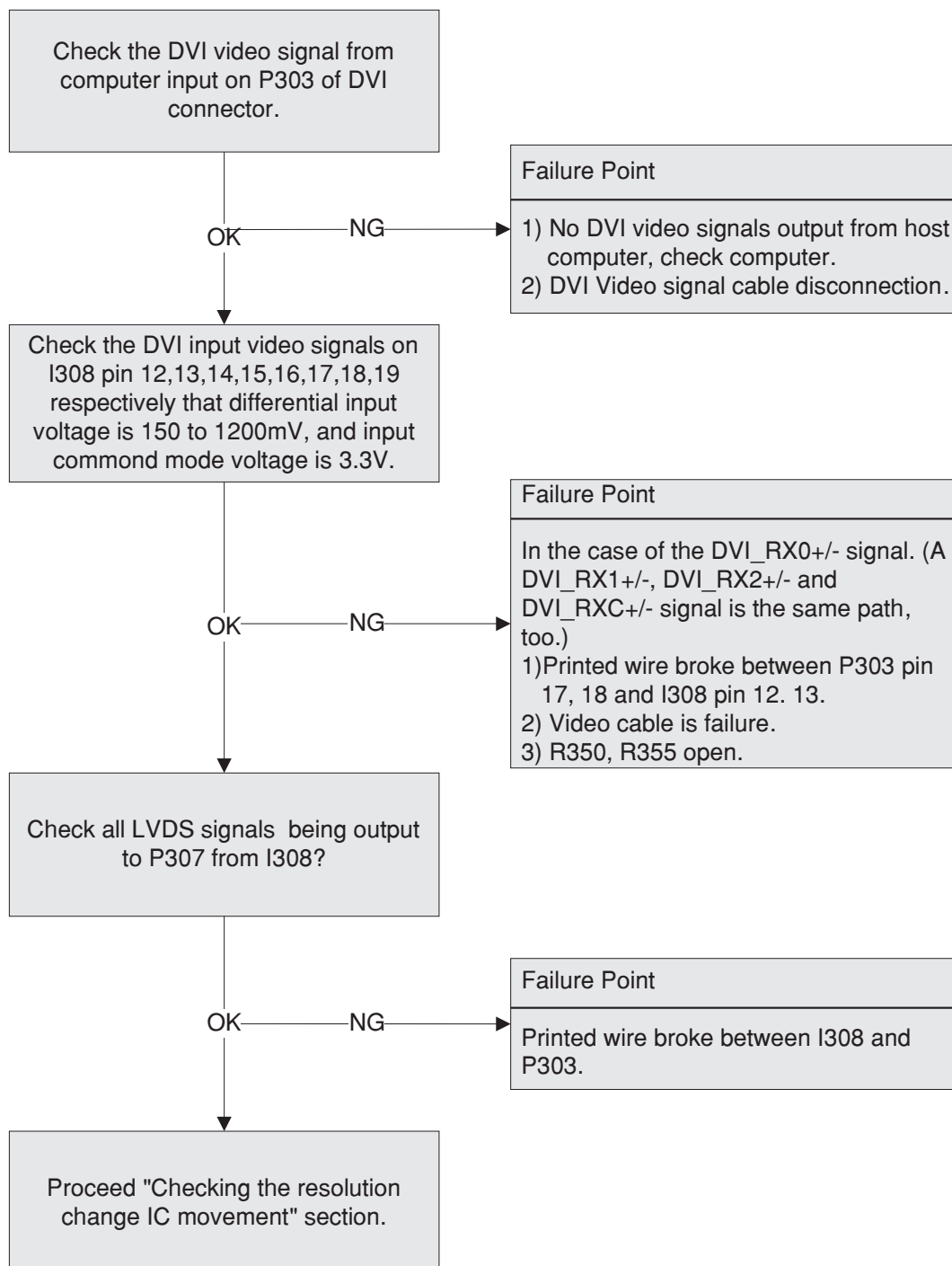


5.1.4 Abnormal screen(for VGA):

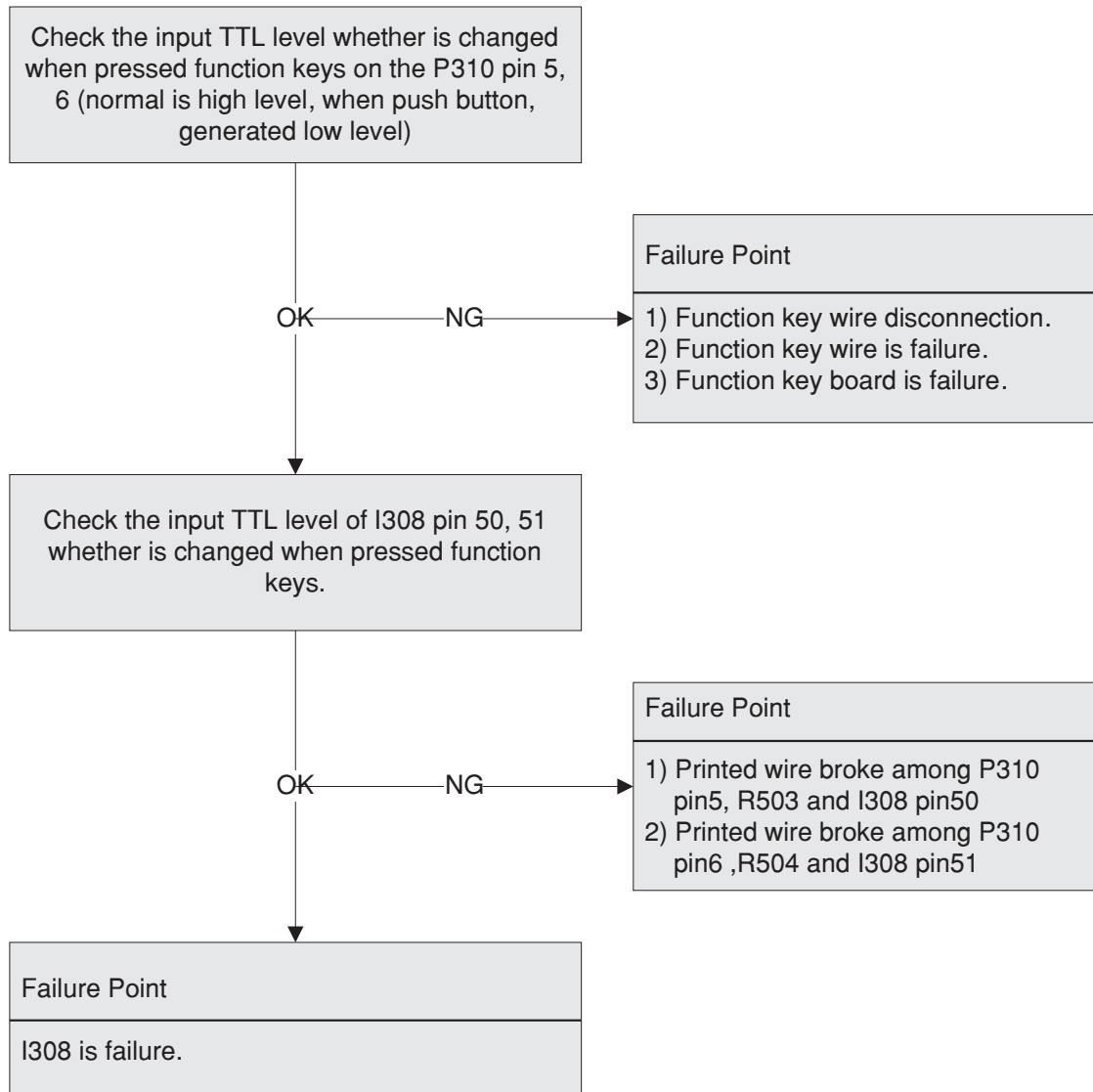


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5.1.4 Abnormal screen (For DVI and the same for HDMI):

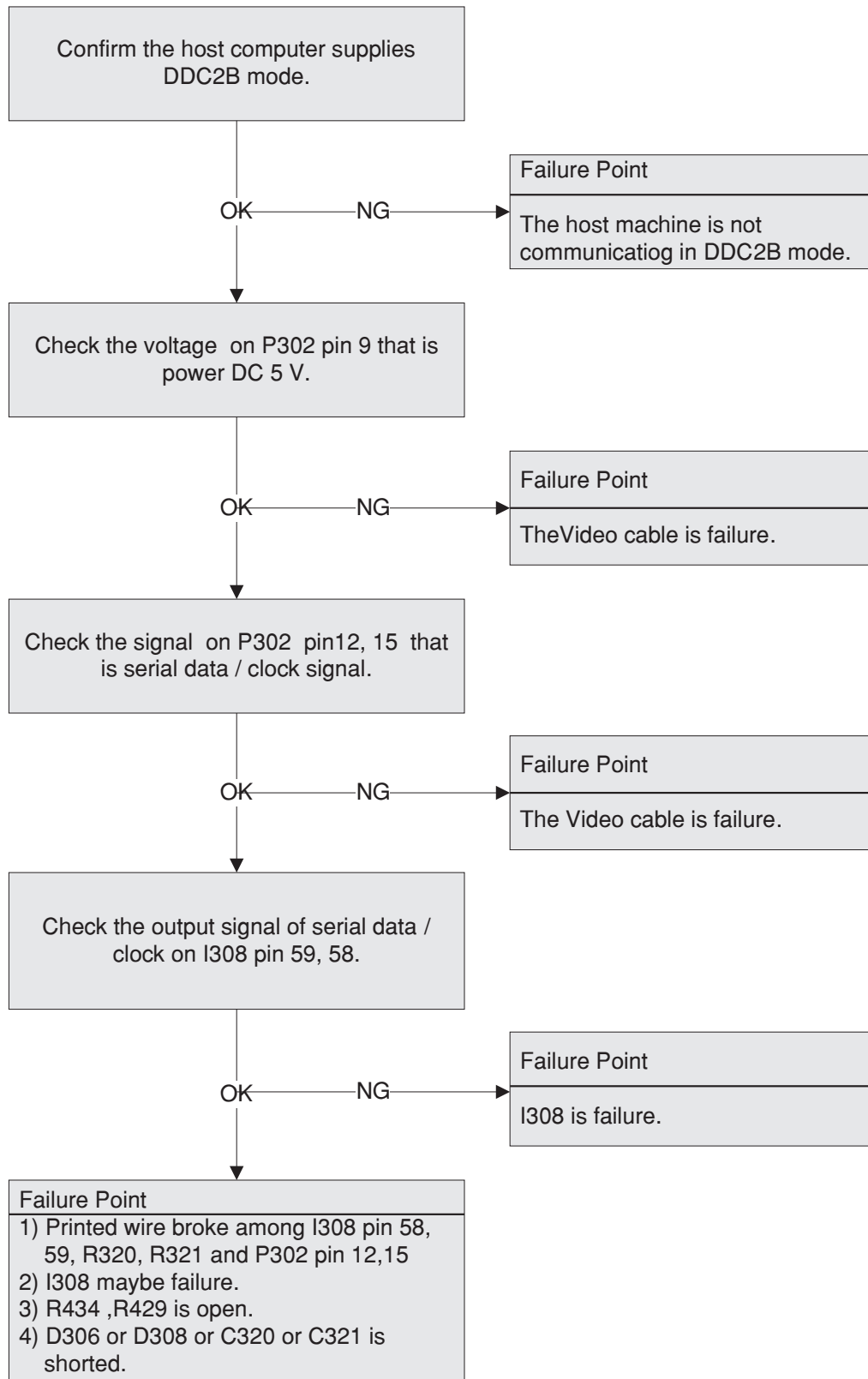


5.1.5 Abnormal OSD display adjust problem:

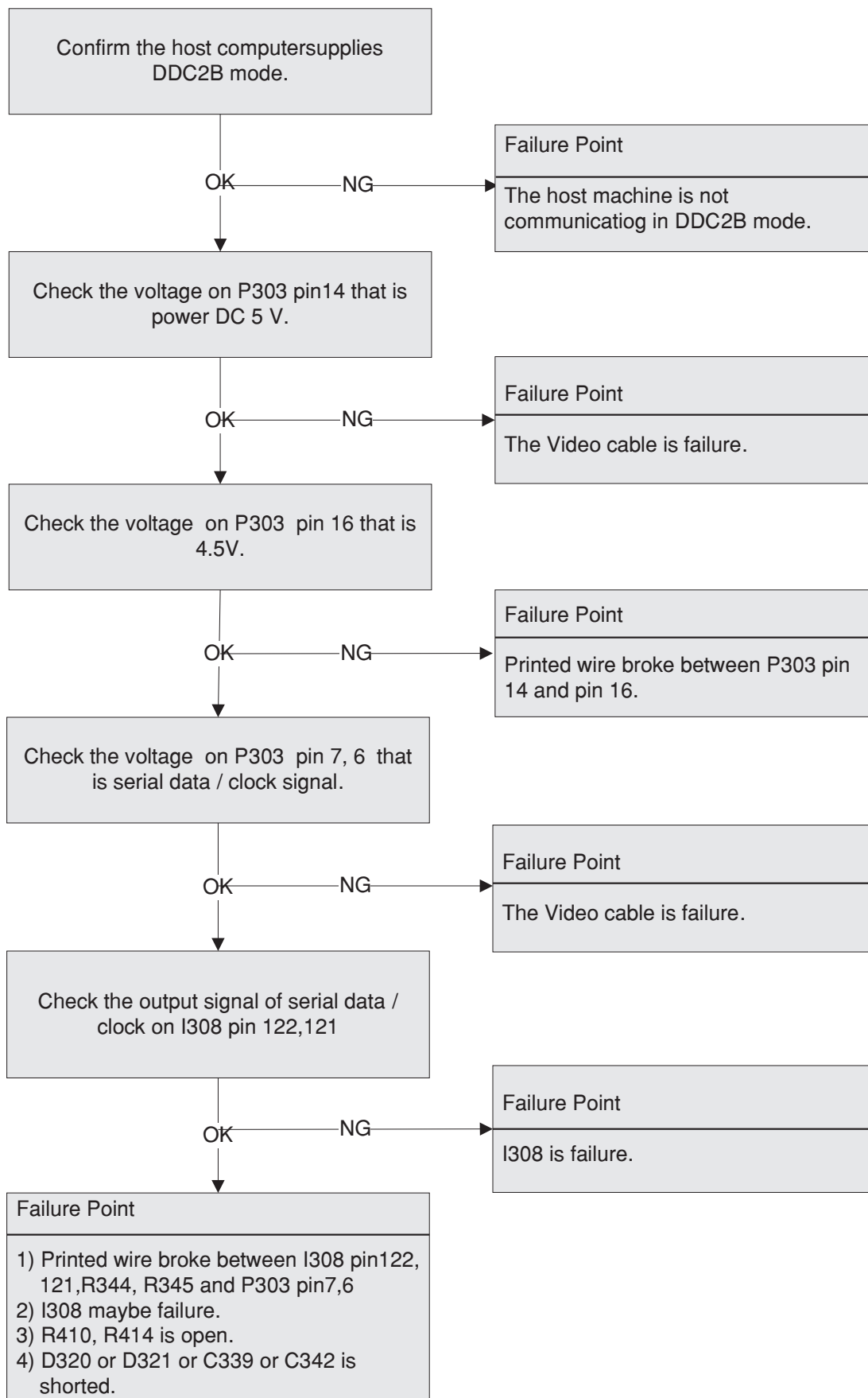


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5.1.6 Abnormal plug and play operation(for VGA):



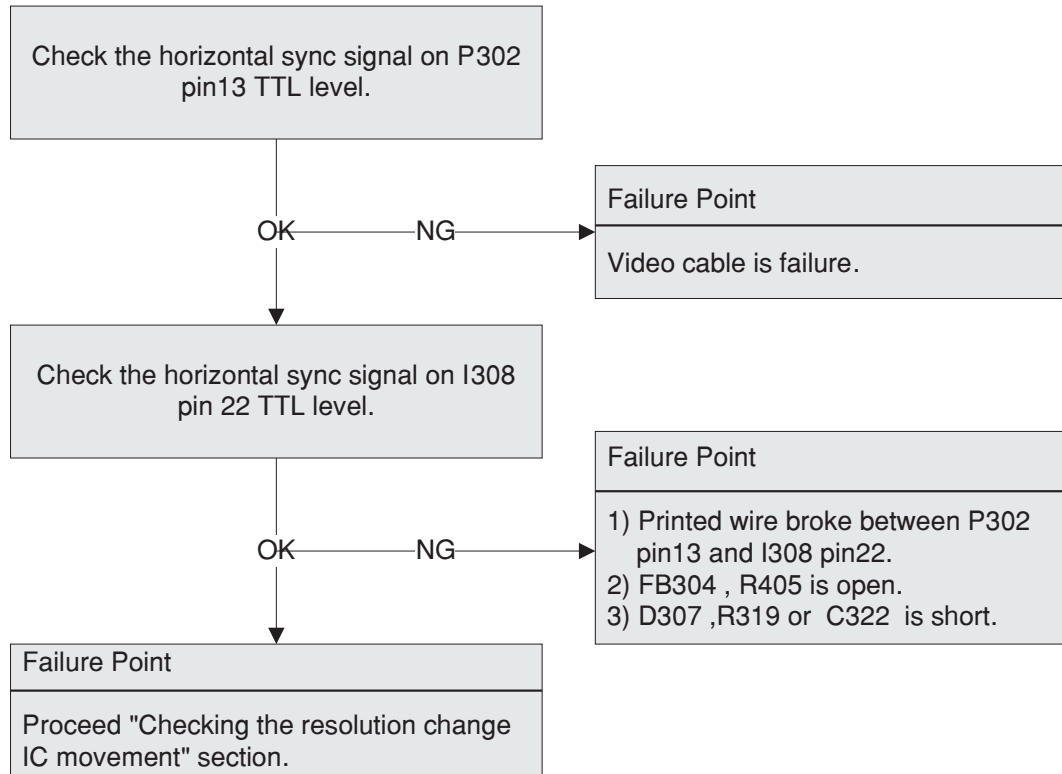
5.1.6 Abnormal plug and play operation (For DVI and the same for HDMI):



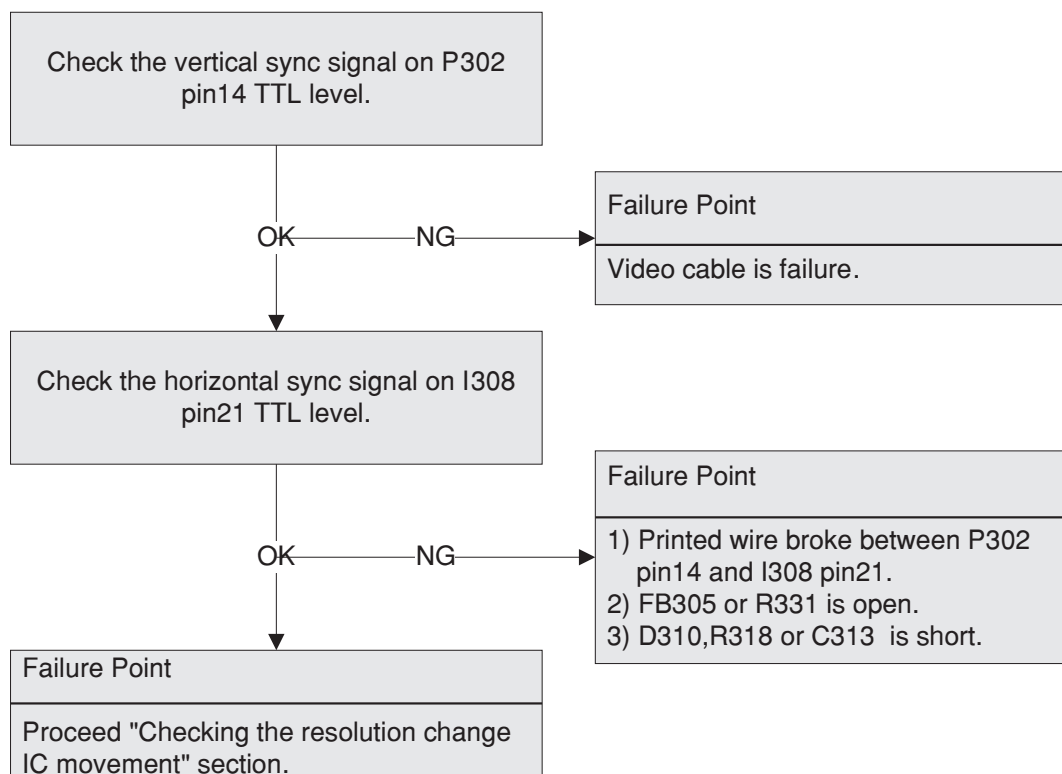
◀◀ [Go to contents page](#)

5.1.7 Checking the interface circuit of sync signal:

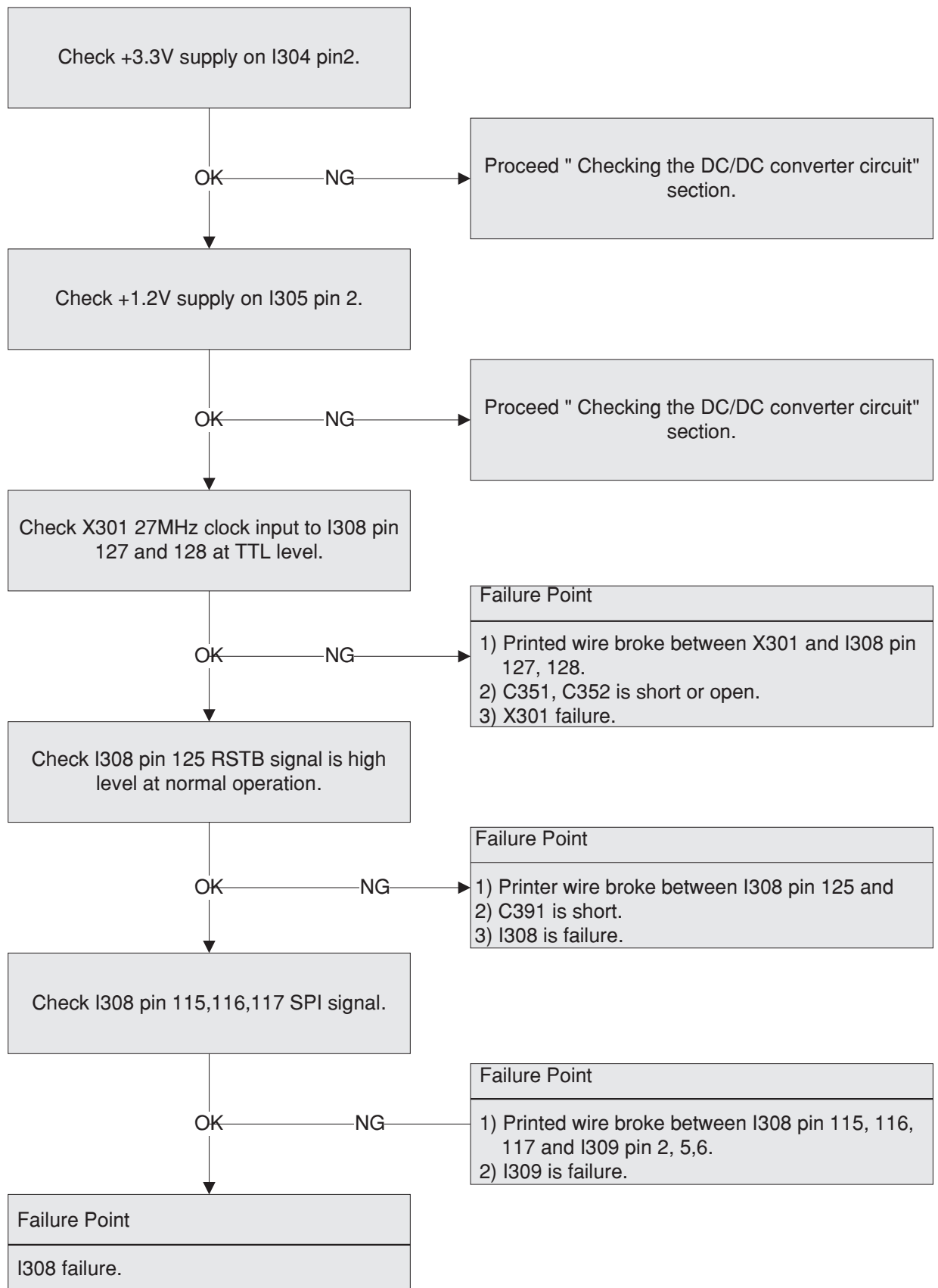
5.1.7.1 Checking the control circuit of horizontal sync pluse:



5.1.7.2 Checking the control circuit of vertical sync pluse:

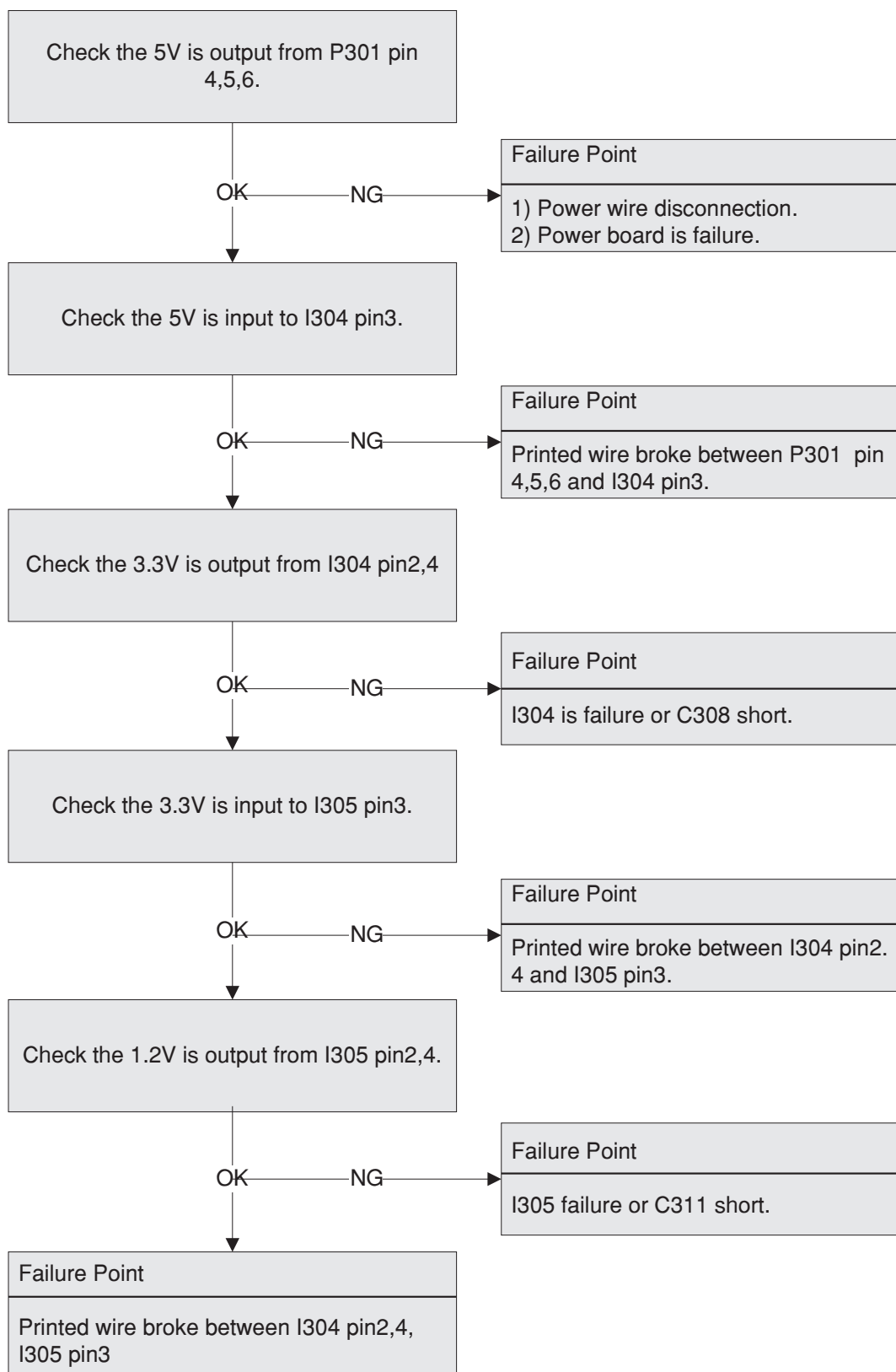


5.1.8 Checking the resolution change IC movement:



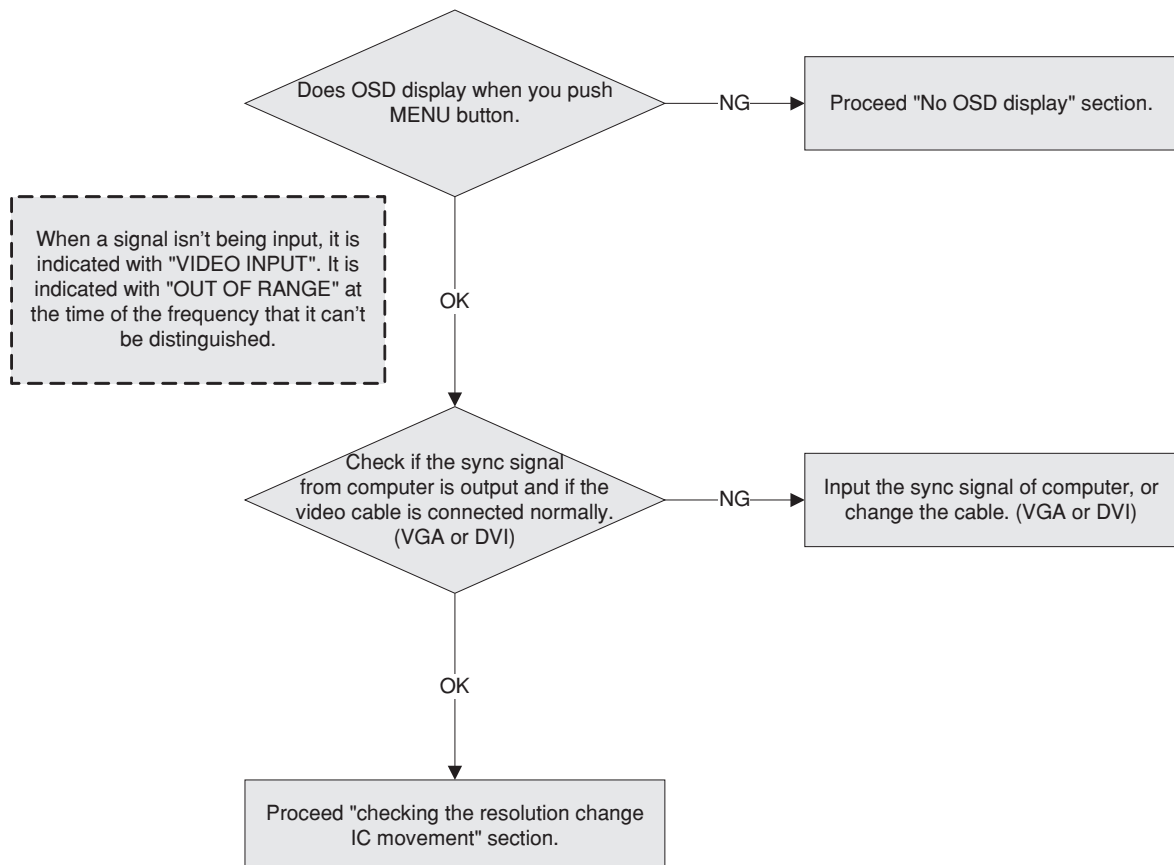
◀◀ [Go to contents page](#)

5.1.9 Checking the DC/DC converter circuit:



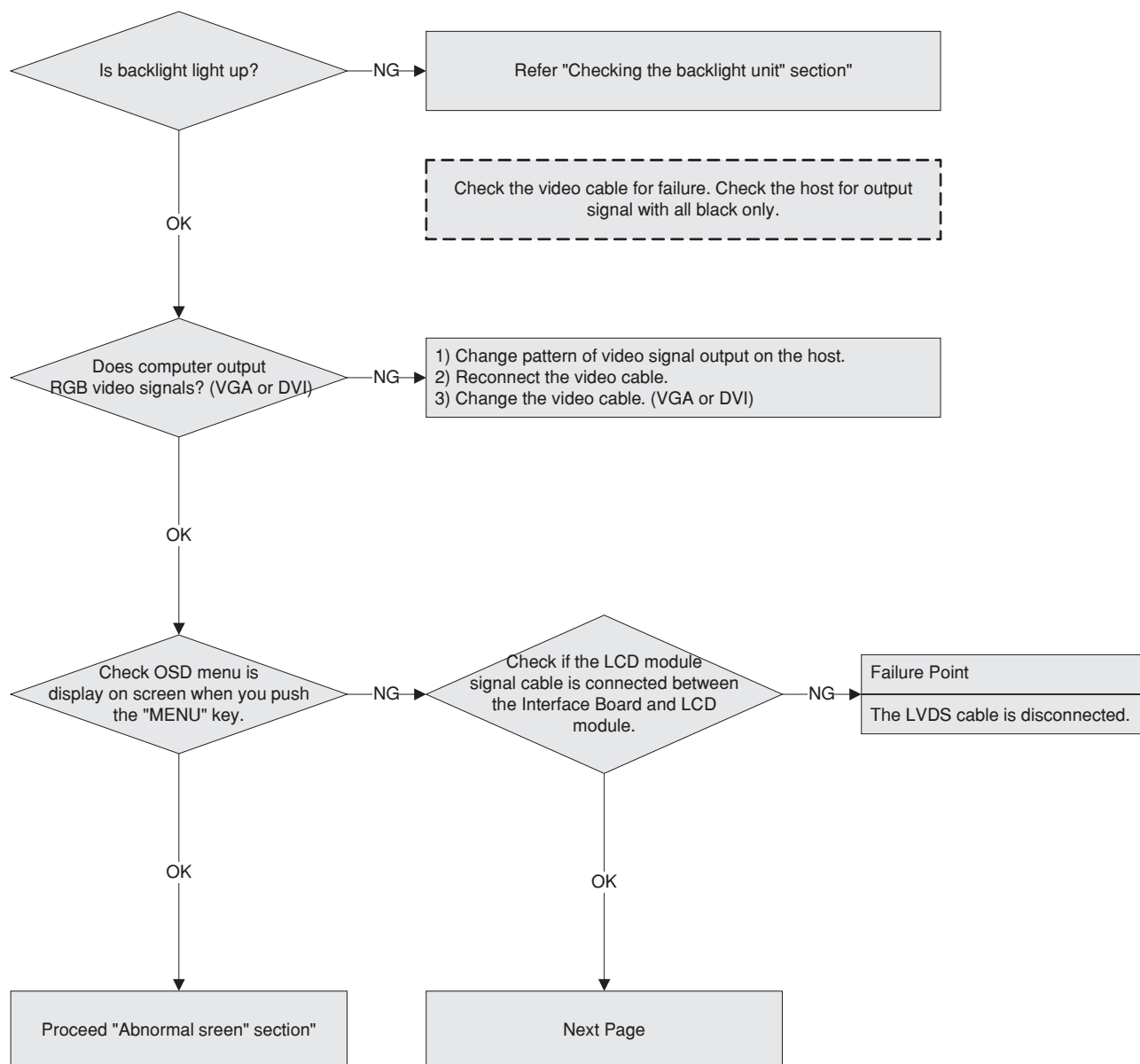
5.2 Troubleshooting for P216H/ P226HQ(1A1D):

5.2.1 No display on the screen (Screen is black and colour of LED is amber):

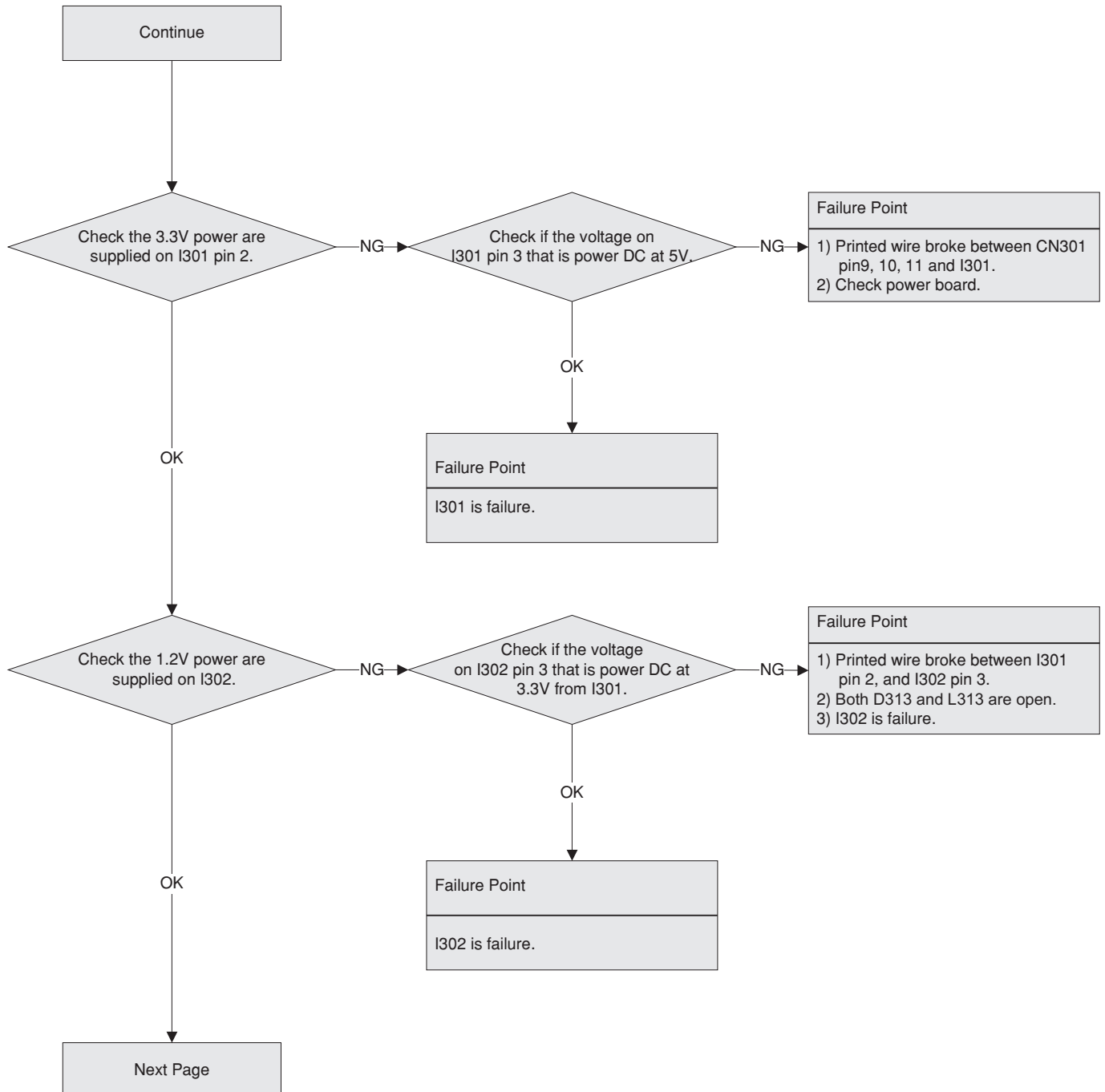


◀◀ [Go to contents page](#)

5.2.2 Nothing displays on the screen (Screen is black and colour of LED is blue):

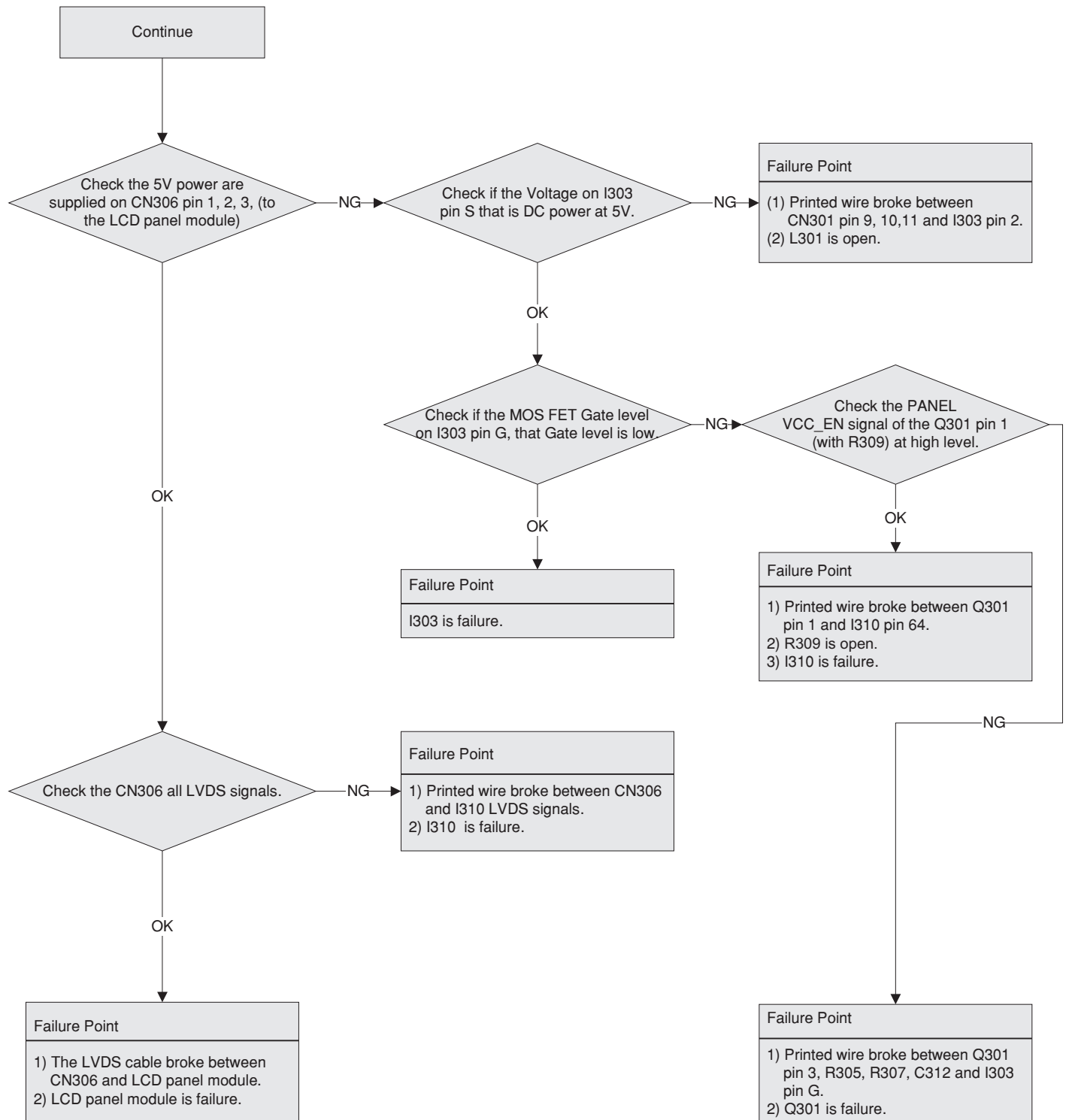


5.2.2 Nothing displays on the screen (Screen is black and colour of LED is blue)continued:

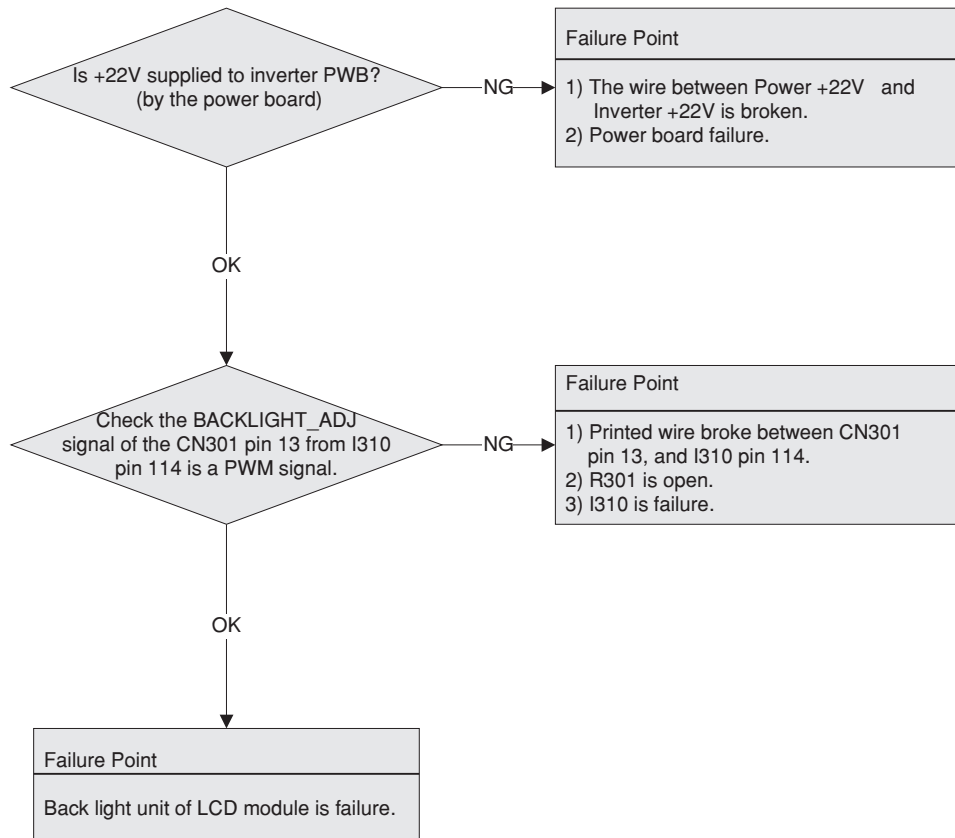


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5.2.2 Nothing displays on the screen (Screen is black and colour of LED is blue)continued:



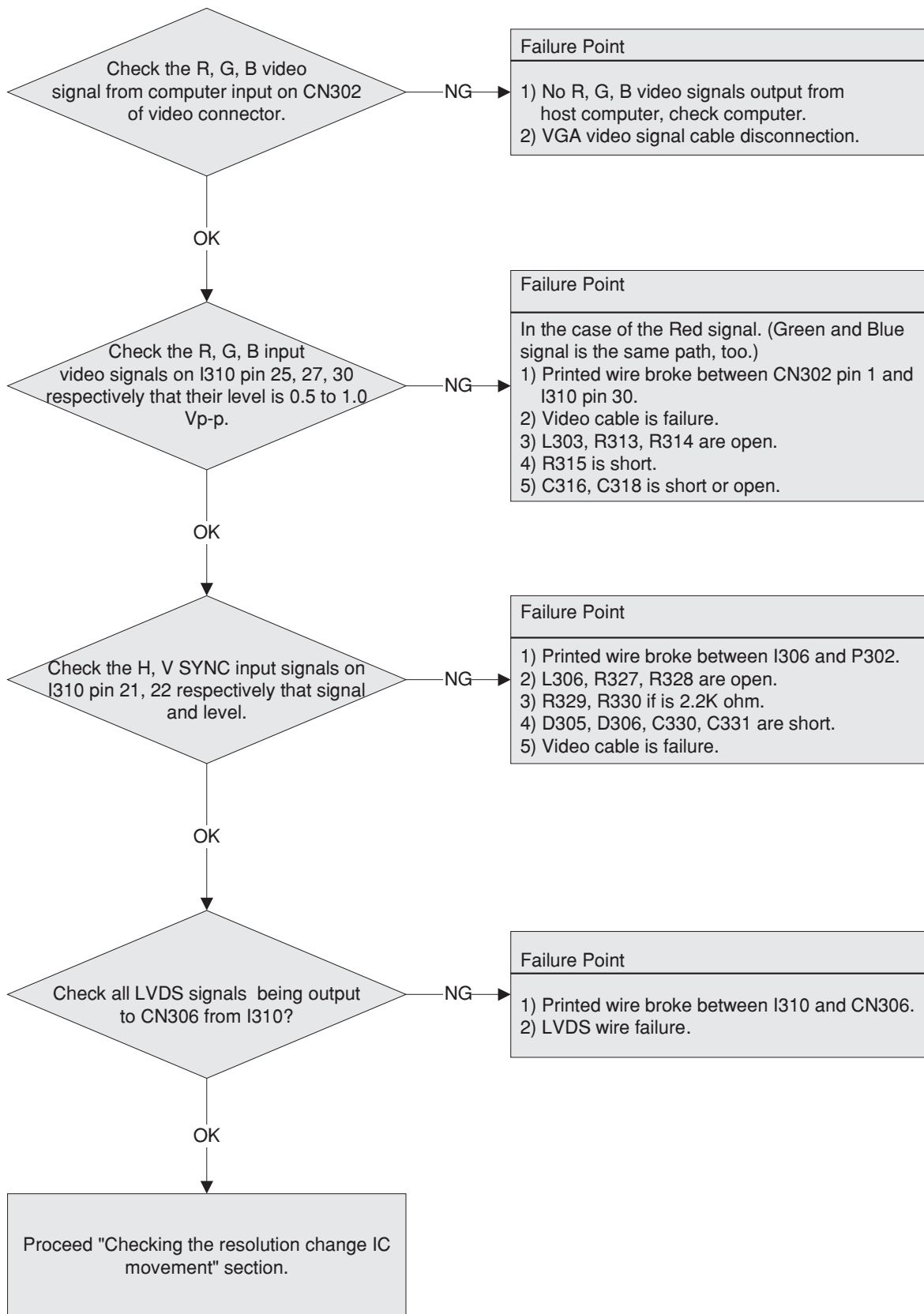
5.2.3 Checking the back light unit:



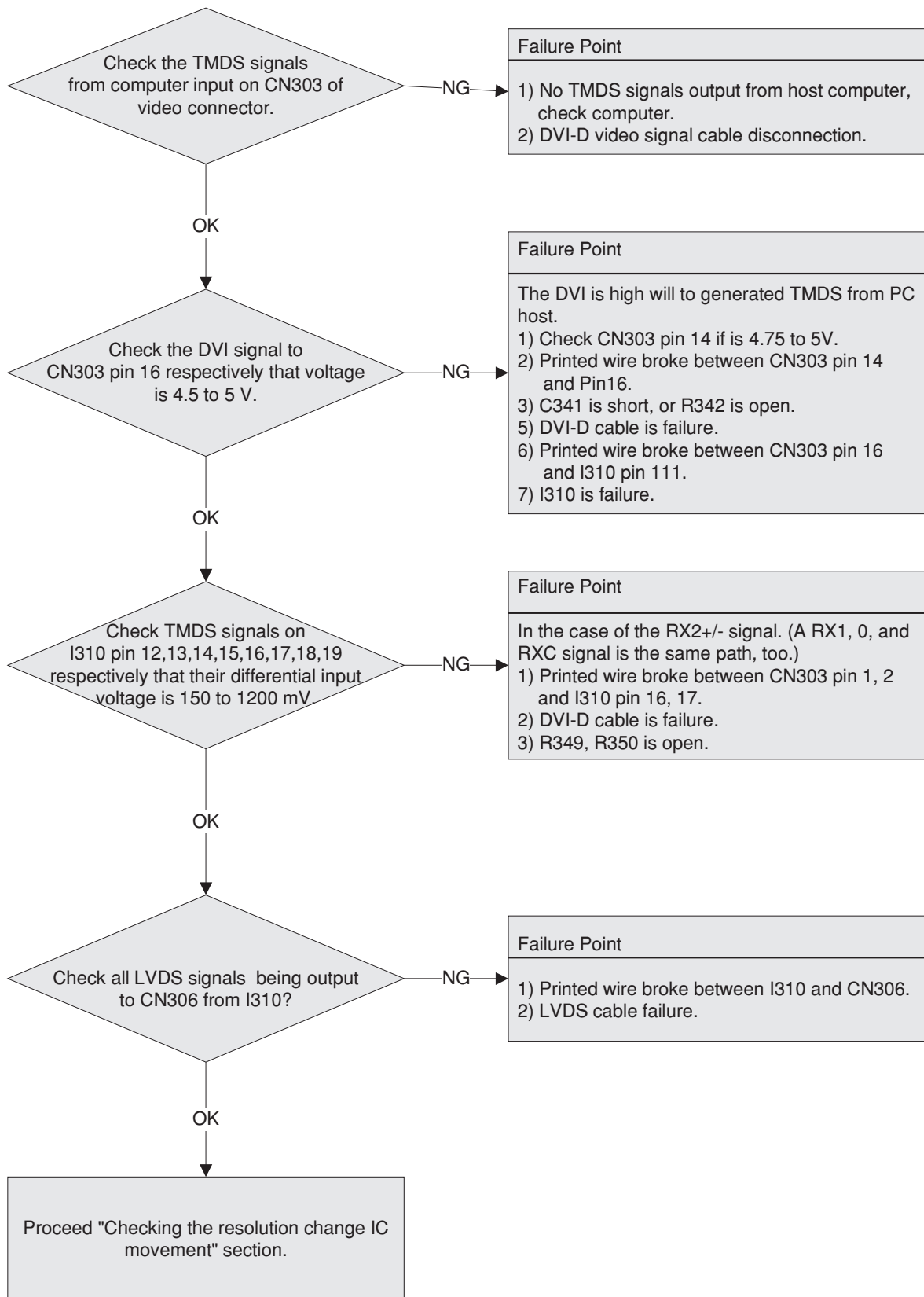
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5.2.4 Abnormal screen

5.2.4.1 Abnormal screen for VGA source

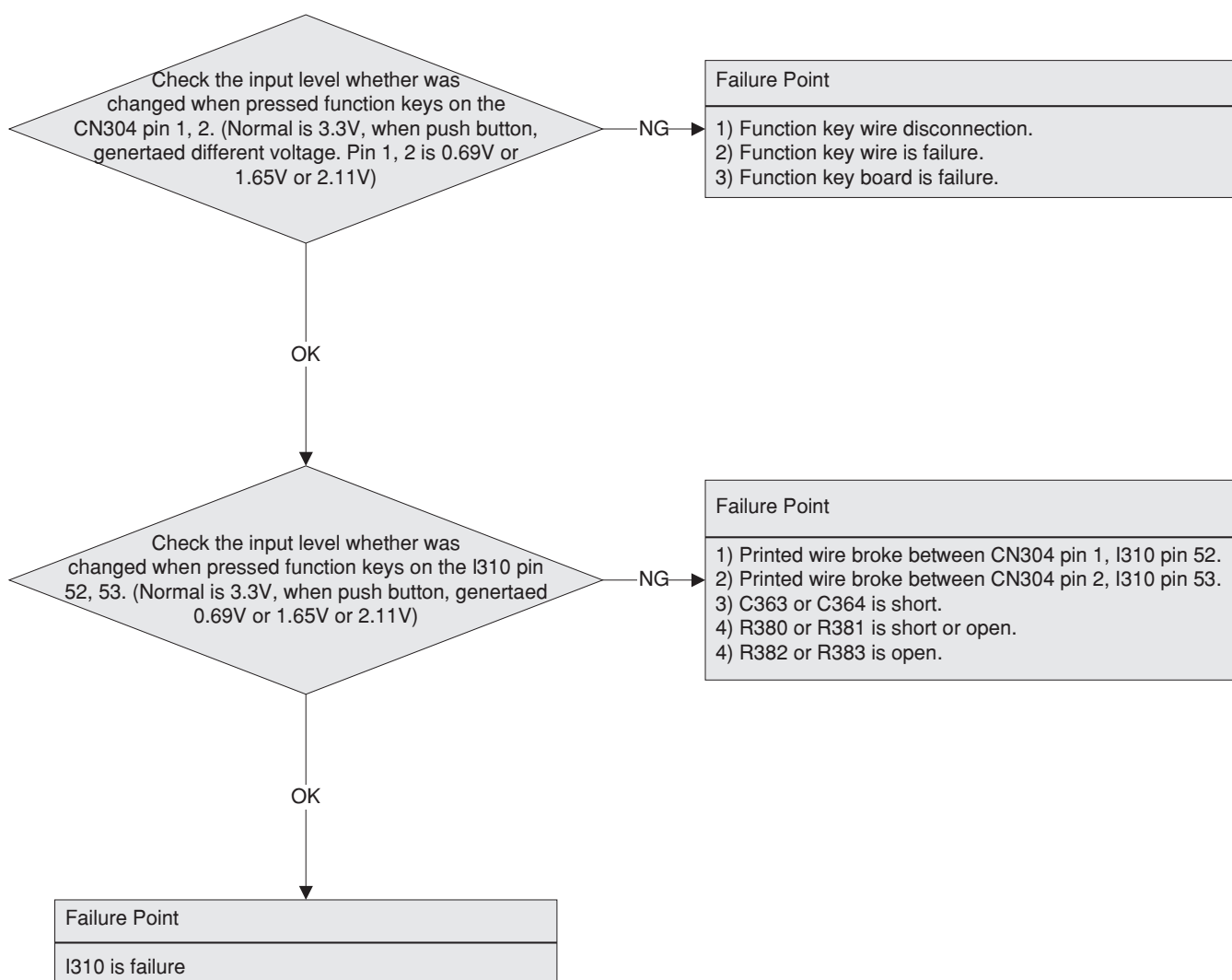


5.2.4.2 Abnormal screen for DVI source



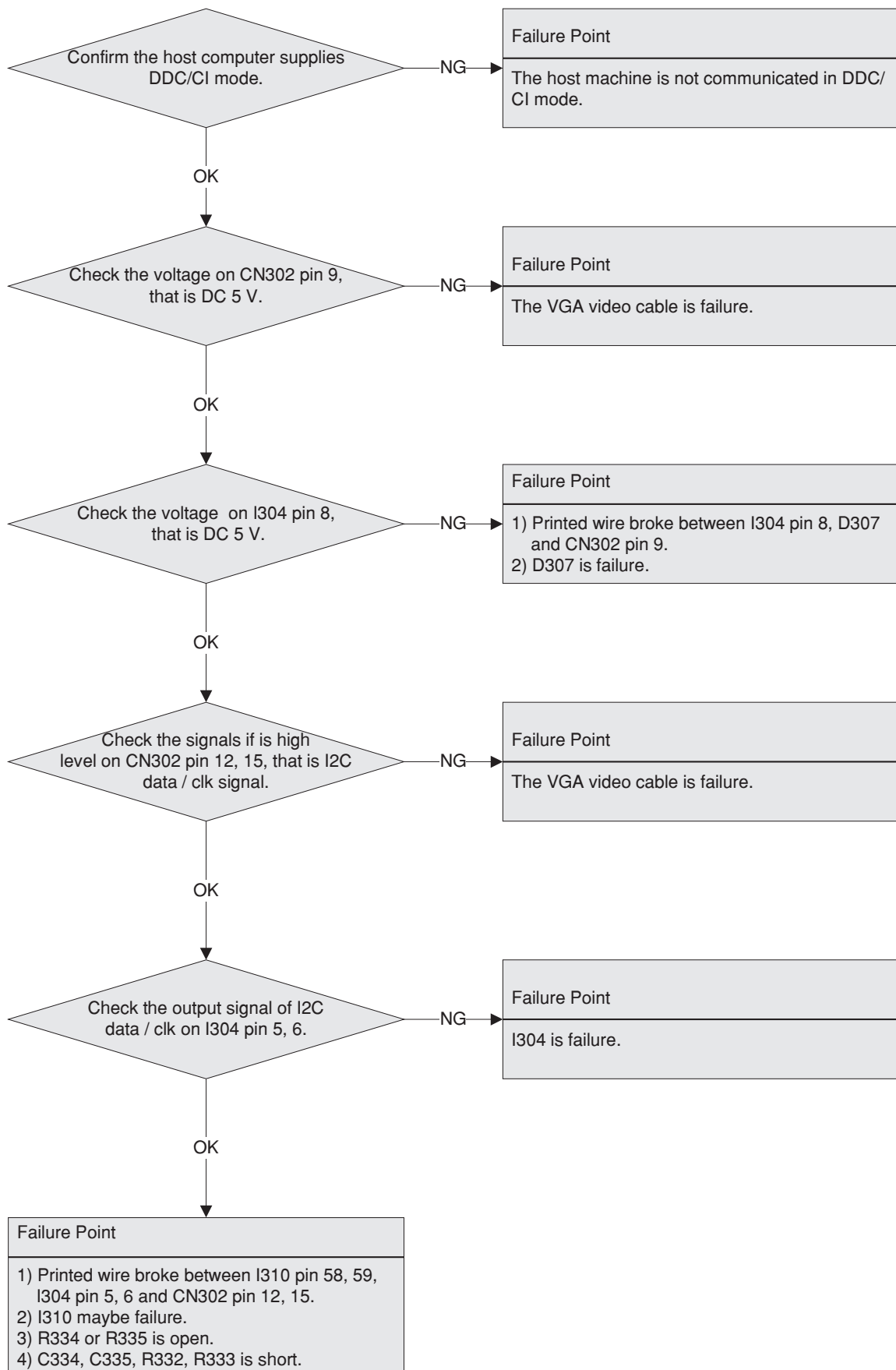
◀◀ [Go to contents page](#)

5.2.5 Abnormal OSD display adjust problem:



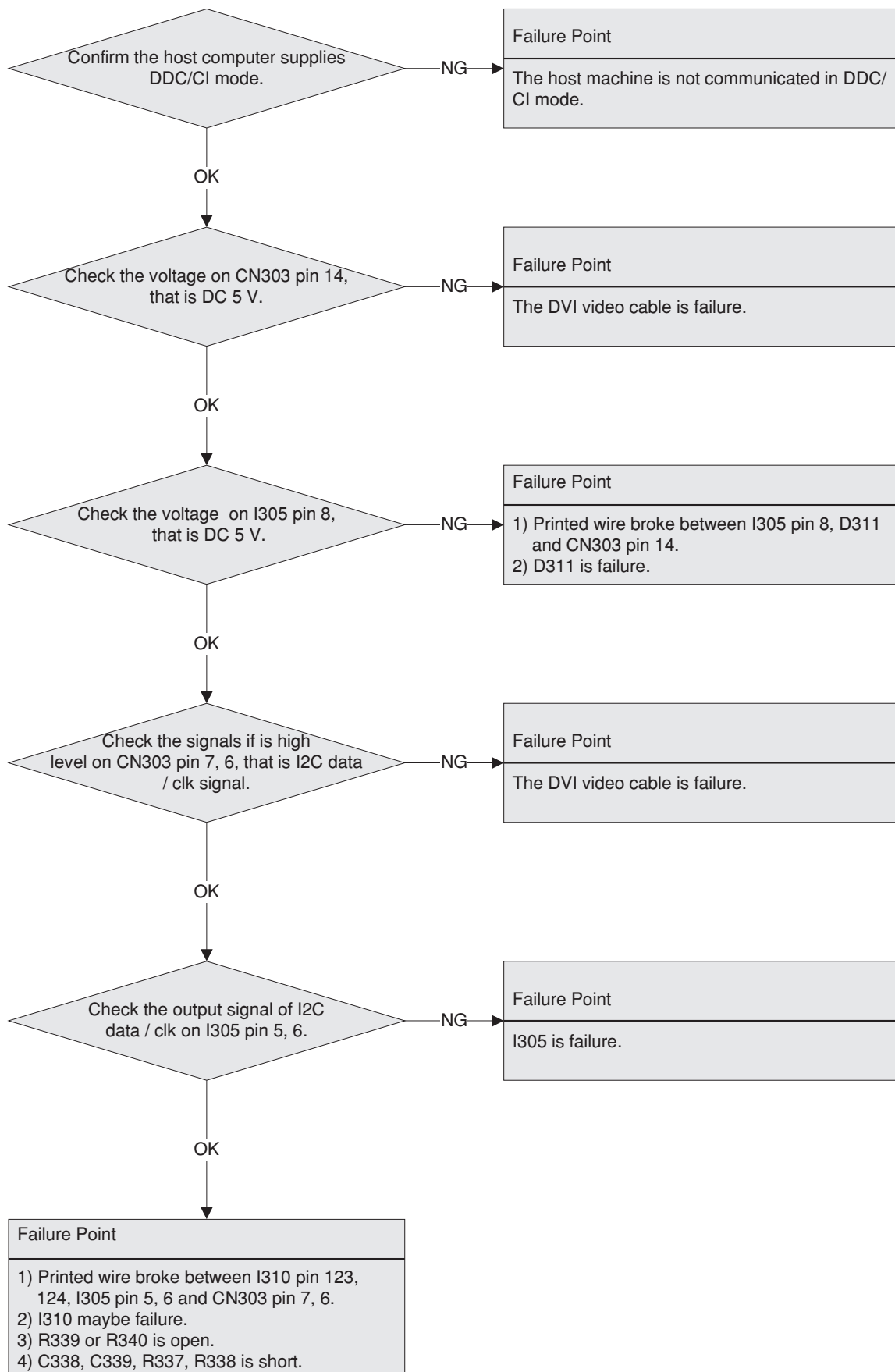
5.2.6 Abnormal plug and play operation

5.2.6.1 Abnormal plug and play operation for VGA



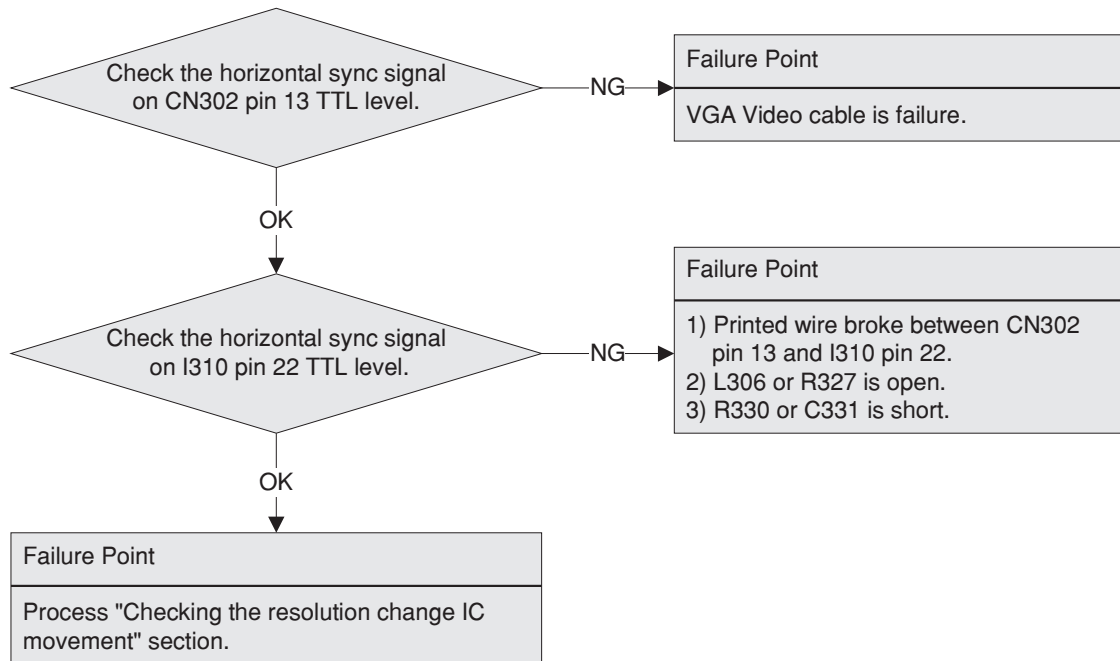
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5.1.6.2 Abnormal plug and play operation for DVI

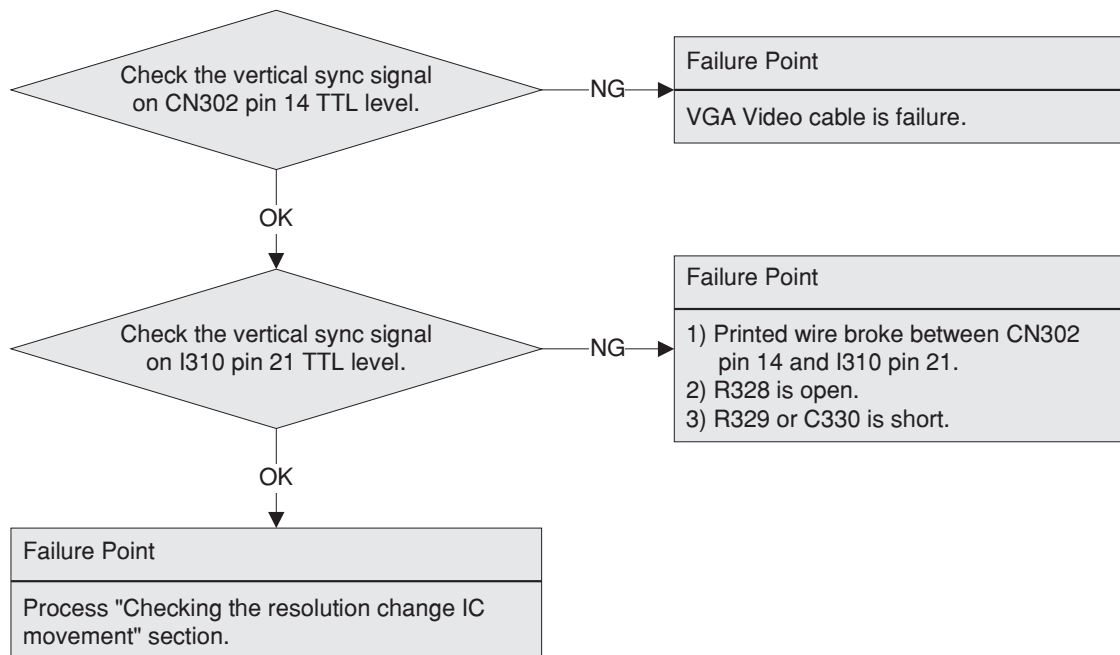


5.2.7 Checking the interface circuit of sync signal:

5.2.7.1 Checking the control circuit of horizontal sync pluse:

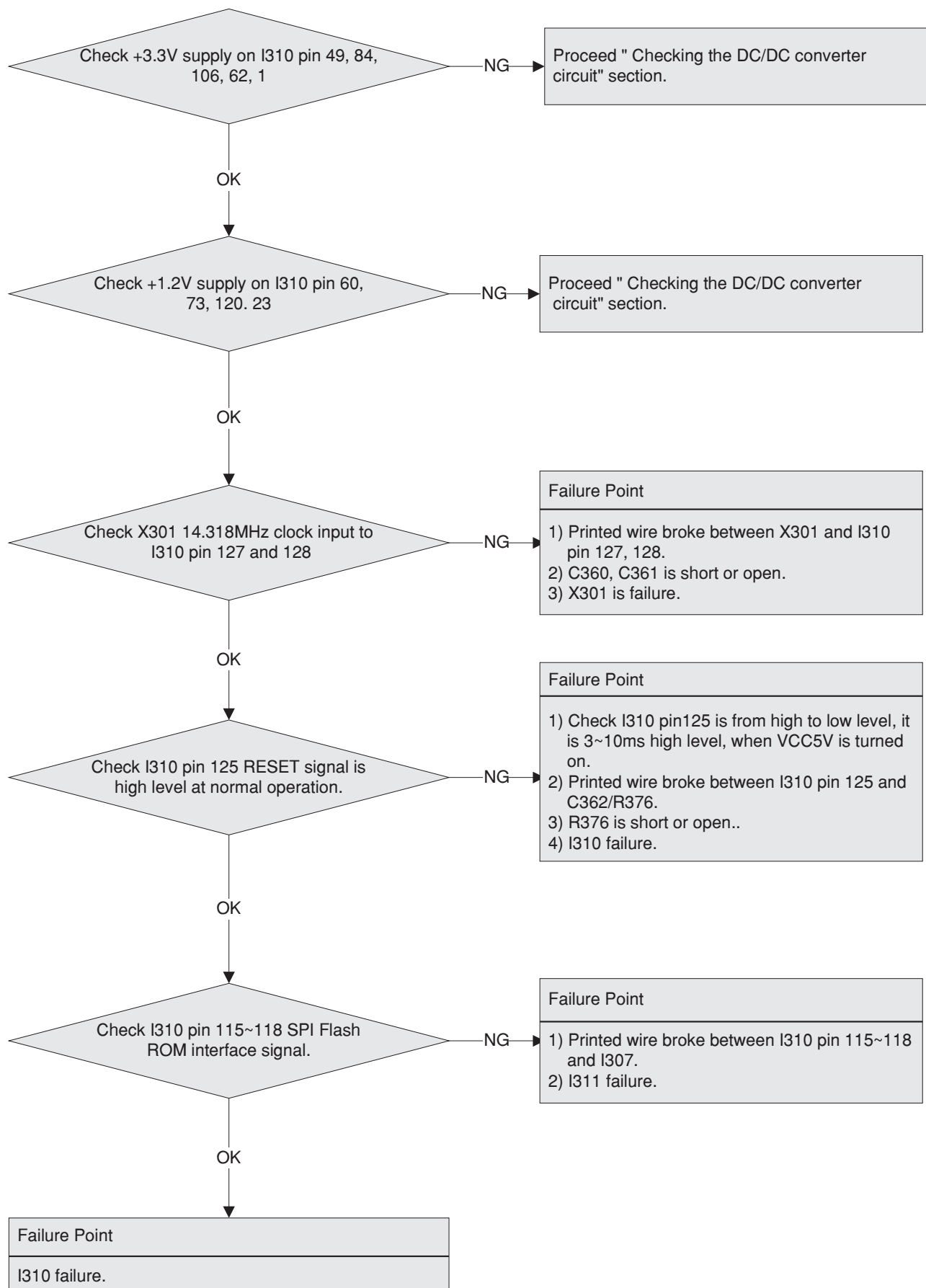


5.2.7.2 Checking the control circuit of vertical sync pluse:

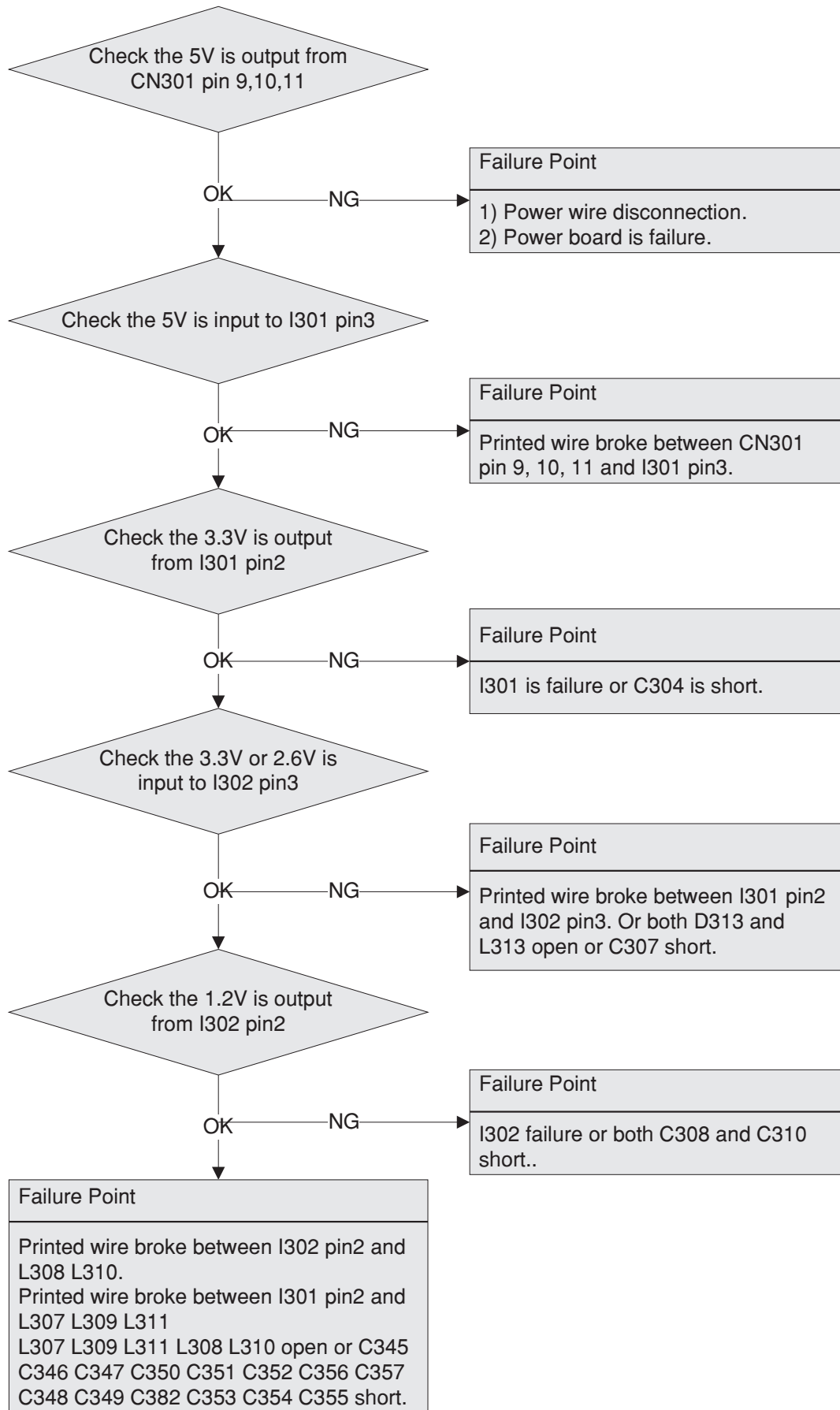


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5.2.8 Checking the resolution change IC movement:



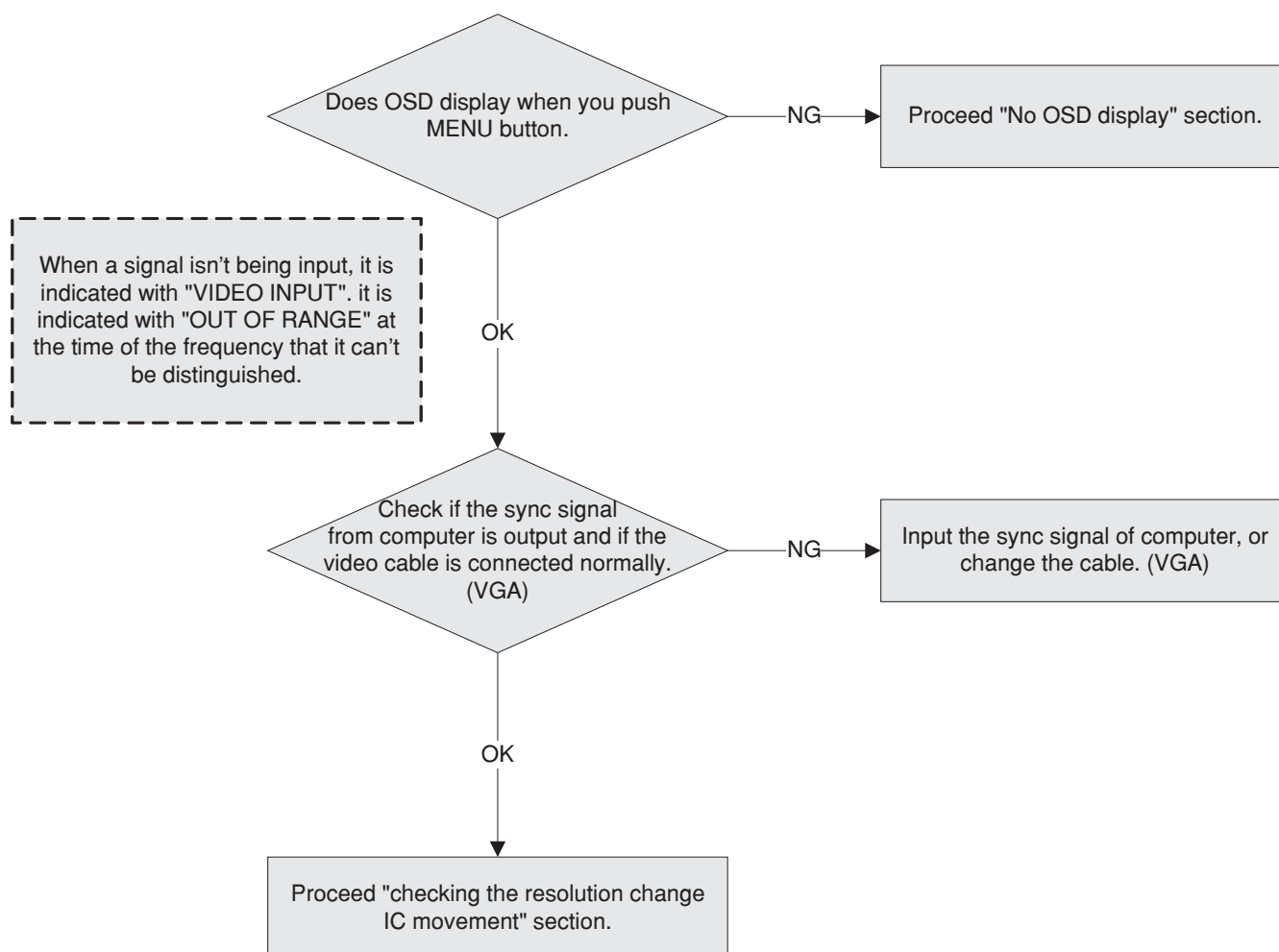
5.2.9 Checking the DC/DC converter circuit:



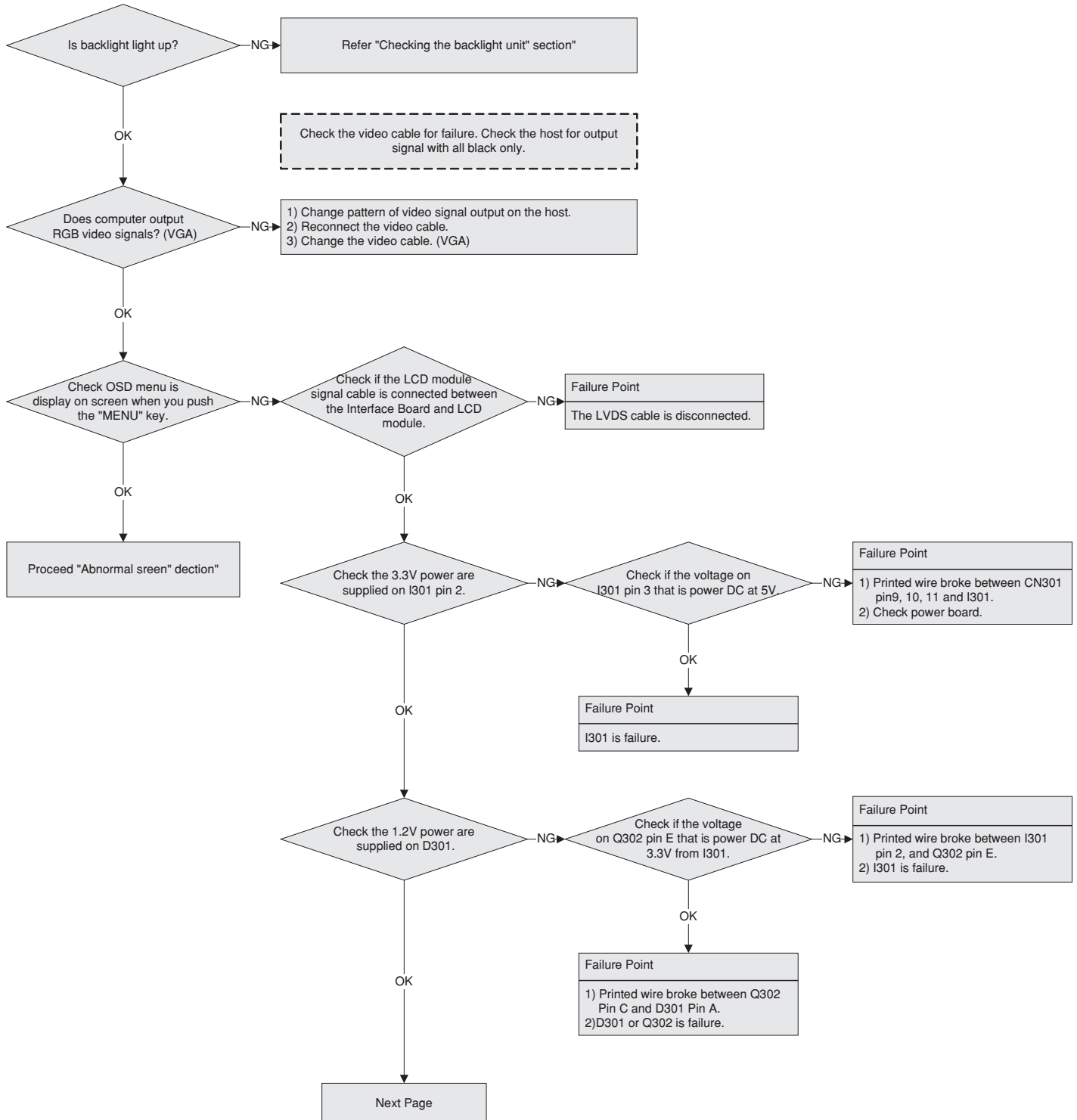
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5.3 Troubleshooting for Acer A211H/A221HQ(1A):

5.3.1 No display on the screen (Screen is black and colour of LED is amber):

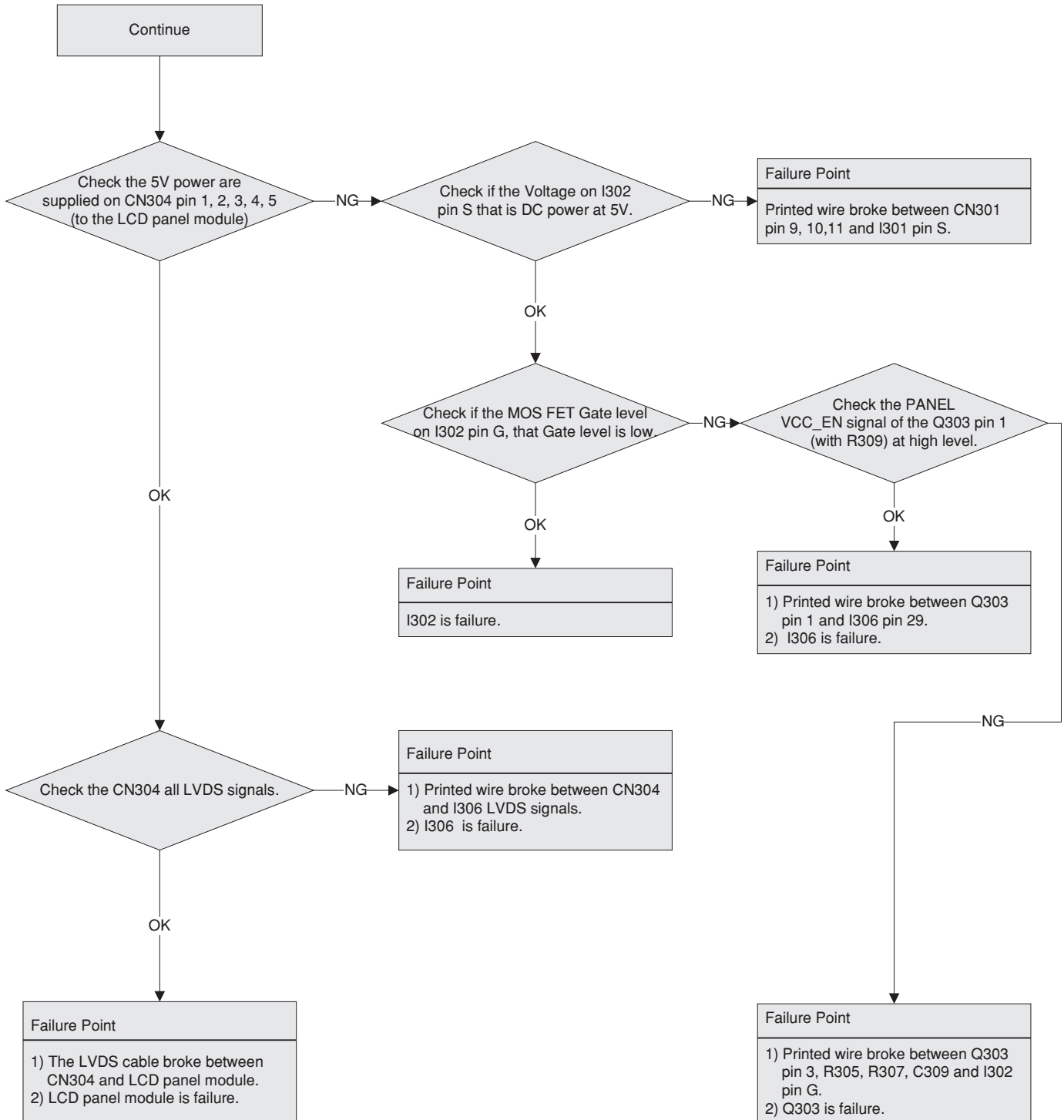


5.3.2 Nothing displays on the screen (Screen is black and colour of LED is blue):

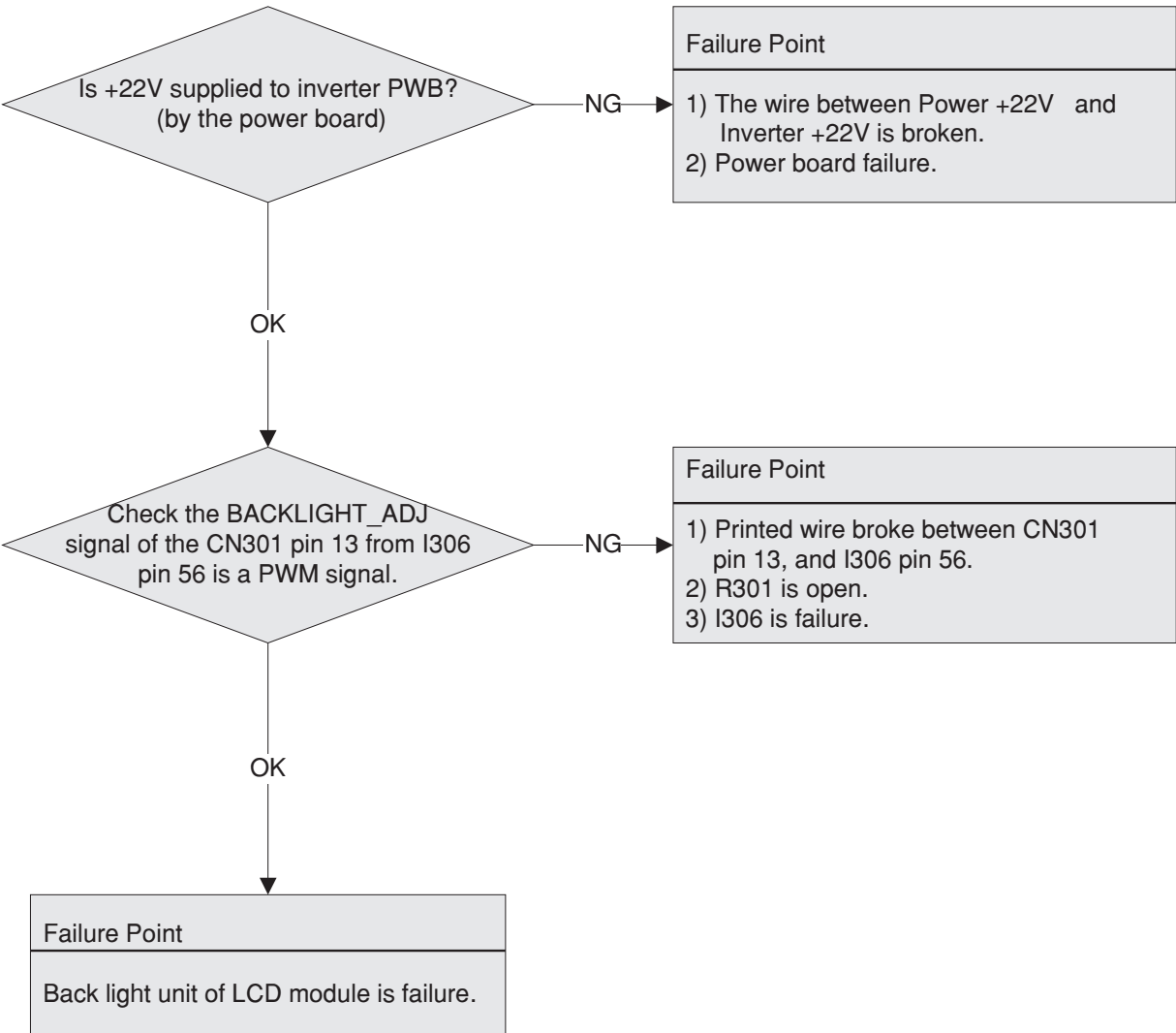


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5.3.2 Nothing displays on the screen (Screen is black and colour of LED is blue)continued:

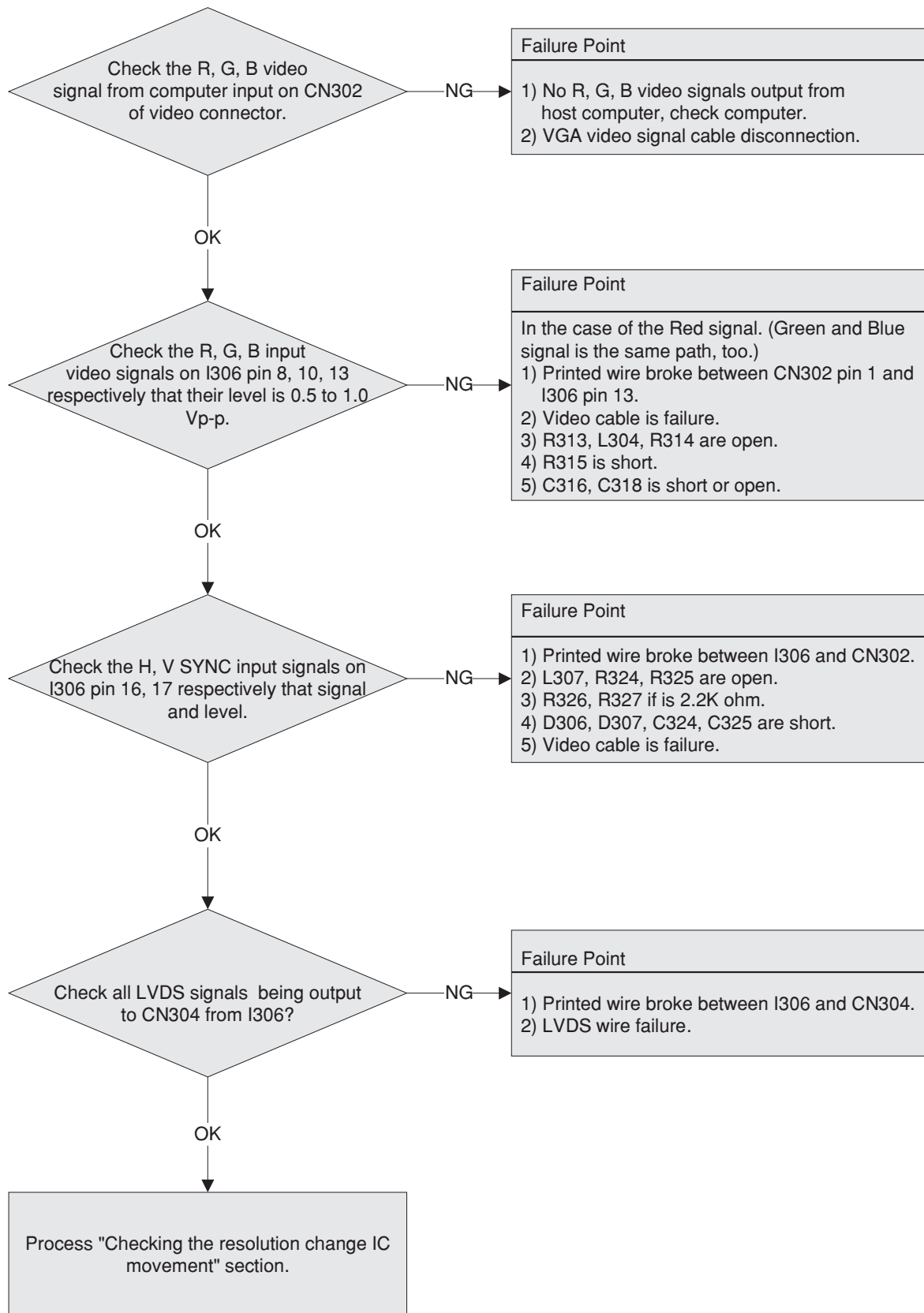


5.3.3 Check the backlight unit:

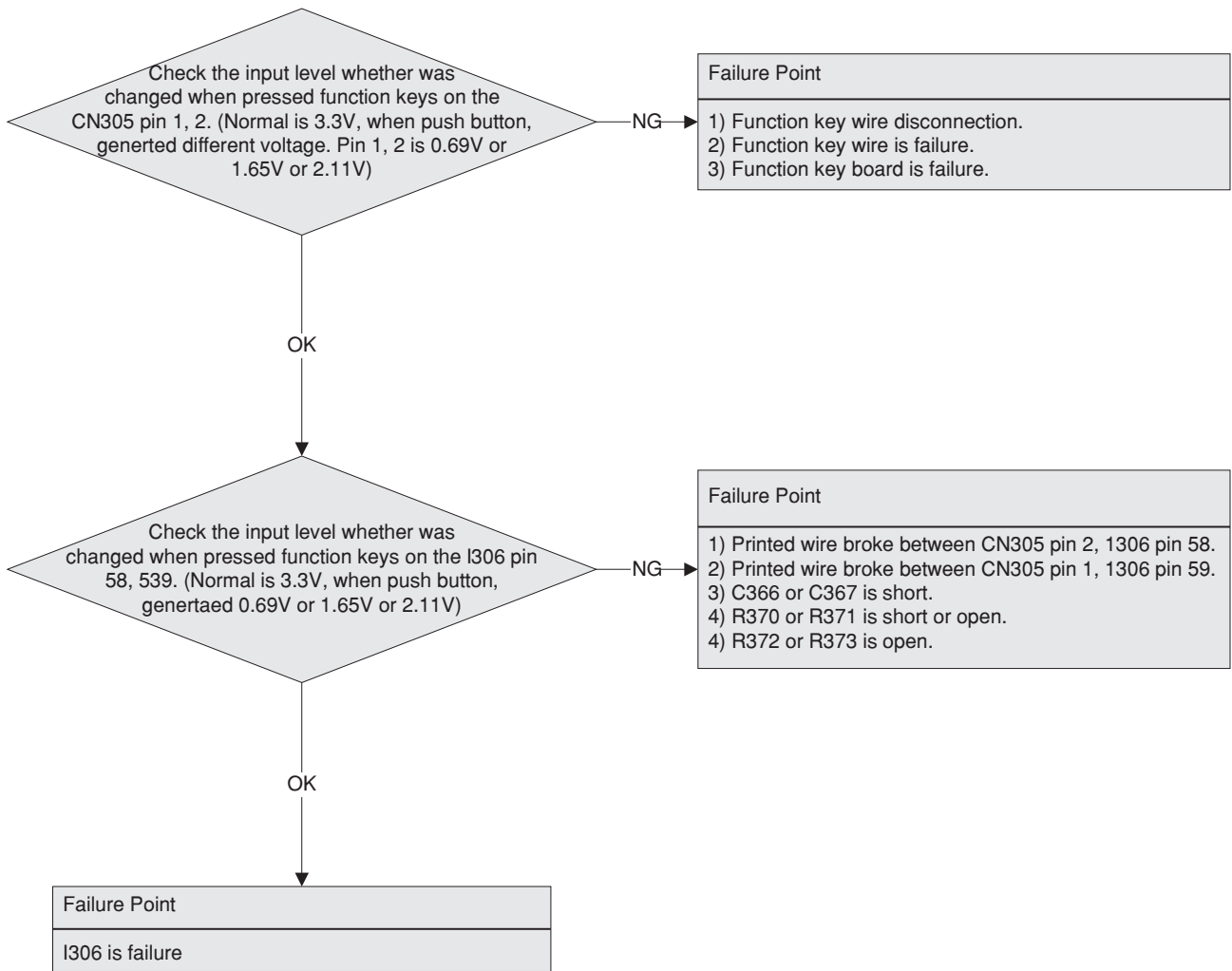


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5.3.4 Abnormal screen for VGA source:

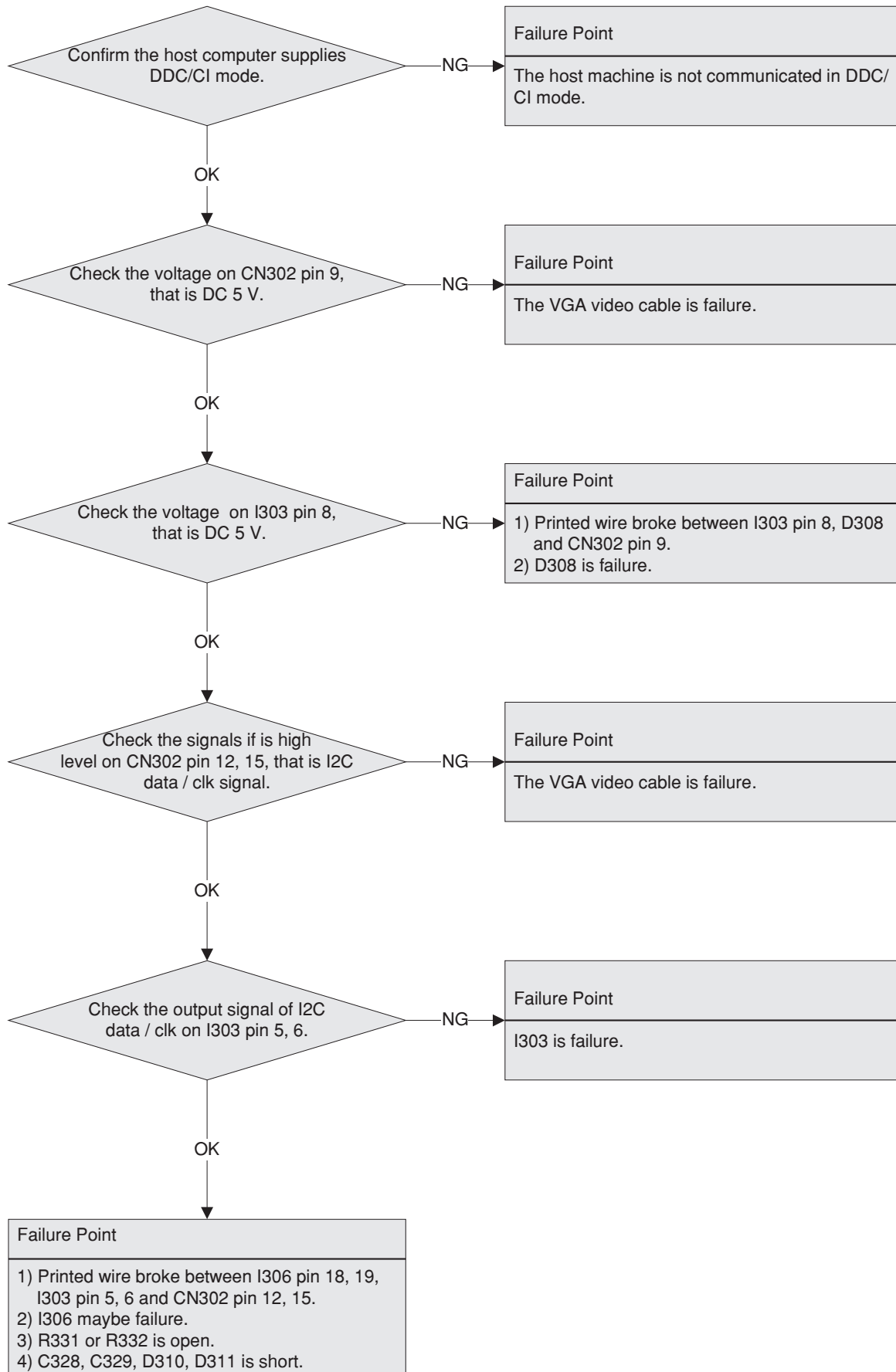


5.3.5 Abnormal OSD display adjust problem:



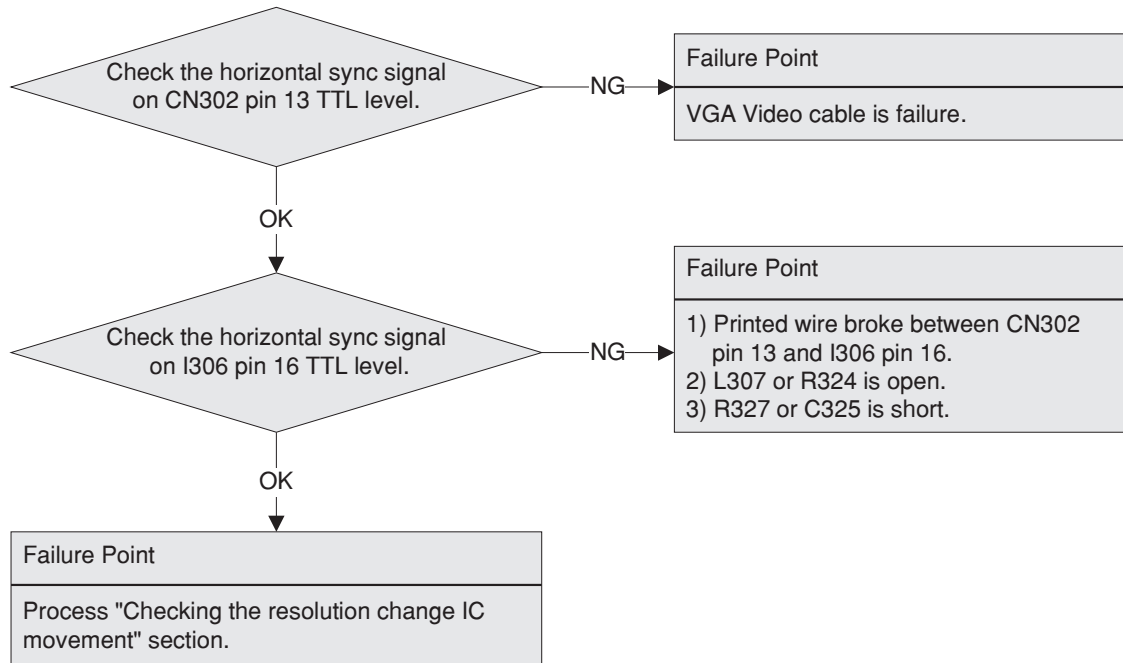
Go to contents page

5.3.6 Abnormal plug and play operation for VGA:

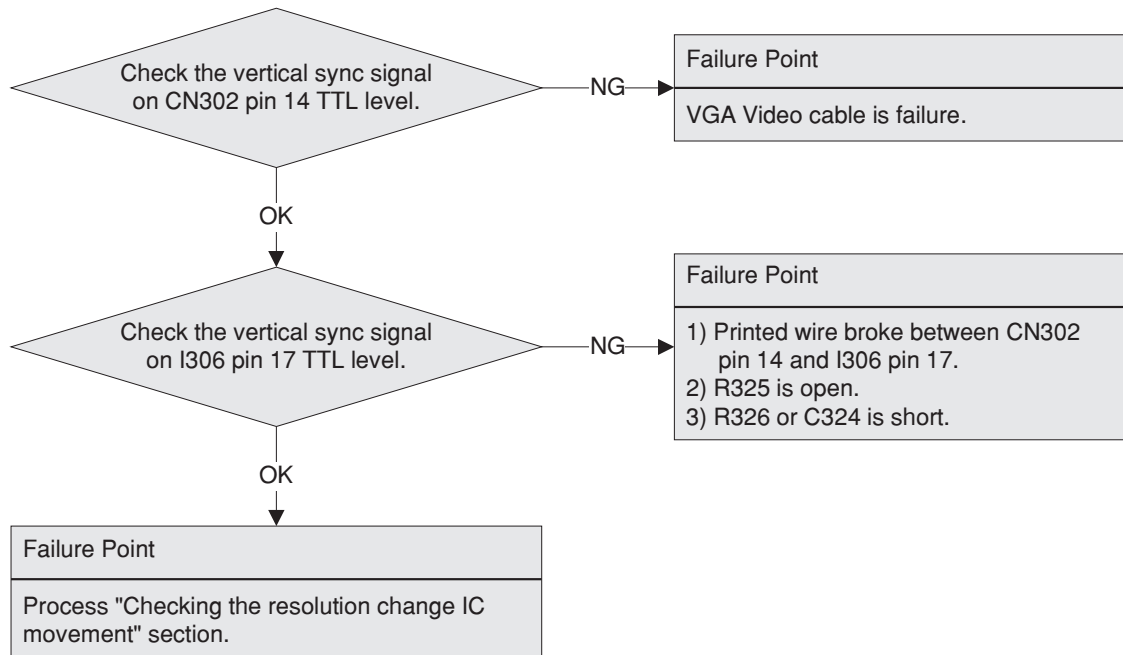


5.3.7 Checking the interface circuit of sync signal:

5.3.7.1 Checking the control circuit of horizontal sync pluse:

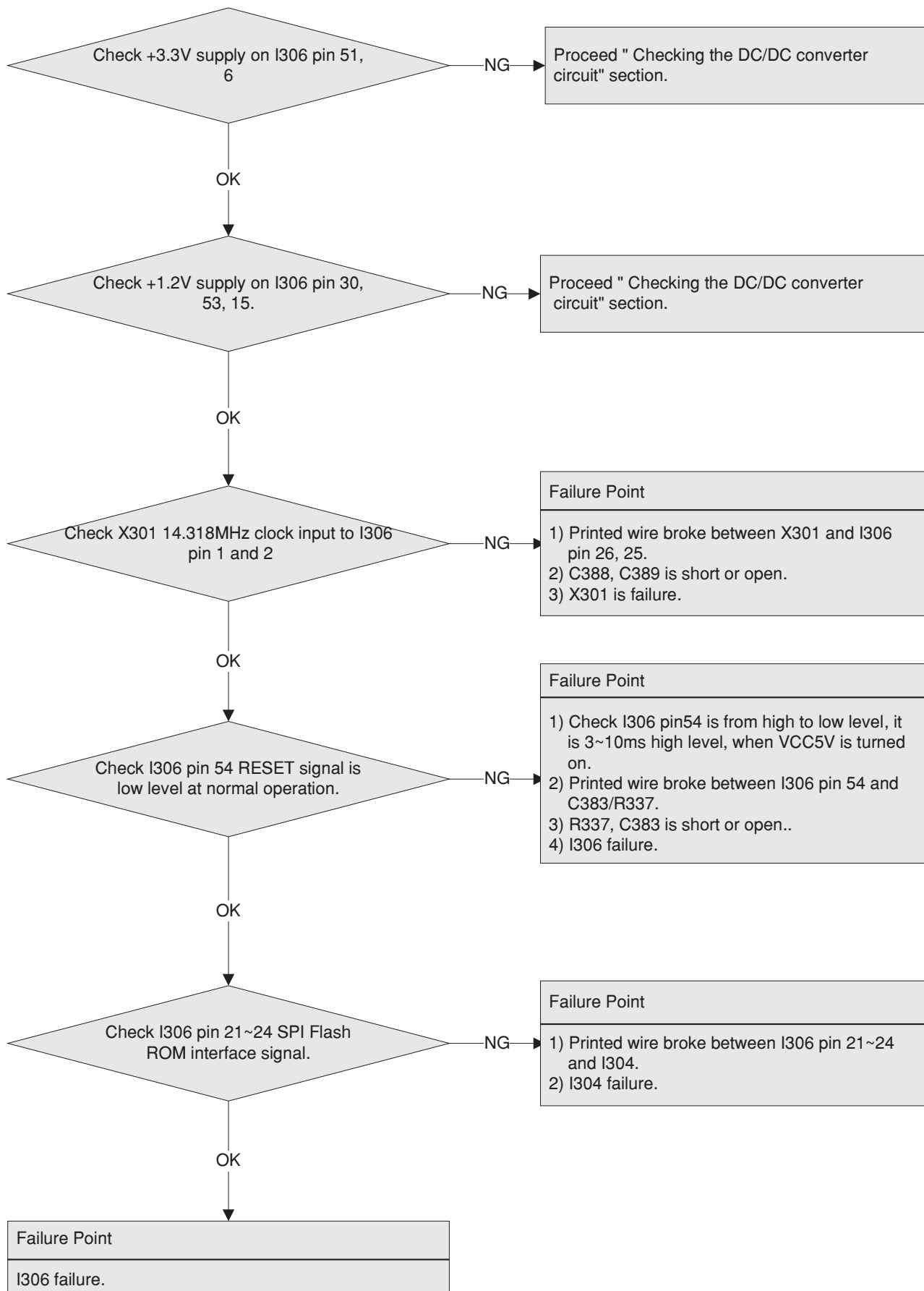


5.3.7.2 Checking the control circuit of vertical sync pulse:

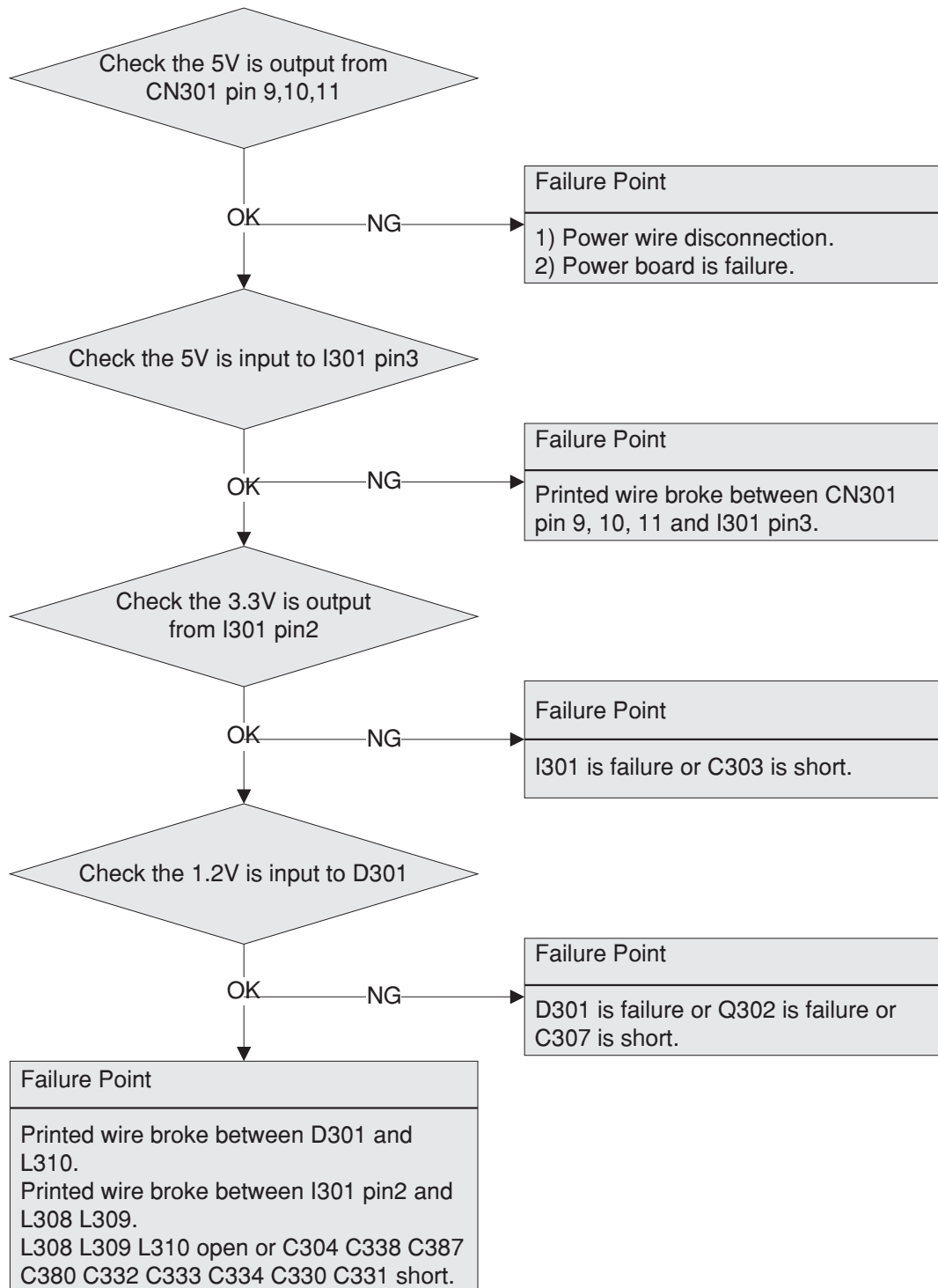


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5.3.8 Checking the resolution change IC movement:



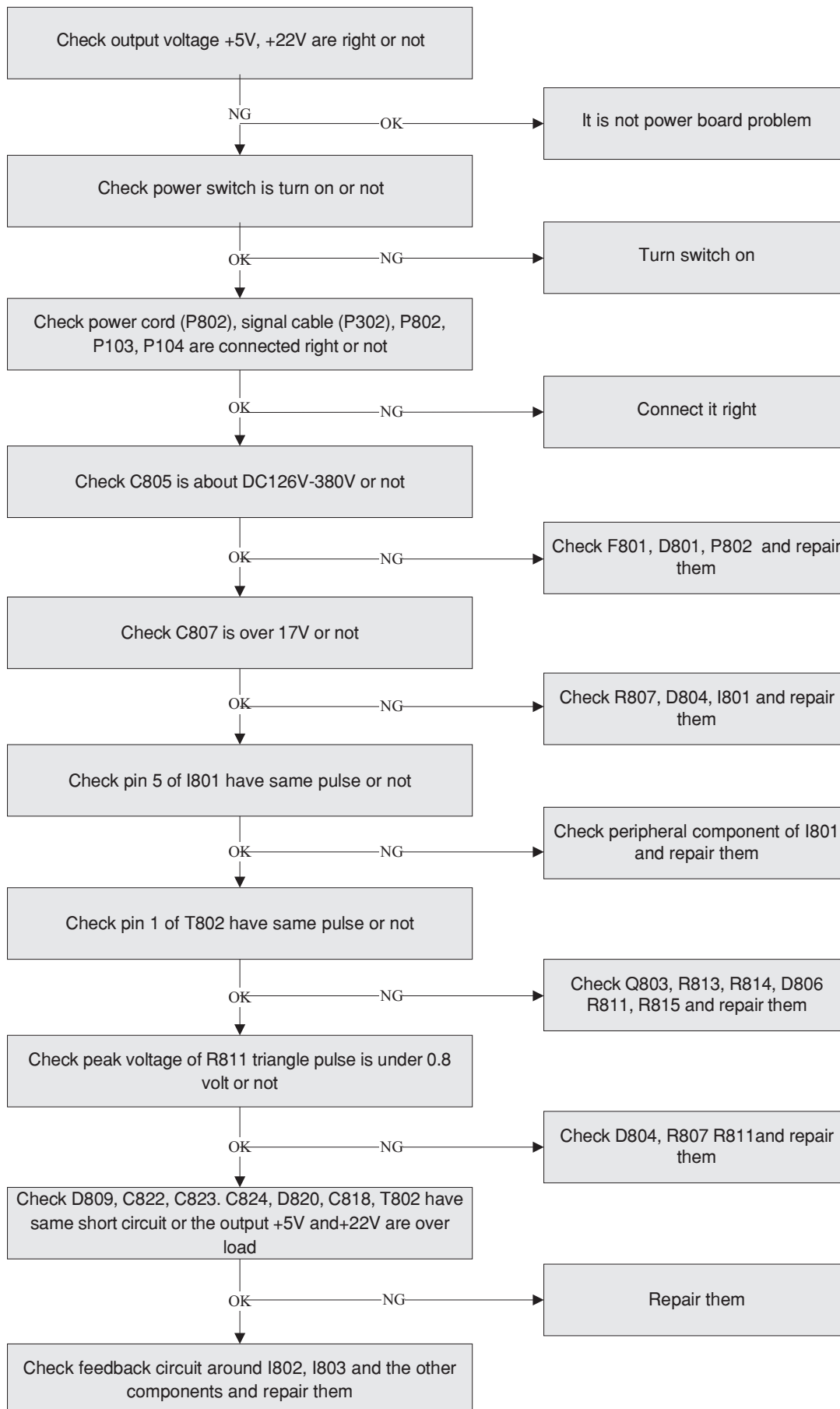
5.3.9 Checking the DC/DC converter circuit:



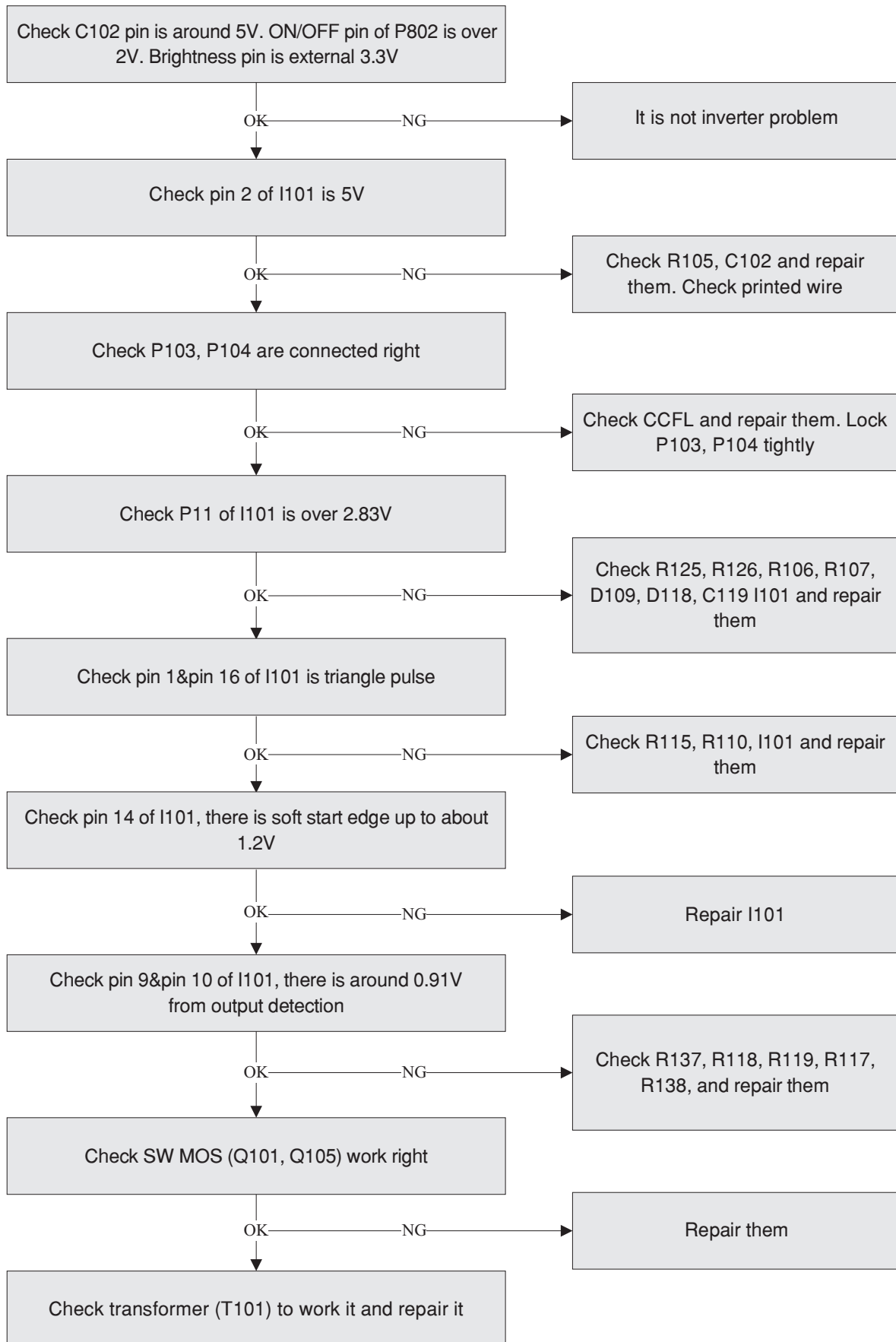
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5.4 Power board troubleshooting(1A1D1H/1A1D/1A):

5.4.1 No Power (1A1D1H/1A1D/1A):



5.4.2 For Inverter Circuit on Power Board (1A1D1H/1A1D/1A):



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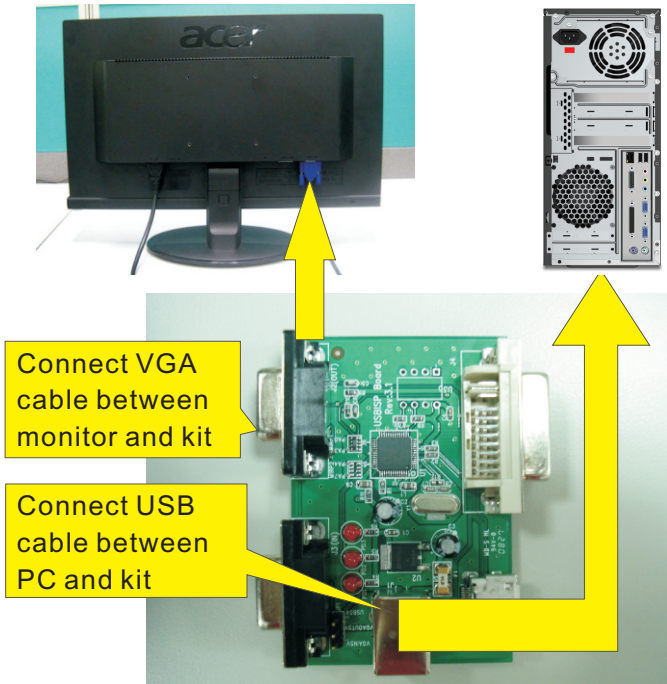
Notes: (1) If the firmware version is shown as same as the current F/W version which you got from Wistron engineers, you must exit the ISP programming process.

(2) The ISP programming is only required when the firmware version is previous version compared to the current version.

6.1 Hardware Configuration:

MONITOR

PC/HOST



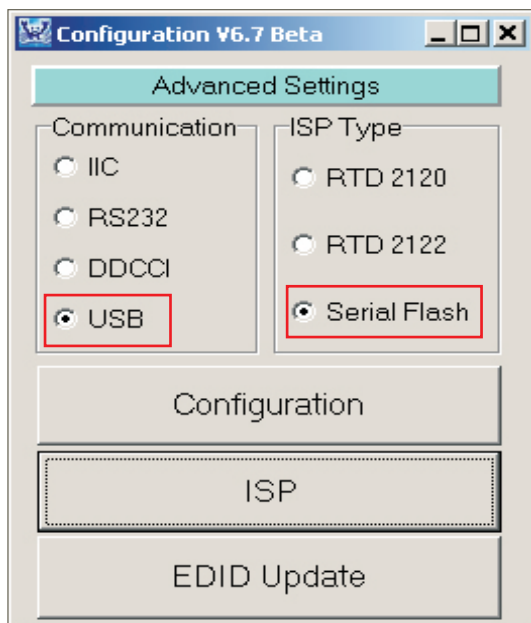
6.2 Realtek F/W Configuration:

S1. Launch the utility of "DebugTool_V6.7.exe".

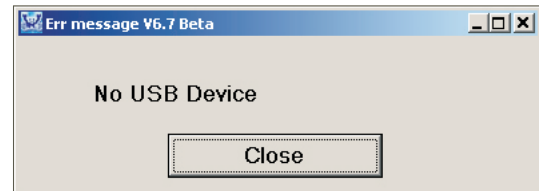


DebugTool_V6.7.exe

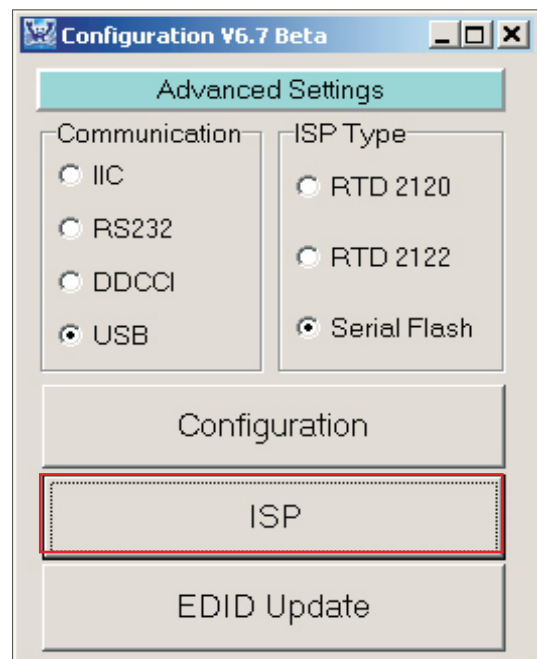
S2. Select "USB" and "Serial Flash".



If it shows "No USB Device", there is a problem with communication. You should confirm your USB device whether be detected by your PC device management or reconnect the USB cable.



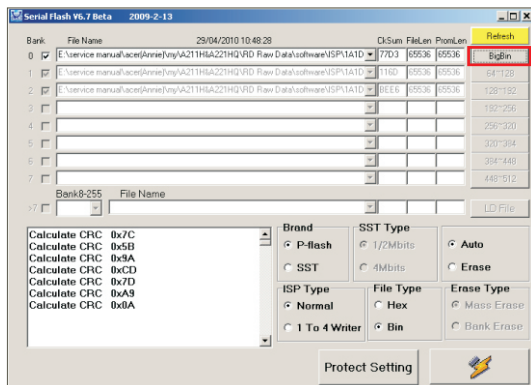
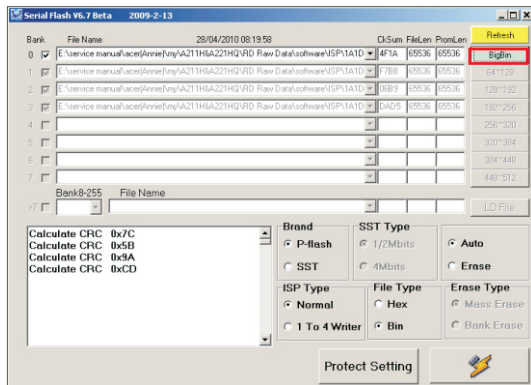
S3. Select ISP icon.



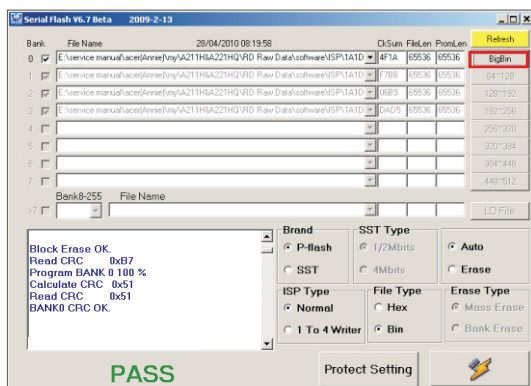
Note: Relative firmware code can be found in the folder of "software pack\ISP", it depends on which model you want to update: "1A1D1H" is used in the monitor which have VGA, DVI and HDMI ports; "1A1D" is used in the monitor which have VGA and DVI ports; "1A" is used in the monitor which have VGA port only.

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S4. Select the right F/W code for the mode you want to update. Herein we take the model of 1A1D1H and 1A1D for example, select "Bin" as "File Type" first, then click **BigBin** to choose "A211H_RH_M001_0428.BIN" in the folder of "A211H_RH_M001_0428" or "A221HQ_RH_M001_0428.BIN" in the folder of "A221HQ_RH_M001_0428" (you can also select hex as file type).



S5. Press  button to update the firmware. Once you see the message of 'Pass' shown on the window, it means ISP upgrading process is completed.

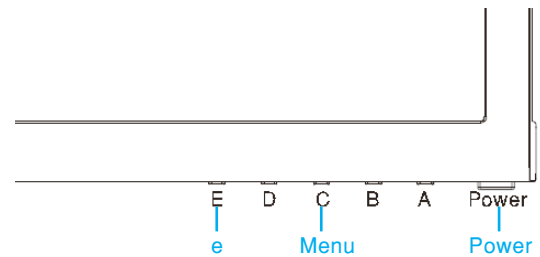


6.3 How to check firmware version?

S1. Turn off the monitor, press "Power" and "e" button at the same time for turning on the monitor.

S2. Press "Menu" button again to enter factory mode, and you will see the firmware version.

Note: Please pay attention: Don't change any parameter which is measured by precise machine before shipping out.



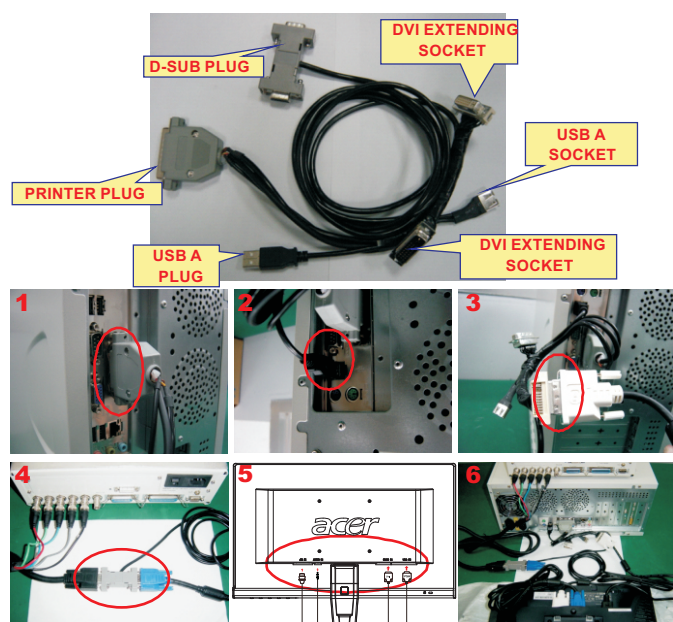
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Notice Notes: Please be noted that 'INI.INI' file must be copied into 'C:\WINDOWS' root directory before running EDID program. Moreover, please be aware of not changing any parameters in the 'INI.INI' file. Especially, the upload key must keep '0' to disable file uploading process in field.

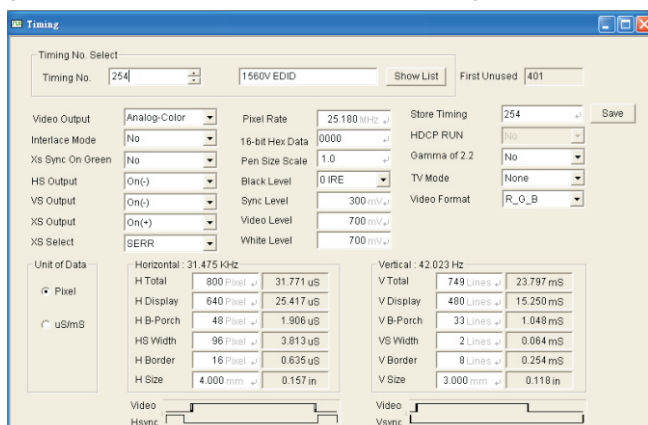
7.1 Writing EDID Procedure:

Hardware Configuration:

1. Connect the PRINTER PLUG of DDC FIXTURE with the printer port of PC. (Refer to figure 1)
2. Plug USB A PLUG of DDC FIXTURE to USB socket of Desktop PC. (Refer to figure 2)
3. Extend the DVI cable on DVI EXTENDING SOCKET of DDC FIXTURE. (Refer to figure 3)
- 4.1 Connect the D-sub plug of Chroma with D-SUB PLUG of DDC FIXTURE. (Refer to figure 4)
- 4.2 Take a video cable then connect the D-SUB PLUG and the D-sub socket of monitor. (Refer to figure 5)
5. Connect the extended DVI cable to DVI socket of monitor. (Refer to figure 6)
6. Re-confirm all the connectors are connected well.

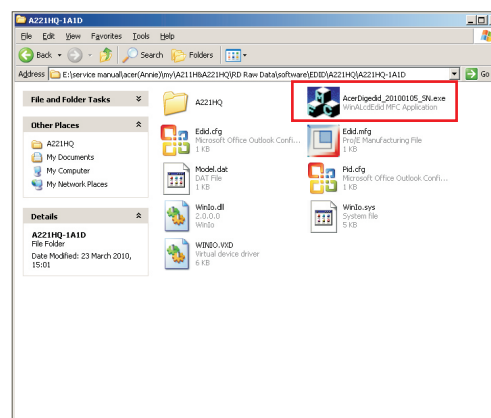


CAUTION: The timing of Chroma shall be setup at T254/P41 before data recording. The detail setting parameter from chroma .Please See below photo :

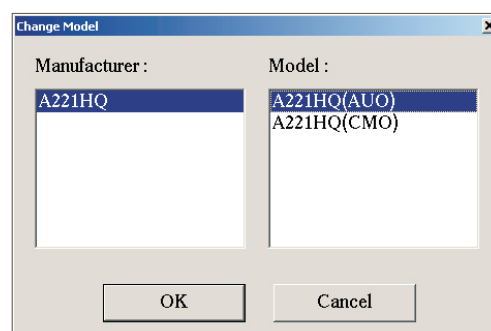
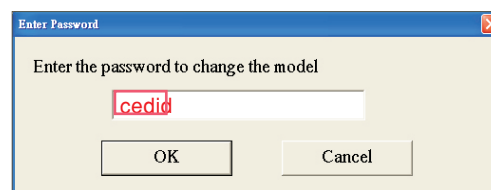
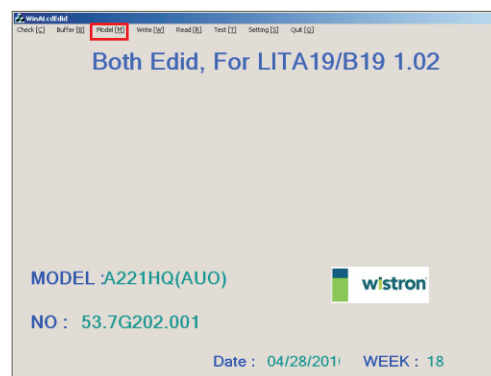


7.2 Writing VGA/DVI Process:

- S1. Chose the folder such as “P226HQ-1A1D”, (Note: It depends on which model you want to write. 1A is used in the monitor only have VGA port, 1A1D is used in the monitor both have VGA and DVI ports.) herein we take “P226HQ-1A1D” for a example, select the “AcerDignedid_20100105_SN.exe” of “P226HQ-1A1D” to execute it.

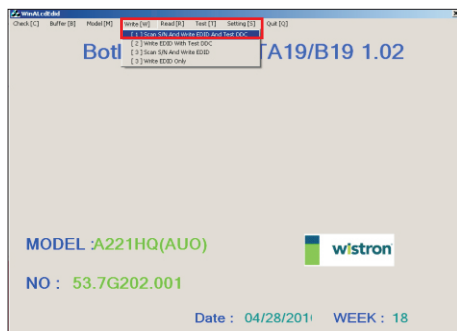


- S2. Select Model: Key in password “cedid” then select model which one you want to write EDID code that it depends on panel type.

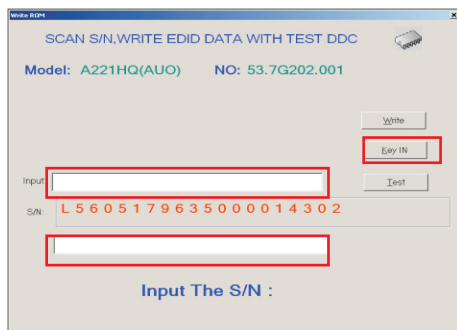


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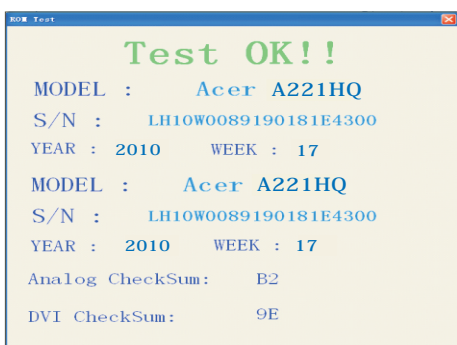
S3. Choose "WRITE" from menu then select "Scan S/N And Write EDID And Test DDC".



S4. Key in PPID number(22 characters) which you can find printed on the model lable in the input column and below empty column. Press write button after key in S/N.



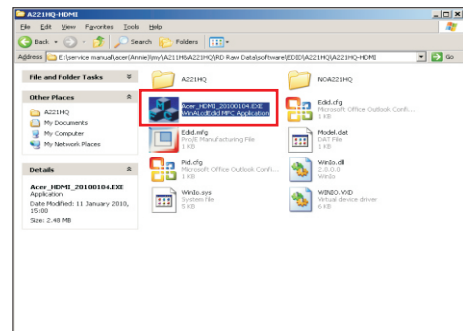
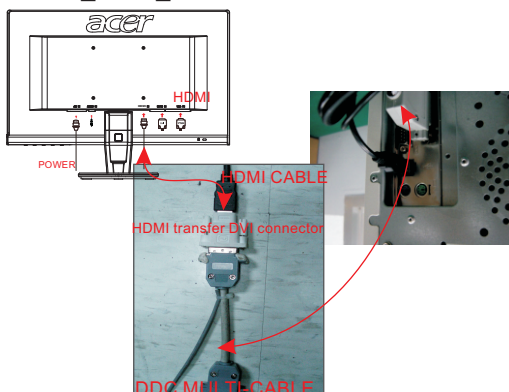
S5. When EDID was written successfully that will show below message on the screen.



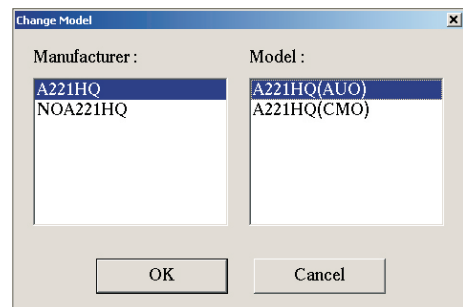
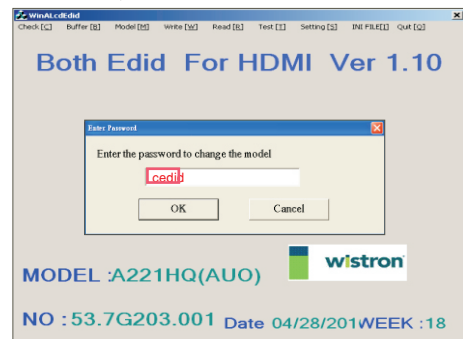
7.3 Writing HDMI Process:

S1. Connect a HDMI cable between monitor and DDC
FIXTURE through HDMI transfer DVI connector. Open the folder: "P226HQ-1H", select

"Acer_HDMI_20100104.EXE" to execute.



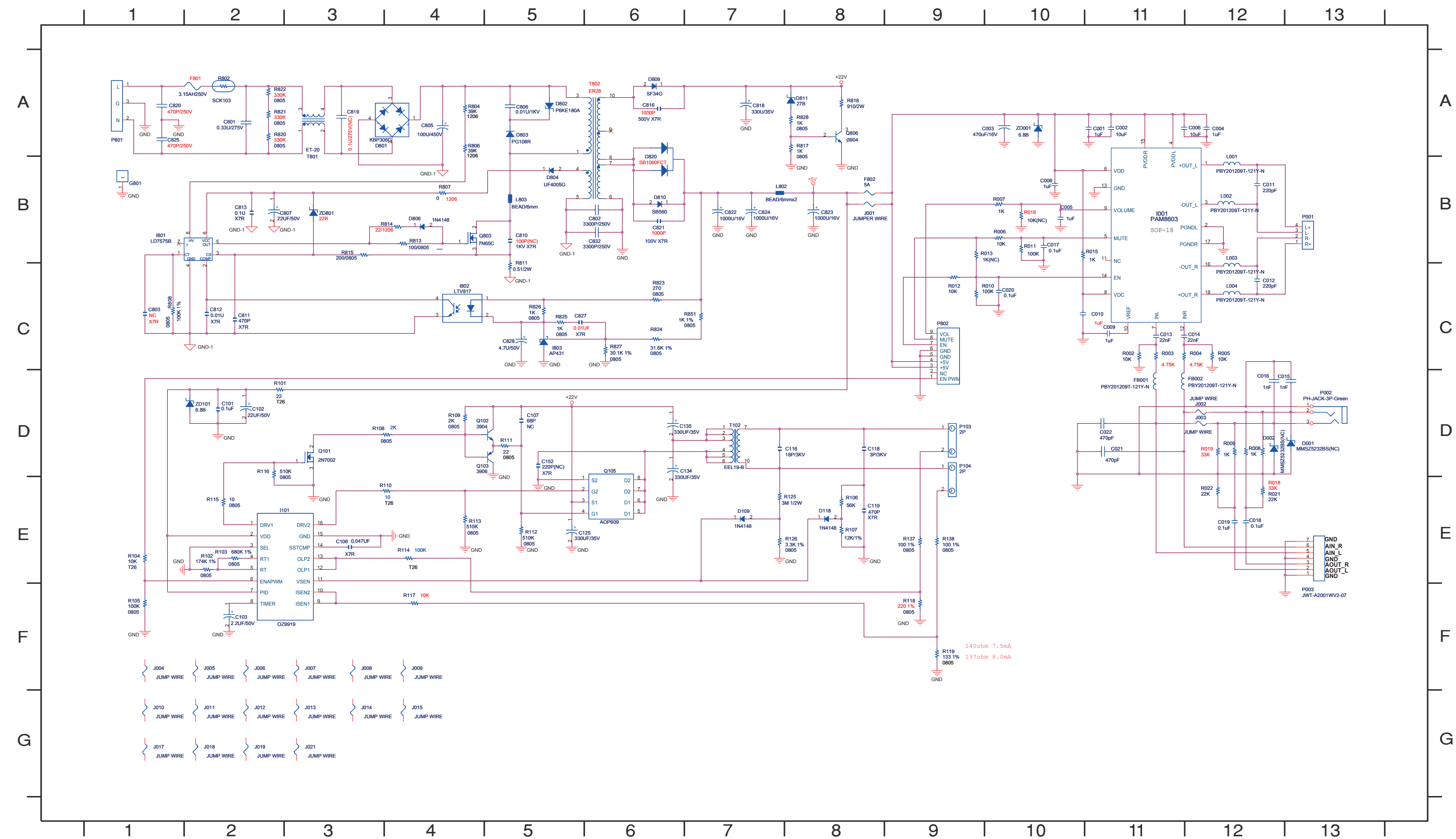
S2. Select Model: Key in password "cedid" then select model which one you want to write EDID code that it depends on if the model have audio speakers, if it have audio speakers, select P226HQ, otherwise select NO226HQ.



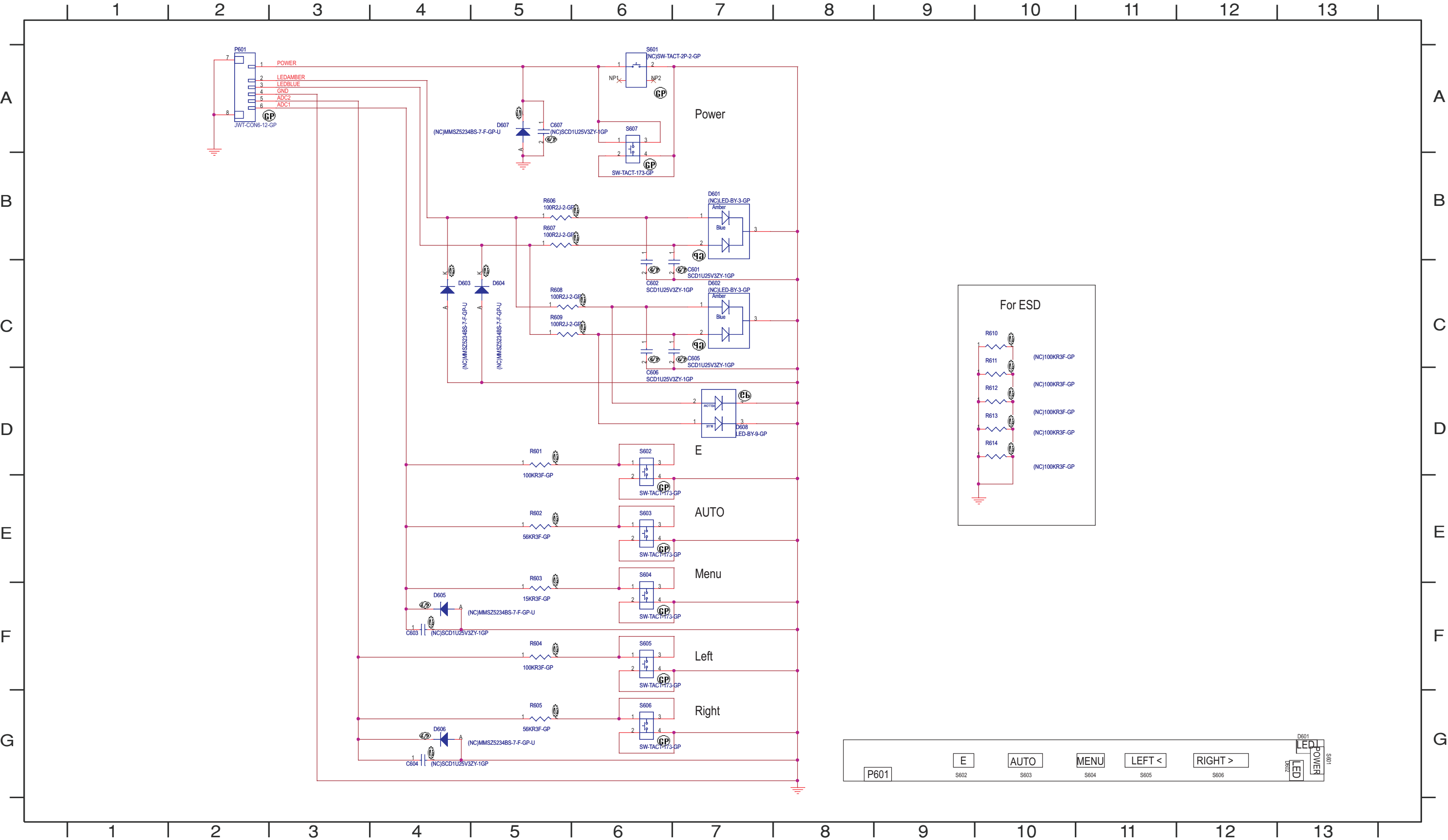
S3~S5. The process of writing EDID for HDMI is same as the process of writing EDID for VGA/DVI.

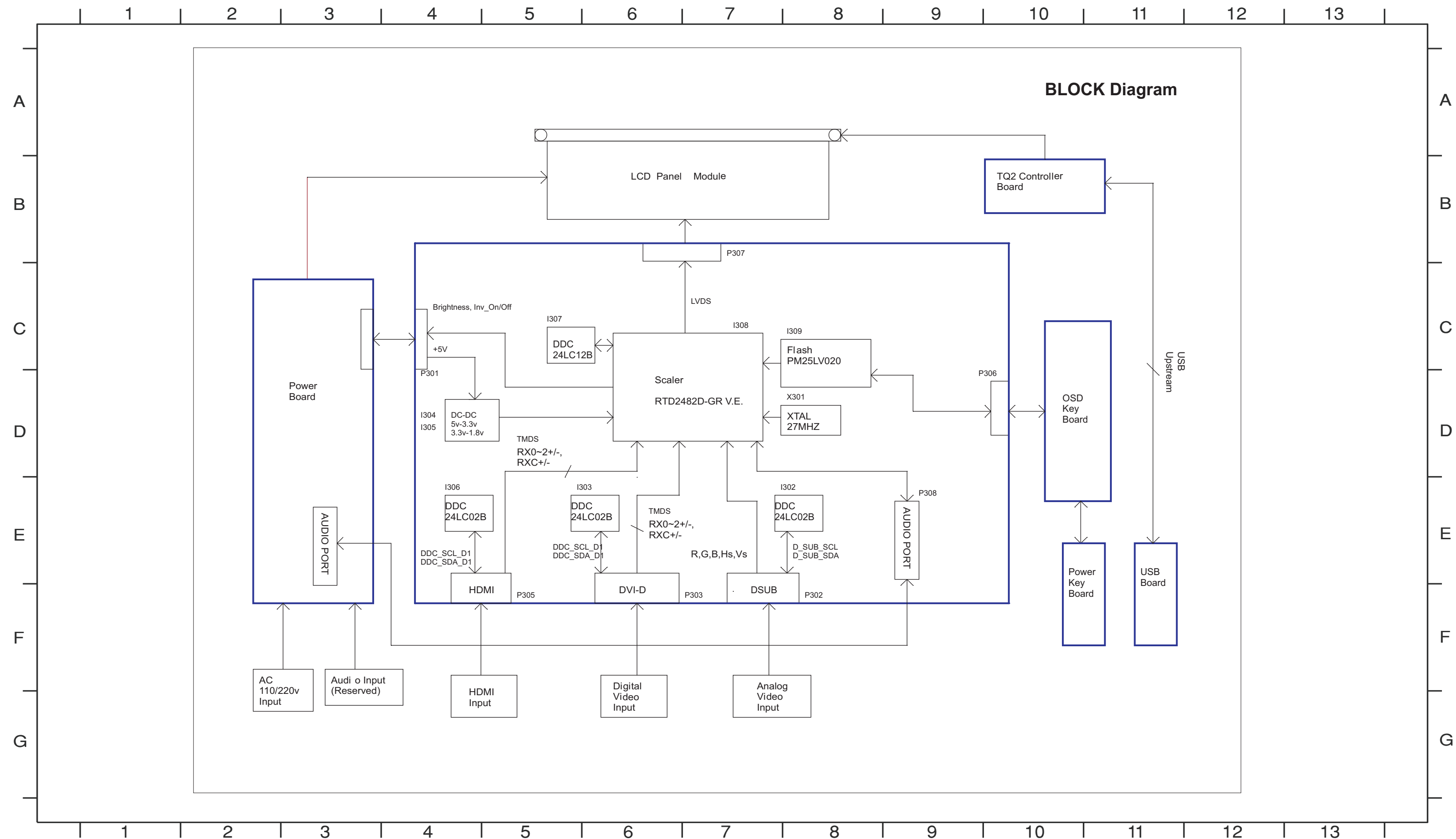
8. ACER_LCD_A211H/A221HQ SCHEMATICS AND LAYOUTS:

8.1 ACER_LCD_A211H/A221HQ_SCHEMATICS_POWER BOARD(1A1D1H/1A1D/1A):

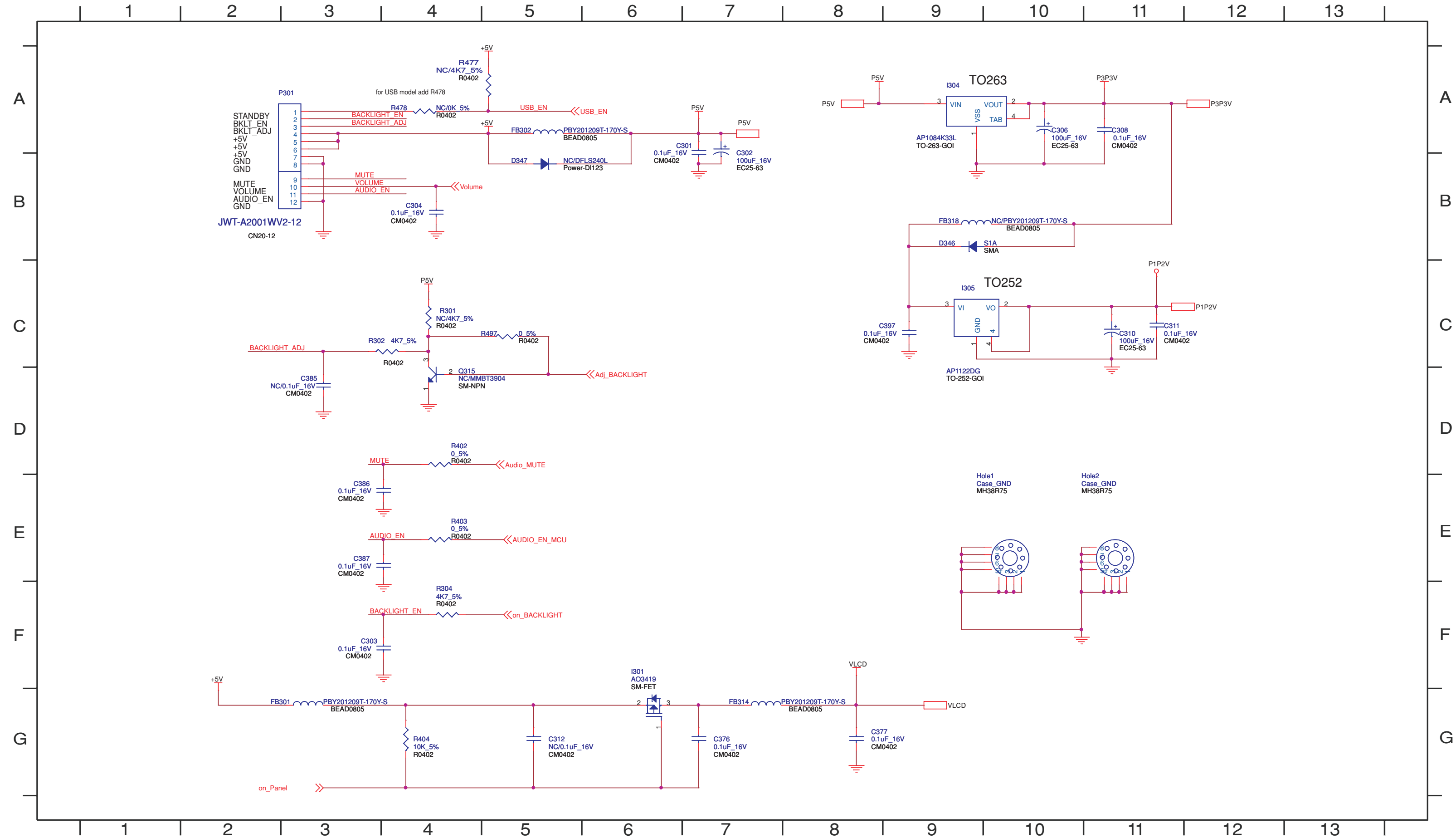


8.2 ACER_LCD_A211H/A221HQ_SCHEMATICS_FUNCTION KEY BOARD(1A1D1H/1A1D1A):

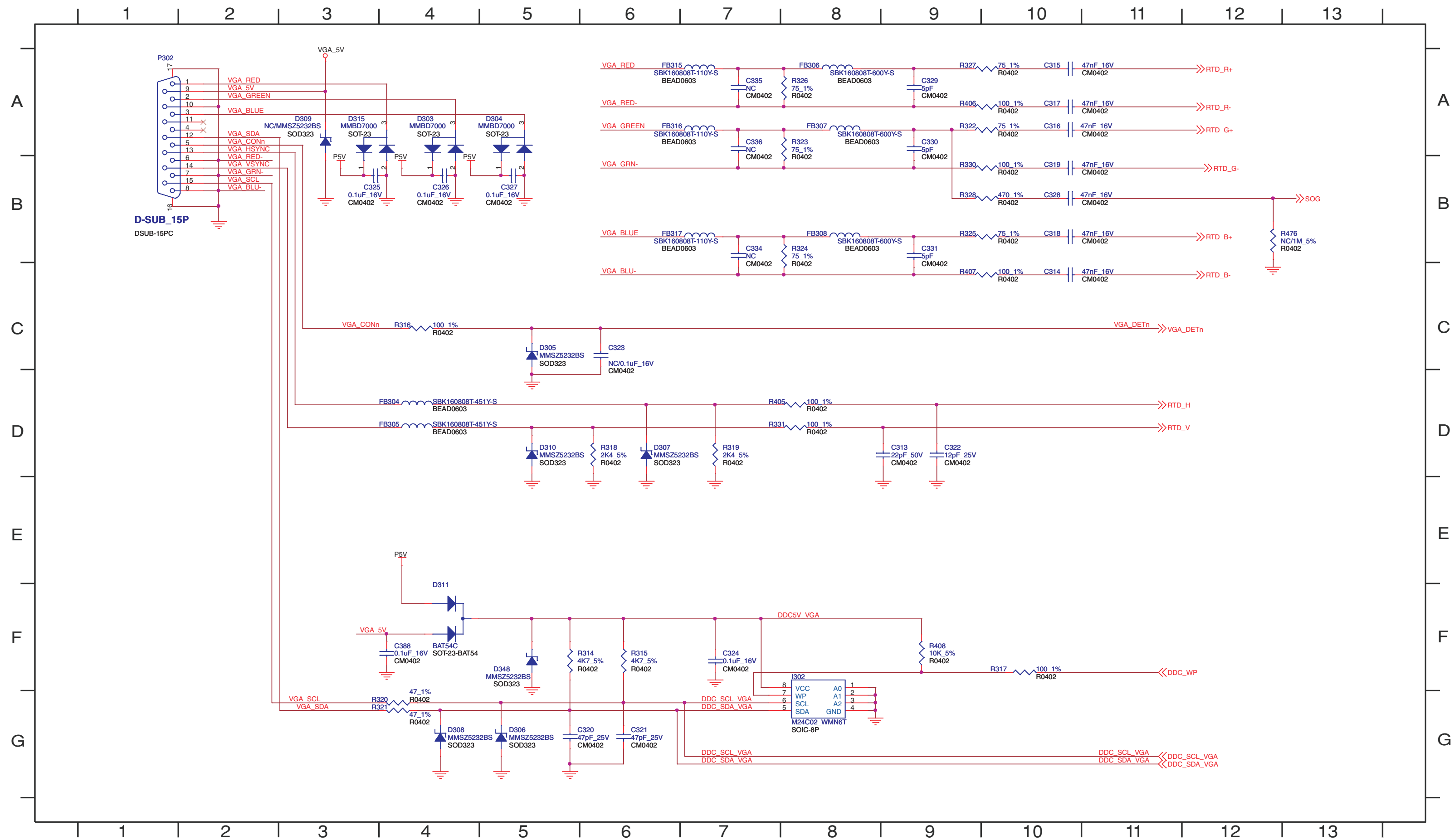




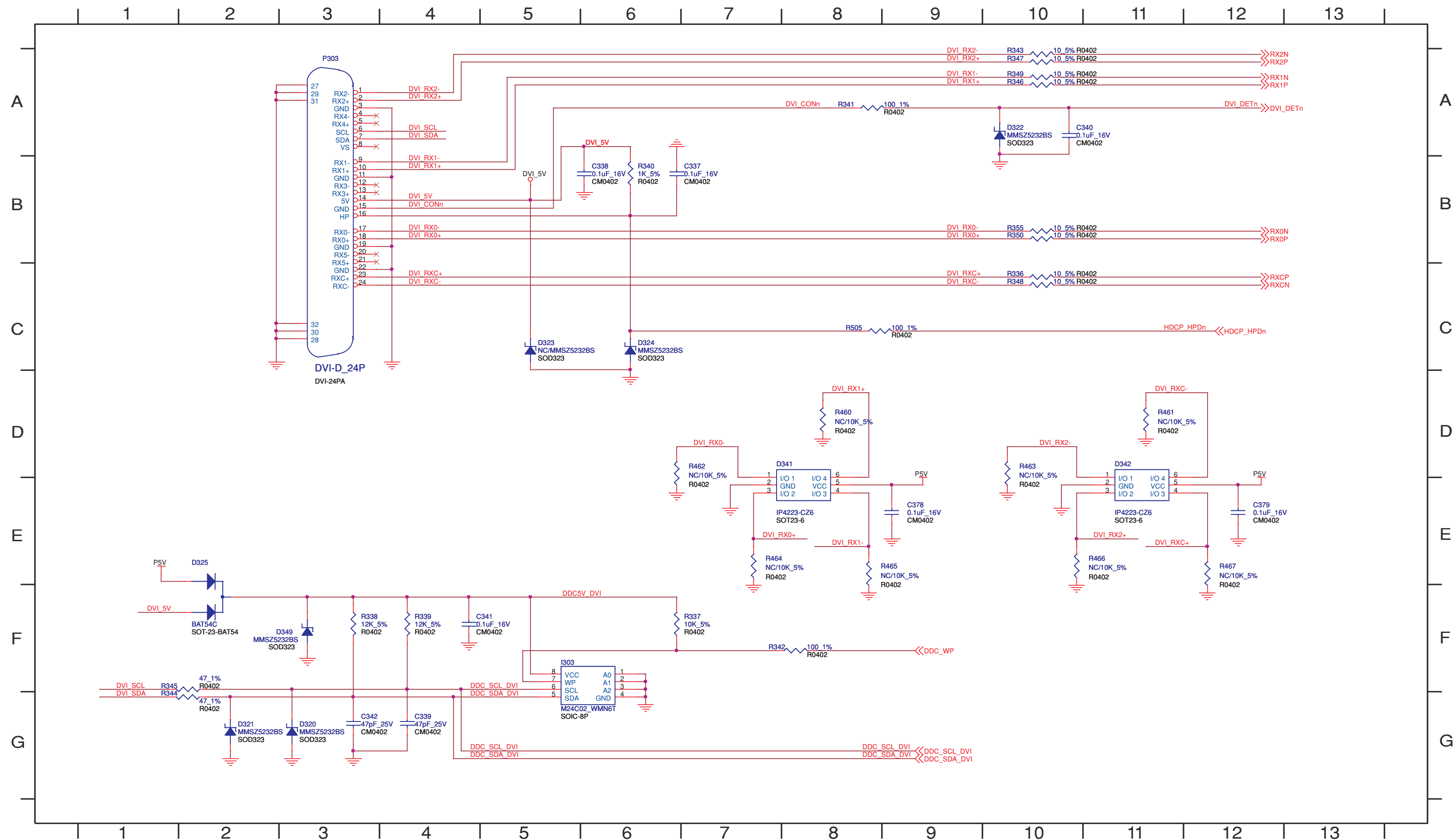
8.3.1.2 ACER_LCD_A211H/A221HQ(1A1D1H)_SCHEMATICS_INTERFACE_BD_POWER:



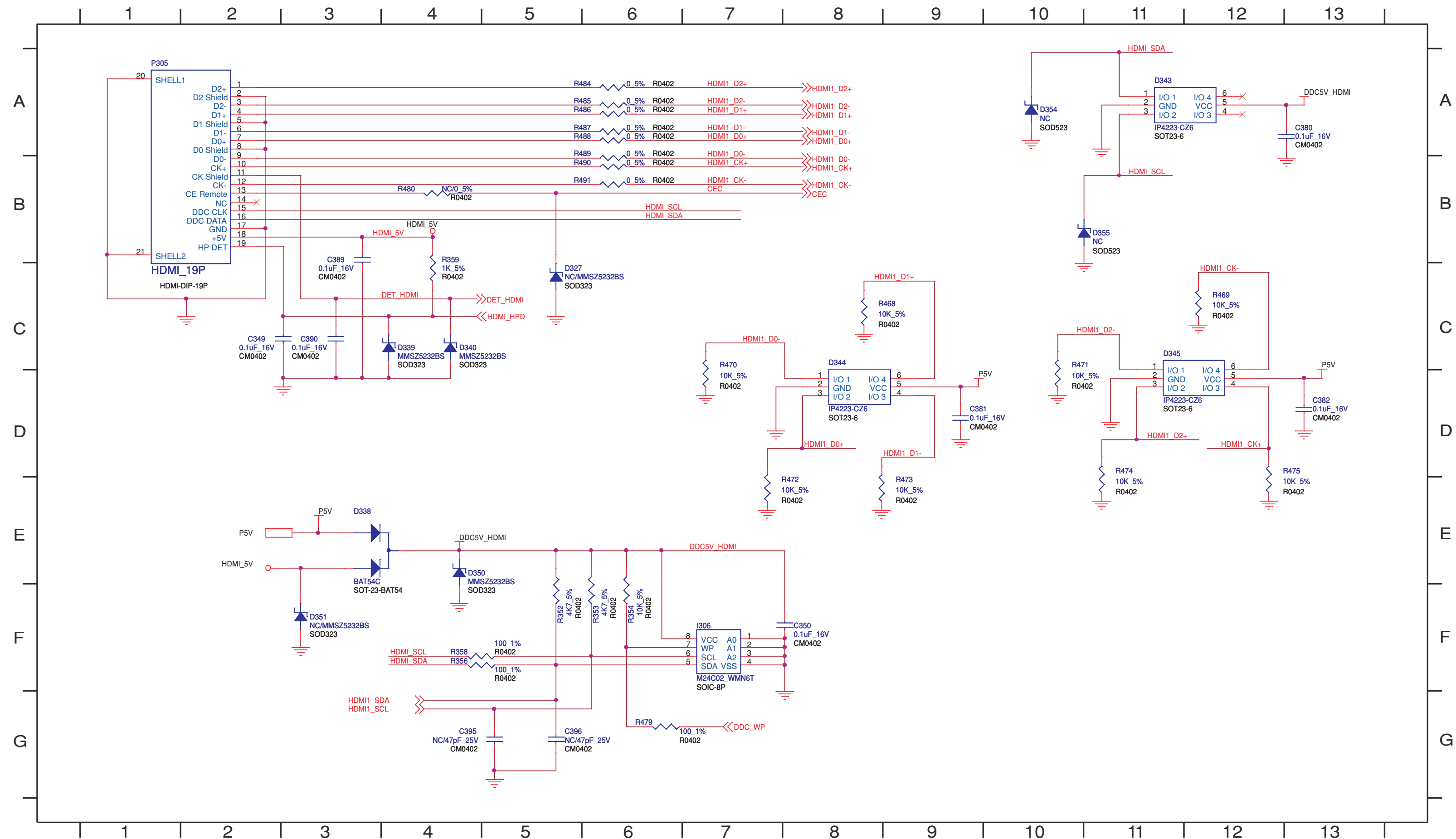
8.3.1.3 ACER_LCD_A211H/A221HQ(1A1D1H)_SCHEMATICS_INTERFACE_BD_VGA & DDC INTERFACE:



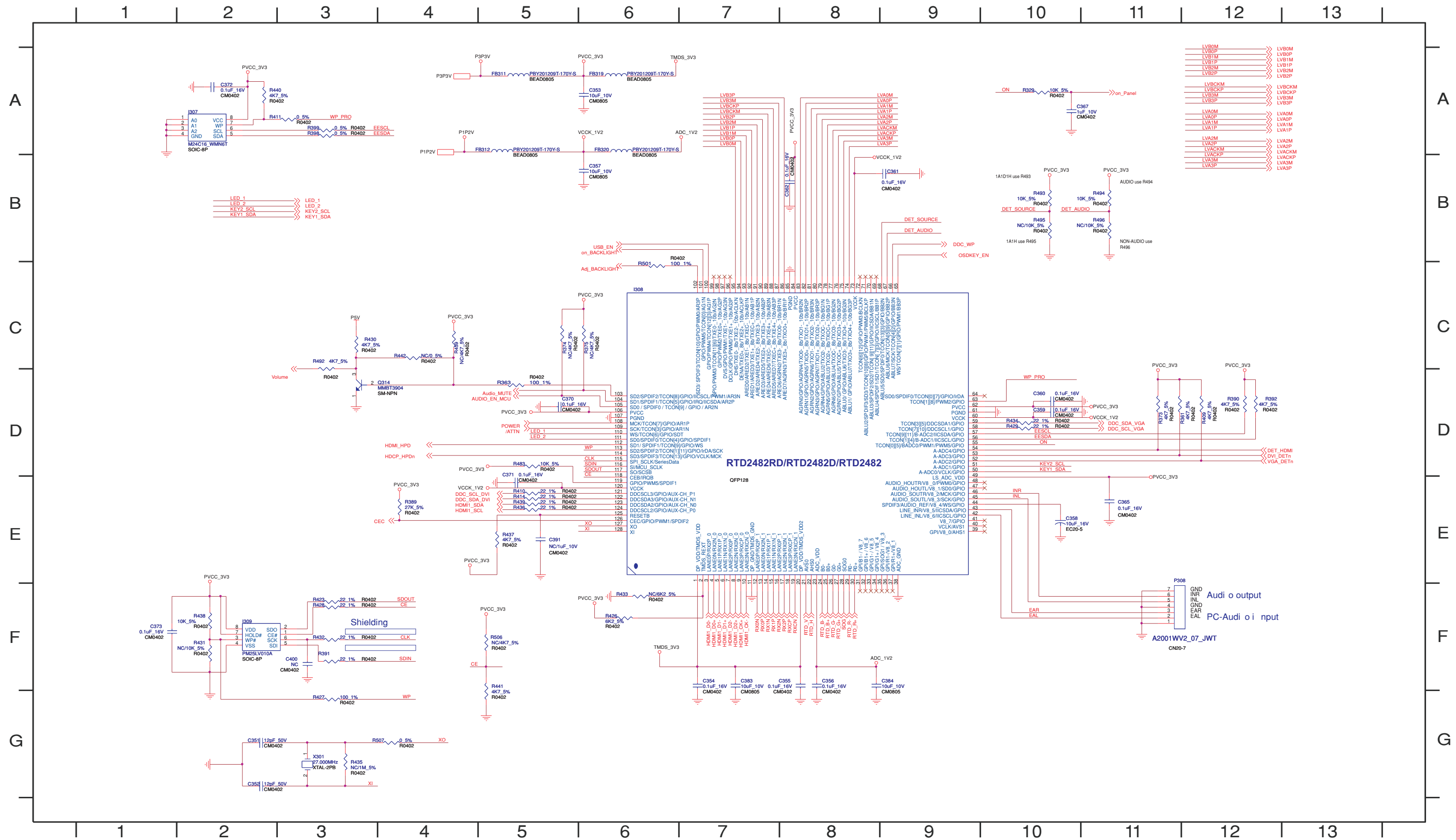
8.3.1.4 ACER_LCD_A211H/A221HQ(1A1D1H)_SCHEMATICS_INTERFACE_BD_DVI&DDC INTERFACE:



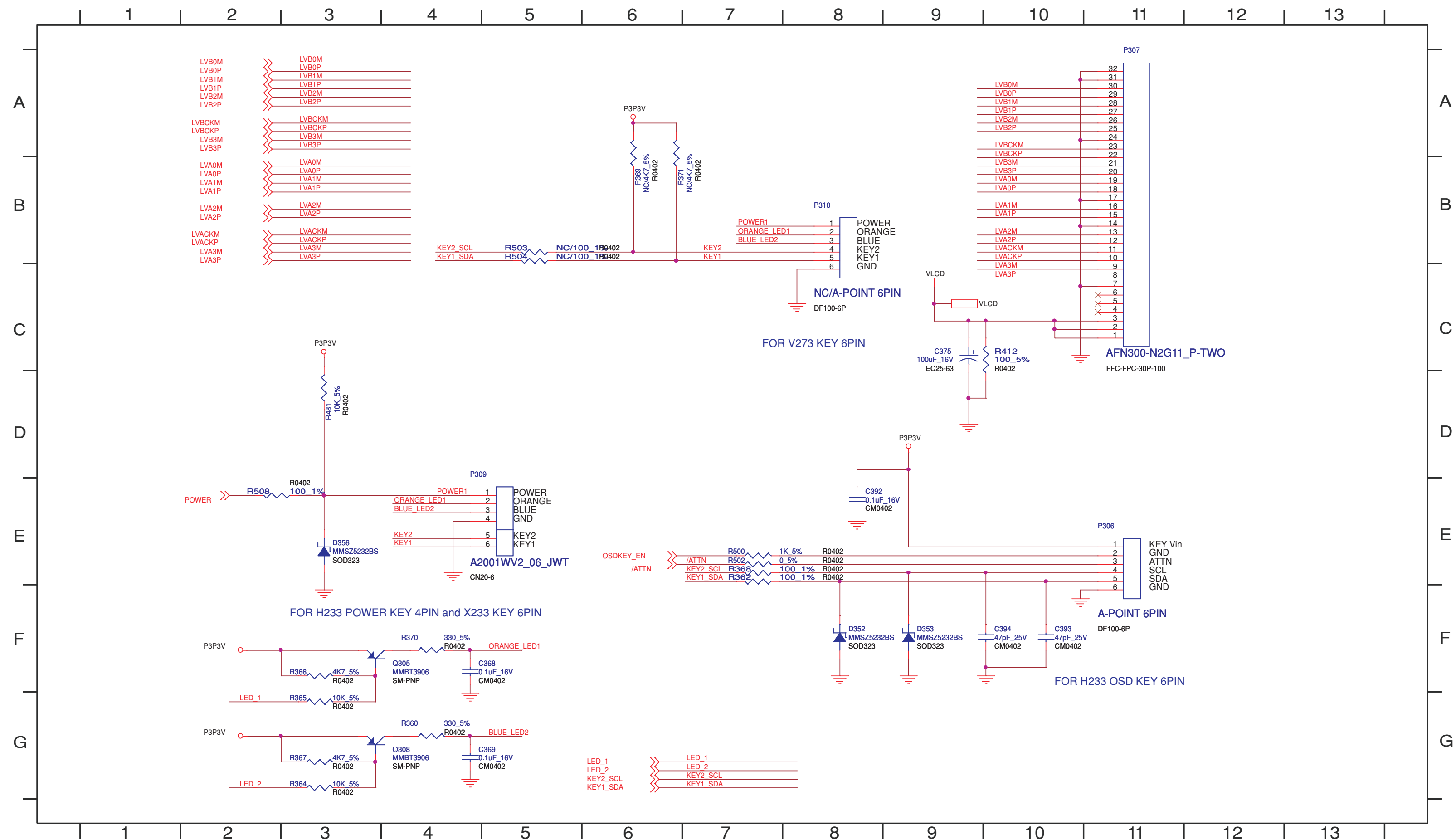
8.3.1.5 ACER_LCD_A211H/A221HQ(1A1D1H)_SCHEMATICS_INTERFACE_BD_HDMI:



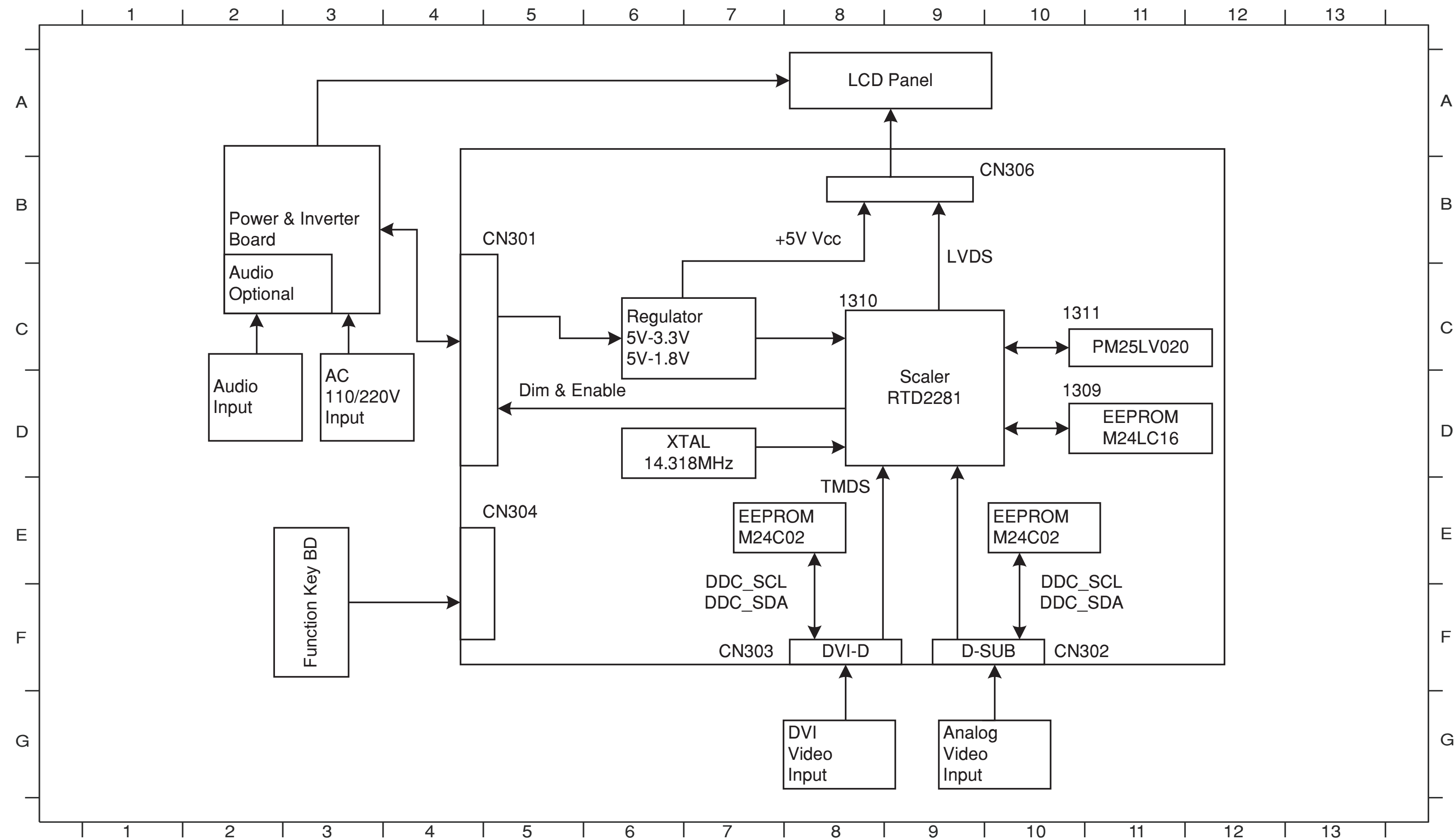
8.3.1.6 ACER_LCD_A211H/A221HQ(1A1D1H)_SCHEMATICS_INTERFACE_BD_SCALER/RTD2482D:



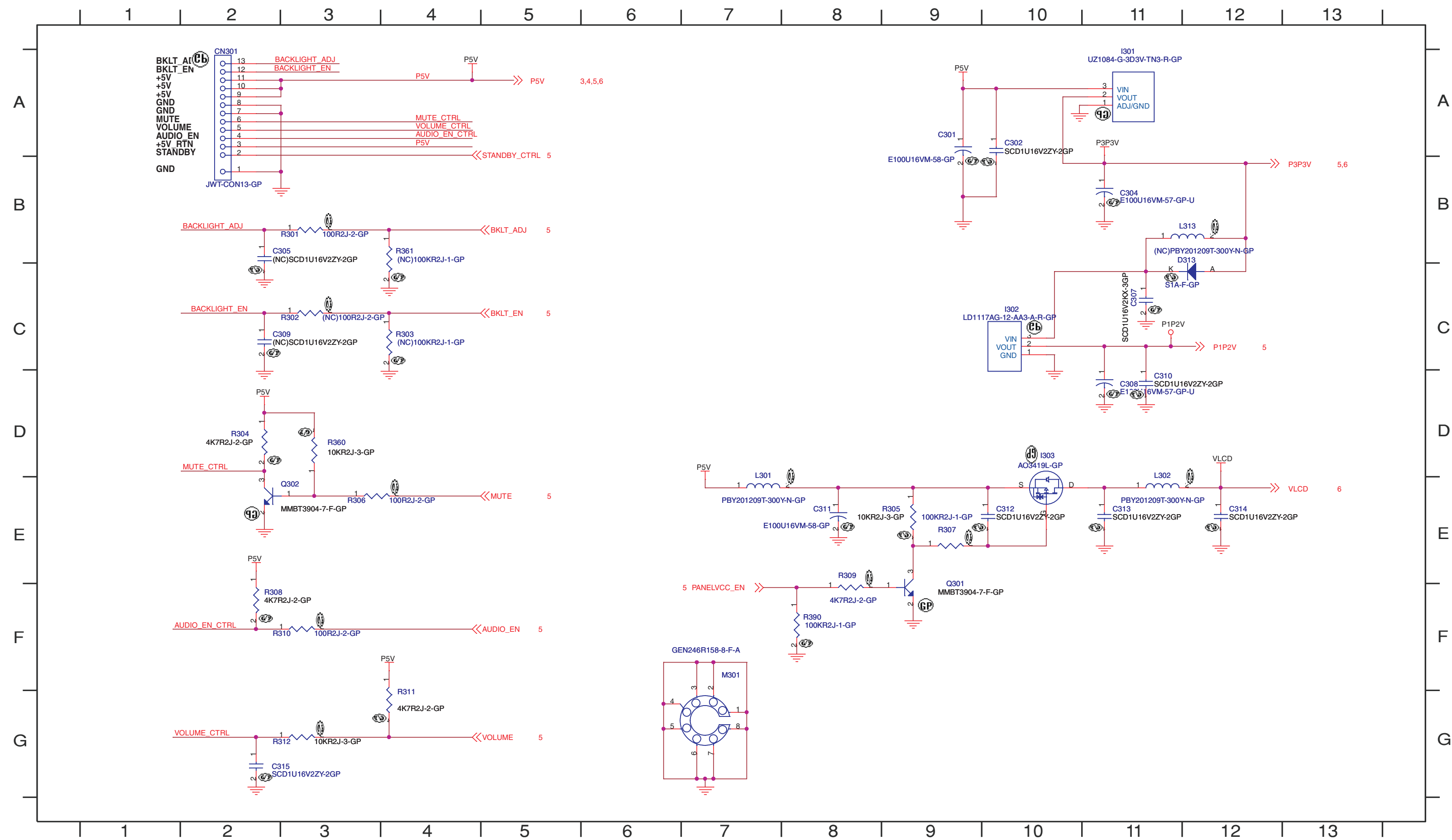
8.3.1.7 ACER_LCD_A211H/A221HQ(1A1D1H)_SCHEMATICS_INTERFACE_BD_PANEL INTERFACE & KEY:



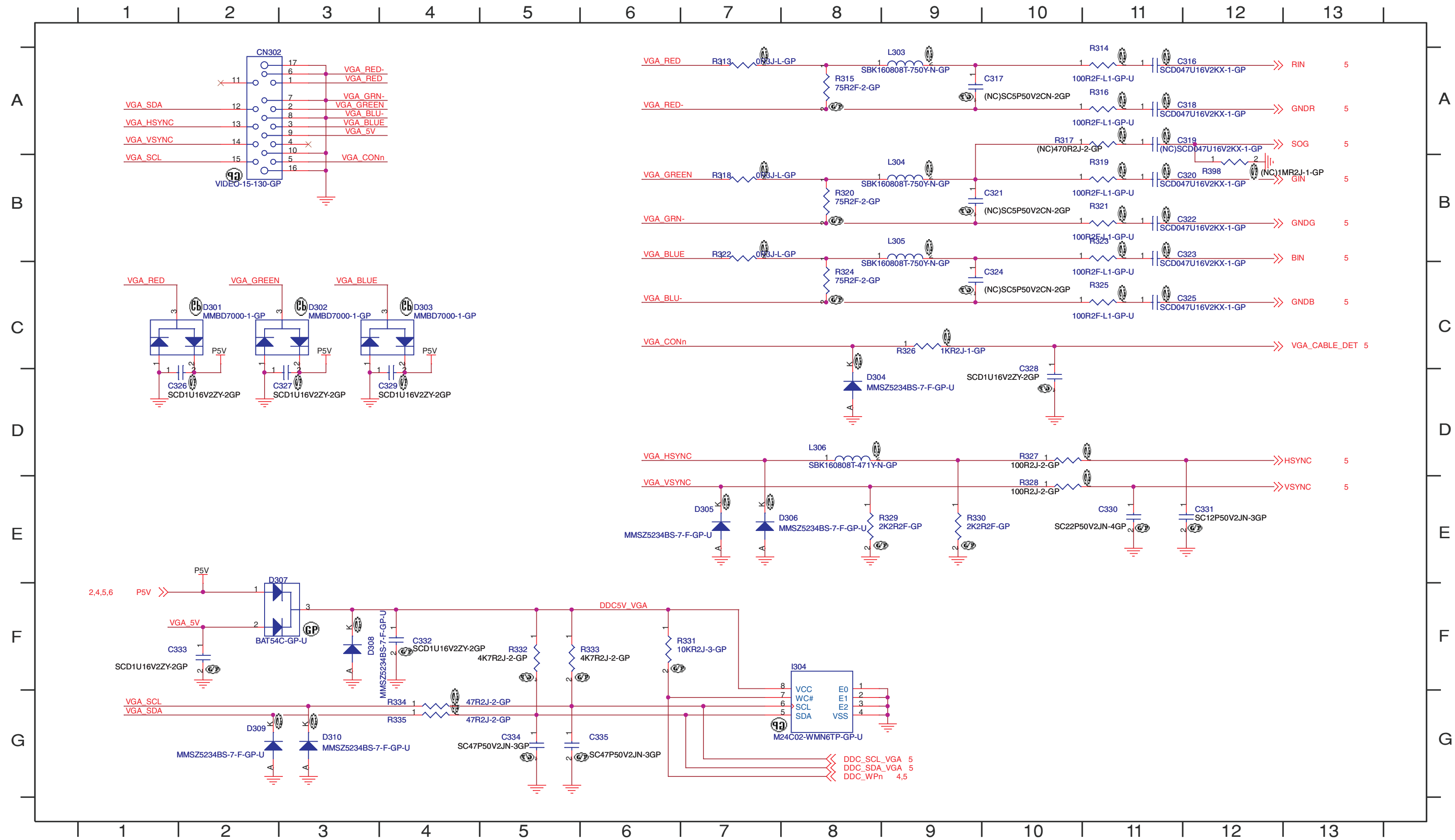
8.3.2 ACER_LCD_A211H/A221HQ_SCHEMATICS_INTERFACE BOARD_1A1D:
8.3.2.1 ACER_LCD_A211H/A221HQ(1A1D)_SCHEMATICS_BLOCK DIAGRAM:



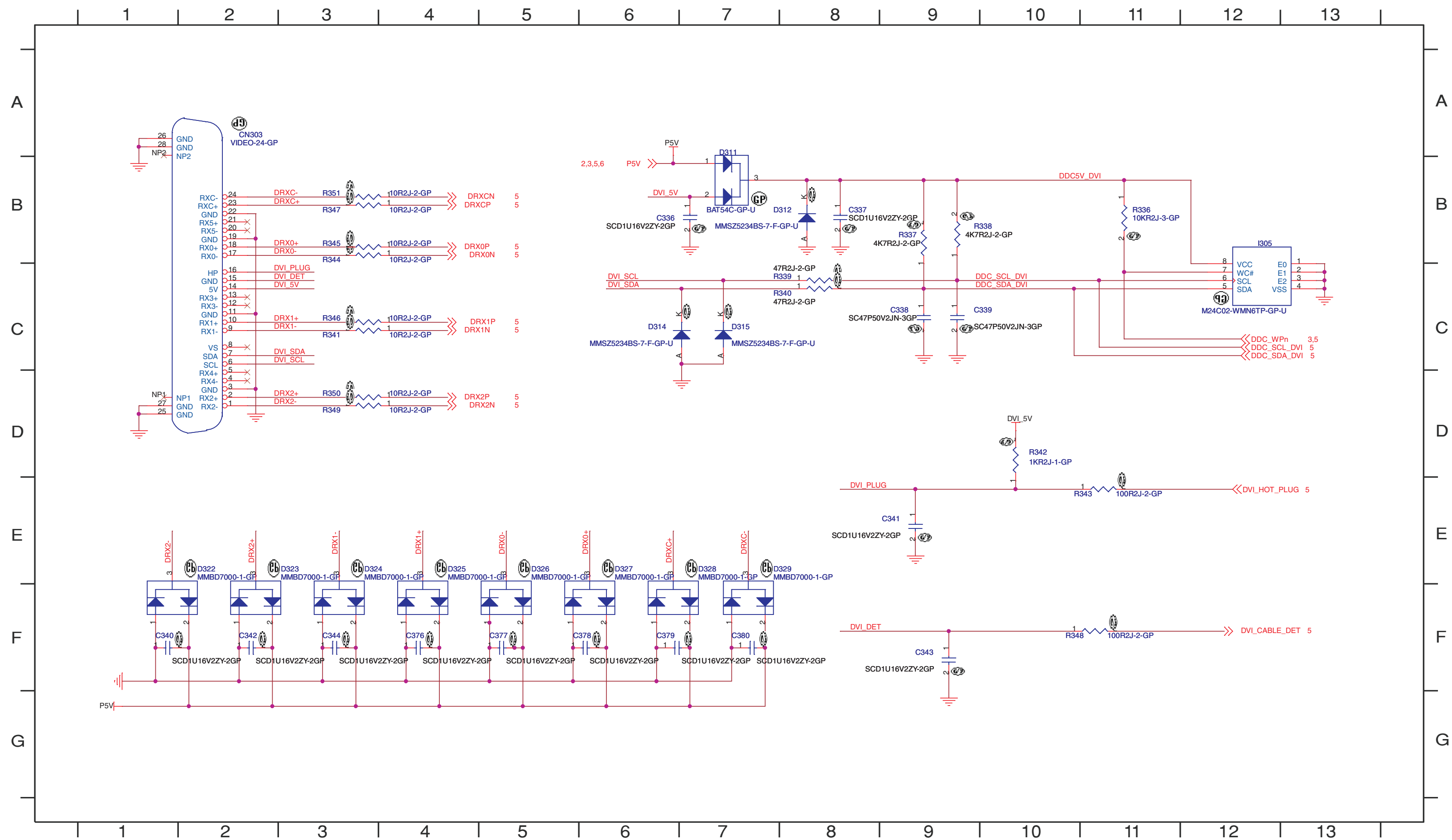
8.3.2.2 ACER_LCD_A211H/A221HQ(1A1D)_SCHEMATICS_INTERFACE BOARD_POWER:



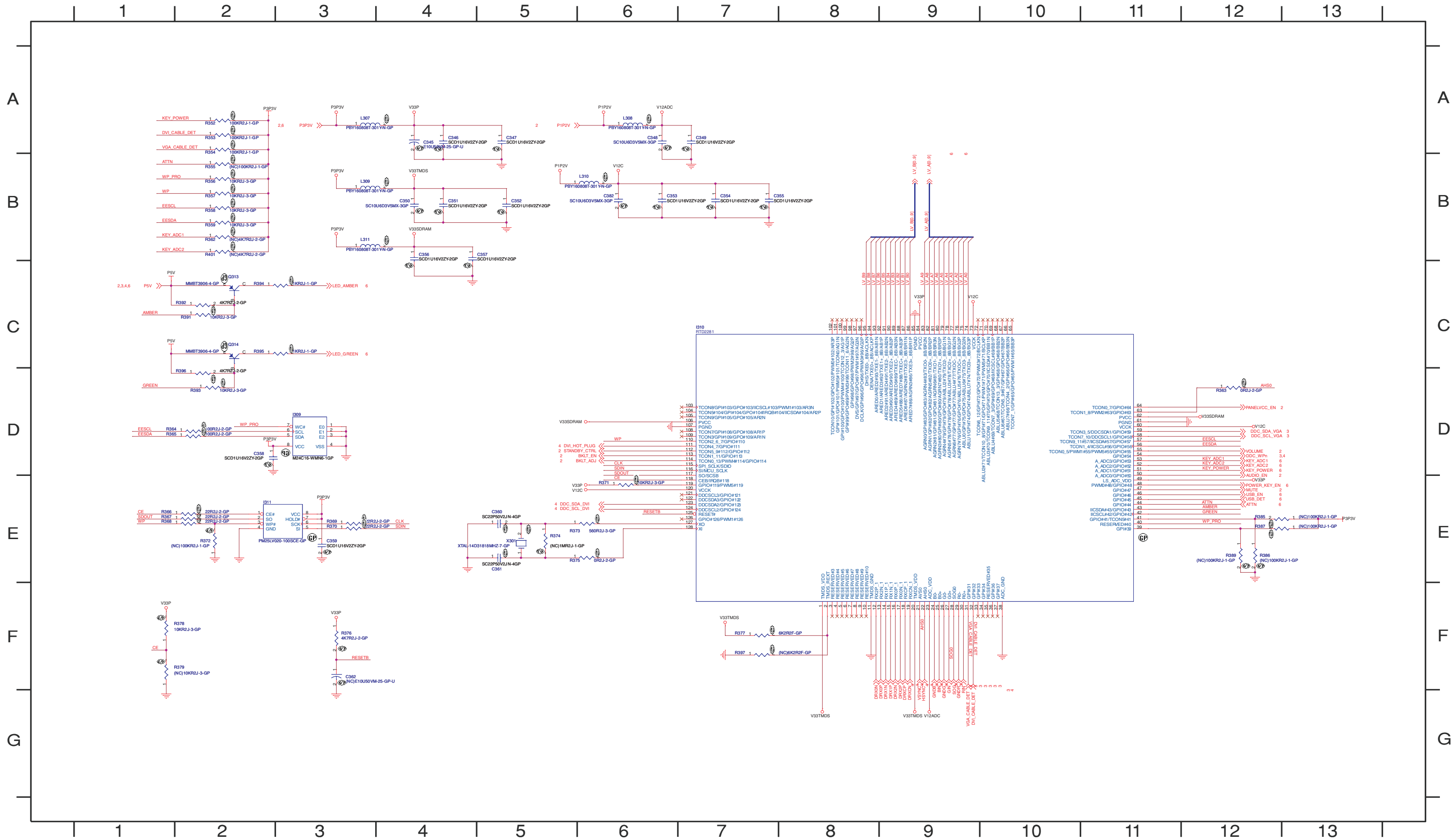
8.3.2.3 ACER_LCD_A211H/A221HQ(1A1D)_SCHEMATICS_INTERFACE BOARD_VGA&DDC:



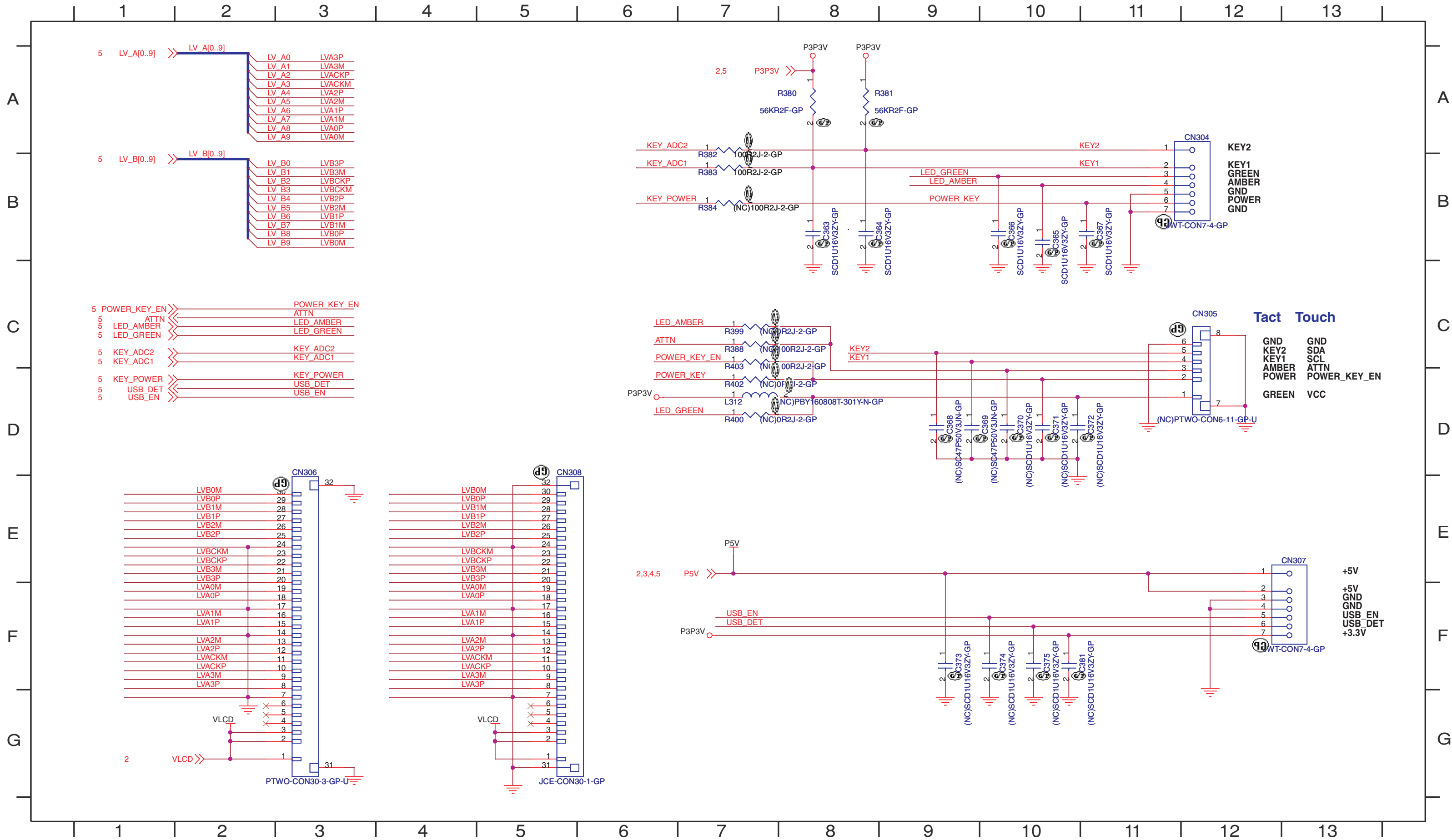
8.3.2.4 ACER_LCD_A211H/A221HQ(1A1D)_SCHEMATICS_INTERFACE BOARD_DVI&DDC:



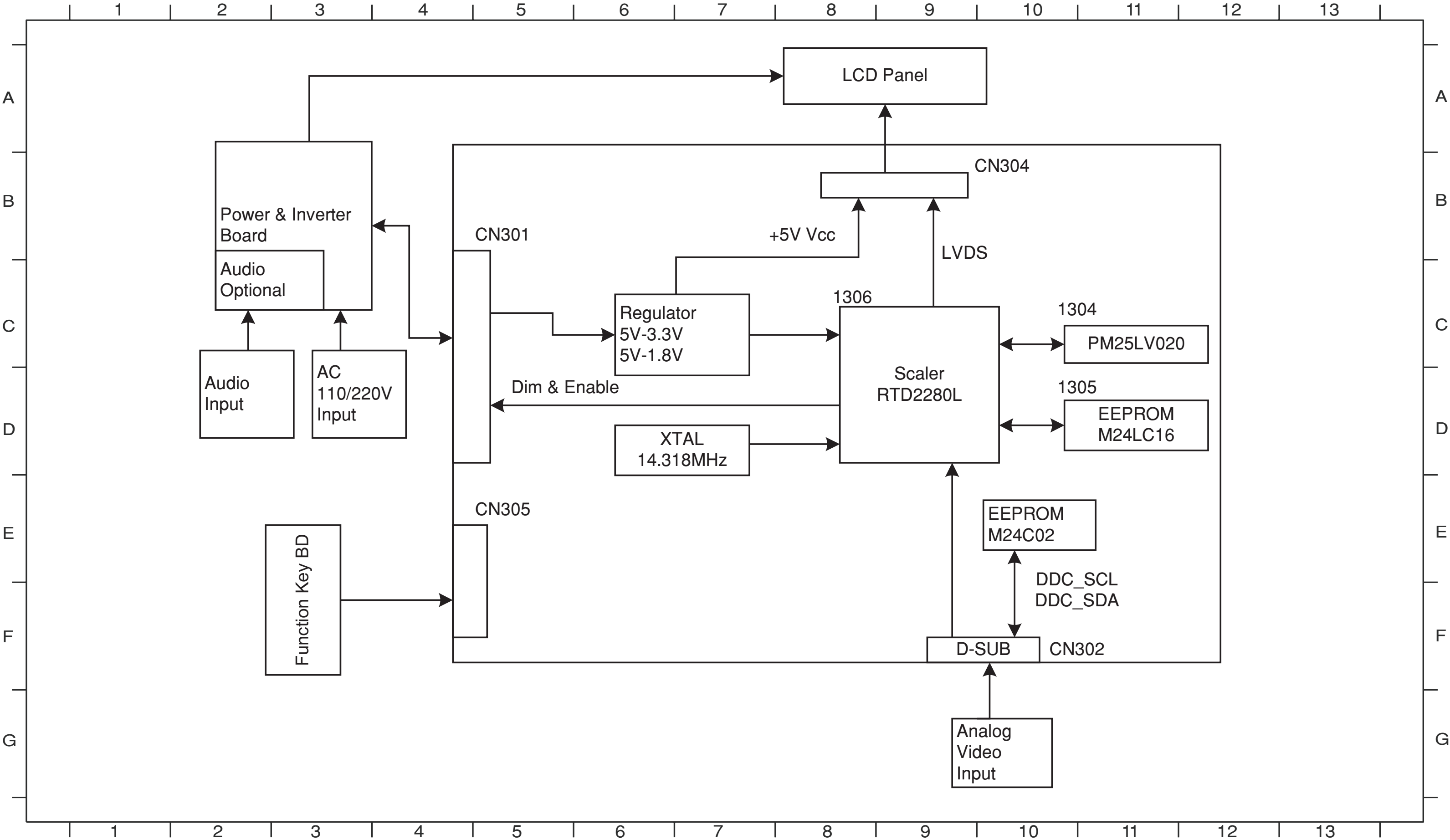
8.3.2.5 ACER_LCD_A211H/A221HQ(1A1D)_SCHEMATICS_INTERFACE BOARD_SCALER:



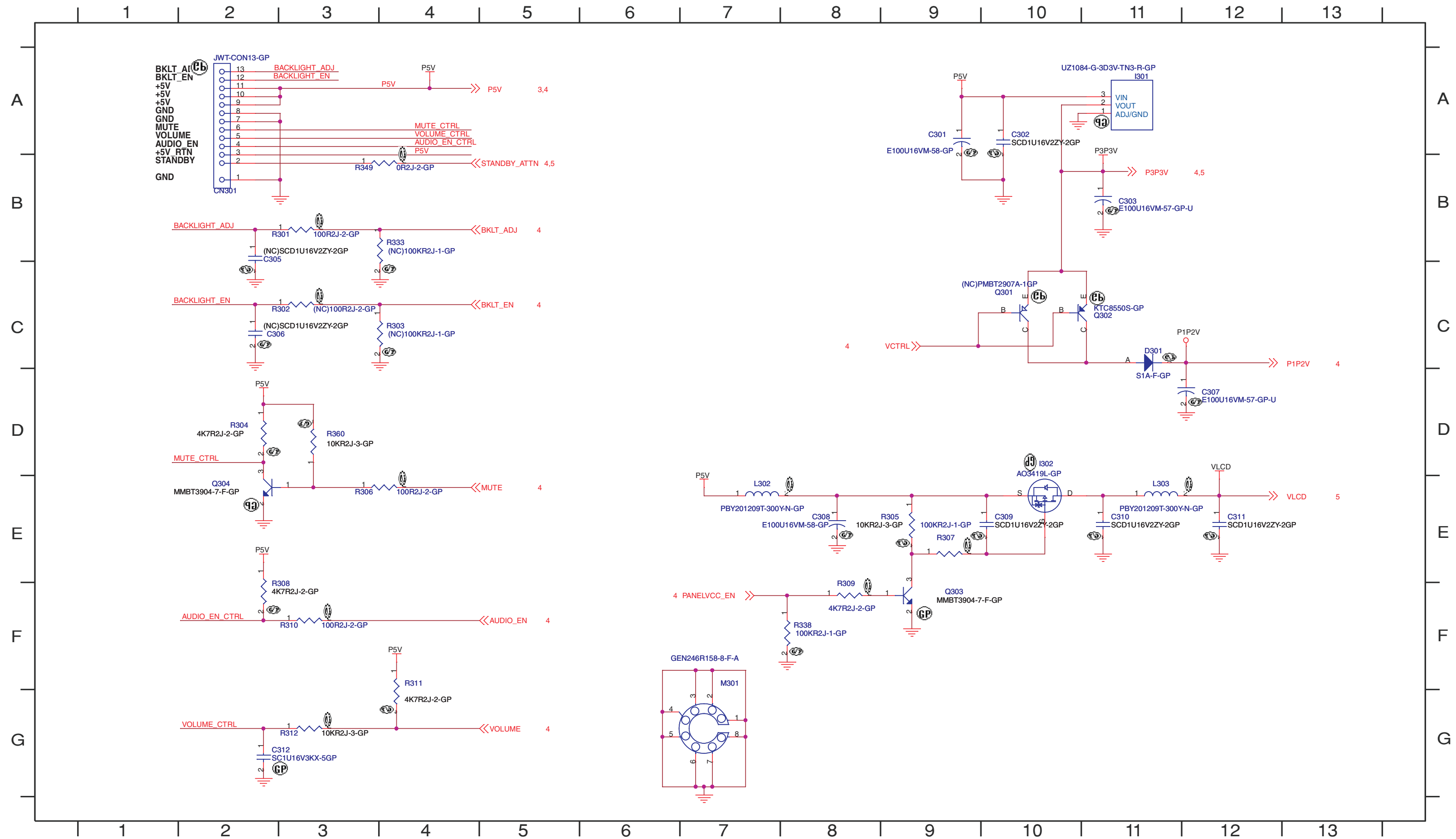
8.3.2.6 ACER_LCD_A211H/A221HQ(1A1D)_SCHEMATICS_INTERFACE BOARD_PANEL INTERFACE &



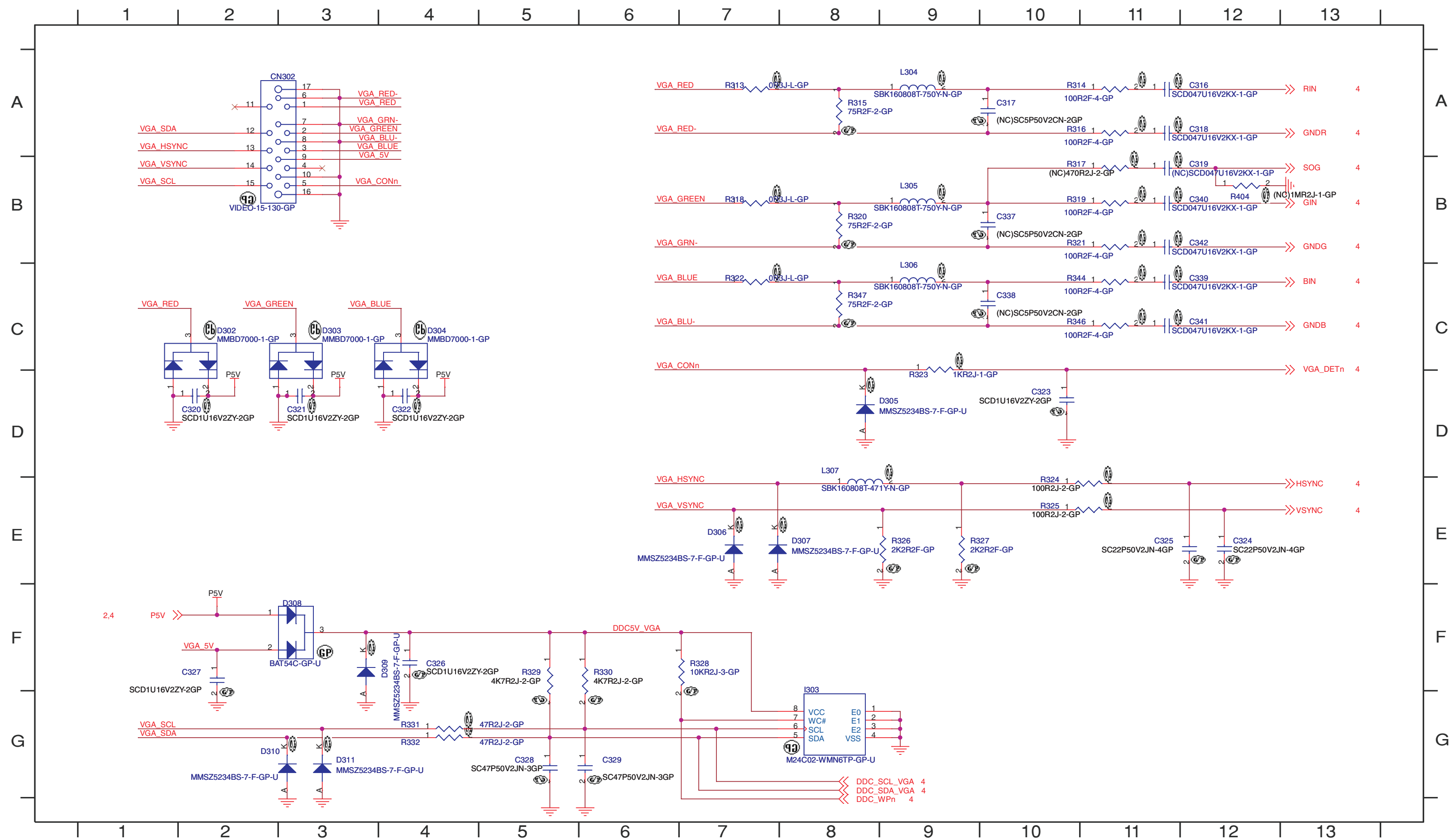
8.3.3 ACER_LCD_A211H/A221HQ_SCHEMATICS_INTERFACE BOARD_1A:
8.3.3.1 ACER_LCD_A211H/A221HQ(1A)_SCHEMATICS_BLOCK DIAGRAM:



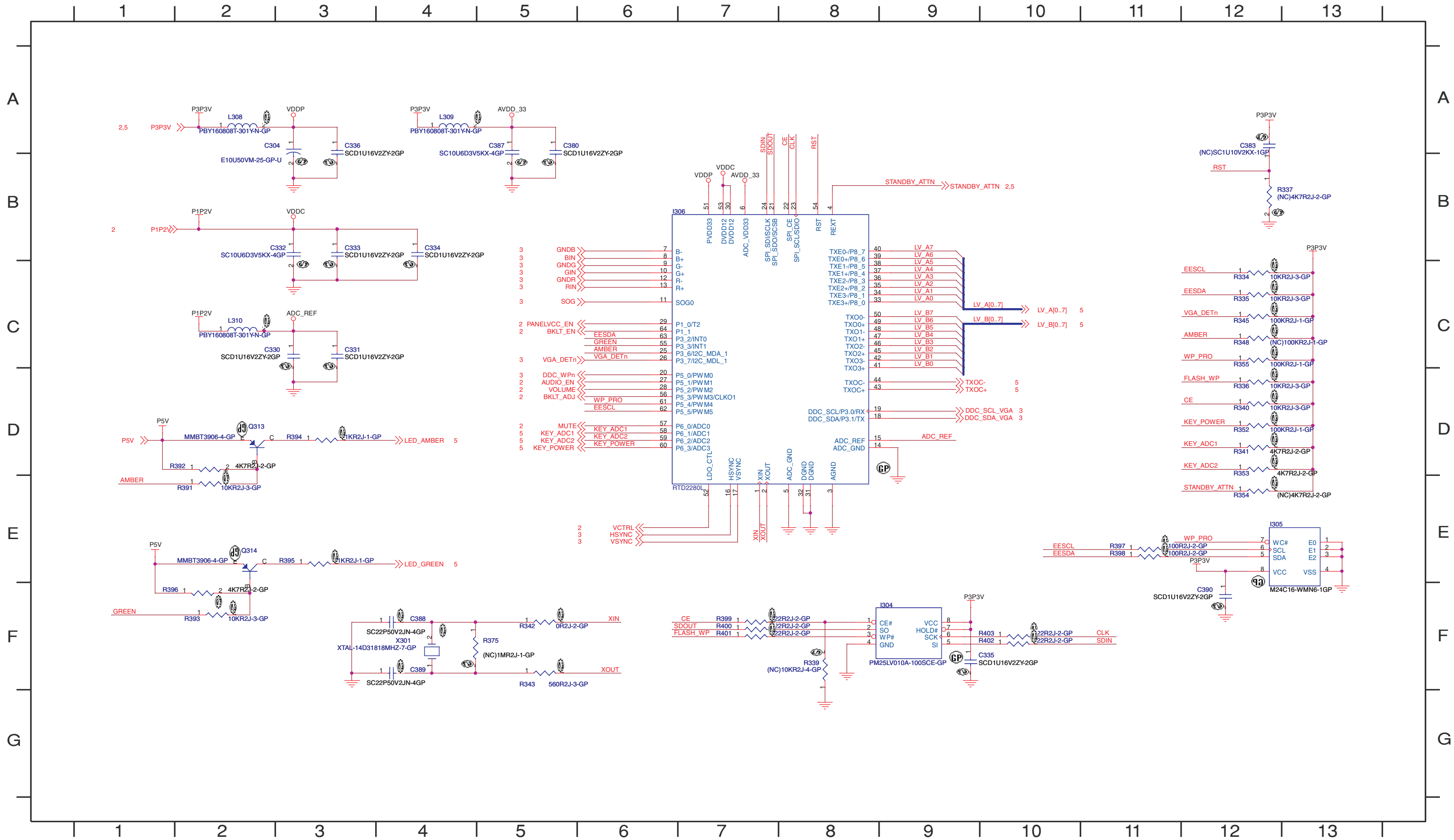
8.3.3.2 ACER_LCD_A211H/A221HQ(1A)_SCHEMATICS_INTERFACE BOARD_POWER:



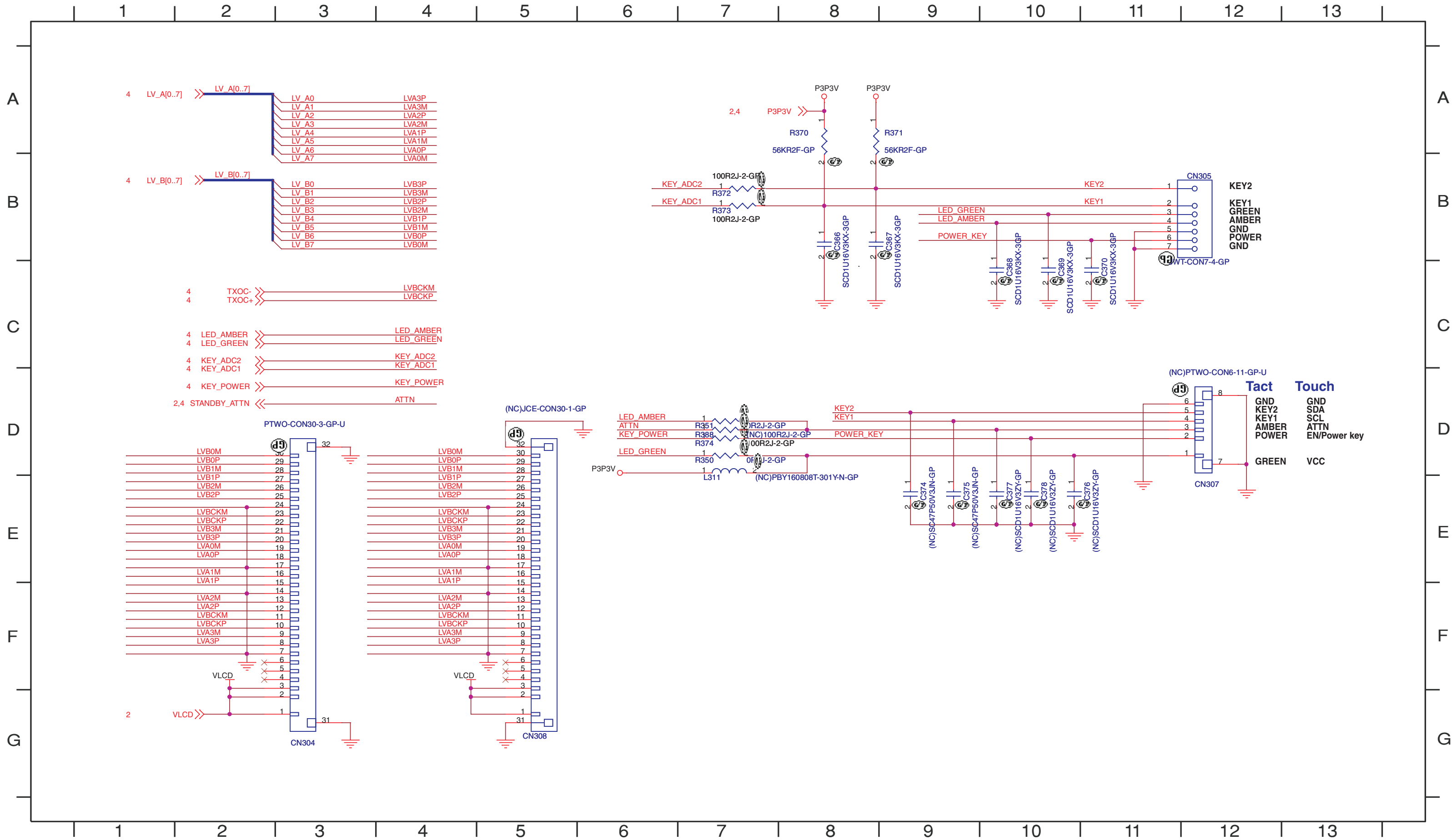
8.3.3.3 ACER_LCD_A211H/A221HQ(1A)_SCHEMATICS_INTERFACE BOARD_VGA&DDC:



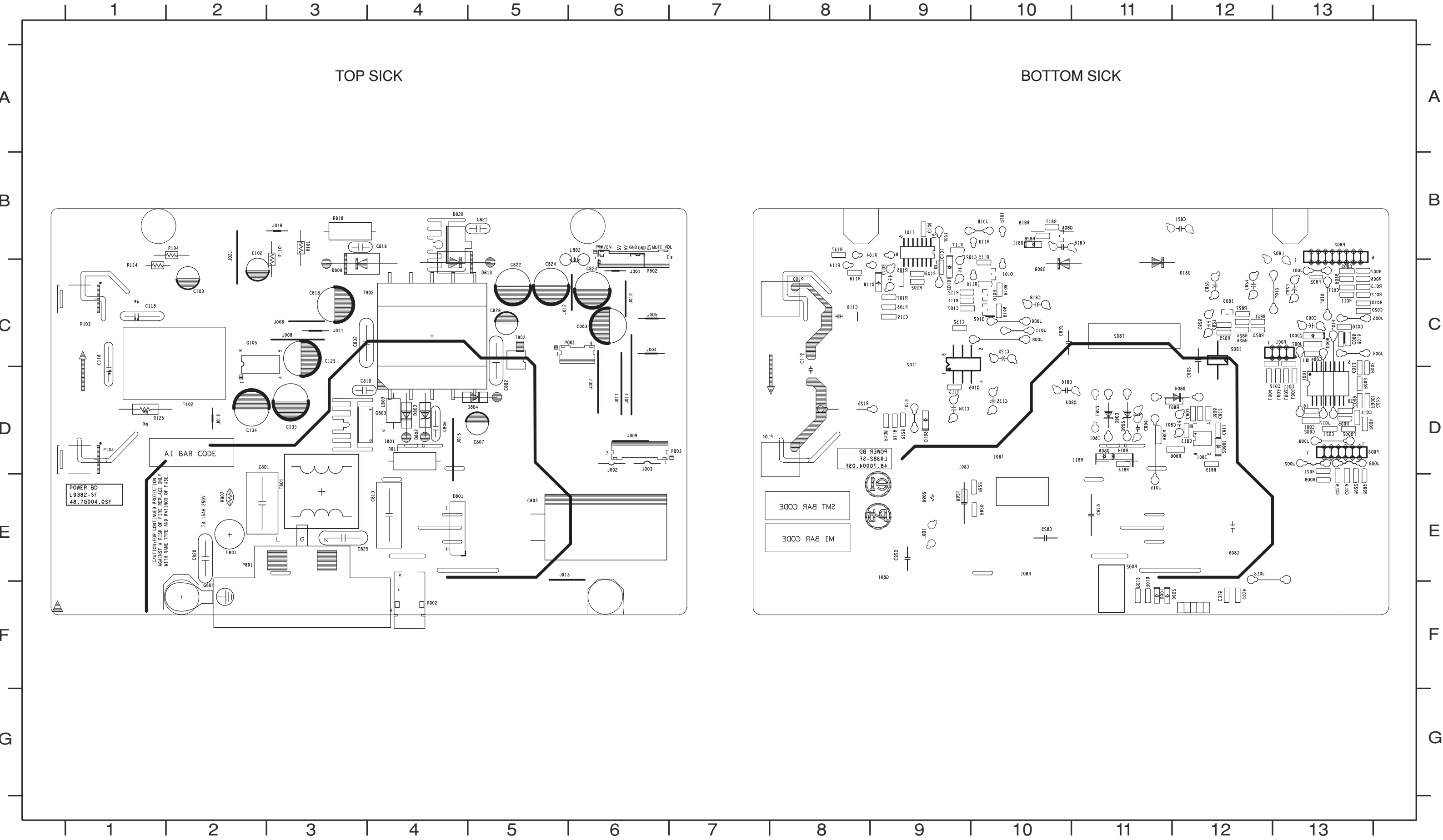
8.3.3.4 ACER_LCD_A211H/A221HQ(1A)_SCHEMATICS_INTERFACE BOARD_SCALER:



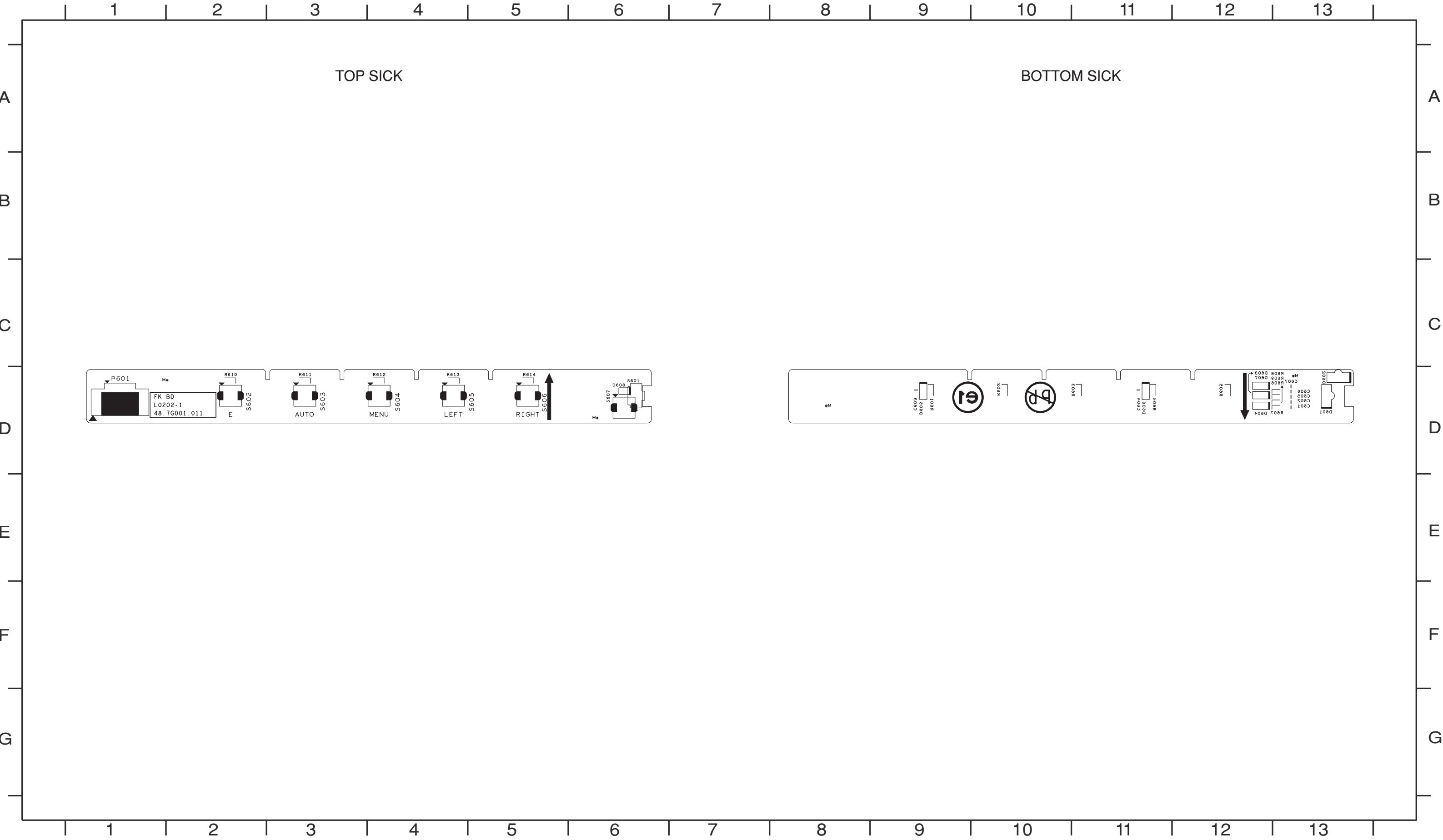
8.3.3.5 ACER_LCD_A211H/A221HQ(1A)_SCHEMATICS_INTERFACE BOARD_PANEL INTERFACE&KEY:



8.4 ACER_LCD_A211H/A221HQ_LAYOUTS_POWER BOARD(1A1D1H/1A1D/1A/1A1D1H+OD):

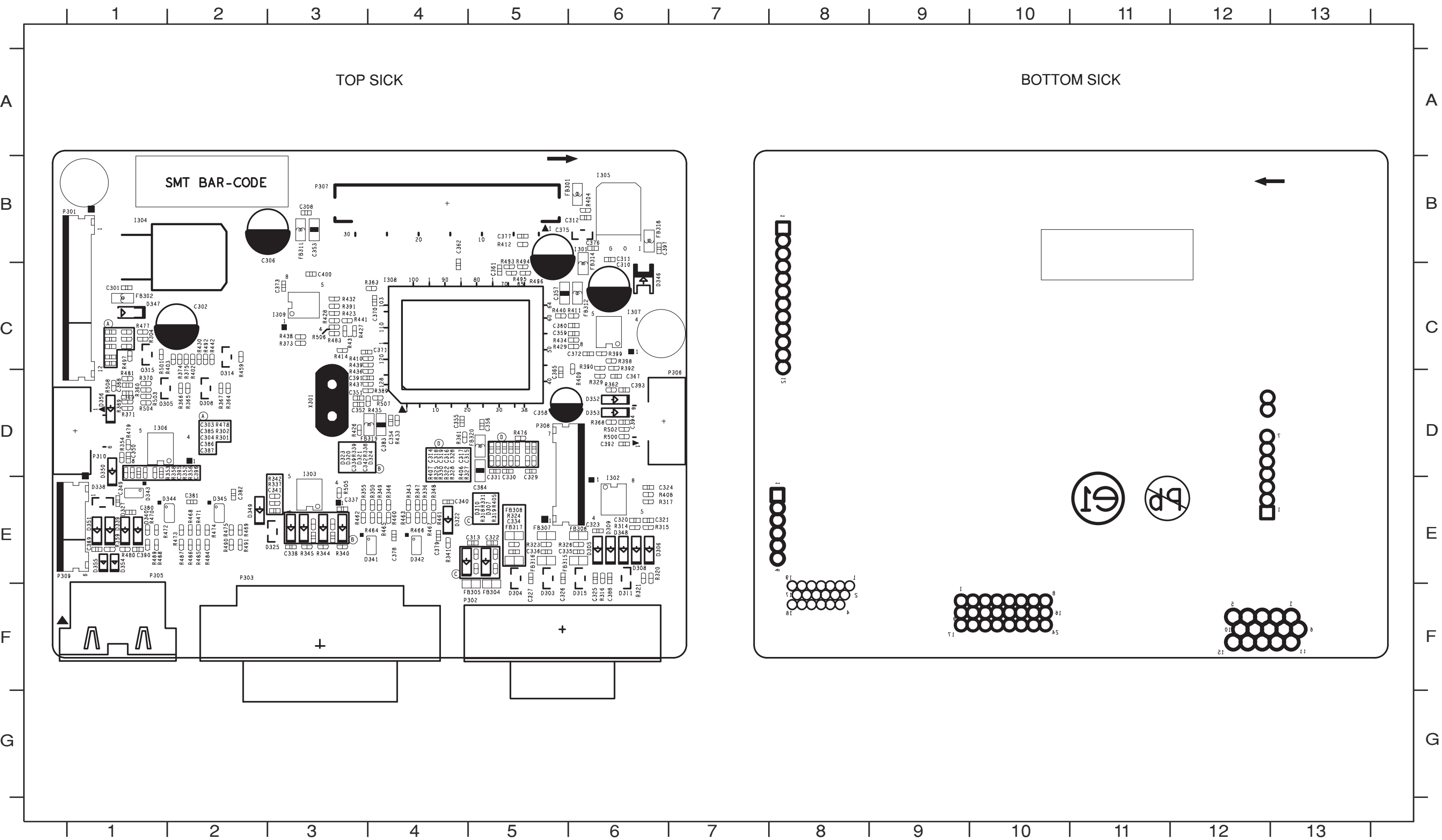


8.5 ACER_LCD_A211H/A221HQ_LAYOUTS_FUNCTION KEY BOARD(1A1D1H/1A1D/1A):

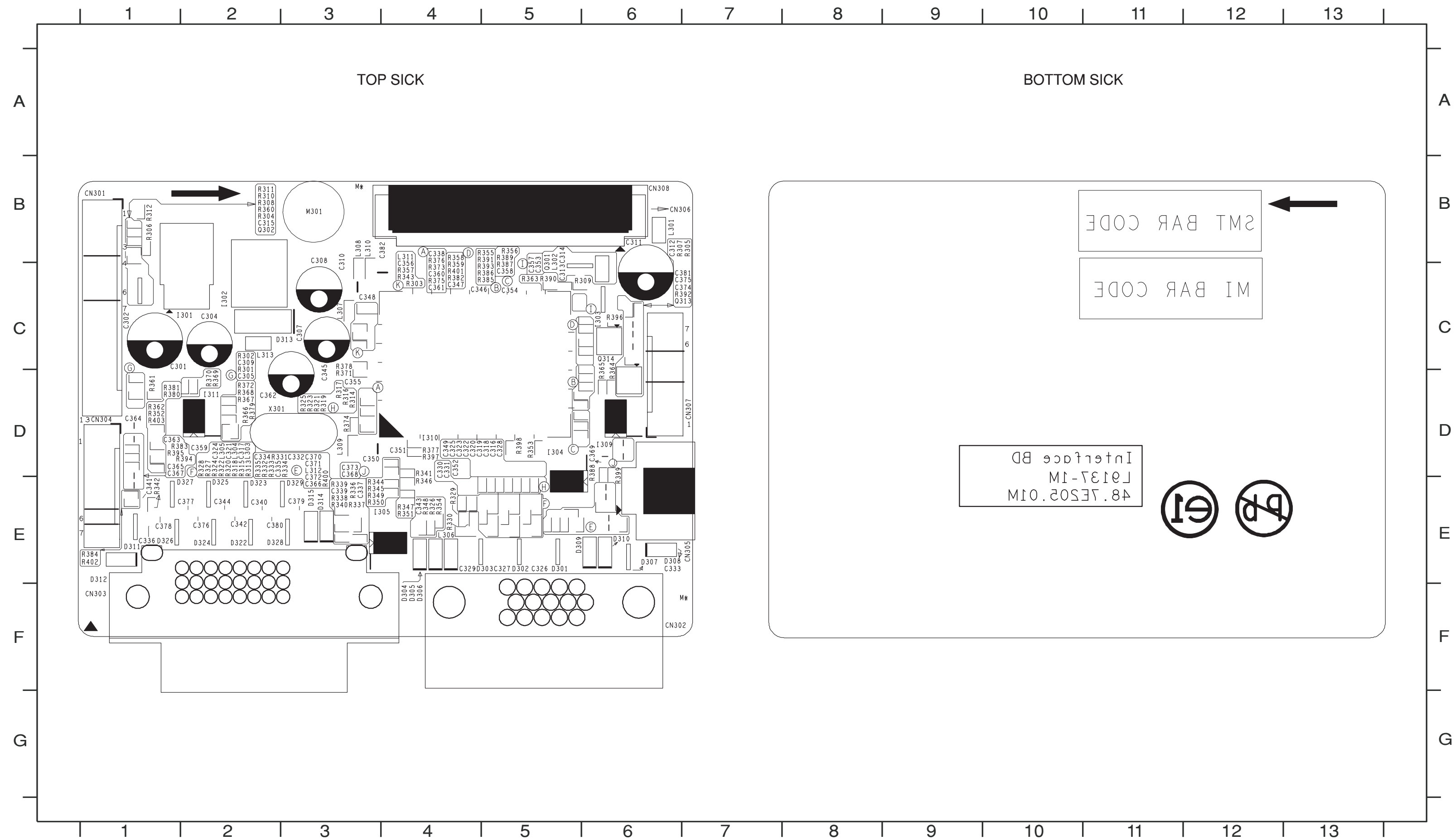


8.6 ACER_LCD_A211H/A221HQ_LAYOUTS_INTERFACE BOARD:

8.6.1 ACER_LCD_A211H/A221HQ_LAYOUTS_INTERFACE BOARD_1A1D1H:



8.6.2 ACER_LCD_A211H/A221HQ_LAYOUTS_INTERFACE BOARD_1A1D:



8.6.3 ACER_LCD_A211H/A221HQ_LAYOUTS_INTERFACE BOARD_1A:

