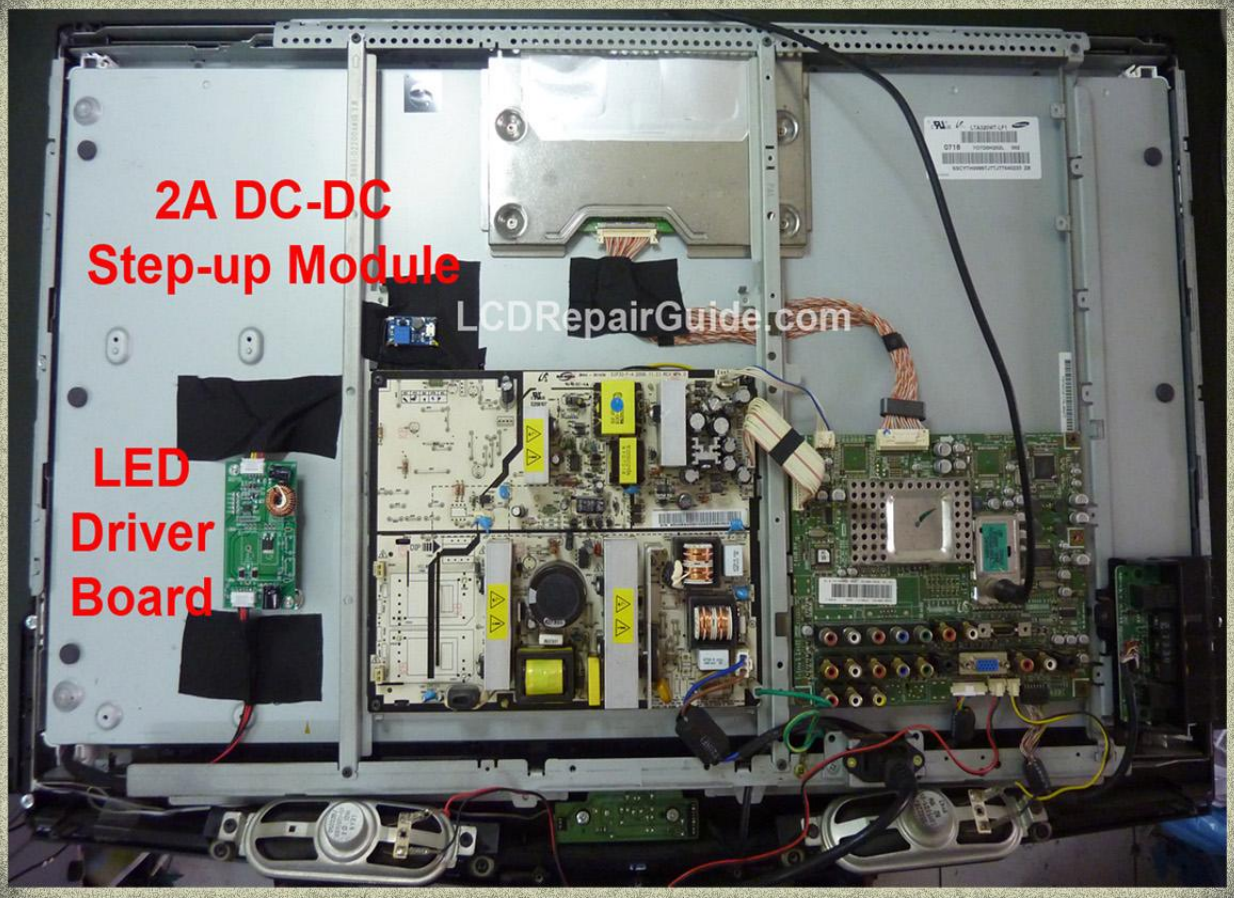
Collection of

NOVACOM
RESPALDO DE CONFIANZA

V5.0

OLED/LED/LCD TV Repair Tips



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http://www.LCDRepairGuide.com

by Kent Liew

Below Models Interconnect Diagram Move to Bonus-B Section

55LM6200-Interconnect_2012……..4

55LM6700-Interconnect_2013……8

55LM8600-3D-Interconnect_2012……..14

55LN5700-Interconnect_2014……..21

55LS4500-Interconnect_2014……..26

55UB9500-Interconnect_2014……..34

55UF7600-SMPS_T-CON_Mainboard_Interconnect_2015…47

60LN5400-Interconnect_2013……..51

65LB5200-Interconnect_2014……..57

65UF9500-UHD_Interconnect_2015……65

84UB9800-Interconnect_2014……..76

OLED65G6P-Interconnect_2016……..……91

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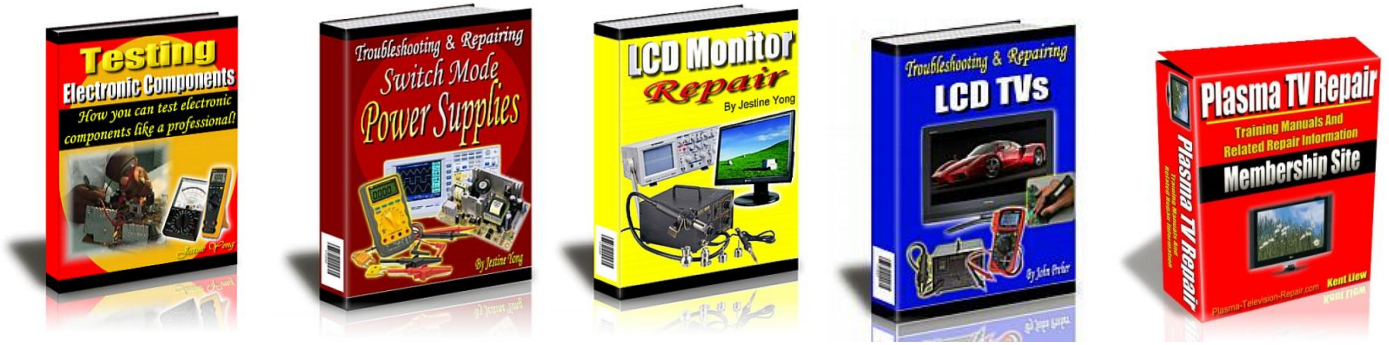


55LM6200 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen.
100% = 2.91V. Follow the P-DIM signal all the way to the SMPS.

DIM OR DARK PICTURE AREA (LED SINGLE BLOCK TEST):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 73V TP210.
Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump any of the blocks grounding pin on P202 or P203 (V1~12) while observing the picture and each block should turn on maximum.

P202 Black Plug "SMPS" To "Panel LEDs"

Pin	Label	Run	Diode Check
1	VC-6	*1.18V~23.62V	OL
2	VC-5	*1.18V~23.62V	OL
3	VC-4	*1.18V~23.62V	OL
4	VC-3	*1.18V~23.62V	OL
5	VC-2	*1.18V~23.62V	OL
6	VC-1	*1.18V~23.62V	OL
7	n/c	n/c	OL
8	LED+	73V	OL

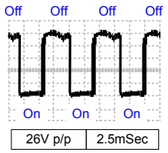
*White to Black screen

P203 White Plug "SMPS" To "Panel LEDs"

Pin	Label	Run	Diode Check
1	LED+	73V	OL
2	n/c	n/c	OL
3	VC-12	*1.18V~23.62V	OL
4	VC-11	*1.18V~23.62V	OL
5	VC-10	*1.18V~23.62V	OL
6	VC-9	*1.18V~23.62V	OL
7	VC-8	*1.18V~23.62V	OL
8	VC-7	*1.18V~23.62V	OL

*White to Black screen

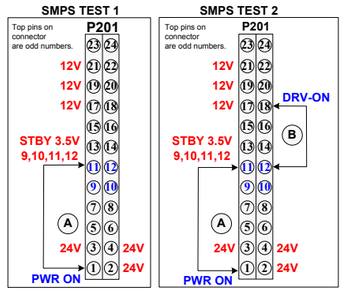
LED Drive Signal 50% Backlight Setting On the Cust. Menu.



Any (VC) pin LED Block grounding pulse

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2400 on the Main board.
(A) Jump pins 9, 10, 11 or 12 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 36V to the Inverter Section of the SMPS. Remove AC power. Leave the jumper in place. No Backlights at this time. Backlight B+ will be 56.25V at this time.
During Test 1, the Error LED (after 1 minute) begins to blink 5 times every 5 seconds.
Test 1 LED Ground Return Line (8.57V).

SMPS TEST 2: (Turning on the Backlights)
(B) Jump pins 9, 10, 11 or 12 (3.5V) to pin 18 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now jump to 74V. During Test 2, the Error LED (immediately) begins to blink 6 times every 5 seconds.
Test 2 LED Ground Return Line is (0.89V).



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect either P202 or P203. When AC is reapplied, the Backlight LEDs should turn on for about 4 seconds and then shut off.

108 Total LEDs
2 Boards (Strips)
54 LEDs per/board

12 Total Blocks
6 Blocks per/board
(6 on Left, 6 on Right)
9 LEDs per/block

PANEL p/n: EAJ62088501

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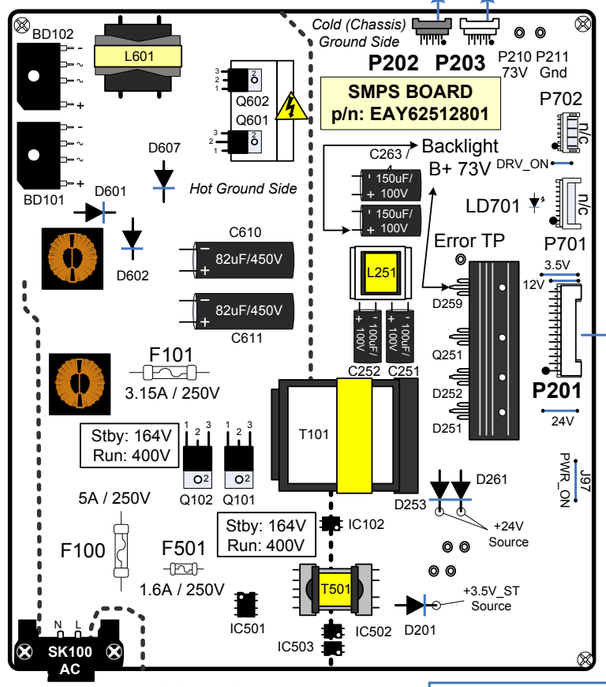
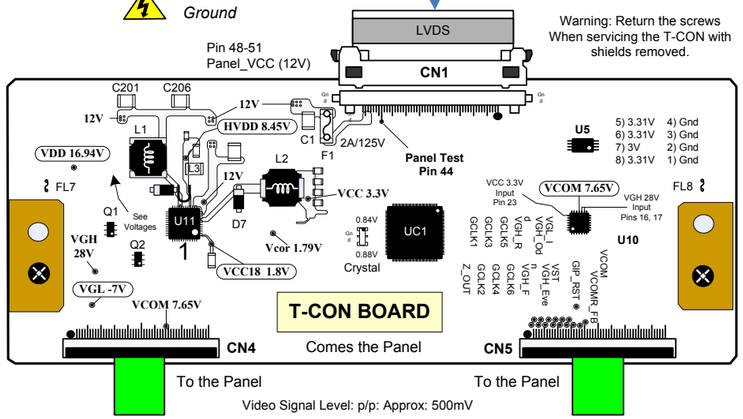
To the Panel Backlights



Indicates Hot Ground

Warning: Return the screws When servicing the T-CON with shields removed.

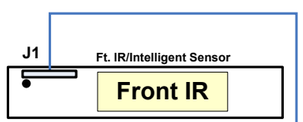


Video Signal Level: p/p: Approx: 500mV

VDD 16.94V	Pin 31, 32	VDD 16.94V	Pin 19, 20
VGL -7V	Pin 38	VGL -7V	Pin 13
HVDD 8.45V	Pin 30	HVDD 8.45V	Pin 21
VCC18 1.8V	Pin 17	VCC18 1.8V	Pin 34
VCOM 7.65V	Pin 34	VCOM 7.65V	Pin 17

Additional Voltages from U10 to the Panel with no silk screen labels:

U10 pin 1 (7.76V) CN4 pin 48 CN5 pin 3
U10 pin 2 (7.74V) CN4 pin 47 CN5 pin 4
U10 pin 3 (7.75V) CN4 pin 46 CN5 pin 5
U10 pin 4 (7.74V) CN4 pin 45 CN5 pin 6
U10 pin 5 (7.76V) CN4 pin 44 CN5 pin 7
U10 pin 6 (7.74V) CN4 pin 43 CN5 pin 8
U10 pin 8 (27.9V) CN4 pin 42 CN5 pin 9
U10 pin 9 (-6.97V) CN4 pin 41 CN5 pin 10
U10 pin 10 (*-6.95V to 27.9V) CN4 pin 40 CN5 pin 11
U10 pin 11 (*-6.95V to 27.9V) CN4 pin 39 CN5 pin 12
*Changes once a second.



Attached to Front Frame
p/n: ACQ85737340

PWR-ON: Starts 12V, 24V and 56.3V LED Power. No Backlights.

DRV-ON: Starts Backlights LED Power goes to 73.

(1) **PWM Pin 22** can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition). Output from the Video Processor. Range 0.15V to 2.91V.

P201 Connector "SMPS Board" To P2401 "MAIN Board"

Pin	Label	STBY	Run	Diode Check
24	Error	Gnd	Gnd	Gnd
23	n/c	n/c	1.3V	OL
22	P-DIM	0V	0.15V~2.91V	OL
21	12V	0V	12V	0.49V
20	n/c	n/c	n/c	n/c
19	12V	0V	12V	0.49V
18	DRV-ON	0V	3.49V	OL
17	12V	0V	12V	0.49V
16	n/c	n/c	n/c	OL
13~15	Gnd	Gnd	Gnd	Gnd
9~12	3.5V (STBY)	3.55V	3.53V	2.64V
5~8	Gnd	Gnd	Gnd	Gnd
2~4	24V	0V	24.9V	1.09V
1	PWR-ON	0V	3.41V	1.16V

P4800 Connector "MAIN Board" To J1" Magic Remote

Pin	Label	STBY	Run	Diode Check
1	3.3V	0V	3.29V	0.56V
2	Gnd	Gnd	Gnd	Gnd
3	RX	0V	3.29V	0.98V
4	TX	0V	3.28V	1.08V
5	RESET	0V	0V	1.18V
6	DC	0V	0V	0.9V
7	DD	0V	0V	OL
8	Gnd	Gnd	Gnd	Gnd

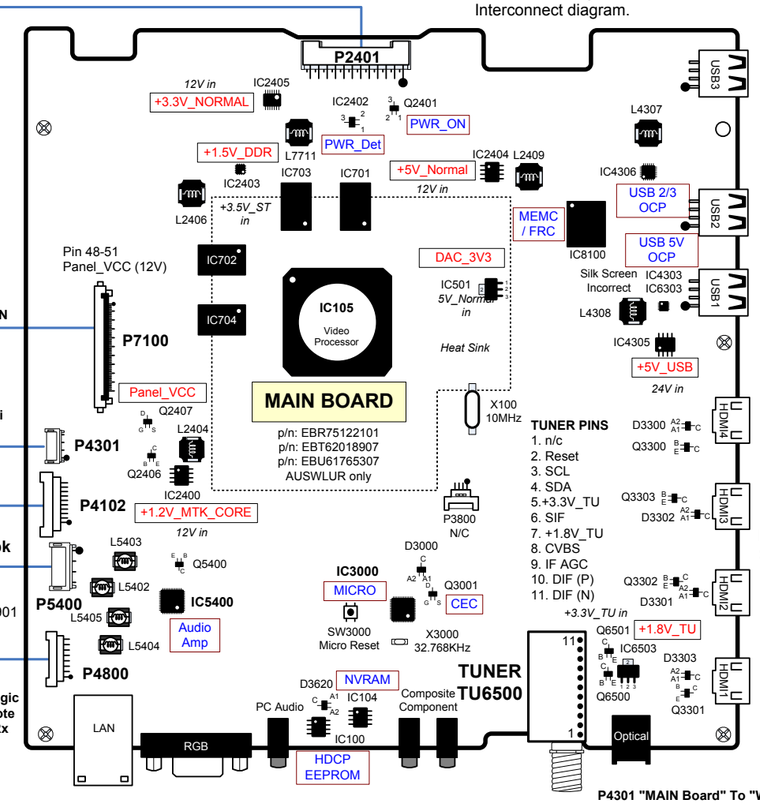
No Local Dimming
In the Model.

LD701: Normal Off. Blinking means error. Abnormal Backlight drive and / or feedback.

ERROR: Is grounded by the Main board and not used. The Error TP is connected to this line, so it is also ground.

For LVDS Waveforms see Page 4 of the Interconnect diagram.

For DC voltages for Main board components see Page 2 of the Interconnect diagram.



P2401 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2-4	OL
5-8	Gnd
9-12	2.3V
13-15	Gnd
16	OL
17	OL
18	1.65V
19	OL
20	OL
21	OL
22	0.86V
23	0.86V
24	Gnd

For DC voltages See P201 Chart

To T-CON

To Wi-Fi Tx/Rx

To Ft. IR

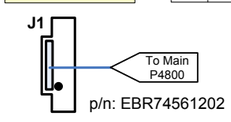
To Spk

12.5V Each Pin
SPK p/n: EAB62648901

To Magic Remote Tx/Rx

PANEL TEST
To run the T-CON "Panel Test", remove the LVDS cables. Jump 12V to the 12V fuse. Jump VCC 3.3V to pin 44 on CN1. White, Red, Blue, Green and Black patterns show on screen.

Magic Remote Tx/Rx



p/n: EBR74561202

P4102 "MAIN Board" To J1 "IR Board"

Pin	Label	STBY	Run	Diode
1	SCL	3.55V	3.49V	OL
2	SDA	3.55V	3.49V	OL
3	Gnd	Gnd	Gnd	Gnd
4	KEY 1	3.55V	3.49V	OL
5	KEY 2	3.55V	3.49V	OL
6	3.5V_ST	3.55V	3.49V	2.3V
7	Gnd	Gnd	Gnd	Gnd
8	LED_R	1.54V	0V	OL
9	IR	3.51V	3.46V	OL
10	Gnd	Gnd	Gnd	Gnd

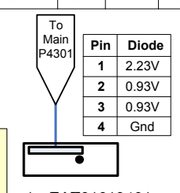
P4800 "MAIN Board" To J1 "MAGIC Remote"

Pin	Label	STBY	Run	Diode
1	3.3V	0V	3.24V	0.57V
2	Gnd	Gnd	Gnd	Gnd
3	RX	0V	3.24V	1.10V
4	TX	0V	3.26V	1.10V
5	RESET	0V	3.26V	1.10V
6	DC	0V	0V	0.79V
7	DD	0V	0V	OL
8	Gnd	Gnd	Gnd	Gnd

P4301 "MAIN Board" To "Wi-Fi Transmitter"

Pin	Label	STBY	Run	Diode
1	+5V_USB	0.05V	4.99V	2.57V
2	WIFI_DM	0V	0.05V	0.7V
3	WIFI_DP	0V	0.05V	0.7V
4	Gnd	Gnd	Gnd	Gnd

Wi-Fi Tx/Rx



Pin	Diode
1	2.23V
2	0.93V
3	0.93V
4	Gnd

p/n: EAT61613401

55LM6200 Main Board DC Voltages

IC100

Pin	HDCP EEPROM
[1]	n/c
[2]	n/c
[3]	n/c
[4]	Gnd
[5]	3.35V
[6]	3.35V
[7]	3.31V
[8]	3.31V (3.3V_Normal)

IC104

Pin	NVRAM Memory
[1]	0V
[2]	Gnd
[3]	3.32V
[4]	Gnd
[5]	3.32V
[6]	3.32V
[7]	Gnd
[8]	3.31V (3.3V_Normal)

IC501

Pin	DAC_3V3 Regulator
[1]	5.14V (5V_Normal)
[2]	3.26V
[3]	Gnd

IC2400

Pin	+1.2V_MTK_CORE Regulator
[1]	Gnd
[2]	12.07V (12V In)
[3]	Gnd
[4]	0.8V
[5]	0.85V
[6]	3.51V
[7]	1.27V (Out)
[8]	1.27V (Out)

Q2401

Pin	PWR_On Switch
[1]	3.51V (Out)
[2]	2.83V
[3]	3.5V_ST (In)

Q2406

Pin	Panel_VCC Driver
[B]	0.64V
[C]	0.1V
[E]	Gnd

IC2402

Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.64V
[3]	3.68V

IC2403

Pin	+1.5V_DDR Regulator
[1]	3.5V_ST (In)
[2]	3.5V_ST (In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.72V
hen Measured [8]	1.5V Sound goes Loud
[9]	1.84V
[10]	1.54V (1.5V_DDR) Out
[11]	1.54V (1.5V_DDR) Out
[12]	1.54V (1.5V_DDR) Out
[13]	5.07V
[14]	n/c
[15]	3.48V
[16]	3.5V_ST (In)

IC2404

Pin	(+5V_NORMAL) Regulator
[1]	3.42V
[2]	0.78V
[3]	5.47V
[4]	5.44V
[5]	Gnd
[6]	5.13V
[7]	10.49V
[8]	12.07V (12V In)

IC2405

Pin	+3.3V_NORMAL Regulator
[1]	3.33V
[2]	0.77V
[3]	5.49V
[4]	5.46V
[5]	Gnd
[6]	5.44V
[7]	3.41V
[8]	Gnd
[9]	Gnd
[10]	3.32V (3.3V_Normal Out)
[11]	3.32V (3.3V_Normal Out)
[12]	8.74V
[13]	12.07V (12V In)
[14]	12.07V (12V In)

IC4303

Pin	5V for USB OCP
[1]	0V (Gnd)
[2]	5.11V (In)
[3]	5.11V (In)
[4]	0V (Gnd)
[5]	0V
[6]	0V
[7]	0.05V
[8]	5.11V (Out)
[9]	5.11V (Out)
[10]	3.31V

Silked Screend IC6303

IC4305

Pin	5V for USB Regulator
[1]	11.08V
[2]	24.61V (24V In)
[3]	3.32V
[4]	1.25V
[5]	0.8V
[6]	0.51V
[7]	Gnd
[8]	5.11V (5V_USB) Out

IC4306

Pin	+1.5V_DDR Regulator
[1]	3.51V
[2]	0.64V
[3]	n/c
[4]	n/c
[5]	3.29V
[6]	3.28V
[7]	3.29V
[8]	3.29V
[9]	5.0V (Out)
[10]	Gnd
[11]	Gnd
[12]	5.0V (Out)
[13]	5.0V (In)
[14]	5.0V (In)
[15]	5.0V (In)
[16]	5.0V (In)
[17]	5.0V (In)
[18]	
[19]	Gnd
[20]	Gnd
[21]	12.07V (12V In)
[22]	12.07V (12V In)
[23]	Gnd
[24]	6.25V

IC6503

Pin	+1.8V_TU Regulator
[1]	0V (Gnd)
[2]	1.8V (1.8V_TU) Out
[3]	3.31V (3.3V_TU) In

Q2407

Pin	Panel_VCC Switch
[G]	1.9V
[S]	12.07V
[D]	12.07V

Q3001

Pin	CEC FET
[G]	3.51V
[S]	3.48V
[D]	3.47V

Q3300
Q3301
Q3302
Q3303

Pin	HDMI 1-4 Hot Swap
B	0V
C	0V
E	Gnd

Q5400

Pin	Amp Mute Driver
[B]	0V (Amp_Mute) Ctl
[C]	3.27V (Amp_Mute) Out
[E]	Gnd

Q6500

Pin	TUNER_SIF Buffer
[B]	0.22V
[C]	0V (Gnd)
[E]	0.91V

Q6501

Pin	Tuner (Analog) Video Buffer
[B]	3.61V
[C]	0V (Gnd)
[E]	4.28V

Q7700

Pin	VGL_FB / VGL Switch
[B]	0.67V
[C]	4.67V
[E]	0V

Q7701

Pin	VGH / VGH_FB Switch
[B]	15.91V
[C]	15.63V
[E]	16.6V

Q7702

Pin	EPI_LOCK6 Drives Q7703
[B]	0.77V
[C]	0.02V
[E]	0V (Gnd)

Q7703

Pin	EPI_LOCK6 Source
[B]	0V (Gnd)
[C]	3.31V
[E]	0V (Gnd)

55LM6200 T-CON Board Component Voltages

U10 DC-to-DC

Panel Power
Level Shifter

Pin		Pin	
[1]	7.76V (GCLK1)	[15]	(-6.97) (VGL)
[2]	7.74V (GCLK2)	[16]	27.96V (VGH)
[3]	7.75V (GCLK3)	[17]	27.96V (VGH)
[4]	7.74V (GCLK4)	[18]	7.65V (V_COM)
[5]	7.76V (GCLK5)	[19]	7.65V
[6]	7.74V (GCLK6)	[20]	7.62V
[7]	2.5V	[21]	16.9V
[8]	27.9V (VGH_R)	[22]	Gnd
[9]	(-6.97) (VGH_F)	[23]	3.3V (VCC)
[10]	*(-6.95V to 27.9V) (VGH_ODD)	[24]	0V
[11]	*(-6.95V to 27.9V) (VGH_EVEN)	[25]	0V
[12]	(-6.91) (VST)	[26]	0.7V
[13]	(-6.88) (GIP_RST)	[27]	1.27V
[14]	(-6.97)	[28]	3.24V

* EVERY Second

U11 DC-to-DC

T-CON and Panel Power
DC-to-DC Conv

Pin		Pin	
[1]	1.81V	[25]	4.95V
[2]	1.86V	[26]	0.53V
[3]	Gnd	[27]	3.3V
[4]	3.3V	[28]	3.3V
[5]	1.79V	[29]	4.99V
[6]	1.81V	[30]	1.3V
[7]	Gnd	[31]	16.4V
[8]	3.31V (VCC)	[32]	27.94V
[9]	3.31V (VCC)	[33]	5.69V
[10]	0V	[34]	8.21V
[11]	11.7V (Panel_VCC)	[35]	(-6.98V) (VGL_FB)
[12]	11.7V (Panel_VCC)	[36]	1.19V
[13]	11.7V (Panel_VCC)	[37]	13.86V
[14]	11.7V (Panel_VCC)	[38]	12.85V
[15]	8.45V (H_VDD)	[39]	10.91V
[16]	8.44V (H_VDD_FB)	[40]	6.55V
[17]	Gnd	[41]	4.6V
[18]	Gnd	[42]	3.5V
[19]	Gnd	[43]	7.65V
[20]	11.7V (Panel_VCC)	[44]	7.64V
[21]	11.7V (Panel_VCC)	[45]	7.63V
[22]	16.97V	[46]	7.61V (VCOM_RFB)
[23]	16.97V (VDD)	[47]	1.61V
[24]	Gnd	[48]	Gnd

U5 Buffer

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	3.31V
[8]	3.31V

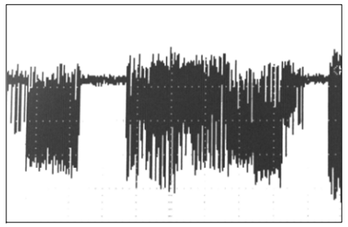
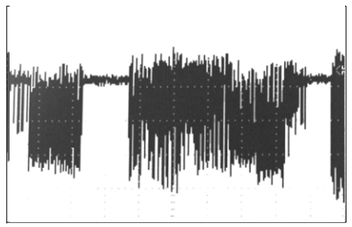
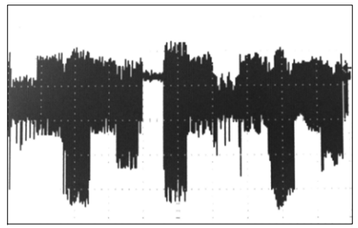
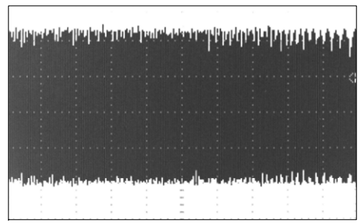
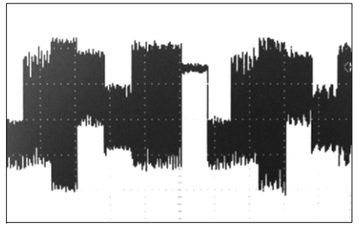
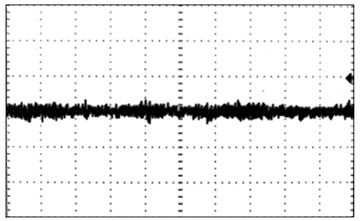
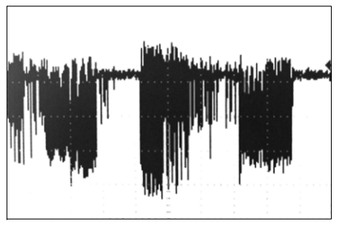
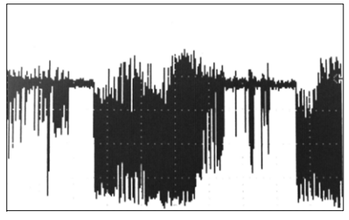
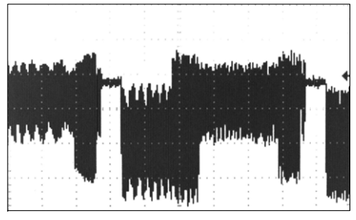
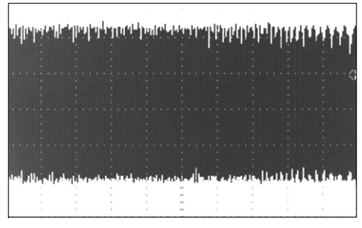
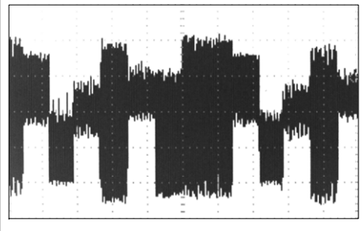
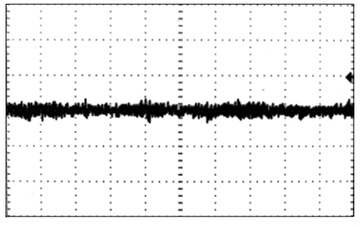
Q1 VDD Rectifier

Pin	
[1]	20.2V
[2]	16.38V
[3]	16.93V Output
[4]	12.98V
[5]	12.98V
[6]	12.95V

Q2 VGL Rectifier

Pin	
[1]	0.56V
[2]	1.18V
[3]	(-2.9V)
[4]	(-7V) Output
[5]	2.97V
[6]	2.97V

55LM6200 P7100 LVDS Connector Video Waveforms

Pin 12	**Pin 14**	**Pin 16**	**Pin 19**	**Pin 22**	**Pin 24**
					
456mV p/p	**476mV p/p**	**484mV p/p**	**464mV p/p**	**444mV p/p**	**56mV p/p**
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
456mV p/p	**468mV p/p**	**448mV p/p**	**456mV p/p**	**476mV p/p**	**64mV p/p**

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

5LM6700 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not,

1st: Check the P-DIM level, it should rise with the percentage shown on screen. 100% = approx 3V. Follow the P-DIM signal all the way to the SMPS.

2nd: Turn off Local Dimming in the Customers Menu or unplug P701 (with power off). If the brightness returns to normal, examine the signals required for Local Dimming. (SIN, V-SYNC and SCLK). Suspect the Main Board.

You can also test each of the 12 blocks functionality by grounding the return path signal (using 220Ω resistor).

LED SINGLE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 80V on TP P210. Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump any of the blocks grounding pin on P202 or P203 (VC1~12) while observing the picture and each block should turn on maximum. (No: Bad Panel, Yes: Bad SMPS).

P202 Black Plug "SMPS Board" To "Panel LEDs"

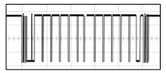
Pin	Label	Run	Diode Check
1	VC-6	*1.44V~24.4V	OL
2	VC-5	*1.44V~24.4V	OL
3	VC-4	*1.44V~24.4V	OL
4	VC-3	*1.44V~24.4V	OL
5	VC-2	*1.44V~24.4V	OL
6	VC-1	*1.44V~24.4V	OL
7	n/c	n/c	OL
8	LED+	81V	OL

*White to Black screen

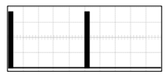
P203 White Plug "SMPS Board" To "Panel LEDs"

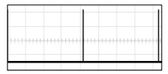
Pin	Label	Run	Diode Check
1	LED+	81V	OL
2	n/c	n/c	OL
3	VC-12	*1.44V~24.4V	OL
4	VC-11	*1.44V~24.4V	OL
5	VC-10	*1.44V~24.4V	OL
6	VC-9	*1.44V~24.4V	OL
7	VC-8	*1.44V~24.4V	OL
8	VC-7	*1.44V~24.4V	OL

*White to Black screen

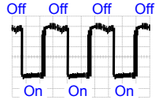

MOSI Pin 4 P7001
3.44V p/p
Local Dimming On

MOSI Pin 4 P701
3.44V p/p
Local Dimming Off


SCLK Pin 3 P701
3.4V p/p


V-SYNC Pin 1 P701
3.3V p/p

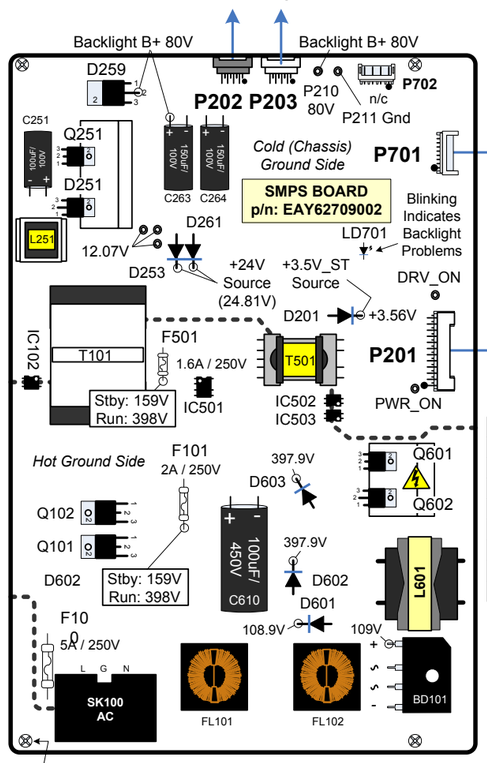
LED Drive Signal 50 IRE



26V p/p	2.5mSec

Any drive signal
V1 through V12

To the Panel Backlights Connection at the bottom of the panel.



This screw is a different size with washer

Indicates Hot Ground

If P202 or P203 is disconnected, the Backlights come on, on the side that is still plugged in. Then the go back off. Error line goes high and LD701 blinks 3 times every 5 seconds.

80V Backlight power.
P202 Pin 8
P203 Pin 1

LD701: Normal Off.
Blinking means error.
Abnormal Backlight drive and / or feedback.
Error line goes high 3.51V.

ERROR: Is not used by the Main board.

P701 "SMPS" to P7600 "MAIN Board"

Pin	Label	Run	Diode
1	VSYNC	3.53V	OL
2	SDA	3.36V	OL
3	SCL	3.36V	OL
4	SIN	0.16V	OL
5	GND	Gnd	Gnd
6	SCLK	0.09V	OL
7	N.C.	0V	OL
8	REVERSE	0V	OL

No Stand-By voltages

(1) PWM Pin 22 can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition). Output from the Video Processor. Range 0.14V to 2.91V.

PWR-ON: Starts 12V, 24V and 62.28V LED Power. No Backlights.

DRV-ON: Starts Backlights LED Power goes to 81.

80V Line:
PWR-ON turns on the 80V supply but it will only be 62.28V. Note: A block of LEDs can not be turned on with this voltage.
It will increase to 81V when the DRV-ON line goes high.

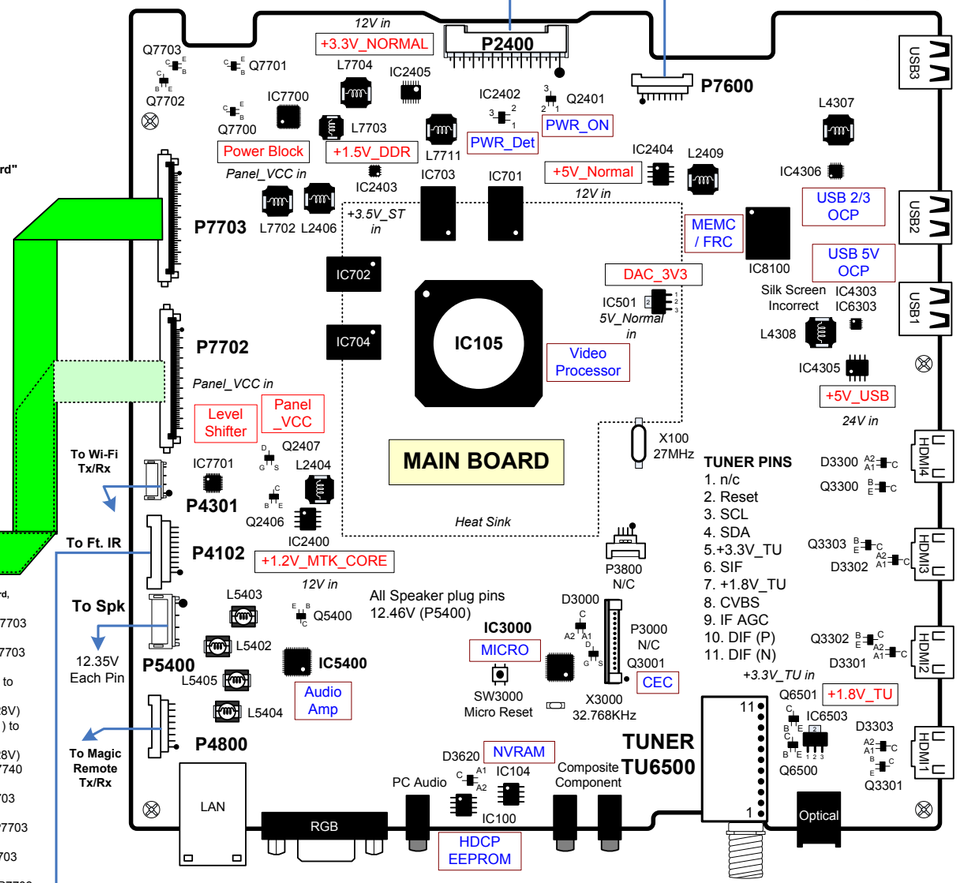
P201 "SMPS Board" To P2400 "MAIN Board"

Pin	Label	STBY	Run	Diode Check
24	ERROR	0V	0V	OL
23	n/c	0V	1.03V	OL
22	(1) PWM	0V	0.14V~2.91V	OL
21	12V	0V	12V	0.49V
20	n/c	n/c	n/c	n/c
19	12V	0V	12V	0.49V
18	DRV-ON	0V	3.52V	n/c
17	12V	0V	12V	0.49V
16	V_Sync	0V	0V	OL
13-15	Gnd	Gnd	Gnd	Gnd
9-12	3.5V STBY	3.54V	3.56V	2.64V
5-8	Gnd	Gnd	Gnd	Gnd
2-4	24V	0V	24.88V	1.64V
1	PWR-ON	0V	3.44V	1.16V

P4800 Connector "MAIN Board" To J1" Magic Remote

Pin	Label	STBY	Run	Diode Check
1	3.3V	0V	3.32V	0.56V
2	Gnd	Gnd	Gnd	Gnd
3	RX	0V	3.31V	0.9V
4	TX	0V	3.31V	1.18V
5	RESET	0V	0.14V	1.18V
6	DC	0V	0V	OL
7	DD	0V	0V	OL
8	Gnd	Gnd	Gnd	Gnd

For DC voltages for Main board components see Page 2 of the Interconnect diagram.



P2400 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2-4	OL
5-8	Gnd
9-12	2.3V
13-15	Gnd
16	OL
17	OL
18	1.62V
19	OL
20	OL
21	OL
22	0.73V
23	0.69V
24	OL

P7600 "MAIN Board" to P701 "SMPS Board"

Pin	Diode
1	OL
2	n/c
3	1.12V
4	Gnd
5	1.02V
6	1.76V
7	1.76V
8	1.09V

Main Boards used:

UA.AUMWLJR
p/n: EBR75087801,
p/n: EBT62095802
p/n: EBT62095803,
p/n: EBT62095809,
p/n: EBU61762824,
p/n: EBU61762826

UA.AUMWLJR and UA.AUMZLUR:
p/n: EBT61976122,
p/n: EBU61762829,
p/n: EBU61762825,

UA.AUMZLUR:
p/n: EBT61976121,

UA.AUMZLHR,
p/n: EBT61976127

P4102 "MAIN Board" To J1 "IR Board"

Pin	Label	STBY	Run	Diode
1	SCL	3.57V	3.55V	OL
2	SDA	3.57V	3.55V	OL
3	Gnd	Gnd	Gnd	Gnd
4	KEY 1	3.56V	3.55V	OL
5	KEY 2	3.56V	3.55V	OL
6	3.5V_ST	3.57V	3.55V	2.3V
7	Gnd	Gnd	Gnd	Gnd
8	LED_R	1.57V	0V	OL
9	IR	3.52V	3.5V	OL
10	Gnd	Gnd	Gnd	Gnd

P4800 "MAIN Board" To J1 "MAGIC Remote"

Pin	Label	STBY	Run	Diode
1	3.3V	0V	3.32V	0.56V
2	Gnd	Gnd	Gnd	Gnd
3	RX	0V	3.31V	0.9V
4	TX	0V	3.31V	1.18V
5	RESET	0V	0.14V	1.18V
6	DC	0V	0V	OL
7	DD	0V	0V	OL
8	Gnd	Gnd	Gnd	Gnd

P4301 "MAIN Board" To "Wi-Fi Transmitter"

Pin	Label	STBY	Run	Diode
1	+5V_USB	0.25V	5V	OL
2	WIFI_DM	0V	0.05V	0.7V
3	WIFI_DP	0V	0.05V	0.7V
4	Gnd	Gnd	Gnd	Gnd

To Main P4302

p/n: EAT61613401

Wi-Fi Tx/Rx

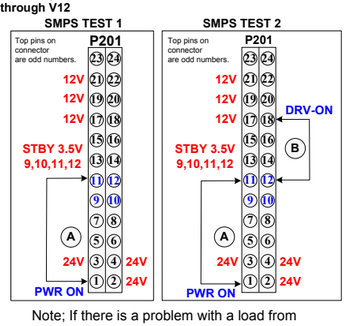
"Key Board" To J2 "Front IR"

Label	STBY	Run
Key 1	3.52V	3.52V
Gnd	Gnd	Gnd
Key 2	3.52V	3.52V
Gnd	Gnd	Gnd

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2400 on the Main board. (A) Jump pin 9, 10, 11 or 12 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 62.28V Backlight power. Remove AC power. No Backlights at this time.

During Test 1, the Error LED (after 1 minute) begins to blink 5 times every 5 seconds.
Any of the LED Ground Return Lines will be (9.25V).

SMPS TEST 2: (Turning on the Backlights) Leave 1st jumper in place. (B) Jump pin 9, 10, 11 or 12 (3.5V) to pin 18 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now jump to 78.4V. During Test 2, the Error LED (immediately) begins to blink 6 times every 5 seconds.
Any of the LED Ground Return Lines will be (1.05V).



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect either P202 or P203. When AC is reapplied, the Backlight LEDs should turn on for about 4 seconds and then shut off.

DC Voltages to the Panel developed by on the Main Board, Output from P7703

VGH_R (IC7701 pin 8) to P7703 pin 42 (28V)
VGH_F (IC7701 pin 9) to P7703 pin 41 (-5V)
VGH_ODD (IC7701 pin 10) to P7703 pin 40 (toggles between -5V and 28V)
VGH_EVEN (IC7701 pin 11) to P7703 pin 39 (toggles between -5V and 28V)
VGL_I (IC7701 pin 1) → R7740 to P7703 pin 38 (-5V)
VST (IC7701 pin 12) to P7703 pin 37 (1.4V)
VCOM (IC7701 pin 18) to P7703 pin 34 (6.68V)
VDD (IC7700 pin 23) to P7703 pin 31, 32 (16.58V)
H_VDD (IC7700 pin 16) to P7703 pin 30 (8.29V)
VCC18V (IC7700 pin 1) to P7703 pin 17 (1.8V)

DC Voltages to the Panel developed by on the Main Board, Output from P7702

VGH_R (IC7701 pin 8) to P7703 pin 9 (28V)
VGH_F (IC7701 pin 9) to P7703 pin 10 (-5V)
VGH_ODD (IC7701 pin 10) to P7703 pin 11 (toggles between -5V and 28V)
VGH_EVEN (IC7701 pin 11) to P7703 pin 12 (toggles between -5V and 28V)
VGL_I (IC7701 pin 1) → R7740 to P7703 pin 13 (-5V)
VST (IC7701 pin 12) to P7703 pin 14 (1.4V)
VCOM (IC7701 pin 18) to P7703 pin 17 (6.68V)
VDD (IC7700 pin 23) to P7703 pin 19, 20 (16.58V)
H_VDD (IC7700 pin 16) to P7703 pin 21 (8.29V)
VCC18V (IC7700 pin 1) to P7703 pin 34 (1.8V)

To the Panel

Video Signal Levels: p/p: Approx: 500mV

Video (TXA) pins 19, 20, 27, 28
Video Clock (TXACLK) 23, 24

Video (TXB) pins 23, 24, 27, 28, 31, 32

PANEL p/n: AFB73410002
p/n: EAJ62109301
p/n: EAJ62114401

Tact Switch Keys
p/n: EBR74785904

J2 Ft. IR/Intelligent Sensor
Front IR J1
p/n: EBR74560901

p/n: EBR74561201
Motion Remote Tx/Rx J1
To Main P4800

55LM6700 Main Board Component Voltages

IC7700 — Panel Power DC-to-DC Conv

Pin		Pin	
[1]	1.89V	[25]	4.95V
[2]	1.89V	[26]	0.52V
[3]	3.4V	[27]	3.31V
[4]	3.4V	[28]	3.31V
[5]	1.2V	[29]	5V
[6]	1.2V	[30]	1.27V
[7]	Gnd	[31]	1.59V
[8]	3.4V	[32]	2.8V
[9]	3.4V	[33]	8.12V
[10]	0V	[34]	8.12V
[11]	11.75V	[35]	(-5V)
[12]	11.75V	[36]	0.67V
[13]	11.76V	[37]	13.56V
[14]	11.75V	[38]	12.38V
[15]	8.29V	[39]	10.42V
[16]	8.29V	[40]	5.97V
[17]	Gnd	[41]	5.95V
[18]	Gnd	[42]	2.85V
[19]	Gnd	[43]	6.7V
[20]	11.71V	[44]	6.7V
[21]	11.7V	[45]	6.69V
[22]	14.84V	[46]	6.69V
[23]	10.6V	[47]	Gnd
[24]	Gnd	[48]	Gnd

IC7701 — Panle Power Level Shifter

Pin		Pin	
[1]	8.33V	[15]	(-5V)
[2]	8.33V	[16]	28V
[3]	8.33V	[17]	28V
[4]	8.33V	[18]	6.7V
[5]	8.33V	[19]	6.7V
[6]	8.33V	[20]	6.7V
[7]	6.21V	[21]	16.58V
[8]	27.9V	[22]	Gnd
[9]	(-5V)	[23]	3.29V
[10]	27.5V to -5V	[24]	0V
[11]	27.5V to -5V	[25]	0V
[12]	(-5V)	[26]	0.07V
[13]	(-5V)	[27]	1.36V
[14]	(-4.9V)	[28]	3.37V

IC[illegible] — HDCP EPROM

Pin	
[1]	
[2]	
[3]	n/c
[4]	Gnd
[5]	3.35V
[6]	3.35V
[7]	3.31V
[8]	3.31V

IC104 — NVRAM Memory

Pin	
[1]	0V
[2]	Gnd
[3]	3.32V
[4]	Gnd
[5]	3.32V
[6]	3.32V
[7]	Gnd
[8]	3.31V

IC501 — DAC_3V3 Regulator

Pin	
[1]	5.13V
[2]	3.26V
[3]	Gnd

IC2400 — +1.2V_MTK_CORE Regulator

Pin	
[1]	Gnd
[2]	11.92V
[3]	Gnd
[4]	0.8V
[5]	0.85V
[6]	3.51V
[7]	1.27V
[8]	1.27V

Q2401 — PWR_On Switch

Pin	
[1]	3.51V
[2]	2.83V
[3]	3.4V

Q2406 — Panel_VCC Driver

Pin	
[B]	0.64V
[C]	0.1V
[E]	Gnd

IC2402 — PWR_Det +12V in

Pin	
[1]	Gnd
[2]	3.64V
[3]	3.68V

IC2403 — +1.5V_DDR Regulator

Pin	
[1]	3.5V
[2]	5.5V
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.72V
[8]	1.5V Sound goes Loud
[9]	1.84V
[10]	1.54V
[11]	1.54V
[12]	1.54V
[13]	5.07V
[14]	n/c
[15]	3.48V
[16]	3.5V (Vcc In)

hen Measured

IC2404 — (+5V_NORMAL) Regulator

Pin	
[1]	3.42V
[2]	0.78V
[3]	5.47V
[4]	5.44V
[5]	Gnd
[6]	5.13V
[7]	10.49V
[8]	11.81V

IC2405 — +3.3V_NORMAL Regulator

Pin	
[1]	3.33V
[2]	0.77V
[3]	5.49V
[4]	5.46V
[5]	Gnd
[6]	5.44V
[7]	3.41V
[8]	Gnd
[9]	Gnd
[10]	3.32V
[11]	3.32V
[12]	8.74V
[13]	11.81V
[14]	11.81V

IC4303 — 5V for USB OCP

Pin	
[1]	0V (Gnd)
[2]	5.11V (In)
[3]	5.11V (In)
[4]	0V (Gnd)
[5]	0V
[6]	0V
[7]	0.05V
[8]	5.11V (Out)
[9]	5.11V (Out)
[10]	3.31V

Silked Screend IC6303

IC4305 — 5V for USB Regulator

Pin	
[1]	11.08V
[2]	24.61V
[3]	3.32V
[4]	1.25V
[5]	0.8V
[6]	0.51V
[7]	Gnd
[8]	5.11V (Out)

IC6503 — +1.8V_TU Regulator

Pin	
[1]	0V (Gnd)
[2]	1.8V (Out)
[3]	3.33V (In)

Q2407 — Panel_VCC Switch

Pin	
[G]	1.9V
[S]	11.92V
[D]	11.92V

Q3001 — CEC FET

Pin	
[G]	3.51V
[S]	3.48V
[D]	3.47V

Q3300
Q3301
Q3302
Q3303 — HDMI 1-4 Hot Swap

Pin	
B	0V
C	0V
E	Gnd

Q5400 — Amp Mute Driver

Pin	
[B]	0V
[C]	
[E]	Gnd

Q6500 — TUNER_SIF Buffer

Pin	
[B]	0.22V
[C]	0V (Gnd)
[E]	0.91V

Q6501 — Tuner (Analog) Video Buffer

Pin	
[B]	3.61V
[C]	0V (Gnd)
[E]	4.28V

Q7700 — VGL_FB / VGL Switch

Pin	
[B]	0.67V
[C]	4.67V
[E]	0V

Q7701 — VGH / VGH_FB Switch

Pin	
[B]	15.91V
[C]	15.63V
[E]	16.6V

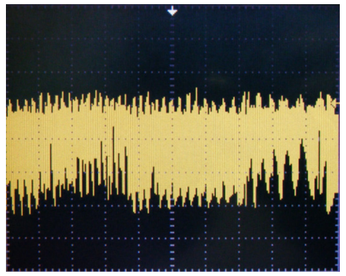
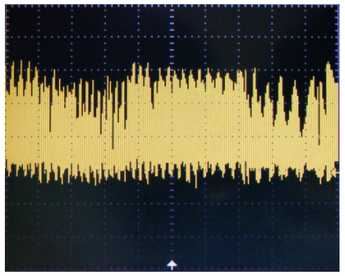
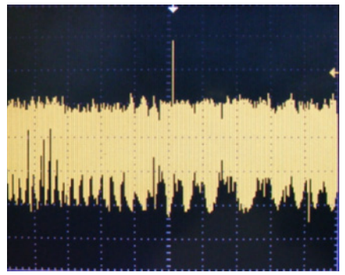
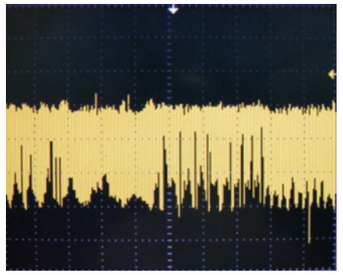
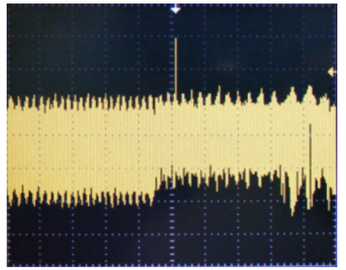
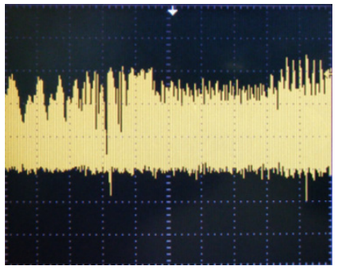
Q7702 — EPI_LOCK6 Drives Q7703

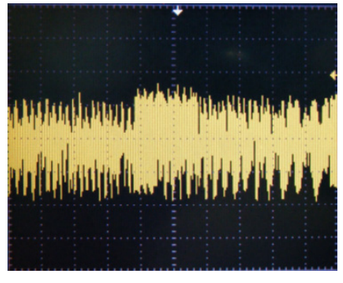
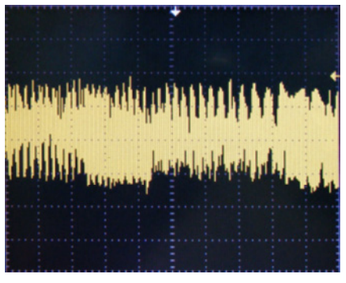
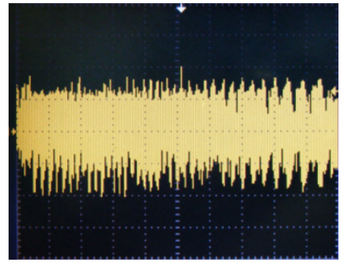
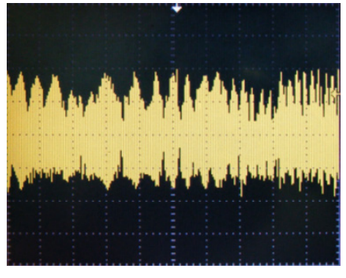
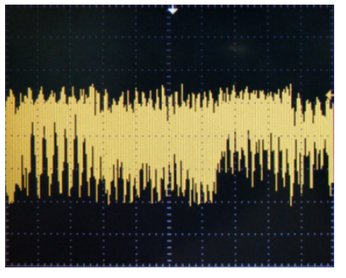
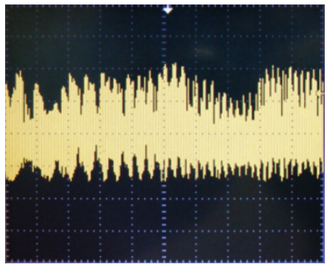
Pin	
[B]	0.77V
[C]	0.02V
[E]	0V (Gnd)

Q7703 — EPI_LOCK6 Source

Pin	
[B]	0V (Gnd)
[C]	3.31V
[E]	0V (Gnd)

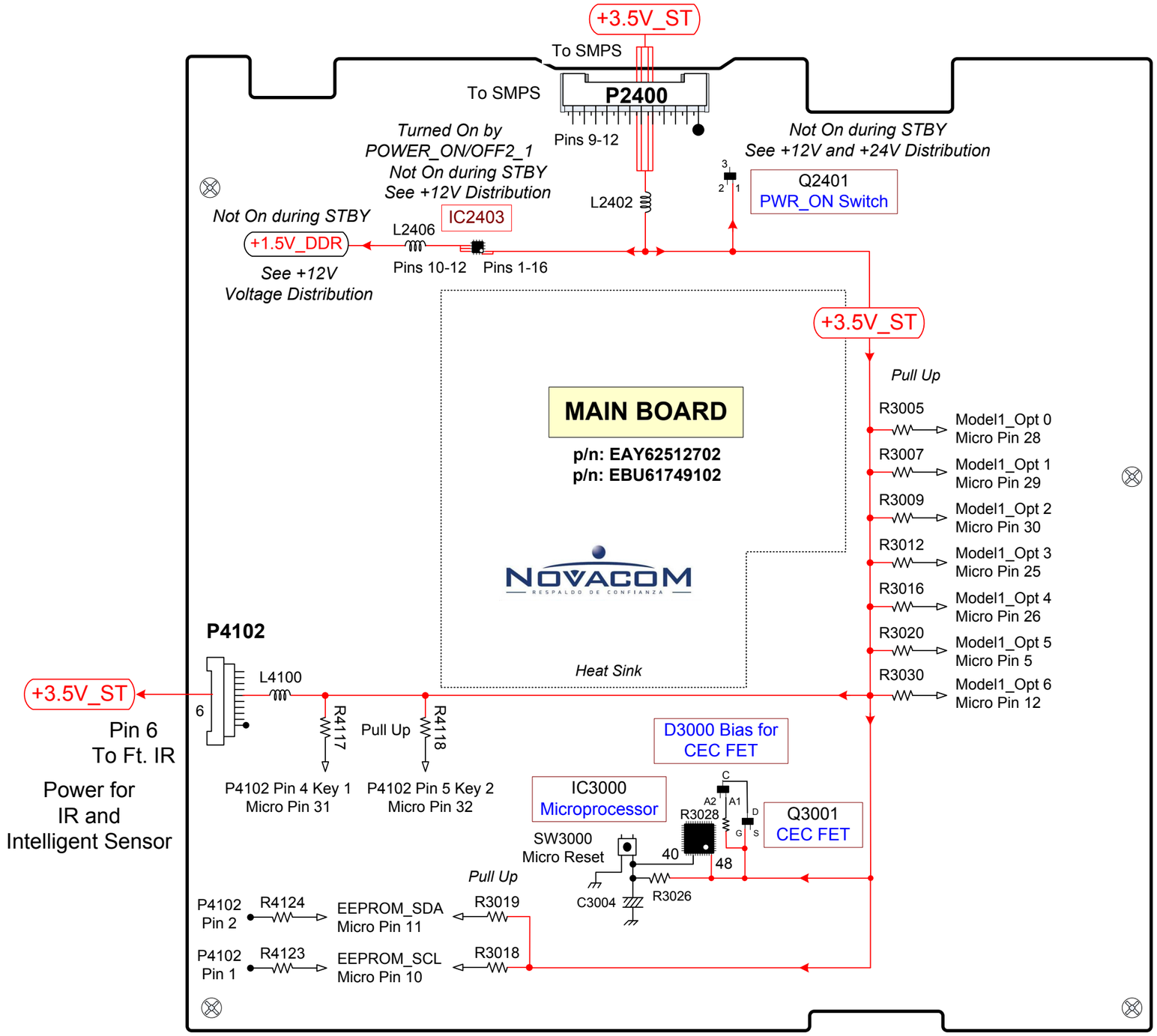
55LM6700 LVDS P7702 and P7703 Video Waveforms

LVDS P702 Pin 23 (TXB0N)	LVDS P702 Pin 24 (TXB0P)	LVDS P702 Pin 27 (TXB1N)	LVDS P702 Pin 28 (TXB1P)	LVDS P702 Pin 31 (TXB2N)	LVDS P702 Pin 32 (TXB2P)
					
380mV p/p	440mV p/p	532mV p/p	444mV p/p	536mV p/p	448mV p/p

LVDS P703 Pin 19 (TXA1N)	LVDS P703 Pin 20 (TXA1P)	LVDS P703 Pin 23 (TXACLKN)	LVDS P703 Pin 24 (TXACLKP)	LVDS P703 Pin 27 (TXA4N)	LVDS P703 Pin 28 (TXA4P)
					
352mV p/p	348mV p/p	404mV p/p	380mV p/p	368mV p/p	360mV p/p

SMPTE Color Bar input signal (Component)
All signals taken at 2.5uSec per/sec / 100mV per/div

55LM6700 Main Board (+3.5V_ST) Voltage Distribution



55LM6700 Main Board (+12V) Voltage Distribution

P7703

VGH_R (IC7701 pin 8) to P7703 pin 42 (28V)
VGH_F (IC7701 pin 9) to P7703 pin 41 (-5V)
VGH_ODD (IC7701 pin 10) to P7703 pin 40 (toggles between -5V and 28V)
VGH_EVEN (IC7701 pin 11) to P7703 pin 39 (toggles between -5V and 28V)
VGL_I (IC7701 pin 1) → R7740 to P7703 pin 38 (-5V)
VST (IC7701 pin 12) to P7703 pin 37 (1.4V)
VCOM (IC7701 pin 18) to P7703 pin 34 (6.68V)
VDD (IC7700 pin 23) to P7703 pin 31, 32 (16.58V)
H_VDD (IC7700 pin 16) to P7703 pin 30 (8.29V)
VCC18V (IC7700 pin 1) to P7703 pin 17 (1.8V)

P7702

VGH_R (IC7701 pin 8) to P7703 pin 9 (28V)
VGH_F (IC7701 pin 9) to P7703 pin 10 (-5V)
VGH_ODD (IC7701 pin 10) to P7703 pin 11 (toggles between -5V and 28V)
VGH_EVEN (IC7701 pin 11) to P7703 pin 12 (toggles between -5V and 28V)
VGL_I (IC7701 pin 1) → R7740 to P7703 pin 13 (-5V)
VST (IC7701 pin 12) to P7703 pin 14 (1.4V)
VCOM (IC7701 pin 18) to P7703 pin 17 (6.68V)
VDD (IC7700 pin 23) to P7703 pin 19, 20 (16.58V)
H_VDD (IC7700 pin 16) to P7703 pin 21 (8.29V)
VCC18V (IC7700 pin 1) to P7703 pin 34 (1.8V)

Q2407 activated by the Microprocessor pin 4 output of Panel_CTL (Low) to Gate of Q2407 Generating Panel_VCC turning on DC-to-DC converters for the T-CON section and the Panel.

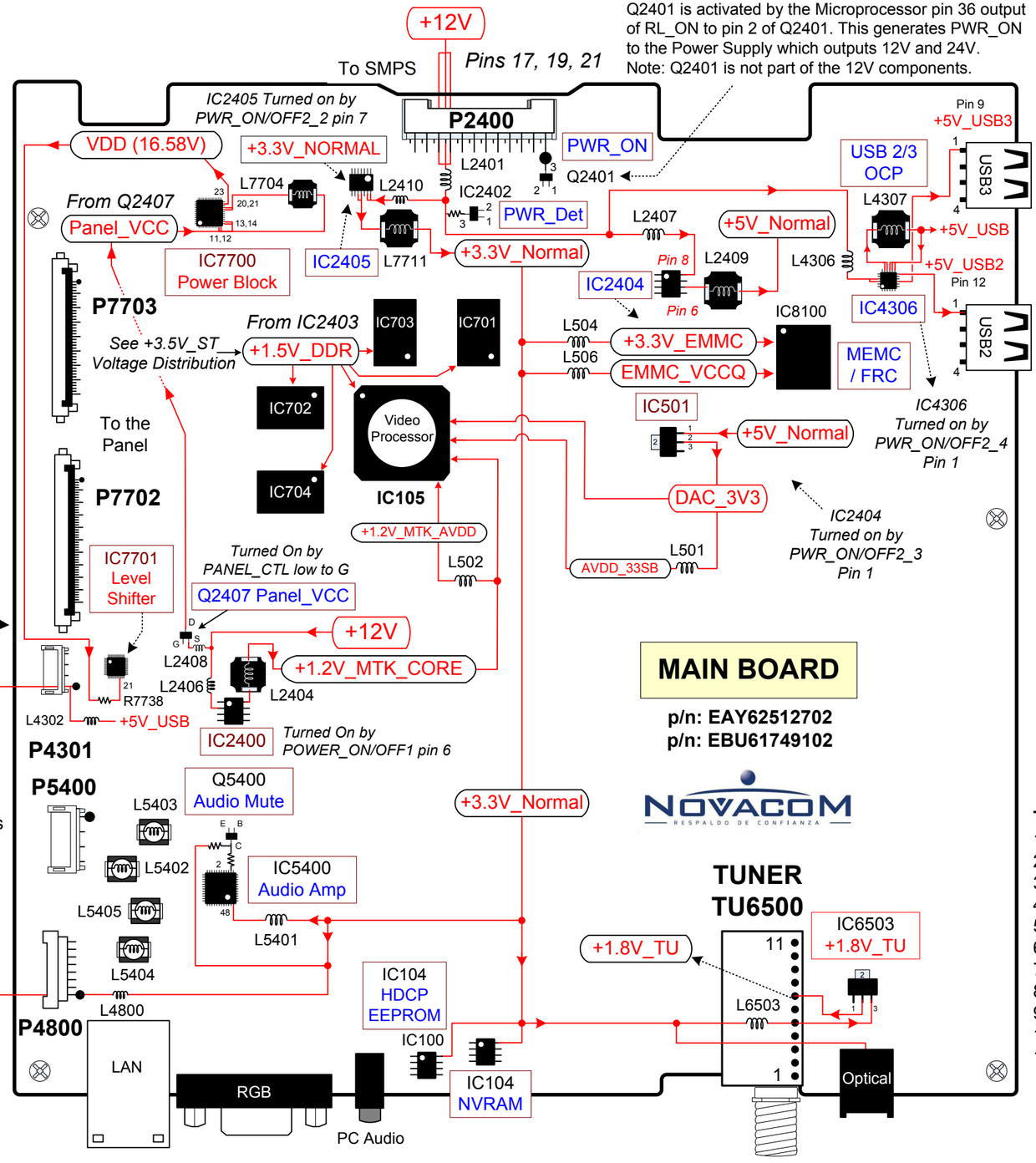
Pin 6 To Wireless Tx/Rx

The Audio Amp IC5400 also uses 24V, (see +24V Distribution).

To Speakers All pins 12.35V

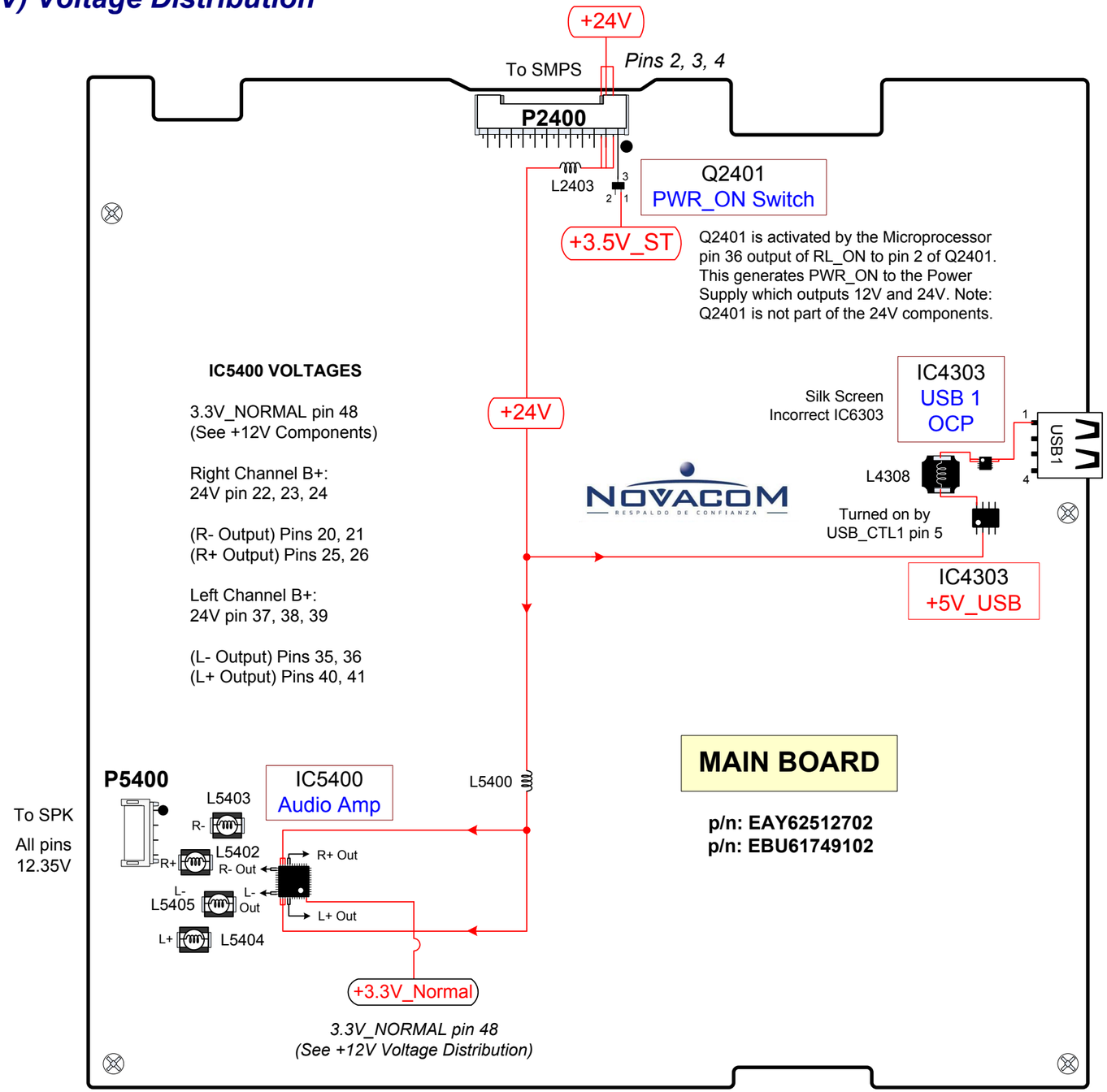
Pin 1 To Motion Tx/Rx

Q2401 is activated by the Microprocessor pin 36 output of RL_ON to pin 2 of Q2401. This generates PWR_ON to the Power Supply which outputs 12V and 24V. Note: Q2401 is not part of the 12V components.



TUNER PINS
1. n/c
2. Reset
3. SCL
4. SDA
5.+3.3V_TU
6. SIF
7. +1.8V_TU
8. CVBS
9. IF AGC
11. DIF (P)
10. DIF (N)

55LM6700 Main Board (+24V) Voltage Distribution



55LM8600 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen. 100% = 3.18V. Follow the P-DIM signal all the way to the SMPS.
2nd: Turn off Local Dimming in the Customers Menu or unplug P701 (with power off). If the brightness returns to normal, examine the signals required for Local Dimming. (SIN, V-SYNC and SCLK). Suspect the Main Board.

LED SINGLE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 81V TP210. Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump any of the blocks grounding pin on P202 or P203 (V1~12) while observing the picture and each block should turn on maximum.

P202 Black Plug "SMPS" To "Panel LEDs"

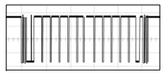
Pin	Label	Run	Diode Check
1	VC-6	*2.89V~26V	OL
2	VC-5	*2.89V~26V	OL
3	VC-4	*2.89V~26V	OL
4	VC-3	*2.89V~26V	OL
5	VC-2	*2.89V~26V	OL
6	VC-1	*2.89V~26V	OL
7	n/c	n/c	OL
8	LED+	81V	OL

*White to Black screen

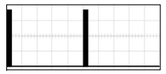
P203 White Plug "SMPS" To "Panel LEDs"

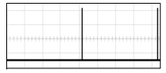
Pin	Label	Run	Diode Check
1	LED+	81V	OL
2	n/c	n/c	OL
3	VC-12	*2.89V~26V	OL
4	VC-11	*2.89V~26V	OL
5	VC-10	*2.89V~26V	OL
6	VC-9	*2.89V~26V	OL
7	VC-8	*2.89V~26V	OL
8	VC-7	*2.89V~26V	OL

*White to Black screen

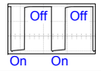

MOSI Pin 4 P7001
3.52V p/p
Local Dimming On

MOSI Pin 4 P701
3.52V p/p
Local Dimming Off


SCLK Pin 3 P701
3.5V p/p


V-SYNC Pin 1 P701
3.36V p/p

LED Drive Signal 50 IRE



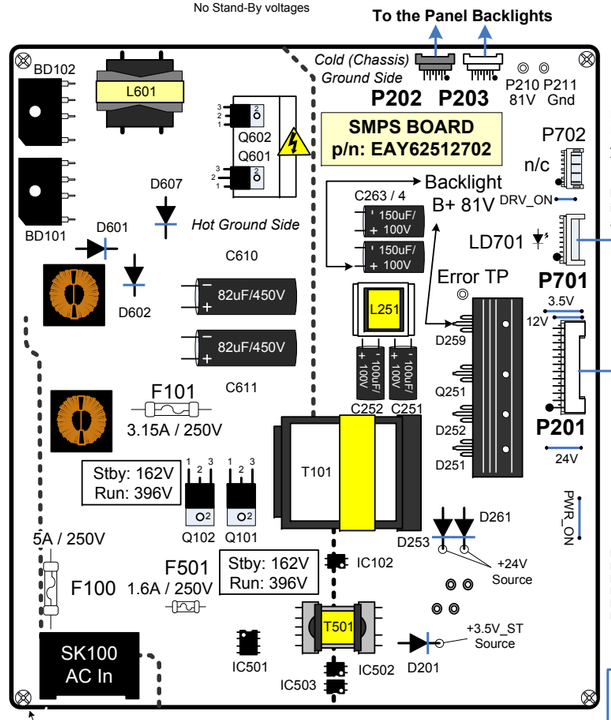
30V p/p	2mSec

Any drive signal
V1 through V12

P701 "SMPS" to P7600 "MAIN Board"

Pin	Label	Run	Diode	Pin	Label	Run	Diode
1	L/DIM0_VS	0V	OL	5	GND	Gnd	Gnd
2	SDA	3.48V	OL	6	SCLK	0.14V	OL
3	SCL	3.48V	OL	7	N.C.	n/c	OL
4	MOSI	3.21V	OL	8	N.C.	n/c	OL

No Stand-By voltages



[1] PWM Pin 22 can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition). Output from the Video Processor. Range 0.15V to 3.18V.

PWR-ON: Starts 12V, 24V and 56.3V LED Power. No Backlights.

DRV-ON: Starts Backlights LED Power goes to 81.

LD701: Normal Off.
Blinking means error.
Abnormal Backlight drive and / or feedback.

ERROR: Is grounded by the Main board and not used. The Error TP is connected to this line, so it is also ground.

T-CON KEY VOLTAGES
VCC_18 (1.8V) IC500 pin 1
H_VDD (8.48V) IC500 pin 15
VDD (16.92V) IC500 pin 23
VST (-5V) IC501 pin 12
VGH_EVEN *(-5V to 28V) IC500 pin 11
VGH_ODD *(-5V to 28V) IC500 pin 10

See page 3 and 4 for additional voltages.
See P601 and P602 for pin voltages.

DC Voltages to the Panel developed on the T-CON

Output from P602	Output from P601
Pin 17 VCC_18 (1.8V)	Pin 34 VCC_18 (1.8V)
Pin 30 H_VDD (8.48V)	Pin 21 H_VDD (8.48V)
Pin 31, 32 VDD (16.92V)	Pin 19, 20 VDD (16.92V)
Pin 37 VST (-5V)	Pin 14 VST (-5V)
Pin 39 VGH_EVEN *(-5V to 28V)	Pin 12 VGH_EVEN *(-5V to 28V)
Pin 40 VGH_ODD *(-5V to 28V)	Pin 11 VGH_ODD *(-5V to 28V)

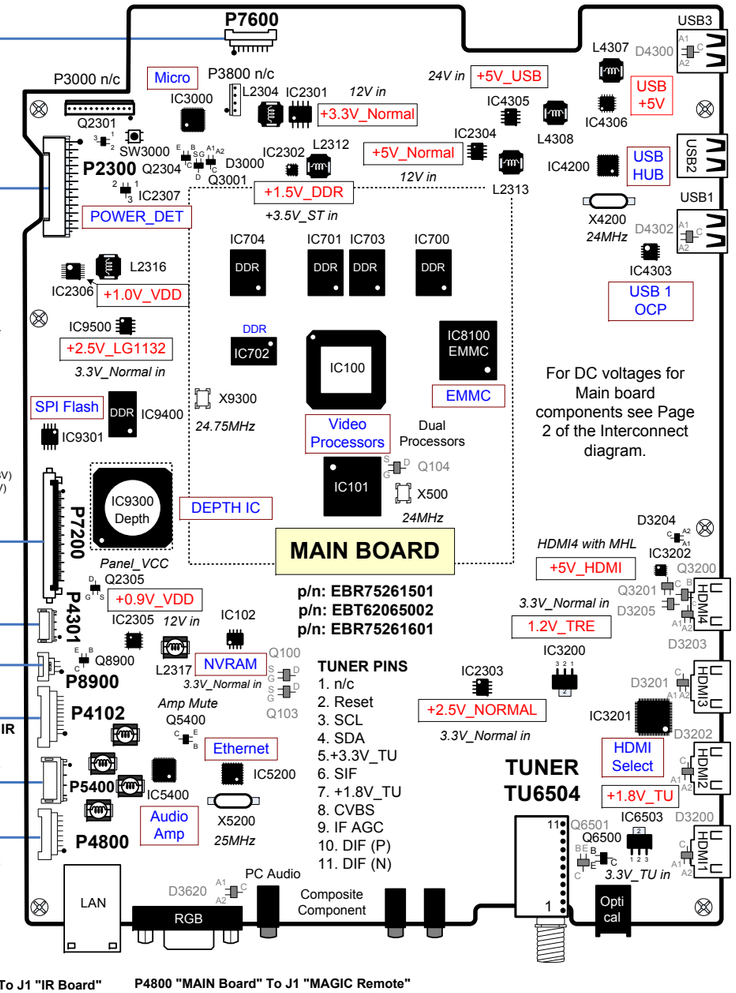
*Changes once a second.

P201 Connector "SMPS Board" To P2300 "MAIN Board"

Pin	Label	STBY	Run	Diode Check
24	Error	Gnd	Gnd	Gnd
23	n/c	n/c	n/c	OL
22	P-DIM	0V	0.15V~3.18V	OL
21	12V	0V	12.1V	0.49V
20	n/c	n/c	n/c	n/c
19	12V	0V	12.1V	0.49V
18	DRV-ON	0V	3.46V	OL
17	12V	0V	12.1V	0.49V
16	n/c	n/c	n/c	OL
13~15	Gnd	Gnd	Gnd	Gnd
9~12	3.5V (STBY)	3.55V	3.50V	OL
5~8	Gnd	Gnd	Gnd	Gnd
2~4	24V	0V	24.93V	1.10V
1	PWR-ON	0V	3.37V	1.17V

P4800 Connector "MAIN Board" To J1" Magic Remote

Pin	Label	STBY	Run	Diode Check
1	3.3V	0V	3.32V	0.55V
2	Gnd	Gnd	Gnd	Gnd
3	RX	0V	3.31V	0.88V
4	TX	0V	3.30V	1.17V
5	RESET	0V	3.26V	1.17V
6	DC	0V	0V	0.87V
7	DD	0V	0V	OL
8	Gnd	Gnd	Gnd	Gnd



P2400 "MAIN Board" To P201 "SMPS Board"

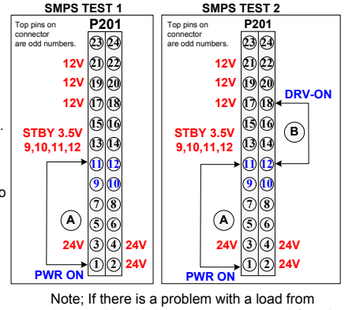
Pin	Diode
1	OL
2-4	2.84V
5-8	Gnd
9-12	2.3V
13-15	Gnd
16	2.85V
17	2.35V
18	1.50V
19	2.35V
20	OL
21	2.35V
22	0.79V
23	1.04V
24	Gnd

P7600 "MAIN Board" to P701 "SMPS Board"

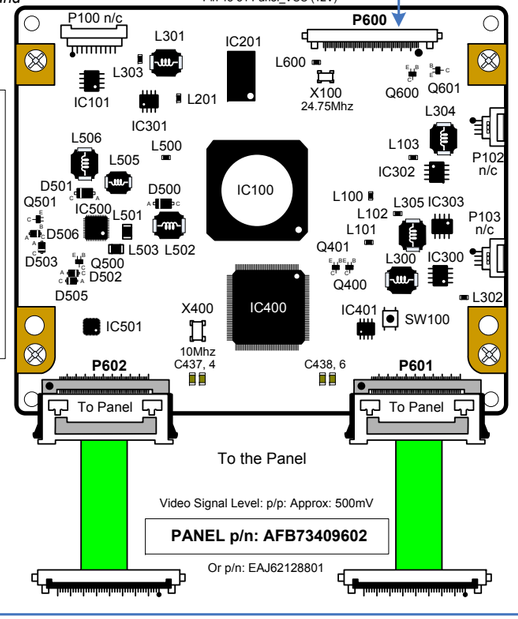
Pin	Diode
1	OL
2	n/c
3	OL
4	Gnd
5	OL
6	0.72V
7	1.0V
8	2.83V

SMPS TEST 1: Force Power Supply On.
Disconnect P2300 on Main board. (A) Jump pins 9, 10, 11 or 12 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 80V to Backlights reads 56.3V. No Backlights. Remove AC power. Leave the jumper in place.

SMPS TEST 2: Force the Backlights On.
(B) Jump pins 9, 10, 11 or 12 (3.5V) to pin 18 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now jump up to 81V.



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect either P202 or P203. When AC is reapplied, the Backlight LEDs should turn on for about 4 seconds and then shut off.



LOGO Board
p/n: EBR75450201

To Wi-Fi Tx/Rx
To Ft. IR
To Spk
12.49V Each Pin
To Magic Remote Tx/Rx

"Key Board" To J2 "Front IR"

Label	STBY	Run
Key 1	3.55V	3.49V
Gnd	Gnd	Gnd
Key 2	3.55V	3.49V
Gnd	Gnd	Gnd

Tact Switch Keys
p/n: EBR74785904

J2 Ft. IR/Intelligent Sensor J1
Front IR
p/n: EBR74560902

No Label

p/n: EBR74561201
Magic Remote Tx/Rx
J1
To Main P4800

P4102 "MAIN Board" To J1 "IR Board"

Pin	Label	STBY	Run	Diode
1	SCL	3.55V	3.49V	OL
2	SDA	3.55V	3.49V	OL
3	Gnd	Gnd	Gnd	Gnd
4	KEY 1	3.55V	3.49V	OL
5	KEY 2	3.55V	3.49V	OL
6	3.5V_ST	3.55V	3.49V	2.3V
7	Gnd	Gnd	Gnd	Gnd
8	LED_R	1.54V	0V	OL
9	IR	3.51V	3.46V	OL
10	Gnd	Gnd	Gnd	Gnd

P4800 "MAIN Board" To J1 "MAGIC Remote"

Pin	Label	STBY	Run	Diode
1	3.3V	0V	3.24V	0.57V
2	Gnd	Gnd	Gnd	Gnd
3	RX	0V	3.24V	1.10V
4	TX	0V	3.26V	1.10V
5	RESET	0V	3.26V	1.10V
6	DC	0V	0V	0.79V
7	DD	0V	0V	OL
8	Gnd	Gnd	Gnd	Gnd

P4301 "MAIN Board" To "Wi-Fi Transmitter"

Pin	Label	STBY	Run	Diode
1	+5V_USB	0.05V	4.99V	2.53V
2	WIFI_DM	0V	0.05V	1.34V
3	WIFI_DP	0V	0.05V	1.34V
4	Gnd	Gnd	Gnd	Gnd

To Main P4301
p/n: EAT61613401
Wi-Fi Tx/Rx

55LM8600 Main Board (Front Side) Component Voltages

IC3000 Micro Processor

Pin		Pin	
[1]	3.22V	[25]	0V
[2]	3.23V	[26]	0.03V
[3]	0.35V	[27]	3.49V
[4]	1.96V	[28]	0.03V
[5]	0V	[29]	0.1V
[6]	3.45V	[30]	0V
[7]	3.43V	[31]	3.48V
[8]	3.49V	[32]	3.48V
[9]	3.48V	[33]	3.48V
[10]	3.48V	[34]	3.48V
[11]	3.48V	[35]	3.48V
[12]	0V	[36]	0V
[13]	0V	[37]	0.02V
[14]	3.68V	[38]	0.81V
[15]	3.48V	[39]	3.48V
[16]	0V	[40]	3.48V
[17]	0V	[41]	0.65V
[18]	3.48V	[42]	0.13V
[19]	3.47V	[43]	0V
[20]	3.26V	[44]	0V
[21]	3.23V	[45]	0V
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0.1V	[48]	3.48V

IC4200 USB HUB

Pin		Pin	
[1]	8.33V	[19]	6.7V
[2]	8.33V	[20]	6.7V
[3]	8.33V	[21]	16.58V
[4]	8.33V	[22]	Gnd
[5]	8.33V	[23]	3.29V
[6]	8.33V	[24]	0V
[7]	6.21V	[25]	0V
[8]	27.9V	[26]	0.07V
[9]	(-5V)	[27]	1.36V
[10]	27.5V to -5V	[28]	3.37V
[11]	27.5V to -5V	[29]	
[12]	(-5V)	[30]	
[13]	(-5V)	[31]	
[14]	(-4.9V)	[32]	
[15]	(-5V)	[33]	
[16]	28V	[34]	
[17]	28V	[35]	
[18]	6.7V	[36]	

IC5200 Ethernet IC

Pin		Pin	
[1]	0.65V	[17]	0V
[2]	1.1V	[18]	n/c
[3]	1.1V	[19]	n/c
[4]	1.1V	[20]	0V
[5]	1.1V	[21]	3.26V
[6]	1.1V	[22]	1.23V
[7]	3.25V	[23]	3.25V
[8]	0.03V	[24]	3.25V
[9]	0V	[25]	3.24V
[10]	0V	[26]	0V
[11]	0V	[27]	0V
[12]	0V	[28]	0V
[13]	0V	[29]	1.08V
[14]	3.25V	[30]	3.25V
[15]	1.32V	[31]	0V
[16]	0V	[32]	0.58V

IC5400 Audio Amp

Pin		Pin	
[1]	Gnd	[25]	12.5V
[2]	1.84V	[26]	12.5V
[3]	0V	[27]	Gnd
[4]	0.73V	[28]	17.84V
[5]	Gnd	[29]	6.1V
[6]	Gnd	[30]	0V
[7]	Gnd	[31]	5.35V
[8]	1.83V	[32]	6.1V
[9]	1.21V	[33]	17.84V
[10]	1.63V	[34]	Gnd
[11]	1.63V	[35]	12.5V
[12]	3.3V	[36]	12.5V
[13]	3.2V	[37]	24.93V
[14]	3.21V	[38]	24.93V
[15]	3.18V	[39]	24.93V
[16]	3.18V	[40]	12.5V
[17]	3.18V	[41]	12.5V
[18]	17.85V	[42]	Gnd
[19]	Gnd	[43]	17.85V
[20]	12.5V	[44]	3.26V
[21]	12.5V	[45]	Gnd
[22]	24.93V	[46]	Gnd
[23]	24.93V	[47]	1.61V
[24]	24.93V	[48]	3.5V

IC102 NVRAM Memory

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.25V
[6]	3.25V
[7]	Gnd
[8]	3.26V

IC501 DAC_3V3 Regulator

Pin	
[1]	5.13V
[2]	3.26V
[3]	Gnd

IC2301 +3.3V_NORMAL Regulator

Pin	
[1]	Gnd
[2]	12.05V (in)
[3]	Gnd
[4]	0.8V
[5]	0.83V
[6]	3.48V (ctrl)
[7]	n/c
[8]	3.32V (out)

IC2302 +1.5V_DDR Regulator

Pin	
[1]	3.5V
[2]	3.5V
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.72V
[8]	1.5V Sound buzz, set turns off/on
[9]	1.84V
[10]	1.54V
[11]	1.54V
[12]	1.54V
[13]	5.07V
[14]	n/c
[15]	3.48V
[16]	3.5V (Vcc In)

IC2303 (+2.5V_NORMAL) Regulator

Pin	
[1]	3.25V (in)
[2]	n/c
[3]	5.11V (in)
[4]	3.42V (ctrl)
[5]	Gnd
[6]	4.19V
[7]	0.8V
[8]	2.52V (out)

IC2304 (+5V_NORMAL) Regulator

Pin	
[1]	3.38V
[2]	0.77V
[3]	5.48V
[4]	5.44V
[5]	Gnd
[6]	5.11V
[7]	10.48V
[8]	12.04V

IC2305 +0.9V_DDR Regulator

Pin	
[1]	0.5V
[2]	Gnd
[3]	Gnd
[4]	11.93V
[5]	11.93V
[6]	11.93V
[7]	0.6V
[8]	0.39V
[9]	1.81V
[10]	3.48V
[11]	0.96V
[12]	0.96V
[13]	7.86V
[14]	n/c

IC2306 +1.0V_DDR Regulator

Pin	
[1]	1.09V
[2]	0.77V
[3]	5.51V
[4]	5.48V
[5]	Gnd
[6]	5.49V
[7]	3.39V
[8]	Gnd
[9]	Gnd
[10]	1.0V
[11]	1.0V
[12]	6.6V
[13]	12.1V
[14]	12.1V

IC2307 PWR_Det 12V Sense

Pin	
[1]	Gnd
[2]	3.69V
[3]	3.72V

IC3200 +1.2V_TRE Regulator

Pin	
[1]	Gnd
[2]	1.2V
[3]	3.25V

IC3202 +5V_USB (MHL) Regulator

Pin	
[1]	Gnd
[2]	5.11V (in)
[3]	5.11V (in)
[4]	Gnd
[5]	3.49V (w/MHL)
[6]	0.52V
[7]	.049V
[8]	5.0V (w/MHL)
[9]	5.0V (w/MHL)
[10]	3.49V (w/MHL)

IC4303 5V for USB OCP

Pin	
[1]	0V (Gnd)
[2]	5.11V (In)
[3]	5.11V (In)
[4]	0V (Gnd)
[5]	3.25V
[6]	0V
[7]	0.4V
[8]	5.11V (Out)
[9]	5.11V (Out)
[10]	3.24V

IC4305 5V for USB Regulator

Pin	
[1]	11.08V
[2]	24.61V
[3]	3.32V
[4]	1.25V
[5]	0.8V
[6]	0.51V
[7]	Gnd
[8]	5.11V (Out)

IC4306 5V for USB Regulator

Pin	
[1]	3.48V
[2]	0.64V
[3]	n/c
[4]	n/c
[5]	3.26V
[6]	3.26V
[7]	3.25V
[8]	3.25V
[9]	4.99V
[10]	Gnd
[11]	Gnd
[12]	4.99V
[13]	4.99V
[14]	4.99V
[15]	4.99V
[16]	4.99V
[17]	4.99V
[18]	11.12V
[19]	Gnd
[20]	Gnd
[21]	12.04V
[22]	12.04V
[23]	Gnd
[24]	6.25V

IC6503 +1.8V_TU Switch

Pin	
[1]	0V (Gnd)
[2]	1.8V (Out)
[3]	3.24V (In)

IC9301 SPI FLASH

Pin	
[1]	3.28V
[2]	0.14V
[3]	3.26V
[4]	Gnd
[5]	Gnd
[6]	0.04V
[7]	3.27V
[8]	3.28V

IC9500 +2.5V_LG1132 Regulator

Pin	
[1]	3.28V
[2]	n/c
[3]	4.99V
[4]	3.28V
[5]	Gnd
[6]	4.75V
[7]	0.81V
[8]	2.54V

Q2301 PWR_On Switch

Pin	
[1]	3.48V
[2]	2.79V
[3]	3.37V

Q2304 Panel_VCC Drives Q2305

Pin	
[B]	0.62V
[C]	0.07V
[E]	Gnd

Q2305 Panel_VCC Switch

Pin	
[G]	1.97V
[S]	11.94V
[D]	11.98V

Q3001 HDMI CEC FET

Pin	
[G]	3.48V
[S]	3.49V
[D]	3.44V

Q5400 Amp Mute Driver

Pin	
[B]	0V
[C]	3.22V
[E]	Gnd

Q6500 TUNER_SIF Buffer

Pin	
[B]	0.22V
[C]	0V (Gnd)
[E]	0.91V

Q8900 LOGO Driver

Pin	
[B]	0.2V
[C]	1V
[E]	Gnd

D3000 Bias for Q3001

Pin	
[A1]	0V
[A2]	3.47V
[C]	3.33V

D3204 MHL Enable for IC3202

Pin	
[A1]	0V
[A2]	3.47V
[C]	3.33V

55LM8600 Main Board (Back Side) Component Voltages

Q100 SOC_RX Buffer

Pin	
[G]	3.27V
[S]	5.11V
[D]	3.27V

Q103 SOC_TX Buffer

Pin	
[G]	3.27V
[S]	5.11V
[D]	3.3V

Q104 HDMI_S/W_RESET

Pin	
B	5.11V
C	3.4V
E	3.4V

Q3200 MHL_DET Driver

Pin	
[B]	0V (0.6V w/MHL)
[C]	3.49V
[E]	Gnd

Q3201 MHL_DET Switch

Pin	
[B]	3.49V
[C]	0V (3.4V w/MHL)
[E]	3.49V

Q6501 Tuner (Analog) Video Buffer

Pin	
[B]	3.61V
[C]	0V (Gnd)
[E]	4.28V

D3200, D3201, D3202, D3203 DDC_SDA/SCL_1-4 PULL_UP

[A1]	5.11V
[A2]	0V
[C]	5.05V

D3205 DDC_SDA/SCL_4 PULL_UP

Pin	
[A1]	3.49V
[A2]	0V
[C]	5.04V

D3620 B+ Routing IC3600

Pin	
[A1]	5.11V
[A2]	0V
[C]	4.51V

D4300, D4302 USB 2 and 3 Data Clamp

Pin	
[A1]	0V
[A2]	0V
[C]	0V

55LM8600 T-CON (TFT Controller) Component Layout

IC101

1) 3.29V
2) 0.13V
3) 0V
4) Gnd
5) 0V
6) 0V
7) 3.28V
8) 3.28V

IC300

1) 11.32V
2) 0.78V
3) 5.46V
4) 5.43V
5) Gnd
6) 1.81V
7) 7.2V
8) 11.64V

IC301

1) 3.2V
2) 0.77V
3) 3.44V
4) 3.4V
5) Gnd
6) 1.52V
7) 6.89V
8) 11.65V

IC302

1) Gnd
2) 11.64V
3) Gnd
4) 0.8V
5) 0.75V
6) 3/22V
7) 1V
8) 1V

IC303

1) 11.32V
2) 0.77V
3) 5.44V
4) 5.4V
5) Gnd
6) 3.28V
7) 8.64V
8) 11.64V

IC401

1) Gnd
2) Gnd
3) Gnd
4) Gnd
5) 3.31V
6) 3.31V
7) 3.3V
8) 3.31V

Q400

B) 3.26V
E) 3.28V
C) 3.31V

Q401

B) 0V
E) 3.28V
C) 3.31V

Q500

B) 0.25V
E) Gnd
C) 4.53V

Q501

B) 16.25V
E) 16.93V
C) 13.13V

Q600

B) 3.28V
E) 3.28V
C) 3.29V

Q601

B) 3.28V
E) 3.28V
C) 3.29V

IC500 DC-DC Conv

1) 1.8V
2) 1.81V
3) 3.27V
4) 3.31V
5) 1.01V
6) 1.03V
7) Gnd
8) 3.32V
9) 3.32V
10) n/c
11) 11.62V
12) 11.62V
13) 11.02V
14) 11.62V
15) 8.48V
16) 8.48V
17) Gnd
18) Gnd
19) Gnd
20) 11.6V
21) 11.6V
22) 16.94V
23) 16.93V
24) Gnd

IC500 On T-CON

25) 4.96V
26) 0.5V
27) 3.28V
28) 3.28V
29) 4.99V
30) 1.41V
31) 16.28V
32) 27.96V
33) 8.2V
34) 3.62V
35) (-5.08V)
36) 0.25V
37) 13.85V
38) 12.83V
39) 10.9V
40) 6.54V
41) 4.59V
42) 3.5V
43) 7.57V
44) 7.54V
45) 7.55V
46) 7.5V
47) 1.97V
48) Gnd

IC501 DC-DC Conv

1) 6.04V
2) 6.04V
3) 6.05V
4) 6.04V
5) 6.04V
6) 6.04V
7) 5.08V
8) 27.93V
9) (-5V)
10) 27.9V to (-5V)
11) 27.9V to (-5V)
12) (-5V)
13) 0V
14) (-5.08V)

IC501 On T-CON

15) (-5.08V)
16) (-5.08V)
17) 27.96V
18) 27.96V
19) 7.57V
20) 7.54V
21) 16.92V
22) Gnd
23) 3.2V
24) 0V
25) 0V
26) 0.06V
27) 0V
28) 2.71V

L100

1) 1.8V
2) 1.8V

L101

1) 1.8V
2) 1.8V

L102

1) 3.28V
2) 3.28V

L103

1) 0.95V
2) 0.97V

L201

1) 1.51V
2) 1.51V

L302

1) 11.67V
2) 11.67V

L303

1) 11.66V
2) 11.66V

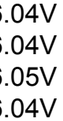
L307

1) 1.8V
2) 1.8V

L500

1) 11.64V
2) 11.65V

L501



1) 1.01V
2) 1.03V

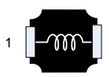
L503

1) 1.80V
2) 1.81V

L600

1) 11.64V
2) 11.65V

L300



1) 1.8V
2) 1.81V

L301

1) 1.52V
2) 1.51V

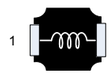
L304

1) 0.89V
2) 1.0V

L305

1) 3.28V
2) 3.28V

L502



1) 3.32V
2) 3.31V

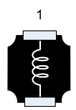
VCC

L505

1) 8.48V
2) 8.48V

IC501 Pin 30
8.48V HVDD P601 21 (P602 30)

L506



1) 11.64V
2) 11.62V

Panel_VCC

D500

A) Gnd
C) 3.32V

D501

A) 16.95V
C) 11.62V

D502

A) (0.45V)
C) 4.53V

D503

A) 20.27V
C) 27.97V

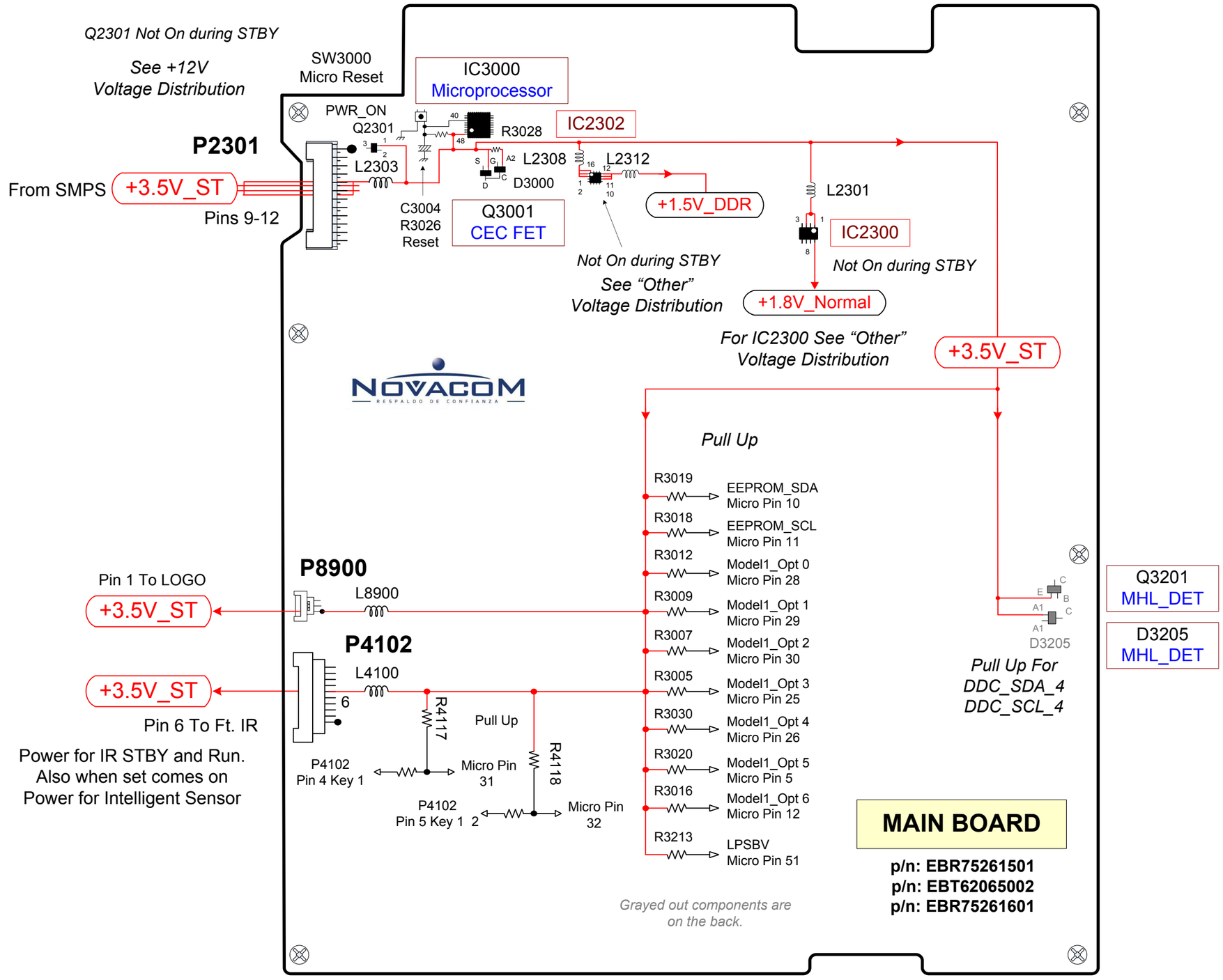
D505

A) (-5.09V)
C) (-0.46V)

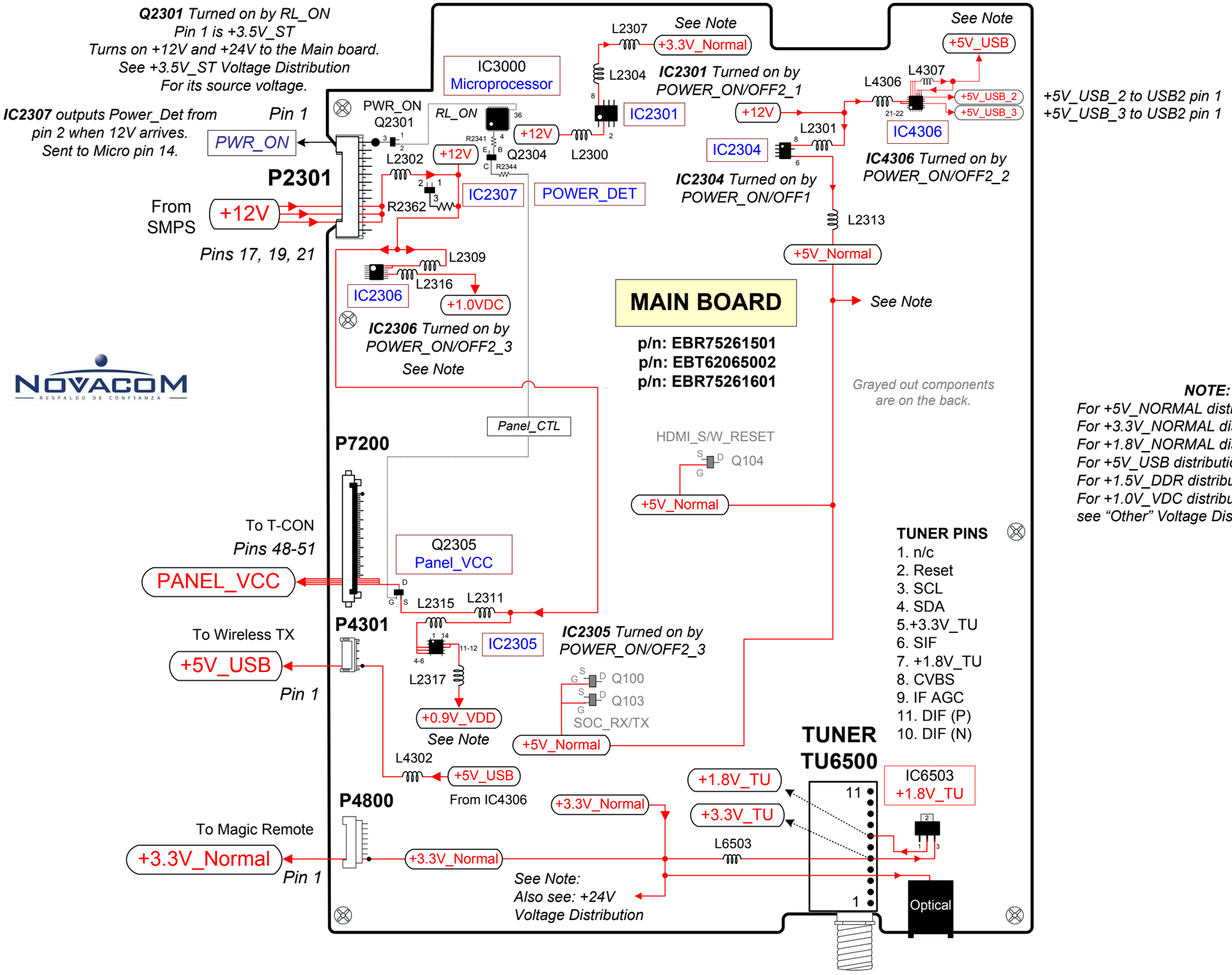
D506

A) 13.13V
C) 20.27V

55LM8600 Main Board (+3.5V_ST) Voltage Distribution



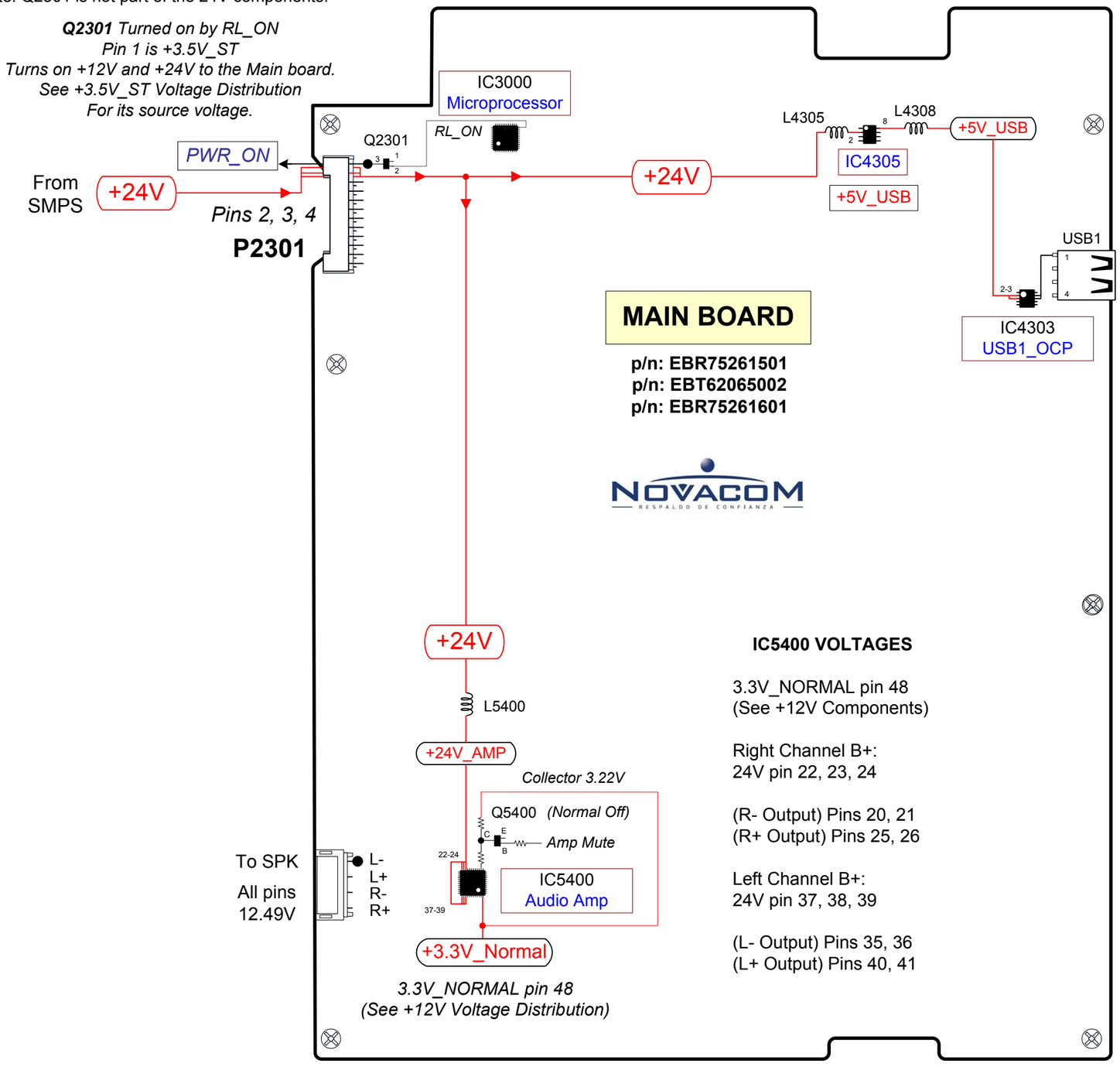
55LM8600 Main Board (+12V) Voltage Distribution



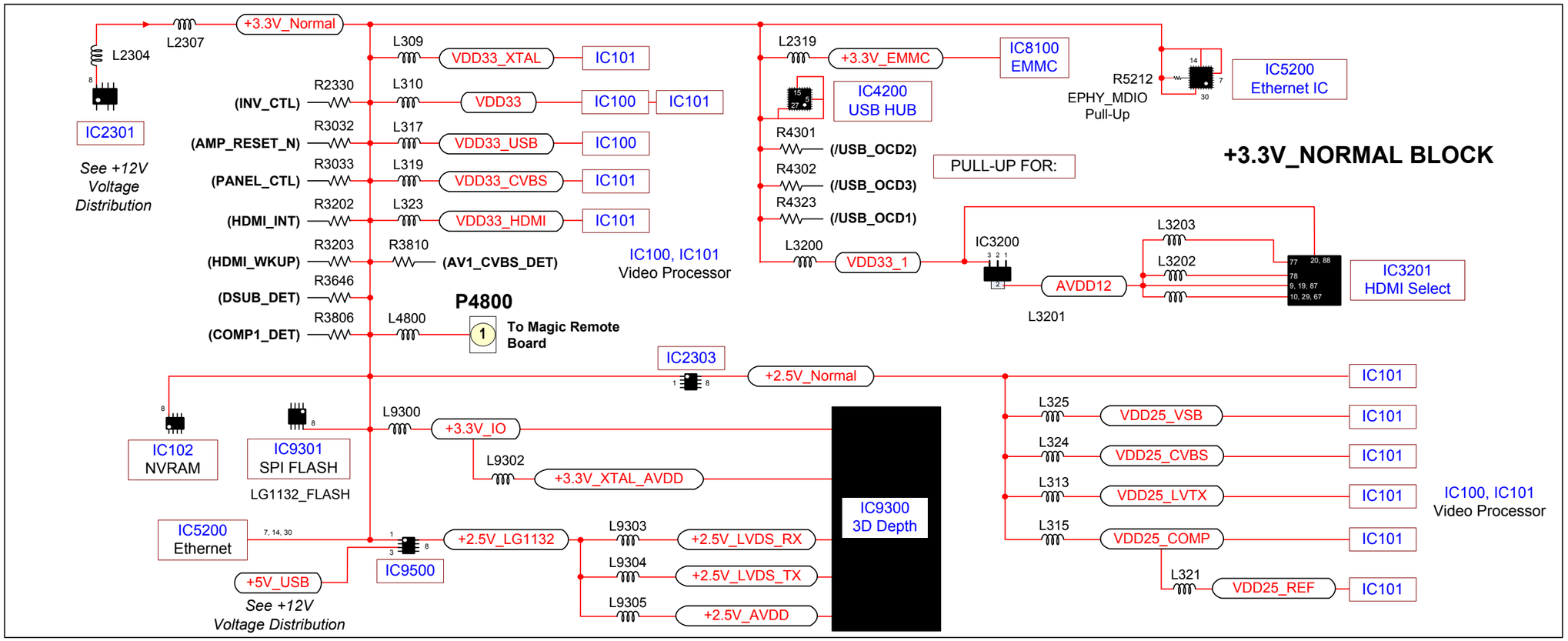
NOTE:
For +5V_NORMAL distribution,
For +3.3V_NORMAL distribution,
For +1.8V_NORMAL distribution,
For +5V_USB distribution,
For +1.5V_DDR distribution,
For +1.0V_VDC distribution,
see "Other" Voltage Distributions

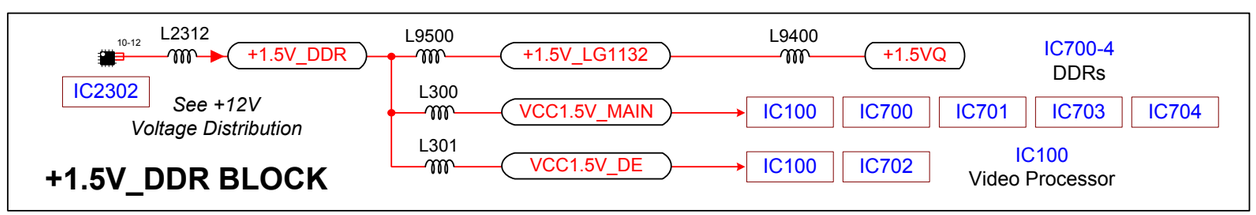
55LM8600 Main Board (+24V) Voltage Distribution

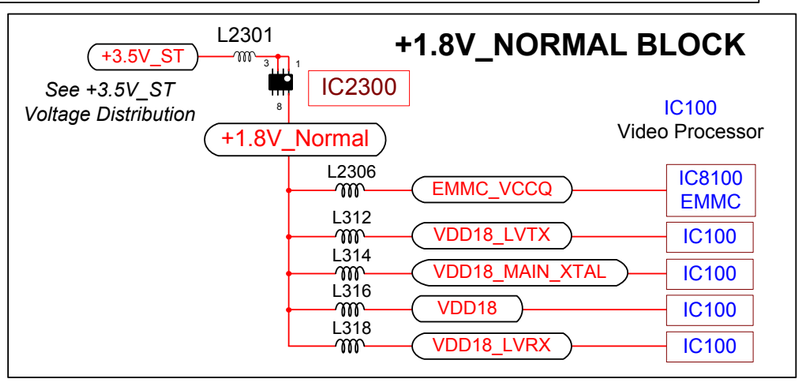
Note: Q2301 is not part of the 24V components.

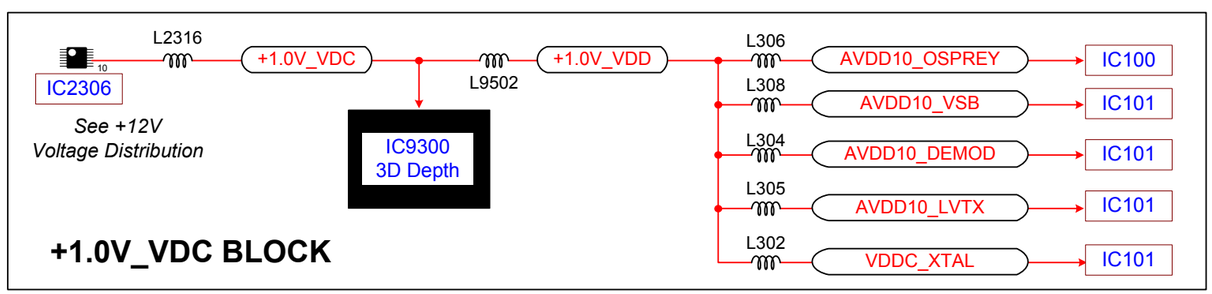


55LM8600 Main Board (Other) Voltage Distribution

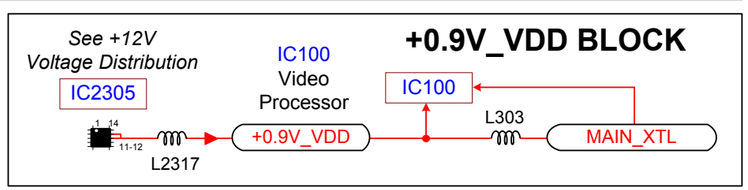








IC100
Video
Processor



55LN5700 INTERCONNECT DIAGRAM

Note: If a particular area is exhibiting a dimmer backlight level than other areas or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen.
100% = 2.91V. Follow the P-DIM signal all the way to the SMPS.

DIM OR DARK PICTURE AREA (LED SINGLE BLOCK TEST):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 135V D801 or D807 and 185V D804. Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump any of the blocks grounding pins on P801 (pins 1 top 4/7 or 3 bottom 3/7) while observing the picture and each block should turn on maximum.

P201 "SMPS Board" to P2400 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode Check
17-18	Gnd	Gnd	Gnd	Gnd
16	24V	0V	24.82V	OL
13-15	12V	0V	12.01V	1.38V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.82V	1.09V
7-8	Gnd	Gnd	Gnd	Gnd
6	*P-DIM2	0V	0.15V~2.9V	OL
5	3.5V_ST	3.56V	3.54V	OL
4	*P-DIM	0V	0.15V~2.9V	OL
3	3.5V_ST	3.56V	3.54V	OL
2	DRV_ON	0V	3.41V	OL
1	PWR_ON	0V	3.40V	1.14V

*0% to 100%

Note: Pin 2 (DRV_ON) is INV_ON from Main.
Note: Pin 16: Is Open. The voltage is loopback from the Main board.

PWR-ON: Starts 12V, 24V and LED Power 84.7V. No Backlights.

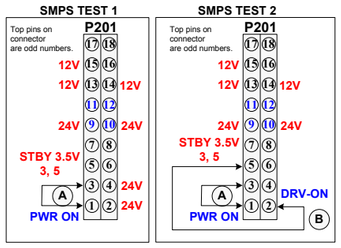
DRV-ON: Starts Backlights Backlight power is 135V P801 pin 4 (180V P801 pin 2).

(1) PWM Pins 4 and 6: can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition). Output from the Video Processor. Range 0.15V to 2.91V.

WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2400 on the Main board.
(A) Jump pin 3 or 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main and 84.5V to the Backlights. (No Backlights at this time).
LED Ground Return Line is 0.27V P801 pin 1 (8.04 P801 Pin 3) .
Remove AC power. Leave the jumper in place.

SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 3 or 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, LED POWER is 129.1V P801 pin 4 (172V P801 pin 2).
LED Ground Return Line is 0.95V P801 pin 1 (0.96 P801 Pin 3) .



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect P801. When AC is reapplied, the Backlight power will start at 85V, rise to 172V then gradually fall back to 86V.

84 Total LEDs, 6 LEDs per/Board.
2 boards per/row. Top group consist of 4 rows consisting of 48 LEDs.
Bottom group consist of 3 rows consisting of 36 LEDs.
2 Groups make up the backlights.

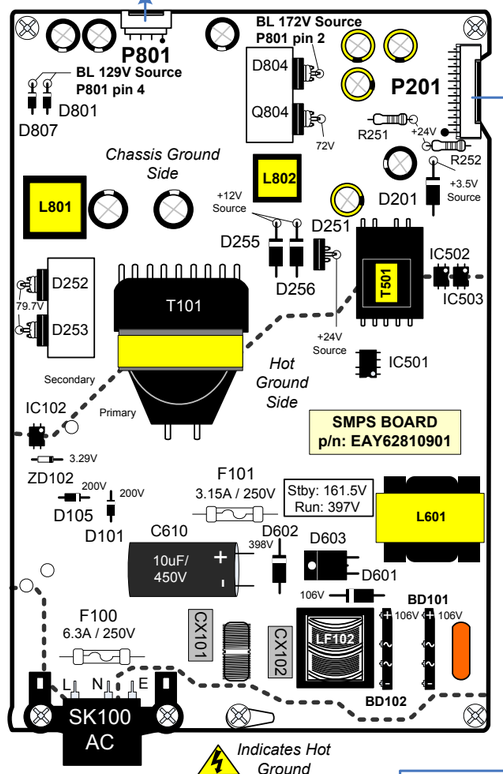
Back Left of Set
Keyboard
p/n: EBR77104601
To Key Board

Ft. IR/Intelligent Sensor
J2 **Front IR** J1

Bottom Center of Set
Front IR
p/n: EBR76405802

To the Panel Backlights

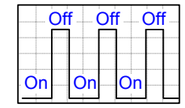
PANEL p/n: EAJ62310101



Indicates Hot Ground

No Local Dimming In this Model.

LED Drive Signal 50% Backlight Setting On the Cust. Menu.



68V p/p	Pin 1
52V p/p	Pin 3

Either pin 1 or 3 P801 LED Block grounding pulse

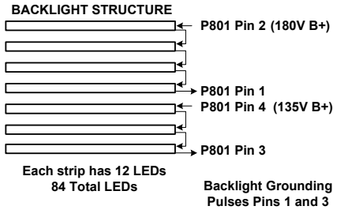
P801 "SMPS Board" To "Panel LEDs"

Pin	Label	Run	Diode Check	
1	BL-	*66.5V – 11.18V	OL	Controls the Top 4/7 of the Picture backlights.
2	BL+	180V	OL	
3	BL-	*50.4V – 8.95V	OL	Controls the Bottom 3/7 of the Picture backlights.
4	BL+	135V	OL	

*Dim to Bright

For DC voltages for Main board components see Page 2 of the Interconnect diagram.

BACKLIGHT STRUCTURE



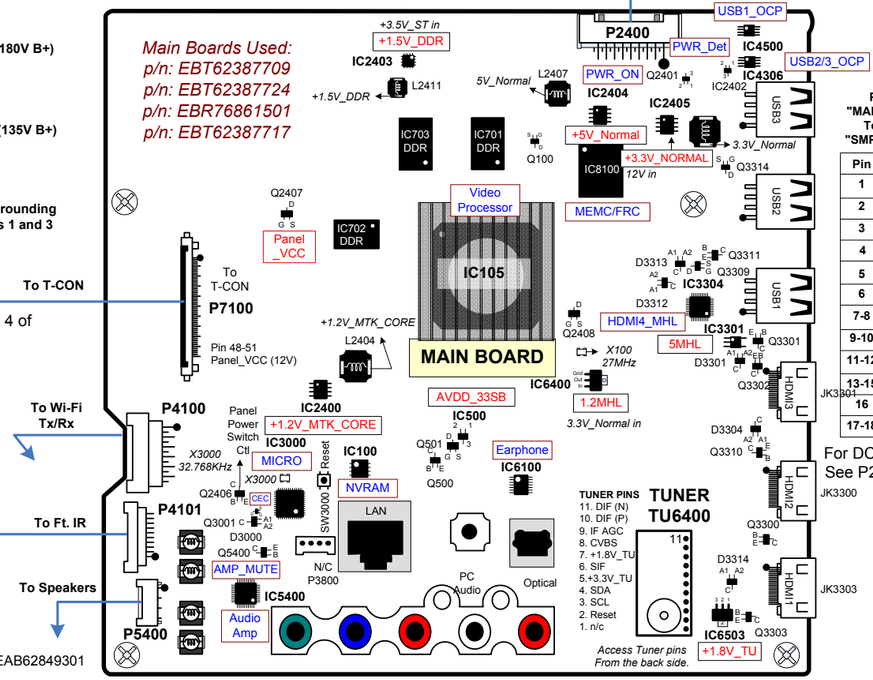
Each strip has 12 LEDs
84 Total LEDs

Backlight Grounding Pulses Pins 1 and 3

For LVDS Waveforms see Page 4 of the Interconnect diagram.

To T-CON

Main Boards Used:
p/n: EBT62387709
p/n: EBT62387724
p/n: EBR76861501
p/n: EBT62387717



All Speaker plug pins
12.41V Diode Check (OL)

P2400 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.6V
3	OL
4	1.6V
5	OL
6	0.84V
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-18	Gnd

For DC voltages See P201 Chart

PANEL TEST
To run the T-CON "Panel Test", remove the LVDS cables. Jump 12V to the 12V fuse. Jump VCC 3.3V to pin 44 on CN1. White, Red, Blue, Green and Black patterns show on screen.

P4101 "MAIN" to "Front IR Board" J1

PIN	LABEL	STBY	RUN	DIODE
10	EYE_SDA	3.56V	3.52V	OL
9	EYE_SCL	3.56V	3.52V	OL
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.54V	3.49V	OL
6	LED_R	1.65V	0V	OL
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.56V	3.52V	OL
3	Key2	3.56V	3.52V	OL
2	Key1	3.56V	3.52V	OL
1	Gnd	Gnd	Gnd	Gnd

P4100 "Main Board" to "WiFi Board"

PIN	LABEL	RUN	DIODE	To What
1	+3.5V_ST_Wake	3.48V	0.83V	WiFi Tx/Rx
2	N/C	n/c	0.61V	
3	WiFi_DM	0.04V	0.73V	WiFi Tx/Rx
4	N/C	n/c	1.23V	
5	WiFi_DP	0.04V	0.72V	WiFi Tx/Rx
6	N/C	n/c	OL	
7	Gnd	Gnd	Gnd	WiFi Tx/Rx
8	N/C	n/c	OL	
9	WiFi_PWR_On	0.04V	OL	WiFi Tx/Rx
10	N/C	n/c	1.36V	
11	Gnd	Gnd	Gnd	
12	N/C	n/c	1.23V	

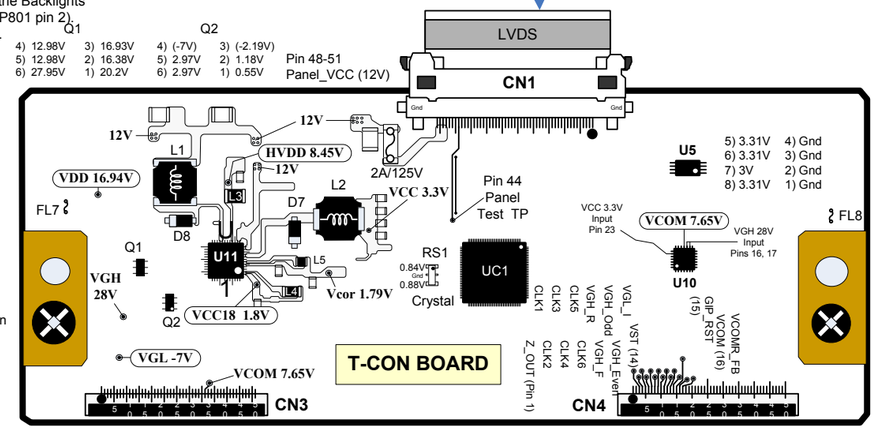
No Stand_By Voltages

Pin	Diode	
1	0.94V	P4100 1
2	0.86V	3
3	1.11V	5
4	Gnd	7
5	1.56V	9
6	OL	n/c

To Main P4100

Wi-Fi Tx/Rx

p/n: EAT61813801



VDD 16.94V	Pin 31, 32	VCC18 1.8V	Pin 17
VGL -7V	Pin 38	VCOM 7.65V	Pin 35
HVDD 8.45V	Pin 30		

TO TFT MODULE (KEY VOLTAGES)

VDD 16.94V	Pin 19, 20	VCC18 1.8V	Pin 34
VGL -7V	Pin 13	VCOM 7.65V	Pin 11
HVDD 8.45V	Pin 21		

Additional Voltages from U10 to the Panel with no silk screen labels:

U10 pin 1 (7.76V) CN4 pin 48 CN5 pin 3
U10 pin 2 (7.74V) CN4 pin 47 CN5 pin 4
U10 pin 3 (7.75V) CN4 pin 46 CN5 pin 5
U10 pin 4 (7.74V) CN4 pin 45 CN5 pin 6
U10 pin 5 (7.76V) CN4 pin 44 CN5 pin 7
U10 pin 6 (7.74V) CN4 pin 43 CN5 pin 8
U10 pin 8 (27.9V) CN4 pin 42 CN5 pin 9
U10 pin 9 (-6.97V) CN4 pin 41 CN5 pin 10
U10 pin 10 (-6.95V to 27.9V) CN4 pin 40 CN5 pin 11
U10 pin 11 (-6.95V to 27.9V) CN4 pin 39 CN5 pin 12

55LN5700 Main Board Component Voltages (ICs)

IC100

Pin	NVRAM (Non-Volitile)
[1]	n/c
[2]	Gnd
[3]	3.31V
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	0V
[8]	3.31V (Vcc In)

IC500

Pin	AVDD_33SB Regulator
[1]	Gnd
[2]	3.34V (Out)
[3]	3.52V (Vcc In)

IC2400

Pin	+1.2V_MTK_CORE Regulator
[1]	Gnd
[2]	11.97V (Vcc In)
[3]	Gnd
[4]	0.8V
[5]	1.6V
[6]	3.49V
[7]	1.22V (Out)
[8]	1.22V (Out)

IC2402

Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.66V (Out)
[3]	3.69V (In)

IC2403

Pin	+1.5V_DDR Regulator
[1]	3.52V (Vcc In)
[2]	3.52V (Vcc In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.68V
[8]	0.51V
[9]	1.85V
[10]	1.53V (Out)
[11]	1.53V (Out)
[12]	1.53V (Out)
[13]	5.06V
[14]	n/c
[15]	3.5V
[16]	3.52V (Vcc In)

IC2404

Pin	(+5V_NORMAL) Regulator
[1]	9.2V
[2]	0V (n/c)
[3]	0V (n/c)
[4]	1.22V
[5]	3.22V
[6]	Gnd
[7]	24.44V (Vcc In)
[8]	5.10V

IC2405

Pin	+3.3V_NORMAL Regulator
[1]	3.44V
[2]	0.77V
[3]	5.51V
[4]	5.32V
[5]	Gnd
[6]	3.32V (Out)
[7]	8.78V
[8]	11.98V (Vcc In)

IC3301

Pin	+5VMHL Regulator
[1]	0V
[2]	Gnd
[3]	0.07V
[4]	0V (MHL_Det)
[5]	5.10V (Vcc In)

IC4306

Pin	+5V_USB1 OCP
[1]	Gnd
[2]	5.10V (Vcc In)
[3]	3.3V
[4]	3.34V
[5]	3.31V
[6]	5.10V (Out USB2)
[7]	5.10V (Out USB3)
[8]	3.31V

IC6400

Pin	1.2V_MHL Regulator
[Gnd]	Gnd
[Out]	1.2V
[In]	3.3V

IC4500

Pin	+5V_USB2/3 OCP
[1]	Gnd
[2]	5.10V (Vcc In)
[3]	5.10V (Vcc In)
[4]	3.3V
[5]	3.3V
[6]	5.10V (Out USB1)
[7]	5.10V (Out USB1)
[8]	5.10V (Out USB1)

IC6100

Pin	Earphone Amp
[1]	Gnd
[2]	0V (R In)
[3]	0V (R Out)
[4]	Gnd
[5]	3.5V (Mute)
[6]	(-3.24V)
[7]	(-1.62V)
[8]	1.66V
[9]	3.31V
[10]	Gnd
[11]	2.34V
[12]	0V (L Out)
[13]	0V (L In)
[14]	Gnd

IC6503

Pin	+1.8V_TU Regulator
[1]	0V (Gnd)
[2]	1.81V (Out)
[3]	3.3V (In)

55LN5700 Main Board Large IC Component Voltages

Q100

Pin	OTP_Write Switch
[S]	3.31V
[G]	3.30V
[D]	0V

Q500

Pin	'+3.5V_ST_WAKE Switch Q501 CTRL
[B]	0.65V
[C]	0.05V
[E]	Gnd

Q501

Pin	'+3.5V_ST_WAKE Switch
[S]	0V
[G]	0.58V
[D]	3.52V

Q2401

Pin	PWR_On Switch
[1]	3.51V
[2]	2.83V
[3]	3.42V

Q2406

Pin	Panel VCC Switch (Q2407) Control
[B]	0.64V
[C]	0.06V
[E]	Gnd

Q2407

Pin	Panel_VCC Switch
[G]	1.8V
[S]	11.97V
[D]	11.96V

Q2408

Pin	VDD3V3_HDMI Switch
[G]	1.95V
[S]	3.31V
[D]	3.31V

Q3001

Pin	CEC (Consummer Electronic Control)
[G]	3.51V
[S]	3.59V
[D]	7.66V

Q3300

Q3303

Pin	HDMI 1, 2 Hot Swap
B	0V
C	0V
E	Gnd

Q3301

Pin	MHL_Det Switch Driver
[B]	0.53V
[C]	3.51V
[E]	0V

Q3302

Pin	MHL Detection Switch
[B]	3.52V
[C]	0V
[E]	3.51V

Q3303

Pin	HDMI1_Hot Swap
B	0V
C	0V
E	Gnd

Q3309

Pin	MHL_SDA/SCL 5V Pull-Up
[G]	5.09V
[S]	5.10V
[D]	2.46V

Q3310

Pin	MHL_Det Switch Changes to HDMI_Det
[B]	0V
[C]	5V
[E]	0V

IC3000

Pin	Micro Processor	Pin
[1]	0.06V	[25] 0V
[2]	3.3V	[26] 0.04V
[3]	0.05V	[27] 3.5V
[4]	0.08V	[28] 0V
[5]	0.02V	[29] 0V
[6]	3.51V	[30] 0V
[7]	3.49V	[31] 3.51V
[8]	3.51V	[32] 3.51V
[9]	3.51V	[33] 3.51V
[10]	3.51V	[34] 3.51V
[11]	3.51V	[35] 0V
[12]	0.17V	[36] 0V
[13]	3.34V	[37] 0V
[14]	3.66V	[38] 1.06V
[15]	3.51V	[39] 3.51V
[16]	0V	[40] 3.51V
[17]	3.51V	[41] 0.64V
[18]	3.51V	[42] 0.12V
[19]	3.24V	[43] 0V
[20]	3.34V	[44] 0V (n/c)
[21]	0.08V	[45] 0V (n/c)
[22]	0V	[46] 2.09V
[23]	0V	[47] Gnd
[24]	0V	[48] 3.51V (Vcc In)

IC3304

Pin	HDMI4_MHL Processor	Pin
[1]	Gnd	[21] 3.36V
[2]	1.2V	[22] 3.31V
[3]	Gnd	[23] 3.31V
[4]	3.3V	[24] 3.31V
[5]	0V	[25] 3.31V
[6]	0.05V	[26] 3.31V
[7]	4.83V	[27] 3.31V
[8]	5.09V	[28] 3.31V
[9]	0V	[29] 3.31V
[10]	5.10V	[30] 1.2V
[11]	0V	[31] 3.31V (Vcc In)
[12]	0V (n/c)	[32] 0.03V
[13]	0V (n/c)	[33] 0.03V
[14]	5V	[34] 0.03V
[15]	0V	[35] 0.03V
[16]	0V (n/c)	[36] 0.03V
[17]	3.29V	[37] 0.03V
[18]	3.28V	[38] 0.03V
[19]	3.37V	[39] 0.03V
[20]	1.02V	[40] 3.31V (Vcc In)

IC5400

Pin	Audio Amp	Pin
[1]	Gnd	[21] 12.2V
[2]	Gnd	[22] Gnd
[3]	Gnd	[23] 16.77V
[4]	Gnd	[24] 3.16V
[5]	0V	[25] Gnd
[6]	1.2V	[26] 0V
[7]	0V	[27] 5.12V
[8]	1.63V	[28] 16.76V
[9]	1.62V	[29] Gnd
[10]	3.31V	[30] **12.2V**
[11]	3.31V	[31] 24.45V
[12]	3.31V	[32] 12.2V
[13]	3.25V	[33] 12.2V
[14]	1.65V	[34] Gnd
[15]	1.65V	[35] 16.76V
[16]	16.77V	[36] 3.29V
[17]	Gnd	[37] Gnd
[18]	12.2V	[38] 1.59V
[19]	24.45V	[39] Gnd
[20]	24.45V	[40] 3.31V (Vcc In)

Q3311

Pin	MHL_SDA/SCL 5V Q3309 Control
B	0V
C	5.09V
E	Gnd

Q3314

Pin	HDMI3 Hot Swap Load Pull-Up
[G]	0V
[S]	0V
[D]	11.98V

Q5400

Pin	Amp Mute Driver
[B]	0V
[C]	3.30V
[E]	Gnd

D3000

Pin	CEC Bias
[A1]	2.9V
[A2]	3.52V
[C]	3.5V

D3301

Pin	DDC_SCL_4_JACK Pull_Up
[A1]	3.51V
[A2]	5.10V
[C]	5V

D3304

Pin	DDC_SCL _MHL Routing
[A1]	3.51V
[A2]	5.10V
[C]	5V

D331DC_SCL_MHL

Pin	Pull_Up
[A1]	0V
[A2]	2.49V
[C]	5.09V

D331DC_SDA_MHL

Pin	Pull_Up
[A1]	0V
[A2]	2.49V
[C]	4.83V

D331DC_SDA_SCL

Pin	Pull_Up
[A1]	0V
[A2]	2.49V
[C]	4.83V

55LN5700 T-CON Board Component Voltages

U3 DC-to-DC

Panel Power
Level Shifter

Pin		Pin	
[1]	7.76V (GCLK1)	[15]	(-6.97) (VGL)
[2]	7.74V (GCLK2)	[16]	27.96V (VGH)
[3]	7.75V (GCLK3)	[17]	27.96V (VGH)
[4]	7.74V (GCLK4)	[18]	7.65V (V_COM)
[5]	7.76V (GCLK5)	[19]	7.65V
[6]	7.74V (GCLK6)	[20]	7.62V
[7]	2.5V	[21]	16.9V
[8]	27.9V (VGH_R)	[22]	Gnd
[9]	(-6.97) (VGH_F)	[23]	3.3V (VCC)
[10]	*(-6.95V to 27.9V) (VGH_ODD)	[24]	0V
[11]	*(-6.95V to 27.9V) (VGH_EVEN)	[25]	0V
[12]	(-6.91) (VST)	[26]	0.7V
[13]	(-6.88) (GIP_RST)	[27]	1.27V
[14]	(-6.97)	[28]	3.24V

* EVERY Second

U2 DC-to-DC

T-CON and Panel Power
DC-to-DC Conv

Pin		Pin	
[1]	1.81V	[25]	4.95V
[2]	1.86V	[26]	0.53V
[3]	Gnd	[27]	3.3V
[4]	3.3V	[28]	3.3V
[5]	1.79V	[29]	4.99V
[6]	1.81V	[30]	1.3V
[7]	Gnd	[31]	16.4V
[8]	3.31V (VCC)	[32]	27.94V
[9]	3.31V (VCC)	[33]	5.69V
[10]	0V	[34]	8.21V
[11]	11.7V (Panel_VCC)	[35]	(-6.98V) (VGL_FB)
[12]	11.7V (Panel_VCC)	[36]	1.19V
[13]	11.7V (Panel_VCC)	[37]	13.86V
[14]	11.7V (Panel_VCC)	[38]	12.85V
[15]	8.45V (H_VDD)	[39]	10.91V
[16]	8.44V (H_VDD_FB)	[40]	6.55V
[17]	Gnd	[41]	4.6V
[18]	Gnd	[42]	3.5V
[19]	Gnd	[43]	7.65V
[20]	11.7V (Panel_VCC)	[44]	7.64V
[21]	11.7V (Panel_VCC)	[45]	7.63V
[22]	16.97V	[46]	7.61V (VCOM_RFB)
[23]	16.97V (VDD)	[47]	1.61V
[24]	Gnd	[48]	Gnd

U5 Buffer

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	3.31V
[8]	3.31V

Q1 VDD Rectifier

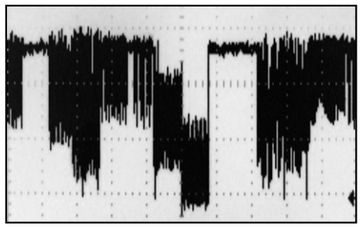
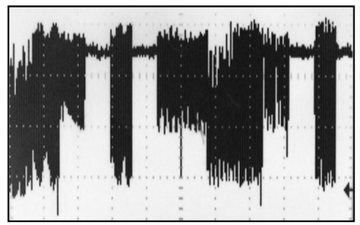
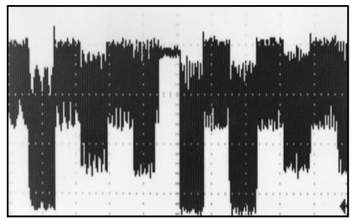
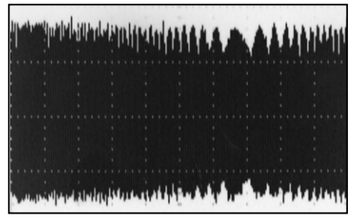
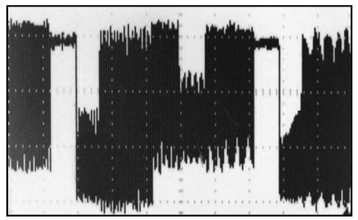
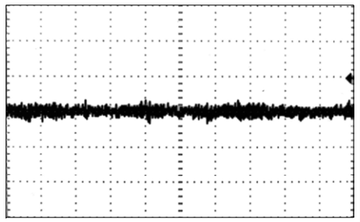
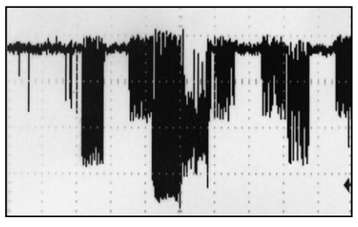
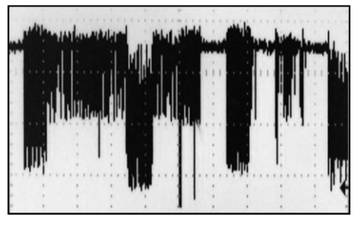
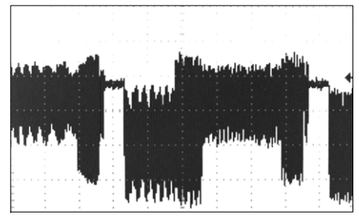
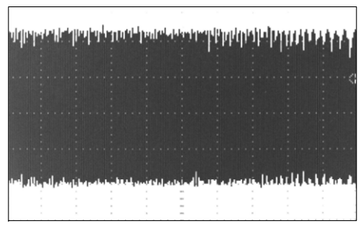
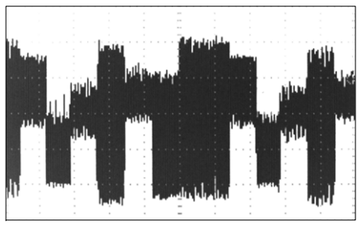
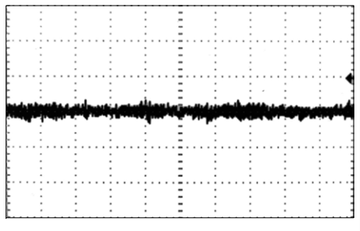
Pin	
[1]	20.2V
[2]	16.38V
[3]	16.93V Output
[4]	12.98V
[5]	12.98V
[6]	12.95V

Q2 VGL Rectifier

Pin	
[1]	0.56V
[2]	1.18V
[3]	(-2.9V)
[4]	(-7V) Output
[5]	2.97V
[6]	2.97V

55LN5700 P7100 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

Pin 12	**Pin 14**	**Pin 16**	**Pin 19**	**Pin 22**	**Pin 24**
					
340mV p/p	**384mV p/p**	**380mV p/p**	**340mV p/p**	**348mV p/p**	**56mV p/p** **No Waveform**
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
384mV p/p	**356mV p/p**	**448mV p/p**	**340mV p/p**	**449mV p/p**	**64mV p/p** **No Waveform**

55LS4500 INTERCONNECT DIAGRAM

Note: If a backlights are exhibiting a dim picture, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal.
If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen.
100% = 3.22V. Follow the P-DIM signal all the way to the SMPS.

DIM OR DARK PICTURE:
Turn the Brightness, Contrast and Backlights all the way up. Confirm 73V D801.
Confirm P-DIM is approx. 3V. Using a 220Ω resistor, jump backlight grounding pins on P202 (pins 1–6) or P203 (pins 3-8) while observing the picture. The Backlights should turn on maximum. If not, replace panel.

PANEL p/n: EAJ62088401

P201 Connector "SMPS Board" To P403 "MAIN Board"

Pin	Label	STBY	Run	Diode CK
24	Error	0V	0V	OL
23	N/C	n/c	1.21V	OL
22	P_DIM	0V	0.15V-2.91V	OL
21	12V	0V	12.15V	0.5V
20	N/C	n/c	n/c	OL
19	12V	0V	12.15V	0.5V
18	DRV_ON	0V	3.33V	OL
17	12V	0V	12.15V	0.5V
16	N/C	n/c	n/c	OL
13-15	Gnd	Gnd	Gnd	Gnd
9-12	3.5V_STBY	3.57V	3..49V	OL
5-8	Gnd	Gnd	Gnd	Gnd
2-4	24V	0V	27.8V	1.12V
1	PWR_ON	0V	3.36V	1.21V

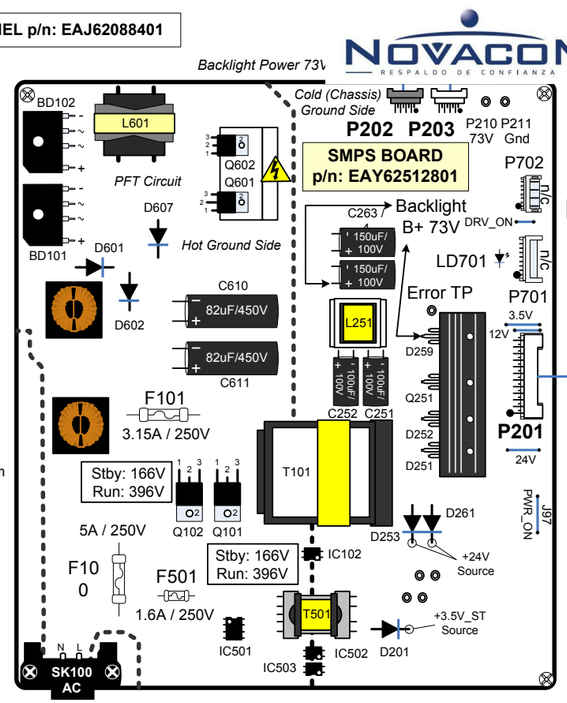
(1) **PWR-ON:** Starts 12V, 24V Backlight Power 56V. No Backlights.

(2) **DRV-ON:** Starts Backlights LED Power goes to 73V.

(3) **PWM Pins 4:** can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition). Output from the Video Processor. Range 0.23V to 2.76V.

(4) **PWM2:** Fixed and not used.
(5) **ERROR:** Not used on the Main.

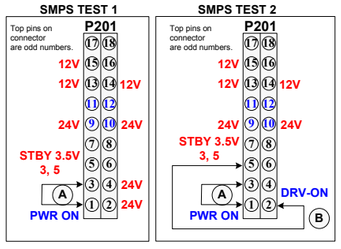
Indicates Hot Ground



WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P401 on the Main board.
(A) Jump pin 3 or 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main. (No Backlight power will be 56.23V, but no backlights at this time).
LED Ground Return Line is (6.28V).
Remove AC power. Leave the jumper in place.

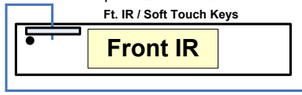
SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 3 or 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read to 72.3V.
LED Ground Return Line is (1.46V). P-DIM P201 (pin 4) pulls up to 3.43V.



Note; If there is a problem with a load from the panel backlights, you can remove AC and Disconnect P202 or P203. When AC is reapplied, the Backlights will come on and then shut off. Backlight power will start at 57V, rise to 102V and stay there. Power Supply continues to run.

BACKLIGHT INFORMATION:
132 Total LEDs, 66 LEDs per/Board.
2 boards One Right, One Left Side.
6 Control lines from P202 and 6 from P203.
LEDs are controlled by ground return lines P202/P203.
Backlight power 73V.

Ft Right of Set
Ft IR / Soft Touch Keys comes with Front Frame
p/n: ABJ73747211

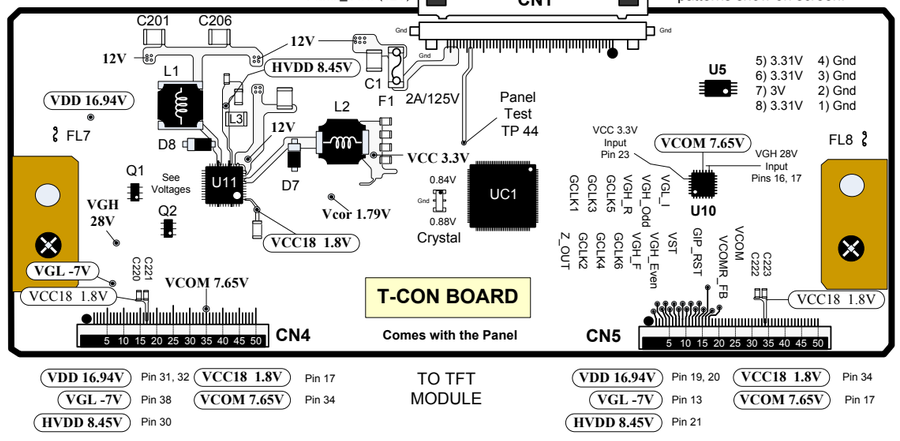


WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.

Q1
4) 12.98V 3) 16.93V
5) 12.98V 2) 16.38V
6) 27.95V 1) 20.2V

Q2
4) (-7V) 3) (-2.19V)
5) 2.97V 2) 1.18V
6) 2.97V 1) 0.55V

Pin 48-51 Panel_VCC (12V)



VDD 16.94V	Pin 31, 32	VCC18 1.8V	Pin 17
VGL -7V	Pin 38	VCOM 7.65V	Pin 34
HVDD 8.45V	Pin 30		

TO TFT MODULE

VDD 16.94V	Pin 19, 20	VCC18 1.8V	Pin 34
VGL -7V	Pin 13	VCOM 7.65V	Pin 17
HVDD 8.45V	Pin 21		

Additional Voltages from U10 to the Panel with no silk screen labels:

U10 pin 1 (7.76V) CN4 pin 48 CN5 pin 3
U10 pin 2 (7.74V) CN4 pin 47 CN5 pin 4
U10 pin 3 (7.75V) CN4 pin 46 CN5 pin 5
U10 pin 4 (7.74V) CN4 pin 45 CN5 pin 6
U10 pin 5 (7.76V) CN4 pin 44 CN5 pin 7
U10 pin 6 (7.74V) CN4 pin 43 CN5 pin 8
U10 pin 8 (27.9V) CN4 pin 42 CN5 pin 9
U10 pin 9 (-6.97V) CN4 pin 41 CN5 pin 10
U10 pin 10 (-6.95V to 27.9V) CN4 pin 40 CN5 pin 11
U10 pin 11 (-6.95V to 27.9V) CN4 pin 39 CN5 pin 12

PANEL TEST
To run the T-CON "Panel Test", remove the LVDS cables. Jump 12V to the 12V fuse. Jump VCC 3.3V to pin 44 on CN1. White, Red, Blue, Green and Black patterns show on screen.

P202 Black Plug "SMPS Board" To "Panel LEDs"

Pin	Label	Run	Diode Check
1	VC-6	*1.71V~20.42V	OL
2	VC-5	*1.71V~20.42V	OL
3	VC-4	*1.71V~20.42V	OL
4	VC-3	*1.71V~20.42V	OL
5	VC-2	*1.71V~20.42V	OL
6	VC-1	*1.71V~20.42V	OL
7	n/c	n/c	OL
8	LED+	*72.2V - 72.5V	OL

*Bright to Dim screen

P203 White Plug "SMPS Board" To "Panel LEDs"

Pin	Label	Run	Diode Check
1	LED+	*72.2V - 72.5V	OL
2	n/c	n/c	OL
3	VC-12	*1.71V~20.42V	OL
4	VC-11	*1.71V~20.42V	OL
5	VC-10	*1.71V~20.42V	OL
6	VC-9	*1.71V~20.42V	OL
7	VC-8	*1.71V~20.42V	OL
8	VC-7	*1.71V~20.42V	OL

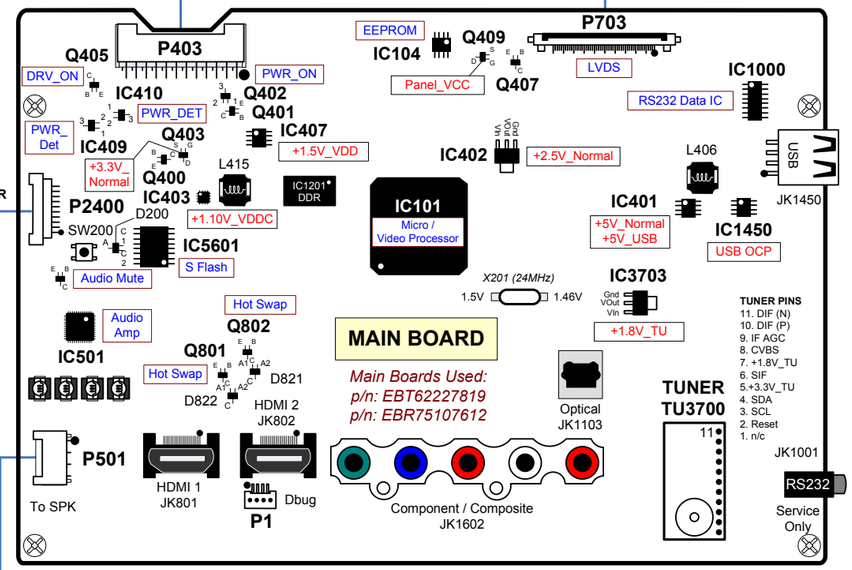
*Bright to Dim screen

For DC voltages See P201 Chart

P403 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2-4	OL
5-8	Gnd
9-12	0.65V
13-15	Gnd
16	n/c
17	OL
18	1.64V
19	OL
20	n/c
21	OL
22	OL
23	1.13V
24	n/c

For LVDS Waveforms see Page 4 of the Interconnect diagram.



12.44V Each Pin

SPK
p/n: EAB62648903

P2400 "MAIN Board" To "Ft IR / Soft Touch Key Board"

PIN	LABEL	STBY	RUN	DIODE ✓
10	Gnd	Gnd	Gnd	Gnd
9	(2)IR	3.54V	3.45V	OL
8	LED_R	2.62V	0V	2.29V
7	Gnd	Gnd	Gnd	Gnd
6	3.5V_ST	3.57V	3.49V	0.65V
5	KEY2	3.57V	3.45V	OL
4	KEY1	3.57V	3.45V	OL
3	Gnd	Gnd	Gnd	Gnd
2	(1)Sensor_SDA	0.33V	3.37V	1.11V
1	(1)Sensor_SCL	.033V	3.37V	0.78V

(1) Sensor_SCL / SDA 3.40V p/p only when Energy Savings is in Auto.
(2) IR 3.6V p/p

For DC voltages for Main board components see Page 2 of the Interconnect diagram.

Additional Voltages from U10 to the Panel with no silk screen labels:

U10 pin 1 (7.76V) CN4 pin 48 CN5 pin 3
U10 pin 2 (7.74V) CN4 pin 47 CN5 pin 4
U10 pin 3 (7.75V) CN4 pin 46 CN5 pin 5
U10 pin 4 (7.74V) CN4 pin 45 CN5 pin 6
U10 pin 5 (7.76V) CN4 pin 44 CN5 pin 7
U10 pin 6 (7.74V) CN4 pin 43 CN5 pin 8
U10 pin 8 (27.9V) CN4 pin 42 CN5 pin 9
U10 pin 9 (-6.97V) CN4 pin 41 CN5 pin 10
U10 pin 10 (-6.95V to 27.9V) CN4 pin 40 CN5 pin 11
U10 pin 11 (-6.95V to 27.9V) CN4 pin 39 CN5 pin 12

55LS4500 Main Board DC Voltages

IC104

Pin	HDCP EEPROM
[1]	n/c
[2]	n/c
[3]	n/c
[4]	Gnd
[5]	3.4V
[6]	3.4V
[7]	0V
[8]	3.4V (3.3V_Normal)

IC401

Pin	(+5V_NORMAL) (USB_+5V) Regulator
[1]	Gnd
[2]	12.13V (In)
[3]	Gnd
[4]	0.8V (FB)
[5]	0.94V (Comp)
[6]	12.14V (Enable)
[7]	2.02V (SS)
[8]	n/c
Case [9]	5.3V (Out)

IC402

Pin	+2.5V_Normal Regulator
[In]	3.4V
[Out]	2.5V
[Gnd]	Gnd

IC403

Pin	+1.10V_VDDC Regulator
[1]	3.43V_ST (In)
[2]	3.43V_ST (In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.72V
[8]	0.5V
[9]	1.84V
[10]	1.24V (Out)
[11]	1.24V (Out)
[12]	1.24V (Out)
[13]	4.73V
[14]	n/c
[15]	3.48V
[16]	3.43V_ST (In)

IC407

Pin	+1.5V_VDD Regulator
[1]	3.29V (Vcc In)
[2]	n/c
[3]	3.29V (Vcc In)
[4]	3.27V (En)
[5]	Gnd
[6]	3.18V
[7]	0.8V
[8]	1.53V (Out)

IC409

Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.59V
[3]	3.84V

IC410

Pin	PWR_Det +12V in
[1]	Gnd
[2]	3.59V
[3]	3.72V

IC1000

Pin	RS232 Data Routing
[1]	3.53V
[2]	5.69V
[3]	0V
[4]	0V
[5]	(-5.60V)
[6]	(-5.63V)
[7]	n/c (5.64V)
[8]	n/c (0V)
[9]	n/c (3.49V)
[10]	n/c (0V)
[11]	3.34V
[12]	3.48V
[13]	0V
[14]	(-5.59V)
[15]	0V (Gnd)
[16]	3.5V (Vcc In)

D200

Pin	SOC_Reset Speed Up
[C1]	0V
[C2]	0V
[A]	0V (Gnd)

IC1450

Pin	5V for USB OCP
[1]	0V (Gnd)
[2]	5.11V (In)
[3]	5.11V (In)
[4]	0V (EN)
[5]	0V
[6]	5.11V (Out)
[7]	5.11V (Out)
[8]	n/c

IC3703

Pin	+1.8V_TU Regulator
[1]	0V (Gnd)
[2]	1.80V (Reset)
[3]	3.39V (In)

IC5601

Pin	Serial Flash Memory
[1]	3.34V (Hold)
[2]	3.33V (In) +3.3V_ST
[3]	0V (n/c)
[4]	0V (n/c)
[5]	0V (n/c)
[6]	0V (n/c)
[7]	1.34V (/SPI_CS)
[8]	1.15V (SPI_SDO)
[9]	0V (WP)
[10]	0V (n/c)
[11]	0V (n/c)
[12]	0V (n/c)
[13]	0V (n/c)
[14]	0V (n/c)
[15]	0V (SPI_SDI)
[16]	0V (SPI_SCK)

Q400

Pin	+3.3V_Normal Driver for Q403
B	0.63V (POWER_ON/OFF_1)
C	0.05V (Ctrl)
E	0V (Gnd)

Q401

Pin	Power On/Off Driver for Q402
B	0.66V (RL_ON)
C	0.06V (Ctrl) to Q402
E	Gnd

Q402

Pin	Power On/Off Switch
1	3.4V (In) +3.3V_ST
2	3.35V (Ctrl) from Q401
3	3.39V (Out) PWR_ON

Q403

Pin	+3.3V_Normal Switch
S	3.48V (In) +3.3V_ST
G	0.07V (Enable)
D	3.41V (Out) +3.3V_Normal

Q405

Pin	DRV_ON Switch
B	0.02V (INV_CTL)
C	3.4V (INV_On)
E	0V (Gnd)

Q407

Pin	PANEL_VCC Drives Q409
B	0.65V (Pannel_Ctl)
C	0.53V (EN) to Q409
E	Gnd

Q409

Pin	PANEL_VCC Switch
S	12.0V (In) +12V
G	1.79V (Enable)
D	11.99V (Out)

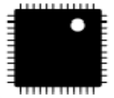
Q500

Pin	Amp Mute Driver
[B]	0V (Amp_Mute) Ctl
[C]	3.27V (Amp_Mute) Out
[E]	Gnd

Q801
Q802

Pin	HDMI 1-4 Hot Swap
B	0V
C	0V
E	Gnd

IC501



Pin	Audio Amp	Pin
[1]	Gnd	[25] 12.4V
[2]	1.2V	[26] 12.4V
[3]	1.2V	[27] Gnd
[4]	0.8V	[28] 17.8V
[5]	Gnd	[29] 6.2V
[6]	Gnd	[30] Gnd
[7]	Gnd	[31] 5.4V
[8]	1.3V	[32] 6.2V
[9]	1.2V	[33] 17.8V
[10]	1.66V	[34] Gnd
[11]	1.66V	[35] 0V
[12]	3.3V	[36] 12.4V
[13]	3.3V	[37] 12.4V
[14]	3.3V	[38] 24.7V
[15]	3.3V n/c	[39] 24.7V
[16]	3.3V n/c	[40] 24.7V
[17]	3.3V n/c	[41] 12.4V
[18]	18V	[42] 12.4V
[19]	Gnd	[43] 17.8V
[20]	12.4V	[44] 3.3V
[21]	12.4V	[45] Gnd
[22]	24.7V	[46] Gnd
[23]	24.7V	[47] 1.7V
[24]	24.7V	[48] 3.3V

D821

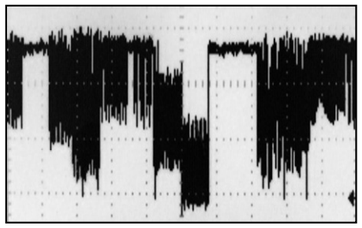
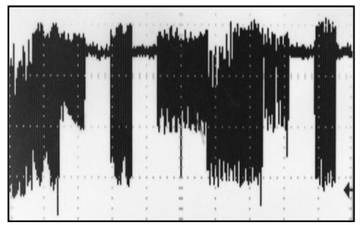
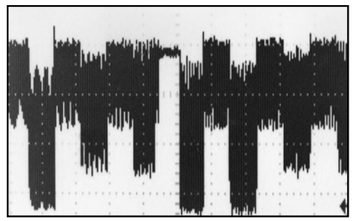
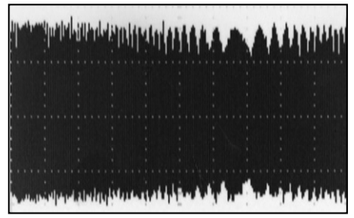
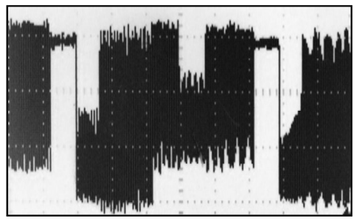
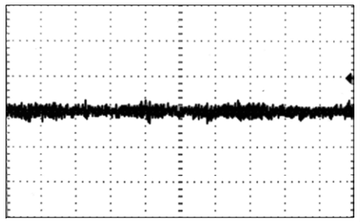
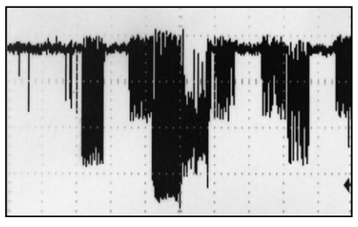
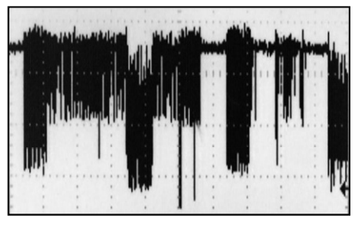
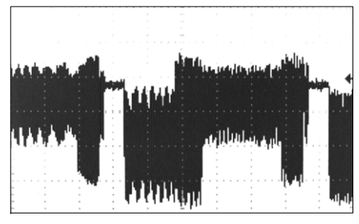
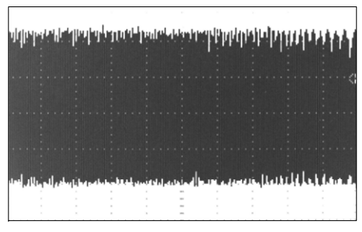
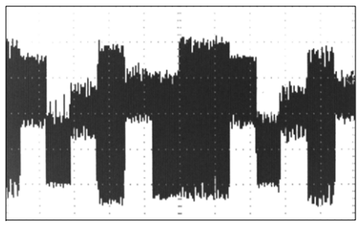
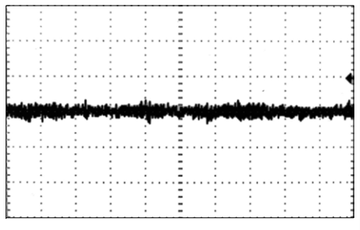
Pin	DDC_SCL1/SDA1 Pull Up
[A1]	V (5V_HDMI_1)
[A2]	5.32V (+5V_Normal)
[C]	5.14V (Pull_Up)

D822

Pin	DDC_SCL2/SDA2 Pull Up
[A1]	5.32V (5V_HDMI_1)
[A2]	5.32V (+5V_Normal)
[C]	5.14V (Pull_Up)

55LS4500 P703 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

Pin 12	Pin 14	Pin 16	Pin 19	Pin 22	Pin 24
					
340mV p/p	384mV p/p	380mV p/p	340mV p/p	348mV p/p	56mV p/p No Waveform
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
384mV p/p	356mV p/p	448mV p/p	340mV p/p	449mV p/p	64mV p/p No Waveform

55LM6200 T-CON Board Component Voltages

U10 DC-to-DC

Panel Power
Level Shifter

Pin		Pin	
[1]	7.76V (GCLK1)	[15]	(-6.97) (VGL)
[2]	7.74V (GCLK2)	[16]	27.96V (VGH)
[3]	7.75V (GCLK3)	[17]	27.96V (VGH)
[4]	7.74V (GCLK4)	[18]	7.65V (V_COM)
[5]	7.76V (GCLK5)	[19]	7.65V
[6]	7.74V (GCLK6)	[20]	7.62V
[7]	2.5V	[21]	16.9V
[8]	27.9V (VGH_R)	[22]	Gnd
[9]	(-6.97) (VGH_F)	[23]	3.3V (VCC)
[10]	*(-6.95V to 27.9V) (VGH	[24]	0V
[11]	*(-6.95V to 27.9V) (VGH	[25]	0V
[12]	(-6.91) (VST)	[26]	0.7V
[13]	(-6.88) (GIP_RST)	[27]	1.27V
[14]	(-6.97)	[28]	3.24V

* EVERY Second

U11 DC-to-DC

T-CON and Panel Power
DC-to-DC Conv

Pin		Pin	
[1]	1.81V	[25]	4.95V
[2]	1.86V	[26]	0.53V
[3]	Gnd	[27]	3.3V
[4]	3.3V	[28]	3.3V
[5]	1.79V	[29]	4.99V
[6]	1.81V	[30]	1.3V
[7]	Gnd	[31]	16.4V
[8]	3.31V (VCC)	[32]	27.94V
[9]	3.31V (VCC)	[33]	5.69V
[10]	0V	[34]	8.21V
[11]	11.7V (Panel_VCC)	[35]	(-6.98V) (VGL_FB)
[12]	11.7V (Panel_VCC)	[36]	1.19V
[13]	11.7V (Panel_VCC)	[37]	13.86V
[14]	11.7V (Panel_VCC)	[38]	12.85V
[15]	8.45V (H_VDD)	[39]	10.91V
[16]	8.44V (H_VDD_FB)	[40]	6.55V
[17]	Gnd	[41]	4.6V
[18]	Gnd	[42]	3.5V
[19]	Gnd	[43]	7.65V
[20]	11.7V (Panel_VCC)	[44]	7.64V
[21]	11.7V (Panel_VCC)	[45]	7.63V
[22]	16.97V	[46]	7.61V (VCOM_RFB)
[23]	16.97V (VDD)	[47]	1.61V
[24]	Gnd	[48]	Gnd

U5 Buffer

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.31V
[6]	3.31V
[7]	3.31V
[8]	3.31V

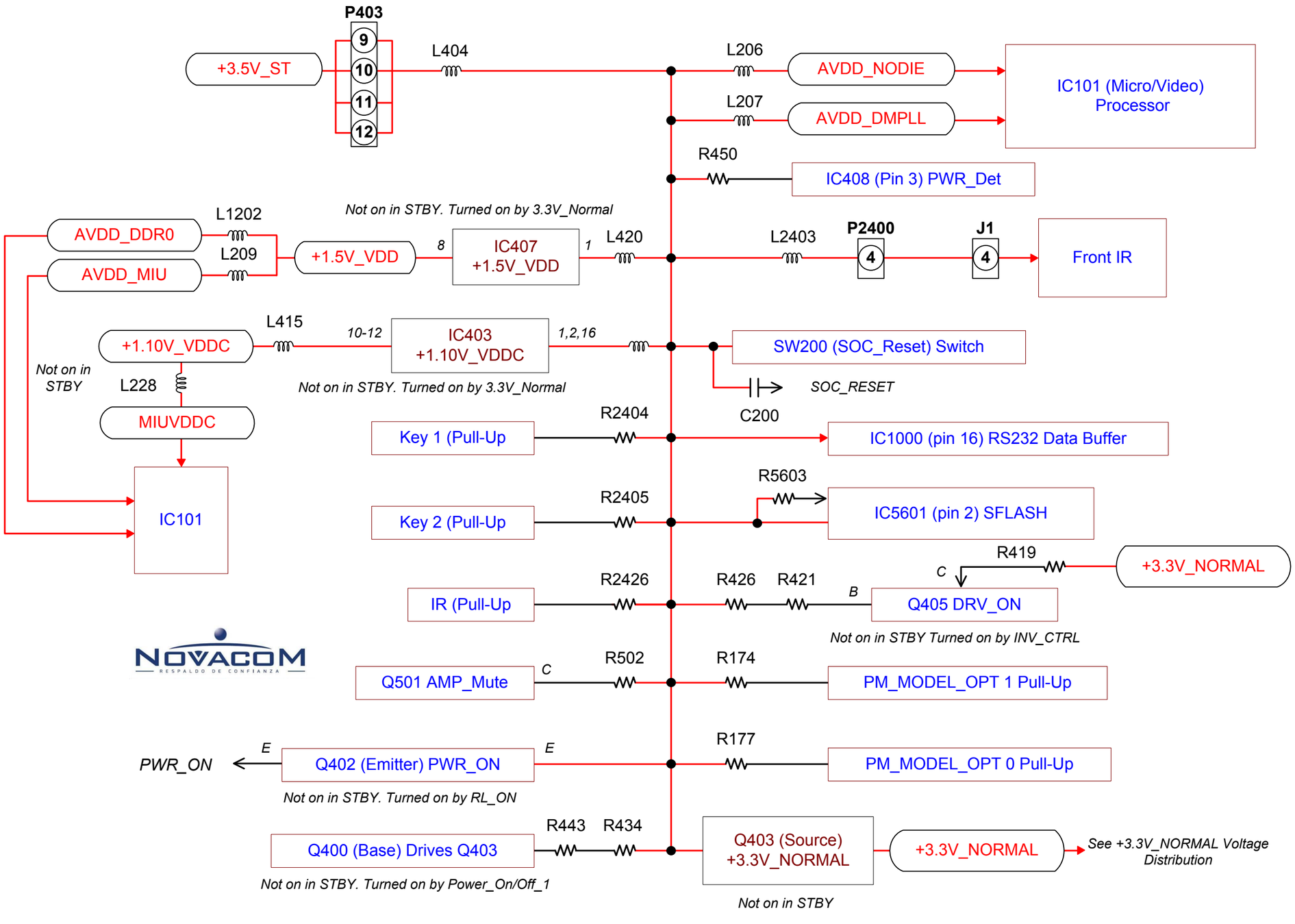
Q1 VDD Rectifier

Pin	
[1]	20.2V
[2]	16.38V
[3]	16.93V Output
[4]	12.98V
[5]	12.98V
[6]	12.95V

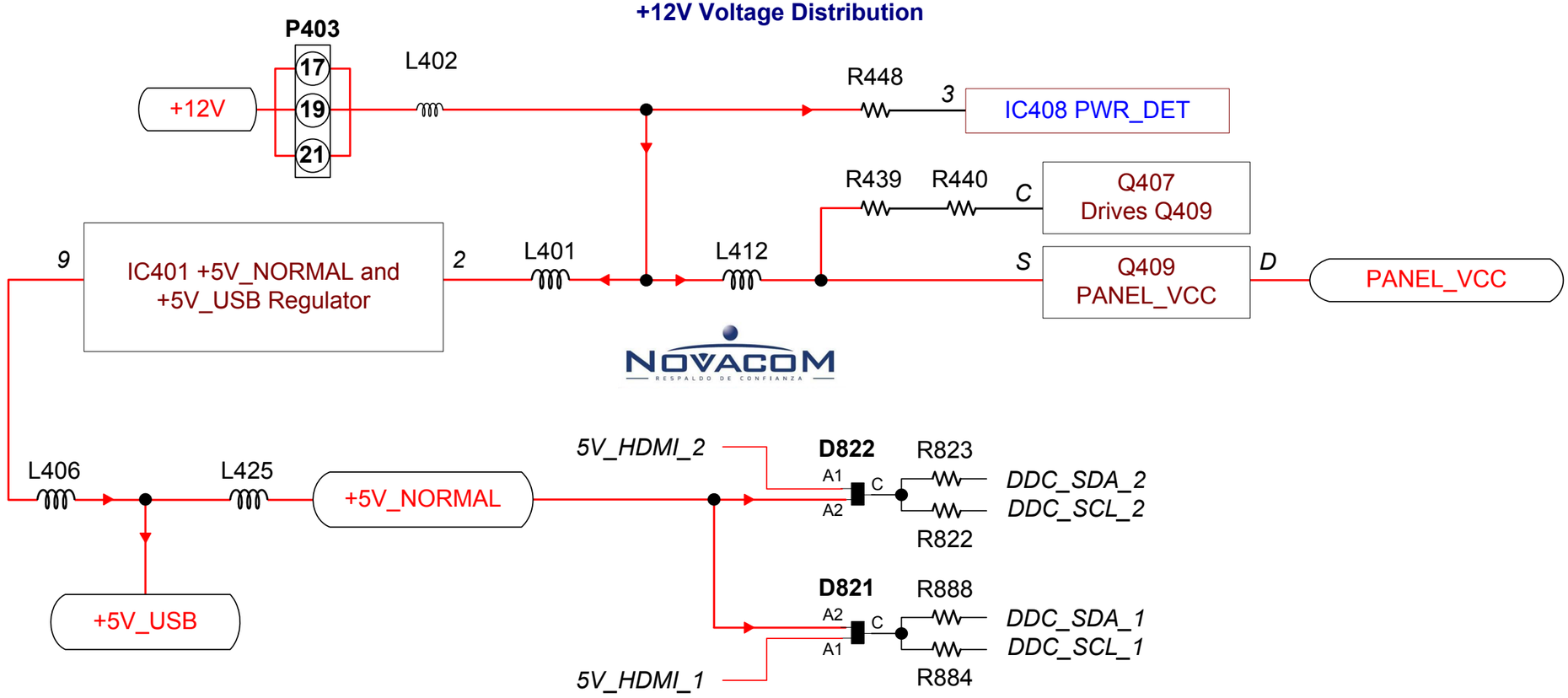
Q2 VGL Rectifier

Pin	
[1]	0.56V
[2]	1.18V
[3]	(-2.9V)
[4]	(-7V) Output
[5]	2.97V
[6]	2.97V

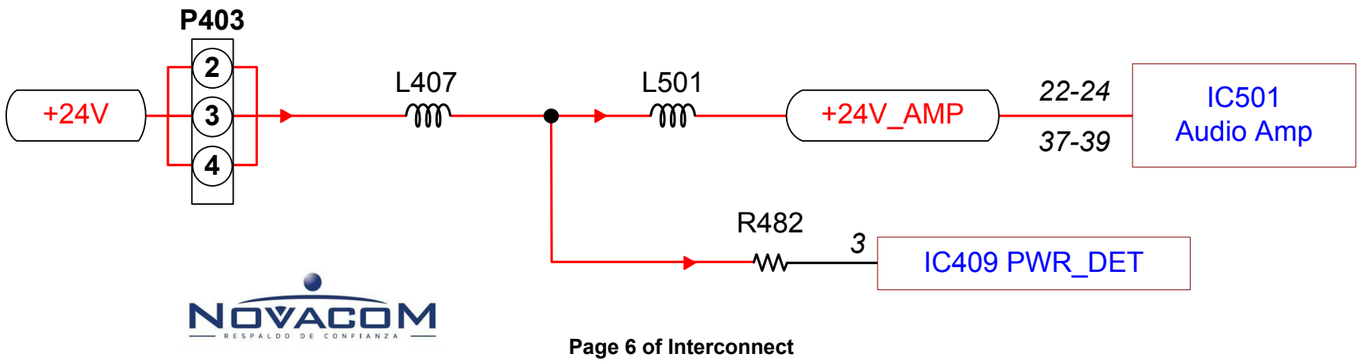
55LS4500 Main Board (+3.5V_ST) Voltage Distribution



+12V Voltage Distribution

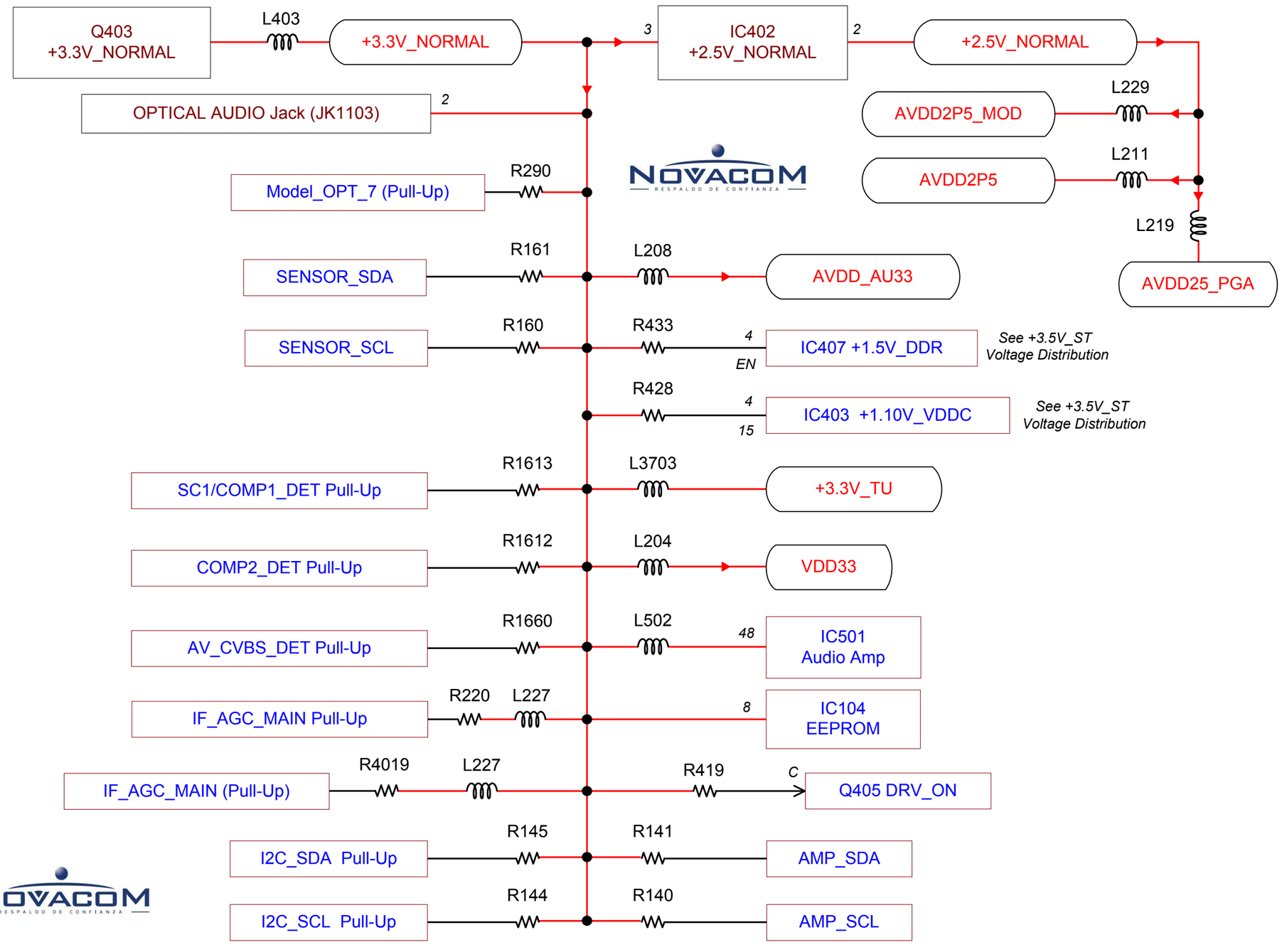


+24V Voltage Distribution

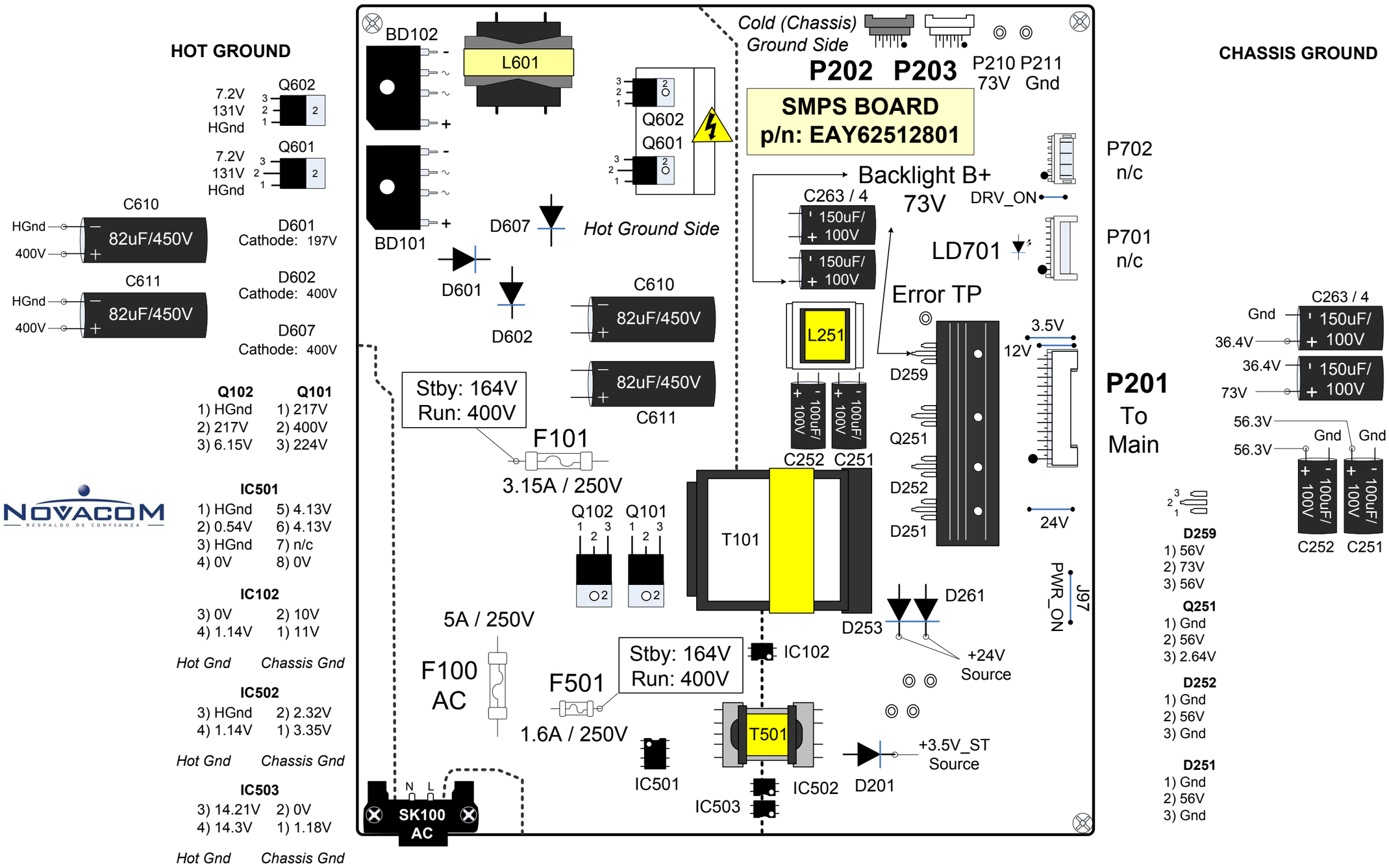


55LS4500 Main Board (+3.3V_Normal) Voltage Distribution

From +3.5V_ST Voltage Distribution



55LS4500 Power Supply Component Voltages



C610
HGnd — 82uF/450V — 400V

C611
HGnd — 82uF/450V — 400V

D601 Cathode: 197V

D602 Cathode: 400V

D607 Cathode: 400V

Q102	Q101
1) HGnd	1) 217V
2) 217V	2) 400V
3) 6.15V	3) 224V

IC501

1) HGnd	5) 4.13V
2) 0.54V	6) 4.13V
3) HGnd	7) n/c
4) 0V	8) 0V

IC102

3) 0V	2) 10V
4) 1.14V	1) 11V

Hot Gnd *Chassis Gnd*

IC502

3) HGnd	2) 2.32V
4) 1.14V	1) 3.35V

Hot Gnd *Chassis Gnd*

IC503

3) 14.21V	2) 0V
4) 14.3V	1) 1.18V

Hot Gnd *Chassis Gnd*

D259
1) 56V
2) 73V
3) 56V

Q251
1) Gnd
2) 56V
3) 2.64V

D252
1) Gnd
2) 56V
3) Gnd

D251
1) Gnd
2) 56V
3) Gnd

55UB9500 INTERCONNECT DIAGRAM

PANEL p/n: EAJ62573501

P801 Black "SMPS Board" to the "Backlights"

Pin	Label	Run	Diode Check	TP
1	VC_6	1.69V-20.1V	OL	EL85
2	VC_5	1.73V-20.5V	OL	EL84
3	VC_4	1.45V~20.1V	OL	EL86
4	VC_3	1.51V~20.1V	OL	EL83
5	VC_2	1.36V~20.3V	OL	EL87
6	VC_1	1.24V~20.4V	OL	EL82
7	N/C	n/c	n/c	
8	LED+	73.2V-74.3V	OL	P210

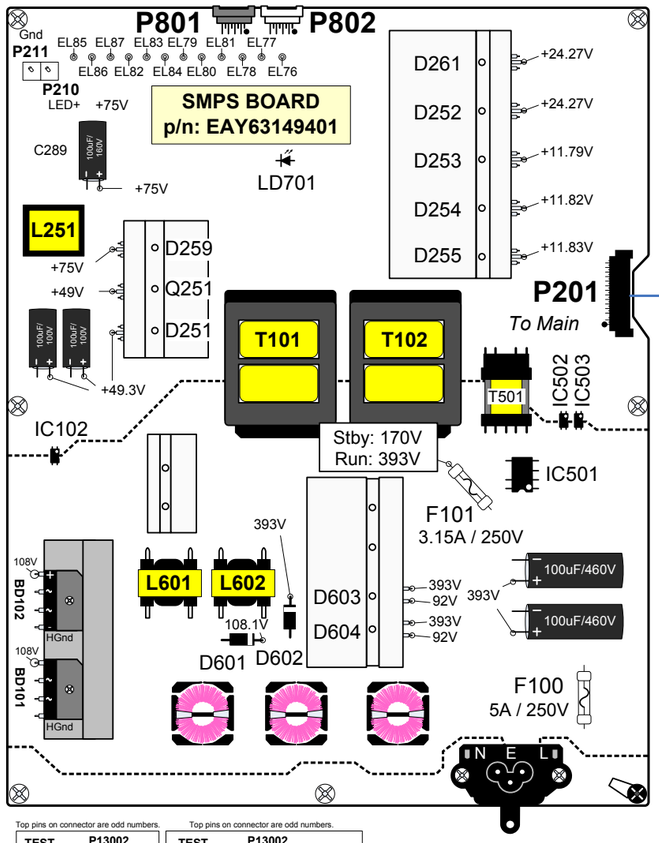
Bright (100%) to *Dim (0%)

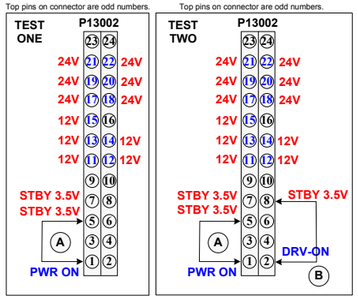
P802 White "SMPS Board" to the "Backlights"

PIN	LABEL	RUN	Diode ✓	TP
1	LED+	73.2V-74.3V	OL	P210
2	N/C	n/c	n/c	
3	VC_7	1.10V~20.1V	OL	EL79
4	VC_8	1.49V~20.4V	OL	EL76
5	VC_9	1.31V~20.0V	OL	EL80
6	VC_10	1.51V~20.3V	OL	EL77
7	VC_11	1.53V~20.3V	OL	EL81
8	VC_12	1.79V~20.3V	OL	EL78

Bright (100%) to *Dim (0%)

To Backlights





If P801 is disconnected, the backlight power will start at 49.7V, then jump to 79V and then fall back to 49.85V. Warning: Backlight power is slow to bleed down after power off, connected or disconnected.

144 Total LEDs, 72 LEDs per/Strip.
2 boards per/strip. (12 LEDs per/board) 12 columns.
6 on the left are controlled by P801
6 on the right are controlled by P802

Note: P201 is actually a 28 pin connector, but only the 24 pins going to the Main board are shown here.

WARNING: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P13002 on the Main board.
(A) Jump pin 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main.
(47.85V Backlight power but the Backlights are not on at this time).
LED Ground Return Line is (0.62V).
Remove AC power. Leave the jumper in place.

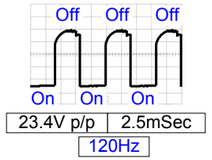
SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 8 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read to 74V.
LED Ground Return Line is (1.12-1.83V). P-DIM P201 (pin 4) reads 3.52V.

P201 "SMPS Board" to "MAIN Board" P13002

Pin	Label	STBY	Run	Diode Check
28	*Vsync	0V	0.02V	OL
27	*SCLK	0V	0.07V	OL
26	*Gnd	Gnd	Gnd	Gnd
25	*SCLK	0V	0.04V	OL
23-24	Gnd	Gnd	Gnd	Gnd
18-22	24V	0V	24.26V	1.12V
16-17	Gnd	Gnd	Gnd	Gnd
11-15	12V	0V	11.66V	0.44V
9-10	Gnd	Gnd	Gnd	Gnd
7-8	3.5V	3.57V	3.55V	OL
6	Gnd	Gnd	Gnd	Gnd
5	3.5V	3.57V	3.55V	OL
4	(4) P-DIM2	0V	1.12V	OL
3	(3) P-DIM	0V	0.16V~3.25V	OL
2	(2) DRV-ON	0V	3.14V	1.66V
1	(1) PWR-ON	0V	3.43V	1.15V

* To the T-CON (3) Dim to Bright

Note: If a part of the picture is exhibiting a dimmer backlight level than the other or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not, Check the P-DIM level, it should rise with the percentage shown on screen.



You can also test any of the 12 blocks functionality by grounding the return path signal (using 1KΩ resistor).

LED ONE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 64V on P210.
Confirm P-DIM is approx. 3V. You can turn on a Block of LEDs by using a 100 ohm resistor from any test point EL76 – EL87 to Ground.
The Power Supply must be producing the 75V for the Backlight B+.
Failure to use a resistor will damage the panels backlight and may also damage the power supply.

BACKLIGHT STRUCTURE

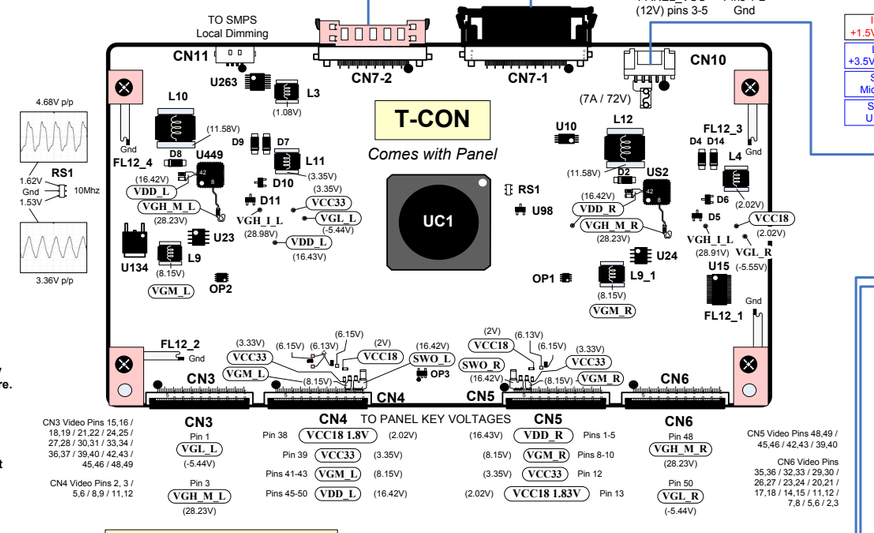
Each strip has 12 LEDs 144 Total LEDs

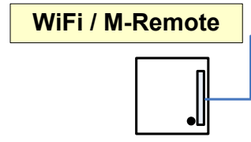
P801 (1-6) P802 (7-12)

(1) PWR_ON: turns on the 12V and 24V lines. Backlight power goes to 47.85V.
(2) DRV_ON: (INV_ON from Main) turns on the Backlights. Backlight power goes to 75V.
(3) P-DIM: controls the backlight brightness. Controlled via the Customer's Menu: Home -> Settings -> Picture -> Backlights. Range 0% to 100% directly proportional to DC voltage to Backlight brightness. (0.16V~3.27V)
P-DIM is actually a PWM signal.
(4) P_DIM2: Fixed Voltage

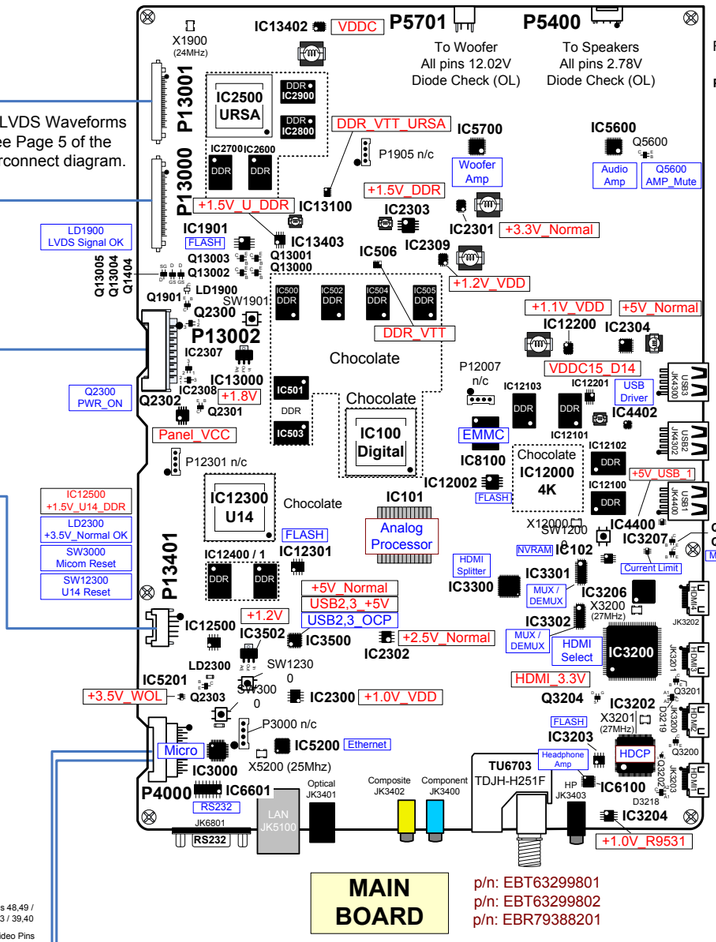
Note: To run the Panel Test (Testing the T-CON without the Main board), simply unplug CN7-1 and CN7-2. Apply power to the set. (Backlights and Power Supply should already be working). T-CON outputs color patterns on the screen. This test confirms the T-CON, Power Supply, Panel and Backlights are working normally.

WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.





For LVDS Waveforms see Page 5 of the Interconnect diagram.



See next page for Component Voltages

For DC voltages see P201 Chart

P13002 "MAIN Board" To P201 "SMPS"

Pin	Diode
1	OL
2	1.48V
3	OL
4	OL
5	1.20V
6	Gnd
7-8	1.20V
9-10	Gnd
11-15	1.56V
16-17	Gnd
18-22	OL
23-24	Gnd

TUNER PINS
9. CVBS
8. SIF
7. DIF (N)
6. DIF (P)
5. SDA
4. SCL
3. DIF_AGC
2. N/C
1. 3.3V

MAIN BOARD
p/n: EBT63299801
p/n: EBT63299802
p/n: EBR79388201

P4000 "Main" To "Joy Stick" & "M-Remote & WiFi Board" J1

Pin	Label	STBY	Run	Diode ✓	
1	Gnd	Gnd	Gnd	Gnd	WiFi pin 1
2	3.5V_WOL	0V	3.51V	1.12V	WiFi pin 8
3	BT_RESET	2.34V	3.31V	OL	WiFi pin 2
4	WiFi_DM	0V	0V	1.18V	WiFi pin 7
5	N/C	n/c	n/c	n/c	WiFi pin 3
6	WiFi_DP	0V	1.16V	1.18V	WiFi pin 6
7	WOL (WiFi On)	0V	0V	1.93V	WiFi pin 4
8	Gnd	Gnd	Gnd	Gnd	WiFi pin 5

Pin	Label	STBY	Run	Diode ✓	
9	Eye_SDA	3.55V	3.54V	1.95V	Joy Stick pin 10
10	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 1
11	Eye_SCL	3.55V	3.54V	1.95V	Joy Stick pin 9
12	Key 1	3.54V	3.54V	1.94V	Joy Stick pin 2
13	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 8
14	Key 2	3.54V	3.54V	1.94V	Joy Stick pin 3
15	IR	3.52V	3.50V	1.85V	Joy Stick pin 7
16	3.5V_ST	3.55V	3.53V	1.20V	Joy Stick pin 4
17	LED_R	2.78V	0V	OL	Joy Stick pin 6
18	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 5

IR 3.76V p/p

55UB9500 Main Board Component Voltages

IC102

Pin	NVRAM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.26V
[6]	3.27V
[7]	Gnd
[8]	3.28V

IC506

Pin	DDR_VTT Regulator
[1]	0.73V
[2]	1.5V
[3]	0.74V VTT (In)
[4]	Gnd
[5]	0.74V
[6]	0.74V
[7]	3.33V (Enable)
[8]	Gnd
[9]	n/c
[10]	3.33V VTT (Out)

IC1901

Pin	SPI FLASH Memory
[1]	3.27V
[2]	3.25V
[3]	0V
[4]	Gnd
[5]	3.27V
[6]	0V
[7]	3.27V
[8]	3.27V (In)

IC2300

Pin	+1.0V_VDD Regulator
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.45V
[4]	5.42V
[5]	Gnd
[6]	1.02V (Out)
[7]	6.41V
[8]	12V (In)

IC2302

Pin	(+2.5V_NORMAL) Regulator
[1]	3.35V (in)
[2]	n/c
[3]	5.12V (in)
[4]	3.53V (ctrl)
[5]	Gnd
[6]	4.92V
[7]	0.81V
[8]	2.56V (out)

IC2303

Pin	+1.5V_DDR Regulator
[1]	3.47V (Enable)
[2]	3.77V
[3]	5.22V
[4]	2.45V
[5]	Gnd
[6]	1.57V (Out)
[7]	6.5V
[8]	12V (+11.61V In)

IC2307

Pin	PWR_Det 12V Sense
[1]	Gnd
[2]	3.54V (Reset)
[3]	3.57V (In)

IC2308

Pin	PWR_Det 20V Sense (Not Used)
[1]	Gnd
[2]	0V (Reset)
[3]	0V (In)

IC3203

Pin	FLASH Memory
[1]	0V
[2]	0V
[3]	0V
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.28V
[8]	3.31V (In)

IC3204

Pin	+1.0V_R9531 Regulator
[1]	n/c
[2]	3.23V
[3]	3.31V (In)
[4]	5.09V (Enable)
[5]	n/c
[6]	1.0V (Out)
[7]	0.6V
[8]	Gnd

IC3207

Pin	+5V_HDMI_4 Regulator
[1]	3.09V (In)
[2]	Gnd
[3]	0V (Enable)
[4]	0V (MHL_OCP)
[5]	0V
[6]	0.0V (Out)

IC3304

Pin	+1.2V Regulator
[Gnd]	0V (Gnd)
[Out]	1.2V (Out)
[In]	3.31V (In)

IC4400

Pin	+5V_USB_1 Regulator
[1]	5.09V (In)
[2]	Gnd
[3]	3.27V (Enable)
[4]	2.96V (USB_OCD1)
[5]	0.41V
[6]	5.09V (Out)

IC5201

Pin	+3.5V_WOL Regulator
[1]	3.52V (Out)
[2]	Gnd
[3]	0.01V n/c
[4]	3.51V (OCP Out)
[5]	3.51V (Vcc In)

IC6601

Pin	RS232 Data
[1]	3.52V
[2]	5.72V
[3]	0V
[4]	0.02V
[5]	(-5.63V)
[6]	(-5.66V)
[7]	n/c
[8]	n/c
[9]	n/c
[10]	n/c
[11]	3.29V
[12]	3.51V
[13]	0V
[14]	(-5.67V)
[15]	Gnd
[16]	3.52V (3.5V_ST In)

IC12002

Pin	FLASH Memory
[1]	3.28V
[2]	0V
[3]	2.46V
[4]	Gnd
[5]	0.11V
[6]	0V
[7]	3.28V
[8]	3.31V (In)

IC12201

Pin	VDDC15_D14 Regulator
[1]	3.47V (Enable)
[2]	0.77V
[3]	5.27V
[4]	2.51V
[5]	Gnd
[6]	1.53V (Out)
[7]	6.40V
[8]	11.57V (In)

IC12301

Pin	SPI FLASH Memory
[1]	3.31V
[2]	0.17V
[3]	3.31V
[4]	Gnd
[5]	0.31V
[6]	0V
[7]	3.31V
[8]	3.31V (In)

IC12500

Pin	+1.5V_U14_DDR Regulator
[1]	3.50V (Enable)
[2]	0.77V
[3]	5.67V
[4]	2.54V
[5]	Gnd
[6]	1.53V (Out)
[7]	6.48V
[8]	11.70V (In)

IC13000

Pin	+1.8V Regulator
[Gnd]	0.55V (Adj)
[Out]	1.8V (Out)
[In]	3.31V (In)

IC13100

Pin	DDR_VTT_URSA Regulator
[1]	0.73V
[2]	1.53V
[3]	0.76V VTT (In)
[4]	Gnd
[5]	0.76V
[6]	0.76V
[7]	3.28V (Enable)
[8]	Gnd
[9]	n/c
[10]	3.28V VTT (Out)

IC13403

Pin	+1.5V_U_DDR Regulator
[1]	3.50V (Enable)
[2]	0.77V
[3]	5.21V
[4]	2.50V
[5]	Gnd
[6]	1.55V (Out)
[7]	6.54V
[8]	11.70V (In)

Q1404

Pin	LockA_N Switch
[G]	1.80V
[S]	0.56V
[D]	0.56V

Q1901

Pin	Drives LD1900
[E]	1.18V
[B]	0.56V
[C]	Gnd

Q2300

Pin	PWR_On Switch
[1]	3.52V
[2]	2.84V
[3]	3.41V

Q2301

Pin	Panel_VCC CTRL Drives Q2302
[B]	0.61V
[C]	0.03V
[E]	Gnd

Q2302

Pin	Panel_VCC Switch
[1]	11.69V (In)
[2]	11.69V (In)
[3]	11.69V (In)
[4]	1.81V (Enable)
[5]	11.69V (Out)
[6]	11.69V (Out)
[7]	11.69V (Out)
[8]	11.69V (Out)

Q12303

Pin	Drives LD2300
[E]	Gnd
[B]	0.64V
[C]	0.02V

Q3200 / 01

Pin	HDMI3 Hot Swap
[B]	0V
[C]	0V
[E]	Gnd

Q3202

Pin	Reset_N Switch for IC3202
[B]	3.28V
[C]	3.46V
[E]	3.28V

Q3204

Pin	HDMI_3.3V Switch
[G]	5.09V (In)
[S]	3.28V (Enable)
[D]	3.29V (Out)

Q3205

Pin	MHL Det
[B]	0V
[C]	3.52V (Out)
[E]	0V

Q3206

Pin	MHL Det
[B]	3.52V
[C]	0V (Out)
[E]	3.52V

Q5600

Pin	Amp Mute Driver
[B]	0V
[C]	3.27V
[E]	Gnd

Q13000

Pin	Drives Q13002
[E]	Gnd
[B]	0.25V
[C]	1.61V

Q13001

Pin	Drives Q13003
[E]	Gnd
[B]	0.25V
[C]	1.59V

Q13002

Pin	Activates Vx1_LOCKn_0
[E]	Gnd
[B]	0.64V
[C]	0.09V

Q13003

Pin	Activates Vx1_LOCKn_V
[E]	Gnd
[B]	0.64V
[C]	0.02V

Q13004

Pin	I2C_SCL1 Switch
[G]	3.24V
[S]	3.31V
[D]	3.29V

Q13005

Pin	I2C_SDA1 Switch
[G]	3.29V
[S]	3.32V
[D]	3.29V

55UB9500 Main Board Component Voltages (Large ICs) Page 1 of 2

IC2301 +3.3V_Normal Regulator

Pin		Pin	
[1]	1.17V	[15]	11.65V (In)
[2]	5.13V	[16]	11.65V (In)
[3]	3.53V (Enable)	[17]	11.65V (In)
[4]	8.42V	[18]	n/c
[5]	n/c	[19]	11.65V (In)
[6]	3.36V (Out)	[20]	5.14V
[7]	3.36V (Out)	[21]	5.12V
[8]	3.36V (Out)	[22]	Gnd
[9]	3.36V (Out)	[23]	0.62V
[10]	Gnd	[24]	3.35V
[11]	Gnd	[25]	0.43V
[12]	Gnd	[26]	n/c
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC2304 +5V_Normal Regulator

Pin		Pin	
[1]	24.68V (In)	[15]	5.04V (OCP2)
[2]	24.68V (In)	[16]	5.09V
[3]	24.68V (In)	[17]	5.09V
[4]	Gnd	[18]	12.04V
[5]	Gnd	[19]	5.09V (Out)
[6]	Gnd	[20]	5.09V (Out)
[7]	6.25V	[21]	5.09V (Out)
[8]	6.25V	[22]	1.94V
[9]	3.53V (Enable)	[23]	0.60V
[10]	5.09V (Out USB2)	[24]	0.35V
[11]	5.09V (Out USB3)	[25]	1.24V
[12]	5.09V (USB2 Ctrl)	[26]	0.45V
[13]	5.09V (USB3 Ctrl)	[27]	0.45V
[14]	5.04V (OCP2)	[28]	Gnd

IC2309 +5V_Normal Regulator

Pin		Pin	
[1]	1.18V	[15]	11.59V (In)
[2]	5.18V	[16]	11.59V (In)
[3]	3.51V (Enable)	[17]	11.59V (In)
[4]	6.44V	[18]	11.59V (In)
[5]	n/c	[19]	11.59V (In)
[6]	1.29V (Out)	[20]	5.18V
[7]	1.29V (Out)	[21]	5.18V
[8]	1.29V (Out)	[22]	Gnd
[9]	1.29V (Out)	[23]	0.61V
[10]	Gnd	[24]	1.26V
[11]	Gnd	[25]	0.41V
[12]	Gnd	[26]	Gnd
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC3000 Micro Processor

Pin		Pin	
[1]	3.28V	[25]	0V
[2]	3.28V	[26]	3.53V
[3]	0.0V	[27]	3.53V
[4]	2.09V	[28]	0.03V
[5]	0.06V	[29]	0.1V
[6]	3.5V	[30]	0V
[7]	3.49V	[31]	3.34V
[8]	3.53V	[32]	3.53V
[9]	0V	[33]	3.53V
[10]	3.53V	[34]	3.75V
[11]	3.53V	[35]	0V
[12]	0V	[36]	0V
[13]	3.51V	[37]	0.02V
[14]	3.68V	[38]	0V
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	3.48V	[41]	0.65V
[18]	3.53V	[42]	0.13V
[19]	3.29V	[43]	0V
[20]	3.32V	[44]	0V
[21]	3.53V	[45]	0V
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0.1V	[48]	3.53V

IC3301 MUX/ DEMUX

Pin		Pin	
[1]	3.31V (In)	[22]	2.94V
[2]	3.28V	[23]	2.94V
[3]	4.88V	[24]	2.94V
[4]	4.88V	[25]	2.94V
[5]	2.98V	[26]	2.94V
[6]	2.98V	[27]	2.94V
[7]	2.98V	[28]	2.94V
[8]	2.98V	[29]	2.94V
[9]	n/c	[30]	n/c
[10]	2.98V	[31]	2.94V
[11]	2.98V	[32]	2.94V
[12]	2.98V	[33]	2.94V
[13]	2.98V	[34]	2.94V
[14]	n/c	[35]	2.94V
[15]	n/c	[36]	2.94V
[16]	3.28V	[37]	2.94V
[17]	3.28V	[38]	2.94V
[18]	n/c	[39]	4.88V
[19]	n/c	[40]	4.88V
[20]	n/c	[41]	3.28V
[21]	n/c	[42]	3.28V

IC3302 MUX/ DEMUX

Pin		Pin	
[1]	3.31V (In)	[22]	2.94V
[2]	3.28V	[23]	2.94V
[3]	4.88V	[24]	2.94V
[4]	4.88V	[25]	2.94V
[5]	2.98V	[26]	2.94V
[6]	2.98V	[27]	2.94V
[7]	2.98V	[28]	2.94V
[8]	2.98V	[29]	2.94V
[9]	n/c	[30]	n/c
[10]	2.98V	[31]	2.94V
[11]	2.98V	[32]	2.94V
[12]	2.98V	[33]	2.94V
[13]	2.98V	[34]	2.94V
[14]	n/c	[35]	2.94V
[15]	n/c	[36]	2.94V
[16]	3.28V	[37]	2.94V
[17]	3.28V	[38]	2.94V
[18]	n/c	[39]	4.88V
[19]	n/c	[40]	4.88V
[20]	n/c	[41]	3.28V
[21]	n/c	[42]	3.28V

IC3500 +5V_Normal Regulato

Pin		Pin	
[1]	24.68V (In)	[15]	5.04V (OCP2)
[2]	24.68V (In)	[16]	5.09V
[3]	24.68V (In)	[17]	5.09V
[4]	Gnd	[18]	12.04V
[5]	Gnd	[19]	5.09V (Out)
[6]	Gnd	[20]	5.09V (Out)
[7]	6.25V	[21]	5.09V (Out)
[8]	6.25V	[22]	1.94V
[9]	3.53V (Enable)	[23]	0.60V
[10]	5.09V (Out USE	[24]	0.35V
[11]	5.09V (Out USE	[25]	1.24V
[12]	5.09V (USB2 C	[26]	0.45V
[13]	5.09V (USB3 C	[27]	0.45V
[14]	5.04V (OCP2)	[28]	Gnd

55UB9500 Main Board Component Voltages (Large ICs) Page 2 of 2

IC4402

Pin	USB 3 Processor
[1]	n/c
[2]	n/c
[3]	3.3V (In)
[4]	3.3V
[5]	3.3V
[6]	n/c
[7]	3.27V
[8]	3.27V
[9]	Gnd
[10]	1.45V
[11]	1.45V
[12]	Gnd
[13]	3.3V (In)
[14]	0.08V
[15]	0V
[16]	1.63V
[17]	3.23V
[18]	n/c
[19]	3.26V
[20]	3.26V
[21]	Gnd
[22]	2.63V
[23]	2.63V
[24]	n/c

IC5200

Pin	Ethernet IC
[1]	0V
[2]	1.1V
[3]	1.1V
[4]	1.1V
[5]	1.1V
[6]	1.1V
[7]	3.51V (In)
[8]	0.03V
[9]	0V
[10]	0V
[11]	0V
[12]	0V
[13]	n/c
[14]	3.51V (In)
[15]	1.32V
[16]	0V
[17]	0V
[18]	n/c
[19]	n/c
[20]	0V
[21]	3.26V
[22]	1.23V
[23]	3.25V
[24]	3.25V
[25]	3.24V
[26]	0V
[27]	0V
[28]	0V
[29]	1.08V
[30]	3.51V (In)
[31]	0V
[32]	0.58V

IC5600

Pin	Audio Amp
[1]	n/c
[2]	1.29V
[3]	n/c
[4]	Gnd
[5]	n/c
[6]	1.27V
[7]	1.14V
[8]	1.63V
[9]	1.63V
[10]	0V
[11]	3.09V
[12]	3.27V (Mute)
[13]	n/c
[14]	1.36V
[15]	n/c
[16]	7.46V
[17]	Gnd
[18]	2.77V (Out R-)
[19-20]	23.89V (R B+)
[21]	(Out R-)
[22]	Gnd
[23]	7.47V
[24]	5.17V
[25]	Gnd
[26]	n/c
[27]	5.16V
[28]	7.46V
[29]	Gnd
[30]	2.76V (Out L-)
[31-32]	23.89V (L B+)
[33]	2.76V (Out L+)
[34]	Gnd
[35]	7.45V
[36]	3.20V (Reset)
[37]	Gnd
[38]	1.66V
[39]	Gnd
[40]	(In)

IC6100

Pin	Earphone IC
[1]	Gnd
[2]	0V (R-In)
[3]	0V (R-Out)
[4]	Gnd
[5]	(Mute)
[6]	(-3.16V)
[7]	(-1.57V)
[8]	1.64V
[9]	3.31V (In)
[10]	Gnd
[11]	n/c
[12]	0V (L-Out)
[13]	0V (L-In)
[14]	Gnd

IC5700

Pin	Woofer Amp
[1]	n/c
[2]	1.25V
[3]	n/c
[4]	Gnd
[5]	n/c
[6]	1.27V
[7]	1.37V
[8]	1.64V
[9]	1.67V
[10]	3.12V
[11]	3.12V
[12]	3.34V (Mute)
[13]	n/c
[14]	0.66V
[15]	n/c
[16]	4.76V
[17]	Gnd
[18]	not used
[19-20]	24.05V (R B+)
[21]	not used
[22]	Gnd
[23]	4.76V
[24]	5.14V
[25]	5.14V
[26]	n/c
[27]	5.14V
[28]	16.63V
[29]	Gnd
[30]	12.01V (Out L-)
[31-32]	24.05V (L B+)
[33]	12.01V (Out L+)
[34]	Gnd
[35]	16.64V
[36]	3.21V (Reset)
[37]	Gnd
[38]	1.66V
[39]	Gnd
[40]	3.34V (In)

IC6601

Pin	RS232 Routing
[1]	3.53V
[2]	5.69V
[3]	0V
[4]	0V
[5]	(-5.60V)
[6]	(-5.63V)
[7]	n/c (5.64V)
[8]	n/c (0V)
[9]	n/c (3.49V)
[10]	n/c (0V)
[11]	3.34V
[12]	3.48V
[13]	0V
[14]	(-5.59V)
[15]	0V (Gnd)
[16]	3.5V (Vcc In)

IC12200

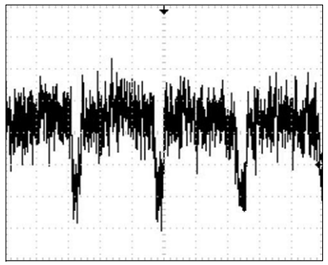
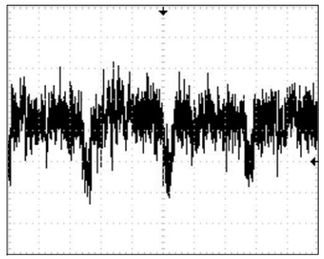
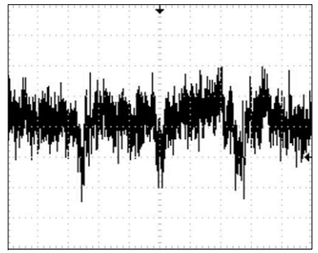
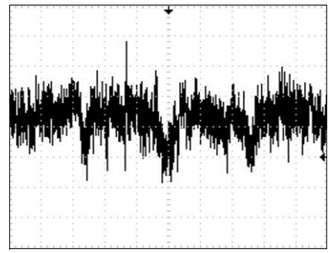
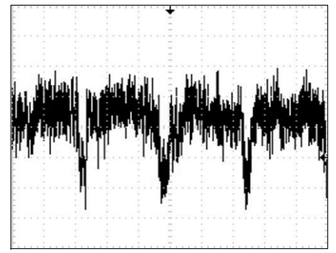
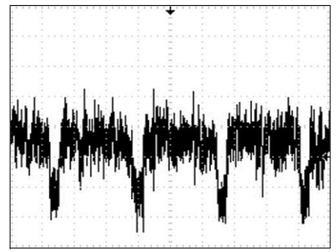
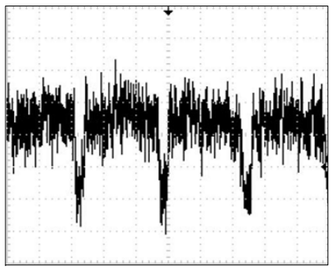
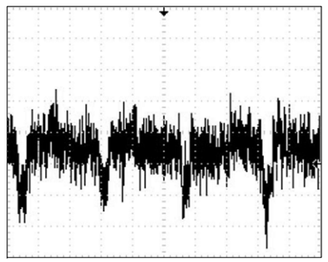
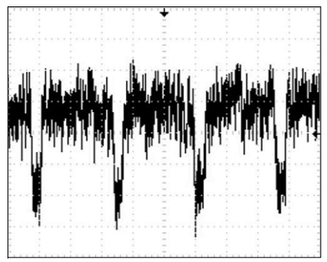
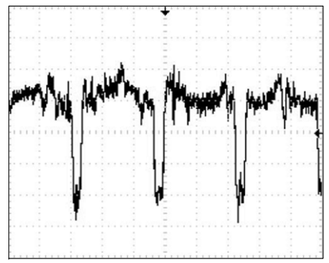
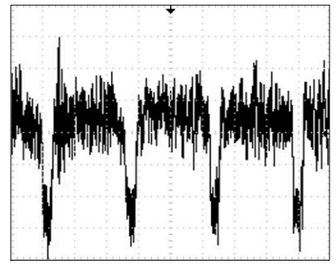
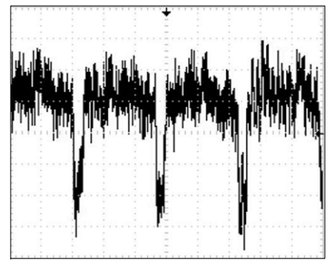
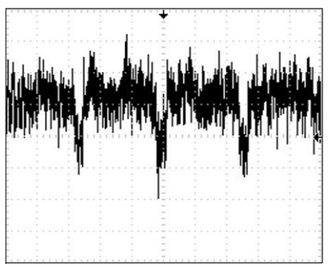
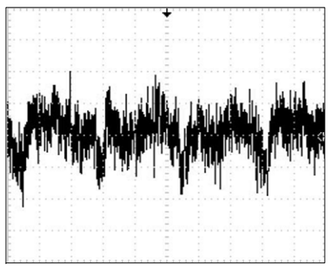
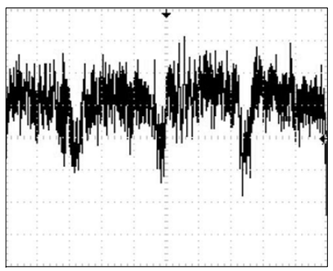
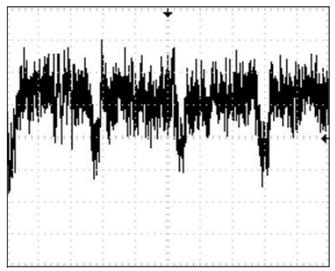
Pin	+1.1V_VDD Regulator
[1]	1.17V
[2]	5.13V
[3]	3.51V (Enable)
[4]	6.27V
[5]	n/c
[6]	1.2V (Out)
[7]	1.2V (Out)
[8]	1.2V (Out)
[9]	1.2V (Out)
[10]	Gnd
[11]	Gnd
[12]	Gnd
[13]	Gnd
[14]	Gnd
[15]	11.62V (In)
[16]	11.62V (In)
[17]	11.62V (In)
[18]	11.62V (In)
[19]	11.62V (In)
[20]	5.13V
[21]	5.13V
[22]	Gnd
[23]	0.6V
[24]	1.19V
[25]	0.39V
[26]	n/c
[27]	Gnd
[28]	Gnd

IC13402

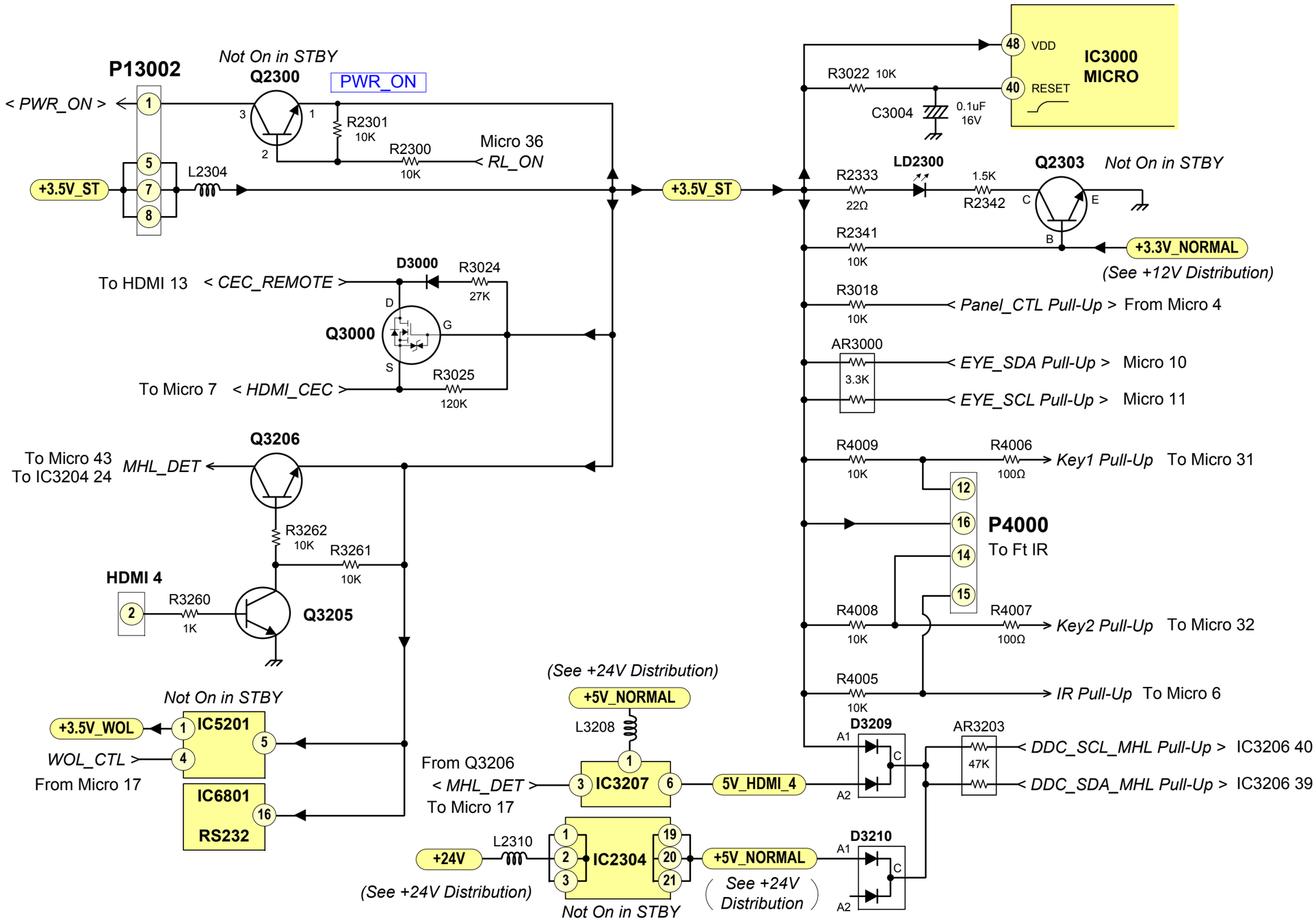
Pin	VDDC Regulator
[1]	1.19V
[2]	5.19V
[3]	3.51V (Enable)
[4]	6.34V
[5]	n/c
[6]	1.19V (Out)
[7]	1.19V (Out)
[8]	1.19V (Out)
[9]	1.19V (Out)
[10]	Gnd
[11]	Gnd
[12]	Gnd
[13]	Gnd
[14]	Gnd
[15]	11.62V (In)
[16]	11.62V (In)
[17]	11.62V (In)
[18]	11.62V (In)
[19]	11.62V (In)
[20]	5.20V
[21]	5.20V
[22]	Gnd
[23]	0.6V
[24]	0.39V
[25]	0V
[26]	Gnd
[27]	Gnd
[28]	Gnd

55UB9500 P13000 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are “Differential Pairs”.
Scope Settings are 5mV per/division, 100uSec per/division.

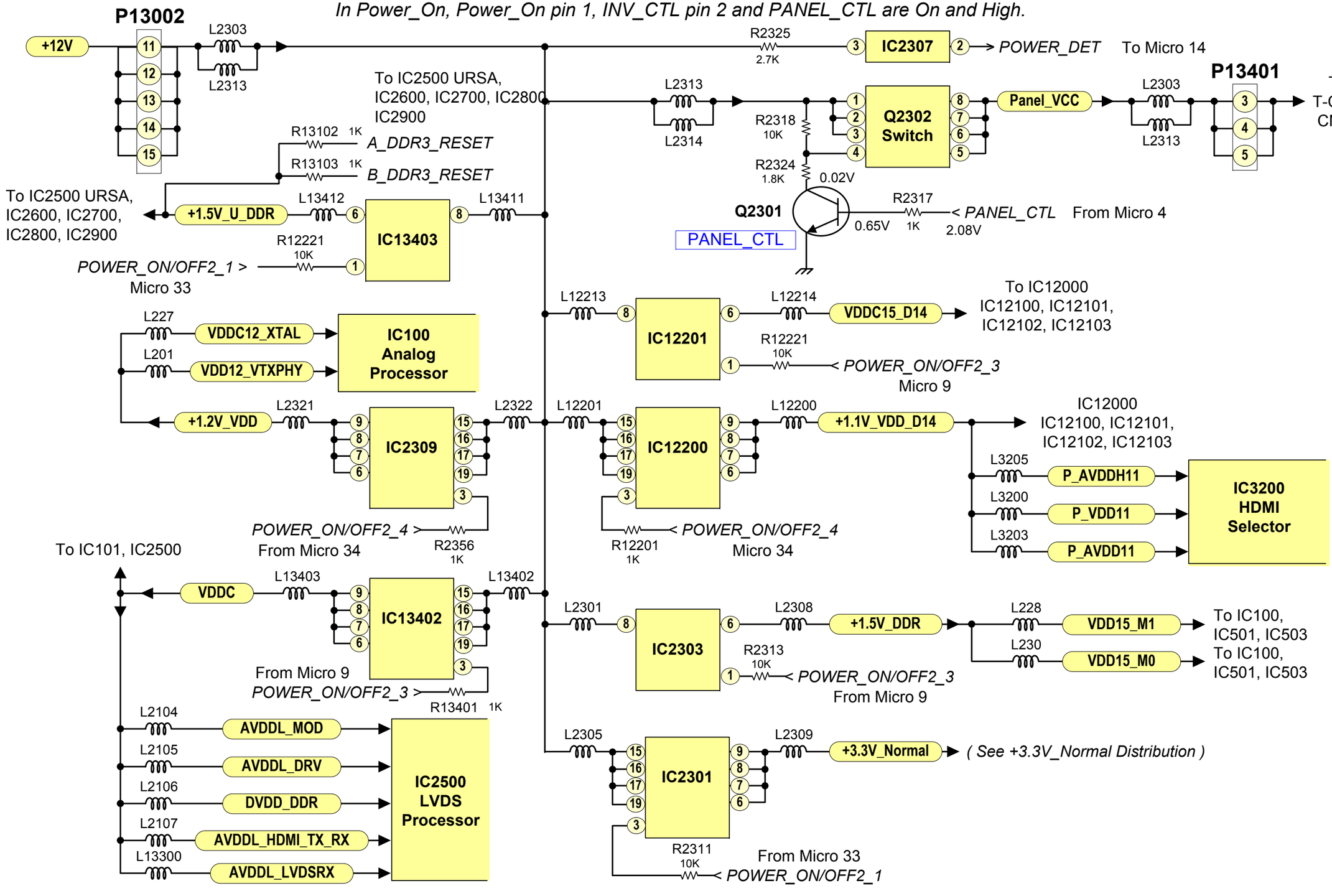
Pin 2  **27mV p/p**	**Pin 3**  **22.8mV p/p**	**Pin 5**  **22.2mV p/p**	**Pin 6**  **23.2mV p/p**	**Pin 8**  **23.2mV p/p**	**Pin 9**  **23.6mV p/p**
Pin 11  **19.4mV p/p**	**Pin 12**  **25.2mV p/p**	**Pin 14**  **428.2mV p/p**	**Pin 15**  **25.4mV p/p**	**Pin 17**  **34.8mV p/p**	**Pin 18**  **33.2mV p/p**
Pin 20  **25.8mV p/p**	**Pin 21**  **21.2mV p/p**	**Pin 23**  **27.6mV p/p**	**Pin 24**  **23.6mV p/p**		

55UB9500 +3.5V_ST Voltage Distribution (In Stand-By)



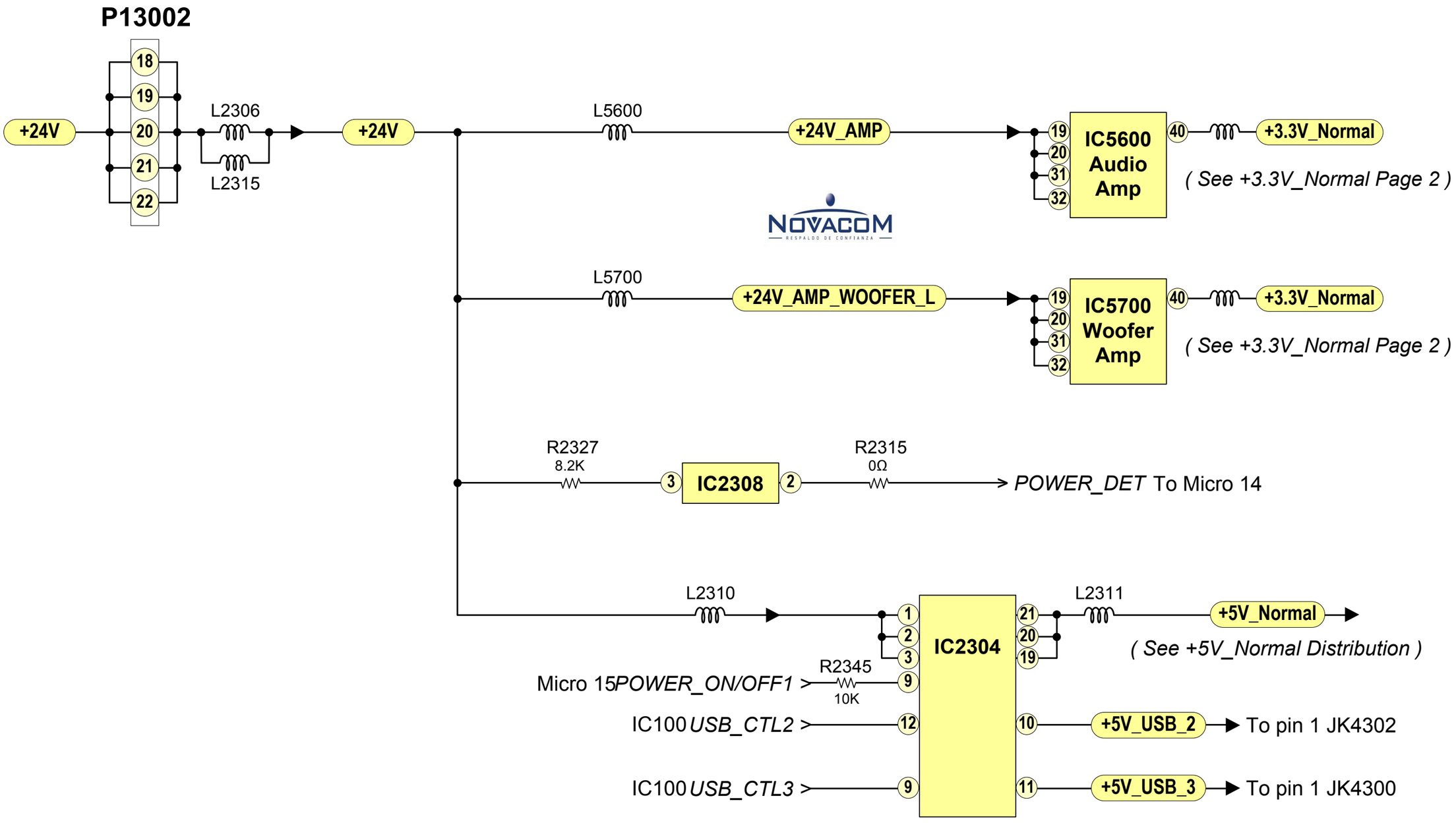
55UB9500 +12V Voltage Distribution (Power On)

In Power_On, Power_On pin 1, INV_CTL pin 2 and PANEL_CTL are On and High.

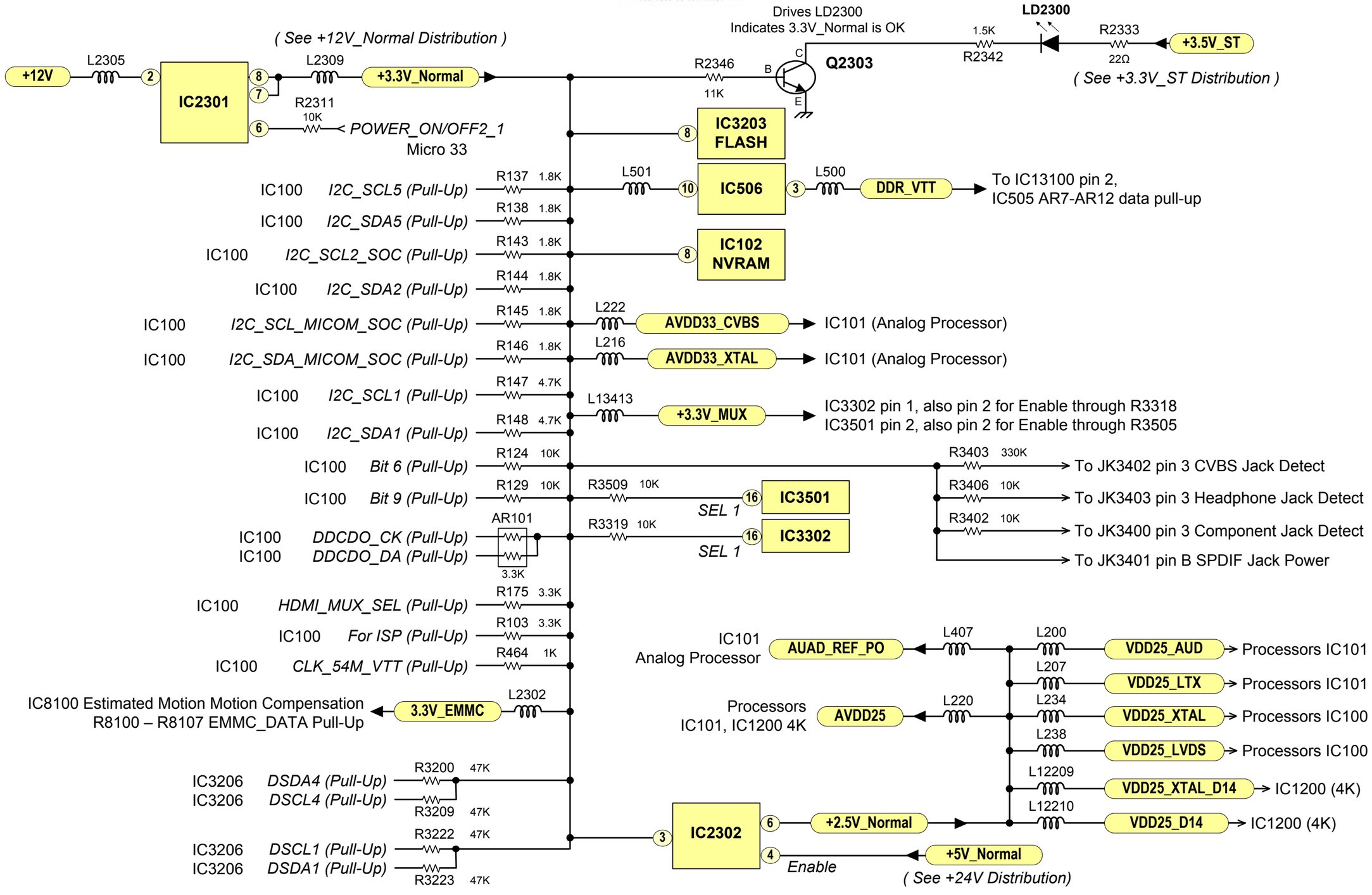


55UB9500 +24V Voltage Distribution (Power On)

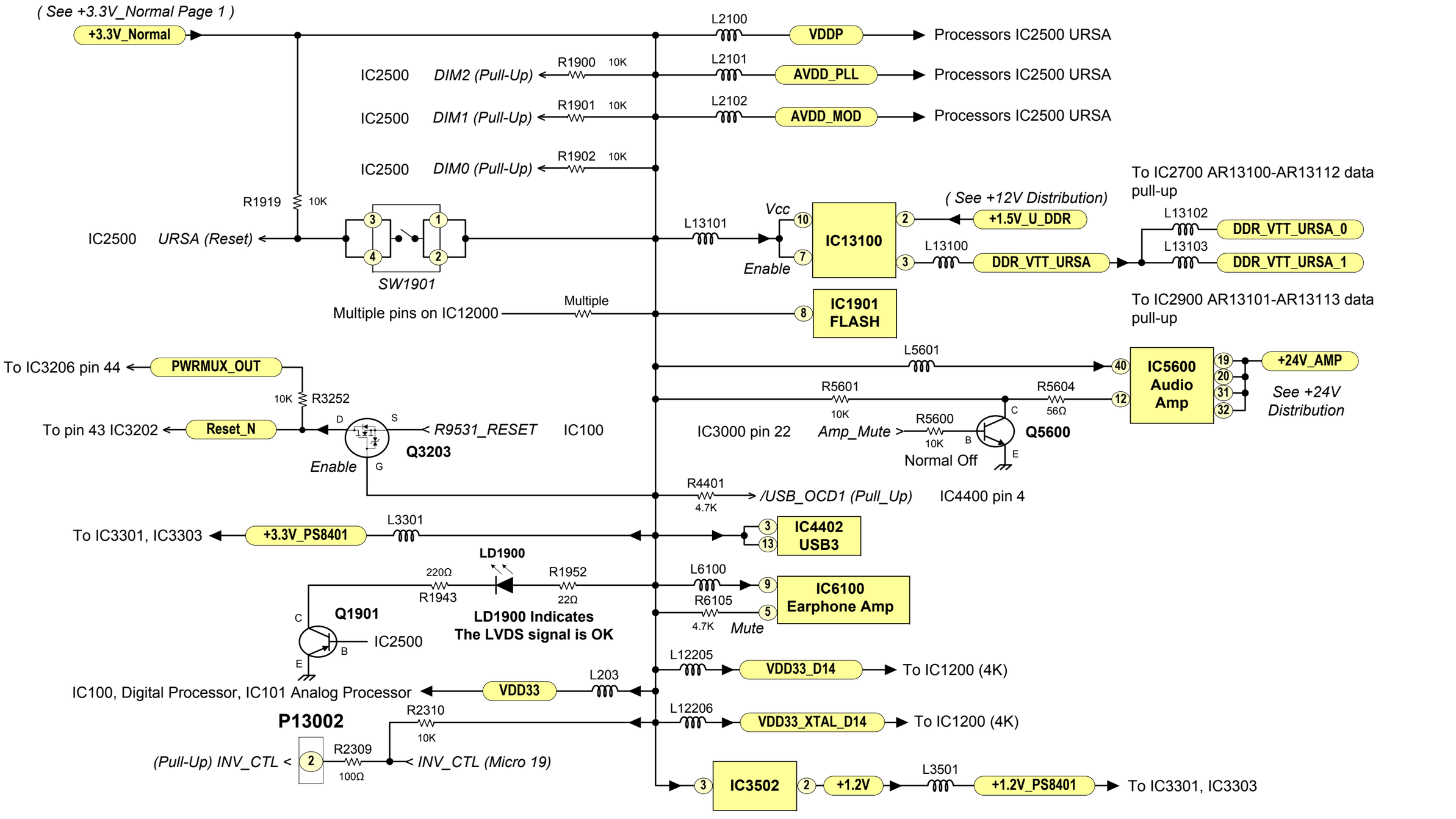
In Power_On, Power_On pin 1, INV_CTL pin 2 and PANEL_CTL are On and High.



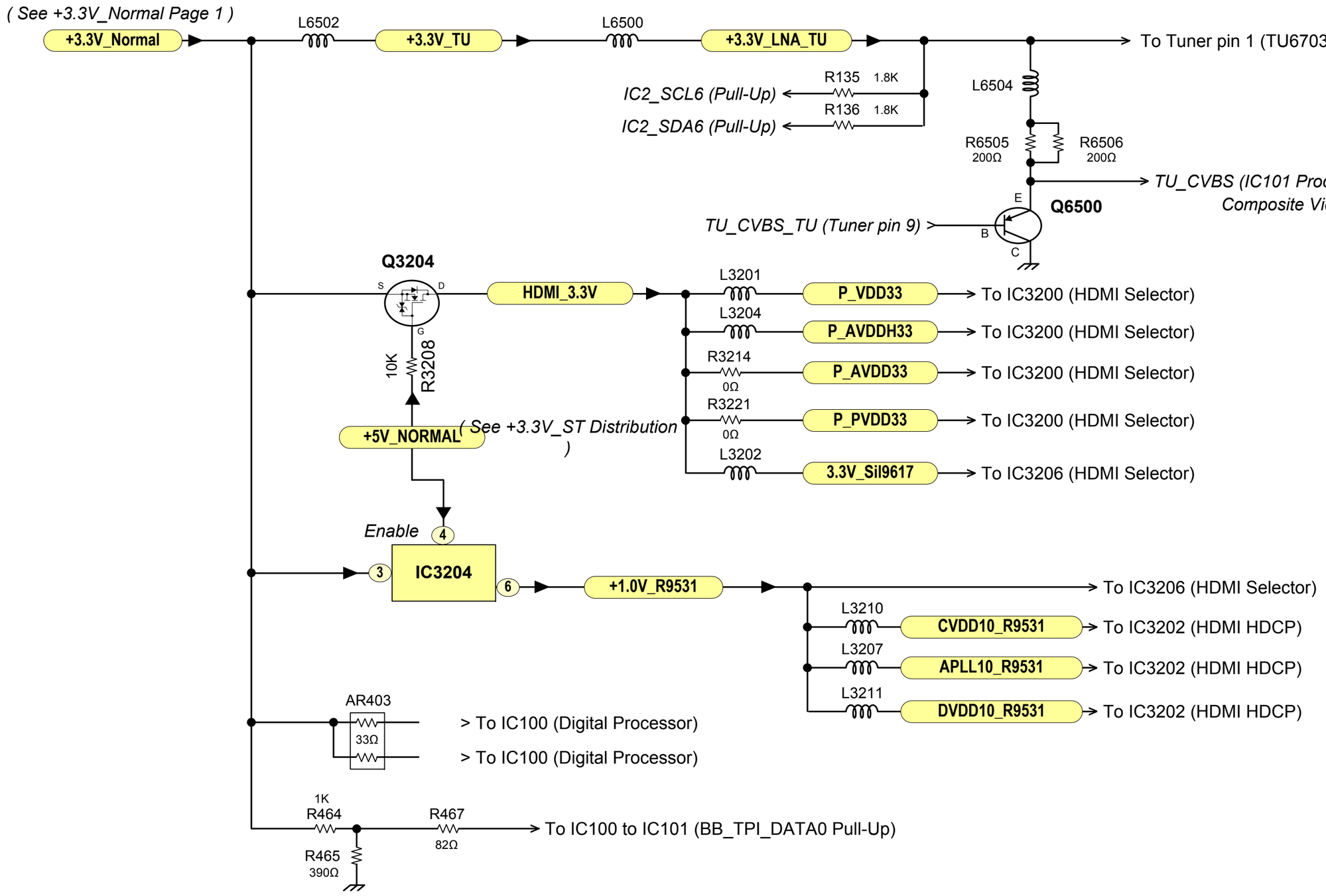
55UB9500 +3.3V_NORMAL Voltage Distribution (Pg 1 of 3)



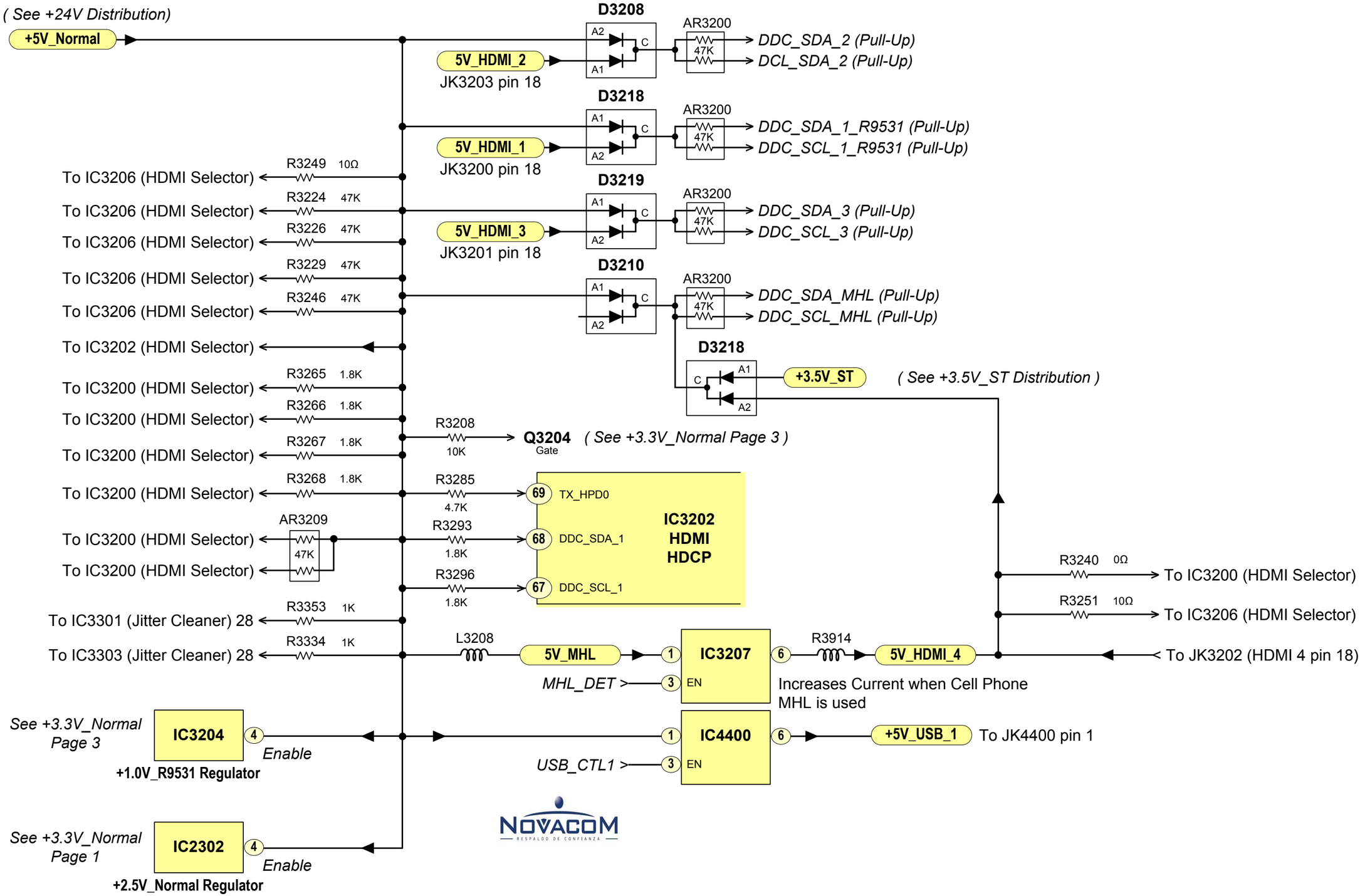
55UB9500 +3.3V_NORMAL Voltage Distribution (Pg 2 of 3)



55UB9500 +3.3V_NORMAL Voltage Distribution (Pg 3 of 3)



55UB9500 +5V_NORMAL Voltage Distribution (Power On)



55UB9800 T-CON Component Voltages

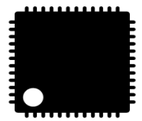
U15 Gamma Voltage Generator (BUF16821)

Pin	DC	RUN
1	Vcom2	6.15V
2	OUT1	15.89V
3	OUT2	0V
4	OUT3	13.92V
5	OUT4	13.48V
6	OUT5	12.33V
7	OUT6	0V
8	Gnd	Gnd
9	Vs	16.29V
10	OUT7	10.32V
11	OUT8	8.50V
12	OUT9	7.87V
13	Vso	3.33V
14	SCL	3.33V

Pin	DC	RUN
15	SDA	3.33V
16	AO	0V
17	BKSEL	3.33V
18	Gnd	Gnd
19	OUT10	5.99V
20	OUG11	0V
21	OUT12	4.41V
22	OUT13	3.19V
23	Vs	16.30V
24	Gnd	Gnd
25	OUT14	2.53V
26	OUT15	0V
27	OUT16	1.20V
28	Vcom1	6.14V

U449 DC-to-DC (TPS65162)

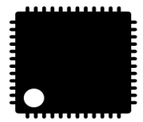
Pin	DC	RUN
1	POS1	0V
2	OUT1	0V
3	VDD	3.26V
4	CE	0.18V
5	VFLK	1.97V
6	VDPM	3.33V
7	RE	3.3V
8	VGHM	28.23V
9	VGHM	28.98V
10	FBP	1.27V
11	Gnd	Gnd
12	DRVP	7.60V
13	SUP	16.47V
14	DRVN	8.12V
15	Gnd	Gnd
16	FBN	0V
17	REF	1.27V
18	DLY1	4.24V
19	N/C	n/c
20	N/C	n/c
21	FBB	1.27V
22	CBOOT	11.31V
23	SWB	3.39V
24	SWB	3.39V



Pin	DC	RUN
25	PVIN	11.57V
26	PVIN	11.57V
27	VIN	11.44V
28	FREQ	0V
29	DLY2	4.24V
30	SS	1.92V
31	VC	0.62V
32	EN2	3.33V
33	EN1	5.80V
34	Gnd	Gnd
35	Gnd	Gnd
36	Gnd	Gnd
37	SW	11.59V
38	SW	11.59V
39	SW1	16.46V
40	NC	n/c
41	FB	1.27V
42	SWO	16.43V
43	AVIN	0V
44	NEG1	0V
45	Gnd	Gnd
46	OUT2	0V
47	Gnd	Gnd
48	NEG1	0V

US2 DC-to-DC (TPS65162)

Pin	DC	RUN
1	POS1	0V
2	OUT1	0.01V
3	VDD	3.26V
4	CE	0.18V
5	VFLK	1.97V
6	VDPM	3.33V
7	RE	3.21V
8	VGHM	28.18V
9	VGHM	28.92V
10	FBP	1.27V
11	Gnd	Gnd
12	DRVP	7.60V
13	SUP	16.47V
14	DRVN	7.87V
15	Gnd	Gnd
16	FBN	0V
17	REF	1.27V
18	DLY1	4.24V
19	N/C	n/c
20	N/C	n/c
21	FBB	1.27V
22	CBOOT	9.95V
23	SWB	2.04V
24	SWB	2.04V



Pin	DC	RUN
25	PVIN	11.61V
26	PVIN	11.61V
27	VIN	11.44V
28	FREQ	0V
29	DLY2	4.24V
30	SS	1.92V
31	VC	0.62V
32	EN2	3.33V
33	EN1	5.80V
34	Gnd	Gnd
35	Gnd	Gnd
36	Gnd	Gnd
37	SW	11.59V
38	SW	11.59V
39	SW1	16.46V
40	NC	n/c
41	FB	1.27V
42	SWO	16.43V
43	AVIN	0V
44	NEG1	0V
45	Gnd	Gnd
46	OUT2	0V
47	Gnd	Gnd
48	NEG1	0V

OP1

Pin	DC
1	0V
2	6.15V
3	6.15V
4	Gnd
5	0V
6	4.7V
7	16.32V
8	0V

OP2

Pin	DC
1	0V
2	6.14V
3	6.15V
4	Gnd
5	0V
6	4.7V
7	16.32V
8	0V

OP3

Pin	DC
1	8.31V
2	Gnd
3	8.33V
4	8.33V
5	16.41V

U10

Pin	DC
1	Gnd
2	Gnd
3	Gnd
4	Gnd
5	3.33V
6	3.33V
7	3.33V
8	3.33V

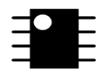
U263 Step-Down Switcher PS54325

Pin	DC	RUN
1	VO	0V
2	VFB	0.76V
3	VREG5	5.51V
4	SS	5.48V
5	Gnd	Gnd
6	PG	0.13V
7	EN	3.25V

Pin	DC	RUN
8	PGND1	Gnd
9	PGND2	Gnd
10	SW1	1.12V
11	SW2	1.12V
12	VBST	6.66V
13	VIN	11.55V
14	VCC	11.55V

U23

Pin	DC
1	12.39V
2	11.57V
3	8.15V
4	Gnd
5	0.93V
6	1.12V
7	3.33V
8	3.57V



U24

Pin	DC
1	12.52V
2	11.57V
3	8.15V
4	Gnd
5	0.93V
6	1.12V
7	3.33V
8	3.57V

U98

Pin	DC
1	2.78V
2	3.33V
3	3.33V

U134

Pin	DC
1	Gnd
2	1.46V
3	3.31V

D2

Pin	DC
A	11.59V
C	16.38V

D4

Pin	DC
A	Gnd
C	2.04V

D5

Pin	DC
A1	14.9V
A2	28.92V
C	21.74V

D6

Pin	DC
A1	(-5.54V)
A2	Gnd
C	(-2.65V)

D7

Pin	DC
A	Gnd
C	3.39V

D8

Pin	DC
A	11.56V
C	16.46V

D9

Pin	DC
A	Gnd
C	3.39V

D10

Pin	DC
A1	(-5.44V)
A2	Gnd
C	(-2.56V)

D11

Pin	DC
A1	14.98V
A2	28.98V
C	21.78CF

D14

Pin	DC
A	Gnd
C	2.14V

NOVACOM
RESPALDO DE CONFIANZA

55UF7600 Power Supply Board Component Layout

P801 Black "SMPS Board" to the "Backlights"

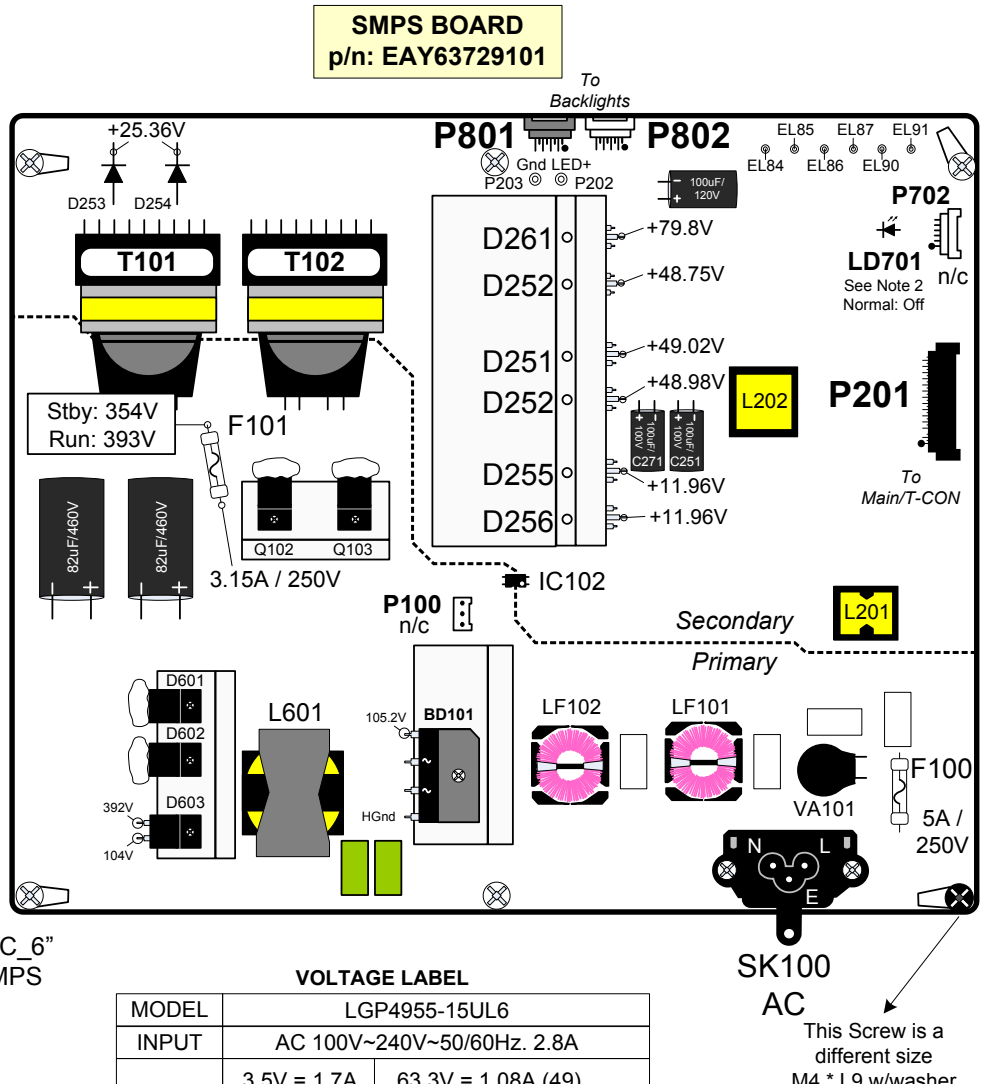
PIN	LABEL	RUN	Diode ✓	
1	VC_6	7.30V-26.72V	OL	EL85
2	VC_5	7.20V-26.93V	OL	EL84
3	VC_4	7.36V-26.77V	OL	EL86
4	N.C.	n/c	n/c	
5	N.C.	n/c	n/c	
6	N.C	n/c	n/c	
7	N.C.	n/c	n/c	
8	LED+	79.5V-79.9V	OL	P202

Bright (100%) to *Dim (0%)

P802 White "SMPS Board" to the "Backlights"

PIN	LABEL	RUN	Diode ✓	
1	LED+	79.5V-79.9V	OL	P202
2	N.C.	n/c	n/c	
3	N.C.	n/c	n/c	
4	N.C	n/c	n/c	
5	N.C.	n/c	n/c	
6	VC_3	7.37V-27.16V	OL	EL90
7	VC_2	7.22V-26.94V	OL	EL87
8	VC_1	7.60V-27.03V	OL	EL91

Bright (100%) to *Dim (0%)

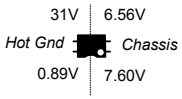


VOLTAGE LABEL

MODEL	LGP4955-15UL6	
INPUT	AC 100V~240V~50/60Hz. 2.8A	
OUTPUT	3.5V = 1.7A 12V = 3.5A 24V = 1.2A	63.3V = 1.08A (49) 72.6V = 1.08A (55)

See Backlight Section concerning "Testing a Backlight Block VC_1-VC_6" to confirm if the problems is the SMPS or the Panel.

IC102



Note: Sometimes LD701 blinks during normal start-up (7 times). Local Dimming Error Code.

P201 "SMPS Board" to P2300 "MAIN Board"

PIN	LABEL	STBY	RUN	Diode ✓
28	*V_SYNC	0V	0.02V	OL
27	*SIN	0V	0.05V	OL
26	*Gnd	Gnd	Gnd	Gnd
25	*SCLK	0V	0.04V	OL
23-24	Gnd	Gnd	Gnd	Gnd
18-22	24V	0V	25.46V	1.11V
16-17	Gnd	Gnd	Gnd	Gnd
11-15	12V	0V	11.88V	0.34V
9-10	Gnd	Gnd	Gnd	Gnd
7-8	3.5V	3.54V	3.52V	1.74V
6	Gnd	Gnd	Gnd	Gnd
5	3.5V	3.54V	3.52V	1.74V
4	(4) P-DIM2	0V	0.92V	OL
3	(3) P-DIM	0V	0.17V~2.55V	OL
2	DRV_ON	0V	3.46V	OL
1	PWR_ON	0V	3.51V	OL

(3) Dim to Bright (4) Fixed

Note: Main board only has 24 pins.
(Top 4 are for local dimming from the T-CON).

PWR_ON Pin 1: Turns on 12V and 24V (Also see Note 1)
DRV_ON Pin 2: Turns on Backlights. (Also see Note 2) DRV_ON is INV_CTL from Main.
P-DIM Pin 3: Controls Backlights via customer's menu Backlights 0% to 100%.
P-DIM2 Pin 4: Fixed Voltage.

Note 1: Backlight power is 63.62V with PWR_ON arrives, (no backlights)

Note 2: Backlight Power goes to 80V when DRV_ON arrives, Backlights On).

LD701 normal state is Off. If it is blinking, it indicates a problem. Missing DRV_ON, LED feedback error, Controller Error, etc.…
Example: If either P801 or P802 is disconnected, backlights come on, but only ½ the screen is lit, then LD701 blinks 3 times every 5 seconds. If DRV_ON is missing, LD701 (after 1 minute), blinks 5 times every 5 seconds.

55UF7600 Power Supply Board Voltage Information

P201 "SMPS Board" Stand-Alone

Pin	Label	Test 1	Test 2
28	*Vsync	n/a	n/a
27	*SCLK	n/a	n/a
26	*Gnd	n/a	n/a
25	*SCLK	n/a	n/a
23-24	Gnd	Gnd	Gnd
18-22	24V	24.50V	24.65V
16-17	Gnd	Gnd	Gnd
11-15	12V	12.07V	12.04V
9-10	Gnd	Gnd	Gnd
7-8	3.5V	3.54V	3.53V
6	Gnd	Gnd	Gnd
5	3.5V	3.54V	3.53V
4	(3) P-DIM2	3.52V	3.50V
3	(3) P-DIM	3.52V	3.50V
2	(2) DRV-ON	0V	3.53V
1	(1) PWR-ON	3.54V	3.53V
		BL Off	BL On

If P801 is disconnected, the backlight power will start at 37.7V, then jump to 47.97V and then fall back to 47.87V. Warning: Backlight power is slow to bleed down after power off, connected or disconnected.
If P801 is disconnected, Front Right half LEDs stay on.
If P802 is disconnected, Front Left half LEDs stay on.
If P801 or P802 is unplugged, LD701 blinks at a rate of 3 times every 5 seconds.

LED Power during TEST 1. **63.62V** After 1 minute LD701 Red LED Blinks 5 times every 5 seconds

Test 1 LED Ground Return Line **12.35V** Average: Backlights are not on

LED Power during TEST 2. **76.2V** LD701 does not blink

Test 2 LED Ground Return Line **1.17V** Average: Each varies due to brightness uniformity software

SMPS Controller IC is IC101

Backlight Driver IC is IC801

Backlight Controller IC is IC701

D251 3.5V_ST Source (back of the board)

D252 D261 24V Source

D253 D254 D255 12V Source

D259 D263 Backlight Power Source

(1) PWR_ON turns on the 12V and 24V lines. Backlight power approx. 63.62V.

(2) DRV_ON (INV_ON from Main) turns on the Backlights. Backlight power goes to approx. 80V.

(3) P_DIM controls the backlight brightness. Controlled via the Customer's Menu: Home → Settings → Picture → Backlights. Range 0% to 100% directly proportional to DC voltage to Backlight brightness. (0.17V~2.55V)
P_DIM is actually a 4V p/p PWM signal.

(4) P_DIM2 fixed voltage.

P201 "SMPS Board" With Smart Jig

Pin	Label	W/Jig
28	*Vsync	n/c
27	*SCLK	n/c
26	*Gnd	n/c
25	*SCLK	n/c
23-24	Gnd	Gnd
18-22	24V	24.72V
16-17	Gnd	Gnd
11-15	12V	12.04V
9-10	Gnd	Gnd
7-8	3.5V	3.51V
6	Gnd	Gnd
5	3.5V	3.51V
4	(3) P-DIM2	n/c
3	(3) P-DIM	n/c
2	(2) DRV-ON	3.28V
1	(1) PWR-ON	3.51V
		BL On

LED Power during Jig Test **75.7V** LD701 does not blink

Test 2 LED Ground Return Line **0.97V-1.45V** Each varies due to brightness unifc

SMPS Controller IC is IC100

Backlight Driver IC is IC801

Backlight Controller IC is IC701

D203 3.5V_ST Source

D251 D252 24V Source

D255 D256 D255 12V Source

D210 (D251) Backlight Power Source

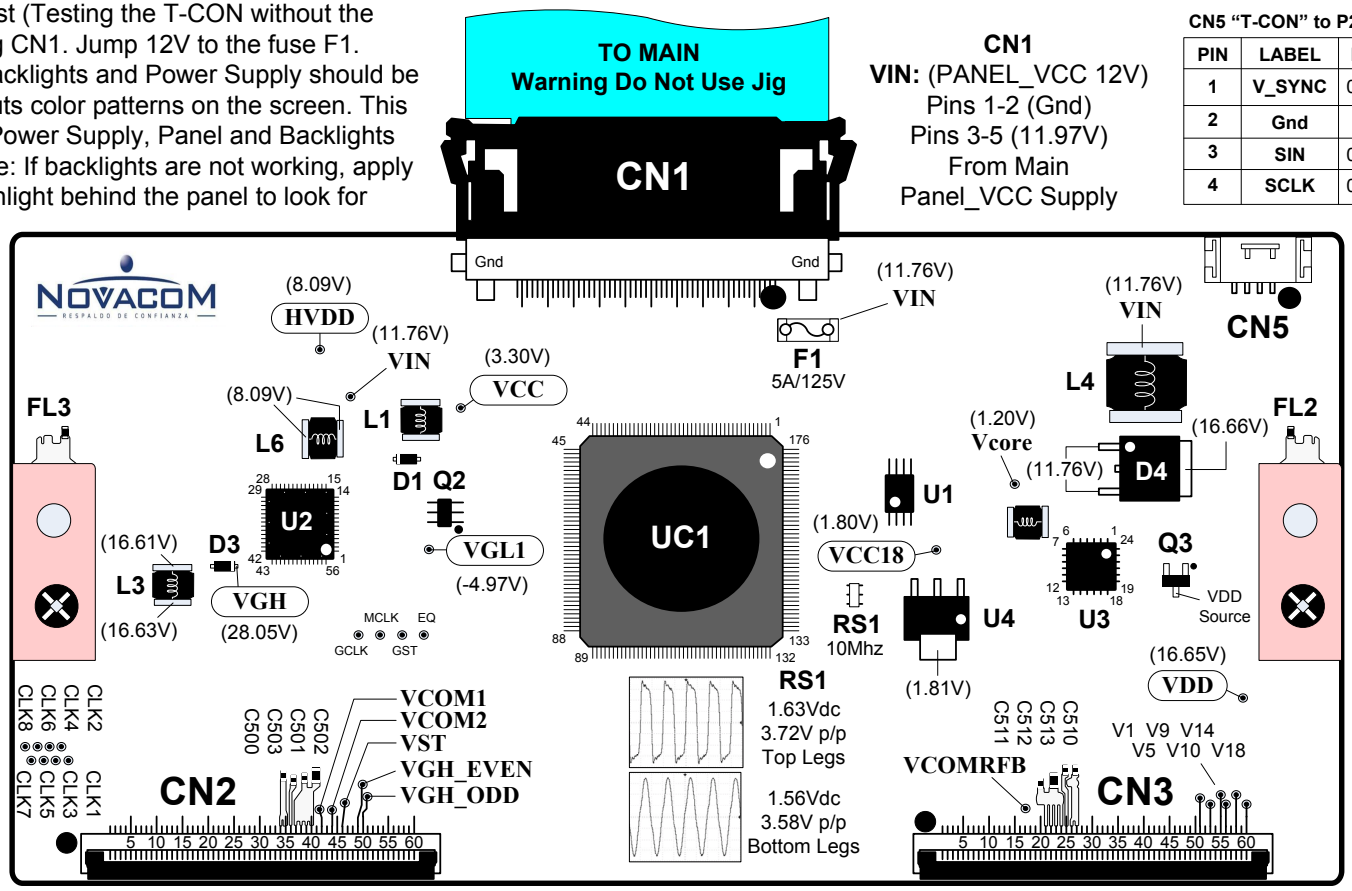
Additional Details:
11.18V Average voltage swing for a block of LEDs. V1-V6
1.17V Average Feedback Voltage (High Bright)
12.35V Average Feedback Voltage (Dim)
79.5V Backlight power 100% Backlights
79.9V Backlight power 0% Backlights
42.29V Total Voltage Drop (Bright, Vivid)
144 Total LEDs 6 Blocks
24 LEDs per-Block 3.26V per-diode Voltage drop
P_DIM (1.58V (50%) Backlight Power 79.7V. Backlight Drive 16.16V.
Note: Sometimes LD701 blinks during normal start-up (7 times).
Local Dimming Error Code.

55UF7600 T-CON (TFT Drive) Components Identified

Caution: Make sure the screws are installed when the T-CON is operating, damage may occur without them.

Note: To run the Panel Test (Testing the T-CON without the Main board), simply unplug CN1. Jump 12V to the fuse F1. Apply power to the set. (Backlights and Power Supply should be working OK). T-CON outputs color patterns on the screen. This test confirms the T-CON, Power Supply, Panel and Backlights are working normally. (Note: If backlights are not working, apply 12V to fuse and use a flashlight behind the panel to look for pattern changes).

Warning: Do not use the Smart Jig on this T-CON. Damage will occur.



CN1

VIN: (PANEL_VCC 12V)
Pins 1-2 (Gnd)
Pins 3-5 (11.97V)
From Main
Panel_VCC Supply

CN5 "T-CON" to P201 "SMPS"

PIN	LABEL	RUN	Diode Check
1	V_SYNC	0.03V	0.76V
2	Gnd	Gnd	Gnd
3	SIN	0.08V	0.76V
4	SCLK	0.06V	0.86V

Local Dimming to SMPS

U1

Pin 1	Gnd
Pin 2	Gnd
Pin 3	Gnd
Pin 4	Gnd
Pin 5	3.27V
Pin 6	3.26V
Pin 7	3.29V
Pin 8	3.30V

C511	16.64V	VDD
C512	16.64V	VDD
C513	8.09V	HVDD
C510	1.80V	VCC18

V1	15.79V
V5	12.12V
V9	8.39V
V10	7.78V
V14	3.90V
V18	0.38V

VCOMRFB 5.90V

Q2

Pin 1	Gnd
Pin 2	0.61V
Pin 3	-0.27V
Pin 4	-4.98V
Pin 5	4.70V
Pin 6	4.71V

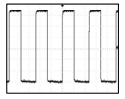
C502	16.64V	VDD
C501	16.64V	VDD
C503	8.09V	HVDD
C500	1.80V	VCC18

VCOM1	5.94V
VCOM2	6.14V
VST	-4.91V
VGH_EVEN	-4.96V to 28V*
VGT_ODD	-4.96V to 28V*

* Toggles Every Second

CLK1	8.91V
CLK2	8.96V
CLK3	8.96V
CLK4	8.96V
CLK5	8.91V
CLK6	8.91V
CLK7	8.91V
CLK8	8.91V

CLK1 – CLK8
32.8V - 33.0V p/p

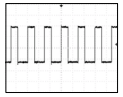


All have similar waveforms

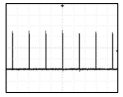
CN2 Key Voltages

Vcore	Pin 33
VCC18	Pin 34, 35
HVDD	Pin 36
VDD	Pin 37-40
VGL1	Pin 45
VGH_EVEN	Pin 49
VGH_ODD	Pin 50
VGH	Pin 51

GCLK
3.56V p/p

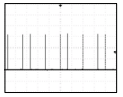


MCLK
3.60V p/p



EQ
No Waveform

GST
3.24V p/p



CN3 Key Voltages

Vcore	Pin 28
VCC18	Pin 26, 27
HVDD	Pin 25
VDD	Pin 21-24
VGL1	Pin 16
VGH_EVEN	Pin 12
VGH_ODD	Pin 11
VGH	Pin 10

Q3

Pin 1	8.99V
Pin 2	16.65V
Pin 3	16.66V

U4

Pin 1	Gnd
Pin 2	1.81V
Pin 3	3.30V

CN2 Video: Pins 14, 15 / 17, 18 / 20, 21 / 23, 24 / 26, 27 / 29, 30

CN3 Video: Pins 31, 32 / 34, 35 / 37, 38 / 40, 41 / 43, 44 / 46, 47

55UF7600 Main Board Component Layout

55UF7600 (2015) Main Board Section

P2300 "MAIN Board" to "SMPS Board" P201

PIN	LABEL	STBY	RUN	Diode Check
23-24	GND	Gnd	Gnd	Gnd
18-22	24V	0V	25.46V	OL
16-17	GND	Gnd	Gnd	Gnd
11-15	12V	0V	11.88V	OL
9-10	GND	Gnd	Gnd	Gnd
7-8	3.5V	3.54V	3.52V	1.23V
6	GND	Gnd	Gnd	Gnd
5	3.5V	3.54V	3.52V	1.23V
4	P-DIM2	0V	0.92V	OL
3	P-DIM	0V	0.17V-2.55V	OL
2	DRV_ON	0V	3.46V	1.54V
1	PWR_ON	0V	3.51V	OL

Dim to Bright

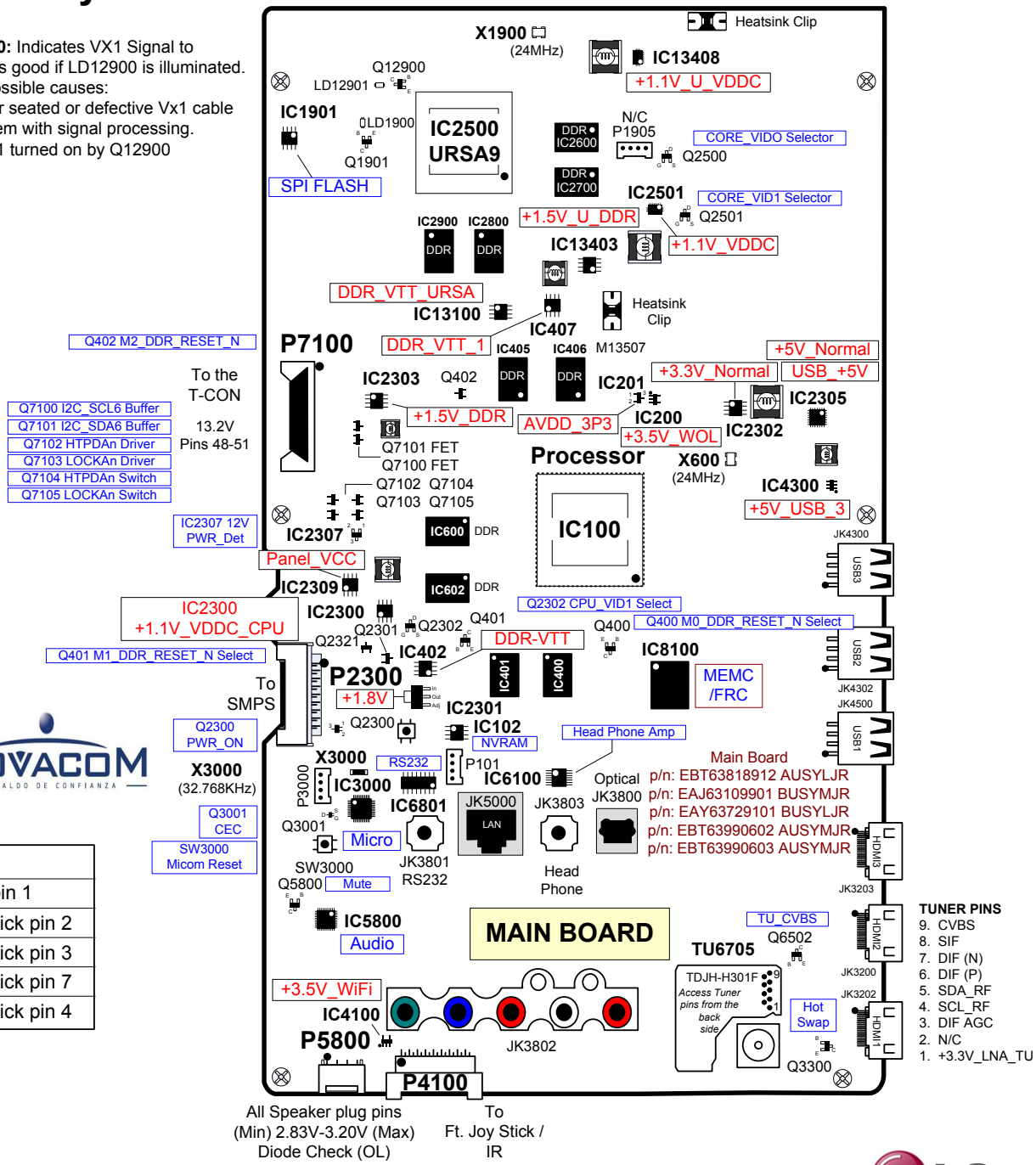
(1) PWR_ON: turns on the 12V and 24V lines. Backlight power goes to 63.62V.
(2) INV_CTL: (DRV_ON on SMPS) turns on the Backlights. Backlight power goes to 80V.
(3) P-DIM: controls the backlight brightness. Controlled by Cust. Menu, Video, Backlights. Range 0% to 100% directly proportional to DC voltage to Backlight brightness. P-DIM is actually a PWM signal.
(4) P-DIM2: Fixed Voltage.

KEY VOLAGES
P4100 "MAIN" to "Joy Stick J1, M-Remote/WiFi"

PIN	LABEL	STBY	RUN	Diode Check	
2	3.5V_WOL	0V	3.49V	OL	WiFi pin 1
12	Key 1	3.55V	3.52V	1.98V	Joy Stick pin 2
14	Key 2	3.55V	3.52V	1.98V	Joy Stick pin 3
15	IR	3.54V	3.78V	1.89V	Joy Stick pin 7
16	3.5V_ST	3.56V	3.52V	1.25V	Joy Stick pin 4

Pin 2 is power for the M-Remote / WiFi Board
Pin 16 is power for the IR/Joy Stick Board
IR peak/peak 3.80V

LD12900: Indicates VX1 Signal to T-CON is good if LD12900 is illuminated. If Off, possible causes:
Improper seated or defective Vx1 cable or problem with signal processing.
LD12901 turned on by Q12900



60LN5400 INTERCONNECT DIAGRAM

Note: If the top or bottom area of the screen is exhibiting a dim picture, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal.
If not,
1st: Check the P-DIM level, it should rise with the percentage shown on screen.
100% = 3.03V. Follow the P-DIM signal all the way through the SMPS to the Inverter.

DIM OR DARK PICTURE:
Turn the Brightness, Contrast and Backlights all the way up. Confirm 180V D801.
Confirm P-DIM is approx. 2.8V. Using a 5K resistor, jump backlight grounding test point (either CH1_Vout or CH2_Vout on the Inverter while observing the picture. The Backlights should brighten up. If not, replace panel. If yes, replace the Inverter (if available).

POWER SUPPLY TESTING (Including the Inverter and Backlights).
Warning: Do not add or remove jumpers with Power Applied.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P401 on the Main board.
(A) Jump pin 3 or 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main. 24V to the Inverter. (No Backlight power and the Backlights are not on at this time). LED Ground Return Line is (0V).
Remove AC power. Leave the jumper in place.

SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 3 or 5 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read to 284V.
LED Ground Return Line is (1.7V). P-DIM P201 (pin 4) reads 3.33V.

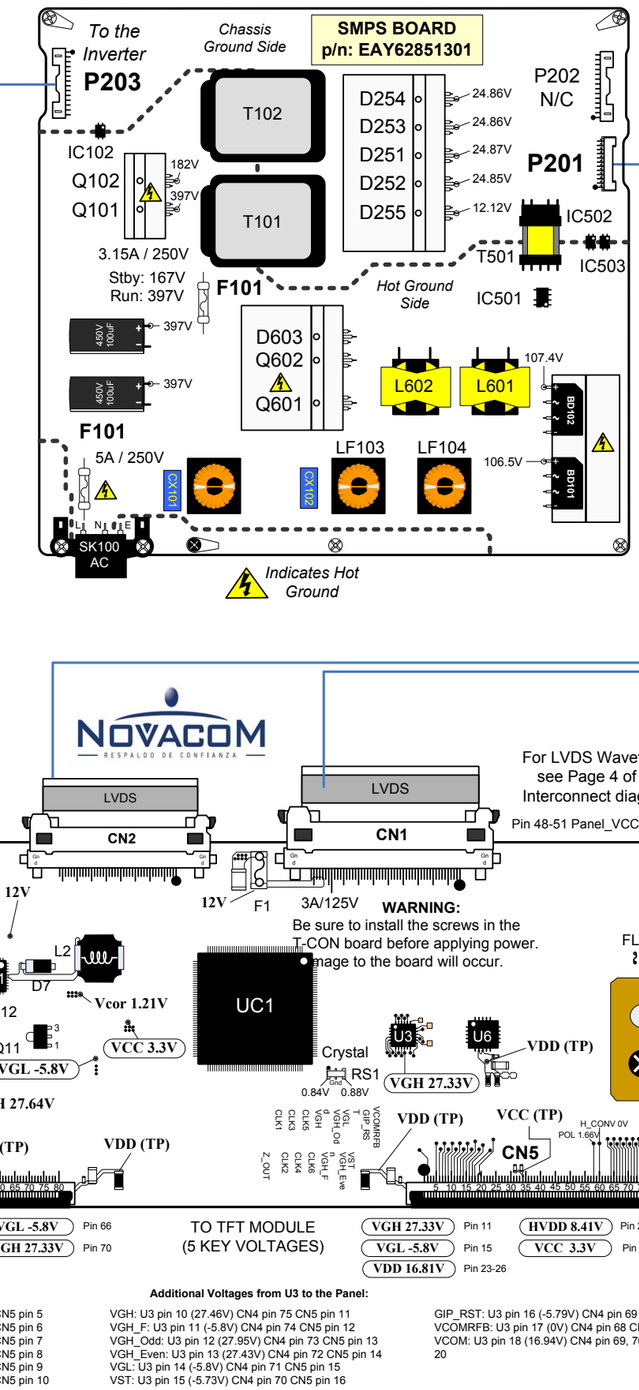
P803 "SMPS" to "Inverter" CN101

PIN	LABEL	RUN
1-5	24V	24.81V
6-10	Gnd	Gnd
11	n/c	n/c
12	DRV_ON	3.28V
13	A-DIM	0.16V~2.86V
14	P-DIM	0.17V~3.03V

No Local Dimming
In this Model.

PANEL p/n: EAJ62273301

Backlight Power 180V Pin 7



P201 CONNECTOR SMPS to MAIN:
PWR-ON Pin 1: Starts 12V, 24V and 24V to Inverter. No Backlights.

DRV-ON Pin 2: Starts Backlights LED Power goes to 284V.

P_DIM Pins 4: can vary according to incoming video IRE level, OSD Backlight setting and then Intelligent Sensor (room light condition).
Output from the Video Processor.
Range 0.17V to 3.03V.

P201 "SMPS Board" to "Main Board" P401

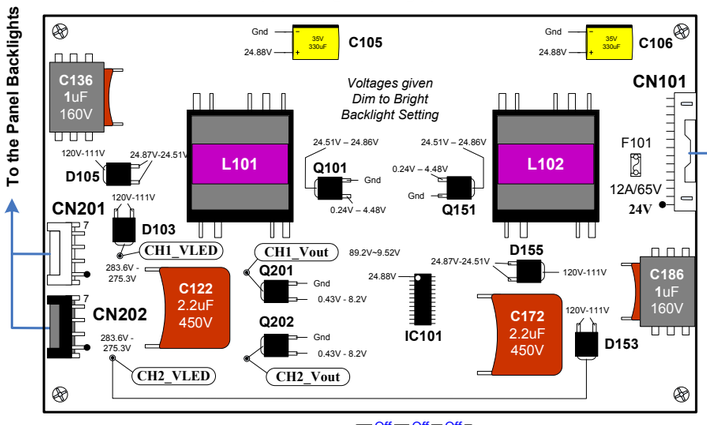
PIN	LABEL	STBY	RUN	Diode Check
17-18	Gnd	Gnd	Gnd	Gnd
16	24V	0V	24.81V	0.55V
13-15	12V	0V	12.02V	1.44V
11-12	Gnd	Gnd	Gnd	Gnd
9-10	24V	0V	24.81V	0.55V
7-8	Gnd	Gnd	Gnd	Gnd
(4) 6	A-DIM	0V	0.16V~2.86V	0.84V
5	3.5V_ST	3.56V	3.52V	OL
(3) 4	P-DIM	0V	0.17V~3.03V	OL
3	3.5V_ST	3.56V	3.52V	OL
(2) 2	DRV_ON	0V	3.28V	OL
(1) 1	PWR_ON	0V	3.3V	1.19V

For DC voltages
See P201 Chart

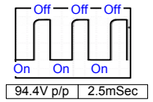
P401 "MAIN Board" To P201 "SMPS Board"

Pin	Diode
1	OL
2	1.75V
3	0.82V
4	OL
5	0.83V
6	1.10V
7-8	Gnd
9-10	OL
11-12	Gnd
13-15	OL
16	OL
17-18	Gnd

150 Total LEDs, 5 LEDs per/Board.
3 boards per/row (Strip). One group consist of 5 rows consisting of 75 LEDs.
2 Groups make up the backlights. Backlight power 284V.



LED Drive Signal CH1 or CH2 Vout
50% Backlight Setting
On the Cust. Menu.



CN201 "Inverter" to "The Panel"

PIN	LABEL	RUN	Diode ✓
7	CH2_FB(-)	184V~142V	OL
6	N/C	n/c	n/c
5	CH2_VLED	284V~275V	0.84V
4	N/C	n/c	n/c
3	CH1_FB(-)	184V~142V	OL
2	N/C	n/c	n/c
1	CH1_VLED	284V~275V	0.84V

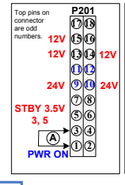
CN202 "Inverter" to "The Panel"

PIN	LABEL	RUN	Diode ✓
7	CH1_Vout	89V~9.5V	0.84V
6	N/C	n/c	n/c
5	CH1_FB(+)	184V~142V	OL
4	N/C	n/c	n/c
3	CH2_Vout	89V~9.5V	0.84V
2	N/C	n/c	n/c
1	CH2_FB(+)	184V~142V	OL

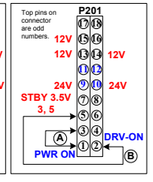
CH2 controls the Top ½ of screen backlights
CH1 controls the Bottom ½ of screen backlights

CN201 pin 7 direct short to CN202 pin 1
CN201 pin 3 direct short to CN202 pin 5

SMPS TEST 1



SMPS TEST 2



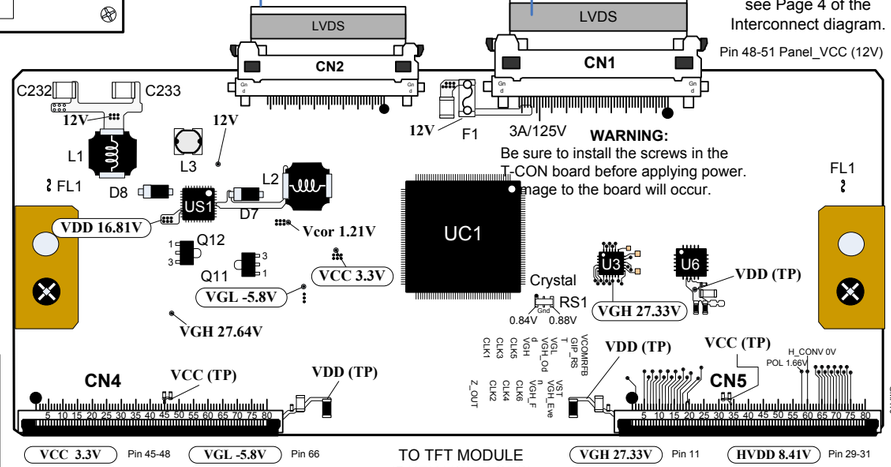
To the Keyboard
Back Left of Set
p/n: EBR77104601
To Key Board

Bottom Center of Set
Front IR
p/n: EBR76405802

NOVACOM
RESPALDO DE CONFIANZA

For LVDS Waveforms see Page 4 of the Interconnect diagram.

Pin 48-51 Panel_VCC (12V)



WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.

VCC 3.3V	Pin 45-48	VGL -5.8V	Pin 66
HVDD 8.41V	Pin 50-52	VGH 27.33V	Pin 70
VDD 16.81V	Pin 55-58		

TO TFT MODULE
(5 KEY VOLTAGES)

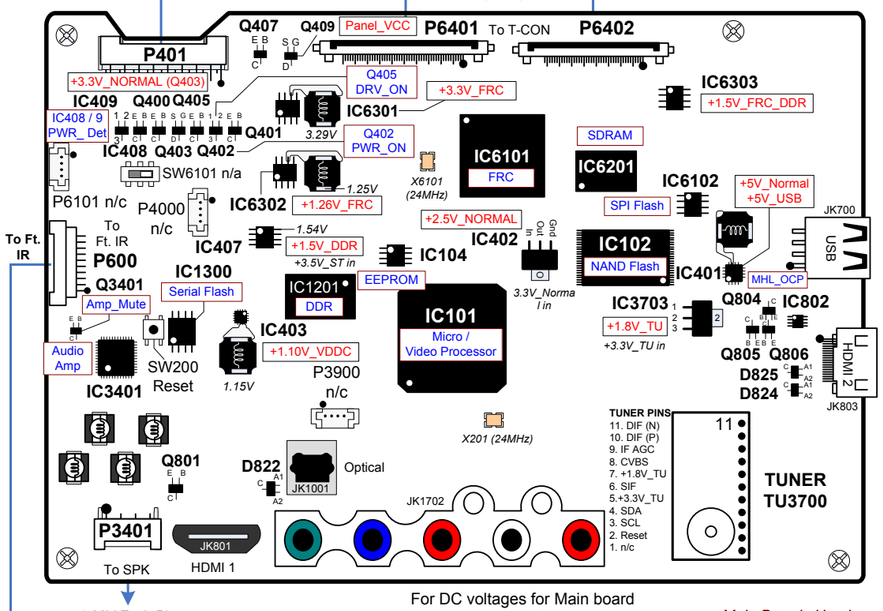
VGH 27.33V	Pin 11	HVDD 8.41V	Pin 29-31
VGL -5.8V	Pin 15	VCC 3.3V	Pin 33-36
VDD 16.81V	Pin 23-26		

Additional Voltages from U3 to the Panel:

CLK1: U3 pin 4 (6.87V) CN4 pin 76 CN5 pin 5
CLK2: U3 pin 5 (6.85V) CN4 pin 75 CN5 pin 6
CLK3: U3 pin 6 (6.85V) CN4 pin 74 CN5 pin 7
CLK4: U3 pin 7 (6.84V) CN4 pin 73 CN5 pin 8
CLK5: U3 pin 8 (6.84V) CN4 pin 72 CN5 pin 9
CLK6: U3 pin 9 (6.83V) CN4 pin 71 CN5 pin 10

VGH: U3 pin 10 (27.46V) CN4 pin 75 CN5 pin 11
VGH_F: U3 pin 11 (-5.8V) CN4 pin 74 CN5 pin 12
VGH_Odd: U3 pin 12 (27.95V) CN4 pin 73 CN5 pin 13
VGH_Even: U3 pin 13 (27.43V) CN4 pin 72 CN5 pin 14
VGL: U3 pin 14 (-5.8V) CN4 pin 71 CN5 pin 15
VST: U3 pin 15 (-5.73V) CN4 pin 70 CN5 pin 16

GIP_RST: U3 pin 16 (-5.79V) CN4 pin 69 CN5 pin 17
VCOMRFB: U3 pin 17 (0V) CN4 pin 68 CN5 pin 18
VCOM: U3 pin 18 (16.94V) CN4 pin 69, 70 CN5 pin 19, 20



1.08V Each Pin
SPK p/n: EAB62849301

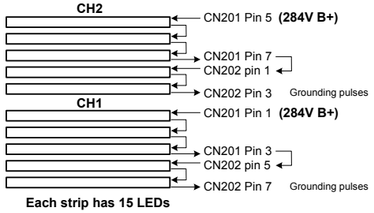
For DC voltages for Main board components see Page 2 of the Interconnect diagram.

Main Boards Used:
UA.AUSULJR / UA.BUSULJR
p/n: EBT62351503
p/n: EBT62351504

P601 "MAIN" to "Front IR Board" J1

PIN	LABEL	STBY	RUN	Diode Check
10	EYE_SDA	0.20V	3.35V	1.22V
9	EYE_SCL	0.20V	3.35V	1.22V
8	Gnd	Gnd	Gnd	Gnd
7	IR	3.54V	3.41V	OL
6	LED_R	2.62V	0V	2.84V
5	Gnd	Gnd	Gnd	Gnd
4	3.5V_ST	3.55V	3.41V	0.83V
3	Key2	3.55V	3.41V	OL
2	Key1	0.05V	3.41V	OL
1	Gnd	Gnd	Gnd	Gnd

BACKLIGHT STRUCTURE



Each strip has 15 LEDs

60LN5400 Main Board (ICs) Component Voltages

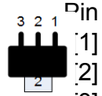
IC104 EEPROM Memory

Pin	
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.27V
[6]	3.27V
[7]	Gnd
[8]	3.27V

IC401 +5V+NORMAL Regulator

Pin	
[1]	n/c
[2]	0.63V
[3]	6.26V
[4]	0.46V
[5]	3.27V
[6]	4.77V
[7]	Gnd
[8]	5.18V (5V_USB Out)
[9]	5.18V (5V_Normal Out)
[10]	0.8V
[11]	5.18V (5V_Normal Out)
[12]	11.32V
[13]	Gnd
[14]	11.93V (Vcc In)
[15]	6.28V
[16]	6.86V

IC402 +1.8V_TU Regulator



Pin	
[1]	0V (Gnd)
[2]	2.5V (Out)
[3]	3.27V (In)

IC403 +1.1V_DDR Regulator

Pin	
[1]	3.29V (Vcc In)
[2]	3.29V (Vcc In)
[3]	Gnd
[4]	Gnd
[5]	Gnd
[6]	0.83V
[7]	0.67V
[8]	0.51V
[9]	0.85V
[10]	1.17V (Out)
[11]	1.17V (Out)
[12]	1.17V (Out)
[13]	4.49V
[14]	n/c
[15]	3.23V
[16]	3.29V (Vcc In)

IC407 +1.5V_DDR Regulator

Pin	
[1]	3.29V (Vcc In)
[2]	n/c
[3]	3.29V (Vcc In)
[4]	3.27V
[5]	Gnd
[6]	3.18V
[7]	0.8V
[8]	1.53V (Out)

IC408 PWR_Det +12V in

Pin	
[1]	Gnd
[2]	3.3V (Out)
[3]	3.3V (In)

IC409 PWR_Det +24V in

Pin	
[1]	Gnd
[2]	3.3V (Out)
[3]	3.3V (In)

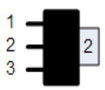
IC802 +5V_USB2/3 OCP

Pin	
[1]	Gnd
[2]	5.18V (Vcc In)
[3]	5.18V (Vcc In)
[4]	0V
[5]	3.26V
[6]	5.10V (Out)
[7]	5.10V (Out)
[8]	5.10V (Out)

IC1300 Serial FLASH Memory

Pin	
[1]	3.29V
[2]	3.28V
[3]	0V
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.29V (Vcc In)
[8]	3.29V (Vcc In)

IC3703 +1.8V_TU Regulator



Pin	
[1]	0V (Gnd)
[2]	1.8V (Out)
[3]	3.27V (In)

IC6102 SPI FLASH

Pin	
[1]	0.05V
[2]	0V
[3]	3.28V (WP)
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.28V
[8]	3.29V (3.3V_FRC in)

IC6301 3.3V_FRC Regulator

Pin	
[1]	11.86V (Enable)
[2]	0.76V
[3]	5.45V
[4]	5.42V
[5]	Gnd
[6]	3.29V (Out)
[7]	8.66V
[8]	12.19V (12V In)

IC6302 1.26V_FRC Regulator

Pin	
[1]	3.20V (Enable)
[2]	0.76V
[3]	5.42V
[4]	5.38V
[5]	Gnd
[6]	1.27V (Out)
[7]	6.67V
[8]	12.19V (12V In)

IC6303 +1.5V_FRC_DDR Regulator

Pin	
[1]	3.29V (Vcc In)
[2]	n/c
[3]	3.28V
[4]	3.28V
[5]	Gnd
[6]	3.19V
[7]	0.80V
[8]	1.50V (Out)

60LN5400 Main Board (Transistors and Large Flat Pack ICs) Component Voltages

Q400

Pin	Drives Q403
[B]	0.63V
[C]	0.04V
[E]	Gnd

Q401

Pin	Drives Q402
[B]	0.66V
[C]	0.05V
[E]	Gnd

Q402

Pin	PWR_On Switch
[1]	3.31V
[2]	2.62V
[3]	3.22V

Q403

Pin	+3.3V_NORMAL Switch
[G]	0.34V
[S]	3.31V
[D]	11.963.29

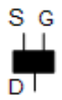
Q405

Pin	DRV_ON Switch
[B]	0.2V
[C]	2.99V
[E]	Gnd

Q407

Pin	Drives Q409
[B]	0.64V
[C]	0.04V
[E]	Gnd

Q409



Pin	Panel_VCC Switch
[G]	1.78V
[S]	11.93V
[D]	11.91V

Q801

Pin	HDMI Hot Swap
[B]	0V
[C]	0.07V
[E]	Gnd

Q804

Pin	MHL_EN Driver
[B]	1.365V
[C]	0V
[E]	0.07V

Q805

Pin	MHL_OCP_EN Driver
[B]	0.65V
[C]	0.03V
[E]	Gnd

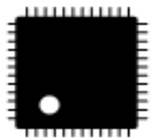
Q806

Pin	VBUS_EN Driver
[B]	0.68V
[C]	0.07V
[E]	Gnd

Q3401

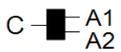
Pin	Amp Mute Driver
[B]	0.02V
[C]	3.31V
[E]	Gnd

IC3401



Pin	Audio Amp	Pin
[1]	24.13V	[25] n/c
[2]	20.88V	[26] n/c
[3]	1.06V	[27] n/c
[4]	Gnd	[28] 3.27V (Vcc In)
[5]	24.16V	[29] Gnd
[6]	1.06V	[30] n/c
[7]	1.06V	[31] n/c
[8]	24.16V	[32] n/c
[9]	Gnd	[33] n/c
[10]	1.07V	[34] 1.8V
[11]	3.28V	[35] Gnd
[12]	0V	[36] 1.4V
[13]	n/c	[37] 1.44V
[14]	n/c	[38] 1.64V
[15]	n/c	[39] 1.14V
[16]	n/c	[40] 3.27V
[17]	n/c	[41] 3.27V
[18]	n/c	[42] n/c
[19]	n/c	[43] 3.27V
[20]	n/c	[44] 3.27V
[21]	n/c	[45] Gnd
[22]	n/c	[46] Gnd
[23]	n/c	[47] Gnd
[24]	n/c	[48] 3.27V (Vcc In)

D822
D823
D825



Pin	DDC_SCL_2/4 Pull_Up	
[A1]	0V	[A1] 0.07V
[A2]	5.18V	[A2] 3.3V
[C]	4.92V	[C] 4.92V

T-CON Board Component Voltages

US1 DC-to-DC

Pin	DC
1	5V
2	2.41V
3	5V
4	0V
5	11.89V
6	11.89V
7	0V
8	8.41V
9	8.42V
10	0V
11	4.95V
12	4.95V
13	Gnd
14	Gnd
15	11.89V (12V In)
16	11.89V (12V In)
17	16.83V
18	16.67V (VDD)
19	0V
20	32.51V

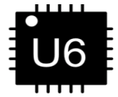
Pin	DC
21	32.34V
22	0.61V
23	0V
24	0.6V
25	0V
26	3.31V
27	Gnd
28	3.3V
29	3.3V
30	1.21V
31	Gnd
32	1.24V
33	0V
34	3.31V
35	3.33V
36	3.33V
37	0V
38	11.89V (12V In)
39	11.89V (12V In)
40	0V

U3 DC-to-DC

Pin	DC
1	27.96V
2	(-5.8)
3	27.85V
4	6.87V (CLK1)
5	6.85V (CLK2)
6	6.85V (CLK3)
7	6.84V (CLK4)
8	6.84V (CLK5)
9	6.83V (CLK6)
10	27.46V (VGH)
11	(-5.8) (VGH_F)
12	27.95V (VGH_Odd)
13	27.43V (VGH_Even)
14	(-5.8) (VGL)
15	(-5.73) (VST)
16	(-5.79) (GIP_RST)
17	Gnd
18	16.94V
19	3.21V
20	0V
21	0V
22	0V
23	0V
24	3.25V

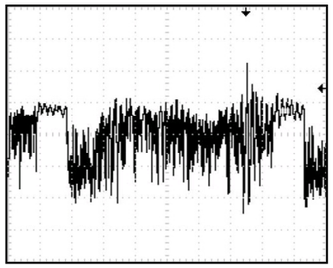
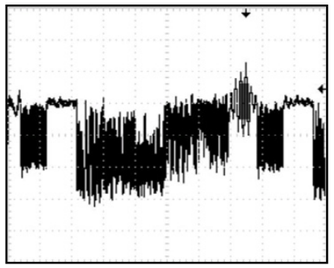
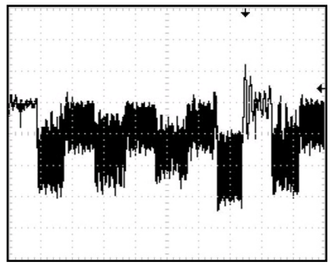
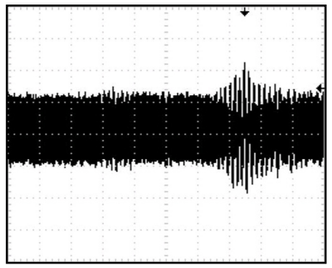
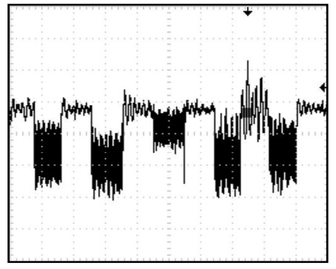
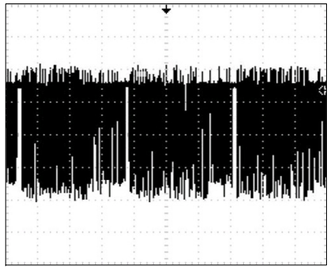
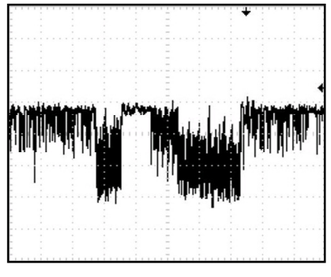
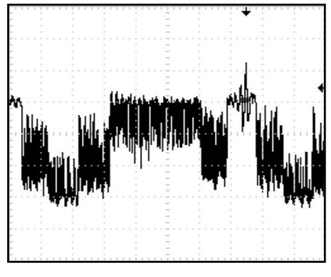
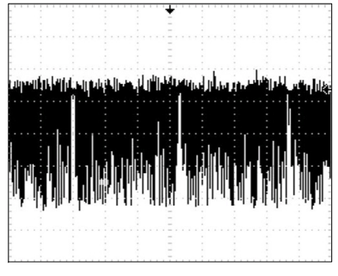
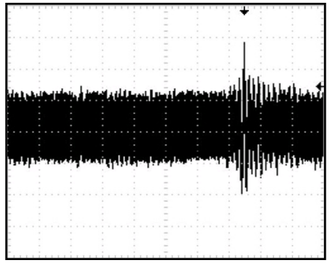
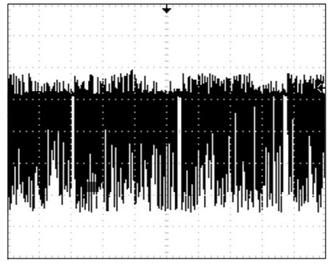
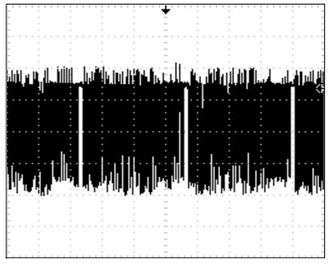
U6 DC-to-DC

Pin	DC
1	3.32V
2	Gnd
3	3.32V
4	Gnd
5	7.25V
6	7.22V
7	16.67V (VDD)
8	16.67V (VDD)
9	Gnd
10	14.25V
11	13.61V
12	12.67V
13	10.87V
14	6.49V
15	4.59V
16	8.42V
17	8.42V
18	3.59V
19	2.95V
20	16.67V

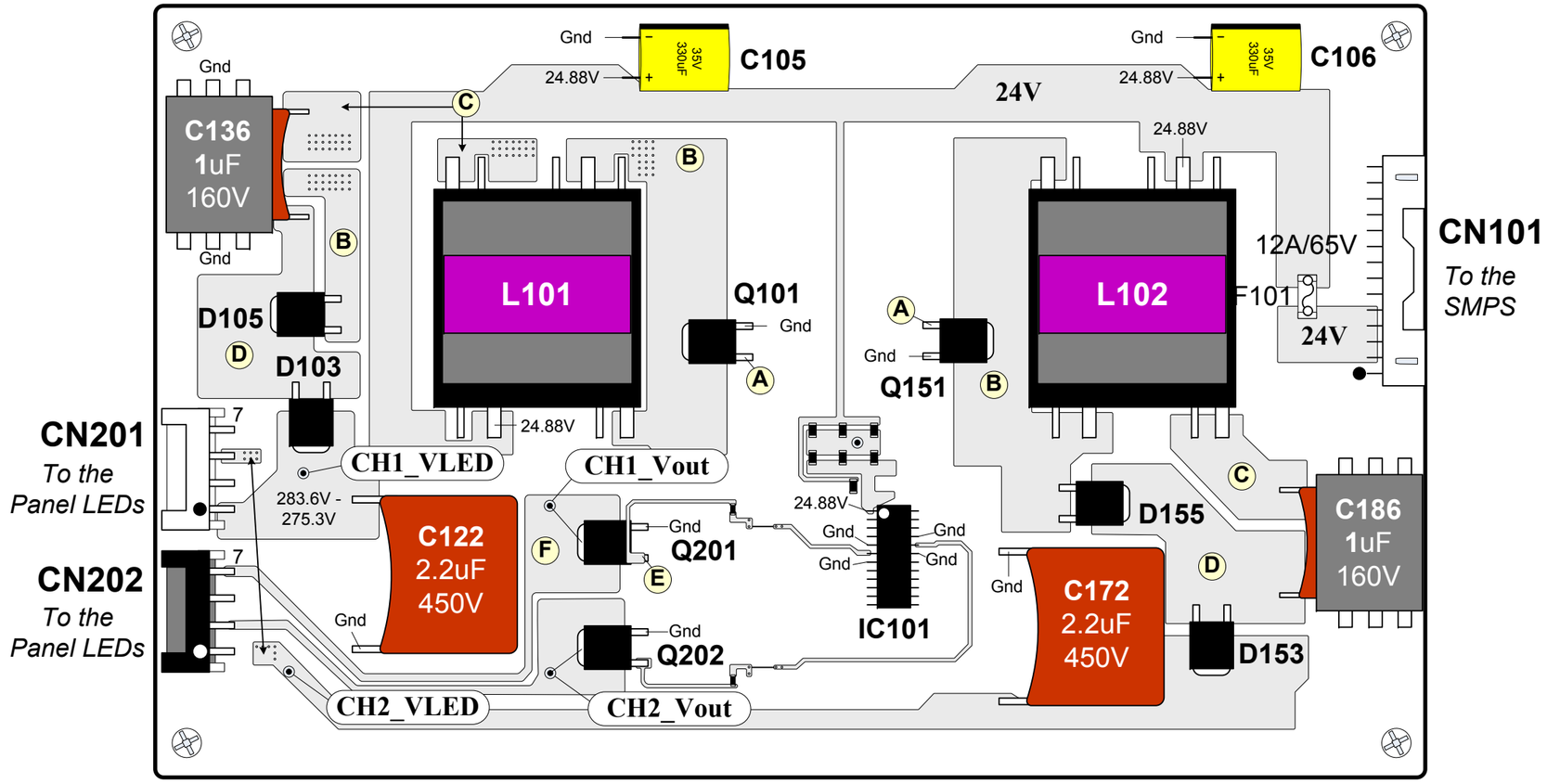


60LN5400 P6401 LVDS Connector Video Waveforms

All P6401 LVDS signals are taken with SMPTE Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". The ones shown are the "Positive" signal of the pair. The Negative signal looks exactly the same but flipped 180^0.
Scope Settings are 100mV per/division, 2.5uSec per/division.

Pin 12	**Pin 14**	**Pin 16**	**Pin 19**	**Pin 22**	**Pin 24**
					
472mV p/p	**452mV p/p**	**464mV p/p**	**408mV p/p**	**436mV p/p**	**420mV p/p**
Pin 28	**Pin 30**	**Pin 32**	**Pin 35**	**Pin 38**	**Pin 40**
					
348mV p/p	**456mV p/p**	**432mV p/p**	**480mV p/p**	**444mV p/p**	**416mV p/p** **No Waveform**

60LN5400 Inverter (LED Driver) Waveforms



	A	B	C	D	E	F
100% Backlights *2.5mSec Per/dim*	9.52V p/p	66V p/p	302V p/p	302V p/p	9.2V p/p	91.2V p/p
0% Backlights *2.5mSec Per/dim*	9.28V p/p	62.8V p/p	302V p/p	62.8V p/p	9.2V p/p	110V p/p

65LB5200 INTERCONNECT DIAGRAM

PANEL p/n:COV32665701

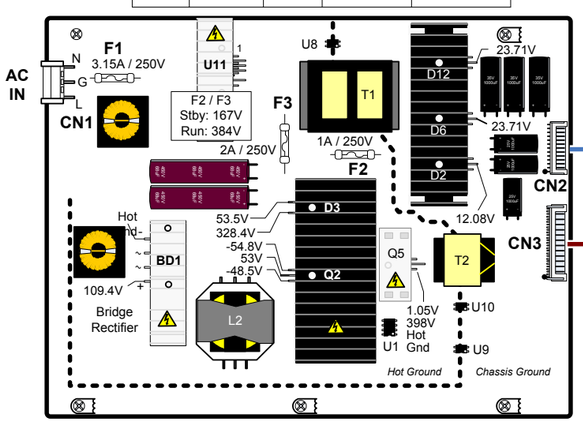
INVERTER INFORMATION: (BACKLIGHTS)
Q44-Q48, Q57-Q67 are the Backlight ground return line drivers. The Backlights are broken down into 16 individual blocks. The 38V backlight B+ is routed to a block "anode side". The cathode side is then routed back to either CN5 or CN6 ground return line. When the Output is low, the Backlight being driven is bright and when they are high, the backlight being driven is dim. Each driver is being driven by a 180Hz pulse width modulated drive signal being provided by U110.
LOCAL DIMMING: There are a total of 16 individual blocks of backlights. Each individual driver can be manipulated by "Local Dimming". The control signals for Local Dimming is delivered via CN10 to U110. This way, if there is an area on the screen that is dark, the backlights driving that area can be pulled low. This helps with the overall "Black Floor" which helps with the Contrast Ratio and it also prevents light bleed.
GLOBAL DIMMING: All the drivers can be manipulated as a group by Pulse width modulated dimming. Usually called P-DIM, however in this set it is called "ADJ" input via CN1 pin 2. It has a range of 1.53V (Dim) to 4.57V (Bright). *[Video mode: Vivid, Energy Savings: Off]* ADJ is manipulated by the customer's menu setting for Backlights which set the peak value. Then the Video processor monitors the overall average brightness level of the picture content to manipulate the ADJ value. Pulling the DC down with the picture is overall dim and pulling it up with the overall brightness content is bright.

The number on each driver indicates the pin being driven on CN5 and CN6, (see voltage table for each connector for details).

(1) Pin 1 (ENA): Enable: (BL_On/Off from Main): Sent to the Inverter and turns on the Backlights.
(2) Pin 2 (ADJ): Adjust or P-DIM: Sent to the Inverter and controls the backlight brightness. Controlled by (Cust. Menu → Video → Backlights). Range 0% to 100% directly proportional to DC voltage to Backlight brightness. P-DIM is actually a PWM signal.
(3) Pin 4 (STB): or PWR_ON: turns on the 12V and 24V lines. It also turns on the Inverter 24V. Backlights are not on.
(4) Pin 6 (5V): Is 0V, not used by the Main Board. Line is open on the Main.
(5) Pin 9, 10 (12V): Is the Stand-By Voltage in this Set.
(6) Pin 13, 14 (24V): Is 24V, but not used by the Main Board. Lines are open on the Main.

CN3 "SMPS Board" to "Main Board" CN1

PIN	LABEL	STBY	RUN	Diode Check
(6) 13-14	24V	0V	23.70V	0.48V
11-12	Gnd	Gnd	Gnd	Gnd
(5) 9-10	12V	12.07V	12.00V	OL
7-8	Gnd	Gnd	Gnd	Gnd
(4) 6	5V	0V	0V	OL
5	GND	Gnd	Gnd	Gnd
(3) 4	STB	0.13V	3.03V	OL
3	Gnd	Gnd	Gnd	Gnd
(2) 2	ADJ	0V	1.53V~4.57V	OL
(1) 1	ENA	0V	3.47V	OL



POWER SUPPLY and INVERTER (BACKLIGHT) TEST

Power Supply should be producing standby 12V.

TEST 1:
With PWR_ON: 33K between pin 10 and 4.
Apply Power.
24V is sent to the Inverter. Backlights are not on.
LED POWER IS 23.52V DURING TEST 1.
Ground Return Line (0.72V - 1.0V)

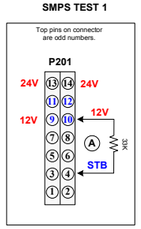
TEST 2:
With PWR_ON and DRV_ON:
Leave first jumper in place.
Add 2.4Meg resistor between pin 9 and pin 1.
Apply Power, Backlights are on.
LED POWER IS 38V DURING TEST 2.
LED Ground Return Line (1.09V - 1.39V)

Hot Ground
Warning: Shock Hazard

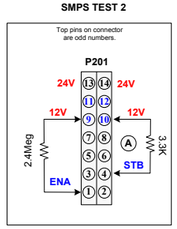
Power Supply

p/n:COV32806701

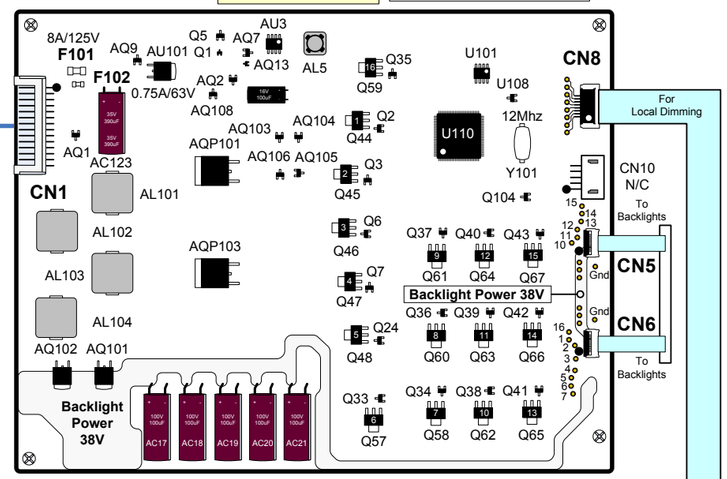
SMPS TEST 1



SMPS TEST 2



INVERTER **Comes with the Panel**



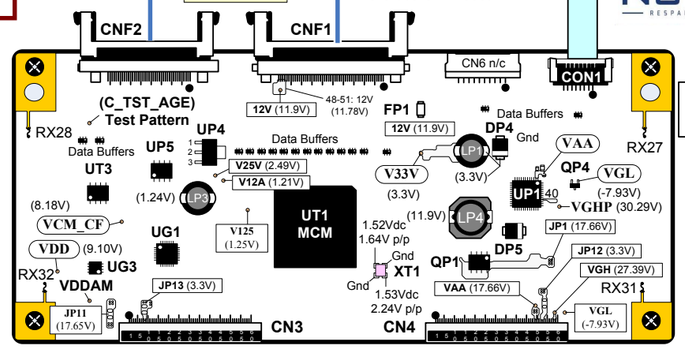
CN2 "SMPS Board" to "Inverter" CN1

PIN	LABEL	STBY	RUN	Diode Check
9-13	24V	0V	23.70V	0.48V
3-8	Gnd	Gnd	Gnd	Gnd
2	ADJ	0V	1.53V~4.57V	OL
1	ENA	0V	3.47V	OL

Comes with the Panel

T-CON

WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.



VDDAM	Pins 17, 18 (9.10V)	VDDAM	Pins 43, 44 (9.10V)
VCM_CF	Pins 13, 14 (8.38V)	VCM_CF	Pins 46, 47 (8.38V)
VAA	Pins 11, 12 (17.66V)	VAA	Pins 49, 50 (17.66V)
V33V	Pins 8, 9 (3.3V)	V33V	Pins 52, 53 (3.3V)
VGL	Pins 5, 6 (-7.93V)	VGL	Pins 55, 56 (-7.93V)
VGH	Pins 2, 3 (27.37V)	VGH	Pins 58, 59 (27.37V)

To the TFT MODULE (6 Key Voltages)

CN8 "Inverter" to "T-CON" CON1

PIN	LABEL	RUN	Diode Check
8	Option2	3.47V	OL
7	Option1	3.47V	OL
6	Gnd	Gnd	Gnd
5	SPI_SDA	3.41V	OL
4	V_SYNC	3.47V	OL
3	SPI_SCK	3.41V	OL
2	Gnd	Gnd	Gnd
1	SPI_EN	3.47V	OL

Local Dimming

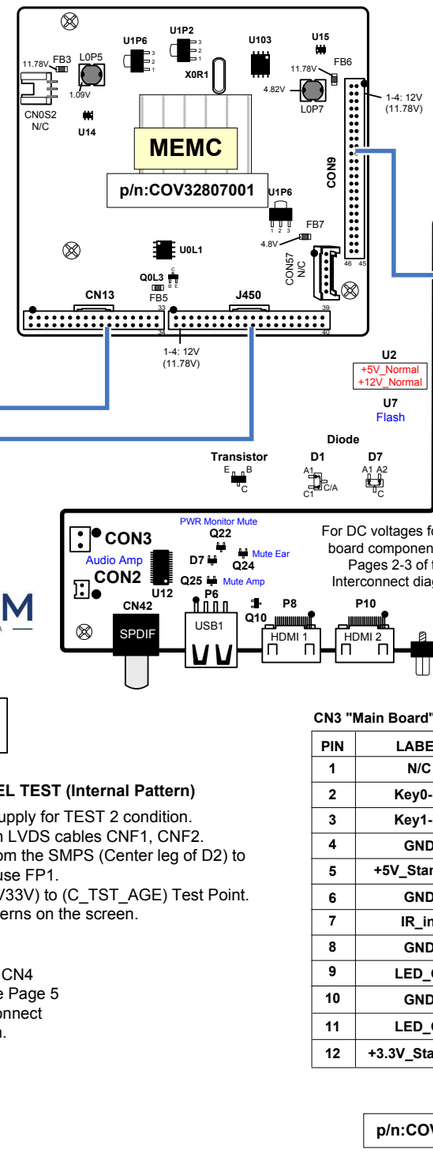
CN5 "Inverter" to "The Panel Backlights"

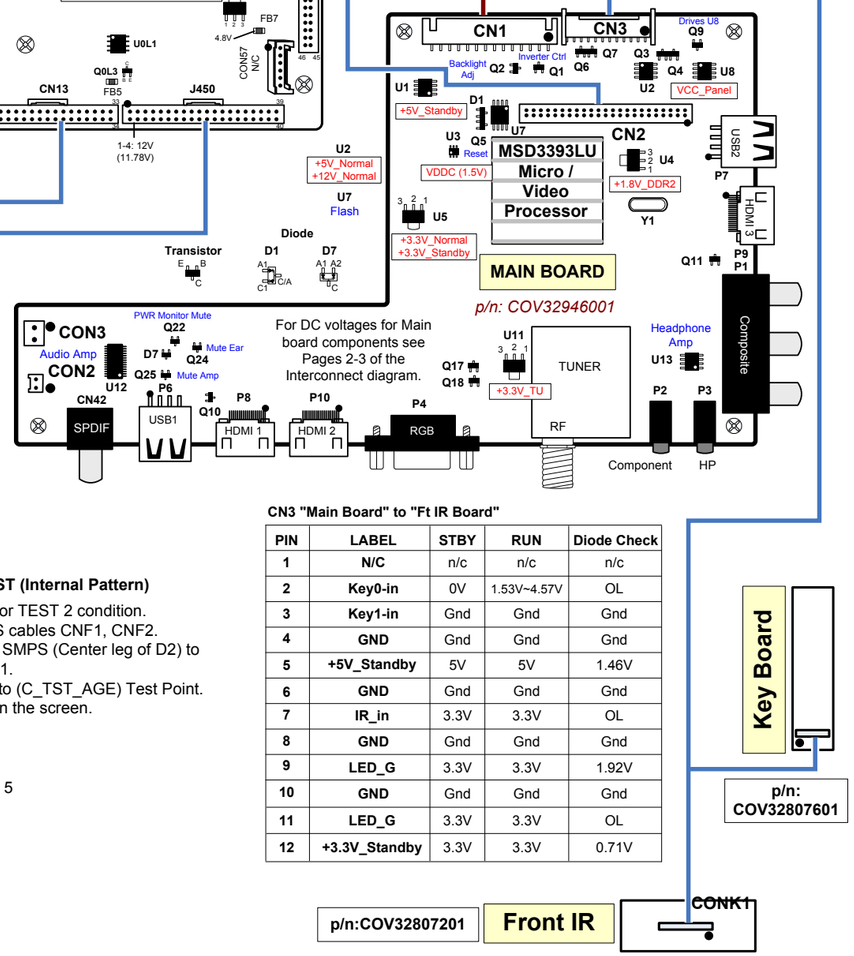
PIN	LABEL	RUN	Diode Check
12	15	1.54V~9.46V	OL
11	14	1.69V~9.38V	OL
10	13	1.56V~9.41V	OL
9	12	1.59V~9.40V	OL
8	11	1.72V~9.34V	OL
7	10	1.78V~9.31V	OL
6	9	1.59V~9.40V	OL
5	8	1.86V~9.28V	OL
4	N/C	n/c	n/c
1-3	B+	38V	OL

CN6 "Inverter" to "The Panel Backlights"

PIN	LABEL	RUN	Diode Check
10-12	B+	38V	OL
9	N/C	n/c	n/c
8	16	1.63V~9.38V	OL
7	1	1.89V~9.36V	OL
6	2	1.77V~9.44V	OL
5	3	1.91V~9.41V	OL
4	4	1.60V~9.42V	OL
3	5	1.93V~9.42V	OL
2	6	1.52V~9.51V	OL
1	7	1.71V~9.45V	OL

DIM OR DARK PICTURE:
Turn the Brightness, Contrast and Backlights all the way up.
Confirm 38V CN5 pins 1-3 and CN6 pins 10-12.
Confirm ADJ (P-DIM) is at least 3V. Using a 100Ω resistor, jump backlight grounding test points (1 through 16 on the Inverter) to ground while observing the picture.
The Backlights should brighten up in the Zone being controlled by that Test Point. If not, replace panel. If yes, replace the Inverter (if available).





For DC voltages for Main board components see Pages 2-3 of the Interconnect diagram.

For MEMC LVDS Waveforms see Pages 6-8 of the Interconnect diagram.

CN3 "Main Board" to "Ft IR Board"

PIN	LABEL	STBY	RUN	Diode Check
1	N/C	n/c	n/c	n/c
2	Key0-in	0V	1.53V~4.57V	OL
3	Key1-in	Gnd	Gnd	Gnd
4	GND	Gnd	Gnd	Gnd
5	+5V_Standby	5V	5V	1.46V
6	GND	Gnd	Gnd	Gnd
7	IR_in	3.3V	3.3V	OL
8	GND	Gnd	Gnd	Gnd
9	LED_G	3.3V	3.3V	1.92V
10	GND	Gnd	Gnd	Gnd
11	LED_G	3.3V	3.3V	OL
12	+3.3V_Standby	3.3V	3.3V	0.71V

Key Board

p/n: COV32807601

p/n:COV32807201 **Front IR** CONK1

VGH (27.39V) UP1 Pin 40

PANEL TEST (Internal Pattern)

Set Power Supply for TEST 2 condition.
Remove both LVDS cables CNF1, CNF2.
Jump 12V from the SMPS (Center leg of D2) to the T-CON fuse FP1.
Jump 3.3V (V33V) to (C_TST_AGE) Test Point.
Observe patterns on the screen.

For T-CON CN4 Waveforms see Page 5 of the Interconnect diagram.

65LB5200 Main Board (ICs) Component Voltages

U1

Pin	+5V_STANDBY Regulator
[1]	Gnd
[2]	11.93V (Vcc In)
[3]	Gnd
[4]	5.18V
[5]	0.8V
[6]	0.72V
[7]	(Enable) Don't Measure
[8]	5.28V (Out)

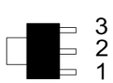
U2

Pin	+5V_NORMAL +12V_NORMAL
[1]	5.26V (Vcc In)
[2]	0.06V (Enable)
[3]	11.97V (Vcc In)
[4]	0.08V (Enable)
[5]	11.93V (Out)
[6]	11.93V (Out)
[7]	5.25V (Out)
[8]	5.25V (Out)

U3

Pin	VDDC (+1.5V) Regulator
[1]	Gnd
[2]	1.19V (Out)
[3]	11.93V (Vcc In)
[4]	0.81V
[5]	7.86V (Enable)
[6]	6.0V

U4

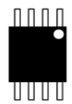


Pin	+1.8V_DDR2 Regulator
[3]	5.25V (Vcc In)
[2]	1.81V (Out)
[1]	0.56V

U5

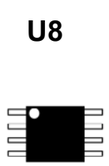
Pin	+3.3V_NORMAL Regulator
[1]	0V
[2]	3.32V (Out)
[3]	5.25V (V-In)

U7



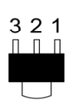
Pin	FLASH Memory
[1]	3.32V
[2]	3.31V
[3]	3.32V
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.32V (V-In)
[8]	3.32V (V-In)

U8



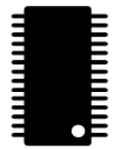
Pin	VCC_PANEL (12V) Switch
[1]	11.93V (V-In)
[2]	11.93V (V-In)
[3]	11.93V (V-In)
[4]	0.03V (Enable)
[5]	11.88V (Out)
[6]	11.88V (Out)
[7]	11.88V (Out)
[8]	11.88V (Out)

U11



Pin	+3.3V_TU Regulator
[1]	0V
[2]	3.3V (Out)
[3]	5.24V (V-In)

U12



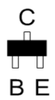
Pin	Audio Processor	Pin
[1]	5.29V	[15] 11.93V (In)
[2]	5.95V (Mute)	[16] 11.93V (In)
[3]	2.97V (L In)	[17] 12.34V
[4]	2.97V	[18] 5.88V (Out R+)
[5]	11.65V	[19] Gnd
[6]	0V	[20] 5.88V (Out R-)
[7]	11.86V	[21] 12.41V
[8]	Gnd	[22] 12.42V
[9]	6.91V	[23] 5.88V (Out L-)
[10]	6.91V	[24] Gnd
[11]	2.97V	[25] 5.88V (Out L+)
[12]	2.97V (R In)	[26] 5.88V
[13]	n/c	[27] 11.93V (In)
[14]	Gnd	[28] 11.93V (In)

U13

Pin	Headphone Amp
[1]	(L Out)
[2]	(Mute)
[3]	(L In)
[4]	Gnd
[5]	(R In)
[6]	
[7]	(R Out)
[8]	(Vcc In)

65LB5200 (Transistors and Large Flat Pack ICs) Voltages

Q1

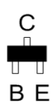


Pin	Inverter Control
[B]	0V
[C]	3.51V
[E]	Gnd

Q2

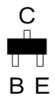
Pin	Backlight Control
[B]	0.04V
[C]	4.53V
[E]	Gnd

Q3



Pin	Turns on U2 +5V_Normal Reg
[B]	0.65V
[C]	0.06V
[E]	Gnd

Q4

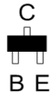


Pin	Turns on U2 +12V_Normal Reg
[B]	0.7V
[C]	0.08V
[E]	Gnd

Q5

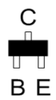
Pin	Reset Switch
[B]	Don't Measure
[C]	Don't Measure
[E]	Don't Measure

Q6



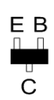
Pin	LED_G Driver
[B]	0.04V
[C]	3.32V
[E]	Gnd

Q7



Pin	Drives Q6
[B]	0.7V
[C]	0.04V
[E]	Gnd

Q9

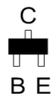


Pin	MHL_Det Switch Changes to HDMI_Det
[B]	0.09V
[C]	0.03V
[E]	Gnd

Q10

Pin	HDMI3-HPD Driver (Hot-Swap)
[B]	0V
[C]	0V
[E]	Gnd

Q11

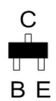


Pin	HDMI1-HPD Driver (Hot-Swap)
[B]	0V
[C]	0V
[E]	Gnd

Q17

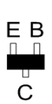
Pin	AVOUT-V 2nd Driver (AV TP)
[B]	4.54V
[C]	2.4V
[E]	524V

Q18



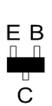
Pin	AVOUT-V 1st Driver (AV TP)
[B]	1.92V
[C]	4.54V
[E]	1.26V

Q22



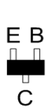
Pin	Power Monitor Mute
[B]	5.24V
[C]	(-0.14V)
[E]	0V

Q24



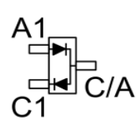
Pin	Driver for Mute Ear
[B]	0V
[C]	3.06V
[E]	Gnd

Q25



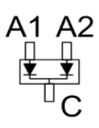
Pin	Driver for Mute Amp
[B]	0V
[C]	5.95V
[E]	Gnd

D1



Pin	Reset Speed-Up
[A1]	5.21V
[C1]	5.04V
[C/A]	Gnd

D7

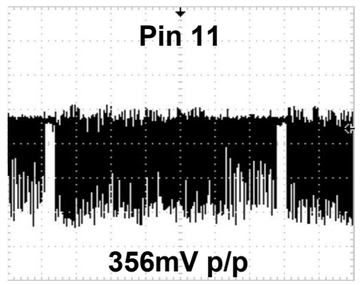
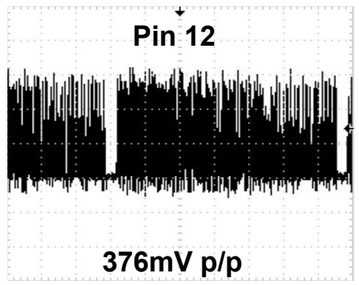
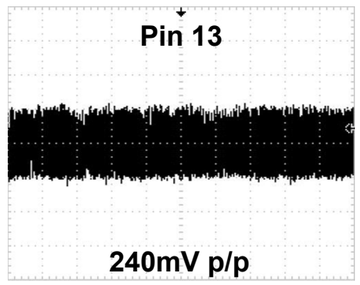
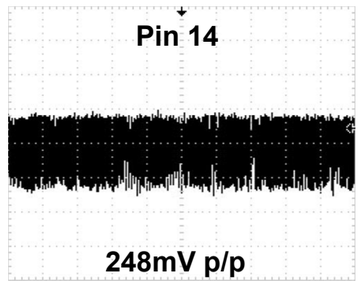
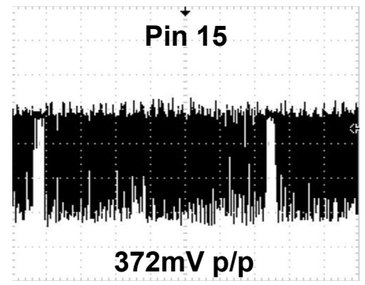
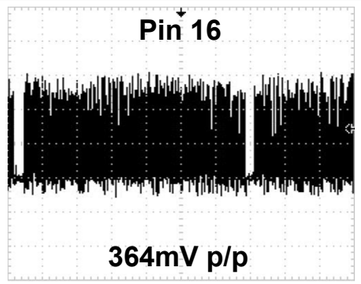
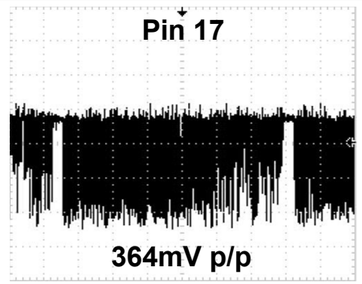
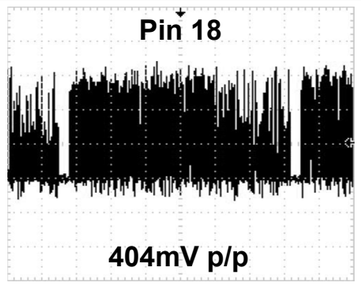
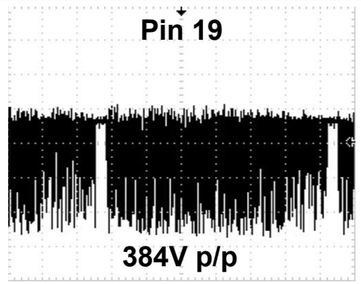
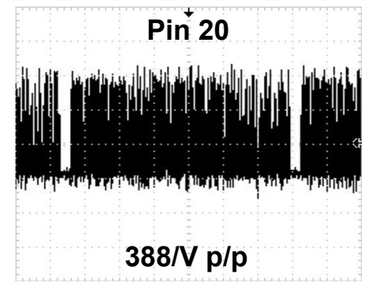
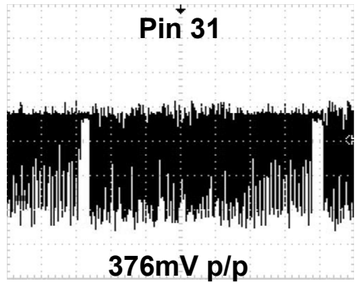
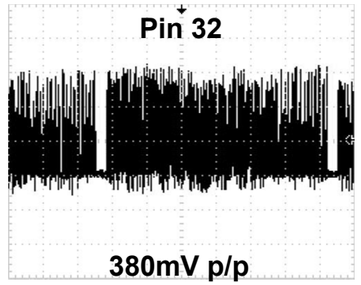
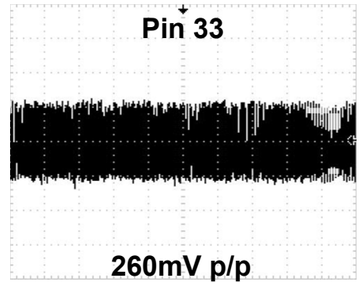
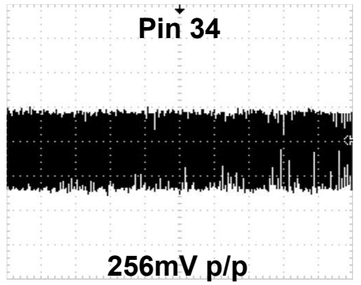
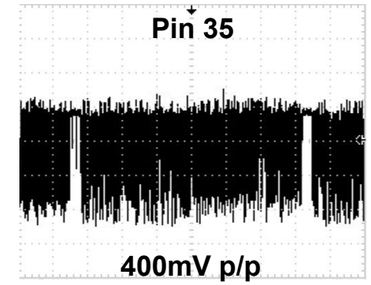
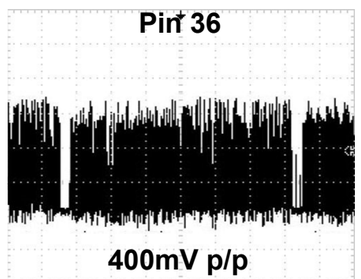
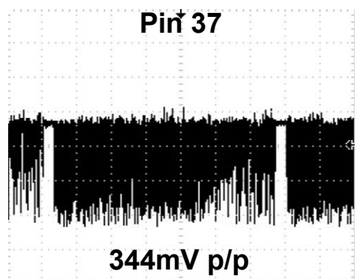
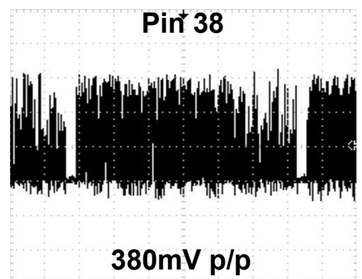
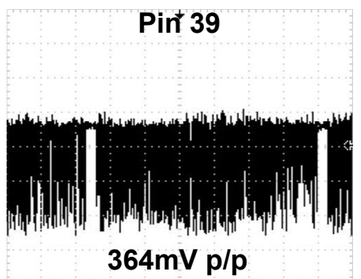
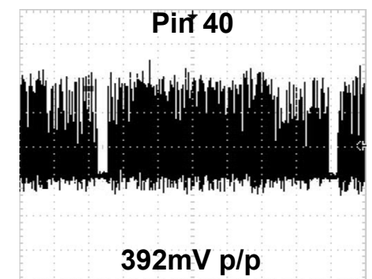


Pin	Power Mute To Q25
[A1]	0.05V
[A2]	(-0.09V)
[C]	Gnd

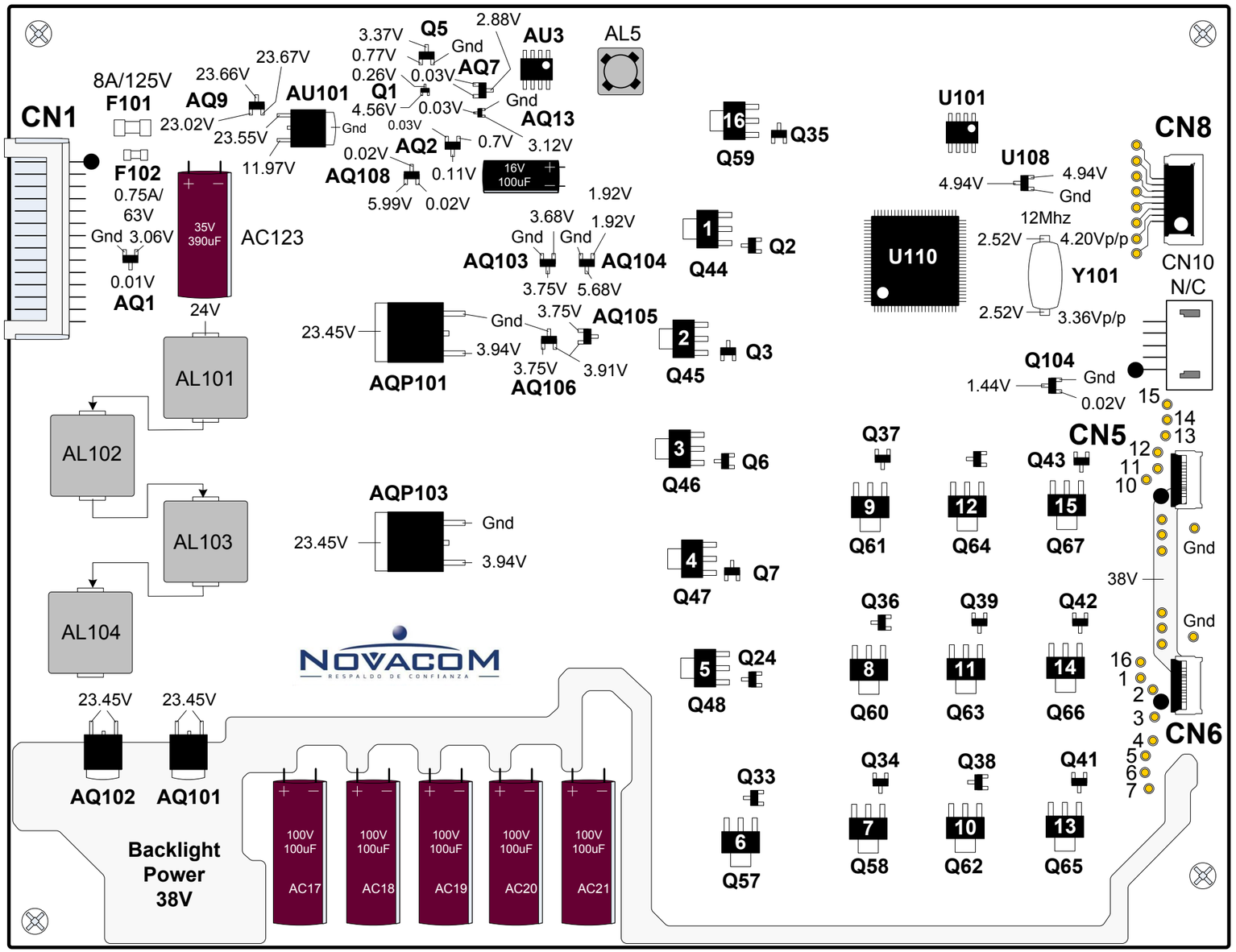
NOVACOM
RESPALDO DE CONFIANZA

65LB5200 MAIN CN2 LVDS to MEMC COF9Connector Video Waveforms

All Main Board CN2 LVDS signals are taken with SMPTE Color Bar signal input (1080P) Component Input.
All LVDS signals are “Differential Pairs”. Scope Settings are 100mV per/division, 2.5mSec per/division.

Pin 11  356mV p/p	Pin 12  376mV p/p	Pin 13  240mV p/p	Pin 14  248mV p/p	Pin 15  372mV p/p
Pin 16  364mV p/p	Pin 17  364mV p/p	Pin 18  404mV p/p	Pin 19  384V p/p	Pin 20  388/V p/p
Pin 31  376mV p/p	Pin 32  380mV p/p	Pin 33  260mV p/p	Pin 34  256mV p/p	Pin 35  400mV p/p
Pin 36  400mV p/p	Pin 37  344mV p/p	Pin 38  380mV p/p	Pin 39  364mV p/p	Pin 40  392mV p/p

65LB5200 Inverter Component Voltages



AU3

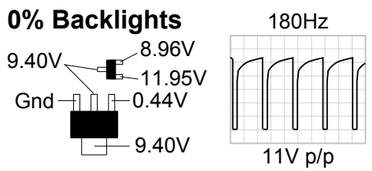
1) 9.4V
2) Gnd
3) 0.03V
4) 1.24V
5) 2.87V
6) Gnd?
7) 23.68V
8) 4.96V

U101

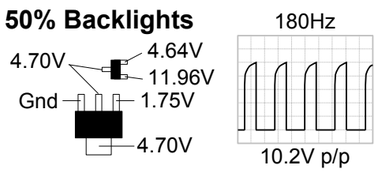
1) 0.08V
2) 0.95V
3) 3.46V
4) Gnd
5) 0.09V
6) 0.34V (B/L goes off)
7) 3.46V
8) 3.47V

Q44-Q48, Q57-Q67 and Q2-Q3, Q6-Q7, Q24, Q33-Q43 All 16 circuits have similar voltages.

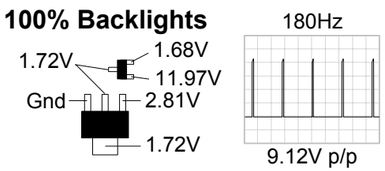
0% Backlights



50% Backlights

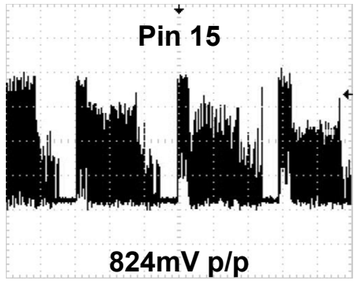
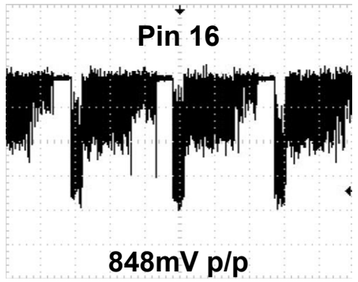
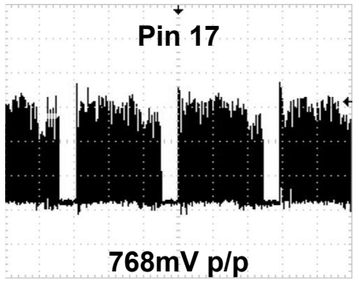
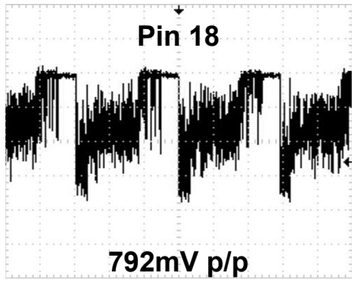
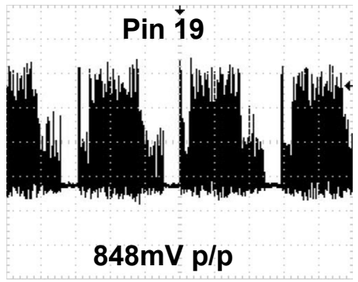
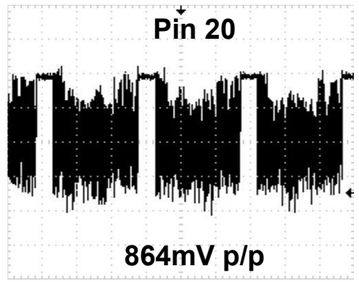
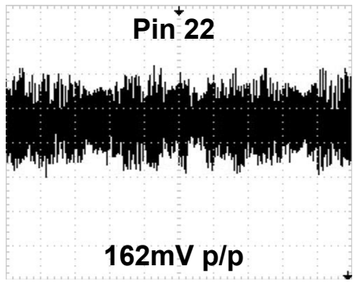
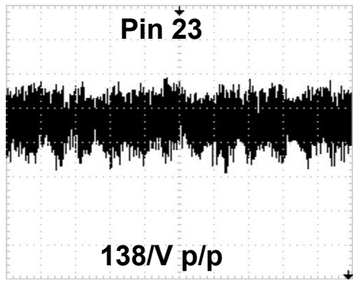
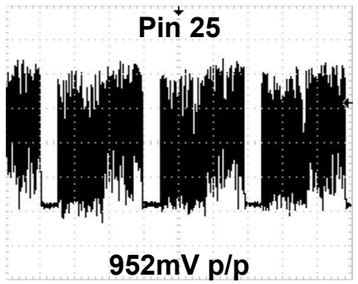
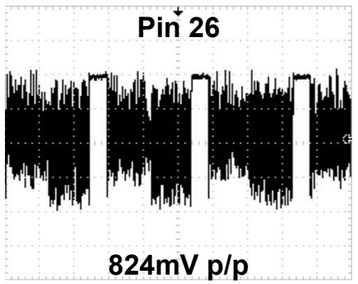
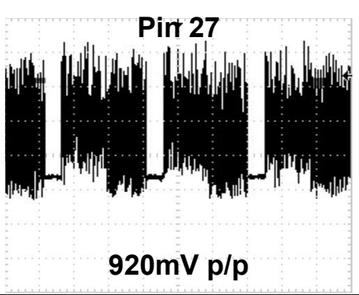
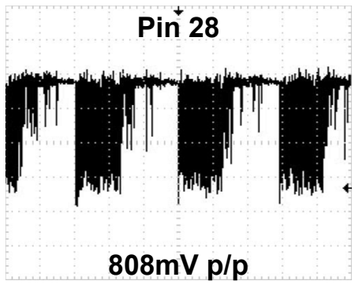
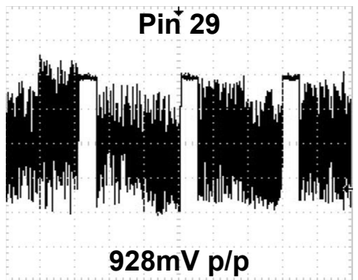
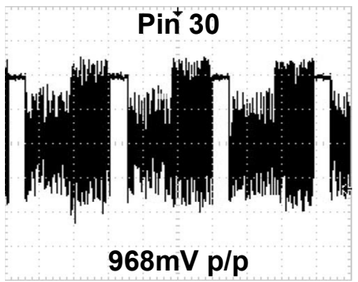
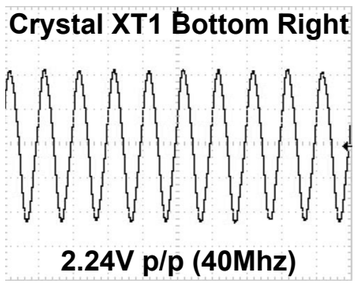
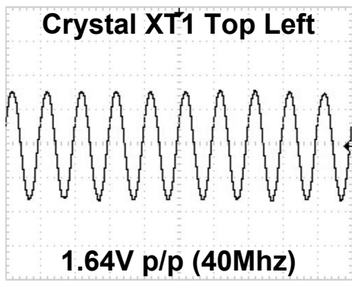


100% Backlights



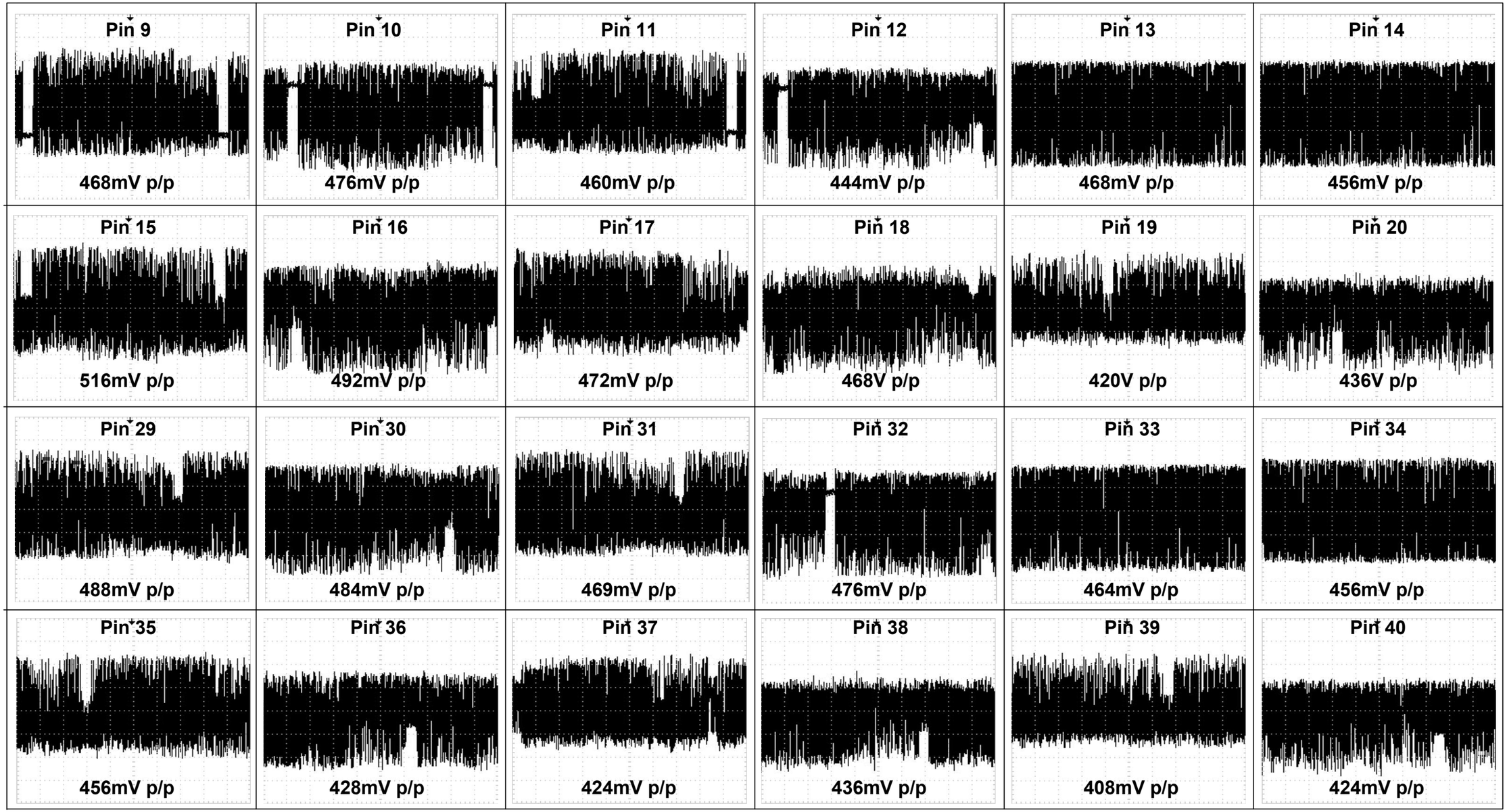
65LB5200 T-CON CN4 Connector to Panel Video and XT1 Crystal Waveforms

All T-CON Board CN4 Video signals are taken with SMPTE Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". Scope Settings are 200mV per/division, 5mSec per/division.
Except the Crystal which is 500mV per/division, 25nSec per/division.

Pin 15  824mV p/p	Pin 16  848mV p/p	Pin 17  768mV p/p	Pin 18  792mV p/p
Pin 19  848mV p/p	Pin 20  864mV p/p	Pin 22  162mV p/p	Pin 23  138/V p/p
Pin 25  952mV p/p	Pin 26  824mV p/p	Pin 27  920mV p/p	Pin 28  808mV p/p
Pin 29  928mV p/p	Pin 30  968mV p/p	Crystal XT1 Bottom Right  2.24V p/p (40Mhz)	Crystal XT1 Top Left  1.64V p/p (40Mhz)

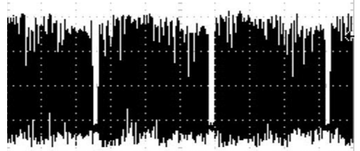
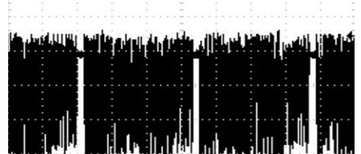
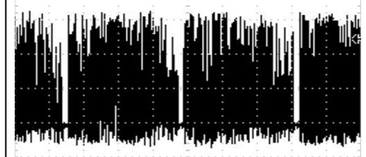
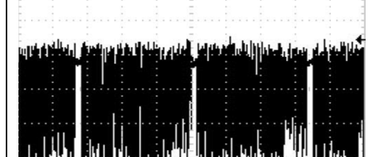
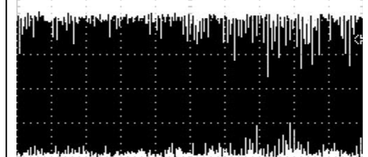
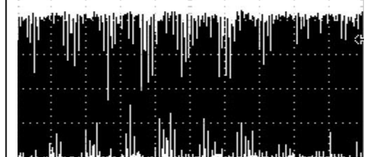
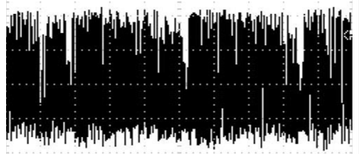
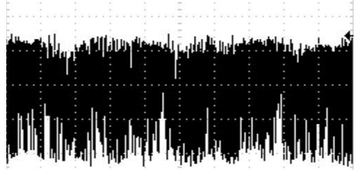
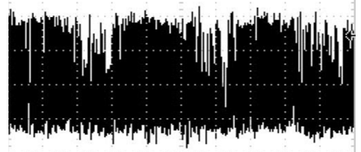
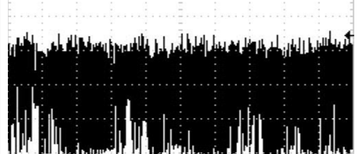
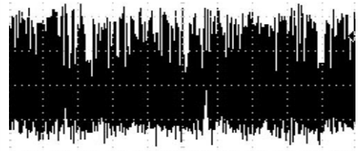
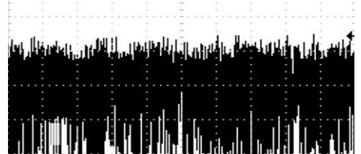
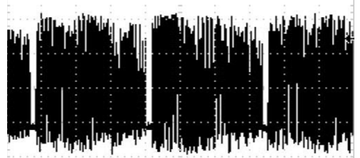
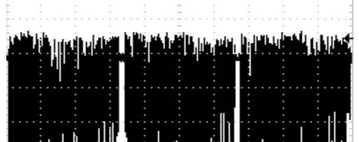
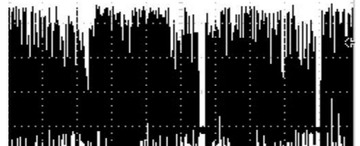
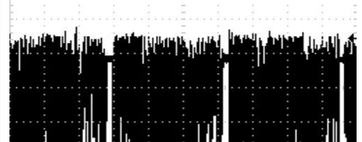
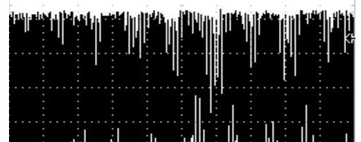
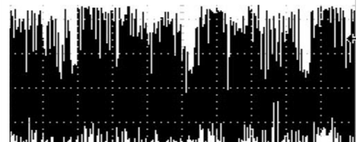
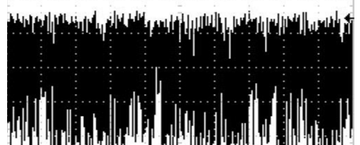
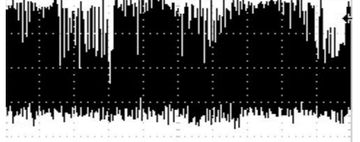
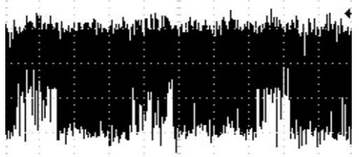
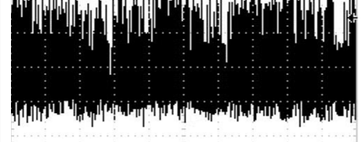
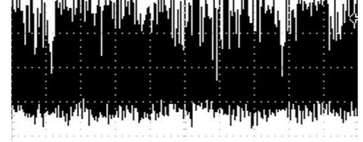
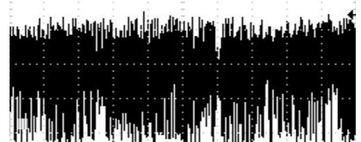
65LB5200 MEMC J450 LVDS to T-CON CNF1 Connector Video Waveforms

All MEMC Board J450 LVDS signals are taken with SMPTE Color Bar signal input (1080P) Component Input.
All LVDS signals are "Differential Pairs". Scope Settings are 100mV per/division, 1mSec per/division.



65LB5200 MEMC CN13 LVDS to T-CON CNF2 Connector Video Waveforms

All MEMC Board CN13 LVDS signals are taken with SMPTE Color Bar signal input (1080P) Component Input.
All LVDS signals are “Differential Pairs”. Scope Settings are 100mV per/division, 2.5mSec per/division.

Pin 3  392mV p/p	Pin 4  404mV p/p	Pin 5  396mV p/p	Pin 6  404mV p/p	Pin 7  428mV p/p	Pin 8  440mV p/p
Pin 11  416mV p/p	Pin 12  384mV p/p	Pin 13  412mV p/p	Pin 14  400V p/p	Pin 15  412V p/p	Pin 16  404V p/p
Pin 19  408mV p/p	Pin 20  420mV p/p	Pin 21  456mV p/p	Pin 22  456mV p/p	Pin 23  440mV p/p	Pin 24  444mV p/p
Pin 27  428mV p/p	Pin 28  412mV p/p	Pin 29  412mV p/p	Pin 30  420mV p/p	Pin 31  424mV p/p	Pin 32  420mV p/p

65UF9500 INTERCONNECT DIAGRAM

PANEL p/n: EAJ63089101

P801 White "SMPS Board" to the "Backlights"

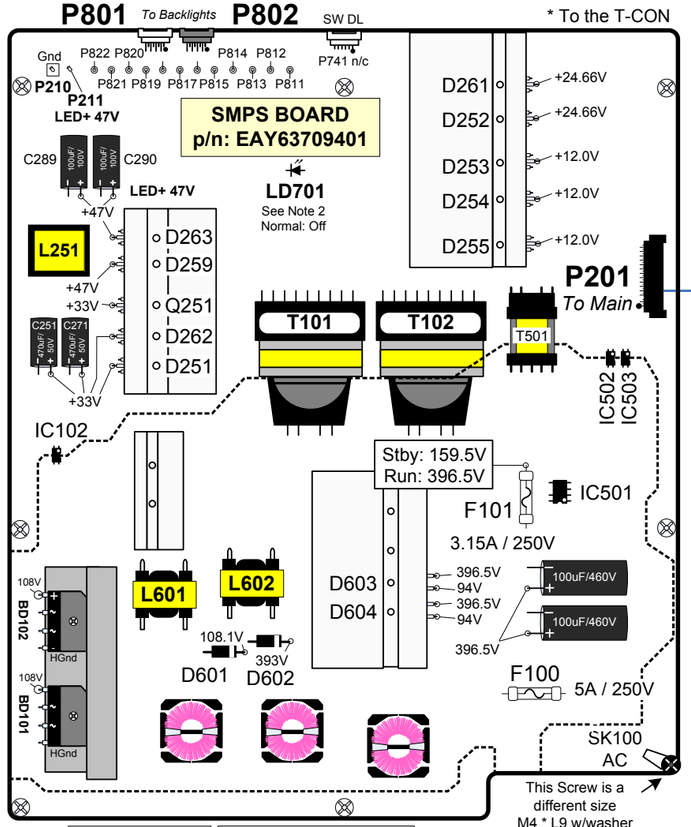
Pin	Label	Run	Diode Check	TP
1	VC_6	3.77V-15.7V	OL	P822
2	VC_5	4.11V-15.7V	OL	P817
3	LED+	46.3V-46.55V	OL	P211
4	VC_4	4.00V~15.70V	OL	P821
5	LED+	46.3V-46.55V	OL	P211
6	VC_3	4.35V~15.77V	OL	P818
7	VC_2	4.35V~15.77V	OL	P820
8	VC_1	4.43V~15.90V	OL	P819

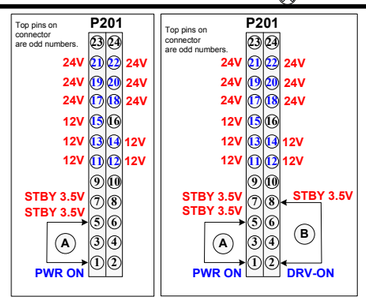
Bright (100%) to *Dim (0%)

P802 Black "SMPS Board" to the "Backlights"

PIN	LABEL	RUN	Diode ✓	TP
1	VC_7	3.85V~15.74V	OL	P816
2	VC_8	4.03V~46.55V	OL	P811
3	LED+	46.3V-46.55V	OL	P211
4	VC_9	4.00V~15.70V	OL	P815
5	LED+	46.3V-46.55V	OL	P211
6	VC_10	4.33V~15.75V	OL	P812
7	VC_11	4.58V~15.81V	OL	P814
8	VC_12	4.60V~15.66V	OL	P813

Bright (100%) to *Dim (0%)





Note: If P801 or P802 is disconnected, the backlights power will come on, start at 37.7V climb to 48V, the fallback to 47.87V. ½ of the Backlights will be on

168 Total LEDs, 84 LEDs per/Strip.
2 boards per/strip. (42 LEDs per/board) 12 columns (Blocks or Zones).
14 LEDs per/Block
6 on the left are controlled by P801, 6 on the right are controlled by P802

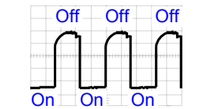
March 2015

P201 "SMPS Board" to "MAIN Board" P2600

Pin	Label	STBY	Run	Diode Check
28	*Vsync	0V	0.02V	OL
27	*SCLK	0V	0.05V	OL
26	*Gnd	Gnd	Gnd	Gnd
25	*SCLK	0V	0.04V	OL
23-24	Gnd	Gnd	Gnd	Gnd
18-22	24V	0V	24.80V	1.10V
16-17	Gnd	Gnd	Gnd	Gnd
11-15	12V	0V	12.13V	0.48V
9-10	Gnd	Gnd	Gnd	Gnd
7-8	3.5V	3.56V	3.55V	OL
6	Gnd	Gnd	Gnd	Gnd
5	3.5V	3.56V	3.55V	OL
4	(4) P-DIM2	0V	0.92V	OL
3	(3) P-DIM	0V	0.16V~2.76V	OL
2	(2) DRV-ON	0V	3.46V	OL
1	(1) PWR-ON	0V	3.41V	1.17V

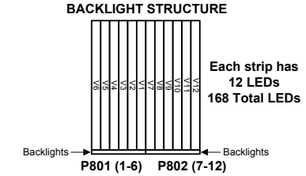
* To the T-CON (3) Dim to Bright

DARK AREA ON SCREEN: If a part of the picture is exhibiting a dimmer backlight level than the other or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not, Check the P-DIM level, it should rise with the percentage shown on screen.
Unplug CN5 (T-CON to SMPS) Local Dimming signals. If problem is fixed, assume T-CON, if not perform Block test below.



LED ONE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 47V on P211.
Confirm P-DIM is approx. 3V. You can turn on a Block of LEDs by using a 1K ohm resistor from any test point P811 – P822 to Ground.
The Power Supply must be producing the 47V for the Backlight B+.
Failure to use a resistor will damage the panels backlight and may also damage the power supply.

BACKLIGHT STRUCTURE



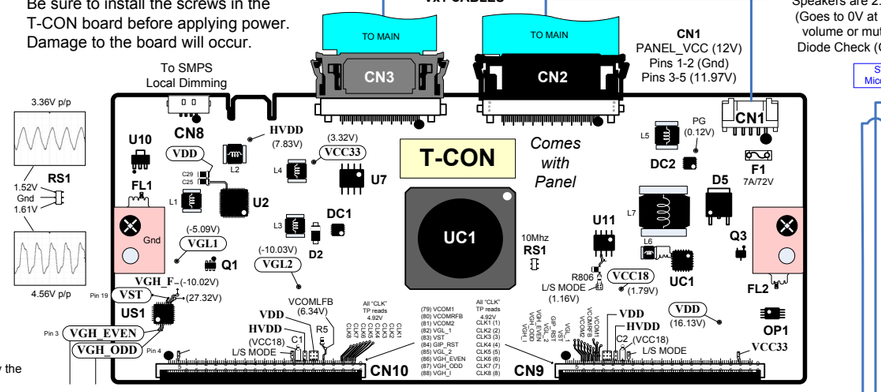
(1) **PWR_ON:** turns on the 12V and 24V lines. Backlight power goes to 34V.
(2) **DRV_ON:** (INV_ON from Main) turns on the Backlights. Backlight power goes to 47V.
(3) **P-DIM:** controls the backlight brightness. Controlled via the Customer's Menu: Home -> Settings -> Picture -> Backlights. Range 0% to 100% directly proportional to DC voltage to Backlight brightness. (0.16V~2.76V)
P-DIM is actually a PWM signal.
(4) **P_DIM2:** Fixed Voltage

PANEL TEST:
To run the Panel Test (Testing the T-CON without the Main board), simply unplug CN2 or CN3. Apply 12V to the Fuse F1 on the T-CON. Apply power to the set. (Backlights and Power Supply should already be working). T-CON outputs color patterns on the screen. This test confirms the T-CON, Power Supply, Panel and Backlights are working normally.

WARNING:
Be sure to install the screws in the T-CON board before applying power. Damage to the board will occur.

Vx1: V by One (Video Signals)

Vx1 CABLES



CN10 Key Voltages

VGH_ODD	Pin 87
VGH_EVEN	Pin 86
VGL_2	Pin 85
VST	Pin 83
VGL_1	Pin 82
VCC18	Pin 66, 67, 68
HVDD	Pin 70 - 71
VDD	Pin 73 - 77

CN9 Key Voltages

VGH_ODD	Pin 10
VGH_EVEN	Pin 11
VGL_2	Pin 12
VST	Pin 14
VGL_1	Pin 15
VCC18	Pin 29, 30, 31
VDD	Pin 20 - 24
VDD	Pin 20 - 24

VCOM1	(6.39V) Pin 18
VCOMRFB	(6.34V) Pin 17
VCOM2	(6.51V) Pin 16
VGL_1	(-5.09V) Pin 15
VST	(-9.96V) Pin 14
GIP_RST	(-9.95V) Pin 13
VGL_2	(-10.02V) Pin 12
VGH_EVEN	*(-10.01V ~ 27.97V)
VGH_ODD	*(-10.01V ~ 27.97V)
VGH_I	(21.24V) Pin 9

*Toggles Ever Second pins 10 and 11

CN10 Video
Pins 25, 26 / 28, 29 / 31, 32 / 34, 35 / 37, 38 / 40, 41 / 43, 44 / 46, 47 / 49, 50 / 52, 53 / 55, 56 / 58, 59

CN9 Video
Pins 37, 38 / 40, 41 / 43, 44 / 46, 47 / 49, 50 / 52, 53 / 55, 56 / 58, 59 / 61, 62 / 64, 65 / 67, 68 / 70, 71

Note: P201 is actually a 28 pin connector, but only the 24 pins going to the Main board are shown here.

WARNING: Do not add or remove jumpers with Power Applied.

NOTE: The pin numbers on P2600 on the Main board are different than P201 on the SMPS. The pins denoted on the left are for P201, but use the Main board side to insert Jumpers.

SMPS TEST 1: To Force Power Supply On without the Main Board.
Disconnect the P2600 on the Main board.
(A) Jump pin 5 (3.5V) to pin 1. Test Voltage Outputs 12V, 24V to Main.
(34V Backlight power but the Backlights are not on at this time).
LED Ground Return Line is (0.62V).
Remove AC power. Leave the jumper in place.

SMPS TEST 2: (Turning on the Backlights)
(B) Jump pin 8 (3.5V) to pin 2 (DRV-ON). Apply AC power, the Backlights should turn on. Note, the LED B+ will now read to 45V.
LED Ground Return Line is (0.97V-1.87V). P-DIM P201 (pin 4) reads 3.52V.

Bottom Center of Set
Front IR
p/n: MAZ64123603

Front IR/ Joy Stick

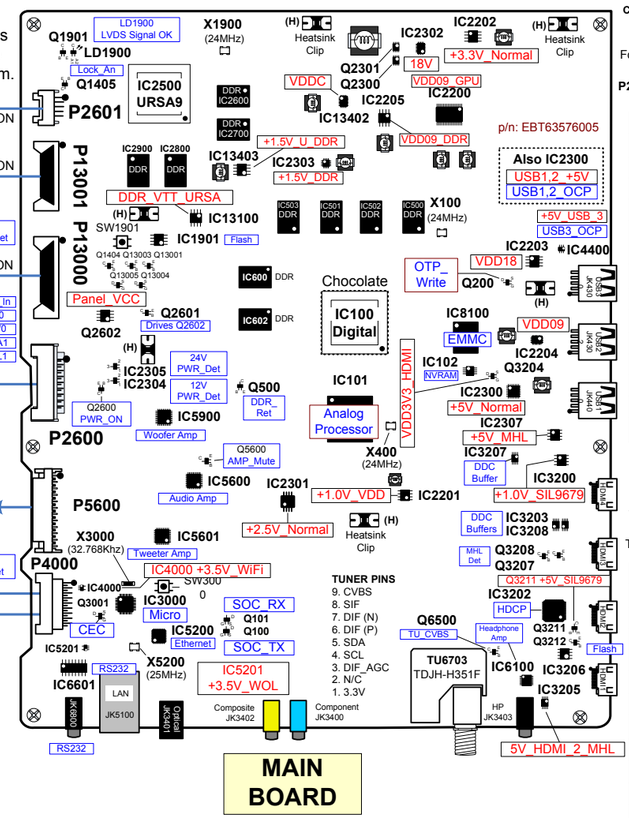
WiFi / M-Remote

Bottom Center of Set
WiFi / M-Remote
p/n: EAB63129202

For Vx1 Waveforms see Page 5 of the Interconnect diagram.

12V to T-CON
Vx1 To T-CON
SW1901 URSA Reset
Vx1 To T-CON
Q1404 Q13003 Q13001
Q13005 Q13004
Q1404 Lock_In
Q13003 Vx1_Lockn_V/0
Q13001 URSA_Lock_V/0
Q13005 I2C_SDA1
Q13004 I2C_SCL1

All 12 pins to the Speakers are 2.16V (Goes to 0V at min volume or mute)
Diode Check (OL)
SW3000 Micom Reset



See next page for Component Volteges

For DC voltages see P201 Chart

P2600 "MAIN Board" To P201 "SMPS"

Pin	Diode
1-2	Gnd
3-6	OL
7	Gnd
8	OL
9	2.10V
10	Gnd
11-14	2.10V
15-16	Gnd
17-19	1.24V
20	Gnd
21	OL
22	OL
23	OL
24	1.55V

Note:
The pins on the Main Are different than The pins on the SMPS

P201	P2600
23-24	1-2
21-22	3-4
16-17	7,10
18-20	5-6,8
15	9
13-14	11-12
11-12	13-14
9-10	15-16
7-8	17-18
5	19
6	20
3	21
4	22
1	23
2	24

P4000 "Main" To "Joy Stick" & "M-Remote & WiFi Board" J1

Pin	Label	STBY	Run	Diode ✓	
1	Gnd	Gnd	Gnd	Gnd	WiFi pin 1
2	3.5V_WOL	0V	3.49V	OL	WiFi pin 8
3	BT_RESET	0V	3.39V	OL	WiFi pin 2
4	WiFi_DM	0V	0V	1.30V	WiFi pin 7
5	Gnd	Gnd	Gnd	Gnd	WiFi pin 3
6	WiFi_DP	1.16V	0V	1.30V	WiFi pin 6
7	WOL (WiFi On)	0V	0V	1.90V	WiFi pin 4
8	Gnd	Gnd	Gnd	Gnd	WiFi pin 5

Pin	Label	STBY	Run	Diode ✓	
9	Eye_SDA	3.56V	3.52V	1.99V	Joy Stick pin 10
10	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 1
11	Eye_SCL	3.56V	3.52V	1.99V	Joy Stick pin 9
12	Key 1	3.55V	3.52V	1.98V	Joy Stick pin 2
13	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 8
14	Key 2	3.55V	3.52V	1.98V	Joy Stick pin 3
15	IR	3.54V	3.50V	1.89V	Joy Stick pin 7
16	3.5V_ST	3.56V	3.52V	1.24V	Joy Stick pin 4
17	LED_R	2.78V	0V	OL	Joy Stick pin 6
18	Gnd	Gnd	Gnd	Gnd	Joy Stick pin 5

IR 3.96V p/p

65UF9500 Main Board Component Voltages

IC102

Pin	NVRAM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	2.62V
[6]	2.45V
[7]	Gnd
[8]	3.32V

IC1901

Pin	SPI FLASH Memory
[1]	3.30V
[2]	3.28V
[3]	2.22V
[4]	Gnd
[5]	3.30V
[6]	0V
[7]	3.30V
[8]	3.31V (In)

IC2201

Pin	+1.0V_VDD Regulator
[1]	3.47V (Enable)
[2]	0.77V
[3]	5.26V
[4]	2.51V
[5]	Gnd
[6]	1.03V (Out)
[7]	5.95V
[8]	12.05V (Vcc In)

IC2202

Pin	(+3.3V_NORMAL) Regulator
[1]	3.42V (Enable)
[2]	0.76V
[3]	5.42V
[4]	5.40V
[5]	Gnd
[6]	3.36V (Out)
[7]	8.69V
[8]	12.01V (Vcc In)

IC2203

Pin	(VDD18) Regulator
[1]	n/c
[2]	3.46V (ctrl)
[3]	3.49V (3.5V_ST In)
[4]	5.12V (in)
[5]	n/c
[6]	1.84V (out)
[7]	0.60V
[8]	Gnd

Q3212

Pin	Drives Q3211 5V_SIL9679
[B]	0.78V
[C]	0V (Out)
[E]	Gnd

IC2205

Pin	(VDD09_DDR) Regulator
[1]	3.47V (Enable)
[2]	0.78V
[3]	5.27V
[4]	2.51V
[5]	Gnd
[6]	0.95V (Out)
[7]	5.94V
[8]	12.04V (In)

IC2301

Pin	(+2.5V_NORMAL) Regulator
[1]	n/c
[2]	3.46V (ctrl)
[3]	3.31V (in)
[4]	5.12V (vctrl
[5]	n/c
[6]	2.52V (out)
[7]	0.61
[8]	Gnd

IC2304

Pin	PWR_Det 12V Sense
[1]	Gnd
[2]	3.72V (Out)
[3]	3.72V (In)

IC2305

Pin	PWR_Det 24V Sense
[1]	Gnd
[2]	3.76V (Out)
[3]	3.72V (In)

IC2307

Pin	(+5V_MHL) Regulator
[1]	12.12V
[2]	25.08V (Vcc In)
[3]	5.27V (Out)
[4]	Gnd
[5]	0.81V
[6]	0.23V
[7]	3.48V (Enable)
[8]	0.49V

Q2602

Pin	Panel_VCC Switch
[1]	12.05V (In)
[2]	12.05V (In)
[3]	12.05V (In)
[4]	1.98V (Enable)
[5]	12.05V (Out)
[6]	12.05V (Out)
[7]	12.05V (Out)
[8]	12.05V (Out)

Q5600

Pin	Amp Mute Driver
[B]	0V
[C]	3.30V
[E]	Gnd

IC3200

Pin	(+1.0V_SIL9679) Regulator
[1]	n/c
[2]	3.27V
[3]	3.32V (In)
[4]	5.27V (Enable)
[5]	n/c
[6]	1.01V (Out)
[7]	0.6V
[8]	Gnd

IC3203

Pin	DDC (SCL/SDA) 1 Buffer
[1]	3.32V (in)
[2]	3.32V
[3]	3.32V
[4]	Gnd
[5]	5.27V (Enable)
[6]	5.03V
[7]	5.03V
[8]	5.27V (In)

IC3205

Pin	(+5V_HDMI_2_MHL) Switch
[1]	Gnd
[2]	5.27V (In)
[3]	5.27V (In)
[4]	3.48V On (MHL_Det) 0V off
[5]	n/c
[6]	5.27V On (0V off Out)
[7]	5.27V On (0V off Out)
[8]	5.27V On (0V off Out)

IC3206

Pin	SPI FLASH Memory
[1]	3.31V
[2]	0.17V
[3]	0.26V
[4]	Gnd
[5]	0.17V
[6]	0.16V
[7]	3.31V
[8]	3.31V (In)

IC3207

Pin	DDC (SCL/SDA) 4 Buffer
[1]	3.31V (in)
[2]	3.32V
[3]	3.32V
[4]	Gnd
[5]	5.27V (Enable)
[6]	5.03V
[7]	5.03V
[8]	5.27V (In)

Q6500

Pin	TU_CVBS Buffer
[B]	1.47V
[C]	Gnd
[E]	2.17V

IC3208

Pin	DDC (SCL/SDA) 3 Buffer
[1]	3.32V (in)
[2]	3.32V
[3]	3.32V
[4]	Gnd
[5]	5.27V (Enable)
[6]	5.03V
[7]	5.03V
[8]	5.27V (In)

IC4000

Pin	+3.5V_WiFi Regulator
[1]	3.50V (Out)
[2]	Gnd
[3]	0.19V n/c
[4]	3.49V (OCP Out)
[5]	3.51V (Vcc In)

IC4400

Pin	+5V_USB_1 Regulator
[1]	5.12V (In)
[2]	Gnd
[3]	3.30V (Enable)
[4]	3.32V (USB_OCD1)
[5]	0.41V
[6]	5.12V (Out)

IC5201

Pin	+3.5V_WiFi Regulator
[1]	3.51V (Out)
[2]	Gnd
[3]	0.08V n/c
[4]	3.51V (OCP Out)
[5]	3.51V (Vcc In)

IC13100

Pin	DDR_VTT_URSA Switch
[1]	1.51V (in)
[2]	Gnd
[3]	0.75V
[4]	0.75V (out)
[5]	n/c
[6]	3.31V (Enable)
[7]	n/c
[8]	n/c

IC13403

Pin	+1.5V_DDR Regulator
[1]	3.49V (Enable)
[2]	0.76V
[3]	5.23V
[4]	2.48V
[5]	Gnd
[6]	1.53V (Out)
[7]	6.52V
[8]	12.04V (+11.61V In)

Q13001

Pin	Drives Q13003
[E]	Gnd
[B]	0.03V
[C]	1.23V

Q100

Pin	SOC_TX Switch
[G]	3.31V
[S]	3.31V
[D]	3.30V

Q101

Pin	SOC_RX Switch
[G]	3.31V
[S]	3.31V
[D]	3.30V

Q200

Pin	OTP_WRITE Switch
[G]	1.84V
[S]	1.84V
[D]	0V

Q500

Pin	DDR_RET Buffer
[B]	0V
[C]	1.54V
[E]	Gnd

Q1404

Pin	Drives Q1405 LOCKAn
[E]	Gnd
[B]	0.19V
[C]	0.64V

Q1405

Pin	LOCKAn Switch
[E]	Gnd
[B]	0.64V
[C]	0.07V

Q1901

Pin	Drives LD1900
[E]	0.72V
[B]	0.07V
[C]	Gnd

Q2300

Pin	18V Regulation CTL
[1]	18.66V (In)
[2]	18.66V (In)
[3]	18.66V (In)
[4]	1.18V (Drive)
[5]	18.60V (Out)
[6]	18.60V (Out)
[7]	18.60V (Out)
[8]	18.60V (Out)

Q13003

Pin	Activates Vx1_LOCKn_V
[B]	0.62V
[C]	0.10V
[E]	Gnd

Q13004

Pin	I2C_SCL1 Switch
[G]	0.62V
[S]	0V
[D]	0.95V

Q2301

Pin	18V Regulation CTL
[1]	(PGnd)
[2]	(PGnd)
[3]	(PGnd)
[4]	1.81V (Drive)
[5]	18.66V (Out)
[6]	18.66V (Out)
[7]	18.66V (Out)
[8]	18.66V (Out)

Q2600

Pin	PWR_On Switch
[B]	2.82V
[E]	3.53V
[C]	3.41V

Q2601

Pin	Drives Q2602 Panel_CTL
[E]	Gnd
[B]	0.67V
[C]	0.11V

Q3001

Pin	CEC Bi-Directional
[G]	3.51V
[S]	3.48V
[D]	3.43V

Q3204

Pin	VDD3V3_HDMI Switch
[G]	5.27V
[S]	3.32V
[D]	3.32V

Q3207

Pin	Drives Q3208 MHL_Det
[B]	3.52V
[C]	0V (Out)
[E]	3.52V

Q3208

Pin	MHL_Det Switch
[B]	0V (MHL_Det)
[C]	3.52V On / 0V Off (Out
[E]	3.50V

Q3211

Pin	(+5V_SIL9679) Switch
[B]	0.02V
[C]	0V
[E]	0.05V

Q13005

Pin	I2C_SDA1 Switch
[G]	3.29V
[S]	3.29V
[D]	3.28V

65UF9500 Main Board Component Voltages (Large ICs)

IC2200

VDD09_GPU Regulator

Pin		Pin	
[1]	3.52V (En)	[17]	0.61V
[2]	3.52V (En)	[18]	1.06V(Out)
[3]	Gnd	[19]	8.03V
[4]	Gnd	[20]	1.09V (Out)
[5]	(+12.03V In)	[21]	1.09V (Out)
[6]	(+12.03V In)	[22]	2.04V
[7]	Gnd	[23]	0.45V
[8]	Gnd	[24]	0.40V
[9]	6.52V	[25]	Gnd
[10]	(+12.03V In)	[26]	0.27V
[11]	(+12.03V In)	[27]	2.07V
[12]	(+12.03V In)	[28]	0.96V (Out)
[13]	Gnd	[29]	0.96V (Out)
[14]	Gnd	[30]	7.92V
[15]	3.34V	[31]	0.96V (Out)
[16]	3.34V	[32]	0.60V

IC2204

VDD09 Regulator

Pin		Pin	
[1]	1.11V	[15]	12.04V (In)
[2]	5.06V	[16]	12.04V (In)
[3]	3.51V (Enable)	[17]	12.04V (In)
[4]	5.99V	[18]	12.04V (In)
[5]	n/c	[19]	12.04V (In)
[6]	0.96V (Out)	[20]	5.06V
[7]	0.96V (Out)	[21]	5.05V
[8]	0.96V (Out)	[22]	Gnd
[9]	0.96V (Out)	[23]	5.05V
[10]	Gnd	[24]	0.93V
[11]	Gnd	[25]	0.38V
[12]	Gnd	[26]	Gnd
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC2300

+5V_Normal Regulator

Pin		Pin	
[1]	24.04V (In)	[15]	3.23V (OCP2)
[2]	24.04V (In)	[16]	5.12V
[3]	24.04V (In)	[17]	5.12V
[4]	Gnd	[18]	12.00V
[5]	Gnd	[19]	5.12V (Out)
[6]	Gnd	[20]	5.12V (Out)
[7]	6.21V	[21]	5.12V (Out)
[8]	6.21V	[22]	2.0V
[9]	3.53V (Enable)	[23]	0.61V
[10]	5.12V (Out USB2)	[24]	0.34V
[11]	5.12V (Out USB2)	[25]	0V
[12]	3.3V (USB2 Ctrl)	[26]	0.46V
[13]	3.3V (USB3 Ctrl)	[27]	0.45V
[14]	3.29V (OCP2)	[28]	Gnd

IC2302

(+18V Regulator)

Pin		Pin	
[1]	3.51V (Enable)	[11]	2.59V
[2]	n/c	[12]	0.11V
[3]	25.07V (+24V In)	[13]	(PGnd)
[4]	1.68V	[14]	1.82V (Drive)
[5]	3.33V	[15]	8.03V
[6]	3.34V	[16]	18.66V (Out)
[7]	0.60V	[17]	23.54V (Drive)
[8]	2.23V	[18]	25.59V
[9]	Gnd	[19]	25.07V (+24V In)
[10]	3.35V	[20]	3.35V

IC2303

+1.5V_DDR Regulator

Pin		Pin	
[1]	3.49V (Vcc In)	[9]	2.22V
[2]	3.49V (Vcc In)	[10]	1.55V (Out)
[3]	Gnd	[11]	1.55V (Out)
[4]	Gnd	[12]	1.55V (Out)
[5]	Gnd	[13]	5.04V
[6]	0.80V	[14]	n/c
[7]	0.36V	[15]	3.47V
[8]	0.0V	[16]	3.49V (Vcc In)

IC3000

Micro Processor

Pin		Pin	
[1]	3.23V	[25]	0V
[2]	3.23V	[26]	3.51V
[3]	2.69V	[27]	3.51V
[4]	2.09V	[28]	0.03V
[5]	3.46V	[29]	0.1V
[6]	3.5V	[30]	0V
[7]	3.49V	[31]	3.34V
[8]	3.51V	[32]	3.51V
[9]	0V	[33]	3.51V
[10]	3.51V	[34]	3.75V
[11]	3.51V	[35]	0V
[12]	0V	[36]	0V
[13]	3.51V	[37]	0.02V
[14]	3.72V	[38]	0V
[15]	3.53V	[39]	3.51V
[16]	0V	[40]	3.51V
[17]	3.51V	[41]	0.65V
[18]	3.51V	[42]	0.13V
[19]	3.29V	[43]	0V
[20]	3.09V	[44]	0.14V
[21]	3.06V	[45]	0V
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0.1V	[48]	3.51V

IC5200

Ethernet IC

Pin		Pin	
[1]	0V	[17]	0V
[2]	1.1V	[18]	n/c
[3]	1.1V	[19]	n/c
[4]	1.1V	[20]	0V
[5]	1.1V	[21]	3.26V
[6]	1.1V	[22]	1.23V
[7]	3.51V (In)	[23]	3.25V
[8]	0.03V	[24]	3.25V
[9]	0V	[25]	3.24V
[10]	0V	[26]	0V
[11]	0V	[27]	0V
[12]	0V	[28]	0V
[13]	n/c	[29]	1.08V
[14]	3.51V (In)	[30]	3.51V (In)
[15]	1.32V	[31]	0V
[16]	0V	[32]	0.58V

IC5600

Audio Amp

Pin		Pin	
[1]	n/c	[21]	2.16V (Out R+)
[2]	1.24V	[22]	Gnd
[3]	n/c	[23]	4.71V
[4]	Gnd	[24]	5.12V
[5]	n/c	[25]	5.14V
[6]	1.26V	[26]	n/c
[7]	0V	[27]	5.11V
[8]	1.62V	[28]	4.72V
[9]	n/c	[29]	Gnd
[10]	2.62V	[30]	2.16V (Out L-)
[11]	2.43V	[31-32]	18.67V (L B+)
[12]	3.30V (Mute)	[33]	2.16V (Out L+)
[13]	n/c	[34]	Gnd
[14]	0.0V	[35]	4.71V
[15]	n/c	[36]	3.03V (Reset)
[16]	4.71V	[37]	Gnd
[17]	Gnd	[38]	1.61V
[18]	2.16V (Out R-)	[39]	Gnd
[19-20]	18.67V (R B+)	[40]	3.31V (In)

IC5601

Tweeter Audio Amp

Pin		Pin	
[1]	n/c	[21]	2.16V (Out R+_TW)
[2]	1.24V	[22]	Gnd
[3]	n/c	[23]	4.71V
[4]	Gnd	[24]	5.12V
[5]	n/c	[25]	5.14V
[6]	1.26V	[26]	n/c
[7]	0V	[27]	5.11V
[8]	1.62V	[28]	4.72V
[9]	n/c	[29]	Gnd
[10]	2.62V	[30]	2.16V (Out L-_TW)
[11]	2.43V	[31-32]	18.67V (L B+)
[12]	3.30V (Mute)	[33]	2.16V (Out L+_TW)
[13]	n/c	[34]	Gnd
[14]	0.0V	[35]	4.71V
[15]	n/c	[36]	3.03V (Reset)
[16]	4.71V	[37]	Gnd
[17]	Gnd	[38]	1.61V
[18]	2.16V (Out R-_TW)	[39]	Gnd
[19-20]	18.67V (R B+)	[40]	3.31V (In)

IC6100

Audio Amp

Pin		Pin	
[1]	Gnd	[8]	1.66V
[2]	0V (R In)	[9]	3.31V (3.3V_Normal In)
[3]	0V (R Out)	[10]	Gnd
[4]	Gnd	[11]	n/c
[5]	3.49V (Mute)	[12]	0V (L Out)
[6]	(-3.18V)	[13]	0V (L In)
[7]	(-1.59V)	[14]	Gnd

IC5900

Woofer Audio Amp

Pin		Pin	
[1]	n/c	[21]	2.16V (Out R+_WF)
[2]	1.24V	[22]	Gnd
[3]	n/c	[23]	4.71V
[4]	Gnd	[24]	5.12V
[5]	n/c	[25]	5.14V
[6]	1.26V	[26]	n/c
[7]	0V	[27]	5.11V
[8]	1.62V	[28]	4.72V
[9]	n/c	[29]	Gnd
[10]	2.62V	[30]	2.16V (Out L-_WF)
[11]	2.43V	[31-32]	18.67V (L B+)
[12]	3.30V (Mute)	[33]	2.16V (Out L+_WF)
[13]	n/c	[34]	Gnd
[14]	0.0V	[35]	4.71V
[15]	n/c	[36]	3.03V (Reset)
[16]	4.71V	[37]	Gnd
[17]	Gnd	[38]	1.61V
[18]	2.16V (Out R-WF)	[39]	Gnd
[19-20]	18.67V (R B+)	[40]	3.31V (In)

IC6601

RS232 Data

Pin		Pin	
[1]	3.52V	[9]	n/c
[2]	5.39V	[10]	n/c
[3]	0V	[11]	3.09V
[4]	0.02V	[12]	3.52V
[5]	(-5.33V)	[13]	0V
[6]	(-5.34V)	[14]	(-5.24V)
[7]	n/c	[15]	Gnd
[8]	n/c	[16]	3.52V (3.5V_ST In)

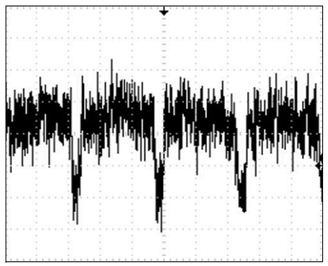
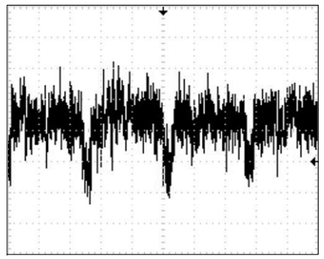
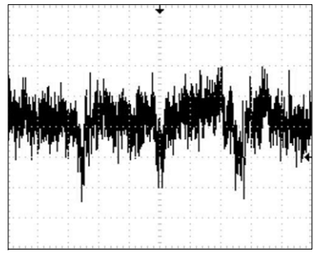
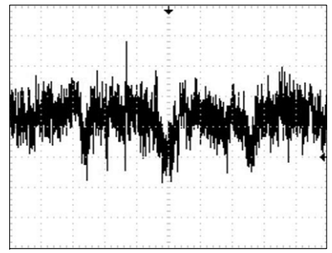
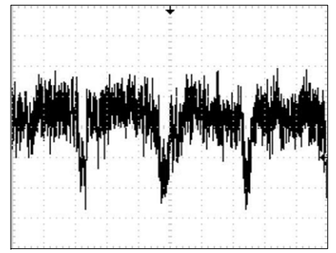
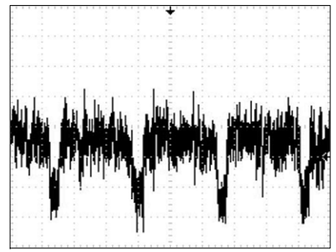
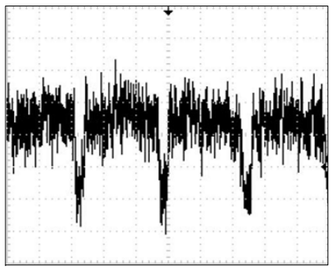
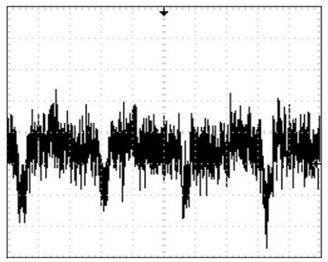
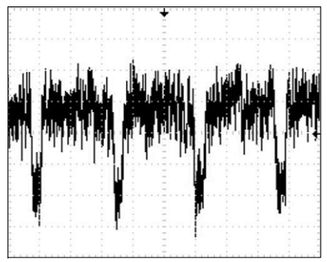
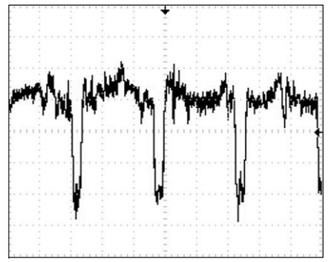
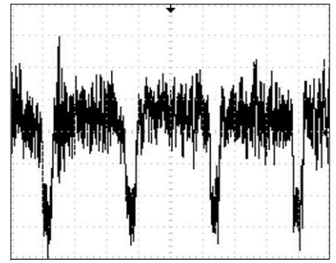
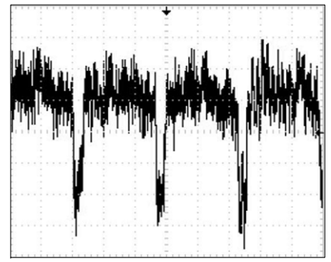
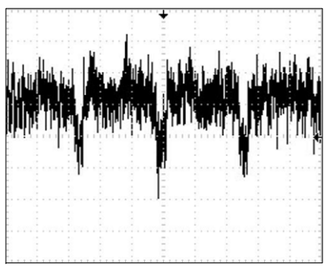
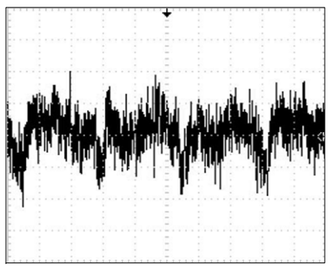
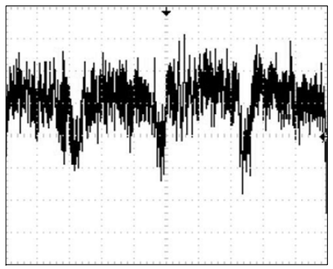
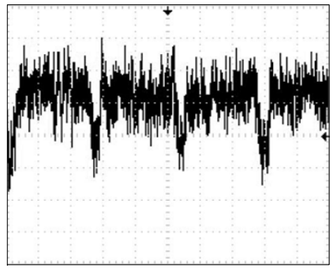
IC13402

VDDC Regulator

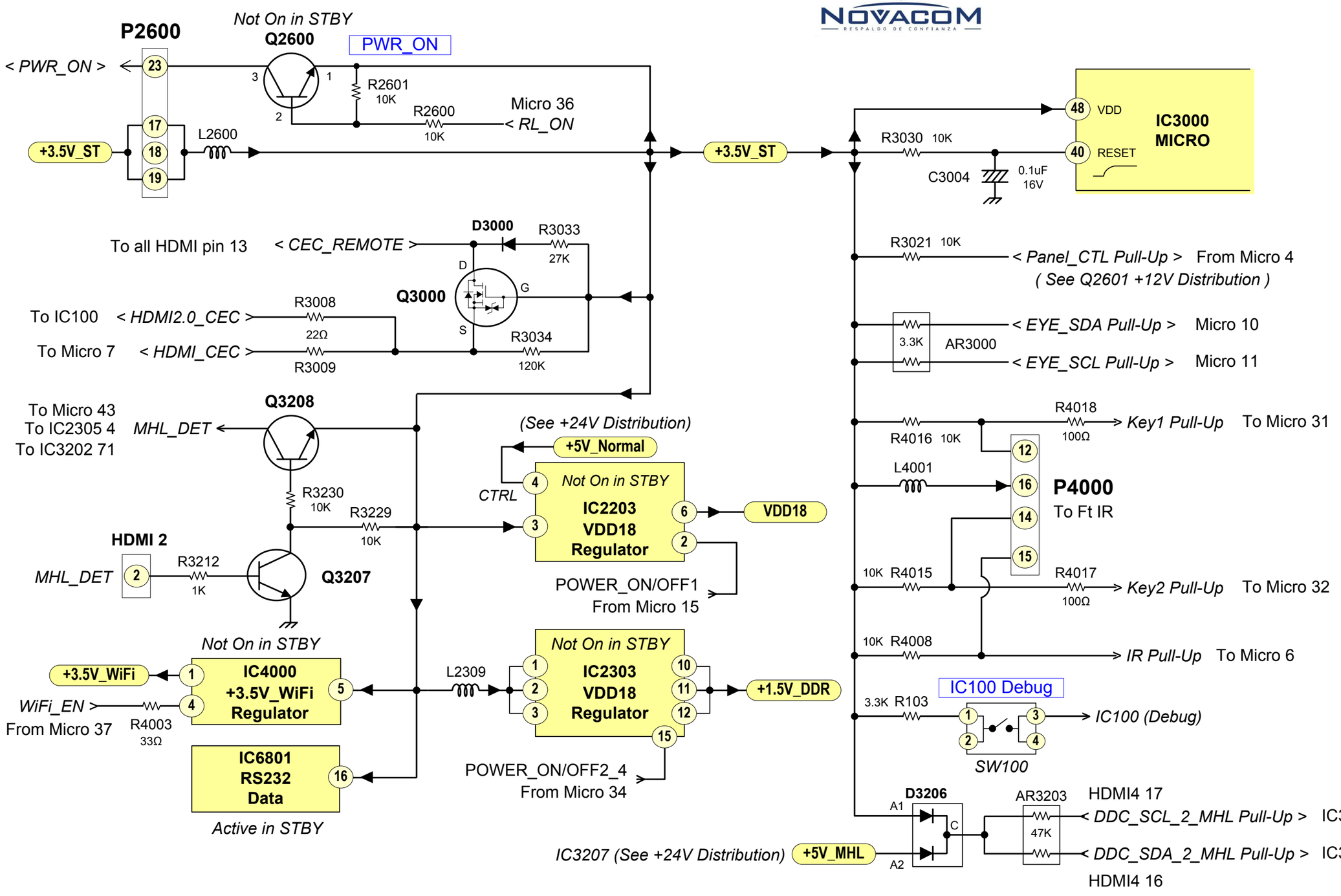
Pin		Pin	
[1]	1.15V	[15]	12.03V (In)
[2]	4.99V	[16]	12.03V (In)
[3]	3.51V (Enable)	[17]	12.03V (In)
[4]	6.22V	[18]	12.03V (In)
[5]	n/c	[19]	12.03V (In)
[6]	1.26V (Out)	[20]	4.99V
[7]	1.26V (Out)	[21]	4.96V
[8]	1.26V (Out)	[22]	Gnd
[9]	1.26V (Out)	[23]	0.61V
[10]	Gnd	[24]	1.22V
[11]	Gnd	[25]	0.37V
[12]	Gnd	[26]	Gnd
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

65UF9500 P13000 LVDS Connector Video Waveforms

All LVDS signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All LVDS signals are “Differential Pairs”.
Scope Settings are 5mV per/division, 100uSec per/division.

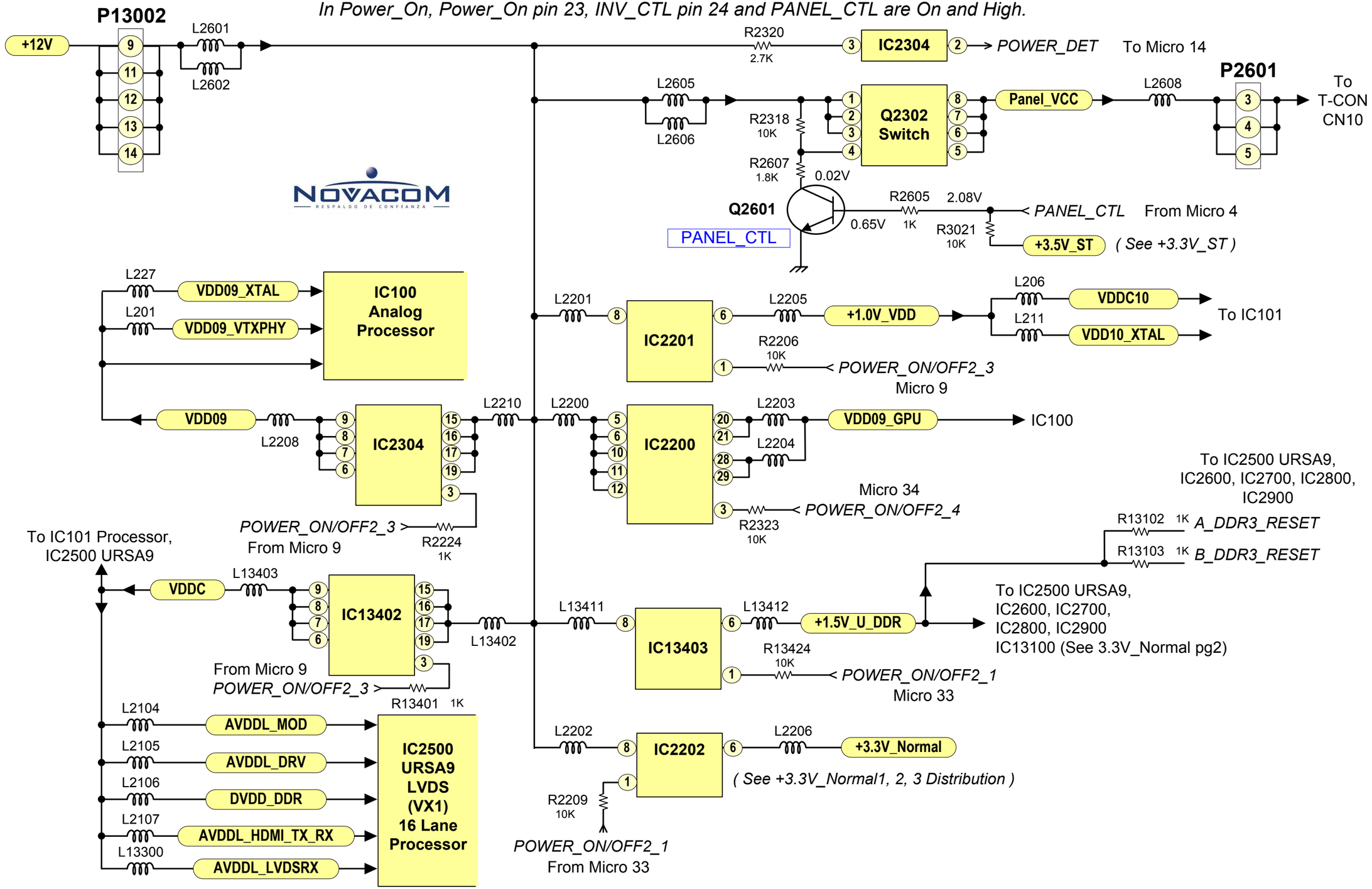
Pin 2  **27mV p/p**	**Pin 3**  **22.8mV p/p**	**Pin 5**  **22.2mV p/p**	**Pin 6**  **23.2mV p/p**	**Pin 8**  **23.2mV p/p**	**Pin 9**  **23.6mV p/p**
Pin 11  **19.4mV p/p**	**Pin 12**  **25.2mV p/p**	**Pin 14**  **428.2mV p/p**	**Pin 15**  **25.4mV p/p**	**Pin 17**  **34.8mV p/p**	**Pin 18**  **33.2mV p/p**
Pin 20  **25.8mV p/p**	**Pin 21**  **21.2mV p/p**	**Pin 23**  **27.6mV p/p**	**Pin 24**  **23.6mV p/p**		

65UF9500 +3.5V_ST Voltage Distribution (In Stand-By)



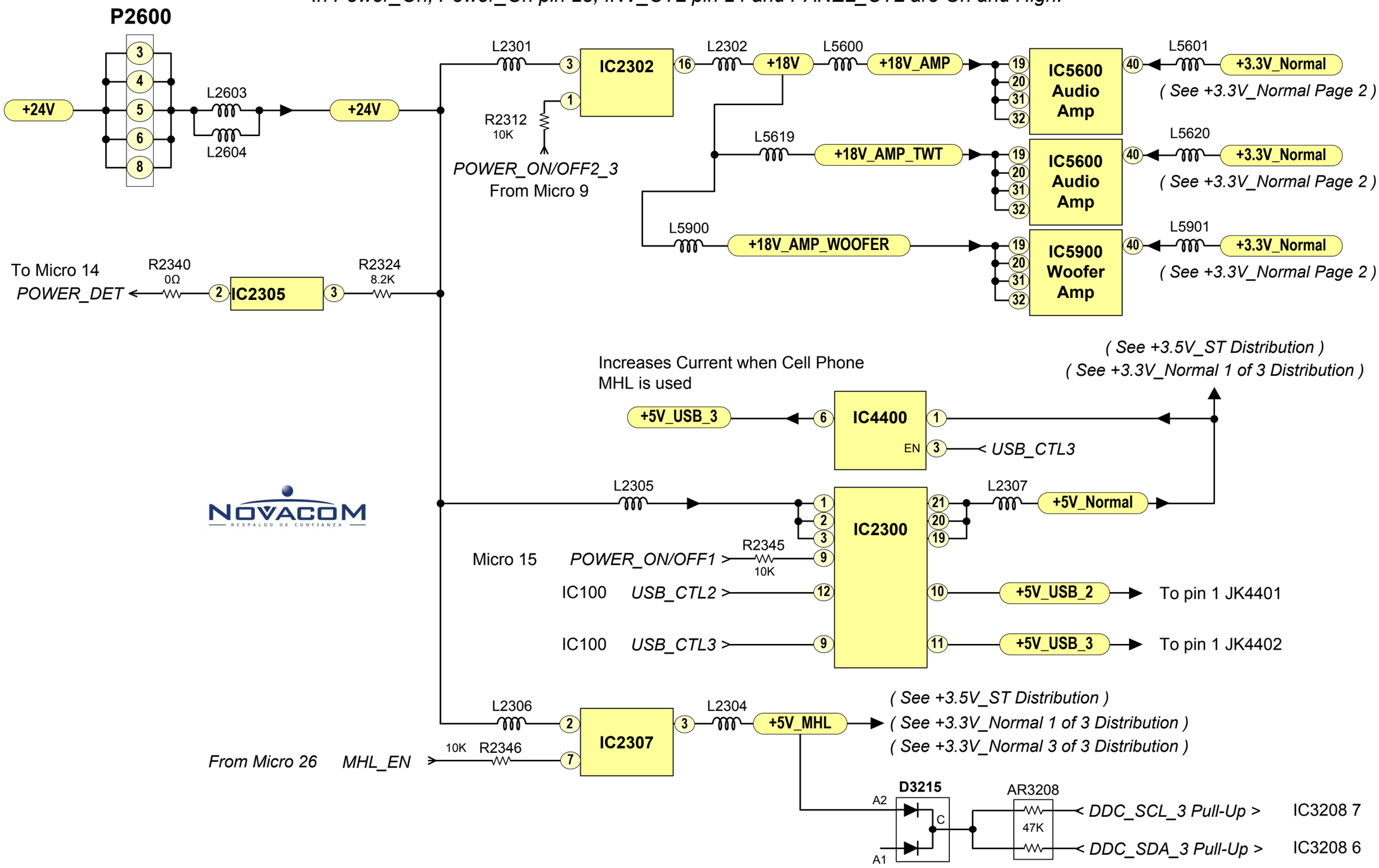
65UF9500 +12V Voltage Distribution (Power On)

In Power_On, Power_On pin 23, INV_CTL pin 24 and PANEL_CTL are On and High.

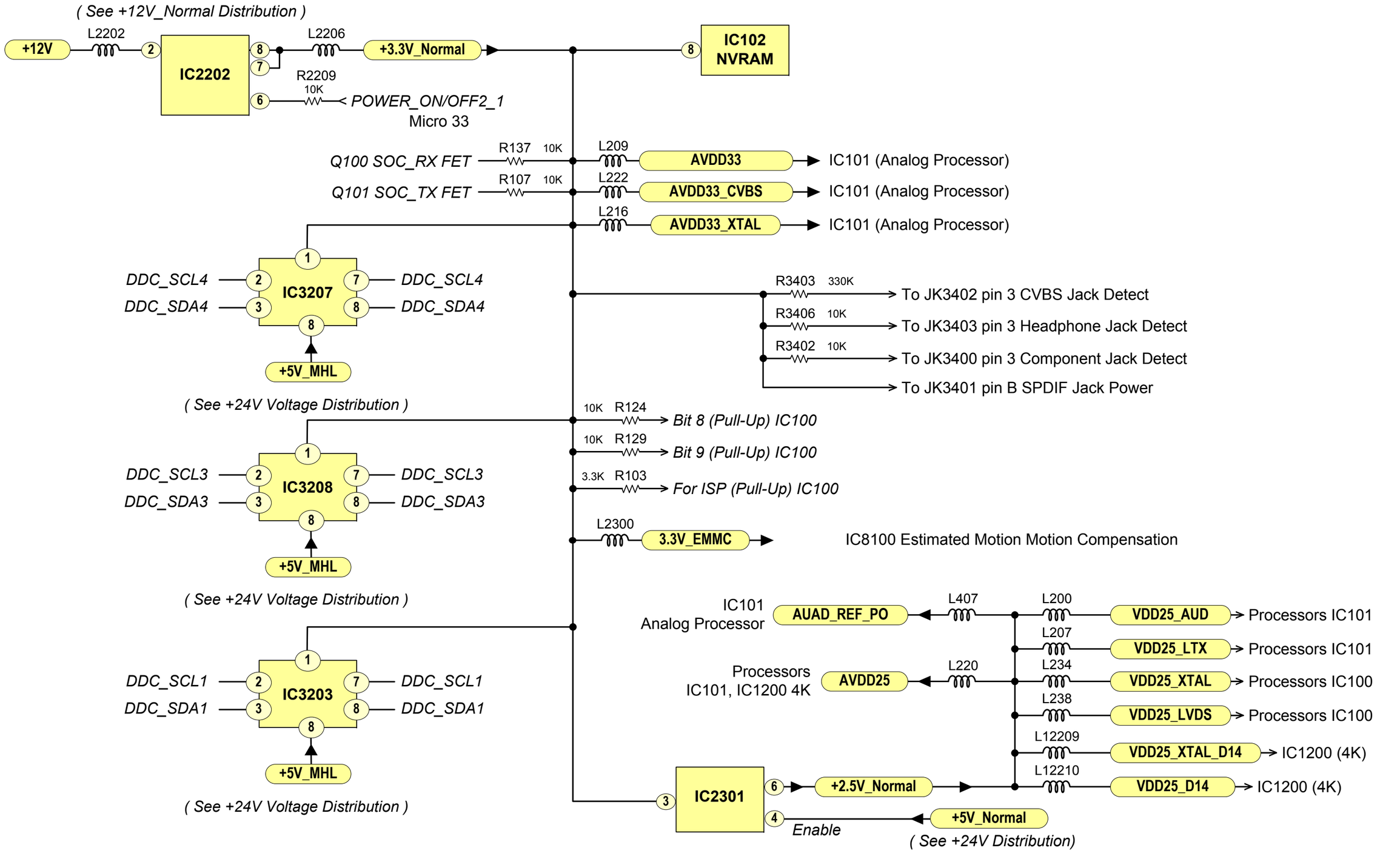


65UF9500 +24V Voltage Distribution (Power On)

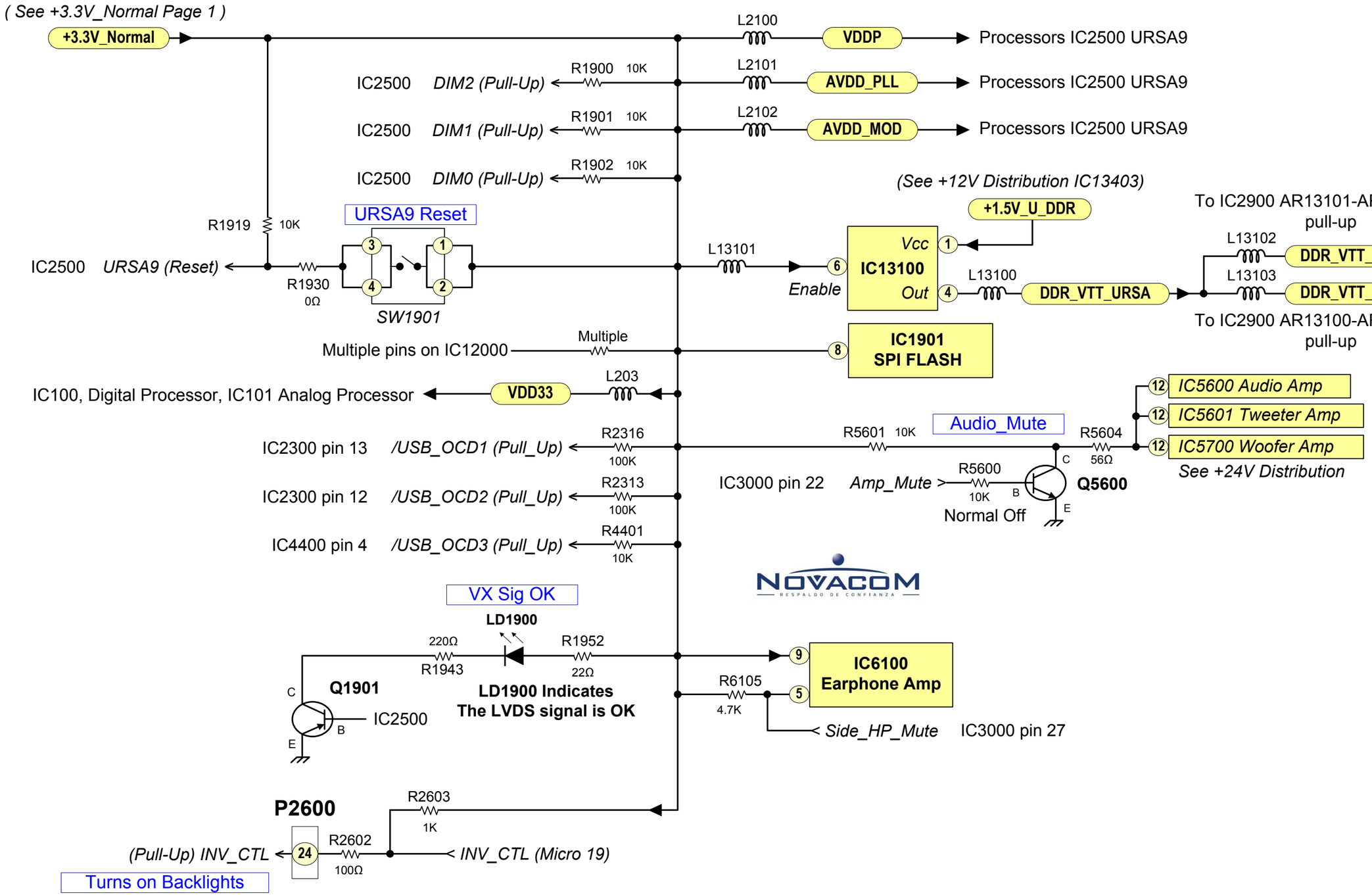
In Power_On, Power_On pin 23, INV_CTL pin 24 and PANEL_CTL are On and High.



65UF9500 +3.3V_NORMAL Voltage Distribution (Pg 1 of 3)



65UF9500 +3.3V_NORMAL Voltage Distribution (Pg 2 of 3)



65UF9500 +3.3V_NORMAL Voltage Distribution (Pg 3 of 3)

(See +3.3V_Normal Page 1)

+3.3V_Normal → L6500 → +3.3V_LNA_TU → To Tuner pin 1 (TU6703)

3.3K R133 → *IC2_SCL6 (Pull-Up)*

3.3K R134 → *IC2_SDA6 (Pull-Up)*

For Tuner

L6504 — R6506 200Ω — R6505 200Ω → *TU_CVBS (IC101 Processor) Composite Video*

TU_CVBS_TU (Tuner pin 9) > → **Q6500** (E, B, C)

> To IC100 to IC101 (BB_TPI_DATA0 Pull-Up)

R467 82Ω — 1K R464 — R465 390Ω

Q3204 (S, D, G) — L3207 → **VDD3V3_HDMI** → > To IC100 (Digital Processor)

10K R3235 → **+5V_MHL** *(See +24V Distribution)*

To IC100 (Digital Processor) ← AR403 33Ω

To IC100 (Digital Processor) ←

(See +24V Distribution)

+5V_MHL — *Enable* — R3208 10K — **Q3200** (G, S, D) — L3200 → **+3.3V_SIL9679**

R3207 10K — *Enable*

IC3200 (3, 4, 6) → **+1.0V_SIL9679**

+3.3V_SIL9679:

- R3267 → *SIL9679_INT (Pull-Up) IC3202*
- R3216 4.7K → *SIL9679_RESET (Pull-Up) IC3202*
- L3201 → **+3.3V_VDDH** → IC3202 pin 10
- L3202 → **+3.3V_VDDIO** → IC3202 pin 57
- pin 8 → **IC3206 SPI Flash**

+1.0V_SIL9679:

- L3203 → **+1.0V_VDD10** → IC3202 pin 59
- L3204 → **+1.0V_AVDD** → IC3202 pins 9, 17
- L3205 → **+1.0V_AVDD_PLL** → IC3202 pin 36
- L3206 → **+1.0V_AVDD_ETC** → IC3202 pins 6, 18

IC3202 HDMI HDCP

IC3202 pin 66 — 1.8K R3237 — **+5V_MHL** *(See +24V Distribution)*

IC3202 pin 67 — 1.8K R3236

IC3202 pin 74 — 10Ω R3244 — **+5V_MHL**

IC3202 pin 2 — 10Ω R3244 — **+5V_MHL**

65UF9800 T-CON Component Voltages

OP1

Pin	DC
1	0V
2	6.15V
3	6.15V
4	Gnd
5	0V
6	4.7V
7	16.32V
8	0V

U7

Pin	DC
1	3.31V
2	3.31V
3	n/c
4	Gnd
5	3.31V
6	3.31V
7	3.31V
8	3.31V

U10

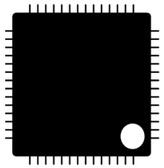
Pin	DC
1	19.98V
2	21.25V
3	23.06V

U11

Pin	DC
1	0V
2	3.25V
3	1.79V
4	3.31V
5	0V
6	1.16V
7	0.61V
8	Gnd

U2

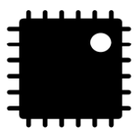
Pin	RUN
1	Gnd
2	Gnd
3	Gnd
4	Gnd
5	Gnd
6	n/c
7	(-5.08V)
8	5.94V
9	3.94V
10	3.30V
11	3.32V
12	3.36V
13	Gnd
14	11.83V
15	11.83V
16	7.85V
17	7.83V
18	Gnd
19	3.29V
20	3.29V
21	3.21V
22	1.74V
23	Gnd
24	n/c
25	16.15V
26	16.12V
27	0V
28	4.07V



Pin	RUN
29	0.18V
30	15.12V
31	11.98V
32	8.07V
33	7.51V
34	4.01V
35	0.52V
36	6.34V
37	6.39V
38	6.5V
39	6.34V
40	Gnd
41	16.07V
42	28.06V
43	Gnd
44	Gnd
45	Gnd
46	Gnd
47	Gnd
48	Gnd
49	Gnd
50	Gnd
51	Gnd
52	Gnd
53	Gnd
54	Gnd
55	Gnd
56	Gnd

UC1

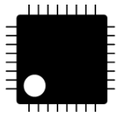
Pin	RUN
1	Gnd
2	11.96V
3	11.96V
4	Gnd
5	4.91V
6	Gnd
7	1.82V
8	1.82V
9	6.64V
10	Gnd
11	11.97V
12	11.97V



Pin	RUN
13	11.97V
14	0.81V
15	5.15V
16	5.14V
17	Gnd
18	11.96V
19	16.15V
20	Gnd
21	1.11V
22	1.26V
23	9.08V
24	Gnd

US1

Pin	RUN
1	27.35V
2	28.04V
3	See Note
4	See Note
5	4.93V
6	4.93V
7	4.93V
8	4.94V
9	4.93V
10	4.92V
11	4.93V
12	4.92V
13	n/c
14	n/c
15	n/c
16	1.22V



Pin	RUN
17	27.32V
18	(-10.01V)
19	(-9.96V)
20	(-9.95V)
21	(-10.01V)
22	(-10.02V)
23	Gnd
24	0V
25	3.32V
26	0.02V
27	0.16V
28	0.70V
29	1.17V
30	3.25V
31	3.31V
32	Gnd

Note: Cycles (-10.01V ~ 27.97V) Ever Second

DC1

Pin	RUN
1	0.89V
2	Gnd
3	3.3V
4	3.3V
5	3.3V
6	Gnd
7	Gnd
8	(-10.03V)
9	0V
10	1.22V

DC2

Pin	DC
1	3.31V
2	0.81V
3	5.17V
4	4.94V
5	0.14V
6	1.09V
7	1.09V
8	6.04V
9	11.97V
10	11.97V

D2

Pin	DC
C	Gnd
A	(-10.03V)

D5

Pin	RUN
1	11.95V
2	16.15V
3	11.95V

Q1

Pin	RUN
1	3.31V
2	3.93V
3	0.92V
4	(-5.09V)
5	5.34V
6	5.34V

Q3

Pin	RUN
1	10.36V
2	16.15V
3	16.13V

84UB9800 INTERCONNECT DIAGRAM

PANEL p/n: EAJ62573201

If the Panel is replaced, reset the UTT, Unit's Total Time.
Press "In-Stop" using Service Remote.

CN201 "LED Driver Right" to "SMPS 1st" P2205
CN1201 "LED Driver Left" to "SMPS 1st" P2207

PIN	LABEL	RUN	Diode ✓
1-5	VIN	23.66V-23.76V	OL
6-10	Gnd	Gnd	Gnd
11	N/C	n/c	n/c
12	DRV_ON	2.97V	OL

CN101 "LED Driver Right" to SMPS 1st" P2204
CN1101 "LED Driver Left" to SMPS 1st" P2206

PIN	LABEL	RUN	Diode ✓
1-5	VIN	23.66V-23.76V	OL
6-10	Gnd	Gnd	n.c.
11	Status	0V	OL
12	ENA	2.97V	OL
13	ADIM	0V	OL
14	EXTUBR-B	3.28V-0.17V	OL

CN603 "LED Driver Right" to "T-CON" CN3
CN1603 "LED Driver Left" to "T-CON" CN11

PIN	LABEL	RUN	Diode ✓
1	DCLK	0.52V	OL
2	DIN	0.82V	OL
3	Gnd	Gnd	n.c.
4	VSYNC	0V	OL

To Main P4201 / To Main P4200

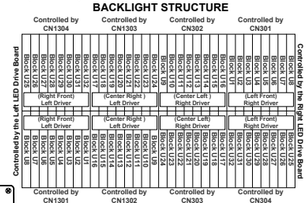
Camera
p/n: EBX61988502

Note: If a part of the picture is exhibiting a dimmer backlight level than the other or the overall brightness seems dim, be sure to first check the customer's Menu setting for Backlights. Raise the percentage and see if the overall brightness returns to normal. If not, Check the P-DIM level, it should rise with the percentage shown on screen.

Backlight Drive
Off Off Off
On On On
120Hz
16.8V p/p | 2.5mSec

LED ONE BLOCK TEST (DIM OR DARK PICTURE AREA):
Turn the Brightness, Contrast and Backlights all the way up. Confirm 49V B/L Power.
Confirm P-DIM is approx. 3V. You can turn on a Block of LEDs by using a 100 ohm resistor from any test point U1 – U32 to Ground (On each Driver board).
Failure to use a resistor will damage the panels backlight and may also damage the power supply.

BACKLIGHT STRUCTURE



448 Total LEDs
64 Blocks (Zones), 7 LEDs per Block.
6 on the left are controlled by P801
6 on the right are controlled by P802

CN301 "LED Driver Right" to "Panel" or CN1301 "LED Driver Left" to "Panel"

PIN	LABEL
1	V_Left1
2	N.C.
3	U8
4	U7
5	U6
6	U5
7	U4
8	U3
9	U2
10	U1
11	N.C.
12	V_Left1

CN303 "LED Driver Right" to "Panel" or CN1303 "LED Driver Left" to "Panel"

PIN	LABEL
1	V_Left2
2	N.C.
3	U24
4	U23
5	U22
6	U21
7	N.C.
8	U20
9	U19
10	U18
11	U17
12	N.C.
13	V_Left2

All Diode Readings "OL"

CN302 "LED Driver Right" to "Panel" or CN1302 "LED Driver Left" to "Panel"

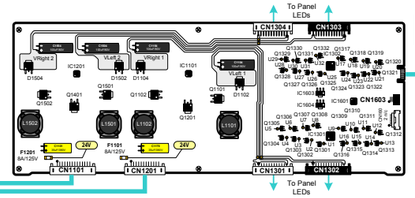
PIN	LABEL
1	V_Right1
2	N.C.
3	U16
4	U15
5	U14
6	U13
7	N.C.
8	U12
9	U11
10	U10
11	U9
12	N.C.
13	V_Left2

CN304 "LED Driver Right" to "Panel" or CN1304 "LED Driver Left" to "Panel"

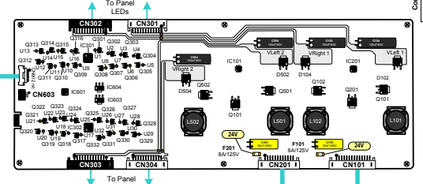
PIN	LABEL
1	V_Right2
2	N.C.
3	U32
4	U31
5	U30
6	U29
7	U28
8	U27
9	U26
10	U25
11	N.C.
12	V_Left1

All Diode Readings "OL"

Readings Bright to Dark (100% to 0% P-DIM)
V_Right 1, 2 and V_Left 1, 2: (44.31V-48.48V)
U1-U32: (17.13V~2.09V)

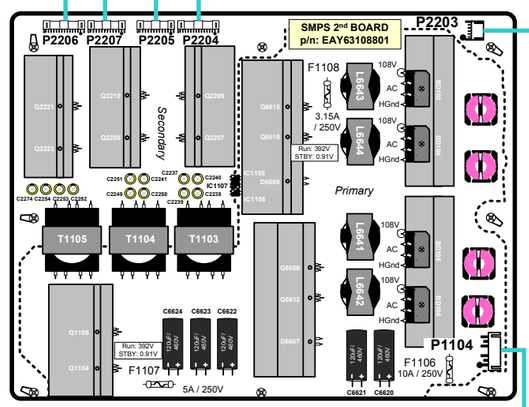


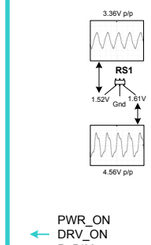
LED Driver (Left) Comes with panel
Local Dimming

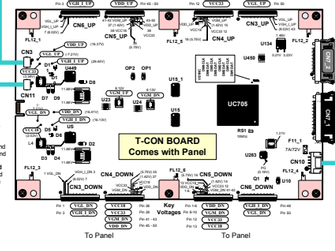


LED Driver (Right) Comes with panel
Local Dimming

PANEL TEST: To run the Panel Test (Testing the T-CON and Panel without the Main board), simply unplug CN7_1 and CN7_2. Set SMPS 1st into **Test 2** condition. (If necessary, unplug CN10 and jump 12V to the fuse F11_1). Apply power to the set. (Backlights and Power Supply should be working OK). T-CON outputs color patterns on the screen. This test confirms the T-CON, Power Supply, Panel and Backlights are working normally.

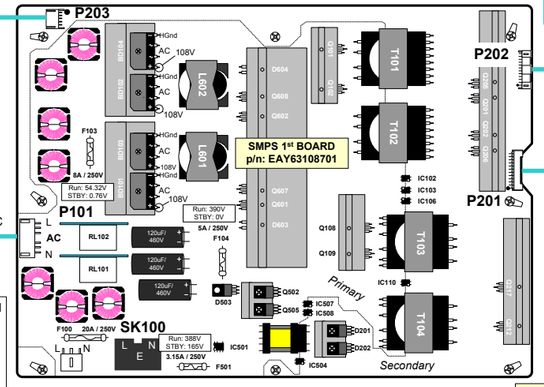






Local Dimming

PWR_ON
DRV_ON
P_DIM



AC

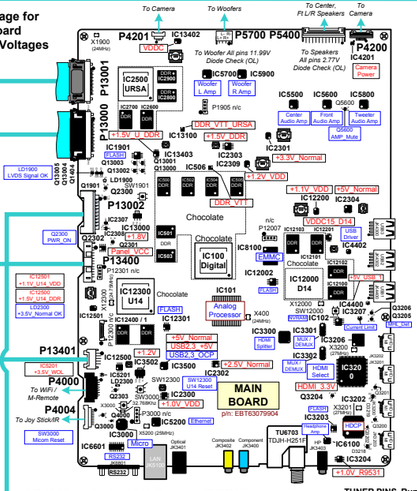
For Vx1 Waveforms see Page 5 of the Interconnect diagram.

CN10 "T-CON" to P13401 "Main"

PIN	LABEL	RUN	Diode ✓
3-5	12V	11.88V	OL
1-2	Gnd	Gnd	Gnd

12V for T-CON
12V for T-CON
PWR_ON
DRV_ON
P_DIM
STBY: 3.5V
RUN: 3.5V / 12V / 24V
For Main

See next page for Main Board Component Voltages



84UB9800 Main Board Component Voltages

IC102

Pin	NVRAM Memory
[1]	Gnd
[2]	Gnd
[3]	Gnd
[4]	Gnd
[5]	3.26V
[6]	3.27V
[7]	Gnd
[8]	3.28V

IC506

Pin	DDR_VTT Regulator
[1]	0.73V
[2]	1.5V
[3]	0.74V VTT (In)
[4]	Gnd
[5]	0.74V
[6]	0.74V
[7]	3.33V (Enable)
[8]	Gnd
[9]	n/c
[10]	3.33V VTT (Out)

IC1901

Pin	SPI FLASH Memory
[1]	3.27V
[2]	3.25V
[3]	0V
[4]	Gnd
[5]	3.27V
[6]	0V
[7]	3.27V
[8]	3.27V (In)

IC2300

Pin	+1.0V_VDD Regulator
[1]	3.44V (Enable)
[2]	0.77V
[3]	3.45V
[4]	5.42V
[5]	Gnd
[6]	1.02V (Out)
[7]	6.41V
[8]	12V (In)

IC2302

Pin	(+2.5V_NORMAL) Regulator
[1]	3.35V (in)
[2]	n/c
[3]	5.12V (in)
[4]	3.53V (ctrl)
[5]	Gnd
[6]	4.92V
[7]	0.81V
[8]	2.56V (out)

IC2303

Pin	+1.5V_DDR Regulator
[1]	3.47V (Enable)
[2]	3.77V
[3]	5.22V
[4]	2.45V
[5]	Gnd
[6]	1.57V (Out)
[7]	6.5V
[8]	12V (+11.61V In)

IC2307

Pin	PWR_Det 12V Sense
[1]	Gnd
[2]	3.54V (Reset)
[3]	3.57V (In)

IC2308

Pin	PWR_Det 20V Sense (Not Used)
[1]	Gnd
[2]	0V (Reset)
[3]	0V (In)

IC3203

Pin	FLASH Memory
[1]	0V
[2]	0V
[3]	0V
[4]	Gnd
[5]	0V
[6]	0V
[7]	3.28V
[8]	3.31V (In)

IC3204

Pin	+1.0V_R9531 Regulator
[1]	n/c
[2]	3.23V
[3]	3.31V (In)
[4]	5.09V (Enable)
[5]	n/c
[6]	1.0V (Out)
[7]	0.6V
[8]	Gnd

IC3207

Pin	+5V_HDMI_4 Regulator
[1]	3.09V (In)
[2]	Gnd
[3]	0V (Enable)
[4]	0V (MHL_OCP)
[5]	0V
[6]	0.0V (Out)

IC3502

Pin	+1.2V Regulator
[Gnd]	0V (Gnd)
[Out]	1.2V (Out)
[In]	3.31V (In)

IC4201

Pin	+3.5V_CAM Regulator
[1]	3.41V (Out)
[2]	Gnd
[3]	n/c
[4]	3.43V (EN)
[5]	3.43V (+3.5V_ST)

IC4400

Pin	+5V_USB_1 Regulator
[1]	5.09V (In)
[2]	Gnd
[3]	3.27V (Enable)
[4]	2.96V (USB_OCD1)
[5]	0.41V
[6]	5.09V (Out)

IC5201

Pin	+3.5V_WOL Regulator
[1]	3.52V (Out)
[2]	Gnd
[3]	0.01V n/c
[4]	3.51V (OCP Out)
[5]	3.51V (Vcc In)

IC12002

Pin	FLASH Memory
[1]	3.28V
[2]	0V
[3]	2.46V
[4]	Gnd
[5]	0.11V
[6]	0V
[7]	3.28V
[8]	3.31V (In)

IC12201

Pin	VDDC15_D14 Regulator
[1]	3.47V (Enable)
[2]	0.77V
[3]	5.27V
[4]	2.51V
[5]	Gnd
[6]	1.53V (Out)
[7]	6.40V
[8]	11.57V (In)

IC12301

Pin	SPI FLASH Memory
[1]	3.31V
[2]	0.17V
[3]	3.31V
[4]	Gnd
[5]	0.31V
[6]	0V
[7]	3.31V
[8]	3.31V (In)

IC12500

Pin	+1.5V_U14_DDR Regulator
[1]	3.50V (Enable)
[2]	0.77V
[3]	5.67V
[4]	2.54V
[5]	Gnd
[6]	1.53V (Out)
[7]	6.48V
[8]	11.70V (In)

IC13000

Pin	+1.8V Regulator
[Gnd]	0.55V (Adj)
[Out]	1.8V (Out)
[In]	3.31V (In)

IC13100

Pin	DDR_VTT_URSA Regulator
[1]	0.73V
[2]	1.53V
[3]	0.76V VTT (In)
[4]	Gnd
[5]	0.76V
[6]	0.76V
[7]	3.28V (Enable)
[8]	Gnd
[9]	n/c
[10]	3.28V VTT (Out)

IC13403

Pin	+1.5V_U_DDR Regulator
[1]	3.50V (Enable)
[2]	0.77V
[3]	5.21V
[4]	2.50V
[5]	Gnd
[6]	1.55V (Out)
[7]	6.54V
[8]	11.70V (In)

Q1404

Pin	LockA_N Switch
[G]	1.80V
[S]	0.56V
[D]	0.56V

Q1901

Pin	Drives LD1900
[E]	1.18V
[B]	0.56V
[C]	Gnd

Q2300

Pin	PWR_On Switch
[1]	3.52V
[2]	2.84V
[3]	3.41V

Q2301

Pin	Panel_VCC CTRL Drives Q2302
[B]	0.61V
[C]	0.03V
[E]	Gnd

Q2302

Pin	Panel_VCC Switch
[1]	11.69V (In)
[2]	11.69V (In)
[3]	11.69V (In)
[4]	1.81V (Enable)
[5]	11.69V (Out)
[6]	11.69V (Out)
[7]	11.69V (Out)
[8]	11.69V (Out)

Q2303

Pin	Drives LD2300
[E]	Gnd
[B]	0.64V
[C]	0.02V

Q3000

Pin	HDMI_3.3V Switch
[G]	3.42V (+3.5V_ST)
[S]	3.39V (HDMI_CEC)
[D]	3.35V (CEC_REMOTE)

Q3200 / 01

Pin	HDMI3 Hot Swap
[B]	0V
[C]	0V
[E]	Gnd

Q3202

Pin	Reset_N Switch for IC3202
[B]	3.28V
[C]	3.46V
[E]	3.28V

Q3204

Pin	HDMI_3.3V Switch
[G]	5.09V (In)
[S]	3.28V (Enable)
[D]	3.29V (Out)

Q3205

Pin	MHL Det
[B]	0V
[C]	3.52V (Out)
[E]	0V

Q3206

Pin	MHL Det
[B]	3.52V
[C]	0V (Out)
[E]	3.52V

Q4000

Pin	LOGO_Light Driver
[B]	0V (En)
[C]	1.27V (Out)
[E]	Gnd

Q5600

Pin	Amp Mute Driver
[B]	0V
[C]	3.27V
[E]	Gnd

Q13000

Pin	Drives Q13002
[E]	Gnd
[B]	0.25V
[C]	1.61V

Q13001

Pin	Drives Q13003
[E]	Gnd
[B]	0.25V
[C]	1.59V

Q13002

Pin	Activates Vx1_LOCKn_0
[E]	Gnd
[B]	0.64V
[C]	0.09V

Q13003

Pin	Activates Vx1_LOCKn_V
[E]	Gnd
[B]	0.64V
[C]	0.02V

Q13004

Pin	I2C_SCL1 Switch
[G]	3.24V
[S]	3.31V
[D]	3.29V

Q13005

Pin	I2C_SDA1 Switch
[G]	3.29V
[S]	3.32V
[D]	3.29V

84UB9800 Main Board Component Voltages (Large ICs) Page 1 of 2

IC2301
+3.3V_Normal Regulator

Pin		Pin	
[1]	1.17V	[15]	11.65V (In)
[2]	5.13V	[16]	11.65V (In)
[3]	3.53V (Enable)	[17]	11.65V (In)
[4]	8.42V	[18]	n/c
[5]	n/c	[19]	11.65V (In)
[6]	3.36V (Out)	[20]	5.14V
[7]	3.36V (Out)	[21]	5.12V
[8]	3.36V (Out)	[22]	Gnd
[9]	3.36V (Out)	[23]	0.62V
[10]	Gnd	[24]	3.35V
[11]	Gnd	[25]	0.43V
[12]	Gnd	[26]	n/c
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC2304
+5V_Normal Regulator

Pin		Pin	
[1]	24.68V (In)	[15]	5.04V (OCP2)
[2]	24.68V (In)	[16]	5.09V
[3]	24.68V (In)	[17]	5.09V
[4]	Gnd	[18]	12.04V
[5]	Gnd	[19]	5.09V (Out)
[6]	Gnd	[20]	5.09V (Out)
[7]	6.25V	[21]	5.09V (Out)
[8]	6.25V	[22]	1.94V
[9]	3.53V (Enable)	[23]	0.60V
[10]	5.09V (Out USB2)	[24]	0.35V
[11]	5.09V (Out USB3)	[25]	1.24V
[12]	5.09V (USB2 Ctrl)	[26]	0.45V
[13]	5.09V (USB3 Ctrl)	[27]	0.45V
[14]	5.04V (OCP2)	[28]	Gnd

IC2309
+1.2V_VDD Regulator

Pin		Pin	
[1]	1.18V	[15]	11.59V (In)
[2]	5.18V	[16]	11.59V (In)
[3]	3.51V (Enable)	[17]	11.59V (In)
[4]	6.44V	[18]	n/c
[5]	n/c	[19]	11.59V (In)
[6]	1.29V (Out)	[20]	5.18V
[7]	1.29V (Out)	[21]	5.18V
[8]	1.29V (Out)	[22]	Gnd
[9]	1.29V (Out)	[23]	0.61V
[10]	Gnd	[24]	1.26V
[11]	Gnd	[25]	0.41V
[12]	Gnd	[26]	Gnd
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC3000
Micro Processor

Pin		Pin	
[1]	3.28V	[25]	0V
[2]	3.28V	[26]	3.53V
[3]	0.0V	[27]	3.53V
[4]	2.09V	[28]	0.03V
[5]	0.06V	[29]	0.1V
[6]	3.5V	[30]	0V
[7]	3.49V	[31]	3.34V
[8]	3.53V	[32]	3.53V
[9]	0V	[33]	3.53V
[10]	3.53V	[34]	3.75V
[11]	3.53V	[35]	0V
[12]	0V	[36]	0V
[13]	3.51V	[37]	0.02V
[14]	3.68V	[38]	0V
[15]	3.53V	[39]	3.53V
[16]	0V	[40]	3.53V
[17]	3.48V	[41]	0.65V
[18]	3.53V	[42]	0.13V
[19]	3.29V	[43]	0V
[20]	3.32V	[44]	0V
[21]	3.53V	[45]	0V
[22]	0V	[46]	2.09V
[23]	0V	[47]	Gnd
[24]	0.1V	[48]	3.53V

IC3301 / IC3302
MUX/ DEMUX

Pin		Pin	
[1]	3.31V (In)	[22]	2.94V
[2]	3.28V	[23]	2.94V
[3]	4.88V	[24]	2.94V
[4]	4.88V	[25]	2.94V
[5]	2.98V	[26]	2.94V
[6]	2.98V	[27]	2.94V
[7]	2.98V	[28]	2.94V
[8]	2.98V	[29]	2.94V
[9]	n/c	[30]	n/c
[10]	2.98V	[31]	2.94V
[11]	2.98V	[32]	2.94V
[12]	2.98V	[33]	2.94V
[13]	2.98V	[34]	2.94V
[14]	n/c	[35]	2.94V
[15]	n/c	[36]	2.94V
[16]	3.28V	[37]	2.94V
[17]	3.28V	[38]	2.94V
[18]	n/c	[39]	4.88V
[19]	n/c	[40]	4.88V
[20]	n/c	[41]	3.28V
[21]	n/c	[42]	3.28V

IC3500
+5V_NORMAL Regulator

Pin		Pin	
[1]	24.68V (In)	[15]	5.04V (OCP2)
[2]	24.68V (In)	[16]	5.09V
[3]	24.68V (In)	[17]	5.09V
[4]	Gnd	[18]	12.04V
[5]	Gnd	[19]	5.09V (Out)
[6]	Gnd	[20]	5.09V (Out)
[7]	6.25V	[21]	5.09V (Out)
[8]	6.25V	[22]	1.94V
[9]	3.53V (Enable)	[23]	0.60V
[10]	5.09V (Out USB2)	[24]	0.35V
[11]	5.09V (Out USB3)	[25]	1.24V
[12]	5.09V (USB2 Ctrl)	[26]	0.45V
[13]	5.09V (USB3 Ctrl)	[27]	0.45V
[14]	5.04V (OCP2)	[28]	Gnd

IC12200
+1.1V_VDD Regulator

Pin		Pin	
[1]	1.17V	[15]	11.62V (In)
[2]	5.13V	[16]	11.62V (In)
[3]	3.51V (Enable)	[17]	11.62V (In)
[4]	6.27V	[18]	n/c
[5]	n/c	[19]	11.62V (In)
[6]	1.2V (Out)	[20]	5.13V
[7]	1.2V (Out)	[21]	5.13V
[8]	1.2V (Out)	[22]	Gnd
[9]	1.2V (Out)	[23]	0.6V
[10]	Gnd	[24]	1.19V
[11]	Gnd	[25]	0.39V
[12]	Gnd	[26]	n/c
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC12501
+1.1V_U14_VDD Regulator

Pin		Pin	
[1]	1.15V	[15]	11.95V (In)
[2]	5.06V	[16]	11.95V (In)
[3]	3.42V (Enable)	[17]	11.95V (In)
[4]	6.17V	[18]	n/c
[5]	n/c	[19]	11.95V (In)
[6]	1.14V (Out)	[20]	5.06V
[7]	1.14V (Out)	[21]	5.05V
[8]	1.14V (Out)	[22]	Gnd
[9]	1.14V (Out)	[23]	0.61V
[10]	Gnd	[24]	1.12V
[11]	Gnd	[25]	0.39V
[12]	Gnd	[26]	n/c
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

IC13402
VDDC Regulator

Pin		Pin	
[1]	1.19V	[15]	11.62V (In)
[2]	5.19V	[16]	11.62V (In)
[3]	3.51V (Enable)	[17]	11.62V (In)
[4]	6.34V	[18]	n/c
[5]	n/c	[19]	11.62V (In)
[6]	1.19V (Out)	[20]	5.20V
[7]	1.19V (Out)	[21]	5.20V
[8]	1.19V (Out)	[22]	Gnd
[9]	1.19V (Out)	[23]	0.6V
[10]	Gnd	[24]	0.39V
[11]	Gnd	[25]	0V
[12]	Gnd	[26]	Gnd
[13]	Gnd	[27]	Gnd
[14]	Gnd	[28]	Gnd

84UB9800 Main Board Component Voltages (Large ICs) Page 1 of 2

IC4402

Pin	USB 3 Processor	Pin
[1]	n/c	[13] 3.3V (In)
[2]	n/c	[14] 0.08V
[3]	3.3V (In)	[15] 0V
[4]	3.3V	[16] 1.63V
[5]	3.3V	[17] 3.23V
[6]	n/c	[18] n/c
[7]	3.27V	[19] 3.26V
[8]	3.27V	[20] 3.26V
[9]	Gnd	[21] Gnd
[10]	1.45V	[22] 2.63V
[11]	1.45V	[23] 2.63V
[12]	Gnd	[24] n/c

IC5200

Pin	Ethernet IC	Pin
[1]	0V	[17] 0V
[2]	1.1V	[18] n/c
[3]	1.1V	[19] n/c
[4]	1.1V	[20] 0V
[5]	1.1V	[21] 3.26V
[6]	1.1V	[22] 1.23V
[7]	3.51V (In)	[23] 3.25V
[8]	0.03V	[24] 3.25V
[9]	0V	[25] 3.24V
[10]	0V	[26] 0V
[11]	0V	[27] 0V
[12]	0V	[28] 0V
[13]	n/c	[29] 1.08V
[14]	3.51V (In)	[30] 3.51V (In)
[15]	1.32V	[31] 0V
[16]	0V	[32] 0.58V

IC5500

Pin	Center Amp	Pin
[1]	n/c	[21] 2.77V (C_SPK_R+)
[2]	1.29V	[22] Gnd
[3]	n/c	[23] 7.47V
[4]	Gnd	[24] 5.17V
[5]	n/c	[25] Gnd
[6]	1.27V	[26] n/c
[7]	1.14V	[27] 5.16V
[8]	1.63V	[28] 7.46V
[9]	1.63V	[29] Gnd
[10]	0V	[30] 2.77V (C_SPK_L-)
[11]	3.09V	[31-32] 24V (L B+)
[12]	3.27V (Mute)	[33] 2.77V (C_SPK_L+)
[13]	n/c	[34] Gnd
[14]	1.36V	[35] 7.45V
[15]	n/c	[36] 3.20V (Reset)
[16]	7.46V	[37] Gnd
[17]	Gnd	[38] 1.66V
[18]	2.77V (C_SPK_R-)	[39] Gnd
[19-20]	24V (R B+)	[40] 3.34 (In)

IC5700

Pin	Woofer Left Amp	Pin
[1]	n/c	[21] 11.99V (SPK_Woofer
[2]	1.25V	[22] Gnd
[3]	n/c	[23] 4.76V
[4]	Gnd	[24] 5.14V
[5]	n/c	[25] 5.14V
[6]	1.27V	[26] n/c
[7]	1.37V	[27] 5.14V
[8]	1.64V	[28] 16.63V
[9]	1.67V	[29] Gnd
[10]	3.12V	[30] 11.99V (SPK_Woofer
[11]	3.12V	[31-32] 24V (L B+)
[12]	3.34V (Mute)	[33] 11.99V (SPK_Woofer
[13]	n/c	[34] Gnd
[14]	0.66V	[35] 16.64V
[15]	n/c	[36] 3.21V (Reset)
[16]	4.76V	[37] Gnd
[17]	Gnd	[38] 1.66V
[18]	11.99V (SPK_Woofer_L-)	[39] Gnd
[19-20]	24V (R B+)	[40] 3.34V (In)

IC5900

Pin	Woofer Right Amp	Pin
[1]	n/c	[21] 11.99V (SPK_Woofer_R+)
[2]	1.25V	[22] Gnd
[3]	n/c	[23] 4.76V
[4]	Gnd	[24] 5.14V
[5]	n/c	[25] 5.14V
[6]	1.27V	[26] n/c
[7]	1.37V	[27] 5.14V
[8]	1.64V	[28] 16.63V
[9]	1.67V	[29] Gnd
[10]	3.12V	[30] 11.99V (SPK_Woofer_R-)
[11]	3.12V	[31-32] 24V (L B+)
[12]	3.34V (Mute)	[33] 11.99V (SPK_Woofer_R+)
[13]	n/c	[34] Gnd
[14]	0.66V	[35] 16.64V
[15]	n/c	[36] 3.21V (Reset)
[16]	4.76V	[37] Gnd
[17]	Gnd	[38] 1.66V
[18]	11.99V (SPK_Woofer_R-)	[39] Gnd
[19-20]	24V (R B+)	[40] 3.34V (In)

IC5600

Pin	Front Amp	Pin
[1]	n/c	[21] 2.77V (Out SPK_R+)
[2]	1.29V	[22] Gnd
[3]	n/c	[23] 7.47V
[4]	Gnd	[24] 5.17V
[5]	n/c	[25] Gnd
[6]	1.27V	[26] n/c
[7]	1.14V	[27] 5.16V
[8]	1.63V	[28] 7.46V
[9]	1.63V	[29] Gnd
[10]	0V	[30] 2.77V (Out SPK_L-)
[11]	3.09V	[31-32] 24V (L B+)
[12]	3.27V (Mute)	[33] 2.77V (Out SPK_L+)
[13]	n/c	[34] Gnd
[14]	1.36V	[35] 7.45V
[15]	n/c	[36] 3.20V (Reset)
[16]	7.46V	[37] Gnd
[17]	Gnd	[38] 1.66V
[18]	2.77V (Out SPK_R-)	[39] Gnd
[19-20]	24V (R B+)	[40] 3.34V (In)

IC5800

Pin	Height Speaker Audio Amp	Pin
[1]	n/c	[21] 2.77V (H_SPK_R+)
[2]	1.29V	[22] Gnd
[3]	n/c	[23] 7.47V
[4]	Gnd	[24] 5.17V
[5]	n/c	[25] Gnd
[6]	1.27V	[26] n/c
[7]	1.14V	[27] 5.16V
[8]	1.63V	[28] 7.46V
[9]	1.63V	[29] Gnd
[10]	0V	[30] 2.77V (H_SPK_L-)
[11]	3.09V	[31-32] 24V (L B+)
[12]	3.27V (Mute)	[33] 2.77V (H_SPK_L+)
[13]	n/c	[34] Gnd
[14]	1.36V	[35] 7.45V
[15]	n/c	[36] 3.20V (Reset)
[16]	7.46V	[37] Gnd
[17]	Gnd	[38] 1.66V
[18]	2.77V (H_SPK_R-)	[39] Gnd
[19-20]	24V (R B+)	[40] 3.34 (In)

IC6100

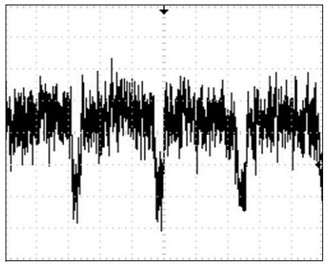
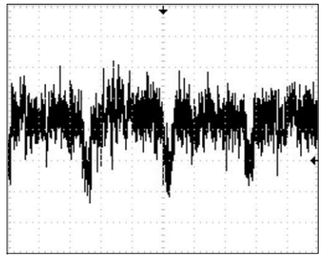
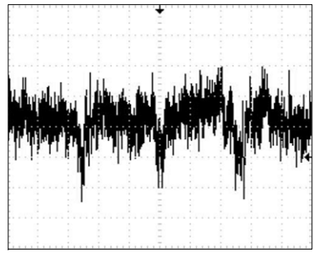
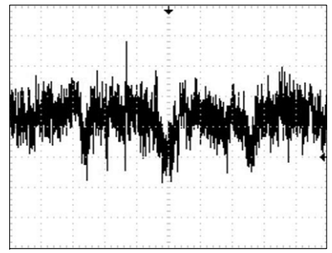
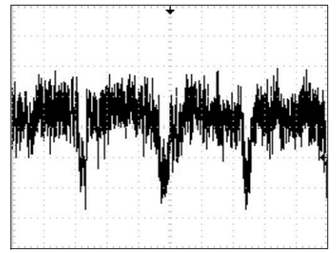
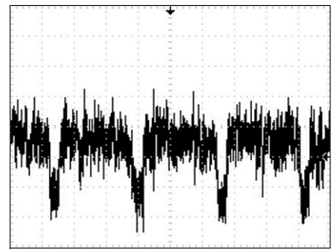
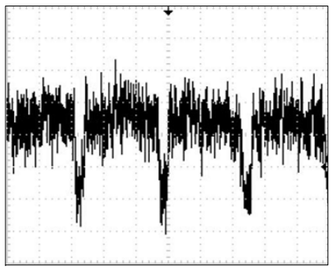
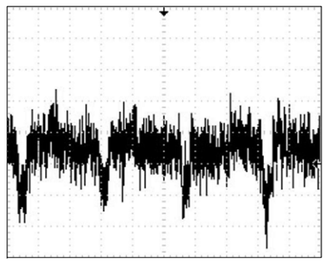
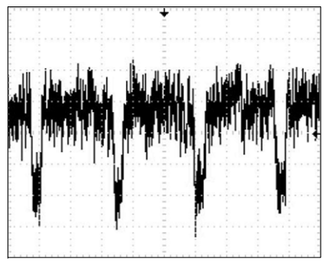
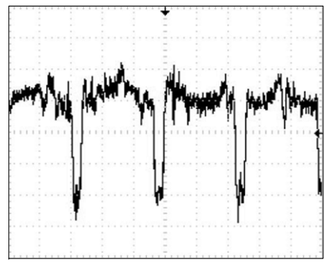
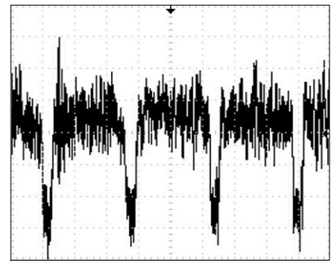
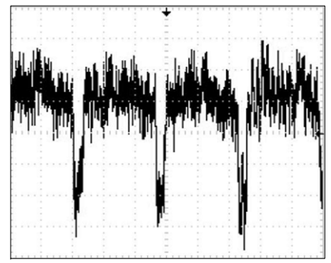
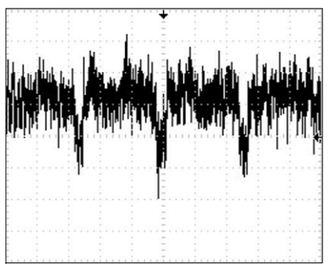
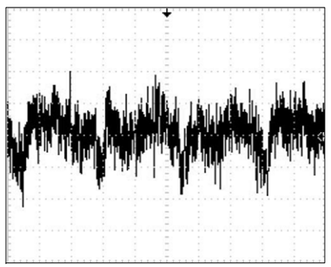
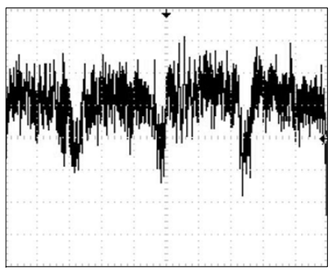
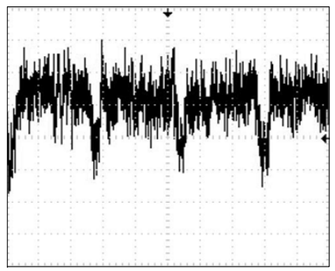
Pin	Earphone IC	Pin
[1]	Gnd	[8] 1.64V
[2]	0V (R-In)	[9] 3.31V (In)
[3]	0V (R-Out)	[10] Gnd
[4]	Gnd	[11] n/c
[5]	(Mute)	[12] 0V (L-Out)
[6]	(-3.16V)	[13] 0V (L-In)
[7]	(-1.57V)	[14] Gnd

IC6601

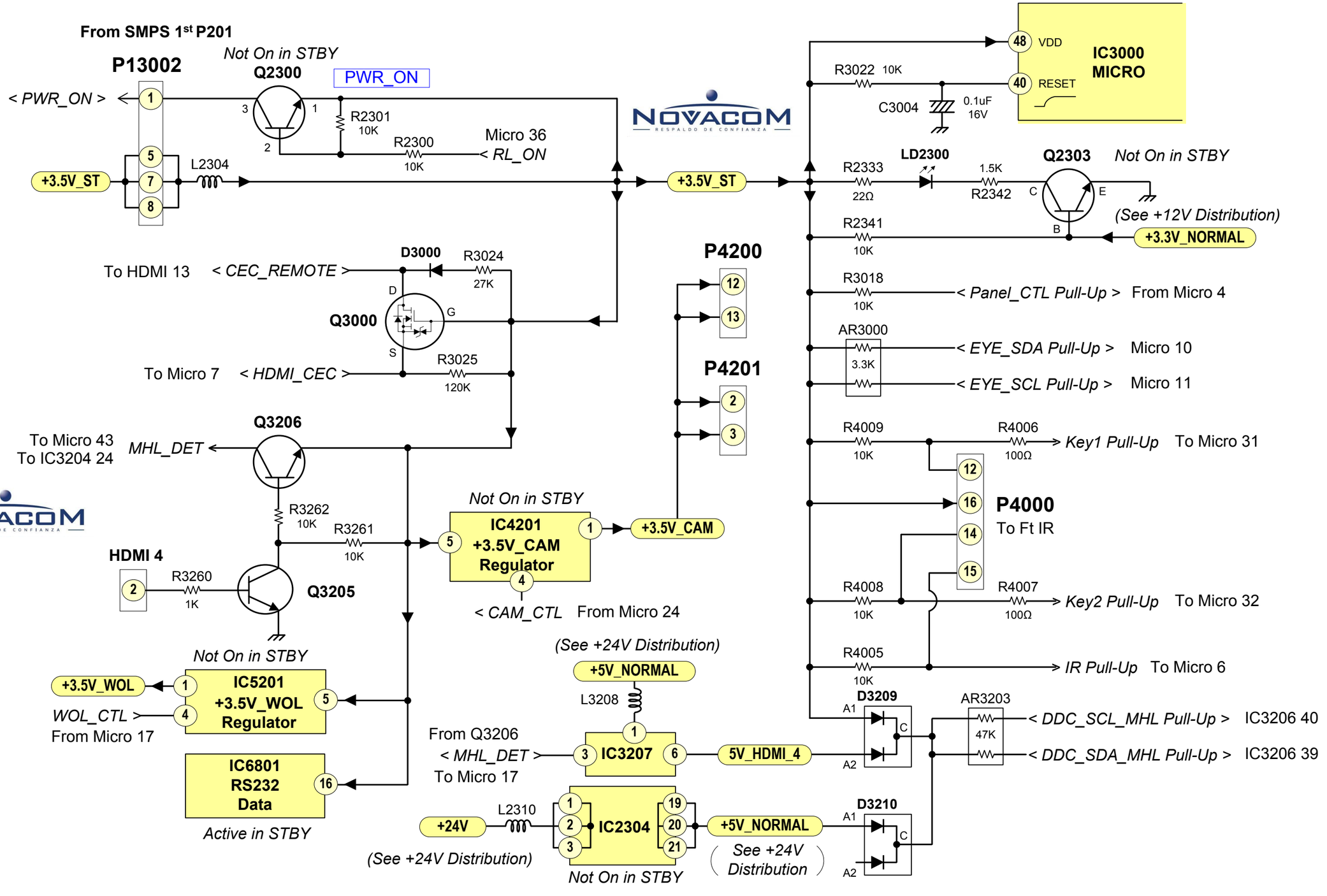
Pin	RS232 Routing	Pin
[1]	3.53V	[9] n/c (3.49V)
[2]	5.69V	[10] n/c (0V)
[3]	0V	[11] 3.34V
[4]	0V	[12] 3.48V
[5]	(-5.60V)	[13] 0V
[6]	(-5.63V)	[14] (-5.59V)
[7]	n/c (5.64V)	[15] 0V (Gnd)
[8]	n/c (0V)	[16] 3.5V (Vcc In)

84UB9800 P13000 and P13001 Connector (Vx1) Video Waveforms

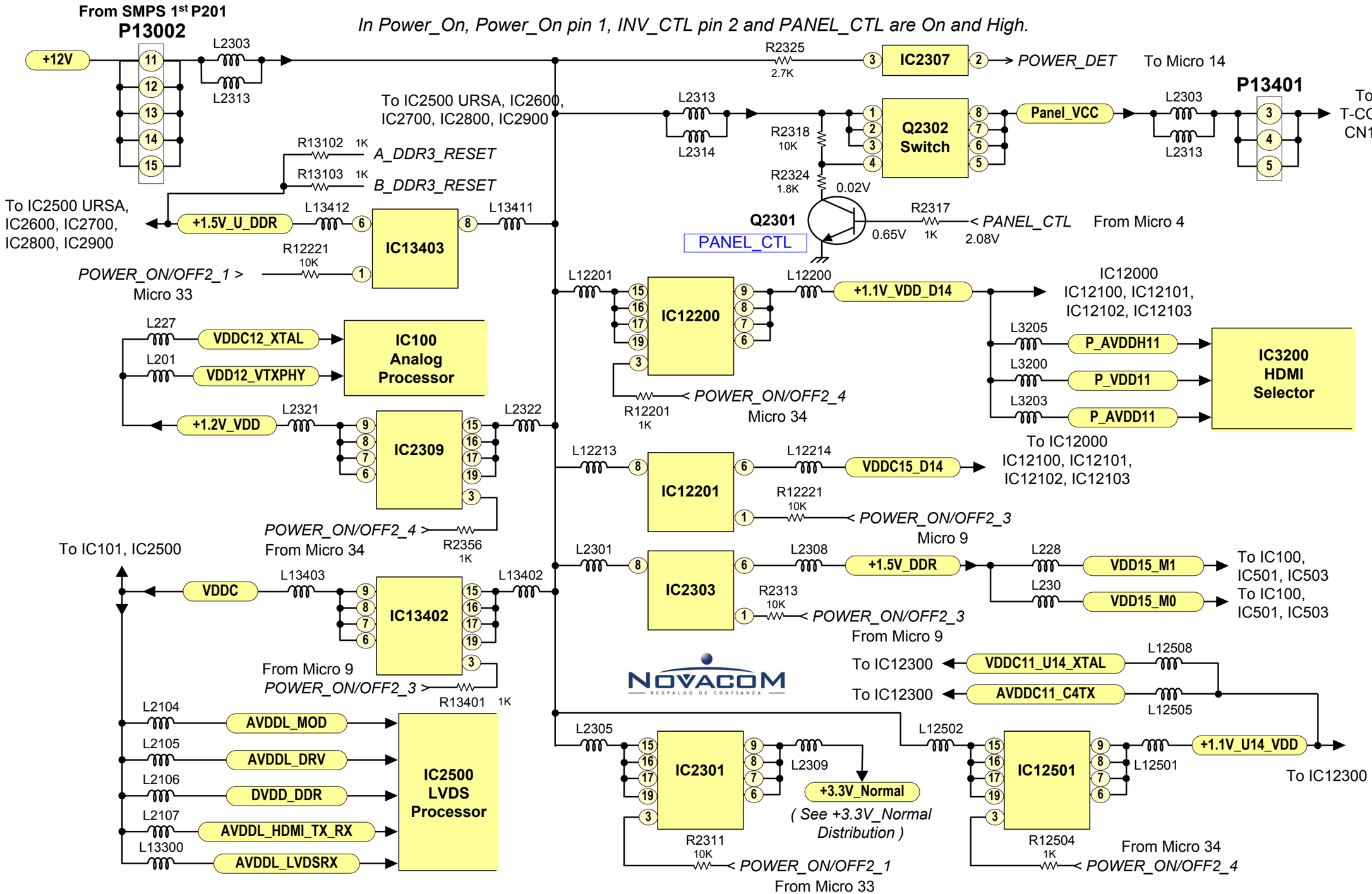
All Vx1 (V-by-One) signals are taken with SMPTY Color Bar signal input (1080P) Component Input.
All Vx1 signals are “Differential Pairs”.
Scope Settings are 5mV per/division, 100uSec per/division. Note: P13001 Vx1 Signals appear similar.

Pin 2  **27mV p/p**	**Pin 3**  **22.8mV p/p**	**Pin 5**  **22.2mV p/p**	**Pin 6**  **23.2mV p/p**	**Pin 8**  **23.2mV p/p**	**Pin 9**  **23.6mV p/p**
Pin 11  **19.4mV p/p**	**Pin 12**  **25.2mV p/p**	**Pin 14**  **428.2mV p/p**	**Pin 15**  **25.4mV p/p**	**Pin 17**  **34.8mV p/p**	**Pin 18**  **33.2mV p/p**
Pin 20  **25.8mV p/p**	**Pin 21**  **21.2mV p/p**	**Pin 23**  **27.6mV p/p**	**Pin 24**  **23.6mV p/p**		

84UB9800 +3.5V_ST Voltage Distribution (In Stand-By)

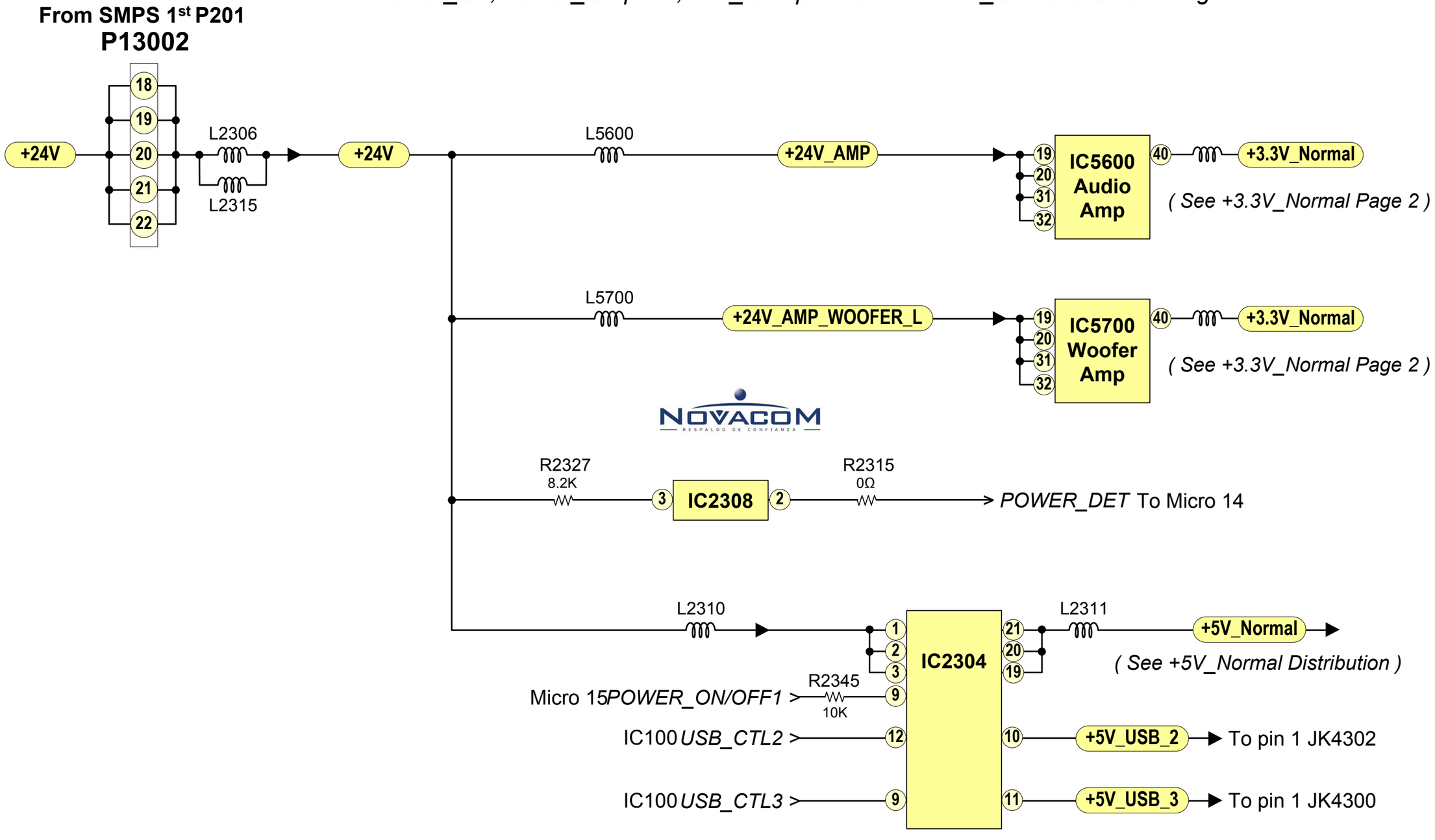


84UB9800 +12V Voltage Distribution (Power On)

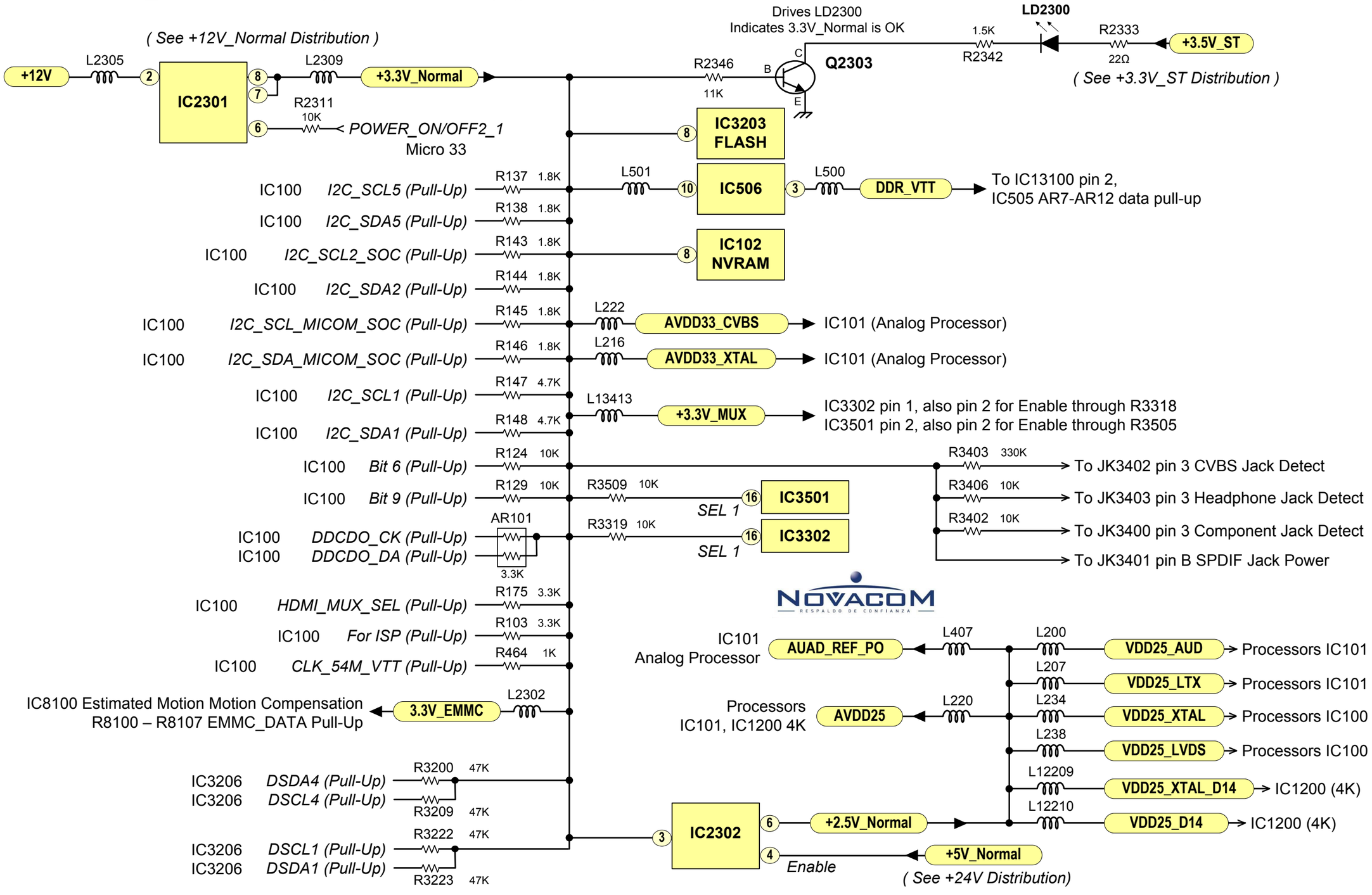


84UB9800 +24V Voltage Distribution (Power On)

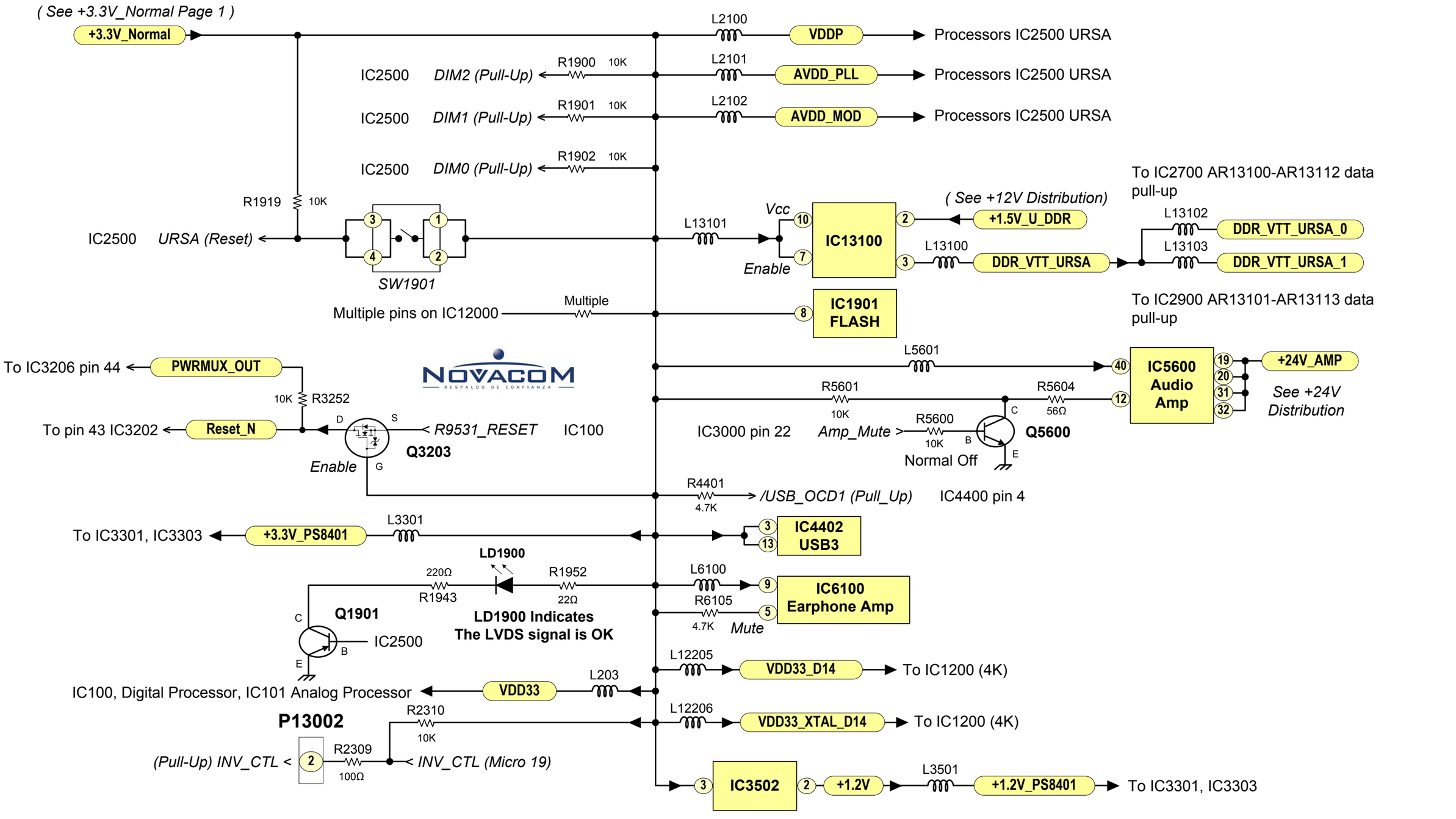
In Power_On, Power_On pin 1, INV_CTL pin 2 and PANEL_CTL are On and High.



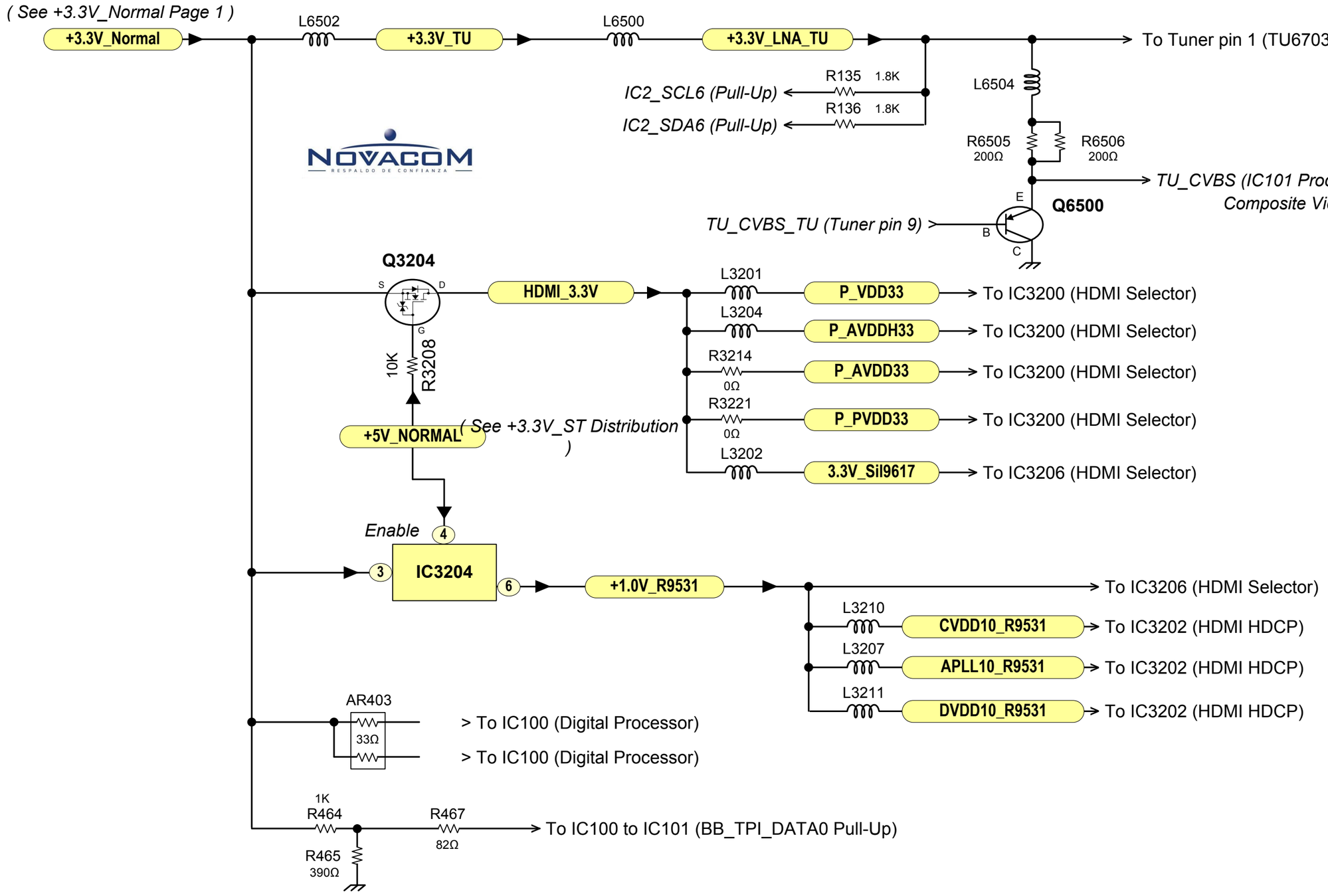
84UB9800 +3.3V_NORMAL Voltage Distribution (Pg 1 of 3)



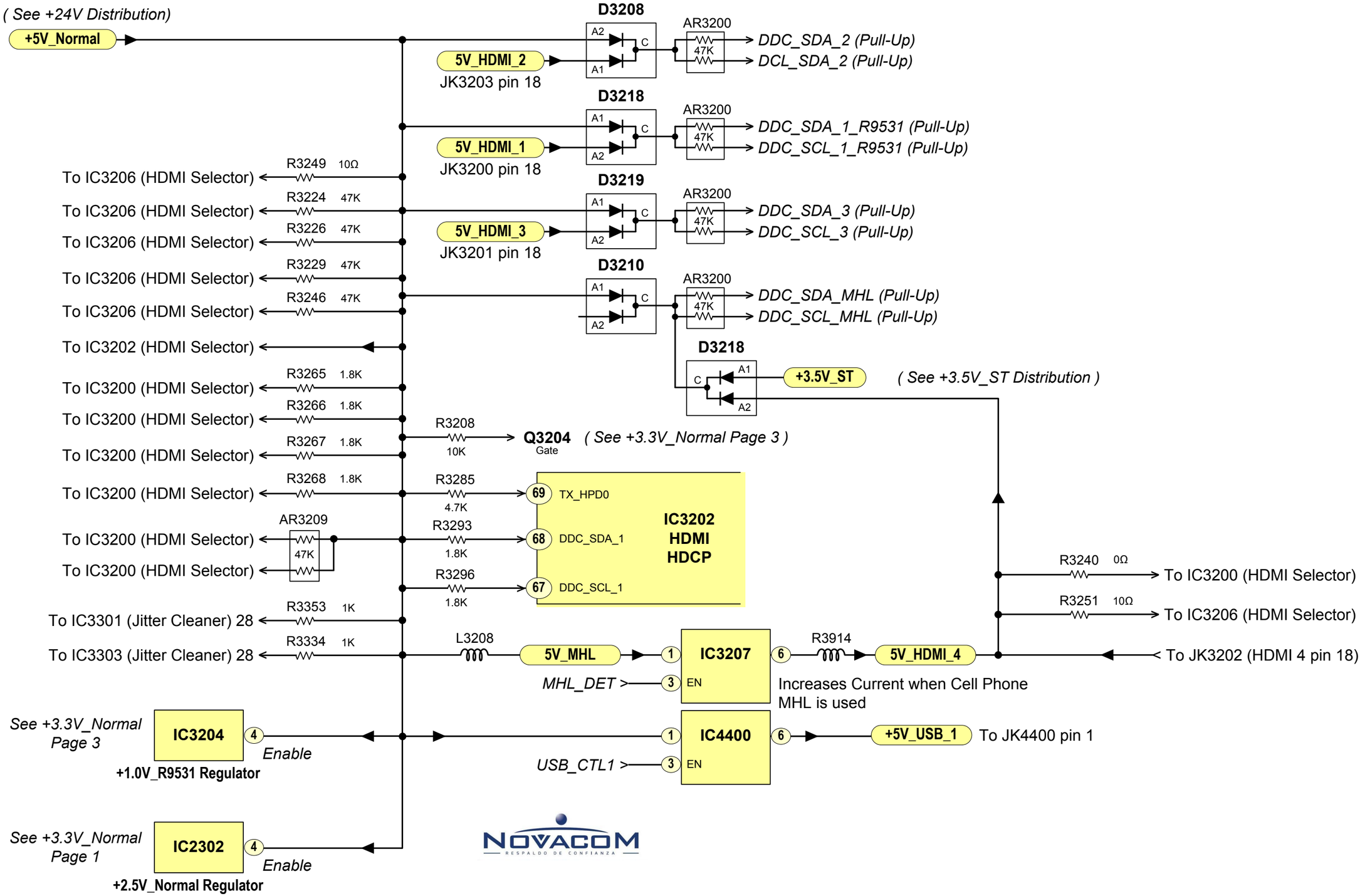
84UB9800 +3.3V_NORMAL Voltage Distribution (Pg 2 of 3)



84UB9800 +3.3V_NORMAL Voltage Distribution (Pg 3 of 3)



84UB9800 +5V_NORMAL Voltage Distribution (Power On)



84UB9800 T-CON Component Voltages

OP1

Pin	DC
1	5.75V
2	5.75V
3	5.75V
4	Gnd
5	5.75V
6	5.75V
7	5.75V
8	16.35V

OP2

Pin	DC
1	5.75V
2	5.75V
3	5.75V
4	Gnd
5	5.75V
6	5.75V
7	5.75V
8	16.35V

U10

Pin	DC
1	Gnd
2	Gnd
3	Gnd
4	Gnd
5	3.33V
6	3.33V
7	3.32V
8	3.33V

U23

Pin	DC
1	12.29V
2	11.78V
3	8.11V
4	Gnd
5	0.93V
6	1.10V
7	3.23V
8	3.63V

U15

Pin	RUN
1	5.75V
2	0V
3	15.60V
4	0V
5	13.21V
6	12.11V
7	11.70V
8	Gnd
9	16.38V
10	10.11V
11	8.33V
12	7.92V
13	3.33V
14	3.32V

Pin	RUN
15	3.32V
16	0V
17	3.33V
18	Gnd
19	5.73V
20	5.26V
21	3.78V
22	2.72V
23	16.38V
24	Gnd
25	1.99V
26	10.32V
27	1.99V
28	5.79V

U15_1

Pin	RUN
1	5.75V
2	0V
3	15.60V
4	0V
5	13.21V
6	12.11V
7	11.70V
8	Gnd
9	16.38V
10	10.11V
11	8.33V
12	7.92V
13	3.33V
14	3.32V

Pin	RUN
15	3.32V
16	0V
17	3.33V
18	Gnd
19	5.73V
20	5.26V
21	3.78V
22	2.72V
23	16.38V
24	Gnd
25	1.99V
26	10.32V
27	1.99V
28	5.79V

U24

Pin	DC
1	12.29V
2	11.78V
3	8.11V
4	Gnd
5	0.93V
6	1.10V
7	3.23V
8	3.63V

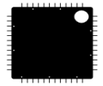
U134

Pin	RUN
1	0.21V
2	1.46V
3	3.23V

U449

Pin	RUN
1	Gnd
2	0V
3	3.25V
4	0.20V
5	1.97V
6	3.33V
7	0.16V
8	25.45V
9	29.49V
10	1.23V
11	Gnd
12	8.00V
13	16.49V
14	7.16V
15	Gnd
16	0.03V
17	1.26V
18	4.25V
19	n/c
20	n/c
21	0V
22	10.06V
23	2.05V
24	2.05V

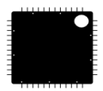
Pin	RUN
25	11.81V
26	11.81V
27	11.54V
28	4.26V
29	4.25V
30	1.89V
31	0.61V
32	3.37V
33	5.85V
34	Gnd
35	Gnd
36	Gnd
37	11.78V
38	11.78V
39	16.48V
40	1.27V
41	16.42V
42	16.49V
43	16.50V
44	0V
45	Gnd
46	0V
47	Gnd
48	0V



US2

Pin	RUN
1	Gnd
2	0V
3	3.25V
4	0.20V
5	1.97V
6	3.33V
7	0.16V
8	25.45V
9	29.49V
10	1.23V
11	Gnd
12	8.00V
13	16.49V
14	7.16V
15	Gnd
16	0.03V
17	1.26V
18	4.25V
19	n/c
20	n/c
21	0V
22	10.06V
23	2.05V
24	2.05V

Pin	RUN
25	11.81V
26	11.81V
27	11.54V
28	4.26V
29	4.25V
30	1.89V
31	0.61V
32	3.37V
33	5.85V
34	Gnd
35	Gnd
36	Gnd
37	11.78V
38	11.78V
39	16.48V
40	1.27V
41	16.42V
42	16.49V
43	16.50V
44	0V
45	Gnd
46	0V
47	Gnd
48	0V



U263

Pin	RUN
1	1.31V
2	0.29V
3	5.53V
4	5.50V
5	Gnd
6	0.72V
7	3.34V
8	Gnd
9	Gnd
10	1.36V
11	1.36V
12	6.99V
13	11.84V
14	11.84V

U450

Pin	DC
1	3.23V
2	3.23V
3	0V
4	Gnd
5	3.24V
6	3.24V
7	3.24V
8	3.24V

Q1

Pin	RUN
1	2.74V
2	3.31V
3	0V

D2

Pin	DC
C	16.57V
A	11.59V

D5

Pin	RUN
1	14.84V
2	22.01V
3	29.45V

D6

Pin	RUN
1	(-7.21V)
2	(-3.34V)
3	Gnd

D7

Pin	DC
C	3.37V
A	Gnd

D8

Pin	DC
C	16.57V
A	11.69V

D9

Pin	DC
C	3.37V
A	Gnd

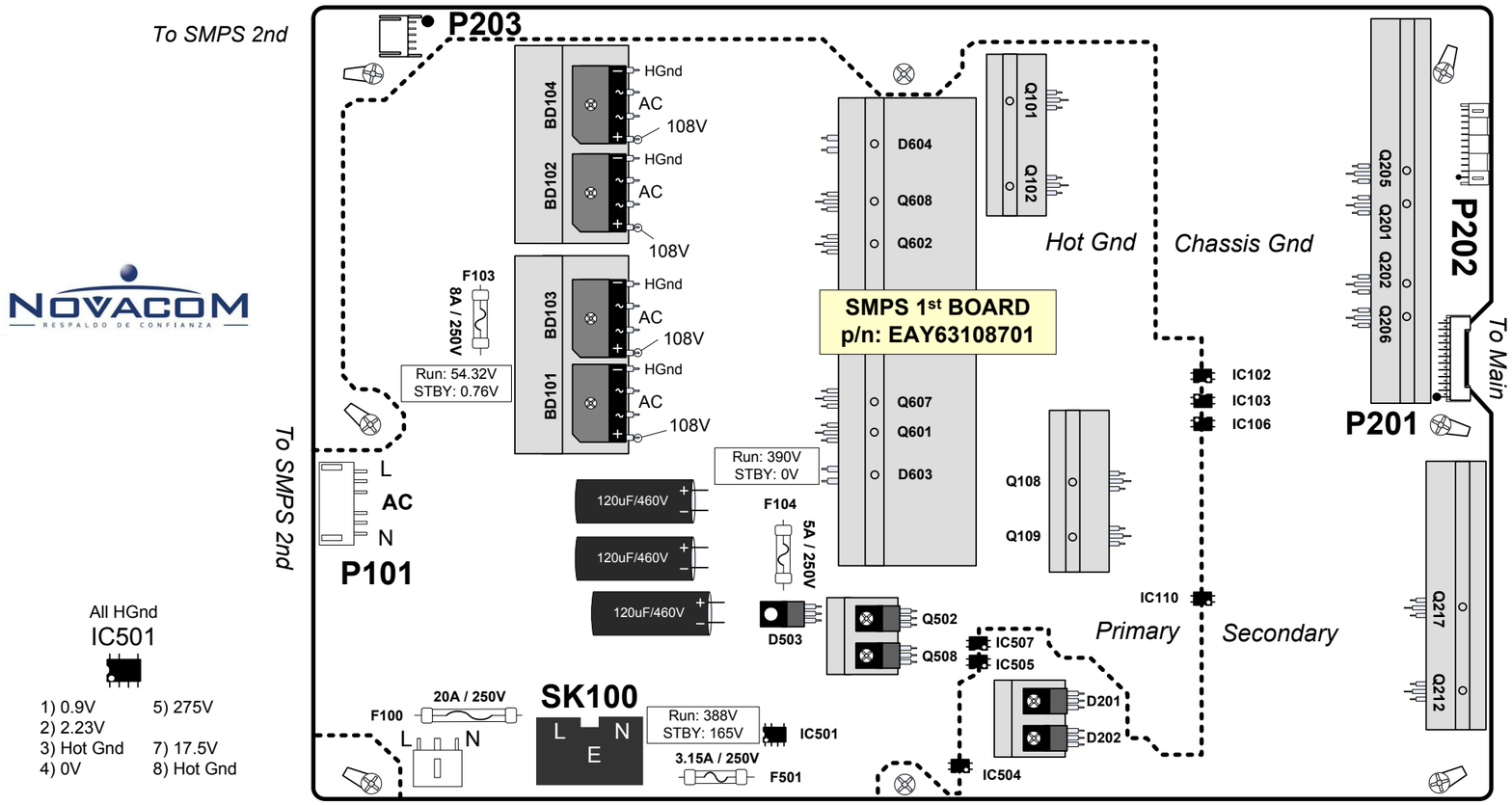
D10

Pin	RUN
1	(-7.21V)
2	(-3.34V)
3	Gnd

D11

Pin	RUN
1	14.84V
2	22.01V
3	29.45V

84UB9800 SMPS 1st Component Voltages



All HGnd

IC501

1) 0.9V
2) 2.23V
3) Hot Gnd
4) 0V
5) 275V
7) 17.5V
8) Hot Gnd

IC102

HGnd 2.18V
0.92V 3.20V
Hot Gnd | Chassis

IC103

14.54V 3.44V
13.76V 0.02V
Hot Gnd | Chassis

IC106

17.5V 0.03V
17.57V 1.19V
Hot Gnd | Chassis

IC110

HGnd 8.28V
0.83V 9.3V
Hot Gnd | Chassis

IC504

HGnd 1.99V
2.36V 3.0V
Hot Gnd | Chassis

IC505

17.51V 1.45V
17.55V 2.66V
Hot Gnd | Chassis

IC507

10.94V 0.03V
10.85V 1.19V
Hot Gnd | Chassis

D201

3) (-0.02V)
2) 3.46V
1) Gnd

D202

3) (-0.02V)
2) 3.46V
1) Gnd

D503

3) 14.95V
2) 16.94V
1) 15.61V

D508

3) 17.49V
2) 19.06V
1) 16.86V

D603

2) 97V
1) 389.5V

D604

2) 97V
1) 389.5V

Q101

3) 1.87V
2) 309.5V
1) 184V

Q102

3) 6.38V
2) 184.8
1) 0V

Q108

3) 189.5V
2) 389.5V
1) 184V

Q109

3) 6.37V
2) 185V
1) HGnd

Q201

1) Gnd
2) 12.06V
3) 4.03V

Q202

1) Gnd
2) 12.06V
3) 4.26V

Q205

1) Gnd
2) 12.06V
3) 4.03V

Q206

1) Gnd
2) 12.06V
3) 4.26V

Q212

1) Gnd
2) 24.02V
3) 4.35V

Q217

1) Gnd
2) 24.02V
3) 4.68V

Q502

3) 17.49V
2) 19.02V
1) 16.84V

Q601

1) HGnd
2) 95V
3) 6.0V

Q602

1) HGnd
2) 97V
3) 4.96V

Q607

1) HGnd
2) 96.7V
3) 5.97V

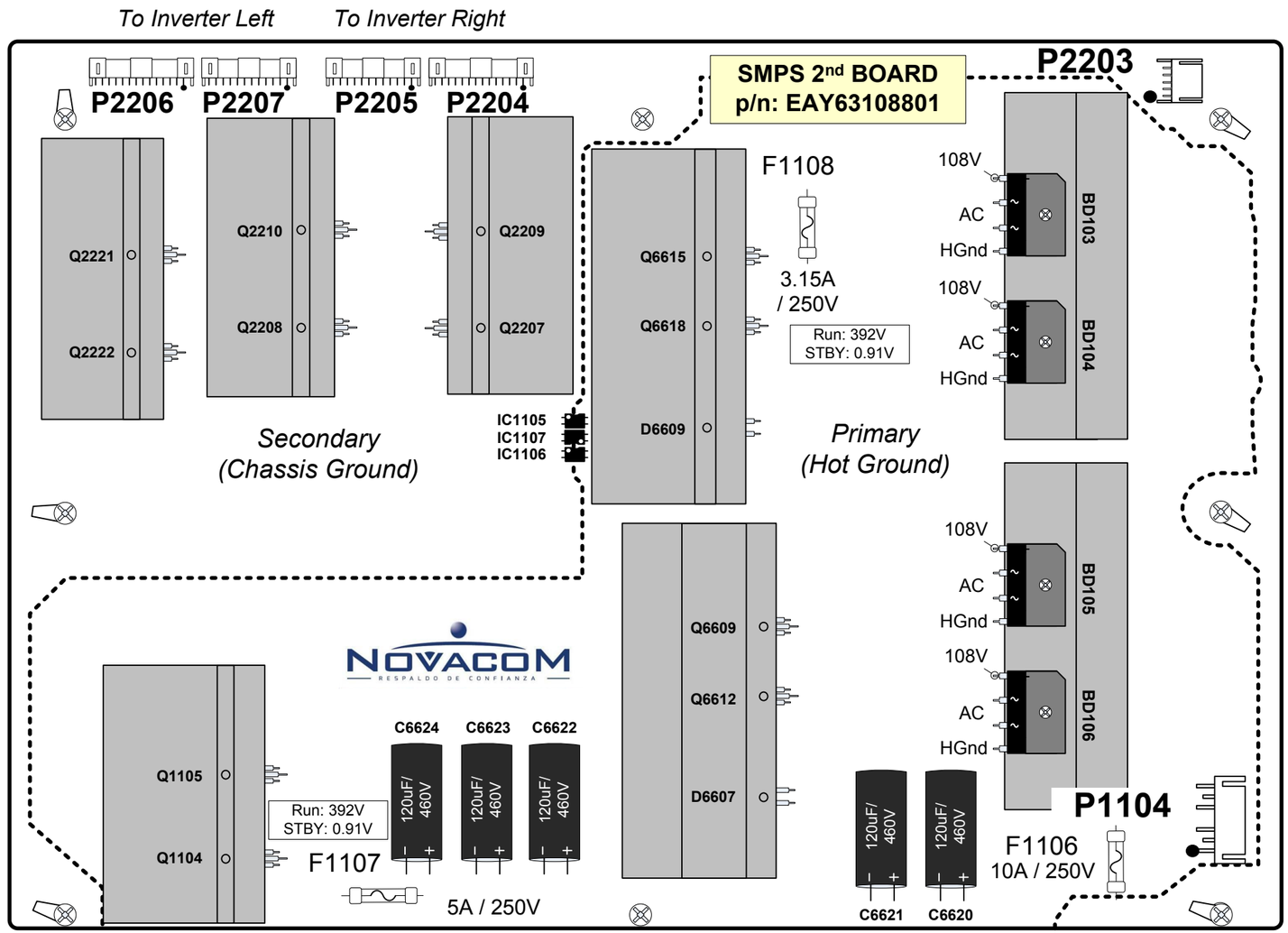
Q608

1) HGnd
2) 98.6V
3) 4.96V

Q608

1) HGnd
2) 98.6V
3) 4.96V

84UB9800 SMPS 2nd Board Component Voltages



D6607
2) 391.7V
1) 391.7V

Q1104
3) 196.1V
2) 391.7V
1) 194V

Q2207
1) Gnd
2) 23.77V
3) 4.34V

Q2209
1) Gnd
2) 23.77V
3) 4.21V

Q2221
3) 4.14V
2) 23.76V
1) Gnd

Q6609
3) 8.18V
2) 90.6V
1) 0.06V

Q6615
3) 7.87V
2) 90.7V
1) HGnd

IC1105
1.10V — 0.2V
OV — HGnd
Chassis — Hot Gnd

IC1107
0.15V — 13.41V
3.44V — 13.98V
Chassis — Hot Gnd

D6609
2) 391.7V
1) 86V

Q1105
3) 6.07V
2) 191.7V
1) 0V

Q2208
3) 4.27V
2) 23.77V
1) Gnd

Q2210
3) 4.20V
2) 23.8V
1) Gnd

Q2222
3) 4.50V
2) 23.79V
1) Gnd

Q6612
3) 8.17V
2) 90.6V
1) HGnd

Q6618
3) 7.87V
2) 90.7V
1) HGnd

IC1106
11.40V — 1.75V
10.43V — Hot Gnd
Chassis — Hot Gnd

OLED65G6P INTERCONNECT DIAGRAM

T-CON IS PART OF THE PANEL ITSELF, ALL OTHER BOARDS ARE IN THE STAND

PANEL p/n: EAJ63727601

Panel comes with the T-CON

T-CON TROUBLESHOOTING:
Confirm all connections are good going to the T-CON.
CN6, CN10 (Vx1) CN5, CN11 (Power)
CN13, 14, 16, 17 (To the Panel)
Confirm 12V and 24V are arriving at CN5 and CN11
Confirm at least these 5 voltages are going to the panel on CN17 and/or CN14

Q6002: (1) 4.56V, (2) 12V (3) 3.35V
Q6004: (1) 1.88V, (2) 12V (3) Gnd
Q6007: (1) 6.89V, (2) 12V (3) 0V
Q6008: (1) 1.65V, (2) 12V (3) 1.19V
Q6009: (1) 4.34V, (2) 1.19V (3) Gnd

12V DIODE CHECK

Blk on Gnd	Red on Gnd
0.40V	0.36V All Connected
1.15	0.45V No SMPS

24V DIODE CHECK

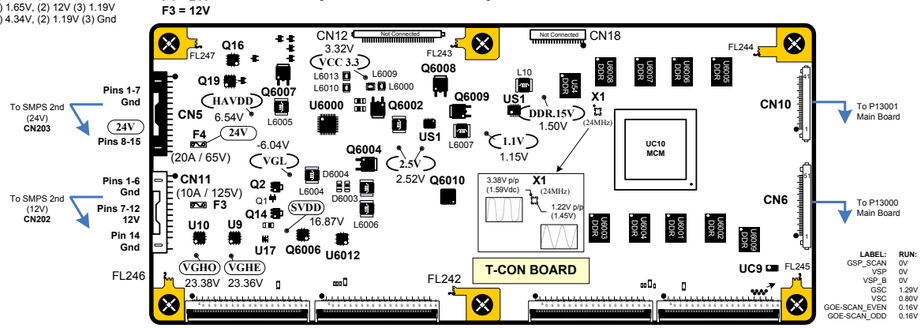
Blk on Gnd	Red on Gnd
0.31V	0.26V All Connected
OL	0.35V No SMPS with Panel
OL	0.65V No SMPS or Panel

P201 "SMPS" to "Main"

Pin	Diode Check
22,23	Gnd
19 - 22	1.39V
18	OL
16,17	Gnd
11 - 15	1.48V
6,9,10	Gnd
5,7,8	OL
4	2.96V
3	OL
2	OL
1	1.20V

Warning: Make sure screws are in place, damage to the board may occur if they are left out.
FL244 ~ FL247 are ground protect EMI Filters.
Warning: Make sure before reassembling the Shield that the Heat Transfer materials "Chocolate" can be on back or front.

F4 = 24V
F3 = 12V



LABEL: RUN:
GSP_SCAN 0V
VSP 0V
VSP_B 0V
GSC 1.29V
VSC 0.80V
GOE-SCAN_EVEN 0.16V
GOE-SCAN_ODD 0.16V

TO OLED PANEL (KEY VOLTAGES)

VGH_O (25.38V)	Pin 1
VGH_E (25.36V)	Pin 2
VGL (-6.04V)	Pins 4, 5
SVDD (16.87V)	Pins 27 ~ 30
24V (23.91V)	Pins 32 ~ 63

T-CON comes with the Panel

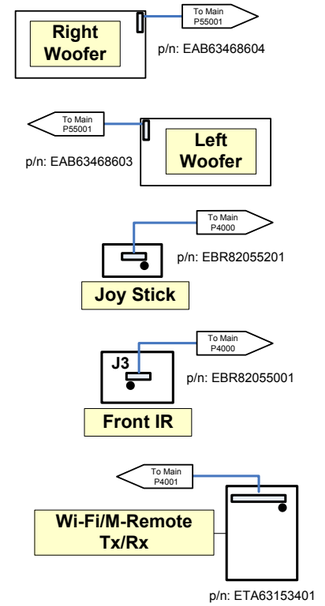
Pins 34 ~ 65	24V (23.91V)
Pins 67 ~ 70	SVDD (16.87V)
Pins 92, 93	VGL (-6.04V)
Pin 95	VGH_E (25.36V)
Pin 96	VGH_O (25.38V)

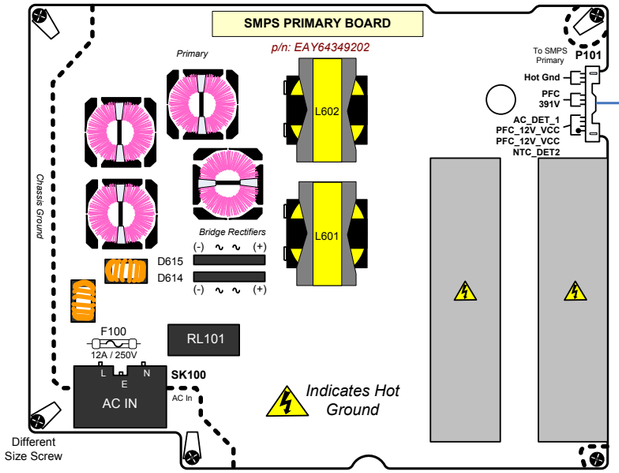
P4001 "Main" To "M-Remote/WiFi Module"

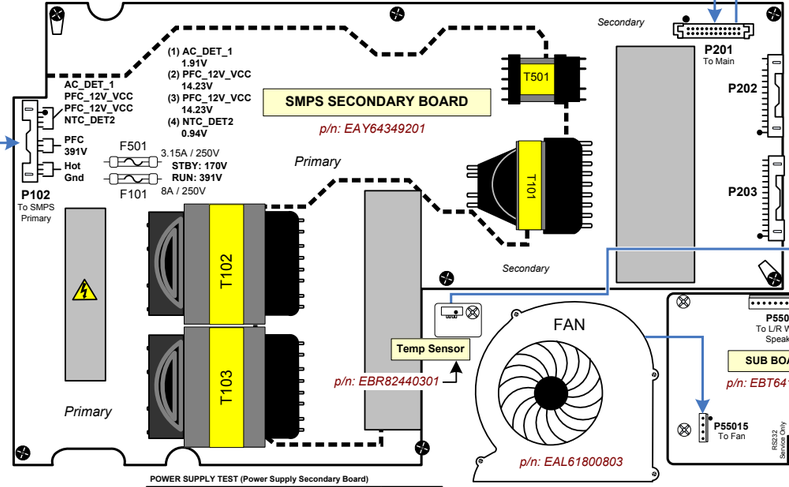
Pin	Label	Run	Diode
1	Gnd	Gnd	Gnd
2	BT-RESET	3.39V	OL
3	3D_SYNC_RF	3.46V	OL
4	WOL/WiFi_Power__On	3.47V	OL
5	Gnd	Gnd	Gnd
6	WiFi_BT_DP	0.03V	1.70V
7	WiFi_BT_DM	0.03V	1.70V
8	+3.5V_WiFi	3.49V	OL

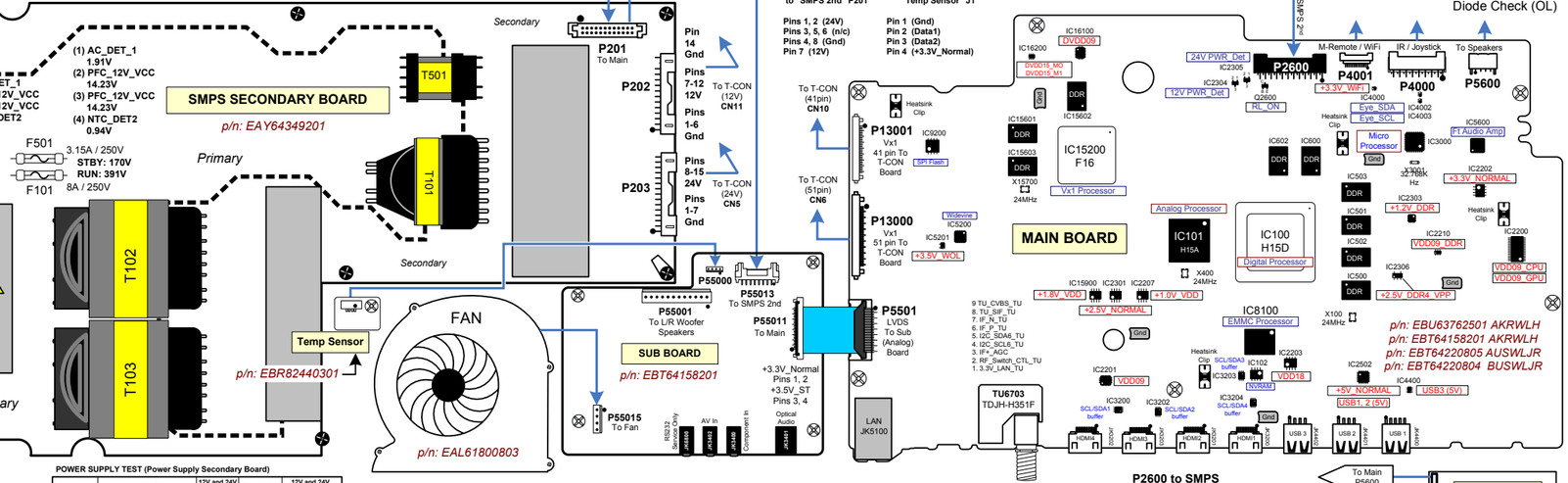
P4000 "MAIN Board" To "IR, Joy Stick" Board

PIN	LABEL	STBY	RUN	Diode	To	Pin
1	Gnd	Gnd	Gnd	Gnd	Joy Stick	8
2	+3.5V_Normal	0V	3.32V	OL	Joy Stick	7
3	+3.5V_Normal	0V	3.32V	OL	Ft IR	10
4	3.5V_ST	3.51V	3.49V	1.30V	Joy Stick	6
5	Eye_SDA_Wall	Gnd	Gnd	Gnd	Ft IR	9
6	Accel	0V	0.32V	1.30V	Joy Stick	5
7	Eye_SCL_Wall	0V	3.47V	1.90V	Ft IR	8
8	Gnd	Gnd	Gnd	Gnd	Joy Stick	4
9	Eye_SDA_Stand	3.56V	3.52V	1.99V	Ft IR	7
10	Gnd	Gnd	Gnd	Gnd	Joy Stick	3
11	Eye_SDA_Stand	3.56V	3.52V	1.99V	Ft IR	6
12	Key 1	3.51V	3.49V	1.98V	Joy Stick	2
13	Gnd	Gnd	Gnd	Gnd	Ft IR	5
14	Key 2	3.51V	3.49V	1.98V	Joy Stick	1
15	IR	3.54V	3.50V	1.89V	Ft IR	4
16	+3.5V_ST	3.51V	3.49V	1.24V	Ft IR	3
17	Logo_Light	2.78V	0V	OL	Ft IR	2
18	Gnd	Gnd	Gnd	Gnd	Ft IR	1



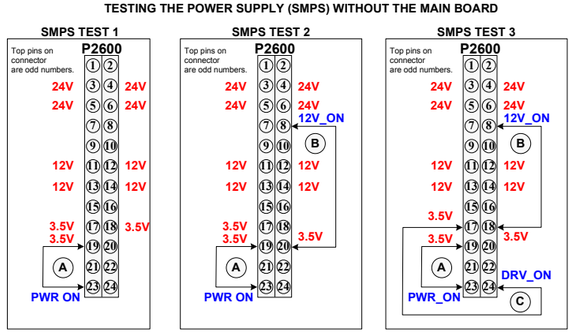






TESTING THE POWER SUPPLY (SMPS) WITHOUT THE MAIN BOARD

TESTING SET-UP: Unplug P2600 from the Main board. Use P2600 side to insert Jumpers and take readings.



SMPS TEST:

TEST 1: Short PWR_ON to 3.5V_ST. Turns on 12V and 24V to the Main

TEST 2: Leave Test 1 short in place. Short 12V_ON to 3.5V_ST. Turns on 12V to T-CON.

TEST 3: Leave Test 1 and Test 2 shorts in place. Short DRV_ON to 3.5V_ST. Turns on 24V to T-CON.

Unplug AC Power when adding or removing a Jumper.
All readings from Chassis Ground.

POWER SUPPLY TEST (Power Supply Secondary Board)

MAIN	P201 "POWER 2ND"		12V and 24V to Main	12V to T-CON	12V and 24V to T-CON
Pin	Pin	Label	Test 1	Test 2	Test 3
2	24	Gnd	Gnd	Gnd	Gnd
4 P55013	23	(R) (Gnd)	Gnd	Gnd	Gnd
4	22	24V	23.98V	23.65V	24.66V
2 P55013	21	(R) (24V)	23.98V	23.65V	24.66V
6	20	24V	23.98V	23.65V	24.66V
1 P55013	19	(R) (24V)	23.98V	23.65V	24.66V
8	18	(O) 12V_ON	0V	3.51V	3.51V
8 P55013	17	(R) (Gnd)	Gnd	Gnd	Gnd
10	16	Gnd	Gnd	Gnd	Gnd
7 P55013	15	(R) (12V)	12.01V	11.97V	11.97V
12	14	12V	12.01V	11.97V	11.97V
11	13	12V	12.01V	11.97V	11.97V
14	12	12V	12.01V	11.97V	11.97V
13	11	12V	12.01V	11.97V	11.97V
16	10	Gnd	Gnd	Gnd	Gnd
15	9	Gnd	Gnd	Gnd	Gnd
18	8	3.5V_ST	3.51V	3.51V	3.51V
17	7	3.5V_ST	3.51V	3.51V	3.51V
20	6	Gnd	Gnd	Gnd	Gnd
19	5	3.5V_ST	3.51V	3.51V	3.51V
22	4	(R) AC_DET	3.77V	3.76V	3.75V
21	3	(O) DPC	0V	0V	0V
24	2	(O) DRV_ON	0V	0V	3.51V
23	1	(O) RL_ON	3.51V	3.51V	3.51V

P201 "SMPS Board" to P2600 "MAIN Board"

	PIN	LABEL	RUN	PIN	LABEL	RUN	
P55013 Sub Board	4	23	Gnd	Gnd	24	Gnd	Gnd	2
	2	21	24V	24.31V	22	24V	24.31V	4
	1	19	24V	24.31V	20	24V	24.31V	6
	8	17	Gnd	Gnd	18	12V_ON	3.49V	8
	7	15	12V	11.98V	16	Gnd	Gnd	10
	11	13	12V	11.98V	14	12V	11.98V	12
	13	11	12V	11.98V	12	12V	11.98V	14
	15	9	Gnd	Gnd	10	Gnd	Gnd	16
	17	7	3.5V	3.50V	8	3.5V	3.50V	18
	19	5	3.5V	3.50V	6	Gnd	Gnd	20
	21	3	DPC	0.0V	4	ACD	3.64V	22
	23	1	P_ON	3.04V	2	DRV_ON	3.03V	24

P2600 "MAIN Board" Pins are Inverted (Outside pin numbers) But by rows only. (12 pins per row Odd/Even). Odd pins are on Top Row on Main, Back Row on SMPS.

(1) **PWR_ON:** turns on the 12V and 24V lines. to the Main. (Not the 24V to the T-CON)
(2) **12V_ON:** turns on the 12V to the T-CON.
(3) **INV_ON:** (DRV_ON on the SMPS) turns on the 24V to the T-CON.
(4) **AC_DET:** If missing will prevent the TV from coming on. Power Light blinks 3 times, the relay clicks off.
(5) **DPC :** Places the Power Supply in Power Saving Mode.
(6) Pins 15, 17, 19, 21, 23 of P201 goes to P55013 on the Sub (Analog) board.

Connected	Diode Checks	Disconnected
3.5V_ST to Main		
1.12V (Blk on Gnd)		OL (Blk on Gnd)
0.18V (Red on Gnd)		0.18V (Red on Gnd)
24V to Main		
1.23V (Blk on Gnd)		1.40V (Blk on Gnd)
0.35V (Red on Gnd)		0.36V (Red on Gnd)
12V to Main		
1.13V (Blk on Gnd)		1.17V (Blk on Gnd)
0.14V (Red on Gnd)		0.14V (Red on Gnd)

P2600 to SMPS

Pin	Diode Check
1,3,5,7	n/c
2	Gnd
4,6	24V
8	12V_ON
9,11,12,13,14	12V
10, 15, 16	Gnd
17,18,19	3.5V_ST
20	Gnd
21	DPC
22	AC_DET
23	RL_ON
24	INV_ON

For DC voltages See P201 Chart

P55015 "SUB Board" to "FAN"

Pin 1	12V	OL
Pin 2	Gnd	Gnd
Pin 3	Fan_FG_Sig	OL
Pin 4	PWM_FAN	OL

FG_Sig (3.40V peak/peak)
PWM_Sig (3.36V peak/peak)