

Service
Service
Service

Service Manual

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1. Revision List

Manual xxxx xxx xxxx.0

- First release.

2. Technical Specifications, Connections

Index of this chapter:

[2.1 Technical Specifications](#)

[2.2 Directions for Use](#)

[2.3 Connections](#)

Notes:

- Figures can deviate due to the different set executions.
- Specifications are indicative (subject to change).

2.2 Directions for Use

Directions for use can be downloaded from the following websites:

<http://www.philips.com/support>

<http://www.p4c.philips.com>

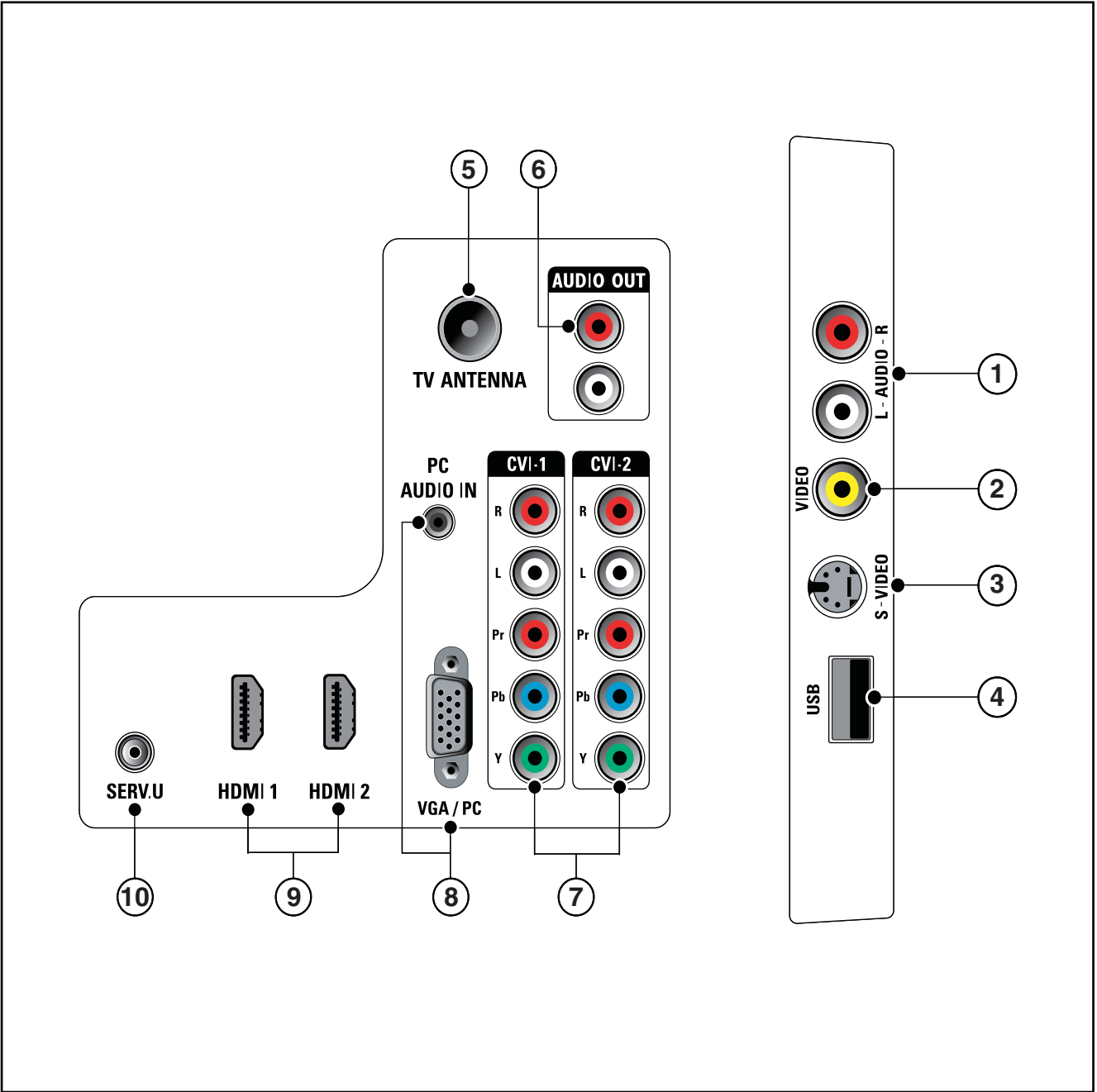
2.1 Technical Specifications

For on-line product support please use the links in [Table 2-1](#). Here is product information available, as well as getting started, user manuals, frequently asked questions and software & drivers.

Table 2-1 Described Model Numbers:

Model Number	Styling	Published in
32PFL3605/67	Dali	3122 785 18930
32PFL3605/93	Dali	3122 785 18930
32PFL3605/98	Dali	3122 785 18930
42PFL3605/67	Dali	3122 785 18930
42PFL3605/93	Dali	3122 785 18930
42PFL3605/98	Dali	3122 785 18930

2.3 Connections



18930_001_100309.eps
100312

Figure 2-1 Connection overview

Note: The following connector colour abbreviations are used (acc. to DIN/IEC 757): Bk= Black, Bu= Blue, Gn= Green, Gy= Grey, Rd= Red, Wh= White, Ye= Yellow.

2.3.1 Side Connections

1, 2 - Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS	1 V _{PP} / 75 ohm	⊕ ⊙
Wh - Audio L	0.5 V _{RMS} / 10 kohm	⊕ ⊙
Rd - Audio R	0.5 V _{RMS} / 10 kohm	⊕ ⊙

3 - S-Video (Hosiden): Video Y/C - In

1 - Ground Y	Gnd	⊕ ⊙
2 - Ground C	Gnd	⊕ ⊙
3 - Video Y	1 V _{PP} / 75 ohm	⊕ ⊙
4 - Video C	0.3 V _{PP} / 75 ohm	⊕ ⊙

4 - USB2.0

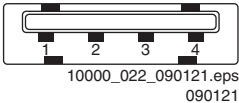
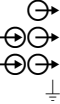


Figure 2-2 USB (type A)

1	- +5V
2	- Data (-)
3	- Data (+)
4	- Ground

Gnd



2.3.2 Rear Connections

5 - Aerial - In

- IEC-type (EU) Coax, 75 ohm

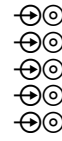
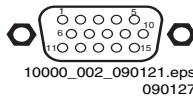
**6 - Cinch: Audio - Out**Rd - Audio - R 0.5 V_{RMS} / 10 kohmWh - Audio - L 0.5 V_{RMS} / 10 kohm**7 - Cinch: Video YPbPr - In, Audio - In**Gn - Video Y 1 V_{PP} / 75 ohmBu - Video Pb 0.7 V_{PP} / 75 ohmRd - Video Pr 0.7 V_{PP} / 75 ohmRd - Audio - R 0.5 V_{RMS} / 10 kohmWh - Audio - L 0.5 V_{RMS} / 10 kohm**8 - VGA: Video RGB - In, Mini Jack: Audio - In**

Figure 2-3 VGA Connector

1 - Video Red 0.7 V_{PP} / 75 ohm2 - Video Green 0.7 V_{PP} / 75 ohm3 - Video Blue 0.7 V_{PP} / 75 ohm

4 - n.c.

5 - Ground Gnd

6 - Ground Red Gnd

7 - Ground Green Gnd

8 - Ground Blue Gnd

9 - +5V_{DC} +5 V

10 - Ground Sync Gnd

11 - n.c.

12 - DDC_SDA DDC data

13 - H-sync 0 - 5 V

14 - V-sync 0 - 5 V

15 - DDC_SCL DDC clock

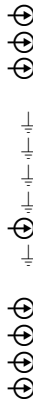
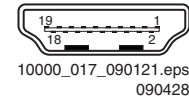
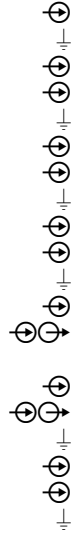
Wh - Audio L 0.5 V_{RMS} / 10 kohmRd - Audio R 0.5 V_{RMS} / 10 kohm**9 - HDMI 1, 2: Digital Video, Digital Audio - In**

Figure 2-4 HDMI (type A) connector

1 - D2+	Data channel
2 - Shield	Gnd
3 - D2-	Data channel
4 - D1+	Data channel
5 - Shield	Gnd
6 - D1-	Data channel
7 - D0+	Data channel
8 - Shield	Gnd
9 - D0-	Data channel
10 - CLK+	Data channel
11 - Shield	Gnd
12 - CLK-	Data channel
13 - Easylink/CEC	Control channel
14 - n.c.	
15 - DDC_SCL	DDC clock
16 - DDC_SDA	DDC data
17 - Ground	Gnd
18 - +5V	
19 - HPD	Hot Plug Detect
20 - Ground	Gnd

**10 - Service Connector (UART)**

1 - Ground	Gnd
2 - UART_TX	Transmit
3 - UART_RX	Receive



3. Precautions, Notes, and Abbreviation List

Index of this chapter:

[3.1 Safety Instructions](#)


[3.2 Warnings](#)

[3.3 Notes](#)

[3.4 Abbreviation List](#)

3.1 Safety Instructions


Safety regulations require the following **during** a repair:

- Connect the set to the Mains/AC Power via an isolation transformer (> 800 VA).
- Replace safety components, indicated by the symbol , only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard. Of de set ontploft!

Safety regulations require that **after** a repair, the set must be returned in its original condition. Pay in particular attention to the following points:



- Route the wire trees correctly and fix them with the mounted cable clamps.
- Check the insulation of the Mains/AC Power lead for external damage.
- Check the strain relief of the Mains/AC Power cord for proper function.
- Check the electrical DC resistance between the Mains/AC Power plug and the secondary side (only for sets that have a Mains/AC Power isolated power supply):
 1. Unplug the Mains/AC Power cord and connect a wire between the two pins of the Mains/AC Power plug.
 2. Set the Mains/AC Power switch to the "on" position (keep the Mains/AC Power cord unplugged!).
 3. Measure the resistance value between the pins of the Mains/AC Power plug and the metal shielding of the tuner or the aerial connection on the set. The reading should be between 4.5 MΩ and 12 MΩ.
 4. Switch "off" the set, and remove the wire between the two pins of the Mains/AC Power plug.
- Check the cabinet for defects, to prevent touching of any inner parts by the customer.

3.2 Warnings





- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD ) . Careless handling during repair can reduce life drastically. Make sure that, during repair, you are connected with the same potential as the mass of the set by a wristband with resistance. Keep components and tools also at this same potential.
- Be careful during measurements in the high voltage section.
- Never replace modules or other components while the unit is switched "on".
- When you align the set, use plastic rather than metal tools. This will prevent any short circuits and the danger of a circuit becoming unstable.

3.3 Notes

3.3.1 General

- Measure the voltages and waveforms with regard to the chassis (= tuner) ground () , or hot ground () , depending on the tested area of circuitry. The voltages and waveforms shown in the diagrams are indicative. Measure them in the Service Default Mode with a colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and

picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).

- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in stand-by () . These values are indicated by means of the appropriate symbols.

3.3.2 Schematic Notes

- All resistor values are in ohms, and the value multiplier is often used to indicate the decimal point location (e.g. 2K2 indicates 2.2 kΩ).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 Ω).
- All capacitor values are given in micro-farads ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed on the Philips Spare Parts Web Portal.

3.3.3 Spare Parts

For the latest spare part overview, consult your Philips Spare Part web portal.

3.3.4 BGA (Ball Grid Array) ICs

Introduction

For more information on how to handle BGA devices, visit this URL: <http://www.atyourservice-magazine.com>. Select "Magazine", then go to "Repair downloads". Here you will find Information on how to deal with BGA-ICs.

BGA Temperature Profiles

For BGA-ICs, you **must** use the correct temperature-profile. Where applicable and available, this profile is added to the IC Data Sheet information section in this manual.

3.3.5 Lead-free Soldering

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free soldering tin. If lead-free solder paste is required, please contact the manufacturer of your soldering equipment. In general, use of solder paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free soldering tin. The solder tool must be able:
 - To reach a solder-tip temperature of at least 400°C.
 - To stabilize the adjusted temperature at the solder-tip.
 - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature of around 360°C - 380°C is reached and stabilized at the solder joint. Heating time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C, otherwise wear-out of tips will increase drastically and flux-fluid will be destroyed. To avoid wear-out of tips, switch "off" unused equipment or reduce heat.
- Mix of lead-free soldering tin/parts with leaded soldering tin/parts is possible but PHILIPS recommends strongly **to avoid** mixed regimes. If this cannot be avoided, carefully clear the solder-joint from old tin and re-solder with new tin.

3.3.6 Alternative BOM identification

It should be noted that on the European Service website, "Alternative BOM" is referred to as "Design variant".

The **third digit** in the serial number (example: AG2B0335000001) indicates the number of the alternative B.O.M. (Bill Of Materials) that has been used for producing the specific TV set. In general, it is possible that the same TV model on the market is produced with e.g. two different types of displays, coming from two different suppliers. This will then result in sets which have the same CTN (Commercial Type Number; e.g. 28PW9515/12) but which have a different B.O.M. number.

By looking at the third digit of the serial number, one can identify which B.O.M. is used for the TV set he is working with. If the third digit of the serial number contains the number "1" (example: AG1B0335000001), then the TV set has been manufactured according to B.O.M. number 1. If the third digit is a "2" (example: AG2B0335000001), then the set has been produced according to B.O.M. no. 2. This is important for ordering the correct spare parts!

For the third digit, the numbers 1...9 and the characters A...Z can be used, so in total: 9 plus 26 = 35 different B.O.M.s can be indicated by the third digit of the serial number.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 1 and 2 refer to the production centre (e.g. AG is Bruges), digit 3 refers to the B.O.M. code, digit 4 refers to the Service version change code, digits 5 and 6 refer to the production year, and digits 7 and 8 refer to production week (in example below it is 2006 week 17). The 6 last digits contain the serial number.

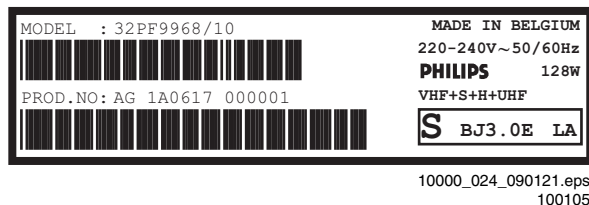


Figure 3-1 Serial number (example)

3.3.7 Board Level Repair (BLR) or Component Level Repair (CLR)

If a board is defective, consult your repair procedure to decide if the board has to be exchanged or if it should be repaired on component level.

If your repair procedure says the board should be exchanged completely, do not solder on the defective board. Otherwise, it cannot be returned to the O.E.M. supplier for back charging!

3.3.8 Practical Service Precautions

- **It makes sense to avoid exposure to electrical shock.** While some sources are expected to have a possible dangerous impact, others of quite high potential are of limited current and are sometimes held in less regard.
- **Always respect voltages.** While some may not be dangerous in themselves, they can cause unexpected reactions that are best avoided. Before reaching into a powered TV set, it is best to test the high voltage insulation. It is easy to do, and is a good service precaution.

3.4 Abbreviation List

0/6/12	SCART switch control signal on A/V board. 0 = loop through (AUX to TV), 6 = play 16 : 9 format, 12 = play 4 : 3 format
AARA	Automatic Aspect Ratio Adaptation: algorithm that adapts aspect ratio to remove horizontal black bars; keeps the original aspect ratio
ACI	Automatic Channel Installation: algorithm that installs TV channels directly from a cable network by means of a predefined TXT page
ADC	Analogue to Digital Converter
AFC	Automatic Frequency Control: control signal used to tune to the correct frequency
AGC	Automatic Gain Control: algorithm that controls the video input of the feature box
AM	Amplitude Modulation
AP	Asia Pacific
AR	Aspect Ratio: 4 by 3 or 16 by 9
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information
ATSC	Advanced Television Systems Committee, the digital TV standard in the USA
ATV	See Auto TV
Auto TV	A hardware and software control system that measures picture content, and adapts image parameters in a dynamic way
AV	External Audio Video
AVC	Audio Video Controller
AVIP	Audio Video Input Processor
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
BDS	Business Display Solutions (iTV)
BLR	Board-Level Repair
BTSC	Broadcast Television Standard Committee. Multiplex FM stereo sound system, originating from the USA and used e.g. in LATAM and AP-NTSC countries
B-TXT	Blue TeleteXT
C	Centre channel (audio)
CEC	Consumer Electronics Control bus: remote control bus on HDMI connections
CL	Constant Level: audio output to connect with an external amplifier
CLR	Component Level Repair
ComPair	Computer aided rePair
CP	Connected Planet / Copy Protection
CSM	Customer Service Mode
CTI	Color Transient Improvement: manipulates steepness of chroma transients
CVBS	Composite Video Blanking and Synchronization
DAC	Digital to Analogue Converter
DBE	Dynamic Bass Enhancement: extra low frequency amplification
DCM	Data Communication Module. Also referred to as System Card or Smartcard (for iTV).
DDC	See "E-DDC"
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFI	Dynamic Frame Insertion

DFU	Directions For Use: owner's manual		SDI), is a digitized video format used for broadcast grade video.
DMR	Digital Media Reader: card reader		Uncompressed digital component or digital composite signals can be used.
DMSD	Digital Multi Standard Decoding		The SDI signal is self-synchronizing, uses 8 bit or 10 bit data words, and has a maximum data rate of 270 Mbit/s, with a minimum bandwidth of 135 MHz.
DNM	Digital Natural Motion		
DNR	Digital Noise Reduction: noise reduction feature of the set		
DRAM	Dynamic RAM		
DRM	Digital Rights Management		
DSP	Digital Signal Processing		
DST	Dealer Service Tool: special remote control designed for service technicians	ITV	Institutional TeleVision; TV sets for hotels, hospitals etc.
DTCP	Digital Transmission Content Protection; A protocol for protecting digital audio/video content that is traversing a high speed serial bus, such as IEEE-1394	LS	Last Status; The settings last chosen by the customer and read and stored in RAM or in the NVM. They are called at start-up of the set to configure it according to the customer's preferences
DVB-C	Digital Video Broadcast - Cable	LATAM	Latin America
DVB-T	Digital Video Broadcast - Terrestrial	LCD	Liquid Crystal Display
DVD	Digital Versatile Disc	LED	Light Emitting Diode
DVI(-d)	Digital Visual Interface (d= digital only)	L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
E-DDC	Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information form the display.	LPL	LG.Philips LCD (supplier)
EDID	Extended Display Identification Data (VESA standard)	LS	Loudspeaker
EEPROM	Electrically Erasable and Programmable Read Only Memory	LVDS	Low Voltage Differential Signalling
EMI	Electro Magnetic Interference	Mbps	Mega bits per second
EPG	Electronic Program Guide	M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
EPLD	Erasable Programmable Logic Device	MHEG	Part of a set of international standards related to the presentation of multimedia information, standardised by the Multimedia and Hypermedia Experts Group. It is commonly used as a language to describe interactive television services
EU	Europe		
EXT	EXTeRnal (source), entering the set by SCART or by cinches (jacks)		
FDS	Full Dual Screen (same as FDW)	MIPS	Microprocessor without Interlocked Pipeline-Stages; A RISC-based microprocessor
FDW	Full Dual Window (same as FDS)		
FLASH	FLASH memory		
FM	Field Memory or Frequency Modulation	MOP	Matrix Output Processor
FPGA	Field-Programmable Gate Array	MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
FTV	Flat TeleVision	MPEG	Motion Pictures Experts Group
Gb/s	Giga bits per second	MPIF	Multi Platform InterFace
G-TXT	Green TeleteXT	MUTE	MUTE Line
H	H_sync to the module	MTV	Mainstream TV: TV-mode with Consumer TV features enabled (iTV)
HD	High Definition		
HDD	Hard Disk Drive	NC	Not Connected
HDCP	High-bandwidth Digital Content Protection: A "key" encoded into the HDMI/DVI signal that prevents video data piracy. If a source is HDCP coded and connected via HDMI/DVI without the proper HDCP decoding, the picture is put into a "snow vision" mode or changed to a low resolution. For normal content distribution the source and the display device must be enabled for HDCP "software key" decoding.	NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
HDMI	High Definition Multimedia Interface	NTC	Negative Temperature Coefficient, non-linear resistor
HP	HeadPhone	NTSC	National Television Standard Committee. Color system mainly used in North America and Japan. Color carrier NTSC M/N= 3.579545 MHz, NTSC 4.43= 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
I	Monochrome TV system. Sound carrier distance is 6.0 MHz	NVM	Non-Volatile Memory: IC containing TV related data such as alignments
I ² C	Inter IC bus	O/C	Open Circuit
I ² D	Inter IC Data bus	OSD	On Screen Display
I ² S	Inter IC Sound bus	OAD	Over the Air Download. Method of software upgrade via RF transmission.
IF	Intermediate Frequency		Upgrade software is broadcasted in TS with TV channels.
IR	Infra Red	OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
IRQ	Interrupt Request	P50	Project 50: communication protocol between TV and peripherals
ITU-656	The ITU Radio communication Sector (ITU-R) is a standards body subcommittee of the International Telecommunication Union relating to radio communication. ITU-656 (a.k.a.	PAL	Phase Alternating Line. Color system mainly used in West Europe (color carrier= 4.433619 MHz) and South America (color carrier PAL M=

	3.575612 MHz and PAL N= 3.582056 MHz)	SVHS	Super Video Home System
PCB	Printed Circuit Board (same as "PWB")	SW	Software
PCM	Pulse Code Modulation	SWAN	Spatial temporal Weighted Averaging
PDP	Plasma Display Panel		Noise reduction
PFC	Power Factor Corrector (or Pre-conditioner)	SXGA	1280 × 1024
PIP	Picture In Picture	TFT	Thin Film Transistor
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency	THD	Total Harmonic Distortion
		TMDS	Transmission Minimized Differential Signalling
POD	Point Of Deployment: a removable CAM module, implementing the CA system for a host (e.g. a TV-set)	TS	Transport Stream
		TXT	Teletext
POR	Power On Reset, signal to reset the uP	TXT-DW	Dual Window with Teletext
PSDL	Power Supply for Direct view LED backlight with 2D-dimming	UI	User Interface
		uP	Microprocessor
PSL	Power Supply with integrated LED drivers	UXGA	1600 × 1200 (4:3)
PSLS	Power Supply with integrated LED drivers with added Scanning functionality	V	V-sync to the module
		VESA	Video Electronics Standards Association
PTC	Positive Temperature Coefficient, non-linear resistor	VGA	640 × 480 (4:3)
PWB	Printed Wiring Board (same as "PCB")	VL	Variable Level out: processed audio output toward external amplifier
PWM	Pulse Width Modulation	VS	Vestigial Side Band; modulation method
QRC	Quasi Resonant Converter	WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
QTNR	Quality Temporal Noise Reduction		
QVCP	Quality Video Composition Processor	WXGA	1280 × 768 (15:9)
RAM	Random Access Memory	XTAL	Quartz crystal
RGB	Red, Green, and Blue. The primary color signals for TV. By mixing levels of R, G, and B, all colors (Y/C) are reproduced.	XGA	1024 × 768 (4:3)
		Y	Luminance signal
RC	Remote Control	Y/C	Luminance (Y) and Chrominance (C) signal
RC5 / RC6	Signal protocol from the remote control receiver	YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
RESET	RESET signal	YUV	Component video
ROM	Read Only Memory		
RSDS	Reduced Swing Differential Signalling data interface		
R-TXT	Red Teletext		
SAM	Service Alignment Mode		
S/C	Short Circuit		
SCART	Syndicat des Constructeurs d'Appareils Radiorécepteurs et Téléviseurs		
SCL	Serial Clock I ² C		
SCL-F	CLock Signal on Fast I ² C bus		
SD	Standard Definition		
SDA	Serial Data I ² C		
SDA-F	DAta Signal on Fast I ² C bus		
SDI	Serial Digital Interface, see "ITU-656"		
SDRAM	Synchronous DRAM		
SECAM	SEquence Couleur Avec Mémoire. Color system mainly used in France and East Europe. Color carriers= 4.406250 MHz and 4.250000 MHz		
SIF	Sound Intermediate Frequency		
SMPS	Switched Mode Power Supply		
SoC	System on Chip		
SOG	Sync On Green		
SOPS	Self Oscillating Power Supply		
SPI	Serial Peripheral Interface bus; a 4-wire synchronous serial data link standard		
S/PDIF	Sony Philips Digital InterFace		
SRAM	Static RAM		
SRP	Service Reference Protocol		
SSB	Small Signal Board		
SSC	Spread Spectrum Clocking, used to reduce the effects of EMI		
STB	Set Top Box		
STBY	STand-BY		
SVGA	800 × 600 (4:3)		

4. Mechanical Instructions

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[4.1 Cable Dressing](#)

[4.2 Service Positions](#)

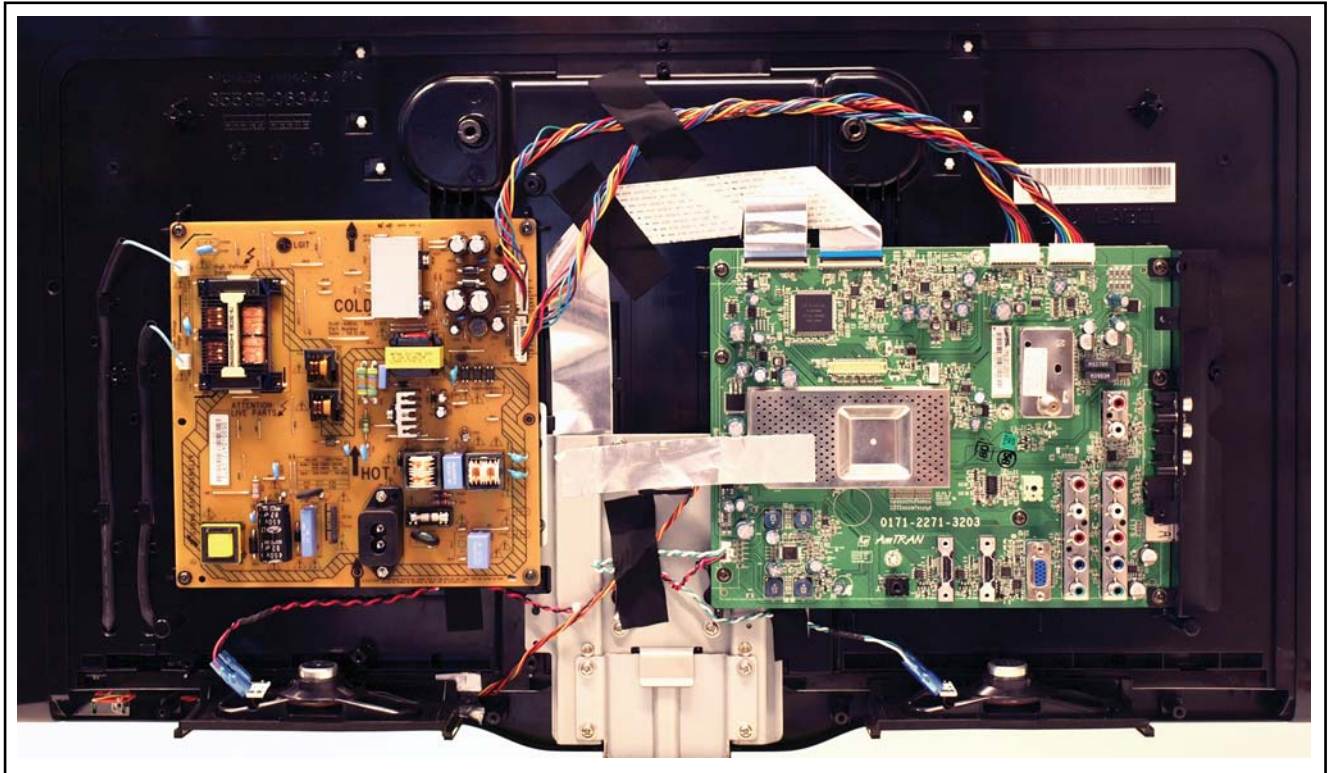
[4.3 Assembly/Panel Removal](#)

[4.4 Set Re-assembly.](#)

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.

4.1 Cable Dressing



18930_101_100303.eps
100303

Figure 4-1 Cable dressing (32")

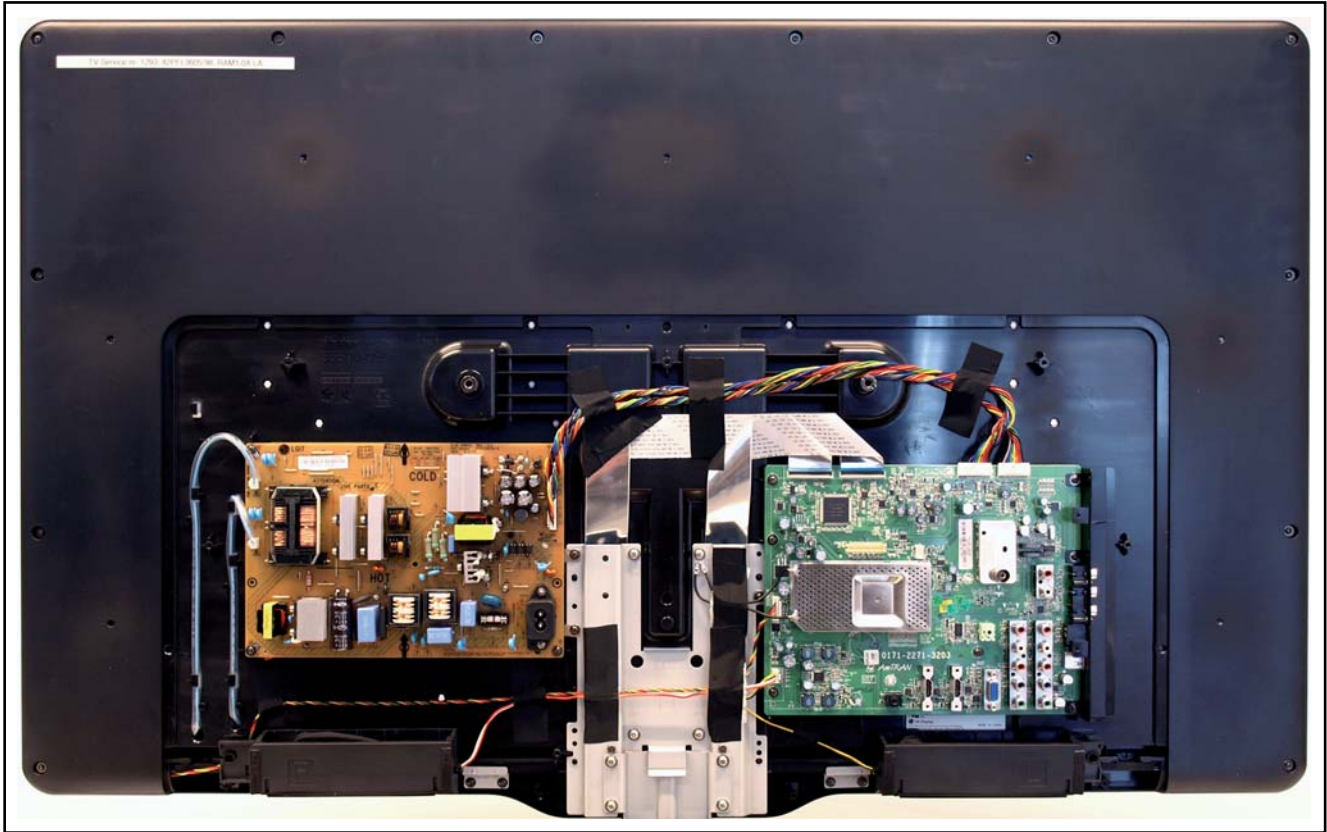
18930_120_100303.eps
100303

Figure 4-2 Cable dressing (42'')

4.2 Service Positions

For easy servicing of a TV set, the set should be put face down on a soft flat surface, foam buffers or other specific workshop tools. Ensure that a stable situation is created to perform measurements and alignments. When using foam bars take care that these always support the cabinet and **never** only the display. **Caution:** Failure to follow these guidelines can seriously damage the display!
Ensure that ESD safe measures are taken.

4.3 Assembly/Panel Removal

4.3.1 Rear Cover

18930_100_100302.eps
100305

Figure 4-3 Rear cover removal (32")

18930_121_100303.eps
100303

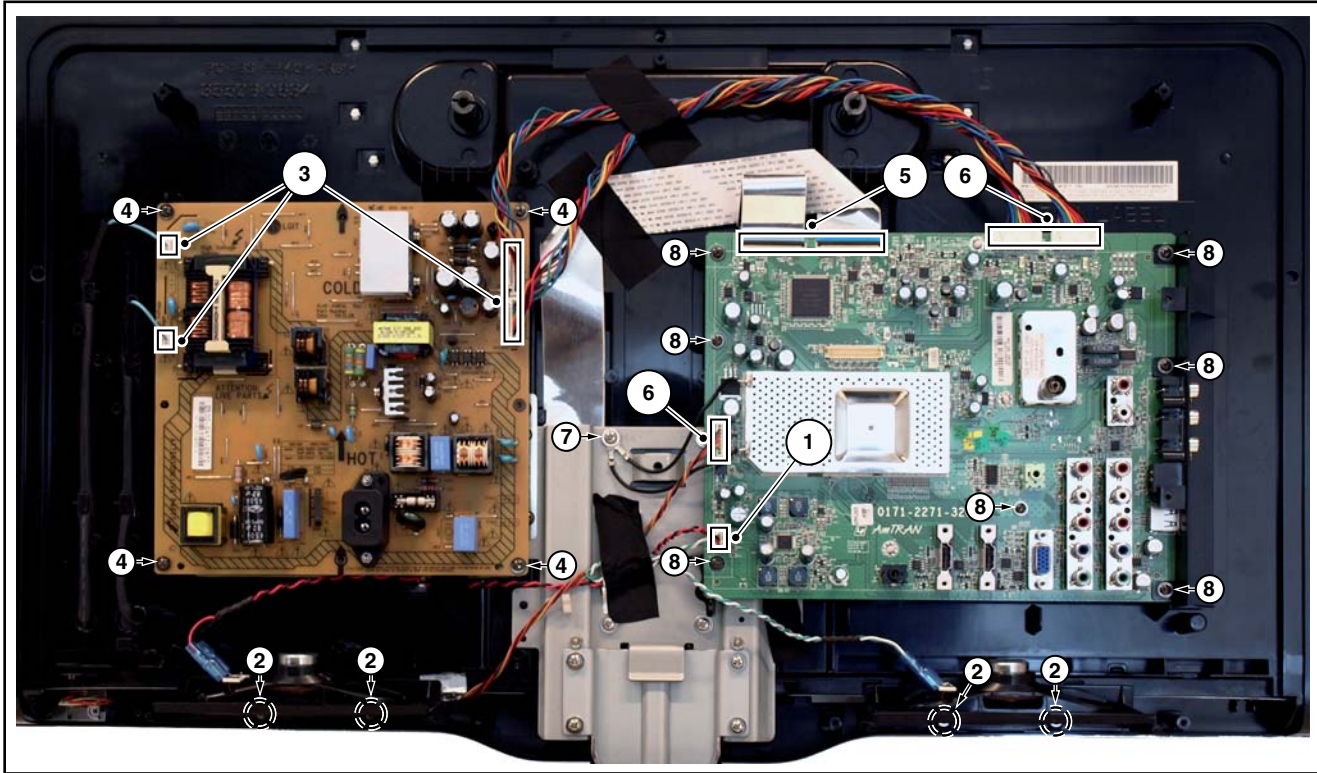
Figure 4-4 Rear cover removal (42")

Warning: Disconnect the mains power cord before removing the rear cover.

See [Figure 4-3](#) and [Figure 4-4](#).

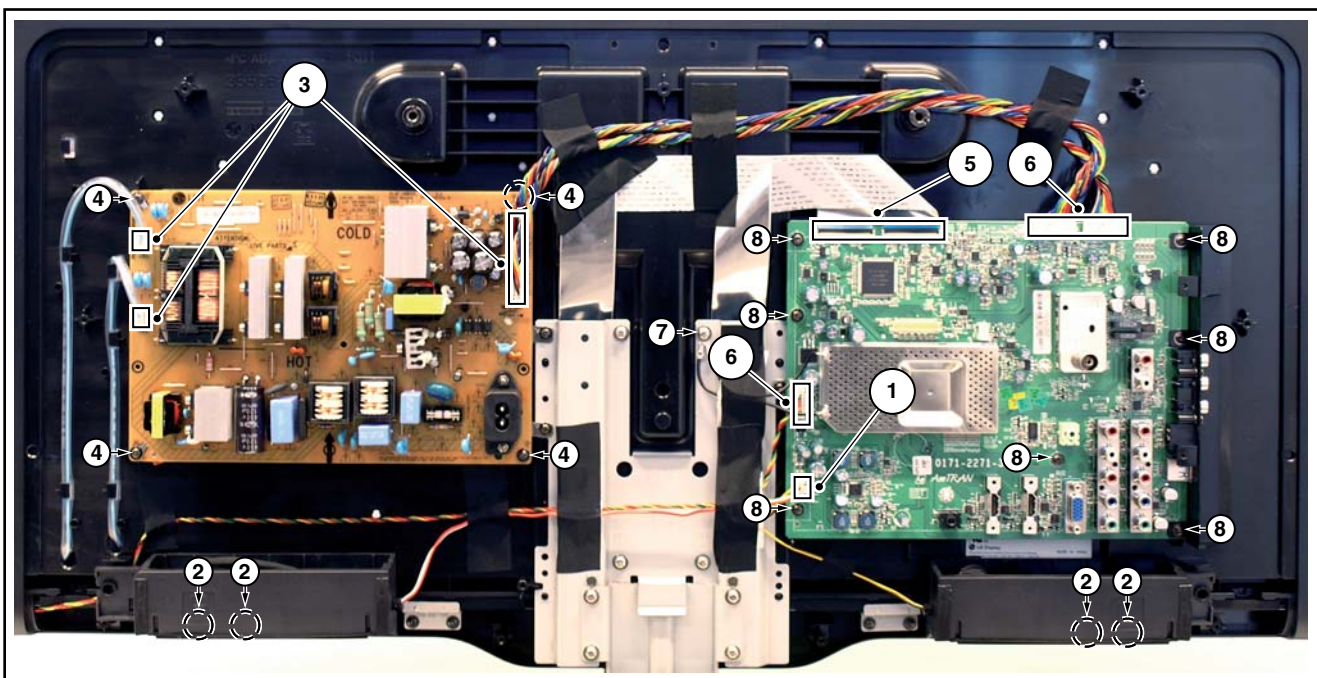
1. Remove the 3 different kind of fixation screws that secure the rear cover.
2. Lift the rear cover from the TV. Make sure that wires and flat foils are not damaged while lifting the rear cover from the set.

4.3.2 Speakers



18930_106_100305.eps
100305

Figure 4-5 Speakers, PSU & SSB removal (32")



18930_122_100304.eps
100305

Figure 4-6 Speakers, PSU & SSB removal (42")

See [Figure 4-5](#) and [Figure 4-6](#).

1. Unplug the speaker connector [1] from the SSB and remove the wire wrap from this cable.
 2. Remove the fixation screws from the speakers [2].
 3. Take the speakers out.
- When defective, replace the whole unit.

4.3.3 Power Supply Unit (PSU)

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the PSU. See [Figure 4-5](#) and [Figure 4-6](#).

1. Unplug all connectors [3] from the PSU.
 2. Remove all fixation screws [4] from the PSU.
 3. The PSU can now be taken out of the set.
- When defective, replace the whole unit.

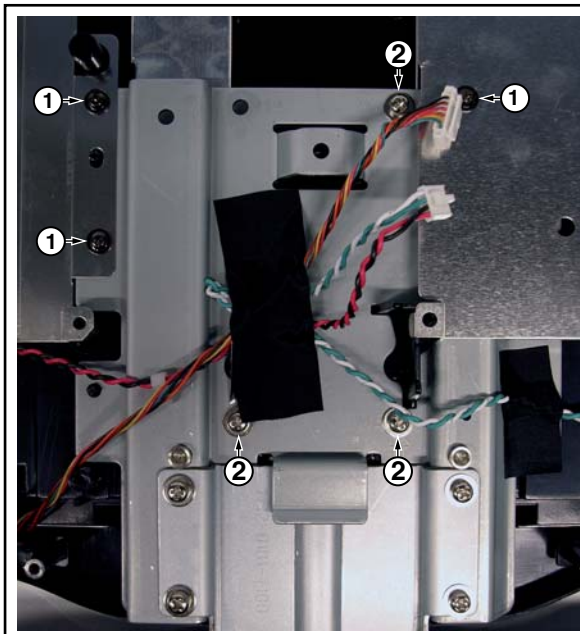
4.3.4 Small Signal Board (SSB)

Caution: it is mandatory to remount all different screws at their original position during re-assembly. Failure to do so may result in damaging the SSB. See [Figure 4-5](#) and [Figure 4-6](#).

1. Release the clips from both the LVDS Flat Foil connectors [5].
Caution: be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors [1] and [6].
3. Remove grounding screws [7] from the stand support.
4. Remove all other fixation screws [8] from the SSB.
5. The SSB can now be lifted upwards away from the bottom shield cover.

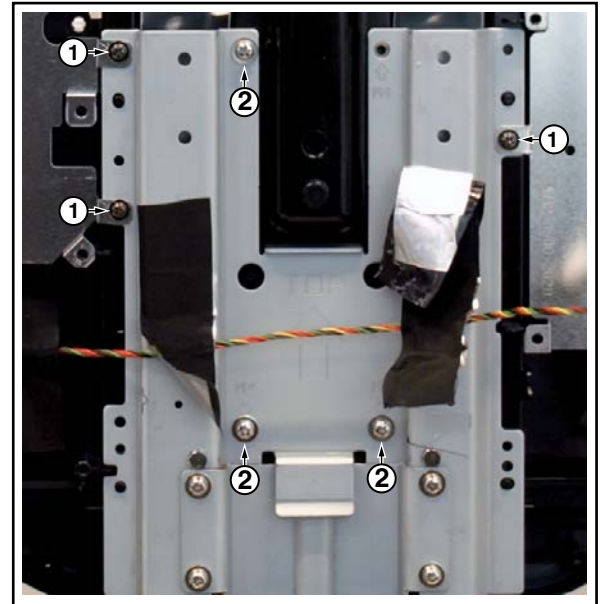
Caution: be careful not to damage the bottom shielding between the SSB and the plastic stand-off.

4.3.5 Stand support plate



18930_105_100304.eps
100304

Figure 4-7 Stand support plate (32")



18930_124_100305.eps
100305

Figure 4-8 Stand support plate (42")

See [Figure 4-7](#) and [Figure 4-8](#).

1. Remove the SSB as described earlier.
2. Remove the PSU as described earlier.
3. Remove shielding fixation screws [1]. See [Figure 4-7](#).
4. Remove stand support plate fixation screws [2].
5. Lift up the support plate together with the stand.

4.3.6 Bezel removal

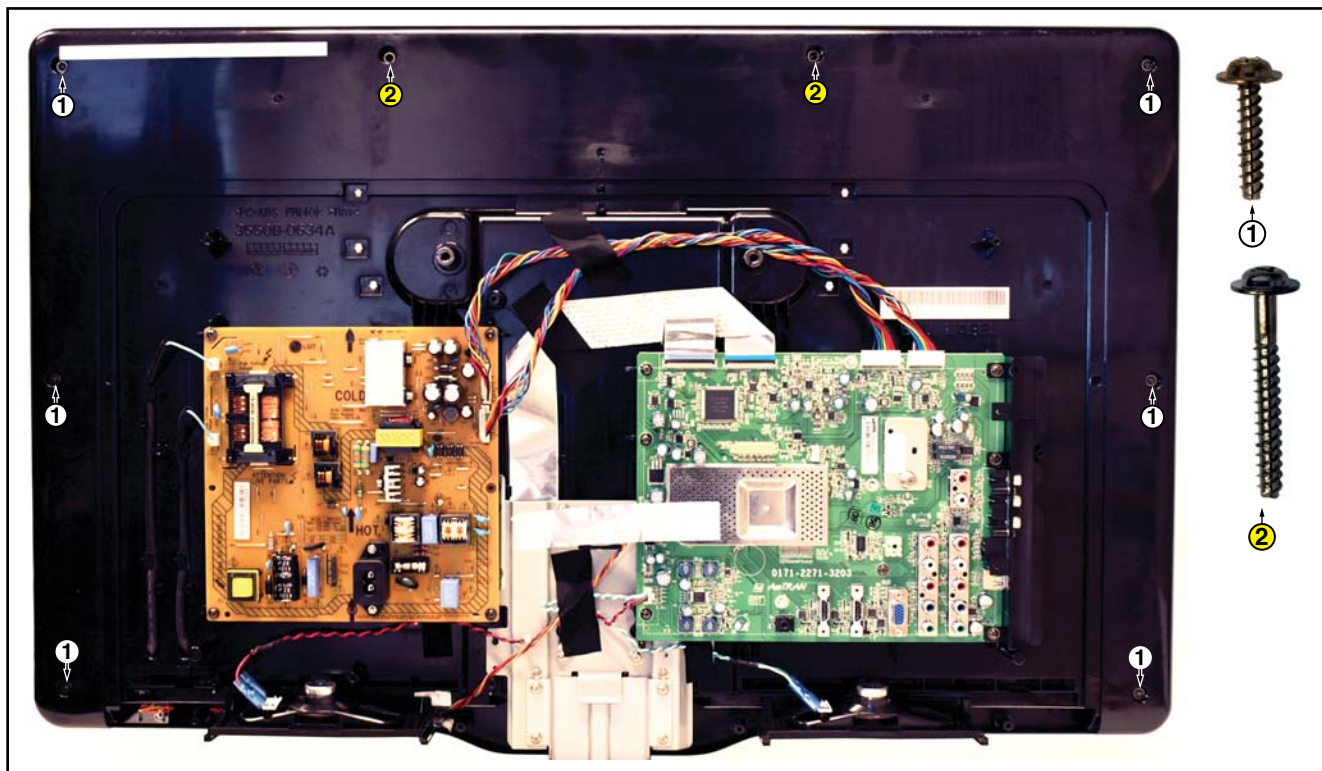
18930_102_100303.eps
100305

Figure 4-9 Bezel removal (32")

18930_123_100305.eps
100305

Figure 4-10 Bezel removal (42")

See [Figure 4-9](#) and [Figure 4-10](#).

1. Remove the speakers as described earlier.
2. Remove the panel holders [3] (42" version only).
3. Remove the other fixation screws [1] and [2].
4. Lift up the LCD panel.

4.3.7 IR/LED Board



18930_103_100304.eps
100304

Figure 4-11 IR/LED Board

1. Remove the bezel as described earlier.
2. Unplug the connectors from the IR/LED board.
3. Release the clips that hold the board and take it from the bezel, see [Figure 4-11](#).

When defective, replace the whole unit.

4.3.8 Keyboard Control Board

1. Remove the bezel as described earlier.
2. Unplug the connector from the Keyboard Control Board.
3. Remove the fixation screws from the Keyboard Control Board and take unit out.

When defective, replace the whole unit.

4.4 Set Re-assembly

To re-assemble the whole set, execute all processes in reverse order.

Notes:

- While re-assembling, make sure that all cables are placed and connected in their original position.
See [Figure 4-1](#) and [Figure 4-2](#).
- Pay special attention not to damage the EMC foams on the SSB shields. Ensure that EMC foams are mounted correctly.

4.3.9 LCD removal



18930_107_100315.eps
100315

Figure 4-12 Vesa spacer

1. Remove the SSB as described earlier.
2. Remove the PSU as described earlier.
3. Remove the stand support plate as described earlier.
4. Remove the bezel as described earlier.
5. Remove the Vesa spacer as shown in [Figure 4-12](#) by using a 10 m.m. wrench. **Note it has been secured with Loctite 2440.**
6. Lift the LCD Panel from the bezel.

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- [5.1 Service Modes](#)
- [5.2 Service Tools](#)
- [5.3 Software Upgrading](#)
- [5.4 Error Codes](#)
- [5.5 Fault Finding and Repair Tips](#)

5.1 Service Modes

The Customer Service Mode (CSM) is used for communication between the call centre and the customer, while the Service Alignment Mode (SAM) offers several features for the service technician. The Standard Default Mode (SDM) creates a pre-defined setting.

This chassis also offers the option of using ComPair, a hardware interface between a computer and the TV chassis. It offers the abilities of structured troubleshooting, error code reading, and software version read-out for all chassis.

5.1.1 Service Default Mode (SDM)

Purpose

- To create a pre-defined setting, to get the same measurement results as given in this manual
- To start the blinking LED procedure where only Layer 2 errors are displayed (see also [Table 5-1](#)).

How to Activate

Use the standard RC transmitter and key in the code “062596”, directly followed by the “MENU” button.

How to Exit

Switch the set to STANDBY.

5.1.2 Customer Service Mode (CSM)

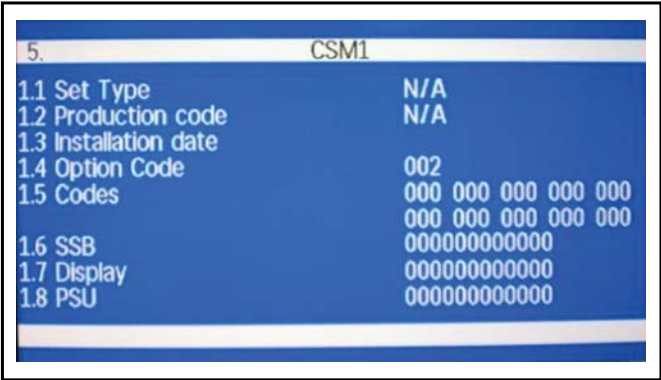
Purpose

The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call. The CSM is a read-only mode; therefore, modifications are not possible in this mode.

How to Activate CSM

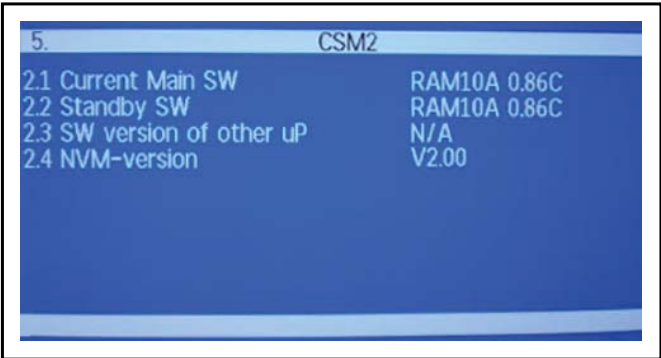
Key in the code “123654” via the standard RC transmitter.

Note: Activation of the CSM is only possible if there is no (user) menu on the screen!



18930_200_100309.eps
100309

Figure 5-1 CSM Menu [1/3]



18930_201_100309.eps
100309

Figure 5-2 CSM Menu [2/3]



18930_202_100309.eps
100309

Figure 5-3 CSM Menu [3/3]

How to Navigate

Toggleing between menus CSM1, -2 and -3 can be done by means of the “CURSOR-DOWN/UP” knob.

CSM1

- Set Type** Philips Model type number (16 characters maximum)
- Production code** Displays the production serial number of the TV. Note that if an NVM is replaced or is initialized after corruption, this production code has to be re-written to NVM. ComPair will foresee a possibility to do this.

- **Installation date** Installation date.
- **Option code** Displays the option code.
- **Codes** Displays the latest 5 error codes status.
Refer to [5-1 Error codes](#).
- **SSB** Displays the 12NC of the SSB (Small Signal Board).
- **Display** Displays the 12NC of the display (LCD Panel).
- **PSU** Displays the 12NC of PSU (Power Supply Unit).

CSM2

- **Current Main SW** Main software version.
- **Standby SW** Standby software version.
- **SW version of other uP** Other uP software version if applicable.
- **NVM-version** NVM version.

CSM3

- **Signal Quality/Present** Digital percentage and analog Yes/No.
- **Child lock** Child lock active/non-active.
- **HDCP keys** Detect and display HDCP keys: Valid/Non-valid.
- **HDMI audio format input stream** Indication of HDMI audio input stream format e.g. Dolby TrueHD, DTS-HD Master Audio, MPCM.
- **HDMI video format input stream** Indication of HDMI video input stream format e.g. 576i50Hz, 576p50Hz, 720p50Hz, 1080i50Hz, 1080p50Hz.

How to Exit CSM

Press "MENU" on the RC-transmitter.

5.1.3 Service Alignment Mode (SAM)**How to enter**

To enter the factory mode, use the following method:

- Press the following key sequence on the remote control transmitter: "062596" directly followed by the "INFO" button.

After entering the service alignment mode, the following screen is visible (refer to [Figure 5-4](#)).



18930_203_100310.eps
100310

Figure 5-4 Example of SAM**How to Navigate**

The up/down cursor keys can be used to navigate through the menu, while with the Left/Right cursor the values can be changed.

How to Store

Choose "DO", and press the "OK" button.

How to go one level up in the menu

Press the MENU button.

How to Exit

Go up in the menu to the root and switch the set to STANDBY.

5.2 Service Tools**5.2.1 ComPair****Introduction**

ComPair (Computer Aided Repair) is a Service tool for Philips Consumer Electronics products. and offers the following:

1. ComPair helps to quickly get an understanding on how to repair the chassis in a short and effective way.
2. ComPair allows very detailed diagnostics and is therefore capable of accurately indicating problem areas. No knowledge on I²C or UART commands is necessary, because ComPair takes care of this.
3. ComPair speeds up the repair time since it can automatically communicate with the chassis (when the uP is working) and all repair information is directly available.
4. ComPair features TV software upgrade possibilities.

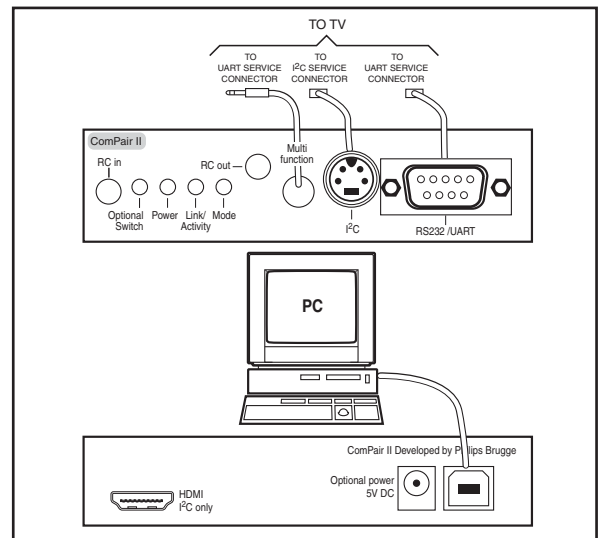
Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair II interface box is connected to the PC via an USB cable. For the TV chassis, the ComPair interface box and the TV communicate via a bi-directional cable via the service connector(s).

The ComPair fault finding program is able to determine the problem of the defective television, by a combination of automatic diagnostics and an interactive question/answer procedure.

How to Connect

This is described in the chassis fault finding database in ComPair.



10000_036_090121.eps
091118

Figure 5-5 ComPair II interface connection

Caution: It is compulsory to connect the TV to the PC as shown in the picture above (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If one connects the TV directly to the PC (via UART), ICs will be damaged!

How to Order

ComPair II order codes:

- ComPair II interface: 3122 785 91020.
- Programming software can be downloaded from the Philips Service portal.
- ComPair UART interface cable for RAM1.1x xx. 3138 188 75051.

Note: While having problems, contact the local support desk.

5.3 Software Upgrading

5.3.1 Introduction

Philips continuously tries to improve its products, and we recommend that you update the TV software when updates are available. Software update files can be obtained from your dealer or can be downloaded from the following website:
<http://www.philips.com/support>

Preparing a portable memory for software upgrade

You require the following:

- 1. A personal computer connected to the Internet.
- 2. An archive utility that supports the ZIP-format (e.g. "WinZip" for Windows or "Stuffit" for Mac OS).
- 3. A USB flash drive (preferably empty).

Note:

- 1. Only FAT/DOS-formatted flash drives are supported.
- 2. Only use software update files that can be found on the Philips Service Portal.

5.3.2 Check the current TV software version

Before starting the software upgrade procedure, it is advised to check the current TV software version:

- 1. Press the "Menu" button on your remote control.
- 2. Select "Setup" and press "OK", then select [Software update] > [Current software].

If the current software version of your TV is the same as the latest update file found on the Philips Service Portal, it is not necessary to update the TV software.

5.3.3 Download the latest software

- 1. Point your web browser to the Philips Service Portal.
- 2. Find information and software related to your TV.
- 3. Select the latest software update file and download it to your PC.
- 4. Insert a USB flash drive into one of the USB ports of your PC.
- 5. Decompress the downloaded ZIP file and copy the "autorun.upg" to the root directory of the USB flash drive.

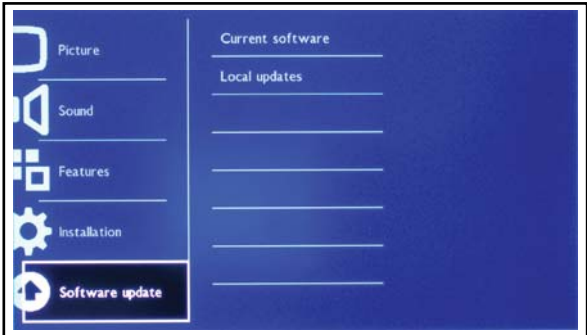
5.3.4 Update the TV software

- 1. Power off your TV and disconnect all memory devices.
- 2. Insert the USB flash drive that contains the software update file.
- 3. Switch on your TV, and TV will display the Main Menu upon detection of USB portable.
- 4. Select [Setup] and press OK. See [Figure 5-6](#).
Note: If the USB flash drive is not detected after power up, disconnect it and re-insert it.
- 5. Select [Software update] > [Local updates] and press OK. See [Figure 5-7](#) and [Figure 5-8](#).
- 6. When prompted, select [Cancel] or [OK] and press OK. See [Figure 5-9](#).
- 7. To proceed, In next menu select [Start] and press OK to start software updates. See [Figure 5-10](#).
- 8. Upgrading will now begins and the status of the updating progress will be displayed. See [Figure 5-11](#).
- 9. When the TV software is updated, the TV automatically restarts and the TV starts up with the new software.



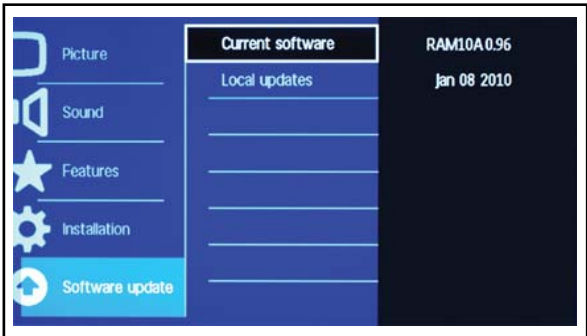
18930_204_100310.eps
100310

Figure 5-6 Update the TV software 1



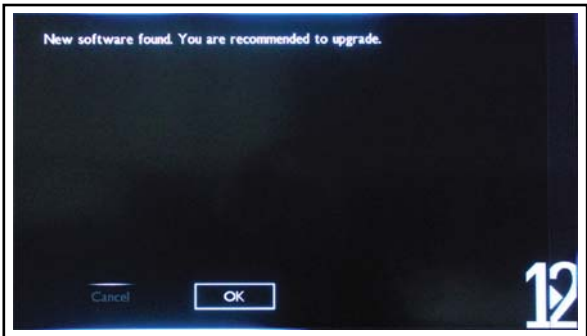
18930_205_100310.eps
100310

Figure 5-7 Update the TV software 2



18930_206_100310.eps
100310

Figure 5-8 Update the TV software 3



18870_206_100209.eps
100209

Figure 5-9 Update the TV software 4

18870_207_100209.eps
100209

Figure 5-10 Update the TV software 5

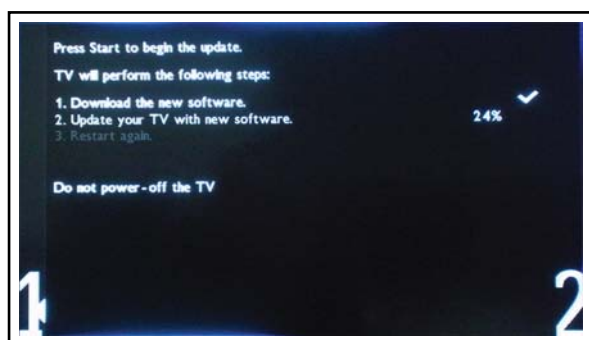
18870_208_100209.eps
100209

Figure 5-11 Update the TV software 6

Table 5-1 Error codes

Error Code x yy ¹	Event	Error blinking			Defective board
		in SDM	in CSM	spontaneous	
0 00	no error	n.a.	n.a.	n.a.	n.a.
2 13	I ² C bus error	layer 2	layer 1	layer 1	SSB
3 16	12V sensing of platform supply	-	-	layer 1	platform supply
4 18	false POK-line display or inverter	layer 2	layer 1	layer 1	display supply/inverter
2 27	multi-standard demodulator (IF)	layer 2	layer 1	-	SSB
2 34	tuner	layer 2	layer 1	-	SSB

Notes:

1. x = layer 1 error indication, yy = layer 2 error indication.

5.5 Fault Finding and Repair Tips

5.5.1 Speakers

Make sure that the volume is set to minimum during disconnecting the speakers in the ON-state of the TV. The audio amplifier can be damaged by disconnecting the speakers during ON-state of the set!

5.5.2 Tuner

Attention: In case the tuner is replaced, always check the tuner options.

Note:

- Do not remove the USB flash drive during the software update.
- If a power failure occurs during the update, do not remove the USB flash drive from the TV. The TV will continue the software update as soon as power comes back.
- If an error occurs during the update retry the procedure or contact your dealer.
- We do not recommend downgrading to an older version.
- Once the upgrade is finished, use your PC to remove the TV software from your USB portable memory.

5.4 Error Codes

The error code buffer contains all errors detected since the last time the buffer was erased. The buffer is written from left to right. When an error occurs that is not yet in the error code buffer, it is displayed at the left side and all other errors shift one position to the right.

5.5.3 Power failure

For trouble shooting, following reference voltages are given:

- After power-up
- After power-down (switched to standby).

Table 5-2 Reference voltages

Signal name	Location (testpoint, item + pin no.)	Voltage ($\pm 5\%$)	
		after power- up	after power- down (standby)
5VIN	FB1	5 V	5 V
5VSB	R29	5 V	5 V
3V3SB	FB18	3.3 V	3.3 V
1V0SB	C6	1.1 V	1.1 V
5VSW	Q28 pin 7,8	5 V	0 V
VGA_5V	U6 pin 8	4.8 V	4.8 V
REG3V3	U38 pin 4	3.3 V	3.3 V
3V3SW	Q28 pin 5, 6	3.3 V	0 V
1V2SB	U3 pin 3	1.2 V	1.2 V
VDD33	FB8	3.3 V	3.3 V
3V3DRV	FB15	3.3 V	0 V
1V8SW	U1 pin 4	1.8 V	0 V
B3V3SW	FB20	3.3 V	0 V
12VIN	FB2	12 V	0 V
12VSW	R34	12 V	0 V
PANEL_VDD	Q22 pin 5 to 8	12 V	0 V
TUNER_VCC	U9 pin 3	5 V	0 V
12VAMP	C454	12 V	0 V
REG5V	U39 pin 3	5 V	0 V
H_VDD	C363	8 V	0 V
3V3TC	C419	3.3 V	0 V
VGL	R587	-5 V	0 V
VGH	C392	28.5 V	0 V
16VTC	C359	16.5 V	0 V

5.5.4 Trouble shooting diagrams

Set is in PC mode, no image

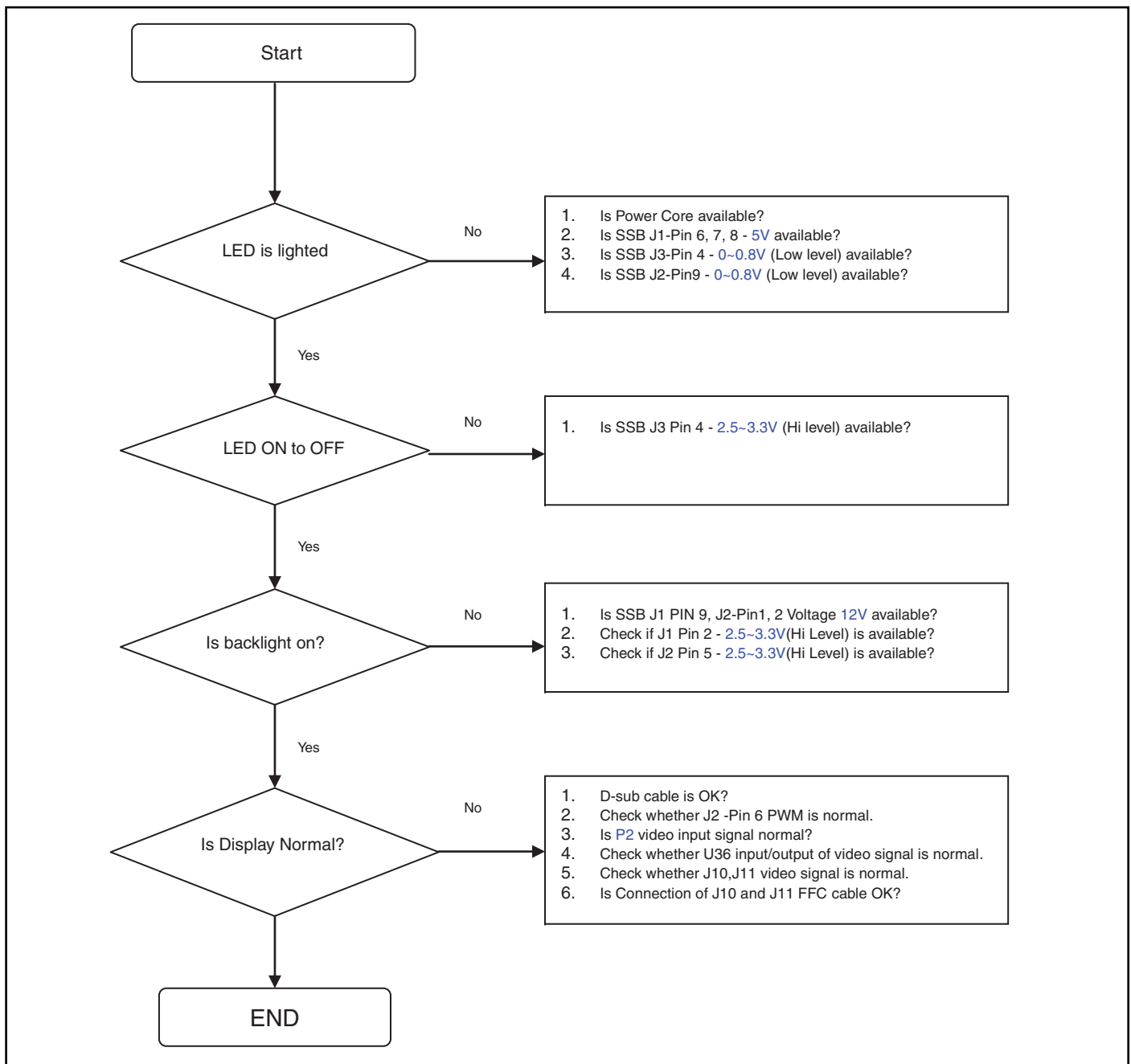
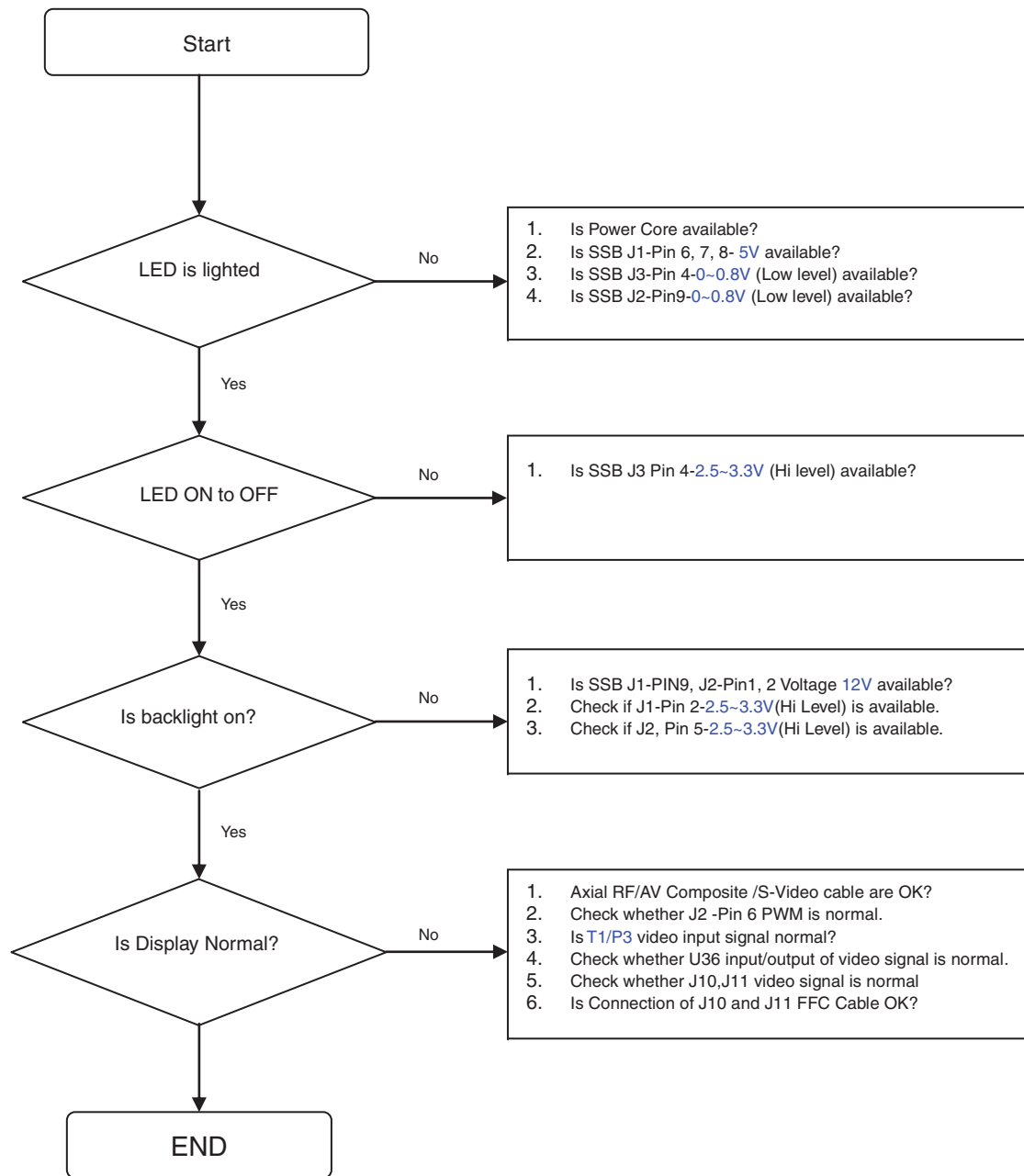
18930_214_100310.eps
100310

Figure 5-12 Trouble shooting diagram - set is in PC mode, no image

Set is in TV/Composite video mode, no image



18930_215_100310.eps
100310

Figure 5-13 Trouble shooting diagram - set is in TV/Composite video mode, no image

Set is in Component video mode, no image

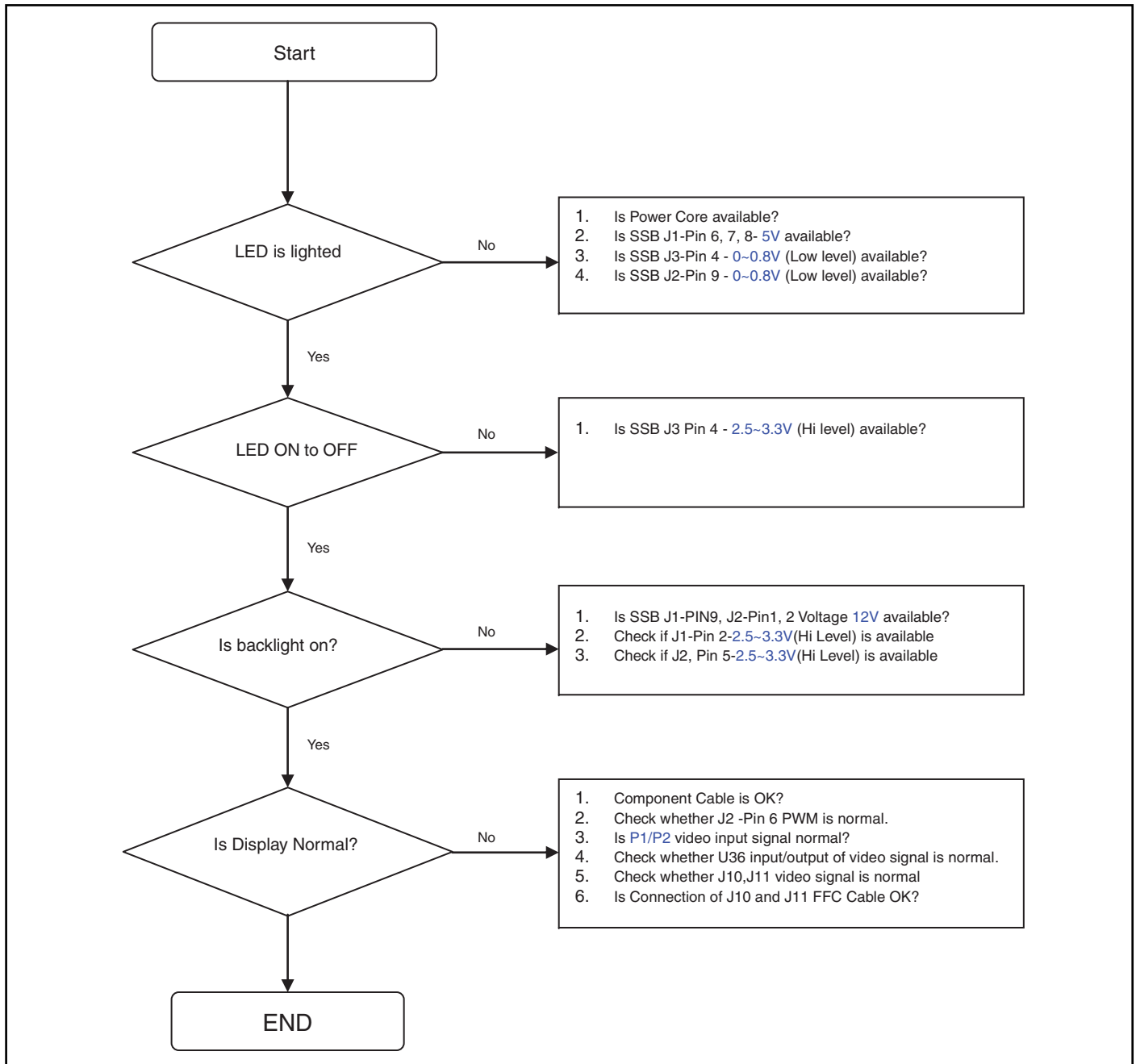
18930_216_100310.eps
100310

Figure 5-14 Trouble shooting diagram - set is in Component video mode, no image

Set is in HDMI mode, no image

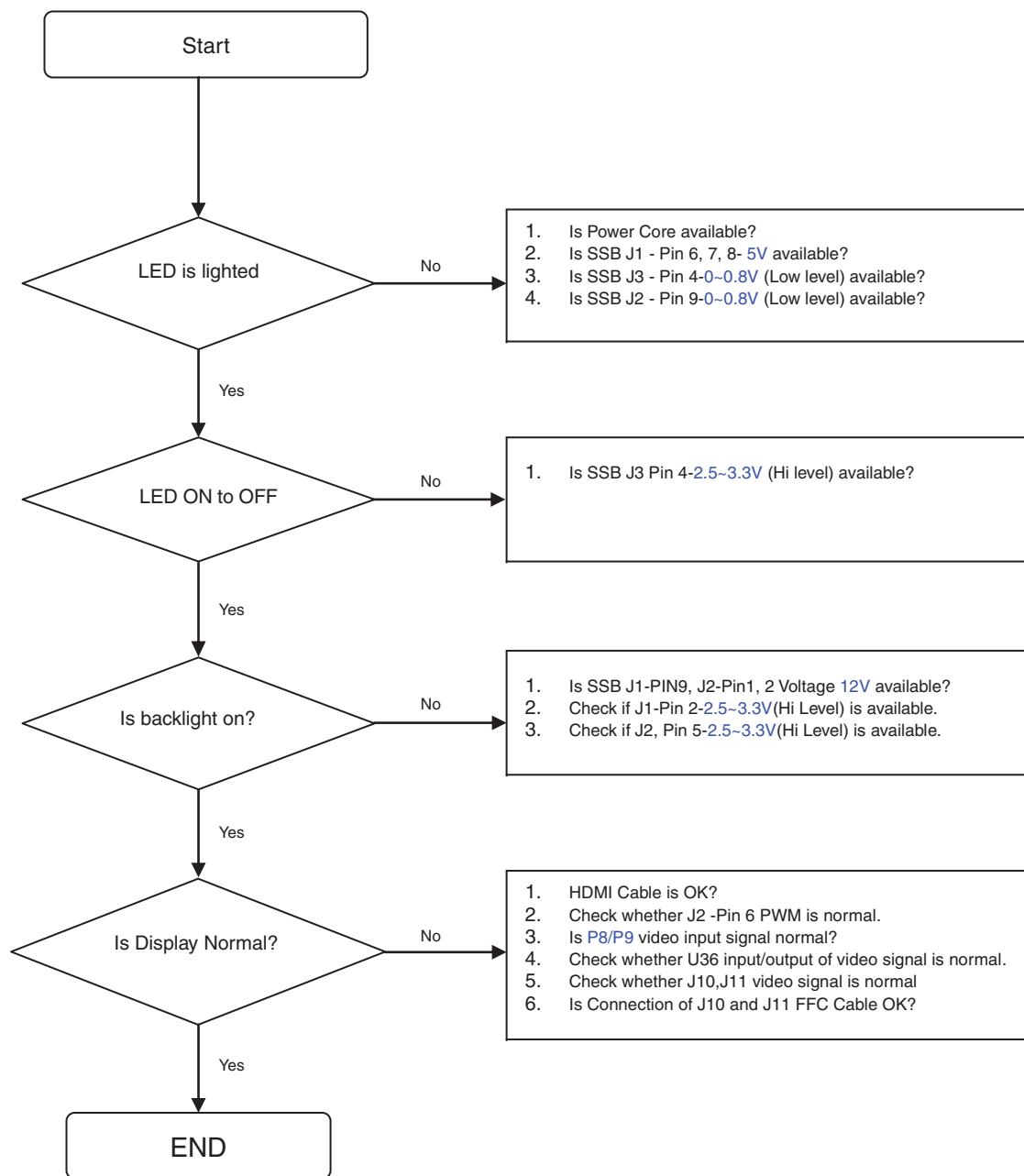
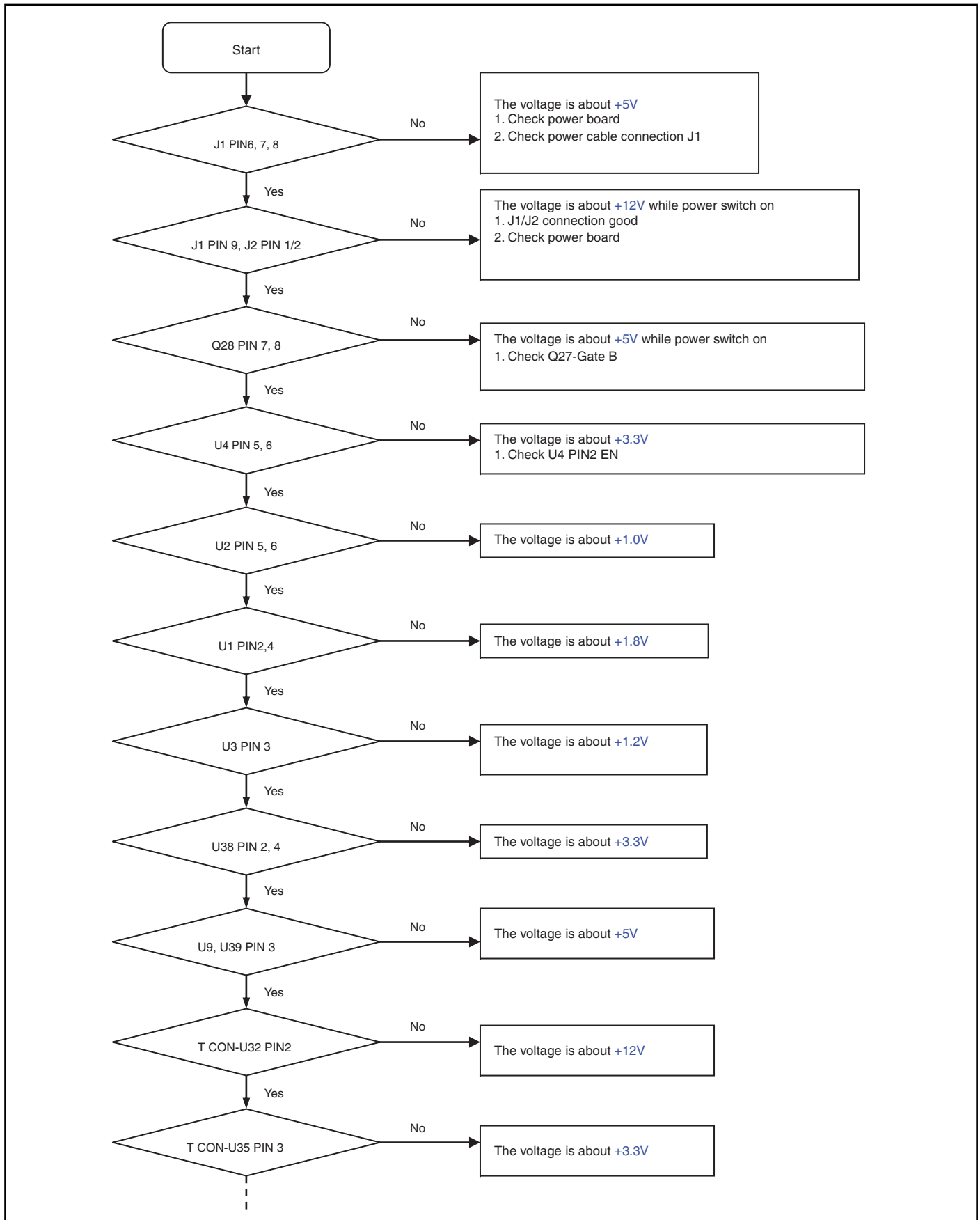
18930_217_100310.eps
100310

Figure 5-15 Set is in HDMI mode, no image

DC/DC converter



18930_218_100310.eps

Figure 5-16 DC/DC converter [1/2]

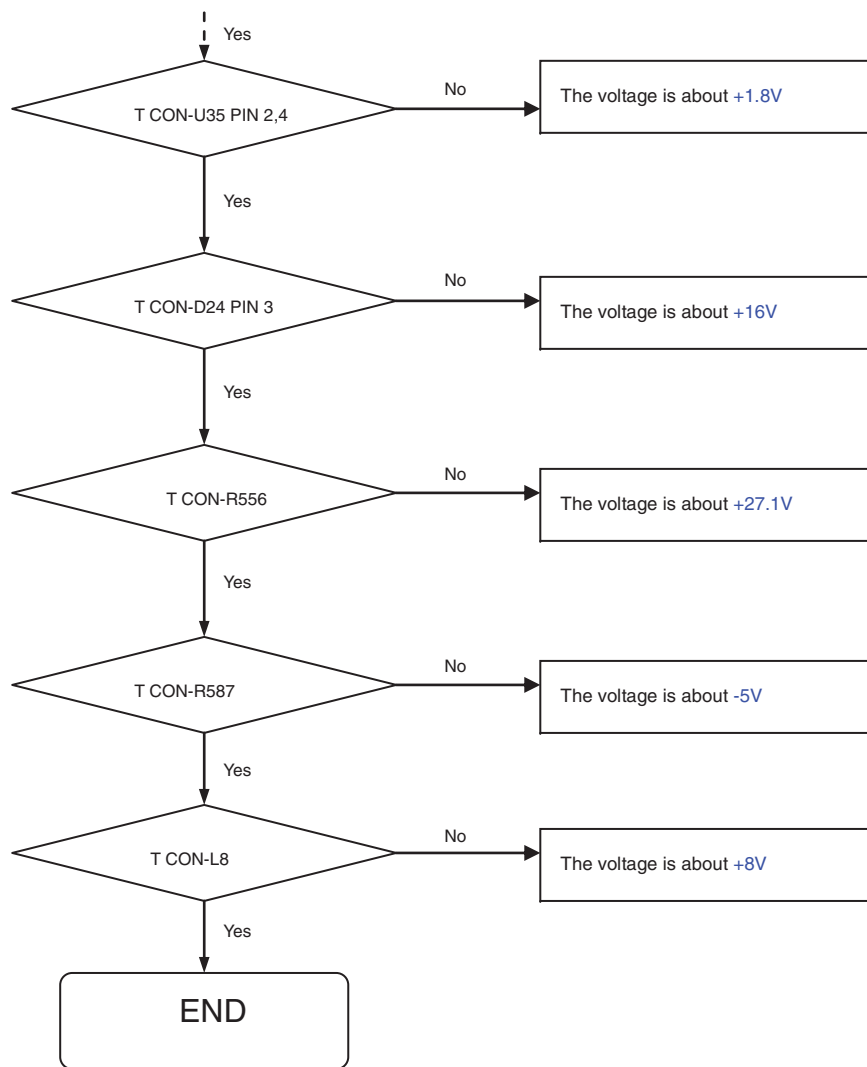
18930_219_100310.eps
100310

Figure 5-17 DC/DC converter [2/2]

DDC reading

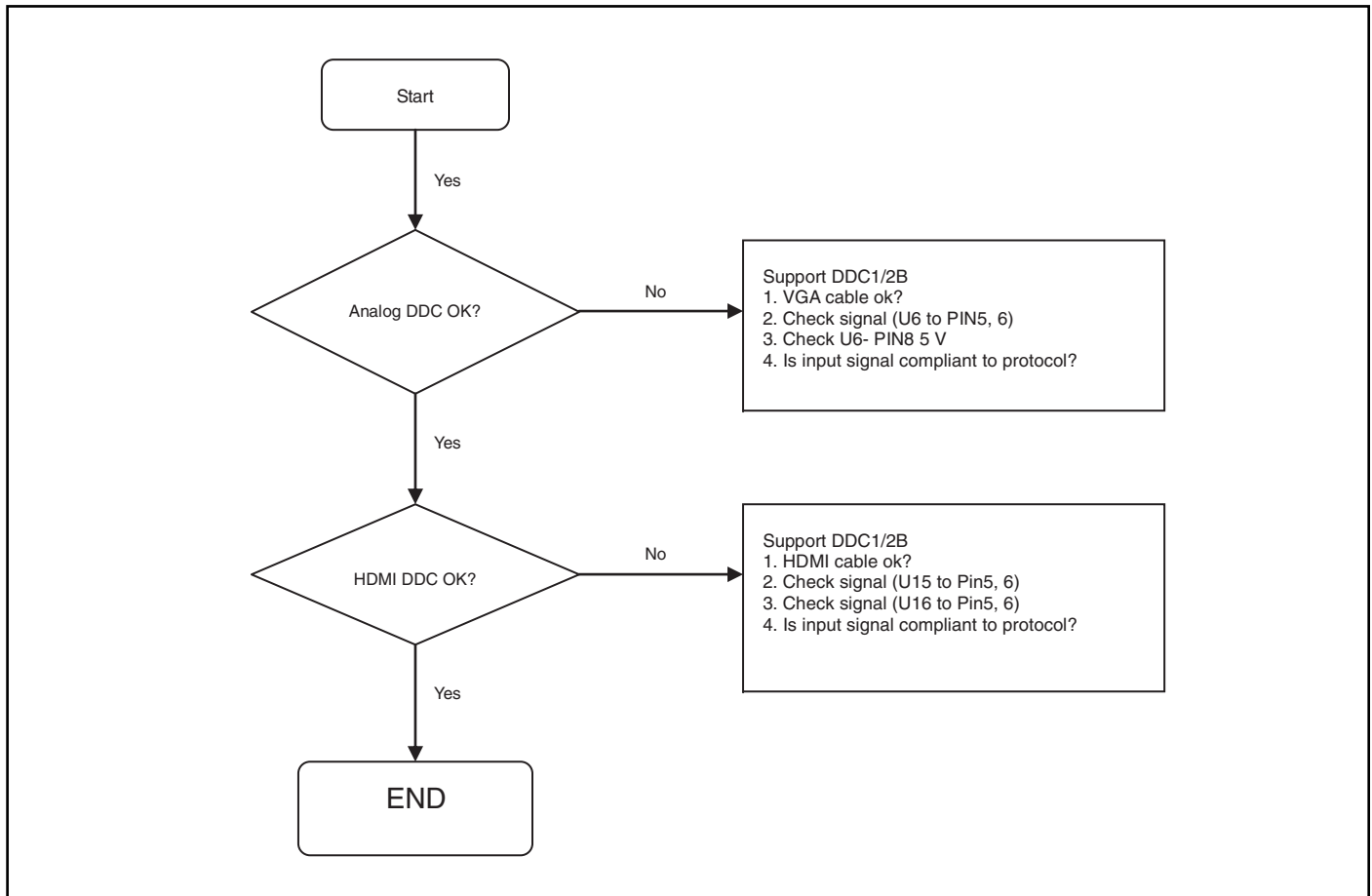
18930_220_100310.eps
100310

Figure 5-18 DDC reading

No audio

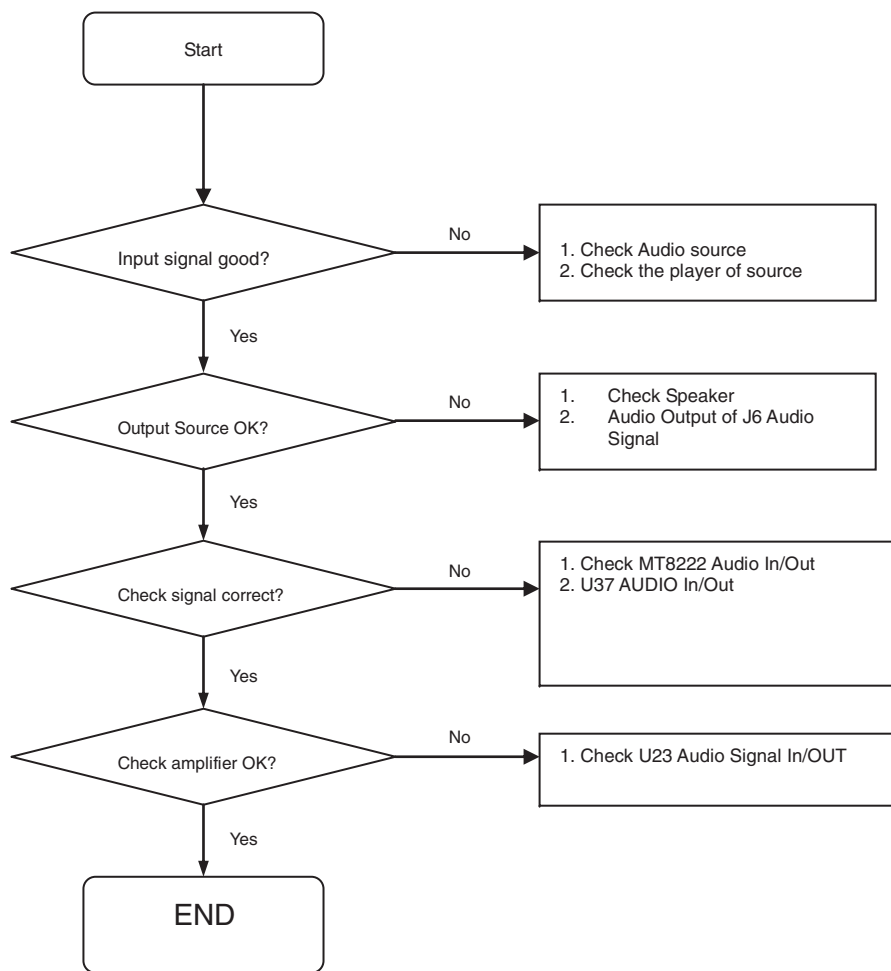
18930_221_100310.eps
100310

Figure 5-19 No audio

6. Alignments

Index of this chapter:

[6.1 General Alignment Conditions](#)

[6.2 Hardware Alignments](#)

[6.3 Software Alignments](#)

[6.4 Display Option Settings](#)

[6.5 Reset of Repaired SSB](#)

Note: The Service Alignment Mode (SAM) are described in chapter [5. Service Modes, Error Codes, and Fault Finding](#). Menu navigation is done with the CURSOR UP, DOWN, LEFT or RIGHT keys of the remote control transmitter.

6.1 General Alignment Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 120 - 230 V_{AC}, 50 ± 10 Hz.
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 15 minutes.
- Measure voltages and waveforms in relation to correct ground (e.g. measure audio signals in relation to AUDIO_GND).

Caution: It is not allowed to use heatsinks as ground.

- Test probe: R_i > 10 MΩ, C_i < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

6.1.1 Alignment Sequence

Set the correct options:

- In SAM, select "Options" and then "Option numbers"
- Fill in the option numbers for "Group 1" and "Group 2" according to the set sticker (see also section [6.4 Display Option Settings](#)).
- Press "OK" on the remote control **before** the cursor is moved to the left
- In submenu "Option numbers" select "Store" and press OK on the RC, or
- In main menu, select "Store" again and press OK on the RC
- Switch the stand to standby.

Warm the set up for >15 minutes.

6.2 Hardware Alignments

Not applicable.

6.3 Software Alignments

Put the set in SAM mode (see chapter 5. Service Modes, Error Codes, and Fault Finding). The SAM menu will now appear on the screen. Select "RGB Align" and go to one of the sub menus. The alignments are explained below.

The following item can be aligned:

- White point.

To store the data:

- Press OK on the RC **before the cursor is moved to the left**.
- In main menu select "Store" and press OK on the RC.
- Press MENU on the RC to switch back to the main menu.
- Switch the set to stand-by mode.

For the next alignments, supply the following test signals via a video generator to the RF input:

- **EU/AP-PAL models:** a PAL B/G TV-signal with a signal strength of at least 1 mV and a frequency of 475.25 MHz

- **US/AP-NTSC models:** an NTSC M/N TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).
- **LATAM models:** an NTSC M TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).
- **DVB-T models:** a DVB-T signal with the following specifications:
 - frequency: 546.00 PID
 - video: 0B 06 PID
 - PCR: 0B 06 PID
 - Audio: 0B 07.

6.3.1 White Point

- Choose "TV menu", "TV Settings" and then "Picture" and set "Smart Picture" to "Vivid" mode.

White point alignment LCD screens:

- Use a 100% white screen as input signal and set the following values:
 - "Colour temperature": "Normal".
 - All "White point" values to: "127".
 - "Red BL offset" value to "240" for HDMI source.
 - "Green BL offset" value to "240" for HDMI source.
 - "Red BL offset" value to "0" for VGA source.
 - "Green BL offset" value "0" for VGA source.

In case you have a colour analyser:

- Measure with a calibrated contactless (max. 25 mm) colour analyser in the centre of the screen. Consequently, the measurement needs to be done in a dark environment.
- Adjust the correct x, y coordinates (while holding one of the White point registers R, G or B on 127) by means of decreasing the value of one or two other white points to the correct x, y coordinates (see [Table 6-1](#)). Tolerance: dx: ± 0.004, dy: ± 0.004.
- Repeat this step for the other colour temperatures that need to be aligned.
- When finished press "OK" on the RC and then press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

Table 6-1 White D alignment values

Value	Cool (11000K)	Normal (9000K)	Warm (6500K)
x	0.276	0.287	0.313
y	0.282	0.296	0.329

If you do not have a colour analyser, you can use the default values. This is the next best solution. The default values are average values coming from production.

- Select a "COLOUR TEMPERATURE" (e.g. "COOL", "NORMAL", or "WARM").
- Set the White point "RED", "GREEN" and "BLUE" default values according to the values in [Table 6-2](#).
- When finished press OK on the RC, then press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

Table 6-2 White tone default settings 32" & 42" Dali sets (3xxx series)

White Tone	32"			42"			Black level offset	
Colour Temp	R	G	B	R	G	B	R	G
Normal	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.
Cool	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.
Warm	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.	t.b.d.

6.4 Display Option Settings

Table 6-3 Display code overview

CTN_ALT BOM#	Panel Type	Display code in SAM
32PFL3605/67	LGD LC320WUY-SCA1-8R1	009
32PFL3605/93	LGD LC320WUY-SCA1-8R1	004
32PFL3605/98	LGD LC320WUY-SCA1-8R1	001
42PFL3605/67	LGD LC420WUY-SCA1-7R1	010
42PFL3605/93	LGD LC420WUY-SCA1-7R1	005
42PFL3605/98	LGD LC420WUY-SCA1-7R1	002

6.5 Reset of Repaired SSB

A very important issue towards a repaired SSB from a service repair shop implies the reset of the NVM on the SSB.

A repaired SSB in service should get the service Set type "00PF0000000000" and Production code "00000000000000". Also the virgin bit is to be set. To set all this, you can use the ComPair tool.

7. Circuit Descriptions

Index of this chapter:

- [7.1 Introduction](#)
- [7.2 Power Architecture](#)
- [7.3 MT8222 Video/Audio processor](#)

Notes:

- Only **new** circuits (circuits that are not published recently) are described.
- Figures can deviate slightly from the actual situation, due to different set executions.
- For a good understanding of the following circuit descriptions, please use the wiring, block (see chapter 9. Block Diagrams) and circuit diagrams (see chapter 10. Circuit Diagrams and PWB Layouts). Where necessary, you will find a separate drawing for clarification.

7.1.1 Implementation

Key components of this chassis are:

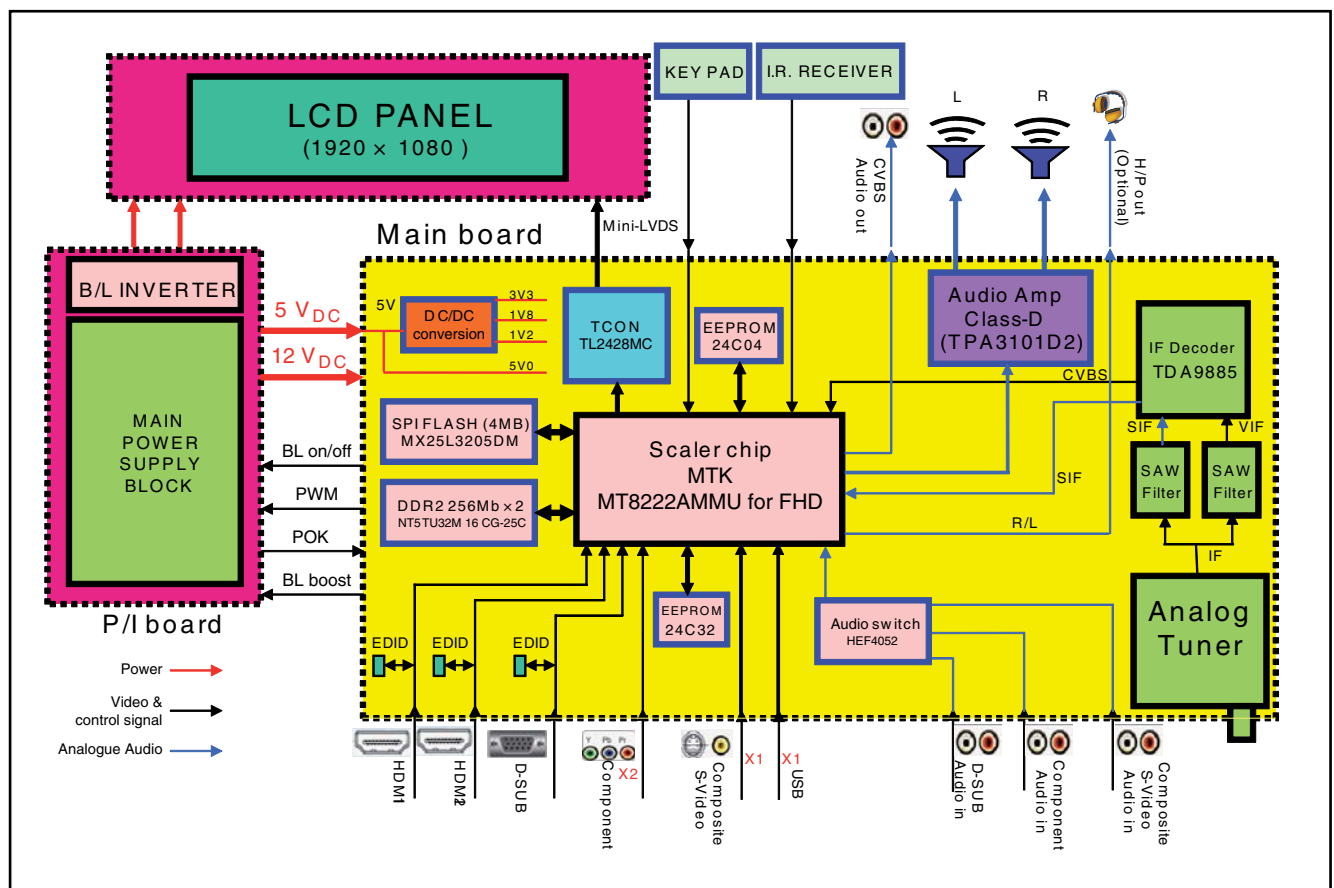
- MT8222 scaler
- HFT-8/125H (China/AP)/HFT-8-13F2 (Argentina) tuner
- K3953M/K9362M (China/AP)/M3953M/M9370M (Argentina) saw filter
- TDA9885TS IF demultiplexer
- TPA3101D2 audio amplifier
- TL2428MC T-CON IC

7.1.2 RAM1.0A LA Architecture Overview

- For details about the chassis diagrams refer to chapter 10. Circuit Diagrams and PWB Layouts. An overview of the RAM1.0A LA architecture can be found in [Figure 7-1](#).

7.1 Introduction

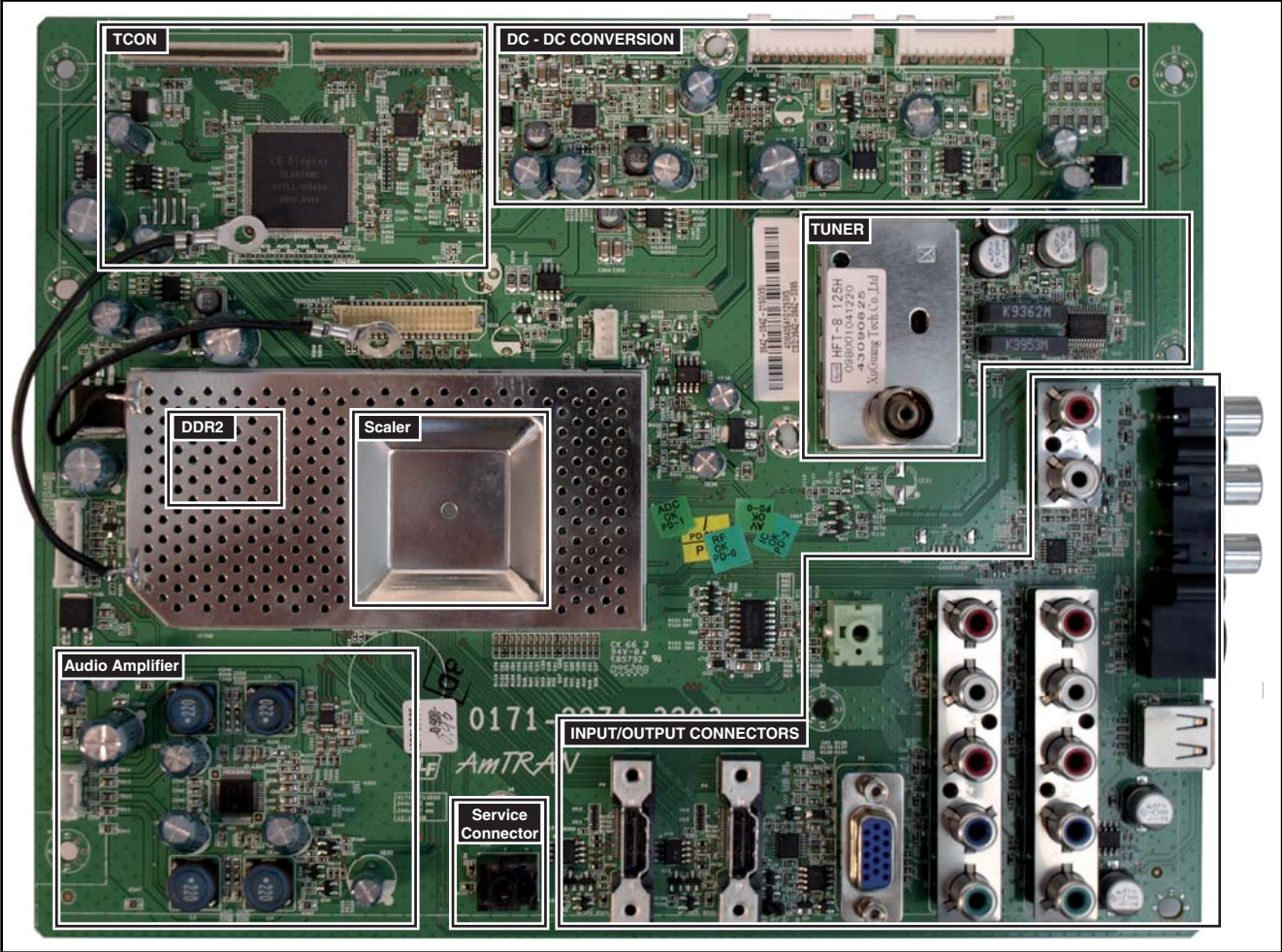
The RAM1.0A LA chassis is using the MT8222 video and audio processor.



18930_210_100310.eps
100310

Figure 7-1 Architecture of RAM1.0A LA

7.1.3 SSB Cell Layout



18930_211_100310.eps
100310

Figure 7-2 SSB layout cells (top view)

7.2 Power Architecture

Refer to figure [Figure 7-3](#) for the power architecture of this platform. For trouble shooting, refer to section [5.5.3 Power failure](#).

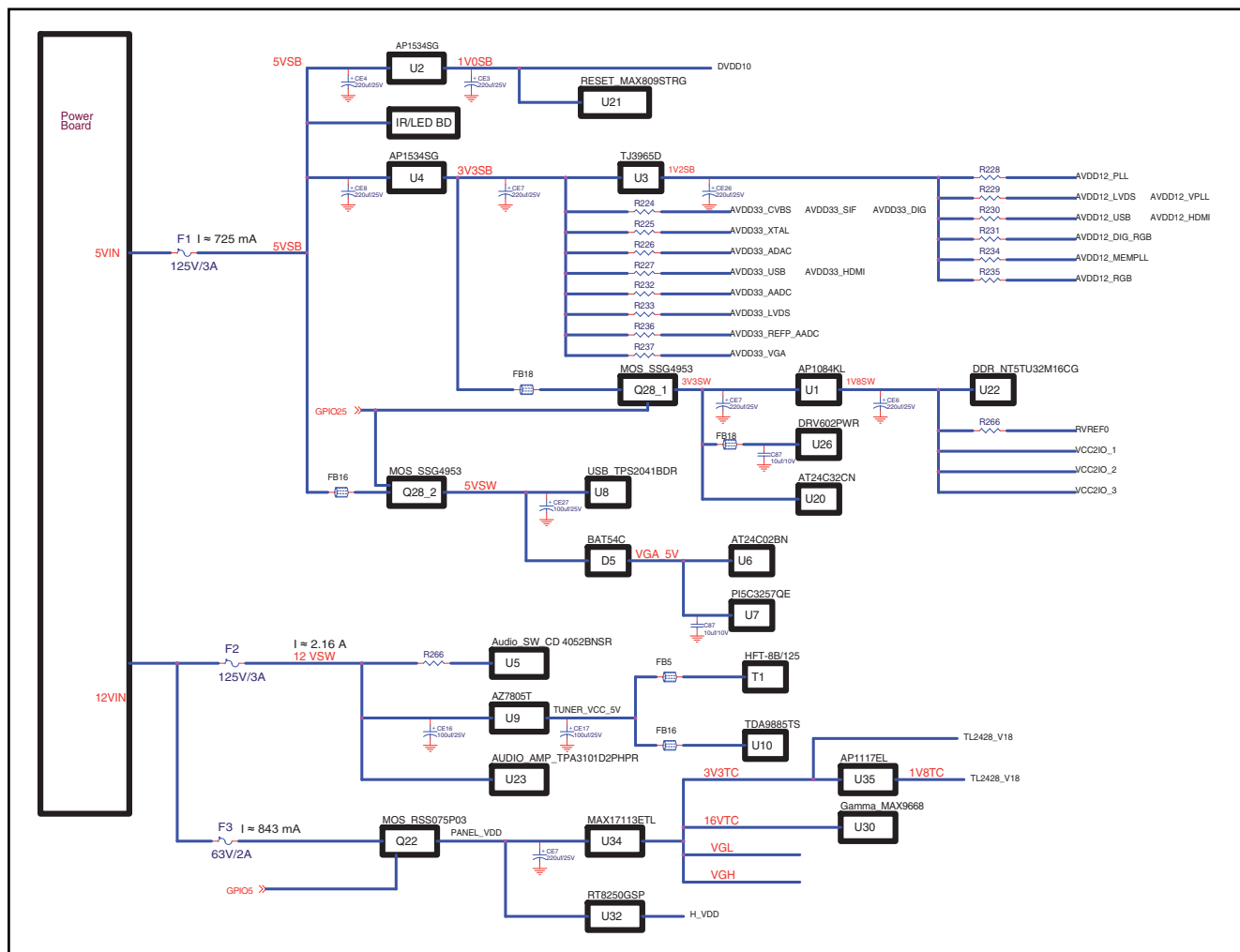


Figure 7-3 Power Architecture RAM1.0A LA platform

7.3 MT8222 Video/Audio processor

Refer to figure [Figure 7-4](#) for the power architecture of this platform.

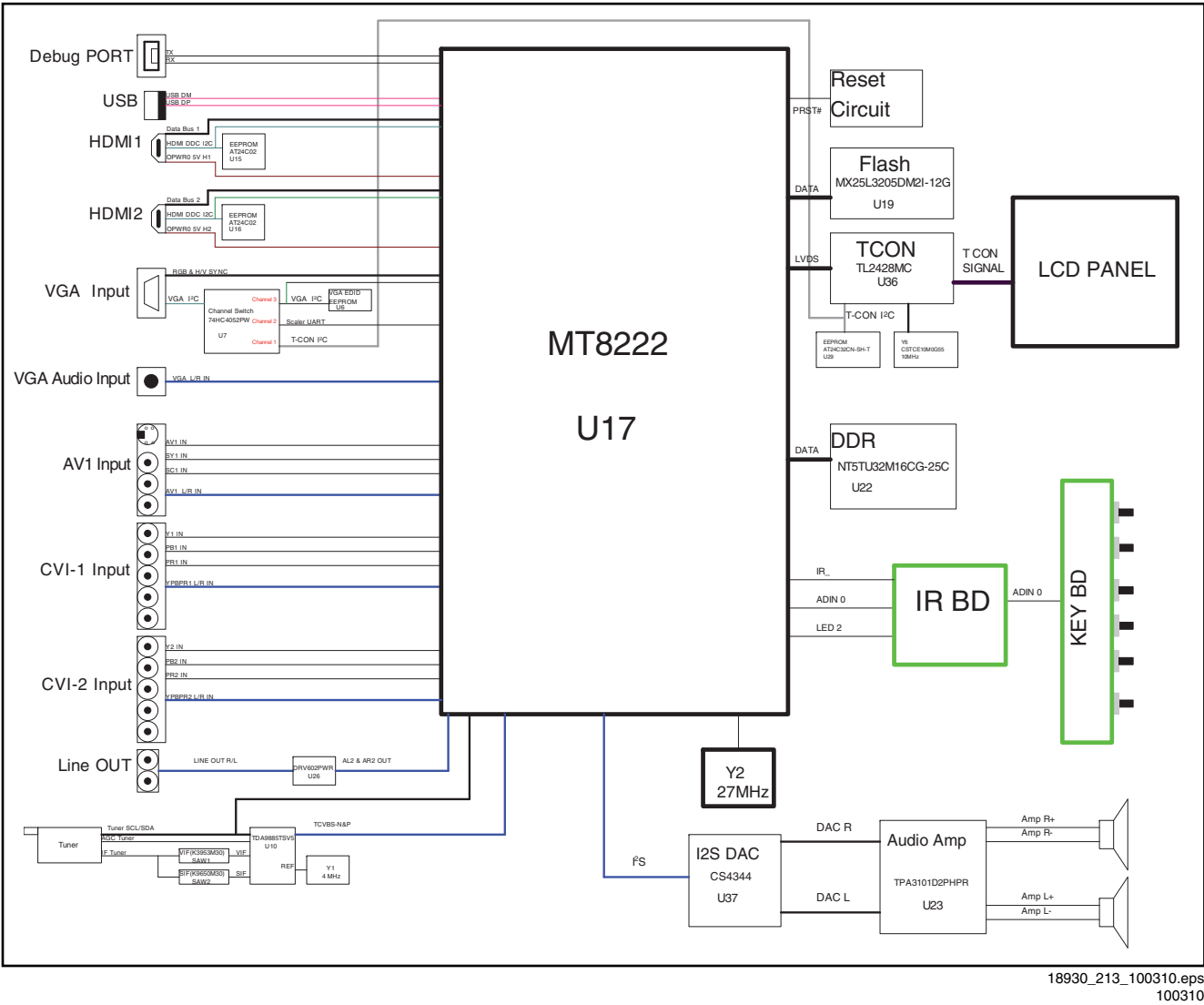


Figure 7-4 MT8222 Video/Audio system application

7.3.1 Signal paths

RGB
Analogue RGB signals are transferred by the MT8222 to a digital signal by the internal A/D converter. The MT8222 generates an LVDS signal to the TL2428 on-chip TCON which drives the LCD display.

HDMI
HDMI signals are further processed digitally by the MT8222. The MT8222 generates an LVDS signal to the TL2428 on-chip TCON which drives the LCD display.

Component Input
Component signals are processed by the MT8222. The MT8222 generates an LVDS signal to the TL2428 on-chip TCON which drives the LCD display. Audio is separately processed by the MT8222 and further processed by the CS4344 and then the audio amplifier.

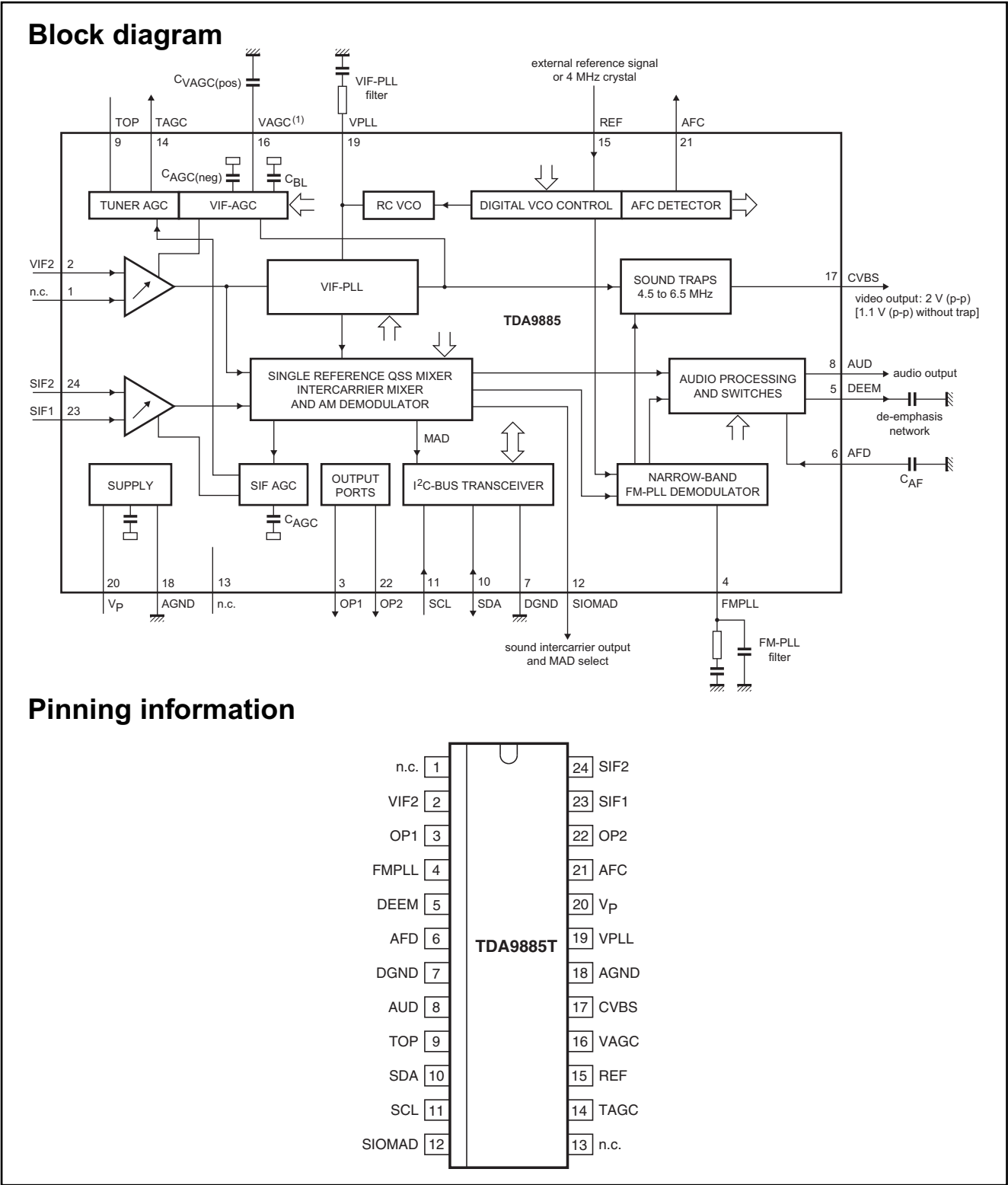
RF Input
RF input signals are demodulated by the TDA9885 IF demodulator and further processed by the MT8222. The signal is then split into an video and an audio part.

The video signal is further processed by the MT8222 which generates an LVDS signal to the TL2428 on-chip TCON which drives the LCD display.
The audio signal is further processed by the MT8222 and split into two parts. One part drives the Stereo Line Driver “AUDIO OUT” chain, the other part drives the CS4344 and the audio amplifier.

8. IC Data Sheets

This section shows the internal block diagrams and pin configurations of ICs that are drawn as “black boxes” in the electrical diagrams (with the exception of “memory” and “logic” ICs).

8.1 Diagram B05, TDA9885 (IC U10)



18930_300_100308.eps
100308

Figure 8-1 Internal block diagram and pin configuration

8.2 Diagram B07, MT8222TMMU/A (IC U17)

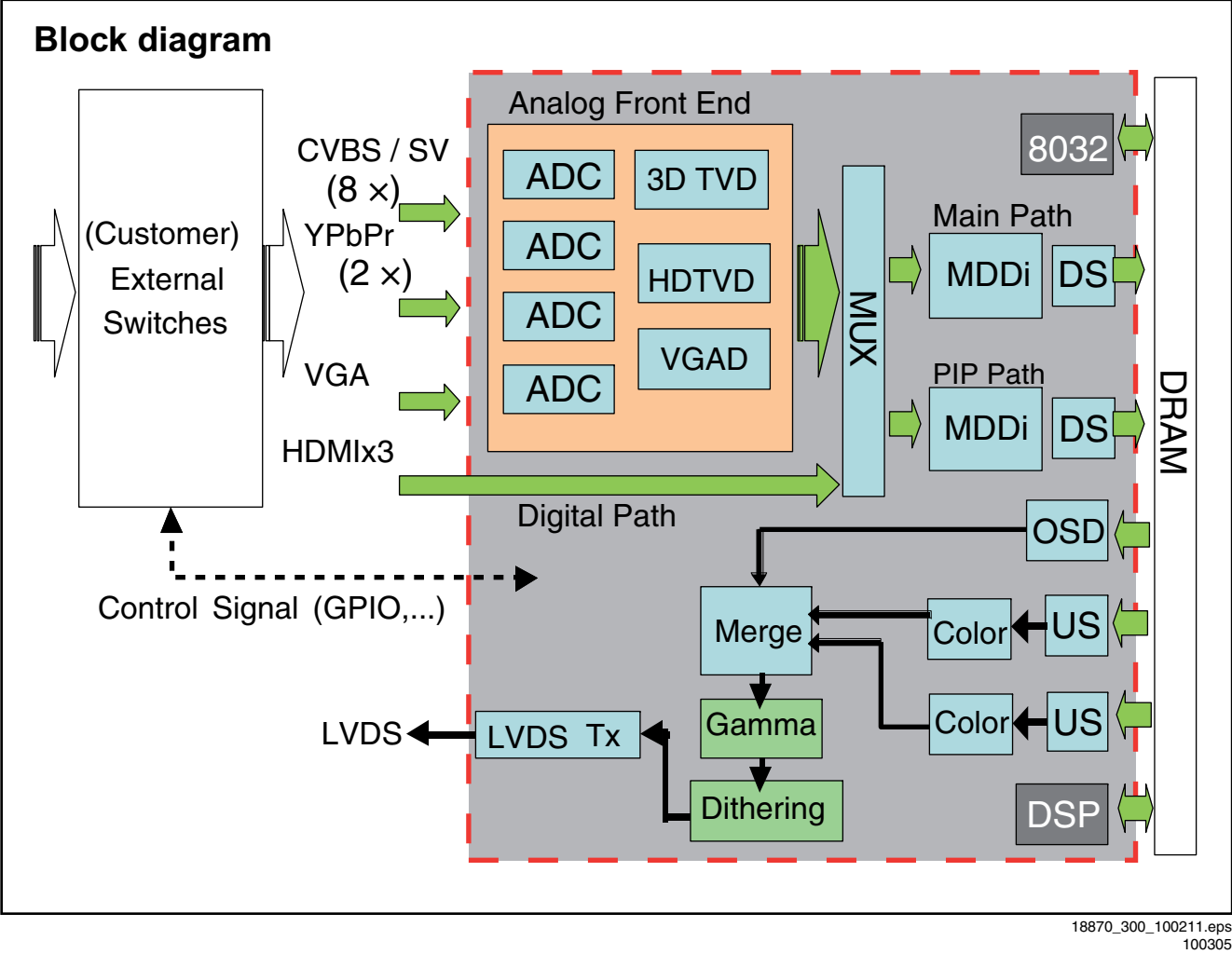


Figure 8-2 Internal block diagram

8.3 Diagram B10, TPA3101D (IC U23)

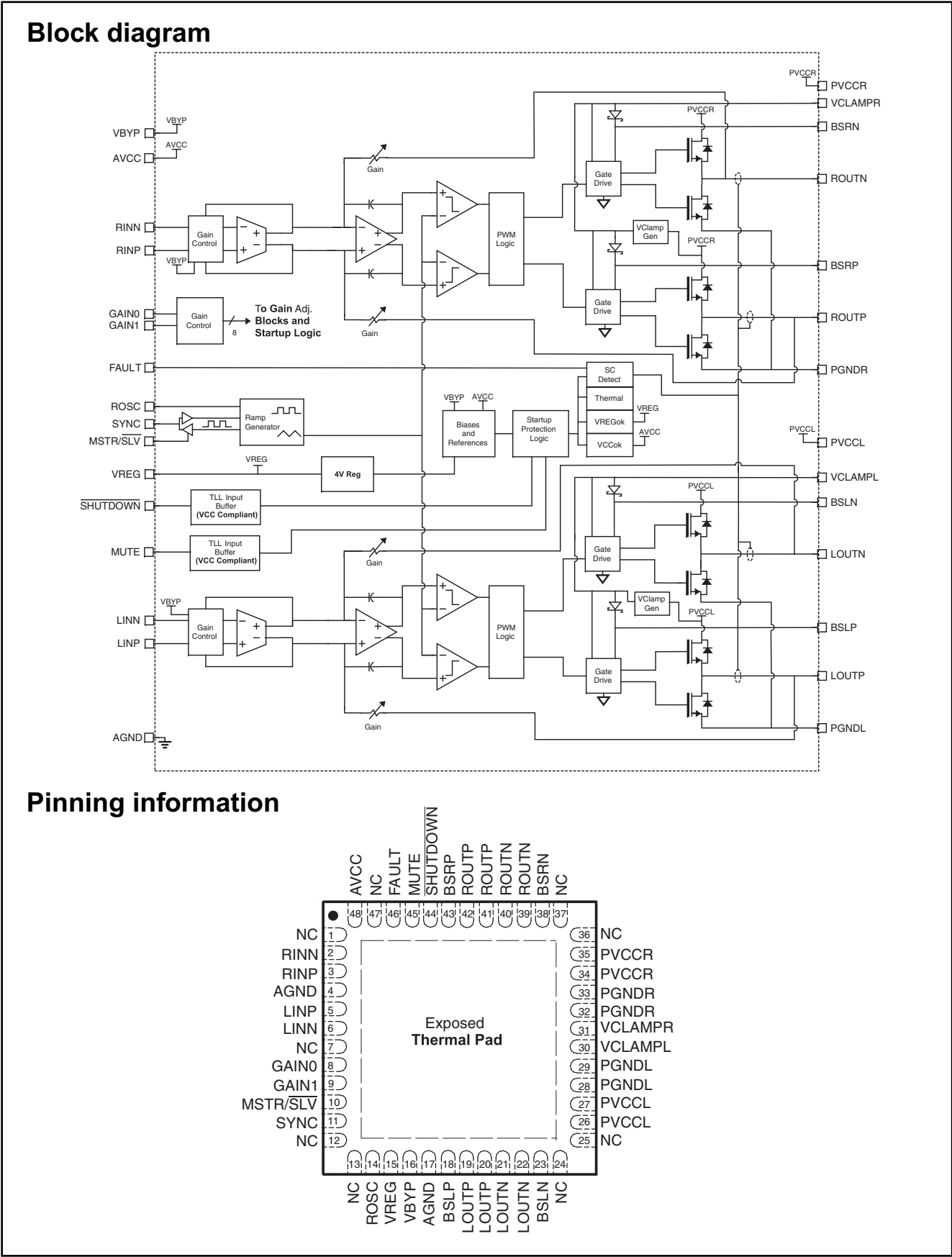


Figure 8-4 Internal block diagram and pin configuration

8.4 Diagram B11, TL2428MC (IC U36)

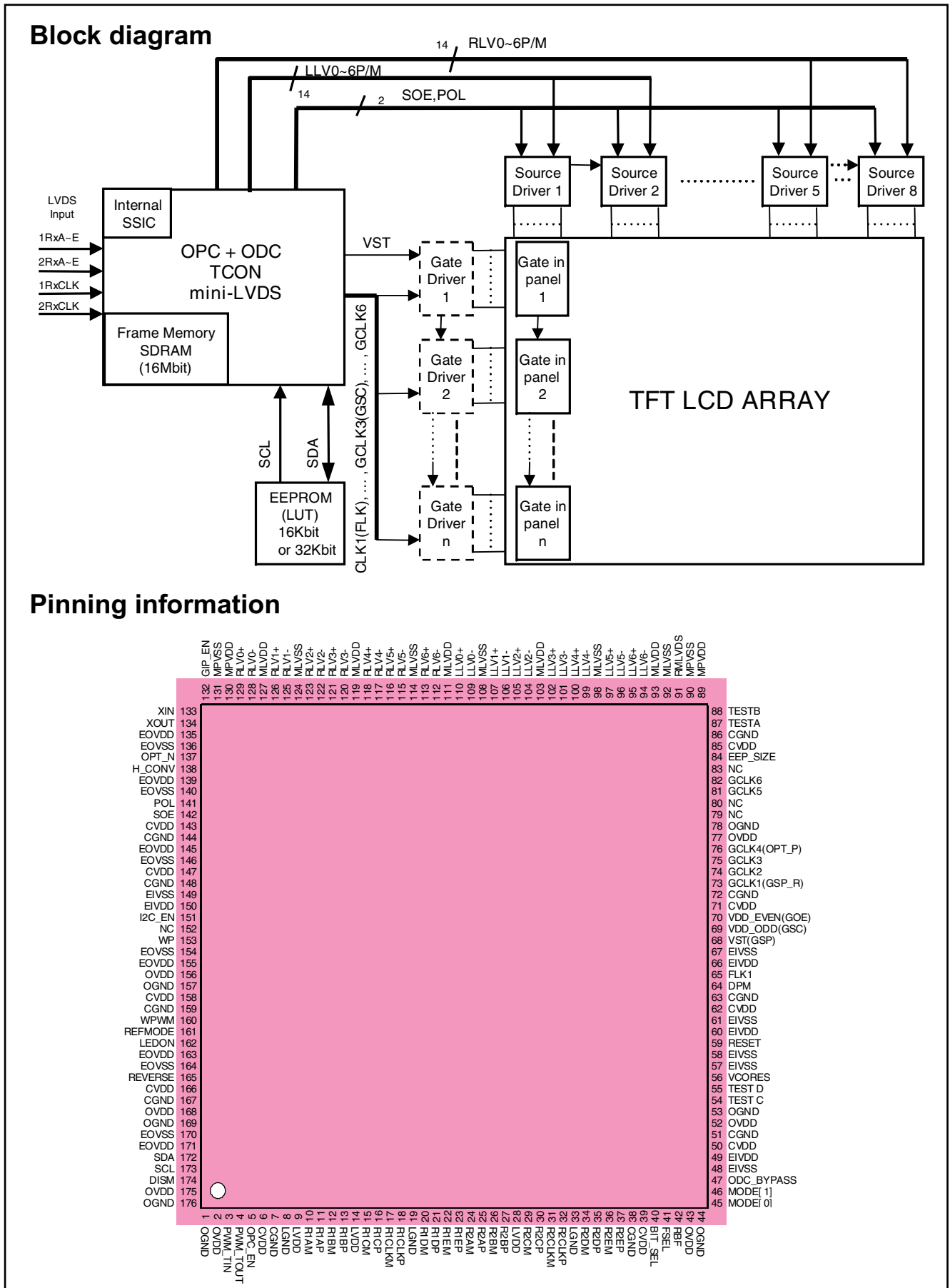
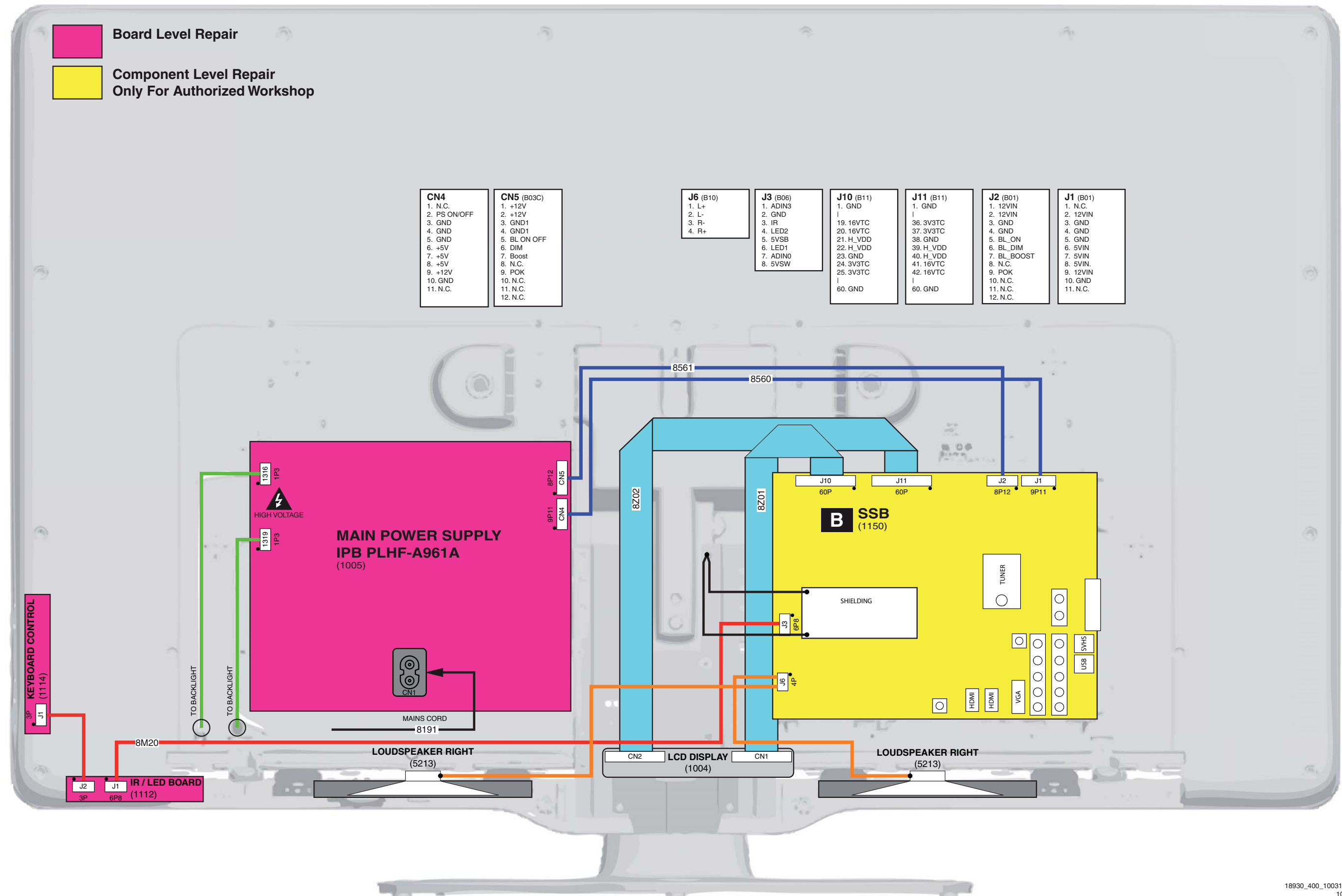


Figure 8-5 Internal block diagram and pin configuration

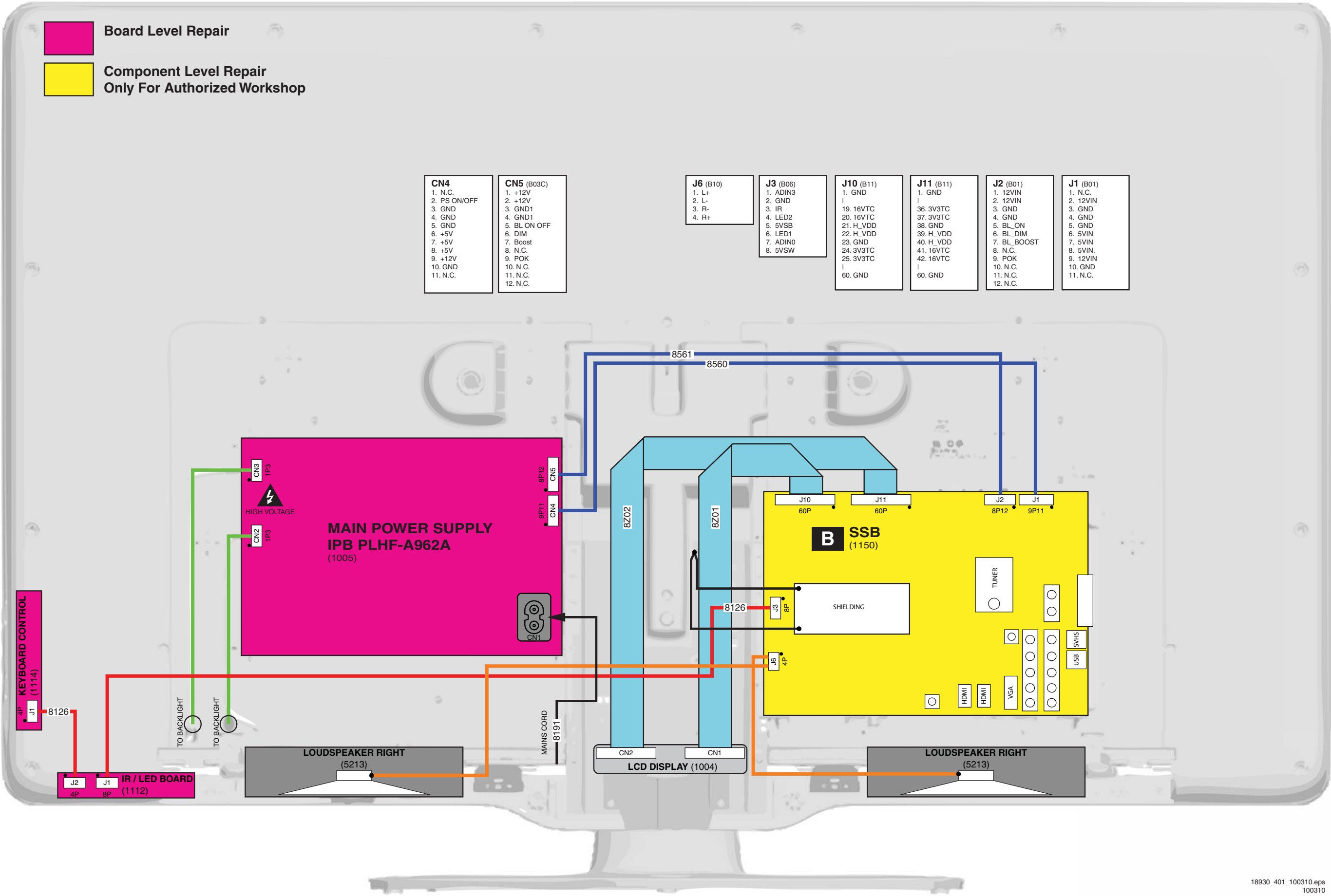
This image shows a full page of blank, lined paper. It features approximately 30 horizontal blue or grey lines spaced evenly apart, typical of notebook paper. The lines extend across the entire width of the page, leaving small margins at the top and bottom. There are no vertical lines, text, or other markings on the page.

Wiring Diagram (32")

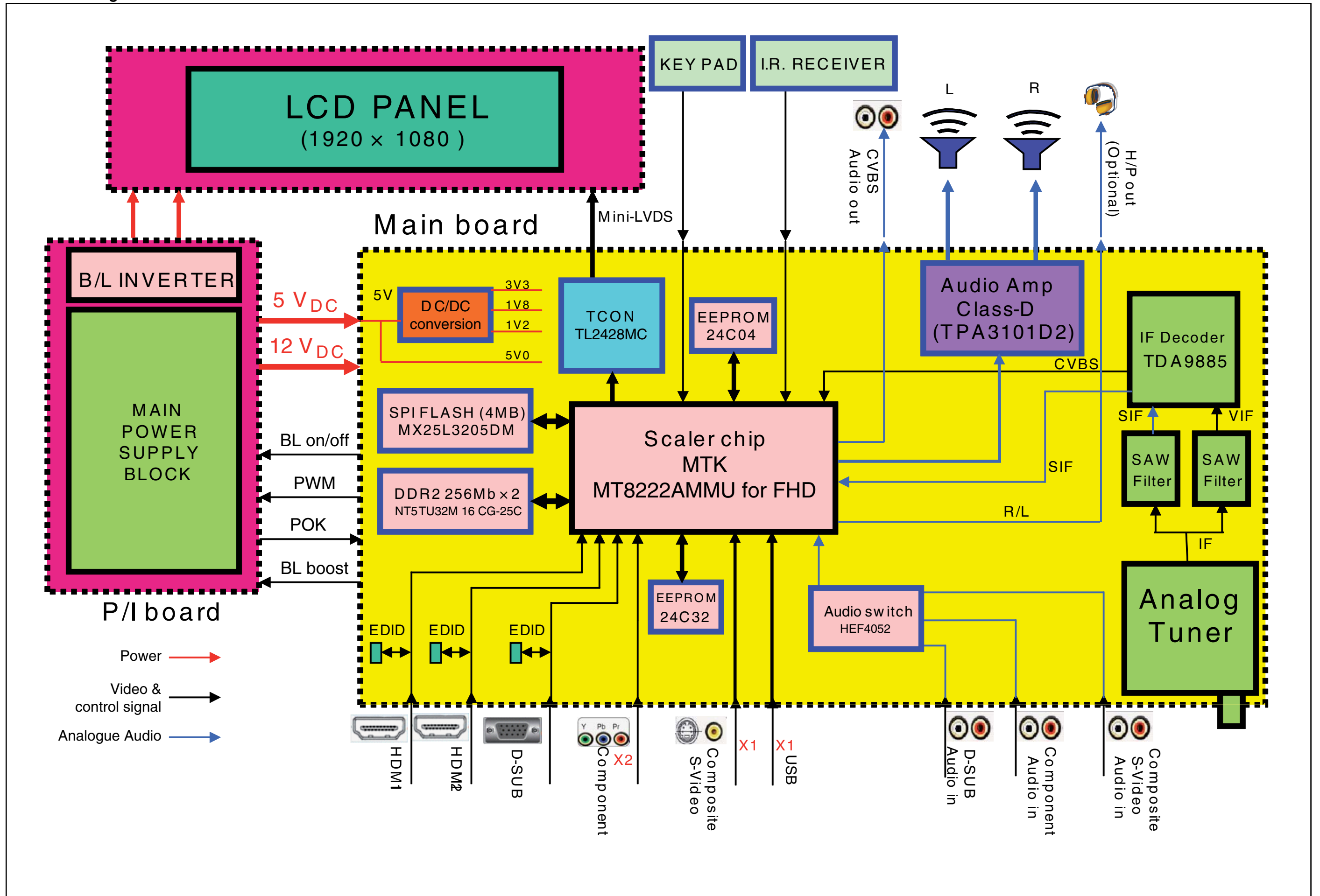
WIRING DIAGRAM 32" DALI



Wiring Diagram (42")
WIRING DIAGRAM 42" DALI

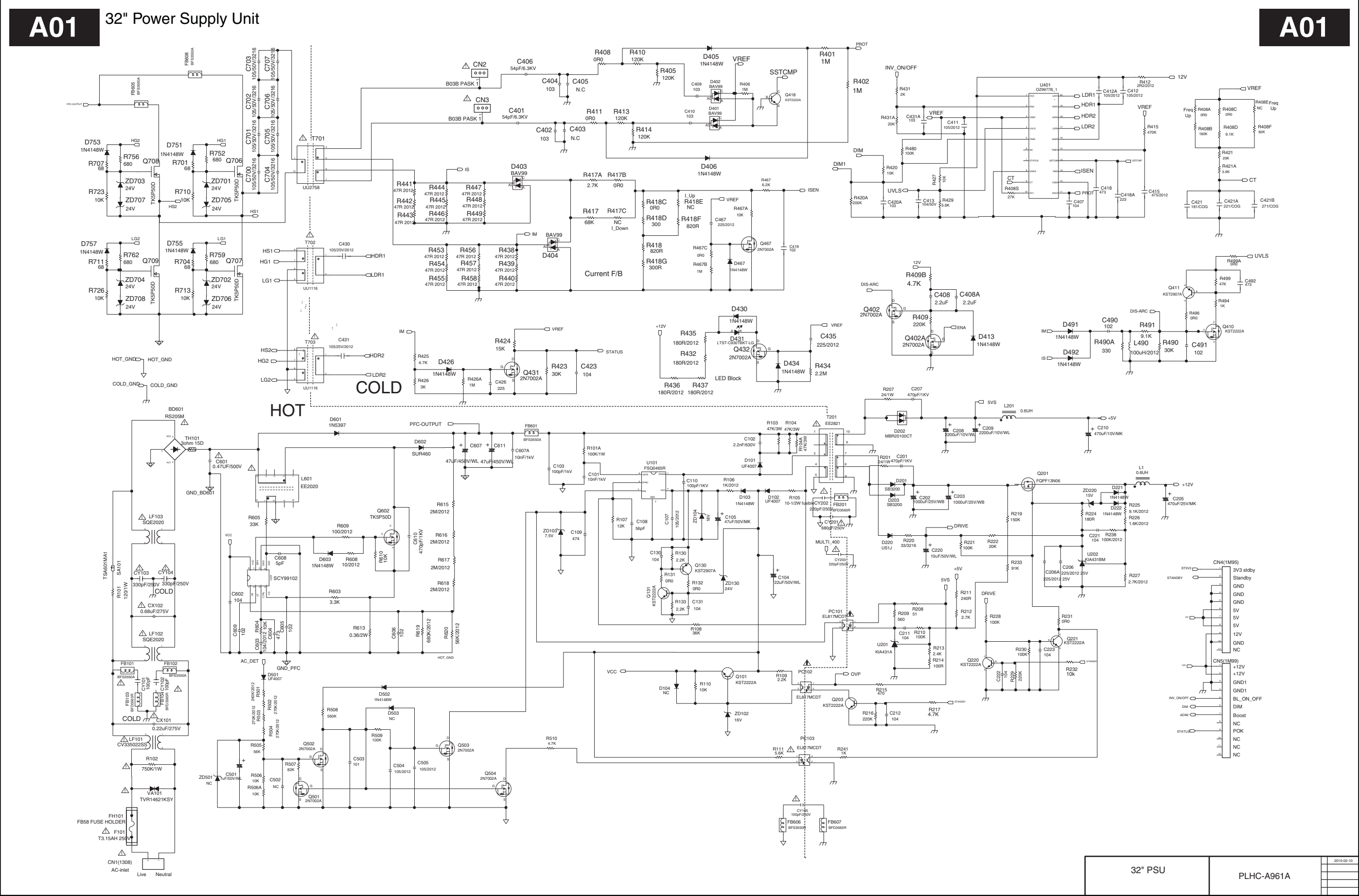


Block Diagram



10. Circuit Diagrams and PWB Layouts

Power Supply Unit 32"



32" PSU	PLHC-A961A	2010-02-10
		18930_560_100315.eps
		100315

PLHC-A961A, Rev : 0.0
Part Number : 3PAGC10030A-R
Date : 10.02.17

CN2-CN3 : 1000V~/115mA
Model : 3000 SERIES (32FHD)
PLHC-A961A
Input : 220-240V~, 50-60 Hz
5.1V --- 4.0A
12V --- 2.5A

High Voltage Danger

ATTENTION: LIVE PARTS

BAR CODE

COLD

HOT

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.
UTILISER UN FUSIBLE DE REMPLACEMENT DE MEME TYPE ET DE MEME RATING.

0	2010-02-17

The image displays a complex PCB layout for a 1U rack-mountable system, featuring a split-board design with 'COLD' and 'HOT' sections. The layout is densely packed with components, including resistors, capacitors, diodes, and integrated circuits. Key features include:

- Connectors:** A large connector strip on the left side, labeled 'POK', 'Boost', 'DIM', 'GND1', 'GND1', '+12V', '+12V', 'GND', '+12V', '+5V', '+5V', '+5V', 'GND', 'GND', 'GND', 'PS_ON/OFF', '3V3'. A large connector strip on the right side is labeled 'ATTENTION: LIVE PARTS'.
- Component Labels:** Numerous component labels are scattered across the board, including resistors (R100, R101, R102, R103, R104, R105, R106, R107, R108, R109, R110, R111, R112, R113, R114, R115, R116, R117, R118, R119, R120, R121, R122, R123, R124, R125, R126, R127, R128, R129, R130, R131, R132, R133, R134, R135, R136, R137, R138, R139, R140, R141, R142, R143, R144, R145, R146, R147, R148, R149, R150, R151, R152, R153, R154, R155, R156, R157, R158, R159, R160, R161, R162, R163, R164, R165, R166, R167, R168, R169, R170, R171, R172, R173, R174, R175, R176, R177, R178, R179, R180, R181, R182, R183, R184, R185, R186, R187, R188, R189, R190, R191, R192, R193, R194, R195, R196, R197, R198, R199, R200, R201, R202, R203, R204, R205, R206, R207, R208, R209, R210, R211, R212, R213, R214, R215, R216, R217, R218, R219, R220, R221, R222, R223, R224, R225, R226, R227, R228, R229, R230, R231, R232, R233, R234, R235, R236, R237, R238, R239, R240, R241, R242, R243, R244, R245, R246, R247, R248, R249, R250, R251, R252, R253, R254, R255, R256, R257, R258, R259, R260, R261, R262, R263, R264, R265, R266, R267, R268, R269, R270, R271, R272, R273, R274, R275, R276, R277, R278, R279, R280, R281, R282, R283, R284, R285, R286, R287, R288, R289, R290, R291, R292, R293, R294, R295, R296, R297, R298, R299, R300, R301, R302, R303, R304, R305, R306, R307, R308, R309, R310, R311, R312, R313, R314, R315, R316, R317, R318, R319, R320, R321, R322, R323, R324, R325, R326, R327, R328, R329, R330, R331, R332, R333, R334, R335, R336, R337, R338, R339, R340, R341, R342, R343, R344, R345, R346, R347, R348, R349, R350, R351, R352, R353, R354, R355, R356, R357, R358, R359, R360, R361, R362, R363, R364, R365, R366, R367, R368, R369, R370, R371, R372, R373, R374, R375, R376, R377, R378, R379, R380, R381, R382, R383, R384, R385, R386, R387, R388, R389, R390, R391, R392, R393, R394, R395, R396, R397, R398, R399, R400, R401, R402, R403, R404, R405, R406, R407, R408, R409, R410, R411, R412, R413, R414, R415, R416, R417, R418, R419, R420, R421, R422, R423, R424, R425, R426, R427, R428, R429, R430, R431, R432, R433, R434, R435, R436, R437, R438, R439, R440, R441, R442, R443, R444, R445, R446, R447, R448, R449, R450, R451, R452, R453, R454, R455, R456, R457, R458, R459, R460, R461, R462, R463, R464, R465, R466, R467, R468, R469, R470, R471, R472, R473, R474, R475, R476, R477, R478, R479, R480, R481, R482, R483, R484, R485, R486, R487, R488, R489, R490, R491, R492, R493, R494, R495, R496, R497, R498, R499, R500, R501, R502, R503, R504, R505, R506, R507, R508, R509, R510, R511, R512, R513, R514, R515, R516, R517, R518, R519, R520, R521, R522, R523, R524, R525, R526, R527, R528, R529, R530, R531, R532, R533, R534, R535, R536, R537, R538, R539, R540, R541, R542, R543, R544, R545, R546, R547, R548, R549, R550, R551, R552, R553, R554, R555, R556, R557, R558, R559, R560, R561, R562, R563, R564, R565, R566, R567, R568, R569, R570, R571, R572, R573, R574, R575, R576, R577, R578, R579, R580, R581, R582, R583, R584, R585, R586, R587, R588, R589, R590, R591, R592, R593, R594, R595, R596, R597, R598, R599, R600, R601, R602, R603, R604, R605, R606, R607, R608, R609, R610, R611, R612, R613, R614, R615, R616, R617, R618, R619, R620, R621, R622, R623, R624, R625, R626, R627, R628, R629, R630, R631, R632, R633, R634, R635, R636, R637, R638, R639, R640, R641, R642, R643, R644, R645, R646, R647, R648, R649, R650, R651, R652, R653, R654, R655, R656, R657, R658, R659, R660, R661, R662, R663, R664, R665, R666, R667, R668, R669, R670, R671, R672, R673, R674, R675, R676, R677, R678, R679, R680, R681, R682, R683, R684, R685, R686, R687, R688, R689, R690, R691, R692, R693, R694, R695, R696, R697, R698, R699, R700, R701, R702, R703, R704, R705, R706, R707, R708, R709, R710, R711, R712, R713, R714, R715, R716, R717, R718, R719, R720, R721, R722, R723, R724, R725, R726, R727, R728, R729, R730, R731, R732, R733, R734, R735, R736, R737, R738, R739, R740, R741, R742, R743, R744, R745, R746, R747, R748, R749, R750, R751, R752, R753, R754, R755, R756, R757, R758, R759, R760, R761, R762, R763, R764, R765, R766, R767, R768, R769, R770, R771, R772, R773, R774, R775, R776, R777, R778, R779, R780, R781, R782, R783, R784, R785, R786, R787, R788, R789, R790, R791, R792, R793, R794, R795, R796, R797, R798, R799, R800, R801, R802, R803, R804, R805, R806, R807, R808, R809, R810, R811, R812, R813, R814, R815, R816, R817, R818, R819, R820, R821, R822, R823, R824, R825, R826, R827, R828, R829, R830, R831, R832, R833, R834, R835, R836, R837, R838, R839, R840, R841, R842, R843, R844, R845, R846, R847, R848, R849, R850, R851, R852, R853, R854, R855, R856, R857, R858, R859, R860, R861, R862, R863, R864, R86

PLHF-A962A, Rev : 1.0
Part Number : 3PAGC10031A-R
Date : 10.02.08

Model : PLHF-A962A
3000 SERIES (42FHD)
Input : 220-240V~; 50-60Hz
5.1V --- 4.0A
12V --- 2.5A

BAR CODE

ATTENTION: LIVE PARTS

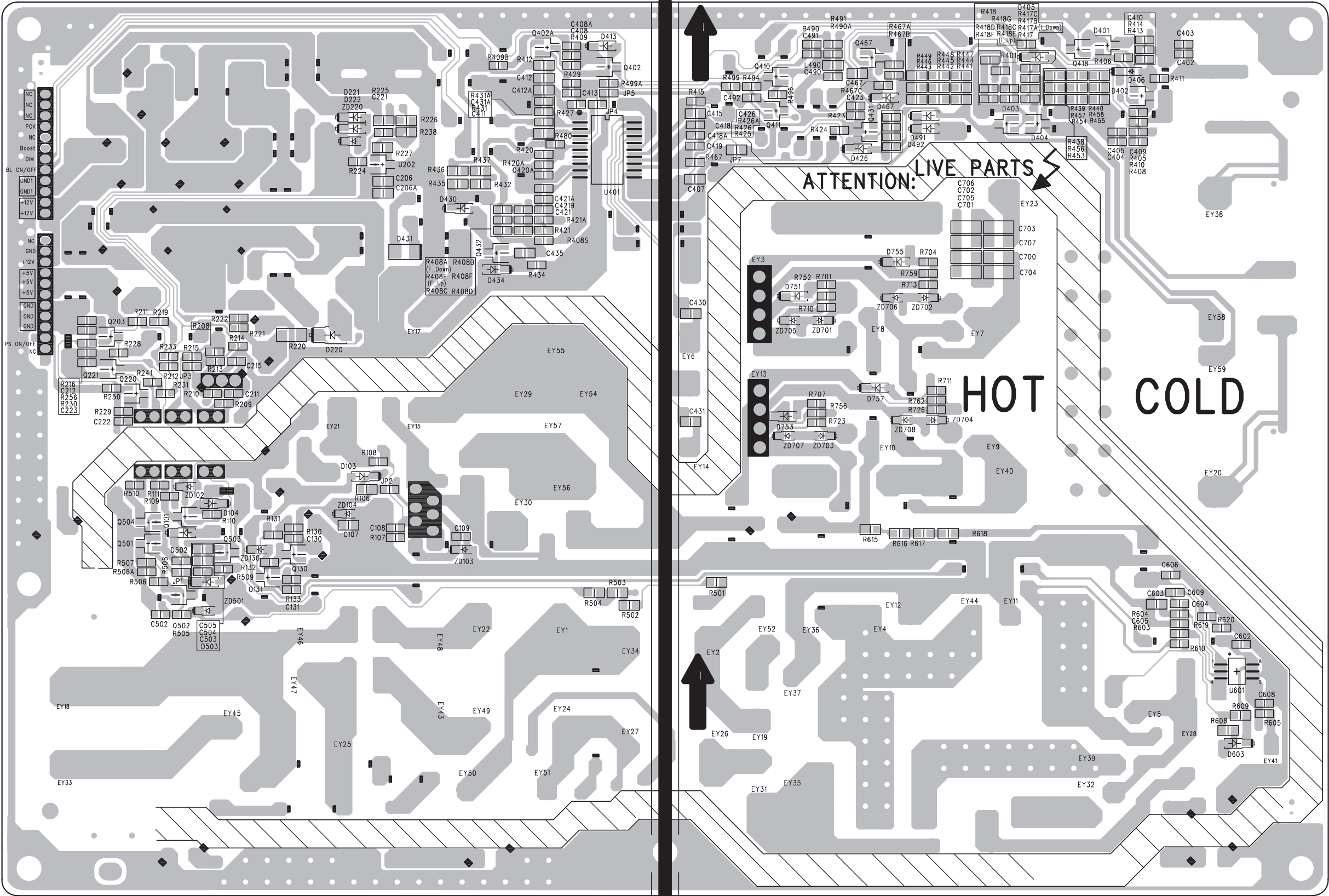
COLD

HOT

High Voltage Danger

CAUTION: FOR CONTINUED PROTECTION AGAINST RISK OF FIRE, REPLACE ONLY WITH SAME TYPE AND RATING OF FUSE.
UTILISER UN FUSIBLE DE RECHANGE DE MEME TYPE DE

Layout Power Supply Unit 42" (Bottom Side)

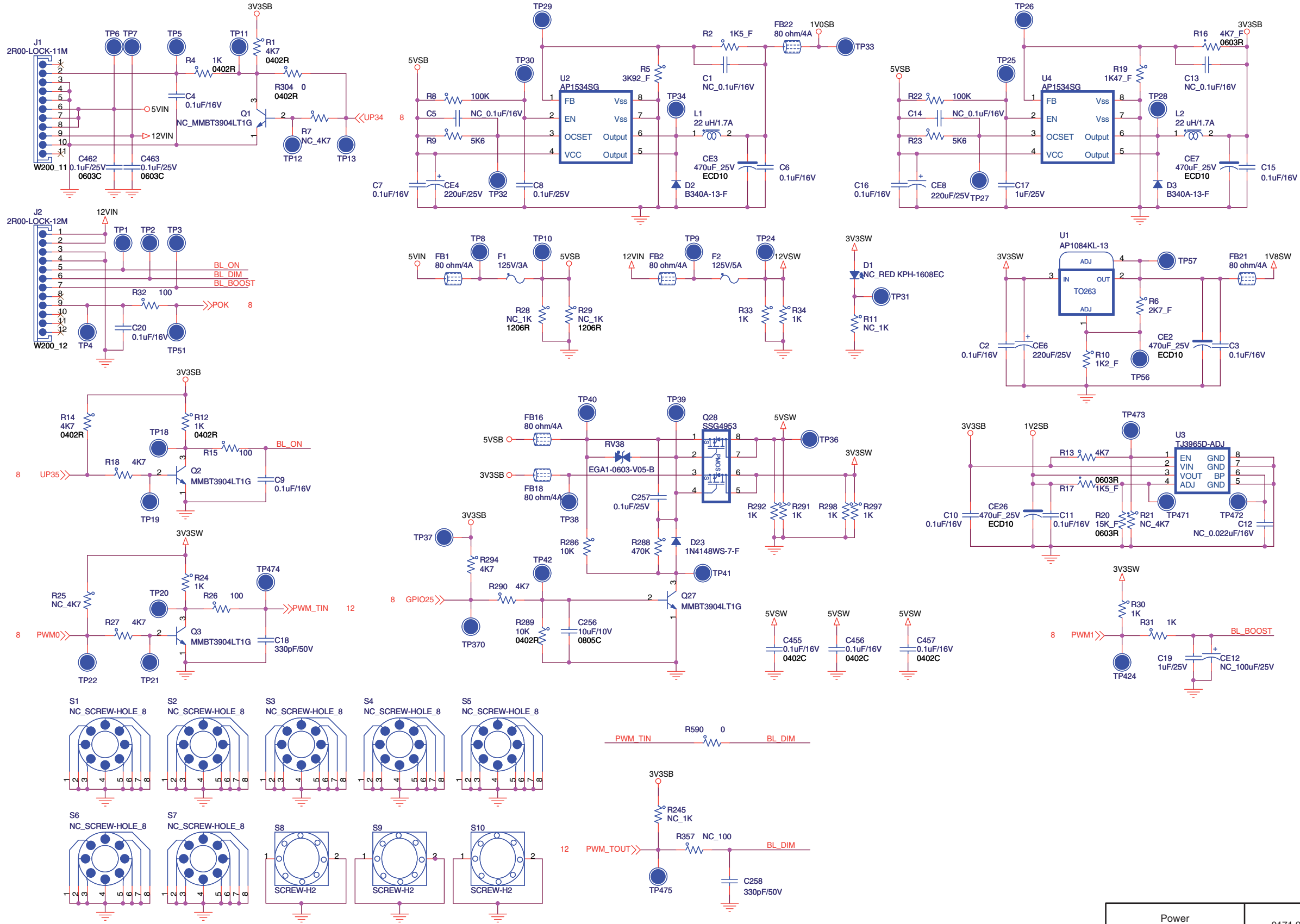


SSB: Power

B01

Power

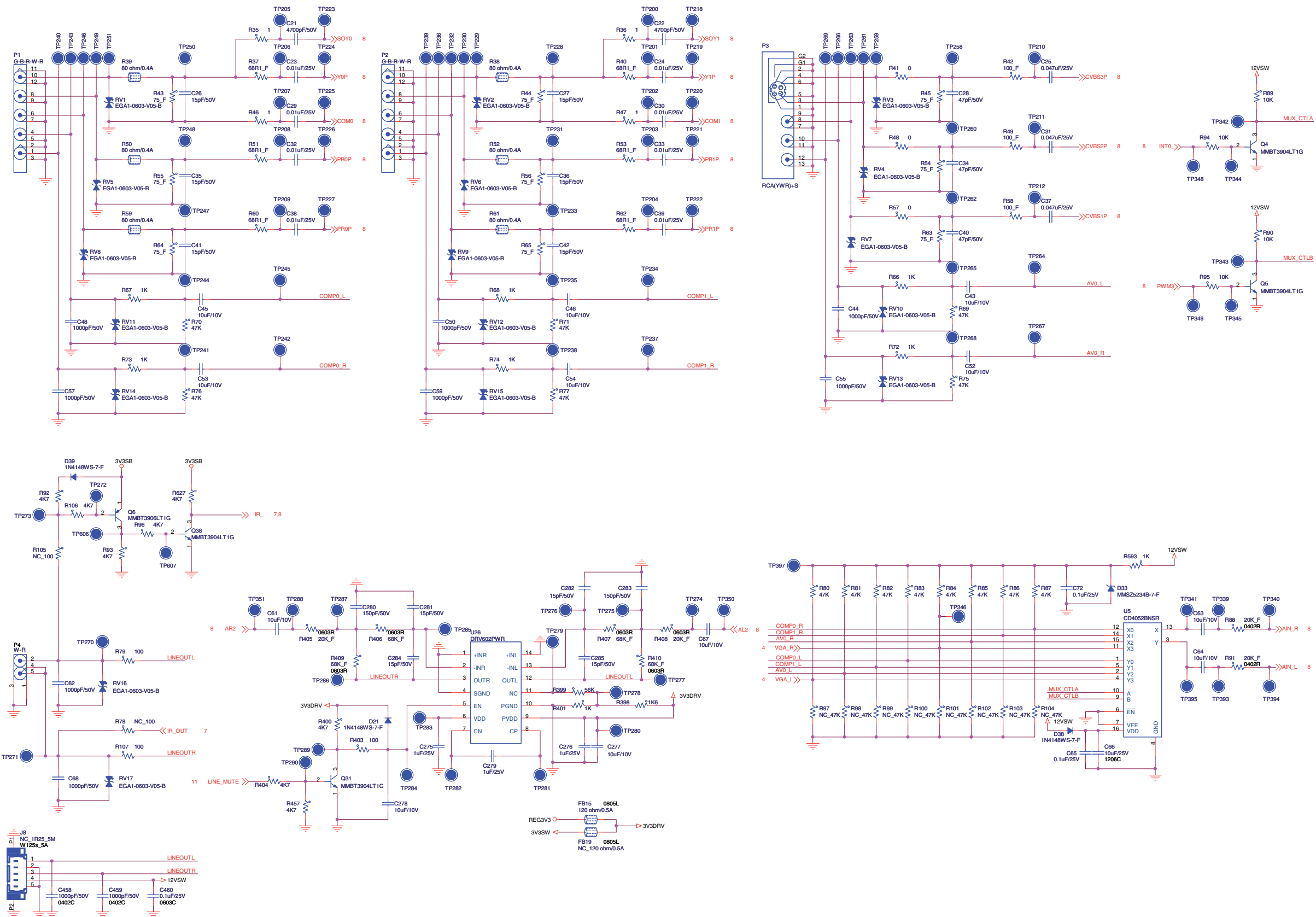
B01



Power	0171 2271 3203	2	2019-01-08
		3	
		4	
		5	

AV Input

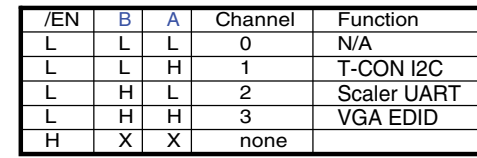
B02



0171 2271 3203

VGA Input

B03



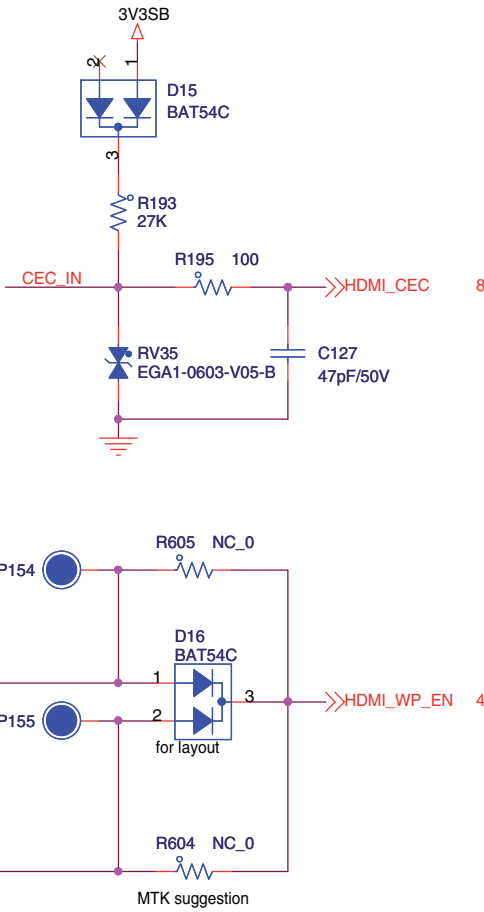
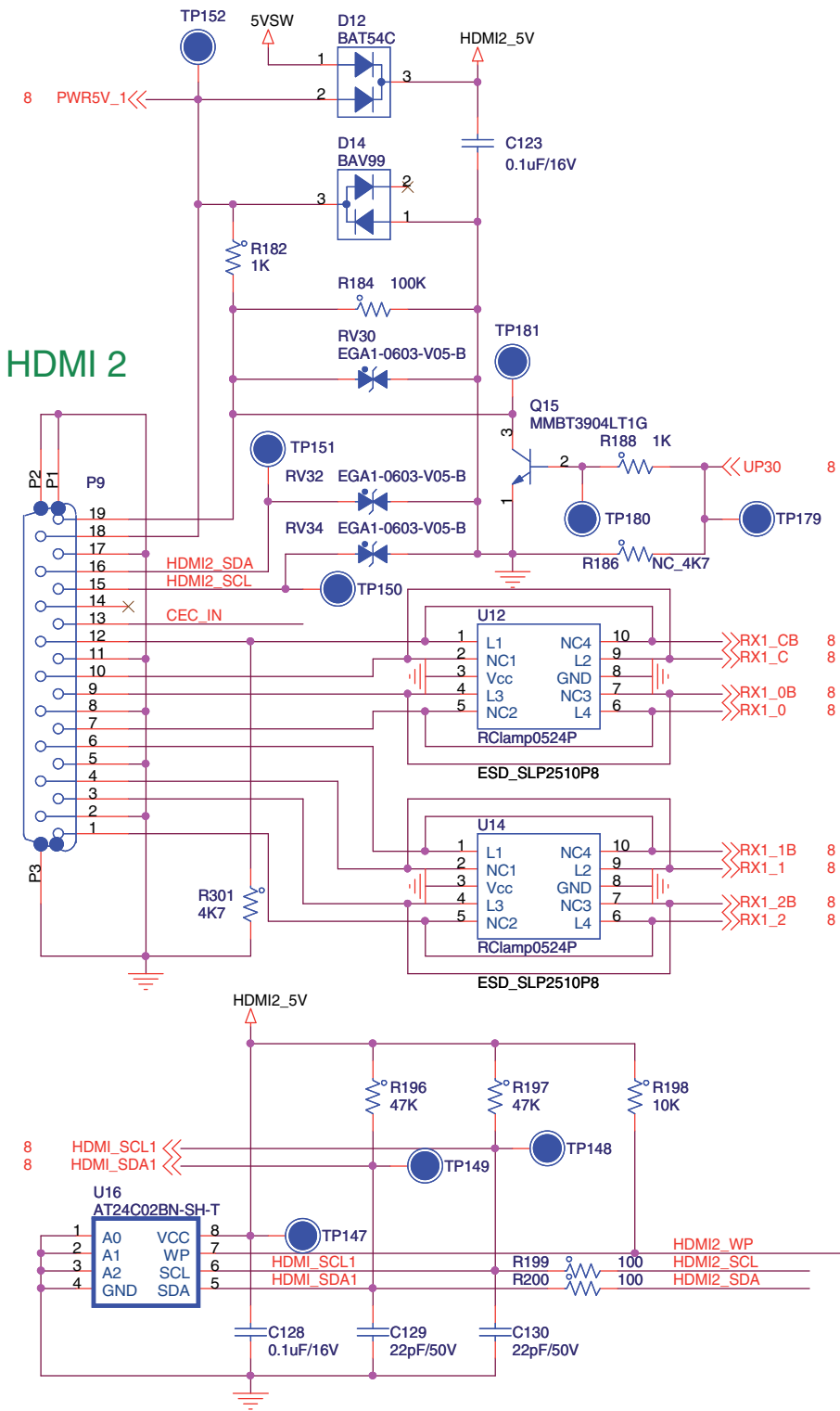
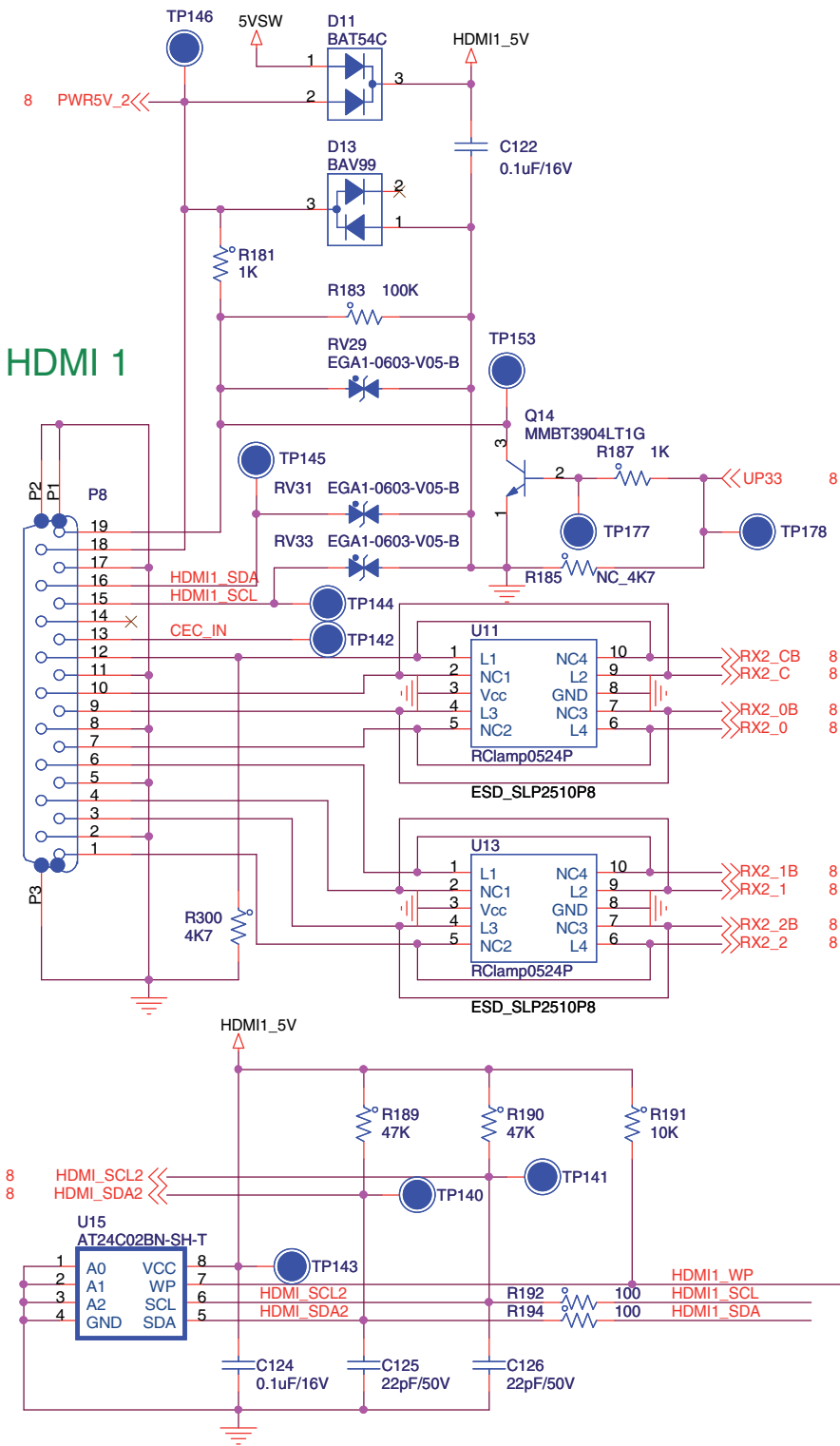
/EN	B	A	Channel	Function
L	L	L	0	N/A
L	L	H	1	T-CON I2C
L	H	L	2	Scaler UART
L	H	H	3	VGA EDID
H	X	X	none	

SSB: HDMI Input

B04

HDMI Input

B04



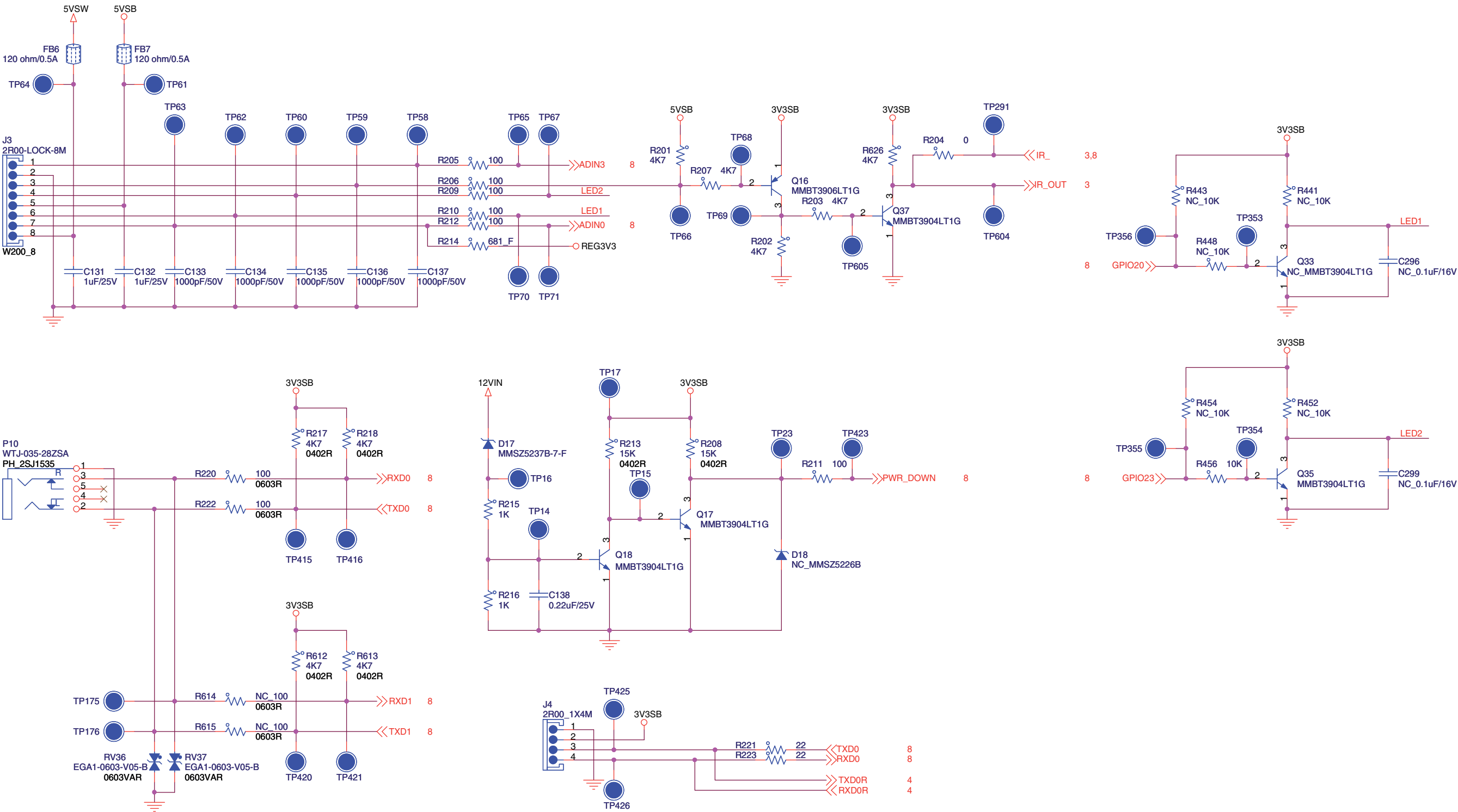
HDMI Input	0171-2271-3203	2	2010-01-05

SSB: Keyboard/LED/IR Interface

B06

Keyboard/LED/IR Interface

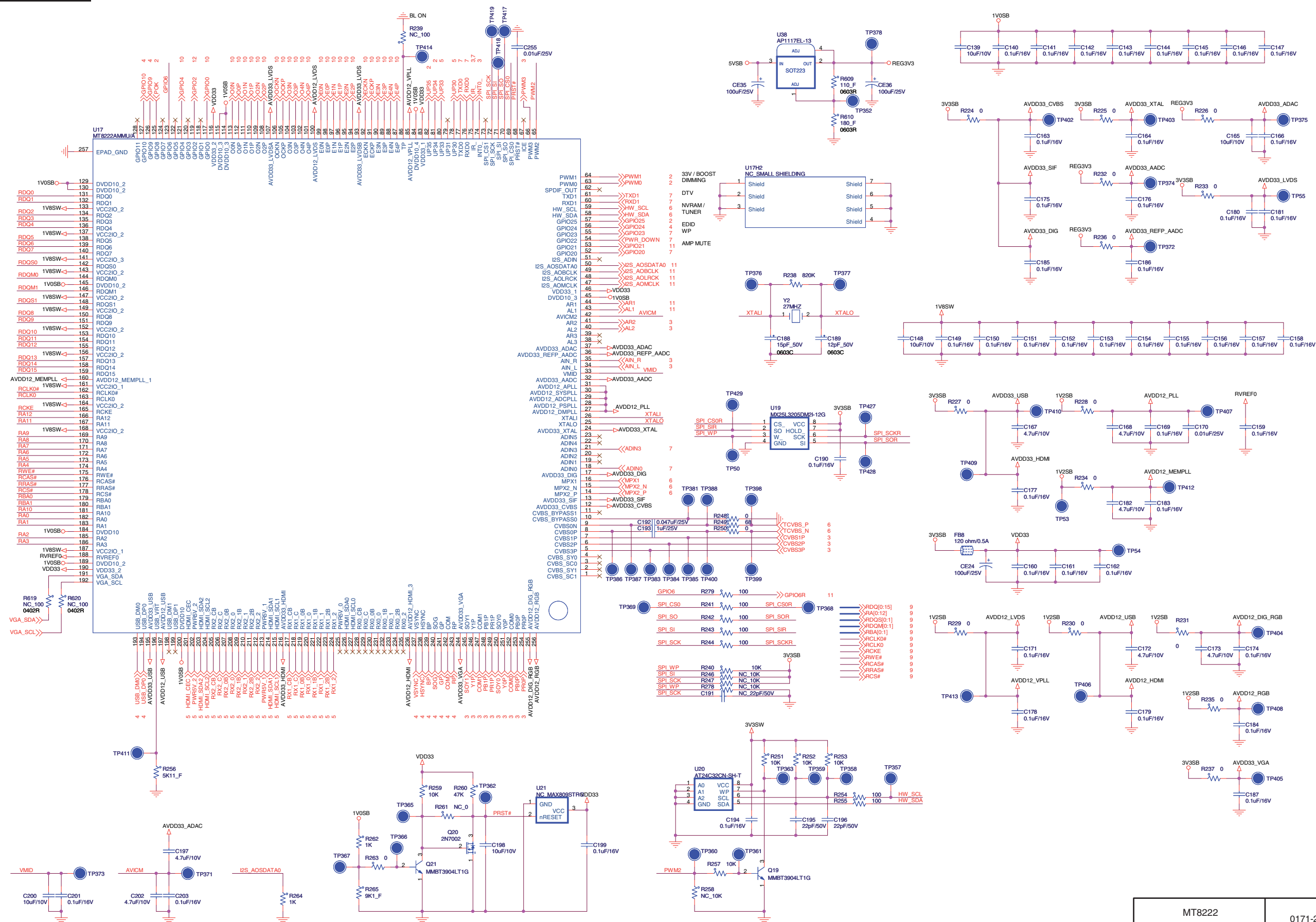
B06



Keyboard/LED/IR Interface	0171-2271-3203	2	2010-01-05

MT8222

B07



0171-2271-3203

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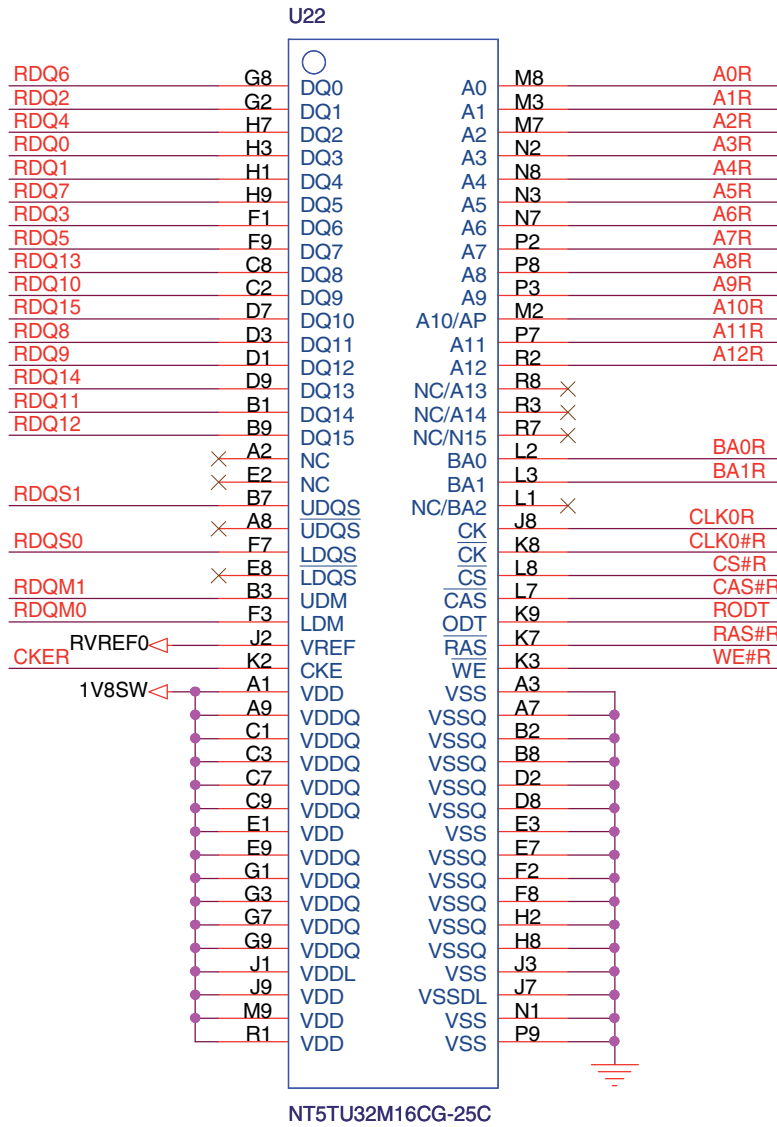
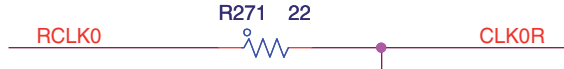
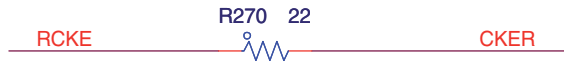
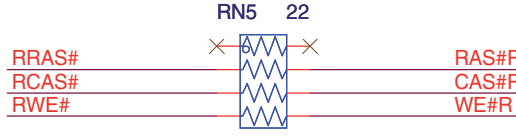
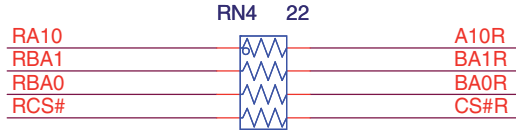
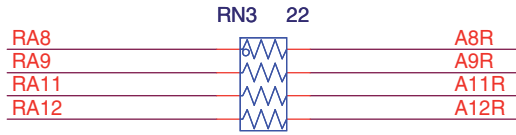
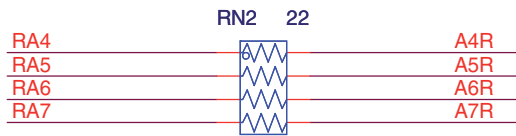
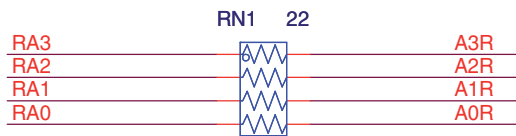
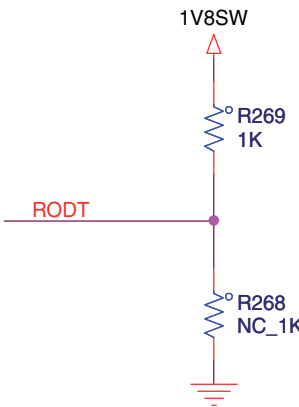
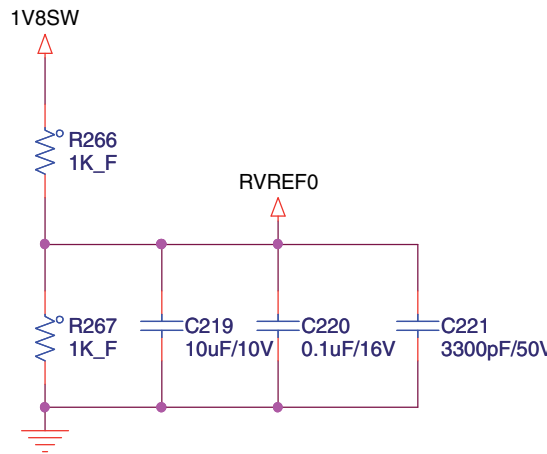
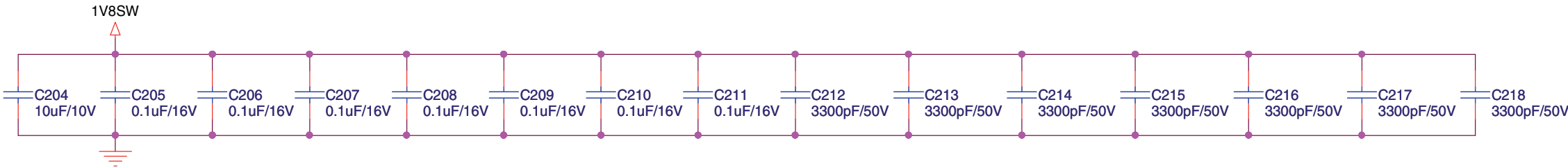
18930_506_100302.eps
100302

SSB: DDR2 DRAM

B08

DDR2 DRAM

B08



DDR2 DRAM

0171-2271-3203

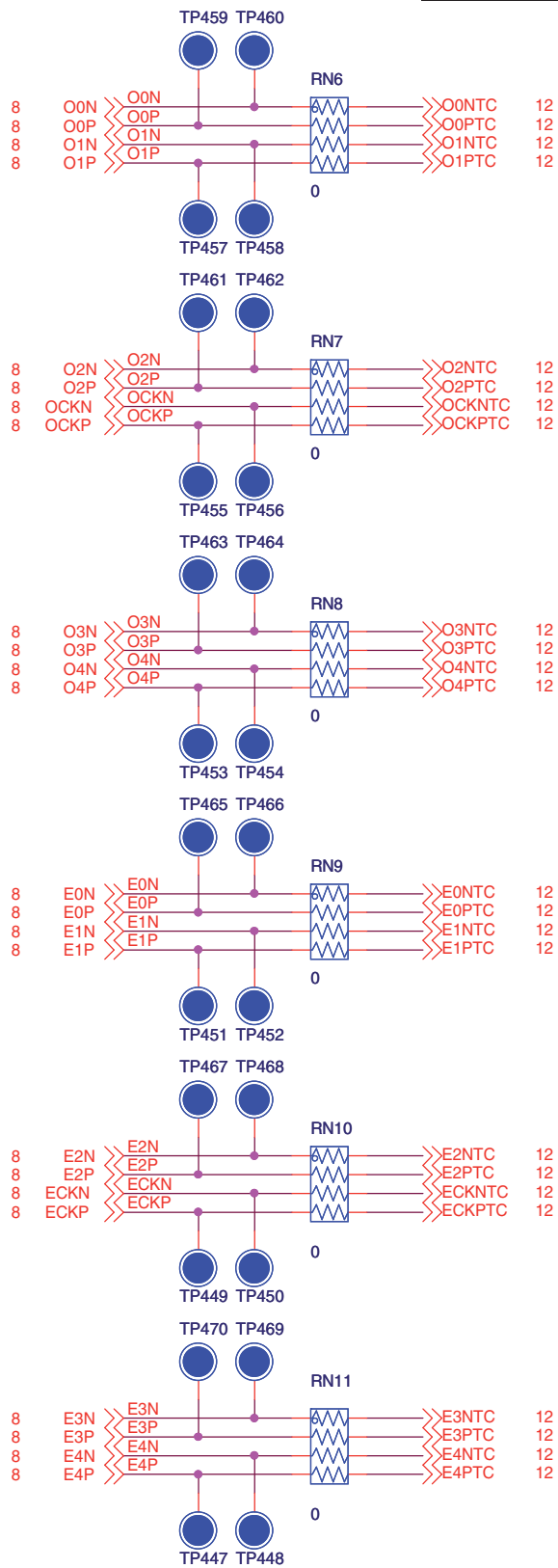
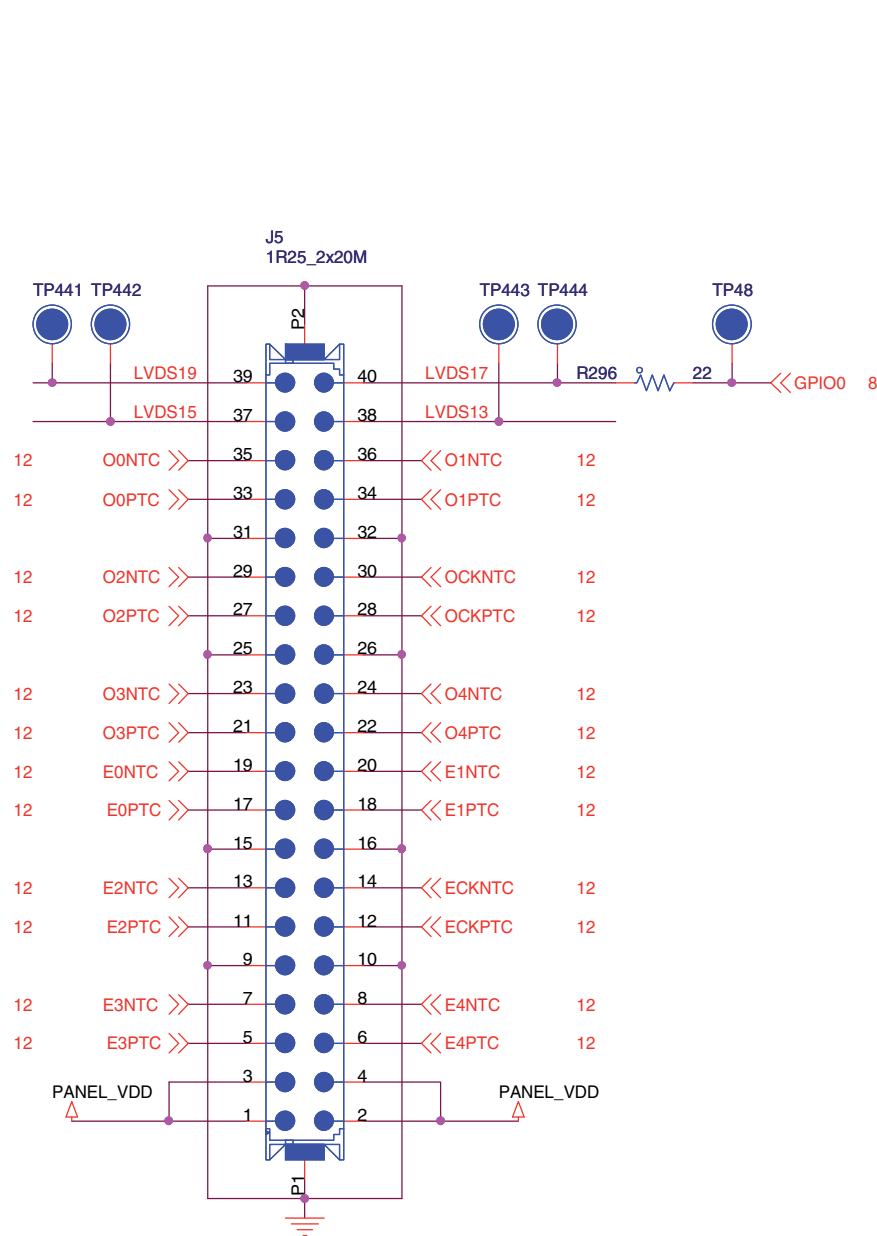
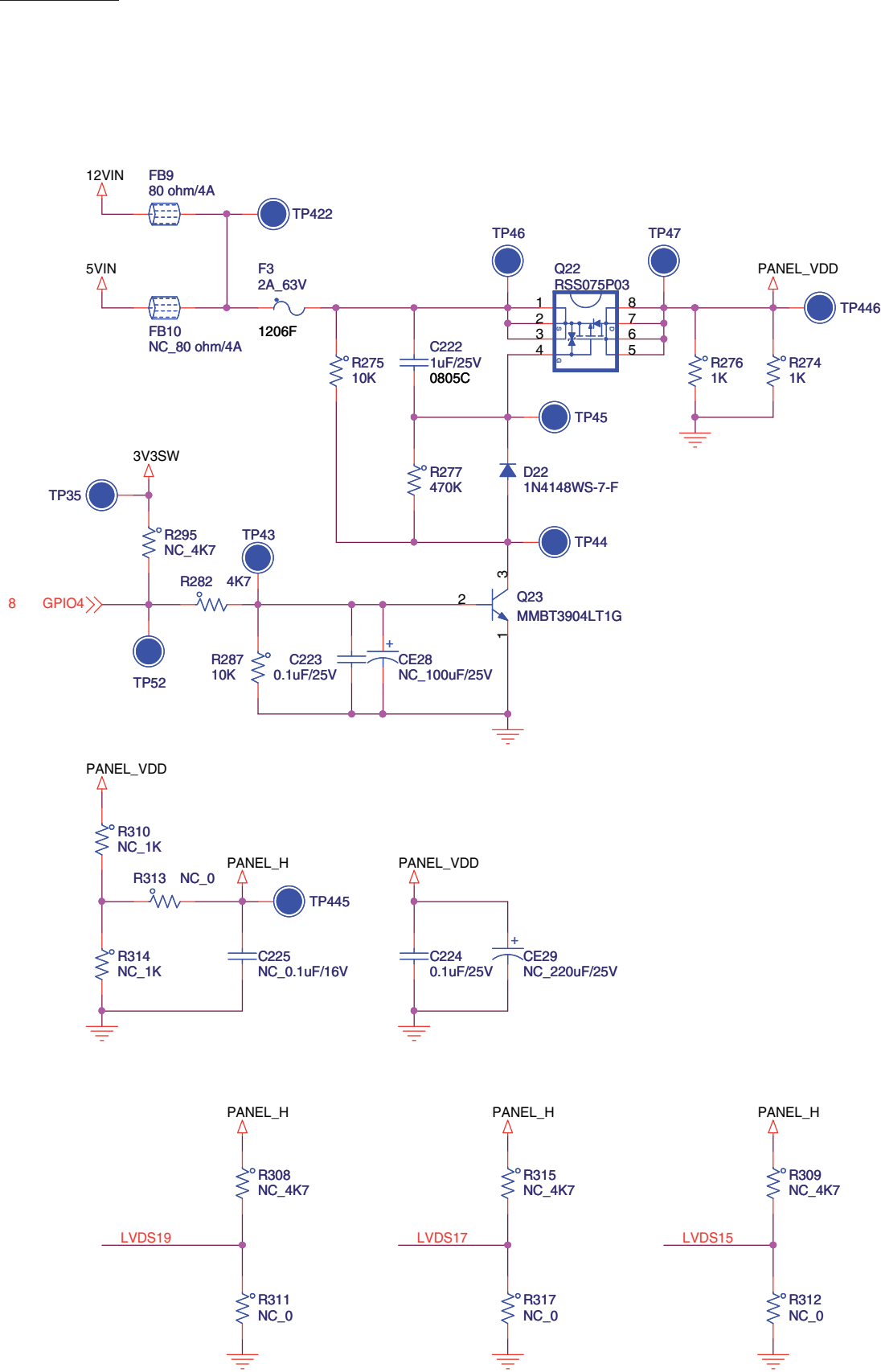
1	2010-01-05
2	
3	
4	

SSB: LVDS Output

B09

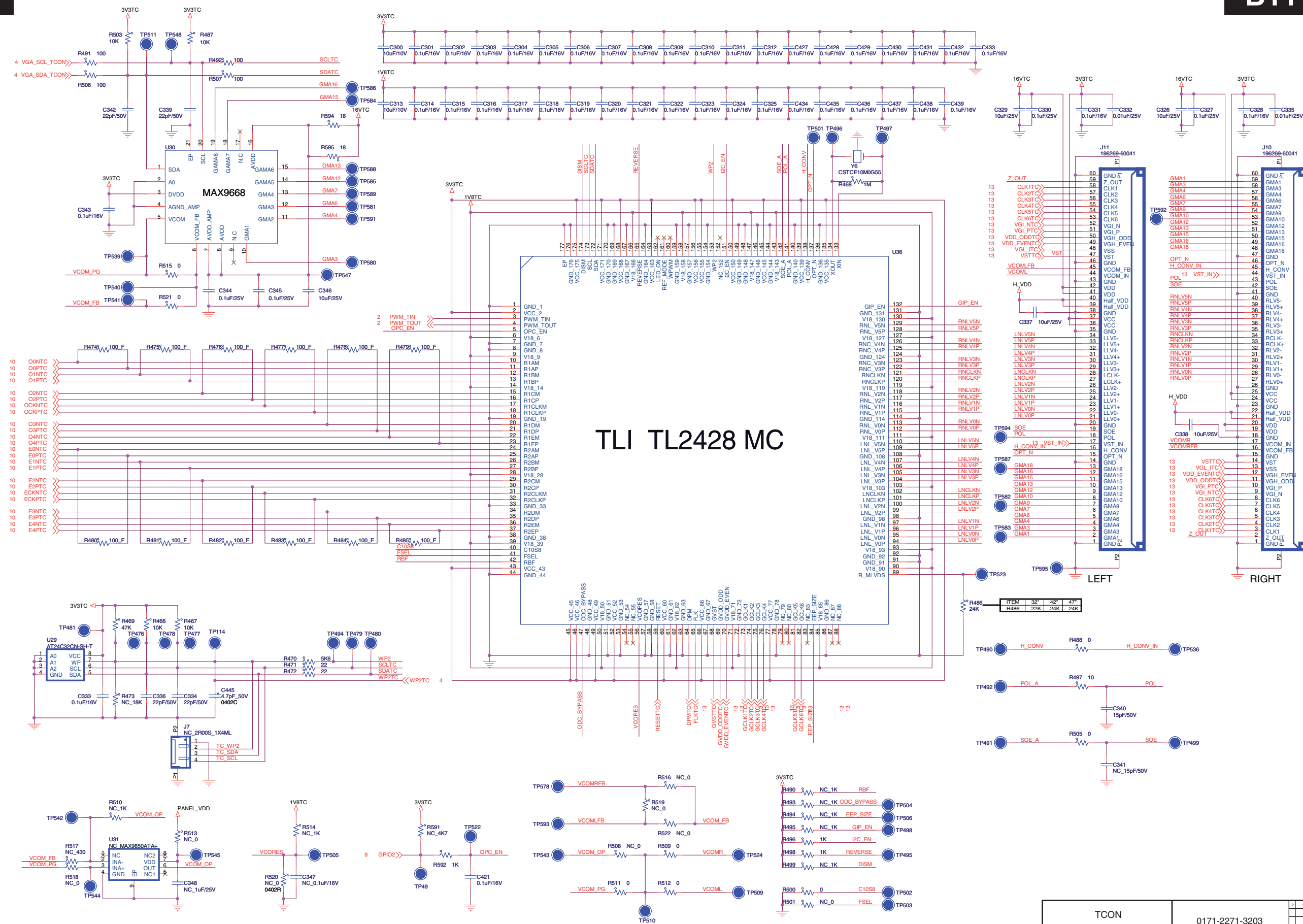
LVDS Output

B09



LVDS Output	0171-2271-3203	2	2010-01-05

TCON

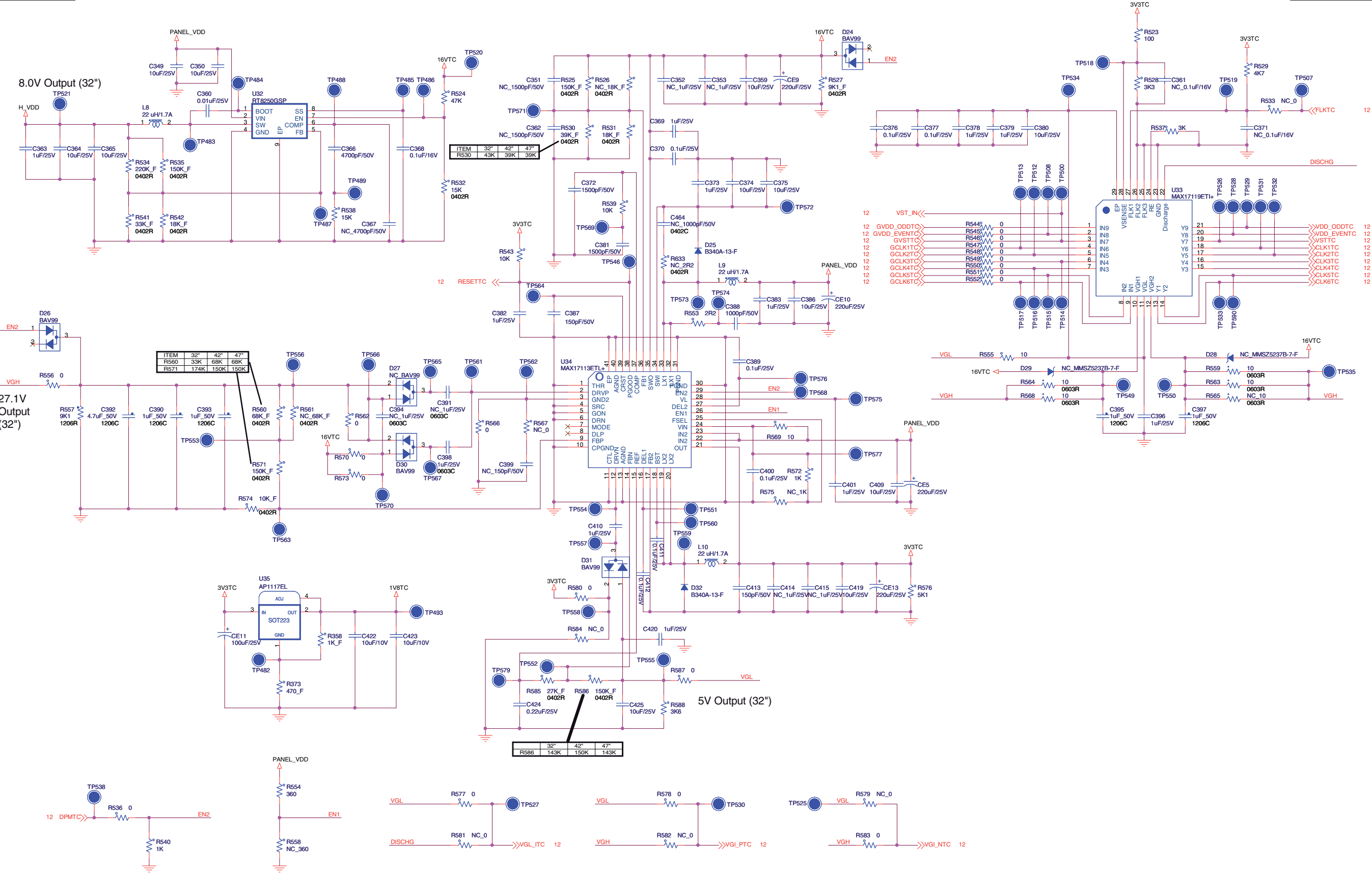


SSB: TCON Power

B12

TCON Power

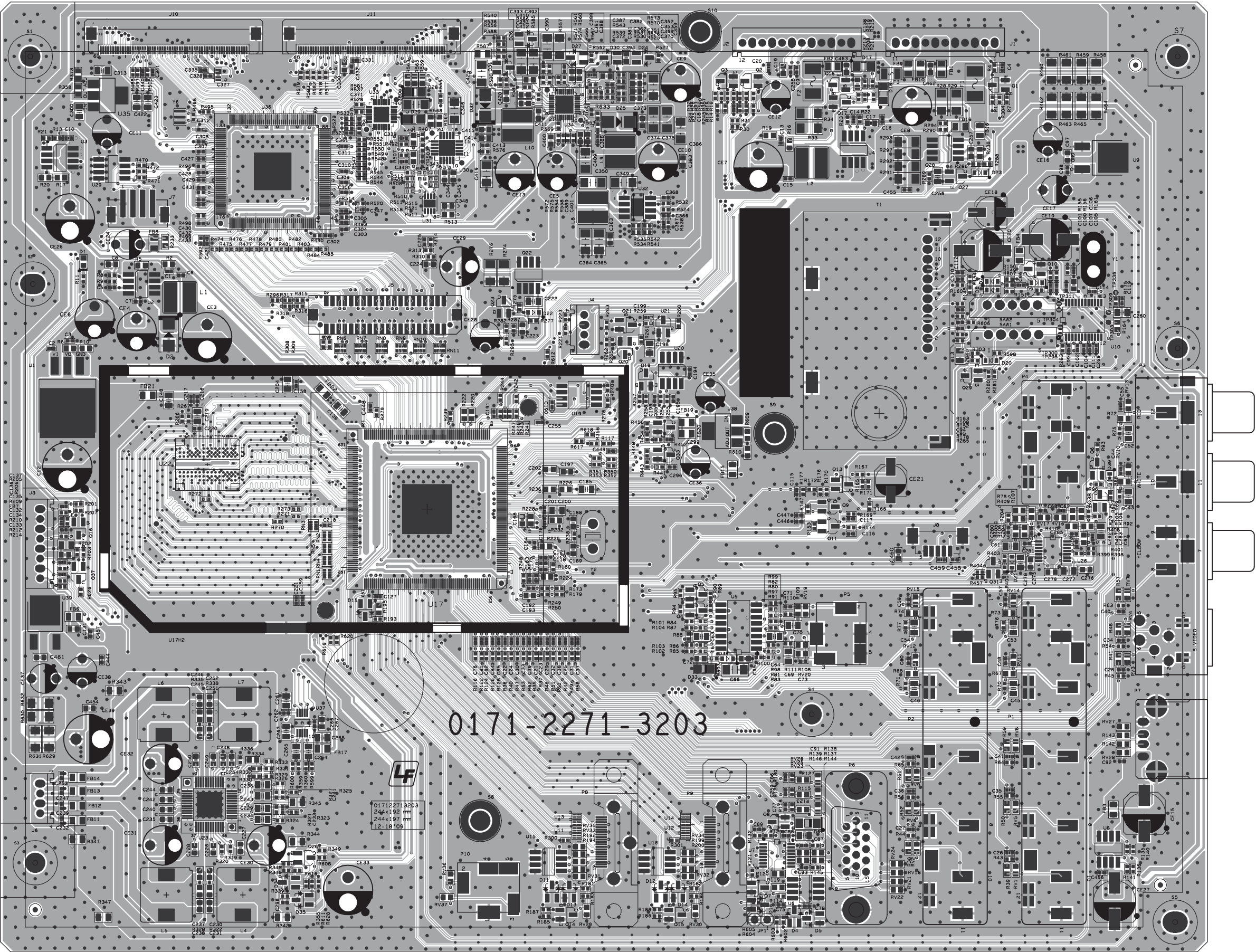
B12



TCON Power

0171-2271-3203

Layout Small Signal Board (Overview Top Side)

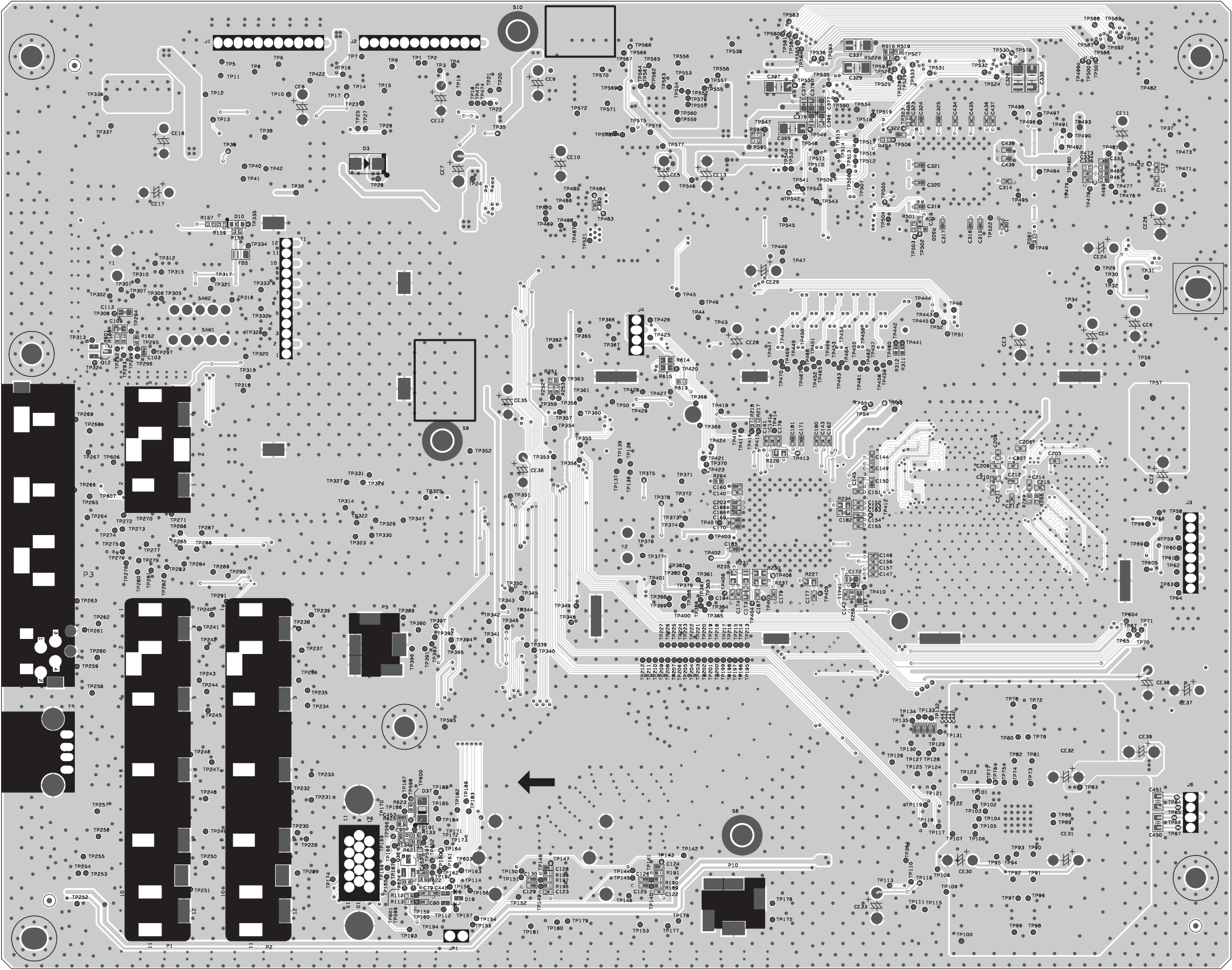


SSB top

0171 2271 3203

3	2009-12-18

Layout Small Signal Board (Overview Bottom Side)



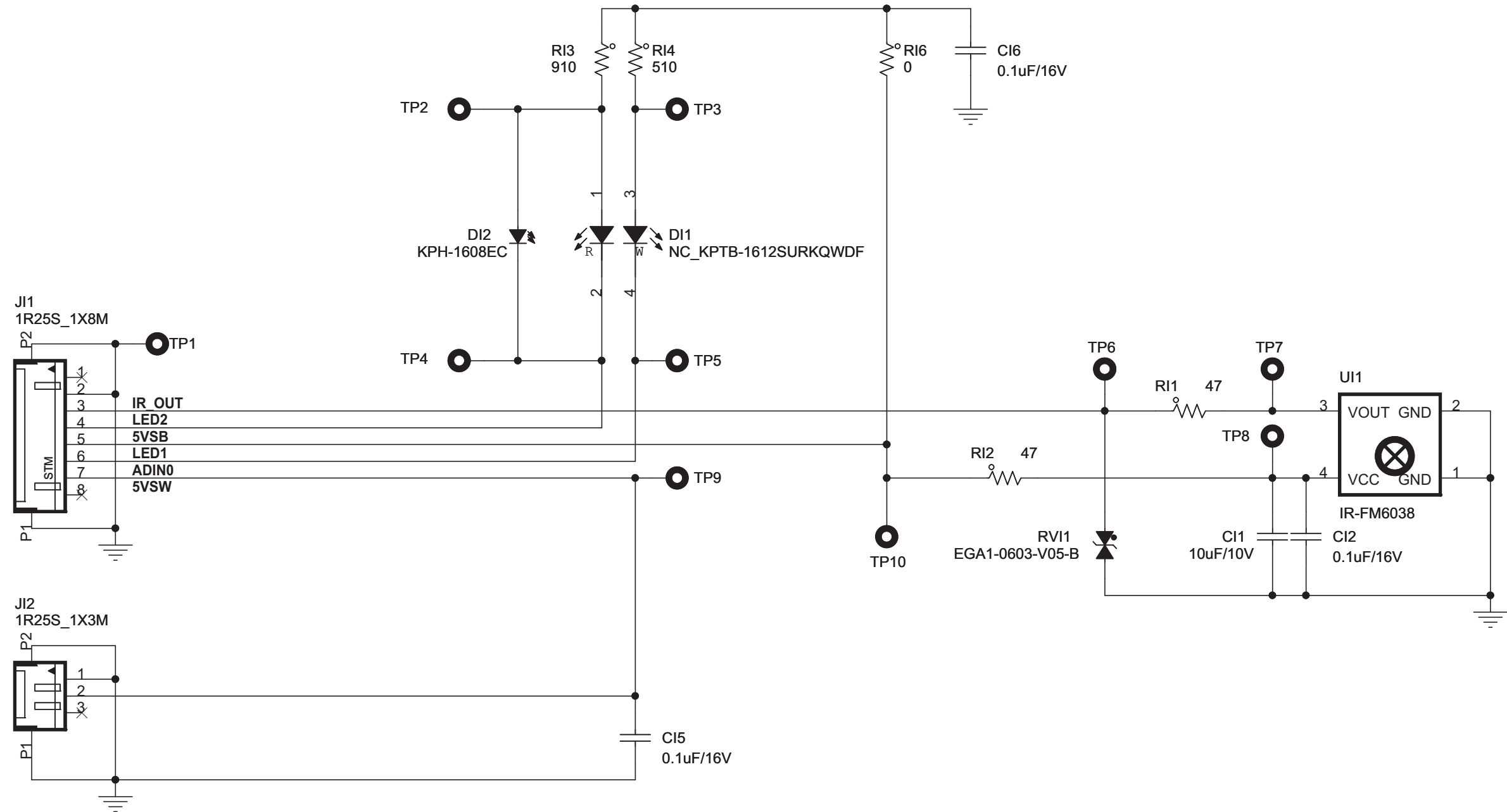
SSB bottom	0171 2271 3203	3	2009-12-18

IR/LED Board

J

LED/IR Board

J



IR/LED	0171 1671 0722	2	2009-10-09

Personal Notes:

