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# Service Manual

| Contents   | Page                     |
|--|--------------------------|
| <a href="#">1. Revision List</a>                                 | <a href="#">2</a>        |
| <a href="#">2. Technical Specifications, Connections</a>         | <a href="#">2</a>        |
| <a href="#">3. Precautions, Notes, and Abbreviation List</a>     | <a href="#">5</a>        |
| <a href="#">4. Mechanical Instructions</a>                       | <a href="#">9</a>        |
| <a href="#">5. Service Modes, Error Codes, and Fault Finding</a> | <a href="#">15</a>       |
| <a href="#">6. Alignments</a>                                    | <a href="#">21</a>       |
| <a href="#">7. Circuit Descriptions</a>                          | <a href="#">24</a>       |
| <a href="#">8. IC Data Sheets</a>                                | <a href="#">28</a>       |
| <a href="#">9. Block Diagrams</a>                                |                          |
| <a href="#">Wiring Diagram 32"</a>                               | <a href="#">37</a>       |
| <a href="#">Wiring Diagram 42"</a>                               | <a href="#">38</a>       |
| <a href="#">Block Diagram</a>                                    | <a href="#">40</a>       |
| <a href="#">10. Circuit Diagrams and PWB Layouts</a>             |                          |
| <a href="#">Power 32"</a>  | (A01) <a href="#">41</a> |
| <a href="#">Inverter 32"</a>                                     | (A02) <a href="#">42</a> |
| <a href="#">Power 42" &amp; 47"</a>                              | (A01) <a href="#">45</a> |
| <a href="#">Inverter 42" &amp; 47"</a>                           | (A02) <a href="#">46</a> |
| <a href="#">SSB: Power-1</a>                                     | (B01) <a href="#">49</a> |
| <a href="#">SSB: Power-2</a>                                     | (B02) <a href="#">50</a> |
| <a href="#">SSB: Tuner</a>                                       | (B03) <a href="#">51</a> |
| <a href="#">SSB: MT5363 By-pass/Trap</a>                         | (B04) <a href="#">52</a> |
| <a href="#">SSB: MT5363 peripheral/USB2.0</a>                    | (B05) <a href="#">53</a> |
| <a href="#">SSB: DDR2 memory</a>                                 | (B06) <a href="#">54</a> |
| <a href="#">SSB: Flash/JTAG/UART/IR</a>                          | (B07) <a href="#">55</a> |
| <a href="#">SSB: CI card</a>                                     | (B08) <a href="#">56</a> |
| <a href="#">SSB: Scart1/Scart2</a>                               | (B09) <a href="#">57</a> |
| <a href="#">SSB: YPbPr/VGA input</a>                             | (B10) <a href="#">58</a> |
| <a href="#">SSB: HDMI 1/ HDMI 2</a>                              | (B11) <a href="#">59</a> |
| <a href="#">SSB: Audio Amp/Headphone out</a>                     | (B12) <a href="#">60</a> |
| <a href="#">SSB: LVDS output</a>                                 | (B13) <a href="#">61</a> |
| <a href="#">SSB: T-CON power</a>                                 | (B14) <a href="#">62</a> |
| <a href="#">SSB: T-CON main chip</a>                             | (B15) <a href="#">63</a> |
| <a href="#">IR/LED Board</a>                                     | (J) <a href="#">66</a>   |

| Contents                           | Page               |
|------------------------------------|--------------------|
| <a href="#">11. Styling Sheets</a> |                    |
| <a href="#">Styling Sheet 32"</a>  | <a href="#">68</a> |
| <a href="#">Styling Sheet 42"</a>  | <a href="#">69</a> |
| <a href="#">Styling Sheet 47"</a>  | <a href="#">70</a> |

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# 1. Revision List

## Manual xxxx xxx xxxx.0

- First release.

## Manual xxxx xxx xxxx.1

- Added models 47PFL3605H/xx to the manual
- **Chapter 2:** Added new models to [Table 2-1](#).
- **Chapter 4:** added wiring diagrams and mechanical information of 47" sets.
- **Chapter 4:** added information on returning a defect LCD panel.
- **Chapter 5:** Updated SAM contents.
- **Chapter 6:** Added table 6-2 White tone default settings and updated table 6-3 Panel codes overview.
- **Chapter 9:** Added 47" Wiring Diagram.
- **Chapter 11:** Added 47" Styling Sheet.

## Manual xxxx xxx xxxx.2

- Added models 32HFL3232D/10 and 32PFL3205H/12 to the manual
- **Chapter 2:** Added new models in [Table 2-1](#).
- **Chapter 5:** Updated SAM contents.
- **Chapter 6:** Add the panel codes in [Table 6-3](#).

# 2. Technical Specifications, Connections

## Index of this chapter:

[2.1 Technical Specifications](#)

[2.2 Directions for Use](#)

[2.3 Connections](#)

[2.4 Chassis Overview](#)

## 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

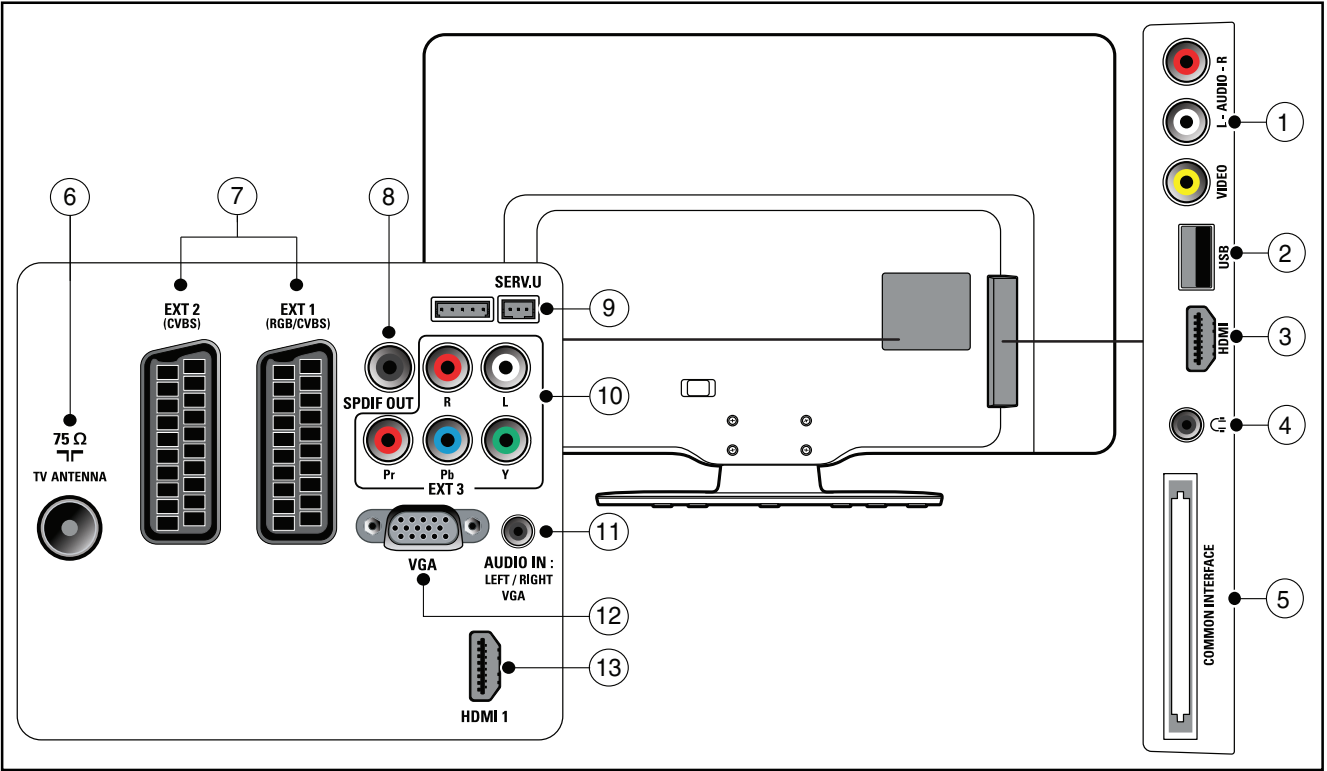
For on-line product support please use the links in. Here is product information available, as well as getting started, user manuals, frequently asked questions and software & drivers.

**Table 2-1 Described Model Numbers**

| Model Number                  | Styling | Published in   |
|-------------------------------|---------|----------------|
| <a href="#">32HFL3232D/10</a> | Dali    | 3122 785 18852 |
| <a href="#">32PFL3205H/12</a> | Dali    | 3122 785 18850 |
| <a href="#">32PFL3605H/12</a> | Dali    | 3122 785 18850 |
| <a href="#">42PFL3605H/12</a> | Dali    | 3122 785 18850 |
| <a href="#">47PFL3605H/12</a> | Dali    | 3122 785 18851 |
| <a href="#">47PFL3605H/60</a> | Dali    | 3122 785 18851 |

**Note:** The given Model Numbers are subject to change.

## 2.3 Connections



18850\_001\_100107.eps  
100209

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 - Cinch: Video CVBS - In, Audio - In

Ye - Video CVBS 1 V<sub>PP</sub> / 75 Ω  
Rd - Audio R 0.5 V<sub>RMS</sub> / 10 kΩ  
Wh - Audio L 0.5 V<sub>RMS</sub> / 10 kΩ



#### 2 - USB2.0

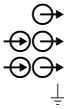


10000\_022\_090121.eps  
090121

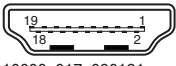
Figure 2-2 USB (type A)

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

Gnd



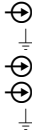
#### 3 - HDMI: Digital Video, Digital Audio - In



10000\_017\_090121.eps  
090428

Figure 2-3 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 - n.c.
- 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



#### 4 - Head phone (Output)

Bk - Head phone 80 - 600 Ω / 10 mW



#### 5 - Common Interface

68p - See diagram B08 [SSB: CI card](#).



### 2.3.2 Rear Connections

#### 6 - TV ANTENNA - In

Signal input from an antenna, cable or satellite.

### 7 - EXT1 - 2: Video RGB/YC - In, CVBS - In/Out, Audio - In/Out

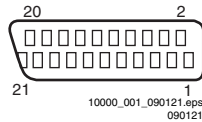


Figure 2-4 SCART connector

|    |                    |  |    |
|----|--------------------|--|----|
| 1  | - Audio R          | 0.5 V <sub>RMS</sub> / 1 kΩ                                | ⊕→ |
| 2  | - Audio R          | 0.5 V <sub>RMS</sub> / 10 kΩ                               | ⊕→ |
| 3  | - Audio L          | 0.5 V <sub>RMS</sub> / 1 kΩ                                | ⊕→ |
| 4  | - Ground Audio     | Gnd  | ⊕→ |
| 5  | - Ground Blue      | Gnd  | ⊕→ |
| 6  | - Audio L          | 0.5 V <sub>RMS</sub> / 10 kΩ                               | ⊕→ |
| 7  | - Video Blue/C-out | 0.7 V <sub>PP</sub> / 75 Ω                                 | ⊕→ |
| 8  | - Function Select  | 0 - 2 V: INT<br>4.5 - 7 V: EXT 16:9<br>9.5 - 12 V: EXT 4:3 | ⊕→ |
| 9  | - Ground Green     | Gnd  | ⊕→ |
| 10 | - n.c.             |  | ⊕→ |
| 11 | - Video Green      | 0.7 V <sub>PP</sub> / 75 Ω                                 | ⊕→ |
| 12 | - n.c.             |  | ⊕→ |
| 13 | - Ground Red       | Gnd  | ⊕→ |
| 14 | - Ground P50       | Gnd  | ⊕→ |
| 15 | - Video Red/C      | 0.7 V <sub>PP</sub> / 75 Ω                                 | ⊕→ |
| 16 | - Status/FBL       | 0 - 0.4 V: INT<br>1 - 3 V: EXT / 75 Ω                      | ⊕→ |
| 17 | - Ground Video     | Gnd  | ⊕→ |
| 18 | - Ground FBL       | Gnd  | ⊕→ |
| 19 | - Video CVBS       | 1 V <sub>PP</sub> / 75 Ω                                   | ⊕→ |
| 20 | - Video CVBS/Y     | 1 V <sub>PP</sub> / 75 Ω                                   | ⊕→ |
| 21 | - Shield           | Gnd  | ⊕→ |

### 8 - Cinch: S/PDIF - Out

|    |           |                                   |    |
|----|-----------|-----------------------------------|----|
| Bk | - Coaxial | 0.4 - 0.6V <sub>PP</sub> / 75 ohm | ⊕→ |
|----|-----------|-----------------------------------|----|

### 9 - Service / UART

|   |           |          |    |
|---|-----------|----------|----|
| 1 | - Ground  | Gnd      | ⊕→ |
| 2 | - UART_TX | Transmit | ⊕→ |

|   |           |         |    |
|---|-----------|---------|----|
| 3 | - UART_RX | Receive | ⊕→ |
|---|-----------|---------|----|

### 10 - EXT3: Video YPbPr - In, Audio - In

|    |              |                            |    |
|----|--------------|----------------------------|----|
| Gn | - Video - Y  | 1 V <sub>PP</sub> / 75 W   | ⊕→ |
| Bu | - Video - Pb | 0.7 V <sub>PP</sub> / 75 W | ⊕→ |
| Rd | - Video - Pr | 0.7 V <sub>PP</sub> / 75 W | ⊕→ |

|    |             |                              |    |
|----|-------------|------------------------------|----|
| Wh | - Audio - L | 0.5 V <sub>RMS</sub> / 10 kW | ⊕→ |
| Rd | - Audio - R | 0.5 V <sub>RMS</sub> / 10 kW | ⊕→ |

### 11 - Audio - In: Left / Right, VGA

|    |                |                              |    |
|----|----------------|------------------------------|----|
| Gn | - Audio L/R in | 0.5 V <sub>RMS</sub> / 10 kW | ⊕→ |
|----|----------------|------------------------------|----|

### 12 - PC IN:VGA

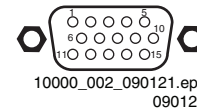


Figure 2-5 VGA connector

|    |                     |                            |    |
|----|---------------------|----------------------------|----|
| 1  | - Video Red         | 0.7 V <sub>PP</sub> / 75 Ω | ⊕→ |
| 2  | - Video Green       | 0.7 V <sub>PP</sub> / 75 Ω | ⊕→ |
| 3  | - Video Blue        | 0.7 V <sub>PP</sub> / 75 Ω | ⊕→ |
| 4  | - n.c.              |                            | ⊕→ |
| 5  | - Ground            | Gnd                        | ⊕→ |
| 6  | - Ground Red        | Gnd                        | ⊕→ |
| 7  | - Ground Green      | Gnd                        | ⊕→ |
| 8  | - Ground Blue       | Gnd                        | ⊕→ |
| 9  | - +5V <sub>DC</sub> | +5 V                       | ⊕→ |
| 10 | - Ground Sync       | Gnd                        | ⊕→ |
| 11 | - Ground Red        | Gnd                        | ⊕→ |
| 12 | - DDC_SDA           | DDC data                   | ⊕→ |
| 13 | - H-sync            | 0 - 5 V                    | ⊕→ |
| 14 | - V-sync            | 0 - 5 V                    | ⊕→ |
| 15 | - DDC_SCL           | DDC clock                  | ⊕→ |

### 13 - HDMI 1: Digital Video, Digital Audio - In

See [3 - HDMI: Digital Video, Digital Audio - In.](#)

## 2.4 Chassis Overview

Refer to [9. Block Diagrams](#) for PWB/CBA locations.



## 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.

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.



10000\_024\_090121.eps  
100105

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 <sup>2</sup> C | Inter IC bus   | O/C    | Open Circuit   |
| I <sup>2</sup> D | Inter IC Data bus  | OSD    | On Screen Display  |
| I <sup>2</sup> S | Inter IC Sound bus   | OAD    | Over the Air Download. Method of software upgrade via RF transmission. Upgrade software is broadcasted in TS with TV channels.   |
| IF               | Intermediate Frequency   | OTC    | On screen display Teletext and Control; also called Artistic (SAA5800)   |
| IR               | Infra Red  |        |  |
| 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  |
| PSL       | Power Supply with integrated LED drivers   | uP      | Microprocessor  |
| PSLS      | Power Supply with integrated LED drivers with added Scanning functionality   | UXGA    | 1600 × 1200 (4:3)   |
|           |  | V       | V-sync to the module  |
| PTC       | Positive Temperature Coefficient, non-linear resistor  | VESA    | Video Electronics Standards Association   |
| PWB       | Printed Wiring Board (same as "PCB")   | VGA     | 640 × 480 (4:3)   |
| PWM       | Pulse Width Modulation   | VL      | Variable Level out: processed audio output toward external amplifier                  |
| QRC       | Quasi Resonant Converter   | VSF     | Vestigial Side Band; modulation method  |
| QTNR      | Quality Temporal Noise Reduction   | WYSIWYR | What You See Is What You Record: record selection that follows main picture and sound |
| QVCP      | Quality Video Composition Processor  |         |   |
| RAM       | Random Access Memory   | WXGA    | 1280 × 768 (15:9)   |
| 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.        | XTAL    | Quartz crystal  |
|           |  | XGA     | 1024 × 768 (4:3)  |
| RC        | Remote Control   | Y       | Luminance signal  |
| RC5 / RC6 | Signal protocol from the remote control receiver   | Y/C     | Luminance (Y) and Chrominance (C) signal  |
| RESET     | RESET signal   | YPbPr   | Component video. Luminance and scaled color difference signals (B-Y and R-Y)          |
| ROM       | Read Only Memory   | YUV     | Component video   |
| 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 <sup>2</sup> C  |         |   |
| SCL-F     | CLock Signal on Fast I <sup>2</sup> C bus  |         |   |
| SD        | Standard Definition  |         |   |
| SDA       | Serial Data I <sup>2</sup> C   |         |   |
| SDA-F     | DAta Signal on Fast I <sup>2</sup> 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

### Index of this chapter:

[4.1 Cable Dressing](#)

[4.2 Service Positions](#)

[4.3 Assembly/Panel Removal 32"](#)

[4.4 Assembly/Panel Removal 42"](#)

[4.5 Returning a defect 32" or 42" LCD panel](#)

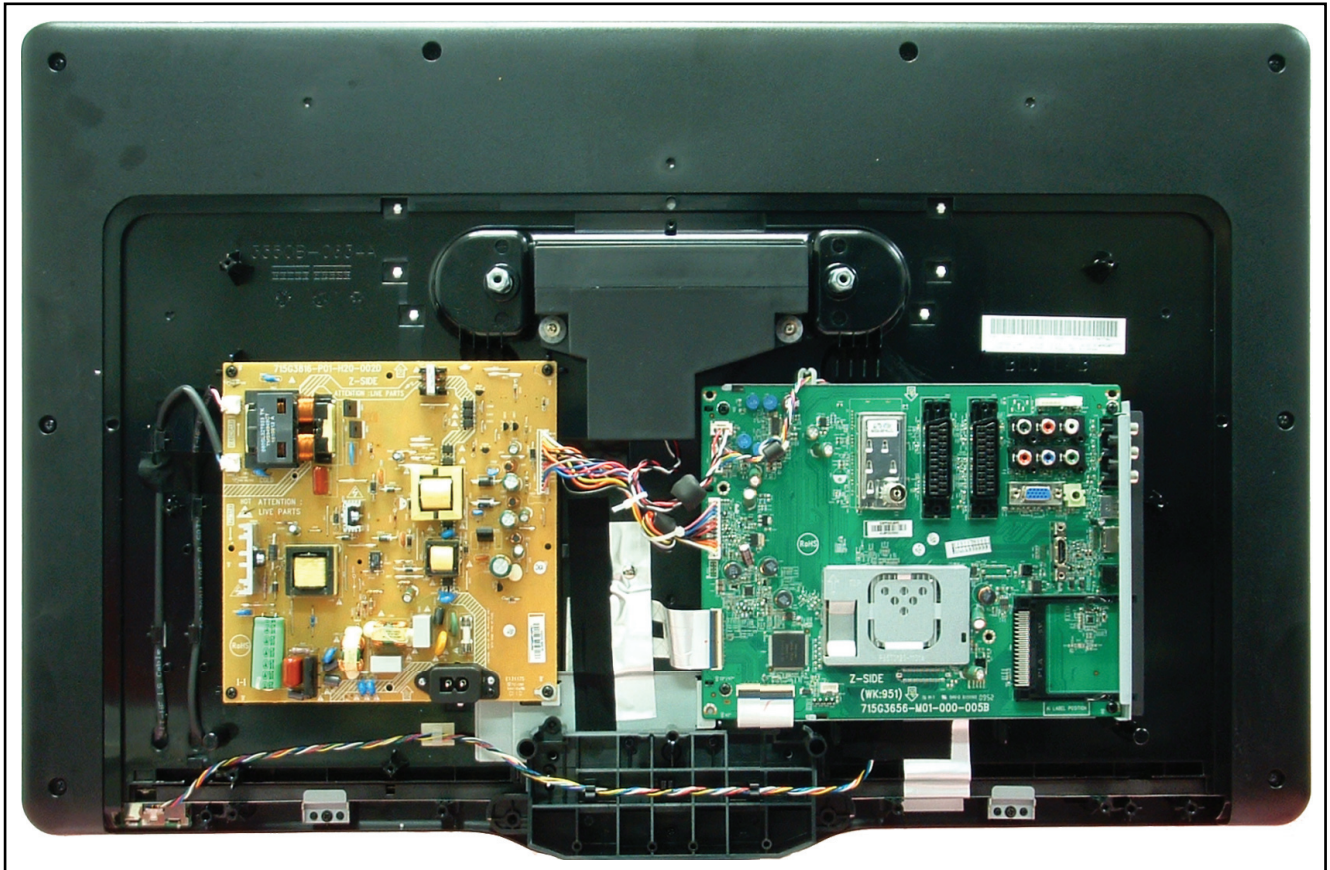
[4.6 Assembly/Panel Removal 47"](#)

[4.7 Set Re-assembly.](#)

### Notes:

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

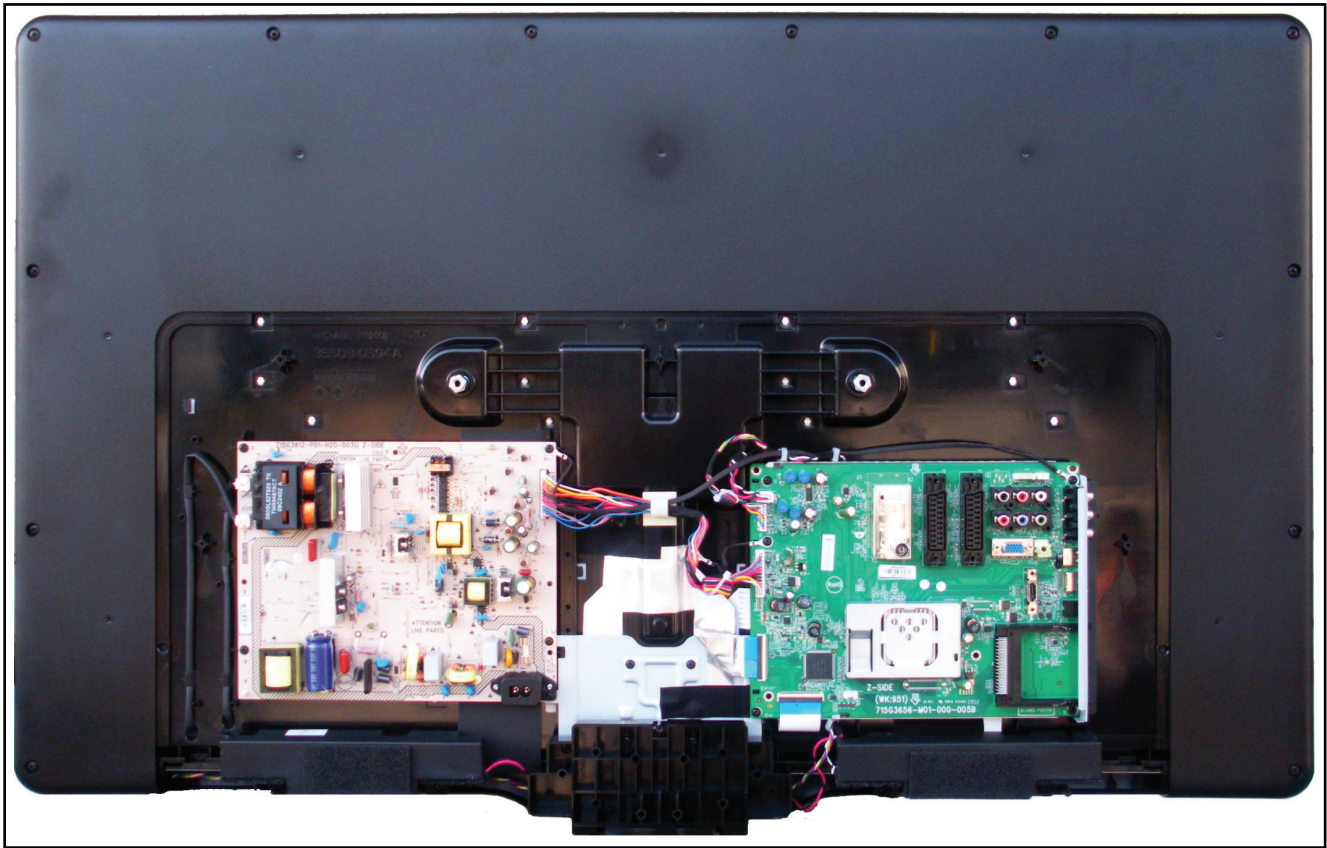
### 4.1 Cable Dressing



18850\_101\_100107.eps  
100202

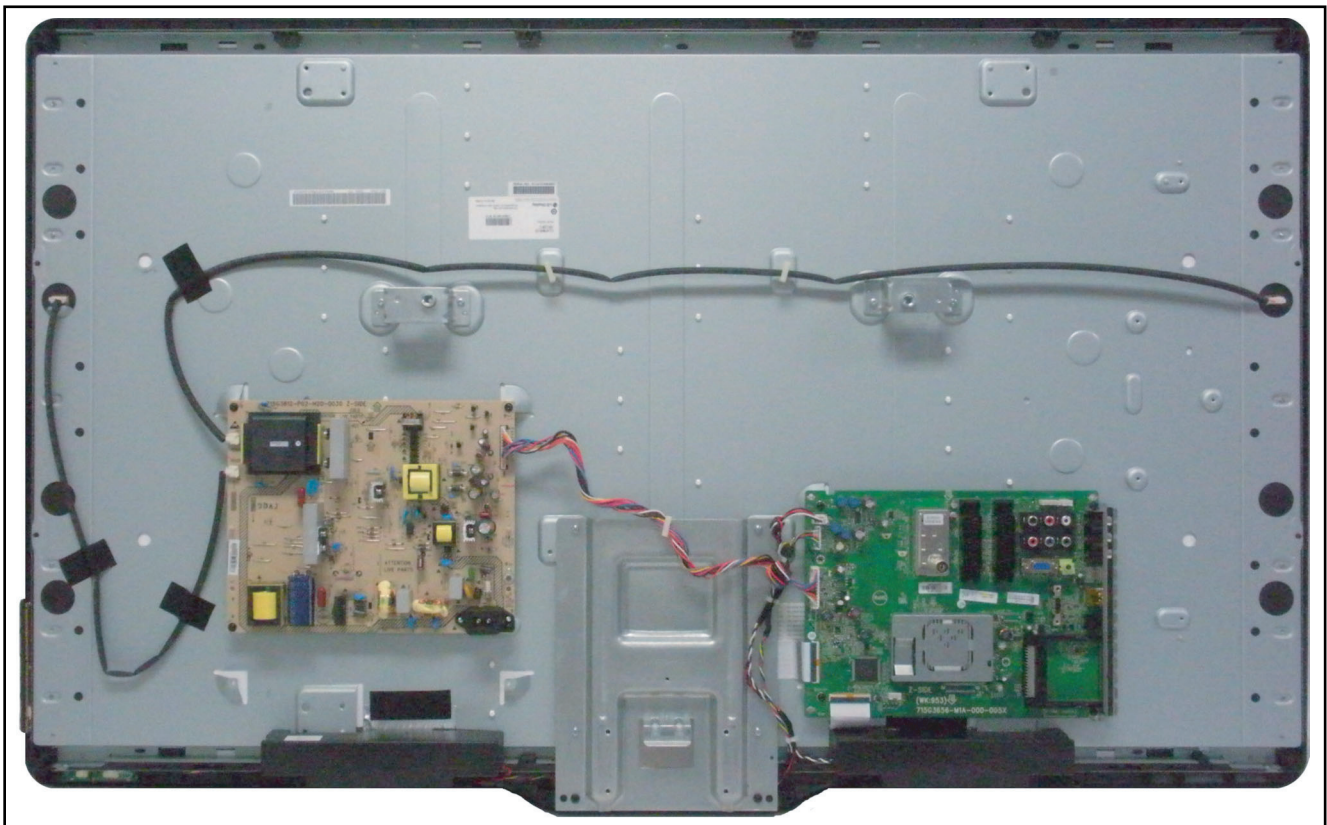
Figure 4-1 Cable dressing (32")





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100209

Figure 4-2 Cable dressing (42")



18850\_103\_100505.eps  
100505

Figure 4-3 Cable dressing (47")

## 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 32"

### 4.3.1 Rear Cover

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

1. Remove the 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 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.

1. Release the clips from both the LVDS Flat Foil connectors.  
**Caution:** be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors.
3. Release the tape near the bottom side of the set from the LCD panel.
4. Remove all other fixation screws from the SSB.
5. Take out the SSB together with its shielding.
6. Remove the screws near the HDMI and L/R audio connectors.
7. The SSB can now be shifted sideways away from the side connector cover and take out of the shielding.  
**Caution:** be careful not to damage the thermal pad between the SSB and shielding.

### 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.

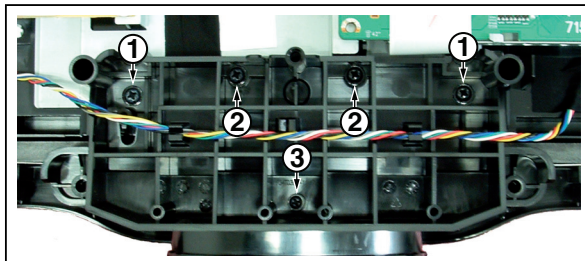
1. Unplug power connector from the SSB and remove the wire wrap from this cable.
  2. Unplug all other connectors from the PSU.
  3. Remove all fixation screws from the PSU.
  4. The PSU can now be taken out of the set.
- When defective, replace the whole unit.

#### 4.3.4 Stand removal

See [Figure 4-4](#).

**Caution:** it is mandatory to remount all different screws at their original position during re-assembly. Be sure to put the set in the Service Position.

1. Remove the SSB as described earlier up till step 5 and including step 5.
2. Remove the fixation screws [1], (M3).
3. Remove the fixation screws [2], (M4).
4. Remove the fixation screws [3], (Parker).
5. Take out the stand.



18850\_102\_100203.eps  
100203

Figure 4-4 Stand (32")

#### 4.3.5 Speakers

1. Unplug the speaker connector from the SSB and remove the wire wrap from this cable.
2. Remove the fixation screws from the speaker.
3. Take the speaker out.

When defective, replace the whole unit.

#### 4.3.6 Stand support plate

1. Release the IR/LED/Keyboard Control cable from its clamps and put it aside.
2. Remove the SSB as described earlier.
3. Remove the PSU as described earlier.
4. Remove the Stand as described earlier.
5. Release the tape and take out of the set.

#### 4.3.7 IR/LED Board

1. Release the IR/LED/Keyboard Control cable from its clamps.
2. Remove the fixation screw in the middle-bottom of the stand that secures the stand with the bezel, see [Figure 4-4](#) [3].
3. Remove the clips at the bottom that secure the LCD panel with the bezel.
4. Remove the fixation screws that secure the LCD panel with the bezel.
5. Remove the bezel from the set.
6. Unplug the connectors from the IR/LED board.
7. Release the clips that hold the board and take it from the bezel.

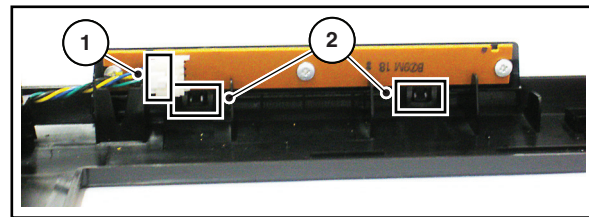
When defective, replace the whole unit.

#### 4.3.8 Keyboard Control Panel

1. Release the IR/LED/Keyboard Control cable from its clamps.
2. Remove the fixation screw in the middle-bottom of the stand that secures the stand with the bezel, see [Figure 4-4](#) [3].
3. Remove the clips at the bottom that secure the LCD panel with the bezel.
4. Remove the fixation screws that secure the LCD panel with the bezel.

5. Remove the bezel from the set.
6. Unplug the connectors from the IR/LED board.
7. See [Figure 4-5](#), unplug the connector [1] from the Keyboard Control Panel.
8. Release the clips that secure the Keyboard Control Panel [2].

When defective, replace the whole unit.



18850\_104\_100203.eps  
100203

Figure 4-5 Keyboard Control Panel (32")

#### 4.3.9 LCD Panel

1. Remove the SSB as described earlier.
2. Remove the PSU as described earlier.
3. Remove the speaker as described earlier.
4. Remove the stand as described earlier.
5. Remove the Stand support as described earlier.
6. Remove the clips at the bottom that secure the LCD panel with the bezel.
7. Remove the fixation screws that secure the LCD panel with the bezel.
8. Lift the LCD Panel from the bezel.

When defective, replace the whole unit.

### 4.4 Assembly/Panel Removal 42"

#### 4.4.1 Rear Cover

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

1. Remove the 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.

#### 4.4.2 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.

1. Release the clips from both the LVDS Flat Foil connectors.  
**Caution:** be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors.
3. Release the tape near the tuner from the LCD panel.
4. Release the tape near the processor shielding from the LCD panel.
5. Remove the fixation screw that connects the ground cable.
6. Remove all other fixation screws from the SSB.
7. Take out the SSB together with its shielding.
8. Remove the screws near the HDMI and L/R audio connectors.
9. The SSB can now be shifted sideways away from the side connector cover and take out of the shielding.

**Caution:** be careful not to damage the thermal pad between the SSB and shielding.



#### 4.4.3 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.

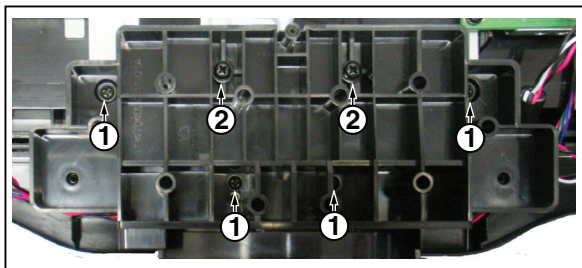
1. Unplug power connector from the SSB and take the cable out of the cable clamp.
  2. Unplug all other connectors from the PSU.
  3. Remove the fixation screw that connects the ground cable.
  4. Remove all fixation screws from the PSU.
  5. The PSU can now be taken out of the set.
- When defective, replace the whole unit.

#### 4.4.4 Stand removal

See [Figure 4-4](#).

**Caution:** it is mandatory to remount all different screws at their original position during re-assembly. Be sure to put the set in the Service Position.

1. Remove the fixation screws [1], (Parker).
2. Remove the fixation screws [2], (M4).
3. Take out the stand.



18850\_105\_100203.eps  
100203

Figure 4-6 Stand (42")

#### 4.4.5 Speakers

1. Unplug the speaker connector from the SSB.
  2. Remove the stand, as described earlier.
  3. Take the speakers out together with their casing.
- When defective, replace the whole unit.

#### 4.4.6 Stand support plate

1. Remove the stand as described earlier.
2. Remove the SSB as described earlier.
3. Remove the PSU as described earlier.
4. Remove all fixation screws from the stand support plate and take it out of the set.

#### 4.4.7 IR/LED Board

1. Remove the stand as described earlier.
2. Remove the speakers as described earlier.
3. Remove the SSB as described earlier.
4. Remove the clips at the bottom that secure the LCD panel with the bezel.
5. Remove the fixation screws that secure the LCD panel with the bezel.
6. Lift the LCD Panel from the bezel.
7. Unplug the connectors from the IR/LED board.
8. Release the clips that hold the board and take it from the bezel.

When defective, replace the whole unit.

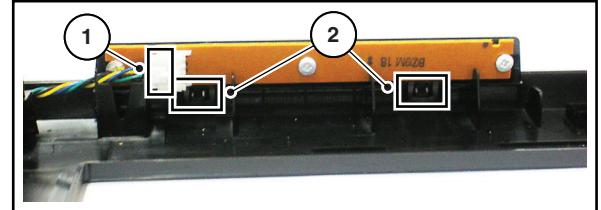
#### 4.4.8 Keyboard Control Panel

See [Figure 4-5](#).

1. Remove the stand as described earlier.
2. Remove the speakers as described earlier.

3. Remove the SSB as described earlier.
4. Remove the clips that secure the LCD panel with the bezel.
5. Remove the fixation screws that secure the LCD panel with the bezel.
6. Lift the LCD Panel from the bezel.
7. Unplug the connector [1] from the Keyboard Control Panel.
8. Release the clips that secure the Keyboard Control Panel [2].

When defective, replace the whole unit.



18850\_104\_100203.eps  
100203

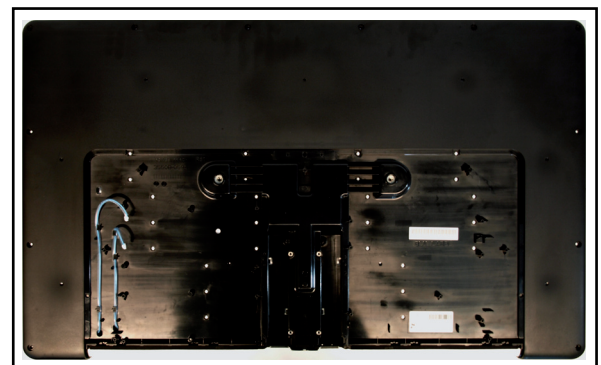
Figure 4-7 Keyboard Control Panel (42")

#### 4.4.9 LCD Panel

1. Remove the stand as described earlier.
  2. Remove the speakers as described earlier.
  3. Remove the SSB as described earlier.
  4. Remove the PSU as described earlier.
  5. Remove the Stand support as described earlier.
  6. Remove the clips that secure the LCD panel with the bezel.
  7. Remove the fixation screws that secure the LCD panel with the bezel.
  8. Lift the LCD Panel from the bezel.
- When defective, replace the whole unit.

### 4.5 Returning a defect 32" or 42" LCD panel

To return a defect LCD panel to the factory, all boards, cabling, mechanical supports, shieldings, clamps, spacers, the bezel and tapes have to be removed from the panel, see [Figure 4-8](#). Be sure to carefully pack the area's of the panel that are visible during normal use.



18931\_100\_100510.eps  
100510

Figure 4-8 LCD panel

### 4.6 Assembly/Panel Removal 47"

#### 4.6.1 Stand removal

**Caution:** it is mandatory to remount all different screws at their original position during re-assembly. Be sure to put the set in the Service Position.

1. Remove the fixation screws that secure the stand with the rear cover.
2. Take out the stand from the rear cover.

#### 4.6.2 Rear Cover

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

1. Remove the 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.

#### 4.6.3 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.

1. Release the clips from both the LVDS Flat Foil connectors.  
**Caution:** be careful, as these are very fragile connectors! Take the flat foils out of their connectors.
2. Unplug all other connectors.
3. Remove all other fixation screws from the SSB.
4. Take out the SSB together with side I/O BKT.
5. Remove the screws near the HDMI and L/R audio connectors.

#### 4.6.4 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.

1. Unplug power connector from the SSB and take the cable out of the cable clamp.
  2. Unplug all other connectors from the PSU.
  3. Remove all fixation screws from the PSU.
  4. The PSU can now be taken out of the set.
- When defective, replace the whole unit.

#### 4.6.5 Stand support plate

1. Remove all fixation screws from the stand support plate and take it out of the set.

#### 4.6.6 Speakers

1. Unplug the speaker connector from the SSB.
  2. Remove the stand support plate as described earlier.
  3. Take the speakers out together with their casing.
- When defective, replace the whole unit.

#### 4.6.7 IR/LED Board

1. Release the clips that hold the board and take it out from the bezel.
  2. Unplug the connectors from the IR/LED board.
- When defective, replace the whole unit.

#### 4.6.8 Keyboard Control Panel

See [Figure 4-5](#).

3. Pull out the keyboard control from the panel.
  4. Unplug the cable from the keyboard control.
- When defective, replace the whole unit.

#### 4.6.9 LCD Panel

1. Remove the stand as described earlier.
  2. Remove the stand support plate as described earlier.
  3. Remove the speakers as described earlier.
  4. Remove the SSB as described earlier.
  5. Remove the PSU as described earlier.
  6. Remove the clips that secure the LCD panel with the bezel.
  7. Lift the LCD Panel from the bezel.
- When defective, replace the whole unit.

### 4.7 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.

## 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.

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 Customer Service Mode (CSM)

##### **Purpose**

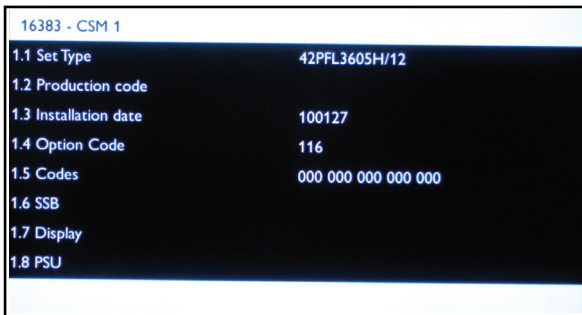
The Customer Service Mode shows error codes and information on the TV's operation settings. The call centre can instruct the customer (by telephone) to enter CSM in order to identify the status of the set. This helps the call centre to diagnose problems and failures in the TV set before making a service call.

The CSM is a read-only mode; therefore, modifications are not possible in this mode.

##### **How to Activate CSM**

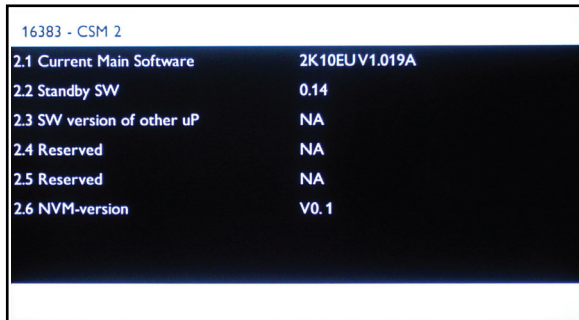
Key in the code "123654" via the standard RC transmitter.

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



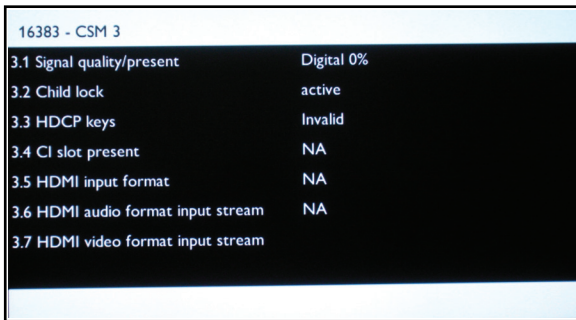
|                       |                     |
|-----------------------|---------------------|
| 16383 - CSM 1         |                     |
| 1.1 Set Type          | 42PFL3605H/12       |
| 1.2 Production code   |                     |
| 1.3 Installation date | 100127              |
| 1.4 Option Code       | 116                 |
| 1.5 Codes             | 000 000 000 000 000 |
| 1.6 SSB               |                     |
| 1.7 Display           |                     |
| 1.8 PSU               |                     |

Figure 5-1 CSM Menu 1



|                            |               |
|----------------------------|---------------|
| 16383 - CSM 2              |               |
| 2.1 Current Main Software  | 2K10EUV1.019A |
| 2.2 Standby SW             | 0.14          |
| 2.3 SW version of other uP | NA            |
| 2.4 Reserved               | NA            |
| 2.5 Reserved               | NA            |
| 2.6 NVM-version            | V0.1          |

Figure 5-2 CSM Menu 2



|                                    |            |
|------------------------------------|------------|
| 16383 - CSM 3                      |            |
| 3.1 Signal quality/present         | Digital 0% |
| 3.2 Child lock                     | active     |
| 3.3 HDCP keys                      | Invalid    |
| 3.4 CI slot present                | NA         |
| 3.5 HDMI input format              | NA         |
| 3.6 HDMI audio format input stream | NA         |
| 3.7 HDMI video format input stream |            |

Figure 5-3 CSM Menu 3

##### **How to Navigate**

By means of the "CURSOR-DOWN/UP" knob (or the scroll wheel) on the RC-transmitter, can be navigated through the menus.

##### **General**

- **1.1 Set Type** NVM read/write (max. 16 characters).
- **1.2 Production code** NVM read/write (max. 16 characters).
- **1.3 Installation date** Date the software was installed.
- **1.4 Option Code** Store in NVM (set feature grouping as option) panel code.
- **1.5 Codes** Error code Layer 2. Store in NVM. 10 error buffers: 000 = No problem, 011 = I<sup>2</sup>C bus error, 012 = tuner error, 013 = panel.
- **1.6 SSB** 12NC NVM read/write (12 characters).
- **1.7 Display** 12NC NVM read/write (12 characters).
- **1.8 PSU** 12NC NVM read/write (12 characters).
- **2.1 Current Main SW** Detects and displays software version.
- **2.2 Standby SW** Detects and displays software version.
- **2.3 SW version of other  $\mu$ P** Detects and displays software version.
- **2.4 Reserved** Not applicable.
- **2.5 Reserved** Not applicable.
- **2.6 NVM version** Detects and displays software version.
- **3.1 Signal Quality/Present** analog/digital signal strength.
- **3.2 Child lock** Detects and displays.
- **3.3 HDCP keys** Detects and displays.
- **3.4 CI slot present** Detects and displays.
- **3.5 HDMI input format** per Supported format. e.g. 576i 50 Hz, 576p 50 Hz, 720p 50 Hz, 1080i 50 Hz, 1080p 50 Hz.
- **3.6 HDMI audio format input stream** Per supported format e.g. Dolby TrueHD, DTS-HD Master Audio, MPCM.

- **3.7 HDMI video format input stream** Per Supported format. e.g. 576i 50 Hz, 576p 50 Hz, 720p 50 Hz, 1080i 50 Hz, 1080p 50 Hz

#### How to Exit CSM

Press "MENU" on the RC-transmitter.

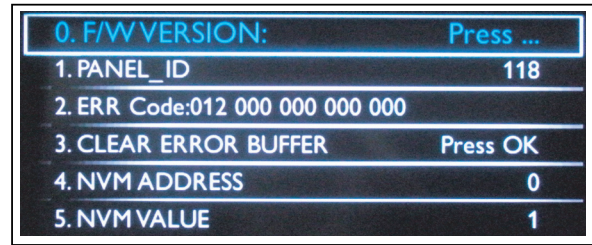
### 5.1.2 Service Alignment Mode (SAM)

#### 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.

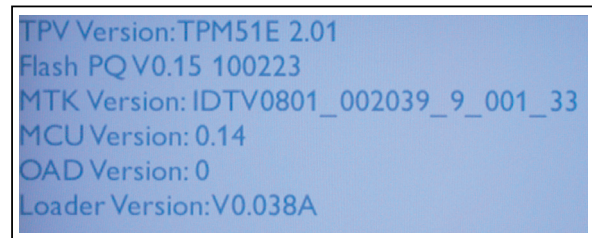
After entering the factory mode, the following screen is visible on the top and right of the panel.



18850\_203\_100202.eps  
100506

Figure 5-4 Example of SAM

Press "OK" to check the Version information of the software when you select the "F/W Version".



18850\_212\_100506.eps  
100512

Figure 5-5 Software Version information in SAM

Table 5-1 Contents of SAM

| Number | Action Items                 | Range   | Default Value |          |          | Description  |
|--------|------------------------------|---------|---------------|----------|----------|--|
|        |                              |         | 32"           | 42"      | 47"      |  |
| 0      | F/W Version                  |         | Press OK      | Press OK | Press OK | Version description  |
| 1      | Panel_ID                     |         | 117           | 116      | 118      | panel ID identify  |
| 2      | Err Code:000 000 000 000 000 |         | -             | -        | -        | Show the latest 5 error code status  |
| 3      | Clear Error Buffer           |         | Press OK      | Press OK | Press OK | Reset CSM ERROR Code to 0  |
| 4      | NVM Address                  |         | 0             | 0        | 0        | The address in the NVM   |
| 5      | NVM Value                    |         | 1             | 1        | 1        | The value in the NVM   |
| 6      | NVM Store                    |         | Press OK      | Press OK | Press OK | Store in the NVM   |
| 7      | NVM Copy TV to USB           |         | Press OK      | Press OK | Press OK | Use this to copy the NVM data from the TV to the USB   |
| 8      | NVM Read USB to TV           |         | Press OK      | Press OK | Press OK | Use this to copy the NVM data from the USB to the TV   |
| 9      | CLR_Temp_R                   | 0 - 255 | 127           | 127      | 128      | Back-End Scaler R G B Gain NVM has for YPbPr four settings: NORMAL, WARM, COOL, CUSTOMER. Other source use offset with hardcoding. |
| 10     | CLR_Temp_G                   | 0 - 255 | 121           | 123      | 128      |  |
| 11     | CLR_Temp_B                   | 0 - 255 | 121           | 119      | 116      |  |
| 12     | Auto_Color                   |         | Press OK      | Press OK | Press OK | PC: any pattern has black and white YPbPr: SMPTE bar (colour bar), any timing.   |
| 13     | ADC_Gain_R                   | 0 - 255 | 0             | 86       | 0        | Analogue to Digital Converter Gain for Red, AutoColor affects this and it value is depends on the input                            |
| 14     | ADC_Gain_G                   | 0 - 255 | 0             | 86       | 0        | Analogue to Digital Converter Gain for Green, AutoColor affects this and it value is depends on the input                          |
| 15     | ADC_Gain_B                   | 0 - 255 | 0             | 87       | 0        | Analogue to Digital Converter Gain for Blue, AutoColor affects this and it value is depends on the input                           |
| 16     | ADC_Offset_R                 | 0 - 255 | 128           | 113      | 128      | Analogue to Digital Converter Offset for Red, AutoColor affects this and it value is depends on the input                          |
| 17     | ADC_Offset_G                 | 0 - 255 | 128           | 109      | 128      | Analogue to Digital Converter Offset for Green, AutoColor affects this and it value is depends on the input                        |
| 18     | ADC_Offset_B                 | 0 - 255 | 128           | 100      | 128      | Analogue to Digital Converter Offset for Blue, AutoColor affects this and it value is depends on the input                         |
| 19     | Virgin_Mode                  |         | Off           | Off      | Off      | Reset the set to manufacturer's mode   |
| 20     | Gamma_Table                  |         | On            | On       | On       | use gamma table or not   |
| 21     | E-Fuse                       |         | On            | On       | On       | use efuse as default ADC value or not  |
| 22     | Ageing Mode                  |         | Off           | Off      | Off      | turn on ageing mode  |
| 23     | Reset_PBS_PWD                |         | Press OK      | Press OK | Press OK | Clear EEP_OFFSET_BDS_PCODE_1_4, EEP_OFFSET_BDS_PCODE_2_4, EEP_OFFSET_BDS_PCODE_3_4, EEP_OFFSET_BDS_PCODE_4_4                       |
| 24     | V-COM                        |         | Press OK      | Press OK | Press OK | This starts V-COM  |
| 25     | Video_PWM_Medium             | 0 - 255 | 128           | 128      | 128      | PWM value at contrast 50%  |
| 26     | Video_PWM_Minimum            | 0 - 255 | 200           | 200      | 200      | Minimum PWM value  |
| 27     | Video_PWM_Maximum            | 0 - 255 | 0             | 0        | 0        | Maximum PWM value  |
| 28     | Video_PWM_Ratio_Top          | 0 - 100 | 60            | 60       | 60       | PWM value at Best Power  |
| 29     | Video_PWM_Ratio_Bottom       | 0 - 100 | 20            | 20       | 20       | PWM value at Best Picture  |
| 30     | Video_PWM_Ratio_STD          | 0 - 100 | 78            | 78       | 78       | PWM value at standard  |
| 31     | YPBPR_PHASE                  | 0 - 255 | InValid       | InValid  | InValid  | 480i, 480p, 576i, 576p, 720p 50 Hz, 720p 60 Hz, 1080i 25 Hz, 1080i 30 Hz, 1080p 24 Hz, 1080p 50 Hz, 1080p 60 Hz                    |
| 32     | AUD_GAIN_LINEIN              | 0 - 36  | 23            | 23       | 23       | Audio gain by different sources  |

| Number | Action Items      | Range       | Default Value |          |          | Description   |
|--------|-------------------|-------------|---------------|----------|----------|---|
|        |                   |             | 32"           | 42"      | 47"      |   |
| 33     | AUD_GAIN_HDMI     | 0 - 36      | 22            | 22       | 22       | Audio gain for HDMI inputs  |
| 34     | AUD_GAIN_ATV      | 0 - 36      | 23            | 23       | 23       | Audio gain for analogue TV signals  |
| 35     | AUD_GAIN_DTV      | 0 - 36      | 22            | 22       | 22       | Audio gain for digital TV signal  |
| 36     | AUD_GAIN_USB      | 0 - 36      | 22            | 22       | 22       | Audio gain for the USB input  |
| 37     | AUD_LIPSYNC_SPK   | -272 - +272 | 250           | 250      | 100      | Audio delay to the speaker, "+" is delay, "-" is ahead. NVM value = Delay (ms)/0.147        |
| 38     | AUD_LIPSYNC_HP    | -272 - +272 | 250           | 250      | 100      | Audio delay to the head-phone, "+" is delay, "-" is ahead. NVM value = Delay (ms)/0.147     |
| 39     | AUD_LIPSYNC_SPDIF | -272 - +272 | 250           | 250      | 100      | Audio delay to the S/P-DIF output, "+" is delay, "-" is ahead. NVM value = Delay (ms)/0.147 |
| 40     | Tuner_ID          |             | 95            | 95       | 95       | Tuner Identification, 94: NXP 95: LG  |
| 41     | OPT AV2 Scart2    | 0, 2        | 2             | 2        | 2        | 0: not available, 2: CVBS + YC  |
| 42     | OPT HDMI2         | 0/1         | 1             | 1        | 1        | On/Off  |
| 43     | OPT Reset Option  | 0/1         | Press OK      | Press OK | Press OK | after reset, should restart the set immediately   |
| 44     | Esticker NVM 1    | 0 - 61, 255 | 32            | 32       | 32       | 0-61: Icon number. 255: no icon   |
| 45     | Esticker NVM 2    | 0 - 61, 255 | 40            | 40       | 40       | 0-61: Icon number. 255: no icon   |
| 46     | Esticker NVM 3    | 0 - 61, 255 | 25            | 25       | 25       | 0-61: Icon number. 255: no icon   |
| 47     | Esticker NVM 4    | 0 - 61, 255 | 35            | 35       | 35       | 0-61: Icon number. 255: no icon   |
| 48     | Esticker NVM 5    | 0 - 61, 255 | 45            | 45       | 45       | 0-61: Icon number. 255: no icon   |
| 49     | Esticker NVM 6    | 0 - 61, 255 | 65            | 65       | 65       | 0-61: Icon number. 255: no icon   |
| 50     | Esticker NVM 7    | 0 - 61, 255 | 2             | 2        | 2        | 0-61: Icon number. 255: no icon   |
| 51     | Esticker NVM 8    | 0 - 61, 255 | 48            | 48       | 48       | 0-61: Icon number. 255: no icon   |
| 52     | Esticker NVM 9    | 0 - 61, 255 | 58            | 58       | 58       | 0-61: Icon number. 255: no icon   |
| 53     | Esticker NVM 10   | 0 - 61, 255 | 64            | 64       | 64       | 0-61: Icon number. 255: no icon   |
| 54     | Esticker NVM 11   | 0 - 61, 255 | 76            | 76       | 76       | 0-61: Icon number. 255: no icon   |
| 55     | Esticker NVM 12   | 0 - 61, 255 | 77            | 77       | 77       | 0-61: Icon number. 255: no icon   |
| 56     | Esticker NVM 13   | 0 - 61, 255 | 71            | 71       | 71       | 0-61: Icon number. 255: no icon   |
| 57     | Esticker NVM 14   | 0 - 61, 255 | 74            | 74       | 74       | 0-61: Icon number. 255: no icon   |
| 58     | Esticker NVM 15   | 0 - 61, 255 | 78            | 78       | 78       | 0-61: Icon number. 255: no icon   |
| 59     | Esticker NVM 16   | 0 - 61, 255 | 70            | 70       | 70       | 0-61: Icon number. 255: no icon   |
| 60     | Esticker NVM 17   | 0 - 61, 255 | 72            | 72       | 72       | 0-61: Icon number. 255: no icon   |
| 61     | Esticker NVM 18   | 0 - 61, 255 | 255           | 255      | 255      | 0-61: Icon number. 255: no icon   |
| 62     | Esticker NVM 19   | 0 - 61, 255 | 255           | 255      | 255      | 0-61: Icon number. 255: no icon   |
| 63     | Esticker NVM 20   | 0 - 61, 255 | 255           | 255      | 255      | 0-61: Icon number. 255: no icon   |
| 64     | Esticker Reset    |             | Press OK      | Press OK | Press OK | Executing this resets the e-sticker   |
| 65     | Exit_Factory      |             | Press OK      | Press OK | Press OK | Exit factory mode   |

### How to Navigate

With 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 EXIT

Choose "EXIT", and press the "OK" button. Turn "Off" the TV via the side control key and then turn "On" the TV again.

**Notes:** (only applicable to xxHFL3232D/10)

- When the Hotel mode is active, the service modes CSM, SDM, SAM and ComPair are automatically disabled (this is to prevent hotel guests entering Philips service modes).
- In order to use the service modes and ComPair, Hotel mode must be disabled.
- To enable/disable the hotel mode, the hotel setup remote (green remote) is needed.

### 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.

## 5.2 Service Tools

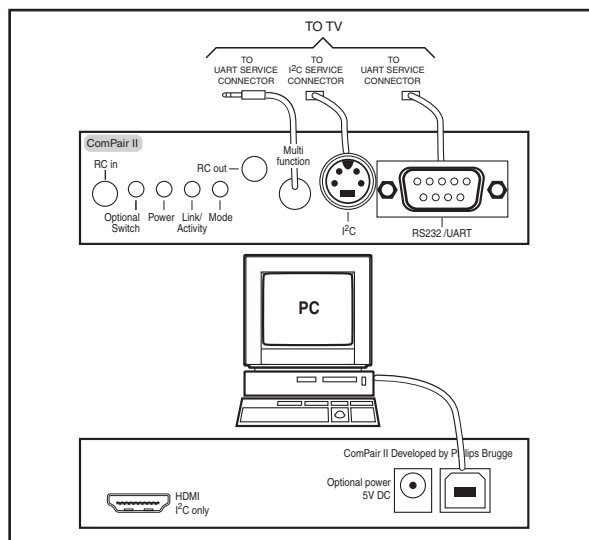
### 5.2.1 ComPair

#### Introduction

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

- ComPair helps to quickly get an understanding on how to repair the chassis in a short and effective way.
- ComPair allows very detailed diagnostics and is therefore capable of accurately indicating problem areas. No knowledge on I<sup>2</sup>C or UART commands is necessary, because ComPair takes care of this.
- 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.
- ComPair features TV software upgrade possibilities.





10000\_036\_090121.eps  
091118

**Figure 5-6 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 90630.
- Programming software can be downloaded from the Philips Service portal.
- ComPair UART interface cable for TPM5.1x xx.  
3122 785 90630.

**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 websites:

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

### 5.3.2 Check the current TV software version

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

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

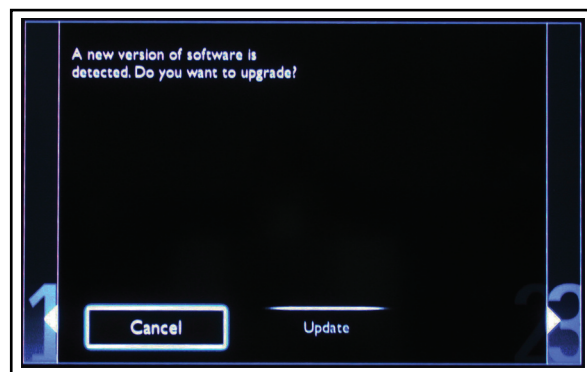
If the current software version of your TV is the same as the latest update file found on <http://www.philips.com/support>, it is not necessary to update the TV software.

### 5.3.3 Download the latest software

1. Point your web browser to <http://www.philips.com/support>.
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. Insert the USB flash drive that contains the software update file.
2. Then a window jumps out as [Figure 5-7](#).  
**Note:** If the USB flash drive is not detected after power up, disconnect it and re-insert it.
3. Select [Update] and press OK.
4. To proceed, In next menu select [Start] and press OK to start software updates. See [Figure 5-8](#).
5. Upgrading will now begins and the status of the updating progress will be displayed.
6. When the TV software is updated. Remove your USB flash drive, then select [Restart] and press OK to restart the TV. See [Figure 5-9](#).



18850\_204\_100204.eps  
100204

Figure 5-7 Update the TV software 1



18850\_205\_100204.eps  
100204

Figure 5-8 Update the TV software 2



18850\_206\_100204.eps  
100204

Figure 5-9 Update the TV software 3

#### **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.

Basically there are three kinds of error codes:

| Error Code | Event                      |
|------------|----------------------------|
| 000        | No problem                 |
| 011        | I <sup>2</sup> C bus error |
| 012        | Tuner error                |
| 013        | LCD panel                  |

## 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.



## 6. Alignments

### Index of this chapter:

- [6.1 General Alignment Conditions](#)
- [6.2 Hardware Alignments](#)
- [6.3 YPbPr Mode display adjustment](#)
- [6.4 PC mode display adjustment](#)
- [6.5 LCD Panel Flicker Adjustment](#)
- [6.6 Option Settings](#)
- [6.7 Serial Number Definition](#)

**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: 195 - 264 V<sub>AC</sub>, 50/ 60 ± 3 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.
- **Caution:** It is not allowed to use heatsinks as ground.
- Test probe: R<sub>i</sub> > 10 MΩ, C<sub>i</sub> < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

### 6.2 Hardware Alignments

Not applicable.

### 6.3 YPbPr Mode display adjustment

#### 6.3.1 General set-up

##### Equipment Requirements:

Minolta CA-110 or Equivalent Colour analyser. Quantum Data Pattern Generator 802G, 802BT or equivalent instrument.

##### Input requirements:

Input Signal Type: YPbPr signal

- 1080i mode, TVBar100 pattern by 802G or 802BT.
- Select Picture mode to User mode and check the x, y data.

##### Input Signal Strength:

1 V<sub>pp</sub> for Y signal; 700 mV<sub>pp</sub> for Pb & Pr signal

##### Input Injection Point:

YPbPr (RAC jack)

#### 6.3.2 Alignment method

Quantum Data Pattern Generator 802G or 802BT. Apply 1080i, and the pattern TVBAR100 shown as below.

##### Initial Set-up:

1. Select source as "EXT3".
2. Set Smart Picture mode as "Vivid" and off the "Dynamic contrast/Dynamic backlight".
3. Apply "TVBar100" pattern with colour bar pattern by signal generator.
4. Enter factory mode menu: press numeric keys "062596" + INFO key (FAC mode menu).

##### Alignment:

1. At SAM mode menu, select AUTO\_COLOR item. Then press "OK" key to adjust ADC\_GAIN\_R, ADC\_GAIN\_G, ADC\_GAIN\_B and ADC\_OFFSET\_R, ADC\_OFFSET\_G, ADC\_OFFSET\_B. Then store those values to NVM.
2. Apply 80% white pattern.
3. Set colour temperature to "NORMAL".
4. At FAC mode menu, adjust the CLR\_TEMP\_R, CLR\_TEMP\_G, CLR\_TEMP\_B values to meet "NORMAL" colour coordinates specification below. Then store those values to NVM (R/G/B gain value ≤ 128).
5. Set colour temperature to "COOL".
6. At FAC mode menu, adjust the CLR\_TEMP\_R, CLR\_TEMP\_G, CLR\_TEMP\_B values to meet "COOL" colour coordinates specification below. Then store those values to NVM (R/G/B gain value ≤ 128).
7. Set colour temperature to "WARM".
8. At FAC mode menu, adjust the CLR\_TEMP\_R, CLR\_TEMP\_G, CLR\_TEMP\_B values to meet "WARM" colour coordinates specification below. Then store those values to NVM (R/G/B gain value ≤ 128).

Colour temperature Normal/Warm/Cool (x, y) co-ordinates specification:

**Table 6-1 Reading with Minolta CA-210**

| Picture Mode   | Cool          | Normal        |
|----------------|---------------|---------------|
| Normal (9000K) | 0.287 ± 0.003 | 0.296 ± 0.003 |
| Cool (11000K)  | 0.276 ± 0.003 | 0.282 ± 0.003 |
| Warm (6500K)   | 0.313 ± 0.003 | 0.329 ± 0.003 |

**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 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**

| Picture mode | Screen size | Colour temperature |       |      |
|--------------|-------------|--------------------|-------|------|
|              |             | Red                | Green | Blue |
| Normal       | 32"         | 127                | 124   | 119  |
|              | 42"         | 127                | 126   | 113  |
|              | 47"         | 128                | 128   | 116  |
| Cool         | 32"         | 119                | 114   | 127  |
|              | 42"         | 125                | 121   | 127  |
|              | 47"         | 120                | 124   | 128  |
| Warm         | 32"         | 127                | 114   | 73   |
|              | 42"         | 127                | 118   | 72   |
|              | 47"         | 128                | 122   | 76   |

##### Caution:

- Use Minolta CA-210 for colour coordinates and luminance check.
- Luminance > 400 cd/m<sup>2</sup> in the centre of the screen when Brightness/Contrast/Video Contrast setting at 100 and CLR\_TEMP\_R/CLR\_TEMP\_G/CLR\_TEMP\_B = 128 for 32"/42"/47" panels.

## 6.4 PC mode display adjustment

### 6.4.1 Display quality adjustment

Use timing mode and use the POPO (pixel on pixel off) pattern to adjust the clock until no stripe and adjust the phase until clear picture ("Auto" will be done every time switching to PC mode and mode change).

### 6.4.2 WHITE-D adjustment

#### Equipment Requirements:

Minolta CA-210 or Equivalent Colour analyser, Chroma 2250 or equivalent PC signal generator.

#### Input requirements:

Input Signal Type: PC VGA signal, 1366 × 768/60 Hz PC mode with "five white block" pattern.

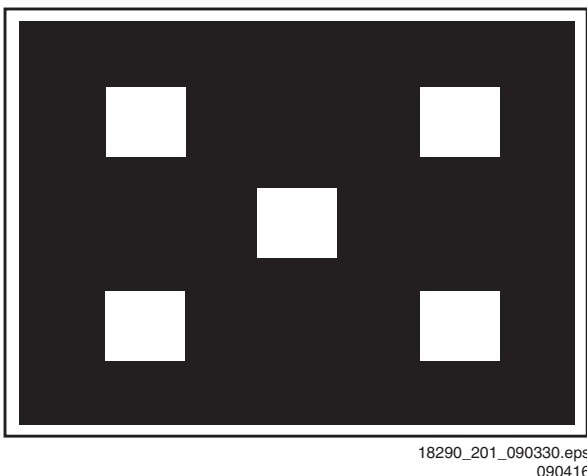


Figure 6-1 Five white blocks pattern

#### Input Signal Strength:

0.7 V<sub>p-p</sub> linear voltage.

#### Input Injection Point:

PC D-SUB input.

### 6.4.3 Alignment method

#### Initial Set-up:

1. Select source as "PC".
2. Set Contrast = 50 (Sharp) and Brightness=50 (Sharp), at normal menu mode.
3. Apply "5 white block" pattern by VGA pattern generator, see [Figure 6-1](#).
4. Enter factory mode menu: press numeric keys "062596" + INFO key (FAC mode menu).

### 6.4.4 Alignment

1. At FAC mode menu, select AUTO\_COLOR item. Then press "OK" key to adjust ADC\_GAIN\_R, ADC\_GAIN\_G, ADC\_GAIN\_B and ADC\_OFFSET\_R, ADC\_OFFSET\_G, ADC\_OFFSET\_B. Then store those values to NVM.

## 6.5 LCD Panel Flicker Adjustment

### 6.5.1 Flicker (V-COM) adjustment

#### Equipment Requirements:

Chroma 2250 or equivalent PC signal generator.

#### Input requirements:

Input Signal Type: PC VGA signal or software built-in test pattern, 1920 × 1080/60 Hz PC mode with "Pixel ON/OFF" pattern, see [Figure 6-2](#).

#### Input Signal Strength:

0.7 V<sub>p-p</sub> linear voltage.

#### Input Injection Point:

PC D-SUB input.

### 6.5.2 Alignment method

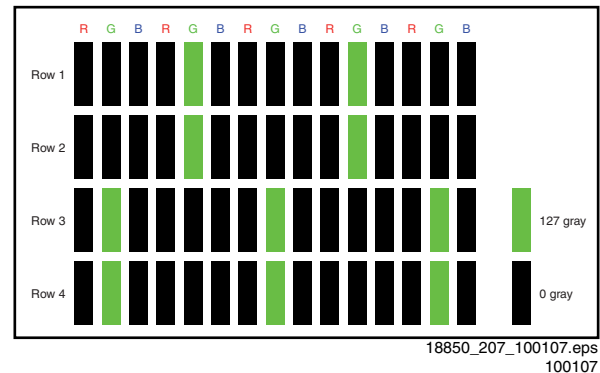


Figure 6-2 1920 × 1080 @ 60 Hz, Pixel ON/OFF pattern

#### Initial Set-up:

1. Select source as "VGA".
2. Apply "Pixel ON / OFF" pattern by signal generator or use a factory cone and to enable built-in "Pixel ON / OFF" pattern, see [Figure 6-2](#).
3. Enter factory mode menu: press numeric keys "062596" + INFO key (FAC mode menu).

### 6.5.3 Alignment

1. At FAC mode menu, select V-COM item. Then press "OK" key to start adjusting panel flicker. By pressing "<-" or ">-" key on RC to decrease or increase V-COM value, minimize panel flicker.

2. Once panel flicker is minimal, press "OK" key on RC to store V-COM value to V-COM IC's MTP and NVM.

**Caution:** Please note that P Gamma IC is 100 times-write ONLY. Make sure you get the optimum result before press "OK" to save the V-COM data.

## 6.6 Option Settings

### 6.6.1 Introduction

The microprocessor communicates with a large number of I<sup>2</sup>C ICs in the set. To ensure good communication and to make digital diagnosis possible, the microprocessor has to know which ICs to address. The presence/absence of these specific ICs (or functions) is made known by the option codes.

#### Notes:

- After changing the option (s), save them by pressing the "OK" button on the RC **before** the cursor is moved to the left, select STORE in the SAM root menu and press "OK" on the RC.
- The new option setting is only active after the TV is switched "off"/"stand-by" and "on" again with the Mains switch (the NVM is then read again).

### 6.6.2 Reset Options

In SAM, after reset “Reset option code”, restart the set immediately.

### 6.6.3 Option Code Overview

**Table 6-3 Panel codes overview**

| CTN_ALT BOM#    | Panel Type       | Panel ID |
|-----------------|------------------|----------|
| 32HFL3232D/10_1 | LG LC320WUY-SCB1 | 117      |
| 32PFL3205H/12_1 | LG LC320WUY-SCB1 | 117      |
| 32PFL3605H/12_1 | LG LC320WUY-SCB1 | 117      |
| 42PFL3605H/12_1 | LG LC420WUY-SCB1 | 116      |
| 47PFL3605H/12_1 | LG LC470WUG-SCB1 | 118      |
| 47PFL3605H/60_1 | LG LC470WUG-SCB1 | 118      |

## 6.7 Serial Number Definition

**Table 6-4 BOM Code**

| Panel Supplier | Code |
|----------------|------|
| AU             | 1    |
| CPT            | 2    |
| LPL (LG)       | 3    |
| QDI            | 4    |
| CMO            | 5    |
| HSD            | 6    |
| SVA            | 7    |

7. Circuit Descriptions

Index of this chapter:

- [7.1 Introduction](#)
- [7.2 Power Architecture](#)
- [7.3 T-CON Architecture](#)

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 Introduction

The TPM5.1E LA chassis is used the MT5363LICG main processing.

7.1.1 Implementation

- Key components of this chassis are:
- TPA3110D2 Audio Amplifier
  - NAND128W3A2BN6E NAND Flash
  - TDTW-S810D Tuner
  - NT5TU32M16CG-BD DDR Memory
  - TPA6132A2RTER Head phone Amplifier
  - TL2428MC T-CON IC

7.1.2 TPM5.1E Architecture Overview

For details about the chassis block diagrams refer to chapter [9. Block Diagrams](#). An overview of the TPM5.1E LA architecture can be found in [Figure 7-1](#).

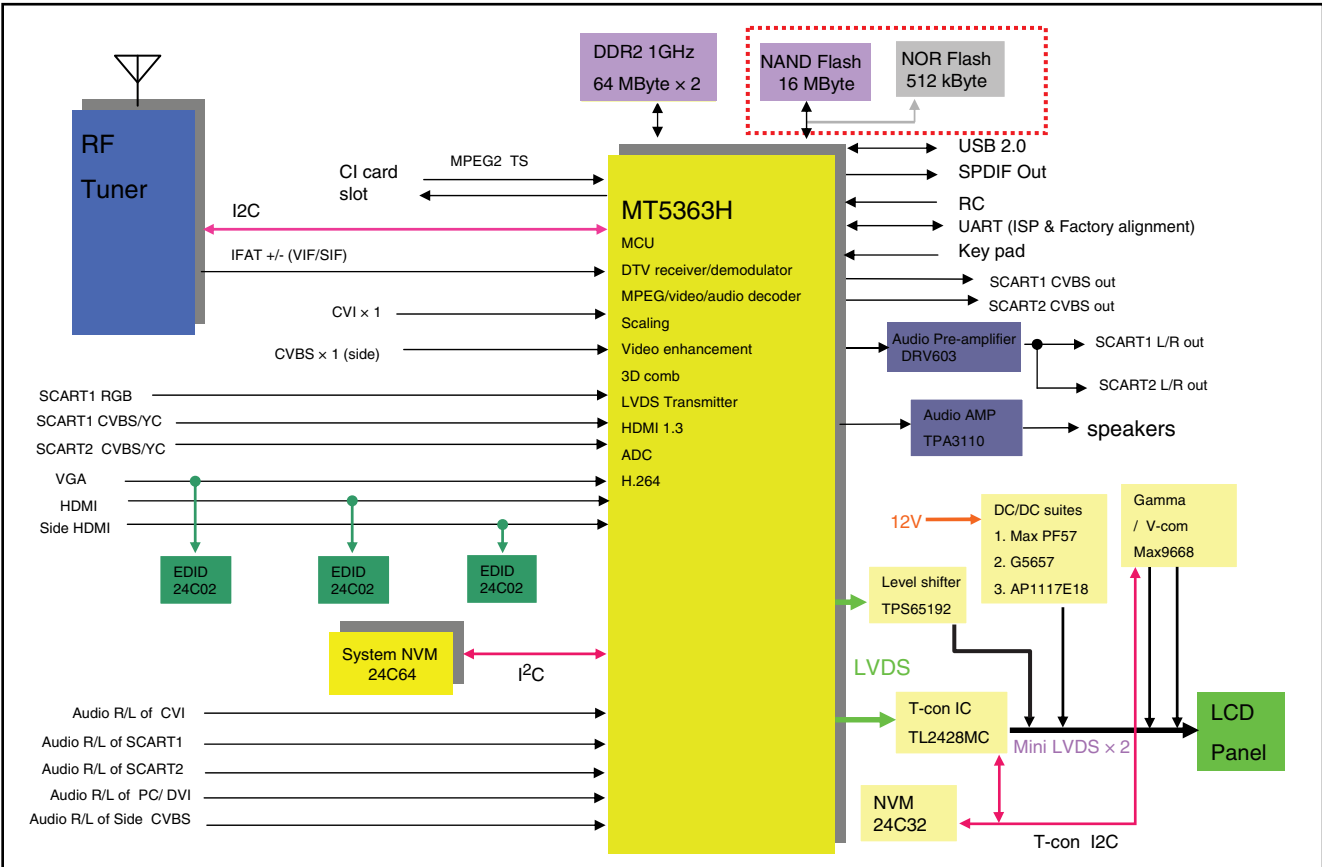
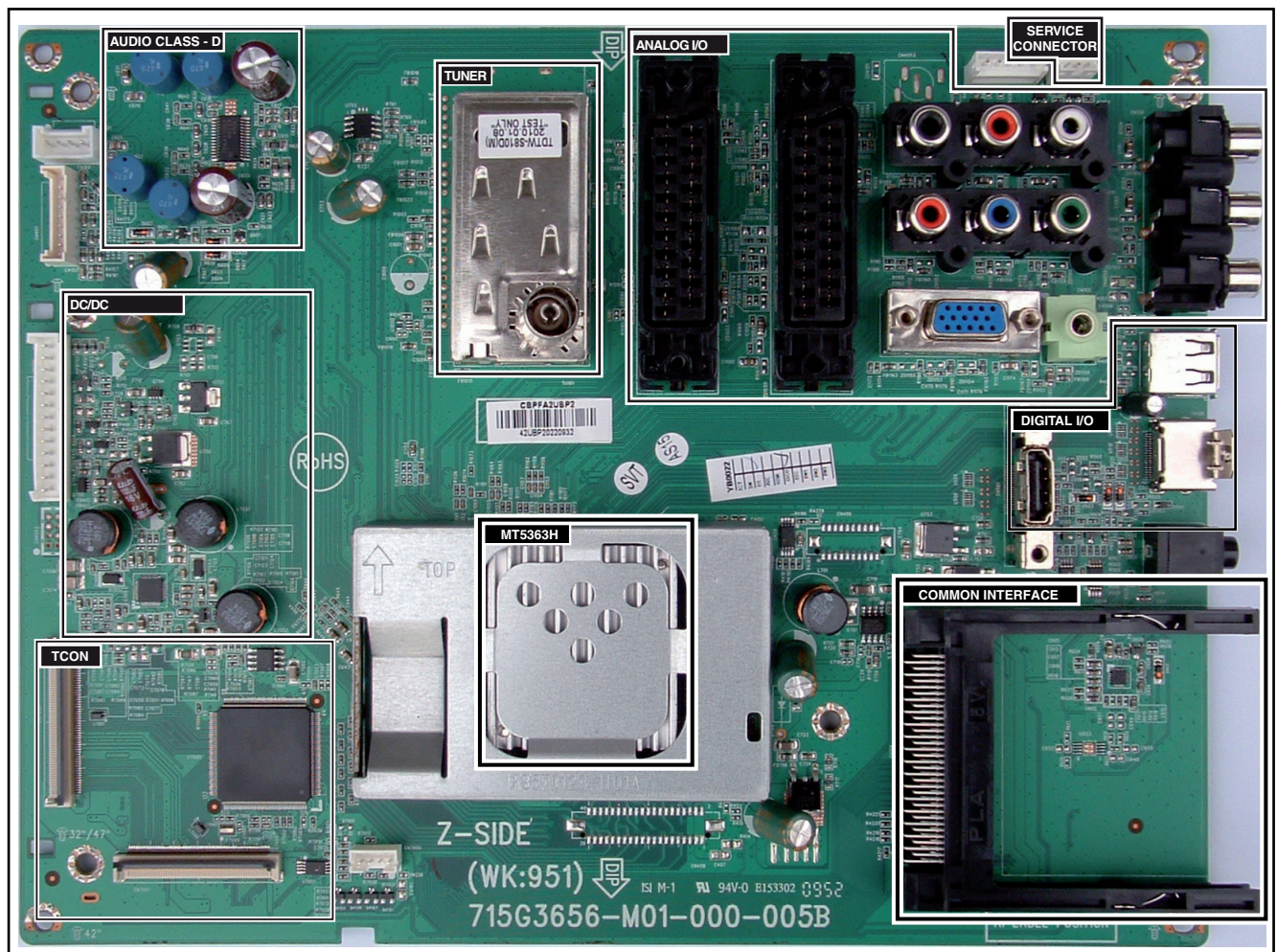


Figure 7-1 Architecture of TPM5.1E LA

## 7.1.3 SSB Cell Layout



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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 (DC/DC power conversion).

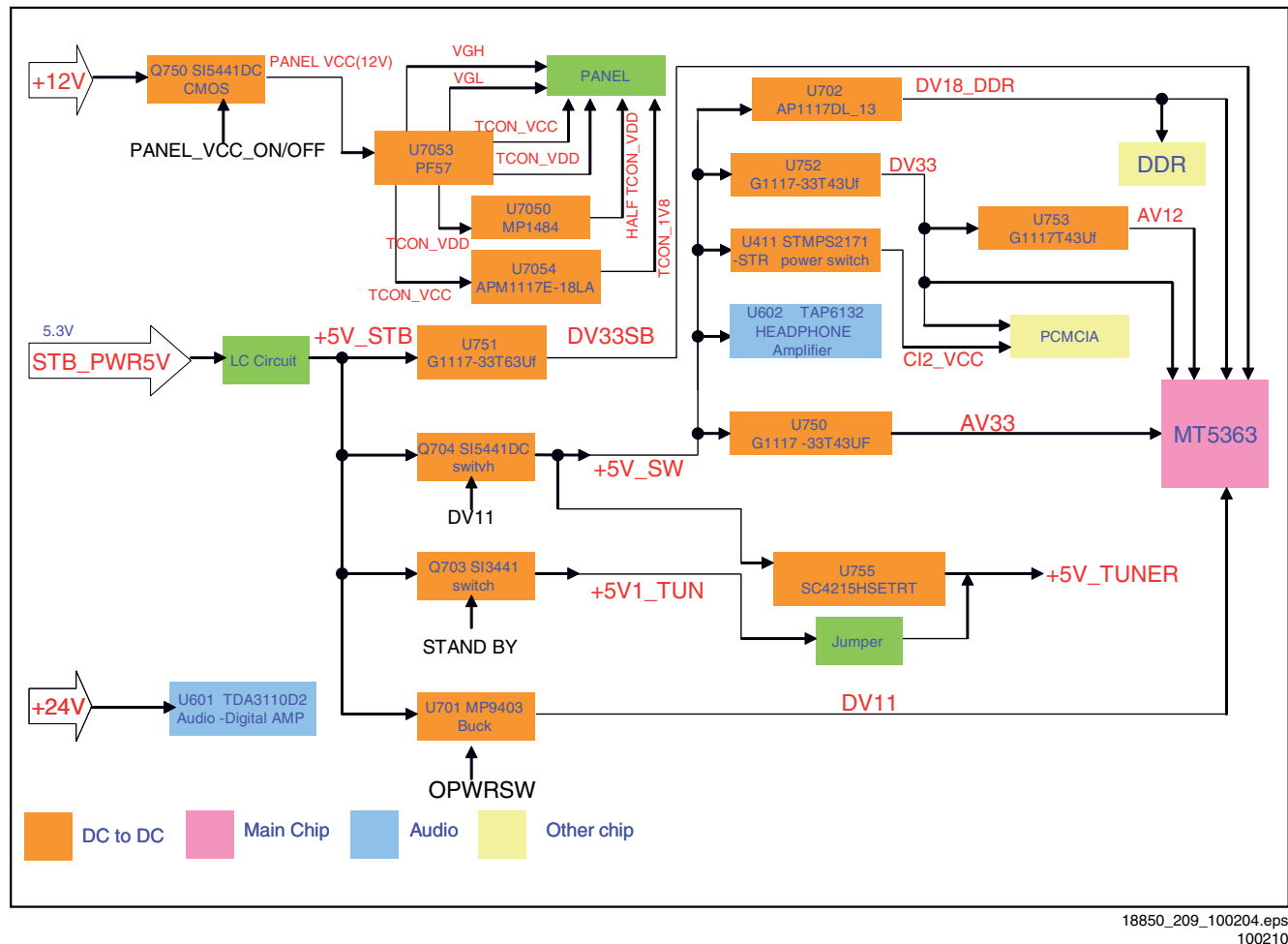


Figure 7-3 Power Architecture

### 7.2.1 Power Supply Unit

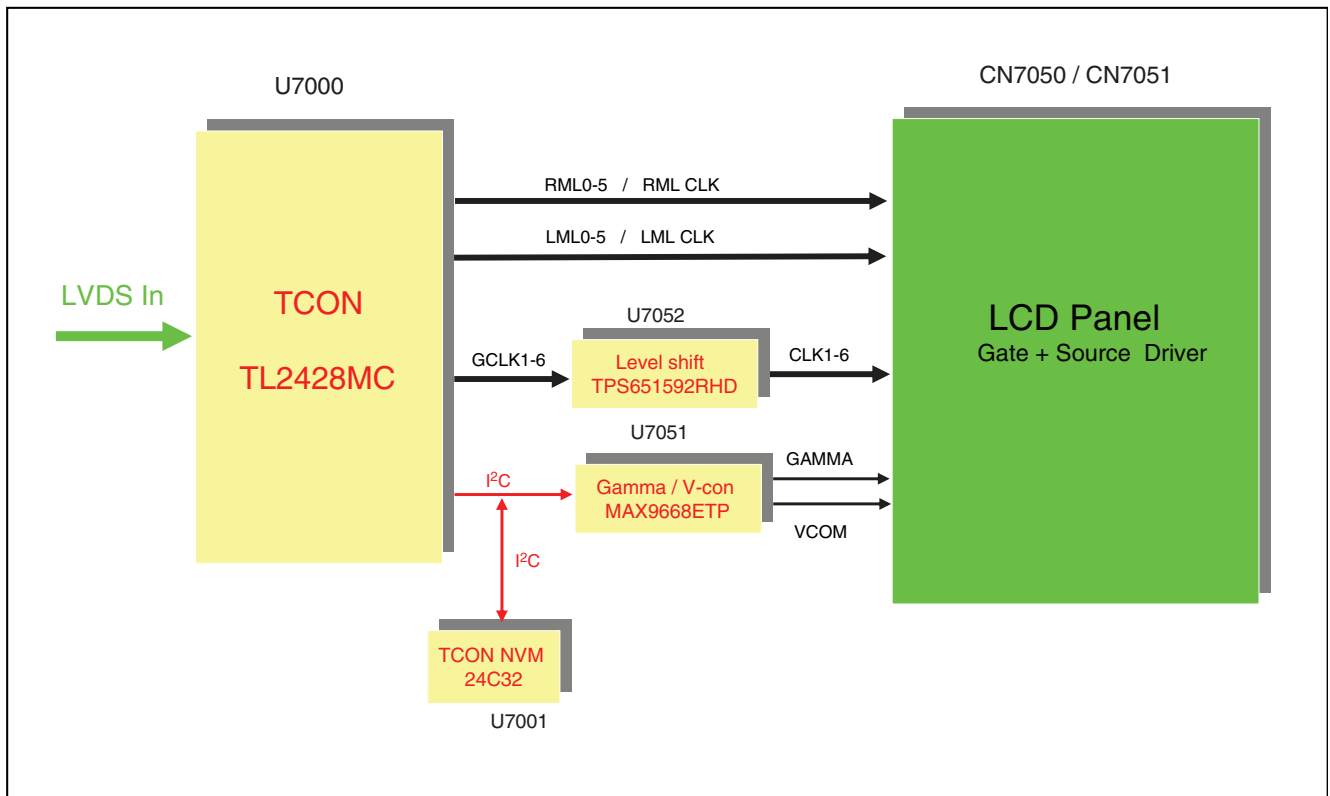
All power supplies are a black box for Service. When defective, a new board must be ordered and the defective one must be returned, unless the main fuse of the board is broken. Always replace a defective fuse with one with the correct specifications! This part is available in the regular market. Consult the Service website for the order codes of the boards.

The output voltages to the chassis are:

- +5-STANDBY (stand-by-mode only)
- +12V (on-mode)
- +24V (audio power)

### 7.3 T-CON Architecture

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



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Figure 7-4 T-CON Architecture

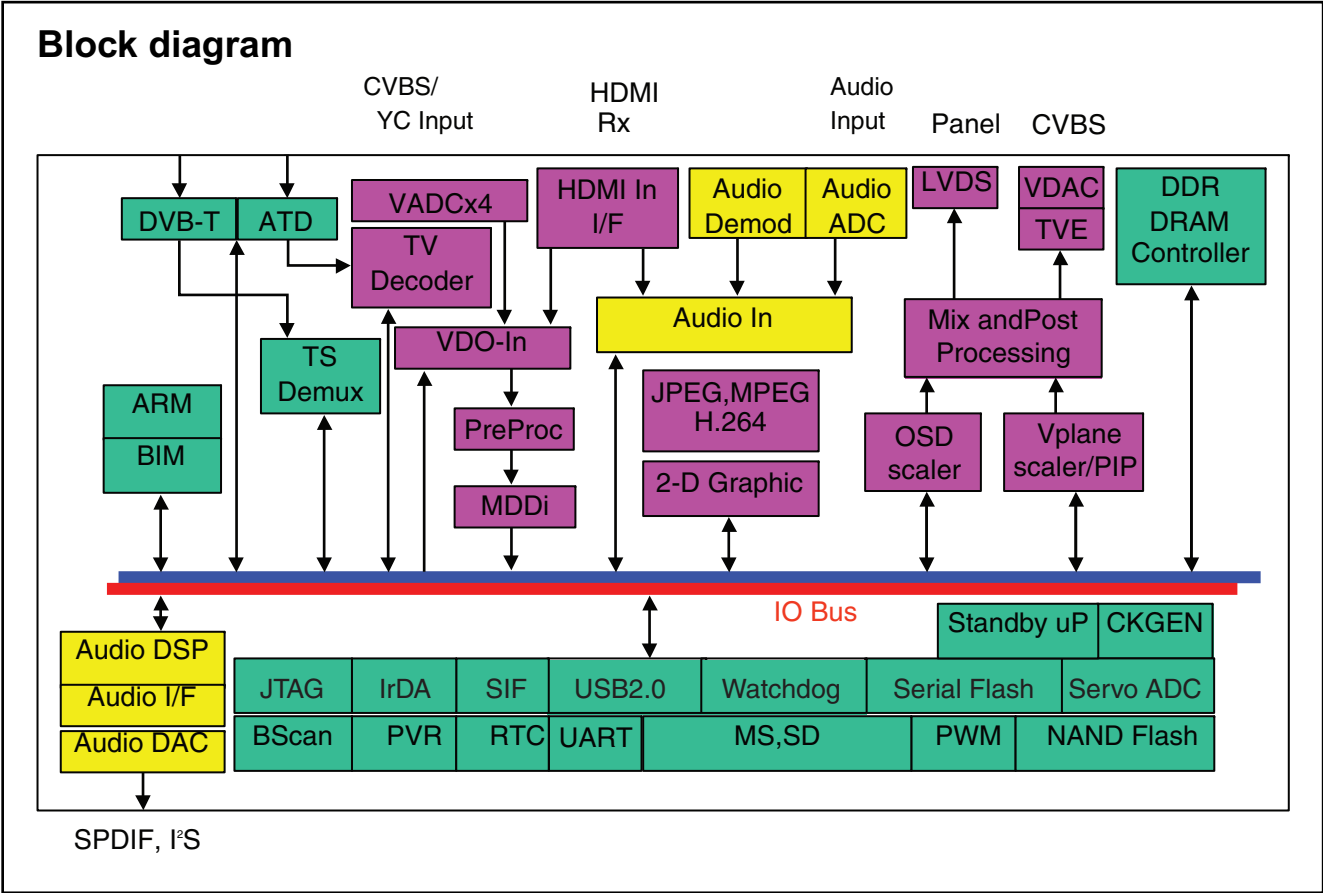
#### 7.3.1 T-CON Unit

The T-CON section includes the T-CON IC, a Level shift IC, a DC to DC conversion IC and a correction Gamma IC. The T-CON IC will transform the LVDS signal into a mini-LVDS signal with a 6 pairs Level shifter IC. This is a 9 channel level-shifter intended for use in LCD display applications such as TVs and monitors. The device converts the logic-level signals generated by the Timing Controller (T-CON) to the high-level signals used by the display panel. The gamma IC outputs eight voltage references for gamma correction in TFT LCDs and one voltage reference for VCOM. Each gamma reference voltage has its own 10-bit digital-to-analog converter (DAC) and buffer to ensure a stable voltage. The VCOM reference voltage has its own 10-bit DAC and an amplifier to ensure a stable voltage when critical levels and patterns are displayed. The DC to DC IC multiple-output power-supply controller generates all the supply rails for thin-film transistor (TFT) liquid-crystal display (LCD) panels in TVs and monitors operating from a regulated 12 V input. It includes a step-down and a step-up regulator, a positive and a negative charge pump, a dual-mode logic controlled high-voltage switch control block, and an adjustable timing power-good output. The positive and negative charge-pump regulators provide the TFT gate driver supply voltages.

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 B04 SSB: MT5363 By-pass/Trap, MT5363LICG BGA-522 (IC U401)



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Figure 8-1 Internal block diagram



## Pinning information

| LT | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9           | 10          | 11           | 12           | 13             | 14         | 15           | 16           | 17           | 18           | 19           |
|----|--------|--------|--------|--------|--------|--------|--------|--------|-------------|-------------|--------------|--------------|----------------|------------|--------------|--------------|--------------|--------------|--------------|
| A  |        | RCLK0_ |        | RDQ10  |        | RDQ15  |        | RDQS0_ |             | RDQ14       |              | RDQ12        |                |            |              | AO1N         |              | AOCKN        |              |
| B  | VCC2IO |        | RCLK0  |        | RDQ8   |        | RDQS1  |        | RDQS0       |             | RDQ11        |              | VCC2IO         |            | AO0N         |              | AO2N         |              | AO3N         |
| C  |        | VCC2IO |        | RDQ13  |        | RDQS1_ |        | DVSS   |             | RDQM1       |              | VCC2IO       |                |            |              | AO1P         |              | AOCKP        |              |
| D  | RA9    |        | VCC2IO |        | RDQ5   |        | RDQ0   |        | DVSS        |             | RDQ9         |              | VCC2IO         |            | AO2P         |              | AO2P         |              | AO3P         |
| E  |        | RA12   |        | VCC2IO |        | RDQ2   |        | DVSS   |             | RDQM0       |              | VCC2IO       |                | VCC2IO     |              | AE0N         |              | AE2N         |              |
| F  | RA5    |        | RA7    |        | VCC2IO |        | RDQ7   |        | DVSS        |             | RDQ6         |              | VCC2IO         |            | AVDD33_L VDS |              | AE1N         |              | AECKN        |
| G  |        | RA10   |        | RA3    |        | VCC2IO |        | DVSS   |             | DVSS        |              | RDQ3         |                | VCC2IO     |              | AE0P         |              | AE2P         |              |
| H  | RBA2   |        | RBA0   |        | RA1    |        | VCC2IO |        |             |             | RDQ1         |              | RDQ4           |            | AVDD33_L VDS |              | AE1P         |              | AECKP        |
| J  |        | RBA1   |        | DVSS   |        | DVSS   |        |        |             |             |              |              |                | VCC2IO     |              |              |              | AVSS33_L VDS |              |
| K  | RCKE   |        | RWE_   |        | MEMTN  |        | MEMTP  |        |             |             |              |              |                |            |              |              |              |              |              |
| L  |        | RCAS_  |        | DVSS   |        | DVSS   |        |        |             |             |              |              |                |            |              |              |              |              |              |
| M  | RA13   |        | RA2    |        | RA4    |        | RA6    |        |             |             |              |              |                |            |              |              |              |              | TP_VPLL      |
| N  |        | RA11   |        | RA0    |        | RODT   |        | RVREF  |             |             |              |              |                | DVSS       |              | AVDD12_L VDS |              | AVDD12_V PLL |              |
| P  | RA8    |        | RCS_   |        | RRAS_  |        | RVREF  |        |             |             |              |              | AVDD12_M EMPLL |            | DVSS         |              | AVSS12_L VDS |              | AVSS12_V PLL |
| R  |        | VCC2IO |        | VCC2IO |        | VCC2IO |        |        |             |             |              |              |                | DVSS       |              | VCCCK        |              | DVSS         |              |
| T  | RDQ19  |        | RDQ20  |        | RDQ30  |        | RDQ25  |        |             |             |              |              | AVSS12_M EMPLL |            | DVSS         |              | DVSS         |              | DVSS         |
| U  |        | RDQ22  |        | RDQ17  |        | RDQM3  |        |        |             |             |              |              |                | VCCCK      |              | DVSS         |              | DVSS         |              |
| V  | RDQM2  |        | RDQS2  |        | RDQ28  |        | RDQ27  |        |             |             |              |              |                | VCCCK      |              | DVSS         |              | DVSS         |              |
| W  |        | RDQS2_ |        | DVSS   |        | DVSS   |        |        |             |             |              |              |                | DVSS       |              | DVSS         |              | DVSS         |              |
| Y  | RDQS3  |        | DVSS   |        | RDQ24  |        | RDQ31  |        |             |             |              |              |                | VCCCK      |              | VCCCK        |              | DVSS         |              |
| AA |        | RDQS3_ |        | RDQ29  |        | RDQ26  |        |        |             |             |              |              |                | VCCCK      |              | DVSS         |              | DVSS         |              |
| AB | RDQ16  |        | RDQ23  |        | REXTDN |        |        |        |             |             |              |              |                | DVSS       |              | DVSS         |              | DVSS         |              |
| AC |        | RDQ21  |        | RDQ18  |        | VCC2IO |        |        |             |             |              |              |                | DVSS       |              | DVSS         |              | DVSS         |              |
| AD | RCLK1  |        | RCLK1_ |        | VCC2IO |        | VCC2IO |        |             |             |              |              |                | DVSS       |              | VCCCK        |              | VCCCK        |              |
| AE |        | VCC2IO |        | VCC2IO |        | GPIO39 |        | DVSS   |             |             |              |              |                | VCCCK      |              | VCCCK        |              | VCCCK        |              |
| AF | VCC2IO |        | VCC2IO |        | GPIO37 |        | GPIO40 |        | DVSS        |             |              |              |                | VCCIO33-1  |              | VCCIO33-1    |              |              |              |
| AG |        | GPIO38 |        | GPIO41 |        | GPIO42 |        |        |             |             |              |              | VCCCK          |            |              |              |              |              |              |
| AH | GPIO44 |        | GPIO43 |        | JTDO   |        | VCCCK  |        |             |             |              |              |                |            |              |              |              |              |              |
| AJ |        | JTDI   |        | JTMS   |        | VCCCK  |        | VCCCK  |             |             |              |              |                |            |              |              |              |              |              |
| AK | JTRST_ |        | JTCK   |        | VCCCK  |        | VCCCK  |        |             |             |              |              |                |            |              |              |              |              |              |
| AL |        | VCCCK  |        | VCCCK  |        | VCCCK  |        | VCCCK  |             | AVDD12_U SB |              | HDMI_SCL 2   |                | HDMI_SDA 2 |              | PWR5V_1      |              | HDMI_HPD 1   |              |
| AM | VCCCK  |        | VCCCK  |        | VCCCK  |        | VCCCK  |        | AVSS12_U SB |             | AVDD33_U SB  |              | AVDD33_H DMI   |            | PWR5V_2      |              | HDMI_SCL 1   |              | OPCTRL1      |
| AN |        | VCCCK  |        | VCCCK  |        | POCE1_ |        |        |             | USB_VRT     |              | AVSS33_H DMI |                | HDMI_CEC   |              | HDMI_HPD 2   |              | HDMI_SDA 1   |              |
| AP | OSDA0  |        | OSCL0  |        | PDD1   |        | PDD4   |        | AVSS33_U SB |             | AVDD12_H DMI |              | RX2_0          |            | RX2_2        |              | RX1_0        |              | RX1_2        |
| AR |        | PDD0   |        | PAALE  |        | PDD2   |        | PDD6   |             | USB_DM      |              | RX2_C        |                | RX2_1      |              | RX1_C        |              | RX1_1        |              |
| AT | POCE0_ |        | POWE_  |        | PARB_  |        | PDD5   |        | AVSS33_U SB |             | AVSS33_U SB  |              | RX2_0B         |            | RX2_2B       |              | RX1_0B       |              | RX1_2B       |
| AU |        | POCE_  |        | PACLE  |        | PDD3   |        | PDD7   |             | USB_DP      |              | RX2_CB       |                | RX2_1B     |              | RX1_CB       |              | RX1_1B       |              |
| AV | 1      | 2      | 3      | 4      | 5      | 6      | 7      | 8      | 9           | 10          | 11           | 12           | 13             | 14         | 15           | 16           | 17           | 18           | 19           |

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Figure 8-2 Pin configuration (1)

## Pinning information

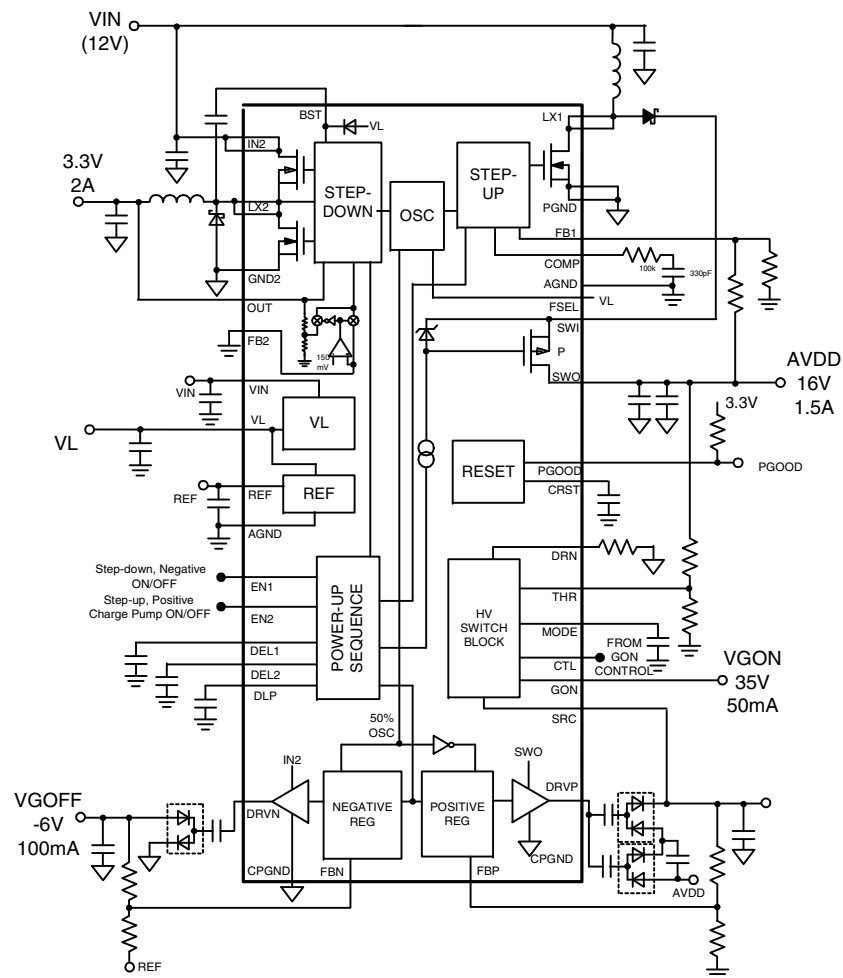
| 20      | 21      | 22      | 23             | 24                 | 25             | 26             | 27     | 28     | 29                | 30                  | 31               | 32                | 33                | 34                 | 35                  | 36                | 37               | RT              |    |
|---------|---------|---------|----------------|--------------------|----------------|----------------|--------|--------|-------------------|---------------------|------------------|-------------------|-------------------|--------------------|---------------------|-------------------|------------------|-----------------|----|
| AQ4N    |         | GPIO35  |                |                    |                | GPIO21         |        |        |                   | GPIO3               |                  | ETTXD0            |                   | ETRXD2             |                     | ETRXD0            |                  | A               |    |
|         | DVSS    |         | GPIO32         |                    | GPIO26         |                | GPIO17 |        | GPIO9             |                     | ETTXD3           |                   | ETRXCLK           |                    | ETRXD1              |                   | ETRXDV           | B               |    |
| AQ4P    |         | GPIO36  |                | GPIO28             |                | GPIO22         |        | GPIO11 |                   | GPIO4               |                  | ETTXD1            |                   | ETRXD3             |                     | ETCRS             |                  | C               |    |
|         | DVSS    |         | GPIO34         |                    | GPIO27         |                | GPIO18 |        | GPIO10            |                     | ETTXEN           |                   | ETTXCLK           |                    | ETRXER              |                   | ETMDIO           | D               |    |
| AE3N    |         | DVSS    |                | GPIO30             |                | GPIO20         |        | GPIO12 |                   | GPIO6               |                  | ETTXD2            |                   | ETTXER             |                     | ETMDC             |                  | E               |    |
|         | AE4N    |         | GPIO33         |                    | GPIO24         |                | GPIO16 |        | GPIO8             |                     | ETPHYCLK         |                   | CI_MCLKO          |                    | CI_MCLKI            |                   | CI_MOSTR<br>T    | F               |    |
| AE3P    |         | DVSS    |                | GPIO29             |                | GPIO19         |        | GPIO14 |                   | GPIO5               |                  | ETCOL             |                   | CI_MIVAL           |                     | CI_MOVAL          |                  | G               |    |
|         | AE4P    |         | VCCIO33        |                    | GPIO25         |                | GPIO15 |        | GPIO7             |                     | VCCIO33          |                   | CI_MISTR<br>T     |                    | CI_MDIO             |                   | CI_MDO0          | H               |    |
|         |         |         |                | GPIO31             |                | GPIO23         |        | GPIO13 |                   | VCCIO33             |                  | GPIO2             |                   | OPWM0              |                     | OPWM1             |                  | J               |    |
|         |         |         |                |                    |                |                |        |        |                   |                     | AOSDATA3         |                   | ASPDIF            |                    | GPIO0               |                   | GPIO1            | K               |    |
|         |         |         |                |                    |                |                |        |        |                   | FSRC_WF             |                  | ALIN              |                   | AOBCK              |                     | AOSDATA0          |                  | L               |    |
|         |         |         |                |                    |                |                |        |        |                   |                     | IF_AGC           |                   | RF_AGC            |                    | AOMCLK              |                   | AOLRCK           | M               |    |
| DVSS    |         | VCCK    |                | VCCK               |                |                |        |        |                   |                     |                  | AOSDATA4          |                   | TUNER_DA<br>TA     |                     | TUNER_CL<br>K     |                  | N               |    |
|         | DVSS    |         | DVSS           |                    | DVSS           |                |        |        |                   |                     | OSCL2            |                   | OSDA2             |                    | AOSDATA1            |                   | AOSDATA2         | P               |    |
| DVSS    |         | DVSS    |                | DVSS               |                |                |        |        |                   |                     |                  | OSDA1             |                   | OSCL1              |                     | U1RX              |                  | R               |    |
|         | DVSS    |         | DVSS           |                    | VCCK           |                |        |        |                   |                     | AVDD33_A<br>DAC1 |                   | OPWM2             |                    | U1TX                |                   | VCXO             | T               |    |
| DVSS    |         | DVSS    |                | DVSS               |                |                |        |        |                   | AVSS33_A<br>DAC1    |                  | AL1               |                   | AR2                |                     | AR3               |                  | U               |    |
|         | DVSS    |         | DVSS           |                    | VCCK           |                |        |        |                   |                     | VCCIO33          |                   | AR1               |                    | AL2                 |                   | AL3              | V               |    |
| DVSS    |         | DVSS    |                | VCCK               |                |                |        |        |                   | AVDD33_R<br>EF_AADC |                  | VCCIO33           |                   | VCCIO33            |                     | VCCIO33           |                  | W               |    |
|         | DVSS    |         | DVSS           |                    | VCCK           |                |        |        |                   | AVSS33_R<br>EF_AADC |                  | AVDD33_A<br>ADC   |                   | AVSS33_A<br>ADC    |                     | AIN5_R_A<br>ADC   |                  | AIN6_R_A<br>ADC | Y  |
| DVSS    |         | DVSS    |                | VCCK               |                |                |        |        |                   | VMID_AAD<br>C       |                  | AIN4_L_AA<br>DC   |                   | AIN5_L_AA<br>DC    |                     | AIN6_L_AA<br>DC   |                  | AA              |    |
|         | DVSS    |         | DVSS           |                    | VCCK           |                |        |        |                   |                     | AIN1_L_AA<br>DC  |                   | AIN4_R_A<br>ADC   |                    | AIN2_R_A<br>ADC     |                   | AIN3_R_A<br>ADC  | AB              |    |
| DVSS    |         | DVSS    |                | DVSS               |                |                |        |        |                   |                     |                  | AIN1_R_A<br>ADC   |                   | AIN0_R_A<br>ADC    |                     | AIN3_L_AA<br>DC   |                  | AC              |    |
|         | DVSS    |         | DVSS           |                    | DVSS           |                |        |        |                   |                     |                  |                   | AIN0_L_AA<br>DC   |                    | AIN2_L_AA<br>DC     |                   |                  | AD              |    |
| VCCK    |         | VCCK    |                | DVSS               |                |                |        |        |                   |                     |                  |                   |                   | AVSS33_A<br>DAC0   |                     | AR0               |                  | AE              |    |
|         |         |         |                |                    |                |                |        |        | AVDD12_T<br>VDPLL |                     |                  |                   | AVDD33_A<br>DAC0  |                    | AVICM               |                   | AL0              | AF              |    |
|         |         |         |                |                    |                |                |        |        |                   | AVDD12_A<br>PLL     |                  | AVDD12_S<br>YSPLL |                   | AVDD33_D<br>DEM0D1 |                     | AVSS33_D<br>EMOD1 |                  | AG              |    |
|         |         |         |                |                    |                |                |        |        | AVSS12_P<br>LL    |                     | AVSS12_P<br>LL   |                   | AVDD12_A<br>DCPLL |                    | ADCINN_D<br>EMOD    |                   | ADCINP_D<br>EMOD | AH              |    |
|         |         |         |                |                    |                |                |        |        |                   | AVSS33_D<br>IG      |                  |                   |                   | XTALO              |                     | XTALI             |                  | AJ              |    |
|         |         |         |                |                    |                |                |        |        | AVSS33_S<br>F     |                     | AVDD33_D<br>IG   |                   | ADIN1_SR<br>V     |                    | AVDD33_X<br>TAL_STB |                   | AVSS33_X<br>TAL  | AK              |    |
| OPWRSB  |         | ORESET_ |                | AVSS33_V<br>GA_STB |                |                |        |        |                   | AVDD33_S<br>IF      |                  | ADIN0_SR<br>V     |                   | ADIN3_SR<br>V      |                     | ADIN5_SR<br>V     |                  | AL              |    |
|         | OPCTRL0 |         | AVDD10_L<br>DO |                    | AVDD12_R<br>GB |                |        |        |                   | FS_VDAC             |                  | BYPASS0           |                   | AF                 |                     | ADIN2_SR<br>V     |                  | ADIN4_SR<br>V   | AM |
| OPCTRL2 |         | OIRI    |                | AVDD33_V<br>GA_STB |                | AVSS12_R<br>GB |        |        |                   | AVDD33_V<br>DAC     |                  | AVDD33_C<br>VBS   |                   | MPXP               |                     | MPXN              |                  | AN              |    |
|         | U0TX    |         | SOG            |                    | SOY1           |                | PR1P   |        | PB0P              |                     | VDAC_OUT<br>1    |                   | SY0               |                    | CVBS2P              |                   | TUNER_BY<br>PASS | AP              |    |
| OPCTRL3 |         | HSYNC   |                | COM                |                | COM1           |        | Y0P    |                   | AVSS33_V<br>DAC     |                  | AVSS33_C<br>VBS   |                   | SY1                |                     | CVBS0N            |                  | AR              |    |
|         | U0RX    |         | BP             |                    | RP             |                | PB1P   |        | COM0              |                     | VDAC_OUT<br>2    |                   | SC0               |                    | CVBS3P              |                   | CVBS0P           | AT              |    |
| OPCTRL4 |         | VSYNC   |                | GP                 |                | Y1P            |        | SOY0   |                   | PR0P                |                  |                   |                   | SC1                |                     | CVBS1P            |                  | AU              |    |
| 20      | 21      | 22      | 23             | 24                 | 25             | 26             | 27     | 28     | 29                | 30                  | 31               | 32                | 33                | 34                 | 35                  | 36                | 37               | RB              |    |

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Figure 8-3 Pin configuration (2)

## 8.2 Diagram B14 SSB: T-CON power, PF57 TQFN-40 (IC U7053)

## Block diagram



## Pinning information

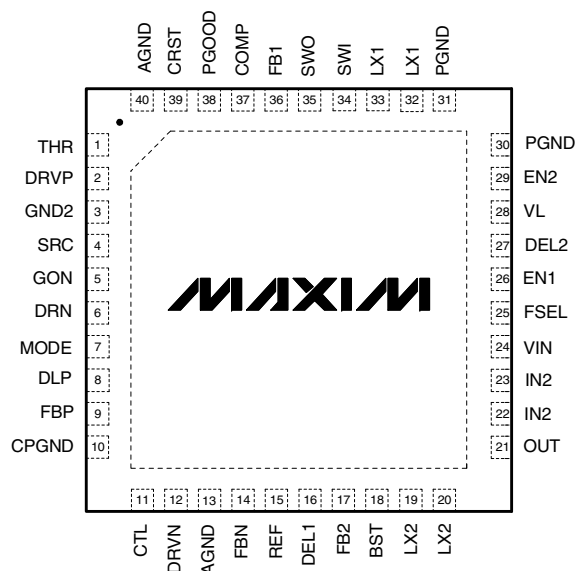
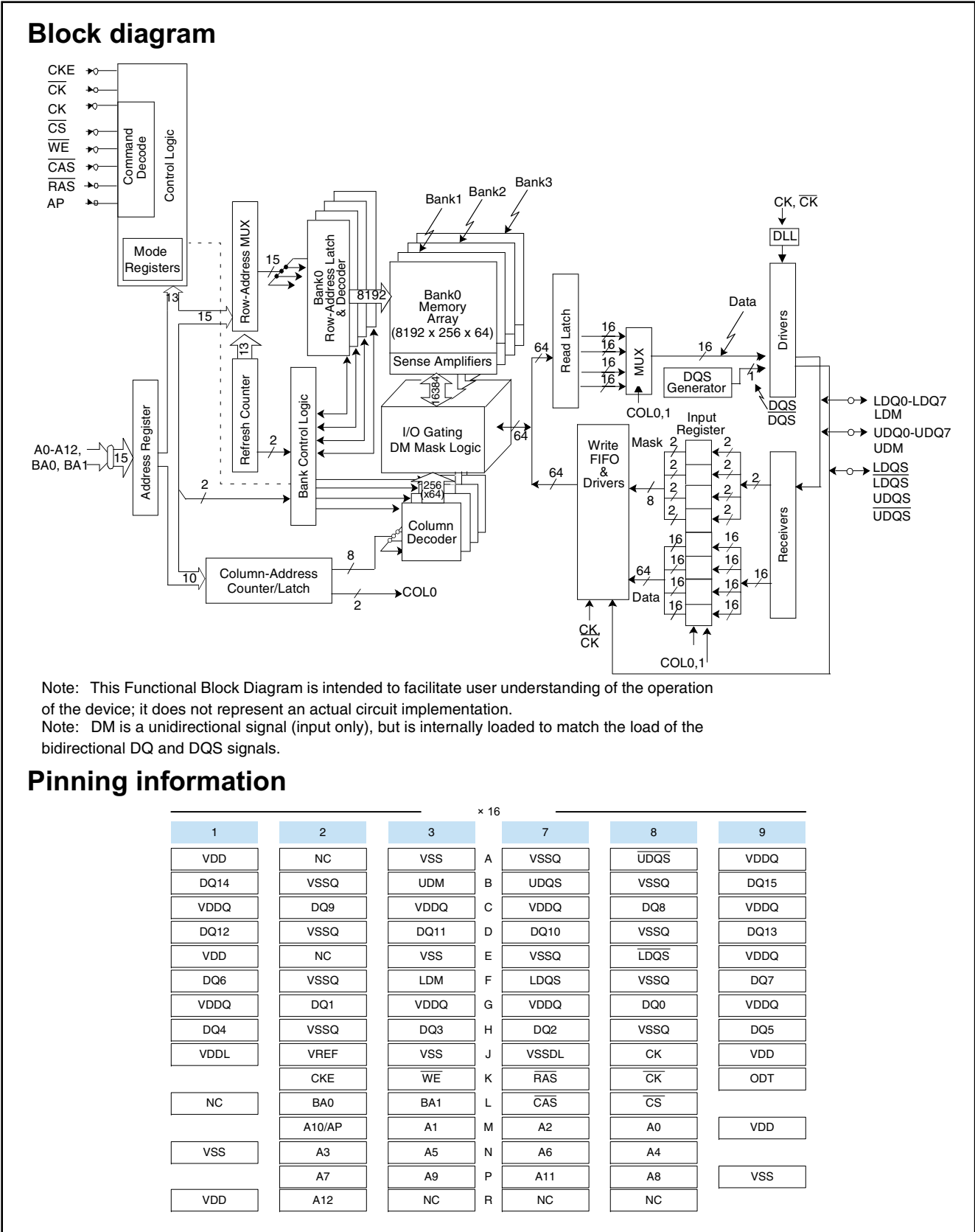
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Figure 8-4 Internal block diagram and pin configuration

8.3 Diagram B06 SSB: DDR2 memory, NT5TU32M16CG-BD (IC U402, U403)

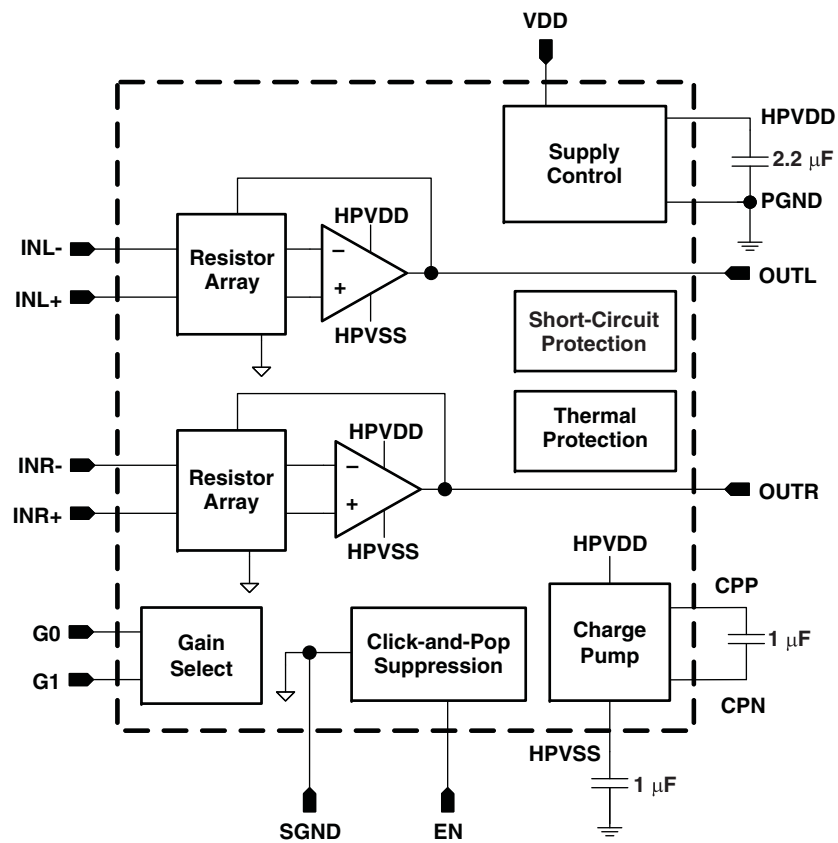


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Figure 8-5 Internal block diagram and pin configuration

8.4 Diagram B12 [SSB: Audio Amp/Headphone out](#), TPA6132A2RTER 25mW QFN-16 (IC U602)

## Block diagram



## Pinning information

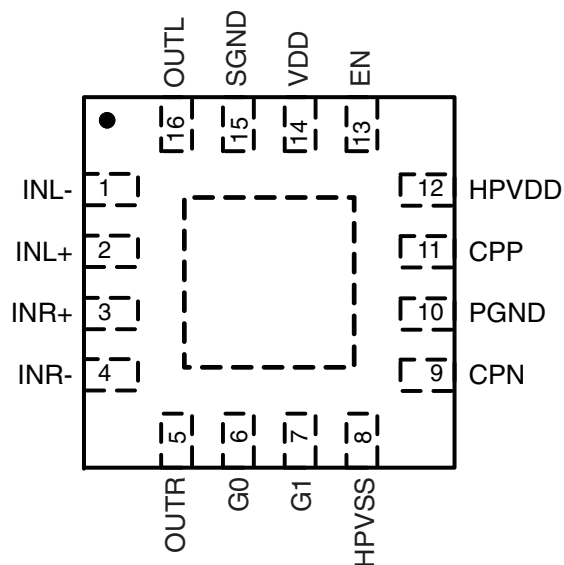
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Figure 8-6 Internal block diagram and pin configuration

8.5    Diagram B15 [SSB: T-CON main chip, TL2428MC LQPF-176 \(IC U7000\)](#)

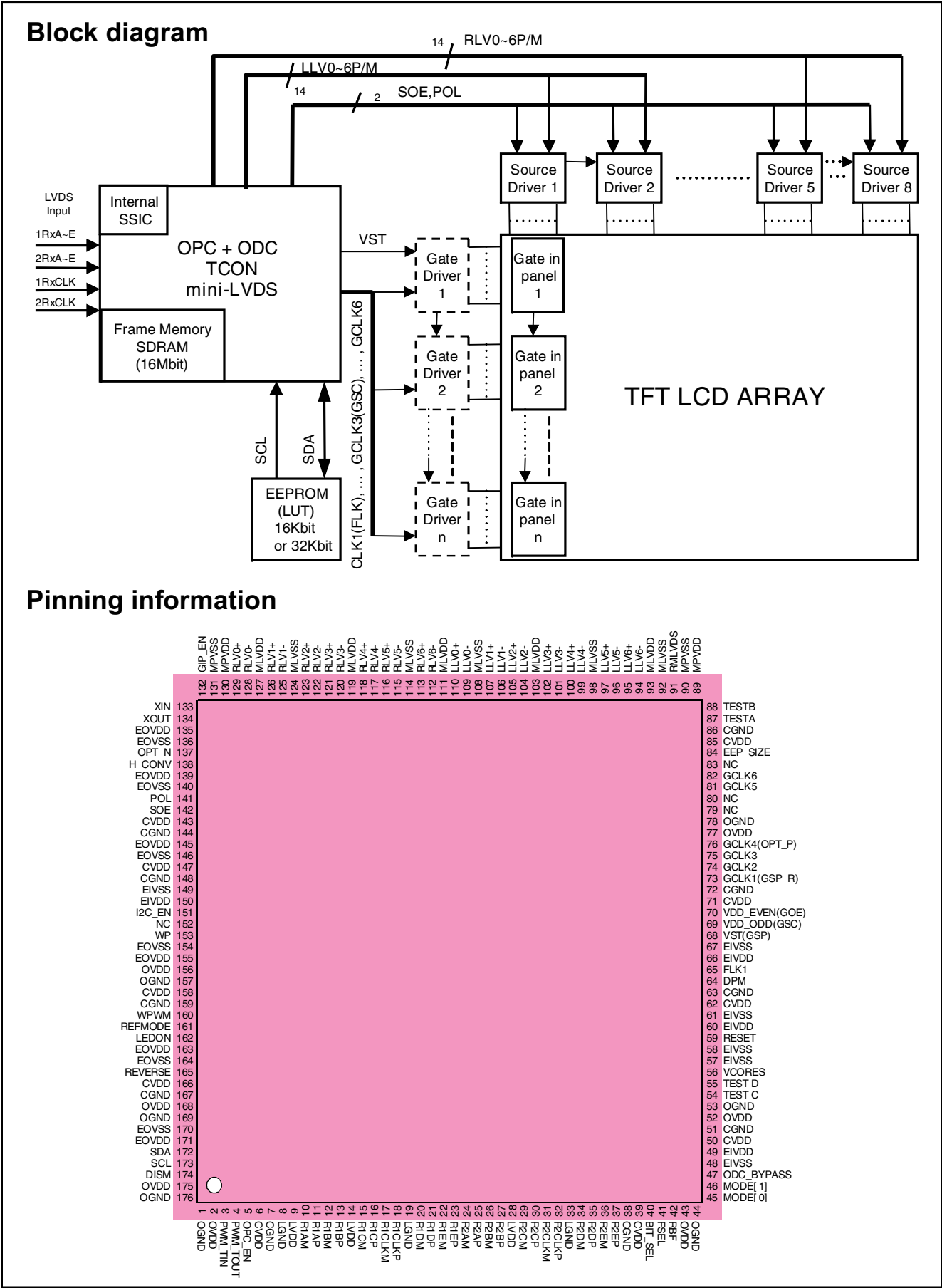
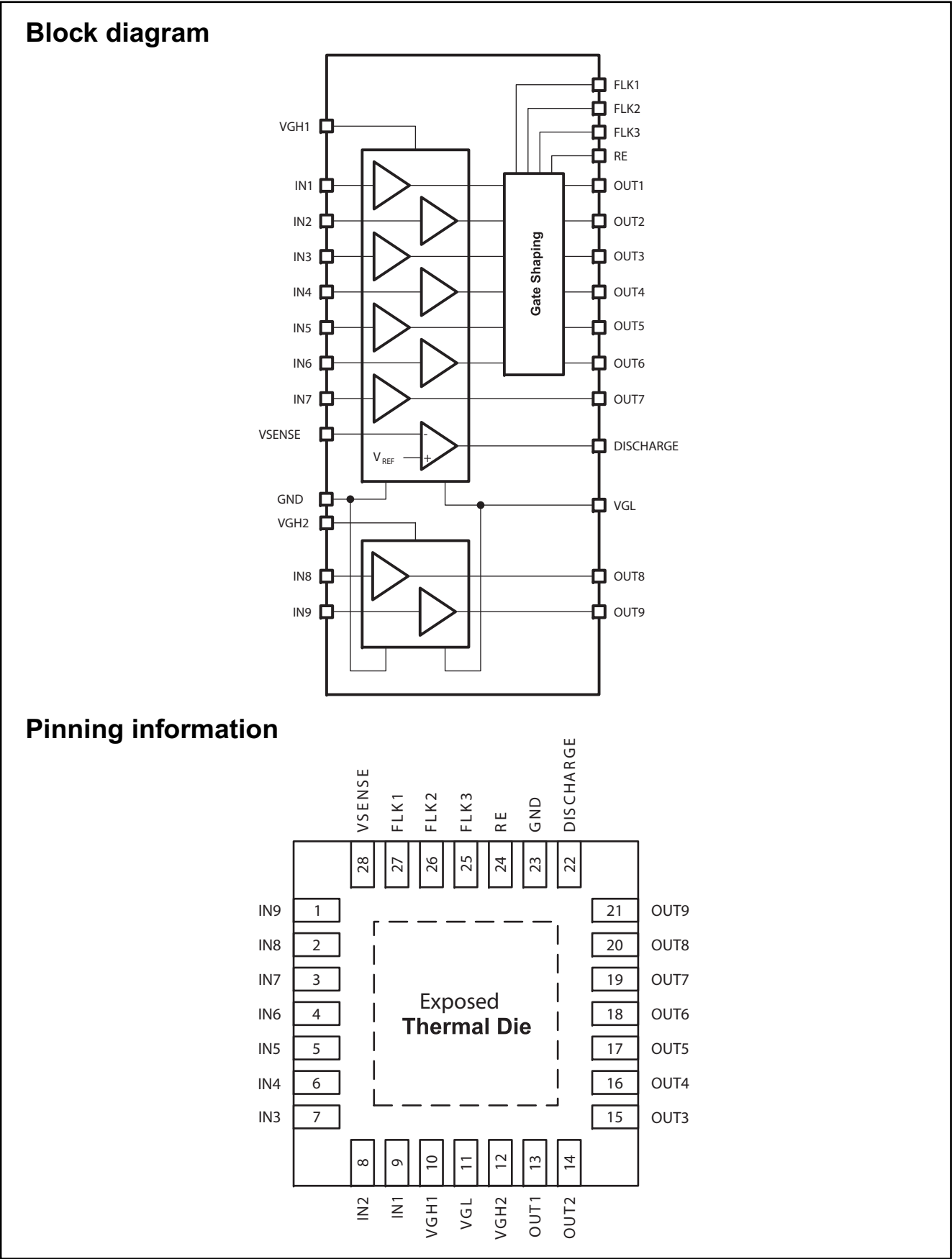


Figure 8-7 Internal block diagram and pin configuration

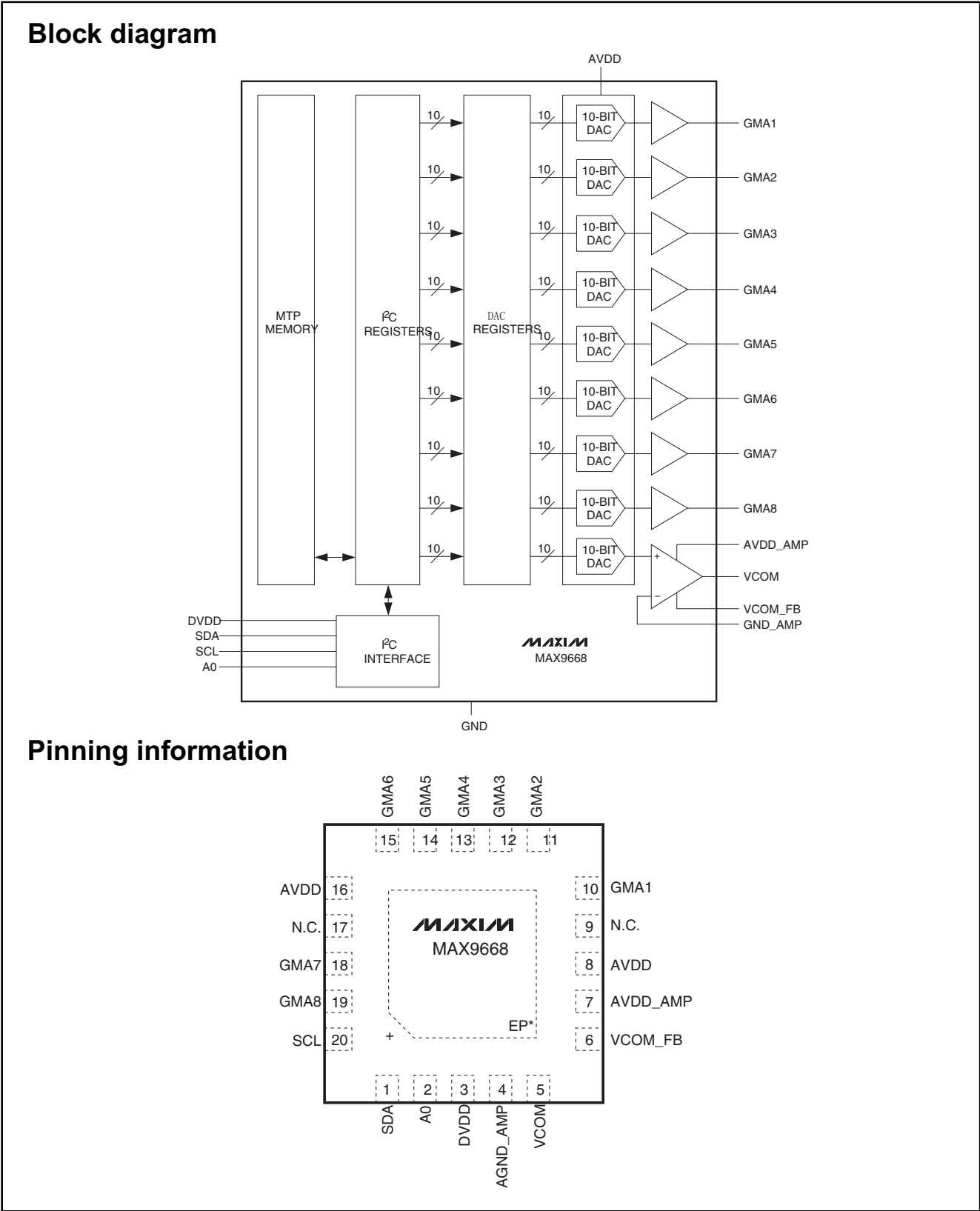
8.6 Diagram B14 [SSB: T-CON power](#), TPS65192RHDR QFN-28 (IC U7052)



18850\_306\_100107.eps  
100223

Figure 8-8 Internal block diagram and pin configuration

8.7
 Diagram B14
 [SSB: T-CON power](#), MAX9668ETP+ TQFN-EP-20 (IC U7051)



18850\_307\_100107.eps  
 100223

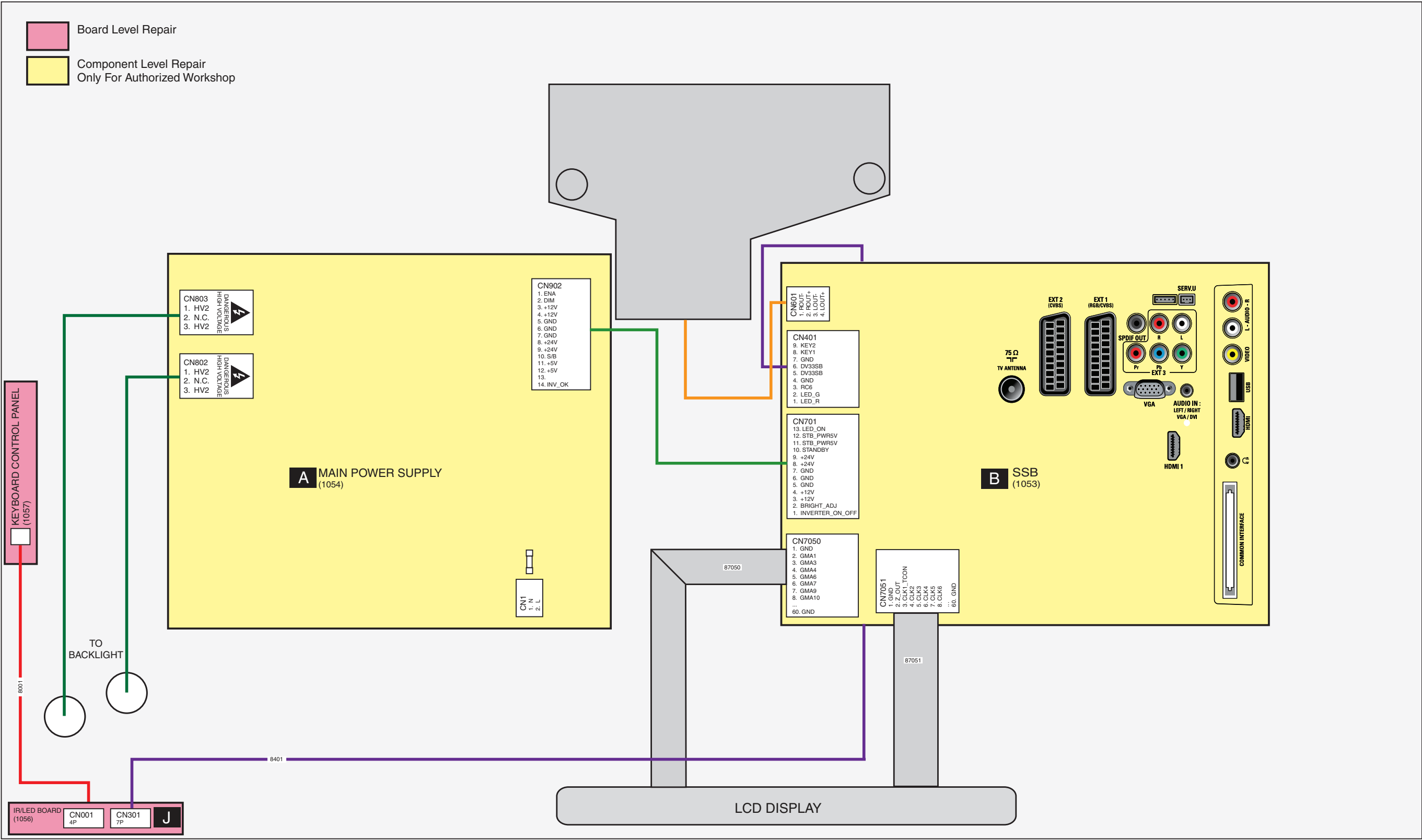
Figure 8-9 Internal block diagram and pin configuration



9. Block Diagrams

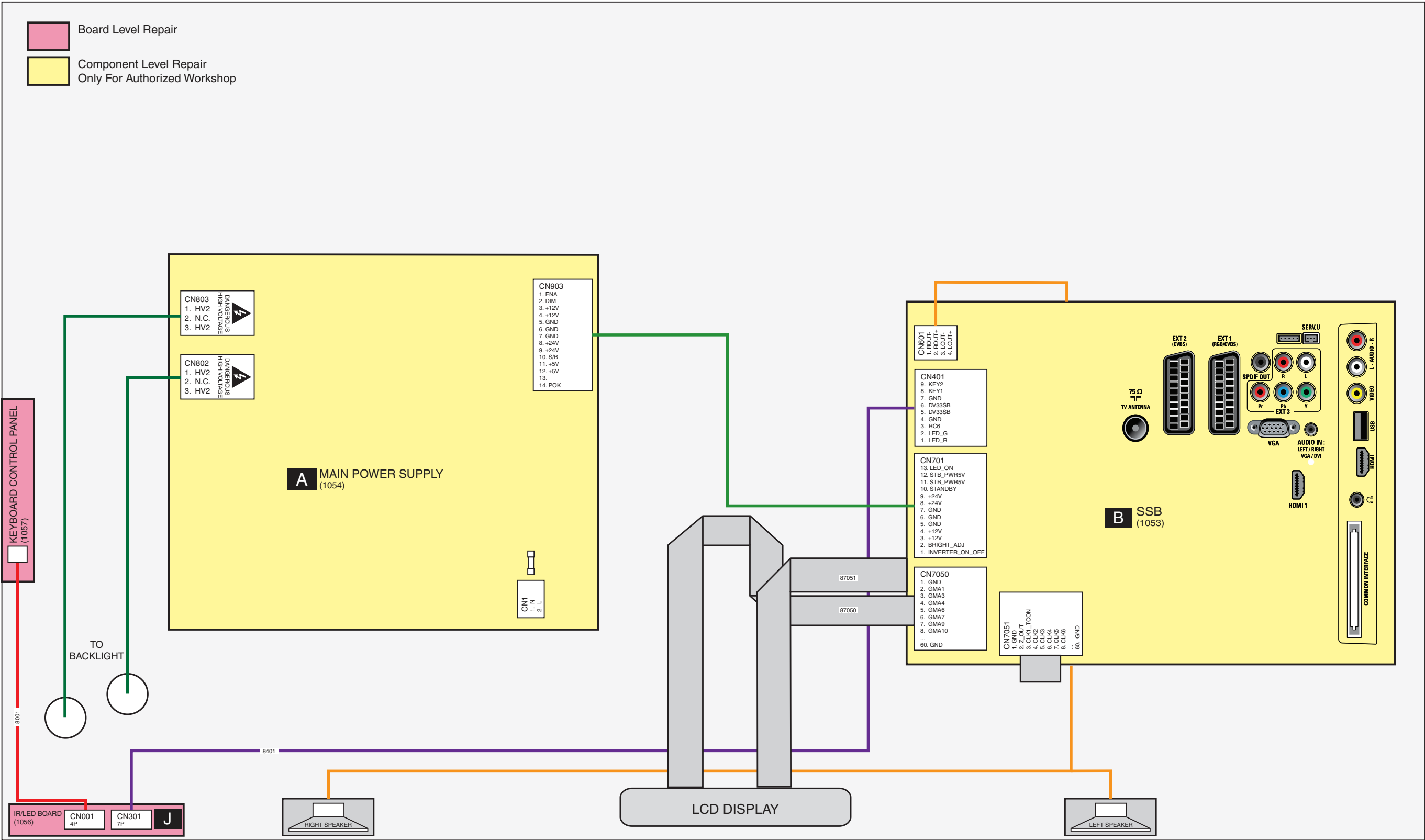
Wiring Diagram 32"

WIRING DIAGRAM 32" (Dali)



Wiring Diagram 42"

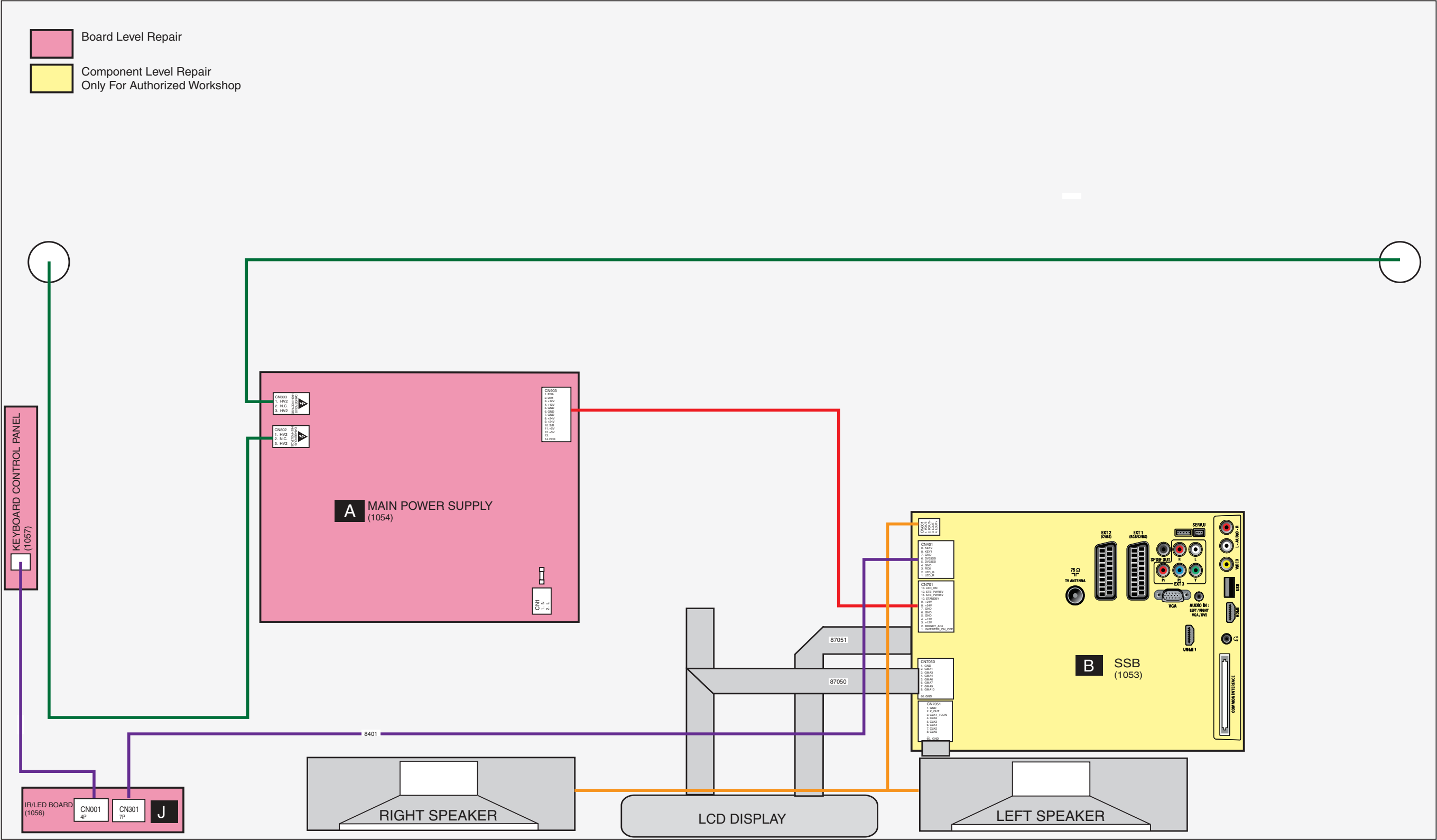
WIRING DIAGRAM 42" (Dali)



18850\_400\_100107.eps  
100223

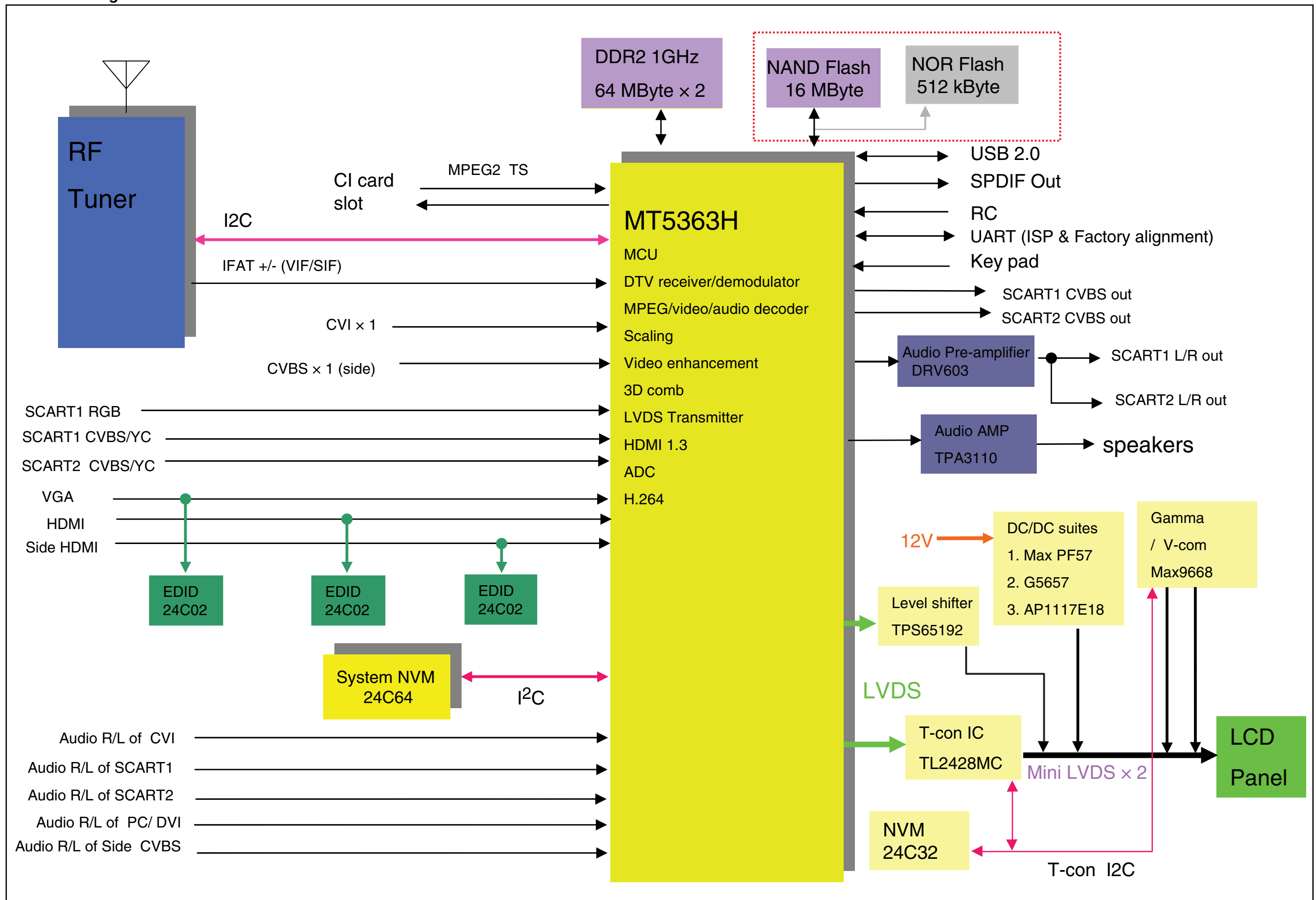
**Wiring Diagram 47"**

WIRING DIAGRAM 47" (Dall)



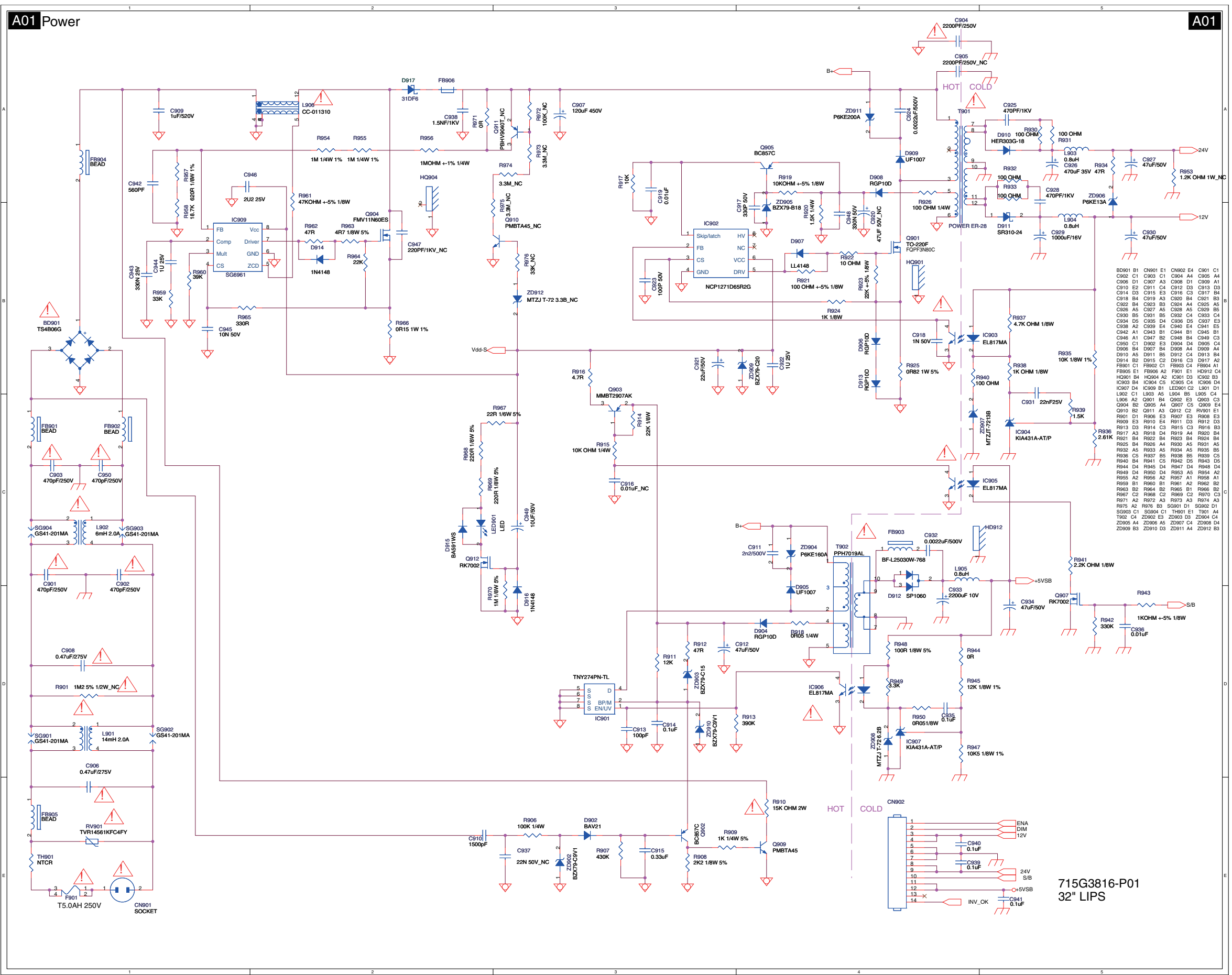
18850\_402\_100506.eps  
100506

# Block Diagram

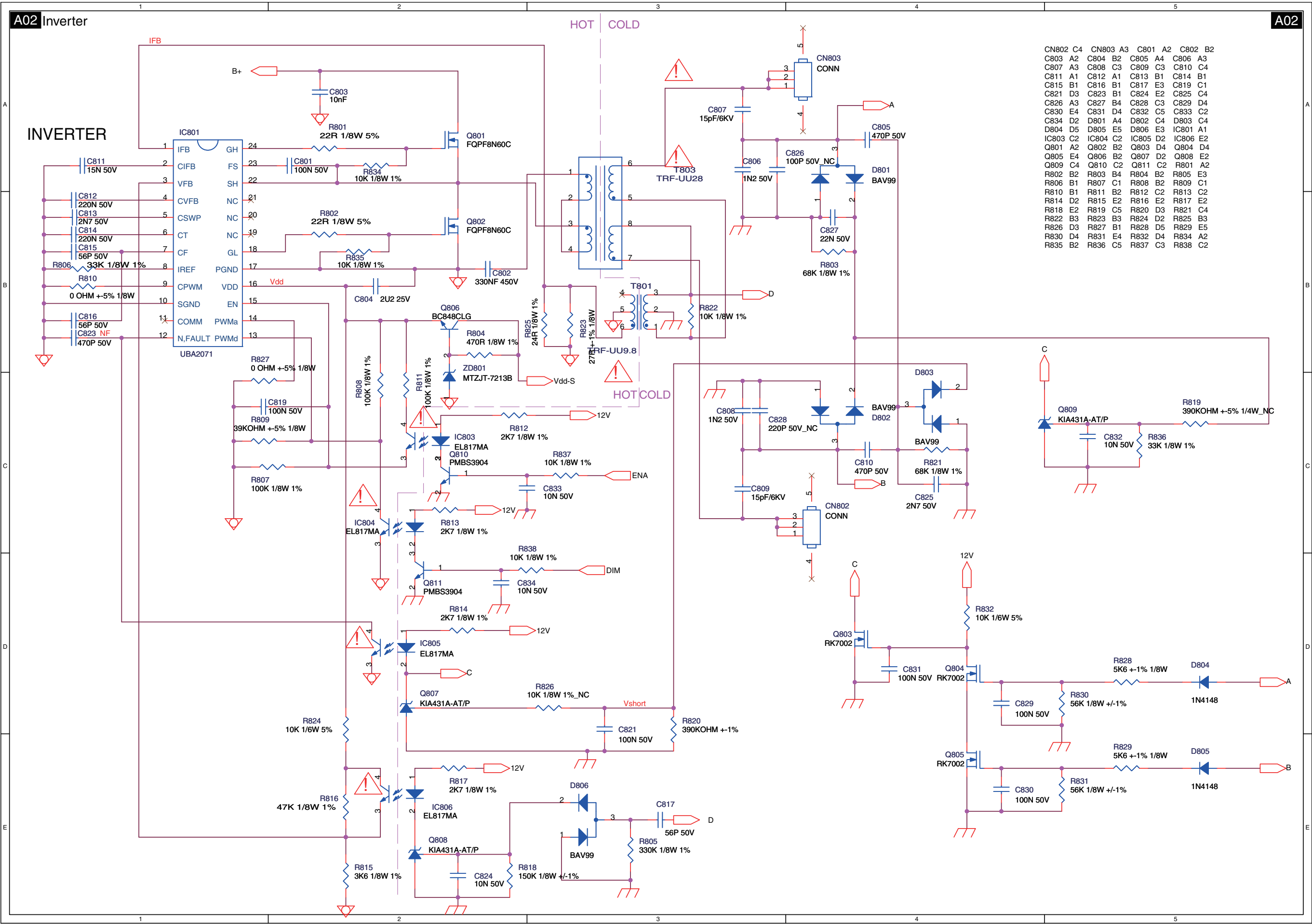


10. Circuit Diagrams and PWB Layouts

Power 32"



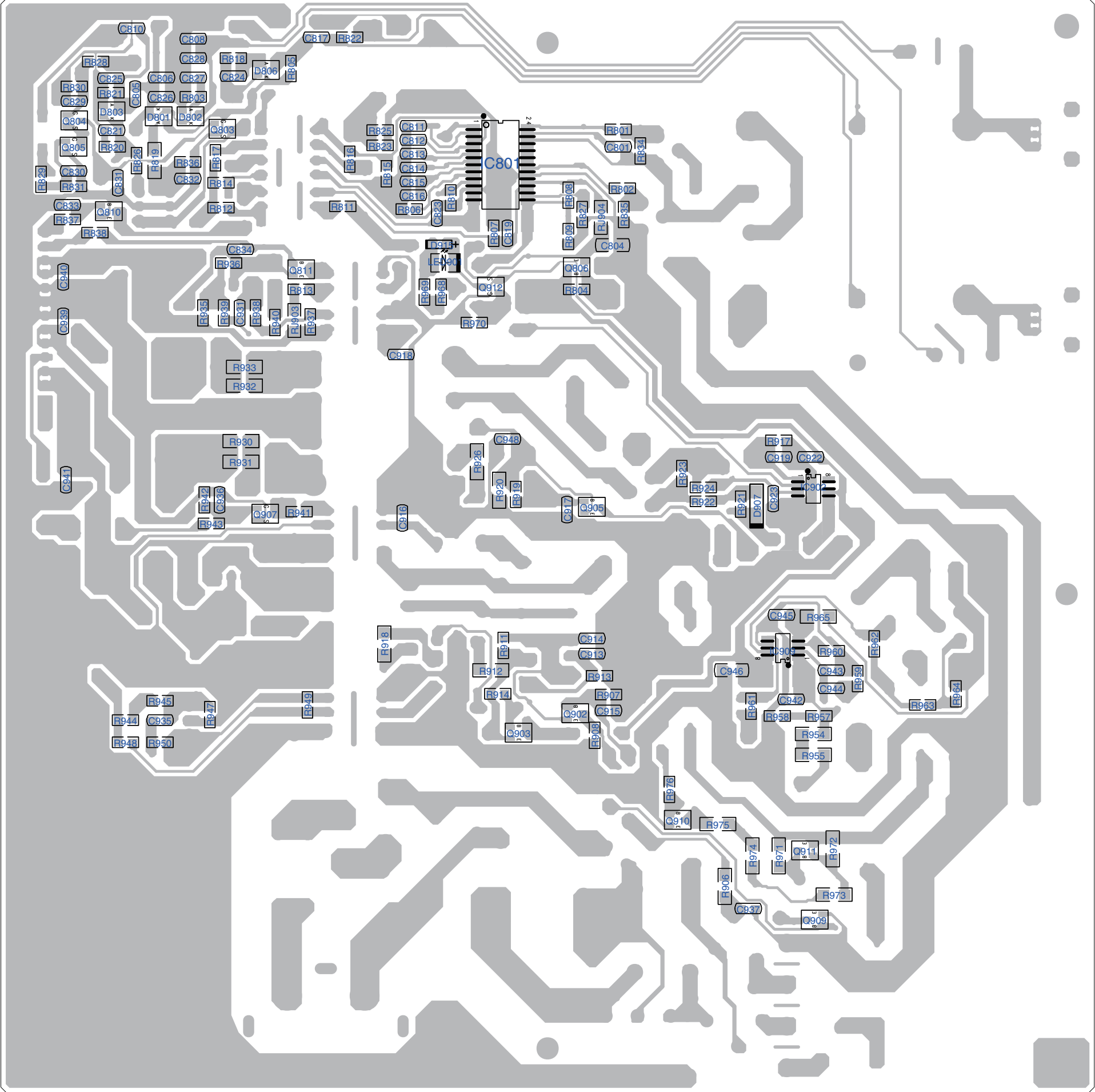
Inverter 32"



|       |    |       |    |       |    |       |    |
|-------|----|-------|----|-------|----|-------|----|
| CN802 | C4 | CN803 | A3 | C801  | A2 | C802  | B2 |
| C803  | A2 | C804  | B2 | C805  | A4 | C806  | A3 |
| C807  | A3 | C808  | C3 | C809  | C3 | C810  | C4 |
| C811  | A1 | C812  | A1 | C813  | B1 | C814  | B1 |
| C815  | B1 | C816  | B1 | C817  | E3 | C819  | C1 |
| C821  | D3 | C823  | B1 | C824  | E2 | C825  | C4 |
| C826  | A3 | C827  | B4 | C828  | C3 | C829  | D4 |
| C830  | E4 | C831  | D4 | C832  | C5 | C833  | C2 |
| C834  | D2 | D801  | A4 | D802  | C4 | D803  | C4 |
| D804  | D5 | D805  | E5 | D806  | E3 | IC801 | A1 |
| IC803 | C2 | IC804 | C2 | IC805 | D2 | IC806 | E2 |
| Q801  | A2 | Q802  | B2 | Q803  | D4 | Q804  | D4 |
| Q805  | E4 | Q806  | B2 | Q807  | D2 | Q808  | E2 |
| Q809  | C4 | Q810  | C2 | Q811  | C2 | R801  | A2 |
| R802  | B2 | R803  | B4 | R804  | B2 | R805  | E3 |
| R806  | B1 | R807  | C1 | R808  | B2 | R809  | C1 |
| R810  | B1 | R811  | B2 | R812  | C2 | R813  | C2 |
| R814  | D2 | R815  | E2 | R816  | E2 | R817  | E2 |
| R818  | E2 | R819  | C5 | R820  | D3 | R821  | C4 |
| R822  | B3 | R823  | B3 | R824  | D2 | R825  | B3 |
| R826  | D3 | R827  | B1 | R828  | D5 | R829  | E5 |
| R830  | D4 | R831  | E4 | R832  | D4 | R834  | A2 |
| R835  | B2 | R836  | C5 | R837  | C3 | R838  | C2 |

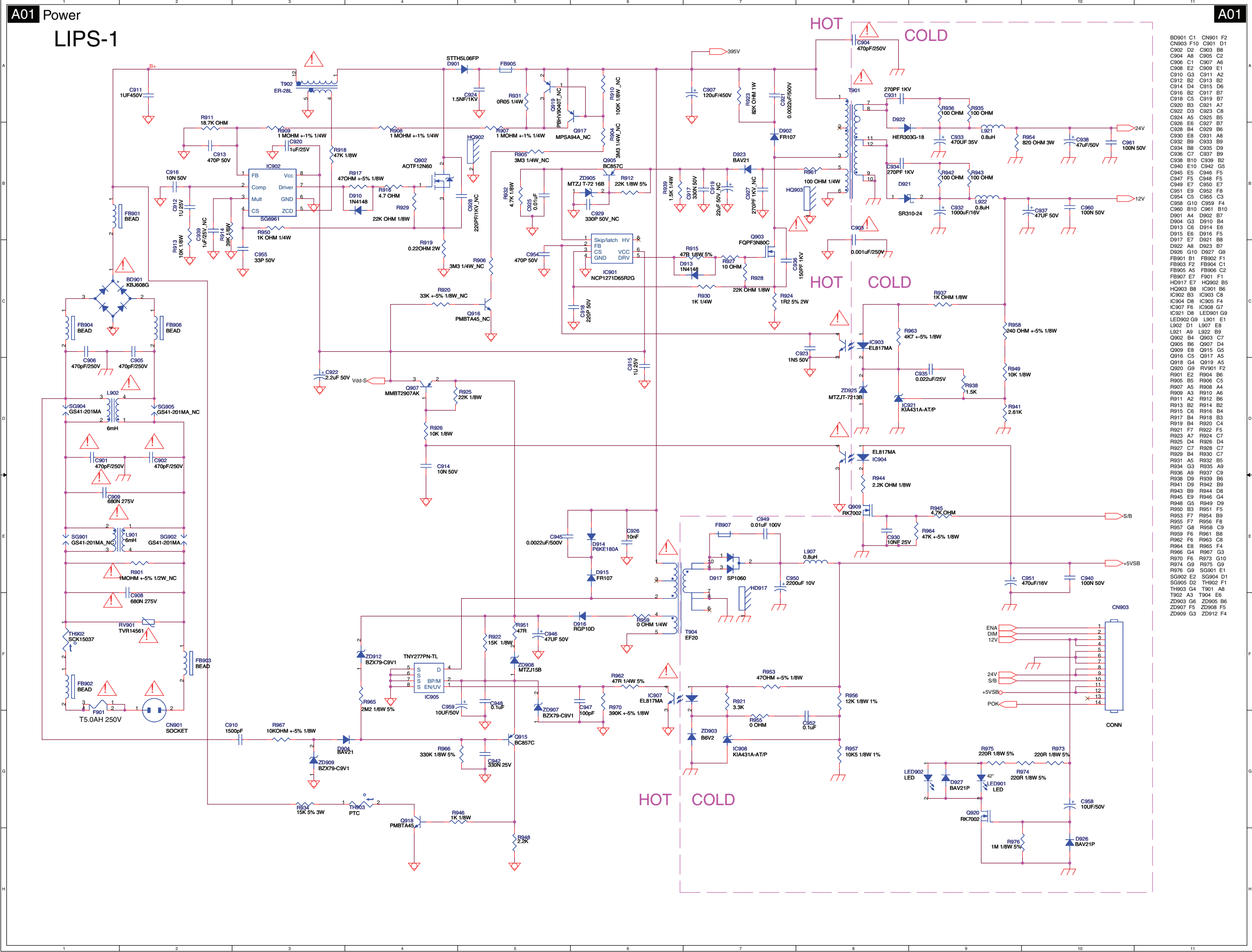
2010-Oct-15

Layout Power Board 32" (Bottom Side)

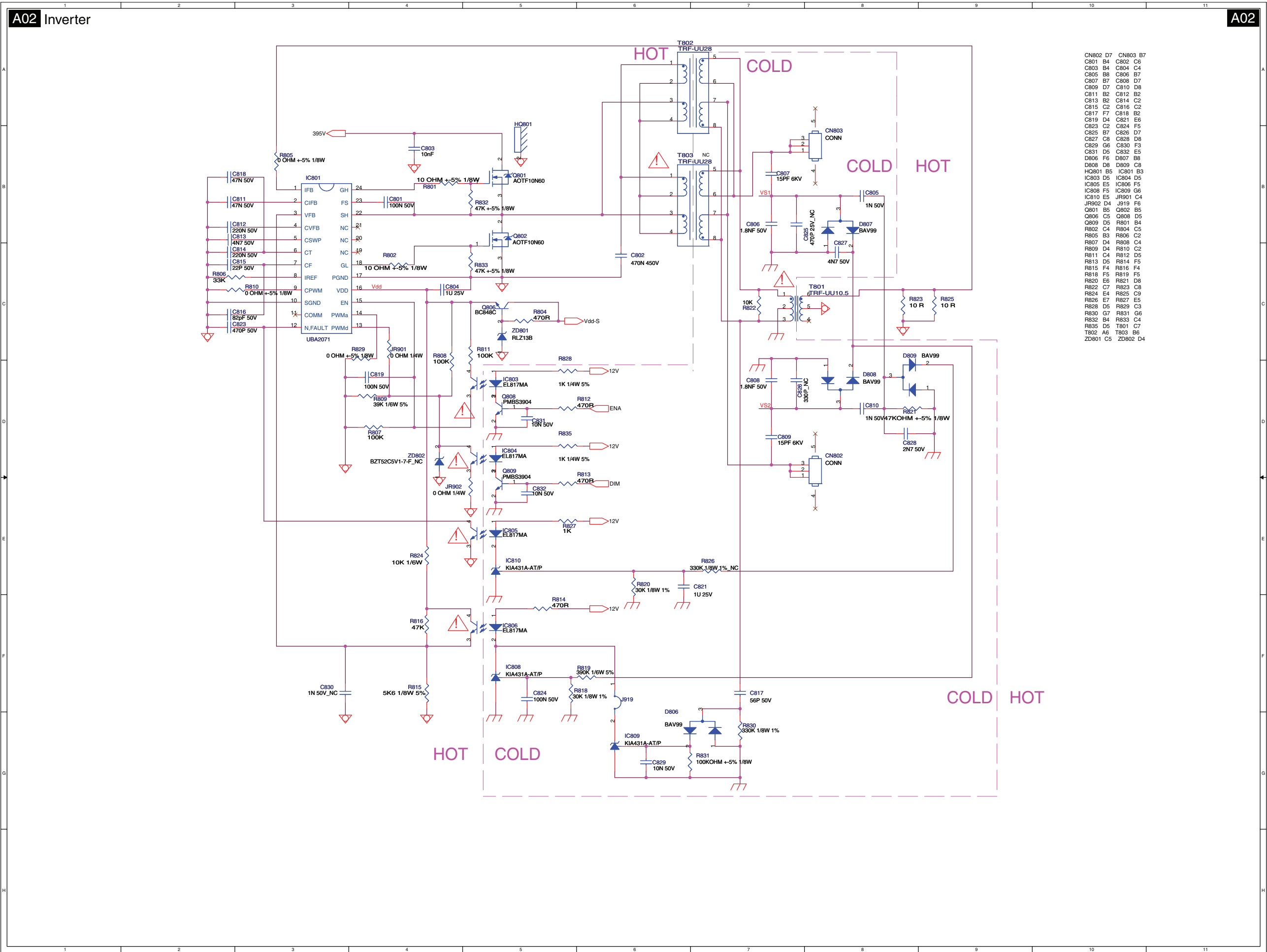




Power 42" & 47"

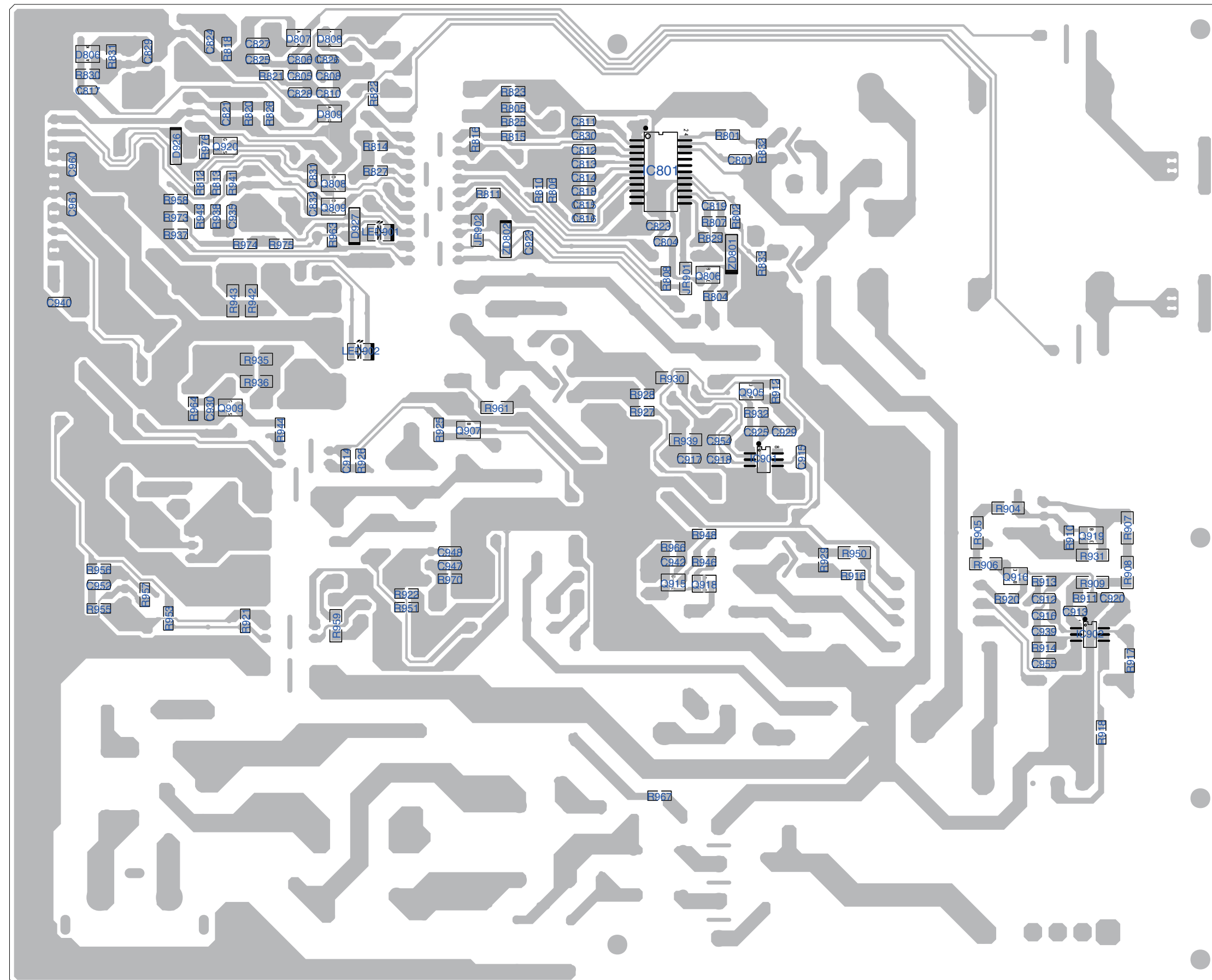


Inverter 42" & 47"





## Layout Power Board, 42" &amp; 47" (Bottom Side)

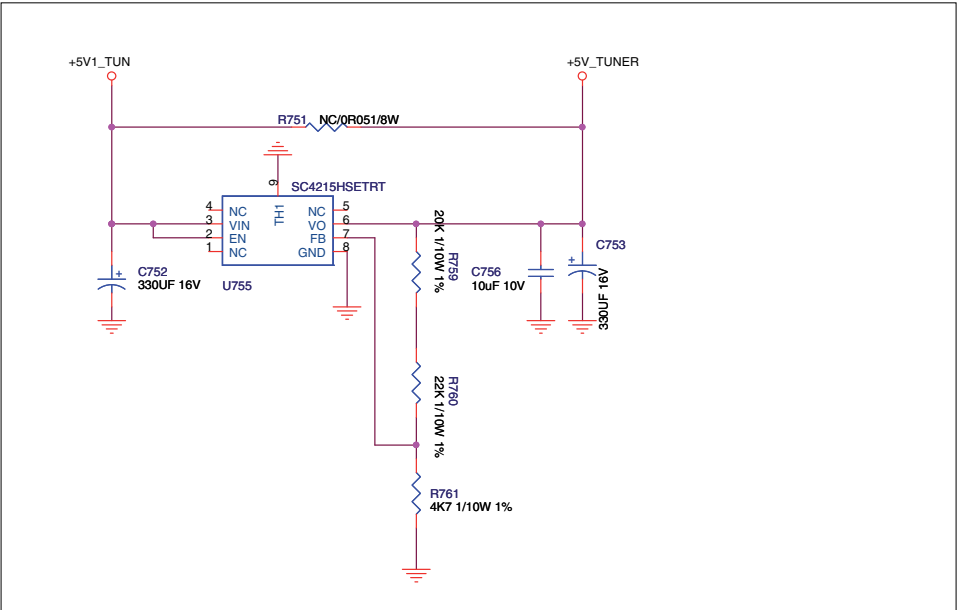
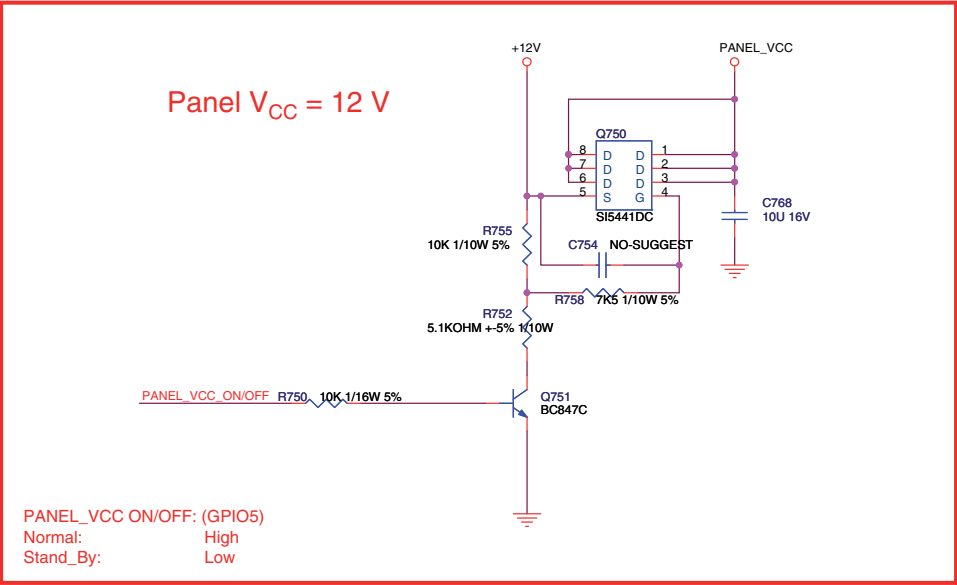
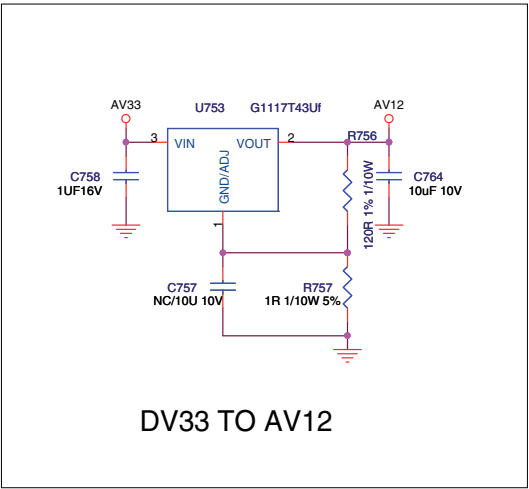
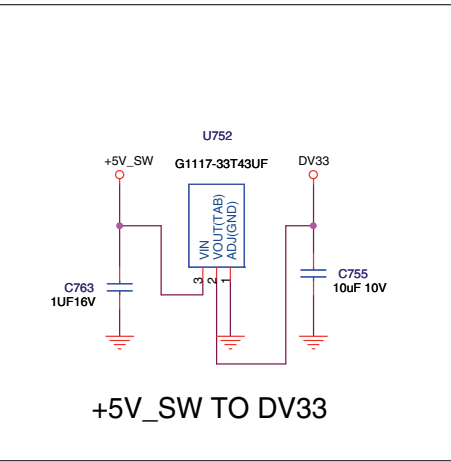
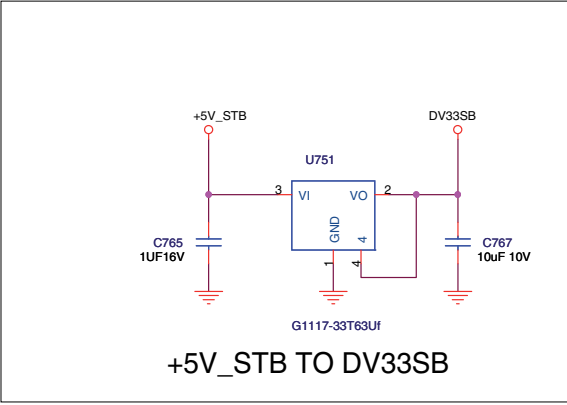
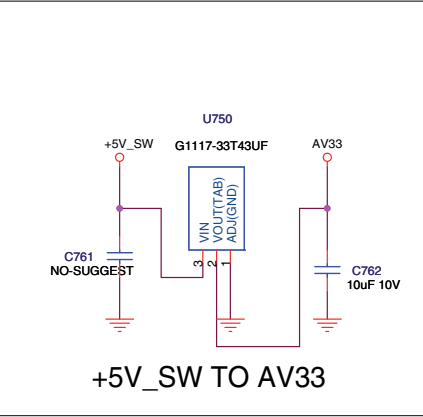




SSB: Power-2

B02 POWER-2

B02



|                                    |                  |      |                  |
|------------------------------------|------------------|------|------------------|
| 2,13                               | +24V             | <<>> | +24V             |
| 2,10,13                            | +12V             | <<>> | +12V             |
| 2,6,8,13                           | +5V_STB          | <<>> | +5V_STB          |
| 2,6,9,11,12,13,14                  | +5V_SW           | <<>> | +5V_SW           |
| 4                                  | +5V_TUNER        | <<>> | +5V_TUNER        |
| 2                                  | +5V1_TUN         | <<>> | +5V1_TUN         |
| 2,5,6,8,9,10,12,13,14              | DV33             | <<>> | DV33             |
| 6,12,14                            | AV33             | <<>> | AV33             |
| 8,12,14                            | DV33SB           | <<>> | DV33SB           |
| 5,6,7,12,14                        | AV12             | <<>> | AV12             |
| 14                                 | PANEL_VCC        | <<>> | PANEL_VCC        |
| 6                                  | PANEL_VCC_ON/OFF | <<>> | PANEL_VCC_ON/OFF |
| 2,4,5,6,7,8,9,10,11,12,13,14,15,16 | GND              | <<>> | GND              |

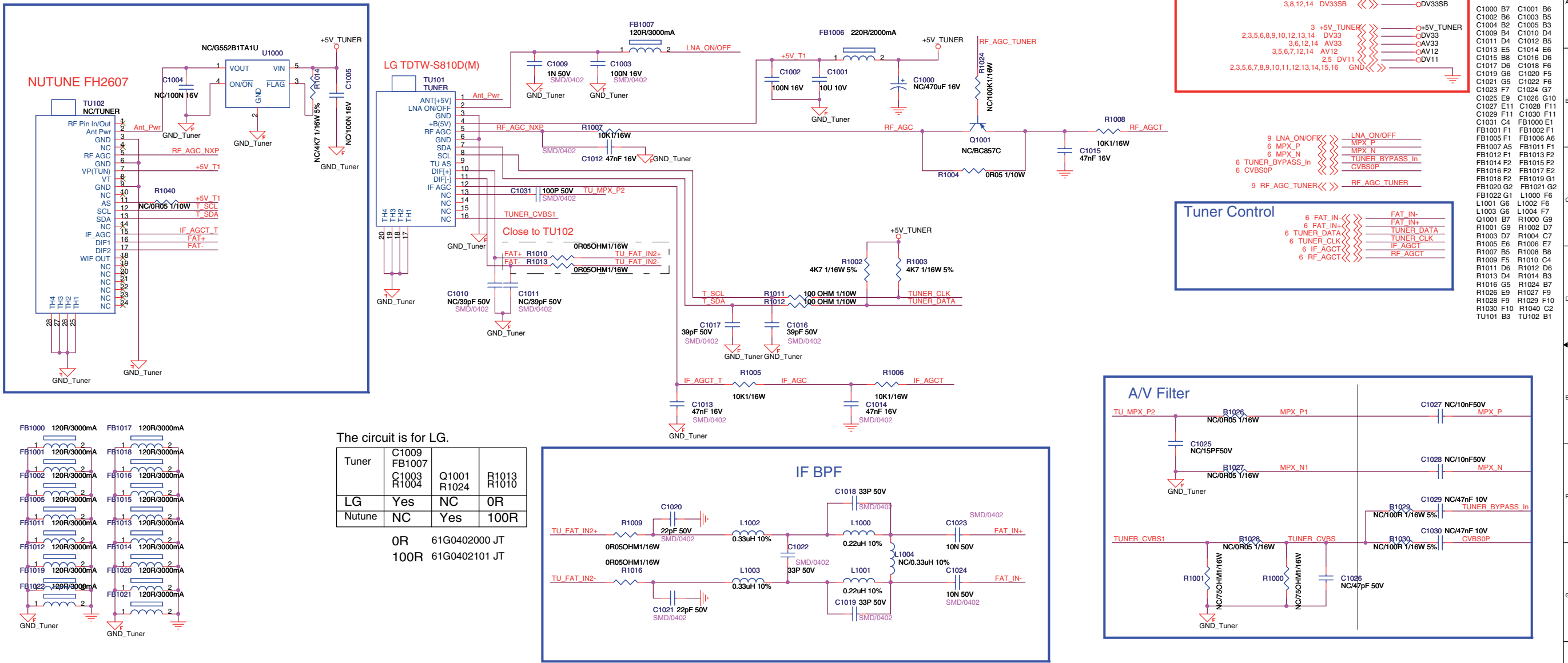
|      |    |      |    |
|------|----|------|----|
| C752 | E6 | C753 | E7 |
| C754 | C8 | C755 | E2 |
| C756 | E7 | C757 | E3 |
| C758 | E3 | C761 | C1 |
| C762 | C2 | C763 | E1 |
| C764 | E4 | C765 | C3 |
| C767 | C4 | C768 | B8 |
| C750 | B8 | C751 | C7 |
| R750 | C6 | R751 | E6 |
| R752 | C7 | R755 | B7 |
| R756 | E4 | R757 | E4 |
| R758 | C8 | R759 | E7 |
| R760 | F7 | R761 | F7 |
| U750 | B1 | U751 | B4 |
| U752 | E1 | U753 | D3 |



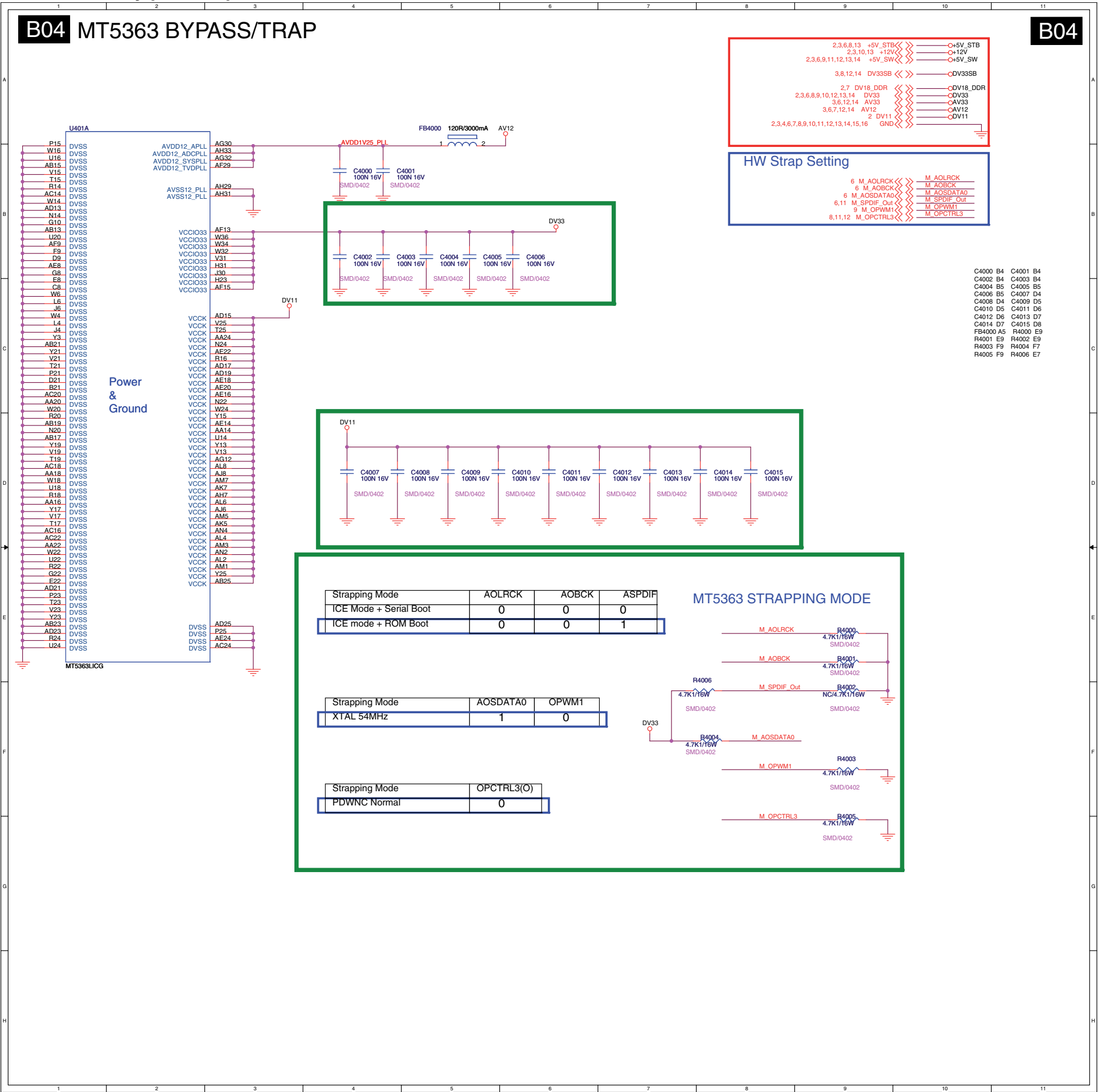
SSB: Tuner

B03 TUNER

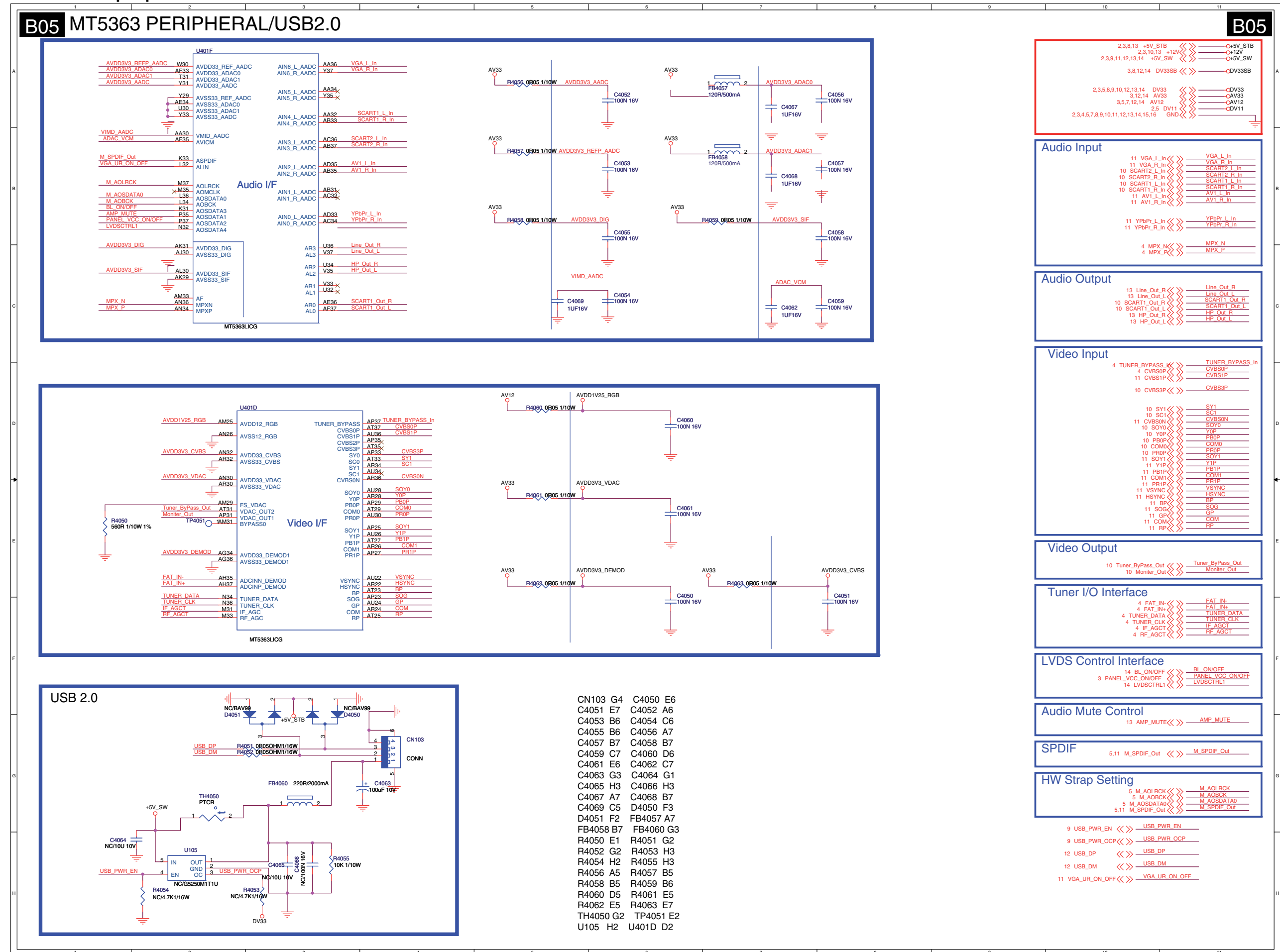
B03



SSB: MT5363 By-pass/Trap

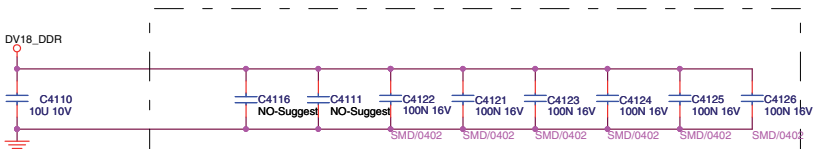
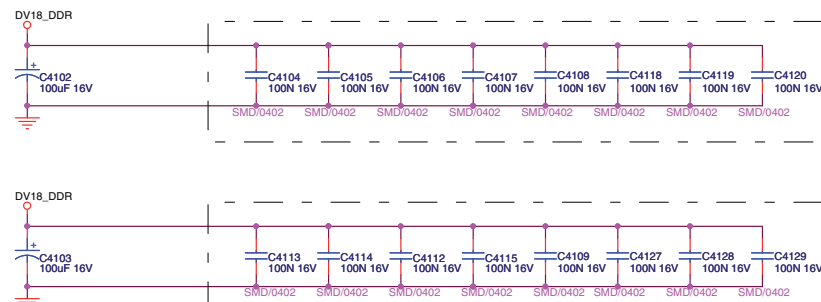
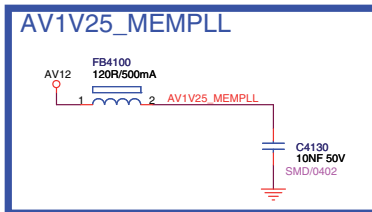
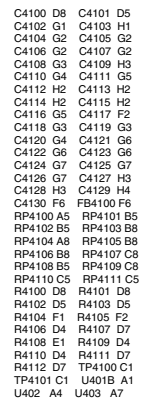
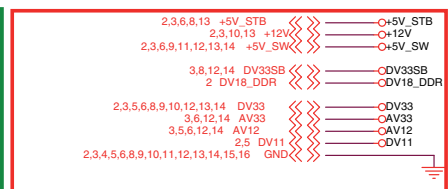
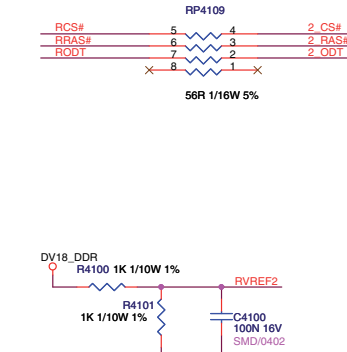
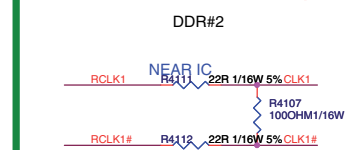
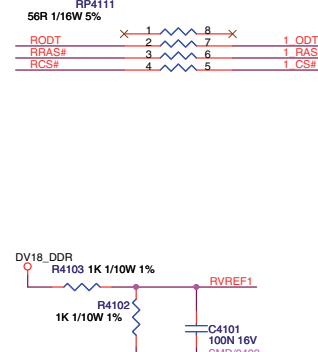
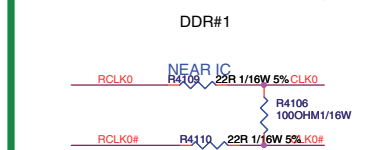
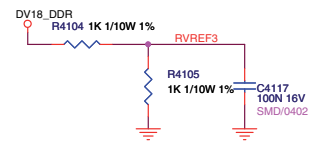


## SSB: MT5363 peripheral/USB2.0

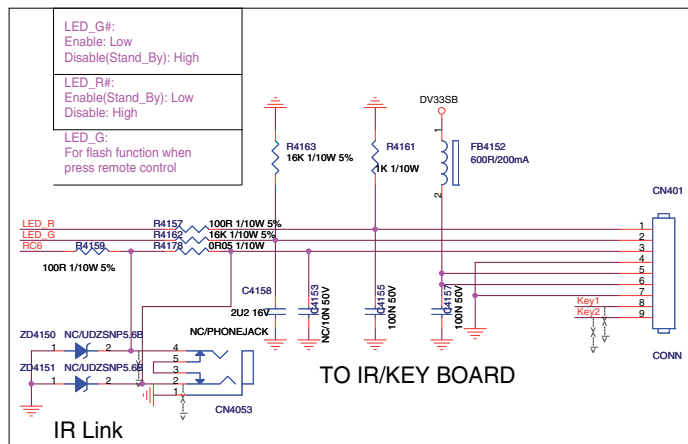


## B06 DDR2 MEMORY

## B06

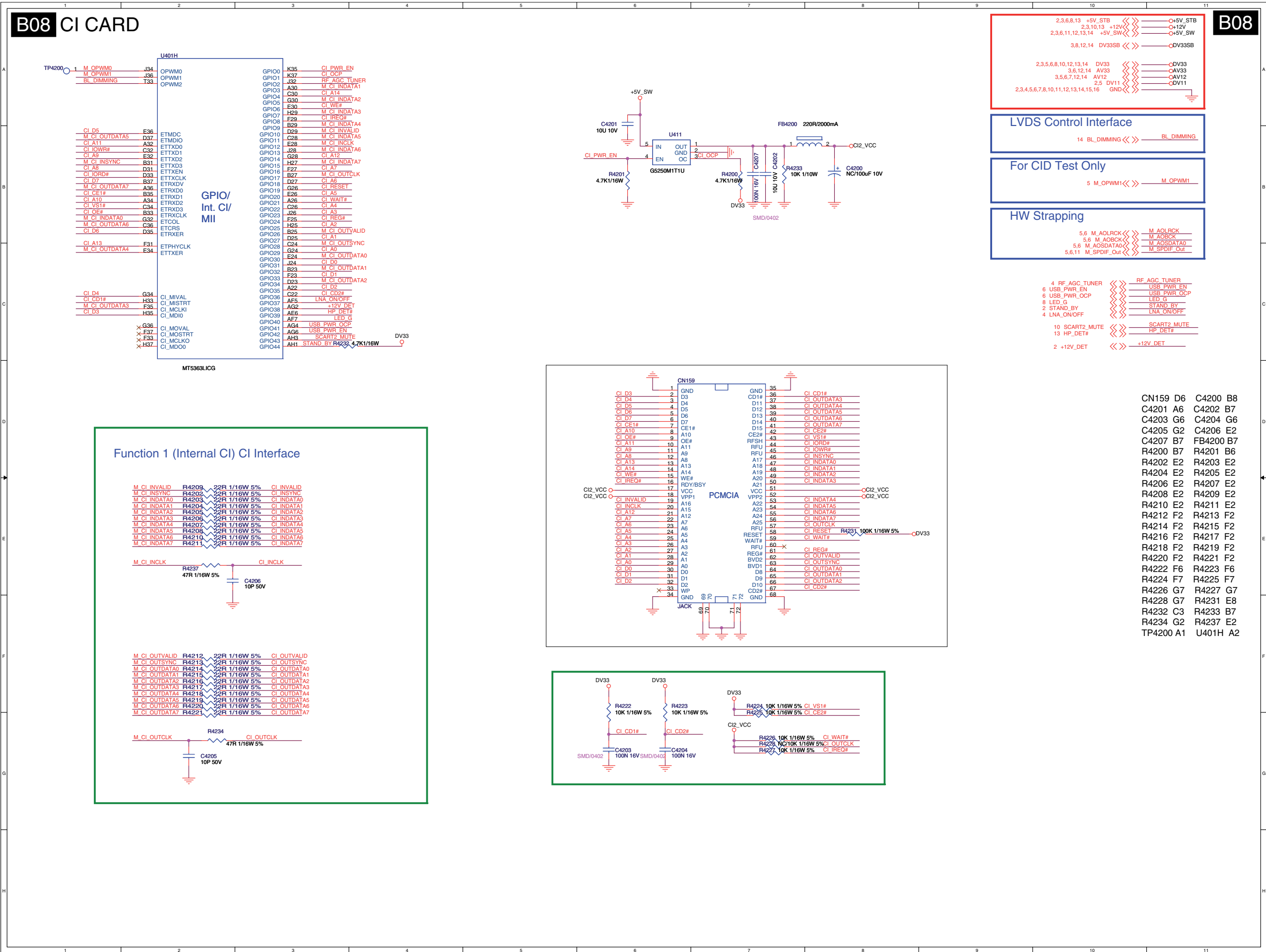


## B07 FLASH/JTAG/UART/IR



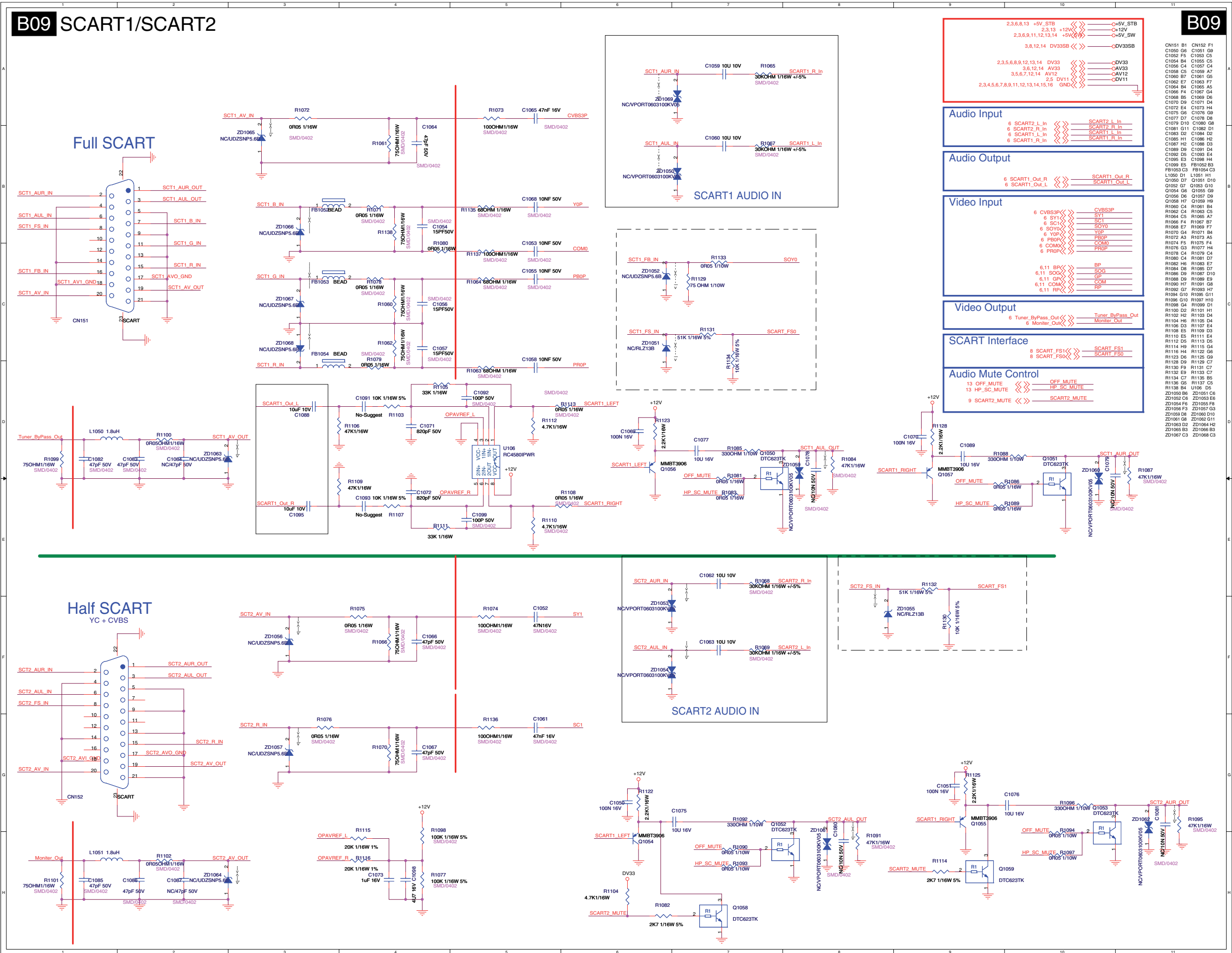


SSB: CI card



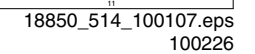


SSB: Scart1/Scart2

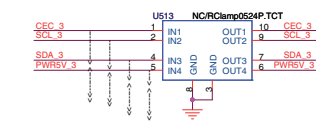
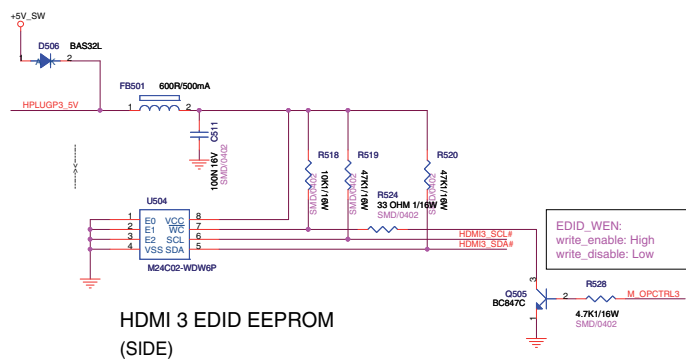


## B10 YPBPR/VGA INPUT

## B10

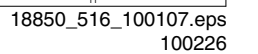


**B11** HDMI 1/ HDMI 2

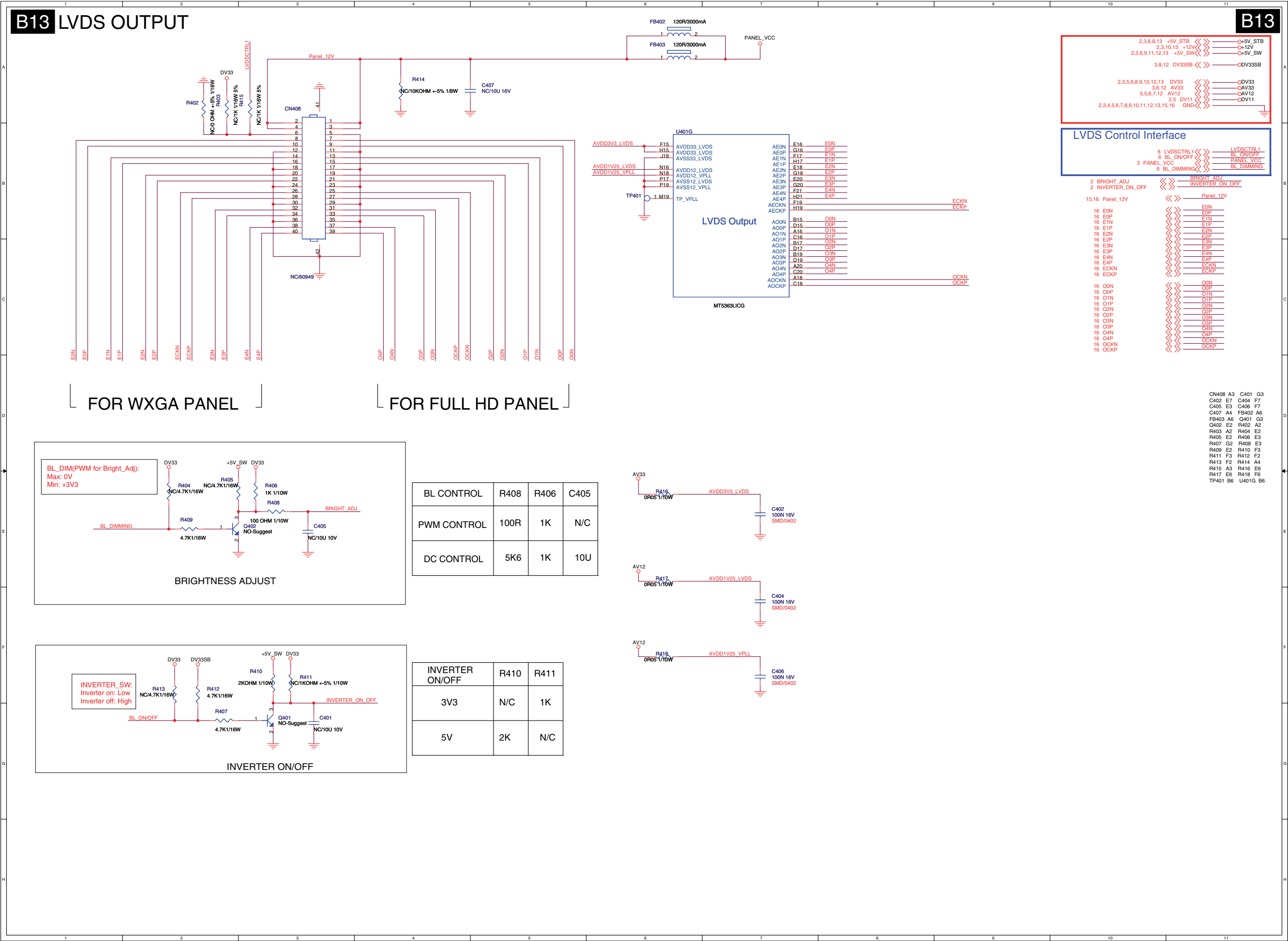


C5051 A1 C5056 C1  
C5059 A1 C5060 C5  
C5059 B9 C5056 C5  
C5059 C2 C5056 C5  
C5059 D2 C510 C8  
C511 E5 D051 E2  
C512 A5 D051 E2  
C514 D5 D051 E2  
C5058 E4 D057 D2  
C5058 F5 D057 D2  
Q501 B1 C5052 C5  
Q503 D6 D504 D3  
Q503 E5 D504 D3  
Q503 B3 R501 D3  
R502 A5 R503 A5  
R502 B5 R503 E2  
R502 P2 R507 D5  
R508 D6 R509 B8  
R510 B2 R513 B8  
R512 D6 R513 B8  
R514 B2 R515 B3  
R516 D6 R517 B3  
R518 E3 R519 B3  
R520 E6 R521 C2  
R522 D2 R523 A8  
R524 F6 R525 D2  
R528 D3 R527 D3  
R528 F6 R529 B8  
R530 B8 R532 E3  
R541 F3 R542 B4  
R543 D4 R562 B6  
R562 E7 R565 D5  
U504 F5 U505 C8  
U508 D8 U507 E8  
U508 E3 U507 E8  
U513 G8 ZD501 B5  
ZD502 B8 ZD503 D2

**B12** AUDIO AMP/HEADPHONE OUT



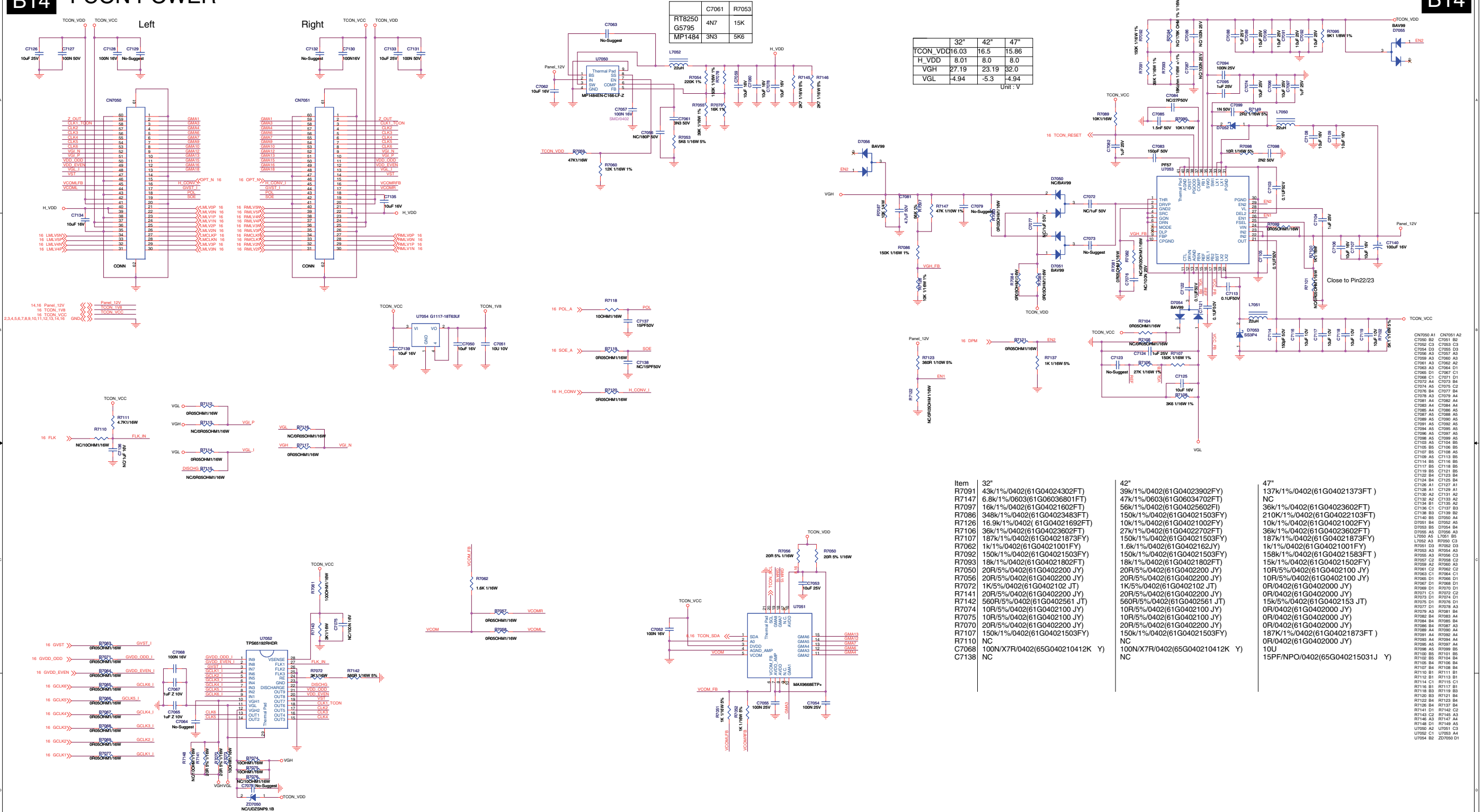
SSB: LVDS output





## SSB: T-CON power

## B14 T-CON POWER

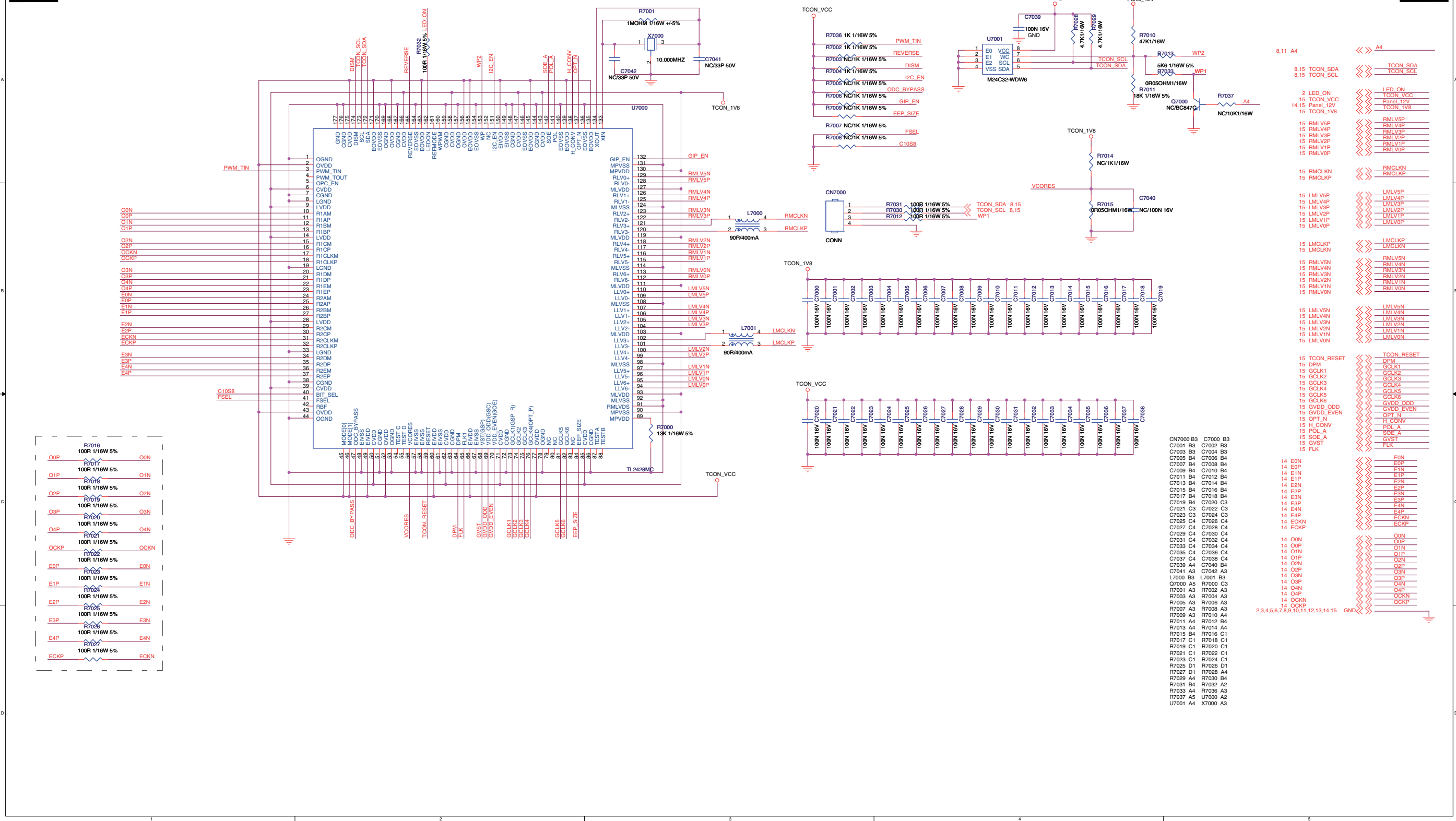




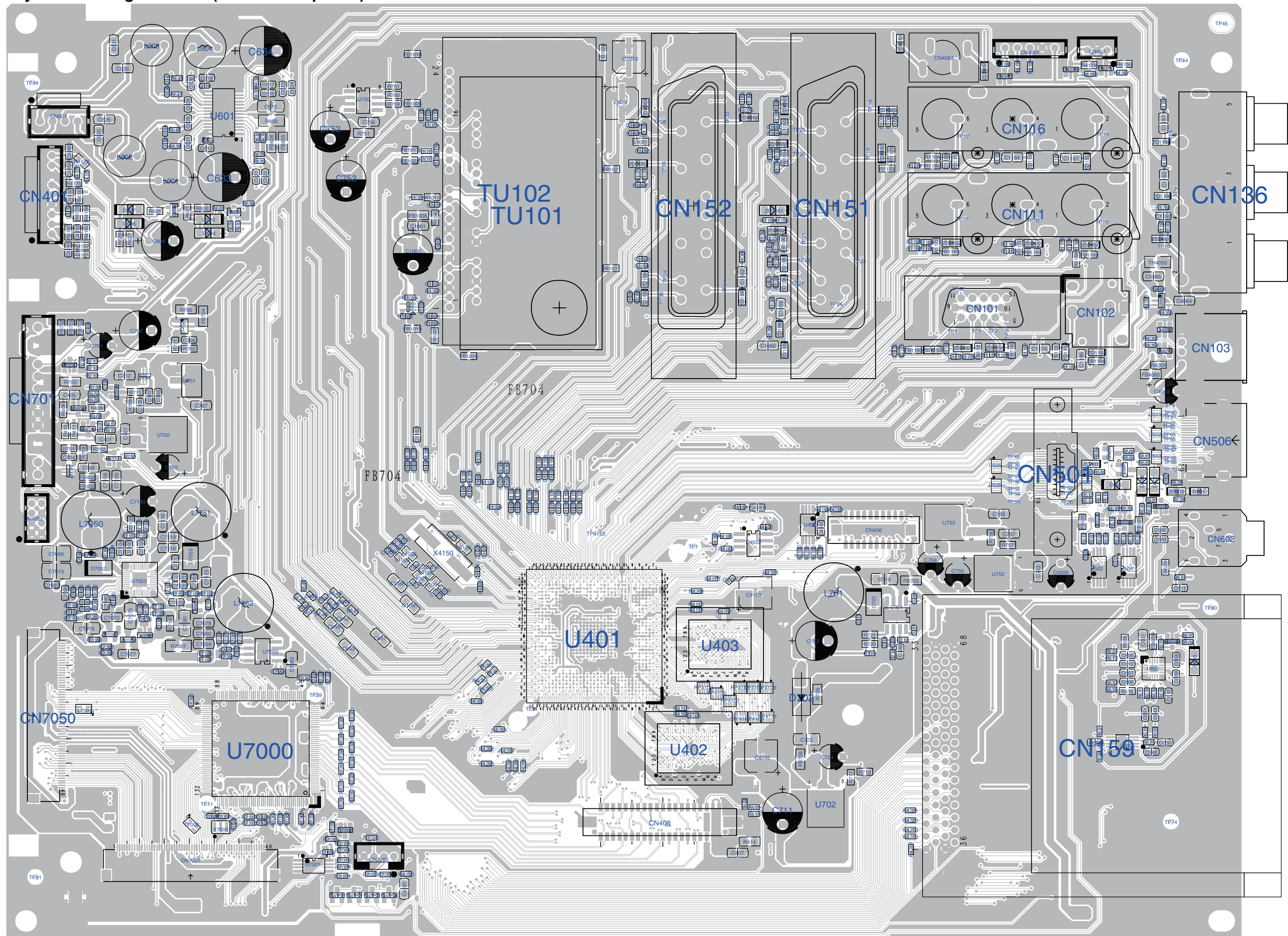
SSB: T-CON main chip

B15 T-CON MAIN CHIP

B15

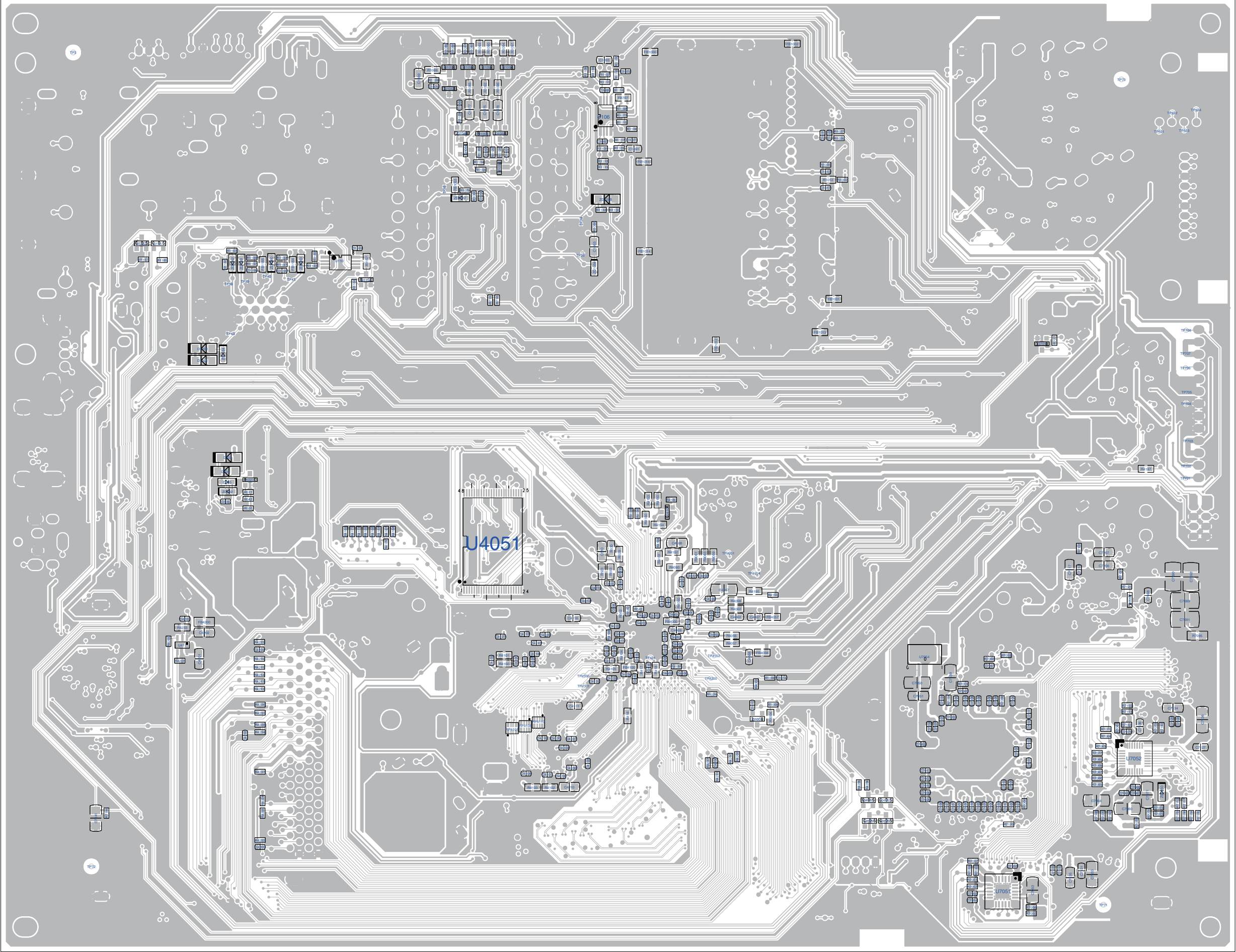


## Layout Small Signal Board (Overview Top Side)

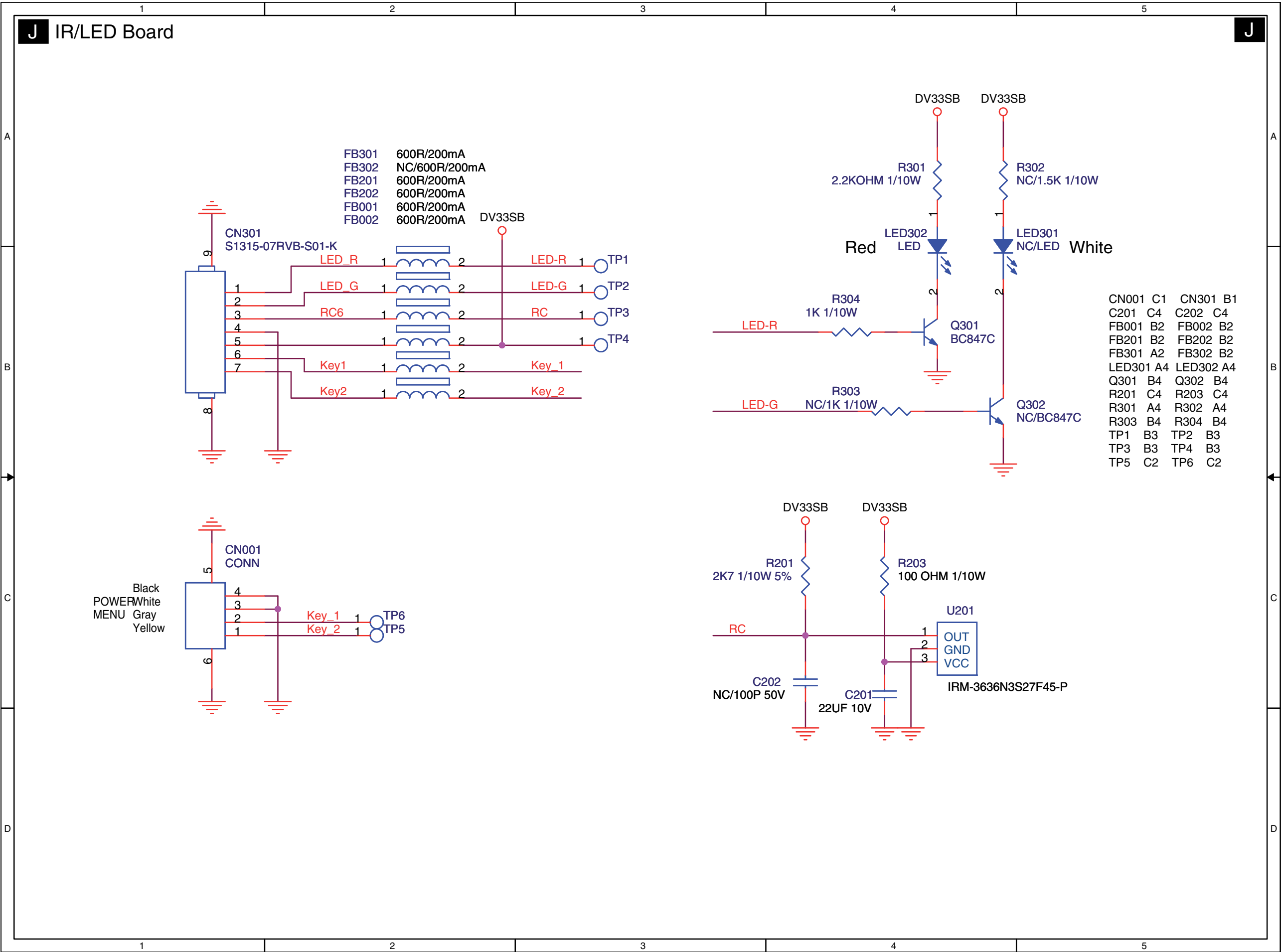




Layout Small Signal Board (Overview Bottom Side)



IR/LED Board



**Personal Notes:**

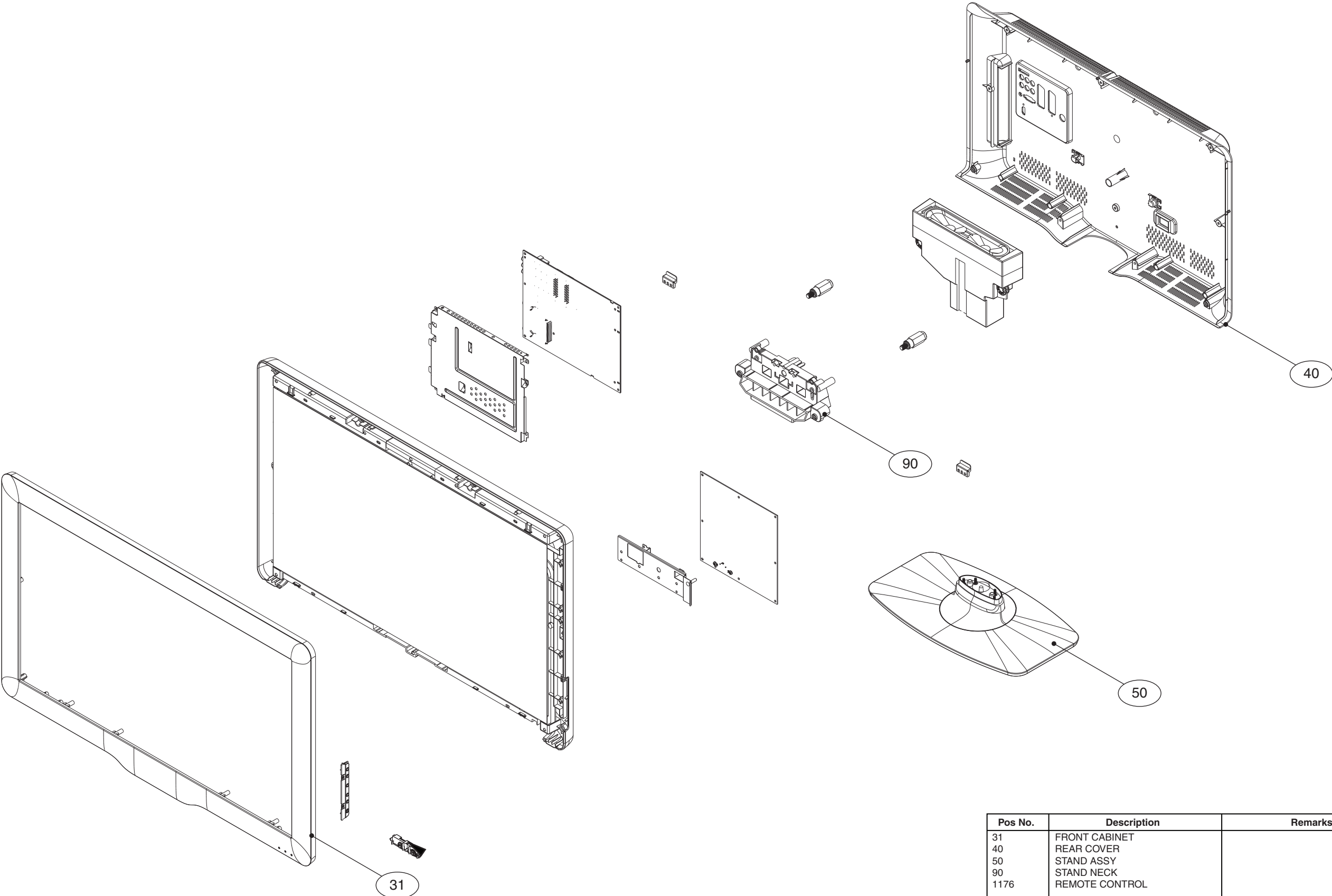


10000\_012\_090121.eps  
090121

11. Styling Sheets

Styling Sheet 32"

DALI 32"



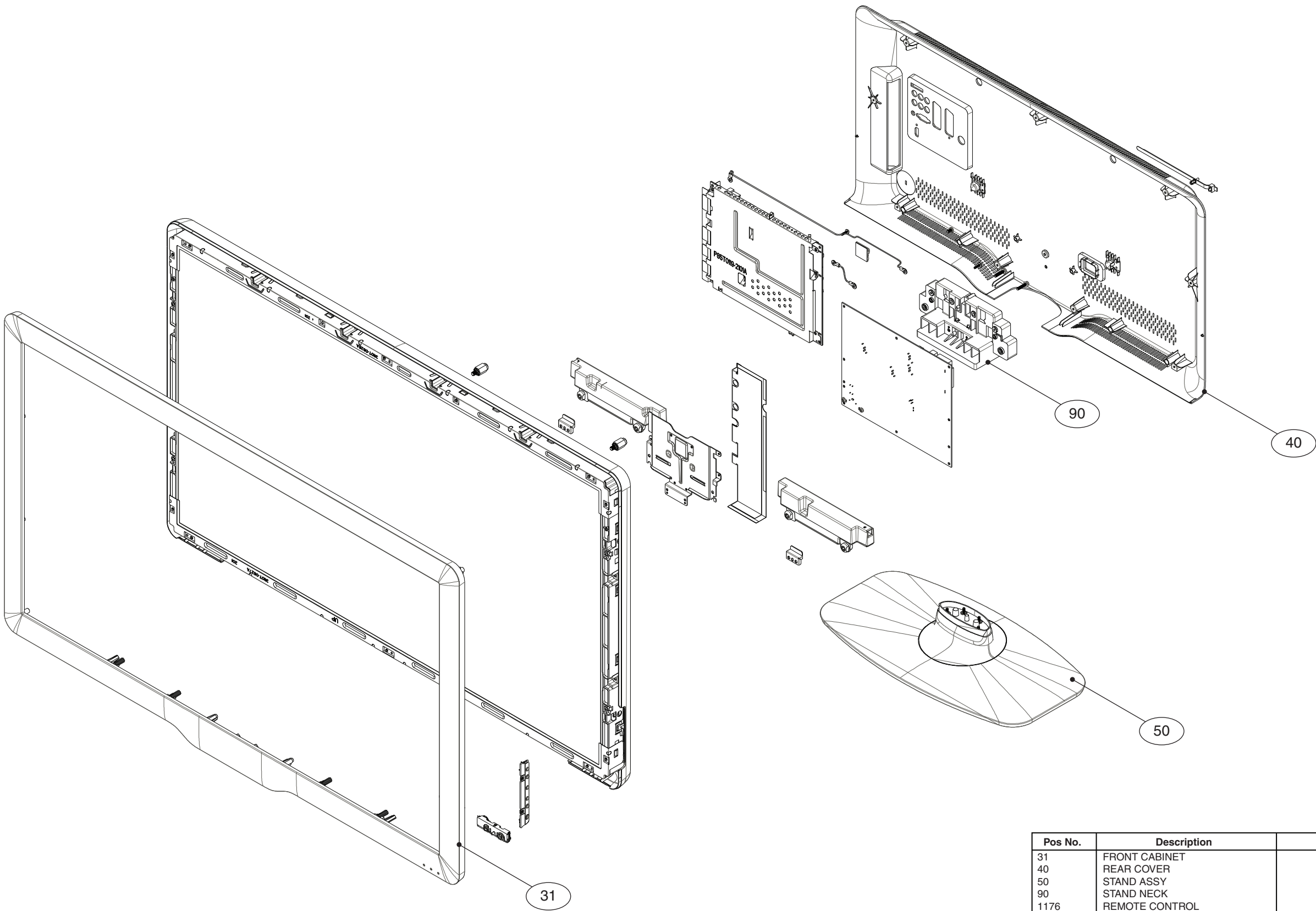
| Pos No. | Description    | Remarks |
|---------|----------------|---------|
| 31      | FRONT CABINET  |         |
| 40      | REAR COVER     |         |
| 50      | STAND ASSY     |         |
| 90      | STAND NECK     |         |
| 1176    | REMOTE CONTROL |         |

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9



Styling Sheet 42"

DALI 42"

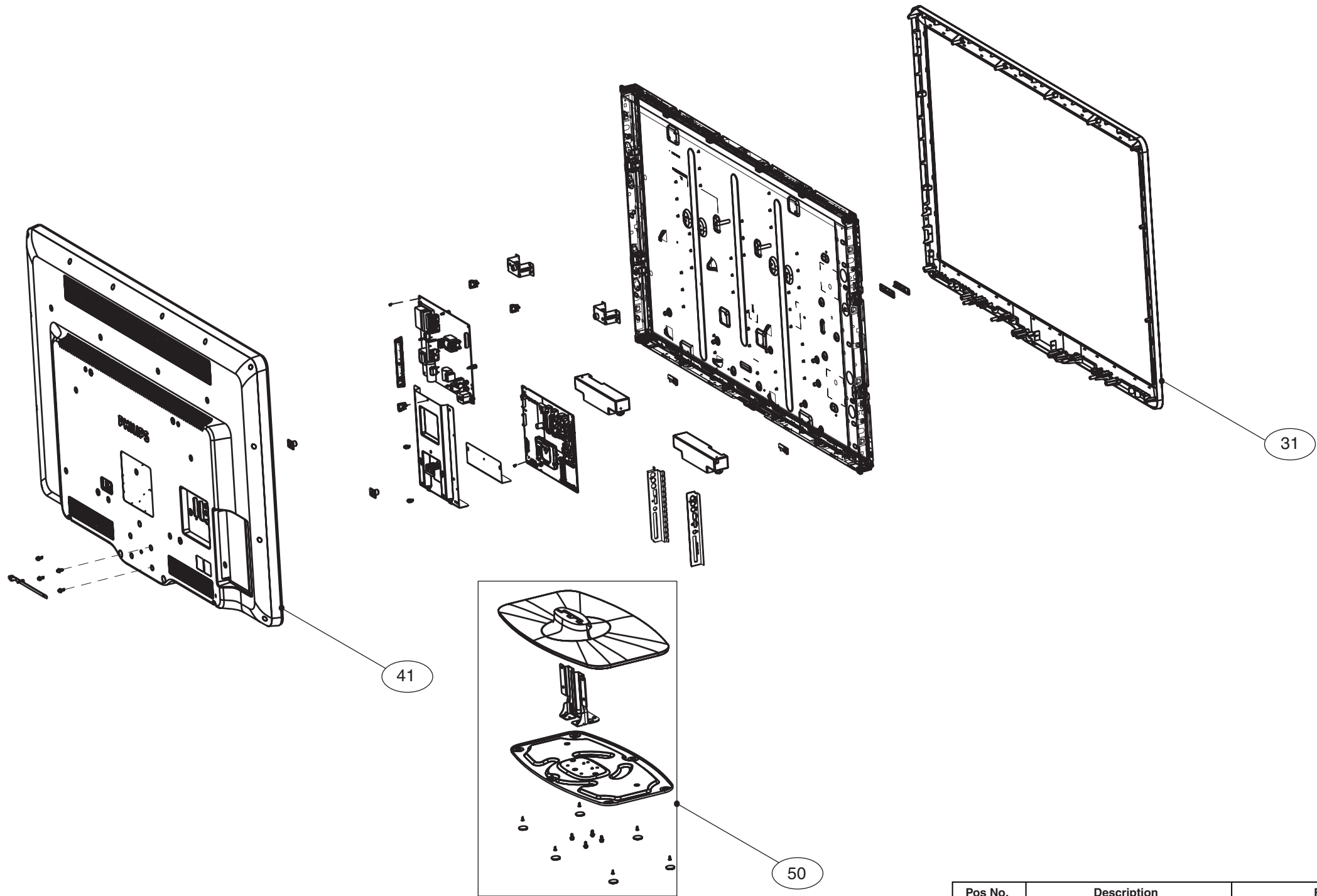


| Pos No. | Description    | Remarks |
|---------|----------------|---------|
| 31      | FRONT CABINET  |         |
| 40      | REAR COVER     |         |
| 50      | STAND ASSY     |         |
| 90      | STAND NECK     |         |
| 1176    | REMOTE CONTROL |         |

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9

Styling Sheet 47"

DALI 47"



| Pos No. | Description    | Remarks |
|---------|----------------|---------|
| 31      | FRONT CABINET  |         |
| 41      | REAR COVER     |         |
| 50      | STAND ASSY     |         |
| 1176    | REMOTE CONTROL |         |

FOR ELECTRICAL PARTS/ASSEMBLIES SEE WIRING DIAGRAM CHAPTER 9