

Service
Service
Service

Q522.2E
LA



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130608

Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connections
- 1.3 Chassis Overview

Notes:

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

1.1 Technical Specifications

1.1.1 Vision

Display type	: LCD
Screen size	: 32" (82 cm), 16:9 : 42" (107 cm), 16:9 : 47" (120 cm), 16:9
Resolution (H × V pixels)	: 1366×768 (32") : 1920×1080 (42 & 47")
Light output (cd/m ²)	: 500
Contrast ratio	: 30000:1
Viewing angle (H × V degrees)	: 176 × 176
Max. response time (ms)	: ≈ 5
Tuning system	: PLL
Colour systems	: PAL B/G, D/K, I : SECAM B/G, D/K, L/L' : DVB COFDM 2K/8K
Video playback	: NTSC : PAL : SECAM
Tuner bands	: UHF, VHF, S, Hyper
Supported video formats	:
- @ 60 Hz	: 480i
- @ 60 Hz	: 480p
- @ 50 Hz	: 576i
- @ 50 Hz	: 576p
- @ 50, 60 Hz	: 720p
- @ 50, 60 Hz	: 1080i
- @ 24, 25, 30, 50, 60 Hz	: 1080p
Supported computer formats	:
- @ 60, 70, 75, 85 Hz	: 1024 × 768
- @ 60, 72, 75, 85 Hz	: 800 × 600
- @ 60, 70, 75, 85 Hz	: 640 × 480

1.1.2 Sound

Maximum power (W _{RMS})	: 2 × 15
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1.1.3 Multimedia

Supported file formats	: JPEG : MP3 : Slideshow (.alb)
USB input	: USB2.0

1.1.4 Miscellaneous

Power supply:

- Mains voltage (V _{AC})	: 220 - 240 ± 10%
- Mains frequency (Hz)	: 50 / 60

Ambient conditions:

- Temperature range (°C)	: +5 to +35
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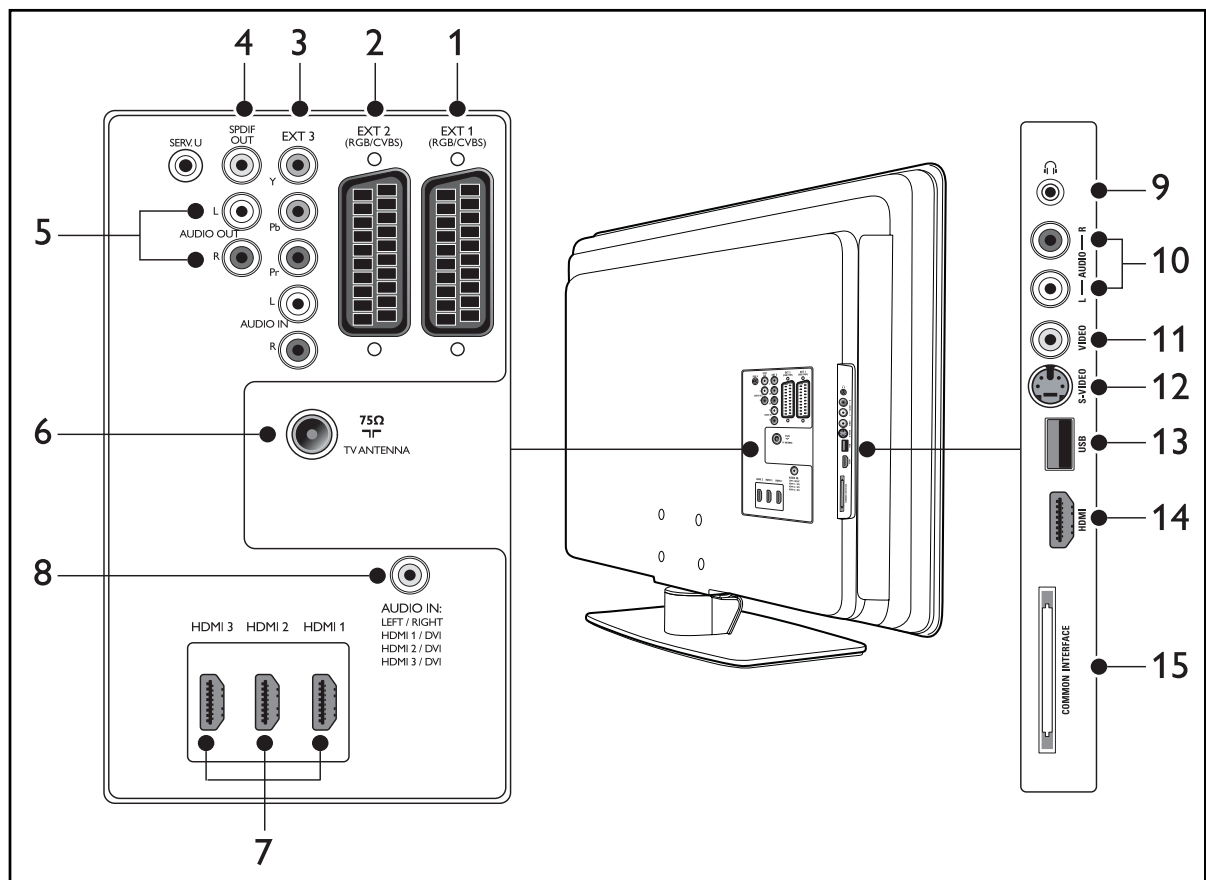
Power consumption (values are indicative)

- Normal operation (W)	: 130 (32") : 200 (42") : 260 (47")
- Stand-by (W)	: < 0.15

Dimensions (W × H × D in mm)	: 819×518×92 (32") : 1046×644×88 (42") : 1163×712×104 (47")
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Weight (kg)	: 13 (32") : 21 (42") : 27.5 (47")
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1.2 Connections



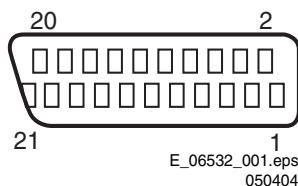
L_18010_067.eps
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Figure 1-1 Connection overview

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.

1.2.1 Rear Connections

1 & 2. EXT1 & 2: Video RGB - In, CVBS - In/Out, Audio - In/Out



E_06532_001.eps
050404

Figure 1-2 SCART connector

1	- Audio R	0.5 V _{RMS} / 1 kohm	⊕
2	- Audio R	0.5 V _{RMS} / 10 kohm	⊕
3	- Audio L	0.5 V _{RMS} / 1 kohm	⊕
4	- Ground Audio	Gnd	⊖
5	- Ground Blue	Gnd	⊖
6	- Audio L	0.5 V _{RMS} / 10 kohm	⊕
7	- Video Blue	0.7 V _{PP} / 75 ohm	⊕
8	- Function Select	0 - 2 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3	⊕
9	- Ground Green	Gnd	⊖
10	- n.c.		
11	- Video Green	0.7 V _{PP} / 75 ohm	⊕
12	- n.c.		

13	- Ground Red	Gnd	⊖
14	- Ground P50	Gnd	⊖
15	- Video Red	0.7 V _{PP} / 75 ohm	⊕
16	- Status/FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm	⊕
17	- Ground Video	Gnd	⊖
18	- Ground FBL	Gnd	⊖
19	- Video CVBS/Y	1 V _{PP} / 75 ohm	⊕
20	- Video CVBS	1 V _{PP} / 75 ohm	⊕
21	- Shield	Gnd	⊖

3. EXT3: Cinch: Video YPbPr - In, Audio - In

Gn	- Video Y	1 V _{PP} / 75 ohm	⊕
Bu	- Video Pb	0.7 V _{PP} / 75 ohm	⊕
Rd	- Video Pr	0.7 V _{PP} / 75 ohm	⊕
Rd	- Audio - R	0.5 V _{RMS} / 10 kohm	⊕
Wh	- Audio - L	0.5 V _{RMS} / 10 kohm	⊕

4. Cinch: S/PDIF - Out

Bk	- Coaxial	0.4 - 0.6 V _{PP} / 75 ohm	⊕
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Service Connector (UART)

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

5. Cinch: Audio - Out

Rd	- Audio - R	0.5 V _{RMS} / 10 kohm	⊕
Wh	- Audio - L	0.5 V _{RMS} / 10 kohm	⊕

6. Aerial - In

-	- IEC-type (EU)	Coax, 75 ohm	⊖
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7. HDMI 1, 2 & 3 Digital Video, Digital Audio - In

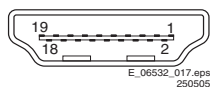


Figure 1-3 HDMI (type A) connector

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		

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

- 2.1 Safety Instructions
- 2.2 Warnings
- 2.3 Notes

2.1 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 M

2.3.5 Alternative BOM identification

Be aware: 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.



4.2 Service Positions

For easy servicing of this set, there are a few possibilities created:

- The buffers from the packaging.
- Foam bars (created for Service).

4.2.1 Foam Bars

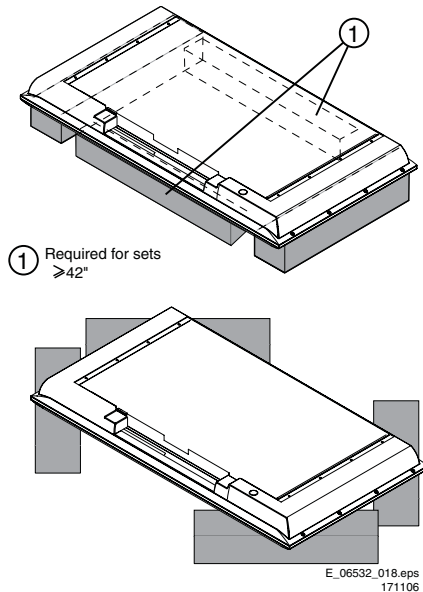


Figure 4-10 Foam bars

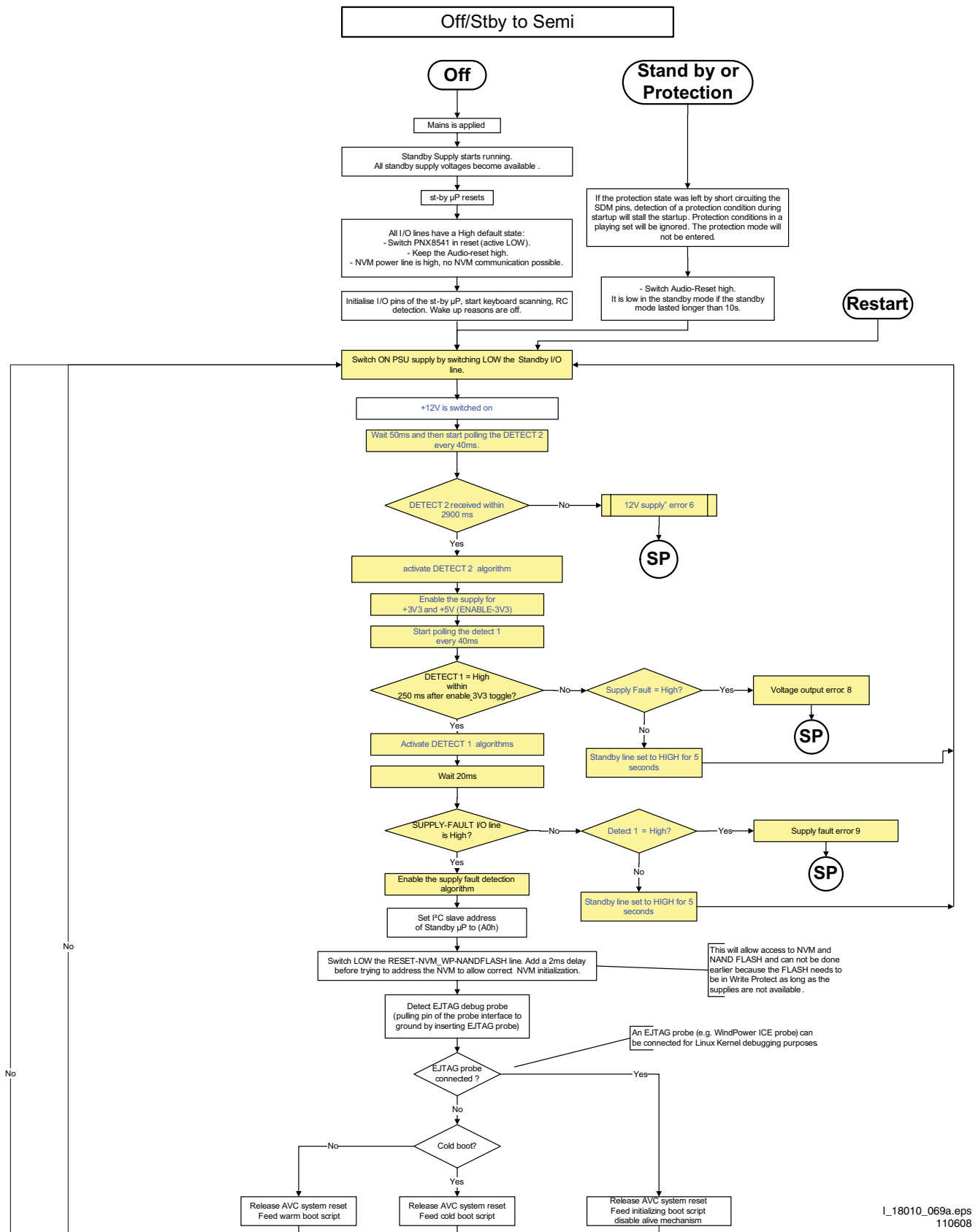
The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. See figure "Foam bars" for details. Sets with a display of 42" and larger, require **four** foam bars [1]. Ensure that the foam bars are always supporting the cabinet and **never** only the display. **Caution:** Failure to follow these guidelines can seriously damage the display!

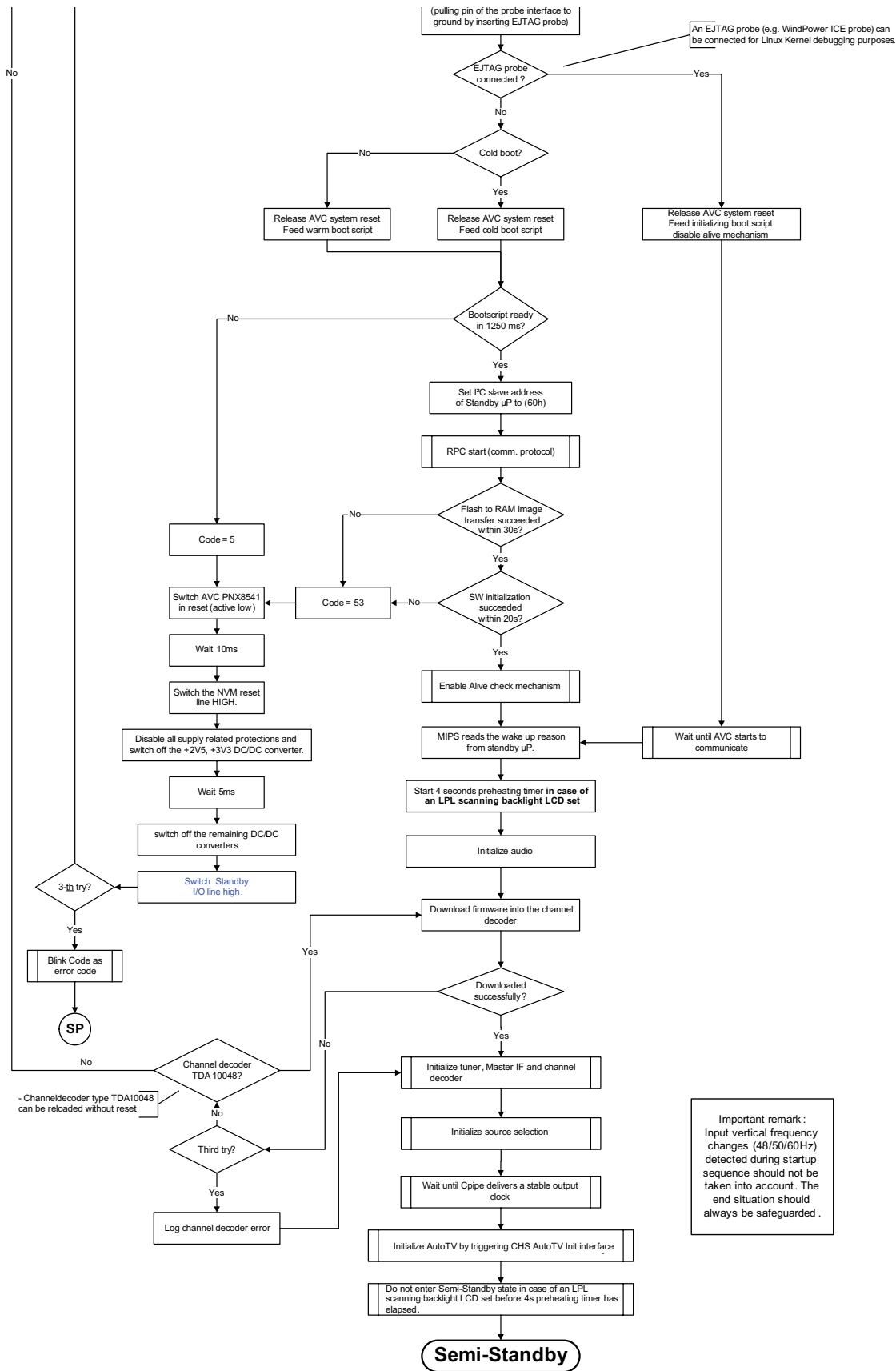
By laying the TV face down on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By placing a mirror under the TV, you can monitor the screen.

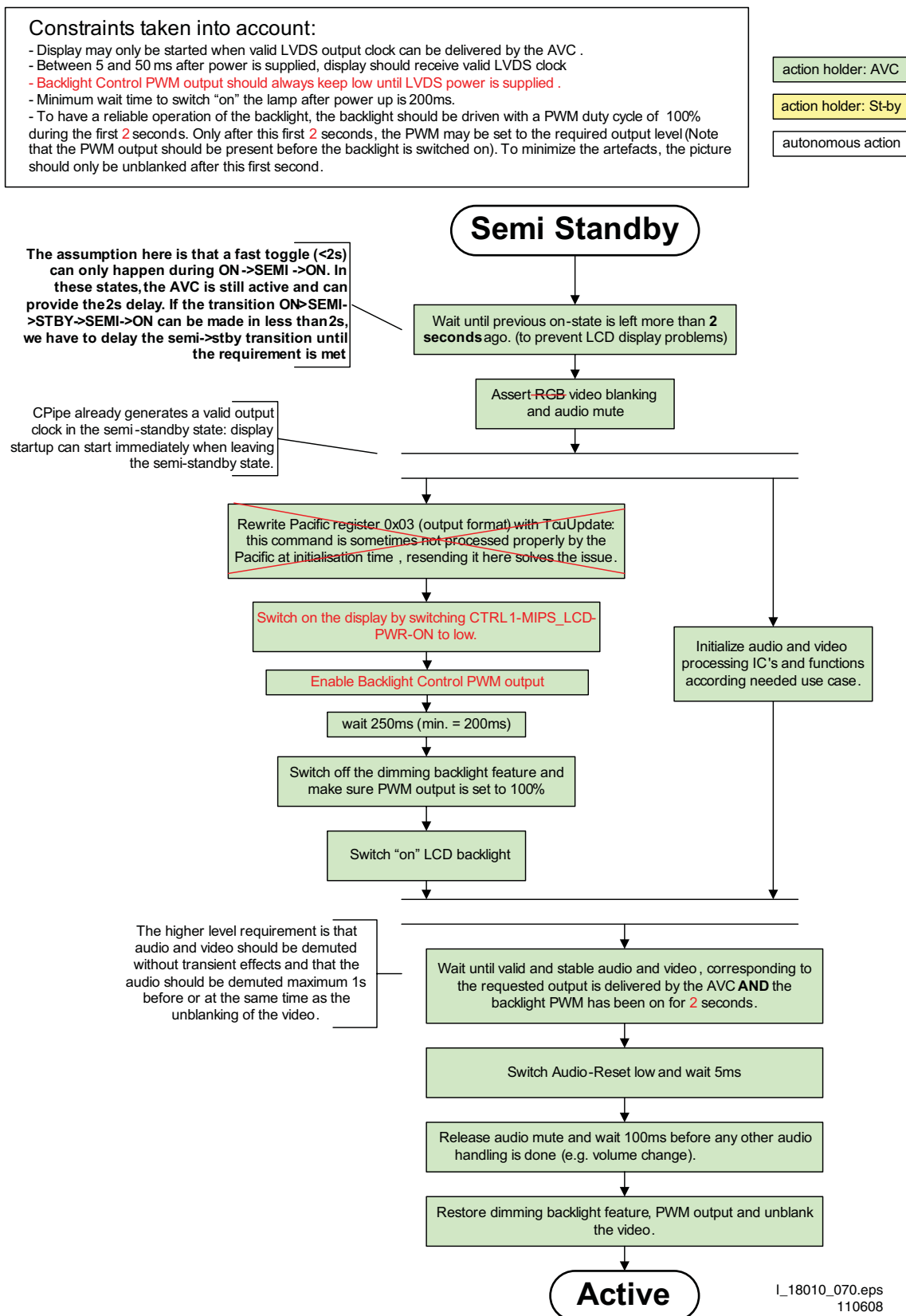
4.3 Assy/Panel Removal

the customer wants to make use of the HDMI functionality, the SSB has to be replaced.

- **Tuner Frequency.** Indicates the frequency the transmitter is tuned to.
- **TV System.** Gives information about the video system of the selected transmitter. In case a DVBT signal is received this item will also show ATSC.
 - BG: PAL BG signal received
 - DK: PAL DK signal received
 - L/La: SECAM L/La signal received
 - I: PAL I signal received
 - M: NTSC M signal received
 - ATSC: ATSC signal received
 - DVB: DVBT signal received
- **12NC One Zip SW.** Displays the 12NC number of the one-zip file as it is used for programming software in production. In this one-zip file all below software versions can be found.
- **Initial Main SW.** Displays the main software version which was initially loaded by the factory.
- **Current Main SW.** Displays the built-in main software version. In case of field problems related to software, software can be upgraded. As this software is consumer upgradable, it will also be published on the Internet. Example: Q582E_1.2.3.4.
- **Flash Utils SW.** Displays the software version of the software which contains all necessary components of the download application. To program this software, EJTAG tooling is needed. Example: Q582E_1.2.3.4.
- **Stand-by SW.** Displays the built-in stand-by processor software version. Upgrading this software will be possible via ComPair or via USB (see chapter Software upgrade). Example: STDBY_3.0.1.2.
- **MOP SW.** Only applicable for US. At the time of release of this manual, there was still a problem with this item, and some rubbish was displayed. Ignore this.
- **Pacific 3 Flash SW (if applicable).** Displays the Pacific 3 software version.
- **NVM Version.** Displays the NVM version as programmed by factory.
- **Display Parameters.** for development purposes only.
- **Private PQ Parameters.** for development purposes only.
- **Public PQ Parameters.** for development purposes only.
- **Ambilight**







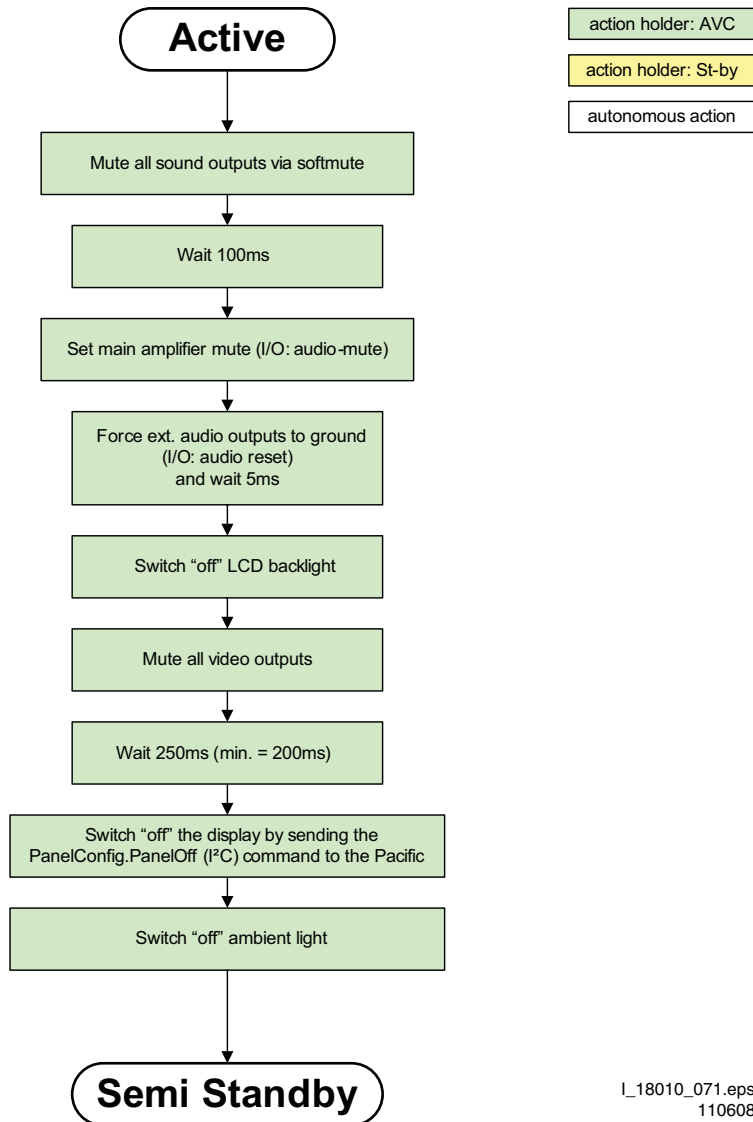


Figure 5-7 "Active" to "Semi Stand-by" flowchart (non-DFI)

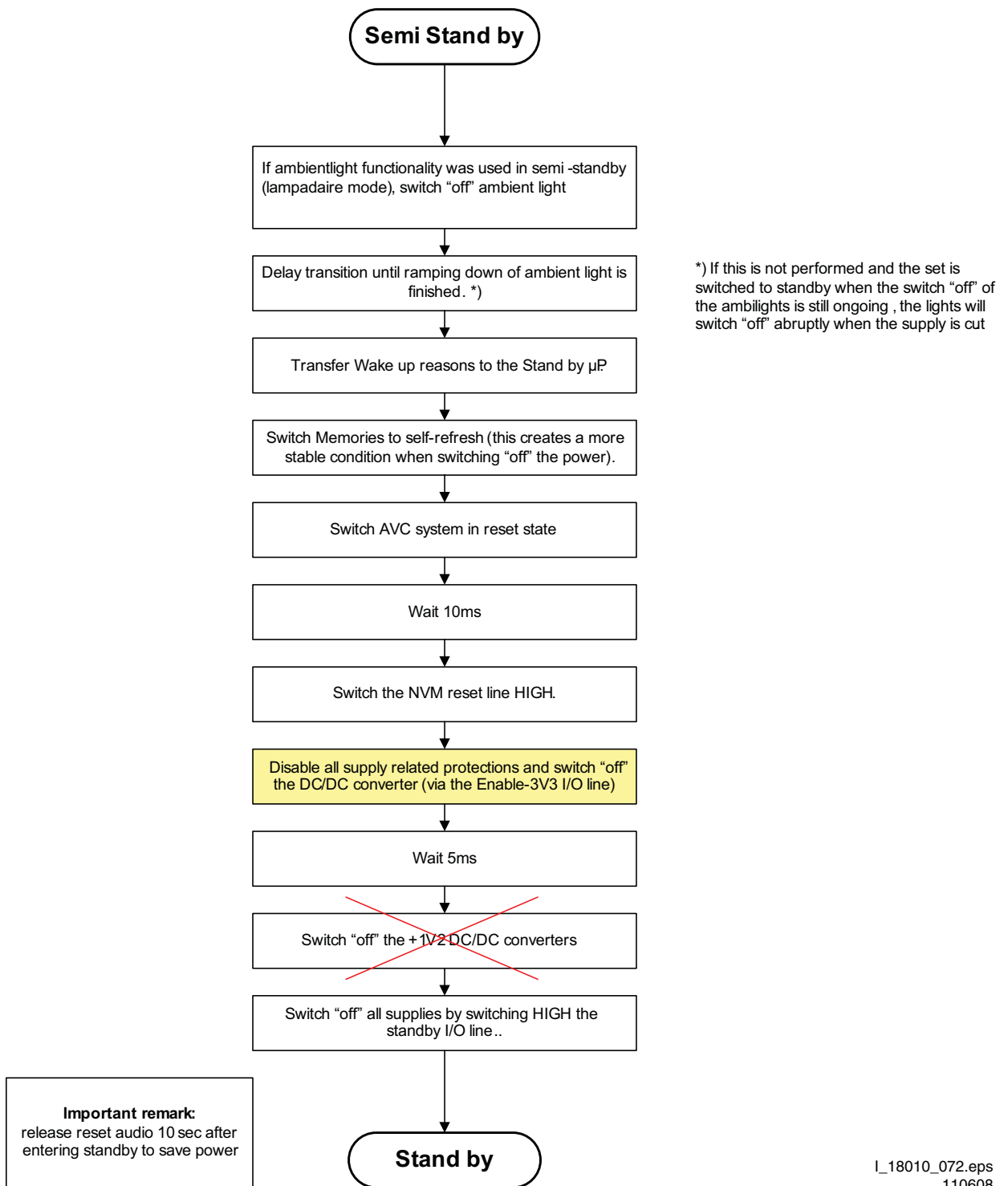
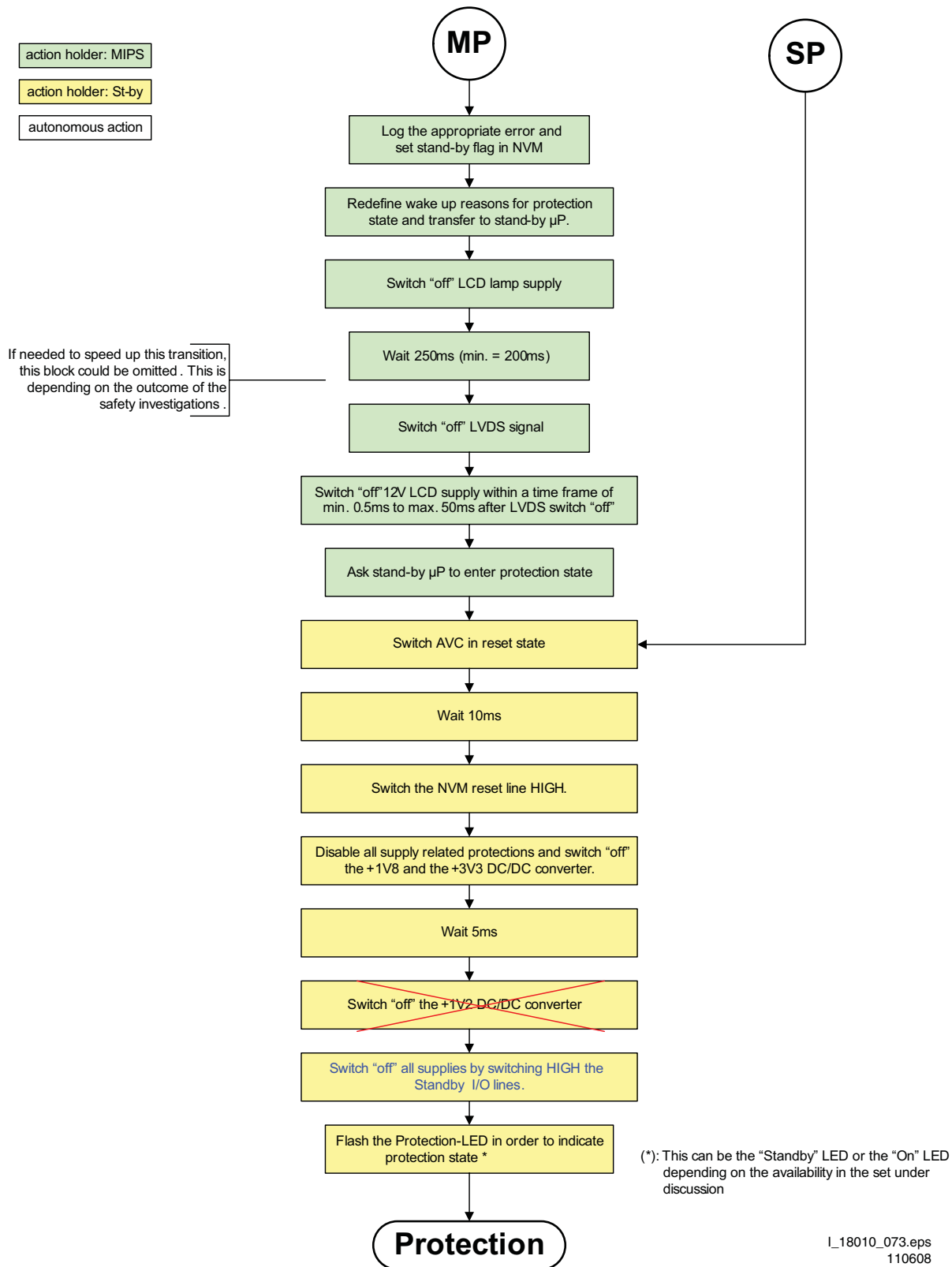


Figure 5-8 "Semi Stand-by" to "Stand-by" flowchart



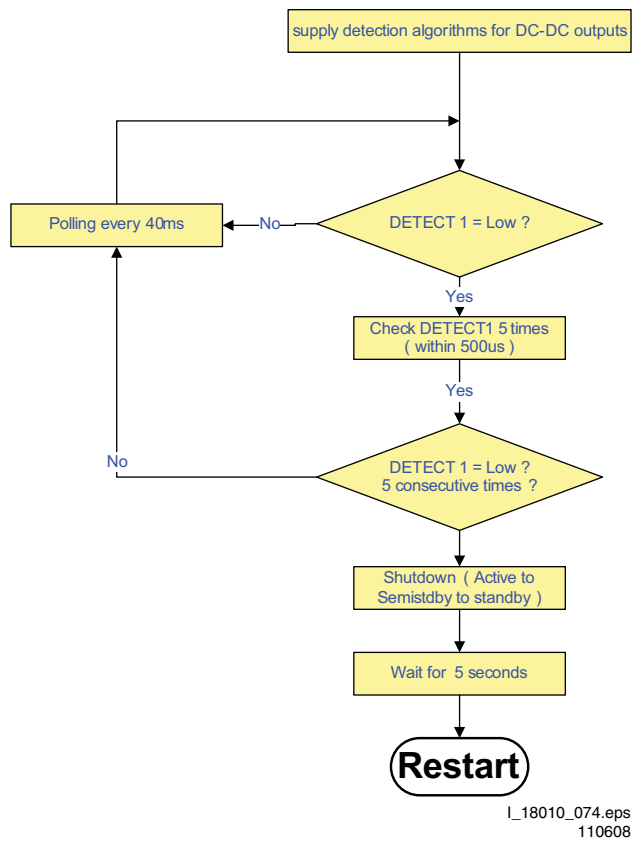
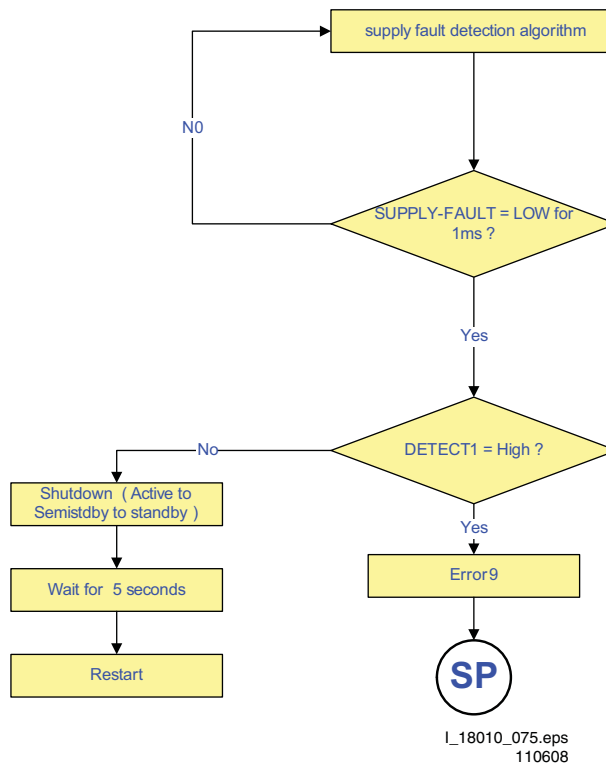


Figure 5-10 “DC-DC output control” flowchart



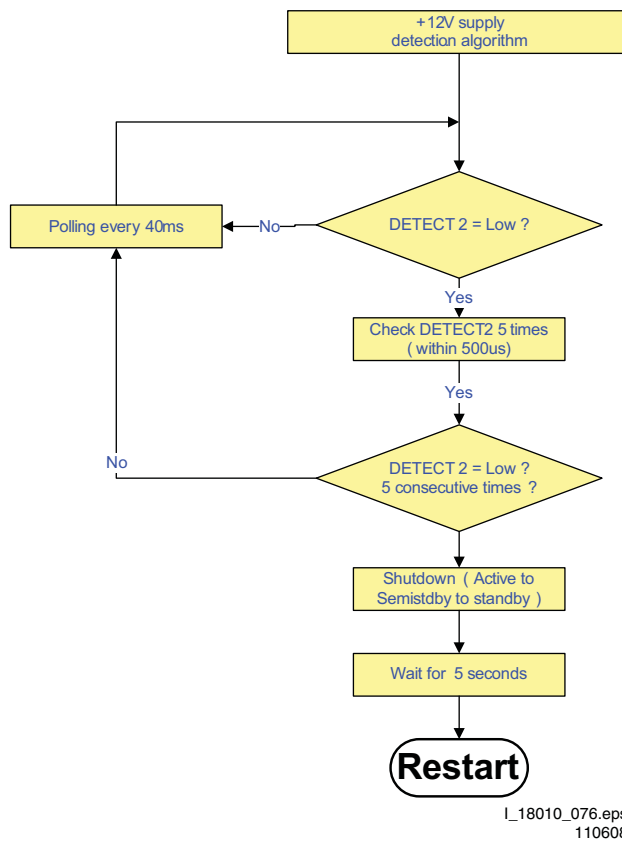


Figure 5-12 “+12V fault detection” flowchart

5.6 The Blinking LED Procedure

5.6.1 Introduction

The blinking LED procedure can be split up into two situations:

- **Blinking LED procedure in case of a protection.** In this case the error is automatically blinked. This will be only one error, namely the one that is causing the protection. Therefore, you do not have to do anything special, just read out the blinks. A long blink indicates the decimal digit, a short blink indicates the units.
- **Blinking LED procedure in the "on" state.** Via this procedure, you can make the contents of the error buffer visible via the front LED. This is especially useful for fault finding, when there is no picture.

When the blinking LED procedure is activated in the "on" state, the front LED will show (blink) the contents of the error-buffer.

Error-codes > 10 are shown as follows:

1. "n" long blinks (where "n" = 1 - 9) indicating decimal digit,
2. A pause of 1.5 s,
3. "n" short blinks (where "n" = 1 - 9),
4. A pause of approx. 3 s,
5. When all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
6. The sequence starts again.

Example: Error 12 8 6 0 0.

5.8 Fault Finding and Repair Tips

Read also paragraph "Error Codes" -> "Error Buffer" -> "Extra Info".

5.8.1 CSM

When you activate CSM and there is a USB stick connected to the TV, the software will dump the complete CSM content to the USB stick. The file (Csm.txt) will be saved in the root of your USB stick. If this mechanism works you can conclude that a large part of the operating system is already working (MIPS, USB...)

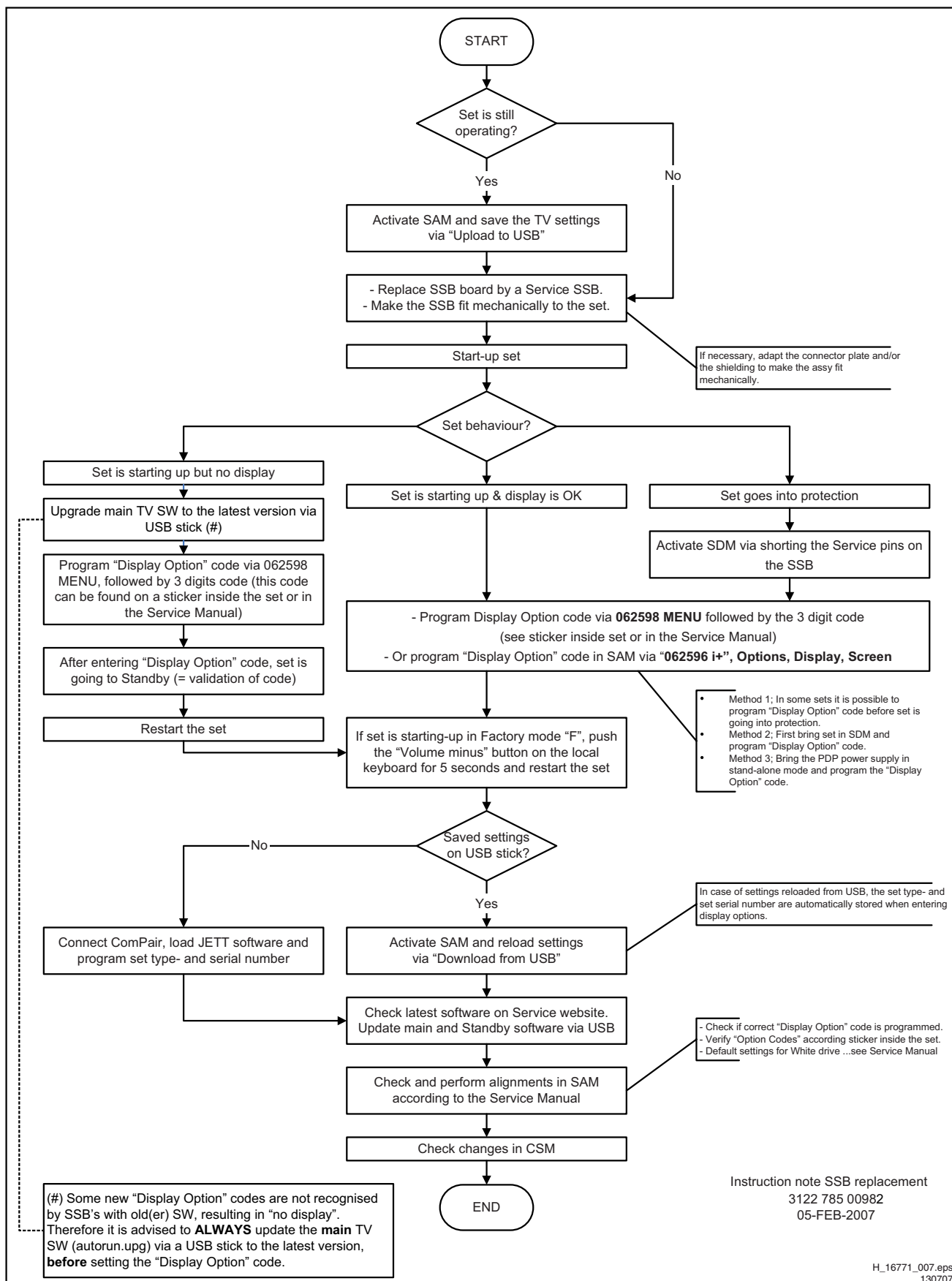
5.8.2 DC/DC Converter

Introduction

- The best way to find a failure in the DC-DC converters is to check their starting-up sequence at "power-on via the mains cord", presuming that the stand-by microprocessor is operational.
- If the input voltage of DC-DC converters is around 12.7 V (measured on decoupling capacitors 2U0W and 2U0Y) and the enable signals are "low" (active), then the output voltages should have their normal values. The +1.2 V supply starts-up when +12 V appears, then at least 100 ms later, the +3.3 V will be activated via the ENABLE-3V3 signal from the stand-by microprocessor. If +12 V value is less than 10 V then the last enumerated voltages will not show-up due to the under-voltage detection circuit 7U01-1 + 6U04 and surrounding components. Furthermore, if +12 V is less than 8 V then also +1.2 V will not be available.
- The consumption of controller IC 7U0A is around 19 mA (that means almost 200 mV drop voltage across resistor 3U70).
- The current capability of DC-DC converters is quite high (short-circuit current is 7 to 10 A), therefore if there is a linear integrated stabiliser that, for example, delivers 1.8 V

5.8.4 SSB Replacement

Follow the instructions in the flowchart in case you have to exchange the SSB. See figure "SSB replacement flowchart".



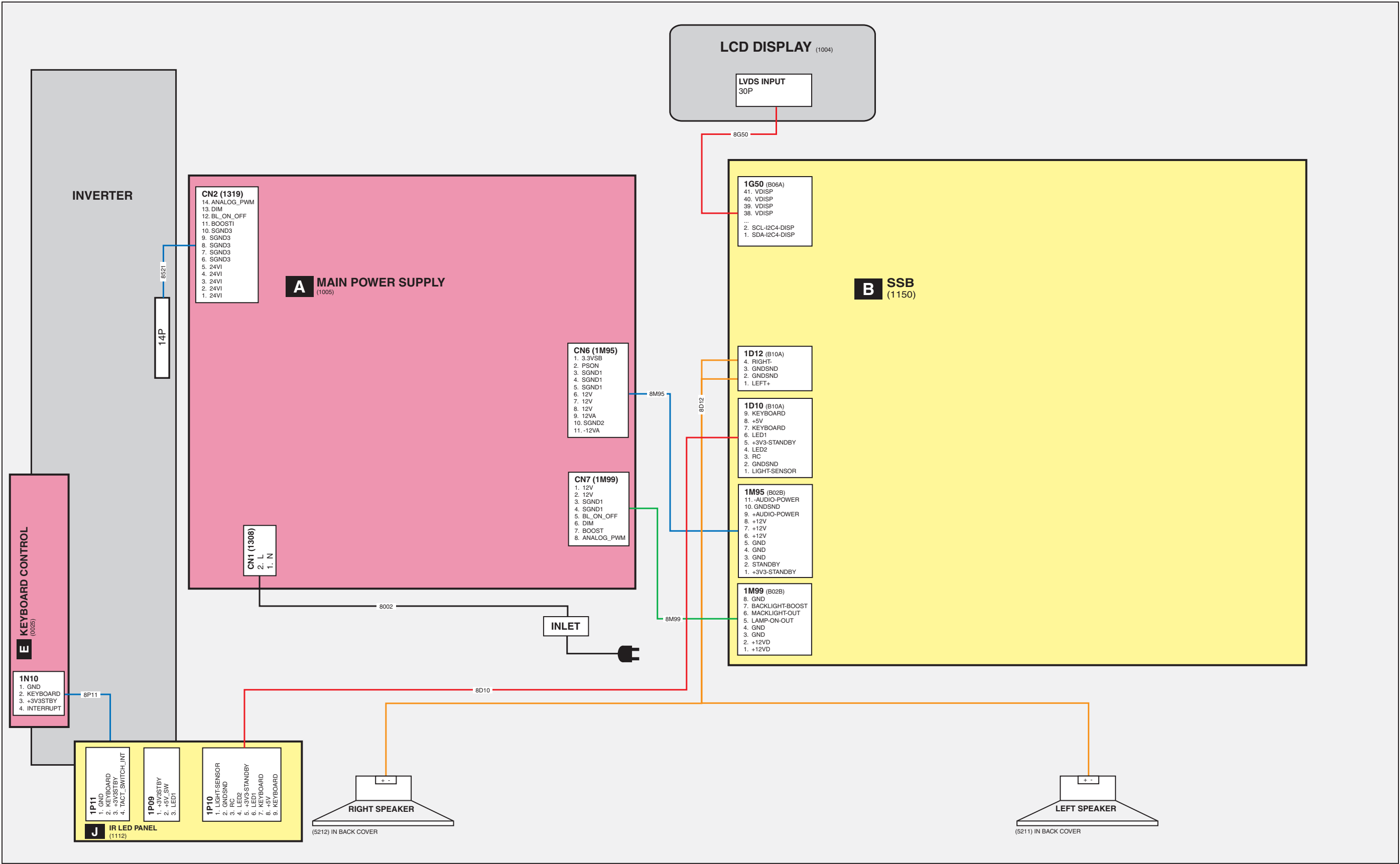
5.9.4 Content and Usage of the One-Zip Software File

Below you find a content explanation of the One-Zip file (content may vary per chassis), and instructions on how and when to use it.

- **1.1 Ambilight_PRFAM_x.x.x.x.zip.** Not to be used by Service technicians.
- **1.2 Cabinet_ACOUS_x.x.x.x.zip.** Not to be used by Service technicians.
- **1.3 Ceisp2padII_P2PAD_x.x.x.x.zip.** Not to be used by Service technicians. For ComPair development only.
- **1.4 Display_DISPT_x.x.x.x.zip.** Not to be used by Service technicians.
- **1.5 EDID_Q582E_x.x.x.x.zip.** Contains the EDID content of the different EDID NVMs. See ComPair for further instructions.
For sets with three HDMI connectors.
 - For **HDMI 1** NVM, use ""port 1*.bin
 - For **HDMI 2** NVM, use ""port 2*.bin
 - For **HDMI 3** NVM, use ""port 3*.bin
- **1.6 EJTAGDownload_Q582X_x.x.x.x.zip.** Only used by service centra which are allowed to do component level repair.
- **1.7 Factory_Q582X_x.x.x.x_commercial.zip.** Only for production purposes, not to be used by Service technicians.
- **1.8 FlashUtils_Q582X_x.x.x.x_commercial.zip.** Not to be used by Service technicians.
- **1.9 FUS_Q582X_x.x.x.x_commercial.zip.** Contains the "autorun.upg" which is needed to upgrade the TV main software and the software download application.
- **2.0 MOP_IACXX_x.x.x.x.zip.** Not to be used by Service technicians. A programmed MOP device can be ordered via your regional Service organization.
- **2.1 OpenSourceFile_Q582X_x.x.x.x.zip.** Not to be used by Service technicians.
- **2.2 Pacific3**

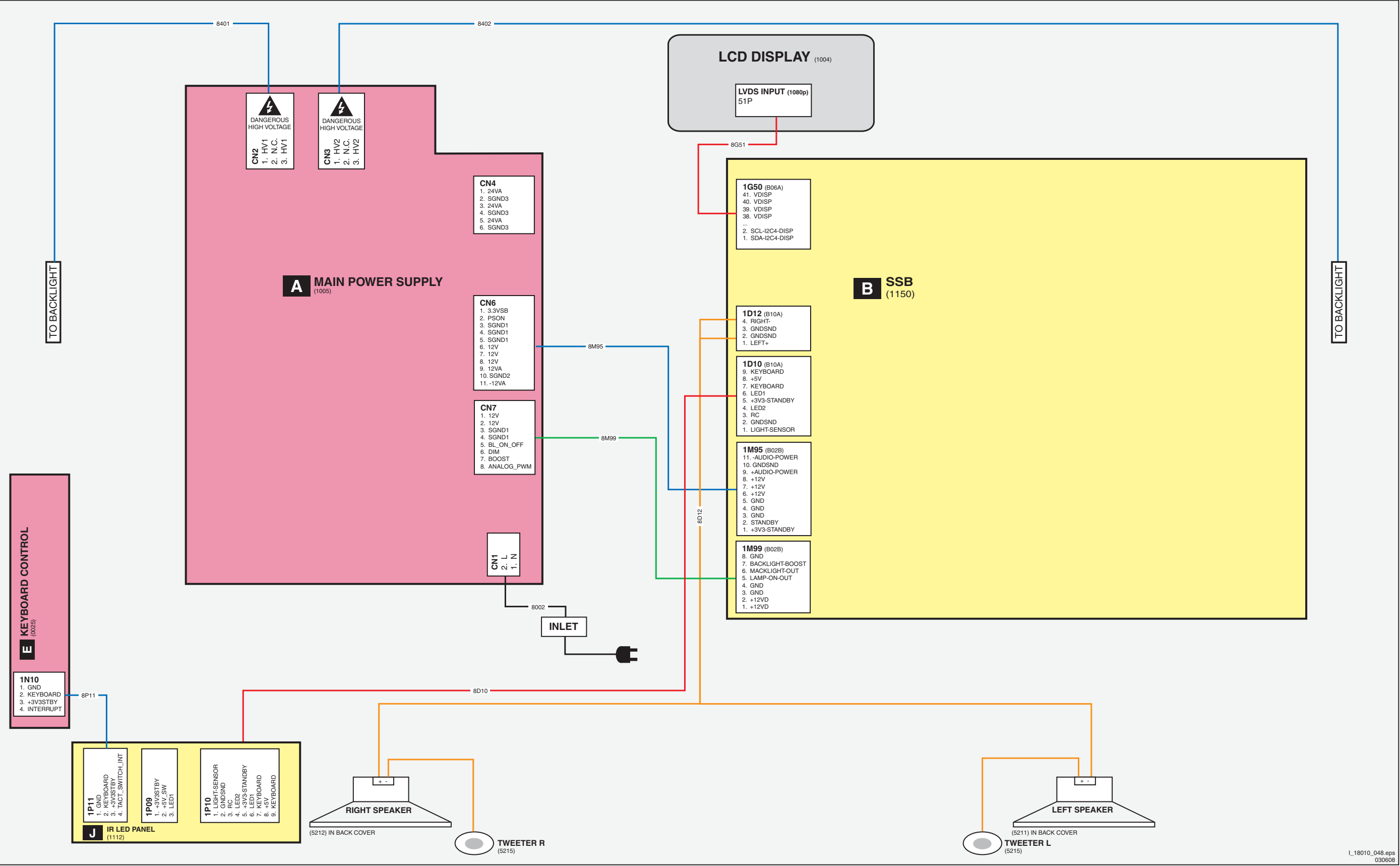
6. Block Diagrams, Test Point Overview, and Waveforms

Wiring Diagram 32” (ME8)
WIRING DIAGRAM 32” (STYLING ME8)

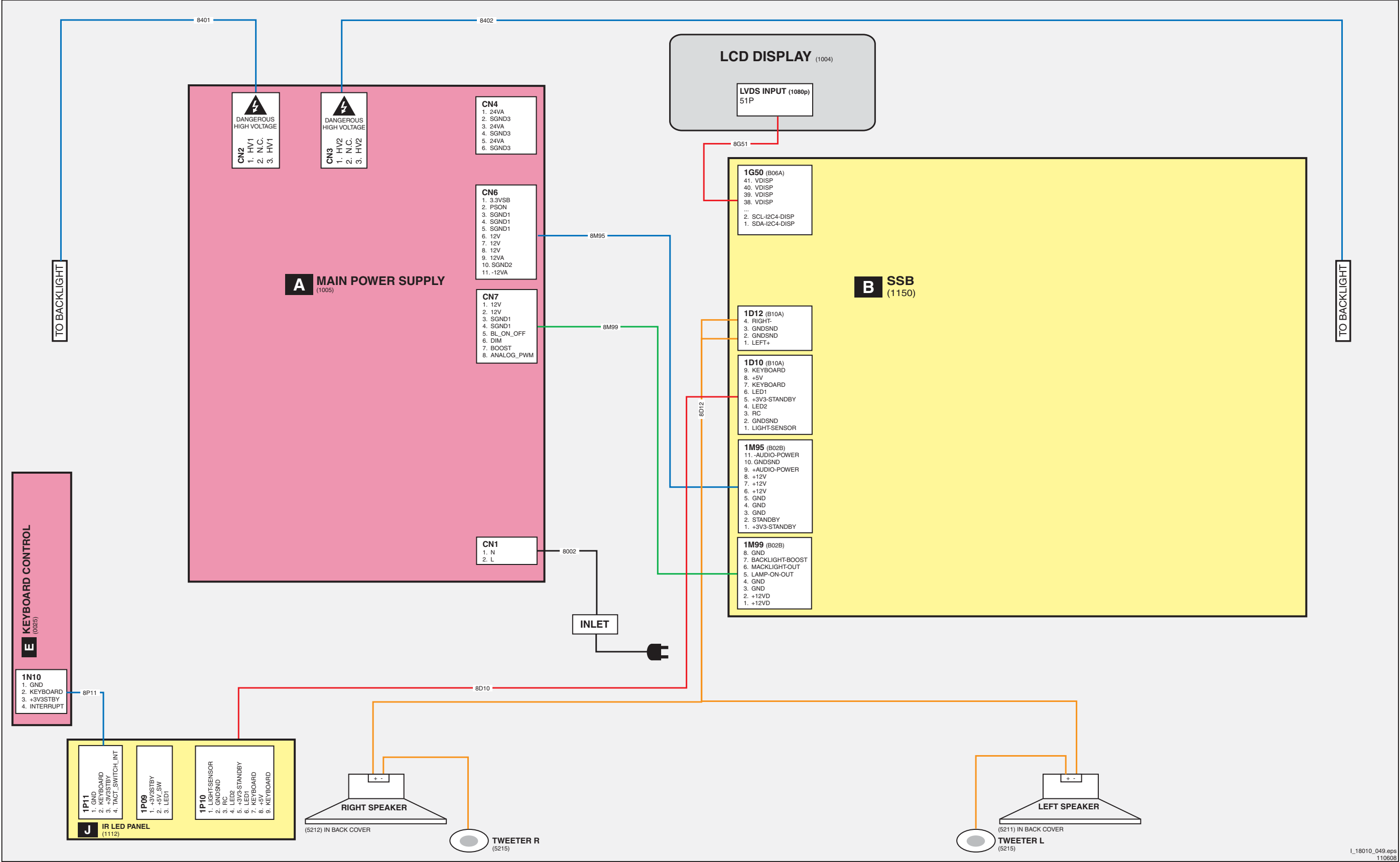


Wiring Diagram 42" (ME8)

WIRING DIAGRAM 42" (STYLING ME8)



Wiring Diagram 47” (ME8)
WIRING DIAGRAM 47" (STYLING ME8)

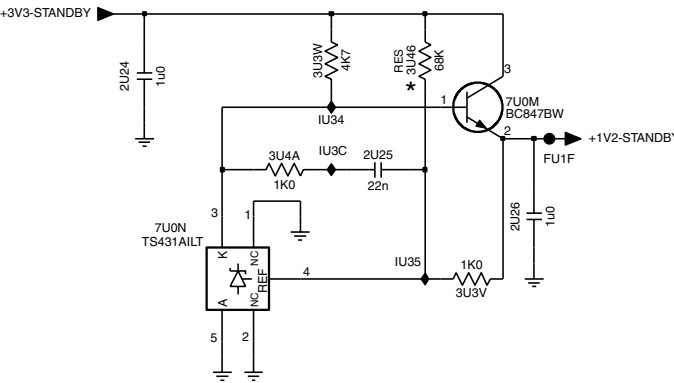
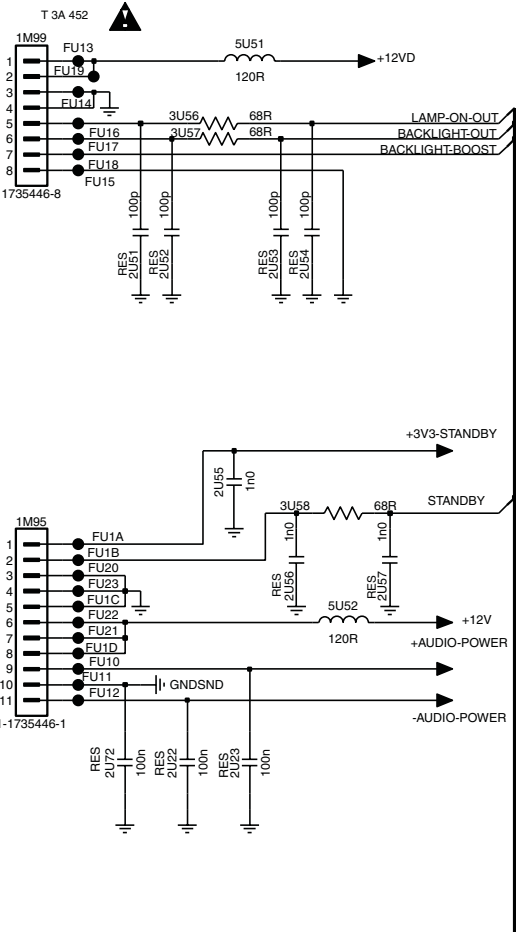


SSB: DC / DC +3V3 +1V2 Standby

B02B

DC / DC +3V3-STANDBY +1V2-STANDBY

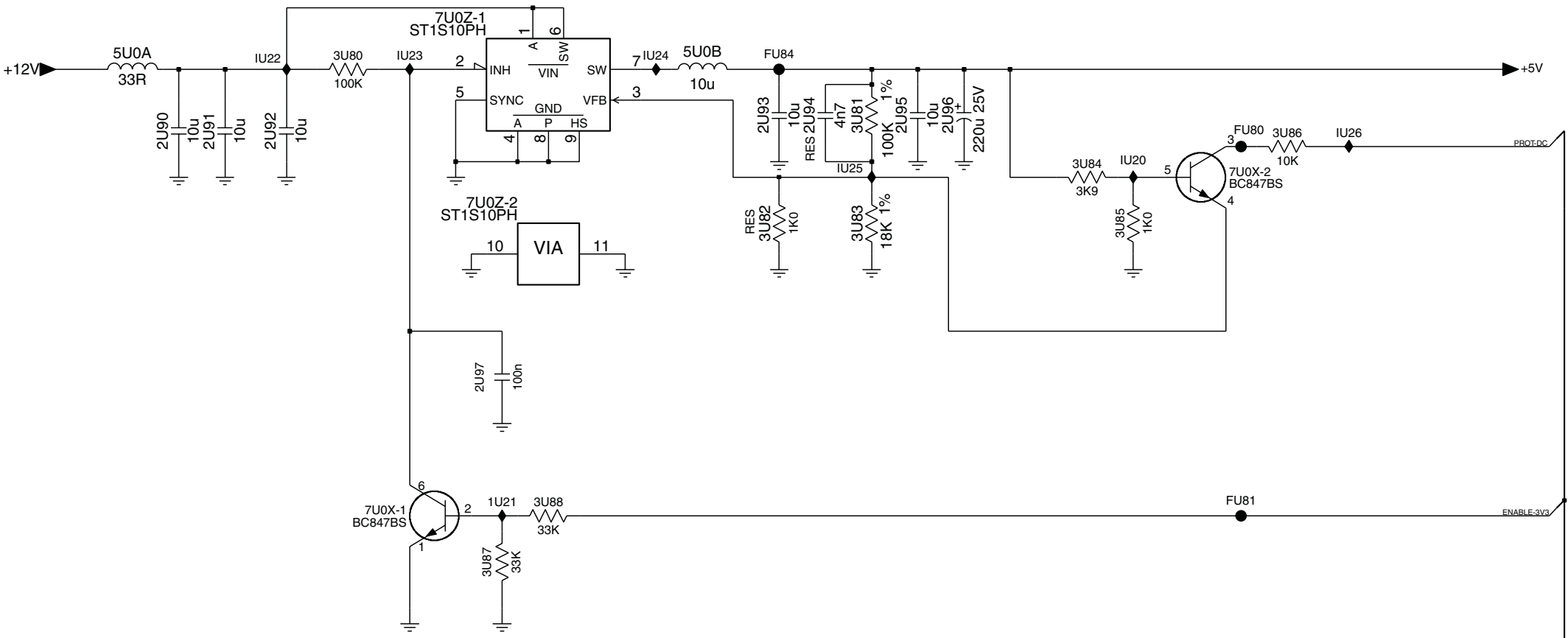
B02B



SSB: DC / DC

B02C DC / DC

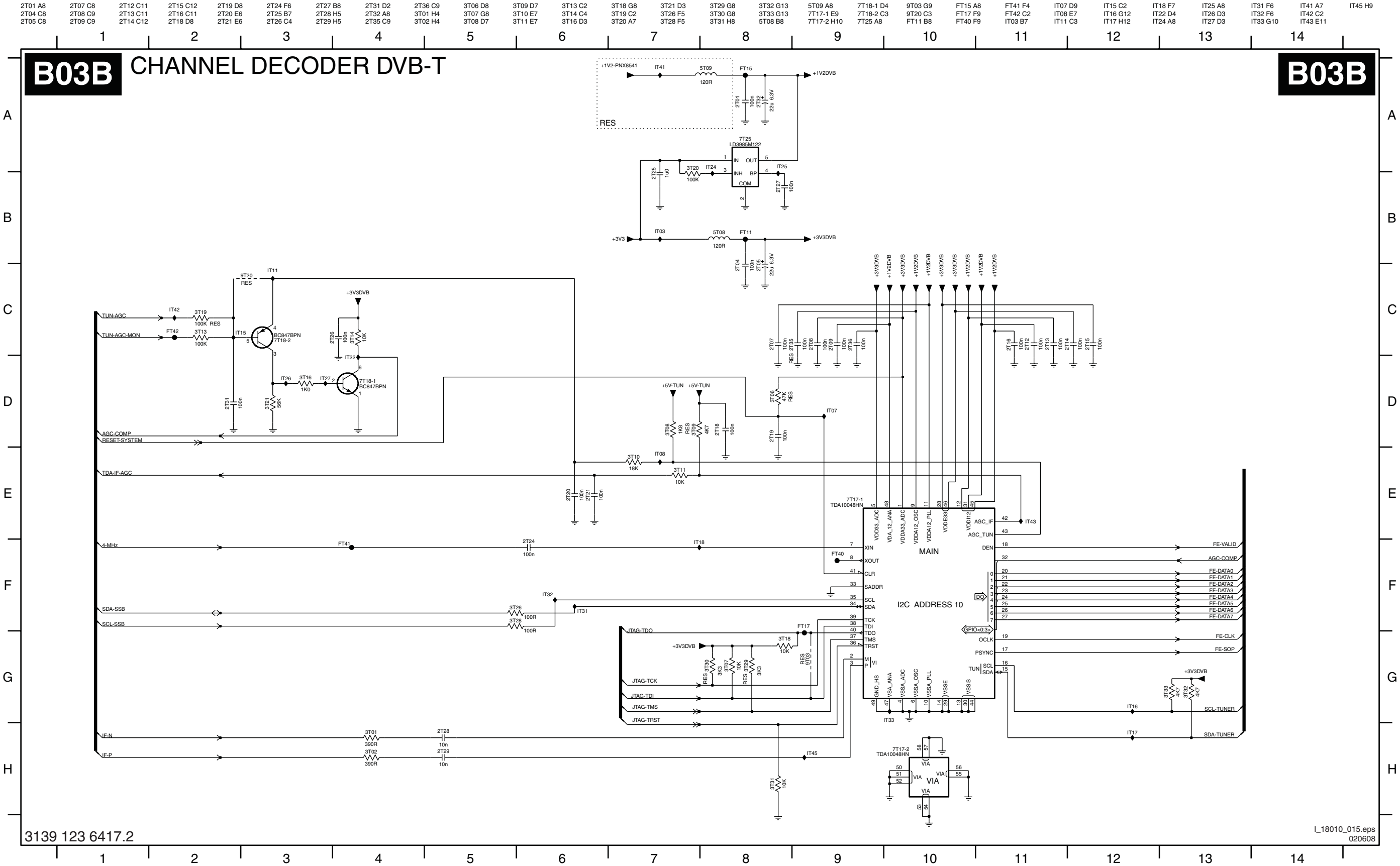
B02C



SSB: Main Tuner

1T04 D2	1T75 B5	2T47 G8	2T5B B9	2T62 F5	2T66 G14	2T73 G13	2T78 F13	2T82 H10	2T87 F9	2T96 F13	3T25 G9	3T40 G10	3T55 H10	3T5B B7	3T5F C8	3T74 H10	3T86 F10	5T61 F4	7T57 E11	9T59 F5	9T66 F14	9T6A G14	AT63 F4	FT57 H13	FT77 F11	IT02 G8	IT13 E2	IT21 G9	IT70 E12	IT75 H10	IT7B E3	IT90 F4	IT94 H10	ITAA G9
1T55 C5	1T85 G13	2T51 F13	2T5C B10	2T63 H11	2T67 F1	2T74 F14	2T79 E11	2T83 H10	2T91 E3	2T97 G11	3T36 F2	3T41 G14	3T56 F13	3T5C B8	3T64 E13	3T75 H10	3T87 F10	5T63 A10	7T5A B7	9T60 G5	9T67 F14	9T6B G												

SSB: Channel Decoder DVB-T

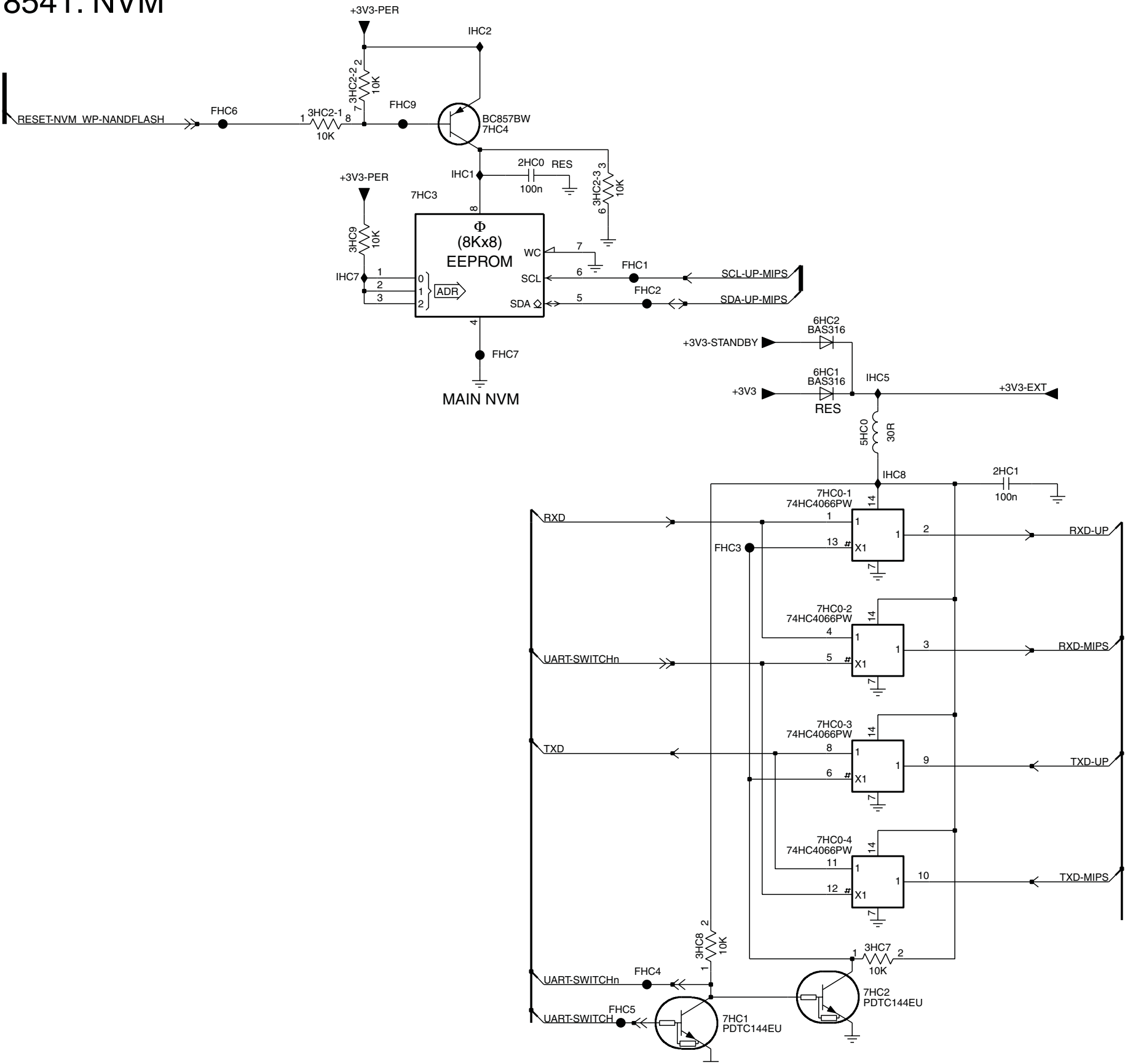


SSB: PNx8541: NVM

B04B PNx 8541: NVM

B04B

2HC0 A5
2HC1 C7
3HC2-1 A3
3HC2-2 A4
3HC2-3 B5
3HC7 F6
3HC8 F5
3HC9 B4
5HC0 C6
6HC1 C6
6HC2 B6
7HC0-1 C6
7HC0-2 D6
7HC0-3 E6
7HC0-4 E6
7HC1 F6
7HC2 F6
7HC3 B4
7HC4 A4
FHC1 B5
FHC2 B5
FHC3 D6
FHC4 F5
FHC5 F5
FHC6 A3
FHC7 C4
FHC9 A4
IHC1 A4
IHC2 A4
IHC5 C6
IHC7 B3
IHC8 C7



SSB: PNx8541: Miscellaneous

B04C PNx 8541: MISCELLANEOUS

B04C

- 2HD0 C3
- 3HD3-1 B2
- 3HD3-2 C2
- 3HD3-3 D2
- 3HD3-4 B4
- 7HD0 B3
- FHD0 B4
- FHD1 C2
- IHD0 C3

A

B

C

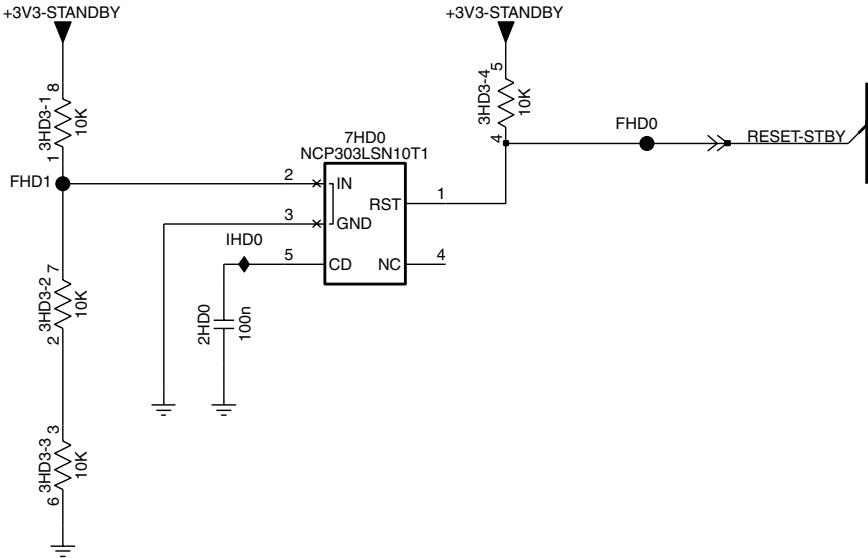
D

A

B

C

D



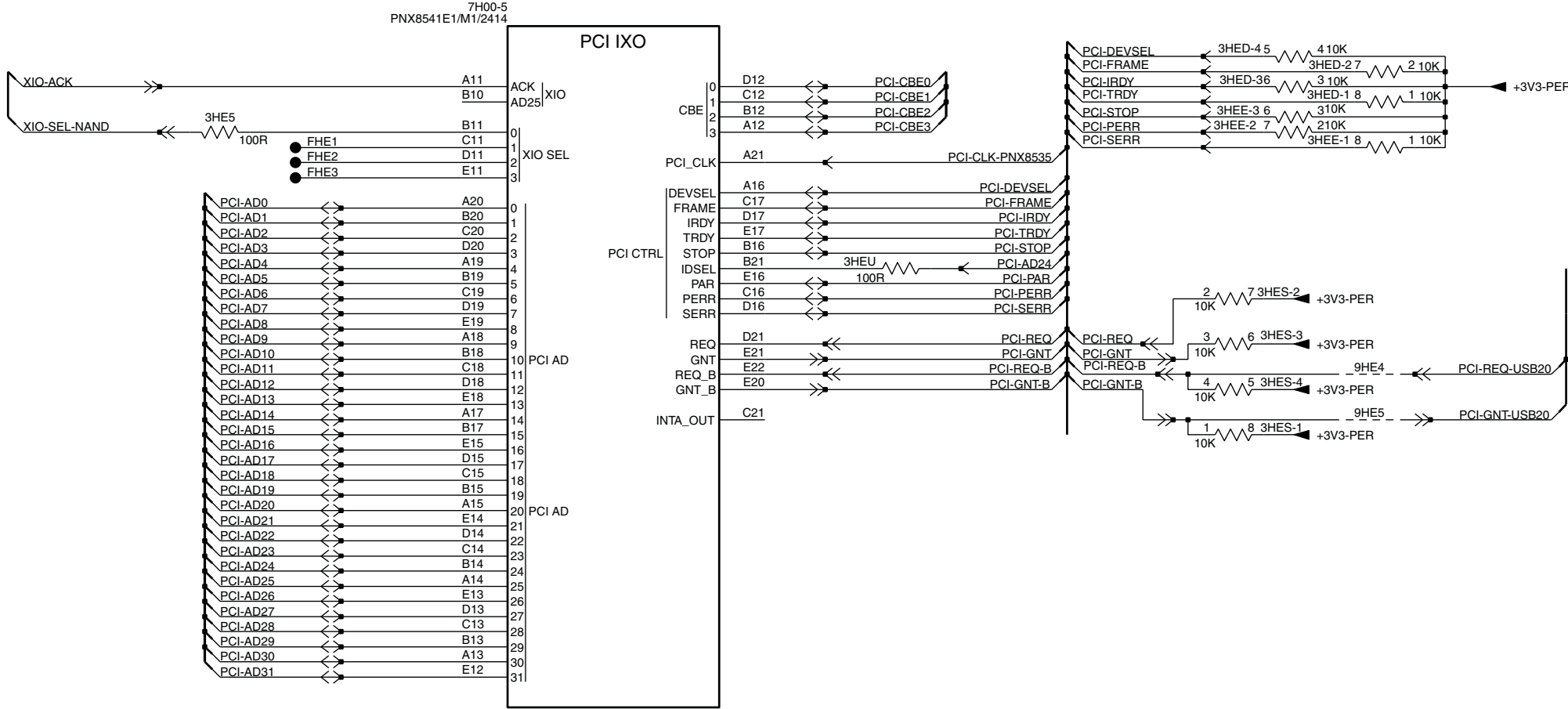
SSB: PNx8541: Control PCI

B04F

PNX 8541: CONTROL PCI

B04F

3HE5 B2
3HED-1 B7
3HED-2 B8
3HED-3 B8
3HED-4 B7
3HEE-1 B7
3HEE-2 C8
3HEE-3 B7
3HES-1 C7
3HES-2 C7
3HES-3 D7
3HES-4 D7
3HEU C5
7H00-5 B4
9HE4 D8
9HE5 D8
FHE1 C3
FHE2 C3
FHE3 C3

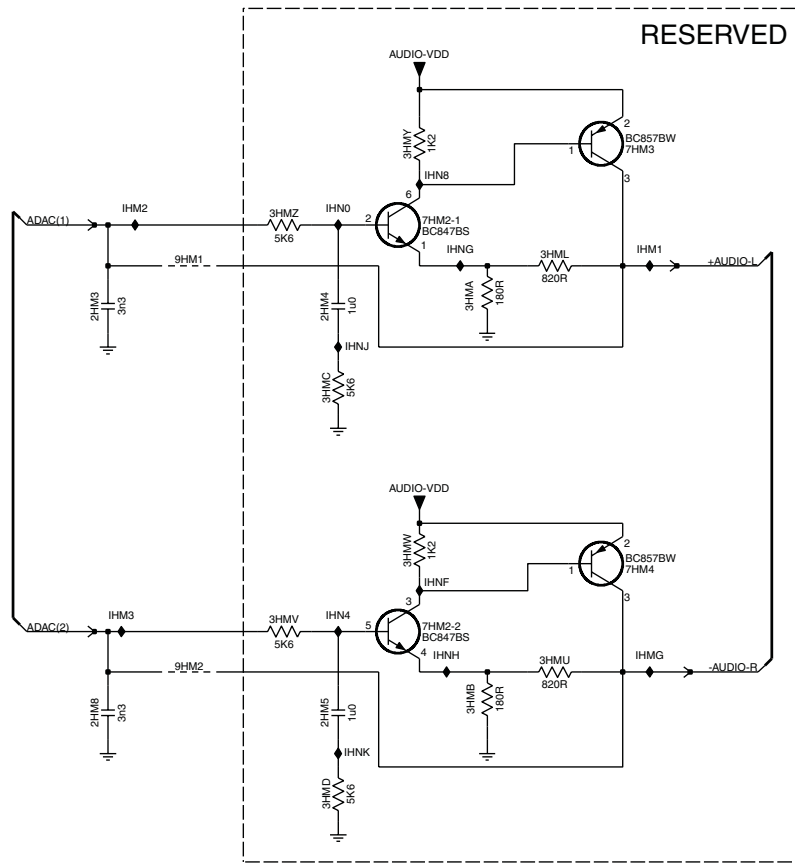
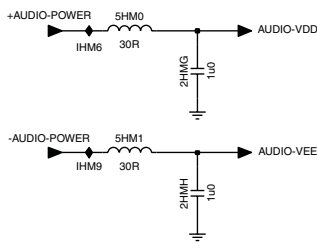


SSB: PNX8541: Audio

B04I

PNX 8541: AUDIO

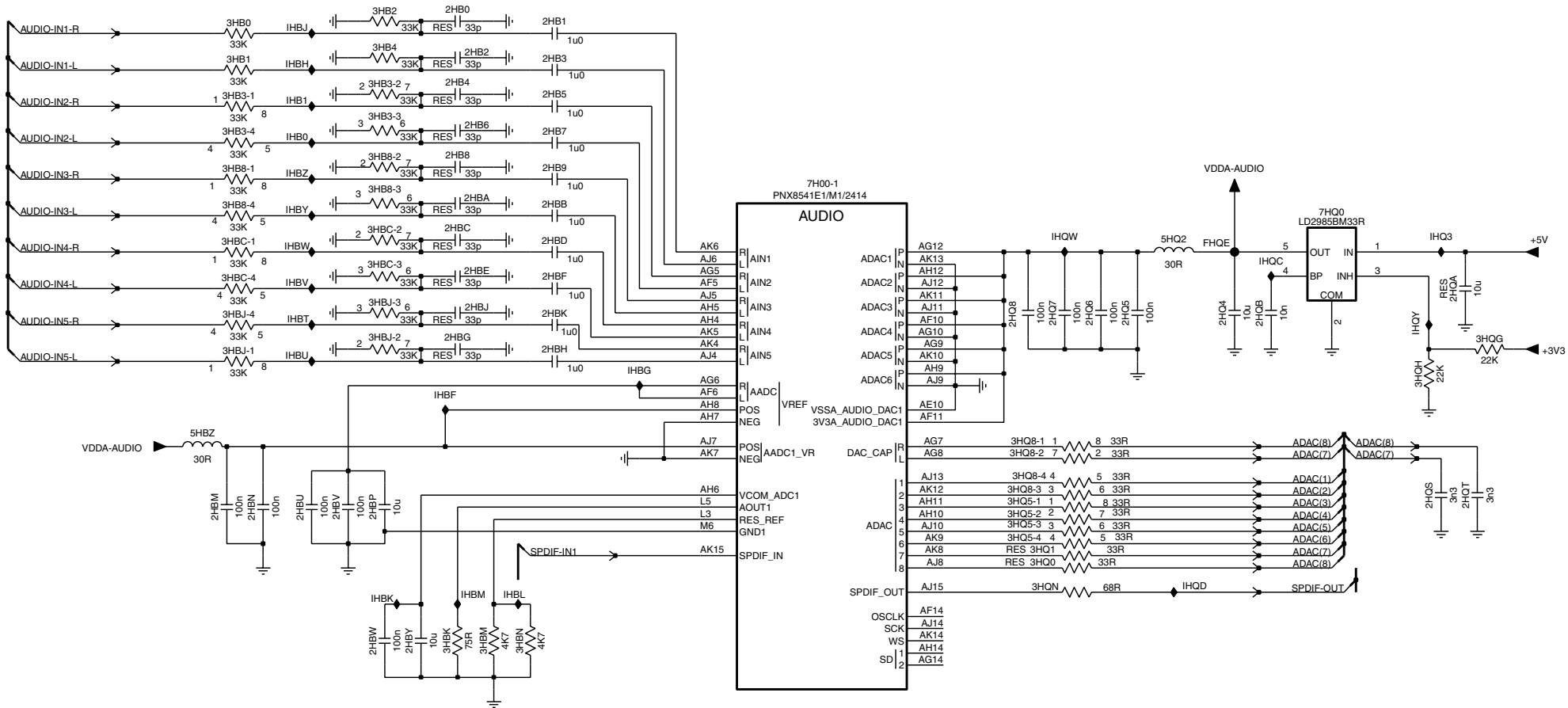
B04I



SSB: PNx8541: Audio

B04L PNx 8541: AUDIO

B04L



SSB: PNX8541: Audio

B04M

PNX 8541: AUDIO

B04M

- 1HV1 E4
2HVG E6
2HVL A3
2HVM B1
2HVN B5
2HVO B4
2HVP B3
2HVQ B4
2HVR C1
2HVS C5
2HVT C2
2HVU B3
2HVW C2
3HV4-1 D8
3HV4-2 E8
3HV4-3 E6
3HV4-4 E6
3HV6 D2
3HV7 E1
3HV8 E2
3HV9 D3
3HVA E2
3HVB E3
3HVG A3
3HVN A5
3HVI B2
3HVJ B5
3HVK B6
3HVL B3
3HVM C3
3HVN C5
3HVO C2
3HVP C5
3HVQ C6
3HVR C3
7HV1 E2
7HV2 E3
7HV3-1 A4
7HV3-2 C4
7HV4 B6
7HV5 C6
7HVA-1 E7
7HVA-2 E9
FHV3 E6
FHV4 E3
FHV5 E3
FHV6 E4
FHV7 B3
FHV8 C3
IHV2 A2
IHV3 D1
IHV6 C5
IHV7 E9
IHV8 E8
IHV9 E7
IHVA E8
IHVB E6
IHVG D3
IHVJ A1
IHVK C1
IHVL A2
IHVM C2
IHVO B4
IHVP C4
IHVQ B4

SSB: PNX8541: Video Streams

