Service
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BP2.2U, BP2.3U

AA

Service Manual SDI Plasma Panels: 3122 785 14990

ServiceManual

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PHILIPS

1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

Note: Data below can deviate slightly from the actual situation, due to the different set executions.

1.1 Technical Specifications

1.1.1 Vision

Display type	:	Plasma
Screen size	:	42” (107 cm), 16:9
	:	50” (127 cm), 16:9
Resolution (HxV pixels)	:	1024(*3)x768p (42”)
	:	1366(*3)x768p (50”)
Contrast ratio	:	3000:1
Light output (cd/m^2)	:	1000 (BP2.3)
	:	1100 (BP2.2)
Viewing angle (HxV degrees)	:	160x160
Tuning system	:	PLL
TV Color systems	:	ATSC
	:	NTSC
Video playback	:	NTSC
Cable	:	Unscrambled digital cable - QAM
	:	Digital cable ready - CableCard
Presets/channels	:	100 presets
Tuner bands	:	VHF
	:	UHF
	:	S-band
	:	Hyper-band
Supported video formats	:	640x480i-1fH
	:	640x480p-2fH
	:	720x576i-1fH(BP2.2)
	:	720x576p-2fH(BP2.2)
	:	1280x720p-3fH
	:	1920x1080i-2fH
Supported computer formats	:	640x480 @ 60Hz
	:	800x600 @ 60Hz
	:	1024x768 @ 60Hz
	:	1366x768 @ 60Hz

1.1.2 Sound

Sound systems	:	AV Stereo
	:	BTSC
Maximum power (W_{RMS})	:	2 x 15

1.1.3 Multimedia

Supported digital media	:	Compact Flash I & II
	:	Memory Stick
	:	Microdrive (upto 2GB)
	:	SD / mini SD Card
	:	Multi Media Card
	:	Smart Media Card
Supported file formats	:	JPEG
	:	MP3
	:	MP3-pro
	:	Slideshow (.alb)
USB input	:	USB1.1 (12 Mbps)

1.1.4 Miscellaneous

Power supply:		
- Mains voltage (V_{AC})	:	100 - 240
- Mains frequency (Hz)	:	50/60
Ambient conditions:		
- Temperature range (°C)	:	+5 to +40
- Maximum humidity	:	90% R.H.
Power consumption (values are indicative)		
- Normal operation (W)	:	≈ 400 (42”)
	:	≈ 467 (50”)
- Standby (W)	:	< 2
Dimensions (WxHxD in cm)	:	124x68x10.4 (42”)
	:	141x78x10.4 (50”)
Weight (kg/lbs)	:	42/92.6 (42”)
	:	60/132.3 (50”)

1.2 Connection Overview

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

1.2.1 Side Connections

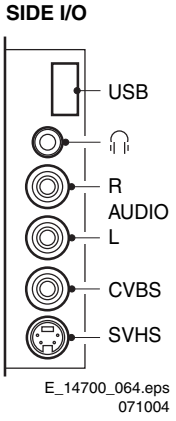


Figure 1-1 Side I/O connections

USB1.1 (only for BP2.3)

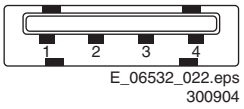


Figure 1-2 USB (type A)

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

Mini Jack: Audio Headphone - Out

Bk	- Headphone	32 - 600 ohm / 10 mW

Cinch: Video CVBS - In, Audio - In

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

SVHS (Hosiden): Video Y/C - In

1 - Ground Y	Gnd	
2 - Ground C	Gnd	
3 - Video Y	1 V_{PP} / 75 ohm	
4 - Video C	0.3 V_{PP}P / 75 ohm	

1.2.2 Digital Media Reader with USB2.0 (only for BP2.2)

In some versions, a 6-in-1 card reader unit is available, which is connected via USB to the Small Signal Board (see also par. “Technical Specifications” -> “Multimedia”).
This unit also contains two USB2.0 connectors (see figure rear connections).

1.2.3 Rear Connections (under side)

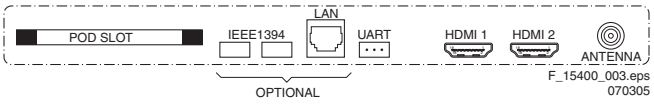


Figure 1-3 Rear connections (under side)

POD: CableCARD Interface

68p - See diagram B10A	

IEEE1394 (optional)

1 - Data (-)	TPB-	
2 - Data (+)	TPB+	
3 - Data (-)	TPA-	
4 - Data (+)	TPA+	

RJ45: LAN (optional)

8p - See diagram B9A	

Service Connector (UART)

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

HDMI 1 & 2: Digital Video, Digital Audio - In

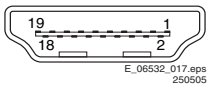


Figure 1-4 HDMI (type A) connector

1 - D2+	Data channel	
2 - Shield	Gnd	
3 - D2-	Data channel	
4 - D1+	Data channel	
5 - Shield	Gnd	
6 - D1-	Data channel	
7 - D0+	Data channel	
8 - Shield	Gnd	
9 - D0-	Data channel	
10 - CLK+	Data channel	
11 - Shield	Gnd	
12 - CLK-	Data channel	
13 - 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	

Aerial - In

- F-type (US)	Coax, 75 ohm	

1.2.4 Rear Connections (rest)

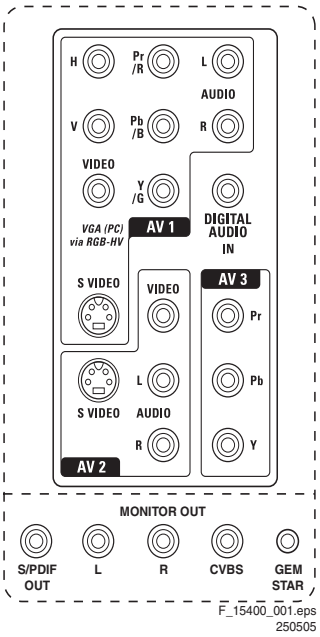


Figure 1-5 Rear connections (rest)

AV1 Cinch: Video YPbPrHV- 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	
Bk - H-sync	0 - 5 V	
Bk - V-sync	0 - 5 V	

AV1 Cinch: Video CVBS - In, Audio - In

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

DIGITAL AUDIO Cinch: S/PDIF - In

Bk - Coaxial	0.2 - 0.6V_{PP} / 75 ohm	

AV1 S-Video (Hosiden): Video Y/C - In

1 - Ground Y	Gnd	
2 - Ground C	Gnd	
3 - Video Y	1 V_{PP} / 75 ohm	
4 - Video C	0.3 V_{PP}P / 75 ohm	

AV2 S-Video (Hosiden): Video Y/C - In

1 - Ground Y	Gnd	
2 - Ground C	Gnd	
3 - Video Y	1 V_{PP} / 75 ohm	
4 - Video C	0.3 V_{PP}P / 75 ohm	

AV2 Cinch: Video CVBS - In, Audio - In

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

AV3 Cinch: Video YPbPr - In

Rd - Video Pr	0.7 V_{PP} / 75 ohm	
Bu - Video Pb	0.7 V_{PP} / 75 ohm	
Gn - Video Y	1 V_{PP} / 75 ohm	

DIGITAL AUDIO Cinch: S/PDIF - Out

Bk - Coaxial	0.4 - 0.6V_{PP} / 75 ohm	⊖→◎

MONITOR OUT Cinch: Video CVBS - Out, Audio - Out

Ye - Video CVBS	1 V_{PP} / 75 ohm	⊖→◎
Wh - Audio L	0.5 V_{RMS} /10 kohm	⊖→◎
Rd - Audio R	0.5 V_{RMS} / 10 kohm	⊖→◎

GEMSTAR Mini Jack: Remote Control - In/Out

1 - Ground	Gnd	⏚
2 - RXD		⊕
3 - TXD		⊖→
4 - IR-OUT		⊖→
5 - RXD		⊖→

1.3 Chassis Overview

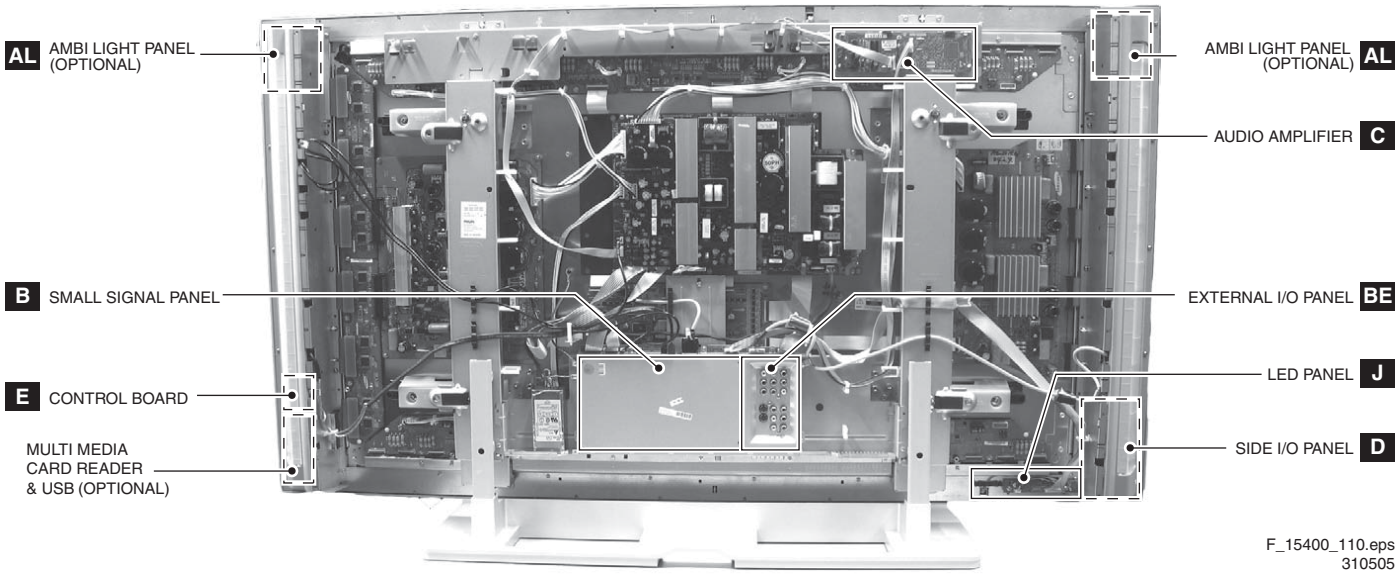


Figure 1-6 PWB/CBA locations

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

2.1 Safety Instructions

Safety regulations require that **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 which 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 Mohm and 12 Mohm.
  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 avoid touching of any inner parts by the customer.

2.2 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. Available ESD protection equipment:
  – Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  – Wristband tester 4822 344 13999.
- 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.

2.3 Notes

2.3.1 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 (see chapter 5) with a color 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.
- The semiconductors indicated in the circuit diagram and in the parts lists, are interchangeable per position with the semiconductors in the unit, irrespective of the type indication on these semiconductors.
- Manufactured under license from Dolby Laboratories. “Dolby”, “Pro Logic” and the “double-D symbol”, are trademarks of Dolby Laboratories.

2.3.2 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 kohm).
- Resistor values with no multiplier may be indicated with either an "E" or an "R" (e.g. 220E or 220R indicates 220 ohm).
- All capacitor values are given in micro-farads (μ= x10^{-6}), nano-farads (n= x10^{-9}), or pico-farads (p= x10^{-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 in the Spare Parts List. Therefore, always check this list when there is any doubt.

2.3.3 Rework on BGA (Ball Grid Array) ICs

General

Although (LF)BGA assembly yields are very high, there may still be a requirement for component rework. By rework, we mean the process of removing the component from the PWB and replacing it with a new component. If an (LF)BGA is removed from a PWB, the solder balls of the component are deformed drastically so the removed (LF)BGA has to be discarded.

Device Removal

As is the case with any component that, it is essential when removing an (LF)BGA, the board, tracks, solder lands, or surrounding components are not damaged. To remove an (LF)BGA, the board must be uniformly heated to a temperature close to the reflow soldering temperature. A uniform temperature reduces the chance of warping the PWB.
To do this, we recommend that the board is heated until it is certain that all the joints are molten. Then carefully pull the component off the board with a vacuum nozzle. For the appropriate temperature profiles, see the IC data sheet.

Area Preparation

When the component has been removed, the vacant IC area must be cleaned before replacing the (LF)BGA.
Removing an IC often leaves varying amounts of solder on the mounting lands. This excessive solder can be removed with either a solder sucker or solder wick. The remaining flux can be removed with a brush and cleaning agent.
After the board is properly cleaned and inspected, apply flux on the solder lands and on the connection balls of the (LF)BGA.
Note: Do not apply solder paste, as this has shown to result in problems during re-soldering.

Device Replacement
The last step in the repair process is to solder the new component on the board. Ideally, the (LF)BGA should be aligned under a microscope or magnifying glass. If this is not possible, try to align the (LF)BGA with any board markers. So as not to damage neighboring components, it may be necessary to reduce some temperatures and times.

More Information
For more information on how to handle BGA devices, visit this URL: *www.atyourservice.ce.philips.com* (needs subscription, not available for all regions). After login, select “Magazine”, then go to “Workshop Information”. Here you will find Information on how to deal with BGA-ICs.

2.3.4 Lead Free Solder

Philips CE is producing lead-free sets (PBF) from 1.1.2005 onwards.

Identification: The bottom line of a type plate gives a 14-digit serial number. Digits 5 and 6 refer to the production year, digits 7 and 8 refer to production week (in example below it is 1991 week 18).

E_06532_024.eps
230205

Figure 2-1 Serial number example

Regardless of the special lead-free logo (which is not always indicated), one must treat all sets from this date onwards according to the rules as described below.

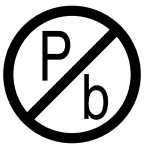


Figure 2-2 Lead-free logo

Due to lead-free technology some rules have to be respected by the workshop during a repair:
- Use only lead-free soldering tin Philips SAC305 with order code 0622 149 00106. 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 at least a solder-tip temperature of 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 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 rise 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 not to avoid, clean carefully the solder-joint from old tin and re-solder with new tin.
- Use only original spare-parts listed in the Service-Manuals. Not listed standard material (commodities) has to be purchased at external companies.
- Special information for lead-free BGA ICs: these ICs will be delivered in so-called "dry-packaging" to protect the IC against moisture. This packaging may only be opened short before it is used (soldered). Otherwise the body of the IC gets "wet" inside and during the heating time the structure of the IC will be destroyed due to high (steam-)pressure inside the body. If the packaging was opened before usage, the IC has to be heated up for some hours (around 90°C) for drying (think of ESD-protection!).
  Do not re-use BGAs at all!
- For sets produced before 1.1.2005, containing leaded soldering tin and components, all needed spare parts will be available till the end of the service period. For the repair of such sets nothing changes.

In case of doubt whether the board is lead-free or not (or with mixed technologies), you can use the following method:
- Always use the highest temperature to solder, when using SAC305 (see also instructions below).
- De-solder thoroughly (clean solder joints to avoid mix of two alloys).

Caution: For BGA-ICs, you **must** use the correct temperature-profile, which is coupled to the 12NC. For an overview of these profiles, visit the website *www.atyourservice.ce.philips.com* (needs subscription, but is not available for all regions)
You will find this and more technical information within the "Magazine", chapter "Workshop information".
For additional questions please contact your local repair help desk.

2.3.5 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.

Annex 1 - Philips TV software upgrade with portable memory

Introduction

Philips offers software upgrade capability for your TV using portable memory.
After you have completed a software upgrade, your TV will typically perform better.
What improvements are made depends on the upgrade software you are using as well as the software your TV contained before the upgrade.
You can execute the software upgrade procedure yourself.
Be aware that the content of this document is addressing technical or software skilled users.

Preparing a portable memory for software upgrade

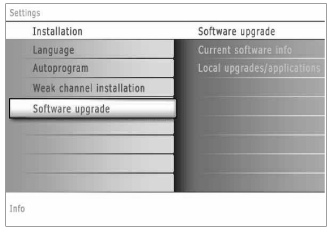
For the procedure you will require:
- A personal computer with web browsing capability.
- An archive utility that supports the ZIP-format (e.g. WinZip for Windows or Stuffit for Mac OS.
- A preferably empty USB memory stick or memory card (if available). Supported memory cards (if available): CompactFlash Card Type I & II, IBM Microdrive, Memory Stick, SecureDigital Card / Mini SD Card, SmartMedia Card, MultiMedia Card.
  Note: Only FAT/DOS-formatted portable memory is supported.

New software can be obtained from your dealer or can be downloaded from the www.philips.com/support website:

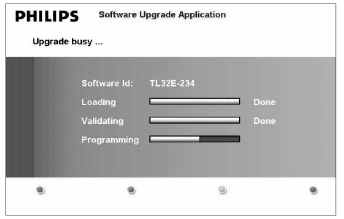
1. Go to **www.philips.com/support** using the web browser on your PC.
2. Follow the procedure to find the information and the software related to your TV.
3. Select the latest software upgrade file and download it to your PC.
4. Decompress the ZIP-file and copy the file "autorun.upg" to the root directory of the USB portable memory.
   Note: Only use software upgrades that can be found on the www.philips.com/support web site.

Verifying the version of the TV software

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



1. Select **Software Upgrade** in the Installation menu.
2. Press the cursor right.
   The Software Upgrade menu moves to the left panel.
3. Select **Current Software Info** to observe the version and the description of the current software.

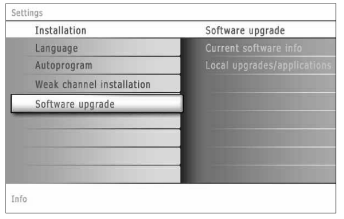


Automatic software upgrade procedure

1. Power off your TV and remove all memory devices.
2. Insert the USB portable memory that contains the downloaded software upgrade.
3. Switch on your TV with the power switch ⏻ at the right side of the TV.
4. At startup the TV will scan the USB portable memory until it finds the update content. The TV will automatically go to the upgrade mode. After a few seconds it will display the status of the upgrade procedure.

   Warning:
   - *You are not allowed to remove the USB portable memory during the software upgrade procedure!*
   - *In case of a power drop during the upgrade procedure, don't remove the USB portable memory from the TV. The TV will continue the upgrade as soon as the power comes back.*
   - *If you try to upgrade to a software version lower than the current version, a confirmation will be asked. Downgrading to older software should only be done in case of real necessity.*
   - *If an error occurs during the upgrade you should retry the procedure or contact your dealer.*
5. When the software upgrade was successful, remove the USB portable memory and restart your TV with the power switch ⏻ at the right side of the TV.
   Your TV will start up with the new software.
   Note: Once the upgrade is finished use your PC to remove the TV software from your USB portable memory.

Manual software upgrade procedure



For a manual software upgrade copy the "autorun.upg" file in a directory called "Upgrades" located in the root of the USB portable memory.

1. Insert the portable memory that contains the downloaded software upgrade.
2. Select **Software Upgrade** in the Installation menu. Go to **Local upgrades/applications**.
   The TV will list all compatible images available on the USB portable memory and display the data for each selected upgrade image.
3. Select the correct upgrade image and press the red color button to start the upgrade.
   Your TV will restart and will automatically go to the upgrade mode. After a few seconds it will display the status of the upgrade procedure.
   Warning:
   If you try to upgrade to a software version equal or lower than the current version, a confirmation will be asked. Downgrading to older software should only be done in case of real necessity.
4. When the software upgrade was successful, remove the USB portable memory and restart your TV with the power switch ⏻ at the right side of the TV.
   Your TV will start up with the new software.

3. Directions for Use

You can download this information from the following websites:
http://www.philips.com/support
http://www.p4c.philips.com

As the software upgrade is a new feature, it is explained below.

4. Mechanical Instructions

Index of this chapter:

Notes:

- Figures below can deviate slightly from the actual situation, due to the different set executions.
- Follow the disassemble instructions in described order.

4.1 Cable Dressing

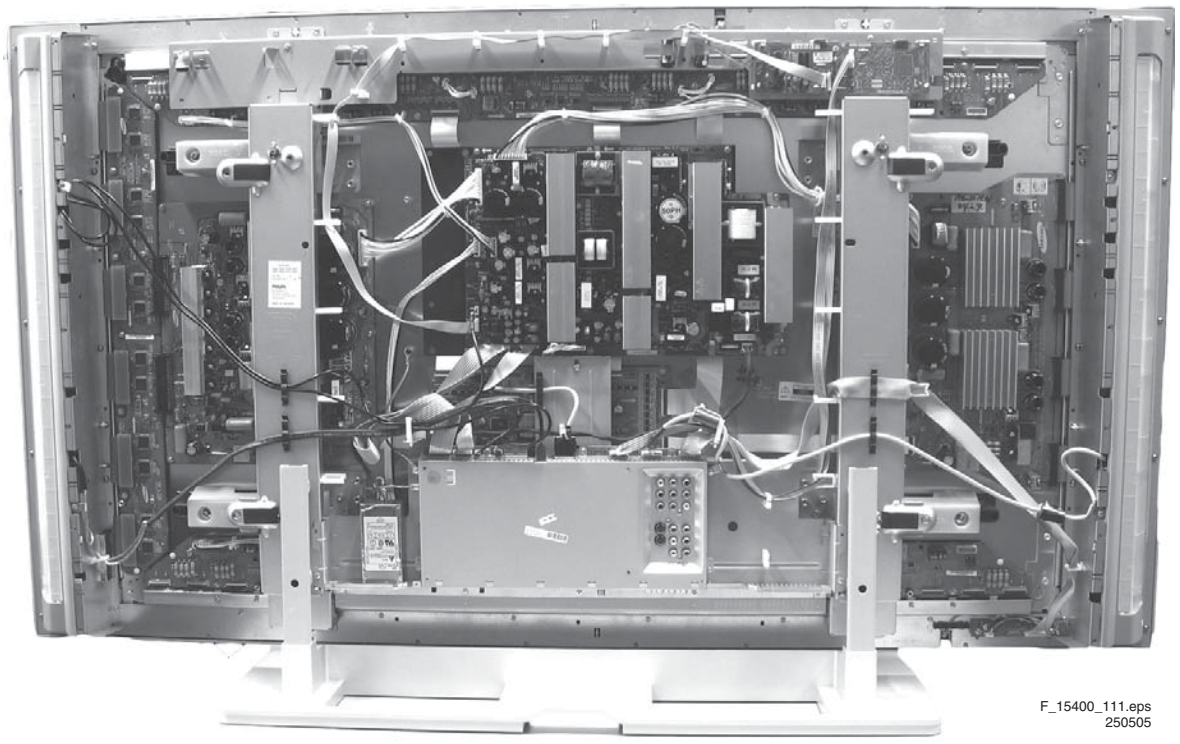


Figure 4-1 Cable dressing (BP2.2U)

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).
- Aluminium service stands (created for Service).

4.2.1 Foam Bars

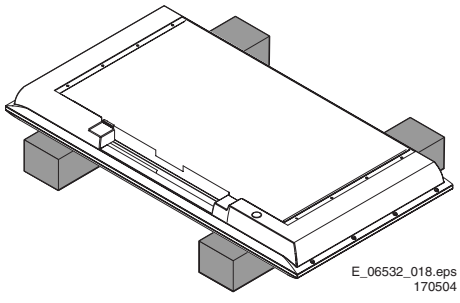


Figure 4-2 Foam bars

The foam bars (order code 3122 785 90580 for two pieces) can be used for all types and sizes of Flat TVs. 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.

4.2.2 Aluminium Stands

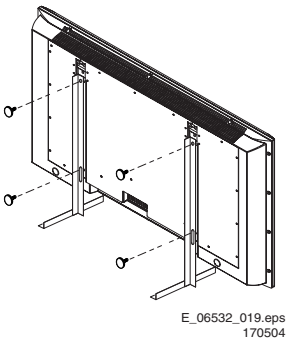


Figure 4-3 Aluminium stands (drawing of MkI)

The new MkII aluminium stands (not on drawing) with order code 3122 785 90690, can also be used to do measurements, alignments, and duration tests. The stands can be (dis)mounted quick and easy by means of sliding them in/out the "mushrooms". The new stands are backwards compatible with the earlier models.

Important: For (older) FTV sets without these "mushrooms", it is obligatory to use the provided screws, otherwise it is possible to damage the monitor inside!.

4.3 Assy/Panel Removal

4.3.1 Metal Rear Cover

Caution: Disconnect the Mains/AC Power cord before you remove the rear cover!

1. Place the TV set upside down on a table top, using the foam bars (see part "Foam Bars").
   Caution: do **not** put pressure on the display, but let the monitor lean on the speakers or the Front cover.
2. Remove all T10 screws around the edges of the metal rear cover: “parker” screws around the outer rim, “tapping” screws around the connector plate.
3. Remove the four "mushrooms" from the rear cover.
4. Lift the metal rear cover from the set. Make sure that wires and flat foils are not damaged.

4.3.2 Speaker Compartment Cover

After removing the metal rear cover, you gain access to the Speaker Compartment covers.

1. Remove all T10 screws [1] around the outer rim of the cover.
2. Remove the T10 screws [2] on top of the inner rim.
3. **For sets with AmbiLight**: Remove the T10 screws [3] at the bottom of the inner rim.
4. After removal of all the screws, slightly push the top of the cover inwards. This will lift the outer rim slightly up so you can take the cover out.

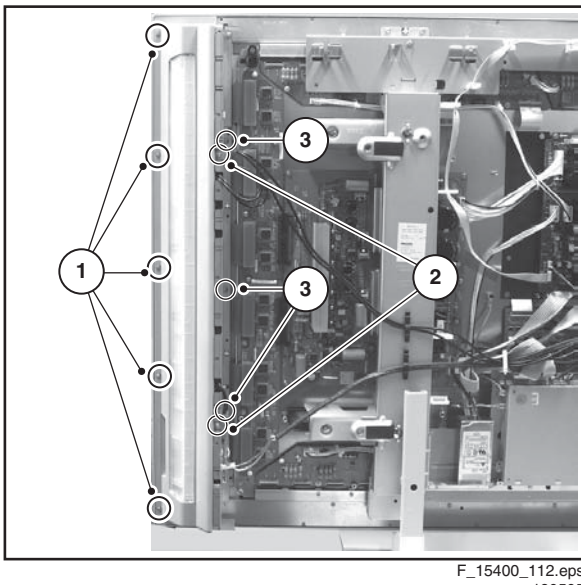


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Figure 4-4 Speaker compartment cover removal

To release the complete cover (only for models with the AmbiLight feature, as in figure above):

- Lift the cover up; let it hinge at the top side.
- Now, unplug the cables [1] at the AmbiLight Inverter panel.

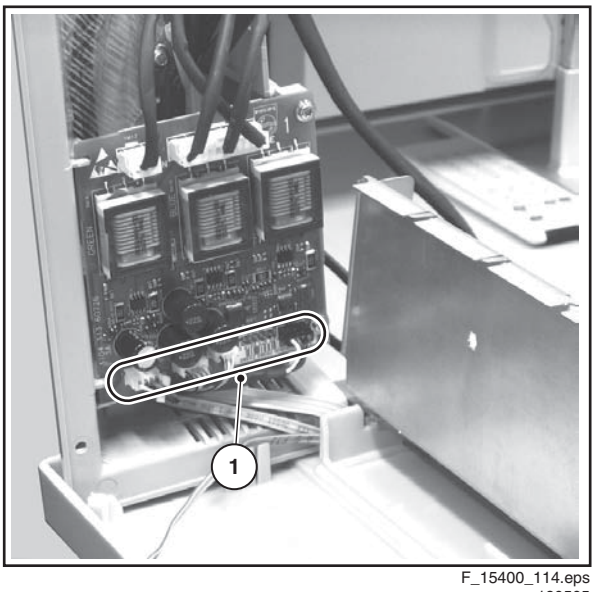

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Figure 4-5 AmbiLight inverter panel connections

4.3.3 AmbiLight Inverter Panel (if present)

After removal of the Speaker Compartment Covers, this panel is accessible.

1. Disconnect the cable(s) from the panel.
2. Remove the T10 mounting screws [1] that hold the assy.
3. Take out the panel from its bracket [2].

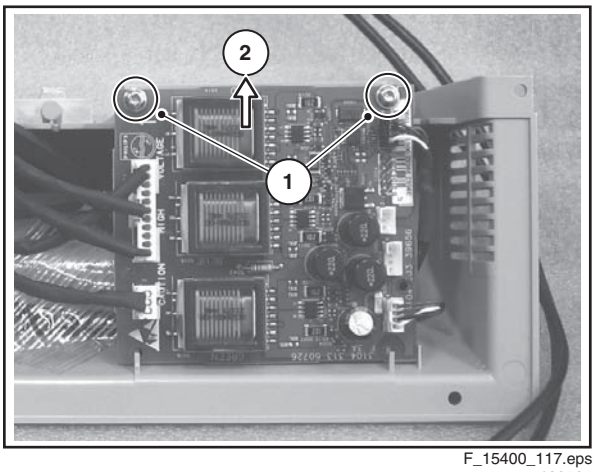

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Figure 4-6 AmbiLight inverter panel removal

4.3.4 Control Panel

After removal of the Speaker Compartment Covers, this panel is accessible. Release the clamps and take out the panel

4.3.5 Speakers

After removal of the Speaker Compartment Covers, you can access the speakers.

4.3.6 Side I/O Panel

After removal of the Speaker Compartment Covers, this panel is accessible.
1. Disconnect the cable(s) from the panel.
2. Remove the T10 mounting screws [1] that hold the assy.
3. Take out the panel from its bracket [2].

When defective, replace the whole unit.

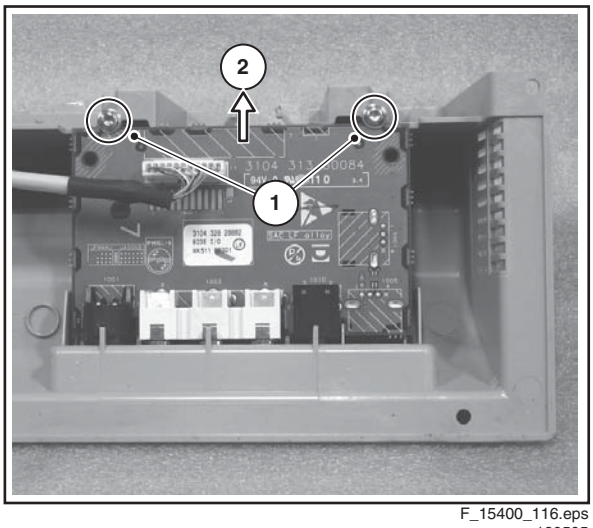

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Figure 4-7 Side I/O panel removal

4.3.7 Multimedia Card Reader (if present)

After removal of the Speaker Compartment Covers, this panel is accessible.
1. Unplug the related USB cable at the top of the SSB.
2. Remove the two T10 mounting screws [1] that hold the assy.

When defective, replace the whole unit.

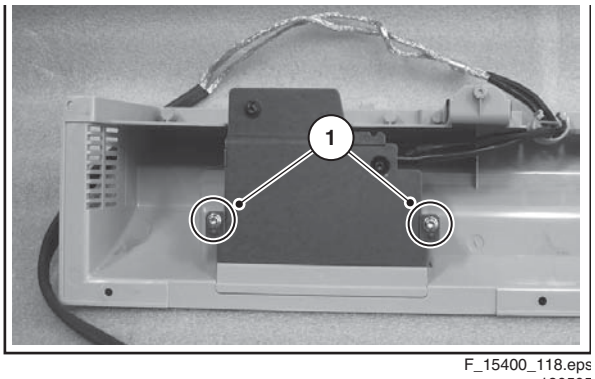

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Figure 4-8 Multimedia card reader removal

4.3.8 Audio Amplifier Panel

1. Disconnect all cables from the Audio Amplifier panel.
2. Remove the T10 mounting screw from the Audio panel.
3. Release the two plastic fixation pins.
4. Take out the Audio panel (it hinges at the top side).

4.3.9 LED Panel

1. Disconnect the cable(s) from the panel.
2. Remove the T10 mounting screws that hold the panel.
3. Take out the panel.

When defective, replace the whole unit.

4.3.10 Small Signal Board (SSB)

1. Remove all connector fixation screws [1] at the connector plate (bottom side), and at the shielding plate (rear side).
2. Remove the fixation screws [2] of the connector plate itself.
3. Remove all shielding fixing screws [3].
4. Slide the connector plate away from the SSB [4], and lift the shielding from the SSB.
5. Unplug all cables on the SSB.
6. Remove the mounting screws that hold the SSB, and lift the panel from the set.

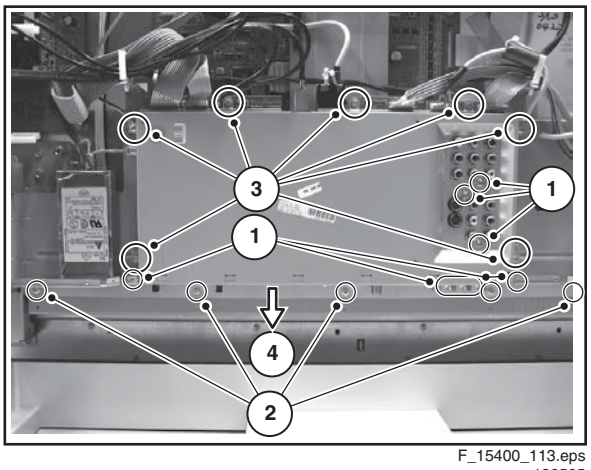

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Figure 4-9 SSB top shielding

4.3.11 Plasma Display Panel / Glass Plate

1. Remove the T20 display panel mounting screws [1].
2. Remove the T10 screws [2] from the mounting frame.
3. Unplug all cable(s):
   - LVDS cable at SSB side (fragile connector!).
   - SSB supply cables at the Main Supply board.
   - Mains cable at the Main Supply board.
   - Side I/O cable at SSB side (fragile connector!).
   - Cable at LED panel.
   - Keyboard cable at SSB side.
   - Audio Amplifier supply cable at the Main Supply board.
   - Loudspeaker cables (incl. ferrites) at the Audio panel.
4. Lift the metal frame (together with all PWBs) from the display panel (see figure “Frame lift”).
5. After removal of the frame, lift the PDP from the set.

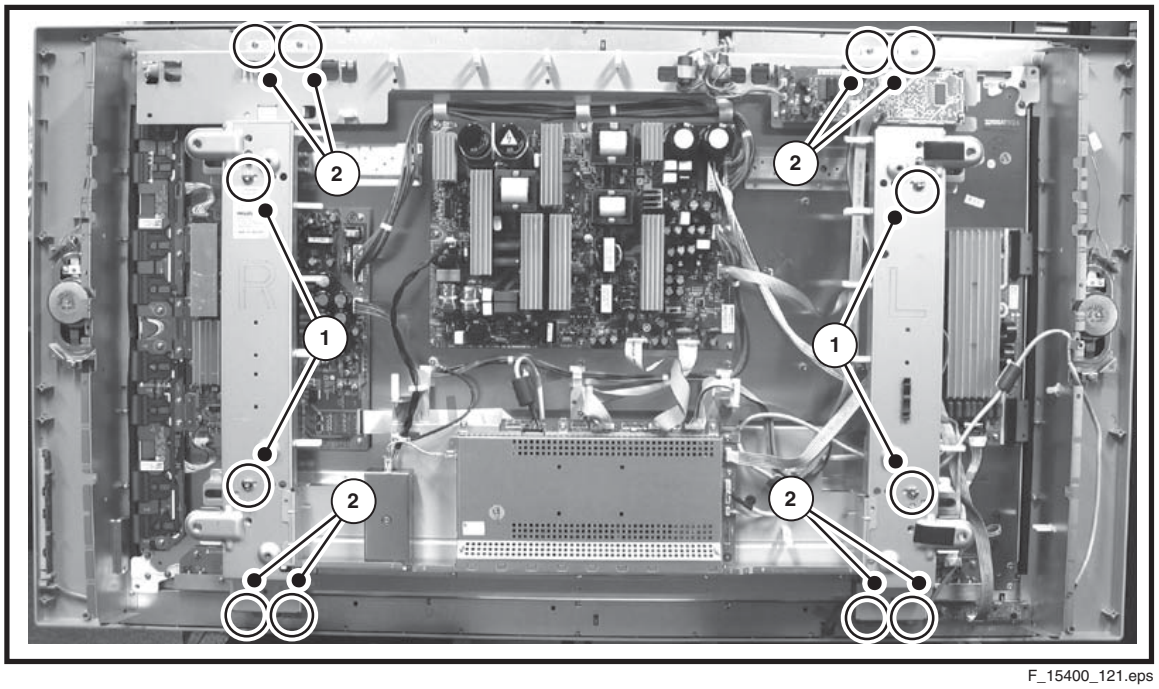

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Figure 4-10 Display panel removal (photo from LC4.9 chassis)

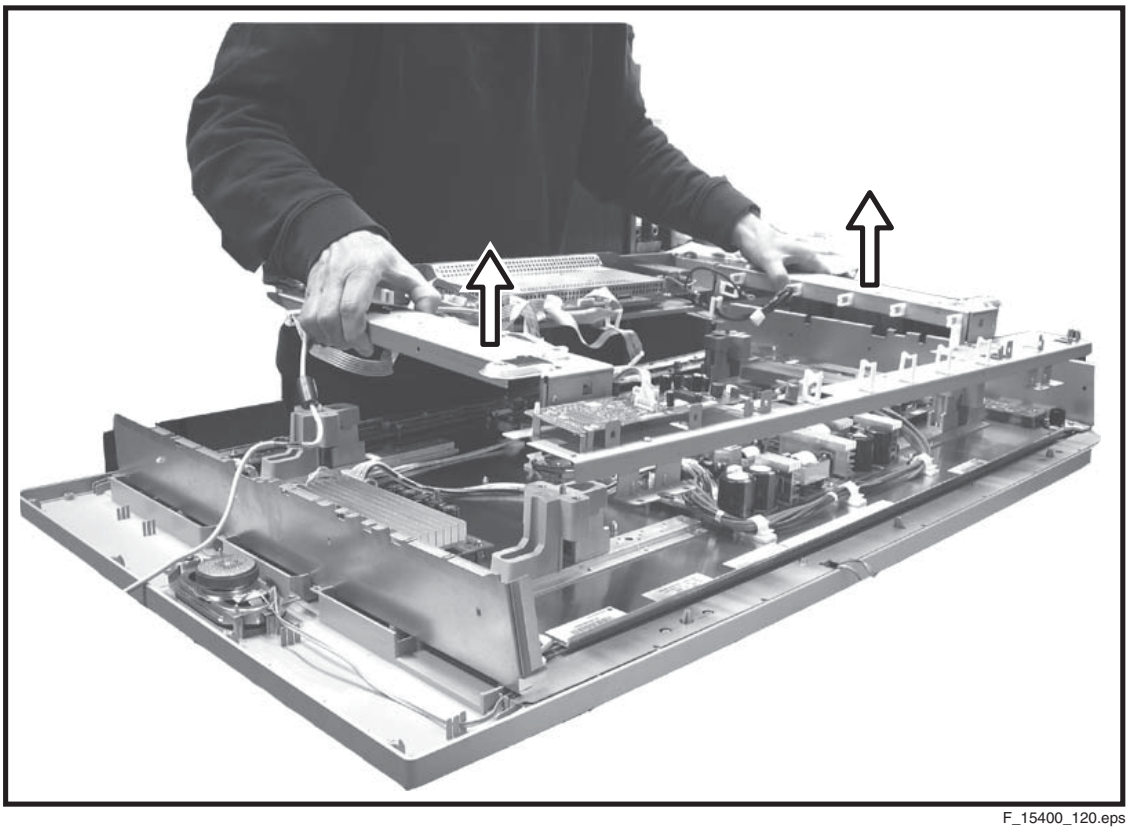

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Figure 4-11 Frame lift (photo from LC4.9 chassis)

4.3.12 PDP Glass Plate

In order to remove/exchange the PDP glass plate:
1. Remove the PDP as described earlier.
2. Remove the T10 screws [1] from the mounting frame.
3. After removal of the frame, you can lift the glass plate from the set.

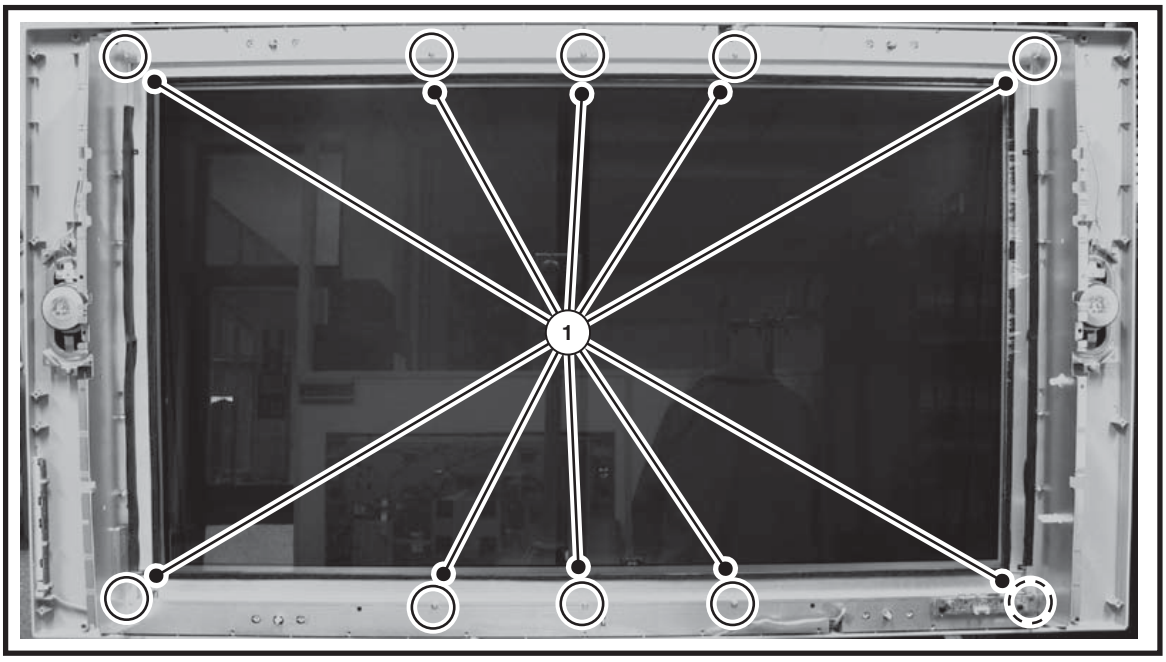

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Figure 4-12 Glass plate removal (photo from LC4.9 chassis)

4.4 Set Re-assembly

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

Notes:
- While re-assembling, make sure that all cables are placed and connected in their original position. See figure "Cable dressing".
- 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 Test Points

The chassis is equipped with test points (Fxxx) printed on the circuit board assemblies. As most signals are digital, it will be almost impossible to measure waveforms with a standard oscilloscope. Therefore, waveforms are not given in this manual. Several key ICs are capable of generating test patterns, which can be controlled via ComPair. In this way it is possible to determine which part is defective.

Perform measurements under the following conditions:
- Service Default Mode.
- Video: Color bar signal.
- Audio: 3 kHz left, 1 kHz right.

5.2 Service Modes

Service Default Mode (SDM) and Service Alignment Mode (SAM) offer several features for the service technician, while the Customer Service Mode (CSM) is used for communication between a Customer Helpdesk and a customer.

There is also the option of using ComPair, a hardware interface between a computer (see requirements below) and the TV chassis. It offers the ability of structured troubleshooting, test pattern generation, error code reading, software version readout, and software upgrading.

Minimum requirements for ComPair: a Pentium processor, Windows 95/98, and a CD-ROM drive (see also paragraph “ComPair”).

5.2.1 Service Default Mode (SDM)

Purpose
- To create a pre-defined setting, to get the same measurement results as given in this manual.
- To override SW protections (only applicable for protections detected by stand-by processor) and make the TV start up to the step just before protection (a sort of automatic stepwise start up). See paragraph “Stepwise Start Up”.
- To start the blinking LED procedure (not valid in protection mode).

Specifications

Table 5-1 SDM default settings

Region	Freq. (MHz)	Default system
Europe, AP-PAL/Multi	475.25	PAL B/G
NAFTA, AP-NTSC, LATAM	61.25 (ch. 3)	NTSC M

- Tuning frequency 61.25 MHz for NTSC: The TV shall tune to physical channel 3 only if channel 3 is an analog channel or if there is no channel 3 installed in the channel map. If there is a digital channel installed in channel 3, then the frequency to which the set will tune, would be as specified in the channel map and could be different from the one corresponding to the physical channel 3.
- All picture settings at 50% (brightness, color, contrast).
- All sound settings at 50%, except volume at 25%.
- All service-unfriendly modes (if present) are disabled, like:
  - (Sleep) timer.
  - Child/parental lock.
  - Picture mute (blue mute or black mute).
  - Automatic volume levelling (AVL).
  - Auto switch "off" (when no video signal was received for 10 minutes).
  - Skip/blank of non-favorite pre-sets.
  - Smart modes.
  - Auto store of personal presets.
  - Auto user menu time-out.

How to Activate SDM
Use one of the following methods:
- Use the standard RC-transmitter and key in the code “062596”, directly followed by the “MENU” button.
  Note: It is possible that, together with the SDM, the main menu will appear. To switch it "off", push the “MENU” button again.
- Short for a moment the two solder pads [1] on the SSB, with the indication “SDM”. They are located outside the shielding. Activation can be performed in all modes, except when the set has a problem with the Stand-by Processor. See figure “SDM service pads”.

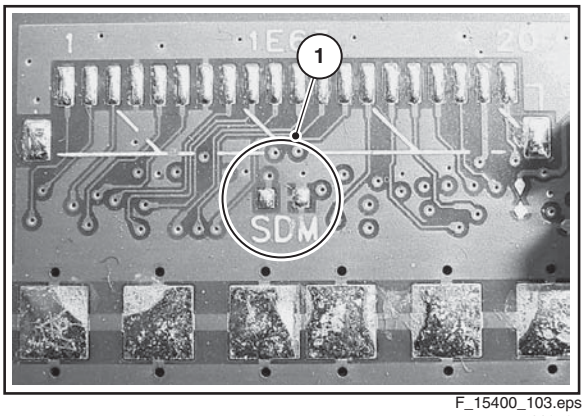

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Figure 5-1 SDM service pads

After activating this mode, “SDM” will appear in the upper right corner of the screen (if you have picture).

How to Navigate
When you press the “MENU” button on the RC transmitter, the set will toggle between the SDM and the normal user menu (with the SDM mode still active in the background).

How to Exit SDM
Use one of the following methods:
- Switch the set to STAND-BY via the RC-transmitter.
- Via a standard customer RC-transmitter: key in “00”-sequence.

5.2.2 Service Alignment Mode (SAM)

Purpose
- To perform (software) alignments.
- To change option settings.
- To easily identify the used software version.
- To view operation hours.

- To display (or clear) the error code buffer.

How to Activate SAM

Via a standard RC transmitter: key in the code "062596" directly followed by the "INFO" button. After activating SAM with this method a service warning will appear on the screen, you can continue by pressing the red button on the RC.

Contents of SAM:

- **Hardware Info.**
  - **A. VIPER SW Version.** Displays the software version of the VIPER software (main software) (**example:** BX23U-1.2.3.4_12345 = AAAAB_X.Y.W.Z_NNNNN).
    - **AAAA**= the chassis name.
    - **B**= the region: A= AP, E= EU, L= Latam, U = US.
    - **X.Y.W.Z**= the software version, where X is the main version number (different numbers are not compatible with one another) and Y is the sub version number (a higher number is always compatible with a lower number). The last two digits are used for development reasons only, so they will always be zero in official releases.
    - **NNNNN**= last five digits of 12nc code of the software.
  - **B. SBY PROC Version.** Displays the software version of the stand-by processor.
  - **C. Production Code**. Displays the production code of the TV, this is the serial number as printed on the back of the TV set. Note that if an NVM is replaced or is initialized after corruption, this production code has to be re-written to NVM. ComPair will foresee in a possibility to do this.
- **Operation Hours.** Displays the accumulated total of operation hours (not the stand-by hours). Every time the TV is switched "on/off", 0.5 hours is added to this number.
- **Errors.** (Followed by maximal 10 errors). The most recent error is displayed at the upper left (for an error explanation see paragraph "Error Codes").
- **Defective Module.** Here the module that generates the error is displayed. If there are multiple errors in the buffer, which are not all generated by a single module, there is probably another defect. It will then display the message "UNKNOWN" here.
- **Reset Error Buffer.** When you press "cursor right" and then the "OK" button, the error buffer is reset.
- **Alignments.** This will activate the "ALIGNMENTS" sub-menu.
- **Dealer Options.** Extra features for the dealers.
- **Options.** Extra features for Service.
- **Initialise NVM.** When an NVM was corrupted (or replaced) in the former EMG based chassis, the microprocessor replaces the content with default data (to assure that the set can operate). However, all preferences and alignment values are gone now, and option numbers are not correct. Therefore, this was a very drastic way. In this chassis, the procedure is implemented in another way: The moment the processor recognizes a corrupted NVM, the "initialize NVM" line will be highlighted. Now, you can do two things (dependent of the service instructions at that moment):
  - Save the content of the NVM via ComPair for development analysis, **before** initializing. This will give the Service department an extra possibility for diagnosis (e.g. when Development asks for this).
  - Initialize the NVM (same as in the past, however now it happens conscious).

Note: When you have a corrupted NVM, or you have replaced the NVM, there is a high possibility that you will not have picture any more because your display option is not correct. So, before you can initialize your NVM via the SAM, you need to have a picture and therefore you need the correct display option. To adapt this option, use ComPair. The correct HEX values for the options can be found in the table below.

Table 5-2 Display option code overview

Display Option	HEX	Display Type	Size	Vertical Resolution
000	00	PDP SDI HD V3	42"	768p
001	01	PDP SDI HD V3	50"	768p
002	02	PDP FHP ALIS 1024i	42"	1024i
003	03	LPL	30"	768p
004	04	LPL:	37"	768p
005	05	LPL	42"	768p
006	06	SHARP	32"	768p
007	07	PDP SDI SD V3	42"	480p
008	08	PDP FHP ALIS 1024i	37"	1024i
009	09	LCOS XION	-	720p
010	0A	LCD AUO	30"	768p
011	0B	LCD LPL	32"	768p
012	0C	LCD AUO	32"	768p
013	0D	LCD SHARP	37"	768p
014	0E	LCD LPL HD	42"	1080p
015	0F	PDP SDI SD	37"	480p
016	10	PDP FHP ALIS 1080i	37"	1080i
017	11	PDP FHP ALIS 580i	42"	1080i
018	12	PDP FHP	55"	768p
019	13	LCOS VENUS	-	720p
020	14	LCOS VENUS	-	1080p
021	15	LCD LPL	26"	768p
022	16	LCD LPL scanning BL.	32"	768p
023	17	LG SD	42"	480p
024	18	PDP SDI SD V4	42"	480p
025	19	PDP SDI HD V4	42"	768p
026	1A	PDP FHP HD A2	42"	1024i
027	1B	PDP SDI HD V4	50"	768p
028	1C	LCD Sharp full HD	37"	1080p

- **Store.** All options and alignments are stored when pressing "cursor right" and then the "OK"-button
- **SW Maintenance.**
  - **SW Events.** Not useful for service purposes. In case of specific software problems, the development department can ask for this info.
  - **HW Events.** Not functional at the moment this manual is released, description will be published in an update manual if the function becomes available.

How to Navigate

- In SAM, you can select the menu items with the "CURSOR UP/DOWN" key on the RC-transmitter. The selected item will be highlighted. When not all menu items fit on the screen, move the "CURSOR UP/DOWN" key to display the next/previous menu items.
- With the "CURSOR LEFT/RIGHT" keys, it is possible to:
  - (De) activate the selected menu item.
  - (De) activate the selected submenu.

How to Exit SAM

Use one of the following methods:

- Press the "MENU" button on the RC-transmitter.
- Switch the set to STAND-BY via the RC-transmitter.

Note: As long as SAM is activated, it is not possible to change a channel. This could hamper the White Point alignments because you cannot choose your channel/frequency any more. Workaround: after you have sent the RC code "062596 INFO" you will see the service-warning screen, and in this stage it is still possible to change the channel (so before pressing the "OK" button).

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer or the Customer Helpdesk. The service technician can then ask the customer to activate the CSM, in order to identify the status of the set. Now, the service technician can judge the severity of the complaint. In many cases, he can advise the customer how to solve the problem, or he can decide if it is necessary to visit the customer.
The CSM is a read only mode; therefore, modifications in this mode are not possible.

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!

How to Navigate

By means of the “CURSOR-DOWN/UP” knob on the RC-transmitter, you can navigate through the menus.

Contents of CSM

- **SW Version (example:** BX23U-1.2.3.4_12345**).** Displays the built-in main software version. In case of field problems related to software, software can be upgraded. As this software is consumer upgradeable, it will also be published on the Internet.
- **SBY Processor Version.** Displays the built-in stand-by processor software version. Upgrading this software will be possible via a PC and a ComPair interface (see chapter Software upgrade).
- **Set Type.** This information is very helpful for a helpdesk/ workshop as reference for further diagnosis. In this way, it is not necessary for the customer to look at the rear of the TV-set. Note that if an NVM is replaced or is initialized after corruption, this set type has to be re-written to NVM. ComPair will foresee a possibility to do this.
- **Production Code.** Displays the production code (the serial number) of the TV. Note that if an NVM is replaced or is initialized after corruption, this production code has to be re-written to NVM. ComPair will foresee a possibility to do this.
- **Code 1.** Gives the latest five errors of the error buffer. As soon as the built-in diagnose software has detected an error the buffer is adapted. The last occurred error is displayed on the leftmost position. Each error code is displayed as a 2-digit number. When less than 10 errors occur, the rest of the buffer is empty (00). See also paragraph Error Codes for a description.
- **Code 2.** Gives the first five errors of the error buffer. See also paragraph Error Codes for a description.
- **Headphone Volume.** Gives the last status of the headphone volume, as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Change via”MENU”, “TV”, “SOUND”, “HEADPHONE VOLUME”.
- **Dolby.** Indicates whether the received transmitter transmits Dolby sound (“ON”) or not (“OFF”). Attention: The presence of Dolby can only be tested by the software on the Dolby Signaling bit. If a Dolby transmission is received without a Dolby Signaling bit, this indicator will show “OFF” even though a Dolby transmission is received.
- **Sound Mode.** Indicates the by the customer selected sound mode (or automatically chosen mode). Possible values are “STEREO” and “VIRTUAL DOLBY SURROUND”. Change via “MENU”, “TV”, “SOUND”, “SOUND MODE”. It can also have been selected automatically by signaling bits (internal software).
- **Tuner Frequency.** Not applicable for US sets.
- **Digital Processing.** Indicates the selected digital mode. Possible values are “STANDARD” and “PIXEL PLUS”. Change via “MENU”, “TV”, “PICTURE”, “DIGITAL PROCESSING”.
- **TV System.** Gives information about the video system of the selected transmitter.
  - M: NTSC M signal received
  - ATSC: ATSC signal received
- **Center Mode.** Not applicable.
- **DNR.** Gives the selected DNR setting (Dynamic Noise Reduction), “OFF”, “MINIMUM”, “MEDIUM”, or “MAXIMUM”. Change via “MENU”, “TV”, “PICTURE”, “DNR”
- **Noise Figure.** Gives the noise ratio for the selected transmitter. This value can vary from 0 (good signal) to 127 (average signal) and to 255 (bad signal). For some software versions, the noise figure will only be valid when “Active Control” is set to “medium” or “maximum” before activating CSM.
- **Source.** Indicates which source is used and the video/ audio signal quality of the selected source. (Example: Tuner, Video/NICAM) Source: “TUNER”, “AV1”, “AV2”, “AV3”, “HDMI 1”, “SIDE”. Video signal quality: “VIDEO”, “S-VIDEO”, “RGB 1FH”, “YPBPR 1FH 480P”, “YPBPR 1FH 576P”, “YPBPR 1FH 1080I”, “YPBPR 2FH 480P”, “YPBPR 2FH 576P”, “YPBPR 2FH 1080I”, “RGB 2FH 480P”, “RGB 2FH 576P” or “RGB 2FH 1080I”. Audio signal quality: “STEREO”, “SPDIF 1”, “SPDIF 2”, or “SPDIF”.
- **Audio System.** Gives information about the audible audio system. Possible values are “Stereo”, ”Mono”, “Mono selected”, “Analog In: No Dig. Audio”, “Dolby Digital 1+1”, “Dolby Digital 1/0”, “Dolby Digital 2/0”, “Dolby Digital 2/1”, “Dolby Digital 2/2”, “Dolby Digital 3/0”, “Dolby Digital 3/1”, “Dolby Digital 3/2”, “Dolby Digital Dual I”, “Dolby Digital Dual II”, “MPEG 1+1”, “MPEG 1/0”, “MPEG 2/0”. This is the same info as you will see when pressing the “INFO” button in normal user mode (item “signal”). In case of ATSC receiving there will be no info displayed.
- **Tuned Bit.** Not applicable for US sets.
- **Preset Lock.** Indicates if the selected preset has a child lock: “LOCKED” or “UNLOCKED”. Change via “MENU”, “TV”, “CHANNELS”, “CHANNEL LOCK”.
- **Lock After.** Indicates at what time the channel lock is set: “OFF” or e.g. “18:45” (lock time). Change “MENU”, “TV”, “CHANNELS”, “LOCK AFTER”.
- **TV Ratings Lock.** Indicates the “TV ratings lock” as set by the customer. Change via “MENU”, “TV”, “CHANNELS”, “TV RATINGS LOCK”. Possible values are: “ALL”, “NONE”, “TV-Y”, “TV-Y7”, “TV-G”, “TV-PG”, “TV-14” and “TV-MA”.
- **Movie Ratings Lock.** Indicates the “Movie ratings lock” as set by the customer. Change via “MENU”, “TV”, “CHANNELS”, “MOVIE RATINGS LOCK”. Possible values are: “ALL”, “NR”, “G”, “PG”, “PG-13”, “R”, “NC-17” and “X”.
- **V-Chip Tv Status.** Indicates the setting of the V-chip as applied by the selected TV channel. Same values can be shown as for “TV RATINGS LOCK”.
- **V-Chip Movie Status.** Indicates the setting of the V-chip as applied by the selected TV channel. Same values can be shown as for “MOVIE RATINGS LOCK”.
- **Options 1.** Gives the option codes of option group 1 as set in SAM (Service Alignment Mode).
- **Options 2.** Gives the option codes of option group 2 as set in SAM (Service Alignment Mode).
- **AVL.** Indicates the last status of AVL (Automatic Volume Level): “ON” or “OFF”. Change via “MENU”, “TV”, “SOUND”, “AVL”. AVL can not be set in case of digital audio reception (e.g. Dolby Digital or AC3)
- **Delta Volume.** Indicates the last status of the delta volume for the selected preset as set by the customer: from “-12” to “+12”. Change via “MENU”, “TV”, “SOUND”, “DELTA VOLUME”.
- **HDMI key validity.** Indicates the security key’s validity.
- **IEEE key validity.** Indicates the security key’s validity.
- **POD key validity.** Indicates the security key’s validity.
- **Digital Signal Quality.** Indicates quality of the received digital signal (0= low).

How to Exit CSM
Press any key on the RC-transmitter (with exception of the "CHANNEL +/-", "VOLUME", "MUTE" and digit (0-9) keys).

5.3 Stepwise Start-up

The stepwise start-up method, as known from FTL/FTP sets is not valid any more. The situation for this chassis is as follows: when the TV is in a protection state detected via the Stand-by Processor (and thus blinking an error) **and** SDM is activated via shortcutting the pins on the SSB, the TV starts up until it reaches the situation just before protection. So, this is a kind of automatic stepwise start-up. In combination with the start-up diagrams below, you can see which supplies are present at a certain moment.
Important to know here is, that if e.g. the 3V3 detection fails (and thus error 11 is blinking) **and** the TV is restarted via SDM, the Stand-by Processor will enable the 3V3, but will not go to protection now. The TV will stay in this situation until it is reset (Mains/AC Power supply interrupted).

The abbreviations "SP" and "MP" in the figures stand for:
- SP: protection or error detected by the **S**tand-by **P**rocessor.
- MP: protection or error detected by the VIPER **M**ain **P**rocessor.

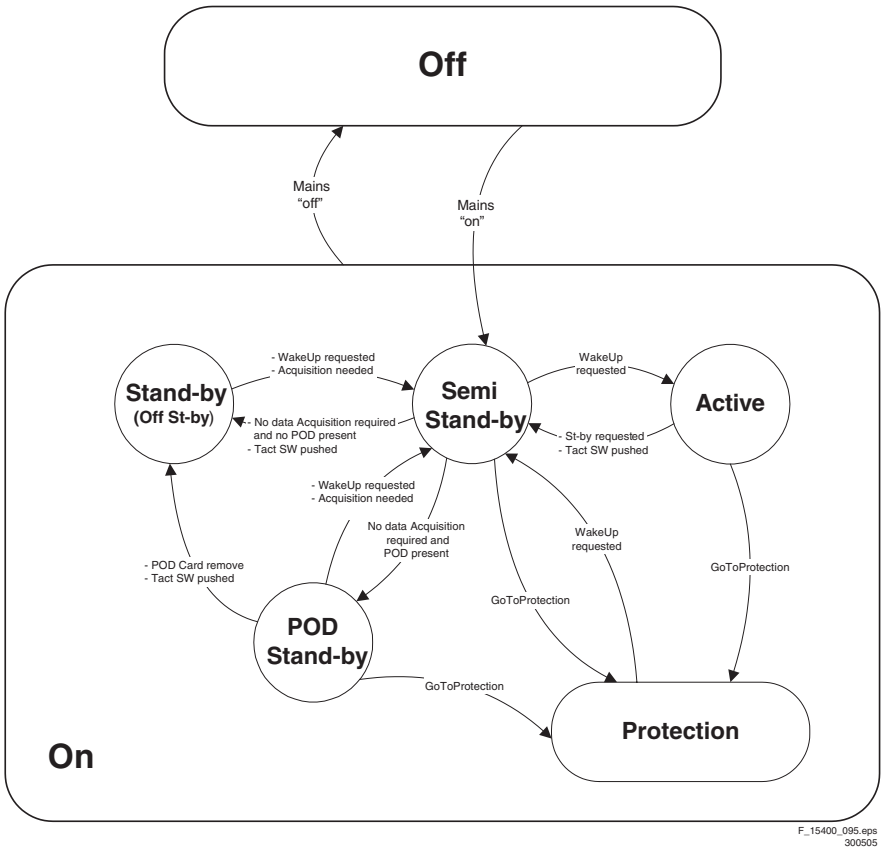


Figure 5-2 Transition diagram

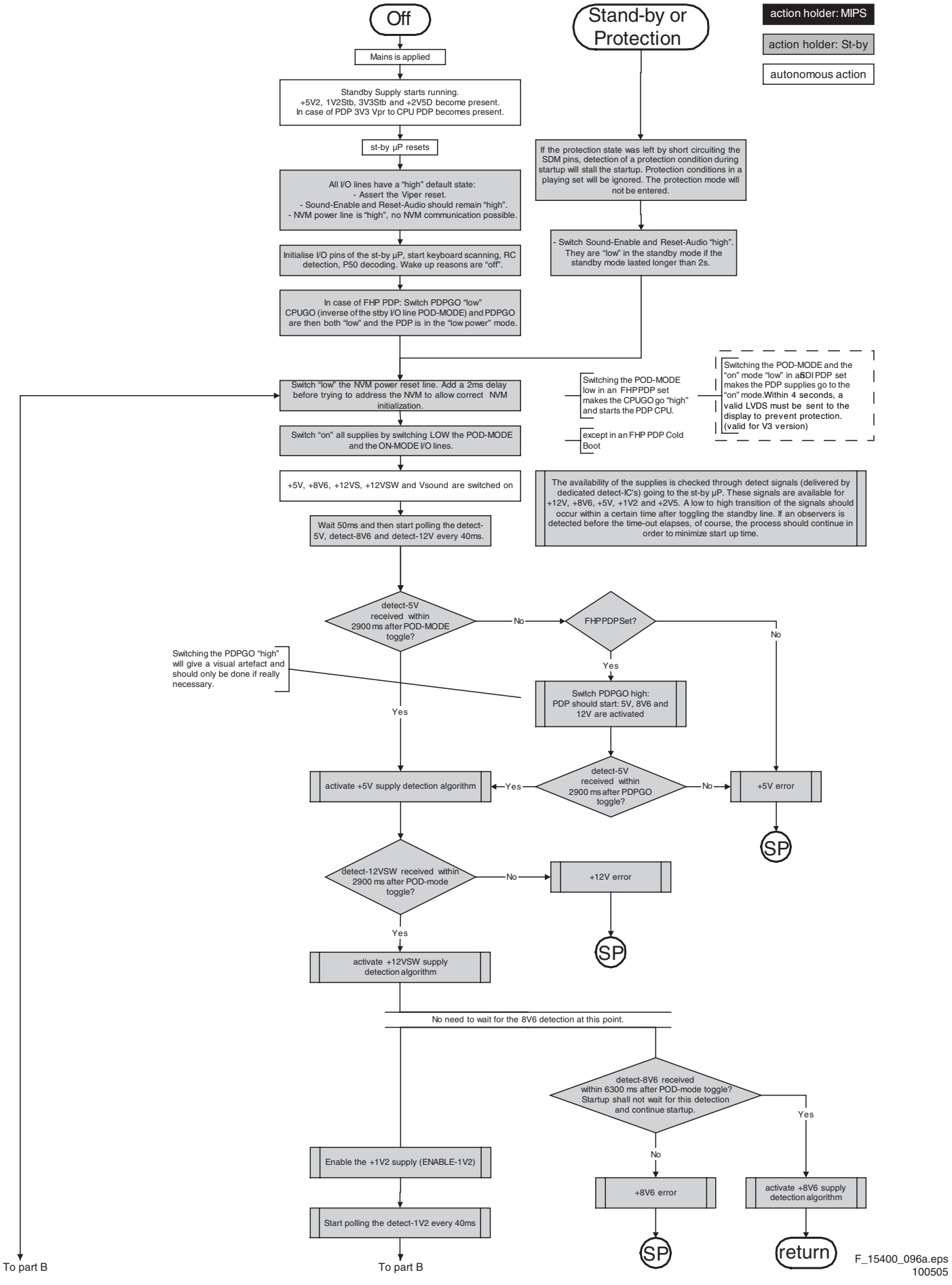


Figure 5-3 "Off" to "Semi Stand-by" flowchart (part 1)

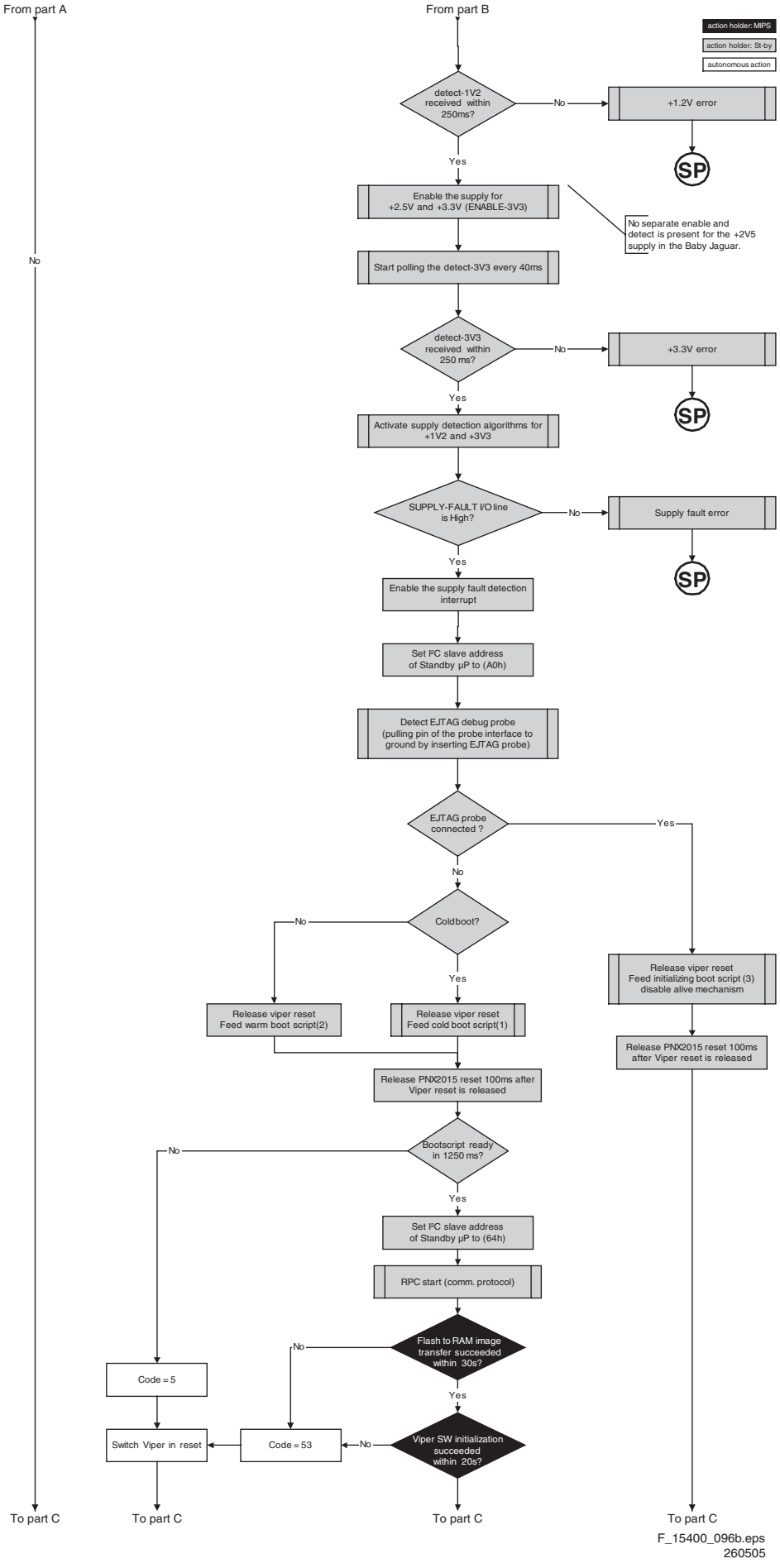


Figure 5-4 “Off” to “Semi Stand-by” flowchart (part 2)

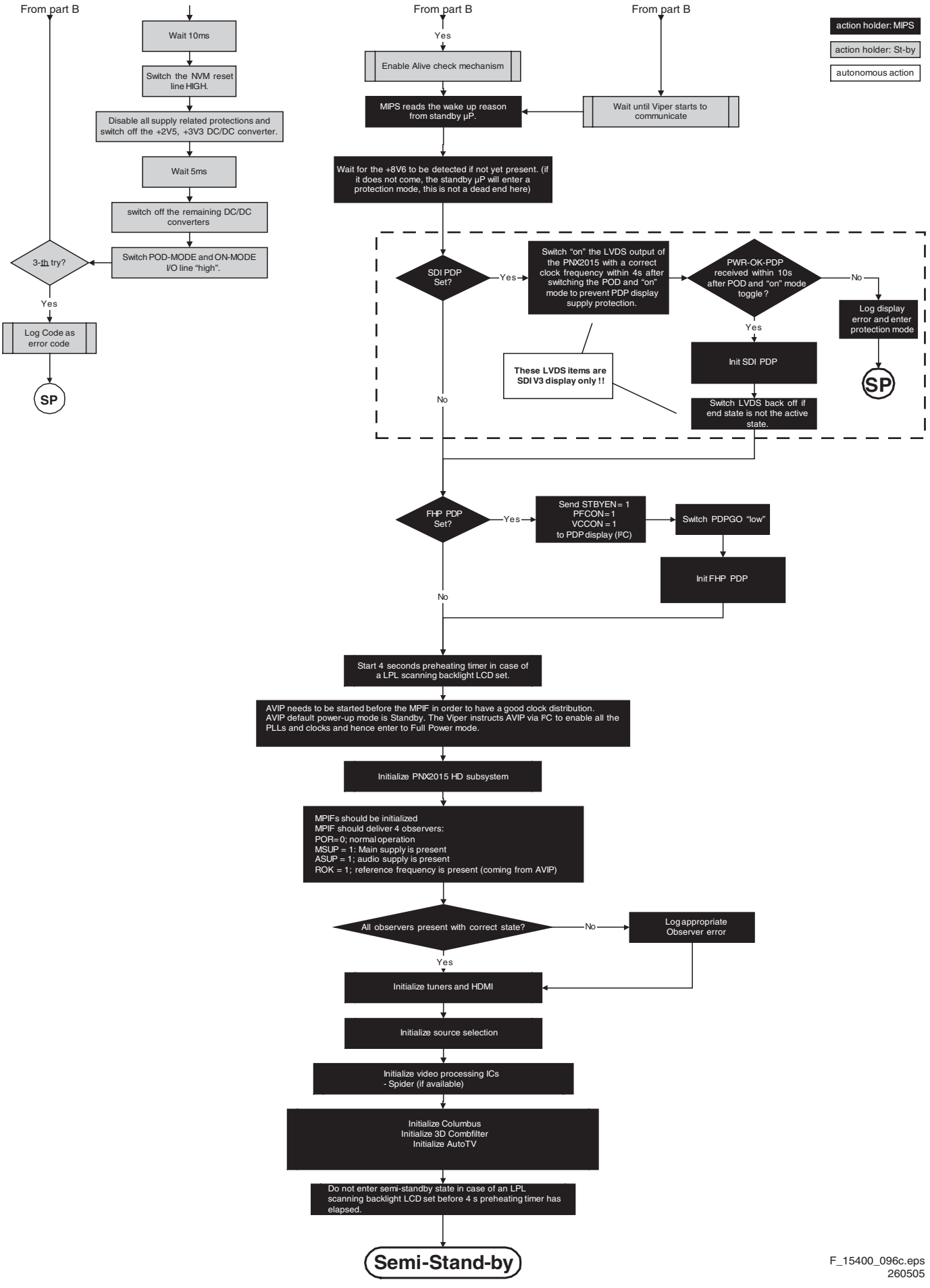


Figure 5-5 "Off" to "Semi Stand-by" flowchart (part 3)

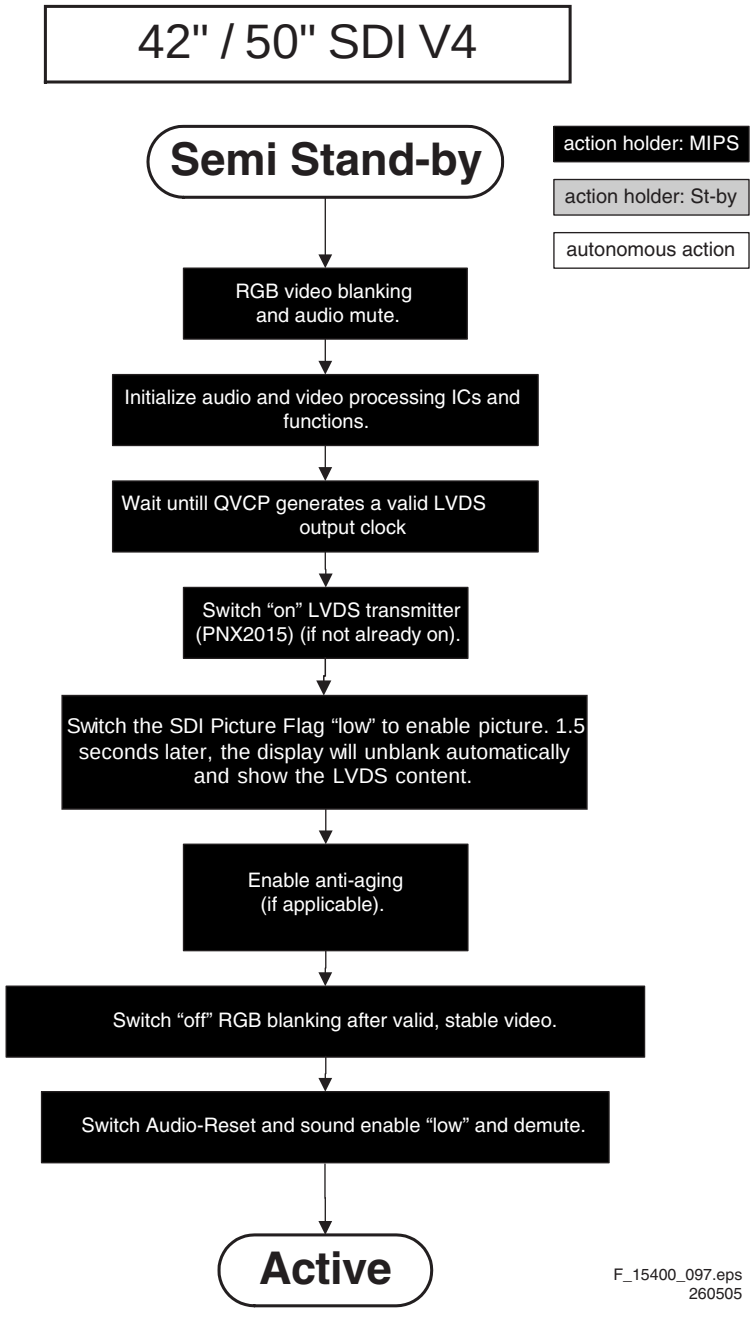


Figure 5-6 "Semi Stand-by" to "Active" flowchart

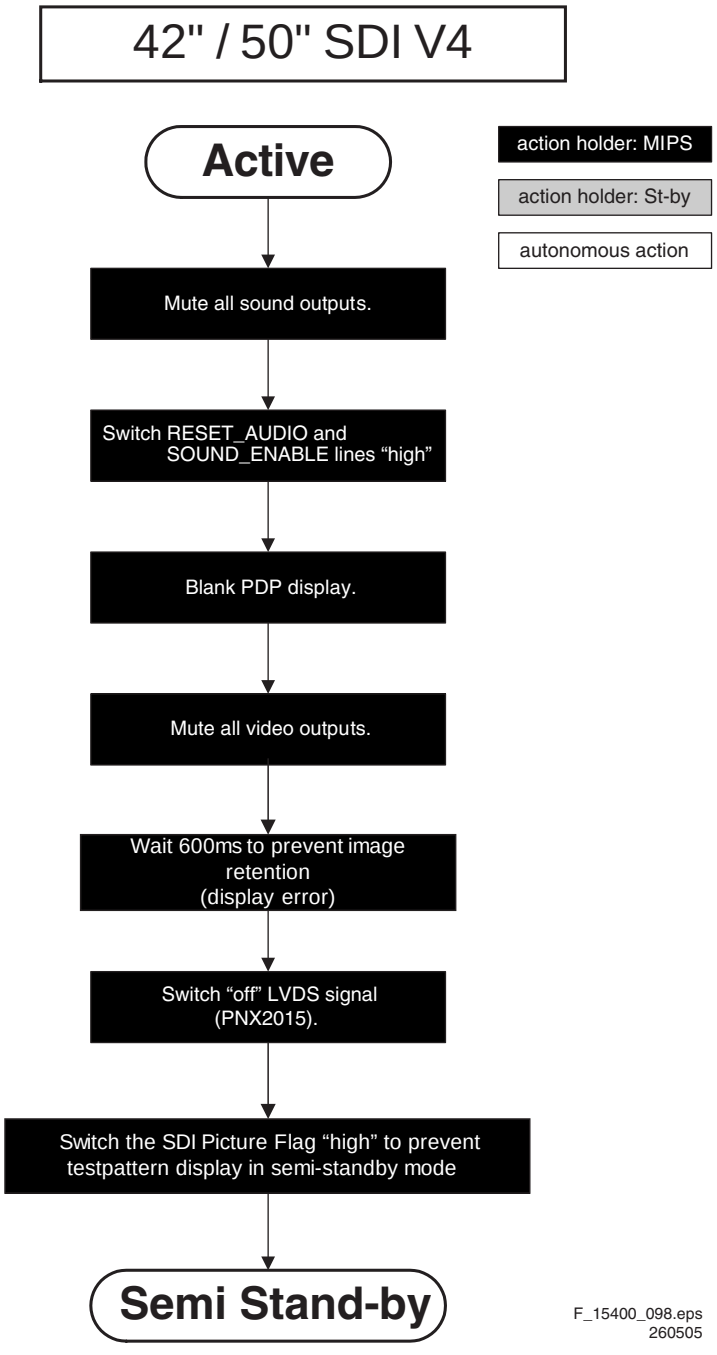


Figure 5-7 “Active” to “Semi Stand-by” flowchart

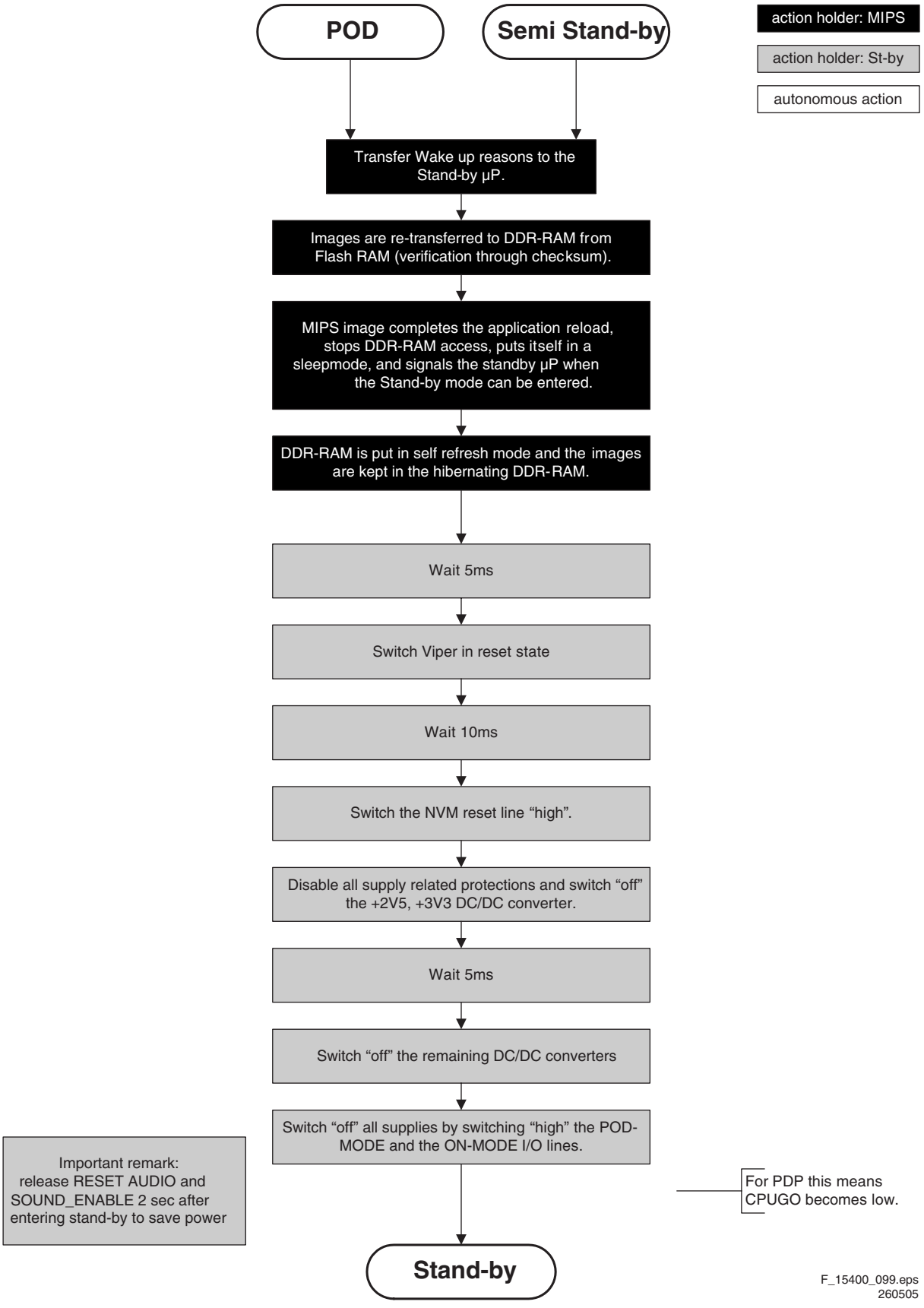


Figure 5-8 “Semi Stand-by” / ”POD” to “Stand-by” flowchart

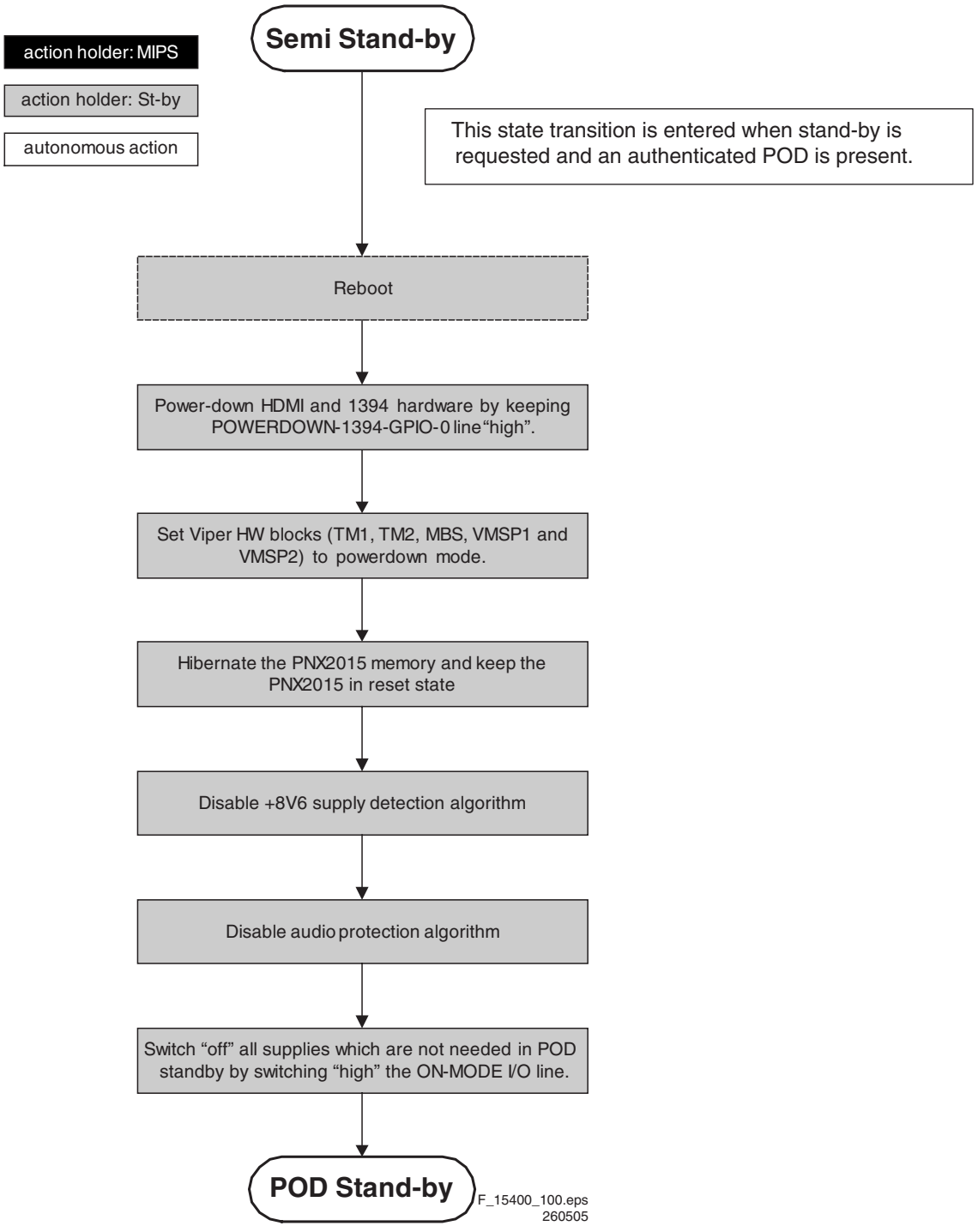


Figure 5-9 "Semi Stand-by" to "POD Stand-by" flowchart

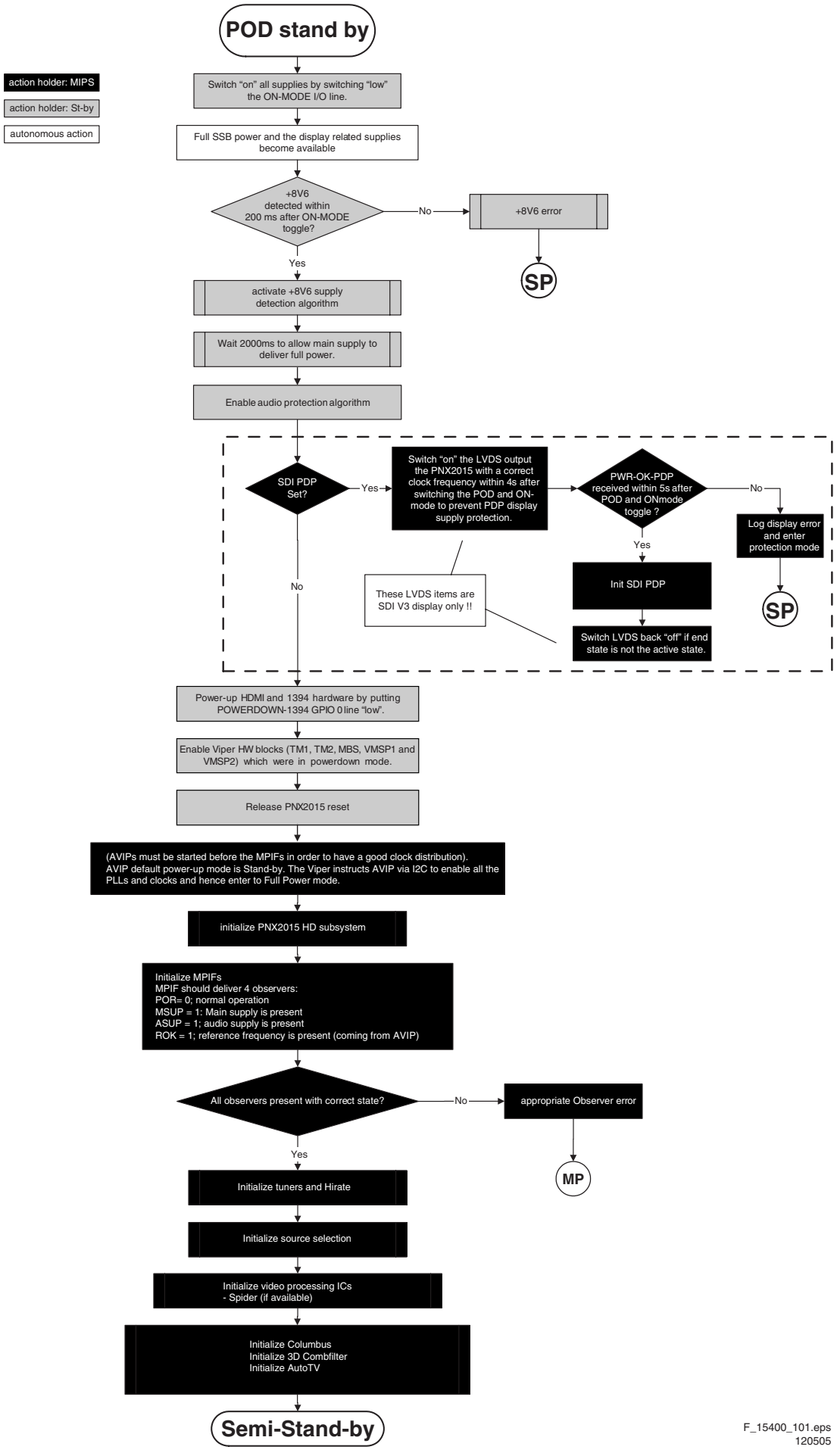


Figure 5-10 "POD Stand-by" to "Semi Stand-by" flowchart

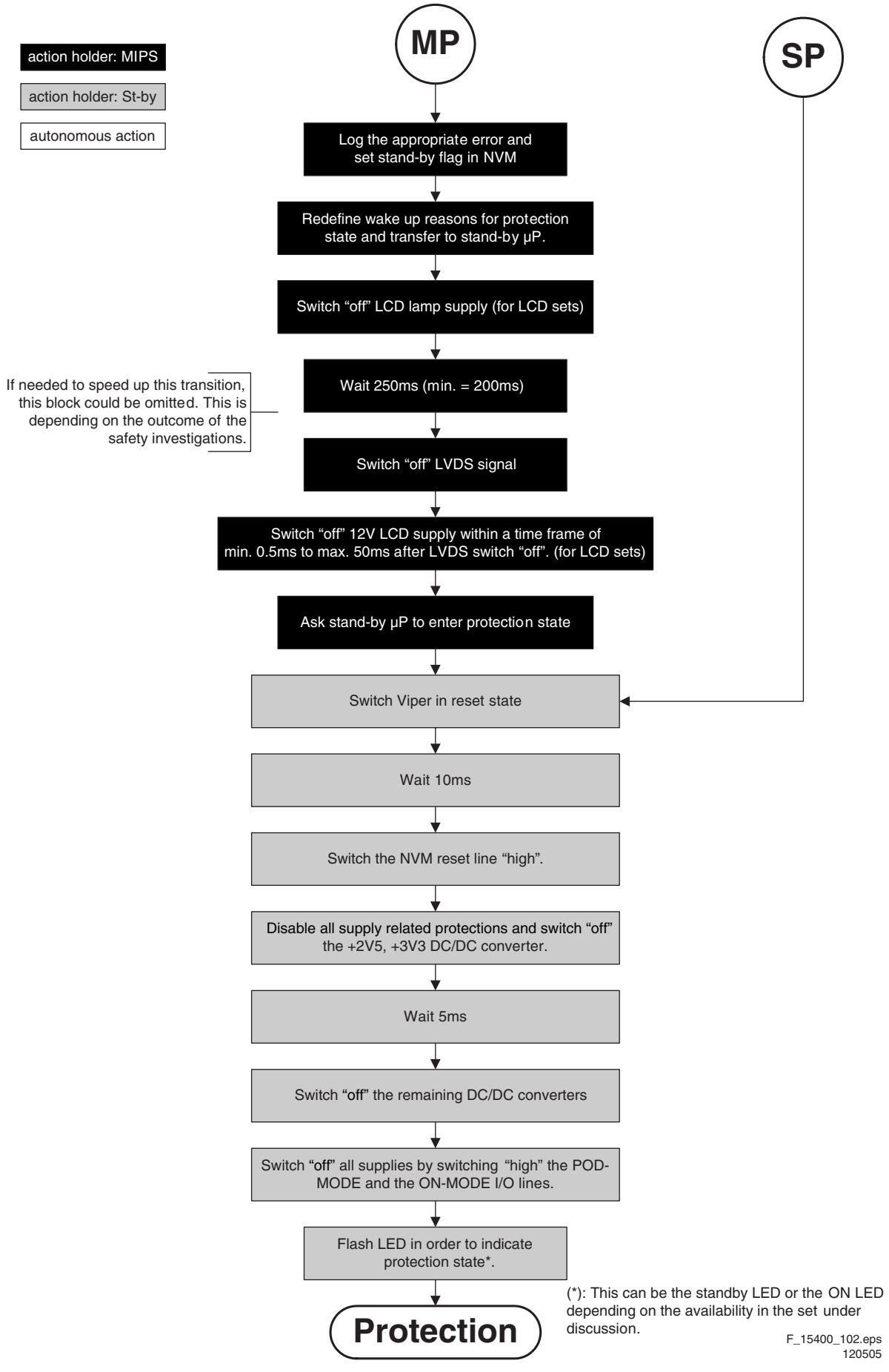


Figure 5-11 "Protection" flowchart

5.4 ComPair

5.4.1 Introduction

ComPair (Computer Aided Repair) is a service tool for Philips Consumer Electronics products. ComPair is a further development on the European DST (service remote control), which allows faster and more accurate diagnostics. ComPair has three big advantages:

- ComPair helps you to quickly get an understanding on how to repair the chassis in a short time by guiding you systematically through the repair procedures.
- ComPair allows very detailed diagnostics (on I^2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I^2C commands yourself because ComPair takes care of this.
- ComPair speeds up the repair time since it can automatically communicate with the chassis (when the microprocessor is working) and all repair information is directly available. When ComPair is installed together with the Force/SearchMan electronic manual of the defective chassis, schematics and PWBs are only a mouse click away.

5.4.2 Specifications

ComPair consists of a Windows based fault finding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial (or RS-232) cable.
For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector(s).

The ComPair fault finding program is able to determine the problem of the defective television. ComPair can gather diagnostic information in two ways:

- Automatic (by communication with the television): ComPair can automatically read out the contents of the entire error buffer. Diagnosis is done on I^2C/UART level. ComPair can access the I^2C/UART bus of the television. ComPair can send and receive I^2C/UART commands to the micro controller of the television. In this way, it is possible for ComPair to communicate (read and write) to devices on the I^2C/UART buses of the TV-set.
- Manually (by asking questions to you): Automatic diagnosis is only possible if the micro controller of the television is working correctly and only to a certain extend. When this is not the case, ComPair will guide you through the fault finding tree by asking you questions (e.g. *Does the screen give a picture? Click on the correct answer: YES / NO*) and showing you examples (e.g. *Measure test-point I7 and click on the correct oscillogram you see on the oscilloscope*). You can answer by clicking on a link (e.g. text or a waveform picture) that will bring you to the next step in the fault finding process.

By a combination of automatic diagnostics and an interactive question / answer procedure, ComPair will enable you to find most problems in a fast and effective way.

5.4.3 How to Connect

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

Caution: It is compulsory to connect the TV to the PC as shown in the picture below (with the ComPair interface in between), as the ComPair interface acts as a level shifter. If you connect the TV directly to the PC (via UART), the VIPER or PNX2015 will be blown!

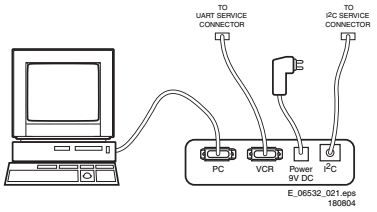


Figure 5-12 ComPair interface connection

5.4.4 How to Order

ComPair order codes (US):

- ComPair Software: ST4191.
- ComPair Interface Box: 4822 727 21631.
- AC Adapter: T405-ND.
- ComPair Quick Start Guide: ST4190.
- ComPair interface extension cable: 3139 131 03791.
- ComPair UART interface cable: 3122 785 90630

Note: If you encounter any problems, contact your local support desk.

5.5 Error Codes

5.5.1 Introduction

The error code buffer contains all detected errors since the last time the buffer was erased. The buffer is written from left to right, new errors are logged at the left side, and all other errors shift one position to the right.
When an error has occurred, the error is added to the list of errors, provided the list is not full or the error is a protection error.
When an error occurs and the error buffer is full, then the new error is not added, and the error buffer stays intact (history is maintained), except when the error is a protection error.
To prevent that an occasional error stays in the list forever, the error is removed from the list after 50+ operation hours.
When multiple errors occur (errors occurred within a short time span), there is a high probability that there is some relation between them.

Basically there are three kinds of errors:

- **Errors detected by the Stand-by Processor.** These errors will always lead to protection and an automatic start of the blinking LED for the concerned error (see paragraph “The Blinking LED Procedure”). In these cases SDM can be used to start up (see chapter “Stepwise Start-up”).
- **Errors detected by VIPER that lead to protection.** In this case the TV will go to protection and the front LED will blink at 3 Hz. Further diagnosis via service modes is not possible here (see also paragraph “Error Codes” -> “Error Buffer” -> “Extra Info”).
- **Errors detected by VIPER that do not lead to protection.** In this case the error can be read out via ComPair, via blinking LED method, or in case you have picture, via SAM.

5.5.2 How to Read the Error Buffer

Use one of the following methods:

- On screen via the SAM (only if you have a picture). E.g.:
  - **00 00 00 00 00**: No errors detected
  - **06 00 00 00 00**: Error code 6 is the last and only detected error
  - **09 06 00 00 00**: Error code 6 was first detected and error code 9 is the last detected error
- Via the blinking LED procedure (when you have no picture). See next paragraph.
- Via ComPair.

5.5.3 How to Clear the Error Buffer

Use one of the following methods:
- By activation of the “RESET ERROR BUFFER” command in the SAM menu.
- With a normal RC, key in sequence “MUTE” followed by “062599” and “OK”.
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

5.5.4 Error Buffer

In case of non-intermittent faults, clear the error buffer before you begin the repair (**before** clearing the buffer, write down the content, as this history can give you significant information). This to ensure that old error codes are no longer present.
If possible, check the entire contents of the error buffer. In some situations, an error code is only the result of another error code and not the actual cause (e.g., a fault in the protection detection circuitry can also lead to a protection).
There are several mechanisms of error detection:
- Via error bits in the status registers of ICs.
- Via polling on I/O pins going to the stand-by processor.
- Via sensing of analogue values on the stand-by processor.
- Via a “not acknowledge” of an I^2C communication

Take notice that some errors need more than 90 seconds before they start blinking. So in case of problems wait 2 minutes from start-up onwards, and then check if the front LED is blinking.

Table 5-3 Error code overview

Error	Description	Error/Prot	Detected by	Device	Defective module	Result
1	I^2C1	P	VIPER	n.a.	I^2C1_blocked	Protection + 3 Hz blinking
2	I^2C2	P	VIPER	n.a.	I^2C2_blocked	Protection + 3 Hz blinking
3	I^2C3	P	Stby µP	n.a.	/	Protection + Error blinking
4	I^2C4	P	VIPER	n.a.	I^2C4_blocked	Protection + 3 Hz blinking
5	VIPER does not boot	P	Stby µP	PNX8550	/	Protection + Error blinking
6	5V supply	P	Stby µP	n.a.	/	Protection + Error blinking
7	8V6 supply	P	Stby µP	n.a.	/	Protection + Error blinking
8	1.2V DC/DC	P	Stby µP	n.a.	/	Protection + Error blinking
11	3.3V DC/DC	P	Stby µP	n.a.	/	Protection + Error blinking
12	12V supply	P	Stby µP	n.a.	/	Protection + Error blinking
14	Supply Class D amplifiers	P	Stby µP		/	Protection + Error blinking
14	Supply Audio part SSB	P	Stby µP		/	Protection + Error blinking
17	MPIF1 audio supply	E	VIPER	PNX3000	IF I/O	Error logged
18	MPIF1 ref freq	E	VIPER	PNX3000	IF I/O	Error logged
25	Supply fault	P	Stby µP		/	Protection + Error blinking
27	Phoenix	E	VIPER	PNX2015B	HD subsystem	Error logged
28	MOP	E	VIPER	EP1C6	Output processor	Error logged
29	AVIP1	E	VIPER	PNX2015	AV input processor 1	Error logged
31	AVIP2	E	VIPER	PNX2015	AV input processor 2	Error logged
32	MPIF1	E	VIPER	PNX3000	/	Error logged
34	Tuner1	E	VIPER	/	Tuner 1	Error logged
37	Channel decoder	E	VIPER	NXT2003	/	Error logged
39	POD Interface	E	VIPER	STV701	/	Error logged
43	Hi Rate Front End	E	VIPER	TDA9975	HDMI	Error logged
44	Main NVM	E	VIPER	M24C64	/	Error logged
45	Columbus 1	E	VIPER	PNX2015	Comb filter	Error logged
53	VIPER	P	Stby µP	PNX8550	/	Protection + Error blinking
63	PDP Display	P	VIPER	/	Display	Protection + 3 Hz blinking

Extra Info

- **Error 1 (I²C bus 1 blocked).** When this error occurs, the TV will go to protection and the front LED will blink at 3 Hz. Now you can partially restart the TV via the SDM shortcut pins on the SSB. Depending on the software version it is possible that no further diagnose (error code read-out) is possible. With the knowledge that only errors 1, 2, 4, and 63 result in a 3 Hz blinking LED, the range of possible defects is limited.
- **Error 2 (I²C bus 2 blocked).** When this error occurs, the TV will go to protection and the front LED will blink at 3 Hz. Now you can partially restart the TV via the SDM shortcut pins on the SSB. Due to hardware restriction (I²C bus 2 is the fast I²C bus) it will be impossible to start up the VIPER and therefore it is also impossible to read out the error codes via ComPair or via the blinking LED method. With the knowledge that only errors 1, 2, 4, and 63 result in a 3 Hz blinking LED, the range of possible defects is limited. When you have restarted the TV via the SDM shortcut pins, and then pressed "CH+" on your remote control, the TV will go to protection again, and the front LED blink at 3 Hz again. This could be an indication that the problem is related to error 2.
- **Error 3 (I²C bus 3 blocked).** There are only three devices on I²C bus 3: VIPER, Stand-by Processor, and NVM. The Stand-by Processor is the detection device of this error, so this error will only occur if the VIPER or the NVM is blocking the bus. This error will also be logged when the NVM gives no acknowledge on the I²C bus (see error 44). Note that if the 12 V supply is missing (connector 1M46 on the SSB), the DC/DC supply on the SSB will not work. Therefore the VIPER will not get supplies and could block I²C bus 3. So, a missing 12 V can also lead to an error 3.
- **Error 4 (I²C bus 4 blocked).** Same remark as with error 1.
- **Error 5 (I²C bus 5 blocked).** This error will point to a severe hardware problem around the VIPER (supplies not OK, VIPER completely dead, I²C link between VIPER and Stand-by Processor broken, etc...).
- **Error 12 (12 V error).** Except a physical problem with the 12 V itself, it is also possible that there is something wrong with the Audio DC Protection: see paragraph "Hardware Protections" for this.
- **Error 14 (Audio supply).** This error combines two fault conditions:
  - First detection is done on the “on-board” audio supplies (SSB). The current through resistor 3A95 (schematic B3E) is measured. An over-current will lead to protection and error 14 blinking.
  - The second detection is done on the audio board itself. Here, the absence of one of the audio supplies is sensed, and will also lead to protection and error 14 blinked. For LCD sets this circuit can be found on schematic SA3, for PDP sets this can be found on schematic C.
- **Error 17 (MPIF audio supply).** This error indicates that the 8V-AUD is missing on pin 98 of the MPIF. The result of this missing supply will be that there is no sound on external sources (you will have sound from tuner).
- **Error 29 (AVIP1).** This error will probably generate extra errors. You will probably also see errors 32 (MPIF) and error 31 (AVIP 2). Error 29 and 31 will always be logged together due to the fact that both AVIPs are inside the PNX2015 and are on the same I²C bus. In this case start looking for the cause around AVIP (part of PNX2015).
- **Error 31 (AVIP2).** See info on error 29.
- **Error 34 (Tuner 1).** When this error is logged, it is not sure that there is something wrong with the tuner itself. It is also possible that there is something wrong with the communication between channel decoder and tuner. See schematic B2B.
- **Error 37 (Channel decoder).** This error will always log error 34 (tuner) extra. This is due to the fact that the tuner I²C bus is coming from the channel decoder.
- **Error 44 (NVM).** This error will never occur because it is masked by error 3 (I²C bus 3). The detection mechanism for error 3 checks on an I²C acknowledge of the NVM. If NVM gives no acknowledge, the stand-by software assumes that the bus is blocked, the TV goes to protection and error 3 will be blinking.
- **Error 53.** This error will indicate that the VIPER has started to function (by reading his boot script, if this would have failed, error 5 would blink) but initialization was never completed because of hardware peripheral problems (NAND flash, ...) or software initialization problems. Possible cause could be that there is no valid software loaded (try to upgrade to the latest main software version).
- **Error 63 (PDP display).** Same remark as with error 1.

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 detected by the stand-by processor. 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 9 6 0 0.
After activation of the SDM, the front LED will show:

1. 1 long blink of 750 ms (which is an indication of the decimal digit) followed by a pause of 1.5 s,
2. 2 short blinks of 250 ms followed by a pause of 3 s,
3. 9 short blinks followed by a pause of 3 s,
4. 6 short blinks followed by a pause of 3 s,
5. 1 long blink of 3 s to finish the sequence,
6. The sequence starts again.

5.6.2 How to Activate

Use one of the following methods:

- **Activate the SDM.** The blinking front LED will show the entire contents of the error buffer (this works in “normal operation” mode).
- **Transmit the commands “MUTE” - “062500” - “OK” with a normal RC.** The complete error buffer is shown. Take notice that it takes some seconds before the blinking LED starts.
- T**ransmit the commands “MUTE” - “06250x” - “OK” with a normal RC** (where “x” is a number between 1 and 5). When x= 1 the last detected error is shown, x= 2 the second last error, etc.... Take notice that it takes some seconds before the blinking LED starts.

5.7 Protections

5.7.1 Software Protections

Most of the protections and errors use either the stand-by microprocessor or the VIPER controller as detection device. Since in these cases, checking of observers, polling of ADCs, filtering of input values are all heavily software based, these protections are referred to as software protections.
There are several types of software related protections, solving a variety of fault conditions:

- **Protections related to supplies:** check of the 12V, +5V, +8V6, +1.2V, +2.5V and +3.3V.
- **Protections related to breakdown of the safety check mechanism.** E.g. since a lot of protection detections are done by means of the VIPER, failing of the VIPER communication will have to initiate a protection mode since safety cannot be guaranteed anymore.

Remark on the Supply Errors
The detection of a supply dip or supply loss during the normal playing of the set does not lead to a protection, but to a cold reboot of the set.

Protections during Start-up
During TV start-up, some voltages and IC observers are actively monitored to be able to optimize the start-up speed, and to assure good operation of all components. If these monitors do not respond in a defined way, this indicates a malfunction of the system and leads to a protection. As the observers are only used during start-up, they are described in the start-up flow in detail (see paragraph “Stepwise Start-up").

5.7.2 Hardware Protections

There is one hardware protection in this chassis: “Audio DC Protection”. This protection occurs when there is a DC voltage on the speakers. In that case the main supply is switched "off", but the stand-by supply is still working.
For the Samsung V4 PDP displays, all internal supplies, except the 5V2, are switched "off" and the LED on the display’s Main Supply blinks eleven times, which means there is an over-voltage protection.
In case of LCD supplies, the 12V supply will drop. This will be detected by the stand-by processor, which will start blinking the 12 V error (error 12).

Repair Tips

- If there is an audio DC protection (DC voltage on your speakers), you will probably see error 12 blink. To be sure there is an audio DC protection, disconnect the cable between the SSB and the Audio PWB and also the cable between the Main Supply and the Audio PWB. If the TV starts up, it is very likely that there is DC voltage on the speakers. Check, and replace if necessary, the audio amplifiers.
- It is also possible that you have an audio DC protection because of an interruption in one or both speakers (the DC voltage that is still on the circuit cannot disappear through the speakers).

5.8 Fault Finding and Repair Tips

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

5.8.1 MPIF

Important things to make the MPIF work:

- Supply.
- Clock signal from the AVIP.
- I^2C from the VIPER.

5.8.2 AVIP

Important things to make the AVIP work:

- Supplies.
- Clock signal from the VIPER.
- I^2C from the VIPER (error 29 and 31).

5.8.3 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/AC Power cord, presuming that the Stand-by Processor is operational.
- If the input voltage of the DC/DC converters is around 12 V (measured on the decoupling capacitors 2U17/2U25/ 2U45) and the ENABLE signals are "low" (active), then the output voltages should have their normal values.
- First, the Stand-by Processor activates the +1V2 supply (via ENABLE-1V2).
- Then, after this voltage becomes present and is detected OK (about 100 ms), the other two voltages (+2V5 and +3V3) will be activated (via ENABLE-3V3).
- The current consumption of controller IC 7U00 is around 20 mA (that means around 200 mV drop voltage across resistor 3U22).
- 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 stabilizer that, for example delivers 1.8V from +3V3 with its output overloaded, the +3V3 stays usually at its normal value even though the consumption from +3V3 increases significantly.
- The +2V5 supply voltage is obtained via a linear stabilizer made with discrete components that can deliver a lot of current. Therefore, in case +2V5 (or +2V5D) is short-circuited to GND, the +3V3 will not have the normal value but much less. The +2V5D voltage is available in standby mode via a low power linear stabilizer that can deliver up to 30 mA. In normal operation mode, the value of this supply voltage will be close to +2V5 (20 - 30 mV difference).
- The supply voltages +5V and +8V6 are available on connector 1M46; they are not protected by fuses. +12VSW is protected for over-currents by fuse 1U04.

Fault Finding

- **Symptom:** +1V2, +2V5, and +3V3 not present (even for a short while ~10ms).
  1. Check 12V availability (fuse 1U01, resistor 3U22, power MOS-FETs) and enable signal ENABLE-1V2 (active low).
  2. Check the voltage on pin 9 (1.5 V).
  3. Check for +1V2 output voltage short-circuit to GND that can generate pulsed over-currents 7-10 A through coil 5U03.
  4. Check the over-current detection circuit (2U12 or 3U97 interrupted).

- **Symptom:** +1V2 present for about 100 ms. Supplies +2V5 and +3V3 not rising.
  1. Check the ENABLE-3V3 signal (active "low").
  2. Check the voltage on pin 8 (1.5 V).

3. Check the under-voltage detection circuit (the voltage on collector of transistor 7U10-1 should be less than 0.8 V).
4. Check for output voltages short-circuits to GND (+3V3, +2V5 and +2V5D) that generate pulsed over-currents of 7-10 A through coil 5U00.
5. Check the over-current detection circuit (2U18 or 3U83 interrupted).

- **Symptom:** +1V2 OK, but +2V5 and +3V3 present for about 100 ms. **Cause:** The SUPPLY-FAULT line stays "low" even though the +3V3 and +1V2 is available. The Stand-by Processor is detecting that and switches all supply voltages "off".
  1. Check the value of +2V5 and the drop voltage across resistor 3U22 (they could be too high)
  2. Check if the +1V2 or +3V3 are higher than their normal values. This can be due to defective DC feedback of the respective DC/DC converter (3U18 or 3UA7).

- **Symptom:** +1V2, +2V5, and +3V3 look okay, except the ripple voltage is increased (audible noise can come from the filtering coils 5U00 or 5U03).
  Cause: Instability of the frequency and/or duty cycle of one or both DC/DC converters.
  – Check resistor 3U06, the decoupling capacitors, the AC feedback circuits (2U20 + 2U21 + 3U14 + 3U15 for +1V2 or 2U19 + 2U85 + 3U12 + 3U13 for +3V3), the compensation capacitors 2U09, 2U10, 2U23 and 2U73, and IC 7U00.

Note 1: If fuse 1U01 is broken, this usually means a pair of defective power MOSFETs (7U01 or 7U03). Item 7U00 should be replaced as well in this case.

Note 2: The 12V switch and 8V6 switch (see "DC/DC CONNECTIONS" schematic) are not present on board: they are bypassed by jumpers.

5.9 Software Upgrading

5.9.1 Introduction

The set software and security keys are stored in a NAND-Flash (item 7P80), which is connected to the VIPER via the PCI bus.

It is possible **for the user** to upgrade the **main** software via the USB port. This allows replacement of a software image in a standalone set, without the need of an E-JTAG debugger. A description on how to upgrade the software can be found in chapter 3 "Directions For Use".

Important: When the NAND-Flash must be replaced, a new SSB must be ordered, due to the presence of the security keys!!! See table “SSB service kits” for the order codes.
Perform the following actions after SSB replacement:
1. Set the correct option codes (see sticker inside the TV).
2. Update the TV software (see chapter 3 for instructions).
3. Perform the alignments as described in chapter 8.
4. Check in CSM menu 5 if the HDMI and POD keys are valid.

Table 5-4 SSB service kits

Model Number	New SSB order code
42PF9830A/37	3104 328 42601
50PF9630A/37	3104 328 42611
42PF9630A/37	
32PF9630A/37	3104 328 42621
50PF7320A/37	3104 328 42631
42PF7320A/37	
37PF7320A/37	3104 328 42641
32PF7320A/37	3104 328 42651
50PF9830A/37	3104 328 42661
42PF9730A/37	3104 328 42671

5.9.2 Procedure

The software image resides in the NAND-Flash, and is formatted in the following way:

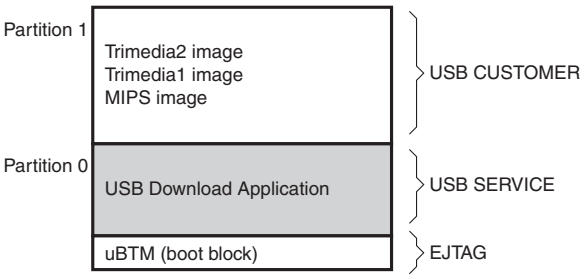


Figure 5-13 NAND-Flash format

Executables are stored as files in a file system. The boot loader (uBTM) will load the USB Download Application in partition 0 (USB drivers, bootscript, etc). This application makes it then possible to upgrade the main software via USB.

Software can be upgraded in two ways:
- Via the USB port.
- Via an external EJTAG tool.

Installing "Partition 0" software is possible via an external EJTAG tool, but also in a special way with the USB stick (see description in paragraph “Manual Start of Software Upgrade Application“).

Software Upgrade via USB
To do a software upgrade (partition 1) via USB, the set must be operational, and the "Partition 0" files for the VIPER **must** be installed in the NAND-Flash!

The new software can be uploaded to the TV by using a portable memory device or USB storage compliant devices (e.g. USB memory stick). You can download the new software from the Philips website to your PC.

Partition 0
To upgrade the USB download application (partition 0 except the bootblock), insert an USB stick with the correct software, but press the “red” button on the remote control (in ”TV” mode) when it is asked via the on screen text.

Caution:
- The USB download application will now erase **both** partitions (except the boot block), so you need to reload the main SW after upgrading the USB download application. As long as this is not done, the USB download application will start when the set is switched “on”.
- When something goes wrong during the progress of this method (e.g. voltage dip or corrupted software file), the set will not start up, and can only be recovered via the EJTAG tool!

Software Upgrade via EJTAG
If the "Partition 0" software is corrupted, the "Partition 0" software needs to be installed.
This is only possible in dedicated workshops with special tools like the EJTAG probe with software, or via the procedure described below.

5.9.3 Manual Start of the Main Software Upgrade Application

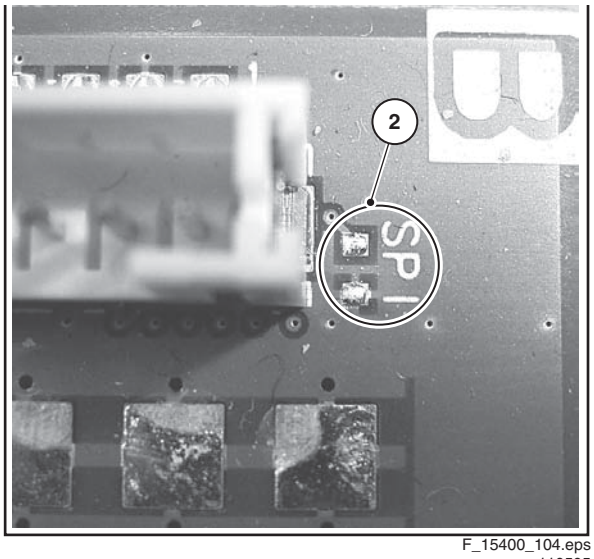
Normally, the software upgrading procedure will start automatically, when a memory device with the correct software is inserted, but in case this does not work, it is possible to force the TV into the software upgrade application. To do so:

- Disconnect the TV from the Mains/AC Power.
- Press the “OK” button on a Philips DVD RC-6 remote control (it is also possible to use the TV remote in "DVD" mode).
- Keep the “OK” button pressed while connecting the TV to the Mains/AC Power.
- The software upgrade application will start.
- When a memory device with upgrade software is connected, the upgrade process will start.

5.9.4 Stand-by Software Upgrade

It will be possible to upgrade the Stand-by software via a PC and the ComPair interface. Check paragraph "ComPair" on how to connect the interface. To upgrade the Stand-by software, use the following steps:

1. Disconnect the TV from the Mains/AC Power.
2. Short circuit the SPI pins [2] on the SSB. They are located outside the shielding (see figure “SPI service pads).
3. Keep the SPI pins shorted while connecting the TV to the Mains/AC Power.
4. Release the short circuit after approx. two seconds.
5. Start up HyperTerminal (can be found in every Windows application via Programs -> Accessories -> Communications -> HyperTerminal. Use the following settings:
   - COM1
   - Bits per second = 19200
   - Data bits = 8
   - Parity = none
   - Stop bits = 1
   - Flow control = Xon / Xoff.
6. Press “Shift U” on your PC keyboard. You should now see the following info:
   - PNX2015 Loader V1.0
   - 19-09-2003
   - DEVID=0x05
   - Erasing
   - MCSUM=0x0000
   - =
7. If you do not see the above info, restart the above procedure, and check your HyperTerminal settings and the connections between PC and TV.
8. Via “Transfer” -> “Send text file ...”, you can send the proper upgrade file to the TV. This file will be distributed via the Service Organization.
9. After successful programming, you must see the following info:
   - DCSUM=0xECB3
   - :Ok
   - MCSUM=0xECB3
   - Programming
   - PCSUM=0xECB3
   - Finished
10. If you do not see this info, restart the complete procedure.
11. Close HyperTerminal.
12. Disconnect and connect Mains/AC Power again.



F_15400_104.eps
110505

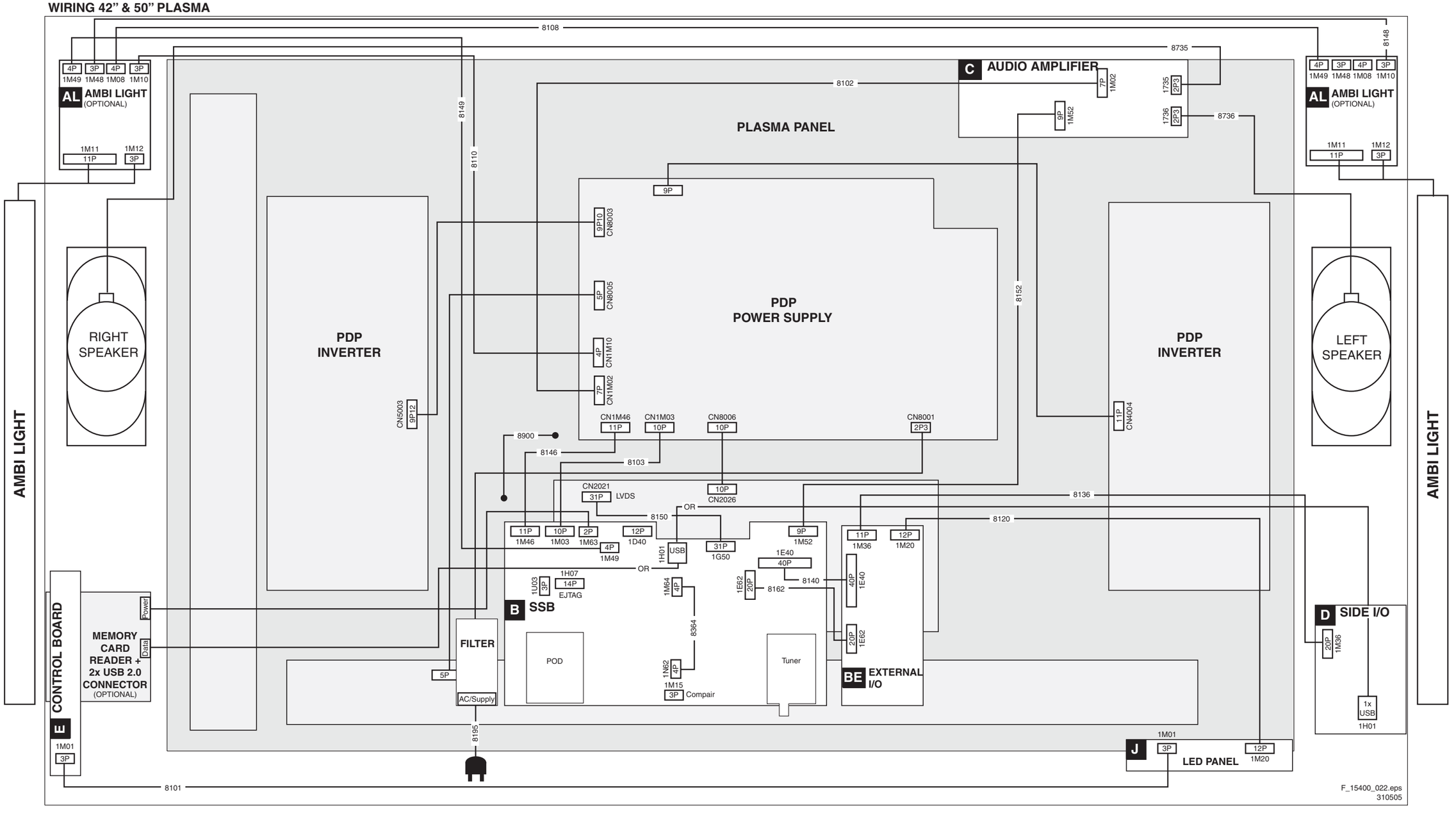
Figure 5-14 SPI service pads

Personal Notes:

E_06532_012.eps
131004

6. Block Diagrams and Overviews

Wiring Diagram



Block Diagram Video

VIDEO 37" - 50"

B2B MAIN TUNER + OOB TUNER

1T04 TD1336O — MAIN HYBRID TUNER — IF-OUT, OOB, IF-1, IF-2, IF-TER2
7T41 UPC3218GV — AGC CONTROL — SAW 44MHz
TUNERAGC-MON, FAT-IF-AGC-MAIN

B2A CHANNEL DECODER

7TG0 NXT2003 — DTV CABLE AND TERRESTRIAL RECEIVER — AUX-IF-AGC-MAIN, FAT-ADC-INP-MAIN, FAT-ADC-INN-MAIN
QAM 8VSB Demodulator, ADC, FEC, Micro-Controller, GPIO, I2C TUNER, FS-OUTP, FS-OUTN, QPSK Demodulator, FDC-ADC-INP, FDC-ADC-INN, MPEG_DATA, IIS[4:64]
7T43 UPC3220GR — CATV OUT OF BAND TUNER — AGC IN, MIX OUT, AGC, IF, AMP OUT, AMP IN
1T41

B10B 7P13 MUX

B10A POD — 7P03 STV0701 — COMMON INTERFACE HARDWARE CONTROLLER — FE-DATA, CRX-POD-A(8), DRX-POD-(9), IIPOI, DATA, POD

B10C BUFFERING — 7P76 7P77 BUFFER — POD-DATA — To DV1of VIPER B5C

B3 MPIF MAIN:

7C00 PNX3000HL

B3C IF

IF-TER2 → 1CS2 → VIFINP (107), VIFINN (108)
SOUND TRAP, GROUP DELAY, LPF, BPF, QSS, QSSOUT
SIFINP (99), SIFINN (100) — TO AM INTERNAL AUDIO SWITCH
SUPPLY → +5VMPIF; DIGITAL BLOCK → SCL-DMA-BUS2, SDA-DMA-BUS2
CVBSOUTIF (120)
CVBS-TER-OUT → 7C56-1 EF, 3C71; 7C56-2 EF, 3C73

B3A SOURCE SELECTION — CVBS/Y RIM, CLAMP, LPF, C-PRIM

MPIF

CVBS-OUTA (19) N.C.; CVBS-OUTB (22) N.C.

CVBSOUTIF-MAIN	CVBS-IF	123	
AV1_CVBS	CVBS1	126	
	CVBS2	1	
	CVBS_DTV	12	
AV2_Y-CVBS	CVBSIY3	4	
AV2_C	C3	5	
FRONT_Y-CVBS	CVBSIY4	8	
FRONT_C	C4	9	
AV7_Y-CVBS	Y_COMB	15	
AV7_C	C_COMB	16	
AV1-AV5-AV6_R-PR	RIPR/V_1	25	
AV1-AV5-AV6_G-Y	GIYI/Y_1	26	
AV1-AV5-AV6_B-PB	BIPB/U_1	27	
AV2-AV4_R-PR	RIPR/V_2	30	
AV2-AV4_G-Y	GIYI/Y_2	31	
AV2-AV4_B-PB	BIPB/U_2	32	

DATA LINK 1: STROBE1N (60) STROBE-MAIN, STROBE1P (61) STROBE1P-MAIN, DATA1N (62) DATA1N-MAIN, DATA1P (63) DATA1P-MAIN
DATA LINK 3: STROBE3N (50) STROBE3N-MAIN, STROBE3P (51) STROBE3P-MAIN, DATA3N (52) DATA3N-MAIN, DATA3P (53) DATA3P-MAIN
DATA LINK 2: STROBE2N (55) STROBE2N-MAIN, STROBE2P (56) STROBE2P-MAIN, DATA2N (57) DATA2N-MAIN, DATA2P (123) DATA2P-MAIN
HV-PRIM-MAIN (46), CLK-MPIF (40)
AV2_FBL (LE), AV6_VSYNC (G2)

B4 PNX2015:

7J00 PNX2015E

B4C TUNNELBUS

PNX2015

North tunnel, South tunnel
TUN-VIPER-RX-DATA, TUN-VIPER-TX-DATA

B4A AUDIO/VIDEO

Memory based scaler, VO-2, VO-1
AVIP-1, AVIP-2
COLUMBUS 3D Comb filter and noice reduction
MUX
Video MPEG decoder
DV1_CLK (AD28 DV1F-CLK), DV2_CLK (AF30 DV2A-CLK), DV3_CLK (AK28 DV3F-CLK)
From POD: POD-DATA
DV1_DATA(0-9), DV2_DATA(0-9), DV3_DATA(0-9)
DV1F-DATA 0 TO 7, DV2A-DATA 0 TO 7, DV3F-DATA 0 TO 7

AVP1_DLK1SN	DATA LINK 1	R4	STROBE1N-MAIN
AVP1_DLK1SP		R3	STROBE1P-MAIN
AVP1_DLK1DN		R2	DATA1N-MAIN
AVP1_DLK1DP		R1	DATA1P-MAIN
AVP1_DLK3SN	DATA LINK 3	N4	STROBE3N-MAIN
AVP1_DLK3SP		N3	STROBE3P-MAIN
AVP1_DLK3DN		N2	DATA3N-MAIN
AVP1_DLK3DP		N1	DATA3P-MAIN
AVP1_DLK2SN	DATA LINK 2	P4	STROBE2N-MAIN
AVP1_DLK2SP		P3	STROBE2P-MAIN
AVP1_DLK2DN		P2	DATA2N-MAIN
AVP1_DLK2DP		P1	DATA2P-MAIN
AVP1_HVINFO1		M3	HV-PRIM-MAIN
MPIF_CLK		M4	CLK-MPIF
AVP2_HSYNCFBL2		LE	AV2_FBL
AVP2_VSYNC2		G2	AV6_VSYNC

B4B DV I/O INTERFACE

DV4_DATA_0 TO 9, DV5_DATA_0 TO 9
VIP
LVDS_TX

B4E STANDBY

7LA7 M25P05 — 512K FLASH — 5 SPI-SDO, 6 SPI-CLK, 1 SPI-CSB, 3 SPI-WP
STANDBY PROCESSOR — See Block digram Control

B4D DDR INTERFACE

Memory controller
PMX-MA(0-12), PNX-MDATA(0-15), MCLK_P, MCLK_N
PMX-MA, PNX-MDATA, A17 PNX-MCLK-P 45, A16 PNX-MCLK-N 46
7L50 K4D261638F — DDR SDRAM 16Mx16

B5 VIPER:

7V00 PNX8550

B5C TUNNELBUS — Tunnel
B5B DDR INTERFACE — Memory controller
VIPER

B5C AUDIO/VIDEO

DVO CSS, 2D DE
2-Layer secondary video out, Dual SD single HD MPE2 decoder, 250Mhz MIPS32 CPU, Scaler and de-interlacer
Temporal noise redux
Video TS router, 1SD+1HD YUV Video in, Dual con acces
5 Layer primary video out HD/VGA/656
DV-ROUT, DV-GOUT, DV-BOUT

B5B VIPER: MAIN MEMORY

7V01 K4D551638F — DDR SDRAM 1
7V02 K4D551638F — DDR SDRAM 2
MM_DATA, MM_A(0-12)

B3B

7C32 EF
AG28 DAC-CVBS → Y-CVBS-MON-OUT → B3f
AJ30 → C-MON-OUT → B3f
AD27 VSYNC-HIRATE → B7A
AE28 HSYNC-HIRATE → BE

B6 DISPLAY INTERFACE: MOP

7G00 XC3S200 — MOP PICTURE ENHANCEMENT
DV-ROUT, DV-GOUT, DV-BOUT
For sets without MOP This connection is made with jumpers 9G10 to 9G26

RGB_HSYNC	J29	MP-OUT-HS	MP-HS 59
RGB_VSYNC	J28	MP-OUT-VS	MP-VS 60
RGB_CLK_IN	J30	MP-CLKOUT	MP-CLK 55
RGB_UD	J27	MP-OUT-FFIELD	MP-FF 57
RGB_DE	K26	MP-OUT-DE	MP-DE 56

RIN (0-9) → MP-ROUT → MP-R
GIN (0-9) → MP-GOUT → MP-G
BIN (0-9) → MP-BOUT → MP-B
(Optional)

B4G PNX2015: DISPLAY INTERFACE

LVDS_AN, LVDS_AP	B26, C26	TXPNXA-	5J50 12
LVDS_BN, LVDS_BP	A25, B25	TXPNXB-	5J52 15
LVDS_CN, LVDS_CP	D25, E25	TXPNXC-	5J54 18
LVDS_CLKN, LVDS_CLKP	C23, D23	TXPNXCLK-	5J56 21
LVDS_DN, LVDS_DP	B24, C24	TXPNXD-	5J58 24
LVDS_EN, LVDS_EP	E24, F24	TXPNXE-	5J60 27

1G50 → LVDS CONNECTOR TO SCREEN
VDISP

B7A HDMI

1B01 HDMI CONNECTOR: ARX2+, ARX2-, ARX1+, ARX1-, ARX0+, ARX0-, ARXC+, ARXC-, ARX-DCC-SCL, ARX-DCC-SDA, ARX-HOTPLUG 7B30 → VSYNC-HIRATE
1B02 HDMI CONNECTOR: BRX2+, BRX2-, BRX1+, BRX1-, BRX0+, BRX0-, BRXC+, BRXC-, BRX-DCC-SCL, BRX-DCC-SDA, BRX-HOTPLUG 7B31 → VSYNC-HIRATE
1B33, 1B32, 1B31, 1B30

B7B HDMI: I/O + CONTROL

7B11 TDA9975

HDMI

RX2+A, RX2-A, RX1+A, RX1-A, RX0+A, RX0-A, RXC+A, RXC-A, RXC-1
RX2+B, RX2-B, RX1+B, RX2-B, RX0+B, RX0-B, RXC+B, RXC-B
HSCL B, HSDA B
Termination resistance control
Video output formatter
Upsample, Derepeater
HDMI receiver, HDCP
VHREF timing generator
I2C slave interface — L16 SDA-MM-BUS1, L15 SCL-MM-BUS1
Line time measuremebt
Activity detection & sync selec., Sync seperator, Clocks generator, Slicers
ADC

DV4-DATA, DV5-DATA, D1 DV4-CLK AK8
A2 DV-HREF AH9, A1 DV-VREF AJ9, C2 DV-FREF AK9 → DV-HREF, DV-VREF, DV-FREF

HSYNC, VSYNC, SOG, R/PR, G/Y, B/PB

AV1-AV6_FBL-HSYNC, AV6_VSYNC, AV2-AV4_G-Y, AV1-AV5-AV6_G-Y, AV2-AV4_R-PR, AV1-AV5-AV6_R-PR, AV2-AV4_G-Y, AV1-AV5-AV6_G-Y, AV2-AV4_B-PB, AV1-AV5-AV6_B-PB

B3F MPIF MAIN: CONNECTION A

AV2-AV4_R-PR	7A20	1E40		AV2-AV4_R-PR
AV2-AV4_G-Y	7A21			AV2-AV4_G-Y
AV2-AV4_B_PB				AV2-AV4_B_PB
AV2-FBL				N.C.
AV2_C				AV2_C
AV2_Y-CVBS				AV2_Y-CVBS
Y-CVBS-MON-OUT				Y-CVBS-MON-OUT
C-MON-OUT				N.C.
AV2-STATUS				N.C.
REGIMBEAU-AV6-VSYNC				
AV6_VSYNC				AV6_VSYNC
AV1_CVBS-AV7-Y-CVBS				
AV7_Y-CVBS				AV7_Y-CVBS
AV1-STATUS-AV7-C				
AV7_C				AV7_C
CVBS-TER-OUT				N.C.
FRONT_Y-CVBS				FRONT_Y-CVBS
FRONT_C				FRONT_C

B3G MPIF MAIN: CONNECTIONS B

AV1-AV5-AV6_R-PR	7A02	1E62		AV1-AV5-AV6_R-PR
AV1-AV5-AV6_G-Y				AV1-AV5-AV6_G-Y
AV1-AV5-AV6_B-PB				AV1-AV5-AV6_B-PB
AV1-AV6_FBL-HSYNC				AV1-AV6_FBL-HSYNC
AV6_VSYNC				N.C.

BE2 EXTERNALS B

FRONT_Y-CVBS, FRONT_C — 1M36

D SIDE I/O

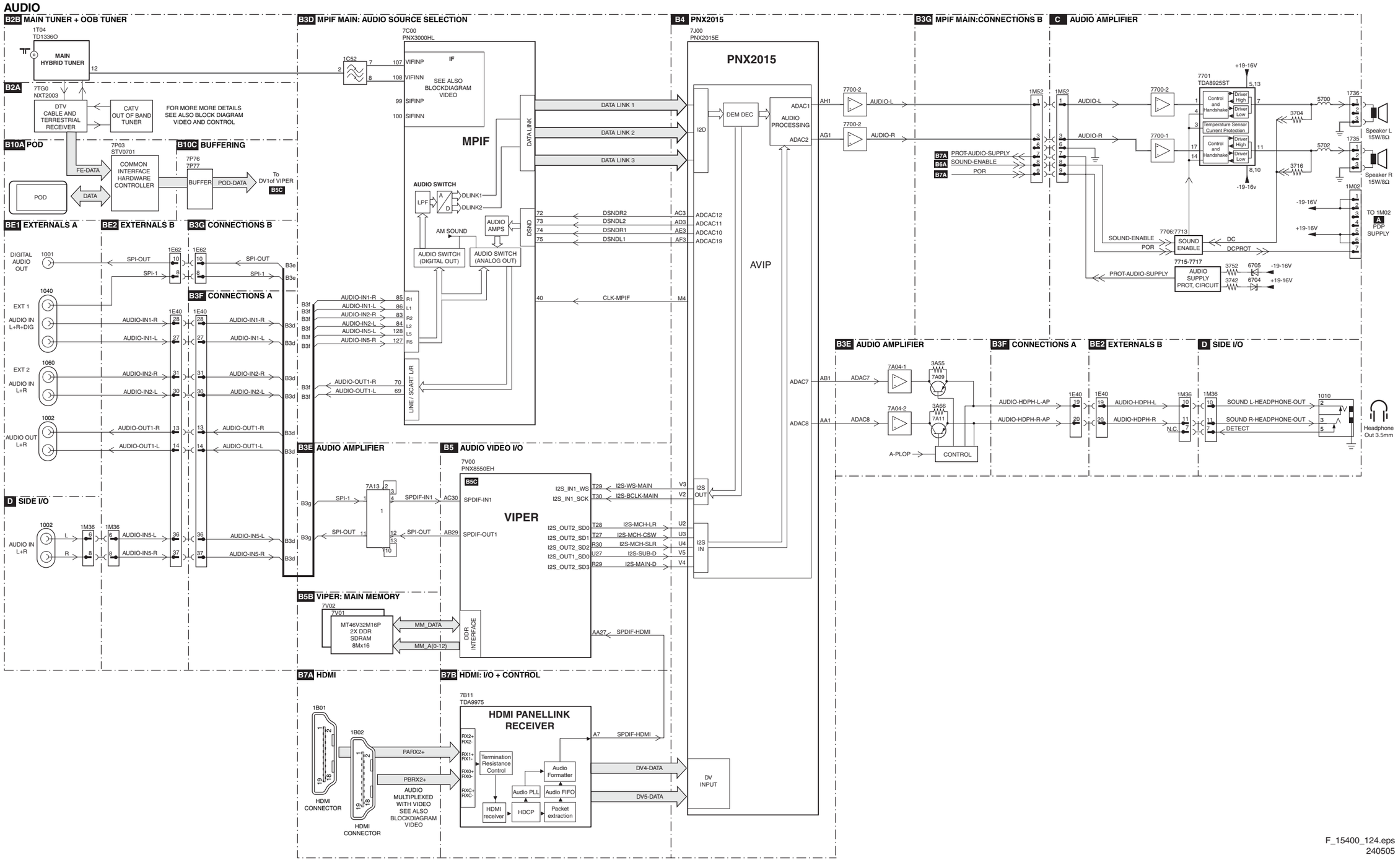
1M36 — Y, C
1060 — Y/CVBS
1080 — C
SVHS

BE1 EXTERNALS A

EXT 1: 1020 — AV7_Y-CVBS, AV6_VSYNC, AV1-AV6_FBL-HSYNC
1070 — AV7_C — SVHS
1030 — +8V, 7012 AV1-AV5-AV6_G-Y, 7011 AV1-AV5-AV6_B-PB, 7010 AV1-AV5-AV6_R-PR
MONITOR OUT: 1002 — Y-CVBS-MON-OUT
EXT 2: 1060 — AV2_Y-CVBS; 1080 — AV2_C — SVHS
EXT 3: 1050 — +8V, 7000 AV2-AV4_G-Y, 7001 AV2-AV4_B_PB, 7002 AV2-AV4_R-PR

F_15400_123.eps
250505

Block Diagram Audio



F_15400_124.eps
240505

Block Diagram Control

CONTROL

B5A VIPER: CONTROL

B8 USB 2.0: HOST

B5 VIPER: A/V + TUNNELBUS

AL AMBI LIGHT

B9A ETHERNET

B10D POD: TS BUFFERING

D SIDE I/O

B10A POD: COMMON INTERFACE

B10C POD: BUFFERING

B11B FIREWIRE 1394: BUFFERING

B3G MPIF MAIN: CONNECTIONS B

BE2 EXTERNALS B

B4 PNX2015: DV I/O INTERFACE

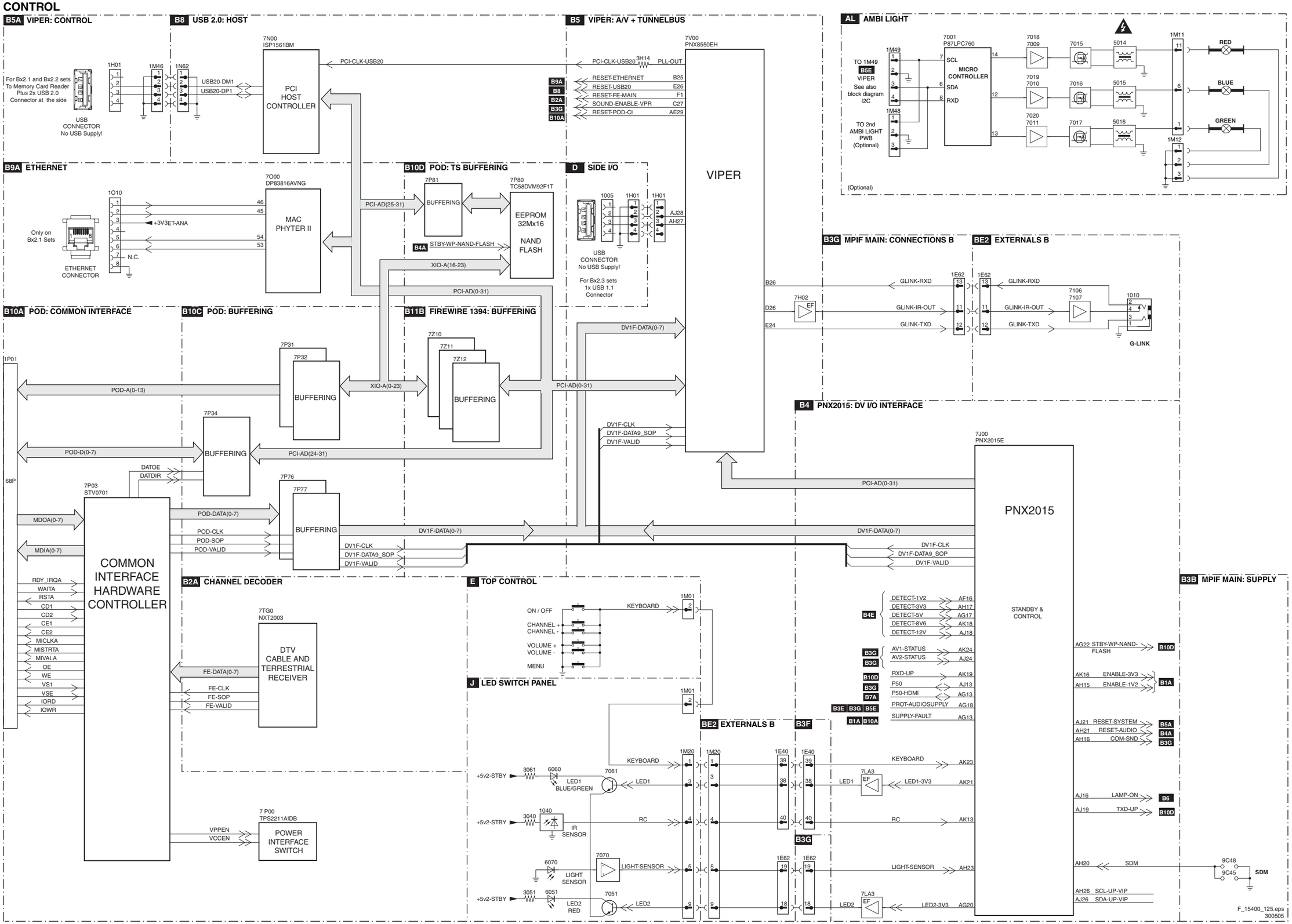
B2A CHANNEL DECODER

E TOP CONTROL

J LED SWITCH PANEL

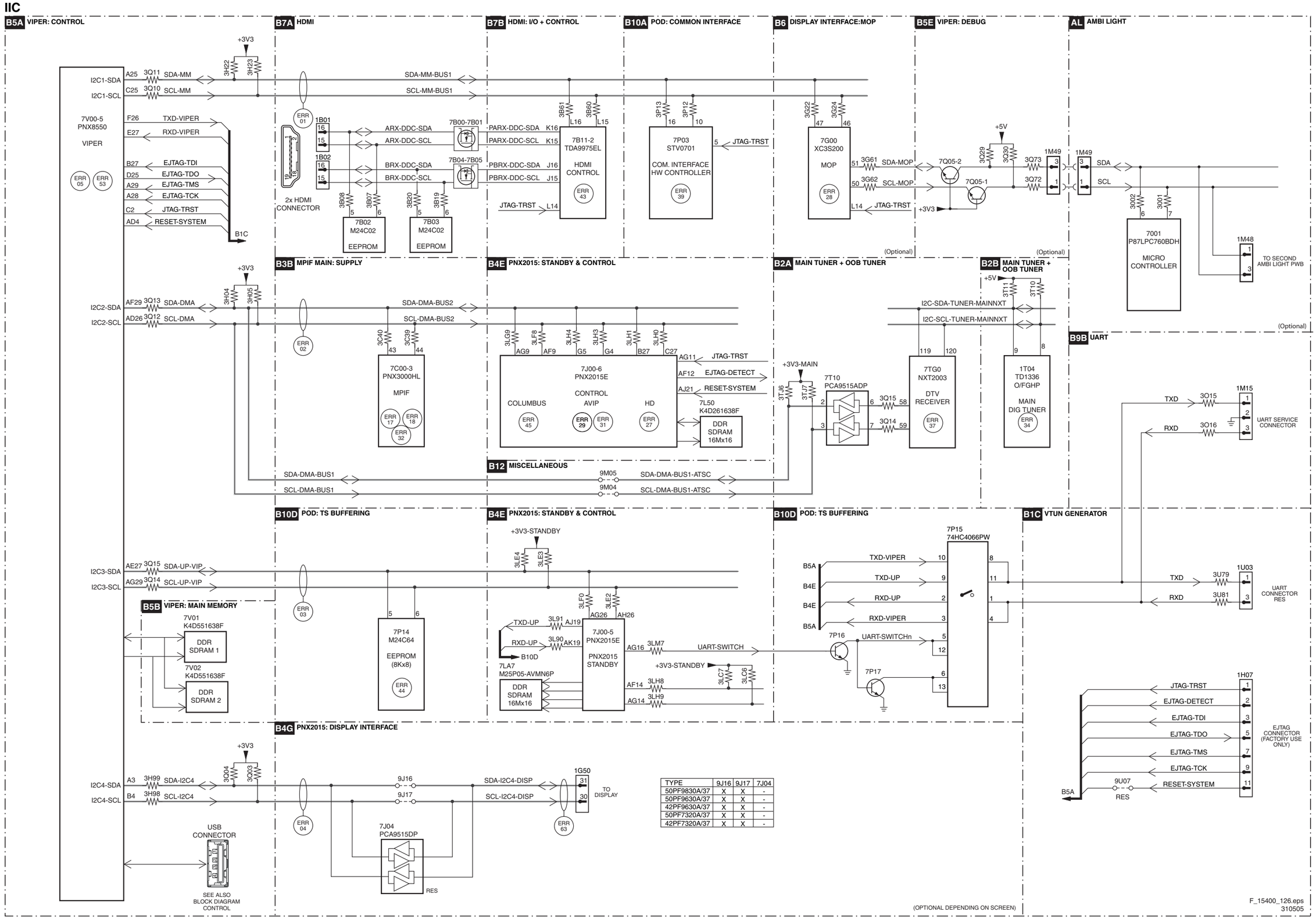
B3F

B3B MPIF MAIN: SUPPLY



I²C ICs Overview

IIC



TYPE	9J16	9J17	7J04
50PF9830A/37	X	X	-
50PF9630A/37	X	X	-
42PF9630A/37	X	X	-
50PF7320A/37	X	X	-
42PF7320A/37	X	X	-

Supply Lines Overview

SUPLY LINE OVERVIEW

PDP
POWER SUPPLY

CN1M46 1M46 7U08 3U47 +8V6-SW
5U04 +8V6
5U05 +12VS
5U06 +5V
5U07 +5V2-STBY
5M08
5U12
+5V2-STBY 9V-STBY

CN1M03
CN1M02
CN1M10

B1B DC/DC CONNECTIONS

B2b,B7a B3b,e,f,g
B1a
B2b,B3b,e,g B5a,e,B6,B7c B10d
B1a,c,B3e,f, B4a,e,g,B7c, B10d,B12
B5e
TO 1M03 B5E VIPER
TO 1M02 C AUDIO AMPLIFIER
TO 1M10 AL AMBI LIGHT

B1A DC/DC

+12VS 1U04 +12SW
1U01
7U29 7U01 5U00 +3V3 12V/3.3V Conversion
7U00 Control
7U03 5U03 +1V2 12V/1.2V Conversion
7U27 +2V5 +2V5 Stabilizer
7U17 +2V5D +2V5D Linear Stabilizer

B1C DC/DC

7U21 +5V2-STBY +3V3-UART
+3V3

B2A CHANNEL DECODER

+2V5 1U01 5T55 +2V5_ATSC
5Y10 5TG0 +2V5A-XTAL-MAIN
5TG1 +2V5A-FAT-MAIN
5TG2 +2V5A-FDC-MAIN
5TG3 +2V5D-PLL-MAIN
5TG4 +2V5A-MAIN
5TG5 +2V5A-PLL-MAIN
5TG6 +2V5-MAIN
+3V3 5TG7 +3V3-MAIN
+1V2 5TG7 +1V2
7TG1 +1V2_ATSC
5TG8 +1V2_MAIN

B2B MAIN TUNER + OOB TUNER

+8V6-SW 7T00 +8V6-SW +5VTUN
+5V +5V
5T50 5T51 +5V-OOB

B3A MPIF MAIN: VIDEO SOURCE SELECTION

+5VMPIF-MAIN +5VMPIF-MAIN

B3B MPIF MAIN: SUPPLY

+5V 1C33 +5VMPIF-MAIN
5C35 7C31-1 VREF-AUD-POS
7C00 MPIF VREF-AUD
7C31-2 VREF-DEFL
+8V6-SW 3C31 +8VMPIF-MAIN

B3C MPIF MAIN: IF + SAW FILTER

+8VMPIF-MAIN 5C52 +8VaM
+5VMPIF-MAIN 3C51 +5VbM
5C54 +5VaM

B3D MPIF MAIN: AUDIO SOURCE SELECTION

+5V-AUD +5V-AUD
+8V-AUD +8V-AUD

B3E MPIF MAIN: AUDIO AMPLIFIER

+3V3 +5V +5V2-STBY +12VSW +8V-AUD
7A07 7A05 VREF-AUD
+8V6-SW 7A06 +5V-AUD

B3F MPIF MAIN: CONNECTIONS A

+5V2-CONN 1E40 24
+5V2-STBY +8V6-SW 8
5A06 +8V6-CONN

B3G MPIF MAIN: CONNECTIONS B

+5V +8V6-SW

B4A PNX2015: AUDIO / VIDEO

+1V2 +3V3 +5V2-STBY +12VS VREF-AUD-POS

B4C PNX 2015: TUNNELBUS

+2V5 5L01 3L38 VREF-PNX

B4D PNX 2015: DDR INTERFACE

VREF-PNX +1V2 +2V5 5L52 5L51 +2V5-DDRPNX

B4E PNX 2015: STANDBY & CONTROL

+1V2 +1V2-STANDBY +3V3 +3V3-STANDBY +5V2-STBY

B4F PNX 2015: SUPPLY

+1V2 5LN1 PLL-1V2
+3V3 5LN3 LVDS-3V3
5LN0 PLL-3V3
+3V3-STANDBY 5LN2 UP-3V3
+2V5 +2V5-DDRPNX

B4G PNX 2015: DISPLAY INTERFACE

+3V3 5J08 VDISP2
+5VDISP 5J10 VDISP
+12VSW 7J06

B5A VIPER: CONTROL

+3V3 +5V

B5B VIPER: MAIN MEMORY

VREF-VPR +2V5D 5V01 +2V5D-DDR
TO 1E40 BE2

B5C VIPER: A/V + TUNNELBUS

+3V3 +2V5-VPR 3H50 VREF-VPR

B5D VIPER: SUPPLY

1V2 +2V5 5Q07 +2V5-VPR +3V3

B5E VIPER: DISPLAY DIVERSITY + AMBILIGHT

+5V +3V3 +12VSW 1M53 TO MEMORY CARD READER
1M03 +5V-CON +5V2-STBY_9V-STBY
CN1M03 PSU

B6 DISPLAY INTERFACE: MOP

+3V3 5G01 +3V3M 7G02 +2V5M 7G03 +1V2M
+5V +8V6-SW

B7A HDMI

+3V3 2x HDMI CONNECTOR 1B01 1B02 AIN-5V BIN-5V

B7B HDMI: I/O + CONTROL

+3V3 DV4-VALID 3B40 3V3-DIG
TO B4f PNX2015

B7C HDMI: SUPPLY

+3V3 5B17 +3V3-APLL 5B11 3V3-PLL 5B12 3V3-DIG
3B52 7B12 +1V8 5B18 +1V8-PLL
+5V 7B38 +3V3-AV 5B10 +3V3-AVI

B8 USB 2.0: HOST

+3V3 +5V2-STBY 3N31 7N10 3N33 3V3-STANDBY
+3V3-STANDBY-TRANS

B9A ETHERNET

+3V3 5O00 +3V3-ET-DIG 5O01 +3V3-ET-ANA

B9B ETHERNET

+3V3-STANDBY

B10A POD: COMMON INTERFACE

+3V3 5P02 VCC_EXTO
+5V 7P00 POD-VPP POD-VCC
Control
CN1M02 PSU

B10B POD: OUT OF BAND

+3V3

B10C POD: BUFFERING

+3V3

B10D POD: TS BUFFERING

+3V3 +3V3-STANDBY +5V2-STANDBY

B11A FIREWIRE 1394: MAIN

+3V3 5Z02 +3V3-VCCA 5Z00 +3V3-VCCD

B11B FIREWIRE 1394: BUFFERING

+3V3 5Z50 +3V3BUFF

B12 MISCELLANEOUS

+3V3 +5V2-STBY 3M73 7M05 +3V3-STANDBY 3M79 7M06 +1V2-STANDBY
B4e,f,g B9b,B10d
B4e

BE1 EXTERNALS A

+8V VREF
BE2

BE2 EXTERNALS B

1E40 +8V6 5100 3153 +8V 3154 VREF 3156 +5V +5V2-STBY
1M20
TO 1E40 B3F
BE1

J LED SWITCH PANEL

1M20 +8V +5V2-STBY

AL AMBI LIGHT

1M10 +12V_A 1010 7002 +5V
TO CN1M10 PSU
1M08 TO SECOND AMBI LIGHT PWB
(OPTIONAL)

C AUDIO AMPLIFIER

1M02 -19-16V 5708 -19-16VS1 5714 -19-16VS2 7702 5701 VDDOPAMP 3713 +19-16V 5705 +19-16VS1 5709 +19-16VS2
CN1M02 PSU

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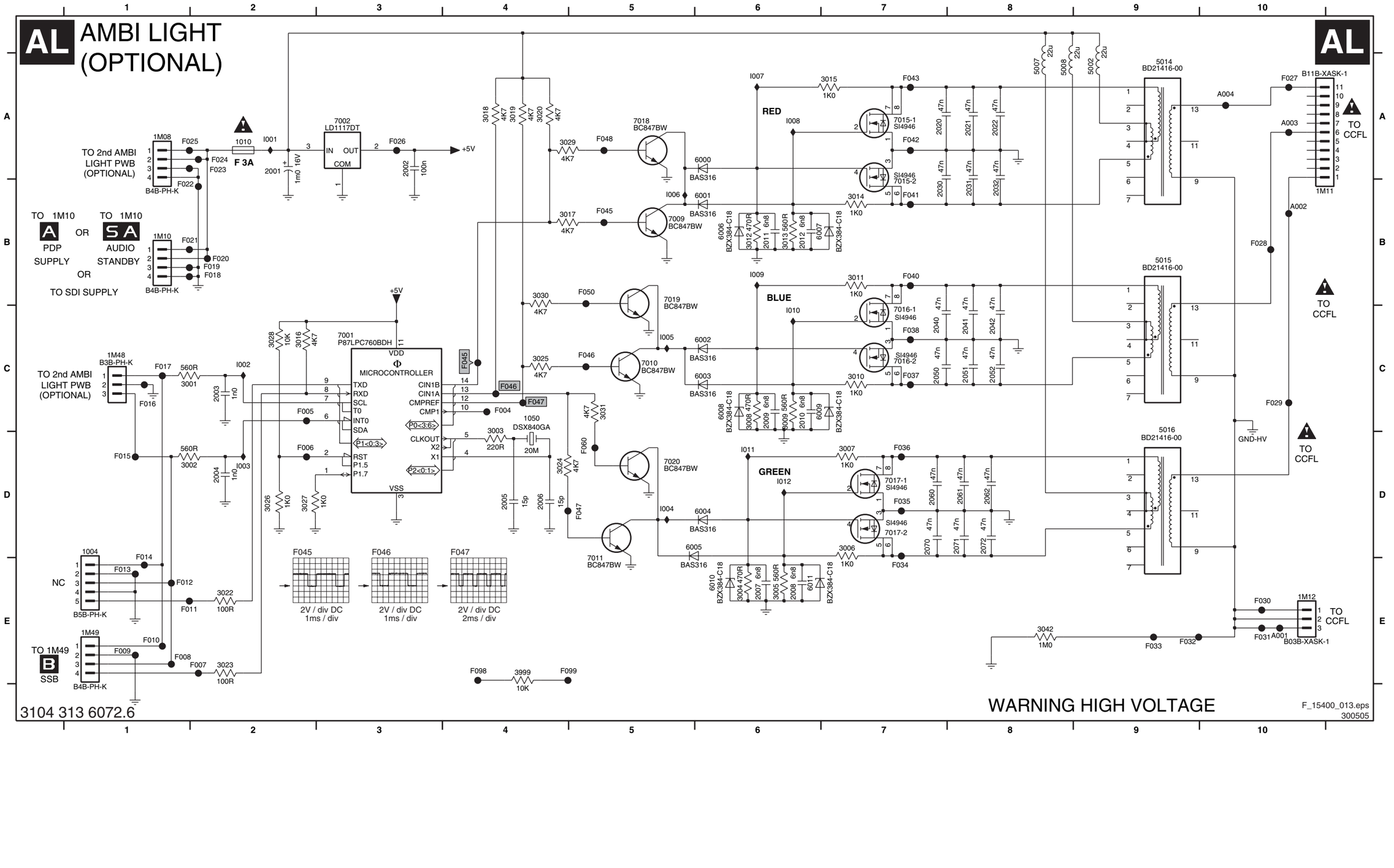
7. Circuit Diagrams and PWB Layouts

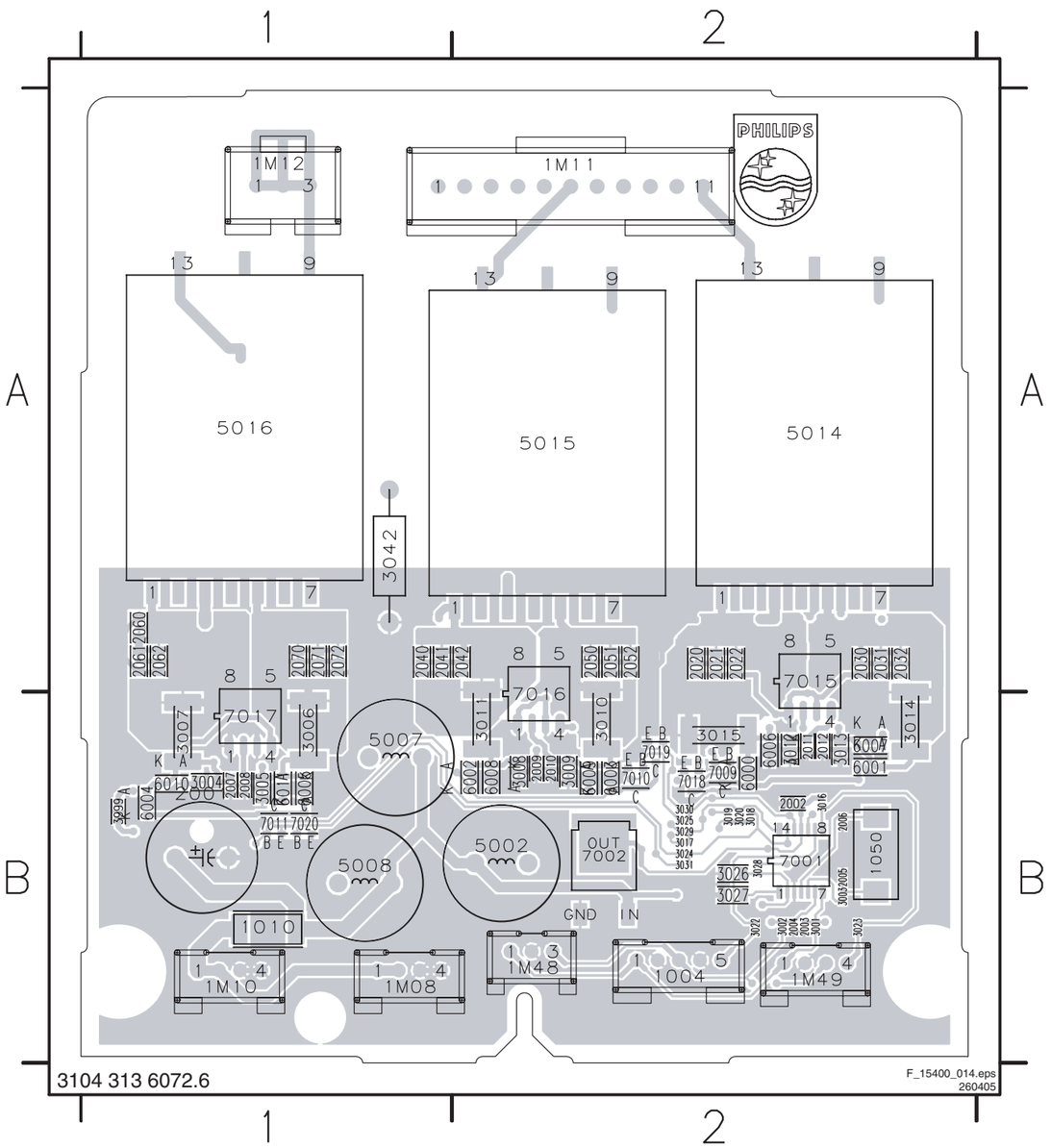
Ambi Light Panel (Optional)

1004 D1	2001 A2	2010 C6	2040 C7	2070 D7	3007 D7	3016 C2	3026 D2	5007 A8	6004 D6	7002 A3	7017-2 D7	F002 C4	F011 E1	F020 B2	F029 C10	F038 C7	F050 B5	I006 B5
1010 A2	2002 A3	2011 B6	2041 C8	2071 D8	3008 C6	3017 B4	3027 D2	5008 A8	6005 D5	7009 B5	7018 A5	F003 C4	F012 E1	F021 B1	F030 E10	F040 B7	F060 D5	I007 A6
1050 C4	2003 C2	2012 B6	2042 C8	2072 D8	3009 C6	3018 A4	3028 C2	5014 A9	6006 B6	7010 C5	7019 B5	F004 C4	F013 E1	F022 B1	F031 E10	F041 B7	F098 E4	I008 A6
1M08 A1	2004 D2	2020 A7	2050 C7	3001 C1	3010 C7	3019 A4	3029 A4	5015 B9	6007 B6	7011 E5	7020 D5	F005 C2	F014 E1	F023 A2	F032 E9	F042 A7	F099 E4	I009 B6
1M10 B1	2005 D4	2021 A8	2051 C8	3002 D1	3011 B7	3020 A4	3030 B4	5016 C9	6008 C6	7015-1 A7	A001 E10	F006 D2	F015 D1	F024 A2	F033 E9	F043 A7	I001 A2	I010 C6
1M11 B10	2006 D4	2022 A8	2052 C8	3003 D4	3012 B6	3022 E2	3031 C5	6000 A6	6009 C6	7015-2 A7	A002 B10	F007 E2	F016 C1	F025 A1	F034 E7	F045 B5	I002 C2	I011 D6
1M12 E10	2007 E6	2030 B7	2060 D7	3004 E6	3013 B6	3023 E2	3042 E8	6001 B6	6010 E6	7016-1 C7	A003 A10	F008 E1	F017 C1	F026 A3	F035 D7	F046 C5	I003 D2	I012 D6
1M48 C1	2008 E6	2031 B8	2061 D8	3005 E6	3014 B7	3024 D4	3999 E4	6002 C6	6011 E6	7016-2 C7	A004 A10	F009 E1	F018 B2	F027 A10	F036 D7	F047 D5	I004 D5	
1M49 E1	2009 C6	2032 B8	2062 D8	3006 D7	3015 A7	3025 C4	5002 A9	6003 C6	7001 C3	7017-1 D7	F001 C4	F010 E1	F019 B2	F028 B10	F037 C7	F048 A5	I005 C5	

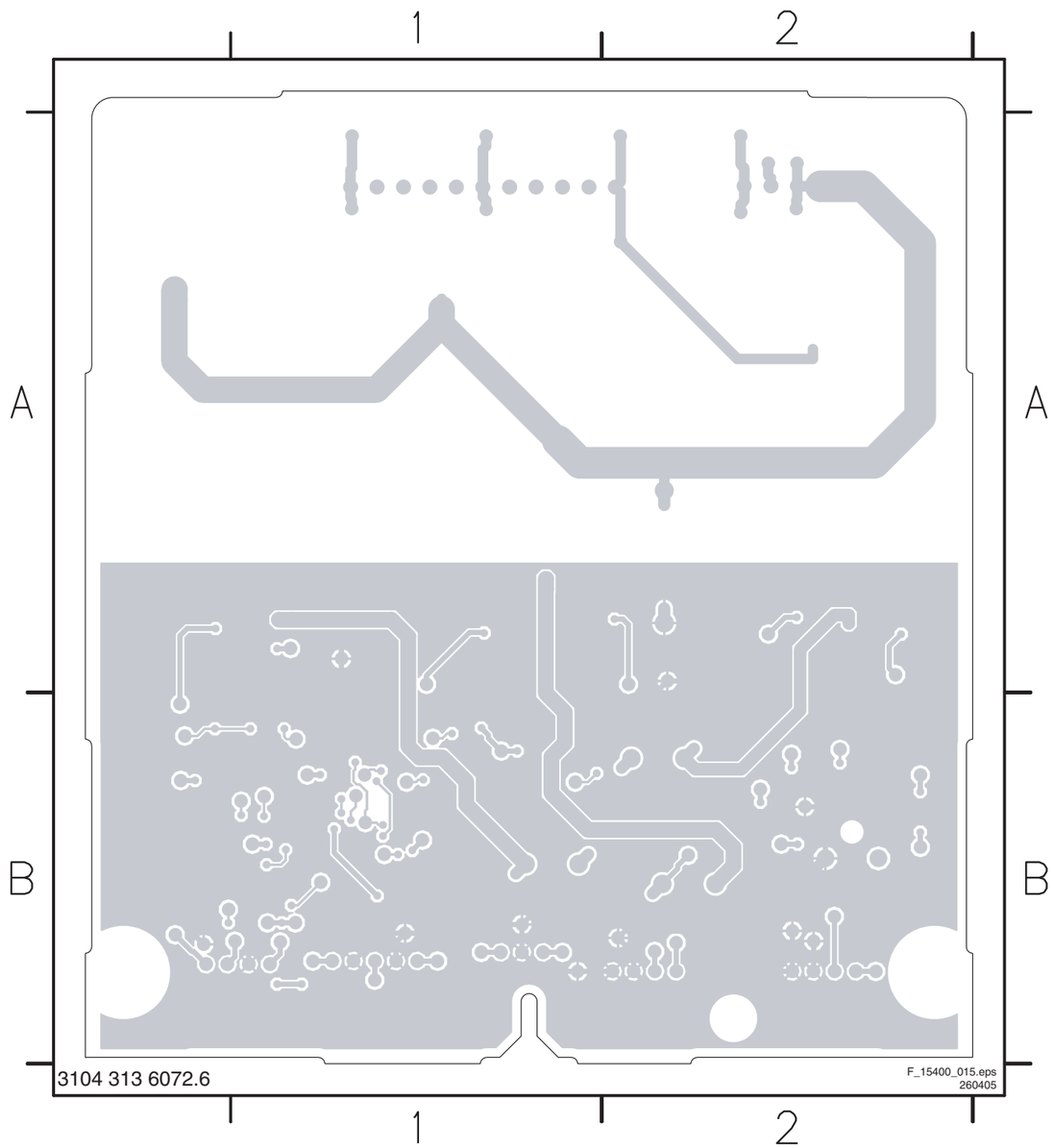


Layout Ambi Light Panel (Top Side)

1004	B2	2001	B1	2010	B2	2040	A1	2070	A1	3007	B1	3016	B2	3026	B2	5007	B1	6004	B1	7002	B2	7020	B1
1010	B1	2002	B2	2011	B2	2041	A1	2071	A1	3008	B2	3017	B2	3027	B2	5008	B1	6005	B1	7009	B2		
1050	B2	2003	B2	2012	B2	2042	A2	2072	A1	3009	B2	3018	B2	3028	B2	5014	A2	6006	B2	7010	B2		
1M08	B1	2004	B2	2020	A2	2050	A2	3001	B2	3010	B2	3019	B2	3029	B2	5015	A1	6007	B2	7011	B1		
1M10	B1	2005	B2	2021	A2	2051	A2	3002	B2	3011	B2	3020	B2	3030	B2	5016	A1	6008	B2	7015	B2		
1M11	A2	2006	B2	2022	A2	2052	A2	3003	B2	3012	B2	3022	B2	3031	B2	6000	B2	6009	B2	7016	B2		
1M12	A1	2007	B1	2030	A2	2060	A1	3004	B1	3013	B2	3023	B2	3042	A1	6001	B2	6010	B1	7017	B1		
1M48	B2	2008	B1	2031	A2	2061	A1	3005	B1	3014	B2	3024	B2	3999	B1	6002	B2	6011	B1	7018	B2		
1M49	B2	2009	B2	2032	A2	2062	A1	3006	B1	3015	B2	3025	B2	5002	B2	6003	B2	7001	B2	7019	B2		

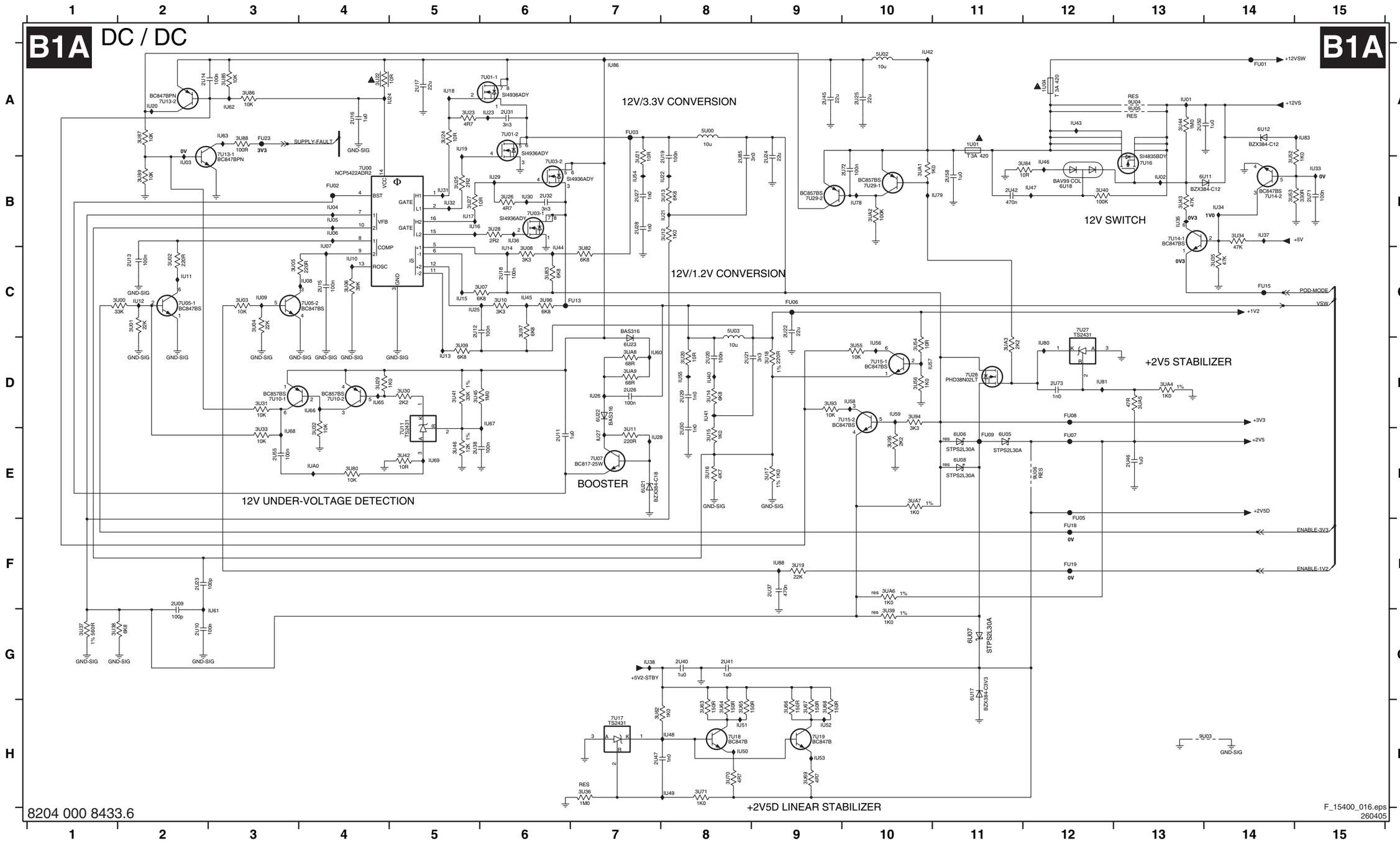


Layout Ambi Light Panel (Bottom Side)



SSB: DC/DC

1U01 A11 1U04 A12 2U09 F2 2U10 G2 2U11 E6 2U12 C5 2U13 C2 2U14 A2 2U15 C4 2U16 A4
2U17 A5 2U18 C6 2U19 B8 2U20 D8 2U21 D8 2U22 C9 2U23 F2 2U24 B9 2U25 A10 2U26 D7
2U27 B7 2U28 B7 2U29 D8 2U30 E8 2U31 A6 2U32 B6 2U37 F9 2U38 E5 2U40 G8 2U41 G8
2U42 B11 2U45 A9 2U46 E13 2U47 H7 2U50 A13 2U55 E3 2U58 B11 2U71 B15 2U72 B10 2U73 D12
2U85 B8 3U00 C2 3U01 C2 3U02 C2 3U03 C3 3U04 C3 3U05 C3 3U06 C4 3U07 C6 3U08 C6
3U09 D5 3U10 C6 3U11 E7 3U12 B8 3U13 B8 3U14 D8 3U15 E8 3U16 E8 3U17 E9 3U18 D9
3U19 F9 3U20 D8 3U21 B7 3U22 A4 3U23 A5 3U24 A5 3U25 B5 3U26 B6 3U27 B5 3U28 B6
3U29 D4 3U30 D5 3U31 D3 3U32 E4 3U33 E3 3U34 B14 3U35 C14 3U36 H7 3U37 G1 3U38 G1
3U39 G10 3U40 B12 3U41 D5 3U42 E5 3U43 B13 3U44 A13 3U45 D5 3U46 E5 3U52 B14 3U53 B14
3U54 D10 3U55 D10 3U56 D10 3U62 H7 3U63 H8 3U64 H8 3U65 H8 3U66 H9 3U67 H9 3U68 H9
3U69 H9 3U70 H8 3U71 H8 3U80 E4 3U82 C7 3U83 C6 3U84 B12 3U85 A3 3U86 A3 3U87 A2
3U88 A3 3U89 B2 3U93 D9 3U94 D10 3U95 E10 3U96 C6 3U97 C6 3UA1 B10 3UA2 B10 3UA3 D11
3UA4 D13 3UA5 D13 3UA6 F10 3UA7 E10 3UA8 D7 3UA9 D7 5U02 A10 5U03 C8 6U05 E11
6U06 E11 6U07 G11 6U08 E11 6U11 B14 6U12 A14 6U17 G11 6U18 B12 6U21 E7 6U22 D7
6U23 D7
7U00 B4 7U01-1 A6 7U01-2 A6 7U03-1 B6 7U03-2 B6 7U05-1 C2 7U05-2 C4 7U07 E7
7U10-1 D3 7U10-2 D4
7U11 E5 7U13-1 B3 7U13-2 B3 7U14-1 B13 7U14-2 B14 7U15-1 D10 7U15-2 D10
7U16 B13 7U17 H7 7U18 H8
7U19 H9 7U27 C12 7U28 D11 7U29-1 B10 7U29-2 B9 7U07 E12 7U08 D12 7U09 E11
7U11 C6 7U12 C6 7U13 C6 7U14 C6 7U15 C6 7U16 C6 7U17 C6 7U18 C6 7U19 C6
FU02 B4 FU03 A7 FU06 C9 FU07 E12 FU08 D12 FU09 E11 FU13 C7 FU15 C14 FU18 F12
FU19 F12 FU23 A3 IU01 A13 IU02 B13 IU03 B2 IU04 B4 IU05 B4 IU06 B4 IU07 B4
IU08 C4
IU09 C3 IU10 C4 IU11 C2 IU12 C2 IU13 D5 IU14 C6 IU15 C6 IU16 B5 IU17 B5 IU18 A5
IU19 A5 IU20 A2 IU21 B8 IU22 B8 IU23 A6 IU24 A5 IU25 C5 IU26 D7 IU27 E7 IU28 E7
IU29 B6 IU30 B6 IU31 B5 IU32 B5 IU33 B15 IU34 B14 IU35 B13 IU36 B6 IU37 B14
IU38 G7
IU40 D8 IU41 D8 IU42 A10 IU43 A12 IU44 C6 IU45 C6 IU46 B12 IU47 B12 IU48 H8
IU49 H8
IU50 H8 IU51 H8 IU52 H9 IU53 H9 IU54 B7 IU55 D4 IU56 D4 IU57 D4 IU58 D4
IU59 D5
IU60 D7 IU61 G3 IU62 A3 IU63 A3 IU65 D4 IU66 D4 IU67 D6 IU68 E3 IU69 E5
IU78 B10
IU79 B11 IU80 D12 IU81 D12 IUA0 E4 IU83 A15 IU84 A7 IU86 A7 IU88 F9

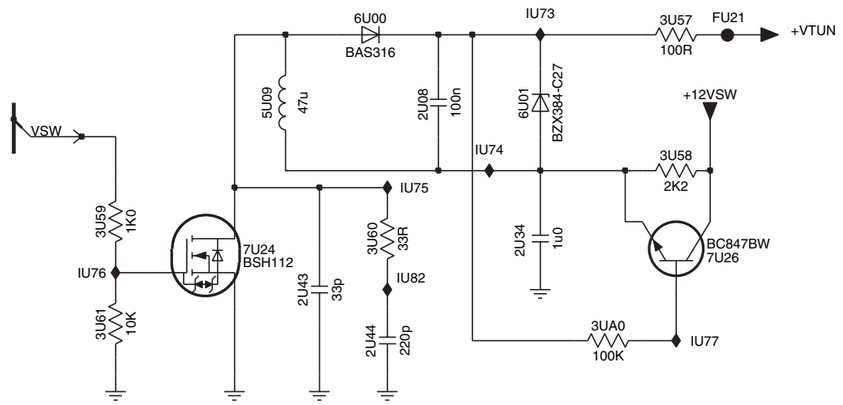


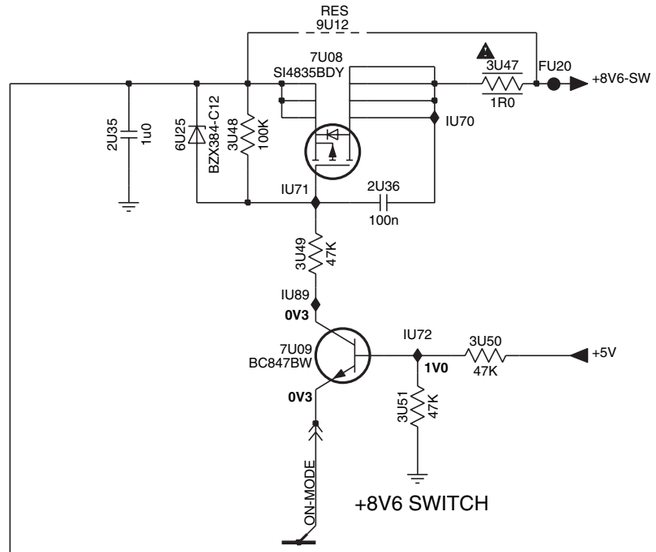
SSB: DC/DC Connections

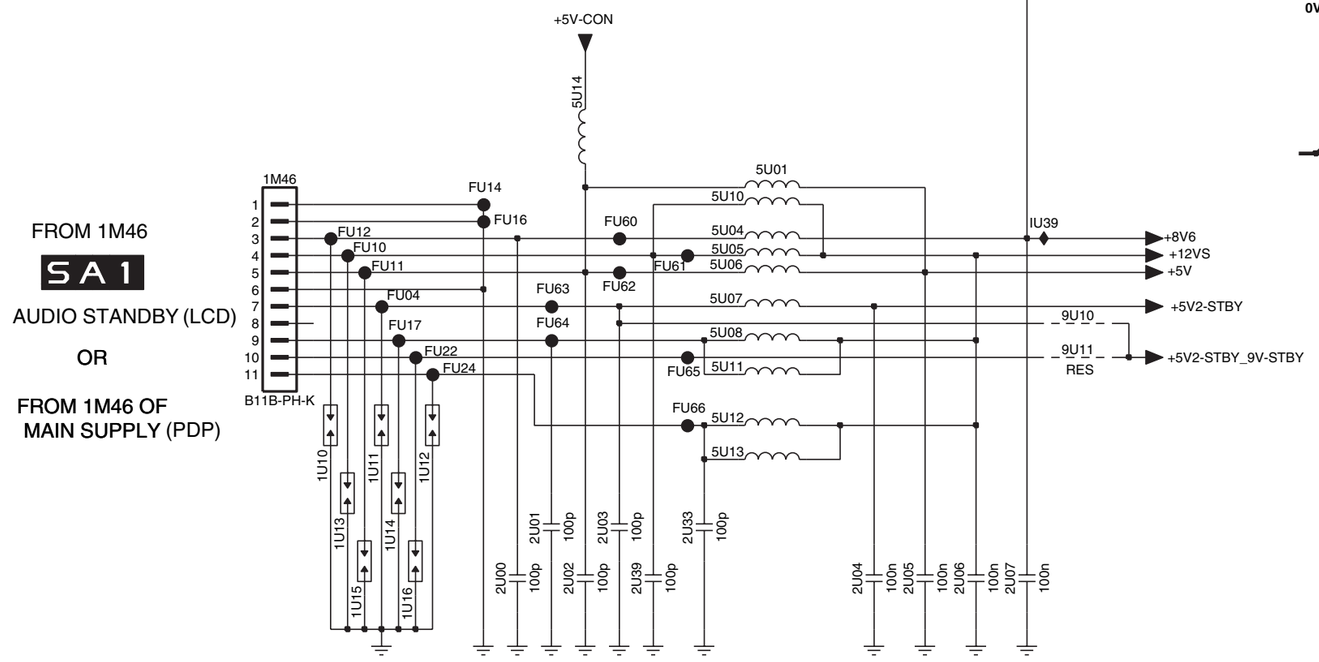
B1B DC/DC CONNECTIONS

B1B

VTUN GENERATOR







1M46 D2	6U25 B6
1U10 E2	7U08 B7
1U11 E3	7U09 C7
1U12 E3	7U24 B2
1U13 E2	7U26 B4
1U14 E3	9U10 D6
1U15 F2	9U11 E6
1U16 F3	9U12 B7
2U00 F3	FU04 D3
2U01 E3	FU10 D3
2U02 F3	FU11 D3
2U03 E4	FU12 D2
2U04 F5	FU14 D3
2U05 F5	FU16 D3
2U06 F5	FU17 E3
2U07 F5	FU20 B8
2U08 B3	FU21 A5
2U33 E4	FU22 E3
2U34 B4	FU24 E3
2U35 B6	FU60 D4
2U36 B7	FU61 D4
2U39 F4	FU62 D4
2U43 B3	FU63 D3
2U44 C3	FU64 E3
3U47 B7	FU65 E4
3U48 B6	FU66 E4
3U49 C7	IU39 D5
3U50 C7	IU70 B7
3U51 C7	IU71 B6
3U57 A4	IU72 C7
3U58 B4	IU73 A4
3U59 B2	IU74 B4
3U60 B3	IU75 B3
3U61 B2	IU76 B2
3UA0 C4	IU77 C4
5U01 D4	IU82 B3
5U04 D4	IU89 C6
5U05 D4	
5U06 D4	
5U07 D4	
5U08 E4	
5U09 B3	
5U10 D4	
5U11 E4	
5U12 E4	
5U13 E4	
5U14 D3	
6U00 A3	
6U01 B4	

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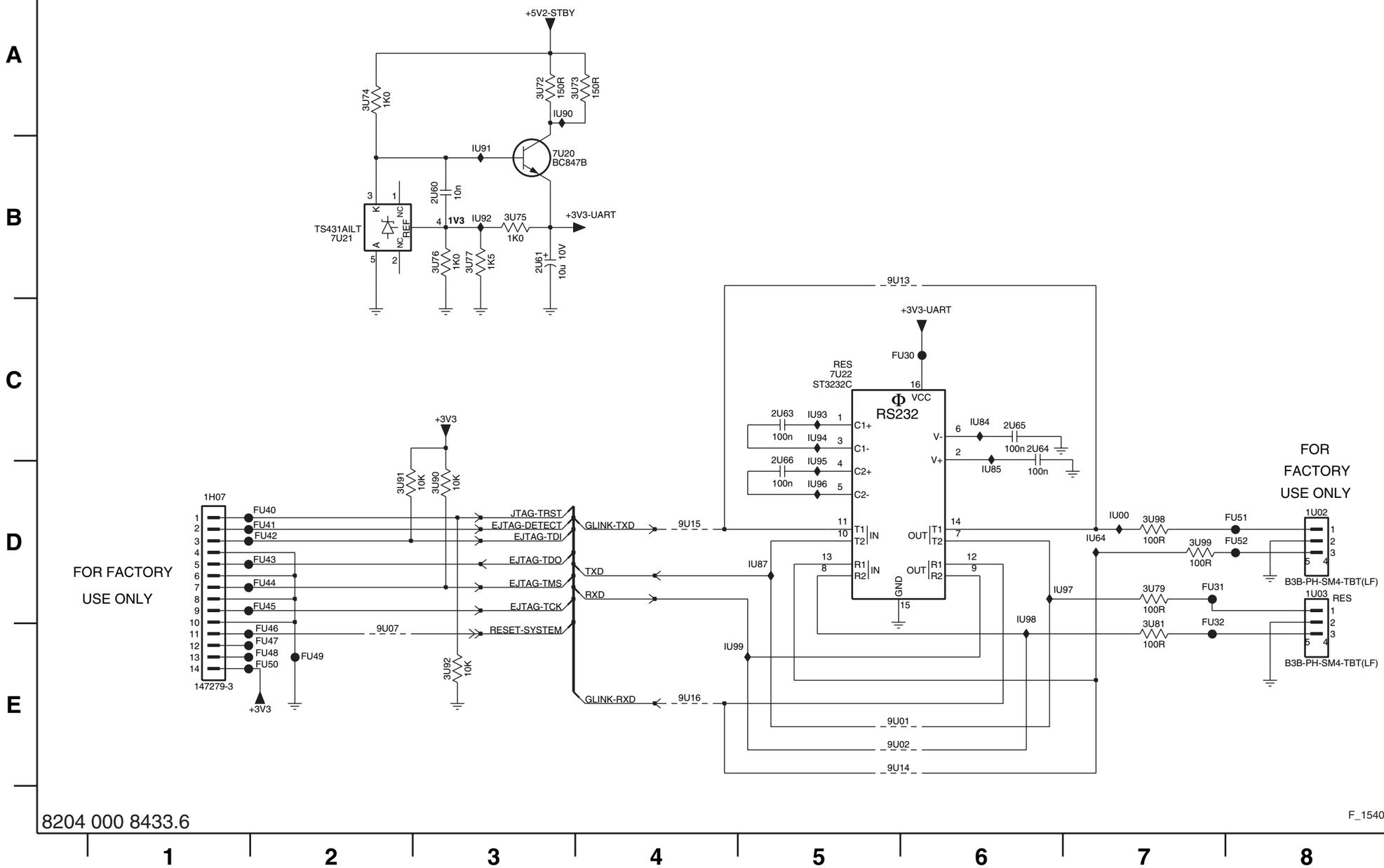
SSB: RS232 Interface

B1C RS232 INTERFACE



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1H07 D1
1U02 D8
1U03 D8
2U60 B3
2U61 B3
2U63 C5
2U64 C6
2U65 C6
2U66 D5
3U72 A3
3U73 A4
3U74 A2
3U75 B3
3U76 B3
3U77 B3
3U79 D7
3U81 E7
3U90 D3
3U91 D2
3U92 E3
3U98 D7
3U99 D7
7U20 B3
7U21 B2
7U22 C5
9U01 E5
9U02 E5
9U07 E2
9U13 B5
9U14 E5
9U15 D4
9U16 E4
FU30 C6
FU31 D7
FU32 E7
FU40 D2
FU41 D2
FU42 D2
FU43 D2
FU44 D2
FU45 D2
FU46 E2
FU47 E2
FU48 E2
FU49 E2
FU50 E2
FU51 D8
FU52 D8
IU00 D7
IU64 D7
IU84 C6
IU85 D6
IU87 D5
IU90 A3
IU91 B3
IU92 B3
IU93 C5
IU94 C5
IU95 C5
IU96 D5
IU97 D7
IU98 D6
IU99 E4

SSB: Channel Decoder

1T55 B6	2T34 D12	2TG3 D2	2TG9 D6	2TJ5 D7	2TK1 H7	2TK7 H7	2TM2 E6	2TN0 G2	3T16 G14	3T19-4 F14	3T21-2 E14	3TG2 E5	3TG9 D13	3TH7 F6	3TJ4 B4	5T55 B5	5TG5 F2	7T11-2 G14	9T10 E14	FTG2 D2	FTG8 H2	IT10 C14	IT18 G13	ITG5 F6	ITH4 B1	ITI4 F5
1TG0 F12	2T55 B5	2TG4 D6	2TJ0 D6	2TJ6 D7	2TK2 H6	2TK8 H6	2TM3 E5	2TN1 H2	3T17 G13	3T20-1 F14	3T21-3 E14	3TG3 D5	3TH0 B3	3TH9 A4	3TJ5 E6	5TG0 C2	5TG6 G2	7TG0 D8	9T11 E14	FTG3 E2	FTG9 F11	IT11 D13	IT19 G13	ITG8 D5	ITH6 F11	ITI5 E14
2T30 F2	2T56 B5	2TG5 D2	2TJ1 D7	2TJ7 E11	2TK3 H6	2TK9 H7	2TM4 F4	2TN3 C14	3T18 G14	3T20-2 F14	3T22 G13	3TG4 E5	3TH3 D7	3TJ0 B2	3TJ6 E13	5TG1 D2	5TG7 G2	7TG1 A4	9TG2 F12	FTG4 F2	FTH0 A4	IT13 G14	ITG1 B6	ITG9 E5	ITI0 B3	
2T31 C13	2TG0 D6	2TG6 D6	2TJ2 D7	2TJ8 E11	2TK4 D6	2TL0 B3	2TM5 E4	2TN4 B1	3T19-1 E14	3T20-3 F14	3T23 H13	3TG5 E14	3TH4 C14	3TJ1 B1	3TJ7 E13	5TG2 D2	5TG8 H2	7TG3-1 B2	9TG3 B4	FTG5 F2	FTH1 B4	IT14 D13	ITG2 B5	ITH1 B4	ITI1 C14	
2T32 D12	2TG1 C1	2TG7 D5	2TJ3 D7	2TJ9 E11	2TK5 E14	2TL7 F12	2TM7 E6	3T14 G13	3T19-2 F14	3T20-4 E14	3T24 G7	3TG6 E5	3TH5 E7	3TJ2 B2	5T10 C1	5TG3 E2	7T10 D14	7TG3-2 B3	FTG0 C2	FTG6 G2	FTH2 D7	IT16 G14	ITG3 F6	ITH2 B2	ITI2 C2	
2T33 G14	2TG2 D6	2TG8 D5	2TJ4 D7	2TK0 H7	2TK6 H7	2TL9 F12	2TM8 E5	3T15 F13	3T19-3 F14	3T21-1 E14	3T26 F4	3TG8 D13	3TH6 F6	3TJ3 B1	5T11 C14	5TG4 E2	7T11-1 G13	7TG4 B4	FTG1 D2	FTG7 G2	FTH3 C13	IT17 G14	ITG4 G7	ITH3 B2	ITI3 E4	

1 2 3 4 5 6 7 8 9 10 11 12 13 14 15

B2A CHANNEL DECODER

B2A

A B C D E F G H

+1V2 · 7TG1 SI2306DS · FTH0 · 3TH9 47K · +1V2_ATSC · 2TL0 100n · ITI0 · 3TH0 1K0 · ITH1 · ITG2 · 5T55 · ITG1 · 1T55 500mA F · +2V5 · ITH2 · 3TJ0 47K · 7TG3-2 BC847BPN · 7TG3-1 BC847BPN · ITH3 · 3TJ1 47K · +3V3 · ITH4 · 3TJ3 4K7 · 2TN4 220n RES · 3TJ2 8K2 · +12VSW · RES 7TG4 SI2306DS · 2TG3 · 2TK6 1u0 · 2TK5 100n · 100u 4V · 3TJ4 47K RES · FTH1 · +2V5_ATSC

+2V5_ATSC · 5T10 · ITI2 · 2TG1 100u 4V · 5TG0 · FTG0 · +2V5A-XTAL-MAIN

5TG1 · FTG1 · +2V5A-FAT-MAIN · 2TG9 10n

5TG2 · FTG2 · +2V5A-FDC-MAIN · 2TG5 10n

5TG3 · FTG3 · +2V5D-PLL-MAIN

5TG4 · FTG4 · +2V5A-MAIN · 2T30 100u 4V

5TG5 · FTG5 · +2V5A-PLL-MAIN

5TG6 · FTG6 · +2V5-MAIN

+3V3 · 5TG7 · FTG7 · +3V3-MAIN · 2TN0 22u 6.3V

+1V2_ATSC · 5TG8 · FTG8 · +1V2-MAIN · 2TN1 22u 6.3V

2V5A-MAIN · 2V5A-FAT-MAIN · 2V5A-FDC-MAIN · 2V5A-XTAL-MAIN · 2V5D-PLL-MAIN · 1V2-MAIN · 2V5-MAIN · 3V3-MAIN

2TG7 100n · 2TG8 100n · 2TG9 100n · 2TK4 100n · 2TG0 100n · 2TG2 100n · 2TJ0 100n · 2TG4 100n · 2TG6 100n · 2TJ3 100n · 2TJ4 100n · 2TJ5 100n · 2TJ6 100n · 2TJ1 100n · 2TJ2 100n

7TG0 NXT2003

AVDD · AVDD_FAT · AVDD_FDC · AVDD_OSC · AVDD_PLL · DVDD_PLL · VDD1.2 · VDD2.5 · VDD3.3

2T27 10n · 2T28 10n · 2T29 10n

Φ DTV CABLE AND TERRESTRIAL RECEIVER

FAT-ADC-INN-MAIN · FAT-ADC-INP-MAIN · FDC-AGC · FDC-ADC-INN · FDC-ADC-INP · FS-OUTN · FS-OUTP · I2C-SDA-TUNER-MAINNXT · I2C-SCL-TUNER-MAINNXT · IRQ-FE-MAIN · SEL-POD · RESET-FE-MAIN · FM-TRAP

3TG3 220R · ITG8 · 2TM2 10n · 3TH3 33K · FTH2 · 3TH5 33K · 3TG2 220R · 1u0 · 2TM3 · 2TM5 10n · ITI3 · 3TG6 220R · ITG9 · 3TJ5 1K0 · 3TG4 220R · 2TM8 · 1u0 · 2TM7 10n · 2TM4 10n · ITI4 · +3V3-MAIN · 3TH6 4K7 · ITG3 · 3TH7 4K7 · ITG5 · 3T26 100R · ITG4 · 3T24 4K7

BIAS_RES · FAT_INCM · FAT_IN · FAT_VREF · FDC_AGC · FDC_INCM · FDC_INN · FDC_INP · FDC_VREF · FS_OUT · GPIO · POWER_RESET · UC_EN

2TK2 10n · 2TK8 1u0 · 2TK3 10n · 2TK9 1u0 · 2TK0 10n · 2TK6 1u0 · 2TK1 10n · 2TK7 1u0

AGND · DGND · GND_HS

AUX_AGC · I2C_SCL · I2C_SDA · I2C_SLAVE_ADDR · IF_AGC · MPEG_CLK · MPEG_DATA · SER_DATA · MPEG_DATA_EN · MPEG_ERR · MPEG_PKT_SYNC · OSC_CLK · OSC_XTAL_IN · OSC_XTAL_OUT · PDET_COMP_IN · PDET_REF_OUT · POD_CRX · POD_DRX · RF_AGC · NC

FTH3 · 3TH4 1K0 · ITI1 · AUX-IF-AGC-MAIN · 2TN3 100n · IT10 · 5T11 · +3V3-MAIN · 2T31 100n · 7T10 PCA9515ADP · VCC · SDA1 · SDA0 · SCL1 · SCL0 · NC · GND · EN

I2C ADDRESS = 14/16

2T32 68p · 3TG8 100R · IT11 · SCL-DMA-BUS1-ATSC · 2T34 68p · 3TG9 100R · IT14 · SDA-DMA-BUS1-ATSC

+3V3-MAIN · 3TJ6 1K0 · 3TJ7 1K0 · 9T10_RES · 9T11_RES · 2TK5 100n · ITI5

3TG5 1K0 · 3T19-1 68R · FE-CLK · 3T21-3 68R · 3T21-2 68R · FE-DATA0 · FE-DATA1 · 3T21-1 68R · 3T20-4 68R · FE-DATA2 · FE-DATA3 · 3T20-3 68R · 3T20-2 68R · FE-DATA4 · FE-DATA5 · 3T20-1 68R · 3T19-4 68R · FE-DATA6 · FE-DATA7 · 3T19-3 68R · FE-VALID · 3T19-2 68R · FE-SOP

ITH6 · FTG9 · 2TL7 33p · 1TG0 13M5 · 9TG2 · 2TL9 33p · +3V3-MAIN · 3T15 10K · IT19 · 7T11-1 BC847BPN · IT18 · 3T17 10K · IT17 · 3T18 100K · 7T11-2 BC847BPN · IT16 · 3T16 100K · TUNERAGC-MON · 3T14 1K0 · IT13 · 2T33 100n · 3T22 68R · CRX-POD · 3T23 68R · DRX-POD

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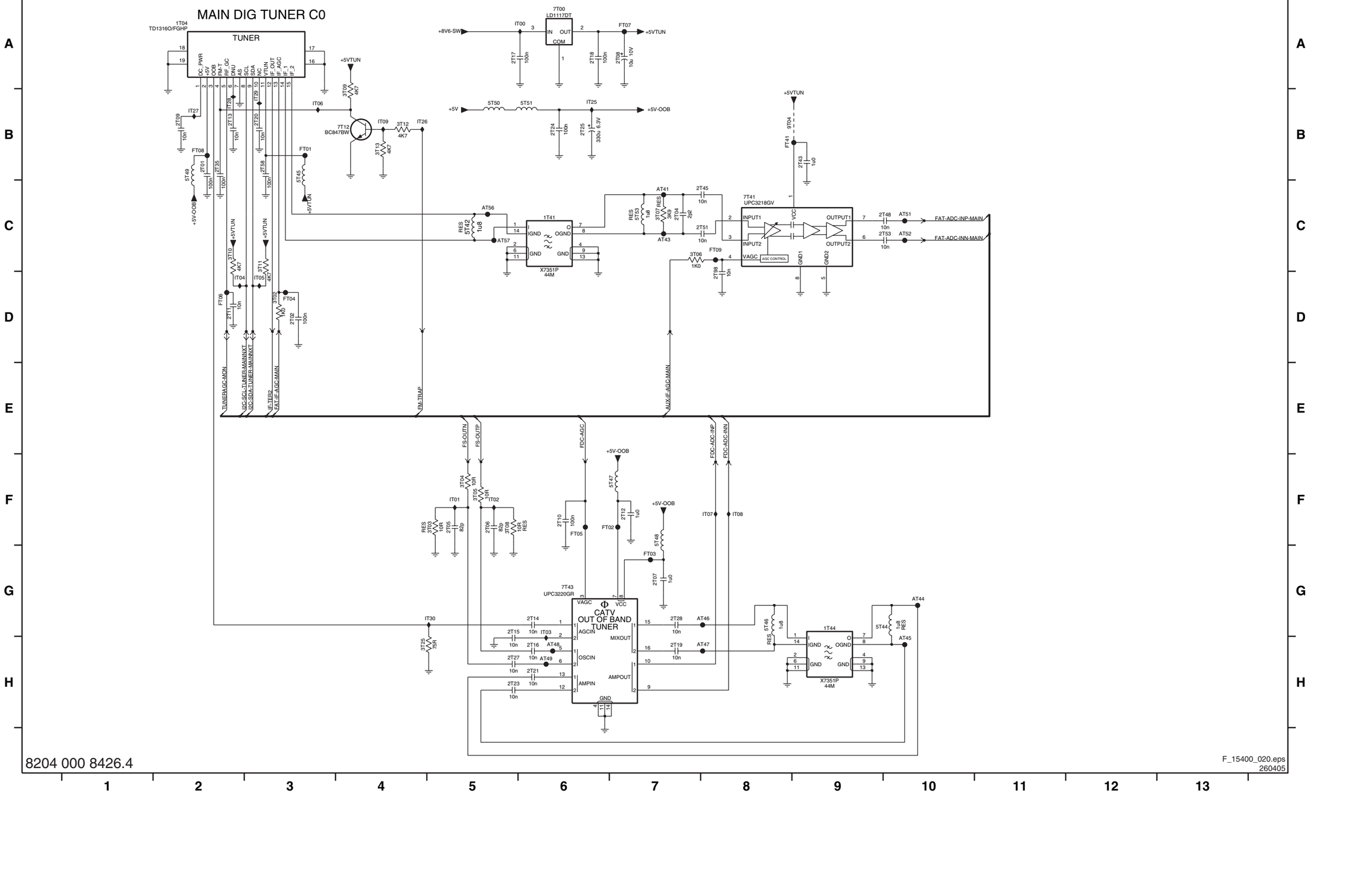
SSB: Main Tuner & OOB Tuner

1T04 A2 2T01 B2 2T02 D3 2T04 C7 2T05 F5 2T06 F5 2T07 G7 2T08 A7 2T09 B2 2T10 F6 2T11 D2 2T12 F7 2T13 B2 2T14 G6 2T15 G5 2T16 H6 2T17 A5 2T18 A6 2T19 H7 2T20 B3 2T21 H6 2T23 H5 2T24 B6 2T25 B6 2T27 H5 2T28 G7 2T35 B2 2T43 B9 2T45 C8 2T48 C10 2T51 C8 2T53 C10 2T58 B3 2T98 D8 3T02 D3 3T03 F5 3T04 F5 3T06 C7 3T07 C7 3T08 F5 3T09 B4 3T10 C2 3T11 C3 3T12 B4 3T13 B4 3T25 H4 5T42 C5 5T44 G9 5T45 B3 5T46 G8 5T47 F6 5T48 F7 5T49 B2 5T50 B5 5T51 B6 5T53 C7 7T00 A6 7T12 B4 7T41 C8 7T43 G6 9T04 B8 AT41 C7 AT43 C7 AT44 G10 AT45 H10 AT46 G8 AT47 H8 AT48 H6 AT49 H6 AT51 C10 AT52 C10 AT56 C5 AT57 C5 FT01 B3 FT02 F6 FT03 G7 FT04 D3 FT05 F6 FT06 D2 FT07 A7 FT08 B2 FT09 C8 FT41 B8 IT00 A6 IT01 F5 IT02 F5 IT03 G6 IT04 D2 IT05 D3 IT06 B3 IT07 F8 IT08 F8 IT09 B4 IT25 B6 IT26 B4 IT27 B2 IT28 B2 IT29 B3 IT30 G5

B2B MAIN TUNER + OOB TUNER



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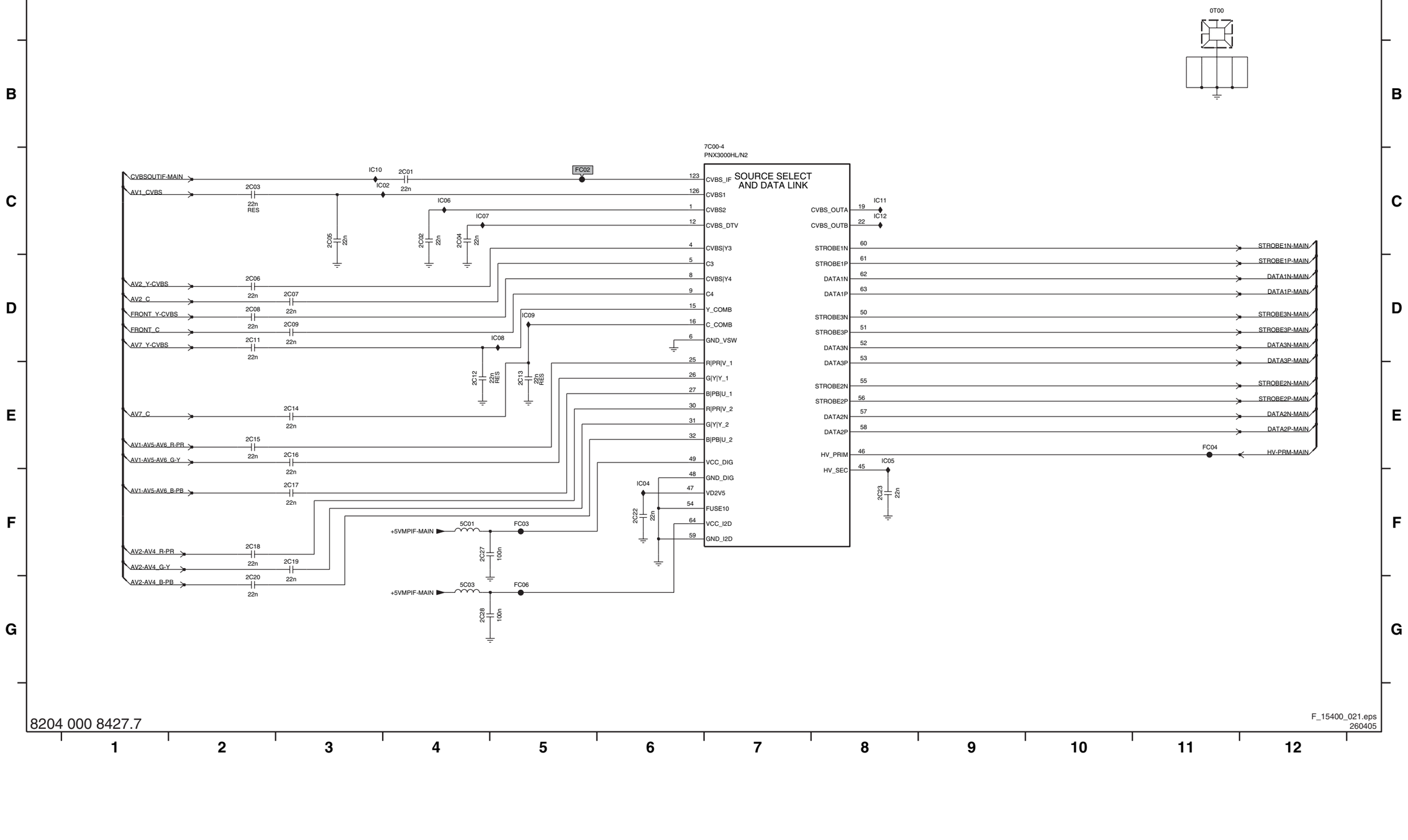
SSB: MPIF Main: Video Source Selection

0T00 A11 2C01 C4 2C02 C4 2C03 C2 2C04 C4 2C05 C3 2C06 D2 2C07 D3 2C08 D2 2C09 D3 2C11 D2 2C12 E4 2C13 E5 2C14 E3 2C15 E2 2C16 E3 2C17 F3 2C18 F2 2C19 F3 2C20 G2 2C22 F6 2C23 F8 2C27 F4 2C28 G4 5C01 F4 5C03 G4 7C00-4 C7 FC02 C5 FC03 E11 FC04 E11 FC06 G5 IC02 C4 IC04 E8 IC05 E8 IC06 C4 IC07 C4 IC08 D5 IC09 D5 IC10 C3 IC11 C8 IC12 C8

B3A MPIF MAIN: VIDEO SOURCE SELECTION



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SSB: MPIF Main: Supply

B3B MPIF MAIN: SUPPLY **B3B**

7C00-3
PNX3000HL/N2

MPIF-SUPPLY
E/W & CONTROL

VOUTO 2
VAUDS 3
VDEFLO 20
VDEFLS 21
RREF 13
BGDEC 7
FUSE9 33
FUSE8 10
FUSE7 23
GND_FILT 11
GND_RGB 29
GND_VADC 34
VCC_FILT 14
VCC_RGB 28
VCC_VADC 35
TESTPIN3 18
TESTPIN2 24
EWVIN 36
REW 38
EWIOUT 37
SCL 44
SDA 43
IRQ 42
XREF 40
ADR 39
FUSE6 41

IC36 3V9 — 7C31-1 BC847BS (6, 2, 1)
IC83 — 9C50
IC37 — 3C30 560R; 2C41 22p (res); 3C32 1K2; 3C34 1K2
IC38 1V4 — 2AB5 1n0
IC47 — 3C45 47K
IC32
IC81 3V9 — 7C31-2 BC847BS (3, 5, 4); 2C42 22p
IC82 1V4 — 3C43 1K8; 3C44 1K2
2C35 100n; 2C36 1u0; 2C46 1u0
IC89 — 3C33 820R
IC46
IC44 — 3C39 100R
IC45 — 3C40 100R
IC35
FC40 — 9C49
3C41 10K RES — +5VMPIF-MAIN

FC31 — 5C35 — +5VMPIF-MAIN; 2C31 100n
FC32 3V2 — VREF-AUD-POS; 2C43 100u 4V
VREF-AUD
FC41 3V2 — VREF-DEFL
FC36 — 5C33 — +5VMPIF-MAIN; 2C45 10u 10V; 2C39 100n
FC37 — 5C34 — +5VMPIF-MAIN
FC38 — 5C36 — +5VMPIF-MAIN; 2C40 100n; 2C44 100n
EW-DRIVE
SCL-DMA-BUS2
SDA-DMA-BUS2
IRQ-MPIF
CLK-MPIF
SPI-PROG — 9C47
SDM — 9C48; 9C46

IC41
+8V6-SW — 5C37; 3C32 10u 10V; 2C33 100n; 3C46 33R; 3C35 1K0; 3C36 82K
IC01 — BC847BPN 7C32-2 (4, 5)
IC34
IC33 — Y-CVBS-MON-OUT
7C32-1 BC847BPN (6, 3, 2, 1)
IC39
IC40
2C34 1u0; 2C37 1u0
3C37 330R; 3C38 10K; 3C42 330R; 3C47 47K
DAC-CVBS

3C31 10R: +8V6-SW — +8VMPIF-MAIN
1C33 500mA F: +5V — +5VMPIF-MAIN

1C33 I7
2AB5 B5
2C31 A7
2C32 H2
2C33 H2
2C34 H4
2C35 C4
2C36 C5
2C37 H4
2C39 D7
2C40 D6
2C41 B5
2C42 C5
2C43 A7
2C44 E5
2C45 D7
2C46 C5
3C30 A6
3C31 I7
3C32 B6
3C33 E4
3C34 B6
3C35 H3
3C36 H4
3C37 H3
3C38 I3
3C39 E5
3C40 F5
3C41 F6
3C42 I3
3C43 C6
3C44 D6
3C45 C5
3C46 H3
3C47 I4
5C33 D7
5C34 D6
5C35 A7
5C36 D5
5C37 G2
7C00-3 A3
7C31-1 A6
7C31-2 C6
7C32-1 H3
7C32-2 H3
9C46 G10
9C47 G10
9C48 G10
9C49 F6
9C50 A7
FC31 A7
FC32 A7
FC36 D6
FC37 D6
FC38 D4
FC40 F7
FC41 C7
IC01 H3
IC32 C5
IC33 H2
IC34 H3
IC35 F7
IC36 A5
IC37 B6
IC38 B6
IC39 H4
IC40 I3
IC41 G3
IC44 E4
IC45 F4
IC46 E4
IC47 C4
IC81 C6
IC82 C6
IC83 A6
IC89 E4

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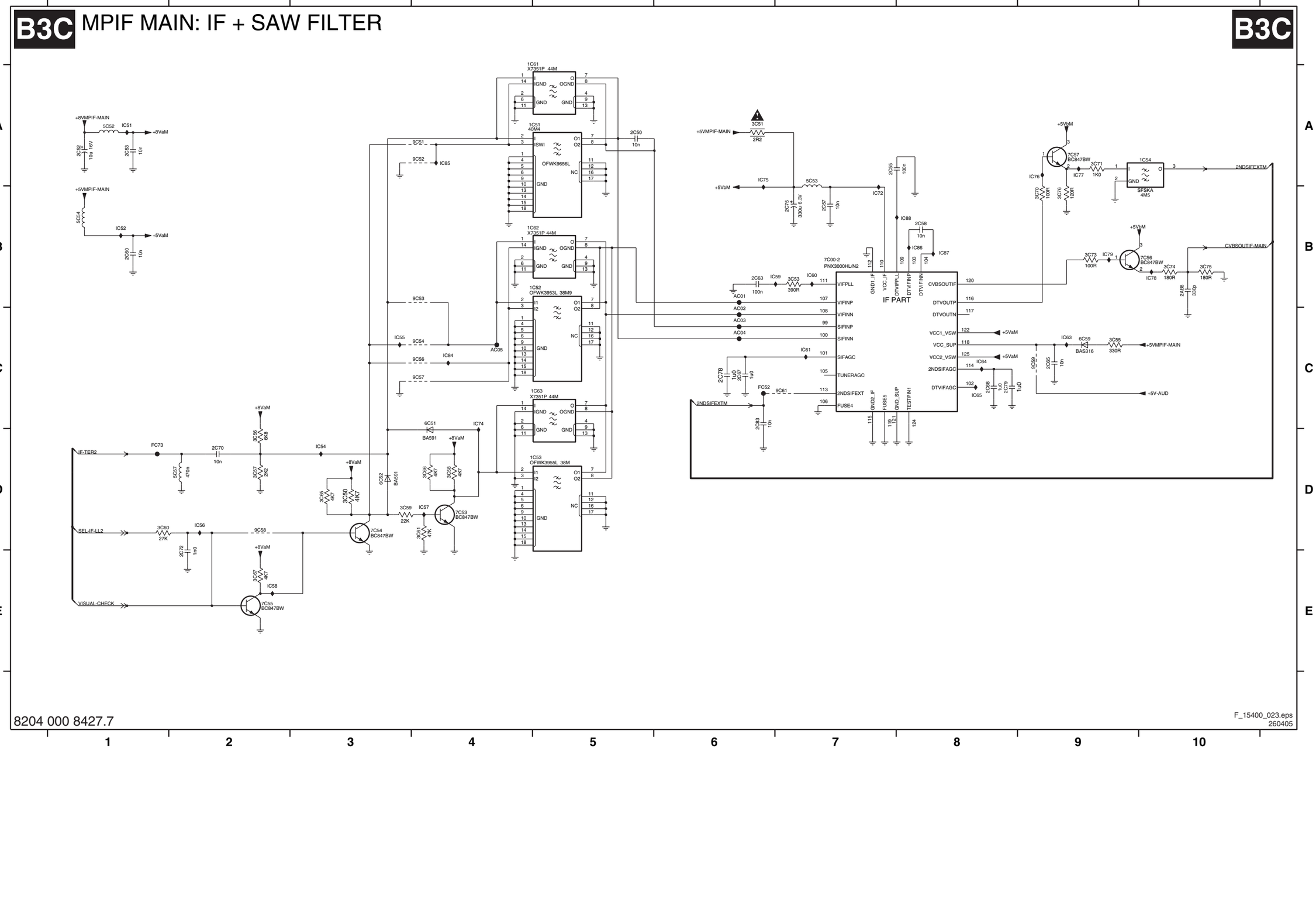
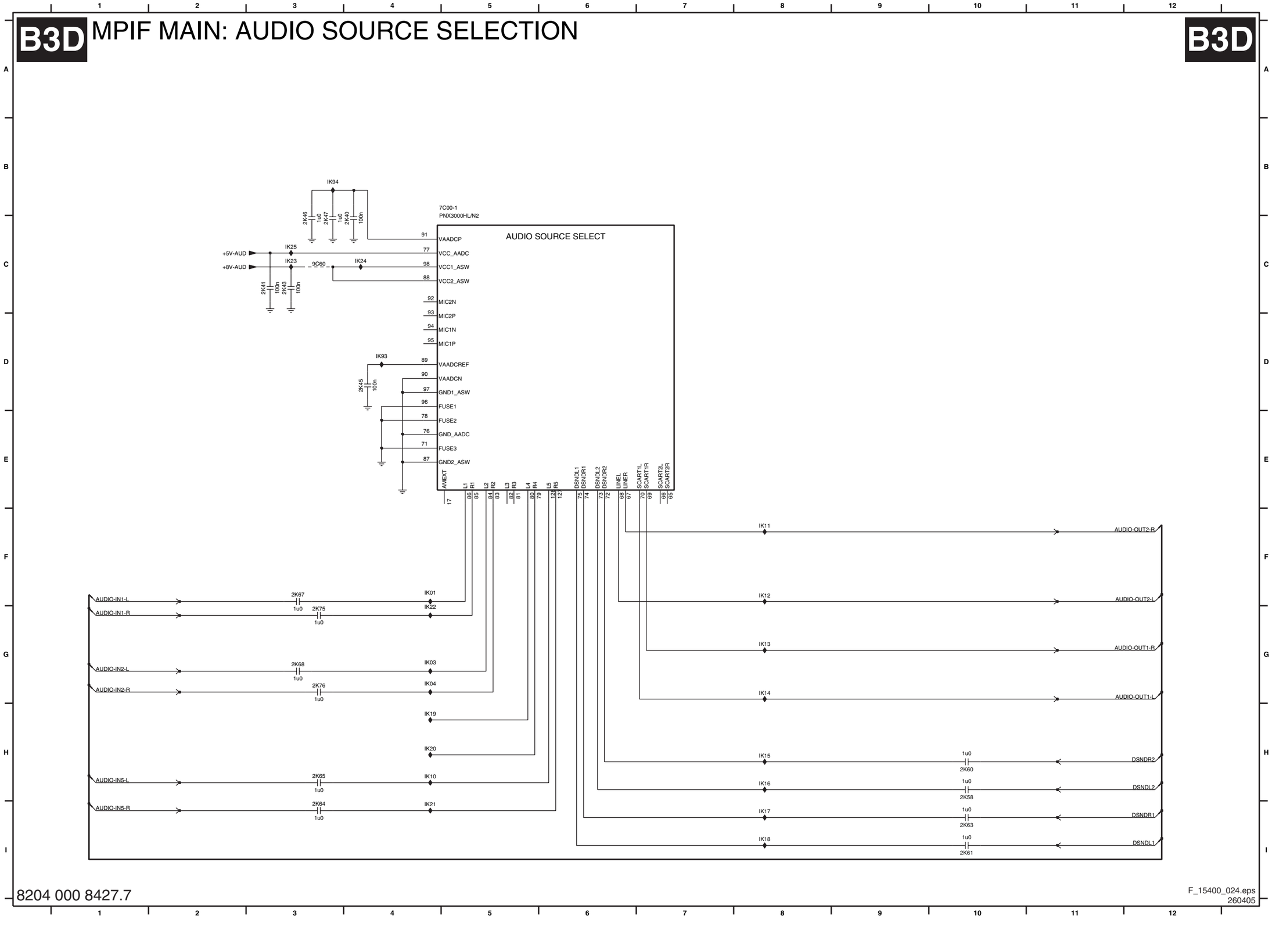
SSB: MPIF Main: IF & SAW Filter

1C51 A4	1C61 A5	2C50 A5	2C57 B7	2C65 C9	2C72 E2	2C83 C6	3C55 C9	3C59 D3	3C66 D4	3C73 B9	5C52 A1	6C51 C4	7C53 D4	7C57 A9	9C54 C4	9C59 C9	AC03 C6	FC73 D1	IC55 C3	IC59 B7	IC64 C8	IC75 A6	IC79 B9	IC87 B8
1C52 B4	1C62 B5	2C52 A1	2C58 B8	2C67 C6	2C75 B7	3C50 D3	3C56 D2	3C60 D1	3C67 E2	3C74 B10	5C53 A7	6C52 D3	7C54 D3	9C51 A4	9C56 C4	9C61 C7	AC04 C6	IC51 A1	IC56 D2	IC60 B7	IC65 C8	IC76 A9	IC84 C4	IC88 B8
1C53 D4	1C63 C5	2C53 A1	2C60 B1	2C68 C8	2C78 C6	3C51 A6	3C57 D2	3C61 D4	3C70 B9	3C75 B10	5C54 B1	6C59 C9	7C55 E2	9C52 A4	9C57 C4	AC01 B6	AC05 C6	IC52 B1	IC57 D4	IC61 C7	IC72 B7	IC77 A9	IC85 A4	
1C54 A10	2AB8 B10	2C55 A7	2C63 B6	2C70 D2	2C79 C8	3C53 B7	3C58 D4	3C65 D3	3C71 A9	3C76 B9	5C57 D2	7C00-2 B7	7C56 B10	9C53 B4	9C58 D2	AC02 C6	FC52 C6	IC54 D3	IC58 E2	IC63 C9	IC74 C4	IC78 B10	IC86 B8	



SSB: MPIF Main: Audio Source Selection

B3D MPIF MAIN: AUDIO SOURCE SELECTION



2K40 C4
2K41 C3
2K43 C3
2K45 D4
2K46 C3
2K47 C3
2K58 H10
2K60 H10
2K61 I10
2K63 I10
2K64 I3
2K65 H3
2K67 F3
2K68 G3
2K75 G3
2K76 G3
7C00-1 B4
9C60 C3
IK01 F4
IK03 G4
IK04 G4
IK10 H4
IK11 F8
IK12 F8
IK13 G8
IK14 G8
IK15 H8
IK16 H8
IK17 I8
IK18 I8
IK19 H4
IK20 H4
IK21 I4
IK22 G4
IK23 C3
IK24 C4
IK25 C3
IK93 D4
IK94 B3

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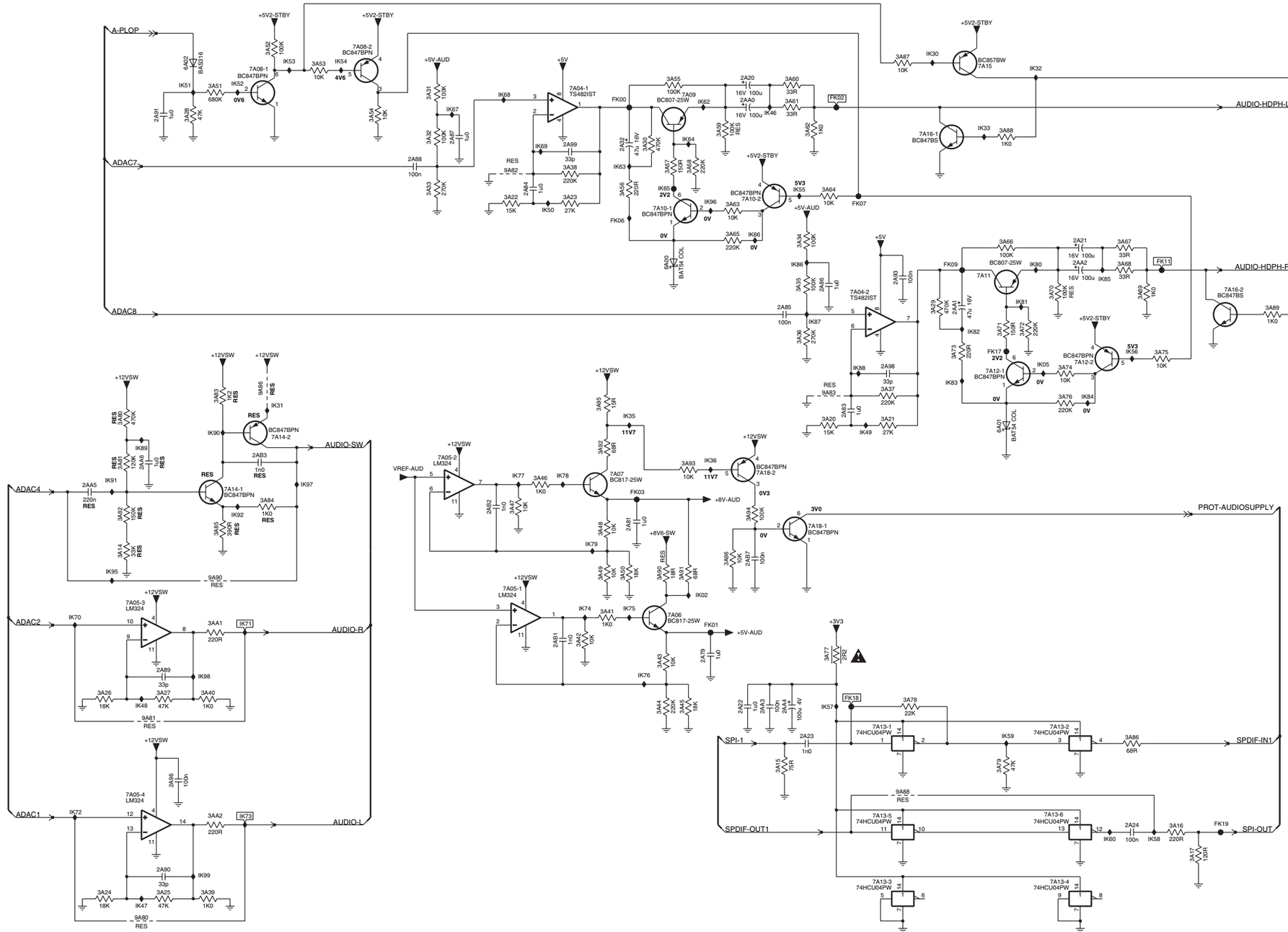
SSB: MPIF Main: Audio Amplifier

B3E MPIF MAIN: AUDIO AMPLIFIER

B3E



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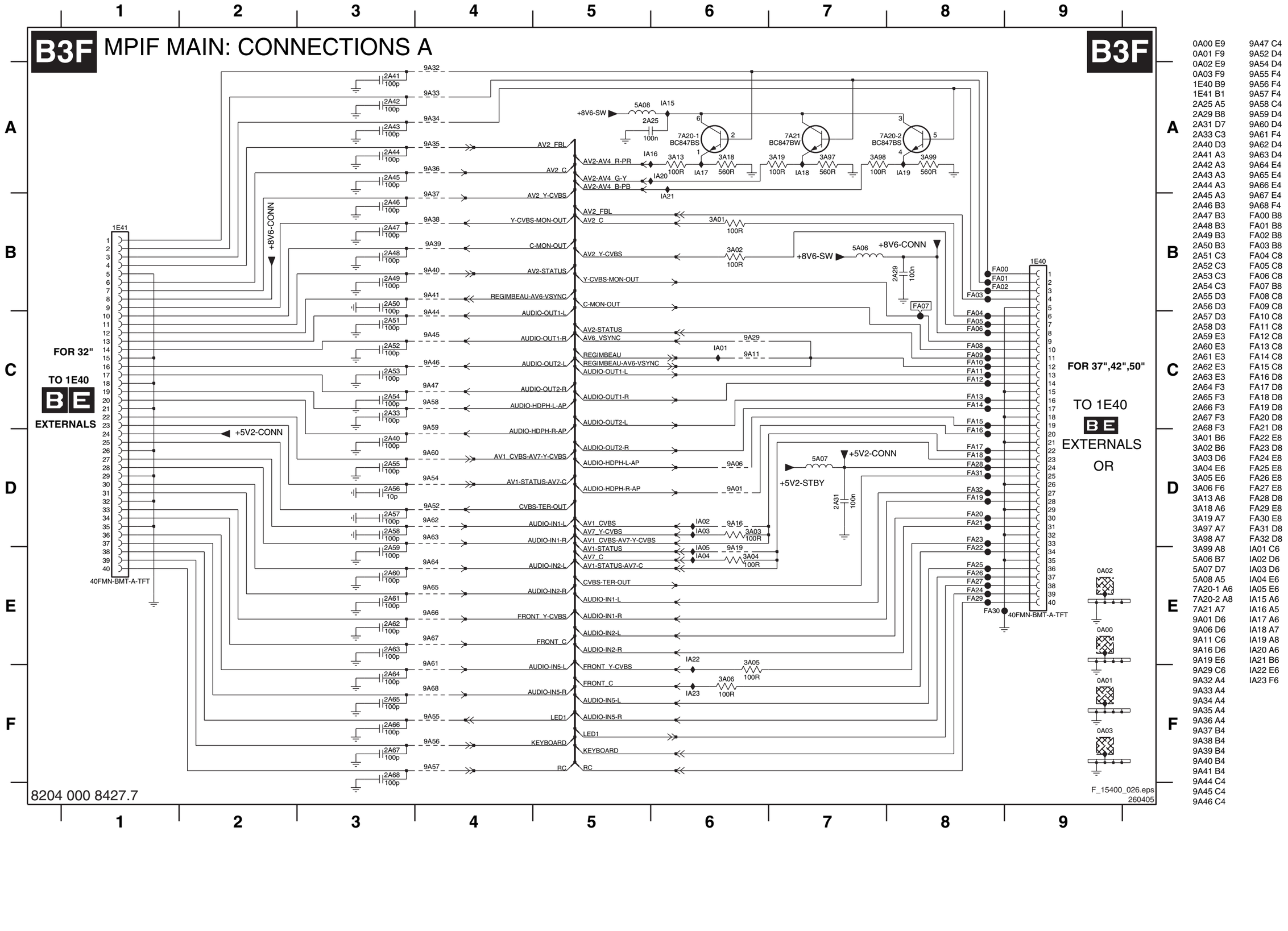
2A20 A8	6A00 C8
2A21 C12	6A01 E11
2A22 G8	6A02 A3
2A23 H9	7A04-1 A7
2A24 I12	7A04-2 C9
2A32 B7	7A05-1 F6
2A79 G8	7A05-2 E5
2A81 F7	7A05-3 F2
2A83 E9	7A05-4 H2
2A84 B6	7A06 G8
2A85 D9	7A07 E7
2A86 C9	7A08-1 A4
2A87 B6	7A08-2 A5
2A88 B5	7A09 A8
2A89 G3	7A10-1 C8
2A90 I3	7A10-2 B9
2A91 B3	7A11 C11
2A93 C10	7A12-1 D11
2A96 H3	7A12-2 D12
2A98 D10	7A13-1 H10
2A99 B7	7A13-2 H12
2AA0 B8	7A13-3 I10
2AA1 D10	7A13-4 I12
2AA2 C12	7A13-5 H10
2AA3 G9	7A13-6 H11
2AA4 G9	7A14-1 E3
2AA5 E2	7A14-2 E4
2AA6 E3	7A15 A11
2AB1 G7	7A16-1 B10
2AB2 E6	7A16-2 C13
2AB3 E4	7A18-1 F9
2AB7 F8	7A18-2 E8
3A14 F2	9A80 I3
3A15 H9	9A81 H3
3A16 I13	9A82 B6
3A17 I13	9A83 D9
3A20 E9	9A86 D4
3A21 E10	9A88 H10
3A22 B6	9A90 F3
3A23 B7	FK00 B7
3A24 I2	FK01 G8
3A25 I3	FK02 B9
3A26 G2	FK03 E7
3A27 G3	FK06 C7
3A28 B3	FK07 C9
3A29 D10	FK09 C10
3A30 B7	FK11 C12
3A31 A5	FK17 D11
3A32 B5	FK18 G9
3A33 B5	FK19 I13
3A34 C9	IK02 F8
3A35 C9	IK05 D11
3A36 D9	IK30 A10
3A37 D10	IK31 D4
3A38 B7	IK32 A11
3A39 I3	IK33 B11
3A40 G3	IK35 E7
3A41 F7	IK36 E8
3A42 G7	IK46 B9
3A43 G8	IK47 I3
3A44 G8	IK48 G3
3A45 G8	IK49 E10
3A46 E6	IK50 C6
3A47 E6	IK51 A3
3A48 F7	IK52 A3
3A49 F7	IK53 A4
3A50 F7	IK54 A4
3A51 A3	IK55 B9
3A52 A4	IK56 D12
3A53 A4	IK57 G9
3A54 B5	IK58 I12
3A55 A8	IK59 H11
3A56 B7	IK60 I12
3A57 B8	IK62 B8
3A58 B8	IK63 B7
3A59 B8	IK64 B8
3A60 A9	IK65 B8
3A61 B9	IK66 C8
3A62 B9	IK67 B6
3A63 C8	IK68 A6
3A64 B9	IK69 B6
3A65 C8	IK70 G2
3A66 C11	IK71 G4
3A67 C12	IK72 H2
3A68 C12	IK73 H4
3A69 C12	IK74 F7
3A70 C11	IK75 F7
3A71 D11	IK76 G7
3A72 D11	IK77 E6
3A73 D10	IK78 E7
3A74 D11	IK79 F7
3A75 D12	IK80 C11
3A76 D11	IK81 C11
3A77 G9	IK82 D11
3A78 G10	IK83 D10
3A79 H11	IK84 D12
3A80 E2	IK85 C12
3A81 E2	IK86 C9
3A82 F2	IK87 D9
3A83 D3	IK88 D9
3A84 E4	IK89 E3
3A85 F3	IK90 E3
3A86 H12	IK91 E2
3A87 A10	IK92 F3
3A88 B11	IK95 F2
3A89 D13	IK96 C8
3A90 F8	IK97 E4
3A91 F8	IK98 G3
3A92 E7	IK99 I3
3A93 E8	
3A94 F8	
3A95 D7	
3A96 F8	
3AA1 G3	
3AA2 H3	

SSB: MPIF Main: Connections A

B3F MPIF MAIN: CONNECTIONS A



0A00 E9	9A47 C4
0A01 F9	9A52 D4
0A02 E9	9A54 D4
0A03 F9	9A55 F4
1E40 B9	9A56 F4
1E41 B1	9A57 F4
2A25 A5	9A58 C4
2A29 B8	9A59 D4
2A31 D7	9A60 D4
2A33 C3	9A61 F4
2A40 D3	9A62 D4
2A41 A3	9A63 D4
2A42 A3	9A64 E4
2A43 A3	9A65 E4
2A44 A3	9A66 E4
2A45 A3	9A67 E4
2A46 B3	9A68 F4
2A47 B3	FA00 B8
2A48 B3	FA01 B8
2A49 B3	FA02 B8
2A50 B3	FA03 B8
2A51 C3	FA04 C8
2A52 C3	FA05 C8
2A53 C3	FA06 C8
2A54 C3	FA07 B8
2A55 D3	FA08 C8
2A56 D3	FA09 C8
2A57 D3	FA10 C8
2A58 D3	FA11 C8
2A59 E3	FA12 C8
2A60 E3	FA13 C8
2A61 E3	FA14 C8
2A62 E3	FA15 C8
2A63 E3	FA16 D8
2A64 F3	FA17 D8
2A65 F3	FA18 D8
2A66 F3	FA19 D8
2A67 F3	FA20 D8
2A68 F3	FA21 D8
3A01 B6	FA22 E8
3A02 B6	FA23 D8
3A03 D6	FA24 E8
3A04 E6	FA25 E8
3A05 E6	FA26 E8
3A06 F6	FA27 E8
3A13 A6	FA28 D8
3A18 A6	FA29 E8
3A19 A7	FA30 E8
3A97 A7	FA31 D8
3A98 A7	FA32 D8
3A99 A8	IA01 C6
5A06 B7	IA02 D6
5A07 D7	IA03 D6
5A08 A5	IA04 E6
7A20-1 A6	IA05 E6
7A20-2 A8	IA15 A6
7A21 A7	IA16 A5
9A01 D6	IA17 A6
9A06 D6	IA18 A7
9A11 C6	IA19 A8
9A16 D6	IA20 A6
9A19 E6	IA21 B6
9A29 C6	IA22 E6
9A32 A4	IA23 F6
9A33 A4	
9A34 A4	
9A35 A4	
9A36 A4	
9A37 B4	
9A38 B4	
9A39 B4	
9A40 B4	
9A41 B4	
9A44 C4	
9A45 C4	
9A46 C4	

SSB: MPIF Main: Connections B

B3G MPIF MAIN: CONNECTIONS B

B3G

TO 1739
SA3
AUDIO STANDBY

1M52
FA33
FA34
FA35
FA36
FA37
FA38
10V8
2A34 100p 5A01 100p 2A75 AUDIO-L
2A35 100p 5A02 100p 2A76 AUDIO-R
2A36 100p 5A03 100p 2A77 AUDIO-SW
2A37 100p 5A04 IA00 3V PROT-AUDIOSUPPLY
2A38 100p 5A05 SOUND-ENABLE
2A39 RES 100p

+5V 6A10-1 BAV99S 6A10-2 BAV99S +5V

1E63
FOR 32"
TO 1E62
BE
EXTERNALS

1E62
FOR 37",42",50"
TO 1E62
BE
EXTERNALS

9A02 2A78 100p
9A03 2A82 100p
9A04 2A92 100p
9A05 IA10
9A07 IA11
9A08 IA12
9A09 FA54 2A97 1n0
9A10 2AA8 100p
9A21 2AA9 100p
9A22 2AAA 100p
9A69 FA39 2AB6 100p
9A70 FA40 2A69 10p
9A71 FA41 2A70 100p
FA42 2A71 10p
FA43
FA47
9A77 2AAB 100p
9A78
9A75 2A80 100p
9A72 2A72 100p
9A73 2A73 100p
9A74 2A74 100p
9A79

FA48 COM-SND
FA49 LIGHT-SENSOR
FA50 LED2
SDA-MM
FA58 SCL-MM
P50
A-PLOP
FA55 GLINK-RXD
FA56 GLINK-TXD
FA57 GLINK-IR-OUT
SPI-OUT
HSYNC-HIRATE
SPI-1
AV1-STATUS
AV6_VSYNC
AV1-AV6_FBL-HSYNC
IA44 AV1-AV5-AV6_B-PB
IA45 AV1-AV5-AV6_G-Y
IA46 AV1-AV5-AV6_R-PR

IA25 5A10 +8V6-SW
2A01 100n

7A01-1 BC847BS
7A02 BC847BW
7A01-2 BC847BS
IA26 3A07 100R 3A08 560R
IA27 3A09 100R 3A10 560R
IA28 3A11 100R 3A12 560R

FA60
FA61
FA62

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1E62 E1 9A79 D5
1E63 C1 FA33 A4
1M52 A4 FA34 A4
2A01 E8 FA35 A4
2A34 A5 FA36 A4
2A35 A5 FA37 A4
2A36 A5 FA38 A4
2A37 A5 FA39 D3
2A38 A5 FA40 D3
2A39 A5 FA41 D3
2A69 D3 FA42 D3
2A70 D3 FA43 D3
2A71 D3 FA47 D4
2A72 E3 FA48 B6
2A73 E3 FA49 B6
2A74 E3 FA50 B6
2A75 A7 FA54 C3
2A76 A7 FA55 C6
2A77 A7 FA56 C6
2A78 B3 FA57 C6
2A80 D3 FA58 C6
2A82 B3 FA60 F3
2A92 C3 FA61 F2
2A97 C3 FA62 F2
2AA8 C3 IA00 A6
2AA9 C3 IA10 C3
2AAA C3 IA11 C3
2AAB D3 IA12 C3
2AB6 D3 IA25 E8
3A07 F6 IA26 F6
3A08 F6 IA27 F7
3A09 F7 IA28 F8
3A10 F7 IA44 D9
3A11 F8 IA45 E9
3A12 F8 IA46 E9
5A01 A6
5A02 A6
5A03 A6
5A04 A6
5A05 A6
5A10 E9
6A10-1 B3
6A10-2 B4
7A01-1 F6
7A01-2 F8
7A02 F7
9A02 B3
9A03 B3
9A04 B3
9A05 C3
9A07 C3
9A08 C3
9A09 C3
9A10 C3
9A21 C3
9A22 C3
9A69 D3
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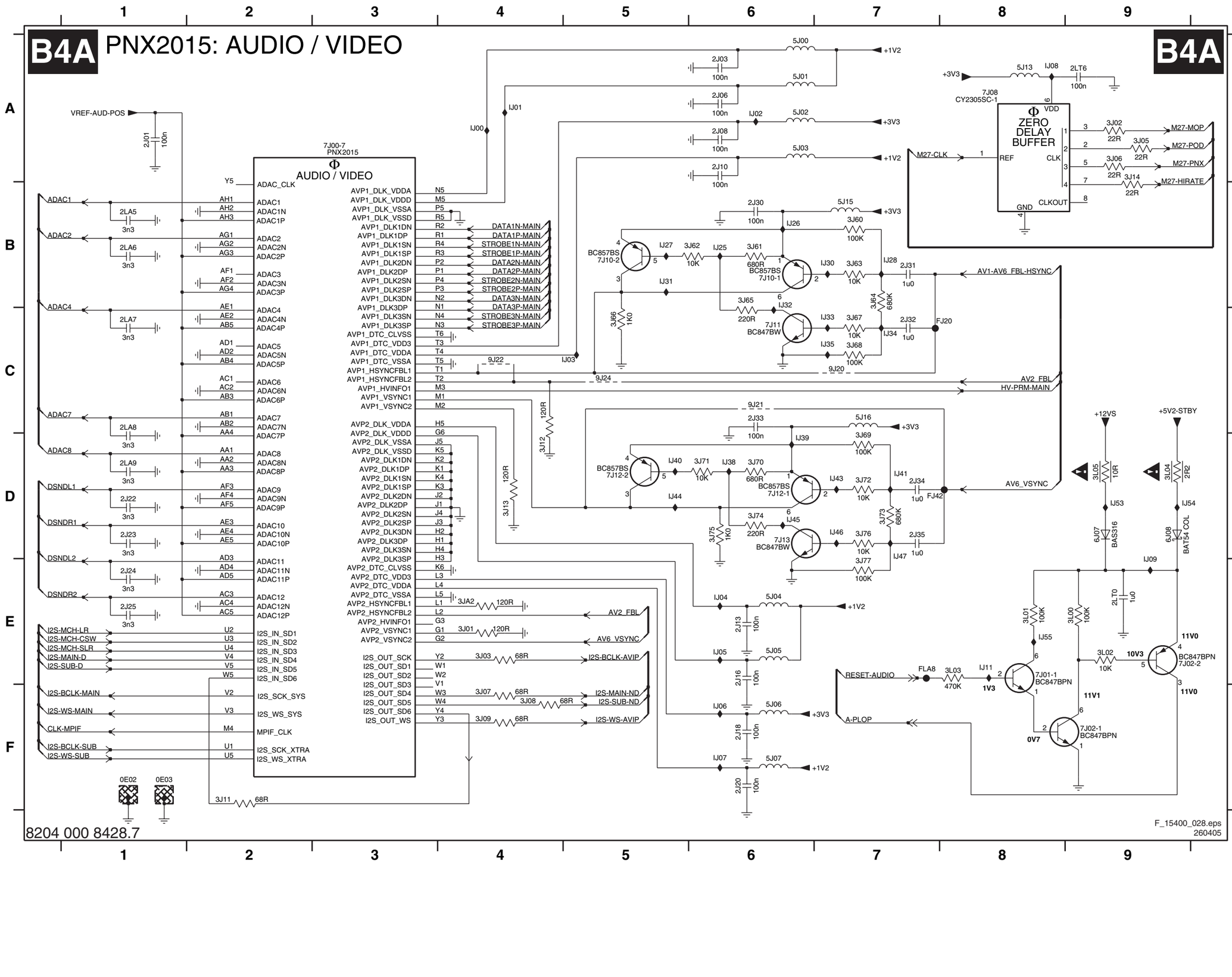
9A74 E4
9A75 D4
9A77 D4
9A78 D4

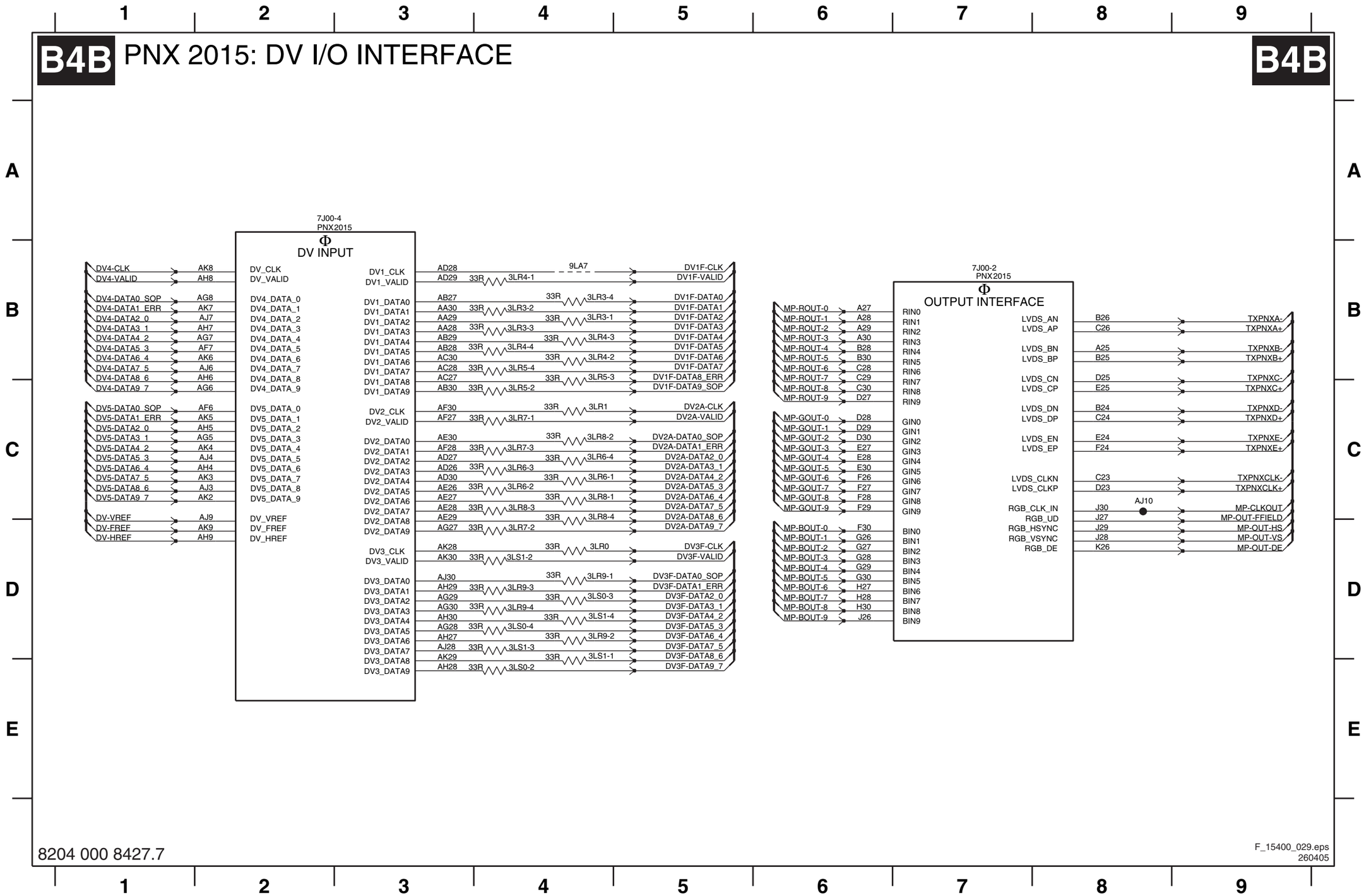
SSB: PNX2015: Audio/Video



0E02 F1 5J01 A6
0E03 F1 5J02 A6
2J01 A1 5J03 A6
2J03 A6 5J04 E6
2J06 A6 5J05 E6
2J08 A6 5J06 F6
2J10 A6 5J07 F6
2J13 E6 5J13 A8
2J16 E6 5J15 B7
2J18 F6 5J16 C7
2J20 F6 6J07 D9
2J22 D1 6J08 D9
2J23 D1 7J00-7 A3
2J24 E1 7J01-1 E8
2J25 E1 7J02-1 F9
2J30 B6 7J02-2 E9
2J31 B7 7J08 A8
2J32 C7 7J10-1 B6
2J33 C6 7J10-2 B5
2J34 D7 7J11 C6
2J35 D7 7J12-1 D6
2LA5 B1 7J12-2 D5
2LA6 B1 7J13 D6
2LA7 C1 9J20 C7
2LA8 C1 9J21 C6
2LA9 D1 9J22 C4
2LT0 E9 9J24 C5
2LT6 A9 FJ20 C8
3J01 E4 FJ42 D7
3J02 A9 FLA8 E7
3J03 E4 IJ00 A4
3J05 A9 IJ01 A4
3J06 A9 IJ02 A6
3J07 F4 IJ03 C5
3J08 F4 IJ04 E6
3J09 F4 IJ05 E6
3J11 F2 IJ06 F6
3J12 D4 IJ07 F6
3J13 D4 IJ08 A8
3J14 A9 IJ09 E9
3J60 B7 IJ11 E8
3J61 B6 IJ25 B6
3J62 B6 IJ26 B6
3J63 B7 IJ27 B5
3J64 B7 IJ28 B7
3J65 B6 IJ30 B7
3J66 C5 IJ31 B5
3J67 C7 IJ32 B6
3J68 C7 IJ33 C7
3J69 C7 IJ34 C7
3J70 D6 IJ35 C7
3J71 D6 IJ38 D6
3J72 D7 IJ39 D6
3J73 D7 IJ40 D5
3J74 D6 IJ41 D7
3J75 D6 IJ43 D7
3J76 D7 IJ44 D5
3J77 D7 IJ45 D6
3JA2 E4 IJ46 D7
3L00 E9 IJ47 D7
3L01 E8 IJ53 D9
3L02 E9 IJ54 D9
3L03 E8 IJ55 E8
3L04 D9
3L05 D9
5J00 A6

SSB: PNX2015: DV I/O Interface

B4B PNX 2015: DV I/O INTERFACE



3LR0 D4
3LR1 C4
3LR3-1 B4
3LR3-2 B4
3LR3-3 B4
3LR3-4 B4
3LR4-1 B4
3LR4-2 B4
3LR4-3 B4
3LR4-4 B4
3LR5-2 C4
3LR5-3 B4
3LR5-4 B4
3LR6-1 C4
3LR6-2 C4
3LR6-3 C4
3LR6-4 C4
3LR7-1 C4
3LR7-2 D4
3LR7-3 C4
3LR8-1 C4
3LR8-2 C4
3LR8-3 C4
3LR8-4 C4
3LR9-1 D4
3LR9-2 D4
3LR9-3 D4
3LR9-4 D4
3LS0-2 E4
3LS0-3 D4
3LS0-4 D4
3LS1-1 D4
3LS1-2 D4
3LS1-3 D4
3LS1-4 D4
7J00-2 B7
7J00-4 A2
9LA7 B4
AJ10 C8

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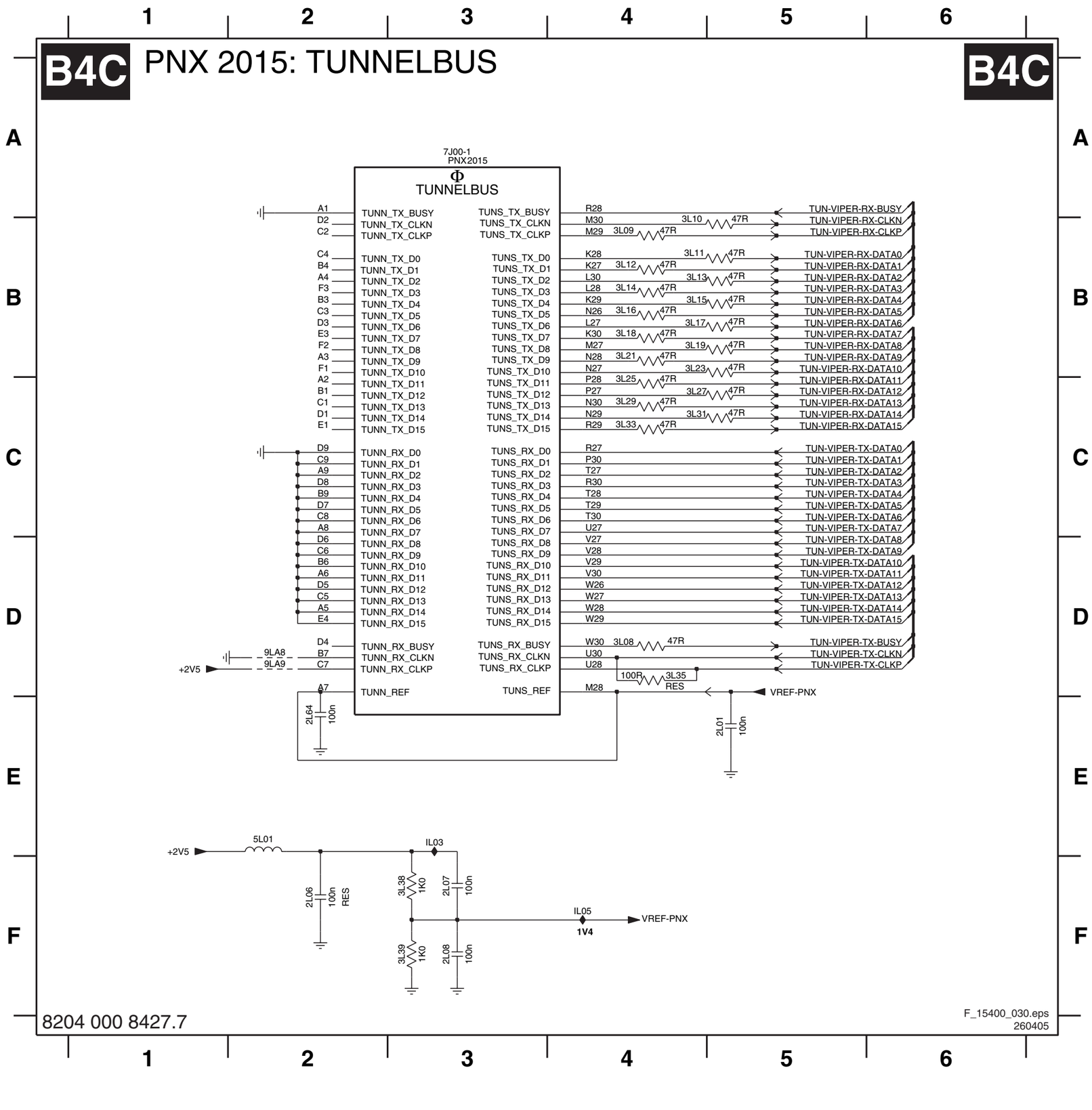
SSB: PNX2015: Tunnel Bus

B4C PNX 2015: TUNNELBUS



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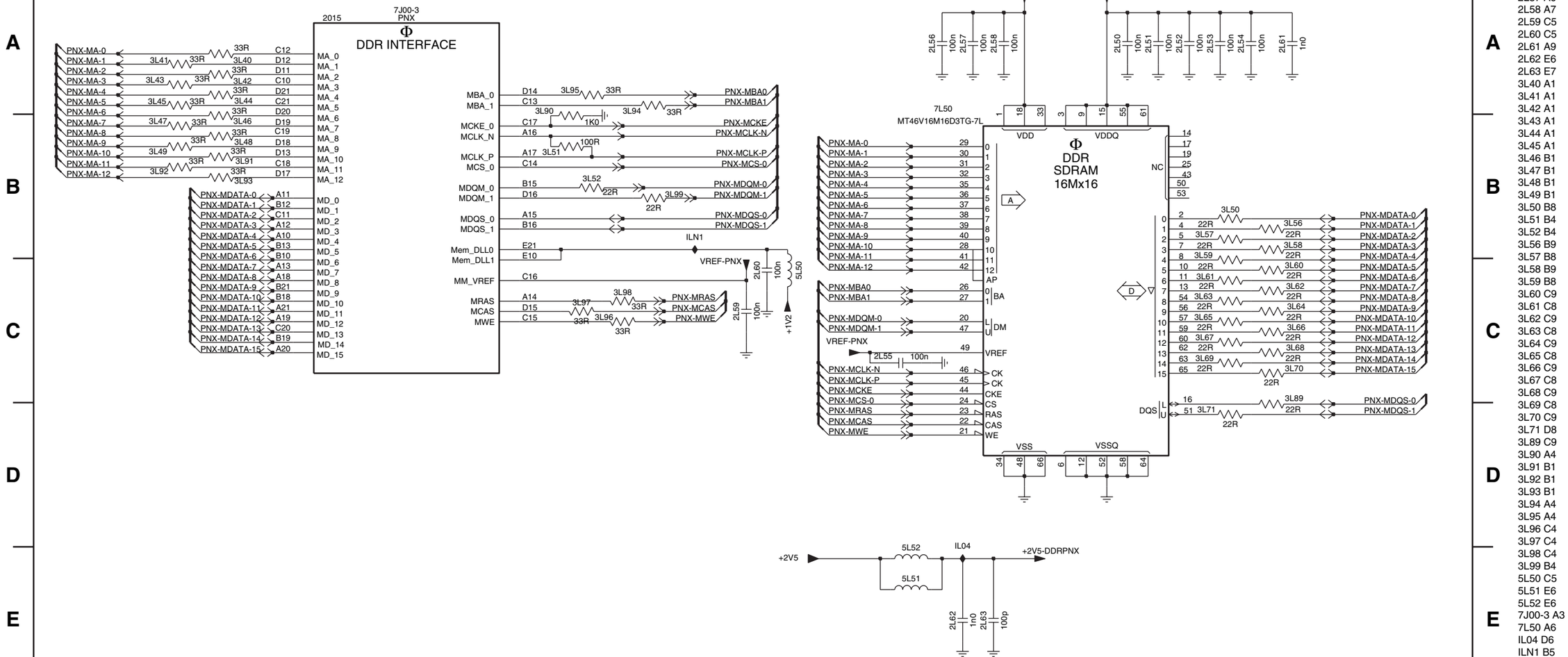
2L01 E5
2L05 F2
2L06 F2
2L07 F3
2L08 F3
2L64 E2
3L08 D4
3L09 B4
3L10 B4
3L11 B4
3L12 B4
3L13 B4
3L14 B4
3L15 B4
3L16 B4
3L17 B4
3L18 B4
3L19 B4
3L21 B4
3L23 B4
3L25 C4
3L27 C4
3L29 C4
3L31 C4
3L33 C4
3L35 D4
3L38 F3
3L39 F3
5L01 E2
7J00-1 A3
9LA8 D2
9LA9 D2
IL03 E3
IL05 F4

SSB: PNX2015: DDR Interface

B4D PNX 2015: DDR INTERFACE



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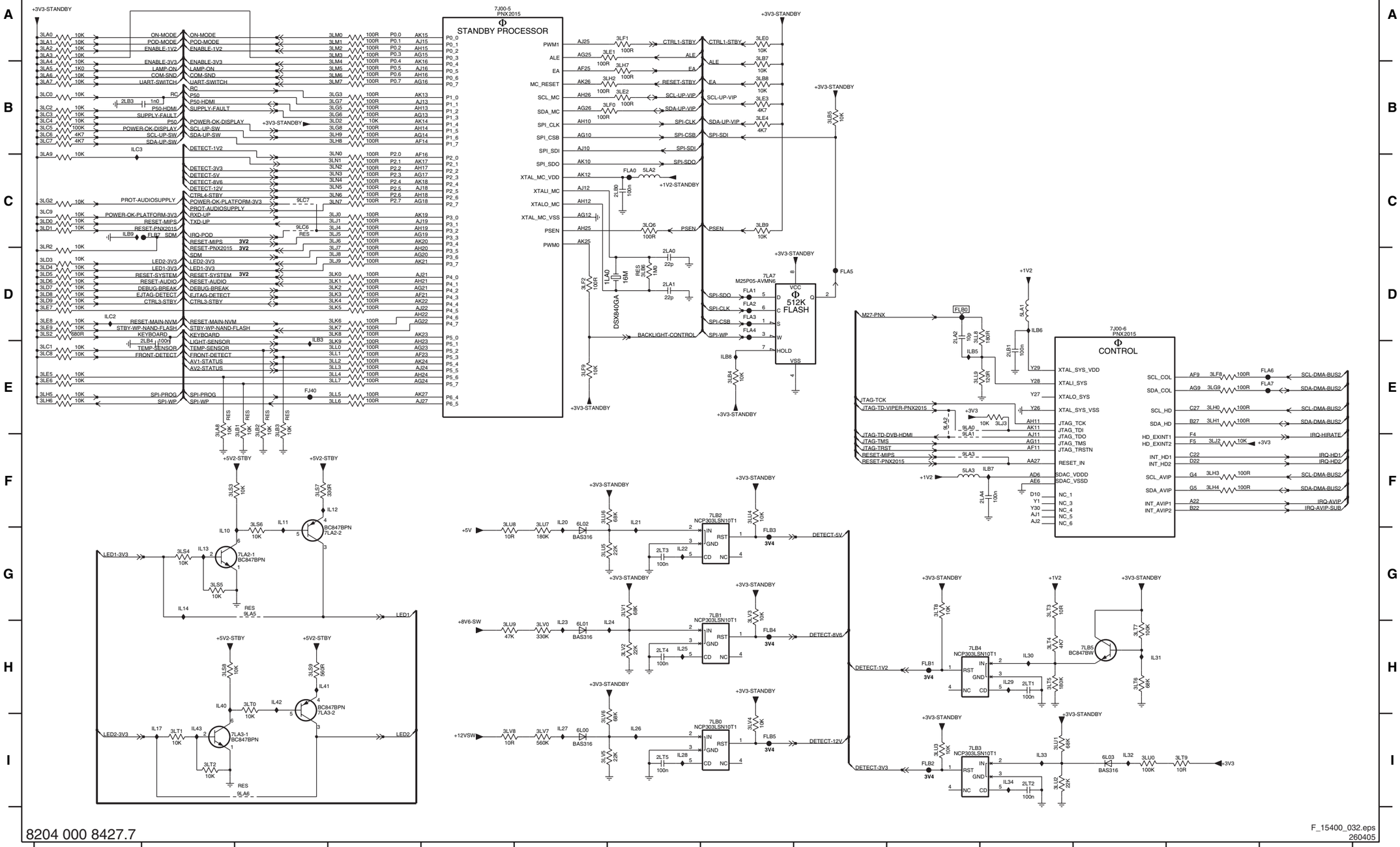
2L50 A8
2L51 A8
2L52 A8
2L53 A8
2L54 A8
2L55 C6
2L56 A6
2L57 A6
2L58 A7
2L59 C5
2L60 C5
2L61 A9
2L62 E6
2L63 E7
3L40 A1
3L41 A1
3L42 A1
3L43 A1
3L44 A1
3L45 A1
3L46 B1
3L47 B1
3L48 B1
3L49 B1
3L50 B8
3L51 B4
3L52 B4
3L56 B9
3L57 B8
3L58 B9
3L59 B8
3L60 C9
3L61 C8
3L62 C9
3L63 C8
3L64 C9
3L65 C8
3L66 C9
3L67 C8
3L68 C9
3L69 C8
3L70 C9
3L71 D8
3L89 C9
3L90 A4
3L91 B1
3L92 B1
3L93 B1
3L94 A4
3L95 A4
3L96 C4
3L97 C4
3L98 C4
3L99 B4
5L50 C5
5L51 E6
5L52 E6
7J00-3 A3
7L50 A6
IL04 D6
ILN1 B5

SSB: PNX2015: Standby & Control

B4E PNX 2015: STANDBY & CONTROL

B4E



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1LA0 D7 3LN4 C4
2LA0 D7 3LN5 C4
2LA1 D7 3LN6 C4
2LA2 D10 3LN7 C4
2LA4 F11 3LO6 C7
2LB0 C7 3LR2 D1
2LB1 E11 3LS2 D1
2LB3 B1 3LS3 F2
2LB4 E2 3LS4 G2
2LT1 H11 3LS5 G2
2LT2 I11 3LS6 F3
2LT3 G7 3LS7 F3
2LT4 H7 3LS8 H2
2LT5 I7 3LS9 H3
3LA0 A1 3LT0 H3
3LA1 A1 3LT1 I2
3LA2 A1 3LT2 I2
3LA3 A1 3LT3 G11
3LA4 B1 3LT4 H11
3LA5 B1 3LT5 H11
3LA6 B1 3LT6 H12
3LA7 B1 3LT7 H12
3LA8 E2 3LT8 G10
3LA9 C1 3LT9 I13
3LB1 E3 3LU0 I12
3LB2 E3 3LU1 I11
3LB3 E3 3LU2 I11
3LB4 E8 3LU3 I10
3LB5 B9 3LU4 F8
3LB6 D7 3LU5 G6
3LB7 A8 3LU6 F6
3LB8 B8 3LU7 F6
3LB9 C8 3LU8 F5
3LC0 B1 3LU9 H5
3LC1 E1 3LV0 H6
3LC2 B1 3LV1 G7
3LC3 B1 3LV2 H7
3LC4 B1 3LV3 G8
3LC5 B1 3LV4 I8
3LC6 B1 3LV5 I6
3LC7 B1 3LV6 I6
3LC8 E1 3LV7 I6
3LC9 C1 3LV8 I5
3LD0 C1 5LA1 D11
3LD1 C1 5LA2 C7
3LD2 B4 5LA3 F10
3LD3 D1 6L00 I6
3LD4 D1 6L01 H6
3LD5 D1 6L02 F6
3LD6 D1 6L03 I12
3LD7 D1 7J00-5 A5
3LD8 D1 7J00-6 D12
3LD9 D1 7LA2-1 G3
3LE0 A8 7LA2-2 G3
3LE1 A7 7LA3-1 I2
3LE2 B7 7LA3-2 H3
3LE3 B8 7LA7 D8
3LE4 B8 7LB0 I8
3LE5 E1 7LB1 G8
3LE6 E1 7LB2 F8
3LE7 D1 7LB3 I10
3LE8 D1 7LB4 H10
3LE9 D1 7LB5 H12
3LF0 B7 9LA0 E10
3LF1 A7 9LA1 F10
3LF2 D6 9LA2 E10
3LF8 E13 9LA3 F10
3LF9 E6 9LA5 G3
3LG2 C1 9LA6 I3
3LG3 B4 9LC6 C3
3LG5 B4 9LC7 C3
3LG6 B4 FJ40 E3
3LG7 B4 FLA0 C7
3LG8 B4 FLA1 D8
3LG9 E13 FLA2 D8
3LH0 E13 FLA3 D8
3LH1 E13 FLA4 D8
3LH2 B7 FLA5 D9
3LH3 F13 FLA6 E14
3LH4 F13 FLA7 E14
3LH5 E1 FLB0 D10
3LH6 E1 FLB1 H10
3LH7 B7 FLB2 I10
3LH8 B4 FLB3 G8
3LH9 B4 FLB4 H8
3LJ0 C4 FLB5 I8
3LJ1 C4 FLB7 C2
3LJ2 F13 IL10 G2
3LJ3 E11 IL11 F3
3LJ4 C4 IL12 F4
3LJ5 C4 IL13 G2
3LJ6 C4 IL14 G2
3LJ7 D4 IL17 I2
3LJ8 D4 IL20 F6
3LJ9 D4 IL21 F7
3LK0 D4 IL22 G7
3LK1 D4 IL23 H6
3LK2 D4 IL24 H7
3LK3 D4 IL25 H7
3LK4 D4 IL26 I7
3LK5 D4 IL27 I6
3LK6 D4 IL28 I7
3LK7 D4 IL29 H11
3LK8 D4 IL30 H11
3LK9 E4 IL31 H12
3LL0 E4 IL32 I12
3LL1 E4 IL33 I11
3LL2 E4 IL34 I11
3LL3 E4 IL40 H2
3LL4 E4 IL41 H3
3LL5 E4 IL42 H3
3LL6 E4 IL43 I2
3LL7 E4 ILB3 D3
3LL8 D10 ILB5 E10
3LL9 E10 ILB6 D11
3LM0 A4 ILB7 F11
3LM1 A4 ILB8 E8
3LM2 A4 ILB9 C1
3LM3 A4 ILC2 D1
3LM4 B4 ILC3 B1
3LM5 B4
3LM6 B4
3LM7 B4
3LN0 C4
3LN1 C4
3LN2 C4
3LN3 C4

SSB: PNX2015: Supply

B4F PNX 2015: SUPPLY

B4F

7J00-9
PNX2015
Φ
GND

B2	VSS_1	VSS_36	R16
B5	VSS_2	VSS_37	R17
B8	VSS_3	VSS_38	R18
B11	VSS_4		
B14	VSS_5	VSS_40	T13
B17	VSS_6	VSS_41	T14
B20	VSS_7	VSS_42	T15
B29	VSS_8	VSS_43	T16
C25	VSS_9	VSS_44	T17
D24	VSS_10	VSS_45	T18
D26	VSS_11	VSS_46	J6
E2	VSS_12	VSS_47	U6
E23	VSS_13	VSS_48	U13
E26	VSS_14	VSS_49	U14
E29	VSS_15	VSS_50	U15
H29	VSS_16	VSS_51	U16
L29	VSS_17	VSS_52	U17
N13	VSS_18	VSS_53	U18
N14	VSS_19	VSS_54	U29
N15	VSS_20	VSS_55	V13
N16	VSS_21	VSS_56	V14
N17	VSS_22	VSS_57	V15
N18	VSS_23	VSS_58	V16
P13	VSS_24	VSS_59	V17
P14	VSS_25	VSS_60	V18
P15	VSS_26	VSS_61	AC29
P16	VSS_27	VSS_62	AF29
P17	VSS_28	VSS_63	AJ5
P18	VSS_29	VSS_64	AJ8
U26	VSS_30	VSS_65	AJ14
U25	VSS_31	VSS_66	AJ17
P29	VSS_32	VSS_67	AJ20
R13	VSS_33	VSS_68	AJ23
R14	VSS_34	VSS_69	AJ26
R15	VSS_35	VSS_70	AJ29

7J00-8
PNX2015
Φ
SUPPLY

+1V2		+3V3	
E9	C1V2_VDD_1	P3V3VDD_1	F25
E11	C1V2_VDD_2	P3V3VDD_2	G25
E12	C1V2_VDD_3	P3V3VDD_3	H26
E16	C1V2_VDD_4	P3V3VDD_4	M6
E17	C1V2_VDD_5	P3V3VDD_5	N6
F9	C1V2_VDD_6	P3V3VDD_6	V6
F10	C1V2_VDD_7	P3V3VDD_7	W6
F12	C1V2_VDD_8	P3V3VDD_8	AF8
F16	C1V2_VDD_9	P3V3VDD_9	AA26
F17	C1V2_VDD_10		
AA6	C1V2_VDD_11	P3V3VDD_11	AB26
J25	C1V2_VDD_12	P3V3VDD_12	AC26
K25	C1V2_VDD_13	P3V3VDD_13	AD25
AB6	C1V2_VDD_14	P3V3VDD_14	AE7
P6	C1V2_VDD_15	P3V3VDD_15	AE13
R6	C1V2_VDD_16	P3V3VDD_16	AE14
AB25	C1V2_VDD_17	P3V3VDD_17	AE24
F22	C1V2_VDD_18	P3V3VDD_18	AE25
F21	C1V2_VDD_19	P3V3VDD_19	AF26
AA5	C1V2_VDD_20		
AE10	C1V2_VDD_21	SB1V2VDD_1	AE15
AE12	C1V2_VDD_22	SB1V2VDD_2	AE16
AF10	C1V2_VDD_23	SB1V2VDD_3	AE17
AF12	C1V2_VDD_24	SB1V2VDD_4	AE18
AF13	C1V2_VDD_25	SB1V2VDD_5	AF15
E20	C1V2_VDD_26	SB1V2VDD_6	AF17
E22	C1V2_VDD_27	SB1V2VDD_7	AF18
AA25	C1V2_VDD_28	SB3V3VDD_1	AE19
		SB3V3VDD_2	AE21
+2V5-DDRPNX		SB3V3VDD_3	AE22
+2V5		SB3V3VDD_4	AF19
E5	P2V5VDD_1	SB3V3VDD_5	AF20
E6	P2V5VDD_2		
E7	P2V5VDD_3	VDD_LVDS_1	A23
E8	P2V5VDD_4	VDD_LVDS_2	A24
E13	P2V5VDD_5	VDD_LVDS_3	A26
E14	P2V5VDD_6	VDD_LVDS	B23
E15	P2V5VDD_7		
E18	P2V5VDD_8	VDDA_SYS_PLL	AE9
E19	P2V5VDD_9	VCCA_LVDS_PLL	T25
F6	P2V5VDD_10	VDDA_1_7_MCAB	V25
F7	P2V5VDD_11	VCCA_U5PLL	P26
F13	P2V5VDD_12		
F14	P2V5VDD_13	ADC_VSSA	AF24
F15	P2V5VDD_14	ADC3V3VDDA	AF22
F18	P2V5VDD_15		
F19	P2V5VDD_16	AVDD_MCAB	V26
L26	P2V5VDD_17	AVSS_MCAB	W25
M25	P2V5VDD_18		
M26	P2V5VDD_19	SDAC_3V3	AK1
N25	P2V5VDD_20		
R26	P2V5VDD_21		
P25	P2V5VDD_22		
T26	P2V5VDD_23		
R25	P2V5VDD_24		

+3V3-STANDBY
+1V2-STANDBY
+3V3-STANDBY
LVDS-3V3
PLL-1V2
LVDS-3V3
+3V3
+1V2
UP-3V3
+1V2
ILN2
5LN4
2LS5 100n

2LN2 47u 4V, 2LN3 100n, 2LN4 100n, 2LN5 100n, 2LN6 100n, 2LN7 100n, 2LN8 100n
2LP0 100u 4V, 2LP2 100n, 2LP3 100n, 2LP4 100n
2LP7 100u 4V, 2LP8 100n, 2LP9 100n, 2LR0 100n
5LN0 ILN3 +3V3 PLL-3V3, 2LR2 100n
5LN1 ILN4 +1V2 PLL-1V2, 2LR4 100n
+3V3-STANDBY 5LN2 ILN5 UP-3V3, 2LR5 100n, 2LR6 100n
5LN3 ILN6 +3V3 LVDS-3V3, 2LR8 100n, 2LR9 100n

2L80 2u2, 2L81 2u2, 2L82 2u2, 2L83 2u2, 2L84 100n, 2L85 100n, 2L86 100n, 2L87 100n, 2L88 100p, 2L89, 2L90 1n0, 2L91 1n0, 2L92 1n0

2L80 E1
2L81 E1
2L82 E1
2L83 E1
2L84 E1
2L85 E1
2L86 E2
2L87 E2
2L88 E2
2L89 E2
2L90 E2
2L91 E3
2L92 E3
2LN2 A7
2LN3 A7
2LN4 A7
2LN5 A8
2LN6 A8
2LN7 A8
2LN8 A8
2LP0 B7
2LP2 B8
2LP3 B8
2LP4 B8
2LP7 B8
2LP8 B8
2LP9 B8
2LR0 B8
2LR2 C8
2LR4 D8
2LR5 D8
2LR6 D8
2LR8 E8
2LR9 E8
2LS5 E6
5LN0 C7
5LN1 C7
5LN2 D7
5LN3 E7
5LN4 E6
7J00-8 A5
7J00-9 A2
ILN2 E6
ILN3 C8
ILN4 C8
ILN5 D8
ILN6 E8

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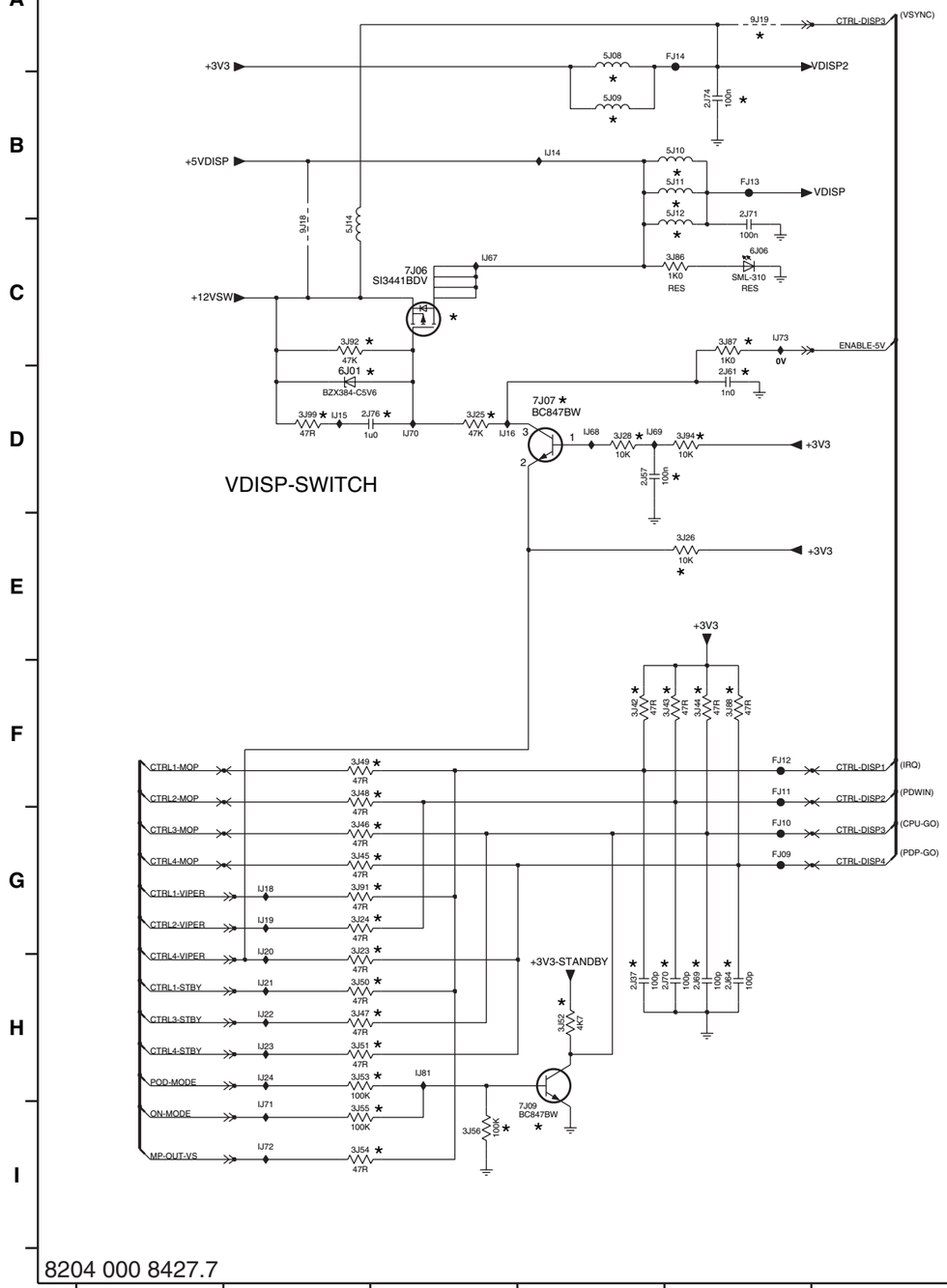
SSB: PNX2015: Display Interface

B4G PNX 2015: DISPLAY INTERFACE



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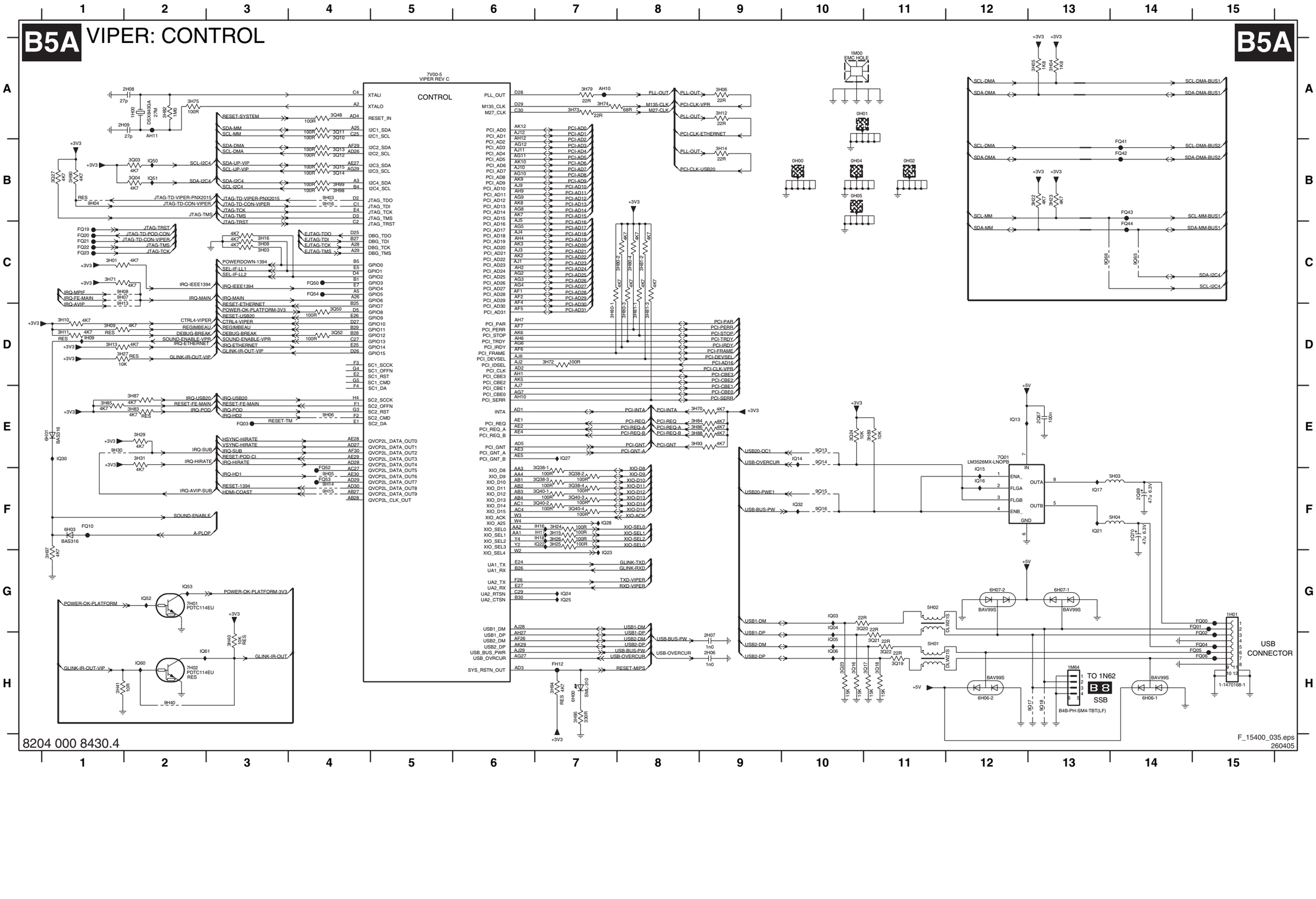
1G50	F12	FJ28	H10
2J37	H4	FJ29	H10
2J40	F9	FJ30	H10
2J41	F9	FJ31	H10
2J42	G9	FJ32	H10
2J43	G9	FJ36	H10
2J44	G9	FJ37	H10
2J45	H9	IJ10	B10
2J46	H9	IJ12	C11
2J47	H9	IJ13	D11
2J48	H9	IJ14	B4
2J49	I9	IJ15	D2
2J57	D4	IJ16	D3
2J60	C10	IJ18	G2
2J61	D5	IJ19	G2
2J64	H5	IJ20	G2
2J67	D12	IJ21	H2
2J68	E12	IJ22	H2
2J69	H5	IJ23	H2
2J70	H5	IJ24	H2
2J71	B5	IJ61	B12
2J72	I9	IJ67	C3
2J73	I9	IJ68	D4
2J74	B5	IJ69	D4
2J75	B11	IJ70	D3
2J76	D3	IJ71	I2
3J23	G2	IJ72	I2
3J24	G2	IJ73	C5
3J25	D3	IJ81	H3
3J26	E5		
3J28	D4		
3J31	C10		
3J32	C11		
3J42	F4		
3J43	F5		
3J44	F5		
3J45	G2		
3J46	G2		
3J47	H2		
3J48	F2		
3J49	F2		
3J50	H2		
3J51	H2		
3J52	H4		
3J53	H2		
3J54	I2		
3J55	I2		
3J56	I3		
3J86	C5		
3J87	C5		
3J88	F5		
3J91	G2		
3J92	C2		
3J94	D5		
3J99	D2		
3LQ7	C12		
3LQ8	D12		
5J08	A4		
5J09	B4		
5J10	B5		
5J11	B5		
5J12	B5		
5J14	C2		
5J50	F8		
5J52	G8		
5J54	G8		
5J56	H8		
5J58	I8		
5J60	I8		
5J82	B9		
5J85	B9		
6J01	D2		
6J03	C11		
6J04	D11		
6J06	C5		
7J04	C9		
7J06	C3		
7J07	D4		
7J09	I4		
9J15	C10		
9J16	D10		
9J17	E10		
9J18	C2		
9J19	A5		
FJ09	G5		
FJ10	G5		
FJ11	F5		
FJ12	F5		
FJ13	B5		
FJ14	A5		
FJ15	C12		
FJ16	D12		
FJ23	G10		
FJ24	G10		
FJ25	G10		
FJ26	H10		
FJ27	H10		

SSB: Viper: Control

0H00 B10	1M00 A10	2Q69 F14	3H08 C3	3H15 F7	3H27 D1	3H72 D7	3H80-3 D8	3H84 E8	3H93 E8	3Q04 B2	3Q16 H10	3Q23 H10	3Q40-1 F7	5H01 H11	6H06-1 H14	7V00-5 A5	9H13 C1	9Q14 E10	AH10 A7	FQ04 H15	FQ22 C1	FQ52 F4	IQ03 G10	IQ16 F12	IQ27 E7	IQ53 G2
0H01 A10	1M64 H13	2Q70 F14	3H09 D1	3H16 C3	3H29 E2	3H73 A7	3H80-4 C8	3H85 E1	3H94 H7	3Q10 A4	3Q17 H11	3Q24 E10	3Q40-2 F7	5H02 G11	6H06-2 H12	9H03 B4	9H14 F4	9Q15 F10	AH11 A2	FQ05 H15	FQ23 C1	FQ53 F4	IQ04 G10	IQ17 F13	IQ28 F7	IQ60 H2
0H02 B11	2H06 H9	3H01 C1	3H10 D1	3H22 B13	3H31 E2	3H74 A7	3H81-1 D8	3H86 E8	3H95 H7	3Q11 A4	3Q18 H11	3Q27 B1	3Q40-3 F7	5H03 F14	6H07-1 G13	9H04 B1	9H15 F4	9Q16 F10	FH12 H7	FQ06 H15	FQ41 B14	IQ05 H10	IQ21 F13	IQ30 E1	IQ61 H2	
0H04 B10	2H07 H9	3H03 C3	3H11 D1	3H23 B13	3H40 H3	3H75 A2	3H81-2 C8	3H87 E2	3H97 G1	3Q12 B4	3Q19 H11	3Q38-1 F7	3Q40-4 F7	5H04 F14	6H07-2 G12	9H05 F4	9H16 B4	9Q17 H13	FQ00 G15	FQ10 F1	FQ42 B14	IH09 D1	IQ06 H10	IQ22 F7	IQ32 F10		
0H05 B10	2H08 A2	3H04 A13	3H12 A9	3H24 F7	3H41 H1	3H79 A7	3H81-3 D8	3H88 E8	3H98 B4	3Q13 B4	3Q20 G10	3Q38-2 F7	3Q48 A4	6H00 H7	7H01 G2	9H06 E4	9H30 E1	9Q18 H13	FQ01 G15	FQ19 C1	FQ43 B14	IH16 F7	IQ13 E12	IQ23 G7	IQ50 B2		
1H00 A2	2H09 A1	3H05 A13	3H13 D1	3H25 F7	3H70 E8	3H80-1 D7	3H82 A2	3H89 E11	3H99 B4	3Q14 B4	3Q21 H11	3Q38-3 F7	3Q50 D4	6H01 E1	7H02 H2	9H07 C1	9H40 H2	9Q65 C14	FQ02 H15	FQ20 C1	FQ44 C14	IH17 F7	IQ14 E10	IQ24 G7	IQ51 B2		
1H01 G15	2Q67 E13	3H06 A9	3H14 B9	3H26 F7	3H71 C1	3H80-2 C7	3H83 E2	3H90 B1	3Q03 B2	3Q15 B4	3Q22 H11	3Q38-4 F7	3Q52 D4	6H03 F1	7Q01 E12	9H08 C1	9Q13 E10	9Q66 C13	FQ03 E3	FQ21 C1	FQ50 C4	IH18 F7	IQ15 F12	IQ25 G7	IQ52 G2		



SSB: Viper: Main Memory

B5B VIPER: MAIN MEMORY

B5B

7V00-2
VIPER REV C

DDR INTERFACE

SD RAM1

SD RAM2

DDR SDRAM 8Mx16

MT46V32M16P-5BTR

+2V5D-DDR

VREF-VPR

2V02 100n

IH20

3V44 100R

3V78 1K0

5V01 IH21 5V02 RES +2V5D +2V5D-DDR

2V01 2V03 2V04 2V05 2V16 2V17 2V18 2V19 2V20 2V21 2V22 2V23 2V24 2V25 2V26 2V27 2V28 2V29 2V30 2V31 2V35

2Q01 B8
2Q03 B9
2Q21 B13
2Q23 B14
2V00 C7
2V01 C14
2V02 C2
2V03 G8
2V04 G9
2V05 G9
2V16 G10
2V17 G11
2V18 G11
2V19 G11
2V20 G11
2V21 G11
2V22 G12
2V23 G12
2V24 G12
2V25 G12
2V26 G12
2V27 G13
2V28 G13
2V29 G13
2V30 G13
2V31 G14
2V35 G14
3V00 C9
3V01 C11
3V02 C9
3V03 C11
3V04 C9
3V05 C11
3V06 C9
3V07 C11
3V08 C9
3V09 C11
3V10 C9
3V11 C11
3V12 C9
3V13 C11
3V14 C9
3V15 C11
3V16 C9
3V17 C11
3V18 C9
3V19 C11
3V20 C9
3V21 C11
3V22 C9
3V23 C11
3V32 C9
3V33 C11
3V34 C9
3V35 C11
3V36 D9
3V37 D11
3V38 D9
3V39 D11
3V40 D9
3V41 D11
3V42 D9
3V43 D11
3V44 E3
3V78 E3
5V01 G9
5V02 G9
7V00-2 A4
7V01 B7
7V02 B13
IH20 D3
IH21 G9

SSB: Viper: A/V & Tunnel Bus

B5C VIPER: A/V + TUNNELBUS

B5C

7V00-1
VIPER REV C

AUDIO/VIDEO

DV1F-DATA0 … DV1F-DATA9_ERR, DV1F-DATA9_SOP, DV1F-VALID, DV1F-CLK → DV1_DATA0 … DV1_DATA9, DV1_VALID, DV1_CLK

DV2A-DATA2_0 … DV2A-DATA9_7, DV2A-VALID, DV2A-CLK, DV2A-DATA1_ERR, DV2A-DATA0_SOP → DV2_DATA0 … DV2_DATA7, DV2_VALID, DV2_CLK, DV2_ERR, DV2_SOP

DV3F-DATA2_0 … DV3F-DATA9_7, DV3F-VALID, DV3F-CLK, DV3F-DATA1_ERR, DV3F-DATA0_SOP → DV3_DATA0 … DV3_DATA7, DV3_VALID, DV3_CLK, DV3_ERR, DV3_SOP

+3V3; 4K7 3H28 DV1F-VALID; 4K7 3H32 DV2A-VALID; 4K7 3H18 DV3F-VALID

I2S-MAIN-ND, I2S-SUB-ND, I2S-WS-AVIP, I2S-BCLK-AVIP

IH10, IH11, IH15 → DV_FREF, DV_VREF, DV_HREF

IH01, IH03 → I2S_IN1_SD, I2S_IN1_WS, I2S_IN1_SCK, I2S_IN1_OSCLK

I2S_IN2_SD, I2S_IN2_WS, I2S_IN2_SCK, I2S_IN2_OSCLK

IH00 → SPDIF-HDMI, SPDIF-IN1 → SPDIF_IN2, SPDIF_IN1

QVCP5L_DATA_OUT0 … QVCP5L_DATA_OUT29, QVCP5L_CLK_OUT, QVCP5L_VSYNC, QVCP5L_HSYNC, QVCP5L_AUX1, QVCP5L_AUX2 → DV-BOUT-0 … DV-BOUT-9, DV-GOUT-0 … DV-GOUT-9, DV-ROUT-0 … DV-ROUT-9, DV-CLKIN, DV-OUT-VS, DV-OUT-HS, DV-OUT-FFIELD, DV-OUT-DE

DAC_IRSET, DAC_RDUMPY, DAC_RDUMPC, DAC_CVBS, DAC_CHROMA

IH08, IH07, IH06; 3H19 1K0; 3H21 39R; 3H20 39R

IQ00 47R 3Q00 IQ01 5Q05 1u0 2Q29 100p IQ02 → DAC-CVBS

3Q06 39R; 2Q25 12p; 2Q31 56p

IH12 120R 3Q01 IH13 5Q06 2u2 2H11 100p RES IH14 → C-MON-OUT

75R 3H92; 2H13 12p RES; 2H12 27p

TS_DATA0 … TS_DATA7, TS_VALID, TS_SOP, TS_CLK → TS-DATA0 … TS-DATA7, TS-VALID, TS-SOP, TS-CLK

3Q09 33R

I2S_OUT1_SD0 … I2S_OUT1_SD3, I2S_OUT1_WS, I2S_OUT1_SCK, I2S_OUT1_OSCLK

3H07 22R; IH04

I2S_OUT2_SD0 … I2S_OUT2_SD3, I2S_OUT2_WS, I2S_OUT2_SCK, I2S_OUT2_OSCLK

IH05

SPDIF_OUT → 3Q64 68R → SPDIF-OUT1

I2S-SUB-D, BACKLIGHT-CONTROL, CTRL1-VIPER, CTRL2-VIPER, I2S-MCH-LR, I2S-MCH-CSW, I2S-MCH-SLB, I2S-MAIN-D, I2S-WS-MAIN, I2S-BCLK-MAIN

68R 3H49; 68R 3H48 → I2S-WS-SUB, I2S-BCLK-SUB

9H26, 9H27, 9H34, 9H29

7V00-4
VIPER REV C

TUNNELBUS

TUN-VIPER-TX-DATA0 … TUN-VIPER-TX-DATA15, TUN-VIPER-TX-CLKP, TUN-VIPER-TX-CLKN, TUN-VIPER-TX-BUSY → TUN_TX_DATA0 … TUN_TX_DATA15, TUN_TX_CLOCKP, TUN_TX_CLOCKN, TUN_TX_BUSY

TUN_AVREF ← VREF-VPR; 2H01 100n

TUN_RX_DATA0 … TUN_RX_DATA15, TUN_RX_CLOCKP, TUN_RX_BUSY → TUN-VIPER-RX-DATA0 … TUN-VIPER-RX-DATA15, TUN-VIPER-RX-CLKP, TUN-VIPER-RX-CLKN, TUN-VIPER-RX-BUSY

3Q65 RES 100R; 3Q68 47R

+2V5-VPR; 5H05; IQ35; 2H03 100n; 10K 3H50; 100n; 2H00; FQ15; 1V3; VREF-VPR; 10K 3H51; 100n; 2H02

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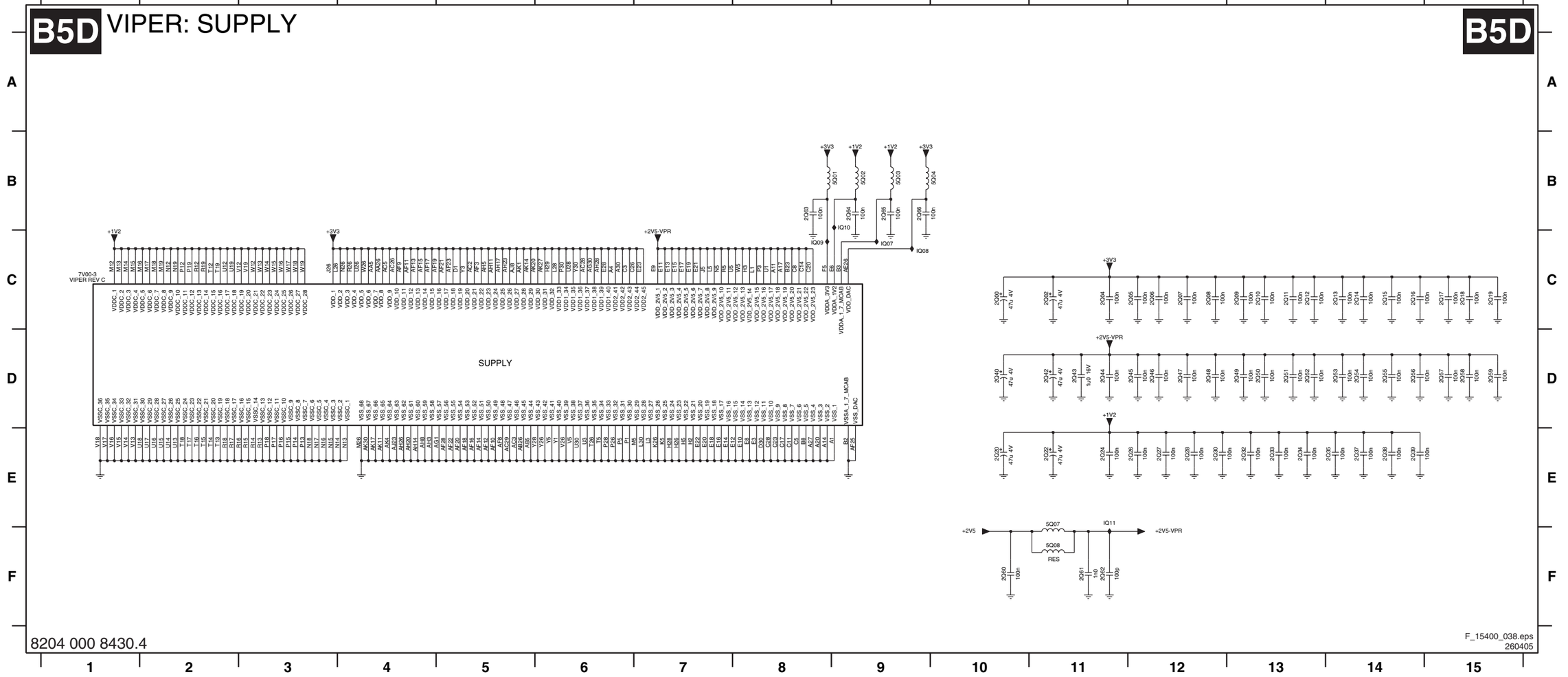
2H00 H3
2H01 I6
2H02 H3
2H03 H2
2H11 D12
2H12 D12
2H13 D12
2Q25 C12
2Q29 B12
2Q31 C12
3H02 C9
3H07 E8
3H18 C3
3H19 C10
3H20 D10
3H21 D9
3H28 B3
3H32 B3
3H48 G9
3H49 F9
3H50 H3
3H51 H3
3H92 D11
3Q00 C11
3Q01 D11
3Q02-1 C9
3Q02-2 C9
3Q02-3 C9
3Q02-4 C8
3Q05-1 C9
3Q05-2 C8
3Q05-3 C9
3Q05-4 C9
3Q06 C11
3Q07-1 C8
3Q07-2 B9
3Q07-3 B9
3Q07-4 B8
3Q08-1 B9
3Q08-2 B9
3Q08-3 B8
3Q08-4 B9
3Q09 E8
3Q25-1 B8
3Q25-2 B9
3Q25-3 C8
3Q25-4 C9
3Q26-3 B9
3Q26-4 A8
3Q28-1 A9
3Q28-2 A8
3Q28-3 A9
3Q28-4 A9
3Q33 H5
3Q34-1 A9
3Q34-2 A9
3Q34-3 A8
3Q34-4 A9
3Q35 H5
3Q37 H6
3Q39 H5
3Q41 H5
3Q43 H6
3Q44-1 B9
3Q44-2 B8
3Q44-3 B9
3Q44-4 B9
3Q45 H5
3Q47 H5
3Q49 H6
3Q51 H5
3Q53 H5
3Q55 H6
3Q57 H5
3Q59 I5
3Q61 I6
3Q63 I5
3Q64 F8
3Q65 I9
3Q66 I5
3Q67 I6
3Q68 I9
5H05 H2
5Q05 B12
5Q06 C12
7V00-1 A6
7V00-4 G7
9H18 D3
9H19 D4
9H26 G8
9H27 G8
9H29 G7
9H32 D3
9H33 D4
9H34 G7
FQ15 H3
IH00 E4
IH01 D4
IH03 D4
IH04 E8
IH05 F8
IH06 D9
IH07 D9
IH08 C9
IH10 D5
IH11 D5
IH12 C11
IH13 C12
IH14 C13
IH15 D5
IQ00 B11
IQ01 B12
IQ02 B13
IQ35 H3

SSB: Viper: Supply

2Q00 C10 2Q05 C12 2Q08 C12 2Q11 C13 2Q14 C14 2Q17 C15 2Q20 E10 2Q26 E12 2Q30 E12 2Q34 E13 2Q38 E14 2Q42 D11 2Q45 D12 2Q48 D12 2Q51 D13 2Q54 D14 2Q57 D15 2Q60 F10 2Q63 B8 2Q66 B9 5Q03 B9 5Q08 F11 IQ08 C9 IQ11 E11
2Q02 C11 2Q06 C12 2Q09 C13 2Q12 C13 2Q15 C14 2Q18 C15 2Q22 E11 2Q27 E12 2Q31 E12 2Q35 E13 2Q39 E14 2Q43 D11 2Q46 D12 2Q49 D13 2Q52 D13 2Q55 D14 2Q58 D15 2Q61 F11 2Q64 B9 2Q67 B9 5Q01 B9 5Q04 B10 7V00-3 C1 IQ09 C8
2Q04 C11 2Q07 C12 2Q10 C13 2Q13 C14 2Q16 C14 2Q19 C15 2Q24 E11 2Q28 E12 2Q33 E13 2Q37 E14 2Q40 D10 2Q44 D11 2Q47 D12 2Q50 D13 2Q53 D14 2Q56 D14 2Q59 D15 2Q62 F11 2Q65 B9 5Q02 B9 5Q07 E11 IQ07 C9 IQ10 B9



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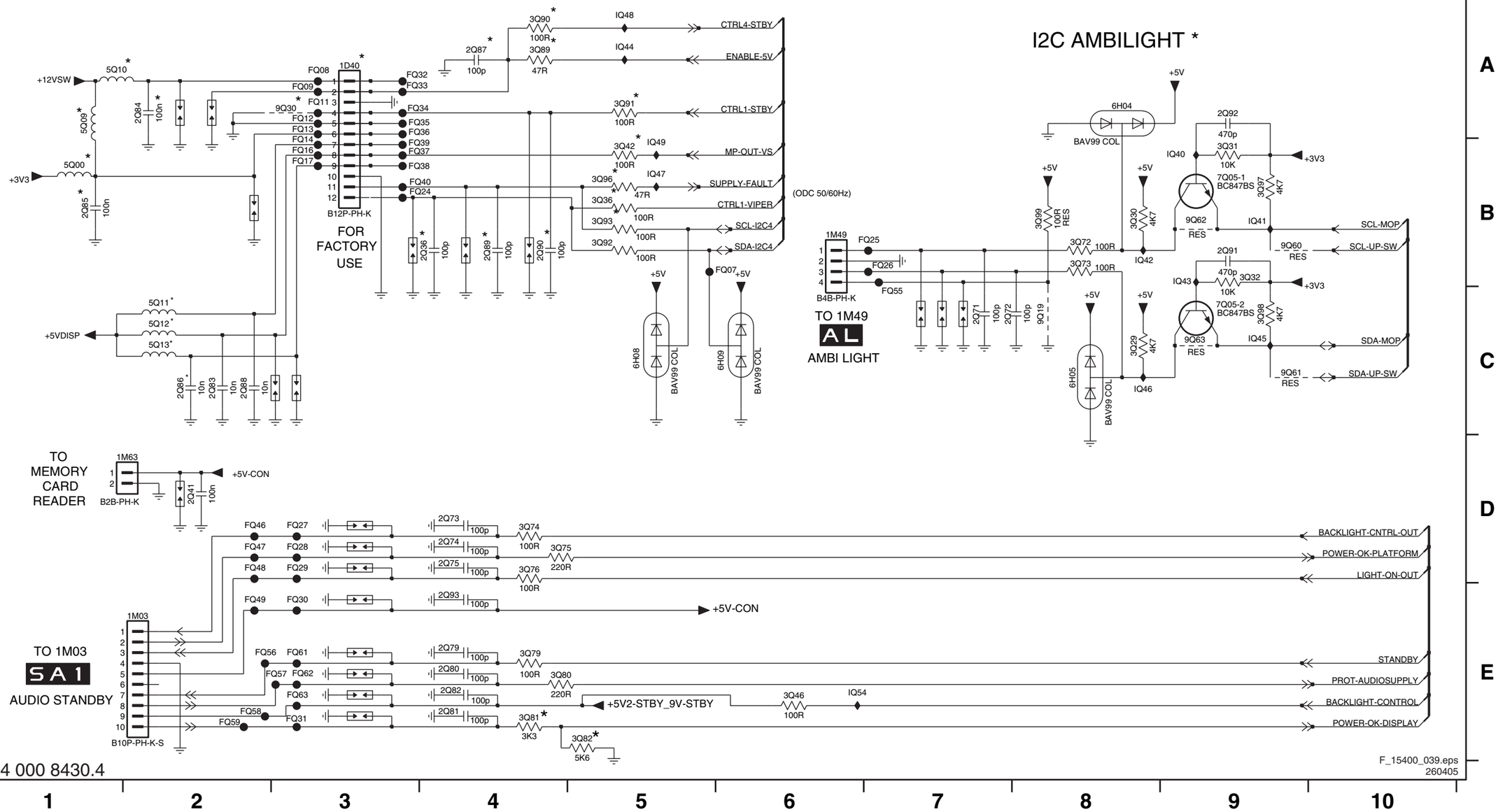
SSB: Viper: Display Diversity & Ambilight

1D40 A3	2Q71 C7	2Q80 E4	2Q86 C2	2Q92 A9	3Q36 B5	3Q75 D4	3Q89 A4	3Q97 B9	5Q11 C2	6H09 C6	9Q61 C9	FQ11 A3	FQ24 B4	FQ30 E3	FQ36 A3	FQ47 D2	FQ58 E2	IQ41 B9	IQ47 B5
1M03 E2	2Q72 C7	2Q81 E4	2Q87 A4	2Q93 E4	3Q42 B5	3Q76 D4	3Q90 A4	3Q98 C9	5Q12 C2	7Q05-1 B9	9Q62 B9	FQ12 A3	FQ25 B7	FQ31 E3	FQ37 B3	FQ48 D2	FQ59 E2	IQ42 B8	IQ48 A5
1M49 B6	2Q73 D4	2Q82 E4	2Q88 C2	3Q29 C8	3Q46 E6	3Q79 E4	3Q91 A5	3Q99 B8	5Q13 C2	7Q05-2 C9	9Q63 C9	FQ13 A3	FQ26 B7	FQ32 A3	FQ38 B3	FQ49 E2	FQ61 E3	IQ43 B9	IQ49 B5
1M63 D2	2Q74 D4	2Q83 C2	2Q89 B4	3Q30 B8	3Q72 B8	3Q80 E4	3Q92 B5	5Q00 B1	6H04 A8	9Q19 C8	FQ07 B6	FQ14 B3	FQ27 D3	FQ33 A3	FQ39 B3	FQ55 C7	FQ62 E3	IQ44 A5	IQ54 E6
2Q36 B4	2Q75 D4	2Q84 A2	2Q90 B4	3Q31 B9	3Q73 B8	3Q81 E4	3Q93 B5	5Q09 A1	6H05 C8	9Q30 A3	FQ08 A3	FQ16 B3	FQ28 D3	FQ34 A3	FQ40 B4	FQ56 E2	FQ63 E3	IQ45 C9	
2Q41 D2	2Q79 E4	2Q85 B1	2Q91 B9	3Q32 B9	3Q74 D4	3Q82 E5	3Q96 B5	5Q10 A1	6H08 C5	9Q60 B9	FQ09 A3	FQ17 B3	FQ29 D3	FQ35 A3	FQ46 D2	FQ57 E3	IQ40 B9	IQ46 C8	

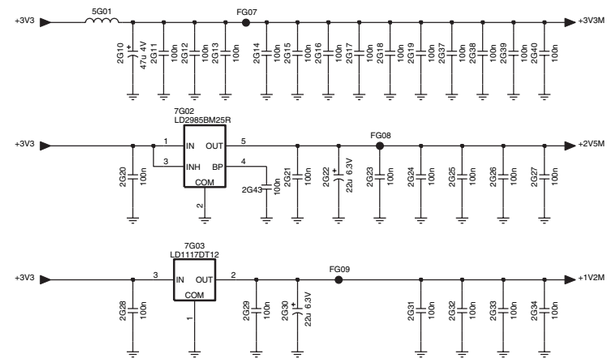
B5E VIPER: DISPLAY DIVERSITY + AMBILIGHT

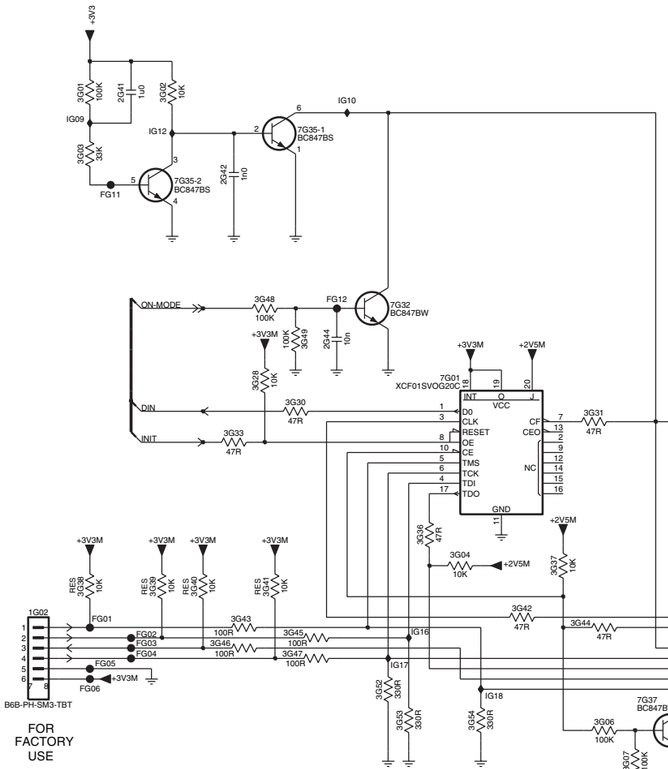


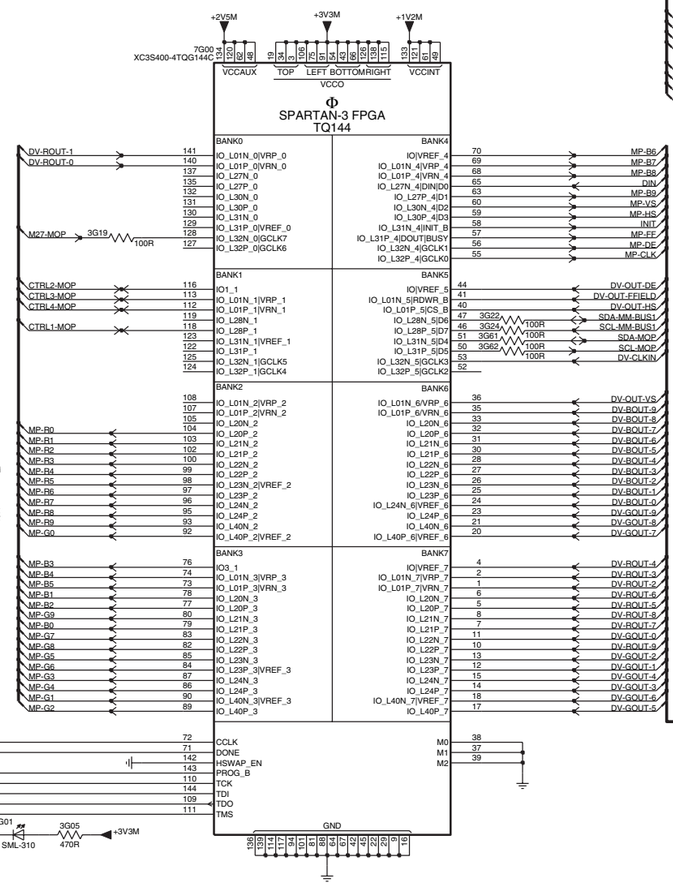
SSB: Display Interface: MOP

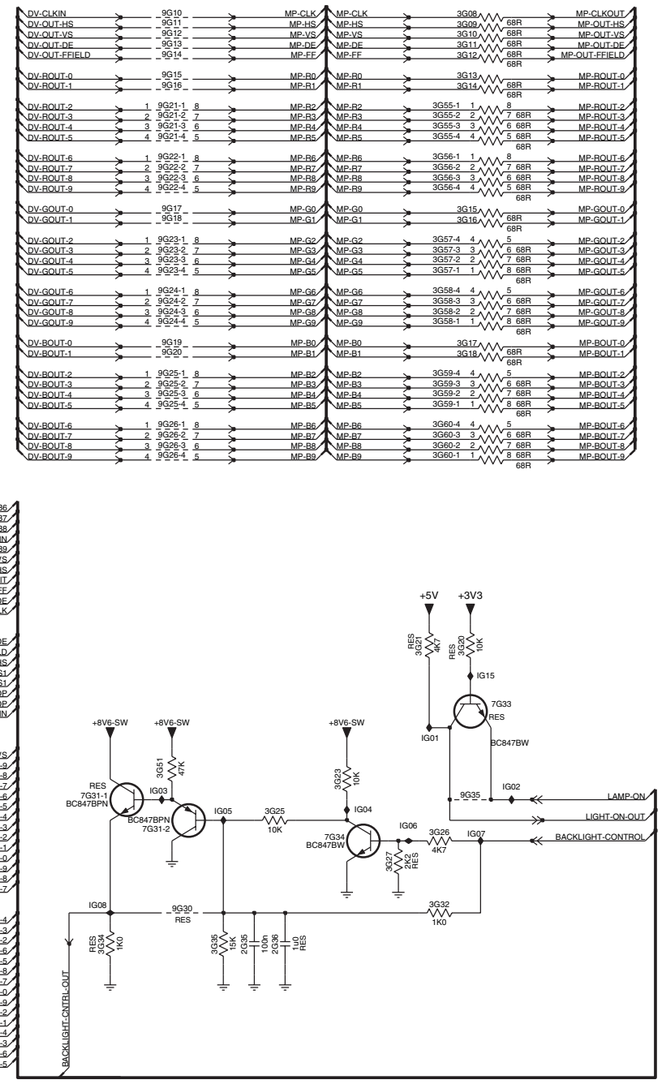
B6 DISPLAY INTERFACE: MOP

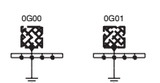
B6











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0G00 I13
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2G10 A1
2G11 A2
2G12 A2
2G13 A2
2G14 A2
2G15 A3
2G16 A3
2G17 A3
2G18 A3
2G19 A3
2G20 B1
2G21 B3
2G22 B3
2G23 B3
2G24 B3
2G25 B4
2G26 B4
2G27 B4
2G28 C1
2G29 C2
2G30 C3
2G31 C3
2G32 C4
2G33 C4
2G34 C4
2G35 G11
2G36 G12
2G37 A4
2G38 A4
2G39 A4
2G40 A4
2G41 E1
2G42 E2
2G43 B2
2G44 G3
3G01 E1
3G02 E2
3G03 E1
3G04 H4
3G05 I6
3G06 I5
3G07 I5
3G08 A13
3G09 A13
3G10 A13
3G11 A13
3G12 A13
3G13 A13
3G14 B13
3G15 B13
3G16 B13
3G17 C13
3G18 C13
3G19 E6
3G20 E13
3G21 E13
3G22 F9
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3G26 G13
3G27 G13
3G28 G2
3G29 G5
3G30 G2
3G31 G5
3G32 G13
3G33 G2
3G34 G11
3G35 G11
3G36 H3
3G37 H4
3G38 H1
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3G40 H2
3G41 H2
3G42 H4
3G43 I2
3G44 I4
3G45 I2
3G46 I2
3G47 I2
3G48 F2
3G49 G3
3G51 F11
3G52 I3
3G53 I3
3G54 I4
3G55-1 B13
3G55-2 B13
3G55-3 B13
3G55-4 B13
3G56-1 B13
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3G56-3 B13
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3G57-3 C13
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9G15 A11
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9G18 B11
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9G25-4 D11
9G26-1 D11
9G26-2 D11
9G26-3 D11
9G26-4 D11
9G30 G11
9G35 F13
FG01 I1
FG02 I1
FG03 I1
FG04 I1
FG05 I1
FG06 I1
FG07 A2
FG08 B3
FG09 C3
FG11 F1
FG12 F3
IG01 F13
IG02 F13
IG03 F11
IG04 G12
IG05 G11
IG06 G13
IG07 G13
IG08 G10
IG09 E1
IG10 E3
IG11 E2
IG15 F13
IG16 I3
IG17 I3
IG18 I4

SSB: HDMI

B7A HDMI

B7A

HDMI CONNECTOR 1

DDC NVM HDMI 1

DDC NVM HDMI 2

HDMI CONNECTOR 2

8204 000 8429.6

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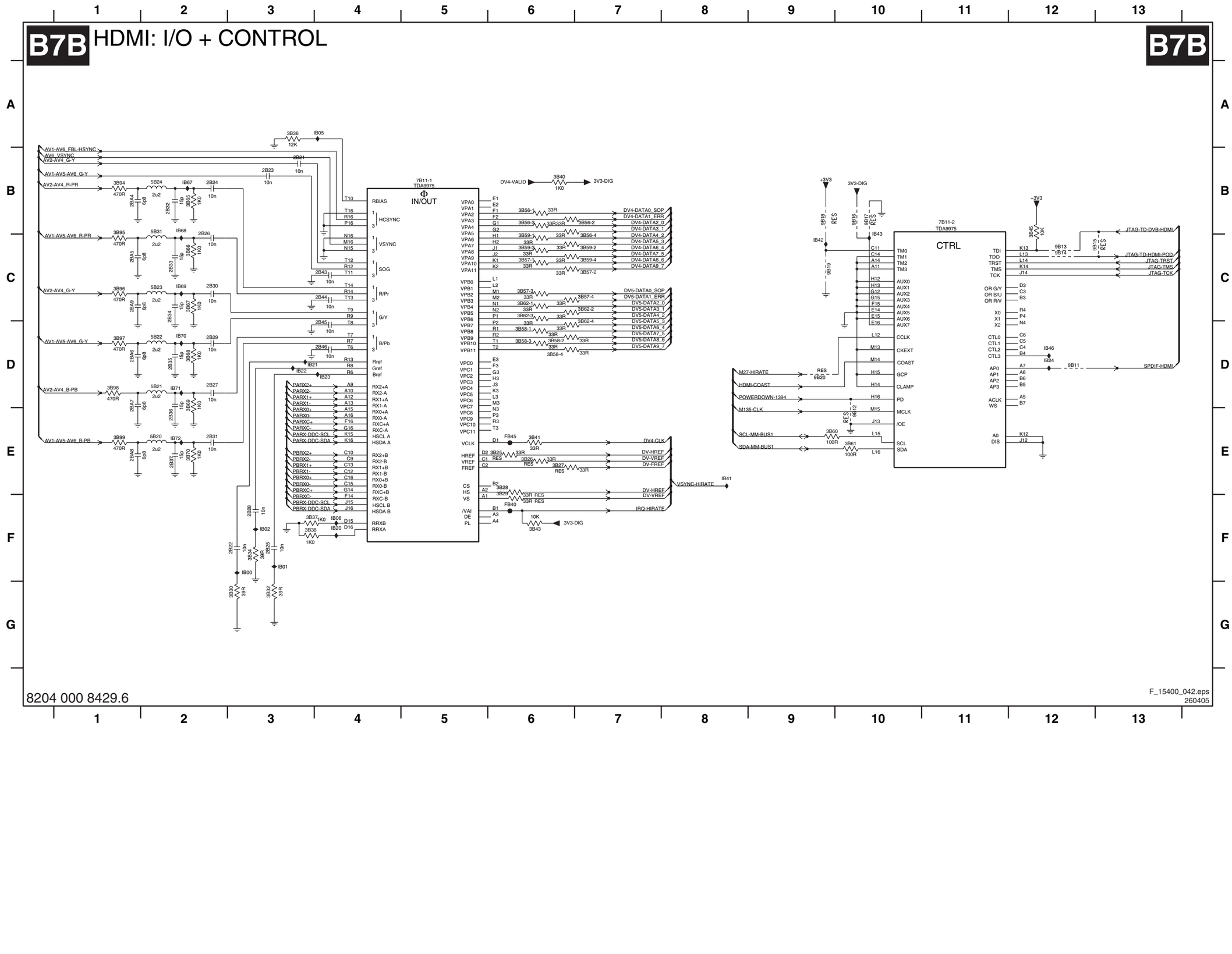
1B00 B3
1B01 A1
1B02 D8
1B03 B3
1B04 B3
1B05 B10
1B06 B10
1B07 B10
1B20 I4
1B21 I11
1B30 D4
1B31 E4
1B32 G4
1B33 H4
1B34 D10
1B35 E10
1B36 G10
1B37 H10
2B00 B4
2B01 B4
2B02 A9
2B04 B10
2B05 B11
2BA0 I5
2BA1 I4
2BA2 I12
2BA3 I10
3B00 A6
3B01 A6
3B02 B5
3B03 B7
3B04 B5
3B05 B5
3B06 B6
3B07 B5
3B08 C5
3B09 C5
3B10 D5
3B11 E5
3B12 A12
3B13 A13
3B14 B12
3B15 B14
3B16 B12
3B17 B12
3B18 B12
3B19 B11
3B20 C12
3B21 F5
3B22 F5
3B23 I3
3B24 I10
3B90 I4
3B91 I4
3B92 I11
3B93 I10
3BA0 G5
3BA1 H5
3BA2 C11
3BA3 E11
3BA4 F11
3BA5 F11
3BA6 H11
3BA7 H11
3BA8 H11
3BA9 E11
3BB0 H5
5B00 A4
5B01 A11
5B02 A8
6B20 I4
6B21 I3
6B22 I10
6B23 I10
7B00 A6
7B01 A7
7B02 B4
7B03 B10
7B04 A12
7B05 A13
7B30 I5
7B31 I11
9B00 B2
9B03 E8
9B30 I6
9B31 I12
FB09 B1
FB10 B1
FB11 B1
FB12 B1
FB13 B1
FB14 C1
FB28 D8
FB29 E8
FB30 E8
FB31 E8
FB32 E8
FB34 B11
FB35 B5
FB36 E8
IB10 B14
IB11 B12
IB12 A13
IB13 A11
IB14 A13
IB50 I12
IB51 I5
IB60 A13
IB61 I11
IB62 I5
IB63 A6
IB64 A7
IB65 B6
IB66 B7

SSB: HDMI: I/O & Control

B7B HDMI: I/O + CONTROL



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2B21 B3	3B99 E1
2B22 F3	5B20 E2
2B23 B3	5B21 D2
2B24 B2	5B22 D2
2B25 F3	5B23 C2
2B26 C2	5B24 B2
2B27 D2	5B31 B2
2B28 F3	7B11-1 B5
2B29 D2	7B11-2 B11
2B30 C2	9B11 D12
2B31 E2	9B12 E10
2B32 B2	9B13 C12
2B33 C2	9B14 C12
2B34 C2	9B15 C12
2B35 D2	9B16 B10
2B36 E2	9B17 B10
2B37 E2	9B18 B9
2B43 C4	9B19 C9
2B44 C4	9B20 D9
2B45 D4	FB40 F6
2B46 D4	FB45 E6
2BA4 B1	IB00 F3
2BA5 C1	IB01 F3
2BA6 D1	IB02 F3
2BA7 D1	IB05 A4
2BA8 E1	IB06 F4
2BA9 C1	IB20 F4
3B25 E6	IB21 D3
3B26 E6	IB22 D3
3B27 E6	IB23 D4
3B28 E6	IB24 D12
3B29 F6	IB41 E8
3B30 G3	IB42 C9
3B32 G3	IB43 B10
3B34 F3	IB46 D12
3B36 A3	IB67 B2
3B37 F3	IB68 B2
3B38 F3	IB69 C2
3B40 B6	IB70 D2
3B41 E6	IB71 D2
3B43 F6	IB72 E2
3B45 B12	
3B56-1 B6	
3B56-2 B7	
3B56-3 B6	
3B56-4 C7	
3B57-1 C6	
3B57-2 C7	
3B57-3 C6	
3B57-4 C7	
3B58-1 D6	
3B58-2 D6	
3B58-3 D6	
3B58-4 D6	
3B59-1 C6	
3B59-2 C7	
3B59-3 C6	
3B59-4 C7	
3B60 E9	
3B61 E10	
3B62-1 C6	
3B62-2 C7	
3B62-3 C6	
3B62-4 D7	
3B65 B2	
3B66 C2	
3B67 C2	
3B68 D2	
3B69 D2	
3B70 E2	
3B94 B1	
3B95 C1	
3B96 C1	
3B97 D1	
3B98 D1	

SSB: HDMI: Supply

B7C HDMI: SUPPLY

B7C

HDMI SUPPLY 7B11-3 TDA9975

HDMI SUPPLY PART

+3V3 — 5B17 — FB57 — 3V3-APLL; 2B52 100n

3V3-AVI — 2B40 100n, 2B41 100n, 2B42 100n

+3V3-AV — 5B10 — FB50 — 3V3-AVI; 2B67 47u 4V

+3V3 — 5B11 — FB51 — 3V3-PLL; 2B69 100n

3V3-DIG — 2B49 100n, 2B51 100n, 2B53 100n

+3V3 — 5B12 — FB52 — 3V3-DIG

3V3-DIG — 2B62 100n, 2B64 100n

+1V8 — 2B79 100n

+1V8 — 2B80 100n, 2B81 100n

+3V3 — 3B52 1K0; 3B53 33R, 3B54 33R, 3B55 33R

IB47, IB48, IB44

7B13 BC817-25

7B12 TS431L — 2B89 10n — 1V3 — IB49 — 3B50 470R — 3B51 4R7

3B48 1K0, 3B49 47K

2B90 47u 4V

FB55 — +1V8

5B18 — FB56 — 1V8-PLL; 2B92 100n, 2B77 100n

+3V3 — RES 9B38 — FB48

7B38 LD1117DT33: +5V — IN; OUT — +3V3-AV; COM

2B38 1u0; 2B39 330u 6.3V

3V3-APLL, 1V8-PLL	N7	VDDAPLL	
	M7	VDD18APLL	
	M11	VDDR	
	N11		
	M10	VDDG	
	N10		
3V3-AVI	M9	VDDB	
	N9		
	P10	VDDBIAS	
	P11	VDDSOG	
	N12	VDDFRO	
3V3-PLL, 1V8-PLL	N13	VDDPLL	
	N14	VDD18PLL	
	E12	VDD18HDMI	
+1V8	E13	VDD18RRX	
	D8	VDDRX2A	
	D9	VDDRX2B	
	D10	VDDRX1A	
3V3-DIG	D11	VDDRX1B	
	D12	VDDRX0A	
	D13	VDDRX0B	
	D14	VDDRXC	
+1V8	G13	1 2 VDD18CORE	
	E6		
IB45	T4	OTP7V	
	F13	VDDIN	
	D4	VDDQ0	
	E4	VDDQ1	
	F4	VDDQ3	
3V3-DIG	G4	VDDQ4	
	H4	VDDQ5	
	J4	VDDQ6	
	K4	VDDQ7	
	L4	VDDQ8	
	M4	VDDQ9	

GNDAVI	M5, N5, P5, R5, T5, M8, N8, P6, P7, P8, P9, R10, R11, M12, P12, P13, P14, P15, R15, T15	
GNDAPLL	M6, N6	
GNDHDMI	A8, B8, C8, B9, B10, B11, B12, B13, B14, B15, B16	
GNDCORE	E7, E8, E9, E10, E11	
GNDI2C	F12	
GNDOUT	C7, D6, D7, E5, F5, D5, G5, J5, K5, L5, H5	

THERMAL GROUNDS: F6, G6, H6, J6, K6, L6, F7, G7, H7, J7, K7, L7, F8, G8, H8, J8, K8, L8, F9, G9, H9, J9, K9, L9, F10, G10, H10, J10, K10, L10, F11, G11, H11, J11, K11, L11

2B38	F5
2B39	F6
2B40	A3
2B41	A3
2B42	A4
2B49	C3
2B51	C3
2B52	A2
2B53	C4
2B62	D3
2B64	D4
2B67	B1
2B69	C2
2B77	F4
2B79	C5
2B80	C5
2B81	C5
2B89	E1
2B90	F2
2B92	F4
3B48	F1
3B49	F1
3B50	E2
3B51	E2
3B52	D1
3B53	D2
3B54	D2
3B55	D2
5B10	B1
5B11	C1
5B12	C1
5B17	A1
5B18	E3
7B11-3	A8
7B12	E1
7B13	E2
7B38	F5
9B38	E5
FB48	E6
FB50	B2
FB51	C2
FB52	C2
FB55	E4
FB56	E4
FB57	A2
IB44	E2
IB45	D6
IB47	D2
IB48	E1
IB49	E2

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SSB: USB2.0: Host

B8 USB 2.0: HOST

B8

1N00 G8
1N62 F1
2N00 G9
2N01 G9
2N02 B6
2N03 A6
2N04 A6
2N05 A6
2N06 A7
2N07 A7
2N08 A7
2N09 A7
2N10 A8
2N11 A8
2N12 B8
2N13 B8
3N08 G6
3N09 D5
3N12 E5
3N13 E5
3N14 E5
3N15 E5
3N20 D2
3N25 D2
3N30 B4
3N31 B4
3N32 B5
3N33 B5
3N90 E2
3N92 E2
5N00 H7
5N01 B8
5N02 A8
7N00 C6
7N10 B4
FN01 G8
FN10 F2
FN11 G2
IN01 D6
IN02 D9
IN03 E5
IN04 D5
IN05 F6
IN06 G7
IN07 E4
IN08 E4
IN09 E5
IN10 B8
IN11 B8
IN12 E5
IN13 B4
IN14 C4

+5V2-STBY
3N30 150R
3N31 150R
3N32 150R
IN13
+3V3-STANDBY-B-TRANS
7N10 BC847B
IN14
3N33 4R7
+3V3-STANDBY

+3V3
2N03 100n
2N04 100n
2N05 100n
2N06 100n
2N07 100n
2N08 100n
2N09 100n
2N10 100n
2N11 100n
5N02
IN11
2N02 100n
5N01
IN10
2N12 1n0
2N13 1n0

7N00 ISP1561BM
VCC: 10 17 25 33 41 49 57 65 73 80
VAUX: 5 85 93 108 115 121 101
VAUX_T1 VAUX_T2 VAUXA_T3 VAUXA_T4 VAUXA_PLL

Φ PCI HOST CONTROLLER

1	SEL48M		
2	SCL		
3	SDA		
9	ADP_SEL		
12	KBIRQ1		
13	MUIRQ12		
18	RST		
19	CLK		
20	GNT	PCI-GNT	IN01
35	IDSEL	PCI-AD22	3N09 100R IN04
48	FRAME	PCI-FRAME	
50	IRDY	PCI-IRDY	
51	TRDY	PCI-TRDY	
52	DEVSEL	PCI-DEVSEL	
54	STOP	PCI-STOP	
55	CLKRUN		
56	PERR	PCI-PERR	
59	PAR	PCI-PAR	
107	RREF		
89	OC1	USB20-OC1	IN07
90	PWE	USB20-PWE1	IN12
102	DM1	USB20-DM1	
103	DP1	USB20-DP1	
91	GL1		
92	AMB1		
95	GRN1		
96	OC2	USB20-OC2	IN08
97	PWE2		
109	DM2		IN09
110	DP2		IN03
98	GL2		
99	AMB2		
100	GRN2		
105	OC3		
106	PWE3		
116	DM3		
117	DP3		
112	GL3		
113	AMB3		
114	GRN3		
119	OC4		
120	PWE4		
122	DM4		
123	DP4		
125	GL4		
126	AMB4		
127	GRN4		

4	PME		
7	IRQ1		
8	IRQ12		
11	A20OUT		
15	SMI		
16	INTA	IRQ-USB20	
22	REQ	PCI-REQ	IN02
72	C0/BE0	PCI-CBE0	
60	C1/BE1	PCI-CBE1	
47	C2/BE2	PCI-CBE2	
34	C3/BE3	PCI-CBE3	
84	0	PCI-AD0	
82	1	PCI-AD1	
81	2	PCI-AD2	
79	3	PCI-AD3	
78	4	PCI-AD4	
77	5	PCI-AD5	
75	6	PCI-AD6	
74	7	PCI-AD7	
71	8	PCI-AD8	
70	9	PCI-AD9	
68	10	PCI-AD10	
67	11	PCI-AD11	
66	12	PCI-AD12	
64	13	PCI-AD13	
63	14	PCI-AD14	
62	15	PCI-AD15	
46	16	PCI-AD16	
44	17	PCI-AD17	
43	18	PCI-AD18	
42	19	PCI-AD19	
40	20	PCI-AD20	
39	21	PCI-AD21	
38	22	PCI-AD22	
36	23	PCI-AD23	
32	24	PCI-AD24	
31	25	PCI-AD25	
30	26	PCI-AD26	
28	27	PCI-AD27	
27	28	PCI-AD28	
26	29	PCI-AD29	
24	30	PCI-AD30	
23	31	PCI-AD31	
58	SERR	PCI-SERR	
87	XI		
88	XO		

AD

+3V3
3N25 4K7 RESET-USB20
3N20 4K7 PCI-GNT
3N90 4K7 USB20-OC1
3N92 4K7 USB20-OC2

3N13 15K
3N12 15K
3N14 15K
3N15 15K
IN05
3N08 12K

DGND: 6 14 21 29 37 45 53 61 69 76 83 86 128
AGND_REF: 94
AGND_T1 AGND_T2 AGND_T3 AGND_T4: 104 111 118 124
IN06
5N00

2N00 33p
1N00 12M
2N01 33p
FN01

TO 1M64
B5A
SSB
1N62
FN10 USB20-DM1
FN11 USB20-DP1
B4B-PH-SM4-TBT(LF)

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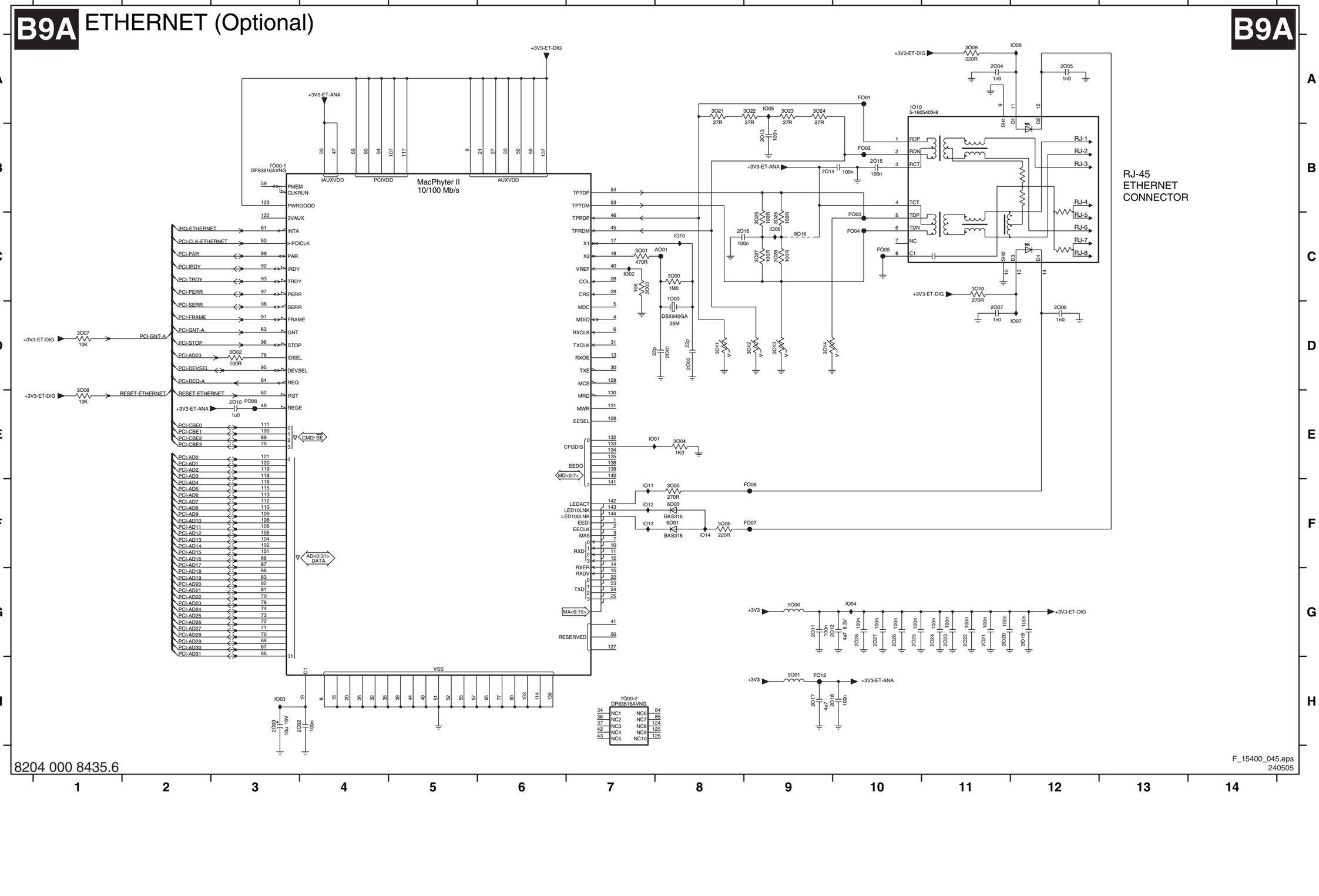
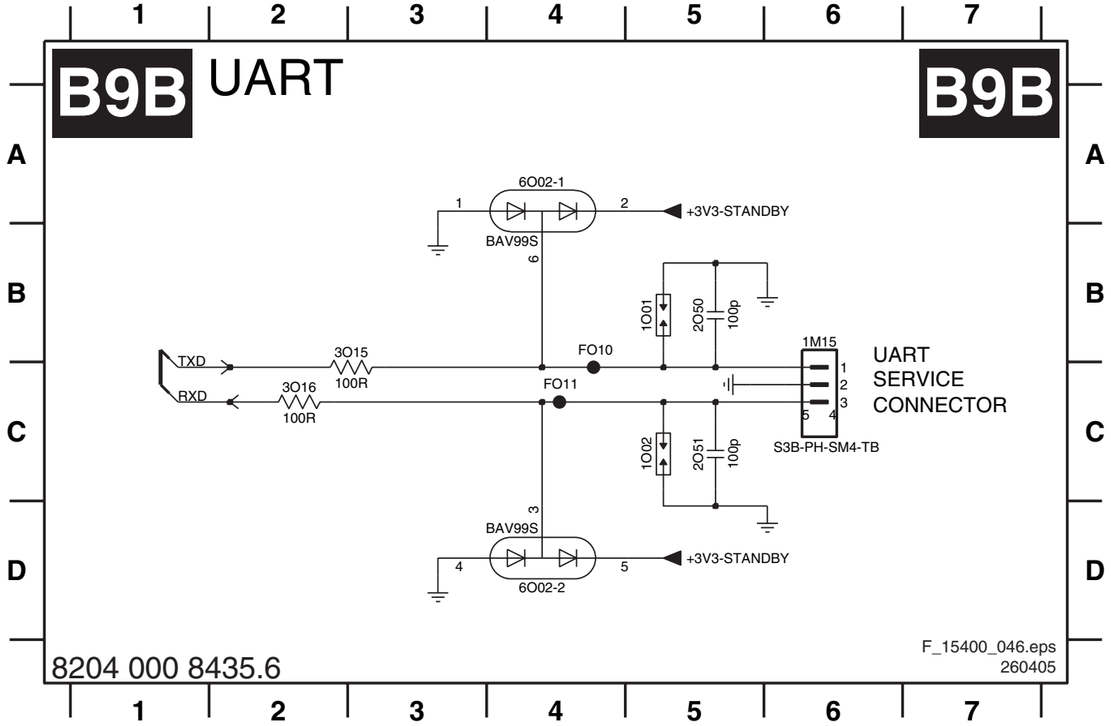
SSB: Ethernet (Optional)

1O00 C8	2O02 H4	2O06 D12	2O12 G10	2O16 C8	2O20 G11	2O24 G11	2O28 G10	3O03 C7	3O07 D1	3O11 D8	3O21 A8	3O25 C9	5O00 G9	7O00-1 B3	FO01 A10	FO05 C10	FO12 H9	IO04 G10	IO08 A12	IO13 F7
1O10 A10	2O03 H3	2O07 D11	2O13 B9	2O17 H9	2O21 G11	2O25 G10	3O00 C8	3O04 E8	3O08 E1	3O12 D9	3O22 A9	3O26 C9	5O01 H9	7O00-2 H7	FO02 B10	FO06 F9	IO01 E7	IO05 A9	IO10 C8	IO14 F8
2O00 D8	2O04 A11	2O10 E3	2O14 B9	2O18 H10	2O22 G11	2O26 G10	3O01 C7	3O05 F8	3O09 A11	3O13 D9	3O23 A9	3O27 C9	6O00 F8	9O16 C9	FO03 C10	FO07 F9	IO02 C7	IO06 C9	IO11 F7	
2O01 D8	2O05 A12	2O11 G9	2O15 B10	2O19 G12	2O23 G11	2O27 G10	3O02 D3	3O06 F8	3O10 C11	3O14 D9	3O24 A9	3O28 C9	6O01 F8	AO01 C8	FO04 C10	FO08 E3	IO03 H3	IO07 D12	IO12 F7	



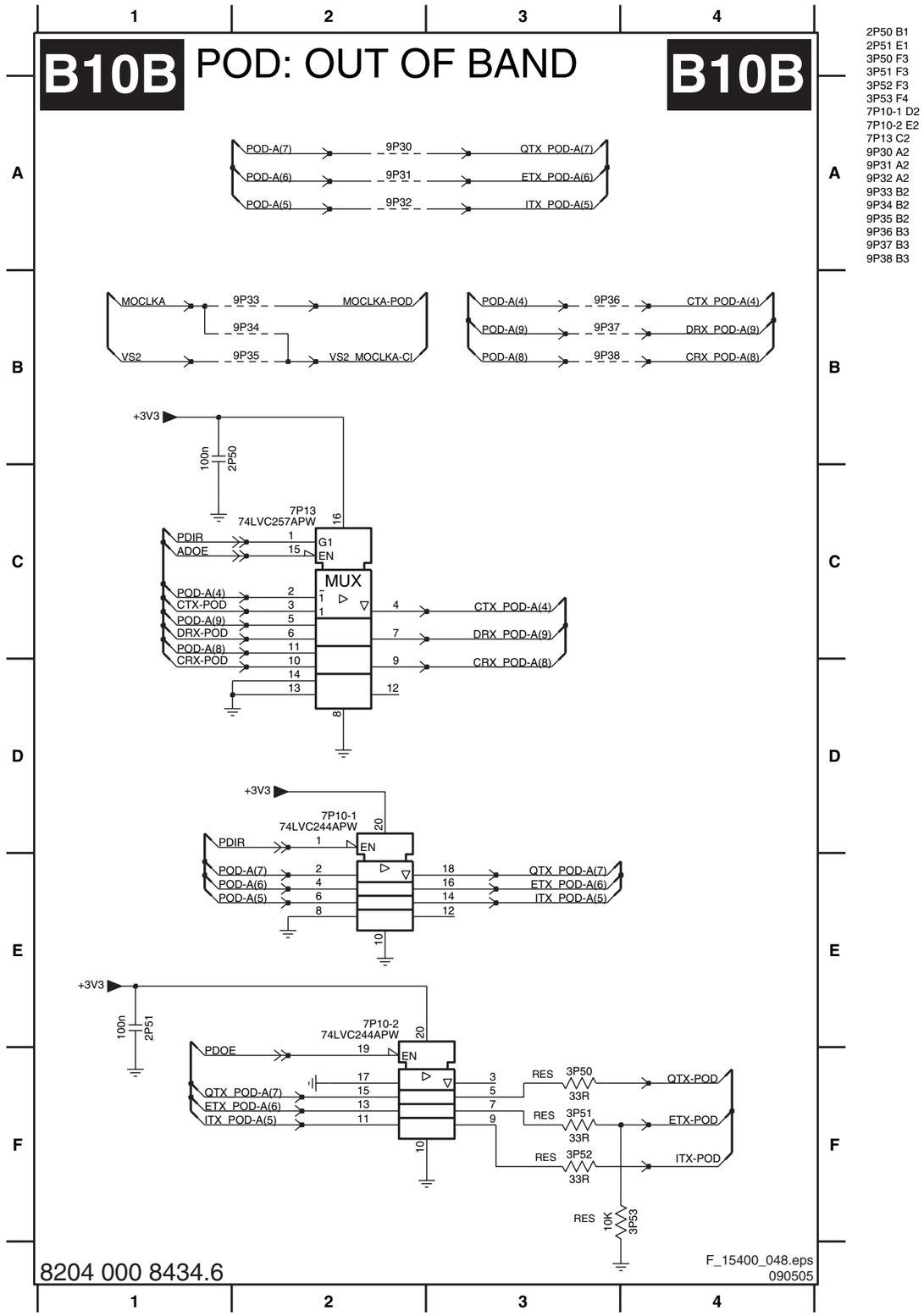
SSB: UART

1M15 B6
1O01 B5
1O02 C5
2O50 B5
2O51 C5
3O15 B3
3O16 C2
6O02-1 A4
6O02-2 D4
FO10 B4
FO11 C4



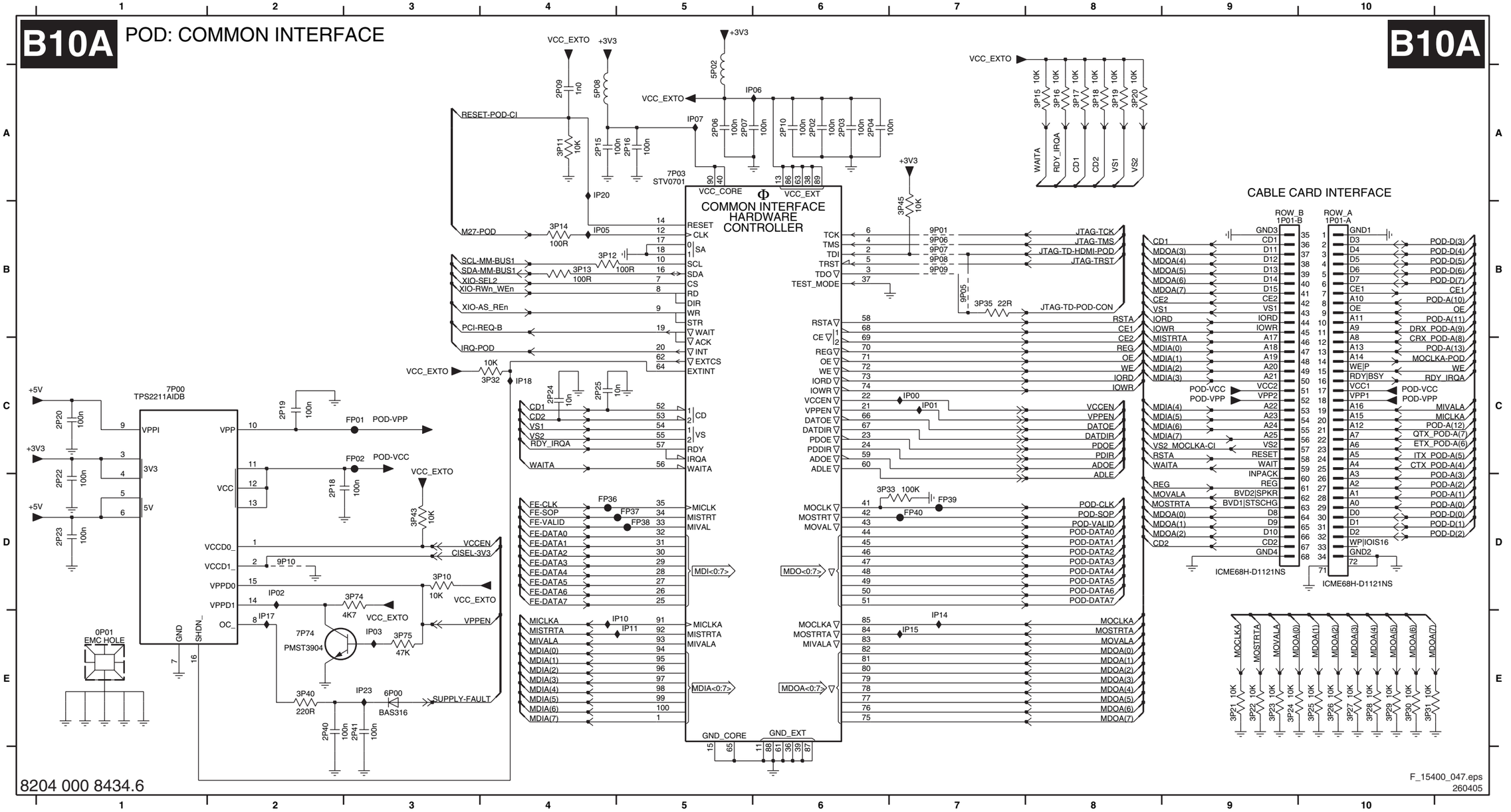
SSB: POD: Out of Band

2P50 B1
2P51 E1
3P50 F3
3P51 F3
3P52 F3
3P53 F4
7P10-1 D2
7P10-2 E2
7P13 C2
9P30 A2
9P31 A2
9P32 A2
9P33 B2
9P34 B2
9P35 B2
9P36 B3
9P37 B3
9P38 B3



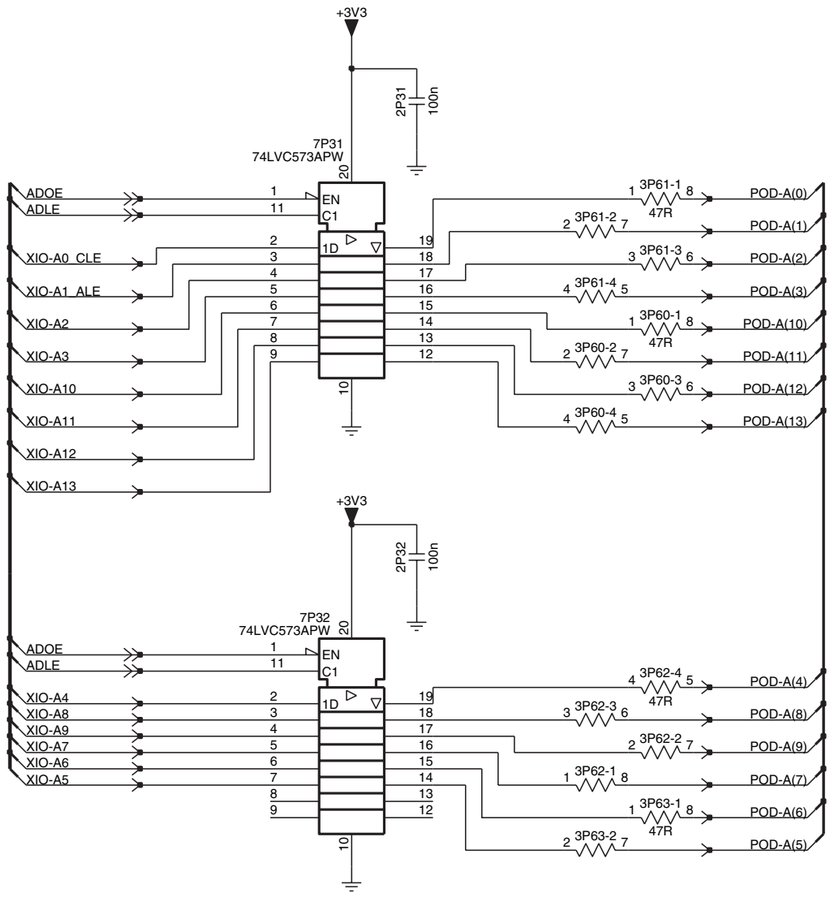
SSB: POD: Common Interface

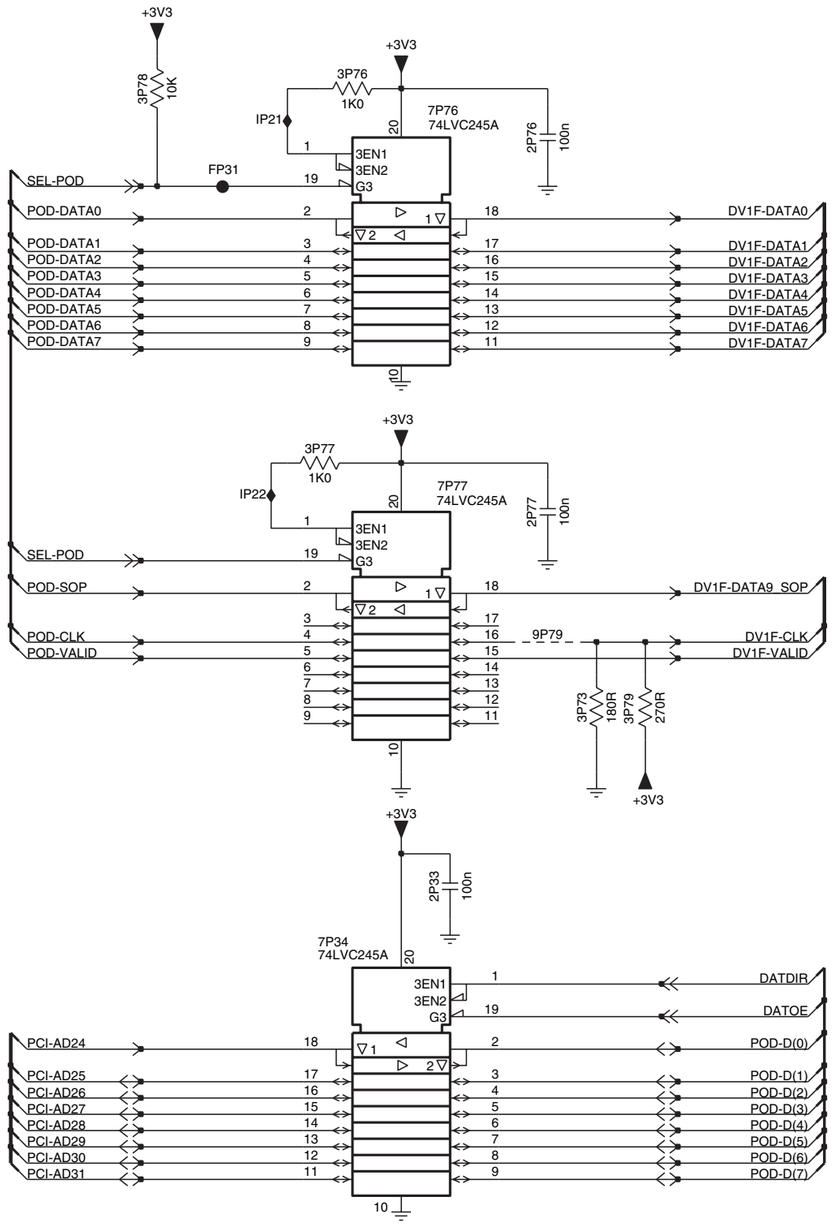
1P01-A B10	2P06 A5	2P16 A5	2P23 D1	3P10 D3	3P15 A8	3P20 A8	3P25 E10	3P30 E10	3P40 E2	5P02 A5	7P74 E2	9P08 B7	FP36 D4	IP00 C7	IP06 A6	IP15 E7
1P01-B B9	2P07 A5	2P18 D2	2P24 C4	3P11 A4	3P16 A8	3P21 E9	3P26 E10	3P31 E10	3P43 D3	5P08 A4	9P01 B7	9P09 B7	FP37 D5	IP01 C7	IP07 A5	IP17 E2
2P02 A6	2P09 A4	2P19 C2	2P25 C4	3P12 B4	3P17 A8	3P22 E9	3P27 E10	3P32 C4	3P45 B7	6P00 E3	9P05 B7	9P10 D2	FP38 D5	IP02 D2	IP10 E5	IP18 C4
2P03 A6	2P10 A6	2P20 C1	2P40 E2	3P13 B4	3P18 A8	3P23 E9	3P28 E10	3P33 D6	3P74 D3	7P00 C1	9P06 B7	FP01 C3	FP39 D7	IP03 E3	IP11 E5	IP20 A4
2P04 A6	2P15 A4	2P22 D1	2P41 E3	3P14 B4	3P19 A8	3P24 E9	3P29 E10	3P35 B7	3P75 E3	7P03 A5	9P07 B7	FP02 C3	FP40 D7	IP05 B4	IP14 E7	IP23 E3



SSB: POD: Buffering

B10C POD: BUFFERING





2P31 A3
2P32 C3
2P33 E7
2P76 A7
2P77 C7
3P60-1 B4
3P60-2 C3
3P60-3 C4
3P60-4 C3
3P61-1 B4
3P61-2 B3
3P61-3 B4
3P61-4 B3
3P62-1 D3
3P62-2 D4
3P62-3 D3
3P62-4 D4
3P63-1 E4
3P63-2 E3
3P73 D7
3P76 A6
3P77 C6
3P78 A6
3P79 D8
7P31 B2
7P32 D2
7P34 E6
7P76 A7
7P77 C7
9P79 C7
FP31 A6
IP21 A6
IP22 C6

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SSB: POD: TS Buffering

B10D POD: TS BUFFERING

B10D

+3V3-STANDBY
9P41
9P42 RES
3P36 10K
3P37 100K
RESET-MAIN-NVM
3P38 10K
BC857BW 7P18
2P34 100n
+3V3-STANDBY
+3V3-STANDBY
7P14 M24C64
Φ (8Kx8) EEPROM
WC
SCL
SDA
ADR
FP22
FP34
FP35
SCL-UP-VIP
SDA-UP-VIP
SCL-UP-VIP
SDA-UP-VIP
9P39 RES
9P40 RES
RES 1P02
B3B-PH-SM4-TBT(LF)
FOR FACTORY USE
9P16
9P17
MAIN NVM

+3V3
3P80 10K
XIO-SEL0
3P81 2K2
XIO-ACK

RXD
9P18 RES
RXD-VIPER
TXD
9P19 RES
TXD-VIPER
+5V2-STBY
2P35 100n
7P15-1 74HC4066PW
3P83 100R
RXD
FP23
3P84 100R
RXD-UP
7P15-2 74HC4066PW
UART-SWITCHn
3P85 100R
RXD-VIPER
TXD
3P86 100R
7P15-3 74HC4066PW
+5V2-STBY
TXD-UP
3P88 10K
UART-SWITCHn
FP32
7P15-4 74HC4066PW
UART-SWITCH
FP33
7P16 PDTC114EU
TXD-VIPER
10K 3P57
7P17 PDTC114EU

+3V3
2P82 100n
7P81 74LVC245A
XIO-AS_REn
XIO-SEL0
PCI-AD31
PCI-AD30
PCI-AD27
PCI-AD26
PCI-AD24
PCI-AD25
PCI-AD29
PCI-AD28
3EN1
3EN2
G3

+3V3
2P80 100n
2P81 100n
7P80 TC58DVM92F1TGI0
VCC
VCCQ
EEPROM (32Mx16)
I/O
XIO-A16_D8
XIO-A17_D9
XIO-A18_D10
XIO-A19_D11
XIO-A20_D12
XIO-A21_D13
XIO-A22_D14
XIO-A23_D15
NC
GND
VSS
10K 6
3P82
RE
CE
CLE
ALE
WE
WP
RY
BY
IP16
XIO-AS_REn
XIO-SEL0
XIO-A0_CLE
XIO-A1_ALE
XIO-RWn_WEn
STBY-WP-NAND-FLASH
XIO-ACK

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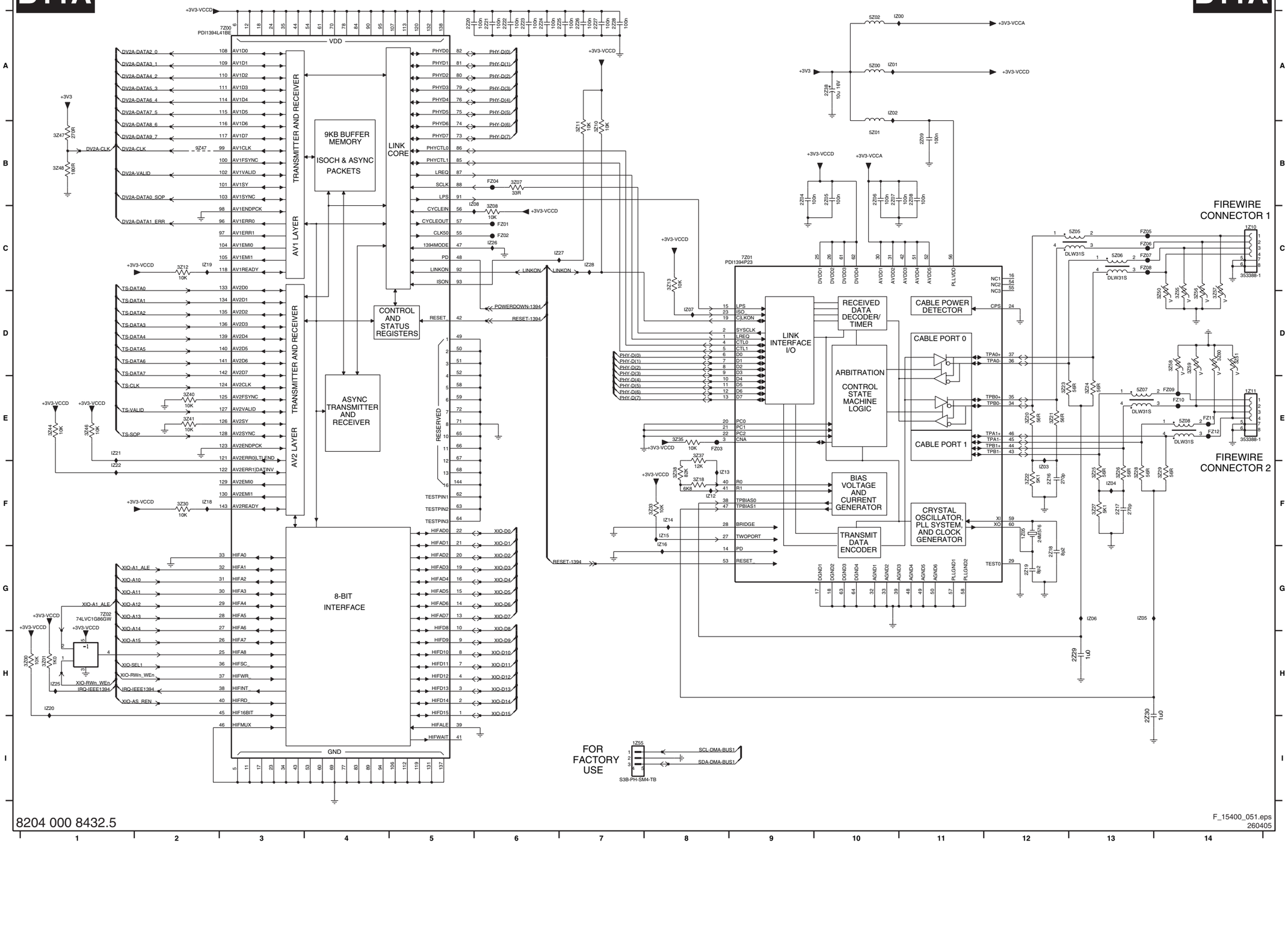
1P02 B6
2P34 B4
2P35 C4
2P80 C8
2P81 C8
2P82 C6
3P36 A3
3P37 A4
3P38 A2
3P57 F3
3P80 B9
3P81 C9
3P82 F8
3P83 D2
3P84 D2
3P85 D2
3P86 E2
3P88 E2
7P14 B3
7P15-1 C3
7P15-2 D3
7P15-3 E3
7P15-4 E3
7P16 F2
7P17 F3
7P18 A3
7P80 C8
7P81 C5
9P16 B4
9P17 C4
9P18 C2
9P19 C2
9P39 B6
9P40 B6
9P41 A3
9P42 A4
FP22 B4
FP23 D2
FP32 E2
FP33 F2
FP34 B4
FP35 B4
IP16 D9

SSB: Firewire 1394: Main (Optional)

B11A FIREWIRE 1394: MAIN (Optional)

B11A



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1Z10 C14 IZ05 G1
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1Z55 I7 IZ07 D8
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2Z06 B10 IZ13 F8
2Z07 B10 IZ14 F8
2Z08 B11 IZ15 F8
2Z09 B11 IZ16 F8
2Z16 F12 IZ18 F2
2Z17 F13 IZ19 C2
2Z18 G12 IZ20 H1
2Z19 G12 IZ21 E1
2Z20 A5 IZ22 F1
2Z21 A6 IZ25 H1
2Z22 A6 IZ26 C6
2Z23 A6 IZ27 C6
2Z24 A6 IZ28 C7
2Z25 A7
2Z26 A7
2Z27 A7
2Z28 A7
2Z29 H13
2Z30 H13
3Z38 A10
3Z00 H1
3Z01 H1
3Z07 B6
3Z08 C6
3Z10 B7
3Z11 B7
3Z12 C2
3Z13 C8
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3Z60 D14
5Z00 A10
5Z01 B10
5Z02 A10
5Z05 C13
5Z06 C13
5Z07 E13
5Z08 E14
7Z00 A3
7Z01 C9
7Z02 G1
9Z47 B2
FZ01 C6
FZ02 C6
FZ03 E8
FZ04 B6
FZ05 C13
FZ06 C13
FZ07 C13
FZ08 C13
FZ09 E14
FZ10 E14
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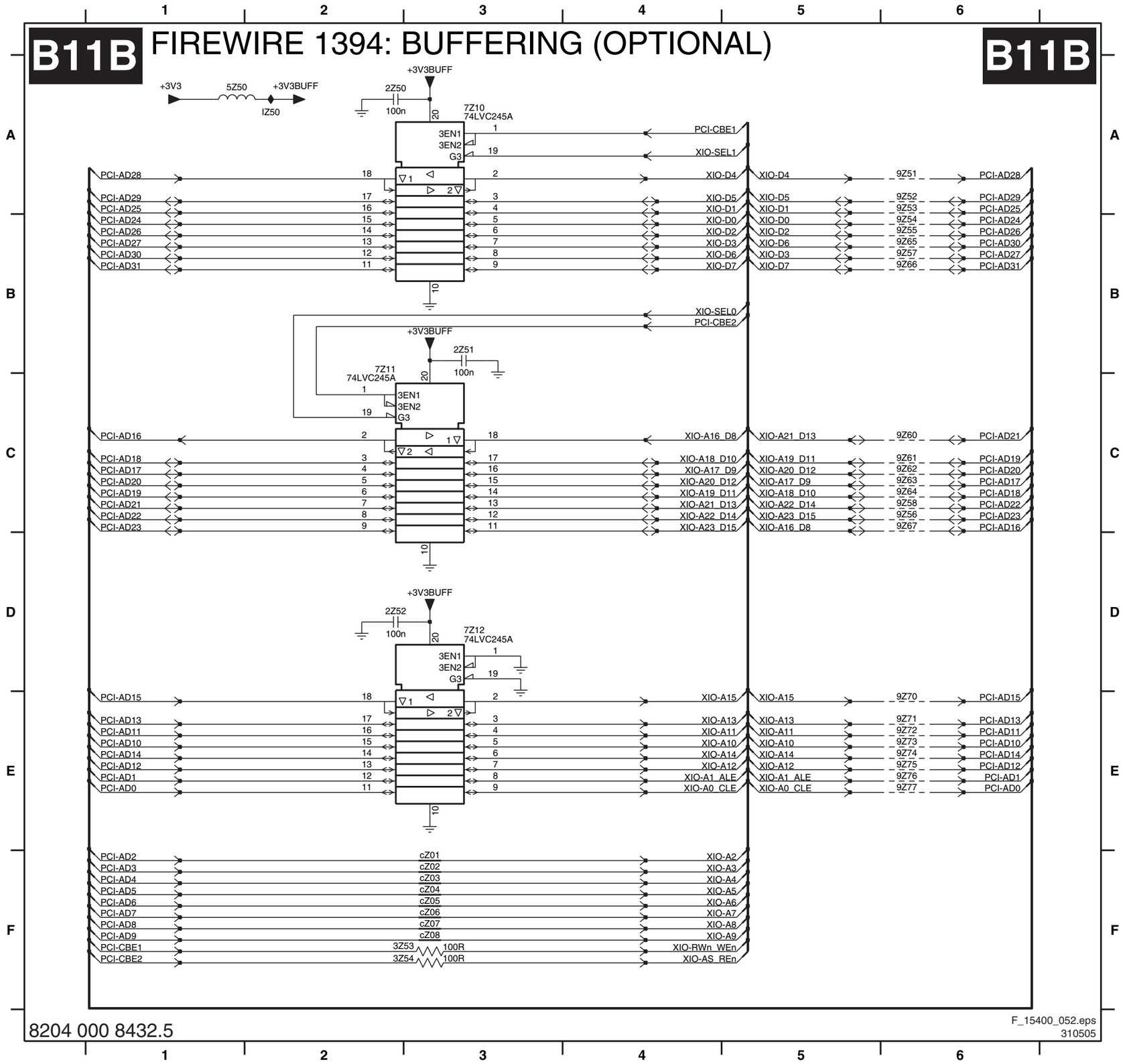
FZ12 E14
IZ00 A10
IZ01 A10
IZ02 A10
IZ03 F12

SSB: Firewire 1394: Buffering (Optional)



2Z50 A2
2Z51 B3
2Z52 D2
3Z53 F2
3Z54 F2
5Z50 A1
7Z10 A3
7Z11 B2
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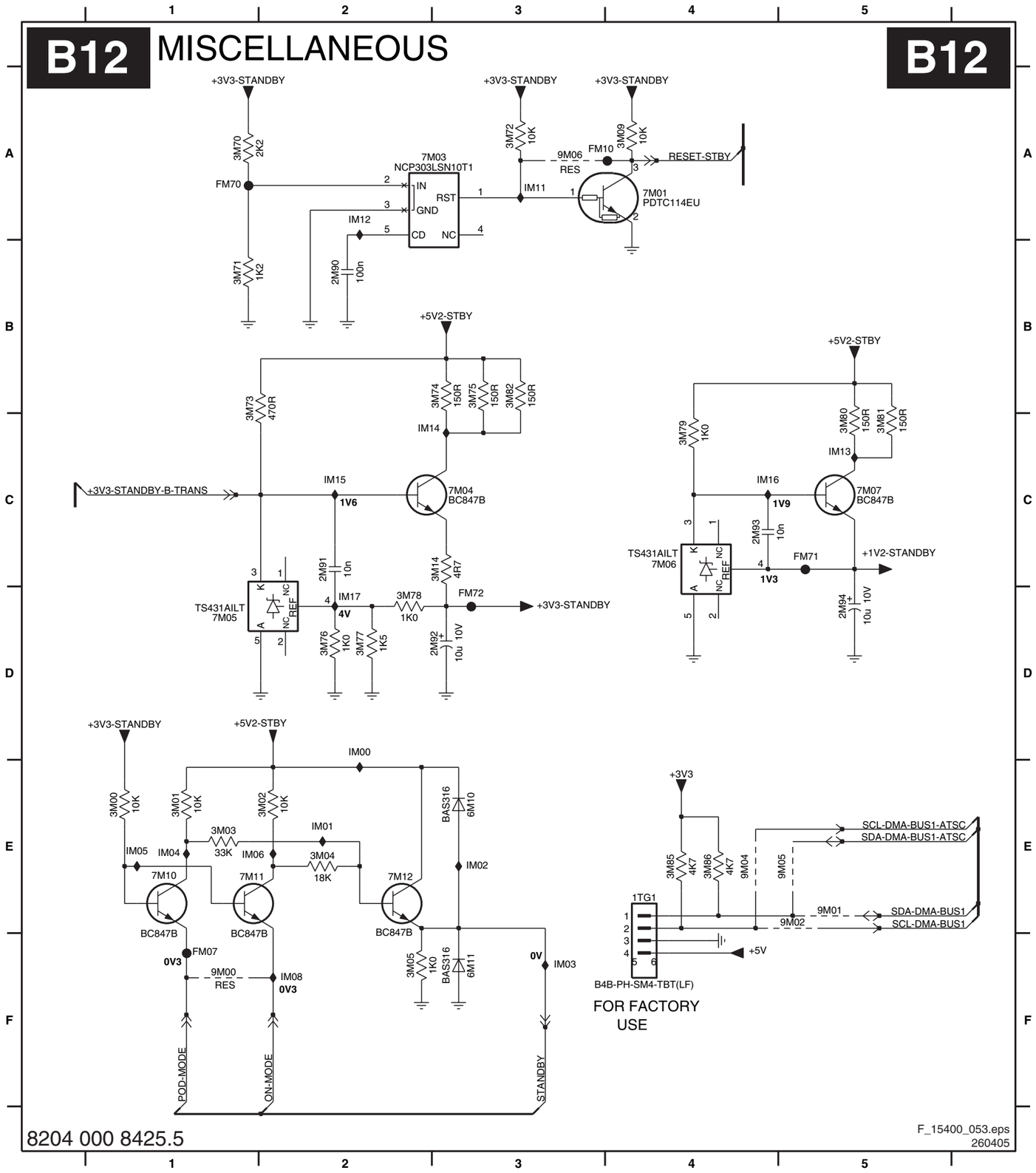
9Z51 A6
9Z52 A6
9Z53 A6
9Z54 B6
9Z55 B6
9Z56 C6
9Z57 B6
9Z58 C6
9Z60 C6
9Z61 C6
9Z62 C6
9Z63 C6
9Z64 C6
9Z65 B6
9Z66 B6
9Z67 C6
9Z70 E6
9Z71 E6
9Z72 E6
9Z73 E6
9Z74 E6
9Z75 E6
9Z76 E6
9Z77 E6
IZ50 A2
cZ01 F3
cZ02 F3
cZ03 F3
cZ04 F3
cZ05 F3
cZ06 F3
cZ07 F3
cZ08 F3

SSB: Miscelaneous



SRP Overview SSB

+12VS	B1a	+5VbM	B3c	AV1-STATUS	B3f	DATOE	B10a	DV3F-DATA8_6	B4b	DV-ROUT-3	B6	I2S-MCH-CSW	B5c	MDOA(4)	B10a	MP-G1	B6	PBRX2+	B7a
+12VS	B1b	+5V-CON	B1b	AV1-STATUS	B3g	DATOE	B10c	DV3F-DATA8_6	B5c	DV-ROUT-4	B5c	I2S-MCH-LR	B4a	MDOA(5)	B10a	MP-G2	B6	PBRX2+	B7b
+12VS	B4a	+5V-CON	B5e	AV1-STATUS	B4e	DEBUG-BREAK	B4e	DV3F-DATA9_7	B4b	DV-ROUT-4	B6	I2S-MCH-LR	B5c	MDOA(6)	B10a	MP-G3	B6	PBRXC-	B7a
+12VSW	B1a	+5VDISP	B4g	AV1-STATUS-AV7-C	B3f	DEBUG-BREAK	B5a	DV3F-DATA9_7	B5c	DV-ROUT-5	B5c	I2S-MCH-SLR	B4a	MDOA(7)	B10a	MP-G4	B6	PBRXC-	B7b
+12VSW	B1b	+5VDISP	B5e	AV2_C	B3a	DETECT-12V	B4e	DV3F-VALID	B4b	DV-ROUT-5	B6	I2S-MCH-SLR	B5c	MICLKA	B10a	MP-G5	B6	PBRXC+	B7a
+12VSW	B2a	+5VMPIF-MAIN	B3a	AV2_C	B3f	DETECT-1V2	B4e	DV3F-VALID	B5c	DV-ROUT-6	B5c	I2S-SUB-D	B4a	MISTRTA	B10a	MP-G6	B6	PBRXC+	B7b
+12VSW	B3e	+5VMPIF-MAIN	B3b	AV2_FBL	B3f	DETECT-3V3	B4e	DV4-CLK	B4b	DV-ROUT-6	B6	I2S-SUB-D	B5c	MIVALA	B10a	MP-G7	B6	PBRX-DDC-SCL	B7a
+12VSW	B4e	+5VMPIF-MAIN	B3c	AV2_FBL	B4a	DETECT-5V	B4e	DV4-CLK	B7b	DV-ROUT-7	B5c	I2S-SUB-ND	B4a	MM_A0	B5b	MP-G8	B6	PBRX-DDC-SCL	B7b
+12VSW	B4g	+5V-OOB	B2b	AV2_Y-CVBS	B3a	DETECT-8V6	B4e	DV4-DATA0_SOP	B4b	DV-ROUT-7	B6	I2S-SUB-ND	B5c	MM_A1	B5b	MP-G9	B6	PBRX-DDC-SDA	B7a
+12VSW	B5e	+5VTUN	B2b	AV2_Y-CVBS	B3f	DIN	B6	DV4-DATA0_SOP	B7b	DV-ROUT-8	B5c	I2S-WS-AVIP	B4a	MM_A10	B5b	MP-GOUT-0	B4b	PBRX-DDC-SDA	B7b
+1V2	B1a	+8V6	B1b	AV2-AV4_B-PB	B3a	DRX_POD-A(9)	B10a	DV4-DATA1_ERR	B4b	DV-ROUT-8	B6	I2S-WS-AVIP	B5c	MM_A11	B5b	MP-GOUT-0	B6	PCI-AD0	B11b
+1V2	B2a	+8V6-CONN	B3f	AV2-AV4_B-PB	B3f	DRX_POD-A(9)	B10b	DV4-DATA1_ERR	B7b	DV-ROUT-9	B5c	I2S-WS-MAIN	B4a	MM_A12	B5b	MP-GOUT-1	B4b	PCI-AD0	B5a
+1V2	B4e	+8V6-SW	B1b	AV2-AV4_B-PB	B7b	DRX-POD	B10b	DV4-DATA2_0	B4b	DV-ROUT-9	B6	I2S-WS-MAIN	B5c	MM_A2	B5b	MP-GOUT-1	B6	PCI-AD0	B8
+1V2	B5d	+8V6-SW	B2b	AV2-AV4_G-Y	B3a	DRX-POD	B2a	DV4-DATA2_0	B7b	DV-VREF	B4b	I2S-WS-SUB	B4a	MM_A3	B5b	MP-GOUT-2	B4b	PCI-AD0	B9a
+1V2_ATSC	B2a	+8V6-SW	B3b	AV2-AV4_G-Y	B3f	DSNDL1	B3d	DV4-DATA3_1	B4b	DV-VREF	B7b	I2S-WS-SUB	B5c	MM_A4	B5b	MP-GOUT-2	B6	PCI-AD1	B11b
+1V2M	B6	+8V6-SW	B3e	AV2-AV4_G-Y	B7b	DSNDL1	B4a	DV4-DATA3_1	B7b	EA	B4e	IF-TER2	B2b	MM_A5	B5b	MP-GOUT-3	B4b	PCI-AD1	B5a
+1V2-MAIN	B2a	+8V6-SW	B3f	AV2-AV4_R-PR	B3a	DSNDL2	B3d	DV4-DATA4_2	B4b	EJTAG-DETECT	B1c	IF-TER2	B3c	MM_A6	B5b	MP-GOUT-3	B6	PCI-AD1	B8
+1V2-STANDBY	B12	+8V6-SW	B3g	AV2-AV4_R-PR	B3f	DSNDL2	B4a	DV4-DATA4_2	B7b	EJTAG-DETECT	B4e	INIT	B6	MM_A7	B5b	MP-GOUT-4	B4b	PCI-AD1	B9a
+1V2-STANDBY	B4e	+8V6-SW	B4e	AV2-AV4_R-PR	B7b	DSNDR1	B3d	DV4-DATA5_3	B4b	EJTAG-TCK	B1c	IORD	B10a	MM_A8	B5b	MP-GOUT-4	B6	PCI-AD10	B11b
+1V2-STANDBY	B4f	+8V6-SW	B6	AV2-STATUS	B3f	DSNDR1	B4a	DV4-DATA5_3	B7b	EJTAG-TCK	B5a	IOWR	B10a	MM_A9	B5b	MP-GOUT-5	B4b	PCI-AD10	B5a
+1V8	B7c	+8VaM	B3c	AV2-STATUS	B4e	DSNDR2	B3d	DV4-DATA6_4	B4b	EJTAG-TDI	B1c	IRQ-AVIP	B4e	MM_BA0	B5b	MP-GOUT-5	B6	PCI-AD10	B8
+2V5	B1a	+8V-AUD	B3e	AV6_VSYNC	B3f	DSNDR2	B4a	DV4-DATA6_4	B7b	EJTAG-TDI	B5a	IRQ-AVIP	B5a	MM_BA1	B5b	MP-GOUT-6	B4b	PCI-AD10	B9a
+2V5	B2a	+8VMPIF-MAIN	B3b	AV6_VSYNC	B3g	DV1F-CLK	B10c	DV4-DATA7_5	B4b	EJTAG-TDO	B1c	IRQ-AVIP-SUB	B4e	MM_CAS	B5b	MP-GOUT-6	B6	PCI-AD11	B11b
+2V5	B4d	+8VMPIF-MAIN	B3c	AV6_VSYNC	B4a	DV1F-CLK	B4b	DV4-DATA7_5	B7b	EJTAG-TDO	B5a	IRQ-AVIP-SUB	B5a	MM_CKE	B5b	MP-GOUT-7	B4b	PCI-AD11	B5a
+2V5	B5d	+VTUN	B1b	AV6_VSYNC	B7b	DV1F-CLK	B5c	DV4-DATA8_6	B4b	EJTAG-TMS	B1c	IRQ-ETHERNET	B5a	MM_CLK_N	B5b	MP-GOUT-7	B6	PCI-AD11	B8
+2V5_ATSC	B2a	1V8-PLL	B7c	AV7_C	B3a	DV1F-DATA0	B10c	DV4-DATA8_6	B7b	EJTAG-TMS	B5a	IRQ-ETHERNET	B9a	MM_CLK_P	B5b	MP-GOUT-8	B4b	PCI-AD11	B9a
+2V5A-FAT-MAIN	B2a	2NDSIFEXTM	B3c	AV7_C	B3f	DV1F-DATA0	B4b	DV4-DATA9_7	B4b	ENABLE-1V2	B1a	IRQ-FE-MAIN	B2a	MM_CS0	B5b	MP-GOUT-8	B6	PCI-AD12	B11b
+2V5A-FDC-MAIN	B2a	3V3-APLL	B7c	AV7_Y-CVBS	B3a	DV1F-DATA0	B5c	DV4-DATA9_7	B7b	ENABLE-1V2	B4e	IRQ-FE-MAIN	B5a	MM_DATA_0	B5b	MP-GOUT-9	B4b	PCI-AD12	B5a
+2V5A-MAIN	B2a	3V3-AVI	B7c	AV7_Y-CVBS	B3f	DV1F-DATA1	B10c	DV4-VALID	B4b	ENABLE-3V3	B1a	IRQ-HD1	B4e	MM_DATA_1	B5b	MP-GOUT-9	B6	PCI-AD12	B8
+2V5A-PLL-MAIN	B2a	3V3-DIG	B7b	BACKLIGHT-CNTRL-OUT	B5e	DV1F-DATA1	B4b	DV4-VALID	B7b	ENABLE-3V3	B4e	IRQ-HD1	B5a	MM_DATA_10	B5b	MP-HS	B6	PCI-AD12	B9a
+2V5A-XTAL-MAIN	B2a	3V3-DIG	B7c	BACKLIGHT-CNTRL-OUT	B6	DV1F-DATA1	B5c	DV5-DATA0_SOP	B4b	ENABLE-5V	B4g	IRQ-HD2	B4e	MM_DATA_11	B5b	MP-OUT-DE	B4b	PCI-AD13	B11b
+2V5D	B1a	3V3-PLL	B7c	BACKLIGHT-CONTROL	B4e	DV1F-DATA2	B10c	DV5-DATA0_SOP	B7b	ENABLE-5V	B5e	IRQ-HD2	B5a	MM_DATA_12	B5b	MP-OUT-DE	B6	PCI-AD13	B5a
+2V5D	B5b	ADAC1	B3e	BACKLIGHT-CONTROL	B5c	DV1F-DATA2	B4b	DV5-DATA1_ERR	B4b	ETX_POD-A(6)	B10a	IRQ-HIRATE	B4e	MM_DATA_13	B5b	MP-OUT-FFIELD	B4b	PCI-AD13	B8
+2V5D-DDR	B5b	ADAC1	B4a	BACKLIGHT-CONTROL	B5e	DV1F-DATA2	B5c	DV5-DATA1_ERR	B7b	ETX_POD-A(6)	B10b	IRQ-HIRATE	B5a	MM_DATA_14	B5b	MP-OUT-FFIELD	B6	PCI-AD13	B9a
+2V5-DDRPNX	B4d	ADAC2	B3e	BACKLIGHT-CONTROL	B6	DV1F-DATA3	B10c	DV5-DATA2_0	B4b	ETX-POD	B10b	IRQ-HIRATE	B7b	MM_DATA_15	B5b	MP-OUT-HS	B4b	PCI-AD14	B11b
+2V5-DDRPNX	B4f	ADAC2	B4a	BIN-5V	B7a	DV1F-DATA3	B4b	DV5-DATA2_0	B7b	EW-DRIVE	B3b	IRQ-IEEE1394	B11a	MM_DATA_16	B5b	MP-OUT-HS	B6	PCI-AD14	B5a
+2V5D-PLL-MAIN	B2a	ADAC4	B3e	BRX0-	B7a	DV1F-DATA3	B5c	DV5-DATA3_1	B4b	FAT-ADC-INN-MAIN	B2a	IRQ-IEEE1394	B5a	MM_DATA_17	B5b	MP-OUT-VS	B4b	PCI-AD14	B8
+2V5M	B6	ADAC4	B4a	BRX0+	B7a	DV1F-DATA4	B10c	DV5-DATA3_1	B7b	FAT-ADC-INN-MAIN	B2b	IRQ-MAIN	B5a	MM_DATA_18	B5b	MP-OUT-VS	B4g	PCI-AD14	B9a
+2V5-MAIN	B2a	ADAC7	B3e	BRX1-	B7a	DV1F-DATA4	B4b	DV5-DATA4_2	B4b	FAT-ADC-INP-MAIN	B2a	IRQ-MPIF	B3b	MM_DATA_19	B5b	MP-OUT-VS	B5e	PCI-AD15	B11b
+2V5-VPR	B5c	ADAC7	B4a	BRX1+	B7a	DV1F-DATA4	B5c	DV5-DATA4_2	B7b	FAT-ADC-INP-MAIN	B2b	IRQ-MPIF	B5a	MM_DATA_2	B5b	MP-OUT-VS	B6	PCI-AD15	B5a
+2V5-VPR	B5d	ADAC8	B3e	BRX2-	B7a	DV1F-DATA5	B10c	DV5-DATA5_3	B4b	FAT-IF-AGC-MAIN	B2a	IRQ-POD	B10a	MM_DATA_20	B5b	MP-R0	B6	PCI-AD15	B8
+3V3	B10a	ADAC8	B4a	BRX2+	B7a	DV1F-DATA5	B4b	DV5-DATA5_3	B7b	FAT-IF-AGC-MAIN	B2b	IRQ-POD	B4e	MM_DATA_21	B5b	MP-R1	B6	PCI-AD15	B9a
+3V3	B10b	ADLE	B10a	BRXC-	B7a	DV1F-DATA5	B5c	DV5-DATA6_4	B4b	FDC-ADC-INN	B2a	IRQ-POD	B5a	MM_DATA_22	B5b	MP-R2	B6	PCI-AD16	B11b
+3V3	B10c	ADLE	B10c	BRXC+	B7a	DV1F-DATA6	B10c	DV5-DATA6_4	B7b	FDC-ADC-INN	B2b	IRQ-SUB	B5a	MM_DATA_23	B5b	MP-R3	B6	PCI-AD16	B5a
+3V3	B10d	ADOE	B10a	BRX-DDC-SCL	B7a	DV1F-DATA6	B4b	DV5-DATA7_5	B4b	FDC-ADC-INP	B2a	IRQ-USB20	B5a	MM_DATA_24	B5b	MP-R4	B6	PCI-AD16	B8
+3V3	B11a	ADOE	B10b	BRX-DDC-SDA	B7a	DV1F-DATA6	B5c	DV5-DATA7_5	B7b	FDC-ADC-INP	B2b	IRQ-USB20	B8	MM_DATA_25	B5b	MP-R5	B6	PCI-AD16	B9a
+3V3	B11b	ADOE	B10c	BRX-HOTPLUG	B7a	DV1F-DATA7	B10c	DV5-DATA8_6	B4b	FDC-AGC	B2a	ITX_POD-A(5)	B10a	MM_DATA_26	B5b	MP-R6	B6	PCI-AD17	B11b
+3V3	B12	AIN-5V	B7a	CD1	B10a	DV1F-DATA7	B4b	DV5-DATA8_6	B7b	FDC-AGC	B2b	ITX_POD-A(5)	B10b	MM_DATA_27	B5b	MP-R7	B6	PCI-AD17	B5a
+3V3	B1a	ALE	B4e	CD2	B10a	DV1F-DATA7	B5c	DV5-DATA9_7	B4b	FE-CLK	B10a	ITX-POD	B10b	MM_DATA_28	B5b	MP-R8	B6	PCI-AD17	B8
+3V3	B1c	A-PLOP	B3e	CE1	B10a	DV1F-DATA8_ERR	B4b	DV5-DATA9_7	B7b	FE-CLK	B2a	JTAG-TCK	B10a	MM_DATA_29	B5b	MP-R9	B6	PCI-AD17	B9a
+3V3	B2a	A-PLOP	B3g	CE2	B10a	DV1F-DATA8_ERR	B5c	DV-BOUT-0	B5c	FE-DATA0	B10a	JTAG-TCK	B4e	MM_DATA_3	B5b	MP-ROUT-0	B4b	PCI-AD18	B11b
+3V3	B3e	A-PLOP	B4a	CISEL-3V3	B10a	DV1F-DATA9_SOP	B10c	DV-BOUT-0	B6	FE-DATA0	B2a	JTAG-TCK	B5a	MM_DATA_30	B5b	MP-ROUT-0	B6	PCI-AD18	B5a
+3V3	B4a	A-PLOP	B5a	CLK-MPIF	B3b	DV1F-DATA9_SOP	B4b	DV-BOUT-1	B5c	FE-DATA1	B10a	JTAG-TCK	B7b	MM_DATA_31	B5b	MP-ROUT-1	B4b	PCI-AD18	B8
+3V3	B4e	ARX0-	B7a	CLK-MPIF	B4a	DV1F-DATA9_SOP	B5c	DV-BOUT-1	B6	FE-DATA1	B2a	JTAG-TD-CON-VIPER	B5a	MM_DATA_4	B5b	MP-ROUT-1	B6	PCI-AD18	B9a
+3V3	B4g	ARX0+	B7a	C-MON-OUT	B3f	DV1F-VALID	B10c	DV-BOUT-2	B5c	FE-DATA2	B10a	JTAG-TD-DVB-HDMI	B4e	MM_DATA_5	B5b	MP-ROUT-2	B4b	PCI-AD19	B11b
+3V3	B5a	ARX1-	B7a	C-MON-OUT	B5c	DV1F-VALID	B4b	DV-BOUT-2	B6	FE-DATA2	B2a	JTAG-TD-DVB-HDMI	B7b	MM_DATA_6	B5b	MP-ROUT-2	B6	PCI-AD19	B5a
+3V3	B5c	ARX1+	B7a	COM-SND	B3g	DV1F-VALID	B5c	DV-BOUT-3	B5c	FE-DATA3	B10a	JTAG-TD-HDMI-POD	B10a	MM_DATA_7	B5b	MP-ROUT-3	B4b	PCI-AD19	B8
+3V3	B5d	ARX2-	B7a	COM-SND	B4e	DV2A-CLK	B11a	DV-BOUT-3	B6	FE-DATA3	B2a	JTAG-TD-HDMI-POD	B7b	MM_DATA_8	B5b	MP-ROUT-3	B6	PCI-AD19	B9a
+3V3	B5e	ARX2+	B7a	CRX_POD-A(8)	B10a	DV2A-CLK	B4b	DV-BOUT-4	B5c	FE-DATA4	B10a	JTAG-TD-POD-CON	B10a	MM_DATA_9	B5b	MP-ROUT-4	B4b	PCI-AD2	B11b
+3V3	B6	ARXC-	B7a	CRX_POD-A(8)	B10b	DV2A-CLK	B5c	DV-BOUT-4	B6	FE-DATA4	B2a	JTAG-TD-POD-CON	B5a	MM_DQM_0	B5b	MP-ROUT-4	B6	PCI-AD2	B5a
+3V3	B7a	ARXC+	B7a	CRX-POD	B10b	DV2A-DATA0_SOP	B11a	DV-BOUT-5	B5c	FE-DATA5	B10a	JTAG-TD-VIPER-PNX2015	B4e	MM_DQM_1	B5b	MP-ROUT-5	B4b	PCI-AD2	B8
+3V3	B7b	ARX-DDC-SCL	B7a	CRX-POD	B2a	DV2A-DATA0_SOP	B4b	DV-BOUT-5	B6	FE-DATA5	B2a	JTAG-TD-VIPER-PNX2015	B5a	MM_DQM_2	B5b	MP-ROUT-5	B6	PCI-AD2	B9a
+3V3	B7c	ARX-DDC-SDA	B7a	CTRL1-MOP	B4g	DV2A-DATA0_SOP	B5c	DV-BOUT-6	B5c	FE-DATA6	B10a	JTAG-TMS	B10a	MM_DQM_3	B5b	MP-ROUT-6	B4b	PCI-AD20	B11b
+3V3	B8	ARX-HOTPLUG	B7a	CTRL1-MOP	B6	DV2A-DATA1_ERR	B11a	DV-BOUT-6	B6	FE-DATA6	B2a	JTAG-TMS	B4e	MM_DQS0	B5b	MP-ROUT-6	B6	PCI-AD20	B5a
+3V3	B9a	AUDIO-HDPH-L-AP	B3e	CTRL1-STBY	B4e	DV2A-DATA1_ERR	B4b	DV-BOUT-7	B5c	FE-DATA7	B10a	JTAG-TMS	B5a	MM_DQS1	B5b	MP-ROUT-7	B4b	PCI-AD20	B8
+3V3-AV	B7c	AUDIO-HDPH-L-AP	B3f	CTRL1-STBY	B4g	DV2A-DATA1_ERR	B5c	DV-BOUT-7	B6	FE-DATA7	B2a	JTAG-TMS	B7b	MM_DQS2	B5b	MP-ROUT-7	B6	PCI-AD20	B9a
+3V3BUFF	B11b	AUDIO-HDPH-R-AP	B3e	CTRL1-STBY	B5e	DV2A-DATA2_0	B11a	DV-BOUT-8	B5c	FE-SOP	B10a	JTAG-TRST	B10a	MM_DQS3	B5b	MP-ROUT-8	B4b	PCI-AD21	B11b
+3V3-ET-ANA	B9a	AUDIO-HDPH-R-AP	B3f	CTRL1-VIPER	B4g	DV2A-DATA2_0	B4b	DV-BOUT-8	B6	FE-SOP	B2a	JTAG-TRST	B1c	MM_RAS	B5b	MP-ROUT-8	B6	PCI-AD21	B5a
+3V3-ET-DIG	B9a	AUDIO-IN1-L	B3d	CTRL1-VIPER	B5c	DV2A-DATA2_0	B5c	DV-BOUT-9	B5c	FE-VALID	B10a	JTAG-TRST	B4e	MM_WE	B5b	MP-ROUT-9	B4b	PCI-AD21	B8
+3V3M	B6	AUDIO-IN1-L	B3f	CTRL1-VIPER	B5e	DV2A-DATA3_1	B11a	DV-BOUT-9	B6	FE-VALID	B2a	JTAG-TRST	B5a	MOCLKA	B10a	MP-ROUT-9	B6	PCI-AD21	B9a
+3V3-MAIN	B2a	AUDIO-IN1-R	B3d	CTRL2-MOP	B4g	DV2A-DATA3_1	B4b	DV-CLKIN	B5c	FM-TRAP	B2a	JTAG-TRST	B7b	MOCLKA	B10b	MP-VS	B6	PCI-AD22	B11b
+3V3-STANDBY	B10d	AUDIO-IN1-R	B3f	CTRL2-MOP	B6	DV2A-DATA3_1	B5c	DV-CLKIN	B6	FM-TRAP	B2b	KEYBOARD	B3f	MOCLKA-POD	B10a	OE	B10a	PCI-AD22	B5a
+3V3-STANDBY	B12	AUDIO-IN2-L	B3d	CTRL2-VIPER	B4g	DV2A-DATA4_2	B11a	DV-FREF	B4b	FRONT_C	B3a	KEYBOARD	B4e	MOCLKA-POD	B10b	ON-MODE	B12	PCI-AD22	B8
+3V3-STANDBY	B4e	AUDIO-IN2-L	B3f	CTRL2-VIPER	B5c	DV2A-DATA4_2	B4b	DV-FREF	B7b	FRONT_C	B3f	LAMP-ON	B4e	MOSTRTA	B10a	ON-MODE	B1b	PCI-AD22	B9a
+3V3-STANDBY	B4g	AUDIO-IN2-R	B3d	CTRL3-MOP	B4g	DV2A-DATA4_2	B5c	DV-GOUT-0	B5c	FRONT_Y-CVBS	B3a	LAMP-ON	B6	MOVALA	B10a	ON-MODE	B4e	PCI-AD23	B11b
+3V3-STANDBY	B8	AUDIO-IN2-R	B3f	CTRL3-MOP	B6	DV2A-DATA5_3	B11a	DV-GOUT-0	B6	FRONT_Y-CVBS	B3f	LED1	B3f	MP-B0	B6	ON-MODE	B4g	PCI-AD23	B5a
+3V3-STANDBY	B9b	AUDIO-IN5-L	B3d	CTRL3-STBY	B4e	DV2A-DATA5_3	B4b	DV-GOUT-1	B5c	FRONT-DETECT	B4e	LED1	B4e	MP-B1	B6	ON-MODE	B6	PCI-AD23	B8
+3V3-STANDBY-B-TRANS	B12	AUDIO-IN5-L	B3f	CTRL3-STBY	B4g	DV2A-DATA5_3	B5c	DV-GOUT-1	B6	FS-OUTN	B2a	LED1-3V3	B4e	MP-B2	B6	P50	B3g	PCI-AD23	B9a
+3V3-STANDBY-B-TRANS	B8	AUDIO-IN5-R	B3d	CTRL4-MOP	B4g	DV2A-DATA6_4	B11a	DV-GOUT-2	B5c	FS-OUTN	B2b	LED2	B3g	MP-B3	B6	P50	B4e	PCI-AD24	B10c
+3V3-UART	B1c	AUDIO-IN5-R	B3f	CTRL4-MOP	B6	DV2A-DATA6_4	B4b	DV-GOUT-2	B6	FS-OUTP	B2a	LED2	B4e	MP-B4	B6	P50-HDMI	B4e	PCI-AD24	B10d
+3V3-VCCA	B11a	AUDIO-L	B3e	CTRL4-STBY	B4e	DV2A-DATA6_4	B5c	DV-GOUT-3	B5c	FS-OUTP	B2b	LED2-3V3	B4e	MP-B5	B6	P50-HDMI	B7a	PCI-AD24	B11b
+3V3-VCCD	B11a	AUDIO-L	B3g	CTRL4-STBY	B4g	DV2A-DATA7_5	B11a	DV-GOUT-3	B6	GLINK-IR-OUT	B3g	LIGHT-ON-OUT	B5e	MP-B6	B6	PARX0-	B7a	PCI-AD24	B5a
+5V	B10a	AUDIO-OUT1-L	B3d	CTRL4-STBY	B5e	DV2A-DATA7_5	B4b	DV-GOUT-4	B5c	GLINK-IR-OUT	B5a	LIGHT-ON-OUT	B6	MP-B7	B6	PARX0-	B7b	PCI-AD24	B8
+5V	B12	AUDIO-OUT1-L	B3f	CTRL4-VIPER	B4g	DV2A-DATA7_5	B5c	DV-GOUT-4	B6	GLINK-IR-OUT-VIP	B5a	LIGHT-SENSOR	B3g	MP-B8	B6	PARX0+	B7a	PCI-AD24	B9a
+5V	B1a	AUDIO-OUT1-R	B3d	CTRL4-VIPER	B5a	DV2A-DATA8_6	B11a	DV-GOUT-5	B5c	GLINK-RXD	B1c	LIGHT-SENSOR	B4e	MP-B9	B6	PARX0+	B7b	PCI-AD25	B10c
+5V	B1b	AUDIO-OUT1-R	B3f	CTRL-DISP1	B4g	DV2A-DATA8_6	B4b	DV-GOUT-5	B6	GLINK-RXD	B3g	LINKON	B11a	MP-BOUT-0	B4b	PARX1-	B7a	PCI-AD25	B10d
+5V	B2b	AUDIO-OUT2-L	B3d	CTRL-DISP2	B4g	DV2A-DATA8_6	B5c	DV-GOUT-6	B5c	GLINK-RXD	B5a	LVDS-3V3	B4f	MP-BOUT-0	B6	PARX1-	B7b	PCI-AD25	B11b
+5V	B3b	AUDIO-OUT2-L	B3f	CTRL-DISP3	B4g	DV2A-DATA9_7	B11a	DV-GOUT-6	B6	GLINK-TXD	B1c	M135-CLK	B5a	MP-BOUT-1	B4b	PARX1+	B7a	PCI-AD25	B5a
+5V	B3e	AUDIO-OUT2-R	B3d	CTRL-DISP4	B4g	DV2A-DATA9_7	B4b	DV-GOUT-7	B5c	GLINK-TXD	B3g	M135-CLK	B7b	MP-BOUT-1	B6	PARX1+	B7b	PCI-AD25	B8
+5V	B3g	AUDIO-OUT2-R	B3f	CTX_POD-A(4)	B10a	DV2A-DATA9_7	B5c	DV-GOUT-7	B6	GLINK-TXD	B5a	M27-CLK	B4a	MP-BOUT-2	B4b	PARX2-	B7a	PCI-AD25	B9a
+5V	B4e	AUDIO-R	B3e	CTX_POD-A(4)	B10b	DV2A-VALID	B11a	DV-GOUT-8	B5c	HDMI-COAST	B5a	M27-CLK	B5a	MP-BOUT-2	B6	PARX2-	B7b	PCI-AD26	B10c
+5V	B5a	AUDIO-R	B3g	CTX-POD	B10b	DV2A-VALID	B4b	DV-GOUT-8	B6	HDMI-COAST	B7b	M27-HIRATE	B4a	MP-BOUT-3	B4b	PARX2+	B7a	PCI-AD26	B10d
+5V	B5e	AUDIO-SW	B3e	CVBSOUTIF-MAIN	B3a	DV2A-VALID	B5c	DV-GOUT-9	B5c	HSYNC-HIRATE	B3g	M27-HIRATE	B7b	MP-BOUT-3	B6	PARX2+	B7b	PCI-AD26	B11b
+5V	B6	AUDIO-SW	B3g	CVBSOUTIF-MAIN	B3c	DV3F-CLK	B4b	DV-GOUT-9	B6	HSYNC-HIRATE	B5a	M27-MOP	B4a	MP-BOUT-4	B4b	PARXC-	B7a	PCI-AD26	B5a
+5V	B7c	AUX-IF-AGC-MAIN	B2a	CVBS-TER-OUT	B3f	DV3F-CLK	B5c	DV-HREF	B4b	HV-PRM-MAIN	B3a	M27-MOP	B6	MP-BOUT-4	B6	PARXC-	B7b	PCI-AD26	B8
+5V2-CONN	B3f	AUX-IF-AGC-MAIN	B2b	DAC-CVBS	B3b	DV3F-DATA0_SOP	B4b	DV-HREF	B7b	HV-PRM-MAIN	B4a	M27-PNX	B4a	MP-BOUT-5	B4b	PARXC+	B7a	PCI-AD26	B9a
+5V2-STBY	B10d	AV1_CVBS	B3a	DAC-CVBS	B5c	DV3F-DATA0_SOP	B5c	DV-OUT-DE	B5c	I2C-SCL-TUNER-MAINNXT	B2a	M27-PNX	B4e	MP-BOUT-5	B6	PARXC+	B7b	PCI-AD27	B10c
+5V2-STBY	B12	AV1_CVBS	B3f	DATA1N-MAIN	B3a	DV3F-DATA1_ERR	B4b	DV-OUT-DE	B6	I2C-SCL-TUNER-MAINNXT	B2b	M27-POD	B10a	MP-BOUT-6	B4b	PARX-DDC-SCL	B7a	PCI-AD27	B10d
+5V2-STBY	B1a	AV1_CVBS-AV7-Y-CVBS	B3f	DATA1N-MAIN	B4a	DV3F-DATA1_ERR	B5c	DV-OUT-FFIELD	B5c	I2C-SDA-TUNER-MAINNXT	B2a	M27-POD	B4a	MP-BOUT-6	B6	PARX-DDC-SCL	B7b	PCI-AD27	B11b
+5V2-STBY	B1b	AV1-AV5-AV6_B-PB	B3a	DATA1P-MAIN	B3a	DV3F-DATA2_0	B4b	DV-OUT-FFIELD	B6	I2C-SDA-TUNER-MAINNXT	B2b	MDIA(0)	B10a	MP-BOUT-7	B4b	PARX-DDC-SDA	B7a	PCI-AD27	B5a
+5V2-STBY	B1c	AV1-AV5-AV6_B-PB	B3g	DATA1P-MAIN	B4a	DV3F-DATA2_0	B5c	DV-OUT-HS	B5c	I2S-BCLK-AVIP	B4a	MDIA(1)	B10a	MP-BOUT-7	B6	PARX-DDC-SDA	B7b	PCI-AD27	B8
+5V2-STBY	B3e	AV1-AV5-AV6_B-PB	B7b	DATA2N-MAIN	B3a	DV3F-DATA3_1	B4b	DV-OUT-HS	B6	I2S-BCLK-AVIP	B5c	MDIA(2)	B10a	MP-BOUT-8	B4b	PBRX0-	B7a	PCI-AD27	B9a
+5V2-STBY	B3f	AV1-AV5-AV6_G-Y	B3a	DATA2N-MAIN	B4a	DV3F-DATA3_1	B5c	DV-OUT-VS	B5c	I2S-BCLK-MAIN	B4a	MDIA(3)	B10a	MP-BOUT-8	B6	PBRX0-	B7b	PCI-AD28	B10c
+5V2-STBY	B4a	AV1-AV5-AV6_G-Y	B3g	DATA2P-MAIN	B3a	DV3F-DATA4_2	B4b	DV-OUT-VS	B6	I2S-BCLK-MAIN	B5c	MDIA(4)	B10a	MP-BOUT-9	B4b	PBRX0+	B7a	PCI-AD28	B10d
+5V2-STBY	B4e	AV1-AV5-AV6_G-Y	B7b	DATA2P-MAIN	B4a	DV3F-DATA4_2	B5c	DV-ROUT-0	B5c	I2S-BCLK-SUB	B4a	MDIA(5)	B10a	MP-BOUT-9	B6	PBRX0+	B7b	PCI-AD28	B11b
+5V2-STBY	B4g	AV1-AV5-AV6_R-PR	B3a	DATA3N-MAIN	B3a	DV3F-DATA5_3	B4b	DV-ROUT-0	B6	I2S-BCLK-SUB	B5c	MDIA(6)	B10a	MP-CLK	B6	PBRX1-	B7a	PCI-AD28	B5a
+5V2-STBY	B8	AV1-AV5-AV6_R-PR	B3g	DATA3N-MAIN	B4a	DV3F-DATA5_3	B5c	DV-ROUT-1	B5c	I2S-MAIN-D	B4a	MDIA(7)	B10a	MP-CLKOUT	B4b	PBRX1-	B7b	PCI-AD28	B8
+5V2-STBY_9V-STBY	B1b	AV1-AV5-AV6_R-PR	B7b	DATA3P-MAIN	B3a	DV3F-DATA6_4	B4b	DV-ROUT-1	B6	I2S-MAIN-D	B5c	MDOA(0)	B10a	MP-CLKOUT	B6	PBRX1+	B7a	PCI-AD28	B9a
+5V2-STBY_9V-STBY	B5e	AV1-AV6_FBL-HSYNC	B3g	DATA3P-MAIN	B4a	DV3F-DATA6_4	B5c	DV-ROUT-2	B5c	I2S-MAIN-ND	B4a	MDOA(1)	B10a	MP-DE	B6	PBRX1+	B7b	PCI-AD29	B10c
+5VaM	B3c	AV1-AV6_FBL-HSYNC	B4a	DATDIR	B10a	DV3F-DATA7_5	B4b	DV-ROUT-2	B6	I2S-MAIN-ND	B5c	MDOA(2)	B10a	MP-FF	B6	PBRX2-	B7a	PCI-AD29	B10d
+5V-AUD	B3e	AV1-AV6_FBL-HSYNC	B7b	DATDIR	B10c	DV3F-DATA7_5	B5c	DV-ROUT-3	B5c	I2S-MCH-CSW	B4a	MDOA(3)	B10a	MP-G0	B6	PBRX2-	B7b	PCI-AD29	B11b

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PCI-AD29	B5a	PLL-3V3	B4f	POD-SOP	B10a	SDA-UP-VIP	B4e	TUN-VIPER-RX-DATA9	B4c	VSYNC-HIRATE	B7b
PCI-AD29	B8	PLL-OUT	B5a	POD-SOP	B10c	SDA-UP-VIP	B5a	TUN-VIPER-RX-DATA9	B5c	WAITA	B10a
PCI-AD29	B9a	PNX-MA-0	B4d	POD-VALID	B10a	SDM	B3b	TUN-VIPER-TX-BUSY	B4c	WE	B10a
PCI-AD3	B11b	PNX-MA-1	B4d	POD-VALID	B10c	SDM	B4e	TUN-VIPER-TX-BUSY	B5c	XIO-A0_CLE	B10c
PCI-AD3	B5a	PNX-MA-10	B4d	POD-VCC	B10a	SEL-IF-LL1	B5a	TUN-VIPER-TX-CLKN	B4c	XIO-A0_CLE	B10d
PCI-AD3	B8	PNX-MA-11	B4d	POD-VPP	B10a	SEL-IF-LL2	B3c	TUN-VIPER-TX-CLKN	B5c	XIO-A0_CLE	B11b
PCI-AD3	B9a	PNX-MA-12	B4d	POWERDOWN-1394	B11a	SEL-IF-LL2	B5a	TUN-VIPER-TX-CLKP	B4c	XIO-A1_ALE	B10c
PCI-AD30	B10c	PNX-MA-2	B4d	POWERDOWN-1394	B5a	SEL-POD	B10c	TUN-VIPER-TX-CLKP	B5c	XIO-A1_ALE	B10d
PCI-AD30	B10d	PNX-MA-3	B4d	POWERDOWN-1394	B7b	SEL-POD	B2a	TUN-VIPER-TX-DATA0	B4c	XIO-A1_ALE	B11a
PCI-AD30	B11b	PNX-MA-4	B4d	POWER-OK-DISPLAY	B4e	SOUND-ENABLE	B3g	TUN-VIPER-TX-DATA0	B5c	XIO-A1_ALE	B11b
PCI-AD30	B5a	PNX-MA-5	B4d	POWER-OK-DISPLAY	B5e	SOUND-ENABLE	B5a	TUN-VIPER-TX-DATA1	B4c	XIO-A10	B10c
PCI-AD30	B8	PNX-MA-6	B4d	POWER-OK-PLATFORM	B5a	SOUND-ENABLE-VPR	B5a	TUN-VIPER-TX-DATA1	B5c	XIO-A10	B11a
PCI-AD30	B9a	PNX-MA-7	B4d	POWER-OK-PLATFORM	B5e	SPDIF-HDMI	B5c	TUN-VIPER-TX-DATA10	B4c	XIO-A10	B11b
PCI-AD31	B10c	PNX-MA-8	B4d	POWER-OK-PLATFORM-3V3	B4e	SPDIF-HDMI	B7b	TUN-VIPER-TX-DATA10	B5c	XIO-A11	B10c
PCI-AD31	B10d	PNX-MA-9	B4d	POWER-OK-PLATFORM-3V3	B5a	SPDIF-IN1	B3e	TUN-VIPER-TX-DATA11	B4c	XIO-A11	B11a
PCI-AD31	B11b	PNX-MBA0	B4d	PROT-AUDIOSUPPLY	B3e	SPDIF-IN1	B5c	TUN-VIPER-TX-DATA11	B5c	XIO-A11	B11b
PCI-AD31	B5a	PNX-MBA1	B4d	PROT-AUDIOSUPPLY	B3g	SPDIF-OUT1	B3e	TUN-VIPER-TX-DATA12	B4c	XIO-A12	B10c
PCI-AD31	B8	PNX-MCAS	B4d	PROT-AUDIOSUPPLY	B4e	SPDIF-OUT1	B5c	TUN-VIPER-TX-DATA12	B5c	XIO-A12	B11a
PCI-AD31	B9a	PNX-MCKE	B4d	PROT-AUDIOSUPPLY	B5e	SPI-1	B3e	TUN-VIPER-TX-DATA13	B4c	XIO-A12	B11b
PCI-AD4	B11b	PNX-MCLK-N	B4d	PSEN	B4e	SPI-1	B3g	TUN-VIPER-TX-DATA13	B5c	XIO-A13	B10c
PCI-AD4	B5a	PNX-MCLK-P	B4d	QTX_POD-A(7)	B10a	SPI-CLK	B4e	TUN-VIPER-TX-DATA14	B4c	XIO-A13	B11a
PCI-AD4	B8	PNX-MCS-0	B4d	QTX_POD-A(7)	B10b	SPI-CSB	B4e	TUN-VIPER-TX-DATA14	B5c	XIO-A13	B11b
PCI-AD4	B9a	PNX-MDATA-0	B4d	QTX-POD	B10b	SPI-OUT	B3e	TUN-VIPER-TX-DATA15	B4c	XIO-A14	B11a
PCI-AD5	B11b	PNX-MDATA-1	B4d	RC	B3f	SPI-OUT	B3g	TUN-VIPER-TX-DATA15	B5c	XIO-A14	B11b
PCI-AD5	B5a	PNX-MDATA-10	B4d	RC	B4e	SPI-PROG	B3b	TUN-VIPER-TX-DATA2	B4c	XIO-A15	B11a
PCI-AD5	B8	PNX-MDATA-11	B4d	RDY_IRQA	B10a	SPI-PROG	B4e	TUN-VIPER-TX-DATA2	B5c	XIO-A15	B11b
PCI-AD5	B9a	PNX-MDATA-12	B4d	REG	B10a	SPI-SDI	B4e	TUN-VIPER-TX-DATA3	B4c	XIO-A16_D8	B10d
PCI-AD6	B11b	PNX-MDATA-13	B4d	REGIMBEAU	B3f	SPI-SDO	B4e	TUN-VIPER-TX-DATA3	B5c	XIO-A16_D8	B11b
PCI-AD6	B5a	PNX-MDATA-14	B4d	REGIMBEAU	B5a	SPI-WP	B4e	TUN-VIPER-TX-DATA4	B4c	XIO-A17_D9	B10d
PCI-AD6	B8	PNX-MDATA-15	B4d	REGIMBEAU-AV6-VSYNC	B3f	STANDBY	B12	TUN-VIPER-TX-DATA4	B5c	XIO-A17_D9	B11b
PCI-AD6	B9a	PNX-MDATA-2	B4d	RESET-1394	B11a	STANDBY	B5e	TUN-VIPER-TX-DATA5	B4c	XIO-A18_D10	B10d
PCI-AD7	B11b	PNX-MDATA-3	B4d	RESET-1394	B5a	STBY-WP-NAND-FLASH	B10d	TUN-VIPER-TX-DATA5	B5c	XIO-A18_D10	B11b
PCI-AD7	B5a	PNX-MDATA-4	B4d	RESET-AUDIO	B4a	STBY-WP-NAND-FLASH	B4e	TUN-VIPER-TX-DATA6	B4c	XIO-A19_D11	B10d
PCI-AD7	B8	PNX-MDATA-5	B4d	RESET-AUDIO	B4e	STROBE1N-MAIN	B3a	TUN-VIPER-TX-DATA6	B5c	XIO-A19_D11	B11b
PCI-AD7	B9a	PNX-MDATA-6	B4d	RESET-ETHERNET	B5a	STROBE1N-MAIN	B4a	TUN-VIPER-TX-DATA7	B4c	XIO-A2	B10c
PCI-AD8	B11b	PNX-MDATA-7	B4d	RESET-ETHERNET	B9a	STROBE1P-MAIN	B3a	TUN-VIPER-TX-DATA7	B5c	XIO-A2	B11b
PCI-AD8	B5a	PNX-MDATA-8	B4d	RESET-FE-MAIN	B2a	STROBE1P-MAIN	B4a	TUN-VIPER-TX-DATA8	B4c	XIO-A20_D12	B10d
PCI-AD8	B8	PNX-MDATA-9	B4d	RESET-FE-MAIN	B5a	STROBE2N-MAIN	B3a	TUN-VIPER-TX-DATA8	B5c	XIO-A20_D12	B11b
PCI-AD8	B9a	PNX-MDQM-0	B4d	RESET-MAIN-NVM	B10d	STROBE2N-MAIN	B4a	TUN-VIPER-TX-DATA9	B4c	XIO-A21_D13	B10d
PCI-AD9	B11b	PNX-MDQM-1	B4d	RESET-MAIN-NVM	B4e	STROBE2P-MAIN	B3a	TUN-VIPER-TX-DATA9	B5c	XIO-A21_D13	B11b
PCI-AD9	B5a	PNX-MDQS-0	B4d	RESET-MIPS	B4e	STROBE2P-MAIN	B4a	TXD	B10d	XIO-A22_D14	B10d
PCI-AD9	B8	PNX-MDQS-1	B4d	RESET-MIPS	B5a	STROBE3N-MAIN	B3a	TXD	B1c	XIO-A22_D14	B11b
PCI-AD9	B9a	PNX-MRAS	B4d	RESET-PNX2015	B4e	STROBE3N-MAIN	B4a	TXD	B9b	XIO-A23_D15	B10d
PCI-CBE0	B5a	PNX-MWE	B4d	RESET-POD-CI	B10a	STROBE3P-MAIN	B3a	TXD-UP	B10d	XIO-A23_D15	B11b
PCI-CBE0	B8	POD-A(0)	B10a	RESET-POD-CI	B5a	STROBE3P-MAIN	B4a	TXD-UP	B4e	XIO-A3	B10c
PCI-CBE0	B9a	POD-A(0)	B10c	RESET-STBY	B12	SUPPLY-FAULT	B10a	TXD-VIPER	B10d	XIO-A3	B11b
PCI-CBE1	B11b	POD-A(1)	B10a	RESET-STBY	B4e	SUPPLY-FAULT	B1a	TXD-VIPER	B5a	XIO-A4	B10c
PCI-CBE1	B5a	POD-A(1)	B10c	RESET-SYSTEM	B1c	SUPPLY-FAULT	B4e	TXPNXA-	B4b	XIO-A4	B11b
PCI-CBE1	B8	POD-A(10)	B10a	RESET-SYSTEM	B4e	SUPPLY-FAULT	B5e	TXPNXA-	B4g	XIO-A5	B10c
PCI-CBE1	B9a	POD-A(10)	B10c	RESET-SYSTEM	B5a	TEMP-SENSOR	B4e	TXPNXA+	B4b	XIO-A5	B11b
PCI-CBE2	B11b	POD-A(11)	B10a	RESET-USB20	B5a	TS-CLK	B11a	TXPNXA+	B4g	XIO-A6	B10c
PCI-CBE2	B5a	POD-A(11)	B10c	RESET-USB20	B8	TS-CLK	B5c	TXPNXB-	B4b	XIO-A6	B11b
PCI-CBE2	B8	POD-A(12)	B10a	RSTA	B10a	TS-DATA0	B11a	TXPNXB-	B4g	XIO-A7	B10c
PCI-CBE2	B9a	POD-A(12)	B10c	RXD	B10d	TS-DATA0	B5c	TXPNXB+	B4b	XIO-A7	B11b
PCI-CBE3	B5a	POD-A(13)	B10a	RXD	B1c	TS-DATA1	B11a	TXPNXB+	B4g	XIO-A8	B10c
PCI-CBE3	B8	POD-A(13)	B10c	RXD	B9b	TS-DATA1	B5c	TXPNXC-	B4b	XIO-A8	B11b
PCI-CBE3	B9a	POD-A(2)	B10a	RXD-UP	B10d	TS-DATA2	B11a	TXPNXC-	B4g	XIO-A9	B10c
PCI-CLK-ETHERNET	B5a	POD-A(2)	B10c	RXD-UP	B4e	TS-DATA2	B5c	TXPNXC+	B4b	XIO-A9	B11b
PCI-CLK-ETHERNET	B9a	POD-A(3)	B10a	RXD-VIPER	B10d	TS-DATA3	B11a	TXPNXC+	B4g	XIO-ACK	B10d
PCI-CLK-USB20	B5a	POD-A(3)	B10c	RXD-VIPER	B5a	TS-DATA3	B5c	TXPNXCLK-	B4b	XIO-ACK	B5a
PCI-CLK-USB20	B8	POD-A(4)	B10b	SCL-DMA	B5a	TS-DATA4	B11a	TXPNXCLK-	B4g	XIO-AS_REn	B10a
PCI-CLK-VPR	B5a	POD-A(4)	B10c	SCL-DMA-BUS1	B11a	TS-DATA4	B5c	TXPNXCLK+	B4b	XIO-AS_REn	B10d
PCI-DEVSEL	B5a	POD-A(5)	B10b	SCL-DMA-BUS1	B12	TS-DATA5	B11a	TXPNXCLK+	B4g	XIO-AS_REn	B11a
PCI-DEVSEL	B8	POD-A(5)	B10c	SCL-DMA-BUS1	B5a	TS-DATA5	B5c	TXPNXD-	B4b	XIO-AS_REn	B11b
PCI-DEVSEL	B9a	POD-A(6)	B10b	SCL-DMA-BUS1-ATSC	B12	TS-DATA6	B11a	TXPNXD-	B4g	XIO-D0	B11a
PCI-FRAME	B5a	POD-A(6)	B10c	SCL-DMA-BUS1-ATSC	B2a	TS-DATA6	B5c	TXPNXD+	B4b	XIO-D0	B11b
PCI-FRAME	B8	POD-A(7)	B10b	SCL-DMA-BUS2	B3b	TS-DATA7	B11a	TXPNXD+	B4g	XIO-D1	B11a
PCI-FRAME	B9a	POD-A(7)	B10c	SCL-DMA-BUS2	B4e	TS-DATA7	B5c	TXPNXE-	B4b	XIO-D1	B11b
PCI-GNT	B5a	POD-A(8)	B10b	SCL-DMA-BUS2	B5a	TS-SOP	B11a	TXPNXE-	B4g	XIO-D10	B11a
PCI-GNT	B8	POD-A(8)	B10c	SCL-I2C4	B4g	TS-SOP	B5c	TXPNXE+	B4b	XIO-D10	B5a
PCI-GNT-A	B5a	POD-A(9)	B10b	SCL-I2C4	B5a	TS-VALID	B11a	TXPNXE+	B4g	XIO-D11	B11a
PCI-GNT-A	B9a	POD-A(9)	B10c	SCL-I2C4	B5e	TS-VALID	B5c	UART-SWITCH	B10d	XIO-D11	B5a
PCI-INTA	B5a	POD-CLK	B10a	SCL-I2C4-DISP	B4g	TUNERAGC-MON	B2a	UART-SWITCH	B4e	XIO-D12	B11a
PCI-IRDY	B5a	POD-CLK	B10c	SCL-MM	B3g	TUNERAGC-MON	B2b	UART-SWITCHn	B10d	XIO-D12	B5a
PCI-IRDY	B8	POD-D(0)	B10a	SCL-MM	B5a	TUN-VIPER-RX-BUSY	B4c	UP-3V3	B4f	XIO-D13	B11a
PCI-IRDY	B9a	POD-D(0)	B10c	SCL-MM-BUS1	B10a	TUN-VIPER-RX-BUSY	B5c	USB1-DM	B5a	XIO-D13	B5a
PCI-PAR	B5a	POD-D(1)	B10a	SCL-MM-BUS1	B5a	TUN-VIPER-RX-CLKN	B4c	USB1-DP	B5a	XIO-D14	B11a
PCI-PAR	B8	POD-D(1)	B10c	SCL-MM-BUS1	B6	TUN-VIPER-RX-CLKN	B5c	USB20-DM1	B8	XIO-D14	B5a
PCI-PAR	B9a	POD-D(2)	B10a	SCL-MM-BUS1	B7b	TUN-VIPER-RX-CLKP	B4c	USB20-DP1	B8	XIO-D15	B11a
PCI-PERR	B5a	POD-D(2)	B10c	SCL-MOP	B5e	TUN-VIPER-RX-CLKP	B5c	USB20-OC1	B5a	XIO-D15	B5a
PCI-PERR	B8	POD-D(3)	B10a	SCL-MOP	B6	TUN-VIPER-RX-DATA0	B4c	USB20-OC1	B8	XIO-D2	B11a
PCI-PERR	B9a	POD-D(3)	B10c	SCL-UP-SW	B4e	TUN-VIPER-RX-DATA0	B5c	USB20-OC2	B8	XIO-D2	B11b
PCI-REQ	B5a	POD-D(4)	B10a	SCL-UP-SW	B5e	TUN-VIPER-RX-DATA1	B4c	USB20-PWE1	B5a	XIO-D3	B11a
PCI-REQ	B8	POD-D(4)	B10c	SCL-UP-VIP	B10d	TUN-VIPER-RX-DATA1	B5c	USB20-PWE1	B8	XIO-D3	B11b
PCI-REQ-A	B5a	POD-D(5)	B10a	SCL-UP-VIP	B4e	TUN-VIPER-RX-DATA10	B4c	USB2-DM	B5a	XIO-D4	B11a
PCI-REQ-A	B9a	POD-D(5)	B10c	SCL-UP-VIP	B5a	TUN-VIPER-RX-DATA10	B5c	USB2-DP	B5a	XIO-D4	B11b
PCI-REQ-B	B10a	POD-D(6)	B10a	SDA-DMA	B5a	TUN-VIPER-RX-DATA11	B4c	USB-BUS-PW	B5a	XIO-D5	B11a
PCI-REQ-B	B5a	POD-D(6)	B10c	SDA-DMA-BUS1	B11a	TUN-VIPER-RX-DATA11	B5c	USB-OVERCUR	B5a	XIO-D5	B11b
PCI-SERR	B5a	POD-D(7)	B10a	SDA-DMA-BUS1	B12	TUN-VIPER-RX-DATA12	B4c	VCC_EXTO	B10a	XIO-D6	B11a
PCI-SERR	B8	POD-D(7)	B10c	SDA-DMA-BUS1	B5a	TUN-VIPER-RX-DATA12	B5c	VCCEN	B10a	XIO-D6	B11b
PCI-SERR	B9a	POD-DATA0	B10a	SDA-DMA-BUS1-ATSC	B12	TUN-VIPER-RX-DATA13	B4c	VDISP	B4g	XIO-D7	B11a
PCI-STOP	B5a	POD-DATA0	B10c	SDA-DMA-BUS1-ATSC	B2a	TUN-VIPER-RX-DATA13	B5c	VDISP2	B4g	XIO-D7	B11b
PCI-STOP	B8	POD-DATA1	B10a	SDA-DMA-BUS2	B3b	TUN-VIPER-RX-DATA14	B4c	VISUAL-CHECK	B3c	XIO-D8	B11a
PCI-STOP	B9a	POD-DATA1	B10c	SDA-DMA-BUS2	B4e	TUN-VIPER-RX-DATA14	B5c	VPPEN	B10a	XIO-D8	B5a
PCI-TRDY	B5a	POD-DATA2	B10a	SDA-DMA-BUS2	B5a	TUN-VIPER-RX-DATA15	B4c	VREF-AUD	B3e	XIO-D9	B11a
PCI-TRDY	B8	POD-DATA2	B10c	SDA-I2C4	B4g	TUN-VIPER-RX-DATA15	B5c	VREF-AUD-POS	B3b	XIO-D9	B5a
PCI-TRDY	B9a	POD-DATA3	B10a	SDA-I2C4	B5a	TUN-VIPER-RX-DATA2	B4c	VREF-AUD-POS	B4a	XIO-RWn_WEn	B10a
PDIR	B10a	POD-DATA3	B10c	SDA-I2C4	B5e	TUN-VIPER-RX-DATA2	B5c	VREF-DEFL	B3b	XIO-RWn_WEn	B10d
PDIR	B10b	POD-DATA4	B10a	SDA-I2C4-DISP	B4g	TUN-VIPER-RX-DATA3	B4c	VREF-PNX	B4c	XIO-RWn_WEn	B11a
PDOE	B10a	POD-DATA4	B10c	SDA-MM	B3g	TUN-VIPER-RX-DATA3	B5c	VREF-PNX	B4d	XIO-RWn_WEn	B11b
PDOE	B10b	POD-DATA5	B10a	SDA-MM	B5a	TUN-VIPER-RX-DATA4	B4c	VREF-VPR	B5b	XIO-SEL0	B10d
PHY-D(0)	B11a	POD-DATA5	B10c	SDA-MM-BUS1	B10a	TUN-VIPER-RX-DATA4	B5c	VS1	B10a	XIO-SEL0	B11b
PHY-D(1)	B11a	POD-DATA6	B10a	SDA-MM-BUS1	B5a	TUN-VIPER-RX-DATA5	B4c	VS2	B10a	XIO-SEL0	B5a
PHY-D(2)	B11a	POD-DATA6	B10c	SDA-MM-BUS1	B6	TUN-VIPER-RX-DATA5	B5c	VS2	B10b	XIO-SEL1	B11a
PHY-D(3)	B11a	POD-DATA7	B10a	SDA-MM-BUS1	B7b	TUN-VIPER-RX-DATA6	B4c	VS2_MOCLKA-CI	B10a	XIO-SEL1	B11b
PHY-D(4)	B11a	POD-DATA7	B10c	SDA-MOP	B5e	TUN-VIPER-RX-DATA6	B5c	VS2_MOCLKA-CI	B10b	XIO-SEL1	B5a
PHY-D(5)	B11a	POD-MODE	B12	SDA-MOP	B6	TUN-VIPER-RX-DATA7	B4c	VSW	B1a	XIO-SEL2	B10a
PHY-D(6)	B11a	POD-MODE	B1a	SDA-UP-SW	B4e	TUN-VIPER-RX-DATA7	B5c	VSW	B1b	XIO-SEL2	B5a
PHY-D(7)	B11a	POD-MODE	B4e	SDA-UP-SW	B5e	TUN-VIPER-RX-DATA8	B4c	VSYNC-HIRATE	B5a	Y-CVBS-MON-OUT	B3b
PLL-1V2	B4f	POD-MODE	B4g	SDA-UP-VIP	B10d	TUN-VIPER-RX-DATA8	B5c	VSYNC-HIRATE	B7a	Y-CVBS-MON-OUT	B3f

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1.1. Introduction

SRP (Service Reference Protocol) is a software tool that creates a list with all references to signal lines. The list contains references to the signals within all schematics of a PWB. It replaces the text references currently printed next to the signal names in the schematics. These printed references are created manually and are therefore not guaranteed to be 100% correct. In addition, in the current crowded schematics there is often none or very little place for these references.
Some of the PWB schematics will use SRP while others will still use the manual references. Either there will be an SRP reference list for a schematic, or there will be printed references in the schematic.

1.2. Non-SRP Schematics

There are several different signals available in a schematic:

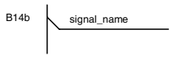
1.2.1. Power Supply Lines

All power supply lines are available in the supply line overview (see chapter 6). In the schematics (see chapter 7) is not indicated where supplies are coming from or going to.
It is however indicated if a supply is incoming (created elsewhere), or outgoing (created or adapted in the current schematic).

Outgoing Incoming

1.2.2. Normal Signals

For normal signals, a schematic reference (e.g. B14b) is placed next to the signals.



1.2.3. Grounds

For normal and special grounds (e.g. GNDHOT or GND3V3 etc.), nothing is indicated.

1.3. SRP Schematics

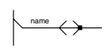
SRP is a tool, which automatically creates a list with signal references, indicating on which schematic the signals are used.
A reference is created for all signals indicated with an SRP symbol, these symbols are:

Power supply line.

Stand alone signal or switching line (used as less as possible).

Signal line into a wire tree.

Switching line into a wire tree.



Bi-directional line (e.g. SDA) into a wire tree.

Signal line into a wire tree, its direction depends on the circuit (e.g. ingoing for PDP, outgoing for LCD sets).

Remarks:

- When there is a black dot on the "signal direction arrow" it is an SRP symbol, so there will be a reference to the signal name in the SRP list.
- All references to normal grounds (Ground symbols without additional text) are not listed in the reference list, this to keep it concise.
- Signals that are not used in multiple schematics, but only once or several times in the same schematic, are included in the SRP reference list, but only with one reference.

Additional Tip:

When using the PDF service manual file, you can very easily search for signal names and follow the signal over all the schematics. In Adobe PDF reader:

- Select the signal name you want to search for, with the "Select text" tool.
- Copy and paste the signal name in the "Search PDF" tool.
- Search for all occurrences of the signal name.
- Now you can quickly jump between the different occurrences and follow the signal over all schematics. It is advised to "zoom in" to e.g. 150% to see clearly, which text is selected. Then you can zoom out, to get an overview of the complete schematic.

PS. It is recommended to use at least Adobe PDF (reader) version 6.x, due to better search possibilities in this version.

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Layout Small Signal Board (Overview Top Side)

1B01 C4	1H00 D2	1Z05 E4	2AA4 A1	2B39 C4	2B89 B4	2G10 F2	2J24 B3	2L07 C3	2L91 C2	2LN7 B3	2N01 C4	2O14 D4	2Q03 E2	2Q23 D2	2Q43 E2	2Q66 E3	2U02 G1	2U50 G2	2Z25 E4	3A31 A3	3A66 A3	3B10 C4	3B32 B4	3B62 B4	3BA7 B4	3C76 A2	3H03 D2	3H29 E3	3H86 D3	3J31 B1	3L01 C3	3L27 C3	3L93 C2	3LB6 B3	3LD6 C3	3LG6 B3	3Q47 D3	5L52 C2	9A47 A1
1B02 B4	1H01 D1	1Z10 E4	2AB7 B3	2B40 B4	2B90 B4	2H00 D2	2J25 B3	2L08 C2	2L92 B2	2LN8 B3	2N02 C4	2O15 D4	2Q04 D3	2Q24 E3	2Q44 E2	2Q69 D2	2U03 G1	2U58 G2	2Z27 E4	3A32 A3	3A70 A3	3B11 C4	3B34 B4	3B65 B4	3BA8 B4	3G09 F1	3H06 E3	3H31 E3	3H87 D2	3J32 B1	3L02 C3	3L29 C3	3L94 B2	3LB7 C3	3LD7 C3	3LG7 C3	3Q48 D3	5LA1 C3	9A52 A1
1B30 C4	1H07 F3	1Z11 E4	2B04 C4	2B41 B4	2B92 B4	2H01 D2	2J37 C1	2L58 B1	2LA0 B3	2LP0 C3	2N03 C4	2O16 D4	2Q05 E3	2Q25 E3	2Q45 E2	2Q70 D2	2U04 G1	2V02 E2	2Z29 E4	3A33 A3	3A78 B2	3B12 C4	3B36 B4	3B66 B4	3BA9 B4	3G10 F1	3H07 E3	3H32 E3	3H88 D3	3J42 C1	3L03 C3	3L31 C3	3L95 C2	3LB8 C3	3LD8 C3	3LG8 C3	3Q49 D3	5LA2 C3	9A54 A1
1B31 C4	1LA0 C4	2A20 A2	2B05 C4	2B42 B4	2BA1 C4	2H02 D2	2J60 B1	2L59 C2	2LA1 B3	2LP2 B3	2N04 C4	2O17 D4	2Q06 E2	2Q26 E3	2Q46 E2	2Q71 E1	2U05 G1	2V03 E2	2Z30 E4	3A34 A3	3A79 B1	3B13 C4	3B37 C4	3B67 B4	3BB0 C4	3G11 F2	3H08 D2	3H48 E3	3H90 E3	3J43 C1	3L04 C3	3L33 C3	3L96 C2	3LB9 C3	3LD9 C3	3LG9 B3	3Q50 D2	5LA3 B3	9A55 A1
1B32 C4	1M03 F1	2A21 A2	2B21 B4	2B43 B4	2BA4 B4	2H03 D2	2J64 C1	2L60 C2	2LA2 C3	2LP3 B2	2N07 C4	2O18 D4	2Q07 E3	2Q27 E3	2Q47 E2	2Q72 E1	2U06 G1	2V04 F2	2Z38 E4	3A35 A3	3A87 B3	3B14 C4	3B38 C4	3B68 B4	3C31 A2	3G12 F2	3H09 E2	3H49 E3	3H93 D3	3J44 C1	3L05 C3	3L35 C3	3L97 C2	3LC0 C3	3LE0 C3	3LH0 C2	3Q51 D3	5LN0 C3	9A56 A1
1B33 C4	1M15 D4	2A22 B2	2B22 B4	2B44 B4	2BA5 B4	2H06 E3	2J67 B1	2L61 C2	2LA4 B3	2LP4 C2	2N09 C4	2O19 D4	2Q08 E3	2Q28 E3	2Q48 D2	2Q73 F1	2U07 G1	2V05 F2	2Z50 D4	3A36 A3	3A88 B3	3B15 C4	3B41 C4	3B69 B4	3C33 B2	3G13 F1	3H10 E2	3H50 D2	3H94 E3	3J45 C1	3L08 C3	3L38 C3	3L98 B2	3LC1 C3	3LE2 C3	3LH1 C2	3Q52 E2	5LN1 B3	9A57 A1
1B34 B4	1M46 G1	2A23 B2	2B23 B4	2B45 B4	2BA6 B4	2H07 E3	2J68 B1	2L62 C2	2LA5 B3	2LP7 C3	2N12 C4	2O20 D4	2Q09 E2	2Q29 E3	2Q49 D3	2Q74 F1	2U17 G2	2V35 E2	2Z51 D4	3A39 B3	3A89 B3	3B16 C4	3B43 C4	3B70 B4	3C35 A2	3G14 F1	3H11 E2	3H51 D2	3H95 D3	3J46 C1	3L09 C3	3L39 C2	3LA0 B3	3LC2 B3	3LE3 C3	3LH3 B2	3Q53 D3	5LN2 C3	9A58 A1
1B35 B4	1M49 E1	2A24 B2	2B24 B4	2B46 B4	2BA7 B4	2H08 D2	2J69 C1	2L63 B2	2LA6 B3	2LP8 C3	2N13 C4	2O21 D4	2Q10 E3	2Q30 E3	2Q50 D3	2Q75 F1	2U22 G2	2Z04 E4	2Z52 D4	3A40 A3	3A90 B3	3B17 C4	3B45 C4	3B91 C4	3C36 A2	3G15 F1	3H12 E3	3H70 D3	3H97 E3	3J47 C1	3L10 C2	3L40 B2	3LA1 B3	3LC3 B3	3LE4 C3	3LH4 B2	3Q55 D3	5LN3 C3	9A59 A1
1B36 B4	1M52 A1	2A31 A1	2B25 B4	2B49 C4	2BA9 B4	2H09 D2	2J70 C1	2L64 B2	2LA7 B3	2LP9 B2	2O00 D4	2O22 D4	2Q11 E3	2Q31 E3	2Q51 E2	2Q79 E1	2U24 G2	2Z05 E4	3A01 B1	3A46 A3	3A91 B3	3B18 C4	3B48 B4	3B94 B4	3C37 A2	3G16 F1	3H13 E2	3H71 D2	3H98 E2	3J49 C1	3L11 C2	3L41 B2	3LA2 B3	3LC4 C3	3LE5 C3	3LH5 C3	3Q57 D3	5LN4 B3	9A60 A1
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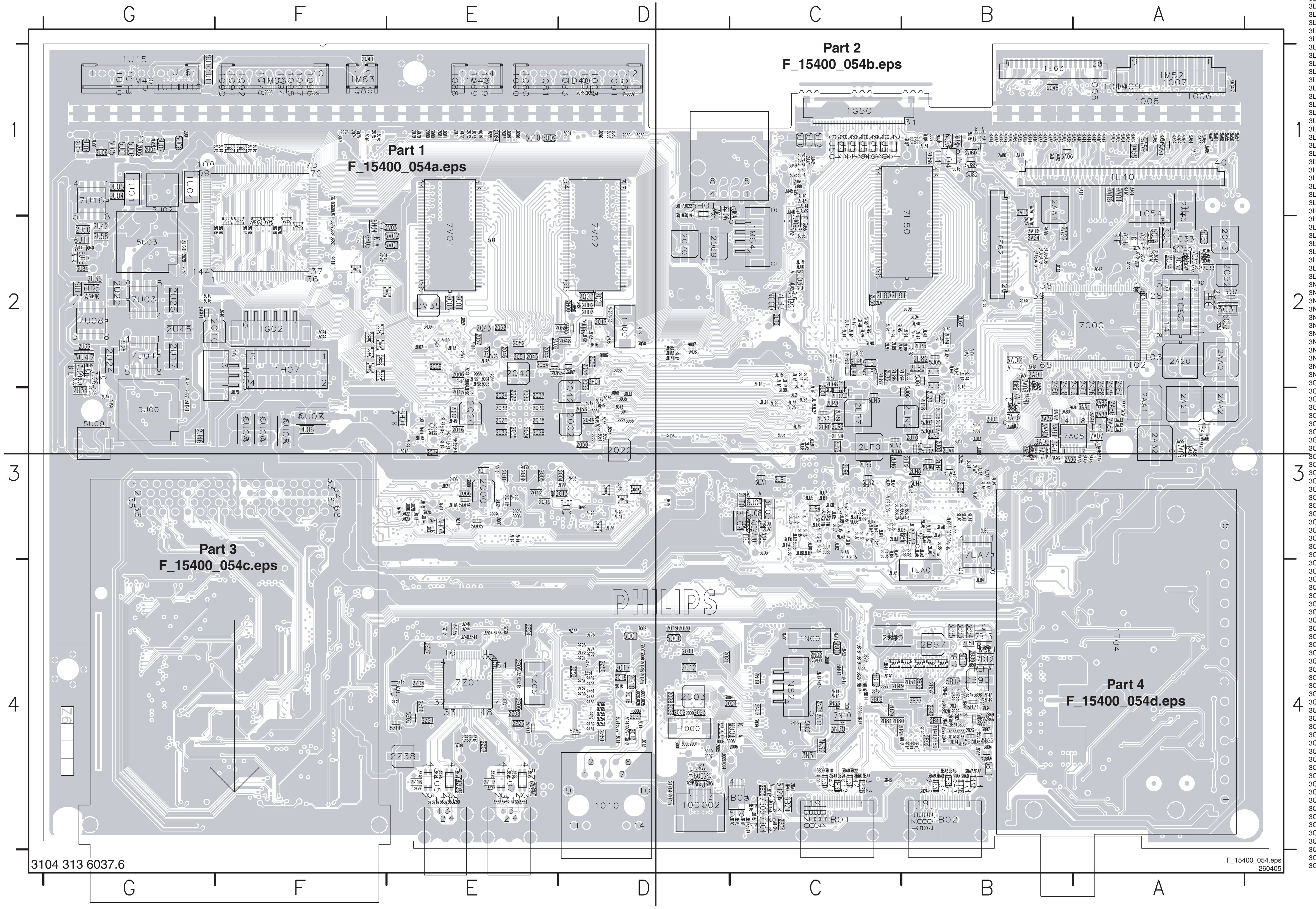

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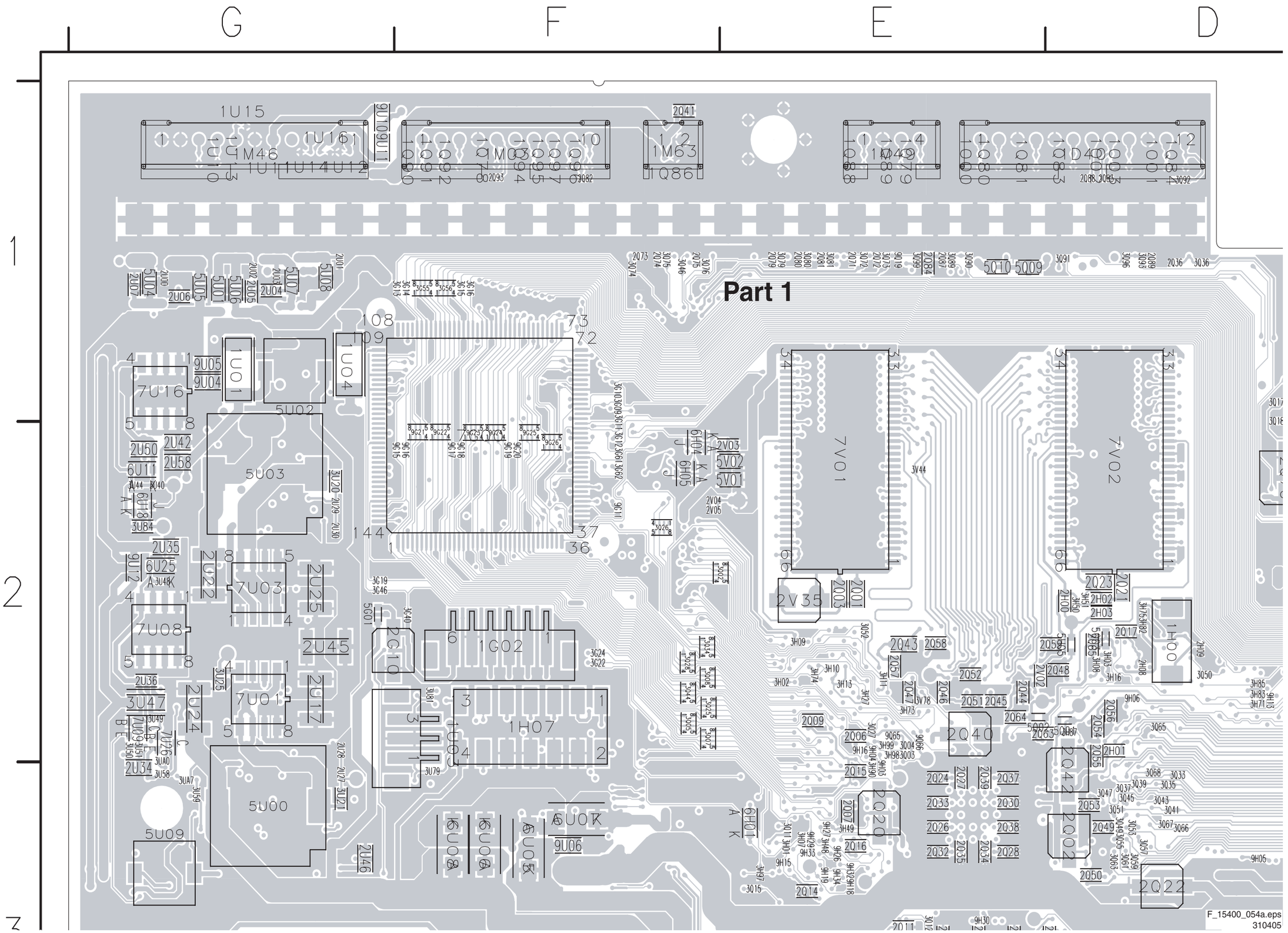

Layout Small Signal Board (Part 2 Top Side)

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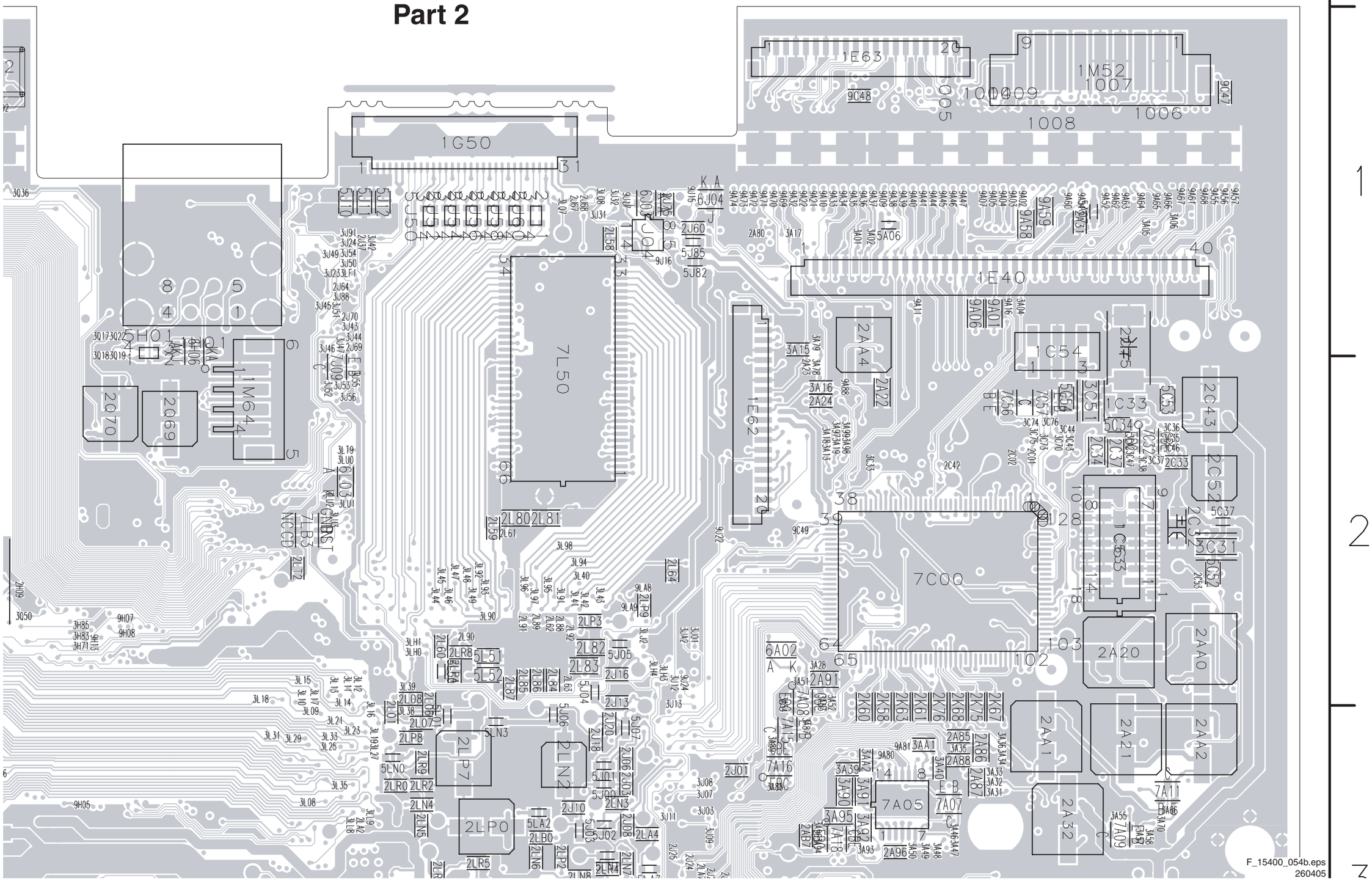
Part 2



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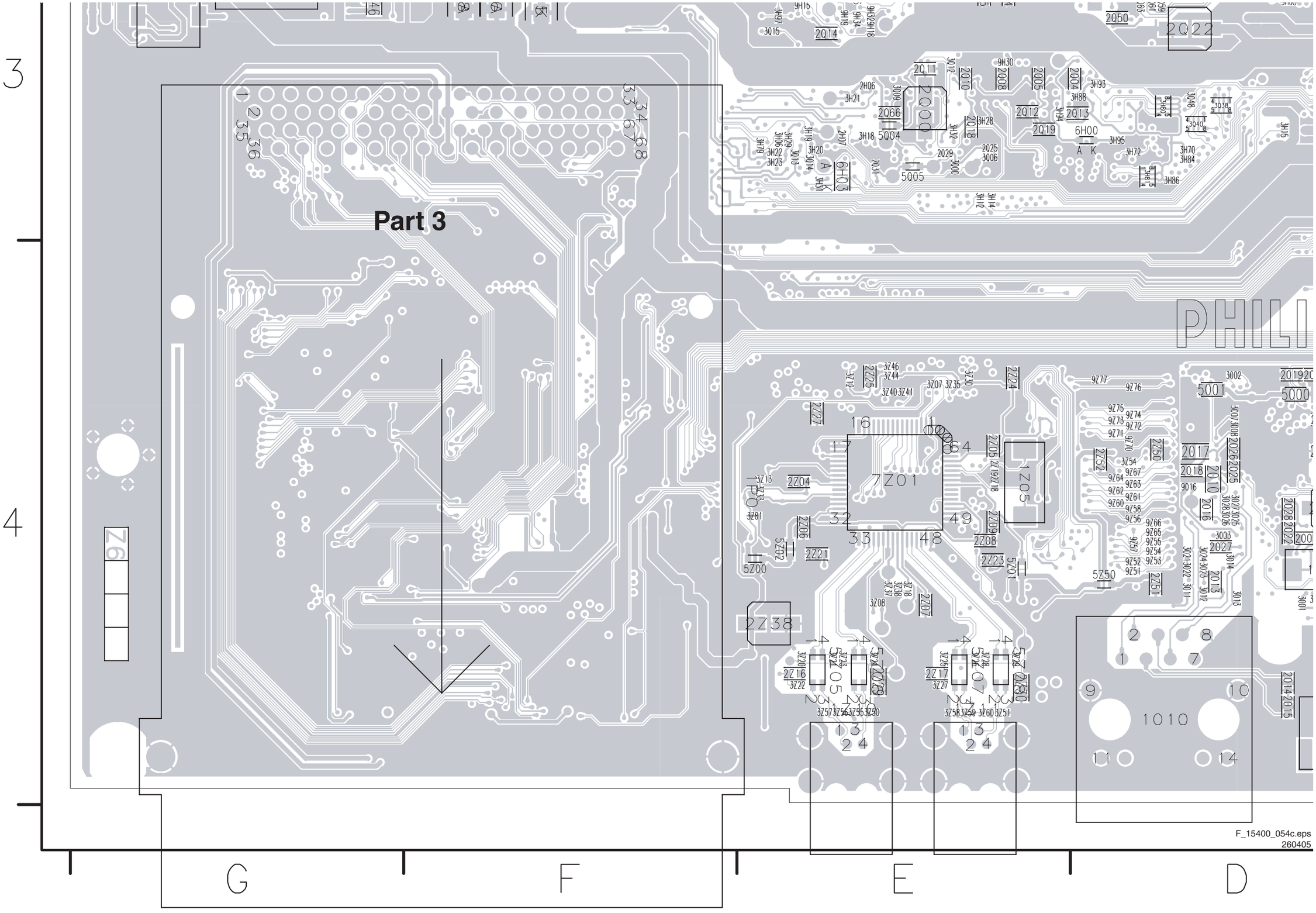

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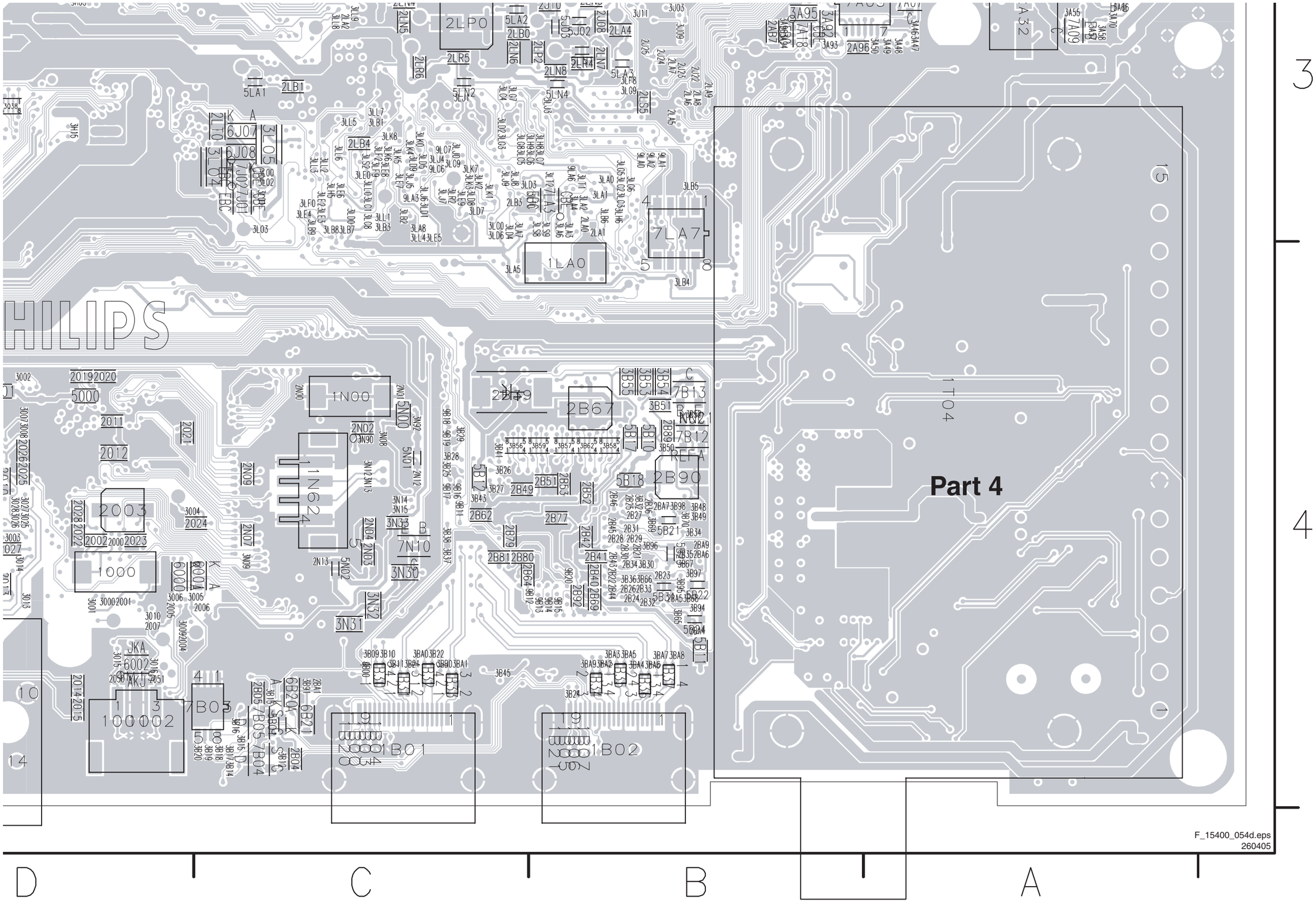

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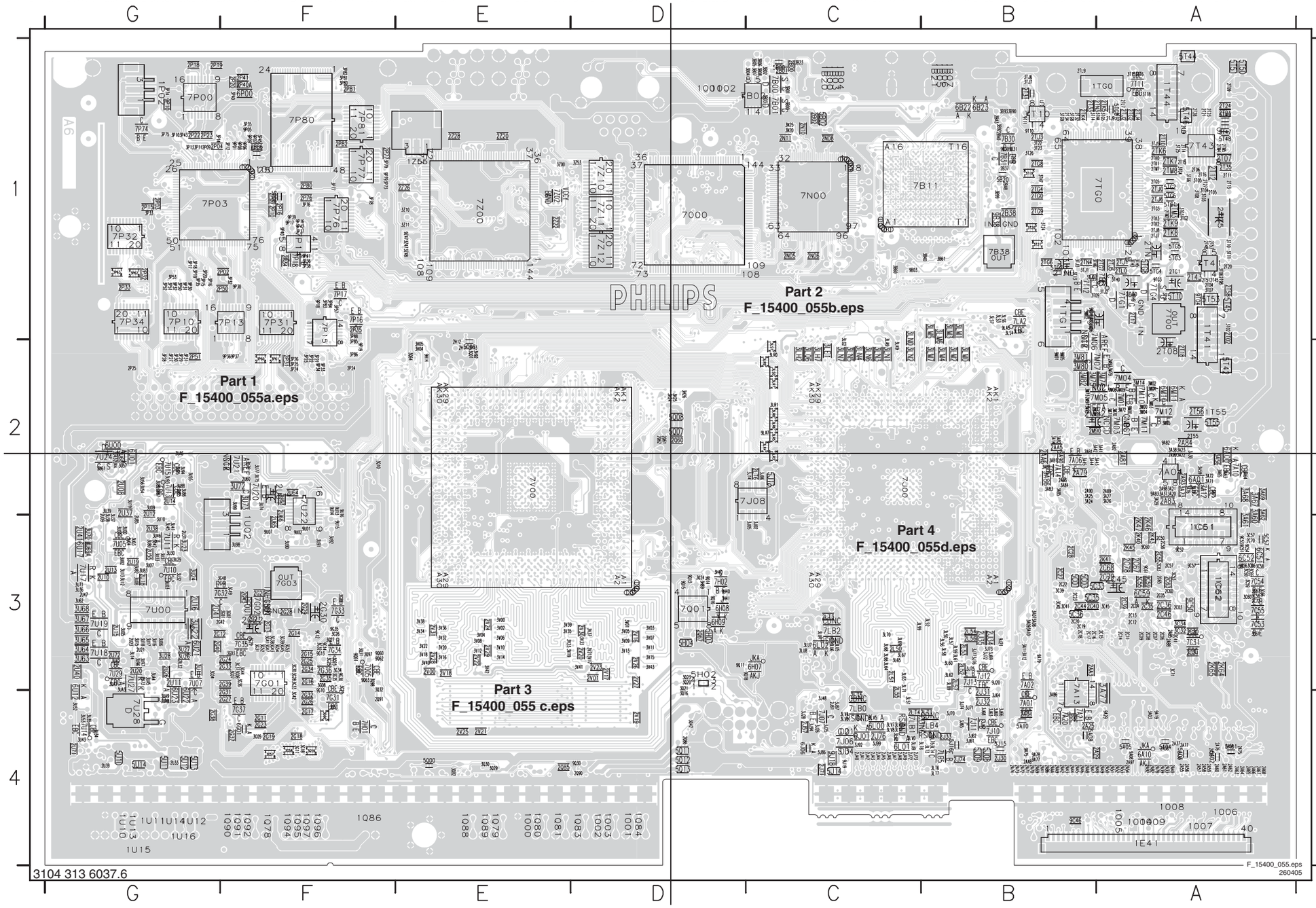

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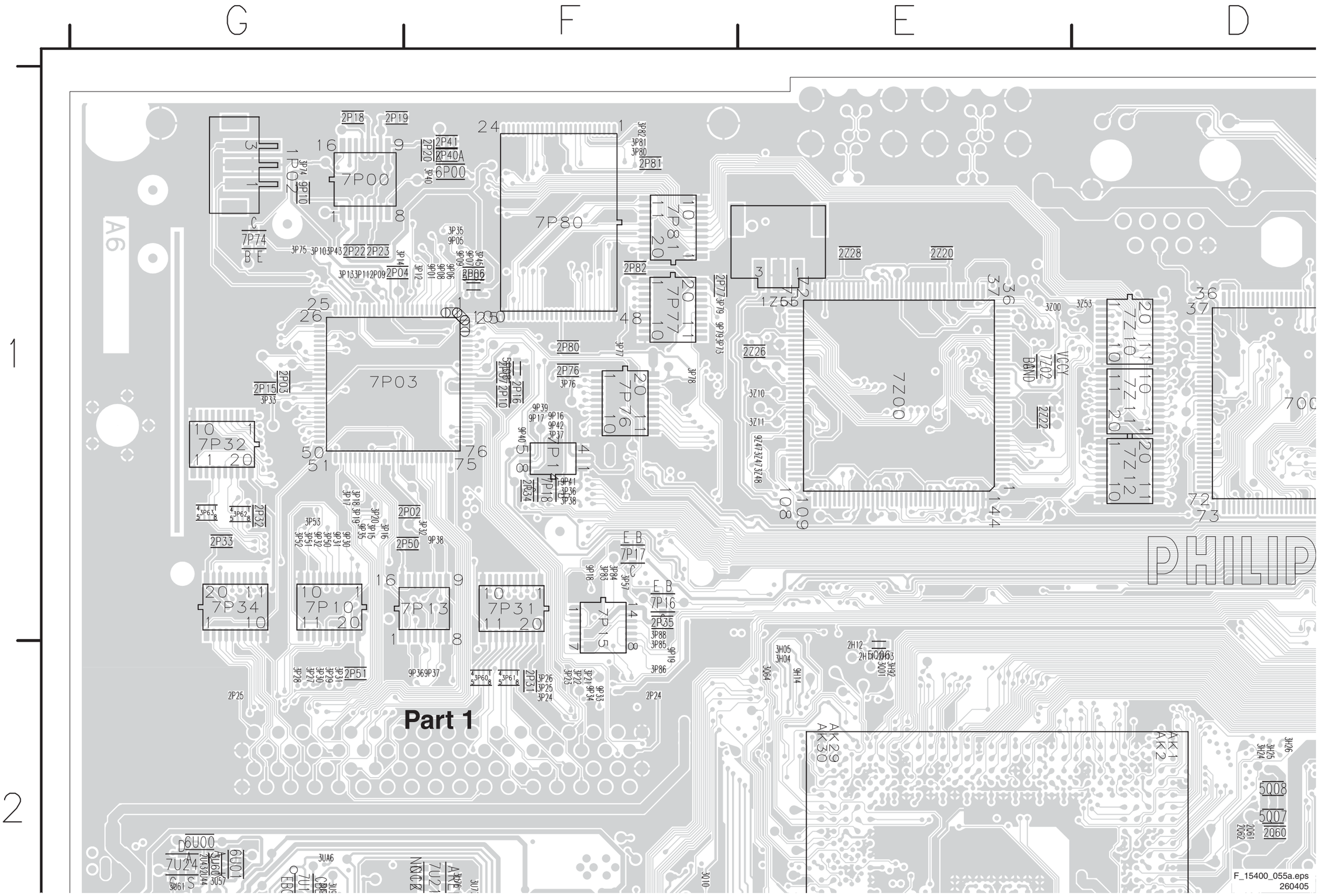

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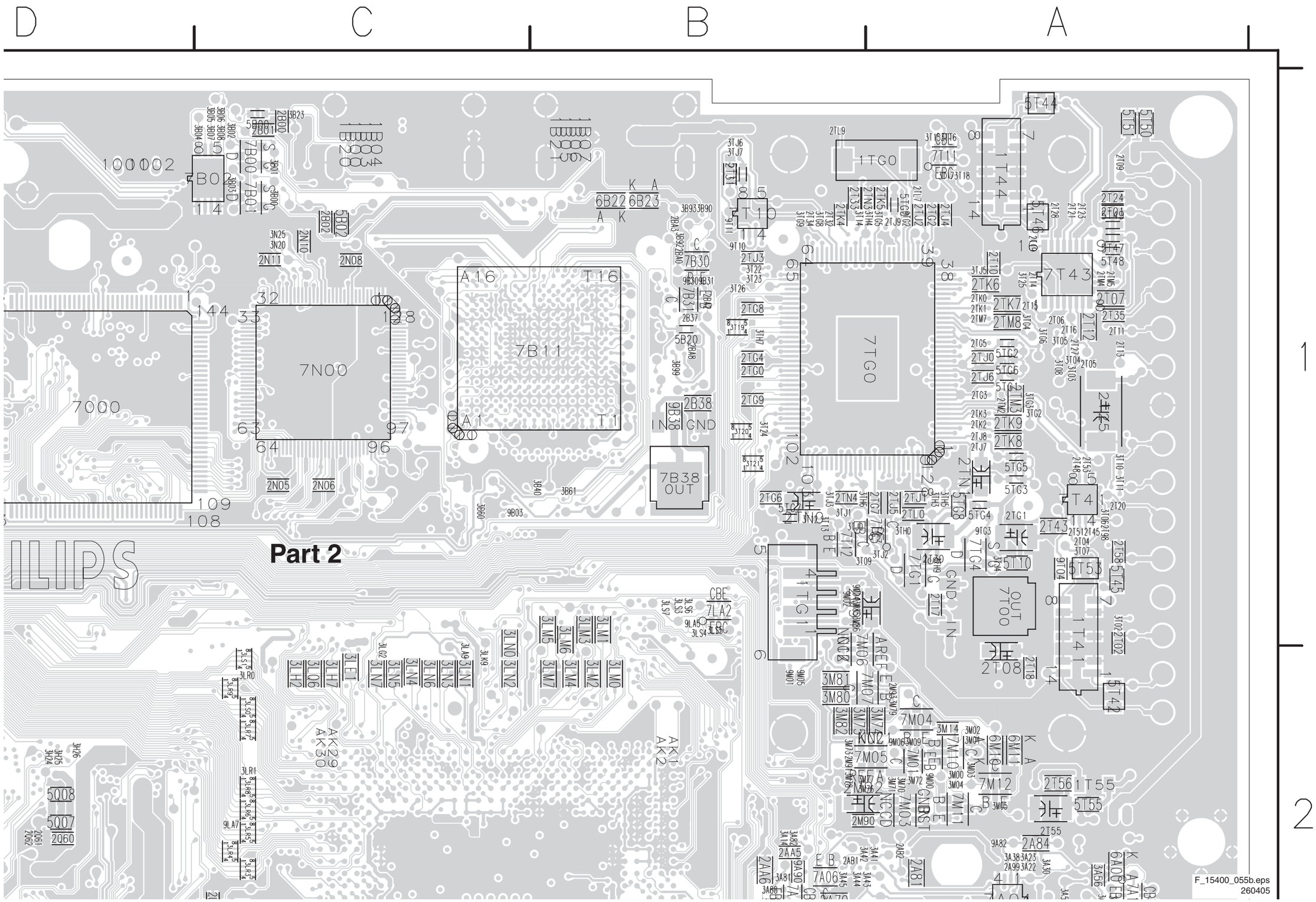

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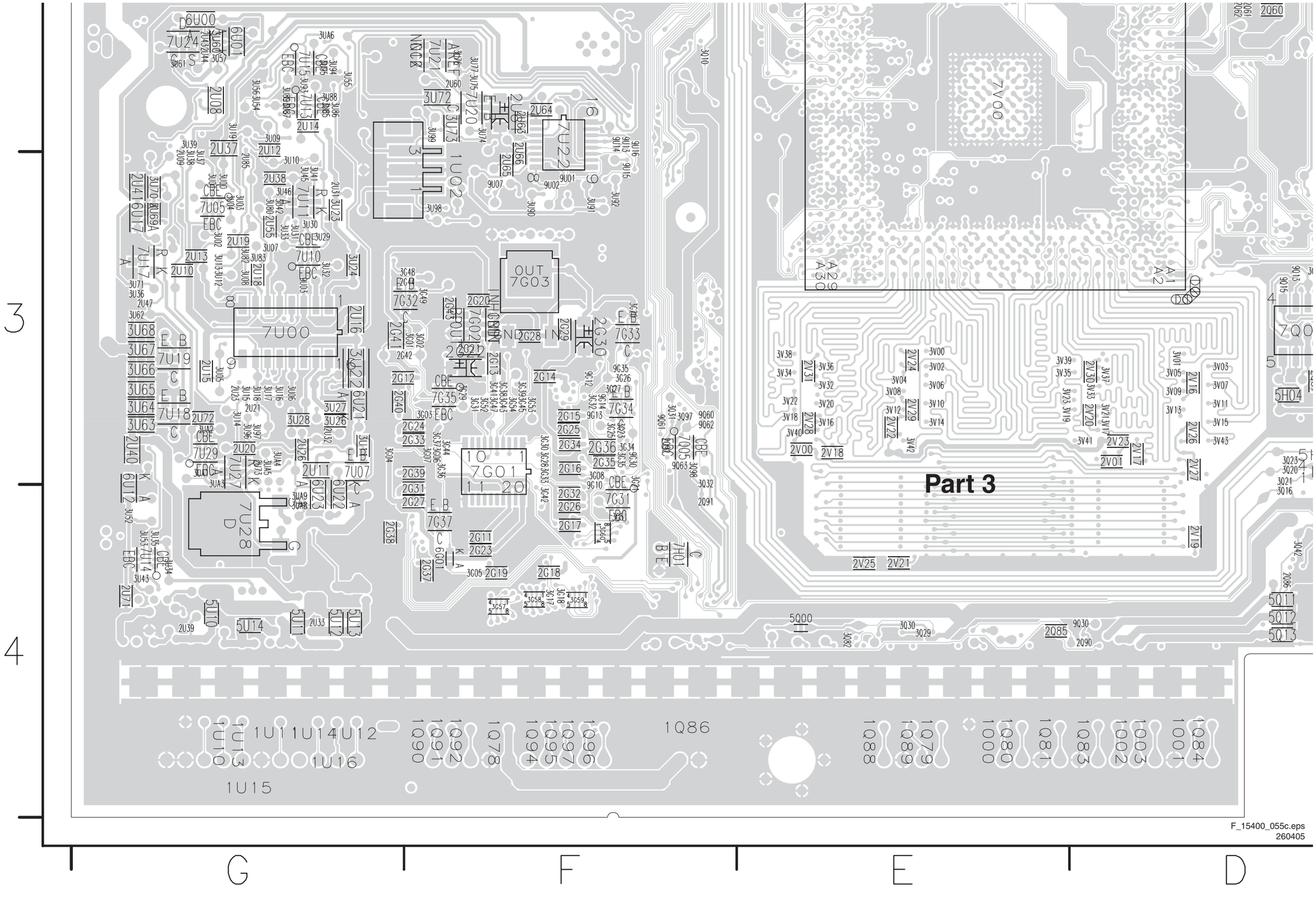

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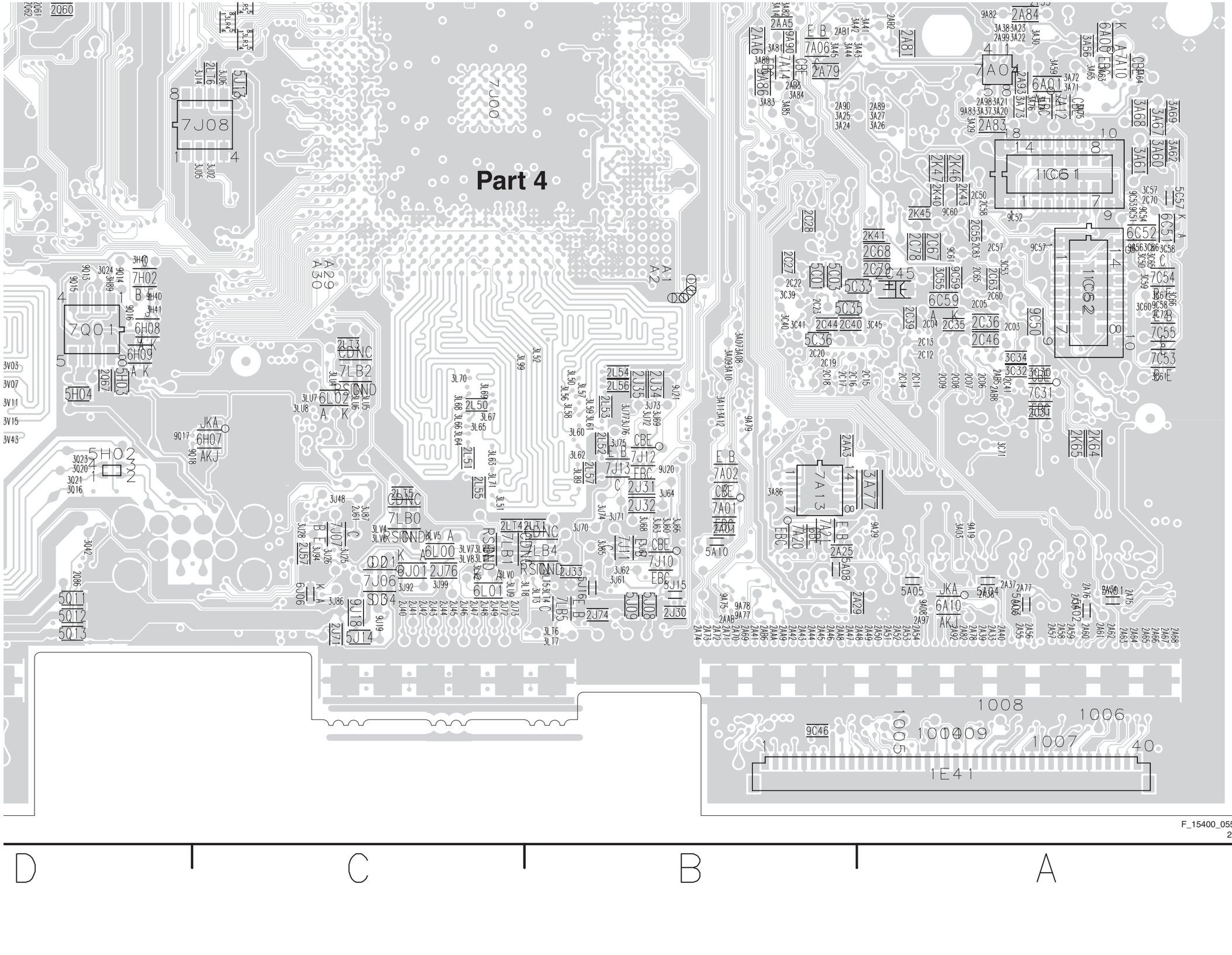
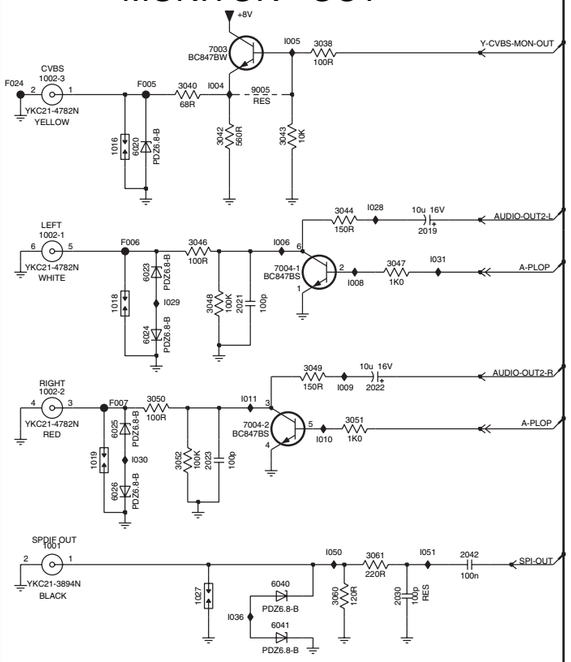


External I/O Panel: Externals A

BE1 EXTERNALS A

BE1

MONITOR - OUT



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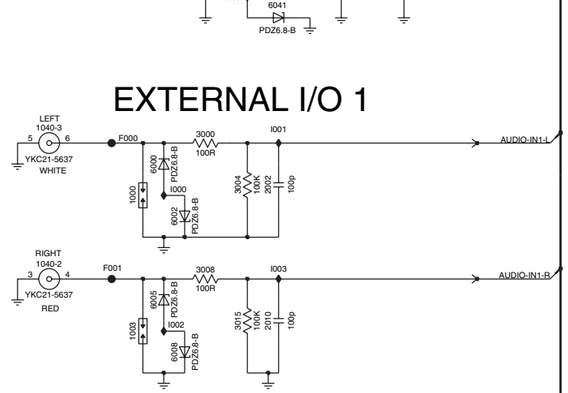

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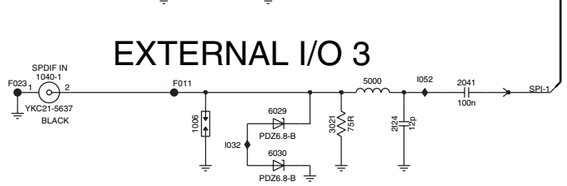

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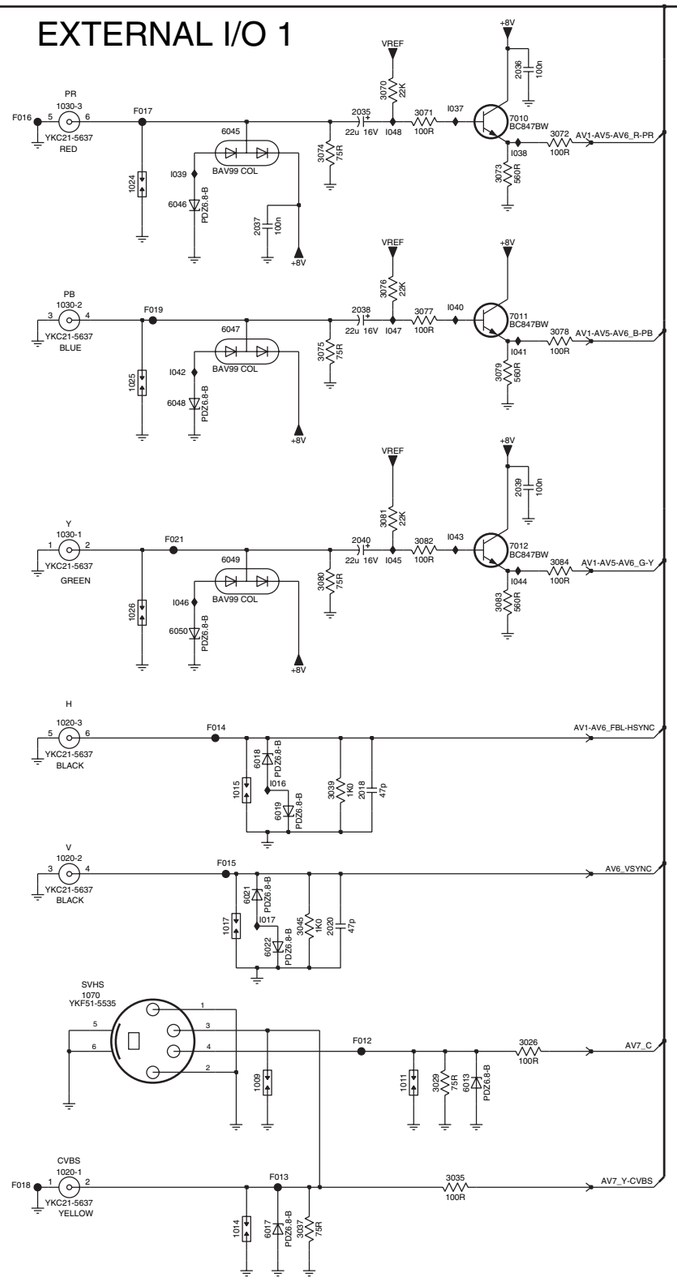

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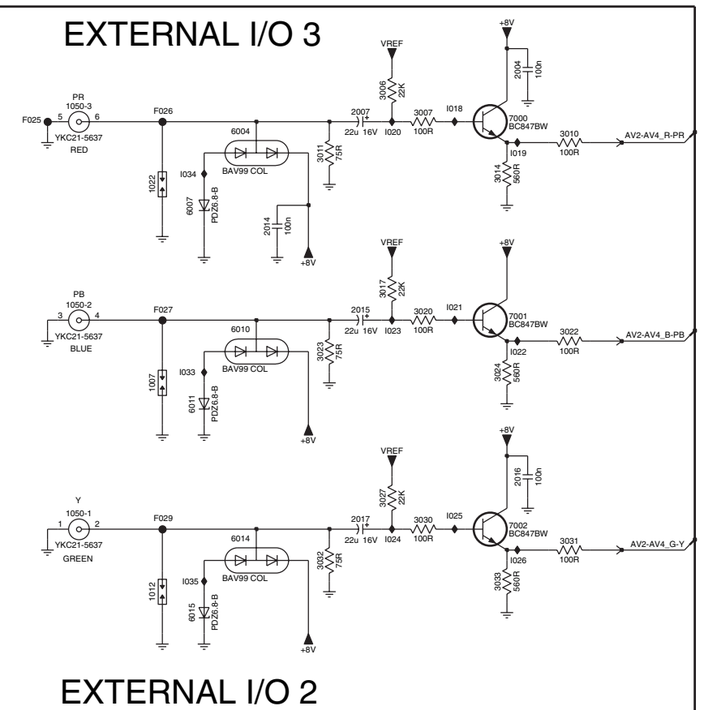

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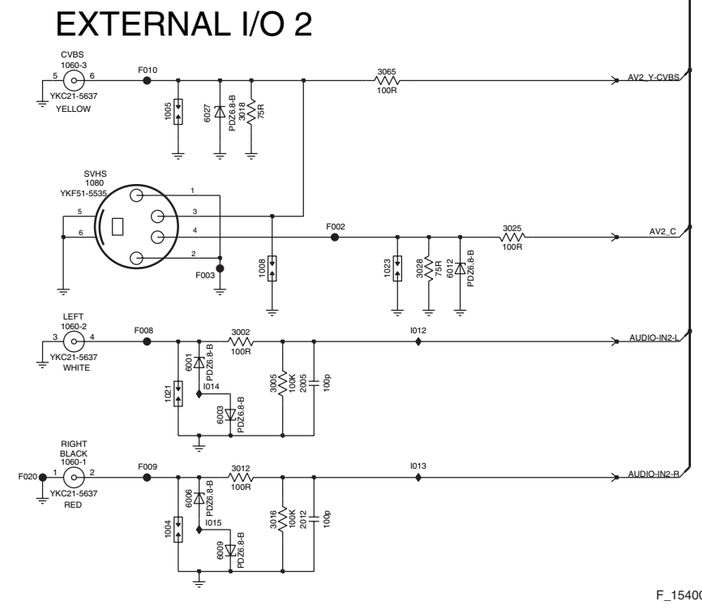

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1005 F10	3071 B7	I024 E11
1006 I1	3072 B8	I025 D12
1007 D10	3073 B7	I026 E12
1008 G10	3074 B6	I028 C3
1009 H6	3075 C6	I029 C1
1011 H7	3076 C7	I030 D1
1012 E10	3077 C7	I031 C3
1014 I6	3078 C8	I032 I2
1015 F6	3079 C7	I033 C10
1016 B1	3080 E6	I034 B10
1017 G6	3081 D7	I035 E10
1018 C1	3082 E7	I036 E2
1019 D1	3083 E7	I037 B7
1020-1 I5	3084 E8	I038 B8
1020-2 G5	5000 I3	I039 B5
1020-3 F5	6000 G1	I040 C7
1021 H10	6001 H10	I041 C8
1022 B10	6002 G1	I042 C5
1023 G11	6003 H10	I043 E7
1024 B5	6004 B10	I044 E8
1025 D5	6005 H1	I045 E7
1026 E5	6006 I10	I046 E5
1027 E1	6007 B10	I047 C7
1030-1 E5	6008 H1	I048 B7
1030-2 C5	6009 I10	I050 E2
1030-3 B5	6010 C10	I051 E3
1040-1 I1	6011 D10	I052 I3
1040-2 G1	6012 G12	
1040-3 F1	6013 H7	
1050-1 D9	6014 E10	
1050-2 C9	6015 E10	
1050-3 B9	6017 I6	
1060-1 I9	6018 F6	
1060-2 H9	6019 F6	
1060-3 F9	6020 B1	
1070 H5	6021 G6	
1080 G9	6022 G6	
2002 G2	6023 C1	
2004 A12	6024 D1	
2005 H11	6025 D1	
2007 B11	6026 E1	
2010 H2	6027 F10	
2012 I11	6029 I2	
2014 B10	6030 I2	
2015 C11	6040 E2	
2016 D12	6041 E2	
2017 D11	6045 B6	
2018 F7	6046 B5	
2019 C3	6047 C6	
2020 G6	6048 D5	
2021 C2	6049 E6	
2022 D3	6050 E5	
2023 D2	7000 B12	
2030 E3	7001 C12	
2035 B7	7002 E12	
2036 A8	7003 B2	
2037 B6	7004-1 C2	
2038 C7	7004-2 D2	
2039 D8	7010 B8	
2040 E7	7011 C8	
2041 I3	7012 E8	
2042 E3	9005 B2	
2124 I3	F000 F1	
3000 F2	F001 G1	
3002 H10	F002 G11	
3004 G2	F003 G10	
3005 H11	F005 B1	
3006 B11	F006 C1	
3007 B12	F007 D1	
3008 G2	F008 H10	
3010 B13	F009 I10	
3011 B11	F010 F10	
3012 I10	F011 I1	
3014 B12	F012 H7	
3015 H2	F013 I6	
3016 I11	F014 F6	
3017 C11	F015 G6	
3018 F10	F016 B4	
3020 C12	F017 B5	
3021 I2	F018 I4	
3022 C13	F019 C5	
3023 C11	F020 I9	
3024 C12	F021 E5	
3025 G12	F023 I1	
3026 H8	F024 B1	
3027 D11	F025 B9	
3028 G12	F026 B10	
3029 H7	F027 C10	
3030 D12	F029 D10	
3031 E13	I000 G1	
3032 E11	I001 F2	
3033 E12	I002 H1	
3035 I7	I003 G2	
3037 I6	I004 B2	
3038 B2	I005 B2	
3039 F6	I006 C2	
3040 B1	I008 C3	
3042 B2	I009 D2	
3043 B2	I010 D2	
3044 C2	I011 D2	
3045 G6	I012 H12	
3046 C1	I013 I12	
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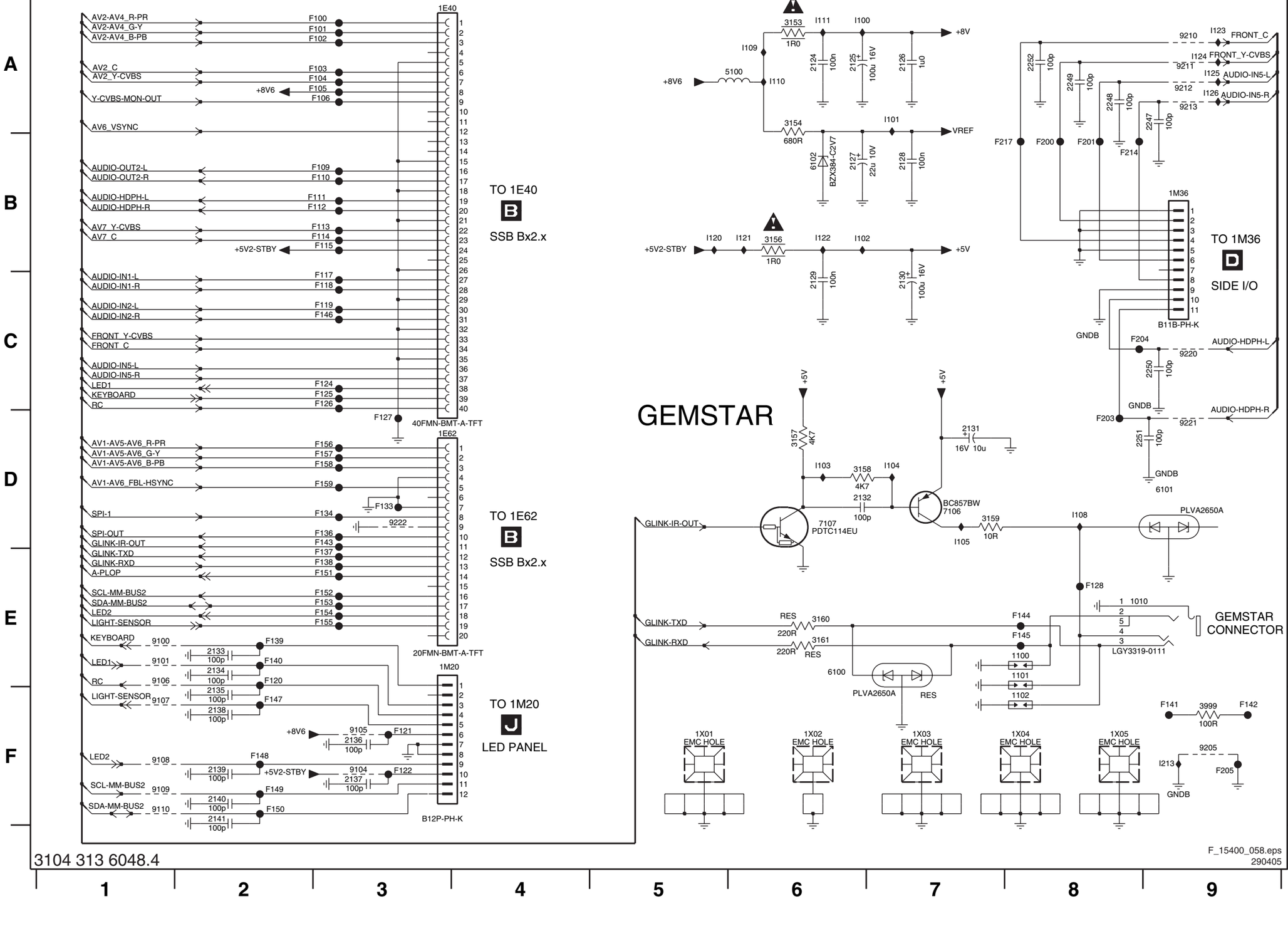
External I/O Panel: Externals B

BE2 EXTERNALS B



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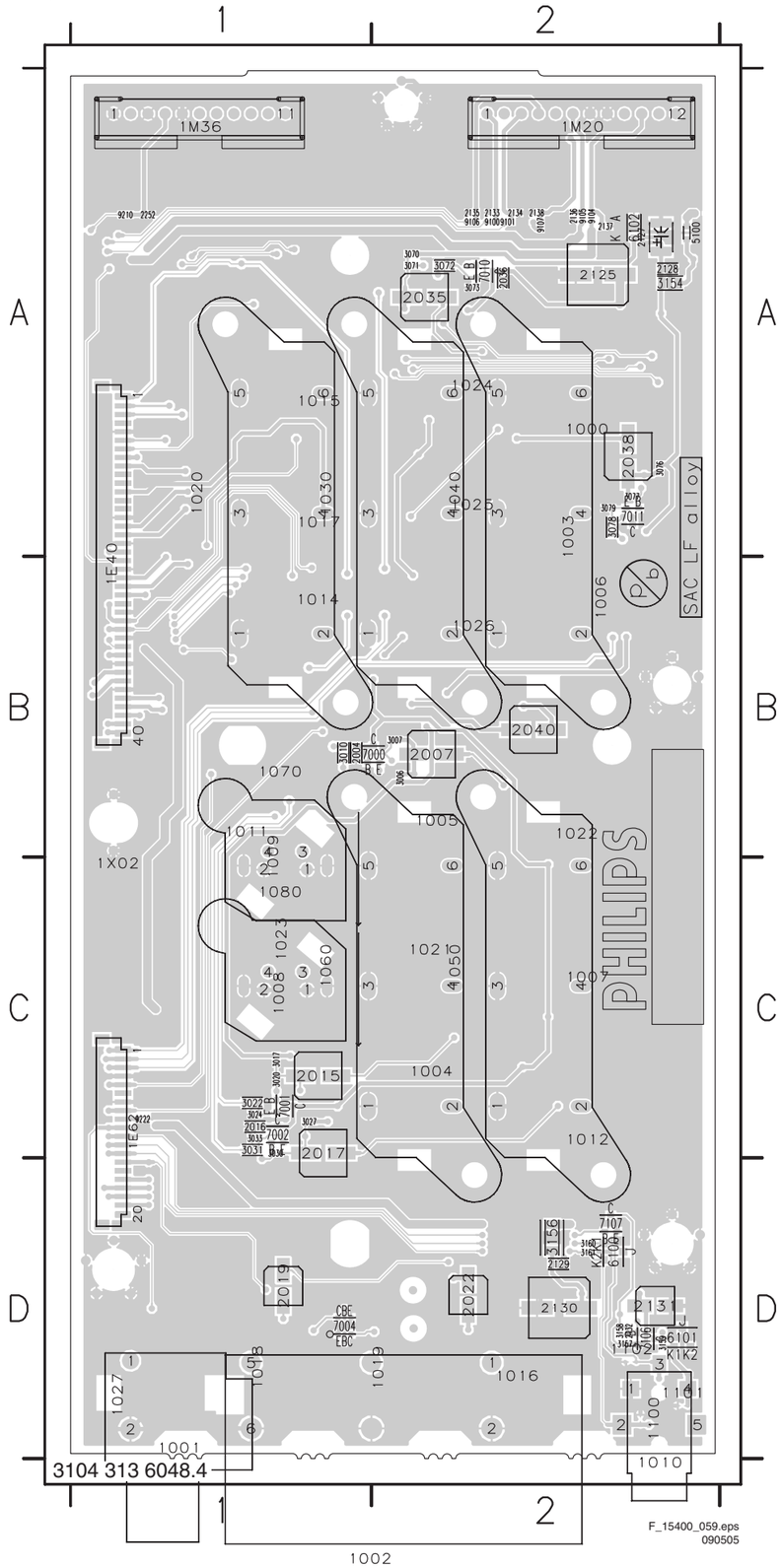
1101	E8	F112	B3
1102	F8	F113	B3
1E40	A3	F114	B3
1E62	D3	F115	B3
1M20	E3	F117	C3
1M36	B9	F118	C3
1X01	F5	F119	C3
1X02	F6	F120	E2
1X03	F7	F121	F3
1X04	F8	F122	F3
1X05	F8	F124	C3
2124	A6	F125	C3
2125	A6	F126	C3
2126	A7	F127	D3
2127	B6	F128	E8
2128	B7	F133	D3
2129	C6	F134	D3
2130	C7	F136	D3
2131	D7	F137	E3
2132	D6	F138	E3
2133	E2	F139	E2
2134	E2	F140	E2
2135	F2	F141	F9
2136	F3	F142	F9
2137	F3	F143	D3
2138	F2	F144	E8
2139	F2	F145	E8
2140	F2	F146	C3
2141	F2	F147	F2
2247	A9	F148	F2
2248	A8	F149	F2
2249	A8	F150	F2
2250	C9	F151	E3
2251	D8	F152	E3
2252	A8	F153	E3
3153	A6	F154	E3
3154	A6	F155	E3
3156	B6	F156	D3
3157	D6	F157	D3
3158	D6	F158	D3
3159	D7	F159	D3
3160	E6	F200	B8
3161	E6	F201	B8
3999	F9	F203	D8
5100	A6	F204	C8
6100	E6	F205	F9
6101	D9	F214	B8
6102	B6	F217	B7
7106	D7	I100	A6
7107	D6	I101	A7
9100	E1	I102	B6
9101	E1	I103	D6
9104	F3	I104	D7
9105	F3	I105	D7
9106	E1	I108	D8
9107	F1	I109	A6
9108	F1	I110	A6
9109	F1	I111	A6
9110	F1	I120	B5
9205	F9	I121	B6
9210	A9	I122	B6
9211	A9	I123	A9
9212	A9	I124	A9
9213	A9	I125	A9
9220	C9	I126	A9
9221	D9	I213	F9
9222	D3		
F100	A3		
F101	A3		
F102	A3		
F103	A3		
F104	A3		
F105	A3		
F106	A3		
F109	B3		

Layout External I/O Panel (Top Side)



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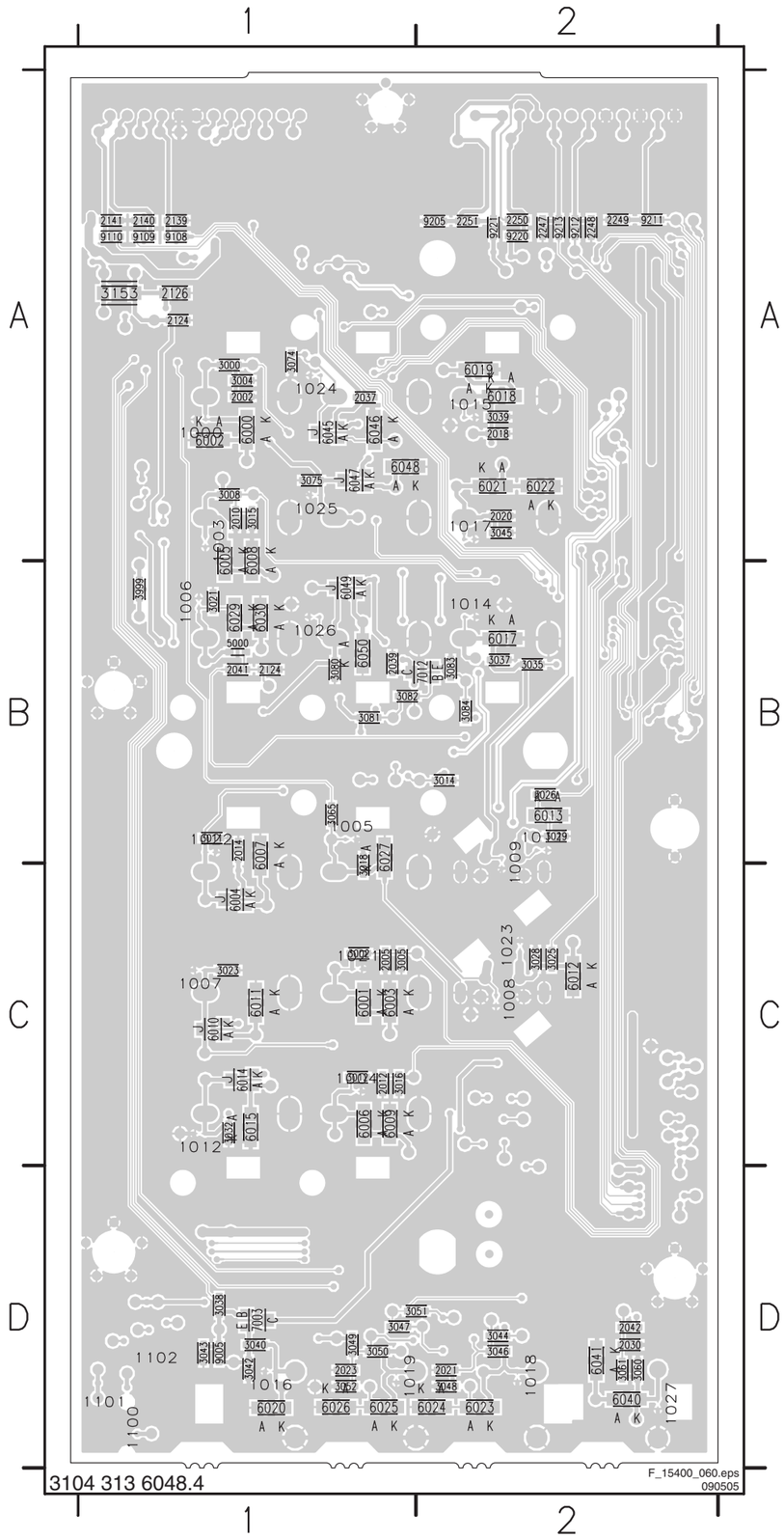
1002 D2
1010 D2
1020 A1
1030 A1
1040 A2
1050 D2
1060 D2
1070 B1
1080 C1
1E40 A1
1E62 C1
1M20 A2
1M36 A1
2004 B1
2007 B2
2015 C1
2016 C1
2017 D1
2019 D1
2022 D2
2035 A2
2036 A2
2038 A2
2040 B2
2125 A2
2127 A2
2128 A2
2129 D2
2130 D2
2131 D2
2132 D2
2133 A2
2134 A2
2135 A2
2136 A2
2137 A2
2138 A2
2252 A1
3006 B2
3007 B2
3010 B1
3017 C1
3020 C1
3022 C1
3024 C1
3027 C1
3030 C1
3031 C1
3033 C1
3070 A2
3071 A2
3072 A2
3073 A2
3076 A2
3077 A2
3078 A2
3079 A2
3154 A2
3156 D2
3157 D2
3158 D2
3159 D2
3160 D2
3161 D2
5100 A2
6100 D2
6101 D2
6102 A2
7000 B2
7001 C1
7002 D1
7004 D2
7010 A2
7011 A2
7106 D2
7107 D2
9100 A2
9101 A2
9104 A2
9105 A2
9106 A2
9107 A2
9210 A1
9222 C1

Layout External I/O Panel (Bottom Side)



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2005 C1
2010 A1
2012 C1
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2018 A2
2020 A2
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2039 B1
2041 B1
2042 D2
2124 A1
2126 A1
2139 A1
2140 A1
2141 A1
2247 A2
2248 A2
2249 A2
2250 A2
2251 A2
2124 B1
3000 A1
3002 C1
3004 A1
3005 C1
3008 A1
3011 B1
3012 C1
3014 B2
3015 A1
3016 C1
3018 C1
3021 B1
3023 C1
3025 C2
3026 B2
3028 C2
3029 B2
3032 C1
3035 B2
3037 B2
3038 D1
3039 A2
3040 D1
3042 D1
3043 D1
3044 D2
3045 A2
3046 D2
3047 D1
3048 D2
3049 D1
3050 D1
3051 D2
3052 D1
3060 D2
3061 D2
3065 B1
3074 A1
3075 A1
3080 B1
3081 B1
3082 B1
3083 B2
3084 B2
3153 A1
3999 B1
5000 B1
6000 A1
6001 C1
6002 A1
6003 C1
6004 C1
6005 B1
6006 C1
6007 B1
6008 B1
6009 D1
6010 C1
6011 C1
6012 C2
6013 B2
6014 C1
6015 C1
6017 B2
6018 A2
6019 A2
6020 D1
6021 A2
6022 A2
6023 D2
6024 D2
6025 D1
6026 D1
6027 B1
6029 B1
6030 B1
6040 D2
6041 D2
6045 A1
6046 A1
6047 A1
6048 A1
9205 A2
9211 A2
9220 A2
9221 A2

Audio Amplifier Panel

0001 A15	2705 B10	2717 A8	2729 H10	2745 B7	2758 G5	2772 G2	2790 G15	3703 A2	3715 B8
1735 C12	2706 A3	2718 B5	2731 C9	2746 C7	2759 G11	2773 G3	2791 D14	3704 A10	3716 C10
1736 A13	2707 C5	2719 A4	2732 C10	2747 C2	2760 G6	2774 G3	2793 H1	3705 A5	3717 C5
1738 G13	2708 F9	2720 B5	2733 G9	2748 C2	2761 G1	2775 H5	2794 H3	3706 A4	3718 C2
1M02 A13	2709 A6	2721 B6	2736 D10	2749 C3	2762 G2	2776 A6	2795 H3	3707 A8	3719 C2
1M06 A14	2710 A7	2722 B4	2737 D10	2750 G9	2763 H5	2778 E9	2796 H3	3708 A10	3720 D10
1M52 E14	2711 A2	2723 B8	2739 D6	2751 F4	2764 E8	2779 E8	2797 H4	3709 A3	3721 C3
2700 A3	2712 A10	2724 H10	2740 F11	2752 G5	2766 H11	2780 A10	2798 H4	3710 B8	3722 A3
2701 B10	2713 A4	2725 H10	2741 E6	2754 D15	2767 H11	2782 F8	2799 H9	3711 B9	3723 A3
2702 H11	2714 G14	2726 B4	2742 G11	2755 G2	2768 H5	2783 G8	3700 A2	3712 B3	3724 C2
2703 A7	2715 A10	2727 C9	2743 E5	2756 G7	2770 A15	2788 H8	3701 A10	3713 C13	3725 D2
2704 A7	2716 A10	2728 H10	2744 E3	2757 G7	2771 H6	2789 D10	3702 C2	3714 B4	3726 D4

3727 D6	3739 F9	3751 H13	3763 H7	3775 H9	5709 E9	7706 D3	7718-1 G2	9707 H7	F709 C11
3728 D4	3740 F15	3752 H14	3764 A10	3776 H9	5714 H8	7707 D2	7718-2 G4	9708 H7	F710 E13
3729 D2	3741 G10	3753 H11	3765 D10	3777 D3	6700 D13	7708 E6	7719-1 H6	9709 G14	F711 E14
3730 D1	3742 G14	3754 G4	3766 H10	3778 D10	6702 D5	7709 E5	7719-2 H6	F700 A12	F712 E13
3731 D3	3743 G5	3755 H5	3767 H9	3999 A15	6703 E3	7710 E4	7720 H15	F701 A12	F713 D15
3732 E4	3744 G5	3756 H5	3768 G10	5700 A10	6704 G13	7711 F5	9700 E12	F702 A11	F714 F13
3733 E6	3745 G11	3757 G3	3769 H8	5701 D14	6705 H13	7712 G6	9701 E12	F703 B13	F715 F13
3734 E4	3746 G13	3758 G2	3770 H2	5702 C10	7700-1 C4	7713 G6	9702 E12	F704 A13	F716 F13
3735 F5	3747 G5	3759 G7	3771 H3	5704 G9	7700-2 A4	7714 F8	9703 E13	F705 B13	F717 F13
3736 F3	3748 G15	3760 E2	3772 H2	5705 A7	7701 A7	7715 G15	9704 G12	F706 B12	F718 F13
3737 F3	3749 G5	3761 H11	3773 H2	5706 G10	7702 C14	7716 G14	9705 H12	F707 C12	F719 G12
3738 F5	3750 G2	3762 H9	3774 H2	5708 C7	7705 D5	7717 H14	9706 G7	F708 C12	F720 G12

F721 G12	F734 A15	I700 G13	I712 A9	I724 B9	I736 D2	I748 G15	I760 H14	I772 H2
F722 H8	F735 A14	I701 H13	I713 C2	I725 C8	I737 D2	I749 G1	I761 H4	I773 H10
F723 H8	F740 A12	I702 G11	I714 C2	I726 B10	I738 D3	I750 G3	I762 H9	I774 G10
F724 H6	F741 A12	I703 A2	I715 A8	I727 D10	I739 D4	I751 G14	I763 H5	I775 C9
F725 G7	F742 A13	I704 A3	I716 A10	I728 G9	I740 E4	I752 G5	I764 H3	I776 B10
F726 A7	F743 B13	I705 A3	I717 D2	I729 D13	I741 G11	I753 G5	I765 H15	I777 A11
F727 A5	F744 C7	I706 A4	I718 A8	I730 D3	I742 E3	I754 G5	I766 G1	
F728 B6	F745 C12	I707 C3	I719 A10	I731 G7	I743 F3	I755 G2	I767 H3	
F729 C5	F747 E8	I708 D4	I720 B8	I732 D14	I744 F5	I756 G4	I768 H10	
F730 D6	F748 G3	I709 D5	I721 B4	I733 D10	I745 F6	I757 G5	I769 H11	
F731 B8	F749 G12	I710 A4	I722 C9	I734 D3	I746 F9	I758 H11	I770 H3	
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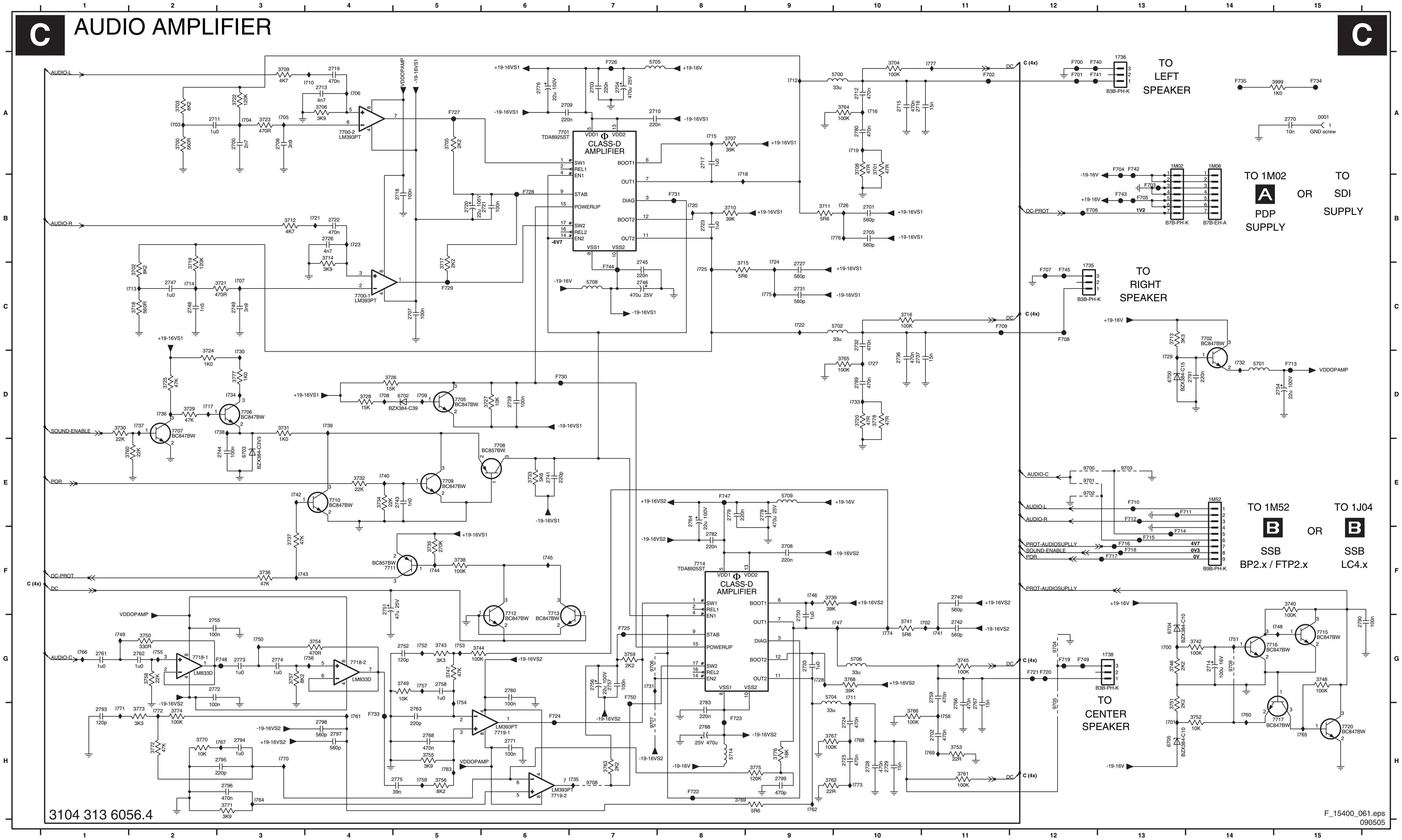
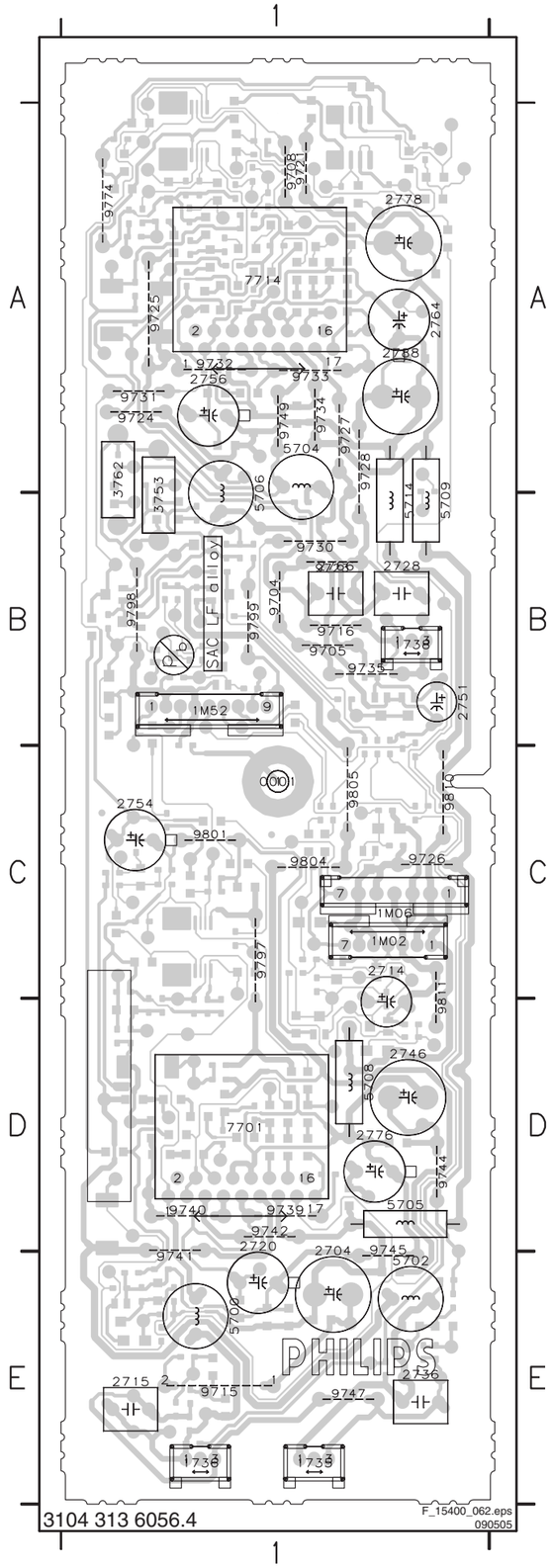


Layout Audio Amplifier Panel (Top Side)



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2720 D1
2728 B1
2736 E1
2746 D1
2751 B1
2754 C1
2756 A1
2764 A1
2766 B1
2776 D1
2778 A1
2788 A1
3753 B1
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9724 A1
9725 A1
9726 C1
9727 A1
9728 B1
9730 B1
9731 A1
9732 A1
9733 A1
9734 A1
9735 B1
9739 D1
9740 D1
9741 E1
9742 D1
9744 D1
9745 D1
9747 E1
9749 A1
9774 A1
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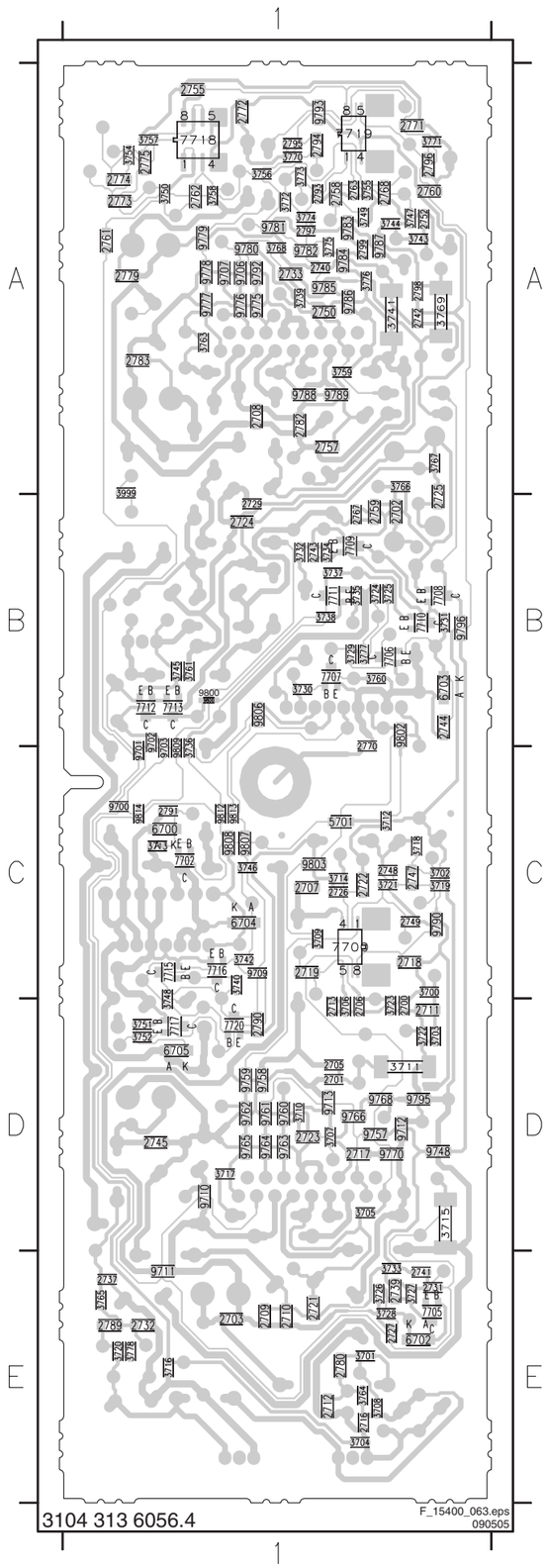
9811 C1

Layout Audio Amplifier Panel (Bottom Side)



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2710 E1
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2712 E1
2713 D1
2716 E1
2717 D1
2718 C1
2719 C1
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2731 E1
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2737 E1
2739 E1
2740 A1
2741 E1
2742 A1
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2744 B1
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3704 E1
3705 D1
3706 D1
3707 D1
3708 E1
3709 C1
3710 D1
3711 D1
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9789 A1
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9793 A1
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9796 B1
9800 B1
9801 C1
9802 B1
9803 C1
9806 B1
9807 C1
9808 C1
9809 C1
9812 C1
9813 C1
9814 C1

Side I/O Panel

SIDE I/O

JAGUAR ONLY

TO 1H01
B6A
VIPER

1H01 OR 1M60

USB CONNECTOR

SVHS

Y / CVBS

CVBS

L

R

HEADPHONE-OUT

SOUND L-HEADPHONE-OUT

SOUND R-HEADPHONE-OUT

TO 1M36
B21
SSB EM6
OR
TO 1M36
H
SCART 3 EM6
OR
TO 1M36
B10
SSB BP2

B11B-PH-SM3-TBT

3104 313 6008.4

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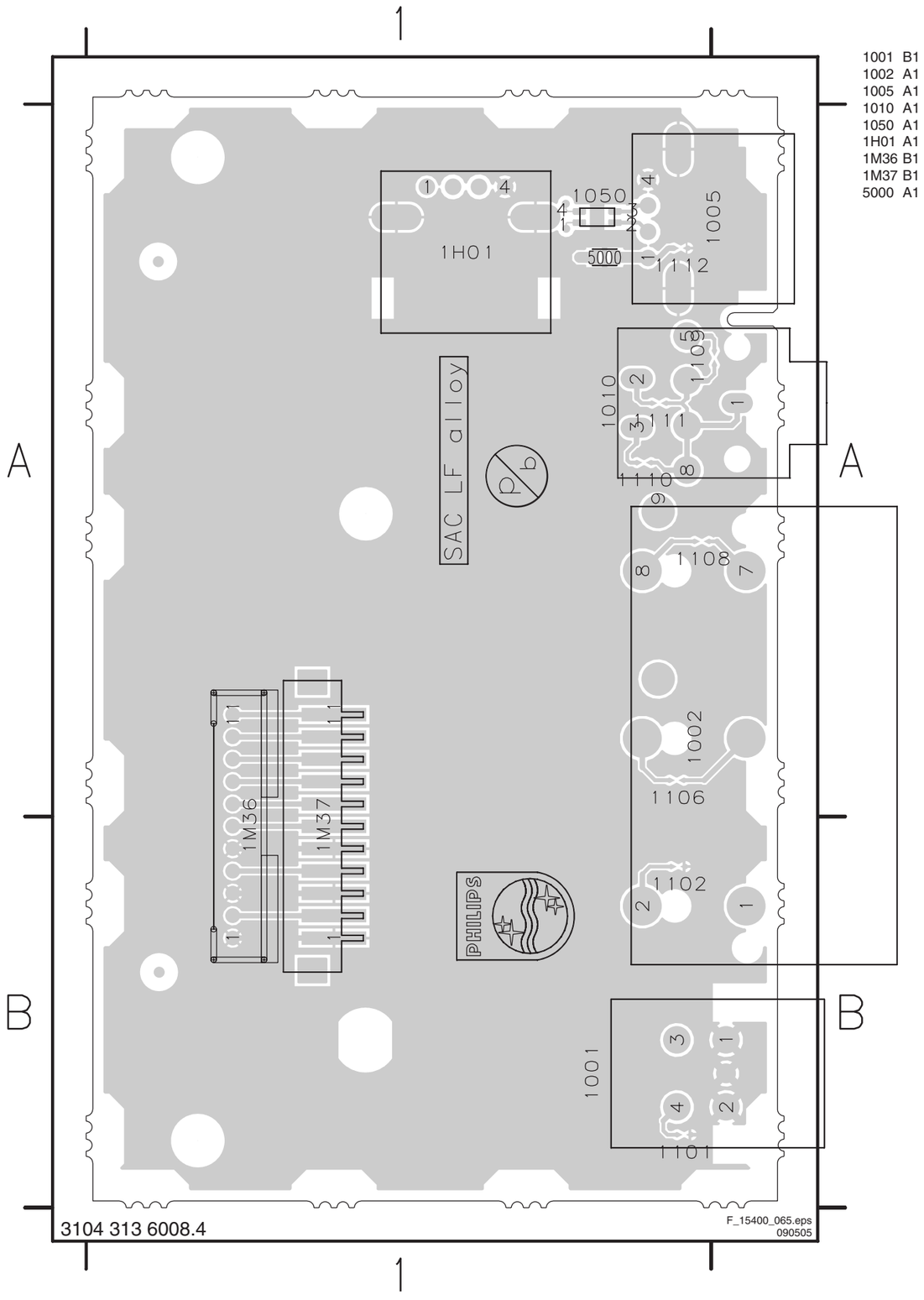
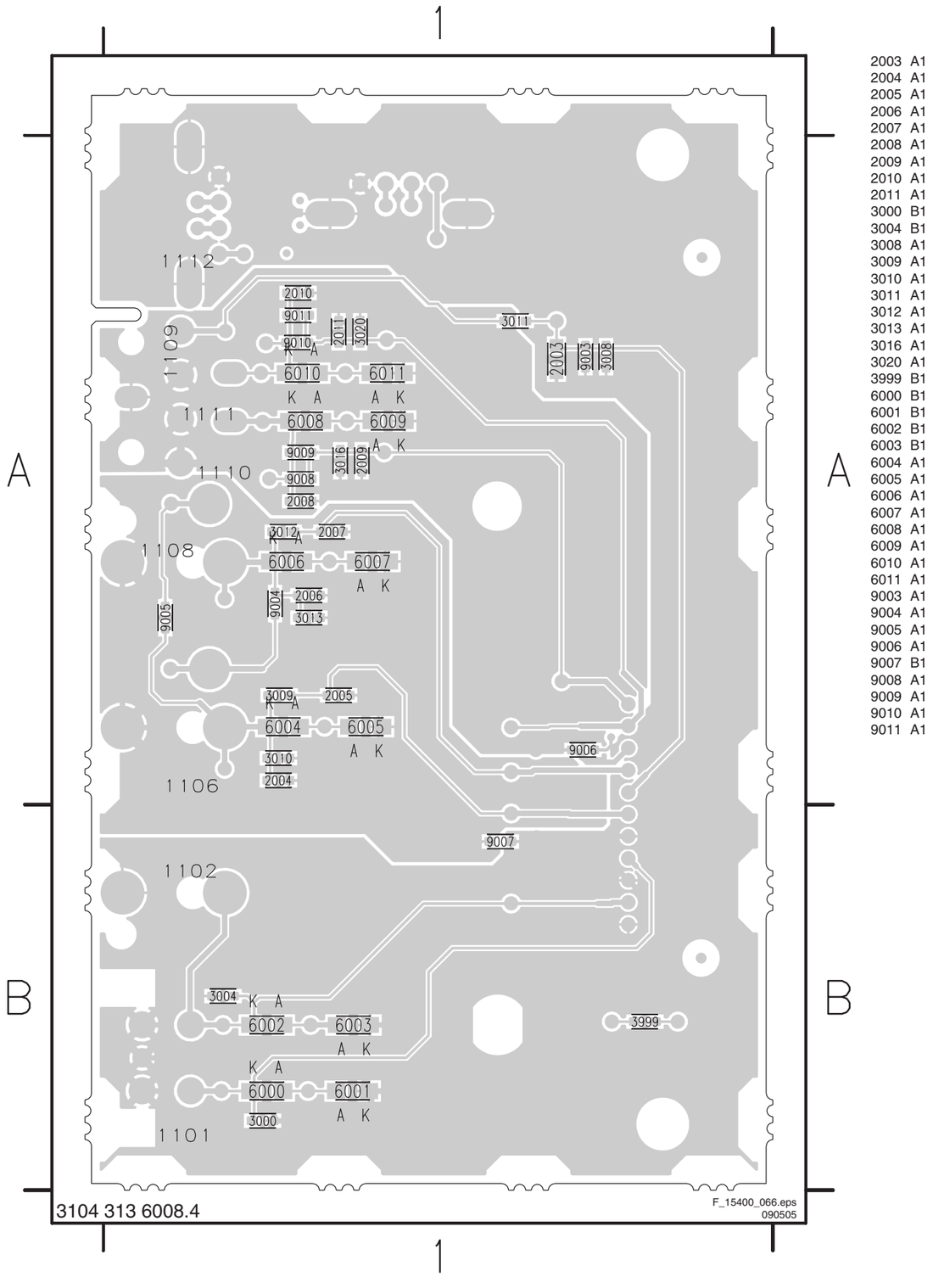
300505

1001 B2	F002 A2	
1002-1 B1	F003 B2	
1002-2 C1	F004 C2	
1002-3 D1	F005 C2	
1005 A8	F006 D2	
1010 E1	F007 E2	
1050 A7	F008 E2	
1101 A3	F009 E2	
1102 B3	F010 F8	
1106 C3	F011 F9	
1108 D3	F012 A6	
1109 E3	F013 A7	
1110 F3	F014 A6	
1111 E3	F015 A7	
1112 A7	F016 A6	
1H01 A6	F017 A7	
1M36 B8	F018 F7	
1M37 B8	F019 F2	
2003 C5	F020 B4	
2004 C3	F021 C6	
2005 C4	F022 C6	
2006 D3	F023 C6	
2007 D4	F024 E6	
2008 F2	F025 E6	
2009 F5	I001 C2	
2010 E2	I002 C3	
2011 E5	I003 D2	
3000 A4	I004 A3	
3004 B3	I005 F4	
3008 C5	I006 F4	
3009 C4	I007 E4	
3010 C4	I008 E4	
3011 C5	I009 B3	
3012 D4	I010 D3	
3013 D4	I011 F7	
3016 F5	I012 F8	
3020 E5	I013 F3	
3999 F9	I014 E3	
5000 A7		
6000 A3		
6001 A3		
6002 B3		
6003 B3		
6004 C3		
6005 C3		
6006 D3		
6007 D3		
6008 F3		
6009 F3		
6010 E3		
6011 F3		
9003 C6		
9004 C2		
9005 D2		
9006 F7		
9007 F8		
9008 F4		
9009 F4		
9010 E4		
9011 E4		
F001 A2		

Layout Side I/O Panel (Top Side)

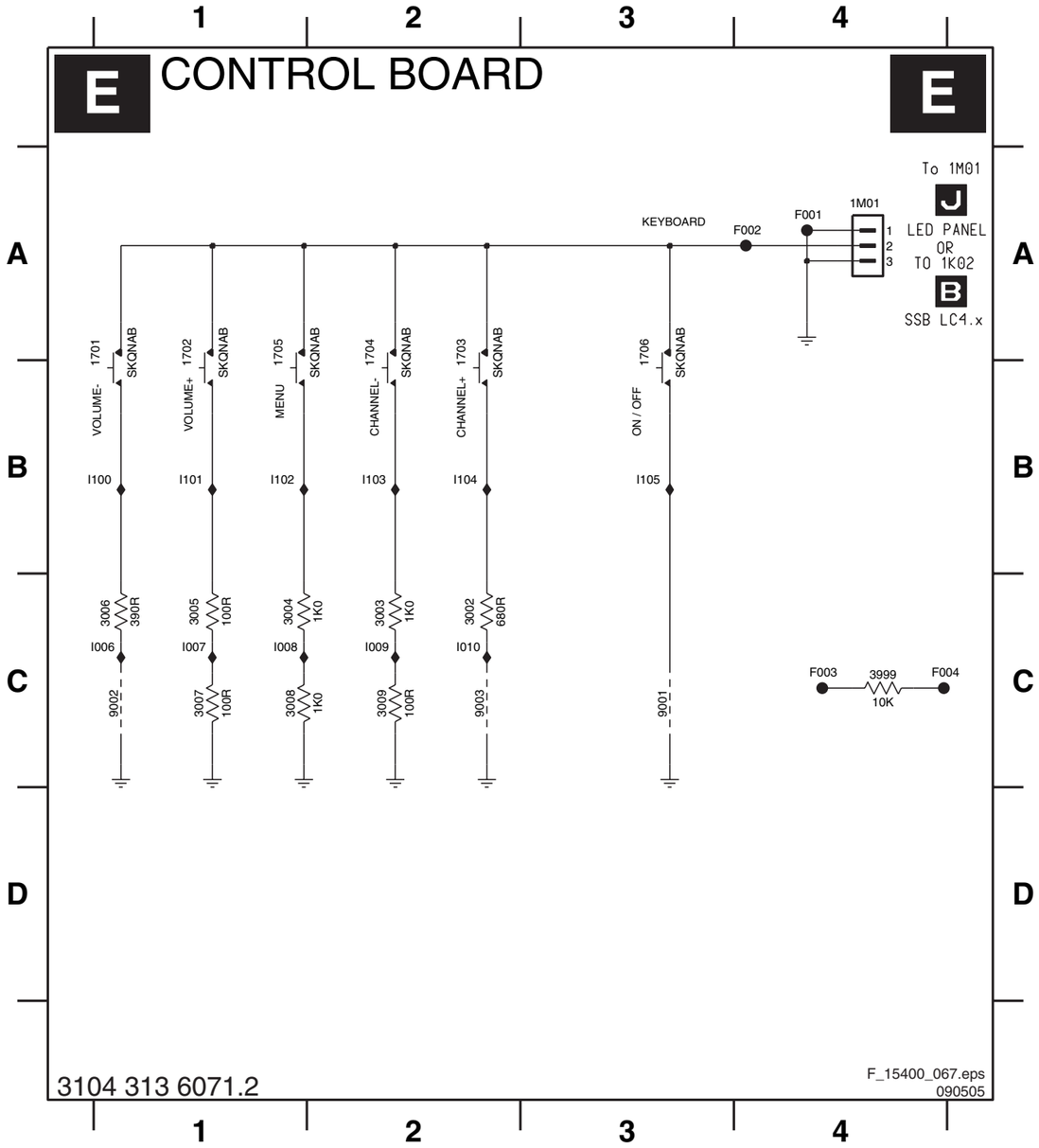


Layout Side I/O Panel (Bottom Side)



Control Board

1701 A1	1704 A2	1M01 A4	3004 C1	3007 C1	3999 C4	9003 C2	F003 C4	I007 C1	I010 C2	I102 B1	I105 B3
1702 A1	1705 A1	3002 C2	3005 C1	3008 C1	9001 C3	F001 A4	F004 C4	I008 C1	I100 B1	I103 B2	
1703 A2	1706 A3	3003 C2	3006 C1	3009 C2	9002 C1	F002 A4	I006 C1	I009 C2	I101 B1	I104 B2	



3104 313 6071.2

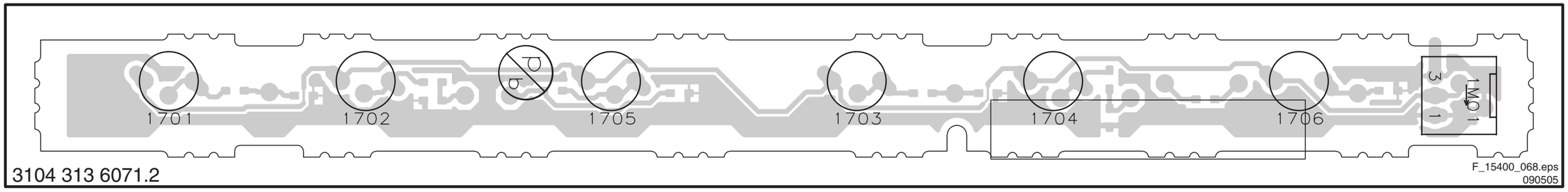
F_15400_067.eps
090505

Personal Notes:

E_06532_012.eps
131004

Layout Control Board (Top Side)

1701 -- 1702 -- 1703 -- 1704 -- 1705 -- 1706 -- 1M01 --

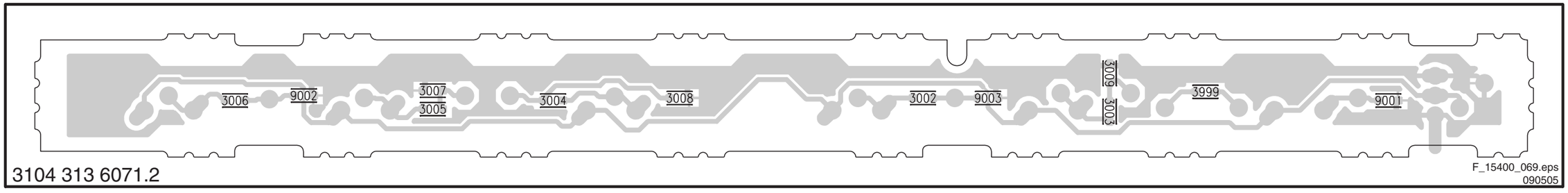


3104 313 6071.2

F_15400_068.eps
090505

Layout Control Board (Bottom Side)

3002 -- 3003 -- 3004 -- 3005 -- 3006 -- 3007 -- 3008 -- 3009 -- 3999 -- 9001 -- 9002 -- 9003 --



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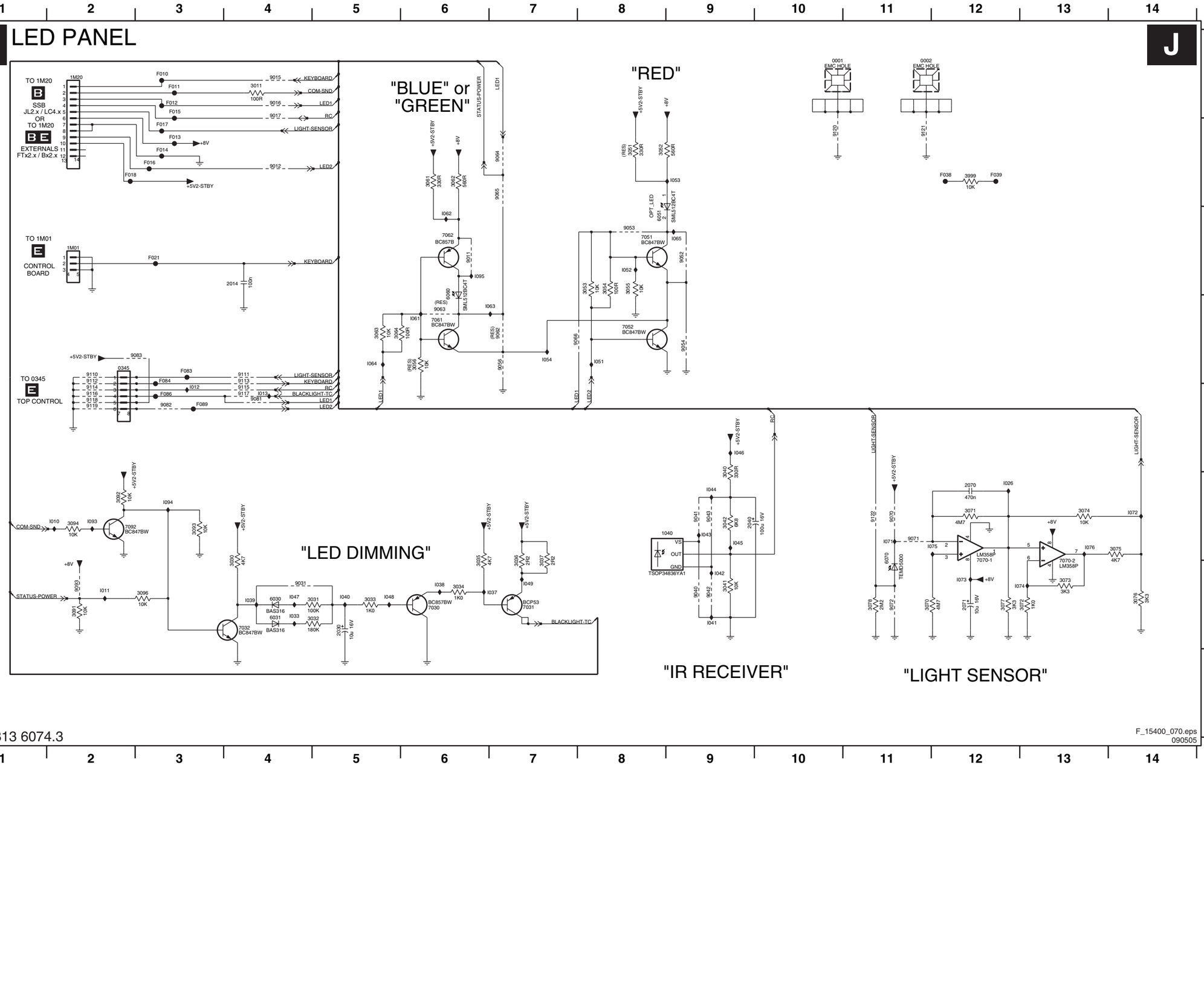
F_15400_069.eps
090505

LED Panel

J LED PANEL

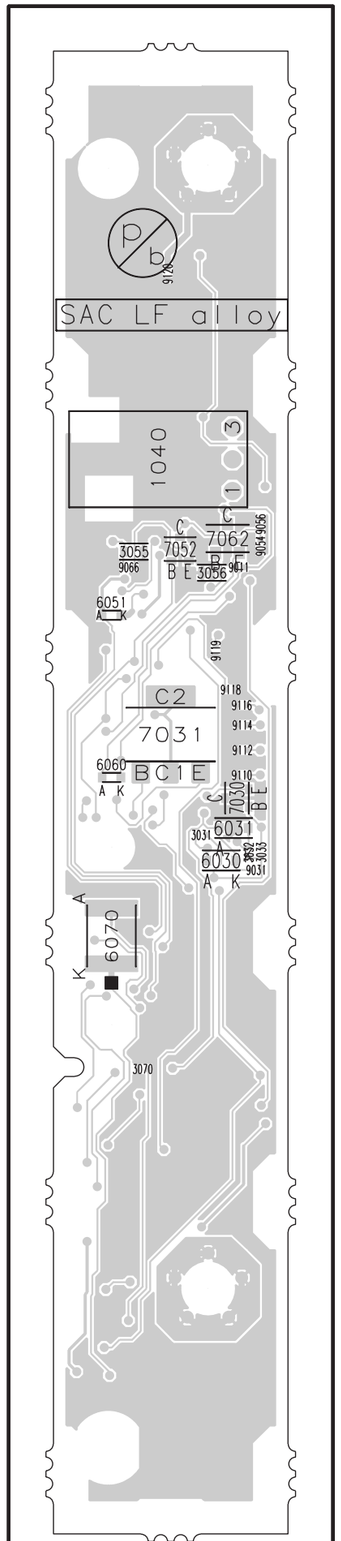


3104 313 6074.3

F_15400_070.eps
090505

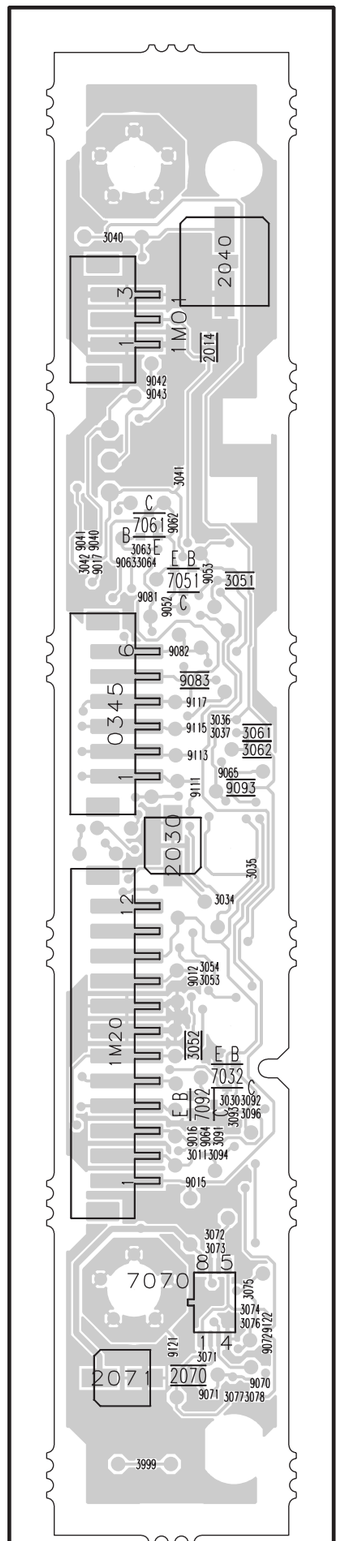
0001 A10
0002 A11
0345 D2
1040 F9
1M01 C2
1M20 A2
2014 C4
2030 G5
2040 F9
2070 F12
2071 G12
3011 A4
3030 G4
3031 G5
3032 G5
3033 G5
3034 G6
3035 G6
3036 G7
3037 G7
3040 F9
3041 G9
3042 F9
3051 B8
3052 B8
3053 C8
3054 C8
3055 C8
3056 D6
3061 B6
3062 B6
3063 D5
3064 D5
3070 G11
3071 F12
3072 G13
3073 G13
3074 F13
3075 F14
3076 G14
3077 G12
3078 G11
3091 G2
3092 F2
3093 F3
3094 F2
3096 G3
3999 B12
6030 G4
6031 G4
6051 C8
6060 C6
6070 G11
7030 G6
7031 G7
7032 G4
7051 C8
7052 D8
7061 D6
7062 C6
7070-1 F12
7070-2 G13
7092 F2
9011 C6
9012 B4
9015 A4
9016 A4
9017 A4
9031 G4
9040 G9
9041 F9
9042 G9
9043 F9
9052 C9
9053 C8
9054 D9
9056 D7
9062 D7
9063 D6
9064 B7
9065 B7
9066 D7
9070 F11
9071 F11
9072 G11
9081 E4
9082 E3
9083 D3
9093 G2
9110 D2
9111 D4
9112 D2
9113 D4
9114 E2
9115 E4
9116 E2
9117 E4
9118 E2
9119 E2
9120 B10
9121 B11
9122 F11
I010 F2
I011 E3
I012 E3
I013 E4
I026 F12
I033 G4
I037 G7
I038 G6
I039 G4
I040 G5
I041 G9
I042 G9
I043 F9
I044 F9
I045 F9
I046 E9
I047 G4
I048 G5
I049 G7
I051 D8
I052 C8
I053 B9
I054 D7
I061 D6
I062 C6
I063 D7
I064 D5
I065 C9
I071 F11
I072 F14
I073 G12
I074 G12
I075 F12
I076 F13
I093 F2
I094 F3
I095 C6

Layout LED Panel (Top and Bottom Side)



3104 313 6074.3

1040 --
3031 --
3032 --
3033 --
3055 --
3056 --
3070 --
6030 --
6031 --
6051 --
6060 --
6070 --
7030 --
7031 --
7052 --
7062 --
9011 --
9031 --
9054 --
9056 --
9066 --
9110 --
9112 --
9114 --
9116 --
9118 --
9119 --
9120 --



F_15400_071.eps
090505

0345 --
1M01 --
1M20 --
2014 --
2030 --
2040 --
2070 --
2071 --
3011 --
3030 --
3034 --
3035 --
3036 --
3037 --
3040 --
3041 --
3042 --
3051 --
3052 --
3053 --
3054 --
3061 --
3062 --
3063 --
3064 --
3071 --
3072 --
3073 --
3074 --
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3076 --
3077 --
3078 --
3091 --
3092 --
3093 --
3094 --
3096 --
3999 --
7032 --
7051 --
7061 --
7070 --
7092 --
9012 --
9015 --
9016 --
9017 --
9040 --
9041 --
9042 --
9043 --
9052 --
9053 --
9062 --
9063 --
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9072 --
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9093 --
9111 --
9113 --
9115 --
9117 --
9121 --
9122 --

Personal Notes:

E_06532_012.eps
131004

8. Alignments

Index of this chapter:

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:
- Power supply voltage: 120 V_{AC} / 60 Hz (± 10%).
- Connect the set to the AC Power 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 chassis ground (with the exception of the voltages on the primary side of the power supply).
  Caution: It is not allowed to use heatsinks as ground.
- Test probe: Ri > 10 Mohm, Ci < 20 pF.
- Use an isolated trimmer/screwdriver to perform alignments.

8.1.2 Initial Settings

Perform all electrical adjustments with the following initial settings (via the "Active Control" button on the RC):
1. To avoid the working of the lightsensor, set ACTIVE CONTROL to OFF.
2. Set SMART PICTURE to NATURAL/ECO.

8.1.3 Alignment Sequence

- First, set the correct options:
  – In SAM, select (SERVICE) OPTIONS -> OPT. NO,
  – Fill in the option settings according to the set sticker (see also paragraph "Option Settings"),
  – Select STORE OPTIONS and push OK on the remote control,
  – After storing, the set must be restarted!
- Warming up (>10 minutes).
- White point alignment.

8.2 Hardware Alignments

Not applicable.

8.3 Software Alignments

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

Notes:
- All changes must be stored manually.
- If an empty EAROM (permanent memory) is detected, all settings are set to pre-programmed default values.

8.3.1 General

For the next alignments, supply the following test signals via a video generator to the RF input: NTSC M/N TV-signal with a signal strength of at least 1 mV and a frequency of 61.25 MHz (channel 3).

IF AFC
Alignment procedure:
1. During the IF AFC-parameter adjustment, one can see OSD feedback on the screen.
2. The OSD feedback can give four kinds of messages:
3. The first item ("IN/OUT") informs you whether you are in or out of the AFC-window.
4. The second item ("HIGH/LOW") informs you whether the AFC-frequency is too high or too low.

Table 8-1 AFC

AFC-window	AFC-frequency vs. reference
Out	High
In	High
[In]	[Low]
Out	Low

1. Adjust the IF AFC parameter until the **first** value is within the AFC window (= IN).
2. Next, adjust the IF AFC parameter until the **second** value is LOW.

Tuner AGC
Purpose: To keep the tuner output signal constant as the input signal amplitude varies.

Default value: “32”.

In case the default value gives problems, use the next method:
1. Set the video generator to a color bar test pattern and a RF amplitude of 1 mV.
2. Select the channel with the test picture.
3. Measure the DC voltage on pin 1 of the (main) Tuner.
4. Adjust this voltage via TUNER AGC to just below 3.5 V.

8.3.2 White Point

- Set ACTIVE CONTROL to OFF.
- In the [MENU] -> PICTURE user menu, set:
  – DYNAMIC CONTRAST to OFF.
  – COLOUR ENHANCEMENT to OFF.
  – COLOUR to "0".
  – CONTRAST to "100".
  – BRIGHTNESS to "50".
- Go to the SAM and select ALIGNMENTS -> WHITE POINT.

Method 1 (with color analyzer):
- Use a 100% white screen as input signal and set the following values:
  – COLOR TEMPERATURE: "Tint to be aligned".
  – All WHITE POINT values to: "127".
  – RED and GREEN BL OFFSET values to: "3".
- Measure with a calibrated (phosphor- independent) color analyzer in the centre of the screen. Consequently, the measurement needs to be done in a dark environment.
- Adjust, by means of decreasing the value of one or two white points, the correct x,y coordinates (see table "White D alignment values"). Tolerance: dx,dy: ± 0.004.
- Repeat this step for the other Color Temperatures that need to be aligned.
- When finished press STORE (in the SAM root menu) to store the aligned values to the NVM.
- Restore the initial picture settings after the alignments.

Table 8-2 White D alignment values

Color Temp.	Cool	Normal	Warm
x	0.276	0.285	0.313
y	0.282	0.293	0.329

When such equipment is not available, use “method 2”.

Method 2 (without color analyzer):
If you do not have a color analyzer, you can use the default values. This is the next best solution. The default values are average values coming from production (statistics).

1. Select a COLOUR TEMPERATURE (e.g. COOL, NORMAL, or WARM).
2. Set the RED, GREEN and BLUE default values according to the values in the "Tint settings" table.
3. When finished press STORE (in the SAM root menu) to store the aligned values to the NVM.
4. Restore the initial picture settings after the alignments.

Table 8-3 Tint settings (42”/50”)

	Default Values (42”/50”)		
	Cool	Normal	Warm
R	?	?	?
G	?	?	?
B	?	?	?

Note: *These values were not available at the time of writing. As soon as they become available, a Service Info or Service Manual update will be issued via the appropriate channels.*

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I^2C 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 with the STORE command.
- The new option setting is only active after the TV is switched "off" and "on" again with the Mains switch (the EAROM is then read again).

8.4.2 Dealer Options

Table 8-4 Dealer options

Menu item	Subjects	Options	Description
Personal Options	Picture Mute	On	Picture mute active in case no picture detected
		Off	Noise in case of no picture detected
	Virgin Mode	On	TV starts up (once) with a language selection menu after the Mains switch is turned "on" for the first time (virgin mode)
		Off	TV does not start up (once) with a language selection menu after the Mains switch is turned "on" for the first time (virgin mode)

8.4.3 (Service) Options

Select the sub menu's to set the initialization codes (options) of the set via text menus.

Table 8-5 Service options

Menu-item	Subjects	Options	Description
PIP/DS	Dual Screen	None / 1 tuner / 2 tuners	no DS / DS with one tuner / DS with two tuners
Data	TV Guide US	On / Off	Feature present / not present
Display	Screen	“Value”	Used screen size, type, and resolution
	Scanning Backlight	On / Off	Feature present / not present
	Dimming Backlight	On / Off	Feature present / not present
Video Repro	Picture Processing	Spider / No Spider	Feature present / not present
	Combfilter	None / 2D / 3D	Only selectable when Columbus is present
	Ambient Light	None / Mono / Stereo	Inverter not present / one inverter / two inverters
	MOP	On / Off	Feature present / not present (for sets with AmbiLight this is “on”)
Source Selection	HDMI 1	None / Audio / No Audio	No HDMI / HDMI with analog audio / HDMI without analog audio
	HDMI 2	None / Audio / No Audio	No HDMI / HDMI with analog audio / HDMI without analog audio
	USB version	None / 1.1 / 2.0 + CR	No USB / USB 1.1 in side I/O panel / USB 2.0 in cardreader panel
	IEEE1394	Yes / No	Connector present / not present
	Ethernet	Yes / No	Connector present / not present
	S/PDIF inputs	None / 1 conn. / 2 conn.	None / 1 connector present (in)/ 2 connectors present (in/out)
Audio Repro	Subw. Internal Present	Yes / No	Internal sub woofer present / not present
	Acoustic System (Cabinet design, used for setting dynamic audio parameters).	None	n.a.
		Entry ME5 5W	n.a
		Entry ME5 15W	42/50PF7320A
		(Soft) Wrap	n.a.
		Top	n.a.
		Entry+	42/50PF9630A, 50PF9830A
		Others	n.a.
Miscellaneous	Alternative Tuner	Philips / Alps	Tuner brand
	Tuner Type	TD1336S	Tuner type
Opt. no.	Group 1		xxxxx xxxxx xxxxx xxxxx (see set sticker)
	Group 2		xxxxx xxxxx xxxxx xxxxx (see set sticker)

8.4.4 Opt. No. (Option numbers)

Select this sub menu to set all options at once (expressed in two long strings of numbers).
An option number (or "option byte") represents a number of different options. When you change these numbers directly, you can set all options very quickly. All options are controlled via eight option numbers.
When the EAROM is replaced, all options will require resetting. To be certain that the factory settings are reproduced exactly, you must set both option number lines. You can find the correct option numbers on a sticker inside the TV set.

Example: The options sticker gives the following option numbers:

- 04368 00005 01066 08707
- 00000 00032 00512 00000

The first line (group 1) indicates hardware options 1 to 4, the second line (group 2) indicates software options 5 to 8.
Every 5-digit number represents 16 bits (so the maximum value will be 65536 if all options are set).
When all the correct options are set, the sum of the decimal values of each Option Byte (OB) will give the option number.
See next table for the option overview.

Table 8-6 Option code overview

Byte	Bit (dec. value)	Subject	Options	Settings (in decimal values)	Remarks
1	0 (1)	Video Repro	Picture Processing	0= No Spider, 1= Spider	Spider availability, influences, digital options.
	1 (2)				
	2 (4)				
	3 (8)		Comb Filter	0= None, 8= 2D Comb (Columbus without DRAM), 16= 3D Comb (Columbus with DRAM)	
	4 (16)				
	5 (32)		Ambient Light	0= None, 32=Ambi-light Stereo, 64= Ambi-light Mono	
	6 (64)				
	7 (128)				
	8 (256)		Dual Screen	0= None, 256= One Tuner DS, 512= Two Tuner DS	
	9 (512)				
	10 (1024)		MOP	0= Off, 1024= On	Matrix Output Processor (or EBILD)
	11 (2048)		JOP	0= Off, 2048= On	Jaguar Output Processor (or EBILD) Reserved for future use
	12 (4096)		POD	0= Off, 4096= On	
	13 (8192)		n.a.		
	14 (16384)		n.a.		
	15 (32768)		n.a.		
2	0 (1)	Sound Repro	Acoustic System (Cabinet)	0= None, 1= Entry_ ME5_5W, 2= Entry_ME5_15W, 3= (Soft)Wrap, 4= Top, 5= Entry+, 15= Others	Cabinet design, used for setting dynamic audio parameters.
	1 (2)				
	2 (4)				
	3 (8)				
	4 (16)		Aux Headphone Sound	0= Off, 16= On	Dual AC3 sound in Aux available.
	5 (32)		n.a.		
	6 (64)		n.a.		
	7 (128)		n.a.		
	8 (256)		n.a.		
	9 (512)		Sub woofer Internal	0= Not Present, 512= Present	
	10 (1024)		Centre Mode Support	0= Not Supported, 1024= Supported	
	11 (2048)		n.a.		
	12 (4096)		n.a.		
	13 (8192)		n.a.		
	14 (16384)		n.a.		
	15 (32768)		n.a.		
3	0 (1)	Source Select	HDMI1	0= None, 1= With analog audio, 2= Without analog audio	
	1 (2)				
	2 (4)		HDMI2	0= None, 4= With analog audio, 8= Without analog audio	
	3 (8)				
	4 (16)		n.a.		
	5 (32)		USB Version	0= None, 32= USB 1.1, 64= USB 2.0 + Card reader	USB support.
	6 (64)				
	7 (128)		IEEE1394	0= Not Present, 128= Present	
	8 (256)		Ethernet	0= LAN not present, 256= LAN present	
	9 (512)		n.a.		
	10 (1024)		S/PDIF Inputs	0= None, 1024= 1 Connector, 2048= 2 Connectors	
	11 (2048)				
	12 (4096)		LCOS I/O	0= Not Present, 4096= Present	
	13 (8192)		n.a.		
	14 (16384)		n.a.		
	15 (32768)		n.a.		
4	0 (1)	Region	Region	0= EU, 1= AP-P, 2= AP-N, 3= US, 4= Latam	
	1 (2)				
	2 (4)				
	3 (8)	Interconnect	China IF	0= Off, 8= On	
	4 (16)		Alternative Tuner	0= Philips, 16= Alps	Tuner make.
	5 (32)		Tuner Type	0= TD1336s (B-Chassis US), 32= TD1331(J-Chassis US), 64= UV1318 (Analogue EU), 96= TD1316 (Hybrid EU)	Tuner type (B-chassis US is e.g "BP2.3U").
	6 (64)				
	7 (128)	Source Select	n.a.		
	8 (256)		AV1	0= CVBS/RGB, 256= CVBS/YC/LR, 512= CVBS/YC/YPbPr/HV/LR	Input type.
	9 (512)				
	10 (1024)		AV2	0= CVBS/YC/RGB/P50, 1024= CVBS/YC/LR	Input type.
	11 (2048)				
	12 (4096)		AV3	0= Not Available, 4096= CVBS, 8192= YPbPr	Input type.
	13 (8192)				
	14 (16384)		AV4	0= Not Available, 16384= YPbPr	Input type.
	15 (32768)				

Byte	Bit (dec. value)	Subject	Options	Settings (in decimal values)	Remarks
5	0 (1)	Display	Screen	000 (0000)= 42-inch PDP (SDI) HD V3, 001 (0256)= 50-inch PDP (SDI) HD V3, 002 (0512)= 42-inch PDP (FHP) ALiS, 003 (0768)= 30-inch LCD (LPL), 004 (1024)= 37-inch LCD (LPL), 005 (1280)= 42-inch LCD (LPL), 006 (1536)= 32-inch LCD (Sharp), 007 (1792)= 42-inch PDP (SDI) SD, 008 (2048)= 37-inch PDP (FHP) ALiS, 009 (2304)= Reserved, 010 (2560)= 30-inch LCD (AUO), 011 (2816)= 32-inch LCD (LPL), 012 (3072)= 32-inch LCD (AUO), 013 (3328)= 37-inch LCD (Sharp), 014 (3584)= 42-inch LCD (LPL) HD, 015 (3840)= 37-inch PDP (SDI) SD, 016 (4096)= 37-inch PDP (FHP) ALiS, 017 (4352)= 42-inch PDP (FHP) ALiS, 018 (4608)= 55-inch PDP (FHP), 019 (4864)= Reserved, 020 (5120)= Reserved, 021 (5376)= 26-inch LCD (LPL), 022 (5632)= 32-inch LCD (LPL) scan. BL, 023 (5888)= 42-inch PDP (LG) SD, 024 (6144)= 42-inch PDP (SDI) SD V4, 025 (6144)= 42-inch PDP (SDI) HD V4, 026 (6400)= 42-inch PDP (FHP) HD A2, 027 (6656)= 50-inch PDP (SDI) HD V4, 028 (6912)= 37-inch LCD (Sharp) HD	Screen size, type, and resolution.
	1 (2)				
	2 (4)				
	3 (8)				
	4 (16)				
	5 (32)				
	6 (64)				
	7 (128)				
	8 (256)		n.a.		
	9 (512)		n.a.		
	10 (1024)		Dimming Backlight	0= Off, 1024= On	
	11 (2048)		Scanning Backlight	0= Off, 2048= On	
	12 (4096)		n.a.		
	13 (8192)		n.a.		
	14 (16384)		n.a.		
	15 (32768)		n.a.		
6	0 (1)	Miscellaneous	Monitor	0= Off, 2= On	Reserved for future use
	1 (2)		n.a.		
	2 (4)		Stand Alone	0= Off, 4= On	Reserved for future use
	3 (8)		n.a.		
	4 (16)		n.a.		
	5 (32)		n.a.		
	6 (64)		Proximity Sensor	0= Off, 64= On	
	7 (128)		n.a.		
	8 (256)		Touch Pad	0= Off, 256= On	Reserved for future use
	9 (512)		n.a.		
	10 (1024)		n.a.		
	11 (2048)		n.a.		
	12 (4096)		n.a.		
	13 (8192)		n.a.		
	14 (16384)		n.a.		
	15 (32768)		n.a.		
7	0 (1)	Personal	Self Learning TV	0= Off, 1= On	Reserved for future use
	1 (2)		Auto Store Mode	0= None, 2= PDC/VPS, 4= TXT Page, 6= PDC/VPS/TXT Page	Fixed to: "None" in the AP-N and US versions.
	2 (4)				
	3 (8)		2CS Korea	0= Off, 8= On, 16= Auto	
	4 (16)				
	5 (32)		Picture Mute	0= Off, 32= On	
	6 (64)		n.a.		
	7 (128)		Virgin Mode	0= Off, 128= On	
	8 (256)		Hotel Mode	0= Off, 256= On	
	9 (512)		Content Browser	0= Not Present, 512= Present	
	10 (1024)		Connected Planet	0= Off, 1024= Full Connected Planet + logo support	
	11 (2048)				
	12 (4096)		n.a.		
	13 (8192)		EPG	0= None, 8192= TXT Guide only, 16384= NextView 2C3, 24576 = NexTView 2	
	14 (16384)				
	15 (32768)		TV Guide USA (Gemstar)	0= Off, 32768= On	
8	0 (1)	n.a.	n.a.		
	1 (2)	n.a.	n.a.		
	2 (4)	n.a.	n.a.		
	3 (8)	n.a.	n.a.		
	4 (16)	n.a.	n.a.		
	5 (32)	n.a.	n.a.		
	6 (64)	n.a.	n.a.		
	7 (128)	n.a.	n.a.		
	8 (256)	n.a.	n.a.		
	9 (512)	n.a.	n.a.		
	10 (1024)	n.a.	n.a.		
	11 (2048)	n.a.	n.a.		
	12 (4096)	n.a.	n.a.		
	13 (8192)	n.a.	n.a.		
	14 (16384)	n.a.	n.a.		
	15 (32768)	n.a.	n.a.		

9. Circuit Descriptions, Abbreviation List, and IC Data Sheets

Index of this chapter:

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 (chapter 6) and circuit diagrams (chapter 7). Where necessary, you will find a separate drawing for clarification.

9.1 Introduction

The BP2.x is a new TV chassis, specifically developed for ATSC reception. The key components are:

- POD circuitry.
- MPIF (PNX3000).
- AVIP/COLUMBUS (PNX2015).
- VIPER 2 (PNX8550).

9.1.1 Features

The main features for this chassis are:

- The move from the analog world to the digital world. W.o.w. from signal processing via "hardware circuits" to signal processing via "software algorithms". This means: no software = no picture and sound!
- Fit for both analog and digital signal processing, this by converting analog signals into digital transport streams and allowing seamless zapping between all possible signal sources. This makes the chassis applicable for e.g. receiving ATSC in an integrated product form.
- AmbiLight (BP2.2): To be able to control lamps at the rear of the TV with respect to the measured ambient light level from the light sensor or the picture content, a control output from AutoTV has been foreseen.
- The internal digital processing allows new "Multi-Media" applications such as Content Browser, Memory Card Slot, Local Area Network support and all kinds of streaming applications.
- The chassis can be upgraded in the future with internal functionality such as Personal Video Recording, DVD/RW.

9.1.2 Chassis Block Diagram

Description below refers to the block diagrams in chapter 6 “Block Diagrams, Test Point Overview, and Waveforms”.

Analog Reception

The TV receives multimedia information by tuning to one of many 6 MHz input channels available via a cable connection. When the input channel is an analog channel, the signal is processed via the NTSC decoder and the VBI data decoder.

Digital Reception

As depicted in the block diagram, the POD module consists of the following functional blocks: POD Common Interface, Out of Band part, and buffering. These blocks are interfacing with the ATSC In Band (IB) channel decoder and Out of Band (OOB) channel decoder. The interface is connected to the VIPER. Also the POD Interface outgoing Transport Stream (TS) is routed to the VIPER.

The TV receives multimedia information by tuning to one of many 6 MHz input channels available via a cable connection. When the input channel is a digital channel, it is processed via the QAM demodulator and then passed to the CableCARD device (POD) where secure and scrambled information is processed. Non-scrambled information is passed through the CableCARD Device to the MPEG-2 Transport Demultiplexer. When the CableCARD Device is not inserted, the output of the QAM demodulator is routed directly to the MPEG-2 Transport Demultiplexer. The multi-media processor (VIPER) handles the synchronization and display of audio-visual material.

The OpenCable Host Device also receives control information and other data by tuning to an Out-Of-Band (OOB) Forward Data Channel (FDC) channel. The terminal will remain tuned to the OOB Forward Data Channel (own tuner) to continuously receive information. This information is passed to the CableCARD Device for processing, and relevant information is passed back to the TV.

Signal Processing

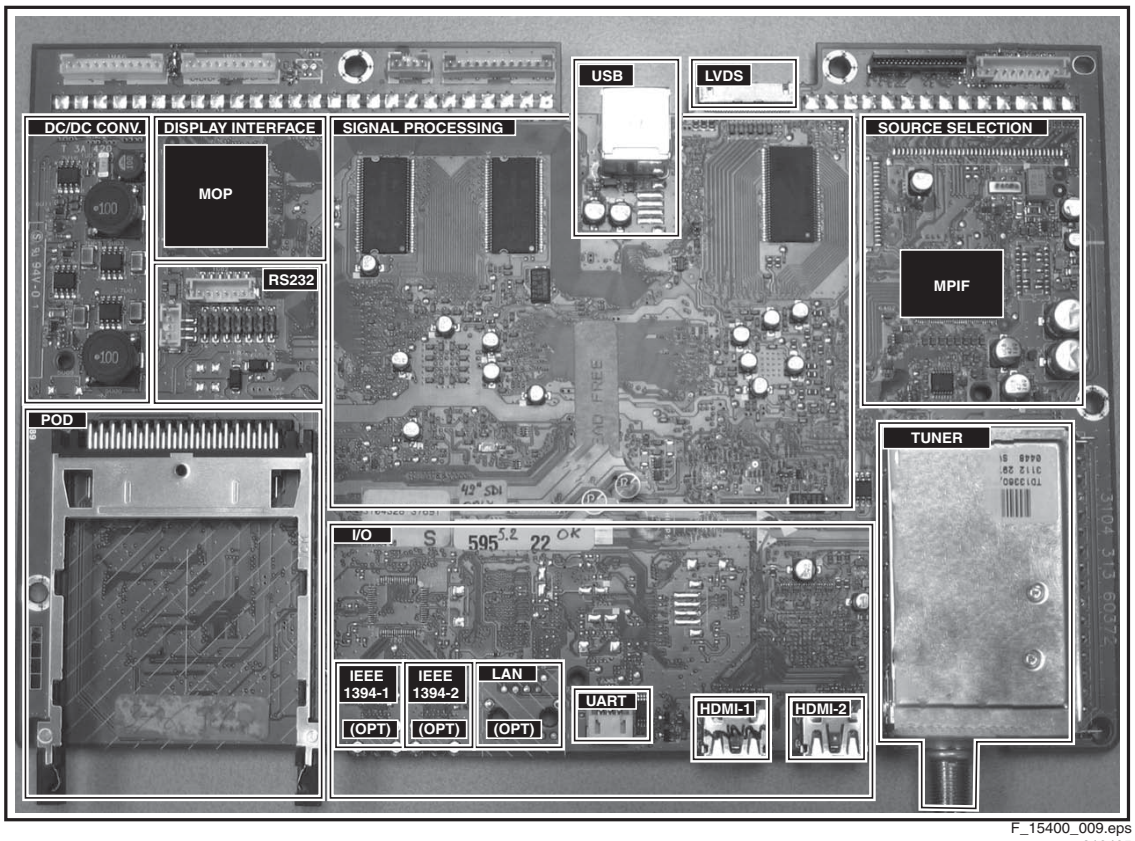
The AVIP together with the MPIF device is used to perform the input decoding of a single stream of analog audio and video broadcast signals. In addition, the AVIP is used for decoding and presentation of audio output streams. The main data connection between MPIF and AVIP is done via an I^2D bus. The AVIP converts the incoming video data to ITU-656 format for communication to the VIPER IC.
The audio data is transferred between the AVIP and VIPER using I^2S.

The AVIP IC is controlled by the VIPER via the I^2C bus.

The key part in the system, the VIPER, performs almost all key features, like video quality enhancement, motion compensation, picture-in-picture processing, and others. It is a completely digital IC with a TriMedia DSP (Digital Signal Processor) core and a MIPS microcontroller core. The DSP and some additional cores are used to do the video feature processing and some auxiliary sound feature processing. The MIPS microcontroller core is used for all internal and external controlling tasks including a system wide I^2C bus.

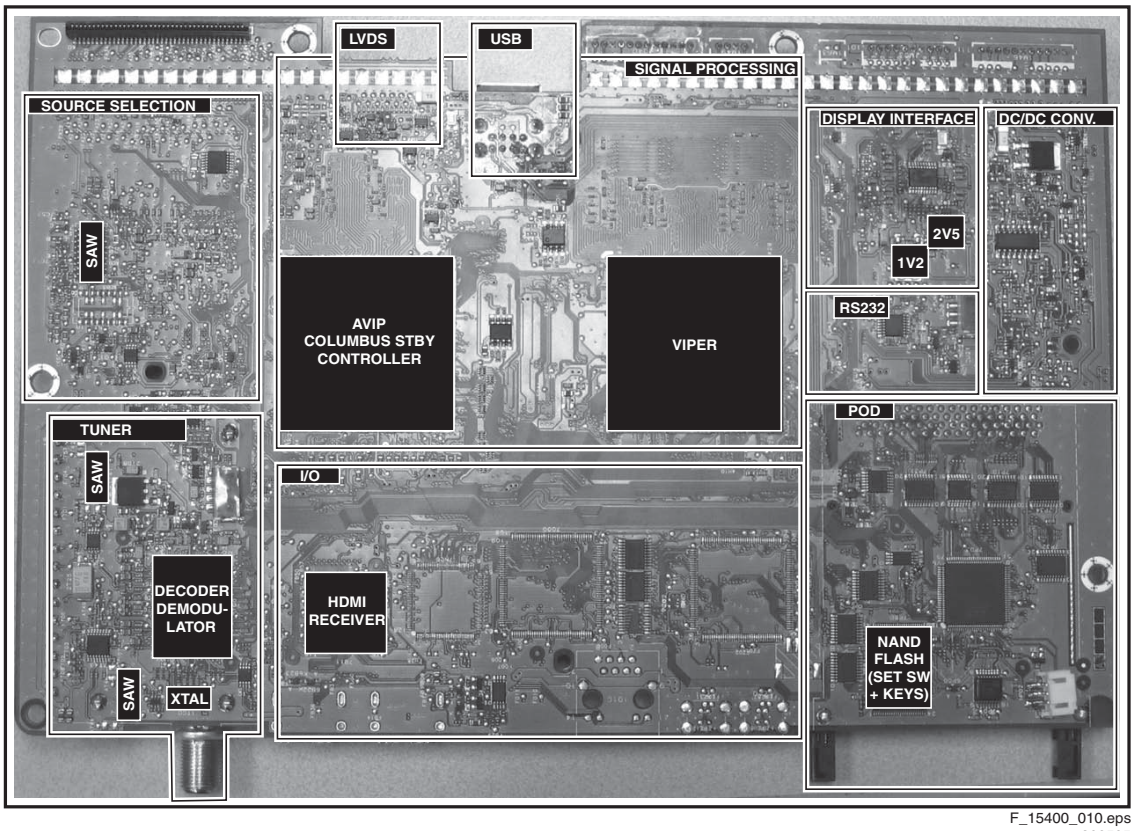
The VIPER provides a primary digital (YUV or RGB) output to the LVDS transmitter. For models with the AmbiLight feature, an EPLD is connected between VIPER output and LVDS Transmitter input. This EPLD (or MOP) is used for the AmbiLight processing and some picture enhancements.

SSB Cell Layout



F_15400_009.eps
210405

Figure 9-1 SSB top view



F_15400_010.eps
300505

Figure 9-2 SSB bottom view

9.2 Power Supply

9.2.1 Introduction

The Main Power Supply is a buy-in module (it belongs to the PDP), and therefore is a “black box” for Service. When defective, a new panel must be ordered and after receipt, the defective panel must be send for repair.
This Power Supply delivers the following supply voltages to the chassis:

- +12VS.
- +8V6.
- +5V2.
- +5V.

As the VIPER and many other ICs on the SSB require low supply voltages at high current (up to 3 A for the main voltages), onboard DC/DC converters are implemented.
The circuit on the SSP provides the 3.3 and 1.2 voltages.
A DC/DC converter has the following advantages:

- The DC/DC converter is directly on the SSB near the circuits that needs to be powered.
- Some circuits on the SSB need high current by low voltage, so there is no risk to have power dips or voltage loss in connections between the PSU and the SSB panel.

9.2.2 Block Diagram

See also diagrams B1A and B1B.

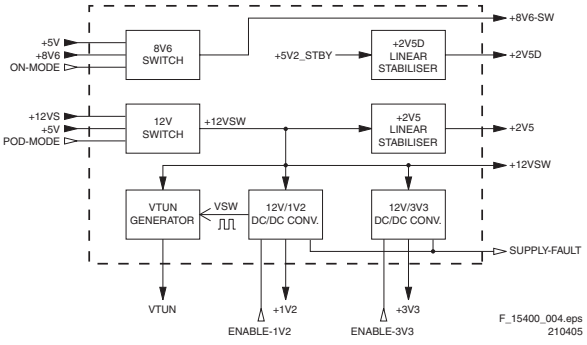


Figure 9-3 DC/DC converter block diagram

9.2.3 PSU Start-up Sequence

1. If the input voltage of the DC/DC converters is around 12 V (measured on the decoupling capacitors 2U17/2U25/ 2U45) and the ENABLE signals are "low" (active), then the output voltages should have their normal values.
2. First, the Stand-by Processor activates the +1V2 supply (via ENABLE-1V2).
3. Then, after this voltage becomes present and is detected OK (about 100 ms), the other two voltages (+2V5 and +3V3) will be activated (via ENABLE-3V3).
4. The current consumption of controller IC 7U00 is around 20 mA (that means around 200 mV drop voltage across resistor 3U22).

9.2.4 +2V5D Linear Stabilizer

- Provides the +2V5D voltage, and is derived from the +5V2-STBY voltage coming from the Main Power Supply.
- The output current is limited to a few tenths of mA.
- Output over-voltage protection is done by zener diode 6U17.

9.2.5 +12V Switch

- The +12V switch is activated when the POD-MODE signal is "low".
- The rise time of the output voltage is set by components 2U42, 3U43, and 3U95 at about 30 ms.
- The switch "off" is fast, because there can be fault currents that must be interrupted.
- When the input voltage (+12VS) is higher than 15 V, the switch is disabled via circuit 6U12, 3U52, 3U53, 2U71, and 7U14-2.

9.2.6 Internal Protection

- Provides a SUPPLY-FAULT signal (active "low"), when the output voltage of any DC/DC converter is out of its limits (± 10% of the normal value). In such cases, the Stand-by Processor will immediately stop the supplies by sending a "high" control signal towards the external and internal supplies: ENABLE-xVx, POD-MODE, ON-MODE, and STAND-BY.
  Note: The SUPPLY-FAULT control signal is "low" when any DC/DC converter is disabled by its control signal (ENABLE-xVx) and +12VSW is present, therefore it is ignored during start-up!
- The internal protection works together with the output over-voltage detector transistors 7U15-1, 7U15-2, 7U29-1, and 7U29-2.

9.2.7 1.2V and 3.3V DC/DC Converters

Introduction
The circuit used is a so-called "synchronous buck converter".
Some characteristics:

- Switching frequency: approx. 250 kHz.
- Efficiency: approx. 90%.
- Built-in output over-voltage and over-current protections
- Soft start.
- Software controlled “on/off” (via ENABLE line).

Block diagram

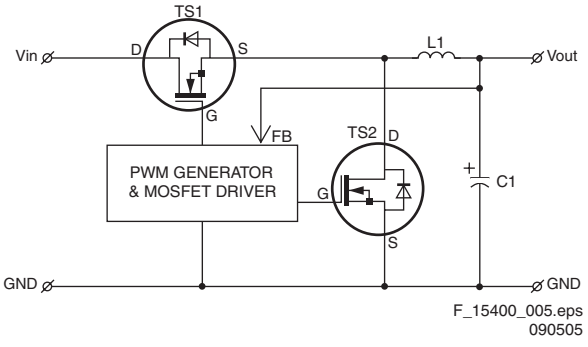


Figure 9-4 Block diagram synchronous buck converter.

The advantage of a "synchronous buck converter" over a "classical buck converter" is its better efficiency (about 90%). The difference between the two is that in a synchronous buck converter the "low -side" diode is replaced by a MOSFET TS2 (item 7U03). This, because the voltage drop across a MOSFET is smaller than the forward voltage drop of a diode.
This second MOSFET TS2 conducts current during the "off" times of the first MOSFET TS1 (item 7U01 at the input side). The upper MOSFET TS1 conducts, to transfer energy from the input to the inductor L_1 and load R_L, while the lower MOSFET TS2 conducts to circulate the inductor current (free wheel). The synchronous PWM control block regulates the output voltage by modulating the conduction intervals of the upper and lower MOSFETs.

PWM Generator and MOSFET Drivers
This circuit is a one-chip solution (item 7U00). It contains all the circuitry for two independent buck regulators (3V3 and 1V2). The MOSFETs T7U01 and T7U03 are the switching transistors, they are conducting alternatively.

- Time sequence 1: T7U01 is conducting; energy is stored in coil 5U00/5U03. The current is flowing from the +12VSW power supply source.
- Time sequence 2: T7U01 is blocked; energy is stored in coil 5U00/5U03.
- Time sequence 3: T7U03 is conducting, and the current circuit is now closed via T7U03, Coil 5U00/5U03, C2U24/2U22, and the load. So the energy stored in the coil during time sequence T1 is consumed during sequence T3. The signal on the gate T7U03 is 180 degrees turned compared with the signal on the gate T7U01.

Voltage Booster
This circuit is build around capacitors 2U11 and 2U26, resistor 3U11, diodes 6U22 and 6U23, and transistor 7U07.
It generates the +18 V boost voltage on pin 4 of item 7U00, to drive the "high-side" power MOS-FET 7U01. The voltage is generated only during normal operation of the converter; therefore, any drop in its value means an internal fault condition, which is sensed by the internal protection circuit.
The AC component of the voltage on the source of transistor 7U01 is rectified by the diodes and added to the input voltage, resulting into the boost voltage. The resistor 3U11 limits the peak current through the rectifier diodes.

Over-current Detection
Over-current detection is done via components 3U07, 3U08, 3U82, 3U83, and 2U18 for the 3.3 V converter and 3U09, 3U10, 3U96, 3U97, and 2U12 for the 1.2 V converter.

Under-voltage Detection
There is an additional circuit (7U10 and 7U11) to switch "off" the 3.3 V converter in case the +12VS drops below 9 V.

Service Tips

- When a power MOS-FET is found defective, replace the other power MOS-FET and fuse 1U01 as well.
- For a normal operation of the converter, it is important to check the switching frequency, the value of the boost voltage, and the amplitude of the gate voltage of transistor 7U04 (it should be close to the boost voltage).

9.2.8 V_{TUN} Generator

The +VTUN supply voltage (value 31...35 V at 4 mA) for the analog tuner(s) is generated by a boost converter. It uses the incoming +12 V_{DC} and the pulses have a duty cycle of about 10% from those of the 1.2 V DC/DC converter.

9.2.9 8V6 Switch

- Provides the +8V6-SW supply voltage from the incoming +8V6.
- It is activated by the ON-MODE signal, which is active "low". This is needed to switch "off" the +8V6-SW in POD Stand-by mode, to lower the power consumption.
  Note: It is not active if the +5V voltage is not present.

9.2.10 Useful Data

Voltage Name	Value [V]	Tolerance [%]
+5V2	5.2	5
+5V	5.1	5
+8V6	8.6	5
+12VS	12	5
+VTUN	33	5
+1V2	1.26	3
+2V5	2.6	4
+2V5D	2.6 (2.5) *	4 (5) *
+3V3	3.3	5
+5V2S	5.1	5
+8V6-SW	8.6	5
+12VSW	12	5
*) ON mode (STAND-BY mode)		

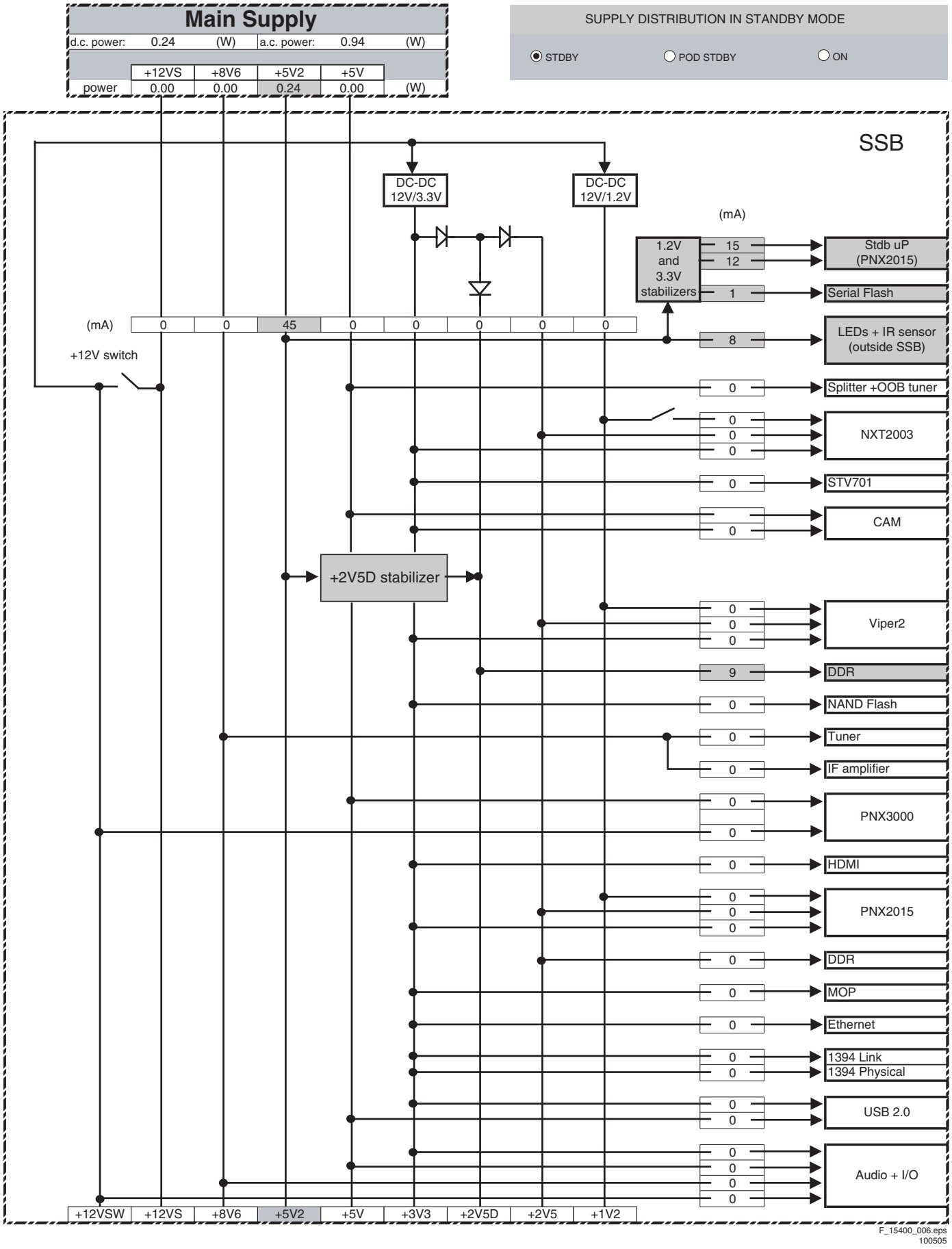


Figure 9-5 Supply distribution: STANDBY Mode (mentioned values are indicative)

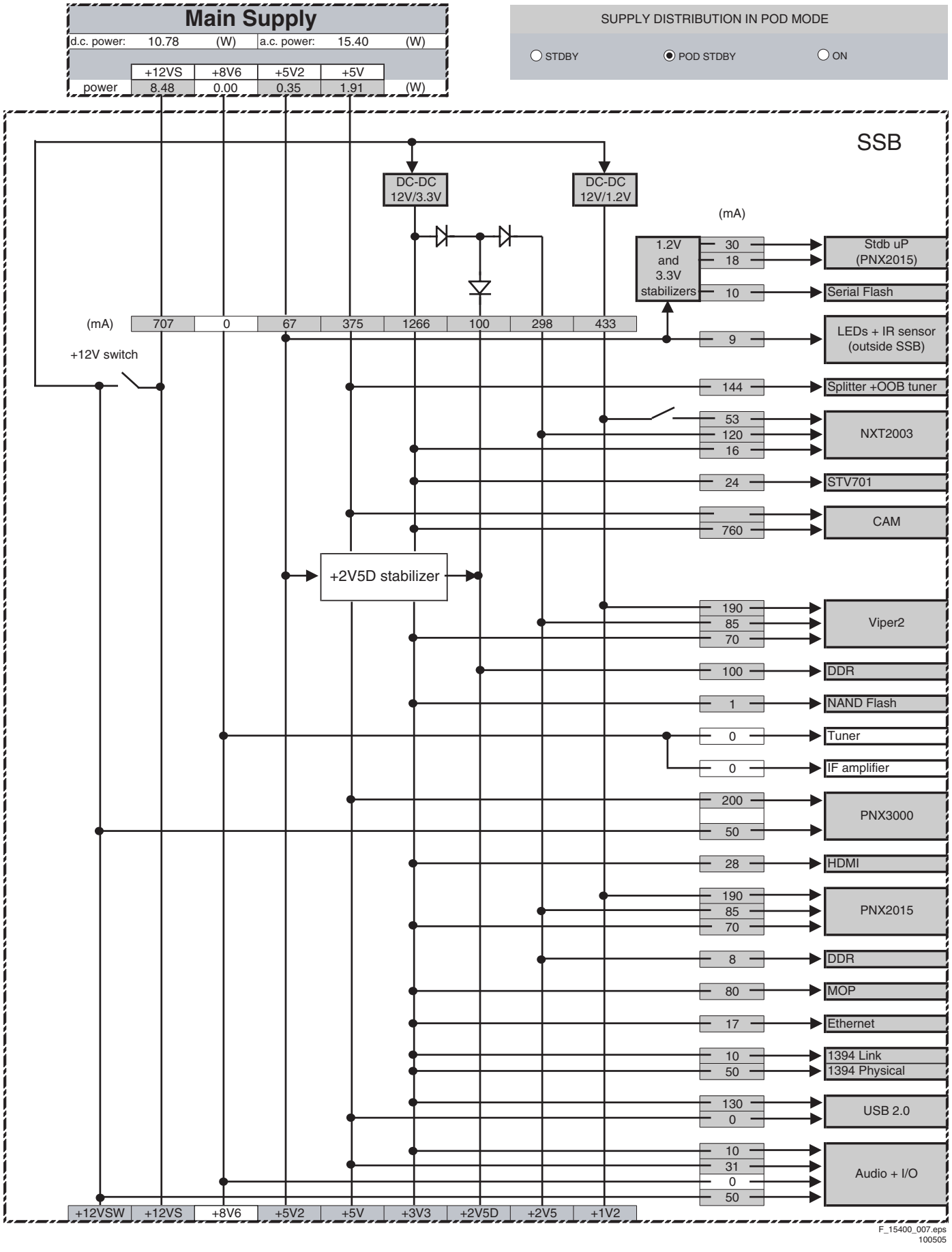


Figure 9-6 Supply distribution: POD STDBY Mode (mentioned values are indicative)

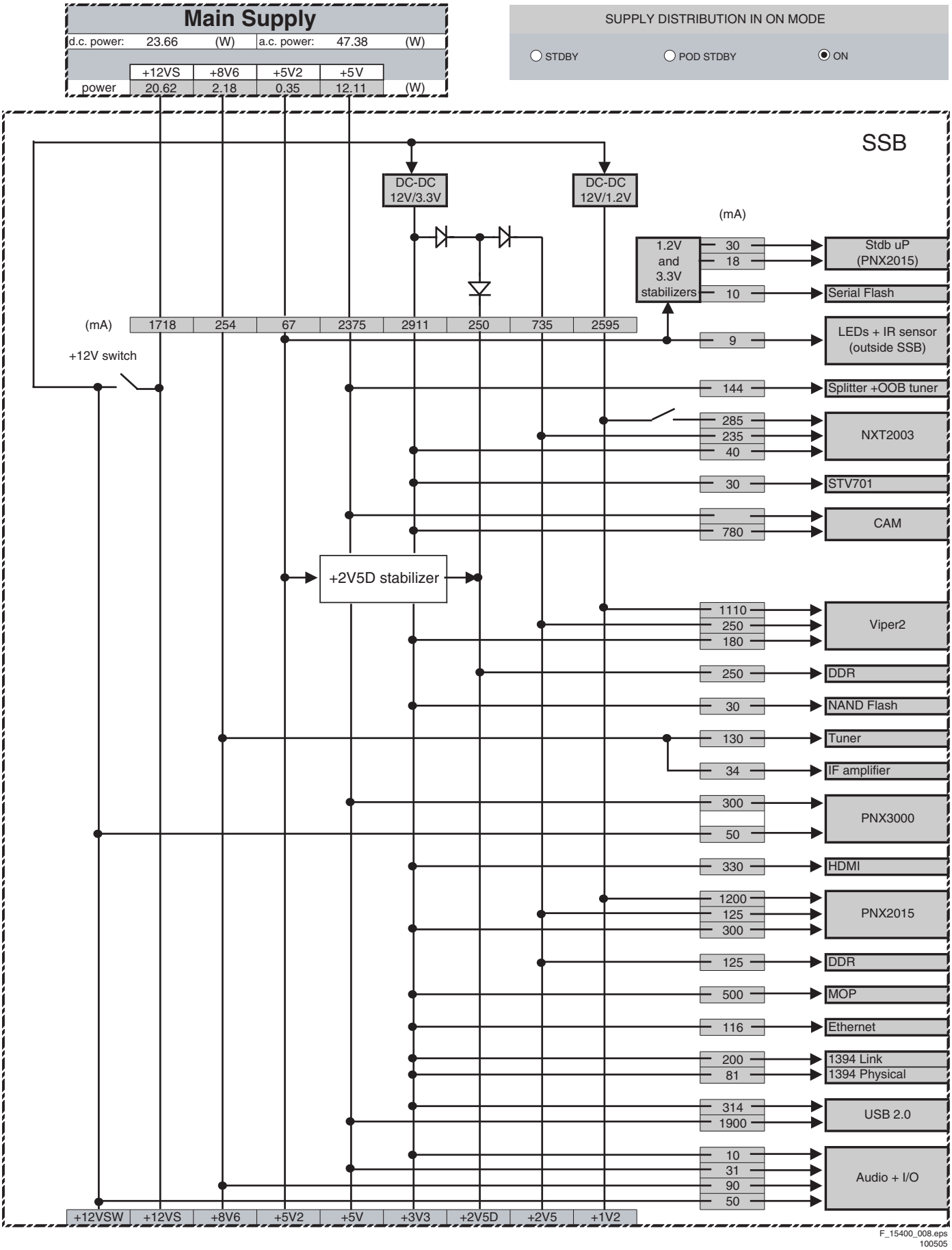


Figure 9-7 Supply distribution: ON Mode (mentioned values are indicative)

9.3 Inputs

9.3.1 USB

These chassis have different USB specifications:
- Chassis BP2.2 features USB2.0. This USB version is hosted by a separate IC (7N00) which communicates with the VIPER via a PCI bus.
- Chassis BP2.3 features USB1.1. This USB version is hosted directly by the VIPER.

Each USB port has four lines:
1. 5V (red).
2. D- (white).
3. D+ (green).
4. GND (black).

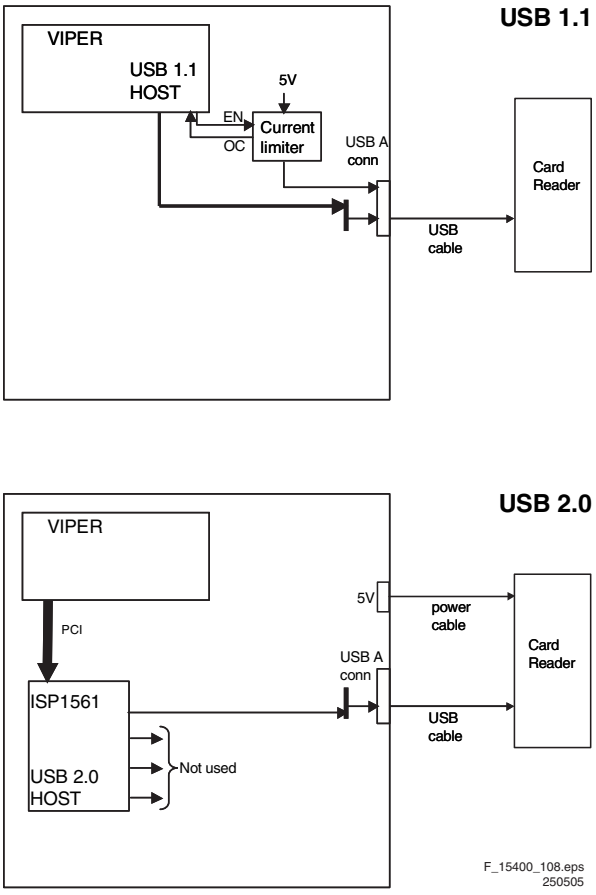


Figure 9-8 USB configurations

USB1.1

The USB1.1 is a hardware block in the VIPER. There are two USB ports. Each port has a D+ and D- line; this is the differential signal path for USB. There is also one over-current detect and power enable line that is used for both ports (these lines are controlled by VIPER).
A tandem USB connector is mounted on the SSB, on which you can connect two USB devices; one device will be the SCM digital media card-reader. Only USB mass storage class device is supported, so other USB devices (card-readers) have to be compliant with this class.
The host (= SSB) needs to provide the power supply to the attached devices (like memory cards or other USB devices). Since it is not known what the customer will attach (e.g. a USB hub with multiple USB devices), and these USB devices draw current from the SSB, these supply lines must be protected against over-current and/or too many connected devices. This is controlled by the VIPER via the USB_OVERCUR line (see diagram B5A): when more then 500 mA per channel is drawn from the USB ports, the protection becomes active (= "high").
During stand-by, when there is no +5V available (and VIPER is not active), the USB port does not work. This is controlled by the VIPER via the USB_BUS_PW line (see diagram B5A), which switches the 5V input to the outputs of IC7Q01.

USB2.0

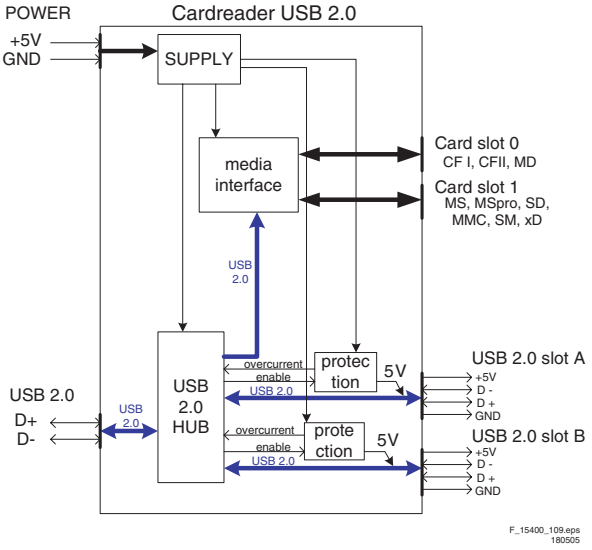


Figure 9-9 Multimedia card reader assy

9.3.2 HDMI

Introduction

Note: Text below is an excerpt from the ”HDMI Specification” that is issued by the HDMI founders (see *http://www.hdmi.org*).

This High-Definition Multimedia Interface is developed for transmitting digital television audiovisual signals from DVD players, set-top boxes and other audiovisual sources to television sets, projectors and other video displays.
HDMI can carry high quality multi-channel audio data and can carry all standard and high-definition consumer electronics video formats. Content protection technology is available. HDMI can also carry control and status information in both directions.

As shown in the HDMI block diagram, the HDMI connector carries four differential pairs that make up the TMDS (Transition Minimized Differential Signalling) data and clock channels. These channels are used to carry video, audio, and auxiliary data. In addition, HDMI carries a VESA DDC channel. The DDC is used for configuration and status exchange between a single source device and a single sink device.

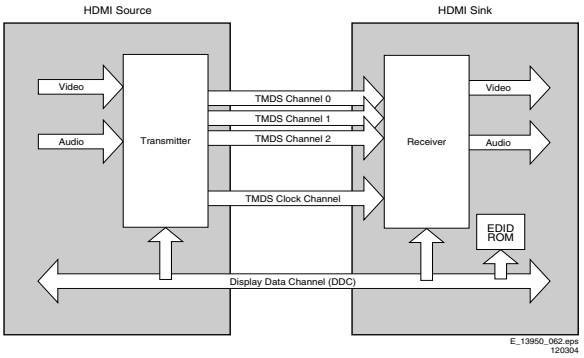


Figure 9-10 HDMI block diagram

Audio, video, and auxiliary data is transmitted across the three TMDS data channels. The video pixel clock is transmitted on the TMDS clock channel and is used by the receiver as a frequency reference for data recovery on the three TMDS data channels.

Video data is carried as a series of 24-bit pixels on the three TMDS data channels. TMDS encoding, converts the 8 bits per channel into the 10 bit DC-balanced transition minimized sequence, which is then transmitted serially across the pair at a rate of 10 bits per pixel clock period.
Video pixel rates can range from 25 MHz to 165 MHz. Video formats with rates below 25 MHz (e.g. 13.5 MHz for 480i/NTSC) can be transmitted using a pixel-repetition scheme. The video pixels can be encoded in either RGB, YC_BC_R 4:4:4, or YC_BC_R 4:2:2 formats. In all three cases, up to 24 bits per pixel can be transferred.

In order to transmit audio and auxiliary data across the TMDS channels, HDMI uses a packet structure. In order to attain the higher reliability required of audio and control data, this data is protected with a BCH error correction code and is encoded using a special error reduction coding to produce the 10-bit word that is transmitted.
Basic audio functionality consists of a single IEC 60958 audio stream at sample rates of 32 kHz, 44.1 kHz, or 48 kHz. This can accommodate any normal stereo stream. Optionally, HDMI can carry a single such stream at sample rates up to 192 kHz or from two to four such streams (3 to 8 audio channels) at sample rates up to 96 kHz. HDMI can also carry IEC 61937 compressed (e.g. surround-sound) stream at sample rates up to 192 kHz.

The DDC is used by the source to read the sink's Enhanced Extended Display Identification Data (E-EDID) in order to discover the sink's configuration and/or capabilities.

HDMI is backward compatible with DVI (1.0). Compared with DVI, HDMI offers extra:
- YUV 4:4:4 (3 x 8-bit) or 4:2:2 (up to 2 x 12-bit), where DVI offers only RGB 4:4:4 (3 x 8 bit).
- Digital audio in CD quality (16-bit, 32/44.1/48 kHz), higher quality available (8 channels, 192 kHz).
- Remote control via CEC bus (Consumer Electronics Control): allows user to control all HDMI devices with the TV's remote control and menus.
- Smaller connector (SCART successor).
- Less cables: e.g. from 10 audio/9 video cables to 3 HDMI cables.

Implementation
The IC used is the TDA9975 (triple 10-bit video converter interface), item 7B11 on the SSB.
- Power supply: 3V3 and 1V8.
- Inputs:
  - HDMI connectors (Video, Audio, HDCP, Control).
  - Analogue (YPbPr, RGB, and H/V).
- Control signals:
  - I^2C coming from TDA9975 (MM-BUS1).
  - 13.5 MHz clock for analog format detection.
  - JTAG.
- Output to PNX2015: Video (DV4 and DV5):
  - YUV 4:2:2 20 bit (10 bit Y, 10 bit UV multiplexed) + clock + sync.
  - ITU-656 (compressed DVD video) encoded in data stream.
- Output to VIPER:
  - Audio: S/PDIF.
  - Interrupt signal.

Data Content

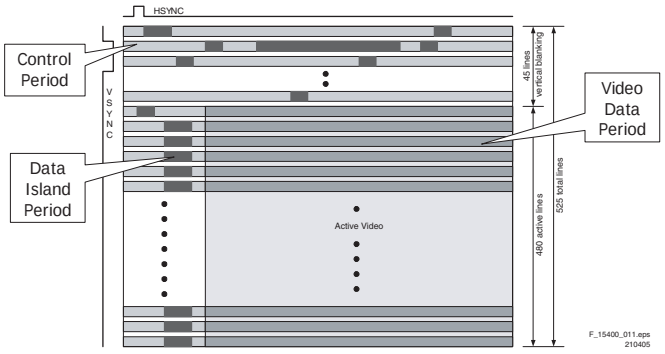


Figure 9-11 Typical video frame

A typical video frame is built up with the following info blocks:
- Control Period.
  - Transmission of the pre-amble.
  - Character synchronization.
- Data Island Period.
  - Audio and auxiliary information are carried in packets within a Data Island.
  - HSYNC, VSYNC are also carried during Data Island Period.
  - Packet Types:
    - Audio Sample.
    - Audio Clock Recovery.
    - InfoFrame: Aux. Video IF, Audio IF, MPEG IF, vendor-defined IF.
- Video Data Period.
  - Carries the pixels of an active video line.
  - TMDS encoding.

Data Islands: Audio Formats
- All current CE audio formats can be transmitted.
- Supports compressed formats like:
  - Dolby Digital.
  - Dolby Digital EX (THX-EX).
  - DTS.
  - Etc.
- Supports uncompressed formats ("discrete" PCM audio):
  - Up to 8 channels, up to 192 kHz, up to 24 bits.
- CD-quality audio is always available, so the user will always hear sound.
  - 2 channel, 16 bit at 32 kHz (STB), 44.1kHz (CD), or 48 kHz (DVD)

Data Islands: InfoFrames (EIA/CEA-861B)
- Auxiliary Video Information (AVI):
  - Specifies active aspect ratio, colorimetric info, pixel encoding, etc.
- Audio InfoFrame:
  - Describes audio stream, speaker/channel allocation, etc.
- Source Product Info:

- Contains manufacturer name, product name, type, etc. (replaced by CEC).
- MPEG Source:
  - Contains flags that permit optimized display of de-compressed video.
- Vendor unique info.

Content Protection: HDCP

- HDCP (High-bandwidth Digital Content Protection) for HDMI encrypts and protects video, audio, and other auxiliary data.
- If a source device is HDCP coded and is connected to a HDTV display or projector via DVI/HDMI without the proper HDCP decoding mechanism, the picture is relegated to "snow" or in some cases, a very low (480p) resolution. In order to see HDTV with HDCP compliance, both the source and display devices must be equipped with DVI/HDMI connections that can enable HDCP using "software key" decoding.
- HDCP requires that decoding takes place in the display device (no external converters).

CEC Bus (Consumer Electronics Control)

- This is the successor of the P50 protocol.
- It allows the user to control all HDMI devices with the TV's remote control and menus.
- High-level functions such as “One-touch play”.
- Optional for device to implement protocol.
- Mandatory to implement wire pass-through.

9.4 Front-End

See description in paragraph “Introduction” -> “Chassis Block Diagram”.

9.5 POD (Point Of Deployment)

9.5.1 Introduction

This chassis is provided with a special slot called CableCARD™. This means that it is not necessary to have a separate Set Top Box to receive digital cable SDTV and HDTV programs (however this is still possible).
The CableCARD (or POD) is a removable card distributed by cable companies, which is inserted into the slot at the bottom of the television. It allows you to tune digital and high definition scrambled or encrypted cable channels through the cable antenna. The CableCARD is also required to receive premium digital TV channels and services (where available) through the cable. A CableCARD functionality includes conditional access and copy protection.

9.5.2 Implementation

1. The receiver receives the digital data stream.
2. The data flows into the Conditional Access Module, which contains the content provider's unscrambling algorithms.
3. This module verifies the existence of a smart card (POD) that contains the subscriber's authorization code.
4. If the authorization code is accepted, the CAM unscrambles the data and returns the data to the receiver (if the code is not accepted, the data remains scrambled, restricting access).
5. The receiver then decodes the data and outputs it for viewing.

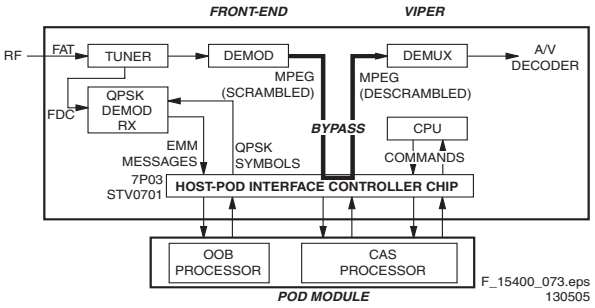


Figure 9-12 In Band channel reception (without POD inserted)

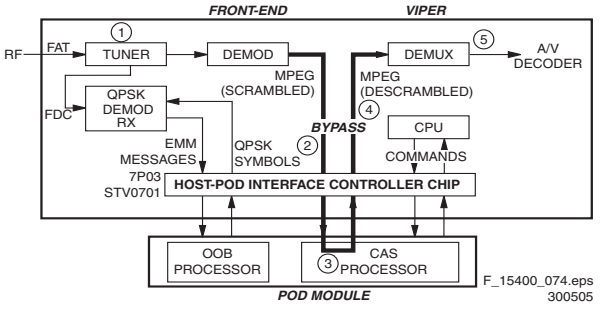


Figure 9-13 In Band channel reception (with POD inserted)

POD Working Principle

The POD is a removable CAM, implementing the CA system for a Host (i.e. the TV set). The POD module is inserted into a standard PCMCIA slot in the Host.
When the POD is inserted into the Host, it goes through an initialization procedure, which is called the "POD personality change". This initialization procedure consists of:

- POD and Host verify each other’s identity by means of certificate and/or key exchange.
- Reporting POD-ID and Host-ID to the Cable Head end, in order to entitle the POD for descrambling services. In case of uni-directional operation (as for this chassis), this reporting requires user-interaction.
- Key generation for secure communication between POD and Host.

After initialization, the POD is used to unscramble any particular scrambled service in the In Band (IB) transport stream. The host must provide the selection choice (which program to descramble). The host can only do so if it gets specific data like PSIP (Program and System Information Protocol) data from the POD.
The POD implements a copy protection system, so the unscrambled Transport Stream signal from POD to Host can be re-scrambled.

Copy Protection (CP)

- Every TV-set has its own unique Host-certificate (with Host-ID). These certificates are stored on a dedicated PC at the TV supplier.
- The CP-key is refreshed at the following times:
  - At the end of the authentication process.
  - Periodically at a rate set by max_key_session_period.
  - At every power cycle.
  - When initiated by the CA System.
  - At every hard reset.
  - At power-up, the POD checks the Auth-key to see if the host is still the same, after this the re-authentication takes place.
  - During CP-refresh is the transport stream in the clear (<1s)

POD Stand-by Mode

- POD stack still alive:

  - Active Front-End.
  - Active VIPER, Stby-uP.
- Allows the POD to request services:
  - Listen to OOB.
  - Firmware upgrade.

Connector
- Mechanical
  - 68 pins PCMCIA connector.
  - Voltage keying (LV type).
  - Type I, II, III.
- Hot plug ability
  - Initial, V_{CC} is applied to the socket.
  - Card detection (CD1 & CD2 = low).
  - Voltage sense pins (VS1 & VS2).
  - Power controller to set V_{CC} and V_{PP}.
- CIS structure
  - All PCMCIA cards have a CIS structure.
    - Information about size, speed, functions, ...
    - Distinguish between PC-card and Cable-card.
  - Before reading the CIS, the PCMCIA driver is in an 8-bit memory card mode with reduced address- and control lines (only purpose is to read the CIS).
  - After reading the CIS, there is a personality change and the driver is ready to communicate with a Cable-card.
  - Once a card's client driver successfully parses the CIS and obtains the system resources required by the card, it assigns the resources to the card via the COR (Configuration Option Register).
- POD pinning.

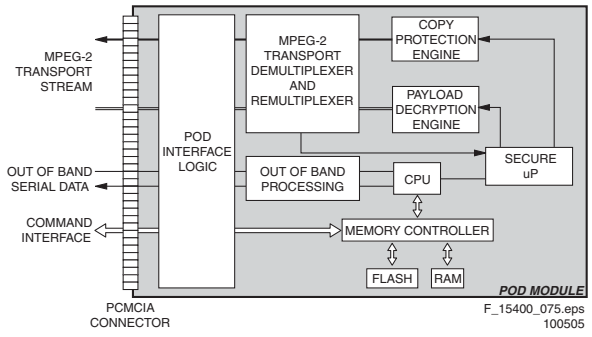


Figure 9-14 Example of POD design

9.5.3 Communication Channels

In Band (IB)
- Forward Application Transport channels (FAT):
  - 256 QAM modulation (8 bits/symbol).
  - 54 - 864 MHz.
  - 6 MHz bandwidth.
  - Carry information via MPEG-2 streams.
    - Scrambled In-Band Channels.
    - TS packet header.
    - In-the-Clear channels.
- NTSC analog channels:
  - 8-VSB modulation (3 bits/symbol).
  - 54 - 806 MHz (UHF and VHF)
  - 6 MHz bandwidth.
  - Not via POD, but via MPIF.
  - With VBI (Vertical Blanking Interval) signals for closed captioning.

Out Of Band (OOB)
- Forward Data Channels (FDC):
  - DQPSK modulation (2 bits/symbol).
  - 70 - 130 MHz.
  - 6 MHz bandwidth.
  - Spaced between 6 MHz FAT and analog channels.
  - Control and Access messages.
  - Application code download.
  - Only from cable operator towards user.
  - Service Information (SI) like:
    - PMT: TS Program Map Table.
    - PAT: Program Association Table.
    - CAT: Conditional Access Table.
    - STT: System Time Table.
  - Emergency Alert Service (EAS)= US federal system for alerting the public to emergencies; works before and after CableCARD insertion

9.6 MPIF (PNX 3000)

9.6.1 Introduction

The MPIF (Multi Platform InterFace, type number PNX3000, item number 7C00) is an analog video and audio pre-processing unit for the AVIP TV processor. It contains the high frequent IF part and all the analog video and audio source switching for external in- and outputs. The MPIF can handle CVBS, Y/C, RGB (1fH/2fH) and YPbPr (1fH/2fH) video signals as well as stereo, I^2S, and second sound IF audio signals. The MPIF converts the selected video and audio streams from the analog to the digital domain. Via three high-speed serial data links (I^2D), the digitized audio and video signals are streamed (594 Mbit/s) to the AVIP IC for further processing.
The MPIF uses a clock coming from the AVIP of 13.5 MHz and is I^2C driven. The supply voltage for the MPIF is 5V.

The MPIF uses the following input signals:
- CVBS, Y/C, YPbPr, or RGB video format.
- 1fH or 2fH video.
- Clock 13.5 MHz from the AVIP.
- I^2C from the VIPER.
- Clamping-pulse from the AVIP.

9.6.2 Block Diagram

Following figure shows the MPIF block diagram:

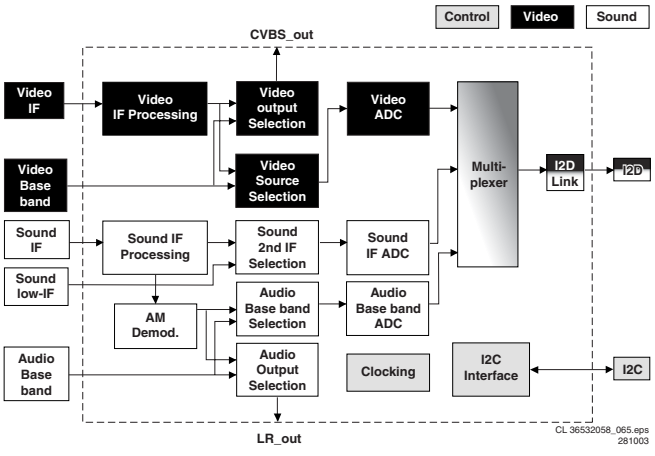


Figure 9-15 MPIF block diagram

9.6.3 IF Processing

The MPIF is capable of demodulation of RF signals.

Analogue Vision IF Processing
Some specifications:
- Synchronous demodulation of the IF vision carrier. Selectable frequency and auto-calibration of the VCO (Voltage controlled oscillator).
- Group delay correction for BG system.

- AGC at vision IF level to give fixed CVBS output level, and AGC at RF level (tuner AGC) to limit output level of the tuner.
- AGC gating for bad reception conditions.
- CVBS amplitude correction and mute.
- Detections for AFC and video presence.

The video signal is demodulated by means of an alignment-free PLL carrier regenerator with an internal VCO. This VCO is calibrated by means of a digital control circuit, which uses an external crystal frequency as reference. The frequency setting for the various standards (33.4, 33.9, 38.0, 38.9, 45.75 and 58.75 MHz) is realized via the I^2C bus.
The AFC output is generated by the digital control circuit of the IF-PLL demodulator and can be read via the I^2C bus.
The AGC-detector operates on "top sync" or "top white" level.
The MPIF IC has an integrated sound trap filter. The trap frequencies can be switched via the I^2C-bus.
Also, a group delay correction filter is integrated. The filter can be switched between the PAL BG curve and a flat group delay response characteristic. This has the advantage that in multi-standard receivers the video SAW filter does not need to be switchable (cost effective).

Analogue Sound IF Processing
Some specifications:
- A switch to select QSS or inter-carrier mode.
- Sound carrier frequency conversion at second IF sound frequency (SSIF)
- A switch to select internal or external SSIF.
- AGC at sound IF level (for QSS (quasi-split-sound) mode) and AGC at SSIF level (for inter-carrier and QSS modes).
- Demodulation of AM modulated carrier (L and L' standards).

The MPIF has a separate sound IF input to enable Quasi Split Sound (QSS) applications. The sound IF amplifier is similar to the vision IF amplifier and has a gain control range of about 55 dB.
The AGC detector measures the SIF carrier levels (average level of AM or FM carriers) and ensures a constant signal amplitude for the AM demodulator and QSS mixer.
For applications without SIF SAW filter, the IC can also be used in intercarrier mode. In this mode, the composite video signal from the VIF amplifier is fed to the QSS mixer and converted to the intercarrier frequency. AM sound demodulation is realized in the analog domain with the QSS mixer.

9.6.4 Source Selection

Below the main functions and features of the main blocks in the MPIF for video and audio are explained.

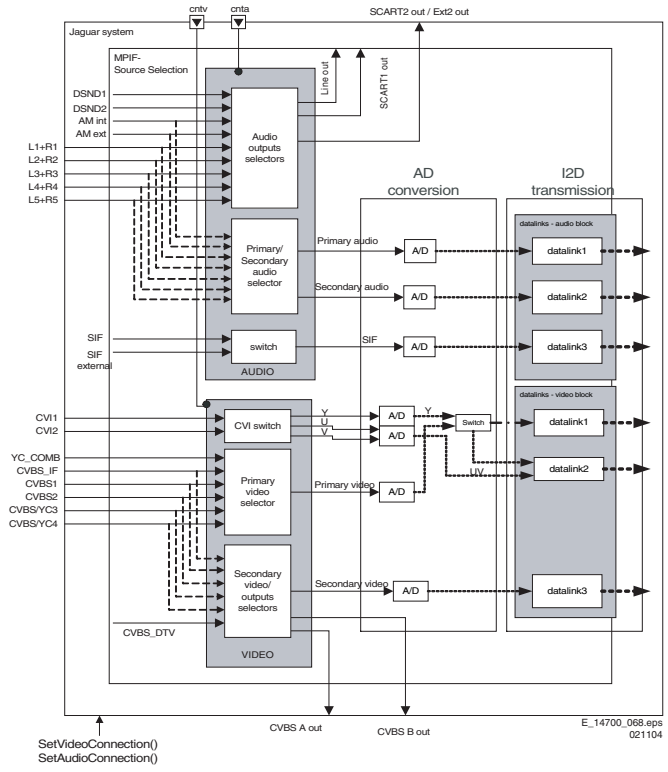


Figure 9-16 MPIF analog source selection block

Video Selectors
The CVI switch (Composite Video Input, including RGB, YUV, and YPbPr) is selecting the signal from one of the two CVI inputs; the output is always a YUV signal.
The primary video selector is selecting a signal from the CVBS and YC inputs; the video coding of the output signal equals to the video coding of the input signal.
The primary video selector has an extra input (YC_COMB), capable of selecting an Y/C signal from the comb filter. This input cannot be downscaled to a CVBS signal and fed back to the CVBS_A or CVBS_B output. It is also advisable not to connect other sources to the YC_COMB input because it is treated as an internal one that is not available for the outside world.
Two video output selectors are responsible for the contents of CVBS_A and CVBS_B video out.

Audio Selectors
The primary audio selector is selecting a signal from five external stereo inputs and one stereo input that handles two mono signals (AM internal and AM external). The AM internal signal is demodulated in the IF part and is internally routed, so not available as external input. Additionally, the AM internal signal is available on the left channel whereas the AM external signal is available on the right channel.
The secondary audio selector is selecting a signal from the same range as the primary audio selector; the second audio selector can work in stereo or mono mode. In case the stereo mode is selected, it is alike the primary audio selector. In mono mode, the input stereo signal L+R is transformed into a mono signal (L+R)/2 and put on the left channel of the stereo output. When the stereo input (handling two mono signals) is selected and the selector works in mono mode, the AMint and AMext can be swapped on the primary as well as on the secondary audio channel. It is also possible to digitize the mono + AM on the secondary audio channel.
Further it is possible to select the AM signal on the analog audio outputs independently from the AM signal that is selected for the secondary (digital) audio channel.
Three audio output selectors are responsible for the content of the Line, SCART1, and SCART2 outputs. These selectors

allow selection of the output out of five L+R inputs, two mono signals (AM internal or AM external) and two externally connected DSND streams.

SIF Switching
SIF (Sound Intermediate Frequency) switching allows selecting between internal or external SIF signals.

AD Converters
The second part of the MPIF is responsible for conversion of the chosen signals into digital signals and grouping them into three data streams. Each data stream handles both video and audio. These data streams are fed into three data links and send via I2D to the outside.

The MPIF contains four video ADCs for analog and digital video broadcast signals. The clock frequency for these ADCs is either 27 MHz or 54 MHz. In some cases, two analog signals are multiplexed at the input of one ADC. In these cases, the clock frequency of the ADCs is 54 MHz, while the sample frequency for each of the two signals is 27 MHz.

The sample frequency for standard 1fH video signals is 27 MHz. For the YUV channel the sample frequency of the U and V components is half the sample frequency of the Y signal. For 2fH YPbPr or RGB input signals (for instance 480p or 1080i ATSC signals), the frequency that is used to sample the YUV signals is twice as high as for 1fH signals. The sample frequency is 54 MHz for Y and 27 MHz for U and V.
Due to the high sample frequency, two data links are needed for transport of the video data to the digital video processor.

I^2D Data Link
The digital interface between MPIF and AVIP is called Data Link (or I^2D Link). This is a serial interface that transfers the data from MPIF to AVIP over three Data Link interfaces. Each Data Link has a data signal and a strobe signal. The synchronization information is distributed over the data and the strobe signal. To minimize EMC, both signal outputs are low voltage differential swing signals, with a swing of about 300 mV.
Each Data Link has four lines, one differential pair for the data, and one differential pair for the strobe. The data rate is 594 Mbit/s. Each Data Link can carry two 27 MHz sampled video streams (or one 54 MHz sampled 2fH video stream) and two audio channels sampled at 6.75 MHz.

In the MPIF, the (video and audio) data to be transmitted is multiplexed in an output register of 44 bits (including the 2 bit sync information). The content of that 44 bits register is serial transmitted on one of the three data links. In the AVIP, the serial data is de-multiplexed into parallel streams. The data on the data link is divided in several groups of signals (video, audio and strobe signals). Obvious it is important that the transmitter and receiver are in the same transmitting mode

Data links can operate in two different modes called:
1. Normal mode.
2. YUV2fH.

Normal Mode
In the normal mode the content of the data links is as follows:

Table 9-1 Normal mode

Data Stream	Video	Audio
1	CVBS/YC primary	(L+R) primary
2	YUV 1fH	(L+R) secondary
3	CVBS secondary	SIF
Data link Mode bit: DM= 0		

In the normal mode the data links can handle up to three video signals: CVBS or YC signal from the primary video selector, CVI 1fH source selected on the CVI switch, and CVBS signal from the secondary video selector.

YUV 2fH Mode
In the YUV 2fH mode (higher bandwidth signal) the data links content is as follows:

Table 9-2 YUV 2fH mode

Data Stream	Video	Audio
1	Y 2fH	(L+R) primary
2	UV 2fH	(L+R) secondary
3	CVBS secondary	SIF
Data link Mode bit: DM= 1		

The data link 1 can output only one of two input signals: the output of the primary video selector or the Y output of the CVI switch. Only one can be active at a moment, and that is determined by the data link mode bit (DM). It means, that for data links working in YUV 2fH mode, the data link 1 carries the Y component of the YUV 2fH signal, the data link 2 carries the UV component, and the data link 3 contains the signal that is connected through the secondary video selector.

9.7 PNX2015

The functional blocks of the PNX2015 (item 7J00) are:
- Audio Video Input Processor (AVIP).
- 3D Comb Filter (COLUMBUS).
- High Definition MPEG Decoder (HD Subsystem).
- LVDS transmitter.
- Stand-by Processor for low-power control.

BLOCK DIAGRAM

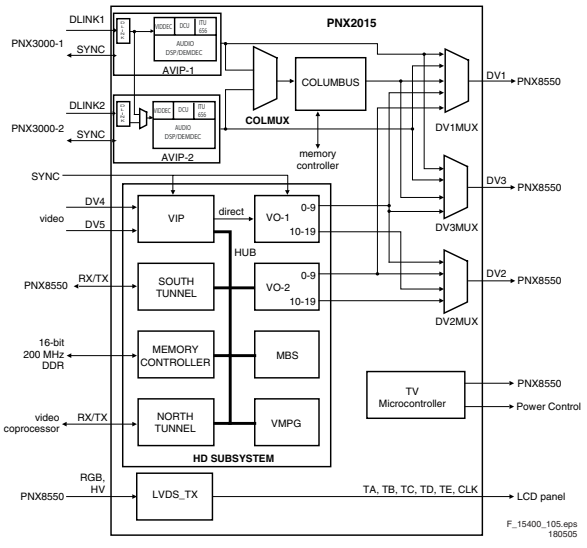


Figure 9-17 Block diagram PNX2015

These different blocks are described separately in the next paragraphs.

9.8 PNX2015: AVIP

9.8.1 Introduction

The AVIP (Audio Video Input Processor) receives the digital data via the I²D link (coming from MPIF). It reformats this data and maps (synchronizes) the data to the clock of the AVIP. Then a digital AGC is passed. After this, the video decoding is performed in the VIDDEC-block of the AVIP. The decoded video is sent to an output block, which formats the data to an ITU-656 compatible standard data stream.
The AVIP power supply is 1.2 V and 3.3 V. To ensure synchronization of video streams processed across the VIPER and PNX2015 devices, a 27 MHz is coming from the VIPER. The AVIP is I²C driven.
Initialization of this IC begins with a hard reset (MIPS-RESET) provided by the VIPER. Besides video decoding, the AVIP is also used for decoding and presentation of all audio output streams in the system.

9.8.2 Block Diagrams

Below the main functions and features in the AVIP for video and audio are given.

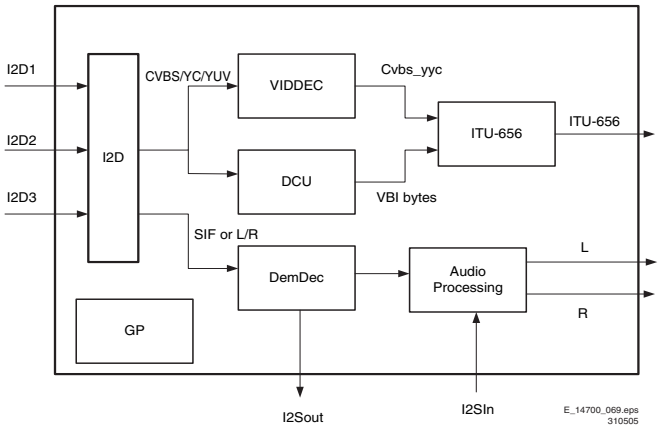


Figure 9-18 AVIP block diagram

Main AVIP function:
- I²D receiver.
- Color decoding into ITU-601 compatible format (1fH/2fH).
- Interface with 3D comb filter (called Columbus in this chassis).
- VBI data capture via DCU (Teletext, CC, etc.).
- ITU-656 formatting.
- Audio demodulation and decoding via DEMDEC.
- Audio processing and D/A conversion.

I²D Receiver

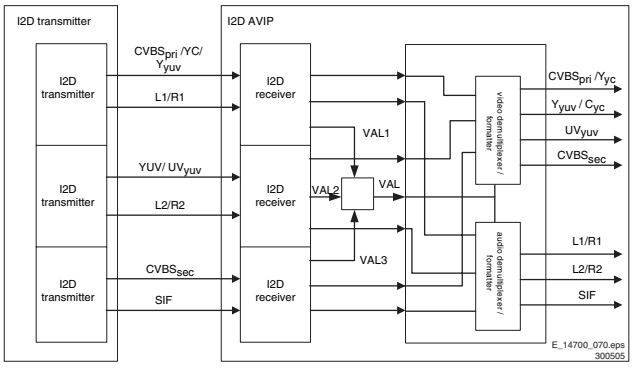


Figure 9-19 I²D receiver block diagram

The receiver block gets the serial data stream and converts it to a parallel stream. This parallel data is fed to the "de-multiplexer and formatter " block where the selected audio/ video stream is forwarded to the video and audio decoder for further processing. This communication bus is completely digital and very difficult to monitor.

The I²D link has the following characteristics.
- The data-link runs at 297 MHz / 594 Mbps.
- The driver rise/fall time is around 200 ps.
- The data-link uses differential signals.

VIDDEC (Video Decoder)

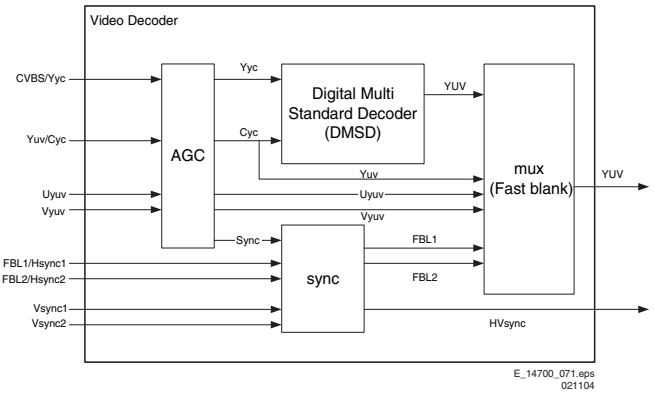


Figure 9-20 VIDDEC block diagram

The CVBS/YC/YUV signals (coming from the I²D receiver block) enter the DMSD block (Digital Multi Standard Decoder) via the AGC (Automatic Gain Control) block. The multiplexer block (MUX) takes care of the correct output signal. The sync signals are processed in the sync block.

The VIDDEC has the following main functions:
- Multi standard color decoder.
- Automatic system recognition.
- Fully programmable static or automatic (AGC) for all analog video base band signals.
- AGC on sync amplitude in digital domain.
- Selectable peak white control.
- AGC for chrominance (PAL and NTSC only).
- Programmable Luminance and Chrominance bandwidth for CVBS and Y/C sources.
- Programmable clamp window for the selected video base band signals.
- Digital PLL for synchronization on 2fH and ATSC standards.
- Horizontal (including 3-level sync for 2fH) and vertical sync detection.
- Automatic detection of 50/60Hz ATSC field frequency.
- Adaptive 2/4-line delay comb filter for two-dimensional Chrominance/Luminance separation.
- Copy protected source detection according to MacroVision up to version 7.01
- Possibility of RGB insertion through fast blanking in CVBS input mode, not in Y/C.

DCU (Data Capturing Unit)

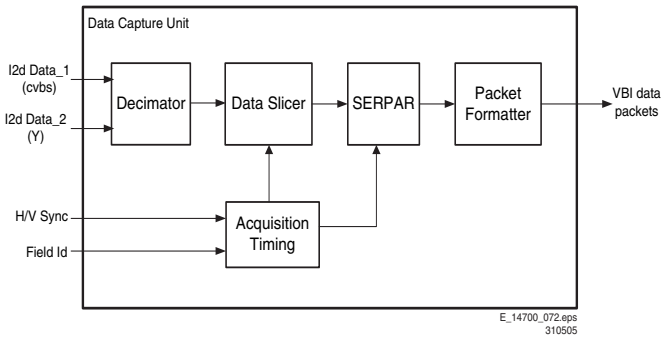


Figure 9-21 DCU block diagram

The purpose of this block is to acquire digital data (containing Teletext, Closed Captions, ...) from a CVBS/Y/C video input source. It performs processing on the received data and provides the data to the ITU-656 formatter unit.
The decimator reduces the sample rate (from 27 MHz to 13.5 MHz) of the incoming digitized CVBS or Y data stream from the I^2D receiver. From the video input, the data slicer reconstructs the transmitted bit stream and associated clock. The SERPAR block converts the serial bits, coming from the data slicer, into parallel bytes. The packet processor performs data decoding and some error correction, assembles received bytes into packet structure, and streams out the data to the ITU-656 formatter.
The acquisition-timing block locks onto sync signals, and provides timing information to the other blocks of the data capture unit.

ITU656 Output Formatter

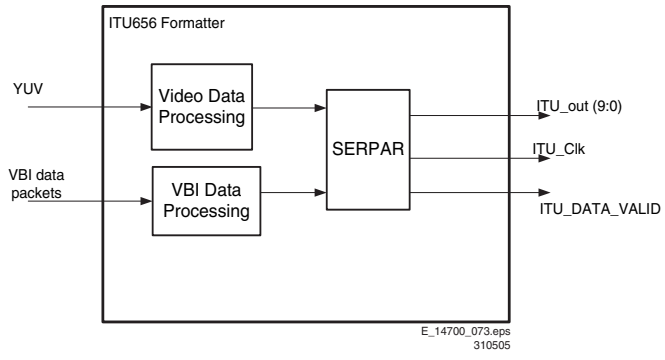


Figure 9-22 ITU656 formatter block diagram

The ITU656 formatter gets YUV data as video input signal, coming from the VIDDEC block. These YUV data are either decoded CVBS signals, matrixed RGB signals, or YUV input signals. The second input data are VBI sliced data coming from the DCU. The output of the ITU delivers a data stream, which is ITU-601/656/1364 compliant, and includes video as well as the VBI data.

DEMDEC (Demodulator and Decoder)

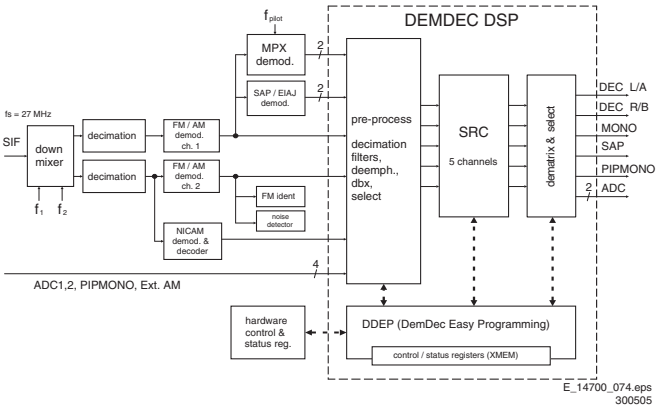


Figure 9-23 DEMDEC block diagram

The demodulator and decoder (DEMDEC) is responsible for demodulating and decoding incoming SIF signals.

The main features of the DEMDEC are:
- Auto Standard Detection (ASD).
- DQPSK demodulation for different standards, simultaneously with 1-channel demodulation.
- NICAM decoding (B/G, I, D/K, and L standard).
- Two-carrier multi standard FM demod. (B/G, D/K and M).
- Optional AM demodulation for system L, simultaneously with NICAM.
- Identification A2 systems (B/G, D/K and M standard) with different identification time constants.
- FM pilot carrier present detector.
- BTSC MPX decoder.
- SAP decoder.
- dBx noise reduction.
- Japan (EIAJ) decoder.
- FM radio decoder.

Audio Processing

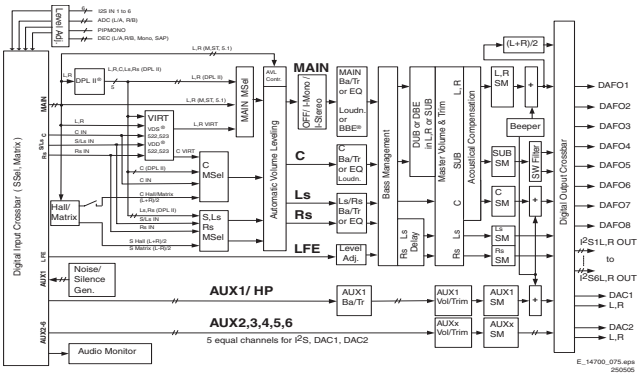


Figure 9-24 Audio processing block diagram

Main features are:
- Master volume control and Balance.
- Tone control (Loudness, Bass, Treble, Equalizer).
- Dolby ProLogic delay.
- Incredible Mono and Stereo.
- Virtual Dolby Surround (VDS 522, 523).
- Virtual Dolby Digital (VDD 522, 523).
- Digital audio I/O interface (stereo I2S input interface).
- Eight audio DACs for six channel loudspeaker outputs and stereo headphones output.
- Audio DACs for stereo SCART output and stereo LINE output.
- Serial data link interface for interfacing with the analog multi-purpose interface IC PNX3000 (MPIF).

9.9 PNX2015: Columbus (Comb Filter)

9.9.1 Introduction

This block provides the following picture improvement functions:

- Enhanced 2D combing for PAL and NTSC.
- 3D field combing for PAL and NTSC.
- 3D frame combing for PAL and NTSC.
- Spatial noise reduction for all component video standards.
- Temporal noise reduction for all component video standards.

The comb filter is controlled via a separate I^2C interface on the PNX2015, this is to ensure registers containing measurement information, are accessed at appropriate times. The measurement information is also available as ancillary data within the video stream (ITU-656).
For certain features of the comb filter, access to external memory is required. The PNX2015 has a unified memory that both comb filter and HD subsystem's share concurrently.

9.9.2 Block Diagram

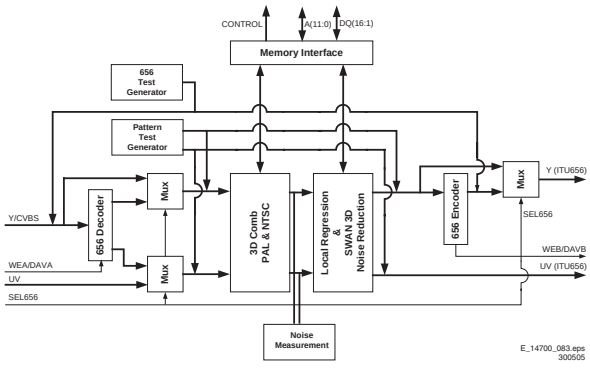


Figure 9-25 COLUMBUS internal block diagram

Figure above, shows a block diagram of the Columbus comb filter in the PNX2015 device. An input video signal is supplied by the AVIP and fed to the Columbus block. The signal is supplied in digitized components of:

- CVBS or Y.
- Uncombed U.
- Uncombed V.

The CVBS signal is combed, extracting the luminance components and rejecting the chroma components. The UV signals are combed, rejecting the left over luminance components, from a previous filtering (normally band pass filtered).

The outputs from the 3D comb filter are:

- Combed luminance signal (Y).
- Combed U signal.
- Combed V signal.

The output from the 3D comb filter feeds the SWAN and LORE noise reduction block, which performs spatial/temporal noise reduction, for both luminance and chrominance components.

Control Register Interface

The control registers are accessed via I^2C. Most signals that can be written via I^2C are double buffered. The fast I^2C interface implemented on the COLUMBUS is a 5V compliant, 400 kHz slave receiver/transmitter. The I^2C will not be blocked during voltage shorts or opens.

For the system dependent parameters of the 3D-Comb filter, five register banks are present. Data can be written in one of the banks via I^2C, by programming bits [2:0] of the SYSTEM_SELECT register. The bits [6:4] of the SYSTEM_SELECT register select, which register bank is used by Columbus to define the filter settings.

Bank number	System
0	PAL B, G, H, I, D, K
1	PAL M
2	PAL N
3	NTSC
4	Bypass

Internal Test Generators

There are two test generators inside the COLUMBUS chip:

- The "656 test generator" generates a 656 compliant stream and is used for testing the functionality of the 656 encoder and decoder. The 656 stream can be injected at the front end or the back end of the chip.
- A second internal test pattern generator enables testing of the device and attached external memory (if present). The test pattern generator signal can be inserted at the front end of the chip (passing through the 3D Comb and noise reduction system and external memory) or at the back end of the chip. Test patterns are available for both PAL/SECAM and NTSC systems.

9.10 PNX2015: HD Subsystem

The HD subsystem performs MPEG video decoding on HD/SD transport streams. It interfaces with the PNX8550 and video coprocessor via tunnel interfaces, HD/SD using DV4 and DV5 inputs, and PNX8550 using DV1, DV2 and DV3 outputs. The HD subsystem can also perform horizontal and vertical scaling of video images, and perform a range of video measurements on a transport stream.

9.11 PNX2015: LVDS Transmitter

Low Voltage Differential Signaling (LVDS) is a low-power, low-noise differential technology for high speed data transmission over two PWB traces, or a balanced cable. LVDS allows single-channel data transmission at hundreds, or even up to a thousand Mbps. Low swing and current-mode driver outputs create low noise and provide very low power consumption across frequency ranges.
The LVDS transmitter IP provides a connection interface to FPDs.

Differences between standard and LVDS signalling:

- Standard single ended signal (TTL):
  - Requires 28 signal lines and more than 14 grounds.
  - Single ended signals up to 3 V.
  - Wide flat ribbon cable.
  - EMI/EMC problems.
  - Feasible up to VGA/NTSC resolution (limited to 250 Mb/s).
- LVDS:
  - Five low voltage (350 mV) differential pairs: one clock pair and four data pairs.
  - Five grounds.
  - EMI/EMC friendly.
  - WXGA and HD-1280x720p (up to 1 Gb/s).

LVDS offers superior performance compared to the standard single ended signal (TTL).
It is even "protocol independent" so it requires no software.

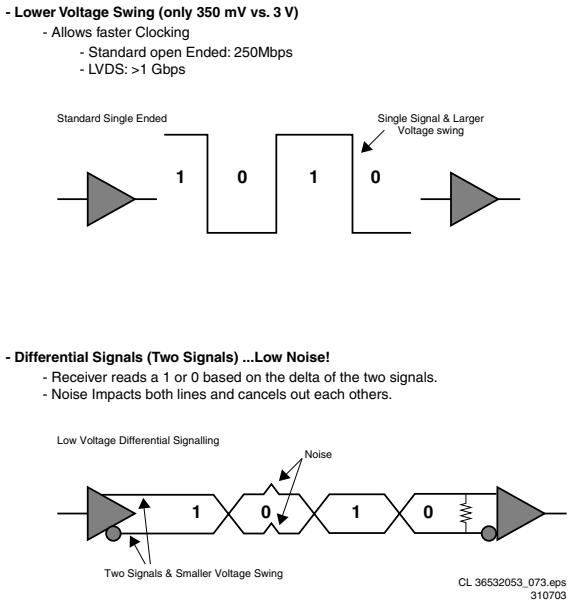


Figure 9-26 LVDS technology

The digital video output from the VIPER is connected to the display via the LVDS interface. This transmitter converts 28 bits of LVCMOS/LVTTL data into four LVDS (Low Voltage Differential Signalling) data streams. A phase-locked transmit clock is transmitted in parallel with the data streams over a fifth LVDS link. With every cycle of the transmit clock, 28 bits of input data are sampled and transmitted. At a transmit clock frequency of 85 MHz, 24 bits of RGB data and 3 bits of LCD timing and control data (FPLINE, FPFRAME, DRDY) are transmitted at a rate of 595 Mbps per LVDS data channel. Using a 85 MHz clock, the data throughput is 297.5 Mbytes/sec.

9.12 PNX2015: Stand-by Processor

9.12.1 Introduction

The Stand-by Processor's sub system is isolated from the other sub systems within thePNX2015. It has its own power supply (1.2V and 3.3V), together with separate clocking (16MHz) and reset. This allows for it to be active while all other sub systems are either inactive, via clock being disabled, or powered down.

The main tasks of the Stand-by Controller are:
- RC5/RC6 remote control handling.
- P50.
- Keyboard handling (side control, "on/off" switch).
- Detection and protection of the power supplies.
- Status detection on EXTernals.
- SAM/SDM entering.
- Provide boot-scripts to the VIPER.
- Start-up behavior of the set; sequentially enabling the power supplies via the ENABLE lines.

9.12.2 TV Start-up Behavior and Fault Detection

1. The Stand-by Controller is powered by the +5V2 voltage (3V3_STBY voltage is derived from the +5V2), which becomes available when the set is connected to the Mains / AC Power.
2. By default, all I/O lines of the controller are "high", this state is also the state that will not trigger protections or cause supplies to rise, since enabling a supply requires that an IO line is pulled "low". Also all protections are active "low".
3. The 16 MHz crystal starts running.
4. Reset IC 7M03 will generate a RESET_STBY pulse.
5. All I/O lines will be set in default state, as "told" by the software.
   – RESET_SYSTEM will be "low" (this will hold the VIPER in reset).
   – LAMP_ON will be "low".
6. The system waits for an RC or functional switch command: when this command is "low" the set will start-up.

The Stand-by Microprocessor is responsible for the start-up of the VIPER, by providing the correct timing for the DC/DC converted voltages (for timing of DC/DC converter voltages see description in paragraph "Power Supply").
The +12V switch (via POD_MODE) and the DC/DC converters (via ENABLE) are switched "on" (active "low"). Once these voltages are switched "on", the Stand-by Controller is monitoring these voltages via a voltage detector circuit connected to port P2.x. When one of the voltages is missing, the fault detection will be active "low" on port P2.x. An error code will be written in the error buffer.
There is a common SUPPLY_FAULT line; connected to port P1.3 (INT5) that is active "low" when there is a problem detected on one of the DC/DC power supplies driver circuits. One input (P2.6) is used for the Audio Supply protection from the audio amplifier.
The RESET_SYSTEM line (P4.0) is "low" in Stand-by and at Start-up to keep the VIPER in reset state. Once the VIPER core supply is available, the RESET_SYSTEM line will become "high". The VIPER is starting up and will provide a RESET-MIPS active "high" to the Stand-by Processor P3.3, AVIP, and COLUMBUS.

9.12.3 I/O Stand-by Processor

The inputs on the Stand-by Microprocessor are used to detect the AV status from the front inputs (see also the control block diagram in chapter 6 "Block diagrams,...").
An UART communication line via an electronic switch is available on a connector and will be used for Service to communicate with ComPair. The UART line is switched to the Stand-by Processor when the UART_SWITCH line (P0.7) is "high". Otherwise it is switched to the VIPER.

9.13 VIPER 2 (PNX 8550)

9.13.1 Introduction

The PNX8550 is a highly integrated media processor intended for deployment in analog, digital, and hybrid TV receivers. It can be used for 100 Hz interlaced as well as 60 Hz progressive screens. It is fully capable of performing advanced video improvement algorithms, such as Digital Natural Motion™, on Standard Definition analog or digital sources. It includes an HD capable de-interlacer for converting interlaced HD transmission signals to progressive output for driving wide-XGA class Plasma or LCD displays. Two 32-bit 240 MHz VLIW media processors, referred to as the TriMedia TM3260 CPU core, carry out the advanced video improvement processing as well as all audio operations. Fixed hardware functions perform stable core video functions, such as picture level MPEG2 decoding, scaling, image composition and pixel post processing.

The PNX8550 provides a primary digital (YUV or RGB) output to connect to the display specific output processor. In addition, a secondary analog video output (CVBS or S-Video) for a VCR is available. This is the so-called DENC-out. It can operate either in analog PAL/NTSC or digital mode.

9.13.2 Block Diagram

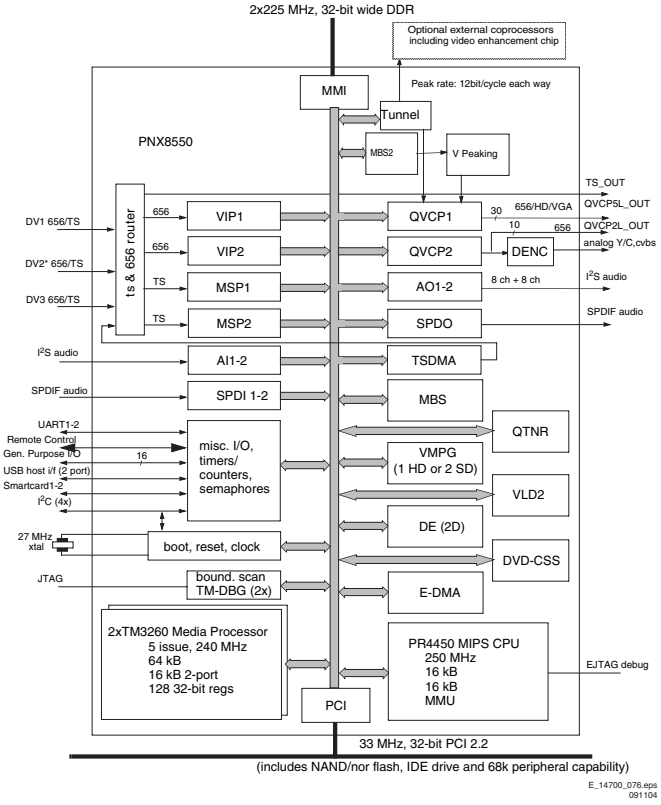


Figure 9-27 VIPER 2 internal block diagram

Control

An embedded MIPS32 processor (PR4450) running at 266 MHz is available to run the Operating System. The PR4450 processor is primarily responsible for running the demand paged graphics-intensive operating system, while the TM3260 media processors are responsible for running all real-time media functions. All hardware resources inside the PNX8550 are accessible by both the MIPS processor and the TM3260 CPUs. A "'sandbox" style system protection provision ensures that selected MIPS memory regions and critical peripherals cannot be corrupted or inspected.

VIP (Video Input Processor)

The Video Input Processors (VIP) handles incoming digital video and processes it for use by other components of the PNX8550. It provides the following functions:

- Receives 10-bit YUV4:2:2 digital video data from the selected DVx video port (input signal coming from the AVIP or Columbus IC output). The data is dithered down to in-memory 8-bit data format.
- Performs horizontal down scaling or up scaling by 2x (not available in HD video capture mode).
- Provides an internal Test Pattern Generator with NTSC, PAL, and variable format support.
- Acquire VBI data using a separate acquisition window from the video acquisition window.
- ANC header decoding or window mode for VBI data extraction.
- Interrupt generation for VBI or video written to memory input mode.
- Color space conversion (mutual exclusive with horizontal scaling).
- Raw data mode captures of 8- or 10-bit data.

MBS (Memory Based Scaler)

The PNX8550 contains a Memory Based Scaler that performs operation on images in main memory. The MBS can either be controlled task by task by a TM3260, or it can be given a list of de-interlacing and scaling tasks. It reads images from memory, performs a transformation, and writes the result back in memory.

The MBS main features are:

- De-interlacing using either a median, 2-field majority select, or 3-field majority select algorithm with an edge detect/correct post-pass (these three provide increasing quality, at expense of increased bandwidth).
- Edge detect/correct on an input frame that has been software de-interlaced (this provides future capabilities in case we develop a better core de-interlacer than 3-field majority select).
- Horizontal and vertical scaling (on the input image, or on the result of edge detect/correct stage).
- Linear and non-linear aspect ratio conversion.
- Anti-flicker filtering.
- Conversions from any input pixel format to any non-indexed pixel format, including conversions between 4:2:0, 4:2:2 and 4:4:4, indexed to true color conversion, color expansion / compression, de-planarisation / planarisation (to convert between planar and packed pixel formats), programmable color space conversion.

Supported video measurement functions during scaling or de-interlacing pass:

- Gather a histogram of luminance values (this data is used by software to control histogram modification).
- Measure noise level inside a rectangular window.
- Measure the lowest level luminance within a rectangular window (used to control black stretch in QVCP).
- Measure UV bandwidth inside a rectangular window.

QTNR (Quality Temporal Noise Reduction and Video Measurement)

The QTNR block has two primary functions: Temporal Noise Reduction: reading two video fields from memory, "current" (noisy) and "previous" (noise reduced) and producing a noise-reduced version of "current" in memory. While doing this, or as a separate "measurement only" pass, perform video measurements:

- Gather a histogram of luminance values (this data is used by software to control histogram modification).
- Measure noise level inside a rectangular window.
- Measure the lowest level luminance within a rectangular window (used to control black stretch in QVCP).
- Measure UV bandwidth inside a rectangular window.
- Measure the position of top and bottom black bars in the image.

QVCP (Quality Video Composition Processor)

The PNX8550 contains two QVCPs, which are responsible for combining and displaying video and graphics images from main memory. The primary QVCP serves as the main display pipeline, the second one is targeted to be connected to a record device (VCR). The primary QVCP allows composition of up to five layers, and can output in ITU-656/HD/VGA format in 10 bits per component up to 81 Mpix/s.

The secondary QVCP allows composition of up to two layers, can output in 656 10-bit component mode up to 81 MHz (40.5 Mpix/s). The secondary QVCP is connected to an on-chip Digital Video Encoder (DENC), allowing direct analog CVBS or S-video output.
In analog output mode, standard definition interlaced NTSC or PAL is supported (SCART2-out signal, for VCR-recording). The encoder has two DACs. DAC1 provides CVBS or luminance for S-video. DAC2 provides chrominance for S-video.
Internal sensors allow software to test loading on the S-video Chrominance line to decide whether to output luminance or CVBS on DAC1.

The primary and secondary QVCP each contain a series of layers and mixers. The QVCP creates a series of display data layers (pixel streams) and mixes them logically from back to front to create the composite output picture.

Some of the features the QVCP provides are:
- Video Quality Enhancement.
- Luminance Transient Improvement.
- Color Dependent Sharpening.
- Horizontal Dynamic Peaking.
- Histogram Modification.
- Digital Color Transient Improvement.
- Black Stretch.
- Skin Tone Correction.
- Blue Stretch and Green Enhancement.
- Video and Graphics horizontal up scaling.
- Color space unification of all the display surfaces.
- Contrast and Brightness Control.
- Screen timing generation adopted to the connected display requirements (SD-TV standards, HD-TV standards, progressive, interlaced formats).

9.14 MOP

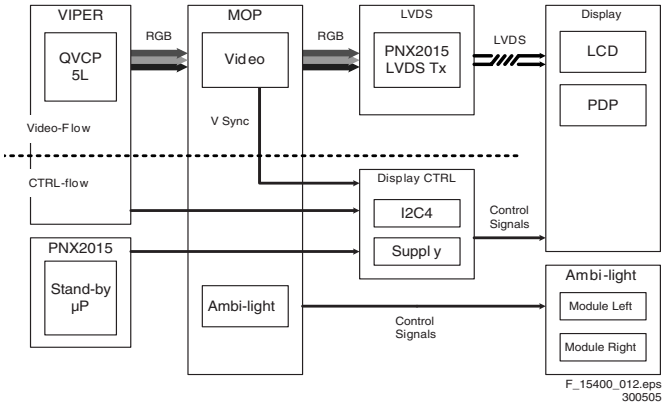


Figure 9-28 Block diagram of video output with MOP

In the BP2.2 chassis an EPLD (or MOP) is used for AmbiLight processing and for some picture enhancements, like blue and green stretch. For sets without AmbiLight (like BP2.3), the picture enhancements are done in the VIPER.

9.15 Ambient Light (if present)

9.15.1 Introduction

At the rear left and right side of the TV-set, three gas discharging lamps are mounted. With the red, green, and blue lamps, each color can be made.
- Ambient light is adjustable with three variables: Hue, Saturation, and Brightness.
- Hue and saturation are controlled via menu control or via smart settings.
- The brightness is controlled via menu or via a cycle generator.
- The light sensor influences the brightness.
- Switching "on" or "off" goes via a ramp up or down.
- The ambient light may be active or passive.

In the user set up menu the following items are added:
- Ambient Light.
- Lights "On/Off".
- Ambient Light: "Personal/Normal/Warm/Cool".

Two extra keys are added on the Remote Control:
- ON/OFF: A (normal) press on this key switches the Ambient Light "On/Off".
- MODE: In case the set is "On", to toggle the smart modes.

Specifications:
- Lamp current frequency= 43 kHz.
- Lamp dimming frequency= 85 Hz.
- PWM duty cycle range= 30%
- Each lamp is only driven one third of the period to avoid crosstalk (drive lamps at 33.3% to have no losses in output).

9.15.2 Block Diagram

All mentioned blocks (from "Cycle Generator" to "HSV-to-RGB Converter" are implemented in the main software. Via I^2C, the RGB values are sent to the MOP (where a selection is made between "active" and "passive" mode) and again via I^2C the Inverter board is addressed.
In "passive" mode, the RGB values from the "HSV-to-RGB Converter" are used, while in "active" mode the picture content is used to steer the ambient lights.

Cycle Generator
The Cycle Generator (for fade in/out) starts with a long press on the "On/Off" button on the RC. It stops when the button is released.

Light Sensor
The light sensor influences the Brightness: when the room is darker, the ambient light is reduced. The amount of dimming is set according to an algorithm in the Auto TV software. In "active" Ambient Light mode, the light sensor does not influence the Brightness.

Ramp Up/Down
The Brightness is changing with a speed from min. to max. in 2 s.

HSV to RGB Converter.
The HSV (Hue, Saturation, Value) values are converted to RGB values.

Outputs
The outputs are RGB values and can individually be decreased.

MOP (EPLD)
In "passive" mode, the EPLD sends the info from the OTC directly to the inverter board. In "active" mode, the EPLD calculates the RGB values. Hue and Saturation are not adjustable, Brightness is adjustable.

9.15.3 Inverter Board

This board is for Service a "Black Box". This means that it is not repairable on component level, but when found defective, the board must be swapped. See the Spare Parts List for the order code.

Some specifications:
- There are three inverters to drive the lamps, each inverter drives the Left and Right lamp for one color.
- DC-to-AC converter: 2.3 kV.
- Able to drive Cold Cathode Fluorescent Lamps (CCFL). There are two lamp units, three lamps (RGB) per unit= six lamps.
- The lamps are driven with Pulse Width Modulation (PWM).
- The inverters and lamps are supplied with 12V from main supply.

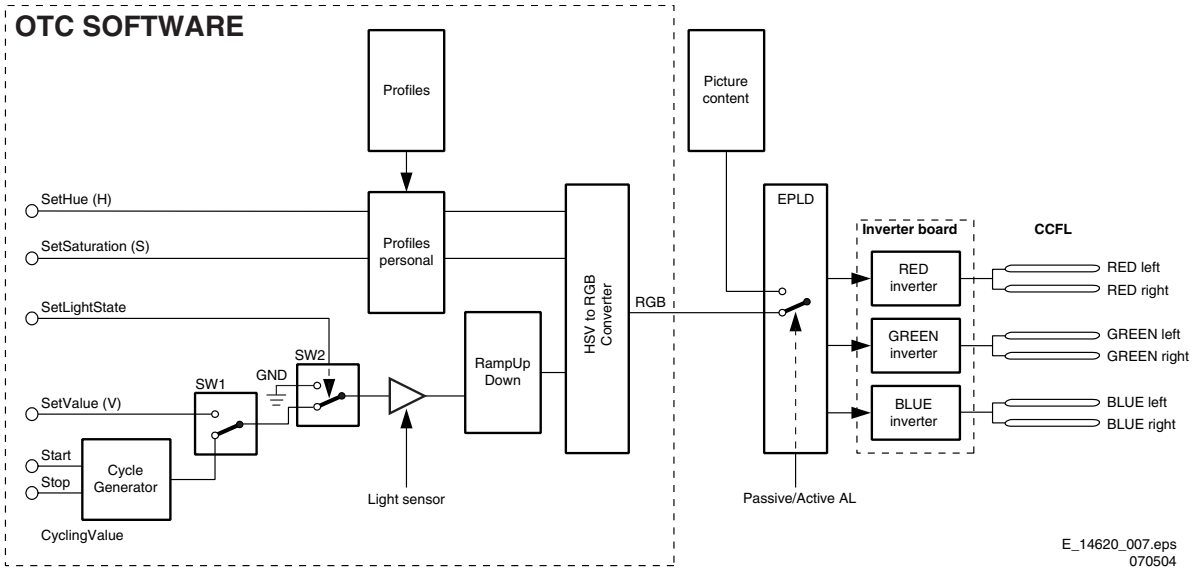


Figure 9-29 Ambient light block diagram

9.16 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
2DNR	Spatial (2D) Noise Reduction
3DNR	Temporal (3D) Noise Reduction
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
ANR	Automatic Noise Reduction: one of the algorithms of Auto TV
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
AVIP	Audio Video Input Processor
B/G	Monochrome TV system. Sound carrier distance is 5.5 MHz
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)
CA(M)	Conditional Access (Module)
CEC	Consumer Electronics Control bus: remote control bus on HDMI connections
CIS	Card Information Structure: Protocol which identifies the card in a POD module
CL	Constant Level: audio output to connect with an external amplifier
COLUMBUS	COlor LUMinance Baseband Universal Sub-system
ComPair	Computer aided rePair
CP	Connected Planet / Copy Protection
CSM	Customer Service Mode
CSS	Content Scrambling System; An encryption method for MPEG-2 video on DVDs. The algorithm and keys required to decode the disc are stored on the DVD-player
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
DDC	See "E-DDC"
D/K	Monochrome TV system. Sound carrier distance is 6.5 MHz
DFU	Directions For Use: owner's manual
DNR	Digital Noise Reduction: noise reduction feature of the set
DRAM	Dynamic RAM
DSP	Digital Signal Processing
DST	Dealer Service Tool: special remote control designed for service technicians
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
DVD	Digital Versatile Disc
DVI(-d)	Digital Visual Interface (d= digital only)
EAS	Emergency Alert Signalling; A cable TV standard (SCTE18) to signal emergency information to digital terminal devices
ECM	Entitlement Control Message
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.
EDID	Extended Display Identification Data (VESA standard)
EEPROM	Electrically Erasable and Programmable Read Only Memory
EMI	Electro Magnetic Interference
EMM	Entitlement Management Message
EPLD	Erasable Programmable Logic Device
EU	Europe
EXT	EXTernal (source), entering the set by SCART or by cinches (jacks)
FAT	Forward Application Transport channel
FBL	Fast BLanking: DC signal accompanying RGB signals
FDC	
FDS	Full Dual Screen (same as FDW)
FDW	Full Dual Window (same as FDS)
FLASH	FLASH memory
FM	Field Memory or Frequency Modulation
FTV	Flat TeleVision
Gb/s	Giga bits per second
G-TXT	Green TeleteXT
H	H_sync to the module
HD	High Definition
HDD	Hard Disk Drive
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.
HDMI	High Definition Multimedia Interface
HP	HeadPhone
I	Monochrome TV system. Sound carrier distance is 6.0 MHz

I^2C	Integrated IC bus
I^2D	Integrated IC Data bus
I^2S	Integrated IC Sound bus
IB	In Band channel
IF	Intermediate Frequency
Interlaced	Scan mode where two fields are used to form one frame. Each field contains half the number of the total amount of lines. The fields are written in "pairs", causing line flicker.
IR	Infra Red
IRQ	Interrupt Request
ITU-656	The ITU Radiocommunication Sector (ITU-R) is a standards body subcommittee of the International Telecommunication Union relating to radio communication. ITU-656 (a.k.a. SDI), is a digitized video format used for broadcast grade video. Uncompressed digital component or digital composite signals can be used. 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.
ITV	Institutional TeleVision; TV sets for hotels, hospitals etc.
JOP	Jaguar Output Processor (or EBILD)
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
LATAM	Latin America
LCD	Liquid Crystal Display
LED	Light Emitting Diode
L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
LORE	LOcal REgression approximation noise reduction
LS	Loudspeaker
LVDS	Low Voltage Differential Signalling
Mbps	Mega bits per second
M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
MOP	Matrix Output Processor (or EBILD)
MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
MPEG	Motion Pictures Experts Group
MPIF	Multi Platform InterFace
MUTE	MUTE Line
NC	Not Connected
NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
NTC	Negative Temperature Coefficient, non-linear resistor
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)
NVM	Non-Volatile Memory: IC containing TV related data such as alignments
O/C	Open Circuit
OOB	Out Of Band channel
OSD	On Screen Display
OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
P50	Project 50: communication protocol between TV and peripherals
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)
PCB	Printed Circuit Board (same as "PWB")
PCM	Pulse Code Modulation
PCMCIA	Personal Computer Memory Card International Association
PDP	Plasma Display Panel
PFC	Power Factor Corrector (or Pre-conditioner)
PIP	Picture In Picture
PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
POD	Point Of Deployment: A removable CAM module, implementing the CA system for a host (e.g. a TV-set)
POR	Power On Reset, signal to reset the uP
Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
PSIP	Program and System Information Protocol: A standard for (broadcast) digital television. PSIP consists of channel mapping data, program guide data, information about closed captions and content advisory ratings, and other data related to the current and future programs.
PTC	Positive Temperature Coefficient, non-linear resistor
PWB	Printed Wiring Board (same as "PCB")
PWM	Pulse Width Modulation
QAM	Quadrature Amplitude Modulation; modulation method
QTNR	Quality Temporal Noise Reduction
QVCP	Quality Video Composition Processor
RAM	Random Access Memory
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.
RC	Remote Control
RC5 / RC6	Signal protocol from the remote control receiver
RESET	RESET signal
ROM	Read Only Memory
R-TXT	Red TeleteXT
SAM	Service Alignment Mode
S/C	Short Circuit
SCART	Syndicat des Constructeurs d'Appareils Radiorecepteurs et Televisieurs
SCL	Serial Clock I^2C
SCL-F	CLock Signal on Fast I^2C bus
SD	Standard Definition
SDA	Serial Data I^2C
SDA-F	DAta Signal on Fast I^2C bus
SDI	Serial Digital Interface, see “ITU-656”
SDRAM	Synchronous DRAM
SECAM	SEequence Couleur Avec Memoire. 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
SOG	Sync On Green
SOPS	Self Oscillating Power Supply
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM

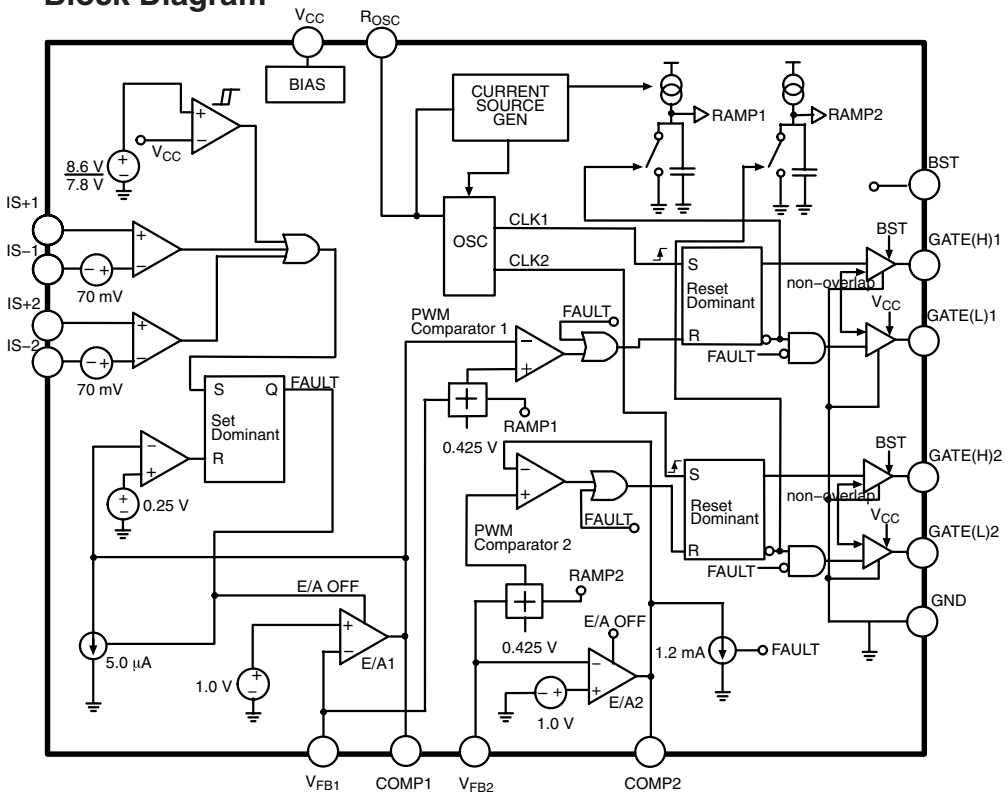
SSB	Small Signal Board
STBY	STandBY
SOG	Sync On Green
SVGA	800x600 (4:3)
SVHS	Super Video Home System
SW	Software
SWAN	Spatial temporal Weighted Averaging Noise reduction
SXGA	1280x1024
TFT	Thin Film Transistor
THD	Total Harmonic Distortion
TMDS	Transmission Minimised Differential Signalling
TXT	TeleteXT
TXT-DW	Dual Window with TeleteXT
uP	Microprocessor
UXGA	1600x1200 (4:3)
V	V-sync to the module
VCR	Video Cassette Recorder
VESA	Video Electronics Standards Association
VGA	640x480 (4:3)
VL	Variable Level out: processed audio output toward external amplifier
VSB	Vestigial Side Band; modulation method
WYSIWYR	What You See Is What You Record: record selection that follows main picture and sound
WXGA	1280x768 (15:9)
XTAL	Quartz crystal
XGA	1024x768 (4:3)
Y	Luminance signal
Y/C	Luminance (Y) and Chrominance (C) signal
YPbPr	Component video. Luminance and scaled color difference signals (B-Y and R-Y)
YUV	Component video

9.17 IC Data Sheets

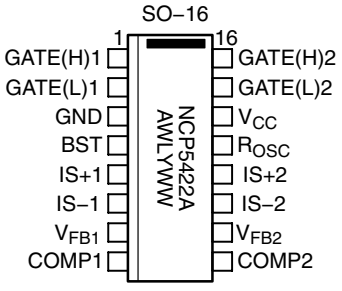
This section shows the internal block diagrams and pin configurations of ICs that are drawn as "black boxes" in the electrical diagrams (with the exception of "memory" and "logic" ICs).

9.17.1 Diagram B1A, NCP5422AD (IC 7U00)

Block Diagram



Pin Configuration



A = Assembly Location
WL = Wafer Lot
Y = Year
WW = Work Week

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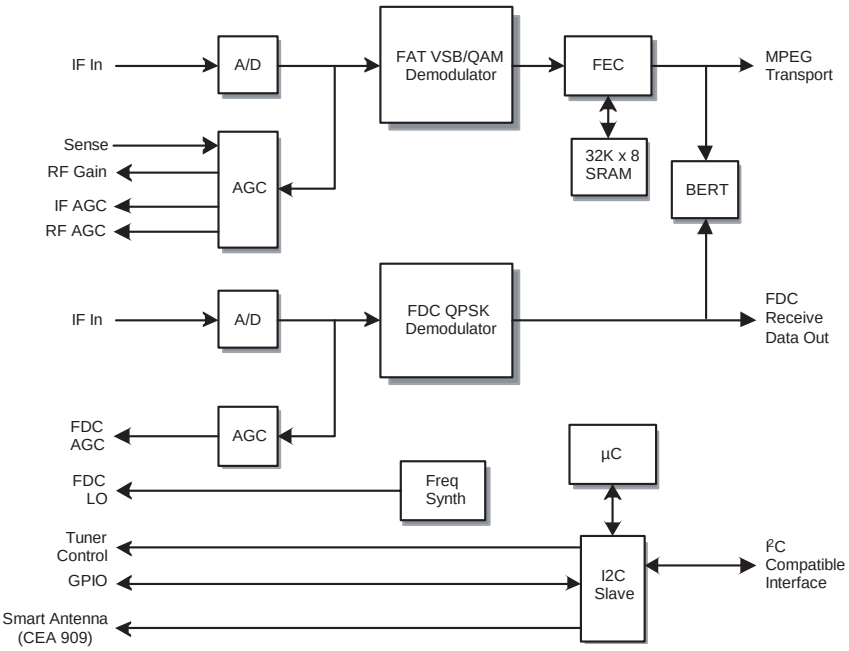
240505

Figure 9-30 Internal block diagram and pin configuration

9.17.2 Diagram B2A, NXT2003 (IC 7TG0)

Block Diagram



Pin Configuration

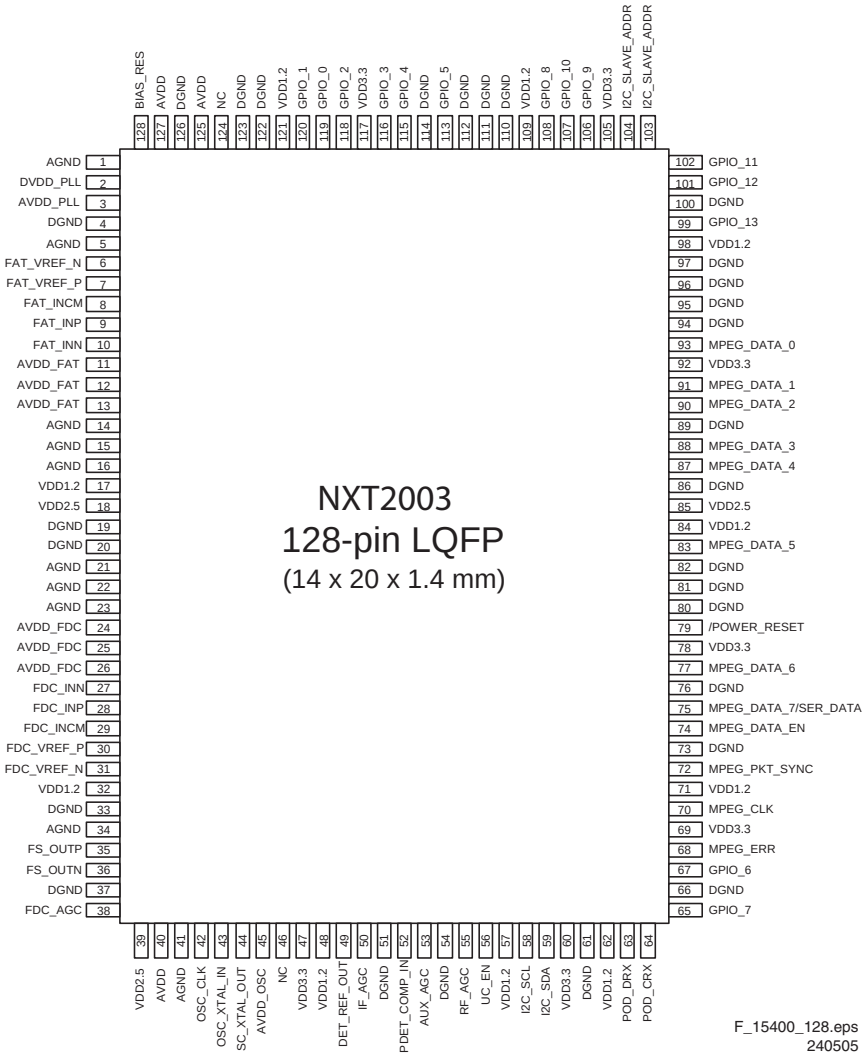


Figure 9-31 Internal block diagram and pin configuration

9.17.3 Diagram B2B, UPC3220GR (IC 7T43)

Block Diagram and Pin Configuration

(Top View)

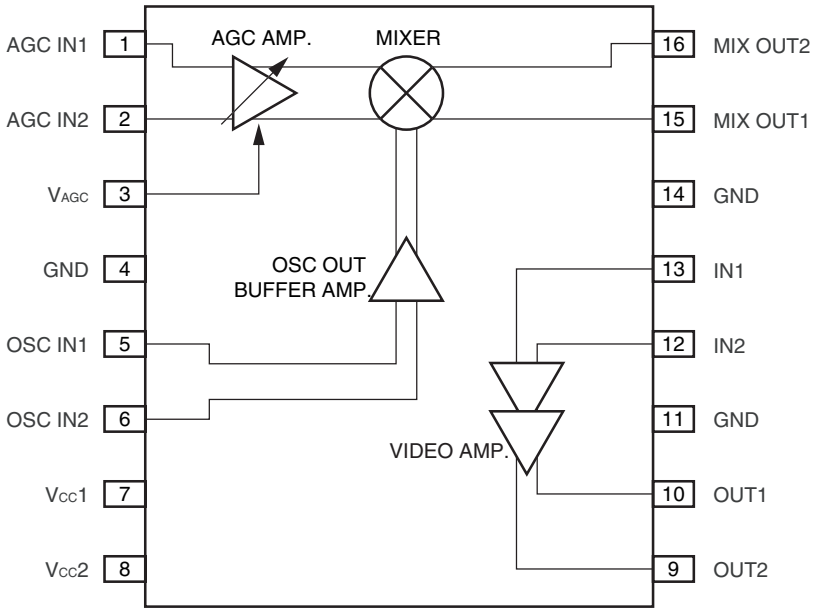
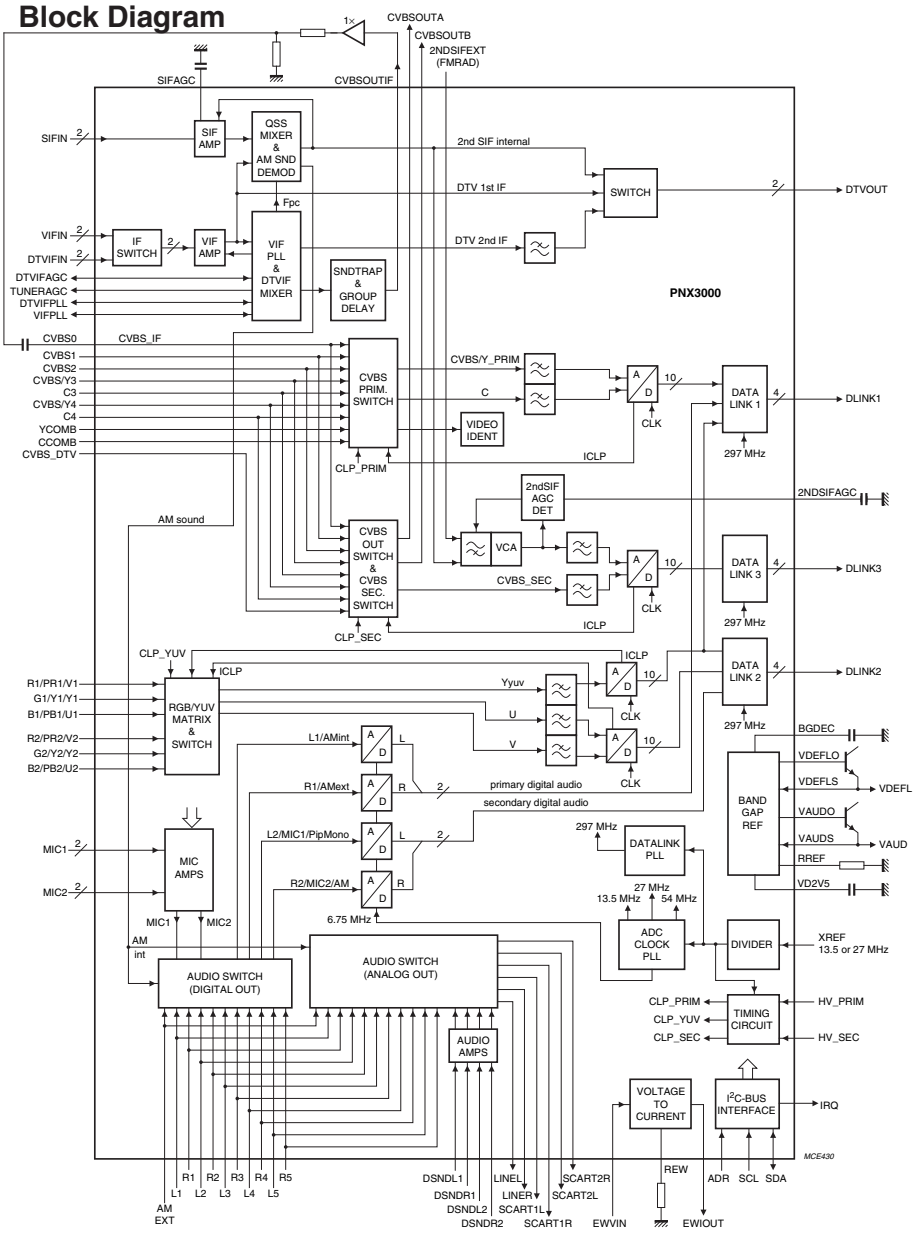


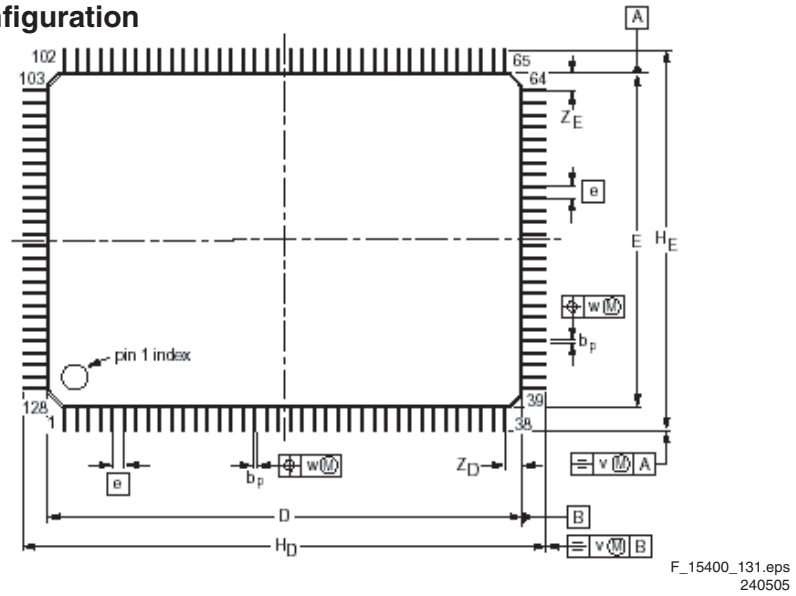
Figure 9-32 Internal block diagram and pin configuration

9.17.4 Diagram B3x, PNX3000HL (IC 7C00)

Block Diagram



Pin Configuration

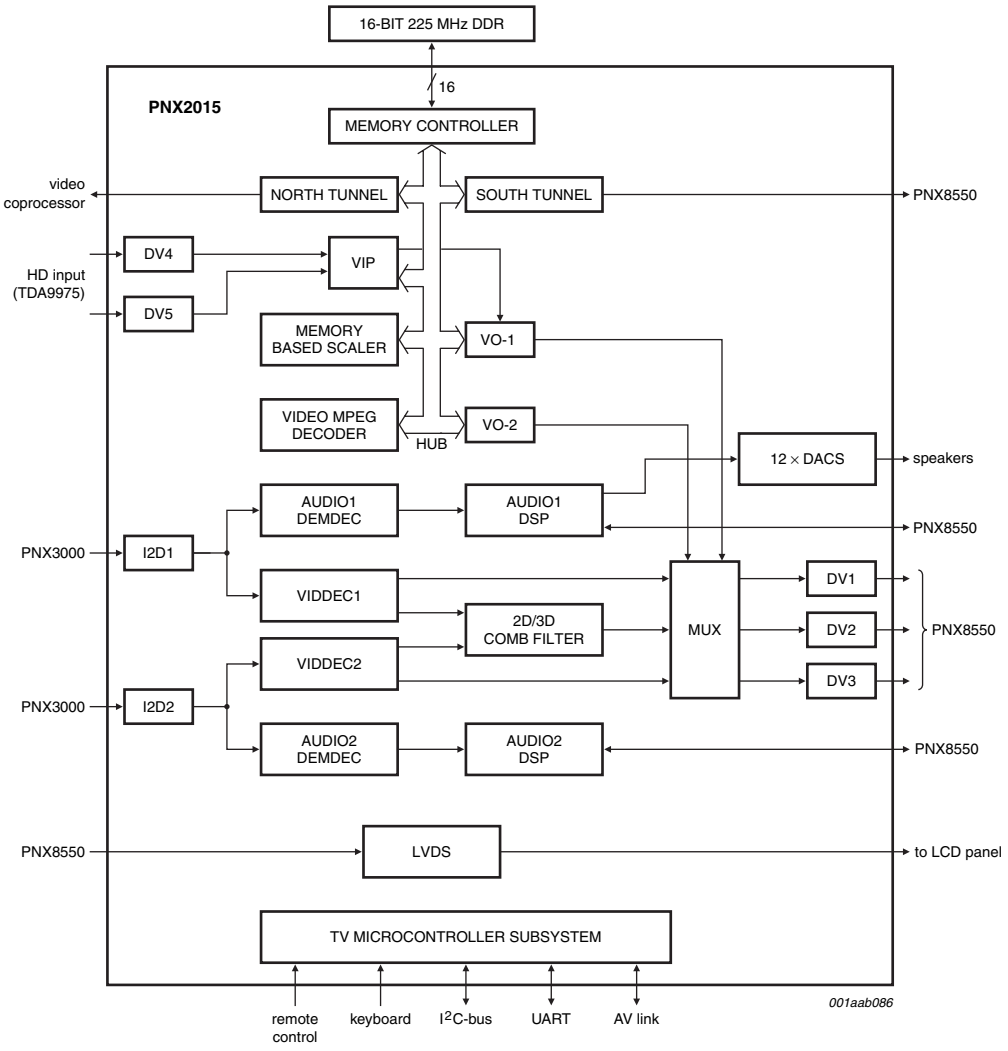


F_15400_131.eps
240505

Figure 9-33 Internal block diagram and pin configuration

9.17.5 Diagram B4x, PNX2015E (IC 7J00)

Block Diagram



Pin Configuration

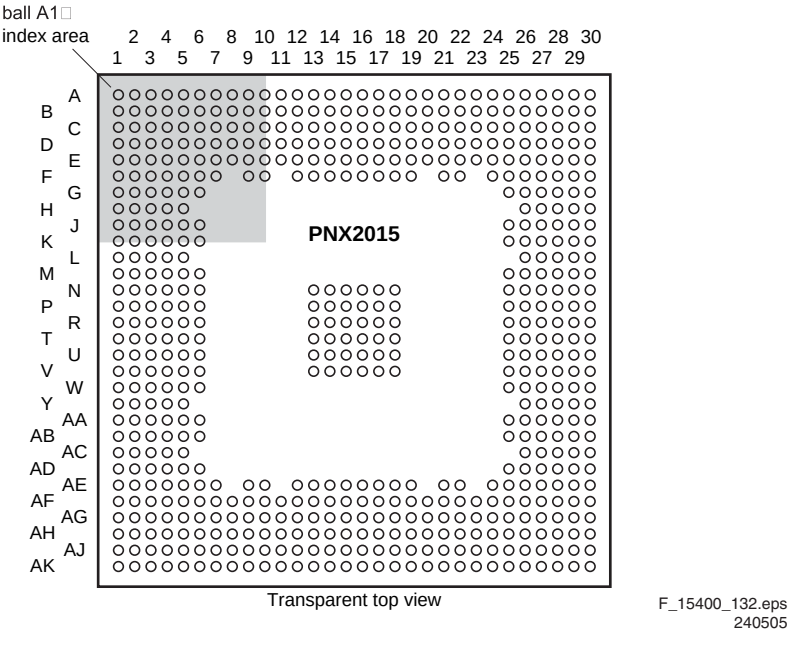


Figure 9-34 Internal block diagram and pin configuration

9.17.6 Diagram B4A, CY2305SC-1 (IC 7J08)

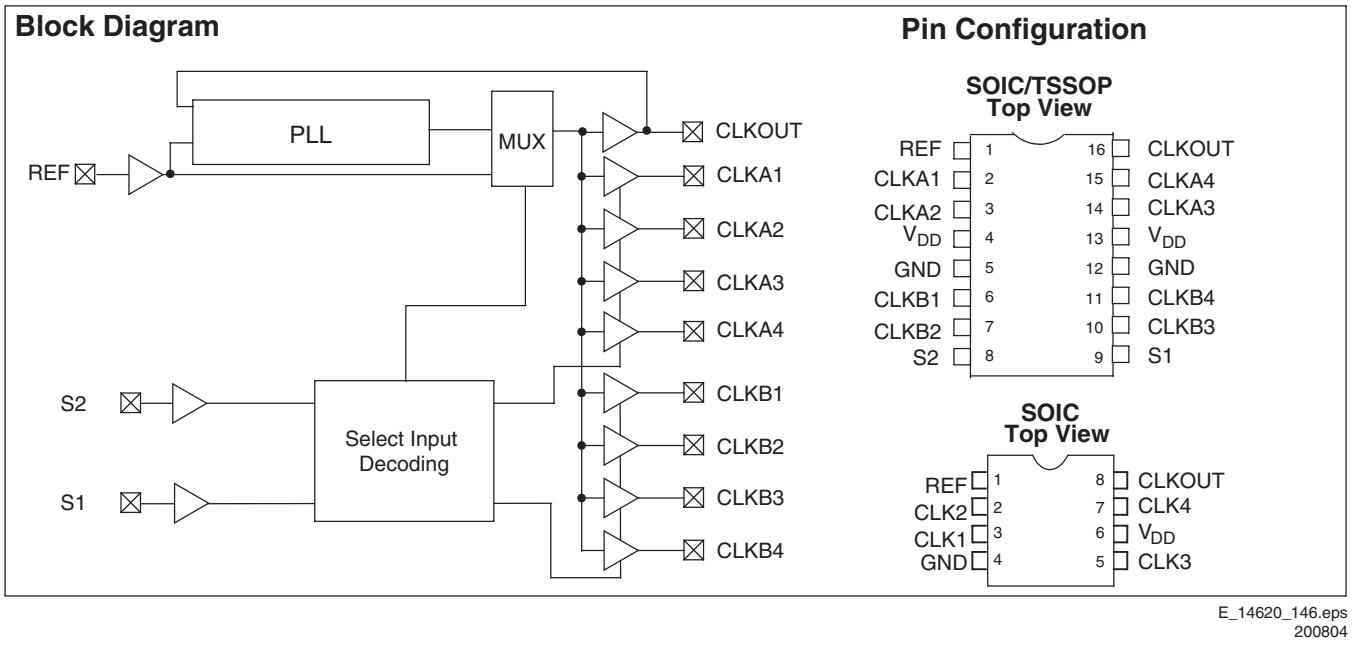
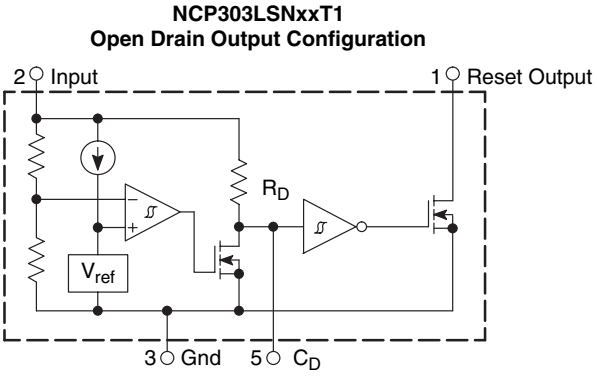


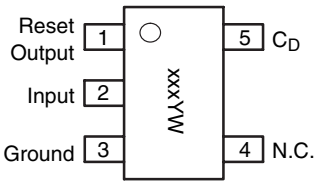
Figure 9-35 Internal block diagram and pin configuration

9.17.7 Diagram B4E, NCP303LSN (IC 7LB0 - 7LB4)

Block Diagram



Pin Configuration



xxx = 302 or 303
Y = Year
W = Work Week

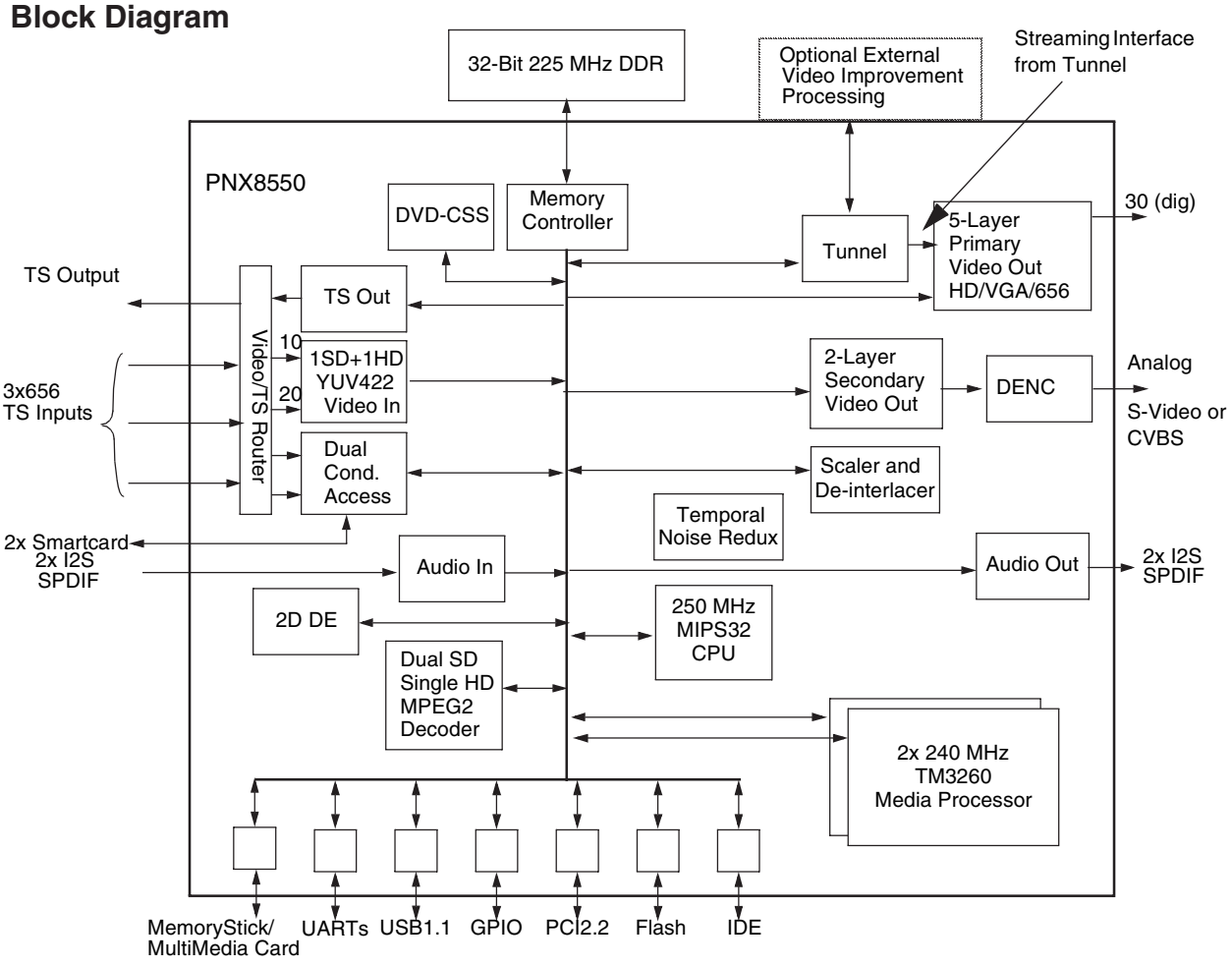
(Top View)

F_15400_133.eps
250505

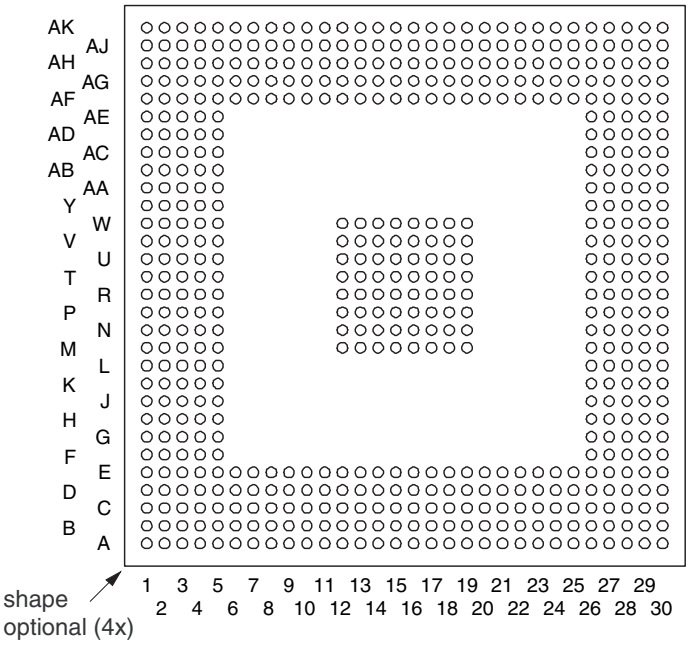
Figure 9-36 Internal block diagram and pin configuration

9.17.8 Diagram B5x, PNX8550EH (IC 7V00)

Block Diagram



Pin Configuration

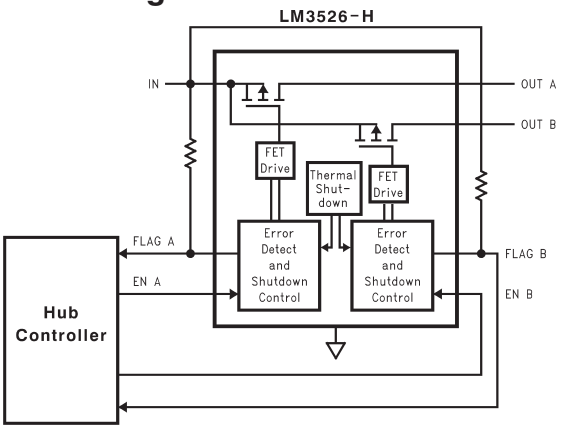


E_14700_088.eps
250505

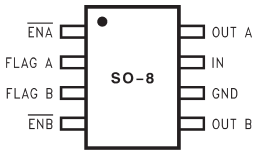
Figure 9-37 Internal block diagram and pin configuration

9.17.9 Diagram B5A, LM3526MX (IC 7Q01)

Block Diagram



Pin Configuration



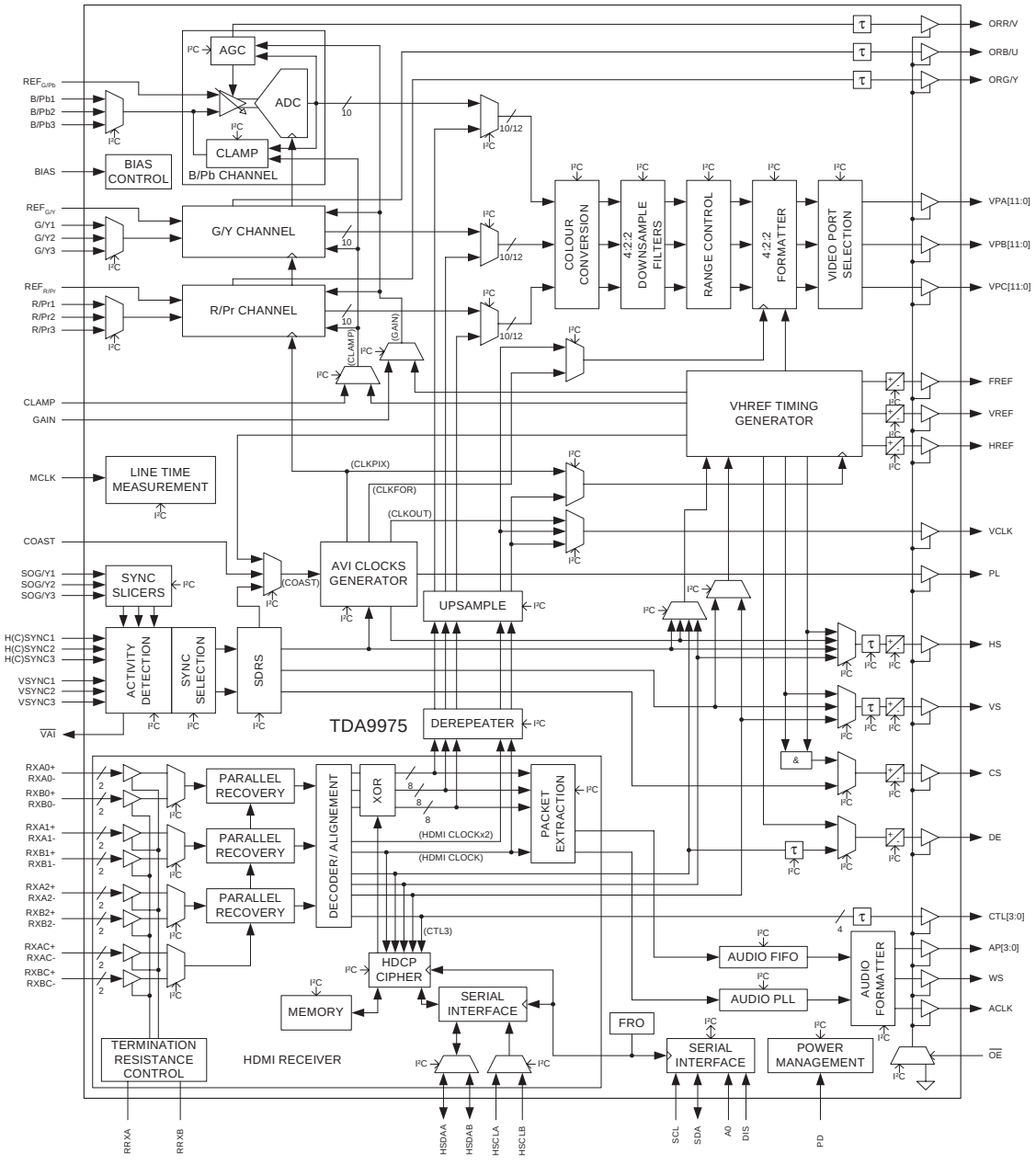
LM3526-L

F_15400_134.eps
240505

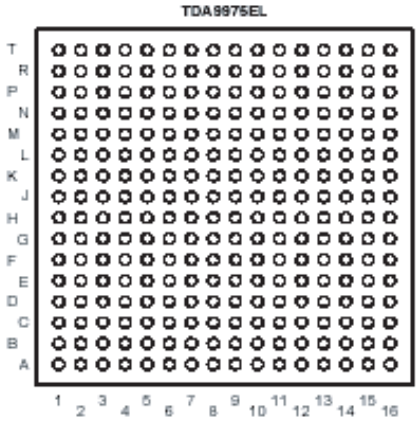
Figure 9-38 Internal block diagram and pin configuration

9.17.10 Diagram B7B & B7C, TDA9975EL (IC 7B11)

Block Diagram



Pin Configuration

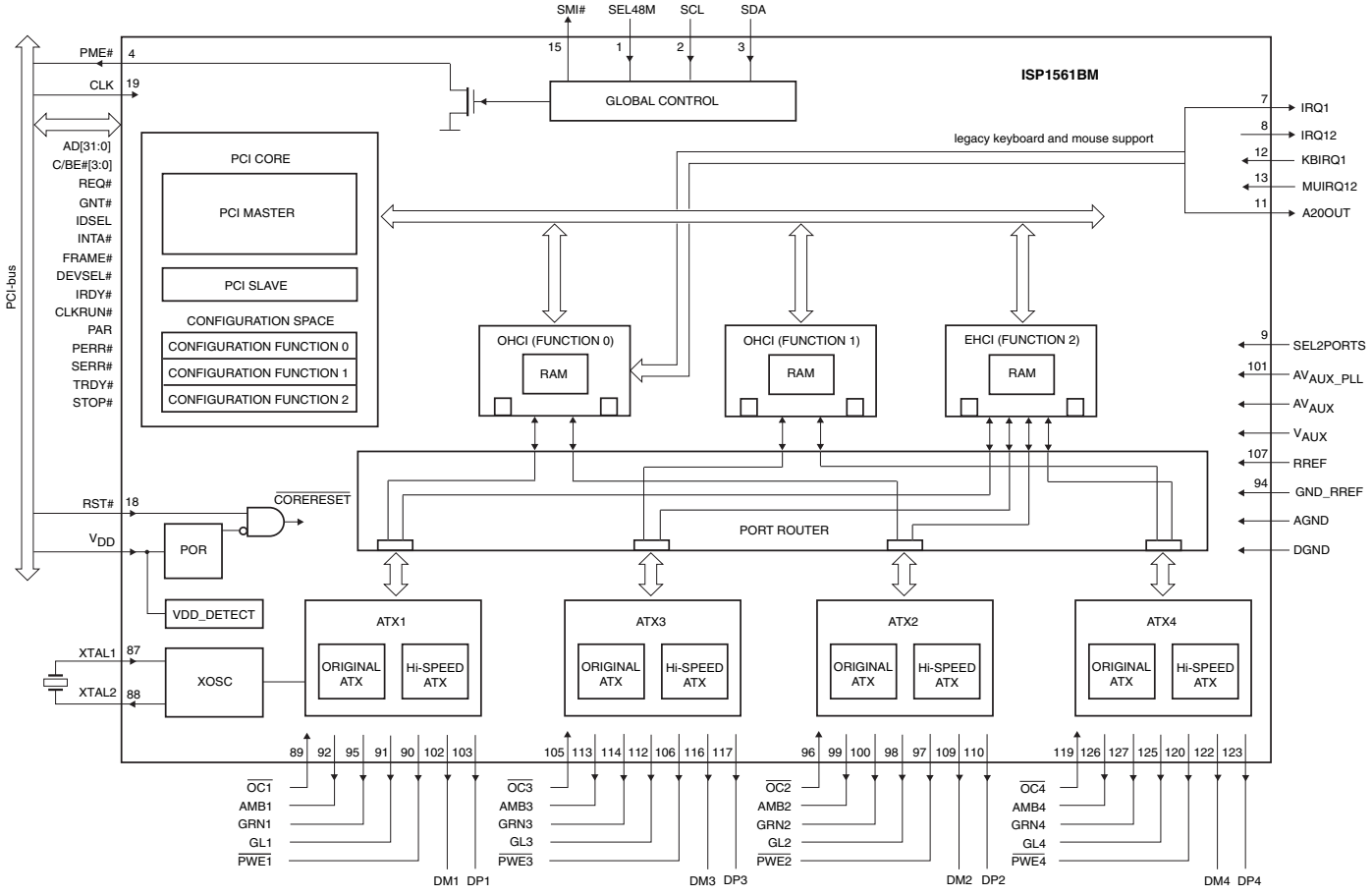


F_15400_135.eps
240505

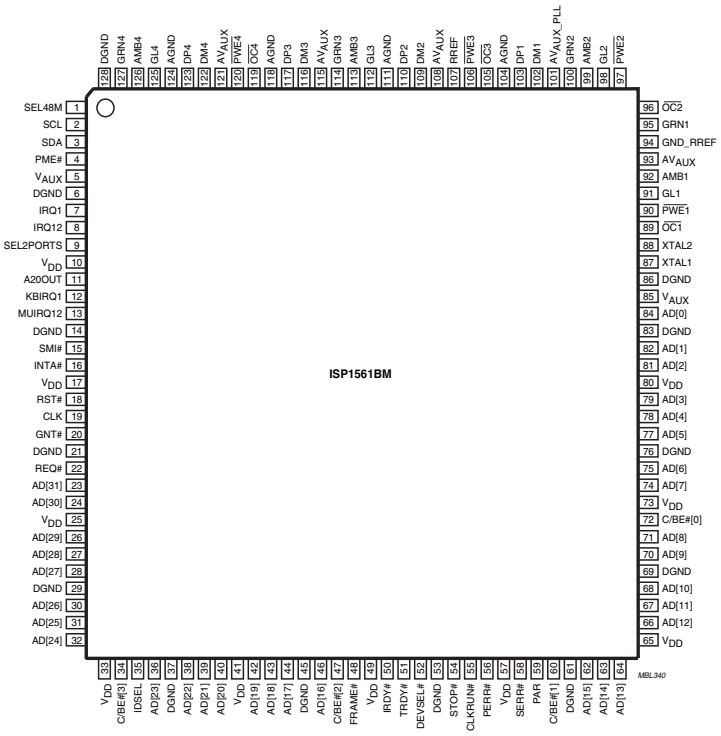
Figure 9-39 Internal block diagram and pin configuration

9.17.11 Diagram B8, ISP1561BM (IC 7N00)

Block Diagram



Pin Configuration

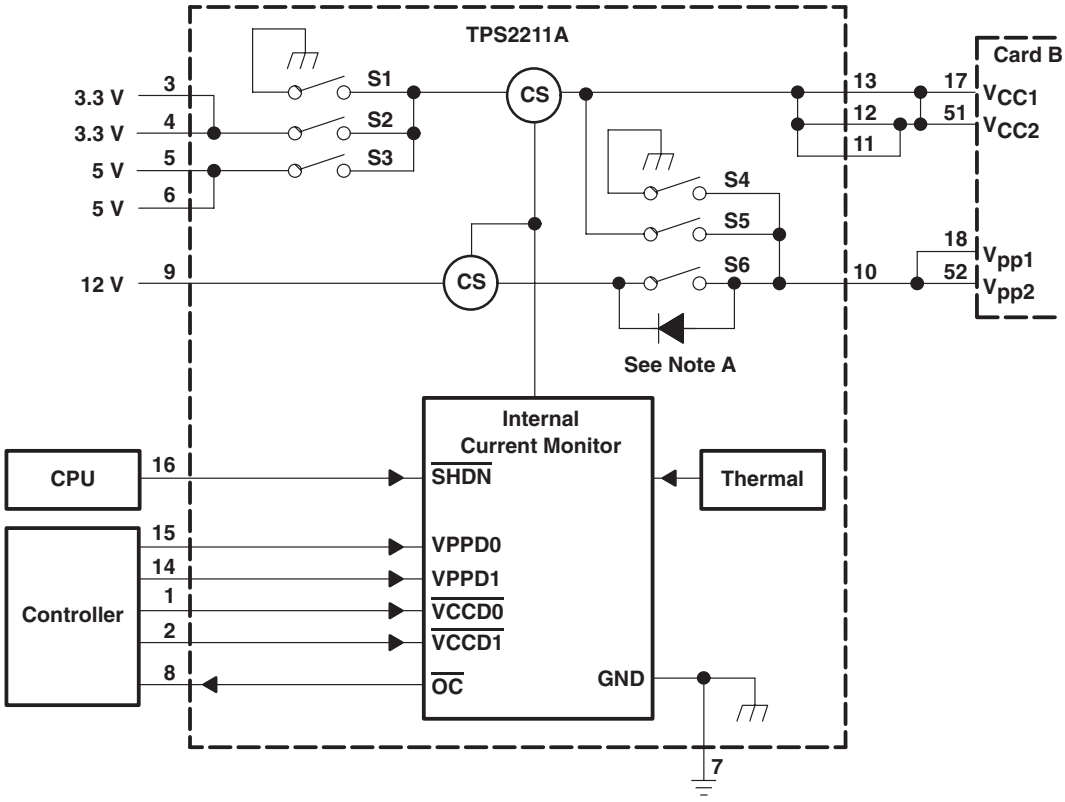


F_15400_136.eps
240505

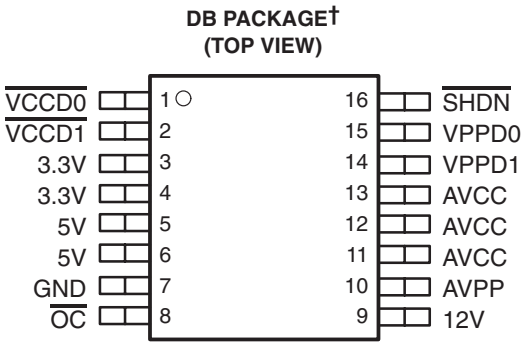
Figure 9-40 Internal block diagram and pin configuration

9.17.12 Diagram B10A, TPS2211AIDB (IC 7P00)

Block Diagram



Pin Configuration

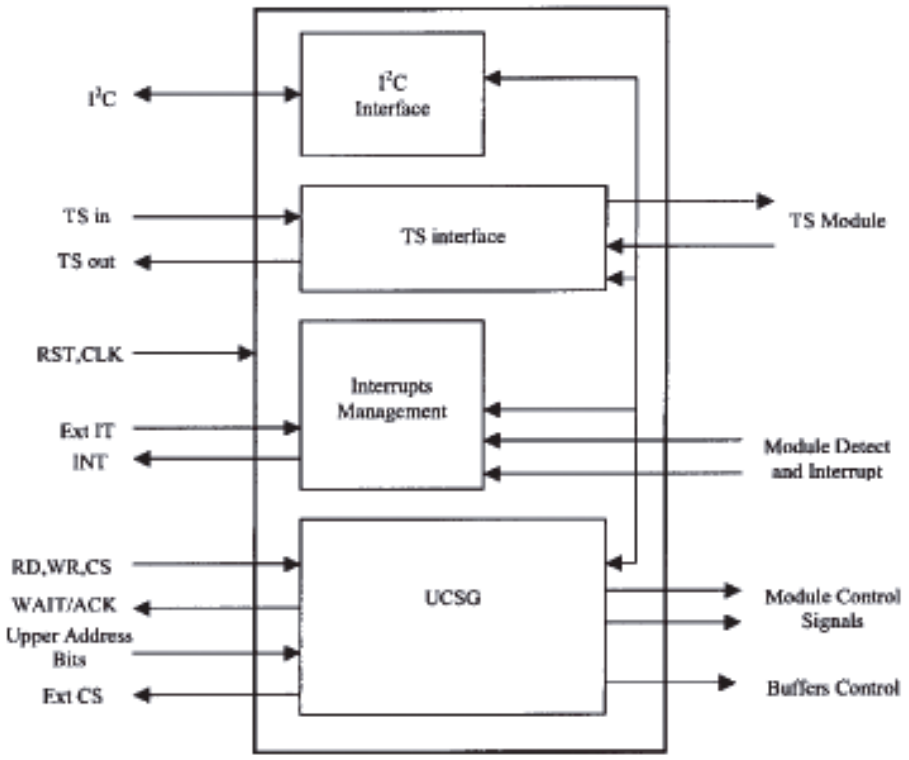


F_15400_137.eps
240505

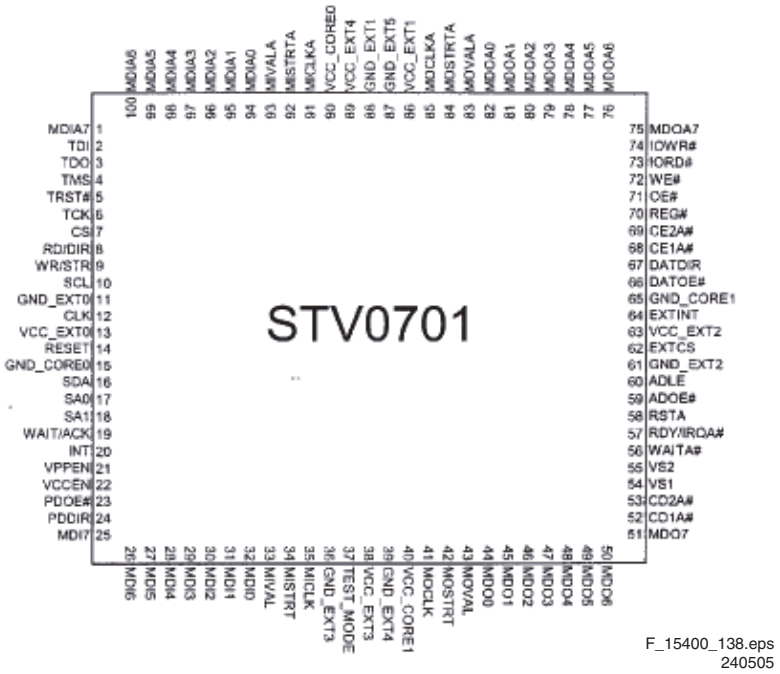
Figure 9-41 Internal block diagram and pin configuration

9.17.13 Diagram B10A, STV0701 (IC 7P03)

Block Diagram



Pin Configuration

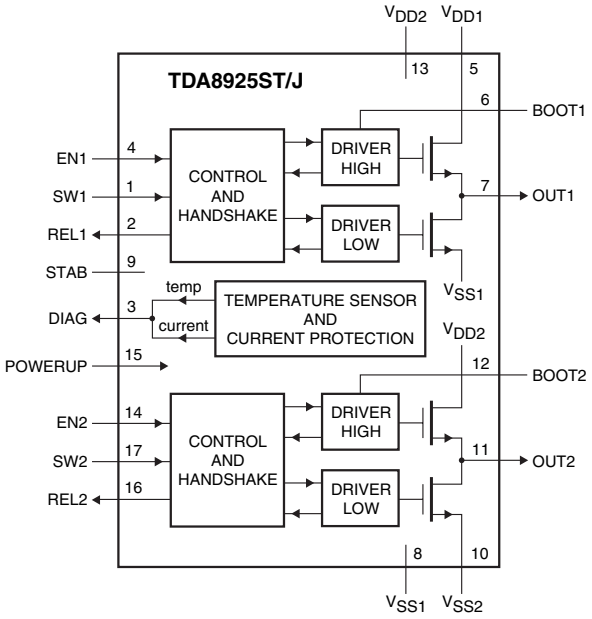


F_15400_138.eps
240505

Figure 9-42 Internal block diagram and pin configuration

9.17.14 Diagram C, TDA8925ST (IC 7701)

Block Diagram



Pin Configuration

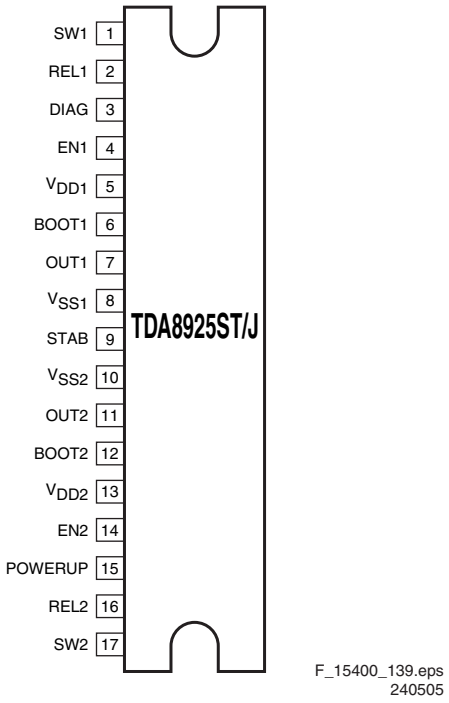


Figure 9-43 Internal block diagram and pin configuration

10. Spare Parts List

Set Level

Various

0041	3104 304 28141	Light guide
0180	3104 328 35431	Cardreader assy
1004▲	8204 000 78201	PDP S50HW-XD04 (SDI)
1004▲	9322 225 38682	PDP S42AX-YD01 (SDI)
1012	3104 328 36781	LED panel assy
1014	3104 328 36671	Control panel assy
1064	3104 328 39552	CCFL Inverter panel
1066	3104 328 39552	CCFL Inverter panel
1101	See table 5-4	SSB incl. security keys
1116	3104 328 39821	Side I/O panel assy
1175	2722 171 00256	Ambi light 500R (42")
1175	2722 171 00262	Ambi light 600R (50")
1176	2722 171 00258	Ambi light 500L (42")
1176	2722 171 00264	Ambi light 600L (50")
5213	2441 257 30020	Loudspeaker 8Ω 10W
5214	2441 257 30020	Loudspeaker 8Ω 10W
8101	3104 311 10561	Cable 3p/1200/3p
8101	3104 311 10911	Cable 3p/1400/3p
8102	3104 311 07241	Cable 7p/1000/7p
8103	3104 311 07391	Cable 10p/220/10p
8108	3104 311 10531	Cable 4p/1400/4p
8110	3104 311 10712	Cable 4p/1000/4p
8110	3104 311 10851	Cable 4p/1K3/4p
8120	3104 311 07291	Cable 12p/820/12p
8136	3104 311 10733	Cable 11p/1K/11p
8146	3104 311 08621	Cable 11p/220/11p
8148	3104 311 10521	Cable 3p/1400/3p
8149	3104 311 10722	Cable 4p/1K0/4p
8149	3104 311 10861	Cabl 4p/1K3/4p
8150	3104 311 08841	Cable 31p/220/31p
8152	3104 311 07941	Cable 9p/820/9p
8735	3104 311 10601	Cable 2p3/1400/POSI
8736	3104 311 10591	Cable 2p3/1000/POSI
8900	3104 311 07911	Cable ring/180/ring

AmbiLight Inverter Panel [AL]

Various

0615	3104 317 09401	SW (see Prod. Survey)
1010	2422 086 00657	Fuse 3A 125V F SMD
1050	2422 543 01431	Xtal 20MHz 16pF
1M08	2422 025 09406	Connector 4p m
1M10	2422 025 09406	Connector 4p m
1M11	2422 025 19068	Connector 11p m
1M12	2422 025 19069	Connector 3p m
1M48	2422 025 10768	Connector 3p m
1M49	2422 025 18884	Connector 4p m

⊣⊢

2001	2020 012 00018	1000µF 20% 16V
2002	2238 586 59812	100nF 20% 50V 0603
2003	2020 552 96618	1nF 10% 50V 0402
2004	2020 552 96618	1nF 10% 50V 0402
2005	3198 034 01590	15pF 1% 50V 0402
2006	3198 034 01590	15pF 1% 50V 0402

⊣WW⊢

3003	4822 117 13596	220Ω 5% 0.01W 0402
3004	4822 051 20471	470Ω 5% 0.1W
3005	4822 051 20561	560Ω 5% 0.1W
3006	2322 762 60102	1kΩ 5% 2512
3007	2322 762 60102	1kΩ 5% 2512
3008	4822 051 20471	470Ω 5% 0.1W
3009	4822 051 20561	560Ω 5% 0.1W
3010	2322 762 60102	1kΩ 5% 2512
3011	2322 762 60102	1kΩ 5% 2512
3012	4822 051 20471	470Ω 5% 0.1W
3013	4822 051 20561	560Ω 5% 0.1W
3014	2322 762 60102	1kΩ 5% 2512
3015	2322 762 60102	1kΩ 5% 2512
3016	3198 031 04720	4.7kΩ 5% 0402
3017	3198 031 04720	4.7kΩ 5% 0402
3018	3198 031 04720	4.7kΩ 5% 0402
3019	3198 031 04720	4.7kΩ 5% 0402
3020	3198 031 04720	4.7kΩ 5% 0402
3022	4822 117 13545	100Ω 1% 0402
3023	4822 117 13545	100Ω 1% 0402
3024	3198 031 04720	4.7kΩ 5% 0402
3025	3198 031 04720	4.7kΩ 5% 0402
3028	4822 117 13606	10kΩ 5% 0.01W 0402
3029	3198 031 04720	4.7kΩ 5% 0402
3030	3198 031 04720	4.7kΩ 5% 0402
3031	3198 031 04720	4.7kΩ 5% 0402
3042	4822 053 20105	1MΩ 5% 0.25W
3999	4822 051 30103	10kΩ 5% 0.062W

⌒

5002	2422 536 00923	22µH 10% LHL10
5007	2422 536 00923	22µH 10% LHL10
5008	2422 536 00923	22µH 10% LHL10
5014	3104 308 21271	Transf. BD21416-00
5015	3104 308 21271	Transf. BD21416-00
5016	3104 308 21271	Transf. BD21416-00

⊳⊢

6000	4822 130 11397	BAS316
6001	4822 130 11397	BAS316
6002	4822 130 11397	BAS316
6003	4822 130 11397	BAS316
6004	4822 130 11397	BAS316
6005	4822 130 11397	BAS316
6006	4822 130 11152	UDZ18B
6007	4822 130 11152	UDZ18B
6008	4822 130 11152	UDZ18B
6009	4822 130 11152	UDZ18B
6010	4822 130 11152	UDZ18B
6011	4822 130 11152	UDZ18B

7001		For SW see item 0615
7002	9322 202 58668	LD1117DT50
7009	3198 010 42310	BC847BW
7010	3198 010 42310	BC847BW
7011	3198 010 42310	BC847BW
7015	9322 214 20668	SI4946EY
7016	9322 214 20668	SI4946EY
7017	9322 214 20668	SI4946EY
7018	3198 010 42310	BC847BW
7019	3198 010 42310	BC847BW
7020	3198 010 42310	BC847BW

Small Signal Board [B]

Various

1062	2422 549 00148	Socket 3p m
1B01	2422 033 00018	Connector 19p F
1B02	2422 033 00018	Connector 19p F
1B30	2422 549 00146	Line filter 20V 3A
1B31	2422 549 00146	Line filter 20V 3A
1B32	2422 549 00146	Line filter 20V 3A
1B33	2422 549 00146	Line filter 20V 3A
1B34	2422 549 00146	Line filter 20V 3A
1B35	2422 549 00146	Line filter 20V 3A
1B36	2422 549 00146	Line filter 20V 3A
1B37	2422 549 00146	Line filter 20V 3A
1C33	2422 086 11092	Fuse 500mA 50V F SMD
1C52	2422 549 44377	Filter 45.75MHz
1C54	2422 549 00505	Filter 4.5MHz
1E40	2422 025 17601	Connector 40p f
1E62	2422 025 17759	Connector 20p f
1G02	2422 025 18741	Connector 6p m
1G50	2422 025 18427	Connector 31p f
1H00	2422 543 01397	Xtal 27MHz 18pF
1H01	2422 025 17775	Socket USB 4p f
1H07	2422 025 03999	Connector 14p m
1LA0	4822 242 11006	16MHz DSX840GA
1M03	2422 025 10771	Connector 10p m
1M15	2422 025 18749	Connector 3p m
1M46	2422 025 10655	Connector 11p m
1M49	2422 025 18884	Connector 4p m
1M52	2422 025 18744	Connector 9p m
1M63	2422 025 09405	Connector 2p m
1M64	2422 025 18779	Connector 4P m
1N00	2422 543 01095	Res. 12MHz DSX840
1N62	2422 025 18779	Connector 4P m
1P01	2422 033 00364	Connector smartcard
1T04	3112 297 14221	Tuner TD1336O/FGHP
1T41	2422 549 00137	Filter 44MHz
1T44	2422 549 00137	Filter 44MHz
1T55	2422 086 11092	Fuse 500mA 50V F SMD
1TG0	2422 543 01522	Xtal 25.140MHz 20pF
1U01▲	2422 086 00623	Fuse 3A T 125V
1U04▲	2422 086 00623	Fuse 3A T 125V
8140	3104 311 10451	Cable FFC 40p/120/40p
8162	3104 311 10461	Cable FFC 20p/180/20p
8321	3104 311 08731	Cable POSI/100/POSI
8364	3104 311 09871	Cable 4p/220/4p

⊣⊢

2A01	2238 586 59812	100nF 20% 50V 0603
2A20	4822 124 12095	100µF 20% 16V
2A21	4822 124 12095	100µF 20% 16V
2A22	2022 552 05679	1µF 10% 16V 0805
2A23	2020 552 96618	1nF 10% 50V 0402
2A24	2238 586 59812	100nF 20% 50V 0603
2A25	2238 586 59812	100nF 20% 50V 0603
2A29	2238 586 59812	100nF 20% 50V 0603
2A31	2238 586 59812	100nF 20% 50V 0603
2A32	4822 124 80151	47µF 16V
2A34	2238 869 15101	100pF 5% 50V 0402
2A35	2238 869 15101	100pF 5% 50V 0402
2A36	2238 869 15101	100pF 5% 50V 0402
2A37	2020 552 96628	10nF 10% 16V 0402
2A38	2238 869 15101	100pF 5% 50V 0402
2A39	2238 869 15101	100pF 5% 50V 0402
2A75	2238 869 15101	100pF 5% 50V 0402
2A76	2238 869 15101	100pF 5% 50V 0402
2A77	2238 869 15101	100pF 5% 50V 0402
2A79	2022 552 05679	1µF 10% 16V 0805
2A81	2022 552 05679	1µF 10% 16V 0805
2A83	2022 552 05679	1µF 10% 16V 0805
2A84	2022 552 05679	1µF 10% 16V 0805
2A85	2238 586 59812	100nF 20% 50V 0603
2A86	2022 552 05679	1µF 10% 16V 0805
2A87	2022 552 05679	1µF 10% 16V 0805
2A88	2238 586 59812	100nF 20% 50V 0603
2A89	4822 126 14324	33pF 5% 50V 0402
2A90	4822 126 14324	33pF 5% 50V 0402
2A91	2022 552 05679	1µF 10% 16V 0805
2A93	2238 586 59812	100nF 20% 50V 0603
2A96	2238 586 59812	100nF 20% 50V 0603
2A98	4822 126 14324	33pF 5% 50V 0402
2A99	4822 126 14324	33pF 5% 50V 0402
2AA0	4822 124 12095	100µF 20% 16V
2AA1	4822 124 80151	47µF 16V
2AA2	4822 124 12095	100µF 20% 16V
2AA3	2238 586 59812	100nF 20% 50V 0603
2AA4	4822 124 12108	100µF 20% 4V
2AB1	2020 552 96618	1nF 10% 50V 0402
2AB2	2020 552 96618	1nF 10% 50V 0402
2AB5	2020 552 96618	1nF 10% 50V 0402
2AB7	2238 586 59812	100nF 20% 50V 0603
2AB8	3198 035 03310	330pF 5% 50V 0402
2B00	2238 586 59812	100nF 20% 50V 0603
2B01	2238 586 59812	100nF 20% 50V 0603
2B02	2238 586 59812	100nF 20% 50V 0603
2B04	2238 586 59812	100nF 20% 50V 0603
2B05	2238 586 59812	100nF 20% 50V 0603
2B21	2020 552 96628	10nF 10% 16V 0402
2B22	2020 552 96628	10nF 10% 16V 0402
2B23	2020 552 96628	10nF 10% 16V 0402
2B24	2020 552 96628	10nF 10% 16V 0402
2B25	2020 552 96628	10nF 10% 16V 0402
2B26	2020 552 96628	10nF 10% 16V 0402
2B27	2020 552 96628	10nF 10% 16V 0402
2B28	2020 552 96628	10nF 10% 16V 0402
2B29	2020 552 96628	10nF 10% 16V 0402
2B30	2020 552 96628	10nF 10% 16V 0402
2B31	2020 552 96628	10nF 10% 16V 0402
2B32	2238 869 15109	10pF 5% 50V 0402
2B33	2238 869 15109	10pF 5% 50V 0402
2B34	2238 869 15109	10pF 5% 50V 0402
2B35	2238 869 15109	10pF 5% 50V 0402
2B36	2238 869 15109	10pF 5% 50V 0402
2B37	2238 869 15109	10pF 5% 50V 0402
2B38	2022 552 05679	1µF 10% 16V 0805
2B39	2022 009 00703	330µF 20% 6.3V
2B40	2238 586 59812	100nF 20% 50V 0603
2B41	2238 586 59812	100nF 20% 50V 0603
2B42	2238 586 59812	100nF 20% 50V 0603
2B43	4822 117 13605	Jumper 0402
2B44	2020 552 96628	10nF 10% 16V 0402
2B45	2020 552 96628	10nF 10% 16V 0402
2B46	2020 552 96628	10nF 10% 16V 0402
2B49	2238 586 59812	100nF 20% 50V 0603
2B51	2238 586 59812	100nF 20% 50V 0603
2B52	2238 586 59812	100nF 20% 50V 0603
2B53	2238 586 59812	100nF 20% 50V 0603
2B62	2238 586 59812	100nF 20% 50V 0603

2B64	2238 586 59812	100nF 20% 50V 0603
2B67	4822 124 11131	47µF 6.3V
2B69	2238 586 59812	100nF 20% 50V 0603
2B77	2238 586 59812	100nF 20% 50V 0603
2B79	2238 586 59812	100nF 20% 50V 0603
2B80	2238 586 59812	100nF 20% 50V 0603
2B81	2238 586 59812	100nF 20% 50V 0603
2B89	5322 126 11583	10nF 10% 50V 0603
2B90	4822 124 81058	47µF 20% 4V
2B92	2238 586 59812	100nF 20% 50V 0603
2BA0	2020 552 96628	10nF 10% 16V 0402
2BA1	3198 035 14720	4.7nF 5% 25V 0402
2BA2	2020 552 96628	10nF 10% 16V 0402
2BA3	3198 035 14720	4.7nF 5% 25V 0402
2BA4	3198 034 01580	1.5pF 1% 50V 0402
2BA5	3198 034 01580	1.5pF 1% 50V 0402
2BA6	3198 034 01580	1.5pF 1% 50V 0402
2BA7	3198 034 01580	1.5pF 1% 50V 0402
2BA8	3198 034 01580	1.5pF 1% 50V 0402
2BA9	3198 034 01580	1.5pF 1% 50V 0402
2C01	2238 787 15641	22nF 5% 16V 0402
2C02	2238 787 15641	22nF 5% 16V 0402
2C04	2238 787 15641	22nF 5% 16V 0402
2C05	2238 787 15641	22nF 5% 16V 0402
2C06	2238 787 15641	22nF 5% 16V 0402
2C07	2238 787 15641	22nF 5% 16V 0402
2C08	2238 787 15641	22nF 5% 16V 0402
2C09	2238 787 15641	22nF 5% 16V 0402
2C11	2238 787 15641	22nF 5% 16V 0402
2C14	2238 787 15641	22nF 5% 16V 0402
2C15	2238 787 15641	22nF 5% 16V 0402
2C16	2238 787 15641	22nF 5% 16V 0402
2C17	2238 787 15641	22nF 5% 16V 0402
2C18	2238 787 15641	22nF 5% 16V 0402
2C19	2238 787 15641	22nF 5% 16V 0402
2C20	2238 787 15641	22nF 5% 16V 0402
2C22	2238 787 15641	22nF 5% 16V 0402
2C23	2238 787 15641	22nF 5% 16V 0402
2C27	2238 586 59812	100nF 20% 50V 0603
2C28	2238 586 59812	100nF 20% 50V 0603
2C31	2238 586 59812	100nF 20% 50V 0603
2C32	2020 004 90283	10µF 20% 10V 1206
2C33	2238 586 59812	100nF 20% 50V 0603
2C34	2022 552 05679	1µF 10% 16V 0805
2C35	2238 586 59812	100nF 20% 50V 0603
2C36	2022 552 05679	1µF 10% 16V 0805
2C37	2022 552 05679	1µF 10% 16V 0805
2C39	2238 586 59812	100nF 20% 50V 0603
2C40	2238 586 59812	100nF 20% 50V 0603
2C42	4822 126 14519	22pF 5% 50V 0402
2C43	4822 124 12108	100µF 20% 4V
2C44	2238 586 59812	100nF 20% 50V 0603
2C45	2020 004 90283	10µF 20% 10V 1206
2C46	2022 552 05679	1µF 10% 16V 0805
2C50	2020 552 96628	10nF 10% 16V 0402
2C52	4822 124 23002	10µF 16V
2C53	2020 552 96628	10nF 10% 16V 0402
2C55	2238 586 59812	100nF 20% 50V 0603
2C57	2020 552 96628	10nF 10% 16V 0402
2C58	2020 552 96628	10nF 10% 16V 0402
2C60	2020 552 96628	10nF 10% 16V 0402
2C63	2238 586 59812	100nF 20% 50V 0603
2C65	2020 552 96628	10nF 10% 16V 0402
2C67	2022 552 05679	1µF 10% 16V 0805
2C68	2022 552 05679	1µF 10% 16V 0805
2C70	2020 552 96628	10nF 10% 16V 0402
2C75	2022 029 00632	330µF 20% 6.3V
2C78	2022 552 05679	1µF 10% 16V 0805
2C79	2022 552 05679	1µF 10% 16V 0805
2G10	4822 124 81058	47µF 20% 4V
2G11	2238 586 59812	100nF 20% 50V 0603
2G12	2238 586 59812	100nF 20% 50V 0603
2G13	2238 586 59812	100nF 20% 50V 0603
2G14	2238 586 59812	100nF 20% 50V 0603
2G15	2238 586 59812	100nF 20% 50V 0603
2G16	2238 586 59812	100nF 20% 50V 0603
2G17	2238 586 59812	100nF 20% 50V 0603
2G18	2238 586 59812	100nF 20% 50V 0603
2G19	2238 586 59812	100nF 20% 50V 0603
2G20	2238 586 59812	100nF 20% 50V 0603
2G21	2238 586 59812	100nF 20% 50V 0603
2G22	4822 124 11946	22µF 20% 16V
2G23	2238 586 59812	100nF 20% 50V 0603
2G24	2238 586 59812	100nF 20% 50V 0603
2G25	2238 586 59812	100nF 20% 50V 0603
2G26	2238 586 59812	100nF 20% 50V 0603
2G27	2238 586 59812	100nF 20% 50V 0603
2G28	2238 586 59812	100nF 20% 50V 0603
2G29	2238 586 59812	100nF 20% 50V 0603
2G30	4822 124 11946	22µF 20% 16V
2G31	2238 586 59812	100nF 20% 50V 0603
2G32	2238 586 59812	100nF 20% 50V 0603
2G33	2238 586 59812	100nF 20% 50V 0603
2G34	2238 586 59812	100nF 20% 50V 0603
2G37	2238 586 59812	100nF 20% 50V 0603
2G38	2238 586 59812	100nF 20% 50V 0603
2G39	2238 586 59812	100nF 20% 50V 0603
2G40	2238 586 59812	100nF 20% 50V 0603
2G41	2022 552 05679	1µF 10% 16V 0805
2G42	2020 552 96618	1nF 10% 50V 0402
2G43	2238 586 59812	100nF 20% 50V 0603
2G44	2020 552 96628	10nF 10% 16V 0402
2H00	2238 586 59812	100nF 20% 50V 0603
2H01	2238 586 59812	100nF 20% 50V 0603
2H02	2238 586 59812	100nF 20% 50V 0603
2H03	2238 586 59812	100nF 20% 50V 0603
2H06	2020 552 96618	1nF 10% 50V 0402
2H07	2020 552 96618	1nF 10% 50V 0402
2H08	3198 034 02790	47pF 1% 50V 0402
2H09	3198 034 02790	47pF 1% 50V 0402
2H12	3198 034 02790	47pF 1% 50V 0402
2J01	2238 586 59812	100nF 20% 50V 0603
2J03	2238 586 59812	100nF 20% 50V 0603
2J06	2238 586 59812	100nF 20% 50V 0603
2J08	2238 586 59812	100nF 20% 50V 0603
2J10	2238 586 59812	100nF 20% 50V 0603
2J13	2238 586 59812	100nF 20% 50V 0603
2J16	2238 586 59812	100nF 20% 50V 0603
2J18	2238 586 59812	100nF 20% 50V 0603
2J20	2238 586 59812	100nF 20% 50V 0603
2J22	3198 035 03320	3.3nF 5% 50V 0402
2J23	3198 035 03320	3.3nF 5% 50V 0402
2J24	3198 035 03320	3.3nF 5% 50V 0402
2J25	3198 035 03320	3.3nF 5% 50V 0402
2J37	2020 552 96628	10nF 10% 16V 0402
2J40	2238 869 15109	10pF 5% 50V 0402
2J41	2238 869 15109	10pF 5% 50V 0402
2J42	2238 869 15109	10pF 5% 50V 0402
2J43	2238 869 15109	10pF 5% 50V 0402
2J44	2238 869 15109	10pF 5% 50V 0402
2J45	2238 869 15109	10pF 5% 50V 0402
2J46	2238 869 15109	10pF 5% 50V 0402
2J47	2238 869 15109	10pF 5% 50V 0402
2J48	2238 869 15109	10pF 5% 50V 0402
2J49	2238 869 15109	10pF 5% 50V 0402
2J67	2238 869 15101	100pF 5% 50V 0402
2J68	2238 869 15101	100pF 5% 50V 0402
2J72	2238 869 15109	10pF 5% 50V 0402
2J73	2238 869 15109	10pF 5% 50V 0402
2K40	2238 586 59812	100nF 20% 50V 0603
2K41	2238 586 59812	100nF 20% 50V 0603
2K43	2238 586 59812	100nF 20% 50V 0603
2K45	2238 586 59812	100nF 20% 50V 0603
2K46	2022 552 05679	1µF 10% 16V 0805
2K47	2022 552 05679	1µF 10% 16V 0805
2K58	2022 552 05679	1µF 10% 16V 0805
2K60	2022 552 05679	1µF 10% 16V 0805
2K61	2022 552 05679	1µF 10% 16V 0805
2K63	2022 552 05679	1µF 10% 16V 0805
2K64	2022 552 05679	1µF 10% 16V 0805
2K65	2022 552 05679	1µF 10% 16V 0805
2K67	2022 552 05679	1µF 10% 16V 0805
2K68	2022 552 05679	1µF 10% 16V 0805
2K75	2022 552 05679	1µF 10% 16V 0805
2K76	2022 552 05679	1µF 10% 16V 0805
2L01	2238 586 59812	100nF 20% 50V 0603
2L06	2238 586 59812	100nF 20% 50V 0603
2L07	2238 586 59812	100nF 20% 50V 0603
2L08	2238 586 59812	100nF 20% 50V 0603
2L50	2238 586 59812	100nF 20% 50V 0603
2L51	2238 586 59812	100nF 20% 50V 0603
2L52	2238 586 59812	100nF 20% 50V 0603
2L53	2238 586 59812	100nF 20% 50V 0603
2L54	2238 586 59812	100nF 20% 50V 0603
2L55	2238 586 59812	100nF 20% 50V 0603
2L56	2238 586 59812	100nF 20% 50V 0603
2L57	2238 586 59812	100nF 20% 50V 0603
2L58	2238 586 59812	100nF 20% 50V 0603
2L59	2238 586 59812	100nF 20% 50V 0603
2L60	2238 586 59812	100nF 20% 50V 0603
2L61	2020 552 96618	1nF 10% 50V 0402
2L62	2020 552 96618	1nF 10% 50V 0402
2L63	2238 869 15101	100pF 5% 50V 0402
2L64	2238 586 59812	100nF 20% 50V 0603
2L80	2022 552 05615	2.2µF 10% 6.3V 0805
2L81	2022 552 05615	2.2µF 10% 6.3V 0805
2L82	2022 552 05615	2.2µF 10% 6.3V 0805
2L83	2022 552 05615	2.2µF 10% 6.3V 0805
2L84	2238 586 59812	100nF 20% 50V 0603
2L85	2238 586 59812	100nF 20% 50V 0603
2L86	2238 586 59812	100nF 20% 50V 0603
2L87	2238 586 59812	100nF 20% 50V 0603
2L88	2238 869 15101	100pF 5% 50V 0402
2L89	2020 552 96618	1nF 10% 50V 0402
2L90	2020 552 96618	1nF 10% 50V 0402
2L91	2020 552 96618	1nF 10% 50V 0402
2L92	2020 552 96618	1nF 10% 50V 0402
2LA0	4822 126 14519	22pF 5% 50V 0402
2LA1	4822 126 14519	22pF 5% 50V 0402
2LA2	2238 869 15109	10pF 5% 50V 0402
2LA4	2238 586 59812	100nF 20% 50V 0603
2LA5	3198 035 03320	3.3nF 5% 50V 0402
2LA6	3198 035 03320	3.3nF 5% 50V 0402
2LA7	3198 035 03320	3.3nF 5% 50V 0402
2LA8	3198 035 03320	3.3nF 5% 50V 0402
2LA9	3198 035 03320	3.3nF 5% 50V 0402
2LB0	2238 586 59812	100nF 20% 50V 0603
2LB1	2238 586 59812	100nF 20% 50V 0603
2LB3	2020 552 96618	1nF 10% 50V 0402
2LB4	2238 586 59812	100nF 20% 50V 0603
2LN2	4822 124 81058	47µF 20% 4V
2LN3	2238 586 59812	100nF 20% 50V 0603
2LN4	2238 586 59812	100nF 20% 50V 0603
2LN5	2238 586 59812	100nF 20% 50V 0603
2LN6	2238 586 59812	100nF 20% 50V 0603
2LN7	2238 586 59812	100nF 20% 50V 0603
2LN8	2238 586 59812	100nF 20% 50V 0603
2LP0	4822 124 12108	100µF 20% 4V
2LP2	2238 586 59812	100nF 20% 50V 0603
2LP3	2238 586 59812	100nF 20% 50V 0603
2LP4	2238 586 59812	100nF 20% 50V 0603
2LP7	4822 124 12108	100µF 20% 4V
2LP8	2238 586 59812	100nF 20% 50V 0603
2LP9	2238 586 59812	100nF 20% 50V 0603
2LR0	2238 586 59812	100nF 20% 50V 0603
2LR2	2238 586 59812	100nF 20% 50V 0603
2LR4	2238 586 59812	100nF 20% 50V 0603
2LR5	2238 586 59812	100nF 20% 50V 0603
2LR6	2238 586 59812	100nF 20% 50V 0603
2LR8	2238 586 59812	100nF 20% 50V 0603
2LR9	2238 586 59812	100nF 20% 50V 0603
2LS5	2238 586 59812	100nF 20% 50V 0603
2LT0	2022 552 05679	1µF 10% 16V 0805
2LT1	2238 586 59812	100nF 20% 50V 0603
2LT2	2238 586 59812	100nF 20% 50V 0603
2LT3	2238 586 59812	100nF 20% 50V 0603
2LT4	2238 586 59812	100nF 20% 50V 0603
2LT5	2238 586 59812	100nF 20% 50V 0603
2LT6	2238 586 59812	100nF 20% 50V 0603
2M90	2238 586 59812	100nF 20% 50V 0603
2M91	2020 552 96628	10nF 10% 16V 0402
2M92	2020 004 90283	10µF 20% 10V 1206
2M93	2020 552 96628	10nF 10% 16V 0402
2M94	2020 004 90283	10µF 20% 10V 1206
2N00	4822 126 14324	33pF 5% 50V 0402
2N01	4822 126 14324	33pF 5% 50V 0402
2N02	2238 586 59812	100nF 20% 50V 0603
2N03	2238 586 59812	100nF 20% 50V 0603
2N04	2238 586 59812	100nF 20% 50V 0603
2N05	2238 586 59812	100nF 20% 50V 0603
2N06	2238 586 59812	100nF 20% 50V 0603
2N07	2238 586 59812	100nF 20% 50V 0603
2N08	2238 586 59812	100nF 20% 50V 0603
2N09	2238 586 59812	100nF 20% 50V 0603
2N10	2238 586 59812	100nF 20% 50V 0603
2N11	2238 586 59812	100nF 20% 50V 0603
2N12	2020 552 96455	22nF 10% 16V 0402
2N13	2020 552 96455	22nF 10% 16V 0402
2O50	2238 869 15101	100pF 5% 50V 0402
2O51	2238 869 15101	100pF 5% 50V 0402
2P02	2238 586 59812	100nF 20% 50V 0603
2P03	2238 586 59812	100nF 20% 50V 0603
2P04	2238 586 59812	100nF 20% 50V 0603
2P06	2238 586 59812	100nF 20% 50V 0603
2P07	2238 586 59812	100nF 20% 50V 0603
2P09	2020 552 96618	1nF 10% 50V 0402
2P10	2238 586 59812	100nF 20% 50V 0603
2P15	2238 586 59812	100nF 20% 50V 0603
2P16	2238 586 59812	100nF 20% 50V 0603
2P18	2238 586 59812	100nF 20% 50V 0603
2P19	2238 586 59812	100nF 20% 50V 0603
2P20	2238 586 59812	100nF 20% 50V 0603
2P22	2238 586 59812	100nF 20% 50V 0603
2P23	2238 586 59812	100nF 20% 50V 0603
2P24	2020 552 96628	10nF 10% 16V 0402
2P25	2020 552 96628	10nF 10% 16V 0402
2P31	2238 586 59812	100nF 20% 50V 0603
2P32	2238 586 59812	100nF 20% 50V 0603
2P33	2238 586 59812	100nF 20% 50V 0603
2P34	2238 586 59812	100nF 20% 50V 0603
2P35	2238 586 59812	100nF 20% 50V 0603
2P40	2238 586 59812	100nF 20% 50V 0603
2P41	2238 586 59812	100nF 20% 50V 0603
2P50	2238 586 59812	100nF 20% 50V 0603
2P51	2238 586 59812	100nF 20% 50V 0603
2P76	2238 586 59812	100nF 20% 50V 0603
2P77	2238 586 59812	100nF 20% 50V 0603
2P80	2238 586 59812	100nF 20% 50V 0603
2P81	2238 586 59812	100nF 20% 50V 0603
2P82	2238 586 59812	100nF 20% 50V 0603
2Q00	4822 124 81058	47µF 20% 4V
2Q01	2020 552 96637	10µF 10% 6.3V 0805

2Q02	4822 124 81058	47µF 20% 4V
2Q03	2020 552 96637	10µF 10% 6.3V 0805
2Q04	2238 586 59812	100nF 20% 50V 0603
2Q05	2238 586 59812	100nF 20% 50V 0603
2Q06	2238 586 59812	100nF 20% 50V 0603
2Q07	2238 586 59812	100nF 20% 50V 0603
2Q08	2238 586 59812	100nF 20% 50V 0603
2Q09	2238 586 59812	100nF 20% 50V 0603
2Q10	2238 586 59812	100nF 20% 50V 0603
2Q11	2238 586 59812	100nF 20% 50V 0603
2Q12	2238 586 59812	100nF 20% 50V 0603
2Q13	2238 586 59812	100nF 20% 50V 0603
2Q14	2238 586 59812	100nF 20% 50V 0603
2Q15	2238 586 59812	100nF 20% 50V 0603
2Q16	2238 586 59812	100nF 20% 50V 0603
2Q17	2238 586 59812	100nF 20% 50V 0603
2Q18	2238 586 59812	100nF 20% 50V 0603
2Q19	2238 586 59812	100nF 20% 50V 0603
2Q20	4822 124 81058	47µF 20% 4V
2Q21	2020 552 96637	10µF 10% 6.3V 0805
2Q22	4822 124 81058	47µF 20% 4V
2Q23	2020 552 96637	10µF 10% 6.3V 0805
2Q24	2238 586 59812	100nF 20% 50V 0603
2Q25	3198 034 01290	12pF 1% 50V 0402
2Q26	2238 586 59812	100nF 20% 50V 0603
2Q27	2238 586 59812	100nF 20% 50V 0603
2Q28	2238 586 59812	100nF 20% 50V 0603
2Q29	2238 869 15101	100pF 5% 50V 0402
2Q30	2238 586 59812	100nF 20% 50V 0603
2Q31	2238 587 15619	560pF 10% 50V 0402
2Q32	2238 586 59812	100nF 20% 50V 0603
2Q33	2238 586 59812	100nF 20% 50V 0603
2Q34	2238 586 59812	100nF 20% 50V 0603
2Q35	2238 586 59812	100nF 20% 50V 0603
2Q37	2238 586 59812	100nF 20% 50V 0603
2Q38	2238 586 59812	100nF 20% 50V 0603
2Q39	2238 586 59812	100nF 20% 50V 0603
2Q40	4822 124 81058	47µF 20% 4V
2Q42	4822 124 81058	47µF 20% 4V
2Q43	2020 552 96637	10µF 10% 6.3V 0805
2Q44	2238 586 59812	100nF 20% 50V 0603
2Q45	2238 586 59812	100nF 20% 50V 0603
2Q46	2238 586 59812	100nF 20% 50V 0603
2Q47	2238 586 59812	100nF 20% 50V 0603
2Q48	2238 586 59812	100nF 20% 50V 0603
2Q49	2238 586 59812	100nF 20% 50V 0603
2Q50	2238 586 59812	100nF 20% 50V 0603
2Q51	2238 586 59812	100nF 20% 50V 0603
2Q52	2238 586 59812	100nF 20% 50V 0603
2Q53	2238 586 59812	100nF 20% 50V 0603
2Q54	2238 586 59812	100nF 20% 50V 0603
2Q55	2238 586 59812	100nF 20% 50V 0603
2Q56	2238 586 59812	100nF 20% 50V 0603
2Q57	2238 586 59812	100nF 20% 50V 0603
2Q58	2238 586 59812	100nF 20% 50V 0603
2Q59	2238 586 59812	100nF 20% 50V 0603
2Q60	2238 586 59812	100nF 20% 50V 0603
2Q61	2020 552 96618	1nF 10% 50V 0402
2Q62	2238 869 15101	100pF 5% 50V 0402
2Q63	2238 586 59812	100nF 20% 50V 0603
2Q64	2238 586 59812	100nF 20% 50V 0603
2Q65	2238 586 59812	100nF 20% 50V 0603
2Q66	2238 586 59812	100nF 20% 50V 0603
2Q67	2238 586 59812	100nF 20% 50V 0603
2Q69	4822 124 11131	47µF 6.3V
2Q70	4822 124 11131	47µF 6.3V
2Q71	2238 869 15101	100pF 5% 50V 0402
2Q72	2238 869 15101	100pF 5% 50V 0402
2Q74	2238 869 15101	100pF 5% 50V 0402
2Q79	2020 552 96628	10nF 10% 16V 0402
2Q80	2238 869 15101	100pF 5% 50V 0402
2Q81	2020 552 96628	10nF 10% 16V 0402
2Q91	3198 035 04710	470pF 50V 0402
2Q92	3198 035 04710	470pF 50V 0402
2Q93	2238 869 15101	100pF 5% 50V 0402
2T01	2238 586 59812	100nF 20% 50V 0603
2T02	2238 586 59812	100nF 20% 50V 0603
2T04	3198 034 02280	2.2pF 1% 50V 0402
2T05	2238 869 15829	82pF 5% 50V 0402
2T06	2238 869 15829	82pF 5% 50V 0402
2T07	2022 552 05679	1µF 10% 16V 0805
2T08	2020 004 90283	10µF 20% 10V 1206
2T09	2020 552 96628	10nF 10% 16V 0402
2T10	2238 586 59812	100nF 20% 50V 0603
2T11	2020 552 96628	10nF 10% 16V 0402
2T12	2022 552 05679	1µF 10% 16V 0805
2T13	2020 552 96628	10nF 10% 16V 0402
2T14	2020 552 96628	10nF 10% 16V 0402
2T15	2020 552 96628	10nF 10% 16V 0402
2T16	2020 552 96628	10nF 10% 16V 0402
2T17	2238 586 59812	100nF 20% 50V 0603
2T18	2238 586 59812	100nF 20% 50V 0603
2T19	2020 552 96628	10nF 10% 16V 0402
2T20	2020 552 96628	10nF 10% 16V 0402
2T21	2020 552 96628	10nF 10% 16V 0402
2T23	2020 552 96628	10nF 10% 16V 0402
2T24	2238 586 59812	100nF 20% 50V 0603
2T25	2022 029 00646	470µF 20% 6.3V
2T27	2020 552 96628	10nF 10% 16V 0402
2T28	2020 552 96628	10nF 10% 16V 0402
2T30	3198 032 15190	100µF 20% 4V
2T31	2238 586 59812	100nF 20% 50V 0603
2T33	2238 586 59812	100nF 20% 50V 0603
2T35	2238 586 59812	100nF 20% 50V 0603
2T43	2022 552 05679	1µF 10% 16V 0805
2T45	2020 552 96628	10nF 10% 16V 0402
2T48	2020 552 96628	10nF 10% 16V 0402
2T51	2020 552 96628	10nF 10% 16V 0402
2T53	2020 552 96628	10nF 10% 16V 0402
2T58	2238 586 59812	100nF 20% 50V 0603
2T98	2020 552 96628	10nF 10% 16V 0402
2TG0	2238 586 59812	100nF 20% 50V 0603
2TG1	3198 032 15190	100µF 20% 4V
2TG2	2238 586 59812	100nF 20% 50V 0603
2TG3	2020 552 96628	10nF 10% 16V 0402
2TG4	2238 586 59812	100nF 20% 50V 0603
2TG5	2020 552 96628	10nF 10% 16V 0402
2TG6	2238 586 59812	100nF 20% 50V 0603
2TG7	2238 586 59812	100nF 20% 50V 0603
2TG8	2238 586 59812	100nF 20% 50V 0603
2TG9	2238 586 59812	100nF 20% 50V 0603
2TJ0	2238 586 59812	100nF 20% 50V 0603
2TJ1	2238 586 59812	100nF 20% 50V 0603
2TJ2	2238 586 59812	100nF 20% 50V 0603
2TJ3	2238 586 59812	100nF 20% 50V 0603
2TJ4	2238 586 59812	100nF 20% 50V 0603
2TJ5	2238 586 59812	100nF 20% 50V 0603
2TJ6	2238 586 59812	100nF 20% 50V 0603
2TJ7	2020 552 96628	10nF 10% 16V 0402
2TJ8	2020 552 96628	10nF 10% 16V 0402
2TJ9	2020 552 96628	10nF 10% 16V 0402
2TK0	2020 552 96628	10nF 10% 16V 0402
2TK1	2020 552 96628	10nF 10% 16V 0402
2TK2	2020 552 96628	10nF 10% 16V 0402
2TK3	2020 552 96628	10nF 10% 16V 0402
2TK4	2238 586 59812	100nF 20% 50V 0603
2TK5	2238 586 59812	100nF 20% 50V 0603
2TK6	2022 552 05679	1µF 10% 16V 0805
2TK7	2022 552 05679	1µF 10% 16V 0805
2TK8	2022 552 05679	1µF 10% 16V 0805
2TK9	2022 552 05679	1µF 10% 16V 0805
2TL0	2238 586 59812	100nF 20% 50V 0603
2TL7	4822 126 14324	33pF 5% 50V 0402
2TL9	4822 126 14324	33pF 5% 50V 0402
2TM2	2020 552 96628	10nF 10% 16V 0402
2TM3	2022 552 05679	1µF 10% 16V 0805
2TM4	2020 552 96628	10nF 10% 16V 0402
2TM5	2020 552 96628	10nF 10% 16V 0402
2TM7	2020 552 96628	10nF 10% 16V 0402
2TM8	2022 552 05679	1µF 10% 16V 0805
2TN0	4822 124 11946	22µF 20% 16V
2TN1	4822 124 11946	22µF 20% 16V
2TN3	2238 586 59812	100nF 20% 50V 0603
2U00	2238 869 15101	100pF 5% 50V 0402
2U01	2238 869 15101	100pF 5% 50V 0402
2U02	2238 869 15101	100pF 5% 50V 0402
2U03	2238 869 15101	100pF 5% 50V 0402
2U04	2238 586 59812	100nF 20% 50V 0603
2U05	2238 586 59812	100nF 20% 50V 0603
2U06	2238 586 59812	100nF 20% 50V 0603
2U07	2238 586 59812	100nF 20% 50V 0603
2U09	2238 869 15101	100pF 5% 50V 0402
2U10	2238 586 59812	100nF 20% 50V 0603
2U11	2022 552 05679	1µF 10% 16V 0805
2U12	2238 586 59812	100nF 20% 50V 0603
2U13	2238 586 59812	100nF 20% 50V 0603
2U14	2238 586 59812	100nF 20% 50V 0603
2U15	2238 586 59812	100nF 20% 50V 0603
2U16	2022 552 05679	1µF 10% 16V 0805
2U17	2022 552 05635	22µF 10% 16V
2U18	2238 586 59812	100nF 20% 50V 0603
2U19	2238 586 59812	100nF 20% 50V 0603
2U20	2238 586 59812	100nF 20% 50V 0603
2U21	3198 035 03320	3.3nF 5% 50V 0402
2U22	2022 552 05635	22µF 10% 16V
2U23	2238 869 15101	100pF 5% 50V 0402
2U24	2022 552 05635	22µF 10% 16V
2U25	2022 552 05635	22µF 10% 16V
2U26	2238 586 59812	100nF 20% 50V 0603
2U27	2020 552 96618	1nF 10% 50V 0402
2U28	2020 552 96618	1nF 10% 50V 0402
2U29	2020 552 96618	1nF 10% 50V 0402
2U30	2020 552 96618	1nF 10% 50V 0402
2U31	3198 035 03320	3.3nF 5% 50V 0402
2U32	3198 035 03320	3.3nF 5% 50V 0402
2U33	2238 869 15101	100pF 5% 50V 0402
2U35	2022 552 05679	1µF 10% 16V 0805
2U37	2020 552 96684	470nF 10% 25V 0805
2U38	2238 586 59812	100nF 20% 50V 0603
2U39	2238 869 15101	100pF 5% 50V 0402
2U40	2022 552 05679	1µF 10% 16V 0805
2U41	2022 552 05679	1µF 10% 16V 0805
2U45	2022 552 05635	22µF 10% 16V
2U46	2022 552 05679	1µF 10% 16V 0805
2U47	2020 552 96618	1nF 10% 50V 0402
2U50	2022 552 05679	1µF 10% 16V 0805
2U55	2238 586 59812	100nF 20% 50V 0603
2U58	2022 552 05679	1µF 10% 16V 0805
2U72	2238 586 59812	100nF 20% 50V 0603
2U73	2020 552 96618	1nF 10% 50V 0402
2U85	3198 035 03320	3.3nF 5% 50V 0402
2V00	2238 586 59812	100nF 20% 50V 0603
2V01	2238 586 59812	100nF 20% 50V 0603
2V02	2238 586 59812	100nF 20% 50V 0603
2V03	2238 586 59812	100nF 20% 50V 0603
2V04	2020 552 96618	1nF 10% 50V 0402
2V05	2238 869 15101	100pF 5% 50V 0402
2V16	2238 586 59812	100nF 20% 50V 0603
2V17	2238 586 59812	100nF 20% 50V 0603
2V18	2238 586 59812	100nF 20% 50V 0603
2V19	2238 586 59812	100nF 20% 50V 0603
2V20	2238 586 59812	100nF 20% 50V 0603
2V21	2238 586 59812	100nF 20% 50V 0603
2V22	2238 586 59812	100nF 20% 50V 0603
2V23	2238 586 59812	100nF 20% 50V 0603
2V24	2238 586 59812	100nF 20% 50V 0603
2V25	2238 586 59812	100nF 20% 50V 0603
2V26	2238 586 59812	100nF 20% 50V 0603
2V27	2238 586 59812	100nF 20% 50V 0603
2V28	2238 586 59812	100nF 20% 50V 0603
2V29	2238 586 59812	100nF 20% 50V 0603
2V30	2238 586 59812	100nF 20% 50V 0603
2V31	2238 586 59812	100nF 20% 50V 0603
2V35	4822 124 81058	47µF 20% 4V
2Z51	2238 586 59812	100nF 20% 50V 0603
2Z52	2238 586 59812	100nF 20% 50V 0603

–WW–

3A01	4822 117 13545	100Ω 1% 0402
3A02	4822 117 13545	100Ω 1% 0402
3A03	4822 117 13545	100Ω 1% 0402
3A04	4822 117 13545	100Ω 1% 0402
3A05	4822 117 13545	100Ω 1% 0402
3A06	4822 117 13545	100Ω 1% 0402
3A07	4822 117 13605	Jumper 0402
3A09	4822 117 13605	Jumper 0402
3A11	4822 117 13605	Jumper 0402
3A13	4822 117 13605	Jumper 0402
3A15	4822 051 30759	75Ω 5% 0.062W
3A16	4822 051 30221	220Ω 5% 0.062W
3A19	4822 117 13605	Jumper 0402
3A20	3198 031 01530	15kΩ 5% 0.01W 0402
3A21	3198 031 02730	27kΩ 5% 0402
3A22	3198 031 01530	15kΩ 5% 0.01W 0402
3A23	3198 031 02730	27kΩ 5% 0402
3A24	3198 031 01830	18kΩ 5% 0.01W 0402
3A25	3198 031 04730	47Ω 5% 0402
3A26	3198 031 01830	18kΩ 5% 0.01W 0402
3A27	3198 031 04730	47Ω 5% 0402
3A28	3198 031 04730	47Ω 5% 0402
3A31	4822 117 11297	100kΩ 5% 0.1W
3A32	4822 117 11297	100kΩ 5% 0.1W
3A33	2322 705 70274	270kΩ 5% 0402
3A34	4822 117 11297	100kΩ 5% 0.1W
3A35	4822 117 11297	100kΩ 5% 0.1W
3A36	2322 705 70274	270kΩ 5% 0402
3A37	3198 031 02240	220kΩ 5% 0.1W 0402
3A38	3198 031 02240	220kΩ 5% 0.1W 0402
3A39	4822 051 30102	1kΩ 5% 0.062W
3A40	4822 051 30102	1kΩ 5% 0.062W
3A41	4822 117 13548	1kΩ 5% 0402
3A42	4822 117 13606	10kΩ 5% 0.01W 0402
3A43	4822 117 13606	10kΩ 5% 0.01W 0402
3A44	3198 031 02240	220kΩ 5% 0.1W 0402
3A45	3198 031 01830	18kΩ 5% 0.01W 0402
3A46	4822 117 13548	1kΩ 5% 0402
3A47	4822 117 13606	10kΩ 5% 0.01W 0402
3A48	4822 117 13606	10kΩ 5% 0.01W 0402
3A49	4822 117 13606	10kΩ 5% 0.01W 0402
3A50	3198 031 01830	18kΩ 5% 0.01W 0402
3A51	3198 031 06840	680kΩ 5% 0.01W 0402
3A52	4822 117 11297	100kΩ 5% 0.1W
3A53	4822 117 13606	10kΩ 5% 0.01W 0402
3A54	4822 117 13606	10kΩ 5% 0.01W 0402
3A55	4822 117 11297	100kΩ 5% 0.1W
3A56	4822 051 30221	220Ω 5% 0.062W
3A57	3198 031 01510	150Ω 5% 0.01W 0402
3A58	3198 031 02240	220kΩ 5% 0.1W 0402
3A60	2322 734 63309	33Ω 1% 0.1W 0805
3A61	2322 734 63309	33Ω 1% 0.1W 0805

3A62	4822 051 30102	1kΩ 5% 0.062W
3A63	4822 117 13606	10kΩ 5% 0.01W 0402
3A64	4822 117 13606	10kΩ 5% 0.01W 0402
3A65	3198 031 02240	220kΩ 5% 0.1W 0402
3A66	4822 117 11297	100kΩ 5% 0.1W
3A67	2322 734 63309	33Ω 1% 0.1W 0805
3A68	2322 734 63309	33Ω 1% 0.1W 0805
3A69	4822 051 30102	1kΩ 5% 0.062W
3A71	3198 031 01510	150Ω 5% 0.01W 0402
3A72	3198 031 02240	220kΩ 5% 0.1W 0402
3A73	4822 051 30221	220Ω 5% 0.062W
3A74	4822 117 13606	10kΩ 5% 0.01W 0402
3A75	4822 117 13606	10kΩ 5% 0.01W 0402
3A76	3198 031 02240	220kΩ 5% 0.1W 0402
3A77▲	4822 117 11748	Fuse 2.2Ω 5% 1206
3A78	4822 117 13601	22kΩ 5% 0402
3A79	3198 031 04730	47Ω 5% 0402
3A86	3198 031 06890	68Ω 5% 0402
3A87	4822 117 13606	10kΩ 5% 0.01W 0402
3A88	4822 117 13548	1kΩ 5% 0402
3A89	4822 117 13548	1kΩ 5% 0402
3A91	4822 117 12521	68Ω 1% 0.1W
3A92	4822 117 12521	68Ω 1% 0.1W
3A93	4822 117 13606	10kΩ 5% 0.01W 0402
3A94	4822 117 11297	100kΩ 5% 0.1W
3A95	4822 051 20159	15Ω 5% 0.1W
3A96	4822 117 13606	10kΩ 5% 0.01W 0402
3A98	4822 117 13605	Jumper 0402
3AA1	4822 051 30221	220Ω 5% 0.062W
3AA2	4822 051 30221	220Ω 5% 0.062W
3B00	3198 031 04720	4.7kΩ 5% 0402
3B01	3198 031 04720	4.7kΩ 5% 0402
3B02	4822 117 13545	100Ω 1% 0402
3B03	4822 117 13545	100Ω 1% 0402
3B04	4822 117 13606	10kΩ 5% 0.01W 0402
3B05	3198 031 04730	47Ω 5% 0402
3B06	3198 031 04730	47Ω 5% 0402
3B07	4822 117 13545	100Ω 1% 0402
3B08	4822 117 13545	100Ω 1% 0402
3B09	2120 550 00054	VDR 90V 1mA 0402
3B10	2120 550 00054	VDR 90V 1mA 0402
3B11	2120 550 00054	VDR 90V 1mA 0402
3B12	3198 031 04720	4.7kΩ 5% 0402
3B13	3198 031 04720	4.7kΩ 5% 0402
3B14	4822 117 13545	100Ω 1% 0402
3B15	4822 117 13545	100Ω 1% 0402
3B16	4822 117 13606	10kΩ 5% 0.01W 0402
3B17	3198 031 04730	47Ω 5% 0402
3B18	3198 031 04730	47Ω 5% 0402
3B19	4822 117 13545	100Ω 1% 0402
3B20	4822 117 13545	100Ω 1% 0402
3B21	2120 550 00054	VDR 90V 1mA 0402
3B22	2120 550 00054	VDR 90V 1mA 0402
3B23	4822 117 13548	1kΩ 5% 0402
3B24	4822 117 13548	1kΩ 5% 0402
3B27	3198 031 03390	33Ω 1% 0402
3B28	3198 031 03390	33Ω 1% 0402
3B29	3198 031 03390	33Ω 1% 0402
3B30	2322 705 70399	39Ω 5% 0402
3B32	2322 705 70399	39Ω 5% 0402
3B34	2322 705 70399	39Ω 5% 0402
3B36	3198 031 01230	12kΩ 5% 0402
3B37	4822 117 13548	1kΩ 5% 0402
3B38	4822 117 13548	1kΩ 5% 0402
3B40	4822 117 13548	1kΩ 5% 0402
3B41	3198 031 03390	33Ω 1% 0402
3B43	4822 117 13606	10kΩ 5% 0.01W 0402
3B45	4822 117 13606	10kΩ 5% 0.01W 0402
3B48	2322 706 71002	1kΩ 1% 0402
3B49	3198 031 04730	47Ω 5% 0402
3B50	4822 117 13543	470Ω 5% 0402
3B51	4822 117 13608	4.7Ω 5% 0603 0.62W
3B52	2322 706 71002	1kΩ 1% 0402
3B53	2322 734 63309	33Ω 1% 0.1W 0805
3B54	2322 734 63309	33Ω 1% 0.1W 0805
3B55	2322 734 63309	33Ω 1% 0.1W 0805
3B56	2350 033 11339	4 x 33Ω 5%
3B57	2350 033 11339	4 x 33Ω 5%
3B58	2350 033 11339	4 x 33Ω 5%
3B59	2350 033 11339	4 x 33Ω 5%
3B60	4822 117 13545	100Ω 1% 0402
3B61	4822 117 13545	100Ω 1% 0402
3B62	2350 033 11339	4 x 33Ω 5%
3B65	4822 117 13548	1kΩ 5% 0402
3B66	4822 117 13548	1kΩ 5% 0402
3B67	4822 117 13548	1kΩ 5% 0402
3B68	4822 117 13548	1kΩ 5% 0402
3B69	4822 117 13548	1kΩ 5% 0402
3B70	4822 117 13548	1kΩ 5% 0402
3B90	3198 031 02290	22Ω 5% 0.1W 0402
3B91	4822 117 11297	100kΩ 5% 0.1W
3B92	3198 031 02290	22Ω 5% 0.1W 0402
3B93	4822 117 11297	100kΩ 5% 0.1W
3B94	4822 117 13543	470Ω 5% 0402
3B95	4822 117 13543	470Ω 5% 0402
3B96	4822 117 13543	470Ω 5% 0402
3B97	4822 117 13543	470Ω 5% 0402
3B98	4822 117 13543	470Ω 5% 0402
3B99	4822 117 13543	470Ω 5% 0402
3BA0	2120 550 00054	VDR 90V 1mA 0402
3BA1	2120 550 00054	VDR 90V 1mA 0402
3BA2	2120 550 00054	VDR 90V 1mA 0402
3BA3	2120 550 00054	VDR 90V 1mA 0402
3BA4	2120 550 00054	VDR 90V 1mA 0402
3BA5	2120 550 00054	VDR 90V 1mA 0402
3BA6	2120 550 00054	VDR 90V 1mA 0402
3BA7	2120 550 00054	VDR 90V 1mA 0402
3BA8	2120 550 00054	VDR 90V 1mA 0402
3BA9	2120 550 00054	VDR 90V 1mA 0402
3BB0	2120 550 00054	VDR 90V 1mA 0402
3C30	2322 704 65601	560Ω 1% 0.063W 0603
3C31▲	5322 117 11726	10Ω 5%
3C32	5322 117 13036	1.2kΩ 1% 0.063W 0603
3C33	3198 031 08210	820Ω 5% 0.5W
3C34	5322 117 13036	1.2kΩ 1% 0.063W 0603
3C35	4822 117 13548	1kΩ 5% 0402
3C36	3198 031 08230	82kΩ 5% 0402
3C37	4822 117 13597	330Ω 5% 0402 0.01W
3C38	4822 117 13606	10kΩ 5% 0.01W 0402
3C39	4822 117 13545	100Ω 1% 0402
3C40	4822 117 13545	100Ω 1% 0402
3C41	4822 117 13606	10kΩ 5% 0.01W 0402
3C42	4822 117 13597	330Ω 5% 0402 0.01W
3C43	3198 031 01820	1.8kΩ 5% 0.01W 0402
3C44	3198 031 01220	1.2kΩ 5% 0.01W 0402
3C45	3198 031 04730	47Ω 5% 0402
3C46	3198 031 03390	33Ω 1% 0402
3C47	3198 031 04730	47Ω 5% 0402
3C51▲	4822 117 11748	Fuse 2.2Ω 5% 1206
3C53	3198 031 03910	390Ω 1% 0402
3C55	4822 051 30331	330Ω 5% 0.062W
3C70	4822 117 13545	100Ω 1% 0402
3C71	4822 117 13548	1kΩ 5% 0402
3C73	4822 117 13545	100Ω 1% 0402
3C74	3198 031 01810	180Ω 5% 0402
3C75	3198 031 01810	180Ω 5% 0402
3G01	4822 117 11297	100kΩ 5% 0.1W
3G02	4822 117 13606	10kΩ 5% 0.01W 0402
3G03	4822 117 13603	33kΩ 5% 0402
3G04	4822 117 13606	10kΩ 5% 0.01W 0402
3G08	3198 031 06890	68Ω 5% 0402
3G08	4822 117 13605	Jumper 0402
3G09	3198 031 06890	68Ω 5% 0402
3G09	4822 117 13605	Jumper 0402
3G10	3198 031 06890	68Ω 5% 0402
3G10	4822 117 13605	Jumper 0402
3G11	3198 031 06890	68Ω 5% 0402
3G11	4822 117 13605	Jumper 0402
3G12	3198 031 06890	68Ω 5% 0402
3G12	4822 117 13605	Jumper 0402
3G13	3198 031 06890	68Ω 5% 0402
3G13	4822 117 13605	Jumper 0402
3G14	3198 031 06890	68Ω 5% 0402
3G14	4822 117 13605	Jumper 0402
3G15	3198 031 06890	68Ω 5% 0402
3G15	4822 117 13605	Jumper 0402
3G16	3198 031 06890	68Ω 5% 0402
3G16	4822 117 13605	Jumper 0402
3G17	3198 031 06890	68Ω 5% 0402
3G17	4822 117 13605	Jumper 0402
3G18	3198 031 06890	68Ω 5% 0402
3G18	4822 117 13605	Jumper 0402
3G19	4822 117 13545	100Ω 1% 0402
3G22	4822 117 13545	100Ω 1% 0402
3G24	4822 117 13545	100Ω 1% 0402
3G28	4822 117 13606	10kΩ 5% 0.01W 0402
3G29	4822 117 13606	10kΩ 5% 0.01W 0402
3G30	4822 117 13546	47Ω 5% 0402
3G31	4822 117 13546	47Ω 5% 0402
3G33	4822 117 13546	47Ω 5% 0402
3G36	4822 117 13546	47Ω 5% 0402
3G37	4822 117 13606	10kΩ 5% 0.01W 0402
3G42	4822 117 13546	47Ω 5% 0402
3G43	4822 117 13545	100Ω 1% 0402
3G44	4822 117 13546	47Ω 5% 0402
3G45	4822 117 13545	100Ω 1% 0402
3G46	4822 117 13545	100Ω 1% 0402
3G47	4822 117 13545	100Ω 1% 0402
3G48	4822 117 11297	100kΩ 5% 0.1W
3G49	4822 117 11297	100kΩ 5% 0.1W
3G52	4822 117 13597	330Ω 5% 0402 0.01W
3G53	4822 117 13597	330Ω 5% 0402 0.01W
3G54	4822 117 13597	330Ω 5% 0402 0.01W
3G55	2350 033 11689	4x 68Ω 5% Netw.
3G55	2350 033 91001	4 x Jumper
3G56	2350 033 11689	4x 68Ω 5% Netw.
3G56	2350 033 91001	4 x Jumper
3G57	2350 033 11689	4x 68Ω 5% Netw.
3G57	2350 033 91001	4 x Jumper
3G58	2350 033 11689	4x 68Ω 5% Netw.
3G58	2350 033 91001	4 x Jumper
3G59	2350 033 11689	4x 68Ω 5% Netw.
3G59	2350 033 91001	4 x Jumper
3G60	2350 033 11689	4x 68Ω 5% Netw.
3G60	2350 033 91001	4 x Jumper
3G61	4822 117 13545	100Ω 1% 0402
3G62	4822 117 13545	100Ω 1% 0402
3H01	3198 031 04720	4.7kΩ 5% 0402
3H02	4822 117 13545	100Ω 1% 0402
3H03	3198 031 04720	4.7kΩ 5% 0402
3H04	3198 031 01820	1.8kΩ 5% 0.01W 0402
3H05	3198 031 01820	1.8kΩ 5% 0.01W 0402
3H06	3198 031 02290	22Ω 5% 0.1W 0402
3H07	3198 031 02290	22Ω 5% 0.1W 0402
3H08	3198 031 04720	4.7kΩ 5% 0402
3H10	3198 031 04720	4.7kΩ 5% 0402
3H12	3198 031 02290	22Ω 5% 0.1W 0402
3H13	3198 031 04720	4.7kΩ 5% 0402
3H14	3198 031 02290	22Ω 5% 0.1W 0402
3H15	4822 117 13545	100Ω 1% 0402
3H16	3198 031 04720	4.7kΩ 5% 0402
3H18	3198 031 04720	4.7kΩ 5% 0402
3H19	4822 117 13548	1kΩ 5% 0402
3H20	2322 705 70399	39Ω 5% 0402
3H21	2322 705 70399	39Ω 5% 0402
3H22	3198 031 04720	4.7kΩ 5% 0402
3H23	3198 031 04720	4.7kΩ 5% 0402
3H25	4822 117 13545	100Ω 1% 0402
3H26	4822 117 13545	100Ω 1% 0402
3H28	3198 031 04720	4.7kΩ 5% 0402
3H29	3198 031 04720	4.7kΩ 5% 0402
3H31	3198 031 04720	4.7kΩ 5% 0402
3H32	3198 031 04720	4.7kΩ 5% 0402
3H41	4822 117 13606	10kΩ 5% 0.01W 0402
3H48	3198 031 06890	68Ω 5% 0402
3H49	3198 031 06890	68Ω 5% 0402
3H50	4822 117 13606	10kΩ 5% 0.01W 0402
3H51	4822 117 13606	10kΩ 5% 0.01W 0402
3H70	3198 031 04720	4.7kΩ 5% 0402
3H71	3198 031 04720	4.7kΩ 5% 0402
3H72	4822 117 13545	100Ω 1% 0402
3H73	3198 031 02290	22Ω 5% 0.1W 0402
3H74	3198 031 06890	68Ω 5% 0402
3H75	4822 117 13545	100Ω 1% 0402
3H79	3198 031 02290	22Ω 5% 0.1W 0402
3H80	2350 033 11472	4x 4.7kΩ 5%
3H81	2350 033 11472	4x 4.7kΩ 5%
3H82	3198 031 01050	1MΩ 5% 0402
3H83	3198 031 04720	4.7kΩ 5% 0402
3H84	3198 031 04720	4.7kΩ 5% 0402
3H85	3198 031 04720	4.7kΩ 5% 0402
3H86	3198 031 04720	4.7kΩ 5% 0402
3H87	3198 031 04720	4.7kΩ 5% 0402
3H88	3198 031 04720	4.7kΩ 5% 0402
3H90	3198 031 04720	4.7kΩ 5% 0402
3H92	3198 031 07590	75Ω 5% 0402
3H93	3198 031 04720	4.7kΩ 5% 0402
3H94	3198 031 04720	4.7kΩ 5% 0402
3H95	4822 117 13597	330Ω 5% 0402 0.01W
3H97	3198 031 04720	4.7kΩ 5% 0402
3H98	4822 117 13545	100Ω 1% 0402
3H99	4822 117 13545	100Ω 1% 0402
3J02	3198 031 02290	22Ω 5% 0.1W 0402
3J05	3198 031 02290	22Ω 5% 0.1W 0402
3J06	3198 031 02290	22Ω 5% 0.1W 0402
3J07	4822 117 13605	Jumper 0402
3J08	4822 117 13605	Jumper 0402
3J11	4822 117 13605	Jumper 0402
3J42	4822 117 13606	10kΩ 5% 0.01W 0402
3J91	4822 117 13545	100Ω 1% 0402
3L00	4822 117 11297	100kΩ 5% 0.1W
3L01	4822 117 11297	100kΩ 5% 0.1W
3L02	4822 117 13606	10kΩ 5% 0.01W 0402
3L04▲	4822 117 11748	Fuse 2.2Ω 5% 1206
3L05▲	5322 117 11726	10Ω 5%
3L08	4822 117 13546	47Ω 5% 0402
3L09	4822 117 13546	47Ω 5% 0402
3L10	4822 117 13546	47Ω 5% 0402
3L11	4822 117 13546	47Ω 5% 0402
3L12	4822 117 13546	47Ω 5% 0402
3L13	4822 117 13546	47Ω 5% 0402
3L14	4822 117 13546	47Ω 5% 0402
3L15	4822 117 13546	47Ω 5% 0402
3L16	4822 117 13546	47Ω 5% 0402
3L17	4822 117 13546	47Ω 5% 0402
3L18	4822 117 13546	47Ω 5% 0402
3L19	4822 117 13546	47Ω 5% 0402
3L21	4822 117 13546	47Ω 5% 0402
3L23	4822 117 13546	47Ω 5% 0402
3L25	4822 117 13546	47Ω 5% 0402
3L27	4822 117 13546	47Ω 5% 0402
3L29	4822 117 13546	47Ω 5% 0402

3L31	4822 117 13546	47Ω 5% 0402
3L33	4822 117 13546	47Ω 5% 0402
3L38	4822 117 13606	10kΩ 5% 0.01W 0402
3L39	4822 117 13606	10kΩ 5% 0.01W 0402
3L40	3198 031 03390	33Ω 1% 0402
3L41	3198 031 03390	33Ω 1% 0402
3L42	3198 031 03390	33Ω 1% 0402
3L43	3198 031 03390	33Ω 1% 0402
3L44	3198 031 03390	33Ω 1% 0402
3L45	3198 031 03390	33Ω 1% 0402
3L46	3198 031 03390	33Ω 1% 0402
3L47	3198 031 03390	33Ω 1% 0402
3L48	3198 031 03390	33Ω 1% 0402
3L49	3198 031 03390	33Ω 1% 0402
3L50	3198 031 02290	22Ω 5% 0.1W 0402
3L51	4822 117 13545	100Ω 1% 0402
3L52	3198 031 02290	22Ω 5% 0.1W 0402
3L56	3198 031 02290	22Ω 5% 0.1W 0402
3L57	3198 031 02290	22Ω 5% 0.1W 0402
3L58	3198 031 02290	22Ω 5% 0.1W 0402
3L59	3198 031 02290	22Ω 5% 0.1W 0402
3L60	3198 031 02290	22Ω 5% 0.1W 0402
3L61	3198 031 02290	22Ω 5% 0.1W 0402
3L62	3198 031 02290	22Ω 5% 0.1W 0402
3L63	3198 031 02290	22Ω 5% 0.1W 0402
3L64	3198 031 02290	22Ω 5% 0.1W 0402
3L65	3198 031 02290	22Ω 5% 0.1W 0402
3L66	3198 031 02290	22Ω 5% 0.1W 0402
3L67	3198 031 02290	22Ω 5% 0.1W 0402
3L68	3198 031 02290	22Ω 5% 0.1W 0402
3L69	3198 031 02290	22Ω 5% 0.1W 0402
3L70	3198 031 02290	22Ω 5% 0.1W 0402
3L71	3198 031 02290	22Ω 5% 0.1W 0402
3L89	3198 031 02290	22Ω 5% 0.1W 0402
3L90	4822 117 13548	1kΩ 5% 0402
3L91	3198 031 03390	33Ω 1% 0402
3L92	3198 031 03390	33Ω 1% 0402
3L93	3198 031 03390	33Ω 1% 0402
3L94	3198 031 03390	33Ω 1% 0402
3L95	3198 031 03390	33Ω 1% 0402
3L96	3198 031 03390	33Ω 1% 0402
3L97	3198 031 03390	33Ω 1% 0402
3L98	3198 031 03390	33Ω 1% 0402
3L99	3198 031 02290	22Ω 5% 0.1W 0402
3LA0	4822 117 13606	10kΩ 5% 0.01W 0402
3LA1	4822 117 13606	10kΩ 5% 0.01W 0402
3LA2	4822 117 13606	10kΩ 5% 0.01W 0402
3LA3	4822 117 13606	10kΩ 5% 0.01W 0402
3LA4	4822 117 13606	10kΩ 5% 0.01W 0402
3LA5	4822 117 13548	1kΩ 5% 0402
3LA6	4822 117 13606	10kΩ 5% 0.01W 0402
3LA7	4822 117 13606	10kΩ 5% 0.01W 0402
3LA9	4822 117 13606	10kΩ 5% 0.01W 0402
3LB4	4822 117 13606	10kΩ 5% 0.01W 0402
3LB5	4822 117 13606	10kΩ 5% 0.01W 0402
3LB7	4822 117 13606	10kΩ 5% 0.01W 0402
3LB8	4822 117 13606	10kΩ 5% 0.01W 0402
3LB9	4822 117 13606	10kΩ 5% 0.01W 0402
3LC0	4822 117 13606	10kΩ 5% 0.01W 0402
3LC1	4822 117 13606	10kΩ 5% 0.01W 0402
3LC2	4822 117 13606	10kΩ 5% 0.01W 0402
3LC3	4822 117 13606	10kΩ 5% 0.01W 0402
3LC4	4822 117 13606	10kΩ 5% 0.01W 0402
3LC5	4822 117 11297	100kΩ 5% 0.1W
3LC6	3198 031 04720	4.7kΩ 5% 0402
3LC7	3198 031 04720	4.7kΩ 5% 0402
3LC8	4822 117 13606	10kΩ 5% 0.01W 0402
3LC9	4822 117 13606	10kΩ 5% 0.01W 0402
3LD0	4822 117 13606	10kΩ 5% 0.01W 0402
3LD1	4822 117 13606	10kΩ 5% 0.01W 0402
3LD2	4822 117 13606	10kΩ 5% 0.01W 0402
3LD3	4822 117 13606	10kΩ 5% 0.01W 0402
3LD4	4822 117 13606	10kΩ 5% 0.01W 0402
3LD5	4822 117 13606	10kΩ 5% 0.01W 0402
3LD6	4822 117 13606	10kΩ 5% 0.01W 0402
3LD7	4822 117 13606	10kΩ 5% 0.01W 0402
3LD8	4822 117 13606	10kΩ 5% 0.01W 0402
3LD9	4822 117 13606	10kΩ 5% 0.01W 0402
3LE0	4822 117 13606	10kΩ 5% 0.01W 0402
3LE1	4822 117 11373	100Ω 1% 0805
3LE2	4822 117 13545	100Ω 1% 0402
3LE3	3198 031 04720	4.7kΩ 5% 0402
3LE4	3198 031 04720	4.7kΩ 5% 0402
3LE5	4822 117 13606	10kΩ 5% 0.01W 0402
3LE6	4822 117 13606	10kΩ 5% 0.01W 0402
3LE7	4822 117 13606	10kΩ 5% 0.01W 0402
3LE8	4822 117 13606	10kΩ 5% 0.01W 0402
3LE9	4822 117 13606	10kΩ 5% 0.01W 0402
3LF0	4822 117 13545	100Ω 1% 0402
3LF1	4822 117 13545	100Ω 1% 0402
3LF8	4822 117 13545	100Ω 1% 0402
3LG2	4822 117 13606	10kΩ 5% 0.01W 0402
3LG3	4822 117 13545	100Ω 1% 0402
3LG5	4822 117 13545	100Ω 1% 0402
3LG6	4822 117 13545	100Ω 1% 0402
3LG7	4822 117 13545	100Ω 1% 0402
3LG8	4822 117 13545	100Ω 1% 0402
3LG9	4822 117 13545	100Ω 1% 0402
3LH0	4822 117 13545	100Ω 1% 0402
3LH1	4822 117 13545	100Ω 1% 0402
3LH2	4822 117 11373	100Ω 1% 0805
3LH3	4822 117 13545	100Ω 1% 0402
3LH4	4822 117 13545	100Ω 1% 0402
3LH5	4822 117 13606	10kΩ 5% 0.01W 0402
3LH6	4822 117 13606	10kΩ 5% 0.01W 0402
3LH7	4822 117 11373	100Ω 1% 0805
3LH8	4822 117 13545	100Ω 1% 0402
3LH9	4822 117 13545	100Ω 1% 0402
3LJ0	4822 117 13545	100Ω 1% 0402
3LJ1	4822 117 13545	100Ω 1% 0402
3LJ2	4822 117 13606	10kΩ 5% 0.01W 0402
3LJ3	4822 117 13606	10kΩ 5% 0.01W 0402
3LJ4	4822 117 13545	100Ω 1% 0402
3LJ5	4822 117 13545	100Ω 1% 0402
3LJ6	4822 117 13545	100Ω 1% 0402
3LJ7	4822 117 13545	100Ω 1% 0402
3LJ8	4822 117 13545	100Ω 1% 0402
3LJ9	4822 117 13545	100Ω 1% 0402
3LK0	4822 117 13545	100Ω 1% 0402
3LK1	4822 117 13545	100Ω 1% 0402
3LK2	4822 117 13545	100Ω 1% 0402
3LK3	4822 117 13545	100Ω 1% 0402
3LK4	4822 117 13545	100Ω 1% 0402
3LK5	4822 117 13545	100Ω 1% 0402
3LK6	4822 117 13545	100Ω 1% 0402
3LK7	4822 117 13545	100Ω 1% 0402
3LK8	4822 117 13545	100Ω 1% 0402
3LK9	4822 117 13545	100Ω 1% 0402
3LL0	4822 117 13545	100Ω 1% 0402
3LL1	4822 117 13545	100Ω 1% 0402
3LL2	4822 117 13545	100Ω 1% 0402
3LL3	4822 117 13545	100Ω 1% 0402
3LL4	4822 117 13545	100Ω 1% 0402
3LL5	4822 117 13545	100Ω 1% 0402
3LL6	4822 117 13545	100Ω 1% 0402
3LL7	4822 117 13545	100Ω 1% 0402
3LL8	4822 117 13597	330Ω 5% 0402 0.01W
3LL9	4822 117 13596	220Ω 5% 0.01W 0402
3LM0	4822 117 11373	100Ω 1% 0805
3LM1	4822 117 11373	100Ω 1% 0805
3LM2	4822 117 11373	100Ω 1% 0805
3LM3	4822 117 11373	100Ω 1% 0805
3LM4	4822 117 11373	100Ω 1% 0805
3LM5	4822 117 11373	100Ω 1% 0805
3LM6	4822 117 11373	100Ω 1% 0805
3LM7	4822 117 11373	100Ω 1% 0805
3LN0	4822 117 11373	100Ω 1% 0805
3LN1	4822 117 11373	100Ω 1% 0805
3LN2	4822 117 11373	100Ω 1% 0805
3LN3	4822 117 11373	100Ω 1% 0805
3LN4	4822 117 11373	100Ω 1% 0805
3LN5	4822 117 11373	100Ω 1% 0805
3LN6	4822 117 11373	100Ω 1% 0805
3LN7	4822 117 11373	100Ω 1% 0805
3LQ6	4822 117 11373	100Ω 1% 0805
3LQ7	4822 117 13545	100Ω 1% 0402
3LQ8	4822 117 13545	100Ω 1% 0402
3LR0	3198 031 03390	33Ω 1% 0402
3LR1	3198 031 03390	33Ω 1% 0402
3LR2	4822 117 13606	10kΩ 5% 0.01W 0402
3LR3	2350 033 11339	4 x 33Ω 5%
3LR4	2350 033 11339	4 x 33Ω 5%
3LR5	2350 033 11339	4 x 33Ω 5%
3LR6	2350 033 11339	4 x 33Ω 5%
3LR7	2350 033 11339	4 x 33Ω 5%
3LR8	2350 033 11339	4 x 33Ω 5%
3LR9	2350 033 11339	4 x 33Ω 5%
3LS0	2350 033 11339	4 x 33Ω 5%
3LS1	2350 033 11339	4 x 33Ω 5%
3LS2	3198 031 06810	680Ω 5% 0.01W 0402
3LS3	4822 117 13606	10kΩ 5% 0.01W 0402
3LS4	4822 117 13606	10kΩ 5% 0.01W 0402
3LS5	4822 117 13606	10kΩ 5% 0.01W 0402
3LS6	4822 117 13606	10kΩ 5% 0.01W 0402
3LS7	4822 117 13597	330Ω 5% 0402 0.01W
3LS8	4822 117 13606	10kΩ 5% 0.01W 0402
3LT0	4822 117 13606	10kΩ 5% 0.01W 0402
3LT1	4822 117 13606	10kΩ 5% 0.01W 0402
3LT2	4822 117 13606	10kΩ 5% 0.01W 0402
3LT3	3198 031 01090	10Ω 5% 0.01W 0402
3LT4	3198 031 04720	4.7kΩ 5% 0402
3LT5	2322 705 70184	180Ω 5% 0402
3LT6	3198 031 06830	68kΩ 5% 0.01W 0402
3LT7	4822 117 11297	100kΩ 5% 0.1W
3LT8	4822 117 13606	10kΩ 5% 0.01W 0402
3LT9	3198 031 01090	10Ω 5% 0.01W 0402
3LU0	4822 117 11297	100kΩ 5% 0.1W
3LU1	3198 031 06830	68kΩ 5% 0.01W 0402
3LU2	4822 117 13601	22kΩ 5% 0402
3LU3	4822 117 13606	10kΩ 5% 0.01W 0402
3LU4	4822 117 13606	10kΩ 5% 0.01W 0402
3LU5	4822 117 13601	22kΩ 5% 0402
3LU6	3198 031 06830	68kΩ 5% 0.01W 0402
3LU7	2322 705 70184	180Ω 5% 0402
3LU8	3198 031 01090	10Ω 5% 0.01W 0402
3LU9	3198 031 04730	47Ω 5% 0402
3LV0	3198 031 03340	330kΩ 5% 0402
3LV1	3198 031 06830	68kΩ 5% 0.01W 0402
3LV2	4822 117 13601	22kΩ 5% 0402
3LV3	4822 117 13606	10kΩ 5% 0.01W 0402
3LV4	4822 117 13606	10kΩ 5% 0.01W 0402
3LV5	4822 117 13601	22kΩ 5% 0402
3LV6	3198 031 06830	68kΩ 5% 0.01W 0402
3LV7	2322 705 70564	560kΩ 5% 0402
3LV8	3198 031 01090	10Ω 5% 0.01W 0402
3M00	4822 117 13606	10kΩ 5% 0.01W 0402
3M01	4822 117 13606	10kΩ 5% 0.01W 0402
3M02	4822 117 13606	10kΩ 5% 0.01W 0402
3M03	4822 117 13603	33kΩ 5% 0402
3M04	3198 031 01830	18kΩ 5% 0.01W 0402
3M05	4822 117 13548	1kΩ 5% 0402
3M09	4822 117 13606	10kΩ 5% 0.01W 0402
3M14	4822 117 13608	4.7Ω 5% 0603 0.62W
3M70	4822 117 13602	2.2kΩ 5% 0.01W 0402
3M71	3198 031 01220	1.2kΩ 5% 0.01W 0402
3M72	4822 117 13606	10kΩ 5% 0.01W 0402
3M73	4822 117 13543	470Ω 5% 0402
3M74	4822 117 10353	150Ω 1% 0.1W
3M75	4822 117 10353	150Ω 1% 0.1W
3M76	4822 117 13548	1kΩ 5% 0402
3M77	3198 031 01520	1.2kΩ 5% 0.01W 0402
3M78	4822 117 13548	1kΩ 5% 0402
3M79	4822 117 13548	1kΩ 5% 0402
3M80	4822 117 10353	150Ω 1% 0.1W
3M81	4822 117 10353	150Ω 1% 0.1W
3M82	4822 117 10353	150Ω 1% 0.1W
3N08	2322 706 71203	12kΩ 5% 0402
3N09	4822 117 13545	100Ω 1% 0402
3N12	3198 031 01530	15kΩ 5% 0.01W 0402
3N13	3198 031 01530	15kΩ 5% 0.01W 0402
3N14	3198 031 01530	15kΩ 5% 0.01W 0402
3N15	3198 031 01530	15kΩ 5% 0.01W 0402
3N25	3198 031 04720	4.7kΩ 5% 0402
3N30	4822 117 10353	150Ω 1% 0.1W
3N31	4822 117 10353	150Ω 1% 0.1W
3N32	4822 117 10353	150Ω 1% 0.1W
3N33	4822 117 13608	4.7Ω 5% 0603 0.62W
3N90	3198 031 04720	4.7kΩ 5% 0402
3N92	3198 031 04720	4.7kΩ 5% 0402
3O15	4822 117 13545	100Ω 1% 0402
3O16	4822 117 13545	100Ω 1% 0402
3P10	4822 117 13606	10kΩ 5% 0.01W 0402
3P11	4822 117 13606	10kΩ 5% 0.01W 0402
3P12	4822 117 13545	100Ω 1% 0402
3P13	4822 117 13545	100Ω 1% 0402
3P14	4822 117 13545	100Ω 1% 0402
3P15	4822 117 13606	10kΩ 5% 0.01W 0402
3P16	4822 117 13606	10kΩ 5% 0.01W 0402
3P17	4822 117 13606	10kΩ 5% 0.01W 0402
3P18	4822 117 13606	10kΩ 5% 0.01W 0402
3P19	4822 117 13606	10kΩ 5% 0.01W 0402
3P20	4822 117 13606	10kΩ 5% 0.01W 0402
3P21	4822 117 13606	10kΩ 5% 0.01W 0402
3P22	4822 117 13606	10kΩ 5% 0.01W 0402
3P23	4822 117 13606	10kΩ 5% 0.01W 0402
3P24	4822 117 13606	10kΩ 5% 0.01W 0402
3P25	4822 117 13606	10kΩ 5% 0.01W 0402
3P26	4822 117 13606	10kΩ 5% 0.01W 0402
3P27	4822 117 13606	10kΩ 5% 0.01W 0402
3P28	4822 117 13606	10kΩ 5% 0.01W 0402
3P29	4822 117 13606	10kΩ 5% 0.01W 0402
3P30	4822 117 13606	10kΩ 5% 0.01W 0402
3P31	4822 117 13606	10kΩ 5% 0.01W 0402
3P32	4822 117 13606	10kΩ 5% 0.01W 0402
3P33	4822 117 11297	100kΩ 5% 0.1W
3P35	3198 031 02290	22Ω 5% 0.1W 0402
3P36	4822 117 13606	10kΩ 5% 0.01W 0402
3P37	4822 117 11297	100kΩ 5% 0.1W
3P38	4822 117 13606	10kΩ 5% 0.01W 0402
3P40	4822 117 13596	220Ω 5% 0.01W 0402
3P43	4822 117 13606	10kΩ 5% 0.01W 0402
3P45	4822 117 13606	10kΩ 5% 0.01W 0402
3P57	4822 117 13606	10kΩ 5% 0.01W 0402
3P60	2350 033 11479	4x 47Ω 5%
3P61	2350 033 11479	4x 47Ω 5%
3P62	2350 033 11479	4x 47Ω 5%
3P63	2350 033 11479	4x 47Ω 5%
3P73	3198 031 01810	180Ω 5% 0402
3P74	3198 031 04720	4.7kΩ 5% 0402
3P75	3198 031 04730	47Ω 5% 0402
3P76	4822 117 13548	1kΩ 5% 0402
3P77	4822 117 13548	1kΩ 5% 0402

3P78	4822 117 13606	10kΩ 5% 0.01W 0402
3P79	3198 031 02710	270Ω 5% 0.1W 0402
3P80	4822 117 13606	10kΩ 5% 0.01W 0402
3P81	4822 117 13602	2.2kΩ 5% 0.01W 0402
3P82	4822 117 13606	10kΩ 5% 0.01W 0402
3P83	4822 117 13545	100Ω 1% 0402
3P84	4822 117 13545	100Ω 1% 0402
3P85	4822 117 13545	100Ω 1% 0402
3P86	4822 117 13545	100Ω 1% 0402
3P88	4822 117 13606	10kΩ 5% 0.01W 0402
3Q00	4822 117 13546	47Ω 5% 0402
3Q02	2350 033 10101	4 x 100Ω 5%
3Q03	3198 031 04720	4.7kΩ 5% 0402
3Q04	3198 031 04720	4.7kΩ 5% 0402
3Q05	2350 033 10101	4 x 100Ω 5%
3Q06	2322 705 70399	39Ω 5% 0402
3Q07	2350 033 10101	4 x 100Ω 5%
3Q08	2350 033 10101	4 x 100Ω 5%
3Q09	3198 031 03390	33Ω 1% 0402
3Q10	4822 117 13545	100Ω 1% 0402
3Q11	4822 117 13545	100Ω 1% 0402
3Q12	4822 117 13545	100Ω 1% 0402
3Q13	4822 117 13545	100Ω 1% 0402
3Q14	4822 117 13545	100Ω 1% 0402
3Q15	4822 117 13545	100Ω 1% 0402
3Q16	3198 031 01530	15kΩ 5% 0.01W 0402
3Q17	3198 031 01530	15kΩ 5% 0.01W 0402
3Q18	3198 031 01530	15kΩ 5% 0.01W 0402
3Q19	3198 031 02290	22Ω 5% 0.1W 0402
3Q20	3198 031 02290	22Ω 5% 0.1W 0402
3Q21	3198 031 02290	22Ω 5% 0.1W 0402
3Q22	3198 031 02290	22Ω 5% 0.1W 0402
3Q23	3198 031 01530	15kΩ 5% 0.01W 0402
3Q24	4822 117 13606	10kΩ 5% 0.01W 0402
3Q25	2350 033 10101	4 x 100Ω 5%
3Q26	2350 033 10101	4 x 100Ω 5%
3Q27	3198 031 04720	4.7kΩ 5% 0402
3Q28	2350 033 10101	4 x 100Ω 5%
3Q29	4822 117 13602	2.2kΩ 5% 0.01W 0402
3Q30	4822 117 13602	2.2kΩ 5% 0.01W 0402
3Q31	4822 117 13606	10kΩ 5% 0.01W 0402
3Q32	4822 117 13606	10kΩ 5% 0.01W 0402
3Q33	4822 117 13546	47Ω 5% 0402
3Q34	2350 033 10101	4 x 100Ω 5%
3Q35	4822 117 13546	47Ω 5% 0402
3Q37	4822 117 13546	47Ω 5% 0402
3Q38	2350 033 10101	4 x 100Ω 5%
3Q39	4822 117 13546	47Ω 5% 0402
3Q40	2350 033 10101	4 x 100Ω 5%
3Q41	4822 117 13546	47Ω 5% 0402
3Q43	4822 117 13546	47Ω 5% 0402
3Q44	2350 033 10101	4 x 100Ω 5%
3Q45	4822 117 13546	47Ω 5% 0402
3Q47	4822 117 13546	47Ω 5% 0402
3Q48	4822 117 13545	100Ω 1% 0402
3Q49	4822 117 13546	47Ω 5% 0402
3Q50	4822 117 13545	100Ω 1% 0402
3Q51	4822 117 13546	47Ω 5% 0402
3Q52	4822 117 13545	100Ω 1% 0402
3Q53	4822 117 13546	47Ω 5% 0402
3Q55	4822 117 13546	47Ω 5% 0402
3Q57	4822 117 13546	47Ω 5% 0402
3Q59	4822 117 13546	47Ω 5% 0402
3Q61	4822 117 13546	47Ω 5% 0402
3Q63	4822 117 13546	47Ω 5% 0402
3Q64	3198 031 06890	68Ω 5% 0402
3Q66	4822 117 13546	47Ω 5% 0402
3Q67	4822 117 13546	47Ω 5% 0402
3Q68	4822 117 13546	47Ω 5% 0402
3Q72	4822 117 13545	100Ω 1% 0402
3Q73	4822 117 13545	100Ω 1% 0402
3Q75	4822 117 13545	100Ω 1% 0402
3Q79	4822 117 13545	100Ω 1% 0402
3Q81	3198 031 03320	3.3kΩ 5% 0402
3Q82	3198 031 05620	5.6kΩ 5% 0.01W 0402
3Q97	3198 031 04720	4.7kΩ 5% 0402
3Q98	3198 031 04720	4.7kΩ 5% 0402
3T02	4822 117 13548	1kΩ 5% 0402
3T04	3198 031 01090	10Ω 5% 0.01W 0402
3T05	3198 031 01090	10Ω 5% 0.01W 0402
3T06	4822 117 13548	1kΩ 5% 0402
3T09	3198 031 04720	4.7kΩ 5% 0402
3T10	3198 031 04720	4.7kΩ 5% 0402
3T11	3198 031 04720	4.7kΩ 5% 0402
3T12	3198 031 04720	4.7kΩ 5% 0402
3T13	4822 117 11297	100kΩ 5% 0.1W
3T14	4822 117 13548	1kΩ 5% 0402
3T15	4822 117 13606	10kΩ 5% 0.01W 0402
3T16	4822 117 11297	100kΩ 5% 0.1W
3T17	4822 117 13606	10kΩ 5% 0.01W 0402
3T18	4822 117 11297	100kΩ 5% 0.1W
3T19	2350 033 11689	4x 68Ω 5% Netw.
3T20	2350 033 11689	4x 68Ω 5% Netw.
3T21	2350 033 11689	4x 68Ω 5% Netw.
3T22	3198 031 06890	68Ω 5% 0402
3T23	3198 031 06890	68Ω 5% 0402
3T26	4822 117 13545	100Ω 1% 0402
3TG2	4822 117 13596	220Ω 5% 0.01W 0402
3TG3	4822 117 13596	220Ω 5% 0.01W 0402
3TG4	4822 117 13596	220Ω 5% 0.01W 0402
3TG5	4822 117 13548	1kΩ 5% 0402
3TG6	4822 117 13596	220Ω 5% 0.01W 0402
3TG8	4822 117 13545	100Ω 1% 0402
3TG9	4822 117 13545	100Ω 1% 0402
3TH0	4822 117 13548	1kΩ 5% 0402
3TH3	2322 706 73303	33kΩ 5% 0402
3TH4	4822 117 13548	1kΩ 5% 0402
3TH5	2322 706 73303	33kΩ 5% 0402
3TH6	3198 031 04720	4.7kΩ 5% 0402
3TH7	3198 031 04720	4.7kΩ 5% 0402
3TH9	3198 031 04730	47Ω 5% 0402
3TJ0	3198 031 04730	47Ω 5% 0402
3TJ1	3198 031 04730	47Ω 5% 0402
3TJ2	3198 031 08220	8.2kΩ 5% 0.5W
3TJ3	3198 031 04730	47Ω 5% 0402
3TJ5	4822 117 13548	1kΩ 5% 0402
3TJ6	4822 117 13548	1kΩ 5% 0402
3TJ7	4822 117 13548	1kΩ 5% 0402
3U00	4822 117 13603	33kΩ 5% 0402
3U01	4822 117 13603	33kΩ 5% 0402
3U02	4822 117 13596	220Ω 5% 0.01W 0402
3U03	4822 117 13606	10kΩ 5% 0.01W 0402
3U04	4822 117 13601	22kΩ 5% 0402
3U05	4822 117 13596	220Ω 5% 0.01W 0402
3U06	3198 031 03930	39kΩ 5% 0402
3U07	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U08	3198 031 03320	3.3kΩ 5% 0402
3U09	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U10	3198 031 03320	3.3kΩ 5% 0402
3U11	4822 051 30221	220Ω 5% 0.062W
3U12	4822 117 13548	1kΩ 5% 0402
3U13	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U14	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U15	4822 117 13548	1kΩ 5% 0402
3U16	3198 031 04720	4.7kΩ 5% 0402
3U17	2322 706 71002	1kΩ 1% 0402
3U18	4822 117 13596	220Ω 5% 0.01W 0402
3U19	4822 117 13601	22kΩ 5% 0402
3U20	4822 051 30109	10Ω 5% 0.062W
3U21	4822 051 30109	10Ω 5% 0.062W
3U22⚠	5322 117 11726	10Ω 5%
3U24	4822 051 30109	10Ω 5% 0.062W
3U25	4822 117 13613	2.2Ω 5% 0603
3U27	4822 051 30109	10Ω 5% 0.062W
3U28	4822 117 13613	2.2Ω 5% 0603
3U29	4822 117 13548	1kΩ 5% 0402
3U30	4822 117 13602	2.2kΩ 5% 0.01W 0402
3U32	4822 117 13606	10kΩ 5% 0.01W 0402
3U33	4822 117 13606	10kΩ 5% 0.01W 0402
3U37	2322 706 74701	470Ω 1% 0402
3U38	3198 031 04720	4.7kΩ 5% 0402
3U41	2322 706 73303	33kΩ 5% 0402
3U42	3198 031 01090	10Ω 5% 0.01W 0402
3U45	3198 031 01050	1MΩ 5% 0402
3U46	2322 706 71203	12kΩ 5% 0402
3U54	3198 031 01090	10Ω 5% 0.01W 0402
3U55	4822 117 13606	10kΩ 5% 0.01W 0402
3U56	4822 117 13548	1kΩ 5% 0402
3U62	4822 117 13548	1kΩ 5% 0402
3U64	4822 117 10353	150Ω 1% 0.1W
3U65	4822 117 10353	150Ω 1% 0.1W
3U71	4822 117 13548	1kΩ 5% 0402
3U79	4822 117 13545	100Ω 1% 0402
3U80	4822 117 13606	10kΩ 5% 0.01W 0402
3U81	4822 117 13545	100Ω 1% 0402
3U82	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U83	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U85	4822 117 13606	10kΩ 5% 0.01W 0402
3U86	4822 117 13606	10kΩ 5% 0.01W 0402
3U87	4822 117 13606	10kΩ 5% 0.01W 0402
3U88	4822 117 13545	100Ω 1% 0402
3U89	4822 117 13606	10kΩ 5% 0.01W 0402
3U90	4822 117 13606	10kΩ 5% 0.01W 0402
3U91	4822 117 13606	10kΩ 5% 0.01W 0402
3U92	4822 117 13606	10kΩ 5% 0.01W 0402
3U93	4822 117 13606	10kΩ 5% 0.01W 0402
3U94	3198 031 03320	3.3kΩ 5% 0402
3U95	4822 117 13602	2.2kΩ 5% 0.01W 0402
3U96	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U97	3198 031 06820	6.8kΩ 5% 0.01W 0402
3U98	4822 117 13545	100Ω 1% 0402
3U99	4822 117 13545	100Ω 1% 0402
3UA1	4822 117 13602	2.2kΩ 5% 0.01W 0402
3UA2	4822 117 11297	100kΩ 5% 0.1W
3UA3	4822 117 13602	2.2kΩ 5% 0.01W 0402
3UA4	2322 706 71002	1kΩ 1% 0402
3UA5	4822 117 13546	47Ω 5% 0402
3UA7	2322 706 71002	1kΩ 1% 0402
3UA8	3198 031 06890	68Ω 5% 0402
3UA9	3198 031 06890	68Ω 5% 0402
3V00	3198 031 02290	22Ω 5% 0.1W 0402
3V01	3198 031 02290	22Ω 5% 0.1W 0402
3V02	3198 031 02290	22Ω 5% 0.1W 0402
3V03	3198 031 02290	22Ω 5% 0.1W 0402
3V04	3198 031 02290	22Ω 5% 0.1W 0402
3V05	3198 031 02290	22Ω 5% 0.1W 0402
3V06	3198 031 02290	22Ω 5% 0.1W 0402
3V07	3198 031 02290	22Ω 5% 0.1W 0402
3V08	3198 031 02290	22Ω 5% 0.1W 0402
3V09	3198 031 02290	22Ω 5% 0.1W 0402
3V10	3198 031 02290	22Ω 5% 0.1W 0402
3V11	3198 031 02290	22Ω 5% 0.1W 0402
3V12	3198 031 02290	22Ω 5% 0.1W 0402
3V13	3198 031 02290	22Ω 5% 0.1W 0402
3V14	3198 031 02290	22Ω 5% 0.1W 0402
3V15	3198 031 02290	22Ω 5% 0.1W 0402
3V16	3198 031 02290	22Ω 5% 0.1W 0402
3V17	3198 031 02290	22Ω 5% 0.1W 0402
3V18	3198 031 02290	22Ω 5% 0.1W 0402
3V19	3198 031 02290	22Ω 5% 0.1W 0402
3V20	3198 031 02290	22Ω 5% 0.1W 0402
3V21	3198 031 02290	22Ω 5% 0.1W 0402
3V22	3198 031 02290	22Ω 5% 0.1W 0402
3V23	3198 031 02290	22Ω 5% 0.1W 0402
3V32	3198 031 02290	22Ω 5% 0.1W 0402
3V33	3198 031 02290	22Ω 5% 0.1W 0402
3V34	3198 031 02290	22Ω 5% 0.1W 0402
3V35	3198 031 02290	22Ω 5% 0.1W 0402
3V36	3198 031 02290	22Ω 5% 0.1W 0402
3V37	3198 031 02290	22Ω 5% 0.1W 0402
3V38	3198 031 02290	22Ω 5% 0.1W 0402
3V39	3198 031 02290	22Ω 5% 0.1W 0402
3V40	3198 031 02290	22Ω 5% 0.1W 0402
3V41	3198 031 02290	22Ω 5% 0.1W 0402
3V42	3198 031 02290	22Ω 5% 0.1W 0402
3V43	3198 031 02290	22Ω 5% 0.1W 0402
3V44	4822 117 13545	100Ω 1% 0402
3V78	4822 117 13548	1kΩ 5% 0402
3Z53	4822 117 13545	100Ω 1% 0402
3Z54	4822 117 13545	100Ω 1% 0402
9A01	4822 051 20008	Jumper 0805
9A06	4822 051 20008	Jumper 0805
9A29	4822 117 13605	Jumper 0402
9A71	4822 117 13605	Jumper 0402
9A78	4822 117 13545	100Ω 1% 0402
9A79	4822 117 13605	Jumper 0402
9B11	4822 117 13605	Jumper 0402
9B13	4822 117 13605	Jumper 0402
9B14	4822 117 13605	Jumper 0402
9B16	4822 117 13605	Jumper 0402
9B19	4822 117 13605	Jumper 0402
9B30	4822 117 13606	10kΩ 5% 0.01W 0402
9B31	4822 117 13606	10kΩ 5% 0.01W 0402
9C49	4822 117 13605	Jumper 0402
9C50	4822 051 20008	Jumper 0805
9C53	4822 117 13605	Jumper 0402
9C57	4822 117 13605	Jumper 0402
9C60	4822 117 13605	Jumper 0402
9C61	4822 117 13605	Jumper 0402
9G10	4822 117 13605	Jumper 0402
9G11	4822 117 13605	Jumper 0402
9G12	4822 117 13605	Jumper 0402
9G13	4822 117 13605	Jumper 0402
9G14	4822 117 13605	Jumper 0402
9G15	4822 117 13605	Jumper 0402
9G16	4822 117 13605	Jumper 0402
9G17	4822 117 13605	Jumper 0402
9G18	4822 117 13605	Jumper 0402
9G19	4822 117 13605	Jumper 0402
9G20	4822 117 13605	Jumper 0402
9G21	2350 033 91001	4 x Jumper
9G22	2350 033 91001	4 x Jumper
9G23	2350 033 91001	4 x Jumper
9G24	2350 033 91001	4 x Jumper
9G25	2350 033 91001	4 x Jumper
9G26	2350 033 91001	4 x Jumper
9H03	4822 117 13605	Jumper 0402
9H05	4822 117 13605	Jumper 0402
9H06	4822 117 13605	Jumper 0402
9H07	4822 117 13605	Jumper 0402
9H08	4822 117 13605	Jumper 0402
9H13	4822 117 13605	Jumper 0402
9H14	4822 117 13605	Jumper 0402
9H15	4822 117 13605	Jumper 0402
9H16	4822 117 13605	Jumper 0402
9H18	4822 117 13605	Jumper 0402
9H19	4822 117 13605	Jumper 0402
9H26	4822 117 13605	Jumper 0402
9H27	4822 117 13605	Jumper 0402
9H29	4822 117 13605	Jumper 0402
9H30	4822 117 13605	Jumper 0402
9H32	4822 117 13605	Jumper 0402

9H33	4822 117 13605	Jumper 0402
9H34	4822 117 13605	Jumper 0402
9H40	4822 117 13605	Jumper 0402
9J16	4822 117 13605	Jumper 0402
9J17	4822 117 13605	Jumper 0402
9J24	4822 117 13605	Jumper 0402
9LA0	4822 117 13605	Jumper 0402
9LA1	4822 117 13605	Jumper 0402
9LA7	4822 117 13605	Jumper 0402
9LA8	4822 117 13605	Jumper 0402
9LA9	4822 117 13605	Jumper 0402
9LC7	4822 117 13605	Jumper 0402
9M01	4822 117 13605	Jumper 0402
9M02	4822 117 13605	Jumper 0402
9M04	4822 117 13605	Jumper 0402
9M05	4822 117 13605	Jumper 0402
9P01	4822 117 13605	Jumper 0402
9P06	4822 117 13605	Jumper 0402
9P07	4822 117 13605	Jumper 0402
9P08	4822 117 13605	Jumper 0402
9P09	4822 117 13605	Jumper 0402
9P17	4822 117 13605	Jumper 0402
9P33	4822 117 13605	Jumper 0402
9P35	4822 117 13605	Jumper 0402
9P41	4822 117 13605	Jumper 0402
9P79	4822 117 13605	Jumper 0402
9Q14	4822 117 13605	Jumper 0402
9Q16	4822 117 13605	Jumper 0402
9Q19	4822 117 13605	Jumper 0402
9TG2	4822 117 13605	Jumper 0402
9TG3	4822 117 13605	Jumper 0402
9U01	4822 117 13605	Jumper 0402
9U02	4822 117 13605	Jumper 0402
9U03	4822 117 13605	Jumper 0402
9U04	4822 051 20008	Jumper 0805
9U05	4822 051 20008	Jumper 0805
9U10	4822 051 20008	Jumper 0805
9U12	4822 051 20008	Jumper 0805
9U13	4822 117 13605	Jumper 0402
9U14	4822 117 13605	Jumper 0402
9U15	4822 117 13605	Jumper 0402
9U16	4822 117 13605	Jumper 0402

5A01	2422 549 43062	Bead 600Ω at 100MHz
5A02	2422 549 43062	Bead 600Ω at 100MHz
5A03	2422 549 43062	Bead 600Ω at 100MHz
5A04	2422 549 43062	Bead 600Ω at 100MHz
5A05	2422 549 43062	Bead 600Ω at 100MHz
5A06	2422 549 42896	Bead 120Ω 100MHz
5A07	2422 549 42896	Bead 120Ω 100MHz
5A08	2422 549 43062	Bead 600Ω at 100MHz
5A10	2422 549 43062	Bead 600Ω at 100MHz
5B00	2422 549 43769	Bead 30Ω at 100MHz
5B01	2422 549 43769	Bead 30Ω at 100MHz
5B02	2422 549 44197	Bead 220Ω at 100MHz
5B10	2422 549 44197	Bead 220Ω at 100MHz
5B11	2422 549 44197	Bead 220Ω at 100MHz
5B12	2422 549 44197	Bead 220Ω at 100MHz
5B17	2422 549 44197	Bead 220Ω at 100MHz
5B18	2422 549 44197	Bead 220Ω at 100MHz
5C01	2422 549 44197	Bead 220Ω at 100MHz
5C03	2422 549 44197	Bead 220Ω at 100MHz
5C33	2422 549 44197	Bead 220Ω at 100MHz
5C34	2422 549 44197	Bead 220Ω at 100MHz
5C35	2422 549 44197	Bead 220Ω at 100MHz
5C36	2422 549 44197	Bead 220Ω at 100MHz
5C37	2422 549 42896	Bead 120Ω 100MHz
5C52	2422 549 44197	Bead 220Ω at 100MHz
5C53	2422 549 44197	Bead 220Ω at 100MHz
5C54	2422 549 44197	Bead 220Ω at 100MHz
5C57	3198 018 54770	0.47µF 10% 0603
5G01	2422 549 42896	Bead 120Ω 100MHz
5H01	2422 549 45325	Bead 67Ω at 100MHz
5H02	2422 549 45325	Bead 67Ω at 100MHz
5H03	2422 549 44197	Bead 220Ω at 100MHz
5H04	2422 549 44197	Bead 220Ω at 100MHz
5H05	3198 018 90050	Bead 1kΩ at 100MHz
5J00	2422 549 42896	Bead 120Ω 100MHz
5J01	2422 549 42896	Bead 120Ω 100MHz
5J02	2422 549 42896	Bead 120Ω 100MHz
5J03	2422 549 42896	Bead 120Ω 100MHz
5J04	2422 549 42896	Bead 120Ω 100MHz
5J05	2422 549 42896	Bead 120Ω 100MHz
5J06	2422 549 42896	Bead 120Ω 100MHz
5J07	2422 549 42896	Bead 120Ω 100MHz
5J13	2422 549 44197	Bead 220Ω at 100MHz
5J50	2422 549 45325	Bead 67Ω at 100MHz
5J52	2422 549 45325	Bead 67Ω at 100MHz
5J54	2422 549 45325	Bead 67Ω at 100MHz
5J56	2422 549 45325	Bead 67Ω at 100MHz
5J58	2422 549 45325	Bead 67Ω at 100MHz
5J60	2422 549 45325	Bead 67Ω at 100MHz
5L01	2422 549 43062	Bead 600Ω at 100MHz
5L50	2422 549 43769	Bead 30Ω at 100MHz
5L51	2422 549 44197	Bead 220Ω at 100MHz
5L52	2422 549 44197	Bead 220Ω at 100MHz
5LA1	2422 549 43769	Bead 30Ω at 100MHz
5LA2	2422 549 43062	Bead 600Ω at 100MHz
5LA3	2422 549 43769	Bead 30Ω at 100MHz
5LN0	2422 549 43062	Bead 600Ω at 100MHz
5LN1	2422 549 43769	Bead 30Ω at 100MHz
5LN2	2422 549 43062	Bead 600Ω at 100MHz
5LN3	2422 549 43062	Bead 600Ω at 100MHz
5LN4	2422 549 43062	Bead 600Ω at 100MHz
5N00	2422 549 44197	Bead 220Ω at 100MHz
5N01	2422 549 43769	Bead 30Ω at 100MHz
5N02	2422 549 43769	Bead 30Ω at 100MHz
5P02	2422 549 43769	Bead 30Ω at 100MHz
5P08	2422 549 43769	Bead 30Ω at 100MHz
5Q01	2422 549 43769	Bead 30Ω at 100MHz
5Q02	2422 549 43769	Bead 30Ω at 100MHz
5Q03	2422 549 43769	Bead 30Ω at 100MHz
5Q04	2422 549 43769	Bead 30Ω at 100MHz
5Q06	3198 018 52280	2.2µF 10% 1008
5Q07	2422 549 44197	Bead 220Ω at 100MHz
5T10	2422 549 44197	Bead 220Ω at 100MHz
5T11	2422 549 43062	Bead 600Ω at 100MHz
5T45	4822 157 71206	Bead 600Ω 100MHz
5T47	3198 018 90050	Bead 1kΩ at 100MHz
5T48	3198 018 90050	Bead 1kΩ at 100MHz
5T49	2422 549 43062	Bead 600Ω at 100MHz
5T50	4822 157 71206	Bead 600Ω 100MHz
5T51	4822 157 71206	Bead 600Ω 100MHz
5T55	4822 051 20008	Jumper 0805
5TG0	2422 549 43062	Bead 600Ω at 100MHz
5TG1	2422 549 42896	Bead 120Ω 100MHz
5TG2	2422 549 42896	Bead 120Ω 100MHz
5TG3	2422 549 43062	Bead 600Ω at 100MHz
5TG4	2422 549 43062	Bead 600Ω at 100MHz
5TG5	2422 549 43062	Bead 600Ω at 100MHz
5TG6	2422 549 43062	Bead 600Ω at 100MHz
5TG7	2422 549 43062	Bead 600Ω at 100MHz
5TG8	2422 549 44197	Bead 220Ω at 100MHz
5U00	2422 536 00671	10µH 20%
5U01	4822 051 20008	Jumper 0805
5U02	2422 536 00779	10µH 20%
5U03	2422 536 00671	10µH 20%
5U04	4822 051 20008	Jumper 0805
5U05	4822 051 20008	Jumper 0805
5U06	4822 051 20008	Jumper 0805
5U07	4822 051 20008	Jumper 0805
5U08	4822 051 20008	Jumper 0805
5U10	4822 051 20008	Jumper 0805
5U11	4822 051 20008	Jumper 0805
5U12	4822 051 20008	Jumper 0805
5U13	4822 051 20008	Jumper 0805
5U14	4822 051 20008	Jumper 0805
5V01	2422 549 44197	Bead 220Ω at 100MHz
5Z50	2422 549 43769	Bead 30Ω at 100MHz

6A00	4822 130 80622	BAT54
6A01	4822 130 80622	BAT54
6A02	4822 130 11397	BAS316
6B20	4822 130 11397	BAS316
6B21	4822 130 11397	BAS316
6B22	4822 130 11397	BAS316
6B23	4822 130 11397	BAS316
6C59	4822 130 11397	BAS316
6H00	9322 134 46685	SML-310MT
6H01	4822 130 11397	BAS316
6H03	4822 130 11397	BAS316
6H06	9340 566 10115	BAV99S
6H07	9340 566 10115	BAV99S
6J07	4822 130 11397	BAS316
6J08	4822 130 80622	BAT54
6L00	4822 130 11397	BAS316
6L01	4822 130 11397	BAS316
6L02	4822 130 11397	BAS316
6L03	4822 130 11397	BAS316
6M10	4822 130 11397	BAS316
6M11	4822 130 11397	BAS316
6O02	9340 566 10115	BAV99S
6P00	4822 130 11397	BAS316
6U05	9322 165 17668	STPS2L30A
6U07	9322 165 17668	STPS2L30A
6U17	4822 130 10838	UDZ3.3B
6U21	4822 130 11152	UDZ18B
6U22	4822 130 11397	BAS316
6U23	4822 130 11397	BAS316

7xxx		SW 12nc's are not available yet
7A01	9340 425 20115	BC847BS
7A02	3198 010 42310	BC847BW
7A04	9322 187 67668	TS482IS
7A05	9322 185 74668	LM324P
7A06	9340 219 30115	BC817-25W
7A07	9340 219 30115	BC817-25W
7A08	9340 425 30115	BC847BPN
7A09	3198 010 44350	BC807-25W
7A10	9340 425 30115	BC847BPN
7A11	3198 010 44350	BC807-25W
7A12	9340 425 30115	BC847BPN
7A13	9351 875 80118	74HCU04PW
7A15	3198 010 42320	BC857BW
7A16	9340 425 20115	BC847BS
7A18	9340 425 30115	BC847BPN
7A20	9340 425 20115	BC847BS
7A21	3198 010 42310	BC847BW
7B00	9340 560 35235	BSH112
7B01	9340 560 35235	BSH112
7B02	9322 206 25668	M24C02-WDW6P
7B03	9322 206 25668	M24C02-WDW6P
7B04	9340 560 35235	BSH112
7B05	9340 560 35235	BSH112
7B11	9352 774 45557	TDA9975EL/8/C1
7B12	9322 146 75685	TS431L
7B13	4822 130 42804	BC817-25
7B30	3198 010 42310	BC847BW
7B31	3198 010 42310	BC847BW
7B38	4822 209 17398	LD1117DT33
7C00	9352 767 55557	PNX3000HL/N3
7C31	9340 425 20115	BC847BS
7C32	9340 425 30115	BC847BPN
7C56	3198 010 42310	BC847BW
7C57	3198 010 42310	BC847BW
7G00	9322 221 66668	XC3S200-4TQG144C
7G01	9322 222 49668	XCF01SVOG20C
7G02	9322 214 08685	LD2985BM25
7G03	9322 215 24668	LD1117DT12
7G32	3198 010 42310	BC847BW
7G35	9340 425 20115	BC847BS
7H01	3198 010 44310	PDTC114EU
7J00	9352 783 31557	PNX2015E/M1C03
7J01	9340 425 30115	BC847BPN
7J02	9340 425 30115	BC847BPN
7J08	9322 212 46668	CY2305SXC-1
7L50	9322 204 09671	K4D261638F-LC40
7LA2	9340 425 30115	BC847BPN
7LA3	9340 425 30115	BC847BPN
7LA7	9322 206 45668	M25P05-AVMN6P
7LB0	9322 204 63685	NCP303LSN10
7LB1	9322 204 63685	NCP303LSN10
7LB2	9322 204 63685	NCP303LSN10
7LB3	9322 204 63685	NCP303LSN10
7LB4	9322 204 63685	NCP303LSN10
7LB5	3198 010 42310	BC847BW
7M01	3198 010 44310	PDTC114EU
7M03	9322 204 63685	NCP303LSN10
7M04	5322 130 60159	BC846B
7M05	9322 213 50685	TS431AIL
7M06	9322 213 50685	TS431AIL
7M07	5322 130 60159	BC846B
7M10	5322 130 60159	BC846B
7M11	5322 130 60159	BC846B
7M12	5322 130 60159	BC846B
7N00	9352 698 49518	ISP1561BM
7N10	5322 130 60159	BC846B
7P00	9322 173 43668	TPS2211AIDB
7P03	9322 160 60668	STV0701
7P10	9352 104 20118	74LVC244APW
7P13	9352 606 80118	74LVC257APW
7P14	9322 206 22668	M24C64-WDW6P
7P15	9351 750 00118	74HC4066PW
7P16	3198 010 44310	PDTC114EU
7P17	3198 010 44310	PDTC114EU
7P18	3198 010 42320	BC857BW
7P31	9352 190 20118	74LVC573APW
7P32	9352 190 20118	74LVC573APW
7P34	9352 115 40118	74LVC245APW
7P74	9340 269 20115	PMST3904
7P76	9352 115 40118	74LVC245APW
7P77	9352 115 40118	74LVC245APW
7P80	9322 206 62671	TC58DVM92F1TGI0
7P81	9352 115 40118	74LVC245APW
7Q01	9322 204 86668	LM3526M-LNOPB
7Q05	9340 425 20115	BC847BS
7T00	9322 202 58668	LD1117DT50
7T10	9352 759 98118	PCA9515ADP
7T11	9340 425 30115	BC847BPN

7T12	3198 010 42310	BC847BW
7T41	9322 210 84685	UPC3218GV-A
7T43	9322 211 45668	UPC3220GR-A
7TG0	9322 211 46668	NXT2003
7TG1	9322 163 75685	SI2306DS
7TG3	9340 425 30115	BC847BPN
7U00	9322 207 46668	NCP5422AD
7U01	9322 218 27668	SI4944DY
7U03	9322 218 27668	SI4944DY
7U05	9340 425 20115	BC847BS
7U07	9340 219 30115	BC817-25W
7U10	9340 425 10115	BC857BS
7U11	9322 192 16685	TS2431AI
7U13	9340 425 30115	BC847BPN
7U15	9340 425 20115	BC847BS
7U17	9322 192 16685	TS2431AI
7U18	5322 130 60159	BC846B
7U27	9322 192 16685	TS2431AI
7U28	9340 575 87118	PHD38N02LT
7U29	9340 425 10115	BC857BS
7V00	9352 787 87557	PNX8550EH/M1/S1
7V01	9322 221 77671	K4D551638F-LC40
7V02	9322 221 77671	K4D551638F-LC40
7Z11	9352 115 40118	74LVC245APW
7Z12	9352 115 40118	74LVC245APW

External I/O Panel [BE]

Various

1001	2422 026 05607	Soc. Cinch 1p f Bk
1002	2422 026 05697	Soc. Cinch 3p f WhRdYe
1010	2422 026 05548	Soc. Phone 1p f
1020	2422 026 05778	Soc. Chinch 3p f YeBkBk
1030	2422 026 05779	Soc. Chinch 3p f GnBuRd
1040	2422 026 05781	Soc. Chinch 3p f BkRdWh
1050	2422 026 05779	Soc. Chinch 3p f GnBuRd
1060	2422 026 05782	Soc.Chinch 3p f RdWhYe
1070	4822 265 11391	Connector SVHS 4p f
1080	4822 265 11391	Connector SVHS 4p f
1E40	2422 025 17601	Connector 40p f
1E62	2422 025 17759	Connector 20p f
1M20	2422 025 10772	Connector 12p m
1M36	2422 025 10655	Connector 11p m

⊣⊢

2002	2020 552 94427	100pF 5% 50V
2004	2238 586 59812	100nF 20% 50V 0603
2005	2020 552 94427	100pF 5% 50V
2007	5322 124 41945	22µF 20% 35V
2010	2020 552 94427	100pF 5% 50V
2012	2020 552 94427	100pF 5% 50V
2014	2238 586 59812	100nF 20% 50V 0603
2015	5322 124 41945	22µF 20% 35V
2016	2238 586 59812	100nF 20% 50V 0603
2017	5322 124 41945	22µF 20% 35V
2018	4822 126 11785	47pF 5% 50V 0603
2019	4822 124 23002	10µF 16V
2020	4822 126 11785	47pF 5% 50V 0603
2021	2020 552 94427	100pF 5% 50V
2022	4822 124 23002	10µF 16V
2023	2020 552 94427	100pF 5% 50V
2030	2020 552 94427	100pF 5% 50V
2035	5322 124 41945	22µF 20% 35V
2036	2238 586 59812	100nF 20% 50V 0603
2037	2238 586 59812	100nF 20% 50V 0603
2038	5322 124 41945	22µF 20% 35V
2039	2238 586 59812	100nF 20% 50V 0603
2040	5322 124 41945	22µF 20% 35V
2042	2422 549 43062	Bead 600Ω at 100MHz
2124	2238 586 59812	100nF 20% 50V 0603
2125	4822 124 12095	100µF 20% 16V
2126	2022 552 05679	1µF 10% 16V 0805
2127	4822 124 12313	22µF 10V 20%
2128	2238 586 59812	100nF 20% 50V 0603
2129	2238 586 59812	100nF 20% 50V 0603
2130	4822 124 12095	100µF 20% 16V
2131	4822 124 23002	10µF 16V
2132	2238 869 15101	100pF 5% 50V 0402
2133	2238 869 15101	100pF 5% 50V 0402
2134	2238 869 15101	100pF 5% 50V 0402
2135	2238 869 15101	100pF 5% 50V 0402
2136	2238 869 15101	100pF 5% 50V 0402
2137	2238 869 15101	100pF 5% 50V 0402
2138	2238 869 15101	100pF 5% 50V 0402
2139	2020 552 94427	100pF 5% 50V
2140	2020 552 94427	100pF 5% 50V
2141	2020 552 94427	100pF 5% 50V
2247	2020 552 94427	100pF 5% 50V
2248	2020 552 94427	100pF 5% 50V
2249	2020 552 94427	100pF 5% 50V
2250	2020 552 94427	100pF 5% 50V
2251	2020 552 94427	100pF 5% 50V
2252	2238 869 15101	100pF 5% 50V 0402
2I24	4822 126 11663	12pF 5% 50V 0603

⊣WW⊢

3000	4822 051 30101	100Ω 5% 0.062W
3002	4822 051 30101	100Ω 5% 0.062W
3004	4822 117 13632	100kΩ 1% 0603 0.62W
3005	4822 117 13632	100kΩ 1% 0603 0.62W
3006	4822 117 13601	22kΩ 5% 0402
3007	4822 117 13545	100Ω 1% 0402
3008	4822 051 30101	100Ω 5% 0.062W
3010	4822 051 30101	100Ω 5% 0.062W
3011	4822 051 30759	75Ω 5% 0.062W
3012	4822 051 30101	100Ω 5% 0.062W
3014	4822 051 30561	560Ω 5% 0.062W
3015	4822 117 13632	100kΩ 1% 0603 0.62W
3016	4822 117 13632	100kΩ 1% 0603 0.62W
3017	4822 117 13601	22kΩ 5% 0402
3018	4822 051 30759	75Ω 5% 0.062W
3020	4822 117 13545	100Ω 1% 0402
3022	4822 051 30101	100Ω 5% 0.062W
3023	4822 051 30759	75Ω 5% 0.062W
3027	4822 117 13601	22kΩ 5% 0402
3028	4822 051 30759	75Ω 5% 0.062W
3029	4822 051 30759	75Ω 5% 0.062W
3030	4822 117 13545	100Ω 1% 0402
3031	4822 051 30101	100Ω 5% 0.062W
3032	4822 051 30759	75Ω 5% 0.062W
3037	4822 051 30759	75Ω 5% 0.062W
3038	4822 051 30101	100Ω 5% 0.062W
3039	4822 051 30102	1kΩ 5% 0.062W
3040	4822 051 30689	68Ω 5% 0.063W 0603
3042	4822 051 30561	560Ω 5% 0.062W
3043	4822 051 30103	10kΩ 5% 0.062W
3044	4822 051 30151	150Ω 5% 0.062W
3045	4822 051 30102	1kΩ 5% 0.062W
3046	4822 051 30101	100Ω 5% 0.062W
3047	4822 051 30102	1kΩ 5% 0.062W
3048	4822 117 13632	100kΩ 1% 0603 0.62W
3049	4822 051 30151	150Ω 5% 0.062W
3050	4822 051 30101	100Ω 5% 0.062W
3051	4822 051 30102	1kΩ 5% 0.062W
3052	4822 117 13632	100kΩ 1% 0603 0.62W
3060	4822 126 11785	47pF 5% 50V 0603
3070	4822 117 13601	22kΩ 5% 0402
3071	4822 117 13545	100Ω 1% 0402
3072	4822 051 30101	100Ω 5% 0.062W
3074	4822 051 30759	75Ω 5% 0.062W
3075	4822 051 30759	75Ω 5% 0.062W
3076	4822 117 13601	22kΩ 5% 0402
3077	4822 117 13545	100Ω 1% 0402
3078	4822 051 30101	100Ω 5% 0.062W
3080	4822 051 30759	75Ω 5% 0.062W
3081	4822 051 30223	22kΩ 5% 0.062W
3082	4822 051 30101	100Ω 5% 0.062W
3083	4822 051 30561	560Ω 5% 0.062W
3084	4822 051 30101	100Ω 5% 0.062W
3153▲	4822 117 11151	1Ω 5%
3154	4822 117 10361	680Ω 1% 0.1W
3156▲	4822 117 11151	1Ω 5%
3157	3198 031 04720	4.7kΩ 5% 0402
3158	3198 031 04720	4.7kΩ 5% 0402
3159	3198 031 01090	10Ω 5% 0.01W 0402
3160	4822 117 13596	220Ω 5% 0.01W 0402
3161	4822 117 13596	220Ω 5% 0.01W 0402
3999	4822 051 30101	100Ω 5% 0.062W
9100	4822 117 13605	Jumper 0402
9101	4822 117 13605	Jumper 0402
9104	4822 117 13605	Jumper 0402
9105	4822 117 13605	Jumper 0402
9106	4822 117 13605	Jumper 0402
9107	4822 117 13605	Jumper 0402
9210	4822 117 13605	Jumper 0402
9222	4822 117 13605	Jumper 0402

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5000	2422 549 42896	Bead 120Ω 100MHz
5100	2422 549 43769	Bead 30Ω at 100MHz

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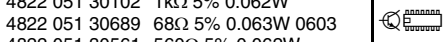
6000	4822 130 11416	PDZ6.8B
6001	4822 130 11416	PDZ6.8B
6002	4822 130 11416	PDZ6.8B
6003	4822 130 11416	PDZ6.8B
6004	4822 130 10328	BAV99W
6005	4822 130 11416	PDZ6.8B
6006	4822 130 11416	PDZ6.8B
6007	4822 130 11416	PDZ6.8B
6008	4822 130 11416	PDZ6.8B
6009	4822 130 11416	PDZ6.8B
6010	4822 130 10328	BAV99W
6011	4822 130 11416	PDZ6.8B
6012	4822 130 11416	PDZ6.8B
6013	4822 130 11416	PDZ6.8B
6014	4822 130 10328	BAV99W
6015	4822 130 11416	PDZ6.8B
6017	4822 130 11416	PDZ6.8B
6018	4822 130 11416	PDZ6.8B
6019	4822 130 11416	PDZ6.8B
6020	4822 130 11416	PDZ6.8B
6021	4822 130 11416	PDZ6.8B
6022	4822 130 11416	PDZ6.8B
6023	4822 130 11416	PDZ6.8B
6024	4822 130 11416	PDZ6.8B
6025	4822 130 11416	PDZ6.8B
6026	4822 130 11416	PDZ6.8B
6027	4822 130 11416	PDZ6.8B
6029	4822 130 11416	PDZ6.8B
6030	4822 130 11416	PDZ6.8B
6040	4822 130 11416	PDZ6.8B
6041	4822 130 11416	PDZ6.8B
6045	4822 130 10328	BAV99W
6046	4822 130 11416	PDZ6.8B
6047	4822 130 10328	BAV99W
6048	4822 130 11416	PDZ6.8B
6049	4822 130 10328	BAV99W
6050	4822 130 11416	PDZ6.8B
6100	4822 130 11422	PLVA2650A
6101	4822 130 11422	PLVA2650A
6102	9322 102 64685	UDZ2.7B



7000	3198 010 42310	BC847BW
7001	3198 010 42310	BC847BW
7002	3198 010 42310	BC847BW
7003	3198 010 42310	BC847BW
7004	9340 425 20115	BC847BS
7010	3198 010 42310	BC847BW
7011	3198 010 42310	BC847BW
7012	3198 010 42310	BC847BW
7106	3198 010 42320	BC857BW
7107	3198 010 44310	PDTC114EU

Audio Amplifier Panel [C]

Various

1735	4822 267 10918	Connector 3p
1736	2422 025 10768	Connector 3p m
1M02	4822 267 10618	Connector 7p
1M06	2422 025 11244	Connector 7p m
1M52	2422 025 10769	Connector 9p m

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2700	4822 126 14247	1.5nF 50V 0603
2701	4822 126 14249	560pF 10% 50V 0603
2703	2020 552 96683	220nF 10% 50V
2704	4822 124 11767	470µF 20% 25V
2705	4822 126 14249	560pF 10% 50V 0603
2706	5322 126 11579	3.3nF 10% 63V
2707	2222 580 15649	100nF 10% 50V 0805
2709	2020 552 96683	220nF 10% 50V
2710	2020 552 96683	220nF 10% 50V
2711	2022 552 05679	1µF 10% 16V 0805
2712	4822 126 14583	470nF 10% 16V 0805
2713	4822 126 13193	4.7nF 10% 63V
2715	4822 121 51252	470nF 5% 63V
2716	3198 017 31530	15nF 20% 50V 0603
2717	2022 552 05679	1µF 10% 16V 0805
2718	2222 580 15649	100nF 10% 50V 0805
2719	4822 126 14583	470nF 10% 16V 0805
2720	2020 021 91431	22µF 20% 100V
2721	2222 580 15649	100nF 10% 50V 0805
2722	4822 126 14583	470nF 10% 16V 0805
2723	2022 552 05679	1µF 10% 16V 0805
2726	4822 126 13193	4.7nF 10% 63V
2727	4822 126 14249	560pF 10% 50V 0603
2731	4822 126 14249	560pF 10% 50V 0603
2732	4822 126 14583	470nF 10% 16V 0805
2736	4822 121 51252	470nF 5% 63V
2737	3198 017 31530	15nF 20% 50V 0603
2739	2222 580 15649	100nF 10% 50V 0805
2741	4822 126 13883	220pF 5% 50V
2743	3198 016 31020	1nF 25V 0603
2744	2222 580 15649	100nF 10% 50V 0805

2745	2020 552 96683	220nF 10% 50V
2746	4822 124 11767	470µF 20% 25V
2747	2022 552 05679	1µF 10% 16V 0805
2748	4822 126 14247	1.5nF 50V 0603
2749	5322 126 11579	3.3nF 10% 63V
2751	4822 124 40433	47µF 20% 25V
2754	2020 021 91431	22µF 20% 100V
2770	3198 017 41050	1µF 10V 0603
2776	2020 021 91431	22µF 20% 100V
2780	4822 126 14583	470nF 10% 16V 0805
2789	4822 126 14583	470nF 10% 16V 0805
2790	2222 580 15649	100nF 10% 50V 0805
2791	4822 126 13879	220nF +80-20% 16V

–WW–

3700	4822 051 30561	560Ω 5% 0.062W
3701	4822 051 30479	47Ω 5% 0.062W
3702	3198 021 38220	8.2kΩ 5% 0.062W 0603
3703	3198 021 38220	8.2kΩ 5% 0.062W 0603
3704	4822 117 13632	100kΩ 1% 0603 0.62W
3705	4822 051 30222	2.2kΩ 5% 0.062W
3706	4822 051 30392	3.9Ω 5% 0.063W 0603
3707	4822 051 30393	39kΩ 5% 0.062W
3708	4822 051 30479	47Ω 5% 0.062W
3709	4822 051 30472	4.7Ω 5% 0.062W
3710	4822 051 30393	39kΩ 5% 0.062W
3711	2322 762 60568	5.6Ω 5% 5% 2512
3712	4822 051 30472	4.7Ω 5% 0.062W
3713	4822 051 30332	3.3Ω 5% 0.062W
3714	4822 051 30392	3.9Ω 5% 0.063W 0603
3715	2322 762 60568	5.6Ω 5% 5% 2512
3716	4822 117 13632	100kΩ 1% 0603 0.62W
3717	4822 051 30222	2.2kΩ 5% 0.062W
3718	4822 051 30561	560Ω 5% 0.062W
3719	4822 051 30124	120kΩ 5% 0.062W
3720	4822 051 30479	47Ω 5% 0.062W
3721	4822 051 30471	47Ω 5% 0.062W
3722	4822 051 30124	120kΩ 5% 0.062W
3723	4822 051 30471	47Ω 5% 0.062W
3724	4822 051 30102	1kΩ 5% 0.062W
3725	4822 117 12925	47kΩ 1% 0.063W 0603
3726	4822 051 30153	15kΩ 5% 0.062W
3727	4822 051 30103	10kΩ 5% 0.062W
3728	4822 051 30153	15kΩ 5% 0.062W
3729	4822 117 12925	47kΩ 1% 0.063W 0603
3730	4822 051 30223	22kΩ 5% 0.062W
3731	4822 051 30102	1kΩ 5% 0.062W
3732	4822 051 30223	22kΩ 5% 0.062W
3733	4822 051 30562	5.6kΩ 5% 0.063W 0603
3734	4822 051 30223	22kΩ 5% 0.062W
3735	4822 117 12889	270kΩ 1% 0.063W 0603
3736	4822 117 12925	47kΩ 1% 0.063W 0603
3737	4822 117 12925	47kΩ 1% 0.063W 0603
3738	4822 117 13632	100kΩ 1% 0603 0.62W
3740	4822 117 13632	100kΩ 1% 0603 0.62W
3742	4822 117 13632	100kΩ 1% 0603 0.62W
3746	4822 051 30222	2.2kΩ 5% 0.062W
3748	4822 117 13632	100kΩ 1% 0603 0.62W
3751	4822 051 30222	2.2kΩ 5% 0.062W
3752	4822 051 30103	10kΩ 5% 0.062W
3760	4822 051 30223	22kΩ 5% 0.062W
3764	4822 117 13632	100kΩ 1% 0603 0.62W
3765	4822 117 13632	100kΩ 1% 0603 0.62W
3777	4822 051 30102	1kΩ 5% 0.062W
3778	4822 051 30479	47Ω 5% 0.062W
3999	4822 051 30102	1kΩ 5% 0.062W
9710	4822 051 20008	Jumper 0805
9711	4822 051 20008	Jumper 0805
9712	4822 051 20008	Jumper 0805
9713	4822 051 20008	Jumper 0805
9748	4822 051 20008	Jumper 0805
9757	4822 051 20008	Jumper 0805
9758	4822 051 20008	Jumper 0805
9759	4822 051 20008	Jumper 0805
9760	4822 051 20008	Jumper 0805
9761	4822 051 20008	Jumper 0805
9762	4822 051 20008	Jumper 0805
9763	4822 051 20008	Jumper 0805
9764	4822 051 20008	Jumper 0805
9765	4822 051 20008	Jumper 0805
9766	4822 051 20008	Jumper 0805
9768	4822 051 20008	Jumper 0805
9770	4822 051 20008	Jumper 0805
9790	4822 051 20008	Jumper 0805
9795	4822 051 20008	Jumper 0805
9796	4822 051 20008	Jumper 0805
9806	4822 051 20008	Jumper 0805
9807	4822 051 20008	Jumper 0805
9808	4822 051 20008	Jumper 0805

5700	2422 536 00942	33µH 20%
5701	4822 157 11716	Bead 30Ω at 100MHz
5702	2422 536 00942	33µH 20%
5705	4822 157 11411	Bead 80Ω at 100MHz
5708	4822 157 11411	Bead 80Ω at 100MHz

6700	4822 130 11522	UDZ15B
6702	9322 150 18685	BZX384-C47
6703	4822 130 10838	UDZ3.3B
6704	4822 130 11551	UDZS10B
6705	4822 130 11551	UDZS10B

7700	9322 202 89668	LM393P
7701	9352 729 65112	TDA8925ST/N1
7702	3198 010 42310	BC847BW
7705	3198 010 42310	BC847BW
7706	3198 010 42310	BC847BW
7707	3198 010 42310	BC847BW
7708	3198 010 42320	BC857BW
7709	3198 010 42310	BC847BW
7710	3198 010 42310	BC847BW
7711	3198 010 42320	BC857BW
7712	3198 010 42310	BC847BW
7713	3198 010 42310	BC847BW
7715	3198 010 42310	BC847BW
7716	3198 010 42310	BC847BW
7717	3198 010 42310	BC847BW
7720	3198 010 42310	BC847BW

Side I/O Panel [D]

See 12nc on “Set Level”

Control Panel [E]

See 12nc on “Set Level”

LED Panel [J]

See 12nc on “Set Level”

11. Revision List

Manual xxxx xxx xxxx.0

- First release.