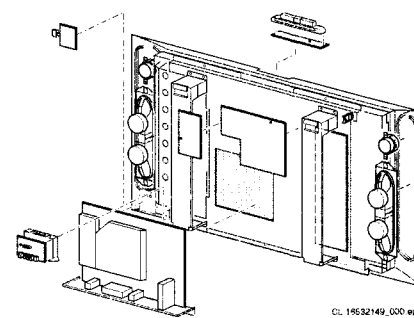


Service Service Service

FTL13E AA & AB

CL 19532149_000 mp's
11C703

Service Manual

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1. Technical Specifications, Connections, and Chassis Overview

Index of this chapter:

- 1.1 Technical Specifications
- 1.2 Connections
- 1.3 Chassis Overview

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

1.1 Technical Specifications

1.1.1 Vision

Display type	: TFT LCD, 15:9
Screen size	: 30-inch (76 cm)
Resolution (HxV)	: WXGA 1280(*3)x768
Contrast ratio	: 350:1
Light output	: 450 cd/m ²
LCD response time	: 16 ms
Viewing angle	: 176 deg. (H)
	: 176 deg. (V)
Tuning system	: PLL
Colour systems	: PAL B/G, D/K, I
	: SECAM B/G, D/K, L/L'
AV (playback only)	: NTSC 4.43/3.58
Channel selections	: 100 presets
	: UVSH
Aerial input	: 75 ohm, IEC-type
Dimensions (WxHxD) in mm	: 891x489x110

1.1.2 Sound

Sound systems	: FM-mono, AM-mono
	: 2CS B/G, D/K
	: NICAM B/G, D/K, I, L/L'
Maximum power	: 2 x 10 W _{rms} (int.)

1.1.3 Miscellaneous

Mains voltage	: 95 - 264 V _{ac}
Mains frequency	: 50 / 60 Hz
Ambient temperature	: +5 to +45 °C
Maximum humidity	: 90 % R.H.
Power consumption	:
- Normal operation	: ≈ 160 W
- Standby	: < 2 W

1.2 Connections

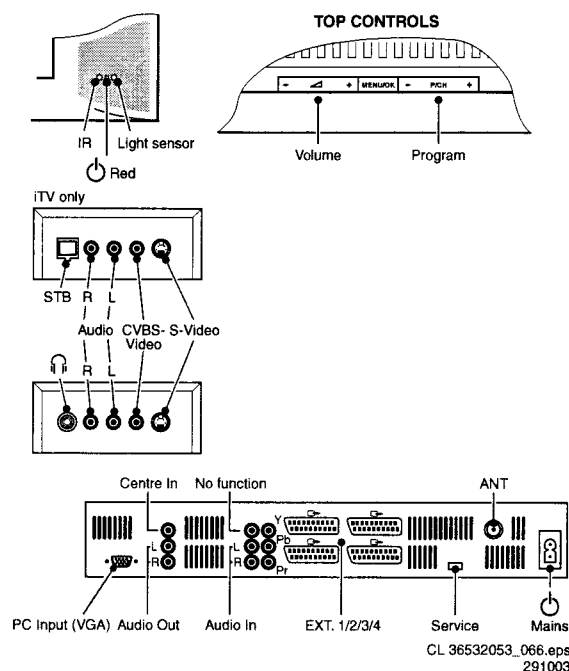


Figure 1-1 Side I/O and rear connections

1.2.1 Side I/O (Left Bottom Side)

Hosiden: SVHS (Input)

1	- Y	Ground	⊕
2	- C	Ground	⊕
3	- Y	1 V _{pp} / 75 ohm	⊕
4	- C	0.3 V _{pp} / 75 ohm	⊕

Cinch (Input)

- CVBS	1 V _{pp} / 75 ohm	⊕
- Audio - L	0.5 V _{rms} / 10 kohm	⊕
- Audio - R	0.5 V _{rms} / 10 kohm	⊕

Headphone (Output) (only for consumer TV sets)

- Headphone	32 - 600 ohm / 10 mW	⊕
-------------	----------------------	---

STB (only for ITV)

- RJ-11	Only for ICONN	⊕
---------	----------------	---

1.2.2 Audio receiver (if present)

Audio - In (Cinch)

C	- Audio - Centre	⊕
---	------------------	---

Audio - Out (Cinch)

R	- Audio - R	0.5 V _{rms} / 1 kohm	⊕
L	- Audio - L	0.5 V _{rms} / 1 kohm	⊕

Audio - Out (Cinch)

R	- Audio - R	0.5 V _{rms} / 1 kohm	⊕
L	- Audio - L	0.5 V _{rms} / 1 kohm	⊕

1.2.3 VGA

VGA (Input)

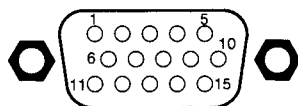


Figure 1-2 VGA Connector

1	- Red	0.7 V _{pp} / 75 ohm
2	- Green	0.7 V _{pp} / 75 ohm
3	- Blue	0.7 V _{pp} / 75 ohm
4	-	Ground
5	-	Ground
6	-	Ground
7	-	Ground
8	-	Ground
9	-5V_DC_OUT	+5 V _{dc}
10	-	Ground
11	-	Ground
12	-DDC_SDA	
13	-H-sync	0 - 5 V
14	-V-sync	0 - 5 V
15	-DDC_SCL	

Cinch (Input)

- Audio - L	0.5 V _{rms} / 10 kohm
- Audio - R	0.5 V _{rms} / 10 kohm
- Y	0.7 V _{pp} / 75 ohm
- Pb	0.7 V _{pp} / 75 ohm
- Pr	0.7 V _{pp} / 75 ohm

1.2.4 SCARTs

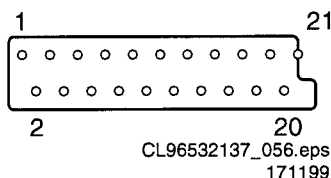
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171199

Figure 1-3 SCART connector

External 1: RGB/YUV and CVBS - In/Out

1	- Audio - R	0.5 V _{rms} / 1 kohm
2	- Audio - R	0.5 V _{rms} / 10 kohm
3	- Audio - L	0.5 V _{rms} / 1 kohm
4	- Audio	Ground
5	- Audio	Ground
6	- Audio - L	0.5 V _{rms} / 10 kohm
7	- Blue / U	0.7 V _{pp} / 75 ohm
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3
9	- Video	Ground
10	- N.C.	
11	- Green / Y	0.7 V _{pp} / 75 ohm
12	- N.C.	
13	- Video	Ground
14	- Video	Ground
15	- Red / V	0.7 V _{pp} / 75 ohm
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm
17	- Video	Ground
18	- Video	Ground
19	- CVBS-out	1 V _{pp} / 75 ohm
20	- CVBS-in	1 V _{pp} / 75 ohm
21	- Shielding	Ground

External 2: CVBS and SVHS - In/Out (for Recorder)

1	- Audio - R	0.5 V _{rms} / 1 kohm
2	- Audio - R	0.5 V _{rms} / 10 kohm
3	- Audio - L	0.5 V _{rms} / 1 kohm
4	- Audio	Ground
5	- Audio	Ground
6	- Audio - L	0.5 V _{rms} / 10 kohm
7	- C-out	0.7 V _{pp} / 75 ohm
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3
9	- Video	Ground
10	- Easylink	(P50)
11	- Green	0.7 V _{pp} / 75 ohm
12	- N.C.	
13	- Video	Ground
14	- Video	Ground
15	- C-in	0.7 V _{pp} / 75 ohm
16	- Status / FBL	0 - 0.4 V: INT 1 - 3 V: EXT / 75 ohm
17	- Video	Ground
18	- Video	Ground
19	- CVBS-out	1 V _{pp} / 75 ohm
20	- CVBS-in	1 V _{pp} / 75 ohm
21	- Shielding	Ground

External 3: CVBS - In

1	-	Ground
2	- Audio - R	0.5 V _{rms} / 10 kohm
3	-	Ground
4	- Audio	Ground
5	-	Ground
6	- Audio - L	0.5 V _{rms} / 10 kohm
7	- N.C.	
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3
9	- Video	Ground
10	- N.C.	
11	- N.C.	
12	- N.C.	
13	- Video	Ground
14	- Video	Ground
15	- N.C.	
16	- N.C.	
17	- Video	Ground
18	- Video	Ground
19	- N.C.	
20	- CVBS-in	1 V _{pp} / 75 ohm
21	- Shielding	Ground

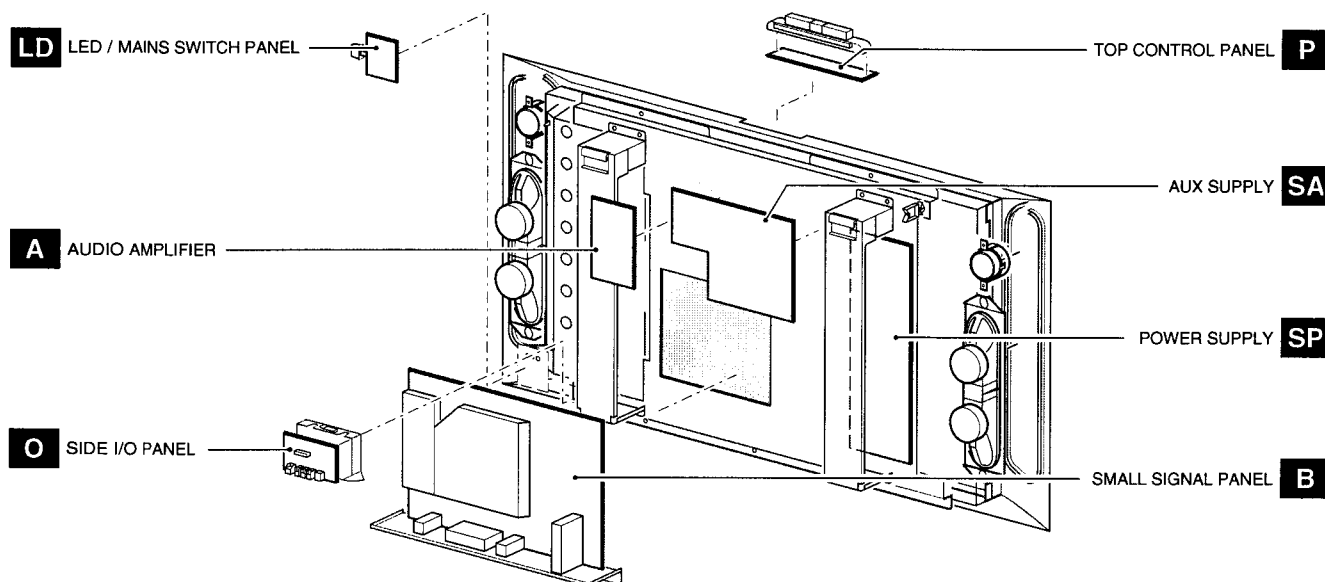
External 4: CVBS - In

1	-	Ground	⊖
2	- Audio - R	0.5 V _{rms} / 10 kohm	⊖
3	-	Ground	⊖
4	- Audio	Ground	⊖
5	-	Ground	⊖
6	- Audio - L	0.5 V _{rms} / 10 kohm	⊖
7	- N.C.		
8	- CVBS-status	0 - 1.3 V: INT 4.5 - 7 V: EXT 16:9 9.5 - 12 V: EXT 4:3 Ground	⊖
9	- Video		
10	- N.C.		
11	- N.C.		

12	- N.C.		
13	- Video	Ground	⊖
14	- Video	Ground	⊖
15	- N.C.		
16	- N.C.		
17	- Video	Ground	⊖
18	- Video	Ground	⊖
19	- N.C.		
20	- CVBS-in	1 V _{pp} / 75 ohm	⊖
21	- Shielding	Ground	⊖

Aerial - In

- IEC-type	Coax, 75 ohm	⊖
------------	--------------	---

1.3 Chassis Overview

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Figure 1-4 PWB location

2. Safety Instructions, Warnings, and Notes

Index of this chapter:

- 2.1 Safety Instructions
- 2.2 Warnings
- 2.3 Notes

2.1 Safety Instructions

Safety regulations require 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 ($\perp$), or hot ground ($\downarrow$), 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 colour bar signal and stereo sound (L: 3 kHz, R: 1 kHz unless stated otherwise) and picture carrier at 475.25 MHz for PAL, or 61.25 MHz for NTSC (channel 3).

- Where necessary, measure the waveforms and voltages with () and without () aerial signal. Measure the voltages in the power supply section both in normal operation () and in stand-by () . These values are indicated by means of the appropriate symbols.
- 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 ($\mu = \times 10^{-6}$), nano-farads ($n = \times 10^{-9}$), or pico-farads ($p = \times 10^{-12}$).
- Capacitor values may also use the value multiplier as the decimal point indication (e.g. 2p2 indicates 2.2 pF).
- An "asterisk" (*) indicates component usage varies. Refer to the diversity tables for the correct values.
- The correct component values are listed 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. To reflow the solder, apply a temperature profile according to the *IC data sheet*. So as not to damage neighbouring 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 going to produce lead-free sets (PbF) from 1.1.2005 onwards.

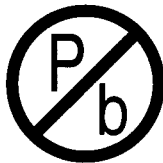


Figure 2-1 Lead-free logo

This sign normally has a diameter of 6 mm, but if there is less space on a board also 3 mm is possible.

Regardless of this logo (is not always present), one must treat all sets from this date onwards according to the following rules.

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 stabilise 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 stabilised 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.

3. Directions for Use

You can download this information from the following websites:

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

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

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Help?

If this instruction manual does not give an answer or if 'Tips' do not solve your TV problem, you can call your Local Philips Customer or Service Centre. See the supplied World-wide guarantee booklet. Please, have the Model and Product number which you can find at the back of your television set or on the packaging, ready, before calling the Philips helpline.

Model: 30PF9975
Product No:

Care of the screen

See Tips, p. 22.

Operation

TV menu	
Picture menu	10-11
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End of life directives

Philips is paying a lot of attention to producing environmentally-friendly in green focal areas. Your new TV contains materials which can be recycled and reused. At the end of its life specialised companies can dismantle the discarded TV to concentrate the reusable materials and to minimise the amount of materials to be disposed of. Please ensure you dispose of your old TV according to local regulations.

Connect peripheral equipment

Connecting and selecting equipment	17-20
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EasyLink features are based on the "one touch operation" approach. This means that a sequence of actions are executed at the same time in both the television and the video cassette recorder, provided both are fitted with the EasyLink function and connected with the eurocable supplied with your video recorder.



Preparation

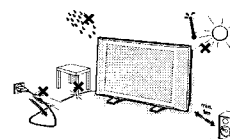
1 Wall mounting instructions

For the wall mounting instructions follow the illustrated steps xx to xx printed on the separate template.

Make sure that the wall mount is being fixed securely enough so that it meets safety standards. The weight of the TV (excl. packaging) is about 17 kg. How to mount the supplied stand, see the separate leaflet.

Note: other (not supplied) stands are optional accessories. Consult your dealer.

2 Place or hang the TV wherever you want, but make sure that air can circulate freely through the ventilation slots. Do not install the TV in a confined space such as a book case or a similar unit.



To prevent any unsafe situations, no naked flame sources, such as lighted candles, should be placed on or in the vicinity. Avoid heat, direct sunlight and exposure to rain or water. The equipment shall not be exposed to dripping or splashing and no objects filled with liquids, such as vases, shall be placed on it.

3 Insert the aerial plug firmly into the aerial socket at the bottom of the TV. For best picture quality use the suppressor-aerial cable supplied.

4 To connect your computer, see p. 20. To connect other peripherals, see p. 17. If you dispose of a Cinema Link combination (Cinema Link Audio receiver and/or Cinema Link video recorder and/or DVD player), see the separate supplied instruction manual. In order to obtain the best result, please use only the supplied antenna cables between the TV and videorecorder, and between videorecorder and antenna connector.

5 Insert the mains cord supplied into the mains at the bottom of the TV and in the wall socket having a mains voltage of 220-240V. To prevent damaging the power (AC) cord which could cause a fire or electric shock, do not place the TV on the cord.

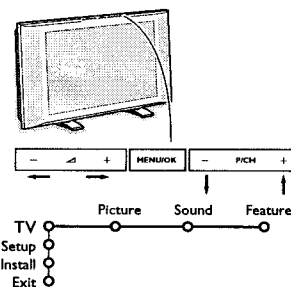
6 Remote control: Insert the 2 batteries supplied (Type R6-1.5V).



The batteries supplied do not contain the heavy metals mercury and cadmium. Please check on how to dispose of exhausted batteries according to local regulations.

7 Switch the TV on: Press the power switch at the right side of the TV. An indicator on the front of the TV lights up and the screen comes on. If the TV is in standby mode, press the -P+ keys or the key on the remote control.

Keys on top of the TV



Should your remote be lost or broken you can still change some of the basic settings with the keys on top of your TV.

Press:

- the  - or + key to adjust the volume;
- the -P/CH+ keys to select the TV channels or sources.

The MENU/OK key can be used to summon the main menu without the remote control.

Use:

- the  - and + keys and the P/CH- and P/CH+ keys to select menu items in the directions as shown;
- the MENU/OK key to confirm your selection.

Note:

When activated via the MENU/OK key on top of the TV, only Exit lets you dismiss the menu.

Navigate to Exit and press the MENU/OK key.

Use of the remote control RC4301

Note: For most keys pressing a key once will activate the function. Pressing a second time will de-activate it. When a key enables multiple options, a small list will be shown. Press repeatedly to select the next item in the list. The list will be removed automatically after 4 seconds or press **OK** to remove immediately.

Remark: in VGA mode only some keys are valid.

VCR DVD SAT AMP CD
See 'Audio- and Video equipment keys', p. 21.

Select your computer or other peripherals
See p. 18.

Audio and Video equipment keys, see p. 21.

Instant record
See Record with your recorder with EasyLink, p. 21.

Time display
The time is displayed on the screen.

Incredible surround
With stereo transmission, and when Incredible surround is selected, it seems as though the loudspeakers are spread further apart from one another.

Virtual Dolby surround
Optimal with Dolby surround signals. Enables you to experience the effect of Dolby surround Pro Logic, reproducing a rear sound effect. See Sound menu, 3D effect, p. 11.
Note: You can make the same selection in the Sound menu, surround mode, p. 11.

Cinema Go
See separate Cinema Link booklet supplied.

NEXTVIEW On/Off see p. 13

Freeze
To freeze the picture.
Dependent on the input signal, the function may not be possible.

Standby
Press to switch the TV on or off. When switched off, a red indicator on the TV lights up. When acquiring NEXTVIEW, see p. 14, an orange indicator lights up and after a period of max. 1 hour the TV is switched to full standby and the red indicator lights up.

Pixel Plus demo on/off
In the right part Pixel Plus and Digital Natural Motion are switched on.

Teletext On/Off see p. 15

OK Press this key
• to activate your choice, when in the menus.
• to display the programme list.

MENU Main menu on/off see p. 5

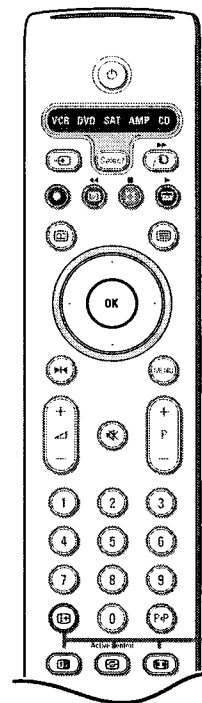
To adjust the volume.

Interrupt the sound or restore it.

Programme selection
To browse through the TV channels and sources stored in the favourite list.

Digit keys
To select a TV channel.
For a two digit programme number, enter the second digit before the dash disappears. To switch immediately to a selected one digit TV channel, keep the digit key pressed a bit longer.

Previous TV channel
Press to display the previously selected TV channel.



On Screen information

Press to display (when available) information about the selected TV channel and programme.

Menu/Remote control info

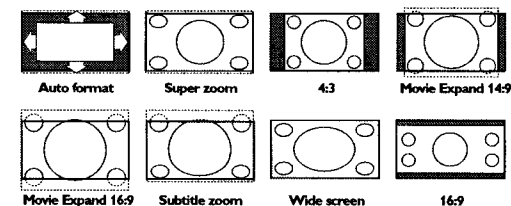
When a menu is on screen, press **Info** to display info on the selected menu item. While the menu info is displayed, press any key to display remote control info. The normal function of the key is not executed.

no function

Active control see p. 11.

Picture format

Press this key repeatedly or press the cursor up/down to select another picture format: Auto format, Super zoom, 4:3, Movie Expand 14:9, Movie Expand 16:9, Subtitle zoom, Wide screen or 16:9.



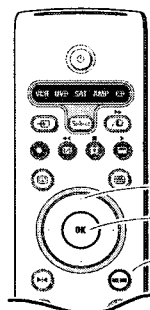
Auto format makes the picture fill the screen as much as possible. In case of subtitles in the bottom black bar, Auto format makes the subtitles visible. In case of a broadcaster logo in the corner of the top black bar, the logo disappears from the screen.

Super zoom removes the black bars on the sides of 4:3 programs with minimal distortion.

When in Movie Expand 14:9, Movie Expand 16:9, Super zoom or Subtitle zoom picture format, you can make subtitles visible with the cursor up/down.

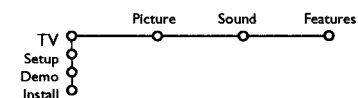
Note: With signals via **EXTS** or the **VGA IN** connector less picture formats are selectable.

To use the menus



- 1 Press the **MENU** key on the remote control to summon the main menu. At any moment you can exit the menu by pressing the **MENU** key again.

Note: If you have connected equipment with Cinema Link, more menu items are present.

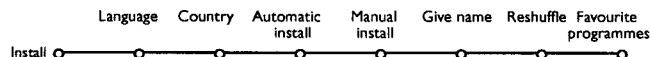


- 2 Use the cursor in the up/down direction to select the **TV**, **Setup**, **Demo** or **Install** menu. Use the cursor left/right to select **Picture**, **Sound** or **Features**.
Note: Sometimes not all the menu items are visible on the screen (indicated by a cluster of blue balls). Use the cursor down or right to reveal all items.
- 3 Use the cursor in the left/right direction to select the menu item.
- 4 Use the cursor up/down again to select the control you want to select or to adjust.

Note: Items temporary not available or not relevant are displayed in a light grey colour and cannot be selected.

Installation

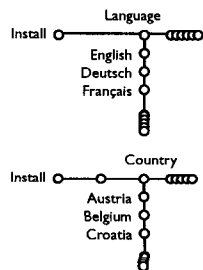
The installation menu contains the following items:



EasyLink

If your video recorder has an EasyLink function, during installation, the language, country and available channels are automatically transmitted to the video recorder.

Select the menu language and country

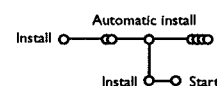


- 1 Press the **MENU** key on the remote control.
- 2 Use the cursor down to select **Install**.
- 3 Use the cursor right to select **Language**. Follow the instructions on screen.
- 4 Use the cursor up/down to select your preferred language and press the **OK** key to confirm your selection.
- 5 Use the cursor right to select **Country**.
- 6 Select the country where you are now located and press the **OK** key. Select **Other** when none of the countries applies.
- 7 Proceed with the **Install** menu.

Store TV channels

After language and country are set correctly, you can now search for and store the TV channels in two different ways: using Automatic Installation or Manual Installation (tuning-in channel by channel). Select your choice with the cursor right.

Automatic installation

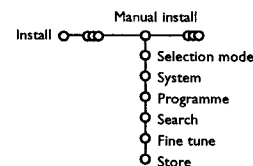


- 1 Select **Automatic install** in the **Install** menu.
Note: All channels must be unlocked in order to autoprogram. If requested, enter your code to unlock all channels. (See TV, Features menu, Childlock, p. 12.)
- 2 Press the cursor down. The autoprogramming option label **Start** appears.
- 3 Press the cursor right.
- 4 The message **Searching** appears and the progress of autoprogramming is displayed.

If a cable system or a TV channel which broadcasts ACI (Automatic Channel Installation) is detected, a programme list appears. Without ACI broadcast, the channels are numbered according your language and country selection. You can use Reshuffle to renumber them. See p. 7.

*It is possible that the cable company or the TV channel displays a broadcast selection menu. Layout and items are defined by the cable company or the TV channel. Make your choice with the cursor and press the **OK** key.*

Manual installation



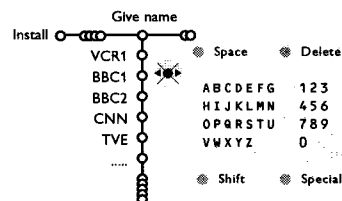
Searching for and storing TV channels is done channel by channel. You must go through every step of the Manual Installation menu.

- 1 Select **Manual install** in the **Install** menu.
- 2 Press the cursor down. Follow the instructions on screen.

Note: Search or direct selection of a TV channel. If you know the frequency, the C- or S-channel number, enter the 3 or 2 digits of the frequency or the channel number directly with the digit keys 0 to 9 (e.g. 048). Press the cursor down to proceed.

Repeat to search for another TV channel.

Give name



It is possible to change the name stored in the memory or to assign a name to a TV channel or external for which a name has not yet been entered. A name with up to 5 letters or numbers can be given to the programme numbers 0 to 99.

Note : It is not possible to rename the VGA source.

- 1 Select **Give Name** in the Install menu and press the cursor down.
- 2 Select the programme number.
Note: keep the cursor up/down pressed to scroll through the programme list quickly.
- 3 Press the cursor right.
A keyboard appears on the screen.
Press the cursor right to enter the keyboard. Press the cursor up/down, left/right to select the first character and press **OK**. Repeat for every character you want to enter.
Select **Space** to enter a space; **Delete** to erase the highlighted character in the name entered; **Shift** to display upper- or lowercase characters on the keyboard; **Special** to display special characters on the keyboard. Press **OK** to confirm.
- 4 Press the cursor left repeatedly when you have finished the name giving.
- 5 Select another programme number and repeat steps 2 to 4.

Reshuffle the programme list

You can change the order of the stored TV channels.

- 1 Select **Reshuffle** in the Installation menu.
- 2 Follow the instructions on screen.

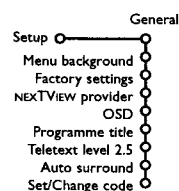
Select Favourite TV channels

A VGA source always belongs to the list of **Favourite programmes**.

- 1 Select **Favourite programmes** in the Install menu.
- 2 Select your programme number with the cursor up/down.

- 3 Select **Yes** or **No** with the cursor right.
- 4 Repeat 2 and 3 for every TV channel or external you want to make a favourite or a non-favourite TV channel or external.

TV Setup



The Setup menu contains items that control the settings of the TV's functions, features, services and peripherals you may have connected.

The **General** menu allows you to change settings that will typically be accessed only occasionally.
The **Source** menu allows you to select a source.
The **Decoder** menu allows you to define one or more programme numbers as decoder programme numbers.

General

This menu allows you to change various settings that are presumably adjusted less frequently than most other settings.

Press the **[12]** key on the remote control to get information about the selected menu item.

Menu background

Select **Yes** or **No** to turn the menu background on or off.

Factory settings

This resets the picture and sound settings to their predefined factory values, but maintains the channel installation settings.

NEXTVIEW provider

Select a TV broadcaster that provides NEXTVIEW data. How to make use of NEXTVIEW, see p. 13.

OSD (On Screen Display)

- 1 Select **OSD**.
- 2 Select **Normal** to activate extended channel and programme information. **Minimum** will display reduced channel information.
Note: When subtitles is switched on, see Features, p.12, display of the programme number is not possible

Programme title

Select **Programme title Yes** or **No**.
When selected **Yes**, after the selection of a TV programme or after pressing the **[12]** key on the remote control, a TV channel which broadcasts teletext may transmit the name of the TV channel or the programme title.
When selected **No**, the programme title will only appear after pressing the **[12]** key, and not after the selection of a TV channel.

Teletext level 2.5

Some broadcasters offer the opportunity to see more colours, other background colours and nicer pictures in the teletext pages.

- 1 Select **Teletext level 2.5**.
- 2 Press the cursor right to select **Teletext level 2.5 On** to take advantage of this feature.
- 3 Press the cursor right again to select **Teletext level 2.5 Off** if you like the more neutral teletext layout.
The selection made is valid for all channels which broadcast teletext level 2.5.

Note: It may take a few seconds before teletext broadcast switches over to Teletext level 2.5.

Auto Surround

Sometimes the broadcaster transmits special signals for Surround Sound encoded programmes.
The TV automatically switches to the best surround sound mode when **Auto Surround** is switched **On**.

Set/Change code

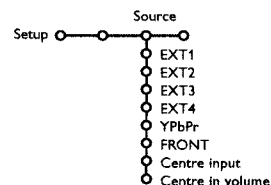
The Child lock feature (see TV, Features, p. 12) allows you to lock channels to prevent others from watching certain programmes. To watch locked channels, a 4-digit code must be entered. The Set/Change code menu item allows you to create or change a Personal Identification Number (PIN).

- 1 Select **Set/Change code**.
- 2 If no code exists yet, the menu item is set to **Set code**.
If a code has previously been entered, the menu item is set to **Change code**. Follow the instructions on screen.

Important: You have forgotten your code !

- 1 Select **Change code** in the General menu and press **OK**.
- 2 Press the cursor right and enter the overriding code 8-8-8-8.
- 3 Press the cursor again and enter a new personal 4-digit code. The previous code is erased and the new code is stored.

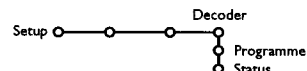
Source



This menu allows you to indicate the peripheral you connected to one of the external inputs.

- 1 Press the cursor right to enter the list of types of peripherals attached to the selected input.
- 2 Select the peripheral device with the cursor up/down.

Decoder



If a decoder or a descrambler is connected, see p. 17, you can define one or more programme numbers as decoder programme numbers.

Once you have selected the source type, e.g. DVD, this source will automatically be selected when your remote control is in DVD mode, see p. 3, and when you press the **[-]** key on the remote control.

Centre input - Centre in volume

When you have connected a surround receiver to the TV, see p. 18, the loudspeakers of the TV can act as centre speaker, making a separate centre speaker unnecessary.

Select **Centre Input On** or **Cinema Link** (in case you have connected a Cinema Link Surround receiver).

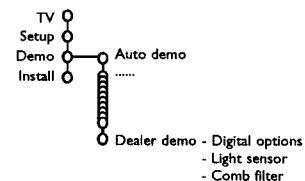
When having selected **On** you can adjust the Centre in volume with the cursor left/right to correct volume level differences of the external audio receiver and speakers.

Note: This is not the case with a Cinema Link surround receiver.

- 1 Select **Decoder** with the cursor right.
- 2 Select **Programme**.
- 3 Select the programme number under which you have stored the programme coming from your decoder.
- 4 Select **Status**.
 - Select the input used to connect your decoder: **None**, **EXT1** or **EXT2**.
 - Select **None** if you do not want the selected programme number being activated as a decoder programme number.

*Note: Select **EXT2** when the decoder is connected to your EasyLink video recorder.*

Demo



The Demo menu allows to demonstrate the TV features separately or in a continuous loop.

If **Auto demo** has been selected the demo will automatically present the features sequentially in a loop. Press one of the cursor keys to stop the Auto demo.

If one of the features has been selected, this particular feature demo will run only once, and the Demo menu will reappear.

Note: The Dealer demo is not part of the automatic sequence and can only be activated separately.

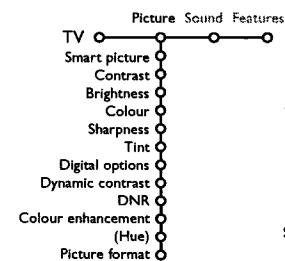
TV menu

Press the **MENU** key on the remote control to summon the main menu.

Note: Dependent on the input signal, one or more menu items may not be selectable.

Press the **[F2]** key on the remote control to get information about the selected menu item.

Picture menu



- 1 Press the cursor right to select **Picture**.
- 2 Select the menu items in the Picture menu with the cursor up/down.
- 3 Adjust the settings with the cursor left/right or enter the list of submenu items with the cursor right. Select a submenu item with the cursor up/down.

Note: To remove the menu background before adjusting the picture settings, see Select TV setup, General, p. 8.

Smart picture

Select **Smart picture** to display a list of predefined picture settings, each corresponding with specific factory settings. **Personal** refers to the personal preference settings of picture in the picture menu.

Digital options

Pixel Plus is the most ideal setting, doubles the horizontal resolution and increases the number of lines with 33%. You may consider to select **Movie Plus** in case a halo effect should disturb you. Dependent on your own preference, select **Progressive scan**.

Dynamic contrast

Sets the level at which the TV automatically enhances the details in dark, middle and light areas of the picture.

DNR

This sets the level at which noise is measured and reduced in the picture.

Colour enhancement

This makes the colours more vivid and improves the resolution of details in bright colours.

Hue

This compensates for the colour variations in NTSC encoded transmissions.

Picture format

This will adjust the size of the picture dependent on the broadcast format and your preferred setting.

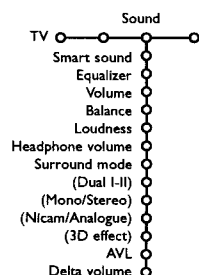
Active Control

The TV continuously measures and corrects all incoming signals in order to provide the best picture possible.

- 1 Press the  key on the remote control.
- 2 The Active Control menu appears.
- 3 Press the cursor up/down to select the Active Control values **Off**, **Minimum**, **Medium** (recommended) or **Maximum**.
The picture settings are being optimised continuously and automatically which is displayed by bars. The menu items can not be selected.
- 4 Press the cursor right to select **Smart Picture**.
- 5 Press the cursor up/down to select one of the predefined picture settings.

- 6 Press the cursor right to select **Active Display**.
- 7 Press the cursor up/down to select **Show bars**, one of the Dual screen demos or **Off**.
When you select Dynamic contrast, Pixel Plus, Digital Noise Reduction or Digital Natural Motion, the TV screen is divided into two parts: in the left part the selected picture quality setting is switched off; in the right part it is switched on.
Note: Dependent on the input signal, one or more Dual screen demos may not be selectable.
- 8 Press the  key again to switch off the Active Control menu.

Sound



- 1 Press the cursor right to select **Sound**.
- 2 Select the menu items in the Sound menu with the cursor up/down and adjust the settings with the cursor left/right. Remember, control settings are at normal mid-range levels when the bar scale is centred.

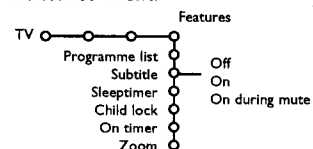
Smart sound

Select Smart sound to display a list of predefined sound settings, each corresponding with specific factory settings of Treble and Bass. **Personal** refers to the personal preference settings of sound in the sound menu.

Notes:

- Some menu items are only available in case of a Cinema Link configuration and when the Cinema Link is activated. Others are steered by the audio receiver instead of by the TV. See the separate Cinema Link booklet supplied.
- Dual I-II is only available with dual sound transmission.
- Mono/Stereo is only selectable in case of analogue stereo transmission.
- Nicam/Analogue is only selectable in case of Nicam transmission.

Features menu



- 1 Press the cursor right to select **Features**.
- 2 Select the menu items with the cursor up/down and adjust the settings with the cursor left/right.

Use the on-screen Menu-Info  for more information about the menu items.

Programme list

Press the **OK** key to switch over to the selected TV channel or external.

Select subtitles

The subtitle page must be stored for each TV channel:

Switch on teletext and select the proper subtitle page from the index. Switch off teletext.

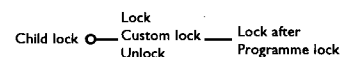
Subtitle On will automatically display them on the selected TV channels if subtitles are in the transmission. A symbol will indicate that the mode is on.

Select **On** during mute when you want to have the subtitles automatically displayed only when the sound has been muted with the  key on the remote control.

Child lock

Note: A VGA source can not be locked.

- 1 Select **Child lock**.



- 2 Press the cursor right to enter the Child lock menu. You're summoned to enter your code.
Note: You have to re-enter your code each time you enter the child lock menu.

Important: You have forgotten your code !
See p. 8.

- 3 Select one of the menu items of the child lock menu:

- **Lock** if you want to lock all channels and externals.

- **Custom lock** and press the cursor right.
Select:

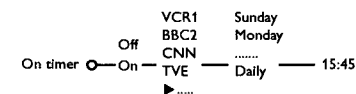
- **Lock after** if you want to lock all programmes from a certain time onwards.
Press the cursor right and enter the time with the cursor up/down and right. Press the **OK** key to validate.

- **Programme lock** if you want to lock a certain TV channel or external;

- Select **Unlock** to disable all locks you have set.

On timer

- 1 Select **On timer** with the cursor down.



- 2 Select **On** with the cursor right.
- 3 Press the cursor right again to enter the programme list.
- 4 Select the TV channel or external you want your TV to switch to on a selected time and day.
- 5 Press the cursor right again to select a day of the week or to select **Daily**.

- 6 Press the cursor right once again to enter the time with the digit keys or with the cursor up/down and press the **OK** key to activate.

- 7 Press the **MENU** key to turn off the menu.
Note: To check your timer settings, press the  key.

Zoom

Note: Dependent on the input signal, Zoom may not be selectable.

- 1 Select **Zoom** with the cursor down and press the ok key.
- 2 Press the **OK** key to select one of the zoom magnifications (x1, x4, x9, x16).
- 3 Additionally you can shift the selected zoom window over the screen with the cursor keys up/down, left/right.
- 4 Press the **MENU** key to turn off the zoom function.

NEXTVIEW / Teletext guide



NEXTVIEW is an electronic guide that allows you to look up programmes as you would in a newspaper or a TV magazine. You can sort the programmes by subject (films, sport...), obtain detailed information and programme your video recorder if it comes with the NEXTVIEWLink function.

Important note: The NEXTVIEW service is only available on certain programmes and in certain countries. When no NEXTVIEW information is broadcast, the teletext programme guide appears in its place. This is based on teletext programme information (if available) and offers most functions of NEXTVIEW. Note: The broadcaster is responsible for the content of the information.

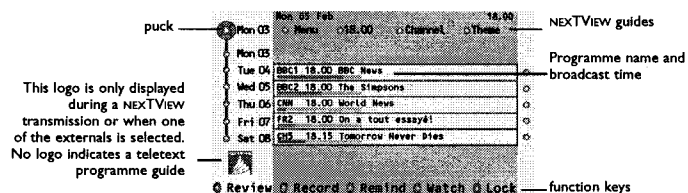
Call NEXTVIEW / Teletext guide

Press the **[OK]** key on the remote control to call the NEXTVIEW/Teletext guide. A menu appears with the message **One moment please**. After a while you obtain:

- a NEXTVIEW page, if the selected channel broadcasts this service (the NEXTVIEW logo is displayed),
- a teletext page, if the selected channel does not broadcast NEXTVIEW,
- **No information available** is displayed if neither NEXTVIEW nor teletext are transmitted. In this case, select another channel.

Display of a NEXTVIEW page

The information is set by the channel that transmits the NEXTVIEW service. See also Setup menu, General, NEXTVIEW provider, p. 8.

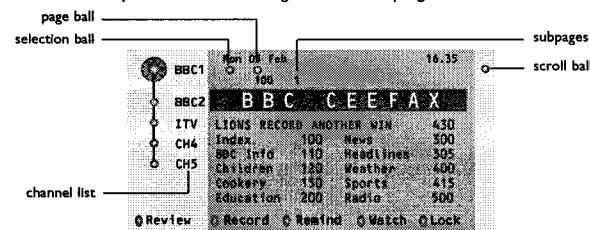


NEXTVIEW guides

- 1 Use the cursor key left/right to select **Time**, **Channel**, **Theme**, the **Date** guide. The **Time guide** provides an overview of all programme titles active in the selected time block. The **Channel guide** provides an overview of all programmes that are broadcast by a single channel during one day. With the **Date guide** you can choose a specific date. The **Theme guide** displays a list of all programmes at the selected date, that matches with the selected category. Going through the menu guide, the TV is collecting the sorting criteria to finally display a list of programme events.
- 2 Press the **OK** key to select the guide type.
- 3 Move the puck down and to the right to select the programmes. If available a summary or commentary on the programme is displayed at the bottom of the screen.
- 4 Use the cursor up/down to scroll through the programmes.

Teletext Guide

- 1 Enter with the digit keys, the teletext page number that contains the programme information for the current channel.
- 2 Press the cursor right to move the puck over the selection ball.
- 3 Use the cursor up/down to scroll through the different programmes.



- If the selected programme contains a page number with an optional subcode referring to a page with more info about the programme, press the **OK** key to display the information. Press the **OK** key again to return to the programme guide page.
- If the selected programme guide page satisfies the VPT requirements, it will be possible to record, remind, watch or lock programmes:
 - the TV will remember the last selected teletext page number of that channel that contains programme guide information and indicates which programme starts at what time. Every time you press the **[OK]** key, the teletext programme guide page of the selected TV channel will be available.
- When necessary you can select the subpage number by moving the cursor to the pageball and pressing right.

Note: You must enter the teletext page number for each channel. You can change the channels also by moving the cursor up/down in the list in the left of the page.

Basic functions

Press one of the grey **[OK]**, red **[STOP]**, green **[GO]**, yellow **[X]** or blue **[MENU]** keys to activate a NEXTVIEW or Teletext Guide function. The keys appear in grey if the function is not available.

Review: this menu provides a list of programmes that are marked as reminders, those that have to be recorded and those that are locked. This menu can be used to change or remove marked programmes.

Record: to programme the recording of the video recorder (if it has a NEXTVIEWLink function and is connected to EXT. 2).

Remind: automatically switch on the TV if it is in standby or by displaying a message if the TV is on.

Lock: to lock certain programmes to prevent recording or watching. For the functions Record, Remind or Lock, a small menu pops up in which you can choose the interval: once, daily or weekly, or clear an earlier made record, remind or lock setting. The default interval is set to **Once**. To confirm the frequency, press the **OK** key.

Watch: to watch the selected and currently broadcast programme.

Acquisition and updating of NEXTVIEW information

Acquisition and updating of NEXTVIEW is done when you are watching the TV channel of the selected NEXTVIEW provider, see Setup menu, p. 8, or when the TV is switched to standby;

Acquisition of fresh data will happen once during the night.

Note: it may be necessary to put the TV in standby mode when all NEXTVIEW information is outdated, e.g. when returning from holiday.

Teletext

Most TV channels broadcast information via teletext. This TV has a 1200 pages memory that will store most broadcasted pages and subpages to reduce waiting time. After each programme change, the memory is refreshed.

Switch Teletext on and off

Press **[MENU]** to switch the teletext on.

102	03 04 05 06 07 08 09 10 11 12
BBC CEEFAX 102 Mon 03 Feb 16.35.22	
BBC CEEFAX	
100	News 300
110	Headlines 305
120	Weather 400
150	Sports 415
200	Radio 500
230	Travel 550
240	Subtitles 625
280	TV Listings 600
Red	Green Yellow Blue

Select a Teletext page

- Enter the desired page number with the digit keys, the cursor keys up/down, left/right or with the **-P+** key.
- Select the options at the bottom of the screen with the colour keys.

Previously selected teletext page

(Only possible in case there is no list of favourite teletext pages available. See p. 17.)
Press the **P+P** key.

Select the index teletext page

Press the grey colour key **[▶]** to display the main index (usually p.100).

Only for T.O.P teletext broadcasts :

Press **[TOP]**. A T.O.P. overview of the teletext subjects available is displayed.
Select with the cursor up/down, left/right the desired subject and press the **OK** key.
Not all TV channels broadcast T.O.P. teletext.

Select subpages

When a selected teletext page consists of different subpages, a list of available subpages appears on the screen.
Press the cursor left or right to select the next or previous subpage.

Enlarge a Teletext page

Press **[F3]** repeatedly to display the upper teletext part, the lower teletext part and then to return to the normal teletext page size.
When the teletext page is enlarged, you can scroll the text, line by line using the cursor up/down.

Hypertext

With hypertext you can quickly jump to a pagenumber or search for a specific word shown on the current teletext page.

- 1 Press the **OK** key to highlight the first word or a number on the page.
- 2 Use the cursor up/down, left/right to select any other word or number you want to search for.
- 3 Press the **OK** key to confirm. The search starts. A message appears at the bottom of the screen to indicate the searching, or that the word or page is not found.
- 4 Use the cursor up to exit hypertext.

Teletext menu

- 1 Press the **MENU** key to activate the menu.
- 2 Press the cursor up/down to select the menu items.
- 3 Press the cursor right to activate.

Reveal

Reveals/conceals hidden information on a page, such as solutions to riddles and puzzles.
Press the cursor right to activate.

Favourite

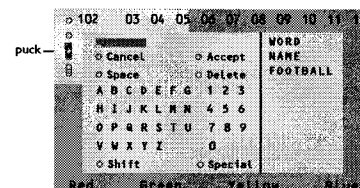
This list contains up to eight favourite teletext pages. Only the pages of the current channel can be selected.

- 1 Press the cursor right to enter the list.
- 2 Press the cursor right again to add the current page or to select one of the favourite pages to the list.
- 3 Press the **MENU** key to watch the page.
- 4 Use the **P+P** key to browse through the list of favourite pages.

Search

Selecting a word

On the keyboard on screen you can type in a random word you want to search for in the teletext pages. Whether upper- or lowercase is used has no influence.



- 1 Press the cursor right to enter the keyboard.
- 2 Press the cursor left/right, up/down to select the characters, words or functions.
- 3 Press the **OK** key to confirm each character selected.
- 4 Select **Cancel** to cancel the word; **Space** to enter a space; **Delete** to delete the last character selected; **Shift** to switch between lowercase or capital characters; **Special** to display special characters on the keyboard and press the **OK** key.
- 5 Press the cursor left repeatedly to return to the Teletext menu again.

Searching a word

- 1 Type in the word on screen or select a word from the history list on the right and press **OK**.
- 2 Select **Accept** and press **OK** again. The message Searching appears.
- 3 To cancel the searching or to search for a new word, select **Keyboard** and press **OK**.
- 4 When a word is not found, a message appears. When the word is found, it is highlighted in the teletext page. To continue the search, press the **OK** key.

Cycle subpages (if available)

Makes the subpages cycle automatically.
Press the cursor right to activate and to deactivate again.

Timed page

To display a specific page from a selected TV channel at a certain time.

- 1 Press the cursor right and select **Yes** or **No**.
- 2 Enter the time and pagenumber with the cursor keys or the digit keys.

Notes:

- Teletext does not have to remain switched on, but you should watch the TV channel you have selected the specific page from.
- It is not possible to display a timed page when in VGA mode.

- 3 Press the cursor left to return to the TV menu again.

Language

If the displayed characters on screen do not correspond with the characters used by the teletext broadcaster, you can change the language group here.
Select **Group 1** or **Group 2** with the cursor right.

Press the **MENU** key to leave the Teletext menu.

Connect Peripheral Equipment

There is a wide range of audio and video equipment that can be connected to your TV. The following connection diagrams show you how to connect them.

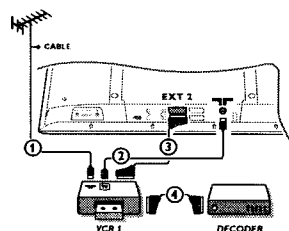
Note: **EXT1** can handle CVBS and RGB; **EXT2** CVBS, Y/C and RGB; **EXT3** and **4** CVBS; **EXT5** Y-Pb-Pr 480p, 576p, 1080i; **VGA IN** can handle VGA, SVGA, XGA and 480p, 576p, 1080i.

It is preferred to connect peripherals with RGB output to **EXT1** or **EXT2** as RGB provides a better picture quality.

Note: If your recorder is provided with the EasyLink function, it should be connected to **EXT2** to benefit from the EasyLink functionality.

Recorder (VCR-DVD+RW)

Note: Do not place your recorder too close to the screen as some recorders may be susceptible for signals out of the display. Keep a minimum distance of 0,5 m to the screen.



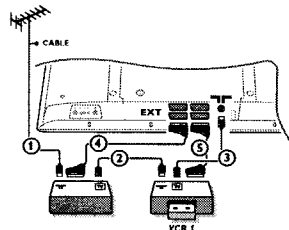
Connect the aerial cables ①, ② and, to obtain the optimum picture quality, eurocable ③ as shown. If your recorder does not have a euroconnector, the only possible connection is via the aerial cable. You will therefore need to tune in your recorder's test signal and assign it programme number 0 or store the test signal under a programme number between 90 and 99, see Manual installation, p. 6.

See the handbook of your recorder.

Decoder and Recorder

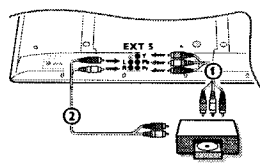
Connect a eurocable ④ to your decoder and to the special euroconnector of your recorder. See also the recorder handbook. See Decoder, p. 9. You can also connect your decoder directly to **EXT1** or **2** with a eurocable.

Other equipment (satellite receiver, decoder, DVD, games, etc.)



- 1 Connect the aerial cables ①, ② and ③ as shown (only if your peripheral has TV aerial in-/output). Connect your equipment with a eurocable ④ or ⑤ to one of the euroconnectors **EXT1**, **2**, **3** or **4** to obtain a better picture quality.
- 2 Look for the test signal of your peripheral in the same way as you do for a recorder.
- 3 Make a selection in the Setup, Source menu, p. 9.

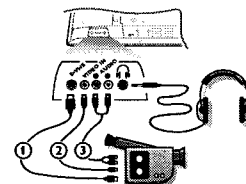
DVD player



With Component Video Output Connectors (EXT5/YPbPr)

- 1 Connect the three separate component video cables to the DVD player's **Y**, **U** (Pb) and **V** (Pr) jacks and to the **Y**, **Pb** and **Pr** jacks on the TV.
- 2 Connect the audio cable to the DVD player's **AUDIO L** and **R** jacks and to the **L** and **R** audio **EXT5** jacks on the TV.

Front connections



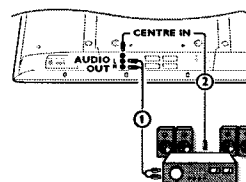
Camera or Camcorder

- 1 Connect your camera or camcorder as shown.
 - 2 Connect to **VIDEO 2** and **AUDIO L 3** for mono equipment. For stereo equipment also connect **AUDIO R 3**. S-VHS quality with an S-VHS camcorder is obtained by connecting the S-VHS cables with the **S-VIDEO** input ① and audio inputs ③.
- Do not connect cable ① and ② at the same time. This may cause picture distortion!

Headphone

- 1 Insert the plug into the headphone socket as shown.
 - 2 Press **⏏** on the remote control to switch off the internal loudspeakers of the TV.
- The headphone impedance must be between 8 and 4000 Ohm. The headphone socket has a 3.5 mm jack. In the Sound menu select **Headphone volume** to adjust the headphone volume.

Multi channel Surround receiver



- 1 Connect the audio cable to the multi channel Surround receiver and to **AUDIO OUT L** and **R** at the bottom of your TV ①.
- 2 If you want the loudspeakers of your TV to act as centre speaker, also connect an audiocable to the multi channel Surround receiver and to the **CENTRE IN** at the bottom of your TV ②.
- 3 Select **Centre Input On** in the Source menu. See p. 9.

The loudspeakers of the TV will now only produce centre sound, the loudspeakers connected to the audio receiver will produce Surround Sound. The volume has to be controlled via the multi channel Surround receiver.

Note: No sound will be heard when a TV channel or external source is blocked via the Child lock menu (see p. 12).

To select connected equipment

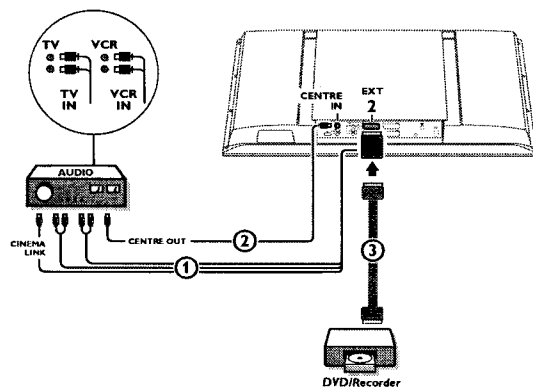
Press the **⏏** key on the remote control repeatedly, or select Source in the Setup menu (see p. 9) to select **EXT1**, **EXT2**, **EXT3**, **EXT4**, **YPbPr**, **FRONT** or **VGA** according to where you connected your equipment.

Remark: Most equipment (decoder, recorder) carries out the switching itself, when it is switched on.

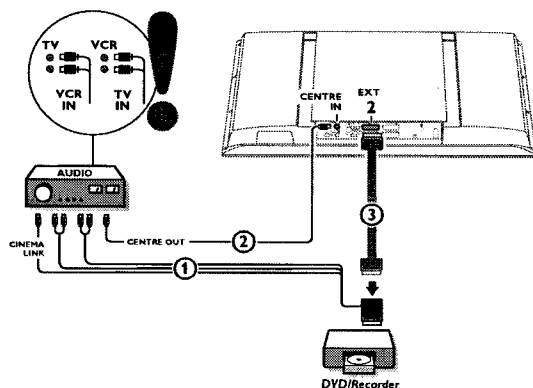
Cinema Link surround receiver

See the separate supplied Cinema Link instruction manual.

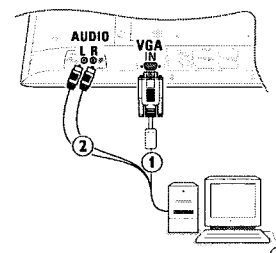
Attention: the sound info on screen will not correspond with the actual sound reproduction.



OR



Connect your computer



- 1 Connect one end of a VGA cable (1) to the video card of the computer and the other end to the **VGA** connector at the bottom of the TV. Fix the connectors firmly with the screws on the plug.
- 2 In case of a Multimedia computer, connect the audio cable (2) to the audio outputs of your Multimedia computer and to the **AUDIO R** (right) and **L** (left) inputs of the side panel.

The **VGA IN** connector allows the following TV and monitor display modes:

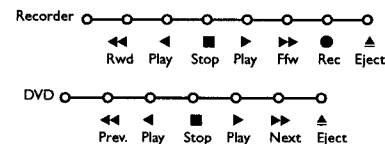
EDTV	640/720 x 480p	
	720 x 576p	
HDTV	1920 x 1080i	
VGA	640 x 480	60 Hz
SVGA	800 x 600	56 Hz
XGA	1024 x 768	60 Hz

Note:

If possible, use the XGA1024x768@60Hz video mode to obtain the best image quality for your LCD monitor.

Recorder or DVD with EasyLink

The recorder (VCR or DVD+RW) or DVD can be operated with the remote control via the **Recorder** or **DVD** menu on screen.

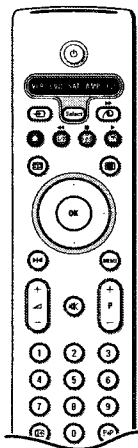


- 1 Press the **MENU** key on the remote control.
- 2 Select the **Recorder** or **DVD** menu with the cursor up/down.
- 3 Press the cursor left/right, up/down to select one of the recorder or DVD functions.

The key ● for recording can be operated in the TV mode.

If your EasyLink recorder has the system standby function, when you press the ⏻ key for 3 seconds, both TV and the recorder are switched to standby.

Audio- and video equipment keys



This system remote control operates the following Philips equipment: TV, VCR, DVD, SAT (RC5), AMP (+TUNER), CD;

Press the **Select** key to operate any of the equipment indicated in the display. Another device can be selected by pressing Select repeatedly within 2 seconds. The led will blink slowly to indicate the device. Press one of the keys on the remote control to operate the peripheral equipment. To return to TV mode press Select while the led is blinking. When no action is taken within 60 seconds, the remote goes back to TV mode.

Note: When the **Select** key is pressed and held for more than 2 seconds, the RCS/RC6 system select command is transmitted.

- | | |
|---|---|
| ⏻ to switch to standby | MENU to switch the menu on or off |
| ⏸ for pause (VCR, DVD, CD) | - P + for chapter, channel, track selection |
| ● for record | 0 to 9 digit entry |
| ⏮ for rewind (VCR, CD); search down (DVD, AMP) | P+P tape index (VCR); select a DVD chapter; select a frequency (AMP) |
| ■ for stop | ⌚ VCR timer |
| ▶ for play | ⌘ surround on/off (AMP, CD) |
| ⏭ for fast forward (VCR, CD); search up (DVD/AMP) | cursor up/down to select the next or the previous disc (CD) |
| Ⓜ to select your choice of subtitle language (DVD); RDS news/TA (AMP); to shuffle play (CD) | cursor left/right to select the previous or following track (CD) search up/down (AMP) |
| Ⓜ to select a DVD title; RDS display (AMP); info on screen (CD) | |
| Ⓜ display information | |

Additionally the DVD, SAT and CD indicator can be programmed to operate the DVD-R, SAT (RC6), CD-R instead.

- 1 Press the **Select** key repeatedly until no LED is lit.
- 2 To program **DVD-R**, press the **OK** key + digit 2.
To program **SAT (RC6)**, press the **OK** key + digit 4.
To program **CD-R**, press the **OK** key + digit 6.

From now on, when the corresponding (**DVD, SAT, CD**) indicator is selected, the remote control will operate your DVD-R, SAT (RC6) or CD-R.

Note: To return to the modes programmed in the factory, either remove the batteries for a few minutes, or press the **OK** key + digit 1 (DVD mode); or + digit 3 (SAT-RC5) or + digit 5 (CD mode).

Record with your recorder with EasyLink

In TV mode, it is possible to start a direct recording of the programme which is being displayed on the TV screen. Continue to press the ● record key on the remote control for more than 2 seconds.

Note: Switching programme numbers on your TV does not disturb recording!
When recording a programme from a peripheral connected to **EXT 1, EXT 3, EXT 4, EXT 5** or **FRONT**, you can not select another TV programme on the screen.

Attention:

Recording from EXT 5 will only have black and white pictures!

Tips

Care of the screen	Do not rub or strike the screen with anything hard as this may scratch, mar, or damage the screen permanently. Unplug the set before cleaning the screen, dust the TV by wiping the screen and the cabinet with a soft, clean cloth. If the screen requires additional cleaning, use a clean, damp cloth; do not use liquid cleaners or aerosol cleaners.
Poor Picture	• Have you selected the correct TV system in the manual installation menu? • Is your TV or house aerial located too close to loudspeakers, non-earthed audio equipment or neon lights, etc.? • Mountains or high buildings can cause double pictures or ghost images. Sometimes you can improve the picture quality by changing the direction of the aerial. • Is the picture or teletext unrecognisable? Check if you have entered the correct frequency. See Installation, Manual installation, p. 6. • Are brightness, sharpness and contrast out of adjustment? Select Factory settings in the Setup, General menu, p. 8.
No Picture	• Are the supplied cables connected properly? (The aerial cable to the TV, the other aerial to your recorder, the VGA cables to the display, the power cables.) • Has the child lock been switched off? • Is your PC switched on? • Do you see a black screen and the indicator in front of the TV lights up green, this means that the display mode is not supported. Switch your VGA-source to a correct mode. • In case of weak or bad signal, consult your dealer.
Digital distortion	The low quality of some digital picture material may be the cause of digital image distortion. In this case select the Soft setting using the Picture menu, Smart Picture, without changing the picture settings manually.
No sound	• No sound on any channel? Check the volume isn't at minimum. • Is the sound interrupted with the mute key ?
No solution found for your picture or sound problem?	Switch your TV off and then on again once. Never attempt to repair a defective TV yourself. Check with your dealer or call a TV technician.
Menu	Have you selected the wrong menu? Press the menu key again to exit from the menu.
NEXTVIEW	Orange indicator on front of the TV during standby / No NEXTVIEW info: See Acquisition and updating of NEXTVIEW information, p. 14. Displayed time is wrong: The broadcaster on programme number one does not transmit the correct local date and time. Use Reshuffle in the installation menu to place another broadcaster on programme number one.
Remote control	• Check if the remote control is in the correct mode. • If your TV no longer responds to the remote control, the batteries may be dead. • You can still use the MENU/OK key and the -/+ keys on top of your TV.
Standby	Your TV consumes energy in the standby mode. Energy consumption contributes to air and water pollution. Power consumption: 2 W.
No stable or not synchronised VGA picture	Check if you have selected the correct VGA mode in your PC. See the separate instruction manual with the monitor.
Miscellaneous	• Ambient temperature: + 5~ + 35°C • Mains: 50/60 Hz Auto Voltage ranging from 198 V to 264 V • Power consumption: around 170 W • Standby consumption: 1 W • Weight (excl. packaging): 17 kg • Dimensions (wxdhxd): 891x489x110

Personal Notes:

Table of TV frequencies.
Frequenztafel der Fernsehsender.
Liste des fréquences des émetteurs.
Frequenztafel TV-Zendern.
Tabella delle frequenze delle trasmissioni.
Lista de las frecuencias de las emisoras.
Lista das frequências das emissoras.
Liste over TV senderne.
Tabell over TV-frekvenser.

Tabell över TV-frekvenser.
TV-faajustatuluikko.
Κατάλογος συχνότητων πομπών.
Список частот передатчиков.
A televízió-adóállomások frekvenciáinak a listája.
Lista częstotliwości stacji nadawczych.
Seznam frekvencí pásem vysílačů.
Zoznam frekvencij pásem vysílačov.

EUROPE	E-EUROPE
CH FREQ (MHz)	CAN. FREQ (MHz)
E1 48.75	R1 49.75
E2 55.25	R2 55.25
E3 61.75	R3 61.75
E4 68.25	R4 68.25
E5 74.75	R5 74.75
E6 81.25	R6 81.25
E7 87.75	R7 87.75
E8 94.25	R8 94.25
E9 100.75	R9 100.75
E10 107.25	R10 107.25
E11 113.75	R11 113.75
E12 120.25	R12 120.25
E13 126.75	R13 126.75
E14 133.25	R14 133.25
E15 139.75	R15 139.75
E16 146.25	R16 146.25
E17 152.75	R17 152.75
E18 159.25	R18 159.25
E19 165.75	R19 165.75
E20 172.25	R20 172.25
E21 178.75	R21 178.75
E22 185.25	R22 185.25
E23 191.75	R23 191.75
E24 198.25	R24 198.25
E25 204.75	R25 204.75
E26 211.25	R26 211.25
E27 217.75	R27 217.75
E28 224.25	R28 224.25
E29 230.75	R29 230.75
E30 237.25	R30 237.25
E31 243.75	R31 243.75
E32 250.25	R32 250.25
E33 256.75	R33 256.75
E34 263.25	R34 263.25
E35 269.75	R35 269.75
E36 276.25	R36 276.25
E37 282.75	R37 282.75
E38 289.25	R38 289.25
E39 295.75	R39 295.75
E40 302.25	R40 302.25
E41 308.75	R41 308.75
E42 315.25	R42 315.25
E43 321.75	R43 321.75
E44 328.25	R44 328.25
E45 334.75	R45 334.75
E46 341.25	R46 341.25
E47 347.75	R47 347.75
E48 354.25	R48 354.25
E49 360.75	R49 360.75
E50 367.25	R50 367.25
E51 373.75	R51 373.75
E52 380.25	R52 380.25
E53 386.75	R53 386.75
E54 393.25	R54 393.25
E55 399.75	R55 399.75
E56 406.25	R56 406.25
E57 412.75	R57 412.75
E58 419.25	R58 419.25
E59 425.75	R59 425.75
E60 432.25	R60 432.25
E61 438.75	R61 438.75
E62 445.25	R62 445.25
E63 451.75	R63 451.75
E64 458.25	R64 458.25
E65 464.75	R65 464.75
E66 471.25	R66 471.25
E67 477.75	R67 477.75
E68 484.25	R68 484.25
E69 490.75	R69 490.75
E70 497.25	R70 497.25
E71 503.75	R71 503.75
E72 510.25	R72 510.25
E73 516.75	R73 516.75
E74 523.25	R74 523.25
E75 529.75	R75 529.75
E76 536.25	R76 536.25
E77 542.75	R77 542.75
E78 549.25	R78 549.25
E79 555.75	R79 555.75
E80 562.25	R80 562.25
E81 568.75	R81 568.75
E82 575.25	R82 575.25
E83 581.75	R83 581.75
E84 588.25	R84 588.25
E85 594.75	R85 594.75
E86 601.25	R86 601.25
E87 607.75	R87 607.75
E88 614.25	R88 614.25
E89 620.75	R89 620.75
E90 627.25	R90 627.25
E91 633.75	R91 633.75
E92 640.25	R92 640.25
E93 646.75	R93 646.75
E94 653.25	R94 653.25
E95 659.75	R95 659.75
E96 666.25	R96 666.25
E97 672.75	R97 672.75
E98 679.25	R98 679.25
E99 685.75	R99 685.75
E100 692.25	R100 692.25

FRANCE	ITALY
CAN. FREQ (MHz)	CAN. FREQ (MHz)
1 48.75	A 53.75
2 55.25	B 58.75
3 61.75	C 63.75
4 68.25	D 68.75
5 74.75	E 73.75
6 81.25	F 78.75
7 87.75	G 83.75
8 94.25	H 88.75
9 100.75	I 93.75
10 107.25	J 98.75
11 113.75	K 103.75
12 120.25	L 108.75
13 126.75	M 113.75
14 133.25	N 118.75
15 139.75	O 123.75
16 146.25	P 128.75
17 152.75	Q 133.75
18 159.25	R 138.75
19 165.75	S 143.75
20 172.25	T 148.75
21 178.75	U 153.75
22 185.25	V 158.75
23 191.75	W 163.75
24 198.25	X 168.75
25 204.75	Y 173.75
26 211.25	Z 178.75
27 217.75	AA 183.75
28 224.25	AB 188.75
29 230.75	AC 193.75
30 237.25	AD 198.75
31 243.75	AE 203.75
32 250.25	AF 208.75
33 256.75	AG 213.75
34 263.25	AH 218.75
35 269.75	AI 223.75
36 276.25	AJ 228.75
37 282.75	AK 233.75
38 289.25	AL 238.75
39 295.75	AM 243.75
40 302.25	AN 248.75
41 308.75	AO 253.75
42 315.25	AP 258.75
43 321.75	AQ 263.75
44 328.25	AR 268.75
45 334.75	AS 273.75
46 341.25	AT 278.75
47 347.75	AU 283.75
48 354.25	AV 288.75
49 360.75	AW 293.75
50 367.25	AX 298.75
51 373.75	AY 303.75
52 380.25	AZ 308.75
53 386.75	BA 313.75
54 393.25	BB 318.75
55 399.75	BC 323.75
56 406.25	BD 328.75
57 412.75	BE 333.75
58 419.25	BF 338.75
59 425.75	BG 343.75
60 432.25	BH 348.75
61 438.75	BI 353.75
62 445.25	BJ 358.75
63 451.75	BK 363.75
64 458.25	BL 368.75
65 464.75	BM 373.75
66 471.25	BN 378.75
67 477.75	BO 383.75
68 484.25	BP 388.75
69 490.75	BQ 393.75
70 497.25	BR 398.75
71 503.75	BS 403.75
72 510.25	BT 408.75
73 516.75	BU 413.75
74 523.25	BV 418.75
75 529.75	BW 423.75
76 536.25	BX 428.75
77 542.75	BY 433.75
78 549.25	BZ 438.75
79 555.75	CA 443.75
80 562.25	CB 448.75
81 568.75	CC 453.75
82 575.25	CD 458.75
83 581.75	CE 463.75
84 588.25	CF 468.75
85 594.75	CG 473.75
86 601.25	CH 478.75
87 607.75	CI 483.75
88 614.25	CJ 488.75
89 620.75	CK 493.75
90 627.25	CL 498.75
91 633.75	CM 503.75
92 640.25	CN 508.75
93 646.75	CO 513.75
94 653.25	CP 518.75
95 659.75	CQ 523.75
96 666.25	CR 528.75
97 672.75	CS 533.75
98 679.25	CT 538.75
99 685.75	CU 543.75
100 692.25	CV 548.75

GB

The frequencies used by a cable company may differ from the frequencies on the table. Consult your cable company or your dealer for detailed information.

D

In Kabelfernsehtanlagen können Abweichungen von den in den Frequenztabellen aufgeführten Frequenzen vorkommen. Bitte wenden Sie sich an Ihren Fachhändler oder Ihre Kabelfernsehgeseinschaft, die Ihnen die zutreffenden Frequenzen mitteilt.

F

Les fréquences utilisées par une société de télédistribution peuvent être différentes de celles sur la liste des fréquences. Consultez votre société de télédistribution ou votre revendeur pour des informations plus détaillées.

NL

De frequenties die gebruikt worden door een kabelmaatschappij kunnen verschillen van deze op de tabel. Raadpleeg uw kabelexploitant of uw handelaar voor meer informatie.

I

Le frequenze usate per una società di tele distribuzione possono essere differenti di quelle nella tabella. Consultate la società di tele distribuzione o il vostro rivenditore per informazione specifica.

E

Las frecuencias utilizadas por las empresas de distribución de señal por cable, pueden ser diferentes de las que se encuentran en esta tabla. Consulte con su compañía de distribución de televisión por cable o con su distribuidor para que le proporcionen una información más detallada.

P

As frequências utilizadas por uma sociedade de tele distribuição podem ser diferentes das indicadas na lista de frequências. Consultar a sociedade de tele distribuição ou o vendedor para informações mais detalhadas.

DK

Frekvenser benyttes af kabel operatør kan være afvigende fra disse, kontakt deres kabel operatør eller forhandler for nærmere information.

N

Frekvensene som benyttes på et kabelnett kan avvike fra de som er oppført i tabellen. Kontakt ditt kabel-TV selskap eller din forhandler for nærmere opplysninger.

S

Frekvenserna som används i kabel-TV-nätet kan avvika från frekvenserna i tabellen. Kontakta ditt kabel-TV-bolag eller din radiohandlare för vidare information.

SF

Kaapeliyhtiöiden käyttämät taajuudet voivat poiketa taulukossa olevista taajuuksista. Tarkat tiedot saat kaapeliyhtiöltä tai myyjältä.

GR

Οι συχνότητες που χρησιμοποιούνται από μια εταιρεία τηλεμόρφωσης είναι δυνατόν να είναι διαφορετικές από αυτές που περιγράφονται στην παρούσα ταράξη. Επικοινωνήστε με την εταιρεία τηλεμόρφωσης ή τον πωλητή για λεπτομερείς πληροφορίες.

CEI

Частоты на которых передаёт телекомпания могут отличаться от частот на данной таблице. (Обратиться к Вашей телекомпании или Вашему продавцу за дополнительной информацией).

H

Egy televízió-adóállomás sugárhézős használt frekvenciatarományai lehetnek a táblázatban közöltéktől eltérőek is. (Abban az esetben, ha bővebb információkra van szüksége, forduljon az eladóhoz.)

PL

Operator sieci telewizyjnej może stosować inne częstotliwości, niż te, które figurują na tablicy (bardziej szczegółowych informacji na ten temat zasięgnąć u operatora lub sprzedawcy).

CZ

Frekvence používané některými televizními společnostmi se mohou lišit od údajů uvedených v tomto seznamu. Informujte se blíže u příslušné společnosti nebo u prodejce, kde jste televizor koupili.

SK

Frekvencie používané niektorými spoločnosťami televízneho prenosu sa môžu líšiť od údajov uvedených v tomto zozname. Informujte sa bližšie u príslušnej spoločnosti alebo u predajni, kde ste televízor kúpili.

4. Mechanical Instructions

Index of this chapter:

- 4.1 Service Positions
- 4.2 Assy/PWB Removal
- 4.3 Set Re-assembly

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 Service Positions

First, put the TV set in its service position. Therefore, place it upside down on a table top (use a protection sheet or a foam cushion).

4.1.1 The Foam Bars

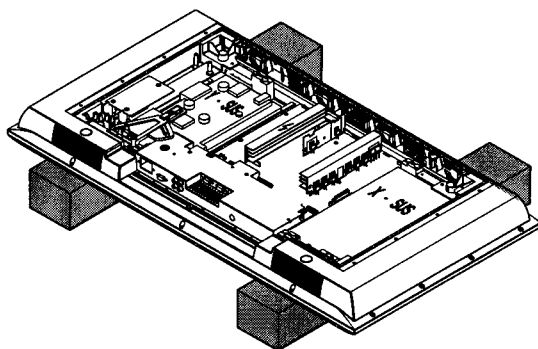


Figure 4-1 Foam bars

The foam bars (order code 3122 785 90580) can be used for all types and sizes of Flat TVs. By laying the plasma or LCD TV flat on the (ESD protective) foam bars, a stable situation is created to perform measurements and alignments. By first placing a mirror flat on the table under the TV you can easily see if something is happening on the screen. The stand is also handy to replace the screen.

4.1.2 The Aluminium Stands

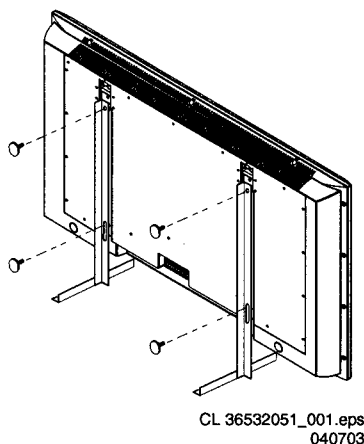


Figure 4-2 Aluminium stands

The aluminium stands (order code 3122 785 90480) can also be used to do measurements and alignments, also they are very suitable to perform duration tests. With this stands the set

does not take much space, has no risk of over heating, and/or falling. The stands can be mounted and removed quickly and easily with use of the provided screws, which can be tightened and loosened manually without the use of tools

Caution: Only use the screws provided, otherwise it is possible to damage the monitor inside.

4.2 Assy/PWB Removal

4.2.1 Rear Cover

Warning: Disconnect the mains power cord before you remove the rear cover.

First, unscrew the rear cover:

1. Remove the screws that secure the rear cover. The screws are located at the top, bottom, left and right side, also there are three deeper located screws next to the stands.
2. Lift the rear cover from the cabinet. Make sure that wires and flat foils are not damaged during cover removal.

4.2.2 Side I/O Panel

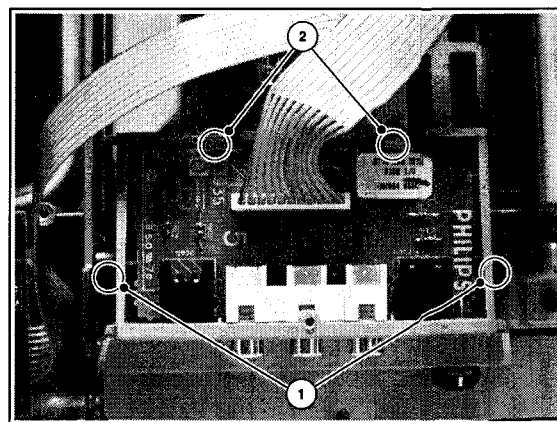


Figure 4-3 Side I/O panel

1. Disconnect the cable of the panel
2. To replace the complete bracket, remove the two fixing screws (1) on either side of the panel.
3. To get the panel out, push the two brackets out and lift the panel off.
4. Remove the panel.

4.2.3 Main switch/LED panel

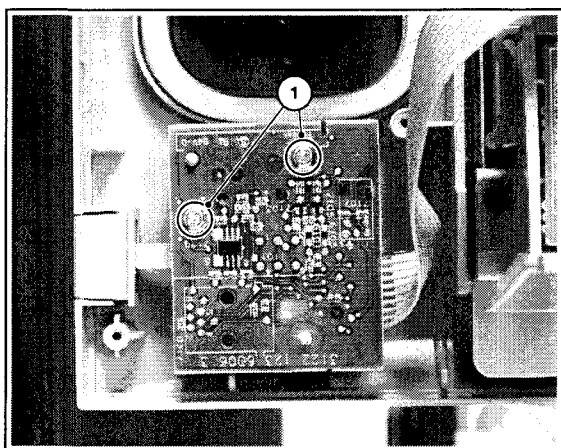
CL 36532064_051.eps
161003

Figure 4-4 Main switch/LED panel

1. Disconnect the cable on the rear of the panel.
2. Remove the two fixing screws (1) as shown on the photo.

4.2.4 Small Signal Panel

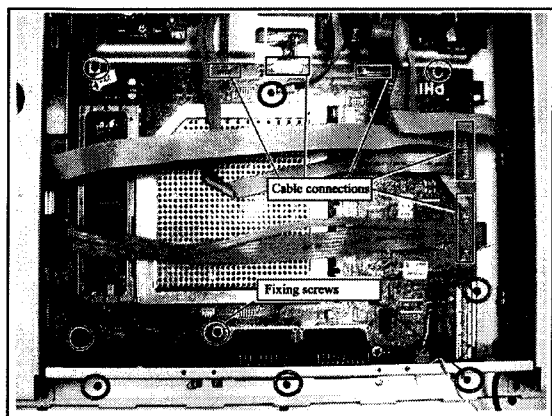
CL 36532053_091.eps
301003

Figure 4-5 Small Signal Panel

1. Disconnect all cables from the panel.
2. **Caution:** The connectors of the LVDS cable are very fragile, be careful not to damage them.
3. Remove the fixing screws of the panel.

4.2.5 Audio Amplifier

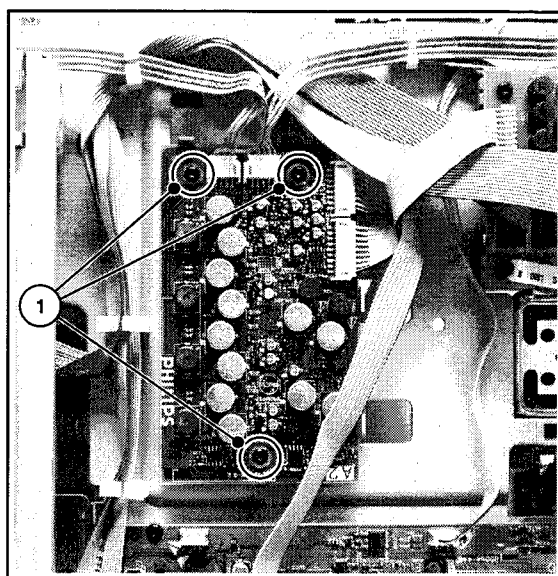
CL 36532064_053.eps
161003

Figure 4-6 Audio Amplifier

1. Disconnect all cables from the panel.
2. Remove the fixing screws (1) of the panel.

4.2.6 Auxiliary Supply

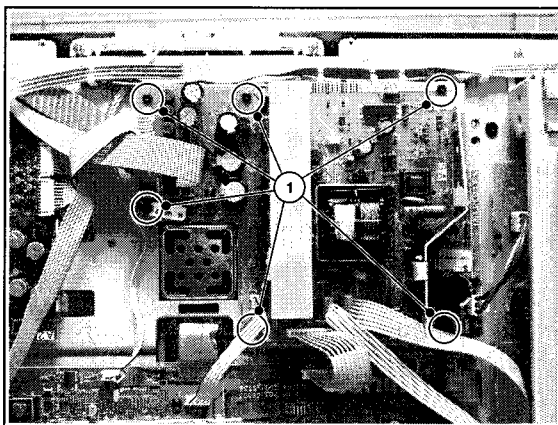
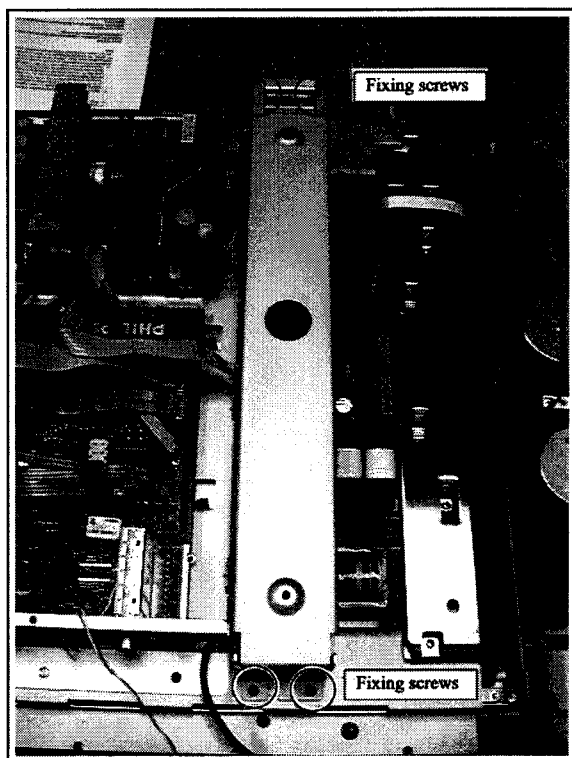
CL 36532064_051.eps
161003

Figure 4-7 Auxiliary Supply

1. Disconnect all cables from the panel.
2. Remove the fixing screws (1) of the panel.

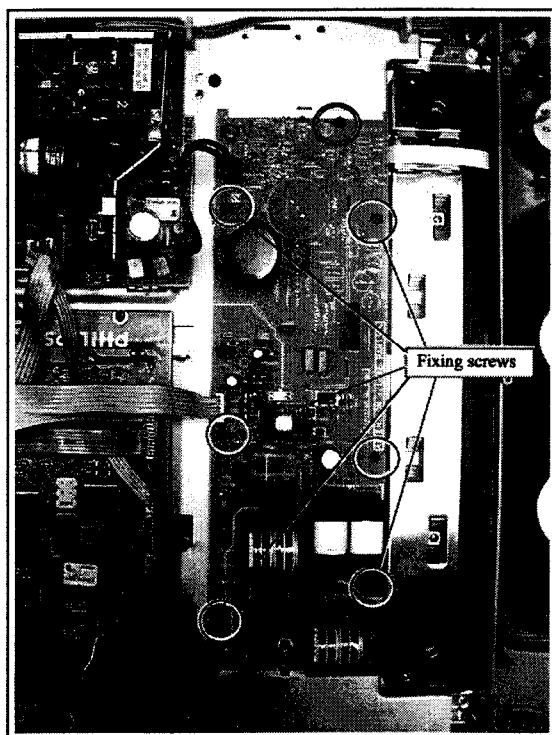
4.2.7 Main Power Supply



CL 36532053_094.eps
301003

Figure 4-8 Wall mounting bracket

1. Remove the screws on both the top and bottom of the mounting bracket.
2. Remove the bracket before accessing the Main Power Supply panel.

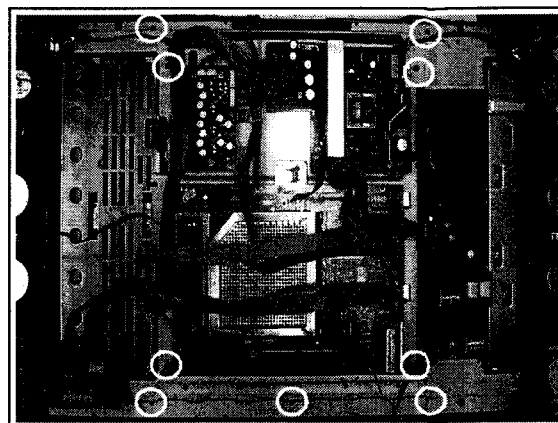


CL 36532053_095.eps
301003

Figure 4-9 Main Power Supply

1. Disconnect the cables from the panel.
2. Remove the fixing screws on each side of the panel.

4.2.8 LCD Panel



CL 36532053_096.eps
301003

Figure 4-10 LCD Display

Make sure that the power is switched "off" and that the necessary cables are disconnected.

To replace the LCD panel (including the backlight), please remove all the panels first (including the two mounting brackets), as mentioned above.

1. Remove the five fixing screws on the border of the panel with a no. 10 Torx screwdriver.
2. Remove the four fixing screws on the panel with a no. 20 Torx screwdriver.
3. Lift the LCD panel including the backlights out of the frame.

4.3 Set Re-assembly

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

Notes:

- As soon as you have removed the plastic back cover, you must replace the speaker-box sealing foam (12nc: 3104 303 10791). This, to ensure that the loudspeakers are airtight. Do not stretch the foam during mounting. Pay special attention to the corners, to make sure that the foam is not stretched and that it is pushed in the corners.
- While re-assembling, make sure that all cables are placed and connected in their original position

5. Service Modes, Error Codes, and Fault Finding

Index of this chapter:

- 5.1 Test Points
- 5.2 Service Modes
- 5.3 Problems and Solving Tips (related to CSM)
- 5.4 ComPair
- 5.5 Error Codes
- 5.6 The Blinking LED Procedure
- 5.7 Protections
- 5.8 Repair tips
- 5.9 Software Downloading

5.1 Test Points

The chassis is equipped with test points printed on the circuit board assemblies.

Perform measurements under the following conditions:

- Service Default Mode.
- Video: colour 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 Philips Customer Care Centre (P3C) 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: 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.
- To start the blinking LED procedure.

Specifications

- Tuning frequency: 475.25 MHz for PAL/SECAM.
- Colour system: SECAM L for France or PAL B/G for the rest of Europe.
- All picture settings at 50 % (brightness, colour, contrast).
- All sound settings at 50 %, except volume at 25 %.
- All service-unfriendly modes (if present) are disabled, like:
 - (Sleep) timer.
 - Child/parental lock.
 - Blue mute.
 - Automatic volume limiter (AVL).
 - Auto switch-off (when no video signal was received for 10 minutes).
 - Skip/blank of non-favourite pre-sets.
 - Smart modes.
 - Auto store of personal presets.
 - Auto user menu time-out.

How to enter 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 (item 9018) on the SSP, with the indication "SDM". Activation can be performed in all modes, except when the set has a problem with the main microprocessor.

Caution: If the SDM is entered via the pins, all the software-controlled protections are de-activated.

- Use the DST-emulation feature of ComPair.
- Use the "DEFAULT" button on the Dealer Service Tool (RC7150).

After entering this mode, "SDM" will appear in the upper right corner of the screen.

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 STANDBY via the RC-transmitter.
- Press the "EXIT" button on the DST.
- 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.

Specifications

- Operation hours counter.
- Software version.
- Option settings.
- Error buffer reading and erasing.
- Software alignments.

How to enter SAM

Use one of the following methods:

- Via a standard RC transmitter: key in the code "062596" directly followed by the "OSD [i+]" button. After entering SAM with this method a service warning will appear on the screen, you can continue by pressing any digit key on the RC.
- Short for a moment the two solder pads (item 9017) on the SSP with the indication "SAM". Depending on the software version, it is possible that a service warning will appear. You can continue by pressing any digit key on the RC.
- Use the DST-emulation feature of ComPair.
- Press the ALIGN button on the DST while the set is in the normal operation

After entering this mode, "SAM" will appear in the upper right corner of the screen.

Contents of SAM:

- **OPERATION HOURS.** Displays the accumulated total of operation hours (not the standby hours).
- **HARDWARE INFO.**
 - **ROM VERSION.** Displays the date of the software and the software version of the ROM (**example:** TL13EU_1.0_01234 = AAAABB_X.Y_NNNNN).
 - **AAAA=** the chassis name.

- **BB**= the region: EU= Europe, AP= Asia Pacific PAL/Multi, AN= Asia Pacific NTSC, US= USA, LT= LATAM.
- **X.Y**= 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).
- **NNNNN**= last five digits of 12nc code software.
- **SW VERSION EPLD**. Displays the software version of the EPLD.
- **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 the "OK" button, the error buffer is reset.
- **ALIGNMENTS**. This will activate the "ALIGNMENTS" submenu.
- **DEALER OPTIONS**. Extra features for the dealers.
- **SERVICE OPTIONS**. Extra features for Service.
- **INITIALISE NVM**. When an NVM was corrupted (or replaced) in the former EM3 chassis, the microprocessor replaces the content with default data (to assure that the set can operate). However, all pre-sets 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 recognises a corrupted NVM, the "initialise 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** initialising. This will give the Philips Service department an extra possibility for diagnosis (e.g. when Development asks for this).
 - Initialise the NVM (same as in the past, however now it happens conscious).
- **STORE**. All options and alignments are stored when pressing the "OK"-button
- **FUNCTIONAL TEST**. All devices are tested via the "OK" button. Eventual errors are displayed in the error buffer. The error buffer is not erased, the content returns when this test is terminated.
- **DAILY MENUS**. With the "OK" button, you can go to the normal user menu. SAM is still active in the background. With the "MENU" button, you return from the user menu to SAM menu. This feature can be helpful to quickly change some settings in the user menu.
- **SW MAINTENANCE**.
 - **UPGRADE**. More info see paragraph Software downloading.
 - **EVENTS**. Not useful for service purposes. In case of specific software problems, the development department can ask for this info.
 - **BDM INFO**. Broadcast Debug Menu info. The purpose of this menu is to debug the broadcast, **not** the TV. The menu gives an overview of what is received on the current preset. Following items are displayed:

Presetnr:	--	UTC:	--:--:--
Presetname:	-----	LTO:	--:--:--
		Time:	--:--:--
		Date:	--/--/----
CNI NVM:	----		
CNI F1:	----		
CNI F2:	----	Time TXT:	--:--:--
CNI VPS:	----	Time 8/30 F1:	--:--:--
Morning Prog:	---	Date 8/30 F1:	--/--/----
Name 8/30 F1:	-----	LTO 8/30 F1:	--:--:--
Name 8/30 F2:	-----		
Name TXT:	-----	WSS G1:	----
Signal Strength:	---	WSS G2:	----
		WSS G3:	----
EPG Service:	---	WSS G4:	----

Figure 5-1 Broadcast debug menu overview

Table 5-1 Broadcast debug menu explanation

Item	Source	Description
Presetnr	Set	Presetnumber of the current selected preset.
Presetname	Set	Presetname of the current selected preset.
CNI NVM	Broadcaster	CNI number stored in NVM for the current preset.
CNI F1	Broadcaster	CNI number from transmitted Packet 8/30 Format 1.
CNI F2	Broadcaster	CNI number from transmitted Packet 8/30 Format 2.
CNI VPS	Broadcaster	CNI number from transmitted VPS line.
Morning Prog	Broadcaster	"ARD" or "ZDF" according to dedicated bit in 8/30 Format 1.
Name 8/30 F1	Broadcaster	Name extracted from status message of 8/30 Format 1.
Name 8/30 F2	Broadcaster	Name extracted from status message of 8/30 Format 2.
Name TXT	Broadcaster	Name extracted from TXT header.
Signal Strength	FBX	Noise figure measured for selected preset.
EPG Service	Set	EPG Service stored in NVM for current preset displayed as "TXT", "MCP", "SCP", "OCP".
UTC	Set	UTC (Universal Time Code formerly known as Greenwich Mean Time) used in the set.
LTO	Set	LTO (Local Time Offset) used in the set. Used by EPG for all Nextview displays. (= Time TXT header - Time 8/30 F1)
Time	Set	Current time running in the set. Was extracted at startup, then maintained by software.
Date	Set	Current date running in the set. Was extracted at startup, then maintained by software.
Time TXT	Broadcaster	TXT header time from the selected preset.
Time 8/30 F1	Broadcaster	UTC time from 8/30 Format 1.
Date 8/30 F1	Broadcaster	Date from 8/30 Format 1.
LTO 8/30 F1	Broadcaster	LTO from 8/30 Format 1.
WSS G1	Broadcaster	WSS Group 1 (Aspect Ratio) bits 0 1 2 3
WSS G2	Broadcaster	WSS Group 2 (Enhanced Services) bits 4 5 6 7
WSS G3	Broadcaster	WSS Group 3 (Subtitles) bits 8 9 10
WSS G4	Broadcaster	WSS Group 4 (Reserved) bits 11 12 13

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.
 - Change the value of the selected menu item.
 - Activate the selected submenu.

How to exit SAM

Use one of the following methods:

- Press the "MENU" button on the RC-transmitter, or

- Switch the set to STANDBY via the RC-transmitter, or
- Press the "EXIT" button on the DST.

5.2.3 Customer Service Mode (CSM)

Purpose

When a customer is having problems with his TV-set, he can call his dealer. 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 enter CSM

Use one of the following methods:

- Press the "MUTE" button on the RC-transmitter **simultaneously** with the "MENU" button on the TV (top control) for at least 4 seconds.
- 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

CUSTOMER SERVICE MENU 1

- **SOFTWARE VERSION (example: TL13EU_1.0_01234).** Displays the built-in software version. In case of field problems related to software, software can be upgraded (for more details, see paragraph Software downloading). You will find details of the software versions in the chapter "Software Survey" of the "Product Survey - Colour Television" publication. This publication is generated four times a year.
- **SOFTWARE VERSION EPLD.** The 12NC-number of the built-in EPLD software.
- **FEATURE BOX.** The 12NC-number of the built-in Feature Box software.
- **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.
- **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 3-digit number. When less than 10 errors occur, the rest of the buffer is empty (000). 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.
- **VOLUME.** Gives the last status of the volume as set by the customer. The value can vary from 0 (volume is minimum) to 100 (volume is maximum). Volume values can be changed via the volume key on the RC-transmitter.
- **BRIGHTNESS.** Gives the last status of the brightness as set by the customer. The value can vary from 0 (brightness is minimum) to 100 (brightness is maximum). Brightness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "BRIGHTNESS".
- **CONTRAST.** Gives the last status of the contrast as set by the customer. The value can vary from 0 (contrast is minimum) to 100 (contrast is maximum). Contrast values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the

"MENU" button and selecting "PICTURE" and "CONTRAST".

CUSTOMER SERVICE MENU 2

- **COLOUR.** Gives the last status of the colour saturation, as set by the customer. The value can vary from 0 (colour is minimum) to 100 (colour is maximum). Colour values can be changed via "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "COLOUR".
- **HUE.** Only relevant for NTSC-signals (e.g. some NTSC-DVD-discs).
- **SHARPNESS.** Gives the sharpness value. The value can vary from 0 (sharpness is minimum) to 7 (sharpness is maximum). In case of bad antenna signals, a too high value of the sharpness can result in a noisy picture. Sharpness values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "PICTURE" and "SHARPNESS".
- **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). Headphone volume values can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys on the RC-transmitter after pressing the "MENU" button and selecting "SOUND" and "HEADPHONE VOLUME".
- **SURROUND MODE.** Indicates the by the customer selected surround mode (or automatically chosen mode). Possible values are "OFF", "INCREDIBLE SURROUND" OR "DOLBY VIRTUAL". These settings can be influenced after pressing the "MENU" button and selecting "SOUND" and "SURROUND MODE". It can also have been selected automatically by signalling bits (internal software).
- **TUNER FREQUENCY.** Indicates the frequency the selected transmitter is tuned to. The tuner frequency can be changed via the "CURSOR LEFT" and "CURSOR RIGHT" keys for fine tune after opening the installation menu and selecting "INSTALL" and "MANUAL INSTALL".
- **DIGITAL OPTION.** Gives the selected digital mode, "PROGRESSIVE SCAN", "MOVIE PLUS" or "PIXEL PLUS". Change via "MENU", "PICTURE", "DIGITAL OPTIONS".
- **TV SYSTEM.** Gives information about the video system of the selected transmitter.
 - BG: PAL BG signal received.
 - DK: PAL DK signal received.
 - I: PAL I signal received.
 - L/La: SECAM L/La signals received.
 - M: NTSC M signal received with video carrier on 33.9 MHz.
- **BALANCE.** Indicates the balance settings, between "-50" and "+50". Change via "MENU", "SOUND", and "BALANCE". Not applicable for Dolby Pro Logic sets.

CUSTOMER SERVICE MENU 3

- **CENTRE MODE.** Indicates if centre mode is set "ON" or "OFF". When centre mode is on, all TV speakers are used as one centre speaker. Change Centre mode via "MENU", "SETUP", "SPEAKERS", and "CENTRE MODE".
- **DNR.** Gives the selected DNR setting (Dynamic Noise Reduction), "OFF", "MINIMUM", "MEDIUM", or "MAXIMUM". Change via "MENU", "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".
- **SOURCE.** Indicates which source is used and the video/audio signal quality of the selected source. (Example: Tuner, Video/NICAM) Source: "TUNER", "EXT1", "EXT2", "EXT3", "EXT4", "SIDE", "AV1", "AV2", "AV3" or "AV4". 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 audio system of the selected transmitter: "ANALOGUE MONO", "ANALOGUE STEREO", "PCM 2/0", "DD 1/0", "DD 2/0 Ltr", "DD 2/0 LOR", "DD 2/1", "DD 2/2", "DD 3/0", "DD 3/1", "DD 3/2", "DD 1+1", "MPEG 1/0", "MPEG 2/0", "MPEG 2/0 Ltr", "MPEG 2/1", "MPEG 2/2", "MPEG 3/0", "MPEG 3/1", "MPEG 3/2", "MPEG 1+1" or "MPEG 2+2".
- **TUNED BIT.** Gives information about the tuning method of the stored pre-set. If a channel is found via "automatic installation", you will see the value "YES". When you change this (automatically found) frequency via "fine tune" adjustment (installation menu - manual installation), the displayed value will change to "NO". Therefore, when you see the value "NO" in this line, it is an indication that the received channel is a non-standard signal (e.g. of a VCR).
- **SURROUND SPEAKERS.** Not applicable in this set.
- **ON TIMER.** Indicates if the "On Timer" is set "ON" or "OFF" and if the timer is "ON" also displays start time, start day and program number. Change via "MENU", "TV", "FEATURES", and "ON TIMER".
- **PRESET LOCK.** Indicates if the selected preset has a child lock: "LOCKED" or "UNLOCKED". Change via "MENU", "TV", "FEATURES", "CHILD LOCK", and "CUSTOM LOCK".
- **CHILD LOCK.** Indicates the last status of the general child lock: "UNLOCK", "LOCK", or "CUSTOM LOCK". Change via "MENU", "TV", "FEATURES", "CHILD LOCK", and "LOCK".

CUSTOMER SERVICE MENU 4

- **AGE LOCK.** Indicates the last status of the EPG rating for child lock: "OFF", "4 YEARS", "6 YEARS", "8 YEARS", "10 YEARS", "12 YEARS", "14 YEARS" or "16 YEARS". This is only displayed if child lock is set to "CUSTOM LOCK".
- **LOCK AFTER.** Indicates at what time the child lock is set: "OFF" or e.g. "18:45" (lock time). This is only displayed if child lock is set to "CUSTOM LOCK".
- **CATEGORY LOCK.** Indicates the last status of the EPG theme childlock: "MOVIES", "NEWS", "SHOWS", "SPORTS", "CHILDREN", "MUSIC", "CULTURE", or "SERIES". This is only displayed if child lock is set to "CUSTOM LOCK". It is possible that more than one value is shown.
- **PROGRAM CATEGORY.** Indicates the theme of the selected transmitter: "MOVIES", "NEWS", "SHOWS", "SPORTS", "CHILDREN", "MUSIC", "CULTURE", or "SERIES".
- **TV RATINGS LOCK.** Only applicable for US.
- **MOVIE RATINGS LOCK.** Only applicable for US.
- **V-CHIP TV STATUS.** Only applicable for US.
- **V-CHIP MOVIE STATUS.** Only applicable for US.
- **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).

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- **AVL.** Indicates the last status of AVL (Automatic Volume Level): "ON" or "OFF". Change via "MENU", "TV", "SOUND", "AVL".
- **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".

How to exit CSM

Use one of the following methods:

- After you press a key on the RC-transmitter (with exception of the "CHANNEL", "VOLUME" and digit (0-9) keys), or
- After you switch the TV-set "OFF" with the mains switch.

5.3 Problems and Solving Tips (related to CSM)

Note: Below described problems are all related to the TV settings (visible in the CSM menu). The procedures to change the value (or status) of the different settings are described above. New value(s) are automatically stored.

5.3.1 Picture Problems

Snowy/noisy picture

1. Check in CSM line NOISE FIGURE. In case the value is "127" or higher, and the value is also high on other programs, check the aerial cable/aerial system. For some software versions, the noise figure will only be valid when "Active Control" is set to "medium" or "maximum".
2. Check in CSM lines SHARPNESS and NOISE FIGURE. In case the value of line SHARPNESS is "3" or "4" and the value of line NOISE FIGURE is high ("127" or higher), decrease the "Sharpness" value.

Picture too dark

1. Press "Menu", "TV", "Picture", "Smart Picture". In case the picture improves, increase the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check in CSM line BRIGHTNESS and CONTRAST. If the value of these lines is low (< "10"), increase the "Brightness" or the "Contrast" value via the user menu.

Picture too bright

1. Press "Menu", "TV", "Picture", "Smart Picture". In case the picture improves, decrease the "Brightness" or the "Contrast" value. The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.
2. Check in CSM lines BRIGHTNESS and CONTRAST. If the value of these line is high (> 50), decrease the "Brightness" value or increase the "Contrast" value via the user menu.

White line around picture elements and text

1. Press "Menu", "TV", "Picture", "Smart Picture". In case the picture improves, decrease the "Sharpness" value. The new value is automatically stored (in "personal" pre-set) for all TV channels.
2. Check in CSM line "Sharpness". If the value is high, decrease it. The new value is automatically stored for all TV channels.

No picture

Check in CSM line TUNED BIT. In case the value is "No", install the required program again. Open the installation menu and perform manual installation.

No picture

No proper signal is received. Check the aerial cable/aerial system.

No picture or unstable picture

A scrambled or decoded signal is received.

Black and white picture

Check in CSM line COLOUR. In case the value is low (< "10"), increase the "Colour" value via the user menu. The new value is automatically stored for all TV channels.

No colours/colour lines around picture elements or colours not correct or unstable picture

1. Check in CSM line TV SYSTEM. If a "strange" system pops up, something has gone wrong during installation. Re-install the channel.
2. If in CSM line TV SYSTEM is "L", the installed system for this pre-set is "France", while "West Europe" is required. Install the required program again: open the installation

menu and perform manual installation. Select system "West Europe".

Menu text not sharp enough

1. Press "MENU", "TV", "PICTURE", "SMART PICTURE". In case picture improves, decrease the contrast value. The new value(s) are automatically stored for all TV channels.
2. Check line 8 "Contrast". The value of line 8 is high (> 50). Decrease the contrast value.

5.3.2 Sound Problems

No sound from left and right speaker

Check line 6 "Volume". The value is low. Increase the value of "Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

Sound too loud for left and right speaker

Check line 6 "Volume". The value is high. Decrease the value of "Volume". The new value(s) are automatically stored (in "personal" pre-set) for all TV channels.

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 I2C level) and is therefore capable of accurately indicating problem areas. You do not have to know anything about I2C 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 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 faultfinding program and an interface box between PC and the (defective) product. The ComPair interface box is connected to the PC via a serial or RS232 cable.

For this chassis, the ComPair interface box and the TV communicate via a bi-directional service cable via the service connector.

The ComPair faultfinding 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 I2C level. ComPair can access the I2C bus of the television. ComPair can send and receive I2C 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 I2C busses 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 extent. When this is not the case, ComPair will guide you through the faultfinding 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 17*

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 faultfinding 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.

Beside fault finding, ComPair provides some **additional features** like:

- Up- or downloading of pre-sets.
- Managing of pre-set lists.
- Emulation of the Dealer Service Tool (DST).
- If both ComPair and SearchMan (Electronic Service Manual) are installed, all the schematics and the PWBs of the set are available by clicking on the appropriate hyperlink.

Example: *Measure the DC-voltage on capacitor C2568 (Schematic/Panel) at the Mono-carrier.*

- Click on the "Panel" hyperlink to automatically show the PWB with a highlighted capacitor C2568.
- Click on the "Schematic" hyperlink to automatically show the position of the highlighted capacitor.

5.4.3 Stepwise Start-up

Under normal circumstances, a fault in the power supply, or an error during start-up, will switch the television to protection mode. ComPair can take over the initialisation of the television. In this way, it is possible to distinguish which part of the start-up routine (hence which circuitry) is causing the problem. Take notice that the transition between two steps can take some time, so give the set some time to reach a stable state. During the transition time, the LED can blink strangely.

Stepwise start-up explanation

This is realised via ComPair and is very helpful when a **protection** is activated (see also chapter "Protections"). The following diagram shows the start-up procedure of the set. Every step of the stepwise start-up (also called trapped start-up) in the diagram corresponds with the number of times the led blinks.

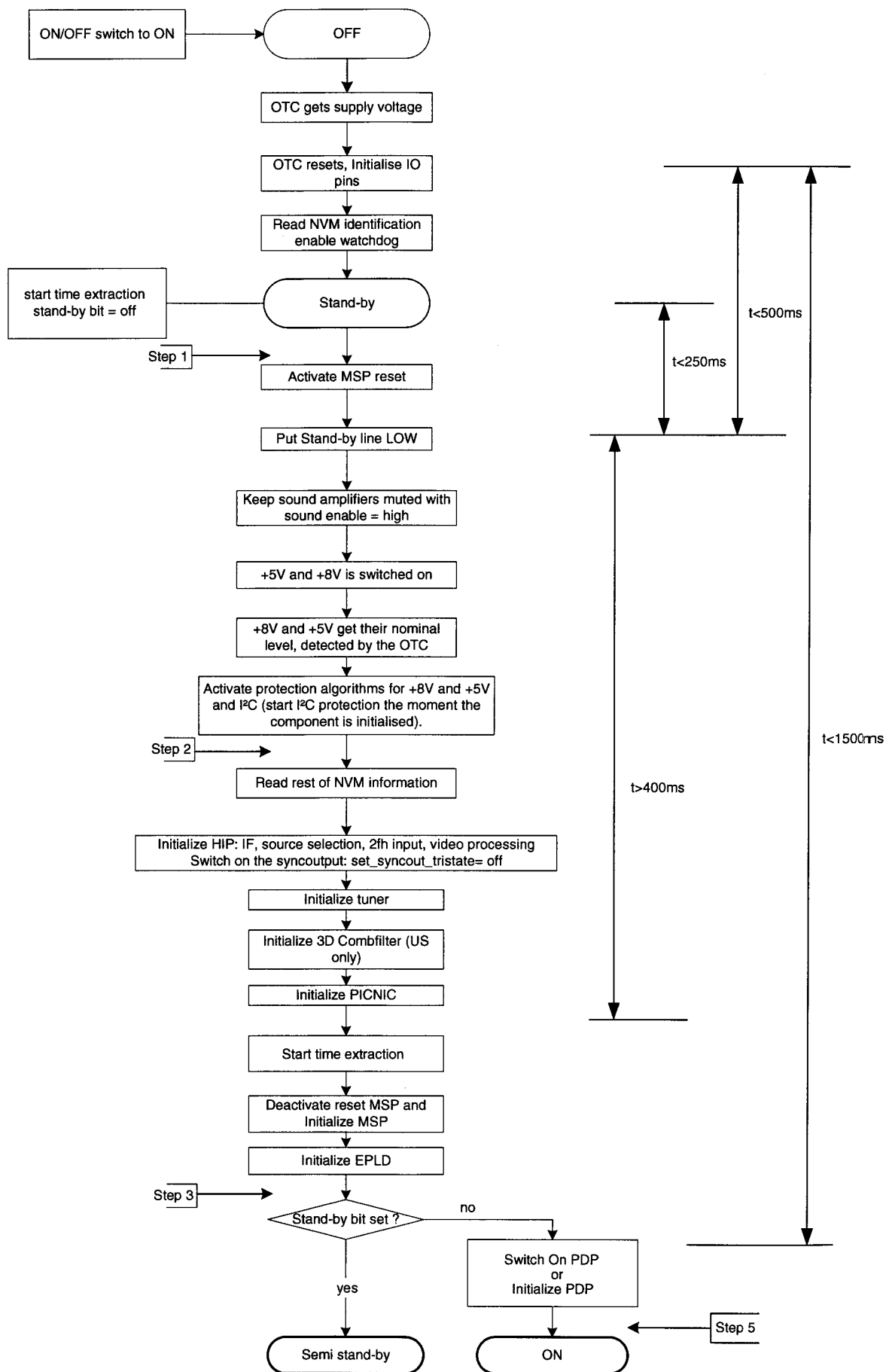
CL 36532053_061.eaps
22/03

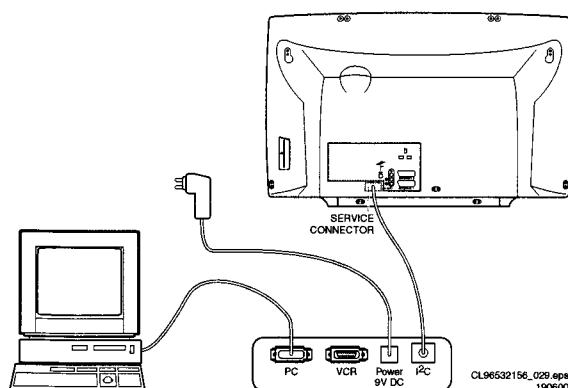
Figure 5-2 Stepwise start-up diagram

Note (*):

- When the set is in stepwise mode and, due to stepping-up, a protection is activated, the set will really go into protection (blinking LED). The set will not leave the stepwise-mode however. If state X is the state where the set went to protection, stepwise start-up will return to state X-1. At state (X-1) diagnostic measurements can be performed. Also, in the short time the set is in state X but not yet in protection, you can also do some measurements.

5.4.4 How To Connect

- First, install the ComPair Browser software (see the Quick Reference Card for installation instructions).
- Connect the RS232 interface cable between a free serial (COM) port of your PC and the PC connector (marked with "PC") of the ComPair interface.
- Connect the mains adapter to the supply connector (marked with "POWER 9V DC") of the ComPair interface.
- Switch the ComPair interface "OFF".
- Switch the television set "OFF" with the mains switch.
- Connect the ComPair interface cable between the connector on the rear side of the ComPair interface (marked with "I2C") and the ComPair connector at the rear side of the TV.
- Plug the mains adapter in a mains outlet, and switch the interface "ON". The green and red LEDs light up together. The red LED extinguishes after approx. 1 second while the green LED remains lit.
- Start the ComPair program and read the "Introduction" chapter.

**Figure 5-3 ComPair Unit****5.4.5 How To Order****ComPair order codes (EU/AP/LATAM):**

- Starter kit ComPair32/SearchMan32 software and ComPair interface (excl. transformer): 3122 785 90450.
- ComPair interface (excluding transformer): 4822 727 21631.
- Starter kit ComPair32 software (registration version): 3122 785 60040.
- Starter kit SearchMan32 software: 3122 785 60050.
- ComPair32 CD (update): 3122 785 60070 (year 2002, 3122 785 60110 (year 2003).
- SearchMan32 CD (update): 3122 785 60080 (year 2002), 3122 785 60120 (year 2003).
- ComPair interface cable: 3122 785 90004.
- ComPair firmware upgrade IC: 3122 785 90510.
- Transformer Europe: 4822 727 21632.
- Transformer UK: 4822 727 21633.

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.

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).
Examples:
 - 00000: No errors detected
 - 60000: Error code 6 is the last and only detected error
 - 96000: 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".
- When you transmit the commands "DIAGNOSE" - "99" - "OK" with ComPair (or with a DST).
- If the content of the error buffer has not changed for 50+ hours, it resets automatically.

5.5.4 Error Codes

In case of non-intermittent faults, clear the error buffer before you begin the repair. This to ensure that old error codes are no longer present. Before clearing the buffer, write down the content, as this history can give you significant information. 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 various errors:

- I2C device errors.
- I2C bus errors.
- Protection errors.
- Errors not related to an I2C device, but of importance:
 - FALCONIC (ERROR 26):** at start-up, after initialisation of the PICNIC, the presence of the FALCONIC can be checked.
 - EAGLE (ERROR 27):** at start-up, after initialisation of the PICNIC, the presence of the Eagle can be checked.

Table 5-2 Table Errors

Error	Device	Description	Def. item	Def. Module Indication	Diagram
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5 V	5V protection	/	+5V Supply	B5a
5	Supply 8 V	8V protection	/	+8V Supply	B5a
6	Slow I2C bus blocked	Spontaneous blinking error 6	/	Slow I2C Blocked	/
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
13	UV1318/...	Tuner protection	1T01	Tuner	B13
14	MSPxxxx	ITT sound processor	7A02	Audio module	B6a
18	Fast I2C bus blocked	Spontaneous blinking error 18	/	Fast I2C Blocked	/
21	M62320P	I/O Expander	7P56	Video Dual Screen	B15b
26	SAA4992	Falconic	7718	+3V (FBX) Supply	B3b
27	T8F24EF	Eagle	7724	+3V (FBX) Supply	B3c
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a
53	AD9883A	AD converter 2fh input	7L01	HD	B19c
55	DC/DC converter	One of the voltages is not ok + protection error	/	Supply	/
56	EPLD	EPLD error	7V01	Video control	B19d,f
76	-	Audio DC protection	-	-	A
83	TEA6422	Source select matrix audio	7117	Audio Source Select	B14d

Note:

- Error codes 1, 6, or 18 are protection codes and in this case, supplies of some circuits will be switched "OFF". Also, in protection, the LED will blink the number of times equivalent to the most recent error code.

notice that it takes some seconds before the blinking LED starts.

- Transmit 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.
- "DIAGNOSE X" with the DST (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.... When x = 0 all errors are shown.

5.6 The Blinking LED Procedure

5.6.1 Introduction

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 SDM is entered, the front LED will show (blink) the contents of the error-buffer. Error-codes > 10 are shown as follows:

- A long blink of 750 ms (which is an indication of the decimal digit),
- A pause of 1.5 s,
- "n" short blinks (where "n" = 1 - 9),
- When all the error-codes are displayed, the sequence finishes with a LED blink of 3 s,
- The sequence starts again.

Example: Error 12 9 6 0 0.

After activation of the SDM, the front LED will show:

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

Note: If errors 1, 6, or 18 occur, the LED always gives the last occurred error even if the set is NOT in service mode.

5.6.2 How to Enter

Use one of the following methods:

- Enter the SDM (only via soldering pads marked "SDM" on SSP). The blinking front LED will show the entire contents of the error buffer (this works in "normal operation" mode and in "protection" mode).
- Transmit the commands "MUTE" - "062500" - "OK" with a normal RC. The complete error buffer is shown. Take

5.7 Protections

5.7.1 Introduction

This chassis has only one microprocessor (OTC), which remains active during Standby. This because power of the microprocessor and the attached memory chip set is coming from the 3V3 supply, which is derived from the 5V Standby-circuitry. Therefore, in both Power-on as in Standby mode, the microprocessor is connected to this power supply.

If a fault situation is detected, an error code will be generated and if necessary, the set is put in protection mode. The protection mode is indicated by the blinking of the front LED at a frequency of 3 Hz (or by a coded blinking in special cases).

The content of the error buffer can be read via the service menu (SAM), the blinking LED procedure or via DS/ComPair.

To get a quick diagnosis, this chassis has three service-modes implemented:

- The **Customer Service Mode (CSM)**.
- The **Service Default Mode (SDM)**. Start-up of the set in a predefined way.
- The **Service Alignment Mode (SAM)**. In this mode, items of the set can be adjusted via a menu.

You can enter both SDM and SAM modes via the "service pads" on the SSP, via an RC-transmitter (DST or standard RC), or via ComPair. It is not possible to enter the SAM in "standby"; the TV has to be in "normal operation" mode.

The "Protection Diagram" shows the structure of the protection system. See diagram below.

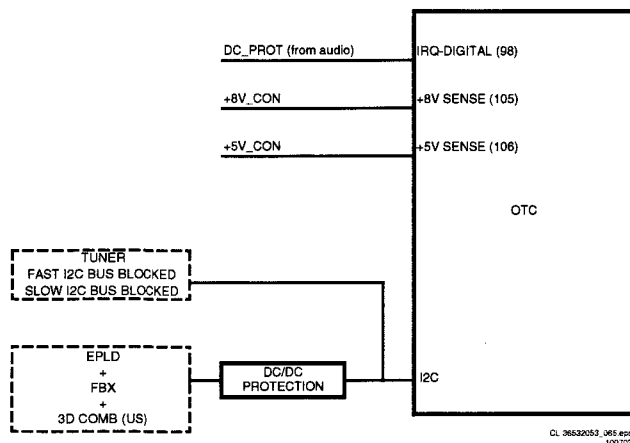


Figure 5-4 Protection diagram.

There are several types of protections:

- I2C related protections.
- OTC related protections (via polling on I/O pins or via algorithms).
- Hardware protection

All protections are explained below.

5.7.2 I2C Related Protections

In normal operation, some registers of the I2C controlled ICs are refreshed every 200 ms. During this sequence, the I2C busses and the I2C ICs are checked.

An I2C protection will take place if the SDA and SCL lines are short-circuited to ground, or to each other. An I2C error will also occur, if the power supply of the IC is missing.

DC/DC protection: When a 3V3 supply is short-circuited the DC/DC converter switches off and goes in protection. The FBX, EPLD IC, and 3D comb IC (US only) have no supply voltage and give no acknowledge. In this case, the set should go into protection. An error code is written in the NVM: DC/DC error.

FBX protection: the FBX protection is not available any more. It is replaced by the DC/DC protection.

5.7.3 OTC Related Protections

If a protection is detected at an OTC input, the OTC will start to scan all protection inputs every 200 ms for 5 times. If the protection on one of the inputs is still active after 1 s, the microprocessor will put the set in the protection mode. Before the scanning is started, a so-called "ESD refresh" is carried out. This is done, because the interrupt on one of the inputs is possibly caused either by a flash or by ESD. As a flash or ESD can influence IC settings, the HIP, MSP, 3D Comb (US only) and wireless module (not used in this set) are initialised again, to ensure the normal picture and sound conditions of the set.

8 V and 5 V protections: The microprocessor senses the presence of the 8 V and 5 V (via the "+5V_CON" and "+8V_CON" lines). If one (or both) of these voltages is (are) not present, an error code is stored in the error buffer of the NVM, and the set is put in the protection mode.

Audio DC protection: The OTC senses if the audio module is in protection via IRQ-DIGITAL (pin 98 of OTC). If this is the case, the OTC puts the set in protection.

5.7.4 Hardware Protection

Short-circuiting the 3V3 supply from the DC/DC converter will shut down the DC/DC converter. The absence of the 3V3 supply line is also sensed via I2C (see description DC/DC protection above), this is useful if there is something wrong in the detection circuit of the DC/DC converter. There are no hardware protections in this chassis, which switch off the supply.

5.8 Repair tips

5.8.1 3V3 Supply (DC/DC converter)

As mentioned above, the DC/DC converter is switched "off" when something goes wrong (detection of a missing 3V3 supply at one of the devices supplied by the 3V3). Because of this, the set goes to protection (I2C protection). Error code 55 is logged.

For further diagnoses, you need to overrule the I2C protection: put the set in Service Default Mode by means of the solder pads on the SSB.

The DC/DC converter is still not working because it is switched "off" by the 3V3_FAULT line (schematic B12). Now you have some possibilities:

1. First, measure the impedance over diode 6U06. In normal conditions, you should measure approximately 120 ohm (if possible, verify this with another set). If the impedance is much too low, do not try to start up the converter as mentioned below. Remind that if FET 7U03 is short-circuited, this will also influence your measurement.
2. Desolder coils 5U05 and 5U06, connect an external 3V3 supply at capacitor 2U23 (current limitation to 500 mA) and a second external 3V3 supply at capacitor 2U31 (current limitation to 800 mA). The normal working current of the 3V3_SIM line is approximately 400 mA and the normal working current for the 3V3_DCDCFBX line is approximately 700 mA. Therefore, if one of the currents exceeds their nominal value you can determine in which circuit the overload is situated. If the set would start up and you have normal picture, there is probably no overload but a problem in the detection circuits.
3. If you do not have two external power supplies, you can do the following: Desolder coils 5U02, 5U03, and 5U04 (you must desolder all three, otherwise the circuit could be damaged), connect an external power supply of 3V3 at the cathode of diode 6U06. Make sure to limit the current of this external supply to approximately 1200 mA. If the supplied current exceeds 1100 mA (approximately normal working current) you can conclude that one of the devices supplied by 3V3 is short-circuited.
4. Another possibility is to force the converter to start up by short-circuiting (and keep short-circuited) resistor 3U25 (B12).
Caution: Be aware that this can damage the set. Even if you measure approximately 120 ohm over diode 6U06, there can still be something wrong in the converter itself. By short-circuiting resistor 3U25, the internal protection of the converter is disabled.

5.8.2 ComPair

This chassis does not have an IR transmitting LED (as in NC-sets). Therefore, a "Service" (ComPair) connector is implemented at the rear side of the set, which is directly accessible (as in A10-, EM2E-, EM3E and EM5E-sets). In addition to this, there is also a blinking LED procedure to show the contents of the error buffer.

When you use ComPair, you have the possibility to activate a "stepwise start-up" mode. With this mode, you can initiate the start-up sequence step by step. This also means that in certain

steps, some protections are not activated. This is sometimes very convenient during repair.

5.8.3 Protections

Activating SDM via the "service pads" will overrule the processor-controlled protections, but not the hardware protections. This means, that the A/D-input protections (5 and 8 V) and the I2C "not-acknowledging" info of FBX + EPLD + 3D Comb (US) and of the tuner are overruled.

Caution: When doing this, the service technician must know what he is doing, as it could lead to damaging the set.

5.8.4 Power Supply

The simplest way to repair the power supply is to check (and replace if necessary) the components that are marked grey on schematic SP1.

5.8.5 AUX Supply

First, determine whether one or more of the secondary diodes (6044, 6021, 6291, 6293) are short-circuited. If this is not the case, check (and replace if necessary) the components that are marked grey on schematic SA.

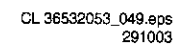
Table 5-3 Repair tips

Phenomenon	Possible Cause	Repair tip
No picture, LED blinking at 3 Hz.	Set is in protection due to various causes. For error codes see error-code list.	You have no picture, so: - Read the error buffer via ComPair (error buffer is accessible when set is in protection, compare-file will guide you to this) - Read the blinking LED information via standard remote command <mute>06250x<ok> . - Or you read the error code sequence via standard remote command <mute>062500<ok> . When you have found the error, check the circuitry related to the supply voltage and I2C-communication or the circuitry that triggers the protection.
No picture, LED blinking with code 6-6-6 or 18-18-18.	No communication on slow I2C- or fast I2C-bus.	As processor cannot communicate with one of the 2 busses it the standby-led spontaneously starts blinking 6-6-6-etc or 18-18-18-etc... If in the error buffer somewhere is an error 6 or 18, these will have the highest priority starting the mentioned blinking. Measure dependent of the error on the I2C-bus which device is loading the bus. (Use I2C-overview)
No picture, LED blinking with code 1-1-1.	No communication on NVM-I2C bus to the uP.	As the uP cannot communicate with the NVM I2C bus, it spontaneously starts blinking 1-1-1. Note: when there is no access to the NVM, a lot of picture setting can go wrong.
No RC-reception. LED does not echo RC-commands.	uP circuitry or RC-receiver is defective.	In case the set does react on a local keyboard operation, you must check the RC-receiver circuitry (diagram LD).
Picture is not synchronised.	The sync is derived in the HIP.	Check crystals in the HIP circuit on bad contacts.
Picture is distorted.	Check video-path in Service Default Mode.	Investigate whether there is an error code present in the error buffer. In case there is one, check the I2C-bus and/or supply lines (see overview supply lines). Measure and check signal path Tuner-HIP-FBX-EPLD.
Picture with horizontal stripes.	Pixel Plus processing is malfunctioning	Check functionality on circuitry (B3a, B3b, and B3c) of PICNIC (7713), FALCONIC (7718, EAGLE (7724) and/or field memories (7714, 7717, 7719, 7722 and 7723). Tip: the whole Pixel Plus chipset (3 ICs + 5 Field Memories) can be diagnosed via ComPair.
No menu, no OSD.	Probably a defective uP.	Measure test points B61 to B64 on diagram B5A.
No NextView (EPG).	IC7012 defective or not powered.	Check circuitry around IC7012 on diagram B5A.
No Teletext.	IC7007 defective or not powered.	Check circuitry around IC7007 on diagram B5A. Check also B61 to B64 around uP on diagram B5A.
Problems caused by EPG (Electronic Program Guide). The TV set "hangs".	Problems with NextView EPG broadcasts.	To switch from EPG 2C3 to Teletext guide. Press for 4 seconds, simultaneously the Menu button on the TV and digit 0 on the remote. The option settings for NextView type and Flashram will not change.
NexTV EPG is not functioning only Teletext guide.	EPG version 2C3 is switched off during production.	To switch from Teletext guide to EPG 2C3. Press for 4 seconds, simultaneously the Menu button on the TV and digit 1 on the remote. The option settings for NexTV type and Flashram will not change.
Various symptoms, due to missing local supply voltage.	An interrupted fuse, NFR-resistor or connection.	When no symptom or error code leads you to a specific circuitry, use the supply lines overview (see supply lines overview), for a quick scan of all supply lines
For ITV (Institutional TV) models, it is possible that the service modes are not functioning as expected.	"Hotel Mode" option is set to "ON". This can cause problems with service modes.	Switch "OFF" the "Hotel Mode" option, in "Service Alignment Mode", "Service Options", "Miscellaneous", "Hotel Mode". After repair this option should be switched on again to use Hotel Mode functionality.

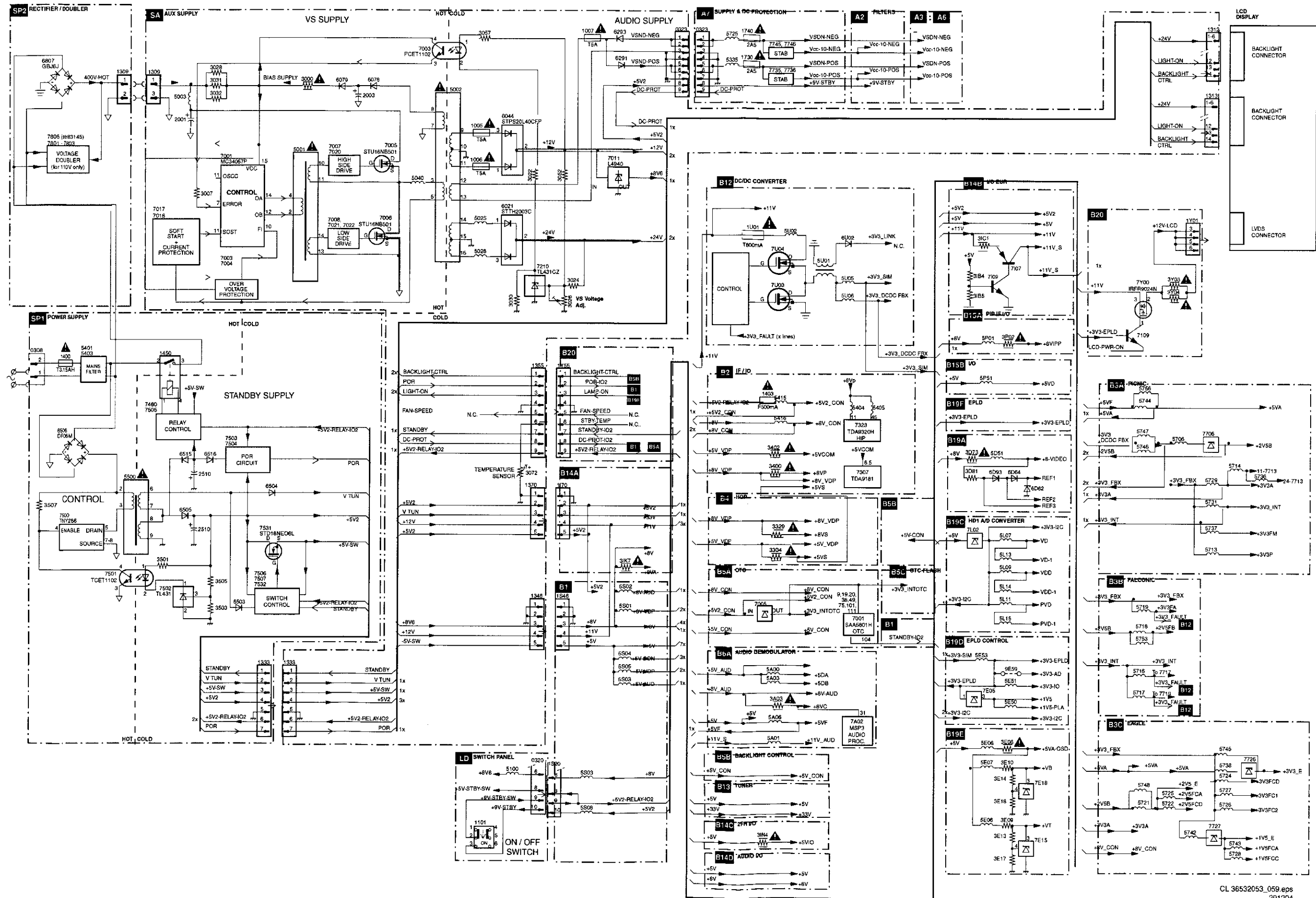
5.9 Software Downloading

In this chassis, you can **upgrade** the software via ComPair without removing the back cover of the set. The switch, which is needed for the software downloading procedure, can be reached through the cooling gaps of the back cover. The switch is located next to the SAM/SDM pads and can be operated with a long and thin screwdriver. Make sure that you do not damage the PWB with sharp objects. You can find more information on how this procedure works in the ComPair file. It is possible that not all sets are equipped with the hardware, needed to make software upgrading possible. To speed up the programming process the firmware of the ComPair interface can be upgraded. See paragraph "How To Order" for the order number

Wiring Diagram

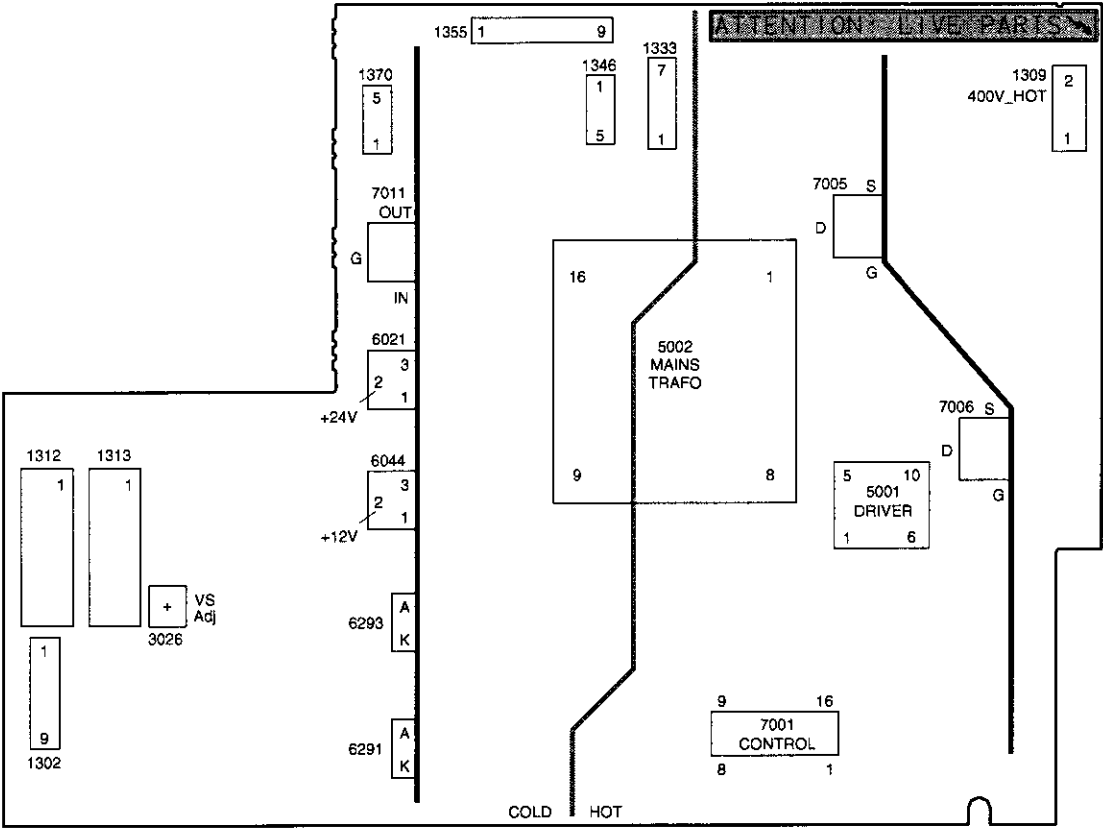


Block Diagram Supply and Supply Lines

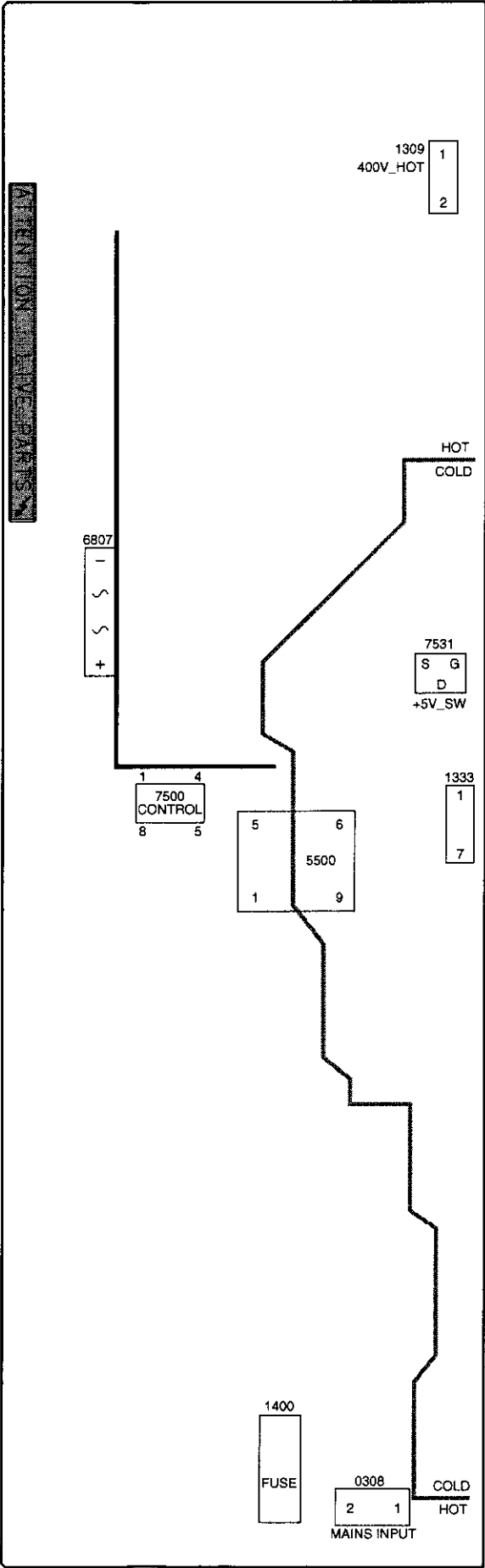


Testpoint Overview Aux Supply and Power Supply

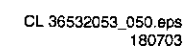
SA AUX SUPPLY (TRACK SIDE VIEW)

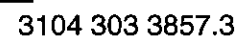


SP POWER SUPPLY (TRACK SIDE VIEW)

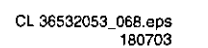
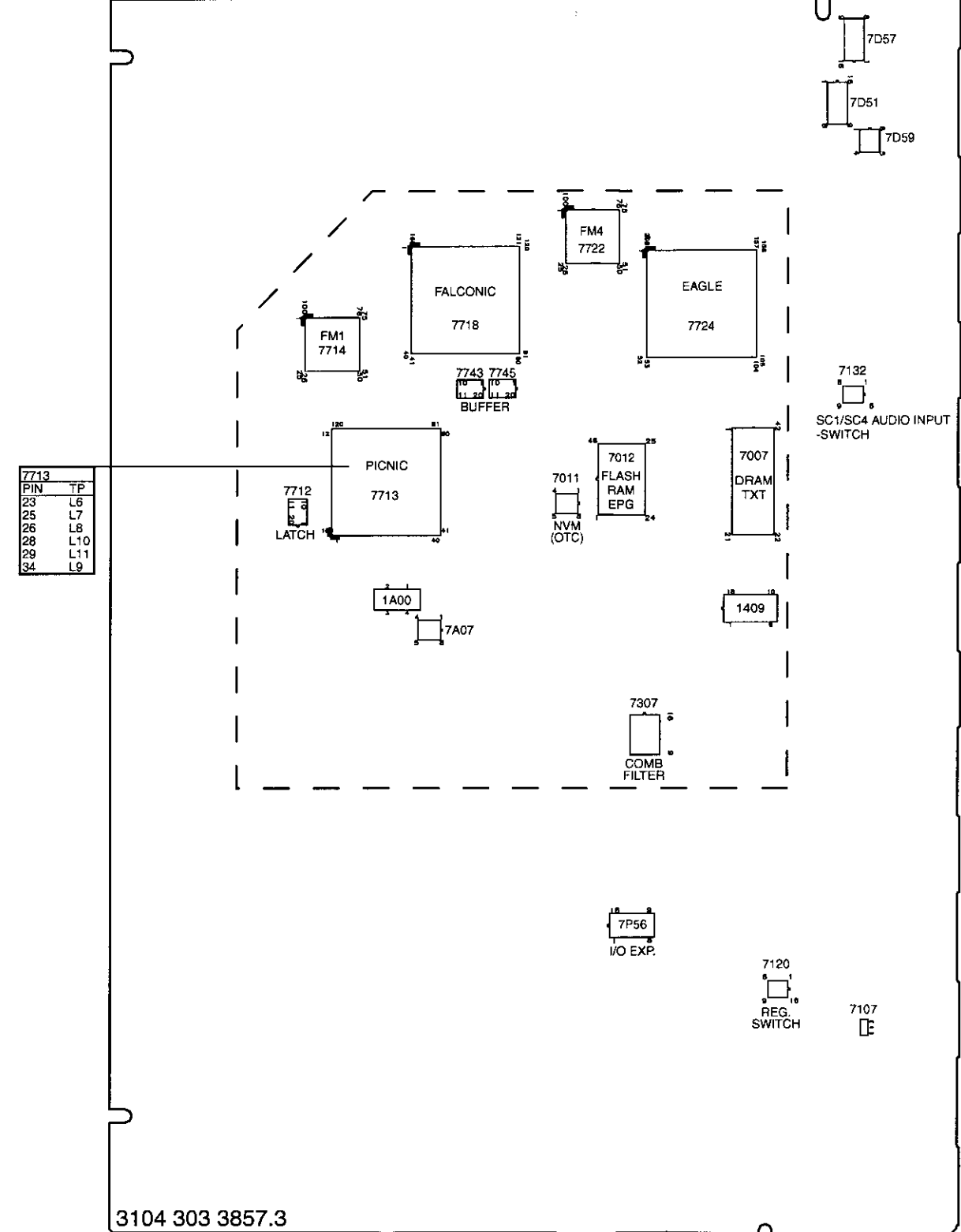


VIDEO

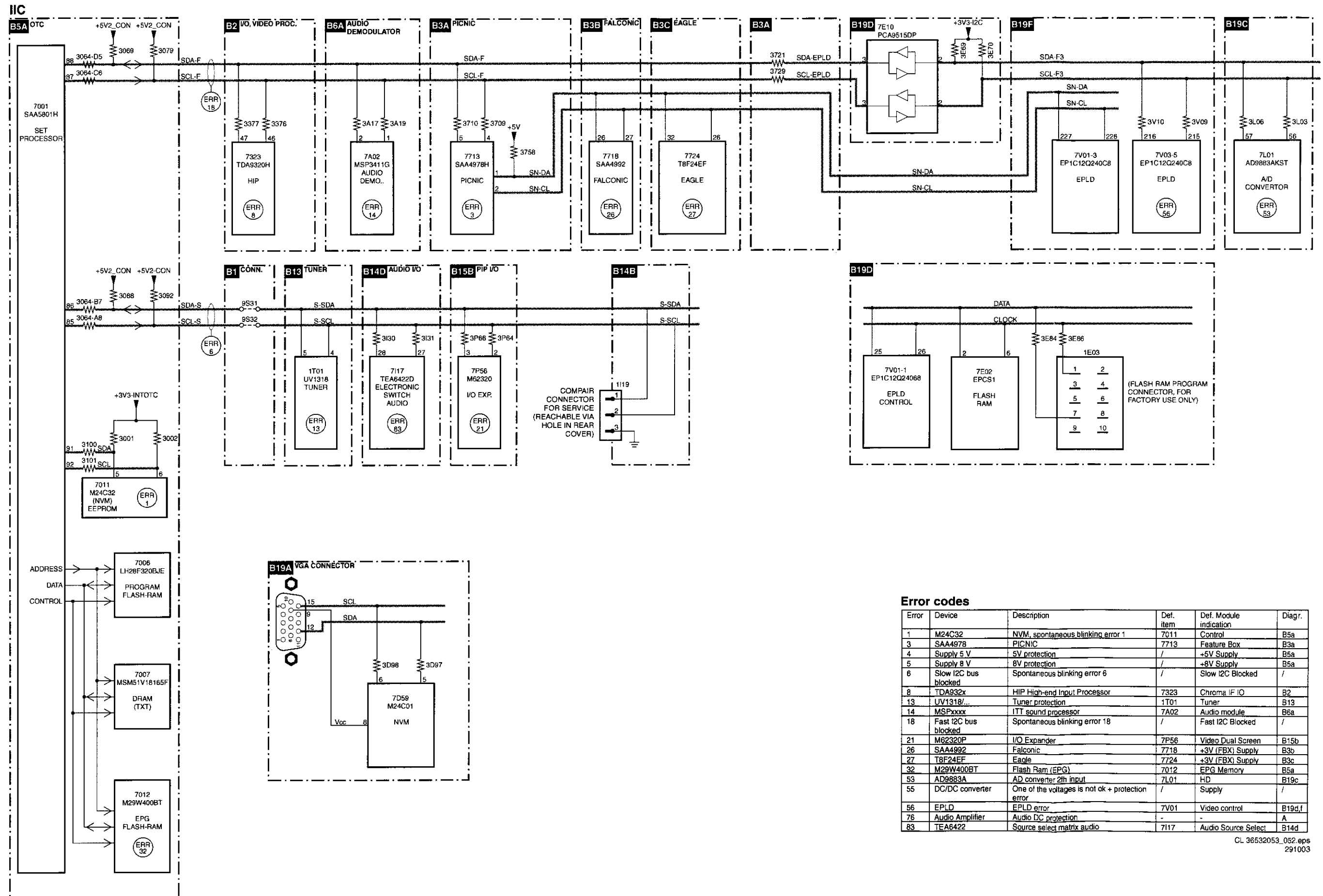


SSB side A

3104 303 3857.3



I2C IC's overview

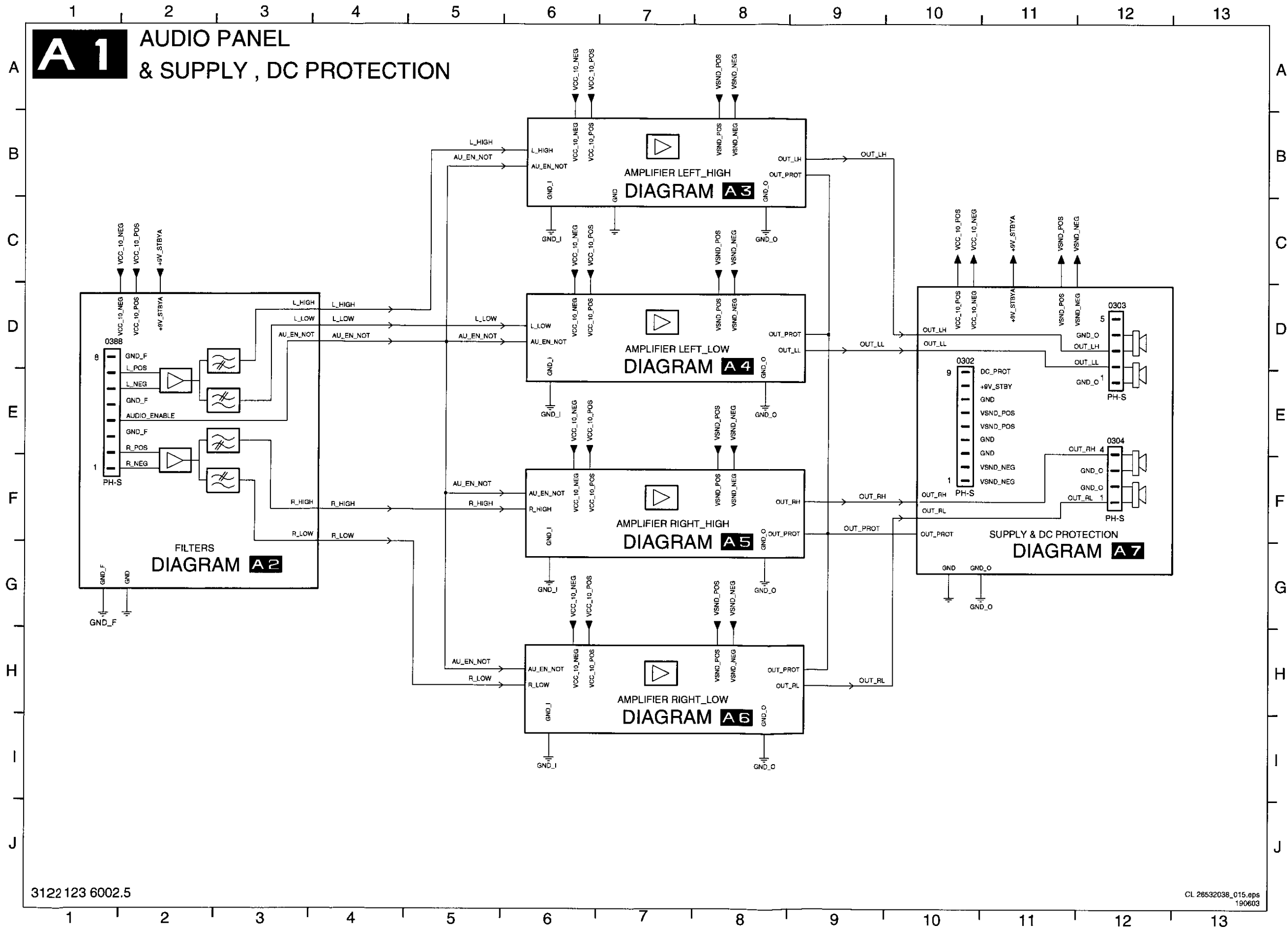


Error codes

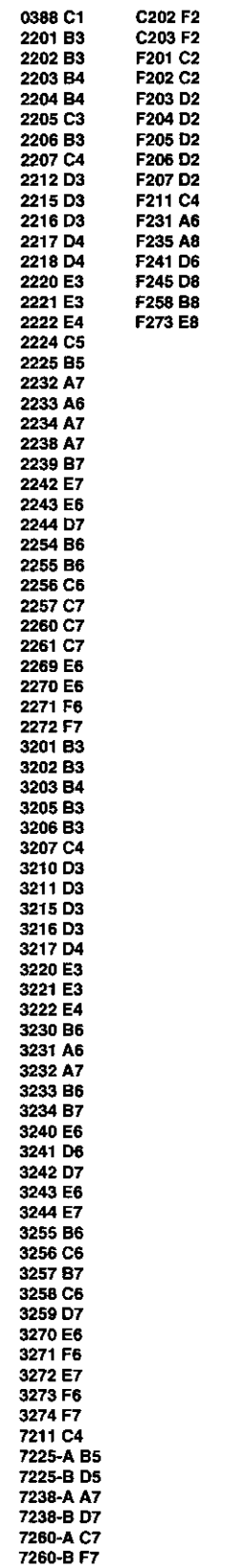
Error	Device	Description	Def. item	Def. Module indication	Diagr.
1	M24C32	NVM, spontaneous blinking error 1	7011	Control	B5a
3	SAA4978	PICNIC	7713	Feature Box	B3a
4	Supply 5 V	5V protection	/	+5V Supply	B5a
5	Supply 8 V	8V protection	/	+8V Supply	B5a
6	Slow I2C bus blocked	Spontaneous blinking error 6	/	Slow I2C Blocked	/
8	TDA932x	HIP High-end Input Processor	7323	Chroma IF IO	B2
13	UV1318/...	Tuner protection	1T01	Tuner	B13
14	MSPxxx	ITT sound processor	7A02	Audio module	B6a
18	Fast I2C bus blocked	Spontaneous blinking error 18	/	Fast I2C Blocked	/
21	M62320P	I/O Expander	7P56	Video Dual Screen	B15b
26	SAA4992	Falconic	7718	+3V (FBX) Supply	B3b
27	T8F24EF	Eagle	7724	+3V (FBX) Supply	B3c
32	M29W400BT	Flash Ram (EPG)	7012	EPG Memory	B5a
53	AD9883A	AD converter 2th input	7L01	HD	B19c
55	DC/DC converter	One of the voltages is not ok + protection error	/	Supply	/
56	EPLD	EPLD error	7V01	Video control	B19d.f
76	Audio Amplifier	Audio DC protection	-	-	A
83	TEA6422	Source select matrix audio	7117	Audio Source Select	B14d

7. Circuit Diagrams and PWB Layouts

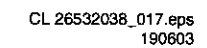
Audio Panel and Supply, DC Protection



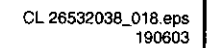
FILTERS



2309 D4	2316 C5	2330 C7	2340 E7	2360 E8	3301 C3	3304 D2	3308 C4	3311 C4	3325 B5	3330 B6	3340 D6	3362 D8	5365 C9	6335 C7	6359 E7	7303 C3	7340 D7	7365-2 C8	F301 C3	F330 C7	F365 C8
2310 B3	2318 D5	2334 B8	2355 D7	2365 C9	3302 D3	3306 C3	3309 D4	3315 B5	3327 C5	3336 B8	3355 E6	5335 B8	6328 C6	6355 D6	6360 D7	7315 C4	7355 D6	C301 E3	F307 C4	F337 C8	
2315 C4	2319 D5	2335 B8	2359 E8	2366 C9	3303 C2	3307 C4	3310 B3	3318 D5	3328 B6	3337 C8	3361 E8	5360 E8	6334 B7	6356 E6	7302 D3	7330 C6	7365-1 D8	C302 E3	F328 B6	F362 D8	

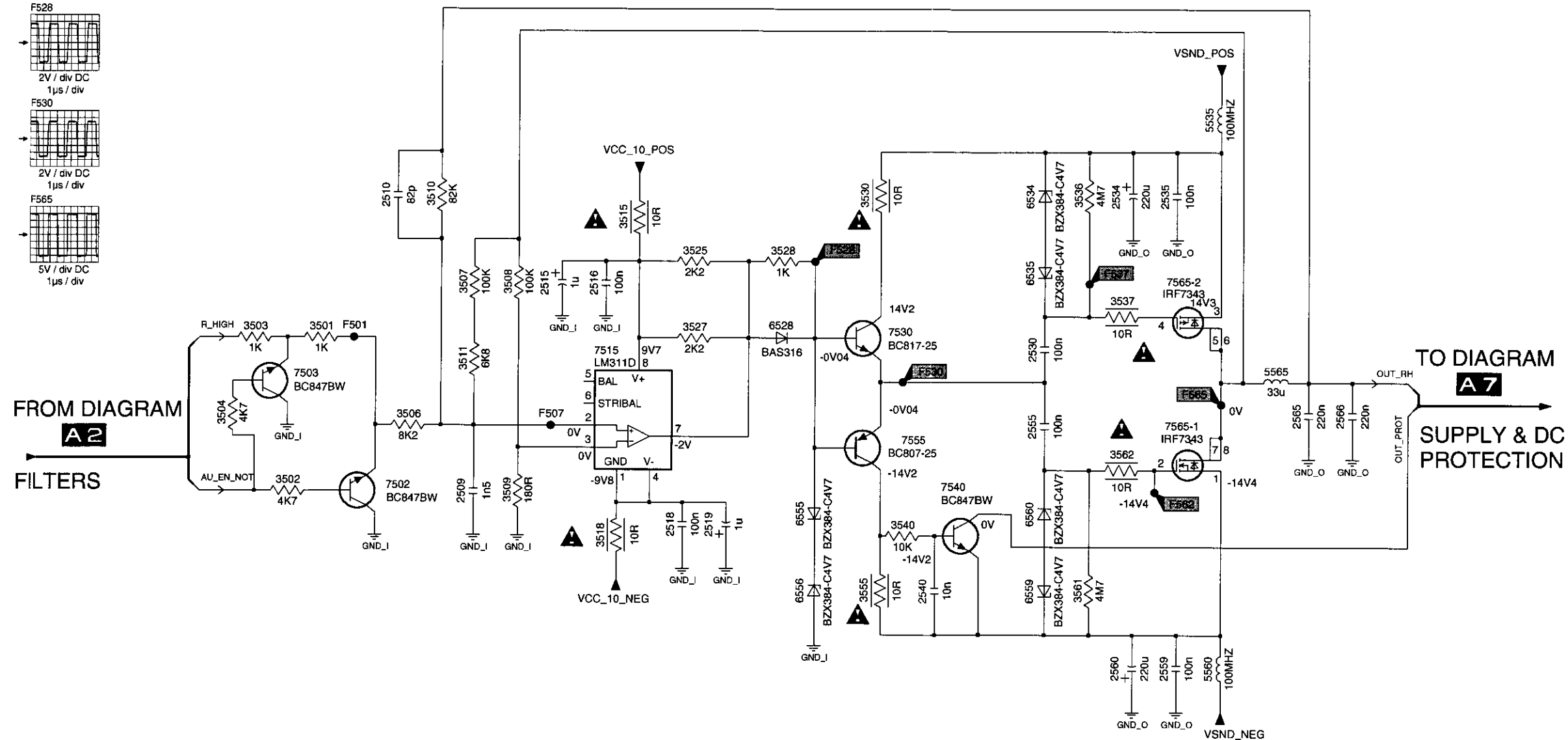
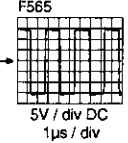
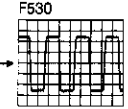
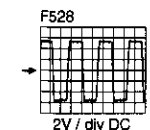


2409 D3	2416 C4	2430 C7	2440 E6	2460 E8	3401 C3	3404 D2	3408 C4	3411 C3	3425 B5	3430 B6	3440 D6	3462 D8	5465 C9	6435 C7	6459 E7	7403 C2	7440 D7	7465-2 C8	F428 B6	F462 D8
2410 B3	2418 D5	2434 B8	2455 D7	2465 D9	3402 D2	3406 C3	3409 D4	3415 B4	3427 C5	3436 B7	3455 E6	5435 B8	6428 C5	6455 D6	6460 D7	7415 C4	7455 D6	F401 C3	F430 C6	F465 C8
2415 C4	2419 D5	2435 B8	2459 E8	2466 D9	3403 C2	3407 C3	3410 B3	3418 D4	3428 B5	3437 C8	3461 E7	5460 E8	6434 B7	6456 E6	7402 D3	7430 C6	7465-1 D8	F407 D4	F437 C8	

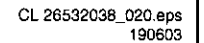


Audio Amplifier Right High

2509 D3	2516 C4	2530 C7	2540 E6	2560 E8	3501 C2	3504 D2	3508 C4	3511 C3	3525 B5	3530 B6	3540 D6	3562 D8	5565 C9	6535 C7	6559 E7	7503 C2	7540 D7	7565-2 C8	F528 B6	F562 D8
2510 B3	2518 D5	2534 B8	2555 D7	2565 D9	3502 D2	3506 D3	3509 D4	3515 B4	3527 C5	3536 B7	3555 E6	5535 B8	6528 C5	6555 D6	6560 D7	7515 C4	7555 D6	F501 C3	F530 C6	F565 C8
2515 C4	2519 D5	2535 B8	2559 E8	2566 D9	3503 C2	3507 C3	3510 B3	3518 D4	3528 B5	3537 C8	3561 E7	5560 E8	6534 B7	6556 E6	7502 D3	7530 C6	7565-1 D8	F507 D4	F537 C8	

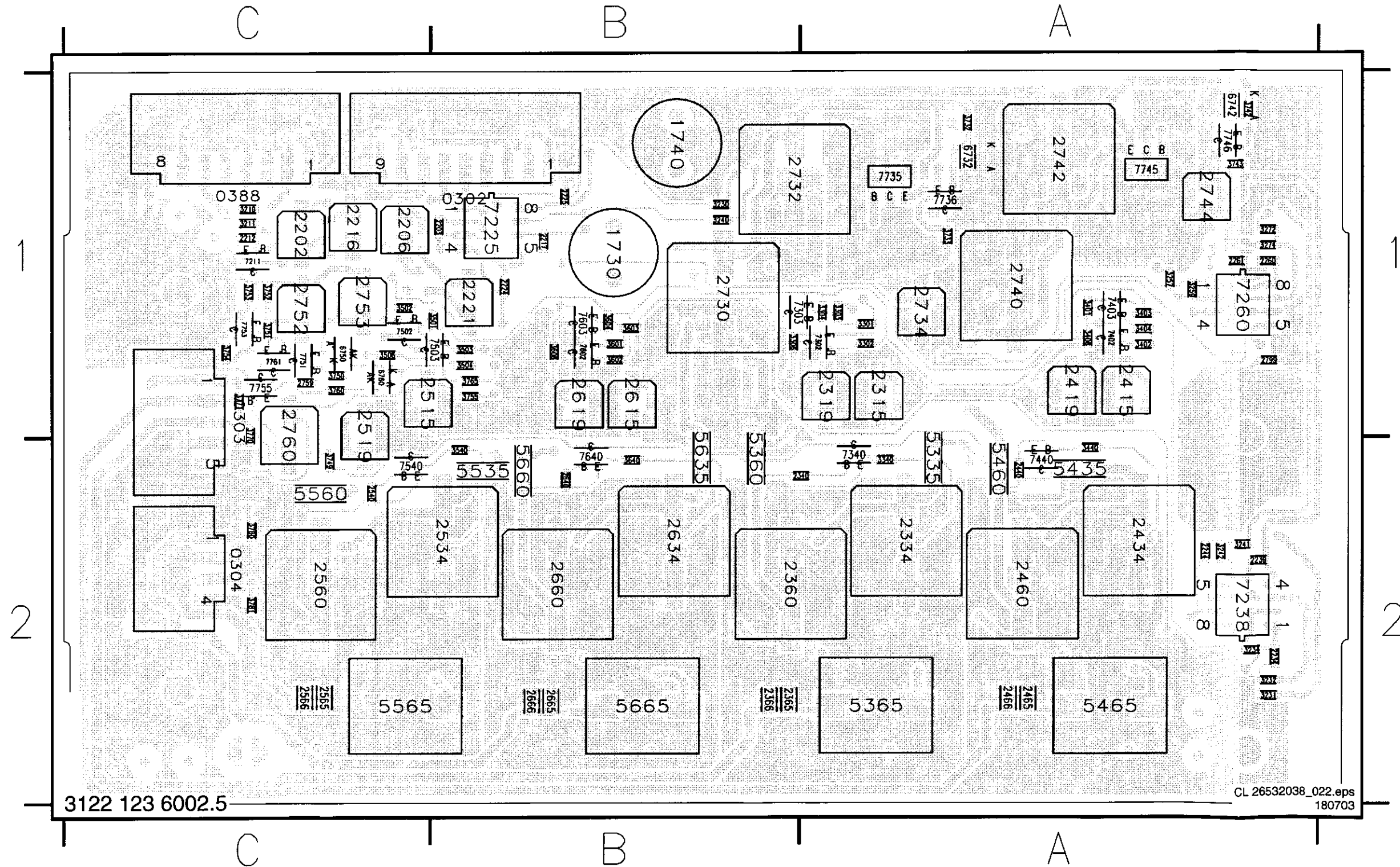
A5 AUDIO AMPLIFIER
RIGHT HIGH

2609 D4	2616 C4	2630 C7	2640 E7	2660 E8	3601 C3	3604 C2	3608 C4	3611 C4	3625 B5	3630 B6	3640 D6	3662 D8	5665 C9	6635 C7	6659 E7	7603 C2	7640 D7	7665-2 C8	F628 B6	F662 D8
2610 B3	2618 D5	2634 B8	2655 C7	2665 C9	3602 D2	3606 C3	3609 D4	3615 B5	3627 C5	3636 B8	3655 E6	5635 B8	6628 C6	6655 D6	6660 D7	7615 C4	7655 D6	F601 C3	F630 C7	F665 C8
2615 C4	2619 D5	2635 B8	2659 E8	2666 C9	3603 C2	3607 C4	3610 B3	3618 D4	3628 B6	3637 C8	3661 E8	5660 E8	6634 B7	6656 E6	7602 D3	7630 C6	7665-1 D8	F607 C4	F637 C8	



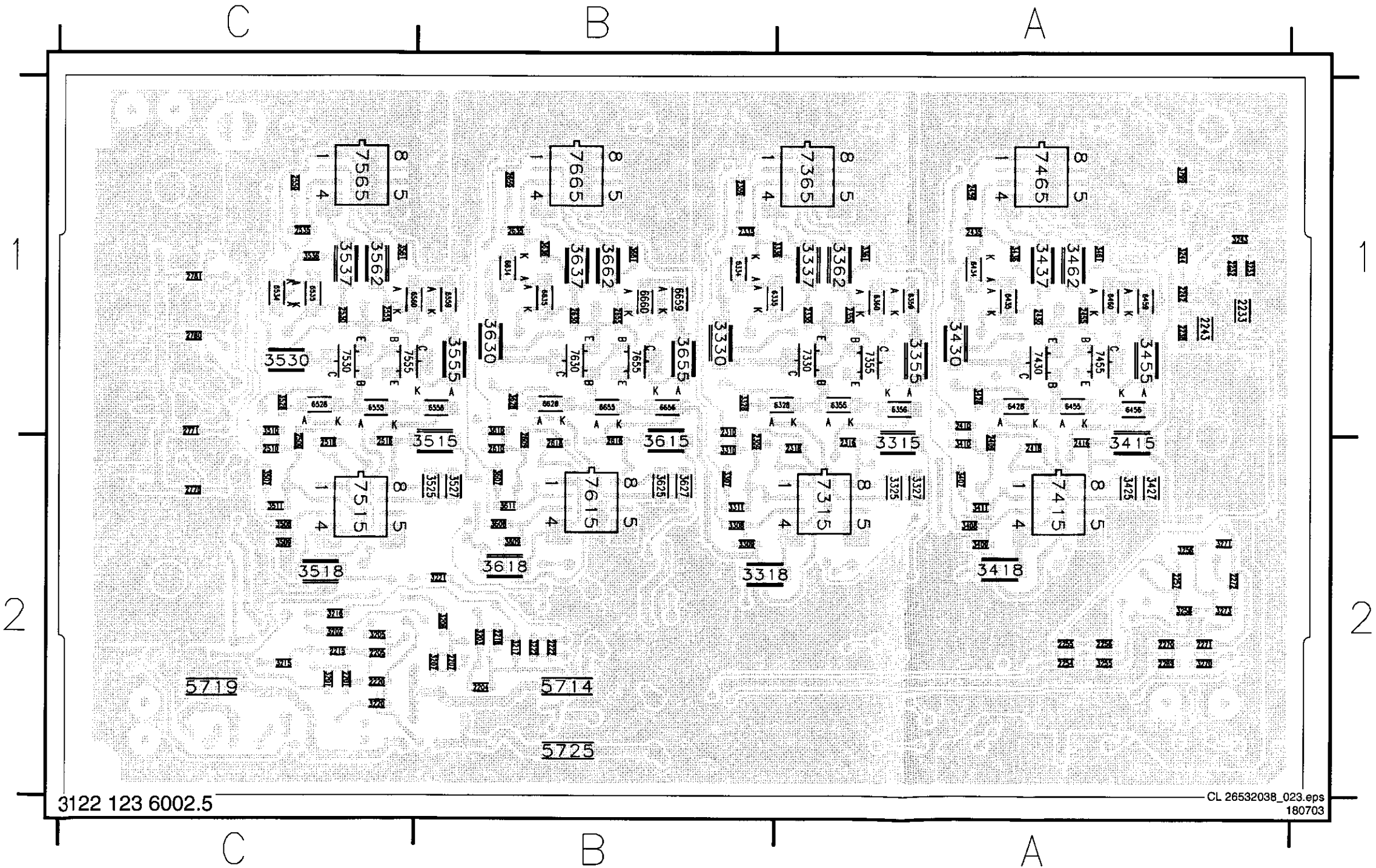
Layout Audio Panel (Top Side)

0302 B1	2216 C1	2315 A1	2440 A2	2566 C2	2734 A1	3211 C1	3272 A1	3403 A1	3601 B1	3749 C2	3780 C2	5565 C2	7225 B1	7503 B1	7753 C1
0303 C1	2217 B1	2319 A1	2460 A2	2615 B1	2740 A1	3230 B1	3274 A1	3404 A1	3602 B1	3750 C1	3781 C2	5635 B2	7238 A2	7540 C2	7755 C1
0304 C2	2221 B1	2334 A2	2465 A2	2619 B1	2742 A1	3231 A2	3301 A1	3406 A1	3603 B1	3751 C1	5335 A2	5660 B2	7260 A1	7602 B1	7761 C1
0388 C1	2224 B1	2340 A2	2466 A2	2634 B2	2744 A1	3232 A2	3302 A1	3440 A2	3604 B1	3752 C1	5360 B2	5665 B2	7302 A1	7603 B1	
1730 B1	2225 B1	2360 B2	2515 C1	2640 B2	2752 C1	3234 A2	3303 A1	3501 B1	3606 B1	3754 C1	5365 A2	5753 C1	7303 B1	7640 B2	
1740 B1	2234 A2	2365 B2	2519 C1	2660 B2	2753 C1	3240 B1	3304 A1	3502 C1	3640 B2	3755 B1	5435 A2	6732 A1	7340 A2	7735 A1	
2202 C1	2239 A2	2366 B2	2534 B2	2665 B2	2759 C1	3241 A2	3306 B1	3503 B1	3732 A1	3760 C1	5460 A2	6742 A1	7402 A1	7736 A1	
2203 B1	2244 A2	2415 A1	2540 C2	2666 B2	2760 C1	3242 A2	3340 A2	3504 B1	3733 A1	3765 B1	5465 A2	6750 C1	7403 A1	7745 A1	
2206 C1	2260 A1	2419 A1	2560 C2	2730 B1	2799 A1	3257 A1	3401 A1	3506 C1	3742 A1	3770 C1	5535 B2	6760 C1	7440 A2	7746 A1	
2212 C1	2261 A1	2434 A2	2565 C2	2732 B1	3210 C1	3259 A1	3402 A1	3540 B2	3743 A1	3771 C1	5560 C2	7211 C1	7502 C1	7751 C1	



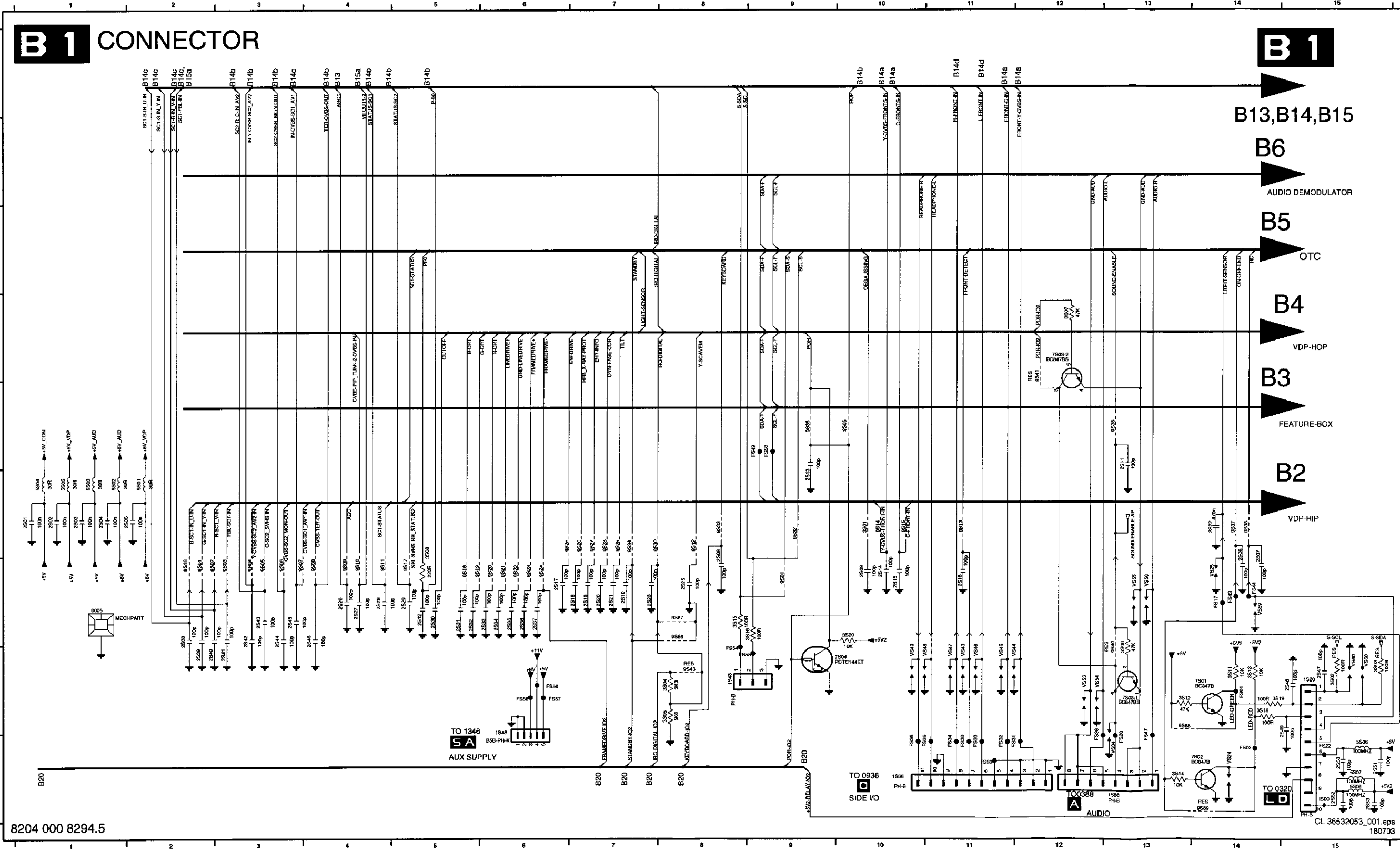
Layout Audio Panel (Bottom Side)

2201 C2	2255 A2	2359 B1	2535 C1	2781 C1	3243 A1	3318 B2	3411 A2	3509 C2	3607 B2	3661 B1	6434 A1	6634 B1	7515 C2
2204 B2	2256 A2	2409 A2	2555 C1	3201 C2	3244 A1	3325 A2	3415 A2	3510 C1	3608 B2	3662 B1	6435 A1	6635 B1	7530 C1
2205 C2	2257 A2	2410 A1	2559 C1	3202 C2	3255 A2	3327 A2	3418 A2	3511 C2	3609 B2	3799 A1	6455 A1	6655 B1	7555 C1
2207 B2	2269 A2	2416 A2	2609 B2	3203 B2	3256 A2	3328 B1	3425 A2	3515 B2	3610 B1	5714 B2	6456 A1	6656 B1	7565 C1
2215 C2	2270 A2	2418 A2	2610 B2	3205 C2	3258 A2	3330 B1	3427 A2	3518 C2	3611 B2	5719 C2	6459 A1	6659 B1	7615 B2
2218 B2	2271 A2	2430 A1	2616 B2	3206 B2	3270 A2	3336 A1	3428 A1	3525 B2	3615 B2	5725 B2	6460 A1	6660 B1	7630 B1
2220 C2	2272 A2	2435 A1	2618 B2	3207 B2	3271 A2	3337 A1	3430 A1	3527 B2	3618 B2	6328 A1	6528 C1	7315 A2	7655 B1
2222 B2	2309 B2	2455 A1	2630 B1	3215 C2	3273 A2	3355 A1	3436 A1	3528 C1	3625 B2	6334 B1	6534 C1	7330 A1	7665 B1
2232 A1	2310 B1	2459 A1	2635 B1	3216 C2	3307 B2	3361 A1	3437 A1	3530 C1	3627 B2	6335 B1	6535 C1	7355 A1	
2233 A1	2316 A2	2509 C2	2655 B1	3217 B2	3308 B2	3362 A1	3455 A1	3536 C1	3628 B1	6355 A1	6555 C1	7365 A1	
2238 A1	2318 A2	2510 C2	2659 B1	3220 C2	3309 B2	3407 A2	3461 A1	3537 C1	3630 B1	6356 A1	6556 B1	7415 A2	
2242 A1	2330 A1	2516 C2	2770 C2	3221 B2	3310 B2	3408 A2	3462 A1	3555 B1	3636 B1	6359 A1	6559 B1	7430 A1	
2243 A1	2335 B1	2518 C2	2771 C1	3222 B2	3311 B2	3409 A2	3507 C2	3561 C1	3637 B1	6360 A1	6560 C1	7455 A1	
2254 A2	2355 A1	2530 C1	2780 C1	3233 A1	3315 A2	3410 A2	3508 C2	3562 C1	3655 B1	6428 A1	6628 B1	7465 A1	

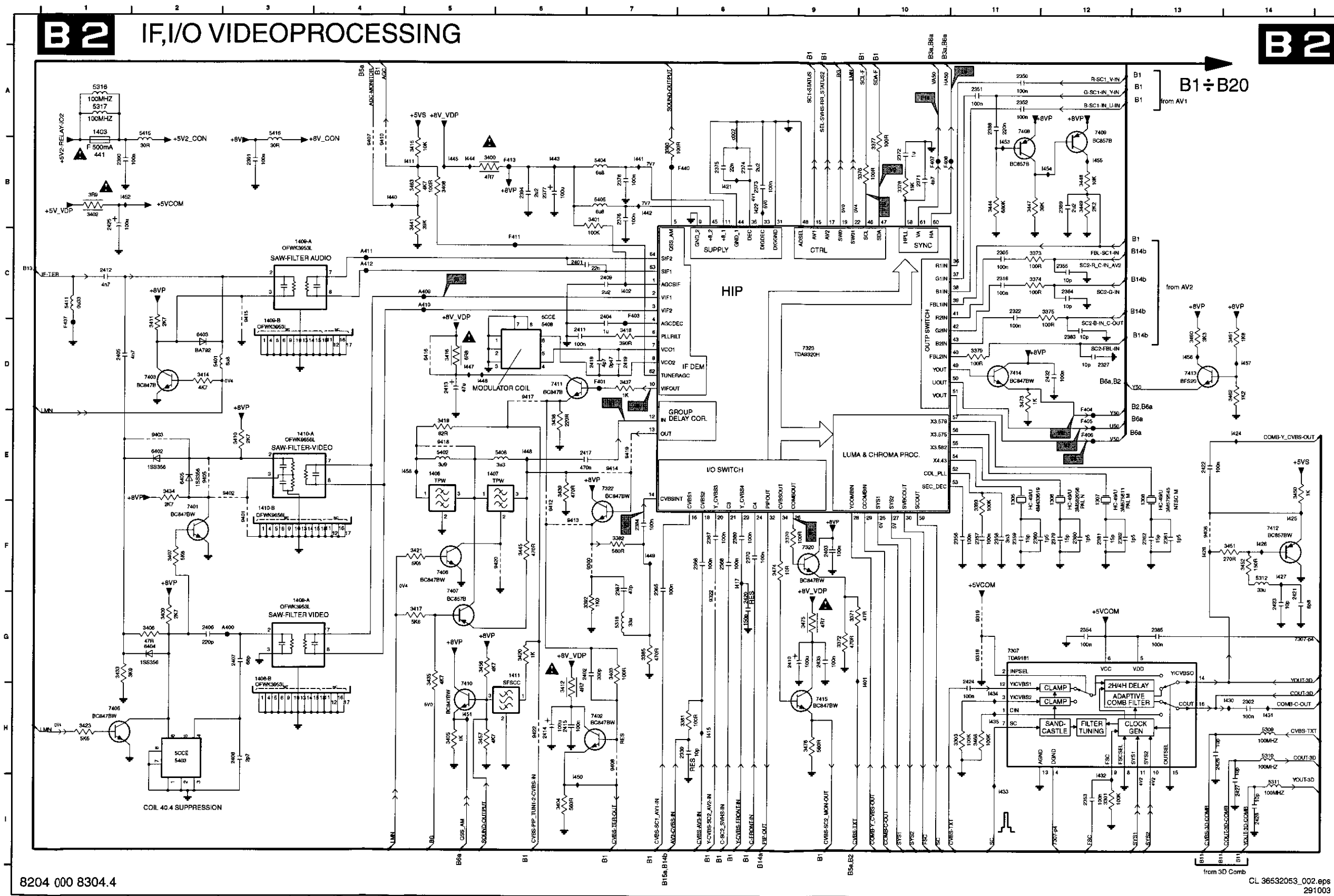


SSB (AA): Connector

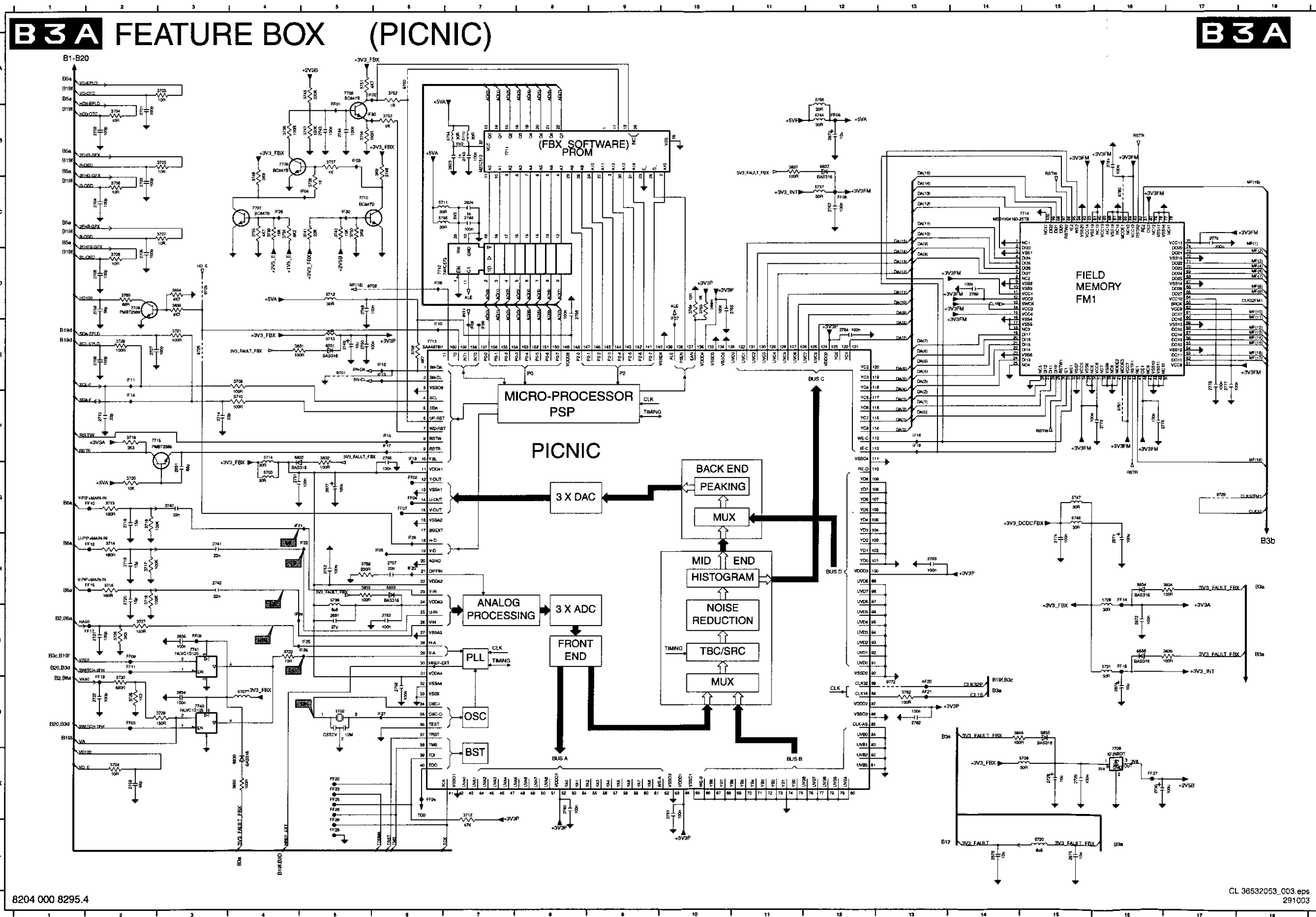
0005 G1	2901 F1	2907 F14	2513 F9	2519 G7	2526 G4	2532 G5	2538 G2	2544 G3	2550 H5	3503 H15	3511 H14	3518 H14	5504 F1	7502 H3	9503 G3	9509 G4	9515 F10	9521 G6	9527 F7	9533 F8	9540 H13	9568 H13	F526 H13	F535 H11	F549 E9	F557 H6	V543 H11	V549 H10	V559 G14
1520 H15	2902 F1	2908 F8	2514 G10	2520 G7	2527 G4	2533 G6	2539 H2	2545 G3	2551 H5	3504 H8	3512 H13	3519 H14	5505 F1	7503-1 H13	9504 G3	9510 G4	9516 G2	9522 G6	9528 F7	9534 F7	9541 D12	9569 H14	F530 H11	F538 H10	F550 E9	F558 H6	V544 H12	V553 H12	V560 H15
1536 H10	2903 F1	2909 G10	2515 G10	2521 G7	2528 G4	2534 G6	2540 H2	2546 G4	2552 H5	3505 H8	3513 H14	3520 G10	5506 H5	7503-2 D12	9505 G3	9511 G4	9517 G5	9523 G6	9529 F7	9535 E9	9543 H8	F501 H14	F531 H12	F539 H12	F553 H11	IS00 H15	V545 H11	V554 H12	
1543 H8	2904 F1	2910 G7	2516 G11	2522 F14	2529 G5	2535 G6	2541 H3	2547 H15	2553 H5	3506 H13	3514 H13	5501 F2	7504 H8	9506 G3	9512 F8	9518 G5	9524 G6	9530 F7	9536 E13	9545 E10	F502 H14	F532 H11	F543 G14	F554 H8	V524 H14	V546 H11	V555 G13		
1546 H6	2905 F2	2911 E13	2517 G6	2523 G7	2530 G5	2536 G6	2542 G3	2548 H15	2554 H15	3507 D12	3515 G8	5502 F1	7501 H14	9507 G3	9513 F10	9519 G5	9525 F6	9531 G6	9537 F14	9546 G6	F517 G14	F533 H11	F544 G14	F555 H8	V525 G14	V547 H11	V556 G13		
1588 H13	2906 F14	2912 G5	2518 G7	2525 G8	2531 G5	2537 G6	2543 G3	2549 H15	2555 H15	3508 F5	3516 G8	5503 F1	7502 G2	9508 G4	9514 F10	9520 G6	9526 F7	9532 F9	9538 F14	9547 G8	F522 H15	F534 H11	F547 H13	F556 H6	V526 G14	V548 H11	V558 H15		



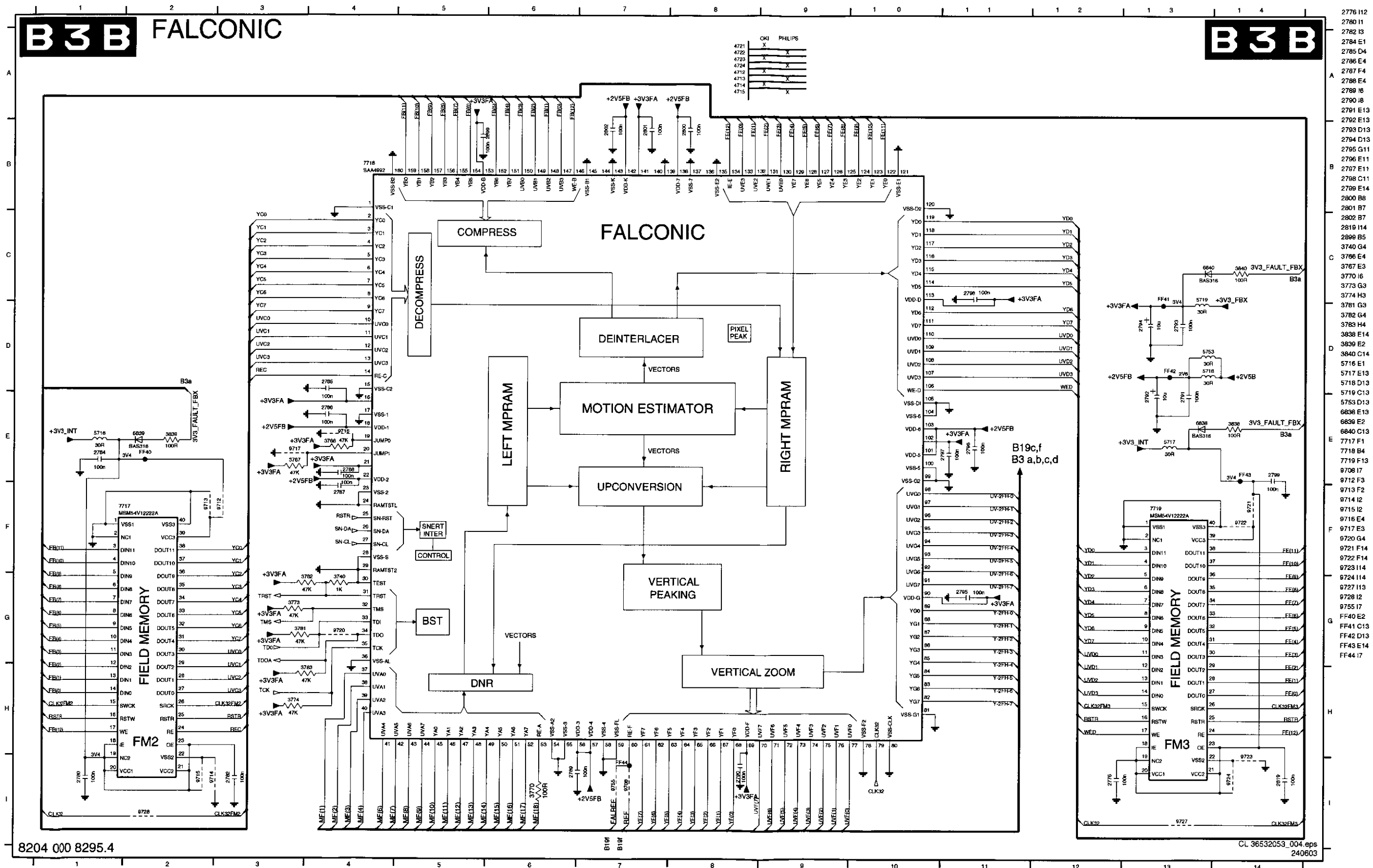
SSB (AA): IF, I/O Videoprocessing



SSB (AA): Feature Box (PICNIC)

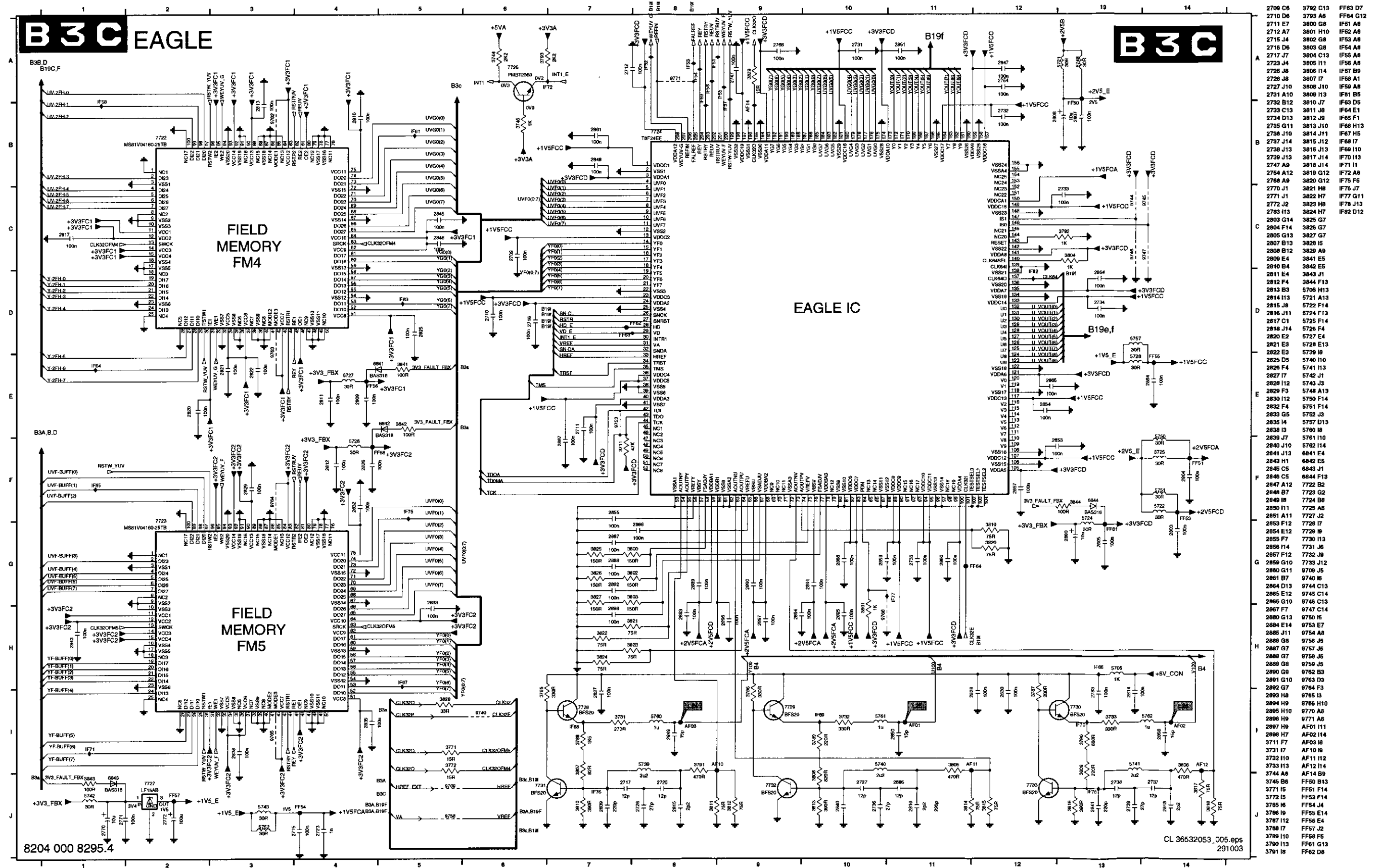


SSB (AA): Falconic

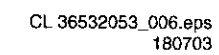


2776 I12
2780 I1
2782 I3
2784 E1
2785 D4
2786 E4
2787 F4
2788 E4
2789 I6
2790 I8
2791 E13
2792 E13
2793 D13
2794 D13
2795 G11
2796 E11
2797 E11
2798 C11
2799 E14
2800 B8
2801 B7
2802 B7
2819 I14
2899 B5
3740 G4
3766 E4
3767 E3
3770 I6
3773 G3
3774 H3
3781 G3
3782 G4
3783 H4
3838 E14
3839 E2
3840 C14
5716 E1
5717 E13
5718 D13
5719 C13
5753 D13
6836 E13
6839 E2
6840 C13
7717 F1
7718 B4
7719 F13
9708 I7
9712 F3
9713 F2
9714 I2
9715 I2
9716 E4
9717 E3
9720 G4
9721 F14
9722 F14
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9755 I7
FF40 E2
FF41 C13
FF42 D13
FF43 E14
FF44 I7

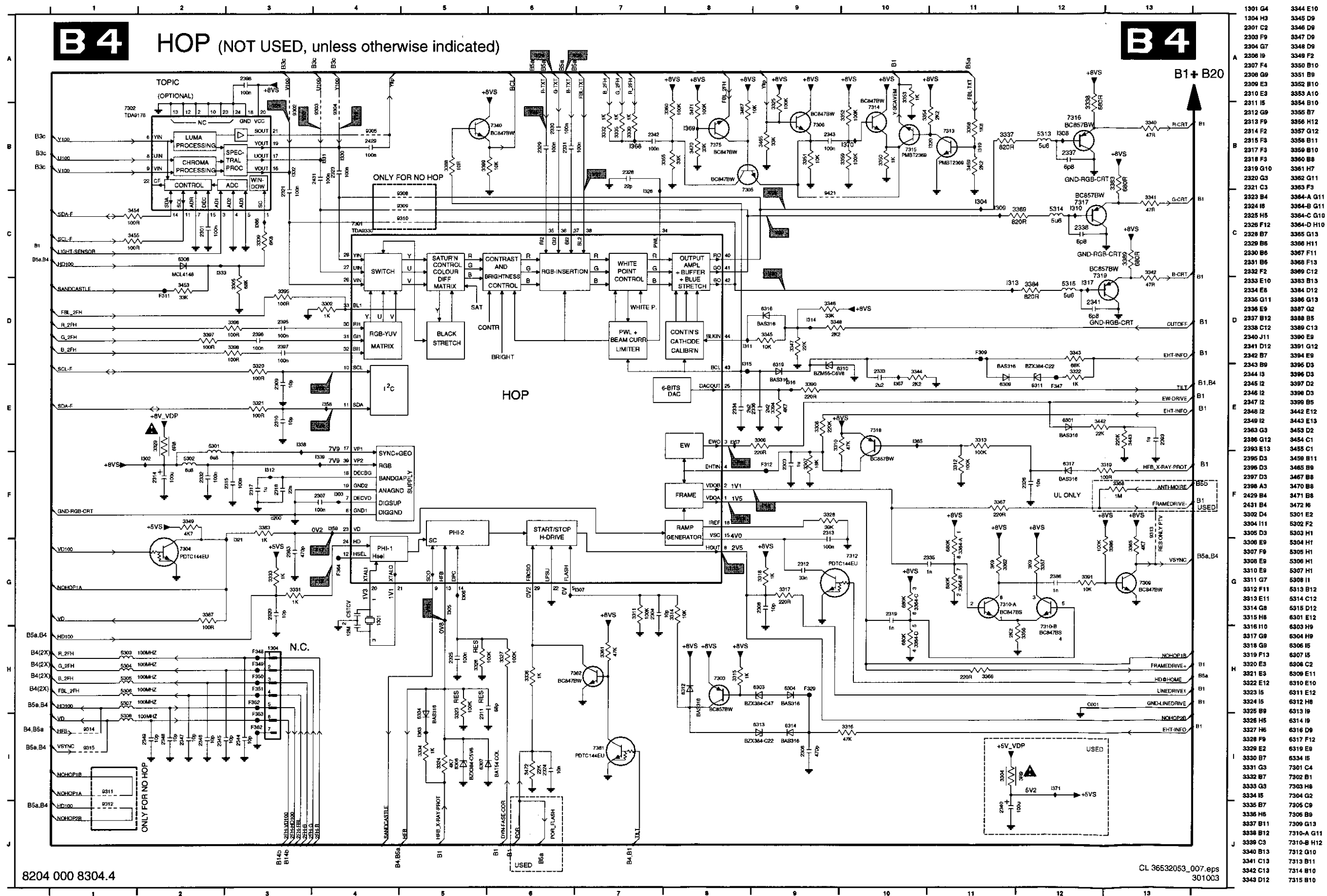
SSB (AA): Eagle



724 E2	2842 A6	2858 E5	3700 A2	3723 C5	3796 E3	3799 E4	3848 F6	3852 E3	3856 F1	5702 D5	6846 E3	7743 A5	7746 E5	9703 E4	9737 A5	9742 C2	9749 C5	FF75 A2
806 F2	2844 C3	2862 E5	3701 A5	3794 E1	3797 F3	3846 F4	3849 F6	3853 A6	5700 D2	5715 A6	6847 A6	7744 C3	7747 E2	9707 E4	9738 A2	9743 C5	FF71 A6	FF76 A5
837 A3	2852 C6	2863 E5	3702 C2	3795 F1	3798 E4	3847 F4	3851 D6	3855 F5	5701 E4	6845 D6	7742 A3	7745 C5	7748 F2	9736 A2	9739 A5	9748 C2	FF74 C2	FF77 C5



SSB (AA): HOP

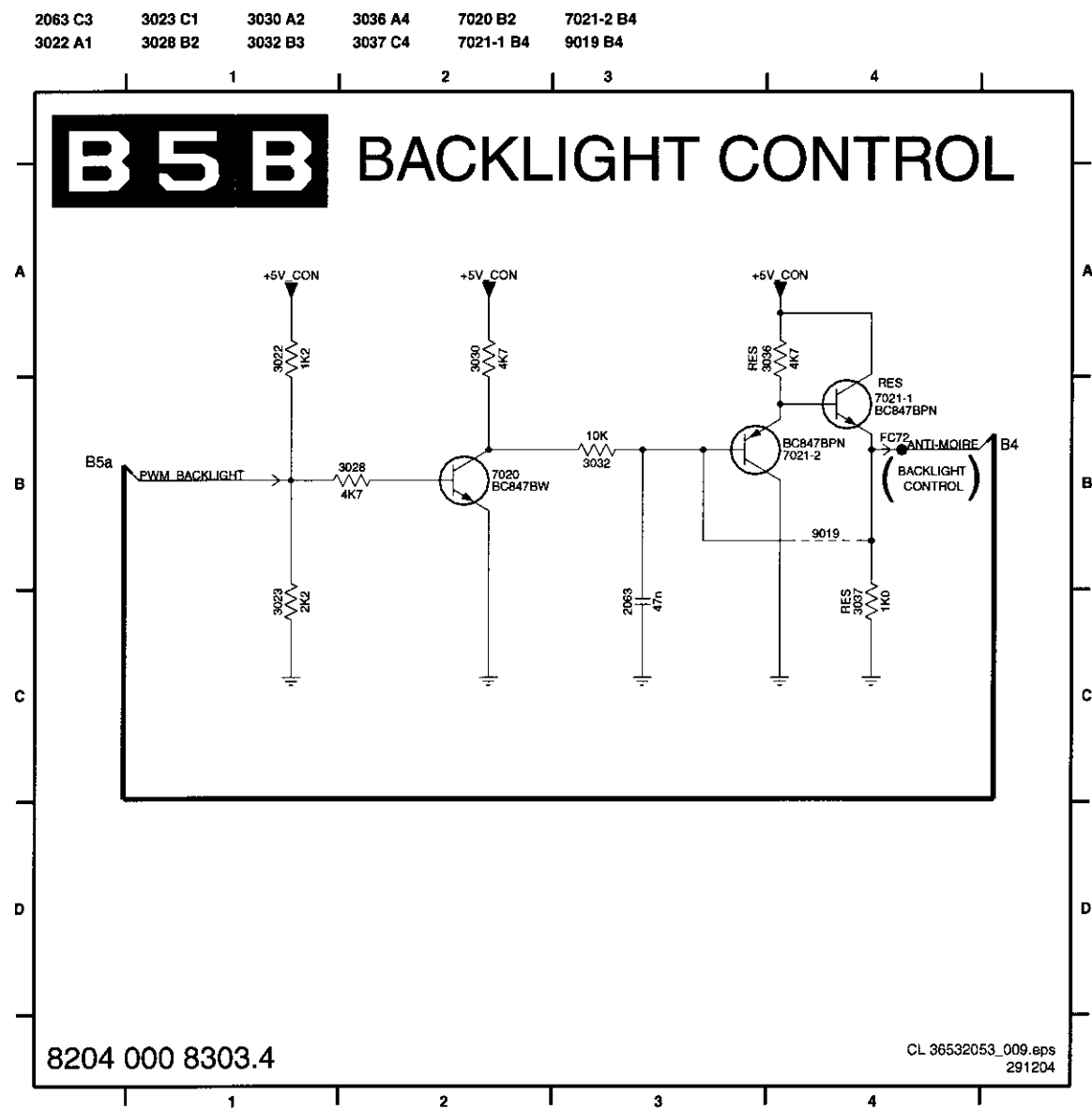


1301 G4	3344 E10	7316 B12
1304 H3	3345 D9	7317 C12
2307 C2	3346 D9	7318 E10
2303 F9	3347 D9	7319 C12
2304 G7	3348 D9	7340 B6
2306 I9	3349 F2	7361 I7
2307 F4	3350 B10	7362 H7
2308 G9	3351 B9	7375 B8
2309 E3	3352 B10	9302 B3
2310 E3	3353 A10	9303 B4
2311 I5	3354 B10	9304 B4
2312 G9	3355 B7	9305 B4
2313 F9	3356 H12	9306 C5
2314 F2	3357 G12	9309 C5
2315 F3	3358 B11	9310 C5
2317 F3	3359 B10	9311 I1
2318 F3	3360 B8	9312 J1
2319 G10	3361 H7	9313 F13
2320 G3	3362 G11	9314 I1
2321 C3	3363 F3	9315 I1
2323 B4	3364-A G11	9421 C9
2324 I8	3364-B G11	C001 H12
2325 H5	3364-C G10	F309 D11
2326 F12	3364-D H10	F311 D2
2328 B7	3365 G13	F312 F9
2329 B6	3366 H11	F329 H9
2330 B6	3367 F11	F347 E12
2331 B6	3368 F13	F348 H3
2332 F2	3369 C12	F349 H3
2333 E10	3370 B10	F350 H3
2334 E8	3374 D12	F351 H3
2335 G11	3375 G13	F352 H3
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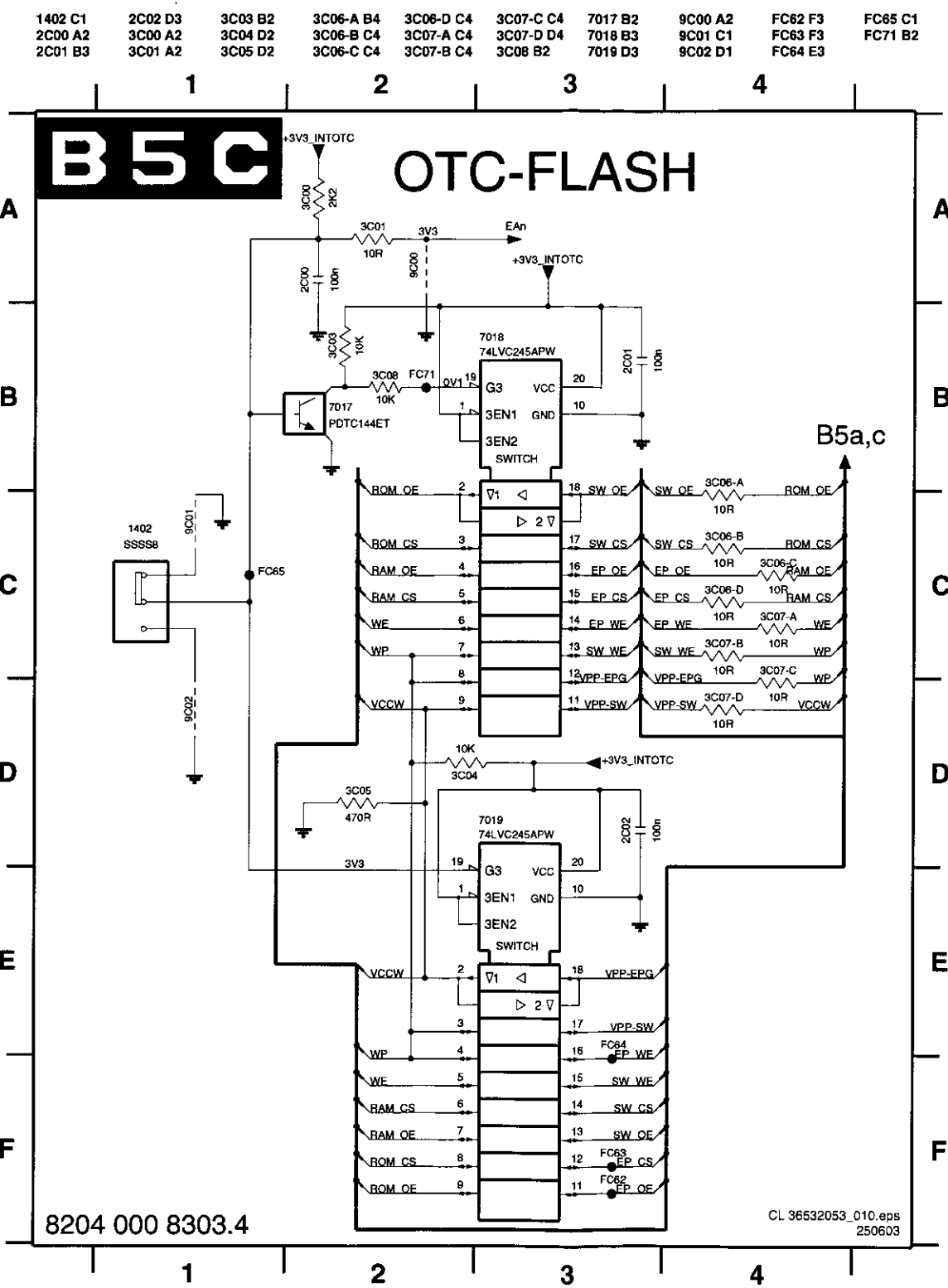
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	3025 D1	3074-D A3	9016 B3	
	3026 D4	3075 B1	9017 A4	
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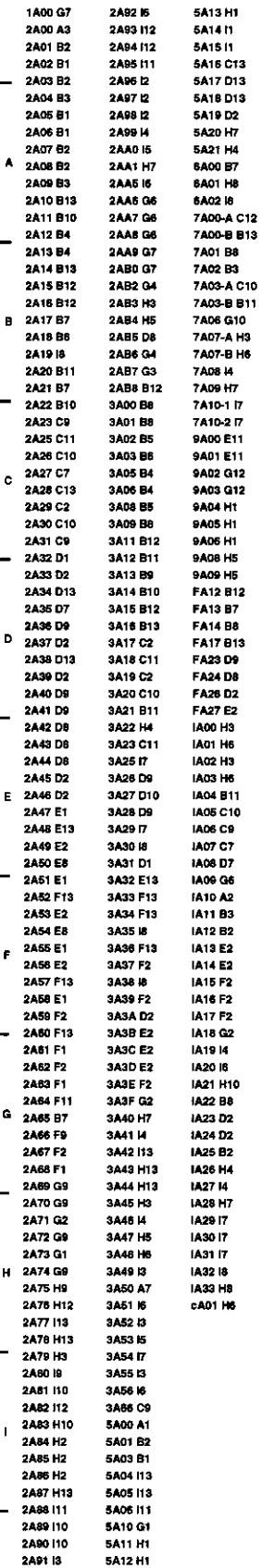
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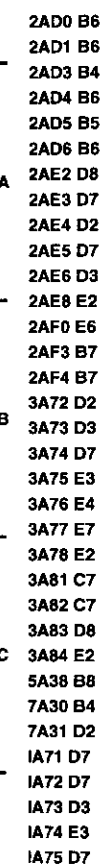


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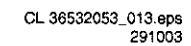


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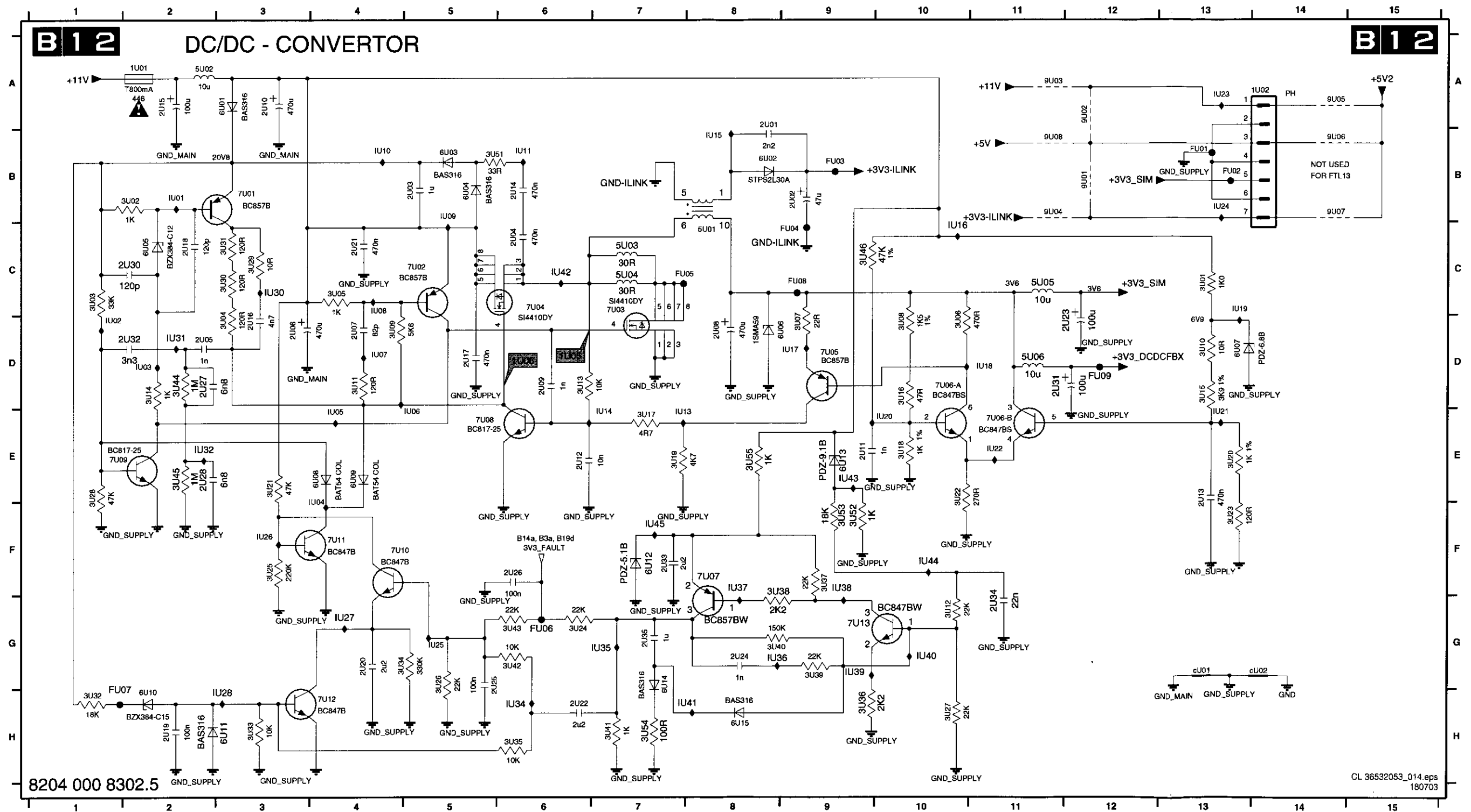


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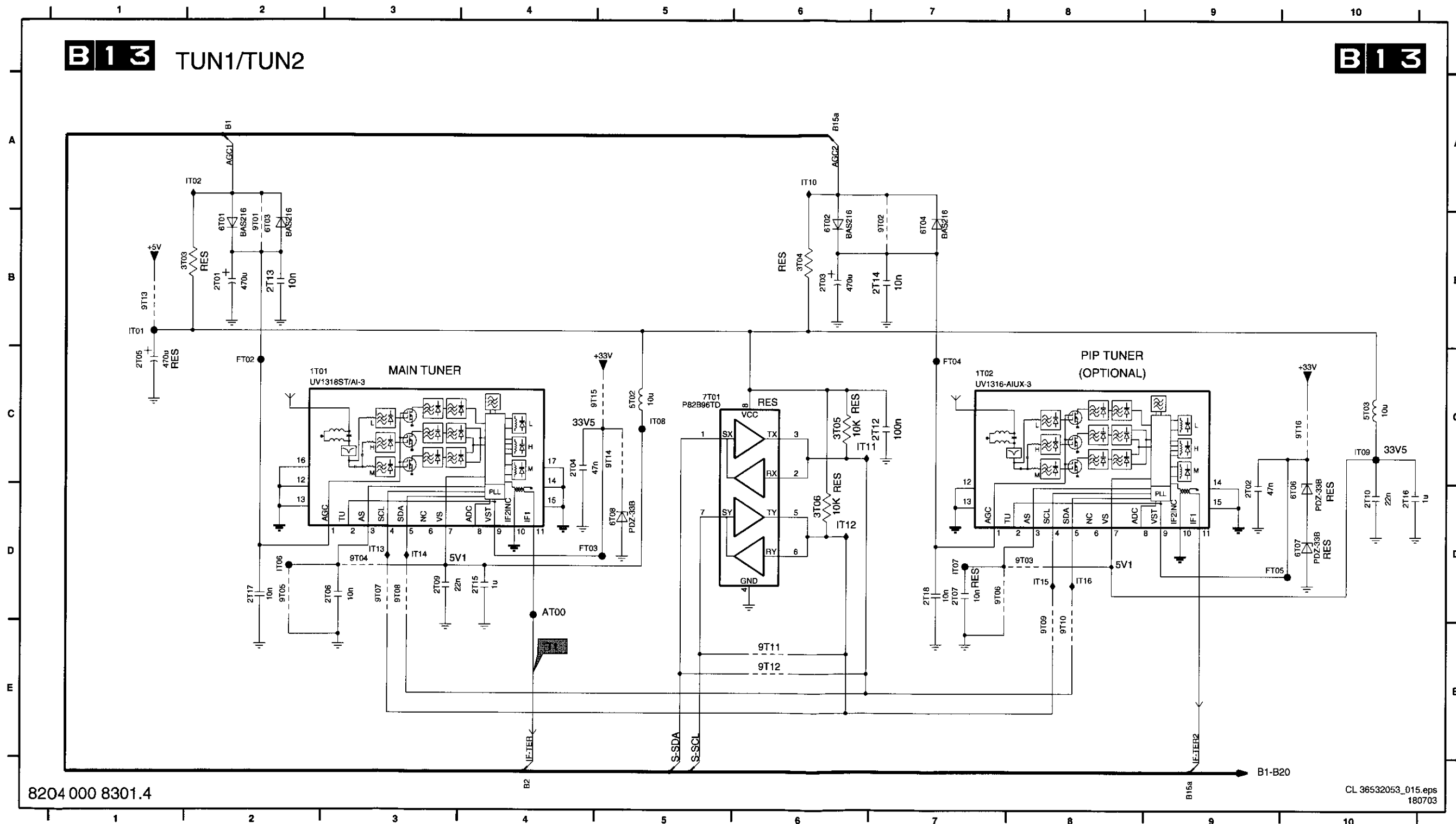


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A23	2U08 D8	2U16 D3	2U24 B8	2U33 F7	3U06 D10	3U14 D2	3U22 E10	3U30 C8	3U38 F8	3U46 C9	5U03 C7	6U05 C2	6U13 E9	7U08 A D10	7U13 G9	9U08 B11	FU08 C9	IU07 D4	IU16 C10	IU24 B13	IU34 H6	IU42 C5
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B09	2U10 A3	2U18 C2	2U26 F6	2U35 G7	3U08 D10	3U16 D10	3U24 G6	3U32 H1	3U40 G8	3U52 F9	5U05 C11	6U07 D13	6U15 H8	7U07 F8	9U02 A12	FU02 B13	IU01 B2	IU06 B5	IU14 D11	IU25 F3	IU36 G8	IU44 F10
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D05	2U13 E13	2U21 C4	2U30 C2	3U03 C1	3U11 D4	3U19 E7	3U27 H10	3U35 H6	3U43 G6	3U55 E8	6U02 B8	6U10 H2	7U03 C7	7U10 F5	9U05 A14	FU05 C7	IU04 E4	IU13 E7	IU21 E13	IU30 C3	IU39 G9	oU02 G14
D03	2U14 B6	2U22 H6	2U31 D11	3U04 D3	3U12 G10	3U20 E13	3U28 E1	3U36 H9	3U44 D2	6U01 C8	6U03 B5	6U11 H3	7U04 C6		9U06 B14	FU06 G6	IU05 E4	IU14 E7	IU22 E11	IU31 D2	IU40 G10	

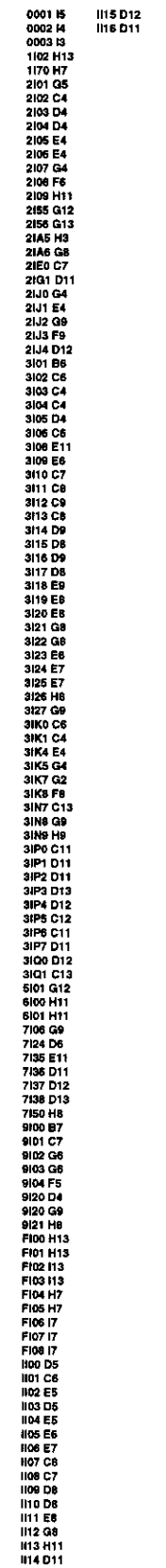


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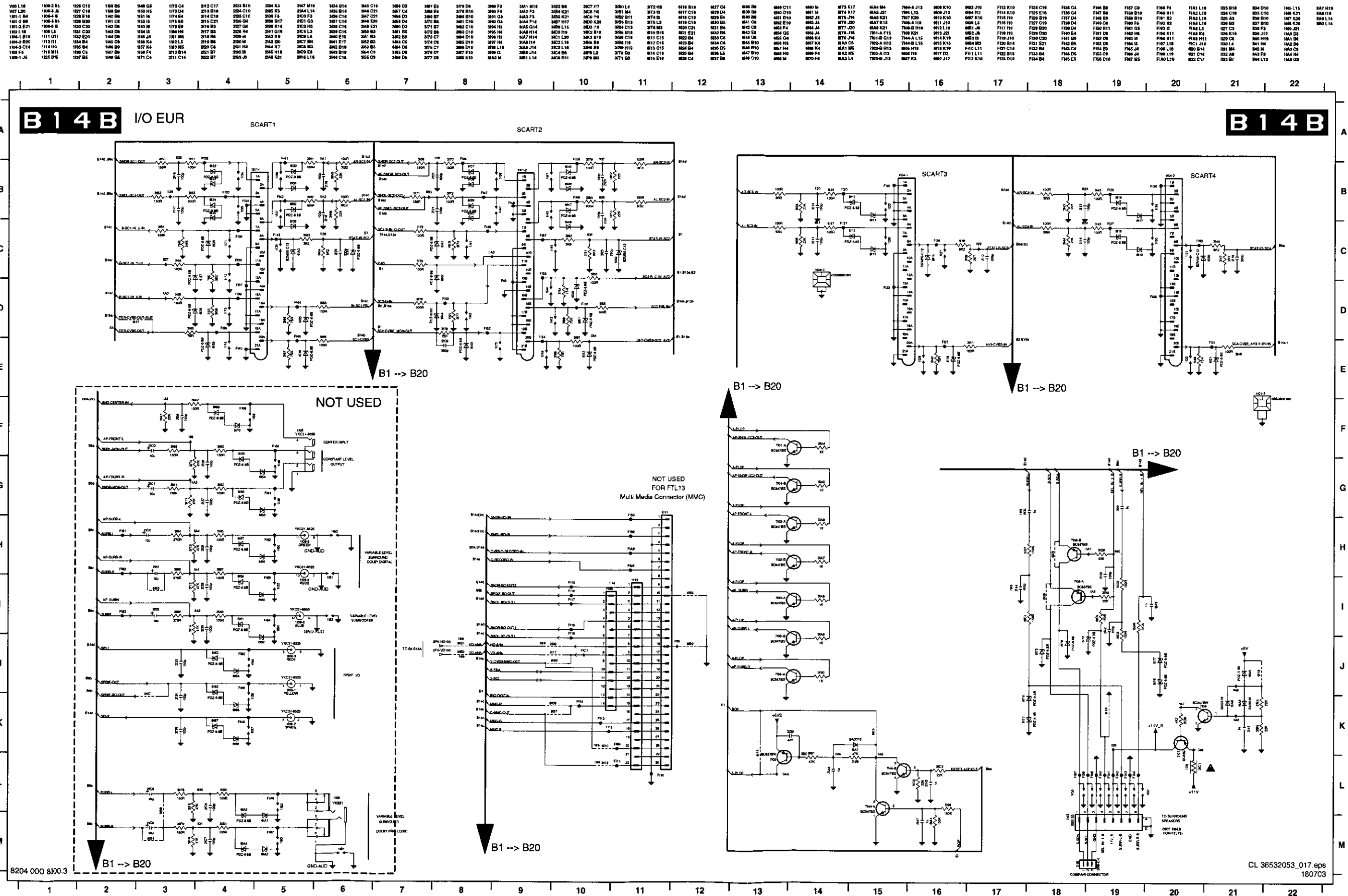
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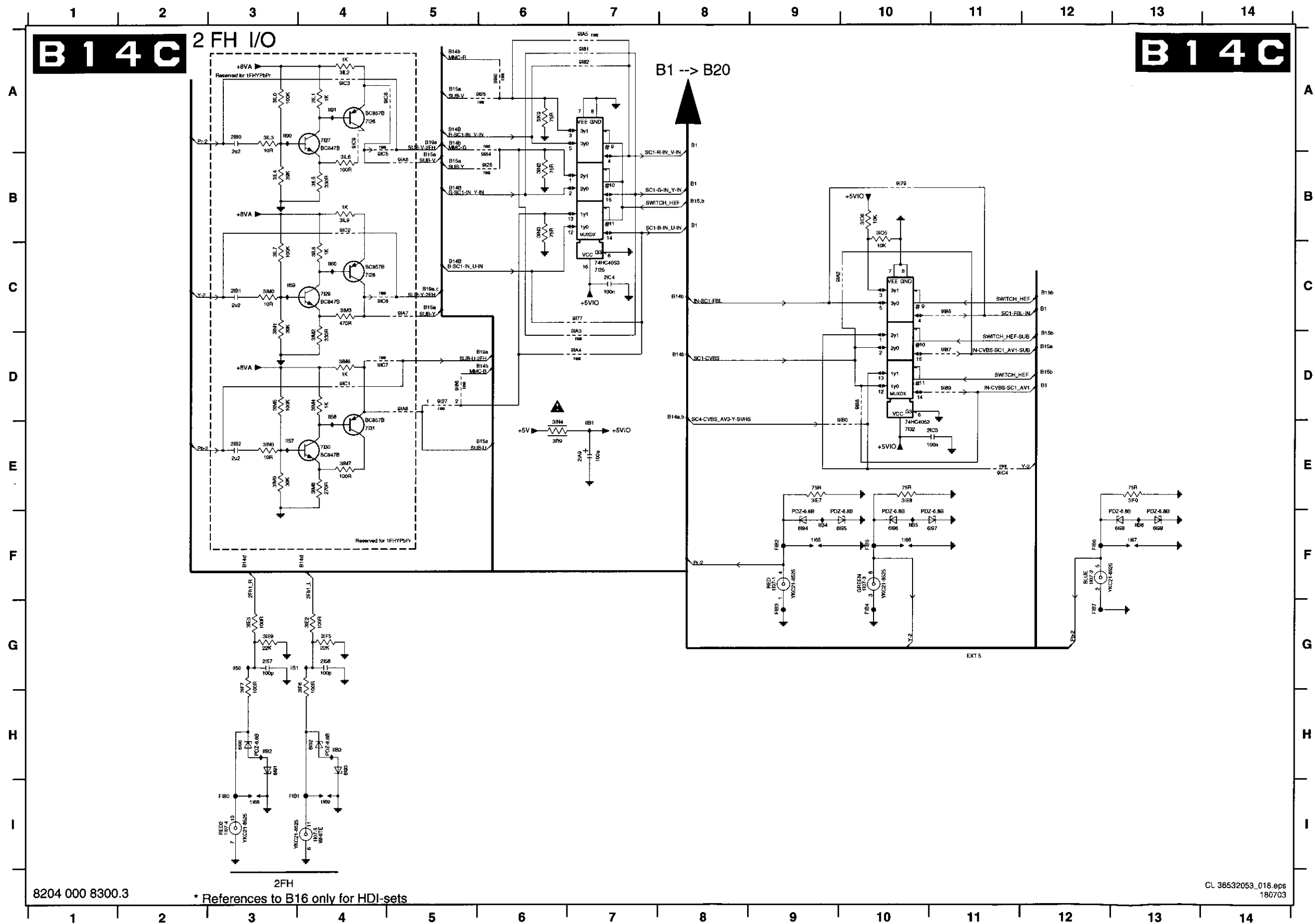
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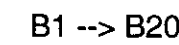
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* References to B16 only for HDI-sets

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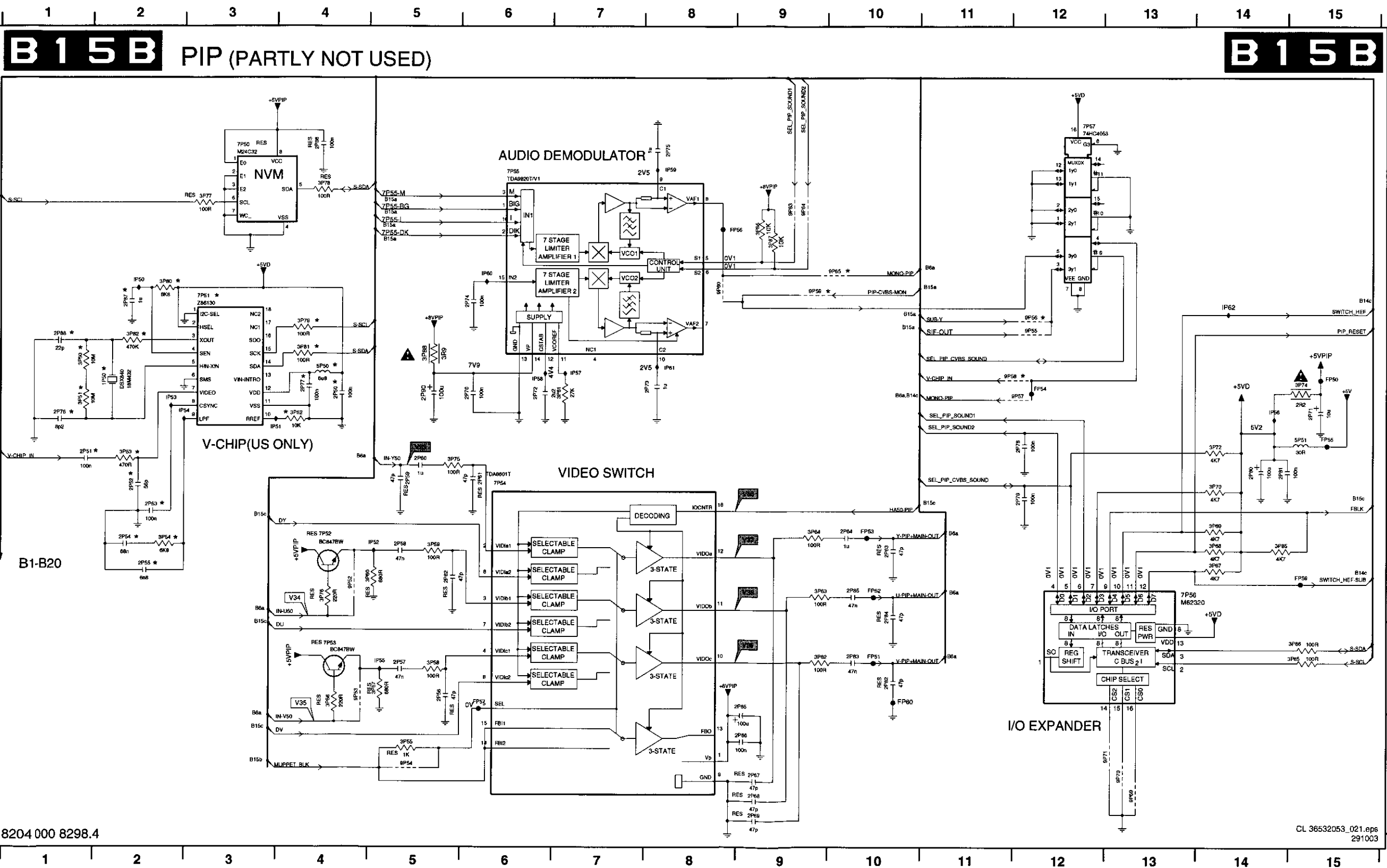
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2P35 F11	6P00 E2	IP26 B4
2P36 F11	6P01 E2	IP27 B3
2P37 F11	6P02 G2	IP28 C4
2P38 F12	6P03 D2	IP29 C4
2P39 F12	7P00 D2	IP30 B3
2P40 F12	7P01 F2	IP31 B3
2P41 F13	7P02 H1	IP32 C3
2P42 F13	7P03 F5	IP33 B6
2P43 F13	7P04 G5	IP34 B7
2P44 F14	7P05 D6	IP35 B7
2P45 C11	7P06 E7	IP36 B10
2P46 D11	7P07 H7	IP37 H11
2P47 D11	7P08 F9	IP38 H11
2P48 F7	7P09 D6	IP39 H12
2P49 D7	7P10 D13	IP40 G13
2P51 G11	7P11 G11	IP41 G14
2P52 I12	9P00 B4	IP42 H13
2P53 H14	9P01 C3	IP43 H14
2P54 G14	9P02 D5	cP00 B8
2P55 G13	9P03 D6	
2P56 G12	9P04 E2	
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2P58 B7	9P06 E7	
2P59 B7	9P07 G7	
3P00 B2	9P08 G7	
3P01 B3	9P09 G6	
3P02 C3	9P10 F3	
3P03 B5	9P11 E3	
3P04 B5	9P12 G8	
3P05 C5	9P13 D11	
3P06 B5	9P14 G6	
3P07 D2	9P15 E7	
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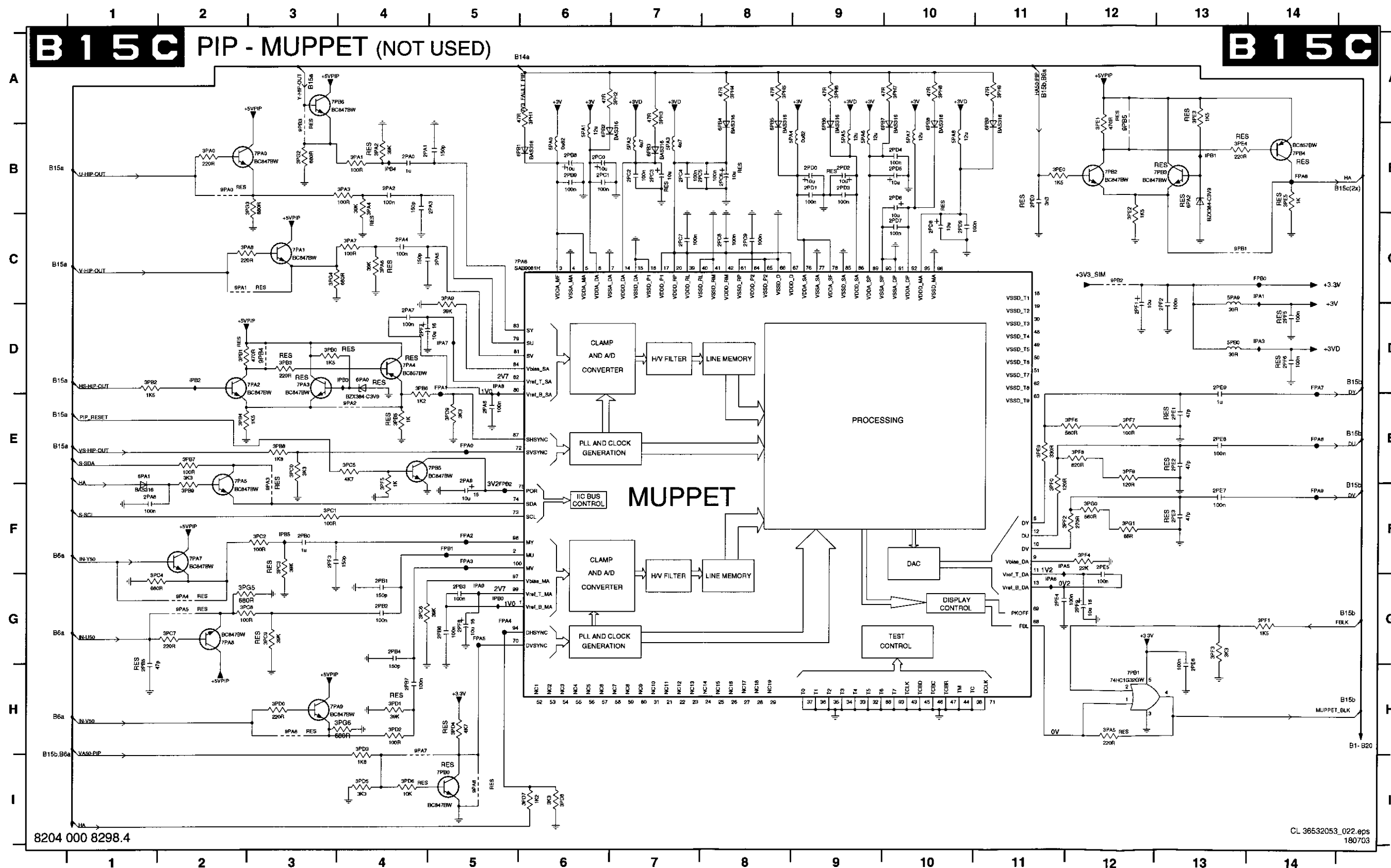
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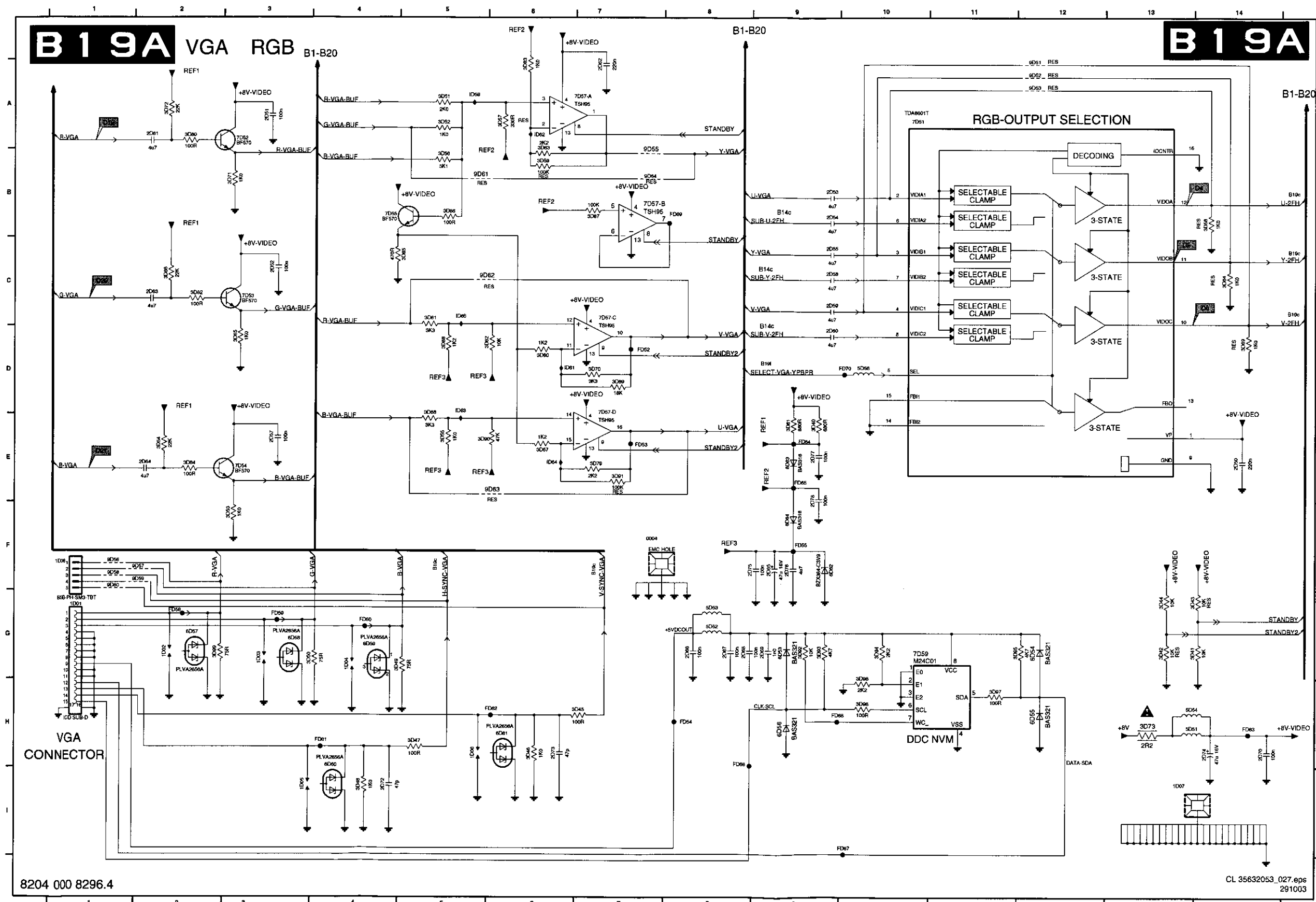
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2P50 D4 2P54 F2 2P58 F5 2P62 F5 2P66 H9 2P70 D6 2P74 C6 2P78 E12 2P82 G10 2P86 A4 3P50 D1 3P54 F2 3P58 G5 3P62 G9 3P66 G15 3P70 E14 3P74 F4 3P78 C2 3P82 B9 5P51 E15 7P53 G4 7P57 A12 9P55 C12 9P59 C9 9P63 C10 9P67 D15 9P71 D12 9P75 D12 9P79 F15 IP52 F5 IP56 D14 IP60 C6
2P51 E1 2P55 F2 2P59 E6 2P63 F10 2P67 H9 2P71 D15 2P75 A8 2P79 E12 2P83 G10 2P87 C2 3P51 D1 3P55 H5 3P59 F5 3P63 F9 3P67 F14 3P71 E14 3P75 B3 3P79 D4 3P83 D5 7P54 E6 9P56 C12 9P60 C8 9P64 H13 9P68 G10 9P72 F10 9P76 B8 IP53 D2 IP57 D7 IP61 D8
2P52 E2 2P56 G6 2P60 E5 2P64 F10 2P68 H9 2P72 D6 2P76 D1 2P80 E14 2P84 F10 2P88 C1 3P52 D4 3P56 G4 3P60 F5 3P64 F9 3P68 F14 3P72 D15 3P76 B4 3P80 C2 3P84 D5 7P55 B6 9P57 D12 9P61 B9 9P65 H13 9P69 F10 9P73 F10 9P77 G6 IP54 D2 IP58 D6 IP62 C14



2PA0 A4	2PA7 D4	2PB4 G4	2PC1 B6	2PC8 C8	2PD5 B10	2PE2 E13	2PE9 D13	2PF8 G5	3PA5 H12	3PB2 D1	3PB9 F2	3PC6 G4	3PD3 H4	3PE0 B11	3PF0 F11	3PF7 E12	3PG4 C3	3PH5 A8	3PA2 B7	3PA9 C13	3PB3 B7	7PA0 B3	7PA7 F2	7PB4 B14	9PA4 G2	9PB3 B3	FFA4 G5	FPB1 F5	IPA8 D5	IPB5 F3
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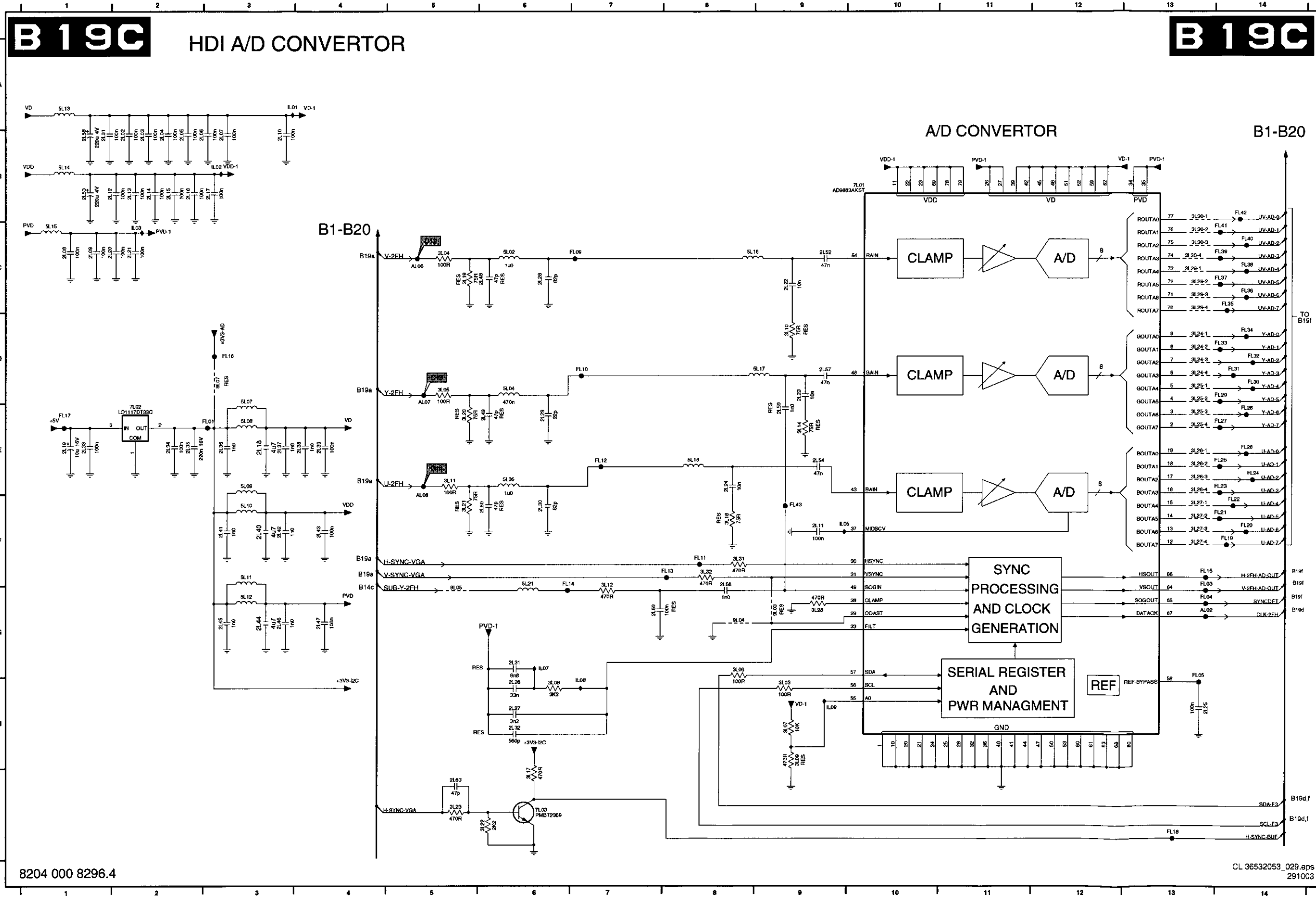


B 1 9 A VGA RGB B1-B20



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	1001 G1	5D54 H10
	1002 G2	5D58 D10
	1003 G3	5D53 G9
	1004 G4	5D54 G12
	1005 I3	5D55 H12
	1006 H5	5D56 H9
	1007 I13	5D57 G2
	1008 F1	5D58 G3
A	2050 E14	5D59 H4
	2051 A3	5D60 H4
	2052 C3	5D61 H6
	2053 B9	5D62 F9
	2054 B9	5D63 E9
	2055 C9	5D64 F9
	2057 E3	7D51 A10
	2058 C9	7D52 A3
	2059 C9	7D53 C3
	2060 D9	7D54 E3
B	2061 A2	7D55 B4
	2062 A7	7D57-A A6
	2063 C2	7D57-B B7
	2064 E2	7D57-C C7
	2065 F9	7D57-D D7
	2066 H8	7D58 G10
	2067 G4	9D51 A12
	2068 H8	9D52 A12
	2069 G9	9D53 A12
C	2070 H14	9D55 B7
	2072 I4	9D56 F1
	2073 H6	9D57 F2
	2074 H14	9D58 F1
	2075 F8	9D59 F2
	2076 F9	9D60 F1
	2077 E9	9D61 B5
	2078 E9	9D62 C5
	2040 E9	9D63 E6
D	2041 G14	9D64 B7
	2042 G13	9D52 D7
	2043 G14	9D53 E7
	2044 G13	9D54 H8
	2045 H7	9D55 F9
	2046 H8	9D56 G2
	2047 H5	9D59 G3
	2048 I4	9D60 G4
	2049 G4	9D61 H4
	2050 G3	9D62 H8
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	2055 E5	9D67 I10
	2056 B5	9D68 H9
	2057 A8	9D69 B5
	2058 B14	9D70 D10
	2059 B8	9D59 A5
F	2060 D6	9D61 D6
	2061 C5	9D62 A8
	2062 D5	9D63 D5
	2063 B6	9D64 E6
	2064 C14	9D65 C5
	2065 D3	
	2066 C2	
	2067 E6	
	2068 E5	
G	2069 D14	
	2070 D7	
	2071 B3	
	2072 A2	
	2073 H13	
	2079 E7	
	2080 A2	
	2081 E9	
	2082 C2	
	2083 A6	
H	2084 E2	
	2085 C5	
	2086 B5	
	2087 B7	
	2088 D6	
	2089 D7	
	2090 E5	
	2091 E7	
	2092 G8	
I	2093 G9	
	2094 G10	
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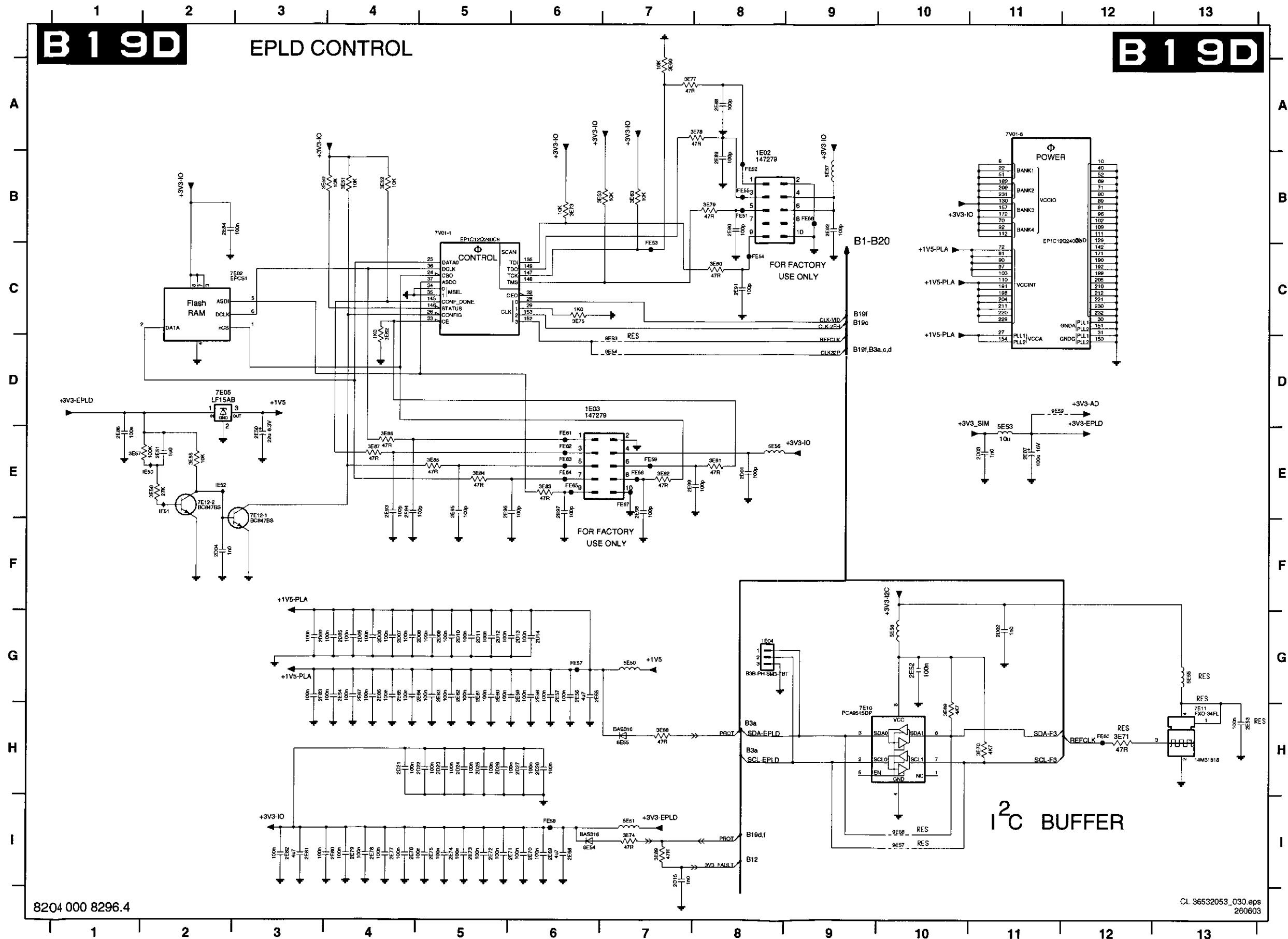
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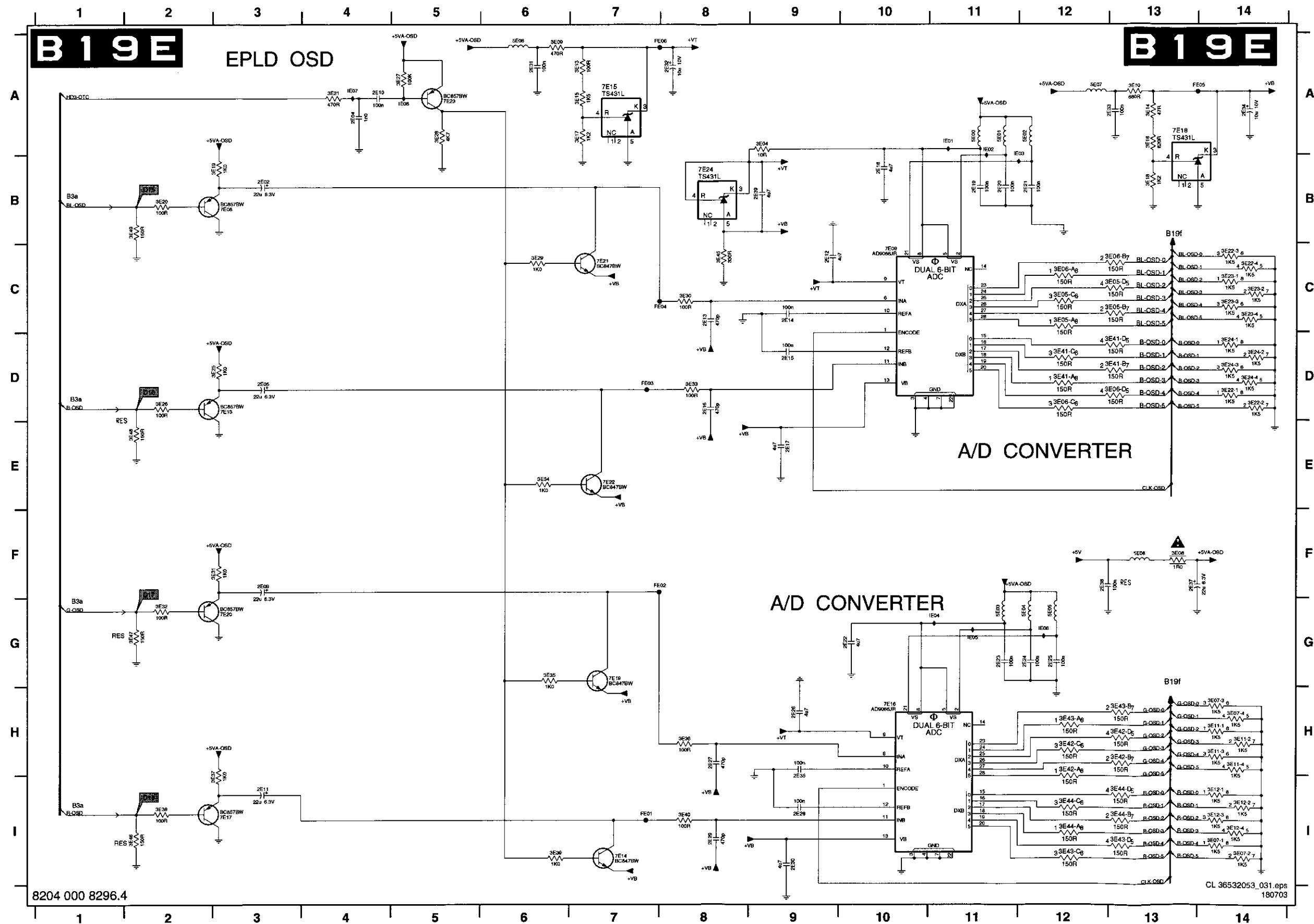
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2D01 E8	7E12-2 E2
2D02 G11	7V01-1 B5
2D03 E11	7V01-6 A11
2D04 F2	9E53 D7
2D05 G4	9E54 D7
2D06 G4	9E57 H0
2D07 G4	9E58 H0
2D08 G5	9E59 D11
2D09 G5	FE51 B8
2D10 G5	FE52 B8
2D11 G5	FE53 C7
2D12 G5	FE54 C8
2D13 G6	FE55 B8
2D14 G6	FE56 E7
2D15 I7	FE57 G6
2D21 H4	FE58 H6
2D22 H5	FE59 E7
2D23 H5	FE60 H12
2D24 H5	FE61 E6
2D25 H5	FE62 E6
2D26 H5	FE63 E6
2D27 H6	FE64 E6
2D28 H6	FE65 E6
2D85 G4	FE66 B9
2E50 E3	FE67 E7
2E51 E2	IE50 E2
2E52 G10	IE51 E2
2E53 H13	
2E54 G4	
2E55 G8	
2E56 G6	
2E57 G6	
2E58 G6	
2E59 G6	
2E60 G5	
2E61 G5	
2E62 G5	
2E63 G5	
2E64 G5	
2E65 G4	
2E66 G4	
2E67 G4	
2E68 H6	
2E69 H6	
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2E71 H6	
2E72 H5	
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2E74 H5	
2E75 H5	
2E76 H4	
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2E92 B9	
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2E98 E7	
2E99 E7	
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3E78 A8	
3E79 B8	
3E80 C8	
3E81 E8	
3E82 E7	
3E83 E6	
3E84 E5	
3E85 E5	
3E86 E4	
3E87 E4	
3E88 H7	
3E89 I7	
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5E51 I7	
5E53 E11	
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6E55 H7	
7E02 C2	

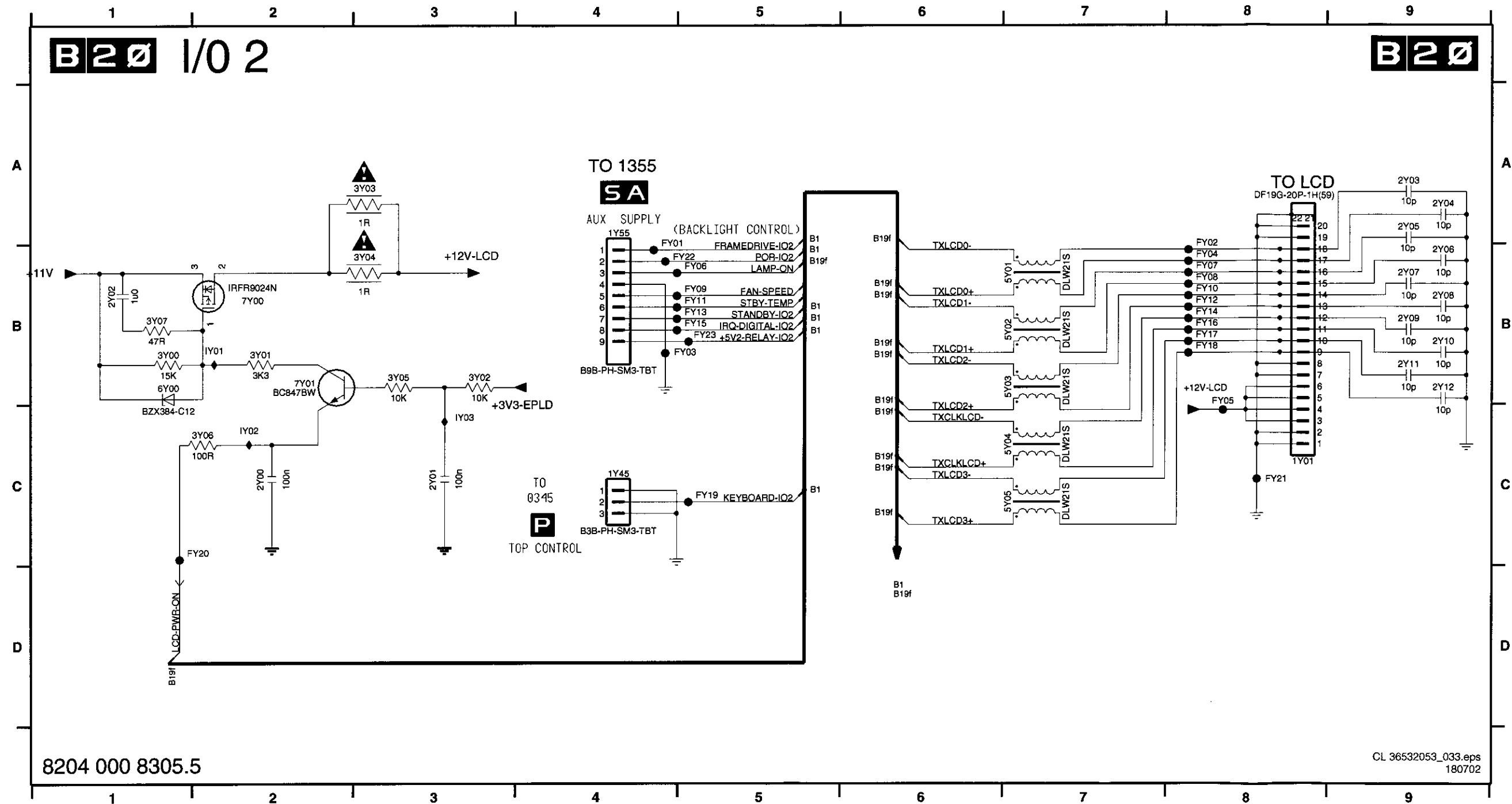
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2E11 I3
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2E13 C8
2E14 C9
2E15 D9
2E16 D8
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2E21 B12
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2E23 G11
2E24 G12
2E25 G12
2E26 H9
2E27 H9
2E28 I9
2E29 I8
2E30 I9
2E31 A6
2E32 A8
2E33 A13
2E34 A14
2E35 H9
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2E38 F12
2E39 B9
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3E05-C C12
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3E06-A C12
3E06-B C13
3E06-C D12
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3E12-4 I14
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3E35 G6
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3E38 I2
3E39 I6
3E40 I8
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3E41-C D12
3E41-D D13
3E42-A H12
3E42-B H13
3E42-C H12
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3E43-B H13
3E43-C H12
3E44-A H12
3E44-B H13
3E44-C H12
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5E02 A12

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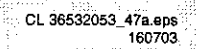
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1Y45 C4	2Y01 C3	2Y04 A9	2Y07 B9	2Y10 B9	3Y00 B1	3Y03 A3	3Y06 C2	5Y02 B7	5Y05 C7	7Y01 B2	FY03 B5	FY06 B5	FY09 B5	FY12 B8	FY15 B5	FY18 B8	FY21 C8	IY01 B2	
1Y55 A4	2Y02 B1	2Y05 A9	2Y08 B9	2Y11 B9	3Y01 B2	3Y04 B3	3Y07 B1	5Y03 B7	6Y00 B1	FY01 B4	FY04 B8	FY07 B8	FY10 B8	FY13 B5	FY16 B8	FY19 C5	FY22 B5	IY02 C2	



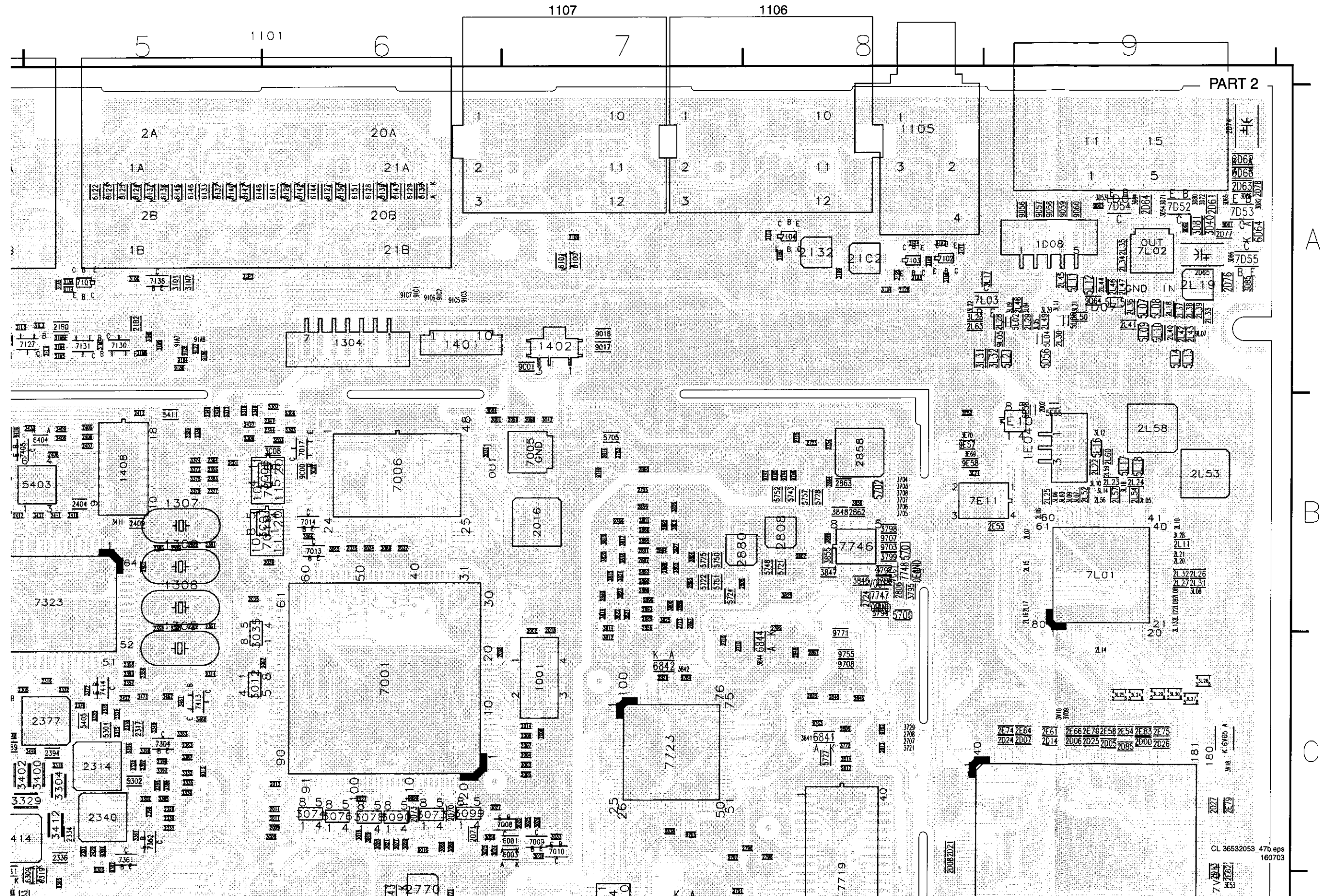
Layout SSB (AA) Mapping (Top Side)

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1304	A6	2332	C5	2755	E6	2A21	D5	2A16	E5	2E86	E9	2195	A2	2P36	D2	3012	C5	3439	B4	3826	B7	3AC8	E5	3H68	E3	3IB0	A8	3P35	D1	3U10	F7	5A03	D4	6834	D6	7013	B6	7118	A2	9764	C7	9PB4	D3
1305	C5	2333	D5	2756	E5	2A22	D4	2A18	E4	2E87	E8	2196	A2	2P37	D2	3018	C6	3442	C4	3827	B7	3C01	B6	3H69	E2	3IC0	A2	3P41	D2	3U11	E8	5A06	E4	6836	E7	7014	B6	7124	B3	9765	C7	9PB5	C2
1306	B5	2334	C5	2763	D7	2A23	E4	2A19	E4	2E88	F9	2197	A2	2P38	D2	3019	C6	3443	C4	3829	B8	3C03	B6	3H70	E2	3IC9	A2	3P42	D2	3U13	F7	5A16	E4	6838	D8	7017	B6	7126	A4	9766	B7	9S01	C4
1307	B5	2336	C5	2764	E6	2A25	E4	2A1A	E5	2E89	F9	2198	A2	2P39	C2	3020	C6	3444	C4	3832	E6	3C06	B6	3H75	E2	3ID3	A2	3P43	D2	3U14	E8	5A17	E4	6839	E7	7018	B6	7127	A5	9771	C8	9S02	C4
1308	B5	2339	B5	2767	E7	2A26	D4	2AM0	E4	2E90	F9	21A6	B3	2P40	C2	3021	C6	3447	C4	3833	E6	3C07	B5	3H76	E2	3I18	A2	3P44	D1	3U15	F7	5A18	E4	6840	D7	7019	B6	7130	A5	9772	D7	9S03	C4
1401	A6	2340	C5	2770	D6	2A27	D5	2AM1	E4	2E91	F9	21A9	A4	2P41	C2	3024	C6	3448	C4	3834	D6	3C08	B6	3H80	E2	3I19	B2	3P61	C3	3U16	F7	5A19	D5	6841	C8	7304	C5	7131	A5	9A04	D5	9S04	B4
1402	A7	2344	B6	2771	D6	2A29	E5	2AM2	E4	2E92	F9	21B0	A5	2P42	C2	3025	C7	3449	C5	3835	E6	3C09	C6	3H81	E2	3I10	A3	3P77	D2	3U17	F7	5A23	E4	6842	C7	7320	B4	7135	B3	9A05	D5	9S05	B4
1403	B4	2347	B6	2772	D6	2A30	D4	2AM3	E5	2E93	F9	21B2	A5	2P44	D2	3026	C7	3460	C5	3836	E7	3D40	A9	3H83	E2	3I11	A3	3P78	D2	3U18	F7	5A24	E4	6843	D6	7323	C4	7136	B3	9A06	D5	9S06	B4
1408	B5	2348	B5	2774	E6	2A31	E4	2AM5	E4	2E94	F9	21C2	A8	2P50	C2	3027	C6	3461	C5	3838	D8	3D53	A9	3H84	E2	3I10	B2	3P90	C2	3U19	F7	5A37	D4	6844	C8	7340	D4	7137	B3	9A60	E5	9S07	B4
1702	D6	2349	B5	2776	D8	2A32	E5	2AM6	E4	2E95	F9	21C7	A3	2P80	C3	3033	C7	3462	C5	3839	E7	3D54	A9	3H85	E2	3I18	B3	3P91	C2	3U20	F7	5A38	F3	6847	D7	7361	D5	7138	A5	9A61	D5	9S08	B4
1D01	A9	2350	C4	2780	E7	2A33	E5	2AM7	E5	2E96	F9	21C8	A3	2P81	B3	3035	B5	3472	D4	3840	D7	3D65	A9	3H92	E2	3I10	A4	3P93	C3	3U21	F6	5A60	E4	6A00	D4	7362	C5	7L01	B9	9A65	E4	9S09	C4
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1I13	B3	2367	B4	2807	B8	2A50	D5	2D07	C9	2H21	E2	2115	B9	2PB8	C3	3084	B6	3715	D5	3A01	D5	3E21	E9	3HB1	D1	3I17	A5	3PB4	D2	3V09	C9	5H12	E1	6117	A3	7711	E6	7PA4	D3	9105	A2	9S24	C4
1I14	B3	2368	B4	2808	B8	2A51	E5	2D08	C8	2H25	E2	2116	B9	2PB9	C3	3089	B6	3716	D6	3A02	D5	3E25	E9	3HB2	D1	3I10	B3	3PB5	D3	3V10	C9	5H13	E2	6118	A4	7715	E6	7PA5	D2	9106	A2	9S25	C4
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1I70	F5	2376	C5	2811	C8	2A53	E5	2D10	D9	2H27	E2	2118	A9	2PC1	D3	3091	B6	3718	D5	3A05	E5	3E27	E9	3HB4	E1	3I12	B2	3PB7	D2	3V12	E9	5H17	E3	6120	A4	7719	D8	7PA7	D3	9110	B2	9S27	C4
1P00	D2	2377	C5	2813	C8	2A54	D5	2D11	D9	2H28	E2	2119	A9	2PC2	C3	3099	C6	3719	D6	3A06	E5	3E28	E9	3HB5	E2	3I13	A5	3PB8	C2	3V17	E9	5H18	E1	6121	A4	7723	C7	7PA8	C3	9112	B3	9S28	C4
1P01	C2	2379	B5	2814	B7	2A55	D4	2D12	D9	2H29	E2	2120	B9	2PC3	C3	3301	B4	3720	E6	3A08	D5	3E29	E9	3HB6	E2	3I14	B2	3PB9	D2	3V18	C9	5I01	B2	6122	A5	7725	D6	7PA9	D3	9114	A5	9S29	C4
1P02	C2	2380	B5	2817	C8	2A56	E5	2D13	D9	2H30	E2	2121	B9	2PC4	C3	3302	C5	3721	C8	3A09	D5	3E30	E9	3HB7	E2	3I15	B3	3PB1	C3	3Y00	F7	5L02	A9	6123	A5	7727	D6	7PB0	D2	9117	B3	9S30	B4
1P03	C2	2381	B5	2823	E5	2A57	E4	2D14	C9	2H31	E2	2122	B9	2PC5	C3	3304	C5	3725	D6	3A11	D5	3E31	E9	3HB8	E2	3I16	B3	3PB2	D3	3Y01	F7	5L04	A9	6124	A5	7742	D7	7PB1	C2	9126	A5	9S31	D4
1P06	C2	2382	B5	2825	C8	2A58	D4	2D21	C8	2H32	E1	2123	B9	2PC6	B3	3306	C4	3726	D5	3A12	E5	3E32	E9	3HE1	D2	3I17	B3	3PB3	D3	3Y02	F8	5L06	A9	6125	A5	7744	D7	7PB2	D3	9127	A5	9S32	D4
1P10	C2	2383	B5	2829	C7	2A59	E5	2D23	D8	2H33	E2	2124	B9	2PC7	C2	3317	C4	3727	D6	3A13	E4	3E33	E9	3HE2	D2	3I19	A3	3PB4	D3	3Y03	F7	5L07	A9	6126	A6	7746	B8	7PB3	C2	9132	A2	9S33	D4
1P11	C2	2388	C4	2831	E6	2A60	E4	2D24	C9	2H34	E1	2125	B9	2PC8	C2	3318	C5	3728	D5	3A14	D4	3E34	E9	3HE3	D2	3I10	A5	3PB5	D3	3Y04	F7	5L08	A9	6									

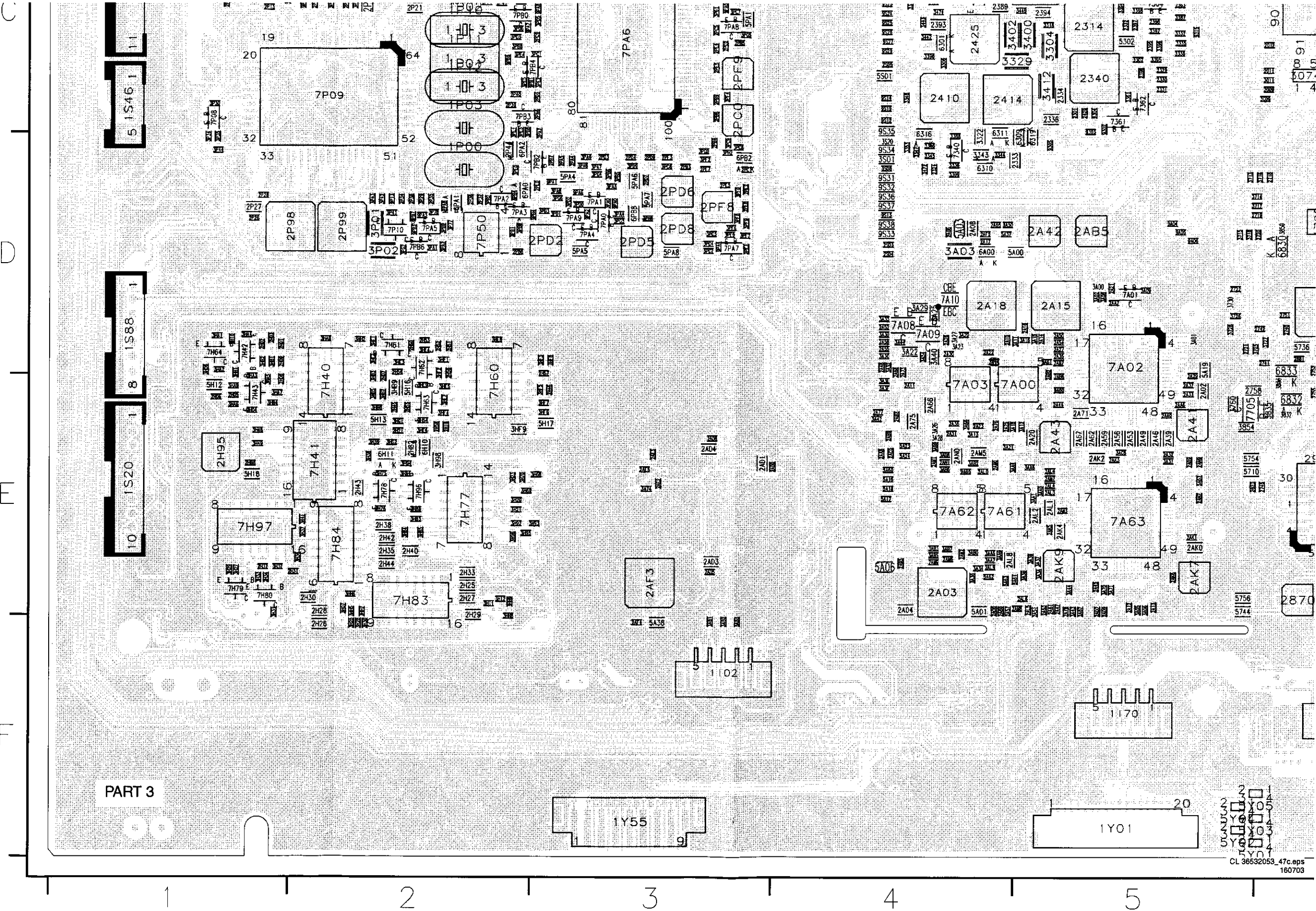
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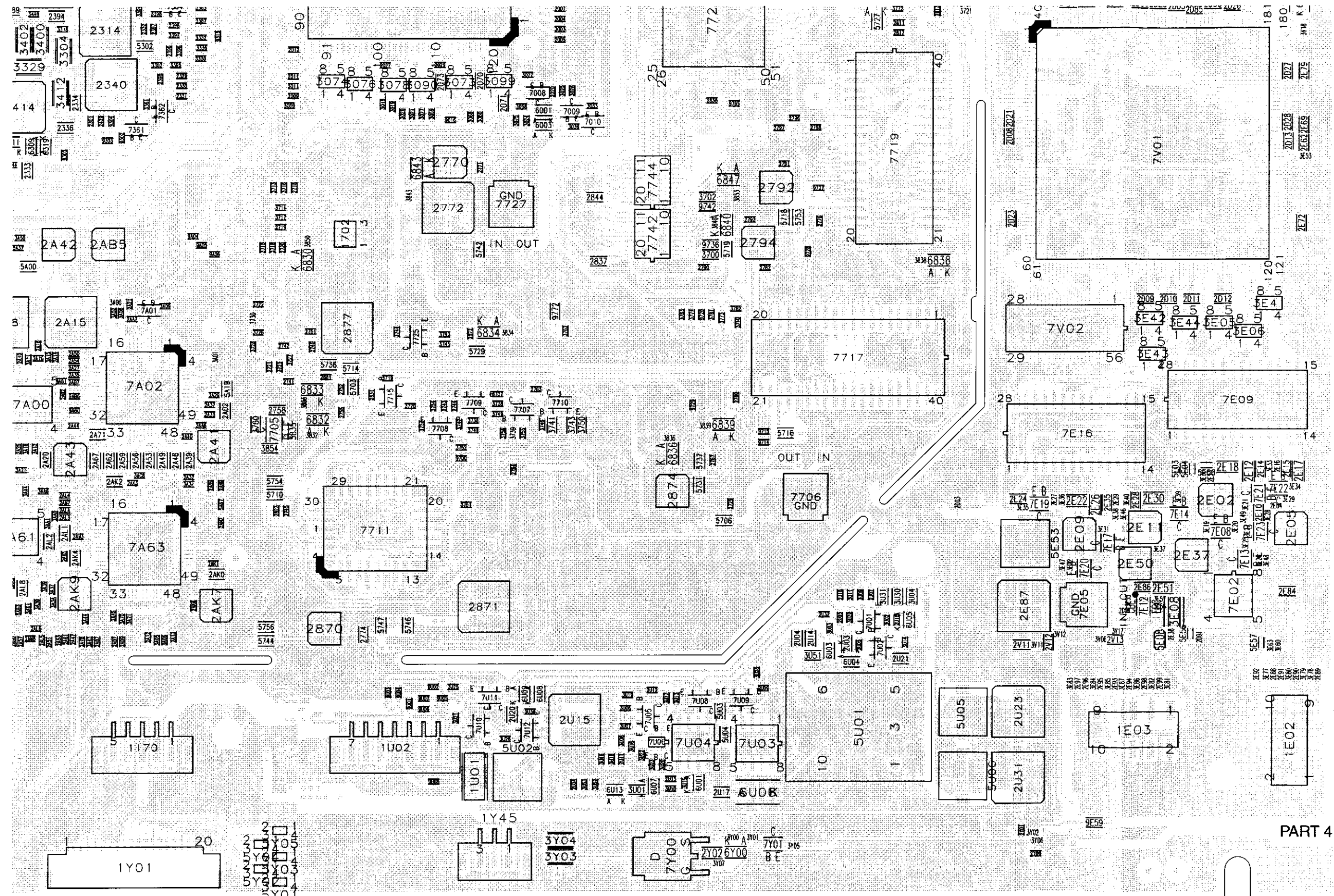
Layout SSB (AA) (Top Side Part 2)



Layout SSB (AA) (Top Side Part 3)



Layout SSB (AA) (Top Side Part 4)



PART 4

The figure displays four detailed PCB layout diagrams, labeled PART 1, PART 2, PART 3, and PART 4, arranged in a 2x2 grid. Each diagram shows component footprints, dimensions, and grid coordinates.

PART 1: CL 36532053_48a.eps

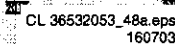
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Components: 7057, 7051, 7059, 7007, 7012, 7013, 7011, 7010, 7009, 7008, 7007, 7006, 7005, 7004, 7003, 7002, 7001, 7000, 6999, 6998, 6997, 6996, 6995, 6994, 6993, 6992, 6991, 6990, 6989, 6988, 6987, 6986, 6985, 6984, 6983, 6982, 6981, 6980, 6979, 6978, 6977, 6976, 6975, 6974, 6973, 6972, 6971, 6970, 6969, 6968, 6967, 6966, 6965, 6964, 6963, 6962, 6961, 6960, 6959, 6958, 6957, 6956, 6955, 6954, 6953, 6952, 6951, 6950, 6949, 6948, 6947, 6946, 6945, 6944, 6943, 6942, 6941, 6940, 6939, 6938, 6937, 6936, 6935, 6934, 6933, 6932, 6931, 6930, 6929, 6928, 6927, 6926, 6925, 6924, 6923, 6922, 6921, 6920, 6919, 6918, 6917, 6916, 6915, 6914, 6913, 6912, 6911, 6910, 6909, 6908, 6907, 6906, 6905, 6904, 6903, 6902, 6901, 6900, 6899, 6898, 6897, 6896, 6895, 6894, 6893, 6892, 6891, 6890, 6889, 6888, 6887, 6886, 6885, 6884, 6883, 6882, 6881, 6880, 6879, 6878, 6877, 6876, 6875, 6874, 6873, 6872, 6871, 6870, 6869, 6868, 6867, 6866, 6865, 6864, 6863, 6862, 6861, 6860, 6859, 6858, 6857, 6856, 6855, 6854, 6853, 6852, 6851, 6850, 6849, 6848, 6847, 6846, 6845, 6844, 6843, 6842, 6841, 6840, 6839, 6838, 6837, 6836, 6835, 6834, 6833, 6832, 6831, 6830, 6829, 6828, 6827, 6826, 6825, 6824, 6823, 6822, 6821, 6820, 6819, 6818, 6817, 6816, 6815, 6814, 6813, 6812, 6811, 6810, 6809, 6808, 6807, 6806, 6805, 6804, 6803, 6802, 6801, 6800, 6799, 6798, 6797, 6796, 6795, 6794, 6793, 6792, 6791, 6790, 6789, 6788, 6787, 6786, 6785, 6784, 6783, 6782, 6781, 6780, 6779, 6778, 6777, 6776, 6775, 6774, 6773, 6772, 6771, 6770, 6769, 6768, 6767, 6766, 6765, 6764, 6763, 6762, 6761, 6760, 6759, 6758, 6757, 6756, 6755, 6754, 6753, 6752, 6751, 6750, 6749, 6748, 6747, 6746, 6745, 6744, 6743, 6742, 6741, 6740, 6739, 6738, 6737, 6736, 6735, 6734, 6733, 6732, 6731, 6730, 6729, 6728, 6727, 6726, 6725, 6724, 6723, 6722, 6721, 6720, 6719, 6718, 6717, 6716, 6715, 6714, 6713, 6712, 6711, 6710, 6709, 6708, 6707, 6706, 6705, 6704, 6703, 6702, 6701, 6700, 6699, 6698, 6697, 6696, 6695, 6694, 6693, 6692, 6691, 6690, 6689, 6688, 6687, 6686, 6685, 6684, 6683, 6682, 6681, 6680, 6679, 6678, 6677, 6676, 6675, 6674, 6673, 6672, 6671, 6670, 6669, 6668, 6667, 6666, 6665, 6664, 6663, 6662, 6661, 6660, 6659, 6658, 6657, 6656, 6655, 6654, 6653, 6652, 6651, 6650, 6649, 6648, 6647, 6646, 6645, 6644, 6643, 6642, 6641, 6640, 6639, 6638, 6637, 6636, 6635, 6634, 6633, 6632, 6631, 6630, 6629, 6628, 6627, 6626, 6625, 6624, 6623, 6622, 6621, 6620, 6619, 6618, 6617, 6616, 6615, 6614, 6613, 6612, 6611, 6610, 6609, 6608, 6607, 6606, 6605, 6604, 6603, 6602, 6601, 6600, 6599, 6598, 6597, 6596, 6595, 6594, 6593, 6592, 6591, 6590, 6589, 6588, 6587, 6586, 6585, 6584, 6583, 6582, 6581, 6580, 6579, 6578, 6577, 6576, 6575, 6574, 6573, 6572, 6571, 6570, 6569, 6568, 6567, 6566, 6565, 6564, 6563, 6562, 6561, 6560, 6559, 6558, 6557, 6556, 6555, 6554, 6553, 6552, 6551, 6550, 6549, 6548, 6547, 6546, 6545, 6544, 6543, 6542, 6541, 6540, 6539, 6538, 6537, 6536, 6535, 6534, 6533, 6532, 6531, 6530, 6529, 6528, 6527, 6526, 6525, 6524, 6523, 6522, 6521, 6520, 6519, 6518, 6517, 6516, 6515, 6514, 6513, 6512, 6511, 6510, 6509, 6508, 6507, 6506, 6505, 6504, 6503, 6502, 6501, 6500, 6499, 6498, 6497, 6496, 6495, 6494, 6493, 6492, 6491, 6490, 6489, 6488, 6487, 6486, 6485, 6484, 6483, 6482, 6481, 6480, 6479, 6478, 6477, 6476, 6475, 6474, 6473, 6472, 6471, 6470, 6469, 6468, 6467, 6466, 6465, 6464, 6463, 6462, 6461, 6460, 6459, 6458, 6457, 6456, 6455, 6454, 6453, 6452, 6451, 6450, 6449, 6448, 6447, 6446, 6445, 6444, 6443, 6442, 6441, 6440, 6439, 6438, 6437, 6436, 6435, 6434, 6433, 6432,

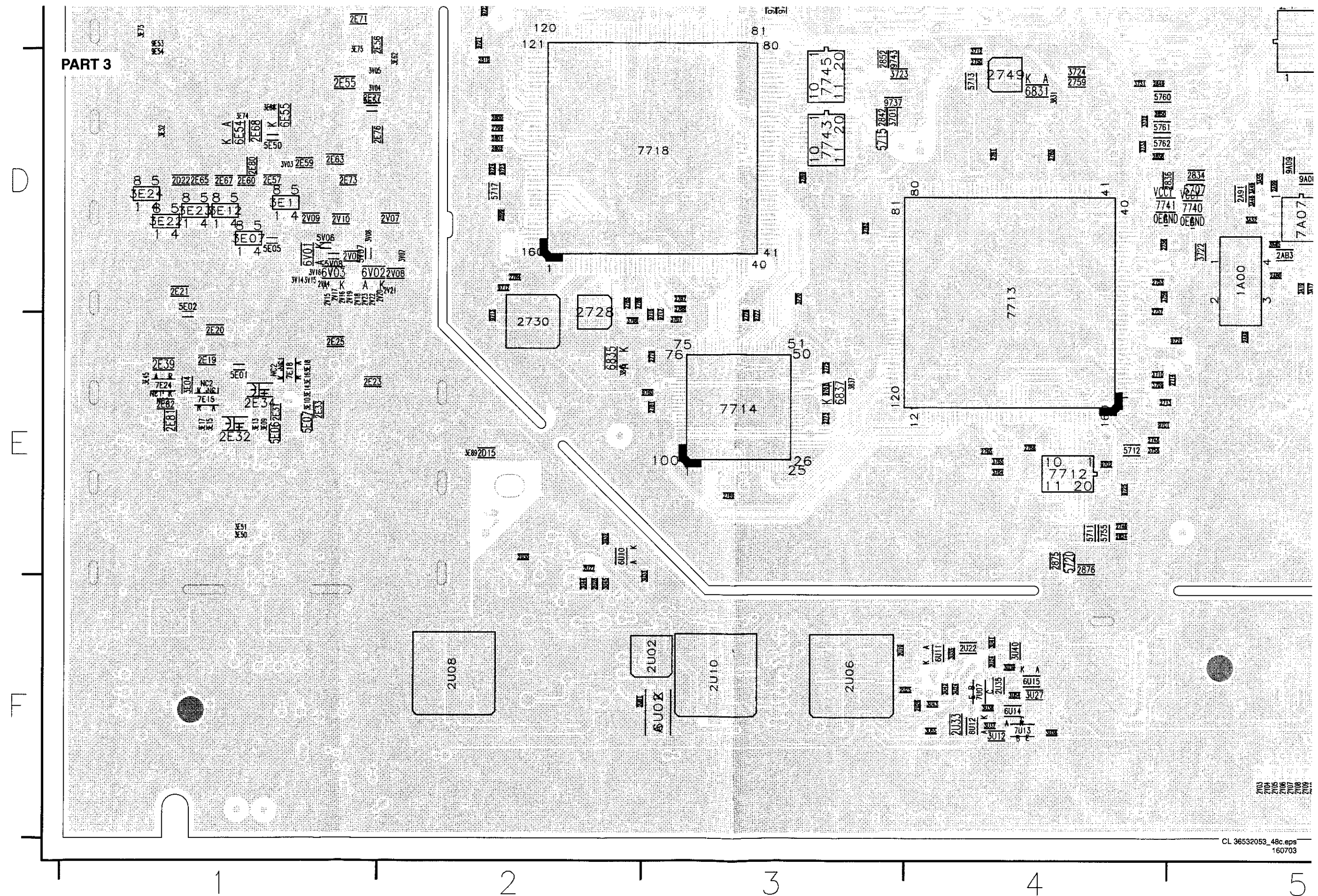
Layout SSB (AA) Mapping (Bottom Side)

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1305	C5	2342	D6	2820	C2	2D51	A1	2111	A7	2P56	D7	2S44	C6	3042	C4	3405	B6	3A77	E7	3H52	E7	3I67	A4	3IN8	B7	3PH9	D7	5E02	D1	6I90	A3	7A31	E7	9702	E4	9P52	C7
1306	B5	2343	C6	2821	C2	2D52	A1	2112	A7	2P57	C7	2S45	B6	3045	B3	3407	B5	3A78	E7	3H53	E8	3I68	A4	3IN9	B7	3S02	E9	5E05	D1	6I91	A3	7D51	A1	9709	C3	9P53	C7
1307	B5	2345	B5	2822	C2	2D53	A1	2113	A7	2P58	C7	2S46	B6	3046	B3	3408	B5	3A84	F7	3H54	E7	3I69	A5	3IO5	A3	3S03	E9	5E06	E1	6I92	A3	7D57	A1	9712	D2	9P54	D7
1308	B5	2346	B4	2824	E4	2D54	A1	2114	A7	2P59	C7	2S47	E9	3048	B4	3410	B5	3AA2	E6	3H55	E8	3I70	A5	3IO6	A3	3S04	F6	5E07	E1	6I93	A3	7D59	A1	9713	E2	9P55	C8
1406	B6	2354	C6	2826	C3	2D55	A1	2115	A7	2P60	C7	2S48	E9	3049	C4	3414	B5	3C00	B5	3H56	E8	3I71	A5	3IP8	A7	3S05	E6	5E50	D1	6I94	A3	7E15	E1	9716	E3	9P56	C8
1407	B6	2366	B6	2827	C3	2D57	A1	2116	A5	2P61	C7	2S49	E9	3050	B4	3415	B5	3C04	B5	3H57	E8	3I72	A5	3IR0	B8	3S06	D6	5E51	D1	6I95	A3	7E18	E1	9717	E3	9P57	C8
1409	B5	2369	C6	2828	C3	2D58	A1	2117	A5	2P62	C7	2S50	E9	3051	B4	3417	B5	3C05	B5	3H59	E7	3I73	A5	3IR1	B8	3S07	D6	5H14	E8	6I96	A3	7E24	E1	9721	C2	9P58	C8
1410	B5	2370	C6	2830	B3	2D59	A1	2118	A5	2P63	D7	2S51	E9	3052	B4	3419	B6	3C10	B5	3H60	E7	3I74	A5	3IR2	B8	3S11	E9	5H15	E8	6I97	A3	7H50	E8	9722	C2	9P59	C9
1411	B5	2371	B5	2832	C3	2D60	A1	2119	A5	2P64	D7	2S52	E9	3053	C4	3420	B5	3C11	C4	3H62	E8	3I75	A4	3IR3	B8	3S12	E9	5H19	F8	6I98	A3	7H51	D8	9723	D2	9P60	C8
1A00	D5	2372	B5	2833	C3	2D62	A1	2120	A5	2P65	D8	2S53	E9	3054	B4	3421	B5	3D41	A1	3H63	E8	3I76	A4	3IR4	B8	3S13	E9	5P05	C9	6I99	A3	7H52	D8	9724	D2	9P63	C7
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1I01	A4	2378	B5	2836	D4	2D68	A1	2123	A5	2P68	D7	2T03	B8	3057	B3	3441	B5	3D44	A1	3H66	E9	3I79	A5	3IR8	B7	3S19	E9	5P10	D8	6IA7	A6	7H73	E8	9737	D3	9P69	C7
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1P11	C8	2703	B2	2885	B3	2E57	D1	2I57	A3	2P91	D9	2U19	F3	3095	C4	3709	E4	3D64	A1	3HB8	D9	3IA1	A6	3P15	C8	3U45	F2	6005	B3	6U11	F4	7I50	B7	9E54	D1	9T14	A9
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1P50	C8	2705	B2	2A01	D6	2E60	D1	2I79	A7	2P93	C9	2U24	F4	3097	B3	3711	C3	3D68	A1	3HC2	D8	3IA3	A2	3P21	C8	3U55	F4	6304	C6	6U14	F4	7P03	C8	9I01	B7	9T16	A9
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1T02	A9	2726	C3	2A64	D5	2E76	D1	2IA3	A7	2PA2	C7	2U35	F4	3307	C5	3733	D4	3D88	A1	3HC9	E8	3IC1	A8	3P36	C9	3V15	D1	6317	C6	7004	C4	7P53	C7	9I13	A8		
2000	E6	2727	B3	2A69	D6	2E77	D1	2IA4	A6	2PA3	C7	2V06	D1	3308	C6	3758	E4	3D89	A1	3HD1	D7	3IC2	A5	3P37	C8	3V16	D1	6334	C5	7007	B4	7P54	D7	9I15	A5		
2001	E6	2728	E2	2A70	D6	2E78	C1	2IA5	B8	2PA9	C7	2V07	D2	3310	C5	3759	D4	3D90	A1	3HD2	E7																

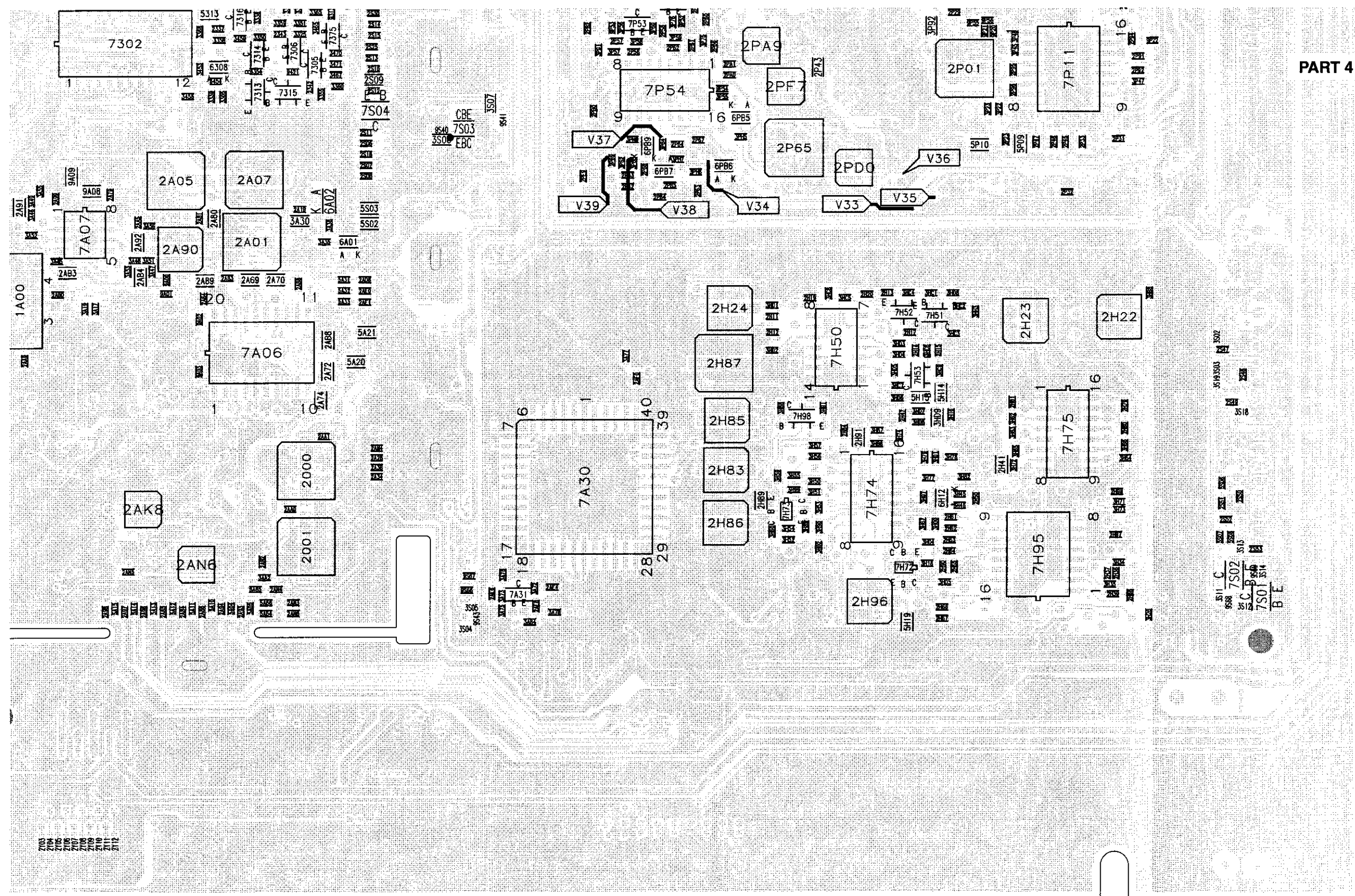
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PART 3

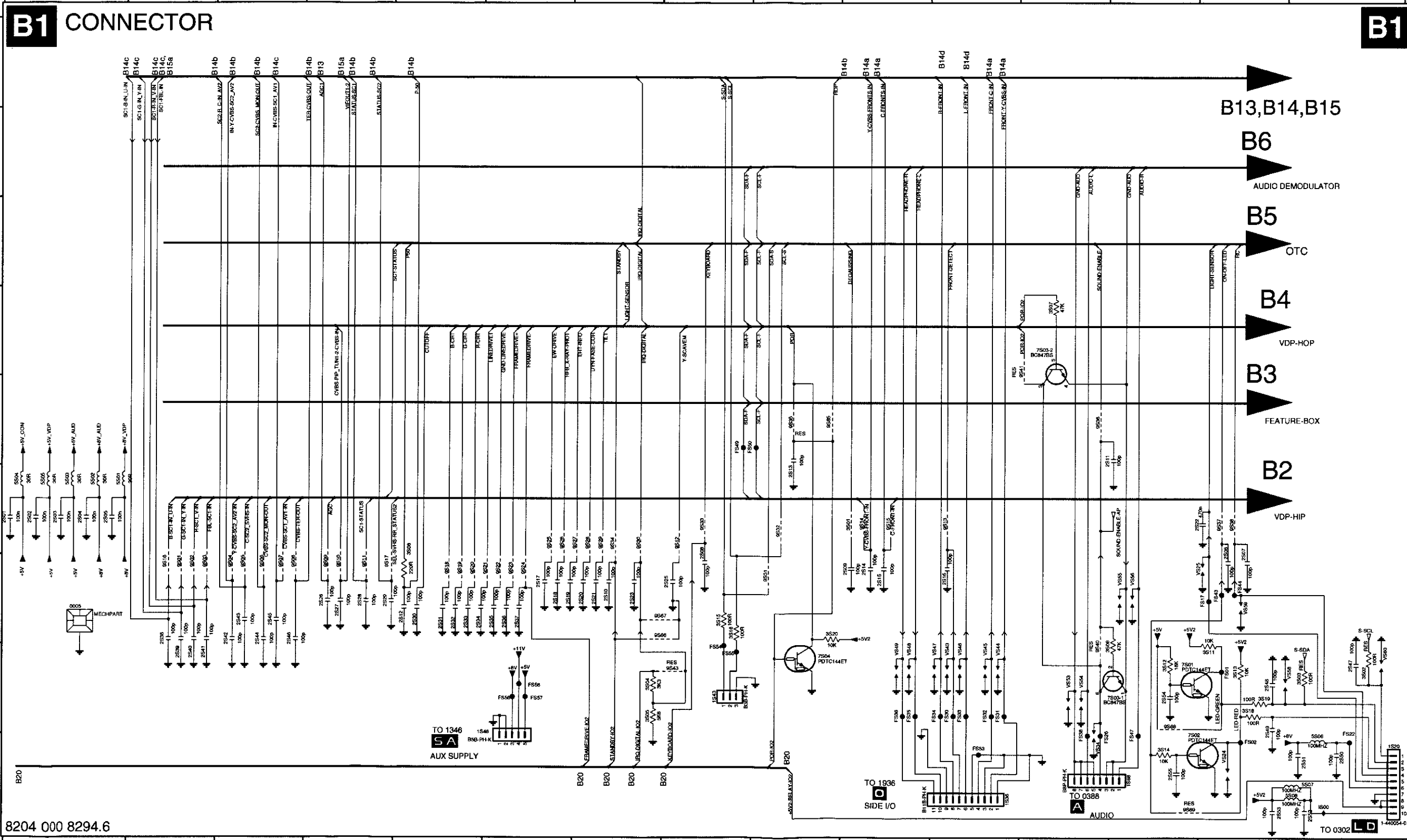


Layout SSB (AA) (Bottom Side Part 4)



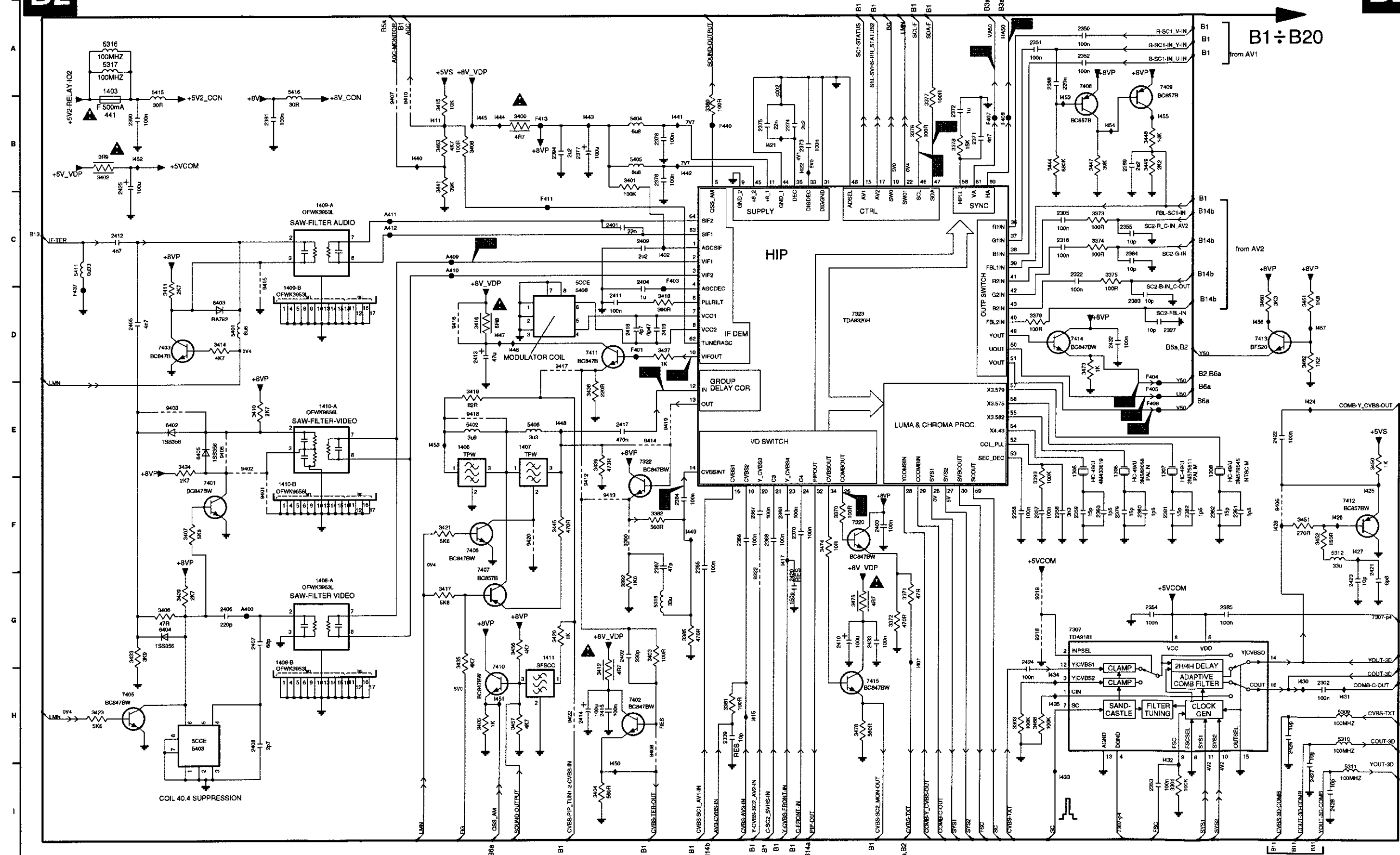
SSB (AB): Connector

0005 G1	2501 F1	2507 F14	2513 F9	2519 G6	2526 G4	2532 G5	2538 G2	2544 G3	2550 I15	3501 F10	3507 D12	3515 G8	5502 F1	5508 I15	9501 G2	9507 G3	9513 F11	9519 G5	9525 F6	9531 G9	9537 F14	9566 G7	FS17 G14	FS39 H11	FS44 G14	FS55 H8	VS25 G14	VS47 H11	VS56 G13
1520 I15	2502 F1	2508 F6	2514 G10	2520 G7	2527 G4	2533 G5	2539 H2	2545 G3	2551 I15	3502 H15	3508 F5	3516 G6	5503 F1	7501 H13	9502 G2	9508 G9	9514 F10	9520 G5	9526 F6	9532 F9	9538 F14	9567 G7	FS22 H15	FS34 H11	FS47 I13	FS56 H6	VS34 I12	VS48 H10	VS58 H14
1536 I11	2503 F1	2509 G10	2515 G10	2521 G7	2528 G4	2534 G5	2540 H2	2546 G3	2552 I15	3503 H15	3511 H14	3518 H14	5504 F1	7502 I13	9503 G2	9509 G4	9515 F10	9521 G6	9527 F7	9533 F8	9540 H12	9568 H13	FS26 I12	FS35 H10	FS49 E8	FS57 H6	VS43 H11	VS49 H10	VS59 G14
1543 H8	2504 F1	2510 G7	2516 G11	2522 F14	2529 G4	2535 G6	2541 H2	2547 H15	2553 I14	3504 H7	3512 H13	3519 H14	5505 F1	7503-1 H13	9504 G3	9510 G4	9516 G2	9522 G6	9528 F7	9534 F8	9541 D12	9569 I13	FS30 H11	FS36 H10	FS50 E8	FS58 H6	VS44 H11	VS53 H12	VS60 H15
1546 H6	2505 F1	2511 E12	2517 G6	2523 G7	2530 G5	2536 G6	2542 G3	2548 H14	2554 H13	3505 H7	3513 H14	3520 G9	5506 I15	7503-2 D12	9505 G3	9511 G4	9517 G4	9523 G6	9529 F7	9535 E9	9543 H8	9561 H14	FS31 H11	FS38 I12	FS53 I11	FS59 H6	VS45 H11	VS54 H12	
1588 I13	2506 F14	2512 G5	2518 G6	2525 G8	2531 G5	2537 G6	2543 G3	2549 H14	2555 I13	3506 H13	3514 I13	3501 F1	5507 I15	7504 H9	9506 G3	9512 F8	9518 G5	9524 G6	9530 F7	9536 E12	9565 E9	FS32 H11	FS43 G14	FS54 H8	VS24 I14	VS46 H11	VS55 G13		



SSB (AB): IF, I/O Videoprocessing

B2 IF, I/O VIDEOPROCESSING



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B2

1305 E11 3460 D13
1306 E12 3461 D14
1307 E12 3462 D14
1308 E13 3463 D5
1403 A1 3468 H11
1406 E5 3473 D11
1407 E5 3474 F9
1408 A13 3475 G8
1408 B13 3476 H8
1409 A13 3477 H14
1410 A13 3478 F14
1411 D6 3479 A1
2302 H14 3480 G7
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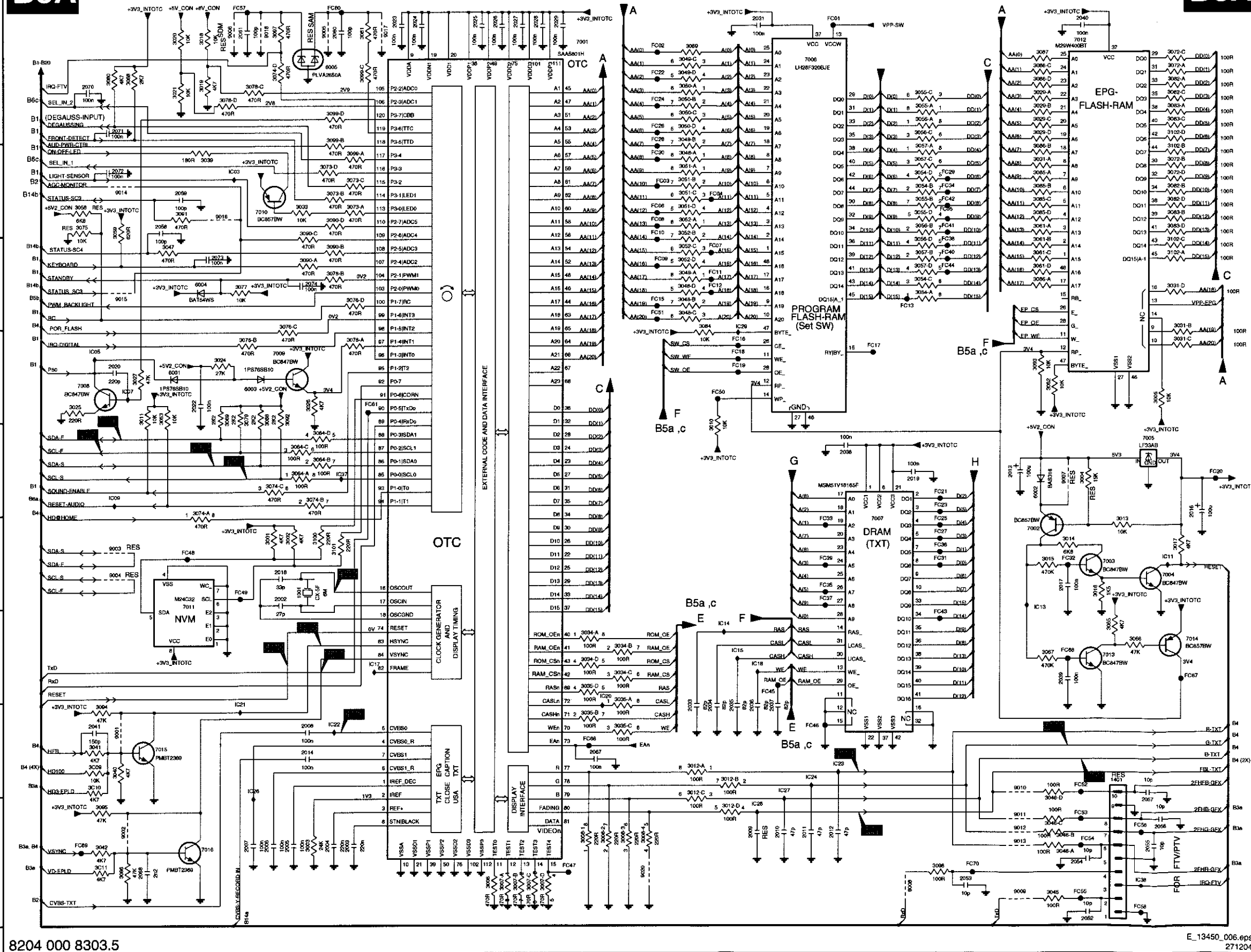


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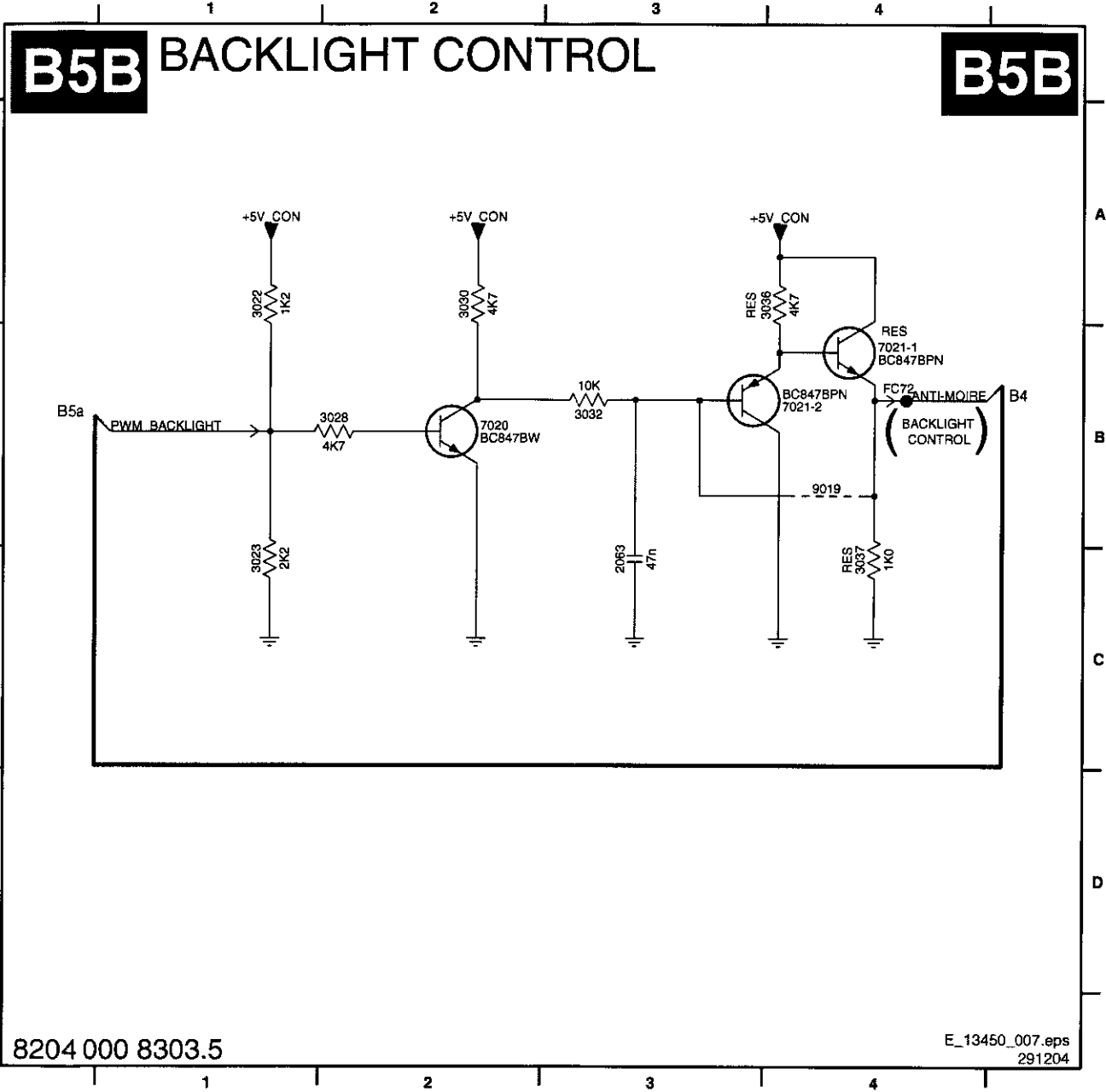
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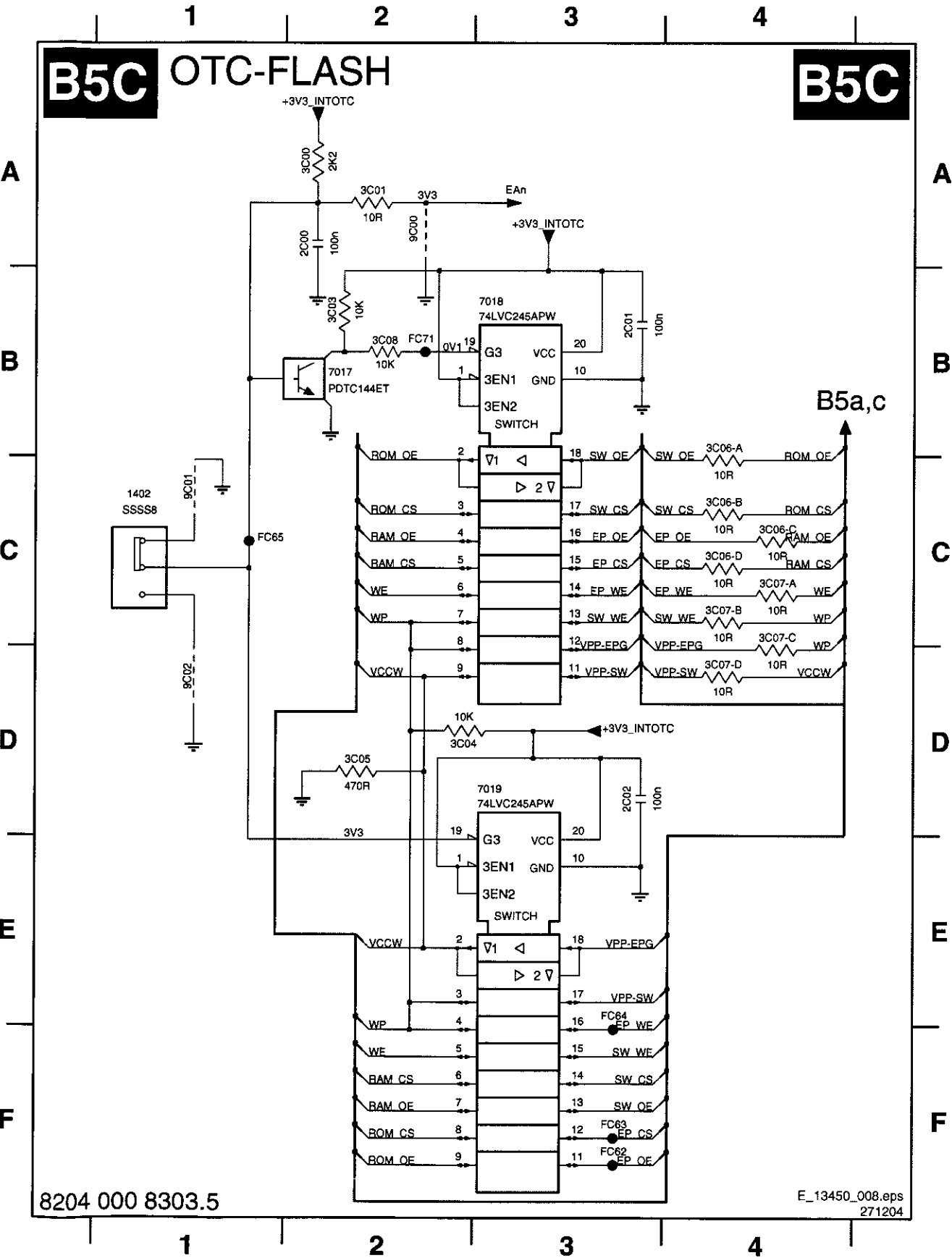
SSB (AB): Backlight Control

2063 C3 3023 C1 3030 A2 3036 A4 7020 B2 7021-2 B4 FC72 B4
3022 A1 3028 B2 3032 B3 3037 C4 7021-1 B4 9019 B4

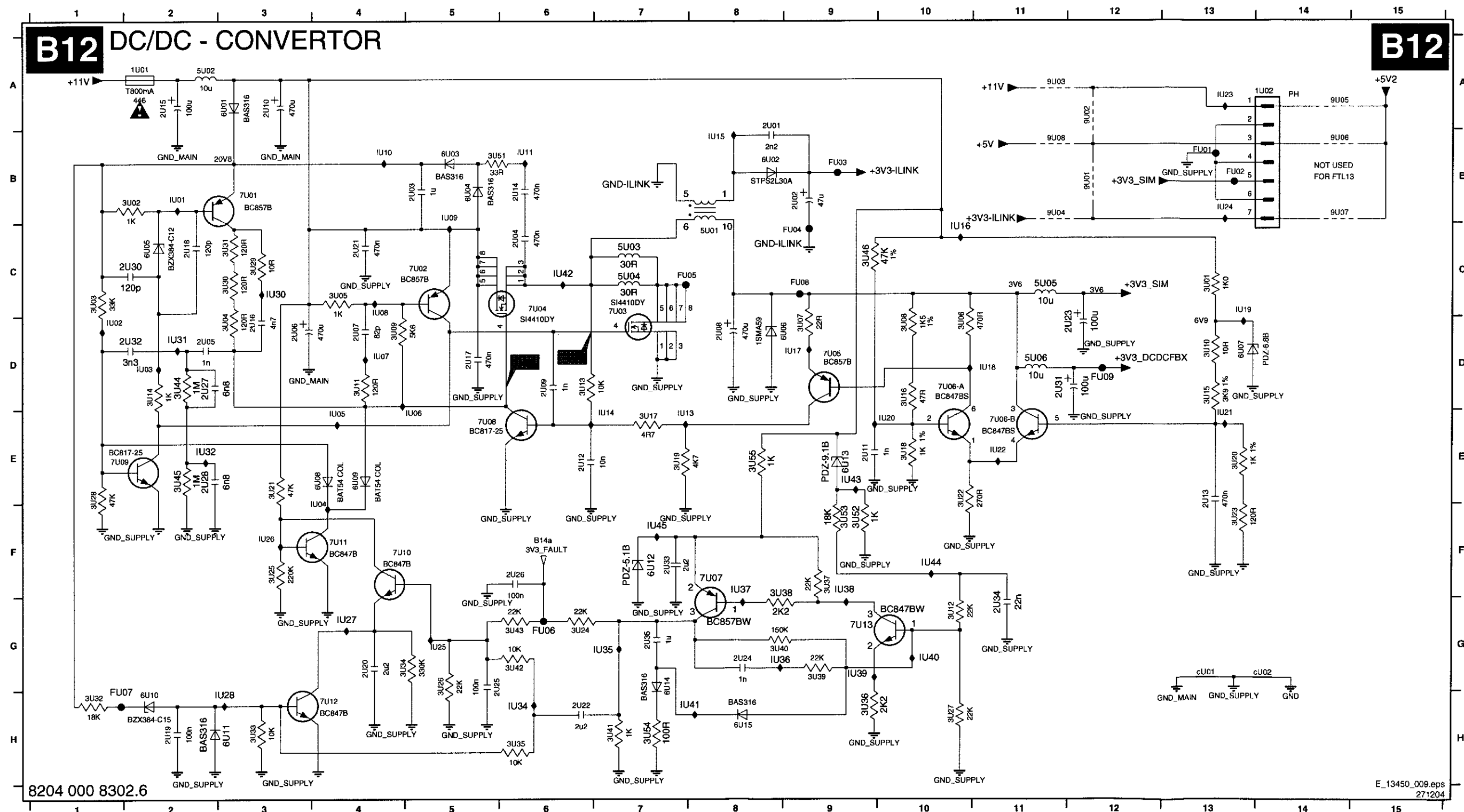


SSB (AB): OTC-Flash

1402 C1 2C02 D3 3C03 B2 3C06-A B4 3C06-D C4 3C07-C C4 7017 B2 9C00 A2 FC62 F3 FC65 C1
2C00 A2 3C00 A2 3C04 D2 3C06-B C4 3C07-A C4 3C07-D D4 7018 B3 9C01 C1 FC63 F3 FC71 B2
2C01 B3 3C01 A2 3C05 D2 3C06-C C4 3C07-B C4 3C08 B2 7019 D3 9C02 D1 FC64 E3



1U01 A2	2U07 D4	2U15 A2	2U23 D12	2U32 D2	3U05 C4	3U13 D6	3U21 E3	3U29 C3	3U37 F9	3U45 E2	5U02 A2	6U04 B5	6U12 F7	7U05 D9	7U12 H4	9U07 B14	FU07 H1	IU06 E5	IU15 B8	IU23 A13	IU32 E2	IU41 H8
1U02 A13	2U08 D8	2U16 D3	2U24 G8	2U33 F7	3U06 D10	3U14 D2	3U22 E10	3U30 C3	3U38 F8	3U46 C9	5U03 C7	6U05 C2	6U13 E9	7U06-A D10	7U13 G9	9U08 B11	FU08 C9	IU07 D4	IU16 C10	IU24 B13	IU34 H6	IU42 C8
1U01 A8	2U09 D6	2U17 D5	2U25 G5	2U34 G11	3U07 D9	3U15 D13	3U23 F13	3U31 C3	3U39 G9	3U51 B5	5U04 C7	6U06 D8	6U14 G7	7U06-B E11	9U01 B12	FU01 B13	FU09 D12	IU08 C4	IU17 D9	IU25 G5	IU35 G7	IU43 E9
2U02 B9	2U10 A3	2U18 C2	2U26 F6	2U35 G7	3U08 D10	3U16 D10	3U24 G6	3U32 H1	3U40 G8	3U52 F9	5U05 C11	6U07 D13	6U15 H8	7U07 F8	9U02 A12	FU02 B13	IU01 B2	IU09 B5	IU18 D11	IU26 F3	IU36 G8	IU44 F10
2U03 B5	2U11 E9	2U19 H2	2U27 D2	3U01 C13	3U09 D4	3U17 E7	3U25 F3	3U33 H3	3U41 H7	3U53 F9	5U06 D11	6U08 E4	7U01 B3	7U08 E5	9U03 A11	FU03 B9	IU02 D1	IU10 B4	IU19 C13	IU27 G4	IU37 F8	IU45 F7
2U04 C6	2U12 E6	2U20 G4	2U28 E2	3U02 B2	3U10 D13	3U18 E10	3U26 G5	3U34 G5	3U42 G6	3U54 H7	6U01 A3	6U09 E4	7U02 C5	7U09 E1	9U04 B11	FU04 C9	IU03 D2	IU11 B6	IU20 E10	IU28 H3	IU38 F9	cU01 G13
2U05 D2	2U13 E13	2U21 C4	2U30 C2	3U03 C1	3U11 D4	3U19 E7	3U27 H10	3U35 H6	3U43 G6	3U55 E8	6U02 B8	6U10 H2	7U03 C7	7U10 F5	9U05 A14	FU05 C7	IU04 E4	IU13 E7	IU21 E13	IU30 C3	IU39 G9	cU02 G14
2U06 D3	2U14 B6	2U22 H6	2U31 D11	3U04 D3	3U12 G10	3U20 E13	3U28 E1	3U36 H9	3U44 D2	5U01 C8	6U03 B5	6U11 H3	7U04 C6	7U11 F4	9U06 B14	FU06 G6	IU05 E4	IU14 E7	IU22 E11	IU31 D2	IU40 G10	

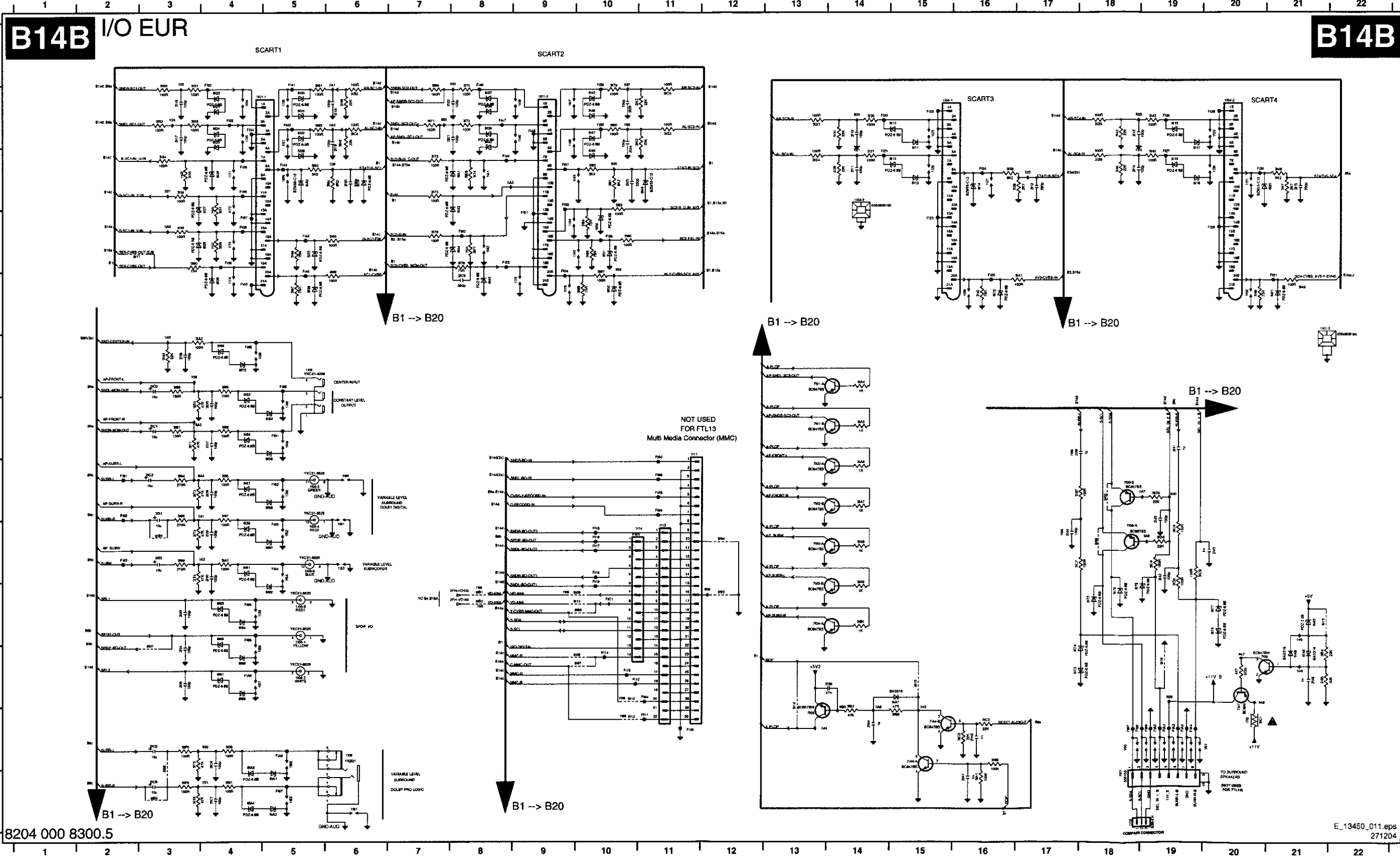


B14A I/O EUR

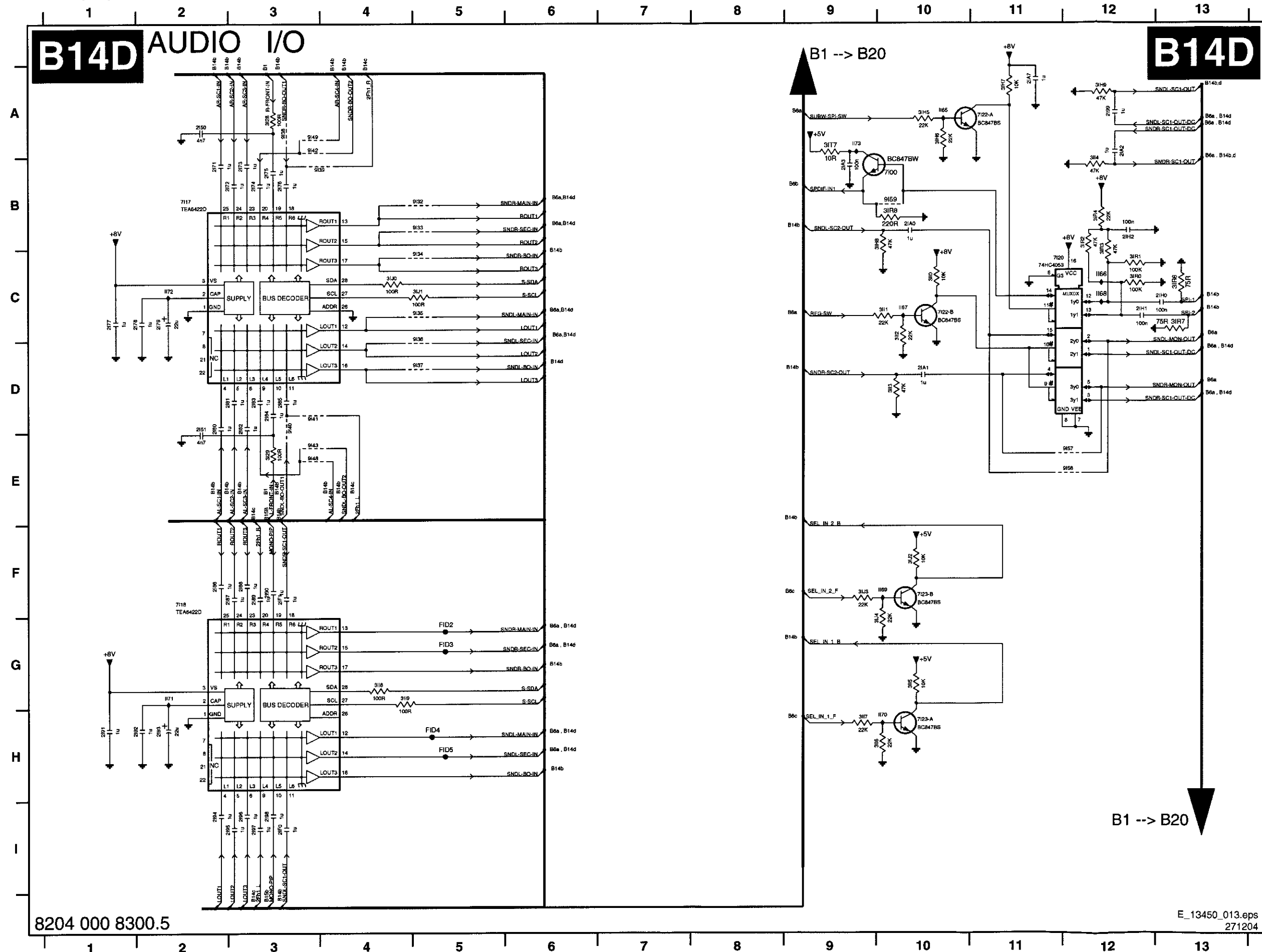
[illegible]

SSB (AB): I/O Eur

100 L18	106 L15	106 C15	108 B5	140 D5	102 C4	212 C17	203 B10	204 K3	2147 M18	334 B14	346 C19	348 C3	347 E5	378 D6	380 F3	381 M15	382 B6	3127 H7	380 L4	372 H5	618 B19	627 C4	628 B8	648 C11	660 E5	673 K17	684 M4	704 A13	908 K10	909 J10	913 K10	914 K10	915 K10	916 K10	917 K10	918 K10	919 K10	920 K10	921 K10	922 K10	923 K10	924 K10	925 K10	926 K10	927 K10	928 K10	929 K10	930 K10	931 K10	932 K10	933 K10	934 K10	935 K10	936 K10	937 K10	938 K10	939 K10	940 K10	941 K10	942 K10	943 K10	944 K10	945 K10	946 K10	947 K10	948 K10	949 K10	950 K10	951 K10	952 K10	953 K10	954 K10	955 K10	956 K10	957 K10	958 K10	959 K10	960 K10	961 K10	962 K10	963 K10	964 K10	965 K10	966 K10	967 K10	968 K10	969 K10	970 K10	971 K10	972 K10	973 K10	974 K10	975 K10	976 K10	977 K10	978 K10	979 K10	980 K10	981 K10	982 K10	983 K10	984 K10	985 K10	986 K10	987 K10	988 K10	989 K10	990 K10	991 K10	992 K10	993 K10	994 K10	995 K10	996 K10	997 K10	998 K10	999 K10	1000 K10
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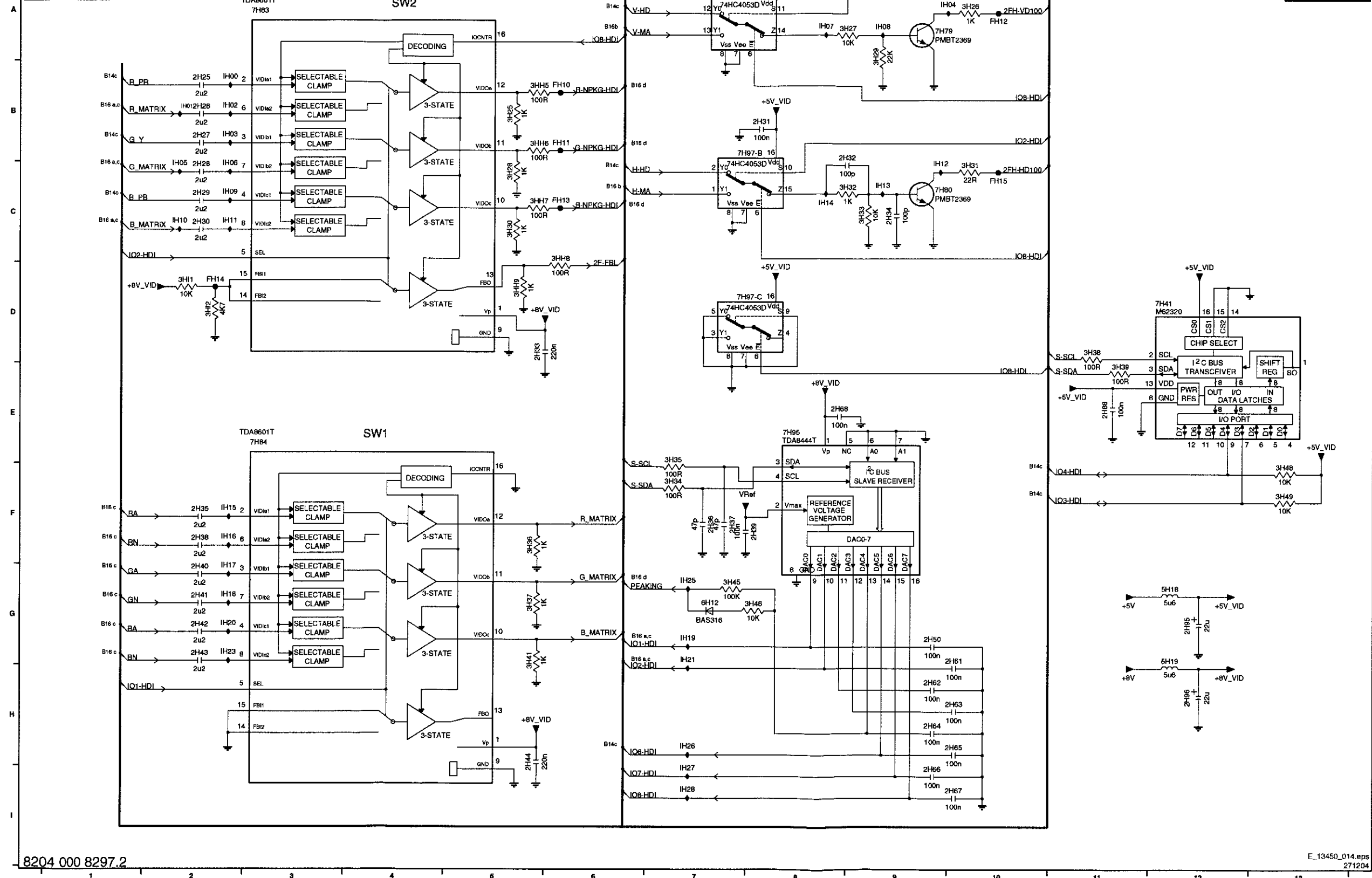
SSB (AB): Audio I/O



SSB (AB): HDI Control

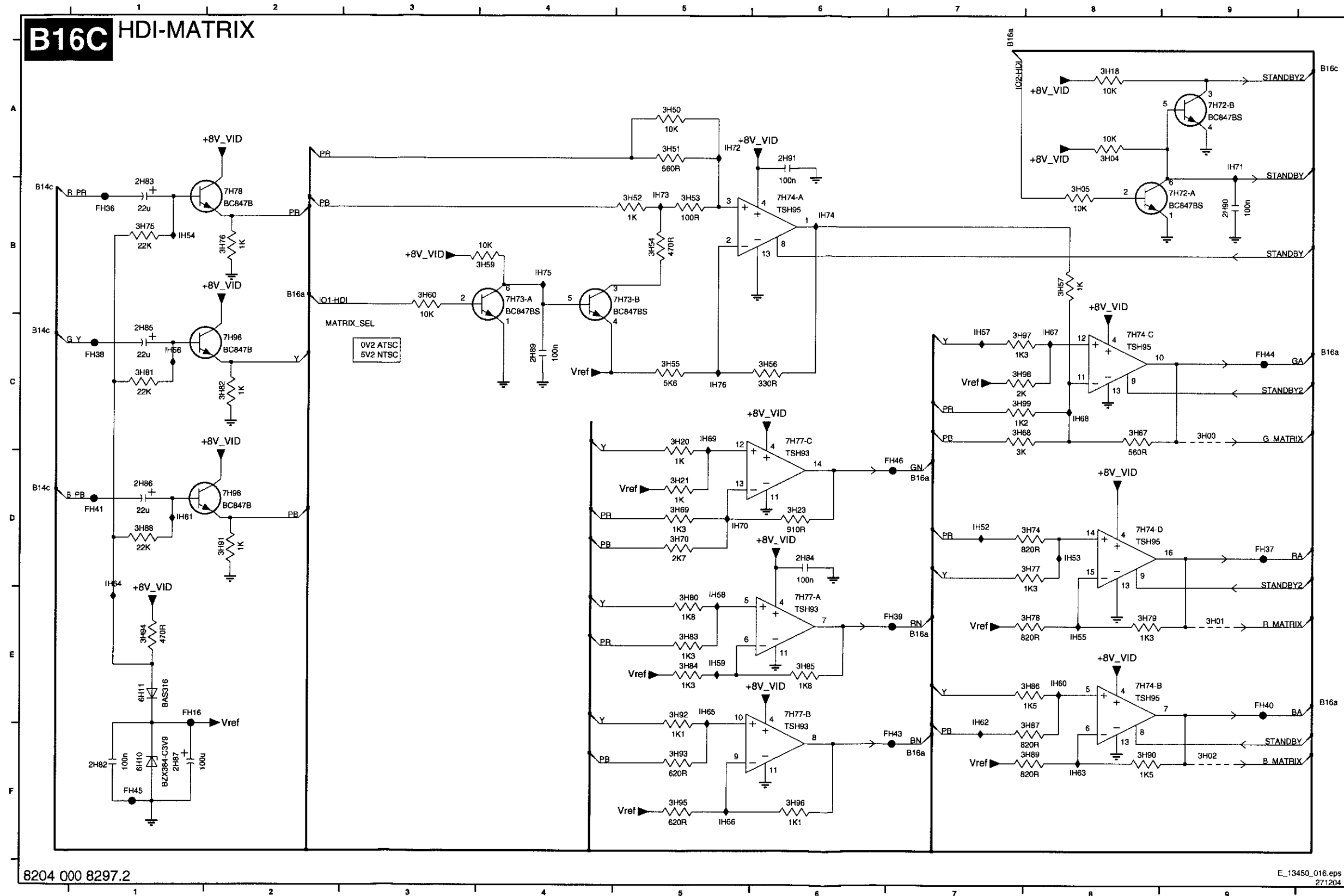
B16A HDI-CONTROL

B16A



SSB (AB): HDI Matrix

B16C HDI-MATRIX

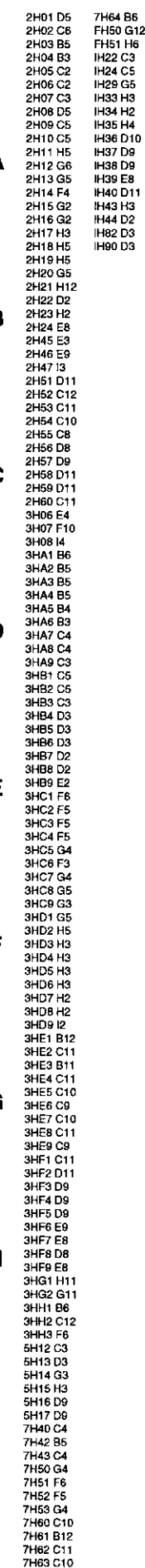


8204 000 8297.2

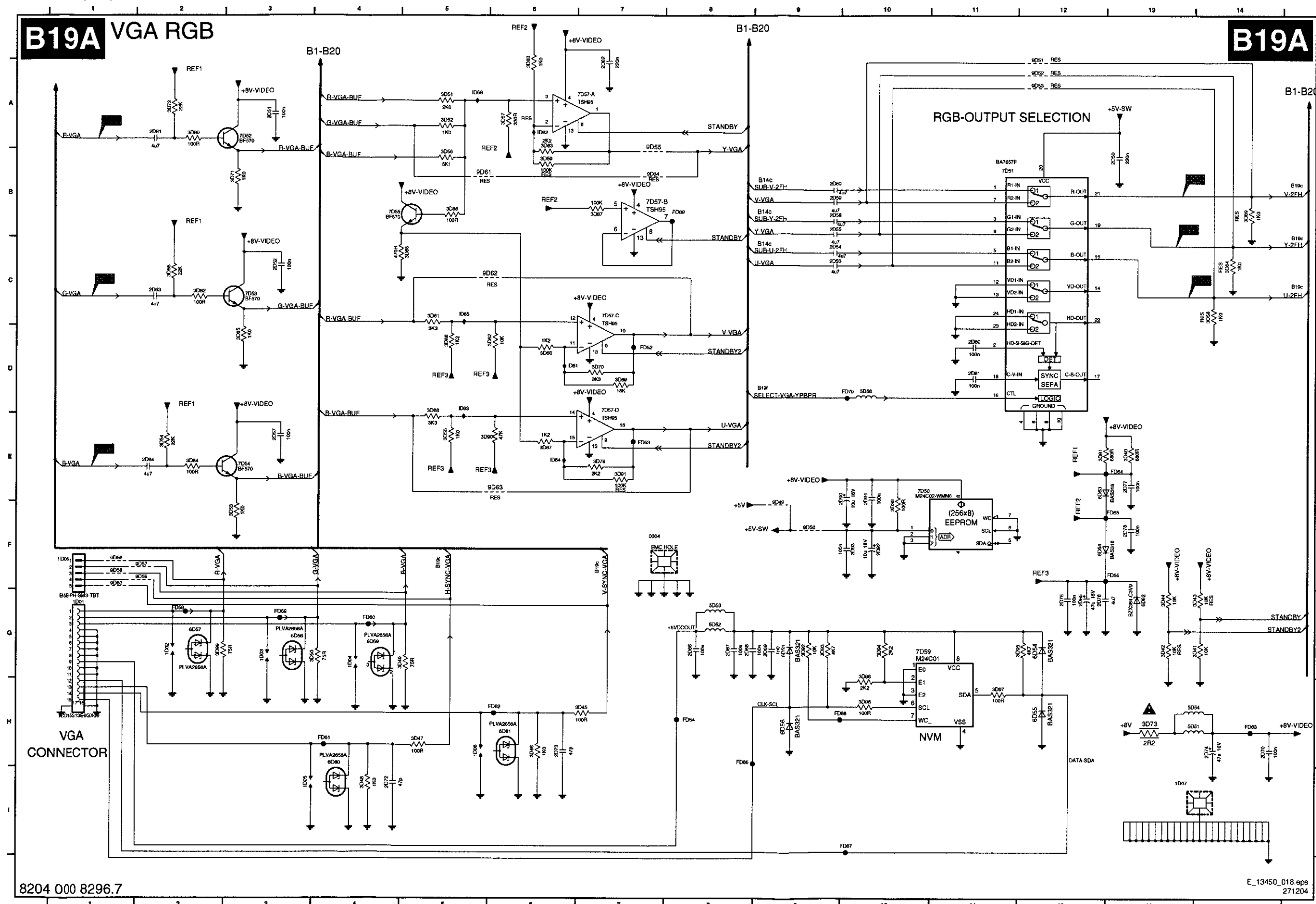
E_13450_016.eps
271204

2H82 F1	7H74-A B6
2H83 B1	7H74-B E8
2H84 D6	7H74-C C8
2H85 C1	7H74-D D8
2H86 D1	7H77-A E6
2H87 F1	7H77-B E6
2H89 C4	7H77-C C6
2H90 B9	7H78 B2
2H91 A6	7H96 C2
3H00 C9	7H98 D2
3H01 E9	FH16 E1
3H02 F9	FH36 B1
3H04 A8	FH37 D9
3H05 B8	FH38 C1
3H18 A8	FH39 E7
3H20 C5	FH40 E9
3H21 D5	FH41 D1
3H23 D6	FH43 F7
3H50 A5	FH44 C9
3H51 A5	FH45 F1
3H52 B5	FH46 D7
3H53 B5	IH52 D7
3H54 B5	IH53 D8
3H55 C5	IH54 B1
3H56 C6	IH55 E8
3H57 B8	IH56 C1
3H59 B4	IH57 C7
3H60 B3	IH58 E5
3H67 C8	IH59 E5
3H68 C7	IH60 E8
3H69 D5	IH61 D1
3H70 D5	IH62 E7
3H74 D8	IH63 F8
3H75 B1	IH64 D1
3H76 B2	IH65 E5
3H77 D8	IH66 F5
3H78 E8	IH67 C8
3H79 E8	IH68 C8
3H80 E5	IH69 C5
3H81 C1	IH70 D5
3H82 C2	IH71 A9
3H83 E5	IH72 A5
3H84 E5	IH73 B5
3H85 E6	IH74 B6
3H86 E8	IH75 B4
3H87 F8	IH76 C5
3H88 D1	
3H89 F8	
3H90 F8	
3H91 D2	
3H92 E5	
3H93 F5	
3H94 E1	
3H95 F5	
3H96 F6	
3H97 C7	
3H98 C7	
3H99 C7	
6H10 F1	
6H11 E1	
7H72-A B9	
7H72-B A9	
7H73-A B4	
7H73-B B4	

B16D HDI-PEAKING

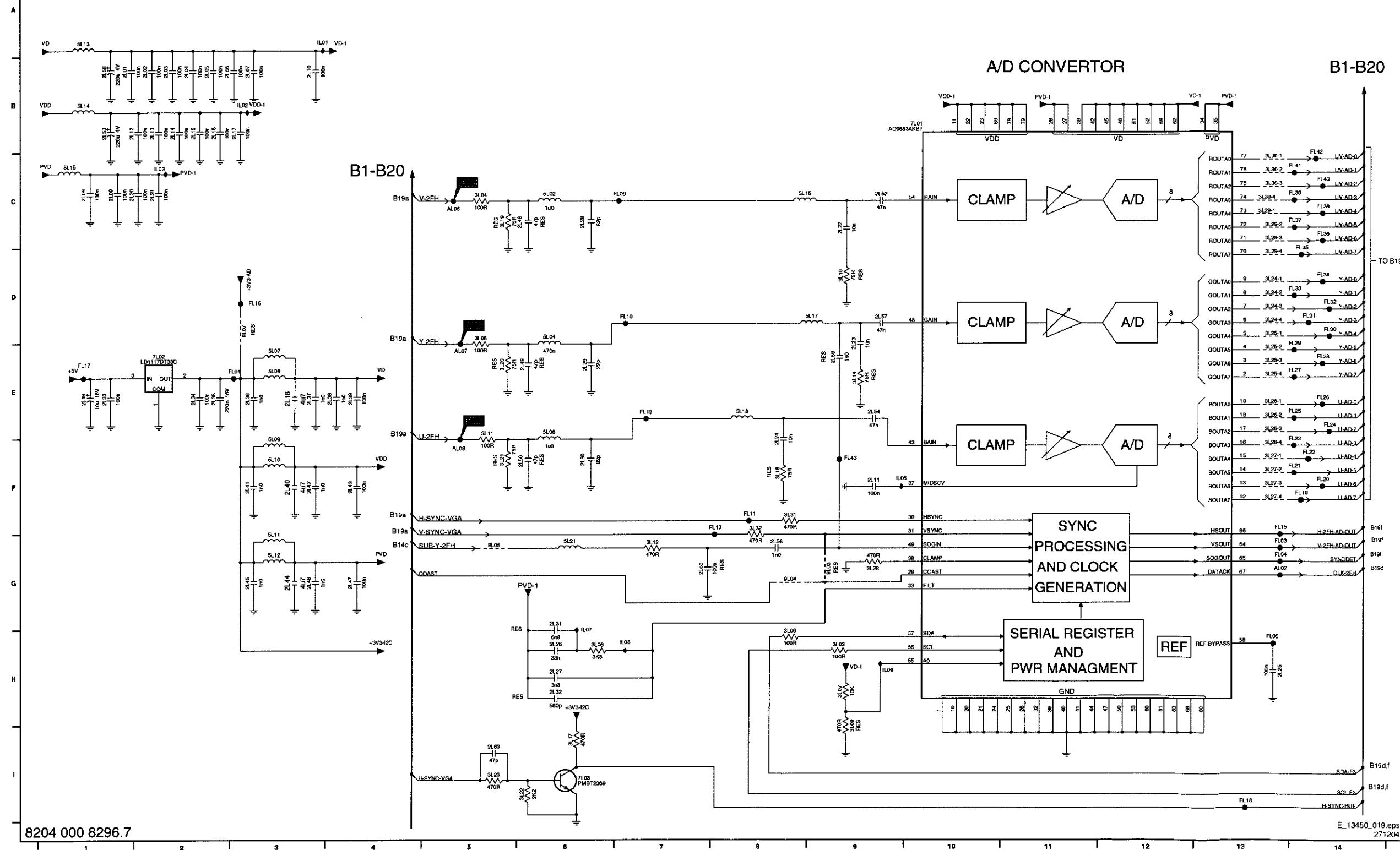


B19A VGA RGB



	0004 F7	3096 G10
	1001 G1	3097 H11
	1002 G2	3098 H10
	1003 G3	3099 G2
	1004 G4	3051 H13
	1005 I3	3052 G8
	1006 H5	3053 G8
	1007 I13	3054 H13
	1008 F1	3056 D10
A	2050 B13	3053 G9
	2051 A3	3054 G12
	2052 C3	3055 H12
	2053 C9	3056 H6
	2054 C9	3067 G2
	2055 B6	3058 G3
	2057 E3	3059 G4
	2058 B6	3060 H4
	2059 B9	3061 H6
	2060 B9	3062 G13
B	2061 A2	3063 E12
	2062 A7	3064 F12
	2063 C2	3065 D10
	2064 E2	3051 B11
	2065 G12	3052 A3
	2066 G8	3053 C3
	2067 G8	3054 E3
	2068 G6	3055 B4
	2069 G9	3057-A A6
C	2070 H14	3057-B B7
	2072 I4	3057-C C7
	2073 H6	3067-D D7
	2074 H14	3059 G10
	2075 G12	3049 F9
	2077 G12	3050 F9
	2078 F13	3052 A12
	2080 D11	3053 A12
D	2081 D11	3055 B7
	2090 E10	3056 F1
	2091 E10	3057 F2
	2092 F10	3058 F1
	2093 F10	3059 F2
	3039 F10	3060 F1
	3040 E13	3061 B5
	3041 G14	3062 C8
	3042 G13	3063 E6
	3043 G14	3064 B7
E	3044 G13	3052 D7
	3045 H7	3053 E7
	3046 H6	3054 H8
	3047 H5	3055 F13
	3048 H4	3058 G2
	3049 G5	3059 G3
	3050 G4	3060 G4
	3051 A5	3061 H4
	3052 A5	3062 H6
F	3053 F3	3063 H14
	3054 E2	3064 F13
	3055 E5	3065 F13
	3056 B5	3066 H8
	3057 A6	3067 I10
	3058 C14	3068 H10
	3059 B6	3069 B8
	3060 D6	3070 D10
	3061 C5	3059 A5
G	3062 D6	3061 D8
	3063 A6	3062 A6
	3064 C14	3063 D5
	3065 D3	3064 E6
	3066 C2	3065 C5
	3067 E6	
	3068 D5	
	3069 B14	
	3070 D7	
H	3071 B3	
	3072 A2	
	3073 H13	
	3079 E7	
	3080 A2	
	3091 E12	
	3082 C2	
	3083 A6	
	3084 E2	
	3085 C5	
	3088 B5	
	3089 D7	
	3090 E5	
	3091 E7	
	3092 G9	
	3093 G9	
	3094 G10	
	3095 G12	

SSB (AB): HDI A/D Convertor

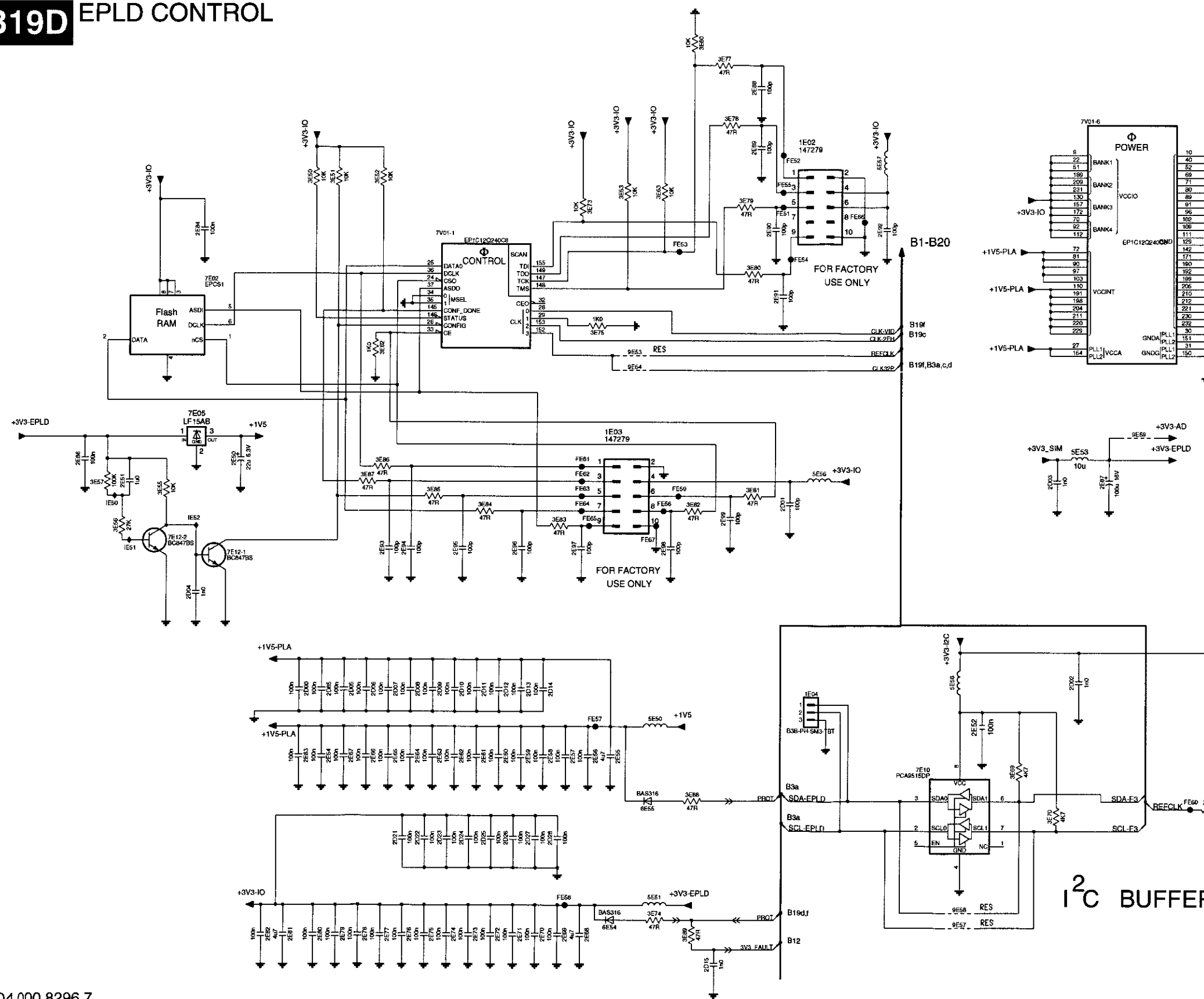
B19C HDI A/D CONVERTOR**B19C**

2L01 B1	3L26-4 F13
2L02 B2	3L27-1 F13
2L03 B2	3L27-2 F13
2L04 B2	3L27-3 F13
2L05 B2	3L27-4 F13
2L06 B2	3L28 G9
2L07 B3	3L29-1 C13
2L08 C1	3L29-2 C13
2L09 C1	3L29-3 C13
2L10 B3	3L29-4 C13
2L11 F9	3L30-1 C13
2L12 B1	3L30-2 C13
2L13 B2	3L30-3 C13
2L14 B2	3L30-4 C13
2L15 B2	3L31 F8
2L16 B2	3L32 F8
2L17 B3	5L02 C6
2L18 E3	5L04 D6
2L19 E1	5L06 E8
2L20 C1	5L07 E3
2L21 C2	5L08 E3
2L22 C9	5L09 F3
2L23 E9	5L10 F3
2L24 F8	5L11 G3
2L25 H13	5L12 G3
2L26 H6	5L13 A1
2L27 H6	5L14 B1
2L28 C6	5L15 C1
2L29 E6	5L16 C8
2L30 F6	5L17 D9
2L31 G6	5L18 E8
2L32 H6	5L21 G6
2L33 E1	7L01 B10
2L34 E2	7L02 E2
2L35 E2	7L03 I6
2L36 E3	9L03 G9
2L37 E3	9L04 G8
2L38 E4	9L05 G5
2L39 E4	9L07 D3
2L40 F3	AL02 G13
2L41 F3	AL06 C6
2L42 F3	AL07 E5
2L43 F4	AL08 F5
2L44 G3	FL01 E3
2L45 G3	FL03 G13
2L46 G3	FL04 G13
2L47 G4	FL05 H13
2L48 C5	FL09 C7
2L49 E6	FL10 D7
2L50 F8	FL11 F8
2L52 C9	FL12 E7
2L53 B1	FL13 F8
2L54 E9	FL15 F13
2L56 G8	FL16 D3
2L57 D9	FL17 E1
2L58 B1	FL18 I13
2L59 E9	FL19 F14
2L60 G7	FL20 F14
2L63 J5	FL21 F14
3L03 H9	FL22 F14
3L04 C5	FL23 F14
3L05 D5	FL24 E14
3L06 H8	FL25 E14
3L07 H9	FL26 E14
3L08 H6	FL27 E14
3L09 I9	FL28 E14
3L10 D9	FL29 E14
3L11 E5	FL30 D14
3L12 G7	FL31 D14
3L14 E9	FL32 D14
3L17 I6	FL33 D14
3L18 F8	FL34 D14
3L19 C5	FL35 D14
3L20 E5	FL36 C14
3L21 F5	FL37 C14
3L22 I6	FL38 C14
3L23 I5	FL39 C14
3L24-1 D13	FL40 C14
3L24-2 D13	FL41 C14
3L24-3 D13	FL42 C14
3L24-4 D13	FL43 F9
3L25-1 D13	IL01 A3
3L25-2 E13	IL02 B3
3L25-3 E13	IL03 C2
3L25-4 E13	IL05 F9
3L26-1 E13	IL07 G6
3L26-2 E13	IL08 H7
3L26-3 E13	IL09 H9

SSB (AB): EPLD Control

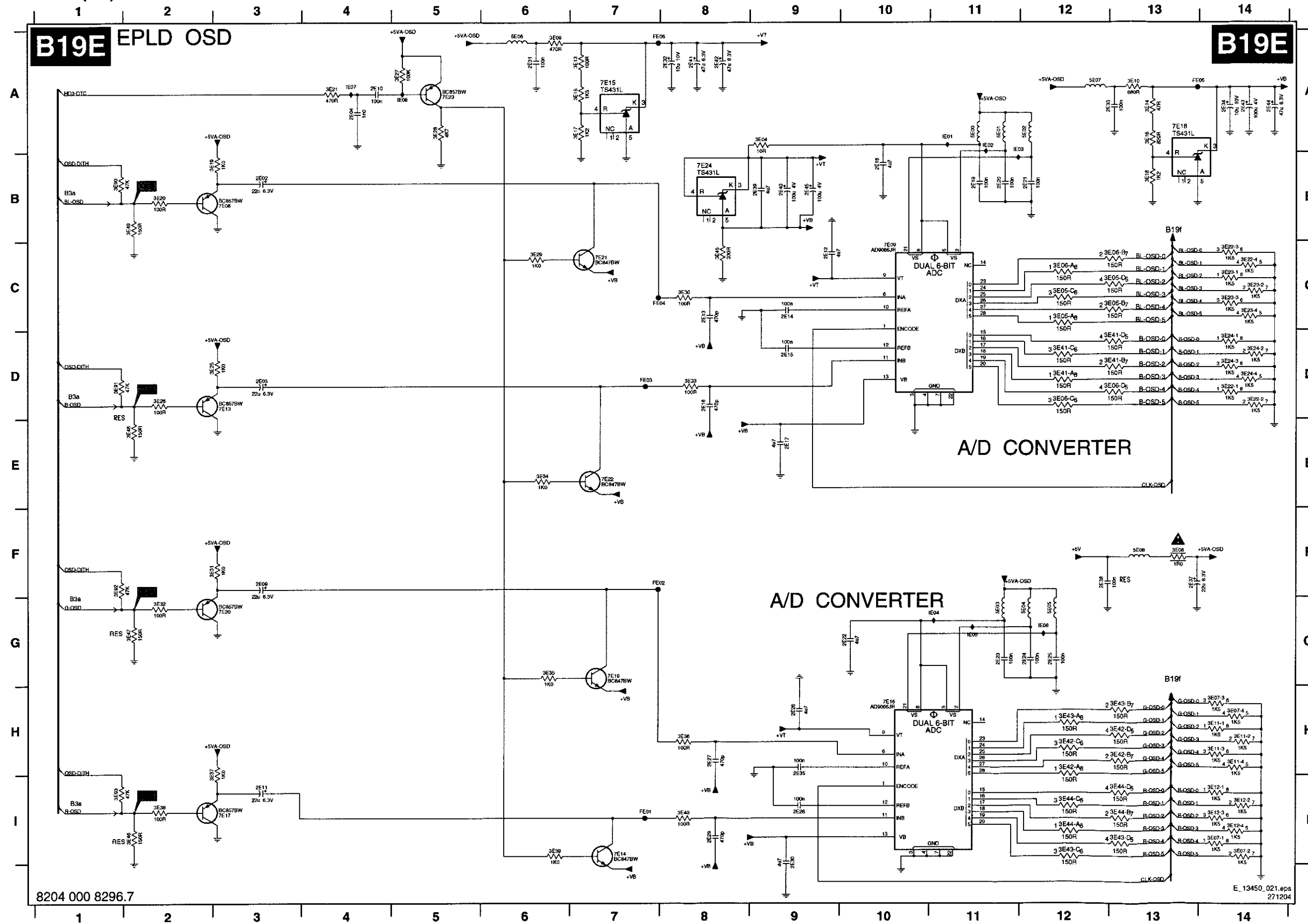
B19D EPLD CONTROL

B19D



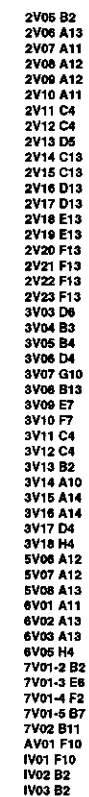
1E02 B8	7E05 D2
1E03 D6	7E10 H9
1E04 G8	7E11 H13
2D00 G3	7E12-1 E3
2D01 E8	7E12-2 E2
2D02 G11	7V01-1 B5
2D03 E11	7V01-6 A11
2D04 F2	9E53 D7
2D05 G4	9E54 D7
2D06 G4	9E57 I10
2D07 G4	9E58 I10
2D08 G5	9E59 D11
2D09 G5	FE51 B8
2D10 G5	FE52 B8
2D11 G5	FE53 C7
2D12 G5	FE54 C8
2D13 G6	FE55 B8
2D14 G6	FE56 E7
2D15 I7	FE57 G6
2D21 H4	FE58 I6
2D22 H5	FE59 E7
2D23 H5	FE60 H12
2D24 H5	FE61 E6
2D25 H5	FE62 E6
2D26 H5	FE63 E6
2D27 H6	FE64 E6
2D28 H6	FE65 E6
2D29 H6	FE66 B9
2E50 E3	FE67 E7
2E51 E2	IE50 E2
2E52 G10	IE51 E2
2E53 H13	IE52 E2
2E54 G4	
2E55 G6	
2E56 G6	
2E57 G6	
2E58 G6	
2E59 G6	
2E60 G5	
2E61 G5	
2E62 G5	
2E63 G5	
2E64 G5	
2E65 G4	
2E66 G4	
2E67 G4	
2E68 I6	
2E69 I6	
2E70 I6	
2E71 I6	
2E72 I5	
2E73 I5	
2E74 I5	
2E75 I5	
2E76 I4	
2E77 I4	
2E78 I4	
2E79 I4	
2E80 I4	
2E81 I3	
2E82 I3	
2E83 G3	
2E84 B2	
2E85 E1	
2E86 E11	
2E87 A8	
2E88 B8	
2E89 B8	
2E90 B8	
2E91 C8	
2E92 B9	
2E93 E4	
2E94 E4	
2E95 E5	
2E96 E5	
2E97 E6	
2E98 E7	
2E99 E7	
3E50 B3	
3E51 B4	
3E52 B4	
3E53 B6	
3E55 E2	
3E56 E2	
3E57 E1	
3E60 A7	
3E62 D4	
3E63 B7	
3E69 H10	
3E70 H11	
3E71 H12	
3E73 B6	
3E74 I7	
3E75 C6	
3E77 A7	
3E78 A8	
3E79 B8	
3E80 C8	
3E81 E8	
3E82 E7	
3E83 E6	
3E84 E5	
3E85 E5	
3E86 E4	
3E87 E4	
3E88 H7	
3E89 I7	
5E50 G7	
5E51 I7	
5E53 E11	
5E55 G13	
5E56 E8	
5E57 B9	
5E58 G10	
6E54 I6	
6E55 H7	
7E02 C2	

SSB (AB): EPLD OSD

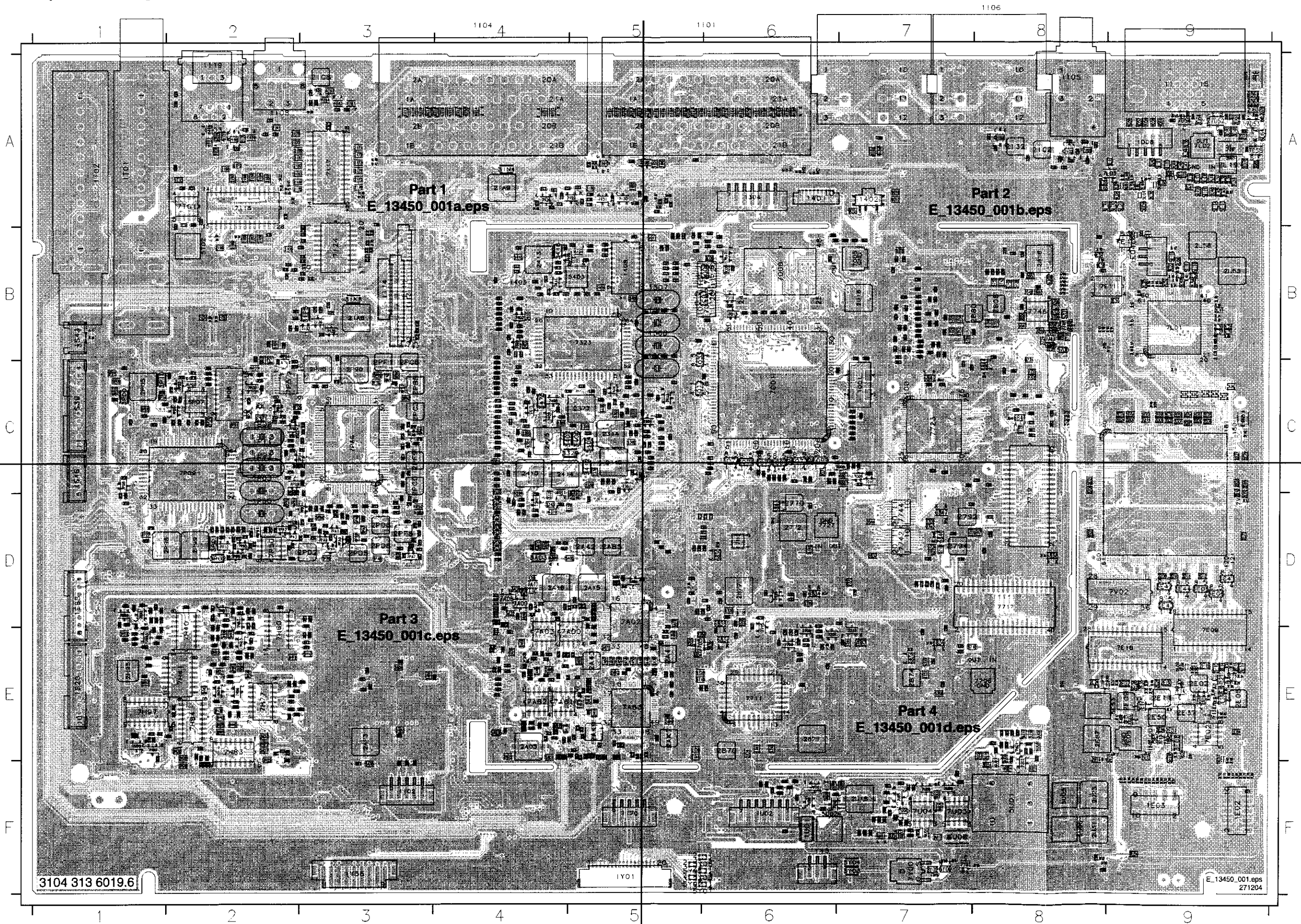


2E02 B3	3E47 G2
2E04 A4	3E48 E2
2E05 D3	3E49 B2
2E06 F3	3E50 B1
2E10 A4	3E91 D1
2E11 I3	3E92 F1
2E12 C9	3E93 I1
2E13 C8	5E00 A11
2E14 C8	5E01 A11
2E15 D9	5E02 A12
2E16 D8	5E03 G11
2E17 E9	5E04 G12
2E18 B10	5E05 G12
2E19 B11	5E06 A6
2E20 B11	5E07 A12
2E21 B12	5E08 F13
2E22 G10	7E08 B3
2E23 G11	7E08 C10
2E24 G12	7E13 D3
2E25 G12	7E14 I7
2E26 H9	7E16 A7
2E27 H8	7E16 H10
2E28 I9	7E17 I3
2E29 I8	7E18 A13
2E30 I9	7E18 G7
2E31 A6	7E20 G3
2E32 A8	7E21 C7
2E33 A12	7E22 E7
2E34 A14	7E23 A5
2E35 H9	7E24 B8
2E37 F13	FE01 I7
2E38 F12	FE02 F7
2E39 B9	FE03 D7
2E40 B9	FE04 C7
2E41 A8	FE05 A13
2E42 A8	FE06 A7
2E43 A14	IE01 A11
2E44 A14	IE02 A11
2E45 B9	IE03 A11
3E04 A9	IE04 G11
3E05 A C12	IE05 G11
3E05-B C13	IE06 G12
3E05-C C12	IE07 A4
3E05-D C13	IE08 A5
3E06-A C12	
3E06-B C13	
3E06-C D12	
3E06-D D13	
3E07-1 H14	
3E07-2 H14	
3E07-3 H14	
3E07-4 H14	
3E08 F13	
3E09 A6	
3E10 A13	
3E11-1 H14	
3E11-2 H14	
3E11-3 H14	
3E11-4 H14	
3E12-1 H14	
3E12-2 H14	
3E12-3 H14	
3E12-4 H14	
3E13 A7	
3E14 A13	
3E15 A7	
3E16 A13	
3E17 A7	
3E18 B13	
3E19 B3	
3E20 B2	
3E21 A4	
3E22-1 D14	
3E22-2 D14	
3E22-3 C14	
3E22-4 C14	
3E23-1 C14	
3E23-2 C14	
3E23-3 C14	
3E23-4 C14	
3E24-1 D14	
3E24-2 D14	
3E24-3 D14	
3E24-4 D14	
3E25 D3	
3E26 D2	
3E27 A5	
3E28 A5	
3E29 C6	
3E30 C8	
3E31 F3	
3E32 G2	
3E33 D8	
3E34 E6	
3E35 G6	
3E36 H8	
3E37 H3	
3E38 I2	
3E39 I6	
3E40 I8	
3E41-A D12	
3E41-B D13	
3E41-C D12	
3E41-D D13	
3E42-A H12	
3E42-B H13	
3E42-C H12	
3E42-D H13	
3E43-A H12	
3E43-B H13	
3E43-C H12	
3E43-D H13	
3E44-A H12	
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3E45 C8	
3E46 I2	

B19F EPLD I/O



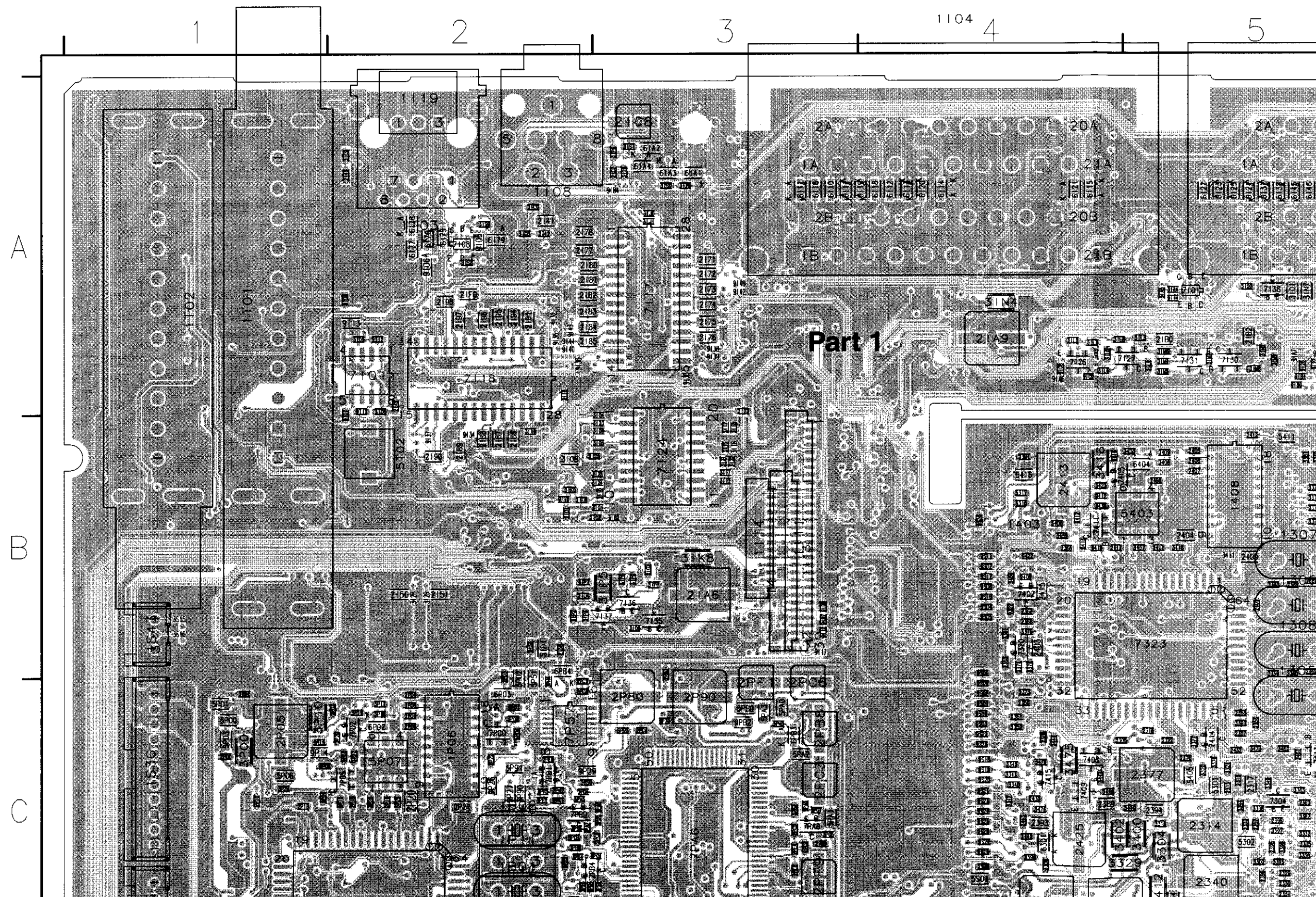
Layout Small Signal Panel (AB) (Top Side Overview)



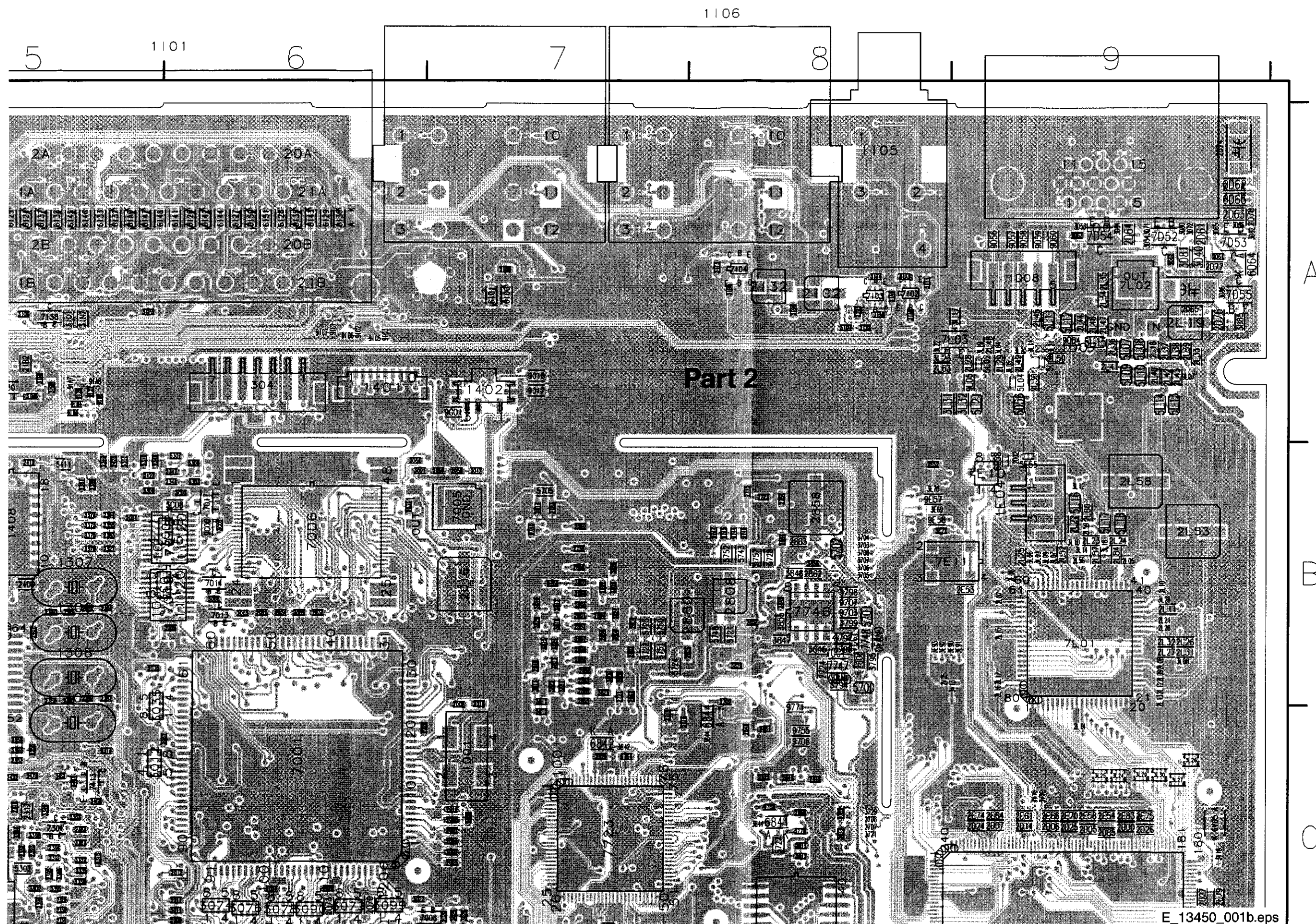
Layout Small Signal Panel (AB) Mapping (Top Side)

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1304	A6	2364	B5	2848	C8	2AD0	E4	2564	C8	21B2	A5	2PB9	C3	3336	D4	3774	D7	3AA9	E4	3H81	E2	3IM0	A5	3PD3	C2	5710	E5	6003	C7	7340	D4	7PA6	C3	9149	A3
1401	A6	2365	B4	2855	B7	2AD1	E3	2566	C9	21C2	A8	2PC0	C3	3340	C4	3781	D7	3AB0	E4	3H83	E2	3IM4	A4	3PD4	C2	5714	D6	6301	C4	7361	D5	7PA7	D3	9180	A5
1402	A7	2367	B4	2858	B8	2AD3	E3	2569	C9	21C7	A3	2PC1	D3	3341	C4	3782	D7	3AB2	E4	3H84	E2	3IM7	A5	3PD5	C3	5716	E7	6309	D5	7362	C5	7PA8	C3	9184	A5
1403	B4	2368	B4	2859	B7	2AD4	E3	2570	C9	21C8	A3	2PC2	C3	3342	C4	3783	D7	3AB3	E4	3H85	E2	3IP0	B3	3PD6	C2	5718	D7	6310	D4	7402	B4	7PA9	D3	9186	A5
1408	B5	2373	C4	2860	B7	2AD5	E3	2572	D9	21E0	B2	2PC3	C3	3343	D4	3793	D6	3AB5	E4	3H82	E2	3IP1	B2	3PD8	C2	5719	D7	6311	D4	7405	B5	7PB0	C2	9197	B3
1702	D6	2376	C5	2861	C8	2AD6	E3	2574	C9	21F0	A2	2PC4	C3	3344	D4	3794	B8	3AB6	E4	3H93	E3	3IP2	B2	3PD9	D3	5721	B8	6316	C4	7408	C4	7PB1	C2	91A6	A4
1D01	A9	2377	C5	2862	B8	2AD7	E5	2575	C9	21G1	B3	2PC5	C3	3345	D4	3795	B8	3AB7	E4	3H94	E2	3IP3	A5	3PE0	D2	5722	B7	6319	D5	7409	C4	7PB2	D3	91A7	A5
1D07	F8	2379	B5	2863	B8	2AD9	E5	2579	C9	21J4	B2	2PC6	B3	3346	D4	3796	B8	3AB8	E4	3H95	E2	3IP4	B2	3PE1	D2	5724	B7	6404	B5	7411	B4	7PB3	C2	91A8	A5
1D08	A9	2380	B5	2866	B7	2AE2	E3	2583	C9	21O5	B9	2PC7	C2	3347	D4	3797	B8	3AB9	E4	3H96	E2	3IP5	B3	3PE2	C3	5725	B7	6830	D6	7413	C5	7PB4	C2	91B4	A3
1E02	F9	2381	B5	2867	B7	2AE3	E3	2584	F9	21O6	B9	2PC8	C2	3348	C4	3798	B8	3AC8	E5	3H98	E2	3IP6	B3	3PE3	D2	5727	C8	6832	E5	7414	C5	7PB6	D2	91C1	A6
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1E04	B9	2383	B5	2871	E6	2AF2	D4	2587	E8	21O8	B9	2PD1	C3	3353	D4	3800	B7	3C03	B6	3HA2	D1	3IP8	A3	3PE5	C2	5729	D6	6834	D6	7705	E6	7U01	E8	91C3	A6
1I01	A6	2388	C4	2872	D6	2AF3	E3	2588	F9	21O9	B9	2PD2	D3	3361	C5	3801	B7	3C06	B6	3HA3	E1	3IQ0	A5	3PE6	C3	5731	E7	6836	E7	7706	E8	7U02	F8	91C5	A6
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1F00	D2	2406	B5	2893	B7	2AL2	E5	2602	D1	2122	B9	2PE5	C3	3388	D4	3823	B7	3D82	A9	3HB7	E2	3L05	A9	3PG4	D3	5754	E5	6H11	E2	7746	B8	9018	C6	9P14	C1
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1S46	C1	2425	C4	2A08	D4	2AM3	E5	2625	E2	2133	A9	2T12	A2	3404	B4	3838	D6	3E26	E9	3HEF	D2	3L19	A9	3S20	D4	5A23	E4	6117	A3	7A61	E4	9408	B4	9PA4	D3
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1Y01	F5	2707	C8	2A14	D5	2AN0	E4	2631	E2	2139	A9	2U11	F7	3418	B5	3844	C8	3E32	E9	3HF7	E3	3L25	C9	3U04	E8	5A62	E4	6123	A5	7D55	A9	9422	B4	9PB2	C3
1Y45	F6	2708	C8	2A15	D5	2AN1	E4	2632	E1	2140	A9	2U12	F7	3423	B4	3846	B8	3E33	E9	3HF8	D3	3L26	C9	3U05	F8	5A63	E4	6124	A5	7E02	E9	9700	E6	9PB3	D2
1Y55	F3	2709	B8	2A16	D5	2AN7																													

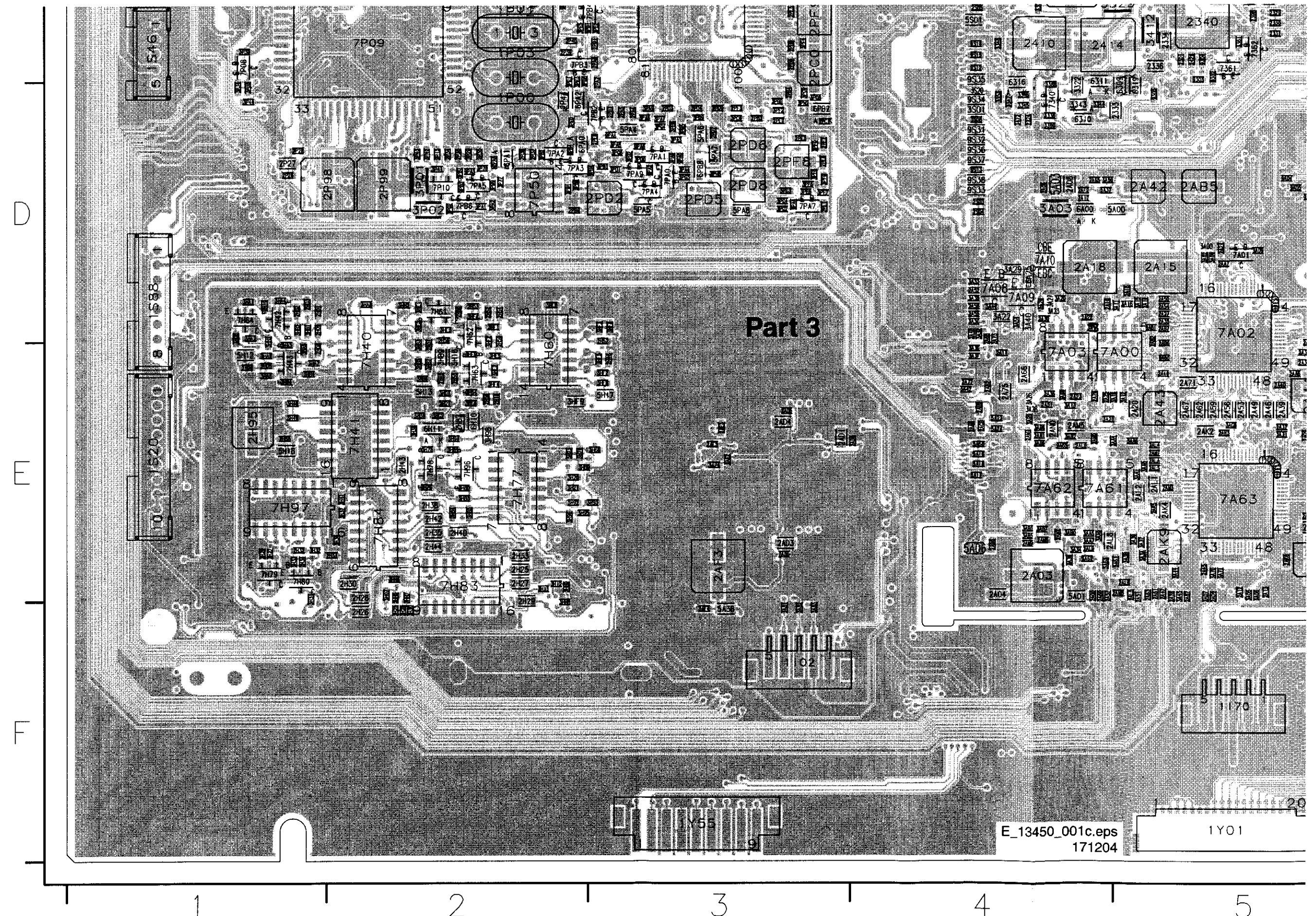
Layout Small Signal Panel (AB) (Top Side Part 1)



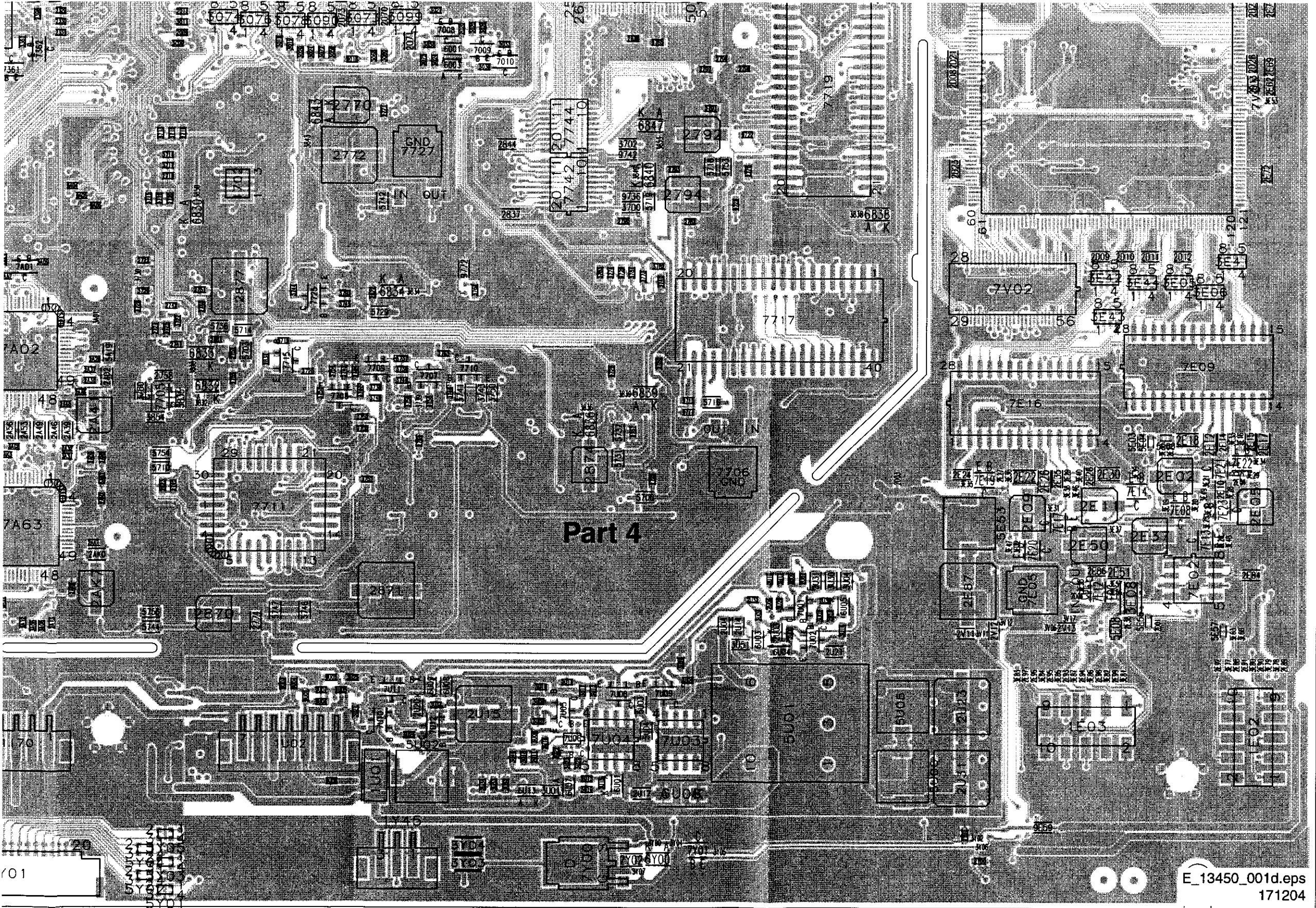
Layout Small Signal Panel (AB) (Top Side Part 2)



Layout Small Signal Panel (AB) (Top Side Part 3)



Layout Small Signal Panel (AB) (Top Side Part 4)



D

E

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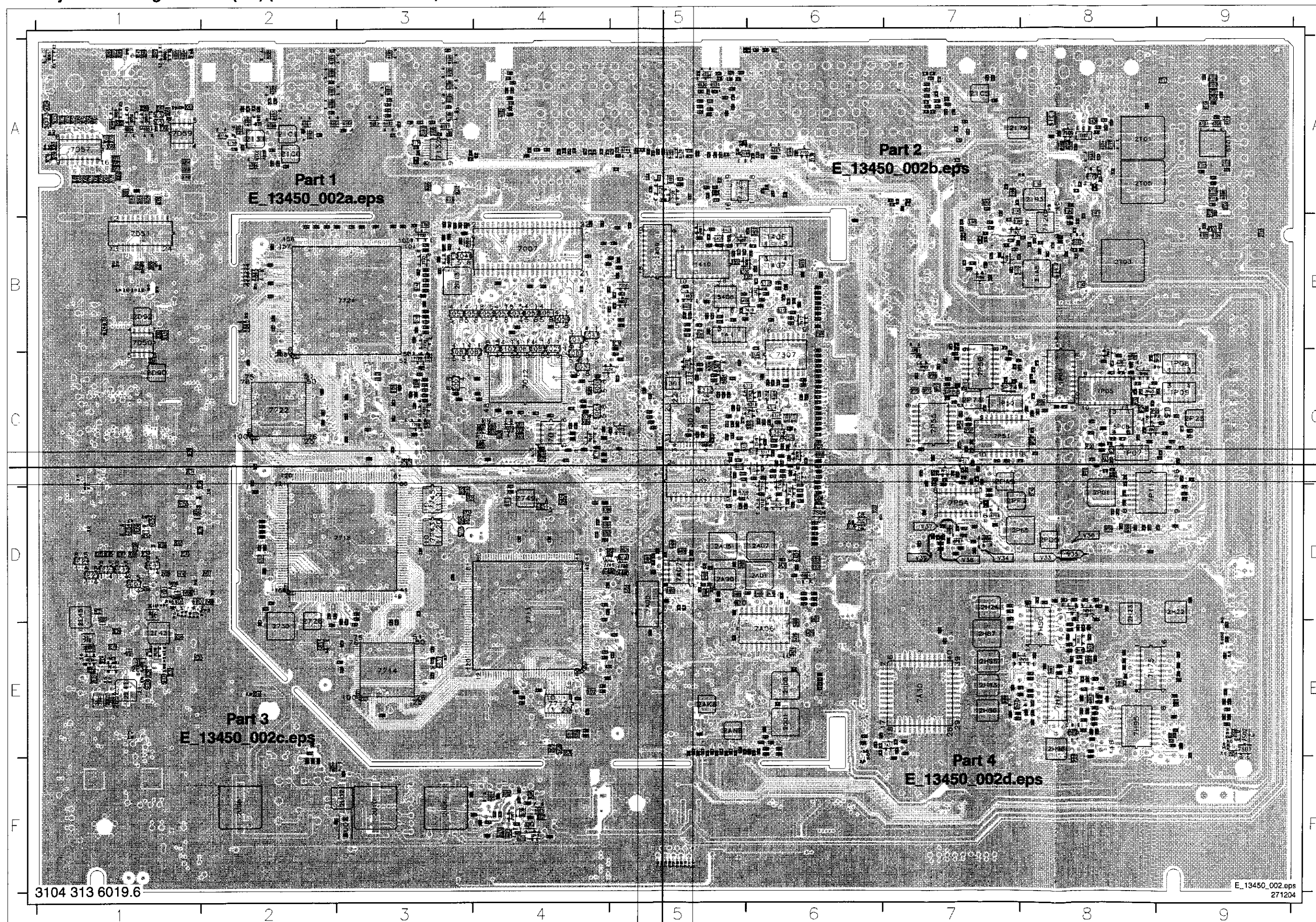
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Layout Small Signal Panel (AB) (Bottom Side Overview)



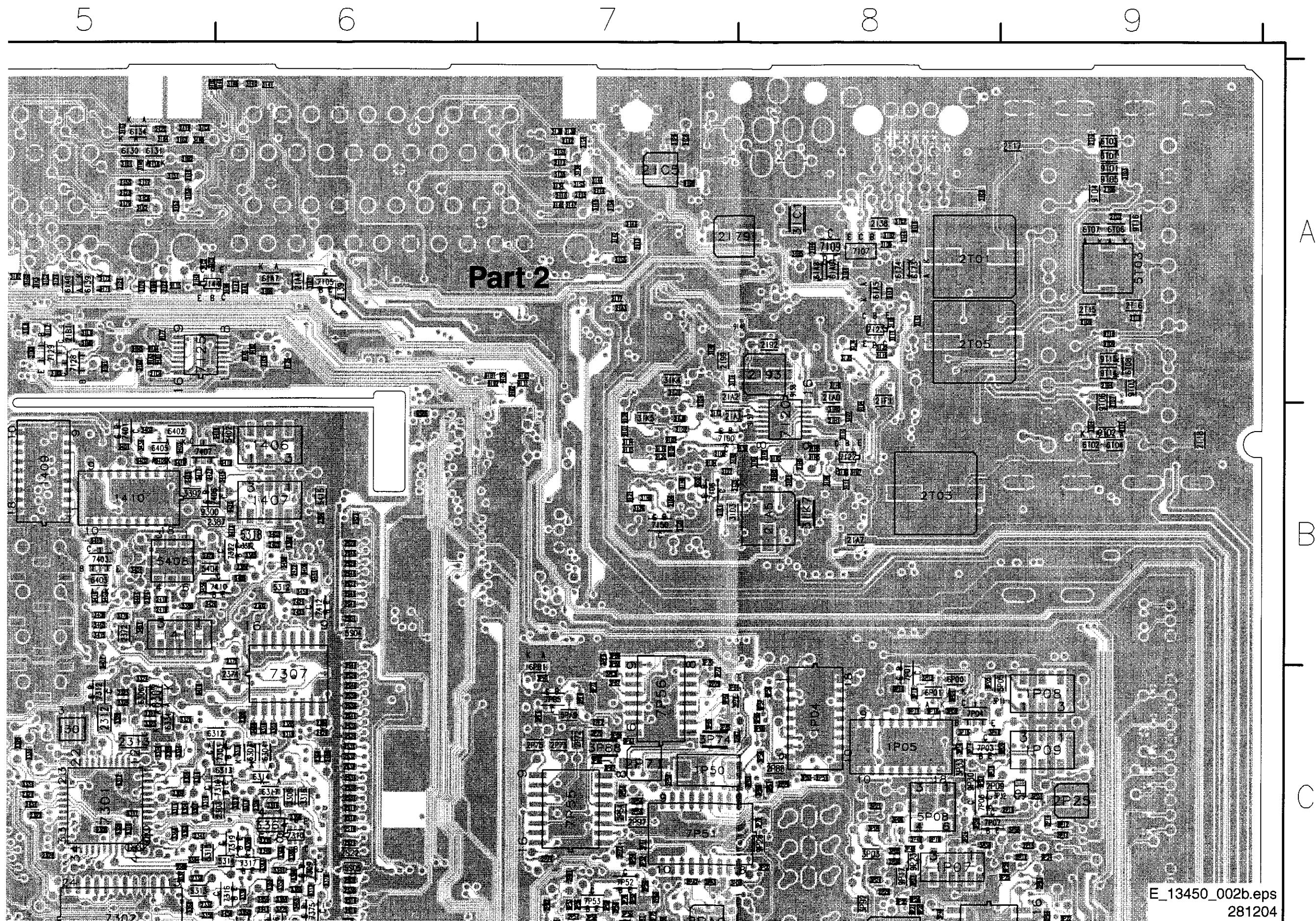
Layout Small Signal Panel (AB) Mapping (Bottom Side)

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1305 C5	2731 B2	2AA0 E6	2H67 F8	2P53 C7	2T05 A8	3100 C4	3790 B3	3E73 C1	3I67 A4	3IT2 A2	3V07 D2	6D58 A1	7722 C2	9713 E2	9S68 E9
1306 B5	2732 B2	2AA1 E6	2H68 E9	2P54 C7	2T06 A9	3101 C4	3791 C3	3E74 D1	3I68 A4	3IT7 A7	3V08 D1	6D59 A1	7724 B3	9716 E3	9S69 E9
1307 B5	2733 B2	2AA5 D5	2H79 E9	2P55 C7	2T07 A9	3102 B4	3792 B2	3E75 D1	3I69 A5	3IT9 A3	3V14 D1	6D60 A1	7728 C3	9717 E3	9T01 A9
1308 B5	2734 B3	2AA9 E5	2H80 E9	2P56 D7	2T09 A9	3303 C8	3804 B2	3E88 D1	3I70 A5	3IU0 A3	3V15 D1	6D61 A1	7729 B3	9721 C2	9T02 B9
1406 B6	2736 B3	2AB0 D5	2H81 E8	2P57 C7	2T10 A9	3305 D5	3805 B3	3E89 E2	3I71 A5	3F03 C8	3V16 D1	6E54 D1	7730 B3	9722 C2	9T03 A9
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1409 B5	2738 B3	2AB4 D5	2H84 E8	2P59 C7	2T14 B9	3308 C6	3807 C3	3I01 E8	3I73 A5	3F05 C8	3305 B4	6H12 E8	7732 B3	9724 D2	9T05 A9
1410 B5	2739 B3	2AB8 E6	2H85 E7	2P60 C7	2T15 A9	3310 C5	3808 B3	3I02 E8	3I74 A5	3F06 C8	3308 B5	6I30 A5	7733 B3	9725 E4	9T06 A9
1411 B6	2746 E4	2AD8 D6	2H86 E7	2P61 C7	2T16 A9	3311 C5	3809 B3	3I04 E8	3I75 A4	3F09 C8	3312 B6	6I31 A5	7740 D5	9726 E5	9T09 A9
1A00 D5	2747 B2	2AE0 D6	2H87 E7	2P62 C7	2T17 A9	3312 C6	3810 C3	3I05 E8	3I76 A4	3F11 C8	3313 C5	6I34 A5	7741 D4	9737 D3	9T10 A9
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1P05 C8	2749 D4	2AE4 E7	2H90 E8	2P64 D7	2U01 F2	3314 C5	3816 B3	3I18 E8	3I78 A4	3F13 C8	3315 C5	6I40 A5	7745 D3	9753 C3	9T15 A9
1P07 C8	2750 D4	2AE6 E6	2H91 E8	2P65 D8	2U02 F3	3315 C6	3828 C3	3I26 E9	3I79 A5	3F14 C8	3318 B6	6I49 A5	7A06 E5	9758 C3	9T16 A9
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2000 E6	2759 D4	2AM4 E8	2I04 A7	2P69 D7	2U19 F3	3324 C5	3851 B2	3I46 E8	3I83 A4	3P22 D8	3408 B5	6I55 A2	7D50 C1	9A01 D5	
2001 E6	2760 D4	2AN2 E6	2I06 B7	2P70 C7	2U22 F4	3325 C6	3852 B2	3I50 E8	3I84 A4	3P23 D8	3415 B6	6I56 A2	7D51 B1	9A02 D5	
2003 C3	2761 D4	2AN3 E6	2I07 B7	2P71 C7	2U24 F4	3326 C5	3A17 D5	3I51 E8	3I85 A4	3P24 C8	3507 D5	6I57 A2	7D57 A1	9A03 E5	
2010 C5	2762 D3	2AN4 E6	2I08 B7	2P72 C7	2U25 F4	3327 C6	3A19 D5	3I52 E7	3I86 A4	3P31 C9	3511 E4	6I58 A2	7D59 A1	9A08 D5	
2013 B5	2765 E4	2AN5 E5	2I10 A7	2P73 C7	2U26 F4	3328 C5	3A30 D6	3I53 E8	3I87 A4	3P32 C9	3512 E4	6I59 A2	7E15 E1	9A09 D5	
2017 B5	2766 E4	2AN6 E5	2I11 A7	2P74 C7	2U27 E2	3331 C5	3A35 D6	3I54 E7	3I88 A4	3P33 C8	3513 D4	6I60 A2	7E18 E1	9C02 A3	
2019 B4	2768 D2	2AN8 E6	2I12 A7	2P75 C7	2U28 F2	3333 C5	3A38 D6	3I55 E8	3I89 A2	3P36 C9	3515 D3	6I61 A2	7E24 E1	9D49 B1	
2022 C4	2769 B3	2C00 B4	2I13 A7	2P76 C8	2U33 F4	3334 C5	3A45 D5	3I56 E8	3I90 A2	3P37 C8	3517 D2	6I62 A2	7H50 E8	9D50 B1	
2023 B4	2773 E3	2C02 B5	2I14 A7	2P77 C7	2U35 F4	3337 C5	3A46 D5	3I57 E8	3I91 A2	3P38 C8	3520 E4	6I63 A3	7H51 D8	9D51 B1	
2024 C4	2775 E3	2D15 E2	2I15 A7	2P78 C7	2V06 D1	3338 C6	3A47 D5	3I59 E7	3I92 A2	3P39 C8	3526 C3	6I64 A2	7H52 D8	9D52 B1	
2026 B4	2777 E3	2D22 D1	2I16 A5	2P79 C7	2V07 D2	3339 D5	3A48 D5	3I60 E7	3I96 A2	3P40 C8	3539 C3	6I65 A2	7H53 E8	9D53 B1	
2033 B4	2778 E3	2D50 B1	2I17 A5	2P82 D7	2V06 D2	3350 C6	3A49 D5	3I62 E8	3I97 A2	3P45 C8	3540 B3	6I66 A3	7H72 E8	9D55 A1	
2036 B4	2779 E3	2D51 A1	2I18 A5	2P83 D7	2V09 D1	3351 C6	3A51 D5	3I63 E8	3I98 A6	3P46 C8	3541 B3	6I67 A2	7H73 E8	9E53 C1	
2038 B4	2781 E3	2D52 A1	2I19 A5	2P84 D7	2V10 D1	3352 C6	3A52 D5	3I64 E9	3I9A A2	3P47 D9	3555 E4	6I68 A3	7H74 E8	9E54 D1	
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2052 B3	2786 D2	2D55 A1	2I22 A5	2P88 C8	2V16 D1	3356 C6	3A56 D5	3I67 E8	3I9A A2	3P51 C8	3562 D4	6I73 A8	7H98 E7	9I02 B7	
2053 B3	2787 D3	2D57 A1	2I23 A5	2P91 D9	2V17 D1	3357 C6	3A72 E7	3I71 E9	3I9B A6	3P52 C7	3A04 E6	6I74 A8	7I00 B7	9I03 B7	
2054 B3	2788 D3	2D58 A1	2I24 A5	2P92 D9	2V18 D1	3358 C5	3A73 E6	3I72 E8	3I9B A5	3P53 C8	3A05 E6	6I90 A3	7I05 A6	9I04 B7	
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2056 B3	2795 C3	2D60 A1	2I26 A2	2P94 C9	2V20 D2	3360 D6	3A76 E6	3I74 E8	3I9B A6	3P55 D7	3A11 E5	6I92 A3	7I07 A8	9I09 A7	
2057 B3	2799 D2	2D62 A1	2I27 A2	2P95 D8	2V21 D2	3362 C6	3A77 E7	3I77 E8	3I9B A8	3P56 C7	3A12 E5	6I93 A3	7I09 A8	9I11 A7	
2060 B3	2800 D2	2D66 A1	2I29 A2	2P96 D8	2V22 D1	3364 C6	3A78 E7	3I78 E8	3I9B A6	3P57 D7	3A13 E5	6I94 A3	7I20 B8	9I13 A8	
2061 B3	2801 D2	2D67 A1	2I30 A2	2P97 C7	2V23 D1	3365 C6	3A84 F7	3I79 E8	3I9C A8	3P58 C7	3A14 E5	6I95 A3	7I22 B8	9I15 A5	
2063 C4	2802 D2	2D68 A1	2I31 A2	2PA0 D7	2Y03 F5	3366 C5	3AA2 E6	3I82 E8	3I9C A5	3P59 C7	3A15 E5	6I96 A3	7I23 A8	9I16 A8	
2068 C4	2810 C2	2D69 A1	2I33 A3	2PA1 D7	2Y04 F5	3367 C5	3A86 E8	3I86 E8	3I9C A5	3P60 C7	3A20 E6	6I97 A3	7I25 A6	9I20 A5	
2072 C4	2812 C3	2D70 A1	2I34 A2	2PA2 C7	2Y05 F5	3368 C5	3C04 B5	3I87 E8	3I9C A5	3P62 D7	3A21 D6	6I98 A3	7I28 A5	9I21 B7	
2074 C4	2815 C3	2D72 A1	2I35 A2	2PA3 C7	2Y06 F5	3369 C5	3C05 B5	3I88 E7	3I9C A5	3P63 D7	3A31 D6	6I99 A3	7I29 A5	9I25 A6	
2302 B6	2816 B3	2D73 A1	2I36 A2	2PA9 C7	2Y07 F5	3378 B5	3C10 B5	3I89 E8	3I9C A8	3P64 D7	3A32 D6	6IA5 A8	7I32 A3	9I48 A8	
2303 C6	2818 B3	2D75 A1	2I38 A8	2PB0 D7	2Y08 F5	3380 B5	3C11 C4	3I90 E8	3I9C A8	3P65 C7	3A33 D6	6IA6 A8	7I44 A5	9I57 B8	
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2307 C5	2821 C2	2D90 C1	2I44 A8	2PD0 D8	2Y11 F5	3384 C5	3D42 A1	3I99 E8	3I9E A3	3P68 B7	3A66 E8	6P00 C8	7P03 C8	9I77 A5	
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2309 C5	2824 E4	2D92 B1	2I47 A6	2PF2 C7	3001 C4	3386 C6	3D44 A1	3I9C D8	3I9E A3	3P70 B7	3D52 A1	6P01 C7	7P06 C8	9I81 A5	
2310 C5	2826 C3	2D93 B1	2I57 A3	2PF5 C7	3002 C4	3389 C6	3D45 A1	3I9C D8	3I9E A3	3P72 C7	3D53 A1	6P05 D7	7P07 C8	9I82 A6	
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2319 C6	2832 C3	2E23 E1	2I93 A8	2S02 C6	3007 C3	3403 B6	3D49 A1	3I9C E8	3I9F A3	3P79 C8	3E05 D1	6T01 A9	7P53 C7	9I89 A3	
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2323 C5	2835 C3	2E32 E1	2I9A B7	2S08 D6	3013 B5	3408 B5	3D52 A1	3I9C E8	3I9H B8	3P82 C8	3E50 D1	6T04 B9	7P56 C7	9I94 B8	
2325 C5	2836 D4	2E33 E1	2I9A A7	2S09 D6	3014 B5	3410 B5	3D55 A1	3I9H A8	3I9H A8	3P85 C7	3E51 D1	6T06 A9	7P56 C7	9I98 A7	
2326 C6	2839 C3	2E34 E1	2I9A A7	2S10 D6	3015 B5	3414 B5	3D56 A1	3I9D E7	3I9H A7	3P86 C7	3H14 E8	6T07 A9	7S01 F9	9IA2 A3	
2328 C5	2841 B3	2E39 E1	2I9A A6	2S11 D6	3016 B5	3415 B5	3D57 A1	3I9D E8	3I9H B8	3P87 C7	3H15 E8	6T08 A9	7S02 E9	9IA3 A5	
2335 C6	2842 D3	2E40 E1	2I9A B8	2S12 D6	3017 C4	3417 B5	3D58 B1	3I9D E8	3I9H B8	3P88 C7	3H19 F8	6U02 F3	7S03 D6	9IA4 A5	
2337 C5	2843 C3	2E41 E1	2I9A B8	2S13 D6	3022 C4	3419 B6	3D59 A1	3I9D E8	3I9H B8	3P92 C8	3H15 E8	6U10 F3	7S04 D6	9IA5 A6	
2338 C5	2847 B2	2E42 E1	2I9B A5	2S14 C6	3023 C4	3420 B5	3D60 A1	3I9D E8	3I9H B8	3P9C C6	3H19 F8	6U11 F4	7U07 F4	9I80 A5	
2341 C5	2849 D4	2E43 D1	2I9C A2	2S15 C6	3026 C4	3421 B5	3D61 A1	3I9D E8	3I9H B8	3P9C C7	3H19 F8	6U12 F4	7U13 F4	9I81 A7	
2342 D6	2850 D4	2E44 D1	2I9C A2	2S16 D6	3029 B4	3434 B5	3D62 A1	3I9D E8	3I9H B8	3PD7 C7	3H19 F8	6U14 F4	9I82 A7	9I82 A7	
2343 C6	2851 B2	2E45 D1	2I9C A3	2S17 C6	3030 C4	3435 B5	3D63 A1	3I9D E8	3I9H B8	3PF5 B7	3H19 F8	6U15 F4	9I83 A2	9I83 A2	
2345 B5	2852 D3	2E55 D1	2I9C A5	2S18 C6	3031 C4	3441 B5	3D64 B1	3I9H D8	3I9H B8	3PG1 C7	3H19 F8	6V01 D1	9I84 A3	9I84 A3	
2346 B4	2853 B3														

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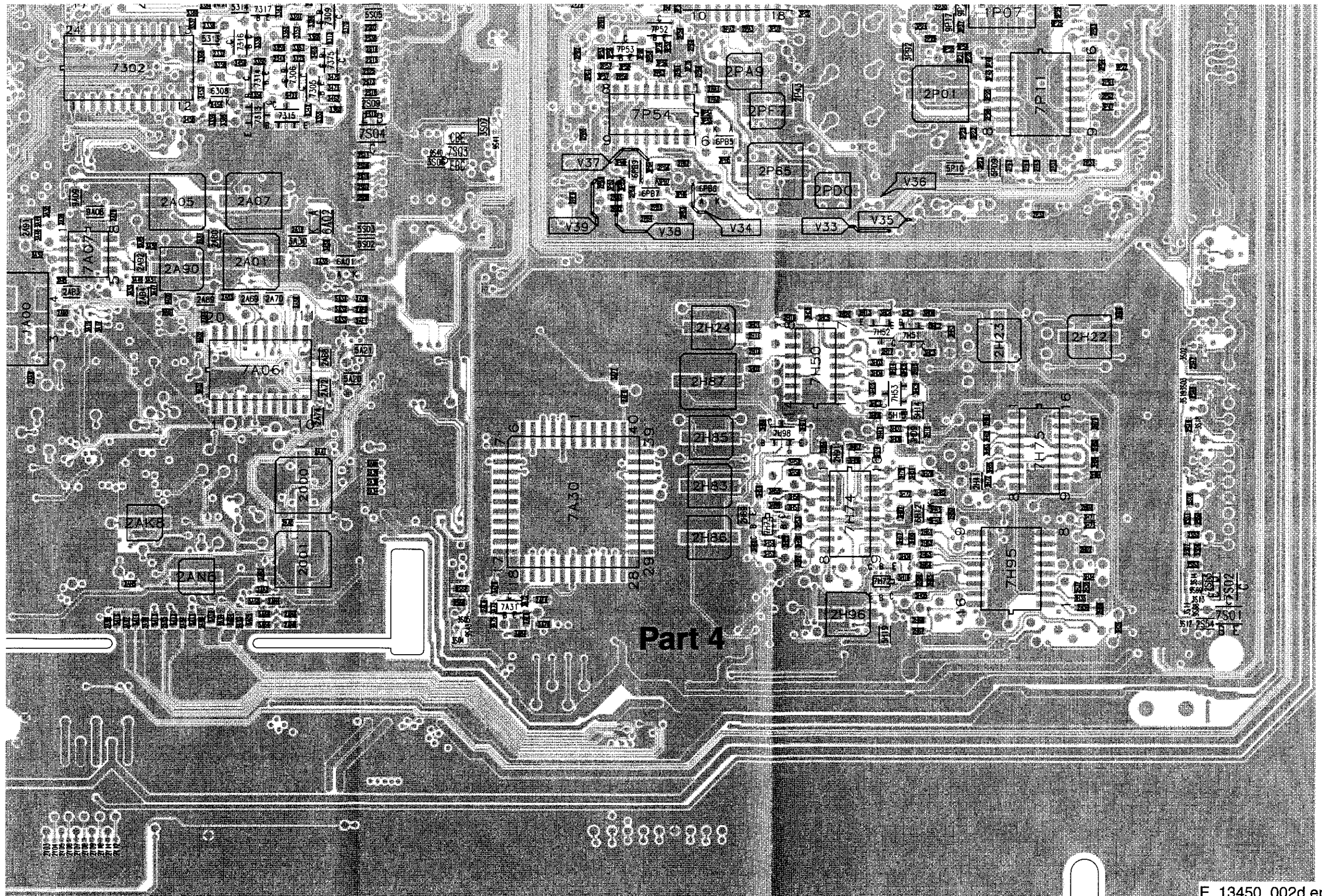
Layout Small Signal Panel (AB) (Bottom Side Part 2)



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E



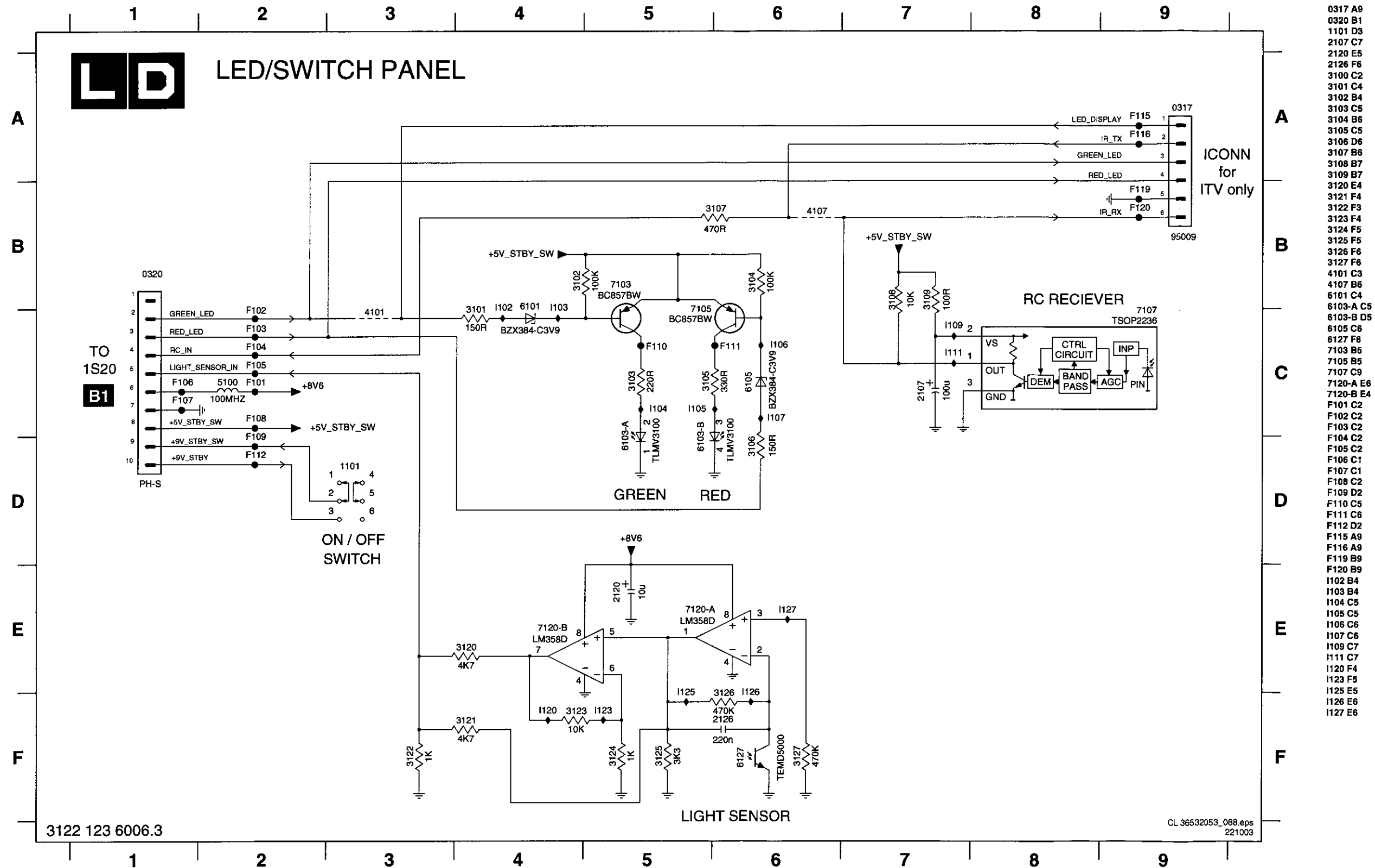
Layout Small Signal Panel (AB) (Bottom Side Part 4)

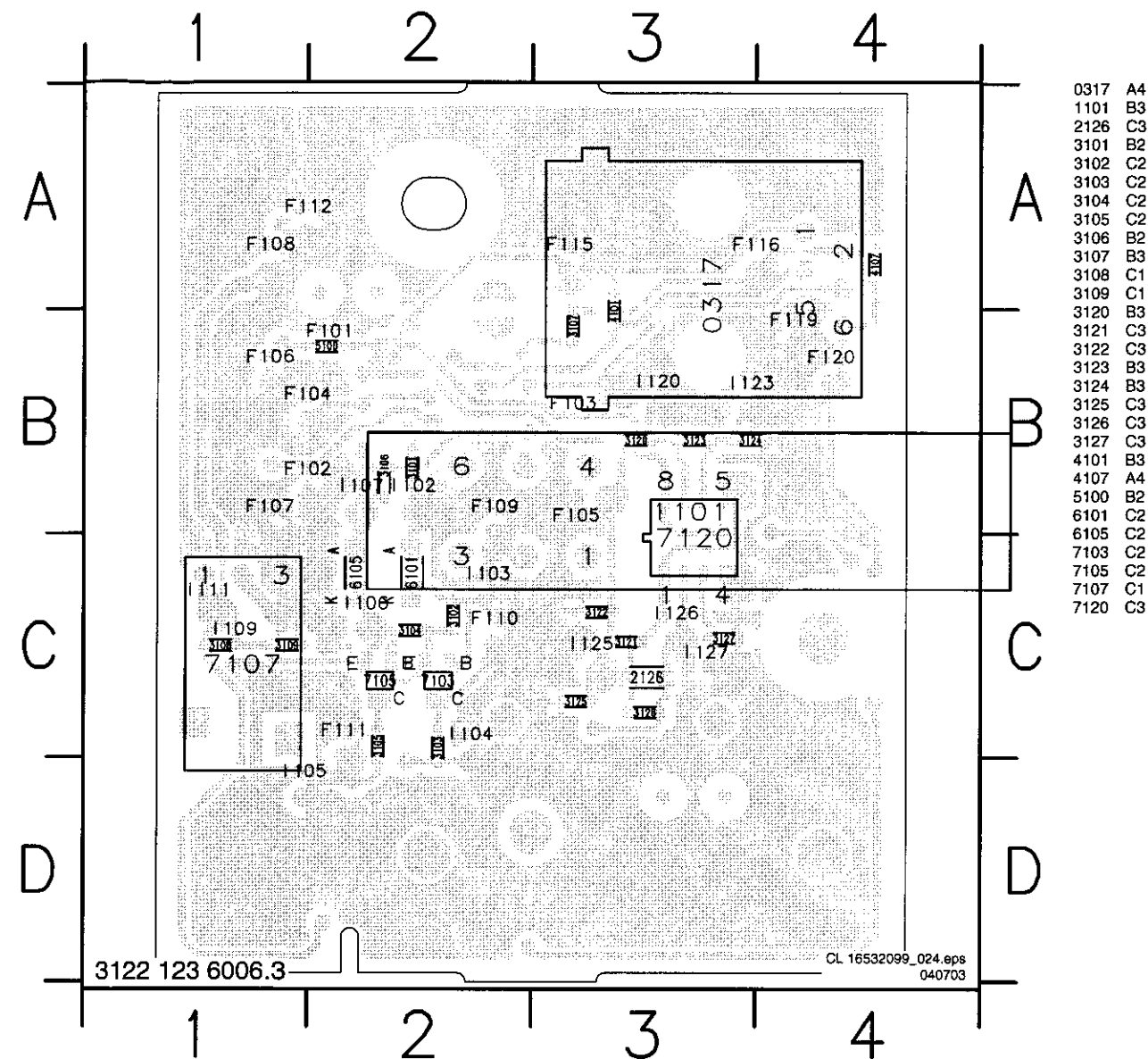


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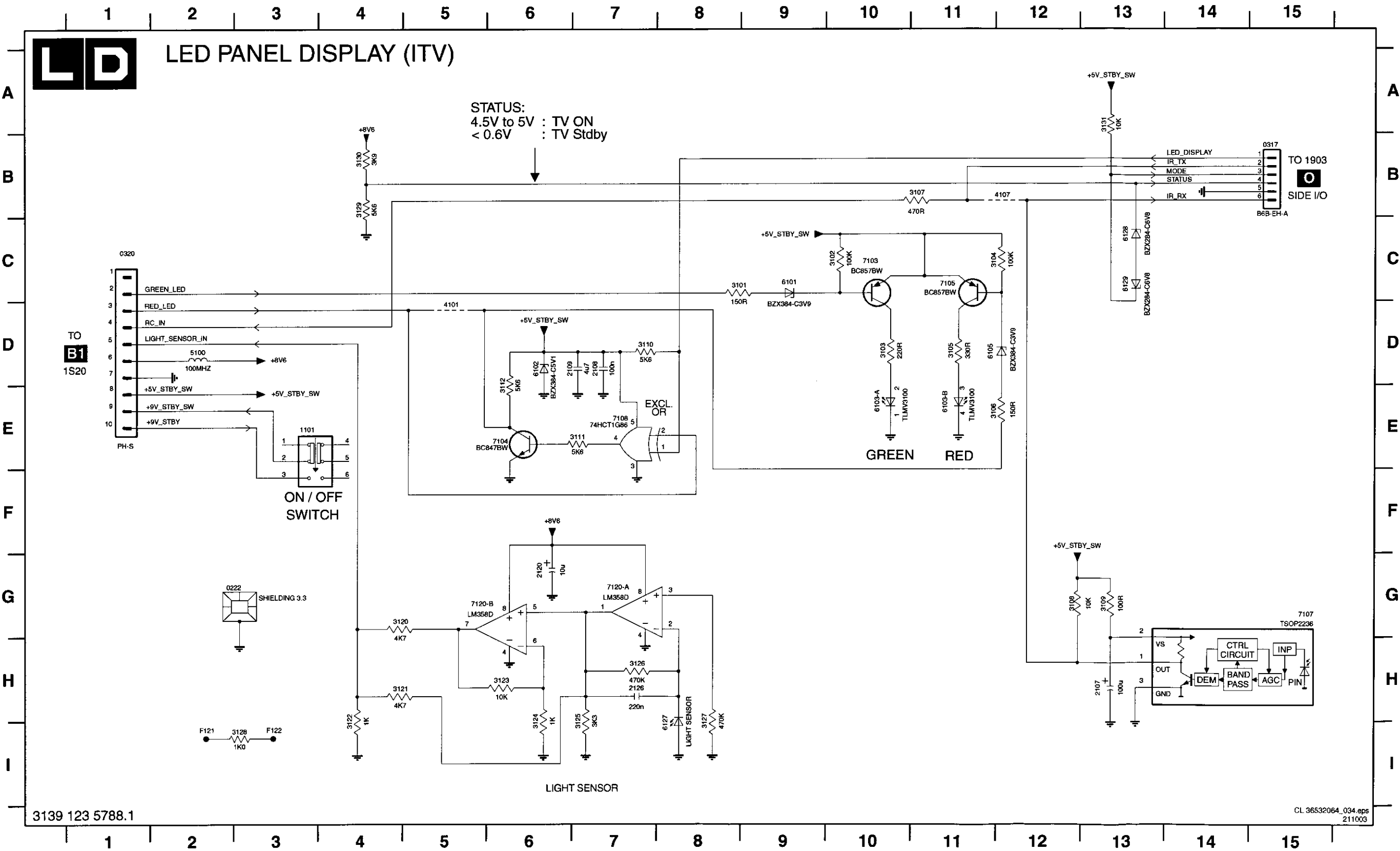
LED/Switch Panel

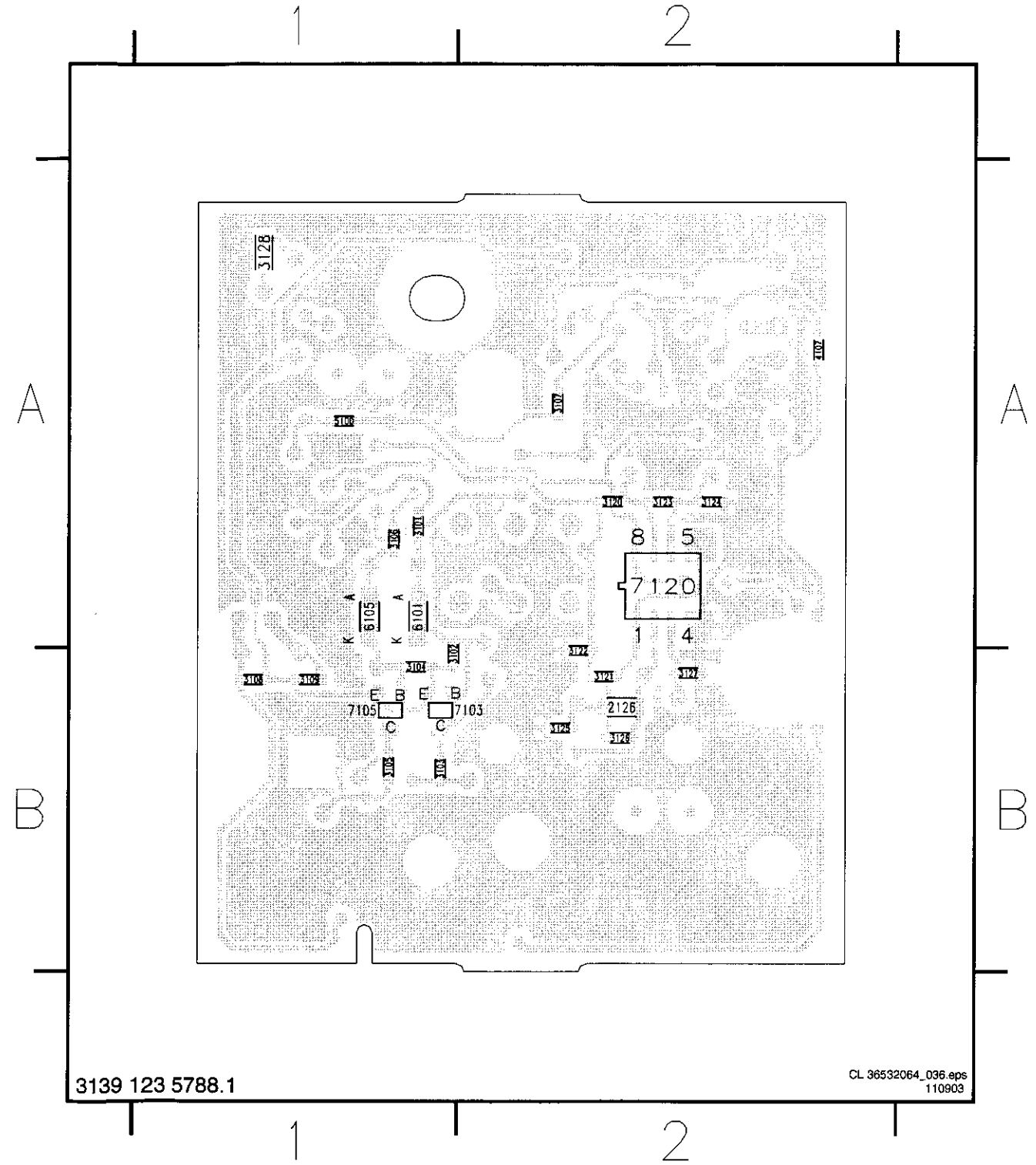




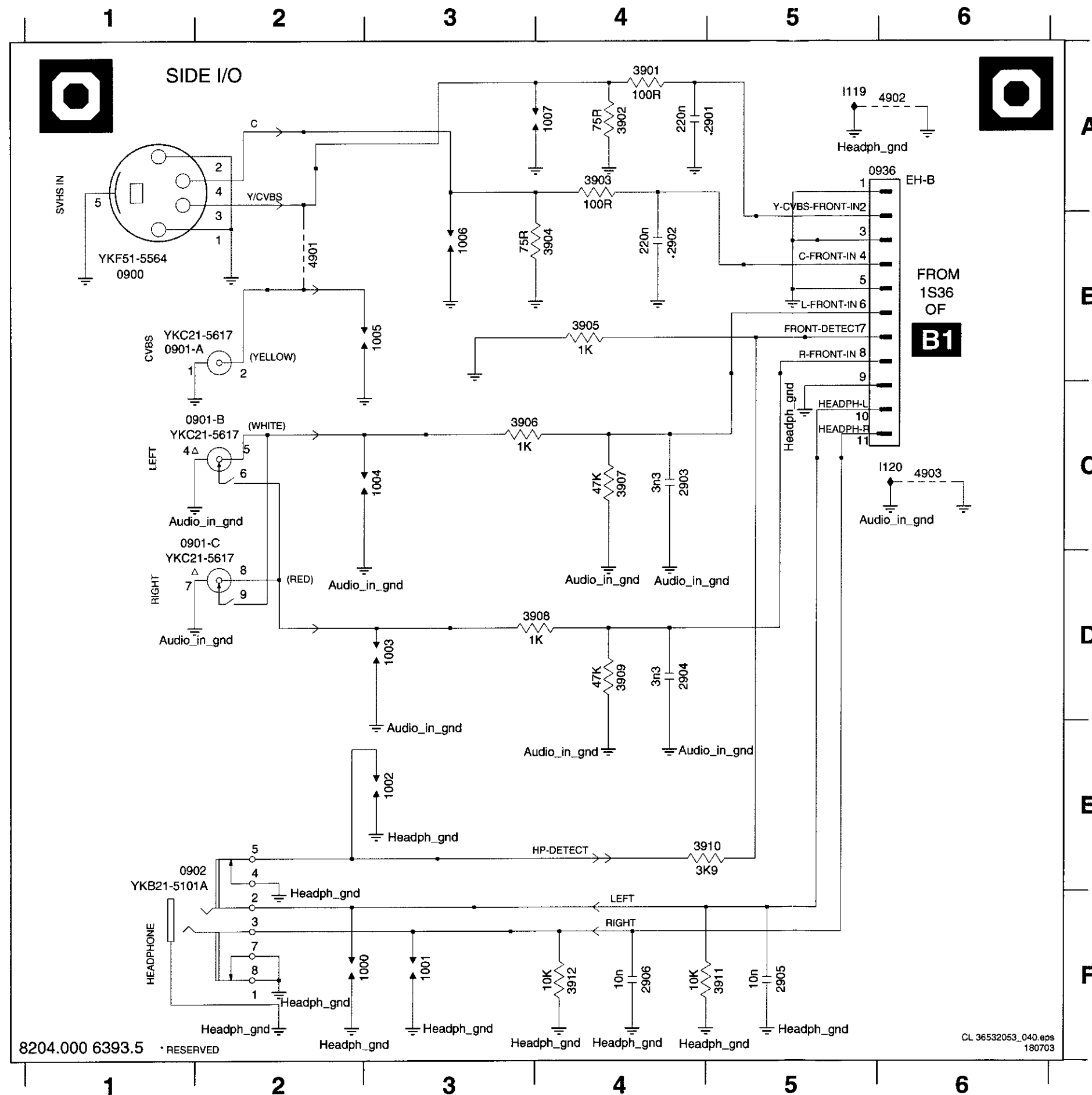
LED/Switch Panel (ITV)

0222 G2	2108 D7	3102 C10	3107 B11	3112 E6	3124 I6	3129 B4	5100 D2	6105 D11	7104 E6	7120-B G6
0317 B15	2109 D6	3103 D10	3108 G12	3120 G4	3125 I7	3130 B4	6101 C9	6127 I8	7105 C11	
0320 C1	2120 G6	3104 C11	3109 G13	3121 H4	3126 H7	3131 A13	6102 D6	6128 C13	7107 G15	
1101 E3	2126 H7	3105 D11	3110 D7	3122 I4	3127 I8	4101 D5	6103-A E10	6129 C13	7108 E7	
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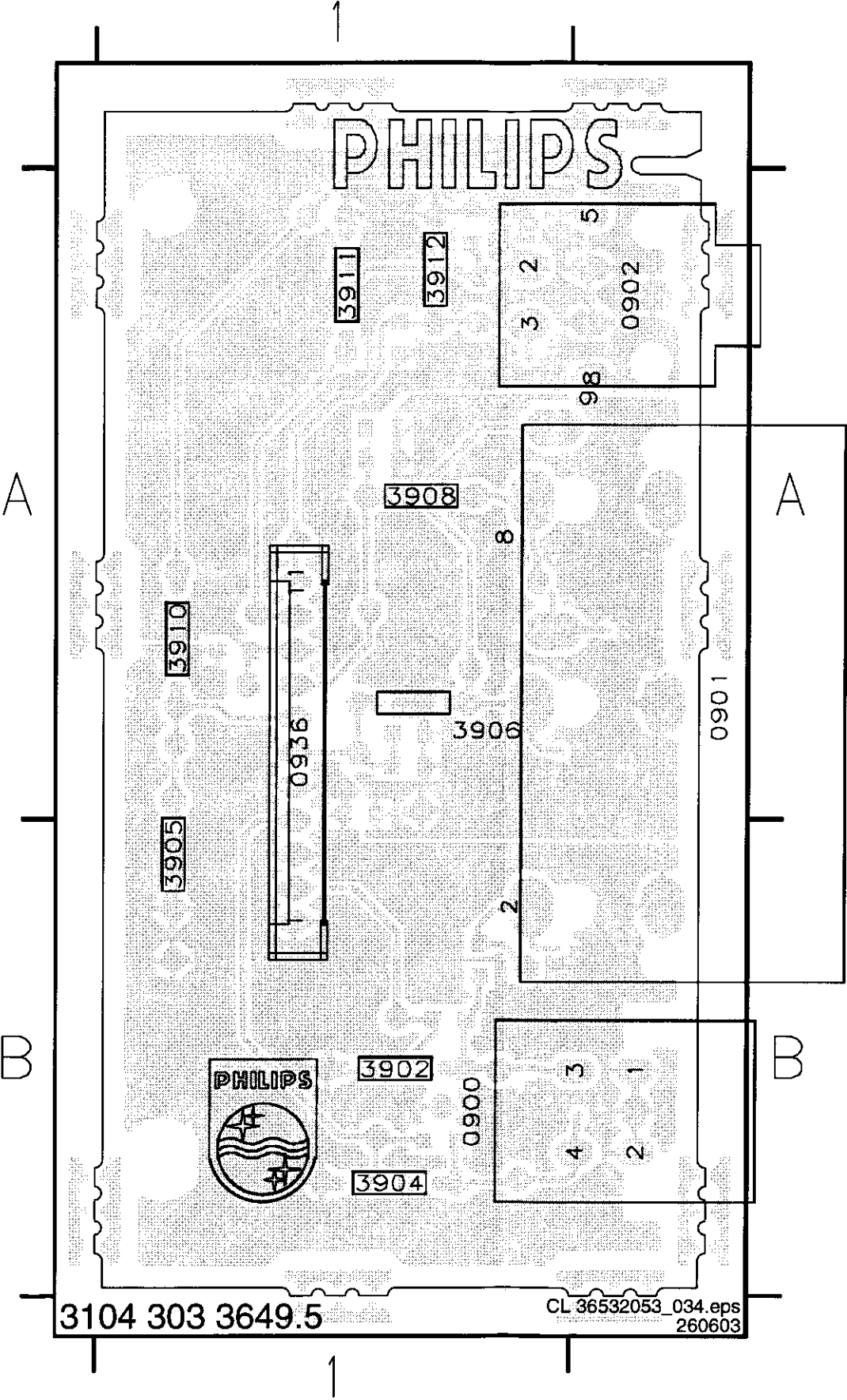


Side I/O



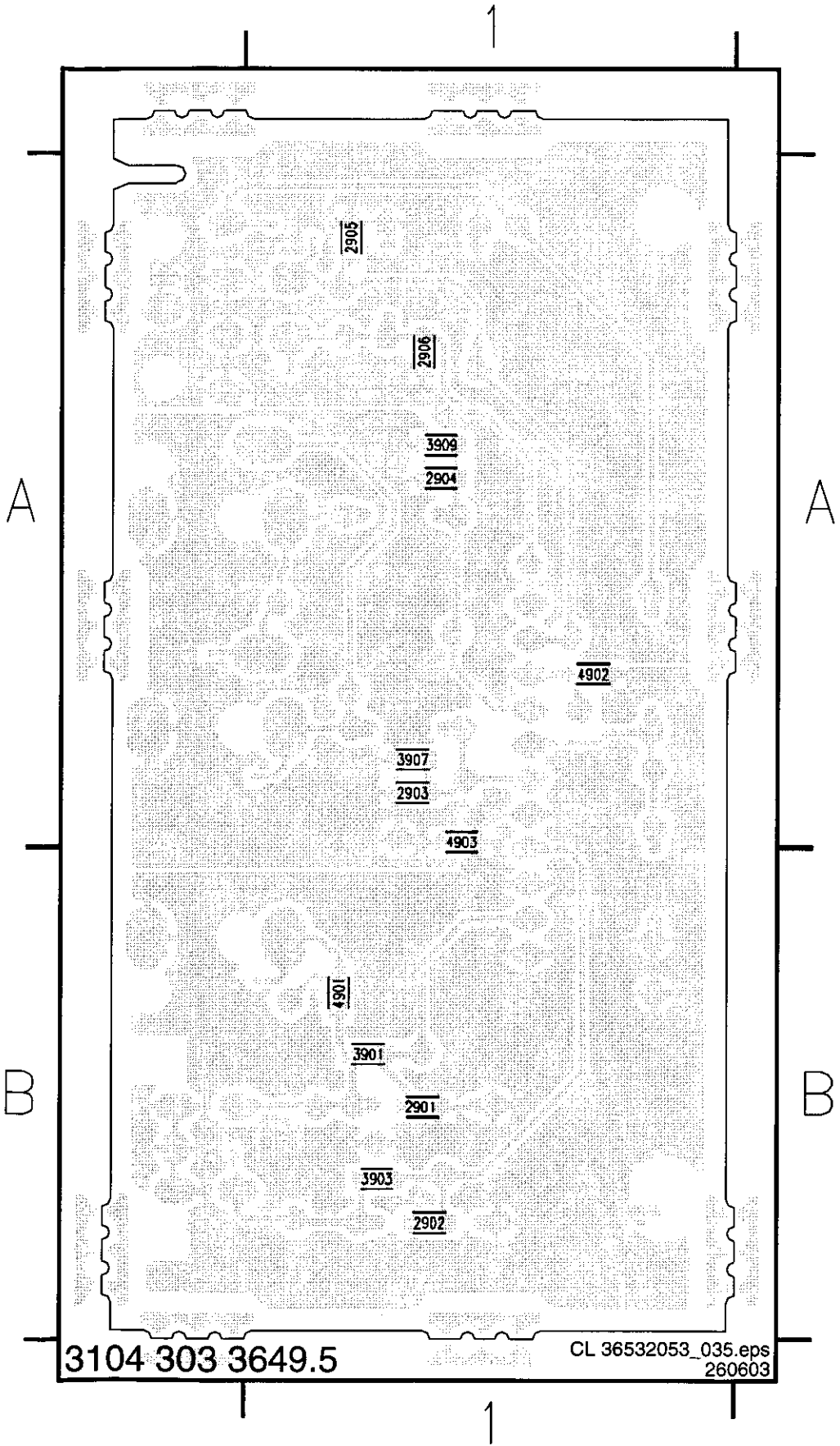
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0901-A B1
0901-B C2
0901-C C2
0902 E2
0936 A5
1000 F2
1001 F3
1002 E3
1003 D3
1004 C3
1005 B3
1006 B3
1007 A4
2901 A4
2902 B4
2903 C4
2904 D4
2905 F5
2906 F4
3901 A4
3902 A4
3903 A4
3904 B4
3905 B4
3906 C3
3907 C4
3908 D4
3909 D4
3910 E5
3911 F5
3912 F4
4901 B2
4902 A6
4903 C6

Layout Side I/O Panel (Top Side)



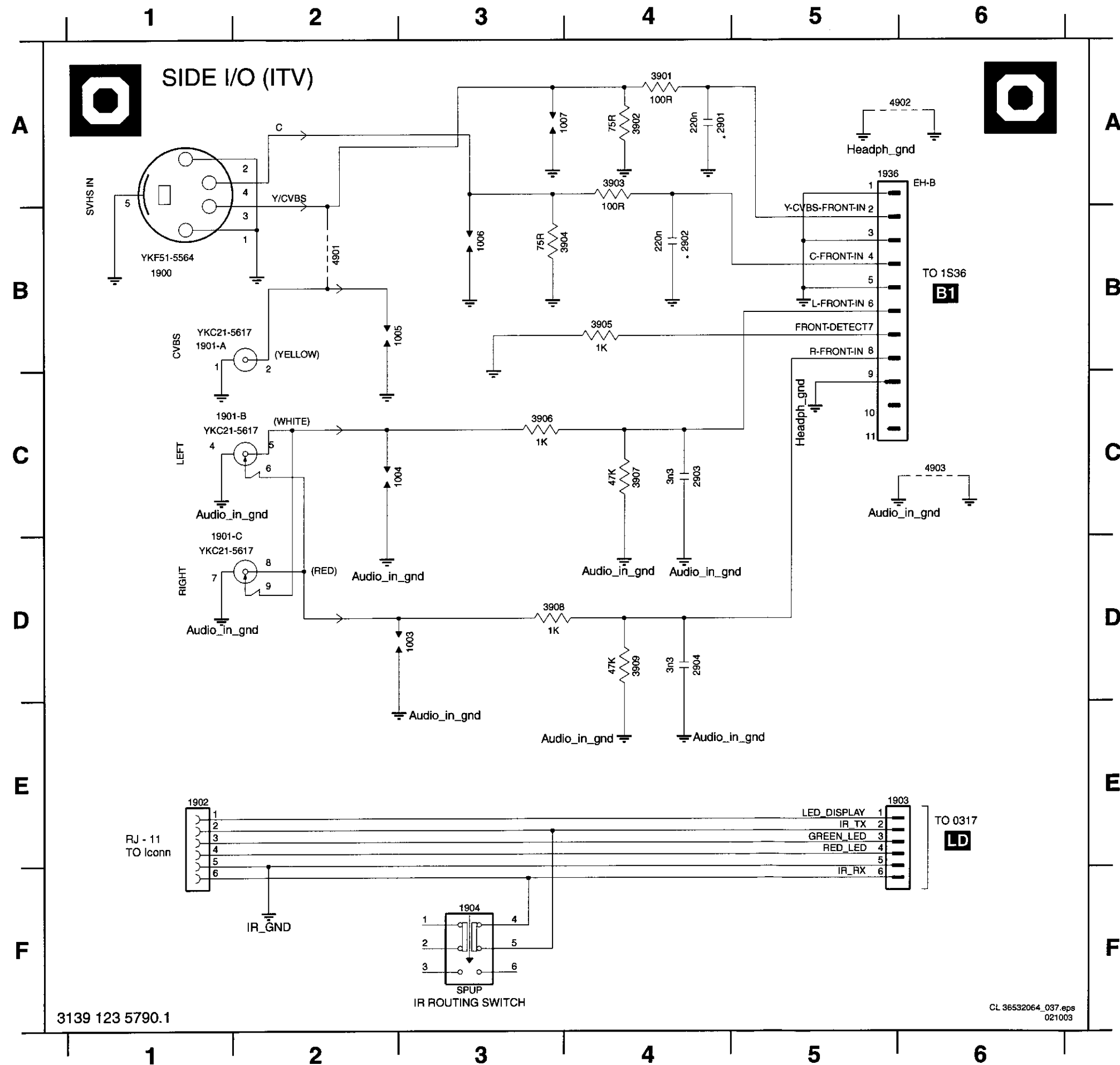
- 0900 B1
- 0901 A1
- 0902 A1
- 0936 A1
- 3902 B1
- 3904 B1
- 3905 B1
- 3906 A1
- 3908 A1
- 3910 A1
- 3911 A1
- 3912 A1

Layout Side I/O Panel (Bottom Side)



- 0900 B1
- 0901 A1
- 0902 A1
- 0936 A1
- 2901 B1
- 2902 B1
- 2903 A1
- 2904 A1
- 2905 A1
- 2906 A1
- 3901 B1
- 3902 B1
- 3903 B1
- 3904 B1
- 3905 B1
- 3906 A1
- 3907 A1
- 3908 A1
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- 3910 A1
- 3911 A1
- 3912 A1
- 4901 B1
- 4902 A1
- 4903 A1

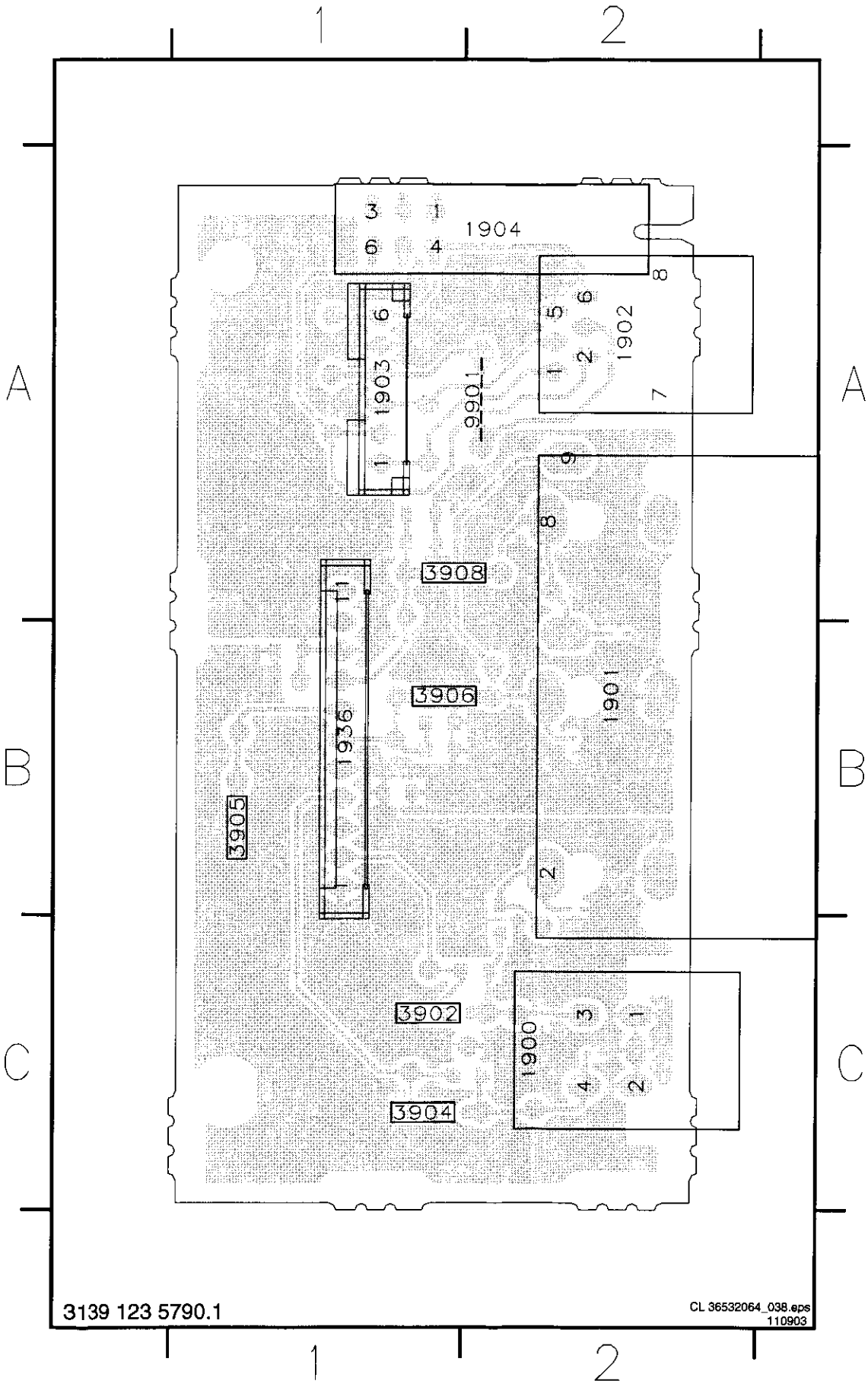
Side I/O (ITV)



1003 D3
1004 C2
1005 B2
1006 B3
1007 A3
1900 B1
1901-A B1
1901-B C1
1901-C D1
1902 E1
1903 E5
1904 F3
1936 A5
2901 A4
2902 B4
2903 C4
2904 D4
3901 A4
3902 A4
3903 A4
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3905 B4
3906 C3
3907 C4
3908 D3
3909 D4
4901 B2
4902 A6
4903 C6

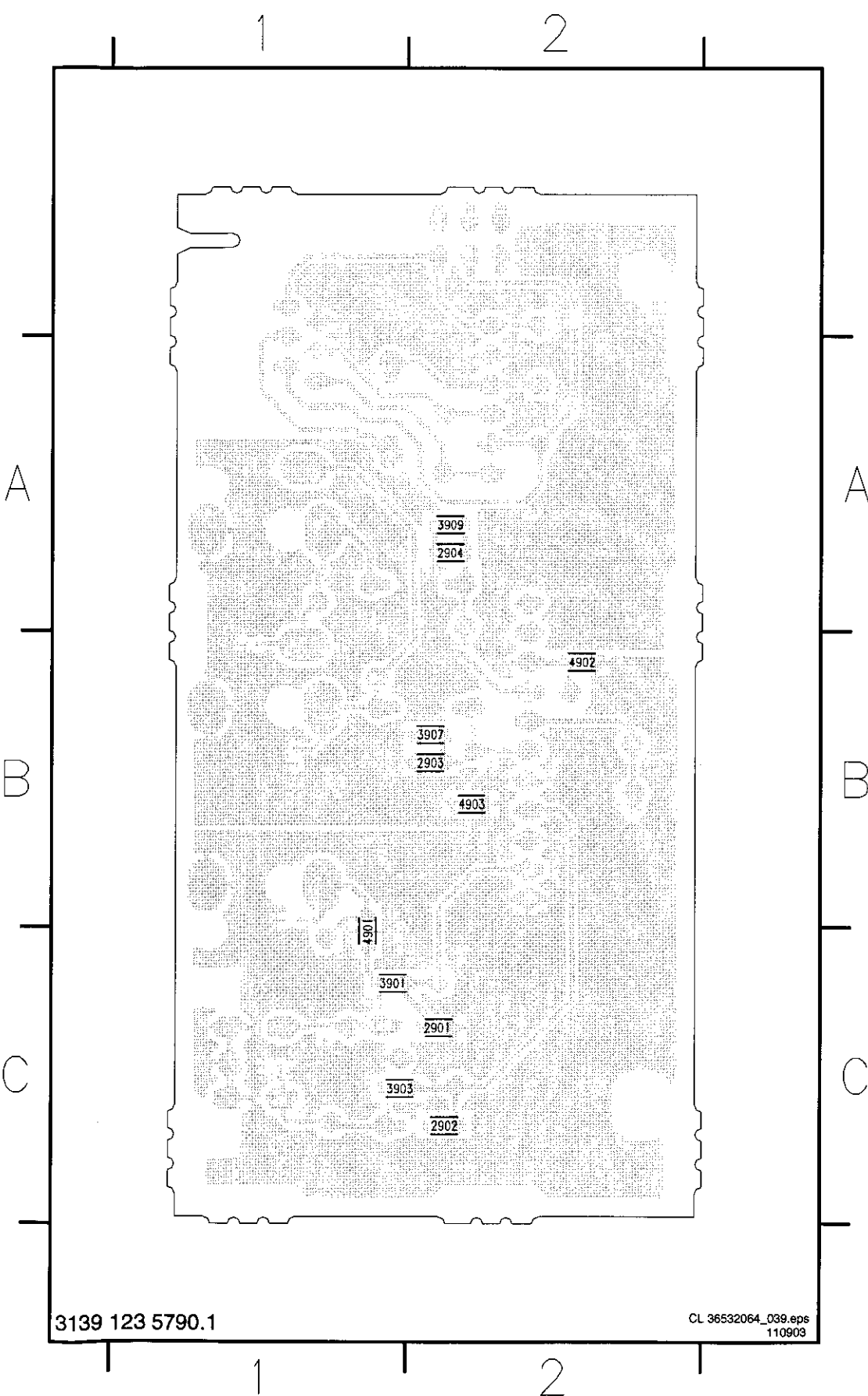
Layout Side I/O Panel (ITV) (Top Side)

1900 C2 1902 A2 1904 A2 3902 C1 3905 B1 3908 A1
1901 B2 1903 A1 1936 B1 3904 C1 3906 B1 9901 A2

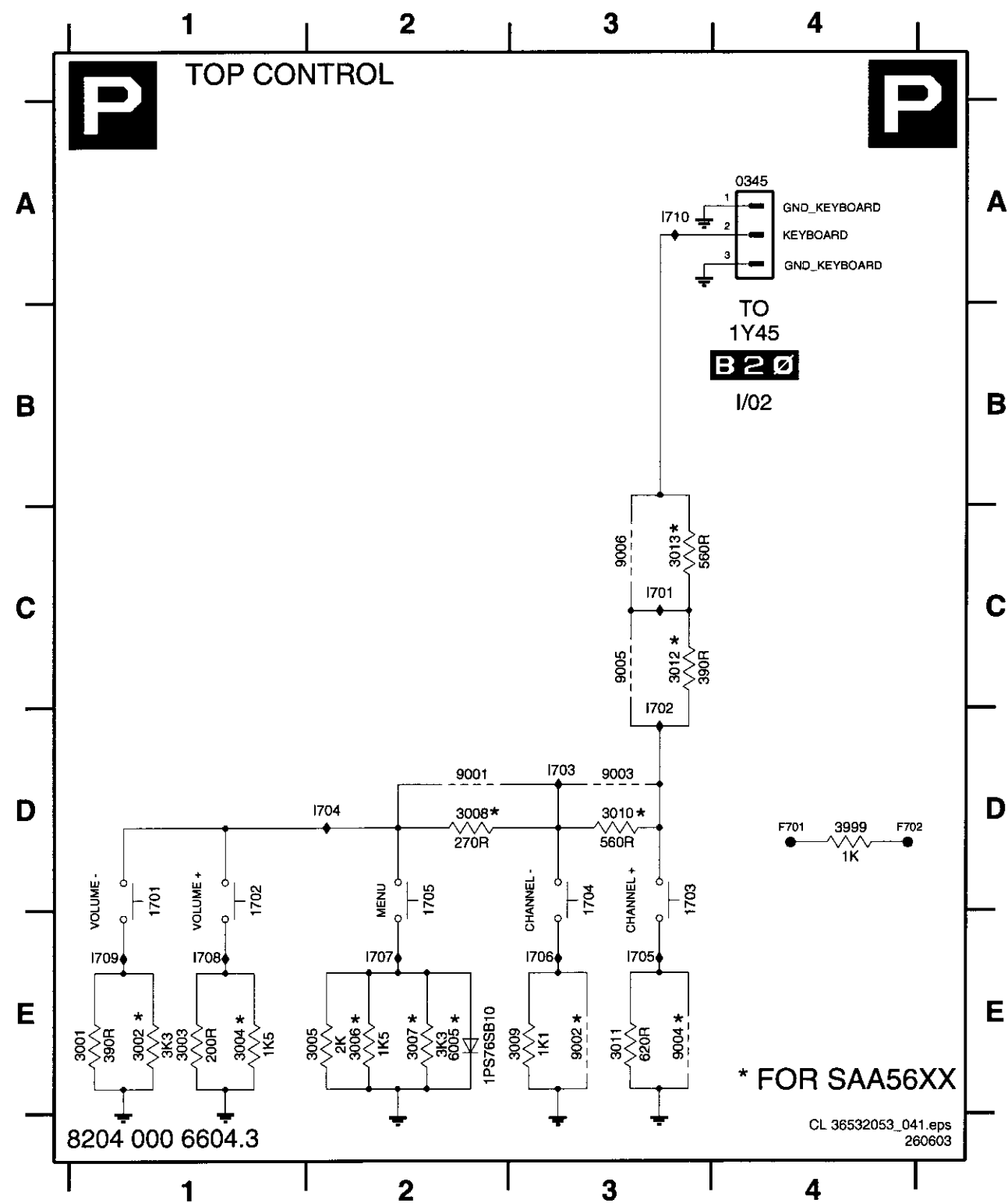


Layout Side I/O Panel (ITV) (Bottom Side)

2901 C2 2903 B2 3901 C1 3907 B2 4901 C1 4903 B2
2902 C2 2904 A2 3903 C1 3909 A2 4902 B2



0345 A4	1704 D3	3003 E1	3007 E2	3011 E3	6005 E2	9004 E3	F702 D4	I704 D2	I708 E1
1701 D1	1705 D2	3004 E1	3008 D2	3012 C3	9001 D2	9005 C3	I701 C3	I705 E3	I709 E1
1702 D1	3001 E1	3005 E2	3009 E3	3013 C3	9002 E3	9006 C3	I702 D3	I706 E3	I710 A3
1703 D3	3002 E1	3006 E2	3010 D3	3999 D4	9003 D3	F701 D4	I703 D3	I707 E2	

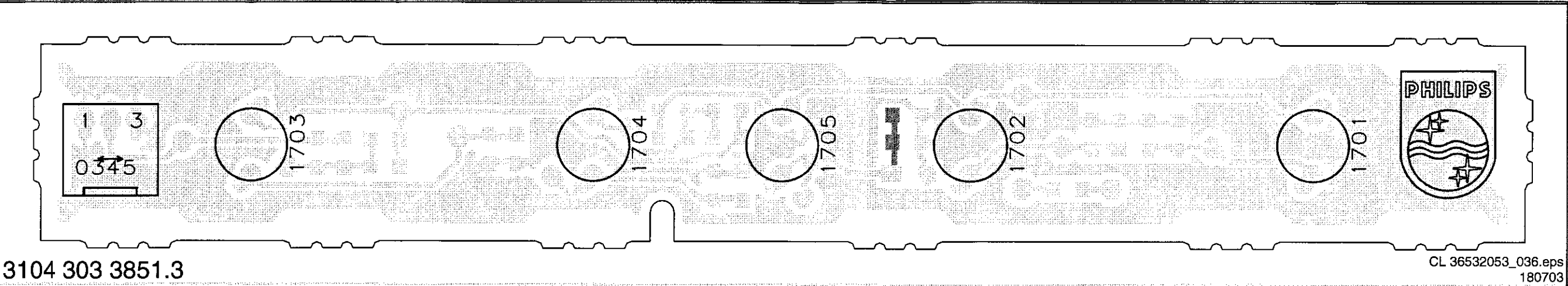


Personal Notes:

This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no margins, text, or other markings on the paper.

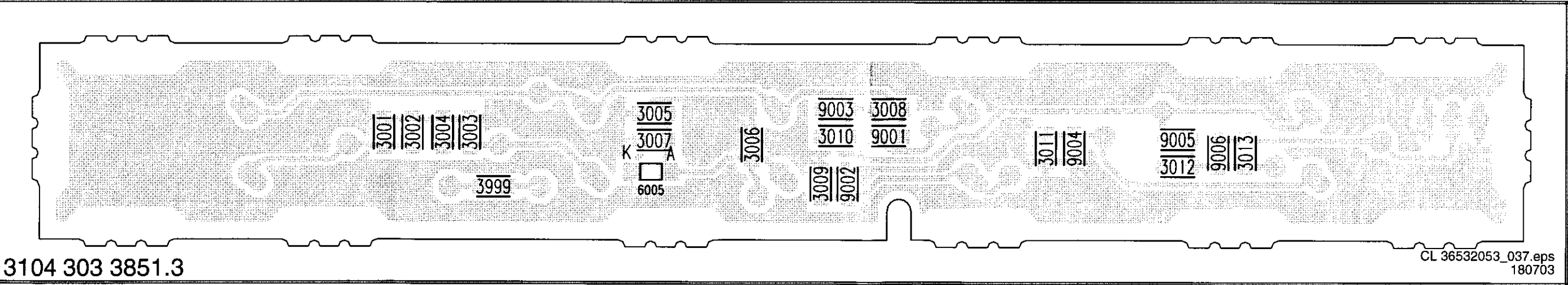
Layout Top Control Panel (Top Side)

0345 1701 1702 1703 1704 1705

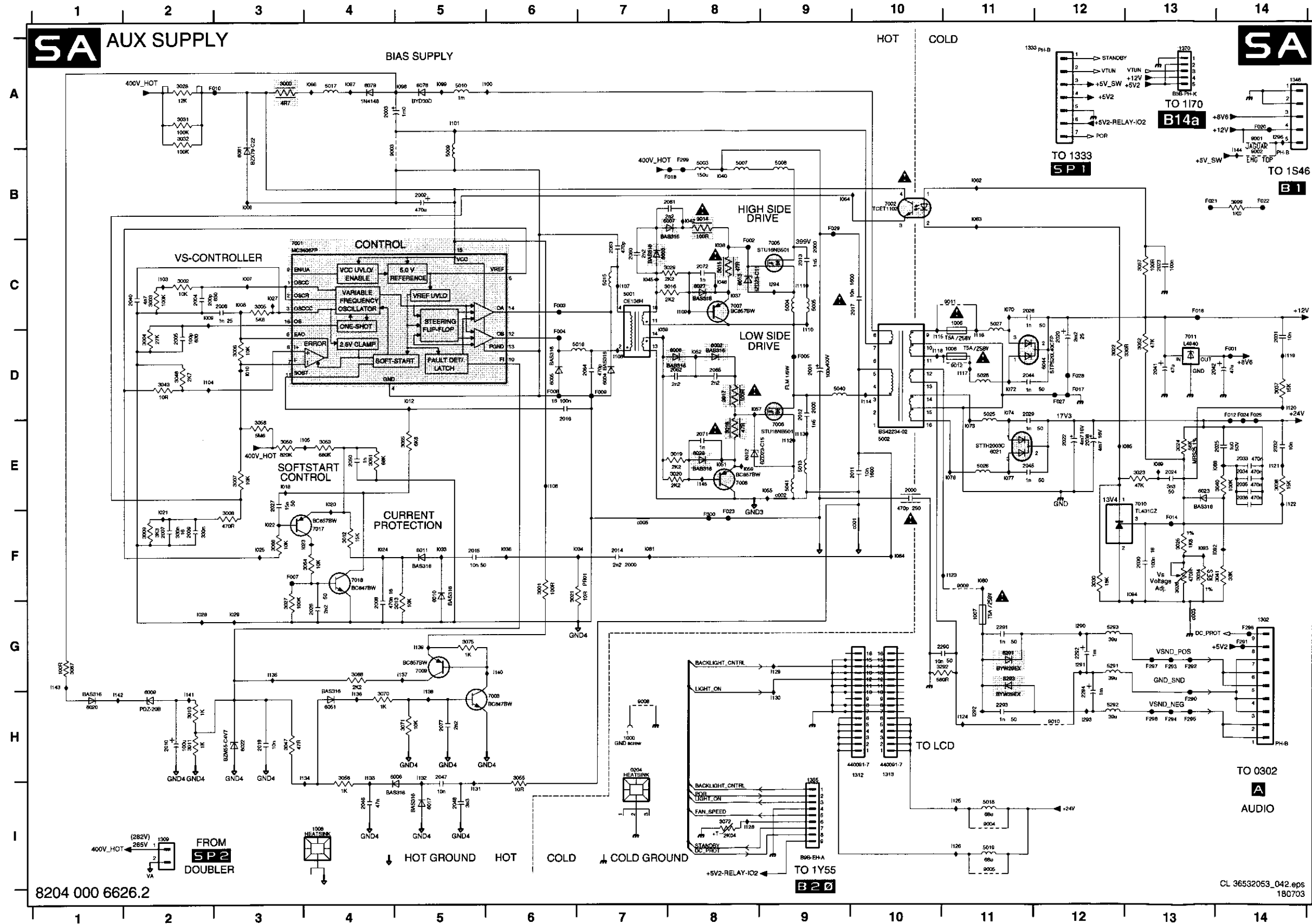


Layout Top Control Panel (Bottom Side)

3001 3003 3005 3007 3009 3011 3013 6005 9002 9004 9006
3002 3004 3006 3008 3010 3012 3999 9001 9003 9005



Aux Supply



0204 H7	3053 E4	F294 H13
1000 H7	3055 H6	F295 H13
1005 C11	3056 H4	F296 G14
1006 D11	3057 C13	F297 G13
1007 G11	3058 E3	F298 H13
1008 I4	3061 E4	F299 B8
1302 G14	3064 F4	F300 F8
1309 I2	3065 E5	K006 B3
1312 H10	3066 F3	K007 C3
1313 H10	3067 G1	K008 C3
1333 A12	3068 G4	K009 C2
1346 A14	3070 H4	K010 D3
1355 I9	3071 H5	K012 D5
1370 A13	3072 I6	K019 E3
2000 E10	3075 G5	K020 E4
2001 D9	3282 G11	K021 F2
2002 B5	3899 B14	K022 F3
2003 A4	5001 C7	K023 F3
2004 C2	5002 E10	K024 F4
2005 D2	5003 B8	K025 F3
2006 C3	5004 C9	K027 C3
2007 F2	5005 C9	K028 G2
2008 G4	5007 B8	K029 G3
2009 F2	5008 B9	K033 F5
2010 H2	5009 B5	K034 F7
2011 E10	5010 A5	K036 F6
2012 D9	5019 E9	K037 C8
2013 C9	5015 C7	K038 C8
2014 F7	5016 D7	K039 D7
2015 F5	5017 A4	K040 B8
2016 D6	5018 I11	K042 B8
2017 C10	5019 I11	K045 C7
2019 H3	5025 D11	K046 C8
2020 D12	5026 E11	K051 E8
2022 E12	5027 C11	K052 D8
2023 C13	5028 D11	K055 E9
2024 E13	5040 D9	K057 D8
2025 E14	5041 E9	K058 E8
2026 G4	5291 G12	K062 B11
2027 E3	5292 H12	K063 B11
2028 C11	5293 G12	K064 B9
2029 D11	6002 D8	K070 C11
2030 F13	6003 C7	K072 D11
2031 D14	6004 D7	K073 E11
2032 E14	6005 D8	K074 D11
2033 E14	6006 H5	K076 E11
2034 E14	6007 B8	K077 E11
2035 E14	6008 D8	K080 F11
2036 E14	6009 H2	K081 F7
2038 E12	6010 F5	K084 F10
2040 C2	6011 F5	K085 E13
2041 D13	6012 E8	K088 E13
2042 D13	6013 C8	K089 E13
2044 D11	6017 I5	K092 F13
2045 E11	6020 H1	K093 F13
2046 I4	6021 E11	K094 F13
2047 H5	6022 H8	K096 A4
2048 I5	6023 E13	K097 A4
2050 E4	6027 C8	K098 A5
2060 C7	6028 E8	K099 A5
2061 B8	6044 D12	K100 A5
2062 D8	6051 H4	K101 A5
2063 C7	6078 A5	K103 C2
2064 D7	6079 A4	K107 A4
2065 D8	6081 B3	K108 C4
2071 E8	6291 G11	K106 E6
2072 C8	6293 G11	K107 C7
2077 H5	7001 C3	K108 D7
2290 G11	7002 B10	K109 C8
2291 G11	7003 H6	K110 D9
2292 G12	7005 C9	K111 C9
2293 H11	7006 E9	K112 E9
2294 H12	7007 C8	K113 E9
3000 A3	7008 E8	K114 D10
3001 F6	7009 G5	K115 D10
3002 C2	7010 E13	K116 D11
3003 C2	7011 D13	K117 D11
3004 D2	7017 F4	K118 D10
3005 C3	7018 F4	K119 D14
3006 D3	9001 A14	K120 D14
3007 E3	9002 B14	K121 E14
3008 F3	9003 B4	K122 E14
3009 F2	9004 I11	K123 F11
3010 H2	9005 I11	K124 H11
3011 H2	9006 H7	K125 I11
3012 F4	9009 F11	K126 I11
3013 G5	9010 H12	K128 I8
3014 B8	9011 C11	K129 G9
3015 C8	9012 D11	K130 H9
3016 C8	F001 D14	K131 I5
3017 D8	F002 C8	K132 H5
3018 E8	F003 C6	K133 H4
3019 E8	F004 D6	K134 H4
3020 E8	F005 D9	K135 G3
3021 F6	F007 F3	K136 H4
3022 D12	F008 D8	K137 G5
3023 E12	F009 D7	K138 H5
3024 E13	F010 A3	K139 G5
3025 F13	F012 D14	K140 G6
3026 F13	F014 F13	K141 H2
3027 G3	F016 C13	K142 H1
3028 A2	F017 D12	K143 G1
3029 C8	F018 B8	K144 B14
3030 F12	F020 A14	K145 E8
3031 A2	F021 B13	K200 G12
3032 A2	F022 B14	K201 G12
3034 F13	F023 F8	K202 H11
3037 D14	F024 D14	K203 H12
3038 E14	F025 D14	K204 C9
3040 E14	F027 D12	K206 A14
3041 F14	F028 D12	K207 F10
3043 D2	F029 B9	K202 E9
3047 H3	F290 H13	K203 G13
3048 D2	F291 G14	K205 F7
3050 E3	F292 G13	
3052 D13	F293 G13	

1 2 3 4

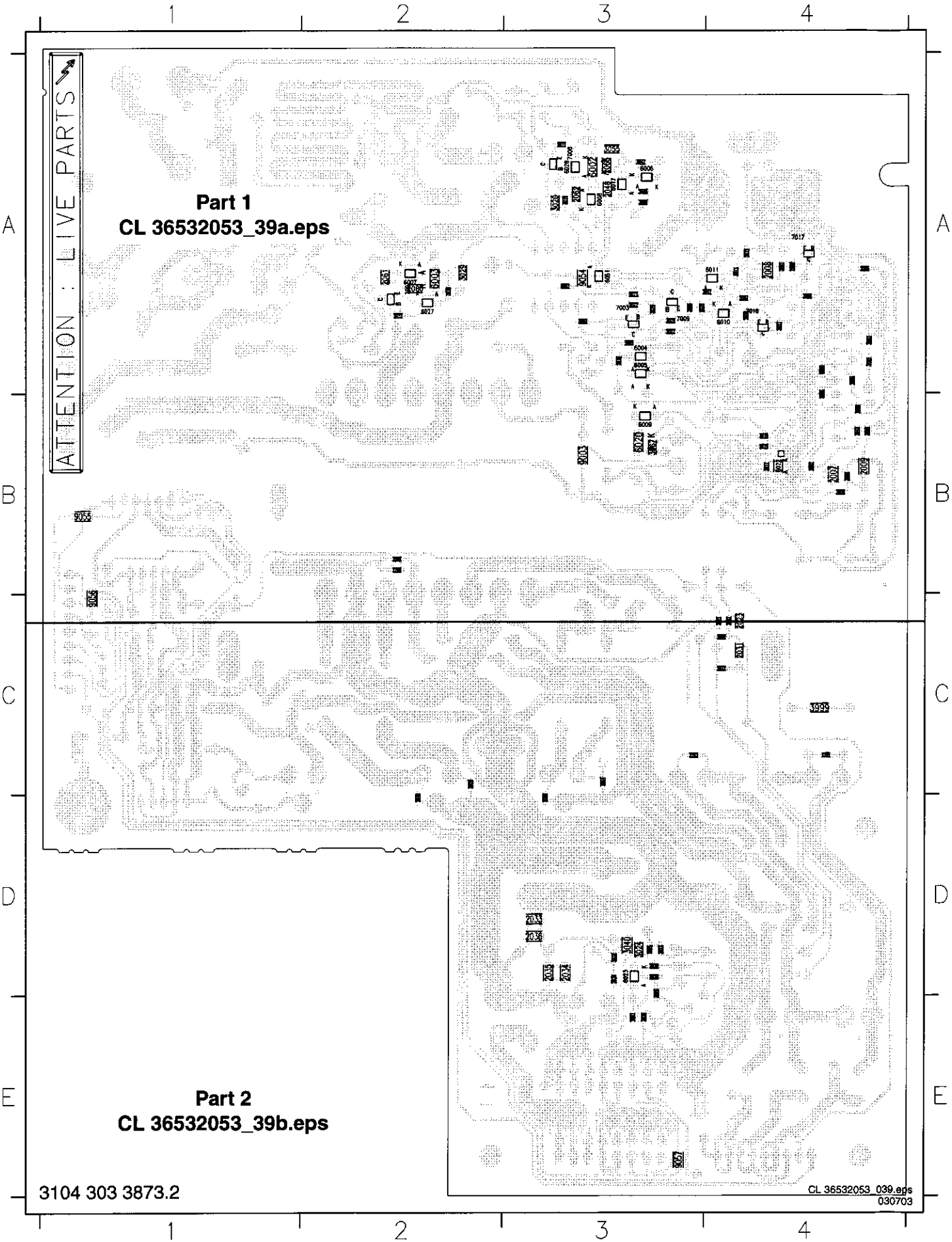
ATTENTION: LIVE PARTS

3104 303 3873.2

CL 36532053_038.e
0307

0204	C3	5293	E1
1000	C4	6012	A3
1005	B2	6013	A3
1006	B2	6021	D3
1007	D1	6044	D2
1008	A2	6078	B2
1302	E1	6079	B1
1309	A4	6081	B1
1312	E2	6291	D1
1313	E2	6293	D2
1333	B4	7001	B1
1346	B4	7002	B1
1355	C4	7005	A4
1370	C4	7006	A2
2000	B4	7010	D2
2001	A4	7011	D3
2002	B1	9001	C4
2003	B2	9002	B4
2004	A1	9004	E2
2005	A1	9005	E2
2010	B2	9008	C4
2011	A3	9009	C3
2012	A3	9010	C3
2013	A4	9011	C2
2014	A3	9012	C2
2017	B4	9050	D1
2020	D1	9051	D1
2022	D3	9052	D1
2025	D2	9053	C4
2038	D2	9058	A1
2041	C4	9059	C4
2042	D4	9060	C4
2292	D1	9061	E1
2294	E1	9062	C3
3000	B1	9063	A1
3001	A1	9064	B4
3014	A3	9065	B4
3015	A3	9066	C1
3017	A2	9067	D1
3018	A2	9068	B4
3021	A1	9069	C4
3026	E1	9070	B1
3028	A2	9071	A3
3031	A1	9072	A4
3032	A2	9073	C1
3050	A2	9074	A4
3053	A1		
3058	A1		
3072	C4		
5001	A2		
5002	A3		
5003	A4		
5004	A4		
5005	A3		
5007	A4		
5008	B4		
5009	B2		
5010	A3		
5013	A3		
5015	A2		
5016	B2		
5017	B1		
5018	D2		
5019	D2		
5025	C3		
5026	C3		
5027	C2		
5028	C2		
5040	A3		
5041	A3		
5291	E1		
5292	E1		

Layout Aux Supply Panel (Bottom Side Overview)



2006 B4	3064 A4
2007 B4	3065 A3
2008 A4	3066 A4
2009 B4	3067 B3
2015 A3	3068 A3
2016 A3	3070 A3
2019 B4	3071 A3
2023 C4	3075 A3
2024 D3	3292 B2
2026 A4	3999 C4
2027 A3	6002 A3
2028 D3	6003 A2
2029 C2	6004 A3
2030 D3	6005 A3
2031 C4	6006 A3
2032 D3	6007 A2
2033 D3	6008 A3
2034 D3	6009 B3
2035 D3	6010 A4
2036 D3	6011 A4
2040 A4	6017 A3
2044 C3	6020 B3
2045 D2	6022 B4
2046 A3	6023 D3
2047 A3	6027 A2
2048 A3	6028 A3
2050 A4	6051 A3
2060 A2	7003 A3
2061 A2	7007 A2
2062 A3	7008 A3
2063 A3	7009 A3
2064 A3	7017 A4
2065 A3	7018 A4
2071 A3	9003 B3
2072 A2	9054 A3
2077 A3	9055 B1
2290 B2	9056 C1
2291 C4	9057 E3
2293 C3	
3002 A4	
3003 A4	
3004 A4	
3005 A4	
3006 B4	
3007 B4	
3008 B4	
3009 B4	
3010 B4	
3011 B4	
3012 A4	
3013 A4	
3016 A2	
3019 A3	
3020 A3	
3022 C4	
3023 D3	
3024 D3	
3025 D3	
3027 A4	
3029 A2	
3030 D3	
3034 E3	
3037 C4	
3038 D3	
3040 D3	
3041 E3	
3043 B4	
3047 A4	
3048 B4	
3052 C4	
3055 A3	
3056 A3	
3057 C4	
3061 A4	

1

2

3

4

ATTENTION : LIVE PARTS

A

B

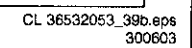
A

D

CL 36532053_39a.eps
300603

15

Part 2



SP 1 POWER SUPPLY



8204 000 6611.4

03008 B1	7506 F10
1301 F2	7531 H11
1302 F2	7532 H11
1333 F14	8002 A4
	8003 B4
1402 C3	9004 C10
1402 C3	9005 C10
2400 B2	F410 B1
2401 B4	F411 B1
2402 C1	F412 A1
2403 C1	F413 A1
2404 C3	F414 A2
2405 C3	F415 B1
2406 B4	F416 B2
2407 B4	F417 B2
2501 D5	F418 B1
2502 G4	F419 B2
2503 D5	F420 C1
2504 G3	F421 F14
2506 G6	F423 F14
2507 F7	F424 F14
2508 F7	F425 B2
2509 F7	F426 G7
2510 G7	F429 G6
2512 F7	F430 H2
2512 F7	F435 F12
2513 H3	F438 F12
2514 E7	F437 F12
2515 H3	F438 F10
2533 H11	F440 G14
2534 B9	F441 E6
2535 H11	F442 E6
2536 H3	F443 D5
2637 H14	F444 D5
2638 G10	F446 F14
2639 G10	F447 F14
3400 B3	F448 B11
3401 B1	F450 H10
3402 B2	M01 E7
3403 C2	M02 F7
3404 C4	M03 F7
3450 B12	M40 F10
3451 D10	M41 F10
3461 D10	M06 H11
3501 H6	M10 A3
3502 H7	M11 A4
3503 F7	M12 B6
3504 B8	M13 B11
3505 H7	M14 B13
3506 G3	M15 A6
3507 G3	M16 B4
3509 F8	M17 B2
3511 E8	M28 C9
3512 H11	M31 F6
3513 H11	M32 F6
3514 H11	M33 C2
3515 H11	M34 H3
3516 F4	M35 H6
3517 B9	M36 G4
3518 H10	M37 F7
3519 H10	M38 H7
3520 H10	M39 H11
3521 G12	M40 H11
3522 G12	M41 H11
3523 G8	M42 B11
3524 H8	M43 B12
3525 H8	M44 A13
3526 C9	M45 B12
3527 B12	M46 D10
3528 B12	M48 F7
3529 B12	M49 H11
3530 H14	M52 H5
3531 H14	M53 H11
3532 H13	M54 H2
3533 F8	M65 C14
3534 F10	M59 H8
3535 F10	M60 H8
3536 F10	M61 G9
3537 F9	M62 H12
3538 H11	M63 H13
3539 G12	M64 H14
3540 H11	M65 H14
5402 B4	M66 C10
5403 A12	M67 H10
5404 A12	M68 G9
5405 A12	M69 D9
5500 F6	M70 D9
5502 G4	M71 G11
5503 G4	
5506 F8	
6480 C10	
6481 D9	
6482 D9	
6501 G4	
6502 H4	
6503 F7	
6504 F7	
6505 H7	
6506 D6	
6507 G9	
6515 B9	
6515 H10	
6517 H9	
6518 B9	
6519 D10	
6531 H11	
6532 H12	
7460 C10	
7500 H3	
7501 H8	
7502 B6	
7505 C10	
7506 H3	
7507 H3	

SP2 DOUBLER

FROM SP1 POWER SUPPLY

TO 1309 SA AUX SUPPLY

100-230VAC1

100-230VAC2

400V_HOT

VA

COM

DEL

T1

STR83145

7805

2SA1925

7802

BC547C

HEATSINK PSU 30

8204 000 6611.4

CL 36532053_044.eps

180703

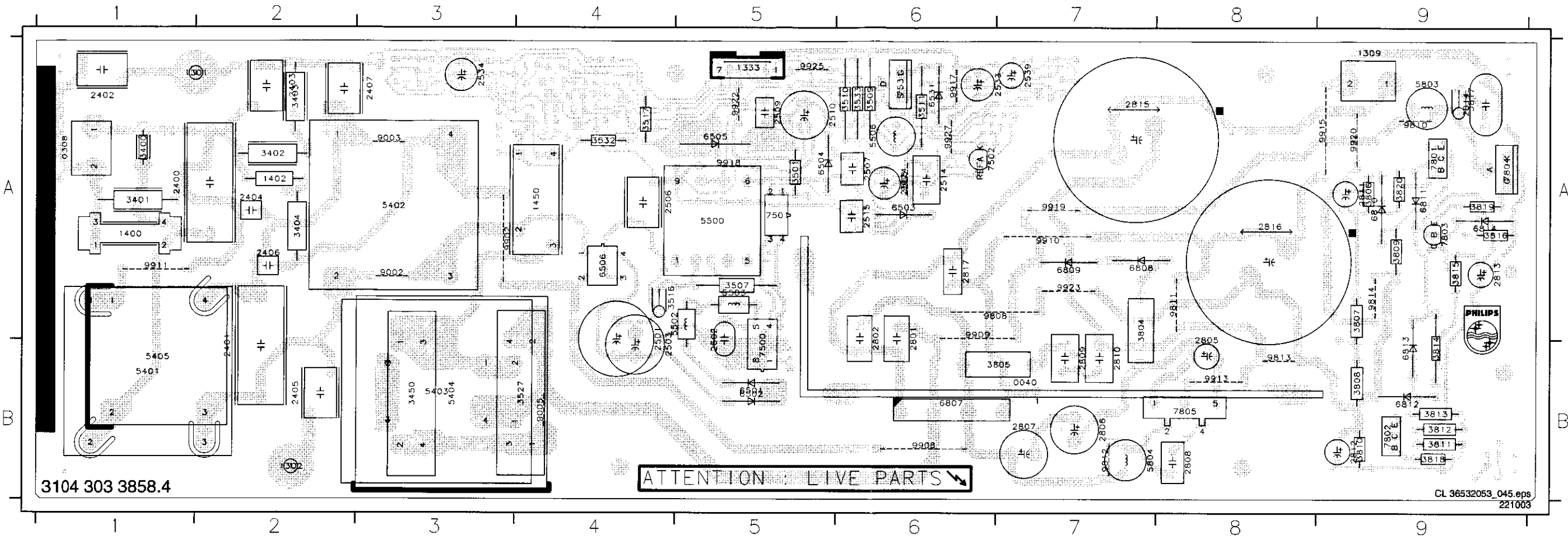
0040 F1	1816 B1
1309 A3	1817 B2
2801 A2	1818 B1
2802 A2	1819 B1
2805 B1	1820 B1
2806 B1	1821 B1
2807 B1	1822 B3
2808 C1	1823 B1
2809 C2	1824 B2
2810 C2	1825 C2
2811 D2	1826 C2
2812 E1	1828 C1
2813 F3	1829 C1
2814 F3	1830 D3
2815 B1	1831 D2
2816 C2	1832 D2
2817 A2	1835 D3
3804 B1	1836 E2
3805 C3	1837 E3
3806 D2	1838 E1
3807 D2	1839 E1
3808 D2	1840 E2
3809 D3	1841 E3
3810 E1	1842 E1
3811 E1	1843 E2
3812 E1	1845 E3
3813 E2	1846 F3
3814 E2	1847 F3
3815 F3	1848 F3
3816 F3	1849 D3
3817 E3	1850 D3
3818 E1	
3819 E3	
3820 D3	
3999 F1	
5803 C3	
5804 C1	
6807 A2	
6808 A1	
6809 A1	
6810 C3	
6811 D3	
6812 E1	
6813 E2	
6814 F2	
7801 D3	
7802 E1	
7803 E3	
7804 E3	
7805 C1	
9808 C2	
9810 C3	
9811 C1	
9812 C1	
9813 C2	
9814 B2	
F020 A3	
F021 A3	
F023 F1	
F024 F1	
F025 F1	
F026 F2	
F027 A3	
F028 B3	
F029 B2	
F030 B2	
F031 B2	
F033 C3	
F034 D1	
F035 D2	
F036 E1	
1810 A2	
1811 A2	
1812 A2	
1813 A1	
1814 A1	
1815 B1	

This image shows a full page of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. In the bottom right corner, there is small black text that reads "E_06532_012.eps" and "131004".

E_06532_012.eps
131004

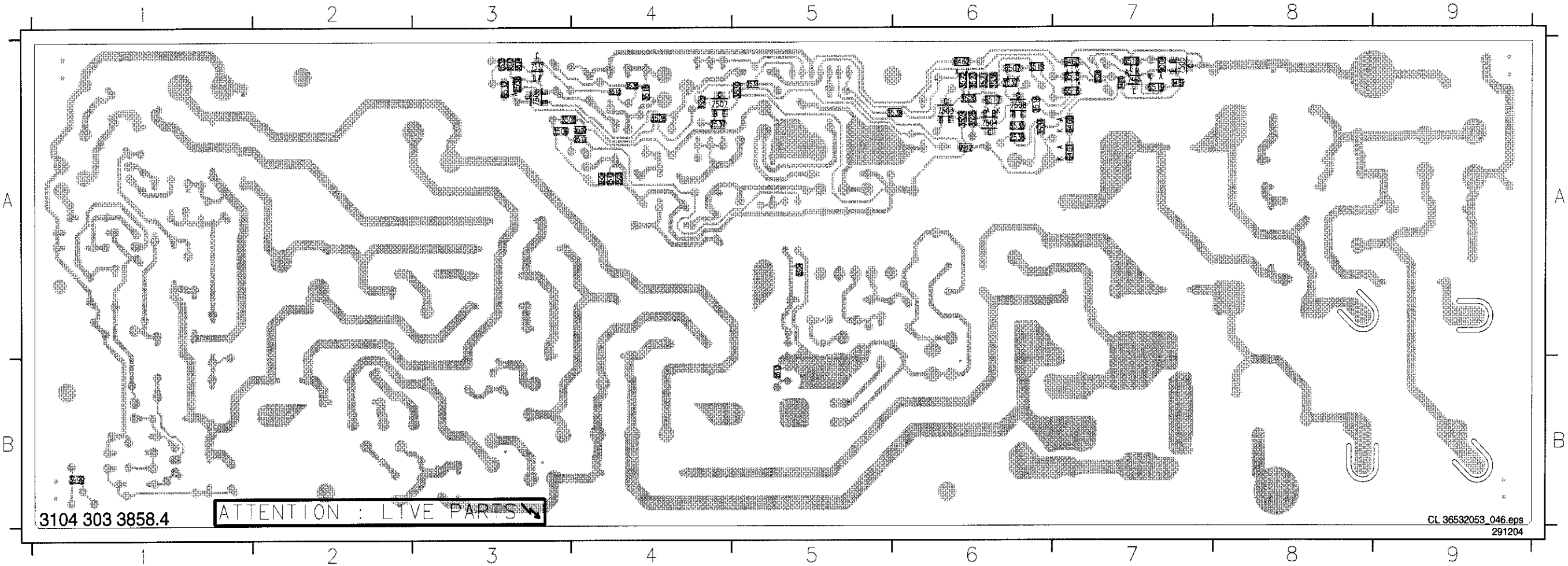
Layout Power Supply Panel (Top Side)

0040 B5	1402 A2	2405 B2	2507 A5	2534 A3	2808 B8	2815 A7	3404 A2	3516 A4	3806 A9	3813 B9	3820 A9	5502 A4	6503 A6	6809 A7	7501 A5	7805 B8	9812 B7	9911 A2	9922 A5
0308 A1	1450 A4	2406 A2	2508 A6	2539 A7	2809 B7	2816 A8	3450 B3	3517 A4	3807 A9	3814 B9	5401 A1	5503 A5	6504 A5	6810 A9	7502 A6	9002 A3	9813 B8	9913 B8	9923 A7
1301 A1	2400 A1	2407 A3	2509 A5	2801 A6	2810 B7	2817 A6	3501 A5	3527 B3	3808 B9	3815 A9	5402 A3	5506 A6	6505 A5	6811 A9	7531 A6	9003 A3	9814 A9	9915 A9	9924 A6
1302 B2	2401 A2	2501 A4	2510 A5	2802 A6	2811 A9	2818 A9	3507 A5	3532 A4	3809 A9	3816 A9	5403 B3	5803 A9	6506 A4	6812 B9	7801 A9	9005 B4	9902 A3	9917 A6	9925 A5
1309 A9	2402 A1	2502 A5	2514 A6	2805 A8	2812 B9	3401 A1	3509 A6	3533 A6	3810 B9	3817 A9	5404 B2	5804 B7	6531 A6	6813 B9	7802 B9	9808 A7	9908 B6	9918 A5	
1333 A5	2403 A2	2503 B4	2515 A6	2806 B7	2813 A9	3402 A2	3510 A5	3804 A7	3811 B9	3818 B9	5405 A1	6501 B5	6807 B6	6814 A9	7803 A9	9810 A9	9909 A6	9919 A7	
1400 A1	2404 A2	2506 A4	2533 A6	2807 B7	2814 A9	3403 A2	3511 A6	3805 B7	3812 B9	3819 A9	5500 A4	6502 B5	6808 A7	7500 B5	7804 A9	9811 A8	9910 A7	9920 A9	9927 A6



Layout Power Supply Panel (Bottom Side)

2504 A5	2535 A3	3460 A7	3504 A4	3513 A3	3519 A6	3523 A6	3528 A4	3534 A6	3538 A4	6461 A7	6515 A7	6519 A7	7504 A6	7508 A6
2511 A4	2536 A3	3461 A7	3505 A3	3514 A3	3520 A6	3524 A6	3529 A4	3535 A6	3539 A6	6462 A6	6516 A7	6532 A3	7505 A7	7532 A3
2512 A4	2537 A4	3502 A4	3506 A3	3515 A4	3521 A6	3525 A6	3530 A5	3536 A6	3999 B1	6463 A7	6517 A6	7460 A7	7506 A3	9004 A7
2513 B5	2538 A6	3503 A4	3512 A4	3518 A6	3522 A6	3526 A7	3531 A5	3537 A6	6460 A7	6507 A6	6518 A7	7503 A6	7507 A5	9912 A6



This image shows a single sheet of white paper with horizontal ruling lines. The lines are evenly spaced and run across the width of the page. There are no vertical margin lines or other markings present. The paper appears to be a standard notebook page.

8. Alignments

Index of this chapter:

- 8.1 General Alignment Conditions
- 8.2 Hardware Alignments
- 8.3 Software Alignments
- 8.4 Option Settings

8.1 General Alignment Conditions

8.1.1 Start Conditions

Perform all electrical adjustments under the following conditions:

- Power supply voltage: 230 V_{ac} / 50 Hz ($\pm 10\%$).
- Connect the set to the mains via an isolation transformer with low internal resistance.
- Allow the set to warm up for approximately 20 to 30 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: never use heatsinks as ground.
- Test probe: $R_i > 10\text{ Mohm}$, $C_i < 20\text{ pF}$.
- 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".
3. Set "Active Display" to "Off"

8.2 Hardware Alignments

8.2.1 24 V_{dc} Alignment

Align R3026 until the voltage on pin 1 (to 6) of connector 1313 is 24 V_{dc} $\pm 0.1\text{ V}$ (you can measure this voltage easily on jumpers 9004 or 9005 nearby R3026).

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

LUMA GAIN

Fixed setting of "2".

IF AFC

Supply, via a service generator or via off-air, a PAL B/G TV-signal with a signal strength of at least 1 mV and a frequency of 475.25 MHz. Alignment procedure:

1. During the IF AFC-parameter adjustment, one can see OSD feedback on the screen.
2. The OSD feedback can give 4 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 OSD feedback of AFC alignment

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.

IF LPRIME AFC

Same procedure as described above, but with other signal source (SECAM L').

TUNER AGC

1. Connect the RF output of a video pattern generator to the antenna input.
2. From the generator, input a PAL B/G TV signal with a signal strength of approximately 2 mV and a frequency of 475.25 MHz.
3. Measure the DC voltage on pin 1 of the (main) Tuner. You can adjust this voltage by adjusting the TUNER AGC item in the SAM menu. Alignment is correct when the DC voltage is just below 3.5 V.

BLEND INTENSITY

Use this alignment when you replace the microcontroller, NVM or the EBILD. It aligns the level of transparency of the menu-picture blended into the main-picture.

Fixed setting "16".

FBX TESTPATTERN

This function makes it possible to generate a test pattern varying from full black to full white in eight steps. You can use this pattern to check the video path, starting at the FBX to the plasma display. The pattern is generated by the Eagle (IC7724) for PixelPlus sets, or by the PICNIC (IC7713) for non-PixelPlus sets.

Note: This test pattern can also be very useful for checking the display for pixel failures.

8.3.2 2FH ADC ALIGNMENT

Only necessary to align, when the EPLD or NVM is replaced.
Use the default values as mentioned in the table.

Table 8-2 2fh ADC alignment

Menu item	Alignment value
RED GAIN RGB	111
BLUE GAIN RGB	117
GREEN GAIN RGB	157
RED OFFSET RGB	59
BLUE OFFSET RGB	52
GREEN OFFSET RGB	46
RED GAIN YPBPR	111
BLUE GAIN YPBPR	117
GREEN GAIN YPBPR	137 ("GREEN GAIN RGB" minus "20")
RED OFFSET YPBPR	59
BLUE OFFSET YPBPR	52
GREEN OFFSET YPBPR	46

8.3.3 OSD CLAMPING

Not necessary to align, set all values to "0".

8.3.4 LUM. DEL.

With this Luminance Delay alignment, you place the luminance information exactly on the chrominance information (brightness is pushed onto the colour). Use a colour bar / grey scale pattern as test signal.

- **LUM. DELAY PAL BG:** Apply a PAL BG colour bar / grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value is "9".
- **LUM. DELAY PAL I:** Apply a PAL I colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value is "9".
- **LUM. DELAY SECAM:** Apply a SECAM colour bar/grey scale pattern as a test signal. Adjust this parameter until the transients of the colour part and black and white part of the test pattern are at the same position. Default value is "11".
- **LUM. DELAY BYPASS:** apply a NTSC colour bar/ greyscale pattern as a test signal. Adjust this value until the transients of the colour and black and white part of the test area are at the same position. Default value is "10".

8.4 Option Settings

8.4.1 Introduction

The microprocessor communicates with a large number of I2C 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 8-3 Dealer Options Overview

Menu name	Subjects	Options	Physically in set
Personal Options	Picture Mute	Yes	Picture mute active in case no picture detected
		No	Noise in case of no picture detected
	Virgin Mode	Yes	TV starts up (once) with language selection menu after mains switch "on" for the first time (virgin mode)
		No	TV does not starts up (once) with language selection menu after mains switch "on" for the first time (virgin mode)
	Auto Store Mode	None	Autostore mode disabled (not in installation menu)
		PDC-VPS	Autostore mode via ATS (PDC/VPS) enabled
		TXT page	Autostore mode via ACI enabled
		PDC-VPS-TXT	Autostore mode via ACI or ATS enabled
	TXT Preference	TOP	Preference to TOP Teletext
		FLOF	Preference to FLOF Teletext

8.4.3 SERVICE OPTIONS

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

Table 8-4 Service option overview

Menu-item	Subjects	Options	Description
Chassis/Region	Region	AP	Only for AP.
		Europe	Only for Europe
Teletext	Flash RAM	Yes	Flash RAM present
		No	Flash RAM not present
	NexTVView	None	Feature not present
		Textguide only	Feature present, but only as text guide.
		Nextview 2	Feature present, for countries that support this.
Display Options	Display Technology	LCD	"Grayed out" in menu, fixed value.
	Size	30"	Panel size (in inches).
		42"	Panel size (in inches).
	Display type	16:9	Widescreen screen format.
		4:3	"Classic" screen format.
Video Repro	Featurebox type	Falconic	No "Eagle" present (only "Natural Motion").
		Eagle	"Eagle" present (Pixel Plus).
	Lightsensor	Yes	Feature present.
		No	Feature not present.
	2D Combfilter	Yes	Feature present.
		No	Feature not present.
	Picture improvement	Yes	LTP (TOPIC) present.
		No	LTP (TOPIC) not present.
Audio Repro	AVL	Yes	Automatic Volume Limiter, available in menu.
		No	Automatic Volume Limiter not available in menu.
Miscellaneous	Home Cinema	Yes	Set with Home Cinema Link (EU only).
		No	Set without Home Cinema Link
	Integrated RC	Yes	Feature present.
		No	Feature not present.
	Tuner type	UV1316	Set with Philips tuner.
		TEDE9	Set with Alps tuner.
	P50 DVD menu line	Yes	Sets with Home Cinema Link (EU only).
		No	Sets without Home Cinema Link.
Option no.	Hotel mode	Yes	Hotel mode on
		No	Hotel mode off
Option no.	Group 1		Group 1 option code overview (see set sticker).
	Group 2		Group 2 option code overview (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 (just below the main power supply on the metal frame).

Example: The options sticker gives the following option numbers:

- 20556 24610 49410 00000
- 00022 00001 00034 02752

The first line (group 1) indicates options 1 to 4, the second line (group 2) options 5 to 8 (see tables below).

Every 5-digit number represents 16 bits (so the maximum number 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.

Service tip: An easy way to check the option numbers is:

1. Convert the decimal option number (as given on the options sticker) to a binary number (e.g. by means of the 'scientific' calculator that comes with MS Windows™). E.g. OB3= 49408 (dec)= 1100000100000000 (bin)
2. Use this binary number to check against the bits as mentioned in the tables below. This means in above-mentioned sample, that Bit 8, 14, and 15 are "1" (means "set"), and that the rest is "0". So, actually this means that the options "Aspect Ratio" (Bit 8), "Home Cinema" (Bit 14), and "Integrated RC" (Bit 15) are set for this particular model.

Table 8-5 Option bytes Group 1

Byte nr.	Bit nr.	Decimal value	Option name	Settings (in decimal values)		Option Byte value	
OB1	0	1	Featurebox	0= None (n.a.)	2= Prozonc (n.a.) 3= Eagle 4= Falconic (n.a.) 5= Falconic+ (n.a.)	OB1= sum of the "on" bits (decimal)	
	1	2					
	2	4					
	3	8	2D Comb Filter	0= Off	8= On		
	4	16	n.a.	0			
	5	32	n.a.	0			
	6	64	Light Sensor	0= Off	64= On		
	7	128	Luma Trans. Proc.	0= Off	128= On		
	8	256	n.a.	0			
	9	512	n.a.	0			
	10	1024	n.a.	0			
	11	2048	n.a.	0			
	12	4096	WSS	0= Off (US/LA/AP-N)	4096= On (EU/AP-P)		
	13	8192	3D Comb Filter	0= Off (EU/AP-P)	8192= On (US/LA/AP-N)		
	14	16384	n.a.	0			
	15	32768	n.a.	0			
OB2	0	1	n.a.	0		OB2= sum of the "on" bits (decimal)	
	1	2	n.a.	0			
	2	4	n.a.	0			
	3	8	n.a.	0			
	4	16	n.a.	0			
	5	32	Virtual Dolby	0= Off (Dolby prologic)	32= On		
	6	64	n.a.	0			
	7	128	n.a.	0			
	8	256	n.a.	0			
	9	512	n.a.	0			
	10	1024	n.a.	0			
	11	2048	n.a.	0			
	12	4096	n.a.	0			
	13	8192	Flash RAM	0= Off	8192= On		
	14	16384	EPG Type (EU only)	0= Type2	16384= Textguide only 32768= NextView 2C3 49152= NexTView 2		
	15	32768					
OB3	0	1	n.a.	0		OB3= sum of the "on" bits (decimal)	
	1	2	n.a.	0			
	2	4	n.a.	0			
	3	8	n.a.	0			
	4	16	n.a.	0			
	5	32	n.a.	0			
	6	64	n.a.	0			
	7	128	n.a.	0			
	8	256	Aspect Ratio	0= 4:3	256= 16:9		
	9	512	n.a.	0			
	10	1024	n.a.	0			
	11	2048	n.a.	0			
	12	4096	n.a.	0			
	13	8192	n.a.	0			
	14	16384	Home Cinema	0= Off (US/LA/AP)	16384= On (EU)		
	15	32768	Integrated RC (P50)	0= Off (US)	32768= On (EU/LA/AP)		
OB4	0	1	n.a.	0		OB4= sum of the "on" bits (decimal)	
	1	2	n.a.	0			
	2	4	n.a.	0			
	3	8	n.a.	0			
	4	16	n.a.	0			
	5	32	n.a.	0			
	6	64	n.a.	0			
	7	128	n.a.	0			
	8	256	n.a.	0			
	9	512	n.a.	0			
	10	1024	n.a.	0			
	11	2048	n.a.	0			
	12	4096	n.a.	0			
	13	8192	n.a.	0			
	14	16384	n.a.	0			
	15	32768	n.a.	0			
Notes:- n.a.= not applicable.- AP-P= Asian Pacific PAL-multi, AP-N= Asian Pacific NTSC, EU= Europe, LA= Latin America, US= NAFTA.							

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Table 8-6 Option bytes Group 2

Byte nr.	Bit nr.	Decimal values	Option name	Settings (in decimal values)		Option Byte value
OB5	0	1	n.a.	0		OB5= sum of the "on" bits (decimal)
	1	2	Auto Store Mode	0= None (US/LA/AP-N)	2= PDC/VPS (EU) 4= TXT Page (EU) 6= PDC/VPS/TXTpage (EU)	
	2	4				
	3	8	n.a.	0		
	4	16	Picture Mute	0= Off	16= On	
	5	32	n.a.	0		
	6	64	Virgin Mode	0= Off	64= On	
	7	128	Hotel Mode	0= Off	128= On	
	8	256	n.a.	0		
	9	512	n.a.	0		
	10	1024	n.a.	0		
	11	2048	n.a.	0		
	12	4096	TXT Preference	0= TOP	4096= FLOF	
	13	8192	n.a.	0		
	14	16384	n.a.	0		
	15	32768	n.a.	0		
OB6	0	1	P50 DVD menu-line	0= Off (US/LA/AP)	1= On (EU)	OB6= sum of the "on" bits (decimal)
	1	2	n.a.	0		
	2	4	n.a.	0		
	3	8	n.a.	0		
	4	16	Region	0= EU	16= AP PAL-multi 32= AP NTSC 48= US	
	5	32				
	6	64				
	7	128				
	8	256	n.a.	0		
	9	512	n.a.	0		
	10	1024	n.a.	0		
	11	2048	n.a.	0		
	12	4096	n.a.	0		
	13	8192	n.a.	0		
	14	16384	n.a.	0		
	15	32768	n.a.	0		
OB7	0	1	n.a.	0		OB7= sum of the "on" bits (decimal)
	1	2	n.a.	0		
	2	4	n.a.	0		
	3	8	n.a.	0		
	4	16	n.a.	0		
	5	32	n.a.	0		
	6	64	n.a.	0		
	7	128	n.a.	0		
	8	256	n.a.	0		
	9	512	n.a.	0		
	10	1024	n.a.	0		
	11	2048	n.a.	0		
	12	4096	n.a.	0		
	13	8192	n.a.	0		
	14	16384	n.a.	0		
	15	32768	n.a.	0		
OB8	0	1	n.a.	0		OB8= sum of the "on" bits (decimal)
	1	2	n.a.	0		
	2	4	n.a.	0		
	3	8	n.a.	0		
	4	16	n.a.	0		
	5	32	n.a.	0		
	6	64	n.a.	0		
	7	128	n.a.	0		
	8	256	Picture tube size	0= 30 inch	256= 32 inch 512= 37 inch 768= 42 inch	
	9	512				
	10	1024				
	11	2048				
	12	4096	Display type	0= LCD	4096= PDP	
	13	8192				
	14	16384	n.a.	0		
	15	32768	n.a.	0		

Notes: - n.a.= not applicable.- AP-P= Asian Pacific PAL-multi, AP-N= Asian Pacific NTSC, EU= Europe, LA= Latin America, US= NAFTA.

Notes: - n.a.= not applicable.- AP-P= Asian Pacific PAL-multi, AP-N= Asian Pacific NTSC, EU= Europe, LA= Latin America, US= NAFTA.

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

Index of this chapter:

- 9.1 Introduction
- 9.2 Block Diagram
- 9.3 Power Supply
- 9.4 Input/Output (I/O)
- 9.5 Video Processing
- 9.6 Audio
- 9.7 Synchronisation
- 9.8 Control
- 9.9 Protections
- 9.10 LCD Panel
- 9.11 Software Upgrading
- 9.12 Abbreviation list
- 9.13 IC Data Sheets

Notes:

- Only **new** circuits (circuits that are not published recently) are described.
- For the other "known" circuits, see:
 - EM5E manual. This manual is available under number 3122 785 12560 (= English).
 - EM6E manual. This manual is available under number 3122 785 13070 (= English).
 - FM24 manual. This manual is available under number 3122 785 12770 (= English).
- 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 diagrams in chapter 6 and 7. Where necessary, you will find a separate drawing for clarification.

- The rear I/O connections (like SCART and cinch) are integrated on the SSP, even as the tuner.
- VGA input (for Europe).
- DVI input (only for USA).

On the photographs you can see where all the functional cells are located on the SSP:

9.1 Introduction

The FTL13 is a 30-inch integrated LCD flat screen set, which uses the EM6 small signal panel. The HOP part is replaced by an Erasable Programmable Logic Device (EPLD). This chassis has no PIP, no FDW, and no TXT-DW. Also, features like Dolby, DVD-loader, HDD, and/or radio are not present.

9.1.1 Features

This chassis has the following (new) features:

- Next step "Active Control" with: two new bars ("Motion" and "Tint Control" bar), four split demos, etc.
- New LLC power supply, based on the one used in the plasma monitors (FMxx chassis)
- Small Signal Panel (SSP) that is based on the existing EM6 architecture: a full panel with integrated (shielded) Feature Box as in the former MG-chassis. This approach gives better EMC / crosstalk behaviour and less cables.
- Upgradeable main software (via ComPair).

9.1.2 Small Signal Panel

The SSP is a high tech module (four layer, 2 sides reflow technology, full SMC) with very high component density and partial shielding (FBX, EBILD) for EMC-reasons. Despite this, it is designed in such a way, that repair on component level is possible. To achieve this, attention was paid to:

- Clearance around surface mounted ICs (for replacing).
- Detailed diagnostics and fault finding is possible via ComPair.
- Software upgrading is possible via ComPair.

Further features of the SSP are:

- The 3D Comb filter functionality (for USA) is integrated on the SSP.

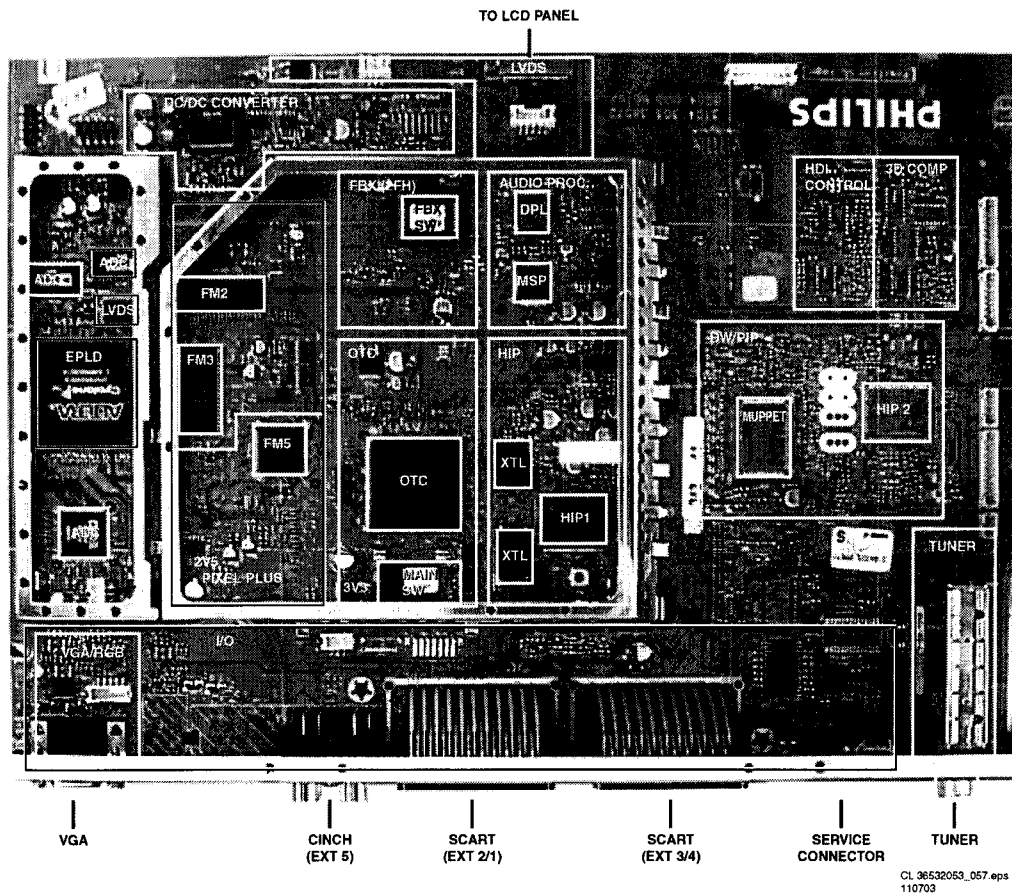


Figure 9-1 SSP top view

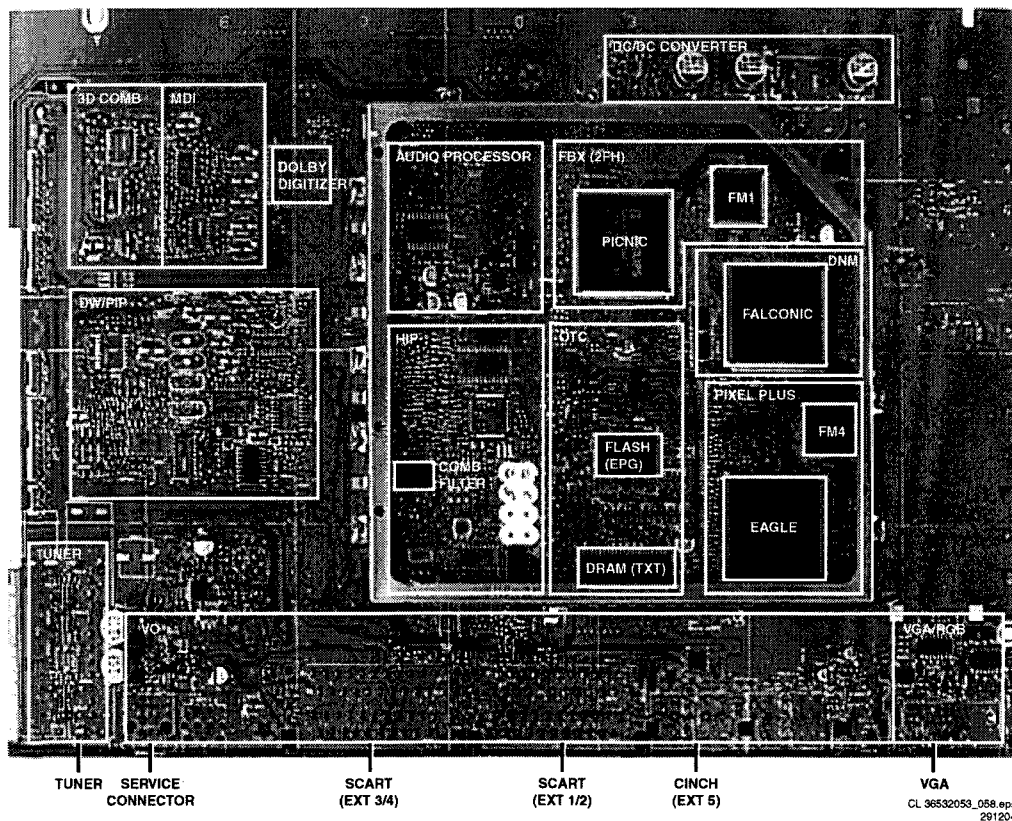


Figure 9-2 SSP bottom view

9.2 Block Diagram

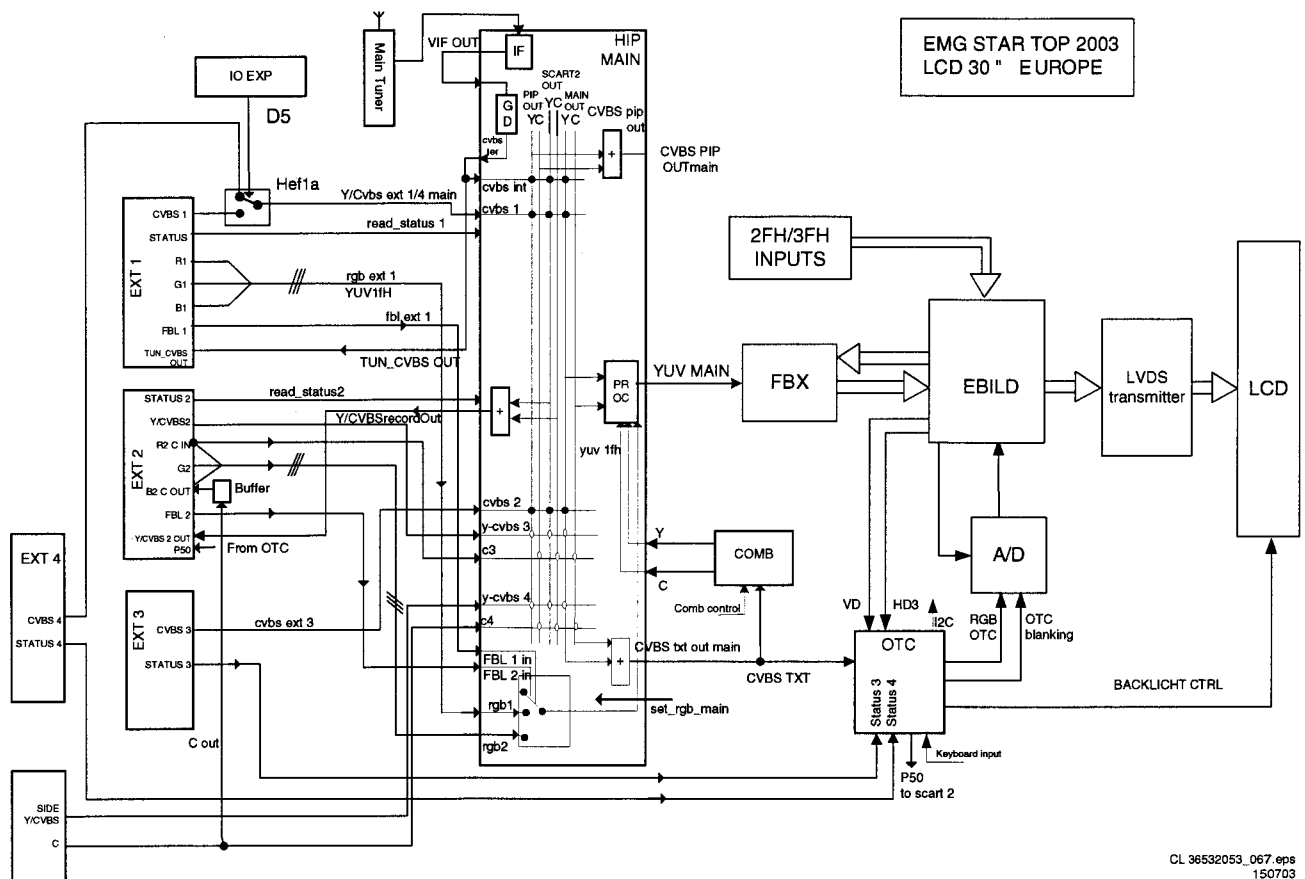


Figure 9-3 Block diagram FTL13 (Europe version)

The main tuner is a PLL tuner and delivers the IF-signal, via audio and video SAW-filters, to the main HIP (High-end Input Processor). This HIP has the following functions:

- IF modulation.
- Video source select and record select (for 1fH inputs).
- Colour decoder.
- Synchronisation.

The following video input/output connections (with audio connections) are available for Europe:

- Side: interfaces CVBS and Y/C.
- EXT1: interfaces CVBS, RGB-, and YUV-input (1fH)
- EXT2: interfaces CVBS and Y/C (meant for VCR or DVDR connection).
- EXT3: interfaces CVBS.
- EXT4: interfaces CVBS.
- AV5: interfaces YPbPr (2fH/3fH).
- AV6: interfaces VGA (2fH/3fH).

The HIP delivers YUV and H/V-sync signals to the PICNIC (in the Feature Box). This IC takes care of:

- Analogue to Digital conversion and vice versa.
- 100 Hz processing
- Interlaced to progressive scan conversion.
- Panorama mode.
- Noise reduction.
- Dynamic contrast.

After the PICNIC, the YUV-signals are fed to the FALCONIC for "Natural Motion", followed by the Eagle for picture enhancement. The processed YUV signals (from Eagle or PICNIC) are, together with the sync-signals from the PICNIC, then fed to the EBILD (Eagle Based Intelligent LCD Driver). This programmed IC handles the video control. The RGB-

signals for TXT/CC/OSD (from the uP) are also inserted via this IC. The video part delivers the RGB signals to the LCD-panel.

The sound part is built around an MSP (Multi-channel Sound Processor) for IF sound detection, sound control and source selection. Amplification is done via a "class D" integrated power amplifier IC, the TDA7490.

The microprocessor, called OTC (OSD, TXT/CC and Control) takes care of the analogue TXT input processing and output processing. The OTC, ROM, and RAM are supplied with 3.3 V. This voltage is derived from the +12V via a DC/DC converter on the SSP.

The NVM (Non Volatile Memory) is used to store the settings; the Flash-RAM contains the set software.

The power supply is based upon the one used in the FMxx chassis. It consists of a main supply (based upon the down converter principle) and an auxiliary supply (based upon the so-called LLC technology).

For the power supply of the FBX, a separate DC/DC converter is used, generating 3.3 V.

9.3 Power Supply

9.3.1 Block diagram

The architecture of the power supply is made flexible by separating the different function blocks as much as possible.

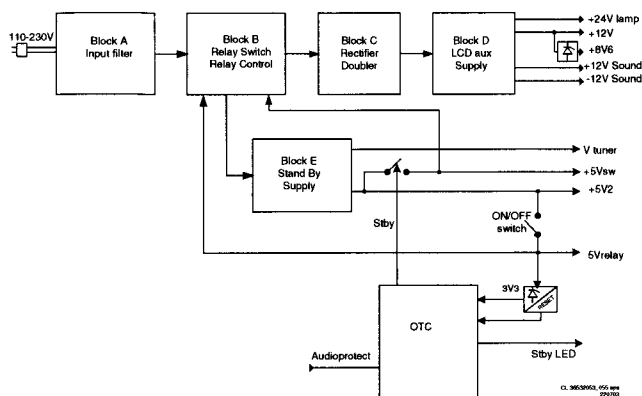


Figure 9-4 Block diagram power supply

Block A

This block contains the mains entrance part together with the filtering. It is supplied directly from the mains cord. The mains input has a polarisation that is requested for the USA together with a polarised mains cord; the neutral of the chassis **must** be connected to the mains neutral in the USA. A non-polarised mains cord is used for Europe and A/P regions.

Block B

This block contains the relay switch and relay control. The relay switches the mains voltage to the rectifier and doubler (for USA). The relay is powered by the +5V2_RELAY and driven by the +5V_SW. This voltage is derived from the +5V2 and is driven by the STAND_BY line (this line is active "low" in the "Semi-standby" and the "On" state).

Block C

This block contains the mains rectifier and doubler (for USA). The mains voltage is rectified and for USA sets it is doubled (see description below).

Rectifier/Doubler

The circuit involves component 7805 (Sanken STR83145) that senses the AC input voltage. This device also includes a thyristor.

If the voltage is less than 140 V_{ac}, the 7805 thyristor switches "on", and the combination (rectifier + closed switch) acts as a voltage doubler (sum of voltages over C2815 and 2816).

If the voltage is above 149 V_{ac}, the 7805 thyristor stays open and we have a classical rectification.

Notes:

- In order to prevent accidental problems with voltage overshoot or sink, once the thyristor goes open, it cannot be closed, unless the mains voltage is back to zero.
- Resistors 3806, 3807, 3808, 3810, 3811, and 3812 are present in order to allow the discharge of capacitors 2815 and 2816 in case of no-load condition (e.g. load not connected).

Protection

If the voltage on one (or both) of the two main electrolytic capacitor's (C2815, C2816) becomes too high (in case of over voltage for instance), the circuit goes into protection. Let us take the case of an over voltage on C2816:

If the voltage across 2816 exceeds 460 V_{dc}, the voltage across 3810 becomes more than 15.7 V (via divider 3810/3811/3812). This implies that transistor 7802 goes into conduction. This will activate transistor 7803.

The emitter of this transistor is connected to the gate of thyristor 7804. When 7803 conducts, then 7804 goes into conduction between the live AC line and the DC ground. The high current flow will immediately blow fuse 1400.

Block D

This block contains an LLC supply. The output voltages are +12V, which delivers +8V6, the +24V for the LCD lamps, and the +12V_SOUND and -12V_SOUND. The relay switch controls the supply for this block (see also description of block B).

Note: See FM24 service manual for a more detailed description.

Block E

This block contains the Standby supply. This supply gives a stabilised +5V2 output. The +5V2 is connected to the ON/OFF switch and delivers the +5V_RELAY to the SSP and to the relay when the functional switch is "on". The 3V3 supply for the OTC, ROM, and RAM are derivations from the +5V_RELAY via a stabiliser on the SSP. A reset circuit resets the OTC as long as the +5V2 is not stabilised.

When the ON/OFF switch is switched "off":

1. The relay is switched "off"
2. The OTC is reset
3. The standby line becomes "high"
4. The main supply is switched "off"

The V_TUN (50 V stabilised, on SSB to 33V) is a secondary voltage of the stand by supply.

Note: See FM24 service manual for a more detailed description.

Block OTC

The OTC controls the supply. The OTC is powered by the 3V3 derived from the +5V2, and is powered when the ON/OFF switch is "on". In standby, the STANDBY line disconnects the +5V_SW from the +5V2, and the relay is switched "off". In "Semi-standby" or "On" state, the STANDBY line is "low" and the +5V_SW is connected. The relay is activated, and the main supply can start up.

Block POR (Power On Reset)

The POR mutes the audio output amplifier and switches "off" the lamps. After a POR, the software must start the set. There must be a delay of 1 s after switching "off" (the lamps needs this delay).

The OTC receives the POR signal via input pin 99 (P1-6/INT3). This POR signal is generated in the following cases:

- When the standby supply (+5V2) starts up (this is when the mains cord is connected).
- By switching "off" the ON/OFF switch (as long as the switch is "off").
- When the main voltage drops.

9.3.2 DC/DC Converter (diagram B12)

This circuit on the SSP provides the 3V3 voltage for the Feature Box and PIP/DW (if present).

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 with the 3.3 V.
- Circuits in the FBX and the DW part needs some high current by low voltage, so, there is no risk to have power dips or voltage loss in connections between the LSP and the SSB panel.

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

- Input parameters: 12.5 V / 330 mA.
- Output parameters: $3.42 \text{ V} \pm 0.15 \text{ V}$ / 1.2 A.
- Switching frequency: approx. 60 kHz.
- Efficiency: approx. 90%.

- Inhibit (+5V) and fast turn-off (3V3_FAULT) control inputs.

Block diagram

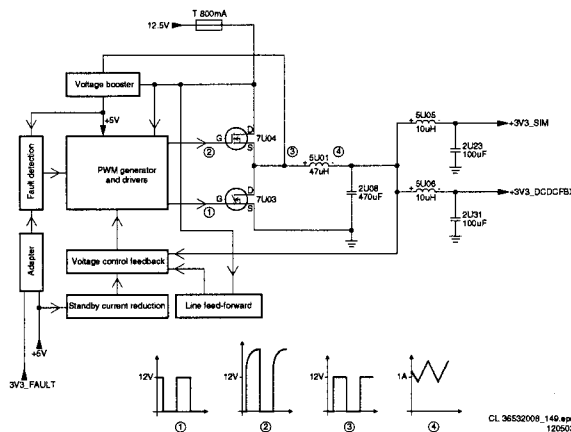


Figure 9-5 Block diagram DC/DC converter.

Advantage to use a "synchronous buck converter" instead of a "classical buck converter" is a 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 (item 7U03). This, because the voltage drop across the MOSFET is smaller than the forward voltage drop of the diode. This second MOSFET conducts current during the "off" times of the first MOSFET (at the input side). The upper MOSFET conducts to transfer energy from the input to the inductor and load, while the lower MOSFET conducts to circulate the inductor current. The synchronous PWM control block regulates the output voltage by modulating the conduction intervals of the upper and lower MOSFETs.

PWM Generator and Drivers

This circuit is built around transistors 7U01, 7U02, 7U08, 7U09, and the associated components. MOSFETs 7U04 and 7U03 are the switching transistors, they are conducting alternatively.

- Time sequence 1: T7U04 is conducting; energy is stored in coil 5U01. The current is flowing from the +11V power supply source.
- Time sequence 2: T7U04 is blocked; energy is stored in coil 5U01.
- Time sequence 3: T7U03 is conducting, and the current circuit is now closed via T7U03, Coil 5U01, C2U08, 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 T7U04.

The principle of operation of the PWM generators and drivers is an astable circuit, whose frequency is mainly given by the values of capacitor 2U32 and resistor 3U03. Capacitors 2U05, 2U27, and 2U28 form a capacitive voltage divider to limit the negative peak voltage on the base of transistor 7U09 at about 3 V. The same role have the capacitors 2U09 and 2U12 for the transistor 7U08.

The resistor 3U14 and the capacitor 2U30 introduce a small dead time between switching "off" of transistor 7U03 and switching "on" of transistor 7U04 to prevent cross-conduction through them.

The capacitors 2U07, 2U16, and 2U18 speed-up the switching of the astable circuit. This circuit is blocked in "off" state (7U02 and 7U08 saturated and 7U01 and 7U09 blocked) when the transistor 7U11 is conducting.

This happens when either +5V has a low value (below 2 V), the boost voltage drops below its minimum value, or the 3V3_FAULT signal is low (below 1 V) for more than 20 ...30 ms.

Voltage Booster

This circuit is built around capacitors 2U03, 2U04, 2U05, resistor 3U51, and diodes 6U03 and 6U04. It generates the boost voltage (approx. +20 V) for supplying the "high-side" driver transistor for the power MOS-FET 7U04. 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 A.C. component of the voltage on the source of transistor 7U04 is rectified by diodes 6U04 and 6U03 and added to the input voltage, resulting into the boost voltage. The resistor 3U51 limits the peak current through the rectifier diodes to about 300 mA.

Voltage Control Feedback

This circuit keeps the output voltage constant when the input voltage and/or the output current vary. It is built around transistors T7U06-A, T7U06-B, T7U05, diode D6U07, and associated components.

A 6.9 V reference voltage is provided by zener diode D6U07 (via T7U15). Transistors T7U05 and T7U06A are comparators. E.g. if the voltage on the base of T7U06-B increases, T7U06-B and T7U08 will conduct more, and via T7U08 the conducting time of T7U04 will be reduced, resulting in a decreasing output voltage.

Linefeed Forward

This circuit (resistor 3U46) improves the line regulation factor.

Stand-by Current Reduction

This circuit is built around transistors 7U14 and 7U15. It cuts the quiescent current through the reference zener diode 6U07 in stand-by mode.

Adapter

This circuit is necessary for having proper start-up/shut-down operation of the converter at various shapes of the +5V voltage.

Fault detection

In "on" mode, transistors 7U12, 7U10, 7U07, and 7U13 are conducting and the transistor 7U11 is blocked.

In protection mode, transistors 7U11, 7U07, and 7U13 are conducting (provided that the "+5V" voltage is higher than 4.5 V) and transistors 7U10 and 7U12 are blocked. During start-up, the protections are bypassed for a short time (tenths of ms) by capacitors 2U22 and 2U20.

+20V Detection

This circuit detects the boost voltage, and is built around transistor 7U12, diode 6U10, and associated components. If the boost voltage is lower than 15 V, transistors 7U12 and 7U10 are blocked, 7U11 is conducting, so via diodes 6U08 and 6U09 the PWM and Driver circuit is switched "off". It is also the case when the input voltage "+11V" is less than about 10 V (the under-voltage lock-out function).

+3V3 Detection

If the +3.3V and +5V are present, C2U26 is charged. Transistor T7U10 conducts, T7U11 is blocked, and the PWM and Driver circuit is working.

If there is a voltage drop on the +3.3V, the voltage on C2U25 cannot be maintained, resulting that T7U10 will block and the PWM and driver circuit will be switched "off".

+5V Detection

The same situations if the +5V drops: T7U07 and T7U13 will block, the reference voltage on R3U41 will drop, and a switch "off" of the PWM and Driver circuit is the result. Diode 6U06 is foreseen to clamp the output voltage to 5 V in case of fault conditions (like 7U04 short-circuited D-S). The fuse 1U01 will open in such conditions.

Role of Other Components

- The capacitors 2U06 and 2U10 are filtering the ripple current generated by the commutation of power MOS-FET 7U04 (about 700 mA_{rms}, while the capacitor 2U08 is filtering the output voltage.
- Coil 5U02 and capacitor 2U15 prevent that noise generated by the switching will disturb other circuits supplied from +11V.
- Coils 5U05 and 5U06 and capacitors 2U23 and 2U31 are supplementary filtering of the output voltage for the two load circuits (PIP and Feature Box).
- Beads 5U03 and 5U04 damp oscillations during the switching of the power MOS-FETs.
- Components 2U01, 2U02, and 6U02 are not present (the voltage "+3V3-ILINK" is not used).

Service Tips

- When a power MOS-FET is found defective, replace the other power MOS-FET, the fuse 1U01, and the diode 6U06 as well.
- When a driver transistor (7U01, 7U02, 7U08, or 7U09) is found defective, replace the complementary transistor as well (example: replace also 7U08 if 7U02 is defective).
- 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).

9.3.3 Power Balance

The total output power is max. 160 W.

Table 9-1 Total power balance overview

Voltage	Value	Current	P _{max}
5V2	5.2 V	0.6 A	3.18 W
8V6	8.6 V	0.5 A	4.3 W
+12V _{sound}	12.3 V	0.24 A continue, 0.81 A peak	3 W continue, 10 W peak
-12V _{sound}	12.3 V	0.24 A continue, 0.81 A peak	3 W continue, 10 W peak
V _{tune}	50 V	4 mA	0.1 W
12V	12.3 V	0.9 A	11 W
24V _{lamp}	24 V	5 A	120 W
Total			160 W peak

9.3.4 Switch On/Off

The set can be switched "on" or "off" via the ON/OFF knob, or by (dis)connecting the mains power cord to the power socket with the ON/OFF knob "on".

9.3.5 Power States

There are four different power states. Some characteristics of these are summarised in the "Power states" table.

Table 9-2 Power states overview

Power state	On/Off switch	Remarks
OUT (mains-cord disconnected)	X	No power
OFF	OFF	Only standby supply is working OTC not powered Main supply not working No LED is "on"
STAND BY (1)	ON	Standby supply is working Red LED is "on" (in Europe and in US)
SEMI STAND BY	ON	Standby supply is working Main supply is working LCD and LCD-lamps are not active EPG loading and P50 recording possible (Europe) Time extraction (Europe and US) Red and Green LEDs are "on"
ON	ON	The set is working Green LED is "on" (in Europe and in US)

Events from OFF to SEMI-STANDBY or ON

(See also figure "Step wise start-up diagram" in chapter "Service Modes, Error Codes, and Fault Finding").

1. The set is in "off" state until the ON/OFF switch is switched to "on". The standby supply starts, +5V2 becomes present, the OTC resets, the I/O pins are initialised, and the watchdog is enabled. The set comes in standby mode.
 - The set leaves the stand by mode if:
 - A time extraction must be started (after every start up).
 - A P50 recording has to start.
 - An EPG loading has to start.
 - The Standby bit is set to "off"; when a user switches on the set, the standby bit is also set to "off".
2. To ensure a quick start-up of the set, the hardware start-up of the set should start within 500 ms after an OTC reset is received, or within 250 ms after a "leave stand by" command is received. The total initialisation should be finished at least within 1500 ms after the OTC reset.
3. The STANDBY line is set to "low", the +5V_{SW} is "on", the relay closes, and the LCD AUX supply starts up (8V6 is present).
4. The rest of the ICs are initialised. The EBILD is initialised min 400 ms after the standby line is set to "low".
5. If the standby bit was set, the set goes into semi-standby until:
 - The time extraction is done.
 - The P50 recording has finished.
 - The EPG loading has finished.
6. If the standby bit was not set, the LCD is switched "on" via the EBILD.

Events in SEMI-STANDBY

1. The set can be in semi-standby during Time extraction, EPG loading, or P50 (Easylink) recording. The semi-standby state is ended when:
 - Time extraction has finished.
 - P50 recording has finished.
 - EPG loading has finished.
 - A P50 recording starts during EPG loading.
 - A user event "On" or "Standby".
 - The set goes into protection.
2. If the standby bit is not set (after user event), the LCD is switched "on".
3. If a P50 recording or an EPG loading has to start, the set stays in semi-standby. If the P50 recording has to start during EPG loading, the P50 has priority.

- If there is no P50 recording or EPG loading, the set goes to standby.

Events from ON to SEMI-STANDBY/STANDBY

- The set can be switched to standby:
 - Via the RC (to semi-standby).
 - Via the MENU button on the top control, long press (to semi standby).
 - Via a protection (to standby).
- The running instructions are finished.
- The LCD is switched "off"; this is controlled by the EBILD. First, the +24V power is switched "off", and then the power supply to the LCD is switched "off".
- Sound is muted
- If there was a protection, the STANDBY line is put "high", and the set goes to standby.
- If there was no protection, the set goes to semi-standby.
- After an event in semi-standby, the set goes to standby.
- Protections are disabled.
- The OTC sets the STANDBY line "high", this switches "off" the main power supply, and only the standby supply remains working.
- The set is in standby.

9.4 Input/Output (I/O)

9.4.1 Introduction

The chassis follows the standard SCART specification:

- The presence of the incoming source is detected via pin 8 of the SCART signal.
 - The Aspect Ratio of the incoming source is derived from the voltage level on SCART pin 8. The pin 8 information is handled by the HIP for SCART 1 and 2 and by the OTC for SCART 3 and 4
 - The P50 in/out is handled via P1-4 and P3-7 of the OTC.
 - RGB sources break in with an additional fast blanking signal that is detected by the HIP. The HIP then internally chooses other signal processing. RGB sources that only have fast blanking and no pin 8 status do not overrule the main TV source. There is no automatic break in detection for the front input.
 - The HIP for further image processing does the detection between Y/C and CVBS automatically.
 - When Y/C is detected, the HIP will add Y and C signal to compose CVBS again. This addition should be overruled by software at the moment any Y/C signal is the source and the presence of a P50 Y/C video recorder is detected: only Y signal is directed to record out (C is already hardwired to EXT 2 out).
- Note:** P50: Chroma-out is pin 7, Chroma-in is pin 15. Non-P50: both Chroma-out and -in is pin 15 (hardwiring C to pin 7 out; non-P50 not supported).
- The signal on MONITOR_OUT follows the incoming source, except in case the incoming source is EXT2, YPbPr-2fH, or VGA. Then the output signal should be FRONTEND_OUT.

Note: The SCART input (1fH) path is equal to the one described in the EM6E manual. Therefore, it is not described in much detail here.

9.4.2 Input detection

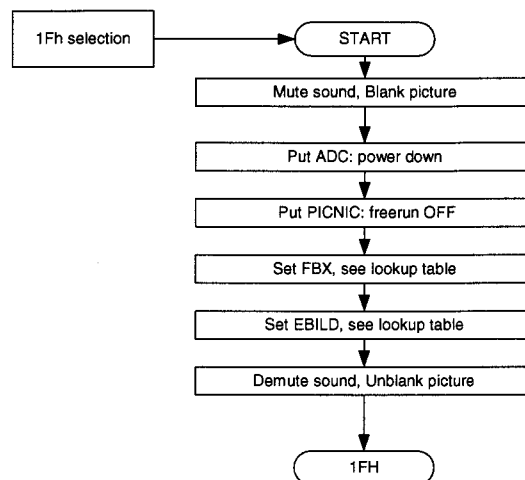
The RGB or YPbPr input signals (2fH/3fH) are sent to the ADC (AD9883A) together with H and V pulses from DVI (USA) or VGA (EUR), and the Y signal from YPbPr called Sync On Green (green is same line as Y). The AD converter:

- Detects via H and V sync, if RGB is present or not.
- Detects via Sync On Green, if YPbPr is present or not.
- Detects the selected sync.
- Selects the sync switch via I2C.

- Does AD conversion to 848 samples per line, 8 bits in 422 format. This means one bus for Y signal with 8 bits and one bus for UV with 4 U and 4 V bits. Depending on the system detected by EBILD, the sample frequency is changed. Via I2C, the "PLL_DIV" signal is given in 11 bits (2 Bytes).

When a 1fH input is detected, the AD converter is set in tristate.

1fH input flow



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170703

Figure 9-6 Flowchart 1fH detection

- If a 1fH selection is done (except for AV4 in USA), the sound is muted and the picture is blanked.
- The ADC is powered down.
- The PICNIC is not in free run.
- Both FBX and EBILD are set in 1fH (see lookup table).
- Sound is demuted and picture is unblanked.

2fH/3fH input flow

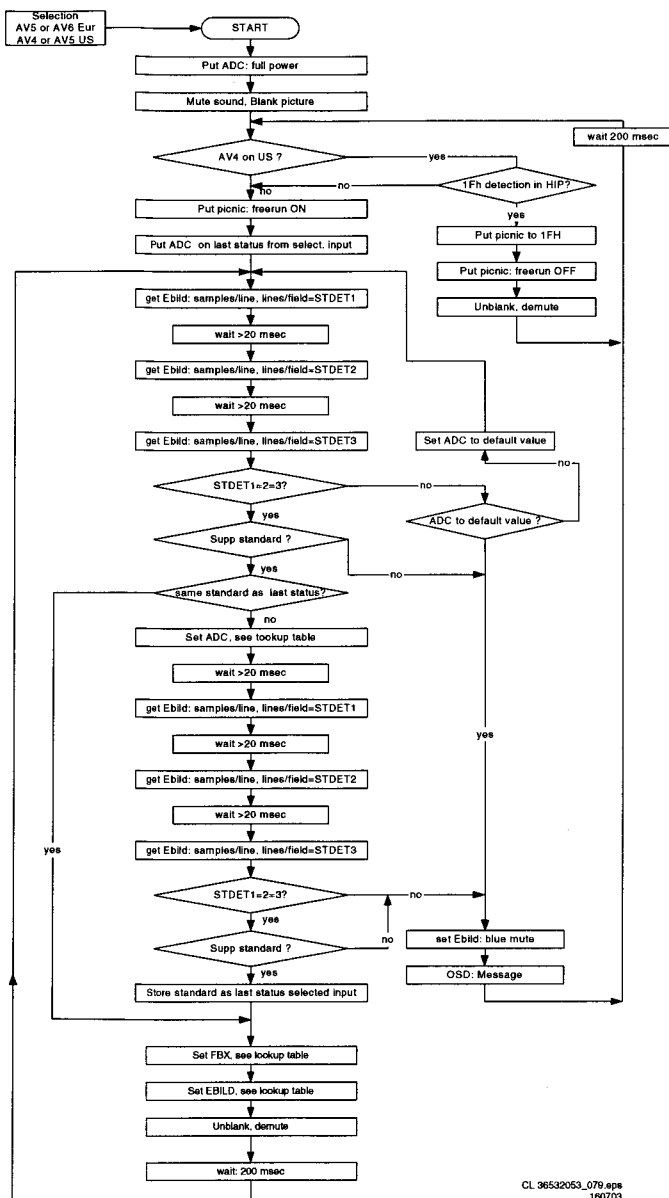


Figure 9-7 Flowchart 2fH/3fH detection

1. The standard detection starts with a 2fH/3fH selection (this is AV5 / AV6 in Europe or AV4 / AV5 in USA).
2. The ADC is full powered (it was powered down in 1fH).
3. The sound is muted and the picture is blanked.
4. On AV4 in USA, an 1fH and 2fH/3fH signal can enter. This detection is done by the HIP. When 1fH is detected, the FBX is set to 1fH, the PICNIC is not in free run, the picture is unblanked, and the sound is demuted. The set is in 1fH state. This state is continued checked, because the input can change from 1fH to 2fH/3fH.
5. If the input is 2fH/3fH, the PICNIC is set to free run
6. The ADC is set to the last status from this selected input, because there is a big chance that the same standard is wanted.
7. The number of samples per line and lines per field is collected from the EBILD. The check is done three times. If the same value is measured within some tolerances (see lookup table) the standard is valid. The time between two measurements must be at least one frame or 20 ms.
8. If the ADC has not the right settings, the PLL does not lock, and the "STDET" measurements do not give the same results. The ADC is set to its default value; this value is able to catch all supported standards. If the ADC is already in

the default value and no standard detection is possible, the set changes to blue mute.

9. If the standard is not supported, the set changes to blue mute via the EBILD, and a message is displayed.
10. If the standard is the same as the last status, the ADC is in the correct state, and both FBX and EBILD are set (see lookup table).
11. If the standard is changed, the ADC is set to the detected standard and a new check is done. If the standard is valid and supported, the new standard is stored in NVM as last status.
12. The FBX and EBILD are set (see lookup table)
13. Picture is unblanked and sound demuted.

Table 9-3 I/O Lookup table

Selected Input	Standard	x fH	FBX	ADC	EPLD	Field Rate
Tuner, SC1...SC4, Side I/O	480i	1 fH	PICNIC			
	576i	1 fH	PICNIC			
AV5 (Cinch)	480p	2 fH	EAGLE	YPbPr	YPbPr	60 Hz
	576p	2 fH	EAGLE	YPbPr	YPbPr	50 Hz
	1080i / 60 Hz	2 fH	EAGLE	YPbPr	YPbPr	60 Hz
	1080i / 50 Hz	2 fH	EAGLE	YPbPr	YPbPr	50 Hz
	720p / 60 Hz	3 fH / 720p		YPbPr	YPbPr	
	720p / 50 Hz	3 fH / 720p		YPbPr	YPbPr	
AV6 (VGA)	480p	2 fH	EAGLE		RGB	60 Hz
	576p	2 fH	EAGLE		RGB	50 Hz
	1080i / 60 Hz	2 fH	EAGLE		RGB	60 Hz
	1080i / 50 Hz	2 fH	EAGLE		RGB	50 Hz
	720p / 60 Hz	3 fH / 720p			RGB	
	720p / 50 Hz	3 fH / 720p			RGB	
	VGA	2 fH	EAGLE		RGB	60 Hz
	SVGA	2 fH	EAGLE		RGB	50 Hz
	XVGA	3 fH / 768p			RGB	

9.5 Video Processing

9.5.1 Introduction

Note: The FBX processing part is equal to the one described in the EM6E manual. Therefore, it is not described here (except for some basic info).

There are two diversities (see also figure "Block diagram FTL13" in paragraph "Block Diagram"):

- Europe: 4 SCARTs, a side IO, 1 x 2fH/3fH inputs (YPbPr), and 1 VGA input
- USA: 4 AV inputs (AV4 can be 1fH or 2fH/3fH YPbPr, a side IO, and a DVI 2fH/3fH input).

Note: There is also an AP version available. This version has no difference w.r.t. the European version, but comes with different cables and some different option settings.

Short overview of video processing

The video processing is based on four key functions, being:

- The HIP + comb filter (for simple source select and video/chroma processing).
- The EBILD that takes over the video control functions of the HOP (as used in CRT based sets).
- The FBX configuration consisting of a PICNIC (100 Hz featuring), a FALCONIC (Auto TV featuring), and an EAGLE (motion compensation and "Pixel Plus" processing).
- A 2fH/3fH source selection.

Additionally, the following features are added

- One-chip NEC 3D comb filter (only for USA): this comb filter uses spatial and temporal filtering for the elimination of cross colour and cross luminance components. Not only for vertical lines, but also for stationary diagonal lines. This comb filter only supports the NTSC standard.
- The light sensor measurement required for "Active Control" is done by the OTC.

Basic functionality of HIP

I/O functionality

- The HIP selects the signals entering on 1fH base band. The HIP contains a source select matrix in order to handle a Tuner, three CVBS sources, two Y/C sources, and two RGB inputs (this in fact means one VIF input for tuner, four CVBS inputs with among them two Y/C inputs, and two RGB inputs). The HIP detects by itself whether the source is Y/C or CVBS, and decides how to handle the signal for further image processing. For Record Out, the signal is handled by software: if a P50 SVHS VCR is present and the signal to be recorded is Y/C, an Y/C signal should be passed to the VCR.
- There are also two inputs for the OTC that will handle status detection, other, or more detection. In case of RGB, the fast blanking signal (FBL) determines the break-through of the RGB1/YPbPr signal if activated beforehand by the user. If a YPbPr-1fH connection was done, then it is equally handled by the RGB1 input without using the internal matrix. The HIP delivers the main video output (YUV- 1fH signal) for further image processing and three CVBS outputs, being: CVBS PIP/DS, CVBS_TXT_OUT for

comb filter (always following YUV main!) and TXT processing, and the CVBS/Y_RECORD_OUT for EXT2.

IF functionality

- The HIP contains a multi standard IF circuit for video demodulation with AFC functionality, a sound IF amplifier, and an AM demodulator. An extra group delay correction is included.
- Chroma demodulation and video processing
- Sync acquisition, delivering H_A/V_A (Horizontal/Vertical Acquisition) towards FBX.

Basic functionality of EBILD

The EBILD is the interface between the FBX and the LCD screen. Its principal functions are:

- Video control functions of the HOP (Saturation, Contrast, Brightness).
- OSD and TXT insertion with blending.
- Video Matrix (NTSC, ATSC, PAL).
- For matrix displays additional functions like:
 - Contrast reserve (peak limiter),
 - Sync wheel,
 - Dithering (matrix displays are 8 bit),
 - Generation of correct timing for LCD display: lamp/video.
- I2C and SNERT bus.
- Sync control.
- Odd/Even field detection.
- A/D converter alignment for OSD.
- H Sync generation for OTC.
- Control lines.
- Standard detection.
- Lamp on.
- Handle shifts of VD.
- Suppress H and V pulses in active video.
- Generate a H_REF for PICNIC (1fH) in case of a 2fH/3fH source.

Basic functionality of the OTC

The OTC combines the microprocessor and TXT/OSD functionality; it will also handle some of the status detections. It also takes care of P50 communication.

9.5.2 Video Source Selection

Table 9-4 Video input overview

I/O	Main/Sub	CVBS-in	CVBS-out	Y/C-in	Y/C-out	RGB 1fH+ FBL	YPbPr 1fH	YPbPr 2fH/3fH	RGB 2fH	Status 4/3-16/9	P50
EXT1 SCART	Main	Yes	Yes, frontend	No	No	Yes	No	No	No	Yes	No
	Sub	Yes	n.a.	No	n.a.	No	No	No	No	Yes	No
EXT2 SCART	Main	Yes	Yes, WYSIWYR	Yes	Yes	Yes	No	No	No	Yes	Yes
	Sub	Yes	n.a.	Yes	n.a.	Yes	No	No	No	Yes	Yes
EXT3 SCART	Main	Yes	No	No	No	No	No	No	No	Yes	No
	Sub	Yes	n.a.	No	n.a.	No	No	No	No	Yes	No
EXT4 SCART	Main	Yes	No	No	No	No	No	No	No	Yes	No
	Sub	Yes	n.a.	No	n.a.	No	No	No	No	Yes	No
EXT5 cinch	Main	No	No	No	No	No	Yes	Yes	No	Only video det.	No
	Sub	No	n.a.	No	n.a.	No	Yes	No	No	Only video det.	No
Side	Main	Yes	No	Yes	No	No	No	No	No	No	No
	Sub	Yes	n.a.	Yes	n.a.	No	No	No	No	No	No
VGA	Main	No	No	No	No	No	No	No	Yes	Only video det.	No
	Sub	No	n.a.	No	n.a.	No	No	No	No	n.a.	No

The High Definition Input (HDI) part has two input "ports". Each port consists of a video input and an audio input. The ports are

named "VGA" (= AV6) and "AV5" and will be referred to using these names.

The physical connectors for these inputs are:

- **AV5.** Three cinches that can be used for YPbPr with sync on Y and two cinches for analogue Audio (left and right).
- **VGA.** One VGA connector and two cinches for analogue Audio (left and right).

Table 9-5 AV5 (YPbPr) input signals

AV5 Inputs (YPbPr)	System	Field freq. (V)	Line freq. (H)	Remark
576 p	PAL	50 Hz	31.25 kHz	
480 p	NTSC	60 Hz	31.5 kHz	
1080 i	ATSC	60 Hz	33.7 kHz	
1080 i	ATSC	50 Hz	28.125 kHz	
720 p	ATSC	50 Hz	37.5 kHz	FBX is not in signal pad
720 p	ATSC	60 Hz	45 kHz	FBX is not in signal pad

Table 9-6 AV6 (VGA) input signals

AV6 Inputs (VGA)	System	Field freq. (V)	Line freq. (H)	Remark
VGA	640x480	60 Hz	31.5 kHz	
SVGA	800x600	56 Hz	35.1 kHz	
XVGA	1024x768	60 Hz	48.4 kHz	FBX is not in signal pad
576 p	PAL	50 Hz	31.25 kHz	
480 p	NTSC	60 Hz	31.5 kHz	
1080 i	ATSC	60 Hz	33.7 kHz	
1080 i	ATSC	50 Hz	28.12 kHz	
720 p	ATSC	50 Hz	37.5 kHz	FBX is not in signal pad
720 p	ATSC	60 Hz	45 kHz	FBX is not in signal pad

The video signals that can be applied are:

- YPbPr sync on Y, 1080i, 480p, and 576p (AV5).
- VGA (RGB + HV: 640x480-60Hz, 800x600-56Hz), SVGA, XVGA.

9.5.3 Video Processing

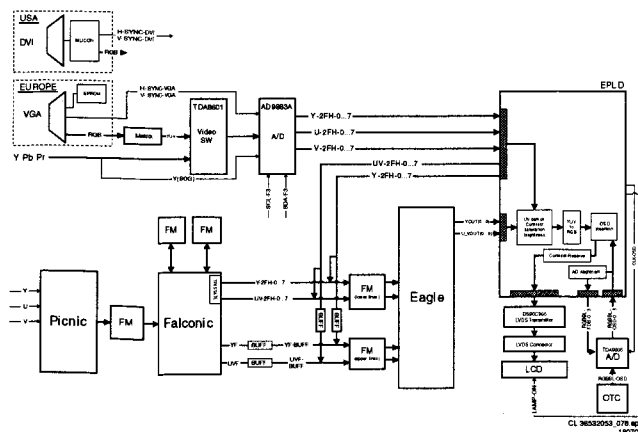


Figure 9-8 Video processing 2fH/3fH input

The outputs toward the electronics of the set consist of:

- YUV-422.
- H-2FH-AD-OUT and V-2FH-AD-OUT.
- Left and right audio channels (analogue).

- CLK-2FH.

Notes:

- In case of 2fH inputs, the signal is (after detection via the EBILD) routed through the FBX for picture improvement. The YUV output of the Eagle is then routed to the EBILD for the displaying part.
- In case of 3fH inputs, the signal is not routed via the FBX (because the Eagle cannot handle them), but directly processed by the EBILD.

9.5.4 Miscellaneous

Comb Filter

The comb filter functionality can be enabled or disabled via the HIP. This means allowing or disallowing the HIP to use the comb filter. Both the conventional 2D comb filter (EUR) and the 3D comb filter (USA) have to use this HIP command.

Notes:

- The command ENABLE_COMBFILTER enables the function. If the TV standard that enters the TV is one where a comb filter is applicable (e.g. PAL or NTSC, not SECAM), the HIP will determine self if the video signal can be combed and as a consequence, the video processing output can be CVBS or Y/C. No software interaction is needed.
- The command ENABLE_COMBFILTER does not necessarily mean that the signals will be combed.
- The comb filter must be disabled in case of RGB and for YPbPr-1fH, to avoid big horizontal shifts of the picture caused by the comb filter processing.
- The comb filter is also disabled at very low quality antenna signals for AP due to vertical instability/scrolling effects.

Auto TV

The Auto Picture Control or in short AutoTV, aims at providing the customer the best possible picture performance at any time. Therefore, it performs real time processing of the video signal and because of that, it decides to adapt several video parameters throughout the whole chassis. The total effect of Auto Picture Control on the screen can be selected by the use of the remote control. The commercial name for the feature is "Active Control".

The sets have three digital options: Progressive Scan, Pixel Plus, and Movie Plus. The Progressive Scan mode has no Pixel Plus enhancement. For 2fH inputs, only Progressive Scan or Pixel Plus mode can be selected. For 3fH inputs no digital options are available.

The aim of Movie Plus mode is to reduce the Halo artefacts (halo's are artefacts introduced with the Natural Motion feature). Reducing halo's will result in motion judder. This is compensated by the FBX software.

The basic component for Auto TV is the FBX. It measures the picture content and it has the most video control parameters on board, like peaking, coring, DNR, and so on. With the presence of the Eagle, additionally the colour enhancement functions and the LTI are controlled. Also, the light sensor, needed for ambient light control, is supported via the OTC. Finally, vertical peaking is mostly done in Eagle, a little in the PICNIC, and the motion compensation and DNR is done in the FALCONIC.

See also EM5 service manual.

9.6 Audio

9.6.1 Introduction

In this chassis, there are only Virtual Dolby sets, but there is diversity between Europe and USA sets.

9.6.2 Audio decoding

Two audio decoders will be used:

- ITT MSP 3411: for Europe sets.
- ITT MSP 3421: for USA sets.

Both MSP versions also decode NICAM. The AM signal is also decoded by the MSP.

9.6.3 Audio source selecting

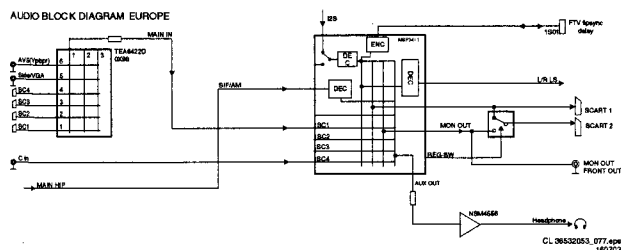


Figure 9-9 Audio block diagram

The MSP covers a SIF input, 4 stereo inputs and one mono input. As this chassis needs more inputs, one matrix IC (TEA6422D, item 7117) is added. The stereo inputs on this IC are:

- For Europe:
 - EXT1.
 - EXT2.
 - EXT3.
 - EXT4.
 - AV5 (YPbPr 2fH/3fH).
 - Side I/O.
 - AV6 (VGA).
- For USA:
 - AV1.
 - AV2.
 - AV3.
 - AV4 (YPbPr 1fH or 2fH/3fH).
 - Side I/O.
 - AV5 (DVI).

There are three separated outputs on the matrix IC, but only the main output (MAIN_IN), going to the MSP, is used.

The MSP has the following inputs:

- SIF input (this can be FM, AM, or NICAM).
- MAIN_IN from matrix IC TEA6422D.
- Centre input.

An S/PDIF in/output is not foreseen.

9.6.4 Audio processing

European sets have an MSP3411, USA sets have an MSP3421. Both can handle Virtual Dolby. All sets have 2 x 10 W_{rms} output.

Following **outputs** are foreseen:

- Europe:
 - EXT1: Front-end
 - EXT2: WYSIWYR.
 - Monitor out: for external Dolby ProLogic amplifier.
 - Headphone out.
- USA:
 - Monitor out: Front-end.
 - Headphone out.

Important remarks

- For Europe: Régimbeau switch (REG_SW): this switch (item 7120) is needed to prevent feedback (Larsen effect). When EXT2 is chosen as incoming signal, the output of EXT2 following the main picture, is also EXT2. This will

cause the Larsen effect. To prevent this, the record select must be switched to tuner. This is especially important when decoders are used (e.g. Canal + decoder) behind a "transparent" VCR connected to EXT2.

- It is not allowed to mix up analogue and digital signals in the MSP; SCART-in towards SCART-out should be treated in the analogue source select part of the MSP. Reason for this, is the limited bandwidth in the MSP (16 kHz) while the analogue source selection part can carry up to 20 kHz.
- If a 2fH/3fH source is selected, it is not possible to handle the video signal in the 1fH source selection. Since the video signal cannot be connected to EXT2, the output of EXT2 is switched to FRONTEND, and MONITOR OUT is WYSIWYR (same source as video).

9.6.5 Audio Amplifier Panel (Diagram A)

Introduction

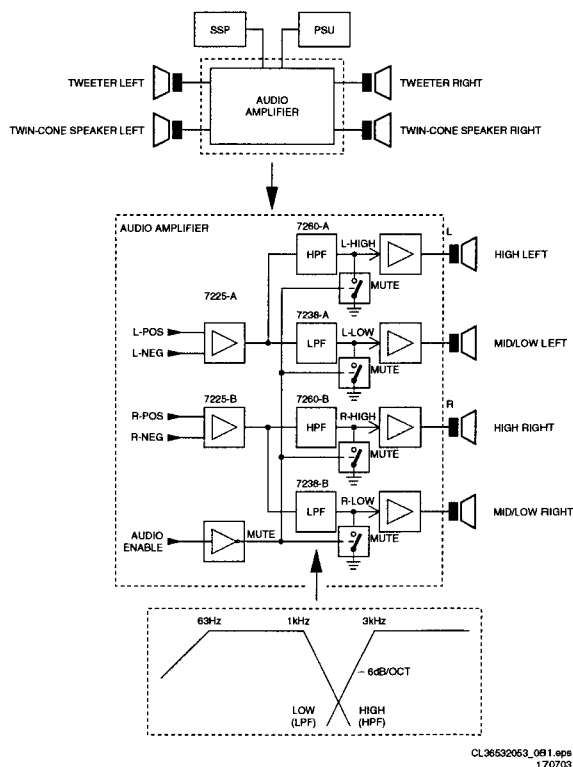


Figure 9-10 Block diagram Audio Amplifier

This panel houses the audio filters and amplifiers necessary for driving the speakers. The differential audio inputs (for common mode immunity) come from the SSP (via connector 0388). The PSU delivers the positive and negative supply voltage of 12 V_{dc}, as well as the +5V2 (standby) voltage. After being filtered and amplified, the signals go to the speaker section, where the (twin cone) low/mid range speakers and the tweeters are driven (load impedance is 8 Ω).

The headphone amplifier is a straightforward OpAmp amplifier (IC7A07-A, MC33178D). It is supplied with +11V_{AUD}.

Supply (Diagram A7)

The supply voltage is a symmetrical voltage of +/- 14.5 V_{dc}, generated by the main supply via L5002.

- V_{SND_POS} (+12 V_{dc}) on connector 0302 pin 5/6.
- V_{SND_NEG} (-12 V_{dc}) on connector 0302 pin 1/2.

Filter (Diagram A2)

Electrical filtering is needed for following reasons:

- Limiting the cone excursion, thereby reducing the distortion.
- Increasing the power handling capacity (PHC).

Active second order Sallen-Key filters are used, with crossover frequencies of 1 kHz for the low pass filter, and 3 kHz for the high pass filter.

The audio signals are filtered **before** the amplifier. There are some reasons for doing this:

- It is now easy to do active filtering.
- Less costs (no expensive coils and capacitors).

Low Pass Filter (LPF)

For L and R separately, a Low Pass Filter (IC7238A and B) is processing L_LOW and R_LOW.

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

High Pass Filter (HPF)

For L and R separately, a High Pass Filter (IC7260A and B) is processing L_HIGH and R_HIGH.

The output signal of this filter is then fed to the audio amplifier (identical for right channel).

Amplifier (Diagrams A3 to A6)

Each speaker has its own class-D amplifier. These amplifiers combine a good performance with a high efficiency, resulting in a big reduction in heat generation.

Principle

Audio-power-amplifier systems have traditionally used linear amplifiers, which are well known for being inefficient. In fact, a linear Class AB amplifier is designed to act as a variable resistor network between the power supply and the load. The transistors operate in their linear region, and the voltage that is dropped across the transistors (in their role as variable resistors) is lost as heat, particularly in the output transistors. Class D amplifiers were developed as a way to increase the efficiency of audio-power-amplifier systems.

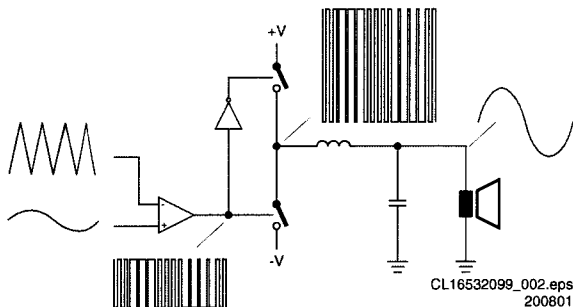


Figure 9-11 Principle Class-D Amplifier

The Class D amplifier works by varying the duty cycle of a Pulse Width Modulated (PWM) signal.

By comparing the input voltage to a triangle wave, the amplifier increases duty cycle to increase output voltage, and decreases duty cycle to decrease output voltage.

The output transistors (item 7365 on diagram A3) of a Class D amplifier switch from 'full off' to 'full on' (saturated) and then back again, spending very little time in the linear region in between. Therefore, very little power is lost to heat. If the transistors have a low 'on' resistance ($R_{DS(ON)}$), little voltage is dropped across them, further reducing losses.

A Low Pass Filter at the output passes only the average of the output wave, which is an amplified version of the input signal. In order to keep the distortion low, negative feedback is applied (via R3308). A second feedback loop (via R3310) is tapped after the output filter, in order to decrease the distortion at high frequencies.

The **advantage** of Class D is increased efficiency (= less heat dissipation). Class D amplifiers can drive the same output power as a Class AB amplifier using less supply current.

The **disadvantage** is the large output filter that drives up cost and size. The main reason for this filter is that the switching waveform results in maximum current flow. This causes more loss in the load, which causes lower efficiency. An LC filter with a cut-off frequency less than the Class D switching frequency (350 kHz), allows the switching current to flow through the filter instead of the load. The filter is less lossy than the speaker, which causes less power dissipated at high output power and increases efficiency in most cases.

Mute (Diagram A3 for "Left High")

A mute switch (item 7302) is provided at the PWM inputs (item 7315, LM311). This switch is controlled by the AU_EN_NOT line, which is controlled via the POR signal (mute at start-up) and via the SOUND_ENABLE line from the OTC (mute during operation). This circuitry is the same for all four amplifier parts.

Protections

Short-circuit Protection (e.g. Diagram A3 for "Left High")

A protection is made against a too high temperature of transistor 7355 in case of a short-circuit of output FET 7365-1. Transistor 7340 is sensing the current through transistor 7355 via R3355, and activates the DC-protection line (see below) in case the current becomes too high. This is the same for all four amplifier parts.

DC-protection (Diagram A7)

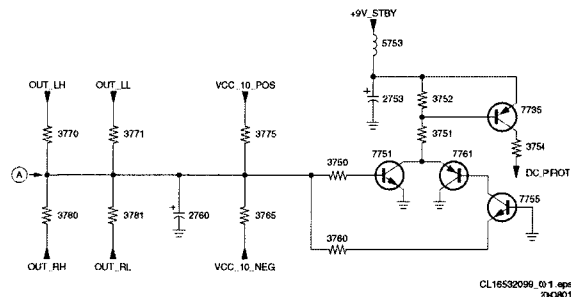


Figure 9-12 DC Protection

Because of the symmetrical supply, a DC-blocking capacitor, between the amplifier and the speaker, is not necessary. However, it is still necessary to protect the speaker for DC voltages.

The following protections are therefore implemented:

- Via R3765 and R3775, each stabilised supply voltage line (via items 7735 and 7745) is checked on deviations.
- Via R3770/3771/3780/3781, each amplifier output is checked for DC-voltage.

Via R3765/3775, a virtual earth is imposed on point A. When one of the supply voltages deviates, a DC voltage will occur on this point. If point A is positive, T7751 will conduct. If it is negative, T7761 will conduct.

Both cases will make T7735 conduct, so that the DC-PROT signal will be made high. This ensures that the power supply is rapidly trimmed back.

Capacitor C2760 will ensure that only DC-signals at point A will activate the protection.

9.7 Synchronisation

9.7.1 Introduction

Through the chassis, the synchronisation is complicated because the LCD display needs another number of pixel per line (1280) and lines per frame (768). Therefore, there is a different sync flow for 1fH, 2fH, or 3fH inputs.

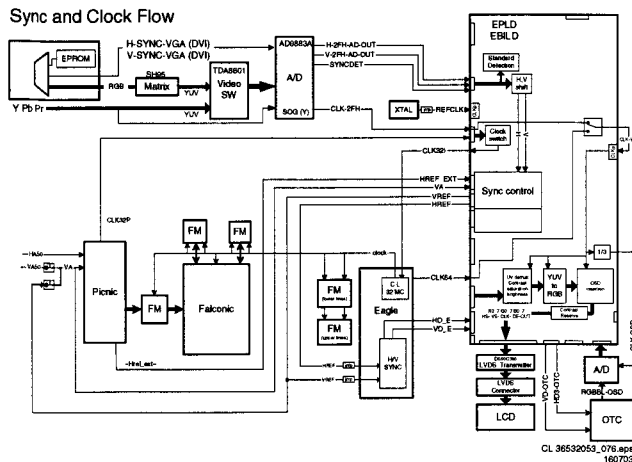


Figure 9-13 Sync and clock flow

9.7.2 Sync Flow 1fH Inputs

1fH Sync Signals

- At the 1fH side, the HIP is detecting the incoming video signal and provides a H_A / V_A (Horizontal / Vertical Acquisition sync) pulse. This is the sync input for the FBX.
- The flywheel of the PICNIC gives a 1fH sync H_REF_EXT to the EBILD, together with the V_A pulse.
- These are switched in the EBILD and sent to Eagle (H_REF and V_REF).
- The Eagle delivers new sync pulses HD_E and VD_E converted to the new line and frame sequence of the LCD 3fH. The LCD displays in 50 or 60 Hz, 768 lines per field and 1280 samples per line
- The EBILD delivers sync pulses to the OTC for OSD and TXT (VD-OTC and HD3-OTC). Note that the OSD has a field freq of 50/60Hz

1fH Clock Signals

- The PICNIC delivers a 32 MHz clock (CLK32P) to the EBILD synchronised with H pulses.
- The EBILD switches this signals to the Eagle (CLK32I).
- The Eagle delivers a clock signal for the FALCONIC and the field memories.
- The Eagle delivers a 64 MHz clock to the EBILD (CLK64).

9.7.3 Sync Flow 2fH Inputs

2fH Sync Signals

- The input signals do not come via the HIP and PICNIC, but via the AD9883A. This AD converter delivers H and V sync signals to the EBILD (H-2FH-AD-OUT and V-2FH-AD-OUT).
- These inputs are used for standard detection and H and V shift.
- The EBILD divides the pulses by two, and switches the H and V syncs to the Eagle (H_ref and V_ref).
- The Eagle delivers new sync pulses HD_E and VD_E converted to the new line and frame sequence of the LCD 3fH. The LCD displays in 50 or 60 Hz, 768 lines per field and 1280 samples per line.

- The EBILD delivers sync pulses to the OTC for OSD and TXT (VD_OTC and HD3_OTC). Note that the OSD has a field freq of 50/60Hz.
- The PICNIC receives V_ref pulses as reference; it is free running for horizontal sync.

2fH Clock Signals

- The AD9883A gives his sample clock (CLK-2FH) to the EBILD, this clock is synchronised with the incoming H pulses.
- The EBILD switches this pulse to the Eagle (CLK32I).
- The Eagle delivers a clock signal for the FALCONIC and the field memories.
- The Eagle delivers a 64MHz clock to the EBILD (CLK64).

9.7.4 Sync Flow 3fH input sync signals

3fH Sync Signals

- The input signals do not come via the HIP and PICNIC but via the AD9883A. This AD converter delivers H and V sync signals to the EBILD (H-2FH-AD-OUT and V-2FH-AD-OUT).
- The sync signals are the same as with 2fH inputs.

3fH Clock Signals

- The master clock is delivered by the AD9883, same as 2fH inputs; The EBILD uses this clock as sample clock for video control.

9.8 Control

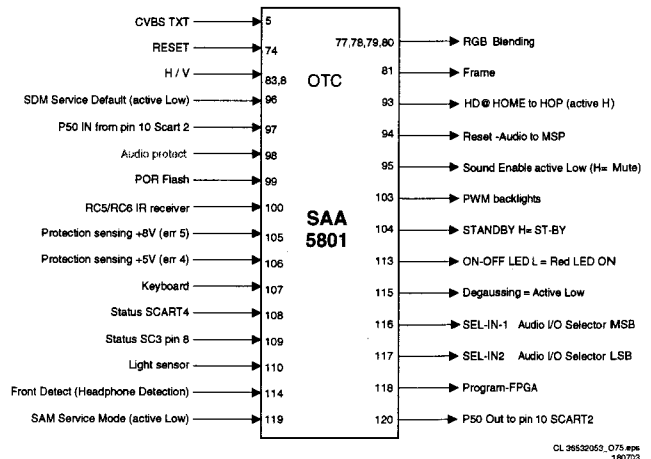


Figure 9-14 OTC interfacing

9.8.1 "Switch On" Behaviour

See paragraph "Power States" in this chapter.

9.8.2 OTC Flash

See paragraph "Software Upgrading" in this chapter.

9.8.3 Keyboard

The local keyboard is connected to P2-4 (pin 107) of the OTC, which is an A/D pin. Each key matches with a range of values within the A/D converter.

9.8.4 LED Control

In USA the same LED configuration is used as in Europe, the 2 colour LED.

Table 9-7 LED control

Condition	Two colour LED
On	Green
Off	No indication
Low power standby	No indication
Standby	Red
Semi-standby	Orange (red and green)
Reaction on RC in On-state	Orange (green and (red blinking))
Reaction on RC in Standby	Red
Reaction on RC in Semi-standby	Orange (green and (red blinking))
Protection	Red blinking

9.9 Protections

9.9.1 General

Under certain fault conditions, as described below, the set must go into the "protection state". This means that the set is switched into standby and displays a blinking LED. These protections are introduced in order to avoid unacceptable temperature rises and burning hazards. The failure cause will be identified and put into the NVM error buffer. For the customer, it is made impossible to switch "on" the set with his remote control.

On the other hand, it must be possible to read out the error codes from NVM while using a Dealer Service Tool or a ComPair tool, or to de-activate the protection states in Service Default Mode. It is possible to enter ComPair from protection but not from standby.

The protection algorithms are activated/de-activated at a certain stage in the "start-up/switch-off" sequence of the set (see also figure "Step wise start-up diagram" in chapter "Service Modes, Error Codes, and Fault Finding").

9.9.2 Hardware protections

Short-circuiting the 3V3 supply from the DC/DC converter will shut down the DC/DC converter. There are no hardware protections foreseen that switch "off" the supply.

There are several types of software related protections, solving a variety of fault conditions:

- Protections related to supply: check if the +8V coming from the main supply and the +5V coming from the standby supply are present.
- Protections related to temperature problems in the DC/DC converter, which supplies the FBX, EBILD, 3D comb (USA), and tuner.

These protections use various mechanisms of detection:

- Via polling on I/O pins going to/coming from the OTC: +5V and +8V.
- Via a "not acknowledge" state of the I2C bus: for FBX, EBILD, 3D comb (USA), and tuner.

Protections with detection via I/O lines of the OTC

8V protection

The +8V information is an ADC input of the microprocessor. This input can sense the absence of the +8V. The failure is filtered by software and put in the error buffer for serviceability. The set must go into protection.

5V protection

The microprocessor can sense the absence of the +5V. The failure must be filtered by software and put in the error buffer for serviceability. The set must go into protection.

Because of the architectural set-up of the power supply (the +5V supply is linked to the +5V2 standby supply of the OTC), it is not possible to detect a complete absence of the +5V and to signal it in software. Therefore, no software error indication will be available when there is a complete short circuit of the +5V supply.

What happens is this:

- When the +5V_SW is overloaded (short circuit), this will also overload the +5V2. The supply that feeds the OTC, the standby supply, hiccups. As a result, the +5V2 is not overloaded anymore and can rise again. Because of the dip in the OTC supply voltage, the OTC will get a reset and restarts the set. If the fault cause is still present at that start-up, the system will restart all over and the set will be in a hiccup mode. This is not a problem if the duty cycle is low enough.
- If however, the short circuit on the +5V is such that the +5V2 supply is not overloaded and the remaining voltage on the +5V2 is still high enough to keep the OTC alive, the short circuit on the +5V can be detected via the ADC input of the OTC the same way the +8V protection is implemented. The set must also go into protection.

If a +8V or a +5V dropout is detected, the protection input should be checked several times, every 200ms. If the protection input is active for five consecutive times, the set must go into protection.

DC protection (from audio amplifier)

Because of the symmetrical supply of the audio amplifier, a DC-blocking capacitor between the amplifier and the speaker is not necessary. However, it is still necessary to protect the speaker for DC voltages. If a DC protection is activated, the OTC will set the TV in protection. A specific error code is **not** generated. For a detailed description, see paragraph "Audio Amplifier".

Protections with detection via I2C bus

DC/DC protection:

When a 3V3 supply is short-circuited, the DC/DC converter switches "off". The FBX, EBILD, and 3D Comb have no supply voltage and therefore will give no acknowledge. In this case, the set goes into protection and an error code is generated (error "55").

Feature box protection

The FBX protection is no longer available. It is replaced by a combined protection called "DC/DC protection".

Tuner protection

The tuner is supplied by the +5V_SW, which is delivered by the standby supply. When this supply is short-circuited, the standby supply will hiccup. If the tuner does not acknowledge on its I2C address for five consecutive times, the set goes into protection and error "13" is generated. Maximum time allowed before protection: 1.5 s.

3D Comb filter protection (USA)

The 3D comb protection is no longer available. It is replaced by a combined protection called "DC/DC protection".

9.10 LCD Panel

9.10.1 Introduction

First, a small comparison between CRT and LCD technology:

- Cathode Ray Tube:
 - Homogeneous surface.
 - Wide range of number of displayable pixels (limited by bandwidth and shadow mask).
 - Wide range of number of lines (limited by deflection characteristics).
 - Wide range of frame/field frequencies (limited by deflection and flicker).
 - Interlaced and progressive images.
- Liquid Crystal Display:
 - Fixed number of pixels per row.
 - Fixed number of rows.
 - Limited range of field frequencies: often 50-60 Hz, sometimes up to 75 Hz.
 - Progressive images only: de-interlacing and scaling necessary.

The LC300W01 from LPL (LG.Philips LCD) is a colour Active Matrix Liquid Crystal Display (AM LCD) with an integrated Cold Cathode Fluorescent Lamp (CCFL) backlight system. The matrix employs a-Si Thin Film Transistors (TFT) as the active elements.

It is a transmissive type display operating in the normally white mode. This TFT-LCD has a 30.0 inch diagonally measured active display area with WXGA resolution (1280 horizontal by 768 vertical pixel array). Each pixel is divided into Red, Green, and Blue sub-pixels or dots, which are arranged in vertical stripes.

Greyscale, or the brightness of the sub-pixel colour, is determined with a 8-bit greyscale signal for each dot, thus, presenting a palette of more than 16.7 Million (true) colours. The panel uses an 8-bit Low Voltage Differential Signalling (LVDS) interface.

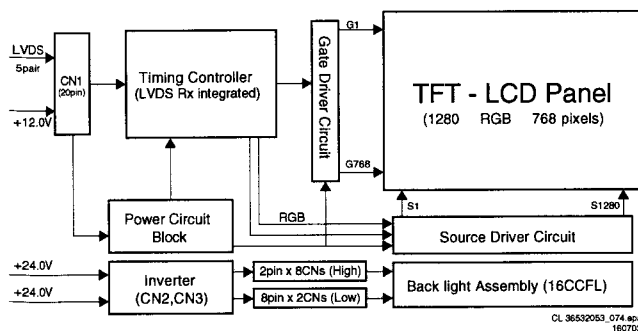


Figure 9-15 Block diagram LCD panel

Table 9-8 Backlight connector pinning

Pin	Symbol	Description
1	GND	Ground
2	Bright-Adjust	0V (Min), 5V (Max)
3	GND	Ground
4	On/Off	On = 5V, 0V = Off
5	GND	Ground
6	GND	Ground
7	NC	No connection
8	GND	Ground
9	GND	Ground
10	Vin	+24V
11	Vin	+24V
12	Vin	+24V
13	Vin	+24V

Pin	Symbol	Description
14	Vin	+24V
15	Vin	+24V

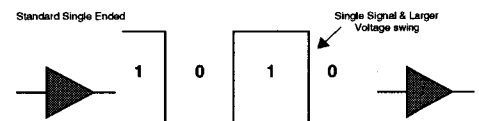
9.10.2 LVDS Interface

- Standard single ended signal (TTL).
 - This 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.

- Lower Voltage Swing (only 350 mV vs. 3 V)
 - Allows faster Clocking
 - Standard open Ended: 250Mbps
 - LVDS: >1 Gbps



- Differential Signals (Two Signals) ...Low Noise!
 - Receiver reads a 1 or 0 based on the delta of the two signals.
 - Noise Impacts both lines and cancels out each others.

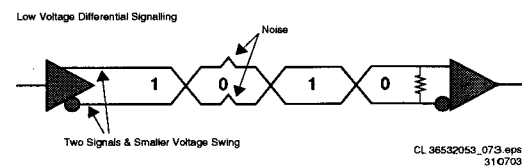


Figure 9-16 LVDS technology

9.11 Software Upgrading

9.11.1 Introduction

In this chassis, you can **upgrade** the software via ComPair. This offers the possibility, to replace the entire SW image without having to remove the flash-memory from its socket. You can find more information on how this procedure works in the ComPair file. It is possible that not all sets are equipped with the hardware, needed to make software upgrading possible. To speed up the programming process, the firmware of the ComPair interface can be upgraded. See Chapter "Service Modes ...", paragraph "ComPair" - "How To Order" for the order number.

9.11.2 Specifications

Some specifications are:

- The upgrade feature makes use of I2C to transfer a new SW image (4 MB).
- It requires the ComPair interface Box (RS232 to I2C).
- The I2C bus is available at the rear side of the set.

- It uses a ZIP-compressed BIN image to speed up the transfer process (1/2 size).
- The complete procedure takes less than 20 minutes with an upgraded ComPair interface:
 - About 90 seconds to erase a 4 MB flash-memory.
 - Less than 10 minutes to transfer the file (max 1.9 MB).
 - About 5 minutes to decompress/program the flash-memory.

Note: It takes about 85 minutes with a standard interface.

Constraints:

- Needs the EPG flash memory, so this device must be placed also for non-EPG regions like AP and USA.

Advantages:

- Flexibility.
- No change in internal ROM (IROM) required (IROM not used).
- Flexibility to change of code flash manufacturer as the "flash driver" is part of the bootstrap code (part of the main software image).

9.11.3 Concept

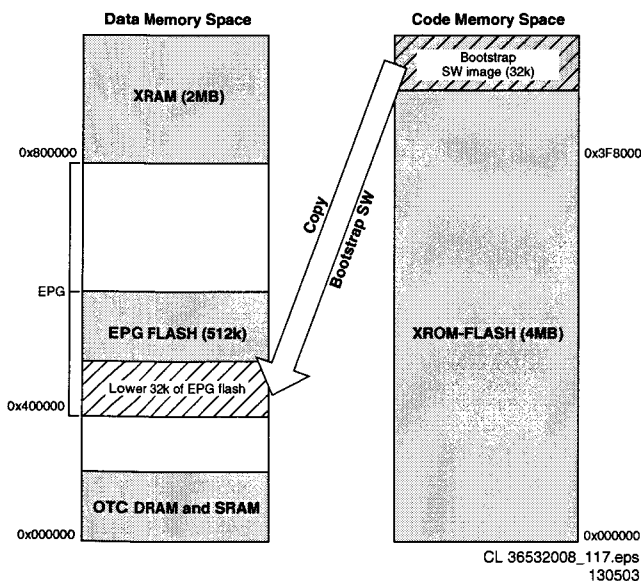


Figure 9-17 Memory diagram (initial situation)

The architecture of the OTC microprocessor does not allow the execution of code from the external RAM. It is also impossible to write data in the code memory space (there is no instruction to write data to those memory locations).

The OTC normally boots from its internal ROM (IROM) but modification of the **internal** ROM software would be too expensive. Fortunately, the chip architecture allows also the booting from **external** ROM (XROM).

The IROM is mapped on the first 32 kB of the ROM address space. The XROM is mapped starting at the same address. Therefore, the lower 32 kB of XROM overlaps the IROM memory space.

Via an external pin (EA), it is possible to reveal the XROM memory below the IROM and so boot using this hidden software. This is the first trick used by the software upgrade procedure.

To be able to write to the CODE flash, it is required to address the device via the RAM address space. Today all RAM but also the EPG flash is mapped on the RAM address space.

Devices are mapped to the right address space via a few control lines (kind of chip select). By exchanging the control lines between the EPG and the CODE flash, it is possible to

map the CODE flash in the RAM address space and at the same time use the EPG flash to execute software. This is the second trick used by the procedure.

The main idea is to use the EPG flash to boot up the software upgrade procedure.

Therefore, the complete procedure relies on the presence of that one.

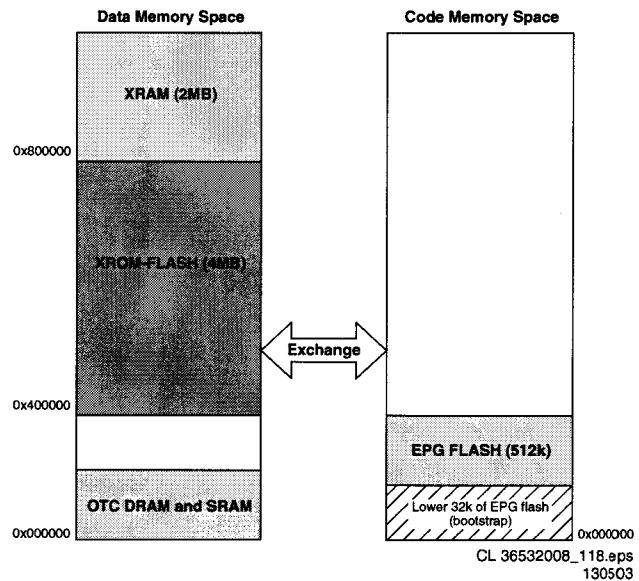


Figure 9-18 Memory diagram (after bus exchange)

In order to be able to write new software code to the set, we therefore must copy the bootstrap code to a free memory area (e.g. the EPG flash-memory) in order to be able to execute "externally" the upgrade procedure code.

Solution: swap the software code to the data memory space (via setting jumper/switch 1402) and boot from the EPG FLASH.

After the zip-file uploading and (internally) software unpacking, the old situation must be restored.

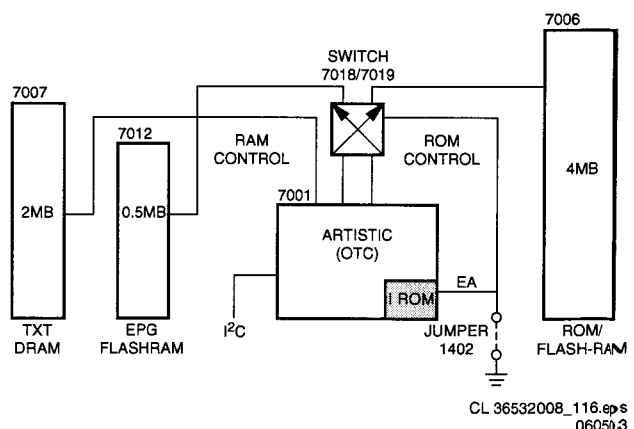


Figure 9-19 Software upgrade set-up

A jumper/switch on the SSP will swap the devices and boot "externally" via the EPG flash. Then, via ComPair, the download command is given. The new (ZIP) image will be first downloaded to the OTC's external RAM (TXT DRAM). Then a checksum on the ZIP image will be computed on both sides (PC and TV) and compared.

If everything is correct, the CODE flash will be erased and the new image will be transferred and unzipped (= decompressed)

into the flash. This is done via the bootstrap code. A second checksum will be computed on the decompressed image. After the upgrade, the EPG flash will be cleared again.

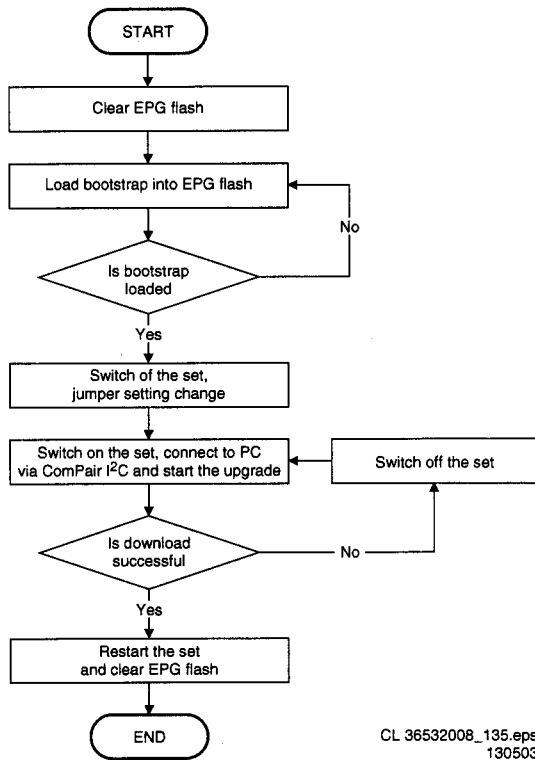


Figure 9-20 Software upgrade flow chart

9.12 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
Artistic	See OTC 2.5: main processor
ASF	Auto Screen Fit: algorithm that adapts aspect ratio to remove horizontal black bars without discarding video information
ATSC	Advanced Television Systems Committee
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
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)
CL	Constant Level: audio output to connect with an external amplifier
ComPair	Computer aided rePair
CSM	Customer Service Mode
CLK_2FH	Clock output AD converter
CTI	Colour 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

DVD	Digital Versatile Disc	LATAM	Latin America
DVI(-d)	Digital Visual Interface (d= digital only)	LCD	Liquid Crystal Display
Eagle	Feature box IC performing peaking, zooming and sub pixel LTI in both horizontal and vertical directions, CTI, and other colour features	LED	Light Emitting Diode
EBILD	Eagle Based Intelligent LCD Driver (Programmed EPLD)	L/L'	Monochrome TV system. Sound carrier distance is 6.5 MHz. L' is Band I, L is all bands except for Band I
E-DDC	Enhanced Display Data Channel (VESA standard for communication channel and display). Using E-DDC, the video source can read the EDID information from the display.	LS	Loudspeaker
EDID	Extended Display Identification Data (VESA standard)	LVDS	Low Voltage Differential Signalling
EEPROM	Electrically Erasable and Programmable Read Only Memory	Mbps	Mega bits per second
EMI	Electro Magnetic Interference	M/N	Monochrome TV system. Sound carrier distance is 4.5 MHz
EPLD	Erasable Programmable Logic Device	MOSFET	Metal Oxide Silicon Field Effect Transistor, switching device
EU	Europe	MPEG	Motion Pictures Experts Group
EXT	EXternal (source), entering the set by SCART or by cinches (jacks)	MSP	Multi-standard Sound Processor: ITT sound decoder
FALCONIC	SAA4992H, feature box IC which performs Digital Natural Motion, 3DNR vertical zoom, and vertical peaking	MUTE	MUTE Line
FBL	Fast BLanking: DC signal accompanying RGB signals	NC	Not Connected
FBX	Feature BoX: part of the small signal board /separate module which contains 100 Hz processing, extra features and AutoTV algorithms (FBX6= based on PICNIC, FBX7= based on PICNIC and Eagle)	NICAM	Near Instantaneous Compounded Audio Multiplexing. This is a digital sound system, mainly used in Europe.
FDS	Full Dual Screen (same as FDW)	NTC	Negative Temperature Coefficient, non-linear resistor
FDW	Full Dual Window (same as FDS)	NTSC	National Television Standard Committee. Colour system mainly used in North America and Japan. Colour carrier NTSC M/N= 3.579545 MHz, NTSC 4.43= 4.433619 MHz (this is a VCR norm, it is not transmitted off-air)
FLASH	FLASH memory	NVM	Non-Volatile Memory: IC containing TV related data such as alignments
FM	Field Memory or Frequency Modulation	O/C	Open Circuit
FTV	Flat TeleVision	OSD	On Screen Display
Gb/s	Giga bits per second	OTC	On screen display Teletext and Control; also called Artistic (SAA5800)
G-TXT	Green TeleteXT	OTP	One Time Programmable
H	H_sync to the module	P50	Project 50: communication protocol between TV and peripherals
H_2FH_AD_OUT	H-sync output from AD converter	PAL	Phase Alternating Line. Colour system mainly used in West Europe (colour carrier= 4.433619 MHz) and South America (colour carrier PAL M= 3.575612 MHz and PAL N= 3.582056 MHz)
HDI	High Definition Interface	PCB	Printed Circuit Board (same as "PWB")
H-DVI	H_sync from DVI to RGB converter chip	PCM	Pulse Code Modulation
HIP	High-end video Input Processor (TDA9320): video and chroma decoder.	PDP	Plasma Display Panel
HOP	High-end video Output Processor (TDA9330): video, sync, and geometry controller	PFC	Power Factor Corrector (or Pre-conditioner)
HP	HeadPhone	PICNIC	Peripheral Integrated Combined Network IC (SAA4978): main IC for 100 Hz features and feature processing
H_DVI	H-sync from DVI-to-RGB converter chip	PIP	Picture In Picture
H_SYNC_VGA	H-sync on VGA connector	PLL	Phase Locked Loop. Used for e.g. FST tuning systems. The customer can give directly the desired frequency
I	Monochrome TV system. Sound carrier distance is 6.0 MHz	POR	Power On Reset, signal to reset the P
I2C	Integrated IC bus	Progressive Scan	Scan mode where all scan lines are displayed in one frame at the same time, creating a double vertical resolution.
I2S	Integrated IC Sound bus	PTC	Positive Temperature Coefficient, non-linear resistor
IF	Intermediate Frequency	PWB	Printed Wiring Board (same as "PCB")
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.	PWM	Pulse Width Modulation
IR	Infra Red	RAM	Random Access Memory
IRQ	Interrupt Request	RGB	Red, Green, and Blue. The primary colour signals for TV. By mixing levels of R, G, and B, all colours (Y/C) are reproduced.
ITV	Institutional TeleVision, TV sets for hotels, hospitals etc.	RGB_DVI	RGB video input on DVI converter chip
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	RGB_VGA	RGB video input on VGA connector

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 I2C
SCL-F	CLock Signal on Fast I2C bus
SD	Standard Definition
SDA	Serial Data I2C
SDA-F	DAta Signal on Fast I2C bus
SDRAM	Synchronous DRAM
SECAM	SEquence Couleur Avec Memoire. Colour system mainly used in France and East Europe. Colour 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
SSP	Small Signal Panel
STBY	STandBY
SUB_Y/U/V_2FH	Y/U/V input from I/O cel
SOGIN	Sync-On-Green input AD converter
SOGOUT	Sync-On-Green output AD converter
SVGA	800x600 (4:3)
SVHS	Super Video Home System
SW	Software
SXGA	1280x1024
SYNCDDET	SOGOUT from AD converter
TFT	Thin Film Transistor
THD	Total Harmonic Distortion
TXT	Teletext
TXT-DW	Dual Window with Teletext
uP	Microprocessor
U_2FH_0..7	U digital output AD converter port 0 to 7 (7= MSB)
UXGA	1600x1200 (4:3)
V	V-sync to the module
V_2FH_0..7	V digital output AD converter port 0 to 7 (7= MSB)
V_2FH_AD_OUT	V-sync output from AD converter
VCR	Video Cassette Recorder
V_DVI	V-sync from DVI-to-RGB converter chip
VESA	Video Electronics Standards Association
VGA	640x480 (4:3)
VL	Variable Level out: processed audio output toward external amplifier
V_SYNC_VGA	V-sync on VGA connector
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_2FH_0..7	Y digital output AD converter port 0 to 7 (7= MSB)
Y/C	Luminance (Y) and Chrominance (C) signal
YPbPr	Component video. Luminance and scaled colour difference signals (B-Y and R-Y)
YUV	Component video
YUV_2FH	YUV video input AD converter
YUV_VGA	YUV output from matrix (RGB to YUV)

9.13 IC Data Sheets

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

9.13.2 Diagram B14A, TEA6415 (IC7124)

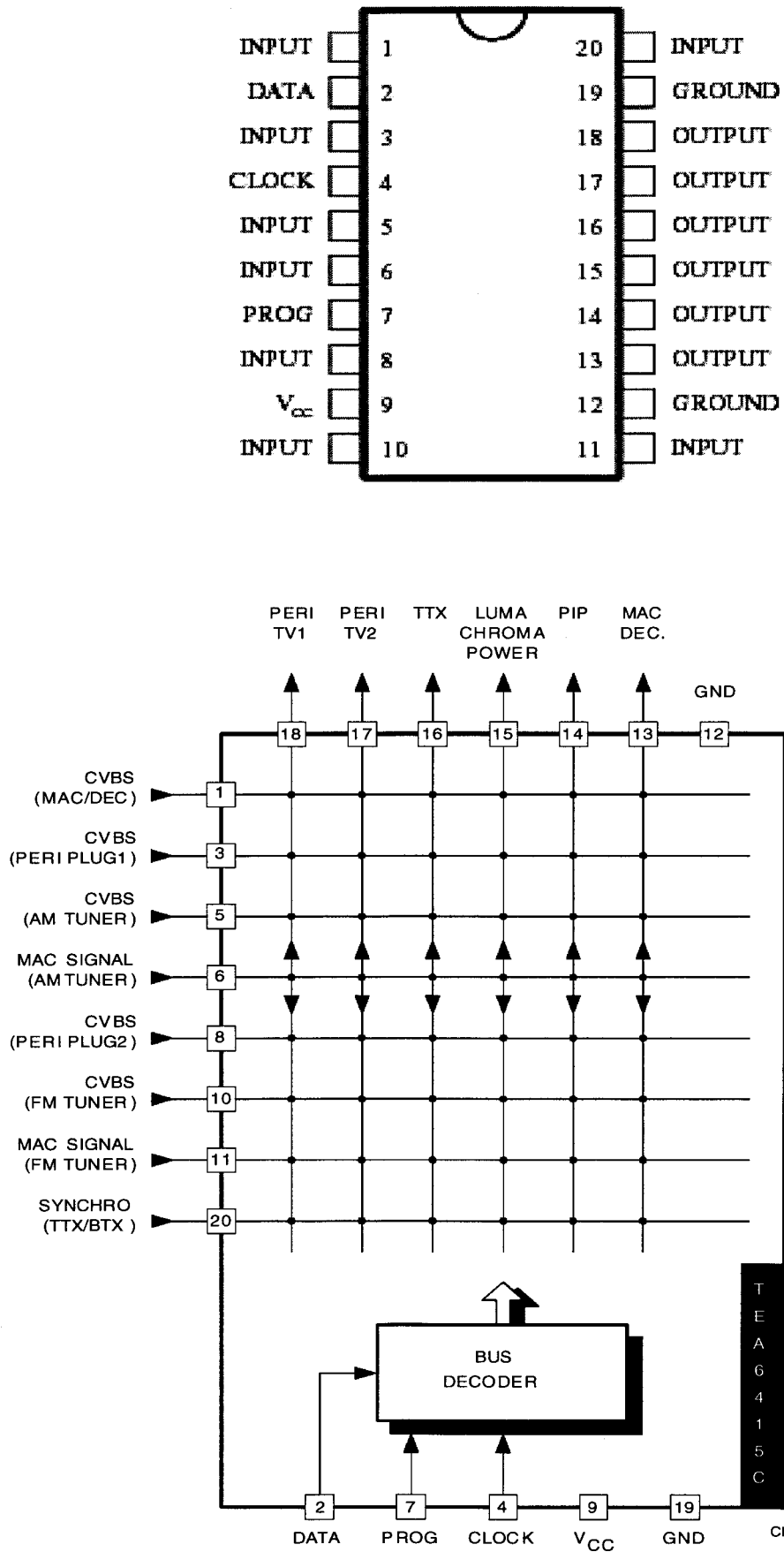
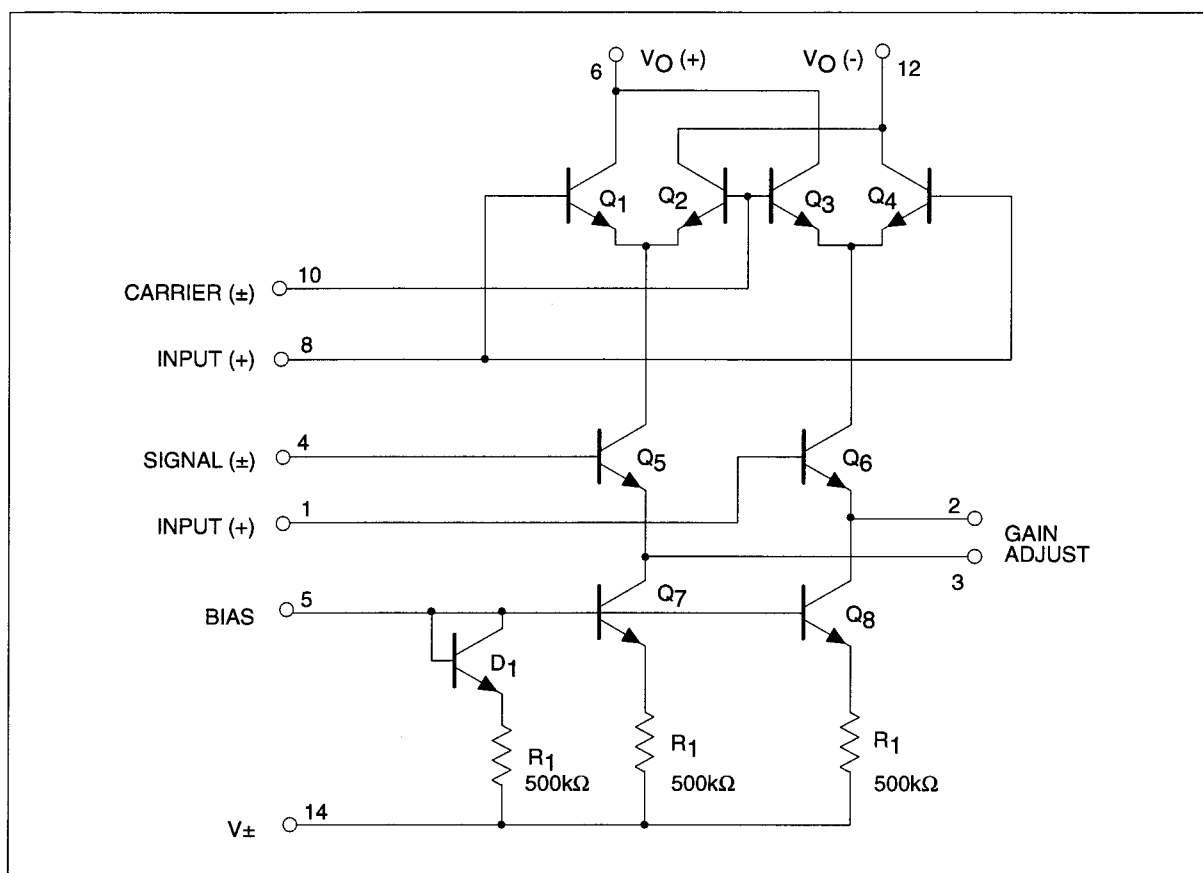


Figure 9-22 Internal Block Diagram and Pin Layout

9.13.3 Diagram B16DE, MC1496D (IC7H40, 7H50, 7H60)

EQUIVALENT SCHEMATIC



PIN CONFIGURATION

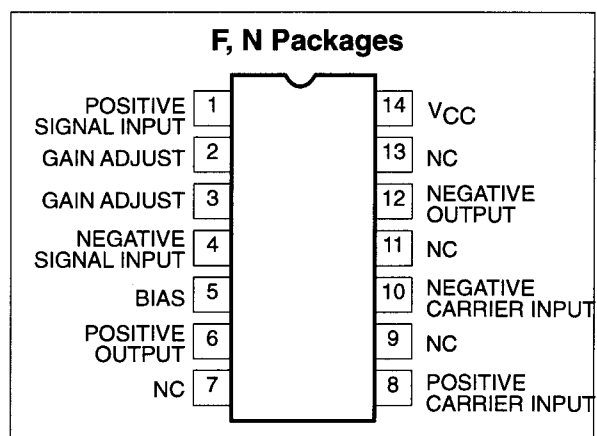
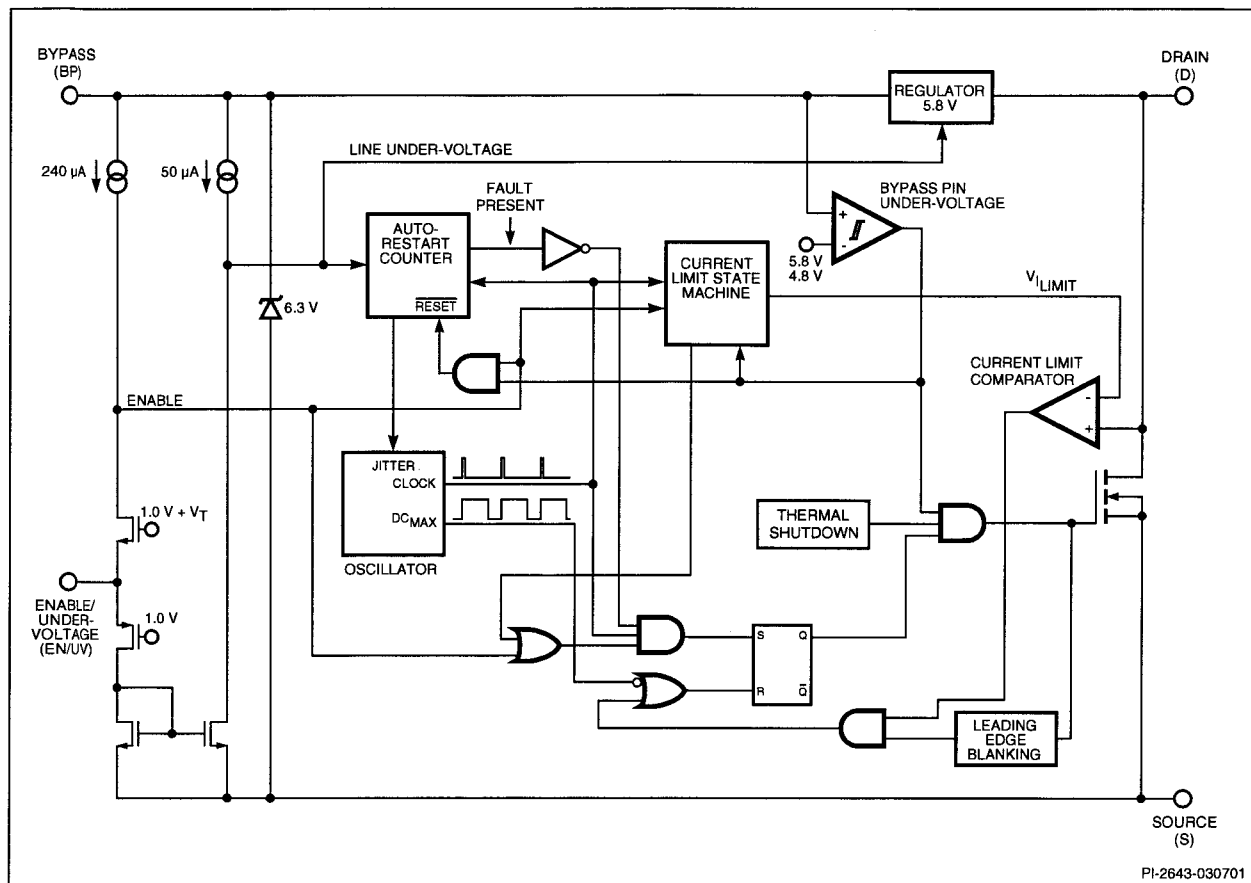
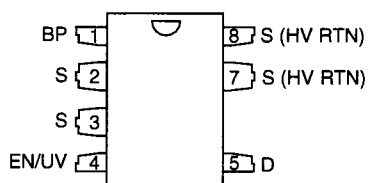
CL 36532053_082.eps
170703

Figure 9-23 Internal Block Diagram and Pin Layout

9.13.5 Diagram SP1, TNY266 (IC7500)



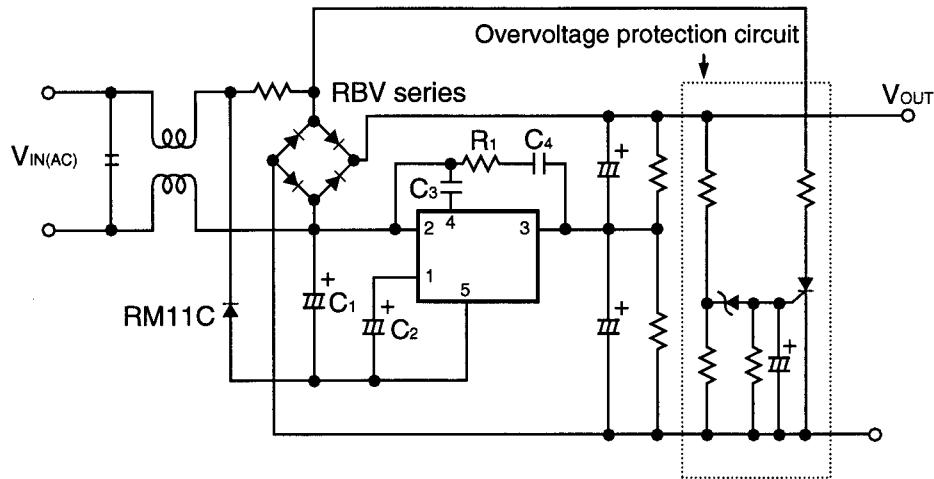
P Package (DIP-8B)
G Package (SMD-8B)



CL 36532053_084.eps
220703

Figure 9-25 Internal Block Diagram and Pin Layout

9.13.6 Diagram SP2, STR83145 (IC7805)



C1: 4.7 μ F/400V, C2: 1 μ F/50V, C3: 0.047 μ F/50V (Observe strictly)

C4: 0.047 μ F/250V, R1: 4.7W

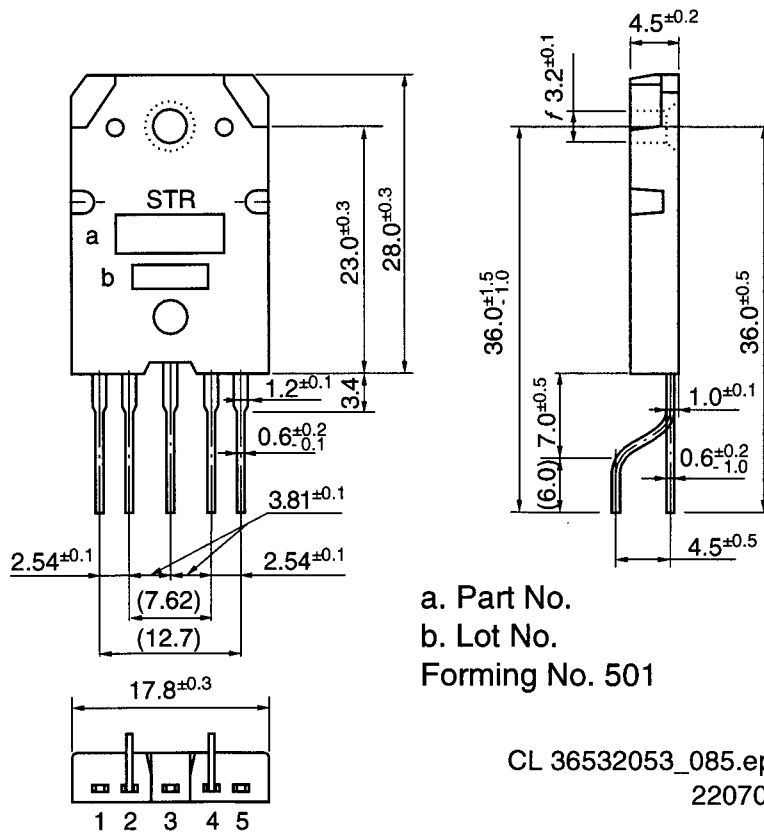


Figure 9-26 Internal Block Diagram and Pin Layout

10. Spare Parts List

Set Level

Various

0081	3104 308 11331	Inverter cable assy
0108	3104 303 10841	EMC Foam 12x9
0165	3104 308 10621	Fixation wallmount
1116	3104 328 26371	Side I/O assy LCD
1116	3104 328 29941	Side I/O assy ITV
8191	2422 070 98149	Mainboard EUR 1.8mtr.
8301	3104 311 06501	Cable 20p/60/20p
8302	3104 311 06341	Cable 9p/100/9p
8309▲	3104 311 06471	Cable 2p3/100/2p3
8312	3104 311 06361	Cable 15p/340/15p16
8313	3104 311 06371	Cable 15p/560/15p16
8333▲	3104 311 06192	Cable 7p/180/7p
8346▲	3104 311 06561	Cable 5p/220/5p
8355	3104 311 05891	Cable 9p/100/9p
8370	3104 311 05691	Cable 5p/100/5p
8388	3104 311 06201	Cable 8p/480/8p

Audio Amplifier [A]

Various

0302	2422 025 16846	Connector 9p m h
0303	2422 025 16702	Connector 5p m h
0304	2422 025 16543	Connector 4p m
0388	2422 025 16704	Connector 8p m
1730	4822 071 52502	Fuse 2.5A
1740	4822 071 52502	Fuse 2.5A

—|—

2201	4822 126 13193	4.7nF 10% 63V
2202	4822 124 23002	10µF 20% 16V
2204	4822 126 14226	82pF 5% 50V 0603
2205	4822 126 13193	4.7nF 10% 63V
2206	4822 124 23002	10µF 20% 16V
2207	4822 126 14226	82pF 5% 50V 0603
2212	5322 126 11578	1nF 10% 50V 0603
2215	4822 126 13193	4.7nF 10% 63V
2216	4822 124 23002	10µF 20% 16V
2218	4822 126 14226	82pF 5% 50V 0603
2220	4822 126 13193	4.7nF 10% 63V
2221	4822 124 23002	10µF 20% 16V
2222	4822 126 14226	82pF 5% 50V 0603
2224	4822 126 14305	100nF 10% 16V 0603
2225	4822 126 14305	100nF 10% 16V 0603
2233	3198 017 31530	15nF 20% 50V 0603
2233	3198 017 36830	68nF 10% 16V 0603
2234	2238 586 59812	100nF 20-80% 50V 0603
2234	4822 126 14494	22nF 10% 25V 0603
2238	4822 126 14305	100nF 10% 16V 0603
2239	4822 126 14305	100nF 10% 16V 0603
2243	3198 017 31530	15nF 20% 50V 0603
2243	3198 017 36830	68nF 10% 16V 0603
2244	2238 586 59812	100nF 20-80% 50V 0603
2244	4822 126 14494	22nF 10% 25V 0603
2255	4822 126 13193	4.7nF 10% 63V
2255	4822 126 14494	22nF 10% 25V 0603
2256	4822 126 13193	4.7nF 10% 63V
2256	4822 126 14494	22nF 10% 25V 0603
2260	4822 126 14305	100nF 10% 16V 0603
2261	4822 126 14305	100nF 10% 16V 0603
2270	4822 126 13193	4.7nF 10% 63V
2270	4822 126 14494	22nF 10% 25V 0603
2271	4822 126 13193	4.7nF 10% 63V
2271	4822 126 14494	22nF 10% 25V 0603
2309	4822 126 14247	1.5nF 50V 0603
2310	4822 126 14226	82pF 5% 50V 0603
2315	4822 124 12084	1µF 20% 50V
2315	4822 124 23002	10µF 20% 16V
2316	4822 126 14305	100nF 10% 16V 0603
2318	4822 126 14305	100nF 10% 16V 0603
2319	4822 124 12084	1µF 20% 50V
2319	4822 124 23002	10µF 20% 16V
2330	4822 126 14305	100nF 10% 16V 0603
2334	2020 012 93764	220µF 20% 35V
2335	4822 126 14305	100nF 10% 16V 0603
2340	5322 126 11583	10nF 10% 50V 0603
2355	4822 126 14305	100nF 10% 16V 0603
2359	4822 126 14305	100nF 10% 16V 0603
2360	2020 012 93764	220µF 20% 35V
2365	2020 552 96326	220nF 10% 16V
2366	2020 552 96326	220nF 10% 16V

2409	4822 126 14247	1.5nF 50V 0603
2410	4822 126 14226	82pF 5% 50V 0603
2415	4822 124 12084	1µF 20% 50V
2415	4822 124 23002	10µF 20% 16V
2416	4822 126 14305	100nF 10% 16V 0603
2418	4822 126 14305	100nF 10% 16V 0603
2419	4822 124 12084	1µF 20% 50V
2419	4822 124 23002	10µF 20% 16V
2430	4822 126 14305	100nF 10% 16V 0603
2434	2020 012 93764	220µF 20% 35V
2435	4822 126 14305	100nF 10% 16V 0603
2440	5322 126 11583	10nF 10% 50V 0603
2455	4822 126 14305	100nF 10% 16V 0603
2459	4822 126 14305	100nF 10% 16V 0603
2460	2020 012 93764	220µF 20% 35V
2465	2020 552 96326	220nF 10% 16V
2466	2020 552 96326	220nF 10% 16V
2509	4822 126 14247	1.5nF 50V 0603
2510	4822 126 14226	82pF 5% 50V 0603
2515	4822 124 12084	1µF 20% 50V
2515	4822 124 23002	10µF 20% 16V
2516	4822 126 14305	100nF 10% 16V 0603
2518	4822 126 14305	100nF 10% 16V 0603
2519	4822 124 12084	1µF 20% 50V
2519	4822 124 23002	10µF 20% 16V
2530	4822 126 14305	100nF 10% 16V 0603
2534	2020 012 93764	220µF 20% 35V
2535	4822 126 14305	100nF 10% 16V 0603
2540	5322 126 11583	10nF 10% 50V 0603
2555	4822 126 14305	100nF 10% 16V 0603
2559	4822 126 14305	100nF 10% 16V 0603
2560	2020 012 93764	220µF 20% 35V
2565	2020 552 96326	220nF 10% 16V
2566	2020 552 96326	220nF 10% 16V
2609	4822 126 14247	1.5nF 50V 0603
2610	4822 126 14226	82pF 5% 50V 0603
2615	4822 124 12084	1µF 20% 50V
2615	4822 124 23002	10µF 20% 16V
2616	4822 126 14305	100nF 10% 16V 0603
2618	4822 126 14305	100nF 10% 16V 0603
2619	4822 124 12084	1µF 20% 50V
2619	4822 124 23002	10µF 20% 16V
2630	4822 126 14305	100nF 10% 16V 0603
2634	2020 012 93764	220µF 20% 35V
2635	4822 126 14305	100nF 10% 16V 0603
2640	5322 126 11583	10nF 10% 50V 0603
2655	4822 126 14305	100nF 10% 16V 0603
2659	4822 126 14305	100nF 10% 16V 0603
2660	2020 012 93764	220µF 20% 35V
2665	2020 552 96326	220nF 10% 16V
2666	2020 552 96326	220nF 10% 16V
2730	2020 012 93764	220µF 20% 35V
2732	2020 012 93764	220µF 20% 35V
2734	4822 124 12084	1µF 20% 50V
2734	4822 124 23002	10µF 20% 16V
2740	2020 012 93764	220µF 20% 35V
2742	2020 012 93764	220µF 20% 35V
2744	4822 124 12084	1µF 20% 50V
2744	4822 124 23002	10µF 20% 16V
2752	4822 124 23002	10µF 20% 16V
2753	4822 124 23002	10µF 20% 16V
2759	5322 126 11578	1nF 10% 50V 0603
2760	5322 124 41945	22µF 20% 35V
2770	5322 126 11578	1nF 10% 50V 0603
2771	5322 126 11578	1nF 10% 50V 0603
2780	5322 126 11578	1nF 10% 50V 0603
2781	5322 126 11578	1nF 10% 50V 0603
2799	5322 126 11583	10nF 10% 50V 0603

—WW—

3201	4822 051 30221	220Ω 5% 0.062W
3202	4822 051 30102	1kΩ 5% 0.062W
3203	4822 051 30272	2.7kΩ 5% 0.062W
3205	4822 051 30221	220Ω 5% 0.062W
3206	4822 051 30102	1kΩ 5% 0.062W
3207	4822 051 30272	2.7kΩ 5% 0.062W
3210	4822 051 30333	33kΩ 5% 0.062W
3211	4822 117 13632	100kΩ 1% 0.62W 0603
3215	4822 051 30221	220Ω 5% 0.062W
3216	4822 051 30102	1kΩ 5% 0.062W
3217	4822 051 30272	2.7kΩ 5% 0.062W
3220	4822 051 30221	220Ω 5% 0.062W
3221	4822 051 30102	1kΩ 5% 0.062W
3222	4822 051 30272	2.7kΩ 5% 0.062W
3230	4822 051 30101	100Ω 5% 0.062W
3231	4822 051 30103	10kΩ 5% 0.062W
3231	4822 051 30222	2.2kΩ 5% 0.062W
3232	4822 051 30152	1.5kΩ 5% 0.062W

3232	4822 051 30682	6.8kΩ 5% 0.062W
3233	4822 051 30103	10kΩ 5% 0.062W
3233	4822 051 30222	2.2kΩ 5% 0.062W
3234	4822 051 30272	2.7kΩ 5% 0.062W
3234	4822 051 30561	560Ω 5% 0.062W
3240	4822 051 30101	100Ω 5% 0.062W
3241	4822 051 30103	10kΩ 5% 0.062W
3241	4822 051 30222	2.2kΩ 5% 0.062W
3242	4822 051 30152	1.5kΩ 5% 0.062W
3242	4822 051 30682	6.8kΩ 5% 0.062W
3243	4822 051 30103	10kΩ 5% 0.062W
3243	4822 051 30222	2.2kΩ 5% 0.062W
3244	4822 051 30272	2.7kΩ 5% 0.062W
3244	4822 051 30561	560Ω 5% 0.062W
3255	4822 051 30562	5.6kΩ 5% 0.063W 0603
3255	4822 117 11817	1.2kΩ 1% 0.062W
3256	4822 051 30153	15kΩ 5% 0.062W
3256	4822 051 30332	3.3kΩ 5% 0.062W
3257	4822 051 30222	2.2kΩ 5% 0.062W
3257	4822 051 30471	470Ω 5% 0.062W
3259	4822 117 12917	1Ω 5% 0.062W 0603
3270	4822 051 30562	5.6kΩ 5% 0.063W 0603
3270	4822 117 11817	1.2kΩ 1% 0.062W
3271	4822 051 30153	15kΩ 5% 0.062W
3271	4822 051 30332	3.3kΩ 5% 0.062W
3272	4822 051 30222	2.2kΩ 5% 0.062W
3272	4822 051 30471	470Ω 5% 0.062W
3274	4822 117 12917	1Ω 5% 0.062W 0603
3301	4822 117 12902	8.2kΩ 1% 0.063W 0603
3302	4822 051 30103	10kΩ 5% 0.062W
3306	4822 117 12903	1.8kΩ 1% 0.063W 0603
3307	4822 117 13632	100kΩ 1% 0.62W 0603
3308	4822 117 13632	100kΩ 1% 0.62W 0603
3309	4822 051 30181	180Ω 5% 0.062W
3310	4822 117 12864	82kΩ 5% 0.6W
3311	4822 051 30682	6.8kΩ 5% 0.062W
3315	5322 117 11726	10Ω 5%
3318	5322 117 11726	10Ω 5%
3325	4822 117 11449	2.2kΩ 5% 0.1W 0805
3327	4822 117 11449	2.2kΩ 5% 0.1W 0805
3328	4822 051 30102	1kΩ 5% 0.062W
3330	5322 117 11726	10Ω 5%
3336	4822 051 30475	4.7MΩ 5% 0.062W 0603
3337	5322 117 11726	10Ω 5%
3340	4822 051 30103	10kΩ 5% 0.062W
3355	5322 117 11726	10Ω 5%
3361	4822 051 30475	4.7MΩ 5% 0.062W 0603
3362	5322 117 11726	10Ω 5%
3401	4822 117 12902	8.2kΩ 1% 0.063W 0603
3402	4822 051 30103	10kΩ 5% 0.062W
3406	4822 117 12903	1.8kΩ 1% 0.063W 0603
3407	4822 117 13632	100kΩ 1% 0.62W 0603
3408	4822 117 13632	100kΩ 1% 0.62W 0603
3409	4822 051 30181	180Ω 5% 0.062W
3410	4822 117 12864	82kΩ 5% 0.6W
3411	4822 051 30153	15kΩ 5% 0.062W
3415	5322 117 11726	10Ω 5%
3418	5322 117 11726	10Ω 5%
3425	4822 117 11449	2.2kΩ 5% 0.1W 0805
3427	4822 117 11449	2.2kΩ 5% 0.1W 0805
3428	4822 051 30102	1kΩ 5% 0.062W
3430	5322 117 11726	10Ω 5%
3436	4822 051 30475	4.7MΩ 5% 0.062W 0603
3437	5322 117 11726	10Ω 5%
3440	4822 051 30103	10kΩ 5% 0.062W
3455	5322 117 11726	10Ω 5%
3461	4822 051 30475	4.7MΩ 5% 0.062W 0603
3462	5322 117 11726	10Ω 5%
3501	4822 117 12902	8.2kΩ 1% 0.063W 0603
3502	4822 051 30103	10kΩ 5% 0.062W
3506	4822 117 12903	1.8kΩ 1% 0.063W 0603
3507	4822 117 13632	100kΩ 1% 0.62W 0603
3508	4822 117 13632	100kΩ 1% 0.62W 0603
3509	4822 051 30181	180Ω 5% 0.062W
3510	4822 117 12864	82kΩ 5% 0.6W
3511	4822 051 30682	6.8kΩ 5% 0.062W
3515	5322 117 11726	10Ω 5%
3518	5322 117 11726	10Ω 5%
3525	4822 117 11449	2.2kΩ 5% 0.1W 0805
3527	4822 117 11449	2.2kΩ 5% 0.1W 0805
3528	4822 051 30102	1kΩ 5% 0.062W
3530	5322 117 11726	10Ω 5%
3536	4822 051 30475	4.7MΩ 5% 0.062W 0603
3537	5322 117 11726	10Ω 5%
3540	4822 051 30103	10kΩ 5% 0.062W
3555	5322 117 11726	10Ω 5%
3561	4822 051 30475	4.7MΩ 5% 0.062W 0603
3562	5322 117 11726	10Ω 5%
3601	4822 117 12902	8.2kΩ 1% 0.063W 0603

3602	4822 051 30103	10kΩ 5% 0.062W
3606	4822 117 12903	1.8kΩ 1% 0.063W 0603
3607	4822 117 13632	100kΩ 1% 0.62W 0603
3608	4822 117 13632	100kΩ 1% 0.62W 0603
3609	4822 051 30181	180Ω 5% 0.062W
3610	4822 117 12864	82kΩ 5% 0.6W
3611	4822 051 30153	15kΩ 5% 0.062W
3615	5322 117 11726	10Ω 5%
3618	5322 117 11726	10Ω 5%
3625	4822 117 11449	2.2kΩ 5% 0.1W 0805
3627	4822 117 11449	2.2kΩ 5% 0.1W 0805
3628	4822 051 30102	1kΩ 5% 0.062W
3630	5322 117 11726	10Ω 5%
3636	4822 051 30475	4.7MΩ 5% 0.062W 0603
3637	5322 117 11726	10Ω 5%
3640	4822 051 30103	10kΩ 5% 0.062W
3655	5322 117 11726	10Ω 5%
3661	4822 051 30475	4.7MΩ 5% 0.062W 0603
3662	5322 117 11726	10Ω 5%
3732	4822 051 30272	2.7kΩ 5% 0.062W
3733	4822 051 30102	1kΩ 5% 0.062W
3742	4822 051 30272	2.7kΩ 5% 0.062W
3743	4822 051 30102	1kΩ 5% 0.062W
3749	4822 051 30103	10kΩ 5% 0.062W
3750	4822 051 30471	470Ω 5% 0.062W
3751	4822 117 12925	47kΩ 1% 0.063W 0603
3752	4822 117 12925	47kΩ 1% 0.063W 0603
3754	4822 051 30102	1kΩ 5% 0.062W
3755	4822 117 13632	100kΩ 1% 0.62W 0603
3760	4822 051 30471	470Ω 5% 0.062W
3765	4822 117 13632	100kΩ 1% 0.62W 0603
3770	4822 117 13632	100kΩ 1% 0.62W 0603
3771	4822 117 13632	100kΩ 1% 0.62W 0603
3780	4822 117 13632	100kΩ 1% 0.62W 0603
3781	4822 117 13632	100kΩ 1% 0.62W 0603

5335	4822 157 11717	Filt. BLM31P500SPT
5360	4822 157 11717	Filt. BLM31P500SPT
5365	2422 536 00338	33μH 10% SMD 10mm
5435	4822 157 11717	Filt. BLM31P500SPT
5460	4822 157 11717	Filt. BLM31P500SPT
5465	2422 536 00338	33μH 10% SMD 10mm
5535	4822 157 11717	Filt. BLM31P500SPT
5560	4822 157 11717	Filt. BLM31P500SPT
5565	2422 536 00338	33μH 10% SMD 10mm
5635	4822 157 11717	Filt. BLM31P500SPT
5660	4822 157 11717	Filt. BLM31P500SPT
5665	2422 536 00338	33μH 10% SMD 10mm
5714	4822 157 11717	Filt. BLM31P500SPT
5719	4822 157 11717	Filt. BLM31P500SPT
5725	4822 157 11717	Filt. BLM31P500SPT
5753	2422 549 43769	Bead 30Ω at 100MHz



6328	4822 130 11397	BAS316
6334	4822 130 11148	UDZ4.7B
6335	4822 130 11148	UDZ4.7B
6355	4822 130 11148	UDZ4.7B
6356	4822 130 11148	UDZ4.7B
6359	4822 130 11148	UDZ4.7B
6360	4822 130 11148	UDZ4.7B
6428	4822 130 11397	BAS316
6434	4822 130 11148	UDZ4.7B
6435	4822 130 11148	UDZ4.7B
6455	4822 130 11148	UDZ4.7B
6456	4822 130 11148	UDZ4.7B
6459	4822 130 11148	UDZ4.7B
6460	4822 130 11148	UDZ4.7B
6528	4822 130 11397	BAS316
6534	4822 130 11148	UDZ4.7B
6535	4822 130 11148	UDZ4.7B
6555	4822 130 11148	UDZ4.7B
6556	4822 130 11148	UDZ4.7B
6559	4822 130 11148	UDZ4.7B
6560	4822 130 11148	UDZ4.7B
6628	4822 130 11397	BAS316
6634	4822 130 11148	UDZ4.7B
6635	4822 130 11148	UDZ4.7B
6655	4822 130 11148	UDZ4.7B
6656	4822 130 11148	UDZ4.7B
6659	4822 130 11148	UDZ4.7B
6660	4822 130 11148	UDZ4.7B
6732	4822 130 11551	UDZS10B
6742	4822 130 11551	UDZS10B
6750	4822 130 10328	BAV99W
6760	4822 130 10328	BAV99W



7211	5322 130 42756	BC857C
7225	4822 209 30095	LM833D
7238	4822 209 30095	LM833D
7260	4822 209 30095	LM833D
7302	3198 010 42310	BC847BW
7315	9338 028 20668	LM311D
7330	4822 130 42804	BC817-25
7340	3198 010 42310	BC847BW
7355	5322 130 60845	BC807-25
7365	9322 161 86668	IRF7343
7402	3198 010 42310	BC847BW
7415	9338 028 20668	LM311D
7430	4822 130 42804	BC817-25
7440	3198 010 42310	BC847BW
7455	5322 130 60845	BC807-25
7465	9322 161 86668	IRF7343
7502	3198 010 42310	BC847BW
7515	9338 028 20668	LM311D
7530	4822 130 42804	BC817-25
7540	3198 010 42310	BC847BW
7555	5322 130 60845	BC807-25
7565	9322 161 86668	IRF7343
7602	3198 010 42310	BC847BW
7615	9338 028 20668	LM311D
7630	4822 130 42804	BC817-25
7640	3198 010 42310	BC847BW
7655	5322 130 60845	BC807-25
7665	9322 161 86668	IRF7343
7735	4822 130 60142	BC869
7736	3198 010 42310	BC847BW
7745	5322 130 61569	BC868
7746	5322 130 42756	BC857C
7751	3198 010 42310	BC847BW
7753	5322 130 42756	BC857C
7755	3198 010 42310	BC847BW
7761	5322 130 42756	BC857C

Small Signal Panel (AA) [B]

Various

0067	3104 304 22841	FFC relieve
0074	3104 301 24221	Cover SSB Z-side
0075	3104 301 24201	Frame SSB Z-side
0077	3104 301 24451	Frame SSB A-side
0078	3104 301 24461	Cover SSB A-side
0080	3104 301 24471	Frame SSB Z-side
0305	3104 304 23841	Xtal grommet
0308	3104 304 23841	Xtal grommet
0325	2422 034 21798	Screwlock
0603	3104 317 05161	Software DDC(Check Prod Surv)
1001	2422 543 89022	Xtal 6MHz 20pF CX5F
1305	2422 543 01184	Xtal 4.433619MHz 20pF
1308	2422 543 01183	Xtal 3.579545MHz 16pF
1402	2422 127 00543	Switch 1p 2pos
1403	2422 086 11092	Fuse F0.5A 50V 1206
1407	2422 549 44324	Filt. TPWCC04BS
1408	2422 549 44372	SAW 38.9MHz K3953L
1409	2422 549 44369	SAW 38.9MHz K9656L
1702	2422 540 98456	Resonator 12MHz
1A00	2422 543 89019	Xtal 18.432MHz 12pF
1D01	2422 025 16984	Connector 15p f
1E02	2422 025 17274	Connector 10p m
1E04	2422 025 17103	Connector 3p m
1I01	4822 267 10771	Socket 2 x SCART
1I04	4822 267 10771	Socket 2 x SCART
1I05	2422 026 05213	Socket 3p BkWhRd
1I07	2422 026 05501	Socket CINCH 6p f
1I19	4822 267 10748	Connector 3p m
1I70	2422 025 16966	Connector 5p m SMD
1S20	2422 025 10771	Connector 10p m
1S36	2422 025 10655	Connector 11p m
1S43	2422 025 10768	Connector 3p m
1S46	4822 267 10637	Connector 5p m
1S88	4822 265 11352	Connector 8p
1T01	3139 147 19341	Tuner UV1318S/A I-3
1U01▲	2422 086 11021	Fuse 800 mA 63V SM T
1Y01	2422 025 17706	Connector 20p m
1Y45	2422 025 17103	Connector 3p m
1Y55	2422 025 17192	Connector 9p m
8190	3104 311 06181	Cable 2p3/80 inlet



2000	4822 124 12095	100μF 20% 16V
2001	4822 124 12095	100μF 20% 16V
2002	4822 126 11669	27pF 5% 50V 0603

2003	4822 126 13879	220nF 20% 16V
2004	4822 126 13879	220nF 20% 16V
2005	2238 586 59812	100nF 20-80% 50V 0603
2006	2238 586 59812	100nF 20-80% 50V 0603
2007	2238 586 59812	100nF 20-80% 50V 0603
2008	2238 586 59812	100nF 20-80% 50V 0603
2010	4822 126 11785	47pF 5% 50V 0603
2011	4822 126 11785	47pF 5% 50V 0603
2012	4822 126 11785	47pF 5% 50V 0603
2013	2020 021 91557	100μF 20% 16V
2016	4822 124 12095	100μF 20% 16V
2017	2238 586 59812	100nF 20-80% 50V 0603
2018	2222 867 15339	33pF 5% 50V 0603
2019	2238 586 59812	100nF 20-80% 50V 0603
2020	4822 126 13883	220pF 5% 50V
2022	2238 586 59812	100nF 20-80% 50V 0603
2023	2238 586 59812	100nF 20-80% 50V 0603
2024	2238 586 59812	100nF 20-80% 50V 0603
2025	2238 586 59812	100nF 20-80% 50V 0603
2026	2238 586 59812	100nF 20-80% 50V 0603
2027	2238 586 59812	100nF 20-80% 50V 0603
2028	2238 586 59812	100nF 20-80% 50V 0603
2029	2238 586 59812	100nF 20-80% 50V 0603
2031	2238 586 59812	100nF 20-80% 50V 0603
2033	4822 126 14226	82pF 5% 50V 0603
2034	4822 126 14226	82pF 5% 50V 0603
2035	4822 126 14226	82pF 5% 50V 0603
2036	4822 126 14226	82pF 5% 50V 0603
2037	4822 126 14226	82pF 5% 50V 0603
2038	2238 586 59812	100nF 20-80% 50V 0603
2039	2238 586 59812	100nF 20-80% 50V 0603
2040	2238 586 59812	100nF 20-80% 50V 0603
2063	3198 017 34730	47nF 16V 0603
2067	2238 586 59812	100nF 20-80% 50V 0603
2074	2238 586 59812	100nF 20-80% 50V 0603
2302	2238 586 59812	100nF 20-80% 50V 0603
2305	2238 586 59812	100nF 20-80% 50V 0603
2316	2238 586 59812	100nF 20-80% 50V 0603
2322	2238 586 59812	100nF 20-80% 50V 0603
2340	2020 021 91557	100μF 20% 16V
2350	2238 586 59812	100nF 20-80% 50V 0603
2351	2238 586 59812	100nF 20-80% 50V 0603
2352	2238 586 59812	100nF 20-80% 50V 0603
2353	2238 586 59812	100nF 20-80% 50V 0603
2354	2238 586 59812	100nF 20-80% 50V 0603
2356	2238 586 59812	100nF 20-80% 50V 0603
2357	2238 586 59812	100nF 20-80% 50V 0603
2358	5322 126 11579	3.3nF 10% 63V
2359	4822 122 33752	15pF 5% 50V
2360	3198 016 31280	1.2pF 50V 0603
2361	3198 016 31280	1.2pF 50V 0603
2362	4822 126 11663	12pF 5% 50V 0603
2365	2238 586 59812	100nF 20-80% 50V 0603
2366	2238 586 59812	100nF 20-80% 50V 0603
2367	2238 586 59812	100nF 20-80% 50V 0603
2368	2238 586 59812	100nF 20-80% 50V 0603
2369	2238 586 59812	100nF 20-80% 50V 0603
2370	2238 586 59812	100nF 20-80% 50V 0603
2371	4822 126 13193	4.7nF 10% 63V
2372	2020 552 96448	1μF 10% 16V
2373	2238 586 59812	100nF 20-80% 50V 0603
2374	4822 126 14491	2.2μF -20+80% 10V 0805
2375	2238 916 15641	22nF 10% 25V 0603
2376	2238 586 59812	100nF 20-80% 50V 0603
2377	2020 021 91557	100μF 20% 16V
2378	2238 586 59812	100nF 20-80% 50V 0603
2384	2238 586 59812	100nF 20-80% 50V 0603
2385	2238 586 59812	100nF 20-80% 50V 0603
2390	2238 586 59812	100nF 20-80% 50V 0603
2391	2238 586 59812	100nF 20-80% 50V 0603
2394	4822 126 14491	2.2μF -20+80% 10V 0805
2403	2238 586 59812	100nF 20-80% 50V 0603
2404	2020 552 96448	1μF 10% 16V
2405	4822 126 13193	4.7nF 10% 63V
2406	4822 126 13883	220pF 5% 50V
2407	4822 126 13956	68pF 5% 63V 0603
2408	3198 016 33380	3.3pF 50V 0603
2409	4822 126 14491	2.2μF -20+80% 10V 0805
2410	2020 021 91557	100μF 20% 16V
2411	2238 586 59812	100nF 20-80% 50V 0603
2412	4822 126 13193	4.7nF 10% 63V
2414	2020 021 91557	100μF 20% 16V
2415	2238 586 59812	100nF 20-80% 50V 0603
2417	3198 017 44740	470nF 10V 0603
2418	3198 016 35680	5.6pF 0.5pF 50V 0603
2422	2238 586 59812	100nF 20-80% 50V 0603
2424	2238 586 59812	100nF 20-80% 50V 0603
2425	2020 021 91557	100μF 20% 16V
2432	2238 586 59812	100nF 20-80% 50V 0603
2433	2238 586 59812	100nF 20-80% 50V 0603
2709	2238 586 59812	100nF 20-80% 50V 0603
2710	2238 586 59812	100nF 20-80% 50V 0603
2711	2238 586 59812	100nF 20-80% 50V 0603
2712	2238 586 59812	100nF 20-80% 50V 0603

2713	4822 122 33761	22pF 5% 50V	2822	2238 586 59812	100nF 20-80% 50V 0603	2A41	2020 021 91554	10µF 20% 16V
2714	4822 122 33761	22pF 5% 50V	2823	5322 126 11578	1nF 10% 50V 0603	2A42	2020 021 91554	10µF 20% 16V
2715	2238 586 59812	100nF 20-80% 50V 0603	2824	5322 126 11578	1nF 10% 50V 0603	2A43	2020 021 91554	10µF 20% 16V
2716	2238 586 59812	100nF 20-80% 50V 0603	2825	2238 586 59812	100nF 20-80% 50V 0603	2A44	2238 586 59812	100nF 20-80% 50V 0603
2718	4822 122 33752	15pF 5% 50V	2826	2238 586 59812	100nF 20-80% 50V 0603	2A46	2020 552 96448	1µF 10% 16V
2719	4822 122 33752	15pF 5% 50V	2829	2238 586 59812	100nF 20-80% 50V 0603	2A47	2020 552 96618	1nF 10% 50V 0402
2720	4822 122 33752	15pF 5% 50V	2831	4822 126 13956	68pF 5% 63V 0603	2A48	2020 552 96618	1nF 10% 50V 0402
2721	2020 552 94427	100pF 5% 50V 0603	2832	2238 586 59812	100nF 20-80% 50V 0603	2A49	2020 552 96448	1µF 10% 16V
2722	2020 552 94427	100pF 5% 50V 0603	2833	2238 586 59812	100nF 20-80% 50V 0603	2A50	2020 552 96618	1nF 10% 50V 0402
2723	3198 016 31020	1nF 10% 25V 0603	2834	2238 586 59812	100nF 20-80% 50V 0603	2A51	2020 552 96618	1nF 10% 50V 0402
2724	2238 586 59812	100nF 20-80% 50V 0603	2835	2238 586 59812	100nF 20-80% 50V 0603	2A52	2020 552 96618	1nF 10% 50V 0402
2728	2020 021 91554	10µF 20% 16V	2836	2238 586 59812	100nF 20-80% 50V 0603	2A54	2020 552 96618	1nF 10% 50V 0402
2729	2238 586 59812	100nF 20-80% 50V 0603	2837	2238 586 59812	100nF 20-80% 50V 0603	2A57	2020 552 96618	1nF 10% 50V 0402
2730	2020 021 91557	100µF 20% 16V	2838	2238 586 59812	100nF 20-80% 50V 0603	2A59	2020 552 96448	1µF 10% 16V
2731	2238 586 59812	100nF 20-80% 50V 0603	2842	2238 586 59812	100nF 20-80% 50V 0603	2A60	2020 552 96618	1nF 10% 50V 0402
2732	2238 586 59812	100nF 20-80% 50V 0603	2843	2238 586 59812	100nF 20-80% 50V 0603	2A61	2020 552 96618	1nF 10% 50V 0402
2733	2238 586 59812	100nF 20-80% 50V 0603	2844	2238 586 59812	100nF 20-80% 50V 0603	2A62	2020 552 96448	1µF 10% 16V
2734	2238 586 59812	100nF 20-80% 50V 0603	2845	2238 586 59812	100nF 20-80% 50V 0603	2A63	2020 552 96618	1nF 10% 50V 0402
2735	2238 586 59812	100nF 20-80% 50V 0603	2846	2238 586 59812	100nF 20-80% 50V 0603	2A65	2020 552 96618	1nF 10% 50V 0402
2740	2238 916 15641	22nF 10% 25V 0603	2847	2238 586 59812	100nF 20-80% 50V 0603	2A67	2020 552 96448	1µF 10% 16V
2741	2238 916 15641	22nF 10% 25V 0603	2848	2238 586 59812	100nF 20-80% 50V 0603	2A68	2020 552 96618	1nF 10% 50V 0402
2742	2238 916 15641	22nF 10% 25V 0603	2851	2238 586 59812	100nF 20-80% 50V 0603	2A71	2020 552 96448	1µF 10% 16V
2743	2238 586 59812	100nF 20-80% 50V 0603	2852	2238 586 59812	100nF 20-80% 50V 0603	2A73	2020 552 96618	1nF 10% 50V 0402
2744	2238 586 59812	100nF 20-80% 50V 0603	2853	2238 586 59812	100nF 20-80% 50V 0603	2A77	2020 552 96618	1nF 10% 50V 0402
2745	2238 586 59812	100nF 20-80% 50V 0603	2854	2238 586 59812	100nF 20-80% 50V 0603	2A78	2020 552 96618	1nF 10% 50V 0402
2746	2238 586 59812	100nF 20-80% 50V 0603	2855	2238 586 59812	100nF 20-80% 50V 0603	2A79	2238 586 59812	100nF 20-80% 50V 0603
2747	2238 586 59812	100nF 20-80% 50V 0603	2857	2238 586 59812	100nF 20-80% 50V 0603	2A82	3198 017 31530	15nF 20% 50V 0603
2748	2238 586 59812	100nF 20-80% 50V 0603	2858	4822 124 12095	100µF 20% 16V	2A87	2020 552 96618	1nF 10% 50V 0402
2749	2020 021 91554	10µF 20% 16V	2859	2238 586 59812	100nF 20-80% 50V 0603	2A91	2020 552 96448	1µF 10% 16V
2750	2238 586 59812	100nF 20-80% 50V 0603	2860	2238 586 59812	100nF 20-80% 50V 0603	2A92	2020 552 96448	1µF 10% 16V
2751	2238 586 59812	100nF 20-80% 50V 0603	2861	2238 586 59812	100nF 20-80% 50V 0603	2A95	4822 126 13883	220pF 5% 50V
2752	2238 586 59812	100nF 20-80% 50V 0603	2862	2238 586 59812	100nF 20-80% 50V 0603	2A99	2238 869 15101	100pF 5% 50V 0402
2753	2238 586 59812	100nF 20-80% 50V 0603	2863	2238 586 59812	100nF 20-80% 50V 0603	2AA0	2238 869 15101	100pF 5% 50V 0402
2754	2238 586 59812	100nF 20-80% 50V 0603	2864	2238 586 59812	100nF 20-80% 50V 0603	2AA1	2238 869 15101	100pF 5% 50V 0402
2755	2238 586 59812	100nF 20-80% 50V 0603	2865	2238 586 59812	100nF 20-80% 50V 0603	2AA5	2238 869 15101	100pF 5% 50V 0402
2756	2238 586 59812	100nF 20-80% 50V 0603	2866	2238 586 59812	100nF 20-80% 50V 0603	2AA6	2020 552 96618	1nF 10% 50V 0402
2757	2238 916 15641	22nF 10% 25V 0603	2867	2238 586 59812	100nF 20-80% 50V 0603	2AA7	2020 552 96618	1nF 10% 50V 0402
2760	2238 586 59812	100nF 20-80% 50V 0603	2870	2020 021 91554	10µF 20% 16V	2AA8	2020 552 96618	1nF 10% 50V 0402
2761	2238 586 59812	100nF 20-80% 50V 0603	2871	2020 021 91557	100µF 20% 16V	2AA9	3198 016 35680	5.6pF 0.5pF 50V 0603
2762	2238 586 59812	100nF 20-80% 50V 0603	2872	2238 586 59812	100nF 20-80% 50V 0603	2AB0	3198 016 35680	5.6pF 0.5pF 50V 0603
2763	2238 586 59812	100nF 20-80% 50V 0603	2874	2020 021 91554	10µF 20% 16V	2AB2	2020 552 96618	1nF 10% 50V 0402
2764	2238 586 59812	100nF 20-80% 50V 0603	2877	2020 021 91557	100µF 20% 16V	2AB3	2020 552 96448	1µF 10% 16V
2765	2238 586 59812	100nF 20-80% 50V 0603	2880	2020 021 91554	10µF 20% 16V	2AB4	2020 552 96448	1µF 10% 16V
2766	2238 586 59812	100nF 20-80% 50V 0603	2881	4822 126 11669	27pF 5% 50V 0603	2AB5	2020 021 91554	10µF 20% 16V
2767	2238 586 59812	100nF 20-80% 50V 0603	2884	2238 586 59812	100nF 20-80% 50V 0603	2AB8	2020 552 96448	1µF 10% 16V
2768	2238 586 59812	100nF 20-80% 50V 0603	2886	2238 586 59812	100nF 20-80% 50V 0603	2C00	2238 586 59812	100nF 20-80% 50V 0603
2769	2238 586 59812	100nF 20-80% 50V 0603	2887	2238 586 59812	100nF 20-80% 50V 0603	2C01	2238 586 59812	100nF 20-80% 50V 0603
2770	2020 021 91554	10µF 20% 16V	2888	2238 586 59812	100nF 20-80% 50V 0603	2C02	2238 586 59812	100nF 20-80% 50V 0603
2771	2238 586 59812	100nF 20-80% 50V 0603	2889	2238 586 59812	100nF 20-80% 50V 0603	2D01	2238 869 15101	100pF 5% 50V 0402
2772	2020 021 91557	100µF 20% 16V	2890	2238 586 59812	100nF 20-80% 50V 0603	2D03	2020 552 96618	1nF 10% 50V 0402
2773	2238 586 59812	100nF 20-80% 50V 0603	2891	2238 586 59812	100nF 20-80% 50V 0603	2D04	2020 552 96618	1nF 10% 50V 0402
2774	2238 586 59812	100nF 20-80% 50V 0603	2892	2238 586 59812	100nF 20-80% 50V 0603	2D09	2238 586 59812	100nF 20-80% 50V 0603
2775	2238 586 59812	100nF 20-80% 50V 0603	2893	2238 586 59812	100nF 20-80% 50V 0603	2D10	2238 586 59812	100nF 20-80% 50V 0603
2776	2238 586 59812	100nF 20-80% 50V 0603	2894	2238 586 59812	100nF 20-80% 50V 0603	2D11	2238 586 59812	100nF 20-80% 50V 0603
2777	2238 586 59812	100nF 20-80% 50V 0603	2895	2238 586 59812	100nF 20-80% 50V 0603	2D12	2238 586 59812	100nF 20-80% 50V 0603
2778	2238 586 59812	100nF 20-80% 50V 0603	2896	2238 586 59812	100nF 20-80% 50V 0603	2D22	2238 586 59812	100nF 20-80% 50V 0603
2779	2238 586 59812	100nF 20-80% 50V 0603	2897	2238 586 59812	100nF 20-80% 50V 0603	2D50	4822 126 13879	220nF 20% 16V
2780	2238 586 59812	100nF 20-80% 50V 0603	2898	2238 586 59812	100nF 20-80% 50V 0603	2D51	2238 586 59812	100nF 20-80% 50V 0603
2781	2238 586 59812	100nF 20-80% 50V 0603	2899	2238 586 59812	100nF 20-80% 50V 0603	2D52	2238 586 59812	100nF 20-80% 50V 0603
2782	2238 586 59812	100nF 20-80% 50V 0603	2A00	2020 552 96618	1nF 10% 50V 0402	2D53	2022 552 05616	4.7µF 5% 6.3V
2784	2238 586 59812	100nF 20-80% 50V 0603	2A01	2020 021 91557	10µF 20% 16V	2D54	2022 552 05616	4.7µF 5% 6.3V
2785	2238 586 59812	100nF 20-80% 50V 0603	2A02	2020 552 96448	1µF 10% 16V	2D55	2022 552 05616	4.7µF 5% 6.3V
2786	2238 586 59812	100nF 20-80% 50V 0603	2A03	2020 021 91557	100µF 20% 16V	2D57	2238 586 59812	100nF 20-80% 50V 0603
2787	2238 586 59812	100nF 20-80% 50V 0603	2A04	2020 552 96448	1µF 10% 16V	2D58	2022 552 05616	4.7µF 5% 6.3V
2788	2238 586 59812	100nF 20-80% 50V 0603	2A05	2020 021 91557	100µF 20% 16V	2D59	2022 552 05616	4.7µF 5% 6.3V
2789	2238 586 59812	100nF 20-80% 50V 0603	2A06	2020 552 96618	1nF 10% 50V 0402	2D60	2022 552 05616	4.7µF 5% 6.3V
2790	2238 586 59812	100nF 20-80% 50V 0603	2A07	2020 021 91557	100µF 20% 16V	2D61	2022 552 05616	4.7µF 5% 6.3V
2791	2238 586 59812	100nF 20-80% 50V 0603	2A08	2020 552 96448	1µF 10% 16V	2D62	4822 126 13879	220nF 20% 16V
2792	2020 021 91554	10µF 20% 16V	2A10	2238 586 59812	100nF 20-80% 50V 0603	2D63	2022 552 05616	4.7µF 5% 6.3V
2793	2238 586 59812	100nF 20-80% 50V 0603	2A11	2238 586 59812	100nF 20-80% 50V 0603	2D64	2022 552 05616	4.7µF 5% 6.3V
2794	2020 021 91554	10µF 20% 16V	2A13	2020 552 96618	1nF 10% 50V 0402	2D65	3198 032 47170	47µF 20% 16V
2795	2238 586 59812	100nF 20-80% 50V 0603	2A14	2020 552 96618	1nF 10% 50V 0402	2D66	2238 586 59812	100nF 20-80% 50V 0603
2796	2238 586 59812	100nF 20-80% 50V 0603	2A15	2020 021 91557	100µF 20% 16V	2D67	2238 586 59812	100nF 20-80% 50V 0603
2797	2238 586 59812	100nF 20-80% 50V 0603	2A16	2238 586 59812	100nF 20-80% 50V 0603	2D68	2238 586 59812	100nF 20-80% 50V 0603
2798	2238 586 59812	100nF 20-80% 50V 0603	2A17	2020 552 96618	1nF 10% 50V 0402	2D69	3198 016 31020	1nF 10% 25V 0603
2799	2238 586 59812	100nF 20-80% 50V 0603	2A18	2020 021 91557	100µF 20% 16V	2D70	2238 586 59812	100nF 20-80% 50V 0603
2800	2238 586 59812	100nF 20-80% 50V 0603	2A19	3198 017 41050	1µF 10V 0603	2D72	4822 126 11785	47pF 5% 50V 0603
2801	2238 586 59812	100nF 20-80% 50V 0603	2A21	2238 586 59812	100nF			

2E17	2022 552 05616	4.7µF 5% 6.3V	2I80	2020 552 96448	1µF 10% 16V	2S15	2020 552 94427	100pF 5% 50v 0603
2E18	2022 552 05616	4.7µF 5% 6.3V	2I81	2020 552 96448	1µF 10% 16V	2S16	2020 552 94427	100pF 5% 50v 0603
2E19	2238 586 59812	100nF 20-80% 50V 0603	2I82	2020 552 96448	1µF 10% 16V	2S22	3198 017 44740	470nF 10V 0603
2E20	2238 586 59812	100nF 20-80% 50V 0603	2I83	2020 552 96448	1µF 10% 16V	2S25	2020 552 94427	100pF 5% 50v 0603
2E21	2238 586 59812	100nF 20-80% 50V 0603	2I84	2020 552 96448	1µF 10% 16V	2T01	2020 021 91642	470µF 20% 16V
2E22	2020 552 96448	1µF 10% 16V	2I85	2020 552 96448	1µF 10% 16V	2T04	3198 024 44730	47nF 50V 0603
2E23	2238 586 59812	100nF 20-80% 50V 0603	2I99	2020 552 96448	1µF 10% 16V	2T05	2020 021 91642	470µF 20% 16V
2E24	2238 586 59812	100nF 20-80% 50V 0603	2IA0	2020 552 96448	1µF 10% 16V	2T06	5322 126 11583	10nF 10% 50V 0603
2E25	2238 586 59812	100nF 20-80% 50V 0603	2IA1	2020 552 96448	1µF 10% 16V	2T09	3198 017 34730	47nF 16V 0603
2E26	2022 552 05616	4.7µF 5% 6.3V	2IA2	2020 552 96448	1µF 10% 16V	2T12	2238 586 59812	100nF 20-80% 50V 0603
2E27	3198 035 04710	470pF 50V 0402	2IA4	2020 552 96448	1µF 10% 16V	2T13	5322 126 11583	10nF 10% 50V 0603
2E28	2238 586 59812	100nF 20-80% 50V 0603	2IA5	2020 021 91557	100µF 20% 16V	2T15	2020 552 96448	1µF 10% 16V
2E29	3198 035 04710	470pF 50V 0402	2IA7	2020 552 96448	1µF 10% 16V	2U03	2020 552 96448	1µF 10% 16V
2E30	2022 552 05616	4.7µF 5% 6.3V	2IA9	2020 021 91557	100µF 20% 16V	2U04	4822 126 13482	470nF 80-20% 16V
2E34	2020 004 90283	10µF 20% 10V 1206	2IC0	4822 124 23002	10µF 20% 16V	2U05	5322 126 11578	1nF 10% 50V 0603
2E35	2238 586 59812	100nF 20-80% 50V 0603	2IC1	4822 124 23002	10µF 20% 16V	2U06	2020 021 91642	470µF 20% 16V
2E37	4822 124 23237	22µF 20% 6.3V	2IC3	2238 586 59812	100nF 20-80% 50V 0603	2U07	4822 126 14226	82pF 5% 50V 0603
2E39	2022 552 05616	4.7µF 5% 6.3V	2IC9	4822 126 13881	470pF 5% 50V	2U08	2020 021 91642	470µF 20% 16V
2E50	4822 124 23237	22µF 20% 6.3V	2IG1	2238 586 59812	100nF 20-80% 50V 0603	2U09	5322 126 11578	1nF 10% 50V 0603
2E51	2020 552 96448	1µF 10% 16V	2IH2	2238 586 59812	100nF 20-80% 50V 0603	2U10	2020 021 91642	470µF 20% 16V
2E52	2238 586 59812	100nF 20-80% 50V 0603	2IH3	3198 016 31020	1nF 10% 25V 0603	2U11	5322 126 11578	1nF 10% 50V 0603
2E54	2238 586 59812	100nF 20-80% 50V 0603	2IJ0	4822 126 13881	470pF 5% 50V	2U12	5322 126 11583	10nF 10% 50V 0603
2E55	2022 552 05616	4.7µF 5% 6.3V	2IJ1	2020 552 94427	100pF 5% 50V 0603	2U13	3198 017 44740	470nF 10V 0603
2E56	2238 586 59812	100nF 20-80% 50V 0603	2IJ4	2238 586 59812	100nF 20-80% 50V 0603	2U14	4822 126 13482	470nF 80-20% 16V
2E58	2238 586 59812	100nF 20-80% 50V 0603	2L01	3198 035 71040	100nF 10% 16V 0402	2U15	4822 124 12095	100µF 20% 16V
2E59	2238 586 59812	100nF 20-80% 50V 0603	2L02	3198 035 71040	100nF 10% 16V 0402	2U16	4822 126 13193	4.7nF 10% 63V
2E61	2238 586 59812	100nF 20-80% 50V 0603	2L03	3198 035 71040	100nF 10% 16V 0402	2U17	4822 126 13482	470nF 80-20% 16V
2E62	2238 586 59812	100nF 20-80% 50V 0603	2L04	3198 035 71040	100nF 10% 16V 0402	2U18	5322 122 33861	120pF 10% 50V
2E63	2238 586 59812	100nF 20-80% 50V 0603	2L05	3198 035 71040	100nF 10% 16V 0402	2U19	2238 586 59812	100nF 20-80% 50V 0603
2E64	2238 586 59812	100nF 20-80% 50V 0603	2L06	3198 035 71040	100nF 10% 16V 0402	2U20	4822 126 14491	2.2µF -20+80% 10V 0805
2E66	2238 586 59812	100nF 20-80% 50V 0603	2L07	3198 035 71040	100nF 10% 16V 0402	2U21	4822 126 13482	470nF 80-20% 16V
2E68	2022 552 05616	4.7µF 5% 6.3V	2L08	3198 035 71040	100nF 10% 16V 0402	2U22	4822 126 14491	2.2µF -20+80% 10V 0805
2E69	2238 586 59812	100nF 20-80% 50V 0603	2L09	3198 035 71040	100nF 10% 16V 0402	2U23	4822 124 12095	100µF 20% 16V
2E70	2238 586 59812	100nF 20-80% 50V 0603	2L10	3198 035 71040	100nF 10% 16V 0402	2U24	5322 126 11578	1nF 10% 50V 0603
2E71	2238 586 59812	100nF 20-80% 50V 0603	2L11	2238 586 59812	100nF 20-80% 50V 0603	2U25	2238 586 59812	100nF 20-80% 50V 0603
2E72	2238 586 59812	100nF 20-80% 50V 0603	2L12	3198 035 71040	100nF 10% 16V 0402	2U26	2238 586 59812	100nF 20-80% 50V 0603
2E73	2238 586 59812	100nF 20-80% 50V 0603	2L13	3198 035 71040	100nF 10% 16V 0402	2U27	5322 126 11582	6.8nF 10% 63V
2E74	2238 586 59812	100nF 20-80% 50V 0603	2L14	3198 035 71040	100nF 10% 16V 0402	2U28	5322 126 11582	6.8nF 10% 63V
2E75	2238 586 59812	100nF 20-80% 50V 0603	2L15	3198 035 71040	100nF 10% 16V 0402	2U30	5322 122 33861	120pF 10% 50V
2E76	2238 586 59812	100nF 20-80% 50V 0603	2L16	3198 035 71040	100nF 10% 16V 0402	2U31	4822 124 12095	100µF 20% 16V
2E78	2238 586 59812	100nF 20-80% 50V 0603	2L17	3198 035 71040	100nF 10% 16V 0402	2U32	5322 126 11579	3.3nF 10% 63V
2E79	2238 586 59812	100nF 20-80% 50V 0603	2L18	2020 552 96305	4.7µF 20-80% 10V	2U33	4822 126 14491	2.2µF -20+80% 10V 0805
2E80	2238 586 59812	100nF 20-80% 50V 0603	2L19	4822 124 23002	10µF 20% 16V	2U34	2238 916 15641	22nF 10% 25V 0603
2E83	2238 586 59812	100nF 20-80% 50V 0603	2L20	3198 035 71040	100nF 10% 16V 0402	2U35	4822 126 14043	1nF 20% 16V
2E84	2238 586 59812	100nF 20-80% 50V 0603	2L21	3198 035 71040	100nF 10% 16V 0402	2V06	2238 586 59812	100nF 20-80% 50V 0603
2E86	2238 586 59812	100nF 20-80% 50V 0603	2L22	5322 126 11583	10nF 10% 50V 0603	2V07	2238 586 59812	100nF 20-80% 50V 0603
2E87	4822 124 12095	100µF 20% 16V	2L23	5322 126 11583	10nF 10% 50V 0603	2V08	2238 586 59812	100nF 20-80% 50V 0603
2E88	2238 869 15101	100pF 5% 50V 0402	2L24	5322 126 11583	10nF 10% 50V 0603	2V09	2238 586 59812	100nF 20-80% 50V 0603
2E89	2238 869 15101	100pF 5% 50V 0402	2L25	2238 586 59812	100nF 20-80% 50V 0603	2V10	2238 586 59812	100nF 20-80% 50V 0603
2E90	2238 869 15101	100pF 5% 50V 0402	2L26	4822 126 14549	33nF 16V 0603	2V11	2238 586 59812	100nF 20-80% 50V 0603
2E91	2238 869 15101	100pF 5% 50V 0402	2L27	4822 126 13193	4.7nF 10% 63V	2V12	2238 586 59812	100nF 20-80% 50V 0603
2E92	2238 869 15101	100pF 5% 50V 0402	2L28	4822 126 14226	82pF 5% 50V 0603	2V13	2238 586 59812	100nF 20-80% 50V 0603
2E93	2238 869 15101	100pF 5% 50V 0402	2L29	4822 122 33761	22pF 5% 50V	2Y00	2238 586 59812	100nF 20-80% 50V 0603
2E94	2238 869 15101	100pF 5% 50V 0402	2L30	4822 126 14226	82pF 5% 50V 0603	2Y01	2238 586 59812	100nF 20-80% 50V 0603
2E95	2238 869 15101	100pF 5% 50V 0402	2L31	3198 017 34730	47nF 16V 0603	2Y02	2020 552 96448	1µF 10% 16V
2E96	2238 869 15101	100pF 5% 50V 0402	2L32	5322 126 11579	3.3nF 10% 63V	2Y03	4822 126 14519	22pF 5% 50V 0402
2E97	2238 869 15101	100pF 5% 50V 0402	2L33	2238 586 59812	100nF 20-80% 50V 0603	2Y04	4822 126 14519	22pF 5% 50V 0402
2E98	2238 869 15101	100pF 5% 50V 0402	2L34	2238 586 59812	100nF 20-80% 50V 0603	2Y05	4822 126 14519	22pF 5% 50V 0402
2E99	2238 869 15101	100pF 5% 50V 0402	2L35	4822 126 13879	220nF 20% 16V	2Y06	4822 126 14519	22pF 5% 50V 0402
2I07	4822 051 30008	Jumper 0603	2L36	3198 016 31020	1nF 10% 25V 0603	2Y07	4822 126 14519	22pF 5% 50V 0402
2I09	2020 552 94427	100pF 5% 50v 0603	2L37	3198 016 31020	1nF 10% 25V 0603	2Y08	4822 126 14519	22pF 5% 50V 0402
2I10	2020 552 94427	100pF 5% 50v 0603	2L38	3198 016 31020	1nF 10% 25V 0603	2Y09	4822 126 14519	22pF 5% 50V 0402
2I11	2020 552 94427	100pF 5% 50v 0603	2L39	2238 586 59812	100nF 20-80% 50V 0603	2Y10	4822 126 14519	22pF 5% 50V 0402
2I12	4822 126 14241	330pF 50V 0603	2L40	2020 552 96305	4.7µF 20-80% 10V	2Y11	4822 126 14519	22pF 5% 50V 0402
2I13	2020 552 94427	100pF 5% 50v 0603	2L41	3198 016 31020	1nF 10% 25V 0603	2Y12	4822 126 14519	22pF 5% 50V 0402
2I14	2020 552 94427	100pF 5% 50v 0603	2L42	3198 016 31020	1nF 10% 25V 0603			
2I15	4822 126 14241	330pF 50V 0603	2L43	2238 586 59812	100nF 20-80% 50V 0603			
2I16	2020 552 94427	100pF 5% 50v 0603	2L44	2020 552 96305	4.7µF 20-80% 10V			
2I17	2020 552 94427	100pF 5% 50v 0603	2L45	3198 016 31020	1nF 10% 25V 0603			
2I18	2020 552 94427	100pF 5% 50v 0603	2L46	3198 016 31020	1nF 10% 25V 0603			
2I19	2020 552 94427	100pF 5% 50v 0603	2L47	2238 586 59812	100nF 20-80% 50V 0603			
2I20	4822 126 14241	330pF 50V 0603	2L48	4822 122 33752	15pF 5% 50V			
2I21	2020 552 94427	100pF 5% 50v 0603	2L50	4822 122 33752	15pF 5% 50V			
2I22	2020 552 94427	100pF 5% 50v 0603	2L52	3198 017 34730	47nF 16V 0603			
2I23	2020 552 94427	100pF 5% 50v 0603	2L53	4822 124 81059	220µF 20% 4V			
2I24	2020 552 94427	100pF 5% 50v 0603	2L54	3198 017 34730	47nF 16V 0603			
2I25	4822 126 14241	330pF 50V 0603	2L56	2020 552 96618	1nF 10% 50V 0402			
2I26	2020 552 94427	100pF 5% 50v 0603	2L57	3198 017 34730	47nF 16V 0603			
2I27	2020 552 94427	100pF 5% 50v 0603	2L58	4822 124 81059	220µF 20% 4V			
2I36	2020 552 94427	100pF 5% 50v 0603	2L63	4822 126 11785	47pF 5% 50V 0603			
2I39	3198 024 44730	47nF 50V 0603	2P80	4822 124 12095	100µF 20% 16V			
2I46	3198 016 31020	1nF 10% 25V 0603	2P81	2238 586 59812	100nF 20-80% 50V 0603			
2I47	3198 016 31020	1nF 10% 25V 0603	2S01	2238 586 59812	100nF 20-80% 50V 0603			
2I57	2020 552 94427	100pF 5% 50v 0603	2S02	2238 586 59812	100nF 20-80% 50V 0603			
2I58	2020 552 94427	100pF 5% 50v 06						

3027	4822 117 12925	47kΩ 1% 0.063W 0603	3441	4822 051 30562	5.6kΩ 5% 0.063W 0603	3826	5322 117 13058	150Ω 1% 0.063W 0603
3028	4822 051 30472	4.7kΩ 5% 0.062W	3445	4822 051 30121	120Ω 5% 0.062W	3827	5322 117 13058	150Ω 1% 0.063W 0603
3029	3198 031 11010	4 x 100Ω 5% 1206	3463	4822 051 30472	4.7kΩ 5% 0.062W	3828	4822 051 30339	330Ω 5% 0.062W
3030	4822 051 30472	4.7kΩ 5% 0.062W	3468	4822 117 13632	100kΩ 1% 0.62W 0603	3829	4822 117 12971	15Ω 5% 0.62W 0603
3031	3198 031 11010	4 x 100Ω 5% 1206	3473	4822 051 30102	1kΩ 5% 0.062W	3831	4822 117 13545	100Ω 1% 0402
3032	4822 051 30103	10kΩ 5% 0.062W	3474	4822 051 30109	10Ω 5% 0.062W	3832	4822 117 13545	100Ω 1% 0402
3033	4822 051 30103	10kΩ 5% 0.062W	3475▲	5322 117 11726	10Ω 5%	3833	4822 117 13545	100Ω 1% 0402
3034	3198 031 11010	4 x 100Ω 5% 1206	3476	4822 051 30561	560Ω 5% 0.062W	3834	4822 117 13545	100Ω 1% 0402
3035	3198 031 11010	4 x 100Ω 5% 1206	3700	4822 051 30472	4.7kΩ 5% 0.062W	3836	4822 117 13545	100Ω 1% 0402
3036	4822 051 30472	4.7kΩ 5% 0.062W	3701	4822 051 30472	4.7kΩ 5% 0.062W	3837	4822 117 13545	100Ω 1% 0402
3039	4822 051 30181	180Ω 5% 0.062W	3702	4822 051 30472	4.7kΩ 5% 0.062W	3838	4822 117 13545	100Ω 1% 0402
3046	3198 031 11010	4 x 100Ω 5% 1206	3703	3198 031 01090	10Ω 5% 0.01W 0402	3839	4822 117 13545	100Ω 1% 0402
3047	4822 051 30008	Jumper 0603	3704	3198 031 01090	10Ω 5% 0.01W 0402	3840	4822 117 13545	100Ω 1% 0402
3048	3198 031 11010	4 x 100Ω 5% 1206	3705	3198 031 01090	10Ω 5% 0.01W 0402	3841	4822 117 13545	100Ω 1% 0402
3049	3198 031 11010	4 x 100Ω 5% 1206	3706	3198 031 01090	10Ω 5% 0.01W 0402	3842	4822 117 13545	100Ω 1% 0402
3050	3198 031 11010	4 x 100Ω 5% 1206	3707	3198 031 01090	10Ω 5% 0.01W 0402	3843	4822 117 13545	100Ω 1% 0402
3051	3198 031 11010	4 x 100Ω 5% 1206	3708	3198 031 01090	10Ω 5% 0.01W 0402	3844	4822 117 13545	100Ω 1% 0402
3052	3198 031 11010	4 x 100Ω 5% 1206	3709	4822 051 30101	100Ω 5% 0.062W	3845	4822 117 13545	100Ω 1% 0402
3053	4822 051 30103	10kΩ 5% 0.062W	3710	4822 051 30101	100Ω 5% 0.062W	3846	4822 051 30109	10Ω 5% 0.062W
3054	3198 031 11010	4 x 100Ω 5% 1206	3711	4822 117 12925	47kΩ 1% 0.063W 0603	3847	4822 051 30109	10Ω 5% 0.062W
3055	3198 031 11010	4 x 100Ω 5% 1206	3712	4822 117 12925	47kΩ 1% 0.063W 0603	3849	4822 051 30569	56Ω 5% 0.062W
3056	3198 031 11010	4 x 100Ω 5% 1206	3713	4822 051 30181	180Ω 5% 0.062W	3850	4822 117 13545	100Ω 1% 0402
3057	3198 031 11010	4 x 100Ω 5% 1206	3714	4822 051 30181	180Ω 5% 0.062W	3851	4822 117 13545	100Ω 1% 0402
3059	2322 704 66201	620Ω 1% 0603	3715	4822 051 30181	180Ω 5% 0.062W	3852	4822 117 13545	100Ω 1% 0402
3061	3198 031 11010	4 x 100Ω 5% 1206	3716	4822 117 13632	100kΩ 1% 0.62W 0603	3853	4822 117 13545	100Ω 1% 0402
3062	4822 051 30103	10kΩ 5% 0.062W	3717	4822 117 13632	100kΩ 1% 0.62W 0603	3856	4822 051 30569	56Ω 5% 0.062W
3064	3198 031 11010	4 x 100Ω 5% 1206	3718	4822 117 13632	100kΩ 1% 0.62W 0603	3A00	4822 117 13601	22kΩ 5% 0402
3065	4822 051 30472	4.7kΩ 5% 0.062W	3719	4822 051 30332	3.3kΩ 5% 0.062W	3A01	4822 117 13606	10kΩ 5% 0.01W 0402
3066	4822 117 12925	47kΩ 1% 0.063W 0603	3720	4822 051 30103	10kΩ 5% 0.062W	3A03▲	4822 117 13568	6.8Ω 5% 1206
3067	4822 051 30474	47kΩ 5% 0.062W	3721	4822 117 13545	100Ω 1% 0402	3A06	4822 117 13545	100Ω 1% 0402
3069	4822 051 30222	2.2kΩ 5% 0.062W	3722	4822 051 30109	10Ω 5% 0.062W	3A09	4822 117 13601	22kΩ 5% 0402
3072	3198 031 11010	4 x 100Ω 5% 1206	3723	4822 051 30472	4.7kΩ 5% 0.062W	3A11	4822 117 11297	100kΩ 5% 0.1W
3073	3198 031 14710	4 x 470Ω 5% 1206	3725	4822 051 30332	3.3kΩ 5% 0.062W	3A13	3198 031 04730	47Ω 5% 0402
3074	3198 031 14710	4 x 470Ω 5% 1206	3726	4822 117 11817	1.2kΩ 1% 0.062W	3A14	3198 031 04730	47Ω 5% 0402
3076	3198 031 14710	4 x 470Ω 5% 1206	3727	4822 051 30151	150Ω 5% 0.062W	3A15	4822 117 11297	100kΩ 5% 0.1W
3077	4822 051 30103	10kΩ 5% 0.062W	3728	4822 051 30151	150Ω 5% 0.062W	3A16	4822 117 13545	100Ω 1% 0402
3078	3198 031 14710	4 x 470Ω 5% 1206	3729	4822 117 13545	100Ω 1% 0402	3A17	4822 117 13545	100Ω 1% 0402
3079	4822 051 30222	2.2kΩ 5% 0.062W	3730	3198 031 06810	680Ω 5% 0.01W 0402	3A19	4822 117 13545	100Ω 1% 0402
3080	4822 051 30472	4.7kΩ 5% 0.062W	3736	4822 051 30101	100Ω 5% 0.062W	3A20	4822 117 11297	100kΩ 5% 0.1W
3081	4822 051 30471	470Ω 5% 0.062W	3737	4822 051 30102	1kΩ 5% 0.062W	3A22	4822 117 13632	100kΩ 1% 0.62W 0603
3082	3198 031 11010	4 x 100Ω 5% 1206	3738	4822 051 30102	1kΩ 5% 0.062W	3A23	4822 117 13603	33kΩ 5% 0402
3083	3198 031 11010	4 x 100Ω 5% 1206	3739	3198 031 01530	15kΩ 5% 0.01W 0402	3A25	4822 051 30331	330Ω 5% 0.062W
3084	4822 051 30103	10kΩ 5% 0.062W	3740	4822 051 30102	1kΩ 5% 0.062W	3A26	4822 117 13603	33kΩ 5% 0402
3085	3198 031 11010	4 x 100Ω 5% 1206	3741	4822 051 30223	22kΩ 5% 0.062W	3A27	3198 031 01530	15kΩ 5% 0.01W 0402
3086	3198 031 11010	4 x 100Ω 5% 1206	3743	4822 051 30153	15kΩ 5% 0.062W	3A28	3198 031 01530	15kΩ 5% 0.01W 0402
3087	4822 051 30101	100Ω 5% 0.062W	3744	4822 051 30222	2.2kΩ 5% 0.062W	3A29	4822 051 30331	330Ω 5% 0.062W
3088	4822 051 30222	2.2kΩ 5% 0.062W	3745	4822 051 30102	1kΩ 5% 0.062W	3A30	4822 117 12925	47kΩ 1% 0.063W 0603
3089	4822 051 30101	100Ω 5% 0.062W	3746	5322 117 13042	3.9kΩ 1% 0.063W 0603	3A32	4822 117 13545	100Ω 1% 0402
3090	3198 031 14710	4 x 470Ω 5% 1206	3747	4822 051 30154	150kΩ 5% 0.062W	3A33	4822 117 13545	100Ω 1% 0402
3091	4822 051 30008	Jumper 0603	3748	4822 117 12891	220kΩ 1% 0.063W 0603	3A34	4822 117 13545	100Ω 1% 0402
3092	4822 051 30222	2.2kΩ 5% 0.062W	3749	5322 117 13042	3.9kΩ 1% 0.063W 0603	3A35	4822 051 30105	1MΩ 5% 0.062W
3093	4822 051 30103	10kΩ 5% 0.062W	3750	4822 051 30392	3.9kΩ 5% 0.063W 0603	3A36	4822 117 13545	100Ω 1% 0402
3097	4822 051 30471	470Ω 5% 0.062W	3751	4822 051 30472	4.7kΩ 5% 0.062W	3A37	4822 117 13545	100Ω 1% 0402
3099	3198 031 14710	4 x 470Ω 5% 1206	3752	4822 117 12917	1Ω 5% 0.062W 0603	3A38	4822 051 30101	100Ω 5% 0.062W
3100	4822 051 30221	220Ω 5% 0.062W	3753	4822 117 12917	1Ω 5% 0.062W 0603	3A39	4822 117 13545	100Ω 1% 0402
3101	4822 051 30221	220Ω 5% 0.062W	3754	4822 051 30101	100Ω 5% 0.062W	3A3A	4822 117 13545	100Ω 1% 0402
3102	3198 031 11010	4 x 100Ω 5% 1206	3755	4822 051 30472	4.7kΩ 5% 0.062W	3A3B	4822 117 13545	100Ω 1% 0402
3301	4822 117 13632	100kΩ 1% 0.62W 0603	3756	4822 117 12902	8.2kΩ 1% 0.063W 0603	3A3E	4822 117 13545	100Ω 1% 0402
3303	4822 117 13632	100kΩ 1% 0.62W 0603	3758	4822 051 30472	4.7kΩ 5% 0.062W	3A3F	4822 117 13545	100Ω 1% 0402
3304▲	2322 750 63908	3.9Ω 5% 1206 fusible	3759	4822 051 30221	220Ω 5% 0.062W	3A40	4822 117 13632	100kΩ 1% 0.62W 0603
3308	4822 051 20474	470kΩ 5% 0.1W	3762	4822 051 30101	100Ω 5% 0.062W	3A42	3198 031 03320	3.3kΩ 5% 0402
3368	4822 051 30471	470Ω 5% 0.062W	3764	4822 051 30109	10Ω 5% 0.062W	3A43	4822 117 13545	100Ω 1% 0402
3370	4822 051 30101	100Ω 5% 0.062W	3770	4822 117 13545	100Ω 1% 0402	3A44	4822 117 13545	100Ω 1% 0402
3371	4822 051 30479	47Ω 5% 0.062W	3771	4822 117 12971	15Ω 5% 0.62W 0603	3A45	3198 031 04730	47Ω 5% 0402
3372	4822 051 30471	470Ω 5% 0.062W	3772	4822 117 12971	15Ω 5% 0.62W 0603	3A46	4822 117 11297	100kΩ 5% 0.1W
3373	4822 051 30008	Jumper 0603	3773	4822 117 12925	47kΩ 1% 0.063W 0603	3A47	3198 031 04730	47Ω 5% 0402
3374	4822 051 30008	Jumper 0603	3774	4822 117 12925	47kΩ 1% 0.063W 0603	3A48	4822 117 11297	100kΩ 5% 0.1W
3375	4822 051 30008	Jumper 0603	3781	4822 117 12925	47kΩ 1% 0.063W 0603	3A49	3198 031 04730	47Ω 5% 0402
3376	4822 051 30101	100Ω 5% 0.062W	3782	4822 117 12925	47kΩ 1% 0.063W 0603	3A50	4822 117 13545	100Ω 1% 0402
3377	4822 051 30101	100Ω 5% 0.062W	3783	4822 117 12925	47kΩ 1% 0.063W 0603	3A51	3198 031 04730	47Ω 5% 0402
3378	4822 051 30153	15kΩ 5% 0.062W	3792	4822 051 30102	1kΩ 5% 0.062W	3A52	3198 031 03930	39kΩ 5% 0402
3379	4822 051 30008	Jumper 0603	3793	4822 051 30222	2.2kΩ 5% 0.062W	3A53	3198 031 03930	39kΩ 5% 0402
3380	4822 051 30101	100Ω 5% 0.062W	3794	4822 051 30109	10Ω 5% 0.062W	3A55	3198 031 04720	4.7kΩ 5% 0402
3381	4822 051 30008	Jumper 0603	3795	4822 051 30109	10Ω 5% 0.062W	3A56	3198 031 04720	4.7kΩ 5% 0402
3382	3198 031 05610	560Ω 5% 0.01W 0402	3796	4822 051 30101	100Ω 5% 0.062W	3A66	4822 117 11297	100kΩ 5% 0.1W
3385	4822 051 30471	470Ω 5% 0.062W	3797	4822 051 30101	100Ω 5% 0.062W	3C00	4822 051 30222	2.2kΩ 5% 0.062W
3393	4822 117 13632	100kΩ 1% 0.62W 0603	3798	4822 051 30472	4.7kΩ 5% 0.062W	3C01	4822 051 30109	10Ω 5% 0.062W
3400▲	4822 117 11152	4.7Ω 5% 0.062W	3800	5322 117 13058	150Ω 1% 0.063W 0603	3C03	4822 051 30103	10kΩ 5% 0.062W
3402▲	2322 750 63908	3.9Ω 5% 1206 fusible	3802	5322 117 13058	150Ω 1% 0.063W 0603	3C04	4822 051 30103	10kΩ 5% 0.062W
3403	4822 051 30101	100Ω 5% 0.062W	3803	5322 117 13058	150Ω 1% 0.063W 0603	3C05	4822 051 30471	470Ω 5% 0.062W
3404	4822 051 30561	560Ω 5% 0.062W	3804	4822 051 30102	1kΩ 5% 0.062W	3C08	4822 051 30103	10kΩ 5% 0.062W
3405	4822 051 30102	1kΩ 5% 0.062W	3811	4822 051 30759	75Ω 5% 0.062W	3C10	4822 051 30101	100Ω 5% 0.062W
3406	2322 702 60279	27Ω 5% 0.1W 0603	3812	4822 051 30759	75Ω 5% 0.062W	3C11	4822 051 30101	100Ω 5% 0.062W
3408	4822 051 30101							

3D53	4822 117 13548	1kΩ 5% 0402	3E78	4822 117 13546	47Ω 5% 0402	3I59	4822 117 13601	22kΩ 5% 0402
3D54	4822 117 13601	22kΩ 5% 0402	3E79	4822 117 13546	47Ω 5% 0402	3I60	4822 051 30759	75Ω 5% 0.062W
3D55	5322 117 13018	1kΩ 1% 0.063W 0603	3E80	4822 117 13546	47Ω 5% 0402	3I61	4822 117 13601	22kΩ 5% 0402
3D56	2322 704 65102	5.1kΩ 1% 0603	3E81	4822 117 13546	47Ω 5% 0402	3I62	4822 051 30101	100Ω 5% 0.062W
3D57	5322 117 13047	330Ω 1% 0.063W 0603	3E82	4822 117 13546	47Ω 5% 0402	3I67	4822 051 30101	100Ω 5% 0.062W
3D58	4822 117 13548	1kΩ 5% 0402	3E83	4822 117 13546	47Ω 5% 0402	3I68	3198 031 04730	47Ω 5% 0402
3D60	5322 117 13036	1.2kΩ 1% 0.063W 0603	3E84	4822 117 13546	47Ω 5% 0402	3I69	3198 031 04730	47Ω 5% 0402
3D61	5322 117 13048	3.3kΩ 1% 0.063W 0603	3E85	4822 117 13546	47Ω 5% 0402	3I70	4822 117 13606	10kΩ 5% 0.01W 0402
3D62	4822 051 30103	10kΩ 5% 0.062W	3E86	4822 117 13546	47Ω 5% 0402	3I71	4822 117 13601	22kΩ 5% 0402
3D63	5322 117 13037	2.2kΩ 0.063W 0603	3E87	4822 117 13546	47Ω 5% 0402	3I72	4822 117 13601	22kΩ 5% 0402
3D64	4822 117 13548	1kΩ 5% 0402	3E88	4822 117 13546	47Ω 5% 0402	3I73	3198 031 04730	47Ω 5% 0402
3D65	4822 117 13548	1kΩ 5% 0402	3E89	4822 117 13546	47Ω 5% 0402	3I74	3198 031 04730	47Ω 5% 0402
3D66	4822 117 13601	22kΩ 5% 0402	3I08	4822 117 13548	1kΩ 5% 0402	3I75	4822 117 13545	100Ω 1% 0402
3D67	5322 117 13036	1.2kΩ 1% 0.063W 0603	3I34	4822 117 13601	22kΩ 5% 0402	3I76	4822 117 13545	100Ω 1% 0402
3D68	5322 117 13048	3.3kΩ 1% 0.063W 0603	3I35	4822 051 30101	100Ω 5% 0.062W	3I77	4822 117 13601	22kΩ 5% 0402
3D69	4822 117 13548	1kΩ 5% 0402	3I36	4822 117 13601	22kΩ 5% 0402	3I78	4822 117 13601	22kΩ 5% 0402
3D70	5322 117 13048	3.3kΩ 1% 0.063W 0603	3I37	4822 051 30101	100Ω 5% 0.062W	3I79	4822 051 30101	100Ω 5% 0.062W
3D71	4822 117 13548	1kΩ 5% 0402	3I38	3198 031 08220	8.2kΩ 5% 0.5W	3I80	4822 051 30101	100Ω 5% 0.062W
3D72	4822 117 13601	22kΩ 5% 0402	3I39	3198 031 02720	2.7kΩ 5% 0.01W 0402	3I81	3198 031 08220	8.2kΩ 5% 0.5W
3D73	4822 117 11748	2.2Ω 5% 1206	3I40	4822 051 30759	75Ω 5% 0.062W	3I82	3198 031 03920	3.9kΩ 5% 0402
3D79	5322 117 13037	2.2kΩ 0.063W 0603	3I41	4822 117 13545	100Ω 1% 0402	3I83	4822 117 13545	100Ω 1% 0402
3D80	4822 117 13545	100Ω 1% 0402	3I42	4822 117 13601	22kΩ 5% 0402	3I84	4822 051 30759	75Ω 5% 0.062W
3D81	4822 117 10361	680Ω 1% 0.1W	3I43	4822 051 30101	100Ω 5% 0.062W	3I85	4822 117 13545	100Ω 1% 0402
3D82	4822 117 13545	100Ω 1% 0402	3I44	4822 117 13601	22kΩ 5% 0402	3I86	4822 051 30759	75Ω 5% 0.062W
3D83	5322 117 13018	1kΩ 1% 0.063W 0603	3I45	4822 051 30101	100Ω 5% 0.062W	3I87	4822 117 13545	100Ω 1% 0402
3D84	4822 117 13545	100Ω 1% 0402	3I46	3198 031 08220	8.2kΩ 5% 0.5W	3I88	4822 051 30759	75Ω 5% 0.062W
3D85	4822 051 30471	470Ω 5% 0.062W	3I47	3198 031 02720	2.7kΩ 5% 0.01W 0402	3I89	4822 051 30151	150Ω 5% 0.062W
3D86	4822 117 13545	100Ω 1% 0402	3I48	4822 051 30759	75Ω 5% 0.062W	3I90	4822 051 30101	100Ω 5% 0.062W
3D87	4822 117 13632	100kΩ 1% 0.62W 0603	3I49	4822 117 13545	100Ω 1% 0402	3I91	4822 051 30151	150Ω 5% 0.062W
3D88	5322 117 13036	1.2kΩ 1% 0.063W 0603	3I50	4822 051 30151	150Ω 5% 0.062W	3I92	4822 051 30101	100Ω 5% 0.062W
3D89	4822 051 30183	18kΩ 5% 0.062W	3I51	4822 051 30101	100Ω 5% 0.062W	3I98	4822 117 11297	100kΩ 5% 0.1W
3D90	4822 117 12925	47kΩ 1% 0.063W 0603	3I52	4822 051 30151	150Ω 5% 0.062W	3I99	4822 117 13545	100Ω 1% 0402
3D92	4822 117 13606	10kΩ 5% 0.01W 0402	3I53	4822 051 30101	100Ω 5% 0.062W	3I9A	4822 051 30101	100Ω 5% 0.062W
3D93	3198 031 04720	4.7kΩ 5% 0402	3I54	4822 117 13545	100Ω 1% 0402	3I9B	4822 051 30101	100Ω 5% 0.062W
3D94	4822 117 13602	2.2kΩ 5% 0.01W 0402	3I55	4822 051 30759	75Ω 5% 0.062W	3I9C	4822 051 30103	10kΩ 5% 0.062W
3D95	3198 031 04720	4.7kΩ 5% 0402	3I56	4822 117 13545	100Ω 1% 0402	3I9D	4822 117 12925	47kΩ 1% 0.063W 0603
3D96	4822 117 13602	2.2kΩ 5% 0.01W 0402	3I57	4822 051 30759	75Ω 5% 0.062W	3I9E	4822 117 13574	1.5Ω 5% 1206
3D97	4822 117 13545	100Ω 1% 0402	3I58	4822 117 13545	100Ω 1% 0402	3I9F	4822 117 13601	22kΩ 5% 0402
3D98	4822 117 13545	100Ω 1% 0402	3I59	4822 051 30759	75Ω 5% 0.062W	3I9G	4822 117 13601	22kΩ 5% 0402
3D99	4822 051 30759	75Ω 5% 0.062W	3I60	4822 051 30759	75Ω 5% 0.062W	3I9H	4822 051 30101	100Ω 5% 0.062W
3E04	4822 051 30109	10Ω 5% 0.062W	3I61	4822 051 30101	100Ω 5% 0.062W	3I9I	4822 051 30101	100Ω 5% 0.062W
3E04	4822 051 30479	47Ω 5% 0.062W	3I62	4822 051 30101	100Ω 5% 0.062W	3I9J	4822 051 30101	100Ω 5% 0.062W
3E05	3198 031 14710	4 x 470Ω 5% 1206	3I63	3198 031 03920	3.9kΩ 5% 0402	3I9K	4822 051 30101	100Ω 5% 0.062W
3E06	3198 031 14710	4 x 470Ω 5% 1206	3I64	3198 031 08220	8.2kΩ 5% 0.5W	3I9L	4822 051 30101	100Ω 5% 0.062W
3E07	2350 035 10152	4 x 1.5kΩ 5%	3I65	4822 051 30101	100Ω 5% 0.062W	3I9M	4822 051 30101	100Ω 5% 0.062W
3E08▲	4822 117 11151	1Ω 5%	3I66	4822 051 30759	75Ω 5% 0.062W	3I9N	4822 051 30101	100Ω 5% 0.062W
3E11	2350 035 10152	4 x 1.5kΩ 5%	3I67	4822 051 30759	75Ω 5% 0.062W	3I9O	4822 051 30101	100Ω 5% 0.062W
3E12	2350 035 10152	4 x 1.5kΩ 5%	3I68	4822 117 13545	100Ω 1% 0402	3I9P	4822 051 30101	100Ω 5% 0.062W
3E14	4822 117 13545	100Ω 1% 0402	3I69	4822 051 30151	150Ω 5% 0.062W	3I9Q	4822 051 30101	100Ω 5% 0.062W
3E16	3198 031 03320	3.3kΩ 5% 0402	3I70	4822 051 30101	100Ω 5% 0.062W	3I9R	4822 051 30101	100Ω 5% 0.062W
3E18	4822 117 13602	2.2kΩ 5% 0.01W 0402	3I71	4822 051 30151	150Ω 5% 0.062W	3I9S	4822 051 30101	100Ω 5% 0.062W
3E19	4822 117 13548	1kΩ 5% 0402	3I72	4822 051 30101	100Ω 5% 0.062W	3I9T	4822 117 12925	47kΩ 1% 0.063W 0603
3E20	4822 117 13545	100Ω 1% 0402	3I73	4822 117 13605	Jumper 0402	3I9U	4822 117 13545	100Ω 1% 0402
3E21	4822 117 13548	1kΩ 5% 0402	3I75	4822 117 13545	100Ω 1% 0402	3I9V	4822 117 13545	100Ω 1% 0402
3E22	2350 035 10152	4 x 1.5kΩ 5%	3I76	4822 117 13545	100Ω 1% 0402	3I9W	4822 051 30102	4 x jumper ARV341
3E23	2350 035 10152	4 x 1.5kΩ 5%	3I77	4822 051 30759	75Ω 5% 0.062W	3I9X	4822 051 30102	4 x jumper ARV341
3E24	2350 035 10152	4 x 1.5kΩ 5%	3I78	4822 051 30759	75Ω 5% 0.062W	3I9Y	4822 051 30102	4 x jumper ARV341
3E25	4822 117 13548	1kΩ 5% 0402	3I79	4822 051 30101	100Ω 5% 0.062W	3I9Z	4822 051 30102	4 x jumper ARV341
3E26	4822 117 13545	100Ω 1% 0402	3I80	4822 051 30101	100Ω 5% 0.062W	3I9A	4822 051 30102	4 x jumper ARV341
3E27	4822 117 11297	100kΩ 5% 0.1W	3I81	3198 031 08220	8.2kΩ 5% 0.5W	3I9B	4822 051 30102	4 x jumper ARV341
3E28	3198 031 04720	4.7kΩ 5% 0402	3I82	3198 031 03920	3.9kΩ 5% 0402	3I9C	4822 051 30102	4 x jumper ARV341
3E29	4822 117 13597	330Ω 5% 0402 0.01W	3I83	4822 117 13545	100Ω 1% 0402	3I9D	4822 051 30102	4 x jumper ARV341
3E30	4822 117 13545	100Ω 1% 0402	3I84	4822 051 30759	75Ω 5% 0.062W	3I9E	4822 051 30102	4 x jumper ARV341
3E31	4822 117 13548	1kΩ 5% 0402	3I85	4822 117 13545	100Ω 1% 0402	3I9F	4822 051 30102	4 x jumper ARV341
3E32	4822 117 13545	100Ω 1% 0402	3I86	4822 051 30759	75Ω 5% 0.062W	3I9G	4822 051 30102	4 x jumper ARV341
3E33	4822 117 13545	100Ω 1% 0402	3I87	4822 117 13545	100Ω 1% 0402	3I9H	4822 051 30102	4 x jumper ARV341
3E34	4822 117 13597	330Ω 5% 0402 0.01W	3I88	4822 051 30759	75Ω 5% 0.062W	3I9I	4822 051 30102	4 x jumper ARV341
3E35	4822 117 13597	330Ω 5% 0402 0.01W	3I89	4822 051 30151	150Ω 5% 0.062W	3I9J	4822 051 30102	4 x jumper ARV341
3E36	4822 117 13545	100Ω 1% 0402	3I90	4822 051 30101	100Ω 5% 0.062W	3I9K	4822 051 30102	4 x jumper ARV341
3E37	4822 117 13548	1kΩ 5% 0402	3I91	4822 051 30151	150Ω 5% 0.062W	3I9L	4822 051 30102	4 x jumper ARV341
3E38	4822 117 13545	100Ω 1% 0402	3I92	4822 051 30101	100Ω 5% 0.062W	3I9M	4822 051 30102	4 x jumper ARV341
3E39	4822 117 13597	330Ω 5% 0402 0.01W	3I98	4822 117 11297	100kΩ 5% 0.1W	3I9N	4822 051 30102	4 x jumper ARV341
3E40	4822 117 13545	100Ω 1% 0402	3I9A	4822 117 11297	100kΩ 5% 0.1W	3I9O	4822 051 30102	4 x jumper ARV341
3E41	3198 031 14710	4 x 470Ω 5% 1206	3I9B	4822 051 30101	100Ω 5% 0.062W	3I9P	4822 051 30102	4 x jumper ARV341
3E42	3198 031 14710	4 x 470Ω 5% 1206	3I9C	4822 117 13601	22kΩ 5% 0402	3I9Q	4822 051 30102	4 x jumper ARV341
3E43	3198 031 14710	4 x 470Ω 5% 1206	3I9D	4822 117 13548	1kΩ 5% 0402	3I9R	4822 051 30102	4 x jumper ARV341
3E44	3198 031 14710	4 x 470Ω 5% 1206	3I9E	4822 117 13548	1kΩ 5% 0402	3I9S	4822 051 30102	4 x jumper ARV341
3E45	4822 117 13597	330Ω 5% 0402 0.01W	3I9F	4822 051 30102	1kΩ 5% 0.062W	3I9T	4822 051 30102	4 x jumper ARV341
3E50	4822 117 13606	10kΩ 5% 0.01W 0402	3I9G	4822 051 30102	1kΩ 5% 0.062W	3I9U	4822 051 30102	4 x jumper ARV341
3E51	4822 117 13606	10kΩ 5% 0.01W 0402	3I9H	4822 117 12925	47kΩ 1% 0.063W 0603	3I9V	4822 051 30102	4 x jumper ARV341
3E52	4822 117 13606	10kΩ 5% 0.01W 0402	3I9I	4822 051 30101	100Ω 5% 0.062W	3I9W	4822 051 30102	4 x jumper ARV341
3E53	4822 117 13606	10kΩ 5% 0.01W 0402	3I9J	4822 051 30223	22kΩ 5% 0.062W	3I9X	4822 051 30102	4 x jumper ARV341
3E55	4822 117 13606	10kΩ 5% 0.01W 0402	3I9K	4822 051 30103	10kΩ 5% 0.062W	3I9Y	4822 051 30102	4 x jumper ARV341
3E56	4822 117 13603	33kΩ 5% 0402	3I9L	4822 117 12925	47kΩ 1% 0.063W 0603	3I9Z	4822 051 30102	4 x jumper ARV341
3E57	4822 117 11297	100kΩ 5% 0.1W	3I9M	4822 117 13574	1.5Ω 5% 1206	3I9A	4822 051 30102	4 x jumper ARV341
3E60	4822 117 13606	10kΩ 5% 0.01W 0402	3I9N	4822 117 13601	22kΩ 5% 0402	3I9B		

3U17	4822 117 13608	4.7Ω 5% 0.603 0.62W	9763	4822 051 30008	Jumper 0603	5401	3198 018 56880	6.8μH 10% 0603
3U18	5322 117 13018	1kΩ 1% 0.063W 0603	9764	4822 051 30008	Jumper 0603	5403	2422 549 44461	Trimmer 40MHz 5CCCE
3U19	4822 051 30472	4.7kΩ 5% 0.062W	9765	4822 051 30008	Jumper 0603	5404	2422 535 95427	Bead 120Ω at 100MHz
3U20	5322 117 13018	1kΩ 1% 0.063W 0603	9766	4822 051 30008	Jumper 0603	5405	2422 535 95427	Bead 120Ω at 100MHz
3U21	4822 117 12925	47kΩ 1% 0.063W 0603	9772	4822 051 30008	Jumper 0603	5406	3198 018 52280	2.2μH 10% 0603
3U22	4822 051 30271	270Ω 5% 0.062W	9A00	4822 117 13605	Jumper 0402	5408	2422 549 44983	Trimmer 78MHz 5CCB
3U23	4822 051 30121	120Ω 5% 0.062W	9A01	4822 117 13605	Jumper 0402	5411	3198 018 32770	0.27μH 10% 0805
3U24	4822 051 30223	22kΩ 5% 0.062W	9A04	4822 117 13605	Jumper 0402	5415	4822 157 11716	Bead 30Ω at 100MHz
3U25	4822 117 12891	220kΩ 1% 0.063W 0603	9A05	4822 117 13605	Jumper 0402	5416	4822 157 11716	Bead 30Ω at 100MHz
3U26	4822 051 30223	22kΩ 5% 0.062W	9A06	4822 117 13605	Jumper 0402	5700	4822 157 11716	Bead 30Ω at 100MHz
3U27	4822 051 30223	22kΩ 5% 0.062W	9A09	4822 051 20008	Jumper 0805	5701	4822 157 11716	Bead 30Ω at 100MHz
3U28	4822 117 12925	47kΩ 1% 0.063W 0603	9C02	4822 051 30008	Jumper 0603	5702	4822 157 11716	Bead 30Ω at 100MHz
3U29	4822 051 30109	120Ω 5% 0.062W	9D55	4822 051 30008	Jumper 0603	5703	4822 157 71206	Bead 600Ω at 100MHz
3U30	4822 051 20121	120Ω 5% 0.1W	9E54	4822 117 13605	Jumper 0402	5706	4822 157 11716	Bead 30Ω at 100MHz
3U31	4822 051 20121	120Ω 5% 0.1W	9I00	4822 117 13605	Jumper 0402	5707	4822 157 11716	Bead 30Ω at 100MHz
3U32	4822 051 30183	18kΩ 5% 0.062W	9I02	4822 117 13605	Jumper 0402	5710	4822 157 11716	Bead 30Ω at 100MHz
3U33	4822 051 30103	10kΩ 5% 0.062W	9I05	4822 051 30008	Jumper 0603	5711	4822 157 11716	Bead 30Ω at 100MHz
3U34	4822 051 30334	330kΩ 5% 0.062W	9I06	4822 051 30008	Jumper 0603	5712	4822 156 21729	Bead 1kΩ at 100MHz
3U35	4822 051 30103	10kΩ 5% 0.062W	9I13	4822 051 30008	Jumper 0603	5713	4822 157 11716	Bead 30Ω at 100MHz
3U36	4822 051 30222	2.2kΩ 5% 0.062W	9I32	4822 117 13605	Jumper 0402	5714	4822 157 71206	Bead 600Ω at 100MHz
3U37	4822 051 30223	22kΩ 5% 0.062W	9I33	4822 117 13605	Jumper 0402	5715	4822 157 11716	Bead 30Ω at 100MHz
3U38	4822 051 30222	2.2kΩ 5% 0.062W	9I34	4822 117 13605	Jumper 0402	5716	4822 156 21729	Bead 1kΩ at 100MHz
3U39	4822 051 30223	22kΩ 5% 0.062W	9I35	4822 117 13605	Jumper 0402	5717	4822 156 21729	Bead 1kΩ at 100MHz
3U40	4822 051 30154	150kΩ 5% 0.062W	9I36	4822 117 13605	Jumper 0402	5718	4822 157 11716	Bead 30Ω at 100MHz
3U41	4822 051 30102	1kΩ 5% 0.062W	9I37	4822 117 13605	Jumper 0402	5719	4822 156 21729	Bead 1kΩ at 100MHz
3U42	4822 051 30103	10kΩ 5% 0.062W	9I39	4822 117 13605	Jumper 0402	5720	4822 157 11876	6.8μH 10% 0805
3U43	4822 051 30223	22kΩ 5% 0.062W	9I41	4822 117 13605	Jumper 0402	5721	4822 157 11716	Bead 30Ω at 100MHz
3U44	4822 051 30105	1MΩ 5% 0.062W	9I48	4822 117 13605	Jumper 0402	5722	4822 157 11716	Bead 30Ω at 100MHz
3U45	4822 051 30105	1MΩ 5% 0.062W	9I49	4822 117 13605	Jumper 0402	5724	4822 156 21729	Bead 1kΩ at 100MHz
3U46	5322 117 13029	47kΩ 1% 0.063W 0603	9I77	4822 117 13605	Jumper 0402	5725	4822 157 11716	Bead 30Ω at 100MHz
3U51	4822 051 30339	33Ω 5% 0.062W	9I79	4822 117 13605	Jumper 0402	5726	4822 156 21729	Bead 1kΩ at 100MHz
3U52	4822 051 30102	1kΩ 5% 0.062W	9I81	4822 117 13605	Jumper 0402	5727	4822 156 21729	Bead 1kΩ at 100MHz
3U53	4822 051 30183	18kΩ 5% 0.062W	9I82	4822 117 13605	Jumper 0402	5728	4822 157 11716	Bead 30Ω at 100MHz
3U54	4822 051 30101	100Ω 5% 0.062W	9I89	4822 117 13605	Jumper 0402	5729	4822 157 11716	Bead 30Ω at 100MHz
3U55	4822 051 30102	1kΩ 5% 0.062W	9IB0	4822 117 13605	Jumper 0402	5731	4822 156 21729	Bead 1kΩ at 100MHz
3V03	4822 117 13546	47Ω 5% 0402	9IC1	4822 117 13605	Jumper 0402	5736	4822 157 11876	6.8μH 10% 0805
3V04	4822 117 13546	47Ω 5% 0402	9IC2	4822 117 13605	Jumper 0402	5737	4822 156 21729	Bead 1kΩ at 100MHz
3V05	4822 117 13546	47Ω 5% 0402	9IC3	4822 117 13605	Jumper 0402	5742	4822 157 11716	Bead 30Ω at 100MHz
3V06	4822 117 13545	100Ω 1% 0402	9L04	4822 051 30008	Jumper 0603	5743	4822 157 11716	Bead 30Ω at 100MHz
3V07	3198 031 04720	4.7kΩ 5% 0402	9L05	4822 051 30008	Jumper 0603	5744	4822 157 11716	Bead 30Ω at 100MHz
3V08	4822 117 13548	1kΩ 5% 0402	9P69	4822 117 13605	Jumper 0402	5746	4822 157 11716	Bead 30Ω at 100MHz
3V09	4822 117 13545	100Ω 1% 0402	9P70	4822 117 13605	Jumper 0402	5747	4822 157 11716	Bead 30Ω at 100MHz
3V10	4822 117 13545	100Ω 1% 0402	9P71	4822 117 13605	Jumper 0402	5748	4822 157 11716	Bead 30Ω at 100MHz
3V11	4822 117 13545	100Ω 1% 0402	9S01	4822 051 30008	Jumper 0603	5750	4822 157 11716	Bead 30Ω at 100MHz
3V12	4822 117 13545	100Ω 1% 0402	9S02	4822 051 30008	Jumper 0603	5751	4822 157 11716	Bead 30Ω at 100MHz
3V14	4822 117 13546	47Ω 5% 0402	9S03	4822 051 30008	Jumper 0603	5752	4822 157 11716	Bead 30Ω at 100MHz
3V15	4822 117 13546	47Ω 5% 0402	9S04	4822 051 30008	Jumper 0603	5753	4822 157 11716	Bead 30Ω at 100MHz
3V16	4822 117 13546	47Ω 5% 0402	9S05	4822 051 30008	Jumper 0603	5754	4822 157 11716	Bead 30Ω at 100MHz
3V17	3198 031 04720	4.7kΩ 5% 0402	9S06	4822 051 30008	Jumper 0603	5755	4822 157 11716	Bead 30Ω at 100MHz
3Y00	3198 031 01530	15kΩ 5% 0.01W 0402	9S07	4822 051 30008	Jumper 0603	5756	4822 157 11716	Bead 30Ω at 100MHz
3Y01	3198 031 03320	3.3kΩ 5% 0402	9S08	4822 051 30008	Jumper 0603	5757	4822 157 11716	Bead 30Ω at 100MHz
3Y02	4822 117 13606	10kΩ 5% 0.01W 0402	9S09	4822 051 30008	Jumper 0603	5A00	4822 157 11716	Bead 30Ω at 100MHz
3Y03	4822 117 11151	1Ω 5%	9S11	4822 051 30008	Jumper 0603	5A01	4822 157 11716	Bead 30Ω at 100MHz
3Y04	4822 117 11151	1Ω 5%	9S12	4822 051 30008	Jumper 0603	5A03	4822 157 11716	Bead 30Ω at 100MHz
3Y05	4822 117 13606	10kΩ 5% 0.01W 0402	9S13	4822 051 30008	Jumper 0603	5A06	4822 157 11716	Bead 30Ω at 100MHz
3Y06	4822 117 13545	100Ω 1% 0402	9S14	4822 051 30008	Jumper 0603	5A17	2422 549 43769	Bead 30Ω at 100MHz
3Y07	4822 117 13546	47Ω 5% 0402	9S15	4822 051 30008	Jumper 0603	5A18	2422 549 43769	Bead 30Ω at 100MHz
9001	4822 051 30008	Jumper 0603	9S16	4822 051 30008	Jumper 0603	5A19	4822 157 11828	22μH 20% 0805
9002	4822 051 30008	Jumper 0603	9S17	4822 051 30008	Jumper 0603	5A20	2322 734 63309	33Ω 1% 0.1W 0805
9010	4822 051 30008	Jumper 0603	9S18	4822 051 30008	Jumper 0603	5A21	2322 734 63309	33Ω 1% 0.1W 0805
9011	4822 051 30008	Jumper 0603	9S19	4822 051 30008	Jumper 0603	5D51	4822 157 11716	Bead 30Ω at 100MHz
9012	4822 051 30008	Jumper 0603	9S20	4822 051 30008	Jumper 0603	5D52	4822 157 11716	Bead 30Ω at 100MHz
9013	4822 051 30008	Jumper 0603	9S21	4822 051 30008	Jumper 0603	5D54	4822 157 11716	Bead 30Ω at 100MHz
9016	4822 051 30008	Jumper 0603	9S22	4822 051 30008	Jumper 0603	5D56	4822 156 21729	Bead 1kΩ at 100MHz
9019	4822 051 30008	Jumper 0603	9S23	4822 051 30008	Jumper 0603	5E00	2422 549 42896	Bead 120Ω at 100MHz
9020	4822 051 30008	Jumper 0603	9S24	5322 117 13049	470Ω 1% 0.063W 0603	5E01	2422 549 42896	Bead 120Ω at 100MHz
9318	4822 051 30008	Jumper 0603	9S25	4822 051 30008	Jumper 0603	5E02	2422 549 42896	Bead 120Ω at 100MHz
9322	4822 051 30008	Jumper 0603	9S26	4822 051 30008	Jumper 0603	5E03	2422 549 42896	Bead 120Ω at 100MHz
9406	4822 051 30008	Jumper 0603	9S27	4822 051 30008	Jumper 0603	5E04	2422 549 42896	Bead 120Ω at 100MHz
9410	4822 051 30008	Jumper 0603	9S28	4822 051 30008	Jumper 0603	5E05	2422 549 42896	Bead 120Ω at 100MHz
9413	4822 051 30008	Jumper 0603	9S29	4822 051 30008	Jumper 0603	5E08	4822 157 11716	Bead 30Ω at 100MHz
9416	4822 051 30008	Jumper 0603	9S30	4822 051 30008	Jumper 0603	5E50	2422 549 43062	Bead 600Ω at 100MHz
9417	4822 051 30008	Jumper 0603	9S31	4822 051 30008	Jumper 0603	5E51	2422 549 43062	Bead 600Ω at 100MHz
9418	4822 051 30008	Jumper 0603	9S32	4822 051 30008	Jumper 0603	5E53	2422 535 94134	10μH 20% 0805
9419	4822 051 30008	Jumper 0603	9S33	4822 051 30008	Jumper 0603	5E56	2422 549 43062	Bead 600Ω at 100MHz
9420	4822 051 30008	Jumper 0603	9S34	4822 051 30008	Jumper 0603	5E57	2422 549 43062	Bead 600Ω at 100MHz
9702	4822 051 30008	Jumper 0603	9S35	4822 051 30008	Jumper 0603	5E58	2422 549 43062	Bead 600Ω at 100MHz
9703	4822 051 30008	Jumper 0603	9S36	4822 051 30008	Jumper 0603	5L02	3198 018 51080	1μH 10% 0603
9708	4822 051 30008	Jumper 0603	9S37	4822 051 30008	Jumper 0603	5L04	3198 018 54770	0.47μF 10% 0603
9712	4822 051 30008	Jumper 0603	9S38	4822 051 30008	Jumper 0603	5L06	3198 018 51080	1μH 10% 0603
9714	4822 051 30008	Jumper 0603	9S65	4822 051 30008	Jumper 0603	5L07	4822 157 11716	Bead 30Ω at 100MHz
9716	4822 051 30008	Jumper 0603	9T01	4822 051 30223	22kΩ 5% 0.062W	5L08	4822 157 11716	Bead 30Ω at 100MHz
9717	4822 051 30008	Jumper 0603	9T04	4822 051 30008	Jumper 0603	5L09	4822 157 11716	Bead 30Ω at 100MHz
9721	4822 051 30008	Jumper 0603	9T07	4822 051 30008	Jumper 0603	5L10	4822 157 11716	Bead 30Ω at 100MHz
9723	4822 051 30008	Jumper 0603	9T08	4822 051 30008	Jumper 0603	5L11	4822 157 11716	Bead 30Ω at 100MHz
9725	4822 051 30008	Jumper 0603	9T11	4822 051 30008	Jumper 0603	5L12	4822 157 11716	Bead 30Ω at 100MHz
9727	4822 051 30008	Jumper 0603	9T12	4822 051 30008	Jumper 0603	5L13	4822 156 21729	Bead 1kΩ at 100MHz
9728	4822 051 30008	Jumper 0603	9T13	4822 051 30008	Jumper 0603	5L14	4822 156 21729	Bead 1kΩ at 100MHz
9729	4822 051 30008	Jumper 0603	9T14	4822 051 20008	Jumper 0805	5L15	4822 156 21729	Bead 1kΩ at 100MHz
9744	4822 051 30008	Jumper 0603	9T15	4822 051 30008	Jumper 0603	5L16	4822 117 10353	150Ω 1% 0.1W
9747	4822 051 30008	Jumper 0603						
9760	4822 051 30008	Jumper 0603						
9761	4822 051 30008	Jumper 0603						

5L17	4822 117 10353	150Ω 1% 0.1W
5L18	4822 117 10353	150Ω 1% 0.1W
5L21	4822 156 21729	Bead 1kΩ at 100MHz
5P51	4822 157 11716	Bead 30Ω at 100MHz
5S01	4822 157 11716	Bead 30Ω at 100MHz
5S02	4822 157 11716	Bead 30Ω at 100MHz
5S03	4822 157 11716	Bead 30Ω at 100MHz
5S04	4822 157 11716	Bead 30Ω at 100MHz
5S05	4822 157 11716	Bead 30Ω at 100MHz
5S06	4822 051 30008	Jumper 0603
5S07	4822 051 30008	Jumper 0603
5S08	4822 051 30008	Jumper 0603
5T02	2422 535 94134	10μH 20% 0805
5U01	3104 308 20661	Transformer BD13118-02
5U02	2422 535 94134	10μH 20% 0805
5U03	4822 157 11716	Bead 30Ω at 100MHz
5U04	4822 157 11716	Bead 30Ω at 100MHz
5U05	2422 535 94134	10μH 20% 0805
5U06	2422 535 94134	10μH 20% 0805
5V06	3198 018 90050	Bead 1kΩ at 100MHz
5V07	3198 018 90050	Bead 1kΩ at 100MHz
5V08	3198 018 90050	Bead 1kΩ at 100MHz
5Y01	2422 549 45325	Bead 67Ω at 100MHz
5Y02	2422 549 45325	Bead 67Ω at 100MHz
5Y03	2422 549 45325	Bead 67Ω at 100MHz
5Y04	2422 549 45325	Bead 67Ω at 100MHz
5Y05	2422 549 45325	Bead 67Ω at 100MHz



6001	4822 130 80622	BAT54
6002	4822 130 11397	BAS316
6003	4822 130 80622	BAT54
6004	4822 130 80622	BAT54
6005	4822 130 11422	PLVA2650A
6403	9340 552 30115	BA591
6830	4822 130 11397	BAS316
6831	4822 130 11397	BAS316
6832	4822 130 11397	BAS316
6833	4822 130 11397	BAS316
6834	4822 130 11397	BAS316
6835	4822 130 11397	BAS316
6836	4822 130 11397	BAS316
6837	4822 130 11397	BAS316
6838	4822 130 11397	BAS316
6839	4822 130 11397	BAS316
6840	4822 130 11397	BAS316
6841	4822 130 11397	BAS316
6842	4822 130 11397	BAS316
6843	4822 130 11397	BAS316
6844	4822 130 11397	BAS316
6845	4822 130 11397	BAS316
6846	4822 130 11397	BAS316
6847	4822 130 11397	BAS316
6A00	4822 130 11551	UDZ510B
6A01	4822 130 10838	UDZ3.3B
6A02	4822 130 11397	BAS316
6D53	9340 553 52115	BAS321
6D54	9340 553 52115	BAS321
6D55	9340 553 52115	BAS321
6D56	9340 553 52115	BAS321
6D57	4822 130 11423	PLVA2656A
6D58	4822 130 11423	PLVA2656A
6D59	4822 130 11423	PLVA2656A
6D60	4822 130 11423	PLVA2656A
6D61	4822 130 11423	PLVA2656A
6D62	4822 130 11564	UDZ3.9B
6D63	4822 130 11397	BAS316
6D64	4822 130 11397	BAS316
6E54	4822 130 11397	BAS316
6E55	4822 130 11397	BAS316
6I10	4822 130 11416	PDZ6.8B
6I11	4822 130 11416	PDZ6.8B
6I12	4822 130 11416	PDZ6.8B
6I13	4822 130 11416	PDZ6.8B
6I14	9340 548 61115	PDZ12B
6I15	4822 130 11416	PDZ6.8B
6I16	4822 130 11416	PDZ6.8B
6I17	4822 130 11416	PDZ6.8B
6I18	4822 130 11416	PDZ6.8B
6I19	4822 130 11416	PDZ6.8B
6I20	9340 548 61115	PDZ12B
6I21	4822 130 11416	PDZ6.8B
6I22	4822 130 11416	PDZ6.8B
6I23	4822 130 11416	PDZ6.8B
6I24	4822 130 11416	PDZ6.8B
6I25	4822 130 11416	PDZ6.8B
6I26	4822 130 11416	PDZ6.8B
6I27	4822 130 11416	PDZ6.8B
6I28	4822 130 11416	PDZ6.8B
6I29	4822 130 11416	PDZ6.8B
6I30	4822 130 11416	PDZ6.8B
6I31	4822 130 11416	PDZ6.8B

6I32	4822 130 11416	PDZ6.8B
6I33	4822 130 11416	PDZ6.8B
6I34	4822 130 11416	PDZ6.8B
6I35	4822 130 11416	PDZ6.8B
6I36	4822 130 11416	PDZ6.8B
6I37	4822 130 11416	PDZ6.8B
6I38	4822 130 11416	PDZ6.8B
6I39	4822 130 11416	PDZ6.8B
6I40	4822 130 11416	PDZ6.8B
6I41	4822 130 11416	PDZ6.8B
6I42	4822 130 11416	PDZ6.8B
6I43	4822 130 11416	PDZ6.8B
6I44	4822 130 11416	PDZ6.8B
6I45	4822 130 11416	PDZ6.8B
6I46	4822 130 11416	PDZ6.8B
6I47	4822 130 11416	PDZ6.8B
6I48	4822 130 11416	PDZ6.8B
6I49	9340 548 61115	PDZ12B
6I50	4822 130 11416	PDZ6.8B
6I51	4822 130 11416	PDZ6.8B
6I52	4822 130 11416	PDZ6.8B
6I53	4822 130 11416	PDZ6.8B
6I54	4822 130 11416	PDZ6.8B
6I55	4822 130 11416	PDZ6.8B
6I56	4822 130 11416	PDZ6.8B
6I59	4822 130 11416	PDZ6.8B
6I70	4822 130 11416	PDZ6.8B
6I90	4822 130 11416	PDZ6.8B
6I91	4822 130 11416	PDZ6.8B
6I92	4822 130 11416	PDZ6.8B
6I93	4822 130 11416	PDZ6.8B
6I94	4822 130 11416	PDZ6.8B
6I95	4822 130 11416	PDZ6.8B
6I96	4822 130 11416	PDZ6.8B
6I97	4822 130 11416	PDZ6.8B
6I98	4822 130 11416	PDZ6.8B
6I99	4822 130 11416	PDZ6.8B
6IA0	9340 548 61115	PDZ12B
6IA6	4822 130 11397	BAS316
6IA7	4822 130 11397	BAS316
6T01	4822 130 11397	BAS316
6T03	4822 130 11397	BAS316
6T08	9340 548 71115	PDZ33B
6U01	4822 130 11397	BAS316
6U03	4822 130 11397	BAS316
6U04	4822 130 11397	BAS316
6U05	9340 548 61115	PDZ12B
6U06	9322 184 73668	1SMA5915B
6U07	4822 130 11416	PDZ6.8B
6U08	4822 130 80622	BAT54
6U09	4822 130 80622	BAT54
6U10	4822 130 11522	UDZ15B
6U11	4822 130 11397	BAS316
6U12	9340 548 52115	PDZ5.1B
6U13	9340 548 58115	PDZ9.1B
6U14	4822 130 11397	BAS316
6U15	4822 130 11397	BAS316
6V01	4822 130 11397	BAS316
6V02	4822 130 11397	BAS316
6V03	4822 130 11397	BAS316
6Y00	9340 548 61115	PDZ12B



7001	9352 684 81557	SAAS801H/015
7002	3198 010 42320	BC857BW
7003	3198 010 42310	BC847BW
7004	3198 010 42310	BC847BW
7005	9322 172 45668	LF33ABDT
7007	9322 157 20668	MSM51V18165F-60J
7008	3198 010 42310	BC847BW
7009	3198 010 42310	BC847BW
7010	3198 010 42320	BC857BW
7011	9322 156 81668	M24C32-WMN6TNKSA
7012	9322 156 72668	M29W400BT-90N1
7013	3198 010 42310	BC847BW
7014	3198 010 42320	BC857BW
7017	4822 130 10255	MUN2213
7018	9352 115 40118	74LVC245APW
7019	9352 115 40118	74LVC245APW
7020	3198 010 42310	BC847BW
7066	3104 317 45061	Software (check Prod.Surv.)
7067	3104 317 04831	Software (Check prod.Surv.)
7307	9352 630 99118	TDA9181T
7320	3198 010 42310	BC847BW
7322	3198 010 42310	BC847BW
7323	9352 625 24518	TDA9321H/N2
7402	3198 010 42310	BC847BW
7403	5322 130 60159	BC846B
7407	4822 130 60373	BC856B
7410	3198 010 42310	BC847BW

7411	5322 130 60159	BC846B
7414	3198 010 42310	BC847BW
7415	3198 010 42310	BC847BW
7706	9322 142 88668	LF25CDT
7707	5322 130 60159	BC846B
7708	5322 130 60159	BC846B
7709	5322 130 60159	BC846B
7710	5322 130 60159	BC846B
7711	2422 486 80938	Socket 32p f
7712	9351 870 00118	74HC573PW
7713	9352 688 09557	SAA4978H/V204
7714	9965 000 02179	MS81V04160-25TB
7715	4822 209 73852	PMBT2369
7717	9322 183 81668	MSM54V12222B-25JS
7718	9352 695 58557	SAA4993H/V1
7719	9322 183 81668	MSM54V12222B-25JS
7722	9965 000 02179	MS81V04160-25TB
7723	9965 000 02179	MS81V04160-25TB
7724	9322 188 08702	T8F24EF-0002 EAGLE
7725	4822 209 73852	PMBT2369
7727	9322 170 14668	LF15ABDT
7740	9352 687 20125	74LVC1G125GW
7741	9352 687 20125	74LVC1G125GW
7742	9352 115 40118	74LVC245APW
7743	9352 115 40118	74LVC245APW
7744	9352 115 40118	74LVC245APW
7745	9352 115 40118	74LVC245APW
7746	9322 190 24668	CY2302SC-1
7747	9352 687 21165	74LVC1G126GW
7748	9352 687 20125	74LVC1G125GW
7999	3104 317 45141	Software FBX(check Prod. Surv.)
7999	3104 317 45331	Software FBX (Check Prod Serv)
7A00	4822 209 30095	LM833D
7A01	3198 010 42310	BC847BW
7A02	9322 196 03702	MSP3411G-QI-B8V3
7A03	4822 209 30095	LM833D
7A07	9322 183 05668	TS482ID
7A08	4822 130 60373	BC856B
7A09	4822 130 60373	BC856B
7A10	9340 425 20115	BC847BS
7D51	4822 209 12776	TDA8601T/C1
7D52	4822 130 62755	BF570
7D53	4822 130 62755	BF570
7D54	4822 130 62755	BF570
7D55	4822 130 62755	BF570
7D57	9322 131 22668	TSH95D
7E02	9322 196 51668	EPSC31S18
7E05	9322 170 14668	LF15ABDT
7E08	3198 010 42320	BC857BW
7E09	9322 195 65668	AD9066JR
7E10	9352 686 35118	PCA9515DP
7E12	9340 425 20115	BC847BS
7E13	3198 010 42320	BC857BW
7E14	3198 010 42310	BC847BW
7E16	9322 195 65668	AD9066JR
7E17	3198 010 42320	BC857BW
7E18	9322 146 75685	TS431L
7E19	3198 010 42310	BC847BW
7E20	3198 010 42320	BC857BW
7E21	3198 010 42310	BC847BW
7E22	3198 010 42310	BC847BW
7E23	3198 010 42320	BC857BW
7E24	9322 146 75685	TS431L
7I01	9340 425 20115	BC847BS
7I02	9340 425 20115	BC847BS
7I05	3198 010 42320	BC857BW
7I07	4822 130 60142	BC869
7I09	3198 010 42310	BC847BW
7I17	9322 116 87668	TEA6422D
7I20	9351 869 40118	74HC4053PW
7I22	9340 425 20115	BC847BS
7I32	9351 869 40118	74HC4053PW
7I35	3198 010 42310	BC847BW
7I36	3198 010 42310	BC847BW
7I37	3198 010 42320	BC857BW
7I38	3198 010 42320	BC857BW
7I44	9340 425 20115	BC847BS
7L01	9322 181 72671	AD9883AKST-110
7L02	4822 209 17398	LD1117DT33
7L03	4822 209 73852	PMBT2369
7P56	4822 209 17345	M62320FP
7S01	4822 130 10255	MUN2213
7S01	5322 130 60159	BC846B
7S02	4822 130 10255	MUN2213
7S02	5322 130 60159	BC846B
7S03	9340 425 20115	BC847BS
7S04	4822 130 10255	MUN2213
7U01	4822 130 60373	BC856B
7U02	4822 130 60373	BC856B
7U03	9322 091 04668	SI4410DY
7U04	9322 091 04668	SI4410DY
7U05	4822 130 60373	BC856B

7U06	9340 425 20115	BC847BS
7U07	3198 010 42320	BC857BW
7U08	4822 130 42804	BC817-25
7U09	4822 130 42804	BC817-25
7U10	5322 130 60159	BC846B
7U11	5322 130 60159	BC846B
7U12	5322 130 60159	BC846B
7U13	3198 010 42310	BC847BW
7V01	9322 196 44671	EP1C6Q240C8
7V02	9322 159 45668	DS90C385MTD
7Y00	9322 181 15668	IRFR9024N
7Y01	3198 010 42310	BC847BW

Small Signal Board (AB) [B]

Various

0036	3104 308 10601	Connector plate assy EU
0036	3104 308 11981	Connector plate assy AP
0067	3104 304 22841	FFC RELIEVE ON SHIELDING
0072	3104 301 24451	Frame SSB A-side
0073	3104 301 24461	Cover SSB A-side
0074	3104 301 24221	Cover SSB Z-side
0075	3104 301 24201	Frame SSB Z-side
0079	3104 308 11161	Shielding cover
0080	3104 301 24471	Frame SSB Z-side
0305	3104 304 23841	Xtal grommet
0308	3104 304 23841	Xtal grommet
0325	2422 034 21798	Screwlock
0603	3104 317 05161	Softw. (check Prod.Surv.)
1001	2422 543 89022	Xtal 6MHz 20p
1305	2422 543 01184	Xtal 4.433619MHz 20p
1308	2422 543 01183	Xtal 3.579545MHz 16p
1402	2422 127 00543	Switch 1p 2pos
1403	2422 086 11092	Fuse 500mA 50V F SMD
1407	2422 549 44324	Filt. 5.5/5.74MHz
1408	2422 549 44372	SAW 38.9MHz K3953L
1409	2422 549 44369	SAW 38.9MHz K9656L
1702	2422 540 98456	Resonator 12MHz
1A00	2422 543 89019	Xtal 18.432MHz 12p
1D01	2422 025 16984	Connector 15p f
1E02	2422 025 17274	Connector 10p m
1E04	2422 025 17103	Connector 3p m SMD
1I01	4822 267 10771	Socket 2 x SCART
1I04	4822 267 10771	Socket 2 x SCART
1I04	4822 267 60385	Connector 21p f
1I05	2422 026 05213	Soc CINCH 3p BkWhRd
1I07	2422 026 05501	Socket CINCH 6p f
1I19	4822 267 10748	Connector 3p
1I70	2422 025 16966	Connector 5p m SMD
1S20	2422 025 10771	Connector 10p m
1S36	2422 025 10655	Connector 11p m
1S43	2422 025 10768	Connector 3p m
1S46	4822 267 10637	Connector 5p
1S88	4822 265 11352	Connector 8p
1T01	3139 147 19341	Tuner UV1318S/A I-3
1U01▲	2422 086 11114	Fuse 1A T 125V
1Y01	2422 025 17706	Connector 20p m
1Y45	2422 025 17103	Connector 3p m SMD
1Y55	2422 025 17192	Connector 9p m
8190	3104 311 06181	Cable 2p3/80 inlet

—II—

2000	4822 124 12095	100µF 20% 16V
2001	4822 124 12095	100µF 20% 16V
2002	4822 126 11669	27pF 5% 50V 0603
2003	4822 126 13879	220nF +80-20% 16V
2004	4822 126 13879	220nF +80-20% 16V
2005	2238 586 59812	100nF 20% 50V 0603
2006	2238 586 59812	100nF 20% 50V 0603
2007	2238 586 59812	100nF 20% 50V 0603
2008	2238 586 59812	100nF 20% 50V 0603
2010	4822 126 11785	47pF 5% 50V 0603
2011	4822 126 11785	47pF 5% 50V 0603
2012	4822 126 11785	47pF 5% 50V 0603
2013	2020 021 91557	100µF 20% 16V
2016	4822 124 12095	100µF 20% 16V
2017	2238 586 59812	100nF 20% 50V 0603
2018	2222 867 15339	33pF 5% 50V 0603
2019	2238 586 59812	100nF 20% 50V 0603
2020	4822 126 13883	220pF 5% 50V
2022	2238 586 59812	100nF 20% 50V 0603
2023	2238 586 59812	100nF 20% 50V 0603
2024	2238 586 59812	100nF 20% 50V 0603
2025	2238 586 59812	100nF 20% 50V 0603
2026	2238 586 59812	100nF 20% 50V 0603
2027	2238 586 59812	100nF 20% 50V 0603
2028	2238 586 59812	100nF 20% 50V 0603
2029	2238 586 59812	100nF 20% 50V 0603

2031	2238 586 59812	100nF 20% 50V 0603
2033	4822 126 14226	82pF 5% 50V 0603
2034	4822 126 14226	82pF 5% 50V 0603
2035	4822 126 14226	82pF 5% 50V 0603
2036	4822 126 14226	82pF 5% 50V 0603
2037	4822 126 14226	82pF 5% 50V 0603
2038	2238 586 59812	100nF 20% 50V 0603
2039	2238 586 59812	100nF 20% 50V 0603
2040	2238 586 59812	100nF 20% 50V 0603
2063	3198 017 34730	47nF 16V 0603
2067	2238 586 59812	100nF 20% 50V 0603
2073	2238 586 59812	100nF 20% 50V 0603
2074	2238 586 59812	100nF 20% 50V 0603
2302	2238 586 59812	100nF 20% 50V 0603
2305	2238 586 59812	100nF 20% 50V 0603
2316	2238 586 59812	100nF 20% 50V 0603
2322	2238 586 59812	100nF 20% 50V 0603
2340	2020 021 91557	100µF 20% 16V
2350	2238 586 59812	100nF 20% 50V 0603
2351	2238 586 59812	100nF 20% 50V 0603
2352	2238 586 59812	100nF 20% 50V 0603
2353	2238 586 59812	100nF 20% 50V 0603
2354	2238 586 59812	100nF 20% 50V 0603
2356	2238 586 59812	100nF 20% 50V 0603
2357	2238 586 59812	100nF 20% 50V 0603
2358	5322 126 11579	3.3nF 10% 63V
2359	4822 122 33752	15pF 5% 50V
2360	3198 016 31280	1.2pF 0.25pF 50V 0603
2361	3198 016 31280	1.2pF 0.25pF 50V 0603
2362	4822 126 11663	12pF 5% 50V 0603
2365	2238 586 59812	100nF 20% 50V 0603
2366	2238 586 59812	100nF 20% 50V 0603
2367	2238 586 59812	100nF 20% 50V 0603
2368	2238 586 59812	100nF 20% 50V 0603
2369	2238 586 59812	100nF 20% 50V 0603
2370	2238 586 59812	100nF 20% 50V 0603
2371	4822 126 13193	4.7nF 10% 63V
2372	2022 552 05679	1µF 10% 16V 0805
2373	2238 586 59812	100nF 20% 50V 0603
2374	4822 126 14491	2.2µF 10V 0805
2375	2238 916 15641	22nF 10% 25V 0603
2376	2238 586 59812	100nF 20% 50V 0603
2377	2020 021 91557	100µF 20% 16V
2378	2238 586 59812	100nF 20% 50V 0603
2384	2238 586 59812	100nF 20% 50V 0603
2385	2238 586 59812	100nF 20% 50V 0603
2390	2238 586 59812	100nF 20% 50V 0603
2391	2238 586 59812	100nF 20% 50V 0603
2394	4822 126 14491	2.2µF 10V 0805
2403	2238 586 59812	100nF 20% 50V 0603
2404	2022 552 05615	2.2µF 10% 6.3V 0805
2404	2022 552 05679	1µF 10% 16V 0805
2405	4822 126 13193	4.7nF 10% 63V
2406	4822 126 13883	220pF 5% 50V
2407	4822 126 14221	68pF 5% 50V NPO 0603
2408	3198 016 33380	3.3pF 50V 0603
2409	4822 126 14491	2.2µF 10V 0805
2410	2020 021 91557	100nF 20% 50V 0603
2411	2238 586 59812	100nF 20% 50V 0603
2412	4822 126 13193	4.7nF 10% 63V
2414	2020 021 91557	100µF 20% 16V
2415	2238 586 59812	100nF 20% 50V 0603
2417	3198 017 44740	470nF 10V 0603
2418	3198 016 35680	5.6pF 0.5pF 50V 0603
2422	2238 586 59812	100nF 20% 50V 0603
2424	2238 586 59812	100nF 20% 50V 0603
2425	2020 021 91557	100µF 20% 16V
2432	2238 586 59812	100nF 20% 50V 0603
2433	2238 586 59812	100nF 20% 50V 0603
2709	2238 586 59812	100nF 20% 50V 0603
2710	2238 586 59812	100nF 20% 50V 0603
2711	2238 586 59812	100nF 20% 50V 0603
2712	2238 586 59812	100nF 20% 50V 0603
2713	4822 122 33761	22pF 5% 50V
2714	4822 122 33761	22pF 5% 50V
2715	2238 586 59812	100nF 20% 50V 0603
2716	2238 586 59812	100nF 20% 50V 0603
2718	4822 122 33752	15pF 5% 50V
2719	4822 122 33752	15pF 5% 50V
2720	4822 122 33752	15pF 5% 50V
2721	2020 552 94427	100pF 5% 50V
2722	2020 552 94427	100pF 5% 50V
2723	3198 016 31020	1nF 25V 0603
2724	2238 586 59812	100nF 20% 50V 0603
2728	2020 021 91554	100µF 20% 16V
2729	2238 586 59812	100nF 20% 50V 0603
2730	2020 021 91557	100µF 20% 16V
2731	2238 586 59812	100nF 20% 50V 0603
2732	2238 586 59812	100nF 20% 50V 0603
2733	2238 586 59812	100nF 20% 50V 0603
2734	2238 586 59812	100nF 20% 50V 0603
2735	2238 586 59812	100nF 20% 50V 0603
2740	2238 916 15641	22nF 10% 25V 0603
2741	2238 916 15641	22nF 10% 25V 0603
2742	2238 916 15641	22nF 10% 25V 0603
2743	2238 586 59812	100nF 20% 50V 0603
2744	2238 586 59812	100nF 20% 50V 0603
2745	2238 586 59812	100nF 20% 50V 0603
2746	2238 586 59812	100nF 20% 50V 0603
2747	2238 586 59812	100nF 20% 50V 0603
2748	2238 586 59812	100nF 20% 50V 0603
2749	2020 021 91554	10µF 20% 16V
2750	2238 586 59812	100nF 20% 50V 0603
2751	2238 586 59812	100nF 20% 50V 0603
2752	2238 586 59812	100nF 20% 50V 0603
2753	2238 586 59812	100nF 20% 50V 0603
2754	2238 586 59812	100nF 20% 50V 0603
2755	2238 586 59812	100nF 20% 50V 0603
2756	2238 586 59812	100nF 20% 50V 0603
2757	2238 916 15641	22nF 10% 25V 0603
2760	2238 586 59812	100nF 20% 50V 0603
2761	2238 586 59812	100nF 20% 50V 0603
2762	2238 586 59812	100nF 20% 50V 0603
2763	2238 586 59812	100nF 20% 50V 0603
2764	2238 586 59812	100nF 20% 50V 0603
2765	2238 586 59812	100nF 20% 50V 0603
2766	2238 586 59812	100nF 20% 50V 0603
2767	2238 586 59812	100nF 20% 50V 0603
2768	2238 586 59812	100nF 20% 50V 0603
2769	2238 586 59812	100nF 20% 50V 0603
2770	2020 021 91554	10µF 20% 16V
2771	2238 586 59812	100nF 20% 50V 0603
2772	2020 021 91557	100µF 20% 16V
2773	2238 586 59812	100nF 20% 50V 0603
2774	2238 586 59812	100nF 20% 50V 0603
2775	2238 586 59812	100nF 20% 50V 0603
2776	2238 586 59812	100nF 20% 50V 0603
2777	2238 586 59812	100nF 20% 50V 0603
2778	2238 586 59812	100nF 20% 50V 0603
2779	2238 586 59812	100nF 20% 50V 0603
2780	2238 586 59812	100nF 20% 50V 0603
2781	2238 586 59812	100nF 20% 50V 0603
2782	2238 586 59812	100nF 20% 50V 0603
2784	2238 586 59812	100nF 20% 50V 0603
2785	2238 586 59812	100nF 20% 50V 0603
2786	2238 586 59812	100nF 20% 50V 0603
2787	2238 586 59812	100nF 20% 50V 0603
2788	2238 586 59812	100nF 20% 50V 0603
2789	2238 586 59812	100nF 20% 50V 0603
2790	2238 586 59812	100nF 20% 50V 0603
2791	2238 586 59812	100nF 20% 50V 0603
2792	2020 021 91554	10µF 20% 16V
2793	2238 586 59812	100nF 20% 50V 0603
2794	2020 021 91554	10µF 20% 16V
2795	2238 586 59812	100nF 20% 50V 0603
2796	2238 586 59812	100nF 20% 50V 0603
2797	2238 586 59812	100nF 20% 50V 060

2851	2238 586 59812	100nF 20% 50V 0603	2A91	2022 552 05679	1µF 10% 16V 0805	2E63	2238 586 59812	100nF 20% 50V 0603
2852	2238 586 59812	100nF 20% 50V 0603	2A92	2022 552 05679	1µF 10% 16V 0805	2E64	2238 586 59812	100nF 20% 50V 0603
2853	2238 586 59812	100nF 20% 50V 0603	2A95	4822 126 13883	220pF 5% 50V	2E66	2238 586 59812	100nF 20% 50V 0603
2854	2238 586 59812	100nF 20% 50V 0603	2A99	2238 869 15101	100pF 5% 50V 0402	2E68	2022 552 05616	4.7µF 5% 6.3V
2855	2238 586 59812	100nF 20% 50V 0603	2AA0	2238 869 15101	100pF 5% 50V 0402	2E69	2238 586 59812	100nF 20% 50V 0603
2857	2238 586 59812	100nF 20% 50V 0603	2AA1	2238 869 15101	100pF 5% 50V 0402	2E70	2238 586 59812	100nF 20% 50V 0603
2858	4822 124 12095	100µF 20% 16V	2AA5	2238 869 15101	100pF 5% 50V 0402	2E71	2238 586 59812	100nF 20% 50V 0603
2859	2238 586 59812	100nF 20% 50V 0603	2AA6	2020 552 96618	1nF 10% 50V 0402	2E72	2238 586 59812	100nF 20% 50V 0603
2860	2238 586 59812	100nF 20% 50V 0603	2AA7	2020 552 96618	1nF 10% 50V 0402	2E73	2238 586 59812	100nF 20% 50V 0603
2861	2238 586 59812	100nF 20% 50V 0603	2AA8	2020 552 96618	1nF 10% 50V 0402	2E74	2238 586 59812	100nF 20% 50V 0603
2862	2238 586 59812	100nF 20% 50V 0603	2AA9	3198 016 35680	5.6pF 0.5pF 50V 0603	2E75	2238 586 59812	100nF 20% 50V 0603
2863	2238 586 59812	100nF 20% 50V 0603	2AB0	3198 016 35680	5.6pF 0.5pF 50V 0603	2E76	2238 586 59812	100nF 20% 50V 0603
2864	2238 586 59812	100nF 20% 50V 0603	2AB2	2020 552 96618	1nF 10% 50V 0402	2E78	2238 586 59812	100nF 20% 50V 0603
2865	2238 586 59812	100nF 20% 50V 0603	2AB3	2022 552 05679	1µF 10% 16V 0805	2E79	2238 586 59812	100nF 20% 50V 0603
2866	2238 586 59812	100nF 20% 50V 0603	2AB4	2022 552 05679	1µF 10% 16V 0805	2E80	2238 586 59812	100nF 20% 50V 0603
2867	2238 586 59812	100nF 20% 50V 0603	2AB5	2020 021 91554	10µF 20% 16V	2E83	2238 586 59812	100nF 20% 50V 0603
2870	2020 021 91554	10µF 20% 16V	2AB8	2022 552 05679	1µF 10% 16V 0805	2E84	2238 586 59812	100nF 20% 50V 0603
2871	2020 021 91557	100µF 20% 16V	2C00	2238 586 59812	100nF 20% 50V 0603	2E86	2238 586 59812	100nF 20% 50V 0603
2872	2238 586 59812	100nF 20% 50V 0603	2C01	2238 586 59812	100nF 20% 50V 0603	2E87	4822 124 12095	100µF 20% 16V
2874	2020 021 91554	10µF 20% 16V	2C02	2238 586 59812	100nF 20% 50V 0603	2E88	2238 869 15101	100pF 5% 50V 0402
2877	2020 021 91557	100µF 20% 16V	2D01	2238 869 15101	100pF 5% 50V 0402	2E89	2238 869 15101	100pF 5% 50V 0402
2880	2020 021 91554	10µF 20% 16V	2D03	2020 552 96618	1nF 10% 50V 0402	2E90	2238 869 15101	100pF 5% 50V 0402
2881	4822 126 11669	27pF 5% 50V 0603	2D04	2020 552 96618	1nF 10% 50V 0402	2E91	2238 869 15101	100pF 5% 50V 0402
2884	2238 586 59812	100nF 20% 50V 0603	2D09	2238 586 59812	100nF 20% 50V 0603	2E92	2238 869 15101	100pF 5% 50V 0402
2886	2238 586 59812	100nF 20% 50V 0603	2D10	2238 586 59812	100nF 20% 50V 0603	2E93	2238 869 15101	100pF 5% 50V 0402
2887	2238 586 59812	100nF 20% 50V 0603	2D11	2238 586 59812	100nF 20% 50V 0603	2E94	2238 869 15101	100pF 5% 50V 0402
2888	2238 586 59812	100nF 20% 50V 0603	2D12	2238 586 59812	100nF 20% 50V 0603	2E95	2238 869 15101	100pF 5% 50V 0402
2889	2238 586 59812	100nF 20% 50V 0603	2D22	2238 586 59812	100nF 20% 50V 0603	2E96	2238 869 15101	100pF 5% 50V 0402
2890	2238 586 59812	100nF 20% 50V 0603	2D50	4822 126 13879	220nF +80-20% 16V	2E97	2238 869 15101	100pF 5% 50V 0402
2891	2238 586 59812	100nF 20% 50V 0603	2D51	2238 586 59812	100nF 20% 50V 0603	2E98	2238 869 15101	100pF 5% 50V 0402
2892	2238 586 59812	100nF 20% 50V 0603	2D52	2238 586 59812	100nF 20% 50V 0603	2E99	2238 869 15101	100pF 5% 50V 0402
2893	2238 586 59812	100nF 20% 50V 0603	2D53	2022 552 05616	4.7µF 5% 6.3V	2I07	4822 051 30008	Jumper 0603
2894	2238 586 59812	100nF 20% 50V 0603	2D54	2022 552 05616	4.7µF 5% 6.3V	2I09	2020 552 94427	100pF 5% 50V
2895	2238 586 59812	100nF 20% 50V 0603	2D55	2022 552 05616	4.7µF 5% 6.3V	2I10	2020 552 94427	100pF 5% 50V
2896	2238 586 59812	100nF 20% 50V 0603	2D57	2238 586 59812	100nF 20% 50V 0603	2I11	2020 552 94427	100pF 5% 50V
2897	2238 586 59812	100nF 20% 50V 0603	2D58	2022 552 05616	4.7µF 5% 6.3V	2I12	4822 126 14241	330pF 0603 50V
2898	2238 586 59812	100nF 20% 50V 0603	2D59	2022 552 05616	4.7µF 5% 6.3V	2I13	2020 552 94427	100pF 5% 50V
2899	2238 586 59812	100nF 20% 50V 0603	2D60	2022 552 05616	4.7µF 5% 6.3V	2I14	2020 552 94427	100pF 5% 50V
2A00	2020 552 96618	1nF 10% 50V 0402	2D61	2022 552 05616	4.7µF 5% 6.3V	2I15	4822 126 14241	330pF 0603 50V
2A01	2020 021 91557	100µF 20% 16V	2D62	4822 126 13879	220nF +80-20% 16V	2I16	2020 552 94427	100pF 5% 50V
2A02	2022 552 05679	1µF 10% 16V 0805	2D63	2022 552 05616	4.7µF 5% 6.3V	2I17	2020 552 94427	100pF 5% 50V
2A03	2020 021 91557	100µF 20% 16V	2D64	2022 552 05616	4.7µF 5% 6.3V	2I18	2020 552 94427	100pF 5% 50V
2A04	2022 552 05679	1µF 10% 16V 0805	2D65	3198 032 47170	47µF 20% 16V	2I19	2020 552 94427	100pF 5% 50V
2A05	2020 021 91557	100µF 20% 16V	2D66	2238 586 59812	100nF 20% 50V 0603	2I20	4822 126 14241	330pF 0603 50V
2A06	2020 552 96618	1nF 10% 50V 0402	2D67	2238 586 59812	100nF 20% 50V 0603	2I21	2020 552 94427	100pF 5% 50V
2A07	2020 021 91557	100µF 20% 16V	2D68	2238 586 59812	100nF 20% 50V 0603	2I22	2020 552 94427	100pF 5% 50V
2A08	2022 552 05679	1µF 10% 16V 0805	2D69	3198 016 31020	1nF 25V 0603	2I23	2020 552 94427	100pF 5% 50V
2A10	2238 586 59812	100nF 20% 50V 0603	2D70	2238 586 59812	100nF 20% 50V 0603	2I24	2020 552 94427	100pF 5% 50V
2A11	2238 586 59812	100nF 20% 50V 0603	2D72	4822 126 11785	47pF 5% 50V 0603	2I25	4822 126 14241	330pF 0603 50V
2A13	2020 552 96618	1nF 10% 50V 0402	2D73	4822 126 11785	47pF 5% 50V 0603	2I26	2020 552 94427	100pF 5% 50V
2A14	2020 552 96618	1nF 10% 50V 0402	2D74	3198 032 47170	47µF 20% 16V	2I27	2020 552 94427	100pF 5% 50V
2A15	2020 021 91557	100µF 20% 16V	2D75	2238 586 59812	100nF 20% 50V 0603	2I36	2020 552 94427	100pF 5% 50V
2A16	2238 586 59812	100nF 20% 50V 0603	2D76	2022 552 05616	4.7µF 5% 6.3V	2I39	3198 024 44730	47nF 50V 0603
2A17	2020 552 96618	1nF 10% 50V 0402	2D77	2238 586 59812	100nF 20% 50V 0603	2I46	3198 016 31020	1nF 25V 0603
2A18	2020 021 91557	100µF 20% 16V	2D78	2238 586 59812	100nF 20% 50V 0603	2I47	3198 016 31020	1nF 25V 0603
2A19	3198 017 41050	1µF 10V 0603	2D80	2238 586 59812	100nF 20% 50V 0603	2I50	4822 126 13193	4.7nF 10% 63V
2A21	2238 586 59812	100nF 20% 50V 0603	2D81	2238 586 59812	100nF 20% 50V 0603	2I51	4822 126 13193	4.7nF 10% 63V
2A22	2238 586 59812	100nF 20% 50V 0603	2E02	4822 124 23237	22µF 6.3V	2I57	2020 552 94427	100pF 5% 50V
2A23	2238 586 59812	100nF 20% 50V 0603	2E04	3198 035 04710	470pF 50V 0402	2I58	2020 552 94427	100pF 5% 50V
2A26	2238 586 59812	100nF 20% 50V 0603	2E05	4822 124 23237	22µF 6.3V	2I71	2022 552 05679	1µF 10% 16V 0805
2A27	2020 552 96618	1nF 10% 50V 0402	2E09	4822 124 23237	22µF 6.3V	2I72	2022 552 05679	1µF 10% 16V 0805
2A29	2238 869 15101	100pF 5% 50V 0402	2E10	2238 586 59812	100nF 20% 50V 0603	2I73	2022 552 05679	1µF 10% 16V 0805
2A30	2238 869 15101	100pF 5% 50V 0402	2E11	4822 124 23237	22µF 6.3V	2I74	2022 552 05679	1µF 10% 16V 0805
2A31	2238 586 59812	100nF 20% 50V 0603	2E12	2022 552 05616	4.7µF 5% 6.3V	2I75	2022 552 05679	1µF 10% 16V 0805
2A32	2238 869 15101	100pF 5% 50V 0402	2E14	2238 586 59812	100nF 20% 50V 0603	2I76	2022 552 05679	1µF 10% 16V 0805
2A33	2238 586 59812	100nF 20% 50V 0603	2E15	2238 586 59812	100nF 20% 50V 0603	2I77	2022 552 05679	1µF 10% 16V 0805
2A34	2238 869 15101	100pF 5% 50V 0402	2E17	2022 552 05616	4.7µF 5% 6.3V	2I78	2022 552 05679	1µF 10% 16V 0805
2A35	2020 552 96618	1nF 10% 50V 0402	2E18	2022 552 05616	4.7µF 5% 6.3V	2I79	2020 021 91886	22µF 20% 16V
2A36	2238 869 15101	100pF 5% 50V 0402	2E19	2238 586 59812	100nF 20% 50V 0603	2I80	2022 552 05679	1µF 10% 16V 0805
2A37	2238 869 15101	100pF 5% 50V 0402	2E20	2238 586 59812	100nF 20% 50V 0603	2I81	2022 552 05679	1µF 10% 16V 0805
2A38	2238 869 15101	100pF 5% 50V 0402	2E21	2238 586 59812	100nF 20% 50V 0603	2I82	2022 552 05679	1µF 10% 16V 0805
2A40	2238 586 59812	100nF 20% 50V 0603	2E22	2022 552 05679	1µF 10% 16V 0805	2I83	2022 552 05679	1µF 10% 16V 0805
2A41	2020 021 91554	10µF 20% 16V	2E23	2238 586 59812	100nF 20% 50V 0603	2I84	2022 552 05679	1µF 10% 16V 0805
2A42	2020 021 91554	10µF 20% 16V	2E24	2238 586 59812	100nF 20% 50V 0603	2I85	2022 552 05679	1µF 10% 16V 0805
2A43	2020 021 91554	10µF 20% 16V	2E25	2238 586 59812	100nF 20% 50V 0603	2I99	2022 552 05679	1µF 10% 16V 0805
2A44	2238 586 59812	100nF 20% 50V 0603	2E26	2022 552 05616	4.7µF 5% 6.3V	2I A0	2022 552 05679	1µF 10% 16V 0805
2A46	2022 552 05679	1µF 10% 16V 0805	2E28	2238 586 59812	100nF 20% 50V 0603	2I A1	2022 552 05679	1µF 10% 16V 0805
2A47	2020 552 96618	1nF 10% 50V 0402	2E30	2022 552 05616	4.7µF 5% 6.3V	2I A2	2022 552 05679	1µF 10% 16V 0805
2A48	2020 552 96618	1nF 10% 50V 0402	2E35	2238 586 59812	100nF 20% 50V 0603	2I A4	2022 552 05679	1µF 10% 16V 0805
2A49	2022 552 05679	1µF 10% 16V 0805	2E37	4822 124 23237	22µF 6.3V	2I A5	2020 021 91557	100µF 20% 16V
2A50	2020 552 96618	1nF 10% 50V 0402	2E39	2022 552 05616	4.7µF 5% 6.3V	2I A7	2022 552 05679	1µF 1

2L02	3198 035 71040	100nF 10% 16V 0402	2U14	4822 126 13482	470nF +80%/-20% 16V	3055	3198 031 11010	4 x 100Ω 5% 1206
2L03	3198 035 71040	100nF 10% 16V 0402	2U15	4822 124 12095	100μF 20% 16V	3056	3198 031 11010	4 x 100Ω 5% 1206
2L04	3198 035 71040	100nF 10% 16V 0402	2U16	4822 126 13193	4.7nF 10% 63V	3057	3198 031 11010	4 x 100Ω 5% 1206
2L05	3198 035 71040	100nF 10% 16V 0402	2U17	4822 126 13482	470nF +80%/-20% 16V	3059	2322 704 66201	620Ω 1% 0603
2L06	3198 035 71040	100nF 10% 16V 0402	2U18	5322 122 33861	120pF 10% 50V	3061	3198 031 11010	4 x 100Ω 5% 1206
2L07	3198 035 71040	100nF 10% 16V 0402	2U19	2238 586 59812	100nF 20% 50V 0603	3062	4822 051 30103	10kΩ 5% 0.062W
2L08	3198 035 71040	100nF 10% 16V 0402	2U20	4822 126 14491	2.2μF 10V 0805	3064	3198 031 11010	4 x 100Ω 5% 1206
2L09	3198 035 71040	100nF 10% 16V 0402	2U21	4822 126 13482	470nF +80%/-20% 16V	3065	4822 051 30472	4.7Ω 5% 0.062W
2L10	3198 035 71040	100nF 10% 16V 0402	2U22	4822 126 14491	2.2μF 10V 0805	3066	4822 117 12925	47kΩ 1% 0.063W 0603
2L11	2238 586 59812	100nF 20% 50V 0603	2U23	4822 124 12095	100μF 20% 16V	3067	4822 051 30474	470kΩ 5% 0.062W
2L12	3198 035 71040	100nF 10% 16V 0402	2U24	5322 126 11578	1nF 10% 50V 0603	3069	4822 051 30222	2.2kΩ 5% 0.062W
2L13	3198 035 71040	100nF 10% 16V 0402	2U25	2238 586 59812	100nF 20% 50V 0603	3072	3198 031 11010	4 x 100Ω 5% 1206
2L14	3198 035 71040	100nF 10% 16V 0402	2U26	2238 586 59812	100nF 20% 50V 0603	3073	3198 031 14710	4 x 470Ω 5% 1206
2L15	3198 035 71040	100nF 10% 16V 0402	2U27	5322 126 11582	6.8nF 10% 63V	3074	3198 031 14710	4 x 470Ω 5% 1206
2L16	3198 035 71040	100nF 10% 16V 0402	2U28	5322 126 11582	6.8nF 10% 63V	3076	3198 031 14710	4 x 470Ω 5% 1206
2L17	3198 035 71040	100nF 10% 16V 0402	2U30	5322 122 33861	120pF 10% 50V	3077	4822 051 30103	10kΩ 5% 0.062W
2L18	2020 552 96305	4.7μF 20-80% 10V	2U31	4822 124 12095	100μF 20% 16V	3078	3198 031 14710	4 x 470Ω 5% 1206
2L19	4822 124 23002	10μF 16V	2U32	5322 126 11579	3.3nF 10% 63V	3079	4822 051 30222	2.2kΩ 5% 0.062W
2L20	3198 035 71040	100nF 10% 16V 0402	2U33	4822 126 14491	2.2μF 10V 0805	3080	4822 051 30472	4.7Ω 5% 0.062W
2L21	3198 035 71040	100nF 10% 16V 0402	2U34	2238 916 15641	22nF 10% 25V 0603	3081	4822 051 30471	47Ω 5% 0.062W
2L22	5322 126 11583	10nF 10% 50V 0603	2U35	2022 552 05679	1μF 10% 16V 0805	3082	3198 031 11010	4 x 100Ω 5% 1206
2L23	5322 126 11583	10nF 10% 50V 0603	2V05	2238 869 15109	10pF 5% 50V 0402	3083	3198 031 11010	4 x 100Ω 5% 1206
2L24	5322 126 11583	10nF 10% 50V 0603	2V06	2238 586 59812	100nF 20% 50V 0603	3084	4822 051 30103	10kΩ 5% 0.062W
2L25	2238 586 59812	100nF 20% 50V 0603	2V07	2238 586 59812	100nF 20% 50V 0603	3085	3198 031 11010	4 x 100Ω 5% 1206
2L26	3198 017 33330	33nF 20% 16V 0603	2V08	2238 586 59812	100nF 20% 50V 0603	3086	3198 031 11010	4 x 100Ω 5% 1206
2L27	4822 126 13193	4.7nF 10% 63V	2V09	2238 586 59812	100nF 20% 50V 0603	3087	4822 051 30101	100Ω 5% 0.062W
2L28	4822 126 14226	82pF 5% 50V 0603	2V10	2238 586 59812	100nF 20% 50V 0603	3088	4822 051 30222	2.2kΩ 5% 0.062W
2L29	4822 122 33761	22pF 5% 50V	2V11	2238 586 59812	100nF 20% 50V 0603	3089	4822 051 30101	100Ω 5% 0.062W
2L30	4822 126 14226	82pF 5% 50V 0603	2V12	2238 586 59812	100nF 20% 50V 0603	3090	3198 031 14710	4 x 470Ω 5% 1206
2L31	3198 017 34730	47nF 16V 0603	2V13	2238 586 59812	100nF 20% 50V 0603	3091	4822 051 30008	Jumper 0603
2L32	5322 126 11579	3.3nF 10% 63V	2Y00	2238 586 59812	100nF 20% 50V 0603	3092	4822 051 30222	2.2kΩ 5% 0.062W
2L33	2238 586 59812	100nF 20% 50V 0603	2Y01	2238 586 59812	100nF 20% 50V 0603	3093	4822 051 30103	10kΩ 5% 0.062W
2L34	2238 586 59812	100nF 20% 50V 0603	2Y02	2022 552 05679	1μF 10% 16V 0805	3097	4822 051 30471	47Ω 5% 0.062W
2L35	4822 126 13879	220nF +80-20% 16V	2Y03	4822 126 14519	22pF 5% 50V 0402	3099	3198 031 14710	4 x 470Ω 5% 1206
2L36	3198 016 31020	1nF 25V 0603	2Y04	4822 126 14519	22pF 5% 50V 0402	3100	4822 051 30221	220Ω 5% 0.062W
2L37	3198 016 31020	1nF 25V 0603	2Y05	4822 126 14519	22pF 5% 50V 0402	3101	4822 051 30221	220Ω 5% 0.062W
2L38	3198 016 31020	1nF 25V 0603	2Y06	4822 126 14519	22pF 5% 50V 0402	3102	3198 031 11010	4 x 100Ω 5% 1206
2L39	2238 586 59812	100nF 20% 50V 0603	2Y07	4822 126 14519	22pF 5% 50V 0402	3301	4822 117 13632	100kΩ 1% 0603 0.62W
2L40	2020 552 96305	4.7μF 20-80% 10V	2Y08	4822 126 14519	22pF 5% 50V 0402	3303	4822 117 13632	100kΩ 1% 0603 0.62W
2L41	3198 016 31020	1nF 25V 0603	2Y09	4822 126 14519	22pF 5% 50V 0402	3304▲	2322 750 63908	3.9Ω 5% Fuse 1206
2L42	3198 016 31020	1nF 25V 0603	2Y10	4822 126 14519	22pF 5% 50V 0402	3308	4822 051 20474	470kΩ 5% 0.1W
2L43	2238 586 59812	100nF 20% 50V 0603	2Y11	4822 126 14519	22pF 5% 50V 0402	3368	4822 051 30471	47Ω 5% 0.062W
2L44	2020 552 96305	4.7μF 20-80% 10V	2Y12	4822 126 14519	22pF 5% 50V 0402	3370	4822 051 30101	100Ω 5% 0.062W
2L45	3198 016 31020	1nF 25V 0603				3371	4822 051 30479	47Ω 5% 0.062W
2L46	3198 016 31020	1nF 25V 0603				3372	4822 051 30471	47Ω 5% 0.062W
2L47	2238 586 59812	100nF 20% 50V 0603				3373	4822 051 30008	Jumper 0603
2L48	4822 122 33752	15pF 5% 50V				3374	4822 051 30008	Jumper 0603
2L50	4822 122 33752	15pF 5% 50V	3001	4822 051 30472	4.7Ω 5% 0.062W	3375	4822 051 30008	Jumper 0603
2L52	3198 017 34730	47nF 16V 0603	3002	4822 051 30472	4.7Ω 5% 0.062W	3376	4822 051 30101	100Ω 5% 0.062W
2L53	4822 124 81059	220μF 20% 4V	3003	4822 117 13525	24kΩ 1% 0.62W 0603	3377	4822 051 30101	100Ω 5% 0.062W
2L54	3198 017 34730	47nF 16V 0603	3005	4822 051 30103	10kΩ 5% 0.062W	3378	4822 051 30153	15kΩ 5% 0.062W
2L57	3198 017 34730	47nF 16V 0603	3006	4822 051 30471	47Ω 5% 0.062W	3379	4822 051 30008	Jumper 0603
2L58	4822 124 81059	220μF 20% 4V	3007	3198 031 14710	4 x 470Ω 5% 1206	3380	4822 051 30101	100Ω 5% 0.062W
2L59	2020 552 96618	1nF 10% 50V 0402	3008	4822 117 13523	220Ω 5% 0.63W	3381	4822 051 30008	Jumper 0603
2L60	2222 867 15339	33pF 5% 50V 0603	3010	4822 051 30103	10kΩ 5% 0.062W	3382	3198 031 05610	560Ω 5% 0.01W 0402
2L63	4822 126 11785	47pF 5% 50V 0603	3011	4822 051 30103	10kΩ 5% 0.062W	3385	4822 051 30471	47Ω 5% 0.062W
2P80	4822 124 12095	100μF 20% 16V	3012	3198 031 11010	4 x 100Ω 5% 1206	3393	4822 117 13632	100kΩ 1% 0603 0.62W
2P81	2238 586 59812	100nF 20% 50V 0603	3013	4822 051 30103	10kΩ 5% 0.062W	3400▲	4822 117 11152	4.7Ω 5%
2S01	2238 586 59812	100nF 20% 50V 0603	3014	4822 051 30682	6.8Ω 5% 0.062W	3402▲	2322 750 63908	3.9Ω 5% Fuse 1206
2S02	2238 586 59812	100nF 20% 50V 0603	3015	4822 051 30474	470kΩ 5% 0.062W	3403	4822 051 30101	100Ω 5% 0.062W
2S03	2238 586 59812	100nF 20% 50V 0603	3016	5322 117 13034	1.5kΩ 1% 0.063W 0603	3404	4822 051 30561	560Ω 5% 0.062W
2S04	2238 586 59812	100nF 20% 50V 0603	3017	4822 051 30472	4.7Ω 5% 0.062W	3405	4822 051 30102	1kΩ 5% 0.062W
2S05	2238 586 59812	100nF 20% 50V 0603	3018	4822 051 30103	10kΩ 5% 0.062W	3406	2322 702 60279	27Ω 5% 0.1W 0603
2S06	2020 552 94427	100pF 5% 50V	3019	4822 051 30472	4.7Ω 5% 0.062W	3408	4822 051 30101	100Ω 5% 0.062W
2S07	2020 552 94427	100pF 5% 50V	3020	4822 051 30103	10kΩ 5% 0.062W	3411	3198 031 02720	2.7kΩ 5% 0.01W 0402
2S08	2020 552 94427	100pF 5% 50V	3021	4822 051 30103	10kΩ 5% 0.062W	3412▲	4822 117 11152	4.7Ω 5%
2S09	2020 552 94427	100pF 5% 50V	3022	4822 117 11817	1.2kΩ 1% 0.0625W	3414	4822 051 30472	4.7Ω 5% 0.062W
2S11	2020 552 94427	100pF 5% 50V	3023	4822 051 30222	2.2kΩ 5% 0.062W	3415	4822 051 30222	2.2kΩ 5% 0.062W
2S13	2020 552 94427	100pF 5% 50V	3024	4822 051 30332	3.3Ω 5% 0.062W	3418	4822 051 30391	390Ω 5% 0.062W
2S14	2020 552 94427	100pF 5% 50V	3025	4822 051 30273	27kΩ 5% 0.062W	3419	2120 108 91909	39Ω 5% 0603
2S15	2020 552 94427	100pF 5% 50V	3026	4822 051 30221	220Ω 5% 0.062W	3435	4822 051 30472	4.7Ω 5% 0.062W
2S16	2020 552 94427	100pF 5% 50V	3027	4822 051 30472	4.7Ω 5% 0.062W	3436	4822 051 30181	180Ω 5% 0.062W
2S22	3198 017 44740	470nF 10V 0603	3028	4822 117 12925	47kΩ 1% 0.063W 0603	3437	4822 051 30471	47Ω 5% 0.062W
2S25	2020 552 94427	100pF 5% 50V	3029	4822 051 30472	4.7Ω 5% 0.062W	3439	4822 051 30391	390Ω 5% 0.062W
2S42	4822 051 30759	75Ω 5% 0.062W	3030	3198 031 11010	4 x 100Ω 5% 1206	3441	4822 051 30562	5.6kΩ 5% 0.063W 0603
2T01	2020 021 91887	470μF 20% 16V	3031	4822 051 30222	2.2kΩ 5% 0.062W	3445	4822 051 30121	120Ω 5% 0.062W
2T04	3198 024 44730	47nF 50V 0603	3032	4822 051 30472	4.7Ω 5% 0.062W	3463	4822 051 30472	4.7Ω 5% 0.062W
2T05	2020 021 91887	470μF 20% 16V	3033	3198 031 11010	4 x 100Ω 5% 1206	3468	4822 117 13632	100kΩ 1% 0603 0.62W
2T06	5322 126 11583	10nF 10% 50V 0603	3034	4822 051 30103	10kΩ 5% 0.062W	3473	4822 051 30102	1kΩ 5% 0.062W
2T09	3198 017 34730	47nF 16V 0603	3035	4822 051 30103	10kΩ 5% 0.062W	3474	4822 051 30109	10Ω 5% 0.062W
2T12	2238 586 59812	100nF 20% 50V 0603	3036	3198 031 11010	4 x 100Ω 5% 1206	3475▲	5322 117 11726	10Ω 5%
2T13	5322 126 11583	10nF 10% 50V 0603	3037	4822 051 30472	4.7Ω 5% 0.062W	3476	4822 051 30561	560Ω 5% 0.062W
2T15	2022 552 05679	1μF 10% 16V 0805	3038	4822 051 30332	3.3Ω 5% 0.062W	3700	4822 051 30472	4.7Ω 5% 0.062W
2U03	2022 552 05679	1μF 10% 16V 0805	303					

3712	4822 117 12925	47kΩ 1% 0.063W 0603	3849	4822 051 30569	56Ω 5% 0.062W	3D83	2322 704 61002	1kΩ 1%
3713	4822 051 30181	180Ω 5% 0.062W	3850	4822 117 13545	100Ω 1% 0402	3D84	4822 117 13545	100Ω 1% 0402
3714	4822 051 30181	180Ω 5% 0.062W	3851	4822 117 13545	100Ω 1% 0402	3D85	4822 051 30471	47Ω 5% 0.062W
3715	4822 051 30181	180Ω 5% 0.062W	3852	4822 117 13545	100Ω 1% 0402	3D86	4822 117 13545	100Ω 1% 0402
3716	4822 117 13632	100kΩ 1% 0603 0.62W	3853	4822 117 13545	100Ω 1% 0402	3D87	4822 117 13632	100kΩ 1% 0603 0.62W
3717	4822 117 13632	100kΩ 1% 0603 0.62W	3856	4822 051 30569	56Ω 5% 0.062W	3D88	5322 117 13036	1.2kΩ 1% 0.063W 0603
3718	4822 117 13632	100kΩ 1% 0603 0.62W	3A00	4822 117 13601	22kΩ 5% 0402	3D89	4822 051 30183	18kΩ 5% 0.062W
3719	4822 051 30332	3.3Ω 5% 0.062W	3A01	4822 117 13606	10kΩ 5% 0.01W 0402	3D90	4822 117 12925	47kΩ 1% 0.063W 0603
3720	4822 051 30103	10kΩ 5% 0.062W	3A03▲	4822 117 13568	6.8Ω 5% 1206	3D92	4822 117 13606	10kΩ 5% 0.01W 0402
3721	4822 117 13545	100Ω 1% 0402	3A06	4822 117 13545	100Ω 1% 0402	3D93	3198 031 04720	4.7kΩ 5% 0402
3722	4822 051 30109	10Ω 5% 0.062W	3A09	4822 117 13601	22kΩ 5% 0402	3D95	3198 031 04720	4.7kΩ 5% 0402
3723	4822 051 30472	4.7Ω 5% 0.062W	3A11	4822 117 11297	100kΩ 5% 0.1W	3D96	4822 117 13602	2.2kΩ 5% 0.01W 0402
3725	4822 051 30332	3.3Ω 5% 0.062W	3A13	3198 031 04730	47Ω 5% 0402	3D97	4822 117 13545	100Ω 1% 0402
3726	4822 117 11817	1.2kΩ 1% 0.0625W	3A14	3198 031 04730	47Ω 5% 0402	3D98	4822 117 13545	100Ω 1% 0402
3727	4822 051 30151	150Ω 5% 0.062W	3A15	4822 117 11297	100kΩ 5% 0.1W	3D99	4822 051 30759	75Ω 5% 0.062W
3728	4822 051 30151	150Ω 5% 0.062W	3A16	4822 117 13545	100Ω 1% 0402	3E04	4822 051 30479	47Ω 5% 0.062W
3729	4822 117 13545	100Ω 1% 0402	3A17	4822 117 13545	100Ω 1% 0402	3E05	3198 031 14710	4 x 470Ω 5% 1206
3730	3198 031 06810	680Ω 5% 0.01W 0402	3A19	4822 117 13545	100Ω 1% 0402	3E06	3198 031 14710	4 x 470Ω 5% 1206
3736	4822 051 30101	100Ω 5% 0.062W	3A20	4822 117 11297	100kΩ 5% 0.1W	3E07	2350 035 10152	4 x 1.5kΩ 5%
3737	4822 051 30102	1kΩ 5% 0.062W	3A22	4822 117 13632	100kΩ 1% 0603 0.62W	3E08▲	4822 117 11151	1Ω 5%
3738	4822 051 30102	1kΩ 5% 0.062W	3A23	4822 117 13603	33kΩ 5% 0402	3E11	2350 035 10152	4 x 1.5kΩ 5%
3739	3198 031 01530	15kΩ 5% 0.01W 0402	3A25	4822 051 30331	330Ω 5% 0.062W	3E12	2350 035 10152	4 x 1.5kΩ 5%
3740	4822 051 30102	1kΩ 5% 0.062W	3A26	4822 117 13603	33kΩ 5% 0402	3E14	4822 117 13545	100Ω 1% 0402
3741	4822 051 30223	22kΩ 5% 0.062W	3A27	3198 031 01530	15kΩ 5% 0.01W 0402	3E16	3198 031 03320	3.3kΩ 5% 0402
3743	4822 051 30153	15kΩ 5% 0.062W	3A28	3198 031 01530	15kΩ 5% 0.01W 0402	3E18	4822 117 13602	2.2kΩ 5% 0.01W 0402
3744	4822 051 30222	2.2kΩ 5% 0.062W	3A29	4822 051 30331	330Ω 5% 0.062W	3E19	4822 117 13548	1kΩ 5% 0402
3745	4822 051 30102	1kΩ 5% 0.062W	3A30	4822 117 12925	47kΩ 1% 0.063W 0603	3E20	4822 117 13545	100Ω 1% 0402
3746	5322 117 13042	3.9kΩ 1% 0.063W 0603	3A32	4822 117 13545	100Ω 1% 0402	3E21	4822 117 13548	1kΩ 5% 0402
3747	4822 051 30154	150kΩ 5% 0.062W	3A33	4822 117 13545	100Ω 1% 0402	3E22	2350 035 10152	4 x 1.5kΩ 5%
3748	4822 117 12891	220kΩ 1%	3A34	4822 117 13545	100Ω 1% 0402	3E23	2350 035 10152	4 x 1.5kΩ 5%
3749	5322 117 13042	3.9kΩ 1% 0.063W 0603	3A35	4822 051 30105	1MΩ 5% 0.062W	3E24	2350 035 10152	4 x 1.5kΩ 5%
3750	4822 051 30392	3.9Ω 5% 0.063W 0603	3A36	4822 117 13545	100Ω 1% 0402	3E25	4822 117 13548	1kΩ 5% 0402
3751	4822 051 30472	4.7Ω 5% 0.062W	3A38	4822 051 30101	100Ω 5% 0.062W	3E26	4822 117 13545	100Ω 1% 0402
3752	4822 117 12917	1Ω 5% 0.062W	3A3A	4822 117 13545	100Ω 1% 0402	3E27	4822 117 11297	100kΩ 5% 0.1W
3753	4822 117 12917	1Ω 5% 0.062W	3A3B	4822 117 13545	100Ω 1% 0402	3E28	4822 117 13548	1kΩ 5% 0402
3754	4822 051 30101	100Ω 5% 0.062W	3A3E	4822 117 13545	100Ω 1% 0402	3E29	4822 117 13597	330Ω 5% 0402 0.01W
3755	4822 051 30472	4.7Ω 5% 0.062W	3A3F	4822 117 13545	100Ω 1% 0402	3E30	4822 117 13545	100Ω 1% 0402
3756	5322 117 13056	8.2kΩ 1% 0.063W 0603	3A40	4822 117 13632	100kΩ 1% 0603 0.62W	3E31	4822 117 13548	1kΩ 5% 0402
3758	4822 051 30472	4.7Ω 5% 0.062W	3A42	4822 117 13545	100Ω 1% 0402	3E32	4822 117 13545	100Ω 1% 0402
3759	4822 051 30221	220Ω 5% 0.062W	3A45	3198 031 04730	47Ω 5% 0402	3E33	4822 117 13545	100Ω 1% 0402
3762	4822 051 30101	100Ω 5% 0.062W	3A46	4822 117 11297	100kΩ 5% 0.1W	3E34	4822 117 13545	100Ω 1% 0402
3764	4822 051 30109	10Ω 5% 0.062W	3A47	3198 031 04730	47Ω 5% 0402	3E35	4822 117 13545	100Ω 1% 0402
3770	4822 117 13545	100Ω 1% 0402	3A48	4822 117 11297	100kΩ 5% 0.1W	3E36	4822 117 13545	100Ω 1% 0402
3771	4822 117 12971	15Ω 5% 0603 0.62W	3A49	3198 031 04730	47Ω 5% 0402	3E37	4822 117 13548	1kΩ 5% 0402
3772	4822 117 12971	15Ω 5% 0603 0.62W	3A50	4822 117 13545	100Ω 1% 0402	3E38	4822 117 13545	100Ω 1% 0402
3773	4822 117 12925	47kΩ 1% 0.063W 0603	3A51	3198 031 04730	47Ω 5% 0402	3E39	4822 117 13545	100Ω 1% 0402
3774	4822 117 12925	47kΩ 1% 0.063W 0603	3A52	3198 031 04730	47Ω 5% 0402	3E40	4822 117 13545	100Ω 1% 0402
3781	4822 117 12925	47kΩ 1% 0.063W 0603	3A53	3198 031 04730	47Ω 5% 0402	3E41	3198 031 14710	4 x 470Ω 5% 1206
3782	4822 117 12925	47kΩ 1% 0.063W 0603	3A55	3198 031 04720	4.7kΩ 5% 0402	3E42	3198 031 14710	4 x 470Ω 5% 1206
3783	4822 117 12925	47kΩ 1% 0.063W 0603	3A56	3198 031 04720	4.7kΩ 5% 0402	3E43	3198 031 14710	4 x 470Ω 5% 1206
3792	4822 051 30102	1kΩ 5% 0.062W	3A66	4822 117 11297	100kΩ 5% 0.1W	3E44	3198 031 14710	4 x 470Ω 5% 1206
3793	4822 051 30222	2.2kΩ 5% 0.062W	3C00	4822 051 30222	2.2kΩ 5% 0.062W	3E45	4822 117 13597	330Ω 5% 0402 0.01W
3794	4822 051 30109	10Ω 5% 0.062W	3C01	4822 051 30109	10Ω 5% 0.062W	3E49	4822 117 13602	2.2kΩ 5% 0.01W 0402
3795	4822 051 30109	10Ω 5% 0.062W	3C03	4822 051 30103	10kΩ 5% 0.062W	3E50	4822 117 13606	10kΩ 5% 0.01W 0402
3796	4822 051 30101	100Ω 5% 0.062W	3C04	4822 051 30103	10kΩ 5% 0.062W	3E51	4822 117 13606	10kΩ 5% 0.01W 0402
3797	4822 051 30101	100Ω 5% 0.062W	3C05	4822 051 30471	47Ω 5% 0.062W	3E52	4822 117 13606	10kΩ 5% 0.01W 0402
3798	4822 051 30472	4.7Ω 5% 0.062W	3C08	4822 051 30103	10kΩ 5% 0.062W	3E53	4822 117 13606	10kΩ 5% 0.01W 0402
3800	2322 704 61501	150Ω 1% 0603	3C10	4822 051 30101	100Ω 5% 0.062W	3E55	4822 117 13606	10kΩ 5% 0.01W 0402
3802	2322 704 61501	150Ω 1% 0603	3C11	4822 051 30101	100Ω 5% 0.062W	3E56	4822 117 13603	33kΩ 5% 0402
3803	2322 704 61501	150Ω 1% 0603	3D40	4822 117 10361	680Ω 1% 0.1W	3E57	4822 117 11297	100kΩ 5% 0.1W
3804	4822 051 30102	1kΩ 5% 0.062W	3D41	4822 117 13606	10kΩ 5% 0.01W 0402	3E60	4822 117 13606	10kΩ 5% 0.01W 0402
3811	4822 051 30759	75Ω 5% 0.062W	3D44	4822 117 13606	10kΩ 5% 0.01W 0402	3E62	4822 117 13548	1kΩ 5% 0402
3812	4822 051 30759	75Ω 5% 0.062W	3D45	4822 051 30101	100Ω 5% 0.062W	3E63	4822 117 13606	10kΩ 5% 0.01W 0402
3814	4822 051 30759	75Ω 5% 0.062W	3D46	4822 051 30102	1kΩ 5% 0.062W	3E69	3198 031 04720	4.7kΩ 5% 0402
3815	4822 051 30759	75Ω 5% 0.062W	3D47	4822 051 30101	100Ω 5% 0.062W	3E70	3198 031 04720	4.7kΩ 5% 0402
3817	4822 051 30759	75Ω 5% 0.062W	3D48	4822 051 30102	1kΩ 5% 0.062W	3E73	4822 117 13606	10kΩ 5% 0.01W 0402
3818	4822 051 30759	75Ω 5% 0.062W	3D49	4822 051 30759	75Ω 5% 0.062W	3E74	4822 117 13546	47Ω 5% 0402
3819	4822 051 30759	75Ω 5% 0.062W	3D50	4822 051 30759	75Ω 5% 0.062W	3E75	4822 117 13548	1kΩ 5% 0402
3820	4822 051 30759	75Ω 5% 0.062W	3D51	2322 704 62002	2kΩ 1%	3E77	4822 117 13546	47Ω 5% 0402
3821	4822 051 30759	75Ω 5% 0.062W	3D52	2322 704 61002	1kΩ 1%	3E78	4822 117 13546	47Ω 5% 0402
3822	4822 051 30759	75Ω 5% 0.062W	3D53	4822 117 13548	1kΩ 5% 0402	3E79	4822 117 13546	47Ω 5% 0402
3823	4822 051 30759	75Ω 5% 0.062W	3D54	4822 117 13601	22kΩ 5% 0402	3E80	4822 117 13546	47Ω 5% 0402
3824	4822 051 30759	75Ω 5% 0.062W	3D55	2322 704 61002	1kΩ 1%	3E81	4822 117 13546	47Ω 5% 0402
3825	2322 704 61501	150Ω 1% 0603	3D56	2322 704 65102	5.1kΩ 1% 0603	3E82	4822 117 13546	47Ω 5% 0402
3826	2322 704 61501	150Ω 1% 0603	3D57	5322 117 13047	330Ω 1% 0.063W 0603	3E83	4822 117 13546	47Ω 5% 0402
3827	2322 704 61501	150Ω 1% 0603	3D58	4822 117 13548	1kΩ 5% 0402	3E84	4822 117 13546	47Ω 5% 0402
3828	4822 051 30339	33Ω 5% 0.062W	3D60	5322 117 13036	1.2kΩ 1% 0.063W 0603	3E85	4822 117 13546	47Ω 5% 0402
3829	4822 117 12971	15Ω 5% 0603 0.62W	3D61	2322 704 63302	3.3kΩ 1% 0603	3E86	4822 117 13546	47Ω 5% 0402
3831	4822 117 13545	100Ω 1% 0402	3D62	4822 051 30103	10kΩ 5% 0.062W	3E87	4822 117 13546	47Ω 5% 0402
3832	4822 117 13545	100Ω 1% 0402	3D63	2322 704 62202	2.2kΩ 1% 0603	3E88	4822 117 13546	47Ω 5% 0402
3833	4822 117 13545	100Ω 1% 0402	3D64	4822 117 13548	1kΩ 5% 0402	3E89	4822 117 13546	47Ω 5% 0402
3834	4822 117 13545	100Ω 1% 0402	3D65	4822 117 13548	1kΩ 5% 0402	3E91	3198 031 04730	47Ω 5% 0402
3836	4822 117 13545	100Ω 1% 0402	3D66	4822 117 13601	22kΩ 5% 0402	3E92	3198 031 04730	47Ω 5% 0402
3837	4822 117 13545	100Ω 1% 0402	3D67	5322 117 13036	1.2kΩ 1% 0.063W 0603	3E93	3198 031 04730	47Ω 5% 0402
3838	4822 117 13545	100Ω 1% 0402	3D68	2322 704 63302	3.3kΩ 1%			

3I41	4822 117 13545	100Ω 1% 0.402	3IL3	4822 051 30109	10Ω 5% 0.062W	3U13	4822 051 30103	10kΩ 5% 0.062W
3I42	4822 117 13601	22kΩ 5% 0.402	3IL4	4822 051 30393	39kΩ 5% 0.062W	3U14	4822 051 30102	1kΩ 5% 0.062W
3I43	4822 051 30101	100Ω 5% 0.062W	3IL5	4822 051 30271	270Ω 5% 0.062W	3U15	5322 117 13042	3.9kΩ 1% 0.063W 0603
3I44	4822 117 13601	22kΩ 5% 0.402	3IL6	4822 051 30101	100Ω 5% 0.062W	3U16	4822 051 30479	47Ω 5% 0.062W
3I45	4822 051 30101	100Ω 5% 0.062W	3IL7	4822 117 13632	100kΩ 1% 0.0603 0.62W	3U17	4822 051 30109	10Ω 5% 0.062W
3I46	3198 031 08220	8.2kΩ 5% 0.5W	3IL8	4822 051 30102	1kΩ 5% 0.062W	3U18	2322 704 61002	1kΩ 1%
3I47	3198 031 02720	2.7kΩ 5% 0.01W 0.402	3IL9	4822 051 30102	1kΩ 5% 0.062W	3U19	4822 051 30472	4.7Ω 5% 0.062W
3I48	4822 051 30759	75Ω 5% 0.062W	3IM0	4822 051 30109	10Ω 5% 0.062W	3U20	2322 704 61002	1kΩ 1%
3I49	4822 117 13545	100Ω 1% 0.402	3IM1	4822 051 30393	39kΩ 5% 0.062W	3U21	4822 117 12925	47kΩ 1% 0.063W 0603
3I50	4822 051 30151	150Ω 5% 0.062W	3IM2	4822 051 30561	560Ω 5% 0.062W	3U22	4822 051 30271	270Ω 5% 0.062W
3I51	4822 051 30101	100Ω 5% 0.062W	3IM3	4822 051 30561	560Ω 5% 0.062W	3U23	4822 051 30121	120Ω 5% 0.062W
3I52	4822 051 30151	150Ω 5% 0.062W	3IM4	4822 051 30152	1.5Ω 5% 0.062W	3U24	4822 051 30223	22kΩ 5% 0.062W
3I53	4822 051 30101	100Ω 5% 0.062W	3IM5	4822 117 13632	100kΩ 1% 0.0603 0.62W	3U25	4822 051 30474	470kΩ 5% 0.062W
3I54	4822 117 13545	100Ω 1% 0.402	3IM6	4822 051 30102	1kΩ 5% 0.062W	3U26	4822 051 30223	22kΩ 5% 0.062W
3I55	4822 051 30759	75Ω 5% 0.062W	3IM7	4822 051 30101	100Ω 5% 0.062W	3U27	4822 051 30223	22kΩ 5% 0.062W
3I56	4822 117 13545	100Ω 1% 0.402	3IM8	4822 051 30221	220Ω 5% 0.062W	3U28	4822 117 12925	47kΩ 1% 0.063W 0603
3I57	4822 051 30759	75Ω 5% 0.062W	3IM9	4822 051 30393	39kΩ 5% 0.062W	3U29	4822 051 30109	10Ω 5% 0.062W
3I58	4822 117 13545	100Ω 1% 0.402	3IN0	4822 051 30109	10Ω 5% 0.062W	3U30	4822 051 20121	120Ω 5% 0.1W
3I59	4822 051 30759	75Ω 5% 0.062W	3IN4▲	2322 750 63908	3.9Ω 5% Fuse 1206	3U31	4822 051 20121	120Ω 5% 0.1W
3I60	4822 051 30759	75Ω 5% 0.062W	3IN5	4822 117 13601	22kΩ 5% 0.402	3U32	4822 051 30183	18kΩ 5% 0.062W
3I61	4822 051 30101	100Ω 5% 0.062W	3IN6	4822 117 13601	22kΩ 5% 0.402	3U33	4822 051 30103	10kΩ 5% 0.062W
3I62	4822 051 30101	100Ω 5% 0.062W	3IN7	4822 117 10361	680Ω 1% 0.1W	3U34	4822 051 30474	470kΩ 5% 0.062W
3I63	3198 031 03920	3.9kΩ 5% 0.402	3IO5	4822 117 13606	10kΩ 5% 0.01W 0.402	3U35	4822 051 30103	10kΩ 5% 0.062W
3I64	3198 031 08220	8.2kΩ 5% 0.5W	3IO6	4822 117 13606	10kΩ 5% 0.01W 0.402	3U36	4822 051 30222	2.2kΩ 5% 0.062W
3I65	4822 051 30101	100Ω 5% 0.062W	3IP0	5322 117 13056	8.2kΩ 1% 0.063W 0603	3U37	4822 051 30223	22kΩ 5% 0.062W
3I66	4822 051 30759	75Ω 5% 0.062W	3IP1	4822 117 11817	1.2kΩ 1% 0.0625W	3U38	4822 051 30222	2.2kΩ 5% 0.062W
3I67	4822 051 30759	75Ω 5% 0.062W	3IP2	4822 051 30221	220Ω 5% 0.062W	3U39	4822 051 30223	22kΩ 5% 0.062W
3I68	4822 117 13545	100Ω 1% 0.402	3IP3	4822 051 30151	150Ω 5% 0.062W	3U40	4822 051 30154	150kΩ 5% 0.062W
3I69	4822 051 30151	150Ω 5% 0.062W	3IP4	4822 051 30221	220Ω 5% 0.062W	3U41	4822 051 30102	1kΩ 5% 0.062W
3I70	4822 051 30101	100Ω 5% 0.062W	3IP5▲	4822 117 11748	Fuse 2.2Ω 5% 1206	3U42	4822 051 30103	10kΩ 5% 0.062W
3I71	4822 051 30151	150Ω 5% 0.062W	3IP6	4822 051 30102	1kΩ 5% 0.062W	3U43	4822 051 30223	22kΩ 5% 0.062W
3I72	4822 051 30101	100Ω 5% 0.062W	3IP7	4822 051 30272	2.7kΩ 5% 0.062W	3U44	4822 051 30105	1MΩ 5% 0.062W
3I73	4822 117 13605	Jumper 0402	3IQ0	4822 051 30109	10Ω 5% 0.062W	3U45	4822 051 30105	1MΩ 5% 0.062W
3I74	4822 051 30151	150Ω 5% 0.062W	3IQ1	4822 117 10361	680Ω 1% 0.1W	3U46	4822 117 12925	47kΩ 1% 0.063W 0603
3I75	4822 117 13545	100Ω 1% 0.402	3IS2	4822 051 30101	100Ω 5% 0.062W	3U51	9965 000 23109	22Ω 5% 0603
3I76	4822 117 13545	100Ω 1% 0.402	3IS3	4822 051 30101	100Ω 5% 0.062W	3U52	4822 051 30102	1kΩ 5% 0.062W
3I77	4822 051 30759	75Ω 5% 0.062W	3IS4	4822 051 30101	100Ω 5% 0.062W	3U53	4822 051 30183	18kΩ 5% 0.062W
3I78	4822 051 30759	75Ω 5% 0.062W	3IS5	4822 051 30101	100Ω 5% 0.062W	3U54	4822 051 30101	100Ω 5% 0.062W
3I79	4822 051 30101	100Ω 5% 0.062W	3IS6	4822 051 30101	100Ω 5% 0.062W	3U55	4822 051 30102	1kΩ 5% 0.062W
3I80	4822 051 30101	100Ω 5% 0.062W	3IT0	4822 117 12925	47kΩ 1% 0.063W 0603	3V03	4822 117 13546	47Ω 5% 0.402
3I81	3198 031 08220	8.2kΩ 5% 0.5W	3IT1	4822 117 12925	47kΩ 1% 0.063W 0603	3V04	4822 117 13546	47Ω 5% 0.402
3I82	3198 031 03920	3.9kΩ 5% 0.402	3IT9	4822 117 12925	47kΩ 1% 0.063W 0603	3V05	4822 117 13546	47Ω 5% 0.402
3I83	4822 117 13545	100Ω 1% 0.402	3IU0	4822 117 13632	100kΩ 1% 0.0603 0.62W	3V06	4822 117 13545	100Ω 1% 0.402
3I84	4822 051 30759	75Ω 5% 0.062W	3L03	4822 117 13545	100Ω 1% 0.402	3V07	3198 031 04720	4.7kΩ 5% 0.402
3I85	4822 117 13545	100Ω 1% 0.402	3L04	4822 117 13545	100Ω 1% 0.402	3V08	4822 117 13548	1kΩ 5% 0.402
3I86	4822 051 30759	75Ω 5% 0.062W	3L05	4822 117 13545	100Ω 1% 0.402	3V09	4822 117 13545	100Ω 1% 0.402
3I87	4822 117 13605	Jumper 0402	3L06	4822 117 13545	100Ω 1% 0.402	3V10	4822 117 13545	100Ω 1% 0.402
3I88	4822 051 30151	150Ω 5% 0.062W	3L07	4822 117 13606	10kΩ 5% 0.01W 0.402	3V11	4822 117 13545	100Ω 1% 0.402
3I89	4822 051 30101	100Ω 5% 0.062W	3L08	3198 031 02720	2.7kΩ 5% 0.01W 0.402	3V12	4822 117 13545	100Ω 1% 0.402
3I91	4822 051 30151	150Ω 5% 0.062W	3L11	4822 117 13545	100Ω 1% 0.402	3V13	3198 031 04720	4.7kΩ 5% 0.402
3I92	4822 051 30101	100Ω 5% 0.062W	3L12	4822 117 13543	47Ω 5% 0.402	3V14	4822 117 13546	47Ω 5% 0.402
3I98	4822 117 11297	100kΩ 5% 0.1W	3L17	4822 051 30471	47Ω 5% 0.062W	3V15	4822 117 13546	47Ω 5% 0.402
3IA1	4822 117 11297	100kΩ 5% 0.1W	3L22	4822 117 13602	2.2kΩ 5% 0.01W 0.402	3V16	4822 117 13546	47Ω 5% 0.402
3IA2	4822 051 30101	100Ω 5% 0.062W	3L23	4822 051 30471	47Ω 5% 0.062W	3V17	3198 031 04720	4.7kΩ 5% 0.402
3IA3	4822 117 13601	22kΩ 5% 0.402	3L24	2350 033 91002	4 x jumper	3Y00	3198 031 01530	15kΩ 5% 0.01W 0.402
3IA4	4822 117 13548	1kΩ 5% 0.402	3L25	2350 033 91002	4 x jumper	3Y01	3198 031 03320	3.3kΩ 5% 0.402
3IA5	4822 117 13548	1kΩ 5% 0.402	3L26	2350 033 91002	4 x jumper	3Y02	4822 117 13606	10kΩ 5% 0.01W 0.402
3IA6	4822 051 30102	1kΩ 5% 0.062W	3L27	2350 033 91002	4 x jumper	3Y03▲	4822 117 11151	1Ω 5%
3IA7	4822 051 30102	1kΩ 5% 0.062W	3L28	4822 117 13543	470Ω 5% 0.402	3Y04▲	4822 117 11151	1Ω 5%
3IB1	4822 117 12925	47kΩ 1% 0.063W 0603	3L29	2350 033 91002	4 x jumper	3Y05	4822 117 13606	10kΩ 5% 0.01W 0.402
3IB2	4822 051 30101	100Ω 5% 0.062W	3L30	2350 033 91002	4 x jumper	3Y06	4822 117 13545	100Ω 1% 0.402
3IB4	4822 051 30223	22kΩ 5% 0.062W	3L31	4822 051 20471	470Ω 5% 0.1W	3Y07	4822 117 13546	47Ω 5% 0.402
3IB5	4822 051 30103	10kΩ 5% 0.062W	3L32	4822 051 20471	470Ω 5% 0.1W	9001	4822 051 30008	Jumper 0603
3IB9	4822 117 12925	47kΩ 1% 0.063W 0603	3P65	4822 117 13545	100Ω 1% 0.402	9002	4822 051 30008	Jumper 0603
3IC1▲	4822 117 13574	1.5Ω 5% 1206	3P66	4822 117 13545	100Ω 1% 0.402	9010	4822 051 30008	Jumper 0603
3IC2	4822 117 13601	22kΩ 5% 0.402	3P67	3198 031 04720	4.7kΩ 5% 0.402	9011	4822 051 30008	Jumper 0603
3IC3	4822 117 13601	22kΩ 5% 0.402	3P69	3198 031 04720	4.7kΩ 5% 0.402	9012	4822 051 30008	Jumper 0603
3IC4	4822 051 30101	100Ω 5% 0.062W	3S01	4822 051 30008	Jumper 0603	9013	4822 051 30008	Jumper 0603
3IC6	4822 051 30101	100Ω 5% 0.062W	3S04	3198 031 03320	3.3kΩ 5% 0.402	9016	4822 051 30008	Jumper 0603
3ID0	3198 031 04720	4.7kΩ 5% 0.402	3S05	3198 031 05620	5.6kΩ 5% 0.01W 0.402	9019	4822 051 30008	Jumper 0603
3IE2	4822 051 30101	100Ω 5% 0.062W	3S06	4822 117 12925	47kΩ 1% 0.063W 0603	9020	4822 051 30008	Jumper 0603
3IE3	4822 051 30101	100Ω 5% 0.062W	3S07	4822 117 12925	47kΩ 1% 0.063W 0603	9318	4822 051 30008	Jumper 0603
3IE7	4822 051 30759	75Ω 5% 0.062W	3S08	4822 051 30221	220Ω 5% 0.062W	9322	4822 051 30101	100Ω 5% 0.062W
3IE8	4822 051 30759	75Ω 5% 0.062W	3S11	4822 117 13606	10kΩ 5% 0.01W 0.402	9406	4822 051 30008	Jumper 0603
3IE9	4822 117 13601	22kΩ 5% 0.402	3S12	3198 031 01830	18kΩ 5% 0.01W 0.402	9410	4822 051 30008	Jumper 0603
3IF0	4822 051 30759	75Ω 5% 0.062W	3S13	4822 117 13606	10kΩ 5% 0.01W 0.402	9413	4822 051 30008	Jumper 0603
3IF5	4822 117 13601	22kΩ 5% 0.402	3S14	4822 117 13606	10kΩ 5% 0.01W 0.402	9416	4822 051 30008	Jumper 0603
3IF6	4822 051 30101	100Ω 5% 0.062W	3S15	4822 117 13545	100Ω 1% 0.402	9417	4822 051 30008	Jumper 0603
3IF7	4822 051 30101	100Ω 5% 0.062W	3S16	4822 117 13545	100Ω 1% 0.402	9418	4822 051 30008	Jumper 0603
3IH8	3198 031 04730	47Ω 5% 0.402	3S18	4822 117 13545	100Ω 1% 0.402	9419	4822 051 30008	Jumper 0603
3IH9	3198 031 04730	47Ω 5% 0.402	3S19	4822 117 13545	100Ω 1% 0.402	9420	4822 051 30008	Jumper 0603
3IIO	4822 117 13606	10kΩ 5% 0.01W 0.402	3S20	4822 117 13606	10kΩ 5% 0.01W 0.402	9702	4822 051 30008	Jumper 0603
3II1	4822 117 13601	22kΩ 5% 0.402	3U01	4822 051 30102	1kΩ 5% 0.062W	9703	4822 051 30008	Jumper 0603
3II2	4822 117 13601	22kΩ 5% 0.402	3U02	4822 051 30102	1kΩ 5% 0.062W	9708	4822 051 30008	Jumper 0603
3II3	3198 031 04730	47Ω 5% 0.402	3U03	4822 051 30333	33kΩ 5% 0.062W	9712	4822 051 30008	Jumper 0603
3II4	3198 031 04730	47Ω 5% 0.402	3U04	4822 051 20121	120Ω 5% 0.1W	9714	4822 051 30008	Jumper 0603

9744	4822 051 30008	Jumper 0603	9S36	4822 051 30008	Jumper 0603	5L02	3198 018 51080	1µH 10% 0603
9747	4822 051 30008	Jumper 0603	9S37	4822 051 30008	Jumper 0603	5L04	3198 018 54770	0.47µF 10% 0603
9760	4822 051 30008	Jumper 0603	9S38	4822 051 30008	Jumper 0603	5L06	3198 018 51080	1µH 10% 0603
9761	4822 051 30008	Jumper 0603	9S65	4822 051 30008	Jumper 0603	5L07	4822 157 11716	Bead 30Ω at 100MHz
9762	4822 051 30008	Jumper 0603	9T01	4822 051 30223	22kΩ 5% 0.062W	5L08	4822 157 11716	Bead 30Ω at 100MHz
9763	4822 051 30008	Jumper 0603	9T04	4822 051 30008	Jumper 0603	5L09	4822 157 11716	Bead 30Ω at 100MHz
9764	4822 051 30008	Jumper 0603	9T07	4822 051 30008	Jumper 0603	5L10	4822 157 11716	Bead 30Ω at 100MHz
9765	4822 051 30008	Jumper 0603	9T08	4822 051 30008	Jumper 0603	5L11	4822 157 11716	Bead 30Ω at 100MHz
9766	4822 051 30008	Jumper 0603	9T11	4822 051 30008	Jumper 0603	5L12	4822 157 11716	Bead 30Ω at 100MHz
9772	4822 051 30008	Jumper 0603	9T12	4822 051 30008	Jumper 0603	5L13	4822 156 21729	Bead 1kΩ 100MHz 0805
9A00	4822 117 13605	Jumper 0402	9T13	4822 051 30008	Jumper 0603	5L14	4822 156 21729	Bead 1kΩ 100MHz 0805
9A01	4822 117 13605	Jumper 0402	9T14	4822 051 20008	Jumper 0805	5L15	4822 156 21729	Bead 1kΩ 100MHz 0805
9A04	4822 117 13605	Jumper 0402	9T15	4822 051 30008	Jumper 0603	5L16	4822 051 20008	Jumper 0805
9A05	4822 117 13605	Jumper 0402				5L17	4822 051 20008	Jumper 0805
9A06	4822 117 13605	Jumper 0402				5L18	4822 051 20008	Jumper 0805
9A09	4822 051 20008	Jumper 0805				5L21	4822 117 10353	150Ω 1% 0.1W
9C02	4822 051 30008	Jumper 0603	5401	3198 018 56880	6.8µH 10% 0603	5P51	4822 157 11716	Bead 30Ω at 100MHz
9D49	4822 117 13605	Jumper 0402	5403	2422 549 00195	Bead 40.4MHz	5S01	4822 157 11716	Bead 30Ω at 100MHz
9D55	4822 051 30008	Jumper 0603	5404	2422 535 95427	Bead 120Ω at 100MHz	5S02	4822 157 11716	Bead 30Ω at 100MHz
9E54	4822 117 13605	Jumper 0402	5405	2422 535 95427	Bead 120Ω at 100MHz	5S03	4822 157 11716	Bead 30Ω at 100MHz
9I00	4822 117 13605	Jumper 0402	5406	3198 018 52280	2.2µF 10% 1008	5S04	4822 157 11716	Bead 30Ω at 100MHz
9I02	4822 117 13605	Jumper 0402	5408	2422 549 44983	Trimmer 78MHz 5CCB	5S05	4822 157 11716	Bead 30Ω at 100MHz
9I05	4822 051 30008	Jumper 0603	5411	3198 018 32770	0.27µH 10% 0805	5S06	4822 051 30008	Jumper 0603
9I06	4822 051 30008	Jumper 0603	5415	4822 157 11716	Bead 30Ω at 100MHz	5S07	4822 051 30008	Jumper 0603
9I13	4822 051 30008	Jumper 0603	5416	4822 157 11716	Bead 30Ω at 100MHz	5S08	4822 051 30008	Jumper 0603
9I25	4822 117 13605	Jumper 0402	5700	4822 157 11716	Bead 30Ω at 100MHz	5T02	2422 535 94134	10µH 20% 0805
9I26	4822 117 13605	Jumper 0402	5701	4822 157 11716	Bead 30Ω at 100MHz	5U01	3104 308 20661	Transf. BD13118-02
9I27	4822 117 13605	Jumper 0402	5702	4822 157 11716	Bead 30Ω at 100MHz	5U02	2422 535 94134	10µH 20% 0805
9I32	4822 117 13605	Jumper 0402	5703	4822 157 71206	Bead 600Ω 100MHz	5U03	4822 157 11716	Bead 30Ω at 100MHz
9I33	4822 117 13605	Jumper 0402	5706	4822 157 11716	Bead 30Ω at 100MHz	5U04	4822 157 11716	Bead 30Ω at 100MHz
9I34	4822 117 13605	Jumper 0402	5707	4822 157 11716	Bead 30Ω at 100MHz	5U05	2422 535 94134	10µH 20% 0805
9I35	4822 117 13605	Jumper 0402	5710	4822 157 11716	Bead 30Ω at 100MHz	5U06	2422 535 94134	10µH 20% 0805
9I36	4822 117 13605	Jumper 0402	5711	4822 157 11716	Bead 30Ω at 100MHz	5V06	3198 018 90050	Bead 1kΩ at 100MHz
9I37	4822 117 13605	Jumper 0402	5712	4822 156 21729	Bead 1kΩ 100MHz 0805	5V07	3198 018 90050	Bead 1kΩ at 100MHz
9I39	4822 117 13605	Jumper 0402	5713	4822 157 11716	Bead 30Ω at 100MHz	5V08	3198 018 90050	Bead 1kΩ at 100MHz
9I41	4822 117 13605	Jumper 0402	5714	4822 157 71206	Bead 600Ω 100MHz	5Y01	2422 549 45325	Bead 67Ω at 100MHz
9I48	4822 117 13605	Jumper 0402	5715	4822 157 11716	Bead 30Ω at 100MHz	5Y02	2422 549 45325	Bead 67Ω at 100MHz
9I49	4822 117 13605	Jumper 0402	5716	4822 156 21729	Bead 1kΩ 100MHz 0805	5Y03	2422 549 45325	Bead 67Ω at 100MHz
9I77	4822 117 13605	Jumper 0402	5717	4822 156 21729	Bead 1kΩ 100MHz 0805	5Y04	2422 549 45325	Bead 67Ω at 100MHz
9I79	4822 117 13605	Jumper 0402	5718	4822 157 11716	Bead 30Ω at 100MHz	5Y05	2422 549 45325	Bead 67Ω at 100MHz
9I81	4822 117 13605	Jumper 0402	5719	4822 156 21729	Bead 1kΩ 100MHz 0805			
9I82	4822 117 13605	Jumper 0402	5720	4822 157 11876	6.8µH 10% 0805			
9I85	4822 117 13605	Jumper 0402	5721	4822 157 11716	Bead 30Ω at 100MHz			
9I87	4822 117 13605	Jumper 0402	5722	4822 157 11716	Bead 30Ω at 100MHz	6001	4822 130 80622	BAT54
9I89	4822 117 13605	Jumper 0402	5724	4822 156 21729	Bead 1kΩ 100MHz 0805	6002	4822 130 11397	BAS316
9IA3	4822 117 13605	Jumper 0402	5725	4822 157 11716	Bead 30Ω at 100MHz	6003	4822 130 80622	BAT54
9IA4	4822 117 13605	Jumper 0402	5726	4822 156 21729	Bead 1kΩ 100MHz 0805	6004	4822 130 80622	BAT54
9IA5	4822 117 13605	Jumper 0402	5727	4822 156 21729	Bead 1kΩ 100MHz 0805	6005	4822 130 11422	PLVA2650A
9IA6	4822 117 13605	Jumper 0402	5728	4822 157 11716	Bead 30Ω at 100MHz	6403	9340 552 30115	BA591
9IA7	4822 117 13605	Jumper 0402	5729	4822 157 11716	Bead 30Ω at 100MHz	6830	4822 130 11397	BAS316
9IA8	4822 117 13605	Jumper 0402	5731	4822 156 21729	Bead 1kΩ 100MHz 0805	6831	4822 130 11397	BAS316
9IB0	4822 117 13605	Jumper 0402	5736	4822 157 11876	6.8µH 10% 0805	6832	4822 130 11397	BAS316
9IC1	4822 117 13605	Jumper 0402	5737	4822 156 21729	Bead 1kΩ 100MHz 0805	6833	4822 130 11397	BAS316
9IC2	4822 117 13605	Jumper 0402	5742	4822 157 11716	Bead 30Ω at 100MHz	6834	4822 130 11397	BAS316
9IC3	4822 117 13605	Jumper 0402	5743	4822 157 11716	Bead 30Ω at 100MHz	6835	4822 130 11397	BAS316
9IC8	4822 117 13605	Jumper 0402	5744	4822 157 11716	Bead 30Ω at 100MHz	6836	4822 130 11397	BAS316
9IC9	4822 117 13605	Jumper 0402	5746	4822 157 11716	Bead 30Ω at 100MHz	6837	4822 130 11397	BAS316
9L04	4822 051 30008	Jumper 0603	5747	4822 157 11716	Bead 30Ω at 100MHz	6838	4822 130 11397	BAS316
9P69	4822 117 13605	Jumper 0402	5748	4822 157 11716	Bead 30Ω at 100MHz	6839	4822 130 11397	BAS316
9P70	4822 117 13605	Jumper 0402	5750	4822 157 11716	Bead 30Ω at 100MHz	6840	4822 130 11397	BAS316
9P71	4822 117 13605	Jumper 0402	5751	4822 157 11716	Bead 30Ω at 100MHz	6841	4822 130 11397	BAS316
9S01	4822 051 30008	Jumper 0603	5752	4822 157 11716	Bead 30Ω at 100MHz	6842	4822 130 11397	BAS316
9S02	4822 051 30008	Jumper 0603	5753	4822 157 11716	Bead 30Ω at 100MHz	6843	4822 130 11397	BAS316
9S03	4822 051 30008	Jumper 0603	5754	4822 157 11716	Bead 30Ω at 100MHz	6844	4822 130 11397	BAS316
9S04	4822 051 30008	Jumper 0603	5755	4822 157 11716	Bead 30Ω at 100MHz	6845	4822 130 11397	BAS316
9S05	4822 051 30008	Jumper 0603	5756	4822 157 11716	Bead 30Ω at 100MHz	6846	4822 130 11397	BAS316
9S06	4822 051 30008	Jumper 0603	5757	4822 157 11716	Bead 30Ω at 100MHz	6847	4822 130 11397	BAS316
9S07	4822 051 30008	Jumper 0603	5A00	4822 157 11716	Bead 30Ω at 100MHz	6A00	4822 130 11551	UDZS10B
9S08	4822 051 30008	Jumper 0603	5A01	4822 157 11716	Bead 30Ω at 100MHz	6A01	4822 130 10838	UDZ3.3B
9S09	4822 051 30008	Jumper 0603	5A03	4822 157 11716	Bead 30Ω at 100MHz	6A02	4822 130 11397	BAS316
9S11	4822 051 30008	Jumper 0603	5A06	4822 157 11716	Bead 30Ω at 100MHz	6D53	9340 553 52115	BAS321
9S12	4822 051 30008	Jumper 0603	5A17	2422 549 43769	Bead 30Ω at 100MHz	6D54	9340 553 52115	BAS321
9S13	4822 051 30008	Jumper 0603	5A18	2422 549 43769	Bead 30Ω at 100MHz	6D55	9340 553 52115	BAS321
9S14	4822 051 30008	Jumper 0603	5A19	4822 157 11828	22µH 20% 0805	6D56	9340 553 52115	BAS321
9S15	4822 051 30008	Jumper 0603	5A20	2322 734 63309	33Ω 1% 0.1W 0805	6D57	4822 130 11423	PLVA2656A
9S16	4822 051 30008	Jumper 0603	5A21	2322 734 63309	33Ω 1% 0.1W 0805	6D58	4822 130 11423	PLVA2656A
9S17	4822 051 30008	Jumper 0603	5D51	4822 157 11716	Bead 30Ω at 100MHz	6D59	4822 130 11423	PLVA2656A
9S18	4822 051 30008	Jumper 0603	5D52	4822 157 11716	Bead 30Ω at 100MHz	6D60	4822 130 11423	PLVA2656A
9S19	4822 051 30008	Jumper 0603	5D54	4822 157 11716	Bead 30Ω at 100MHz	6D61	4822 130 11423	PLVA2656A
9S20	4822 051 30008	Jumper 0603	5D56	4822 156 21729	Bead 1kΩ 100MHz 0805	6D62	4822 130 11564	UDZ3.9B
9S21	4822 051 30008	Jumper 0603	5E00	2422 549 42896	Bead 120Ω 100MHz	6D63	4822 130 11397	BAS316
9S22	4822 051 30008	Jumper 0603	5E01	2422 549 42896	Bead 120Ω 100MHz	6D64	4822 130 11397	BAS316
9S23	4822 051 30008	Jumper 0603	5E02	2422 549 42896	Bead 120Ω 100MHz	6E54	4822 130 11397	BAS316
9S24	5322 117 13049	470Ω 1% 0.063W 0603	5E03	2422 549 42896	Bead 120Ω 100MHz	6E55	4822 130 11397	BAS316
9S25	4822 051 30008	Jumper 0603	5E04	2422 549 42896	Bead 120Ω 100MHz	6I10	4822 130 11416	PDZ6.8B
9S26	4822 051 30008	Jumper 0603	5E05	2422 549 42896	Bead 120Ω 100MHz	6I11	4822 130 11416	PDZ6.8B
9S27	4822 051 30008	Jumper 0603	5E08	4822 157 11716	Bead 30Ω at 100MHz	6I12	4822 130 11416	PDZ6.8B
9S28	4822 051 30008	Jumper 0603	5E50	2422 549 43062	Bead 600Ω at 100MHz	6I13	4822 130 11416	PDZ6.8B
9S29	4822 051 30008	Jumper 0603	5E51	2422 549 43062	Bead 600Ω at 100MHz	6I14	9322 129 41685	BZM55-C12
9S30	4822 051 30008	Jumper 0603	5E53	2422 535 94134	10µH 20% 0805	6I15	4822 130 11416	PDZ6.8B
9S31	4822 051 30008	Jumper 0603	5E56	2422 549 43062	Bead 600Ω at 100MHz	6I16	4822 130 11416	PDZ6.8B
9S32	4822 051 30008	Jumper 0603	5E57	2422 549 43062	Bead 600Ω at 100MHz	6I17	4822 130 11416	PDZ6.8B
9S33	4822 051 30008	Jumper 0603	5E58	2422 549 43062	Bead 600Ω at 100MHz	6I18	4822 130 11416	PDZ6.8B
9S34	4822 051 30008	Jumper 0603						

6119	4822 130 11416	PDZ6.8B	7020	3198 010 42310	BC847BW	7137	3198 010 42320	BC857BW
6120	9322 129 41685	BZM55-C12	7066	3104 317 06211	Software	7138	3198 010 42320	BC857BW
6121	4822 130 11416	PDZ6.8B			FTL13EU_1.C_06211	7144	9340 425 20115	BC847BS
6122	4822 130 11416	PDZ6.8B	7067	3104 317 04831	Softw. (check Prod.Surv.)	7L01	9322 181 72671	AD9883AKST-110
6123	4822 130 11416	PDZ6.8B	7070	3104 317 05511	Software	7L02	4822 209 17398	LD1117DT33
6124	4822 130 11416	PDZ6.8B			R_CYCLONE_30LCD_E	7L03	4822 209 73852	PMBT2369
6125	4822 130 11416	PDZ6.8B			_01	7P56	4822 209 17345	M62320FP
6126	4822 130 11416	PDZ6.8B	7307	9352 630 99118	TD49181T	7S01	4822 130 10255	MUN2213
6127	4822 130 11416	PDZ6.8B	7320	3198 010 42310	BC847BW	7S02	4822 130 10255	MUN2213
6128	4822 130 11416	PDZ6.8B	7322	3198 010 42310	BC847BW	7S03	9340 425 20115	BC847BS
6129	4822 130 11416	PDZ6.8B	7323	9352 625 24518	TD49321H/N2	7S04	4822 130 10255	MUN2213
6130	4822 130 11416	PDZ6.8B	7402	3198 010 42310	BC847BW	7U01	4822 130 60373	BC856B
6131	4822 130 11416	PDZ6.8B	7403	5322 130 60159	BC846B	7U02	4822 130 60373	BC856B
6132	4822 130 11416	PDZ6.8B	7407	4822 130 60373	BC856B	7U03	9322 091 04668	SI4410DY
6133	4822 130 11416	PDZ6.8B	7410	3198 010 42310	BC847BW	7U04	9322 091 04668	SI4410DY
6134	4822 130 11416	PDZ6.8B	7411	5322 130 60159	BC846B	7U05	4822 130 60373	BC856B
6135	4822 130 11416	PDZ6.8B	7414	3198 010 42310	BC847BW	7U06	9340 425 20115	BC847BS
6136	4822 130 11416	PDZ6.8B	7415	3198 010 42310	BC847BW	7U07	3198 010 42320	BC857BW
6137	4822 130 11416	PDZ6.8B	7706	9322 142 88668	LF25CDT	7U08	4822 130 42804	BC817-25
6138	4822 130 11416	PDZ6.8B	7707	5322 130 60159	BC846B	7U09	4822 130 42804	BC817-25
6139	4822 130 11416	PDZ6.8B	7708	5322 130 60159	BC846B	7U10	5322 130 60159	BC846B
6140	4822 130 11416	PDZ6.8B	7709	5322 130 60159	BC846B	7U11	5322 130 60159	BC846B
6141	4822 130 11416	PDZ6.8B	7710	5322 130 60159	BC846B	7U12	5322 130 60159	BC846B
6142	4822 130 11416	PDZ6.8B	7711	2422 486 80938	Socket 32p f PLCC	7U13	3198 010 42310	BC847BW
6143	4822 130 11416	PDZ6.8B	7712	9351 870 00118	74HC573PW	7V01	9322 196 44671	EP1C6Q240C8
6144	4822 130 11416	PDZ6.8B	7713	9352 688 09557	SAA4978H/V204	7V02	9322 159 45668	DS90C385MTD
6145	4822 130 11416	PDZ6.8B	7714	9965 000 02179	MS81V04160-25TB	7Y00	9322 181 15668	IRFR9024N
6146	4822 130 11416	PDZ6.8B	7715	4822 209 73852	PMBT2369	7Y01	3198 010 42310	BC847BW
6147	4822 130 11416	PDZ6.8B	7717	9322 183 81668	MSM54V12222B-25JS			
6148	4822 130 11416	PDZ6.8B	7718	9352 695 58557	SAA4993H/V1			
6149	9322 129 41685	BZM55-C12	7719	9322 183 81668	MSM54V12222B-25JS			
6150	4822 130 11416	PDZ6.8B	7722	9965 000 02179	MS81V04160-25TB			
6151	4822 130 11416	PDZ6.8B	7723	9965 000 02179	MS81V04160-25TB			
6152	4822 130 11416	PDZ6.8B	7724	9322 188 08702	T8F24EF-0002			
6153	4822 130 11416	PDZ6.8B	7725	4822 209 73852	PMBT2369			
6154	4822 130 11416	PDZ6.8B	7727	9322 170 14668	LF15ABDT			
6155	4822 130 11416	PDZ6.8B	7740	9352 687 20125	74LVC1G125GW			
6156	4822 130 11416	PDZ6.8B	7741	9352 687 20125	74LVC1G125GW			
6169	4822 130 11416	PDZ6.8B	7742	9352 115 40118	74LVC245APW			
6170	4822 130 11416	PDZ6.8B	7743	9352 115 40118	74LVC245APW			
6190	4822 130 11416	PDZ6.8B	7744	9352 115 40118	74LVC245APW			
6191	4822 130 11416	PDZ6.8B	7745	9352 115 40118	74LVC245APW			
6192	4822 130 11416	PDZ6.8B	7746	9322 190 24668	CY2302SC-1			
6193	4822 130 11416	PDZ6.8B	7747	9352 687 21165	74LVC1G126GW			
6194	4822 130 11416	PDZ6.8B	7748	9352 687 20125	74LVC1G125GW			
6195	4822 130 11416	PDZ6.8B	7999	3104 317 45521	Softw. (check Prod.Surv.)			
6196	4822 130 11416	PDZ6.8B	7A00	4822 209 30095	LM833D			
6197	4822 130 11416	PDZ6.8B	7A01	3198 010 42310	BC847BW			
6198	4822 130 11416	PDZ6.8B	7A02	9322 196 03702	MSP3411G-QI-B8V3			
6199	4822 130 11416	PDZ6.8B	7A03	4822 209 30095	LM833D			
61A0	9322 129 41685	BZM55-C12	7A07	9322 183 05668	TS482ID			
61A6	4822 130 11397	BAS316	7A08	4822 130 60373	BC856B			
61A7	4822 130 11397	BAS316	7A09	4822 130 60373	BC856B			
6T01	4822 130 11397	BAS316	7A10	9340 425 20115	BC847BS			
6T03	4822 130 11397	BAS316	7D51	4822 209 16095	BA7657F			
6T08	9340 548 71115	PDZ33B	7D52	4822 130 62755	BF570			
6U01	4822 130 11397	BAS316	7D53	4822 130 62755	BF570			
6U03	4822 130 11397	BAS316	7D54	4822 130 62755	BF570			
6U04	4822 130 11397	BAS316	7D55	4822 130 62755	BF570			
6U05	9322 129 41685	BZM55-C12	7D57	9322 131 22668	TS95D			
6U06	9322 184 73668	1SMA5915B	7D59	9322 145 26668	M24C02-WMN6			
6U07	4822 130 11416	PDZ6.8B	7E05	9322 170 14668	LF15ABDT			
6U08	4822 130 80622	BAT54	7E08	3198 010 42320	BC847BS			
6U09	4822 130 80622	BAT54	7E09	9322 195 65668	AD9066JR			
6U10	4822 130 11522	UDZ15B	7E10	9352 686 35118	PCA9515DP			
6U11	4822 130 11397	BAS316	7E12	9340 425 20115	BC847BS			
6U12	9340 548 52115	PDZ5.1B	7E13	3198 010 42320	BC857BW			
6U13	9340 548 58115	PDZ9.1B	7E14	3198 010 42310	BC847BW			
6U14	4822 130 11397	BAS316	7E16	9322 195 65668	AD9066JR			
6U15	4822 130 11397	BAS316	7E17	3198 010 42320	BC857BW			
6V01	4822 130 11397	BAS316	7E18	9322 146 75685	TS431L			
6V02	4822 130 11397	BAS316	7E19	3198 010 42310	BC847BW			
6V03	4822 130 11397	BAS316	7E20	3198 010 42320	BC857BW			
6Y00	9322 129 41685	BZM55-C12	7E21	3198 010 42310	BC847BW			
			7E22	3198 010 42310	BC847BW			
			7E23	3198 010 42320	BC857BW			
			7E24	9322 146 75685	TS431L			
7001	9352 684 81557	SAA5801H/015	7I01	9340 425 20115	BC847BS			
7002	3198 010 42320	BC857BW	7I02	9340 425 20115	BC847BS			
7003	3198 010 42310	BC847BW	7I05	3198 010 42320	BC857BW			
7004	3198 010 42310	BC847BW	7I07	4822 130 60142	BC869			
7005	9322 172 45668	LF33ABDT	7I09	3198 010 42310	BC847BW			
7007	9322 157 20668	MSM51V18165F-60J	7I17	9322 116 87668	TEA6422D			
7008	3198 010 42310	BC847BW	7I20	9351 869 40118	74HC4053PW			
7009	3198 010 42310	BC847BW	7I22	9340 425 20115	BC847BS			
7010	3198 010 42320	BC857BW	7I26	4822 130 60373	BC856B			
7011	9322 206 23668	M24C32-WMN6P	7I27	5322 130 60159	BC846B			
7012	9322 199 93668	M29W400DT-55N6	7I28	4822 130 60373	BC856B			
7013	3198 010 42310	BC847BW	7I29	5322 130 60159	BC846B			
7014	3198 010 42320	BC857BW	7I30	5322 130 60159	BC846B			
7017	4822 130 10255	MUN2213	7I31	4822 130 60373	BC856B			
7018	9352 115 40118	74LVC245APW	7I32	9351 869 40118	74HC4053PW			
7019	9352 115 40118	74LVC245APW	7I35	3198 010 42310	BC847BW			
			7I36	3198 010 42310	BC847BW			

LED + Switch Panel [LD]

Various

0317	2422 025 12482	Connector 6p m
0317	2422 025 13369	Socket 6p (Telephone)
0320	2422 025 16545	Connector 10p m
1101	2422 128 02927	Switch push 2p

—II—

2107	4822 124 12095	100µF 20% 16V
2108	3198 017 31040	100nF 20% 50V 0603
2120	2020 024 90166	10µF 20% 35V
2126	2020 552 96326	220nF 10% 16V

—WW—

3101	4822 051 30151	150Ω 5% 0.062W
3102	4822 117 13632	100kΩ 1% 0.62W 0603
3103	4822 051 30221	220Ω 5% 0.062W
3104	4822 117 13632	100kΩ 1% 0.62W 0603
3105	4822 051 30331	330Ω 5% 0.062W
3106	4822 051 30151	150Ω 5% 0.062W
3107	4822 051 30471	470Ω 5% 0.062W
3108	4822 051 30103	10kΩ 5% 0.062W
3109	4822 051 30101	100Ω 5% 0.062W
3110	3198 021 35620	5.6kΩ 5% 0.062W 0603
3111	3198 021 35620	5.6kΩ 5% 0.062W 0603
3112	3198 021 35620	5.6kΩ 5% 0.062W 0603
3120	4822 051 30472	4.7kΩ 5% 0.062W
3121	3198 021 31030	10kΩ 5% 0.062W 0603
3121	4822 051 30472	4.7kΩ 5% 0.062W
3122	4822 051 30102	1kΩ 5% 0.062W
3123	4822 051 30103	10kΩ 5% 0.062W
3124	4822 051 30102	1kΩ 5% 0.062W
3125	4822 051 30332	3.3kΩ 5% 0.062W
3126	4822 051 30474	470kΩ 5% 0.062W
3127	4822 051 30474	470kΩ 5% 0.062W
3128	3198 021 31020	1kΩ 5% 0.062W 0603
3129	3198 021 35620	5.6kΩ 5% 0.062W 0603
3130	3198 021 33920	3.9kΩ 5% 0.062W 0603
3131	3198 021 31030	10kΩ 5% 0.062W 0603
4101	4822 051 30008	Jumper 0603
4107	4822 051 30008	Jumper 0603

—B+

5100	2422 549 43769	Bead 30Ω at 100MHz
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—B+

6101	3198 020 53980	BZX384-C2V9
6101	4822 130 11564	UDZ3.9B
6102	3198 020 55180	BZX384-C5V1
6103	4822 130 83915	TLMV3100
6105	3198 020 53980	BZX384-C2V9
6105	4822 130 11564	UDZ3.9B



7103	3198 010 42320	BC857BW
7103	5322 130 42756	BC857C
7104	3198 010 42310	BC847BW
7105	3198 010 42320	BC857BW
7105	5322 130 42756	BC857C
7107	9322 155 98667	TSOP2236YA1
7107	9322 178 03667	TSOP2136YA1
7108	9352 688 24125	74LVC1G86GW
7120	5322 209 82941	LM358D
7120	9339 848 80668	LM358DT

Side I/O Panel [O]

Various

0206	3104 308 10671	Side I/O bracket LCD 30"
0206	3104 308 11401	Side I/O bracket(ITV)
0900	2422 026 05133	Connector SVHS 4p f
0901	4822 267 10975	Connector 3p
0902	4822 267 31014	Socket headphone
0936	2422 025 12485	Connector 11p m
1900	2422 026 05133	Connector SVHS 4p f
1901	2422 026 04756	Socket CINCH 3p
1901	4822 267 10975	Connector 3p
1902	2422 025 18016	Socket JACK 6p m
1902	4822 267 31014	Socket headphone
1903	2422 025 12482	Connector 6p m
1904	2422 128 03106	Switch 2p 30V
1936	2422 025 12485	Connector 11p m
8936	3104 311 06121	Cable 11p560/11p



2903	5322 122 32531	100pF 5% 50V
2904	5322 122 32531	100pF 5% 50V
2905	4822 122 33177	10nF 20% 50V
2906	4822 122 33177	10nF 20% 50V



3901	4822 117 11373	100Ω 1% 0805
3902	4822 116 52201	75Ω 5% 0.5W
3903	4822 117 11373	100Ω 1% 0805
3904	4822 116 52201	75Ω 5% 0.5W
3905	4822 050 11002	1kΩ 1% 0.4W
3906	4822 050 11002	1kΩ 1% 0.4W
3908	4822 050 11002	1kΩ 1% 0.4W
3910	4822 116 52276	3.9kΩ 5% 0.5W
3911	4822 050 21003	10kΩ 1% 0.6W
3912	4822 050 21003	10kΩ 1% 0.6W
4901	4822 051 20008	Jumper 0805
4903	4822 051 20008	Jumper 0805

Top Control Panel [P]

Various

0053	3104 308 10551	TC assy knob R LCD 30"
0055	3104 308 10561	TC assy knob L LCD 30"
0057	3104 304 25831	TC frame LCD 30"
0058	3104 308 10571	TC assy knob M LCD 30"
0345	4822 267 10459	Connector 3p
1701	2422 128 02778	Tact switch
1702	2422 128 02778	Tact switch
1703	2422 128 02778	Tact switch
1704	2422 128 02778	Tact switch
1705	2422 128 02778	Tact switch
8345	3104 311 00121	Cable 3p/280/3p KR Wh



3001	4822 051 20391	390Ω 5% 0.1W
3003	4822 117 13528	200Ω 1% 0.125W 0805
3005	4822 117 11951	2kΩ 1% 0.1W
3009	4822 117 11534	1.1kΩ 1% 0.1W
3011	4822 117 10845	620Ω 1% 0.1W
3999	4822 051 20471	470Ω 5% 0.1W
9001	4822 051 20008	Jumper 0805
9003	4822 051 20008	Jumper 0805
9005	4822 051 20008	Jumper 0805
9006	4822 051 20008	Jumper 0805

Aux Supply [SA]

Various

0202	3104 301 24181	Spring for Bracket
0203	3104 301 24181	Spring for Bracket
0205	3122 121 67191	Clip small
0206	3122 121 67191	Clip small
0207	3122 121 67191	Clip small
0208	3122 121 67191	Clip small
0209	3122 121 67191	Clip small
0210	3104 304 90361	Insulating plate
1005	4822 071 55002	Fuse T5A 250V
1006	4822 071 55002	Fuse T5A 250V
1007	4822 071 55002	Fuse T5A 250V
1302	2422 025 10769	Connector 9p m
1309	2422 025 16374	Connector 2p m
1312	2422 025 18166	Connector 16p m
1313	2422 025 18166	Connector 16p m
1333	4822 267 10618	Connector 7p
1346	4822 267 10637	Connector 5p m
1355	4822 265 41391	Connector 9p m
1370	4822 267 10637	Connector 5p m



2000▲	2252 811 95017	470pF 10% 250V
2001	2020 024 90754	100μF 20% 400V
2002	4822 124 11767	470μF 20% 25V
2003	4822 124 80061	1000μF 20% 25V
2004	2222 464 90017	200pF 2% 630V
2005	4822 121 51288	100pF 630V
2007	2020 552 96327	330nF 10% 16V 0805
2008	2020 552 96684	470nF 10% 25V
2010	4822 124 81188	100μF 20% 25V
2011	4822 121 70617	10nF 5% 1.6kV
2012	4822 126 13862	1.5nF 10% 2kV
2013	4822 126 13862	1.5nF 10% 2kV
2014	4822 126 13451	2.2nF 10% 2kV
2015	5322 126 11583	10nF 10% 50V 0603
2016	2238 586 59812	100nF 20-80% 50V 0603
2017	4822 121 70617	10nF 5% 1.6kV
2019	5322 126 11583	10nF 10% 50V 0603
2020	2020 021 91551	2200μF 20% 25V
2022	4822 124 11583	2200μF 20% 35V
2023	2238 586 59812	100nF 20-80% 50V 0603
2024	2238 586 59812	100nF 20-80% 50V 0603
2025	4822 121 51319	1μF 10% 63V
2026	4822 126 14238	2.2nF 50V 0603
2027	3198 017 31530	15nF 20% 50V 0603
2028	5322 126 11578	1nF 10% 50V 0603
2029	5322 126 11578	1nF 10% 50V 0603
2033	2020 552 96683	220nF 10% 50V
2034	2020 552 96683	220nF 10% 50V
2035	2020 552 96683	220nF 10% 50V
2036	2020 552 96683	220nF 10% 50V
2038	4822 124 11583	2200μF 20% 35V
2040	4822 126 14249	560pF 10% 50V 0603
2041	5322 121 10472	47μF
2042	5322 121 10472	47μF
2044	5322 126 11578	1nF 10% 50V 0603
2045	5322 126 11578	1nF 10% 50V 0603
2046	3198 017 34730	47nF 16V 0603
2047	5322 126 11583	10nF 10% 50V 0603
2048	5322 126 11583	10nF 10% 50V 0603
2050	5322 126 11578	1nF 10% 50V 0603
2060	4822 126 14238	2.2nF 50V 0603
2061	4822 126 14238	2.2nF 50V 0603
2062	4822 126 14238	2.2nF 50V 0603
2063	4822 126 13881	470pF 5% 50V
2064	4822 126 13881	470pF 5% 50V
2065	4822 126 14238	2.2nF 50V 0603
2071	5322 126 11578	1nF 10% 50V 0603
2072	5322 126 11578	1nF 10% 50V 0603
2077	4822 126 14238	2.2nF 50V 0603
2290	5322 126 11583	10nF 10% 50V 0603
2291	5322 126 11578	1nF 10% 50V 0603
2292	2020 021 91354	1000μF 20% 50V
2293	5322 126 11578	1nF 10% 50V 0603
2294	2020 021 91354	1000μF 20% 50V



3000▲	4822 052 10478	4.7Ω 5% 0.33W
3001	4822 116 52175	100Ω 5% 0.5W
3002	4822 051 30223	22kΩ 5% 0.062W
3003	4822 117 13632	100kΩ 1% 0.62W 0603
3004	4822 051 30273	27kΩ 5% 0.062W
3005	4822 051 30333	33kΩ 5% 0.062W
3006	4822 051 30103	10kΩ 5% 0.062W
3007	4822 051 30103	10kΩ 5% 0.062W

3008	4822 051 30471	470Ω 5% 0.062W
3009	4822 051 30332	3.3kΩ 5% 0.062W
3010	4822 051 30471	470Ω 5% 0.062W
3011	4822 051 30471	470Ω 5% 0.062W
3012	4822 051 30153	15kΩ 5% 0.062W
3013	4822 051 30103	10kΩ 5% 0.062W
3014▲	4822 052 10101	100Ω 5% 0.33W
3015▲	4822 052 10479	47Ω 5% 0.33W
3016	4822 051 30222	2.2kΩ 5% 0.062W
3017▲	4822 052 10101	100Ω 5% 0.33W
3018▲	4822 052 10479	47Ω 5% 0.33W
3019	4822 051 30222	2.2kΩ 5% 0.062W
3020	4822 051 30222	2.2kΩ 5% 0.062W
3021	4822 053 10109	10Ω 5% 1W
3022	4822 051 30681	680Ω 5% 0.062W
3023	4822 051 30223	22kΩ 5% 0.062W
3024	5322 117 13024	33kΩ 1% 0.063W 0603
3025	4822 117 12903	1.8kΩ 1% 0.063W 0603
3026	4822 101 11383	470Ω 30% LIN
3027	4822 117 13632	100kΩ 1% 0.62W 0603
3029	4822 051 30222	2.2kΩ 5% 0.062W
3030	4822 051 30183	18kΩ 5% 0.062W
3031	4822 053 11154	150kΩ 5% 2W
3032	4822 053 11154	150kΩ 5% 2W
3034	4822 051 30102	1kΩ 5% 0.062W
3040	4822 051 20752	7.5kΩ 5% 0.1W
3041	4822 051 30333	33kΩ 5% 0.062W
3043	4822 051 30109	10Ω 5% 0.062W
3047	4822 051 30479	47Ω 5% 0.062W
3048	4822 051 30272	2.7kΩ 5% 0.062W
3050	4822 050 28204	820kΩ 1% 0.6W
3052	2322 704 61603	16kΩ 1% 0603
3053	4822 050 26804	680kΩ 1% 0.6W
3055	4822 051 30109	10Ω 5% 0.062W
3056	4822 051 30681	680Ω 5% 0.062W
3057	4822 051 30221	220Ω 5% 0.062W
3058	4822 053 20565	5.6MΩ 5% 0.25W
3061	4822 051 30683	68kΩ 5% 0.062W
3064	4822 051 30103	10kΩ 5% 0.062W
3065	4822 051 30682	6.8kΩ 5% 0.062W
3066	4822 051 30103	10kΩ 5% 0.062W
3067	4822 051 30101	100Ω 5% 0.062W
3068	4822 051 30222	2.2kΩ 5% 0.062W
3070	4822 051 30102	1kΩ 5% 0.062W
3071	4822 051 30103	10kΩ 5% 0.062W
3072	9337 224 60116	Temp sens. KTY81-220
3075	4822 051 30102	1kΩ 5% 0.062W
3292	4822 051 30561	560Ω 5% 0.062W
3300	4822 050 11002	1kΩ 1% 0.4W
3999	4822 051 10102	1kΩ 2% 0.25W
9054	4822 051 20008	Jumper 0805
9055	4822 051 20008	Jumper 0805
9056	4822 051 20008	Jumper 0805
9057	4822 051 20008	Jumper 0805



5001	2422 531 02444	Transformer S13932-04Y
5002	3104 308 20802	Transformer BS42234-02
5003	4822 157 71442	150μH 10%
5004	4822 526 10704	Bead 45Ω at 50MHz
5005	4822 157 11411	Bead 83Ω at 100MHz
5007	4822 157 11411	Bead 83Ω at 100MHz
5008	4822 157 11411	Bead 83Ω at 100MHz
5009	4822 157 11411	Bead 83Ω at 100MHz
5010	4822 157 11411	Bead 83Ω at 100MHz
5013	4822 157 11411	Bead 83Ω at 100MHz
5015	4822 157 11411	Bead 83Ω at 100MHz
5016	4822 157 11411	Bead 83Ω at 100MHz
5017	4822 526 10704	Bead 45Ω at 50MHz
5025	4822 157 11411	Bead 83Ω at 100MHz
5026	4822 157 11411	Bead 83Ω at 100MHz
5027	4822 157 11411	Bead 83Ω at 100MHz
5028	4822 157 11411	Bead 83Ω at 100MHz
5040	4822 157 11411	Bead 83Ω at 100MHz
5041	4822 526 10704	Bead 45Ω at 50MHz
5291	4822 157 71467	39μH 10%
5292	4822 157 71467	39μH 10%
5293	4822 157 71467	39μH 10%



6002	4822 130 11397	BAS316
6003	4822 130 11397	BAS316
6004	4822 130 11397	BAS316
6005	4822 130 11397	BAS316
6006	4822 130 11397	BAS316
6007	4822 130 11397	BAS316
6008	4822 130 11397	BAS316
6009	9340 548 66115	PDZ20B
6010	4822 130 11397	BAS316
6011	4822 130 11397	BAS316

6012	4822 130 34281	BZX79-B15
6013	4822 130 34281	BZX79-B15
6017	4822 130 11397	BAS316
6020	4822 130 11397	BAS316
6021	9322 167 08687	STTH2003CF
6022	3198 020 55680	BZX384-C5V6
6023	4822 130 11397	BAS316
6027	4822 130 11397	BAS316
6028	4822 130 11397	BAS316
6044	9322 173 47687	STPS20L40CFP
6051	4822 130 11397	BAS316
6078	4822 130 11044	BYV26D
6079	4822 130 30621	1N4148
6081	4822 130 34441	BZX79-B22
6291	4822 130 11596	BYW29EX-200
6293	4822 130 11596	BYW29EX-200



7001	9322 108 21682	MC34067P
7002	9322 149 04682	TCET1102
7003	3198 010 42310	BC847BW
7005	9322 192 18687	STP15NK50ZFP
7006	9322 192 18687	STP15NK50ZFP
7007	3198 010 42320	BC857BW
7008	3198 010 42320	BC857BW
7009	3198 010 42320	BC857BW
7010	4822 209 81397	TL431CLPST
7011	4822 209 12334	L4940V85
7017	3198 010 42320	BC857BW
7018	3198 010 42310	BC847BW

Power supply [SP]

Various

0308	2422 025 16374	Connector 2p m
1309	2422 025 16374	Connector 2p m
1333	4822 267 10618	Connector 7p
1400▲	4822 253 50145	Fuse 3.15A T
1401▲	4822 265 11253	Fuse holder 2p
1402	4822 252 60151	Sparkgap dsp501
1450	2422 132 07411	Relay 1p 5V 5A



2400	4822 126 13589	470nF 275V
2401	4822 126 13589	470nF 275V
2405▲	2252 811 95065	220pF 10% 250V
2502	2252 561 95045	68pF 5% 1kV
2503	2020 024 90718	10μF 20% 450V
2504	5322 126 11578	1nF 10% 50V 0603
2506▲	2252 811 95021	1nF 10% 250V
2507	4822 126 13682	100pF 5% 1kV
2508	4822 124 40764	22μF 100 V
2509	5322 122 32818	2.2nF 10% 100V
2510	2020 021 91794	1000μF 20% 16V
2511	2238 586 59812	100nF 20-80% 50V 0603
2512	2238 586 59812	100nF 20-80% 50V 0603
2513	2238 586 59812	100nF 20-80% 50V 0603
2514	4822 121 43913	470nF 10% 100V
2515	4822 126 13682	100pF 5% 1kV
2533	4822 124 40207	100μF 20% 25V
2534	4822 124 40248	10μF 20% 63V
2535	5322 126 11583	10nF 10% 50V 0603
2536	4822 122 33177	10nF 20% 50V
2537	4822 122 33127	2.2nF 10% 63V
2538	4822 122 33177	10nF 20% 50V
2539	4822 124 21913	1μF 20% 63V
2801	2222 365 55563	56nF 10% 400V
2802	2222 365 55563	56nF 10% 400V
2815	4822 124 42159	330μF 20% 400V
2817	4822 121 70162	10nF 5% 400V



3400▲	2122 550 00158	VDR 1mA 612V
3401	4822 053 21475	4.7MΩ 5% 0.5W
3402	4822 053 21475	4.7MΩ 5% 0.5W
3403	4822 053 21475	4.7MΩ 5% 0.5W
3404	4822 116 83872	220Ω 5% 0.5W
3460	4822 051 30682	6.8kΩ 5% 0.062W
3461	4822 051 30472	4.7kΩ 5% 0.062W
3501	4822 116 52228	680Ω 5% 0.5W
3502	4822 051 30332	3.3kΩ 5% 0.062W
3503	5322 117 13026	4.7kΩ 1% 0.063W 0603
3505	4822 117 13085	5.6kΩ 1% 0.1W 0805
3506	4822 051 20471	470Ω 5% 0.1W
3507	4822 053 20225	2.2MΩ 5% 0.25W
3509	4822 116 83961	6.8kΩ 5%

3510	4822 116 83961	6.8kΩ 5%
3511	4822 116 83884	47kΩ 5% 0.5W
3512	4822 051 30471	470Ω 5% 0.062W
3513	4822 051 30103	10kΩ 5% 0.062W
3514	4822 051 30102	1kΩ 5% 0.062W
3515	4822 117 10833	10kΩ 1% 0.1W
3516▲	4822 052 10688	6.8Ω 5% 0.33W
3517	4822 116 83868	150Ω 5% 0.5W
3518	4822 117 10833	10kΩ 1% 0.1W
3519	4822 051 10102	1kΩ 2% 0.25W
3520	4822 117 11507	6.8kΩ 1% 0.1W
3521	4822 051 20273	27kΩ 5% 0.1W
3522	4822 117 10361	680Ω 1% 0.1W
3523	4822 117 10833	10kΩ 1% 0.1W
3524	4822 117 11449	2.2kΩ 5% 0.1W 0805
3525	4822 051 20471	470Ω 5% 0.1W
3526	4822 051 30101	100Ω 5% 0.062W
3528	4822 051 20472	4.7kΩ 5% 0.1W
3529	4822 051 30101	100Ω 5% 0.062W
3530	4822 051 20223	22kΩ 5% 0.1W
3531	4822 051 30153	15kΩ 5% 0.062W
3532	4822 116 52283	4.7kΩ 5% 0.5W
3533	4822 116 83961	6.8kΩ 5%
3534	4822 051 20223	22kΩ 5% 0.1W
3535	4822 117 10833	10kΩ 1% 0.1W
3536	4822 117 11449	2.2kΩ 5% 0.1W 0805
3537	4822 117 11373	100Ω 1% 0805
3538	4822 051 30101	100Ω 5% 0.062W
3539	4822 117 11373	100Ω 1% 0805
3999	4822 051 10102	1kΩ 2% 0.25W
9004	4822 051 20008	Jumper 0805
9912	4822 051 20008	Jumper 0805



5401	2422 549 43291	Filter 47mH 2A
5402	2422 549 43291	Filter 47mH 2A
5403	2422 549 44698	Filter 20mH
5500▲	3104 308 20882	Transformer BS16301
5502	4822 526 10704	Bead 45Ω at 50MHz
5503	4822 526 10704	Bead 45Ω at 50MHz
5506	4822 157 71467	39μH 10%



6460	4822 130 11397	BAS316
6461	4822 130 11397	BAS316
6462	4822 130 11397	BAS316
6463	4822 130 11397	BAS316
6501	9336 018 60133	BZT03-C300
6502	9336 018 60133	BZT03-C300
6503	4822 130 41487	BYV95C
6504	9340 418 70133	BYV27-600
6505	9322 161 76682	SB340L-7024
6506	4822 130 83147	DF06M
6507	4822 130 11397	BAS316
6515	4822 130 11397	BAS316
6516	3198 020 55680	BZX384-C5V6
6517	4822 130 11397	BAS316
6519	4822 130 11397	BAS316
6531	4822 130 31024	BZX79-B18
6532	4822 130 11397	BAS316
6807	9322 199 39682	GBJ6J-B12



7460	9340 219 30115	BC817-25W
7500	9322 185 00682	TNY266P
7501▲	9322 149 04682	TCET1102
7502	4822 209 81397	TL431CLPST
7503	5322 130 60159	BC846B
7504	5322 130 60159	BC846B
7505	4822 130 60373	BC856B
7506	5322 130 60159	BC846B
7507	5322 130 60159	BC846B
7508	5322 130 60159	BC846B
7531	4822 130 11336	STP16NE06FP
7532	3198 010 42310	BC847BW

11. Revision List

11.1 Manual xxxx xxx xxxx.0

- First release.

11.2 Manual xxxx xxx xxxx.1 (internal release, not published).

- Some pictures renamed.
- Some small spelling mistakes corrected.

11.3 Manual xxxx xxx xxxx.2

- Chapter 1: ITV connections added.
- Chapter 4: Some pictures updated.
- Chapter 5:
 - Error "76" added.
 - Figure "Stepwise start-up diagram" updated.
 - ITV information added.
- Chapter 6: Updated with ITV information (wiring, block diagram audio) and some small corrections on I2C overview.
- Chapter 7: ITV versions of side I/O (O) and LED/Switch panel (LD) added, plus some small corrections.
- Chapter 8: ITV "Hotel" mode option settings added, general update of option tables.
- Chapter 10: ITV models added and parts list updated for other sets.
- Other chapters: small updates and corrections.

11.4 Manual xxxx xxx xxxx.3

- Information of the FTL13E AB chassis added.
During production a different video switch (item 7D51 on B19a of the SSB is used. A new PWB layout is created and some schematics are updated.
- Chapter 7: Schematics and PWB layout of updated SSB are added.
 - Only changed schematics are added..
 - Schematic B16a-B16d are added, these schematics are not used (no components are mounted) but are published to have a complete overview.
- Chapter 10: Spare Part List of FTL13E AB SSB is added
- Some small layout and text changes are made in the text chapters.