DVD-Video Player DVD763SA

DVD763SA /001 /021 /051

Service
Service
Service

Service Manual

CLASS 1
LASER PRODUCT

DVD VIDEO™

COMPACT disc DIGITAL VIDEO

COMPACT disc DIGITAL AUDIO

Contents **Page**

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PHILIPS

1. Technical Specifications and Connection Facilities

Specifications

PLAYBACK SYSTEM

DVD Video
SACD multi channel and SACD stereo
Video CD & SVCD
CD (CD-Recordable and CD-Rewritable)
MP3 CD

TV STANDARD (PAL/50Hz) (NTSC/60Hz)

Number of lines	625	525
Playback	Multistandard	(PAL/NTSC)

VIDEO PERFORMANCE

RGB (SCART) output	0.7 Vpp into 75 ohm
YUV output	Y: 1Vpp into 75 ohm
	Pr/Cr Pb/Cb: 0.7Vpp into 75 ohm
S-Video output	Y: 1Vpp into 75 ohm
	C: 0.3Vpp into 75 ohm
Video output	1 Vpp into 75 ohm
Black Level Shift	On/Off
Video Shift	Left/Right

AUDIO FORMAT

DSD	Multichannel and Stereo
MPEG/	Compressed Digital
Dolby Digital	16, 20, 24 bits
DTS/PCM	fs, 44.1, 48, 96 kHz
MP3	96, 112, 128, 256 kbps and
(ISO 9660)	variable bit rate fs 32, 44.1, 48kHz

Full decoding of Dolby Digital and DTS multi channel sound
Analogue Stereo Sound
Dolby Surround-compatible downmix from Dolby Digital multi-channel sound
3D Sound for virtual 5.1 channel sound on 2 speakers

SACD AUDIO PERFORMANCE

D/A Converter	DSD	
SACD	fs 2.8224MHz	DC - 100kHz
Max. output voltage (0dB)	2V rms	
Channel unbalance	<0.5 dB	
Cut-off frequency	50kHz (Front)	
	40kHz (Surround, Center, Subwoofer)	
Signal-Noise (1kHz)		105 dB
Dynamic Range (1kHz)		105 dB
Crosstalk (1kHz)		105 dB
Total Harmonic Distortion (1kHz)		97 dB

AUDIO PERFORMANCE (TYPICAL)

DA Converter	24 bits	
DVD	fs 96 kHz	4 Hz - 44 kHz
CD/Video CD	fs 44.1 kHz	4 Hz - 20 kHz
S-Video CD	fs 48 kHz	4 Hz - 22 kHz
	fs 44.1 kHz	4 Hz - 20 kHz
Signal-Noise (1kHz)		100 dB
Dynamic Range (1kHz)		100 dB
Crosstalk (1kHz)		105 dB
Total Harmonic Distortion (1kHz)		97 dB
MPEG MP3	MPEG Audio L3	

CONNECTIONS

SCART	2x Euroconnector
Y Pb/Cb Pr/Cr (480i)	Cinch 3x (green, blue, red)
S-Video Output	Mini DIN, 4 pins
Video Output	2x Cinch (yellow)
Audio L+R output	Cinch (white/red)
Digital Output	1 coaxial, 1 optical
	IEC958 for CDDA / LPCM
	IEC1937 for MPEG1/2, Dolby Digital, DTS

6 channel analog output

Audio Front L/R	Cinch (white/red)
Audio Surround L/R	Cinch (white/red)
Audio Centre	Cinch (blue)
Audio Subwoofer	Cinch (black)

CABINET

Dimensions (w x h x d)	435 x 77.5 x 303.5 mm
Weight	Approximately 3.1 Kg

POWER SUPPLY (UNIVERSAL)

Power inlet	110V-240V, 50/60Hz
Power usage	Approx. 23W
Power usage standby	< 1W

* *typical playing time for movie with 2 spoken languages and 3 subtitle languages*

Specifications subject to change without prior notice

2. Safety Instructions, Warnings and Notes

2.1 Safety Instructions

2.1.1 General Safety

Safety regulations require that during a repair:
- Connect the unit to the mains via an isolation transformer.
- 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, you must return the unit in its original condition. Pay, in particular, attention to the following points:
- Route the wires/cables correctly, and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side:
  1. Unplug the mains cord, and connect a wire between the two pins of the mains plug.
  2. Set the mains switch to the 'on' position (keep the mains cord unplugged!).
  3. Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
  4. Repair or correct unit when the resistance measurement is less than 1 MΩ.
  5. Verify this, before you return the unit to the customer/ user (ref. UL-standard no. 1492).
  6. Switch the unit 'off', and remove the wire between the two pins of the mains plug.

2.1.2 Laser Safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser Device Unit

Type	:	Semiconductor laser GaAlAs
Wavelength	:	650 nm (DVD)
	:	780 nm (VCD/CD)
Output Power	:	20 mW (DVD+RW writing)
	:	0.8 mW (DVD reading)
	:	0.3 mW (VCD/CD reading)
Beam divergence	:	60 degree

Figure 2-1 Class 1 Laser Product

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

2.2 Warnings

2.2.1 General

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, symbol ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools 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 live voltage section. The primary side of the power supply (pos. 1005), including the heatsink, carries live mains voltage when you connect the player to the mains (even when the player is 'off'!). It is possible to touch copper tracks and/or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A 'lightning stroke' and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.
- Never replace modules, or components, while the unit is 'on'.

2.2.2 Laser

- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield:

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARNING SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
VAROI AVATT AESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

Figure 2-2 Warning text

2.2.3 Notes

Dolby

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Figure 2-3

Trusurround

TRUSURROUND, **SRS** and symbol (fig 2-4) are trademarks of SRS Labs, Inc. TRUSURROUND technology is manufactured under licence frm SRS labs, Inc.

Figure 2-4

2.3 Service Hints

2.3.1 Switched Mode Power Supply

The power supply unit has to be replaced in case of failure. The schematic provided in the manual is only for information and no service parts will be available.

2.3.2 DVD Module

This module can be repaired as follows:

1. The VAL6011/14 is a combination of loading mechanism and DVD-mechanism. Both are not repairable units and in case of failure, it has to be replaced with a new loader VAL6011/14.

   Note: When replacing with a new VAL6011/14, two solder joints have to be removed after connecting the OPU flex foil to the mono board.
   The solder joints, which shortcircuits the laser diodes to ground, are for protection against ESD. Refer to figures 2-5 and 2-6 for location of solder joints.
2. The mono board has to be repaired down to component level. Repair handling of the monoboard requires a workshop with sophisticated desoldering tools.

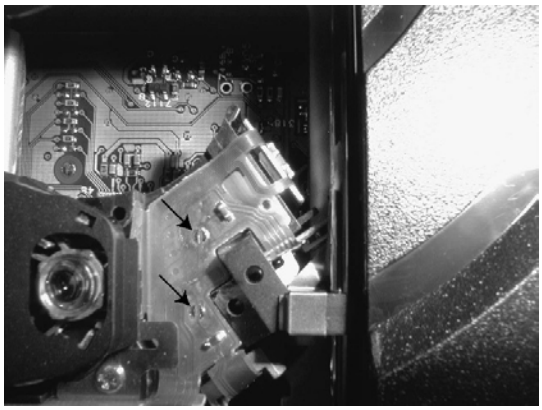


Figure 2-5 Solder joints

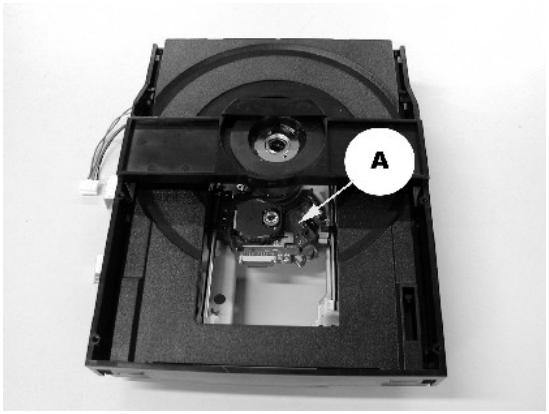


Figure 2-6 Solder joints

2.3.3 ComPair

For assistance with the repair process of the monoboard an electronic fault finding guidance has been developed. This program is called ComPair.
This ComPair program is available on CDROM.
The version of the CDROM for repair of the monoboard is V1.3 or higher and can be ordered with codenumber 4822 727 21637. This is an update CDROM, so when the ComPair CDROM is used for the first time, one has to install the ComPair Engine CDROM V1.2 first.
The V1.2 CDROM can be ordered with code number 4822 727 21634 and has to registered after instalation. The procedure for registration is explained in the help file of the program and in the CDROM booklet.
The cable to connect the monoboard with a PC can be ordered with codenumber: 3122 785 90017.
All the hardware and software requirements of the systems, necessary for working with ComPair, are described on the CDROM.

2.3.4 Service Positions

Refer to dismantling instructions for dismounting of the board. Figures 2-7 to 2-8 shows the service position that are recommended during repair of the boards.

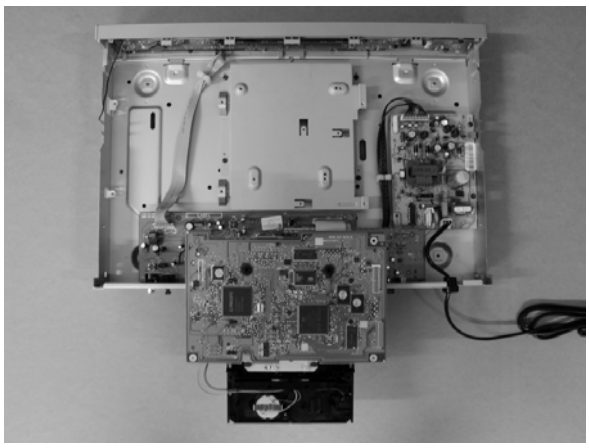


Figure 2-7 SD4.00SA_CH module

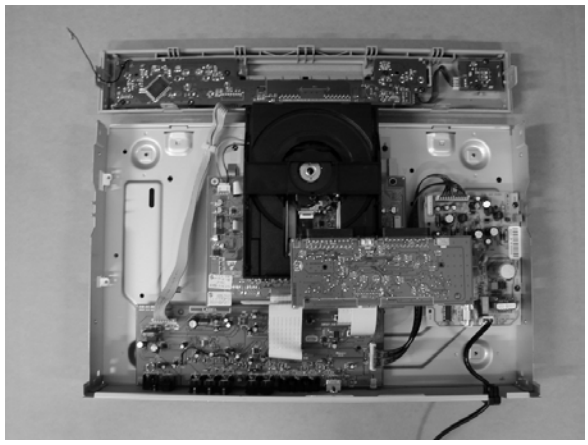


Figure 2-8 DVD763SA model

4. Mechanical- and Dismantling Instructions

DISMANTLING INSTRUCTIONS

See exploded view of DVD763SA for item numbers

Mounting ↕ Dismounting

TopCover 300
- ➔ Remove 4 screws 310 and 3 screws 305.
- ➔ Lift cover from rearside to remove.

Front cabinet 001
- ➔ Remove cable connections.
- ➔ Open Tray (see instruction below).
- ➔ Unlock Tray cover 095 and close tray.
- ➔ Unlock Front panel from frame by releasing successively 4 snaps. (2 on the side and 2 on the bottom)
- ➔ Place Front panel in front of the set (service position).

Front Display board 1002
- ➔ Remove cable connections.
- ➔ Remove the navigation button 120.
- ➔ Remove 6 screws 100. (Board to Front cabinet)
- ➔ Dismount board.

Front Standby board
- ➔ Remove cable connection.
- ➔ Remove 2 screws 110. (Board to Front cabinet)
- ➔ Dismount board.

DVD Module 145
- ➔ Remove flex connections to A/V board.
- ➔ Open tray (see instruction below).
- ➔ Unlock Tray cover 095.
- ➔ Remove 4 screws 185. (Loader to bottom bracket)
- ➔ Remove 2 screws 200. (Monoboard to bottom bracket)
- ➔ Close tray.
- ➔ Lift module up slightly and move backward to remove.

DVD Monoboard
- ➔ Remove flex and cable connections from DVD Loader to Monoboard.
- ➔ Remove 4 screws 10 to 13. (Monoboard to Loader,VAL6011/14)
- ➔ Dismount Monoboard.

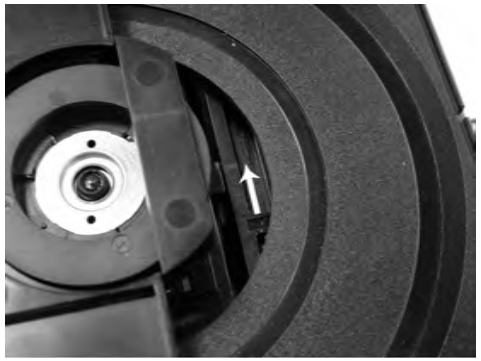
Double Scart board 1003
(Only for DVD763SA /EU)
- ➔ Remove flex connection to conn 1300 on scart board.
- ➔ Remove 4 screws 290. (scart to back-plate)
- ➔ Dismount board.

A/V board 1001
- ➔ Remove Double Scart board (Only for DVD763SA /EU)
- ➔ Remove flex and cable connections.
- ➔ Remove 7 screws 275 (skt cinch ,optical to back-plate) and screw 280. (S-video to back-plate)
- ➔ Release 2 spacer locking.
- ➔ Dismount board.

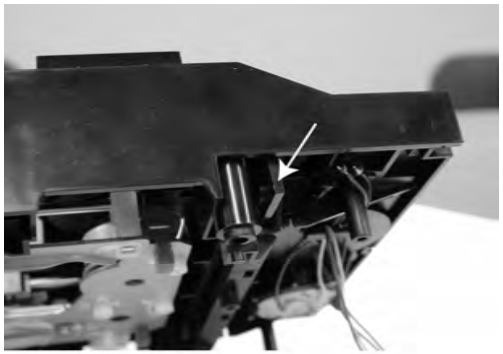
Power supply unit 1005
- ➔ Remove cable connections.
- ➔ Remove 2 screws 190. (Board to bottom frame)
- ➔ Release 2 spacer locking. (Board to bottom frame)
- ➔ Dismount board.

Manually opening of tray

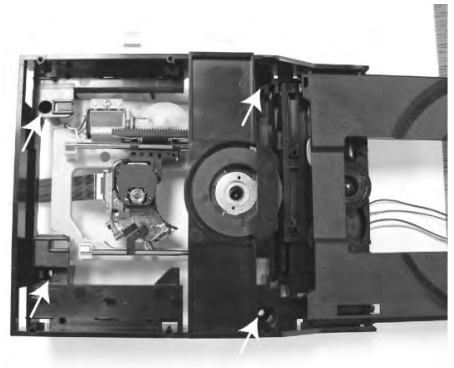
When it is not possible to open the tray with the EJECT button, the tray can be manually opened.
When no disc is loaded, unlock the tray by moving the slide from left to right and pull tray outwards.



When a disc is loaded, unlock the tray by pushing the slide inwards with a screwdriver and pull tray outwards.



Remove 4 screws to remove loader.



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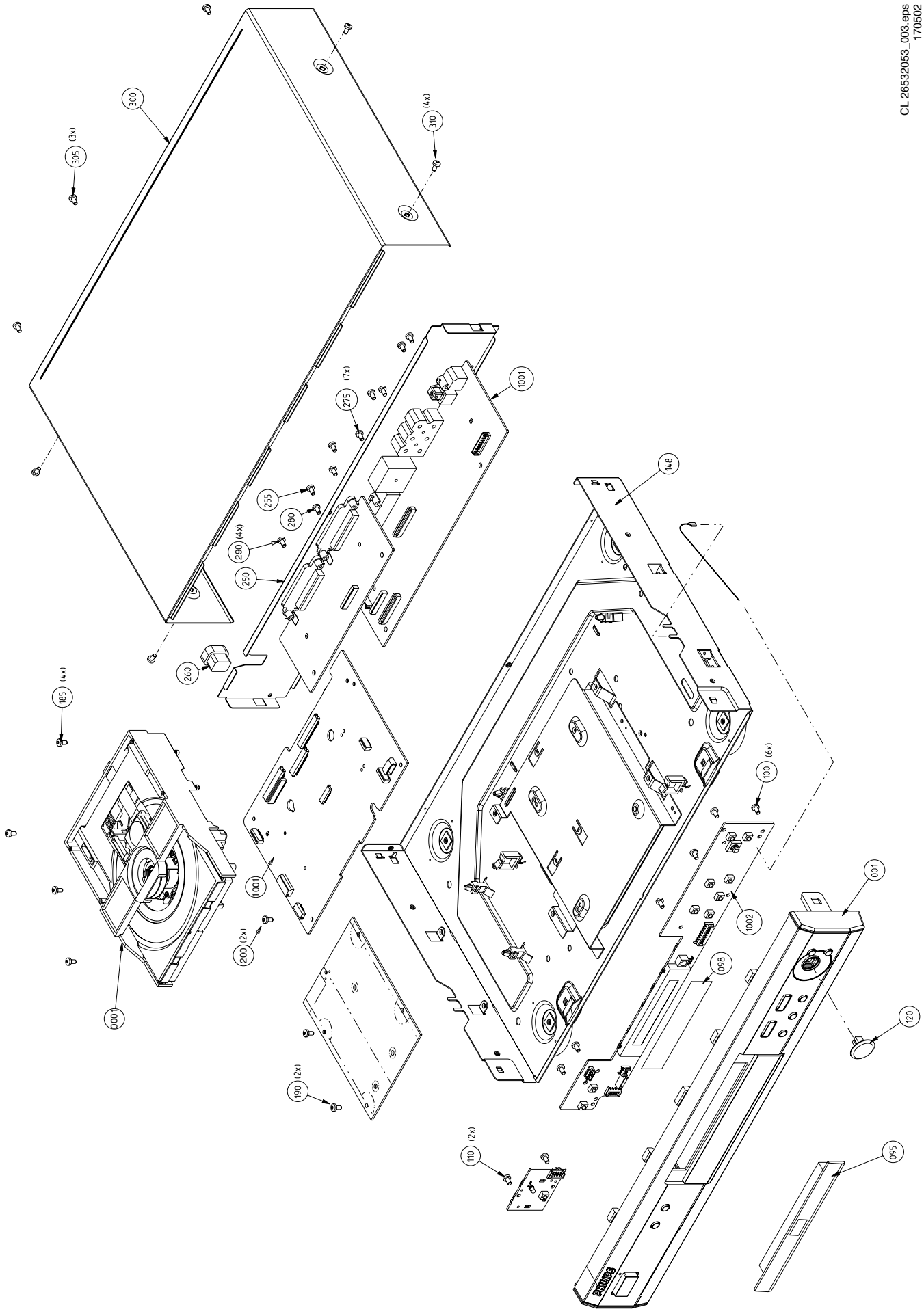

Figure 4-1 Exploded view

5. Diagnostic Software, Trouble Shooting and Test Instructions

5.1 Dealerscript

5.1.1 Purpose of Dealer Script

The dealer script can give a diagnosis on a standalone DVD player, no other equipment is needed to perform a number of hardware tests to check if the DVD player is faulty. The diagnosis is simply a "error" or "pass" message. No indication is given of faulty hardware modules. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

5.1.2 Contents of Dealer Script

The dealer script executes all diagnostic nuclei that do not need any user interaction and are meaningful on a standalone DVD player.
The nuclei called in the dealer script are the following (the number after each nucleus name corresponds with the number being on the local display when the nucleus is executed during the dealer script):

Nucleus

Display Countdown	Nucleus Number	Nucleus Name	Description
7	6	PapChksFl	Calculate and verify checksum of FLASH memory
6	12	PapI2cDisp	Checks the I2C interface with the slave processor on the display board
5	13	PapS2bEcho	Checks the I2C interface to the basic engine
4	11	PapI2cNvram	Checks the I2C interface with the NVRAM
3	15	PapNvramWrR	Pattern test of all locations in the NVRAM
2	16	CompSdramWrR	Pattern test of all locations in the SDRAM(s)
1	63	FURORERSdramWrRLow	Pattern test of all locations in the SDRAM(s)

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Figure 5-1 Dealer script nuclei

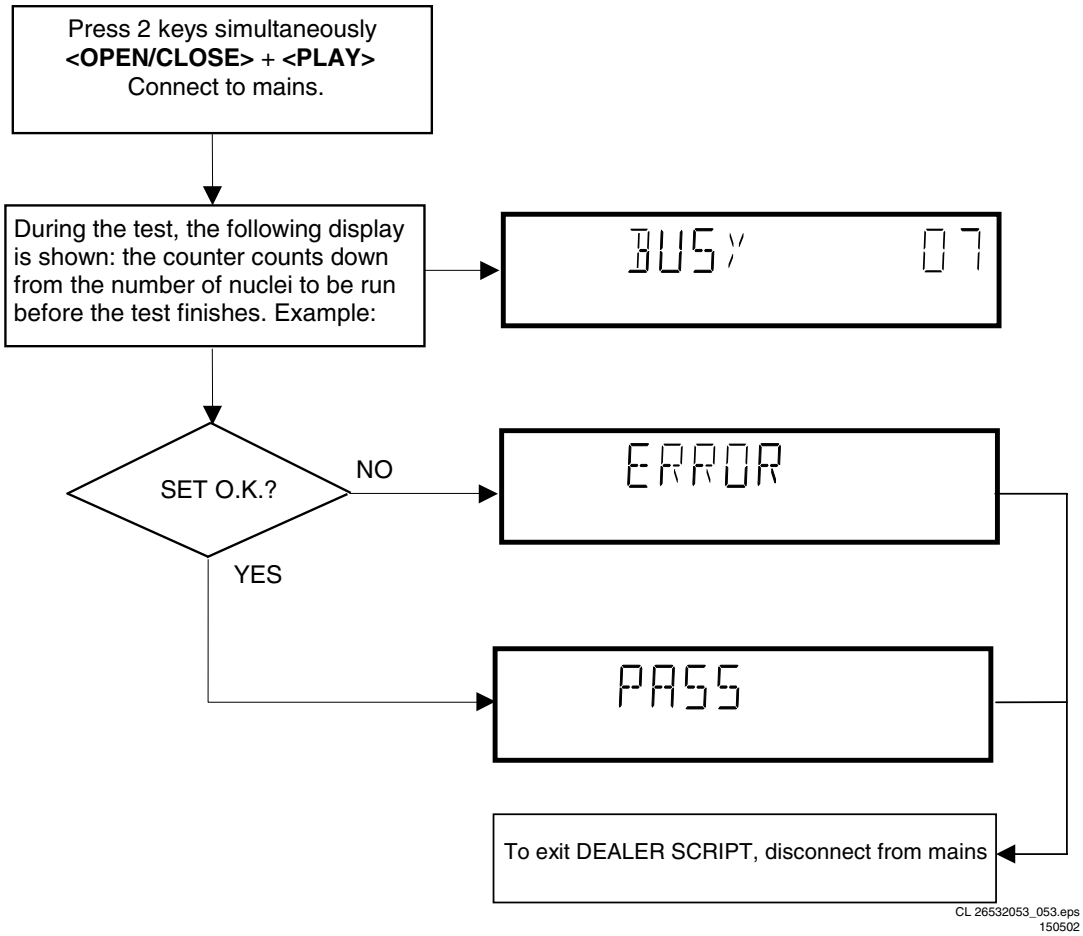

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Figure 5-2 Dealer Script

5.2 Player Script

5.2.1 Purpose of Player Script

The Player script will give the opportunity to perform a test that will determine which of the DVD player's modules are faulty, to read the error log and error bits and to perform an endurance loop test. To successfully perform the tests, the DVD player must be connected to a TV set to check the output of a number of nuclei. For DVDv2b a multi-channel amplifier, a set of 6 speakers and an external video source are necessary to test. To be able to check results of certain nuclei, the player script expects some interaction of the user (i.e. to approve a test picture or a test sound). Some nuclei (e.g. nuclei that test functionality of the Basic Engine module) require that the DVD player itself is opened, to enable the user to observe moving parts and approve their movement visually. Only tests within the scope of the diagnostic software will be executed hence only faults within this scope can be detected.

5.2.2 Contents of Player Script

The player script contains all nuclei that are useful on a DVD player that is connected to a TV set and help to determine which module of the DVD player is faulty, as well as to read out the contents of the error logs.

5.2.3 Structure of Player Script

The player script consists of a set of nuclei testing the three hardware modules in the DVD player: the Display PWB, the Digital PWB, and the Basic Engine.
Nuclei run by the player test need some user interaction. In the next paragraph this interaction is described. The player test is done in two phases:

1. **Interactive tests:** this part of the player test depends strongly on user interaction and input to determine nucleus results and to progress through the full test. Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player.
2. **The loop test**: this part of the player test will loop through the list of nuclei indefinitely, till the player is reset. The list of nuclei is as follows:
   - PapChksFlash
   - PapI2cNvram
   - CompSdramWrR
   - PapS2bEcho
   - PapI2cDisp

At the beginning of the tests, the DSW version number will be indicated on the local display of the DVD.
The display will look like the following:

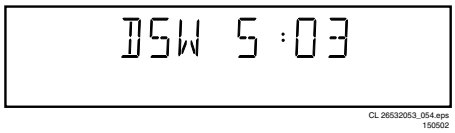

Figure 5-3

Pressing the PLAY key will proceed to the slave S/W version display, which is shown on the local display of the DVD player.
The display will look like the following:

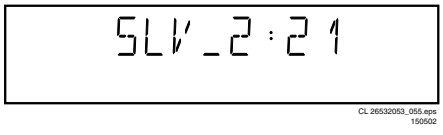

Figure 5-4

Press the OPEN/CLOSE key to proceed to the next test.

5.2.4 Survey

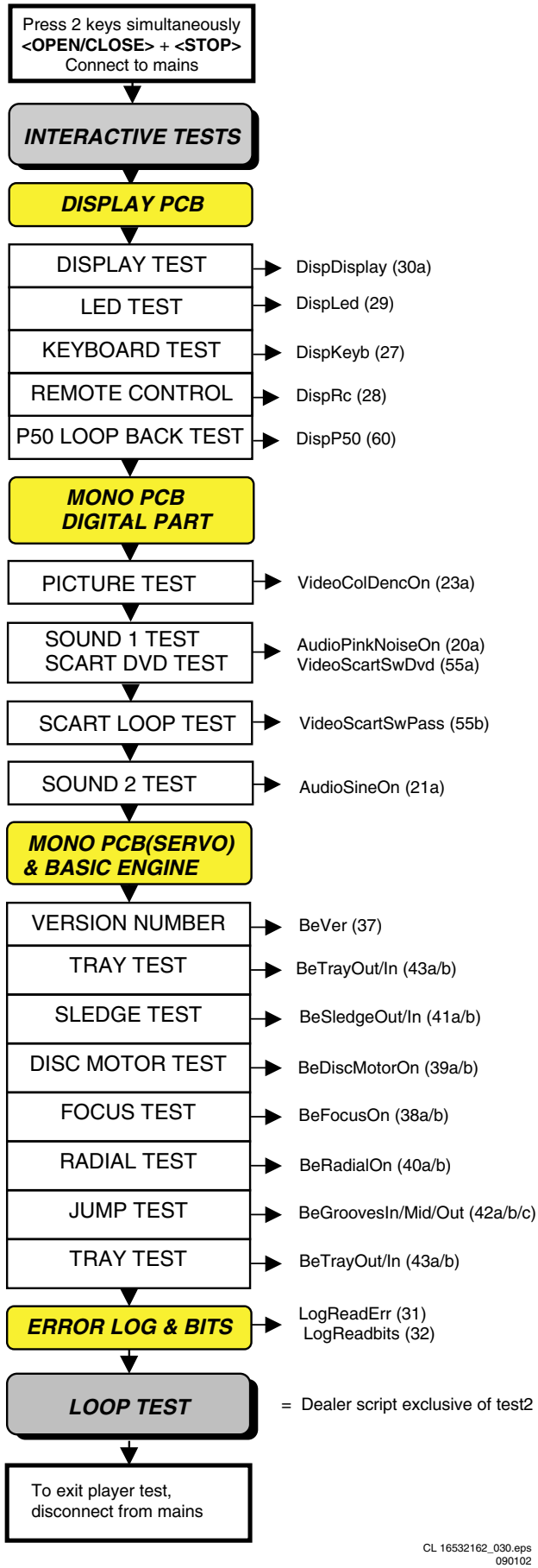

Figure 5-5

5.3 Display PCB

5.3.1 Display Test

The display test is performed by nucleus DispDisplay. By putting a serie of test patterns on the local display, the local display is tested. To step through all different patterns, the user must either press OPEN/CLOSE (pattern is ok) or STOP (pattern was incorrect) to proceed to the next pattern. The display of patterns is continued in a cyclic manner, shown in Fig. 5-6, until the user presses PLAY. If the user presses PLAY before all display patterns are tested, the DispDisplay nucleus will return FALSE (display test unsuccessful).

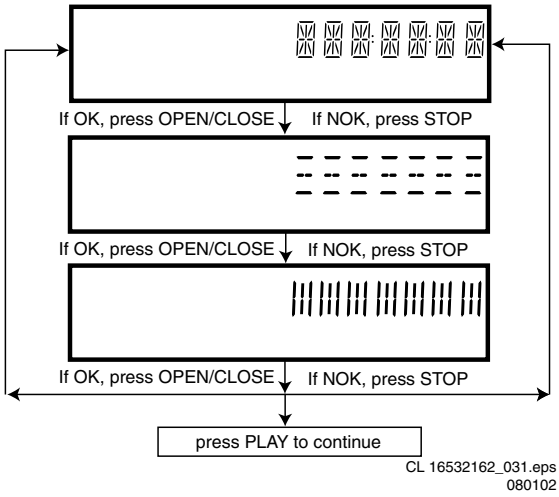

Figure 5-6

5.3.2 LED Test

The LED(s) on the DVD player is (are) tested by nucleus DispLed. The user must check if the LED(s) is (are) lighted; if it is, press OPEN/CLOSE, if it is not, press STOP. By pressing PLAY the script will proceed to the next test. If the user presses PLAY before OPEN/CLOSE or STOP, the DispLed nucleus will return TRUE (LED test successful).

5.3.3 Keyboard Test

The keyboard of the DVD player is tested by nucleus DispKeyb. The user is expected to press all keys on the local keyboard once. The code of the key pressed is shown on the local display (1 hexadecimal digit) immediately followed by a (hexadecimal) number indicating how many times that key has been pressed. Example of the local display during this test:

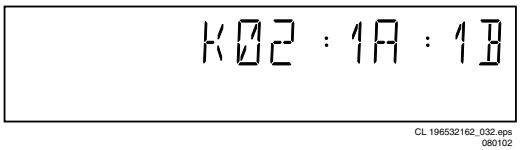

Figure 5-7

The key-codes displayed on the local display will scroll from right to left when the display gets full, the text "K" will remain on display.

KEY ID	KEY
0	PLAY/PAUSE
1	STOP
2	OPEN/CLOSE
3	STANDBY
4	NEXT
5	PREVIOUS
7	SMART PICTURE
8	NAVIGATION -UP
9	NAVIGATION -DOWN
A	NAVIGATION - LEFT
B	NAVIGATION - RIGHT
C	DISC MENU
D	OK
E	SOUND

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Figure 5-8

If any keys are detected more than once (due to hardware error), the key-code is displayed twice (or more), with the second digit increased by 1.
If the user does not press all keys minimally once (in any order), the DispKeys nucleus will return FALSE and cause an error in the overall result of the player script.
The user can leave the keyboard test by pressing the PLAY key on the local display of the DVD player for at least one full second.
The result of the keyboard test is shown on local display as follows:

Figure 5-9

Or

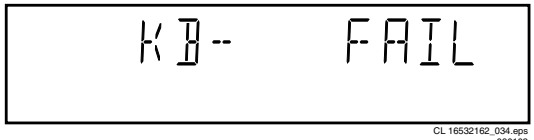

Figure 5-10

Pressing PLAY on the local keyboard again will proceed to the next text.

5.3.4 Remote Control Test

The remote control of the DVD player is tested by nucleus DispRc. The user must press any key on the remote control just once. The codes of the key pressed will be shown on the local display in hexadecimal format. Example:

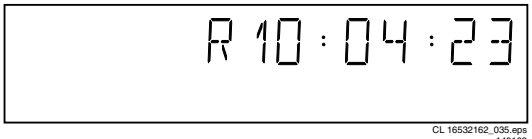

Figure 5-11

In this example 23 is the hexidecimal code of the pressed RC key. The user can leave the remote-control test by pressing PLAY on the local keyboard of the DVD player. The remote control test is successful if a code was received before the user pressed the PLAY key. Pressing the PLAY key, before pressing a key on the remote control, gives an error in the remote control test (note that the remote control test will also fail if a key on the remote control was pressed but no code was received). The remote control test does not check upon the contents of the received code, that is it will not be checked if the received code matches the key pressed. If desired, the user can manually check this code by using a code-table for the remote control key-codes.

RC Key id	Hexadecimal code
STANDBY	0C
1	1
2	2
3	3
4	4
5	5
6	6
7	7
8	8
9	9
0	0
RETURN	83
DISPLAY	EF
DISC MENU	54
SYSTEM MENU	82
CURSOR UP	58
CURSOR DOWN	59
CURSOR LEFT	5A
CURSOR RIGHT	5B
OK	5C
PREVIOUS	21
NEXT	20
STOP	31
PLAY	2C
PAUSE	30
SUBTITLE	4B
ANGLE	85
ZOOM	F7
AUDIO	4E
REPEAT	1D
REPEAT A-B	3B
SHUFFLE	1C
SCAN	2A

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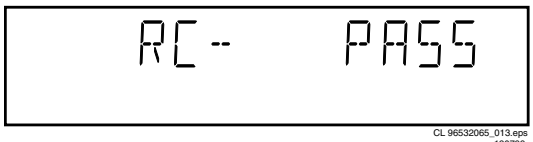
Figure 5-12

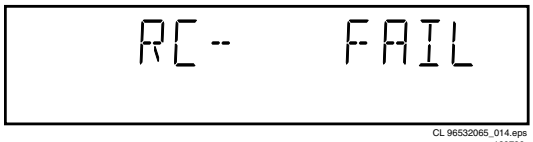
After pressing PLAY, the result of the remote control test is displayed on the local display of the DVD player as follows:



CL 96532065_013.eps
120799

Figure 5-13

Or



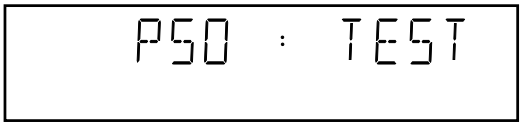
CL 96532065_014.eps
120799

Figure 5-14

Pressing PLAY on the local keyboard again will proceed to the next test.

5.3.5 P50 Loop-Back Test

For the P50 loop-back test, the user must first press a key to decide if the test is to be performed.
The display will show the following message:

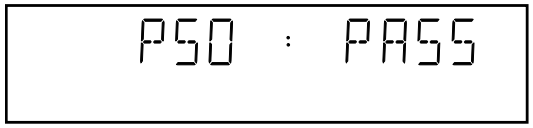


CL 16532007_004.eps
090102

Figure 5-15

If the user presses STOP, the P50 test will be skipped.
If the user presses OPEN/CLOSE, the P50 test is performed and the result is displayed as follows:

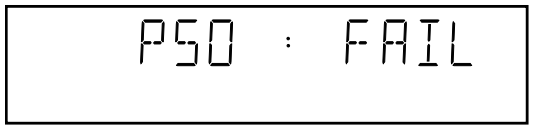
Test successful:



CL 16532007_005.eps
090102

Figure 5-16

Test fails:



CL 16532007_006.eps
090102

Figure 5-17

Press the PLAY key to continue to the next text

5.4 Mono PCB Digital Part

5.4.1 Picture Test

The picture test is performed by putting a predefined picture (colour bar) on the display (nucleus VideoColDencOn), and asking the user for confirmation.
The display will show the following message:

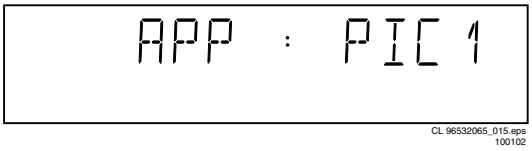


Figure 5-18

By pressing OPEN/CLOSE the user confirms the test, pressing STOP will indicate the picture was invisible or incorrect. Pressing PLAY will proceed to the next test. If the user presses PLAY without pressing OPEN/CLOSE or STOP first, the result of this test will be TRUE (picture ok).

Note: The colour bar must be simultaneously available on the CVBS, YC, and RGB (or YUV) outputs available. On the SCART only the CVBS and RGB signals will be available.

5.4.2 Sound 1 & SCART DVD Test

The first soundtest is performed by starting a pink noise sound that needs confirmation from the user (nucleus AudioPinkNoiseOn).
The display will show the following message:

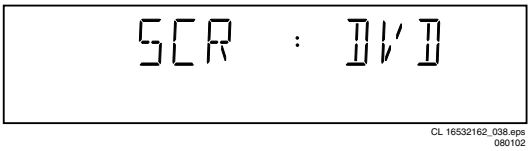


Figure 5-19

On the TV screen a colour bar (generated by nucleus VideoColDencOn) is visible and the internally generated pinknoise is audible.
By pressing the PLAY key, the user confirms the test. Pressing the STOP key will indicate the sound was inaudible or incorrect.

Note: Only for double scart models, SCART loop-through will be simultaneously active during this test. SCART loop-through will be measured with the aid of an external video source.
By pressing the PLAY key, there will be switched over to the external source. This must become now visible on the TV srcreen (using the SCART).
The local display will show the following message:

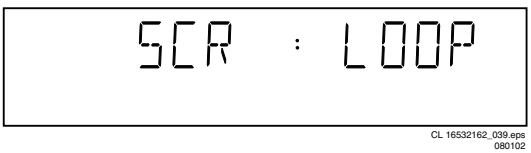


Figure 5-20

The internally generated colour bar is still available on the CVBS and Y/C outputs. And the pinknoise-signal is still available on the cinch audio outputs. By pressing the OPEN/CLOSE button, the internal generated colour bar becomes visual again.

The test can be left by pressing the PLAY key for more than one second.

5.4.3 Sound 2 Test

The second soundtest is performed by producing a sine sound (nucleus AudioSineOn). The signal can be stopped by pressing the STOP key.
The display will show the following message:

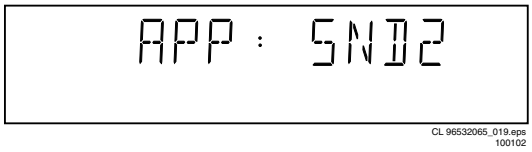


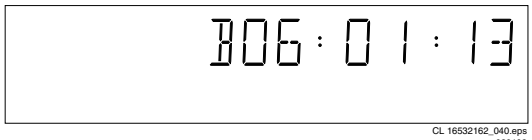
Figure 5-21

After the audio signal has been stopped, by pressing OPEN/CLOSE, the user confirms the test. Pressing STOP will indicate that something went wrong. Pressing PLAY will proceed to the next. If the user presses PLAY without pressing OPEN/CLOSE or STOP first, the result of this test will be TRUE (sound ok).

5.5 Basic Engine

5.5.1 Version Number

In the basic engine tests, the version number of the Basic Engine will be shown first, as the following example:



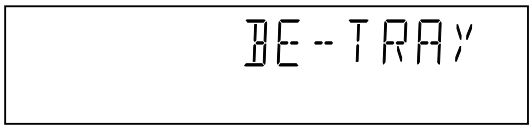
CL 16532162_040.eps
080102

Figure 5-22

By pressing the PLAY key, the Basic Engine tests are started.

5.5.2 Tray Test

First, the tray is tested. The purpose of this test is also to give the user the opportunity to put a disc in the tray of the DVD player. Some tests on the Basic Engine require that a disc (e.g. DVD MPTD test disc) is present in the player. At the end of the Basic Engine tests this tray test will be repeated solely to enable the user to remove the disc in the tray.
The local display will look as follows:



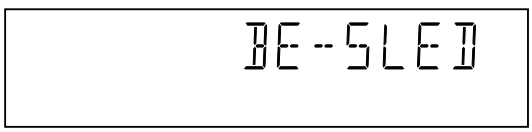
CL 16532162_041.eps
080102

Figure 5-23

By pressing OPEN/CLOSE the user can toggle the position of the tray. Note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY will proceed to the next test. At this point, the tray will be closed automatically by the software if it was open.

5.5.3 Sledge Test (Visual Test)

The second Basic Engine test tests the sledge. The user can move the sledge as many times as desired by using OPEN/CLOSE (nucleus BeSledgeOut) and STOP (nucleus BeSledgeIn). Pressing PLAY on the local keyboard proceeds to the next test. Note that this test will not contribute to the test result of the Basic Engine.
The local display will look as follows during the sledge test:

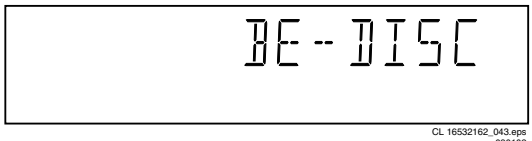


CL 16532162_042.eps
080102

Figure 5-24

5.5.4 Disc Motor Test (Visual Test)

The third Basic Engine test tests the disc motor (nucleus BeDiscMotorOn).
The local display looks as follows:



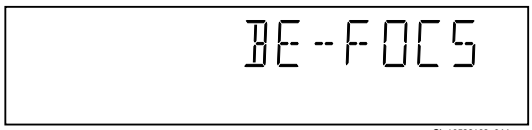
CL 16532162_043.eps
080102

Figure 5-25

By pressing OPEN/CLOSE the user confirms that the disc motor is running. Pressing STOP indicates the disc motor does not work. Pressing PLAY proceeds to the next test, after a reset of the disc motor (nucleus BeDiscMotorOff). If the user presses PLAY before pressing OPEN/CLOSE or STOP, the result of this test will be TRUE (disc motor is running).

5.5.5 Focus Test (Visual Test)

The fourth Basic Engine test tests the focussing. First focussing is turned on by calling nucleus BeFocusOn.
The display will look as follows:



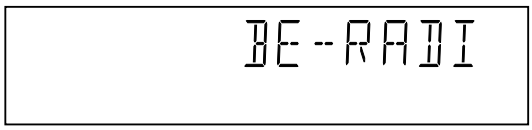
CL 16532162_044.eps
080102

Figure 5-26

By pressing OPEN/CLOSE the user confirms that the focussing was succesful. Pressing STOP indicates a focussing failure. Pressing PLAY proceeds to the next test after a reset of the focussing (nucleus BeFocusOff). If PLAY is pressed before OPEN/CLOSE or STOP, the result of this test will be TRUE (focus successful).

5.5.6 Radial Test (Visual & Listening Test)

The fifth Basic Engine test tests the radial functionality (nucleus BeRadialOn).
The local display looks as follows:



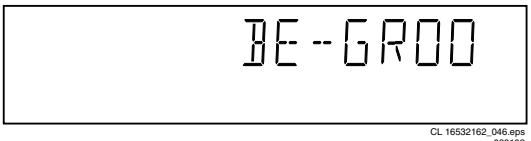
CL 16532162_045.eps
080102

Figure 5-27

By pressing OPEN/CLOSE the user confirms that the radial function works.Pressing STOP indicates the function does not work. Pressing PLAY proceeds to the next test, after a reset of the radial (nucleus BeRadialOff). If the user presses PLAY before pressing OPEN/CLOSE or STOP, the result of this test will be TRUE (radial successful).

5.5.7 Jump Test (Listening Test)

The sixth and last Basic Engine test tests the jumping by calling nuclei BeGroovesIn, BeGroovesMid and BeGroovesOut.
During this test, the local display looks as follows:



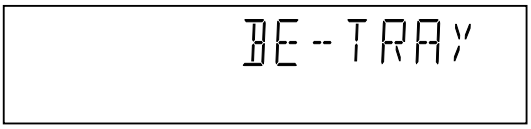
CL 16532162_046.eps
080102

Figure 5-28

The user can switch between the three different types of groove settings by pressing OPEN/CLOSE (forward to next nucleus in the list In-Mid-Out), or STOP (backward in the list In-Mid-Out). This is done in a cyclic manner; note that this test will not contribute to the test result of the Basic Engine. Pressing PLAY proceeds to the next test, after the disc motor has been shut off with a call to nucleus BeDiscMotorOff.

5.5.8 Tray Test

As a last action for the Basic Engine tests, the tray test is repeated. The local display will look as follows:



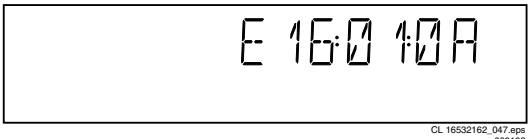
CL 16532162_041.eps
080102

Figure 5-29

This test is meant to give the user the opportunity to remove the disc in the tray. The tray position can be toggled using the OPEN/CLOSE key. The tray will be closed (by the software, if it is open) before proceeding to the next test when the user presses the PLAY key.

5.5.9 Error Log (See Table on Page 25)

Reading the error log and error bits information can be useful to determine any errors that occurred recently during normal operation of the DVD player. Reading the error log is done by nucleus LogReadErr.
The display during the errorlog readout looks as follows :



CL 16532162_047.eps
080102

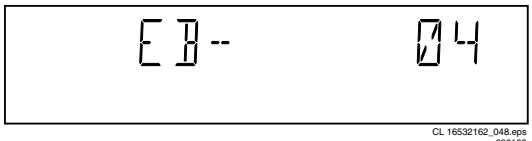
Figure 5-30

Note: Previous versions of the diagnostic software showed a 8-digit error code.
Due to limitations in the number of digits that can be displayed by some front panel displays, the most significant digits will not be shown. This can be done since all the error codes used by this player has set these 2 digits to “00”

By pressing OPEN/CLOSE or STOP the user can move forward or backward (respectively) through the logged error codes. If "0000" is displayed at all positions, the error log is empty. Display of the logged errors is done in a cyclic manner. By pressing PLAY on the local keyboard, the user can proceed to the next test.

5.5.10 Error Bits

Reading the error bits is done by nucleus LogReadBits. The display during the errorbits readout looks as follows:



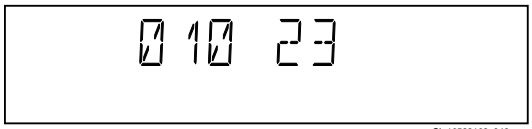
CL 16532162_048.eps
080102

Figure 5-31

Only the identification number (decimal) representing set errorbits will be shown. By pressing OPEN/CLOSE or STOP, the user can move forward or backward (respectively) through the logged errorcodes. If the display only shows "EB-0", no error bits were set. By pressing PLAY the user can continue to the next test.

5.6 Loop Test (See Table Below)

At the start of the loop test, the local display of the DVD player will show the interactive player test result readout in the following display:



CL 16532162_049.eps
080102

Figure 5-32

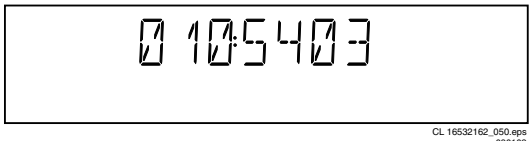
The left side of the display contains a 3-digit code, which can have a value between 000 and 111. These values indicate the faulty modules and are to be interpreted as follows:

Displayed Value	Indication for each module		
	Basic Engine	Mono PCB	Display PCB
000	ok	ok	ok
001	ok	ok	faulty
010	ok	faulty	ok
011	ok	faulty	faulty
100	faulty	ok	ok
101	faulty	ok	faulty
110	faulty	faulty	ok
111	faulty	faulty	faulty

CL 96532065_031.eps
120799

Figure 5-33

The loop test will perform the same nuclei as the dealer test, but it will loop through the list of nuclei indefinitely. The display of the DVD player will display not only the three digits indicating correct/faulty modules and the last found error code (as mentioned, faults are detected as far as they can be within the scope of the diagnostic software), but also a loop counter indicating how many times the loop has been gone through. If an error was detected, the display will remain as in figure 5-34 until the user presses the PLAY key and then it will continue to the next loop.
Example:



CL 16532162_050.eps
080102

Figure 5-34

The 2-digit number (23) on the right of figure 5-32 indicates the number of times the loop test has been performed.

After one loop cycle: Display the 3-digit module bits together with the last error code which occured in the loop test. The 4 digits at the right side of the display (fig. 5-34) show the last error that was found during the loop test. The leftmost two digits (54) of this code indicates which nucleus resulted in a fault. The rightmost two digits (03) refer to the faultcode within that nucleus. For further explanation of this error code, refer to chapter 5.8 (Nuclei Error Codes).

5.6.1 Errorlog

Explanation:
The application errors will be logged in the NVRAM. The maximum number of error bytes that will be visible is 16. The first word (4 digits) of the byte is the component identification, the last word is the error code.
The diagnostics software will present a combination of this component identification plus an error code on the local display (and on the attached terminal). The last reported error is shown as < 00000000, the oldest visible error as 00000000 > and the errors in between as < 00000000 >.
The devices that may report errors are the serial controller (UART), the basic engine (BE), the slave processor (SLPH), the SACD Stream Manager (SSM) and the SACD Media Access (SMA). The identification of these components is as follows:

Component name	Component identification
Serial controller (UART)	000A
Engine (BE)	0016
Slave Processor (SLPH)	001A
SACD Stream Manager (SSM)	001C
SACD Media Access (SMA)	002E
Diagnostic software (DS)	Dxxx

The tables in the next chapters list the error code and corresponding problem. The column 'Explanation' holds a more elaborate description and the most likely reason for the error.

Some Examples:
002E0000 (SMA reported a timeout error)
0016010A (Engine could not fully close or open the tray)
D0010001 (Flash checksum failed).

For further explanation of DS errors, see description of nucleui error codes in paragraph 5.8.

UART Error Codes

Error Number	Error name	Explanation
0000	BUF_OVERFLOW	To many characters were offered in too little time. Reason: system was too busy doing other jobs.
0001	COMMUNICATION	Usually a protocol error. Reason: bad connection between engine and processor.
0002	TIME OUT	

BE Errors

Error Number	Error name	Explanation
0101	S2B_ILL_COMMAND	Parameter(s) not valid for this command. Reason: some communication problem between UART and engine.
0102	S2B_ILL_PARAM	Command not allowed in this state or unknown. Reason: see S2B_ILL_COMMAND error
0103	S2B_SLEDGE	Sledge could not be moved to home position.
0104	S2B_FOCUS	Focus failure
0105	S2B_MOTOR	Motor could not reach speed within timeout
0106	S2B_RADIAL	Servo didn't get on track after several retries.
0107	S2B_PLL_LOCK	PLL could not lock in Accessing or Tracking state
0108	SBC_HEADER_TO	Header timeout
0109	S2B_SBC_NOT_FOUND	Requested subcode item could not be found.
010A	S2B_TRAY	Tray could not be opened or closed completely.
010B	S2B_TOC_READ	TOC could not be read within timeout period.
010C	S2B_JUMP	Requested seek could not be performed.
010D	S2B_NON_EXIST_SES	Attempt to access a non-existing session.
010E	S2B_NON_EXIST_BCA	Caller tries to acces a non-existing BCA area
010F	Speed setting	A wrong or inappropraiate speed value has been set
0116	NO_DISC	No disc selected
011A	TRAY_INIT	After reset, initialized tray
011B	NO TOC INFO	No TOC information in lead-in area or erase TOC found
01F0	S2B_OVERRUN	Too many bytes received over S2B Reason: see S2B_ILL_COMMAND error
01F1	S2B_COMM_TO	Not enough bytes are received over S2B Reason: see S2B_ILL_COMMAND error
01F2	S2B_PARITY	Byte received with parity error. Reason: see S2B_ILL_COMMAND error
01F3	S2B_ILL_PHASE	CMD IDC is not valid, transmission out of sync. Reason: see S2B_ILL_COMMAND error
01F4	S2B_ILL_NR_OF_BYTES	Byte count has an illegal value. Reason: see S2B_ILL_COMMAND error

SLPH Error Codes

Error Number	Error name	Explanation
0000	COMMUNICATION	Error in I2C communication. Reason: bad connection between slave processor and main processor.

SSM Error Codes

Error Code	Error name	Explanation
0006	SP_SYNCERROR	System cannot get synchronised with sectors coming from disc. Reason: Usually a damaged disc or the player was dropped/ pushed during operation. If not, the engine is malfunctioning.
0007	SP_EDCERROR	Data coming from disc is damaged. Reason: see SP_SYNCERROR

Error Code	Error name	Explanation
0008	SP_CONTINUITYERROR	Sequence of sectors coming from disc is incorrect. Reason: see SP_SYNCERROR
0009	DMX_CONTINUITYERROR	Sequence of sectors is incorrect. Reason: problem with buffer RAM
000A	LLD_ERROR	An illegal audio format was offered to the decoder. Reason: unknown audio type on disc or problem with buffer RAM
000B	BCU_ERROR	Internal problem in Furore chip

SMA Error Codes

Error Number	Error name	Explanation
0000	SMA_TIMEOUTERROR	Data coming from disc not in time. Reason: damaged disc or engine problem.

5.6.2 Reprogramming of New Mono Boards.

Caution

This information is confidential and may not be distributed. Only a qualified service person should reprogram the mono board.

After reset of NV-memory or repair of the mono board, all the customer settings and also the region code will be lost.
Reprogramming of the mono board will put the player back in the state in which it has left the factory, i.e. with the default settings and the allowed region code.
Reprogramming is limited to 25 times
When the counter reaches 25, reprogramming is not possible anymore
Reprogramming will be done by way of the remote control.
Put the player in stop mode, no disc loaded.
Press the following keys on the remote control:
<***PLAY***> followed by numerical keys ***<1> <5> <9>***
The display shows: "***- - - - - - - - - - -***"
Press now successively the following keys :

for DVD763SA /001 /021 /051 : ***<2><2><2> <0><0><8><0><0>***

Press <***PLAY***> again.
The TV screen will become BLUE during a short time to confirm that the mono board has been reprogrammed.

CL 26532053_056.eps
150502

Figure 5-35 Reprogamming code

5.6.3 Trade Mode

When the player is in Trade Mode, the player cannot be controlled by means of the front key buttons, but only by means of the remote control.

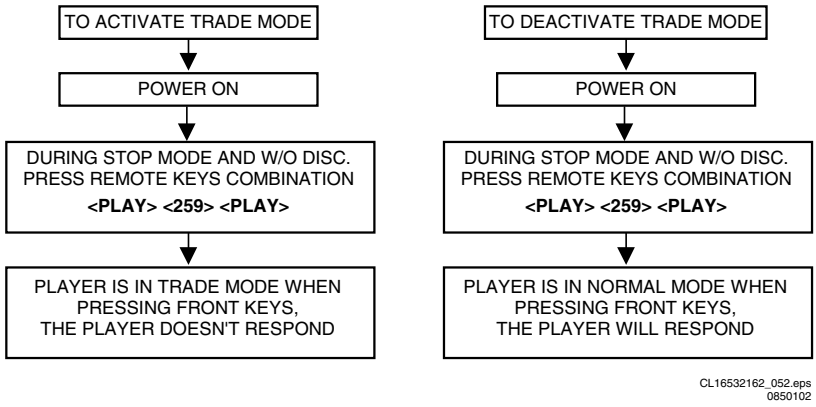


Figure 5-36

Note: To activate and deactivate the Trade Mode with the disc in the player, the procedure is similar to above, except that the remote control keys combination is pressed at the instant when the local display is flashing “READING”

5.7 Menu and Command Mode Interface

5.7.1 Layout of Results Diagnostic Nuclei

Results returned from a Diagnostic Nucleus will be displayed in the following layout:
< number >< string > [ok | ER]

< number >: is a 4-digit decimal number padded with leading zeros if its value is less than 4 digits. The first 2 digits identify the generating nucleus (or group of nuclei) while the latter 2 digits indicate the error number.

< string >: is a text string containing information about the result of the Diagnostic Nucleus.

< number > and < string > are defined in [SSD_DN] in the output sections of each Nucleus.

Examples:
1. 0001Unknown command ER @
2. 3100OK @
3. 0901Data line X is not connected to the DRAM ER@

5.7.2 Command Mode Interface

Set-up Physical Interface Components
Hardware required:
- Service PC
- one free COM port on the Service PC
- special cable to connect DVD player to Service PC

The service PC must have a terminal emulation program (e.g. OS2 WarpTerminal or Procomm) installed and must have a free COM port (e.g. COM1). Activate the terminal emulation program and check that the port settings for the free COM port are: 19200 bps, 8 data bits, no parity, 1 stop bit and no flow control. The free COM port must be connected via a special cable to the RS232 port of the DVD player. This special cable will also connect the test pin, which is available on the connector, to ground (i.e. activate test pin).
Code number of PC interface cable: 3122 785 90017

Activation
Switch the player on and the following text will appear on the screen of the terminal (program):

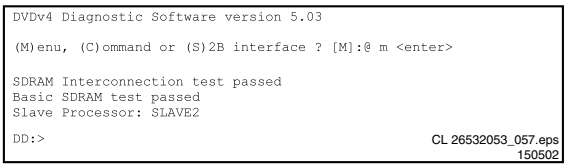


Figure 5-37

The first line indicates that the Diagnostic software has been activated and contains the version number. The second line lets the user choose the interface format. Enter ‘C’ to select Command Mode and the next three lines are the successful result of the two subsequent basic tests (nuclei 2, ,4 and the detection of the display type used by the panel respectively). If not all these messages appear on the terminal screen, then the related nucleus found an error. The last line is the prompt ("DD>"). The diagnostic software is now ready to receive commands.

Command Overview of Nuclei
The following table gives an overview of all available nuclei. The first column contains an identification number, the second contains the name of a nucleus and the last column indicate the description of the nucleus.

Note: User confirmation is necessary during front panel tests

Table 5-1 Basic diagnostic nuclei

Ref. #	Reference Name	Remark
1	BasicSpAcc	Serial port Access test/ initialization
2a	BasicInterconDram	Data and address bus Interconnection (only for development)
2b	BasicInterconSdram	Data and address bus interconnection
3	BasicDramWrR	DRAM Write Read (only for development)
4	BasicSdramWrR	SDRAM Write Read

Table 5-2 Processor and peripherals

Ref. #	Reference Name	Remark
6	PapChksFl	Checksum FLASH
7a	PapUclkAclkCdda	uClock A_CLK in CD-DA mode
7b	PapUclkAclkDvd	uClock A_CLK in DVD mode
7c	PapUclkAclkDvd96	uClock A_CLK in DVD (96kHz) mode
10	PapFlashWrAcc	FLASH Write Access (only for development)
11	PapI2cNvram	I2C NVRAM access
12	PapI2cDisp	I2C Display PWB
13	PapS2bEcho	S2B Echo
14	PapS2bPass	S2B Pass-through
15	PapNvramWrR	NVRAM Write Read
62	PapChksSum	Show checksums stored in flash

Table 5-3 Components

Ref. #	Reference Name	Remark
16	CompSdramWrR	SDRAM Write Read

Table 5-4 Audio

Ref. #	Reference Name	Remark
19a	AudioMuteOn	Audio Mute On
19b	AudioMuteOff	Audio Mute Off
20a	AudioPinkNoiseOn	Audio Pinknoise On
20b	AudioPinkNoiseOff	Audio Pinknoise (or beep tone) Off
20c	AudioBeepToneOn	Audio Beep Tone On
21a	AudioSineOn	Audio Sine signal On/Off
21b	AudioSineBurst	Audio Sine signal Burst
56a	AudioLfePortHigh	Set the LFE_SEL port to HIGH
56b	AudioLfePortLow	Set the LFE_SEL port to LOW
65	DAC_I2C	Resets DAC and check I2C communication with DAC
66a	DAC_I2CEnable	Enable I2C communication to AV board
66b	DAC_I2CDisable	Disable I2C communication to AV board
67a	DAC_ClockInternal	Uses internal clock from monoboard for DAC (256fs)
67b	DAC_ClockExternal	Uses external clock for DAC (384fs)
68a	DAC_AudioPreMuteOn	Enable Audio Pre-mute pin
68b	DAC_AudioPreMuteOff	Disable Audio Pre-mute pin
69a	DAC_CenterOn	Enable Center on pin
69b	DAC_CenterOff	Disable Center on pin
79	DAC_Reset	Resets DAC
80a	DAC_ModeCDDA	Sets DAC to CDDA mode
80b	DAC_ModeDVD48	Sets DAC to DVD mode (48kHz)
80c	DAC_ModeDVD96	Sets DAC to DVD mode (96kHz)
80d	DAC_ModeDSD	Sets DAC to DSD mode
81a	DAC_LowPowerStandbyOn	Enable Low Power Standby
81b	DAC_LowPowerStandbyOff	Disable Low Power Standby
82a	DAC_UpsamplingFreq192k	Sets Upsampling frequency to 192kHz
82b	DAC_UpsamplingFreq96k	Sets Upsampling frequency to 96kHz
82c	DAC_UpsamplingOn	Enable upsampling
82d	DAC_UpsamplingOff	Disable upsampling

Table 5-5 Video

Ref. #	Reference Name	Remark
17a	VidPortOutAA	Output the value 0XAA at the Digital Video Interface Port
17b	VidPortOut55	Output the value 0X55 at the Digital Video Interface Port
23a	VideoColDencOnPAL	Colourbar (PAL) DENC On
23b	VideoColDencOff	Colourbar DENC Off
23c	VideoColDencOnNTSC	Colourbar (NTSC) DENC On
24a	VideoProgMPEGon	Progressive - DigitalVideo Colour Bar ON
24b	VideoYuvMPEGon	Enhanced YUV-DigitalVideo Colour Bar
25a	VideoScartLo	Scart Low
25b	VideoScartMi	Scart Medium
25c	VideoScartHi	Scart High
54	VideoScartSwComm	Scart Switch communication
55a	VideoScartSwDvd	Scart Switch Dvd
55b	VideoScartSwPass	Scart Switch Pass-through
57a	VideoScartPinLo	PIO-pins as used in 2A for Scart-switching
57b	VideoScartPinMi	PIO-pins as used in 2A for Scart-switching
57c	VideoScartPinHi	PIO-pins as used in 2A for Scart-switching
61a	VideoColOutRGB (ST5508)	Output RGB from ST5508
61b	VideoColOutYUV (ST5508)	Output YUV from ST5508

Table 5-6 Display (slave processor)

Ref. #	Reference Name	Remark
26	DispVer	Version number
27	DispKeyb	Keyboard
28	DispRc	Remote Control
29	DispLed	LEDs
30a	DispDisplay	VFT Display test
30b	DispLCDisplay	LCD Display test
30c	DispLCDBkLight	LCD Backlight test
60	DispP50	P50 loopback test

Table 5-7 Log (Error logging in Nvram)

Ref. #	Reference Name	Remark
31	LogReadErr	Read last Errors
32	LogReadBits	Read errors Bits
33	LogReset	Reset

Table 5-8 Miscellaneous

Ref. #	Reference Name	Remark
34	MiscReadConfig	Read Configuration area from NVRAM
35	MiscNvramReset	NVRAM Reset
36	MiscNvramMod	Modify NVRAM contents
46	MiscApplVer	Read version of application software
47a	MiscTrayOpenNr	Read the number of times the tray opened
47b	MiscPowerOnTime	Read the total time the player's power has been on
47c	MiscPlayTimeCddaVcd	Read the Playtime of CDDA and VCD discs
47d	MiscPlayTimeDvd	Read the Playtime of DVD discs

Table 5-9 Basic engine

Ref. #	Reference Name	Remark
37	BeVer	Version number
38a	BeFocusOn	Focus On
38b	BeFocusOff	Focus Off
39a	BeDiscmotorOn	Discmotor On
39b	BeDiscmotorOff	Discmotor Off
40a	BeRadialOn	Radial control On
40b	BeRadialOff	Radial control Off
41a	BeSledgeIn	Sledge Inwards
41b	BeSledgeOut	Sledge Outwards
42a	BeGroovesIn	jump Grooves to Inside
42b	BeGroovesMid	jump Grooves to Middle
42c	BeGroovesOut	jump Grooves to Outside
43a	BeTrayIn	Tray In
43b	BeTrayOut	Tray Out
44	BeReset	Reset Basic Engine
58a	LaserCdOn	CD Laser on
58b	LaserCdOff	CD Laser off
58c	LaserDvdOn	DVD Laser on
58d	LaserDvdOff	DVD Laser off
70	BedReadFlashID	Read flash memory manufacturer and device ID
71	BedCalcRomChksum	Calculate ROM checksum
72	BedScratchTest	Test scratch detection circuit

Table 5-10 Furore IC

Ref. #	Reference Name	Remark
62	Furore_SdramWrR	Furore SDRAM Write Read test
63	Furore_SdramWrR Fast	Furore SDRAM interconnection test
64	Furore_Id	Furore version ID check
83	Furore_Reset	Furore reset
84a	Furore_High	Sets Furore output pins DSD_PCM0-9 to high
84b	Furore_Low	Sets Furore output pins DSD_PCM0-9 to low

Table 5-11 Karaoke (not available)

Ref. #	Reference Name	Remark
48a	KaraokeModeOff	Switch Karaoke mode off
48b	KaraokeModeOn	Switch Karaoke mode on
49	KaraokeMicInput	Check path from the microphone input to audio output
50a	KaraokeKeyOn	Set Karaoke Key to the maximum level (1200 cent)
50b	KaraokeKeyOff	Set Karaoke Key to flat octave (0 cent)
51a	KaraokeEchoOn	Set Echo Control fuction on
51b	KaraokeEchoOff	Set Echo Control function off

5.7.3 Menu Mode Interface

Activation

Switch the player on and the following text will appear on the screen of the terminal (program):

```
DVDv4 Diagnostic Software version 5.03


(M)enu, (C)ommand or (S)2B interface ? [M]:@ <enter>
SDRAM Interconnection test passed
Basic SDRAM test passed
Slave Processor: SLAVE2



Press ENTER to go to main menu
CC: > <enter>

MAIN MENU

1. Audio ...
2. Video ...
3. Front Panel ...
4. Basic Engine ...
5. Processor Peripherals ...
6. Error Log ...
7. Miscellaneous ...

Select >
```

CL 26532053_058.eps 150502

Figure 5-38 Screen menu

The first line indicates that the Diagnostic software has been activated and contains the version number. The next lines are the successful result of the SDRAM interconnection test and the basic SDRAM test. The last line allows the user to choose between the four possible interface forms. If pressing M has made a choice for Menu Interface, the Main Menu will appear.

Layout of Menu and Submenu

The following menu layout will appear after starting up the DVD player in menu mode. The symbol "- - -"" indicates that the current menu choice will invoke the display of a submenu. The number between [ ] idicates the nucleus number. These numbers will not be shown on the screen.

Menus

MAIN MENU

1 Audio...
2 Video...
3 Front Panel...
4 Basic Engine...
5 Processor Peripherals...
6 Error Log...
7 Furore...
8 Miscellaneous...

First Level Submenus

MAIN > AUDIO MENU

1 Mute...
2 Pink Noise...
3 Sine Wave...
4 Digital Ports...
5 Ext. DAC Board...

MAIN > VIDEO MENU

1 Colourbar...
2 Scart...
3 Digital Port...

MAIN > FRONT PANEL MENU

1 Slave Processor...
2 VFT Display [30a]
3 LCD Display [30b]
4 LCD BkLight [30c]
5 Keyboard [27]
6 LEDs [29]
7 Remote Control [28]
8 P50 Check [60]

MAIN > BASIC ENGINE MENU
1 Reset [44]
2 Version [37]
3 S2B...
4 Loader Mechanism...
5 Special Diagnostics...

MAIN > PROCESSOR PERIPHERALS MENU
1 Clock...
2 Flash...
3 NVRAM...
4 SDRAM Write/Read [16]

MAIN > ERROR LOG MENU
1 Read Last Errors [31]
2 Read Error Bits [32]
3 Reset Error Log [33]

MAIN > FURORE MENU
1 SDRAM Write/Read [63]
2 SDRAM Write/Read [64]
3 Chip Revision ID [65]
3 Set Output High [84a]
3 Set Output Low [84b]
3 Reset [83]

MAIN > MISCELLANEOUS MENU
1 Statistics Info...
2 Read DVD Application version[46]

Second Level Submenus

MAIN > AUDIO > MUTE MENU
1 Mute On [19a]
2 Mute Off [19b]

MAIN > AUDIO > PINK NOISE MENU
1 Pink Noise On [20a]
2 Pink Noise / Beep Tone Off [20b]
3 Beep Tone On [20c]

MAIN > AUDIO > SINE WAVE MENU
1 Audio Sine On [21a]
2 Audio Burst On [21b]

MAIN > AUDIO > DIGITAL PORTS MENU
1 LFE_SEL High [56a]
2 LFE_SEL Low [56b]

MAIN > AUDIO > EXT DAC BOARD MENU
1. DAC Reset [79]
2. I2C Test...
3. Clock...
4. Audio...
5. Low Power Standby...
6. DAC Mode...

MAIN > VIDEO > COLOURBAR MENU
1 Colourbar DENC On (PAL) [23a]
2 Colourbar DENC On (NTSC) [23c]
3 Colourbar DENC/MPEG Off [23b]
4 ProgressiveScan MPEG On [24a]
5 Enhanced YUV MPEG On [24b]
6 Set Video Out To RGB [61a]
7 Set Video Out To YUV [61b]

MAIN > VIDEO > SCART MENU
1 I2C Scart IC Check [54]
2 Scart To DVD [55a]
3 Scart Pass Through [55b]
4 Scart Pin 8 Low (0 to 2)V [25a]
5 Scart Pin 8 Mid (4.5 to 7)V [25b]
6 Scart Pin 8 Hi(9.5 to 12)V [25c]

MAIN > VIDEO > DIGITAL PORT MENU
1 Video Port Out 0xAA [17a]
2 Video Port Out 0x55 [17b]

MAIN > FRONT PANEL > SLAVE PROCESSOR MENU
1 Bus Comms Check [12]
2 S/W Version [26]

MAIN > BASIC ENGINE > S2B MENU
1 S2B Echo [13]
2 S2B Pass-Through [14]

MAIN > BASIC ENGINE > MECHANISM MENU
1 Disc Motor...
2 Laser...
3 Tray...
4 Focus...
5 Radial...
6 Sledge...
7 Grooves...

MAIN > BASIC ENGINE > SPECIAL DIAGNOSTICS MENU
1 Read FlashID [70]
2 ROM Checksum [71]
3 Scratch Detector Test [72]

MAIN > PROCESSOR PERIPHERALS > PCM CLOCK MENU
1 PCM_CLK In CDDA Mode (11.3MHz) [8a]
2 PCM_CLK In DVD Mode (12.3MHz) [8b]
3 PCM_CLK In DVD96kHz Mode (24.6MHz) [8c]

MAIN > PROCESSOR PERIPHERALS > FLASH MENU
1 Verify FLASH Checksum [6]
2 Show FLASH Checksum [62]

MAIN > PROCESSOR PERIPHERALS > NVRAM MENU
1 I2C NVRAM Acces [11]
2 NVRAM Config [34]
3 NVRAM Reset [35]
4 NVRAM Modify [36]
5 NVRAM Read/Wr Test [15]

MAIN > MISCELLANEOUS > STATISTICS INFO MENU
1Total Nr Of Times Tray Open[47a]
2 Total Time Power On [47b]
3 Total Play-Time CDDA & VCD [47c]
4 Total Play-Time DVD [47d]

Third Level Submenus

MAIN > AUDIO > EXT DAC BOARD > I2C TEST MENU
1. I2C Test [66a]
2. I2C Enable Pin On [66b]
3. I2C Enable Pin Off [66c]

MAIN > AUDIO > EXT DAC BOARD > CLOCK MENU
1. Clock Internal [67a]
2. Clock External [67b]
3. Clock Upsampling 192k (963 only) [82a]
4. Clock Upsampling 96k (963 only) [82b]
5. Clock Upsampling On (963 only) [82c]
6. Clock Upsampling Off (963 only) [82d]

MAIN > AUDIO > EXT DAC BOARD > AUDIO
1. Audio Pre-Mute On [68a]
2. Audio Pre-Mute Off [68b]
3. Audio Center On [69a]
4. Audio Center Off [69b]

MAIN > AUDIO > EXT DAC BOARD > LOW POWER STANDBY

1. Low Power Standby On [81a]
2. Low Power Standby Off [81b]

MAIN > AUDIO > EXT DAC BOARD > DAC MODE MENU

1. DAC CDDA Mode [80a]
2. DAC DVD48 Mode [80b]
3. DAC DVD96 Mode [80c]
4. DAC DSD Mode [80d

MAIN > BASIC ENGINE > MECHANISM > DISC MOTOR MENU

1 Disc Motor On [39a]
2 Disc Motor Off [39b]

MAIN > BASIC ENGINE > MECHANISM > LASER MENU

1 CD Laser On [58a]
2 CD Laser Off [58b]
3 DVD Laser On [58c]
4 DVD Laser Off [58d]

MAIN > BASIC ENGINE > MECHANISM > TRAY MENU

1 Tray Open [43b]
2 Tray Close [43a]

MAIN > BASIC ENGINE > MECHANISM > FOCUS MENU

1 Focus On [38a] (load DVD first)
2 Focus Off [38b]

MAIN > BASIC ENGINE > MECHANISM > RADIAL MENU

1 Radial Control On [40a] (load DVD first)
2 Radial Control Off [40b]

MAIN > BASIC ENGINE > MECHANISM > SLEDGE MENU

1 Sledge Inwards [41a]
2 Sledge Outwards [41b]

MAIN > BASIC ENGINE > MECHANISM > GROOVES (Uses DVD) MENU

1 Jump To Inside Grooves [42a]
2 Jump To Middle Grooves [42b]
3 Jump To Outside Grooves [42c]

5.8 Nuclei Error Codes

In the following tables the error description of the error codes will be described.

5.8.1 Audio Nuclei

Error code	Error text
1880	Test successful
1800	Test successful
1900	Test successful
1920	Test successful
2000	Test successful
2020	Test successful
2100	Test successful
5600	Test successful
5620	Test successful
7900	"Checksums = 0xA1, 0xB1, 0xC1, 0xD1"
7901	"DAC I2C bus busy"
7902	"DAC I2C expander "
8000	"Test successful"
8001	"DAC mode CDDA I2C bus busy before start"
8002	"DAC mode CDDA I2C connection failed"
8020	"Test successful"
8021	"DAC mode DVD48 I2C bus busy before start"
8022	"DAC mode DVD48 I2C connection failed"
8040	"Test successful"
8041	"DAC mode DVD96 I2C bus busy before start"
8042	"DAC mode DVD96 I2C connection failed"
8060	"Test successful"
8061	"DAC mode DSD I2C bus busy before start"
8062	"DAC mode DSD I2C connection failed"
8100	"Test successful"
8101	"Low Power Standby On I2C bus busy"
8102	"Low Power Standby On I2C connection failed"
8120	"Test successful"
8121	"Low Power Standby Off I2C bus busy"
8122	"Low Power Standby Off I2C connection failed"
8200	"Test successful"
8201	"DAC Upsample 192k I2C bus busy"
8202	"DAC Upsample 192k I2C connection failed"
8220	"Test successful"
8221	"DAC Upsample 96k I2C bus busy"
8222	"DAC Upsample 96k I2C connection failed"
8200	"Test successful"
8201	"DAC UpSample On bus busy"
8202	"DAC UpSample On I2C connection failed"
8200	"Test successful"
8201	"DAC UpSample Off bus busy"
8202	"DAC UpSample Off I2C connection failed"

5.8.2 Basic Engine Nuclei

Error code	Error text
3900	Test successful
3901	“Parity error from Basic Engine to Serial”
3902	“Unexpected response from Basic Engine”
3903	“Communication time-out error”
3904	“Basic Engine returned error number 0xXX”
3921	“Parity error from Basic Engine to Serial”
3922	“Unexpected response from Basic Engine”
3923	“Communication time-out error”
3924	“Basic Engine returned error number 0xXX”
3800	Test successful
3801	“Parity error from Basic Engine to Serial”
3802	“Unexpected response from Basic Engine”
3803	“Communication time-out error”
3804	“Basic Engine returned error number 0xXX”
3805	“Focus loop could not be closed”
3820	Test successful
3821	“Parity error from Basic Engine to Serial”
3822	“Unexpected response from Basic Engine”
3823	“Communication time-out error”
3824	“Basic Engine returned error number 0xXX”
4200	Test successful
4201	“Parity error from Basic Engine to Serial”
4202	“Unexpected response from Basic Engine”
4203	“Communication time-out error”
4204	“Basic Engine returned error number 0xXX”
4205	“Sledge could not be moved to home position”
4206	“Focus loop could not be closed”
4207	“Motor not on speed within time-out”
4208	“Radial loop could not be closed”
4209	“PLL could not lock in accessing or tracking state”
4210	“Subcode or sector information could not be read”
4211	“Requested subcode item could not be found”
4212	“TOC could not be read in time”
4213	“Seek could not be performed”
4220	Test successful
4221	“Parity error from Basic Engine to Serial”
4222	“Unexpected response from Basic Engine”
4223	“Communication time-out error”
4224	“Basic Engine returned error number 0xXX”
4225	“Sledge could not be moved to home position”
4226	“Focus loop could not be closed”
4227	“Motor not on speed within time-out”
4228	“Radial loop could not be closed”
4229	“PLL could not lock in accessing or tracking state”
4230	“Subcode or sector information could not be read”
4231	“Requested subcode item could not be found”
4232	“TOC could not be read in time”
4233	“Seek could not be performed”
4240	Test successful
4241	“Parity error from Basic Engine to Serial”
4242	“Unexpected response from Basic Engine”
4243	“Communication time-out error”
4244	“Basic Engine returned error number 0xXX”
4245	“Sledge could not be moved to home position”
4246	“Focus loop could not be closed”
4247	“Motor not on speed within time-out”
4248	“Radial loop could not be closed”
4249	“PLL could not lock in accessing or tracking state”
4250	“Subcode or sector information could not be read”
4251	“Requested subcode item could not be found”
4252	“TOC could not be read in time”
4253	“Seek could not be performed”
4000	Test successful
4001	“Parity error from Basic Engine to Serial”
4002	“Unexpected response from Basic Engine”
4003	“Communication time-out error”
4004	“Basic Engine returned error number 0xXX”
4005	“Radial loop could not be closed”
4020	Test successful
4021	“Parity error from Basic Engine to Serial”
4022	“Unexpected response from Basic Engine”
4023	“Communication time-out error”
4024	“Basic Engine returned error number 0xXX”
4400	Test successful
4401	Test successful
4100	Test successful
4101	“Parity error from Basic Engine to Serial”
4102	“Unexpected response from Basic Engine”
4103	“Communication time-out error”
4104	“Basic Engine returned error number XX”
4120	Test successful
4121	“Parity error from Basic Engine to Serial”
4122	“Unexpected response from Basic Engine”
4123	“Communication time-out error”
4124	“Basic Engine returned error number XX”
4300	Test successful
4301	“Parity error from Basic Engine to Serial”
4302	“Unexpected response from Basic Engine”
4303	“Communication time-out error”
4304	“Basic Engine returned error number 0xXX”
4320	Test successful
4321	“Parity error from Basic Engine to Serial”
4322	“Unexpected response from Basic Engine”
4323	“Communication time-out error”
4324	“Basic Engine returned error number 0xXX”
3700	“Version: X.Y.Z”
3701	“Parity error from Basic Engine to Serial”
3702	“Unexpected response from Basic Engine”
3703	“Communication time-out error”
3704	“Basic Engine returned error number 0xXX”
5800	Test successful

Error code	Error text
5820	Test successful
5840	Test successful
5860	Test successful
5801	"Unexpected response from Basic Engine"
7000	"Manuf. ID: <XX>" "Device ID: <YY>"
7001	"Comm Test Failed"
7002	"Load Cmd Failed"
7003	"Load Dat Failed"
7004	"Run Cmd Failed"
7100	"ROM Checksum: XXXX"
7101	"Comm Test Failed"
7102	"Load Cmd Failed"
7103	"Load Dat Failed"
7104	"Run Cmd Failed"
7201	"Comm Test Failed"
7200	"Test successful"
7202	"Load Cmd Failed"
7203	"Load Dat Failed"
7204	"Run Cmd Failed"
7205	"Scratch circuit not OK"

5.8.3 Display PWB Nuclei

Error code	Error text
3000	“Test successful”
3001	“Disp not responding”
3002	“Disp key no response”
3003	“One or more patterns not correct”
3004	“Disp type invalid”
3020	“Test successful”
3021	“Disp not responding”
3022	“Disp key no response”
3023	“One or more patterns not correct”
3040	“Test successful”
3041	“Disp not responding”
3042	“Disp key no response”
3043	“One or more patterns not correct”
2700	“Model name in wich the test is running”
2701	“Disp key no response”
2702	“Disp not responding”
2707	“Stop key not pressed”
2708	“Pause key not pressed”
2709	“Play key not pressed”
2710	“Open/close key not pressed”
2713	“Previous key not pressed”
2714	“Next key not pressed”
2715	“More than one key not pressed”
2716	" Audio key not pressed"
2900	“Test successful”
2901	“Slave not responding”
2902	“Slave keyboard not responding”
2903	“Standby led not working”
2800	“Test successful”
2801	“Slave display controller not responding”
2802	“Slave keyboard not responding”
2803	“No key press received from remote control”

Error code	Error text
2600	“The ROM version of the slave processor = 0xXX, and the internal ID = 0xYY”
2601	“I2c bus busy”
2602	“I2c bus not working“
6000	P50 test
6001	“No readback on P50”
6002	“Disp not responding “
6003	“P50 readback error”

5.8.4 Processor & Peripherals Nuclei

Error code	Error text
700	Test successful
720	Test successful
740	Test successful
600	"All checksums are correct"
601	“Following checksum is faulty: BootCode1 Checksum is 0xY2 and is not correct (must be 0xZ2)”
601	“This test is not available when stand-alone compiled”
6200	"Checksums = 0xA1, 0xB1, 0xC1, 0xD1"
6201	“This test is not available when stand-alone compiled”
1000	Test successful
1001	Test successful
1020	Test successful
1021	Test successful
1100	Test successful
1104	“NVRAM reply time-out”
1200	Test successful
1202	“Slave bus not working”
1203	“Slave controller not responding”
1204	“Slave response is not correct”
5900	Test successful
5901	“I2c bus busy”
5902	“I2c bus not working“
5904	“DTS chip response not correct”
1300	Test successful
1301	“Parity error from basic engine to serial”
1302	“Parity error from serial to basic engine”
1303	“No communication between serial and basic engine”
1304	“Communication time-out error”
1600	Test successful
1601	“The DVD SDRAM is faulty”

5.8.5 Log Nuclei

Error code	Error text
3100	"Show error log"
3101	"Error log is invalid"
3102	"Error log could not be read from NVRAM"
3103	"I2C bus busy before start"
3200	"Show error bit"
3201	"Error log is invalid"
3202	"I2C bus busy before start"
3203	"Error log could not be read from NVRAM"
3300	"Error log is cleared"
3301	"Error log could not be cleared"
3302	"I2C bus busy before start"

5.8.6 Miscellaneous Nuclei

Error code	Error text
3400	Test successful
3401	"The configuration data could not be read from NVRAM"
3402	"I2C bus busy before start"
3500	"NVRAM is cleared"
3501	"The NVRAM could not be reset."
3502	"I2C bus busy before start"
3600	"NVRAM contents updated."
	"NVRAM contents and configuration checksum updated."
3601	"NVRAM contents could not be updated."
3602	"I2C bus busy before start"
3603	"NVRAM contents could not be read"
3604	"NVRAM not accessible."
3605	"NVRAM checksum could not be updated."
1500	Test successful
1502	"NVRAM access time-out"
1504	"NVRAM fails"
5400	Test successful
5401	"I2c bus busy"
5402	"I2c bus not working"
5403	"Scart switch controller not responding"
5404	"Scart switch controller response not correct"
5500	Test successful
5501	"I2c bus busy"
5502	"I2c bus not working"
5520	Test successful
5521	"I2c bus busy"
5522	"I2c bus not working"
5523	"Scart switch controller not responding"
5200	Test successful
5201	"I2c bus busy"
5202	"I2c bus not working"
5300	Test successful
5301	"I2c bus busy"
5302	"I2c bus not working"
5320	Test successful
5321	"I2c bus busy"
5322	"I2c bus not working"
4700	"Number of times Tray went Open : XX"
4701	The total number of times tray went open could not be read from NVRAM.
4702	I2C bus busy before start
4720	"Total Power On time (minutes) : XX"
4721	The total power-on time could not be read from NVRAM.
4722	I2C bus busy before start
4740	"Total CDDA & VCD disks Play-time (minutes) : XX"
4741	The playtime of CDDA & VCD disks could not be read from NVRAM.
4742	I2C bus busy before start
4760	"Total DVD disks Play-time (minutes) : XX"
4761	The playtime of DVD disks could not be read from NVRAM.
4762	I2C bus busy before start
4600	"Version of Application Software : XX"
4601	"The application version could not be read from NVRAM."
4602	"I2C bus busy before start"

5.8.7 Video Nuclei

Error code	Error text
2300	Test successful
2320	Test successful
2340	Test successful
2400	Test successful
2401	"I2c bus busy"
2421	"I2c bus busy"
2441	"I2c bus busy"
2500	Test successful
2501	"I2c bus busy"
2502	"I2c bus not working"
2520	Test successful
2521	"I2c bus busy"
2522	"I2c bus not working"
2540	Test successful
2541	"I2c bus busy"
2542	"I2c bus not working"
6100	Test successful
6100	Test successful

5.8.8 Furore Nuclei

Error code	Error text
8300	"Test successful"
8301	"Invalid Version ID read. "
8400	"Test successful"
8420	"Test successful"

5.9 Test Instruction Front Display and Audio/ Video Board

These test instruction is designed specifically for SACD 2002 single disc models which has the following outputs:

- 6 Channel Audio output
- Coaxial / Optical digital output
- CVBS
- Component output YUV
- SVHS
- Double SCART output
- Front Display

5.9.1 General

- All the waveforms measurement carried out in these test instruction will be base on the testpoint indicated in the A/V Board and Front Display schematic diagram in the Service manual.
- Impedance of the measuring-equipment should be > 1MΩ
- Most of the tests can be done using either the Diagnostic software " Player script" which can be found in the chapter "Diagnostic Software description and troubleshooting" or the Menu interface using the Service PC with a terminal emulation program (e.g. Window Hyperterminal) where it is possible to control the execution of the Diagnostic Nuclei
- Setup for the measurement will be done in set level with all modules connected as shown in the Wiring Block diagram.

5.9.2 General Start-Up Measurement

Supply Check:
Before starting the measurement,ensure that all power supply are connected to the A/V and Front Display board via conn.1420 and 1127 respectively.

Pin nr.	A/V Board	Front Display
Voltage	Conn. 1420	Conn. 1127
1	+3V3_Power	-
2	+3V3_Power	-
3	GND	-
4	+12V_Power	-
5	+12VSTBY	-
6	GND	+5VSTBY
7	+5VSTBY	+12V_Power
8	GND	-32V_Power
9	-12V_Power	-
10	GND	-
11	-32V_Power	-
12		-

Clock Check
Ensure the present of the clock to the DAC and the slave μP.

Clock Name	Testpoint	Frequency
PCM_CLK	I117	11.2896MHz ± 0.02% tolerance
XOUT	S1	8MHz ± 0.2% tolerance

Audio Mute Check
Measure the Audio mute voltage input at pin 22 of connector 1421

Status	Value
AudioMuteOn	HIGH (>3V)
AudioMuteOff	LOW (<3V)

To toggle between ON and OFF,use the following commands:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On
19b	AudioMuteOff	Audio Mute Off

5.9.3 Audio DAC And Amplifier

Ensure that the Audio mute signal is OFF
To check the DAC and buffer amplifier,send the following commands.

Ref.#	Command Name	Remarks	Audio output
21a	AudioSineOn	Audio Sine signal ON	Sine,1Khz on stereo
----	Press stop button	Audio Sine signal OFF	No waveform
20a	AudioPinkNoiseOn	Audio Pinknoise ON	Pink Noise on 6 channels
20b	AudioPinkNoiseOff	Audio Pinknoise OFF	No waveform

The audio signal (sine or pink noise) will also be present on the digital output (SPDIF).This can be checked by connecting digital signal to an amplifier with digital input.
Check the I2S and audio signal at the following testpoints:

Name	Testpoint
PCM_LRCLK	I115
PCM_SCLK	I116
PCM_CLK	I117
SDT1	I114
SDT2	I112
SDT3	I110
DIG_OUT	I499
STEREO L/R OUT	I330 / I333
FRONT L/R OUT	I336 / I339
SURROUND L/R OUT	I348 / I351
CENTRE OUT	I345
SUB WOOFER L/R OUT	I342

All waveforms can be refered to the A/V board schematic diagram.

5.9.4 Video Output And Buffer Amplifier

Check DC output-level at all video cinch output : 1.0V DC ± 10%
Generate a color bar using the following software commands:

Ref.#	Command Name	Remarks
23a	VideoColDencOn	Colour DENC ON
23b	VideoColDencOff	Colourbar DENC OFF

Check the video outputs at the following testpoints:

Name	Testpoint
GREEN_Y	I502
BLUE_U	I491
RED_V	I494
CVBS out_Mono	I480
C_Mono	I483
Y_Mono	I482

ll waveforms can be refered to the A/V board schematic diagram.

5.9.5 Play and 16/9 Detection

Check DC voltage at S-VIDEO-CHROMA output (pin 4) with a 6k8 ohm load and SCART connector 1403 (pin 16) and change the SCART0 and SCART1 input using the following commands:

Ref.#	Command Name	Remarks
25a	VideoScartLo	Sends out 0V ± 0.5V
25b	VideoScartMi	Sends out 6V ± 10%

Ref.#	Command Name	Remarks
25c	VideoScartHi	Sends out 12V ± 10%

5.9.6 Kill Circuit

To check the functionality of the Kill circuitry,the audio outputs has to be present by the following command:

Ref.#	Command Name	Remarks	Audio output
21a	AudioSineOn	Audio Sinewave ON	1kHz tone

Check the audio outputs at the audio cinch of the A/V and SCART board: 1kHz tone.

Activate the Kill circuit by using the following command:

Ref.#	Command Name	Remarks
19a	AudioMuteOn	Audio Mute On

Check the audio outputs at the audio L/R cinch and SCART of the A/V and SCART board respectively:
No waveform
Switch off the kill circuit by using the following command:

Ref.#	Command Name	Remarks
19b	AudioMuteOff	Audio Mute Off

Check the audio outputs at the audio L/R cinch and SCART of the A/V and SCART board: 1kHz tone

5.9.7 Digital Silence

Digital silence is a signal from the audio DAC, MFL, when there is no input to the audio DAC, or when the player is in STOP/ PAUSE mode, or during disc changing track.

To check the MFL signal, use the following command and check the voltage level at pin 41 of 7200:

Ref.#	Command Name	Remarks	KILL_LR signal
21a	AudioSineOn	Audio Sinewave ON	LOW (<0.3V)
---	Press STOP button	Audio Sine signal OFF	HIGH (>4.5V)

5.9.8 Front Display

To check the segment display of the FTD, the following command can be used. And for full detail description of the test, refer to the chapter of “Diagnostic Software Player Script” which can be found in chapter “Diagnostic Software Description and Troubleshooting”

Ref.#	Command Name	Remarks
30a	DispDisplay	Turn ON local display

5.9.9 IR Receiver

Check at pin 22 of 7101 and observe if this line switches from LOW (<0.3V) to HIGH (>4.5V) when pressing a key on a philips RC5 or RC6 remote control

5.9.10 P50 Interface

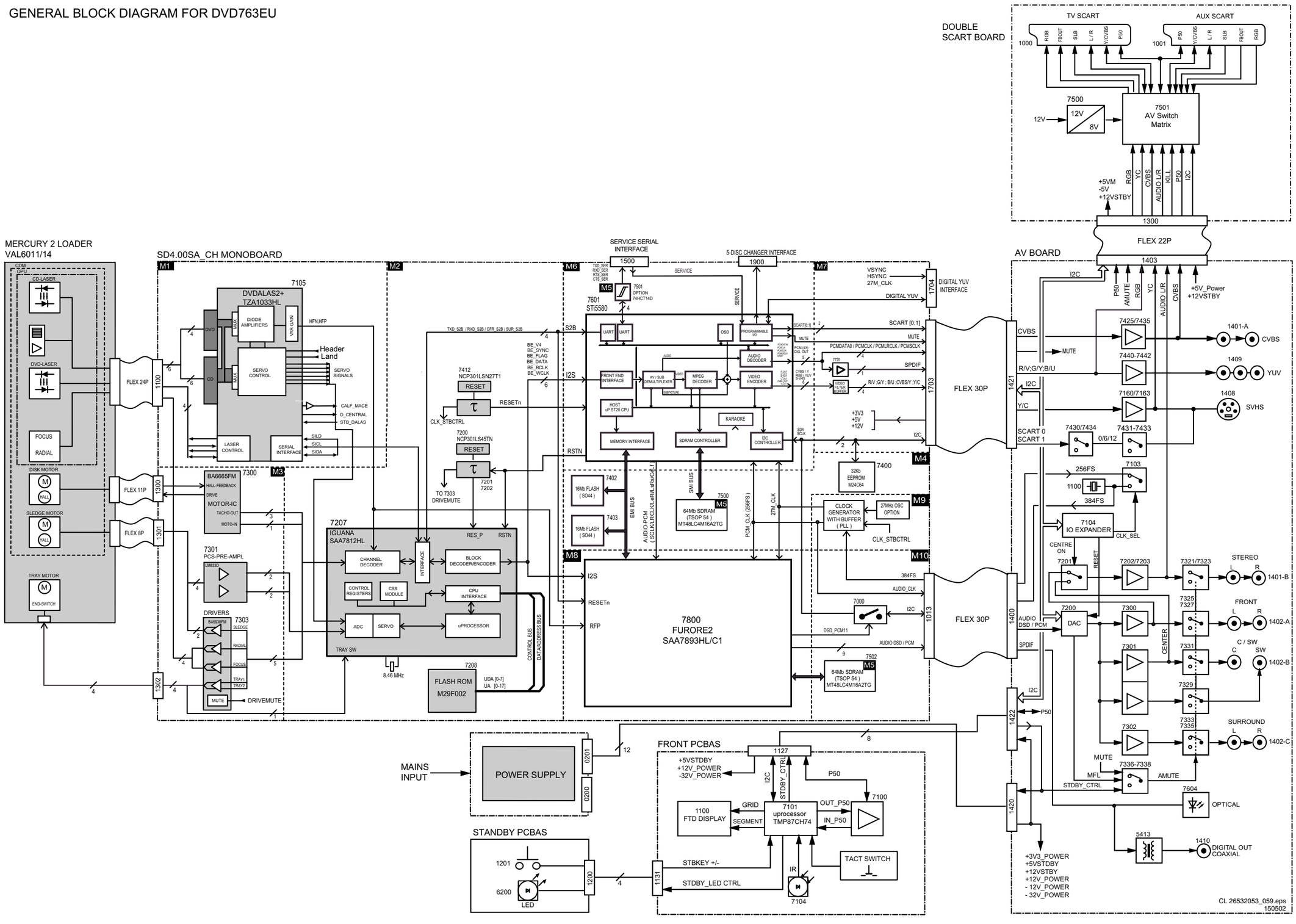
P50 (or Easylink) is a bi-directional serial interface for communication between video equipment. To check for the functionality of the P50 Interface, refer to the chapter of ‘Diagnostic Software Player Script’ for full detail description.

Personal Notes:

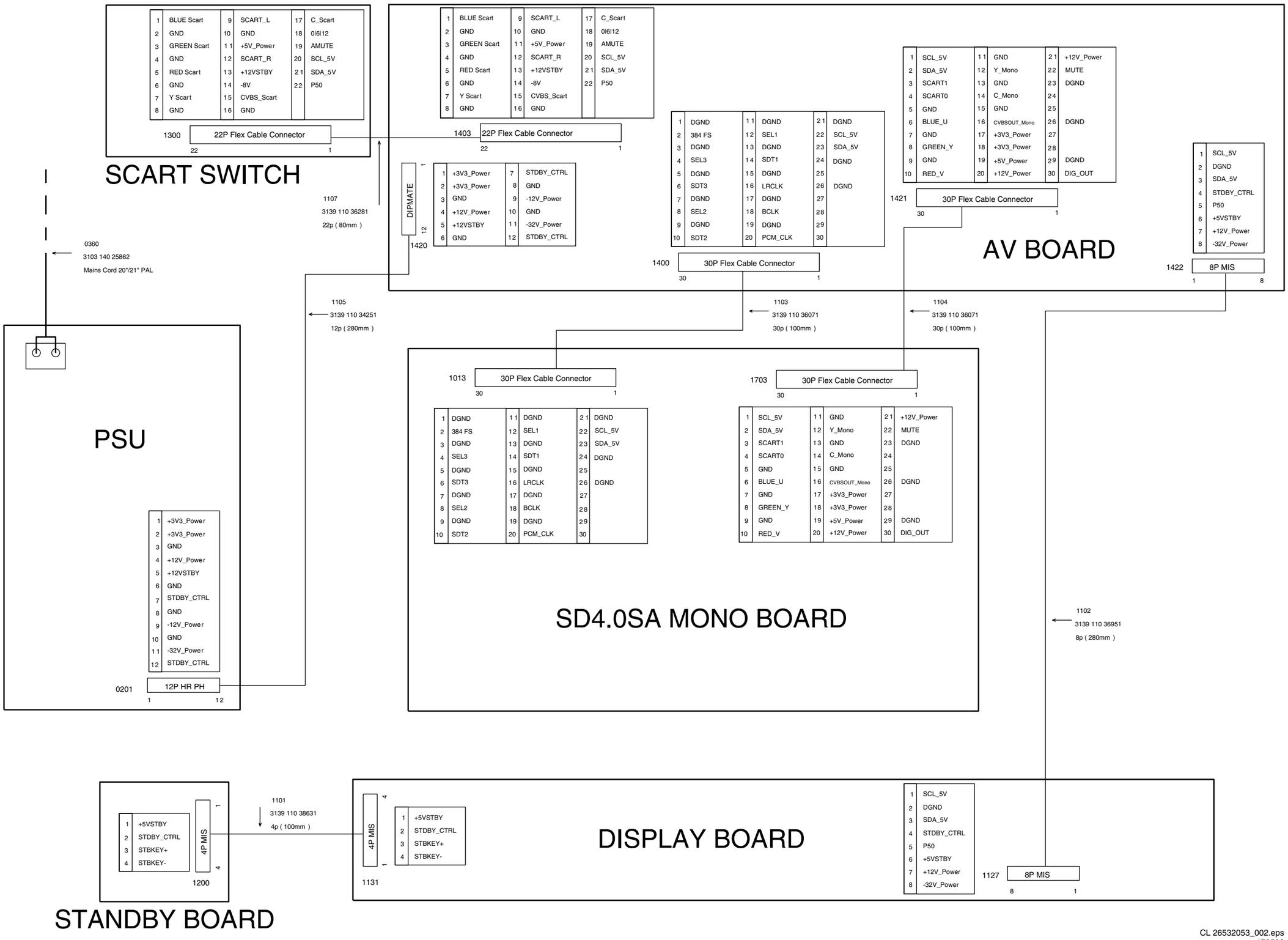
6. Block and Wiring Diagram.

Block Diagram DVD763SA EU

GENERAL BLOCK DIAGRAM FOR DVD763EU



Wiring Diagram DVD763SA EU



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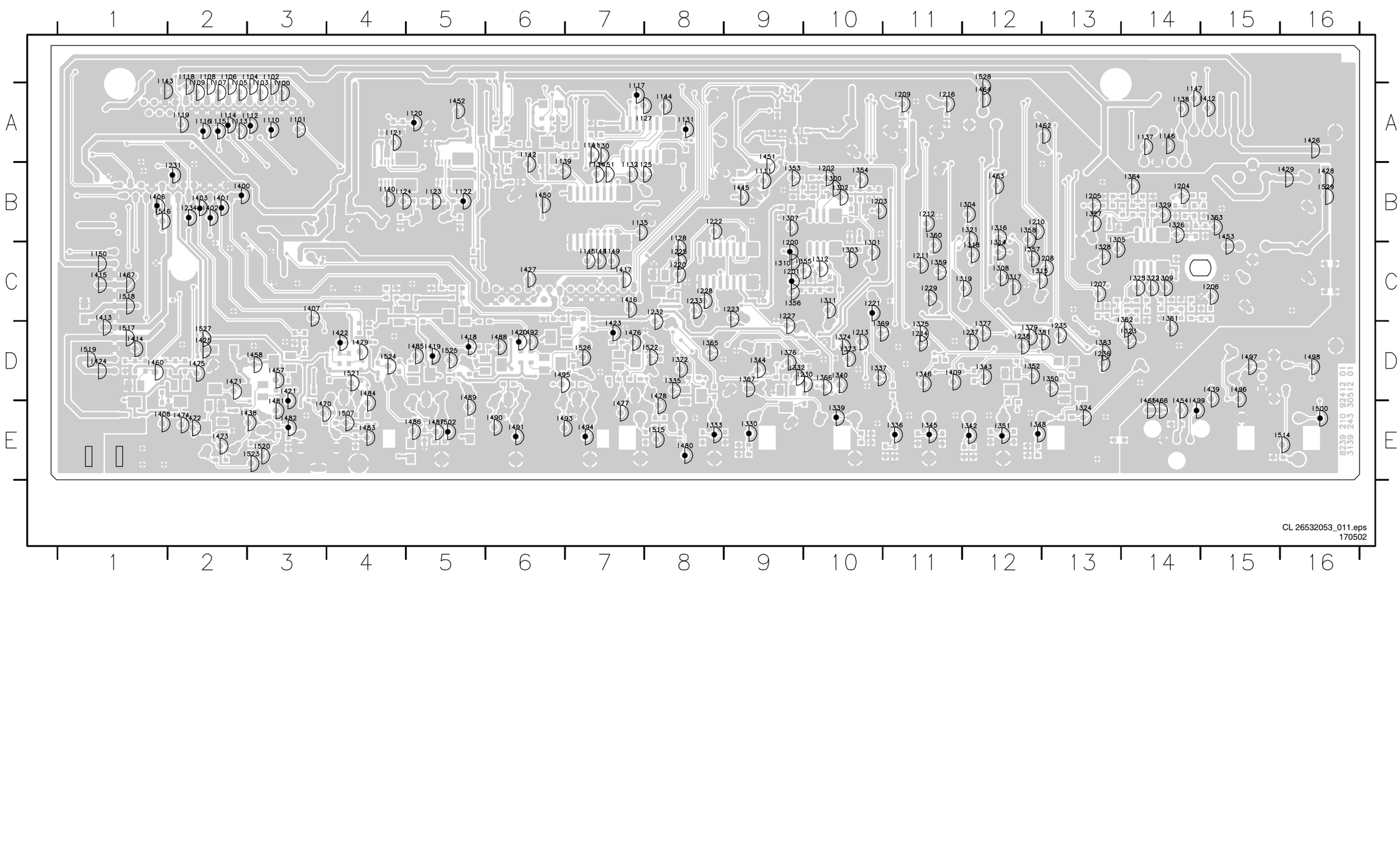
170502

AV Board Testpoint Overview

I100 A3	I113 A2	I127 A7	I143 A1	I204 B14	I221 C10	I236 D13	I311 C10	I326 B14	I343 D12	I358 B12	I374 D10	I408 E1	I423 D7	I453 C15	I472 E2	I485 D5	I498 D16
I101 A3	I114 A2	I128 C8	I144 A8	I205 B13	I222 B8	I237 D12	I312 C10	I327 B13	I344 D9	I359 C11	I375 D11	I409 D11	I424 D1	I454 E14	I473 E2	I486 E5	I499 E14
I102 A3	I115 A2	I130 A7	I145 C7	I206 C15	I223 C9	I238 D12	I314 C12	I328 C13	I345 E11	I360 C11	I376 D9	I412 A15	I425 D2	I457 D3	I474 E2	I487 E5	I500 E16
I103 A3	I116 A2	I131 A8	I146 A14	I207 C13	I225 C8	I300 B10	I315 C12	I329 B14	I346 D11	I361 D14	I377 D12	I413 D1	I426 A16	I458 D3	I475 D2	I488 D6	I502 E5
I104 A3	I117 A7	I132 B7	I147 A14	I208 C13	I227 D9	I301 C10	I316 B12	I330 E9	I348 E12	I362 D14	I379 D12	I414 D1	I427 C6	I460 D1	I476 D7	I489 E5	I507 E4
I105 A2	I118 A2	I134 B7	I148 C7	I209 A11	I228 C8	I302 B10	I317 C12	I332 D9	I350 D13	I363 B15	I381 D13	I415 C1	I428 B16	I462 A13	I477 E7	I490 E6	I514 E16
I106 A2	I119 A2	I135 B7	I149 C7	I210 B12	I229 C11	I303 C10	I318 C12	I333 E8	I351 E12	I364 B14	I383 D13	I416 C7	I429 B16	I463 B12	I478 E8	I491 E6	I515 E8
I107 A2	I120 A5	I137 A14	I150 C1	I211 C11	I230 D10	I304 B12	I319 C12	I335 D8	I352 D12	I365 D8	I400 B2	I417 C7	I438 E3	I464 A12	I479 D4	I492 D6	I516 B1
I108 A2	I121 A4	I138 A14	I151 B7	I212 B11	I231 B2	I305 C13	I321 B12	I336 E11	I353 B9	I366 D10	I401 B2	I418 D5	I439 D15	I465 E14	I480 E8	I493 E6	I517 D1
I109 A2	I122 B5	I139 B6	I200 C9	I213 D10	I232 D8	I307 B9	I322 C14	I337 D10	I354 B10	I367 D9	I402 B2	I419 D5	I445 B9	I466 E14	I481 E3	I494 E7	I518 C1
I110 A3	I123 B5	I140 B4	I201 C9	I214 D11	I233 C8	I308 C12	I323 D14	I339 E10	I355 C9	I369 D10	I403 B2	I420 D6	I450 B6	I467 C1	I482 E3	I495 D6	I519 D1
I111 B9	I124 B4	I141 A7	I202 B10	I216 A11	I234 B2	I309 C14	I324 E13	I340 D10	I356 C9	I372 D8	I406 B1	I421 E3	I451 B9	I470 E3	I483 E4	I496 D15	I520 E3
I112 A3	I125 B7	I142 B6	I203 B10	I220 C8	I235 D13	I310 C9	I325 C14	I342 E12	I357 C12	I373 D10	I407 C3	I422 D4	I452 A5	I471 D2	I484 E4	I497 D15	I521 D4



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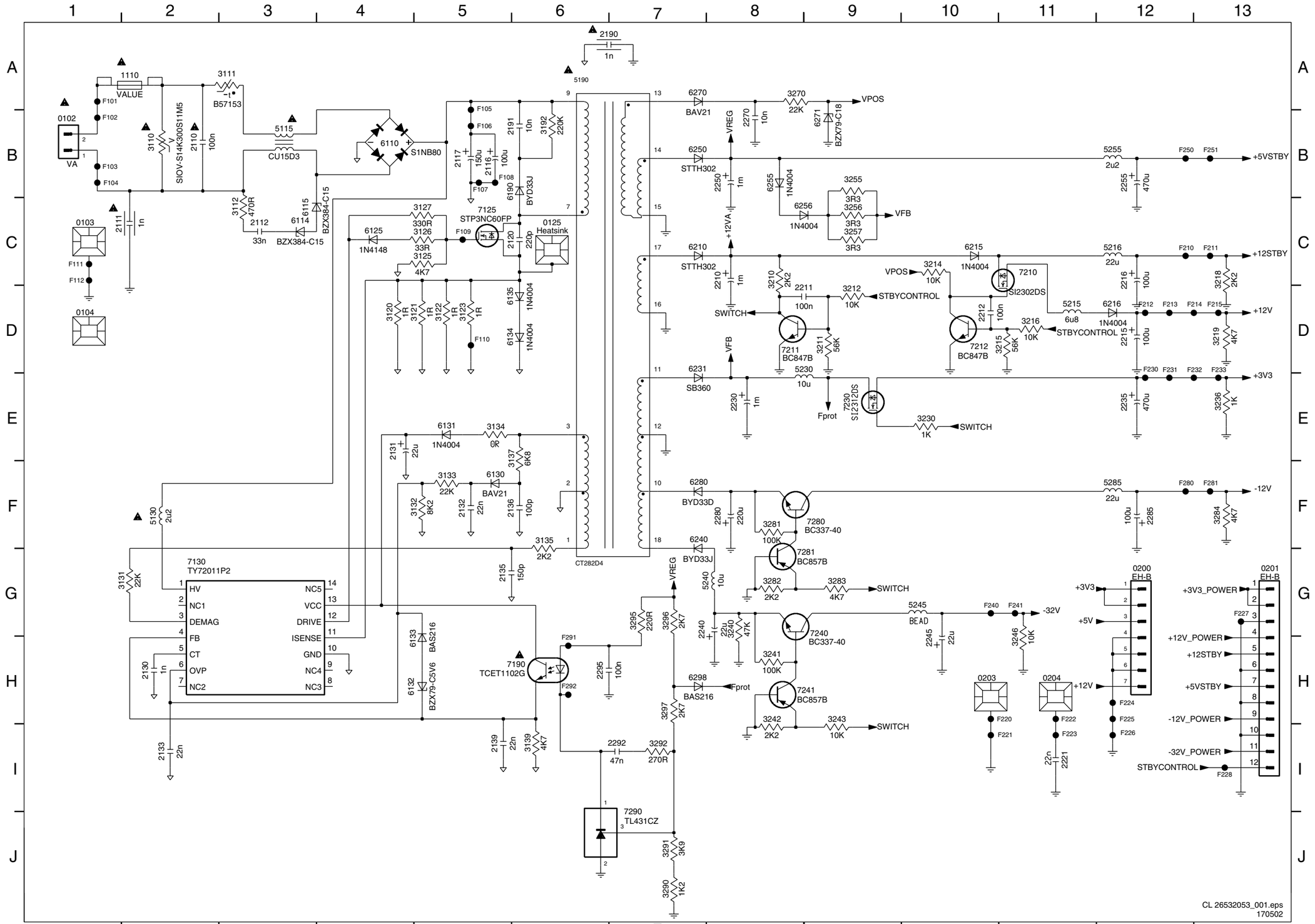
7. Electrical Diagrams

Power Supply Unit DVD763SA EU



AV-Board: Clock & Control

A 1 AV_SYS CLK & CONTROL

1100 C6
1200 G1
1400 B1
1422 H1
2100 A6
2101 A5
2102 C3
2103 C3
2104 E3
2105 C6
2106 C7
2107 E3
2108 H5
2109 H9
2110 B8
2111 E8
3100 C2
3101 C2
3102 C2
3103 D2
3104 D2
3105 D2
3106 E2
3107 E2
3108 E2
3109 F9
3110 A5
3111 B6
3112 C6
3113 F9
3114 F9
3115 F9
3116 F10
3117 H9
3118 H8
3119 I8
3120 C9
3123 E9
3124 G11
3125 G12
3126 G12
3128 H11
3130 E13
3136 H12
3138 G12
3139 F11
3140 F12
4100 F2
4101 F2
6100 F12
7100-A C7
7100-B B6
7100-C B7
7101-A B5
7101-B A7
7101-C A6
7103-A D7
7103-B E12
7103-C D9
7103-D E7
7104 F6
7122 G12
7124 H12

+3V3D
100n 2100
3110 10R
2101 22p
7101-B TC7WHU04FU
7101-C TC7WHU04FU
7101-A TC7WHU04FU
7100-B TC7WHU04FU
7100-C TC7WHU04FU
7100-A TC7WHU04FU
+3V3_OSC
100n 2110
3111 1M
3112 220R
1100 AT-49 16M9344
22p 2105
22p 2106
3120
I120
I122
1V6
0V
3V3

I110 2V / div DC 2µs / div
I112 2V / div DC 2µs / div
I114 2.00 V / div DC 2µs / div
I115 2V / div DC 10µs / div
I116 2V / div DC 100ns / div
I117 2V / div DC 20.0ns / div
I120 2V / div DC 20ns / div
I122 1V / div DC 20ns / div
I131 2V / div DC 20ns / div

1400
FROM 1013 OF SD4.0SA MONO BOARD M1 Ø
384 FS
SEL3 3100 100R 47p 2102 A2-1
SDT3 3101 100R 15p 2103 A2-2
SEL2 3102 100R A2-3
SDT2 3103 100R A2-4
SEL1 3104 100R A2-5
SDT1 3105 100R A2-6
LRCLK 3106 100R 15p 2104 A2-7
BCLK 3107 100R 15p 2107 A2-8
PCM_CLK 3108 100R
4100 * 4101 *
A1-15 CLK_SEL
7103-A 74LVC00AD
7103-C 74LVC00AD
7103-D 74LVC00AD
7103-B 74LVC00AD
3123 47R
3130 47R
MCLK1 A2-14
I131

1200 EH-B
FOR DEVELOPMENT EVALUATION
SCL_5V
SDA_5V
5VD
A4-52
A4-53

1422 EH-B
TO 1127 DISPLAY BOARD D
SCL_5V
SDA_5V
STDBY_CTRL A4-19
P50 A4-20
+5VSTBY
+12V_Power
-32V_Power

7104 PCF8574T
INT_
A0
A1
A2
SCL
SDA
VDD
VSS
2108 100n
INTERRUPT LOGIC
LP FILTER
INPUT FILTER
I²C BUS CONTROL
SHIFT REGISTER
8 BIT I/O PORTS
POWER-ON RESET
P0 P1 P2 P3 P4 P5 P6 P7
A1-12 SCL_3V3 3V3
A1-13 SDA_3V3 3V3
3109 4K7
3114 4K7
3113 4K7
3115 4K7
3116 4K7
4K7 3118
4K7 3119
4K7 3117
2109 10u
CENTER_ON A2-18
RESET A2-16
CLK_SEL A1-15

+5VSTBY
3139 15K
3140 4K7
6100 BAS316
3124 3K3
3125 3K3
3126 3K3
3128 3K3
BSN20 7122
BSN20 7124
3138 0R
3136 0R
4V
SCL_3V3 A1-12,A2-12
SDA_3V3 A1-13,A2-13
SDA_5V A4-53
SCL_5V A4-52

* OPTIONAL
V DC Vtg measured in STOP-MODE

BARE BOARD 3139 243 30512

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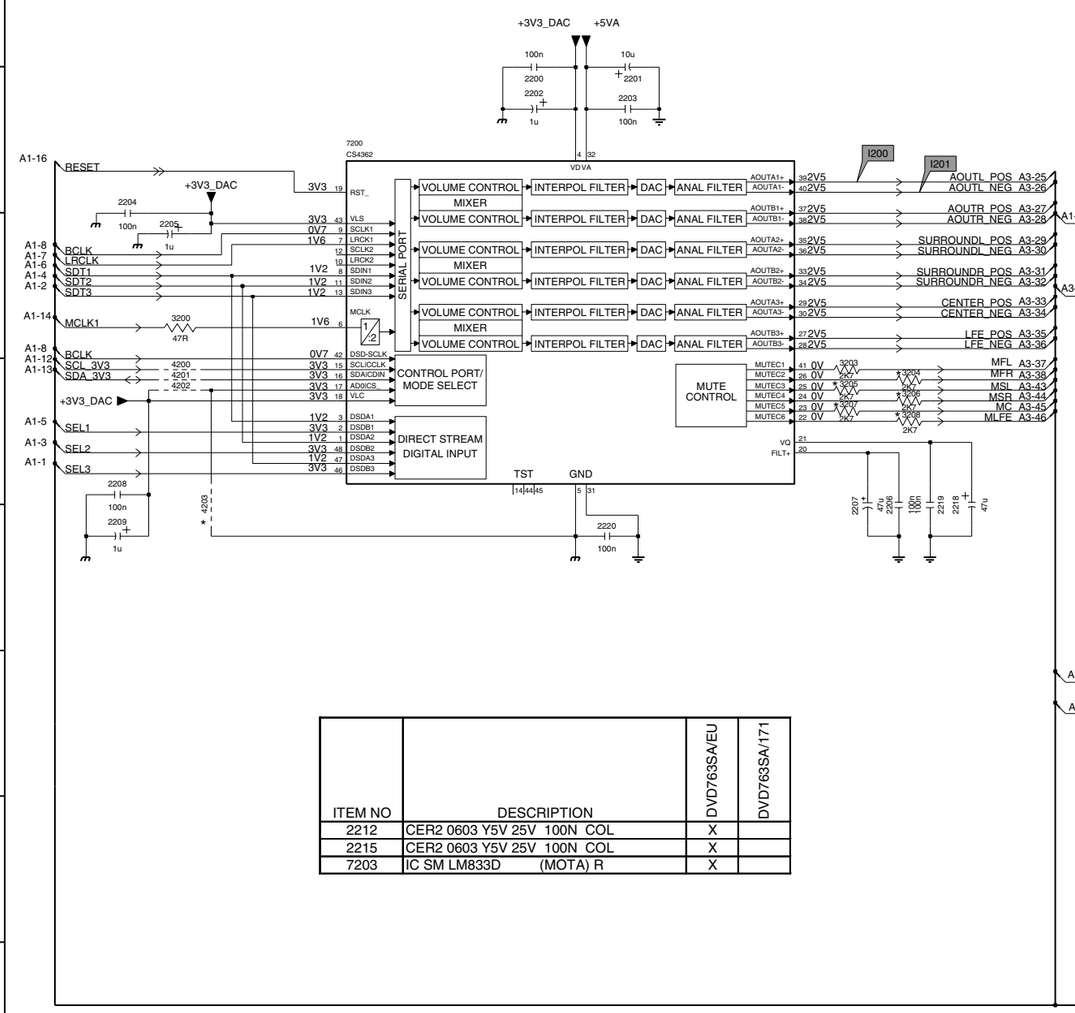
AV-Board: Video DAC

A2 AV_VIDEO DAC



ITEM NO	DESCRIPTION	DVD763SA/EU	DVD763SA/171
2212	CER2 0603 Y5V 25V 100N COL	X	
2215	CER2 0603 Y5V 25V 100N COL	X	
7203	IC SM LM833D (MOTA) R	X	

* OPTIONAL

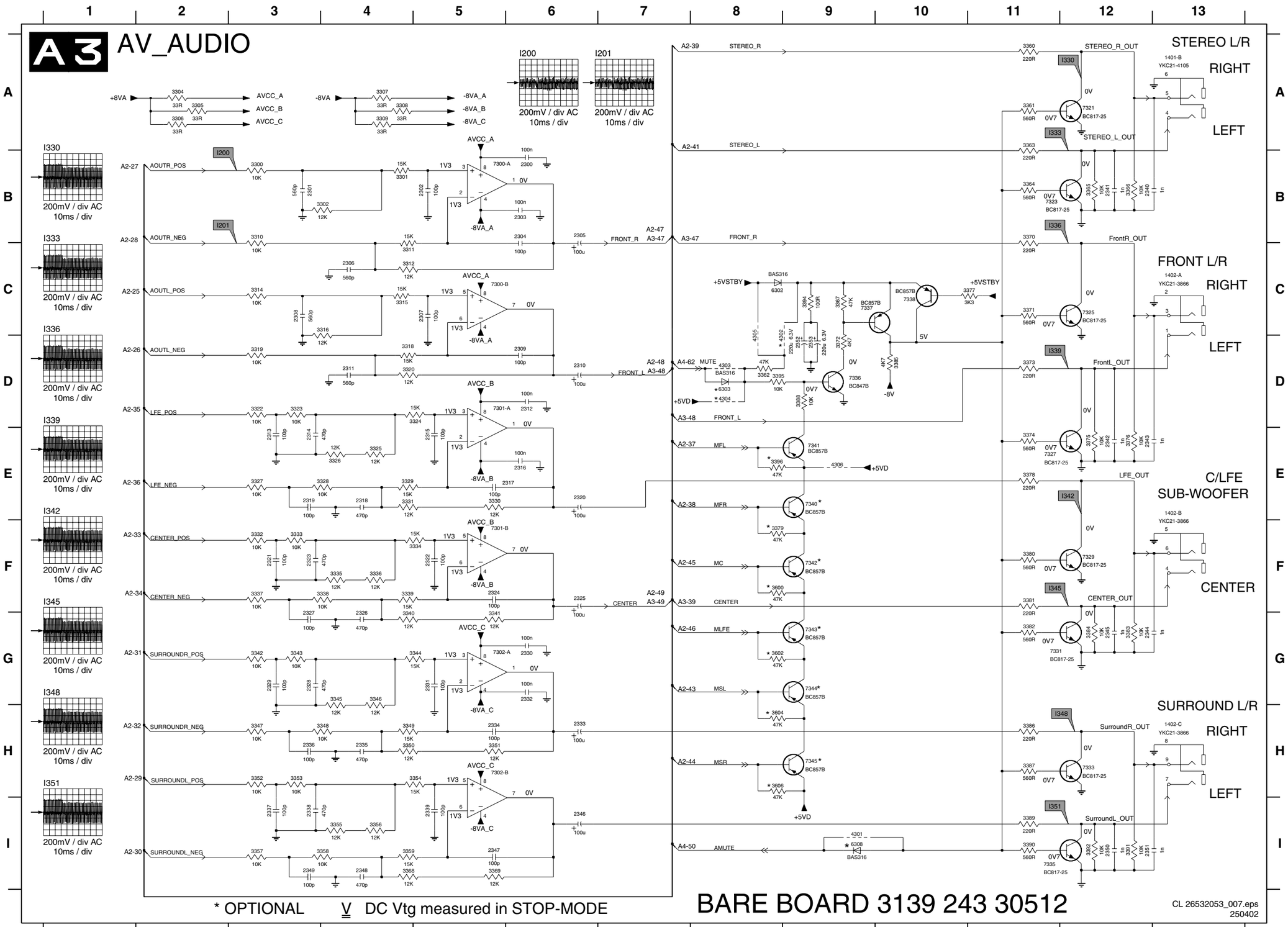
V DC Vtg measured in STOP-MODE

BARE BOARD 3139 243 30512

CL 26532053_006.eps
250402

2200 B4
2201 B5
2202 B4
2203 B5
2204 B1
2205 C2
2206 E6
2207 E6
2208 D1
2209 E1
2210 C12
2211 C13
2212 C14
2213 A10
2214 D12
2215 D14
2216 B10
2217 F13
2218 E7
2219 E7
2220 E5
3200 C2
3201 B9
3202 C8
3203 D6
3204 D7
3205 D6
3206 D7
3207 D6
3208 D7
4200 D2
4201 D2
4202 D2
4203 D2
7200 B3
7201-A B11
7201-B A10
7201-C E11
7202-A C12
7202-B F12
7203-A C13
7203-B G13
7220 C9

AV-Board: Audio



1401-B A13	3362 D8
1402-A C13	3363 A11
1402-B E13	3364 B11
1402-C H13	3365 B12
2300 B6	3366 B12
2301 B3	3367 C9
2302 B5	3368 I4
2303 B6	3369 I5
2304 B6	3370 B11
2305 B6	3371 C11
2306 C4	3372 D9
2307 C5	3373 D11
2308 C3	3374 E11
2309 D6	3375 E12
2310 D6	3376 E12
2311 D4	3377 C11
2312 D6	3378 E11
2313 E3	3379 E8
2314 E3	3380 F11
2315 E5	3381 F11
2316 E6	3382 G11
2317 E6	3383 G12
2318 E4	3384 G12
2319 E3	3385 D10
2320 E6	3386 H11
2321 F3	3387 H11
2322 F5	3388 D9
2323 F3	3389 I11
2324 F5	3390 I11
2325 F6	3391 I12
2326 G4	3392 I12
2327 G3	3394 C9
2328 G3	3395 D8
2329 G3	3396 E8
2330 G6	3600 F8
2331 G5	3602 G8
2332 G6	3604 G8
2333 H6	3606 H8
2334 H5	4301 I9
2335 H4	4302 D9
2336 H3	4303 D8
2337 I3	4304 D8
2338 I3	4305 D8
2339 I5	6302 C8
2340 B12	6303 D8
2341 B12	6308 I9
2342 E12	7300-A B5
2343 E12	7300-B C5
2344 G12	7301-A D5
2345 G12	7301-B F5
2346 I6	7302-A G5
2347 I5	7302-B H5
2348 I4	7321 A12
2349 I3	7323 B11
2350 I12	7325 C12
2351 I12	7327 E11
2352 D9	7329 F12
2353 D9	7331 G11
3300 B3	7333 H12
3301 B4	7335 I11
3302 B4	7336 D9
3304 A2	7337 C9
3305 A2	7338 C10
3306 A2	7340 F9
3307 A4	7341 E8
3308 A4	7342 F9
3309 A4	7343 G9
3310 B3	7344 H9
3311 C4	7345 H9
3312 C4	
3314 C3	
3315 C4	
3316 C4	
3318 D4	
3319 D3	
3320 D4	
3322 D3	
3323 D3	
3324 D5	
3325 E4	
3326 E4	
3327 E3	
3328 E4	
3329 E4	
3330 E5	
3331 E4	
3332 F3	
3333 F3	
3334 F5	
3335 F4	
3336 F4	
3337 F3	
3338 F4	
3339 F4	
3340 G4	
3341 G5	
3342 G3	
3343 G3	
3344 G5	
3345 G4	
3346 G4	
3347 H3	
3348 H4	
3349 H4	
3350 H4	
3351 H5	
3352 H3	
3353 H3	
3354 H5	
3355 I4	
3356 I4	
3357 I3	
3358 I4	
3359 I4	
3360 A11	
3361 A11	

AV-Board: Video

A 4 AV_VIDEO

TO 1300 OF SCART BOARD S1

FROM 0201 OF PSU P

FROM 1703 OF SD4.00SA MONO BOARD M7

ONLY FOR SCART

VIDEO CVBS

S.VIDEO

DIGITAL

OPTICAL

BARE BOARD 3139 243 30512

V DC Vtg measured in STOP-MODE

CL 26532053_008.eps 250402

1401-A C13	3413 C7	4402 G13
1403 A1	3414 C5	4403 H7
1408 D14	3415 C7	4404 E4
1409-A E14	3416 C7	4405 I2
1409-B F14	3417 C6	4406 E13
1409-C G14	3418 C5	4407 D12
1410 H14	3419 C6	4408 E12
1420 C1	3420 B8	4409 D11
1421 E1	3421 C8	4410 C11
1445 G3	3422 C8	4411 E10
1446 G3	3423 C7	4412 F10
2112 C11	3430 A9	4413 G10
2402 E7	3431 A10	5400 D7
2404 E7	3440 A9	5401 E7
2405 F5	3441 A9	5402 E7
2406 F6	3442 A11	5403 H9
2408 I4	3443 A11	5410 C11
2409 I4	3444 B10	5411 F13
2410 B10	3445 B10	5412 G13
2411 D13	3446 B9	5413 H12
2412 D13	3447 B11	5414 F13
2413 E10	3448 B9	5415 D13
2414 E13	3449 B9	5416 E13
2415 E13	3450 A12	6400 G11
2417 E6	3451 A12	6401 H11
2418 H7	3452 B12	6402 F11
2419 H7	3453 C10	6403 C11
2420 F12	3454 C12	6404 D11
2421 G12	3455 C10	6405 E11
2422 H12	3456 C12	6406 E2
2423 H9	3457 D9	7401 E6
2424 H11	3458 D10	7403 H7
2425 I13	3459 D10	7420 C3
2426 I12	3460 D12	7421 C5
2427 I11	3461 E12	7422 C5
2428 I14	3462 E9	7423 C6
2429 G7	3463 E9	7424 C4
2430 F3	3464 E12	7425 C7
2431 F3	3465 F9	7430 A9
2432 D11	3466 F9	7431 A13
2433 E10	3467 F12	7432 A12
2434 F10	3468 F9	7433 B12
2435 G10	3469 G9	7434 B9
3400 B5	3470 G12	7435 C10
3401 B3	3471 G9	7436 E10
3402 B4	3472 H12	7437 D11
3403 C3	3473 I10	7440 E10
3404 C4	3474 I11	7441 F10
3405 C5	3491 F5	7442 G10
3406 C4	3492 H6	7443 E4
3407 C4	3493 I4	7445 F6
3408 C3	3495 H4	7446 F7
3409 C4	3496 E4	7604 H10
3410 B6	3497 E9	
3411 B7	4400 C11	
3412 C6	4401 F13	

ITEM NO.	DESCRIPTION	DVD763SA/EU	DVD763SA/171
1403	CON BM V 22P F 1.00 FFC 0.3 B	X	
3400	RST SM 0603 100R PM5 COL	X	
3401	RST SM 0603 100R PM5 COL	X	
3402	RST SM 0603 100R PM5 COL	X	
3403	RST SM 0603 RC21 56R PM5 R	X	
3404	RST SM 0603 RC21 56R PM5 R	X	
3405	RST SM 0603 RC21 56R PM5 R	X	
3406	RST SM 0603 2K2 PM5 COL	X	
3407	RST SM 0603 RC21 82R PM5 R	X	
3408	RST SM 0603 2K2 PM5 COL	X	
3409	RST SM 0603 75R PM5 COL	X	
3410	RST SM 0603 100R PM5 COL	X	
3411	RST SM 0603 100R PM5 COL	X	
3412	RST SM 0603 68R PM5 COL	X	
3413	RST SM 0603 68R PM5 COL	X	
3414	RST SM 0603 75R PM5 COL	X	
3415	RST SM 0603 2K2 PM5 COL	X	
3416	RST SM 0603 75R PM5 COL	X	
3417	RST SM 0603 2K2 PM5 COL	X	
3418	RST SM 0603 2K2 PM5 COL	X	
3419	RST SM 0603 75R PM5 COL	X	
3420	RST SM 0603 100R PM5 COL	X	
3421	RST SM 0603 RC21 56R PM5 R	X	
3422	RST SM 0603 75R PM5 COL	X	
3423	RST SM 0603 2K2 PM5 COL	X	
7420	TRA SIG SM BC847B (COL) R	X	
7421	TRA SIG SM BC847B (COL) R	X	
7422	TRA SIG SM BC847B (COL) R	X	
7423	TRA SIG SM BC847B (COL) R	X	
7424	TRA SIG SM BC847B (COL) R	X	
7425	TRA SIG SM BC847B (COL) R	X	

I502
500mV / div AC
20µs / div

I499
2V / div DC
200ns / div

I500
500mV / div DC
200ns / div

I491
500mV / div AC
20µs / div

I494
500mV / div AC
20µs / div

I231
200mV / div AC
10ms / div

I234
200mV / div AC
10ms / div

I400 RGB Video output
500mV / div AC
20µs / div

I401 RGB Video output
500mV / div AC
20µs / div

I402 RGB Video output
500mV / div AC
20µs / div

I403
500mV / div AC
20µs / div

I406
500mV / div AC
20µs / div

I407
500mV / div AC
20µs / div

I418 RGB Video output
500mV / div AC
20µs / div

I418 YUV Video output
500mV / div AC
20µs / div

I419 YUV Video output
500mV / div AC
20µs / div

I419 RGB Video output
500mV / div AC
20µs / div

I420 RGB Video output
500mV / div AC
20µs / div

I420 YUV Video output
500mV / div AC
20µs / div

I421
500mV / div AC
20µs / div

I422
500mV / div AC
20µs / div

I423
500mV / div AC
20µs / div

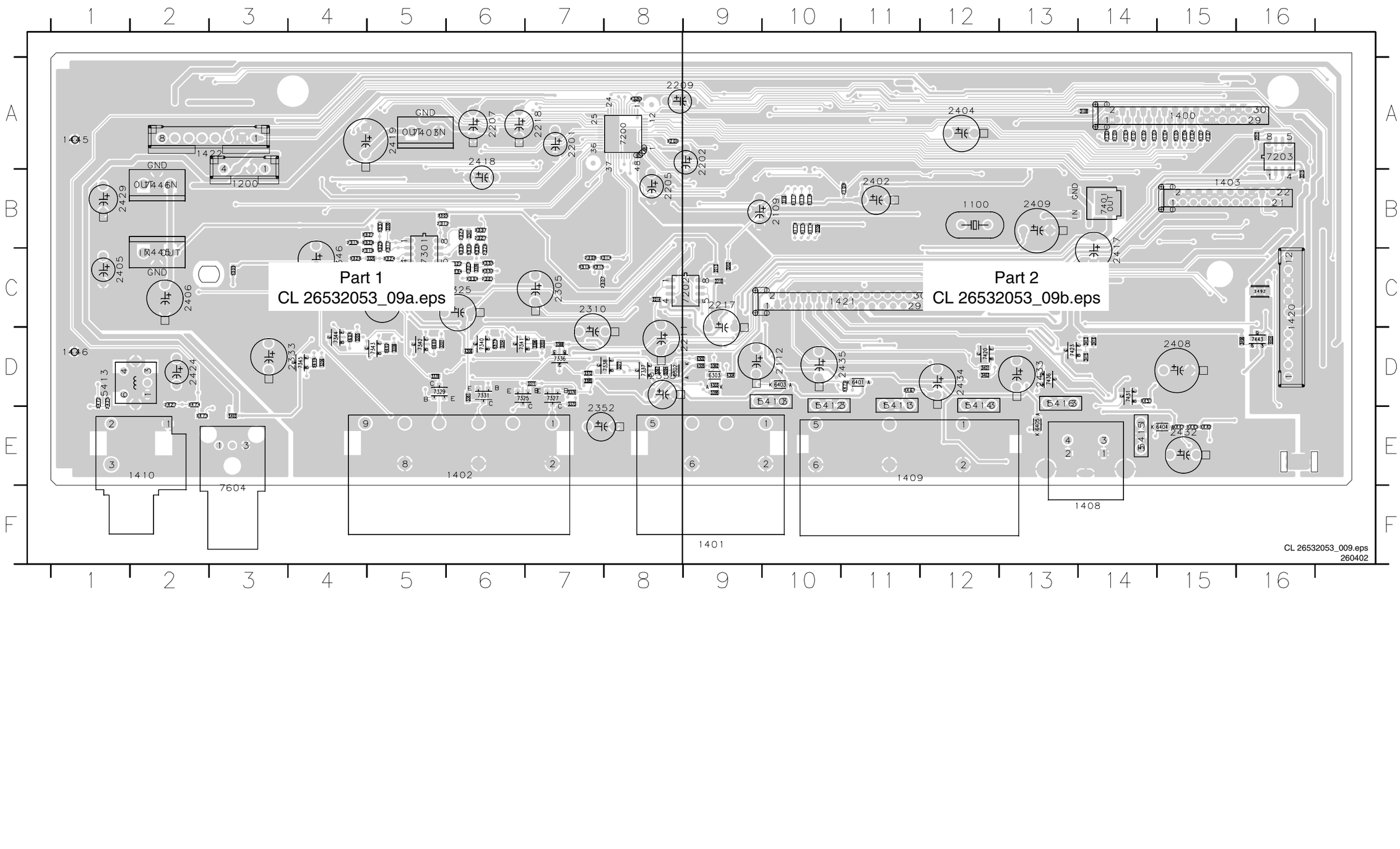
I480
500mV / div AC
20µs / div

I482
500mV / div AC
20µs / div

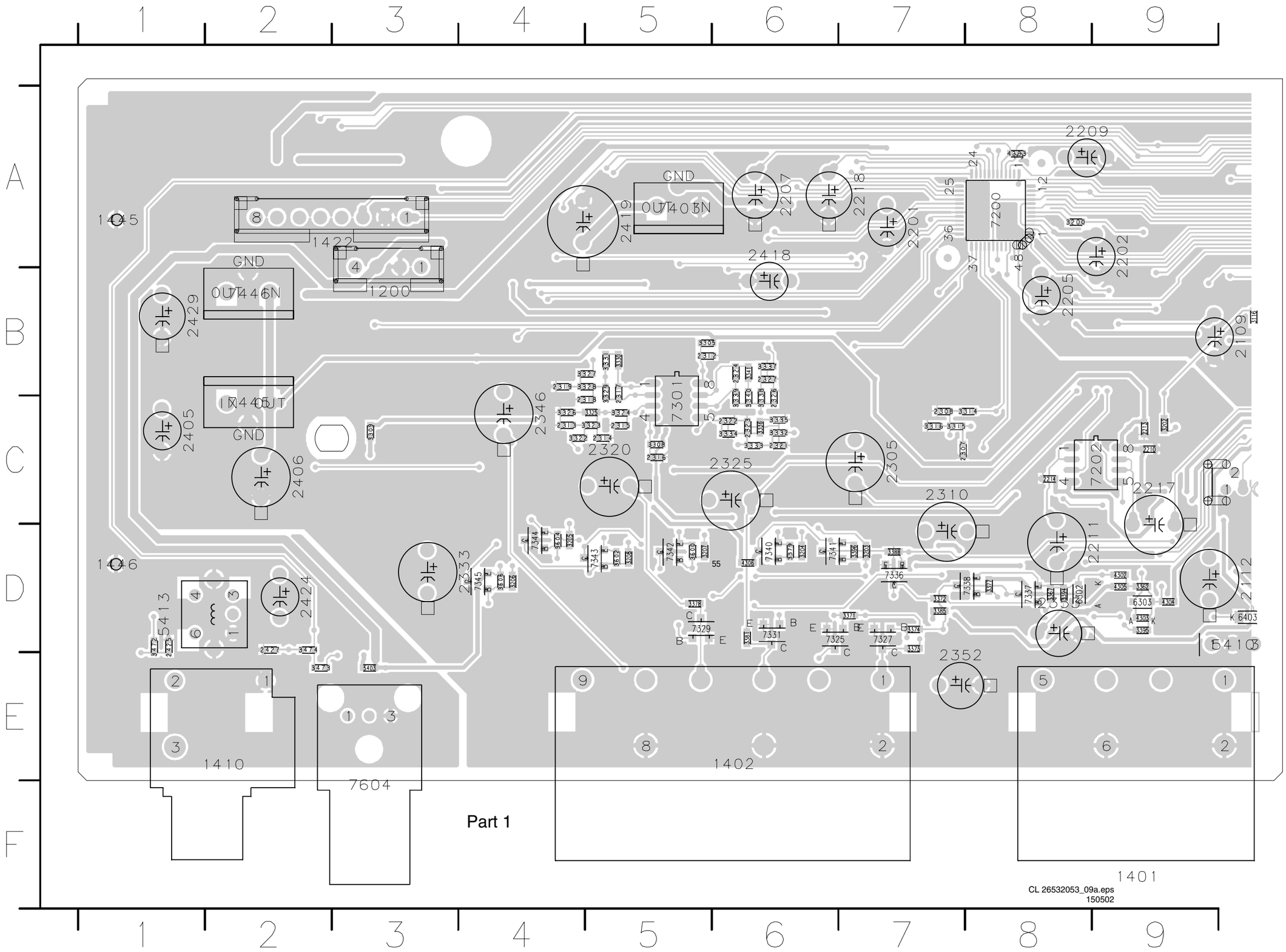
I483
500mV / div AC
20µs / div

Layout AV-Board (Overview Top Side)

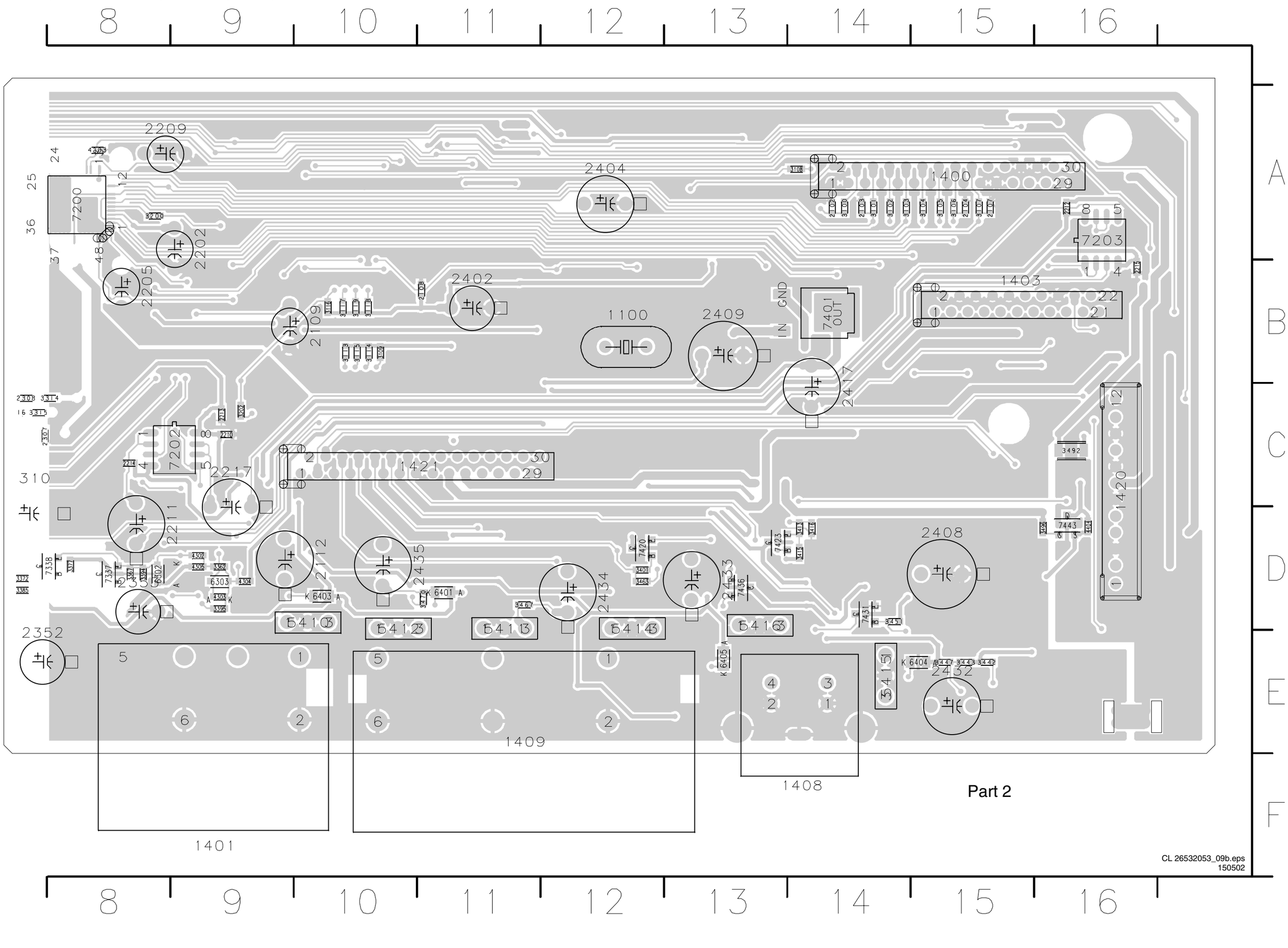
1100 B12	1445 A1	2207 A6	2308 C7	2322 C6	2405 B1	2433 D13	3109 B10	3205 D4	3324 C5	3336 C6	3377 D8	3416 D14	3496 D16	5403 E3	6404 E15	7338 D8	7436 D13
1200 B3	1446 D1	2209 A8	2310 C7	2323 C6	2406 D2	2434 D12	3113 B10	3206 D4	3325 C5	3337 B6	3378 D5	3442 E15	3600 D5	5410 E9	6405 E13	7340 D6	7443 D16
1400 A15	2102 A14	2210 C9	2312 B5	2324 B6	2408 D14	2435 D11	3114 B10	3207 D5	3326 C4	3338 C6	3379 D6	3443 E15	3602 D5	5411 D11	7200 A8	7341 D6	7445 B2
1401 E8	2103 A14	2211 C8	2313 C4	2325 C5	2409 B13	3100 A14	3115 B10	3208 D5	3327 B5	3339 C6	3381 D6	3447 E15	3604 D4	5412 D10	7202 C9	7342 D5	7446 A2
1402 E4	2104 A15	2212 A16	2314 C5	2326 C6	2417 C13	3101 A14	3116 B10	3305 B5	3328 B5	3340 C6	3385 D7	3451 D14	3606 D4	5413 D2	7203 A16	7343 D5	7604 E3
1403 B15	2107 A15	2213 C9	2315 C5	2327 B6	2418 A6	3102 A14	3117 B10	3308 C5	3329 B5	3341 B6	3388 D7	3463 D12	4203 A8	5414 D12	7301 C5	7344 D4	
1408 E14	2108 B11	2214 C8	2316 C5	2333 D3	2419 A4	3103 A14	3118 B10	3309 C3	3330 B5	3362 D9	3394 D8	3467 D11	4302 D9	5415 E14	7325 D6	7345 D4	
1409 E12	2109 B9	2215 B16	2317 B5	2346 C4	2424 D2	3104 A15	3119 B10	3314 C8	3331 B5	3367 D8	3395 D9	3470 D11	4303 D9	5416 D13	7327 D7	7401 B14	
1410 E1	2112 D10	2217 D9	2318 C5	2352 E7	2425 D1	3105 A15	3200 A8	3315 C7	3332 C6	3371 D7	3396 D7	3472 D1	4304 D9	6302 D8	7329 D5	7403 A5	
1420 C16	2201 A7	2218 A6	2319 B4	2353 E9	2427 D2	3106 A15	3202 C9	3316 C7	3333 C6	3372 D7	3401 D12	3473 E2	4305 D9	6303 D9	7331 D6	7420 D12	
1421 C11	2202 A9	2305 C7	2320 C4	2402 B11	2429 B1	3107 A15	3203 D7	3322 C4	3334 C6	3373 D7	3413 D14	3474 D2	4306 D6	6401 D11	7336 D7	7423 D13	
1422 A2	2205 B8	2307 C7	2321 C6	2404 A12	2432 E15	3108 A14	3204 D6	3323 C5	3335 C6	3374 D7	3415 D14	3492 C16	4404 D16	6403 D10	7337 D8	7431 D14	



Layout AV-Board (Part 1 Top Side)

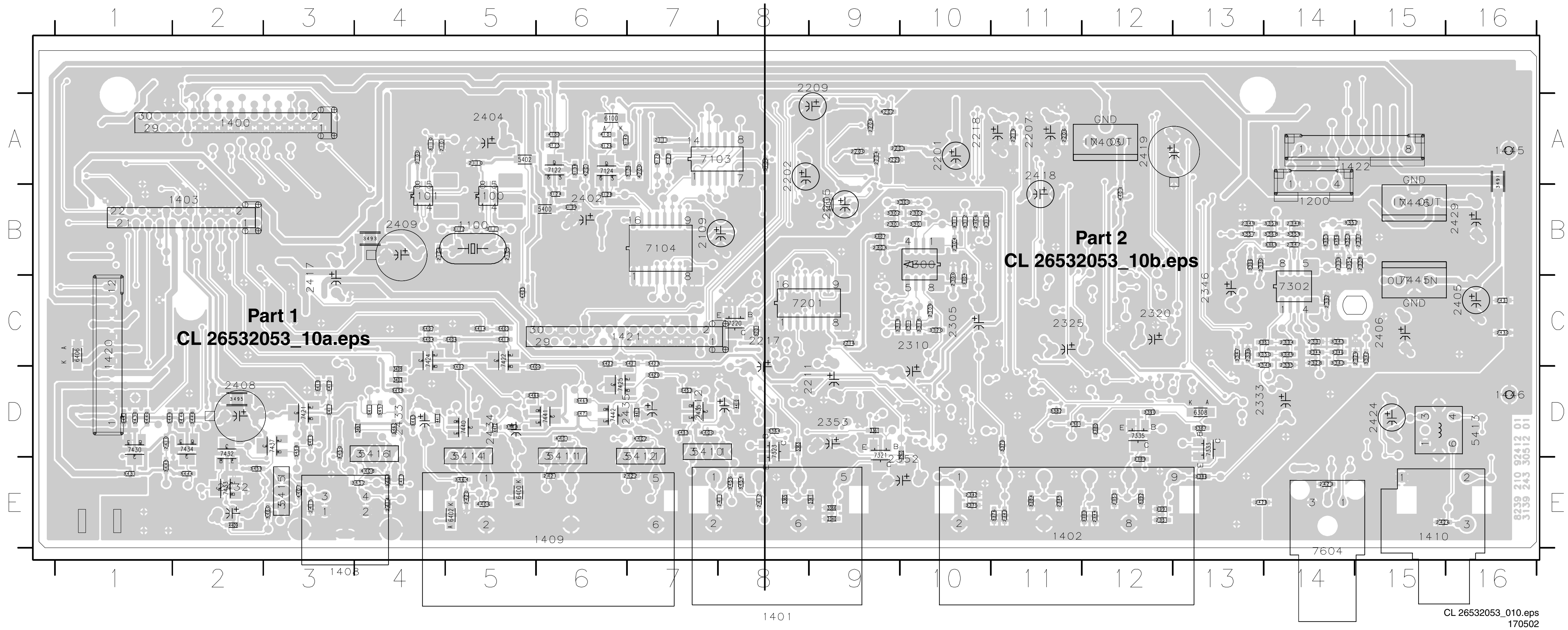


Layout AV-Board (Part 2 Top Side)



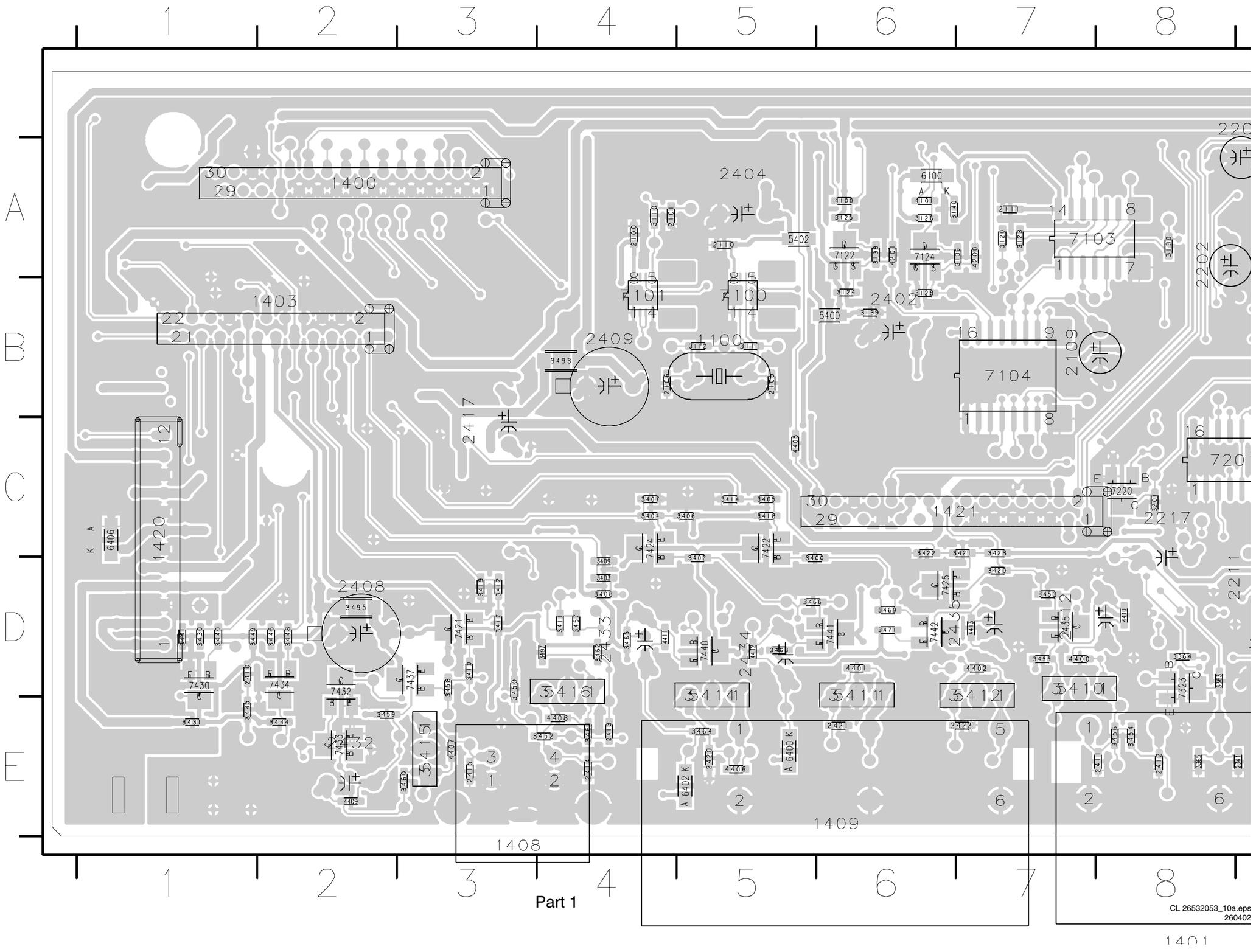
Layout AV-Board (Overview Bottom Side)

2100 A4	2216 C9	2328 C14	2340 E9	2410 D1	2428 E13	3128 B6	3306 B13	3345 C14	3356 B14	3369 B14	3390 D12	3409 D4	3423 C7	3452 E4	3464 E5	4101 A6	4407 E3	6308 D13	7220 C8	7430 D1
2101 A4	2219 A11	2329 C15	2341 E9	2411 E8	2430 C16	3130 A8	3307 B9	3346 C14	3357 B13	3370 D11	3391 E12	3410 D3	3430 D1	3453 D7	3465 D4	4200 A7	4408 E4	6400 E5	7300 B10	7432 D2
2105 B5	2220 A9	2330 B13	2342 E10	2412 E8	2431 C16	3136 A7	3310 B10	3347 C13	3358 B14	3375 E10	3392 E12	3411 D4	3431 E1	3454 E8	3466 D5	4201 A6	4409 E2	6402 E5	7302 C14	7433 E2
2106 B4	2300 C10	2331 C14	2343 E11	2413 E4	3110 A4	3138 A6	3311 B10	3348 C14	3359 B14	3376 E11	3400 D5	3412 D3	3440 D1	3455 D7	3468 D5	4202 A9	4410 D8	6406 C1	7321 D9	7434 D2
2110 A5	2301 B9	2332 C14	2344 E12	2414 E4	3111 B5	3139 B6	3312 B10	3349 C14	3360 D10	3380 D12	3402 D5	3414 C5	3441 D1	3456 E8	3469 D6	4301 D11	4411 D4	7100 B5	7323 D8	7435 D7
2111 A7	2302 B10	2334 C14	2345 E11	2415 E3	3112 B5	3140 A6	3318 C10	3350 C14	3361 D9	3382 D11	3403 D4	3417 D3	3444 E2	3457 D4	3471 D6	4400 D7	4412 D5	7101 B4	7333 D13	7437 D3
2200 A9	2303 B9	2335 C14	2347 B14	2420 E5	3120 A7	3201 C8	3319 C9	3351 C14	3363 D8	3383 E12	3404 C4	3418 C5	3445 E1	3458 D3	3491 A16	4401 D6	4413 D7	7103 A7	7335 D12	7440 D5
2203 A9	2304 B10	2336 C13	2348 B14	2421 E6	3123 A7	3300 B10	3320 C10	3352 B14	3364 D8	3384 E11	3405 C5	3419 D3	3446 D2	3459 E2	3493 B4	4402 D7	5400 B6	7104 B7	7421 D3	7441 D6
2204 A9	2306 B10	2337 B15	2349 B13	2422 E7	3124 B6	3301 B10	3342 C15	3353 B14	3365 E8	3386 E13	3406 C5	3420 D7	3448 D2	3460 E3	3495 D2	4403 B12	5401 B9	7122 A6	7422 C5	7442 D6
2206 A11	2309 C10	2338 B15	2350 E12	2423 E14	3125 A6	3302 B9	3343 C14	3354 B14	3366 E9	3387 D13	3407 C4	3421 C7	3449 D1	3461 E4	3497 D4	4405 C5	5402 A5	7124 A6	7424 C4	
2208 A9	2311 C10	2339 B14	2351 E12	2426 E15	3126 A6	3304 C10	3344 C14	3355 B14	3368 B14	3389 E12	3408 D4	3422 C6	3450 D3	3462 D4	4100 A6	4406 E5	6100 A6	7201 C8	7425 D6	



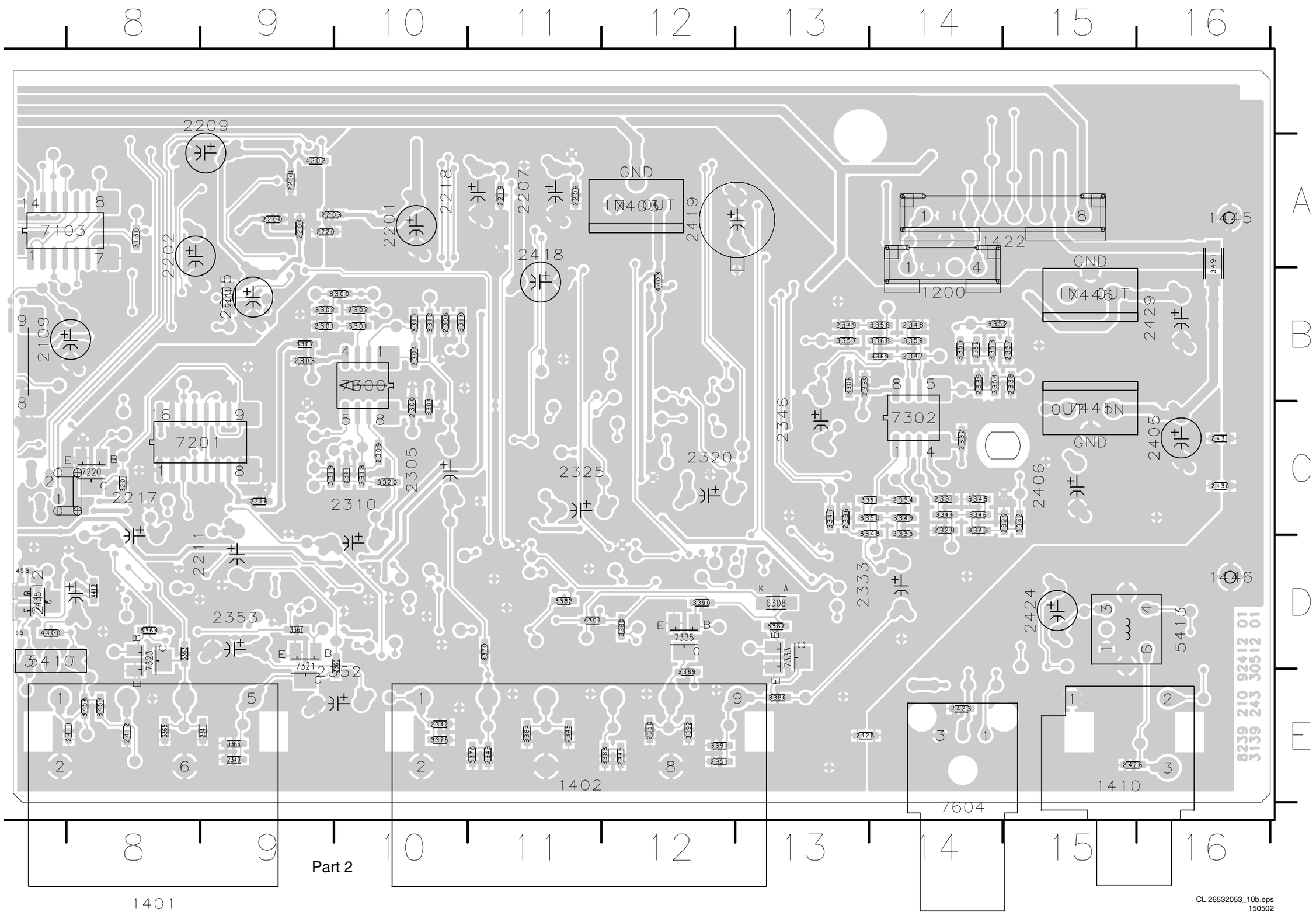
CL 26532053_010.eps
170502

Layout AV-Board (Part 1 Bottom Side)



Part 1

Layout AV-Board (Part 2 Bottom Side)



DVD763SA 30521-Front Board: Display Panel

DISPLAY PANEL

FTD DISPLAY

11-MT-126GNK
1100

INFO : FIL1 - FIL2
= 3.5 Vac RMS

I173: 10V/div DC, 10µs/div
I176: 2V/div DC, 10µs/div
S1: 1V/div DC, 50µs/div

For models with P50 only

TO 1100 OF MIC BOARD

TO 1200 CONN STANDBY BOARD

FROM 1422 of AV Board
* FOR DVD763 ONLY

FROM 1102 of AV Board
* ONLY FOR DVD743 EU

FROM 0201 of PSU
* ONLY for DVD743 EU

LEGEND:
* OPTIONAL
# FOR DVD743 EU

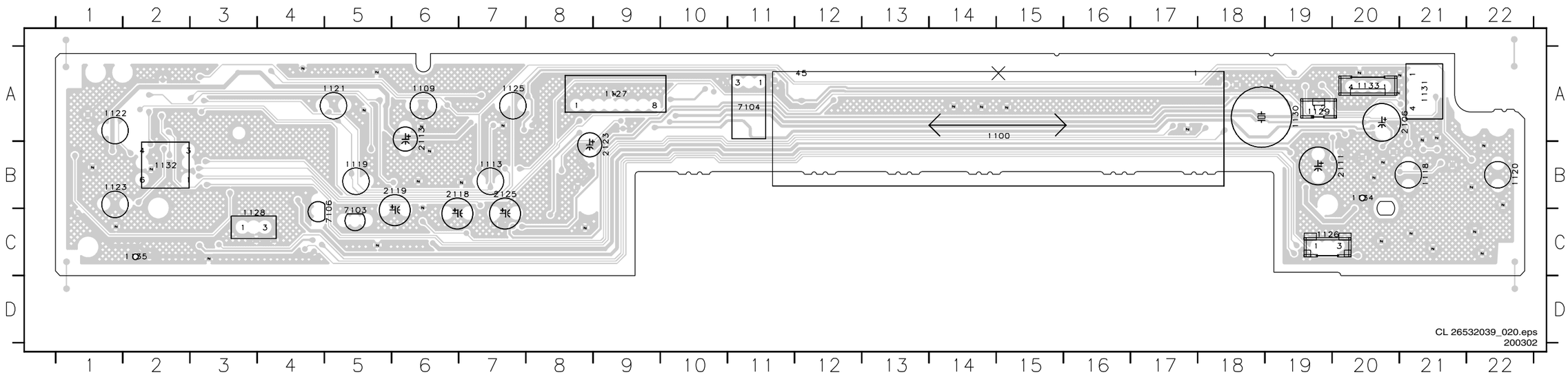
V DC vtg measured in STOP-MODE

CL 25632039_007.eps
190302

1100 A6
1109 C10
1113 C11
1118 D11
1119 D10
1120 D9
1121 D11
1122 D12
1123 D13
1125 D11
1126 E1
1127 E14
1128 G5
1129 I1
1130 H7
1131 G1
1132 C14
1133 G14
1134 D1
1135 C1
2100 A11
2101 A12
2102 D9
2103 F2
2104 F4
2105 F2
2106 F11
2107 F9
2108 G5
2109 G6
2110 G10
2111 G12
2112 H7
2113 H4
2114 H5
2115 H5
2116 H6
2117 H11
2118 H12
2119 I12
2120 H14
2121 I2
2122 I7
2123 I8
2124 I2
2125 I12
2126 I9
2127 I10
3100 A4
3101 G9
3102 A4
3103 A8
3104 A8
3105 A12
3106 A12
3107 A12
3108 A11
3109 B12
3110 C11
3111 G7
3112 C12
3113 C11
3114 C13
3115 C13
3116 C14
3117 C10
3118 E3
3119 E3
3120 F11
3121 F9
3122 G11
3123 F3
3124 G3
3125 G10
3126 H7
3127 G9
3128 I2
3129 H6
3130 H4
3131 H12
3132 H13
3133 H4
3134 G3
3135 H3
3136 H3
3137 I7
3138 I11
3139 H14
3140 I6
3141 I14
3142 I11
3143 F13
3144 G13
3145 C10
3146 F9
3147 F9
3148 G7
4100 I1
4101 I1
4102 I2
4103 G13
4104 G13
6100 A12
6101 G11
6102 H7
6103 H4
6104 F12
7100 A12
7101 C4
7102 H5
7103 H12
7104 I9
7105 H2
7106 I12
7107 I13

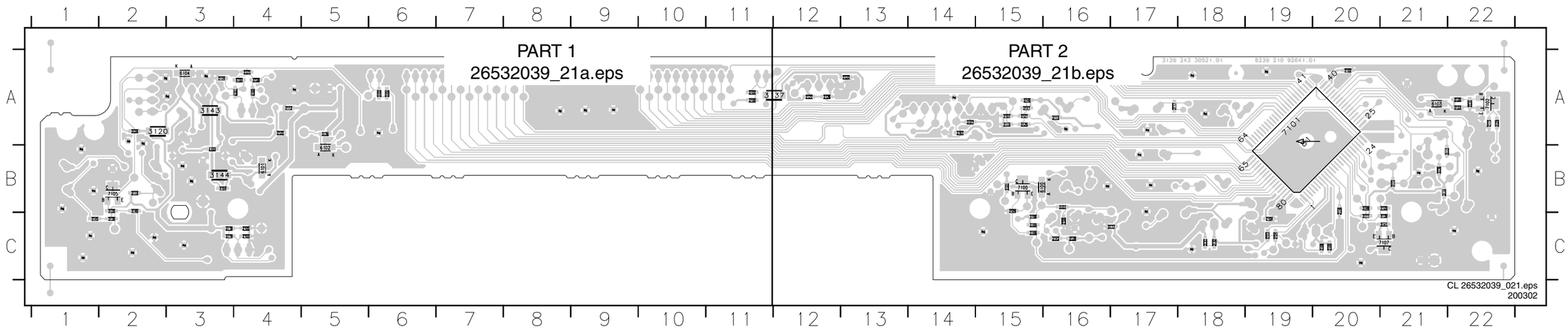
Layout DVD763SA 30521-Front Board (Top Side)

1100 A15
1109 A6
1113 B7
1118 B20
1119 B5
1120 B22
1121 A5
1122 A1
1123 B1
1125 A7
1126 C19
1127 A9
1128 C3
1129 A19
1130 A18
1131 A21
1132 B2
1133 A20
1134 B20
1135 C2
2106 B20
2111 B19
2113 A6
2118 B6
2119 B6
2123 A8
2125 B7
7103 C5
7104 B11
7106 B4

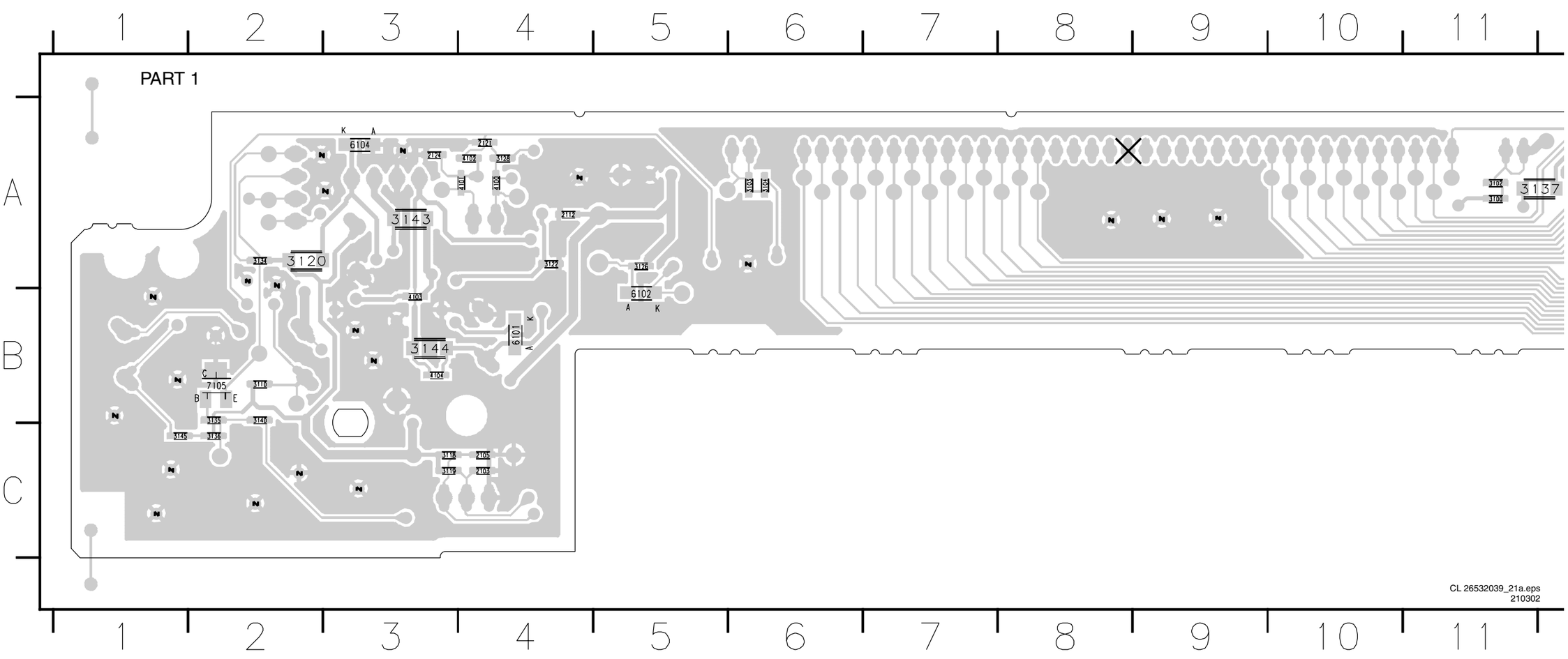


Layout DVD763SA 30521-Front Board (Overview Bottom Side)

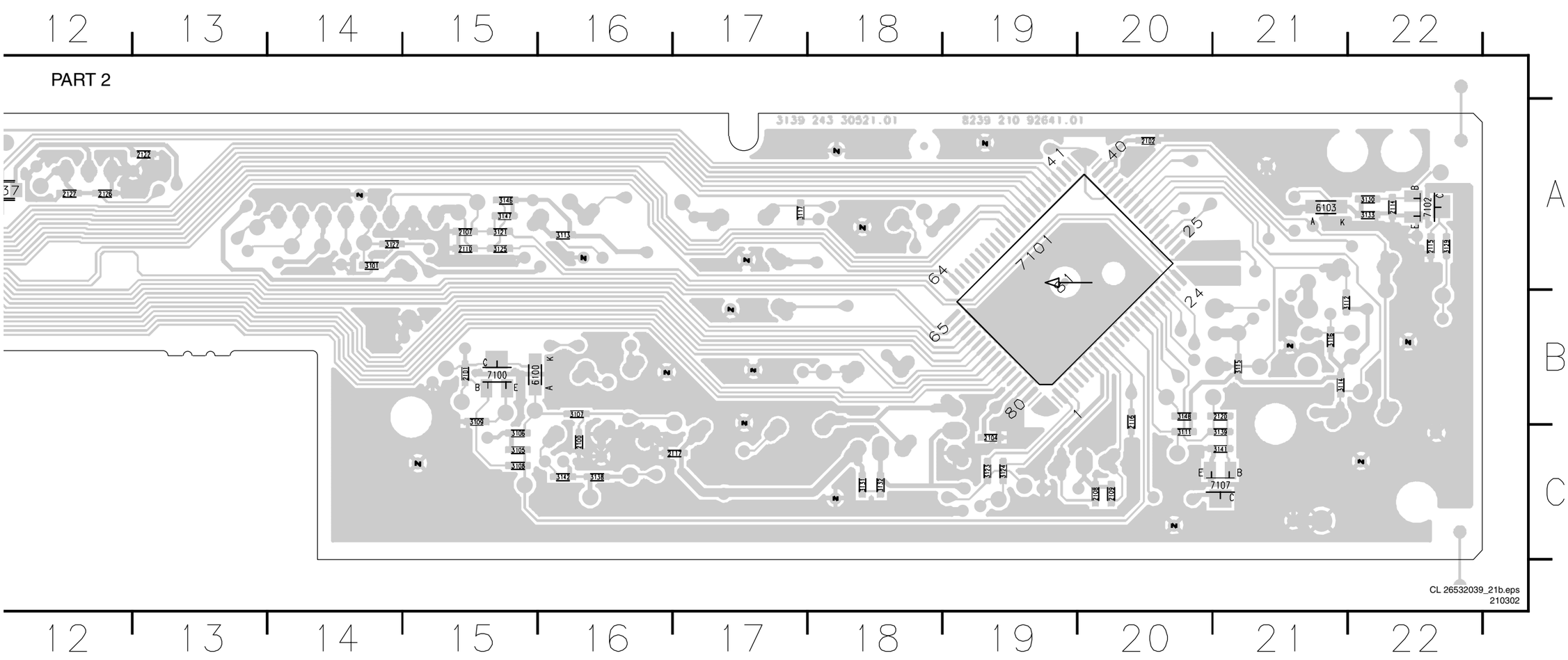
2100 C16
2101 B15
2102 A20
2103 C4
2104 C19
2105 C4
2107 A15
2108 C20
2109 C20
2110 A15
2112 A4
2114 A22
2115 A22
2116 B20
2117 C17
2120 B21
2121 A4
2122 A13
2124 A3
2126 A12
2127 A12
3100 A11
3101 A14
3102 A11
3103 A6
3104 A6
3105 C15
3106 C15
3107 B16
3108 C15
3109 B15
3110 B2
3111 C20
3113 A16
3114 B21
3115 B21
3116 B21
3117 A17
3118 C3
3119 C3
3120 A2
3121 A15
3122 A4
3123 C19
3124 C19
3125 A15
3126 A5
3127 A14
3128 A4
3129 A22
3130 A22
3131 C18
3132 C18
3133 A22
3134 A2
3135 B2
3136 C2
3137 A12
3138 C16
3139 C21
3140 B2
3141 C21
3142 C16
3143 A3
3144 B3
3145 C1
3146 A15
3147 A15
3148 B20
4100 A4
4101 A4
4102 A4
6100 B15
6101 B4
6102 B5
6103 A21
7100 B15
7101 A19
7102 A22
7105 B2
7107 C21



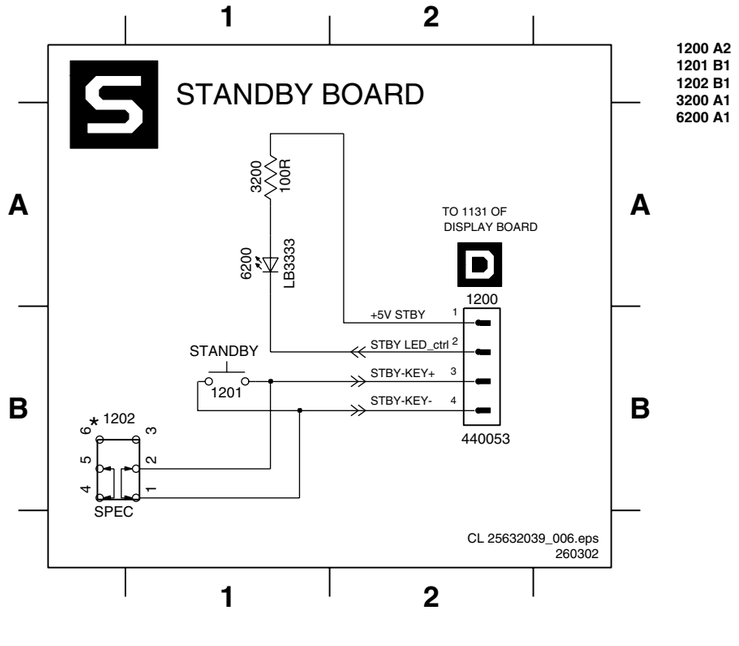
Layout DVD763SA 30521-Front Board (Part 1 Bottom Side)



Layout DVD763SA 30521-Front Board (Part 2 Bottom Side)

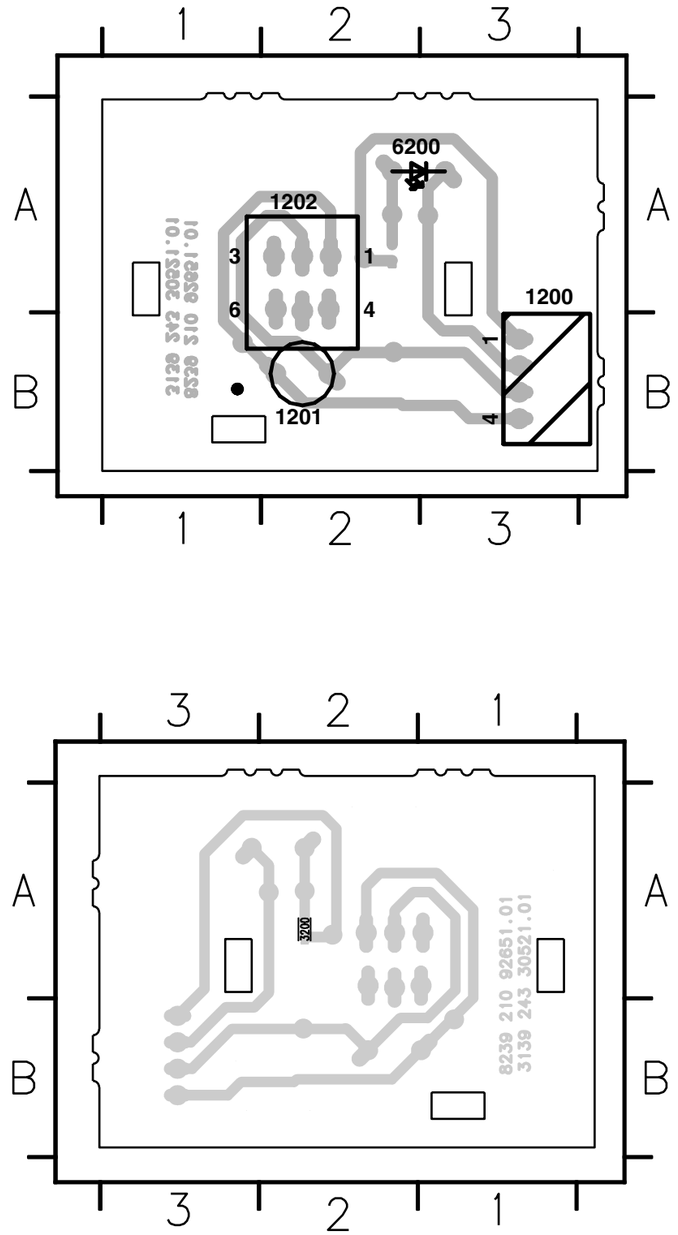


DVD763SA 30521-Front Board: Standby Panel



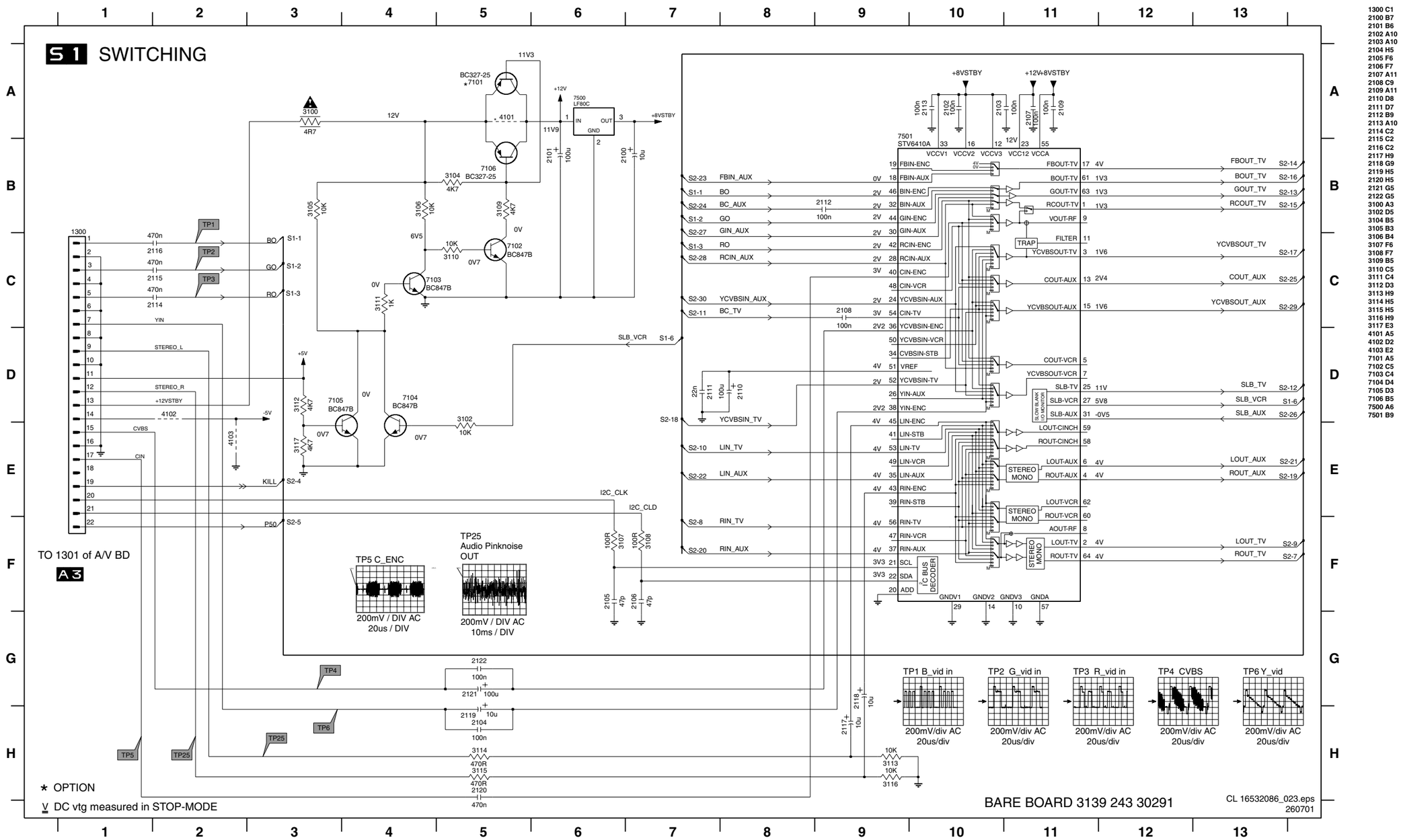
1200 A2
1201 B1
1202 B1
3200 A1
6200 A1

Layout DVD763SA 30521-Front Board: Standby Panel



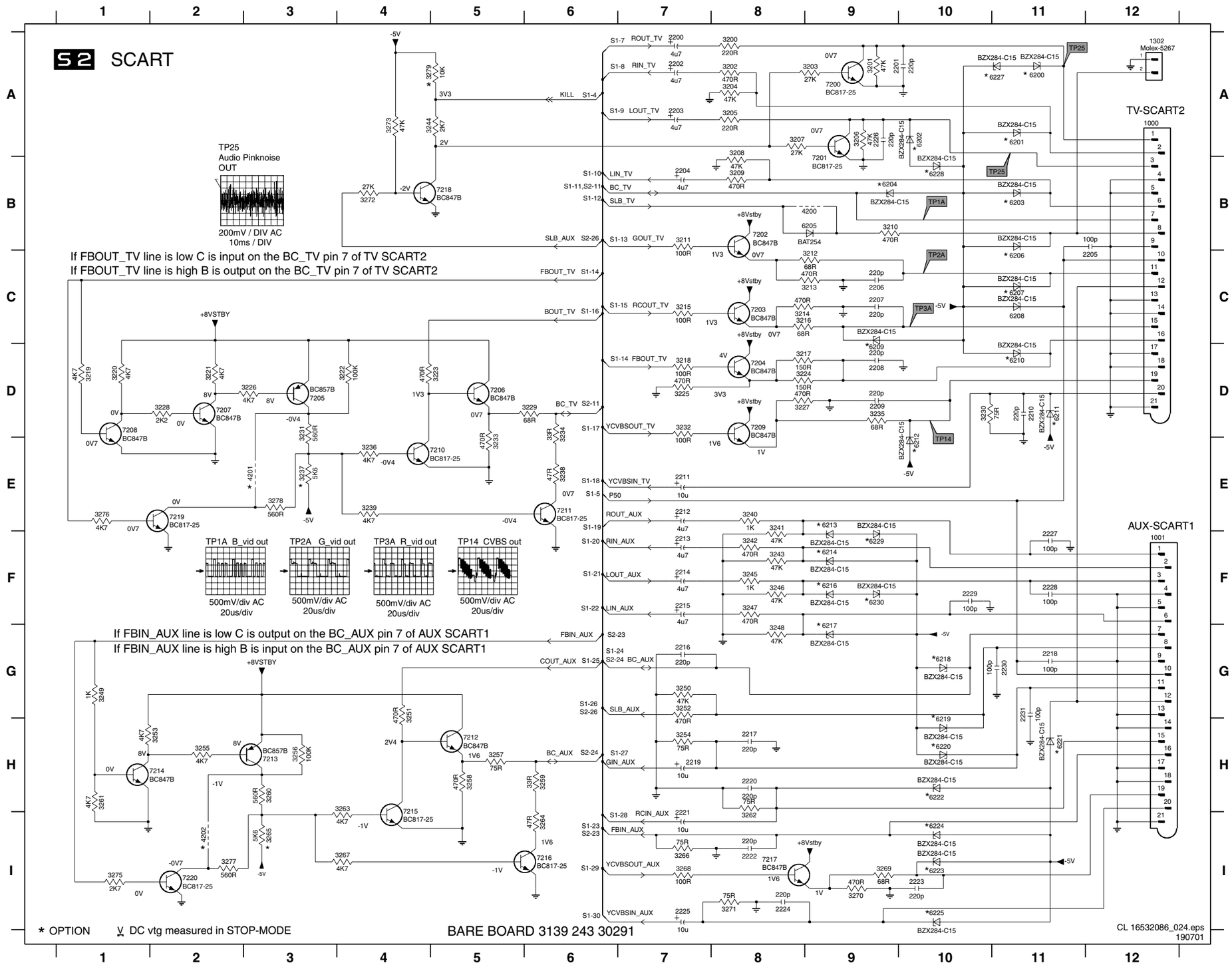
1200 A3
1201 B2
1202 A2
6200 A3
3200 A2

Switching Panel



1300 C1
2100 B7
2101 B6
2102 A10
2103 A10
2104 H5
2105 F6
2106 F7
2107 A11
2108 C9
2109 A11
2110 D8
2111 D7
2112 B9
2113 A10
2114 C2
2115 C2
2116 C2
2117 H9
2118 G9
2119 H5
2120 H5
2121 G5
2122 G5
3100 A3
3102 D5
3104 B5
3105 B3
3106 B4
3107 F6
3108 F7
3109 B5
3110 C5
3111 C4
3112 D3
3113 H9
3114 H5
3115 H5
3116 H9
3117 E3
4101 A5
4102 D2
4103 E2
7101 A5
7102 C5
7103 C4
7104 D4
7105 D3
7106 B5
7500 A6
7501 B9

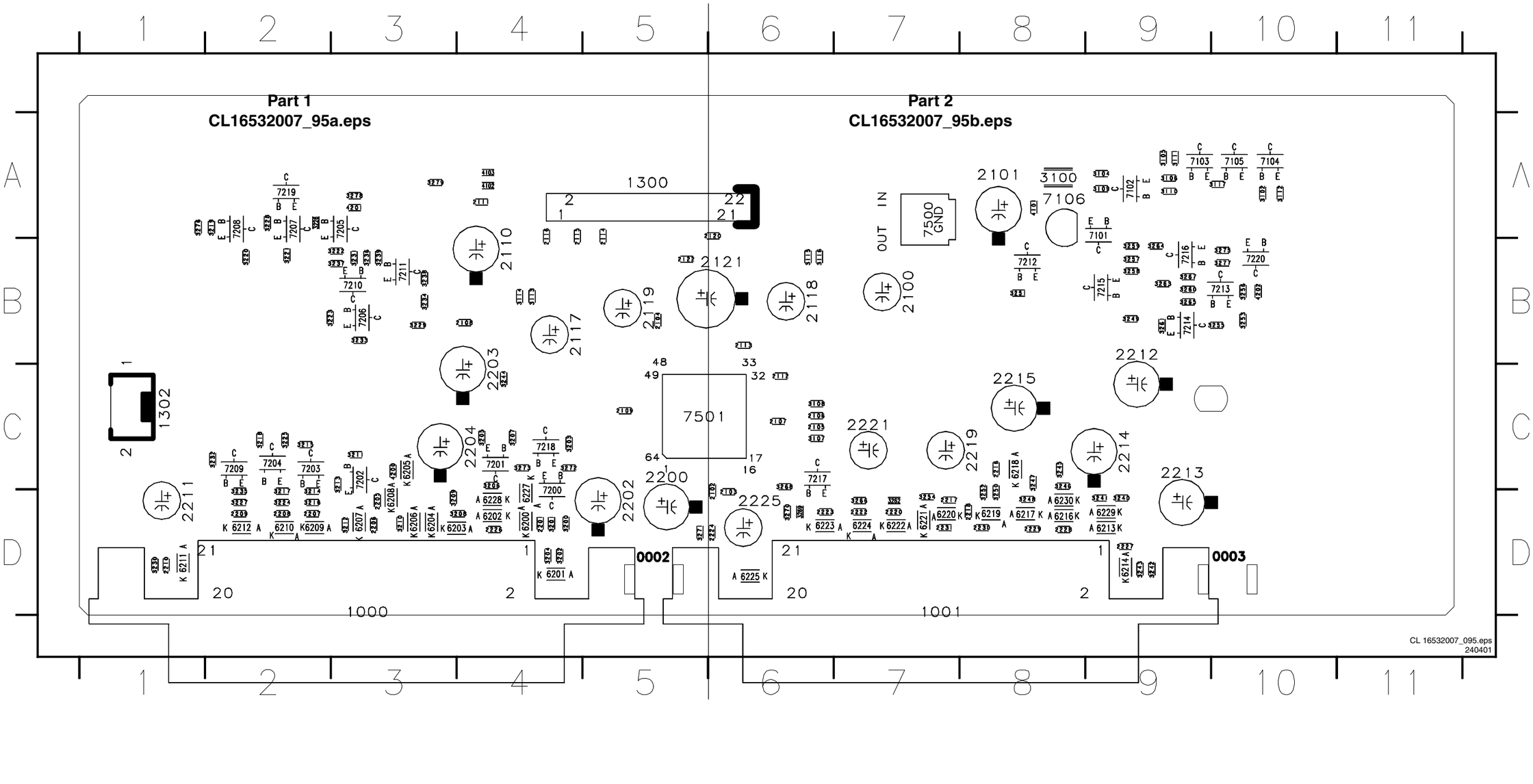
SCART Panel



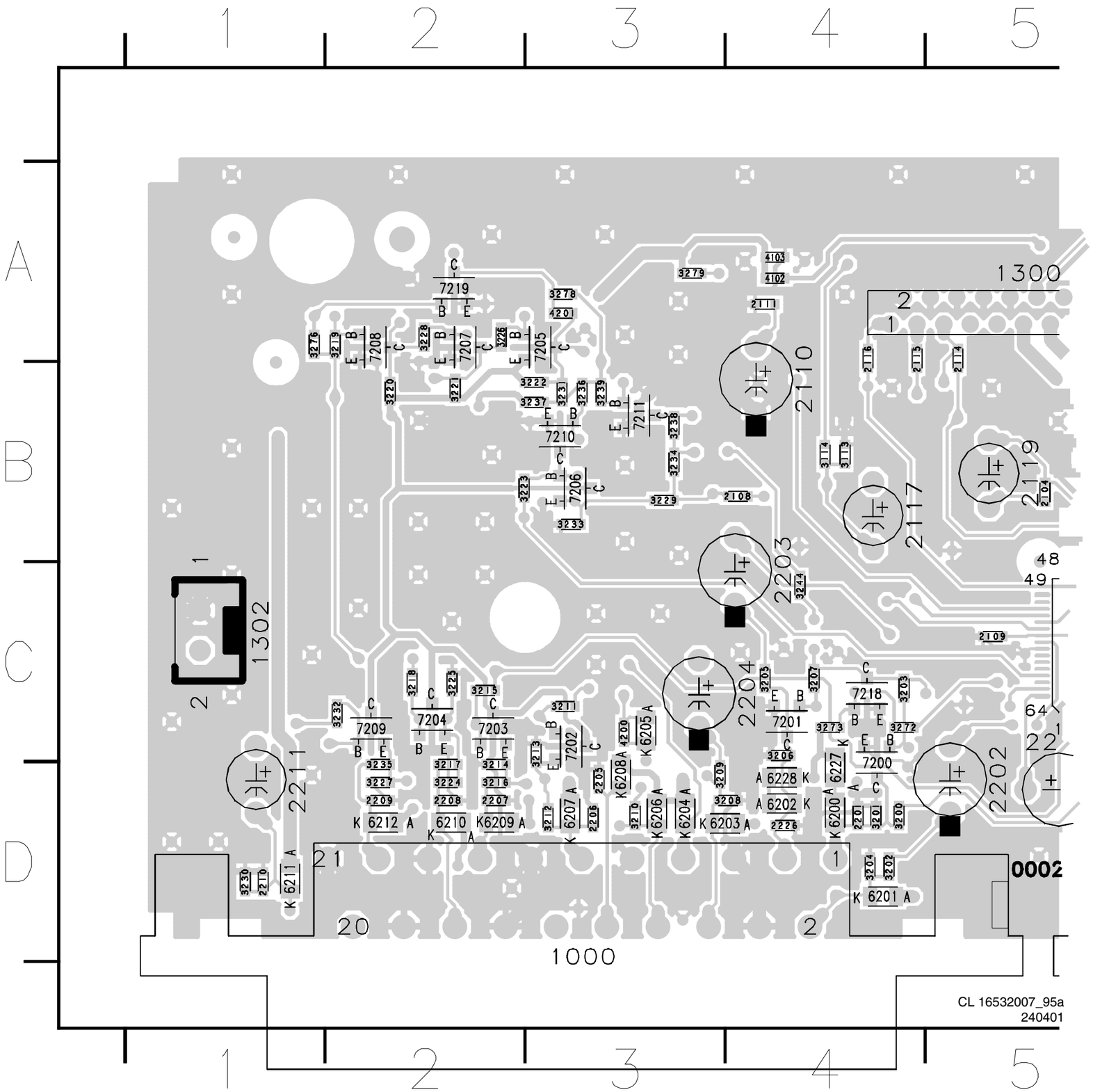
1000 A12
1001 F12
1302 A12
2200 A7
2201 A9
2202 A7
2203 A7
2204 B7
2205 C12
2206 C9
2207 C9
2208 D9
2209 D9
2210 D11
2211 E7
2212 E7
2213 F7
2214 F7
2215 F7
2216 G7
2217 H8
2218 G11
2219 H7
2220 H8
2221 I7
2222 I8
2223 I10
2224 I8
2225 I7
2226 A9
2227 F11
2228 F11
2229 F10
2230 G11
2231 G11
3200 A8
3201 A9
3202 A8
3203 A9
3204 A8
3205 A8
3206 A9
3207 A8
3208 A8
3209 B8
3210 B9
3211 B7
3212 C9
3213 C9
3214 C8
3215 C7
3216 C8
3217 D8
3218 D7
3219 D1
3220 D1
3221 D2
3222 D4
3223 D5
3224 D8
3225 D7
3226 D3
3227 D8
3228 D2
3229 D6
3230 D10
3231 D3
3232 D7
3233 E5
3234 D6
3235 D9
3236 E4
3237 E3
3238 E6
3239 E4
3240 E8
3241 E8
3242 F8
3243 F8
3244 A5
3245 F8
3246 F8
3247 F8
3248 G8
3249 G1
3250 G7
3251 G4
3252 G7
3253 H2
3254 H7
3255 H2
3256 H3
3257 H5
3258 H5
3259 H6
3260 H3
3261 H1
3262 I8
3263 H4
3264 I6
3265 I3
3266 I7
3267 I4
3268 I7
3269 I9
3270 I9
3271 I8
3272 B4
3273 A4
3275 I1
3276 E1
3277 I2
3278 E3
3279 A5
4200 B9
4201 E3
4202 I2
6200 A11
6201 A11
6202 A10
6203 B11
6204 B9
6205 B9
6206 C11
6207 C11
6208 C11
6209 D9
6210 D11
6211 D11
6212 E10
6213 E9
6214 F9
6216 F9
6217 G9
6218 G10
6219 H10
6220 H10
6221 H11
6222 H10
6223 I10
6224 I10
6225 I10
6227 A11
6228 B10
6229 F9
6230 F9
7200 A9
7201 B9
7202 B8
7203 C8
7204 D8
7205 D3
7206 D5
7207 D2
7208 D1
7209 D8
7210 E4
7211 E6
7212 H5
7213 H3
7214 H1
7215 I4
7216 I6
7217 I8
7218 B5
7219 E2
7220 I2

Layout SCART Board (Overview Top Side)

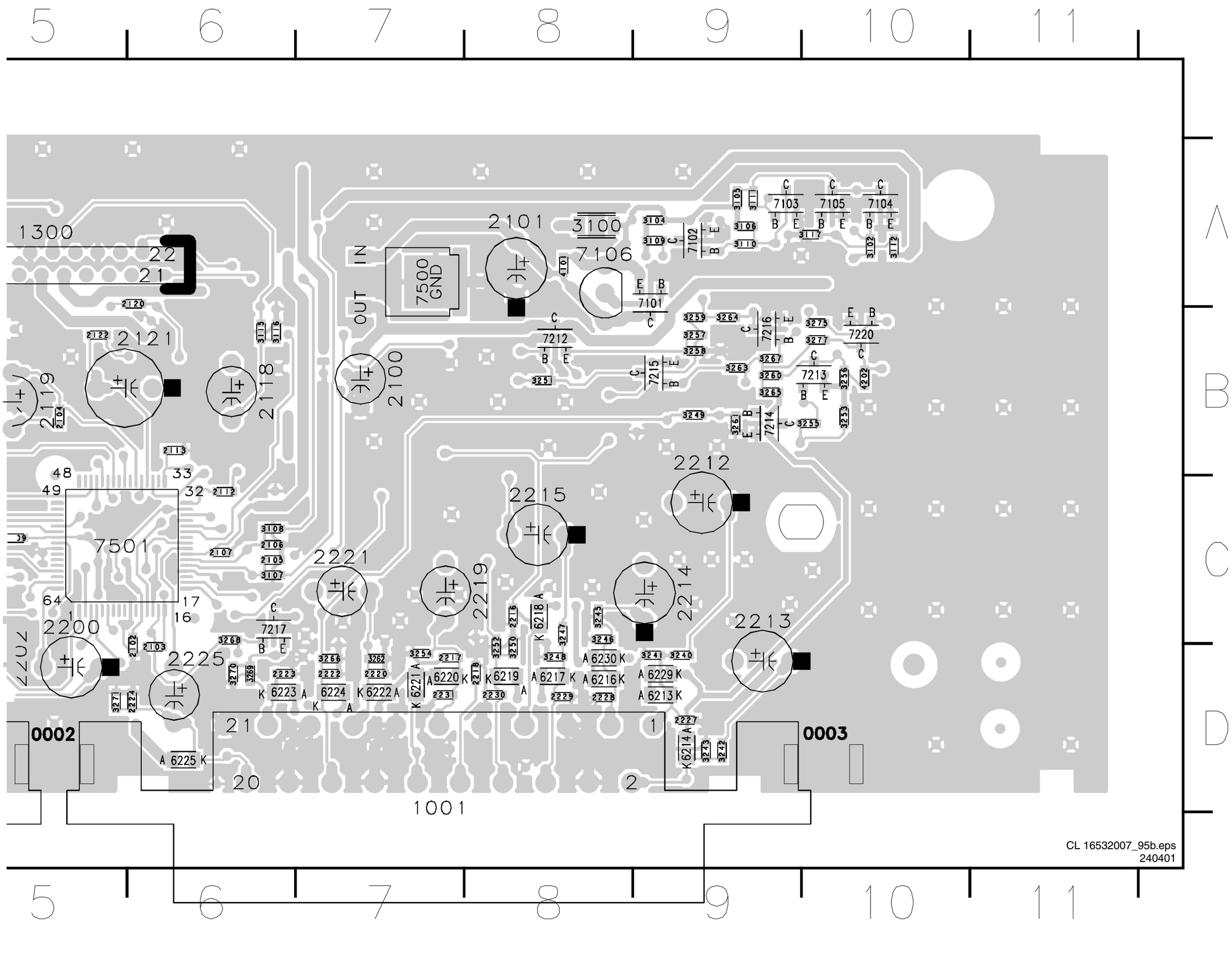
1000 D3	2116 A4	2213 C9	3102 A10	3205 C4	3225 C2	3245 C8	3265 B9	6200 D4	6221 D7	7205 A3
1001 D7	2117 B4	2214 C9	3104 A9	3206 C4	3226 A2	3246 C8	3266 D7	6201 D4	6222 D7	7206 B3
1300 A5	2118 B6	2215 C8	3105 A9	3207 C4	3227 D2	3247 C8	3267 B9	6202 D4	6223 D6	7207 A2
1302 C1	2119 B5	2216 C8	3106 A9	3208 D4	3228 A2	3248 D8	3268 C6	6203 D3	6224 D7	7208 A2
2100 B7	2120 A6	2217 D7	3107 C6	3209 D3	3229 B3	3249 B9	3269 D6	6204 D3	6225 D6	7209 C2
2101 A8	2121 B6	2218 D8	3108 C6	3210 D3	3230 D1	3250 D8	3270 D6	6205 C3	6227 D4	7210 B3
2102 D6	2122 B5	2219 C8	3109 A9	3211 C3	3231 B3	3251 B8	3271 D5	6206 D3	6228 D4	7211 B3
2103 D6	2200 C5	2220 D7	3110 A9	3212 D3	3232 C2	3252 D8	3272 C4	6207 D3	6229 D9	7212 B8
2104 B5	2201 D4	2221 C7	3111 A9	3213 C3	3233 B3	3253 B10	3273 C4	6208 D3	6230 D8	7213 B10
2105 C6	2202 D5	2222 D7	3112 A10	3214 D2	3234 B3	3254 D7	3275 B10	6209 D2	7101 A9	7214 B9
2106 C6	2203 C4	2223 D6	3113 B4	3215 C2	3235 D2	3255 B10	3276 A1	6210 D2	7102 A9	7215 B9
2107 C6	2204 C4	2224 D6	3114 B4	3216 D2	3236 B3	3256 B10	3277 B10	6211 D1	7103 A9	7216 B9
2108 B4	2205 D3	2225 D6	3115 B6	3217 D2	3237 B3	3257 B9	3278 A3	6212 D2	7104 A10	7217 C6
2109 C5	2206 D3	2226 D4	3116 B6	3218 C2	3238 B3	3258 B9	3279 A3	6213 D9	7105 A10	7218 C4
2110 B4	2207 D2	2227 D9	3117 A10	3219 A2	3239 B3	3259 B9	4101 A8	6214 D9	7106 A8	7219 A2
2111 A4	2208 D2	2228 D8	3200 D4	3220 B2	3240 D9	3260 B9	4102 A4	6216 D8	7200 D4	7220 B10
2112 C6	2209 D2	2229 D8	3201 D4	3221 B2	3241 D9	3261 B9	4103 A4	6217 D8	7201 C4	7500 A7
2113 B6	2210 D1	2230 D8	3202 D4	3222 B3	3242 D9	3262 D7	4200 C3	6218 C8	7202 C3	7501 C5
2114 A5	2211 D1	2231 D7	3203 C4	3223 B2	3243 D9	3263 B9	4201 A3	6219 D8	7203 C2	
2115 A4	2212 B9	3100 A8	3204 D4	3224 D2	3244 C4	3264 B9	4202 B10	6220 D7	7204 C2	



Layout SCART Board (Part 1 Top Side)



Layout SCART Board (Part 2 Top Side)



8. Alignments

Not applicable.

9. Circuit Descriptions and List of Abbreviations

Index of this chapter:
1. Introduction
2. Power Supply Unit (PSU).
3. Loader/Mono Board.
4. Audio Video (A/V) Board.
5. Front Display Board.
6. Abbreviations
7. IC Data

Notes:
- See also the SD4.0 SA_CH Service Manual (3122 785 12480).
- 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.

9.1 Introduction

The DVD763SA is a model from the SACD 2002 'single disc' range. It uses a 2nd generation Philips SACD mono board, based on the Furore 2 DSD/DST decoder.
Below you will find a circuit description of the several modules.

9.2 Power Supply Unit

9.2.1 Introduction

This supply is a Switching Mode Power Supply (SMPS), which uses the control IC TY720xx to produce pulses to drive the power 'switch' (MOSFET). The TY720xx (IC7130) is a high performance, current mode controller for DC-to-DC converter applications.
The operation frequency varies with the circuit load. When the output power demand decreases, the switching frequency raises, with a maximum frequency of 125 kHz (defined by C2130 at pin 5). At this point, the internal VCO takes over and starts to decrease the switching frequency.
This has some benefits compared to a 'fixed frequency' flyback converter. The efficiency is better, which results in a lower power consumption.

9.2.2 Output Voltages

The following output voltages are present on connector 0201:
- Pin 1 and 2: +3V3_POWER.
- Pin 4: +12V_POWER
- Pin 5: +12STBY.
- Pin 7: +5VSTBY.
- Pin 9: -12V_POWER.
- Pin 11: -32V_POWER.

Note: The suffix 'STBY' indicates that the supply is not switched 'off' during Standby Mode. Power switching is done with the STBY_CTRL signal from the slave processor.

9.2.3 Operation

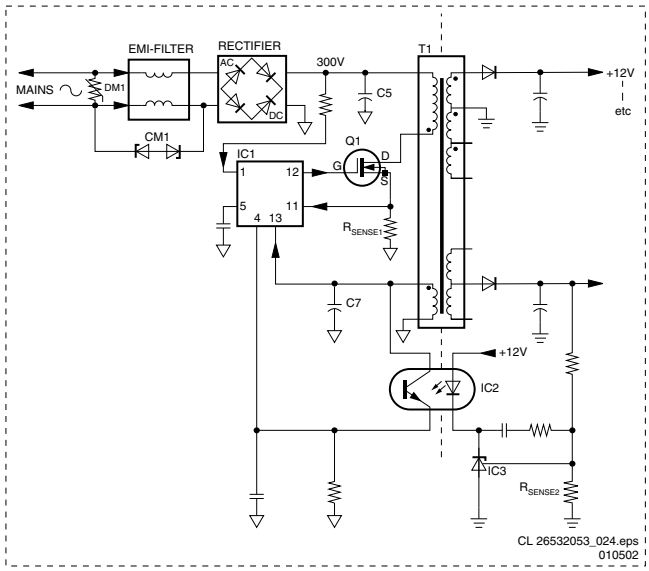


Figure 9-1 Power Supply

Mains Input Circuit
The bridge rectifier D6110 rectifies the mains voltage, after which C5 (2117) smoothens it. The DC voltage across this capacitor is the DC input voltage (approximately 300V), to pin 1 of transformer T1 (pin 9 of 5190) and pin 1 of IC1 (7130). The mains input also consists of a (differential mode) lightning protection DM1 (R3110) and a (common mode) lightning protection CM1 (D6114/15).

Start-up Circuitry
The rectified voltage from the bridge rectifier is connected to pin 1 of IC1. This voltage will charge the Vcc capacitor C7 (C2131). When this voltage, (at pin 13), reaches the start-up threshold of min. 15V, the control circuit starts to operate. After start-up, the control IC requires a sinking current, which the start-up circuitry cannot deliver. Therefore a take-over circuitry (a coupled winding of transformer T1) is present. The voltage at this point will take over the supply voltage at pin 13 of the IC1(7130).
If the take-over circuit does not function, IC1 (7130) will switch 'off' again at the minimal operating voltage of +8V. The whole operation cycle will repeat itself with audible hiccup sound if take-over is not present.

Secondary Voltage Sensing
The secondary voltage regulating circuit comprises of opto-coupler IC2 (7190), which isolates the error signal from the control IC on the primary side, and a reference component IC3 (7290, TL431).

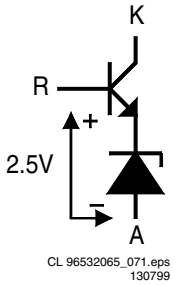


Figure 9-2 TL431

This reference component has two functions:
- A very stable and accurate reference diode
- A high gain amplifier.

When the output voltage increases (due to a reduction in the load), the voltage across RSENSE-2 (R3290/R3291) increases to above the internal reference voltage of 2.5V. The TL431 will conduct and the current through the opto-coupler will increase. This results in an increase of the voltage at pin 4 of IC1, which will reduce the 'on' time of Q1 (FET 7125). In the event of an output voltage decrease (due to an increase in the load), the control circuit will operate in the opposite way.

Primary Current Sensing
The current through FET Q1 will result in a voltage drop across RSENSE-1 (R3120-23). This line goes to pin 11 of IC7130, which is the current sense input. The higher the input voltage, the more the primary current is limited. In this way, the maximum output power of the power supply is limited.

Under-voltage Protection
If the supply voltage at pin 13 of IC7130 drops below 7.2V (typical), e.g. due to a shorted secondary voltage or excessive load, the drive pulse at pin 12 is disabled and the controller will switch 'off'.

Over-voltage Protection
An internal over-voltage protection circuitry continuously monitors the Vcc pin. If, after start-up, this voltage exceeds 40V, the internal latch circuit is triggered, the output buffer is disabled, and the SMPS goes into over-voltage protection. Now a complete restart sequence is required.
Note: If the event of the over-voltage situation remains present, the SMPS will go in sequence of protection, start-up, protection and the cycle repeats. This effect is highly audible.

9.3 Loader/Mono Board

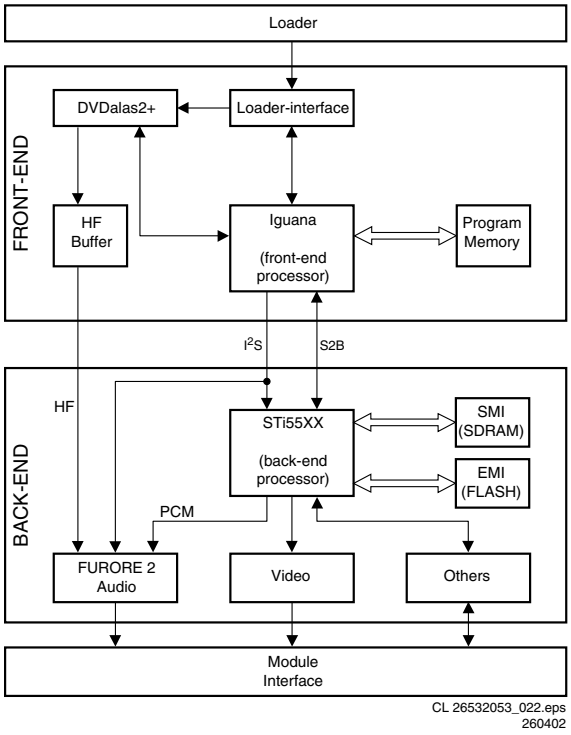


Figure 9-3 Block Diagram Loader/Mono board

The SD4.00_SA_CH (SACHI_4) is the 2nd generation Philips Architectural Standard Design of SACD mono board based on Furore 2, and will be used in the new generation of SACD players. It is designed in a multi-task way so that it can support the following optional main functions:
- SD4.00_SA_CH: Support SACD player with 5-disc changer.
- SD4.00_SA: Support SACD player with single-disc.
- SD4.00_CH: Support DVD player with 5-disc changer but without SACD playback.
- SD4.00_SA_I2C: Support SACD player with single-disc and I2C slave.

The SD4.00_SA_CH (SACHI_4) module consist of the following key components:
1. OPU: Mercury 2 Loader VAL6011/14 (slim type) for a single-disc SACD player, or DVD VAM6001/14 mechanism for a 5-disc SACD changer.
2. **Front-end:** M2 Basic Engine.
3. **Back-end:** DVD Host Processor STi55xx and Furore 2 SACD DSD/DST decoder.
4. **Power supply:** To convert the PSU voltages to the correct values.
5. **Reset circuit:** This circuit that the booting of the several devices on the mono board takes place in the correct order.

9.3.1 The Optical Pick-up Unit (OPU)

The Mercury 2 Loader has an optical unit consisting of two lasers:
- One for CD with a wavelength of 780 nm.
- One for DVD with a wavelength of 650 nm.

The TZA1033 (item 7105) controls the data from these lasers, and the supply to them.

9.3.2 Front-end: the Servo Part

The front-end consists of:
- The Loader interface
- The Servo Processor/Decoder

- The Interface/Program Memory

The Loader Interface

The TZA1033HL/K2 (or DVDALAS2plus, item 7105) is an analogue pre-processor and laser supply circuit. It contains data amplifiers and several options for radial tracking and focus control.
It is possible to optimise the dynamic range of this pre-amp/ processor combination for the LF servo and RF data paths. The gain in both channels is separately programmable. This will guarantee an optimal playability for all kind of discs.
Also, a dual laser supply is implemented, with fully automatic laser control including stabilisation and an ON/OFF switch, plus a separate supply pin for power efficiency.

The Servo Processor/Decoder

In the SD3.0 module, the servo signals were fed to the MACE2 servo processor, while the HF output signal was fed to the SAA7335 decoder. In the new SD4.0SA_CH module, these ICs are combined into one chip: the SAA7812 Iguana.
This chip contains the following blocks: channel decoder, block decoder, servo processor, and microcontroller.
The servo circuit in the SAA7812 (item 7207) takes care of the servo controls.
In a CD system, there are some twelve control loops active. About six of them are needed to adjust the servo error signals that is once per disc rotation. It also adjusts offsets, signal amplitudes, and loop gains (AGCs), to enlarge system robustness and to avoid expensive potentiometer adjustments in production.
The other six loops determine the laser spot position on the disc in the radial, axial (focus), and tangential directions.
It also has to take care that the spot accesses a required position as fast as possible. This access system consists of two parts, namely the actuator and the sled, which are (within a certain range) mechanically and electrically independent. Therefore, during an access, the servo has to control as well the actuator as the sled.
The analogue signals, from the diode pre-processor, are converted into a digital representation using A/D converters.
For the communication between the host processor (STi55xx) and the servo processor, the S2B bus is used. This bus supports full-duplex asynchronous communication.

The SAA7812 is also a combined CD/DVD compatible decoding device. The device operates with built in hardware for CD/DVD error correction and de-interleaving operations. It decodes EFM or EFM+HF signals directly from the laser pre-amplifier, including analogue front-end, PLL data recovery, demodulation, and error correction.

Its analogue front-end input (the channel decoder), converts the HF input signal to the digital domain via an 8-bit ADC, preceded by an AGC circuit to obtain the optimum performance from the converter. An external resonator clocks this block.
This subsystem recovers the data from the channel stream. It corrects asymmetry, performs noise filtering and equalisation, and finally recovers the bit clock and data from the channel using a digital PLL.
The demodulator part detects the frame synchronisation signals and decodes the EFM (14 bit) and EFM+ (16 bit) data and sub-code words into 8-bit symbols. Via the serial output interface, the I^2S data (audio and video) go to the DVD decoder STi55xx.

The spindle-motor interface provides both motor control signals from the demodulator and, in addition, contains a tachometer loop that accepts tachometer pulses from the motor unit. They drive the motor IC (BA6665FM, item 7300).

The SAA7812 has two independent microcontroller interfaces. The first is a serial I^2C-bus and the second is a standard 8-bit multiplexed parallel interface. Both of these interfaces provide access to 32 8-bit registers for control and status.

The Interface/Program Memory

The interface between front-end (SAA7812) and back-end (Sti55xx) is via:
- I2S bus (BCLK, DATA, WCLK, FLAG, SYNC and V4).
- S2B bus (RXD_S2B, TXD_S2B, CPR_S2B and SUR_S2B).
- Miscellaneous I/O ports (RSTNF= front-end reset, EANF= front-end processor boot select).

Service tip: These lines contain series resistors (47 or 100 Ω) for easy hardware debugging, and for EMC/noise reduction of the high-speed I2S lines.

The front-end processor SAA7812 (Iguana) has two boot modes: normal boot from flash memory, or serial mode.
The boot selection is via the EANF pin. The Iguana samples the EANF signal level once during boot-up. Once boot-up is completed, this pin is no longer used for this purpose.
However, in the SD4.0SA_CH circuit, the EANF is also connected to the flash memory. Therefore, when this pin is LOW, the lower 1Mbits of the memory is accessible. Conversely, when this pin is HIGH, the upper 1Mbits is accessible.
Under front-end normal operation, the program memory (less than 1Mbits in size) should reside in the lower bank. Therefore, the EANF pin should be LOW at all times. Since the actual flash memory used is 2Mbits, the upper 1Mbits is unused. This area is reserved for possible use by the front-end self-diagnostic software, or flash download application.

9.3.3 Back-end: the Digital Part

The back-end consists of:
- DVD back-end processor
- SACD DSD processor
- Audio output
- Video output
- Clock factory
- Miscellaneous

DVD Back-end Processor

The SD4.0SA_CH is designed for the Sti55xx family. Some of the DVD related features of these ICs are:

Processor overview

Function	STi5580	STi5588	STi5519
Basic CD/VCD/DVD decoding	X	X	X
Extra 2-channel of I2S output (PCMDATA3)	X	X	
Karaoke	X	X	
DTS	X	X	
Audio post processing (equalizer, level meter, etc)		X	
DVD audio		X	
Progressive scan at analog video output		X	

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240102

Figure 9-4 Processor overview

The STi5580 has the same architecture as the STi5508 (used in earlier DVD generations), and is pin-to-pin compatible.
It works on 3.3 V (VDD), and comprises the following functions:
- Video decoder, which supports MPEG1 and MPEG2.
- Audio decoder that supports AC-3, MPEG1, MPEG2, DTS, PCM, S/PDIF, and MP3.
- PAL/NTSC video encoder with simultaneously Y/C, CVBS, and RGB/YUV outputs.
- The video encoder supports Closed Caption and allows MacroVision 7.0/6.1.
- Full screen On Screen Display (OSD) generator.
- Three on-chip PLLs to generate all necessary clocks (as reference the 27 MHz video clock is used).

Input

Input data comes from the I2S-bus. The front-end interface of this device, accepts DVD, CD and CD-DA information.

Signal Processing

For video, the input data stream is decoded to the appropriate MPEG, Sub Picture, and OSD data streams, after which they are fed to the PAL/NTSC encoder. This cell will convert the digital MPEG/Sub Picture/OSD stream into a standard base band signal and into RGB components. It handles interlaced and non-interlaced data, can perform CC/TXT encoding, and allows MacroVision copy protection.

For audio, the processing cell is a fully compatible DTS, Dolby Digital (AC-3), MPEG1, MPEG2, PCM decoder, capable of decoding 5.1 and 2 channel streams.

Output

For video, six analogue output pins are available on which CVBS, S-VHS (Y/C), and RGB signals are present. They go, via a buffer, to connector 1703. As an option, a digital YUV output is available at connector 1704.

External Memory

The STi55xx family is capable of accessing external memory via three buses:

- **The enhanced memory interface (EMI).** This interface is configurable and can be used to access Flash, ROM, and various flavours of DRAM.
- **The shared memory interface (SMI).** The SMI is only used to access SDRAM. The SMI is connected to a 64Mbits (4M x 16bit) 7.5ns SDRAM (item 7500). The SDRAM has the following functions:
  - It is used by the MPEG video decoder as a frame buffer,
  - It holds the software and the variables used by it.
- **The I2C bus.** Via this bus, the NVRAM (or EEPROM) is accessible. This memory is used to store user settings, player settings, and region code. As the STi55xx I/O-lines are potentially unable handle 5V inputs, a voltage level shifter is foreseen for all I2C-busses. This circuit will isolate the STi55xx I2C ports (3.3V) from the system I2C bus (5V). See figure below.

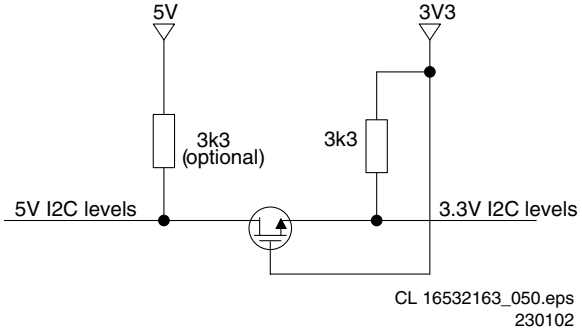


Figure 9-5 I2C voltage level shifter

The SACD DSD processor

The Furore-IC is a one-chip design, containing all the hardware that is required for SACD processing. It is intended to interface with the STixx-family DVD video decoders.
The Furore-IC contains a memory interface to support an external 16 or 64 Mbit SDRAM.
During SACD application, the STi55xx serves as a host, whereby the Furore is controlled via the EMI interface. The Furore processing part is not used during all other play modes. In these modes, the PCM audio signals are fed through the Furore to the appropriate DAC.

Block diagram

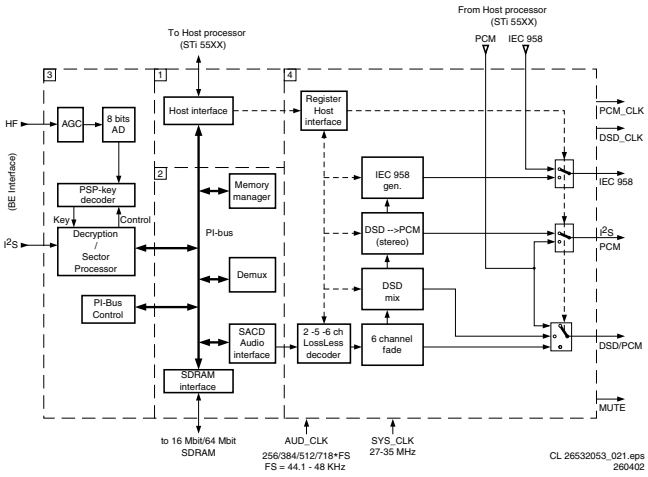


Figure 9-6 Block diagram Furore

We can divide the Furore-IC in four main parts (see block diagram):

1. **Host interface.** This is the link between the host bus and the internal registers and memory bus. It also supplies the general reset signal (HW and SW) and the interrupt signals.
2. **Data processing.** All modules and peripherals in this part are connected to a so-called PI-bus. It is beyond the scope of this manual to go more in detail on this subject.
3. **Copy protection.** On every SACD disc, a PSP-signal is recorded. The player can only play a disc if a valid PSP-signal is detected. This PSP-key is recorded, via a special mechanism, in the EFM-signal on the disc. To detect this key, the analogue HF-signal from the optical pick-up unit is fed directly to the Furore-IC. Via an AGC, the signal is fed to an ADC. The digitised HF signal is then fed to a block where key is encrypted. Control of this process is done via the host interface (sector processor).
4. **DSD decoding and post processing.** In this part, all processing is done to generate a DSD and/or an I^2S stream (from the de-multiplexed stream coming from the data processing block), in such a way that it can directly be connected to a DA-converter. All processing is done on 384*FS.

Interfaces

- **Basic Engine Interface:**
  - Data input interface. The Basic Engine Interface (I2S) is connected to the output of the SAA7335 (HD61) high speed CD decoder.
  - Analogue HF input. The analogue HF input, coming from the optical pickup unit (OPU), is also fed to the Furore-IC, to extract the copy-protection information PSP (Pit Signal Processing = invisible data is stored on to disc, which is required to decrypt the encrypted content).
- **SDRAM Interface:** The SDRAM interface forms a glue less interface to one 64 Mbit SDRAM device. The interface takes care for the power-up sequence, mode programming and refreshing of the SDRAM devices. This is hard coded in the interface and does not have to be controlled by the host.
- **Audio data input/output Interface:**
  - DSD/PCM combined data output. DSD_PCM: Output intended for a combined 6-channel DSD (SACD) and PCM (DVD-CDDA) DAC. Switching between the PCM data coming from the STi55xx, and the internal generated DSD signals, is done in the Furore IC.
  - Stereo DSD only output. DSD_stereo: 2-channel DSD output with stereo down mix in the case of 5- and 6-channel, and normal stereo in case of 2-channel DSD mode.

– Stereo PCM data output. Two possible stereo sources can be selected as stereo PCM output:
  1. Stereo PCM coming from the STi55xx via the PCM input on Furore.
  2. Stereo or down-mix-PCM derived via a decimation filter from the SACD-DSD signal.
– Digital audio output interface (IEC958). The IEC958 format is intended to connect the DVD736SA to a digital receiver. No DSD signals are defined for IEC958, therefore the 'DSD-->PCM converted' signal is transmitted. Following two types of signals are possible on the digital interface:
  1. IEC958 data coming from the STi55xx.
  2. IEC958 data (stereo or down-mix-PCM) derived via a decimation filter from the SACD-DSD signal.
– Clock + reset input. Two different processing clocks and a reset pulse are needed:
  1. Sys_clk: System clock for data processing part, frequency can be 27 MHz or 768*FS.
  2. 384*FS: Processing clock for LLD and post processing.
  3. RESETn is an asynchronous reset and should be low for at least 1 period of DSD_CLK.

Memory
- SDRAM.
  – The size of the SDRAM is 64 Mbit.
  – The SDRAM (items 7500 and 7502) has the following functions:
  – It is used by the MPEG video decoder as a frame buffer,
  – It holds the software and the variables used by it.
- **Flash-ROM.** Two 2MB Flash-ROMs (items 7402 and 7403) hold the DVD firmware, and are controlled by pin 186 (FLASH_OEN) of the STi55xx. It must be able to perform a download (by disk or OS-link) in a Flash-only system.
- EEPROM. User settings, player settings, and region code are stored in a 32 Kb I^2C EEPROM.

Audio Output

The audio interfaces available in SD4.0SA_CH are I2S and S/PDIF for digital audio output, and I2S karaoke microphone input.
In SACD player, two types of DACs (that are PCM DAC and high end DSD DAC), are used on AV board.
The audio data path to both DACs is routed via the Furore 2.

I2S audio

The STi55xx is capable of 6-channel I2S output. These channels can be configured to output 5.1 Dolby Digital, DTS, etc.
- PCM_OUT0: Left and Right.
- PCM_OUT1: Centre and LFE (subwoofer).
- PCM_OUT2: Left and Right surround.

Two additional channels (available in STi5580 and STi5588) are capable of providing down-mixed stereo.

S/PDIF

The S/PDIF signal level (pin 57, SPDIF_OUT) is 5V TTL at module interface. To meet the complete S/PDIF specifications, an external de-coupling circuit (item 7720, diagram M7) is implemented.

I2S karaoke (optional)

The STi5580 and STi5588 have built-in karaoke processing. The internal karaoke block accepts I2S signal, acting as the master by generating the required KOKPCMCLK frequency. This frequency is always 1/4 the music sampling frequency. An external analogue-to-digital converter (ADC), acting as slave, is required to convert the microphone signals to I2S signals.

CD-DA/DVD Data Path

The data path for CD-DA and DVD is as follows:
- I2S data from the M2 basic engine enters the STi55xx.
- The STi55xx processes the data, and sends the 6 PCM output channels to Furore 2. The LeRi channels are directly passed to the AV board also.
- The switch matrix of the Furore 2 sends the two incoming stereo PCM channels (LeRi) to the AV board.
- The switch matrix of the Furore 2 sends the six incoming PCM channels to the high end DAC board.
- The mute signal from the STti55xx is directly passed to the AV board. This requires a patch on the mono board.
- The IEC958 output of the STi55xx is fed directly to AV board.

The clock distribution is as follows:
- The master clock 384FS is received from the high end DAC board.
- From this clock the 27 MHz clock for STi5580 and the Furore 2 is derived (Video clock).
- From the 27 MHz clock the audio clock (256FS) is derived. The STi55xx and Furore 2 use this clock. For CD-DA FS amounts to 44.1 KHz, for DVD 48 or 96 KHz.
- In case of CD-DA, the high end DAC uses its internal clock (384FS). In case of DVD, the switch matrix of Furore 2 sends the audio clock (256FS) to the high end DAC on AV board.
- The AV board receives the 256FS clock.

Selection of the audio clock is done in the clock factory. For a description of the clock factory, see paragraph 'Clock Factory'.

SACD Data Path

The data path for DSD/DST is as follows:
- I2S data from the basic engine enters the Furore 2.
- The Furore 2 processes the data. This results in 6 DSD/DST channels.
- The switch matrix of the Furore 2 sends the 6 DSD/DST channels to the high end DAC on AV board.
- The 6 DSD/DST channels are down mixed to a stereo PCM signal.
- The switch matrix of the Furore 2 sends the stereo PCM signal to the AV board.
- The mute signal from the STi55xx is directly passed to the AV board. This requires a patch on the mono board.

The clock distribution is as follows:
- The master clock 384FS is received from the high end DAC on AV board.
- From this clock the 27 MHz clock for Sti55xx and Furore 2 is derived (video clock).
- From the 27 MHz clock the audio clock (256FS) is derived. The STti5580 and Furore 2 use this clock.
- The high end DAC on AV board uses its own XTAL clock (384FS). The 256FS clock to the DAC board is switched off, to prevent for interference.
- The AV board receives the 256FS clock.

Selection of the audio clock is done in the clock factory. For a description of the clock factory, see paragraph 'Clock Factory'.

Video Output

Digital video (optional)

Digital YUV output is routed directly from STi55xx ports to a 24-pin connector (item 1704). From the same connector, the HSYNC, VSYNC and 27MHZ_CLK signals are available. The digital YUV connector is the interface to external video processing devices; such as high quality progressive scan codex and high quality video DAC.

Analogue video

The STi55xx is capable of 6-channel analogue video. Three channels (pins 25, 26 and 27) are RGB or YUV format, while the other three channels (pins 32, 33 and 34) are Y, C, and CVBS.
A video output buffer (see diagram M7, e.g. item 7701 for R) is implemented: an 8MHz/16MHz selectable filter stage and a 75Ω drive stage.

Clock Factory

One clock factory is implemented to support all clocks required by the Furore 2. The various master clock, which depends on whether SACD is present, is used for SD4.00_SA_CH. The clock factory of SD4.00_SA_CH is showed in Figure 8-2.

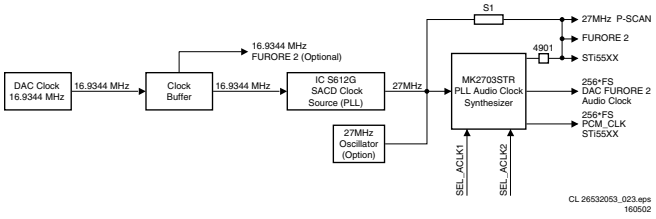


Figure 9-7 Block diagram clock factory

For the SACD player, the clock system is a DAC master clock system. For non-SACD player, the clock system is a mono board master clock system.
The Furore 2 supports clock 256*FS/384*FS/512*FS. The most convenient value in the market is 16.9344 MHz (384*FS, FS=44.1KHz). Therefore, the master clock on the SD4.00_SA_CH mono board is the 384*FS coming from the A/V board. The 384*FS (16.9344 MHz) from the DAC clock, must always be present. It is buffered before it is sent to the Furore 2 and the rest of the clock factory. The IC S612G delivers a 27 MHz system clock.
The Furore 2 and Sti5580/Sti5588 (Video) use this clock. It is used to derive the PCM audio clocks 256*FS by the MK2703STR. This IC is also used to buffer the incoming 27 MHz clock.
The communication between the Sti55xx and the Furore 2 is asynchronous.
To support non-SACD playback, an on-board 27MHz oscillator delivers the master clock for SD4.00_SA_CH mono board.

Miscellaneous

Most general IO ports are connected directly to the module interface. Compared with the SD3.0 module, some on-board circuits are removed, as it made more sense (and more cost effective) to implement these circuits externally.

SCART Status Signal

The SCART0 and SCART1 signals are directly available at the module interface, where the 0_6_12V signal is generated. See table below:

Table 9-1 0_6_12V SCART status truth table

Function	PIO3_6 (SCART0)	PIO3_7 (SCART1)	0_6_12V (at SCART connector)
TV display	1	1	0V
TV display	0	1	0V
16:9 aspect ratio	1	0	+6V
4:3 aspect ratio	0	0	+12V

Mute

The audio MUTE signal (active 'high') is directly available at the module interface.

Service

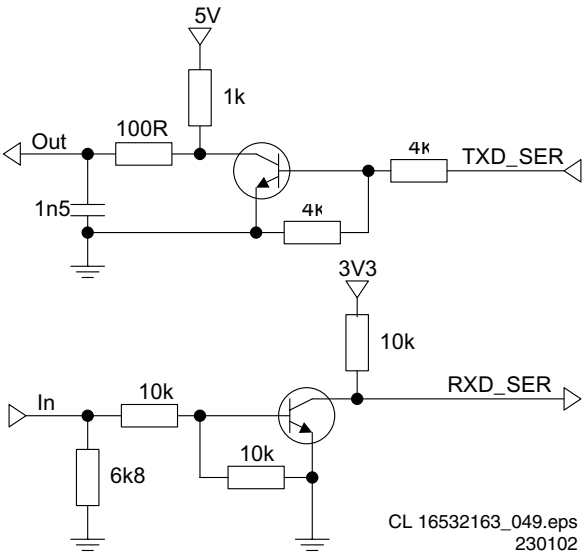


Figure 9-8 Service Port Buffer

The service port (see diagram M5) is simplified to reduce cost. The unused RTS and CTS lines are no longer connected. A transistor buffer (item 7508) is used instead of the Schmitt Trigger buffer (item 7501).
The overall loading and driving capability of the RS-232 emulator port is not greatly changed. However, as a precaution, the Schmitt Trigger circuit remains in the layout as an optional implementation.

This SD4.0SA_CH has the same ComPair connector as in previous DVD generations. Flashing of the application-SW is not possible with the ComPair cable, except with a CD-R disc. For sets with Mask-ROM software, replace it with a programmed Flash (available via your Philips Service organisation).

Power Supply (diagram M7)

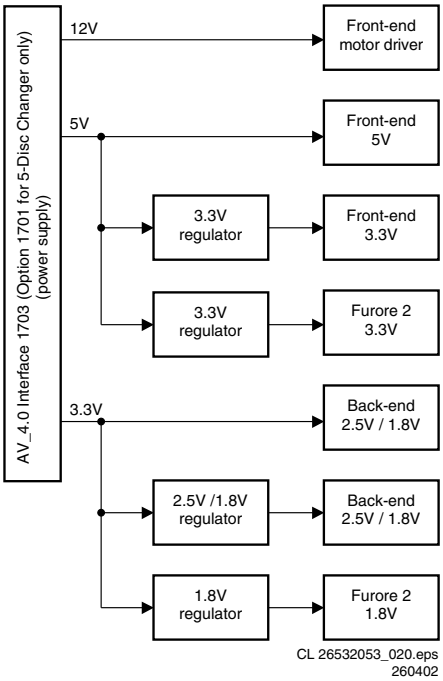


Figure 9-9 Mono Board Power Supply Block Diagram

The main power supplies to the module are 3.3V, 5V, and 12V (input via connector 1703).

The SACD DSD/DST decoder Furore 2 uses 1.8V for its core and analogue portion, and 3.3V for its interface. The on-board 1.8V linear regulator LF18ABDT and 3.3V linear LD1117DT33 are used to generate 1.8V and 3.3V power supply respectively. The back-end section mainly uses the 1.8V or 2.5V and 3.3V, which depend on which back-end processor is used. The on-board linear regulators LF25ABDT or LF18ABDT are used to generate the 2.5V (or 1.8V) required by the STi55xx.
The front-end section mainly uses the 5V and 12V. An on-board linear regulator LD1117DT33 can be used to generate the 3.3V required by the front-end. The 12V is used by the motor and servo drivers.

Reset Circuit

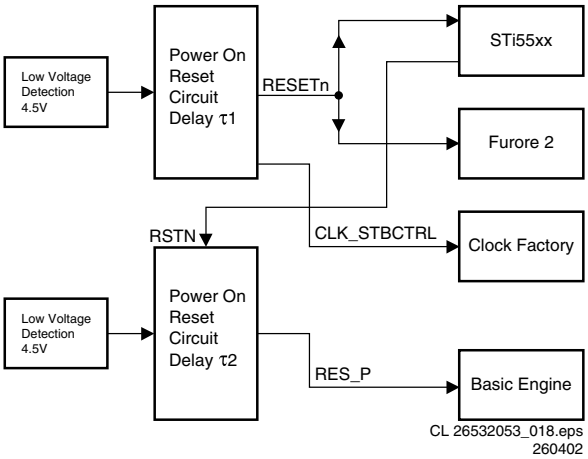


Figure 9-10 Block diagram of reset circuit

This reset circuit takes care that booting the different devices on the mono board takes place in the correct order. The correct reset order is:

1. The Power On Reset circuit (delay t1) creates a reset signal 'RESETn' to reset the STi55xx and Furore .
2. In the meantime, the Power On Reset circuit (delay t1) creates a reset signal 'CLK_STBCTRL', which is inverted to 'RESETn', to enable the Clock Factory.
3. Then, the Power On Reset circuit (delay t2) generates a reset signal 'RES_P' to reset the Basic Engine.
4. The STI55xx can now reset the Basic Engine via 'RSTN'.

9.4 Audio/Video (A/V) Board

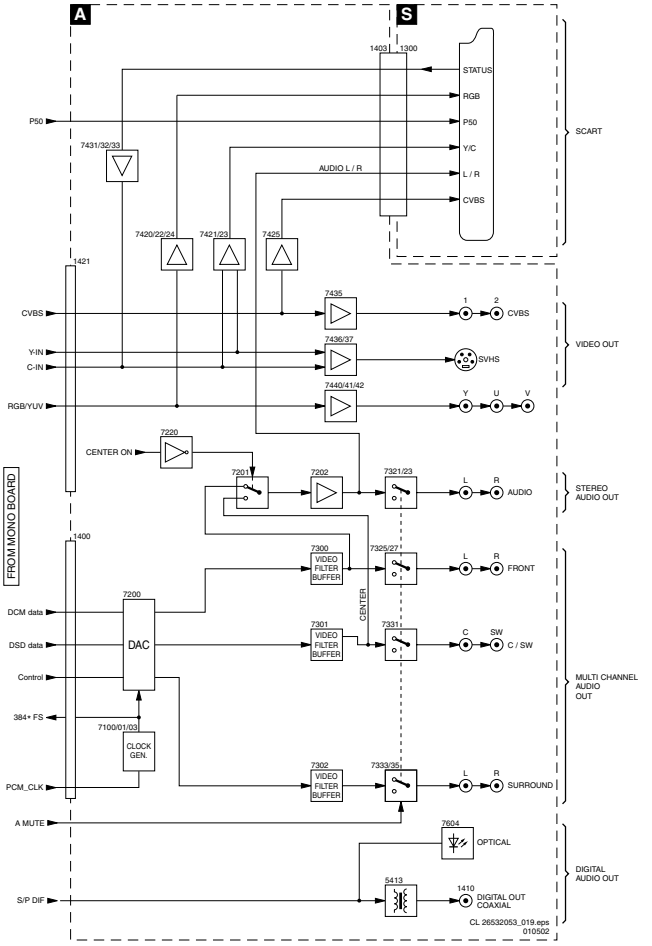


Figure 9-11 Block diagram A/V board

This board is the interface panel between the DVD-player and its peripherals. See also block diagram in Chapter 6.

9.4.1 Control

The control of the A/V board is done by the I²C-decoder IC7104 (see table below):

Table 9-2 Control lines overview IC7104

Description	Pin	Hi	Lo
CLK_SEL	12	Internal clock	External clock
DAC_RESET	10	Normal	Reset
CENTER_ON	9	?	?

9.4.2 Video

The analogue video signals from the Mono Board are buffered before they are fed to the several output connectors (SCART, Cinch, and SVHS). The video output from the A/V Board is RGB/YUV, YC, and CVBS.

9.4.3 Audio

The digital audio signals are fed to a 6-channel DAC CS4362 (item 7200, 48-pin LQFP) for the audio output. This DAC accepts both DSD and PCM data streams.

There is a control line from the STi55xx, called CENTRE_ON, which is used to switch between the centre channel and front channels for both SACD- and DVD modes.

9.5 Control and Display

9.5.1 Control

The key component on this board is the (slave) microprocessor (item 7101). It runs on an 8 MHz system clock generated with a ceramic resonator (item 1128) and has a reset circuit that is triggered by the +5VSTBY voltage.
After the RESET pulse (active LOW), the STB_CTRL line (pin 21, item 7101) will release the reset of the host uP (on the mono board) via the switched 3V3 supply. See circuit around item 7409 on mono board (diagram M4).

Other slave processor functions are:
- Generation of a scanning grid for the keys.
- Generation of the display grid and segment scanning.
- Generation of a square signal to generate the filament voltage for FTD display.
- Input for RC5/6 remote control protocol. The logic is HIGH > 4.5V and LOW < 0.3V.

Standby LED
Transistor 7105 drives the Standby LED. When the STBY_LED signal from the slave processor is ‘high’, the LED is ‘off’.

Key Matrix
When a key on the local keyboard is pressed, the signal at the scanning pins of the microprocessor (pins 26 to 37) goes from +5V to 0V.

IR Receiver
The IR controller in the slave processor handles both RC5 and RC6 signals. The logic is +5V for ‘high’ and 0V for ‘low' (measure at pin 22).

P50 Interface
P50 (or Easylink) is a bi-directional serial interface for communication between video equipment. This communication goes via pin 10 of the SCART-bus.

9.5.2 Display

The slave uP provides a negative DC switching voltage, to drive the 11-segment FTD. As the display consists of eleven segments, there are eleven grid signals (G1-G11) controlling each respective grid.
The slave processor has an internal square signal generator (42 kHz with duty cycle 45/55), to generate the AC filament voltage. TS7103 and 7106 amplify the square signal before it is applied to the display (VAC= VFIL_1 - VFIL_2, VRMS ≈ 3.5 V).
The necessary power supply of -26 V is derived (via zener diode 6101) from the -32V supply, which is coming directly from the Switching Mode Power Supply (SMPS).

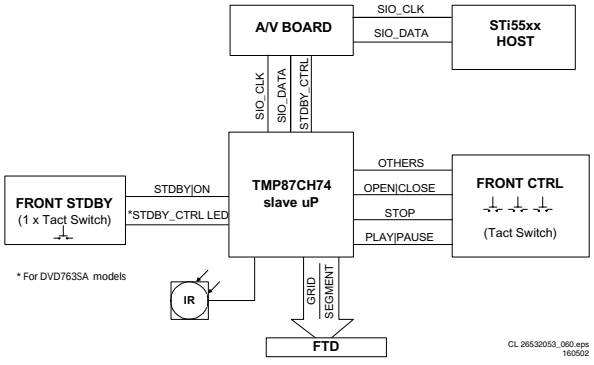


Figure 9-12 Slave processor interface

The block diagram above, illustrates the interfaces of the slave uP. The start-up sequence is as follows:

1. The required IC voltage is the +5VSTBY, which is present during Standby Mode.
2. When the RESET circuit (item 7102) is triggered by the +5VSTBY, the slave uP initialises.
3. This will set the STDBY_CTRL signal to LOW, which will switch on the +3V3 and +5V.
4. Once these voltages are provided, the host uP (on the mono board) will reset.
5. Now, the host uP will initialise, and indicate the slave uP to activate the Standby Mode (STBY_CTRL) signal.
6. The player wakes up from the Standby Mode when any button is pressed on the front panel, or when the 'Power' button is pressed on the Remote Control.

Note: The slave uP will not reset successfully, if the 8MHz clock oscillator has not stabilised (check on pin 8 of IC7101).

9.6 Abbreviation list

ADC	Analogue to Digital Converter
AGC	Automatic Gain Control
ASD	Architecture and Standard Design
AM	Amplitude Modulation
BE	Basic Engine
ComPair	Computer aided rePair
CD-DA	CD Digital Audio
CS	Chip Select
CVBS	Composite Video Blanking and Synchronisation
DAC	Digital to Analogue Converter
DAIO	Digital Audio Input Output
DEMUX	De-multiplexer
DENC	Digital Encoder
DFU	Direction For Use: description for the end user
DNR	Dynamic Noise Reduction
DRAM	Dynamic Random Access Memory
DSD	Direct Stream Digital
DSP	Digital Signal Processing
DST	Direct Stream Transfer (= loss less compressed DSD signal)
DTS	Digital Theatre Sound
DVD	Digital Versatile Disc
EEPROM	Electrically Erasable and Programmable Read Only Memory
EFM	Eight to Fourteen bit Modulation
EMI	External Memory Interface (STi55xx)
FFC	Flat Foil Cable
FLASH	Flash memory
HPF	High Pass Filter
HW	Hardware
I2C	Integrated IC bus (signals at 5V level)
I2S	Integrated IC Sound bus (signals at 3.3V level)
IC	Integrated Circuit
IF	Intermediate Frequency
IRQ	Interrupt Request
KOK	Karaoke
LFE	Low Frequency Effect (= subwoofer)
LLD	Loss Less Decoder
LPCM	Linear Pulse Code Modulation
LRCLK	Left/Right clock
LVTTL	Low Voltage Transistor Transistor Logic (3.3V logic)
M2	Mercury 2 Basic Engine
MACE	Mini All Compact Disc Engine
MPEG	Motion Pictures Experts Group
NC	Not Connected
NVM	Non Volatile Memory (= IC containing TV related data e.g. alignments)
OC	Open Circuit
OPU	Optical Pick-up Unit
PCB	Printed Circuit Board (see PWB)
PCM	Pulse Code Modulation
PCM_CLK	Audio system clock for DAC
PCM_OUTx	Audio serial output data
PSP	Pit Signal Processing
PSU	Power Supply Unit
PWB	Printed Wiring Board (see PCB)
RAM	Random Access Memory
RGB	Red, Green and Blue colour space
ROM	Read Only Memory
S2B	Serial to Basic Engine (= communication bus between host- and servo processor)
SCL	Serial Clock I2C
SCLK	Audio serial bit clock
SDA	Serial Data I2C
SDRAM	Synchronous DRAM
SMI	Shared Memory Interface
S/PDIF	Sony Philips Digital InterFace
SRAM	Static RAM
STBY	Standby
SVCD	Super Video CD
SW	Software
THD	Total Harmonic Distortion
TTL	Transistor Transistor Logic (5V logic)
uP	Microprocessor
VAL	Video Audio Loader
VCD	Video CD
Y/C	Luminance (Y) and Chrominance (C) signal
YUV	Component video

9.7 IC Data

In this paragraph, the internal block diagrams and pinning are given of ICs that are drawn as 'black box' in the electrical diagrams (with the exception of 'memory' and 'logic' ICs).

9.7.1 Diagram Power Supply

TY72011P2 Block Diagram (item 7130)

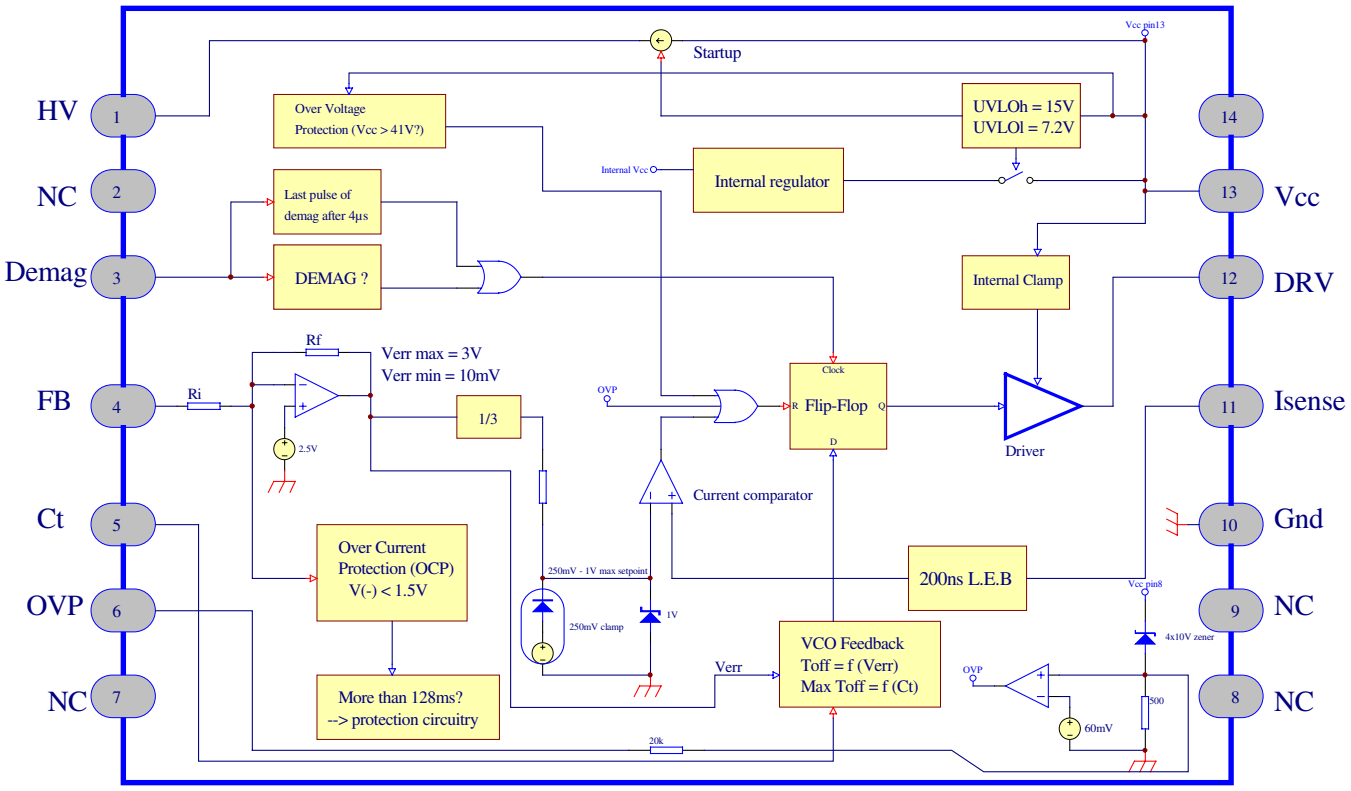
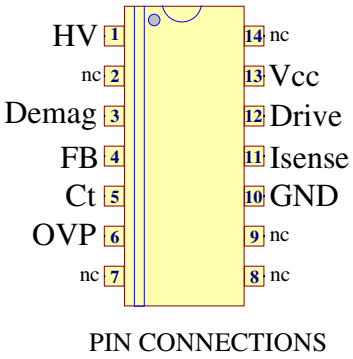


Figure 9-13

TY72011P2 Pinning (item 7130)



PIN CONNECTIONS

Figure 9-14

10. Spare Parts List

Various

Various

0001	3139 247 55711	ASSY FRONT DVD763EU
0095	3139 247 55591	ASSY TRAY COVER DVD763
0098	3139 243 10101	FILTER FTD DVD870L
0120	3139 247 55421	BUTTON NAVI DVD743 PPT
0148	3139 247 55751	ASSY FRAME DVD763 EU
0250	3139 247 55621	BACK PLATE DVD763EU PNT PRT
0300	3139 247 55511	COVER TOP DVD743 PPT
0350	3139 238 02051	PROD. ASSY RC19237004/01H PKD
0360▲	4822 321 11196	MAINS CORD 20/21"
0360▲	4822 321 11207	MAINS CORD FOR /05x
0365	3103 308 92610	CABLE AUDIO 2X2RCA MALE 1.5MTR
0366	4822 321 61579	VIDEO-CABLE
0372	2422 076 00468	CABLE SCART 1M1 SCART 21P BK B
0375	3139 246 11801	IFU DVD763/00X
0375	3139 246 11881	IFU DVD763/02X
0375	3139 246 11911	IFU DVD763/05X
1010	3122 427 23251	FFC FOIL 30P/100/30P BD 1MMP
1104	3139 110 36071	FFC FOIL 30P/100/30P BD 1MMP
1107	3139 110 36281	FFC FOIL 22P/080/22P BD 1MMP

SD 4.00SA_CH Module

Various

0001	9305 023 61114	VAL6011/14

AV PWB

Various

1100	9322 179 99668	OPA2228U
1400	2422 025 17433	CON BM V 30P F 1.00 FFC 0.3 B
1401	2422 026 05189	CON BM CINCH H 4P F YEWHRD B
1402	2422 026 05088	CON BM CINCH H 6P F B
1403	4822 265 11154	52030-2210 (22P)
1408	2422 026 05188	CON BM MDIN H 3P F TCS7927 B
1409	2422 026 05191	CON BM CINCH H 3P F RDBUGN B
1410	4822 267 31626	
1420	2422 025 10772	CON BM V 12P M 2.00 PH B
1421	2422 025 17433	CON BM V 30P F 1.00 FFC 0.3 B
1422	2422 025 17467	CON BM V 8P M 2.50 MIS B

⊣⊢

2100	2238 586 59812	0603 50V 100NP80M
2101	4822 122 33761	22pF 5% 50V
2102	4822 126 11785	0603 50V 47P PM5
2103	4822 122 33752	15pF 5% 50V
2104	4822 122 33752	15pF 5% 50V
2105	4822 122 33761	22pF 5% 50V
2106	4822 122 33761	22pF 5% 50V
2107	4822 122 33752	15pF 5% 50V
2108	2238 586 59812	0603 50V 100NP80M
2109	4822 124 40248	10µF 20% 63V
2110	2238 586 59812	0603 50V 100NP80M
2111	2238 586 59812	0603 50V 100NP80M
2200	2238 586 59812	0603 50V 100NP80M
2201	4822 124 40248	10µF 20% 63V
2202	4822 124 21913	1µF 20% 63V
2203	2238 586 59812	0603 50V 100NP80M
2204	2238 586 59812	0603 50V 100NP80M
2205	4822 124 21913	1µF 20% 63V
2206	2238 586 59812	0603 50V 100NP80M
2207	4822 124 40433	47µF 20% 25V
2208	2238 586 59812	0603 50V 100NP80M
2209	4822 124 21913	1µF 20% 63V
2210	2238 586 59812	0603 50V 100NP80M
2211	4822 124 41584	100µF 20% 10V
2212	2238 586 59812	0603 50V 100NP80M
2213	2238 586 59812	0603 50V 100NP80M
2214	2238 586 59812	0603 50V 100NP80M
2215	2238 586 59812	0603 50V 100NP80M
2216	2238 586 59812	0603 50V 100NP80M
2217	4822 124 41584	100µF 20% 10V
2218	4822 124 40433	47µF 20% 25V
2219	2238 586 59812	0603 50V 100NP80M
2220	2238 586 59812	0603 50V 100NP80M
2300	2238 586 59812	0603 50V 100NP80M
2301	4822 126 14249	560pF 10% 50V CASE0603
2302	2020 552 94427	0603 50V 100P PM5 R
2303	2238 586 59812	0603 50V 100NP80M
2304	2020 552 94427	0603 50V 100P PM5 R
2305	4822 124 41584	100µF 20% 10V
2306	4822 126 14249	560pF 10% 50V CASE0603
2307	2020 552 94427	0603 50V 100P PM5 R
2308	4822 126 14249	560pF 10% 50V CASE0603
2309	2020 552 94427	0603 50V 100P PM5 R
2310	4822 124 41584	100µF 20% 10V
2311	4822 126 14249	560pF 10% 50V CASE0603
2312	2238 586 59812	0603 50V 100NP80M
2313	2020 552 94427	0603 50V 100P PM5 R
2314	4822 126 13881	470pF 5% 50V
2315	2020 552 94427	0603 50V 100P PM5 R
2316	2238 586 59812	0603 50V 100NP80M
2317	2020 552 94427	0603 50V 100P PM5 R
2318	4822 126 13881	470pF 5% 50V
2319	2020 552 94427	0603 50V 100P PM5 R
2320	4822 124 41584	100µF 20% 10V
2321	2020 552 94427	0603 50V 100P PM5 R
2322	2020 552 94427	0603 50V 100P PM5 R
2323	4822 126 13881	470pF 5% 50V
2324	2020 552 94427	0603 50V 100P PM5 R
2325	4822 124 41584	100µF 20% 10V
2326	4822 126 13881	470pF 5% 50V
2327	2020 552 94427	0603 50V 100P PM5 R
2328	4822 126 13881	470pF 5% 50V
2329	2020 552 94427	0603 50V 100P PM5 R
2330	2238 586 59812	0603 50V 100NP80M
2331	2020 552 94427	0603 50V 100P PM5 R
2332	2238 586 59812	0603 50V 100NP80M
2333	4822 124 41584	100µF 20% 10V
2334	2020 552 94427	0603 50V 100P PM5 R
2335	4822 126 13881	470pF 5% 50V
2336	2020 552 94427	0603 50V 100P PM5 R
2337	2020 552 94427	0603 50V 100P PM5 R
2338	4822 126 13881	470pF 5% 50V
2339	2020 552 94427	0603 50V 100P PM5 R
2340	3198 016 31020	0603 25V 1nF
2341	3198 016 31020	0603 25V 1nF
2342	3198 016 31020	0603 25V 1nF
2343	3198 016 31020	0603 25V 1nF
2344	3198 016 31020	0603 25V 1nF
2345	3198 016 31020	0603 25V 1nF
2346	4822 124 41584	100µF 20% 10V
2347	2020 552 94427	0603 50V 100P PM5 R
2348	4822 126 13881	470pF 5% 50V
2349	2020 552 94427	0603 50V 100P PM5 R
2350	3198 016 31020	0603 25V 1nF
2351	3198 016 31020	0603 25V 1nF
2352	4822 124 11912	220µF 20% 6.3V
2353	4822 124 11912	220µF 20% 6.3V
2402	4822 124 40433	47µF 20% 25V
2404	4822 124 40433	47µF 20% 25V
2405	4822 124 80875	220µF 20% 25V
2406	4822 124 80791	470µF 16V 20% 105C DXH=8X11.5
2408	4822 124 40207	100µF 20% 25V
2409	4822 124 40207	100µF 20% 25V
2410	3198 017 42230	0603 50V 22nF COL
2411	4822 126 13883	220pF 5% 50V
2412	4822 126 13883	220pF 5% 50V
2413	3198 017 44740	0603 10V 470nF COL
2414	4822 126 13883	220pF 5% 50V
2415	4822 126 13883	220pF 5% 50V
2417	4822 124 41584	100µF 20% 10V
2418	4822 124 40248	10µF 20% 63V
2419	4822 124 81144	1000µF 16V
2420	4822 126 13883	220pF 5% 50V
2421	4822 126 13883	220pF 5% 50V
2422	4822 126 13883	220pF 5% 50V
2423	2238 586 59812	0603 50V 100NP80M
2424	4822 124 40248	10µF 20% 63V
2425	4822 126 11785	0603 50V 47P PM5
2426	2238 586 59812	0603 50V 100NP80M
2427	4822 126 11785	0603 50V 47P PM5
2428	5322 126 11583	10nF 10% 50V 0603
2429	4822 124 41584	100µF 20% 10V
2430	2238 586 59812	0603 50V 100NP80M
2431	2238 586 59812	0603 50V 100NP80M

⊣▭⊢

3100	4822 051 30101	100Ω 5% 0.062W
3101	4822 051 30101	100Ω 5% 0.062W
3102	4822 051 30101	100Ω 5% 0.062W
3103	4822 051 30101	100Ω 5% 0.062W
3104	4822 051 30101	100Ω 5% 0.062W
3105	4822 051 30101	100Ω 5% 0.062W
3106	4822 051 30101	100Ω 5% 0.062W
3107	4822 051 30101	100Ω 5% 0.062W
3108	4822 051 30101	100Ω 5% 0.062W
3109	4822 051 30472	4k7 5% 0.062W
3110	4822 051 30109	10Ω 5% 0.062W
3111	4822 051 30105	1M 5% 0.062W
3112	4822 051 30221	220Ω 5% 0.062W
3113	4822 051 30472	4k7 5% 0.062W
3114	4822 051 30472	4k7 5% 0.062W
3115	4822 051 30472	4k7 5% 0.062W
3116	4822 051 30472	4k7 5% 0.062W
3117	4822 051 30472	4k7 5% 0.062W
3118	4822 051 30472	4k7 5% 0.062W
3119	4822 051 30472	4k7 5% 0.062W
3120	4822 051 30479	47Ω 5% 0.062W
3123	4822 051 30479	47Ω 5% 0.062W
3124	4822 051 30332	3k3 5% 0.062W
3125	4822 051 30332	3k3 5% 0.062W
3126	4822 051 30332	3k3 5% 0.062W
3128	4822 051 30332	3k3 5% 0.062W
3130	4822 051 30479	47Ω 5% 0.062W
3200	4822 051 30479	47Ω 5% 0.062W
3201	4822 051 30103	10k 5% 0.062W
3202	4822 051 30272	2k7 5% 0.062W
3203	4822 051 30272	2k7 5% 0.062W
3300	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3301	5322 117 13033	15k 1% 0.063W 0603 RC22H
3302	5322 117 13028	12k 1% 0.063W 0603 RC22H
3304	4822 051 30339	33Ω 5% 0.062W
3305	4822 051 30339	33Ω 5% 0.062W
3306	4822 051 30339	33Ω 5% 0.062W
3307	4822 051 30339	33Ω 5% 0.062W
3308	4822 051 30339	33Ω 5% 0.062W
3309	4822 051 30339	33Ω 5% 0.062W
3310	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3311	5322 117 13033	15k 1% 0.063W 0603 RC22H
3312	5322 117 13028	12k 1% 0.063W 0603 RC22H
3314	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3315	5322 117 13033	15k 1% 0.063W 0603 RC22H
3316	5322 117 13028	12k 1% 0.063W 0603 RC22H
3318	5322 117 13033	15k 1% 0.063W 0603 RC22H
3319	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3320	5322 117 13028	12k 1% 0.063W 0603 RC22H
3322	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3323	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3324	5322 117 13033	15k 1% 0.063W 0603 RC22H
3325	5322 117 13028	12k 1% 0.063W 0603 RC22H
3326	5322 117 13028	12k 1% 0.063W 0603 RC22H
3327	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3328	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3329	5322 117 13033	15k 1% 0.063W 0603 RC22H
3330	5322 117 13028	12k 1% 0.063W 0603 RC22H
3331	5322 117 13028	12k 1% 0.063W 0603 RC22H
3332	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3333	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3334	5322 117 13033	15k 1% 0.063W 0603 RC22H
3335	5322 117 13028	12k 1% 0.063W 0603 RC22H
3336	5322 117 13028	12k 1% 0.063W 0603 RC22H
3337	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3338	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3339	5322 117 13033	15k 1% 0.063W 0603 RC22H
3340	5322 117 13028	12k 1% 0.063W 0603 RC22H
3341	5322 117 13028	12k 1% 0.063W 0603 RC22H
3342	4822 117 12706	10k 1% 0.063W CASE0603 RC22H

3343	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3344	5322 117 13033	15k 1% 0.063W 0603 RC22H
3345	5322 117 13028	12k 1% 0.063W 0603 RC22H
3346	5322 117 13028	12k 1% 0.063W 0603 RC22H
3347	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3348	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3349	5322 117 13033	15k 1% 0.063W 0603 RC22H
3350	5322 117 13028	12k 1% 0.063W 0603 RC22H
3351	5322 117 13028	12k 1% 0.063W 0603 RC22H
3352	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3353	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3354	5322 117 13033	15k 1% 0.063W 0603 RC22H
3355	5322 117 13028	12k 1% 0.063W 0603 RC22H
3356	5322 117 13028	12k 1% 0.063W 0603 RC22H
3357	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3358	4822 117 12706	10k 1% 0.063W CASE0603 RC22H
3359	5322 117 13033	15k 1% 0.063W 0603 RC22H
3360	4822 051 30221	220Ω 5% 0.062W
3361	4822 051 30561	560Ω 5% 0.062W
3362	4822 117 12925	47k 1% 0.063W 0603
3363	4822 051 30221	220Ω 5% 0.062W
3364	4822 051 30561	560Ω 5% 0.062W
3365	4822 051 30103	10k 5% 0.062W
3366	4822 051 30103	10k 5% 0.062W
3367	4822 117 12925	47k 1% 0.063W 0603
3368	5322 117 13028	12k 1% 0.063W 0603 RC22H
3369	5322 117 13028	12k 1% 0.063W 0603 RC22H
3370	4822 051 30221	220Ω 5% 0.062W
3371	4822 051 30561	560Ω 5% 0.062W
3372	4822 051 30472	4k7 5% 0.062W
3373	4822 051 30221	220Ω 5% 0.062W
3374	4822 051 30561	560Ω 5% 0.062W
3375	4822 051 30103	10k 5% 0.062W
3376	4822 051 30103	10k 5% 0.062W
3377	4822 051 30332	3k3 5% 0.062W
3378	4822 051 30221	220Ω 5% 0.062W
3380	4822 051 30561	560Ω 5% 0.062W
3381	4822 051 30221	220Ω 5% 0.062W
3382	4822 051 30561	560Ω 5% 0.062W
3383	4822 051 30103	10k 5% 0.062W
3384	4822 051 30103	10k 5% 0.062W
3385	4822 051 30472	4k7 5% 0.062W
3386	4822 051 30221	220Ω 5% 0.062W
3387	4822 051 30561	560Ω 5% 0.062W
3388	4822 051 30103	10k 5% 0.062W
3389	4822 051 30221	220Ω 5% 0.062W
3390	4822 051 30561	560Ω 5% 0.062W
3391	4822 051 30103	10k 5% 0.062W
3392	4822 051 30103	10k 5% 0.062W
3394	4822 051 30101	100Ω 5% 0.062W
3395	4822 051 30103	10k 5% 0.062W
3400	4822 051 30101	100Ω 5% 0.062W
3401	4822 051 30101	100Ω 5% 0.062W
3402	4822 051 30101	100Ω 5% 0.062W
3403	4822 051 30569	56Ω 5% 0.062W
3404	4822 051 30569	56Ω 5% 0.062W
3405	4822 051 30569	56Ω 5% 0.062W
3406	4822 051 30222	2k2 5% 0.062W
3407	4822 117 13501	82Ω 5% 0.62W 0603
3408	4822 051 30222	2k2 5% 0.062W
3409	4822 051 30759	75Ω 5% 0.062W
3410	4822 051 30101	100Ω 5% 0.062W
3411	4822 051 30101	100Ω 5% 0.062W
3412	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3413	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3414	4822 051 30759	75Ω 5% 0.062W
3415	4822 051 30222	2k2 5% 0.062W
3416	4822 051 30759	75Ω 5% 0.062W
3417	4822 051 30222	2k2 5% 0.062W
3418	4822 051 30222	2k2 5% 0.062W
3419	4822 051 30759	75Ω 5% 0.062W
3420	4822 051 30101	100Ω 5% 0.062W
3421	4822 051 30569	56Ω 5% 0.062W
3422	4822 051 30759	75Ω 5% 0.062W
3423	4822 051 30222	2k2 5% 0.062W
3430	4822 051 30103	10k 5% 0.062W
3431	4822 051 30332	3k3 5% 0.062W
3440	4822 051 30103	10k 5% 0.062W
3441	4822 051 30183	18k 5% 0.062W
3442	4822 051 30223	22k 5% 0.062W
3443	4822 051 30153	15k 5% 0.062W
3444	4822 051 30471	470Ω 5% 0.062W
3445	4822 051 30221	220Ω 5% 0.062W
3446	4822 051 30103	10k 5% 0.062W
3447	4822 051 30103	10k 5% 0.062W
3448	4822 051 30103	10k 5% 0.062W
3449	4822 051 30183	18k 5% 0.062W
3450	4822 051 30222	2k2 5% 0.062W
3451	4822 051 30223	22k 5% 0.062W
3452	4822 117 12902	8k2 1% 0.063W 0603
3453	4822 051 30101	100Ω 5% 0.062W
3454	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3455	4822 051 30222	2k2 5% 0.062W
3456	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3457	4822 051 30101	100Ω 5% 0.062W
3458	4822 051 30101	100Ω 5% 0.062W
3459	4822 051 30222	2k2 5% 0.062W
3460	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3461	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3462	4822 051 30222	2k2 5% 0.062W
3463	4822 051 30101	100Ω 5% 0.062W
3464	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3465	4822 051 30222	2k2 5% 0.062W
3466	4822 051 30101	100Ω 5% 0.062W
3467	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3468	4822 051 30222	2k2 5% 0.062W
3469	4822 051 30101	100Ω 5% 0.062W
3470	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3471	4822 051 30222	2k2 5% 0.062W
3472	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3473	4822 051 30101	100Ω 5% 0.062W
3474	4822 051 30101	100Ω 5% 0.062W
3491	4822 117 11151	1Ω 5%
3492	4822 117 11151	1Ω 5%
3493	4822 117 11151	1Ω 5%
3495	4822 117 11151	1Ω 5%
3496	4822 051 30472	4k7 5% 0.062W
3497	4822 117 12903	1k8 1% 0.063W 0603

5400	2422 535 94092	IND FXD SM 0805 33U PM10 R
5401	2422 535 94092	IND FXD SM 0805 33U PM10 R
5402	2422 535 94092	IND FXD SM 0805 33U PM10 R
5403	4822 157 11074	100µH
5413	4822 157 70601	100µH (920927085A)

6302	4822 130 11397	BAS316
6304	4822 130 11397	BAS316
6400	4822 130 11087	BZX284-C15
6401	4822 130 11087	BZX284-C15
6402	4822 130 11087	BZX284-C15

7100	9965 000 06673	TC7WHU04FU
7101	9965 000 06673	TC7WHU04FU
7103	9352 499 60118	IC SM 74LVC00AD (PHSE) R
7104	5322 209 11578	PCF8574T
7122	9965 000 04199	BSN20
7124	9965 000 04199	BSN20
7200	9322 177 92671	IC SM CS4362-KQ (CILO) Y
7201	5322 209 14481	HEF4053BT
7202	4822 209 30095	LM833D
7203	4822 209 30095	LM833D
7220	4822 130 42804	BC817-25
7300	9352 202 10118	IC SM NE5532AD8 (PHSE) R
7301	9352 202 10118	IC SM NE5532AD8 (PHSE) R
7302	9352 202 10118	IC SM NE5532AD8 (PHSE) R
7321	4822 130 42804	BC817-25
7323	4822 130 42804	BC817-25
7325	4822 130 42804	BC817-25
7327	4822 130 42804	BC817-25
7329	4822 130 42804	BC817-25
7331	4822 130 42804	BC817-25
7333	4822 130 42804	BC817-25
7335	4822 130 42804	BC817-25
7336	5322 130 60159	BC846B
7337	4822 130 60373	BC856B
7338	4822 130 60373	BC856B
7341	4822 130 60373	BC856B
7401	4822 209 17398	LD1117DT33
7403	4822 209 82112	MC7908CT
7420	5322 130 60159	BC846B
7421	5322 130 60159	BC846B
7422	5322 130 60159	BC846B
7423	5322 130 60159	BC846B
7424	5322 130 60159	BC846B
7425	5322 130 60159	BC846B
7430	5322 130 60159	BC846B
7431	5322 130 60159	BC846B
7432	5322 130 60159	BC846B
7433	5322 130 60159	BC846B
7434	5322 130 60159	BC846B
7435	5322 130 60159	BC846B
7436	5322 130 60159	BC846B
7437	5322 130 60159	BC846B
7440	5322 130 60159	BC846B
7441	5322 130 60159	BC846B
7442	5322 130 60159	BC846B
7443	9322 163 53685	FET POW SM IRLML2502 (INR0) R
7445	4822 209 33083	L7808CV
7446	4822 209 80817	L7805CV
7604	9322 155 28667	OPT FIB CON GP1FA550TZ (SRPJ)L

Front PWB

Various

1100	3139 240 50211	FTD 11-MT-130GNK DVD LEAD2002
1109	4822 276 13775	SWITCH
1113	4822 276 13775	SWITCH
1118	4822 276 13775	SWITCH
1119	4822 276 13775	SWITCH
1120	4822 276 13775	SWITCH
1121	4822 276 13775	SWITCH
1122	4822 276 13775	SWITCH
1123	4822 276 13775	SWITCH
1125	4822 276 13775	SWITCH
1127	2422 025 17479	CON BM H 8P M 2.50 MIS B
1128	2422 540 98518	RES CER 8MHz CSTS*MHz 03 A
1130	2422 527 01005	BUZZER PIEZO PKM13EPY-4002 Y
1131	4822 267 10567	4P
1132	2422 128 03034	SWI TACT NAV 1P 4POS SKQUAA R
1200	4822 267 10567	4P
1201	4822 276 13775	SWITCH

2100	4822 126 13883	220pF 5% 50V
2101	4822 126 13883	220pF 5% 50V
2102	4822 126 14549	33nF 16V O6O3
2104	3198 024 44730	47nF 50V 0603
2106	4822 124 41643	100µF 20% 16V DIM:6.3X11MM
2111	3198 028 52290	22µF 20% 50V
2112	4822 126 14549	33nF 16V O6O3
2113	4822 124 12032	4.7µF 20% 50V
2114	5322 126 11578	1nF 10% 50V 0603
2115	4822 126 14549	33nF 16V O6O3
2116	5322 126 11578	1nF 10% 50V 0603
2117	4822 126 14549	33nF 16V O6O3
2118	4822 124 81286	47µF 20% 16V
2119	3198 028 42290	EL 5MM 35V 22µF PM20 COL A
2120	4822 122 33761	22pF 5% 50V
2121	4822 122 33761	22pF 5% 50V
2122	4822 126 14549	33nF 16V O6O3
2123	4822 124 11947	10µF 20% 16V
2124	4822 122 33761	22pF 5% 50V
2125	3198 028 42290	EL 5MM 35V 22µF PM20 COL A

3100	4822 117 13608	4.7Ω 5% 0603 0.0016W
3101	4822 051 30472	4k7 5% 0.062W
3102	4822 117 13613	2Ω2 5% 0603
3103	4822 117 13608	4.7Ω 5% 0603 0.0016W
3104	4822 117 13613	2Ω2 5% 0603
3105	4822 051 30223	22k 5% 0.062W
3106	4822 051 30273	27k 5% 0.062W
3107	4822 117 12925	47k 1% 0.063W 0603
3108	4822 117 13632	100k 1% 0603 0.62W
3109	4822 051 30221	220Ω 5% 0.062W

3110	4822 051 30472	4k7 5% 0.062W
3112	4822 051 30472	4k7 5% 0.062W
3113	4822 051 30472	4k7 5% 0.062W
3114	4822 051 30472	4k7 5% 0.062W
3115	4822 051 30472	4k7 5% 0.062W
3116	4822 051 30472	4k7 5% 0.062W
3117	4822 051 30472	4k7 5% 0.062W
3118	4822 051 30103	10k 5% 0.062W
3119	4822 051 30103	10k 5% 0.062W
3120	4822 117 11152	4Ω7 5%
3121	4822 051 30109	10Ω 5% 0.062W
3122	4822 051 30103	10k 5% 0.062W
3123	4822 051 30101	100Ω 5% 0.062W
3124	4822 051 30101	100Ω 5% 0.062W
3125	4822 051 30109	10Ω 5% 0.062W
3126	4822 051 30472	4k7 5% 0.062W
3127	4822 051 30109	10Ω 5% 0.062W
3128	4822 051 30109	10Ω 5% 0.062W
3129	4822 051 30102	1k 5% 0.062W
3130	4822 051 30103	10k 5% 0.062W
3131	4822 051 30331	330Ω 5% 0.062W
3132	4822 051 30331	330Ω 5% 0.062W
3133	4822 051 30103	10k 5% 0.062W
3134	4822 051 30221	220Ω 5% 0.062W
3135	4822 051 30331	330Ω 5% 0.062W
3136	4822 051 30103	10k 5% 0.062W
3137	4822 117 11152	4Ω7 5%
3138	4822 051 30471	470Ω 5% 0.062W
3139	4822 051 30472	4k7 5% 0.062W
3140	4822 051 30109	10Ω 5% 0.062W
3141	4822 051 30103	10k 5% 0.062W
3142	4822 051 30471	470Ω 5% 0.062W
3143	4822 117 11152	4Ω7 5%
3145	4822 051 30472	4k7 5% 0.062W
3200	4822 051 30101	100Ω 5% 0.062W

6100	4822 130 11397	BAS316
6101	9965 000 04709	UDZ6.2BTE-17
6102	4822 130 11397	BAS316
6103	4822 130 11397	BAS316
6200	4822 130 82978	LTL-16KPE-P

7100	5322 130 60159	BC846B
7101	3139 240 50221	TMP87CH74F-3NB2 DVDV2.21
7102	5322 130 60159	BC846B
7103	4822 130 40981	BC337-25
7104	9322 155 82667	IR RECEIVER TSOP2236
7105	4822 130 60373	BC856B
7106	4822 130 40854	BC327
7107	5322 130 60159	BC846B

SCART PWB

Various

1000	2422 025 12352	CON BM EURO H 21P F BK GRND-L
1001	2422 025 12352	CON BM EURO H 21P F BK GRND-L
1300	2422 025 16526	CON BM V 22P F 1.00 FFC 0.3 R

2100	4822 124 11947	10µF 20% 16V
2101	4822 124 40207	100µF 20% 25V
2102	4822 126 14305	100nF 10% 16V 0603
2103	4822 126 14305	100nF 10% 16V 0603
2104	4822 126 14305	100nF 10% 16V 0603
2105	4822 122 33777	47pF 5% 63V
2106	4822 122 33777	47pF 5% 63V
2107	4822 126 14305	100nF 10% 16V 0603
2108	4822 126 14305	100nF 10% 16V 0603
2109	4822 126 14305	100nF 10% 16V 0603
2110	4822 124 41584	100µF 20% 10V
2111	4822 126 14494	22nF 10% 25V 0603
2112	4822 126 14305	100nF 10% 16V 0603
2113	4822 126 14305	100nF 10% 16V 0603
2114	3198 017 44740	0603 10V 470nF COL
2115	3198 017 44740	0603 10V 470nF COL
2116	3198 017 44740	0603 10V 470nF COL
2117	4822 124 11947	10µF 20% 16V
2118	4822 124 11947	10µF 20% 16V
2119	4822 124 21732	10µF 20% 25V
2120	3198 017 44740	0603 10V 470nF COL
2121	4822 124 40207	100µF 20% 25V
2122	4822 126 14305	100nF 10% 16V 0603
2200	4822 124 12032	4.7µF 20% 50V
2201	4822 126 13883	220pF 5% 50V
2202	4822 124 12032	4.7µF 20% 50V
2203	4822 124 12032	4.7µF 20% 50V
2204	4822 124 12032	4.7µF 20% 50V
2205	4822 122 31765	100pF 2% 63V 1206
2206	4822 126 13883	220pF 5% 50V
2207	4822 126 13883	220pF 5% 50V
2208	4822 126 13883	220pF 5% 50V
2209	4822 126 13883	220pF 5% 50V
2210	4822 126 13883	220pF 5% 50V
2211	4822 124 21732	10µF 20% 25V
2212	4822 124 12032	4.7µF 20% 50V
2213	4822 124 12032	4.7µF 20% 50V
2214	4822 124 12032	4.7µF 20% 50V
2215	4822 124 12032	4.7µF 20% 50V
2216	4822 126 13883	220pF 5% 50V
2217	4822 126 13883	220pF 5% 50V
2218	4822 122 31765	100pF 2% 63V 1206
2219	4822 124 11947	10µF 20% 16V
2220	4822 126 13883	220pF 5% 50V
2221	4822 124 11947	10µF 20% 16V
2222	4822 126 13883	220pF 5% 50V
2223	4822 126 13883	220pF 5% 50V
2224	4822 126 13883	220pF 5% 50V
2225	4822 124 21732	10µF 20% 25V
2226	4822 126 13883	220pF 5% 50V

3100	4822 117 11152	4Ω7 5%
3102	4822 051 30103	10k 5% 0.062W
3104	4822 051 30472	4k7 5% 0.062W
3105	4822 051 30103	10k 5% 0.062W
3106	4822 051 30103	10k 5% 0.062W
3107	4822 051 30101	100Ω 5% 0.062W
3108	4822 051 30101	100Ω 5% 0.062W
3109	4822 051 30472	4k7 5% 0.062W
3110	4822 051 30103	10k 5% 0.062W
3111	4822 051 30102	1k 5% 0.062W
3112	4822 051 30472	4k7 5% 0.062W
3113	4822 051 30103	10k 5% 0.062W
3114	4822 051 30471	470Ω 5% 0.062W
3115	4822 051 30471	470Ω 5% 0.062W
3116	4822 051 30103	10k 5% 0.062W
3117	4822 051 30472	4k7 5% 0.062W
3200	4822 051 30221	220Ω 5% 0.062W
3201	4822 117 12925	47k 1% 0.063W 0603
3202	4822 051 30471	470Ω 5% 0.062W
3203	4822 051 30273	27k 5% 0.062W
3204	4822 117 12925	47k 1% 0.063W 0603
3205	4822 051 30221	220Ω 5% 0.062W
3206	4822 117 12925	47k 1% 0.063W 0603
3207	4822 051 30273	27k 5% 0.062W
3208	4822 117 12925	47k 1% 0.063W 0603
3209	4822 051 30471	470Ω 5% 0.062W
3210	4822 051 30471	470Ω 5% 0.062W
3211	4822 051 30101	100Ω 5% 0.062W
3212	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3213	4822 051 30471	470Ω 5% 0.062W
3214	4822 051 30471	470Ω 5% 0.062W
3215	4822 051 30101	100Ω 5% 0.062W
3216	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3217	4822 051 30151	150Ω 5% 0.062W
3218	4822 051 30101	100Ω 5% 0.062W
3219	4822 051 30472	4k7 5% 0.062W
3220	4822 051 30472	4k7 5% 0.062W
3221	4822 051 30472	4k7 5% 0.062W
3222	4822 117 13632	100k 1% 0603 0.62W
3223	4822 051 30471	470Ω 5% 0.062W
3224	4822 051 30151	150Ω 5% 0.062W
3225	4822 051 30471	470Ω 5% 0.062W
3226	4822 051 30472	4k7 5% 0.062W
3227	4822 051 30471	470Ω 5% 0.062W
3228	4822 051 30222	2k2 5% 0.062W
3229	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3230	4822 051 30759	75Ω 5% 0.062W
3231	4822 051 30561	560Ω 5% 0.062W
3232	4822 051 30101	100Ω 5% 0.062W
3233	4822 051 30471	470Ω 5% 0.062W
3234	4822 051 30339	33Ω 5% 0.062W
3235	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3236	4822 051 30472	4k7 5% 0.062W
3237	4822 051 30562	5k6 5% 0.063W 0603 RC21 RST SM
3238	4822 051 30479	47Ω 5% 0.062W
3239	4822 051 30472	4k7 5% 0.062W
3240	4822 051 30102	1k 5% 0.062W
3241	4822 117 12925	47k 1% 0.063W 0603
3242	4822 051 30471	470Ω 5% 0.062W
3243	4822 117 12925	47k 1% 0.063W 0603
3244	4822 051 30272	2k7 5% 0.062W
3245	4822 051 30102	1k 5% 0.062W
3246	4822 117 12925	47k 1% 0.063W 0603
3247	4822 051 30471	470Ω 5% 0.062W
3248	4822 117 12925	47k 1% 0.063W 0603
3249	4822 051 30102	1k 5% 0.062W
3250	4822 117 12925	47k 1% 0.063W 0603
3251	4822 051 30471	470Ω 5% 0.062W
3252	4822 051 30471	470Ω 5% 0.062W
3253	4822 051 30472	4k7 5% 0.062W
3254	4822 051 30759	75Ω 5% 0.062W
3255	4822 051 30472	4k7 5% 0.062W
3257	4822 051 30759	75Ω 5% 0.062W
3258	4822 051 30471	470Ω 5% 0.062W
3259	4822 051 30339	33Ω 5% 0.062W
3260	4822 051 30561	560Ω 5% 0.062W
3261	4822 051 30472	4k7 5% 0.062W
3262	4822 051 30759	75Ω 5% 0.062W
3263	4822 051 30472	4k7 5% 0.062W
3264	4822 051 30479	47Ω 5% 0.062W
3266	4822 051 30759	75Ω 5% 0.062W
3267	4822 051 30472	4k7 5% 0.062W
3268	4822 051 30101	100Ω 5% 0.062W
3269	4822 051 30689	68Ω 5% 0.063W 0603 RC21 RST SM
3270	4822 051 30471	470Ω 5% 0.062W
3271	4822 051 30759	75Ω 5% 0.062W
3272	4822 051 30273	27k 5% 0.062W
3273	4822 117 12925	47k 1% 0.063W 0603
3275	4822 051 30272	2k7 5% 0.062W
3276	4822 051 30472	4k7 5% 0.062W
3277	4822 051 30561	560Ω 5% 0.062W
3278	4822 051 30561	560Ω 5% 0.062W

6208	9340 548 63115	PDZ15B

7102	4822 130 60511	BC847B
7103	4822 130 60511	BC847B
7104	4822 130 60511	BC847B
7105	4822 130 60511	BC847B
7106	4822 130 40854	BC327
7200	4822 130 42804	BC817-25
7201	4822 130 42804	BC817-25
7202	4822 130 60511	BC847B
7203	4822 130 60511	BC847B
7204	4822 130 60511	BC847B
7205	4822 130 60373	BC856B
7206	4822 130 60511	BC847B
7207	4822 130 60511	BC847B
7208	4822 130 60511	BC847B
7209	4822 130 60511	BC847B
7210	4822 130 42804	BC817-25
7211	4822 130 42804	BC817-25
7212	4822 130 60511	BC847B
7213	4822 130 60373	BC856B
7214	4822 130 60511	BC847B
7215	4822 130 42804	BC817-25
7216	4822 130 42804	BC817-25
7217	4822 130 60511	BC847B
7218	4822 130 60511	BC847B
7219	4822 130 42804	BC817-25
7220	4822 130 42804	BC817-25
7500	9322 134 86668	LF80C
7501	9322 135 59671	STV6411AD