DVDR3575H/05/31/58
DVDR3577H/05/31/51/58
DVDR3595H/05/31/51/58
DVDR3597H/05/31/58
Service Package
Version 1.1

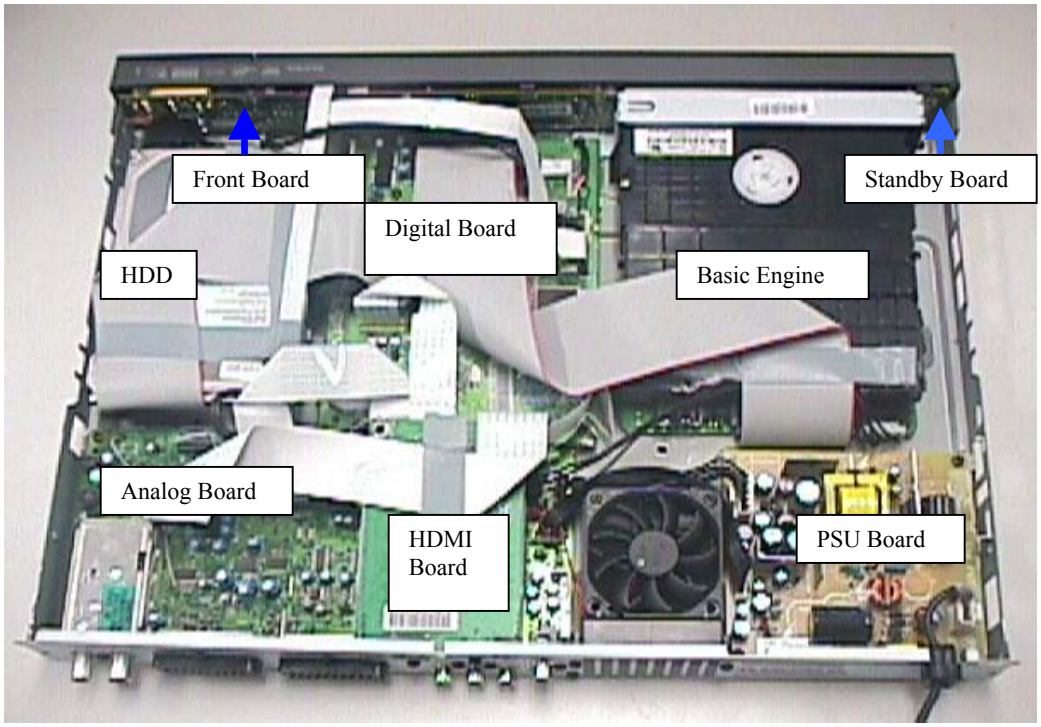
The table below gives the summary of all the files in the service package. Please refer to this document for the required information.

Chapter No.	Reference Document & Instructions
Chapter 1 Technical Specifications and Connection Facilities	3575_95_77_97H Technical Specifications and Connecti... Adobe Acrobat 7.0 Document
Chapter 2 Safety Information, General notes & Lead-free Requirements	Safety_requirements Adobe Acrobat 7.0 Document 251 KB
Chapter 3 Directions for Use / QUG	Direction for use is available at website: www.p4c.philips.com dvdr357xh-359xh_31qsg_eng.. Adobe Acrobat 7.0 Document 1,050 KB (EPG /31) dvdr357xh-359xh_58qsg_eng... Adobe Acrobat 7.0 Document 960 KB (Non EPG/05/51/58)
Chapter 4 Mechanical Instructions	3575H-3595H & 3577H-3597H Mechanical Instructions v 1.1 Adobe Acrobat 7.0 Document
Chapter 5 Firmware Upgrading, Alignment and Test Procedures Diagnostic Software	Firmware Upgrading, Alignment and Test Procedures v1.1 Adobe Acrobat 7.0 Document 701 atlas_uman_ds_lecoplus Adobe Acrobat 7.0 Documen 524 KB (Diagnostic Software)
Chapter 6 Block Diagram & Wiring Diagram	Set Block Diagram Adobe Acrobat 7.0 Document 332 KB Set Wiring Diagram Adobe Acrobat 7.0 Document 178 KB

Chapter 7 Electrical Circuits & Layout Drawings, Test Point View, Waveforms	1. Front Panel: Front Panel Drawings WinZip File 1,339 KB 2. Analog Board Analogue Board Drawings WinZip File 3,044 KB 3. Digital Board Digital Board Drawings WinZip File 3,645 KB 4. HDMI Board HDMI Board Drawings WinZip File 1,121 KB
Chapter 8 Exploded View and Service Parts List	 Exploded View Adobe Acrobat 7.0 Document 2,210 KB Service Parts List 1.1 Adobe Acrobat 7.0 Document 67 KB
Chapter 9 Revision List	 Revision_List Text Document 1 KB

1. Technical Specifications and Connection Facilities

1.1. PCB Locations



1.2. General

Mains voltage:	220V-240V
Mains frequency:	50 Hz
Power consumption:	35 W
Standby Power consumption:	<3.5 W

1.3. RF Tuner (Analogue)

Test equipment: Fluke 54200 TV Signal generator
Test streams: PAL BG Philips Standard test pattern

1.3.1.1. System

B/G, I, L/L', D/K

1.3.2. RF – Loop Through:

Frequency range:	43 MHz – 860 M Hz
Gain (ANT IN – ANT OUT) standby mode:	-2.5 dB to -4dB
Gain (ANT IN – ANT OUT) active mode:	2 dB± 4dB

1.3.3. Receiver

Output of Euro connector/Cinch to be used for measurements (direct output from front end)

Video Performance:

Frequency response (0 - 4.4 MHz):	0 ± 4dB
Group delay (0 - 4.4 MHz):	0 ± 150 nsec

Audio Performance (Analogue Mono):

Frequency response (100 Hz – 12 kHz) relative to 1 kHz:	0 ± 3dB
S/N Ratio unweighted (quasi peak, 22Hz – 22kHz):	≥ 40 dB
S/N Ratio weighted (quasi peak, CCIR 468):	≥ 45 dB
Harmonic distortion at 1kHz: FM± 25 kHz:	≤ 1.5 %
Harmonic distortion at 1kHz: AM: m = 54% (L/L'):	≤ 2 %

Audio Performance (NICAM Stereo/Dual)

Frequency response (40 Hz - 15 kHz): (Relative to 1 kHz)	0 ± 3dB
S/N Ratio unweighted (quasi peak, 22Hz – 22kHz):	≥ 65 dB
S/N Ratio weighted (quasi peak, CCIR 468):	≥ 70 dB
Harmonic distortion at 1kHz: (Headroom: system I - 21.1dB all others - 16.5dB)	≤ 0.5 %
Channel Separation:	≥ 45 dB

1.3.4. Tuning

Tuning Frequency Range:	45.25 MHz – 857 MHz
Antenna Level for40dB S/N (video unweighted):	< 40 dBµV (High End) at 75Ω ≤ 60 dBµV (Low End) at 75Ω

Automatic Search Tuning

Scanning time auto search without RF Signal:	<2.5 min. (Typical 3 minutes)
Stop level (vision carrier):	≥ 40 dBµV
Maximum tuning error during operation (drift):	± 100 kHz
Maximum tuning error of a recalled program:	± 62.5 kHz

Tuning Principles:

Automatic system recognition (B/G, I, L/L', D/K)
Manual Selection in "Store" mode
Storage of frequencies at each random position number

1.4. Analog Inputs/Outputs

1.4.1. SCART 1 (Connected to TV)

Pin Signals:

1	Audio-out R	1.8V RMS
2	Audio-in R	
3	Audio-out L	1.8V RMS
4	Audio GND	
5	Blue GND	
6	Audio-in L	
7	Blue-out	0.7Vpp ± 0.1V into 75Ω
8	Function switch	< 2V = TV > 4.5V / < 7V = asp. Ratio 16:9 DVD > 9.5V / < 12V = asp. Ratio 4:3 DVD
9	Green GND	
10	P50 control	not use
11	Green out	0.7Vpp ± 0.1V into 75Ω
12	NC	
13	Red GND	
14	Fast switch GND	
15	Red-out	0.7Vpp ± 0.1V into 75Ω
16	Fast switch RGB / CVBS or Y out	< 0.4V into 75Ω = CVBS >1V / < 3V into 75Ω = RGB
17	CVBS-out GND	
18	CVBS-in GND	

19	CVBS-out	1Vpp ± 0.1V into 75Ω
20	CVBS-in	
21	Shield	

1.4.2. SCART 2 (Connected to AUX)

Pin Signals:

1	Audio-out R	1.8V RMS
2	Audio-in R	
3	Audio-out L	1.8V RMS
4	Audio GND	
5	Blue GND	
6	Audio-in L	
7	Blue-in	
8	Function switch	
9	Green GND	
10	P50 control	not used
11	Green-in	
12	NC	
13	Red GND	
14	Fast switch GND	
15	Red-in	
16	Fast switch RGB / CVBS or Y in	
17	CVBS-out GND	
18	CVBS-in GND	
19	CVBS-out	1Vpp ± 0.1V into 75Ω
20	CVBS-in	
21	Shield	

1.4.3. Audio/Video Front Input Connectors

CAM 1 AUDIO- Cinch (L/R)

Input Voltage:	2Vrms max.
Input impedance:	> 10kΩ

CAM 1 VIDEO - Cinch

Input voltage:	1Vpp ± 3dB
Input impedance:	75Ω

1.4.4. VIDEO OUT Connectors

CVBS OUT – Cinch

Output Voltage:	1Vpp ± 3dB
Output impedance:	75Ω

S-VIDEO OUT - Hosiden

According to IEC 933-5	
Output Voltage Y:	1Vpp ± 3dB
Output Impedance Y:	75Ω
Output Voltage C:	300mVpp ± 3dB
Output Impedance C:	75Ω

1.4.5. AUDIO OUT – AUDIO Cinch (L/R)

Output voltage:	2Vrms ± 2dB
Output impedance:	< 1kΩ

1.5. Digital Inputs/Outputs

1.5.1. DV IN CAM 2 (IEEE 1394 Digital Video Input)

Implementation standard according:
IEEE Std 1394-1995
IEC61883 - Part1
IEC61883 - Part 2 SD-DVCR (02-01-1997)
Specification of consumer use digital VCR's using 6.3mm magnetic tape – dec.1994
Mechanical connection according to Annex of IEC 61883-1

1.5.2. USB

Compatibility:	USB 2.0
Type of connector:	Series A Connector

1.5.3. HDMI Output

Compatibility:	HDMI version 1.1
Type of connector:	Type A connector (19 pins)

1.5.4. AUDIO OUT: DIGITAL OUT COAXIAL – Cinch

LPCM:	according IEC 60958
MPEG 1, MPEG 2, AC3:	according IEC 61937
DTS:	according IEC 61937 + addendum

1.6. Video Performance

1.6.1. SNR

PAL

RGB	CVBS	Y/C
≥ 60 dB	Lumincance: ≥ 60 dB	Y: ≥ 60 dB
	Chroma: ≥ 55 dB (AM) ≥ 52 dB (PM)	C: ≥ 57 dB (AM) ≥ 54 dB (PM)

NTSC

Y Pb Pr	CVBS	Y/C
≥ 60 dB	Lumincance:≥ 60 dB	Y: ≥ 60 dB
	Chroma: ≥ 54 dB (AM) ≥ 54dB (PM)	C: ≥ 54 dB (AM) ≥ 54 dB (PM)

1.6.2. Bandwidth

PAL

RGB	CVBS	Y/C
0.5-4 MHz:+1dB/-2dB	0.5-4 MHz:+1dB/-2dB	Y:4.8MHz-3dB
4.8 MHz:-3dB	4.8 MHz:-3dB	C:700 kHz
5.8 MHz:-6dB	5.8 MHz:-6dB	

NTSC

YPbPr	CVBS	Y/C
4.2 MHz:-3dB	4.2 MHz:-3dB	Y:4.2 MHz -3 dB
5.8 MHz:-6dB	5.8 MHz:-6dB	C:≥ 700 kHz
With Pscan: 8.4MHz -3dB		

1.7. Audio Performance

1.7.1. Cinch Output Rear

Output voltage 2 channel mode:	2Vrms ± 1dB
Channel unbalance (1kHz):	< 0.22 dB
Crosstalk 1kHz:	> 110 dB
Crosstalk 16Hz-20kHz:	> 110 dB
Frequency response:	≤ |0.2| dB
Signal to noise ratio (unweighted):	> 110 dB
Signal to noise ratio (A-weighted):	> 112 dBA
Dynamic range 1kHz:	> 92 dB
Distortion and noise 1kHz:	> 85 dB
Distortion and noise 16Hz-20kHz:	> 85dB
Intermodulation distortion:	≤ -94 dB (pcm)
Intermodulation distortion:	≤ -77 dB (lpcm)

1.7.2. Scart Audio

Output voltage:	2Vrms ± 1dB
Channel unbalance (1kHz):	< 0.22 dB
Crosstalk 1kHz:	> 100 dB
Crosstalk 16Hz-20kHz:	> 78 dB
Frequency response:	≤ |0.2| dB
Signal to noise ratio (unweighted):	> 100 dB
Signal to noise ratio (Aweighted):	> 100 dB
Dynamic range 1kHz:	> 83 dB
Distortion and noise 1kHz:	> 83 dB
Distortion and noise 16Hz-20kHz:	> 75 dB
Intermodulation distortion:	≤ -65 dB (pcm)
Intermodulation distortion:	≤ -77 dB (lpcm)

1.8. Dimension and Weight

Set Dimension W x H x D:	435 x 43 x 324 mm
Net Weight:	3.8 kg

1.9. Laser Output Power & Wavelength

1.9.1. DVD

Output power during reading:	1.0 m W
Output power during writing:	69 m W
Wavelength:	658 nm (at 25 °C)

1.9.2. CD

Output power:	1.2 m W
Wavelength:	783 nm (at 25 °C)

1.10. Playability

Video Playback		
1	Playback Media: CD-R/CD-RW, DVD+R/+RW, DVD-R/-RW, DVD-Video, Video CD/SVCD, DVD+R DL, DVD-R DL, USB flash drive	x
2	Compression formats: MPEG2, MPEG1, DivX 3.11, DivX 4.x, DivX 5.x, DivX 6.0, DivX Ultra, MPEG4	x

Audio Playback		
1	Playback Media: Audio CD, CD-R/RW, DVD+R DL, DVD+R/+RW, DVD-R/-RW, MP3-CD, MP3-DVD, USB flash drive, WMA-CD	x
2	Compression format: Dolby Digital, MP3, MPEG2 Multichannel, PCM, WMA	x
3	MPEG1 bit rates: 64-384 kbps and VBR	x
Still Picture Playback		
1	Playback Media: CD-R/RW, DVD+R DL, DVD+R/+RW, DVD-R/-RW, Picture CD, USB Digital Camera (PTP), USB flash drive	x
2	Picture compression format: JPEG, JPEG digital camera photos	x
3	Picture enhancement: Slideshow with MP3 playback, Create albums, Rotate, Slideshow with music playback, Zoom	x

1.11. Supported Disc Types and Media Speed for Recording

Disc	Media speeds
DVD+R	1x - 16x
DVD+RW	2.4x - 8x
DVD-R	1x - 16x
DVD-RW	2.4x - 4x
DVD+R DL	2.4x

1.12. Diversity Matrix

	DVDR3575H EU	DVDR3577H EU	DVDR3595H EU	DVDR3597H EU
Hard Disk capacity	160 GB	160 GB	250GB	250GB
Colour	Titanium Black	Sliver	Sliver	Pure Black

2. Safety Information, General Notes & Lead Free Requirements

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

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,). 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, 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
VARO! AVATTAESSA 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

2.3 Lead Free Requirement

Information about Lead-free produced sets

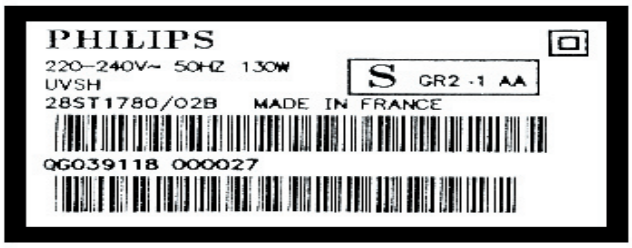
Philips CE is starting production of lead-free sets from 1.1.2005 onwards.

INDENTIFICATION:

Regardless of special logo (not always indicated)

One must treat all sets from **1 Jan 2005** onwards, according next rules.

Example S/N:



Bottom line of typeplate gives a 14-digit S/N. Digit 5&6 is the year, digit 7&8 is the week number, so in this case 1991 wk 18

So from 0501 onwards = from 1 Jan 2005 onwards

Important note: In fact also products of year 2004 must be treated in this way as long as you avoid mixing solder-alloys (leaded/ lead-free). So best to always use SAC305 and the higher temperatures belong to this.

Due to lead-free technology some rules have to be respected by the workshop during a repair:

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-pate is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - o To reach at least a solder-temperature of 400°C,
  - o To stabilize the adjusted temperature at the solder-tip
  - o To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C – 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free). If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.
- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.
  Do not re-use BGAs at all.
- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website **www.atyourservice.ce.Philips.com** you find more information to:

  - BGA-de-/soldering (+ baking instructions)
  - Heating-profiles of BGAs and other ICs used in Philips-sets

  You will find this and more technical information within the "magazine", chapter "workshop news".

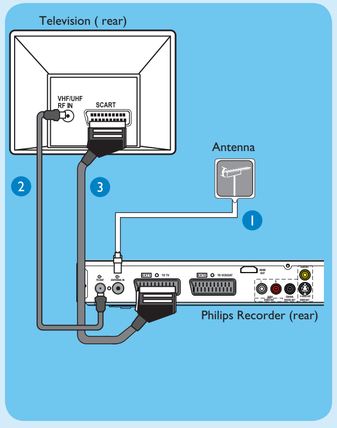
For additional questions please contact your local repair-helpdesk.

1 Connect

Before connecting

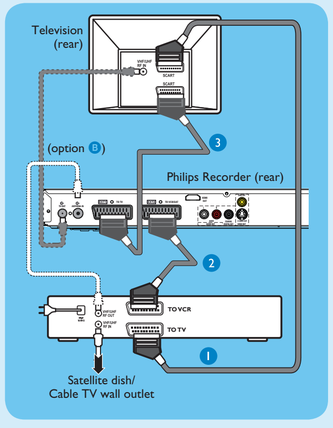
Select the most suitable connection (A or B or C) based on the type of device you have and your home set up.
You can also refer to the accompanying User Manual for other possible connections.

A Connecting Recorder and TV
with antenna only



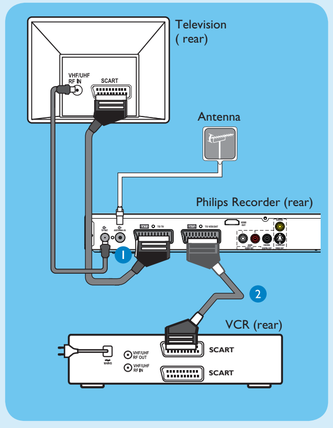
1. Unplug the existing antenna cable from your TV and connect it to the **ANTENNA IN** socket on this recorder.
2. Connect an RF antenna cable (supplied) from the **TV-OUT** socket on this recorder to the Antenna In socket on the TV.
3. Connect a scart cable (supplied) from the **EXT1-TO TV** scart socket on this recorder to the SCART socket on your TV.
4. Plug in the power cable from the recorder to an AC power outlet

B Connecting Recorder and TV
with Cable TV or Satellite Receiver



1. Keep the existing scart connection between the Cable Box/Satellite Receiver and your TV.
   - If your TV only has one Scart connector, then replace the scart connection with antenna connections (see option B).
2. Connect a scart cable (not supplied) from the **EXT2-TO VCR/SAT** scart socket on this recorder to the SCART (TO VCR) socket on the Cable Box/Satellite Receiver.
3. Connect a scart cable (supplied) from the **EXT1-TO TV** scart socket on this recorder to the SCART socket on your TV.
4. Plug in the power cable from the recorder to an AC power outlet

C Connecting Recorder, TV and VCR



Note:
Your new Philips Recorder replaces the VCR for your recording needs. First, unplug all the connections from your VCR.

1. Follow A connection before you proceed to step 2 below.
2. Connect a scart cable (not supplied) from the **EXT2-TO VCR/SAT** scart socket on this recorder to the SCART socket on the VCR.
3. Plug in the power cable from the recorder to an AC power outlet

2 Set up

A Finding the viewing channel

1. Press **STANDBY-ON** on the recorder.
2. Turn on the TV.
   You should see the installation menu.

3. In case you don't see the recorder's setting menu, press the Channel Down button on the TVs remote control repeatedly (or AV, SELECT, button) until you see the menu. This is the correct viewing channel for the recorder.

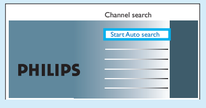
B Start initial installation

Use the recorder's remote control and follow the on-screen instructions to complete the installation.

1. Select the desired menu language, your country and the TV shape.

   Note Press **OK** or the **Green** button on the remote control to go to the next screen.

2. Press **OK** to start automatic analogue channel search.



3. Once complete, press the **Green** button to continue.

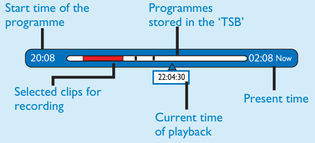
4. Enter the correct time in the entry field, press **OK** followed by the **Green** button to continue. Proceed the same for date entry.
5. The installation is completed now, press the **Green** button to close the menu.

3 Enjoy

About the Time Shift Buffer (TSB)

Once you turn on the recorder, the selected TV programme will be stored in a temporary hard disk storage called Time Shift Buffer '**TSB**'. The '**TSB**' can store up to 6 hours of programmes temporarily.

Press **INFO** to display the Time Shift video bar.



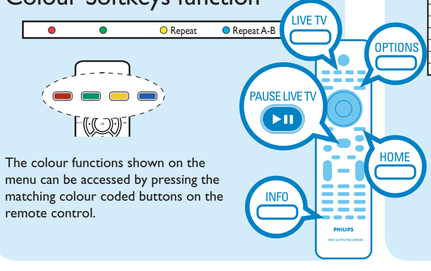
Notes:
- The contents in the time shift video bar will be cleared when you press **STANDBY ON ( )**.
- The blue LED on the recorder will be lit up when the Time Shift Buffer is active or when you playback a recording from the hard disk drive.

Watch TV – Pause live TV

Your Philips Recorder allows you to control the TV programme. You can PAUSE it as if you were in control of the live broadcast.

1. Turn on your recorder to the live TV mode and press **P** +/— to select a TV programme.
2. Press **PAUSE LIVE TV** to suspend it.
3. Press **PAUSE LIVE TV** again to continue.
4. To return to live broadcast, press **LIVE TV**.

Colour Softkeys function



The colour functions shown on the menu can be accessed by pressing the matching colour coded buttons on the remote control.

About the internal hard disk drive

This recorder's hard disk drive can be used as a Media Jukebox, allowing you to store and playback your TV programmes, videos, music and photos files.

Press **HOME** on the remote control to access your contents stored in the { Hard Disk }.

Select a record mode

Select an appropriate recording mode is important as it determines the picture quality and recording time to the hard disk.

1. Before recording, press **OPTIONS** on the remote control.
2. Select { **Settings** } in the menu and press **OK**.
3. Move to { **Recording** } and press ▶ **right**.
4. Move to { **Record mode** } and press ▶ **right**.
5. Select a record mode and press **OK** to confirm.

DVDR3575H / DVDR3577H

Record Mode	Hours of recordings can be stored on the HDD or an empty DVD recordable disc.		
	HDD (160 GB)	DVD±R/ DVD±RW	DVD+R Double Layer
HQ (high quality)	23	1	1 hr 55 mins
SP (standard play)	45	2	3 hrs 40 mins
SPP (standard play plus)	56	2.5	4 hrs 35 mins
LP (long play)	68	3	5 hrs 30 mins
EP (extended play)	90	4	7 hrs 20 mins
SLP (super long play)	135	6	11 hrs 5 mins
SEP (super extended play)	180	8	14 hrs 45 mins

DVDR3595H / DVDR3597H

Record Mode	Hours of recordings can be stored on the HDD or an empty DVD recordable disc.		
	HDD (250GB)	DVD±R/ DVD±RW	DVD+R Double Layer
HQ (high quality)	40	1	1 hr 55 mins
SP (standard play)	77	2	3 hrs 40 mins
SPP (standard play plus)	96	2.5	4 hrs 35 mins
LP (long play)	115	3	5 hrs 30 mins
EP (extended play)	153	4	7 hrs 20 mins
SLP (super long play)	230	6	11 hrs 5 mins
SEP (super extended play)	300	8	14 hrs 45 mins

3 Enjoy

Record/Copy to hard disk

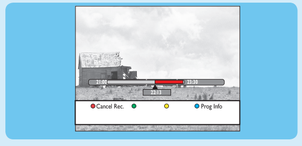
A Record current TV programme

1. Press **REC** to start recording. It can record up to 6 hours.

Note To set the recording time length, press **REC** repeatedly to extend the recording time in 30-minute increments, up to 6 hours.

2. To stop the recording before the scheduled time, press **STOP**.

B Mark a specific content in the Time Shift Buffer for recording



1. Press ◀ **left** or ▶ **right** to search for the scene where you want to record.
2. Press **REC** to start recording from here.

Note Pressing the **Red** button will cancel the recording.

3. Press ▶ **right** to search for the scene to end the recording, then press **STOP**.

Note The title will be marked in red and the recording will only take effect when you turn off the recorder.

C Copy TV programmes from hard disk

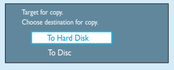
1. Insert a recordable DVD into the recorder.
2. Press **HDD LIST** on the remote control.
3. Select a title to copy and press the **Green** button on the remote control for { **Copy** }.
4. The making disc copy information appears. Press the **Green** button again to start copying.

Note It is not possible to copy the TV recordings to USB device.

D Copy files from USB

You can only copy the data files (MP3, WMA, DivX and JPEG) from your USB device to the recorder's hard disk drive or recordable DVD.

1. Insert your USB device to the USB port at the front panel of the recorder.
2. Press **USB** on the remote control to view the content menu.
3. Use ◀▶▲▼ keys to reach the file you want to copy.
4. Press the **Green** button on the remote control for { **Copy** }.



5. Select the destination for copying and press **OK** to confirm.

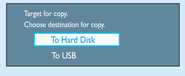
Note If select { To Disc }, insert an empty recordable DVD into the recorder.

6. Press **OK** again to start copying.

E Copy files from Disc

Copy prohibited contents cannot be copied to this recorder.

1. Insert a CD/DVD into the recorder.
2. Press **HOME** and select { **Disc Tray** }.
3. Use ◀▶▲▼ keys to reach the title/file you want to copy.
4. Press the **Green** button on the remote control for { **Copy** }.



5. Select the destination for copying and press **OK** to confirm.

Note Only data files are able to copy to USB device.

6. Press **OK** again to start copying.

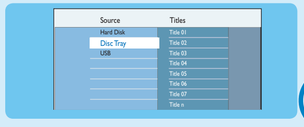
Start playback

A Playback from hard disk

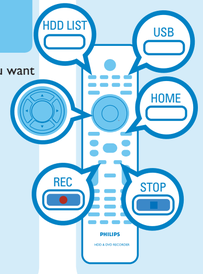
1. Press **HOME**.
2. Select { **Hard Disk** } and press ▶ **right**.
3. Select the contents type and press ▶ **right**.
4. Use ◀ ▶ ▲ ▼ keys to reach the title/file you want to play and press ▶II to start playback.

B Playback from disc

1. Hold down **STOP** until the disc tray opens. Load a disc and close the disc tray.
2. Press **HOME** and select { **Disc Tray** }.

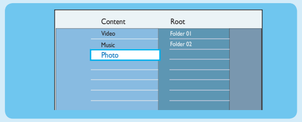


3. Use ◀ ▶ ▲ ▼ keys to reach the title/file you want to play and press ▶II to start playback.



C Playback from USB device

1. Insert the USB device to the USB socket.
2. Press **USB** to show the contents list.



3. Select the contents type and press ▶ **right**.
4. Select a data file (MP3, WMA, DivX and JPEG) and press ▶II to start playback.

Need help?

User Manual

See the user manual that came with your Philips Recorder

Online

Register your product and get support at www.philips.com/welcome

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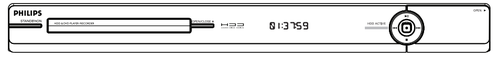
DVDR3575H / DVDR3577H
DVDR3595H / DVDR3597H

Quick Start Guide

1 Connect
2 Set up
3 Enjoy

What's in the box?



Hard Disk/ DVD Recorder

Remote Control and 2 batteries

RF antenna cable (connect between recorder and TV)

Scart cable

User Manual

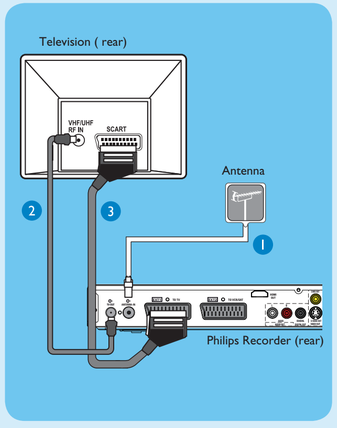
PHILIPS

1 Connect

Before connecting

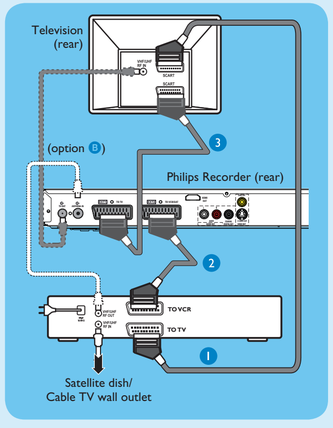
Select the most suitable connection (A or B or C) based on the type of device you have and your home set up.
You can also refer to the accompanying User Manual for other possible connections.

A Connecting Recorder and TV
with antenna only



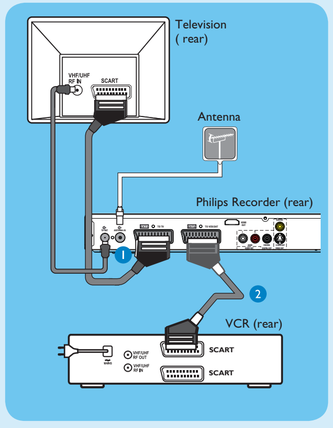
1. Unplug the existing antenna cable from your TV and connect it to the **ANTENNA IN** socket on this recorder.
2. Connect an RF antenna cable (supplied) from the **TV-OUT** socket on this recorder to the Antenna In socket on the TV.
3. Connect a scart cable (supplied) from the **EXT1-TO TV** scart socket on this recorder to the SCART socket on your TV.
4. Plug in the power cable from the recorder to an AC power outlet

B Connecting Recorder and TV
with Cable TV or Satellite Receiver



1. Keep the existing scart connection between the Cable Box/Satellite Receiver and your TV.
- If your TV only has one Scart connector, then replace the scart connection with antenna connections (see option B).
2. Connect a scart cable (not supplied) from the **EXT2-TO VCR/SAT** scart socket on this recorder to the SCART (TO VCR) socket on the Cable Box/Satellite Receiver.
3. Connect a scart cable (supplied) from the **EXT1-TO TV** scart socket on this recorder to the SCART socket on your TV.
4. Plug in the power cable from the recorder to an AC power outlet

C Connecting Recorder, TV and VCR



Note:
Your new Philips Recorder replaces the VCR for your recording needs. First, unplug all the connections from your VCR.

1. Follow A connection before you proceed to step 2 below.

   Note The antenna connection may not be required, depending on the capabilities of your Cable Box / Satellite Receiver. Refer to its user manual for more information.

2. Connect a scart cable (not supplied) from the **EXT2-TO VCR/SAT** scart socket on this recorder to the SCART socket on the VCR.
3. Plug in the power cable from the recorder to an AC power outlet

2 Set up

A Finding the viewing channel

1. Press **STANDBY-ON** on the recorder.
2. Turn on the TV.
   You should see the installation menu.

3. In case you don't see the recorder's setting menu, press the Channel Down button on the TVs remote control repeatedly (or AV, SELECT, button) until you see the menu. This is the correct viewing channel for the recorder.

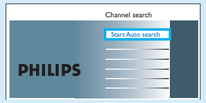
B Start initial installation

Use the recorder's remote control and follow the on-screen instructions to complete the installation.

1. Select the desired menu language, your country and the TV shape.

   Note Press **OK** or the **Green** button on the remote control to go to the next screen.

2. Press **OK** to start automatic analogue channel search.



3. Once complete, press the **Green** button to continue.
4. Enter the correct time in the entry field, press **OK** followed by the **Green** button to continue.
   Proceed the same for date entry.
5. To continue with the GUIDE Plus+ installation, press the **Green** button.

- Otherwise, press the **Red** button to skip.

C Install the GUIDE Plus+ system

- Follow the on-screen instructions to select your language, country and enter the postal code of your area.

  Note If no or wrong postal code is entered, it will cause no GUIDE Plus+ (EPG) service information.

D Load the TV listing data

1. Press **TIMER (GUIDE Plus+)** to exit GUIDE Plus+ system.
   Leave the recorder in 'standby' mode and turn 'on' the set-top box overnight to collect the TV listing data, this may take up to 24 hours.

   Note If you tune to your Host Channel before going to 'standby' mode, this recorder will start downloading the TV listings data immediately.

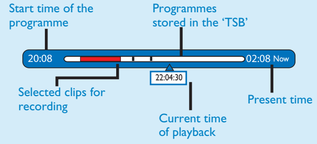
2. Check the { Editor } screen the next day to ensure the source and programme numbers are matching for all channels.

3 Enjoy

About the Time Shift Buffer (TSB)

Once you turn on the recorder, the selected TV programme will be stored in a temporary hard disk storage called Time Shift Buffer '**TSB**'. The '**TSB**' can store up to 6 hours of programmes temporarily.

Press **INFO** to display the Time Shift video bar.

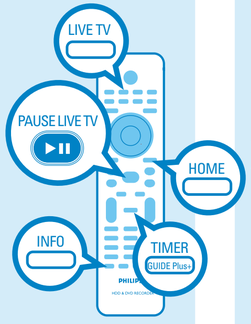


Notes:
- The contents in the time shift video bar will be cleared when you press **STANDBY ON** ().
- The blue LED on the recorder will be lit up when the Time Shift Buffer is active or when you playback a recording from the hard disk drive.

Watch TV – Pause live TV

Your Philips Recorder allows you to control the TV programme. You can PAUSE it as if you were in control of the live broadcast.

1. Turn on your recorder to the live TV mode and press **P** + / — to select a TV programme.
2. Press **PAUSE LIVE TV** to suspend it.
3. Press **PAUSE LIVE TV** again to continue.
4. To return to live broadcast, press **LIVE TV**.



About the internal hard disk drive

This recorder's hard disk drive can be used as a Media Jukebox, allowing you to store and playback your TV programmes, videos, music and photos files.

Press **HOME** on the remote control to access your contents stored in the { Hard Disk }.

3 Enjoy

Record to hard disk

A Record current TV programme

1. Press **REC** to start recording. It can record up to 6 hours.

Note To set the recording time length, press **REC** repeatedly to extend the recording time in 30-minute increments, up to 6 hours.

2. To stop the recording before the scheduled time, press **STOP**.

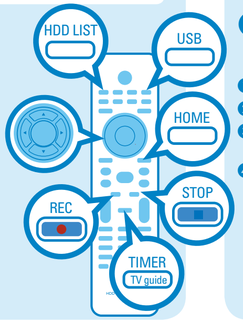
B Mark a specific content in the Time Shift Buffer for recording

1. Press ◀ **left** or ▶ **right** to search for the scene where you want to record.
2. Press **REC** to start recording from here.

Note Pressing the **Red** button will cancel the recording.

3. Press ▶ **right** to search for the scene to end the recording, then press **STOP**.

Note The title will be marked in red and the recording will only take effect when you turn off the recorder.



C Using the GUIDE Plus+ system

Make sure that the GUIDE Plus+ TV listing data download is completed.

1. Press **TIMER (GUIDE Plus+)**.
It shows the list of TV programmes that are currently broadcast and the next 8 days of TV programmes.

2. Press ▼ **down** to select a TV channel.

Notes
– To see an overview of all the available channels, press the **Yellow** button on the remote control.
– To go directly to the previous day's or the next day's TV listing, press |◀ / ▶|.
– To scroll up or down a page, press **P** + / −.

3. Press ◀ **left** or ▶ **right** to select a TV programme.
4. Press the **Red** button on the remote control to set the highlighted programme for recording.

Note You can store up to 25 programmes for recording.

Copy TV programmes or files

A Copy TV programmes from hard disk

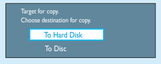
1. Insert a recordable DVD into the recorder.
2. Press **HDD LIST** on the remote control.
3. Select a title to copy and press the **Green** button on the remote control for { **Copy** }.
4. The making disc copy information appears. Press the **Green** button again to start copying.

Note It is not possible to copy the TV recordings to USB device.

B Copy files from USB

You can only copy the data files (MP3, WMA, DivX and JPEG) from your USB device to the recorder's hard disk drive or recordable DVD.

1. Insert your USB device to the USB port at the front panel of the recorder.
2. Press **USB** on the remote control.
3. Use ◀▶▲▼ keys to reach the file you want to copy.
4. Press the **Green** button for { **Copy** }.



5. Select the destination for copying and press **OK**.

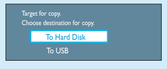
Note If select { To Disc }, insert an empty recordable DVD into the recorder.

6. Press **OK** again to start copying.

C Copy files from Disc

Copy prohibited contents cannot be copied to this recorder.

1. Insert a CD/DVD into the recorder.
2. Press **HOME** and select { **Disc Tray** }.
3. Use ◀▶▲▼ keys to reach the title/file you want to copy.
4. Press the **Green** button for { **Copy** }.



5. Select the destination for copying and press **OK**.

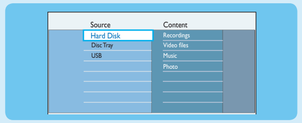
Note Only data files are able to copy to USB device.

6. Press **OK** again to start copying.

Start playback

A Playback from hard disk

1. Press **HOME**.



2. Select { **Hard Disk** } and press ▶ **right**.
3. Select the contents type and press ▶ **right**.
4. Use ◀▶▲▼ keys to reach the title/file you want to play and press ▶II to start playback.

B Playback from disc

1. Hold down **STOP** until the disc tray opens. Load a disc and close the disc tray.
2. Press **HOME** and select { **Disc Tray** }.
3. Use ◀▶▲▼ keys to reach the title/file you want to play and press ▶II to start playback.

C Playback from USB device

1. Insert the USB device to the USB socket.
2. Press **USB** to show the contents list.
3. Select the contents type and press ▶ **right**.
4. Select a data file (MP3, WMA, DivX and JPEG) and press ▶II to start playback.

Need help?

User Manual
See the user manual that came with your Philips Recorder

Online
Register your product and get support at www.philips.com/welcome

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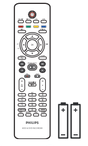
DVDR3575H / DVDR3577H
DVDR3595H / DVDR3597H

Quick Start Guide

1 Connect
2 Set up
3 Enjoy

What's in the box?

Hard Disk/ DVD Recorder



Remote Control and 2 batteries

RF antenna cable (connect between recorder and TV)

Scart cable

User Manual

PHILIPS

1. Mechanical Instructions

Note: The position numbers given here refers to the Exploded view on chapter 8.

1.1. Dismantling of the DVD Tray cover manually

1) Insert a screwdriver into the slot provided at the bottom of the set and push in the direction as shown in Figure1 to unlock before sliding the Tray cover 110 out.

Figure 1 Unlock the tray loader

2) Remove the Tray cover 110 as shown in Figure 2.

Figure 2 Remove the tray cover

1.2. Dismantling of the Front Panel

1) Remove 7 screws to loosen Top cover 240.
2) Remove screws to loosen the Plate Front Loader 183 and detach the Front Assembly 0901 as shown in Figure 3. The Front Panel Service Position is shown in Figure 4.

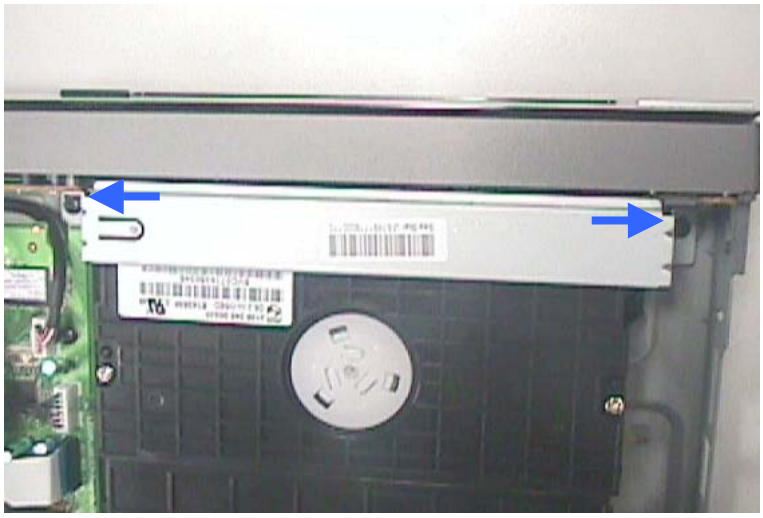


Figure 3 – Unscrew the screws to detach front panel

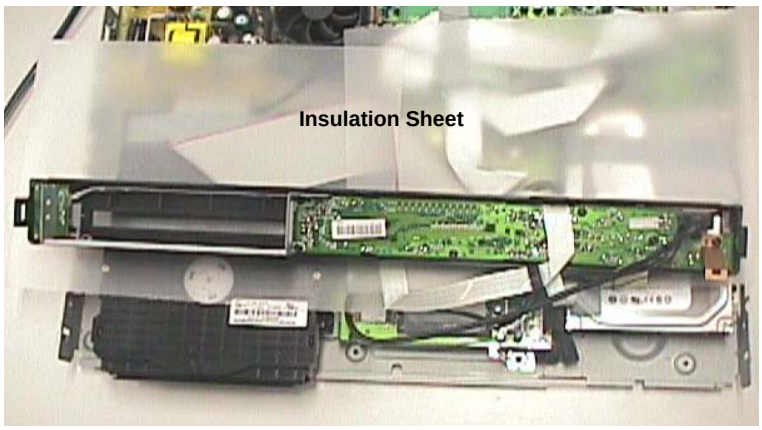


Figure 4 - Front Panel Service Position

1.3. Dismantling of the Basic Engine

1) Remove 4 mounting screw mounting the Basic Engine1007 from the Frame Assembly 0920 as shown in figure 5.

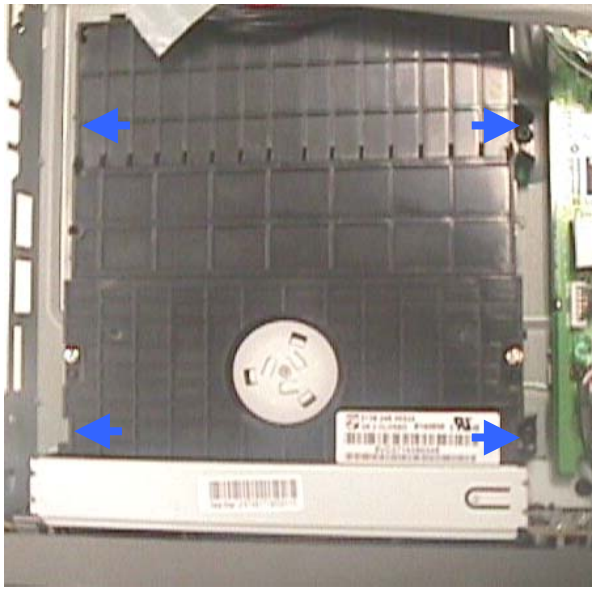


Figure 5 - Basic Engine mounting screw

2) Flip the Basic Engine over to remove 4 screws from the PCB protection plate. Service Position of the Basic Engine is shown in Figure 6.

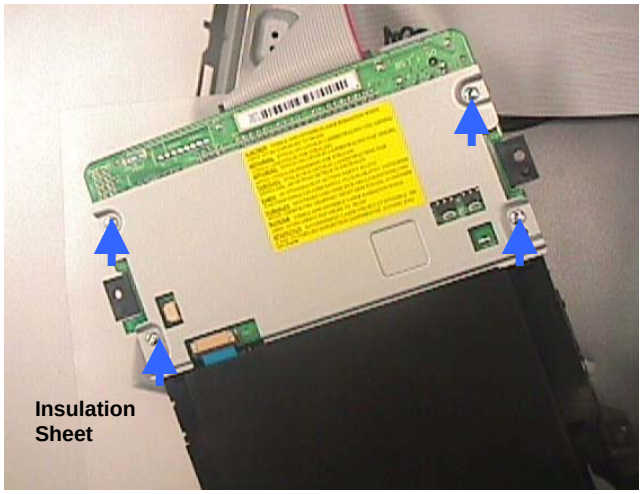


Figure 6 - Basic Engine Service Position

1.4. Dismantling of the PSU Board

1) Remove 3 screws to loosen the PSU Board 1004 as shown in Figure 7.

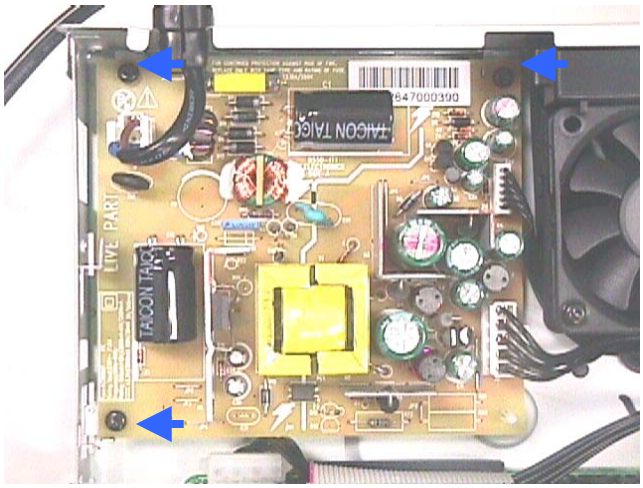


Figure 7 - PSU remove mounting screws

2) Service position for PSU Board is given in Figure 8.

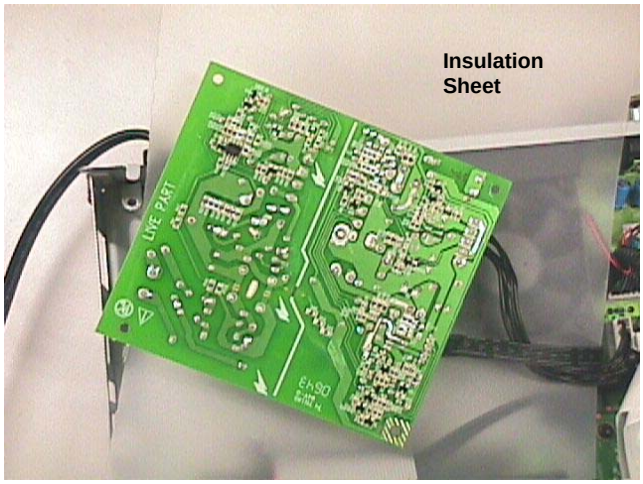


Figure 8 - PSU Board Service Position

1.5. Dismantling of the Digital Board

1) Remove 4 screws to loosen the Digital Board 1003 as shown in Figure 9.

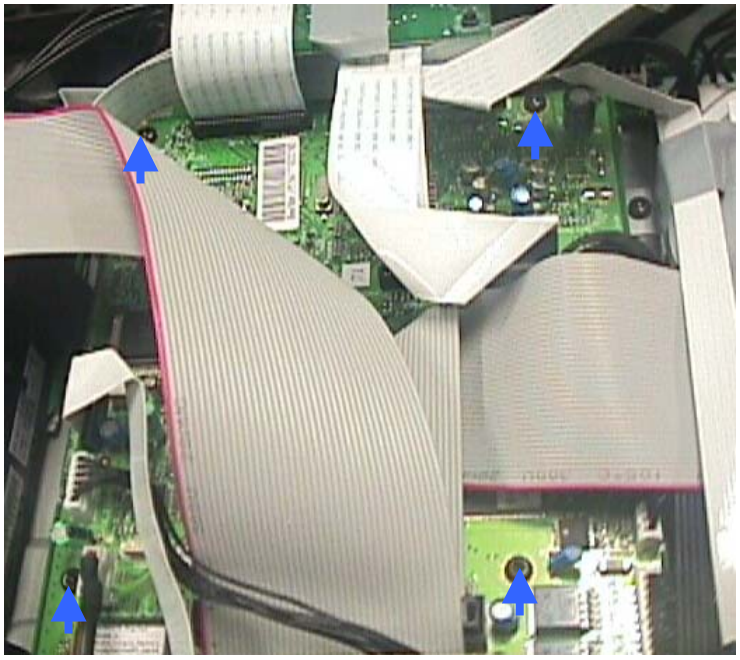


Figure 9 - Remove mounting screws for Digital Board

2) Service position for Digital Board is given in Figure 10. (Remove the Digital Board Bracket 187 and take out the cables beneath it to make it easier to flip over the digital board. Front Panel should also be removed. Flip over the digital board and put the insulation sheet under it for servicing)

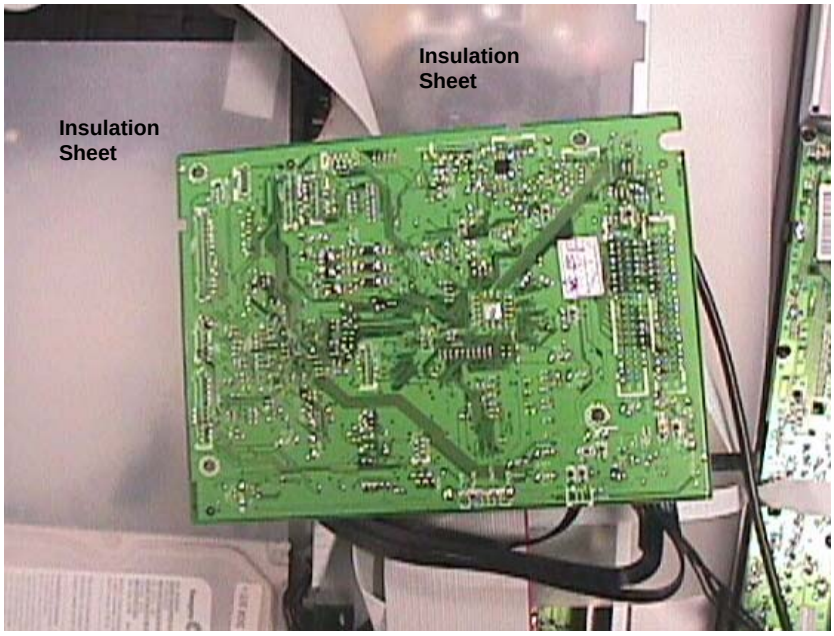


Figure 10 - Digital Board Service Position (the Digital Board Bracket Removed, and Front Panel Detached)

1.6. Dismantling of the HDMI Board

1) Remove 2 screws on the Rear Plate 230 as shown in figure 11 to dismantle the HDMI Board 1006.

Figure 11 – HDMI Board mounting screws

2) Remove the HDMI Shield 190 for HDMI Board service position as shown in figure 12.

Figure 12 – HMDI Board Service Position (HDMI Shield Removed)

1.7. Dismantling of the HDD

1) Remove 4 screws to loosen the HDD assembly (HDD 1005+ HDD Bracket 186+ the screws 271+ HDD Damper 191 only for DVDR3595H & DVDR3597H + HDD Suspension Bracket 192 only for DVDR3595H & DVDR3597H) as shown in figure 11.

Figure 13 – Remove mounting screws for HDD

3) Flip over the HDD Assembly to see the mounting screws 271. Remove the screws to dismantle the HDD 1005 from the HDD assembly.

Notes: Only the special type of screws as described in Service Parts List must be used for position number 271. Using improper screws may damage the mounting holes on the HDD.

1.8. Dismantling of the Analog Board

1) Remove the HDMI board 1006 with its Shield 190 and the HDMI bracket 189 first.

2) Remove 3 screws that attach the Analog Board 1001 to the Frame 161. Remove 6 more screws that attach the Analog Board 1001 to the rear panel 230. Detach the rear panel 230 by removing 3 more screws. Then dismantle the Analog Board. Service position for Analogue Board is given in Figure 12.

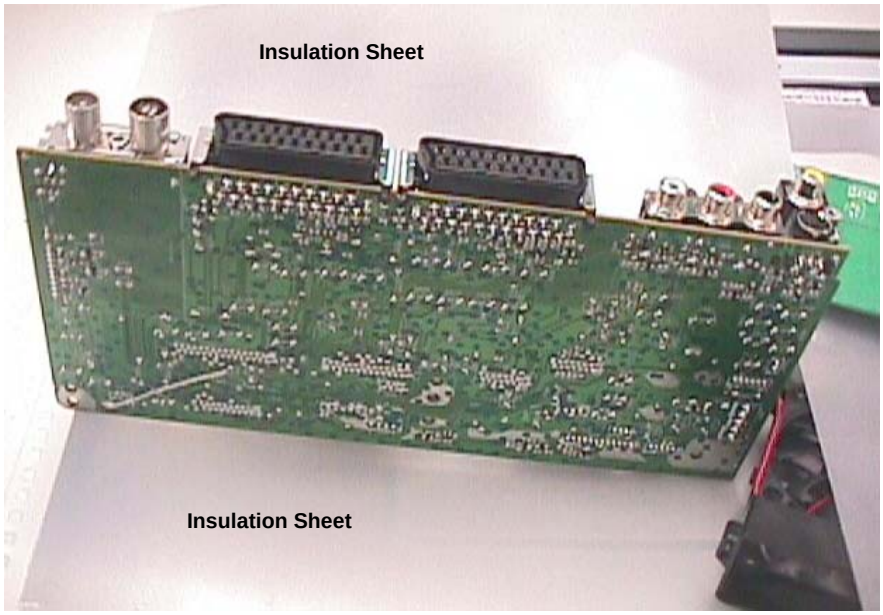


Figure 12- Analogue Board Service Position (Rear Panel 230 detached)

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ATLAS_DSW

User Manual

Diagnostic Software (Leco+)

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DOCUMENT CHANGE HISTORY

Date	Person	Version	Reason
2005-04-26	M. Quik	0.1	Initial version.
2005-09-08	M. van der Ham	0.2	Add detailed description of available nuclei for 2nd delivery of DSW.
2005-09-26	M. van der Ham	0.3	Add detailed description of available nuclei for 3rd delivery of DSW.
2005-11-09	TTTeo	0.4	Modifications due to acceptance review of FRS.
2005-12-02	KBYeo	0.6	Add nuclei for HDMI and DTTM also include euro 13 for VIP routing.
2006-05-15	TTTeo	0.9	Update to VIP routing due to hardware rework.
…			
2006-06-08	TTTeo	0.12	Update DS_HDD with nucleus to check Boot Segment Header.
2006-07-14	KBYeo	0.13	Update DS_FRE with new video standard ID table
2006-09-12	TTTeo	0.14	Adds Divx Model Id Set/Get nuclei.
2006-12-19	KBYeo	0.19	Added dealer script

1 INTRODUCTION

1.1 REFERENCES

[RW2_GLOSSARY] *DVD+RW Generation 2, Standards, Methods and Tools, Project Glossary*
Mark Krom
AR6-106022 C05S00003
Version: V0.5, 2002-02-05

[ATLAS_FRS_DS] *Functional Requirements Specification of Diagnostic Software (Leco+)*
ATLAS_DSW team
Reference number SGP_AVS_SW_ATLAS-05-03
Version 0.4, date 2005-09-02

1.2 GLOSSARY

AC3 : Audio Compression format 3
ACK : Acknowledge
ADC : Analogue to Digital Conversion
AMIX : Audio Matrix (Audio switching)
ANAB : Analogue Board
AROM : Analogue Board EEPROM
ASP : Analogue Slave Processor
ATA : AT Attachment
ATAPI : AT Attachment Packet Interface
BE : Basic Engine
BROM : BOOT EEPROM
CHR : Codec Host Repository
CRC : Cyclic Redundancy Check
DAC : Digital to Analogue Conversion
DB : Digital Board
DCB : Display and Control Board
DENC : Digital (video) ENCoder
DMA : Direct Memory Access
DSW : Diagnostic and Service Software
DSP : Digital Signal Processor
DTTM : Digital Terrestrial Tuner Module
DV : Digital Video
DVIO : Digital Video Input Output
EPGB : Electronic Program Guide Board
FRE : Front End (Tuner)
HDD : Hard Disk Drive
HDMI : High Definition Multimedia Interface
IC : Integrated Circuit
IDE : Integrated Drive Electronics
IH : Interface Handler
IIC : Inter IC Communication

INT : Interrupt
LED : Light Emitting Diode
NVRAM : Non Volatile Random Access Memory
OPC : Optimal Power Control
PIO : Peripheral IO pin
PSCAN : Progressive Scan
RC : Remote Control
S2B : Serial to Basic Engine
SYS : System
TOC : Table Of Contents
UART : Universal Asynchronous Receiver Transmitter
UDF : Universal Disc Format
VIP : Video Input Processor
VMIX : Video Matrix (Video switching)

1.3 PURPOSE, SCOPE AND SHORT DESCRIPTION

This document is the user manual for the Diagnostic Software (DSW).
Its goal is to facilitate the usage of the DSW software.

The users of this document are typically the factory and service teams.

The Diagnostic Software consists of independent 'atomic' tests, called **nuclei**.
Each nucleus forms a test to indicate possible hardware failure.
Its purpose is to facilitate fault-finding in DVD+RW sets.

This document describes all tests that are currently available in the diagnostic software.

Different DVD+RW recorder sets containing different hardware become available all the time, resulting in hardware diversity covered by chapter 118:'Digital Board Diversity'.

Apart from this there will be some different software-builds that define some hardware-specific issues at compile-time.
As a result of this there will be parts in this document that will NOT be executable on your specific DVD+RW recorder.
So if you execute a nucleus from one of these groups not currently in your software-build the command-line will e.g. look like:
DS:> 1800
DS:>

This user manual is intended for an audience that is aware of the diversity in hardware and is aware which hardware is encompassed in their DVD+RW recorder sets.

Please note that the examples given in this user manual can differ from your actual hardware.
The error codes returned by the diagnostic software will ALWAYS be as indicated in the nucleus-description. Should there be any discrepancy then please contact our team so we can correct the issue.

1.4 NOTES

The implementation of DS_ASP_GlinkRcLoop is still unclear because no information about the IR blaster IP block of the LeCo+ codec is available.

The OPC change is industrial/production change because it was reported to have high OPC value (about 2 to 3%) in the production line. This change will help to improve the production fall out due to high OPC value. So the drives that have went thru the production will have good OPC value. As for the drives that are already in the market, they will not be affected. The service centre must perform the drive calibration (nucleus 931; DS_BE_AdjustLaserControl) for AV3.5 drive, which has firmware version 35 below. We do not think that the download SW needs to change anything. Please issue the drive calibration in the service nucleus (931) after the drive is upgrade with the newer firmware.

2 USER INTERFACE

The table below shows an overview of the user interfaces of the DSW. The table is based on logical interface, interfaces as seen from user perspective. A logical interface can use one or more physical interface components.
The DVD Recorder has only a single RS232 port (service port) available for diagnostic or debugging purposes, implying that all interfaces using this port are mutually exclusive.

Logical Interface	Description	Physical interface components
Command line interface	Used to send commands from the Control PC or Service PC to the DVD Recorder DS.	• Control PC or service PC, running a program (e.g. Asterix, Compair, HyperTerminal), connected to service port of the DVD Recorder • Test pin
Scripts interface	Used to execute End-user/Dealer Test Script.	• Local-Keyboard • Local-Display

In the next chapters the logical user interfaces are described in more detail including the exact use of the physical interface components. To switch between interfaces, the DVD Recorder needs to be switched off and on again.

2.1 NUCLEI NUMERATION

Each nucleus has a unique number of four digits. This number is the input of the command line interface.

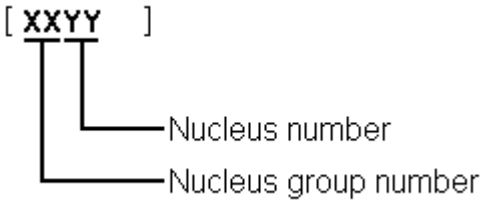

Figure 1 Unique number of a diagnostic nucleus.

The following groups are available for the LeCo+ DSW:

Group number	Group name
0	Scripts
1	Codec (e.g. LeCo+)
2	Boot EEPROM
3	NVRAM (EEPROM of FLASH)
4	SDRAM (or DDR-RAM)
5	FLASH
6	Video Input Processor
7	DVIO
9	Basic Engine
12	System

15	HDMI
16	Analogue Slave Processor
20	Front End
21	Hard Disk
22	DTTM
23	USB

2.2 ERROR HANDLING

Results returned from a diagnostic nucleus to the control/service PC are terminated by a 'CR' character (included in the string length).

The result has the following layout

```
<number> <string> [Test OK | Error] @<CR>
```

The use of the "@" enables the *Asterix* system on the *control PC* to parse the output string of each nucleus into a database. This system is used in the factory and automates the test sequences needed to test each product using the Diagnostic and Service Software.

<number> is a 6-digit decimal number padded with leading zeros if its value is less than 6 digits. The first four digits identify the generating nucleus (group and nucleus); the latter two digits indicate the error number.

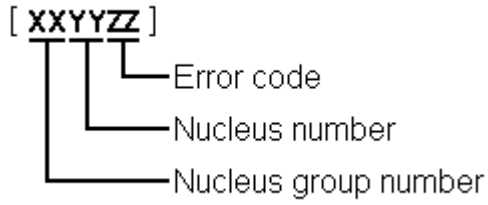

Figure 2 Error-code of a diagnostic nucleus.

2.3 COMMAND LINE INTERFACE

Via the command line interface the execution of diagnostic nuclei can be controlled.

2.3.1 Set-up of physical interface components

Hardware required:

- Control PC
- One free COM port on the Control PC
- Special cable to connect the DVD Recorder to the Control PC

The control PC must use the following port settings for the used COM port:
- 19200 bps,
- 8 data bits,
- no parity,
- 1 stop bit and
- no flow control.
The control PC is connected with a special cable (see chapter 4A.2) to the RS232 port of the DVD Recorder. Via the same connection the 'test pin' will be connected to ground. Using this pin the software can determine whether Diagnostic mode needs to be entered.

2.3.2 Activation

After power on the next text will be sent to the control PC

```
Factory Diagnostics and Service Software
DVD Video Recorder (Dec 13 2003, 10:55:37)

Version  :258          Build     :20031213_1030
Release  :P1_7_b       Buildtype :no
Baseline :I_P1_8_63    Variant   :verum:dvdrw2_lib

DS:>
```

The first lines indicate that the DSW has been activated and contains the version and build info of the DSW. The next line is the command line prompt ("`DS:>`"). The DSW is now ready to receive commands. Please note that this text will be different on your specific variant of the DVD+RW recorder product range.

2.3.3 Usage

The commands that can be given are the numbers of the nuclei. A command must be terminated with an <ENTER> character from the control PC. When typing commands, the backspace key can be used to make corrections. Apart from this one can use the Up and Down arrows to browse to previous commands.
When one enters non-supported commands, the interface returns the command line prompt.

If the command (the nucleus number) is recognised, the nucleus is executed. Result and output of an activated (and terminated) nucleus will be sent back to the control PC.

Example in case the command is correct:

```
DS:> 1200
```

```
120000: Hardware ID = 0x27
Test OK @
```

Example in case the result is an error (DVD+RW 2.1 example):

```
DS:> 1100
110002: Communication with Analogue Board fails
Error @

DS:>
```

2.3.4 Termination

To turn off the command line interface switch off the DVD Recorder.

2.4 END-USER/DEALER SCRIPT INTERFACE

This interface is used during execution of the script to display output and error messages. The local display will be used to display the output and the error messages.

2.4.1 Set-up physical interface components

Hardware required:

- DVD Recorder

The DVD Recorder is tested stand-alone: no other equipment than the DVD Recorder is needed.

2.4.2 Activation

Pressing the **play**-key on the keyboard of the DVD Recorder during **power-on** activates the dealer script.

2.4.3 Usage

The test requires no user interaction. A number of nuclei will be run before a message is returned indicating if there is a failure in the DVD Recorder (‘‘PASS” will be indicated when the product functions OK and “FAIL” when there has been an error during one of the tests).
During the execution of this script, a progress indicator is displayed on the display of the DVD Recorder.
Note that from the command line interface this script can be started as well, by entering ‘*script*’ on it.

2.4.4 Termination

To turn off the dealer test, the DVD Recorder must be powered down.

3 DETAILED DESCRIPTION OF AVAILABLE NUCLEI

3.1 CODEC HOST CONTROLLER (CHR)

Nucleus Name	**DS_CHR_DevTypeGet**	
Nucleus Number	100	
Description	Retrieves the device id, the module ids and revisions of the Codec and returns them to the stdout port.	
Technical	- Determine the codec id by means of comparing version ids of the modules. - Read the module-id register of every module and display it to the user.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	10000	Getting the information succeeded
	10001	Wrong codec id detected
Example	DS:> 100 010000: Device ID 7300 Codec ID PNX7350 F-BCU (0x0102) 4.0 INTC (0x011d) 3.0 SIF (0xa04b) 2.0 BOOT (0x010a) 3.1 CONFIG (0x013f) 5.0 RESET (0x0123) 5.0 CLOCK (0x013e) 7.0 DEBUG (0x0116) 0.1 UART0 (0x0107) 1.2 UART1 (0x0107) 1.2 I2C0 (0x0105) 0.1 I2C1 (0x0105) 0.1 GPIO (0x013c) 3.1 SYNC (0x013a) 4.0 OSD (0x0136) 1.0 SPU (0xa00e) 1.1 MIXER (0x0137) 3.0 DENC (0x0138) 5.0 CCIR (0x0139) 2.1 VDEC (0x0133) 1.0 PARSER (0xa00d) 0.0 DV (0xa00c) 0.0 IDE0 (0xa009) 1.2 IDE1 (0xa009) 1.2 SGDX (0xa008) 4.0 BYTE (0xa00b) 1.0 OUTPUT (0xa003) 8.0 ACOMP (0xa000) 8.0 VFE (0xa001) 8.0 VCOMP (0xa002) 8.0 SCR (0xa004) 8.0 SIFF (0xa011) 3.0 PSCAN (0xa05d) 0.1 ADEC (0x0134) 1.1 IR (0x0131) 2.0 AOI (0xa08c) 0.0 PIP (0xa04d) 1.0 AVLINK (0x3601) 2.1 USBLINK(0xa08e) 0.0 MSVD (0xa087) 0.0 FEBCU (0xa05e) 1.0 BM (0xa085) 0.0 BMI (0xa084) 0.0 DISP (0xa04d) 1.0 Test OK @	

1

Nucleus Name	**DS_CHR_TestImageOn**	
Nucleus Number	101	
Description	Generates a test-image of a selected video standard on selected video output on the digital board. When no input is given, the default values will be used (see user input description below). Make sure to use the proper nuclei to route the video signal on the VIP to get the video signal to the proper output.	
Technical	- Validate the user input. - Initialise the SYNC module. - Initialise the DISPLAY module. - Initialise the MIXER module. - Initialise the DENC module. - Set the selected video standard. - Generate the selected test image in memory. - Start the DISPLAY module. - Start the MIXER module. - Start the DENC module according to the selected test image id.	
Execution Time	6 seconds.	
User Input	The user has to decide which test image, video standard and video output must be used: < Test image id > < Video standard > < Video output > Test image id: 0 VERTICAL_COLOURBAR (default) 1 HORIZONTAL_COLOURBAR 2 WHITE 3 YELLOW 4 CYAN 5 GREEN 6 MAGENTA 7 RED 8 BLUE 9 BLACK 10 GRAY 11 TEST_IMAGE_FOR_PROGRESSIVE_SCAN Video standard: PAL Standard PAL 50 Hz (default) NTSC Standard NTSC 60 Hz Video output: ALL CVBS and YC and RGB signals are enabled (default) ALL_RGB CVBS and YC and RGB signals are enabled (default) ALL_YUV CVBS and YC and YUV signals are enabled CVBS CVBS signal is enabled YC YC signal are enabled RGB CVBS, and RGB signals are enabled YUV YUV signals are enabled PSCAN Progressive scan is enabled	
Error	Number	Description
	10100	Generating the test image succeeded.
	10101	Invalid input was provided.
	10102	The Codec SYNC-module cannot be initialised.
	10103	The Codec MIXER-module cannot be initialised.
	10104	The Codec VPP-module cannot be initialised.
	10105	The Codec DENC-module cannot be initialised.
	10106	The digital board hardware information is corrupt

Example	DS:> 101 010100: Test OK @ DS:> 101 0 pal cvbs 010100: Test OK @ DS:> 101 4 ntsc yc 010100: Test OK @

1

Nucleus Name	**DS_CHR_TestImageOff**	
Nucleus Number	102	
Description	Switches the test-image off.	
Technical	- Stop the DENC module.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	10200	Stopping the test image generation succeeded
	10201	The Codec DENC-module failed.
Example	DS:> 102 010200: Test OK @	

2

Nucleus Name	**DS_CHR_SineOn**	
Nucleus Number	103	
Description	Generate an audio sine signal on the audio output of the digital board. Note: Left channel 6kHz, right channel 12 kHz sine. Make sure to route the signal first. When 'SPDIF' is entered as a parameter, the SPDIF path will be activated correctly to generate a PCM sine wave on the digital audio output.	
Technical	- De-mute the analogue board - Set fifo parameters for audio - Set the volume - Set the I2S outputs and configuration paths - Set the decoder mode - Configure the audio decoder - Put the AC3 audio in the fifo - Send 'prepare' command to the audio decoder - Send 'play' command to the audio decoder	
Execution Time	Less than 1 second	
User Input	None or 'SPDIF'	
Error	Number	Description
	10300	The sine signal was successfully generated
	10301	The analogue board could not be de-muted
	10302	The audio decoder did not initialise
	10303	The dsp2 (DUET) of the audio decoder did not configure
	10304	The dsp1 (PALM) of the audio decoder did not configure
	10305	There was a delay-error before starting
	10306	Wrong input was given to the decoder function
	10307	Wrong input was given to the decoder function @@@@@
	10308	The audio decoder did not get into the 'prepared' state
Example	DS:> 103 010300: Test OK @ DS:> 103 spdif 010300: Test OK @	

3

Nucleus Name	**DS_CHR_SineOff**	
Nucleus Number	104	
Description	Stop generating the audio sine signal	
Technical	- Reset the audio block of the Codec	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	10400	Switching off the audio sine signal succeeded
	10401	Failed to reset the audio decoder

Example	`DS:> 104`
	`010400:`
	`Test OK @`	

1

Nucleus Name	**DS_CHR_SineBurst**	
Nucleus Number	105	
Description	Generate an audio sine signal on the audio output of the digital board for 4 seconds. Note: Left channel 6kHz, right channel 12 kHz sine with some known hick-ups	
Technical	- Call the DS_CHR_SineOn nucleus - Delay for 4 seconds - Call the DS_CHR_SineOff nucleus	
Execution Time	4 seconds	
User Input	None	
Error	Number	Description
	10500	The sine signal burst was successfully generated
	10501	The delay did not succeed during the burst
	10502	The audio sine could not be generated

Example	`DS:> 105`
	`010500:`
	`Test OK @`	

2

Nucleus Name	**DS_CHR_MuteOn**	
Nucleus Number	106	
Description	Mute the audio outputs of the digital board	
Technical	- Send the 'Mute' command to the audio decoder - Activate the 'audio mute' PIO pin	
Execution Time	Less than 1 second.	
User Input	"PIO" to just use the PIO pin mute. When muting using this, also de-mute using this as this works 'paired'.	
Error	Number	Description
	10600	Muting the audio succeeded
	10601	Muting the audio through the PIO-pin failed

Example	`DS:> 106`
	`010600:`
	`Test OK @`
	
	`DS:> 106 PIO`
	`010600:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_CHR_MuteOff**	
Nucleus Number	107	
Description	De-mute the audio outputs of the digital board	
Technical	- Send the 'DeMute' command to the audio decoder - Deactivate the 'audio mute' PIO pin	
Execution Time	"PIO" to just use the PIO pin de-mute. Only de-mute using this when you muted using the PIO parameter, as this works ''paired.	
User Input	None	
Error	Number	Description
	10700	De-muting the audio succeeded
	10701	De-muting the audio through the PIO-pin failed

Example	`DS:> 107`
	`010700:`
	`Test OK @`
	
	`DS:> 107 PIO`
	`010700:`
	`Test OK @`	

2

Nucleus Name	**DS_CHR_MacroVisionOn**	
Nucleus Number	110	
Description	Turn on MacroVision.	
Technical	- Set some registers of the DENC module in the Codec.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	11000	Turning on MacroVision succeeded
	11001	Turning on MacroVision failed

Example	`DS:> 110`
	`011000:`
	`Test OK @`	

3

Nucleus Name	**DS_CHR_MacroVisionOff**	
Nucleus Number	111	
Description	Turn off MacroVision.	
Technical	- Set some registers of the DENC module in the Codec.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	11100	Turning off MacroVision succeeded
	11101	Turning off MacroVision failed

Example	`DS:> 111`
	`011100:`
	`Test OK @`	

4

Nucleus Name	**DS_CHR_Peek**	
Nucleus Number	112	
Description	Peek a value on a specified address	
Technical	- Check the user input - Read out the address specified - Check whether the address to be read is aligned on 4 bytes	
Execution Time	Less than 1 second.	
User Input	The address to peek on	
Error	Number	Description
	11200	Peeking on the specified address succeeded
	11201	Peeking on the specified address failed, wrong user input
	11202	Peeking on the specified address failed due to misalignment

Example	`DS:> 112 0xa0700000`
	`011200: Value read = 0x000001BD`
	`Test OK @`	

5

6

1

Nucleus Name	**DS_CHR_Poke**	
Nucleus Number	113	
Description	Poke a value on a specified address	
Technical	- Check the user input - Change the value on the address specified - Check whether the address to be modified is aligned on 4 bytes	
Execution Time	Less than 1 second.	
User Input	The address to poke and the value: <address><value>	
Error	Number	Description
	11300	Poking the specified address succeeded
	11301	Poking the specified address failed, wrong user input
	11302	Poking the specified address failed due to misalignment

Example	`DS:> 113 0xa0700000 0xaabbccdd`
	`011300:`
	`Test OK @`	

2

Nucleus Name	**DS_CHR_INT_PICInterrupts**	
Nucleus Number	114	
Description	Test all interrupts of the priority interrupt controller	
Technical	- Install interrupt handlers - Generate interrupts - Test whether all interrupts were received	
Execution Time	Less than 1 second.	
User Input	-	
Error	Number	Description
	11400	Testing all the PIC interrupts succeeded
	11401	Testing all the PIC interrupts failed

Example	`DS:> 114`
	`011400:`
	`Test OK @`	

3

Nucleus Name	**DS_CHR_DMA_TestDMA**	
Nucleus Number	115	
Description	Test the memory to memory DMA transfer	
Technical	- Create a block with known data in memory - Copy this block to the consecutive area using 4 different DMAs - Check whether all DMAs transferred the data properly	
Execution Time	Less than 2 seconds.	
User Input	-	
Error	Number	Description
	11500	The testing of the DMAs succeeded
	11501	The initialisation of the DMAs failed for one or more DMA
	11502	One or more DMAs failed the test

Example	`DS:> 115`
	`011500:`
	`Test OK @`	

4

Nucleus Name	**DS_CHR_PioGet**	
Nucleus Number	116	
Description	Get a value from a PIO pin	
Technical	- Decode user input - Read the PIO input register of the codec and return the requested pio line value	
Execution Time	Less than 1 second.	
User Input	<PIN> where PIN is the pio pin to get (0..31)	
Error	Number	Description
	11600	Getting PIO value succeeded
	11601	Invalid parameter

Example	`DS:> 116 15`
	`011600: Value read = 0x1`
	`Test OK @`	

5

6

1

Nucleus Name	**DS_CHR_PioSet**	
Nucleus Number	117	
Description	Set a value on a PIO pin. Make sure that the pin is configured as output first	
Technical	- Decode user input - Update the PIO output register of the codec	
Execution Time	Less than 1 second.	
User Input	<PIN> <VALUE> where PIN is the pio pin to set (0..31) and VALUE the value of the pin (0..1)	
Error	Number	Description
	11700	Setting PIO value succeeded
	11701	Invalid parameter

Example	`DS:> 117 15 0`
	`011700:`
	`Test OK @`	

2

Nucleus Name	**DS_CHR_PioConfig**	
Nucleus Number	118	
Description	Configure a PIO pin	
Technical	- Decode user input - Update the PIO configuration register of the codec	
Execution Time	Less than 1 second.	
User Input	<PIN> <DIR> where PIN is the pio pin to set (0..31) and DIR the direction of the pin (0=IN 1=OUT)	
Error	Number	Description
	11800	Setting PIO configuration succeeded
	11801	Invalid parameter

Example	`DS:> 118 14 0`
	`011700:`
	`Test OK @`	

3

3.2 BOOT EEPROM (BROM)

Nucleus Name	**DS_BROM_Communication**	
Nucleus Number	200	
Description	Check the communication between the IIC controller of the Codec and the boot EEPROM.	
Technical	- Initialise IIC - Read something from the EEPROM	
Important note:	**Communication is checked only if the Diversity string indicates a boot EEPROM is available**	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	20000	The data is properly read so the communication is OK
	20001	The IIC bus was not accessible
	20002	There was a timeout reading the device
	20003	The IIC acknowledge was not received
	20004	An IIC-bus error occurred
	20005	The IIC bus initialisation failed
	20006	An unexpected IIC error occurred

Example	`DS:> 200`
	`020000:`
	`Test OK @`	

3.3 NON VOLATILE MEMORY (EEPROM OR FLASH)

Nucleus Name	**DS_NVRAM_Communication**	
Nucleus Number	300	
Description	Check the communication between the IIC controller of the Codec and the NVRAM EEPROM	
Technical	- Initialise IIC - Read from a location in the NVRAM EEPROM device	
Important note:	This nucleus only checks the physical connection between the Codec and IIC EEPROM. If no EEPROM is mounted this test will fail. However other NVRAM nuclei might still work because the software will store NVM data into flash memory	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	30000	Something is properly read so the communication is OK
	30001	The IIC bus was not accessible
	30002	There was a timeout reading the device
	30003	The IIC acknowledge was not received
	30004	The communication with the device failed
	30005	The IIC bus initialisation failed

Example	`DS:> 300`
	`030003: The IIC acknowledge was not received`
	`Error @`	

Nucleus Name	**DS_NVRAM_Clear**	
Nucleus Number	302	
Description	Fill the Non Volatile Memory with zeros. The Hardware Diversity Information and unique identification number (IEE1394-specific) of the Digital Video processing part is NOT cleared by this nucleus	
Technical	- Initialise IIC - If no IIC EEPROM was found then initialise flash memory to use NVM pages - Read the DVID and diversity string from NVM (either EEPROM or Flash) - Create a memory block filled with zeroes - Write this block to the NVRAM (either EEPROM or Flash) - Write back the Read the DVID and diversity string to NVM (either EEPROM or Flash)	
Important note:	The Hardware Diversity Information and unique identification number (IEE1394-specific) of the **D**igital **V**ideo processing part is NOT cleared by this nucleus!	
Execution Time	16 seconds	
User Input	None	
Error	Number	Description
	30200	The clearing of the NVM succeeded
	30201	There was an IIC error
	30202	Clearing the NVM failed

Example	`DS:> 302`
	`030200:`
	`Test OK @`	

1

Nucleus Name	**DS_NVRAM_Modify**	
Nucleus Number	303	
Description	Modifies one or more locations in NVRAM and updates the checksum of the section modified	
Technical	- Initialise IIC - If no IIC EEPROM was found then initialise flash memory to use NVM pages - Decode user input - Modify the NVRAM as indicated - Validate the NVRAM by calculating the checksum and storing it	
Execution Time	Less than 1 second	
User Input	1. The location that must be modified i.e. "ALL" "BOOT" "DIAGNOSTICS" "DOWNLOAD" "CONFIG" "RECORDER" or no string if an offset from the base address of the NVRAM is required 2. The offset and data which to put on the selected location <offset> <length> <data>	
Error	Number	Description
	30300	Modifying the NVRAM contents succeeded
	30301	Unable to initialise NVM
	30302	Modifying the NVRAM contents failed
	30303	length out of range
	30304	unable to decode length
	30305	offset out of range
	30306	unable to decode offset
	30307	unknown location specified
	30308	no location is specified
	30309	number of values incorrect
	30310	There was an IIC error

Example	`DS:> 303 DIAGNOSTICS 5 1 0x5a`
	`030300: Section is modified successfully`
	`Test OK @`	

2

Nucleus Name	**DS_NVRAM_Read**	
Nucleus Number	304	
Description	Read out one or more locations in the NVRAM	
Technical	- Initialise IIC - If no IIC EEPROM was found then initialise flash memory to use NVM pages - Decode user input - Read from the NVRAM and return this info to the user	
Execution Time	Less than 1 second	
User Input	1. The location which must be read i.e. "ALL" "BOOT" "DIAGNOSTICS" "DOWNLOAD" "CONFIG" "RECORDER" or no string if an offset from the base address of the NVRAM is required 2. The offset and number of bytes to read <offset> <length>	
Error	Number	Description
	30400	Value read
	30401	Unable to initialise NVM
	30402	Reading the NVRAM contents failed
	30403	Length out of range
	30404	Unable to decode length
	30405	Offset out of range
	30406	Unable to decode offset
	30407	Unknown location specified
	30408	No location is specified

Example	`DS:> 304 BOOT 4 4`
	`Read block of 4 bytes from 0x4 :`
	`0x0000:  0x44 0x00 0x00 0x06`
	
	`030400:`
	`Test OK @`	

3

3.4 SDRAM (SDRAM OR DDR-RAM)

Nucleus Name	**DS_SDRAM_WriteRead**	
Nucleus Number	400	
Description	Check all data lines, address lines and memory locations of the RAM	
Technical	- Test the data bus - Test the address bus - Test the integrity of the device itself (memory locations)	
Execution Time	11 seconds for 32 Mb 23 seconds for 64 Mb	
User Input	None	
Error	Number	Description
	40000	The write-read test succeeded
	40001	The data bus contains an error
	40002	The address bus contains an error
	40003	The RAM itself contains an error

Example	`DS:> 400`
	`040000:`
	`Test OK @`	

Nucleus Name	**DS_SDRAM_WriteReadFast**	
Nucleus Number	401	
Description	Check all data lines and address lines of the RAM	
Technical	- Test the data bus - Test the address bus	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	40100	The write-read test succeeded
	40101	The data bus contains an error
	40102	The address bus contains an error

Example	`DS:> 401`
	`040100:`
	`Test OK @`	

Nucleus Name	**DS_SDRAM_Write**	
Nucleus Number	402	
Description	Write to a specific un-cached memory address	
Technical	- Decode the user input and check its ranges and alignment on 4 bytes - Write the data to the RAM	
Execution Time	Less than 1 second	
User Input	1. The location that must be modified (RAM starts at address 0xA0000000) 2. The value to put on the selected location	
Error	Number	Description
	40200	Writing to the RAM succeeded
	40201	Writing to the RAM failed; Wrong user input
	40202	Address is not dividable by 4

Example	`DS:> 402 0xa1000010 0xad112222`
	`040200:`
	`Test OK @`	

Nucleus Name	**DS_SDRAM_Read**	
Nucleus Number	403	
Description	Read from a specific un-cached memory address	
Technical	- Decode the user input and check the ranges - Read from the RAM and return this info to the user	
Execution Time	Less than 1 second	
User Input	The location from which the data must be read (RAM starts at address 0xA0000000)	
Error	Number	Description
	40300	Reading from the RAM succeeded
	40301	Reading from the RAM failed; Wrong user input
	40302	Address is not dividable by 4

Example	`DS:> 403 0xa1000010`
	`040300: Value read = 0xAD112222`
	`Test OK @`	

Nucleus Name	**DS_SDRAM_DmaWriteRead**	
Nucleus Number	404	
Description	Write a pattern to the entire RAM using DMA and check the data	
Technical	- Check if the Stack pointer is not in the write range - Clear a 64kb block and then fill it with a pattern - Initialise the DMA controller and write the data to the SDRAM - Then check if all the data was written correctly (except descriptor tables) - Repeat the process 4 times with 4 different patterns	
Execution Time	24 seconds	
User Input	None.	
Error	Number	Description
	40400	Writing to the RAM succeeded
	40401	Stack area definition ERROR!
	40402	DMA controller could not be initialised.
	40403	Not all data was transferred correctly

Example	`DS:> 404`
	`040400:`
	`Test OK @`	

3.5 FLASH (FLASH)

Nucleus Name	**DS_FLASH_DevTypeGet**	
Nucleus Number	500	
Description	Get the device (revision) type information of the FLASH ICs. (type, manufacturer, device ID and size)	
Technical	- Set the timing for the flash writing - Write a command sequence to determine device type information - Return the information to the user	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	50000	Getting the information from the FLASH succeeded
	50001	Getting the information from the FLASH failed

Example	`DS:> 500`
	`050000: Found FLASH memory:`
	`NOR AMD 29DL640G 8MB,NOR AMD 29DL640G 8MB`
	`Test OK @`	

Nucleus Name	**DS_FLASH_Read**	
Nucleus Number	502	
Description	Read from a specific memory address in FLASH	
Technical	- Decode the user input and check the ranges and whether the address is aligned on 4 bytes - Read the data and return this to the user	
Execution Time	Less than 1 second.	
User Input	The location from which data must be read (FLASH starts at address 0xB8000000)	
Error	Number	Description
	50200	Reading the FLASH succeeded
	50201	Reading the FLASH failed; Wrong user input
	50202	Address is not dividable by 4

Example	`DS:> 502 0xb8000000`
	`050200: Value read = 0x3C08A000`
	`Test OK @`	

Nucleus Name	**DS_FLASH_ChecksumProgram**	
Nucleus Number	503	
Description	Check the checksum of the application partitions by recalculating and comparing partition checksums	
Technical	- Determine the number of segments - Find the application in each segment and determine its checksum - Check whether the checksums stored match the newly calculated	
Execution Time	6 seconds	
User Input	None	
Error	Number	Description
	50300	The checksum is valid, the test succeeded
	50301	The checksum is invalid

Example	`DS:> 503`
	`050300:`
	`BootCode checksum is: 0xBABE5B6F, which is correct`
	`Diagnostics checksum is: 0xBABEBAFF, which is correct`
	`Download checksum is: 0xBABEEDBF, which is correct`
	`Application checksum is: 0xBABE8EEC, which is correct`
	`Test OK @`	

Nucleus Name	**DS_FLASH_CalculateChecksum**	
Nucleus Number	504	
Description	Calculate the checksum over all memory addresses. Used to check entire FLASH contents	
Technical	- Run the checksum calculation algorithm on all flash memory addresses	
Execution Time	6 seconds	
User Input	None	
Error	Number	Description
	50400	Calculating the checksum over all addresses succeeded

Example	`DS:> 504`
	`050400: The Checksum = 0xBABE30A4`
	`Test OK @`	

1

Nucleus Name	**DS_FLASH_CalculateChecksumFast**	
Nucleus Number	505	
Description	Calculate a checksum over a selected number of address locations	
Technical	- Run the checksum calculation algorithm on a selected number of flash memory addresses	
Execution Time	6 seconds	
User Input	None	
Error	Number	Description
	50500	Calculating the checksum over selected addresses succeeded

Example	`DS:> 505`
	`050500: The Checksum = 0xBABEB064`
	`Test OK @`	

2

Nucleus Name	**DS_FLASH_EraseFlfs**	
Nucleus Number	506	
Description	Erase the complete Flash File system segment in flash memory. This will erase all non volatile data including diversity string and DV unique ID number	
Technical	- Initialise Flash access - Search in flash for the segment with the “FLFS” and “FLF2” signature - Ask the user whether he is sure to erase all data - If available erase the sector containing the FLFS signature - If available erase the sector containing the FLF2 signature	
Important note:	**This nucleus will erase all data, make sure to reboot after this and program a diversity string**	
Execution Time	About 1 second per block erased.	
User Input	None	
Error	Number	Description
	50600	FLFS successfully erased
	50601	User aborted the test
	50602	FLFS segment is not available

Examples	`DS:> 506`
	`Do you readlly want to erase the entire FLFS ? [Y /N(Default)] :y`
	`Erasing FLFS...`
	
	`050600: All data has been erased`
	`Test OK @`
	
	`DS:> 506`
	`Do you readlly want to erase the entire FLFS ? [Y /N(Default)] :n`
	`FLFS not erased.`
	
	`050601: User abort`
	`Test OK @`
	
	`DS:> 506`
	`Do you readlly want to erase the entire FLFS ? [Y /N(Default)] :y`
	`Erasing FLFS...`
	
	`050602: No FLFS segment found`
	`Error @`	

3

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5

3.6 VIDEO INPUT PROCESSOR (VIP)

Nucleus Name	**DS_VIP_DevTypeGet**	
Nucleus Number	600	
Description	Get the device (revision) type information of the VIP IC	
Technical	- Initialise IIC - Read out the device (revision) type information of the VIP IC	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	60000	Getting the information from the VIP succeeded
	60001	The IIC bus initialisation failed
	60002	The was an error getting the information from the VIP
	60003	Type not according to type stored in HW diversity string

Example	`DS:> 600`
	`060000: Found SAA7136`
	`Test OK @`	

Nucleus Name	**DS_VIP_Communication**	
Nucleus Number	601	
Description	Check the communication between the IIC controller of the Codec and the VIP IC	
Technical	- Initialise IIC - Read data from a location in the VIP	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	60100	Communicating with the VIP succeeded
	60101	The IIC bus was not accessible
	60102	There was a timeout reading the device
	60103	The IIC acknowledge was not received
	60104	The communication with the device failed
	60105	The IIC bus initialisation failed

Example	`DS:> 601`
	`060100:`
	`Test OK @`	

<table>
<tr><td>Nucleus Name</td><td colspan="3">DS_VIP_SelectInput</td></tr>
<tr><td>Nucleus Number</td><td colspan="3">604</td></tr>
<tr><td>Description</td><td colspan="3">Select an input video path to be switched to the analogue output pin (AOUT) of the VIP</td></tr>
<tr><td>User Input</td><td colspan="3">Select an input video path (id) to be switched to the analogue output pin (AOUT1) of the VIP.

Available channels for input of the SAA7136 and their description:
<table>
<tr><th>Id</th><th>VIP input</th><th>Input source EURO</th><th>Input source NAFTA</th></tr>
<tr><td>1</td><td>AI11</td><td>tuner_scart2-cvbs_in</td><td>reserved</td></tr>
<tr><td>2</td><td>AI12</td><td>leco-cvbs_in1</td><td>rear-y_cvbs_in</td></tr>
<tr><td>3</td><td>AI13</td><td>front-y_in</td><td>front-y_in</td></tr>
<tr><td>4</td><td>AI21</td><td>scart2_c_r_in</td><td>rear-pr_in</td></tr>
<tr><td>5</td><td>AI22</td><td>scart1-cvbs_in</td><td>rear-c_in</td></tr>
<tr><td>6</td><td>AI23</td><td>front-c_in</td><td>front-c_in</td></tr>
<tr><td>7</td><td>AI31</td><td>scart2-g_in</td><td>rear-y_in (YPbPr)</td></tr>
<tr><td>8</td><td>AI32</td><td>scart2-cvbs_in</td><td>front-cvbs_in</td></tr>
<tr><td>9</td><td>AI33</td><td>scart2-tuner-dttm-cvbs_in</td><td>tuner-cvbs_in</td></tr>
<tr><td>10</td><td>AI41</td><td>scart2-b_in</td><td>rear-pb_in</td></tr>
<tr><td>11</td><td>AI42</td><td>leco-cvbs_in2</td><td>reserved</td></tr>
<tr><td>12</td><td>AI43</td><td>front-cvbs_in</td><td>leco-cvbs_in</td></tr>
</table></td></tr>
<tr><td>Technical</td><td colspan="3">- Check the user input
- Initialise IIC
- Read out the VIP id
- Write the set of registers required for the input specified</td></tr>
<tr><td>Execution Time</td><td colspan="3">Less than 1 second</td></tr>
<tr><td>Error</td><td>Number</td><td colspan="2">Description</td></tr>
<tr><td></td><td>60400</td><td colspan="2">Selecting the input of the VIP succeeded</td></tr>
<tr><td></td><td>60401</td><td colspan="2">The user provided wrong input</td></tr>
<tr><td></td><td>60402</td><td colspan="2">The VIP was not accessible</td></tr>
<tr><td></td><td>60403</td><td colspan="2">An unsupported VIP was found</td></tr>
<tr><td>Example</td><td colspan="3">DS:> 604 1
060400:
Test OK @</td></tr>
</table>

1

2

1

Nucleus Name	**DS_VIP_Routing**	
Nucleus Number	605	
Description	Perform the routing of the audio and video signals in the set. It sets the audio and video path according to the user input. The user inputs the path id of choice, as specified in the table below for EURO and NAFTA.	
User Input	<REGION> <PATH_ID> For details see next tables	
Technical	- Check the user input - Initialise IIC - Read out the VIP id - Write the set of registers required for the input specified	
Execution Time	Less than 1 second	
Error	Number	Description
	60500	Selecting the input of the VIP succeeded
	60501	The user provided wrong input
	60502	The VIP was not accessible
	60503	An unsupported VIP was found

Example	`DS:> 605 euro 00`
	`060500:`
	`Test OK @`	

2

3 EURO paths

Path id	Description
euro 00	Scenario: CVBS,Y/C & RGB output / playback **rear cvbs, yc and audio out,** **scart1 cvbs, rgb and audio out,** **scart2 cvbs and audio out.**
euro 01	Scenario: CVBS,Y/C & YUV output / playback **rear cvbs, yc, yuv and audio out.**
euro 02	Scenario: CVBS diagnostics loop test c **cvbs loop on board (via itu656_c).**
euro 03	Scenario: CVBS diagnostics loop test d **cvbs loop on board (via itu656_d).**
euro 04	Scenario: Rear CVBS recording **front cvbs and audio in.** **rear cvbs and audio out,**
euro 05	Scenario: Rear Y/C recording **front yc and audio in.** **rear yc and audio out,**
euro 06	Scenario: SCART 2 RGB recording **scart2 rgb and audio in,** **scart1 rgb and audio out.** **scart1 to scart2 cvbs and audio loopthrough,**
euro 07	Scenario: Low-power standby **scart2 to scart1 rgb and audio loopthrough.**
euro 08	Scenario: SCART 2 CVBS recording **scart2 cvbs and audio in.** **scart1 cvbs and audio out,**
euro 09	Scenario: SCART 1 CVBS recording **scart1 cvbs and audio in.** **scart2 cvbs and audio out,**
euro 10	Scenario: Tuner recording **tuner cvbs in.** **rear cvbs, yc and audio out,** **scart1 cvbs, rgb and audio out,** **scart2 cvbs and audio out,**

euro 11	Scenario : Timer Recording (Analog TV Tuner) and loopthrough (scart1 to scart2 and scart2 to scart1) **scart1 to scart2 cvbs and audio loopthrough,** **scart2 to scart1 cvbs and audio loopthrough,** **tuner cvbs and audio in,** **rear cvbs and audio out**
euro 12	Scenario : Watching analog TV tuner and output Leco+ CVBS to scart 1 and loop CVBS from scart 1 to scart 2 (decoder set to OFF in recorder UI) **tuner cvbs in** **rear cvbs and rear rgb out** **scart1 cvbs, rgb and audio out** **scart1 to scart2 cvbs and audio loopthrough,**
euro 13	Scenario: SPDIF audio recording **spdif rear out,** **spdif rear in.**
euro 14	Scenario: Standby Loopthru (scart1 to scart2) **scart1 to scart2 cvbs and audio loopthrough,**
euro 15	Scenario: Watching DTT and output Leco+ CVBS to scart 1 and loop CVBS from scart 1 to scart 2 **DTT cvbs and audio in** **rear cvbs and audio out** **scart1 cvbs and audio out** **scart1 to scart2 cvbs and audio loopthrough,**
euro 16	Scenario : Recording from DTT and watching the output on scart1, scart2 **DTT cvbs and audio in** **scart1 cvbs and audio out.** **scart2 cvbs and audio out,**
euro 17	Scenario: Recording from DTT in the background and loopthrough (scart1 to scart2 and scart2 to scart1) **DTT cvbs and audio in** **scart1 to scart2 cvbs and audio loopthrough.** **scart2 to scart1 cvbs and audio loopthrough.** **rear cvbs and audio out, rear spdif out**
euro 18	Scenario: Decoder Mode (Transition after Scart 2 pin 8 raised) **tuner cvbs and audio in** **scart2 cvbs and audio out and then in.** **scart1 cvbs and audio out,** **rear cvbs, rgb and audio out**
euro 19	Scenario: Decoder Mode passive loop through **scart2 to scart 1 rgb loopthrough.** **tuner cvbs and audio in.** **scart2 cvbs and audio out and then in.** **scart1 cvbs and audio out,**
euro 20	SCART2 audio input to external audio ADC **scart2 rgb and audio in,** **scart1 rgb and audio out(via external audio ADC).**
euro 21	SCART1 audio input to external audio ADC

	scart1 cvbs and audio in **rear cvbs out** **rear audio out (via external audio ADC)**
euro 22	Front audio input to external audio ADC **front cvbs and audio in.** **rear cvbs and audio out (via external audio ADC),**

1

NAFTA paths

NAFTA Path id	Description
nafta 00	**cvbs, yc, yuv and audio rear out.**
nafta 01	**cvbs and iis loop through (via itu656_c).**
nafta 02	**cvbs and iis loop through (via itu656_d).**
nafta 03	**cvbs and audio front in,** **cvbs and audio rear out.**
nafta 04	**yc and audio rear in,** **yc and audio rear out.**
nafta 05	**yc and audio front in,** **yc and audio rear out.**
nafta 06	**yuv and audio rear out,** **yuv and audio rear in.**
nafta 07	**cvbs, yc, yuv and audio rear out,** **tuner in.**
nafta 08	**spdif rear out,** **spdif1 rear in.**
nafta 09	**spdif rear out,** **spdif2 rear in.**
nafta 10	**cvbs, spdif rear out,** **dttm itu656 spdif in.**.
nafta 11	**cvbs and audio front in,** **cvbs and audio rear out (via external audio ADC).**
nafta 12	**cvbs and iis loop through (via itu656_c and external audio ADC).**
nafta 13	**yuv and audio rear out(via external audio ADC),** **yuv and audio rear in.**

Nucleus Name	**DS_VIP_Reset**	
Nucleus Number	606	
Description	Reset the Video input processor	
Technical	- Toggle the VIP_RESET PIO line of the codec	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	60600	Resetting VIP succeeded
	60601	Resetting VIP failed

Example	`DS:> 606`
	`060600: Ok`
	`Test OK @`	

1

Nucleus Name	**DS_VIP_FastBlankingCheck**	
Nucleus Number	607	
Description	Checks the fast blanking signal on SCART2 in	
Technical	- Read out the SCART1_P16 GPIO pin of the ASP	
Execution Time	Less than 3 second	
User Input	None	
Error	Number	Description
	60700	Value of Fast Blanking Pin is detected
	60701	Error Cannot read Fast Blanking Pin

Example	`DS:> 607`
	`060700: Fast Blanking is ON`
	`Test OK @`	

2

Nucleus Name	**DS_VIP_WssCheck**	
Nucleus Number	608	
Description	Check if the wide screen signal can be set low and high.	
Technical	- Get the WSS Rear Y/C Out value	
Execution Time	Less than 3 second	
User Input	None	
Error	Number	Description
	60800	
	60801	

Example	`DS:> 608`
	`060800: WSS is ON`
	`Test OK @`	

3

Nucleus Name	**DS_VIP_DetectVideo**	
Nucleus Number	609	
Description	Checks if an active video signal is available on the CVBS input of SCART 1 or SCART 2.	
Technical	- Reset the VIP. - Implement the following video route in the VIP : SCART1 (A32) to ITU656_C - Tell user to remove all active video input from SCART1. - Enable sdtv(hlvln) mask in 0x500(First level interrupt enable) and 0x50d (SDTV interrupt enable). - Set GPIO 55 on ASP to input. - Tell user to connect active video into SCART1. - Read GPIO 55. - The line should be LOW if there is active video on SCART1, else LOW. - Clear the VIP *INTA interrupt.	
Execution Time	Depending on user input	
User Input	None	
Error	Number	Description
	609000	Detecting the Active video succeeded.
	609001	Detecting the Active video failed.
	609002	This test is not applicable for current HW layout.
	609003	Could not retrieve hardware version from ASP.

Example	`DS:> 609`
	`Please remove video input from the SCART1 connector.`
	`Press any key when ready ...`
	`Please input video input into the SCART1 connector.`
	`Press any key when ready ...`
	`609000: Active video is ON`
	`Test OK @`	

4

1 # 3.7 DIGITAL VIDEO INPUT OUTPUT CIRCUIT (DVIO)

Nucleus Name	**DS_DVIO_LinkDevTypeGet**	
Nucleus Number	700	
Description	Get the device (revision) type information of the 1394 Link layer IC	
Technical	- Initialise the PIO pins on the Codec - Read out the ID register	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	70000	Getting the information from the link layer IC succeeded
	70001	Getting the information from the link layer IC failed
	70002	Type not according to type stored in HW diversity string

Example	`DS:> 700`
	`070000: Device type of the link layer IC: ffc00301`
	`Test OK @`	

2

Nucleus Name	**DS_DVIO_PhyDevTypeGet**	
Nucleus Number	701	
Description	Get the device (revision) type information of the 1394 Physical layer IC	
Technical	- Initialise the PIO pins of the Codec - Write the PHY-access register in the Link chip to indicate phy read access - Wait until the link chip has obtained the value from the phy-chip - Read this out and filter the data to be returned to the user	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	70100	Getting the information from the physical layer IC succeeded
	70101	The physical layer IC was not accessible
	70102	Getting the information from the physical layer IC failed
	70103	Type not according to type stored in HW diversity

Example	`DS:> 701`
	`070100: Physical layer IC: VendorID: 0x006037, ProductID: 0x412801`
	`Test OK @`	

3

Nucleus Name	**DS_DVIO_PhyCommunication**	
Nucleus Number	703	
Description	Check the accessibility of the 1394 Physical layer IC by writing to and reading from a specific address	
Technical	- Initialise the PIO pins of the Codec - Initialise IIC - Write the data to be written to the PHY-chip to the link chip first - Wait until the link chip indicates that the data has been written to the PHY - Write the PHY-access register in the Link chip to indicate PHY read access - Wait until the link chip has obtained the value from the PHY-chip - Test whether the value read back equals the one previously written	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	70300	Communicating with the physical layer IC succeeded
	70301	The physical layer IC was not accessible
	70302	Communicating with the physical layer IC failed
	70303	Result of nucleus not according to HW diversity string

Example	`DS:> 703`
	`070300:`
	`Test OK @`	

4

5

Nucleus Name	**DS_DVIO_Routing**	
Nucleus Number	704	
Description	Route a DV stream containing an audio and video signal through the physical and link layer ICs to the Codec. This test works for both NTSC and PAL.	
Technical	- Initialise the DMA to transfer 5 frames PAL/NTSC - Initialise the DV de-multiplexer - Initialise the 1394 interface and start reception of the DV stream - Check whether the stream was copied to memory properly by the byte input interface (port to memory type DMA)	
Execution Time	6-10 seconds (6 when OK, 10 when no stream or error)	
User Input	None	
Error	Number	Description
	70400	Routing the signals succeeded
	70401	The 1394 link chip could not be initialised properly
	70402	There was a syntax error in the DV stream
	70403	DMA could not copy DV stream to memory. Stream connected?
	70404	DMA not working properly

Example	`DS:> 704`
	`070400:`
	`Test OK @`	

Nucleus Name	**DS_DVIO_DetectNode**	
Nucleus Number	705	
Description	Check whether a DV node can be detected by the hardware. This test works for both NTSC and PAL.	
Technical	- Initialise the 1394 interface - Detect whether a node is in range	
Execution Time	3 or 5 seconds (3 when OK, 5 when no stream or error)	
User Input	None	
Error	Number	Description
	70500	The node was detected OK
	70501	The 1394 link chip could not be initialised properly
	70502	Unable to write to 1394 PHY chip
	70503	Unable to read from 1394 PHY chip
	70504	No node was detected

Example	`DS:> 705`
	`070500:`
	`Test OK @`	

Nucleus Name	**DS_DVIO_DetectStream**	
Nucleus Number	706	
Description	Check whether a DV stream can be detected by the hardware. This test works for both NTSC and PAL.	
Technical	- Initialise the 1394 interface - Start receiving the stream - Detect whether the stream is OK	
Execution Time	3 or 5 seconds (3 when OK, 5 when no stream or error)	
User Input	None	
Error	Number	Description
	70600	The stream was detected
	70601	The 1394 link chip could not be initialised properly
	70602	No stream detected

Example	`DS:> 706`
	`070600:`
	`Test OK @`	

3.8 PROGRESSIVE SCAN CIRCUIT (PSCAN)

N.A.

3.9 OPTICAL DRIVE OR BASIC ENGINE (BE)

Nucleus Name	**DS_BE_CommunicationEcho**	
Nucleus Number	900	
Description	Check the communication between the digital board and the BE by issuing a TEST_UNIT_READY ATAPI command	
Technical	- Send an ATAPI TEST_UNIT_READY command	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	90000	Communicating with the BE over the IDE interface succeeded
	90001	There was a time-out while communicating
	90002	The Basic Engine returned an unexpected result
	90003	The Basic Engine returned an error code
	90004	No acknowledge received from BE
	90005	Communicating with the Basic Engine failed
	90006	Echo check failed, no ready status received
	90007	Echo check failed, received wrong pattern

Example	`DS:> 900`
	`090000:`
	`Test OK @`	

Nucleus Name	**DS_BE_Reset**	
Nucleus Number	901	
Description	Reset the basic engine	
Technical	- Toggle the reset pin of the IDE interface and wait for the BE to become ready	
Execution Time	9 seconds (when disc inside)	
User Input	None	
Error	Number	Description
	90100	Resetting the Basic Engine succeeded
	90101	Resetting the Basic Engine failed

Example	`DS:> 901`
	`090100:`
	`Test OK @`	

Nucleus Name	**DS_BE_GetSelftestResult**	
Nucleus Number	902	
Description	Return the self-test results through the service port	
Technical	- Send the ATAPI REPORT_DRIVE_DIAGNOSTICS command - On error display the specific error codes received from the BE	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	90200	Self test succeeded, no errors
	90201	There was a time-out while communicating
	90202	The Basic Engine returned an unexpected result
	90203	The BE returned an error code
	90204	No acknowledge received from BE
	90205	Communicating with the Basic Engine failed
	90206	Basic Engine returned no info
	90207	Self test failed, errors are echoed

Example	`DS:> 902`
	`090200:`
	`Self-test result byte : 00000000`
	`Self-test result byte : 00000000`
	`Self-test result byte : 00000000`
	`Test OK @`	

Nucleus Name	**DS_BE_VersionGet**
Nucleus Number	903
Description	Get the version of the basic engine and that of the optical unit

Technical	- send the ATAPI INQUIRY command - Send the GET_OPU_VERSION command - Display the returned version information	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	90300	BE version OK
	90301	There was a time-out while communicating
	90302	The Basic Engine returned an unexpected result
	90303	The BE returned an error code
	90304	No acknowledge received from BE
	90305	Communicating with the Basic Engine failed
	90306	The BE returned no info
Example	DS:> 903 090300: BE version = 31.30.24. PHILIPS ,VAD8031 ,31302400,REL_8031_313024 2073, Optical unit version = 00.06.82.19.00 Test OK @	

1

Nucleus Name	**DS_BE_TrayOut**	
Nucleus Number	904	
Description	Open the tray of the basic engine	
Technical	- Send an ATAPI START_STOP_UNIT command	
Execution Time	Approximately 2 seconds	
User Input	None	
Error	Number	Description
	90400	The command executed successfully
	90401	There was a time-out while communicating
	90402	The Basic Engine returned an unexpected result
	90403	The BE returned an error code
	90404	No acknowledge received from BE
	90405	Unable to enter normal mode
	90406	Communicating with the Basic Engine failed
Example	DS:> 904 090400: Test OK @	

2

Nucleus Name	**DS_BE_TrayIn**	
Nucleus Number	905	
Description	Close the tray of the basic engine	
Technical	- Send an ATAPI START_STOP_UNIT command	
Execution Time	Approximately 1 - 2 seconds	
User Input	None	
Error	Number	Description
	90500	The command executed successfully
	90501	There was a time-out while communicating
	90502	The Basic Engine returned an unexpected result
	90503	The BE returned an error code
	90504	No acknowledge received from BE
	90505	Unable to enter normal mode
	90506	Communicating with the Basic Engine failed
Example	DS:> 905 090500: Test OK @	

3

Nucleus Name	**DS_BE_WriteReadDvdRw**	
Nucleus Number	906	
Description	Write data to and read data from a DVD+RW or DVD-RW disc through the basic engine for verification of the writing	
Technical	- Send an ATAPI START_STOP_UNIT command to insert the tray - Send the READ_TOC command - Generate a random disc location - Generate test data to write to the DVD+RW - Transfer the test data to the disc location using PIO mode ATAPI WRITE_10 - Transfer the test data from the disc location using PIO mode ATAPI READ_10 - Compare the two data areas and check whether the areas are equal	
Execution Time	Approximately 20 seconds	
User Input	None	
Error	Number	Description
	90600	The command executed successfully
	90601	This nucleus cannot be executed because the Self-Test failed
	90602	The BE cannot enter normal operating mode
	90603	Unable to send the tray in
	90604	Unable to read TOC from disc
	90605	Invalid disc is loaded, please insert a DVD+RW or DVD-RW disc
	90606	Writing the test pattern to DVD+RW or DVD-RW failed
	90607	Reading back the test pattern from DVD+RW of DVD-RW failed
	90608	Compare check failed
	90609	Calibrating DVD+RW or DVD-RW failed

Example	`DS:> 906`
	`090600: DVD+RW test on sector 0x5dbe0: OK`
	`Test OK @`	

	`DS:> 906`
	`090600: DVD-RW test on sector 0x304e0: OK`
	`Test OK @`	

1

Nucleus Name	**DS_BE_WriteReadDvdR**	
Nucleus Number	907	
Description	Write data to and read data from a DVD+R or DVD-R disc through the basic engine for verification of the writing	
Technical	- Send an ATAPI START_STOP_UNIT command to insert the tray - Send the READ_TOC command - Use the OPC area to test if the DVD+R or DVD-R is (still) writable - Generate test data to write to the DVD+R or DVD-R - Transfer the test data to the disc location using PIO mode ATAPI WRITE_10 - Transfer the test data from the disc location using PIO mode ATAPI READ_10 - Compare the two data areas and check whether the areas are equal	
Execution Time	Approximately 20 seconds	
User Input	None	
Error	Number	Description
	90700	The command executed successfully
	90701	This nucleus cannot be executed because the Self-Test failed
	90702	The BE cannot enter normal operating mode
	90703	Unable to send the tray in
	90704	Unable to read TOC from disc
	90705	Invalid disc is loaded, please insert a DVD+RW disc
	90706	Unable to write, the DVD+R or DVD-R disc is full
	90707	No writable DVD+R or DVD-R sector found
	90708	Writing the test pattern to DVD failed
	90709	Reading back the test pattern from DVD failed
	90710	Compare check failed

Example	`DS:> 907`
	`090700: DVD+R test on sector 0x36210: OK`
	`Test OK @`	

	`DS:> 907`
	`090700: DVD-R test on sector 0x30000: OK`
	`Test OK @`	

1

2

1

Nucleus Name	**DS_BE_StatisticalInformationGet**	
Nucleus Number	908	
Description	Retrieve the statistical information from the bit engine by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected BEs	
Technical	- Send the transparent BIT engine GET_STATISTICAL_INFO command - Display the info returned from the BE	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	2 seconds	
User Input	None	
Error	Number	Description
	90800	The command executed successfully
	90801	There was a time-out while communicating
	90802	The Basic Engine returned an unexpected result
	90803	The BE returned an error code
	90804	No acknowledge received from BE
	90805	Communicating with the Basic Engine failed
	90806	The BE returned no info

Example

```
DS:> 908
Number of times Tray went Open/Closed
4
Total time the power power on (HR:MIN)
0:0h
Total time of reading CDROM discs (HR:MIN)
0:0h
Total time of reading high speed CD-R discs (HR:MIN)      0:0h
Total time of reading other CD-R discs (HR:MIN)           0:0h
Total time of reading high speed CD-RW discs (HR:MIN)     0:0h
Total time of reading other CD-RW discs (HR:MIN)          0:0h
Total time of reading high speed DVD SL discs (HR:MIN)    0:0h
Total time of reading other DVD SL discs (HR:MIN)         0:0h
Total time of reading high speed DVD DL discs (HR:MIN)    0:0h
Total time of reading other DVD DL discs (HR:MIN)         0:0h
Total time of reading high speed DVD+R discs (HR:MIN)     0:0h
Total time of reading other DVD+R discs (HR:MIN)          0:2h
Total time of reading high speed DVD+RW discs (HR:MIN)    0:0h
Total time of reading other DVD+RW discs (HR:MIN)         0:35h
Total time of writing DVD+R discs at 2.4 x (HR:MIN)       0:0h
Total time of writing DVD+R discs at 4 x (HR:MIN)         0:0h
Total time of writing DVD+RW discs at 2.4 x (HR:MIN)      0:0h
Total time of writing DVD+RW discs at 4 x (HR:MIN)        0:0h
090800:
Test OK @
```

2

3

1

Nucleus Name	**DS_BE_StatisticalInformationReSet**	
Nucleus Number	909	
Description	Reset the statistical information in the bit engine by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected BEs	
Technical	- Send the transparent BIT engine RESET_STATISTICAL_INFO command	
Execution Time	2 seconds	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
User Input	None	
Error	Number	Description
	90900	The command executed successfully
	90901	There was a time-out while communicating
	90902	The Basic Engine returned an unexpected result
	90903	The BE returned an error code
	90904	No acknowledge received from BE
	90905	Communicating with the Basic Engine failed

Example	`DS:> 909`
	`090900:`
	`Test OK @`	

2

Nucleus Name	**DS_BE_ErrorLogGet**	
Nucleus Number	910	
Description	Get the error log from the bit engine by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected BEs	
Technical	- Send the transparent BIT engine GET_ERROR and GET_FATAL commands - Display the returned info	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	91000	The command executed successfully
	91001	There was a time-out while communicating
	91002	The Basic Engine returned an unexpected result
	91003	The BE returned an error code
	91004	No acknowledge received from BE
	91005	Communicating with the Basic Engine failed
	91006	The BE returned no info

Example	`DS:> 910`
	`Momentary errors (0-9): 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	`Cumulative errors (1-9) : 0x00 0x80 0x20 0x00 0x00 0x00 0x00 0x00 0x00`
	`Software fatal assert : 799 engineproxy.cpp`
	`091000:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_BE_ErrorLogReset**	
Nucleus Number	911	
Description	Reset the error log in the bit engine by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected BEs	
Technical	- Send the transparent BIT engine RESET_STATISTICAL_INFO command	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	2 seconds	
User Input	None	
Error	Number	Description
	91100	The command executed successfully
	91101	There was a time-out while communicating
	91102	The Basic Engine returned an unexpected result
	91103	The BE returned an error code
	91104	No acknowledge received from BE
	91105	Communicating with the Basic Engine failed

Example	`DS:> 911`
	`091100:`
	`Test OK @`	

2

Nucleus Name	**DS_BE_JitterOptimise**	
Nucleus Number	912	
Description	Perform jitter optimisation: A formatted DVD must be loaded into the engine before executing this nucleus	
Technical	- Send the START_STOP_UNIT command to insert the tray - Send the READ_TOC command - Send the MEASURE_JITTER_BLER_PPN command and display the average jitter and bler values	
Execution Time	Approximately 20 seconds	
User Input	None	
Error	Number	Description
	91200	Optimising jitter succeeded
	91201	There was a time-out while communicating
	91202	The Basic Engine returned an unexpected result
	91203	The Basic Engine returned an error code
	91204	No acknowledge received from BE
	91205	Unable to send tray in
	91206	Unable to read the disc
	91207	No disc is loaded
	91208	Unknown disc is loaded
	91209	Unable to enter service mode

Example	`DS:> 912`
	`091200: Average Jitter, Bler C1, Bler C2: (92,4,254)`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_BE_FocusOn**	
Nucleus Number	913	
Description	Put the laser of the bit-engine into focus by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected BEs	
Technical	- Send the transparent BIT engine FOCUS command	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	3 seconds	
User Input	None	
Error	Number	Description
	91300	Focus on succeeded
	91301	There was a time-out while communicating
	91302	The Basic Engine returned an unexpected result
	91303	The BE returned an error code
	91304	No acknowledge received from BE
	91305	Communicating with the Basic Engine failed
	91306	Unable to enter service mode

Example	`DS:> 913`
	`091300:`
	`Test OK @`	

2

Nucleus Name	**DS_BE_FocusOff**	
Nucleus Number	914	
Description	Turn off putting the laser of the bit-engine into focus by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected BEs	
Technical	- Send the transparent BIT engine FOCUS command	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	2 seconds	
User Input	None	
Error	Number	Description
	91400	Focus off succeeded
	91401	There was a time-out while communicating
	91402	The Basic Engine returned an unexpected result
	91403	The BE returned an error code
	91404	No acknowledge received from BE
	91405	Communicating with the Basic Engine failed
	91406	Unable to enter service mode

Example	`DS:> 914`
	`091400:`
	`Test OK @`	

3

Nucleus Name	**DS_BE_MotorOn**	
Nucleus Number	915	
Description	Turn on the turntable motor by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected Bes	
Technical	- Send the transparent BIT engine TTM command	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	4 seconds	
User Input	None	
Error	Number	Description
	91500	Turn table motor is on
	91501	There was a time-out while communicating
	91502	The Basic Engine returned an unexpected result
	91503	The BE returned an error code
	91504	No acknowledge received from BE

	91505	Communicating with the Basic Engine failed
	91506	Unable to enter service mode
Example	DS:> 915 091500: Test OK @	

1

2

1

Nucleus Name	**DS_BE_MotorOff**	
Nucleus Number	916	
Description	Turn off the turntable motor by issuing a *TRANSPARENT SEND* and *TRANSPARENT_RECEIVE* command. This nucleus is not guaranteed to work on all connected Bes	
Technical	- Send the transparent BIT engine TTM command	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	4 seconds	
User Input	None	
Error	Number	Description
	91600	Turn table motor is off
	91601	There was a time-out while communicating
	91602	The Basic Engine returned an unexpected result
	91603	The BE returned an error code
	91604	No acknowledge received from BE
	91605	Communicating with the Basic Engine failed
	91606	Unable to enter service mode

Example	`DS:> 916`
	`091600:`
	`Test OK @`	

2

Nucleus Name	**DS_BE_CheckDisc**	
Nucleus Number	921	
Description	Check whether there is a disc inside the BE	
Technical	- Send the START_STOP_UNIT command to insert the tray - Send the READ_TOC command - Display the Disc type info - If Disc type is a DVD+R(W), then read ADIP info. - Display manufacturer and media type.	
Execution Time	Approximately 10 seconds	
User Input	None	
Error	Number	Description
	92100	There was a disc inside the set
	92101	Unable to load the tray
	92102	Error received from BE

Example	`DS:> 921`
	`092100:`
	`Disc type: DVD+RW disc`
	`Disc manufacturer id: PHILIPS`
	`Media type id: 010`
	`Test OK @`
	
	`DS:> 921`
	`090500:`
	`Disc type: None`
	`Test OK @`
	
	`DS:> 921`
	`092100:`
	`Disc type: DVD+R disc`
	`Disc manufacturer id: RICOHJPN`
	`Media type id: R00`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_BE_ReadTocInfo**	
Nucleus Number	924	
Description	Read the TOC from the disc. This gives a good indication if the BE works properly.	
Technical	- Send the START_STOP_UNIT command to insert the tray - Send the READ_TOC command - Display the TOC info.	
Execution Time	Approximately 10 seconds	
User Input	None	
Error	Number	Description
	92400	A disc is loaded, TOC info if echoed
	92401	Unable to load the tray
	92402	The BE has not returned TOC info
	92403	Error received from BE

Example	`DS:> 924`
	`092400: TOC info [hex] = 91 3A 0C`
	`Test OK @`
	
	`DS:> 924`
	`092403: The BE returned: 0x10 #{no_disc_error} No disc is detected`
	`Error @`
	
	`DS:> 924`
	`092403: The BE returned: 0x1e #{illegal_medium_error} Engine unable to handle current disc. Probably illegal medium.`
	`Error @`	

2

Nucleus Name	**DS_BE_RegionCodeSet**	
Nucleus Number	928	
Description	Set the region code in the AV3.	
Technical	- Send the ATAPI SEND_KEY command	
Execution Time		
User Input	Region code	
Error	Number	Description
	92800	The command executed successfully
	92801	There was a time-out while communicating
	92802	The Basic Engine returned an unexpected result
	92803	The BE returned an error code
	92804	No acknowledge received from BE
	92805	Communicating with the Basic Engine failed
	92806	No disc is present, please insert disc
	92807	Region code out of range
	92808	User input wrong
	92809	Region counter expired
	92810	This nucleus is not supported by the engine

Example	`DS:> 928 1`
	`092800:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_BE_RegionCodeGet**	
Nucleus Number	929	
Description	Read the region code from the AV3.	
Technical	- Send the ATAPI REPORT_KEY command	
Execution Time		
User Input	None	
Error	Number	Description
	92900	The command executed successfully
	92901	There was a time-out while communicating
	92902	The Basic Engine returned an unexpected result
	92903	The BE returned an error code
	92904	No acknowledge received from BE
	92905	Communicating with the Basic Engine failed
	92906	This nucleus is not supported by the engine

Example	`DS:> 929`
	`092900: DVD region 1`
	`Test OK @`	

2

Nucleus Name	**DS_BE_RegionCounterReset**	
Nucleus Number	930	
Description	Reset the region counter in the AV3.	
Technical	- Send a special ATAPI RESET_REGION_COUNTER command	
Execution Time		
User Input	None	
Error	Number	Description
	93000	The command executed successfully
	93001	There was a time-out while communicating
	93002	The Basic Engine returned an unexpected result
	93003	The BE returned an error code
	93004	No acknowledge received from BE
	93005	Communicating with the Basic Engine failed
	93006	This nucleus is not supported by the engine

Example	`DS:> 930`
	`093000:`
	`Test OK @`	

3

Nucleus Name	**DS_BE_AdjustLaserControl**	
Nucleus Number	931	
Description	Adjust the DVD-M (with the OPU) with PCBA. (So adjusts the two PCBS to each other)	
Technical	- Sending a transparent BIT engine command to align the PCBs to each other.	
Important note:	**This nucleus uses the transparent bit engine interface of the drive. It is not guaranteed to work on all drives. Only use this nucleus if you are sure that the drive supports this interface**	
Execution Time	30 seconds	
User Input	None	
Error	Number	Description
	93100	The command executed successfully
	93101	There was a time-out while communicating
	93102	The Basic Engine returned an unexpected result
	93103	The BE returned an error code
	93104	No acknowledge received from BE
	93105	Communicating with the Basic Engine failed
	93106	Unable to enter service mode
	93107	This nucleus is not supported by the engine

Example	`DS:> 931`
	`093100:`
	`Test OK @`	

Nucleus Name	**DS_BE_WriteReadDvdRDualLayer**	
Nucleus Number	932	
Description	Write data to and read data from both layers of a DVD+R DL disc through the basic engine for verification of the writing	
Technical	- Send the TRAY_IN command - Send the READ_TOC command - Use READ_TRACK_INFORMATION to determine the next free writable address on Layer 0. - In case of address 0, reserve a track of 0x1FD800 sectors for Layer 0 - Use command SEND_OPC_INFORMATION to calibrate Layer 0 - Generate test data to write to the disc - Transfer the test data to Layer 0 using PIO mode ATAPI WRITE_12 - Use READ_TRACK_INFORMATION to determine the next free writable address on Layer 1 - Use command SEND_OPC_INFORMATION to calibrate Layer 1 - Transfer the test data to Layer 1 using PIO mode ATAPI WRITE_12 - Read back the data of Layer 0 using PIO mode ATAPI READ_12 - Compare the original data with the read data and check whether the areas are equal - Read back the data of Layer 1 using PIO mode ATAPI READ_12 - Compare the original data with the read data and check whether the areas are equal	
Execution Time	Approximately 30 seconds	
User Input	None	
Error	Number	Description
	93200	The command executed successfully
	93201	This nucleus cannot be executed because the Self-Test failed
	93202	The BE cannot enter normal operating mode
	93203	Unable to send the tray in
	93204	Unable to read TOC from disc
	93205	Invalid disc is loaded, please insert a DVD+R DL disc
	93206	Unable to write, the DVD+R DL disc is full
	93207	No writable sector found
	93208	Writing the test pattern to Layer 0 failed
	93209	Writing the test pattern to Layer 1 failed
	93210	Reading back the test pattern from Layer 0 failed
	93211	Reading back the test pattern from Layer 1 failed
	93212	Compare check for Layer 0 failed
	93213	Compare check for Layer 1 failed

Example	`DS:> 932`
	`093200: Dual Layer DVD+R test on LBA 0x750 and 0x1fdf60 OK`
	`Test OK @`	

1

3.10 DISPLAY AND CONTROL BOARD (DCB)

N.A. Use the appropriate DS_ASP nuclei instead

3.11 ANALOGUE BOARD (ANAB)

N.A. Use the appropriate DS_ASP or DS_VIP nuclei instead

3.12 SYSTEM (SYS)

Nucleus Name	**DS_SYS_HardwareVersionGet**	
Nucleus Number	1200	
Description	Get the hardware version and type of the digital board	
Technical	- Read the segment header in FLASH and determine hardware version	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	120000	Getting the hardware version and type of the digital board succeeded
	120001	Getting the hardware version and type of the digital board failed
	120002	Wrong hardware version read from FLASH

Example	`DS:> 1200`
	`120000: Hardware ID = 0x29`
	`Test OK @`	

Nucleus Name	**DS_SYS_SoftwareVersionBootGet**	
Nucleus Number	1201	
Description	Get the version of the boot software on the digital board	
Technical	- Read the segment header in FLASH and determine Boot software version	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	120100	Getting the Boot software version succeeded
	120101	Getting the Boot software version failed

Example	`DS:> 1201`
	`120100: Software Boot Version = 0331`
	`Test OK @`	

Nucleus Name	**DS_SYS_SoftwareVersionDownloadGet**	
Nucleus Number	1202	
Description	Get the version of the download software on the digital board	
Technical	- Read the segment header in FLASH and determine Download software version	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	120200	Getting the Download software version succeeded
	120201	Getting the Download software version failed

Example	`DS:> 1202`
	`120200: Software Download Version = 0001`
	`Test OK @`	

Nucleus Name	**DS_SYS_SoftwareVersionApplGet**	
Nucleus Number	1203	
Description	Get the version of the application software on the digital board	
Technical	- Read the segment header in FLASH and determine Application software version	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	120300	Getting the Application software version succeeded
	120301	Getting the Application software version failed

Example	`DS:> 1203`
	`120300: Software Application Version = 0001`
	`Test OK @`	

Nucleus Name	**DS_SYS_SoftwareVersionDiagnosticsGet**	
Nucleus Number	1204	
Description	Get the version of the diagnostics software on the digital board	
Technical	- Read the segment header in FLASH and determine Diagnostics software version	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	120400	Getting the Diagnostics software version succeeded
	120401	Getting the Diagnostics software version failed

Example	`DS:> 1204`
	`120400: Software Diagnostics Version = 0001`
	`Test OK @`	

1

Nucleus Name	**DS_SYS_DvIdNumberSet**	
Nucleus Number	1207	
Description	Set the IEEE 1394 unique ID	
Technical	- Decode the user input - Store the id (<b4><b3><b2><b1><b0>) into NVRAM (offset + <b4><b3><b2><b1><b0>) - Validate the segment of storage by updating the checksum	
Execution Time	Less than 1 second.	
User Input	The unique ID to be set.	
Error	Number	Description
	120700	Setting the unique DV ID succeeded
	120701	User input is not valid.
	120702	Setting the unique DV ID failed.
	120703	Write succeeded, but checksum is corrupt.

Example	`DS:> 1207 1234567890`
	`120700:`
	`Test OK @`	

2

Nucleus Name	**DS_SYS_DvIdNumberGet**	
Nucleus Number	1208	
Description	Get the IEEE1394 unique ID	
Technical	- Read out the ID from the configuration segment and return this info to the user	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	120800	Getting the unique DV ID succeeded
	120801	Getting the unique DV ID failed
	120802	Reading an unexpected section version in NVRAM

Example	`DS:> 1208`
	`120800: The DvIdNumber is: 1234567890`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_SYS_IicWrite**	
Nucleus Number	1209	
Description	Perform an IIC write action on the digital board	
Technical	- Determine bus ID, slave address, number of bytes to be written and the byte array of data from the user input - Initialise IIC - Write the data to the slave specified through IIC	
Execution Time	Less than 1 second	
User Input	The user input the number of bytes to write followed by the bytes to write: <BusID><Slave address to write to><number of bytes to write><d1><d2><..><dx> Where the bus id is either 0 (normally used) or 1	
Error	Number	Description
	120900	Writing the data over IIC succeeded
	120901	The IIC bus was not accessible
	120902	There was a timeout writing to the device
	120903	The IIC acknowledge was not received
	120904	The communication with the device failed
	120905	Got unknown IIC bus error:
	120906	Unable to initialise IIC bus
	120907	Decoding bus ID unsigned value failed
	120908	Decoding slaveAddr unsigned value failed
	120909	Decoding nrBytes unsigned value failed
	120910	Bus ID out of range
	120911	nrBytes out of range
	120912	Unable to decode parameters

Example	`DS:> 1209 0 0xa0 1 0x6`
	`120900: 1 Bytes written`
	`Test OK @`	

2

Nucleus Name	**DS_SYS_IicRead**	
Nucleus Number	1210	
Description	Perform an IIC read action on the digital board	
Technical	- Determine the bus ID, slave address and number of bytes to read from the user input - Initialise IIC - Read the data form the slave specified	
Execution Time	Less than 1 second	
User Input	The user inputs the bus number, the address to read them from and the number of bytes to read: <BusID><Slave address to read from><Number of bytes to read> Where the bus id is either 0 (normally used) or 1	
Error	Number	Description
	121000	Reading the data over IIC succeeded
	121001	The IIC bus was not accessible
	121002	There was a timeout writing to the device
	121003	The IIC acknowledge was not received
	121004	The communication with the device failed
	121005	There was an unknown IIC bus error
	121006	IIC bus initialisation failed
	121007	Decoding bus ID unsigned value failed
	121008	Decoding slave address unsigned value failed
	121009	Decoding number of bytes unsigned value failed
	121010	Bus ID out of range
	121011	nrBytes out of range

Example	`DS:> 1210 0 0xa0 0x20`
	`Read :`
	`0x0000:  0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	`0x0008:  0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	`0x0010:  0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	`0x0018:  0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	
	`121000:  0 0xa0 0x20`
	`Test OK @`	

1

Nucleus Name	**DS_SYS_UartWrite**	
Nucleus Number	1211	
Description	Perform an UART write action on the digital board on a specified UART	
Technical	- Decode the user input for the proper port to use - Write out the bytes through the indicated port	
Execution Time	Less than 1 second.	
User Input	The user inputs the UART to write to, the number of bytes and the bytes to be written to the UART. 1=UART port 1 : not used 2=UART port 2 : Bit Engine 3=UART port 3 : Analogue board <UartNr><Number of bytes to write><d1><d2><..><dx>	
Error	Number	Description
	121100	Writing the bytes to the UART succeeded
	121101	The user provided wrong input
	121102	Writing to the UART failed

Example	`DS:> 1211 2 2 0xd1 0x01`
	`121100:`
	`Test OK @`	

2

Nucleus Name	**DS_SYS_UartRead**	
Nucleus Number	1212	
Description	Perform an UART read action on the digital board on a specified UART	
Technical	- Decode the user input for the port to read from - Read from the port and return data read to the user	
Execution Time	Less than 1 second.	
User Input	The user inputs the UART to read from. 1=UART port 1 : not used 2=UART port 2 : Bit Engine 3=UART port 3 : Analogue board <UartNr >	
Error	Number	Description
	121200	Reading the data from the UART succeeded
	121201	The user provided wrong input
	121202	Reading the data from the UART failed

Example	`DS:> 1212 2`
	`121200: The HEX value that was read is:  0x50 0xD1 0x00`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_SYS_VideoLoopThroughStart**	
Nucleus Number	1213	
Description	The video signal, which is conform the user input, is routed from the input to the output. The input is set using the proper nucleus to route the signal on the board(s). All outputs are enabled. **Note**: Before executing this nucleus the user must route the video signal on the VIP using **DS_VIP_Routing**	
Technical	- Decode the videosignal: PAL / NTSC and Y/C, RGB, CVBS,YUV - Initialise the Video Input Processor and check for valid signal - Initialise the Video Front End and start capturing frames to memory - Initialise the SYNC module - Initialise the Video Post Processing and retrieve frames from memory - Initialise the mixer - Initialise the DENC module - Route the signal to all outputs	
Execution Time	Less than 1 second, but stays running.	
Note:	First set the correct video route using	
User Input	<VideoSignal> <VideoStandard> 1. Video Signal (CVBS,YC,RGB,YUV). 2. VideoStandard (PAL, NTSC).	
Error	Number	Description
	121300	Video LoopthroughStart succeeded
	121301	User input is not valid.
	121302	Initialisation of the VIP failed.
	121303	Unable to stop the loop through before restarting.
	121304	Video Signal on the input is not a valid signal.
	121305	Initialisation of the VFE failed.
	121306	The digital board hardware information is corrupt

Example	`DS:> 1213 rgb pal`
	`121300:`
	`Test OK @`	

2

Nucleus Name	**DS_SYS_VideoLoopThroughStop**	
Nucleus Number	1214	
Description	Stop routing the video input to all the outputs.	
Technical	- Stop the DENC and the Video Front End	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	121400	VideoLoopthroughStop succeeded
	121401	DENC module on Codec failed.

Example	`DS:> 1214`
	`121400:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_SYS_VideoLoop**	
Nucleus Number	1215	
Description	The Codec generates a video signal with a specific signature and sends it to the output of the digital board. The user selects which video input path must be routed on the digital board and a video standard. The Codec encodes the video signal, checks the signature, and returns a conclusion. **Note**: Before executing this nucleus the user must route the video signal on the VIP using **DS_VIP_Routing**.	
Technical	- Evaluate user input. - Reset the global variables, video memory. - Fill the video memory with a vertical colourbar. - Initialise the Codec SYNC-module. - Initialise the Codec MIXER-module. - Initialise the Codec VPP-module. - Initialise the Codec DENC-module. - Display the original image. - Initialise the VIP. - Initialise the Codec VFE-module. - Try to detect a sync in the VIP input. - Catch the received image in memory. - Display the received image. - Compare the received image with original image. - Create a conclusion.	
Execution Time	3 seconds.	
User Input	<VideoSignal> <VideoStandard> 1. Video Signal (CVBS,YC,RGB,YUV,DTT). 2. VideoStandard (PAL, NTSC).	
Error	Number	Description
	121500	Videoloop test succeeded.
	121501	Wrong user input.
	121502	The Codec SYNC-module cannot be initialised.
	121503	The Codec MIXER-module cannot be initialised.
	121504	The Codec VideoPostProcessor-module cannot be initialised.
	121505	The Codec DENC-module cannot be initialised.
	121506	The VideoInputProcessor cannot be initialised.
	121507	The VideoInputProcessor cannot detect a sync-signal.
	121508	The Codec VideoFrontEnd-module cannot be initialised.
	121509	The Codec VideoFrontEnd-module cannot capture a video field.
	121510	When selected the RGB video input: Error in colour red signal and/or Error in colour green signal and/or Error in colour blue signal. When selected one of the other video inputs: Error in luminance signal (Y) and/or Error in chrominance signal (U) and/or Error in chrominance signal (V).
	121511	The digital board hardware information is corrupt

Example	`DS:> 1215 cvbs ntsc`
	`121500:`
	`Test OK @`
	
	`DS:> 1215 cvbs pal`
	`121508: The VideoInputProcessor cannot detect a sync-signal.`
	`Error @`
	
	`DS:> 1215 yuv ntsc`
	`121511:`
	`Error in luminance signal(Y)`
	`Error in chrominance signal(U)`
	`Error in chrominance signal(V)`
	`Error @`	

2

3

1

Nucleus Name	**DS_SYS_AudioLoop**	
Nucleus Number	1216	
Description	In this nucleus the Codec generates an audio sine signal with a specific signature and sends it to the output of the digital board. The Codec encodes the audio signal to MPEG I layer II and after this the signature of the signal will be checked. **Note**: Before executing this nucleus the user must route the audio signal on the VIP using **DS_VIP_Routing**.	
Technical	- The user needs to route the signal to the audio inputs so the test can encode the audio to MPEG I layer II - An audio signal is generated, resulting in a sine of 6kHz on the left and 12kHz on the right channel. - Then the signal is decoded in memory. - When both signals are detected correctly in the MPEG, the test succeeded.	
Execution Time	Approximately 9 seconds	
User Input	InputType: - I2S (default, when no user input is given) - SPDIF: This input needs a second parameter: - OPT (optical, **default**, when no user input is given) - COAX	
Error	Number	Description
	121600	Testing the components on the audio signal path succeeded
	121601	The audio encoder did not initialise.
	121602	No audio could be generated.
	121603	The audio encoder did not encode audio.
	121604	The audio could not be decoded.
	121605	Frequency on left channel out of range.
	121606	Frequency on right channel out of range.
	121607	The frequencies on both channels are out of range.
	121608	Frequency on left channel out of range. Right channel silent.
	121609	Right channel is silent.
	121610	Frequency on right channel out of range. Left channel silent.
	121611	Left channel is silent.
	121612	Both channels are silent.

Example	`DS:> 1216`
	`121600:`
	`Test OK @`
	
	`DS:> 1216 spdif coax`
	`121600:`
	`Test OK @`
	
	`DS:> 1216 spdif opt`
	`121600:`
	`Test OK @`	

2

3

Nucleus Name	**DS_SYS_SlashVersionSet**	
Nucleus Number	1217	
Description	Set the slash version of the system	
Technical	- Decode the user input for the slash version to set - Issue the command to set the slash version to the analogue board	
Execution Time	Less than 1 second.	
User Input	The slash version	
Error	Number	Description
	121700	Setting the slash version succeeded
	121701	Invalid slash version, no slash version is set.
	121702	Setting the slash version on the Analogue Board fails.
	121703	Invalid input.
	121704	The returned error code from the analogue board is unknown:
	121705	No DS error code known for analogue board error:
	121706	There was no response from the analogue board.
	121707	Retrieving the current version failed
	121708	Unknown recorder layout type
	121709	Validating the section where the version is stored failed
	121710	Getting the configuration section from NVRAM failed
	121711	Initialisation of IIC or reaching NVRAM failed

Example	`DS:> 1217 82`
	`121700:`
	`Test OK @`	

1

Nucleus Name	**DS_SYS_SlashVersionGet**	
Nucleus Number	1218	
Description	Get the slash version of the system	
Technical	- Issue the command to get the slash version to the analogue board - Return the received information to the user	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	121800	Getting the slash version succeeded
	121801	Getting the slash version failed
	121802	The IIC write failed
	121803	The IIC read failed
	121804	There was no response from the analogue board.
	121805	No DS error code known for analogue board error:
	121806	Reading the slash version failed
	121807	Initialisation of IIC or reaching NVRAM failed
	121808	Reading an unexpected section version in NVRAM

Example	`DS:> 1218`
	`121800: The slash version is: 82`
	`Test OK @`	

2

3

Nucleus Name	**DS_SYS_VirginModeOn**	
Nucleus Number	1220	
Description	Turn on the virgin mode functionality (e.g. the auto channel search upon start-up)	
Technical	- Issue the command to set the bit for the virgin mode to the analogue board	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	122000	Turning on the virgin mode succeeded
	122001	Turning on VirginMode on the Analogue Board failed.
	122002	The returned error code from the analogue board is unknown:
	122003	No DS error code known for analogue board error:
	122004	There was no response from the analogue board.
	122005	Section validation or write failed in NVRAM
	122006	Reading the CONFIG section from NVRAM failed
	122007	Initialisation of IIC or reaching NVRAM failed

Example	`DS:> 1220`
	`122000:`
	`Test OK @`	

1

Nucleus Name	**DS_SYS_VirginModeOff**	
Nucleus Number	1221	
Description	Turn off the virgin mode functionality (e.g. the auto channel search upon start-up)	
Technical	- Issue the command to reset the bit for the virgin mode to the analogue board	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	122100	Turning off the virgin mode succeeded
	122101	Turning off VirginMode on the Analogue Board failed.
	122102	The returned error code from the analogue board is unknown:
	122103	No DS error code known for analogue board error:
	122104	There was no response from the analogue board.
	122105	Section validation or write failed in NVRAM
	122106	Reading the CONFIG section from NVRAM failed
	122107	Initialisation of IIC or reaching NVRAM failed

Example	`DS:> 1221`
	`122100:`
	`Test OK @`	

2

Nucleus Name	**DS_SYS_VirginModeGet**	
Nucleus Number	1222	
Description	Get the virgin mode functionality status (e.g. the auto channel search upon start-up)	
Technical	- Issue the command to reset the bit for the virgin mode to the analogue board	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	122200	Getting the virgin mode succeeded
	122201	Reading the Virgin Mode flag from NVRAM failed
	122202	Initialisation of IIC or reaching the NVRAM failed
	122203	Reading an unexpected version of the section in NVRAM

Example	`DS:> 1222`
	`122200: The Virgin Mode functionality is: ON`
	`Test OK @`	

3

Nucleus Name	**DS_SYS_DisplayFatalOn**	
Nucleus Number	1223	
Description	Turn on the display-fatal functionality which displays debug-information on the display when encountering a fatal error condition from which could not be recovered automatically	
Technical	- Issue the command to use the display-fatal functionality to the analogue board	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	122300	Turning on the display-fatal functionality succeeded
	122301	Turning on the display-fatal functionality failed
	122302	The returned error code from the analogue board is unknown:
	122303	No DS error code known for analogue board error:
	122304	There was no response from the analogue board.
	122305	Section validation or write failed in NVRAM
	122306	Reading the section from NVRAM failed
	122307	Initialisation of IIC or reaching NVRAM failed

Example	`DS:> 1223`
	`122300:`
	`Test OK @`	

1

Nucleus Name	**DS_SYS_DisplayFatalOff**	
Nucleus Number	1224	
Description	Turn off the display-fatal functionality which displays debug-information on the display when encountering a fatal error condition from which could not be recovered automatically	
Technical	- Issue the command to stop using the display-fatal functionality to the analogue board	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	122400	Turning off the display-fatal functionality succeeded
	122401	Turning off the display-fatal functionality failed
	122402	The returned errorcode from the analogue board is unknown:
	122403	No DS errCode known for analogue board error:
	122404	There was no response from the analogue board.
	122405	Section validation or write failed in NVRAM
	122406	Reading the section from NVRAM failed
	122407	Initialisation of IIC or reaching NVRAM failed

Example	`DS:> 1224`
	`122400:`
	`Test OK @`	

2

1

Nucleus Name	**DS_SYS_DisplayFatalGet**	
Nucleus Number	1225	
Description	Get the display-fatal flag of the recorder	
Technical	- Issue the command to get the status of the display-fatal functionality to the analogue board	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	122500	Getting the display-fatal flag succeeded
	122501	Getting the display-fatal flag failed
	122502	The returned errorcode from the analogue board is unknown:
	122503	No DS errCode known for analogue board error:
	122504	There was no response from the analogue board.
	122505	Reading the *display fatal* flag failed
	122506	Initialisation of IIC or reaching NVRAM failed
	122507	Unexpected version read from NVRAM section
	122508	Reading the fatal flag from NVRAM failed

Example	`DS:> 1225`
	`122500: The Display Fatal functionality is ON`
	`Test OK @`	

2

Nucleus Name	**DS_SYS_SettingsSet**	
Nucleus Number	1226	
Description	Programs the digital board settings into the boot EEPROM on the digital board.	
Technical	- Evaluate user input. - Set-up IIC-bus. - Write data to boot EEPROM. - Update checksum.	
Execution Time	1 second	
User Input	A large hexadecimal value that represents the digital board hardware information string	
Error	Number	Description
	122600	The settings were successfully programmed.
	122601	User input is invalid.
	122602	IIC access failed.

Example	`DS:>1226 44424849716040014C45434F2B00000060200700000102000001010080080000445644523230303 12E303031020200000001030000000201000000000000000`
	`122600:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_SYS_SettingsDisplay**	
Nucleus Number	1228	
Description	Show the settings that are programmed in the BROM on the digital board.	
Technical	- Set-up IIC-bus. - Read Digital Board Settings from boot EEPROM. - Display the settings.	
Execution Time	1 second	
User Input	None.	
Error	Number	Description
	122800	The settings were successfully displayed.
	122801	IIC access failed.
	122802	Invalid settings
Example	DS:> 1228 Investigating the system, please wait... DBHI-string : 44424849716040014C45434F2B0000006020070000010200000101008008000044 56445232303031 2E3030310202000000010300000002010000000000000000 Boardname : LECO+ Hardware ID : 60 Download Table Filename : DVDR2001.001 RAM type : DDRAM RAM size [MB] : 128 ROM bank 1 type : NOR ROM bank 1 size [MB] : 8 ROM bank 2 type : none ROM bank 2 size [MB] : 0 EEPROM I2C-bus0 size [KB] : 0 EEPROM I2C-bus1 size [KB] : 0 Codec id : PNX7350 VIP id : SAA7136 Progressive scan id : codec internal Dvio physical layer id : PDI1394P25 Dvio link layer id : PDI1394L41 USB id : Internal Connector S2B : not available Connector IDE1 : available Connector IDE2 : available Connector PCI : not available Connector AVI : not available Connector HDMI : not available Connector DVB-T : not available Interface analog board : IIC-bus Audio output : stereo Audio clock scheme : none YUV matrix : not available Bit Engine drive : D 4.3 122800: Test OK @	

2

3

1

Nucleus Name	**DS_SYS_SettingsGet**	
Nucleus Number	1229	
Description	Get the digital board diversity settings string that is programmed in the BROM on the digital board.	
Technical	- Set-up IIC-bus. - Read Digital Board Settings from boot EEPROM. - Read System Settings from boot EEPROM. - Display the settings.	
Execution Time	1 second	
User Input	None.	
Error	Number	Description
	122900	The settings were successfully displayed.
	122901	IIC access failed.
	122902	The settings are invalid

Example	`DS:> 1229`
	`122900:`
	`4442484971604001 4C45434F2B000000602007000001020000010100800800004456445 2`
	`323030312E3030310202000000010300000002010000000000000000`
	`Test OK @`	

2

Nucleus Name	**DS_SYS_AudioLoopThroughStart**	
Nucleus Number	1230	
Description	Description: The audio input is routed from the input to all outputs. The input is set routing the signal with the proper nucleus. All outputs are enabled.	
Technical	- Encode the audio to AC3 in memory - Decode the AC3 in memory to audio on the outputs	
Execution Time	1second buffer time and 30 seconds playing.	
User Input	InputType: - I2S (default) - SPDIF (Only for recorders with 5.1 input and DTT module) InputPort: (Only for recorders with 5.1 input. For DTT modules no parameter should be filled in, so default is chosen) - OPT : Optical input path is selected (default) - COAX : Coax input path is selected	
Error	Number	Description
	123000	AudioLoopthroughStart succeeded
	123001	Resetting the audio decoder failed
	123002	Resetting the audio encoder failed
	123003	Encoding the audio failed
	123004	Decoding the audio failed

Example	`DS:> 1230`
	`123000:`
	`Test OK @`	

Example DTT	`DS:> 1230 spdif`
	`123000:`
	`Test OK @`	

Example 5.1 input	`DS:> 1230 spdif coax`
	`123000:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_SYS_AudioLoopThroughStop**	
Nucleus Number	1231	
Description	Stop routing the audio input to all the outputs	
Technical	- Send the 'Mute' command to the audio decoder and reset the audio decoder	
Execution Time	Less than 1 second.	
User Input	None.	
Error	Number	Description
	123100	AudioLoopthroughStop succeeded
	123101	Resetting the audio decoder failed
	123102	Resetting the audio encoder failed
Example	DS:> 1231 123100: Test OK @	

2

Nucleus Name	**DS_SYS_SettingsHwIdSet**	
Nucleus Number	1232	
Description	This nucleus sets the HW-Id in the HW-diversity string	
Technical	- Read out the HW-diversity string - Modify the HW-ID in that string as requested - Write the modified HW-diversity string to the EEPROM	
Execution Time	Less than 1 second.	
User Input	- <HW-ID> - The hardware ID to set - No input - The user will be asked for the ID	
Error	Number	Description
	123200	Setting the hardware ID succeeded
	123201	Setting the hardware ID failed
	123202	The user aborted setting the hardware ID, no changes made
Example	DS:> 1232 Enter the new HW ID of the digital board (Currently equals 21) Enter a value between 0 and 99: > 22 The HW ID will be set to: 22. Is that correct? ([Y/N]):y 123200: Test OK @ DS:> 1232 Enter the new HW ID of the digital board (Currently equals 22) Enter a value between 0 and 99: > The HW ID will be set to: 0. Is that correct? ([Y/N]):N 123202: Setting the HW ID was aborted by the user. Error @ DS:> 1232 99 123200: Test OK @	

3

4

1

Nucleus Name	**DS_SYS_SettingsDoubleCheck**	
Nucleus Number	1233	
Description	Double check whether stored HW-string equals actual HW as far as we can automatically detect this. An automatic and a manual mode is supported.	
Technical	- Read out the HW diversity string - Check whether these settings correspond the actual hardware - In case of modification: Write back the new HW-diversity settings.	
Execution Time	4 seconds in auto mode when everything matches	
User Input	- 'manual' or 'MANUAL' to enter manual mode - default is automatic mode where the nucleus stops upon and reports the first encountered error	
Error	Number	Description
	123300	Double checking the HW-diversity settings succeeded
	123301	Double check failed, a difference in settings was encountered
	123302	Reading the HW-diversity settings failed
	123303	Writing the modified HW-diversity settings failed

Example

```
DS:> 1233
123300:
Test OK @

DS:> 1233 manual
123300:
Test OK @

DS:> 1233
123301:
Hardware ID mismatch: in HW-Diversity string:99, actual in FLASH:0

Error @

DS:> 1233 manual
Hardware ID mismatch! in HW-Diversity string:99, actual in FLASH:0

Enter the correct HW ID of the digital board.
>   0
The HW-diversity string has been modified by you. Settings:

Board name:                         DIAG
Hardware ID:                        0
Codec IC:                           PNX7100_MF3
Video Input Processor IC:           SAA7118
Progressive Scan Deinterlacer IC:   None
Progressive Scan Denc IC:           ADV7196
I-Link physical layer circuit IC:   PDI1394P25
I-Link link layer circuit IC:       PDI1394P40
Audio clock:                        Clock scheme 1
Bit engine connector:               available
IDE connector 1:                    available
IDE connector 2:                    not available
PCI connector:                      not available
RAM size                            32MByte
ROM size (NOR FLASH bank 1)         8MByte
ROM size (NOR FLASH bank 2)         Not available
ROM size (NAND FLASH)               Not available
Is it OK to program this in
the new HW-diversity string? ([y]es/[n]o):y
Diversity HW-string programmed successfully.

123300:
Test OK @

DS:>
```

2

3

1

Nucleus Name	**DS_SYS_SettingsDlTableFilenameSet**	
Nucleus Number	1234	
Description	This nucleus sets the Download table filename in the HW-diversity string	
Technical	- Retrieve the new filename from the user - Ask the user whether the filename is correct before setting it - Update the diversity settings to use the newly entered filename	
Execution Time	Dependent on the user confirmation	
User Input	- The filename to be set - No input - No new filename will be set	
Error	Number	Description
	123400	Setting the new filename succeeded
	123401	Unsupported setting of the current HW-diversity settings
	123402	Setting the filename was aborted by the user.
Example	DS:> 1234 Enter the new Download Table Filename (Currently equals DVDR2001.001) Enter a filename: > The Download Table Filename will be set to: DVDR2001.001. Is that correct? ([Y/N]): 123402: Setting the filename was aborted by the user. Error @ DS:> 1234 Enter the new Download Table Filename (Currently equals DVDR2001.001) Enter a filename: >DVDR2002.001 The Download Table Filename will be set to: DVDR2002.001. Is that correct? ([Y/N]):Y 123400: Test OK @	

2

Nucleus Name	**DS_SYS_IicWriteRead**	
Nucleus Number	1235	
Description	Perform an IIC write-read action on the digital board	
Technical	- Determine bus ID, slave address, number of bytes to be written and the byte array of data from the user input - Initialise IIC - Write the data to the IIC slave - Read the data from the IIC slave	
Execution Time	Less than 1 second	
User Input	The user inputs the Bus ID, Slave Address, number of bytes to read, number of bytes to write and the bytes to be written <NucNr><BusId><SlaveAddr><ReadLen><WriteLen><WrByte0...WrByteN> Max number of bytes to write: 255 Max number of bytes to read: 255	
Error	Number	Description
	123500	Writing data to and reading data from the IIC slave succeeded
	123501	The IIC bus was not accessible
	123502	There was a bus timeout reading the device
	123503	The IIC acknowledge was not received
	123504	Unable to initialise IIC bus
	123505	The communication with the device failed
	123506	Unknown IIC bus error received
	123507	Decoding bus ID unsigned value failed
	123508	Decoding slave address unsigned value failed
	123509	Decoding number of bytes unsigned value failed
	123510	Bus ID out of range
	123511	Number of bytes out of range
Example	DS:> 1235 0 0xa0 0xf 1 0 0x0000: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x0008: 0x00 0x00 0x00 0x00 0x00 0x00 0x00 123500: Test OK @	

3

Nucleus Name	**DS_SYS_BuildInfoGet**	
Nucleus Number	1236	
Description	Retrieve the software build information of the Diagnostics & Service application	
Technical	- Show the information that is stored in the DVDR_BuildInfoType structure	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	123600	Retrieving build info succeeded
	123601	Retrieving build info failed
Example	DS:> 1236 123600: Version :1091 Build :20050823_0630 Release :SG1_1 Buildtype :dev Baseline :SGP29atl#SG1_1_20050609_base Variant :genlecoplus Test OK @	

1

Nucleus Name	**DS_SYS_UartSetup**	
Nucleus Number	1237	
Description	Set up a configuration for the selected UART	
Technical	- Parse user input - Use MIS_UART_Setup to setup the selected UART with the requested parameters	
Execution Time	Less than 1 second	
User Input	The user inputs 6 parameters: <UartNr><baudrate><flowcontrol><databits><parity><stopbits> UartNr: 1=UART port 1 : not used (Chrysalis only) 2=UART port 2 : Bit Engine or DTTM (Chrysalis only) 3=UART port 3 : Analogue board baudrate: 115200,62500,57600,38400,19200,9600,4800,2400,1200 flowcontrol: 0=disabled 1=enabled databits: 7 or 8 parity: “NO”, “ODD” or “EVEN” stopbits: 1 or 2	
Error	Number	Description
	123700	Setting up the selected UART succeeded
	123701	User provided Invalid setup parameters
	123702	Setting up the selected UART Failed
	123703	Selected UART is not available
Example (Chrysalis)	DS:> 1237 2 38400 0 8 NO 1 123700: Test OK @	
Example (Leco)	DS:> 1237 2 38400 0 8 NO 1 123703: The selected UART is not available Error @	

2

Nucleus Name	**DS_SYS_GLinkWriteRead**	
Nucleus Number	1238	
Description	Send out some data through the G-Link UART and read back the data. The user must short-circuit the TX and RX line of the G-Link connector.	
Technical	- UART 3 setup (1200, 8, n, 1) - Send “HELLO”. - Receive data. - Compare data with “HELLO”.	
Execution Time	1 second	
User Input	None	
Error	Number	Description
	123800	Writing and reading back data through the G-Link succeeded
	123801	Unable to setup the G-Link UART
	123802	Failed to write data to the the G-Link connector
	123803	No data was received from the G-Link connector
	123804	Invalid data was received from the G-Link connector

Example	`DS:> 1238`
	`123800:`
	`Test OK @`	

1

Nucleus Name	**DS_SYS_LowPowerStandby**	
Nucleus Number	1239	
Description	Send wakeup reason to ASP and set the set to low power standby.	
Technical	- Set up ASP - Send wakeup reason to ASP - Send low power standby command to ASP	
Execution Time	Vary (Maximum time will depend on the relative timer used)	
User Input	- wakeup reason - the wakeup reason for the DB to power up - timer - relative timing for the DB to power up if wakeup reason 1 or 3 is chosen	
Error	Number	Description
	123901	Invalid data was given by the user
	123902	Failed to communication to ASP

Example	`DS:> 1239`
	
	`Wakeup reason from Low Power Standby`
	`1) timer only`
	`2) local key or RC pressed only`
	`3) any reason`
	`or press 'a' to abort`
	`1`
	`Enter time to wake up from low power standby.`
	`Range 1 - 5 mins:`
	`1`
	
	`Entering low power standby`	

2

Nucleus Name	**DS_SYS_DivxModelIdSet**	
Nucleus Number	1240	
Description	Sets the Divx Model Id in NVRAM.	
Technical	- Initialize the NVM interface. - Read the NVRAM CONFIG section into RAM - Store the Divx model id into the CONFIG section in RAM - Validate the CONFIG section in RAM - Write the CONFIG section in RAM back into the non-volatile storage.	
Execution Time	Less than 2 seconds	
User Input	- 16-bit word containing the 12-bit Divx model Id. - For example : o 0x3031 (means Low Byte : 0x30 and High Byte 0x31)	
Error	Number	Description
	124001	Validate CONFIG section failed
	124002	Cannot read CONFIG section
	124003	Invalid user parameters
	124004	Error initializing NVRAM interfaces

Example	`DS:> 1240 0x3031`
	
	`124000:`
	
	`Test OK @`	

1

Nucleus Name	**DS_SYS_DivxModelIdGet**	
Nucleus Number	1241	
Description	Retrieves the Divx Model Id from NVRAM.	
Technical	- Read the CONFIG section from NVRAM - Check the header information of the CONFIG section to ensure that it is Version 4 - If Version 4 is detected, proceed to read and display the High Byte and Low byte of the Divx Model Id.	
Execution Time	Less than 2 seconds	
User Input	None.	
Error	Number	Description
	124101	Section version not Version 4
	124102	Cannot read CONFIG section
	124103	Error initializing NVRAM interfaces

Example	`DS:> 1241`
	
	`124100: Divx model id high byte = 0x31, low byte = 0x30`
	
	`Test OK @`	

2

3

3.13 ELECTRONIC PROGRAM GUIDE BOARD (EPGB)

N.A.

3.14 PCMCIA INTERFACE (PCMCIA)

N.A.

3.15 HIGH-DEFINITION MULTIMEDIA INTERFACE (HDMI)

Nucleus Name	**DS_HDMI_DevTypeGet**	
Nucleus Number	1500	
Description	Get the device (revision) type information of the HDMI-IC.	
Technical	- Read out the information through IIC	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	150000	Getting the device type of the nucleus succeeded
	150001	Failed to retrieve the hardware diversity string
	150002	Failed to initialise the IIC communication
	150003	The hardware was not detected although indicated by Diversity
	150004	Failed to access HDMI transmitter chip SI9030

Example	`DS:> 1500`
	`150000:`
	`Vendor ID : 0x 0 0x 1`
	`Device ID : 0x91 0x42`
	`Device Revision : 0x 0`
	`Test OK @`	

Nucleus Name	**DS_HDMI_Communication**	
Nucleus Number	1501	
Description	Check the communication between the I2C controller on the Codec and the HDMI-IC by reading and writing data to one device register. This test detects faults of the I2C lines or a defected HDMI transmitter IC.	
Technical	- Read out an accessible register in the HDMI transmitter IC - Modify this register by writing a known value to it - Read back and check this value for correctness	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	150100	Communicating with the HDMI tx chip succeeded
	150101	Failed to retrieve the hardware diversity string
	150102	Failed to initialise the IIC communication
	150103	The hardware was not detected although indicated by Diversity
	150104	An IIC-bus error occurred
	150105	There was a timeout reading the device
	150106	The IIC bus was not accessible
	150107	The IIC acknowledge was not received
	150108	There was an IIC error upon the stop-condition
	150109	The IIC bus was chosen wrong
	150110	The IIC functionality is not running
	150111	An unknown error was returned by the IIC read
	150112	The data written did not equal the date read

Example	`DS:> 1501`
	`150100:`
	`Test OK @`	

1

Nucleus Name	**DS_HDMI_EdidParse**	
Nucleus Number	1502	
Description	Return the E-EDID (Enhanced Extended Display Identification Data) contained in the HDMI / DVI able TV attached to the DVD+RW. Parse the information retrieved to print the capabilities of the TV in user understandable format	
Technical	- Read out the E-EDID through the DDC channel (IIC) - Parse the information contained in the E-EDID - Print out the information to the user in understandable format	
Execution Time	2 seconds.	
User Input	None	
Error	Number	Description
	150200	Getting the configuration of the HDMI-IC succeeded
	150201	Failed to retrieve the hardware diversity string
	150202	Failed to initialise the IIC communication
	150203	The hardware was not detected although indicated by Diversity
	150204	Retrieving the E-EDID failed
Example	DS:> 1502 Checksum OK of EDID block 0. Checking EDID Structure with 1 extensions: Checking each Extension for consistency. E-EDID structure contains no errors. EDID structure OK. Vendor Specific Data Block: 03 0c 00 10 00 Attached Display is an HDMI device. EDID Version 1.3 Total Native DTD Formats = 0 Monitor Features (CEA Byte 3): BasicAudio YCbCr444 YCbCr422 HDMI compatible EDID Supported video format 1 Supported video format 2 Supported video format 3 Supported video format 5 Supported video format 6 Supported video format 7 index:0 Linear PCM 1 channels, 48KHz, 44KHz, 32KHz, SPK:RLC FLC RC RL FC LFE FL RRC FRC .. RR .. ... FR Attached display is HDMI compatible. Display is YCbCr444 compatible. Display is YCbCr422 compatible. 150200: Test OK @	

2

3

1

Nucleus Name	**DS_HDMI_DefaultVideoSet**	
Nucleus Number	1503	
Description	Set a default video configuration in the HDMI TX chip (720x480p)	
Technical	- Write a known configuration for 720x480P in the registers of the HDMI transmitter chip	
Execution Time	Less than 1 second.	
User Input	<Id> configures the HDMI transmitter to receive an embedded or a separated sync signal at its input. Chose embedded sync if signal comes directly from Leco+ (ITU656) or separated sync if signal comes from Fli2310. Id: **<id >** / **HDMI Tx input configuration** 0 / Separated sync input (default) 1 / Embedded sync input	
Error	Number	Description
	150300	Setting the video configuration succeeded
	150301	Failed to retrieve the hardware diversity string
	150302	Failed to initialise the IIC communication
	150303	The hardware was not detected although indicated by Diversity
	150304	Setting the video configuration failed

Example	`DS:> 101 11 ntsc all`
	`010100:`
	`Test OK @`
	
	`DS:> 1516`
	`151600:`
	`Test OK @`
	
	`DS:> 1503`
	`150300:`
	`Test OK @`
	
	`or`
	
	`DS:> 101 0 ntsc pscan`
	`010100:`
	`Test OK @`
	
	`DS:> 1503 1`
	`150300:`
	`Test OK @`	

2

Nucleus Name	**DS_HDMI_Reset**	
Nucleus Number	1504	
Description	Reset the HDMI transmitter chip by means of a hardware reset and re-initialize in order to have the HDMI transmitter chip accessible again.	
Technical	- Pull the reset line connected to the HDMI transmitter low - Wait a little while - Enable the HDMI chip again by setting the reset line high	
Execution Time	9 seconds.	
User Input	None	
Error	Number	Description
	150400	Resetting the HDMI tx chip succeeded
	150401	Failed to retrieve the hardware diversity string
	150402	Failed to initialise the IIC communication
	150403	The hardware was not detected although indicated by Diversity
	150404	Resetting the HDMI tx chip trhrough PIO failed.
	150405	Software Reset of the HDMI tx chip failed.

Example	`DS:> 1504`
	`150400:`
	`Test OK @`	

3

1

Nucleus Name	**DS_HDMI_DdclicWrite**	
Nucleus Number	1506	
Description	Perform an IIC write action to a device on the DDC bus	
Technical	-	
Execution Time	Less than 1 second.	
User Input	<TimeOut> <Slave address> <offset> <nr of bytes> <d1> <.> <dx>	
Error	Number	Description
	150600	Writing to the device was OK, number of bytes is echoed
	150601	Failed to retrieve the hardware diversity string
	150602	Failed to initialise the IIC communication
	150603	The hardware was not detected although indicated by Diversity
	150604	Writing the bytes to the device failed
	150605	Decoding time-out unsigned value failed
	150606	Decoding slave address unsigned value failed
	150607	Decoding offset unsigned value failed
	150608	Decoding number of bytes unsigned value failed
	150609	Number of bytes out of range. Should be less than 17.
	150610	Incorrect number of data bytes entered
	150611	Unable to initialise IIC

Example	`DS:> 1506 1 0xa0 1 0`
	`150600:`
	`Test OK @`
	
	`DS:> 1506 1 0xa8 1 0`
	`150604: Writing the bytes to the device failed.`
	`Error @`	

2

Nucleus Name	**DS_HDMI_DdclicRead**	
Nucleus Number	1507	
Description	Perform an IIC read action to a device on the DDC bus	
Technical	-	
Execution Time	Less than 1 second.	
User Input	<TimeOut> <Slave address> <Offset> <Number of bytes>	
Error	Number	Description
	150700	
	150701	Failed to retrieve the hardware diversity string
	150702	Failed to initialise the IIC communication
	150703	The hardware was not detected although indicated by Diversity
	150704	Reading from the device on the DDC bus failed
	150705	Decoding time-out unsigned value failed
	150706	Decoding slave address unsigned value failed
	150707	Decoding offset unsigned value failed
	150708	Decoding number of bytes unsigned value failed
	150709	Unable to initialise IIC bus

Example	`DS:> 1507 1 0xa0 0 15`
	`[  0]:0x0`
	`[  1]:0xff`
	`[  2]:0xff`
	`[  3]:0xff`
	`[  4]:0xff`
	`[  5]:0xff`
	`[  6]:0xff`
	`[  7]:0x0`
	`[  8]:0x34`
	`[  9]:0xa9`
	`[ 10]:0x53`
	`[ 11]:0xc0`
	`[ 12]:0x1a`
	`[ 13]:0x0`
	`[ 14]:0x0`
	`150700:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_HDMI_ExtendedWrite**	
Nucleus Number	1508	
Description	Perform an IIC write action on port 0/1 of the HDMI transmitter	
Technical	-	
Execution Time	Less than 1 second.	
User Input	<Port> <Register> <Data> Where 0 == Port 0 and 1 == Port 1	
Error	Number	Description
	150800	Byte was written OK
	150801	Failed to retrieve the hardware diversity string
	150802	Failed to initialise the IIC communication
	150803	The hardware was not detected although indicated by Diversity
	150804	A wrong port number was given by the user
	150805	An invalid register was given by the user
	150806	Invalid data was given by the user
	150807	There was an error writing to the register indicated

Example	`DS:> 1508 0 0x10 0x22`
	`150800:`
	`Test OK @`	

2

Nucleus Name	**DS_HDMI_ExtendedRead**	
Nucleus Number	1509	
Description	Perform an IIC read action on port 0 or 1 of the HDMI transmitter	
Technical	-	
Execution Time	Less than 1 second.	
User Input	<Port> <Register> Where 0 == Port0 and 1 == Port 1	
Error	Number	Description
	150900	Byte was read and echoed OK
	150901	Failed to retrieve the hardware diversity string
	150902	Failed to initialise the IIC communication
	150903	The hardware was not detected although indicated by Diversity
	150904	A wrong port number was given by the user
	150905	An invalid register was given by the user
	150906	There was an error reading the register indicated

Example	`DS:> 1509 0 0x10`
	`150900: Data read: 0x22`
	`Test OK @`	

3

Nucleus Name	**DS_HDMI_CheckHPDTx**	
Nucleus Number	1510	
Description	Check whether Hot-Plugging of the HDMI cable is detected by the SII9030 HDMI transmitter.	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151000	The Hot Plug was detected OK by the HDMI transmitter
	151001	Failed to retrieve the hardware diversity string
	151002	Failed to initialise the IIC communication
	151003	The hardware was not detected although indicated by Diversity
	151004	Error writing to interrupt register
	151005	Error reading interrupt register
	151006	Test aborted by user
	151007	Unknown action

Example	`DS:> 1510`
	`Insert or remove the HDMI cable.(or type 'a' to abort):`
	`151006: Test aborted by user.`
	`Test OK @`
	
	`DS:> 1510`
	`Insert or remove the HDMI cable.(or type 'a' to abort):`
	`151000:`
	`Test OK @`	

4

5

Nucleus Name	**DS_HDMI_CheckHPDChrysalis**	
Nucleus Number	1511	
Description	Check whether Hot-Plugging of the HDMI cable is detected by the software. This tests the interrupt line to the Chrysalis.	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151100	The Hot Plug was detected OK by software. Interrupt line OK.
	151101	Failed to retrieve the hardware diversity string
	151102	Failed to initialise the IIC communication
	151103	The hardware was not detected although indicated by Diversity
	151104	Error writing to HDMI tx register
	151105	User aborted HPD test
	151106	Error reading from HDMI tx register

Example	`DS:> 1511`
	`Insert or remove the HDMI cable.(or type 'a' to abort):`
	`151100:`
	`Test OK @`
	
	`DS:> 1511`
	`Insert or remove the HDMI cable.(or type 'a' to abort):`
	`151105: User aborted HPD test.`
	`Test OK @`	

1

Nucleus Name	**DS_HDMI_FLI2310_DevTypeGet**	
Nucleus Number	1512	
Description	Get the device and revision information of the FLI2310	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151200	Retrieving the device type information succeeded
	151201	Failed to retrieve the hardware diversity string
	151202	Failed to initialise the IIC communication
	151203	The hardware was not detected although indicated by Diversity
	151204	The communication with the device failed

Example	`DS:> 1512`
	`151200:`
	`Chip name : 2300`
	`Chip version : 4`
	`Test OK @`	

2

Nucleus Name	**DS_HDMI_FLI2310_Communication**	
Nucleus Number	1513	
Description	Test whether the communication to the FLI2310 can be established	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151300	Something is properly read so the communication is OK
	151301	Failed to retrieve the hardware diversity string
	151302	Failed to initialise the IIC communication
	151303	The hardware was not detected although indicated by Diversity
	151304	The IIC bus was not accessible
	151305	There was a timeout reading the device
	151306	The IIC acknowledge was not received
	151307	The communication with the device failed
	151308	The IIC bus initialisation failed
	151309	The read data is not the same as the written data

Example	`DS:> 1513`
	`151300:`
	`Test OK @`	

3

Nucleus Name	**DS_HDMI_FLI2310_TestImageOn**

Nucleus Number	1514	
Description	Generate a test image using the FLI2310	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151400	Test image is generated successfully
	151401	Failed to retrieve the hardware diversity string
	151402	Failed to initialise the IIC communication
	151403	The hardware was not detected although indicated by Diversity
	151404	Unable to generate image
	151405	Unable to initialise De-inter-lacer

Example	`DS:> 1514`
	`151400:`
	`Test OK @`	

1

Nucleus Name	**DS_HDMI_FLI2310_TestImageOff**	
Nucleus Number	1515	
Description	Switch of test-image generation by the FLI2310	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151500	Test image is turned off successfully
	151501	Failed to retrieve the hardware diversity string
	151502	Failed to initialise the IIC communication
	151503	The hardware was not detected although indicated by Diversity
	151504	Unable to initialise De-Inter-lacer
	151505	IIC Error during writing DENC

Example	`DS:> 1515`
	`151500:`
	`Test OK @`	

2

Nucleus Name	**DS_HDMI_FLI2310_Routing**	
Nucleus Number	1516	
Description	Have the FLI2310 pass the video from its input to its output	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151600	Routing path is created successfully
	151601	Failed to retrieve the hardware diversity string
	151602	Failed to initialise the IIC communication
	151603	The hardware was not detected although indicated by Diversity
	151604	Unable to initialise the Chrysalis.
	151605	Unable to access de-inter-lacer

Example	`DS:> 1516`
	`151600:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_HDMI_FLI2310_ExtendedWrite**	
Nucleus Number	1517	
Description	Write to any register of the FLI2310	
Technical	-	
Execution Time	Less than 1 second.	
User Input	<Register> <RegLen:1=8bits;2=16bits> <Data>	
Error	Number	Description
	151700	The IIC write action succeeded
	151701	Failed to retrieve the hardware diversity string
	151702	Failed to initialise the IIC communication
	151703	The hardware was not detected although indicated by Diversity
	151704	Decoding register unsigned value failed
	151705	Decoding register length unsigned value failed
	151706	Decoding register data unsigned value failed
	151707	Error writing to register

Example	`DS:> 1517 0x303 1 0x9a`
	`151700:`
	`Test OK @`	

2

Nucleus Name	**DS_HDMI_FLI2310_ExtendedRead**	
Nucleus Number	1518	
Description	Read from any register of the FLI2310	
Technical	-	
Execution Time	Less than 1 second.	
User Input	<Register> <RegLen:1=8bits;2=16bits>	
Error	Number	Description
	151800	The IIC read action succeeded
	151801	Failed to retrieve the hardware diversity string
	151802	Failed to initialise the IIC communication
	151803	The hardware was not detected although indicated by Diversity
	151804	Decoding register unsigned value failed
	151805	Decoding register length unsigned value failed
	151806	Error reading from the register

Example	`DS:> 1518 0x303 1`
	`151800: Data read:  0x009A`
	`Test OK @`	

3

Nucleus Name	**DS_HDMI_FLI2310_1080I**	
Nucleus Number	1519	
Description	Set the Faroudja FLI2310 to generate a 1080I image from the video on its inputs.	
Technical	-	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	151900	Generating the up-scaled image succeeded
	151901	Failed to retrieve the hardware diversity string
	151902	Failed to initialise the IIC communication
	151903	The hardware was not detected although indicated by Diversity
	151904	Generating the up-scaled image failed
	151905	Unable to configure HDMI Tx.

Example	`DS:> 1519`
	`151900:`
	`Test OK @`	

4

1

Nucleus Name	**DS_HDMI_Audio**	
Nucleus Number	1528	
Description	Set the proper audio settings to the HDMI transmitter. **Note:** When **1528 spdif** is used to set the HDMI transmitter audio settings correctly and just **103** is entered i.s.o. **103 spdif** then 'clicking' audio is heard because the Chrysalis audio decoder does not use its SPDIF-path explicitly. **Note:** Currently there is an issue in the order of the tests: - Reboot the set. - First create the video, as audio is passed alongside the video on HDMI - Create the spdif audio using nucleus **103 spdif** - Create the spdif audio settings in the HDMI transmitter using nucleus **1528 spdif** - The spdif audio will be audible - Switch off spdif audio using nucleus **104** - Create i2s audio using nucleus **103** - Create the i2s audio settings in the HDMI transmitter using nucleus **1528** or **1528 I2S** - The audio will be audible - Switch off the audio using nucleus **104**	
Technical	-	
Execution Time	Less than 1 second.	
User Input	'SPDIF' - Set the HDMI transmitter's audio path to SPDIF 'I2S' or nothing - Set the HDMI transmitter's audio path to I2S	
Error	Number	Description
	152800	Creating the proper audio settings succeeded
	152801	Failed to retrieve the hardware diversity string
	152802	Failed to initialise the IIC communication
	152803	The hardware was not detected although indicated by Diversity

Example	`DS:> 1528 i2s`
	`152800:  i2s`
	`Test OK @`
	
	`DS:> 1528 spdif`
	`152800:  spdif`
	`Test OK @`	

2

3

4

5

3.16 ANALOGUE SLAVE PROCESSOR (ASP)

Nucleus Name	**DS_ASP_Communication**	
Nucleus Number	1600	
Description	This nucleus checks the communication between the IIC controller of the Codec and the ASP.	
Technical	- Initialise IIC-bus. - Read something from ASP. - Handle the errorcode.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	160000	Communicating with the ASP succeeded
	160001	The IIC bus was not accessible
	160002	There was a timeout reading the device
	160003	The IIC acknowledge was not received
	160004	An IIC-bus error occurred
	160005	Got unknown IIC bus error
	160006	The IIC bus initialisation failed

Example	`DS:> 1600`
	`160000:`
	`Test OK @`	

Nucleus Name	**DS_ASP_Version**	
Nucleus Number	1601	
Description	This nucleus returns the version number of the software running on the ASP or MCU and if available that of the display driver.	
Technical	- Read versions from ASP and display it.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	160100	Retrieving the software versions succeeded
	160101	The IIC bus initialisation failed.
	160102	The IIC bus failed.
	160103	The CRC checksum of the message is wrong.

Example	`DS:> 1601`
	`160100:`
	`Software version : 0.9`
	`Display driver version: 0.1`
	`Hardware version : 0x02`
	`Hardware layout : 0x03`
	`Hardware revision : 0x00`
	`Test OK @`	

1

Nucleus Name	**DS_ASP_RealTimeClockSetValues**	
Nucleus Number	1602	
Description	This nucleus is used to set the real time clock to the correct values.	
Technical	- Decode the user input. - Write RTC value to ASP.	
Execution Time	Less than 1 second.	
User Input	User must give time and date like this: hh:mm:ss dd/mm/yy	
Error	Number	Description
	160200	Setting the real time clock succeeded
	160201	The ASP initialisation failed.
	160202	The IIC bus failed.
	160203	Wrong user input.

Example	`DS:> 1602 03:20:01 22/06/03`
	`160200:`
	`Test OK @`	

2

Nucleus Name	**DS_ASP_RealTimeClockGetValues**	
Nucleus Number	1603	
Description	This nucleus is used to retrieve the actual real time from the ASP	
Technical	- Read RTC value from ASP. - Decode the RTC value.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	160300	Retrieving the real time succeeded
	160301	The ASP initialisation failed.
	160302	The IIC bus failed.
	160303	The CRC checksum of the message is wrong.
	160304	The Real Time Clock has been found invalid or was not found.

Example	`DS:> 1603`
	` Time: 03:20:17`
	` Date: 22/06/03 (dd/mm/yy)`
	`160300:`
	`Test OK @`	

3

Nucleus Name	**DS_ASP_NTCGet**	
Nucleus Number	1606	
Description	This nucleus reads the value of the NTC-resistor connected to the ASP, which tells the ambient temperature to the processor.	
Technical	- Read the ADC input pin of the ASP that is connected to the NTC-resistor. - Display this value.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	160600	Getting the NTC-value succeeded
	160601	The IIC bus failed

Example	`DS:> 1606`
	`160600: Temperature(NTC) ADC input value = 0x94`
	`Test OK @`	

4

5

1

Nucleus Name	**DS_ASP_FanSpeedSet**	
Nucleus Number	1607	
Description	This nucleus sets the speed of the fan that controls the temperature within the set.	
Technical	- Decode user input. - Set pio-pins FAN_C1 and FAN_C2.	
Execution Time	Less than 1 second.	
User Input	Speed to be set: off, low, medium, high	
Error	Number	Description
	160700	Setting the new fan speed succeeded
	160701	The IIC bus failed
	160702	The user provided wrong input

Example	`DS:> 1607 low`
	`160700:`
	`Test OK @`	

2

Nucleus Name	**DS_ASP_LightDisplay**	
Nucleus Number	1608	
Description	This nucleus lights the entire display.	
Technical	- Set all segments on in the display buffer. - Set the grids correct in the display buffer. - Send the display buffer to the ASP.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	160800	Lighting the entire display succeeded
	160801	IIC-bus communication failed

Example	`DS:> 1608`
	`160800:`
	`Test OK @`	

3

Nucleus Name	**DS_ASP_BlinkDisplay**	
Nucleus Number	1609	
Description	This nucleus lights the entire display, and lets it blink. Only for ASP	
Technical	- Set all segments on in the blink buffer. - Set the grids correct in the blink buffer. - Send the blink buffer to the ASP.	
Execution Time	Less than 1 second.	
User Input	None or ‘on’ to start the blinking of the display. ‘off’ To stop the blinking of the display.	
Error	Number	Description
	160900	The test succeeded
	160901	IIC-bus communication failed
	160902	The user provided wrong input

Example ASP	`DS:> 1609`
	`160900:`
	`Test OK @`
	
	`DS:> 1609 off`
	`160900:`
	`Test OK @`	

4

5

1

Nucleus Name	**DS_ASP_DimmingDisplay**	
Nucleus Number	1610	
Description	This nucleus lights the entire display, and dims it.	
Technical	- Change in a loop the display brightness from maximum to minimum.	
Execution Time	Less than 1 second.	
User Input	'ON' or 'OFF'	
Error	Number	Description
	161000	The test succeeded
	161001	IIC-bus communication failed
	161002	The user provided wrong input

Example	`DS:> 1610 ON`
	`161000:`
	`Test OK @`	

2

Nucleus Name	**DS_ASP_ClearDisplay**	
Nucleus Number	1611	
Description	This nucleus clears the display and deactivates dimming/blinking functionality	
Technical	- Make the display buffer empty. - Make the blink buffer empty. - Send the display buffer to the ASP. - Send the blink buffer to the ASP.	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	161100	The test succeeded
	161101	IIC-bus communication failed

Example	`DS:> 1611`
	`161100:`
	`Test OK @`	

3

Nucleus Name	**DS_ASP_KeyBoard**	
Nucleus Number	1612	
Description	This nucleus checks all keys of the keyboard by having the user confirm the key-code displayed of all keys. If the user presses 'a' or 'A' the test is aborted. If the user presses 'o' or 'O' the test is indicated as OK. If the user holds down 'PLAY' for more than a second the test is indicated as OK, if the user holds down 'RECORD' the test is indicated as failed. Indicate the number of keys pressed to the user, both in the terminal logging and on the display.	
Technical	- Initialise the display. - Display the key pressed by the user on the display. - Monitor the service port for an abort and get the next key pressed. - Update the display and repeat previous steps until user stops / confirms. - Display the number of keys that were pressed.	
Execution Time	Depends on the user.	
User Input	None	
Error	Number	Description
	161200	Checking all keys succeeded
	161201	IIC-bus communication failed
	161202	The user signals a failure of the keyboard
	161203	The user aborted the test

Example	`DS:> 1612`
	`161200: 3 keys were pressed.`
	`Test OK @`	

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5

1

Nucleus Name	**DS_ASP_RemoteControl**	
Nucleus Number	1613	
Description	This nucleus checks the interface to the remote control by having the user confirm the key-code displayed. At least one key must be tested. If the user presses 'a' or 'A' the test is aborted. If the user presses 'o' or 'O' the test is indicated as OK. If the user holds down 'PLAY' for more than a second the test is indicated as OK, if the user holds down 'RECORD' the test is indicated as failed. Indicate the number of keys pressed to the user, both in the terminal logging and on the display.	
Technical	- Initialise the display. - Display the key pressed by the user on the display. - Monitor the service port for an abort and get the next key pressed. - Update the display and repeat previous steps until user stops / confirms. - Display the number of keys that were pressed.	
Execution Time	Depends on the user.	
User Input	None	
Error	Number	Description
	161300	The test succeeded
	161301	IIC-bus communication failed
	161302	The user signals a failure of the remote control
	161303	The user aborted the test

Example	`DS:> 1613`
	`161300: 4 keys were pressed.`
	`Test OK @`	

2

Nucleus Name	**DS_ASP_LEDsOn**	
Nucleus Number	1614	
Description	Switches on the display leds.	
Technical	ASP specific - Check if the analogue board is a MOBO board, if so: - Read the ASP pio port. - Set the RECORD-LED bit on in this port. - Write the ASP pio port. - Read the ASP pio port. - Set the TRAY-LED bit on in this port. - Write the ASP pio port. - Read the ASP pio port. - Set the EPG-LED bit on in this port. - Write the ASP pio port. - Else - Set the RECORD-LED bit on. - Write the external ASP pio port. - Set the TRAY-LED bit on. - Write the external ASP pio port. - Set the EPG-LED bit on. - Write the external ASP pio port. MCU Specific - Get the user input and capitalize it and check validity - Check which lights should be turned on - Write the command to the MCU	
Execution Time	Less than 1 second.	
User Input	None, Green or Red: Choose which colour of the bi-led should be lit with the rest (only for OLAL22PREMIER variant)	
Error	Number	Description
	161400	Switching on the LEDs succeeded
	161401	IIC-bus communication failed
	161402	Invalid parameter

Example	`DS:> 1614`
	`161400:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_ASP_LEDsOff**	
Nucleus Number	1615	
Description	This nucleus switches off the display leds.	
Technical	ASP specific - Check if the analogue board is a MOBO board, if so: - Read the ASP pio port. - Set the RECORD-LED bit off in this port. - Write the ASP pio port. - Read the ASP pio port. - Set the TRAY-LED bit off in this port. - Write the ASP pio port. - Read the ASP pio port. - Set the EPG-LED bit off in this port. - Write the ASP pio port. - Else - Set the RECORD-LED bit off. - Write the external ASP pio port. - Set the TRAY-LED bit off. - Write the external ASP pio port. - Set the EPG-LED bit off. - Write the external ASP pio port. MCU Specific - Write the command to the MCU to turn all display leds off	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	161500	Switching off the LEDs succeeded
	161501	IIC-bus communication failed

Example	`DS:> 1615`
	`161500:`
	`Test OK @`	

2

Nucleus Name	**DS_ASP_Reset**	
Nucleus Number	1616	
Description	This nucleus resets the ASP.	
Technical	- Reset the ASP by toggling the reset wire by a GPIO pin of the codec. - Wait 500ms according to the HSI. - Read Status from ASP. - Put ASP in normal mode. - Configure general ASP PIO. - Make a ASP pio pin low to read the version. - Get GPP40 - GPP47 and GPP48 - GPP55. - Decode hardware version, revision, and layout. - Configure the ASP clock. - Configure display, part 1. - Configure display, part 2. - Configure blinking. - Configure external ASP PIO. - Configure ADC input. - Configure remote control input. - Enable power on the AV3.	
Execution Time	3 seconds.	
User Input	None	
Error	Number	Description
	161600	Reset command succeeded
	161601	IIC-bus communication failed

Example	`DS:> 1616`
	`161600:`
	`Test OK @`	

3

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1

Note:	**Expert use only!**	
Nucleus Name	**DS_ASP_Extended**	
Nucleus Number	1617	
Description	With this nucleus, possible problems in the factory can be worked around. It: - Enables the user to switch the General Purpose Pins of the ASP - Lets the user read out an ADC input value.	
Technical	- Decode user input. - Execute the parameter command.	
Execution Time	Less than 1 second.	
User Input	**Either <GPP> <0|1>** * GPP = The General Purpose I/O Pin: * IPRO * FAN_C1 * FAN_C2 * DD_ON * EPG_LED * ASC1 * IMUTE * REC_LED * TRAY_LED **Or <ADC pin>** * 8SC2 or WSRI * WSFI * TEMP * FBIN * FOME or AFC * WU * KEY1 * KEY2 See example below	
Error	Number	Description
	161700	The test succeeded
	161701	The IIC-bus failed.
	161702	Invalid user input.

Example	`DS:> 1617 temp`
	`161700: TEMP ADC input value: 143`
	`Test OK @`
	
	`DS:> 1617 rec_led 1`
	`161700:`
	`Test OK @`	

2

3

1

Nucleus Name	**DS_ASP_Watchdog**	
Nucleus Number	1618	
Description	This nucleus configures the watchdog timer of the ASP, and waits till the watchdog expires. The watchdog time-out is 10 seconds. On expiry of the watchdog timer, the ASP switching off, and on its power supply, and resets the main controller. So, this nucleus will not return an error code when the test succeeded, but the system will restart again.	
Technical	- Configure watchdog timer. - Wait till the watchdog expired.	
Execution Time	10 seconds.	
User Input	None	
Error	Number	Description
	161801	IIC-bus communication failed.
	161802	The ASP did not reset the host processor.
Example	DS:> 1618 Waiting till the watchdog expires. Factory Diagnostics and Service Software DVD Video Recorder (Sep 10 2004, 08:11:24) Version :662 Build :20040910_0515 Release :C1_1 Buildtype :no Baseline :F_C1_195 Variant :verum:dvdrw2_lib DS:>	

2

Nucleus Name	**DS_ASP_Reboot**	
Nucleus Number	1619	
Description	This command forces a reboot of the main controller. The ASP shutdown the digital board power supply and then switch it on to force reset. So, this nucleus will not return an error code when the test succeeded, but the system will restart again.	
Technical	- Send command reboot to ASP.	
Execution Time	2 seconds.	
User Input	None	
Error	Number	Description
	161901	IIC-bus communication failed.
	161902	The ASP did not reset the host processor.
Example	DS:> 1619 Factory Diagnostics and Service Software DVD Video Recorder (Sep 10 2004, 08:11:24) Version :662 Build :20040910_0515 Release :C1_1 Buildtype :no Baseline :F_C1_195 Variant :verum:dvdrw2_lib DS:>	

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1

Nucleus Name	**DS_ASP_PioExtended**	
Nucleus Number	1623	
Description	This nucleus enables the user to switch all the General Purpose Pins of the ASP.	
Technical	- Decode user input. - Execute the parameter command.	
Execution Time	Less than 1 second.	
User Input	One of the next parameters can be used • "GPIO CONFIG <GPP> <DIR> <MODE>" • "GPIO SET <GPP> <VALUE>" • "GPIO GET <GPP>" • "ADC GET <GPP>" • "ADC CONFIG <BYTE0> <BYTE1> <BYTE2>" (See CONFIG_ADC command parameters) where <GPP> = 0 .. number of GPP pins where <DIR> = 0 (input) or 1 (output) where <MODE> = 0 or 1 0 = input without notification/push-pull output 1 = input with notification/open drain output where <VALUE> = 0 (low) or 1 (high)	
Error	Number	Description
	162300	The test succeeded
	162301	Invalid user input.

Example	`DS:> 1623 GPIO SET 45 0`
	`162300:`
	`Test OK @`	

2

Nucleus Name	**DS_ASP_8SC2Check**	
Nucleus Number	1624	
Description	Check if the 8SC2 signal (slow blanking) can be set low, medium and high. The user must connect SCART2 (pin8) to SCART1 (pin8) on the outside of the set. Works on EURO sets only.	
Technical	- Set the SCART1_PIN8_OUT pin low - Measure the value on the ASP 8SC2 input ADC - Set the SCART1_PIN8_OUT pin to medium level - Measure the value on the 8SC2 input ADC - Set the SCART1_PIN8_OUT pin Matrix high - Measure the value on the ASP 8SC2 input ADC	
Execution Time	Less than 1 second	
User Input	None	
Error	Number	Description
	162400	Detecting 8SC2 signal succeeded
	162401	Detecting 8SC2 signal failed
	162402	This test is not applicable for current HW layout
	162403	Could not retrieve hardware version from ASP

Example	`DS:> 1624`
	`162400:`
	`Test OK @`	

3

4

5

3.17 ANALOGUE BOARD EEPROM (AROM)

N.A.

3.18 VIDEO MATRIX (VMIX)

N.A. Use the appropriate DS_ASP or DS_VIP nuclei instead

3.19 AUDIO MATRIX (SOUND PROCESSOR) (AMIX)

N.A. Use the appropriate DS_ASP or DS_VIP nuclei instead

3.20 FRONTEND (TUNER) (FRE)

Nucleus Name	**DS_FRE_Communication**	
Nucleus Number	2000	
Description	This nucleus checks the communication between the IIC controller of the Codec and the Front End (Tuner) on the analogue board	
Technical	- Determine whether anything can be read from the FRE through IIC	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	200000	Communicating with the front end succeeded
	200001	The IIC bus was not accessible
	200002	There was a timeout reading the device
	200003	The IIC acknowledge was not received
	200004	An IIC-bus error occurred
	200005	Got unknown IIC bus error
	200006	The IIC bus initialisation failed

Example	`DS:> 2000`
	`200000:`
	`Test OK @`	

Nucleus Name	**DS_FRE_ChannelSelect**
Nucleus Number	2001
Description	This nucleus sets the tuner to receive a valid audio and video signal
Technical	- Parse the user input to determine all parameters to set - Pass these parameters to the respective parts using IIC
Execution Time	Less than 1 second
User Input	<Frequency*16> <video standard id> <Tuner> Tuner frequency: to tune the tuner to e.g. 216 MHz, this parameter must be 3456. (Since 216*16 = 3456. This is to avoid the decimal points to the parameter list.)

Name	Colour system	Transmission standard	Sound modulation
PAL_BG_S	PAL	BG	FM-Stereo
PAL_BG_M	PAL	BG	FM-Mono / NICAM
PAL_I_M	PAL	I	FM-Mono / NICAM
PAL_DK_S	PAL	DK	FM-Stereo
PAL_DK_M	PAL	DK	FM-Mono / NICAM
NTSC_M_S	NTSC	M	FM-Stereo

Video Standard ID: The table below shows which video standards are possible

ID	Europe	Nafta / Apac
0	PAL_BG_S	NTSC
1	PAL_BG_M	Invalid
2	PAL_I_M	Invalid
3	PAL_DK_S	Invalid
4	PAL_DK_M	Invalid

* Video Standard ID: For TCSM0601PD25F tuner only

ID	Europe
0	PAL_BG
1	PA_I
2	PAL_DK
3	SECMA L
4	SECAM L'

Tuner: Select the tuner type that you want to tune. This input is not mandatory. (If no input is detected, tuner will be defined run-time (if recognised).)

Tuner	Tuner ID	Runtime Detected
1	FE1316 (Europe Philips)	V
2	FE1319 (Europe Philips)	V
3	TMQZ2-403A (Europe ALPS)	
4	JS6B2-L121 (Europe Xuguang)	
5	TCPK0601 (APAC Samsung)	
6	TCMN0682 (NAFTA Samsung)	V
7	TCPK0600 (APAC Samsung)	
8	TCPD0601 (APAC Samsung)	
9	VPC12R_ENG56PPG1F (Panasonic)	
10 *	TCSM0601PD25F (Europe Samsung)	
11	TCSN9082PA26AF (Nafta Samsung)	

* Refer to Video Standard ID table for TCSM0601PD25F tuner

Error	Number	Description
	200100	Setting the tuner channel succeeded
	200101	Invalid user input
	200102	Getting the version of the set failed
	200103	Configuration of the tuner failed
	200104	Configuration of the IF module failed

Example

```
DS:> 2001 3456 0 1
200100:
Test OK @
```

1

2

<table>
<tr><td>Note</td><td colspan="2">European sets only!!</td></tr>
<tr><td>Nucleus Name</td><td colspan="2">DS_FRE_CommunicationIfModule</td></tr>
<tr><td>Nucleus Number</td><td colspan="2">2003</td></tr>
<tr><td>Description</td><td colspan="2">This nucleus checks the communication with the IF(Intermediate Frequency) module of the front end</td></tr>
<tr><td>Technical</td><td colspan="2">- Determine whether the IF module can be read through IIC</td></tr>
<tr><td>Execution Time</td><td colspan="2">Less than 1 second</td></tr>
<tr><td>User Input</td><td colspan="2"><Tuner>

Tuner: Select the tuner type that you want to tune. This input is not mandatory. (If no input is detected, tuner will be defined run-time (if recognised).)

<table>
<tr><th>Tuner</th><th>Tuner ID</th><th>Runtime Detected</th></tr>
<tr><td>1</td><td>FE1316 (Europe Philips)</td><td>V</td></tr>
<tr><td>2</td><td>FE1319 (Europe Philips)</td><td>V</td></tr>
<tr><td>3</td><td>TMQZ2-403A (Europe ALPS)</td><td></td></tr>
<tr><td>10</td><td>TCSM0601PD25F</td><td></td></tr>
</table></td></tr>
<tr><td>Error</td><td>Number</td><td>Description</td></tr>
<tr><td></td><td>200300</td><td>Communicating with the front end succeeded</td></tr>
<tr><td></td><td>200301</td><td>The IIC bus was not accessible</td></tr>
<tr><td></td><td>200302</td><td>There was a timeout reading the device</td></tr>
<tr><td></td><td>200303</td><td>The IIC acknowledge was not received</td></tr>
<tr><td></td><td>200304</td><td>An IIC-bus error occurred</td></tr>
<tr><td></td><td>200305</td><td>Got unknown IIC bus error</td></tr>
<tr><td></td><td>200306</td><td>The IIC bus initialisation failed</td></tr>
<tr><td></td><td>200307</td><td>Not a Europe set</td></tr>
<tr><td>Example</td><td colspan="2">DS:> 2003 3
200300:
Test OK @</td></tr>
</table>

3.21 HARD DISK DRIVE (HDD)

Nucleus Name	**DS_HDD_Communication**	
Nucleus Number	2100	
Description	Check the communication between the digital board and the hard disk drive by querying the device type of the hard disk drive	
Technical	- Initialise/start IDE - Check for an ATA device on the IDE interface	
Execution Time	3 seconds	
User Input	None	
Error	Number	Description
	210000	Communication with the hard disk drive succeeded
	210001	The initialisation of IDE failed
	210002	Communication with the hard disk drive failed

Example	`DS:> 2100`
	`210000: Found a hard disk drive: MASTER device on IDE interface 1`
	`Test OK @`	

Nucleus Name	**DS_HDD_Reset**	
Nucleus Number	2101	
Description	Reset the hard disk drive	
Technical	- Initialise/start IDE - Check for an ATA device on the IDE interface - Toggle the IDE reset pin of the selected interface	
Execution Time	1 second	
User Input	None	
Error	210100	Resetting the hard disk drive succeeded
	210101	The initialisation of IDE failed
	210102	Communication with the hard disk drive failed
	210103	Failed to reset the hard disk drive

Example	`DS:> 2101`
	`210100: Resetting IDE interface 1 succeeded`
	`Test OK @`	

Nucleus Name	**DS_HDD_VersionGet**	
Nucleus Number	2102	
Description	Get the vendor- and product identification and the product revision level of the hard disk drive	
Technical	- Initialise/start IDE - Send ATA command IDENTIFY DRIVE - Display the serial, firmware revision and model information	
Execution Time	Less than 1 second.	
User Input	None	
Error	210200	Version info successfully
	210201	The initialisation of IDE failed
	210202	Communication with the hard disk drive failed
	210203	Failed to get version info from the hard disk drive

Example	`DS:> 2102`
	`210200: Serial number = F19LP8WE,Firmware rev. = VAM51JJ0 ,Model nu`
	`mber = Maxtor 2F040L0`
	`Test OK @`	

1

Nucleus Name	**DS_HDD_WriteRead**	
Nucleus Number	2103	
Description	Write data to the hard disk, read it back and verify the data read back.	
Technical	- Initialise/start IDE - Generate a random sector number - Generate test data to write to the disk - Read the data from the sector using READ_SECTOR(S) and store this in a temporarily buffer - Transfer the test data to the disk location using ATA command WRITE_SECTOR(S) - Read back the data from the disk location using ATA command READ_SECTOR(S) - Compare the two data areas and check whether the areas are equal - Write back the data from the temporarily buffer	
Execution Time	3 seconds	
User Input	None	
Error	210300	Version info successfully
	210301	The initialisation of IDE failed
	210302	Communication with the hard disk drive failed
	210303	Unable to retrieve device capabilities from HDD
	210304	Writing data to HDD failed
	210305	Reading back data from HDD failed
	210306	Data read back did not equal written data

Example	`DS:> 2103`
	`210300: OK, writing to sector 3f95776`
	`Test OK @`	

2

Nucleus Name	**DS_HDD_CapabilitiesGet**	
Nucleus Number	2104	
Description	Get the cylinders, heads and track information of the hard disk drive	
Technical	- Initialise/start IDE - Send ATA command Identify drive information - Display all required capabilities	
Execution Time	Less than 1 second.	
User Input	None	
Error	210400	Capabilities are displayed correctly
	210401	The initialisation of IDE failed
	210402	Communication with the hard disk drive failed
	210403	Failed to get information from the hard disk drive

Example	`DS:> 2104`
	`Number of cylinders 16383`
	`Number of heads 16`
	`Number of sectors per track 63`
	`Capacity in sectors 80293248`
	`Number of current cylinders 16383`
	`Number of current heads 16`
	`Number of current sectors per track 63`
	`Current capacity in sectors 16514064`
	`Number of unformatted bytes per track 0`
	`Number of unformatted bytes per sector 0`
	`210400:`
	`Test OK @`	

3

4

1

Nucleus Name	**DS_HDD_Diagnostics**	
Nucleus Number	2105	
Description	Shall perform the internal diagnostic tests implemented by the hard disk drive.	
Technical	- Initialise/start IDE - Send the diagnostic (ATA) command to the HDD device	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	210500	The Diagnostic test on the hard disk drive device succeeded
	210501	The initialisation of IDE failed
	210501	The hard disk drive failed
	210501	The diagnostics ATA command failed

Example	`DS:> 2105`
	`210500:`
	`Test OK @`	

2

Nucleus Name	**DS_HDD_UploadImage**	
Nucleus Number	2106	
Description	Upload raw data from the HDD to a DVD+RW	
Technical	- Initialise/start IDE - Check for an ATA device on the IDE interface - Check for an ATAPI DVD+RW drive - Calibrate the DVD+RW laser - Repeat until transfer is completed - Read x MB from HDD source sector into SDRAM - Write x MB from SDRAM to the destination sector on DVD+RW - Read sector 0x34000 on DVD containing the transfer table to use - Update the contents of the table and write it back	
Execution Time	Depending on the number of sectors to transfer it may take approximately 2 MB per second.	
User Input	The user can enter 3 parameters in the next format: <COMMAND> <HDD sector> <nr of HDD sectors> <COMMAND> is one of the next strings: • NEW: Create a new transfer image table, <HDD sector> and <nr of HDD sectors> must be entered. • ADD: Add a section to the current transfer table, <HDD sector> and <nr of HDD sectors> must be entered • READ: Read the current transfer image table from the DVD. The tray of the DVD drive is sent out an the user is asked to insert a DVD+RW • VIEW: View the contents of the current transfer table • GO: Copy data from the HDD to the DVD+RW according to the currently entered transfer table <HDD sector> = the sector on HDD to start reading from <HDD sectors> = the number of HDD sectors to transfer	
Error	Number	Description
	210600	Uploading image succeeded
	210601	The initialisation of IDE failed
	210602	Communication with the hard disk drive failed
	210603	Communication with the AV3 failed
	210604	No DVD+RW is available
	210605	Calibrating DVD+RW failed
	210607	Error while reading image data from HDD
	210608	Error while writing image to DVD+RW
	210609	Unable to update the transfer table on the DVD+RW

Example

```
DS:> 2106
210605: Invalid user input
Error @

DS:> 2106 READ
Please insert a writable DVD+RW
210609: Unable to update transfer table
Error @

DS:> 2106 NEW 0x1 2048
Creating new transfer table
Adding entry 1 to transfer table
Length 1 entries
210605:  NEW 0X1 2048
Test OK @

DS:> 2106 VIEW
Length 1 entries
Entry 1:
  hddPosition  : 0x1
  nrHddSectors : 0x800
  dvdPosition  : 0x34040
  nrDvdSectors : 0x200
210605:  VIEW
Test OK @

DS:> 2106 ADD 0x2001 20480
Adding entry 2 to transfer table
Length 2 entries
210605:  ADD 0X2001 20480
Test OK @

DS:> 2106 GO
Please insert a writable DVD+RW
Executing transfer table 1 of 1, size 1048576 bytes (=1 MB)
Calibrating laser of DVD drive
Start creating image on DVD at 0x34040. Checking ... <OK>
210600: Transfer OK
Test OK @
```

1

Nucleus Name	**DS_HDD_DownloadImage**	
Nucleus Number	2107	
Description	Download a raw image from a DVD+RW disc to the hard disc drive. This image will be written on the hard disc drive.	
Technical	- Initialise/start IDE - Check for an ATA device on the IDE interface - Check for an ATAPI DVD+RW drive - Mount the DVD containing the image to transfer - Read sector x containing the transfer table to use - Read the source sector, destination sector and transfer length from the transfer table - Repeat until transfer is completed - Read x MB from DVD source sector into SDRAM - Write x MB from SDRAM to the destination sector on HDD	
Execution Time	Assumption based on 4.3GB data → 11 movies of 3 minutes. 33 minutes	
User Input	Actions: The tray of the DVD drive is sent out and the user is asked to insert a DVD+RW	
Error	Number	Description
	210700	Downloading image succeeded
	210701	The initialisation of IDE failed
	210702	Communication with the hard disk drive failed
	210703	Communication with the AV3 failed
	210704	No disc is available
	210705	Invalid medium is mounted
	210706	Unable to read the transfer table from DVD
	210707	Error while reading image from DVD
	210708	Error while writing image to HDD
Example	DS:> 2107 Please insert the Master DVD <OK> Executing transfer table 1 of 4 524288 bytes Dvd Sector 0x50000 Dvd Sector Count 256 Hdd Sector 0x40000 Hdd Sector Count 1024 please wait ..<OK> Executing transfer table 2 of 4 10485760 bytes (=10 MB) Dvd Sector 0x70000 Dvd Sector Count 5120 Hdd Sector 0x60000 Hdd Sector Count 20480 please wait ..<OK> Executing transfer table 3 of 4 524288 bytes Dvd Sector 0x50000 Dvd Sector Count 256 Hdd Sector 0x40000 Hdd Sector Count 1024 please wait ..<OK> Executing transfer table 4 of 4 524288 bytes Dvd Sector 0x50000 Dvd Sector Count 256 Hdd Sector 0x40000 Hdd Sector Count 1024 please wait ..<OK> 210700: Transfer OK Test OK @	

2

3

1

Nucleus Name	**DS_HDD_RandomReadScan**	
Nucleus Number	2108	
Description	Perform a short random read scan of x times 1000 commands (x is selectable between 1 to 20) to test the servo. If anything would be wrong with the servo or tracking, the result would be too slow. Recheck the LBA addresses that caused the disc to fail in order to avoid incorrect failure caused by shock or vibrations during the measurement.	

Technical	- Initialise the HDD connection
	- Get the user input
	- Generate a random sequence of test sectors
	- For every sector in the random sequence do
	  - Read 1000 sectors and measure the time to perform this action
	  - Update a list of statistics about the measurement
	- Display statistical information about the test sequence
	- If more than 10% above 160 ms and/or more than 1 request in between 200 & 250ms and/or requests above 250 ms make the result of the test fail.	

Execution Time	Depending on the user input x times 4 minutes	
User Input	parameters in the next format: <nr_cmds><GRAPH> - Number of commands to send (in multiples of 1000), if no input is given 1000 commands will be sent - "GRAPH" optional to print out the measured read scan graph	
Error	Number	Description
	210800	Communication with the hard disk drive succeeded
	210801	The initialisation of the HDD failed
	210802	Invalid user input
	210803	Performance failure: more than 10% above 160 ms and/or more than 1 request in between 200 & 250ms and/or requests above 250 msec
	210804	Read error, unable to read a specified sector from disc

Example	`DS:> 2108 1`
	`210800:`
	`Minimum access time = 142 msec`
	`Maximum access time = 159 msec`
	`Average access time = 146 msec`
	`Number of commands below 160 msec = 1000`
	`Number of commands between 160 and 200 msec = 0`
	`Number of commands between 200 and 250 msec = 0`
	`Number of commands above 250 = 0`
	`Test OK @`	

2

3

1

Nucleus Name	**DS_HDD_LinearSurfaceScan**	
Nucleus Number	2109	
Description	Perform a linear surface scan so that most of the disc is covered.	

Technical	- Initialise the HDD connection
	- Get the user input
	- Generate a sequence of test sectors according to the user input
	- For every sector in the sequence do
	  - Read the sector and measure the time to perform this action
	  - Update a list of statistics about the measurement
	- Display statistical information about the test sequence
	- If more than 1% above 100 ms and/or more than 0.1% above 200 msec and/or requests above 300 msec make the result of the test fail.	

Execution Time	Depending on the user input and HDD size	
User Input	parameters in the next format: <SECTORS> <STEP> <LOW> <HIGH> where - SECTORS: Specifies the number of sectors to read in each access - STEP: Specifies the step (in sectors) between each access. - LOW: The start sector address of an explicit range of LBA addresses to be used for testing. If no value is entered LBA 0 will be used - HIGH: The end sector address of an explicit range of LBA addresses to be used for testing. If no value is entered the maximum LBA will be used. The user must enter either no parameter or all parameters If no parameters are entered the next defaults will be used: 1000 sector each access, steps of 1000 sectors and an address range from 0 to the maximum LBA	
Error	Number	Description
	210900	Communication with the hard disk drive succeeded
	210901	The initialisation of the HDD failed
	210902	Invalid user input
	210903	Performance failure: more than 10% above 160 ms and/or more than 1 request in between 200 & 250ms and/or requests above 250 msec
	210904	Read error, unable to read a specified sector from disc

Example	`DS:> 2109 1000 1000 0 100000`
	`210900:`
	`Executed 100 linear seeks of 1000 sectors each`
	`Minimum access time = 141 msec`
	`Maximum access time = 148 msec`
	`Average access time = 141 msec`
	`Number of commands below 160 msec = 100`
	`Number of commands between 160 and 200 msec = 0`
	`Number of commands between 200 and 250 msec = 0`
	`Number of commands above 250 = 0`
	`Test OK @`	

2

3

1

Nucleus Name	**DS_HDD_SpinOff**	
Nucleus Number	2110	
Description	Put the HDD in parking position by sending the sleep command so it can be moved without endangering the mechanical parts	
Technical	- Initialise/start IDE - Send the Sleep (ATA) command to the HDD device	
Execution Time	Less than 1 second.	
User Input	None	
Error	Number	Description
	211000	The spin off of the hard disk drive device succeeded
	211001	The initialisation of IDE failed
	211002	The hard disk drive failed
	211003	The sleep ATA command failed
Note	**All other HDD nuclei will not work until DS_HDD_Reset is executed**	

Example	`DS:> 2110`
	`211000:`
	`Test OK @`	

2

Nucleus Name	**DS_HDD_SectorRead**	
Nucleus Number	2111	
Description	Read 512 bytes from a specified sector on HDD	
Technical	- Get the user input - Read the data from the sector using READ_SECTOR(S) and display the contents	
Execution Time	Less than 1 second.	
User Input	3 parameters in the next format: <sector> <offset> <length> where - sector is the sector to read from - offset is the byte-offset in the sector buffer (0 .. 256) - length the length (in bytes) of the data to display (1 .. 256)	
Error	Number	Description
	211100	Reading from HDD succeeded
	211101	Invalid user input
	211102	The initialisation of IDE failed
	211103	The hard disk drive failed
	211104	The read command failed

Example	`DS:> 2111 0x80001 0 128`
	`211100:`
	`0x00 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x08 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x10 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x18 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x20 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x28 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x30 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x38 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x40 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x48 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x50 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x58 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x60 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x68 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x70 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	`0x78 : 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF 0xFF`
	
	`Test OK @`	

3

4

1

Nucleus Name	**DS_HDD_SetPower**	
Nucleus Number	2112	
Description	Set the power of the HDD On or Off	
Technical	- Get user input - Set the IDE1_POWER PIO line to the desired value	
Execution Time	Less than 1 second.	
User Input	1 parameter: "ON" , enables the power of the HDD "OFF" , turn off the power of the HDD	
Error	Number	Description
	211200	Setting the HDD power mode succeeded
	211201	Setting the HDD power mode failed
	211202	Invalid user input
Note	**All other HDD nuclei will not work until DS_HDD_Reset is executed**	

Example	`DS:> 2112 off`
	`211200:`
	`Test OK @`	

2

Nucleus Name	**DS_HDD_ValidateBootSegmentHeader**	
Nucleus Number	2113	
Description	Validates the Boot Segment Header in the HDD.	
Technical	- Initializes the HDD interface. - Reads 8 bytes from LBA 0x8001 - Compares these 8 bytes with 0x42,0x4F,0x4F,0x54,0x2D,0x48,0x44,0x4D - If identical, returns pass. Else Hard Disk Boot Segment Header is corrupt.	
Execution Time	Less than 1 second.	
User Input	None.	
Error	Number	Description
	211300	Validation of Hard Disk Boot Segment Header passed.
	211301	Hard Disk Boot Segment Header corrupt or does not match expected values.
	211302	HDD init failed.
	211303	Starting HDD failed.
	211304	Reading from HDD failed.

Example	`DS:> 2113`
	`211300:`
	`Test OK @`	

3

3.22 DIGITAL TERRESTRIAL TUNER MODULE (DTTM)

Nucleus Name	**DS_DTTM_Reset**	
Nucleus Number	2200	
Description	Resets the DTTM module in diagnostic mode, and the communication to it.	
Note	This reset action is also done before the first of the other executed DTTM nuclei, to set-up communications with the DTT module.	
Technical	- Setup of the Basic Engine UART port, which connects to the DTT Module. - Make RTS pin of the UART inactive - Toggle the reset-pin of the DTT Module - Wait for DTTM to become online - Send the Boot loader start character to the DTT Module - Check if the DTT Module boot loader accepted the character. It must return "READY>" - Put the DTTM into D&S command mode. - Empty the DTTM output buffer - Set Reset flag to prevent resetting before every nucleus.	
Execution Time	Approx. 5 sec.	
User Input	None	
Error	Number	Description
	220000	The DTT Module has been successfully reset.
	220001	The DTT Module could not be reset.
	220002	DTT Module initialisation failed.

Example	`DS:> 2200`
	`220000:`
	`Test OK @`	

Nucleus Name	**DS_DTTM_TransparentCommand**	
Nucleus Number	2201	
Description	Sends any DTTM DSW command to the DTT Module, and returns the response transparently.	
Note	No response will be returned before the required number of parameters (zero or more) has been supplied.	
Technical	- Sends all the parameters of this nucleus, starting with the DTTM command ID, to the DTT module. The parameter separator is changed into a single space character.	
Execution Time	Varies between 1 and 30 sec., depending on the supplied DTTM command.	
User Input	Any command ID with parameters, as described in the IBOZapper User Manual. [DTTM_UM]	
Error	Number	Description
	220100	Send/receive of DTTM command successful. (Irrespective of the result of this DTTM command)
	220101	Communication with the DTT Module failed.
	220102	DTT Module initialisation failed.

Example	`DS:> 2201  1503 0x0111 0x0112 0x0111`
	`220100:`
	`>0000:`
	`Test OK @`	

Nucleus Name	**DS_DTTM_Communication**	
Nucleus Number	2202	
Description	Checks the communication between the digital board and the DTT Module.	
Technical	- Send the DTTM DSW command ID 9101 (“switch to command mode”)	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	220200	Communication with the DTT Module succeeded.
	220201	Communication with the DTT Module failed.
	220202	DTT Module initialisation failed.

Example	`DS:> 2202`
	`220200:`
	`Test OK @`	

1

2

Nucleus Name	**DS_DTTM_FlashDeviceType**	
Nucleus Number	2203	
Description	Get the manufacture code and the device ID of the boot flash.	
Technical	- Send DTTM command ID 2701	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	220300	Retrieving Flash device type succeeded.
	220301	Flash device type could not be returned
	220302	Communication with the DTT Module failed.
	220303	DTT Module initialisation failed.

Example	`DS:> 2203`
	`220300:`
	`Flash manufacture code: 0x00002000`
	`Flash device ID : 0x0000DF22`
	`Test OK @`	

3

Nucleus Name	**DS_DTTM_DiagSwVersion**	
Nucleus Number	2204	
Description	The version of Diagnostics software of the DTT module is read from Boot Flash memory.	
Technical	- Send DTTM command ID 6101	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	220400	Retrieving the DTTM DS version succeeded
	220401	DTTM DS version could not be returned
	220402	Communication with the DTT Module failed.
	220403	DTT Module initialisation failed.

Example	`DS:> 2204`
	`220400: DTT Module Diagnostics software version: 1.2`
	`Test OK @`	

4

Nucleus Name	**DS_DTTM_BootSwVersion**	
Nucleus Number	2205	
Description	The version of the Boot on the DTT module is read from Boot Flash memory. It checks also the CRC-value of the Boot software.	
Technical	- Send DTTM command ID 6201 - Send DTTM command ID 6202	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	220500	Retrieving the Boot SW version succeeded
	220501	Boot SW version could not be returned
	220502	Boot SW CRC value could not be returned
	220503	Boot SW CRC value is different from stored one
	220504	Communication with the DTT Module failed.
	220505	DTT Module initialisation failed.

Example	`DS:> 2205`
	`220500:`
	`DTT Module Boot software version: 0x00000002`
	`Stored CRC value : 0x8980C5DC`
	`Calculated CRC value : 0x8980C5DC`
	`Test OK @`	

5

Nucleus Name	**DS_DTTM_ApplSwVersion**	
Nucleus Number	2206	
Description	The version of Application software at the DTT module is read out of Boot Flash memory.	
Technical	- Send DTTM command ID 6301	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	220600	DTTM Application software version could be returned
	220601	No Application software present
	220602	DTTM Application software version could not be returned
	220603	Communication with the DTT Module failed.
	220604	DTT Module initialisation failed.

Example	`DS:> 2206`
	`220600:`
	`DTT Module Application software version: 0x0002 0x0605 (0x0265)`
	`DTT Module Hardware version : 0x0102 0x0101 (0x1211)`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_HardwareVersion**	
Nucleus Number	2207	
Description	The Hardware version of the DTT module is read from Boot Flash memory at two places, and compared.	
Technical	- Send DTTM command ID 6801 - Send DTTM command ID 6301 - Compare the results, and report if different.	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	220700	Retrieving the DTTM Hardware version succeeded
	220701	DTTM Hardware version could not be returned
	220702	Stored DTTM Hardware version could not be returned
	220703	DTTM Hardware version does not start with 0x12
	220704	Downloaded DTTM Hardware version is different
	220705	No Application software present
	220706	Communication with the DTT Module failed.
	220707	DTT Module initialisation failed.

Example	`DS:> 2207`
	`220700:`
	`DTT Module Hardware model/version: 0x0102 0x0101 (0x1211)`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_SdramWriteRead**	
Nucleus Number	2208	
Description	Checks all data lines, address lines, and memory locations of the DTT module's SDRAM.	
Technical	- Send DTTM command ID 2201 (SDRAM stuck-at fault) with parameters: 0xa0000000 0x00800000 - Send DTTM command ID 2202 (SDRAM address w/r test) with parameters: 0xa0000000 0x00800000	
Execution Time	Approx. 45 sec.	
User Input	None	
Error	Number	Description
	220800	SDRAM WR test succeeded
	220801	SDRAM WR stuck-at test failed at given address
	220802	Other SDRAM WR stuck-at test failure
	220803	SDRAM WR write/read test failed at given address
	220804	Other SDRAM WR write/read test failure.
	220805	Communication with the DTT Module failed.
	220806	DTT Module initialisation failed.

Example	`DS:> 2208`
	`220800:`
	`Test OK @`	

3

Nucleus Name	**DS_DTTM_ SdramWriteReadFast**	
Nucleus Number	2209	
Description	Checks all datalines, address lines, and some memory locations of the DTT module's SDRAM.	
Technical	- Send DTTM command ID 2202	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	220900	SDRAM WR test succeeded
	220901	SDRAM WR test failed at given address
	220902	SDRAM WR fast test failed w.r.t. data lines.
	220903	Other fast SDRAM test failure
	220904	Communication with the DTT Module failed.
	220905	DTT Module initialisation failed.

Example	`DS:> 2209`
	`220900:`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_EepromWriteRead**	
Nucleus Number	2210	
Description	Checks whether the bit cells in the User EEPROM can toggle.	
Technical	Send the DTTM command ID 2402 (stuck-at fault test)	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	221000	EEPROM WR test succeeded
	221001	EEPROM WR test failed at given address
	221002	Other EEPROM test failure
	221003	Communication with the DTT Module failed.
	221004	DTT Module initialisation failed.

Example	`DS:> 2210`
	`221000:`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_FatalErrorRead**	
Nucleus Number	2211	
Description	Reads the fatal error database from the User EEPROM.	
Technical	- Send DTTM command ID 6303	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	221100	Retrieving the Fatal error list succeeded
	221101	Fatal error list could not be returned
	221102	Communication with the DTT Module failed.
	221103	DTT Module initialisation failed.

Example	`DS:> 2211`
	`221100: Fatal error database content:`
	`0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	`0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	`0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	`0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00 0x00`
	
	`Test OK @`	

3

Nucleus Name	**DS_DTTM_FatalErrorClear**	
Nucleus Number	2212	
Description	Clears the fatal error database in the User EEPROM.	
Technical	- Send DTTM command ID 6304	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	221200	Clearing the Fatal error list succeeded
	221201	Fatal error list could not be cleared
	221202	Communication with the DTT Module failed.
	221203	DTT Module initialisation failed.

Example	`DS:> 2212`
	`221200:`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_FactoryBitSet**	
Nucleus Number	2213	
Description	The factory bit is set in the user EEPROM.	
Technical	- Send DTTM command ID 6203	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	221300	Setting the Factory bit succeeded
	221301	Factory bit could not be set
	221302	Communication with the DTT Module failed
	221303	DTT Module initialisation failed.

Example	`DS:> 2213`
	`221300:`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_PllVcxoFrequencySet**	
Nucleus Number	2214	
Description	Set the PLL/VCXO frequency values of the processor. The M, N, and P values determine the PLL's clockspeed.	
Technical	- Send DTTM command ID 3101, with the given parameters.	
Execution Time	Approx. 2 sec.	
User Input	1. PLLNumber: The seq. nr of PLL to be changed [0,3] 2. Mvalue : PLL M value [0x1,0x7FF] 3. NValue : PLL N value [0x1,0xFF] 4. Pvalue : PLL P value [0x1,0x1F]	
Error	Number	Description
	221400	Setting the PLL/VCXO parameter values was successful
	221401	Insufficient number of input data supplied
	221402	One of the parameters not within range
	221403	The PLL/VCXO values could not be set
	221404	Communication with the DTT Module failed.
	221405	DTT Module initialisation failed.

Example	`DS:> 2214 0 0xef 0x03 0x01`
	`221400:`
	`Test OK @`	

3

Nucleus Name	**DS_DTTM_PllVcxoFrequencyGet**	
Nucleus Number	2215	
Description	Retrieves the PLL/VCXO values of the processor.	
Technical	- Send DTTM command ID 3102 with the PLL number. - Parse and format the response values.	
Execution Time	< 1 sec.	
User Input	PLLNumber: The seq. nr of PLL to be queried [0,3]	
Error	Number	Description
	221500	Retrieving the PLL/VCXO parameter values was successful
	221501	Insufficient number of input data supplied
	221502	Non-existent PLL number
	221503	The PLL/VCXO values of the processor could not be retrieved.
	221504	Communication with the DTT Module failed
	221505	DTT Module initialisation failed.

Example	`DS:> 2215 0`
	`221500:`
	`PLL M parameter value: 0x00EF`
	`PLL N parameter value: 0x0003`
	`PLL P parameter value: 0x0001`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_IicWrite**	
Nucleus Number	2216	
Description	Performs an IIC write action on the DTT module.	
Technical	- Send DTTM command ID 2902 with the supplied parameters, separated by a single space character.	
Execution Time	< 1 sec.	
User Input	1. IicChannel : IIC channel of the device 2. IicDeviceAddress : address of IIC device to write to 3. NrOfSubAddressBytes: number of sub-address bytes (=x) 4. SubAddressBytes : x sub-address bytes 5. NrOfValues : number of values to write (=y) 6. Data : y bytes data to write	
Error	Number	Description
	221600	The test was successful
	221601	Insufficient number of input data supplied
	221602	No response from the given device-address
	221603	Incorrect device address was given
	221604	Unable to send IIC start-condition
	221605	Error during write to IIC-address
	221606	Device does not support IIC write
	221607	The IIC write action failed.
	221608	Communication with the DTT Module failed.
	221609	DTT Module initialisation failed.

Example	`DS:> 2216  0x00 0x00 0 2 0xAA 0xBB`
	`221600:`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_IicRead**	
Nucleus Number	2217	
Description	Performs an IIC read action on the DTT module.	
Technical	- Send DTTM command ID 2901 with the supplied parameters, separated by a single space character.	
Execution Time	< 1 sec.	
User Input	1. IicChannel : IIC channel of the device 2. IicDeviceAddress : address of IIC device to read from 3. NrOfSubAddressBytes: number of sub-address bytes (=x) 4. SubAddressBytes : x sub-address bytes 5. NrOfValues : number of values to read (=y)	
Error	Number	Description
	221700	The test was successful
	221701	Insufficient number of input data supplied
	221702	No response from the given device-address
	221703	Incorrect device address was given
	221704	Unable to send IIC start-condition
	221705	Error during read from IIC-address
	221706	Device does not support IIC read
	221707	The IIC read action failed.
	221708	Communication with the DTT Module failed.
	221709	DTT Module initialisation failed.

Example	`DS:> 2217 0x00 0x10 2 0x00 0x00 2`
	`221700: Read values: 0x17 0x00`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_AvTsPidSet**	
Nucleus Number	2218	
Description	Sets the PID values of the transport stream.	
Technical	- Send the DTTM command ID 1503, with the supplied parameters.	
Execution Time	< 1 sec.	
User Input	1. Video PID value [0x0000-0x1FFF] 2. Audio PID value [0x0000-0x1FFF] 3. PRC PID value [0x0000-0x1FFF]	
Error	Number	Description
	221800	The TS PID's are set successfully
	221801	Insufficient number of input data supplied
	221802	One or more PID values is out of range
	221803	The TS PID's could not be set.
	221804	Communication with the DTT Module failed
	221805	DTT Module initialisation failed.

Example	`DS:> 2218 0x79 0x7a 0x79`
	`221800:`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_AvMojoBeepOn**	
Nucleus Number	2219	
Description	Generates the Mojo beep.	
Technical	- Send the DTTM command ID 1605.	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	221900	The Mojo beep has been turned on successfully
	221901	Can not start another AV test (one is already running)
	221902	The Mojo beep could not be turned on
	221903	Communication with the DTT Module failed
	221904	DTT Module initialisation failed.

Example	`DS:> 2219`
	`221900:`
	`Test OK @`	

3

Nucleus Name	**DS_DTTM_AvMojoBeepOff**	
Nucleus Number	2220	
Description	Stops generating the Mojo beep.	
Technical	- Send the DTTM command ID 1606.	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	222000	The Mojo beep has been turned off successfully
	222001	The Mojo beep could not be turned off
	222002	Communication with the DTT Module failed
	222003	DTT Module initialisation failed.

Example	`DS:> 2220`
	`222000:`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_ AvAudioVideoStreamPlay**	
Nucleus Number	2221	
Description	Selects a predefined stream, and configures the peripherals to enable streaming, and starts playing the selected audio and video streams.	
Technical	- Send the DTTM command ID 1002 with the selected stream number - Send the DTTM command ID 1001. - Ignore possible error code 2203 (AV play test already started)	
Execution Time	< 2 sec.	
User Input	Stream number: Stream number to be selected. [0-9]	
Error	Number	Description
	222100	The given predefined stream has been selected and started successfully
	222101	Insufficient number of input data supplied
	222102	The given stream could not be selected
	222103	The given stream number is not within range
	222104	The predefined stream has an out-of-range value
	222105	No carrier found
	222106	The selected predefined stream could not be started
	222107	Communication with the DTT Module failed
	222108	DTT Module initialisation failed.

Example	`DS:> 2221 2`
	`222100:`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_ AvPredefinedStreamGet**	
Nucleus Number	2222	
Description	Retrieves the settings of the currently selected stream.	
Technical	- Send the DTTM command ID 1003 - Parse and format the response values.	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	222200	The settings of the currently selected predefined stream are retrieved successfully
	222201	The settings of the currently selected predefined stream could not be retrieved
	222202	Communication with the DTT Module failed
	222203	DTT Module initialisation failed.

Example	`DS:> 2222`
	`222200: The settings of the selected stream are:`
	`current video standard : 0 = PAL`
	`current video PID : 0x0083`
	`current audio PID : 0x0084`
	`current PCR PID : 0x0083`
	`tuner frequency : 506000000 Hz`
	`tuner bandwidth : 8000000 Hz`
	`tuner spectral inversion: 0 = Normal`
	`Test OK @`	

3

Nucleus Name	**DS_DTTM_ AvPredefinedStreamChange**	
Nucleus Number	2223	
Description	Adds or changes the settings of a predefined stream.	
Note	No parameter validity check is being performed. This is done when this stream is selected. Stream no 0 is built-in and cannot be changed.	
Technical	- Send the DTTM command ID 1004, with the supplied parameters.	
Execution Time	< 1 sec.	
User Input	1. Stream number : The stream to be changed. [1-9] 2. VideoStandard : video standard (0=PAL, 1=SECAM) 3. VideoTypeCh3 : TV channel video type (0=RGB, 1=YPbPr, 2=YC) 4. VideoTypeCh2 : TV channel video type (0=CVBS, 1=YC) 5. VideoTypeCh1 : AUX channel video type (0=YC, 1=CVBS) 6. VideoPid : current video PID [0x0000-0x1FFF] 7. AudioPid : current audio PID [0x0000-0x1FFF] 8. PCRPid : current PCR PID [0x0000-0x1FFF] 9. Frequency : tuner frequency [Hz] [5000000, 859000000] 10. Bandwidth : tuner bandwidth (0=7 MHz, 1=8 MHz) 11. SpectralInversion: tuner spectral inversion (0=normal, 1=inverse)	
Error	Number	Description
	222300	A predefined stream has been added or changed successfully
	222301	Insufficient number of input data supplied
	222302	Could not change or add a predefined stream
	222303	Communication with the DTT Module failed
	222304	DTT Module initialisation failed.

Example	`DS:> 2223 4 0 0 0 1 0x79 0x7a 0x79 506000000 1 0`
	`222300:`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_ AvMojoColourbarOn**	
Nucleus Number	2224	
Description	Activates the Mojo colour bar.	
Note	This nucleus will return with error 222401, if another AV test is already running.	
Technical	- Send the DTTM command ID 1607	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	222400	The Mojo colour bar has been activated successfully
	222401	Can not start another AV test (one is already running)
	222402	The Mojo colour bar could not be activated
	222403	Communication with the DTT Module failed
	222404	DTT Module initialisation failed.

Example	`DS:> 2224`
	`222400:`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_ AvMojoColourbarOff**	
Nucleus Number	2225	
Description	Turns off the Mojo colour bar.	
Technical	- Send the DTTM command ID 1608	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	222500	The Mojo colour bar has been turned off successfully
	222501	The Mojo colour bar could not be turned off
	222502	Communication with the DTT Module failed
	222503	DTT Module initialisation failed.

Example	`DS:> 2225`
	`222500:`
	`Test OK @`	

3 **.**

Nucleus Name	**DS_DTTM_ AvVideoStandardSet**	
Nucleus Number	2228	
Description	Configures the Mojo video channel to the given video standard.	
Technical	- Send the DTTM command ID 1501, together with supplied input value.	
Execution Time	< 1 sec.	
User Input	VideoStandard: Video standard to set the channel to (0=PAL, 1=SECAM)	
Error	Number	Description
	222800	Succeeded in configuring the Mojo video channel
	222801	Insufficient number of input data supplied
	222802	Non-existent video standard
	222803	Configuring the Mojo video channel was not successful
	222804	Communication with the DTT Module failed.
	222805	DTT Module initialisation failed.

Example	`DS:> 2228 0`
	`222800:`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_ AvVideoOutputSet**	
Nucleus Number	2229	
Description	Configures the video output to the selected video standard.	
Technical	- Send the DTTM command ID 1504, together with supplied input values.	
Execution Time	< 1 sec.	
User Input	1. VideoDAC : The video DAC to configure 0 = RGB / YUV / YC (TV DAC's) 1 = CVBS / Y (TV DAC) 2 = YC / CVBS (VCR DAC's) 2. VideoOutput: The video output to set the DAC's to 0 = RGB or CVBS or YC (resp. the chosen DAC's) 1 = YUV or YC or CVBS 2 = YC	
Error	Number	Description
	222900	Video output could be set successfully
	222901	Insufficient number of input data supplied
	222902	One of the parameter values is out of range
	222903	Video output could not be set
	222904	Communication with the DTT Module failed
	222905	DTT Module initialisation failed.

Example	`DS:> 2229 0 1`
	`222900:`
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_FreRegisterRead**	
Nucleus Number	2230	
Description	Reads a single byte of data out of a demodulator register.	
Technical	- Send the DTTM command ID 3601, together with supplied input value.	
Execution Time	< 1 sec.	
User Input	Address: register address to read from	
Error	Number	Description
	223000	The selected address register could be read successfully
	223001	Insufficient number of input data supplied
	223002	The register address value is out-of-range
	223003	The selected address register could not be read
	223004	Communication with the DTT Module failed
	223005	DTT Module initialisation failed.

Example	`DS:> 2230 0x12`
	`223000: The value of this register: 0x00`
	`Test OK @`	

3

Nucleus Name	**DS_DTTM_FreRegisterWrite**	
Nucleus Number	2231	
Description	Writes a single byte of data out to a demodulator register.	
Technical	- Send the DTTM command ID 3602, together with supplied input values.	
Execution Time	< 1 sec.	
User Input	Address: register address to write to Data : the value to be written to the register	
Error	Number	Description
	223100	The selected address register has been written successfully
	223101	Insufficient number of input data supplied
	223102	The register address value is out-of-range
	223103	The selected address register could not be written
	223104	Communication with the DTT Module failed
	223105	DTT Module initialisation failed.

Example	`DS:> 2231 0x12 0xb1`
	`223100:`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_FreLockStatusGet**	
Nucleus Number	2232	
Description	Checks and returns the lock status of the front-end.	
Technical	- Send the DTTM command ID 3607. - Parse and format the response values.	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	223200	The lock status of the front-end is returned successfully
	223201	The lock status of the front-end could not be returned
	223202	Communication with the DTT Module failed
	223203	DTT Module initialisation failed.

Example	`DS:> 2232`
	`223200: Front-end lock status: 0x0F`
	`Internal PLL locked : YES`
	`Frequency Locked : YES`
	`Time locked : YES`
	`TPS locked : YES`
	
	`Test OK @`	

2

Nucleus Name	**DS_DTTM_FreLockingParamSet**	
Nucleus Number	2233	
Description	Configures the tuner and the demodulator according to the given parameters. First the configuration mode of the front-end is set to Manual or Autoconfig mode, depending on the number of supplied parameters.	
Technical	- Send the DTTM command ID 3604, with parameter value '0' to put the front-end to Manual configuration mode, or '1' for AutoConfig configuration mode. - Send the DTTM command ID 3605, together with supplied input value.	
Execution Time	< 1 sec.	
User Input	1. Frequency : Tuner frequency [Hz] [5000000 – 859000000] 2. Bandwidth : Tuner bandwidth (0=7MHz, 1=8MHz) 3. SpectralInversion : Spectral inversion (0=Normal, 1=Inverse) The following parameters are optional (Manual mode): 4. Constellation : Constellation type (0=QPSK, 1=QAM16, 2=QAM64, or 3=unknown) 5. Hierarchy : Hierarchy (0=None, 1=Alpha 1,2=Alpha 2, or 3=Alpha 4) 6. CodeRateHigh : High priority CodeRate (0=1_2, 2=2_3, 2=3_4, 3=5_6, 4=7_8, 5=unknown) 7. CodeRateLow : Low priority CodeRate (0-5) 8. GuardInterval : Guard interval (0=1/32, 1=1/16, 2=1/8, 3=1/4, 4=unknown) 9. TransmissionMode : Transmission mode (0=2 KO, 1=8 KO, or 3=unknown) 10. FrequencyOffset : Frequency offset [MHz] (0=none, 1=+1/6, 2=-1/6, 3=+2/6, 4=-2/6, 5=+3/6, 6=-3/6,7=unknown) 11. Priority : Priority (0=High, 1=Low, 2=Both, or 3=unknown)	
Error	Number	Description
	223300	The tuner and demodulator have been configured successfully
	223301	Insufficient number of input data supplied
	223302	One or more parameters is out-of-range
	223303	No carrier could be found with these parameters
	223304	The tuner and demodulator could not be configured
	223305	False lock achieved (incorrect parameters).
	223306	Communication with the DTT Module failed
	223307	DTT Module initialisation failed.

Example	`DS:> 2233 506000000 1 0 2 0 4 0 0 0 0 0`
	`223300:`
	`Test OK @`	

1

Nucleus Name	**DS_DTTM_FreLockingParamGet**	
Nucleus Number	2234	
Description	Retrieves the tuner and demodulator settings.	
Technical	- Send the DTTM command ID 3606. - Parse and format the response values.	
Execution Time	> 1 sec.	
User Input	None	
Error	Number	Description
	223400	The tuner and demodulator settings have been retrieved successfully
	223401	The tuner and demodulator settings could not be retrieved
	223402	Communication with the DTT Module failed
	223403	DTT Module initialisation failed.
Example	DS:> 2234 223400: The front-end locking parameters are: Tuner frequency : 506000000 Hz Tuner bandwidth : 8000000 Hz Spectral inversion : 0 = Normal Constellation type : 2 = QAM64 Hierarchy : 0 = None High Priority CodeRate: 4 = 7_8 Low Priority CodeRate: 0 = 1_2 Guard Interval : 0 = 1/32 Transmission mode : 0 = 2 KO Frequency offset : 0 = None Priority : 0 = High Test OK @	

1

Nucleus Name	**DS_DTTM_FreSignalStatusGet**	
Nucleus Number	2235	
Description	Retrieves the status of the current signal.	
Technical	- Send the DTTM command ID 3608. - Parse and format the response values.	
Execution Time	> 1 sec.	
User Input	None	
Error	Number	Description
	223500	The current signal status has been retrieved successfully
	223501	The current signal status could not be retrieved
	223502	Communication with the DTT Module failed
	223503	DTT Module initialisation failed.
Example	DS:> 2235 223500: Signal status: CBER : 25e-7 VBER : 0e-6 AGC IF : 160 AGC RF : Unknown SNR : 254 Cell ID: 0x0000 Test OK @	

2

3

1

Nucleus Name	**DS_DTTM_SwitchCVBSPath**	
Nucleus Number	2236	
Description	This function switches the CVBS path on the DTTM module by having the MOJO (on the DTTM module) toggle a PIO pin. There are two paths: - Passing video from the analogue board to the digital board - Passing video from the analogue board through the DTT module to the digital board (where the signal might be changed by DTT)	
Technical	- Send the DTTM command ID 3103. - Parse the response values and change bit two of the PIO pin. - Set the new PIO value using DTTM command ID 3104	
Execution Time	> 1 sec.	
User Input	There are three possibilities here: - 'pass' - The video is passed from the analogue board to the digital board - '' - The video is passed from the analogue board to the digital board - 'dttm' - The video is passed from the analogue board through the DTT module to the digital board (where the signal might be changed by DTT)	
Error	Number	Description
	223600	Switching the CVBS path through DTTM PIO succeeded
	223601	Executing the DTTM PIO write failed
	223602	Switching the CVBS path through DTTM PIO failed
	223603	DTT Module initialisation failed.

Example	`DS:> 2236 pass`
	`223600:`
	`Test OK @`
	
	`DS:> 2236 dttm`
	`223600:`
	`Test OK @`
	
	`DS:> 2236`
	`223600:`
	`Test OK @`	

2

3

3.23 UNIVERSAL SERIAL BUS (USB)

Nucleus Name	**DS_USB_DevTypeGet**	
Nucleus Number	2300	
Description	This nucleus retrieves the device and type information of the USB controller	
Technical	- Read out the chip-ID and revision register and return the info to the user	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	230000	Retrieving the device type information succeeded

Example	`DS:> 2300`
	`230000: USB Controller chip ID: 0x6123 Revision:0x10.`
	`Test OK @`	

Nucleus Name	**DS_USB_Reset**	
Nucleus Number	2301	
Description	This nucleus performs a software reset of the controller and tests whether the functional state of the controller has become USBReset	
Technical	- Write the command to software reset the controller and read back the functional status of the controller	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	230100	Resetting the host controller succeeded
	230101	Resetting the host controller failed

Example	`DS:> 2301`
	`230100:`
	`Test OK @`	

Nucleus Name	**DS_USB_CheckDeviceConnect**	
Nucleus Number	2302	
Description	This nucleus checks whether a device connect / disconnect can be aught by the software	
Technical	- Initialise the host controller and its interrupts - wait for the port connect status change interrupt - display the status cause (connect/disconnect) of the interrupt	
Execution Time	Depending on user actions	
User Input	None	
Error	Number	Description
	230200	The device connect was noticed by the hardware correctly
	230201	Retrieving the information from the diversity string failed
	230202	User aborted HPD test

Example	`DS:> 2302`
	`Insert or remove the USB cable (or type 'a' to abort):`
	`230200:`
	`Test OK @`	

Nucleus Name	**DS_USB_ CheckDeviceSpeed**	
Nucleus Number	2303	
Description	This nucleus checks whether the connected device functions at low / full or high speed.	
Technical	- Initialise the host controller and its interrupts - Find out the total number of ports - Read out the port status and display it	
Execution Time	< 1 sec.	
User Input	None	
Error	Number	Description
	230300	The device connect was noticed by the hardware correctly
	230301	Retrieving the information from the diversity string failed
	230302	User aborted the test

Example	`DS:> 2302`
	`230200: Full Speed device on port number: 1`
	`Test OK @`	

3.24 SCRIPT (SCRIPT)

Nucleus Name	**DS_IH_ScriptHandler**
Nucleus Number	Script
Description	The test requires no user interaction. A number of nuclei will be run before a message is returned indicating if there is a failure in the DVD Recorder. When a nucleus failed, the script stops and displays the message "**FAIL**". Otherwise it displays "**PASS**" at the end when all nuclei are executed. During the execution of a script, a progress indicator is displayed on the display of the DVD Recorder.
Technical	Execute the included nuclei one by one If a nucleus fails quit and display the failed nucleus on the local display and service port
Execution Time	16 seconds
Included tests:	1. DS_CHR_DEVTYPEGET_NUC 2. DS_SDRAM_WRITEREADFAST_NUC 3. DS_FLASH_DEVTYPEGET_NUC 4. DS_FLASH_CHECKSUMPROGRAM_NUC 5. DS_VIP_COMMUNICATION_NUC 6. DS_VIP_DEVTYPEGET_NUC 7. DS_DVIO_LINKDEVTYPEGET_NUC 8. DS_DVIO_PHYCOMMUNICATION_NUC 9. DS_DVIO_PHYDEVTYPEGET_NUC 10. DS_BE_COMMUNICATIONECHO_NUC 11. DS_BE_VERSIONGET_NUC 12. DS_SYS_HARDWAREVERSIONGET_NUC 13. DS_SYS_SOFTWAREVERSIONBOOTGET_NUC 14. DS_SYS_SOFTWAREVERSIONDOWNLOADGET_NUC 15. DS_SYS_SOFTWAREVERSIONAPPLGET_NUC 16. DS_SYS_DVIDNUMBERGET_NUC 17. DS_SYS_SLASHVERSIONGET_NUC 18. DS_SYS_SETTINGSDISPLAY_NUC 19. DS_SYS_BUILDINFOGET_NUC 20. DS_ASP_COMM_NUC 21. DS_ASP_VERSION_NUC 22. DS_FRE_COMM_NUC 23. DS_HDD_COMMUNICATION_NUC 24. DS_HDD_VERSION_NUC DS_USB_DEVTYPEGET_NUC
Note!	**Invocation by holding down the PLAY button when powering up the system**
Note!	The following example is for Lecoplus variant only

Example	`Factory Diagnostics and Service Software`
	`DVD Video Recorder (Dec 15 2006, 14:14:54)`
	
	`Version :1463 Build :20061215_1352`
	`Release :SG1_1 Buildtype :dev`
	`Baseline :SGP29atl#SG1_1_20050609_base Variant :lecoplusleadV1`
	
	`Executing User/Dealer script.`
	
	`Busy executing NUC100`

```
Device ID  7300

Codec ID   PNX7350
F-BCU  (0x0102) 4.0 INTC   (0x011d) 3.0   SIF    (0xa04b) 2.0
BOOT   (0x010a) 3.1 CONFIG (0x013f) 5.0   RESET  (0x0123) 5.0
CLOCK  (0x013e) 7.0 DEBUG  (0x0116) 0.1   UART0  (0x0107) 1.2
UART1  (0x0107) 1.2 I2C0   (0x0105) 0.1   I2C1   (0x0105) 0.1
GPIO   (0x013c) 3.1 SYNC   (0x013a) 4.0   OSD    (0x0136) 1.0
SPU    (0xa00e) 1.1 MIXER  (0x0137) 3.0   DENC   (0x0138) 5.0
CCIR   (0x0139) 2.1 VDEC   (0x0133) 1.0   PARSER (0xa00d) 0.0
DV     (0xa00c) 0.0 IDE0   (0xa009) 1.2   IDE1   (0xa009) 1.2
SGDX   (0xa008) 4.0 BYTE   (0xa00b) 1.0   OUTPUT (0xa003) 8.0
ACOMP  (0xa000) 8.0 VFE    (0xa001) 8.0   VCOMP  (0xa002) 8.0
SCR    (0xa004) 8.0 SIFF   (0xa011) 3.0   PSCAN  (0xa05d) 0.1
ADEC   (0x0134) 1.1 IR     (0x0131) 2.0   AOI    (0xa08c) 0.0
PIP    (0xa04d) 1.0 AVLINK (0xdead) 10.11 USBLINK(0xa08e) 0.0
MSVD   (0xa087) 0.0 FEBCU  (0xa05e) 1.0   BM     (0xa085) 0.0
BMI    (0xa084) 0.0 DISP   (0xa04d) 1.0

Busy executing NUC401

Busy executing NUC500
Found FLASH memory:

NOR ST M29DW160ET 2MB

Busy executing NUC503

BootCode   , in FLASH, checksum is: 0xBABE7E83, which is correct
Diagnostics, in FLASH, checksum is: 0xBABED436, which is correct
Download   , in FLASH, checksum is: 0xBABE7C57, which is correct
Application, on HDD  , checksum is: 0xBABE5D76, which is correct

Busy executing NUC601

Busy executing NUC600
Found SAA7136

Busy executing NUC900

Busy executing NUC903
Be version = 52.07.02.10.PHILIPS ,D5.2, 52070210,5VC0635130300,
Basic Engine returned no OPU info

Busy executing NUC1200
Hardware ID = 0x66

Busy executing NUC1201
Software Boot Version = 1463

Busy executing NUC1202
Software Download Version = 1463

Busy executing NUC1203
Software Application Version = 1463

Busy executing NUC1208
The DvIdNumber is: 0000000000

Busy executing NUC1218
The slash version is = 11602

PASS

DS:>
```

4 DIGITAL BOARD DIVERSITY

The DSW software needs to know what kind of system it must diagnose, in other words it must know what components can be tested on the hardware at hand. This to avoid misjudgement of components: e.g. indicating error when the component is not mounted on this specific board.
So, DSW needs some settings that tell DSW which hardware components are available.

In the Non Volatile Memory storage a section is reserved for digital board settings. These settings contain which hardware components are available.

When the factory is building digital boards, the first thing that must be done when DSW is started, is to execute nucleus DS_SYS_SettingsSet (1226) that programs these settings into the Non Volatile Memory. This nucleus must have a string value as parameter. This string contains the settings.

The service department must take the following remark into account. When some components in the DVD Recorder must be replaced (for example: replacing the digital board), the following nucleus must be executed: DS_SYS_SettingsSet (1226).

When DSW detects (by testing the checksum) that the settings are not valid, it gives a warning. In this case some nuclei executed in DSW mode may return errors because of the corrupt settings string. Most nuclei however will behave correctly.

So, it is possible that the next message will appear when starting the Recorder for the first time:

```
[MIS_DIV,WARNING,Digital Board Hardware Information is corrupt,]
Factory Diagnostics and Service Software
DVD Video Recorder (Dec 13 2003, 10:55:37)

Version  :258          Build     :20031213_1030
Release  :P1_7_b       Buildtype :no
Baseline :I_P1_8_63    Variant   :verum:dvdrw2_lib
WARNING,Digital Board Hardware Information is corrupt

DS:>
```

In this case the Non Volatile Memory storage does not contain a string with the required hardware information. To update the digital board with the correct string, nucleus DS_SYS_SettingsSet (1226) must be executed. With the delivery of the Diagnostics & Service software the correct HW-diversity strings are shipped. These can be used as parameters for the nucleus.

APPENDIX A TERMINAL INTERFACE

The DVD+RW set needs to be connected to a terminal in order to see the message when starting the set e.g.:

```
Factory Diagnostics and Service Software
DVD Video Recorder (Dec 13 2003, 10:55:37)

Version  :258          Build     :20031213_1030
Release  :P1_7_b       Buildtype :no
Baseline :I_P1_8_63    Variant   :verum:dvdrw2_lib

DS:>
```

A.1 SOFTWARE SETTINGS:

The terminal needs to be set to **19200** Baud, **8** Data bits, **n**o Parity, **1** Stop bit, **n**o Flow control, and no XON/XOFF usage.

A.2 HARDWARE CONNECTION:

Pin-out of the ‘Service’ connector on the board:

1 - Txd
2 - PIO ‘Service’ Pin
3 - Rxd
4 - RTS
5 - Gnd
6 - CTS
7 - +5V

The ‘Service’ connector provided to you will connect pin 2 to pin 5, in order to have the software detect that service mode is requested.

APPENDIX B LIST OF COMMANDS

A quick reference list of all available commands in the *command-line-interface* is given below:

Command	Description
100	Executing nucleus DS_CHR_DevTypeGet.
101	Executing nucleus DS_CHR_TestImageOn.
102	Executing nucleus DS_CHR_TestImageOff.
103	Executing nucleus DS_CHR_SineOn
104	Executing nucleus DS_CHR_SineOff
105	Executing nucleus DS_CHR_SineBurst
106	Executing nucleus DS_CHR_MuteOn
107	Executing nucleus DS_CHR_MuteOff
110	Executing nucleus DS_CHR_MacroVisionOn.
111	Executing nucleus DS_CHR_MacroVisionOff.
112	Executing nucleus DS_CHR_Peek
113	Executing nucleus DS_CHR_Poke
114	Executing nucleus DS_CHR_INT_PICInterrupts
115	Executing nucleus DS_CHR_DMA_TestDMA
116	Executing nucleus DS_CHR_PioGet
117	Executing nucleus DS_CHR_PioSet
118	Executing nucleus DS_CHR_PioConfig

Table 1 Commands for testing the Codec Host processor.

Command	Description
200	Executing nucleus DS_BROM_Communication

Table 2 Commands for testing the Boot EEPROM.

Command	Description
300	Executing nucleus DS_NVRAM_Communication.
302	Executing nucleus DS_NVRAM_Clear.
303	Executing nucleus DS_NVRAM_Modify.
304	Executing nucleus DS_NVRAM_Read.

Table 3 Commands for testing the NVRAM.

Command	Description
400	Executing nucleus DS_SDRAM_WriteRead.
401	Executing nucleus DS_SDRAM_WriteReadFast.
402	Executing nucleus DS_SDRAM_Write.
403	Executing nucleus DS_SDRAM_Read.
404	Executing nucleus DS_SDRAM_DmaWriteRead.

Table 4 Commands for testing the SDRAM.

Command	Description
500	Executing nucleus DS_FLASH_DevTypeGet.
502	Executing nucleus DS_FLASH_Read.
503	Executing nucleus DS_FLASH_ChecksumProgram.
504	Executing nucleus DS_FLASH_CalculateChecksum.
505	Executing nucleus DS_FLASH_CalculateChecksumFast.

Table 5 Commands for testing the FLASH.

Command	Description
600	Executing nucleus DS_VIP_DevTypeGet.
601	Executing nucleus DS_VIP_Communication.
604	Executing nucleus DS_VIP_SelectInput.
605	Executing nucleus DS_VIP_Routing.
606	Executing nucleus DS_VIP_Reset
607	Executing nucleus DS_VIP_FastBlankingCheck
608	Executing nucleus DS_VIP_WssCheck
609	Executing nucleus DS_VIP_DetectVideo

Table 6 Commands for testing the Video Input Processor.

Command	Description
700	Executing nucleus DS_DVIO_LinkDevTypeGet.
701	Executing nucleus DS_DVIO_PhyDevTypeGet.
703	Executing nucleus DS_DVIO_PhyCommunication.
704	Executing nucleus DS_DVIO_Routing.
705	Executing nucleus DS_DVIO_DetectNode.
706	Executing nucleus DS_DVIO_DetectStream.

Table 7 Commands for testing the DVIO.

Command	Description
900	Executing nucleus DS_BE_CommunicationEcho
901	Executing nucleus DS_BE_Reset
902	Executing nucleus DS_BE_GetSelfTestResult
903	Executing nucleus DS_BE_VersionGet
904	Executing nucleus DS_BE_TrayOut
905	Executing nucleus DS_BE_TrayIn
906	Executing nucleus DS_BE_WriteReadDvdRw
907	Executing nucleus DS_BE_WriteReadDvdR
908	Executing nucleus DS_BE_StatisticaInformationGet
909	Executing nucleus DS_BE_StatisticalInformationReSet
910	Executing nucleus DS_BE_ErrorLogGet
911	Executing nucleus DS_BE_ErrorLogReset
912	Executing nucleus DS_BE_JitterOptimise
913	Executing nucleus DS_BE_FocusOn
914	Executing nucleus DS_BE_FocusOff
915	Executing nucleus DS_BE_MotorOn
916	Executing nucleus DS_BE_MotorOff
921	Executing nucleus DS_BE_CheckDisc
924	Executing nucleus DS_BE_ReadTocInfo
928	Executing nucleus DS_BE_RegionCodeSet
929	Executing nucleus DS_BE_RegionCodeGet

930	Executing nucleus DS_BE_RegionCounterReset
931	Executing nucleus DS_BE_AdjustLaserControl
932	Executing nucleus DS_BE_WriteReadDvdRDualLayer

Table 8 Commands for testing the Basic Engine.

Command	Description
1200	Executing nucleus DS_SYS_HardwareVersionGet.
1201	Executing nucleus DS_SYS_SoftwareVersionBootGet.
1202	Executing nucleus DS_SYS_SoftwareVersionDownloadGet.
1203	Executing nucleus DS_SYS_SoftwareVersionApplGet.
1204	Executing nucleus DS_SYS_SoftwareVersionDiagnosticsGet.
1207	Executing nucleus DS_SYS_DvIdNumberSet
1208	Executing nucleus DS_SYS_DvIdNumberGet
1209	Executing nucleus DS_SYS_IicWrite
1210	Executing nucleus DS_SYS_IicRead
1211	Executing nucleus DS_SYS_UartWrite
1212	Executing nucleus DS_SYS_UartRead
1213	Executing nucleus DS_SYS_VideoLoopThroughStart
1214	Executing nucleus DS_SYS_VideoLoopThroughStop
1215	Executing nucleus DS_SYS_VideoLoop
1216	Executing nucleus DS_SYS_AudioLoop
1217	Executing nucleus DS_SYS_SlashVersionSet
1218	Executing nucleus DS_SYS_SlashVersionGet
1220	Executing nucleus DS_SYS_VirginModeOn
1221	Executing nucleus DS_SYS_VirginModeOff
1222	Executing nucleus DS_SYS_VirginModeGet
1223	Executing nucleus DS_SYS_DisplayFatalOn
1224	Executing nucleus DS_SYS_DisplayFatalOff
1225	Executing nucleus DS_SYS_DisplayFatalGet
1226	Executing nucleus DS_SYS_SettingsSet
1228	Executing nucleus DS_SYS_SettingsDisplay
1229	Executing nucleus DS_SYS_SettingsGet
1230	Executing nucleus DS_SYS_AudioLoopThroughStart
1231	Executing nucleus DS_SYS_AudioLoopThroughStop
1232	Executing nucleus DS_SYS_SettingsHwIdSet
1233	Executing nucleus DS_SYS_SettingsDoubleCheck
1234	Executing nucleus DS_SYS_SettingsDlTableFilenameSet
1235	Executing nucleus DS_SYS_IicWriteRead
1236	Executing nucleus DS_SYS_BuildInfoGet
1237	Executing nucleus DS_SYS_UartSetup
1238	Executing nucleus DS_SYS_GlinkWriteRead

Table 9 Commands for testing (parts of) the System.

Command	Description
1600	Executing nucleus DS_ASP_Communication.
1601	Executing nucleus DS_ASP_Version
1602	Executing nucleus DS_ASP_RealTimeSetClockValues.
1603	Executing nucleus DS_ASP_RealTimeGetClockValues.
1606	Executing nucleus DS_ASP_NTCGet.
1607	Executing nucleus DS_ASP_FanSpeedSet.
1608	Executing nucleus DS_ASP_LightDisplay.
1609	Executing nucleus DS_ASP_BlinkDisplay.
1610	Executing nucleus DS_ASP_DimmingDisplay.
1611	Executing nucleus DS_ASP_ClearDisplay.
1612	Executing nucleus DS_ASP_KeyBoard.
1613	Executing nucleus DS_ASP_RemoteControl.
1614	Executing nucleus DS_ASP_LEDsOn.
1615	Executing nucleus DS_ASP_LEDsOff.
1616	Executing nucleus DS_ASP_Reset.
1617	Executing nucleus DS_ASP_Extended.
1618	Executing nucleus DS_ASP_Watchdog.
1619	Executing nucleus DS_ASP_Reboot.
1623	Executing nucleus DS_ASP_PioExtended
1624	Executing nucleus DS_ASP_8SC2Check

Table 10 Commands for testing the Analogue Slave Processor.

Command	Description
2000	Executing nucleus DS_FRE_Communication.
2001	Executing nucleus DS_FRE_ChannelSelect.
2003	Executing nucleus DS_FRE_CommunicationIfModule

Table 11 Commands for testing the Front End (Tuner).

Command	Description
2100	Executing nucleus DS_HDD_Communication.
2101	Executing nucleus DS_HDD_Reset.
2102	Executing nucleus DS_HDD_VersionGet.
2103	Executing nucleus DS_HDD_WriteRead.
2104	Executing nucleus DS_HDD_CapabilitiesGet.
2105	Executing nucleus DS_HDD_Diagnostics.
2106	Executing nucleus DS_HDD_UploadImage.
2107	Executing nucleus DS_HDD_DownloadImage.
2108	Executing nucleus DS_HDD_RandomReadScan
2109	Executing nucleus DS_HDD_LinearSurfaceScan
2110	Executing nucleus DS_HDD_SpinOff
2111	Executing nucleus DS_HDD_SectorRead
2112	Executing nucleus DS_HDD_SetPower

Table 12 Commands for testing the Hard Disc.

Command	Description
2300	Executing nucleus DS_USB_DevTypeGet.
2301	Executing nucleus DS_USB_Reset
2302	Executing nucleus DS_USB_CheckDeviceConnect
2303	Executing nucleus DS_USB_CheckDeviceSpeed

Table 13 Commands for testing the Universal Serial Bus (USB).

1. Firmware Upgrading and other useful firmware hints

1.1. Preparation to upgrade firmware

1. Unzip the zip-archive file
2. Start the CD Burning software and create a new CD project (data disc) with the following settings:
   File system: Joliet
   Format: MODE 2: CDROM XA
   Recording mode: SINGLE SESSION (TRACK-AT-ONCE), FINALIZED CD
   Note: Long file name is necessary for the preparation of the upgrade disc
3. Place the content of the zip-archive into the root directory of the new CD project.
4. Burn the data onto a blank CDR or CD-RW

1.2. Procedures to apply the Firmware Upgrade

Notes: There are 2 upgrade processes supported: - Normal Upgrade and Forced Download.
For normal upgrading, power up the set, open the tray, insert the upgrade disc, close the tray and follow the on screen instruction. For forced download upgrading, follow the procedures described below.

1. Hold the <Record> + <Next> buttons down and Power up the set.
2. The tray opens and set will display:
   DOWNLOAD ->…….PUT DISC
3. Insert the prepared Upgrade CDROM and close the tray.
4. The set will display:
   INIT DSC -> ……. DOWNLOAD ->……
   The whole process takes less than 10 minutes
   Note: Do not press any buttons or interrupt the mains supply during the upgrading process, otherwise the set may become defective.
5. When the upgrade is completed the tray will open automatically and the set will display:
   REMOVE
6. Close the tray and the set will display:
   DONE
7. Then the software upgrade is successfully done.

1.3. How to read out the firmware version to confirm set has been upgraded

Notes: In order to check the firmware version of the set, user version info screen should be accessed. Follow the procedure below for checking user version info screen.

1. Power up the set
2. Press <OPTIONS> button on the Remote control and go to <Settings> option
3. Then go to <Setup> and choose <Version Info> by pressing OK.
4. The TV connected to the set will display the user version info as shown in the example below for checking software version:

Version Info
Royal Philips DVDR3570H Software version: 01.00 Please visit our website www.philips.com/support for further software updates and additional information

   Developer name: Royal Philips
   Product name (xxxx = model number): DVDRxxxxH
   Official SW release number: Software Version (xx.xx = release): xx.xx (01.00 in the example above)
5. Press <OPTIONS> button to exit.

1.4. Procedure for checking Development Version Info Screen

Notes: For detail software information such as Slash Version, Drive Software Version, etc of the set, the development version info screen should be accessed.

1) Power up the set
2) Press <OPTIONS> button on the Remote control and go to <Settings> option
3) Then go to <Setup> and choose <Version Info> by pressing OK.
4) When the user version info screen is appeared, press the blue key on the remote control.
5) The TV connected to the set will display the Development Version Info Screen as shown below:

Version Info
(c)PHILIPS 2007 Version Information: DI L+06_12/731839 SV 11621 BE 52.07.02.17 ASP 1,18,1,10 C1_8 20070510_1309 pro lecoplusleadV1 <void> EPG:1.00 DPMS:

Digital Board Info: (DI: Digital Board, L+06_12: Digital Board name, 73: Hardware ID for EU EPG, 1839: SW BUILD ID for recorder application in the example)
Slash Version (xxxxx = version): SV xxxxx (11621 for /31 in the example above)
Drive SW Version (yy.yy = model, xx.xx = version): BE yy.yy.xx.xx (Model 52.07, Version 02.17 in the example)
ASP Software and VFD Driver Version Number: (1,18: ASP software version number, 1,10: version number of VFD Driver
Detailed Build Information: (C1_8: Branch Information, 2007: year, 05: month, 10: date, 13: Hour, 09: minute in the above example)
EPG:1.00 DPMS: (internal to the recorder application.)

1.5. Procedure for Formatting a HDD drive

In case of failure the HDD is replaced by a new unformatted HDD. To prepare the new HDD for use, it must be formatted. Follow the procedure below to format HDD.

1) Press and Hold the <Previous> + <Stop> key combination while powering on the mains.
2) The set will start to display “FMT KEY”, and then it will show “FMT HDD” while formatting HDD.
3) If the formatting is completed successfully, the set will display “FMT DONE”. If the formatting is failed, it will show “FMT FAIL”.

Notes: Do not power off the set immediately when the “FMT DONE” is seen. Wait until the time or - - : - - is displayed before powering off the set.

1.6. Procedure to Virginize the set

Notes: All the user information will be lost after virginizing the set. Follow the procedure below to virginize the set.

1) Press and hold down the Standby key on the front while connecting to the power outlet.
2) Release the keys when ‘STARTING’ appears on the display.
3) Follow the instructions when the set wakes up.

2. Alignments & Test Procedures

Replacing the Digital Board

When the defective Digital Board is to be replaced with a new board, the following settings should be restored.

- Slash information (or slash version)
- IEEE Unique number (or DV ID)
- Hard Ware Diversity String (or Hardware ID)

The slash version, IEEE Unique number, and the Hardware ID are set at the end of the production line of the set.

The “Diversity String” tells the software during startup which hardware version is present.
In a new Digital Board, the non-volatile memory, the NVM, is an empty device. After replacement the set can only startup in Diagnostic software mode because the Slash version and Hardware ID is not initialized properly.

By way of commands via the Diagnostic Software (DS) and hyperterminal connection to the PC, these factory settings must be restored into the NVM.

2.1.1. Slash Version

The slash version is stored with DS command 1217 followed by the slash version as parameter.
The slash versions used in DVDR3575H, DVDR3577H, DVDR3595H and DVDR3597H are as follows:

- DVDR3575H & DVDR3577H/31 11621
- DVDR3577H/51 11622
- DVDR3575H & DVDR3577H/58 11623
- DVDR3575H & DVDR3577H/05 11624
- DVDR3595H & DVDR3597H/31 11625
- DVDR3595H/51 11626
- DVDR3595H & DVDR3597H/58 11627
- DVDR3595H & DVDR3597H/05 11628

Example:
DS:> 1217 11621
121700:
Test OK@

With DS command 1218 the slash version can be displayed

2.1.2. IEEE Unique Number

1. Note the serial number of the set example:

VN19 0650 100070

- VN = production center (VN….Szekesfehervar).
  According to UAW-500: V=22 and N=14 (A = 1, B = 2, C =3, etc)
- 19 = change code (this is not used for this calculation)
- 06 = YEAR
- 50 = Production WEEK
- 100070 = Lot and SERIAL number

2. Calculate the unique number: this number always exists out of 10 hexadecimal numbers
3. First 5 numbers: First we calculate a decimal number according to formula below:

- 35828*YEAR + 676*WEEK + 26*V +N + 8788
- The figures are fixed, YEAR, WEEK and production center codes V, N are variables
- Example: 35828*06 + 676*50 + 26*22 + 14 + 8788 = 258142 (decimal)
- Then we translate this decimal number to a hexadecimal number.
- Example: 258142 = 3F05E (hex)

4. Last 5 numbers: The last 5 numbers exist out of the Lot and SERIAL number.

We have to translate the decimal number to the next 5 hexadecimal numbers:
Example: 100070 (decimal) = 186E6 (hex)

5. This IEEE Unique number (10-digit hexadecimal number) is stored with DS command 1207.

Example:
DS:>1207 3F05E186E6
120700:
Test OK@

The set has now its original IEEE unique number.
With DS command 1208 the number can be displayed

2.1.3. Setting HardwareID

With DS command 1228 (command mode interface) the system settings including the Hardware “Diversity String” can be displayed

Note: An error in the Diversity string will render the set not able to boot-up and the Digital board will be defective.

Via the Dignostic Software the “Diversity String” can be stored with the command 1226, followed by the “Diversity String” as parameter. That stored “Diversity String” can be checked with the DS command 1229.

The Diversity strings used in DVDR3575H, DVDR3577H, DVDR3595H and DVDR3597H are as follows:

Non-EPG Sets:DVDR3575H/05/58, DVDR3577H/05/51/58, DVDR3595H/05/51/58 & DVDR3597H/05/58:
444248497A8240014C2B30365F31320072200700000203000001010040020000445644523230303 12E303031
0202000000010300010002010000020000000000

EPG Sets: DVDR3575H/31, DVDR3577H/31, DVDR3595H/31 & DVDR3597H/31:
44424849A88340014C2B30365F31320073200700000203000001010040020000445644523230303 12E303031
0202000000010300010002010000020000000000

Example:
DS:> 1226
444248497A8240014C2B30365F31320072200700000203000001010040020000445644523230303 12E303031
0202000000010300010002010000020000000000
122600:
Test OK @

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ANALOG BOARD

1101 GND, Y_CVBSIN2, GND, AOUT2, GND, AOUT1, GND, Vmux_5_out, GND, A_VR, GND, A_UB, GND, A_YG, GND, Vmux_6_out, GND, SCL_CVBS, GND, D_CVBS, GND, D_Y, GND, D_C, GND, D_VR, GND, D_YG, GND, D_UB

1201 AUDIO1_L, GND, AUDIO1_R, GND, AUDIO2_L, GND, AUDIO2_R, GND, NC, GND, NC, GND, LR1_L, GND, LR1_R, GND, D_KILL, GND, DAOUT, GND, DAINCOAX, DAINOPT, GND, SIF, GND

1403 FAN_P, FAN_N — *FAN*

1507 GND, 3V3STBY, 5VSTBY, GND, 12VSTBY

8001 PS_STBY

J2: GND, 3V3STBY, 5VSTBY, GND, 12VSTBY — AC MAINS

J1: 12VSTBY, GND, IPFAIL, GND, 5NSTBY, VGNSTBY — **PSU**

1500: 12VSTBY, GND, IPFAIL, GND, 5NSTBY, VGNSTBY

8002 PSA

8013 PS_FP

1501: GND, VGNSTBY, 12VSTBY, 5VSTBY, GND

1503: +12VE, GND, GND, +5VE

1200: GND, D_MCLK, GND, D_DATA0, D_WCLK, GND, D_BCLK, GND, LR2_R, GND, LR2_L, GND

8011 AIO_0

1400: GND, SCL_S3V3, SDA_S3V3, GND, WSRO, STBY, DD_ON, FAN A, FAN B, REGION SELECT A, REGION SELECT B, GND, 8SC1/AFC, HD_ON, 8SC2/WSR1, IMUTE, LOOP THRU ON, YUV ACTIVEN

1402: GND, AUDIO_MUX3_SEL_C, AUDIO_MUX1_SEL_A, AUDIO_MUX3_SEL_D, GND, FBIN, FOME, GND, FBOUT, DTT/WU, GND, AUDIO_MUX2_SEL/DTT_SEL, VIDEO_MUX3_SEL, GND

1505: 3V3D, 3V3D, 3V3D, 3V3D, GND, 12VD, GND, GND, 5VD, GND, GND, 5ND

1511: 5VSTBY, GND, 3V3STBY

8005 PSDIG_0

1508: +12VH, GND, GND, +5VH

8012 AIO_1

8008 COMM_0

8009 COMM_1

8006 PSDIG_1

8003 PS_HDD

8007 VIO

8004 PS_DRV

1703: 5VSTBY, GND, 3V3STBY

1700: 5ND, GND, GND, 5VD, GND, 12VD, GND, GND, 3V3D, 3V3D, 3V3D, 3V3D

40-pin IDE

1401: GND, CS1_n, DA2, PDIAG_n, IOCS16, GND, SEL, GND, GND, GND, KEYPIN, DD(15), DD(14), DD(13), DD(12), DD(11), DD(10), DD(9), DD(8), GND, DASP_n, CS0_n, DA0, DA1, INTRQ, DMACK_n, IORDYC, DIOR_n, DIOW_n, DMARQ, GND, DD(0), DD(1), DD(2), DD(3), DD(4), DD(5), DD(6), DD(7), RESETn

8017 IDEI_HDD

40-pin IDE connector

SEAGATE 160G HDD

8018 IDE0_DVR

40-pin IDE connector

BASIC ENGINE (D5.2/D5.8)

DIGITAL BOARD

1500: GND, Y_CVBSIN2, GND, AOUT2, GND, AOUT1, GND, Vmux_5_out, GND, A_VR, GND, A_UB, GND, A_YG, GND, Vmux_6_out, GND, SCL_CVBS, GND, D_CVBS, GND, D_Y, GND, D_C, GND, D_VR, GND, D_YG, GND, D_UB

1503: GND, D_MCLK, GND, D_DATA0, D_WCLK, GND, D_BCLK, GND, LR2_R, GND, LR2_L, GND

1600: GND, SCL_S3V3, SDA_S3V3, GND, WSRO, STBY, DD_ON, FAN A, FAN B, REGION SELECT A, REGION SELECT B, GND, 8SC1/AFC, HD_ON, 8SC2/WR1, IMUTE, LOOP THRU ON, YUV ACTIVE

1502: AUDIO1_L, GND, AUDIO1_R, GND, AUDIO2_L, GND, AUDIO2_R, GND, AUDIO3_L, GND, AUDIO3_R, GND, LR1_L, GND, LR1_R, GND, D_KILL, DAOUT, GND, DAINCOAX, DAINOPT, GND, SIF, GND

1601: GND, AUDIO_MUX3_SEL_C, AUDIO_MUX1_SEL_A, AUDIO_MUX3_SEL_D, GND, FBIN, FOME, GND, FBOUT, WU, GND, AMUX2_SEL, VIDEO_MUX3_SEL, GND

1400 40-pin IDE connector

1402 E-JTAG

1727: GND, SDA1, CEC_INTn, SCL1, GND, ITU_OUT_CLK, GND, ITU_OUT_0, GND, ITU_OUT_1, GND, ITU_OUT_2, GND, ITU_OUT_3, +5V_HDMI, ITU_OUT_4, +3V3_HDMI, ITU_OUT_5, +3V3_HDMI, ITU_OUT_06, +3V3_HDMI, ITU_OUT_7, GND, FSCLK_OUT, GND, SCK_OUT, GND, SD_OUT, GND, SPDIF_OUT, GND, WS_OUT, +3V3_VIP, PIO10_HDMI_IRQ, ITU_OUT_HSYNC, HDMI_RSTn, SDA0, PSCAN_RSTn, SCL_ABT, GND

1404: TXD, MPIO19_EEPROM_En, RXD0, N/U, GND, N/U, +5V — SERVICE

1603: GND, SEL KEY2 3, KEY2 3, KEY1, TEMP_SENSE, GND, RC, STDBY_LEDN, DISP_STBN, DISP_CLK, DISP_DATA, GND, VFD_CLK, GND

1501: AINFR, GND, AINFL, GND, CVBSFIN_FC, GND, CFIN_FC, GND, YFIN_FC

1301: TPB0-, TPB0+, GND, TPA0-, TPA0+, GND

1302: +5V, -D, +D, ID, GND

8014 AV_FP

8015 COMM_FP

8019 USB

USB SHIELD CABLE

HDMI BOARD

8026 HDMI

1101: GND, SDA1, CEC_INTn, SCL1, GND, ITU_OUT_CLK, GND, ITU_OUT_0, GND, ITU_OUT_1, GND, ITU_OUT_2, GND, ITU_OUT_3, +5V_HDMI, ITU_OUT_4, +3V3_HDMI, ITU_OUT_5, +3V3_HDMI, ITU_OUT_06, +3V3_HDMI, ITU_OUT_7, GND, FSCLK_OUT, GND, SCK_OUT, GND, SD_OUT, GND, SPDIF_OUT, GND, WS12_OUT, GND, INT_HDMI, GND, HDMI_RSTn, SDA_ABT, PSCAN_RSTn, SCL_ABT, GND

FRONT BOARD

1100: GND, VGNSTBY, 12VSTBY, 5VSTBY, GND

1102: STANDBY, 5VSTBY, POWER, GND

1101: GND, NU, KEY2, KEY1, TEMP_SENSE, GND, RC, NU, CSN_F, SCK_F, SDA_F, GND, 40KHZ, GND

1203: YFIN_FC, GND, CFIN_FC, GND, CVBSFIN_FC, GND, AINFL, GND, AINFR

8027 STBY_FP

LECOPLUS INTERFACE BOARD

1400: TXD, MPIO19_EEPROM_En, RXD0, N/U, GND, N/U, +5V — SERVICE

8030 SERVICE Port

STANDBY BOARD

1301: STANDBY, 5VSTBY, POWER, GND

*Option

CHN	SETNAME DVDR3575H		
CLASS_NO	**SET WIRING DVDR3575H EU**	1 2007-03-23 1 2007-02-23	**3139 249 4290**
2007-02-23 2			
NAME Samantha C.	SUPERS. 1	10 132 - 1	A3
SV CHECK	DATE 2007-02-23	©c ROYAL PHILIPS ELECTRONICS N.V. 2007	

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DVDR3595H-EU
Set Overview ver 1.0

AC MAINS INPUT (230V)

PIE AC7010LF

PSU-1

PSU-2

PSU SWITCHING

1507

1500

1505

1503

1501

1511

1508

Digital Bd.

Optical

HDD

DTTM

Analog Bd.

7500 M34B43HD (D-D-D-)

ANTENNA INPUT

TV OUT

DIGITAL OUT

1401 Samsung Tuner TCSM0601PD25P

1304

REAR AL AR CVBS S-VIDEO

1304 1301-B 1301-A

SCART1

1100-1

SCART2

1103-1

Analog Bd.

7407 LM393D Quad Comp

7116 HEF4013

7202 CS4351 DAC

Mute Ctrl

NAND

EKILL (Data)

AKILL (Clock)

Buffer

7314/5

7209 LM833DG Dual Amp

AOUT2L/2R

7212 HEF4052BT Analog Switch

7203 LM833DG Dual Amp

AOUT1L/1R

7205 HEF4052BT Analog Switch

7111,2,7, 8,7105

71024 09/12

7100 NJM2580M 3-Channel Video Amp

7101 NJM2594M Tripple Video Switch

7306 NJM2267M Dual 6db Video Amp

7110 NJM2267M Dual 6db Video Amp

7114 NJM2244M 3-Input Video s/w & Driver

7113 NJM2244M 3-Input Video s/w & Driver

Vmux_6_out

RGB/Y

CVBS/Y

VFV

LOOP_THRU_ON

FBOUTSC1

AIN1/2L1R

AIN2L/2R

YCVBSIN2

RGB Y/p

Level Shifter

To Vmux 586

7412-3 7416 Fan Speed Control

1403 FAN

STBY

HD_ON

COM 0 1400

AIO 1 1200

AIO 0 1201

COM 1 1402

VIO 1101

D5.2 Closed

1700

1600

1503

1502

1601

1500

1727

To Loco

1703

7706 NCP565 +1V8

7702 NCP565 +1V2

7700 LD2915 +2.5V +VDDR

1603

7604 TMP87CH74F ASP

7500 SAA7136E VIP

AUDIO DECODER

VIDEO DECODER

24576M

1501

7801 LM833DG Dual Amp

7804 UDA1361TS ADC

7806 4052 Analog Switch

8M

32768K

AJ_Vprst

VIP_Reset

I2C nu

I2C 1 SILENT

WU

I2S_OUT

SDIF_OUT

I2S

SDO

PHI

I2S2/SPDIF

1400

IDE 0

BE

1401

IDE 1

HDD

7608 NCP301

7607 NCP303

3V3

5V

ASP_Rst

PNX_Rst

INT

To HDM

7100 PNX7350E LECO +

PNX_ITU/HN

ITU_OUT

RGB(YUV),VIC, CYBS

7301 TPS2051D

1302

USB

X6

7200/1 DDRAM (32MB X2 per)

7206 8MB FLASH M29W160ET70N6F

7300 PHY TSB41AB1PHP

24576M

DAINCOAX

DAINOPT

1301

Digital Bd.

JTAG-1402

DIAGS-1400

HDMI

7115 Video Scaler

7116 HDMI Transmitter

1101

1107

To TV

HARD-DISC

D5.2 Closed

LECOPLUS INT BD

Front Bd.

1100

7107 TSOP48362

IR

FTD DISPLAY 7100 (HUV-08SS65T)

7103 TMP86PM74A Front Proccessor

Filament Driver

16M

REC. RED LED

HDD BLUE LED

KEY1

KEY2_3

1203

1178

1102

1200

AR AL CVBS

DV-IN 1177

USB 8019TypeA

Standby On/Off

STBY

1301

1302

Legend:-
Green lines: Audio
Brown lines: Video
Black lines: Control

CHN	SETNAME DVDR3575H		
CLASS_NO	E BUILDING BLOCK DVDR3595H EU	1 2007-03-23 1 2007-02-23	3139 249 4289
2007-02-23 2			
NAME Samantha C.	SUPERS. 1	10 130 1	A3
SV CHECK	DATE 2007-02-23	©c ROYAL PHILIPS ELECTRONICS N.V. 2007	

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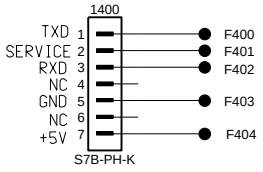
PHILIPS

1400 B2 F400 B2 F401 B2 F402 B2 F403 B2 F404 C2

4

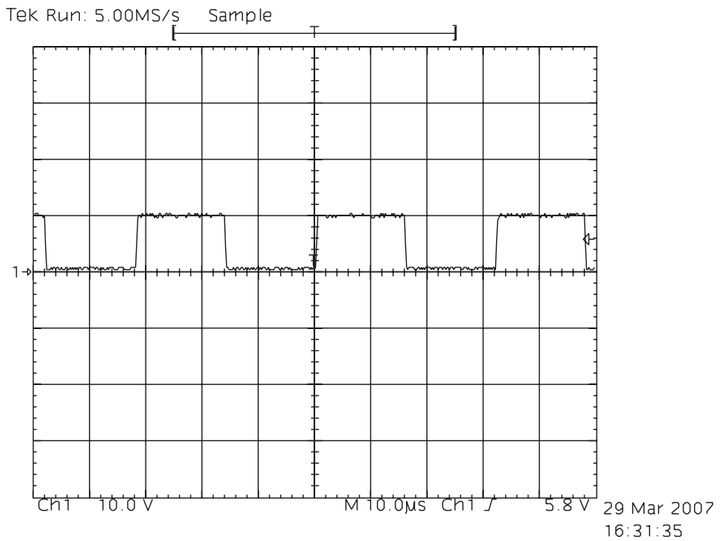


CHN	SETNAME DVDR3570H		
CLASS_NO 3PB120	PCB FR0NT DVDR3570H PANEL	3139 243 3645	4 2007-02-16
2006-10-10 2	LECOPLUS INT BD		3 2007-01-10
NAME Tan Peng Hock	SUPERS. -	4 10 130 – 4	A4
SV CHECK	DATE 2006-07-27	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

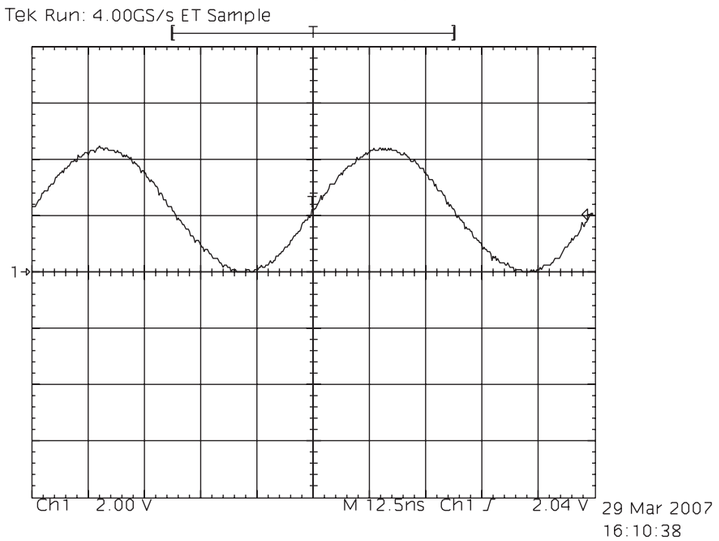
DVDR3570H/boards/3139_243_36504_01

Front Board Waveforms

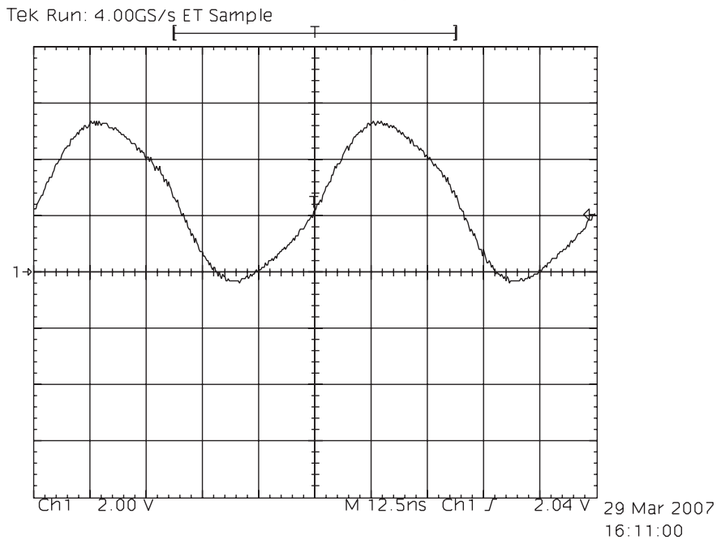
Emitter 7106,7108, 2140 (+)



I102 (1110)

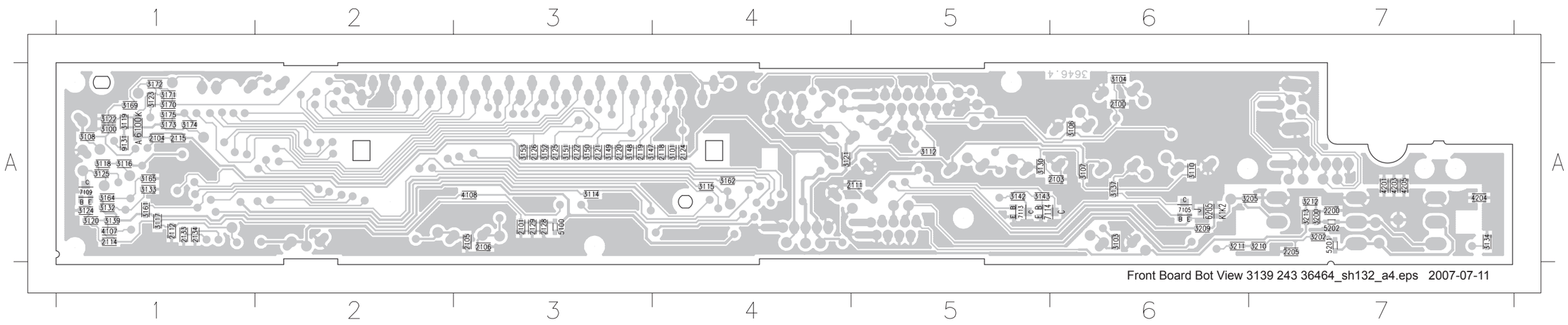


I103 (1110)



Layout: Front Board (Bottom View)

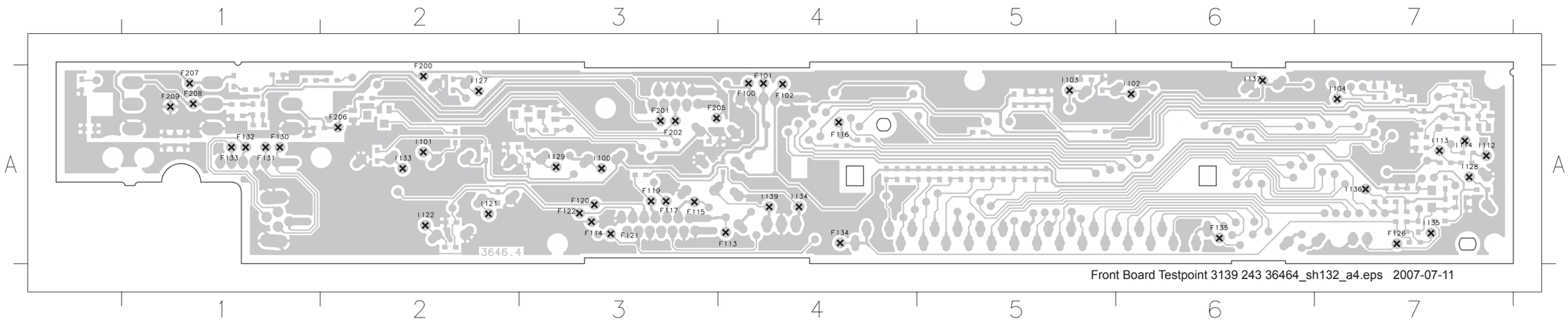
2100	A6	2106	A3	2118	A4	2124	A4	2133	A1	3101	A4	3108	A1	3116	A1	3121	A4	3130	A5	3139	A1	3149	A3	3161	A1	3170	A1	3175	A1	3210	A7	4108	A3	5100	A3	7105	A6
2101	A3	2111	A5	2119	A3	2125	A3	2134	A1	3103	A6	3110	A6	3117	A1	3122	A1	3132	A1	3142	A5	3150	A3	3162	A4	3171	A1	3200	A7	3211	A6	4201	A7	5201	A7	7109	A1
2103	A6	2112	A1	2120	A3	2126	A3	2200	A7	3104	A6	3112	A5	3118	A1	3123	A1	3133	A1	3143	A5	3151	A3	3164	A1	3172	A1	3202	A7	3212	A7	4203	A7	5202	A7	7113	A5
2104	A1	2114	A1	2121	A3	2128	A3	2205	A7	3106	A6	3114	A3	3119	A1	3124	A1	3134	A7	3147	A3	3152	A3	3165	A1	3173	A1	3205	A7	3213	A7	4204	A7	6100	A1	7114	A5
2105	A3	2115	A1	2122	A3	2129	A3	3100	A1	3107	A6	3115	A4	3120	A1	3125	A1	3137	A6	3148	A3	3153	A3	3169	A1	3174	A1	3209	A6	4107	A1	4205	A7	6205	A6	9131	A1



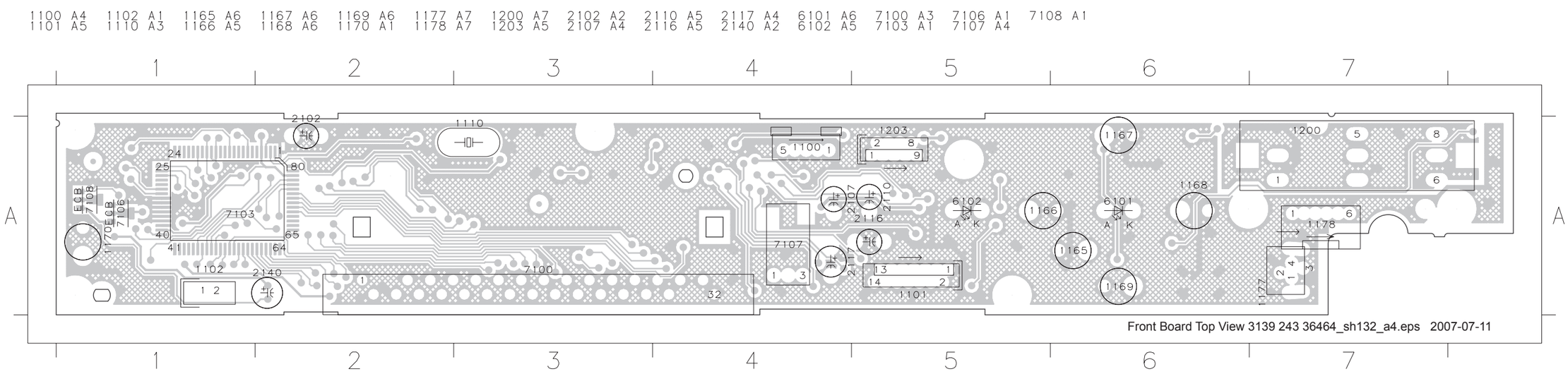
Front Board Bot View 3139 243 36464_sh132_a4.eps 2007-07-11

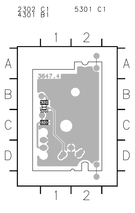
Layout: Front Board Testpoint Overview

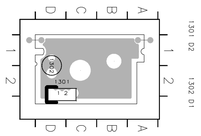
F100 A4 F113 A4 F116 A4 F120 A3 F126 A7 F132 A1 F135 A6 F202 A3 F207 A1 I100 A3 I103 A5 I113 A7 I122 A2 I129 A3 I135 A7 I139 A4
F101 A4 F114 A3 F117 A3 F121 A3 F130 A1 F133 A1 F200 A2 F205 A3 F208 A1 I101 A2 I104 A7 I114 A7 I127 A2 I133 A2 I136 A7
F102 A4 F115 A3 F119 A3 F122 A3 F131 A1 F134 A4 F201 A3 F206 A2 F209 A1 I102 A6 I112 A7 I121 A2 I128 A7 I134 A4 I137 A6

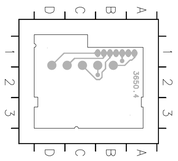


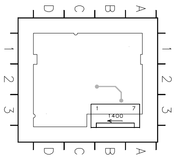
Layout: Front Board (Top View)




2307 G1
4301 G1
5301 C1
1
2
A
B
C
D
2047.4


D
C
B
A
1
2
1301
1302 02
1302 01


A
B
C
D
1
2
3
3050-4



1409.83

VFD Sketch Code is use for MG, for partlist 12NC is 272217100321

1177 CSS5004-7A01E — DV-in CONNECTOR — F130 F131 F132 F133 — 1178 S6B-PH-K — TPBn TPB GND TPAn TPA GND — IEEE1394 — to DIGITAL BOARD

1100 B5B-PH-K PS_FP — from ANA BOARD — GND +5VSTBY +12VSTBY VGNSTBY GND — F100 F101 F102 — +5VSTBY +12VSTBY VGNSTBY — 2107 470u 50V

7107 TSOP4836ZC1 — VS OUT GND — 3121 220R — I109 I134 — 3112 1K0 — 2116 22u

1101 HLW14S-2C7 COMM_FP — from/to Digital Board — GND 40KHZ GND SDA_F SCL_F SCN_F STDBY_LED RC GND TEMP_SENSE KEY1 KEY2_3 SEL_KEY2_3 GND — F113 F114 F115 F116 F117 F119 F120 F121 F122 — not used 4108 — 3134 10K 23226153

1102 WH02D-1 STBY_FP — to STBY-PRINT — POWER GND — F126 — 3169 4K7

7103 TMP86PM74AFG — VAREF VDD VKK AVSS VSS — XTAL RESET TEST INT3 TC2 TC3 TC4 PWM4 PD04 PPG INT4 SI SO SCK INT5 STOP XTIN XTOUT TC1 INT DVO AIN — P0<0:7> P1<0:7> P2<0:2> P3<0:1> STOP<2:5> P4<0:7> P5<0:3> P6<0:7> P7<0:7> P8<0:7> P9<0:7> P<0:4>

7100 HUV-08SS65T — FIL1 FIL2 — G1 G2 G3 G4 G5 G6 G7 G8 P1 P2 P3 P4 P5 P6 P7 P8 P9 P10 P11 P12 P13 P14 P15 P16 P17

DIMMER — 7114 PDTC124EU — 3143 2K2

HDD — 6102 LTL-816TDK3 BLUE LED — I100 — 3142 470R — 7113 PDTC124EU

RECORD — 6101 LTL816KETNN RED LED — I101 — 3137 390R — 7105 PDTC124EU

6100 BZX384-C6V8 — 2117 22u 2L — 3123 470R — 3119 470R — 9131 — 2140 22u 50V

+12VSTBY — 3116 330R — I113 — 3118 330R — 7106 2SD1664 — I114 — 3125 470R — I112 — 7109 BC847BW — 3120 1K0 — 2114 1n0 — 7108 2SB1132 — 3124 10K — 2110 10u — 2111 47n — 2115 47n 50V — 3122 10K — 3100 3K9

+5VSTBY — 3161 10K — not used 2133 10p — 2134 100p — 4107 — 3114 100R — 3115 100R — 3162 100R

not used 3107 2K2 — 2103 10n

3110 220R — I133 — 1168 — EVQ11U05R — NEXT

3130 10K — I129 — 1166 — EVQ11U05R — PREV

3108 47K — I128 — 1170 — EVQ11U05R — OPEN/CLOSE

3103 220R — I127 — 1167 — EVQ11U05R — PLAY

3104 10K — I122 — 1169 — EVQ11U05R — STOP

3106 47K — I121 — 1165 — EVQ11U05R — REC

2100 10n

+5VSTBY — 5100 10u — 2105 10p — I102 — 1110 10M X1-A49 — 2106 10p — I103 — 3117 220K — 2112 470n — I104 — 2101 100n — 2102 10u 25V — 2128 100n — 2129 100n — I137 — VGNSTBY — 2104 100n 50V

2124 100p — 3101 22K — 2118 100p — 3147 22K — 2119 100p — 3148 22K — 2120 100p — 3149 22K — 2121 100p — 3150 22K — 2122 100p — 3151 22K — 2125 100p — 3152 22K — 2126 100p — 3153 22K

3172 1K0 — 3165 1K0

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* Not used (Provision only)

CHN ********	SETNAME DVDR3570H		
CLASS_NO 3PB120	PCB FRONT DVDR3570H PANEL	3139 243 3645	4 2007-02-16
2006-10-10 2	Display Part DISP		3 2007-01-10
NAME TAN PENG HOCK	SUPERS. -	4	10 130 – 1 A2
SV	CHECK	DATE 2006-07-19	© ROYAL PHILIPS ELECTRONICS N.V. 2006

DVDR3570H/boards/3139_243_36464_01

1100 C2 F130 B3
1101 F2 F131 B3
1102 H2 F132 B3
1110 D9 F133 B3
1165 I7 F134 B8
1166 I4 F135 B11
1167 I6 I100 D7
1168 I4 I101 D7
1169 I6 I102 C10
1170 I5 I103 D10
1177 B2 I104 E10
1178 B4 I112 F8
2100 I7 I113 E8
2101 C11 I114 F7
2102 D11 I121 I7
2103 I5 I122 I6
2104 D12 I127 I6
2105 C9 I128 I5
2106 D9 I129 I4
2107 C3 I133 I4
2110 F6 I134 E2
2111 F7 I135 A8
2112 E9 I136 A11
2114 F9 I137 D11
2115 F5 I139 E2
2116 E2
2117 F5
2118 E14
2119 F14
2120 F14
2121 F14
2122 G14
2124 E14
2125 G14
2126 G14
2128 C11
2129 D11
2133 G10
2134 G10
2140 F7
3100 F6
3101 E14
3103 I6
3104 I6
3106 I7
3107 H5
3108 I5
3110 I4
3112 E2
3114 G8
3115 G8
3116 E7
3117 D9
3118 F8
3119 F6
3120 F9
3121 D2
3122 F5
3123 F5
3124 G8
3125 F8
3130 I4
3132 I10
3133 I10
3134 G2
3137 D7
3139 F9
3142 D7
3143 C7
3147 F14
3148 F14
3149 F14
3150 F14
3151 G14
3152 G14
3153 G14
3161 G9
3162 G8
3164 I10
3165 I10
3169 H2
3170 B8
3171 B8
3172 B9
3173 B11
3174 B11
3175 B11
4107 F10
4108 F3
5100 C11
6100 F5
6101 D6
6102 D6
7100 B11
7103 D11
7105 E7
7106 F7
7107 D2
7108 G7
7109 F8
7113 D7
7114 C7
9131 F6
F100 C2
F101 C2
F102 C2
F113 F2
F114 F2
F115 F2
F116 F2
F117 F2
F119 F2
F120 F2
F121 F2
F122 G2
F126 H2

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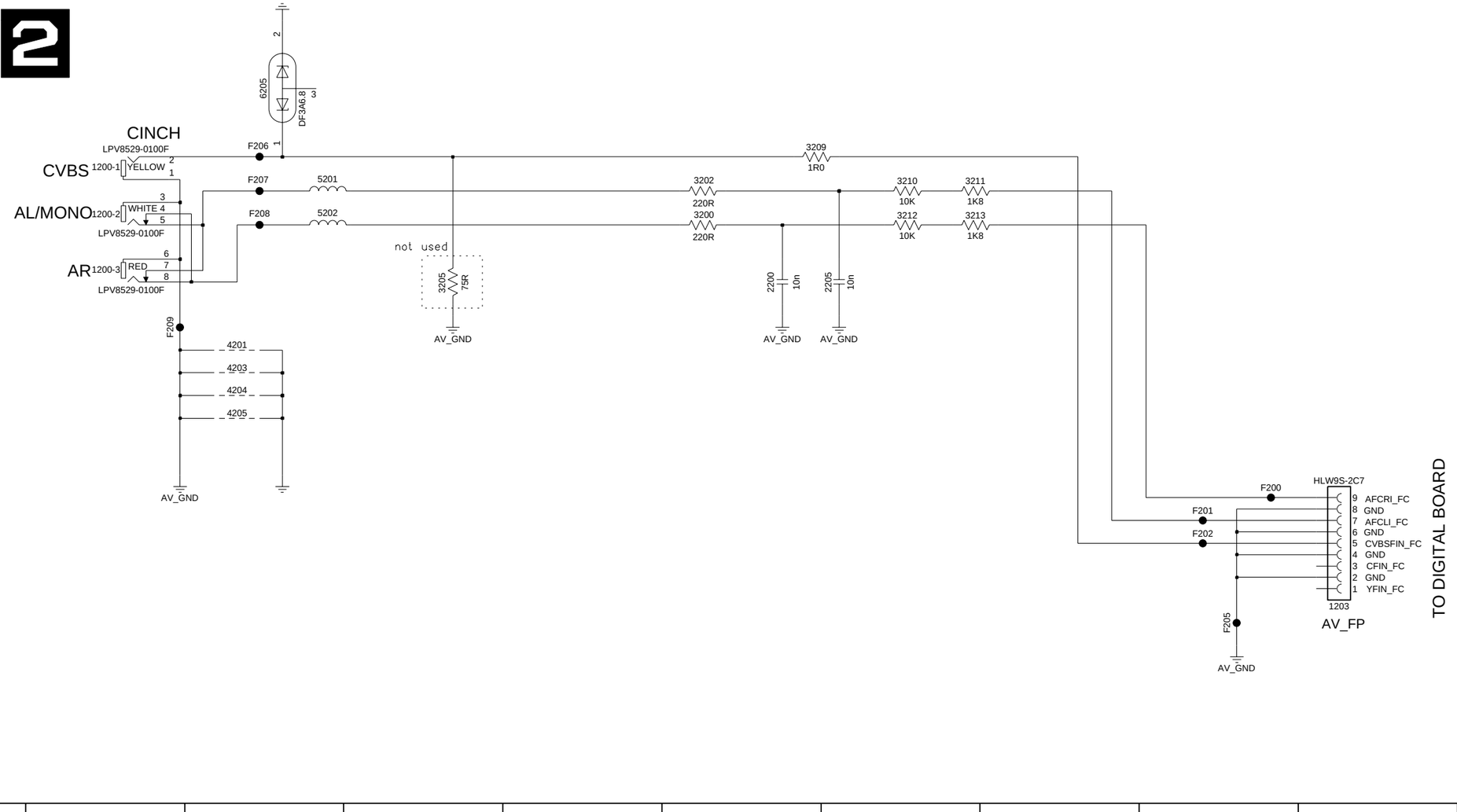
PHILIPS

2



1200-1 B1
1200-2 B1
1200-3 B1
1203 D9
2200 B5
2205 B6
3200 B5
3202 B5
3205 B3
3209 B5
3210 B6
3211 B6
3212 B6
3213 B6
4201 C2
4203 C2
4204 C2
4205 C2
5201 B2
5202 B2
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F202 D8
F205 E8
F206 B2
F207 B2
F208 B2
F209 C1

* Not used (Provision only)

CHN ********	SETNAME DVDR3570H		
CLASS_NO 3PB120	PCB FRONT DVDR3570H PANEL	3139 243 3645	4 2007-02-16
2006-10-10 2	FRONT CONNECTOR FC		3 2007-01-10
NAME TAN PENG HOCK	SUPERS. **** *** *****	4	10 / 130 – 2 / A3
SV / CHECK	DATE 2006-07-19	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

DVDR3570H/boards/3139_243_36464_01

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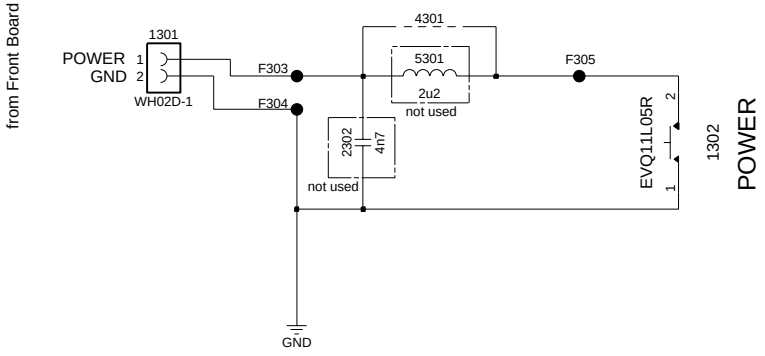
owner.

1301 B2 **1302 B4** **2302 B3** **4301 B3** **5301 B3** **F303 B2** **F304 B2** **F305 B4**



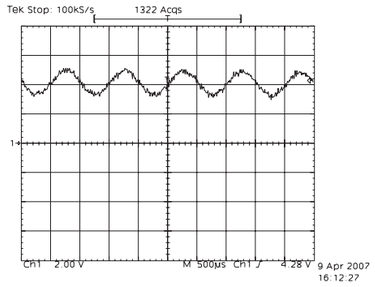
* Not Used (Provision only)

CHN ********		SETNAME DVDR3570H					
CLASS_NO 3PB120	PCB FRONT DVDR3570H PANEL				4	2007-02-16	
					3	2007-01-10	
2006-10-10 2	Standby STBY	3139 243 3645					
NAME Tan Peng Hock	SUPERS. -	4	10	130 – 3		A4	
SV CHECK	DATE 2006-07-19	© ROYAL PHILIPS ELECTRONICS N.V. 2006					

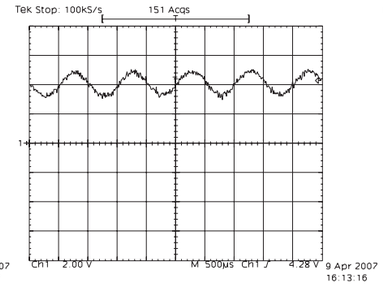
DVDR3570H/boards/319_243_36474_01

Analogue Board Waveforms

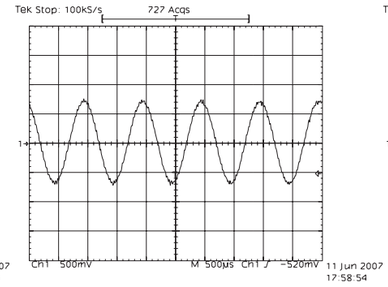
7202 pin 15 AOUTB



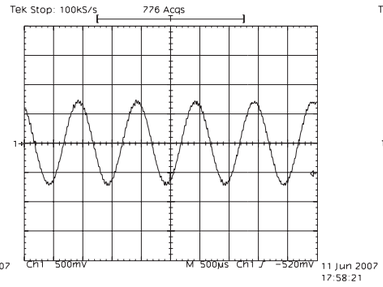
7202 pin 18 AOUTA



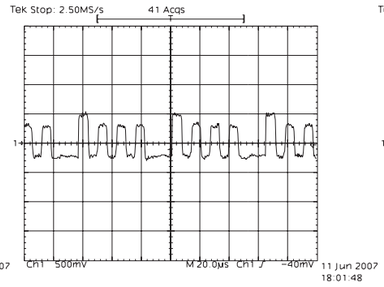
F100 SCART1 AOUTL



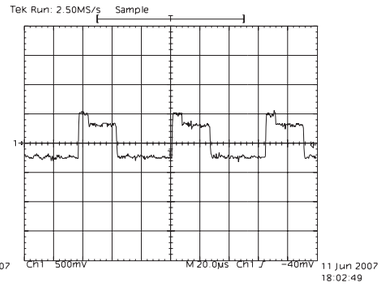
F102 SCART1 AOUTR



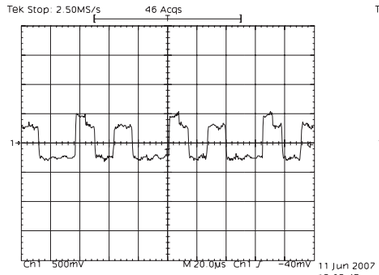
F104 SCART active BOUT



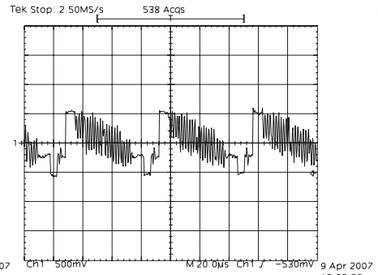
F107 SCART active GOUT



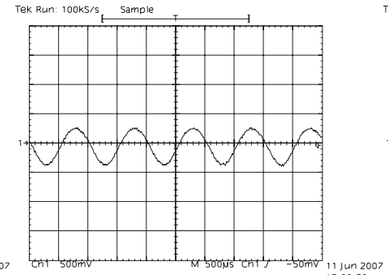
F108 SCART active ROUT



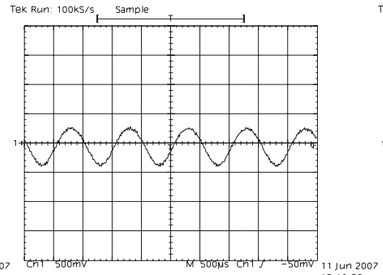
F110 SCART CVBS



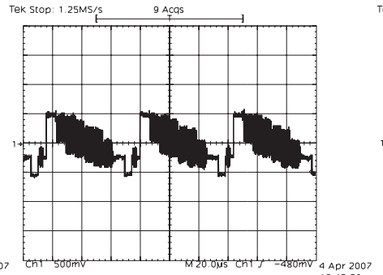
F308 Aud R



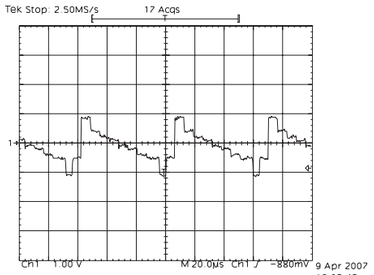
F309 Aud L



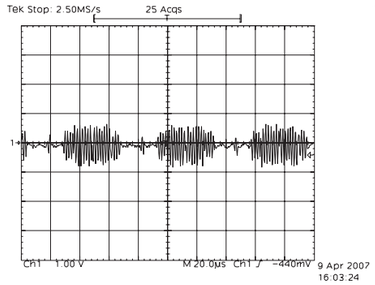
F310 CVBS-Out



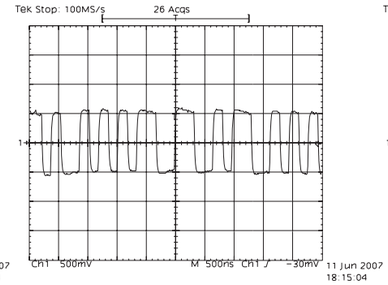
F311 SY out



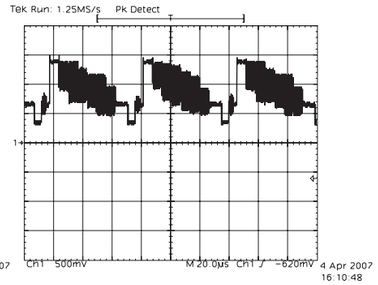
F312 SC out



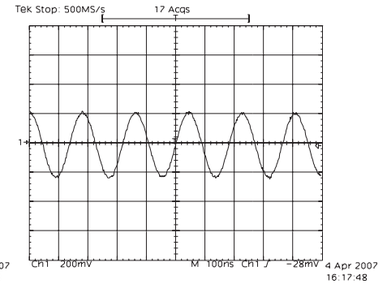
F326 Digital Out Cinch



F435 Tuner Video Out



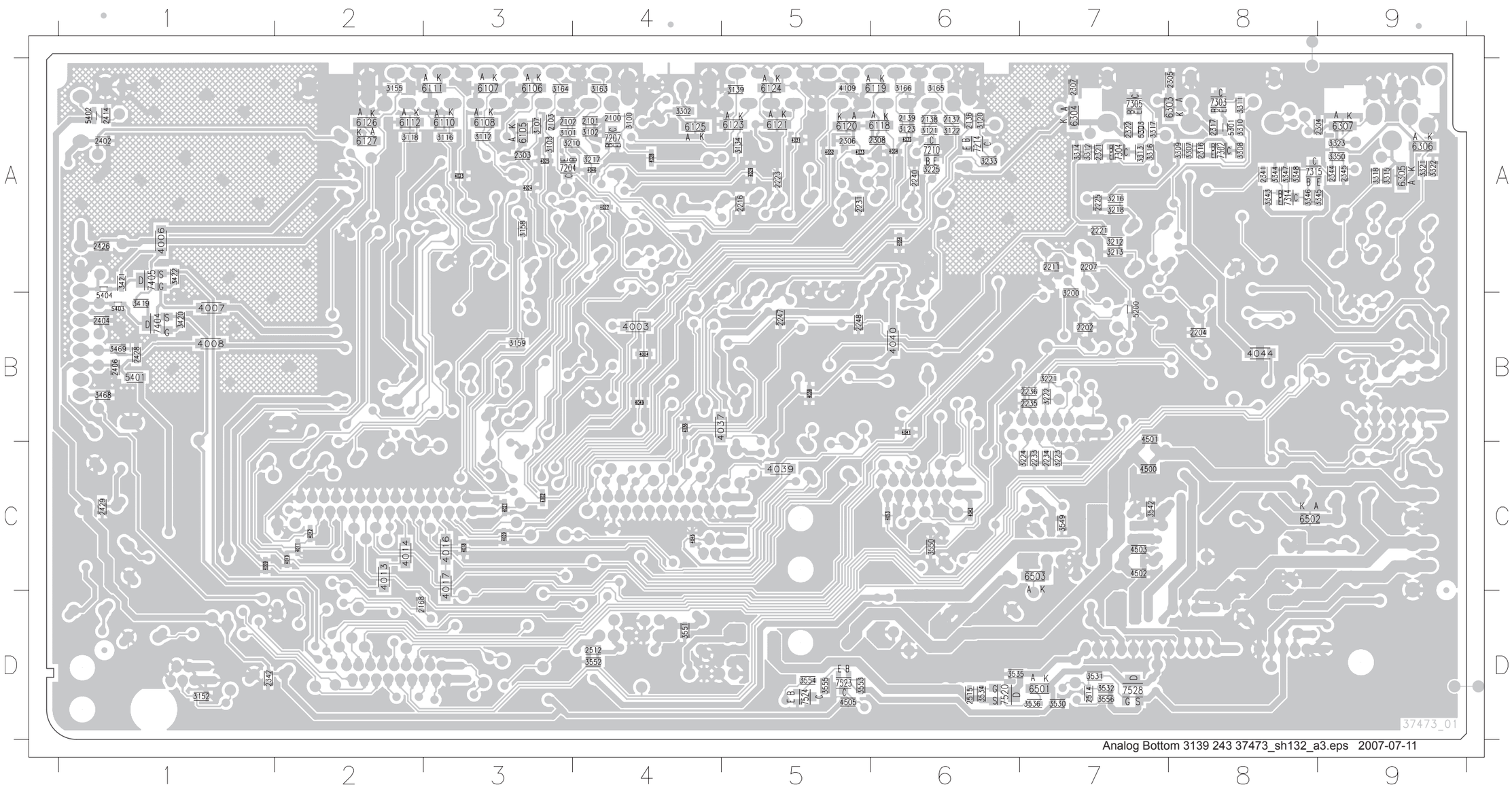
F437 Tuner SIF



Layout: Analog (Bottom View)

2100	A4	2216	A5	2304	A9	2402	A1	3103	A3	3158	A3	3221	B7	3313	A7	3347	A8	3535	D6	4004	B4	4020	C3
2101	A4	2221	A7	2305	A8	2404	B1	3107	A3	3159	B3	3222	B7	3314	A7	3348	A8	3536	D7	4006	A1	4021	C3
2102	A3	2223	A5	2306	A5	2406	B1	3112	A3	3163	A4	3223	C7	3315	A9	3350	A9	3542	C7	4007	B1	4023	A3
2103	A3	2225	A7	2307	A7	2414	A1	3116	A3	3164	A3	3224	C7	3316	A7	3419	B1	3549	C7	4008	B1	4024	A3
2136	A6	2231	A5	2308	A6	2426	A1	3118	A2	3165	A6	3225	A6	3317	A7	3420	B1	3550	C6	4009	C1	4025	A3
2137	A6	2233	C7	2316	A8	2428	B1	3120	A6	3166	A6	3233	A6	3318	A9	3421	A1	3551	D4	4010	C2	4027	A4
2138	A6	2234	C7	2317	A8	2429	C1	3121	A6	3200	B7	3302	A4	3321	A9	3422	A1	3552	D4	4011	C2	4028	A4
2139	A6	2235	B7	2321	A7	2512	D4	3122	A6	3210	A3	3307	A8	3322	A9	3468	B1	3553	D5	4012	C2	4029	A5
2168	D2	2236	B7	2322	A7	2514	D7	3123	A6	3212	A7	3308	A8	3323	A9	3469	B1	3554	D5	4013	C2	4031	A5
2202	B7	2240	A6	2341	A8	2515	D6	3134	A5	3213	A7	3309	A8	3343	A8	3530	D7	3555	D5	4014	C2	4032	A5
2204	B8	2247	B5	2342	D1	3100	A4	3139	A5	3216	A7	3310	A8	3344	A8	3531	D7	3556	D7	4016	C3	4033	A5
2207	A7	2248	B5	2344	A9	3101	A3	3152	D1	3217	A4	3311	A8	3345	A9	3532	D7	4002	C3	4017	C3	4034	A6
2211	A7	2303	A3	2345	A9	3102	A4	3155	A2	3218	A7	3312	A7	3346	A8	3534	D6	4003	B4	4018	C3	4035	A6

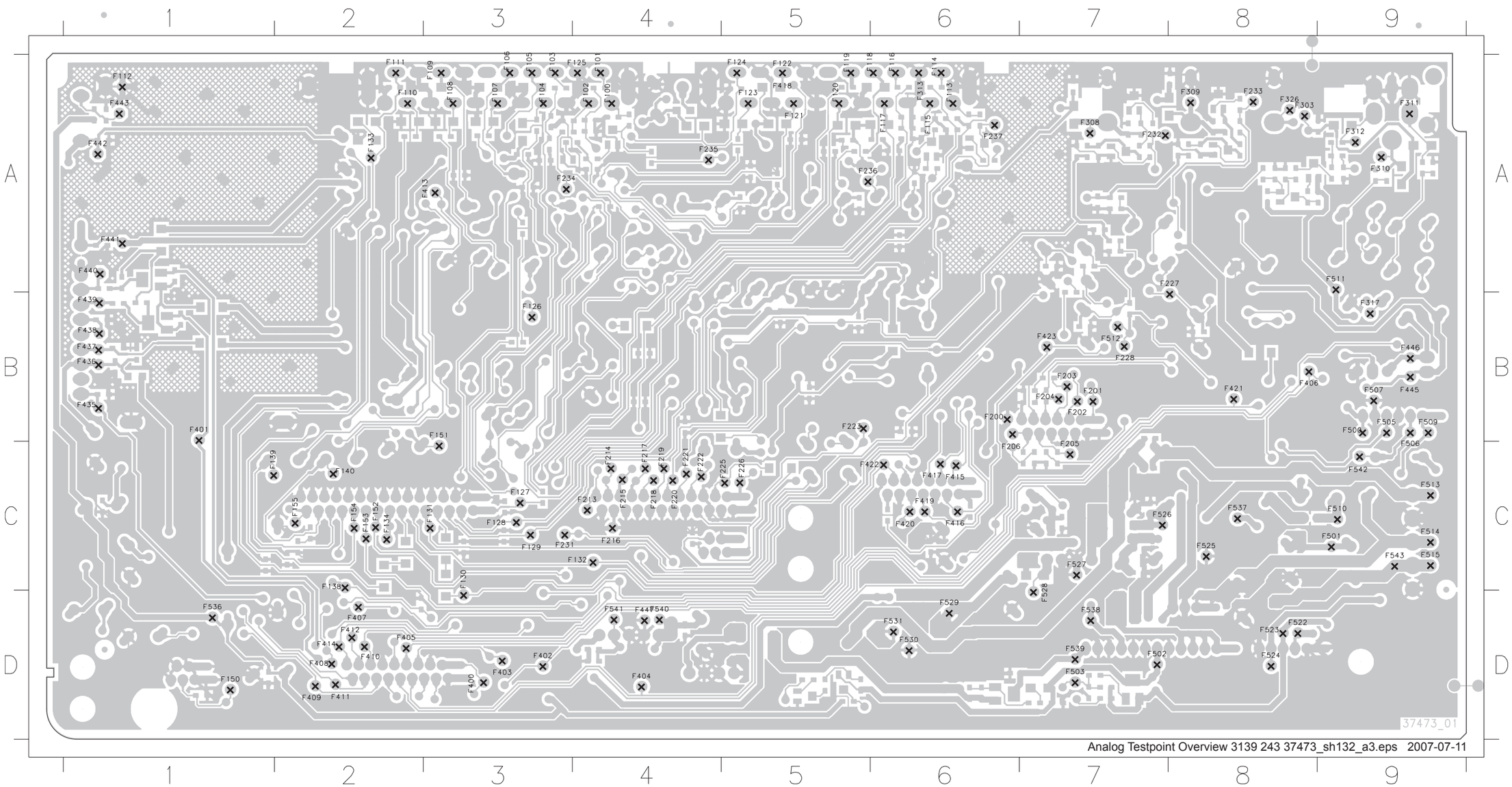
4036	B4	4109	A5	6105	A3	6125	A4	7210	A6	7528	D7												
4037	B4	4500	C7	6106	A3	6126	A2	7214	A6														
4038	B5	4501	B7	6107	A3	6127	A2	7302	A8														
4039	C5	4502	C7	6108	A3	6303	A8	7303	A8														
4040	B6	4503	C7	6110	A3	6304	A7	7304	A7														
4041	B6	4505	D5	6111	A3	6305	A9	7305	A7														
4042	C6	5200	B7	6112	A2	6306	A9	7314	A8														
4044	B8	5301	A8	6118	A6	6307	A9	7315	A8														
4045	C4	5303	A7	6119	A6	6501	D7	7404	B1														
4046	A4	5401	B1	6120	A5	6502	C8	7405	A1														
4049	B4	5402	A1	6121	A5	6503	C7	7520	D6														
4053	C6	5403	B1	6123	A5	7204	A3	7523	D5														
4054	A6	5404	B1	6124	A5	7207	A4	7524	D5														



Analog Bottom 3139 243 37473_sh132_a3.eps 2007-07-11

Layout: Analog Board Testpoint Overview)

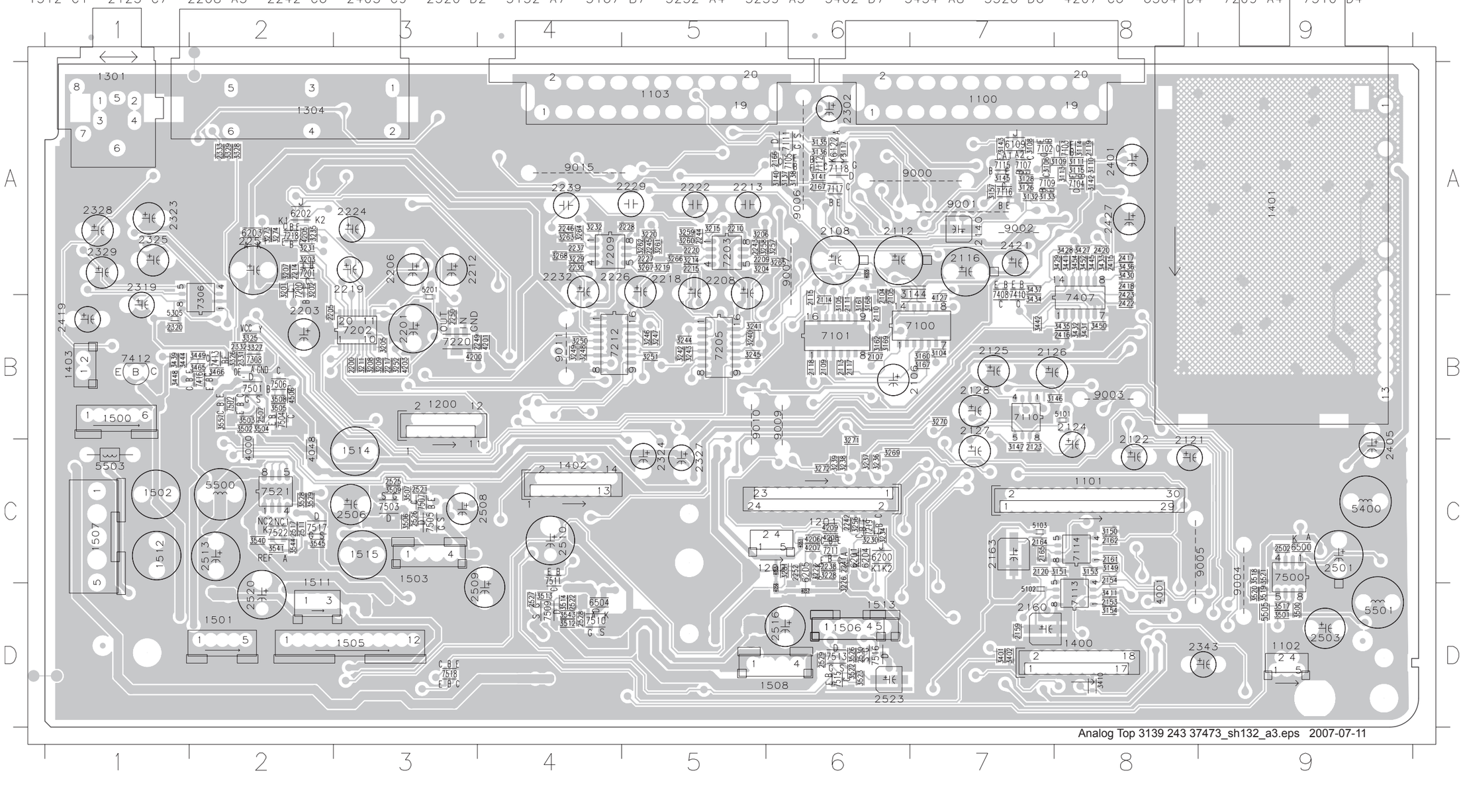
F100 A4	F109 A3	F118 A6	F127 C3	F139 C1	F201 B7	F216 C4	F226 C5	F237 A6	F326 A8	F408 D2	F417 C6	F438 B1	F500 B9	F511 A9	F526 C7	F539 D7
F101 A4	F110 A2	F119 A5	F128 C3	F140 C2	F202 B7	F217 C4	F227 B8	F303 A8	F400 D3	F409 D2	F419 C6	F439 B1	F501 C9	F512 B7	F527 C7	F540 D4
F102 A4	F111 A2	F120 A5	F129 C3	F150 D1	F203 B7	F218 C4	F228 B7	F308 A7	F401 B1	F410 D2	F420 C6	F440 A1	F502 D7	F513 C9	F528 D7	F541 D4
F103 A3	F112 A1	F121 A5	F130 D3	F151 C3	F204 B7	F219 C4	F231 C3	F309 A8	F402 D3	F411 D2	F421 B8	F441 A1	F503 D7	F514 C9	F529 D6	F542 C9
F104 A3	F113 A6	F122 A5	F131 C3	F152 C2	F205 C7	F220 C4	F232 A7	F310 A9	F403 D3	F412 D2	F422 C6	F442 A1	F505 B9	F515 C9	F530 D6	F543 C9
F105 A3	F114 A6	F123 A5	F132 C4	F153 C2	F206 B6	F221 C4	F233 A8	F311 A9	F404 D4	F413 A3	F423 B7	F443 A1	F506 B9	F522 D8	F531 D6	
F106 A3	F115 A6	F124 A5	F133 A2	F154 C2	F213 C4	F222 C4	F234 A3	F312 A9	F405 D2	F414 D2	F435 B1	F445 B9	F507 B9	F523 D8	F536 D1	
F107 A3	F116 A6	F125 A4	F134 C2	F155 C2	F214 C4	F223 B5	F235 A4	F313 A6	F406 B8	F415 C6	F436 B1	F446 B9	F509 B9	F524 D8	F537 C8	
F108 A3	F117 A6	F126 B3	F138 C2	F200 B6	F215 C4	F225 C5	F236 A5	F317 B9	F407 D2	F416 C6	F437 B1	F447 D4	F510 C9	F525 C8	F538 D7	



Analog Testpoint Overview 3139 243 37473_sh132_a3.eps 2007-07-11

Layout: Analog (Top View)

1100	A7	1513	D6	2124	B8	2209	A5	2243	A5	2415	A8	2521	C3	3133	A7	3168	B6	3234	C6	3260	A5	3410	D8	3465	B2	3528	C2	4208	C6	7100	B7	7211	C6	7511	C4
1101	C8	1514	C3	2125	B7	2210	A5	2244	A5	2416	B8	2522	D4	3135	A6	3169	B6	3235	A2	3261	A5	3411	D8	3466	B2	3529	C2	4209	C6	7101	B6	7212	B4	7513	D6
1102	D9	1515	C3	2126	B7	2212	A3	2245	A5	2417	A8	2523	D6	3136	A6	3201	A2	3236	C6	3262	A5	3427	A8	3500	D9	3540	C2	4506	B2	7102	A7	7218	A2	7515	D6
1103	A5	2104	B6	2127	B7	2213	A5	2246	A4	2418	A8	2525	C3	3137	A6	3202	A2	3237	C6	3263	A4	3428	A8	3501	D9	3541	C2	5101	B8	7103	A8	7219	C6	7516	D6
1200	B3	2105	B6	2128	B7	2214	A2	2249	B3	2419	B1	2526	C3	3138	A6	3203	A2	3238	C6	3264	A4	3429	A8	3502	B2	3543	D4	5102	D7	7104	A8	7220	B3	7517	C2
1201	C6	2106	B7	2140	A7	2215	A5	2250	B3	2420	A8	2527	D4	3140	A6	3204	A5	3239	C6	3265	A6	3430	A8	3503	B2	3544	C2	5103	C7	7105	A6	7306	B2	7518	D3
1202	C6	2107	B6	2153	D8	2217	B3	2251	A2	2421	A7	2528	D4	3141	A6	3205	B3	3240	B5	3266	A5	3431	B8	3504	B2	3545	C2	5201	A3	7107	A7	7308	B2	7521	C2
1301	A1	2108	A6	2154	C8	2218	A5	2252	C6	2422	B8	2529	D6	3142	A8	3206	A5	3241	B5	3267	A5	3432	B8	3505	B2	3557	B2	5305	B1	7109	A7	7407	B8	7522	C2
1304	A2	2109	B6	2159	D7	2219	A3	2302	A6	2423	A8	2530	D6	3143	A7	3207	A2	3242	B5	3268	A4	3433	A8	3506	C3	4000	C2	5400	C9	7110	B7	7408	A7	9000	A7
1400	D8	2110	B6	2160	D7	2220	A5	2319	A1	2427	A8	3104	B7	3144	A7	3208	B3	3243	B5	3269	C6	3434	B7	3507	C3	4001	D8	5500	C2	7111	A6	7410	A7	9001	A7
1401	A9	2111	B6	2161	C8	2222	A5	2320	B1	2501	C9	3105	B6	3145	A7	3209	B3	3244	B5	3270	B7	3435	B8	3508	B2	4005	A6	5501	D9	7112	A6	7412	B1	9002	A7
1402	C4	2112	A6	2162	C8	2224	A3	2323	A1	2502	C9	3106	A7	3146	B8	3211	B3	3245	B5	3271	C6	3436	A8	3509	C3	4048	C2	5503	C1	7113	D8	7413	B2	9003	B8
1403	B1	2113	B6	2163	C7	2226	A4	2324	C5	2503	D9	3108	A7	3147	C7	3214	A5	3246	B5	3272	C6	3437	A7	3512	D4	4051	C6	5505	D9	7114	C8	7416	B2	9004	C9
1500	B1	2114	B6	2164	C7	2227	A5	2325	A1	2506	C3	3109	A8	3149	C8	3215	A5	3247	B5	3273	A2	3439	B1	3513	D4	4055	C6	6109	A7	7115	A7	7500	C9	9005	C9
1501	D2	2115	B6	2165	C7	2228	A5	2327	C5	2507	B2	3110	A8	3150	C8	3219	A5	3248	B4	3274	A2	3441	A8	3514	D4	4056	D6	6122	A6	7116	A7	7501	B2	9006	A6
1502	C1	2116	A7	2166	A6	2229	A5	2328	A1	2508	C4	3111	A8	3151	C8	3220	A5	3249	B4	3281	C6	3442	B7	3517	D9	4057	D6	6200	C6	7117	A6	7502	B2	9007	A6
1503	C3	2117	B6	2167	A6	2230	A4	2329	A1	2509	D3	3113	A8	3153	C8	3226	D6	3250	B4	3325	B2	3444	B1	3518	C9	4127	B7	6201	C6	7118	A6	7503	C3	9009	B6
1505	D3	2118	B6	2200	B3	2232	A4	2331	B2	2510	C4	3114	A8	3154	D8	3227	C6	3251	B5	3326	B2	3445	A8	3519	D9	4200	B3	6202	A2	7200	A2	7504	B2	9010	B5
1506	D6	2119	A8	2201	B3	2237	A4	2332	B2	2511	C2	3115	A8	3157	A7	3228	C6	3252	B3	3327	B2	3448	B1	3520	D9	4201	B4	6203	A2	7201	A2	7505	C3	9011	B4
1507	C1	2120	C7	2203	B2	2238	C6	2333	A2	2513	C2	3117	A6	3160	B7	3229	A4	3256	C6	3328	A2	3449	B2	3521	C9	4203	B3	6204	C6	7202	B3	7506	B2	9015	A4
1508	D6	2121	C8	2205	B2	2239	A4	2343	D9	2516	D6	3126	A7	3161	B6	3230	C6	3257	A6	3329	A2	3450	B8	3522	D6	4205	A2	6205	C6	7203	A5	7507	C3		
1511	C2	2122	C8	2206	A3	2241	C6	2401	A8	2517	C2	3128	A7	3162	B6	3231	A2	3258	A5	3401	D7	3452	A8	3523	D6	4206	C6	6500	C9	7205	B5	7509	D4		
1512	C1	2123	C7	2208	A5	2242	C6	2405	C9	2520	D2	3132	A7	3167	B7	3232	A4	3259	A5	3402	D7	3454	A8	3526	D6	4207	C6	6504	D4	7209	A4	7510	D4		



PHILIPS

1

NJM2580 PWR_SAVE	
High	OFF (RGB)
Low	ON
OPEN	ON

NJM2584 Control	
High	Channel B (fr scart 2)
Low	Channel A (fr leco+)
OPEN	Channel A (fr leco+)

SCART 1

MT 1100-2 — MRC-021V-51 PC (PHT)

CON_SCART 1100-1 — MRC-021V-51 PC (PHT)

AOUT1R 1 F100 — AIN1R 2 F101 — AOUT1L 3 F102 — GND 4 — GND 5 — AIN1L 6 F103 — BOUT_CIN 7 F104 — 8SC1 8 F105 — GND 9 — P50 10 F106 — GOUT 11 F107 — NC 12 — GND 13 — GND 14 — ROUT_COUT 15 F108 — FBOUT 16 F109 — GND 17 — GND 18 — YCVBSOUT1 19 F110 — YCVBSIN1 20 F111 — GND 21 F112

AOUT1R from IOA 2 — 3100 100R — 2100 820p
AIN1R to IOA 2 — 2101 2n2 — 3102 100K
AOUT1L from IOA 2 — 3101 100R — 2102 820p
AIN1L to IOA 2 — 2103 2n2 — 3103 100K

3163 220R — 3164 220R — 3166 220R

75R 1% 3107 — BOUT_SC1 from VMUX_1

BZX384-C6V8 6105 5NESD — BZX384-C12 6106 — P50

BZX384-C6V8 6107 — 75R 1% 3112 — GOUT_SC1 from VMUX_1

BZX384-C6V8 6108

BZX384-C6V8 6110 — 75R 1% 3116 — ROUT_SC1 from VMUX_1

BZX384-C6V8 6111

BZX384-C6V8 6112 — 75R 3118 — AOUT1_F from VIO — SC1_CVBS to VIO

6126 BZX384-C6V8 — 3155 75R * — SC1_CVBS to COM 4

6127 BZX384-C6V8

SCART 2

MT 1103-2 — MRC-021V-51 PC (PHT)

CON_SCART 1103-1 — MRC-021V-51 PC (PHT)

AOUT2R 1 F113 — AIN2R 2 F114 — AOUT2L 3 F115 — GND 4 — GND 5 — AIN2L 6 F116 — BIN_COUT 7 F117 — 8SC2 8 F118 — GND 9 — P50_1 10 F119 — GIN 11 F120 — NC 12 — GND 13 — GND 14 — RIN_CIN 15 F121 — FBIN 16 F122 — GND 17 — GND 18 — YCVBSOUT2 19 F123 — YCVBSIN2 20 F124 — GND 21 F125

AOUT2R from IOA 2 — 3120 100R — 2136 820p
AIN2R to IOA 2 — 2137 2n2 — 3122 100K
AOUT2L from IOA 2 — 3121 100R — 2138 820p
AIN2L to IOA 2 — 2139 2n2 — 3123 100K

3165 220R — 3166 220R

A_UB to VMUX_1 to VIO — * 4109

6118 BZX384-C6V8 5NESD — 6119 BZX384-C12

A_YG to VMUX_1 to VIO — A_VR to VMUX_1 to VIO

6120 BZX384-C6V8 5NESD — 6121 BZX384-C6V8 5NESD

6123 BZX384-C6V8 — 3134 1% 75R — AOUT2_F from VIO — Y_CVBSIN2 to VMUX_5

6124 BZX384-C12 5NESD — 3136 75R 1% — FBINSC2 4

6125 BZX384-C6V8 5NESD — 3139 75R *

VMUX_1

RGB_ENABLE 4 from COM_0 (equivalent to yuv_activen)

5VSTBY — 3144 4K7 — 5V_DTT

7100 NJM2580M — 3-CHANNEL VIDEO AMP — VSAG PWR_SAVE — VOUT1 VOUT2 VOUT3 — VIN1 VIN2 VIN3 — GND

2104 100n — 3104 10K — 3167 22K

4127 — F126

to SCART 1 BOUT_SC1 — 2108 470u 10V — 2109 10u
to SCART 1 GOUT_SC1 — 2112 470u 10V — 2113 10u
to SCART 1 ROUT_SC1 — 2116 470u 10V — 2117 10u

3100 22K — 3161 22K — 3162 22K

7101 NJM2584M — 3-CIRCUIT VIDEO SW — V+ CTL — NC OUT1 OUT2 OUT3 — IN1A IN1B IN2A IN2B IN3A IN3B — GND

3158 22K — 3159 22K — 2105 100n — 2106 100u 6.3V

3105 22K — LOOP_THRU_ON from COM_0 4

2115 10u — 2118 10u — from VIO Pr — A_VR from SCART 2
2111 10u — 2114 10u — from VIO Y — A_YG from SCART 2
2107 10u — 2110 10u — from VIO Pb — A_UB from SCART 2

DTT_VIO

05FMN-BTRK-A — 5 A_C, 4 GND, 3 DTT_CVBS, 2 GND, 1 GND — 1102 *

CVBSIN_DTT — F150 — 3152 75R *

8SC1 Video Display AR

8SC1	Video Display AR
0 - 2V	TV
4.5 - 7V	16 : 9
9.5 - 12V	4 : 3

5VSTBY — 3157 16K — 3158 220K — 3159 — from PS IPFAIL 5 2

3143 100R — 7115 PDTC124EU — 3145 22K — 7116 PDTC144EU — 2140 47u

12VSTBY — 2106 27K — 7102 BC847BW — 3108 820R — 3109 390R — 7103 BC847BW — 3111 150K — 8SC1 from COM_0 4

6109 BAT54C — 3142 10K — 3110

3113 33K — 3114 33K — 7104 BC847BW — 3115 6K8 — 2119 10n not used

8SC2 from COM_0 4 — 7107 BC857BW — 3126 470K — 3128 47K — 7109 BC847BW — 3132 100K — LOOP_THRU_ON from COM_0 4

18K 3133

BSN20 7111 — 6122 BAT760 — 12VSTBY — 3135 47K — 3140 100K — 3117 68R — BSN20 7118 — FBOUTSC1 from COM_1 4

3136 75R 1% — 3137 1K — 3138 22K — 7105 BC847BW — 2166 * 100n

7112 BC847BW — 3141 22K — LOOP_THRU_ON — 7117 PDTC124EU — 2167 * 100n

VMUX_6

5V — 5103 600R — 7114 NJM2244M — 3-INPUT VIDEO SW — V+ VIN1 VIN2 VIN3 VOUT SW1 SW2 GND — 47u 6.3V — 2163 100n — 2164

4 VFV — 2161 1u0 — 2162 1u0

3 REGION_SEL_B_P91_DECON

Vmux_6_out to VIO (AI11) — 2165 20p *

3149 1M0 — 3150 1M0

7114_NJM2244	
P91	VOUT
L	Vin1 - VFV
H	Vin2 - Y_CVBSIN2

VMUX_5

5V — 5102 600R — 7113 NJM2244M — 3-INPUT VIDEO SW — V+ VIN1 VIN2 VIN3 VOUT SW1 SW2 GND — 47u 6.3V — 2160 100n — 2159

Y_CVBSIN2 from SC2 #20 from DTT_VIO — 2153 1u0
CVBSIN_DTT * 2120 — 2154 1u0

REGION_SEL_A_P90_DECON 4
DTT_SEL from COM_0 4

Vmux_5_out to VIO (AI33) — 2168 20p *

3153 1M0 — 3153 1M0 — 3154 1M0

7113_NJM2244		
DTT_SEL	P90	VOUT
L	L	Vin1 - Y_CVBSIN2
L	H	VIN2 - vfv
H	X	Vin3 - CVBSIN_DTT
SW2	SW1	

VMUX_1A

5VSTBY — 5101 560R — F151 — 2123 100n — 2124 47u 6.3V — 7110 NJM2267M — DUAL 6dB VIDEO AMP — V+ VOUT1 VOUT2 VSAG1 VSAG2 GND — VIN1 VIN2

AOUT1_F — 100K 3146 — 2125 100u 6.3V — 2126 100u 6.3V
AOUT2_F — 100K 3147 — 2127 100u 6.3V — 2128 100u 6.3V

2121 4u7 50V — 2122 4u7 50V

4 from SCART1 SC1_CVBS — from VMUX_6 Vmux_6_out — from SCART2 A_YG — from SCART2 A_UB — from SCART2 A_VR — from VMUX_5 Vmux_5_out — to SCART1 — to SCART2 — Y_CVBSIN2

VIO 1101 — F127 to VMUX_1 Pb — F128 to VMUX_1 Y — F129 to VMUX_1 Pr — F130 to PROG D_C — F131 to PROG D_Y — F132 to PROG D_CVBS — F133 — F134 — F152 — F153 — F154 — F138 — F139 — F140 — F155

1 D_UB, 2 GND, 3 D_YG, 4 GND, 5 D_VR, 6 GND, 7 D_C, 8 GND, 9 D_Y, 10 GND, 11 D_CVBS, 12 GND, 13 SC1_CVBS, 14 GND, 15 Vmux_6_out (AI11), 16 GND, 17 A_YG, 18 GND, 19 A_UB, 20 GND, 21 A_VR, 22 GND, 23 Vmux_5_out (AI33), 24 GND, 25 AOUT1, 26 GND, 27 AOUT2, 28 GND, 29, 30

HLW30S-2C7

To/From DTTM

5 from PS — 12VSTBY 5VSTBY — 12VSTBY 5VSTBY

3 from PROG — 5NESD — 5NESD

To/From LeCO+ Step

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2103 A4	6111 D2
2104 A6	6112 D3
2105 A9	6118 G2
2106 A10	6119 G2
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2108 B6	6121 H3
2109 B8	6122 H7
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2124 H9	7111 H6
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3169 A9	
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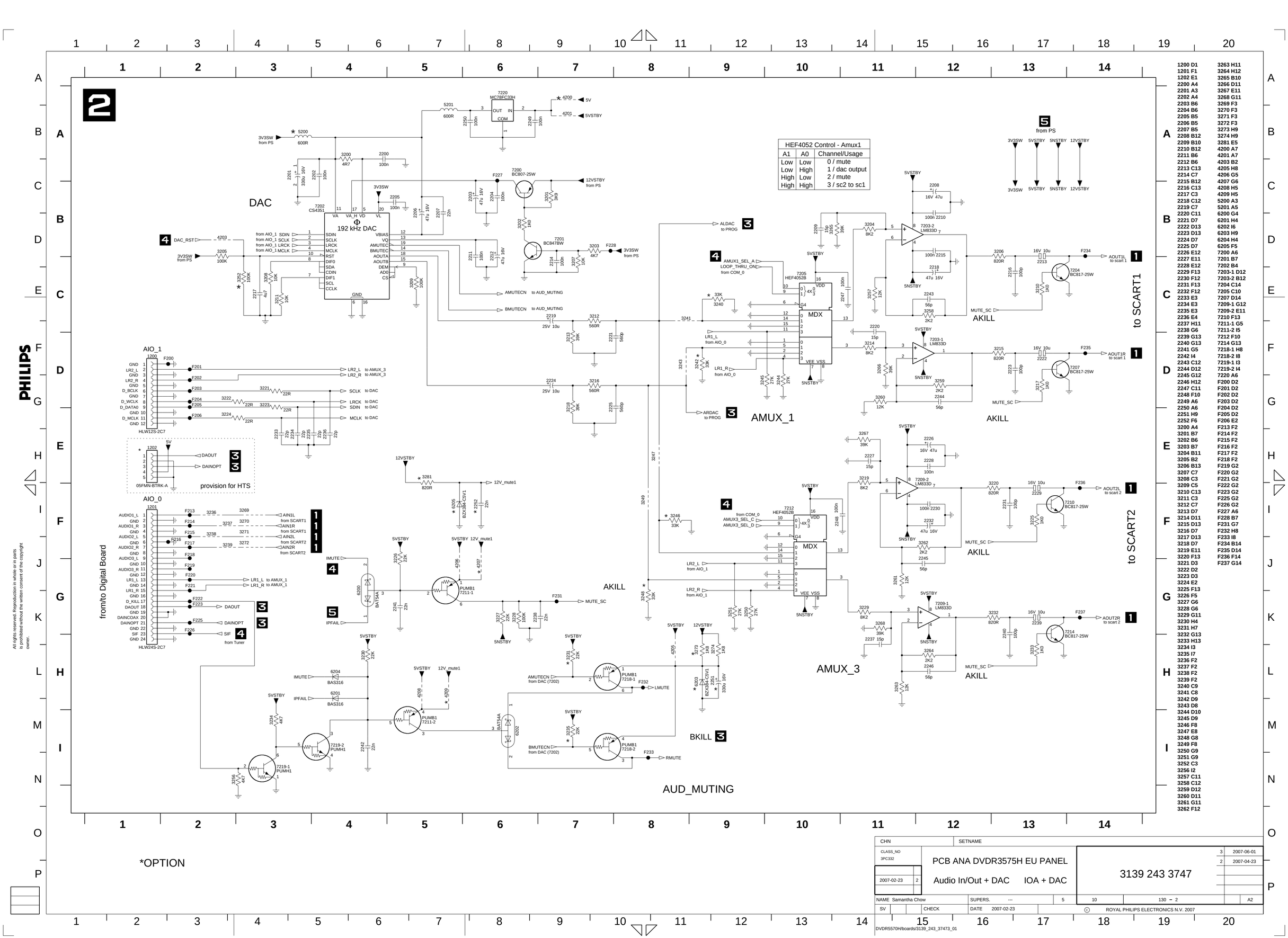
CHN	SETNAME		
CLASS_NO 3PC332	PCB ANA DVDR3575H EU PANEL	3139 243 3747	3 2007-06-01
2007-02-23 2	Video In/Out IOV		2 2007-04-23
NAME Samantha Chow	SUPERS. ---	5	10 130 – 1 A2
SV CHECK	DATE 2007-02-23	© ROYAL PHILIPS ELECTRONICS N.V. 2007	

DVDR5570H/boards/3139_243_37473_01



1200 D1	3263 H11
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1202 E1	3265 B10
2200 A4	3266 D11
2201 A3	3267 E11
2202 A4	3268 G11
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3215 D13	F231 G7
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3257 C11	
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CHN	SETNAME		
CLASS_NO 3PC332	PCB ANA DVDR3575H EU PANEL	3	2007-06-01
		2	2007-04-23
2007-02-23 2	Audio In/Out + DAC IOA + DAC	3139 243 3747	
NAME Samantha Chow	SUPERS. ---	5	10 / 130 – 2 / A2
SV / CHECK	DATE 2007-02-23		

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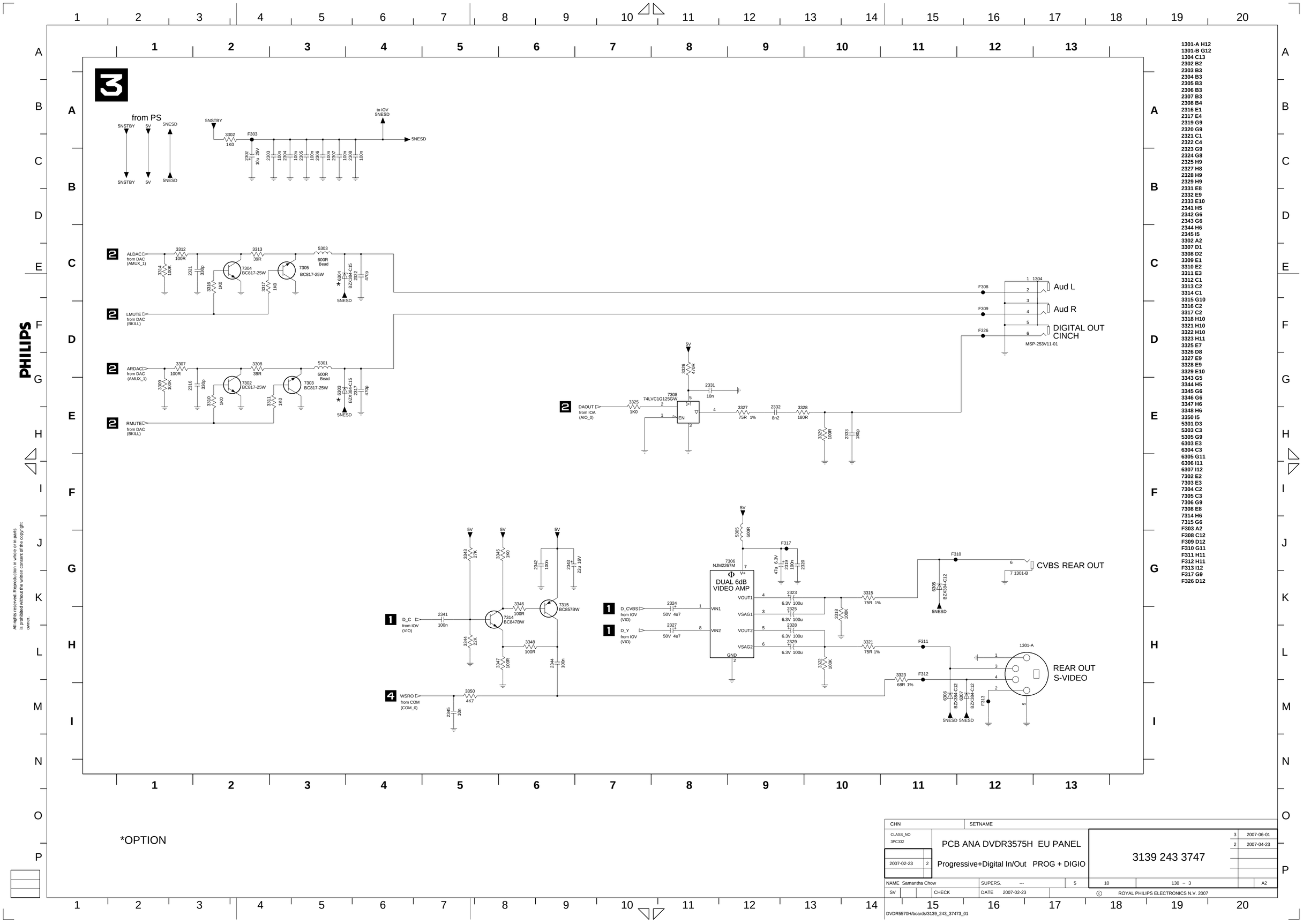

1301-A H12
1301-B G12
1304 C13
2302 B2
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2306 B3
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7304 C2
7305 C3
7306 G9
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F303 A2
F308 C12
F309 D12
F310 G11
F311 H11
F312 H11
F313 I12
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CHN	SETNAME		
CLASS_NO 3PC332	PCB ANA DVDR3575H EU PANEL	3139 243 3747	3 2007-06-01
2007-02-23 2	Progressive+Digital In/Out PROG + DIGIO		2 2007-04-23
NAME Samantha Chow	SUPERS. --- 5	10 130 – 3	A2
SV CHECK	DATE 2007-02-23	© ROYAL PHILIPS ELECTRONICS N.V. 2007	

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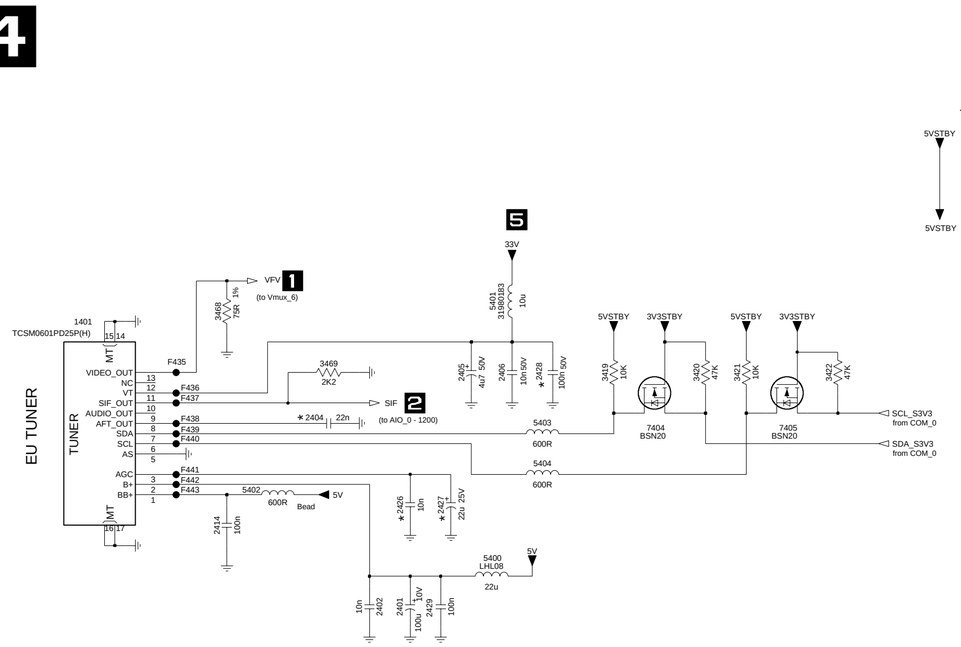
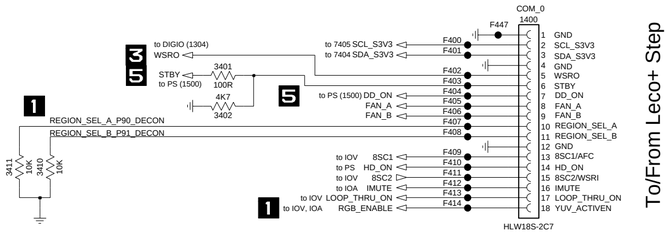
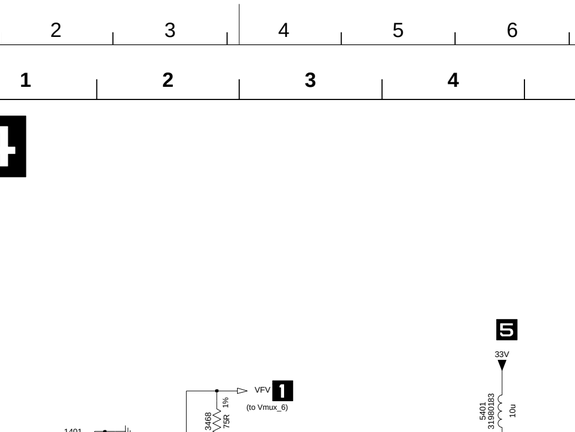
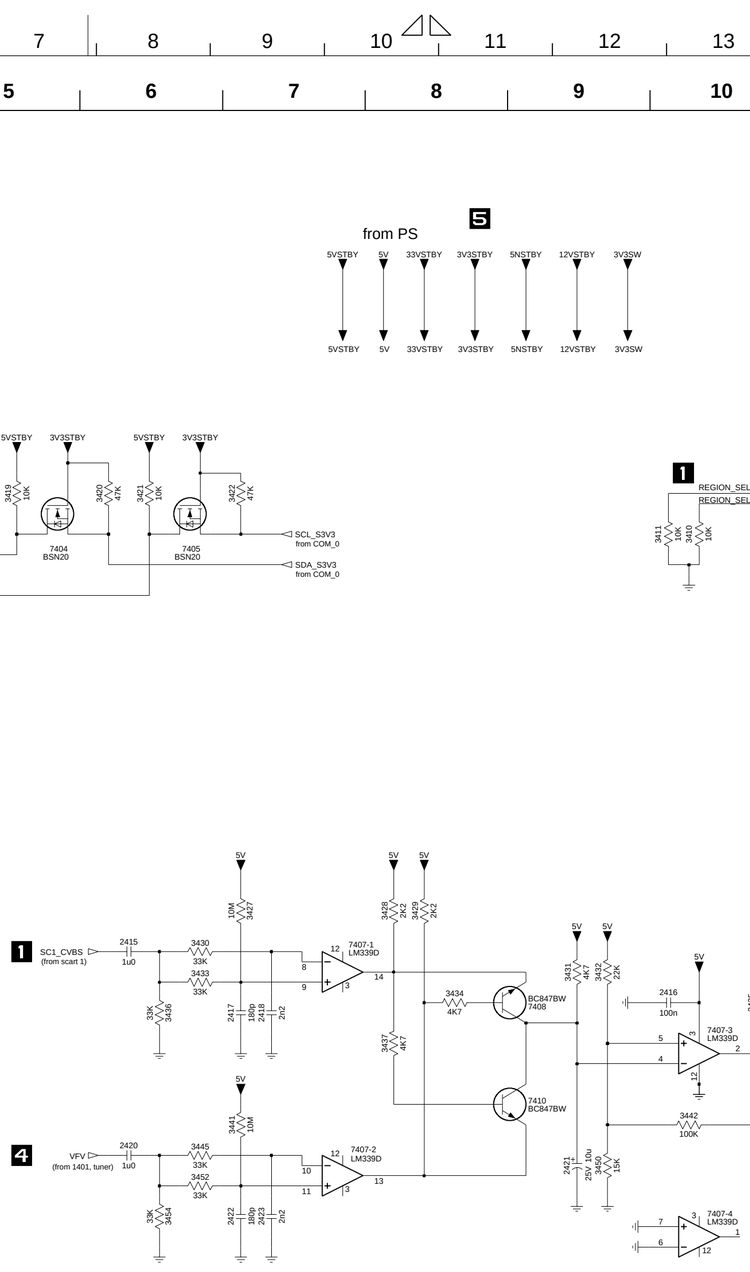


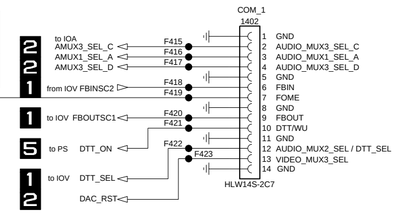




FAN_N	
Off	0V
Low	5.5V
Mid	6.5V
High	8V



Y_CVBSIN1 vs VFV	FOME
Equal	L
Different	H



To/From Leco+ Step

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7408 F9
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F418 G13
F419 G13
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F422 G13
F423 G13
F435 C2
F436 C2
F437 C2
F438 C2
F439 C2
F440 C2
F441 D2
F442 D2
F443 D2
F445 F2
F446 F2
F447 B13

CHN	SETNAME		
CLASS_NO 3PC332	PCB ANA DVDR3575H EU PANEL	3	2007-06-01
		2	2007-04-23
2007-02-23 2	Frontend Video+Com FV + COM	3139 243 3747	
NAME Samantha Chow	SUPERS. ---	5	10 130 – 4 A2
SV CHECK	DATE 2007-02-23	© ROYAL PHILIPS ELECTRONICS N.V. 2007	

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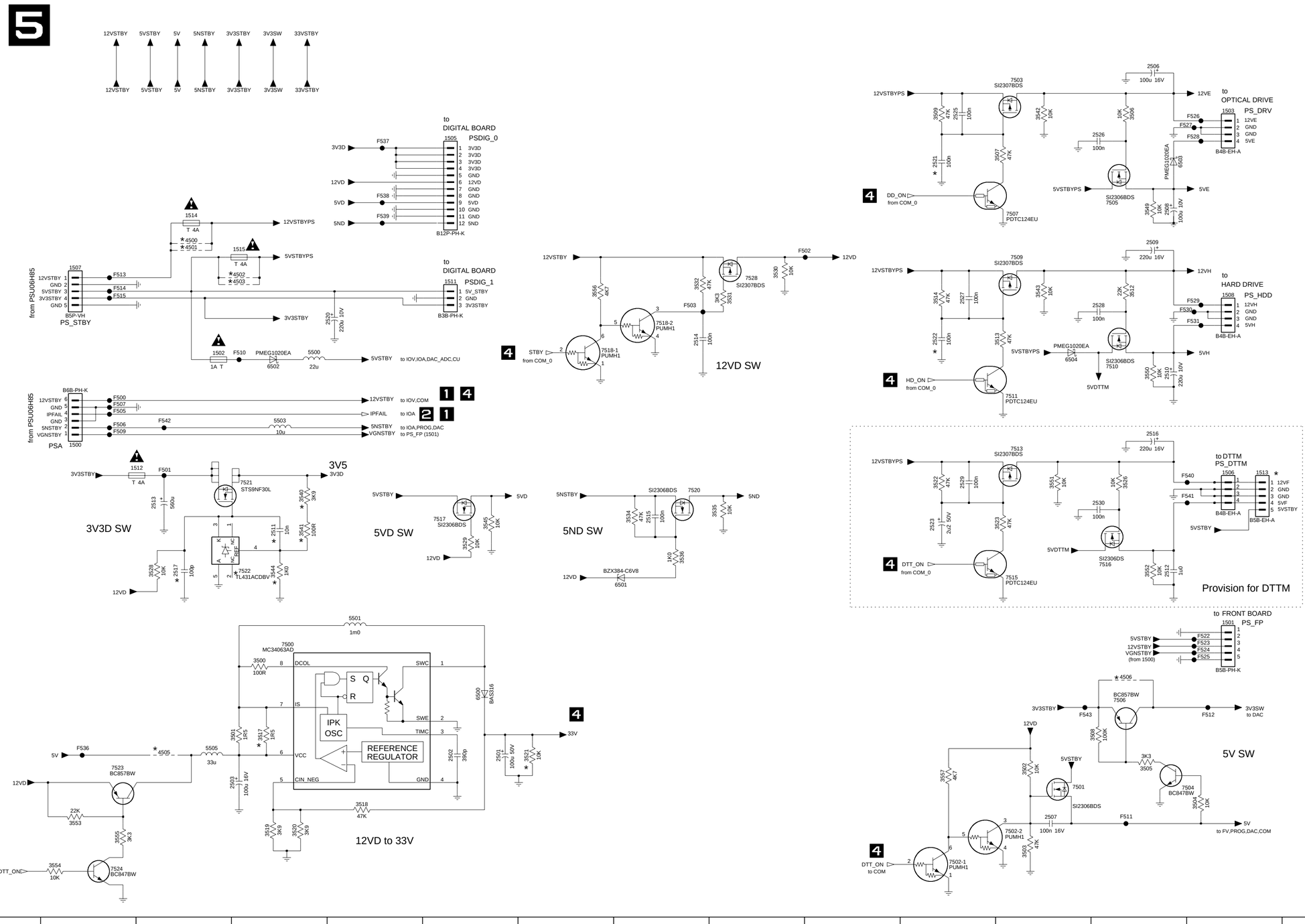

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1512 E2	F503 C7
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2502 H5	F510 D3
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2506 A12	F512 H13
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2509 C12	F515 C1
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2511 F9	F523 G13
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2520 D4	F530 C12
2521 B10	F531 D13
2522 D10	F536 H1
2523 F10	F537 B4
2525 A10	F538 B4
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2007-02-23 2	POWER SUPPLY PS		2 2007-04-23
NAME Samantha Chow	SUPERS. ---	5	10 130 – 5 A2
SV CHECK	DATE 2007-02-23	© ROYAL PHILIPS ELECTRONICS N.V. 2007	

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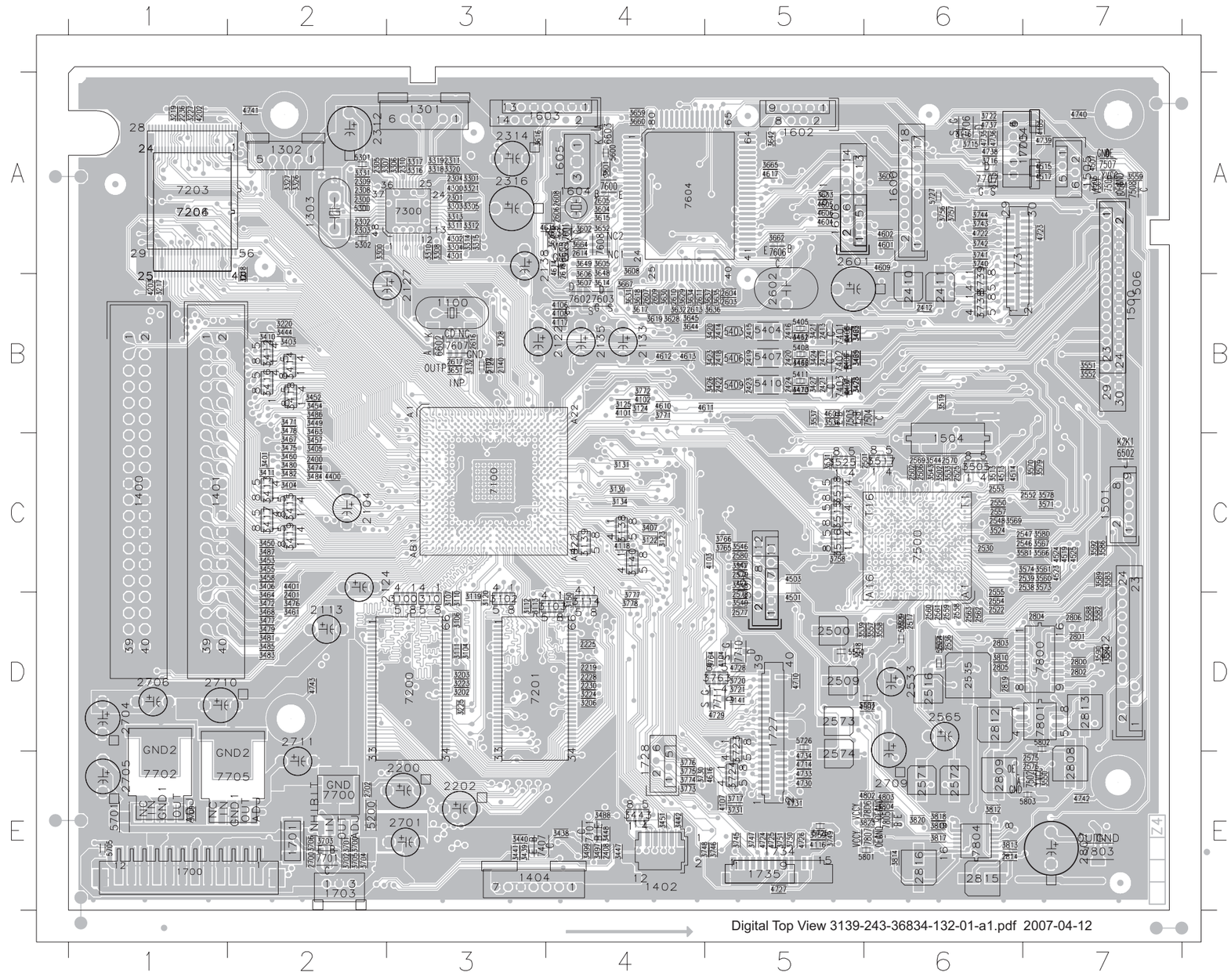
Layout: Digital Top View



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1302	A2	1601	A5	1735	E5	2228	D4	2316	A3	2421	B5	2533	D6	2559	D6	2577	D5	2613	B4	2801	D7	3100	D3	3119	D3	3150	D4	3481	D2
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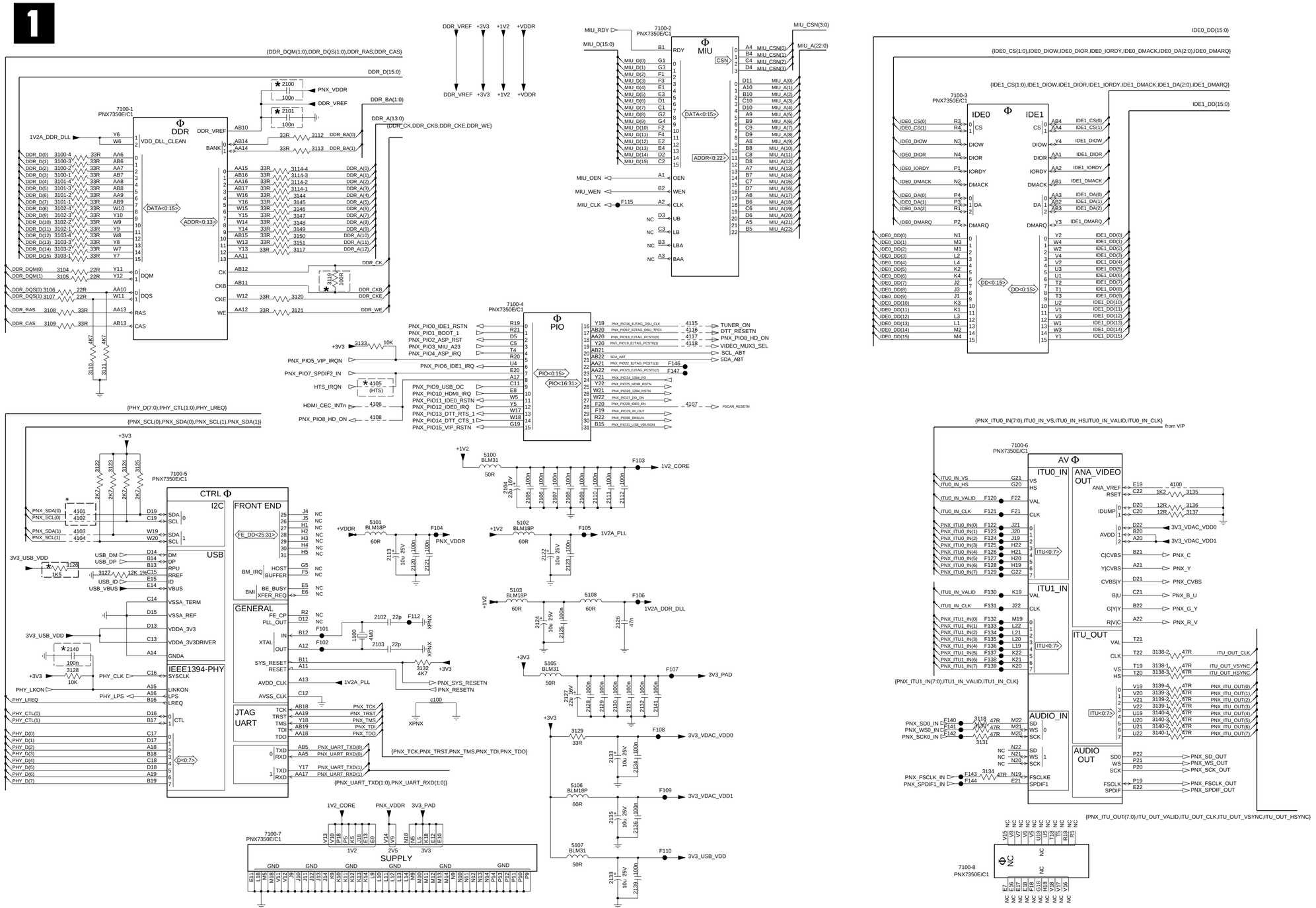

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CHN	SETNAME	DVDR3570H / DVDR5470H /DVDR5570H / DVDR7570H	
CLASS_NO 3PC332	PCB LECO+ 2006 PANEL		5 2007-04-20
- -			4 2007-02-09
2006-10-10 2	LeCoplus	LECO	3139 243 3683
NAME KP Pang / KY Ng	SUPERS. ---	8	10 130 – 1 A2
SV CHECK	DATE 2006-10-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

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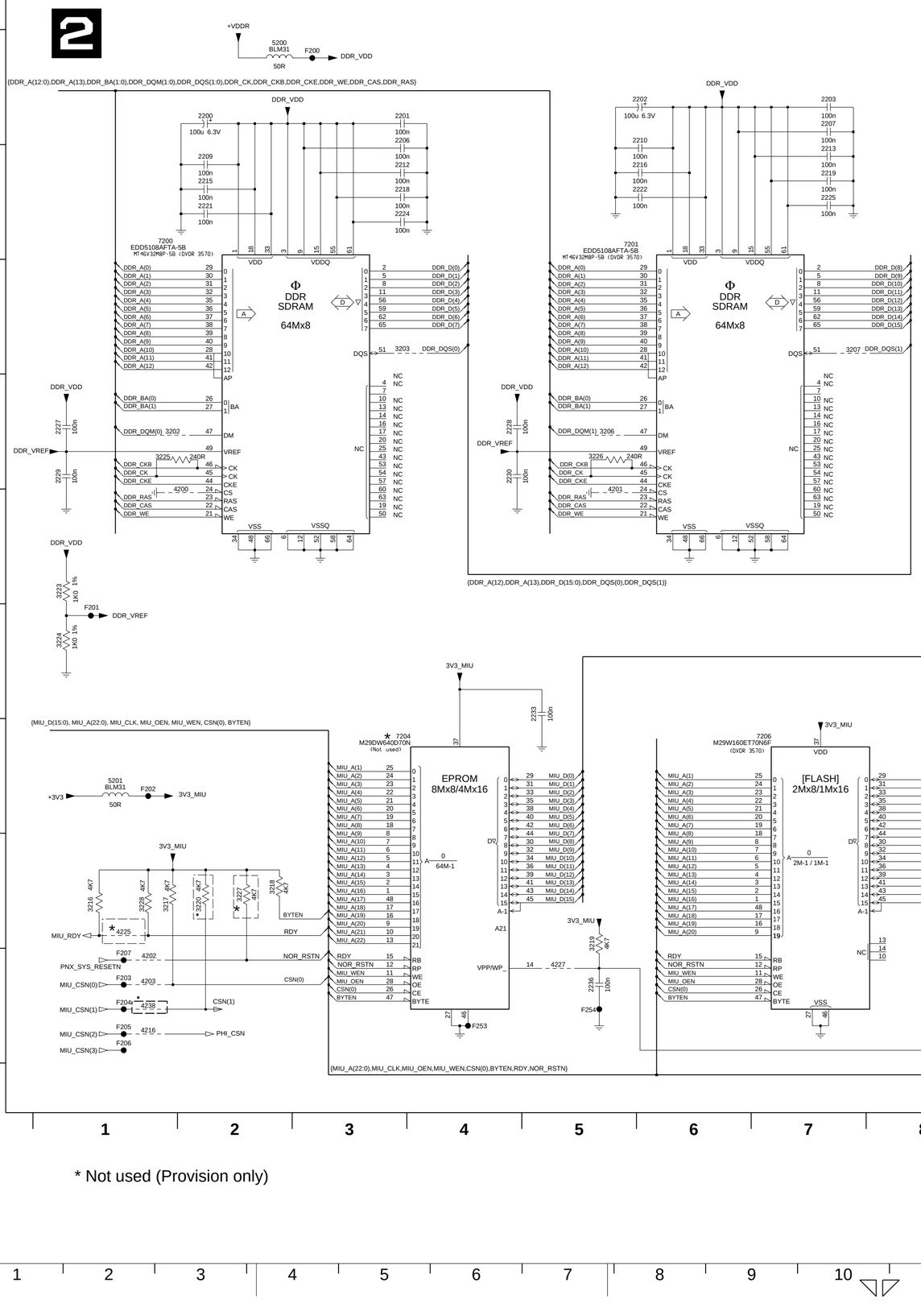

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			4 2007-02-09
2006-10-10 2	FLASH+SDRAM MEM	3139 243 3683	
NAME KP Pang / KY Ng	SUPERS. ---	8 10	130 – 2 A2
SV CHECK	DATE 2006-10-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

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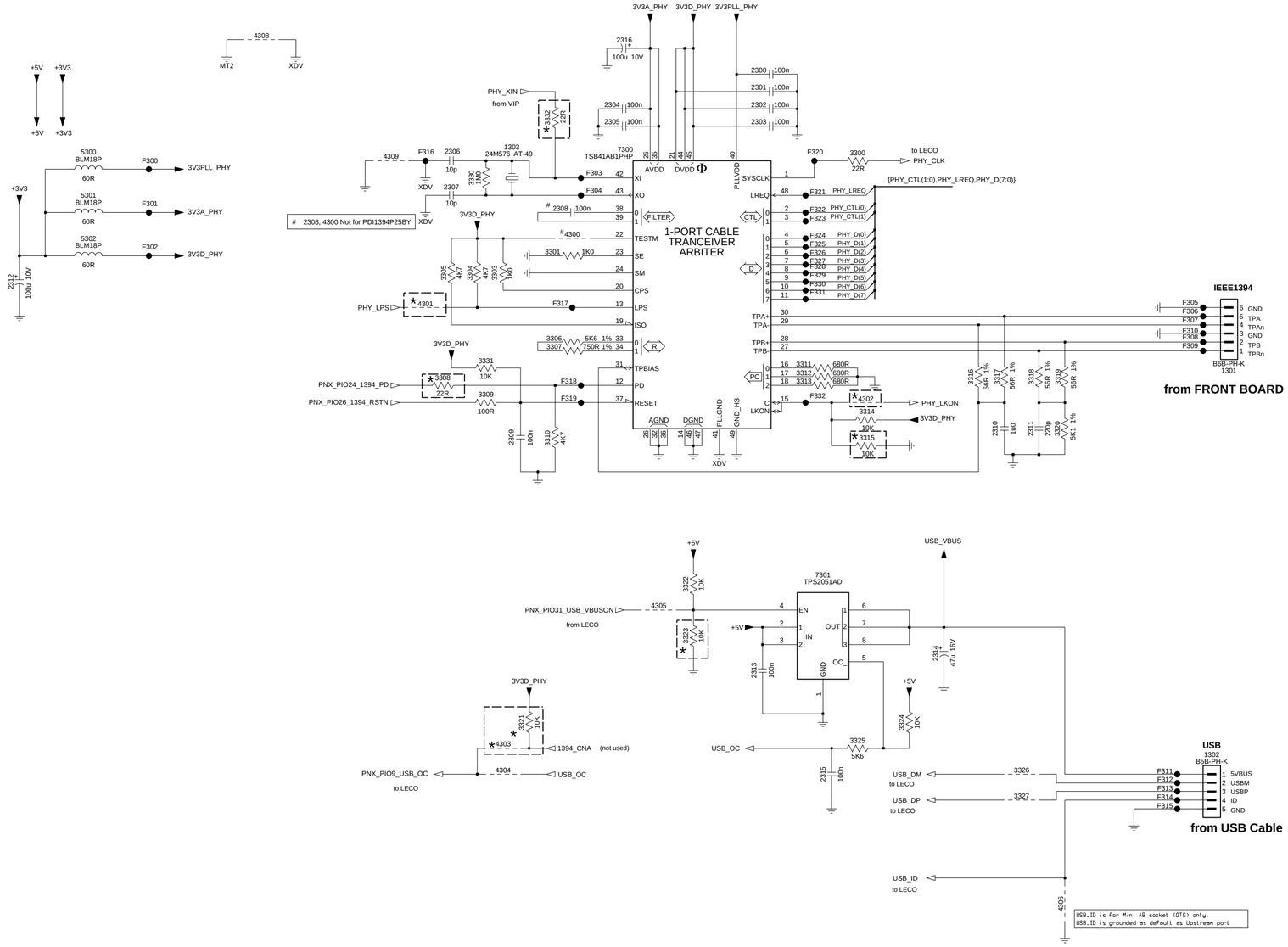

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2303 B9
2304 B7
2305 B7
2306 C6
2307 C6
2308 C7
2309 E7
2310 E11
2311 E11
2312 D3
2313 G9
2314 G10
2315 H9
2316 B8
3300 C9
3301 C7
3303 D6
3304 D6
3305 D6
3306 D7
3307 D7
3308 D6
3309 E6
3310 E7
3311 D9
3312 D9
3313 E9
3314 E10
3315 E10
3316 D10
3317 D11
3318 D11
3319 D11
3320 E11
3321 G7
3322 F8
3323 G8
3324 G10
3325 G9
3326 H11
3327 H11
3330 C6
3331 D6
3332 B7
4300 C7
4301 D6
4302 E10
4303 H7
4304 H7
4305 F8
4306 I11
4308 B5
4309 C6
5300 C3
5301 C3
5302 C3
7300 C8
7301 F9
F300 C4
F301 C4
F302 C4
F303 C7
F304 C7
F305 D12
F306 D12
F307 D12
F308 D12
F309 D12
F310 D12
F311 H12
F312 H12
F313 H12
F314 H12
F315 H12
F316 C6
F317 D7
F318 E7
F319 E7
F320 C9
F321 C9
F322 C9
F323 C9
F324 C9
F325 C9
F326 C9
F327 D9
F328 D9
F329 D9
F330 D9
F331 D9
F332 E9

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CHN	SETNAME DVDR3570H / DVDR5470H / DVDR5570H / DVDR7570H		
CLASS_NO 3PC332	PCB LECO+ 2006 PANEL	5	2007-04-20
		4	2007-02-09
2006-10-10 2	IEEE1394 + USB DV + USB	3139 243 3683	
NAME KP Pang / KY Ng	SUPERS. ---	8	10 130 – 3 A2
SV CHECK	DATE 2006-10-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

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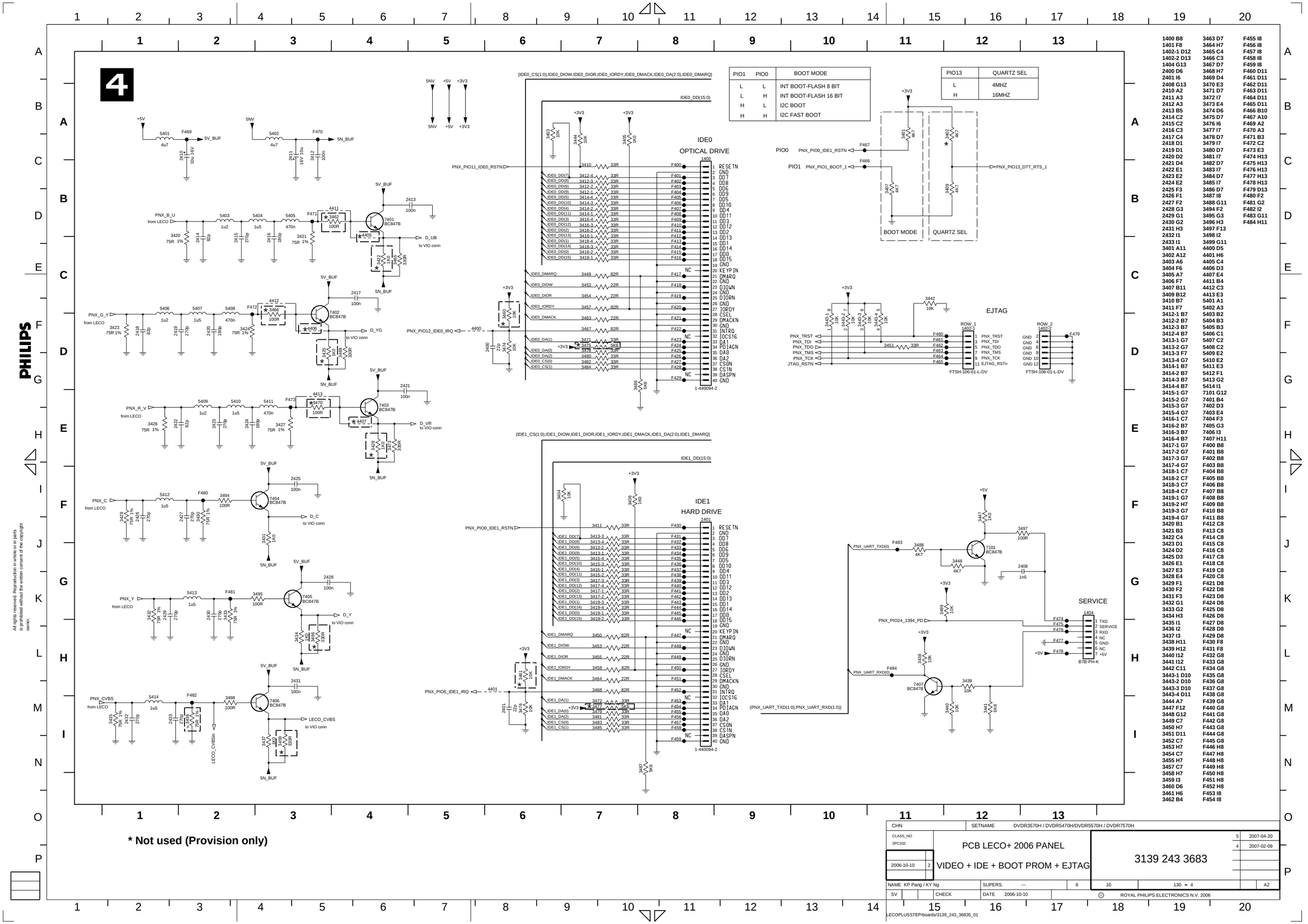

1400 B8	3463 D7	F455 I8
1401 F8	3464 H7	F456 I8
1402-1 D12	3465 C4	F457 I8
1402-2 D13	3466 C3	F458 I8
1404 G13	3467 D7	F459 I8
2400 D6	3468 H7	F460 D11
2401 I6	3469 D4	F461 D11
2408 G13	3470 E3	F462 D11
2410 A2	3471 D7	F463 D11
2411 A3	3472 I7	F464 D11
2412 A3	3473 E4	F465 D11
2413 B5	3474 D6	F466 B10
2414 C2	3475 D7	F467 A10
2415 C2	3476 I6	F469 A2
2416 C3	3477 I7	F470 A3
2417 C4	3478 D7	F471 B3
2418 D1	3479 I7	F472 C2
2419 D1	3480 D7	F473 E3
2420 D2	3481 I7	F474 H13
2421 D4	3482 D7	F475 H13
2422 E1	3483 I7	F476 H13
2423 E2	3484 D7	F477 H13
2424 E2	3485 I7	F478 H13
2425 F3	3486 D7	F479 D13
2426 F1	3487 I8	F480 F2
2427 F2	3488 G11	F481 G2
2428 G3	3494 F2	F482 I2
2429 G1	3495 G3	F483 G11
2430 G2	3496 H3	F484 H11
2431 H3	3497 F13	
2432 I1	3498 I2	
2433 I1	3499 G11	
3401 A11	4400 D5	
3402 A12	4401 H6	
3403 A6	4405 C4	
3404 F6	4406 D3	
3405 A7	4407 E4	
3406 F7	4411 B4	
3407 B11	4412 C3	
3409 B12	4413 E3	
3410 B7	5401 A1	
3411 F7	5402 A3	
3412-1 B7	5403 B2	
3412-2 B7	5404 B3	
3412-3 B7	5405 B3	
3412-4 B7	5406 C1	
3413-1 G7	5407 C2	
3413-2 G7	5408 C2	
3413-3 F7	5409 E2	
3413-4 G7	5410 E2	
3414-1 B7	5411 E3	
3414-2 B7	5412 F1	
3414-3 B7	5413 G2	
3414-4 B7	5414 I1	
3415-1 G7	7101 G12	
3415-2 G7	7401 B4	
3415-3 G7	7402 D3	
3415-4 G7	7403 E4	
3416-1 C7	7404 F3	
3416-2 B7	7405 G3	
3416-3 B7	7406 I3	
3416-4 B7	7407 H11	
3417-1 G7	F400 B8	
3417-2 G7	F401 B8	
3417-3 G7	F402 B8	
3417-4 G7	F403 B8	
3418-1 C7	F404 B8	
3418-2 C7	F405 B8	
3418-3 C7	F406 B8	
3418-4 C7	F407 B8	
3419-1 G7	F408 B8	
3419-2 H7	F409 B8	
3419-3 G7	F410 B8	
3419-4 G7	F411 B8	
3420 B1	F412 C8	
3421 B3	F413 C8	
3422 C4	F414 C8	
3423 D1	F415 C8	
3424 D2	F416 C8	
3425 D3	F417 C8	
3426 E1	F418 C8	
3427 E3	F419 C8	
3428 E4	F420 C8	
3429 F1	F421 D8	
3430 F2	F422 D8	
3431 F3	F423 D8	
3432 G1	F424 D8	
3433 G2	F425 D8	
3434 H3	F426 D8	
3435 I1	F427 D8	
3436 I2	F428 D8	
3437 I3	F429 D8	
3438 H11	F430 F8	
3439 H12	F431 F8	
3440 I12	F432 G8	
3441 I12	F433 G8	
3442 C11	F434 G8	
3443-1 D10	F435 G8	
3443-2 D10	F436 G8	
3443-3 D10	F437 G8	
3443-4 D11	F438 G8	
3444 A7	F439 G8	
3447 F12	F440 G8	
3448 G12	F441 G8	
3449 C7	F442 G8	
3450 H7	F443 G8	
3451 D11	F444 G8	
3452 C7	F445 G8	
3453 H7	F446 H8	
3454 C7	F447 H8	
3455 H7	F448 H8	
3457 C7	F449 H8	
3458 H7	F450 H8	
3459 I3	F451 H8	
3460 D6	F452 H8	
3461 H6	F453 I8	
3462 B4	F454 I8	

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CHN	SETNAME	DVDR3570H / DVDR5470H/DVDR5570H / DVDR7570H	
CLASS_NO 3PC332	PCB LECO+ 2006 PANEL		5 2007-04-20
2006-10-10 2	VIDEO + IDE + BOOT PROM + EJTAG	3139 243 3683	4 2007-02-09
NAME KP Pang / KY Ng	SUPERS. ---	8	10 130 - 4 A2
SV	CHECK	DATE 2006-10-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006

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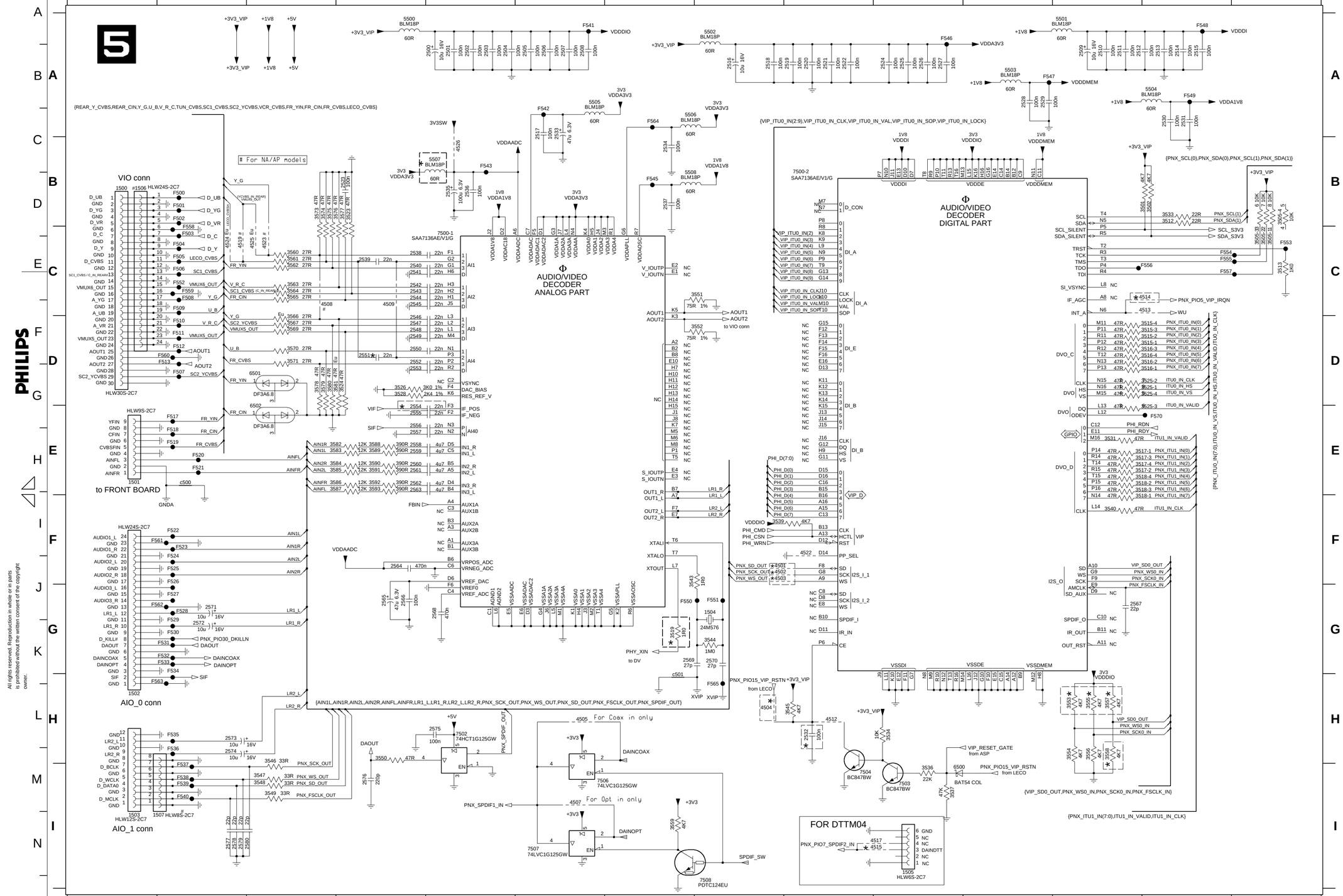

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1500 B1	3525-4 D13	F525 F2
1501 E1	3526 D4	F526 F2
1502 H1	3528 D4	F527 G2
1503 I1	3531 E12	F528 G2
1504 G8	3533 B13	F529 G2
1505 I10	3534 H10	F530 G2
1506 B1	3536 I10	F531 G2
1507 I2	3537 I10	F532 G2
2500 A5	3539 F8	F533 G2
2501 A5	3540 F12	F534 G2
2502 A5	3543 F7	F535 H2
2503 A5	3544 G8	F536 H2
2504 A5	3545 H9	F537 I2
2505 A6	3546 H3	F538 I2
2506 A6	3547 I3	F539 I2
2507 A6	3548 I3	F540 I2
2508 A6	3549 I3	F541 A6
2509 A12	3550 H4	F542 A6
2510 A12	3551 C8	F543 B5
2511 A12	3552 D8	F545 B7
2512 A12	3553 H12	F546 A10
2513 A13	3554 H12	F547 A11
2514 A13	3555 H12	F548 A13
2515 A13	3556 H12	F549 A13
2516 A8	3557 H12	F550 G7
2517 A6	3558 H12	F551 G8
2518 A8	3559 I7	F552 C2
2519 A9	3560 C3	F553 C14
2520 A9	3561 C3	F554 C13
2521 A9	3562 C3	F555 C13
2522 A9	3563 C3	F556 C13
2523 B4	3564 C3	F557 C13
2524 A10	3565 C3	F558 C2
2525 A10	3566 D3	F559 C2
2526 A10	3567 D3	F560 D2
2527 A10	3569 D3	F561 F2
2528 A11	3570 D3	F562 G2
2529 A11	3571 D3	F563 H2
2530 A13	3573 B3	F564 A7
2531 A13	3574 B4	F565 H8
2532 H9	3575 B4	F570 E13
2533 A6	3576 B4	c500 E2
2534 B7	3577 B4	c501 H7
2535 B5	3578 D3	
2536 B5	3579 D4	
2537 B7	3580 D4	
2538 C4	3581 D4	
2539 C4	3582 E3	
2540 C4	3583 E3	
2541 C4	3584 E3	
2542 C4	3585 E3	
2543 C4	3586 E3	
2544 C4	3587 E3	
2545 C4	3588 E4	
2546 D4	3589 E4	
2547 D4	3590 E4	
2548 D4	3591 E4	
2549 D4	3592 E4	
2550 D4	3593 E4	
2552 D4	4501 F8	
2553 D4	4502 F8	
2554 E4	4503 F8	
2555 E4	4504 H8	
2556 E4	4505 H6	
2557 E4	4507 I6	
2558 E4	4512 H9	
2559 E4	4513 C13	
2560 E4	4514 C13	
2561 E4	4515 I10	
2562 E4	4517 I10	
2563 E4	4519 C3	
2564 F4	4522 F9	
2565 G4	4523 C3	
2566 G4	4524 C3	
2567 G12	4525 C3	
2568 G5	4526 B5	
2569 G7	5500 A4	
2570 G8	5501 A12	
2571 G2	5502 A8	
2572 G2	5503 A11	
2573 H2	5504 A13	
2574 H2	5505 A6	
2575 H5	5506 A7	
2576 I4	5507 B5	
2577 I2	5508 B7	
2578 I2	6500 I10	
2579 I2	6501 D3	
2580 I3	6502 E3	
3501 B13	7500-1 C5	
3502 B13	7500-2 B9	
3505-1 C14	7502 H5	
3505-2 C14	7503 I10	
3505-3 C14	7504 I9	
3505-4 B14	7506 I6	
3512 B13	7507 I6	
3513 C14	7508 I8	
3515-1 D13	F500 B2	
3515-2 D13	F501 B2	
3515-3 D13	F502 B2	
3515-4 D13	F503 C2	
3516-1 D13	F504 C2	
3516-2 D13	F505 C2	
3516-3 D13	F506 C2	
3516-4 D13	F507 D2	
3517-1 E13	F508 C2	
3517-2 E13	F509 C2	
3517-3 E13	F510 D2	
3517-4 E13	F511 D2	
3518-1 F13	F512 D2	
3518-2 E13	F513 D2	
3518-3 E13	F517 E2	
3518-4 E13	F518 E2	
3519 G7	F519 E2	
3523 B4	F520 E2	
3524 D4	F521 E2	
3525-1 D13	F522 F2	
3525-2 D13	F523 F2	
3525-3 E13	F524 F2	

CHN	SETNAME	DVDR3570H / DVDR5470H/DVDR5570H / DVDR7570H	
CLASS_NO 3PC332	PCB LECO+ 2006 PANEL		5 2007-04-20
2006-10-10 2	Audio/Video Decoder VIP	3139 243 3683	4 2007-02-09
NAME KP Pang / KY Ng	SUPERS. ---	8	10 130 – 5 A2
SV CHECK	DATE 2006-10-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

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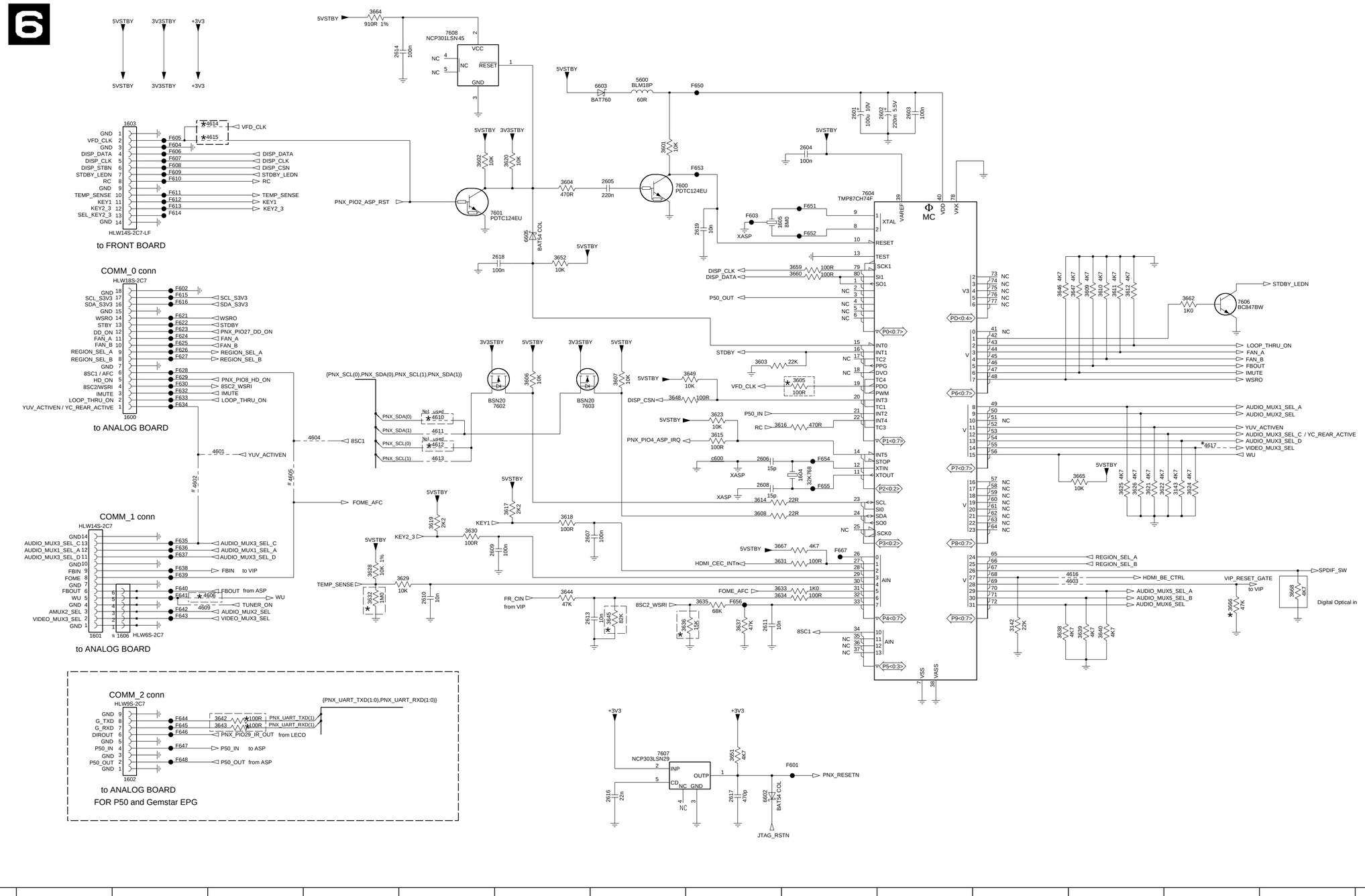

1600 E2	F604 B2
1601 G1	F605 B2
1602 I2	F606 B2
1603 B2	F607 B2
1604 E9	F608 B2
1605 C8	F609 B2
1606 G2	F610 B2
2601 B9	F611 B2
2602 B10	F612 C2
2603 B10	F613 C2
2604 B9	F614 C2
2605 B7	F615 D2
2606 E8	F616 D2
2607 F6	F621 D2
2608 F8	F622 D2
2609 F5	F623 D2
2610 G5	F624 D2
2611 G8	F625 D2
2613 G6	F626 D2
2614 A4	F627 D2
2616 I7	F628 D2
2617 I8	F629 D2
2618 C6	F630 D2
2619 C8	F632 E2
3142 G11	F633 E2
3143 F13	F634 E2
3601 B7	F635 F2
3602 B5	F636 F2
3603 D8	F637 F2
3604 B6	F638 F2
3605 D9	F639 F2
3606 D6	F640 G2
3607 D7	F641 G2
3608 F8	F642 G2
3609 C12	F643 G2
3610 C12	F644 H2
3611 C12	F645 H2
3612 C12	F646 H2
3614 F8	F647 H2
3615 E8	F648 H2
3616 E8	F650 A8
3617 F6	F651 C9
3618 F6	F652 C9
3619 F5	F653 B8
3620 B6	F654 E9
3621 F12	F655 F9
3622 F12	F656 G8
3623 E8	F667 F9
3624 F13	c600 E8
3625 F12	
3626 F12	
3628 F4	
3629 F5	
3630 F5	
3631 F8	
3632 G4	
3633 G8	
3634 G8	
3635 G8	
3636 G7	
3637 G8	
3638 G11	
3639 G12	
3640 G12	
3642 H3	
3643 H3	
3644 G6	
3645 G7	
3646 C11	
3647 C12	
3648 E7	
3649 D8	
3651 H8	
3652 C6	
3659 C9	
3660 C9	
3662 D13	
3664 A4	
3665 E12	
3666 G13	
3667 F8	
3668 G14	
4601 E3	
4602 E2	
4603 G12	
4604 E4	
4605 E3	
4606 G3	
4609 G2	
4610 E5	
4611 E5	
4612 E5	
4613 E5	
4614 B3	
4615 B3	
4616 F12	
4617 E13	
5600 A7	
6602 I8	
6603 A7	
6605 C6	
7600 B7	
7601 C5	
7602 E6	
7603 E7	
7604 B9	
7606 D13	
7607 H7	
7608 A5	
F601 H9	
F602 C2	
F603 C8	

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CHN	SETNAME DVDR3570H / DVDR5470H/DVDR5570H / DVDR7570H		
CLASS_NO 3PC332	PCB LECO+ 2006 PANEL	5	2007-04-20
		4	2007-02-09
2006-10-10 2	Microcontroller+Reset ASP + RESET	3139 243 3683	
NAME KP Pang / KY Ng	SUPERS. --- 8	10	130 – 6 A2
SV	CHECK	DATE 2006-10-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006

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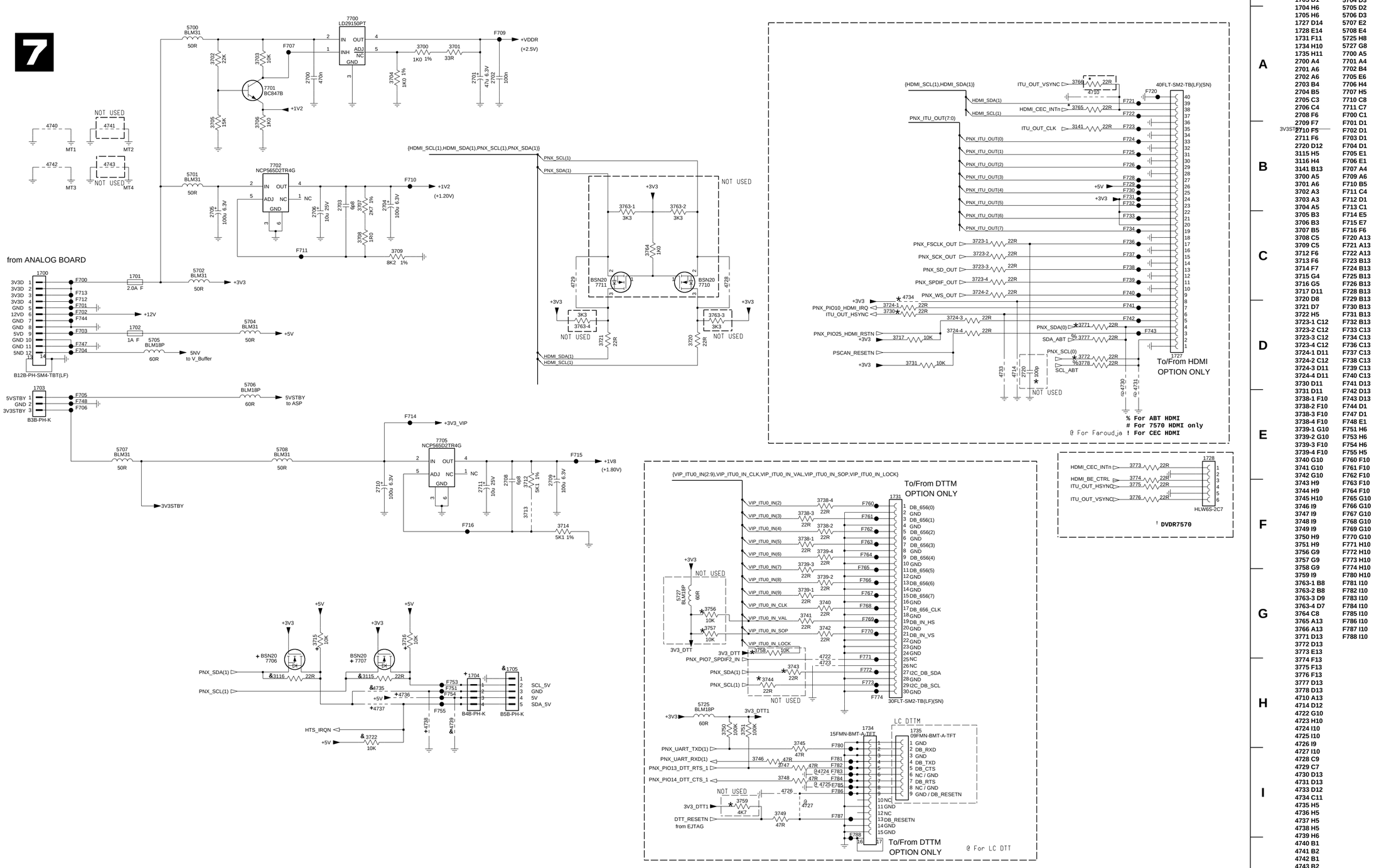

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1700 C1	5700 A3	3738-4 F10	F748 E1
1701 C2	5701 B3	3739-1 G10	F751 H6
1702 D2	5702 C3	3739-2 G10	F753 H6
1703 D1	5704 D3	3739-3 F10	F754 H6
1704 H6	5705 D2	3739-4 F10	F755 H5
1705 H6	5706 D3	3740 G10	F760 F10
1727 D14	5707 E2	3741 G10	F761 F10
1728 E14	5708 E4	3742 G10	F762 F10
1731 F11	5725 H8	3743 H9	F763 F10
1734 H10	5727 G8	3744 H9	F764 F10
1735 H11	7700 A5	3745 H10	F765 G10
2700 A4	7701 A4	3746 I9	F766 G10
2701 A6	7702 B4	3747 I9	F767 G10
2702 A6	7705 E6	3748 I9	F768 G10
2703 B4	7706 H4	3749 I9	F769 G10
2704 B5	7707 H5	3750 H9	F770 G10
2705 C3	7710 C8	3751 H9	F771 H10
2706 C4	7711 C7	3756 G9	F772 H10
2708 F6	F700 C1	3757 G9	F773 H10
2709 F7	F701 D1	3758 G9	F774 H10
3V3ST 2710 F5	F702 D1	3759 I9	F780 I10
2711 F6	F703 D1	3763-1 B8	F781 I10
2720 D12	F704 D1	3763-2 B8	F782 I10
3115 H5	F705 E1	3763-3 D9	F783 I10
3116 H4	F706 E1	3763-4 D7	F784 I10
3141 B13	F707 A4	3764 C8	F785 I10
3700 A5	F709 A6	3765 A13	F786 I10
3701 A6	F710 B5	3766 A13	F787 I10
3702 A3	F711 C4	3771 D13	F788 I10
3703 A3	F712 D1	3772 D13	
3704 A5	F713 C1	3773 E13	
3705 B3	F714 E5	3774 F13	
3706 B3	F715 E7	3775 F13	
3707 B5	F716 F6	3776 F13	
3708 C5	F720 A13	3777 D13	
3709 C5	F721 A13	3778 D13	
3712 F6	F722 A13	4710 A13	
3713 F6	F723 B13	4714 D12	
3714 F7	F724 B13	4722 G10	
3715 G4	F725 B13	4723 H10	
3716 G5	F726 B13	4724 I10	
3717 D11	F728 B13	4725 I10	
3720 D8	F729 B13	4726 I9	
3721 D7	F730 B13	4727 I10	
3722 H5	F731 B13	4728 C9	
3723-1 C12	F732 B13	4729 C7	
3723-2 C12	F733 C13	4730 D13	
3723-3 C12	F734 C13	4731 D13	
3723-4 C12	F736 C13	4733 D12	
3724-1 D11	F737 C13	4734 C11	
3724-2 C12	F738 C13	4735 H5	
3724-3 D11	F739 C13	4736 H5	
3724-4 D11	F740 C13	4737 H5	
3730 D11	F741 D13	4738 H5	
3731 D11	F742 D13	4739 H6	
3738-1 F10	F743 D13	4740 B1	
3738-2 F10	F744 D1	4741 B2	
3738-3 F10	F747 D1	4742 B1	
3738-4 F10	F748 E1	4743 B2	

CHN	SETNAME	DVDR3570H / DVDR5470H/DVDR5570H / DVDR7570H	
CLASS_NO 3PC332	PCB LECO+ 2006 PANEL		5 2007-04-20
2006-10-10 2	Power Supply PS	3139 243 3683	4 2007-02-09
NAME KP Pang / KY Ng	SUPERS. ---	8	10 130 – 7 A2
SV CHECK	DATE 2006-10-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

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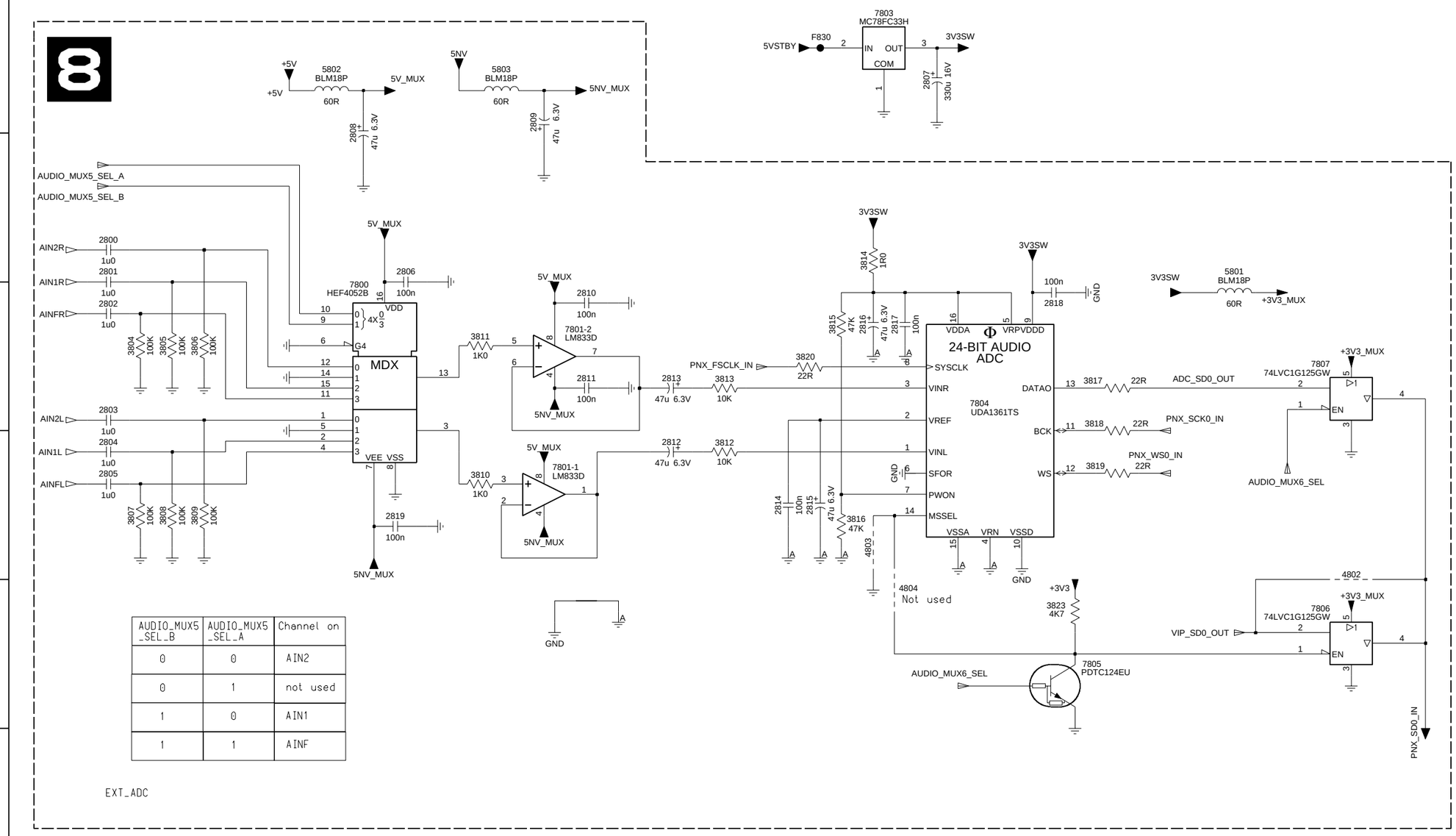

AUDIO_MUX5_SEL_B	AUDIO_MUX5_SEL_A	Channel on
0	0	AIN2
0	1	not used
1	0	AIN1
1	1	AINF

2800 B1
2801 B1
2802 C1
2803 C1
2804 D1
2805 D1
2806 B3
2807 A7
2808 A3
2809 A4
2810 C4
2811 C4
2812 D5
2813 C5
2814 D6
2815 D6
2816 C6
2817 C6
2818 C7
2819 D3
3804 C1
3805 C2
3806 C2
3807 D1
3808 D2
3809 D2
3810 D4
3811 C4
3812 D5
3813 C5
3814 B6
3815 C6
3816 D6
3817 C8
3818 C8
3819 D8
3820 C6
3823 E8
4802 D9
4803 D6
4804 E7
5801 B9
5802 A3
5803 A4
7800 C3
7801-1 D4
7801-2 C4
7803 A6
7804 C7
7805 E8
7806 E9
7807 C9
F830 A6

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CHN	SETNAME	DVDR3570H / DVDR5470H / DVDR5570H / DVDR7570H	
CLASS_NO	PCB LECO+ 2006 PANEL External ADC	3139 243 3683	5 2007-04-20 4 2007-02-09
- 2006-10-10 2			
KP Pang / KY Ng	SUPERS. 8	10 130 – 8	A3
CHECK	DATE 2006-11-10	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

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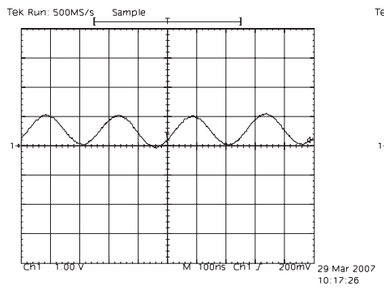
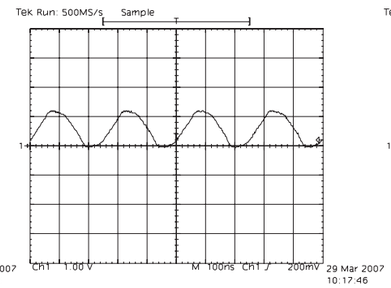
Digital Board Waveforms

F101 (1100)



F102 (1100)



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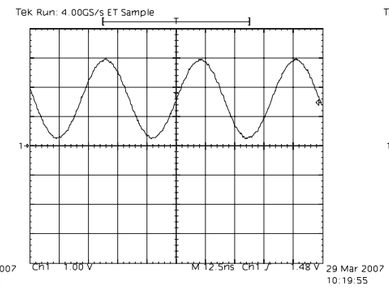

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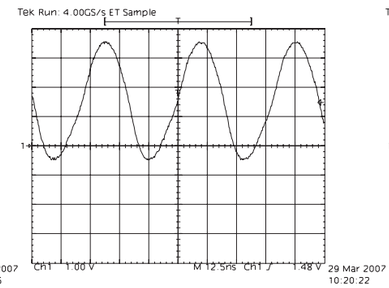

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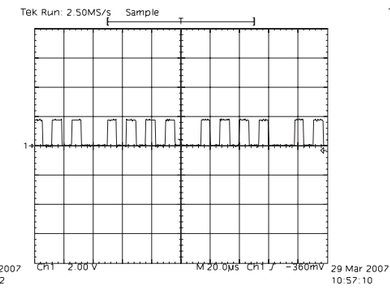

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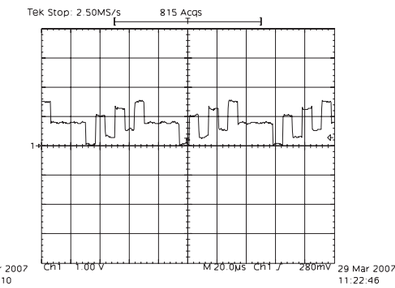

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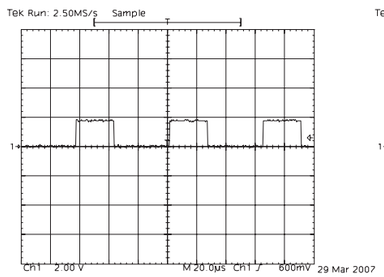

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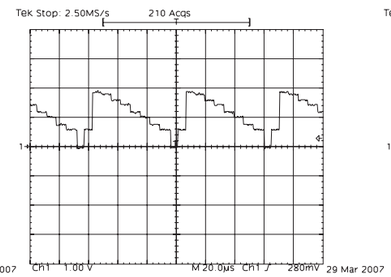

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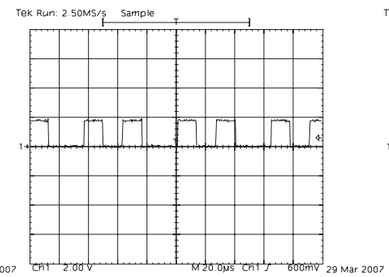

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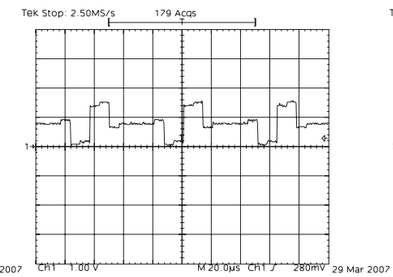

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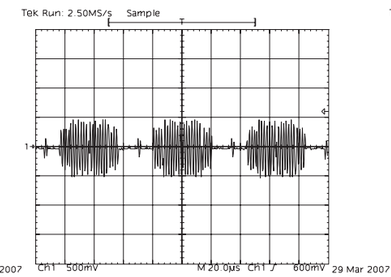

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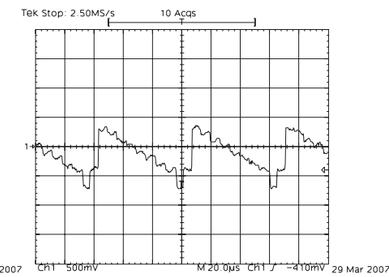

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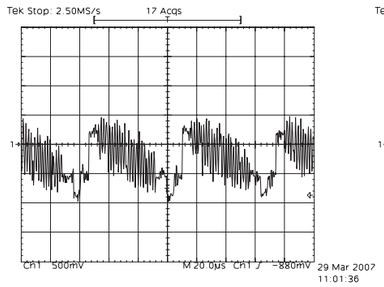

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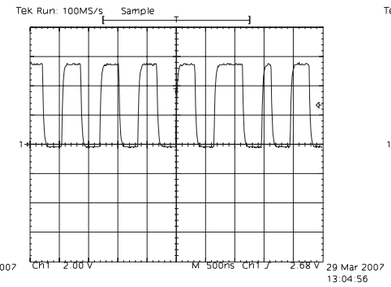

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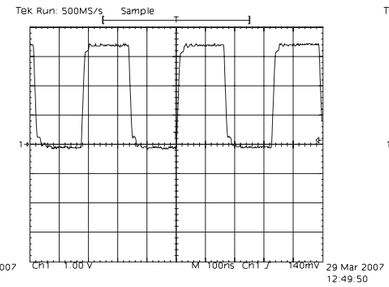
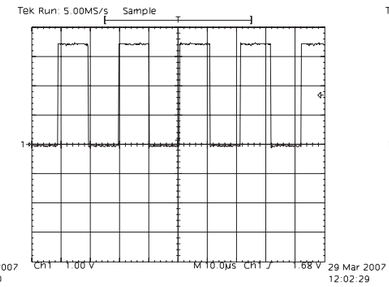


F538_D_WCLK



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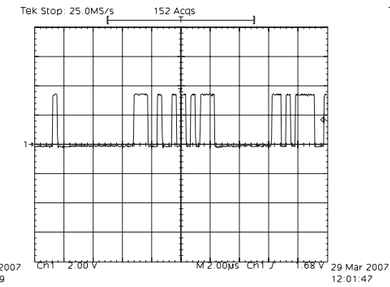

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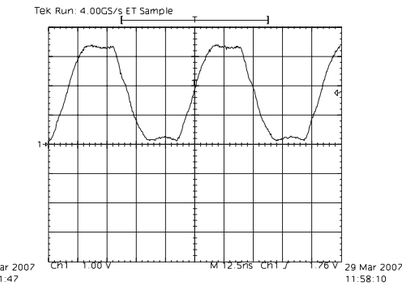
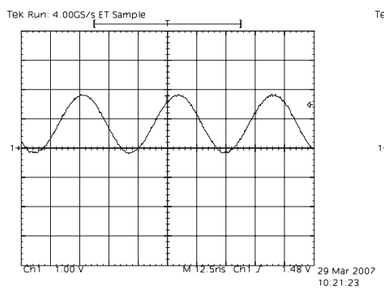
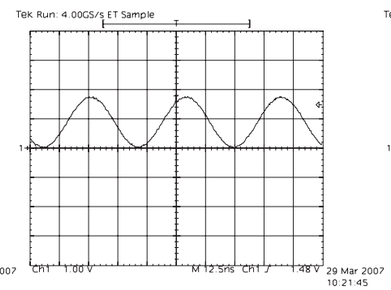


F550 (1504 Top View)



F551 (1504 Top View)



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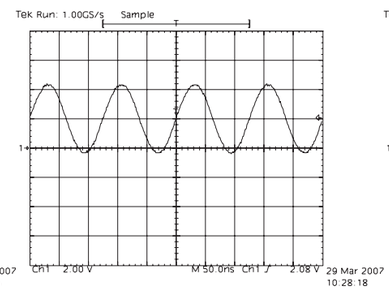

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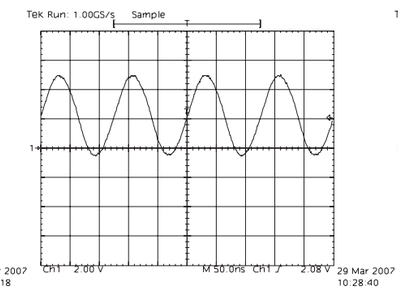

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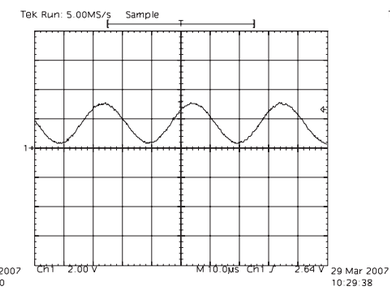

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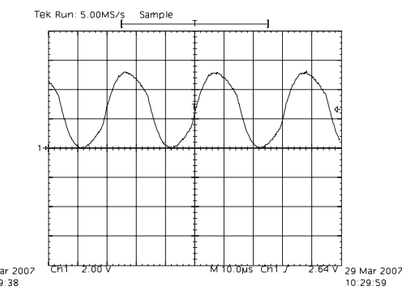
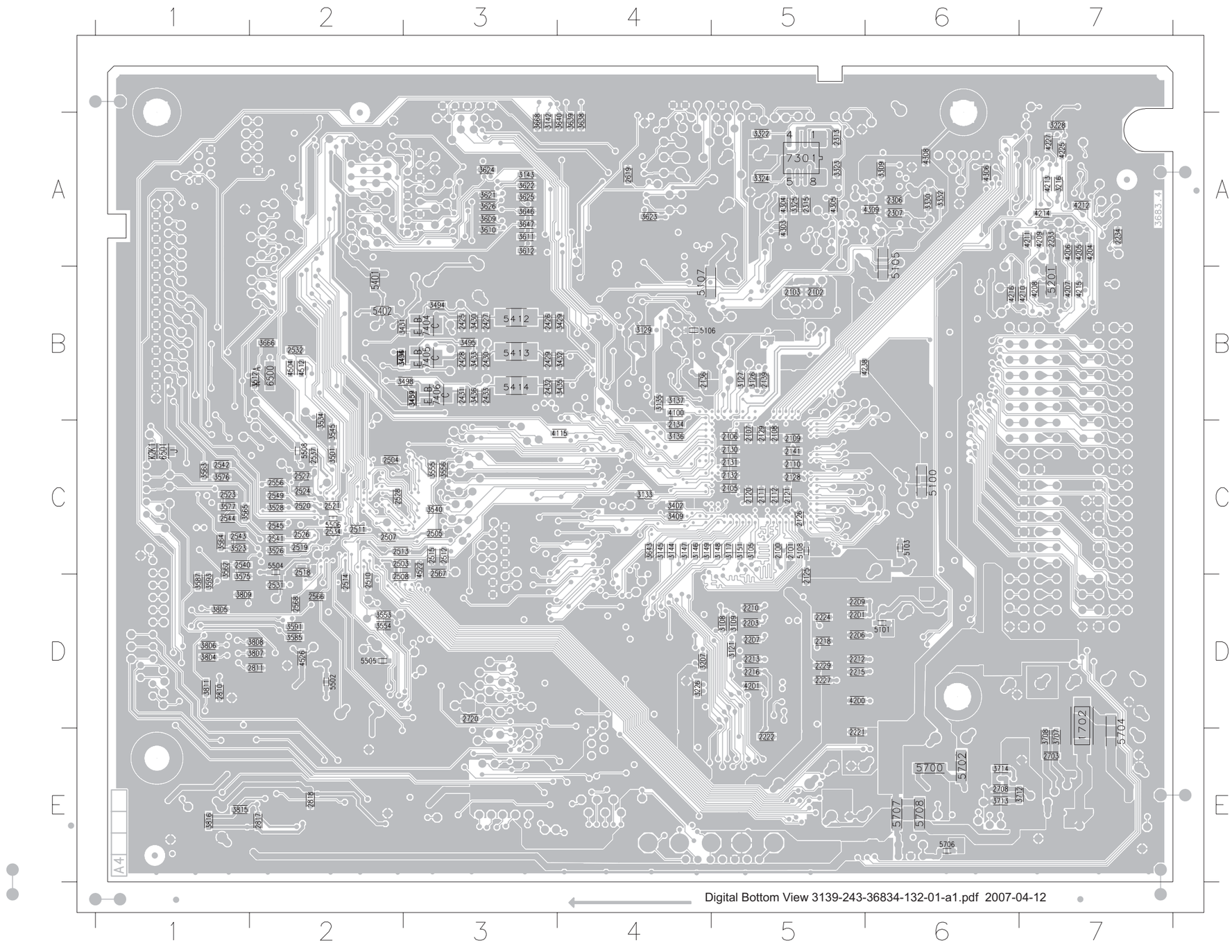


Layout: Digital Bottom View



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Test Points Overview for Digital Board

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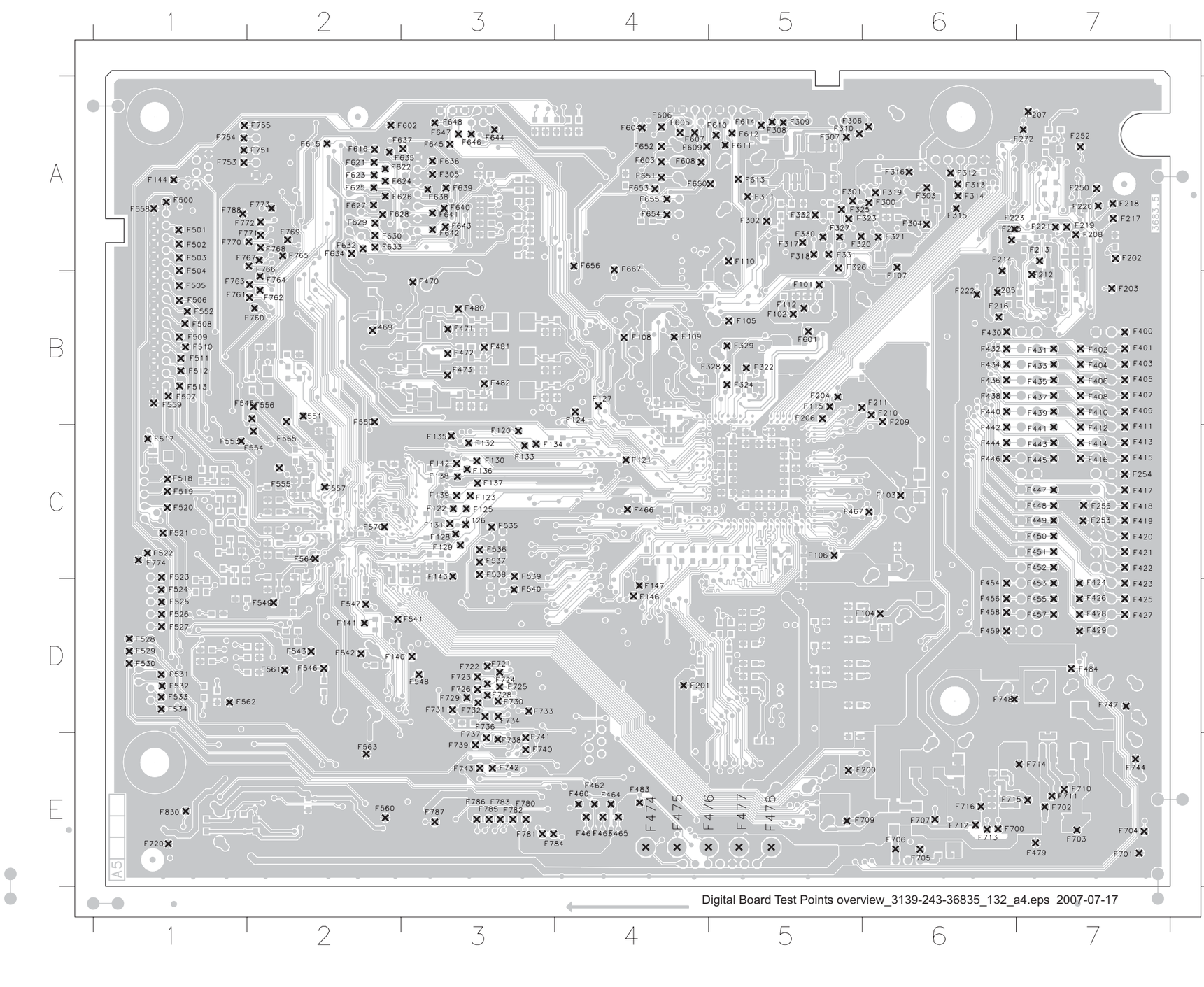
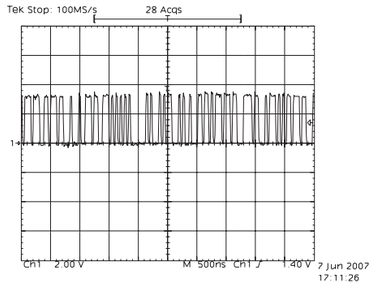
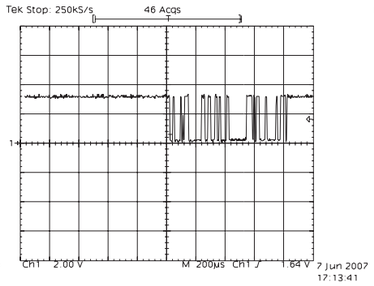


HDMI Board Waveforms

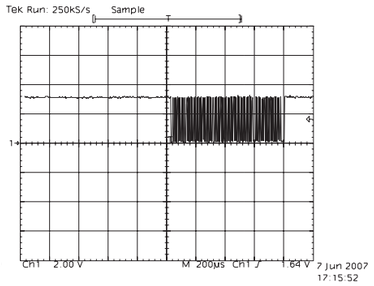
F100 ITU OUT 4



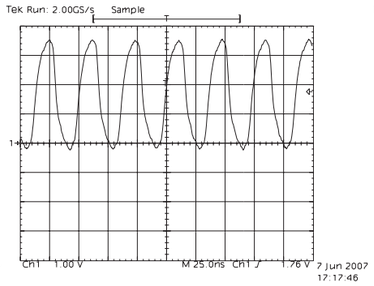
F101 SDA1



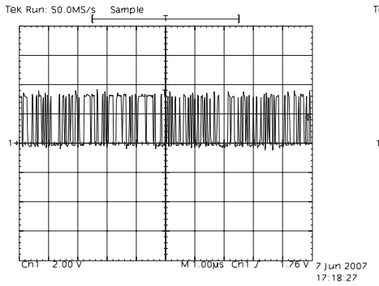
F103 SCL1



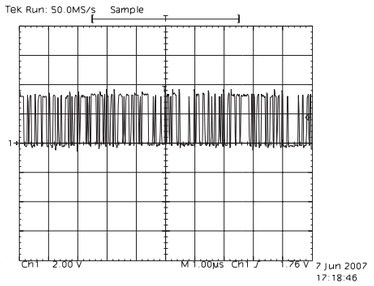
F104 VO CLK



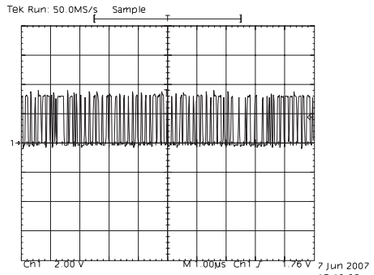
F105 ITU OUT 0



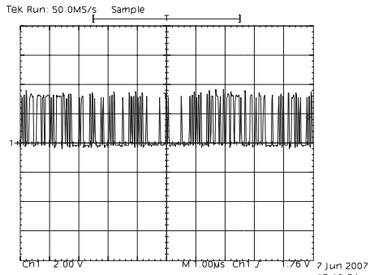
F106 ITU OUT 1



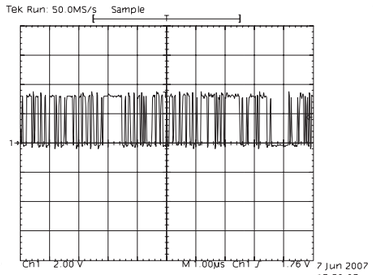
F107 ITU OUT 2



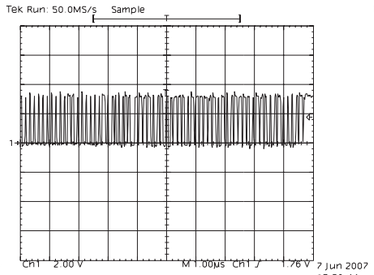
F108 ITU OUT 3



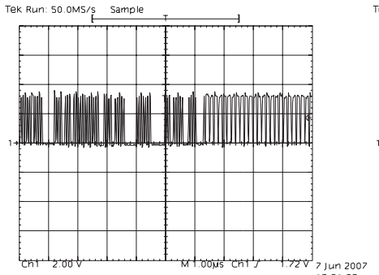
F111 ITU OUT 5



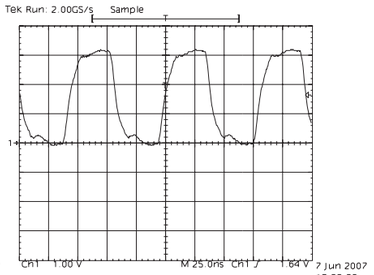
F112 ITU OUT 6



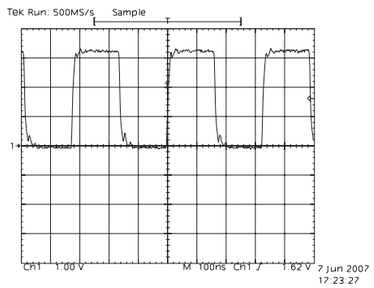
F113 ITU OUT 7



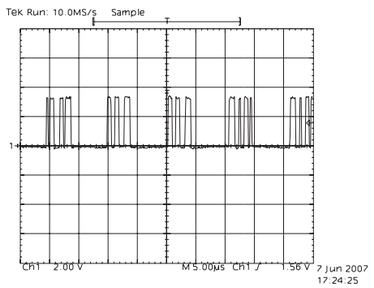
F114 FSCLK12 OUT



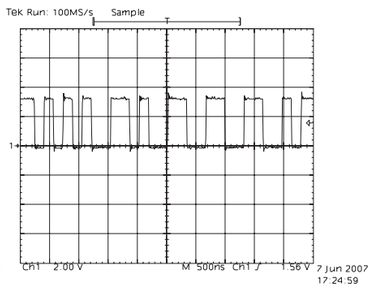
F115 SCLK12 OUT



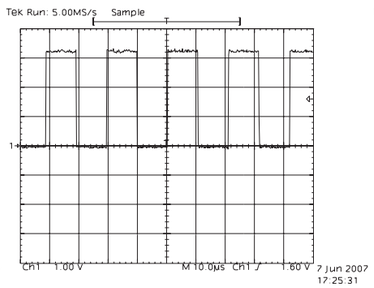
F116 SD OUT



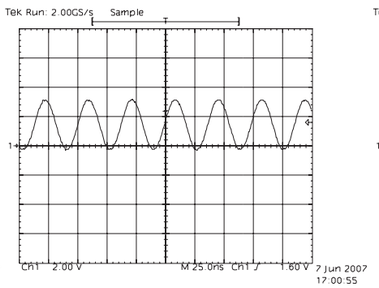
F117 SPDIF OUT



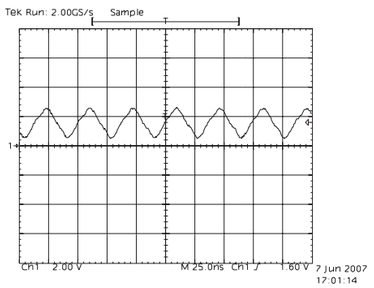
F118 WS12 OUT



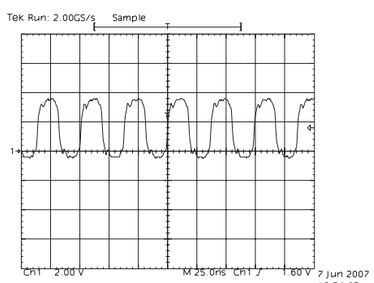
F161 7113-pin2



F162 7113-pin4



F163 SYS CLK ABT



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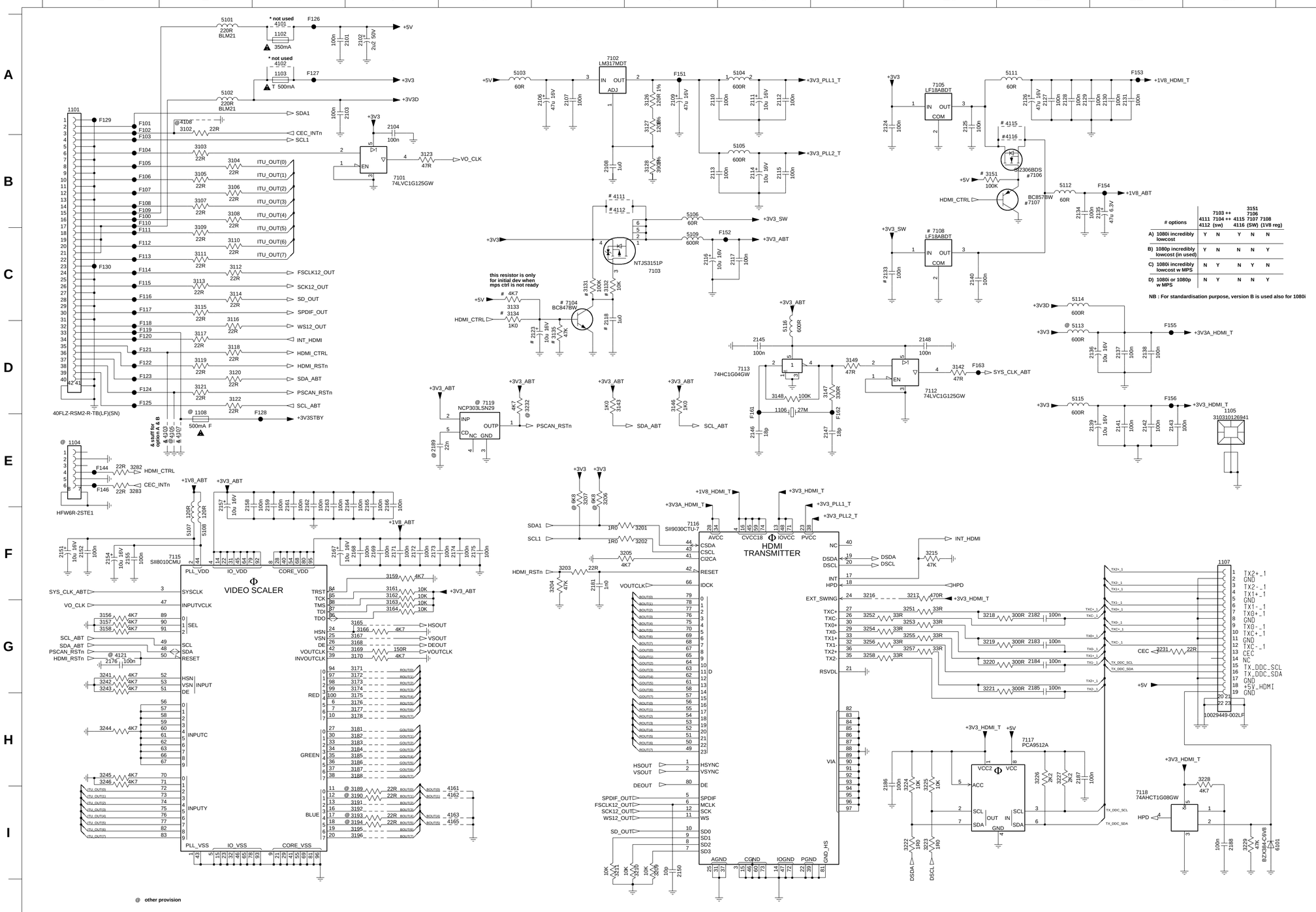

# options	7103 ++ 4111 7104 ++ 4112 (sw)	4115 4116 (SW)	3151 7106 7107 7108 (1V8 reg)
A) 1080i incredibly lowcost	Y N	Y N	N
B) 1080p incredibly lowcost (in used)	Y N	N N	Y
C) 1080i incredibly lowcost w MPS	N Y	N Y	N
D) 1080i or 1080p w MPS	N Y	N N	Y

NB : For standardisation purpose, version B is used also for 1080i

1101 A1
1102 A3
1103 A3
1104 E1
1105 D13
1106 D8
1107 F13
1108 E2
2101 A3
2102 A4
2103 A3
2104 A4
2106 A6
2107 A6
2108 B6
2109 A7
2110 A7
2111 A8
2112 A8
2113 B7
2114 B8
2115 B8
2116 C7
2117 C8
2118 C6
2123 D6
2124 A9
2125 A10
2126 A11
2127 A11
2128 A11
2129 A11
2130 A12
2131 A12
2133 C9
2134 B11
2135 B12
2136 D12
2137 D12
2138 D12
2139 E12
2140 C10
2141 E12
2142 E12
2143 E12
2145 D8
2146 E8
2147 E9
2148 D10
2150 I7
2151 F1
2152 F1
2154 F1
2155 F1
2157 E2
2158 E2
2159 E3
2161 E3
2162 E3
2163 E3
2164 E4
2165 E4
2166 E4
2167 F3
2168 F4
2169 F4
2171 F4
2172 F4
2173 F4
2174 F5
2175 F5
2176 G1
2181 F6
2182 G11
2183 G11
2184 G11
2185 G11
2186 H9
2187 H11
2188 I13
2189 E4
3102 A2
3103 B2
3104 B2
3105 B2
3106 B2
3107 B2
3108 B2
3109 C2
3110 C2
3111 C2
3113 C2
3114 C2
3115 C2
3116 C2
3117 D2
3118 D2
3119 D2
3120 D2
3121 D2
3122 D2
3123 B4
3126 A7
3127 A7
3128 B7
3131 C6
3132 C6
3133 C5
3134 C5
3135 D6
3142 D10
3143 D6
3146 D7
3147 D9
3148 D8
3149 D9
3151 B10
3156 G1
3157 G1
3158 G1
3159 F4
3161 F4
3162 F4
3163 G4
3164 G4
3165 G4
3166 G4
3167 G4
3168 G4
3169 G4
3170 G4
3171 G4
3172 G4
3173 G4
3174 G4
3175 H4
3176 H4
3177 H4
3178 H4
3181 H4
3182 H4
3183 H4
3184 H4
3185 H4
3186 H4
3187 H4
3188 H4
3189 I4
3190 I4
3192 I4
3193 I4
3194 I4
3195 I4
3196 I4
3201 F7
3202 F7
3203 F6
3204 F6
3205 F7
3206 E6
3207 E6
3209 I7
3210 I7
3211 I6
3215 F10
3216 F9
3217 F10
3218 G10
3220 G10
3221 G10
3222 I10
3223 I10
3224 H10
3225 H10
3226 H11
3227 H11
3228 H13
3229 I13
3231 G10
3232 G9
3234 G9
3255 G10
3256 G9
3258 G9
3282 E1
3283 E1
4101 A3
4102 A3
4103 E2
4105 E2
4107 E2
4108 A2
4111 B6
4112 B6
4115 A11
4116 B11
4121 G1
4161 I5
4162 I5
4163 I5
4165 I5
5101 A2
5102 A2
5103 A5
5104 A8
5105 B8
5106 B7
5107 F2
5108 F2
5109 C7
5111 A11
5112 B11
5113 D11
5114 C11
5115 D11
5116 D8
6101 I13
7101 B4
7102 A6
7103 C7
7104 C6
7105 A10
7106 B11
7107 B11
7108 C10
7112 D10
7113 D8
7115 F2
7116 F7
7117 H11
7118 I12
7119 D5
F100 B1
F101 A1
F102 A1
F103 B1
F104 B1
F105 B1
F106 B1
F107 B1
F108 B1
F109 B1
F110 B1
F111 C1
F112 C1
F113 C1
F114 C1
F115 C1
F116 C1
F117 C1
F118 D1
F119 D1
F120 D1
F121 D1
F122 D1
F123 D1
F124 D1
F125 D1
F126 A3
F127 A3
F128 E3
F129 A1
F130 C1
F144 E1
F146 E1
F151 A7
F152 C8
F153 A12
F154 B12
F155 D12
F156 D12
F161 D8
F162 D9
F163 D10

CHN	SETNAME		
CLASS_NO	PCB HDMI LC 1080i PANEL	3	2007-06-15
		3	2007-04-16
2006-11-27 2		3139 243 3675	
NAME KH GOH	SUPERS. 2	10	130 – 1 A2
SV CHECK	DATE 2006-06-30	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

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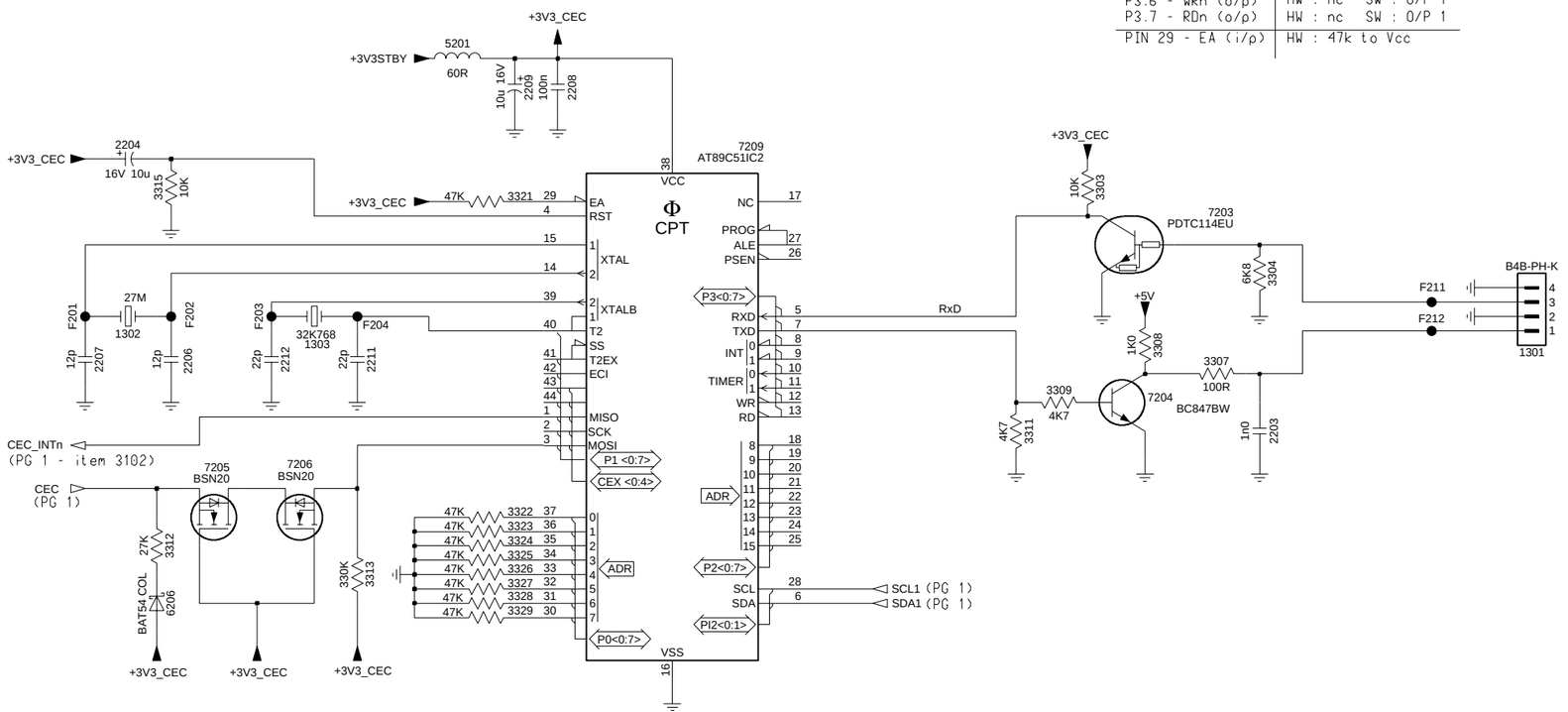
owner.

P0.0 - P0.7 (opendrian i/o)	HW : 47k to gnd SW : O/P 0
P1.1 - P1.4, P1.6 (i/o with pullups)	HW : nc SW : O/P 1
P2.0 - P2.7 (i/o with pullups)	HW : nc SW : O/P 1
P3.2 - INT0 (i/p) P3.3 - INT1 (i/p) P3.4 - T0 (i/p) P3.5 - T1 (i/p) P3.6 - WRn (o/p) P3.7 - RDn (o/p)	HW : nc HW : nc HW : nc HW : nc HW : nc SW : O/P 1 HW : nc SW : O/P 1
PIN 29 - EA (i/p)	HW : 47k to Vcc



Note :- All items on this page are for provision only

1301 C9
1302 C2
1303 C3
2203 D8
2204 B2
2206 C2
2207 C2
2208 B4
2209 B4
2211 C3
2212 C3
3303 C7
3304 C8
3307 C7
3308 C7
3309 D7
3311 D6
3312 D2
3313 D3
3315 C2
3321 C4
3322 D4
3323 D4
3324 D4
3325 D4
3326 D4
3327 E4
3328 E4
3329 E4
5201 B4
6206 E2
7203 C7
7204 D7
7205 D2
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7209 B5
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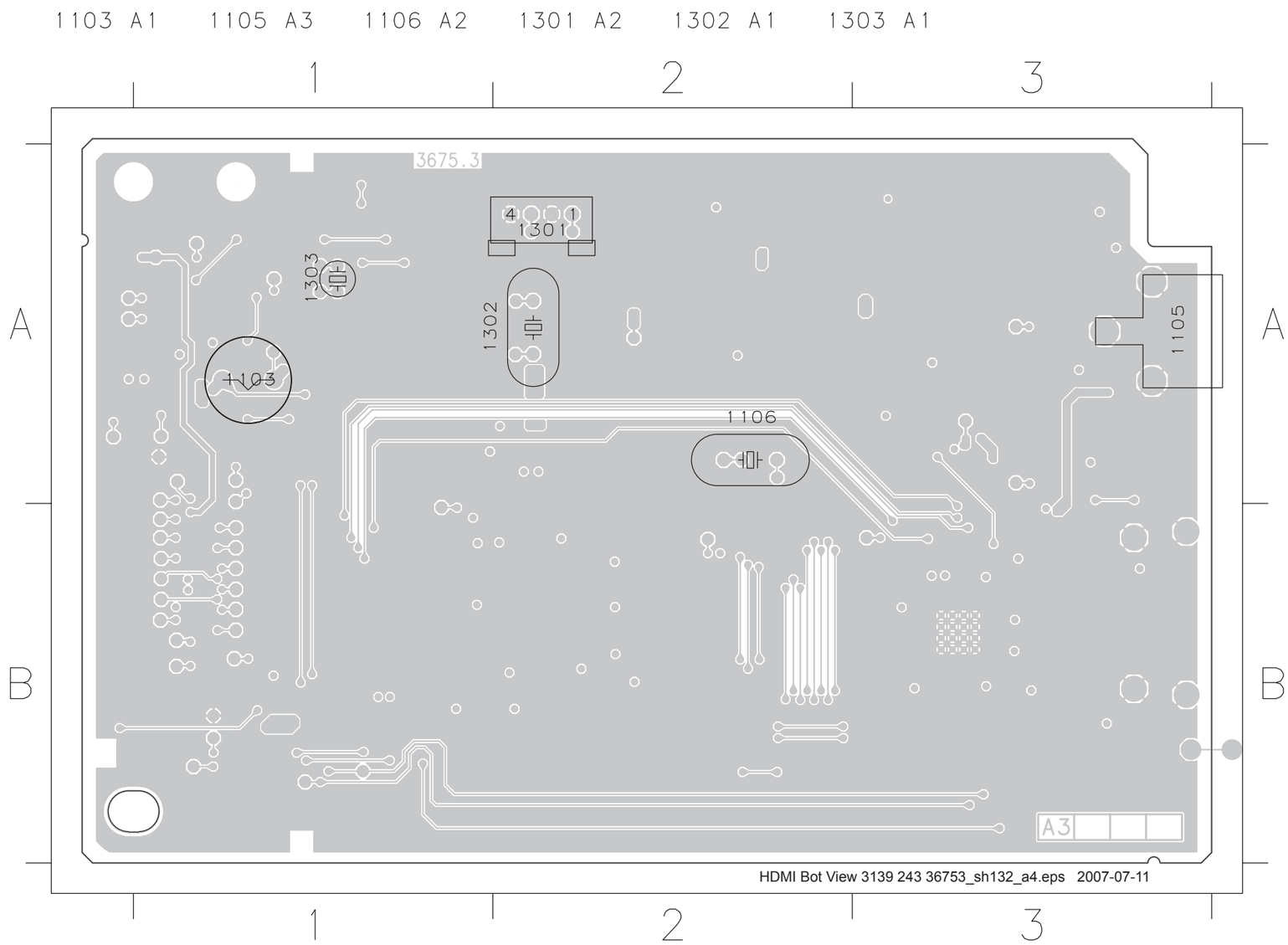
F204 C3
F211 C8
F212 C8

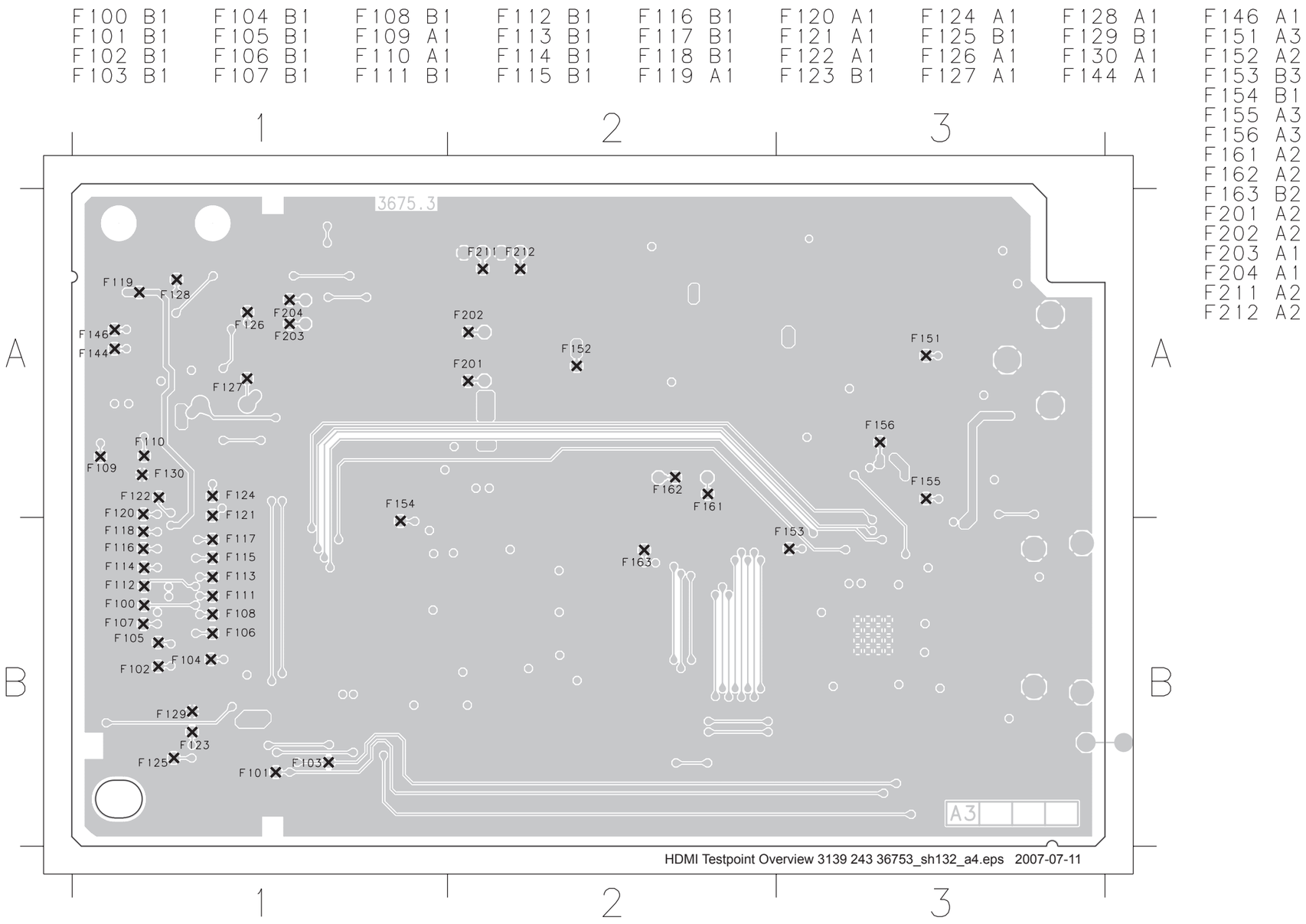
CHN ********		SETNAME ********	
CLASS_NO ******	PCB HDMI LC1080i PANEL	3139 243 3675	3 2007-06-15 3 2007-04-16
2006-11-27 2			
NAME KH GOH	SUPERS. -	2	10 130 – 2 A3
CHECK	DATE 2006-06-30	© ROYAL PHILIPS ELECTRONICS N.V. 2006	

DVDR5570H/boards/3139_243_36753_01

Layout: HDMI (Bottom View)



Layout: HDMI Board Testpoint Overview



Layout: HDMI (Bottom View)

1101 B3
1102 A3
1103 A3
1104 A3
1105 A1
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1107 B1
1108 A3
1301 A2
1302 A2
1303 A3
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5112 A3
5113 A1
5114 B1
5115 A1
5116 B2
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6101 A1
6206 A1
7101 B3
7102 A1
7103 A2
7104 A2
7105 A2
7106 A1
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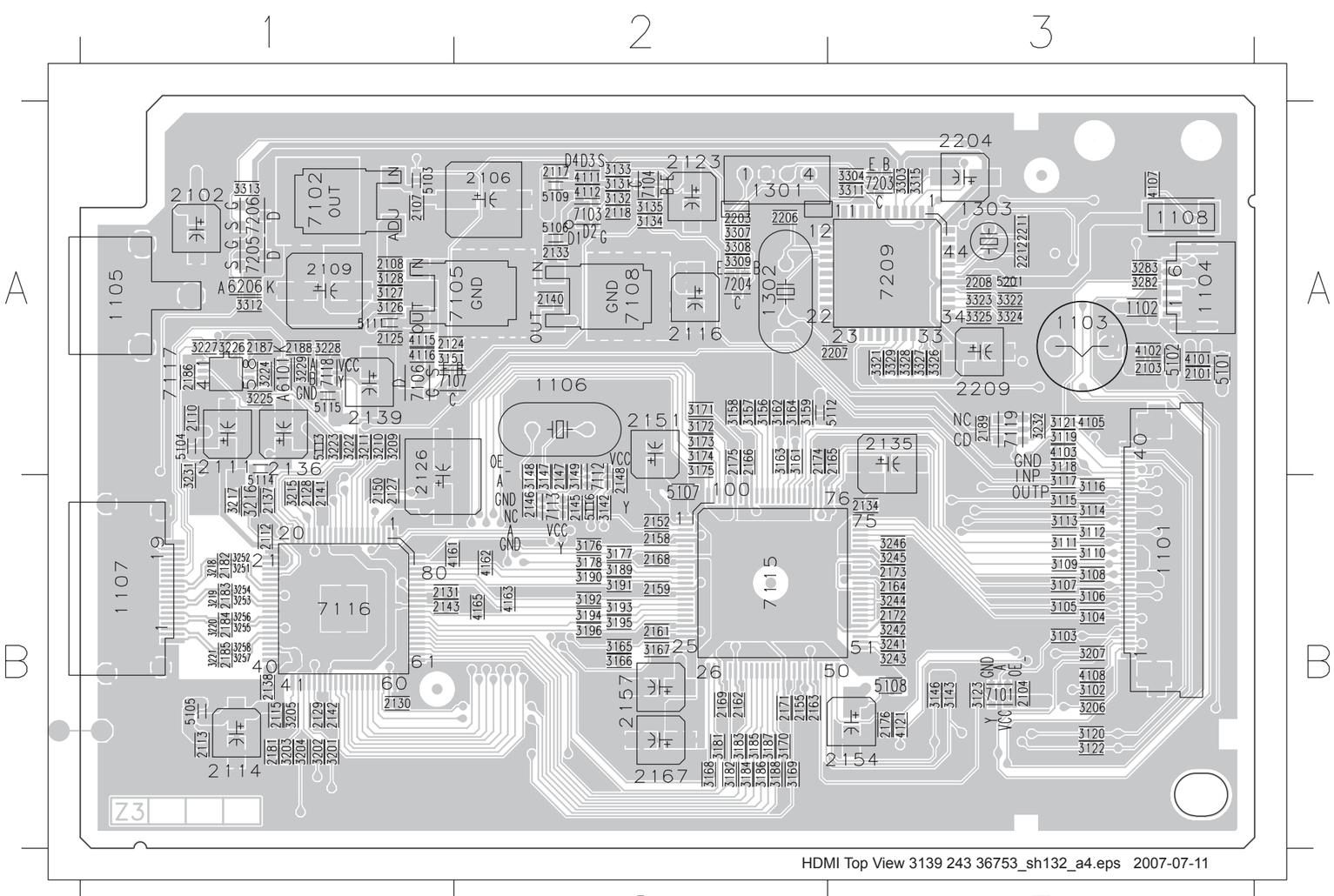


DVDR3575H/05/31/58 Service Parts List

0110	313924417191		COVER TRAY	
0180	313924126261		SPRING EMC	
0181	313924126291		SPRING AV	
0185	313911426671		BUSH, AC CORD	
0190	313924320941		SHIELD HDMI DVDR3575H	
0193	313924160931		SPRING ESD DVDR3570H	
0230	313924126871		PLATE REAR DVDR3575H	
0240	313924126951		COVER TOP DVDR3575H	
0271	252220098475		SCR PAN TORX ST BK #6-32X6	
0341	242254901717		REMOTE CONTR DVDR3570H B	/05 only
0341	242254901652		REMOTE CONTR DVDR3570H/31 B	/31 only
0341	242254901504		REMOTE CONTR DVDR3570H 51 58 B	/58 only
0345	242207098236	$	MAINSCORD UK 5A 1M8 VH BK B	/05 only
0345	242207098231	$	MAINS CORD IEC	/31/58 only
0351	242207600825		CBLE SCART 1M5 SCART 21P BK B	
0351	242207600858		CBLE SCART 1M5 SCART 21P BK B	
0487	242207600885		RF CONNECTING CABLE	
0901	314302767502		FRONT ASSY DVDR3575H UK	/05 only
0901	314302767481		FRONT ASSY DVDR3575H/31	/31 only
0901	314302767522		FRONT ASSY DVDR3575H EU	/58 only
0920	314302765313		FRAME ASSY	
1001	313924852661		PCBAS ANA DVDR3575H EU BOARD	
1002	313924851571		PCBAS FRONT 3570H COMBI	
1003	313924851641		PCBAS DIGI DVDR3575H EU BOARD	
1004	313924713532	$	PSU BOARD PIE	
1005	282206200169		HDD 3.5" 160GB ST3160215ACE B	
1006	313924851901		PCBAS HDMI LC 1080I BOARD	
1007	313924800601		Drive D6.9 Closed (*new running change target Oct ' 07)	
1007	313924800333		DRIVE D5.2 CLOSED	
1008	282203100057		FAN 12VDC 1.2W	
8001	313924102151		CBLE VH 05P/140/05P VH 20ST BK	
8002	313911027881		CBLE PH 06P/180/06P PH 26ST BK	
8003	313924103821		CBLE EH 04P/120/04P LC-L UL	
8004	313924103761		CBLE EH 04P/280/04P LC-L UL	
8005	313911028311		CBLE T PH 12P/280/12P PH 26ST BK	
8006	310330890611		CWAS 03PH/03PH 220 BK AWG26	
8007	313924100981		FFC FOIL 30P/280/30P BD 1MMP	
8008	313924102511		FFC FOIL 18P/280/18P BD 1MMP	
8009	313924101031		FFC FOIL 14P/220/14P BD 1MMP	
8011	313924100301		FFC FOIL 24P/140/24P BD 1MMP	
8012	313911102161		FFC FOIL 12P/140/12P BD 1.0MMP	
8013	310330890562		CWAS 05PH/05PH 340 5P BK 26S	
8014	313924101521		FFC FOIL 09P/280/09P BD 1MMP	
8015	313924102181		FFC FOIL 14P/280/14P BD 1MMP	
8017	313924102141		CBLE IDE 40P/340/40P IDE UL	
8018	313924102651		CBLE IDE 40P/380/40P IDE UL	
8019	242207600786		CBLE USB-A 0M3 PH 5P BK B	
8026	313924102211		FFC FOIL 40P/140/40P BD 0.5MMP	
8030	313911027931		CBLE PH 07P/100/07P PH 26ST BK	

DVDR3577H/05/31/51/58 Service Parts List

0110	313924417181		COVER TRAY	
0180	313924126261		SPRING EMC	
0181	313924126291		SPRING AV	
0185	313911426671		BUSH, AC CORD	
0190	313924320941		SHIELD HDMI DVDR3575H	
0193	313924160931		SPRING ESD DVDR3570H	
0230	313924126871		PLATE REAR DVDR3575H	
0240	313924124232		COVER TOP	
0271	252220098475		SCR PAN TORX ST BK #6-32X6	
0341	242254901717		REMOTE CONTR DVDR3570H B	/05 only
0341	242254901652		REMOTE CONTR DVDR3570H/31 B	/31 only
0341	242254901504		REMOTE CONTR DVDR3570H 51 58 B	/51/58 only
0345	242207098236	$	MAINSCORD UK 5A 1M8 VH BK B	/05 only
0345	242207098231	$	MAINS CORD IEC	/31/51/58 only
0351	242207600825		CBLE SCART 1M5 SCART 21P BK B	
0351	242207600858		CBLE SCART 1M5 SCART 21P BK B	
0487	242207600885		RF CONNECTING CABLE	
0901	314302767623		FRONT ASSY DVDR3577H UK	/05 only
0901	314302767603		FRONT ASSY DVDR3577H/31	/31 only
0901	314302767643		FRONT ASSY DVDR3577H EU	/51/58 only
0920	314302765313		FRAME ASSY	
1001	313924852661		PCBAS ANA DVDR3575H EU BOARD	
1002	313924851571		PCBAS FRONT 3570H COMBI	
1003	313924851641		PCBAS DIGI DVDR3575H EU BOARD	
1004	313924713532	$	PSU BOARD PIE	
1005	282206200169		HDD 3.5" 160GB ST3160215ACE B	
1006	313924851901		PCBAS HDMI LC 1080I BOARD	
1007	313924800601		Drive D6.9 Closed (*new running change target Oct ' 07)	
1007	313924800333		DRIVE D5.2 CLOSED	
1008	282203100057		FAN 12VDC 1.2W	
8001	313924102151		CBLE VH 05P/140/05P VH 20ST BK	
8002	313911027881		CBLE PH 06P/180/06P PH 26ST BK	
8003	313924103821		CBLE EH 04P/120/04P LC-L UL	
8004	313924103761		CBLE EH 04P/280/04P LC-L UL	
8005	313911028311		CBLE T PH 12P/280/12P PH 26ST BK	
8006	310330890611		CWAS 03PH/03PH 220 BK AWG26	
8007	313924100981		FFC FOIL 30P/280/30P BD 1MMP	
8008	313924102511		FFC FOIL 18P/280/18P BD 1MMP	
8009	313924101031		FFC FOIL 14P/220/14P BD 1MMP	
8011	313924100301		FFC FOIL 24P/140/24P BD 1MMP	
8012	313911102161		FFC FOIL 12P/140/12P BD 1.0MMP	
8013	310330890562		CWAS 05PH/05PH 340 5P BK 26S	
8014	313924101521		FFC FOIL 09P/280/09P BD 1MMP	
8015	313924102181		FFC FOIL 14P/280/14P BD 1MMP	
8017	313924102141		CBLE IDE 40P/340/40P IDE UL	
8018	313924102651		CBLE IDE 40P/380/40P IDE UL	
8019	242207600786		CBLE USB-A 0M3 PH 5P BK B	
8026	313924102211		FFC FOIL 40P/140/40P BD 0.5MMP	
8030	313911027931		CBLE PH 07P/100/07P PH 26ST BK	

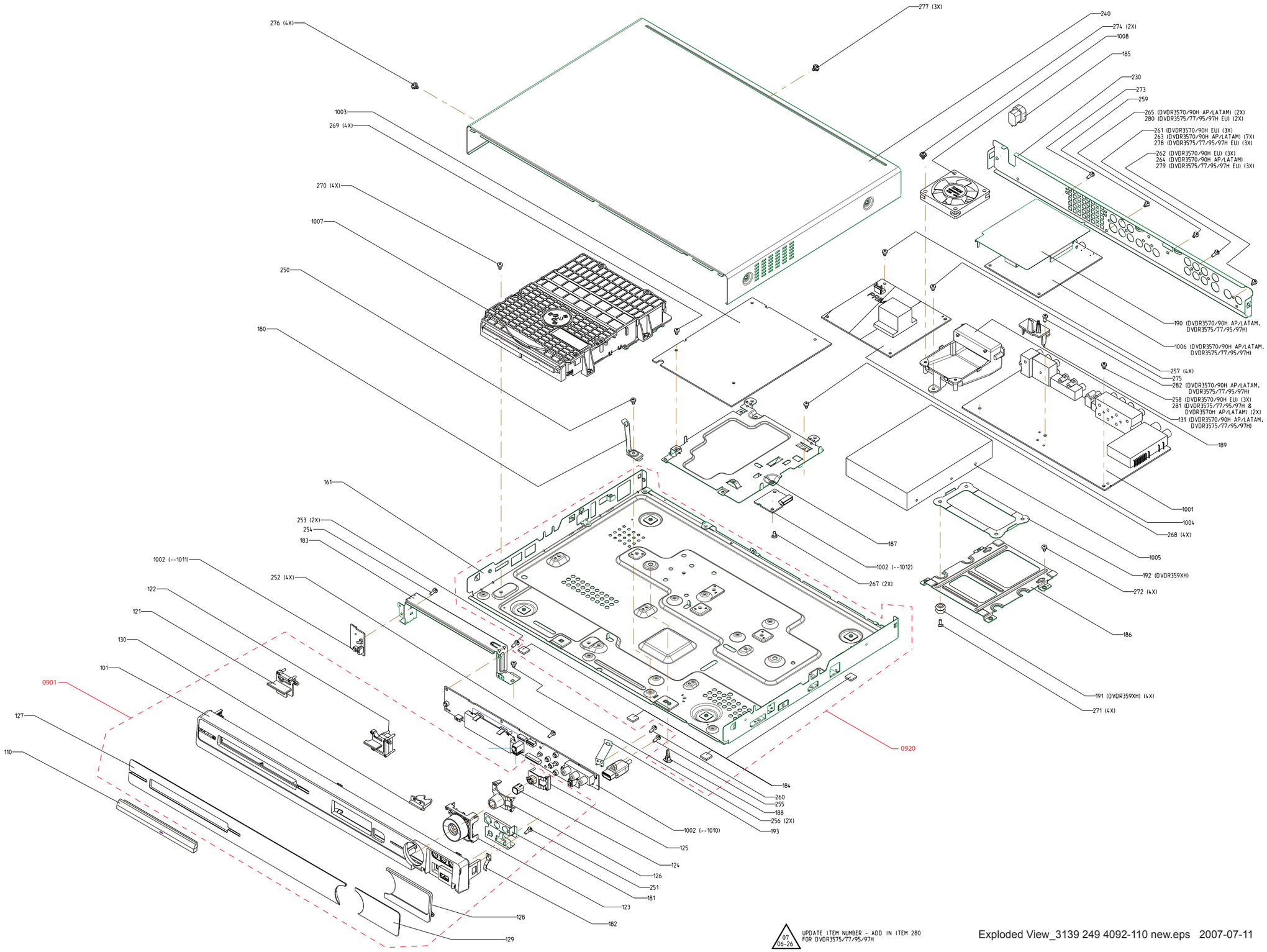
DVDR3595H/05/31/51/58 Service Parts List

0110	313924417171		COVER TRAY DVDR3595H	
0180	313924126261		SPRING EMC DVDR3570H	
0181	313924126291		SPRING AV DVDR3570H	
0185	313911426671		BUSH 450H259010	
0190	313924320941		SHIELD HDMI DVDR3575H	
0191	313924409101		HDD DAMPER	
0193	313924160931		SPRING ESD DVDR3570H	
0230	313924126871		PLATE REAR DVDR3575H	
0240	313924124232		COVER TOP DVDR3455H	
0271	252220000027		SCR WAFER PH STZN BU 6/32X12	
0341	242254901717		REMOTE CONTR DVDR3570H B	/05 only
0341	242254901652		REMOTE CONTR DVDR3570H/31 B	/31 only
0341	242254901504		REMOTE CONTR DVDR3570H 51 58 B	/51/58 only
0345	242207098236	$	MAINSCORD UK 5A 1M8 VH BK B	/05 only
0345	242207098231	$	MAINSCORD IEC 2A5 1M8 VH BK B	/31/51/58 only
0351	242207600825		CBLE SCART 1M5 SCART 21P BK B	
0351	242207600858		CBLE SCART 1M5 SCART 21P BK B	
0487	242207600885		RF CONNECTING CABLE	
0901	314302767623		FRONT ASSY DVDR3577H UK	/05 only
0901	314302767603		FRONT ASSY DVDR3577H/31	/31 only
0901	314302767643		FRONT ASSY DVDR3577H EU	/51/58 only
0920	314302765313		FRAME ASSY DVDR3450H	
1001	313924852661		PCBAS ANA DVDR3575H EU BOARD	
1002	313924851571		PCBAS FRONT 3570H COMBI	
1003	313924851641		PCBAS DIGI DVDR3575H EU BOARD	
1004	313924713532	$	PSU 06H85 EU AC7010LF PIE	
1005	282206200152		HDD 3.5" 250GB ST3250820ACE B	
1006	313924851901		PCBAS HDMI LC 1080I BOARD	
1007	313924800601		Drive D6.9 Closed (*new running change target Oct ' 07)	
1007	313924800333		DRIVE D5.2 CLOSED	
1008	282203100057		FAN 12VDC 1.2W 2850RPM B	
8001	313924102151		CBLE VH 05P/140/05P VH 20ST BK	
8002	313911027881		CBLE PH 06P/180/06P PH 26ST BK	
8003	313924103821		CBLE EH 04P/120/04P LC-L UL	
8004	313924103761		CBLE EH 04P/280/04P LC-L UL	
8005	313911028311		CBLE PH 12P/280/12P PH 26ST BK	
8006	310330890611		CWAS 03PH/03PH 220 BK AWG26	
8007	313924100981		FFC FOIL 30P/280/30P BD 1MMP	
8008	313924102511		FFC FOIL 18P/280/18P BD 1MMP	
8009	313924101031		FFC FOIL 14P/220/14P BD 1MMP	
8011	313924100301		FFC FOIL 24P/140/24P BD 1MMP	
8012	313911102161		FFC FOIL 12P/140/12P BD 1.0MMP	
8013	310330890562		CWAS 05PH/05PH 340 5P BK 26S	
8014	313924101521		FFC FOIL 09P/280/09P BD 1MMP	
8015	313924102181		FFC FOIL 14P/280/14P BD 1MMP	
8017	313924102141		CBLE IDE 40P/340/40P IDE UL	
8018	313924102651		CBLE IDE 40P/380/40P IDE UL	
8019	242207600786		CBLE USB-A 0M3 PH 5P BK B	
8026	313924102211		FFC FOIL 40P/140/40P BD 0.5MMP	
8030	313911027931		CBLE PH 07P/100/07P PH 26ST BK	

DVDR3597H/05/31/58 Service Parts List

0110	313924417161		COVER TRAY DVDR3597H	
0180	313924126261		SPRING EMC	
0181	313924126291		SPRING AV	
0185	313911426671		BUSH, AC CORD	
0190	313924320941		SHIELD HDMI DVDR3575H	
0191	313924409101		HDD DAMPER	
0193	313924160931		SPRING ESD DVDR3570H	
0230	313924126871		PLATE REAR DVDR3575H	
0240	313924126941		COVER TOP DVDR3597H	
0271	252220000027		SCR WAFER PH STZN BU 6/32X12	
0341	242254901717		REMOTE CONTR DVDR3570H B	/05 only
0341	242254901652		REMOTE CONTR DVDR3570H/31 B	/31 only
0341	242254901504		REMOTE CONTR DVDR3570H 51 58 B	/58 only
0345	242207098236	$	MAINSCORD UK 5A 1M8 VH BK B	/05 only
0345	242207098231	$	MAINS CORD IEC	/31/58 only
0351	242207600825		CBLE SCART 1M5 SCART 21P BK B	
0351	242207600858		CBLE SCART 1M5 SCART 21P BK B	
0487	242207600885		RF CONNECTING CABLE	
0901	314302767562		FRONT ASSY DVDR3597H UK	/05 only
0901	314302767542		FRONT ASSY DVDR3597H/31	/31 only
0901	314302767583		FRONT ASSY DVDR3597H EU	/58 only
0920	314302765313		FRAME ASSY	
1001	313924852661		PCBAS ANA DVDR3575H EU BOARD	
1002	313924851571		PCBAS FRONT 3570H COMBI	
1003	313924851641		PCBAS DIGI DVDR3575H EU BOARD	
1004	313924713532	$	PSU BOARD PIE	
1005	282206200152		HDD 3.5" 250GB ST3250820ACE B	
1006	313924851901		PCBAS HDMI LC 1080I BOARD	
1007	313924800601		Drive D6.9 Closed (*new running change target Oct ' 07)	
1007	313924800333		DRIVE D5.2 CLOSED	
1008	282203100057		FAN 12VDC 1.2W	
8001	313924102151		CBLE VH 05P/140/05P VH 20ST BK	
8002	313911027881		CBLE PH 06P/180/06P PH 26ST BK	
8003	313924103821		CBLE EH 04P/120/04P LC-L UL	
8004	313924103761		CBLE EH 04P/280/04P LC-L UL	
8005	313911028311		CBLE T PH 12P/280/12P PH 26ST BK	
8006	310330890611		CWAS 03PH/03PH 220 BK AWG26	
8007	313924100981		FFC FOIL 30P/280/30P BD 1MMP	
8008	313924102511		FFC FOIL 18P/280/18P BD 1MMP	
8009	313924101031		FFC FOIL 14P/220/14P BD 1MMP	
8011	313924100301		FFC FOIL 24P/140/24P BD 1MMP	
8012	313911102161		FFC FOIL 12P/140/12P BD 1.0MMP	
8013	310330890562		CWAS 05PH/05PH 340 5P BK 26S	
8014	313924101521		FFC FOIL 09P/280/09P BD 1MMP	
8015	313924102181		FFC FOIL 14P/280/14P BD 1MMP	
8017	313924102141		CBLE IDE 40P/340/40P IDE UL	
8018	313924102651		CBLE IDE 40P/380/40P IDE UL	
8019	242207600786		CBLE USB-A 0M3 PH 5P BK B	
8026	313924102211		FFC FOIL 40P/140/40P BD 0.5MMP	
8030	313911027931		CBLE PH 07P/100/07P PH 26ST BK	

Exploded View of the Set



Revision_List

Version 1.0

* Initial Release

Version 1.1

* Mechanical Instructions v1.1
* Firmware Upgrading, Alignment and Test Procedures v1.1
* Service parts List v1.1