FEATURES

1. THX Surround EX and THX Ultra2 certified
2. Dolby Digital, Dolby Digital EX and Dolby Pro Logic IIx decoder
3. DTS, DTS-ES, DTS 96/24, DTS Neo:6 and DTS Neo:6 96 decoder
4. MPEG-2 AAC decoder (UJJ)
5. Dolby Headphone and Dolby Virtual Speaker
6. Sound Field Processor by Dual 32 bit TI Aureus™ DSP
7. Dual decode function including Dolby Virtual Speaker for Zone2 output
8. IEEE1394 digital audio interface for SACD/DVD-Audio (option : DTR, ~~DTX~~)
9. HDMI (High-Definition Multimedia Interface) 2-Inputs and 1-Output (option : DTR, ~~DTX~~)
10. MP3, WMA and WAV decode for listening to Internet Radio and Music Server by Net-Tune (option : DTR, ~~DTX~~)
11. 7ch equal power: 150 Watts per channel into 8 ohms (FTC)
12. BTL for Front L/R with Surround Back channel amplifier: 280 Watts per channel into 8 ohms (FTC)
13. Bi-Wiring for Front L/R with Surround Back channel amplifier
14. Parallel push-pull discrete output stage for high current output capability and 4 ohms driven
15. 2-192kHz/24bit 2ch ADC using ΔΣ conversion (Asahikasei AK5385) for Main and Zone2.
16. 2-96kHz/24bit 4ch ADC using ΔΣ conversion (Asahikasei AK5384) for Multichannel inputs.
17. 5-192kHz/24bit 2ch DAC ΔΣ conversion (Wolfson WM8719) for 7.1ch using.
18. 2-192kHz/24bit 2ch DAC ΔΣ conversion (Wolfson WM8716) for Rec and Zone2 outputs.
19. Vector Linear Shaping Circuitry for all channels
20. Adjustable Crossover individually for Front L/R, Center, Surround L/R, Surround Back L/R and LFE [40-150 Hz, 10 Hz step]
21. Fine tuning for distance setup [0.1 ft, 0.03 m step]
22. Slot based construction for future upgraded
23. Phono (MM) Input
24. Assignable 9-Inputs and 5-Outputs Audio L/R terminals (not included Front Video 7)
25. Assignable 6-Inputs and 4-Outputs Composite Video
26. Assignable 6-Inputs and 4-Outputs S-Video
27. Assignable 3-Inputs and 1-Output RCA Component Video (other than TX-NR1000 UDC), 4-Inputs and 2-Outputs (TX-NR1000 UDC)
28. Assignable 1-Input and 1-Output BNC Component Video (other than TX-NR1000 UDC)
29. Assignable 2-Inputs and 1-Output D4 Video (UJJ)
30. Video up-converter from Composite Video to S-Video and S-Video to Component Video by using 5-Line adaptive comb filters and Adaptive digital line length tracking (ADLLT™)
31. Video up converter from analog Video (up to 480p) to HDMI
32. Video down converter from Component Video to S-Video for Monitor out (480i only), (option : DTR, ~~DTX~~)
33. Video down converter from S-Video to Composite Video for Monitor out and Zone 2 Video out
34. Dual Monitor out available for Composite Video and S-Video
35. Independent inputs and outputs of Component RCA, BNC and D4 terminals (UJJ)
36. Color coded RCA pin jacks for Multichannel Input [Front L/C/R, Surround L/R, Surround Back L/R, Subwoofer] (option : DTR-10.5 UDD)
37. Assignable 6-Optical and 6-Coaxial digital inputs and Front Optical input
38. Assignable 2-Optical and 2-Coaxial outputs for Rec out, Zone 2 and Zone 3
39. Front Panel Video 7 Audio and Video inputs with Optical digital input
40. Zone 2 and Zone 3 audio output are available fixed or variable.
41. Available Zone 2 and Zone 3 Composite Video out
42. Zone 2 OSD function independent of Monitor out OSD function (UDD, UDC, UJJ: NTSC format, Other: NTSC/PAL format compatible)
43. Rec selector [audio and video]
44. Tape Dubbing and Video Dubbing
45. 3-band Bass/Mid/Treble Tone control individually for Front L/R, Center, Surround L/R, Surround Back L/R and Subwoofer (Bass only)
46. Notch filter for boom bass reproduction
47. Color coded RCA pin jacks for Pre-out A [Front L/C/R, Surround L/R, Surround Back L/R or Zone 2 L/R, Subwoofer]
48. Subwoofer Pre-out B
49. Color coded and transparent Heavy Duty Speaker Terminals and Dual Banana capability for Speaker A/B flexible configuration
50. FM/AM random 40 Station Preset Tuning
51. Internet Radio random 30 Station Preset Tuning (option : DTR, ~~DTX~~)
52. Character input [Tuner preset, Input selector]
53. FM Automatic Scan Tuning
54. Battery-Free Backup System To Protect Memory Contents
55. AM Loop Antenna (option : ~~DTX~~)
56. Fluorescent Display with Dimmer Control (4 mode)
57. New design HTC Remote Control (UGR, UDT, UGT, UGK, UJJ, UPP-RC)
58. New design HTC Remote Control with RF wireless operation (UDD, UDC, UPA, UPP-RF)
59. The remote ID function for independent control to plurality of AV Receiver
60. Audio muting, Sleep Timer [operable via Remote Control]
61. Handsome Solid Aluminum Front Panel
62. Front pocket door to hide away unusual use control buttons
63. Dual speed dual cooling fan via output level and/or temperature
64. IntelliVolume operation
65. Non Scaling Configuration
66. Wide Range Power Amplifiers 5 Hz - 100 kHz
67. Assignable 5-12V trigger output terminals
68. 3-IR in/out terminals for Main, Zone 2 and Zone 3 (TX, ~~DTX~~)
69. Phoenix connector for 5-12V trigger output and 3-IR input for Custom Installation usage (DTR)
70. RS-232 port for control
71. IEC type AC-Inlet, Detachable Power cord
72. Linear Optimum Gain Volume Circuitry [0.5dB step]
73. H.C.P.S. High current power supply toroidal transformer
74. Aluminum side panel
75. Brazen feet
76. e-control available
77. PC setup application available

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27. Assignable 1-Input and 1-Output BNC Component Video (option for UDD, UJJ)
28. Assignable 2-Inputs and 1-Output D4 Video (option for UJJ)
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37. Assignable 2-Optical and 2-Coaxial outputs for Rec out, Zone 2 and Zone 3
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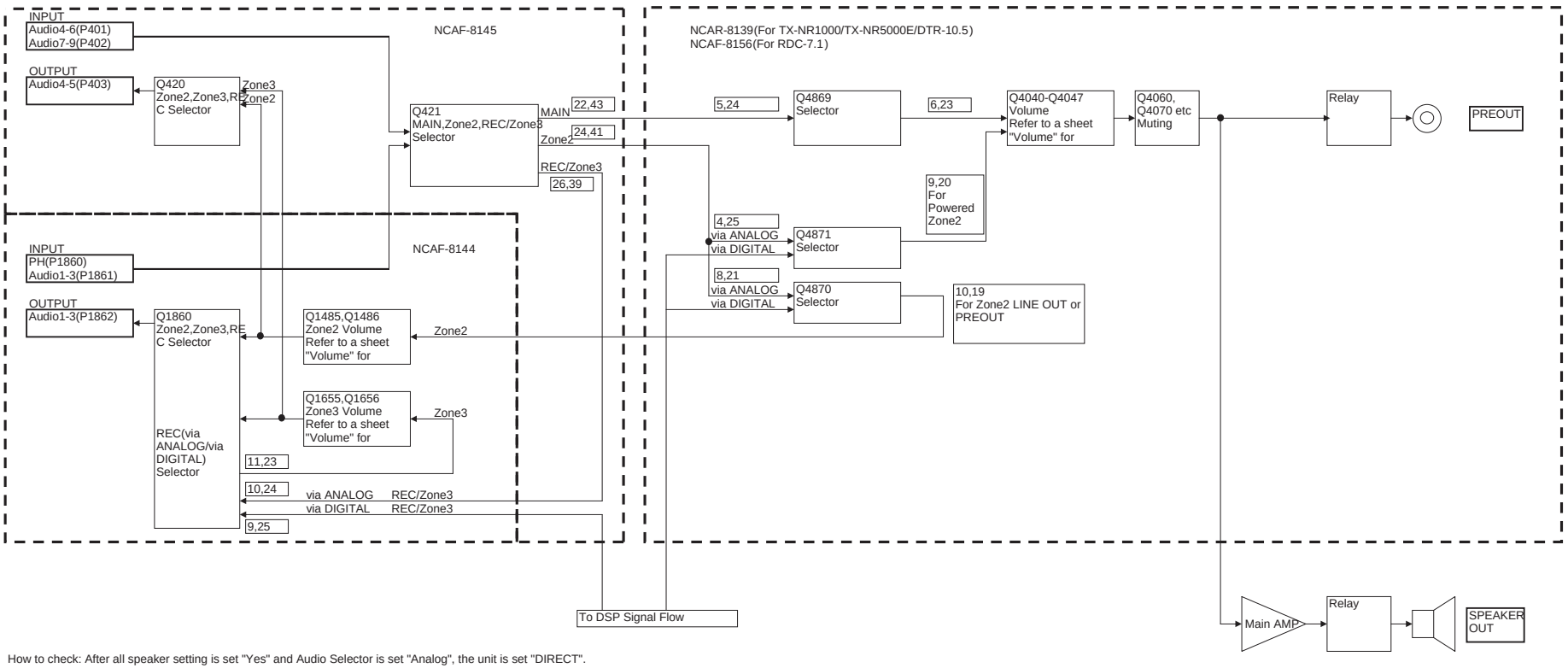
71. Aluminum side panel and top cover
72. Brazen feet
73. e-control available
74. PC setup application available

Aureus is a trademark of Texas Instruments.
ADLLT is a trademark of Analog Devices, Inc.

FLOW CHART

Analog 2 channels

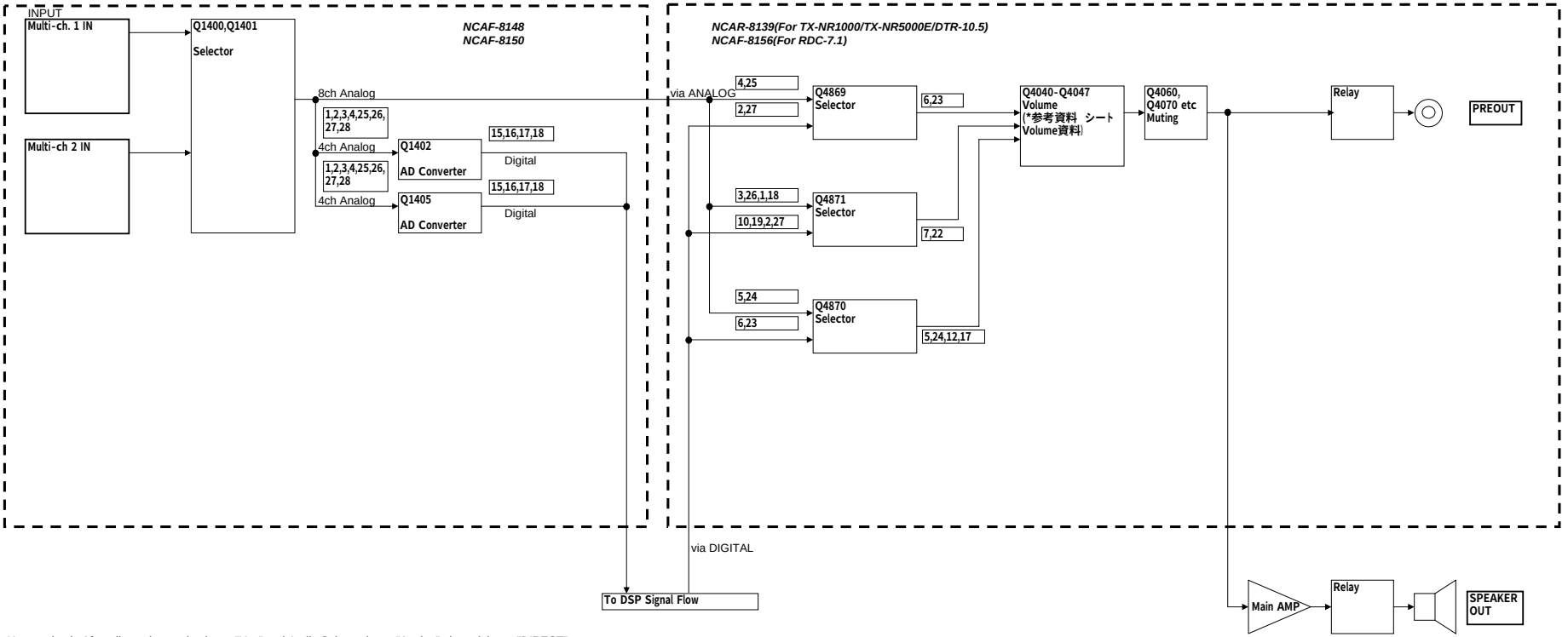
Flowchart when a signal does not pass through DSP circuit
Analog 2 ch. input



How to check: After all speaker setting is set "Yes" and Audio Selector is set "Analog", the unit is set "DIRECT".

How to clear: Hold down "CD" button and then press "STANDBY/ON" button.•

Flowchart when a signal does not pass through DSP circuit
Analog 2 ch. input



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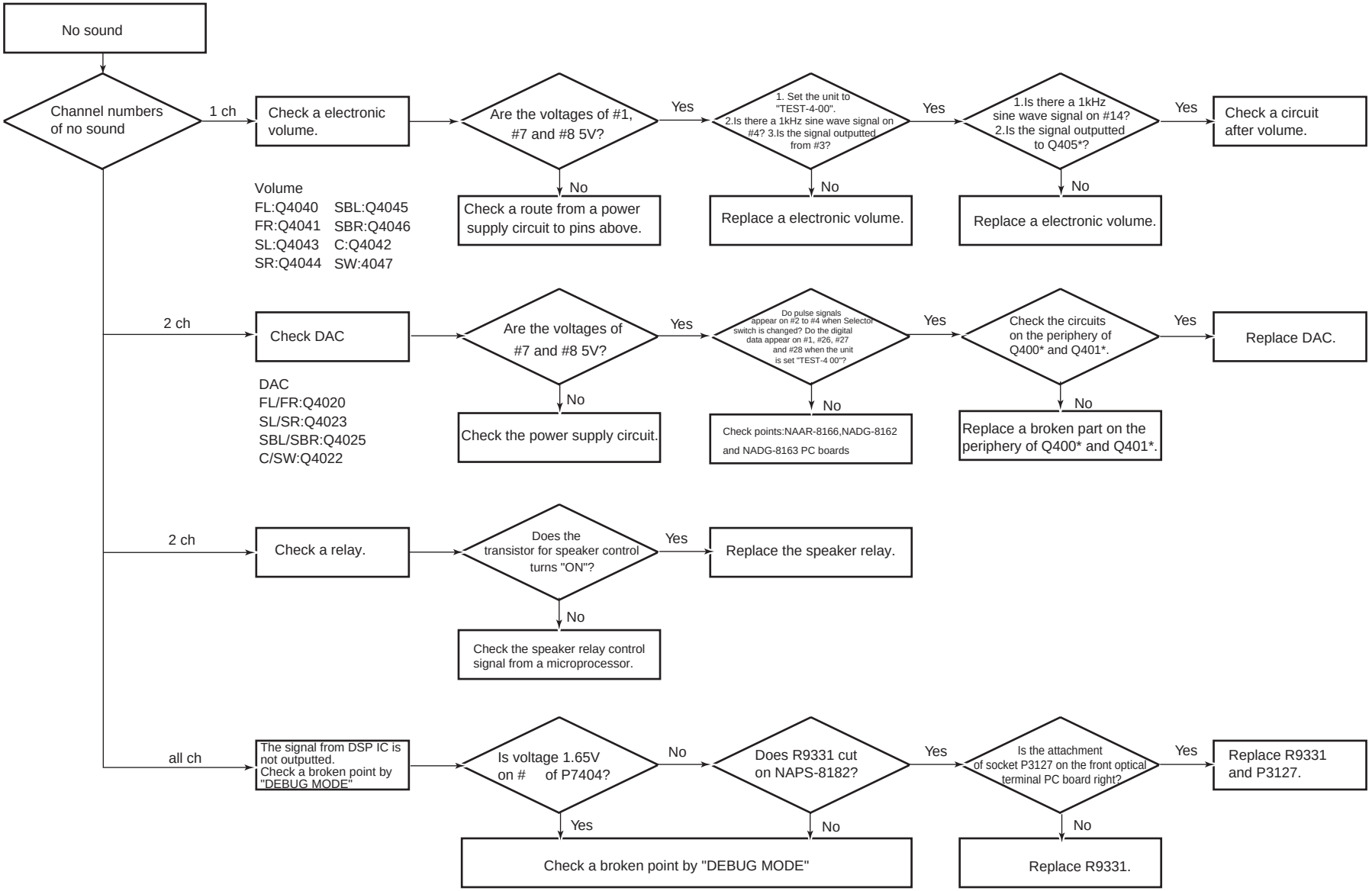
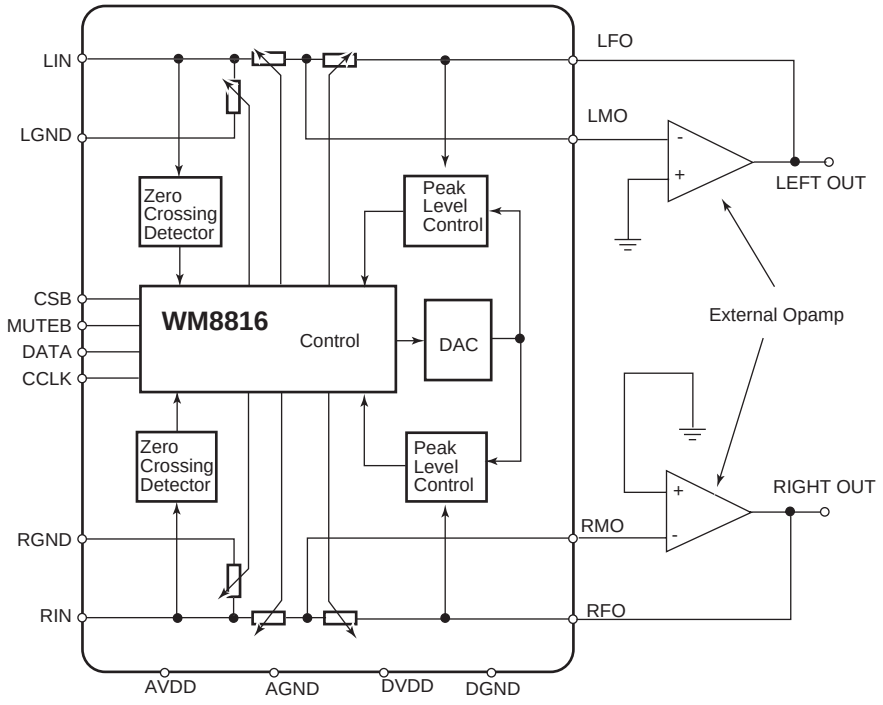
TROUBLE SHOOTING

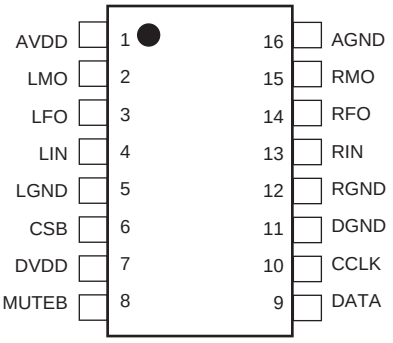


WM8816(Stereo Digital Volume Control)

BLOCK DIAGRAM



PIN CONFIGURATION

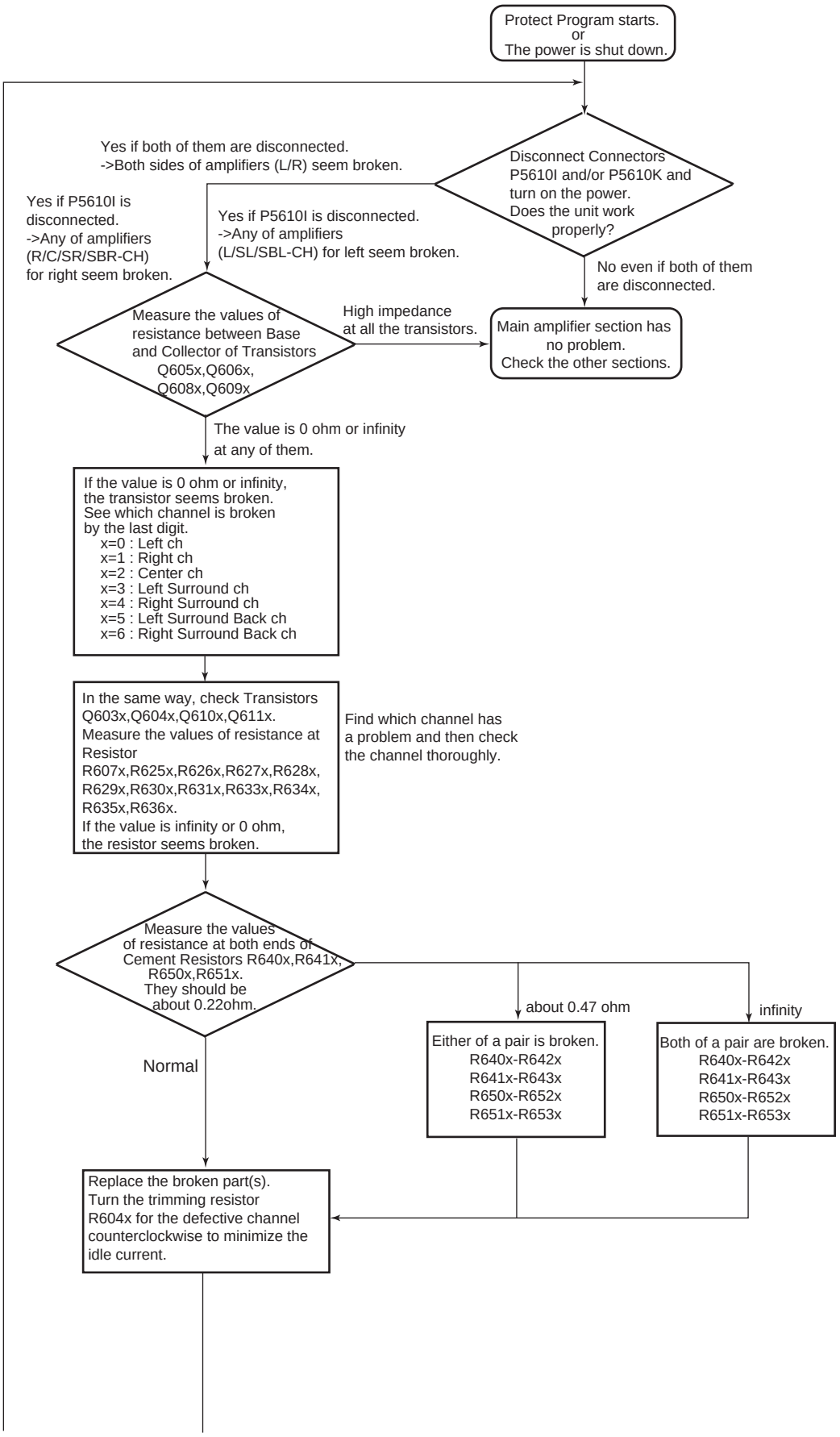


PIN DESCRIPTION

PIN	NAME	TYPE	DESCRIPTION
1	AVDD	Supply	Supply voltage for Analogue Circuitry
2	LMO	Analogue output	External Op-amp Inverting Input (Left channel)
3	LFO	Analogue input	External Op-amp Feedback Signal (Left channel)
4	LIN	Analogue input	Input Signal (Left Channel)
5	LGND	Analogue input	Input Signal Ground (Left Channel)
6	CSB	Digital input	Chip Select (active low)
7	DVDD	Supply	Supply Voltage for Digital Circuitry
8	MUTEB	Digital input	Mute (active low)
9	DATA	Digital In/Out	Serial Interface Data Input/Output (tri-state)
10	CCLK	Digital input	Serial Interface Clock
11	DGND	Supply	Digital Ground
12	RGND	Analogue input	Input Signal Ground (Left Channel)
13	RIN	Analogue input	Input Signal (Left Channel)
14	RFO	Analogue input	External Op-amp Feedback Signal (Left channel)
15	RMO	Analogue output	External Op-amp Inverting Input (Left channel)
16	AGND	Supply	Analogue Ground

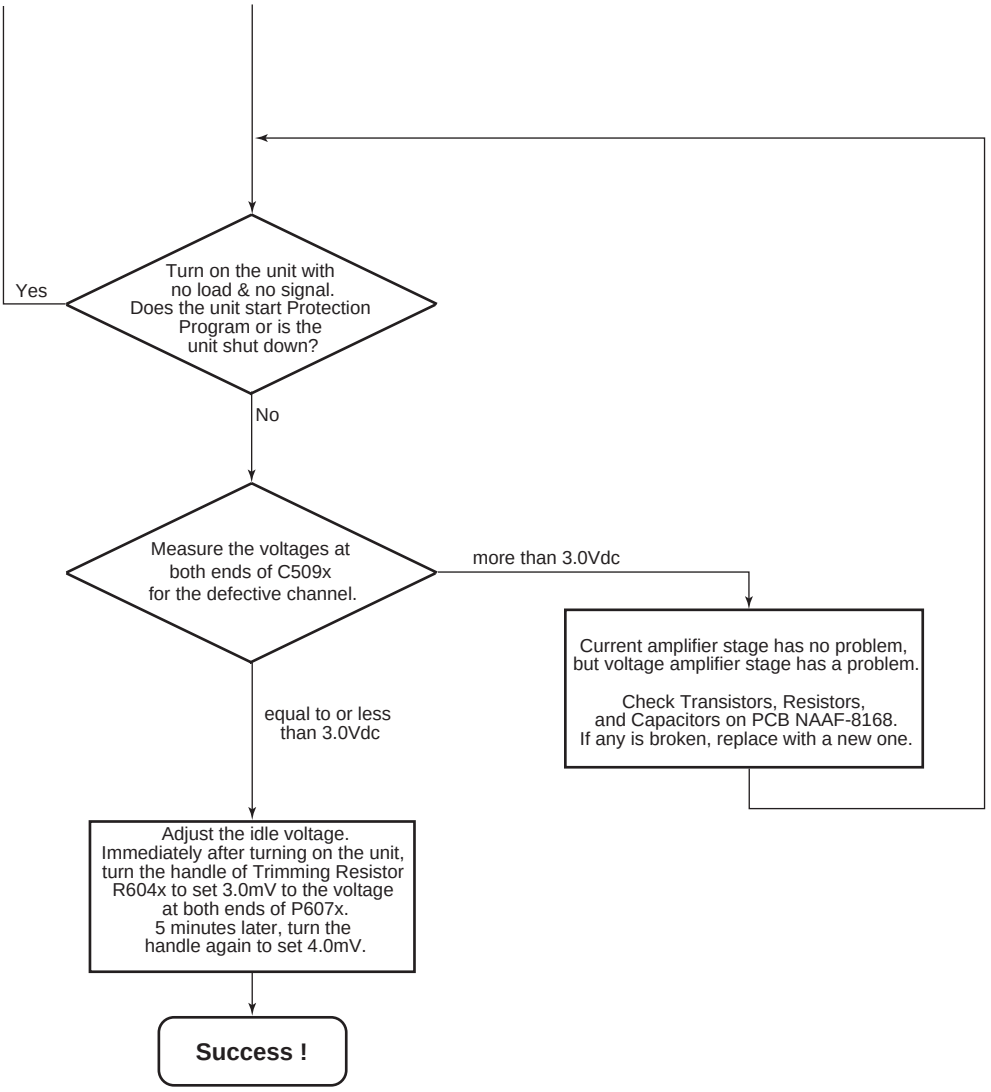
TROUBLE SHOOTING

How to repair the Main amp of TX-NR1000/NR5000E/DTR-10.5



TROUBLE SHOOTING

How to repair the Main amp of TX-NR1000/NR5000E/DTR-10.5



2004 ONKYO Service Seminar

How to check Voltage Protection Program

a: Turn on the unit, hold "CD" button down and then press "STANDBY/ON" button.
Make sure that the front display shows "Test-1".
b: Press "VIDEO4" button and see "Test-4 00" on the front display.
c: Press and release "Zone2" button repeatedly until "Test-4 27" is shown on the front display.
d: See the unit automatically check each channel.
During the check, the message on the display is changing as follows:

Channel	1st Message	2nd Message
Left	Test-4 27	Protect OK
Right	Test-4 28	Protect OK
Left Surround	Test-4 29	Protect OK
Right Surround	Test-4 30	Protect OK
Left Surround Back	Test-4 31	Protect OK
Right Surround Back	Test-4 32	Protect OK
Center	Test-4 33	Protect OK

e: Make sure that the display stops at "Test-4 34".
If this check stops before Test-4 34, do it again from "Test-4 27".
To move to the previous step, press "REC/ZONE3" key.
To move to the next step, press "ZONE2" key.
If the check stops at the same steps after some trials, the channel seems broken.
f: To exit the program, press "STANDBY/ON" button and see "Clear" shown on the front display.
Make sure that the unit returns to the STANDBY mode later.

How to check the operation of Voltage Sensor

a: Turn on the unit, hold "CD" button down and then press "STANDBY/ON" button, and see "Test-1" shown on the front display.
b: Press "VIDEO4" button and see "Test-4 00" on the front display.
c: Make sure that "FM STEREO" is shown in the bottom left area of the front display.

How to check the operation for Thermal Protection

a: Turn on the unit, hold "CD" button down and then press "STANDBY/ON" button, and see "Test-1" shown on the front display.
b: Press "VIDEO1" button and see "Test-1 00" on the front display.
c: With no signal input, connect a 1.2 Kohm/1W resistor between the terminals +24V and TH2L of P6402and between +24V and TH2
d: Make sure that "MEMORY" is shown in the bottom left area of the front display.

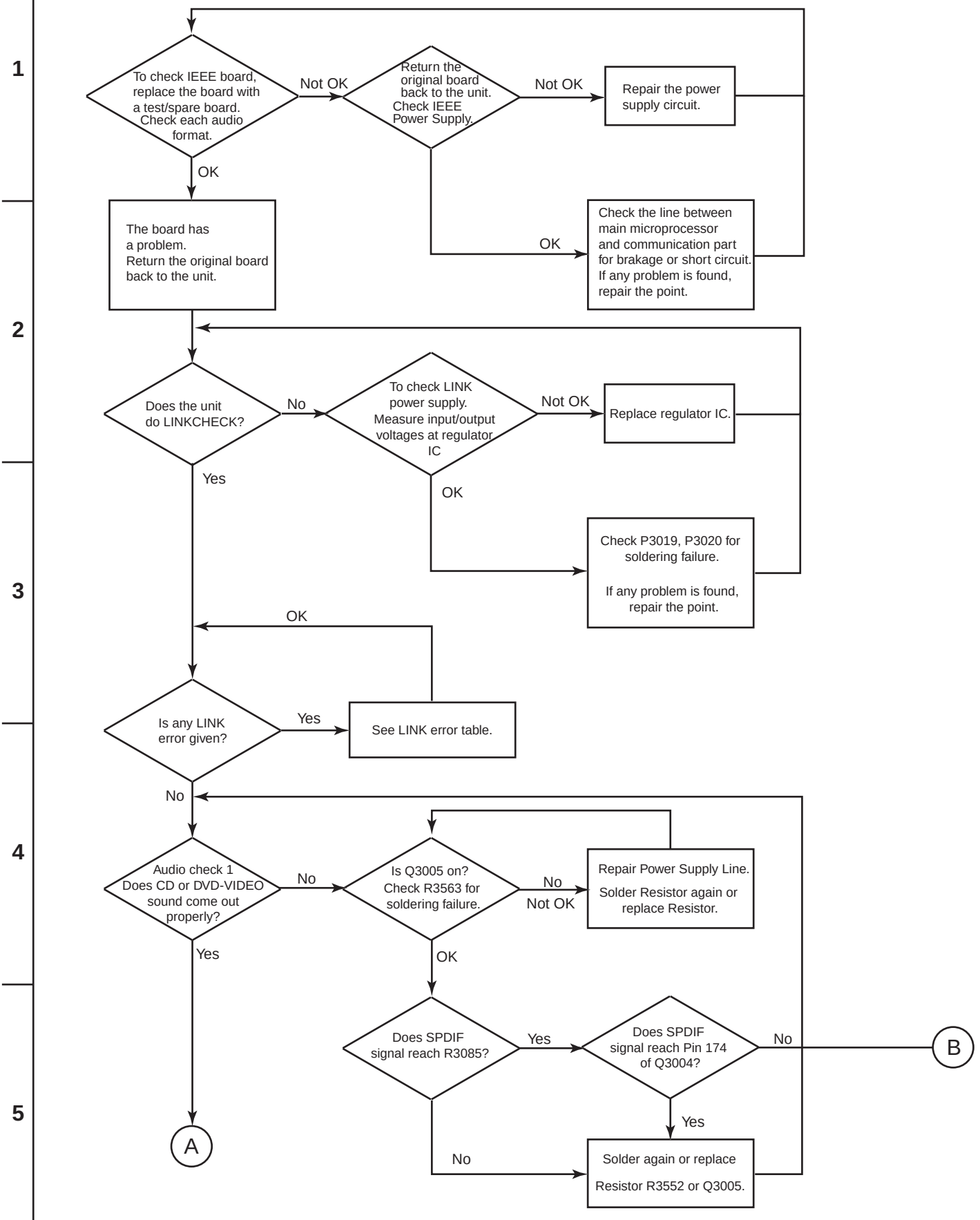
How to check the operation of Cooling Fan -- Do all of the 3 checks.

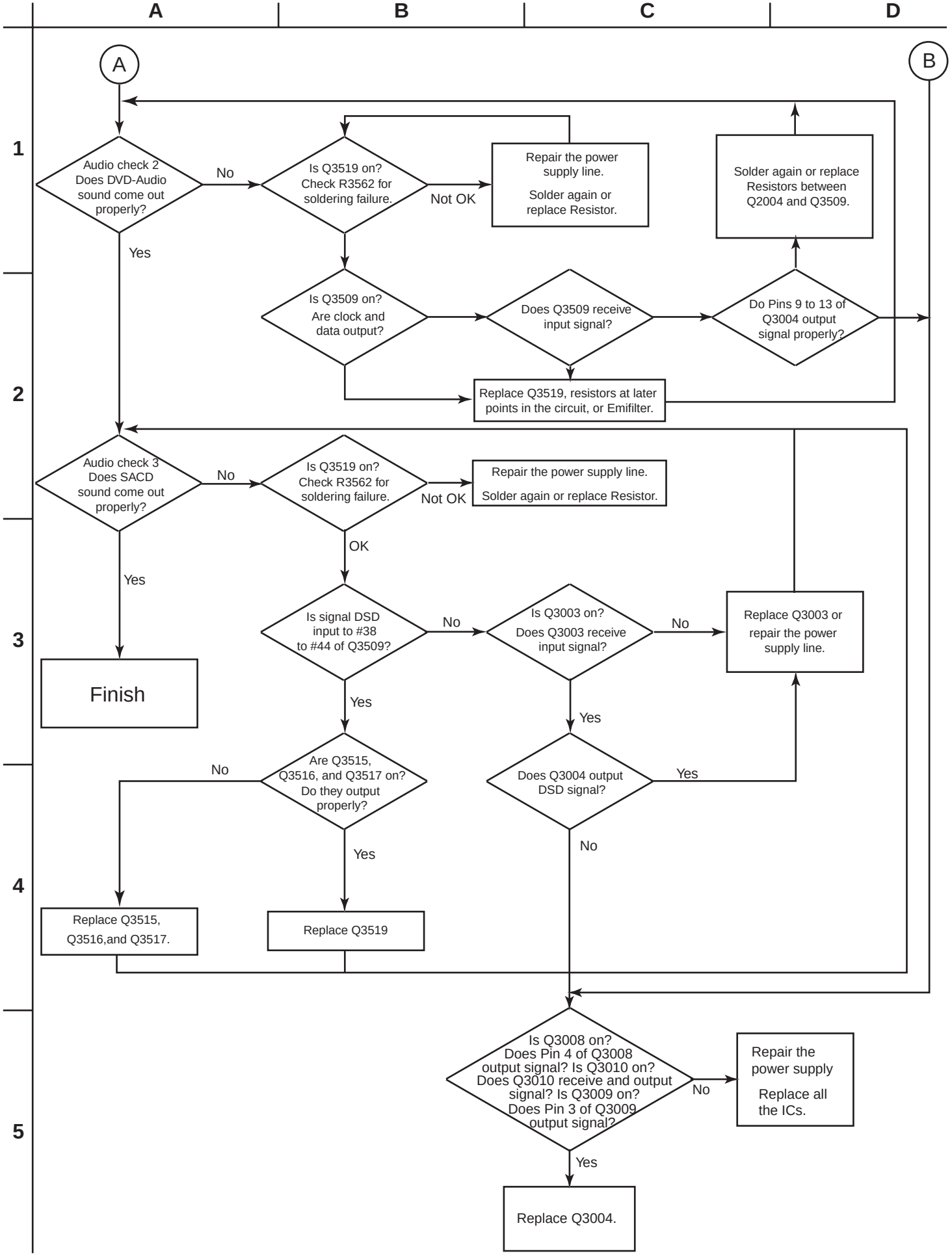
0: Turn on the unit, hold "CD" button down and then press "STANDBY/ON" button, and see "Test-1" shown on the front display.
1-a: Press "VIDEO1" button and see "Test-1 00" shown.
Apply 1kHz -15dBV sine wave to Left channel in Multichannel input with no load.
b: Make sure that the cooling fan starts running at a low speed several seconds later.
c: Do the same for the other input terminals of R , C, SL, SR, SBL, SBR channels.

2-a: With no signal input, connect a 1.2 Kohm/1W resistor between the terminals +24V and TH1L of P6401and between +24V and TH2L of P6402.
b: Make sure that the cooling fan starts running at a high speed several seconds later.

3-a: With no signal input, connect a 1.2 Kohm/1W resistor between the terminals +24V and TH1R of P6401and between +24V and TH2R of P6402.
b: Make sure that the cooling fan starts running at a high speed several seconds later.

Service procedure for IEEE1394 board




A
B
Audio check 2 Does DVD-Audio sound come out properly?
No
Is Q3519 on? Check R3562 for soldering failure.
Not OK
Repair the power supply line.
Solder again or replace Resistor.
Yes
Is Q3509 on? Are clock and data output?
Does Q3509 receive input signal?
Do Pins 9 to 13 of Q3004 output signal properly?
Solder again or replace Resistors between Q2004 and Q3509.
Replace Q3519, resistors at later points in the circuit, or Emifilter.
Audio check 3 Does SACD sound come out properly?
No
Is Q3519 on? Check R3562 for soldering failure.
Not OK
Repair the power supply line.
Solder again or replace Resistor.
OK
Yes
Is signal DSD input to #38 to #44 of Q3509?
No
Is Q3003 on? Does Q3003 receive input signal?
No
Replace Q3003 or repair the power supply line.
Finish
Yes
Yes
Are Q3515, Q3516, and Q3517 on? Do they output properly?
No
Does Q3004 output DSD signal?
Yes
Yes
No
Replace Q3515, Q3516,and Q3517.
Replace Q3519
Is Q3008 on? Does Pin 4 of Q3008 output signal? Is Q3010 on? Does Q3010 receive and output signal? Is Q3009 on? Does Pin 3 of Q3009 output signal?
No
Repair the power supply
Replace all the ICs.
Yes
Replace Q3004.
1
2
3
4
5

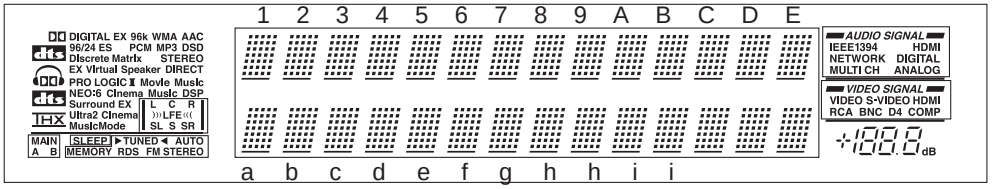
LINK ERROR TABLE

No.	Error	Details	How to respond to the error.
2	Connecting Error	Failed in connection.	Disconnect and Connect i.LINK cable.
3	Authentication Error	Failed in authentication.	Disconnect and connect i.LINK cable or turn off and on the power. If the error appears again, reload DTCP key.
4	Flash Access Error	Failed in access to Flash IC.	
5	Timeout Error	Failed in communication between SUB and ARM in time.	Turn off and on the power.
6	Stream Error	Received unusual stream.	Disconnect and Connect i.LINK cable.
7	Parameter Error	Parameter of command is incorrect.	
8	Hardware Error	Hardware Problem	Replace i.LINK board.
9	Undefined Command Error	Transmitted command does not have a proper command number.	
0A	Bus Reset in Process	In Bus Reset process, a command is transmitted.	Disconnect and Connect i.LINK cable.
0B	AVC Command Error	AVC command error reply.	
0C	ARM Start Error	ARM did not start.	Reload ARM firmware.
0D	SRM Update Error	Failed in SRM update.	
0E	Looping	Looping occurred.	Connect nodes without looping. If the error appears again, replace i.LINK board.
0F	Excessive Connections	More than 63 nodes are connected.	Decrease the number of connected nodes to 63 or less. If the error appears again, replace i.LINK board.
10	Excessive Hops	More than 16 hops were connected.	Decrease the number of hops to 16 or less. If the error appears again, replace i.LINK board.
11	Bus Occupied	No more stream cannot be carried on i.LINK bus.	Stop player etc. If the error appears again, turn off and on the power.
12	Other Error	A problem occurred.	No special operation is necessary. If the error appears again, replace i.LINK board.
13	Retry Error	Command Transmission was retried more than five times.	No special operation is necessary. If the error appears again, turn off and on the power.
14	Disconnection	When disconnected, a command was issued.	No special operation is necessary.
15	Firmware Update Error	Failed to update firmware.	
16	BOOT mode Error	In booting, a problem occurred.	Turn off and on the power. If the error appears again, replace i.LINK board.
17	Authentication in Process	In authentication process, a command was issued.	No special operation is necessary.

DEBUG MODE

To enter Debug Mode, hold "DISPLAY" button down and then press "TAPE1" button.

Front Display



Position	Letter	Target	Status
1	A/D	Q7021 DIR for Main Zone	A:Detects analog singal. D:Detects digital signal.
2	A/D	Q7121 DIR for Zone2	A: Detects analog singal. D: Detects digital signal.
3	A/D	Q7221 DIR for Zone3	A: Detects analog singal. D: Detects digital signal.
4	H/L	Q7021 DIR for Main	H: Digital signal is unlocked. L: Digital signal is locked.
5	H/L	Q7121 DIR for Z2	H: Digital signal is unlocked. L: Digital signal is locked.
6	H/L	Q7221 DIR for Z3	H: Digital signal is unlocked. L: Digital signal is locked.
7	H/L	Q7304 2nd PLL for DSP(MAIN)	H:PLL is locked. L:PLL is unlocked.
8	H/L	Q7305 2nd PLL for DSP(Z2)	H:PLL is locked. L:PLL is unlocked.
9	H/L	Q7244 2nd PLL for DAC(Z3Rec)	H:PLL is locked. L:PLL is unlocked.
A	H/L	APG LOCK PORT Q4864	H:APG is locked. L:APG is unlocked.
B	H/L	APG FS0 PORT #26 Q4864	H: High level L: Low level
C	H/L	APG FS1 PORT #27 Q4864	H: High level L: Low level
D	H/L	APG FS2 PORT #28 Q4864	H: High level L: Low level
E	H/L	DSD/PCM PORT Not used	
a	F/C	Q7021 DIR for Main	F: Control finished C:Still controling
b	F/C	Q7121 DIR for Z2	F: Control finished C:Still controling
c	F/C	Q7221 DIR for Z3	F: Control finished C:Still controling
d	F/C	Q7301 DSP for MAIN	F: Control finished C:Still controling
e	F/C	Q701 DSP for Z2	F: Control finished C:Still controling
f	H/L	Q7301 DSP for MAIN	H: cannot decode L: has decoded successfully
g	H/L	Q701 DSP for Z2	H: cannot decode L: has decoded successfully
hh	See Right	Q7301 DSP for MAIN	00/01:UNKOWN status 08:PCM 0a:DD 0b/0e/0f/10/11:DTS 0c:AAC 0d:MPEG
ii		Q701 DSP for Z2	

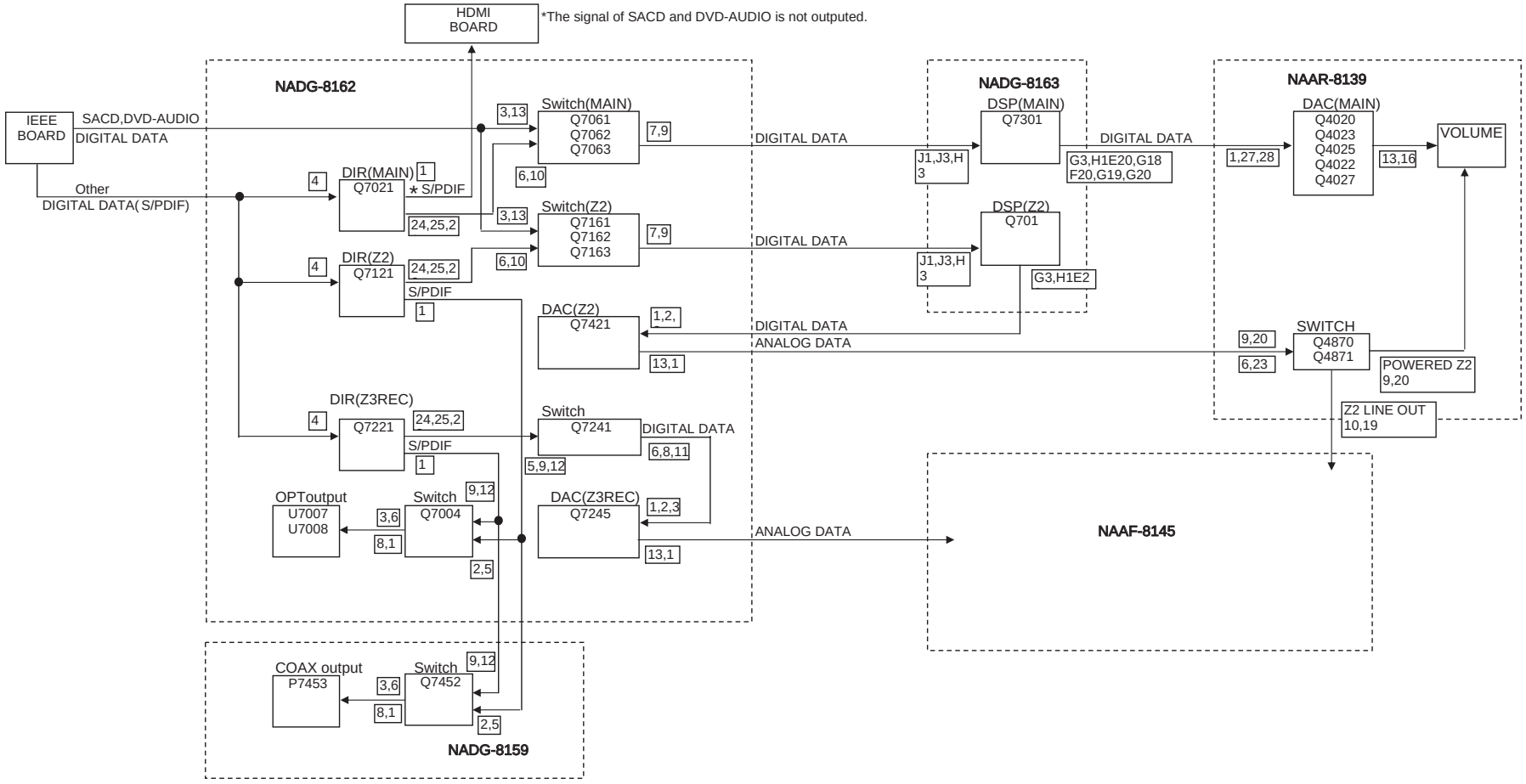
Unless PLL locks, the unit does not operate normally.
Cause of unlock
There is not clock LR on #1 of secondary PLL.
There is clock LR, but many jitter components are contained.
Check the power supply of second PLL. IC.
Check the parts around second PLL IC.

All the digits are "F" when no problem.

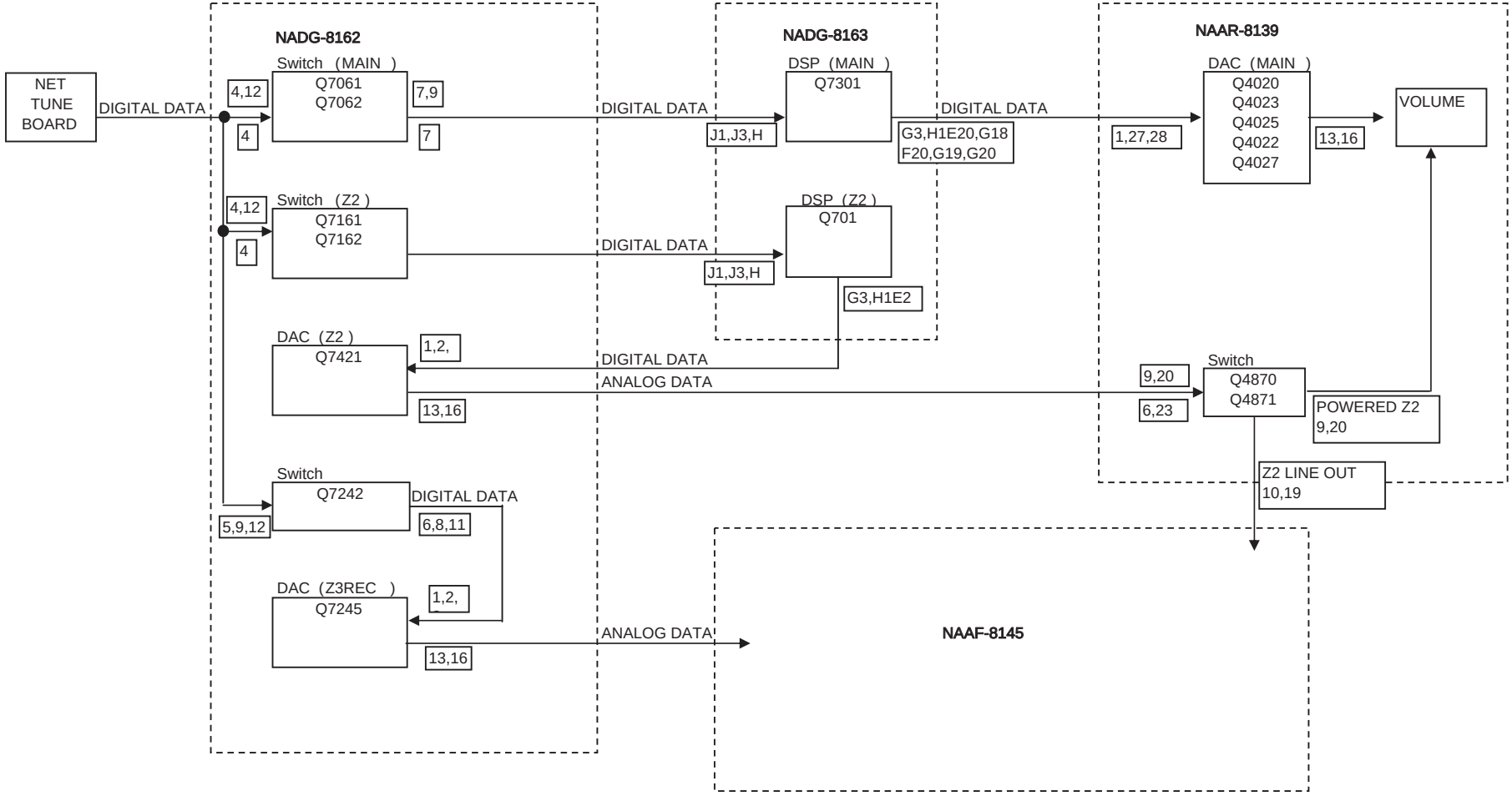
Check whether the voltage of socket P7404 is 1.65V when there is a problem.
Check points: R9331,P3127

All the digits are "L" when no problem.

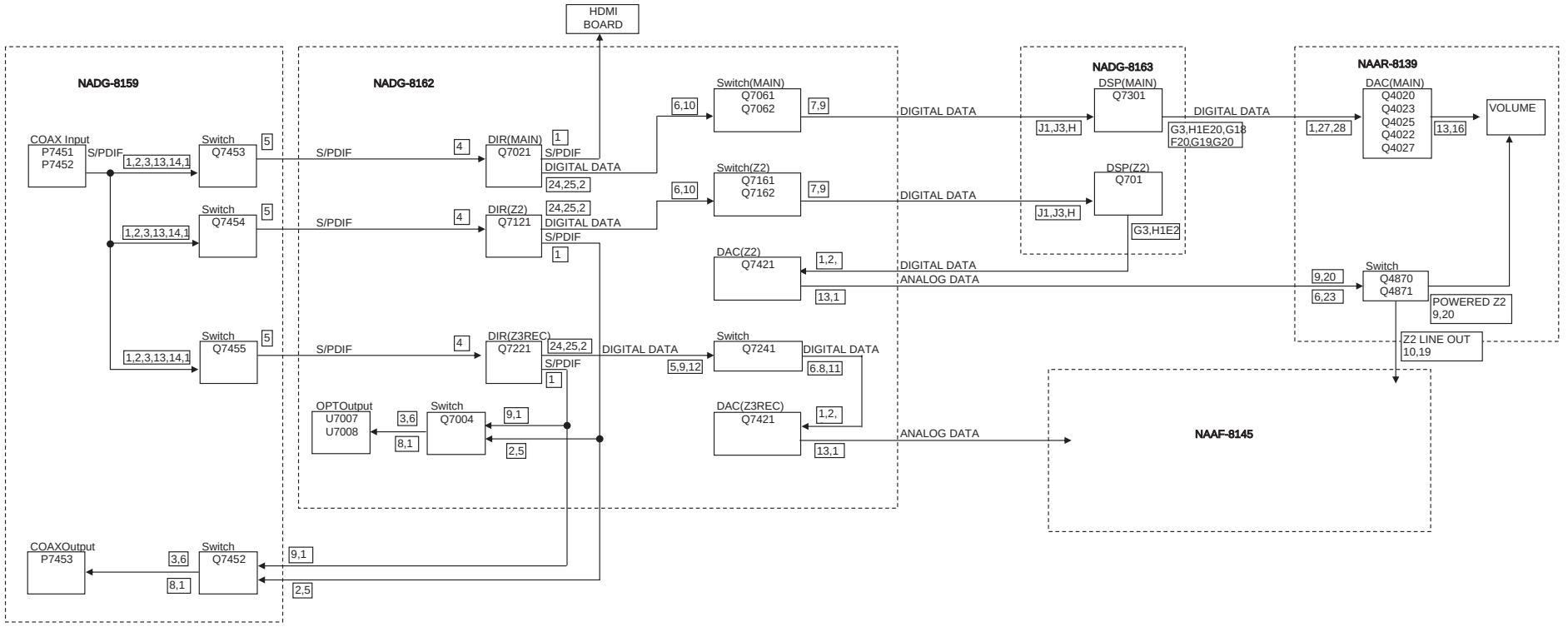
Signal flow of IEEE input



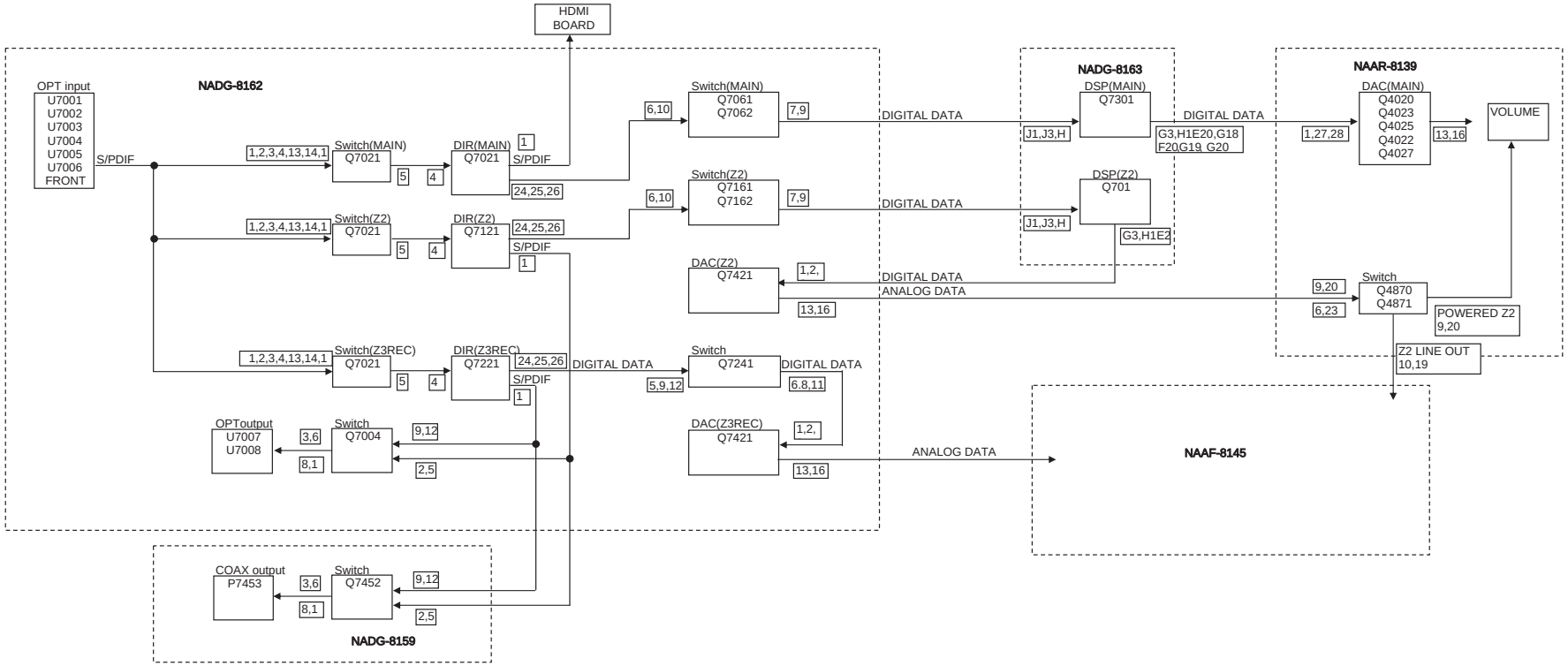
Signal flow of Net-tune



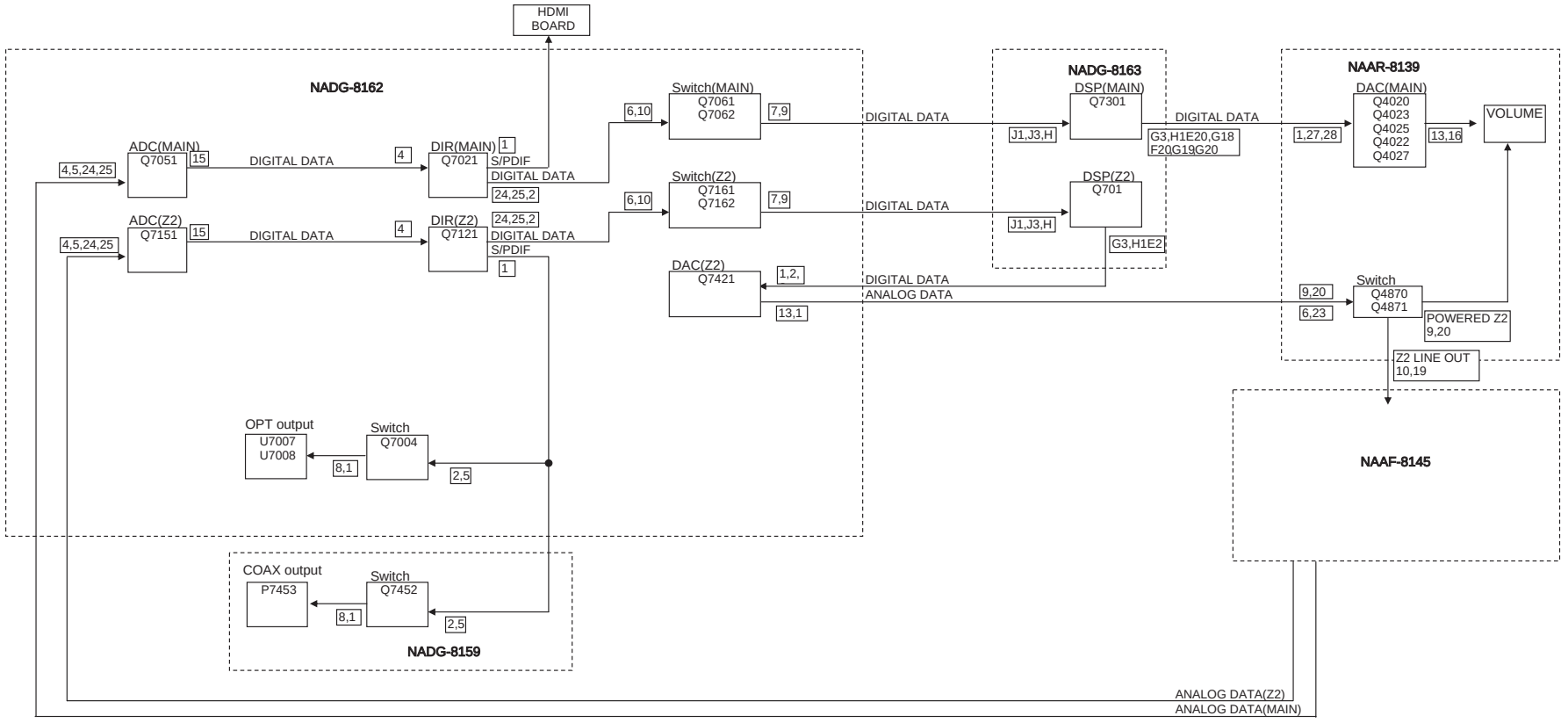
Signal flow of Coaxial input



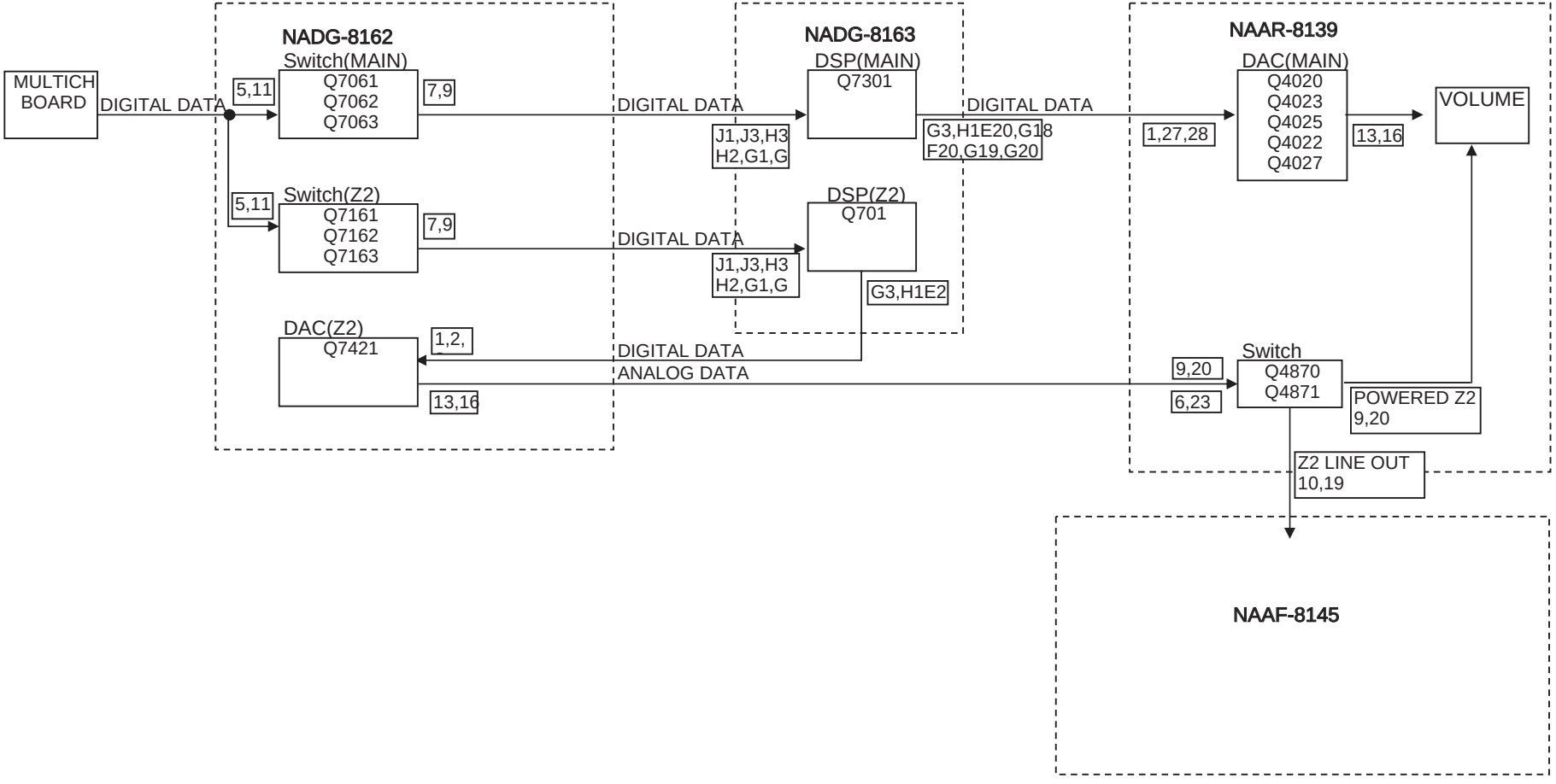
Signal flow of Optical input



Signal flow of Analog input (A/D converter)



Signal flow of Multi channel (A/D converter)



Signal Flow (MAIN)

See a separate block diagram.

When COMPONENT IN4 is assigned, Composite, S video and HDMI's signals except Immediate picture and Component input 4 don't output to Component out 2.

When BNC IN is assigned, Composite, S video and HDMI's signals except Immediate picture and BNC IN don't output to BNC OUT.

When D4 input is assigned, Composite, S video and HDMI's signals except Immediate picture and D4 input don't output to D4 OUT.

	CV-->CV				MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->Q2016-->To output
	Y/C-->Y/C	Y channel			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->Q2017-->Q2009-->To output
		C channel(Output:OUT3 or OUT4)			MAIN SEL-->Q2009-->Q2017-->Q2208-->To output
		C channel(Output:OUT1 or OUT2)			MAIN SEL-->Q2009-->Q2017-->To output
	Y/Cb/Cr-->Y/Cb/Cr		IN1 to 3		Input-->Relay for component video on NAVD-8202.-->To output
			IN4-->	OUT2	Input-->"RL2602,RL2603"-->Q2603--> To output
				Except OUT2	Input-->Q2601-->"RL2601,RL2602"-->Relay for component video on NAVD-8202. →To output
			BNC-->	BNCOUT	Input-->"RL2502,RL2503"-->Q2503--> To output
				Except BNCOUT	Input-->Q2501-->"RL2501,RL2502"-->Relay for component video on NAVD-8202. →To output
			D4-->	D4OUT	Input-->"RL2405,RL2406"-->"RL2403,RL2404"-->Q2407--> To output
				Except D4OUT	Input-->"RL2405,RL2406"-->Q2401-->Relay for component video on NAVD-8202. →To output
	Y/C-->CV	Y channel → CV			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008 → Q2203-->Q2016-->To output
		C channel → CV			MAIN SEL-->Q2009 → Q2203-->Q2016-->To output
No using HDMI	CV-->Y/C	Y channel			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->Q2040-->Q2206-->Q2017--> Q2009-->To output
		C channel(Output:OUT3 or OUT4)			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->Q2040-->Q2206-->Q2017--> Q2208-->To output
		C channel(Output:OUT1 or OUT2)			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->Q2040-->Q2206-->Q2017--> To output
	Y/C-->Y/Cb/Cr	Y channel			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->Q2017-->Q2009-->Q2216--> Q2235-->Relay for component-->To output
		C channel			MAIN SEL-->Q2009-->Q2017-->Q2208-->Q2216-->Q2235--> Relay for component video on NAVD-8202.-->To output
	CV-->Y/Cb/Cr				"CV-->Y/C conversion"-->Q2017-->"Y/C-->Y/Cb/Cr conversion"--> Relay for component video on NAVD-8202.-->To output
	Y/Cb/Cr-->CV		No function		No channel
	Y/Cb/Cr-->Y/C		No function		No channel
	OSD immediate picture-->COMPOSITE output				The input signal is cut by Q2013 and a signal is outputted from Q2004.-->Q2008--> Q2016-->To output
	OSD immediate picture-->S video output				The input signal is cut by Q2013 and a signal is outputted from Q2004.-->Q2008-->Q2040 → "CV-->Y/C conversion"-->To output
	OSD immediate picture-->COMPONENT output				The input signal is cut by Q2013 and a signal is outputted from Q2004.-->Q2008-->Q2040 → "CV-->Y/C conversion"-->"Y/C-->Y/Cb/Crconversion"-->To output
Using HDMI	CV-->Y/C	Y channel			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->HDMI-->Q2017-->Q2009--> To output
		C channel(Output:OUT3 or OUT4)			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->HDMI-->Q2017-->Q2208--> To output
		C channel(Output:OUT1 or OUT2)			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->HDMI-->Q2017-->To output
	Y/C-->Y/Cb/Cr	Y channel			MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->HDMI--> Relay for component video-->To output
		C channel			MAIN SEL-->Q2009-->Relay for component video on NAVD-8202.-->To output
	CV-->Y/Cb/Cr				MAIN SEL-->Q2013-->Q2008-->Q2004-->Q2008-->HDMI--> Relay for component video on NAVD-8202.-->To output
	Y/Cb/Cr-->CV				Input-->Relay for component video on NAVD-8202.-->Q2217-->HDMI-->Q2016--> To output
	Y/Cb/Cr-->Y/C				Input-->Relay for component video on NAVD-8202.-->Q2217-->HDMI-->Q2017--> The signal flow from this step is a same as "Y/C-->Y/C" channel.

HDMI-->Y/Cb/Cr	HDMI-->Relay for component video on NAVD-8202.-->To output
HDMI-->Y/C	HDMI-->Q2017-->The signal flow from this step is a same as "Y/C-->Y/C" channel.
HDMI-->CV	HDMI-->Q2016-->To output
OSD immediate picture-->COMPOSITE output	Same as no using HDMI
OSD immediate picture-->S video output	Input signal is cut by Q2013 and a signal is outputted by Q2004.-->Q2008-->HDMI--> Q2017-->The signal flow from this step is a same as "Y/C-->Y/C" channel.
OSD immediate picture-->COMPONENT output	input signal is cut by Q2013 and a signal is outputted from Q2004.-->Q2008-->HDMI--> Relay for component video on NAVD-8202.-->To output

Signal flow(ZONE 2) **See a separate block diagram.**

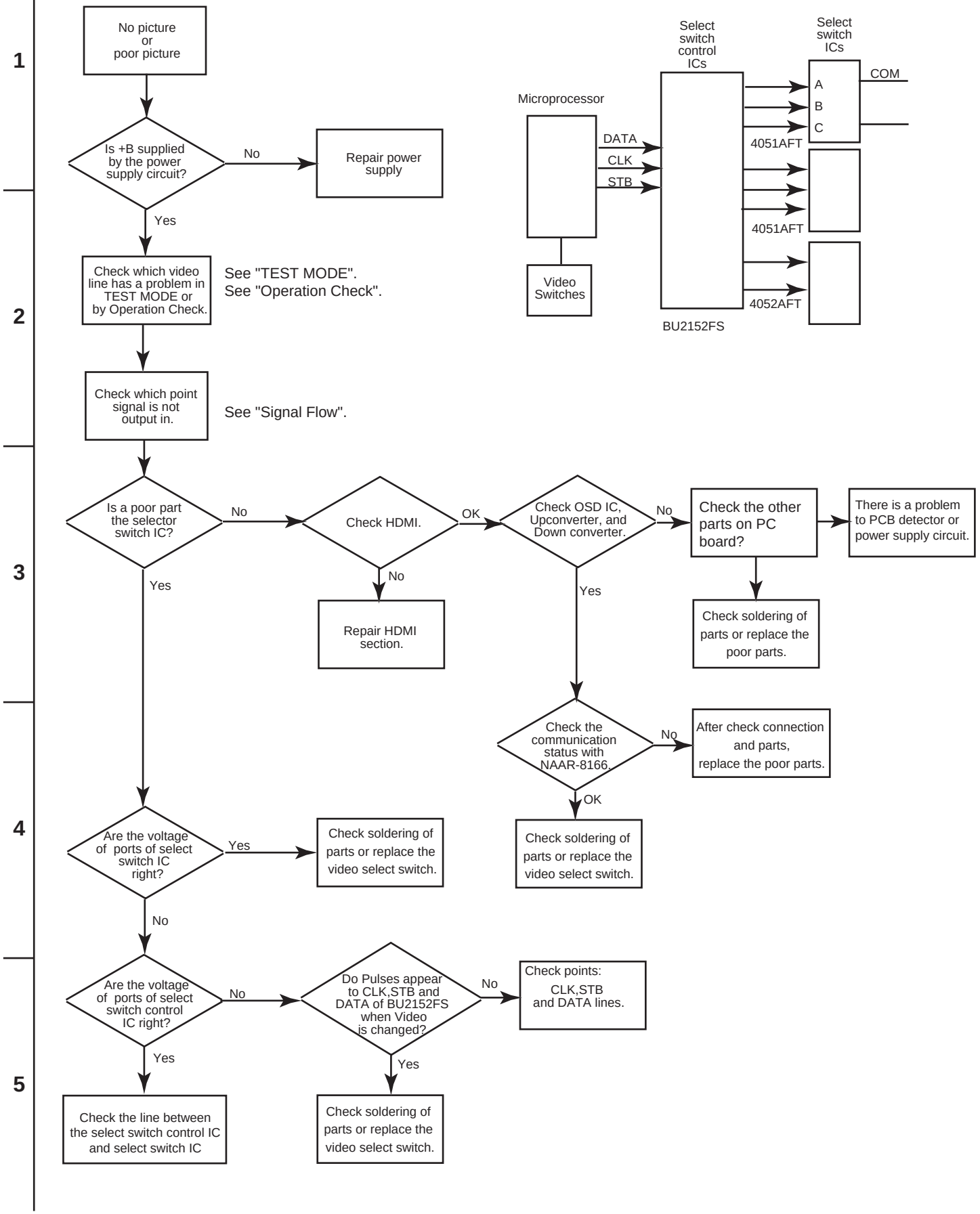
CV-->CV		MAIN SEL-->Q2046-->Q2019-->Q2011-->Q2019-->Q2015-->To output
Y/C-->Y/C	**No function**	**No channel**
Y/Cb/Cr-->Y/Cb/Cr	**No function**	**No channel**
Y/C-->CV	Y channel --> CV	MAIN SEL-->Q2046-->Q2019-->Q2011-->Q2019 --> Q2203-->Q2015-->To output
	C channel --> CV	MAIN SEL-->Q2208 --> Q2203-->Q2015-->To output
CV-->Y/C	**No function**	**No channel**
Y/C-->Y/Cb/Cr	**No function**	**No channel**
CV-->Y/Cb/Cr	**No function**	**No channel**
Y/Cb/Cr-->CV	**No function**	**No channel**
Y/Cb/Cr-->Y/C	**No function**	**No channel**
OSD immediate picture-->COMPOSITE output		Input signal is cut by Q2046 and a signal is outputted from Q2011.-->Q2019--> **The signal flow from this step is same as "CV-->CV" channel.-->To output**
OSD immediate picture-->S video output	**No function**	**No channel**
OSD immediate picture-->COMPONENT output	**No function**	**No channel**

Signal flow **See a separate block diagram.**

CV-->CV		MAIN SEL-->Q2014-->To output
Y/C-->Y/C	Y channel	MAIN SEL-->Q2050-->To output
	C channel	MAIN SEL-->Q2050-->To output
Y/Cb/Cr-->Y/Cb/Cr	**No function**	**No channel**
Y/C-->CV	Y channel --> CV	MAIN SEL-->Q2050 --> Q2040-->Q2014-->To output
	C channel --> CV	MAIN SEL-->Q2050 --> Q2040-->Q2014-->To output
CV-->Y/C	**No function**	**No channel**
Y/C-->Y/Cb/Cr	**No function**	**No channel**
CV-->Y/Cb/Cr	**No function**	**No channel**
Y/Cb/Cr-->CV	**No function**	**No channel**
Y/Cb/Cr-->Y/C	**No function**	**No channel**
OSD immediate picture-->COMPOSITE output	**No function**	**No channel**
OSD immediate picture-->S video output	**No function**	**No channel**
OSD immediate picture-->COMPONENT output	**No function**	**No channel**

How to repair Video board

NAVD-8201/NAVD-8202/NAVD8203/NAVD-8205/NAVD-8207/NAVD-8209



CONFIRMATION OF VIDEO SIGNAL INPUT AND OUTPUT, AND OSD (ON SCREEN DISPLAY) OPERATION

A-1. CONFIRMATION OF OSD(ON SCREEN DISPLAY) OPERATION

a. Confirm that specified operations are made by Enter and Cursor keys of remote control.(Apply to Main and Zone 2)

b. Confirm that the superimpose screen matches the system (NTSC/PAL) of the input signal , and displays approximately in the center of the monitor screen.(It applies to Main and Zone2 other than UDD and UJJ type)

Confirm the item above about UDD and UJJ models by the NTSC system.

TEST MODE 5-00

c.Confirmation of signal detector circuit (CYDEC,SVDEC1,SVDEC2,SVDEC3)

Input signals to Component 1, S-video 1 and composite 1 at the same time , and confirm that the component signal outputs to component output 1 and S-video 1 signal outputs to S-video 2,3 and 4.

TEST MODE 5-01

A-2. CONFIRMATION OF THE INPUT AND OUTPUT OPERATION OF VIDEO SIGNAL

d. Confirm the input and output operation of Composite Video terminals.

1~6 and Front Composite video input → Composite 4 video out (Apply to Main)

TEST MODE 5-21~27

TEST MODE 5-20 No signal outputs from the output terminal.

1~6 and Front Composite video input → Composite1 video out (Apply to ZONE 2)

TEST MODE 5-21~27

TEST MODE 5-20 No signal outputs from the output terminal.

1~6 and Front Composite video input 1~3 → Composite video out (Apply to Rec and Zone 3)

TEST MODE 5-21~27

TEST MODE 5-20 No signal outputs from the output terminal.

e. Confirm the input and output operation of S-Video terminals.

1~6 and Front S-video input S-video4 out (Apply to Main)

TEST MODE 5-13~19

TEST MODE 5-12 → No signal outputs from the output terminal.

1~6 and Front S-video input 2~3 S-video out (Apply to Rec and Zone 3)

TEST MODE 5-13~19

TEST MODE 5-12 → No signal outputs from the output terminal.

1~6 and Front S-video input composite1 out (Apply to Zone 2)

TEST MODE 5-13~19

TEST MODE 5-12 → No signal outputs from the output terminal.

f. Confiramation of input and output operation of component, BNC and D4 terminals

Confirm the input and output operation of component video terminals.

Component/BNC/D4 video input → Component/BNC/D4 video out

TEST MODE 5-02~10

g. Confirm the output operation of conversion of video signal.

S-video input → Composite video out. (Apply to Rec. and Zone 3)

TEST MODE 5-11

TEST MODE

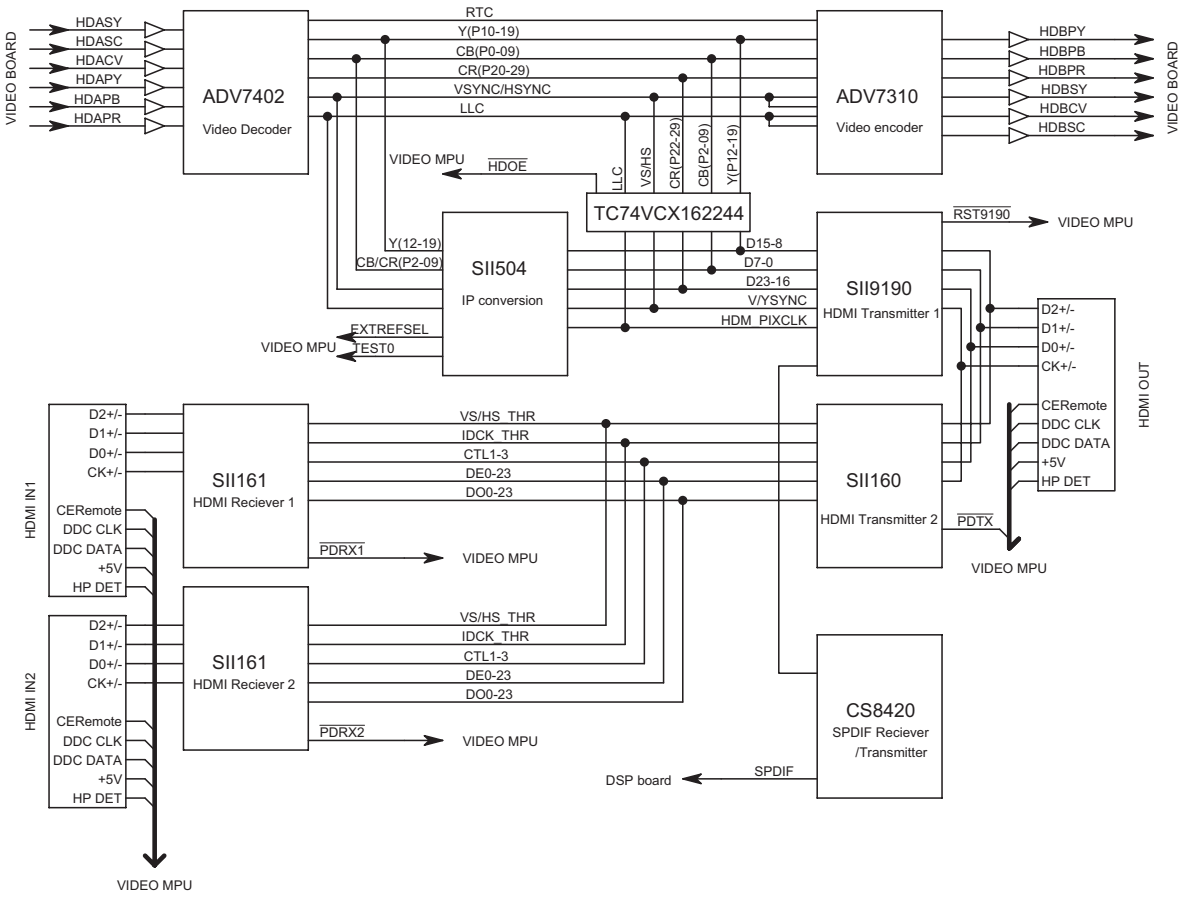
The test modes from 5-00 to 5-27 use the check of analog signals which does not go via HDMI circuit.

TEST No.	Main Input	Zone2 Input	Z3(Rec) Input	MAIN OUTPUT	Z2 OUTPUT	Z3/REC OUTPUT	Target	Necessary board
5-00	Composite1	-	-	All Component	-	-	H/I board	H/I board
5-01	Component1	S-video1 Composite1	S-video1	All Component and S-video 4	S-video3	S-video2	H/I board	H/I board
5-02	Component1	-	-	All Component	-	-	H/I board, J board or K board	H/I board J,K board 8205 or 8207 or 8209
5-03	Component2	-	-	All Component	-	-	H/I board	H/I board
5-04	Component3	-	-	All Component	-	-	H/I board	H/I board
5-05	Component4	-	-	All Component	-	-	J board 8207	H/I board J board 8207
5-06	BNC	-	-	All Component	-	-	J board 8205	H/I board J board 8205
5-07	D4-1	-	-	All Component	-	-	J,K board 8209	H/I board J,K board 8209
5-08	D4-2	-	-	All Component	-	-	J,K board 8209	H/I board J,K board 8209
5-09	D4-3	-	-	All Component	-	-	J,K board 8209	H/I board J,K board 8209
5-10	D4-4	-	-	All Component	-	-	J,K board 8209	H/I board J,K board 8209
5-11	S-video1	S-video2	S-video3	Composite1	Composite2	Composite3	H/I board	H/I board
5-12	S-video1	-	-	All S-video outputs turn off	←	←	H/I board	H/I board
5-13	S-video1	S-video1	S-video1	S-video4	Composite1	S-video1	H/I board	H/I board
5-14	S-video2	S-video2	S-video2	S-video4	Composite1	S-video2	H/I board	H/I board
5-15	S-video3	S-video3	S-video3	S-video4	Composite1	S-video3	H/I board	H/I board
5-16	S-video4	S-video4	S-video4	S-video4	Composite1	S-video1	H/I board	H/I board
5-17	S-video5	S-video5	S-video5	S-video4	Composite1	S-video1	H/I board	H/I board
5-18	S-video6	S-video6	S-video6	S-video4	Composite1	S-video1	H/I board	H/I board
5-19	S-video Front	S-video Front	S-video Front	S-video4	Composite1	S-video1	H/I board	H/I board
5-20	Composite1	-	-	All Composite outputs turns off.	←	←	H/I board	H/I board
5-21	Composite1	Composite1	Composite1	Composite4	Composite1	Composite3	H/I board	H/I board
5-22	Composite2	Composite2	Composite2	Composite4	Composite1	Composite2	H/I board	H/I board
5-23	Composite3	Composite3	Composite3	Composite4	Composite1	Composite2	H/I board	H/I board
5-24	Composite4	Composite4	Composite4	Composite4	Composite1	Composite2	H/I board	H/I board
5-25	Composite5	Composite5	Composite5	Composite4	Composite1	Composite2	H/I board	H/I board
5-26	Composite6	Composite6	Composite6	Composite4	Composite1	Composite2	H/I board	H/I board
5-27	Composite Front	Composite Front	Composite Front	Composite4	Composite1	Composite2	H/I board	H/I board

TEST No.	INPUT		SELECTOR		OUTPUT				
5-28	HDMI IN1		DVD	HDMI OUT				HDMI	L board
5-29	HDMI IN2		VIDEO-1	HDMI OUT				HDMI	L board
	COMPONENT IN3(HI	OPT4	VIDEO-2	HDMI OUT	COMPONENT OUT1			H/I board HDMI	H/I board L board
5-30	COMPONENT IN3(SI	OPT4	VIDEO-3	HDMI OUT	COMPONENT OUT1	SVIDEO OUT4	COMPOSITE OUT4	H/I board HDMI	H/I board L board
5-31	SVIDEO IN4	COAXIAL3	VIDEO-3	HDMI OUT	*COMPONENT OUT1	*SVIDEO OUT4	*COMPOSITE OUT4	H/I board HDMI	H/I board L board
5-32	COMPOSIT IN5	OPT5	VIDEO-4	HDMI OUT	*COMPONENT OUT1	*SVIDEO OUT4	*COMPOSITE OUT4	H/I board HDMI	H/I board L board
									H/I board L board

2004 ONKYO Service Seminar HDMI

1.BLOCK DIAGRAM C-HDMI Board



1-1.Video Assign:Hdmi=Video

a. Analog video signal is changed into digital signal by ADV7402.

b.ADV7402 performs YC separation and up conversion.

c.SII504 changes the signal of 480i or 720i into 480p or 720p. (I/P conversion)

d.The signal beyond it does not pass along SII504. It is bypassed by TC74VCX162244.

e.Digital video signal is changed into an analog video signal by ADV7310.

f.Digital video signal is changed into HDMI signal by SII9190.

g.CS8420 corrects the waveform of SPDIF signal.

h.SII9190 superimposes SPDIF on HDMI signal.

1-2.Video Assign Hdmi=HDMI 1 or 2 (HDMI THROUGH MODE)

a.The signal of HDMI IN 1/2 is changed into the digital signal of low frequency by SII161.
The signal of HDMII cannot perform a direct change for high frequency.

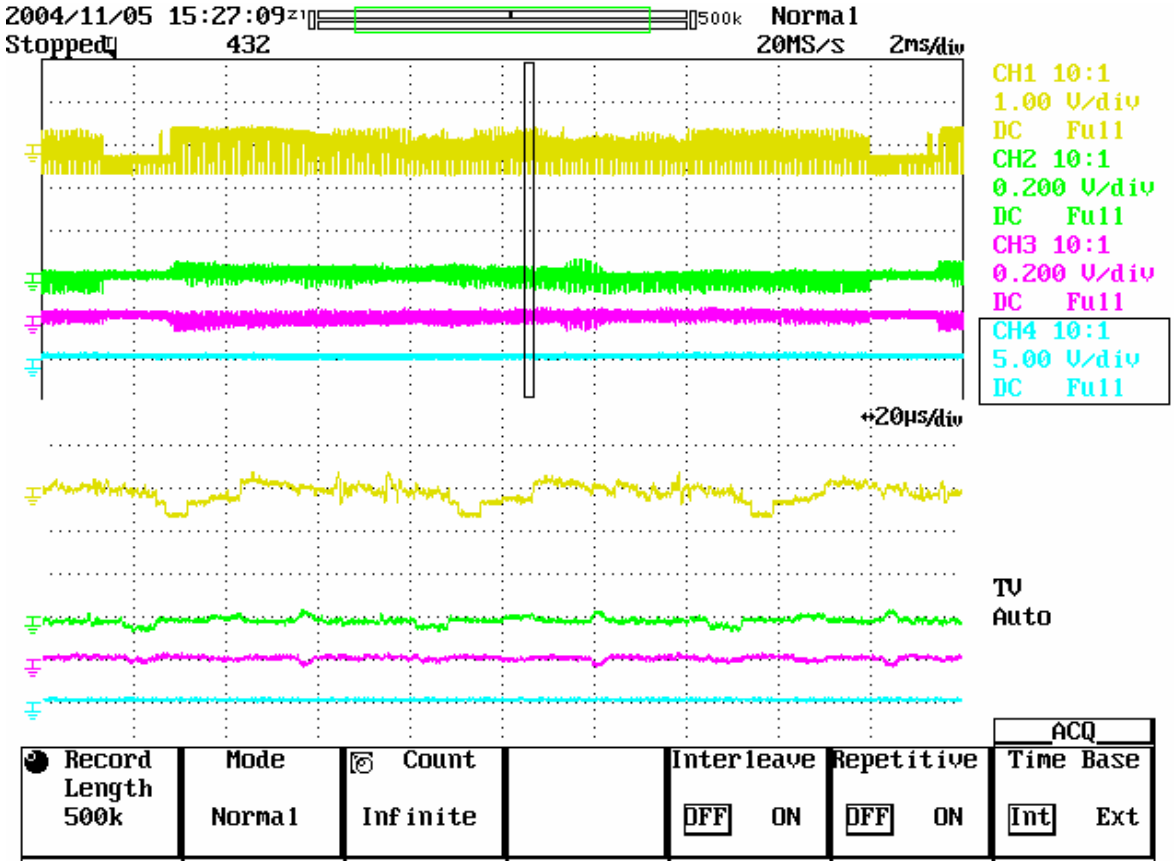
b.The HDMI signal changed into low frequency is returned by SII160.

2.Wave Form

2-1.Video Assign:Hdmi=Video

2-1-a. Decoder (ADV7402) Input

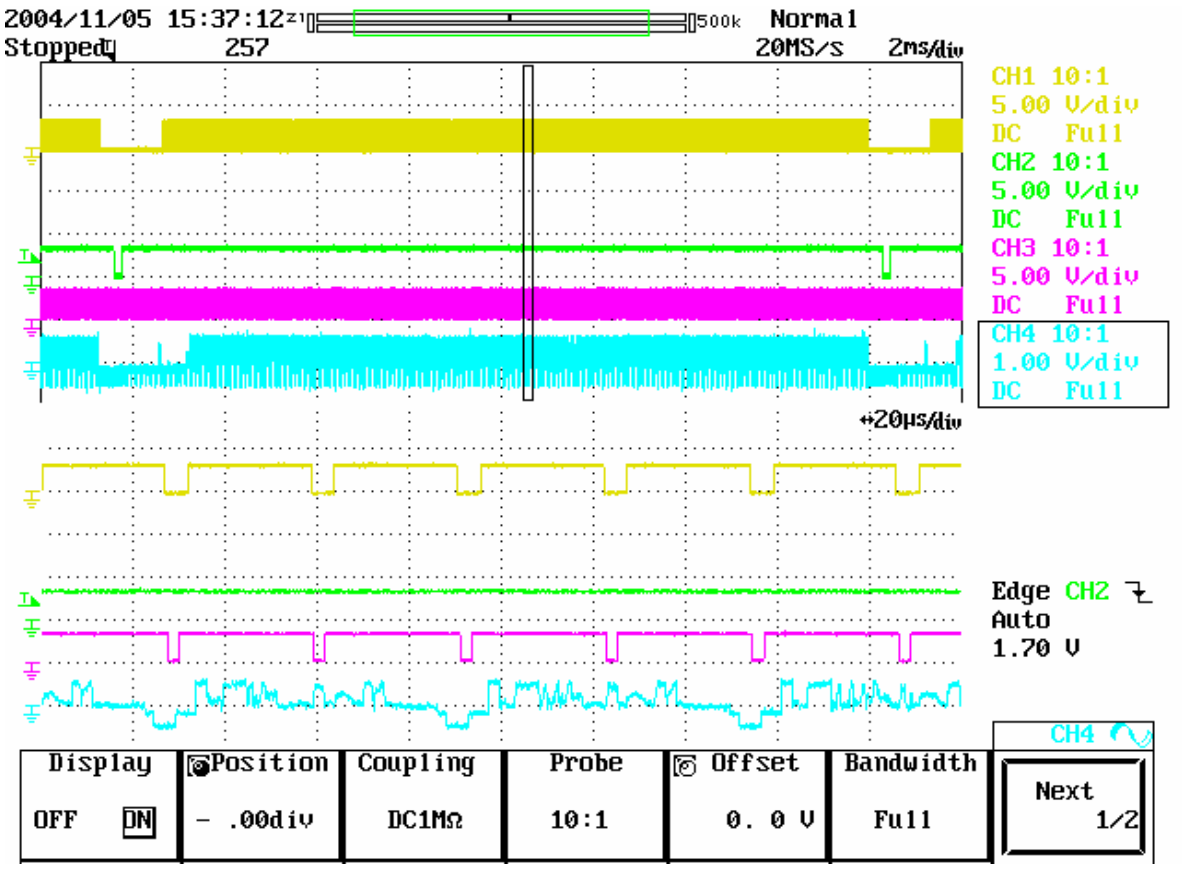
Video Signal Y, Pb, Pr (C8017,8105,8103)



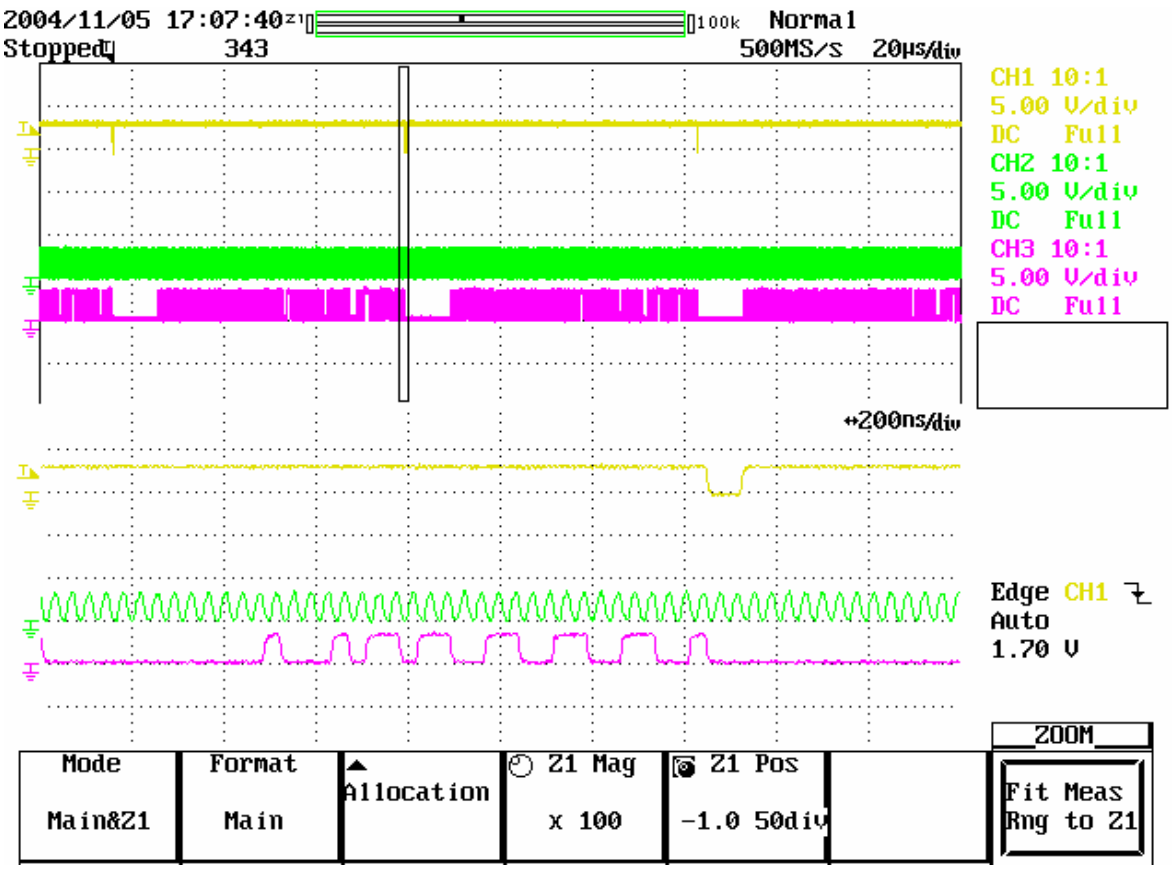
2-1-b. Decoder (ADV7402) Output of Sync Signal

FIELDDE,VS,HC/CS,PY :(PIN NO,:99,98,4,76)

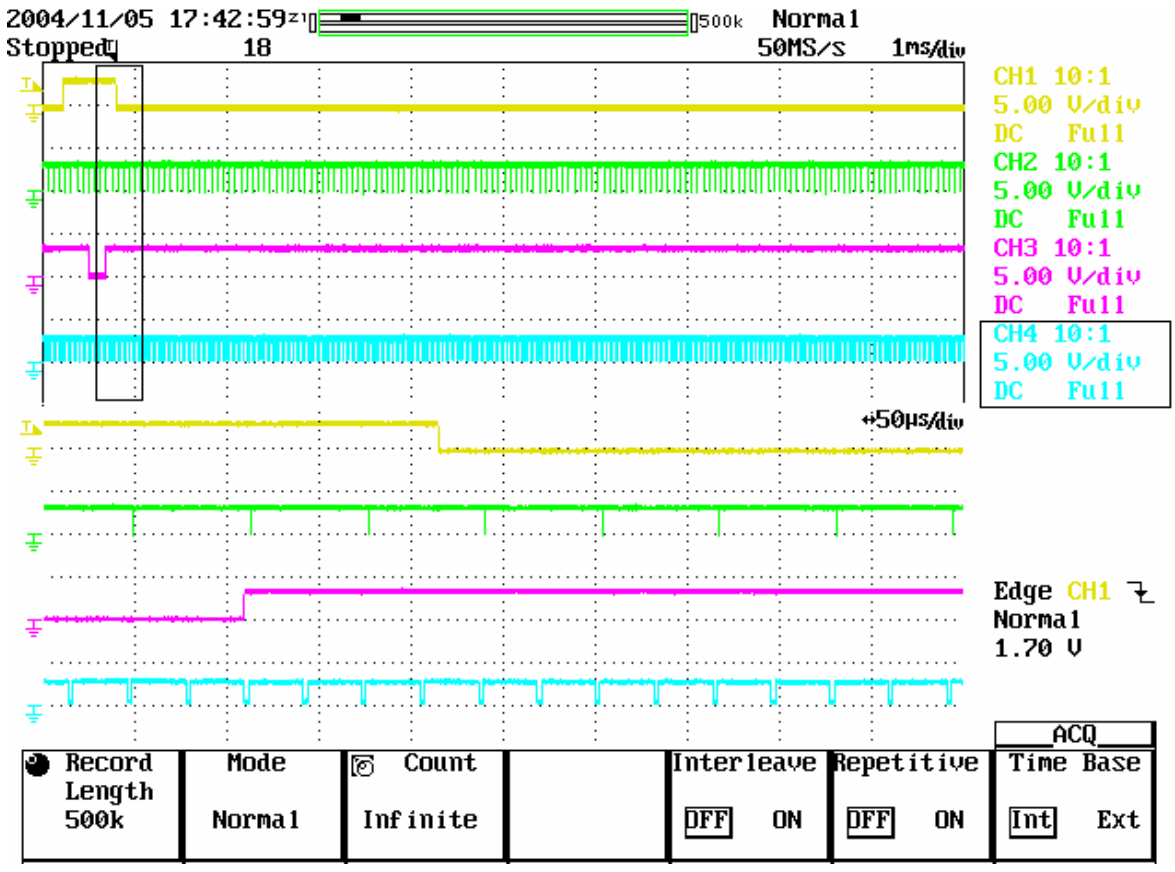
Each SYNC synchronizes with PY.



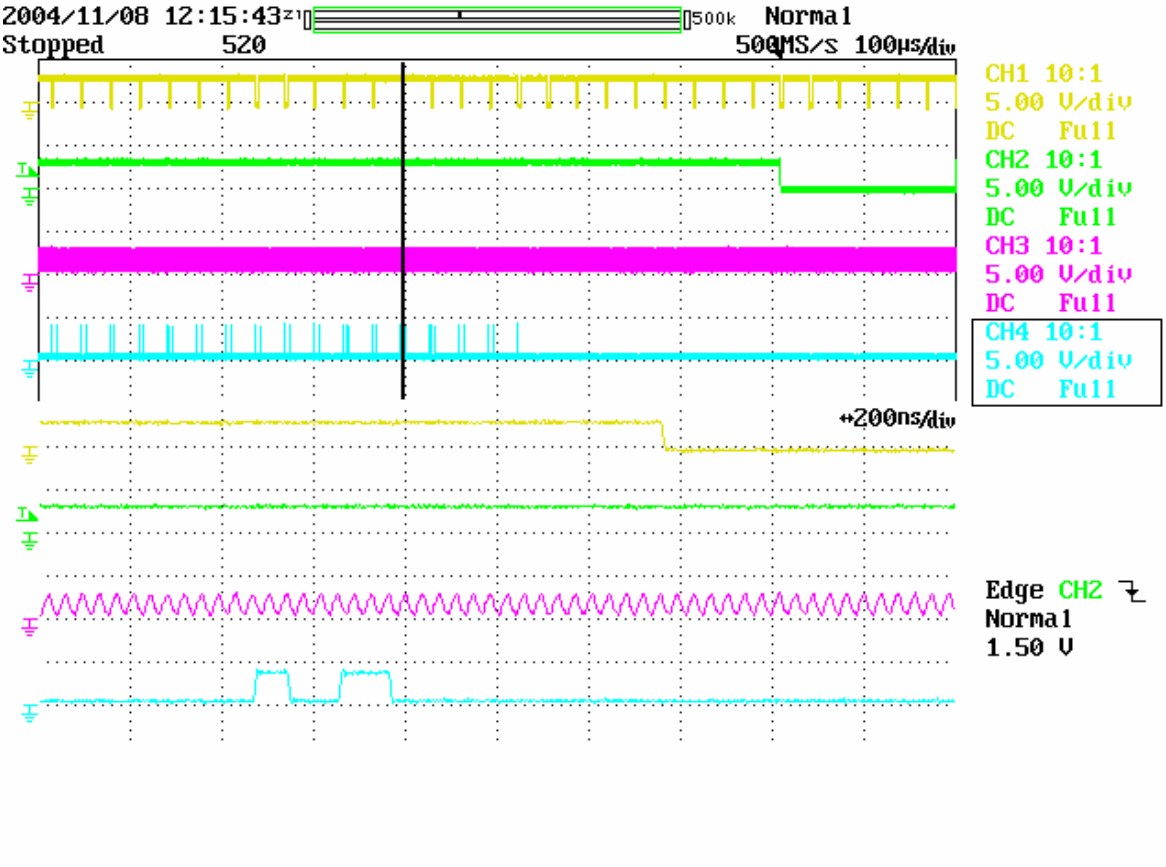
2-1-c. Decoder (ADV7402) Output of digital data
HC/CS,LLC(Pixcel Clock),VP* :(PIN NO,:4,36,10..etc)



2-1-d. IP conversion (SII504) Input/Output of Sync Signal
VS,HC/CS,HDMI_VSYNC,HDMI_HSYNC (PIN NO.174,175,7,8)
The frequency of HSYNC has doubled.



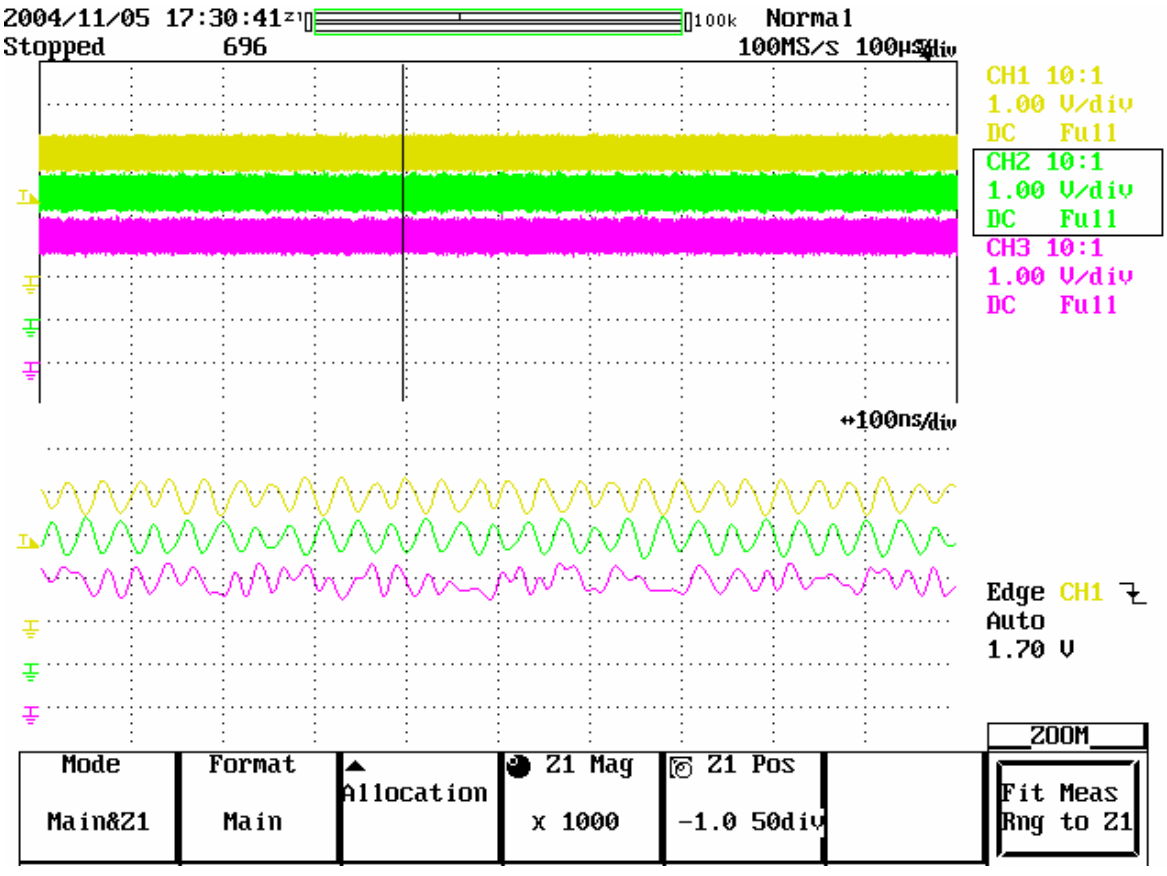
2-1-d.IP conversion （SII504）Output of Sync Signal and Digital Data.
HDMI_VSYNC,HDMI_HSYNC,HDM_PIXCLK,HDMI_Y*/CR*/CB* (PIN NO.7,8,46,32..etc)



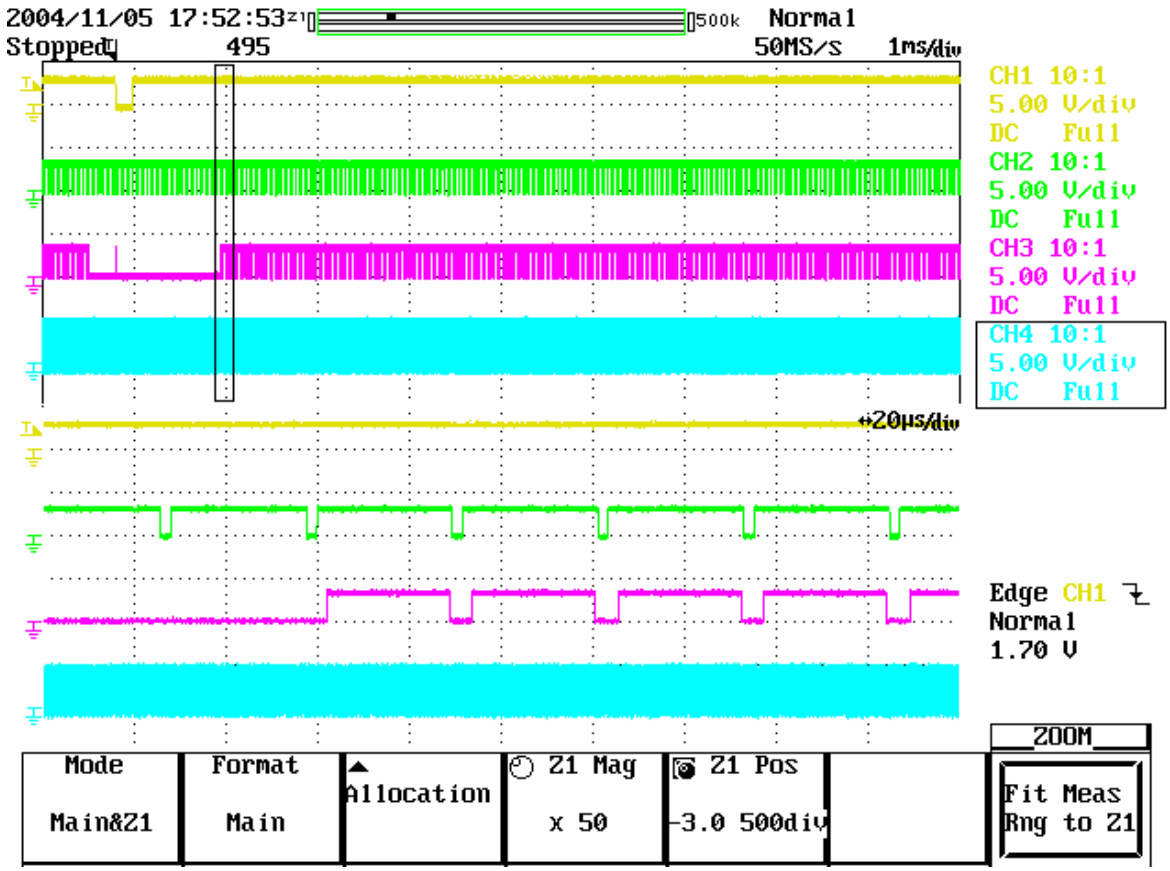
2-1-e. HDMI Output

P8302 TXC+,TXC-,TX*+/-(PIN NO.12,10,9,7,6,4,3)

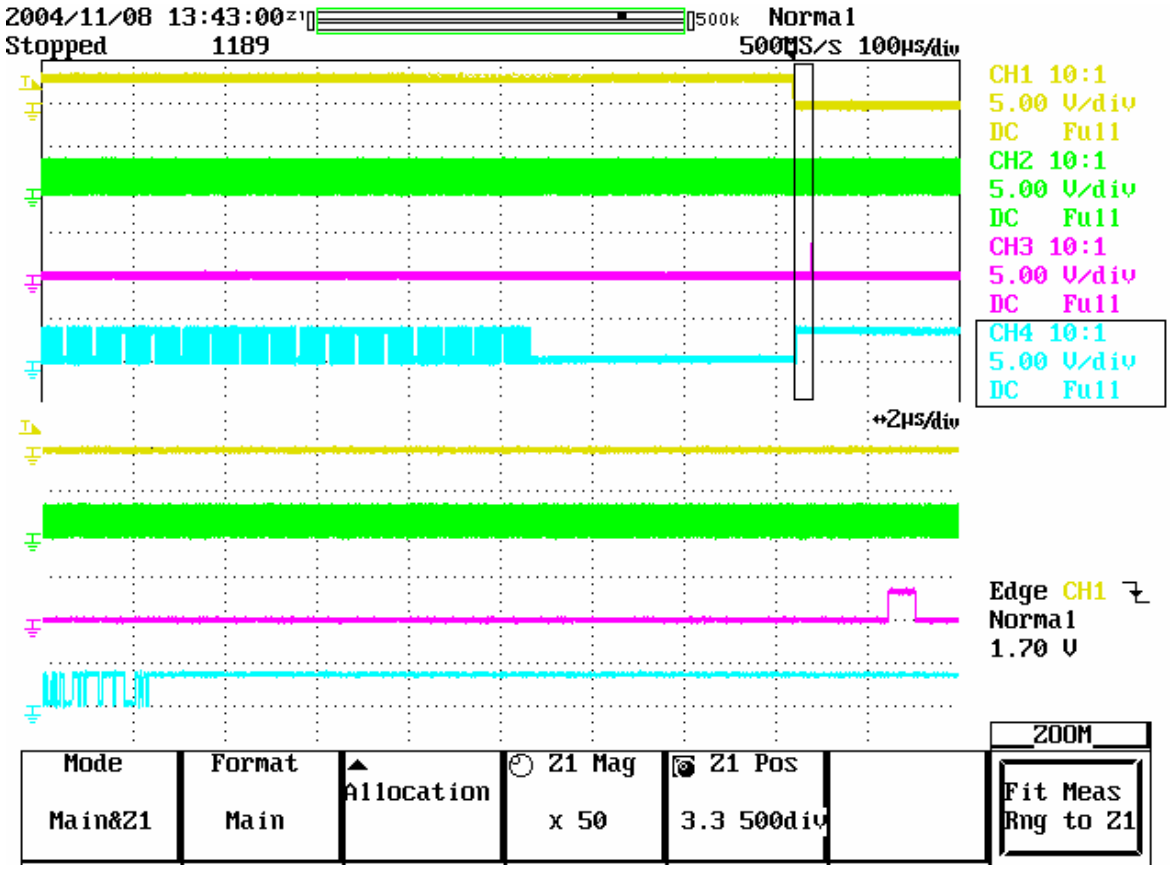
There is amplitude of 600mVpp on the basis of 3.3V.



2-2.Video Assign Hdmi, HDMI1/2(HDMI THROUGH MODE)
2-2-a. SII160 Sync Signal.
VS_THR,HS_THR,DE_THR,IDCK_THR (PIN NO.77,76,78,80)



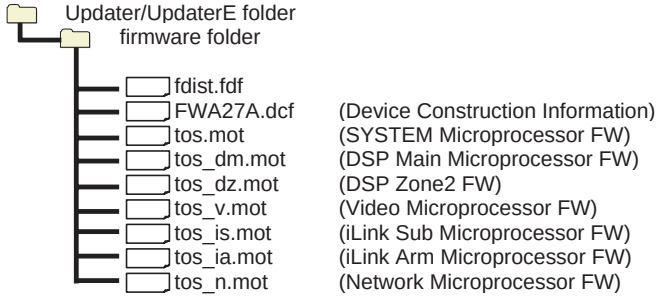
2-2-b. SII160 Sync Signal.
VS_THR,IDCK_THR,CTL*, DE* (PIN NO.77,80,82..etc,90..etc)



How to update

0. Preparation

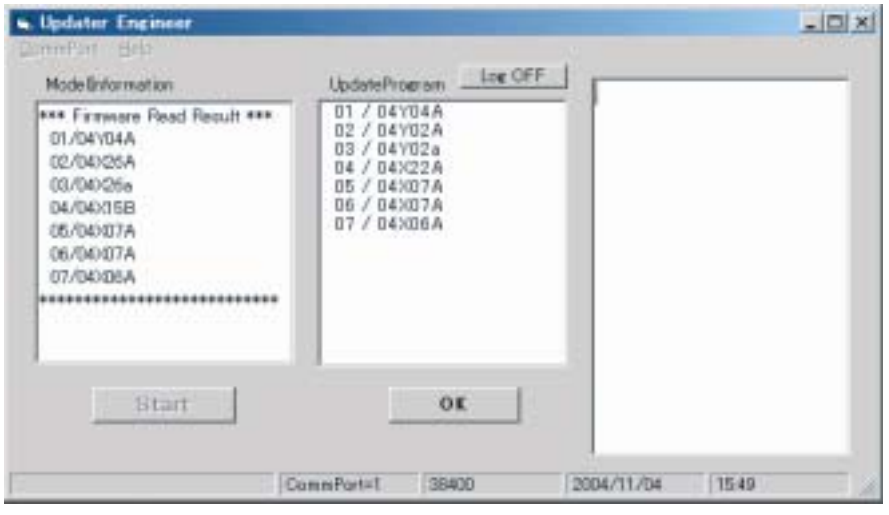
Create a folder in the folder containing "Updater.exe" or ""UpdaterE.exe" and name it "firmware".
Store the firmware information file and firmware object files into the "firmware" folder.
Here is the tree structure.



1.Update Procedure for service centres/stations

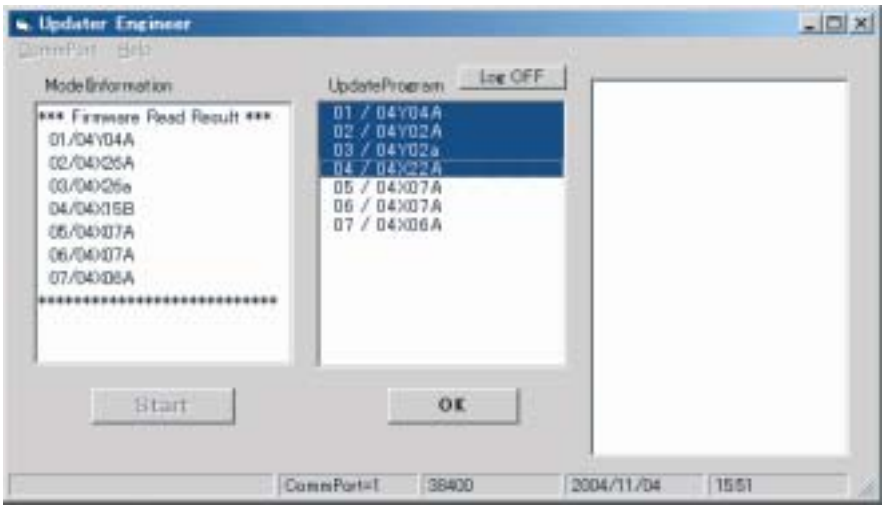
1. Connect the unit and PC with a RS-232C cable.
2. Turn on the unit.
3. Start "UpdaterE.exe".

4. Click "Start".

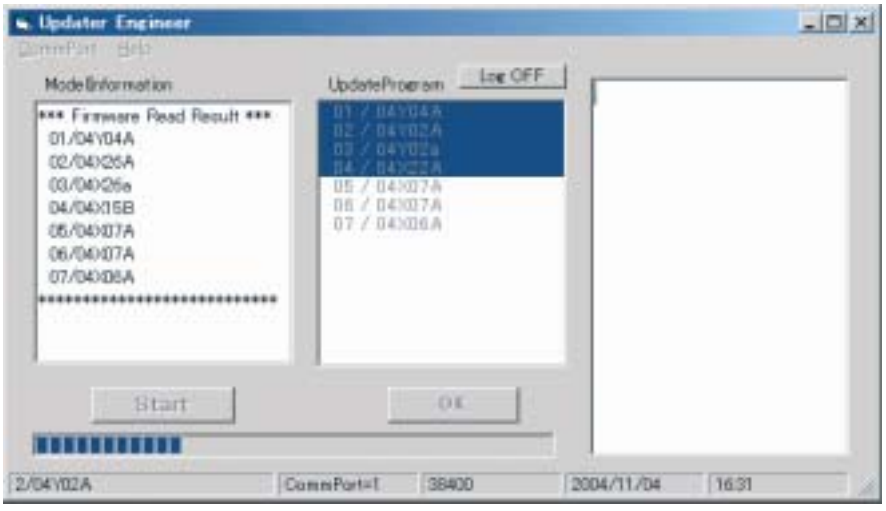


You can see each current version in the left window.

5. Select a program(s) to be updated in the right window.



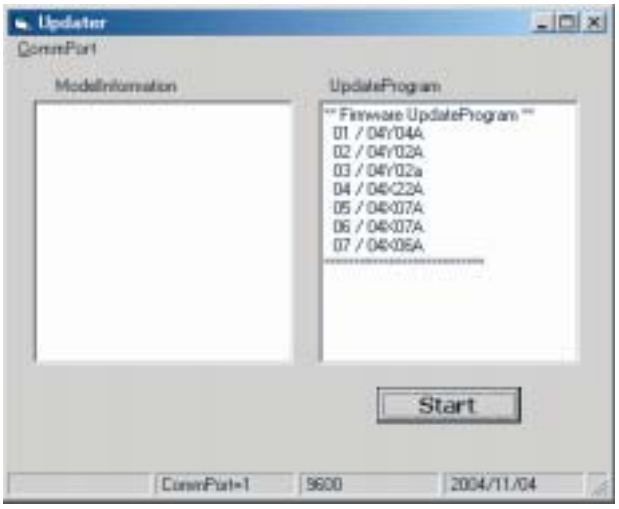
6. Click "OK" to start update.



7. The below message comes out when the update successfully completes. Click "OK" to turn the unit to the standby mode.

2.Update Procedure for end users

1. Connect the unit and PC with a RS-232C cable.
2. Turn on the unit.
3. Start "Updater.exe".



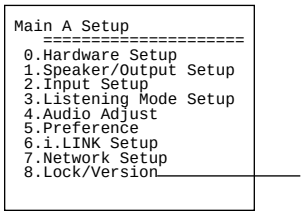
4. Click "Start".

5. The below message comes out when the update successfully completes. Click "OK" to turn the unit to the standby mode.

How to check a version

1. Check procedure using OSD

Main menu



a. Master version
Confirm the firmware version for the main program.

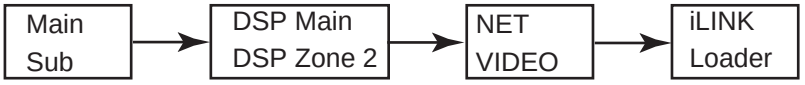
b. i.LINK(IEEE1394) version
Confirm the firmware version for i.LINK.

c. Net-Tune version
Confirm the firmware version for the Net-Tune program.

d. HDMI version
Confirm the firmware version for HDMI.

2. Check procedure using Operation key

Hold "DISPLAY" button down and then press "STANDBY/ON" button.



You can confirm the each firmware version.

3. Check procedure using PHAST command

Firmware version transmission comand : "#UV"

Computer → Main microprocessor "!n#UVRQ(CR) " (Version check command)

Computer ← Main microprocessor "!n#UVii..iinnmmmmmmmmaaaaaaaabbbbbbbbcccccccc czzzzzzzz(CR) "

ii..ii : Product ID (24 figures) (POS code+Serial number)

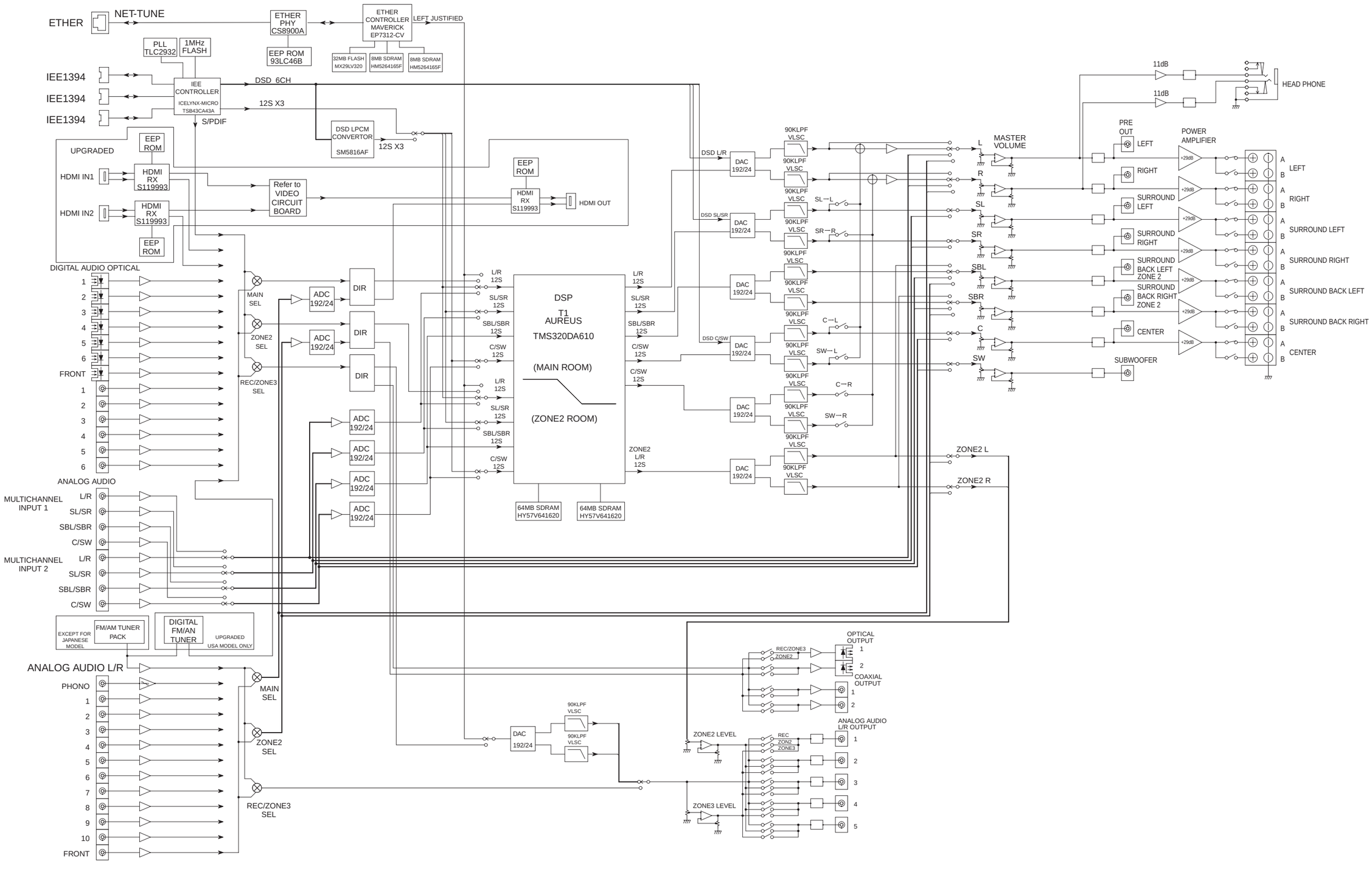
nn : Firmware numbers

mmmmmmmm: Firmware No.+version(ASCII) Ex:01001.01 / 0204310A

Firmware No. 01 shows the version of main microprocessor.

When the version request command or product ID write command sends from the computer to the microprocessor, the microprocessor returns the product ID, firmware numbers, and firmware version information to the computer.

BLOCK DIAGRAM



Disassembling Procedure

Step

1 Remove 7 decorative screws (A141) to release Top Cover (A140) with Trox driver.

2 Remove 8 decorative screws (A141) to release SIDE PANEL (L)/(R) (A138, A139).

3 Remove 6 screws (A194: 3 on the top face, 3 on the bottom face) to release F PANEL (A157).

4 Disconnect FFC(P7501) from DISPLAY Board (U23).

5 Remove 3 screws which fix front VIDEO, OPTICAL terminal Boards (U238, U235) to F Panel (A157) and remove these Boards from Front Section AS.
Now, Front Section AS is completely separated from the unit.

6 Remove 24 copper screws (A052: 4 on the top face, 20 on the side face) to release BRACKET(RAIL-B) (A078).

7 Remove resin BRACKET (U) (A079).

8 Turn the unit around and remove Special Screws (A094) using Allen (hexagon) wrench to release PLATE A to L (A007,010,013,015,018,021,024,026,028). Note that Toothed Washers (A189) are fixed with the screws.

9 Remove Toothed 10mm Screws (A038) which fix AUDIO, OPTICAL, COAXIAL terminal Boards (U03,04,092).

10 Remove Toothed 10mm Screws (A004) which fix Speaker Terminal Board (U154).

11 Remove any screws which fix Pin Jacks and Terminals (3*8mm, RS232)

12 Remove 3*8mm screws (A004) which fix REAR PANEL (A002).

13 Turn the unit upside down and remove a 3*6mm screw (A144) which fixes BOTTOM board (A142) and REAR PANEL(A002).
Now, REAR PANEL is completely separated from the unit.

14 Dismount AUDIO, OPTICAL, COAXIAL terminal Boards (U03,04,092) from Mother Board (U11).

15 Disconnect 3 sockets located on upper side of Power Supply Board (U16) (in upper left area when looking from above).

16 Remove 2 HOLDER(KGLS-12RT) (A037) from the above Boards and Disconnect FFC (P3120) from Mother Board (U11).
Take Power Supply Board (U16) out of the unit.

17 Disconnect all the sockets including FFC's from Mother Board (U11).

18 Release Mother Board by removing HOLDER (KGLS-5RT).

19 Turn the unit upside down and remove 4 4*12mm screws (A149) and 19 3*8mm toothed screws (A143) to release LEG AS (A145) and BOTTOM board (A142).

20 Disconnect Socket (P5000b) and 14 screws (A052) on DAC Board (U02) to separate it from Driving Amplifier Board (U12) installed below Transformer (T9001).
Remove Wire Ties which fix cables to BRACKET (L)/(R) (A001,006).
Remove the copper screws with washer which fix copper plate on Driving Amplifier Board (U12).

21 Make sure that Speaker Terminals (U154) is separated from the unit.

Disassembling Procedure

Step

22 Disconnect Socket (P6940) from Transformer (T9001) and located on Bias Selector PC Board (U15) held by F BRACKET (A081).

23 Disconnect Socket (6950A) and Crimps (P5001,5002) on Driving Amplifier Board (U12) and any lower positioned sockets which connect Driving Amplifier Board (U12) and Connector PC Boards (U14,25) fixed to HEAT SINK(M) (A044) .
Remove 9 copper screws (A052) to release the Driving Amplifier Board (U12).

24 Remove all the 4*8mm screws (A082) to release F BRACKET (A081).

25 Turn the unit around again and remove 8 4*10mm screws (A070) with washer which fix Transformer (T9001).
Take BRACKET(PT) (A066), Transformer (T9001), and 2 SHIELD PLATE(PT) (A068) out of the unit.

26 Remove all the copper screws (A030) which fix BRACKET (RAIL-A) (A072) to BRACKET (L)(A001)/(R)(A006)/(C)(A056).
Take BRACKET(RAIL-A)(A072), resin BRACKET (BTM) (A074), and DAC Board (U02) out of the unit.

27 Remove 4 copper screws (A052) which fix Secondary Power Supply Board (U152).

28 Remove 6 4*8mm screws which fix BRACKET(UL)(A063)/(UR)(A064) to BRACKET(L)(A001)/(R)(A006).

29 Remove 4 copper screws which fix the both ends of BRACKET(C)(A056) to BRACKET (L)(A001)/(R)(A006).
Take BRACKET(C)(A056) with 2 HEAT SINK(S)(A057) and Secondary Power Supply Board (U152) out of the unit.

30 Remove 4 copper screws (A086) to release HOLDER(CH) (A084) from BRACKET(UL)(A063)/(UR)(A064).
Remove 3*14 special screw (A085) to release HOLDER(CH) (A084) from Electric Capacitor (C6901,6902).
Remove 4 3*8mm screws (A052) which fix Electric Capacitor Board (U163).

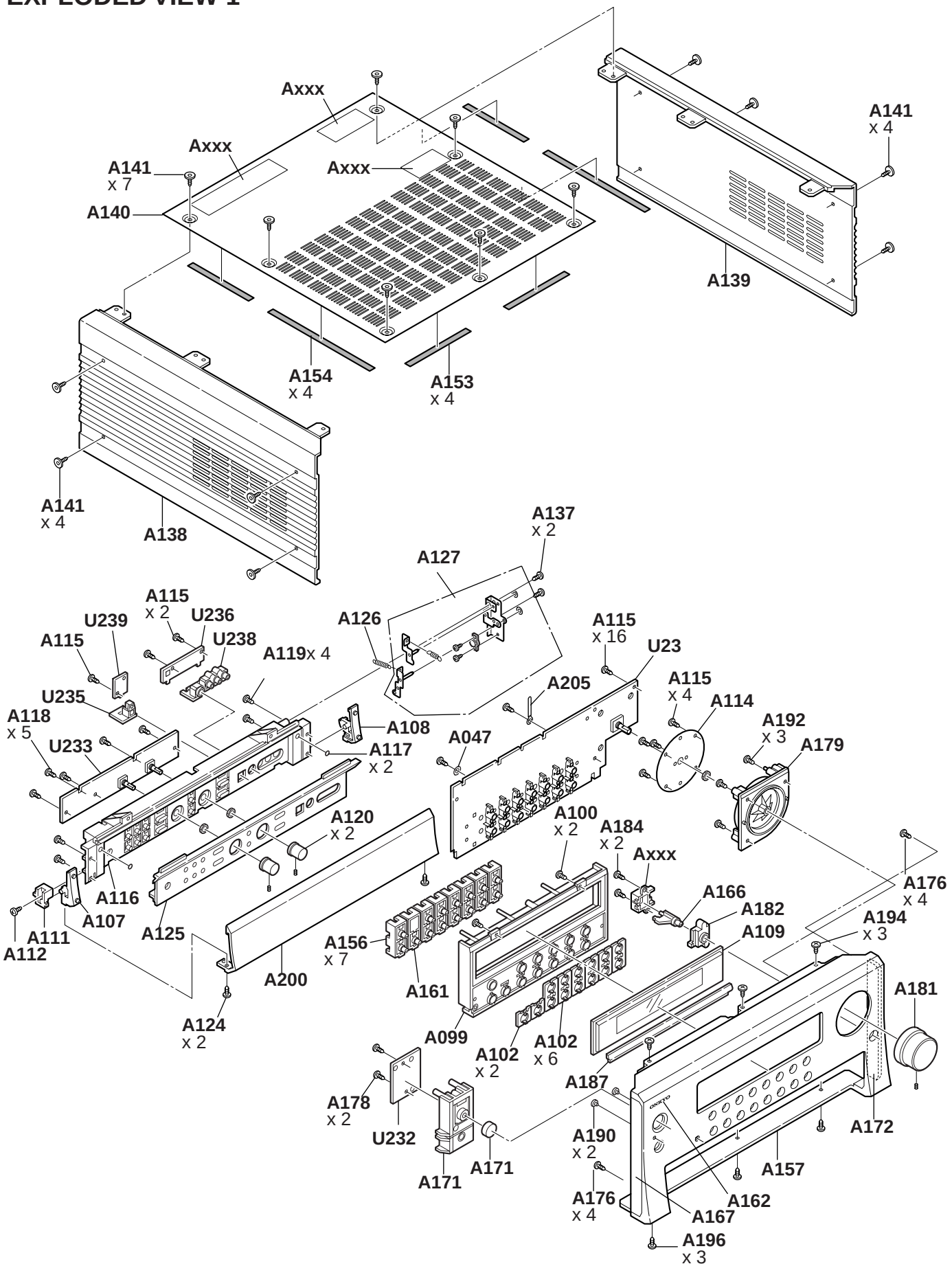
31 Remove 12 copper screws (A052) to release RETAINER(H) (A048) which fix 2 HEAT SINK(M) (A044) to BRACKET(L)(A001)/(R)(A006).
In the same way, remove screws which fix BRACKET(UL)(A063)/(UR)(A64).

32 Turn BRACKET (L)(A001)/(R)(A006) upside down and disconnect sockets of cables from FAN (E9001,9002).

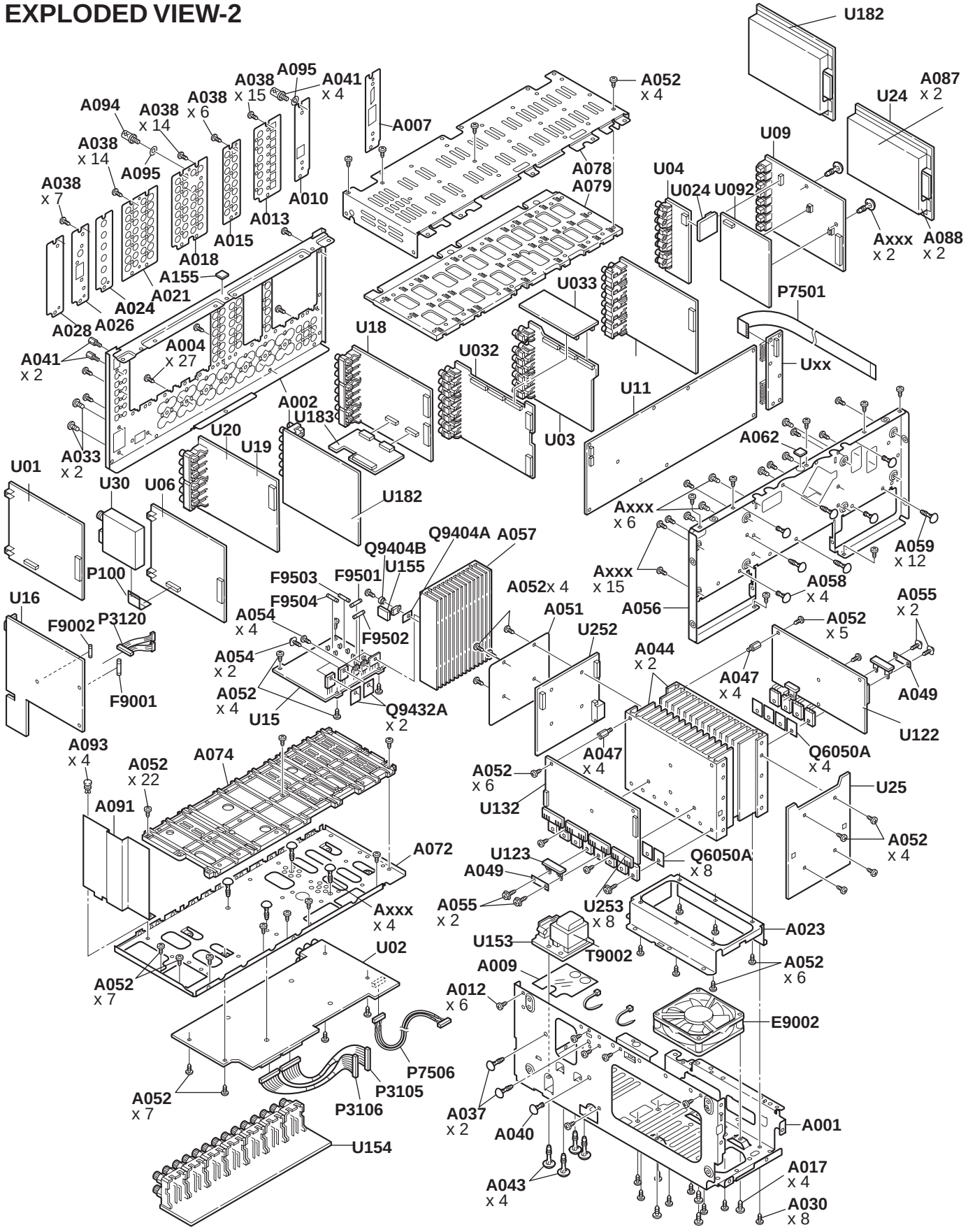
33 Remove 4 screws which fix 2 BRACKET(H) (A023) and remove Power Amplifier PC Boards from BRACKET(L)(A001)/(R)(A006).

34 Remove 12 copper screws (A052) which fix 2 BRACKET(H)(A023) to 2 HEAT SINK (M)(A044).
Put Power Amplifier PC Boards upside down remove copper screws to release Front/Back Connector PC Boards.
Separate Front/Back Connector PC Boards from Power Amplifier PC Boards to get HEAT SINK (M) blocks.

EXPLODED VIEW-1



EXPLODED VIEW-2



EXPLODED VIEW-3