

AV Surround Receiver

NR1608

[Click here!](#)

Online service parts list

<http://dmedia.dmglobal.com/Document/DocumentDetails/23155>

Online Parts List (P5 to P7)

WEB owner's manual (Release schedule)

<http://manuals.marantz.com/NR1608/NA/EN/index.php> (March 2017)<http://manuals.marantz.com/NR1608/EU/EN/index.php> (April 2017)

CAUTION IN SERVICING

ELECTRICAL

MECHANICAL

REPAIR INFORMATION

UPDATING

- For purposes of improvement, specifications and design are subject to change without notice.
- Please use this service manual with referring to the operating instructions without fail.
- Some illustrations using in this service manual are slightly different from the actual set.

Confidential

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SAFETY PRECAUTIONS

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Caution in
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Mechanical

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SAFETY PRECAUTIONS

The following items should be checked for continued protection of the customer and the service technician.

Leakage current check

Before returning the set to the customer, be sure to carry out either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 milliamps, or if the resistance from chassis to either side of the power cord is less than 460 kohms, the set is defective.

Be sure to test for leakage current with the AC plug in both polarities, in addition, when the set's power is in each state (on, off and standby mode), if applicable.

◎ Make a safety check after servicing!

Check that all screws, parts and wires removed or disconnected when servicing have been put back in their original positions, check that no serviced parts have deteriorate the area around. Then make an insulation check on the external metal connectors and between the blades of the power plug, and otherwise check that safety is ensured.

(Insulation check procedure)

Unplug the power cord from the power outlet, disconnect the antenna, plugs, etc., and on the power. Using a 500V insulation resistance tester, check that the insulation resistance value between the inplug and the externally exposed metal parts (antenna terminal, headphones terminal, input terminal, etc.) is 1M Ω or greater. If it is less, the set must be inspected and repaired.

CAUTION

Please heed the following cautions and instructions during servicing and inspection.

◎ Heed the cautions!

Cautions which are delicate in particular for servicing are labeled on the cabinets, the parts and the chassis, etc. Be sure to heed these cautions and the cautions described in the handling instructions.

◎ Cautions concerning electric shock!

- (1) An AC voltage is impressed on this set, so if you touch internal metal parts when the set is energized, you may get an electric shock. Avoid getting an electric shock, by using an isolating transformer and wearing gloves when servicing while the set is energized, or by unplugging the power cord when replacing parts, for example.
- (2) There are high voltage parts inside. Handle with extra care when the set is energized.

◎ Caution concerning disassembly and assembly!

Through great care is taken when parts were manufactured from sheet metal, there may be burrs on the edges of parts. The burrs could cause injury if fingers are moved across them in some rare cases. Wear gloves to protect your hands.

◎ Use only designated parts!

The set's parts have specific safety properties (fire resistance, voltage resistance, etc.). Be sure to use parts which have the same properties for replacement. The burrs have the same properties. In particular, for the important safety parts that are indicated by the △ mark on schematic diagrams and parts lists, be sure to use the designated parts.

◎ Be sure to mount parts and arrange the wires as they were originally placed!

For safety seasons, some parts use tapes, tubes or other insulating materials, and some parts are mounted away from the surface of printed circuit boards. Care is also taken with the positions of the wires by arranging them and using clamps to keep them away from heating and high voltage parts, so be sure to set everything back as it was originally placed.

CAUTION

Concerning important safety parts

Many of the electric and the structural parts used in the set have special safety properties. In most cases these properties are difficult to distinguish by sight, and the use of replacement parts with higher ratings (rated power and withstand voltage) does not necessarily guarantee that safety performance will be preserved. Parts with safety properties are indicated as shown below on the wiring diagrams and the parts list in this service manual. Be sure to replace them with the parts which have the designated part number.

- | | |
|------------------------|--------------------------|
| (1) Schematic diagrams | Indicated by the △ mark. |
| (2) Parts lists | Indicated by the △ mark. |

The use of parts other than the designated parts could cause electric shocks, fires or other dangerous situations.

NOTE FOR SCHEMATIC DIAGRAM

WARNING:

Parts indicated by the \triangle mark have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

CAUTION:

Before returning the set to the customer, be sure to carry out either (1) a leakage current check or (2) a line to chassis resistance check. If the leakage current exceeds 0.5 millamps, or if the resistance from chassis to either side of the power cord is less than 460 kohms, the set is defective.

WARNING:

DO NOT return the set to the customer unless the problem is identified and remedied.

NOTICE:

ALL RESISTANCE VALUES IN OHM. $k=1,000$ OHM / $M=1,000,000$ OHM

ALL CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARAD, UNLESS OTHERWISE INDICATED. P INDICATES MICRO-MICRO FARAD. N INDICATES NANO FARAD. EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION. CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

NOTE FOR PARTS LIST

1. Parts indicated by "nsp" on this table cannot be supplied.
2. When ordering a part, make a clear distinction between "1" and "I" (i) to avoid mis-supplying.
3. A part ordered without specifying its part number can not be supplied.
4. Part indicated by "@" mark is not illustrated in the exploded view.

WARNING: Parts indicated by the \triangle mark have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

INSTRUCTIONS FOR HANDLING SEMICONDUCTORS AND OPTICAL UNIT

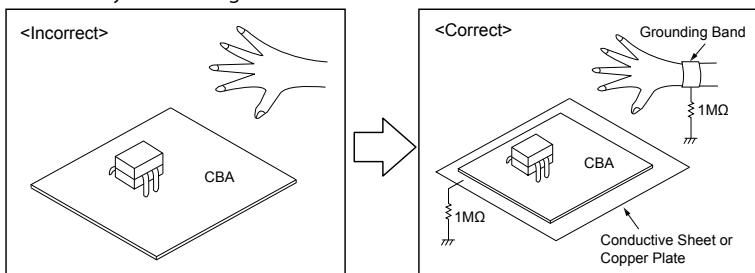
Electrostatic breakdown of the semi-conductors or optical pickup may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

1. Ground for Human Body

Be sure to wear a grounding band (1 M ohm) that is properly grounded to remove any static electricity that may be charged on the body.

2. Ground for Workbench

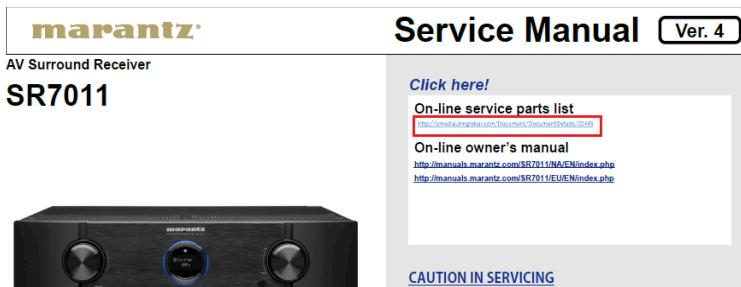
Be sure to place a conductive sheet or copper plate with proper grounding (1 M ohm) on the work-bench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors with your clothing.



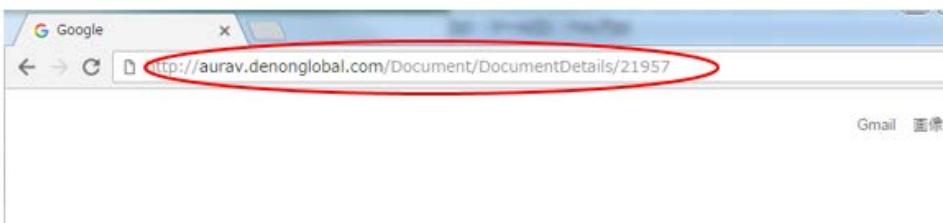
Online Parts List

Accessing the Parts List

- (1) Click the URL link on the cover of the service manual.



NOTE: If the web browser does not open automatically, copy the URL and paste it into the address bar of the web browser and then press Enter.



- (2) When the login screen is displayed, enter your username and password.
(3) Enter the 5 letters shown as the blue CAPTCHA code as single-byte characters.
If the text is unclear, click "Refresh" to change the CAPTCHA code, and enter it again.



- (4) Press the "Login" button.

Logging in to New SDI and Accessing the Parts List

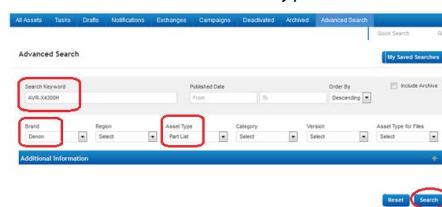
- (1) Access New SDI from the URL below.
<<http://dmedia.dmgglobal.com>>
- (2) When the login screen is displayed, enter your username and password.
(3) Enter the 5 letters shown as the blue CAPTCHA code as single-byte characters.
If the text is unclear, click "Refresh" to change the CAPTCHA code, and enter it again.



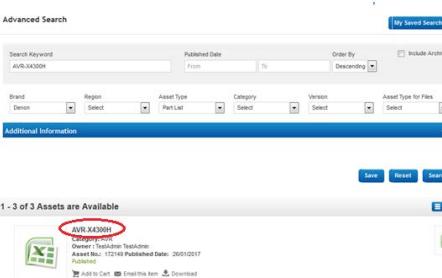
- (4) Press the "Login" button.
(5) When the Home screen is displayed, click "Advanced Search".



- (6) Enter the following search conditions and click "Search".
Keyword : Model name Brand : brand name Asset Type : Part list

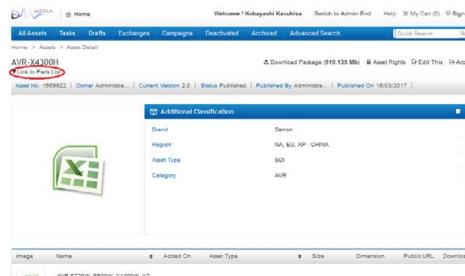


- (7) Click the model name when the search results are displayed.



Accessing the Part List from the Model Asset Screen

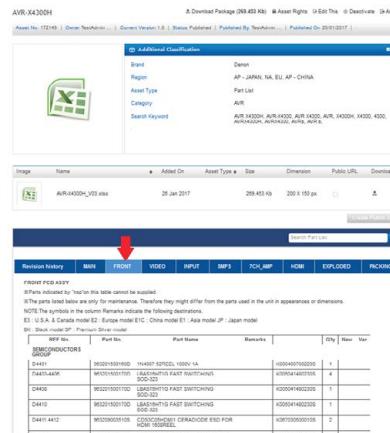
- (1) Display the model Asset from New SDI.
 - (2) Click the section displayed as ▼ Link to Part Lists under the model name.



NOTE: If the ▼ Link to Parts List section is not displayed, download the parts table from the Asset list.

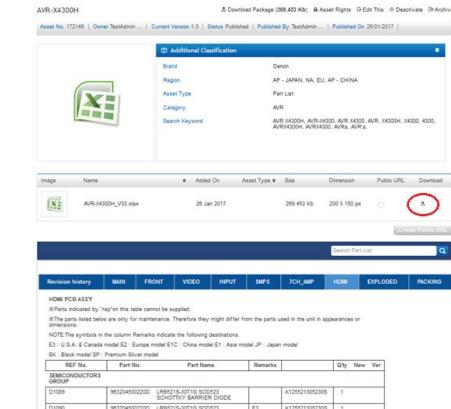
PRINTED CIRCUIT BOARDS Parts Table

- (1) Displays the Parts List. Click the PCB name in the blue bar to display the parts list for the board.



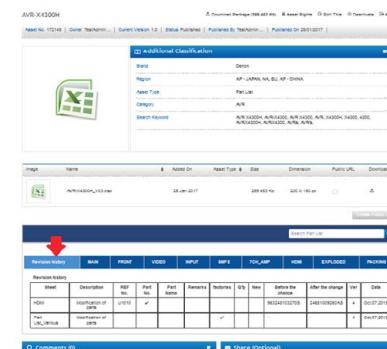
Downloading the Parts List as an Excel File

- (1) Displays the Parts List. Click the Download icon.



Revision History

- (1) Click "**Revision history**" in the blue bar.



The following details are displayed.

Sheet : Name of the changed sheet

Description : Description of the changes

Remarks : Destination, color information

Factories : Factory number

Ver : Version number after revision if changes were made to the parts list

Date : Date of changes

Searching Part Numbers or Ref. Numbers

You can search a Parts List for part numbers or Ref. numbers.

- (1) Enter the part number or Ref. number in the search window of the Parts List, and press the search button.
- (2) The search results are displayed.

The name of the sheet in which the search part is used and the part's line are displayed.

Search Result(s) Found - 14						
S.No.	Sheet	REF No.	Part No.	Part Name	Remarks	Qty
1	MAIN	D4007	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1
2	MAIN	D4016	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1
3	MAIN	D4019	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1
4	MAIN	D4031_4032	0002790401905	155133-D034-AKUAL LRC	K0000133000405	2
5	MAIN	D4037	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1
6	INPUT	D4210_4212	0002790401905	155133-D034-AKUAL LRC	K0000133000405	3
7	SMP	D4150	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1

- (3) Next, click the "Sheet" section of the search results.

Search Result(s) Found - 14						
S.No.	Sheet	REF No.	Part No.	Part Name	Remarks	Qty
1	MAIN	D4007	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1
2	MAIN	D4016	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1
3	MAIN	D4019	0002790401905	155133-D034-AKUAL LRC	K0000133000405	1

- (4) The Board Part Table opens and the line on which the searched part number appears is highlighted.

MAIN PCB ASSY						
!!Parts indicated by * are not supplied.						
!!The parts listed below are only for maintenance. Therefore they might differ from the parts used in the unit in appearances or dimensions.						
NOTE: The part numbers in the columns with remarks indicate the following destinations.						
EEU: U.S.A. & Canada model EEU; Europe model E1C; China model E1; Asia model JP; Japan model						
BB: Black model BP; Premium Silver model						
REF No.	Part No.	Part Name	Remarks	Qty	New	Ver
SEMICONDUCTORS GROUP						
D4009-4009	9632015001700	LBAS15HT110 FAST SWITCHING SOD-323		K0050414602305	5	
D4006	9622050002000	DIOICE BRIDGE D105800 500V/10A STRAIGHT TYPE		K0471000002205	1	
D4013	9632015001700	LBAS15HT110 FAST SWITCHING SOD-323		K0050414602305	1	
D4014	9632015001900	IN4007 52REEL 1000V 1A		K0004007002205	1	
D4018	0002790401905	155133-D034-AKUAL LRC		K0000133000405	1	

CAUTION IN SERVICING.

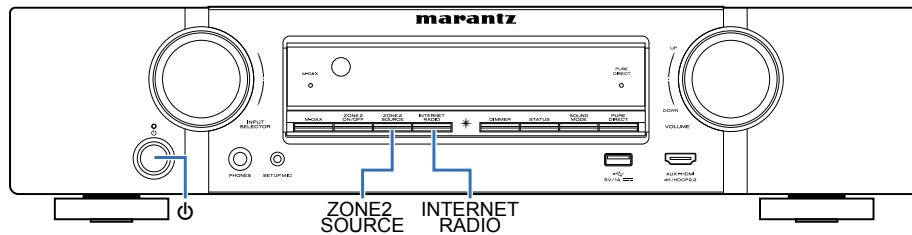
Initializing This Unit

Make sure to initialize this unit after replacing the microcomputer or any peripheral equipment, or the digital PCB.

1. Press the power button to turn off the power.
 2. While holding down buttons "ZONE2 SOURCE" and "INTERNET RADIO" simultaneously, press the power button to turn on the power.
 3. Release the buttons after confirming that the display flashes at 1-second intervals.
* The unit is initialized.
- Use network initialization mode to initialize the network related settings.

NOTE :

- If the unit fails to enter the service mode in step 3, repeat the procedure from step 1.
- Initializing the device restores the customized settings to the factory settings. Write down your settings in advance and reconfigure the settings after initialization.



JIG FOR SERVICING

Use the following jigs (extension cable kit) when repairing the PCBs.
Order with your dealer for the jigs your dealer if necessary.

8U-110084S : EXTENSION UNIT KIT : 1 Set
(See [JIG FOR SERVICING](#))

ELECTRICAL

SCHEMATIC DIAGRAMS

SCH01_TMD SW
SCH02_ADV7180
SCH03_VIDEO PLD
SCH04_HDMI SW1
SCH05_HDMI SW2
SCH06_NET PHY
SCH07_CPU LEVEL CHG
SCH08_DIGITAL CNT
SCH09_CPU
SCH10_ADV8003
SCH11_ADV8003 DDR
SCH12_D SUPPLY
SCH13_HDMI TX
SCH14_DIR APLD
SCH15_DSP
SCH16_MAIN DAC
SCH17_SPK
SCH18_SIDE_CNT
SCH19_INPUT
SCH20_VIDEO
SCH21_TUNER
SCH22_F_HDMI
SCH23_FRONT
SCH24_AMP1
SCH25_AMP2
SCH26_SMPS
SCH27_REG
SCH28_FRONT CNT

PRINTED CIRCUIT BOARDS

DIGITAL, F HDMI
AV
SPK, SIDE CNT, HDMI GUIDE A, HDMI GUIDE B
AMP, FRONT, MC HP, USB
REG, GUIDE L, FRONT CNT, REG CNT, SMPS

LEVEL DIAGRAM

FRONT ch
CENTER, SURROUND, SURR.BCK ch
SUBWOOFER ch
ZONE2 ch
ZONE2(LEGO) ch

BLOCK DIAGRAM

ANALOG AUDIO DIAGRAM
DIGITAL AUDIO DIAGRAM
VIDEO DIAGRAM

POWER DIAGRAM

WIRING DIAGRAM

SEMICONDUCTORS

1. IC's
2. FL DISPLAY

SCHEMATIC DIAGRAMS

SCH01_TMDS SW

Caution in servicing

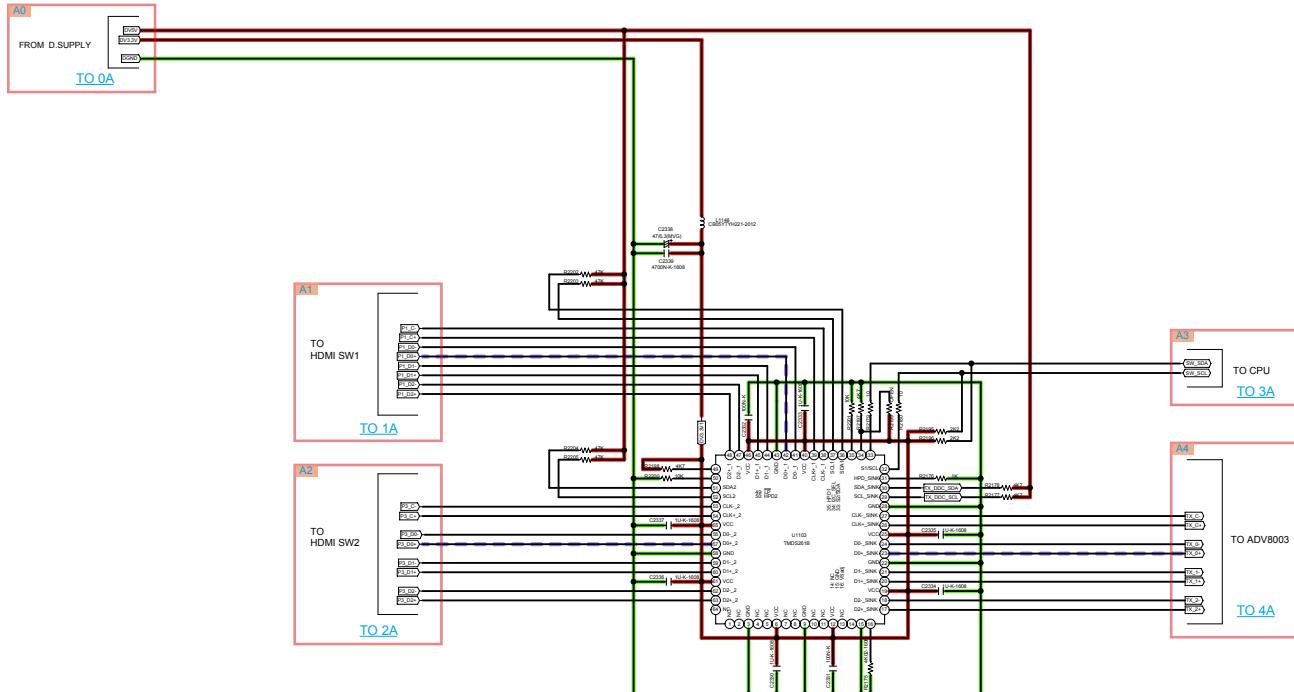
Electrical

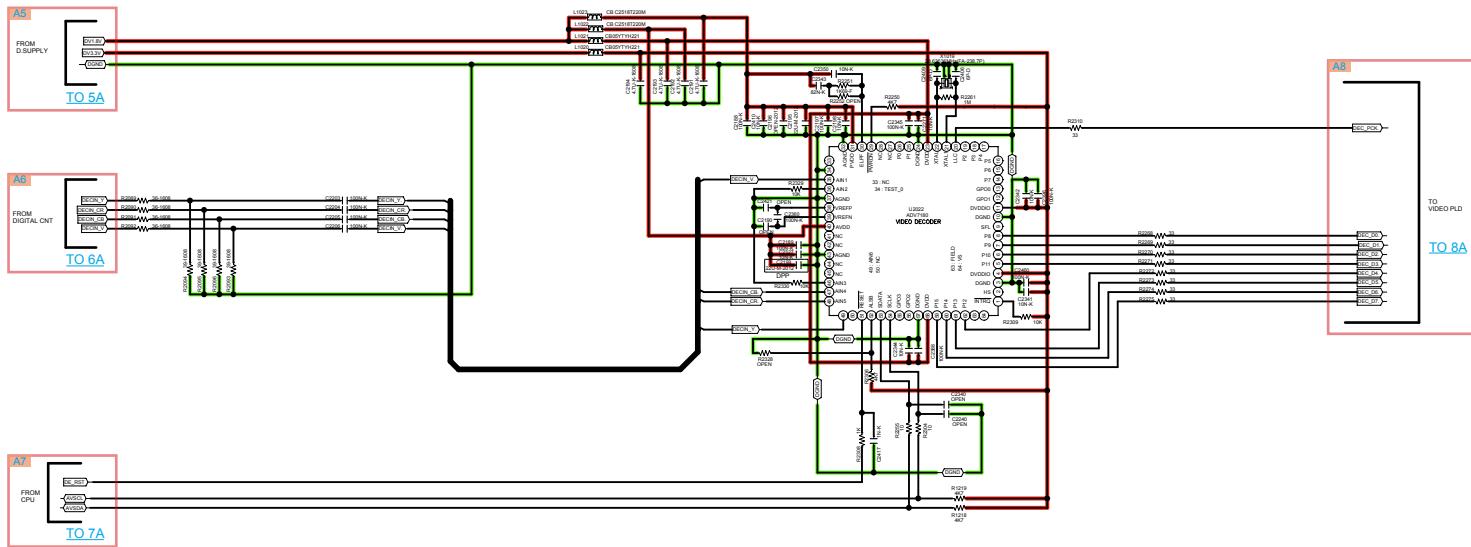
Mechanical

Repair Information

Updating

HDMI SW
TMDS261B

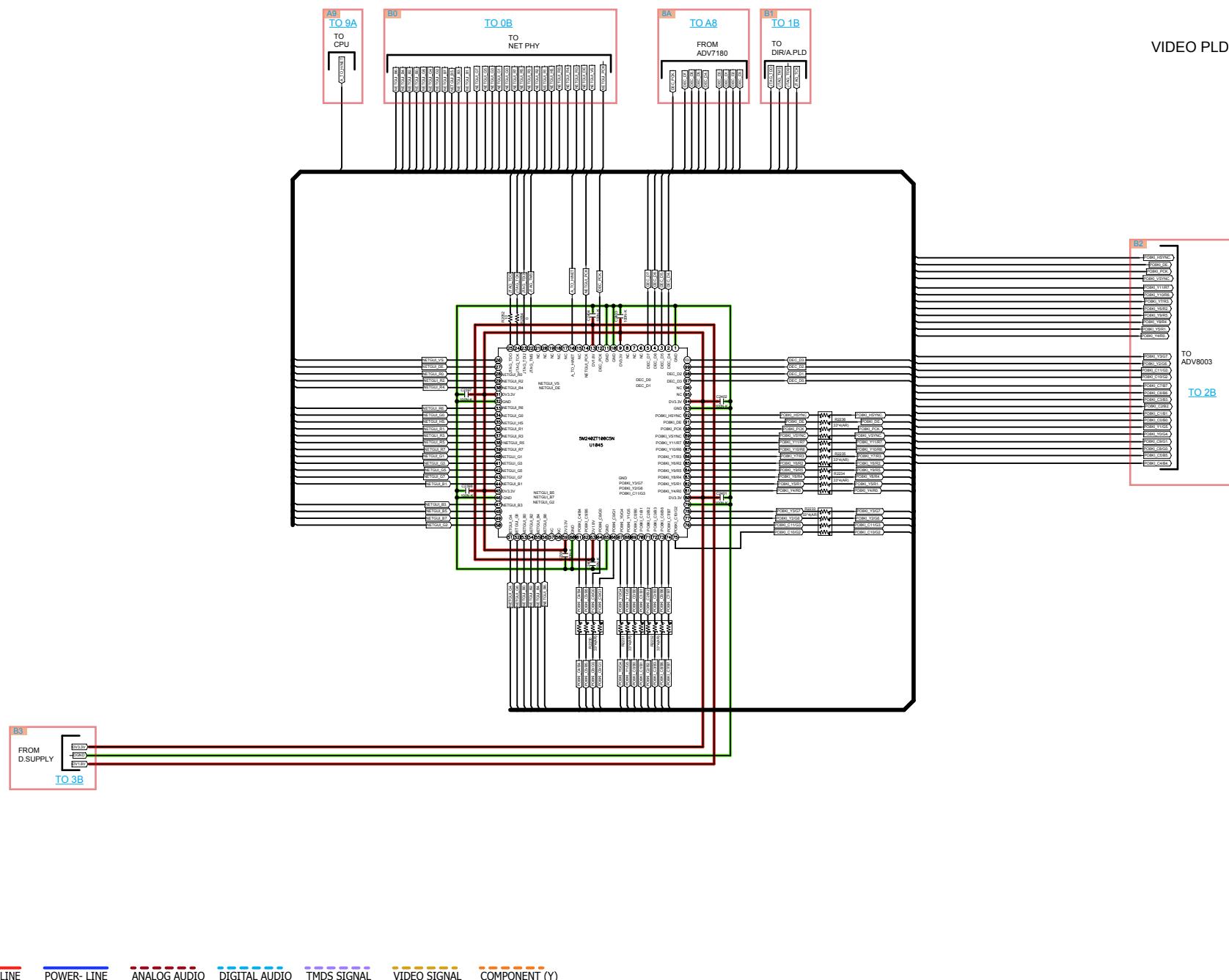




GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

SCH03_VIDEO PLD

VIDEO PLD



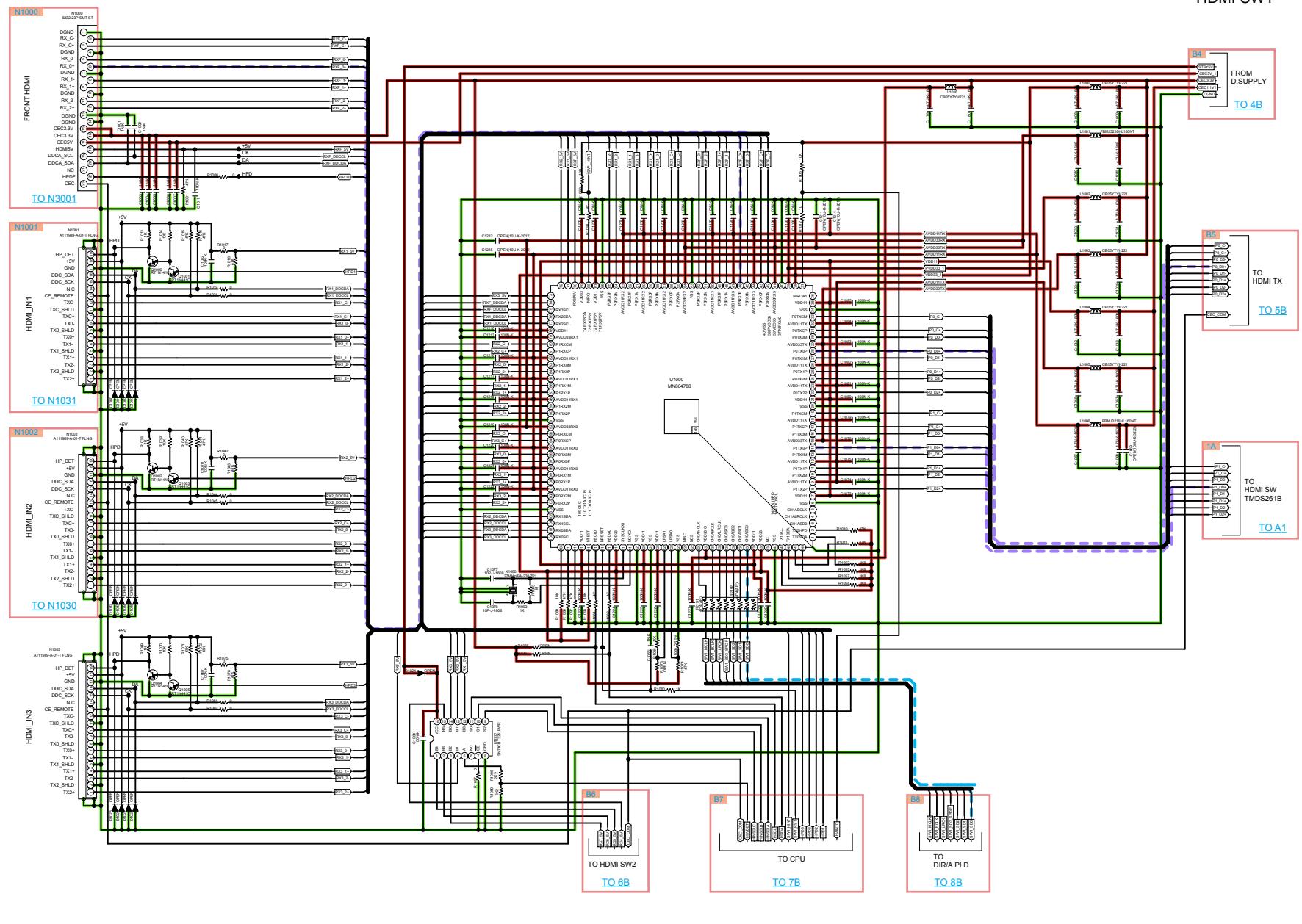
Caution in servicing

Electrical

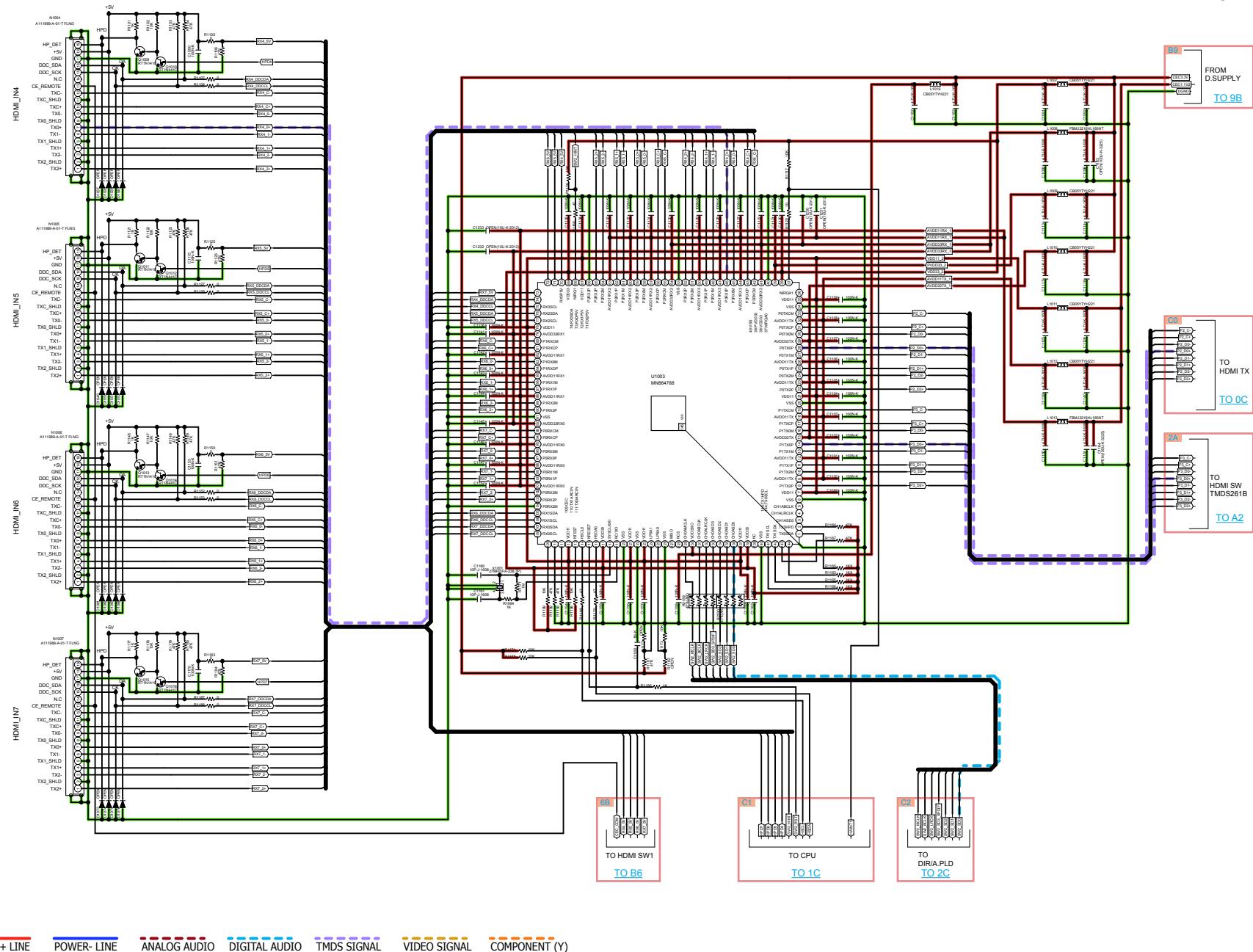
Mechanical

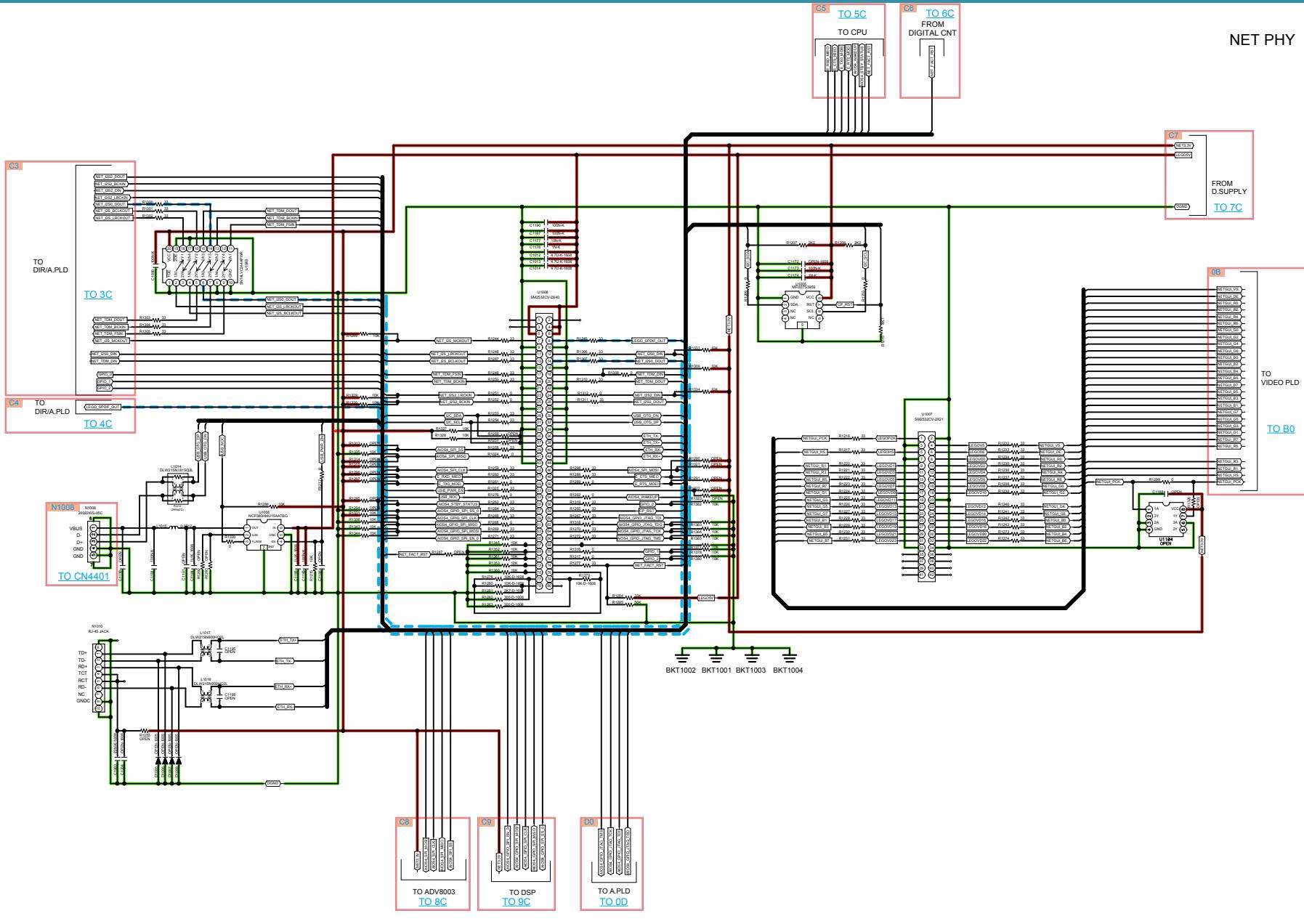
Repair Information

Updating

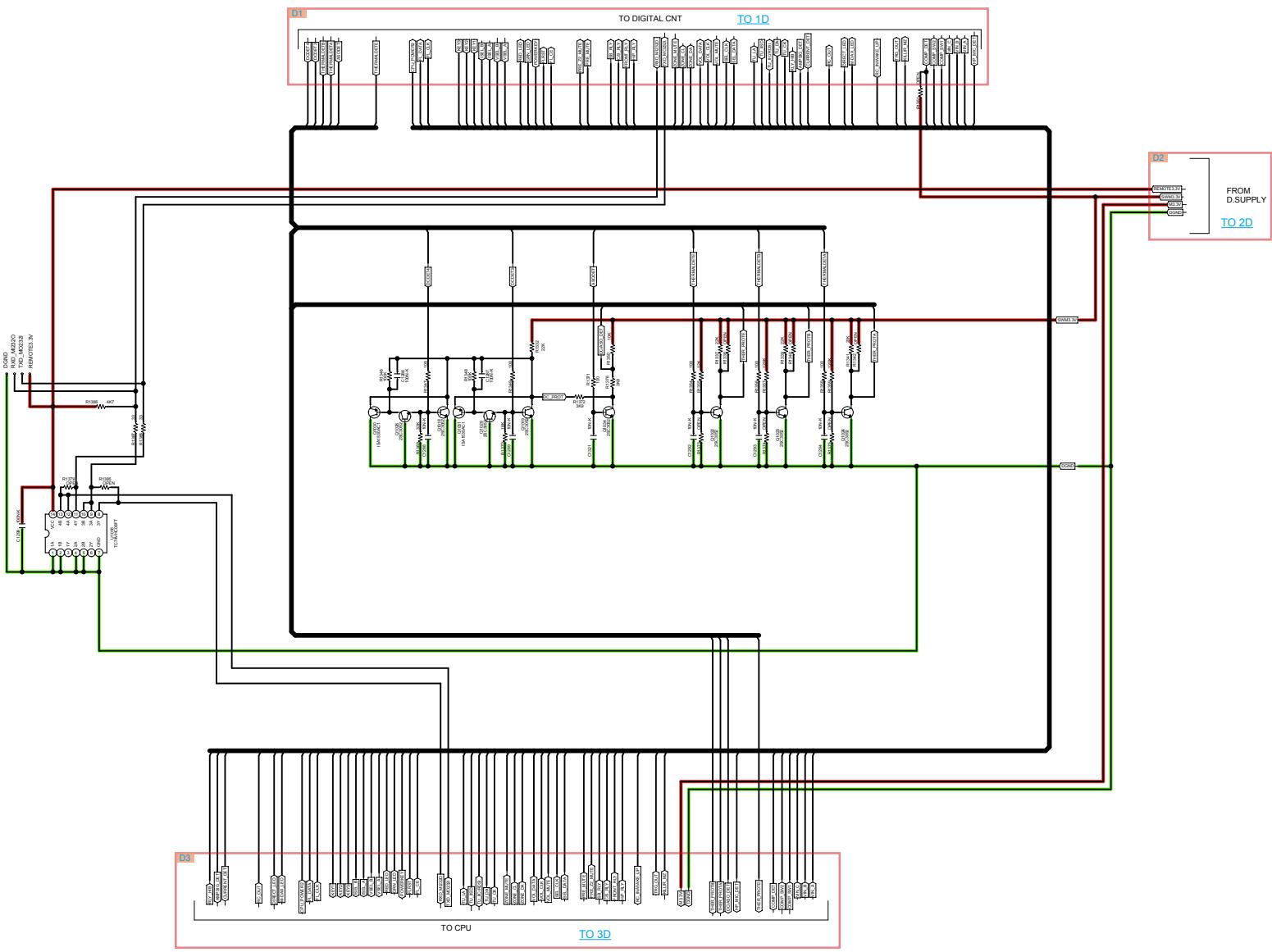


HDMI SW2

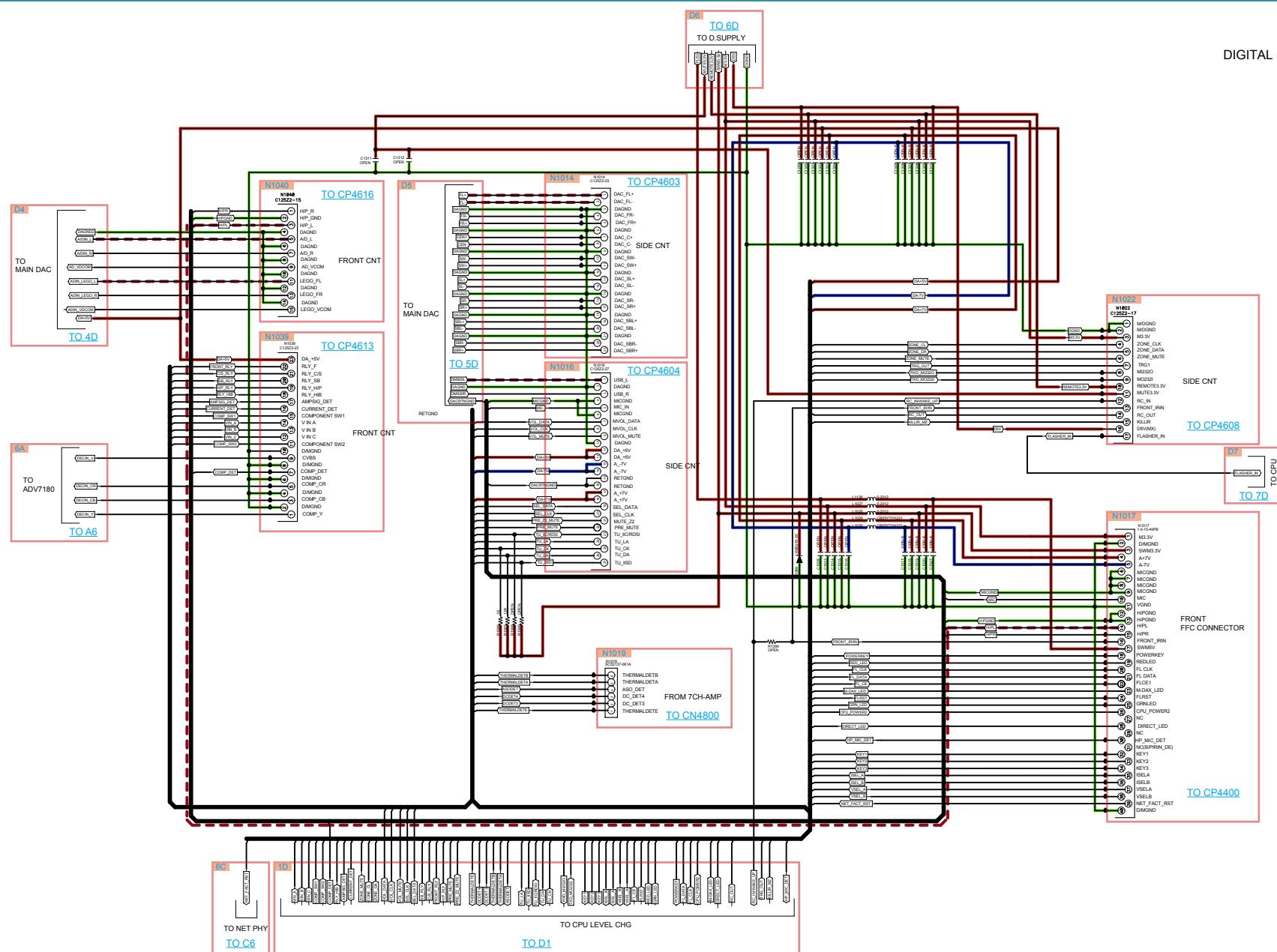




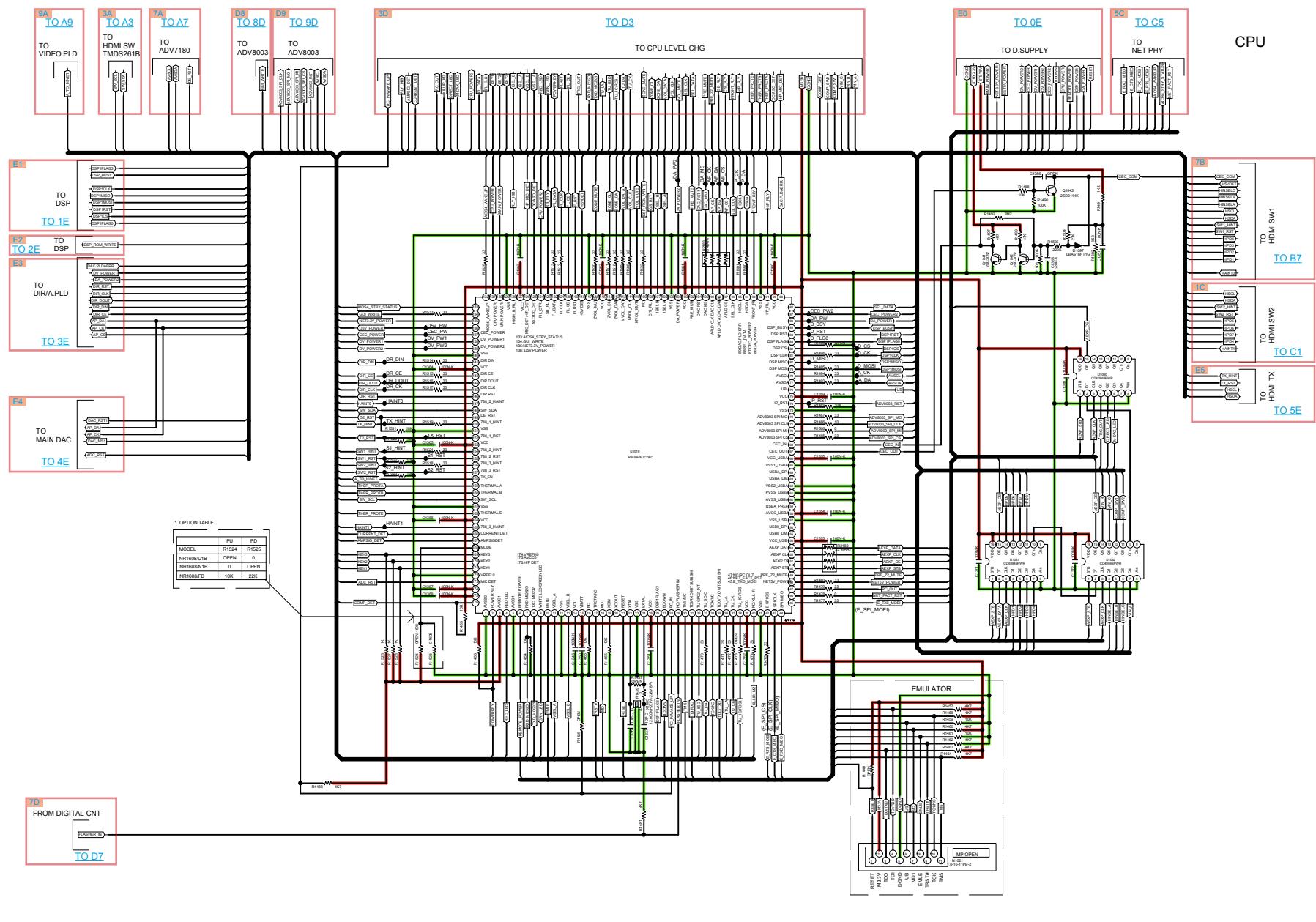
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)



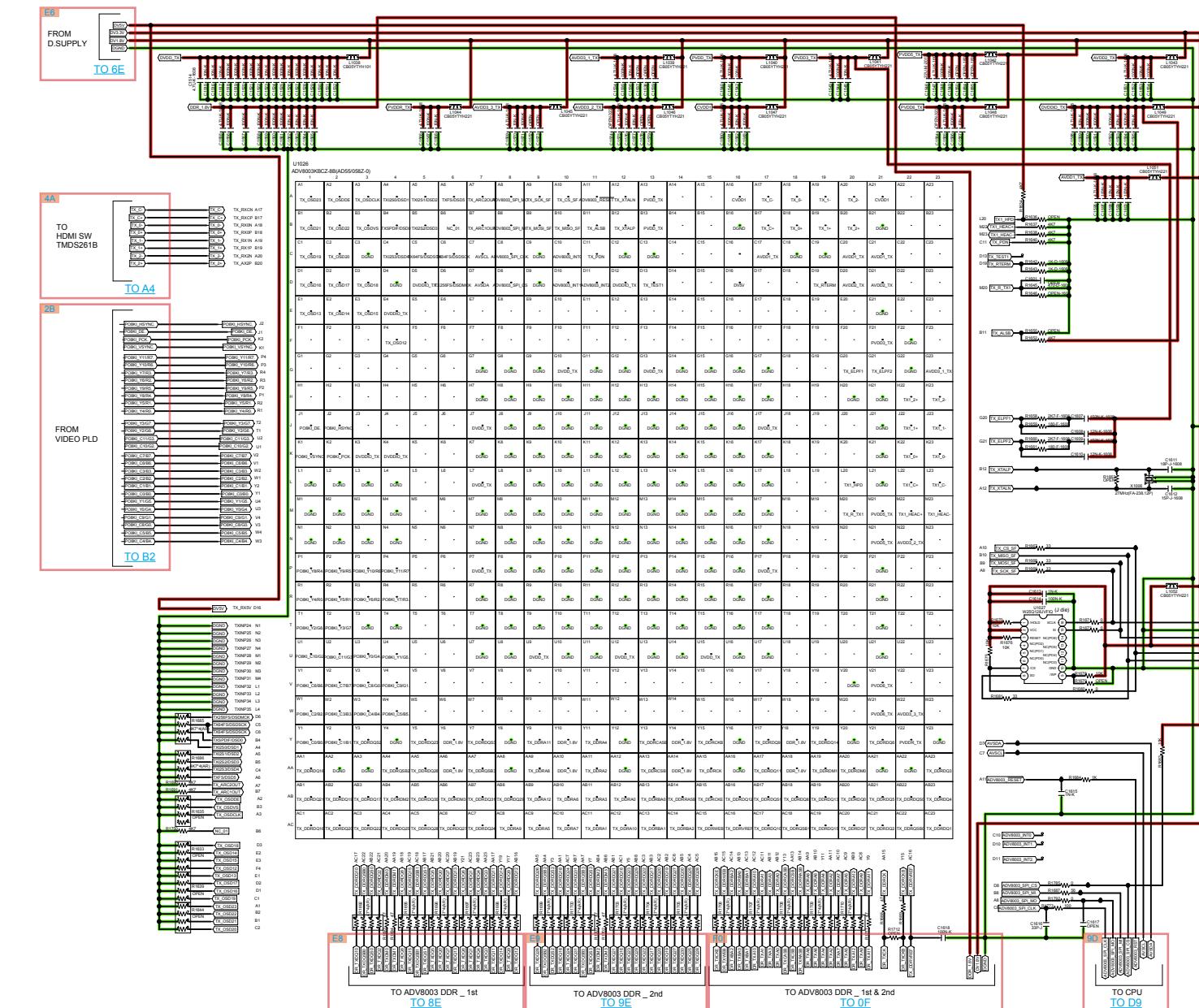
GND LINE **POWER+ LINE** **POWER- LINE** **ANALOG AUDIO** **DIGITAL AUDIO** **TMDS SIGNAL** **VIDEO SIGNAL** **COMPONENT (Y)**



GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)



GND LINE **POWER+ LINE** **POWER- LINE** **ANALOG AUDIO** **DIGITAL AUDIO** **TMDS SIGNAL** **VIDEO SIGNAL** **COMPONENT (Y)**



ADV8003

TO HDMI TX
TO 7E

Caution in servicing

Electrical

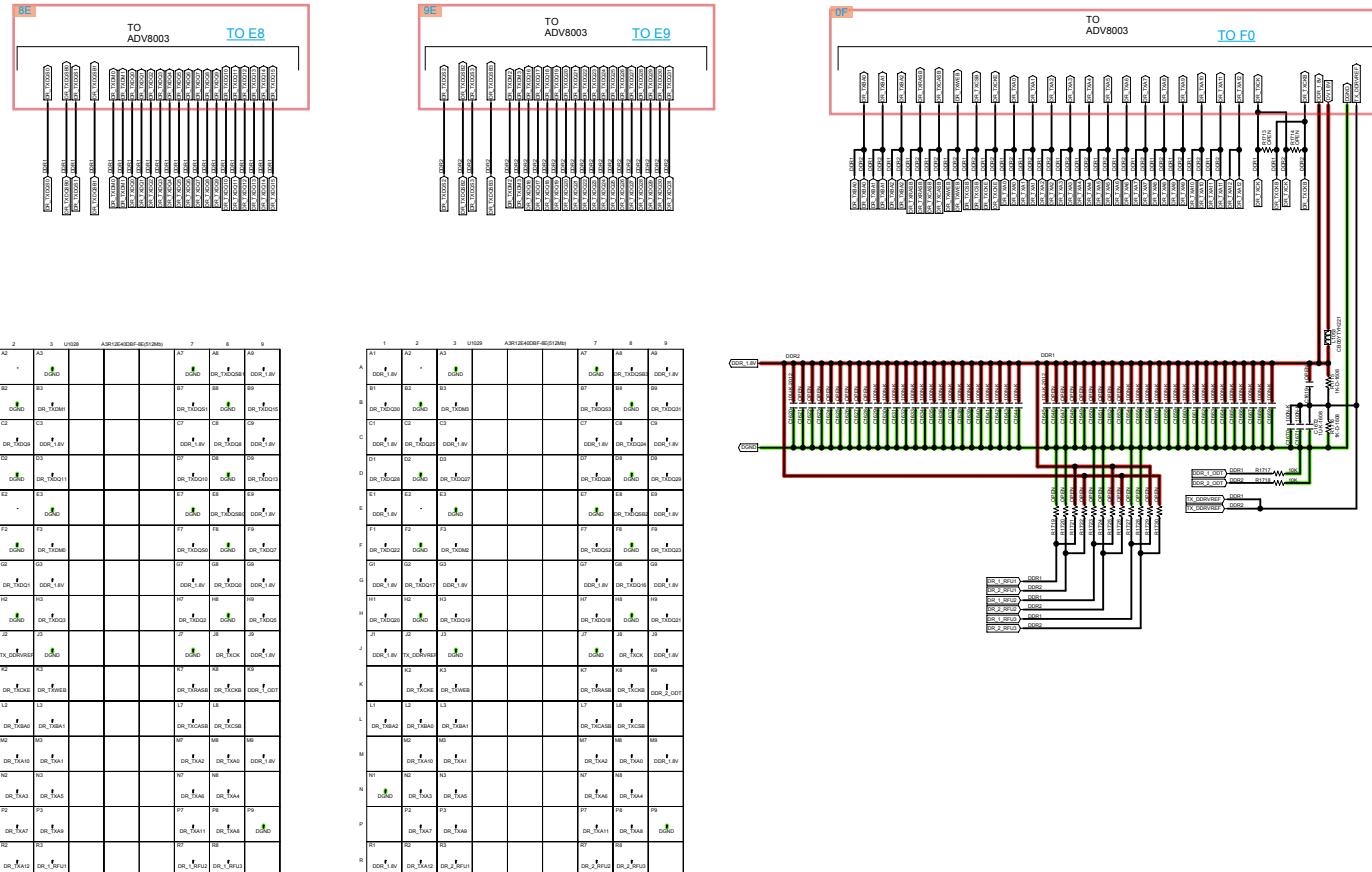
Mechanical

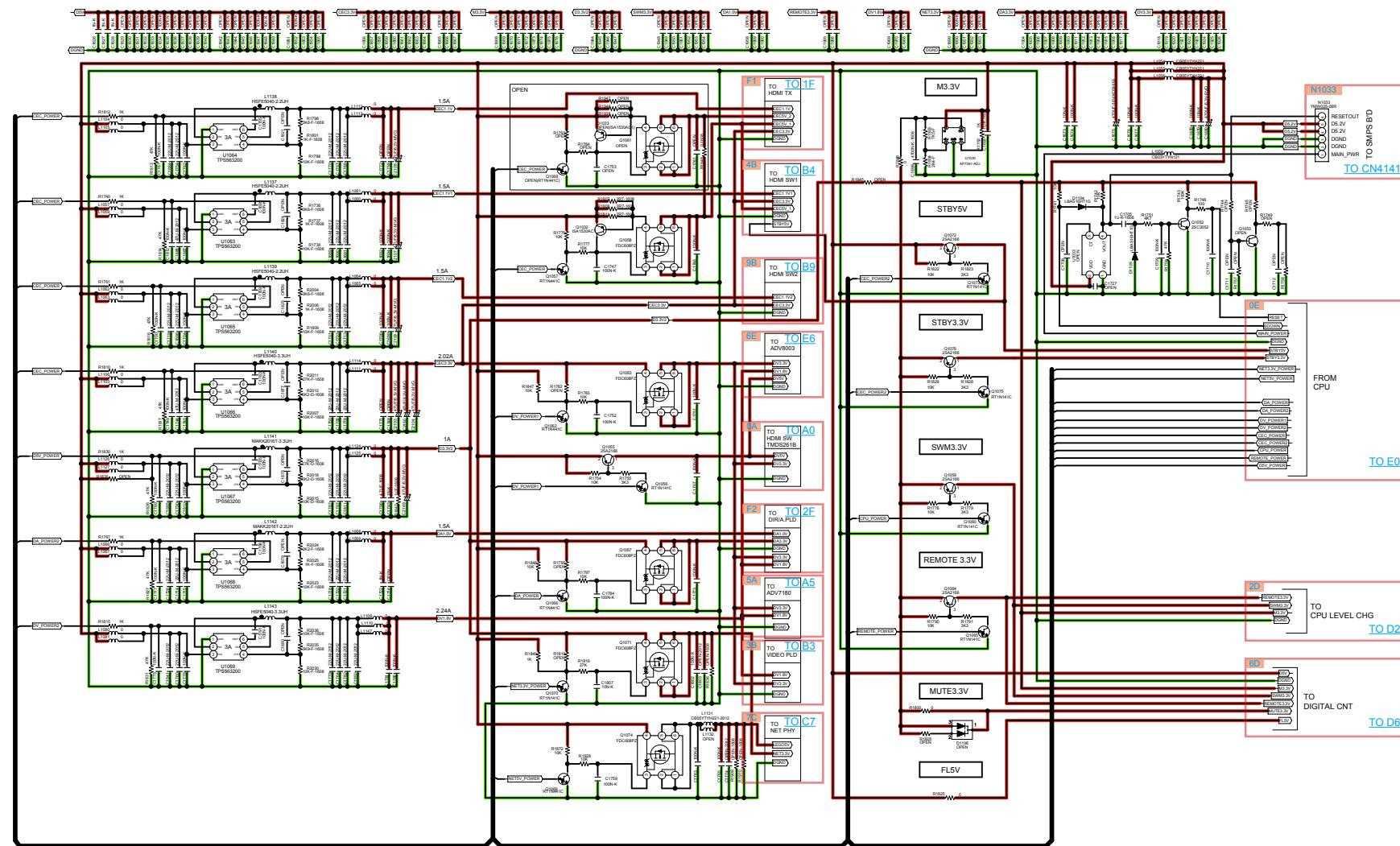
Repair Information

Updating

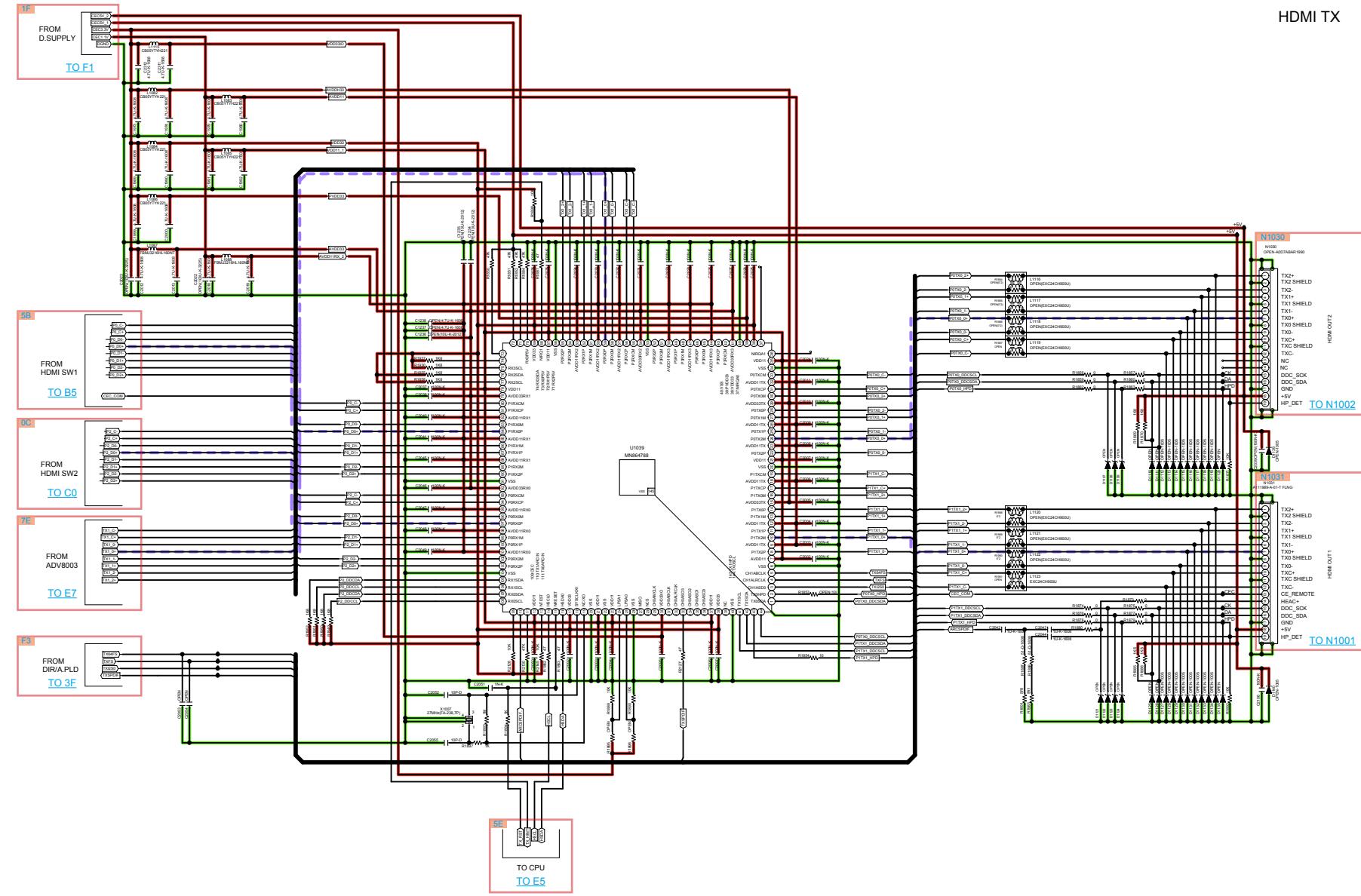
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

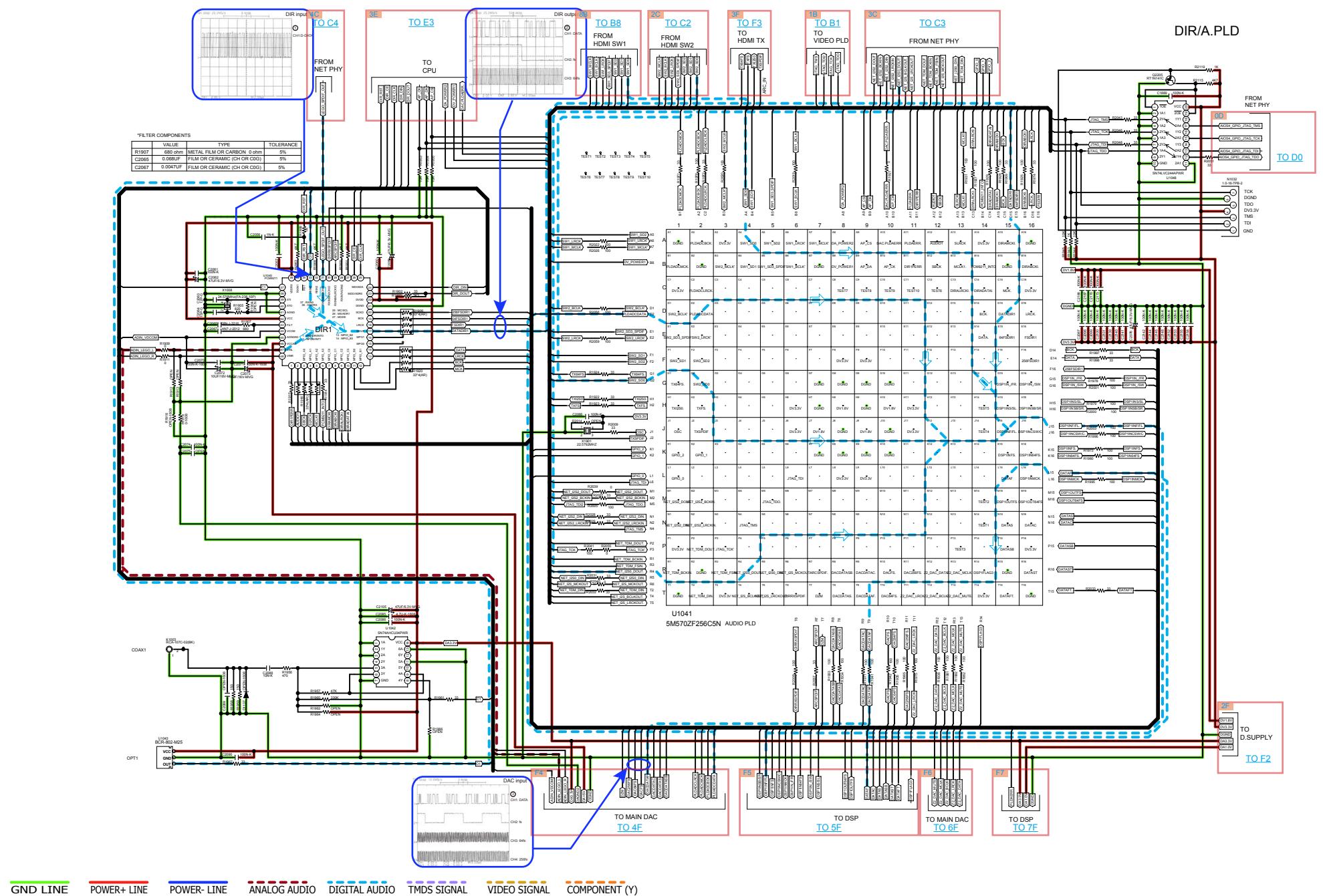


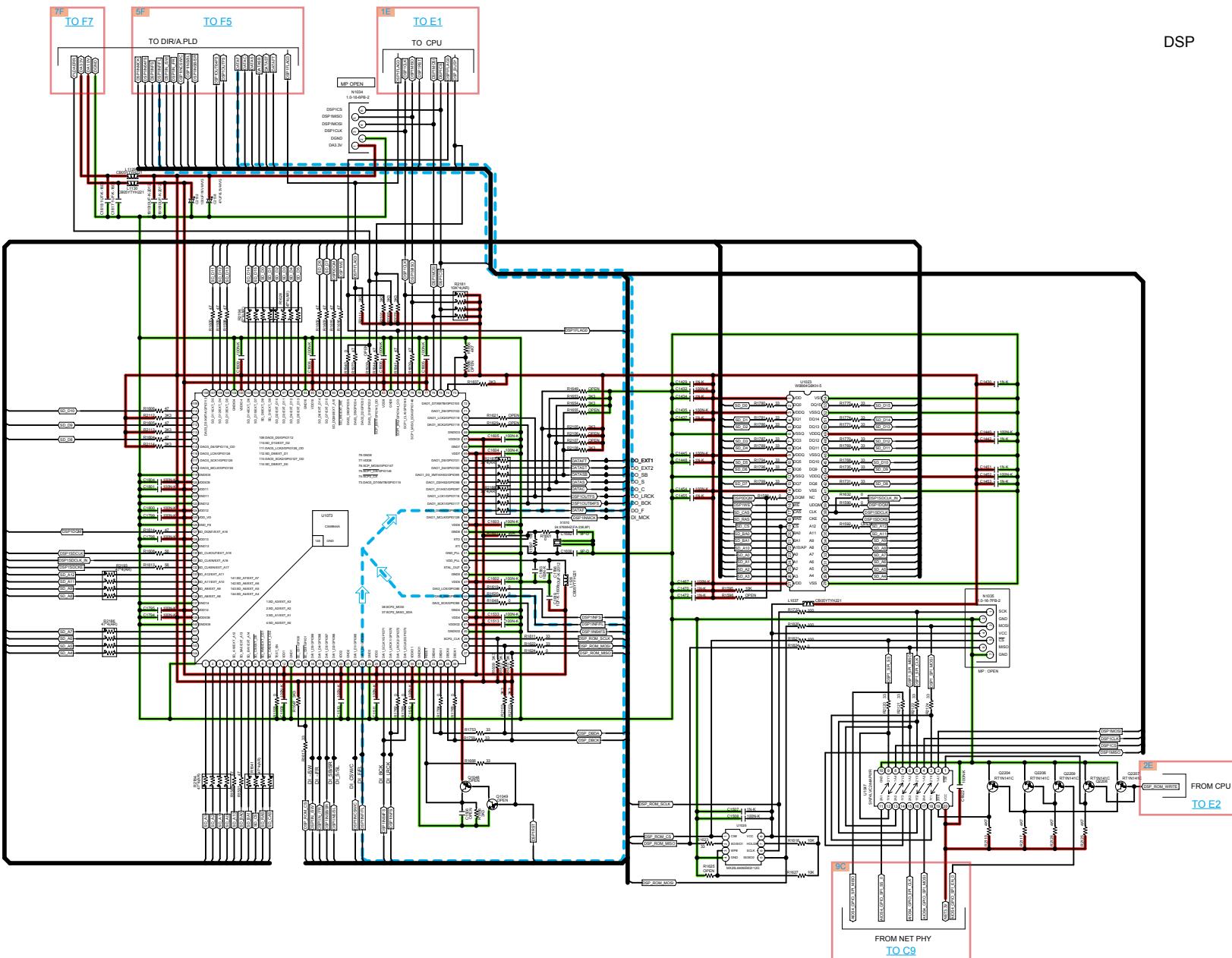


GND LINE **POWER+ LINE** **POWER- LINE** **ANALOG AUDIO** **DIGITAL AUDIO** **TMDS SIGNAL** **VIDEO SIGNAL** **COMPONENT (Y)**

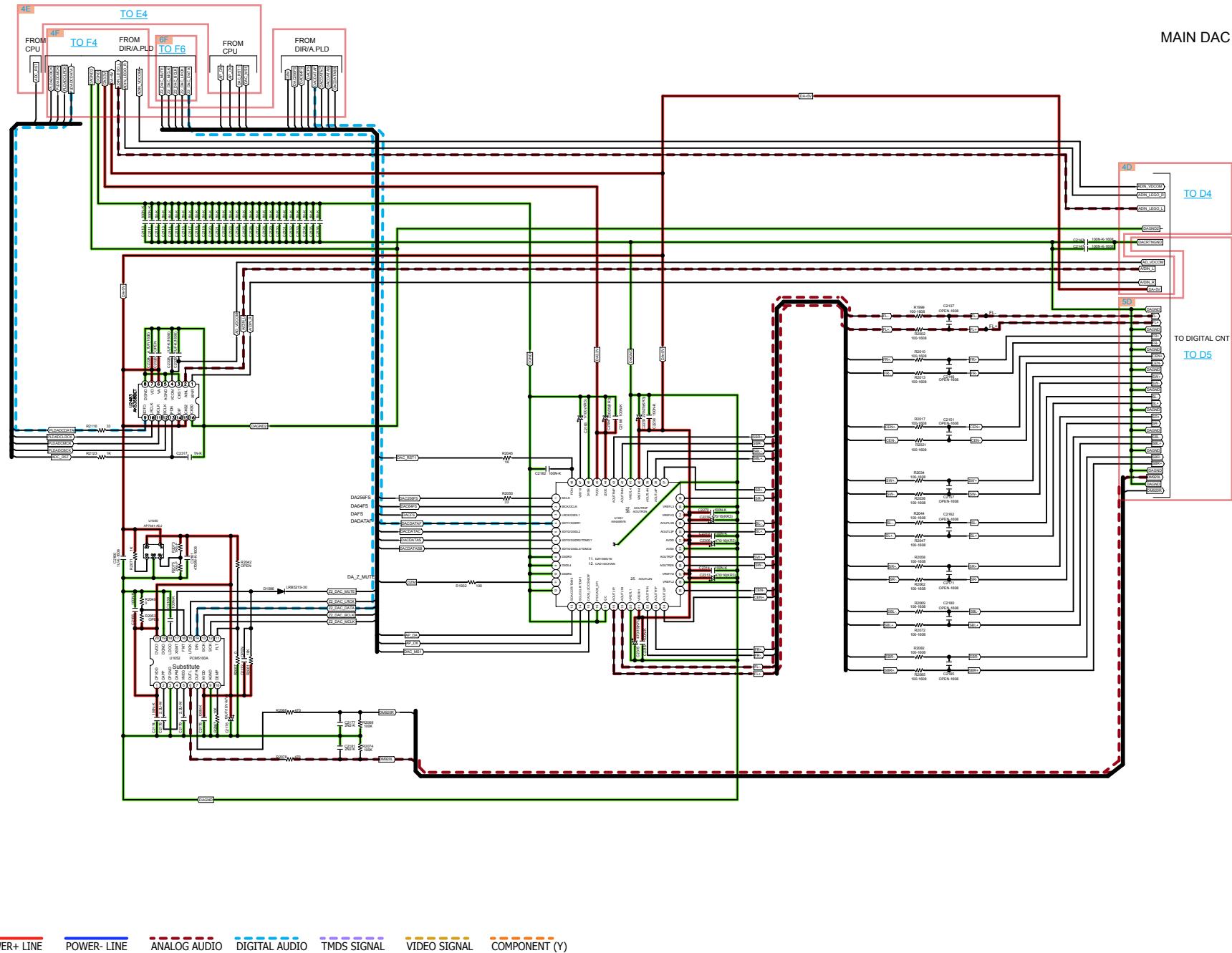


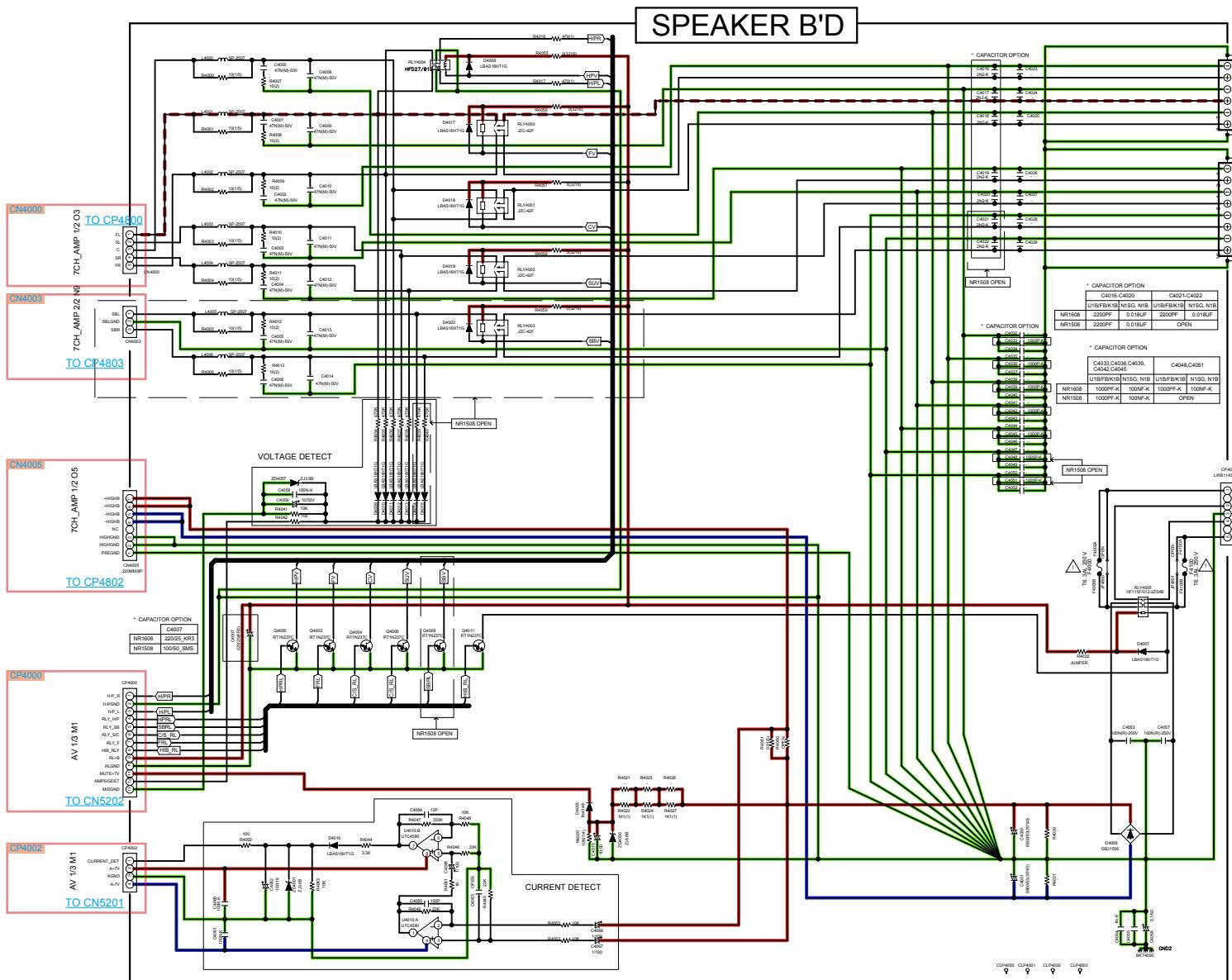
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)





GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)





SPK_SCNT 1/2
MP

Caution in servicing

Electrical

Mechanical

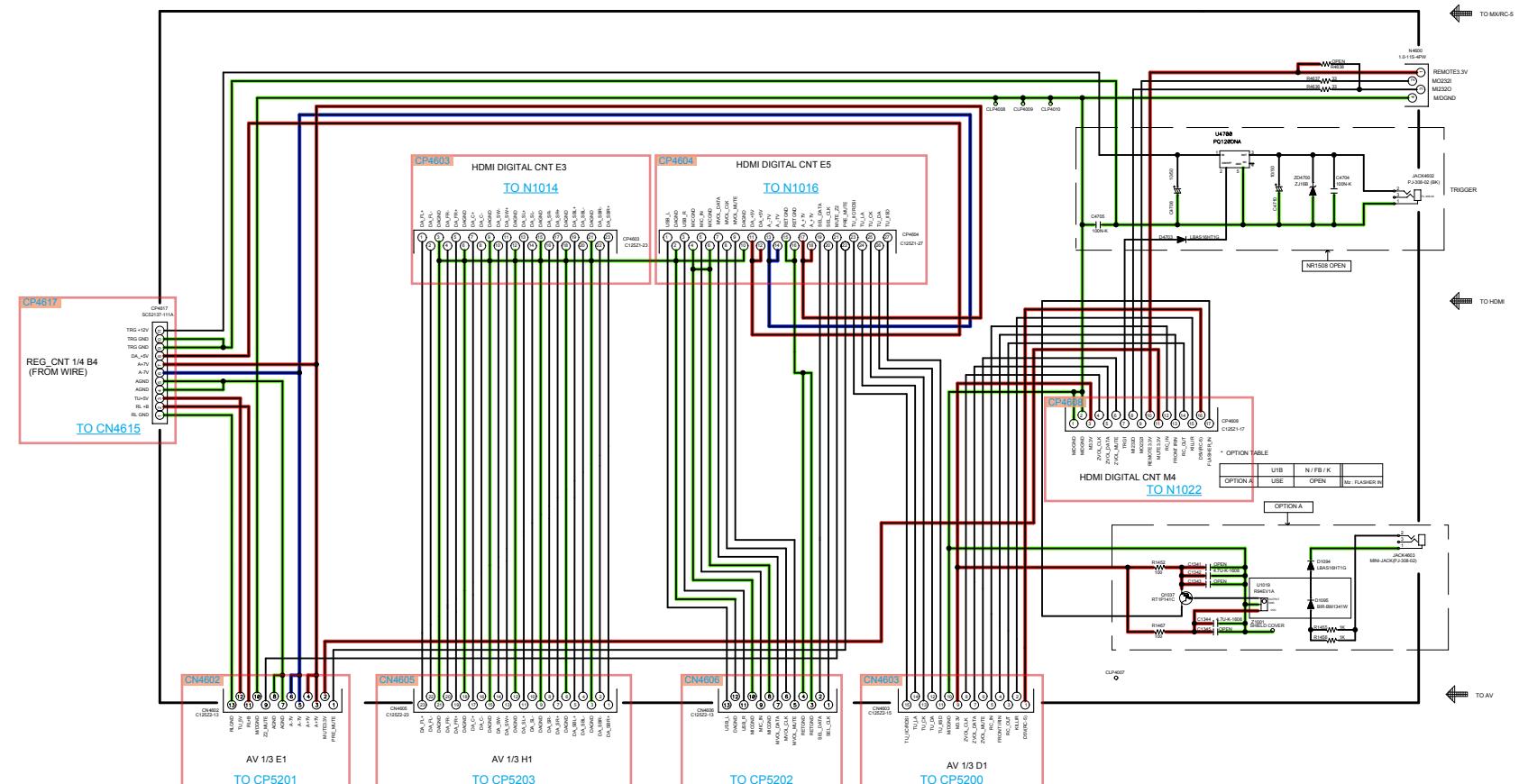
Repair Information

Updating

GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

SIDE CONNECTOR

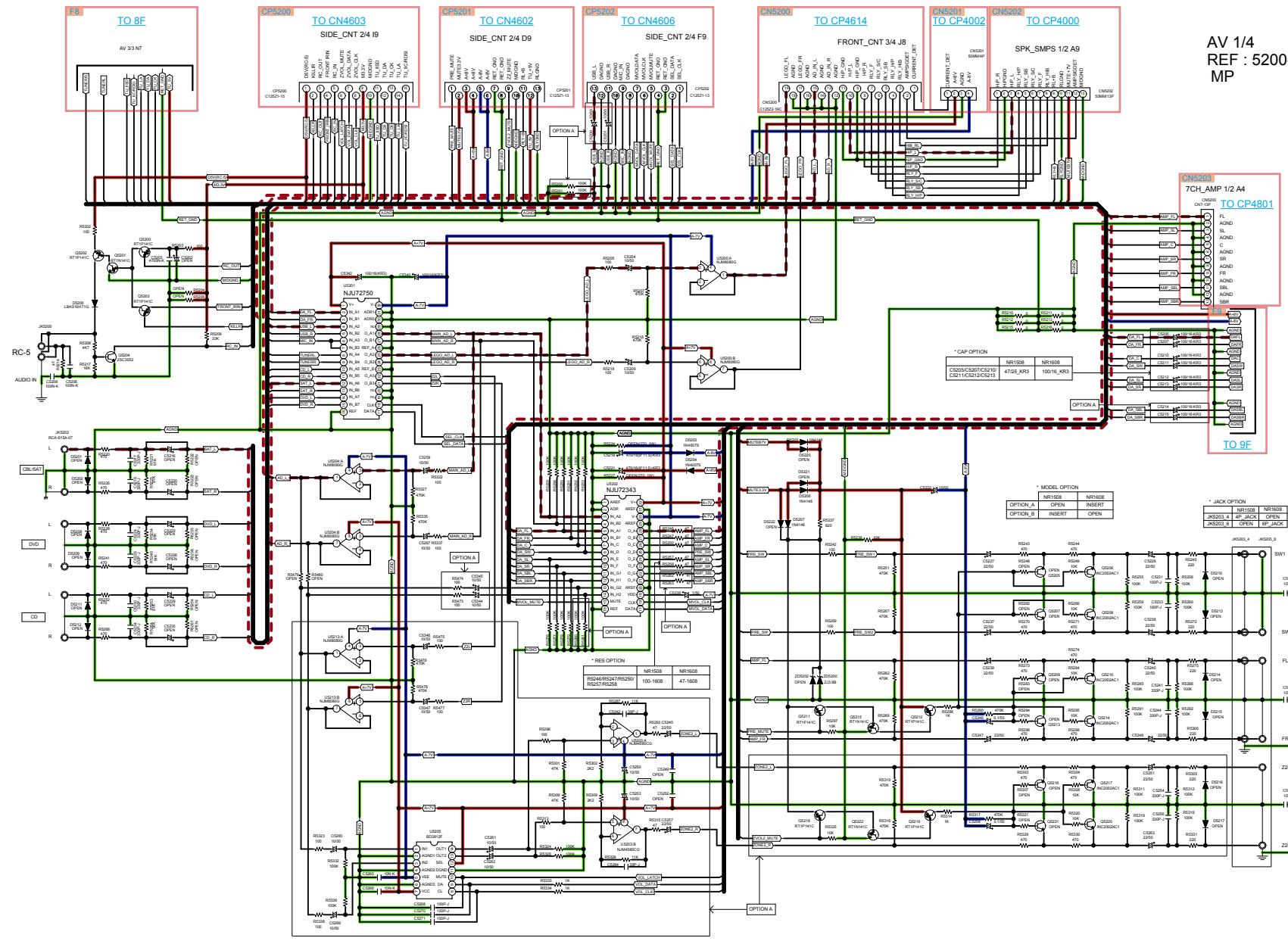
SPK_SCNT 2/2
MP



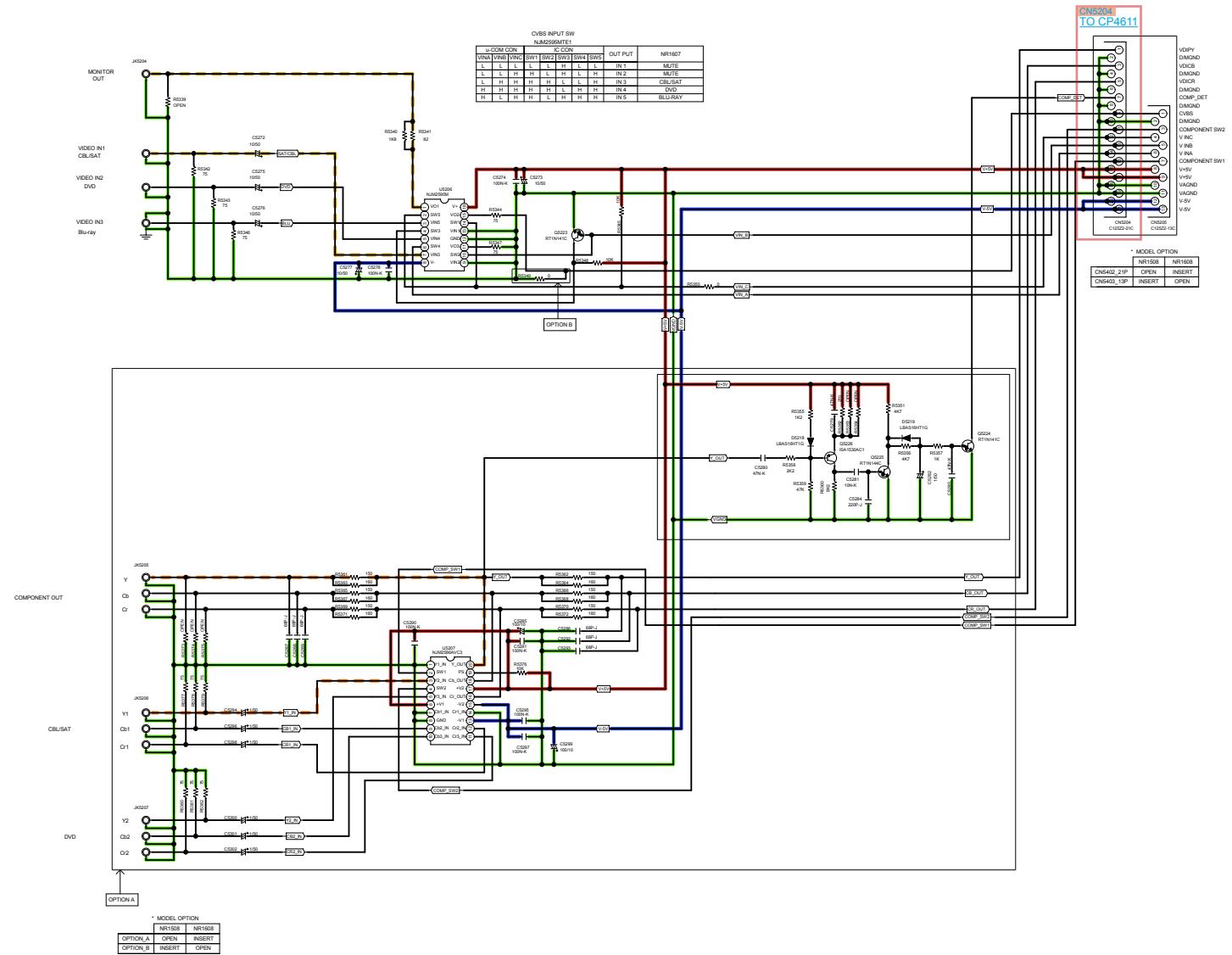
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

SCH19_INPUT

AV 1/4
REF : 5200-5399
MP

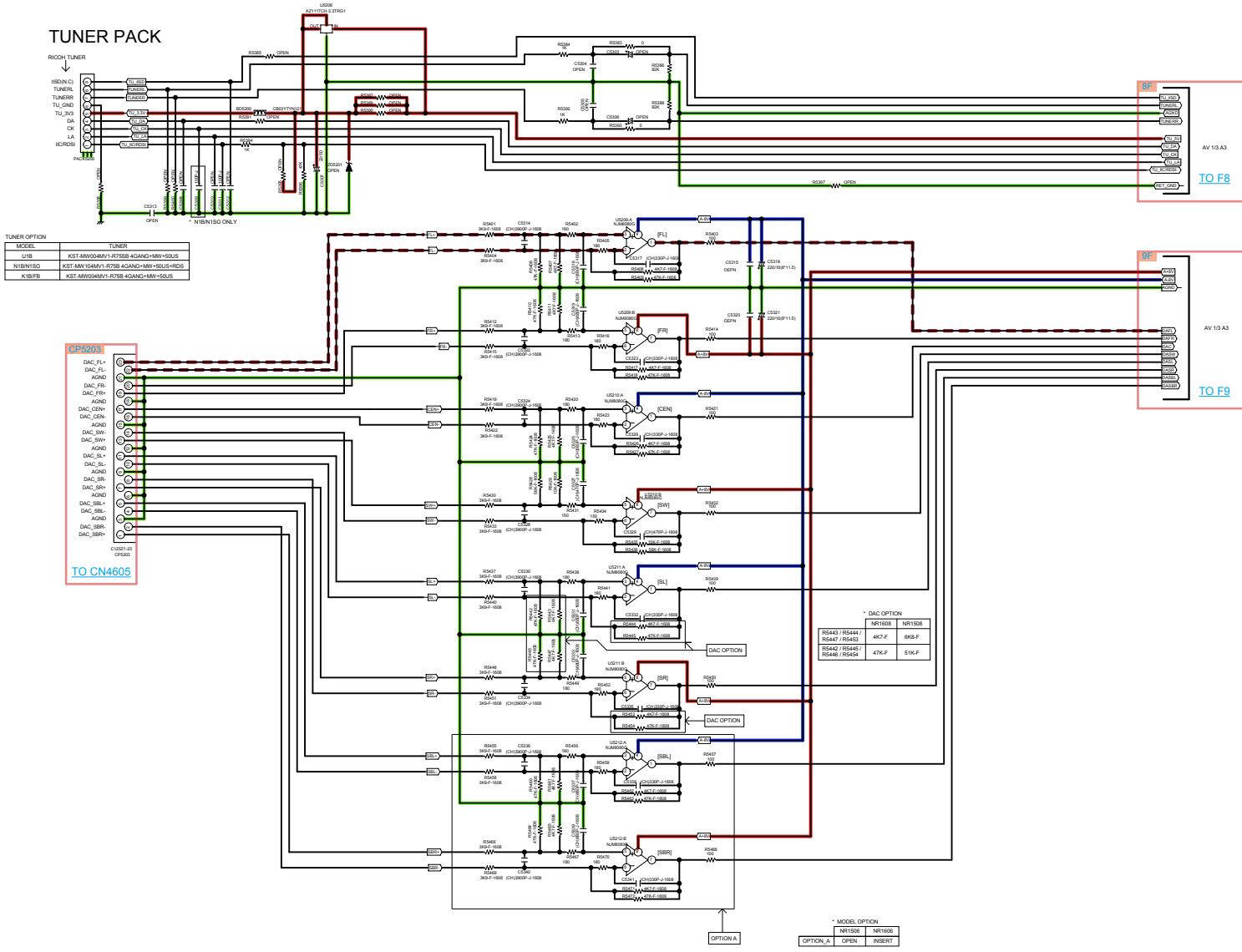


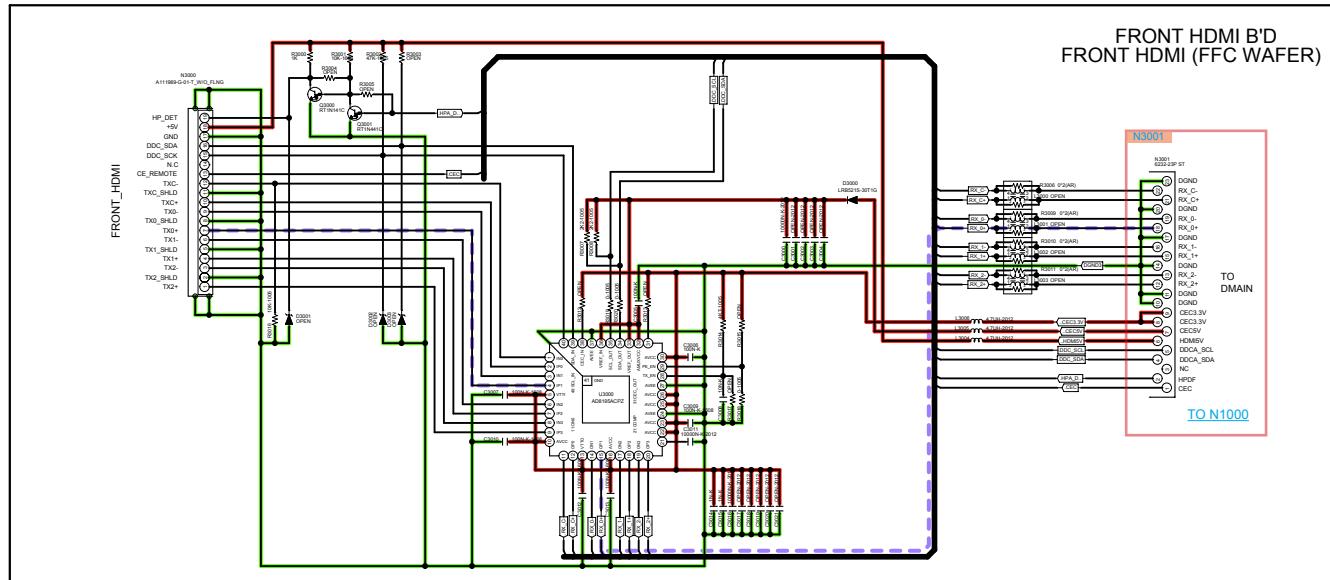
GND LINE **POWER+ LINE** **POWER- LINE** **ANALOG AUDIO** **DIGITAL AUDIO** **TMDS SIGNAL** **VIDEO SIGNAL** **COMPONENT (Y)**



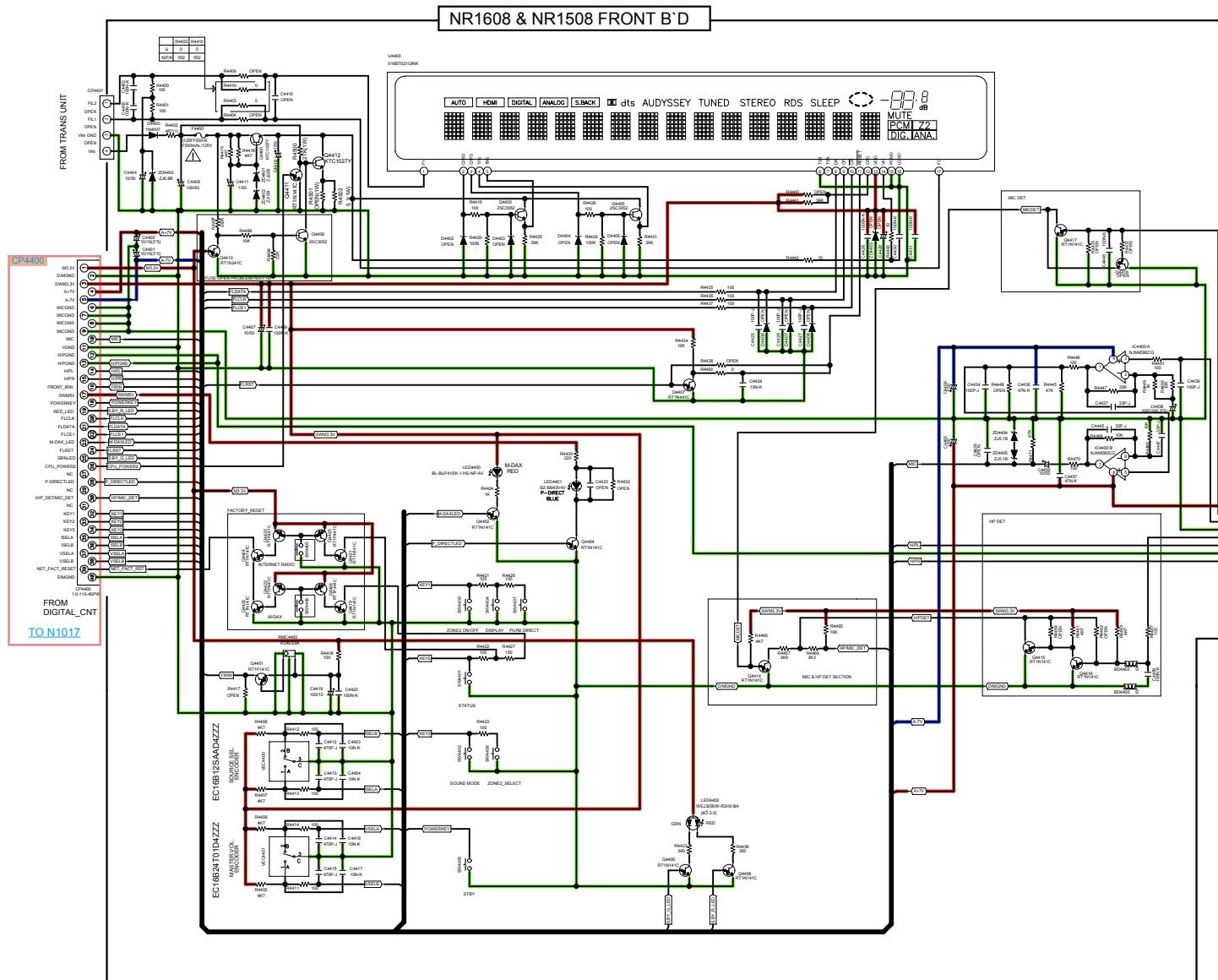
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

AV 3/4
REF : 5500-5599
MP



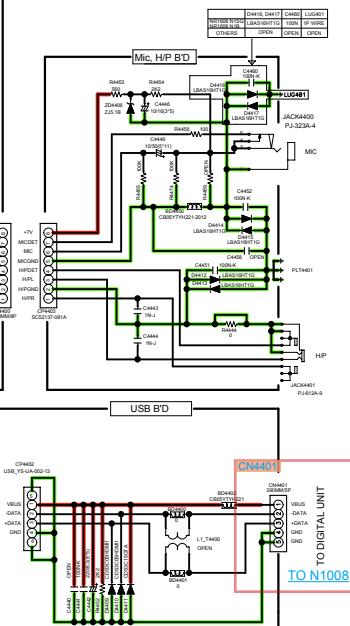


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

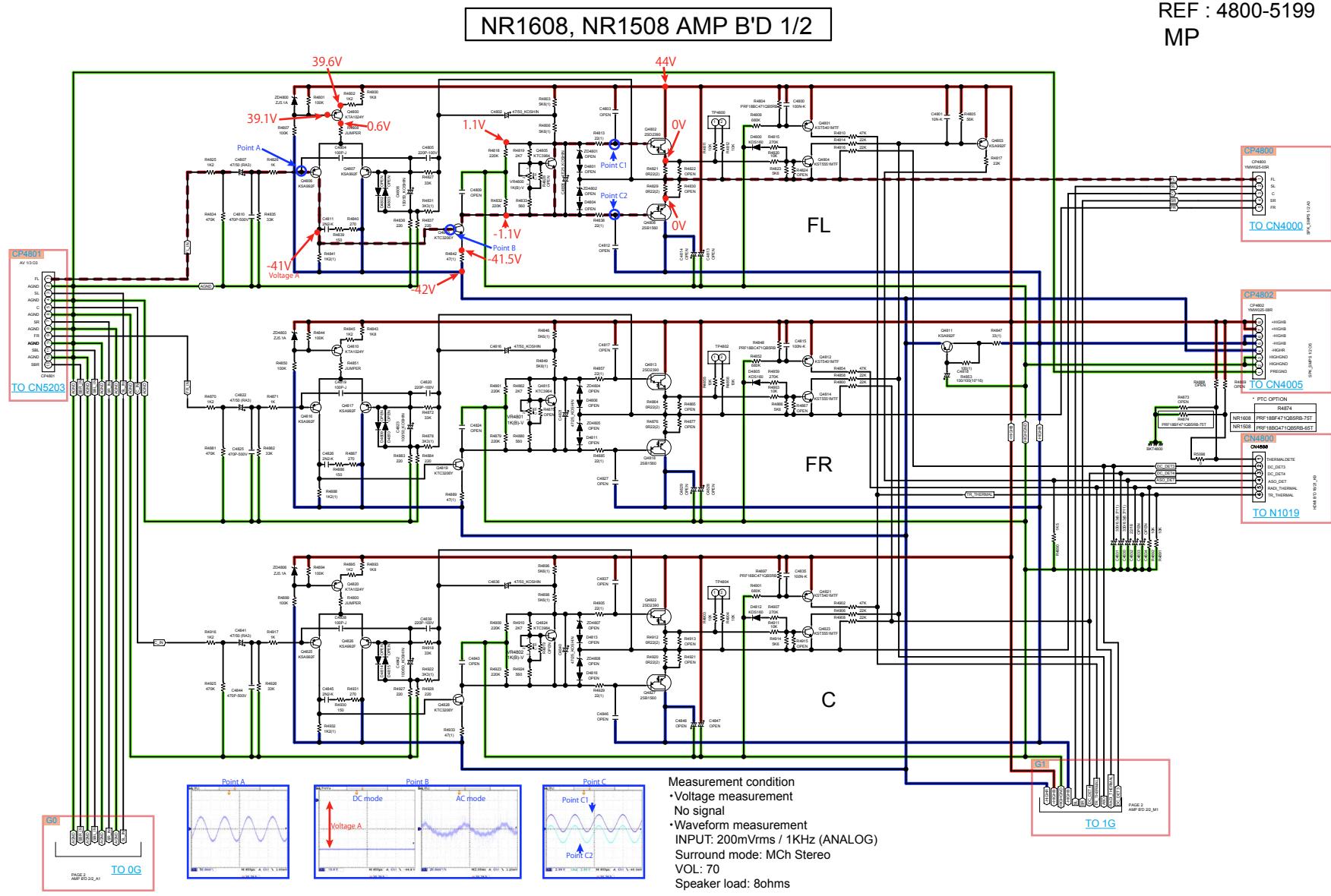


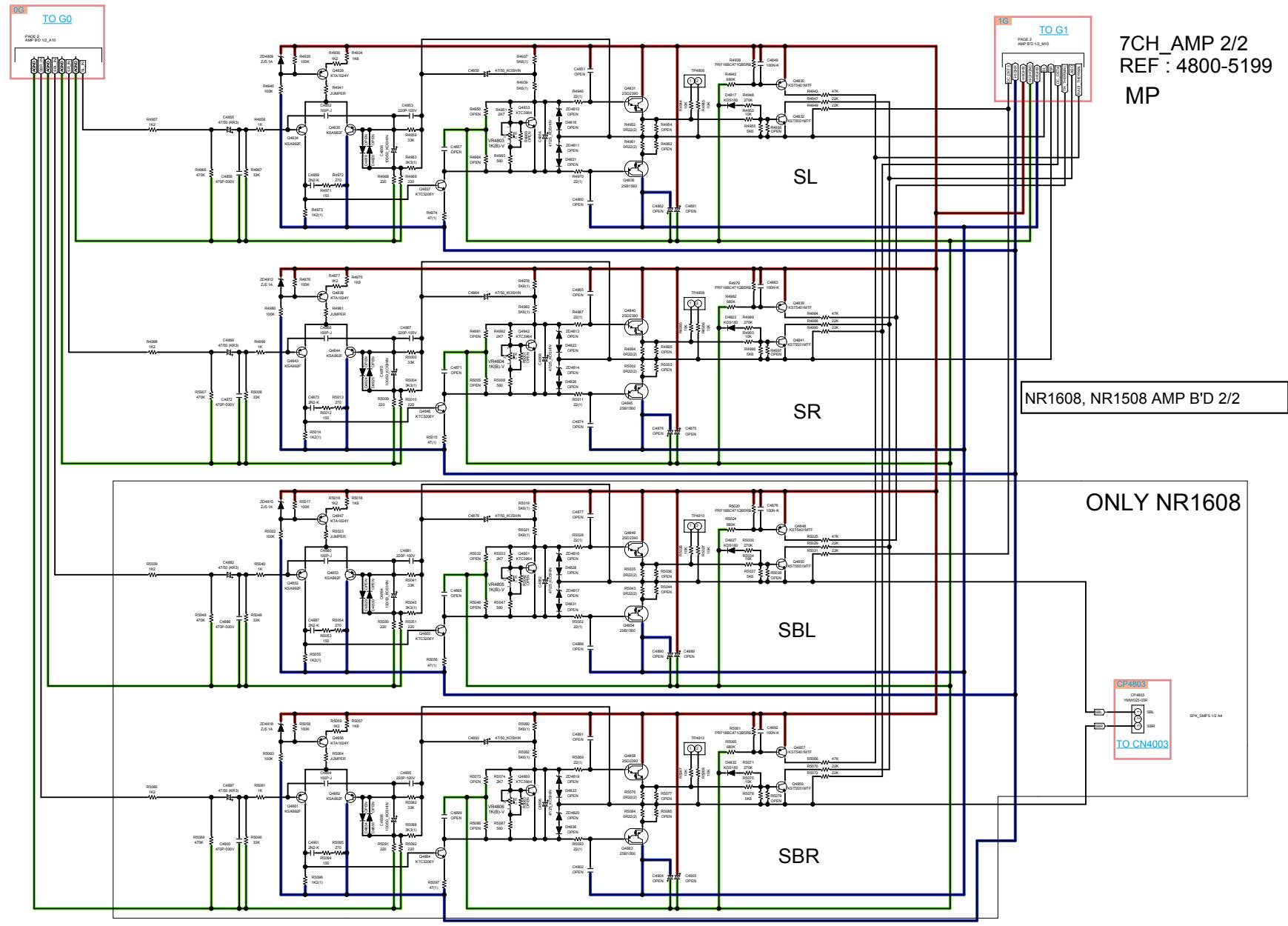
FRONT 1/1
REF: 4400-4599
MP

**△ INDICATES SAFETY CRITICAL COMPONENTS.
TO REDUCE THE RISK OF ELECTRIC SHOCK, LEAKAGE
CURRENT OR RESISTANCE MEASUREMENTS SHALL BE
CARRIED OUT (EXPOSED PARTS ARE ACCEPTABLY
INSULATED FROM THE SUPPLY CIRCUIT) BEFORE
THE APPLIANCE RETURNED TO THE CUSTOMER.**

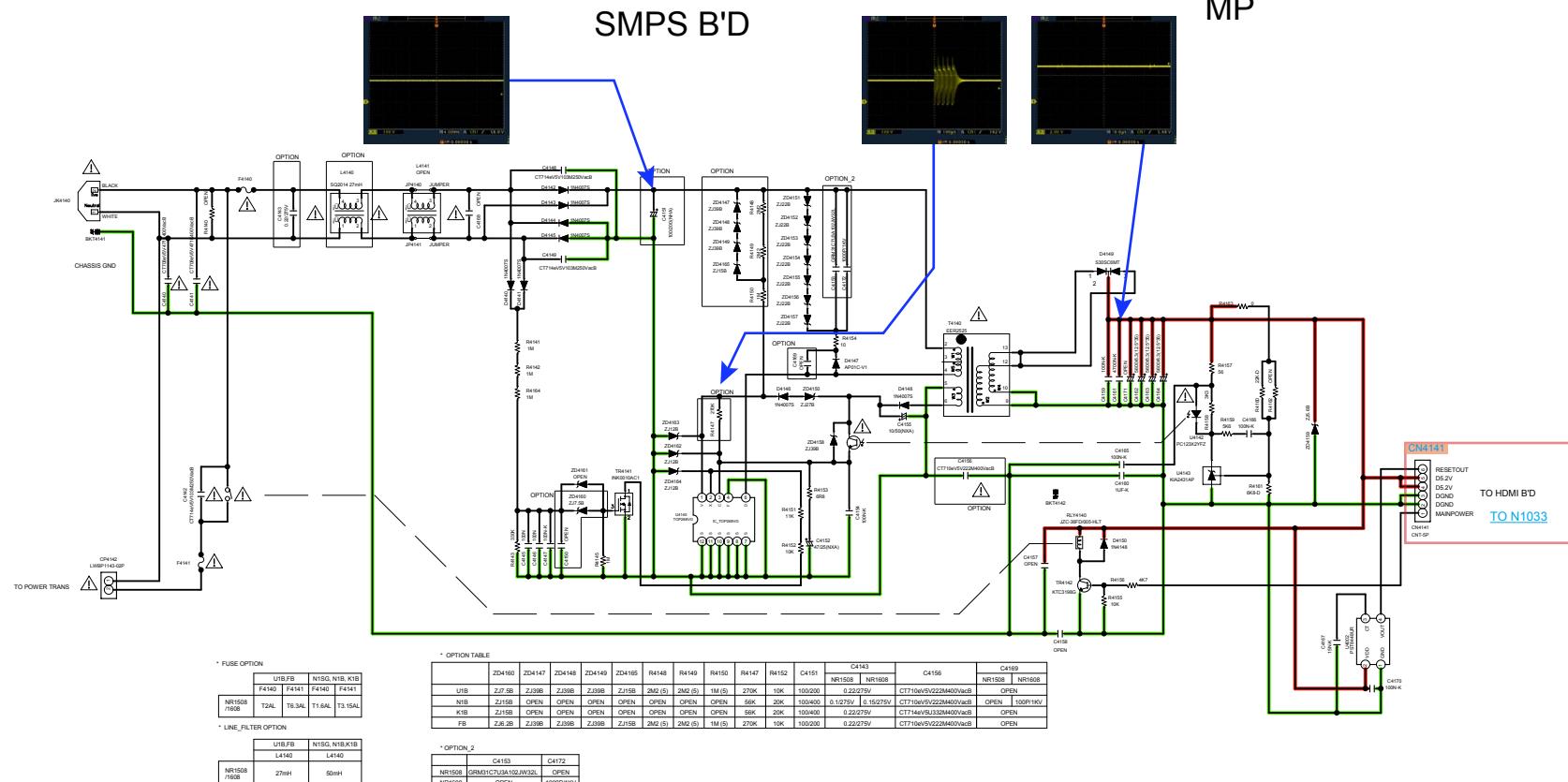


7CH_AMP 1/2
REF : 4800-5199
MP



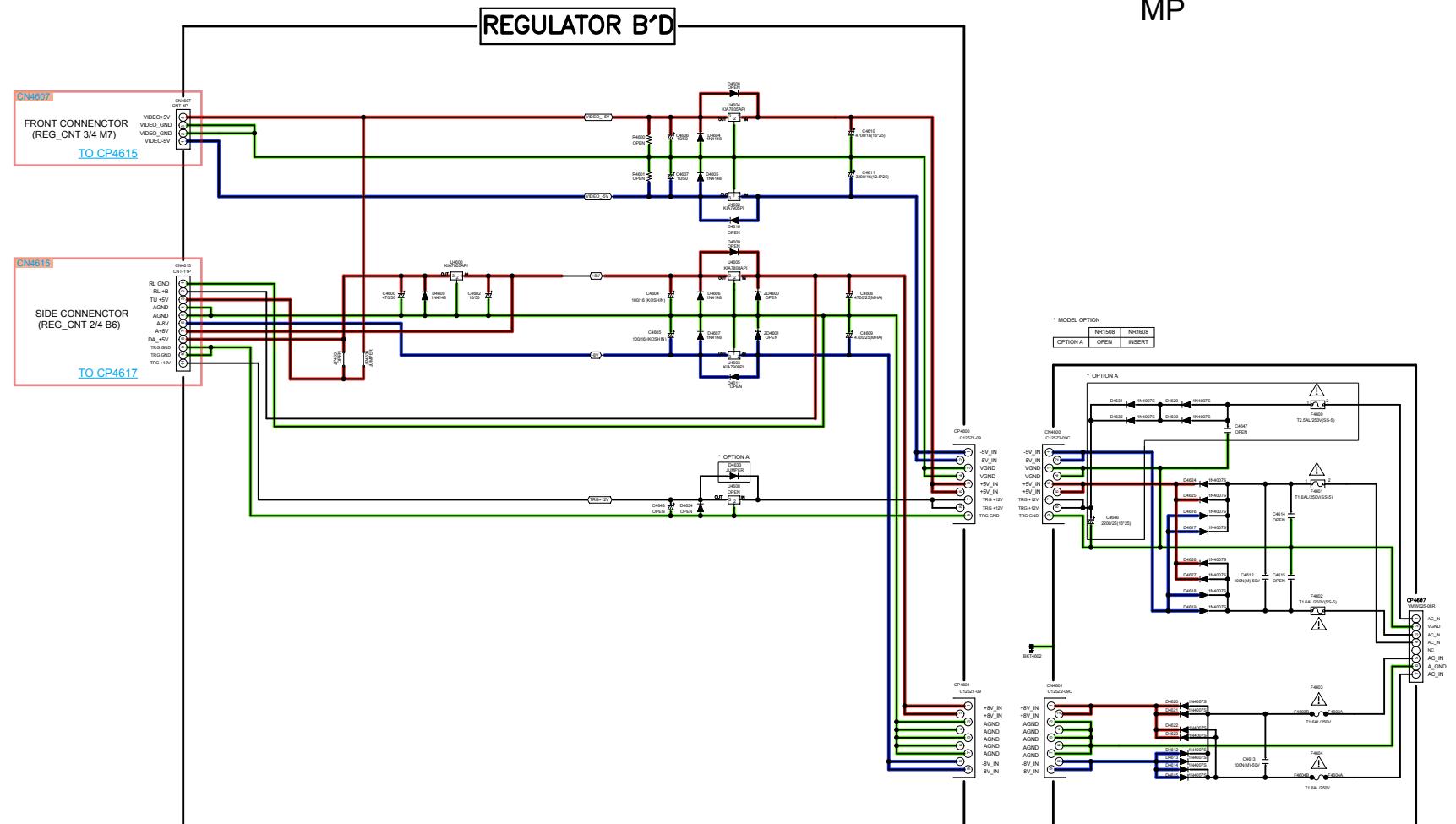


7CH_AMP 2/2
REF : 4800-5199
MP



⚠ INDICATES SAFETY CRITICAL COMPONENTS.
TO REDUCE THE RISK OF ELECTRIC SHOCK, LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHALL BE CARRIED OUT (EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT) BEFORE THE APPLIANCE RETURNED TO THE CUSTOMER.

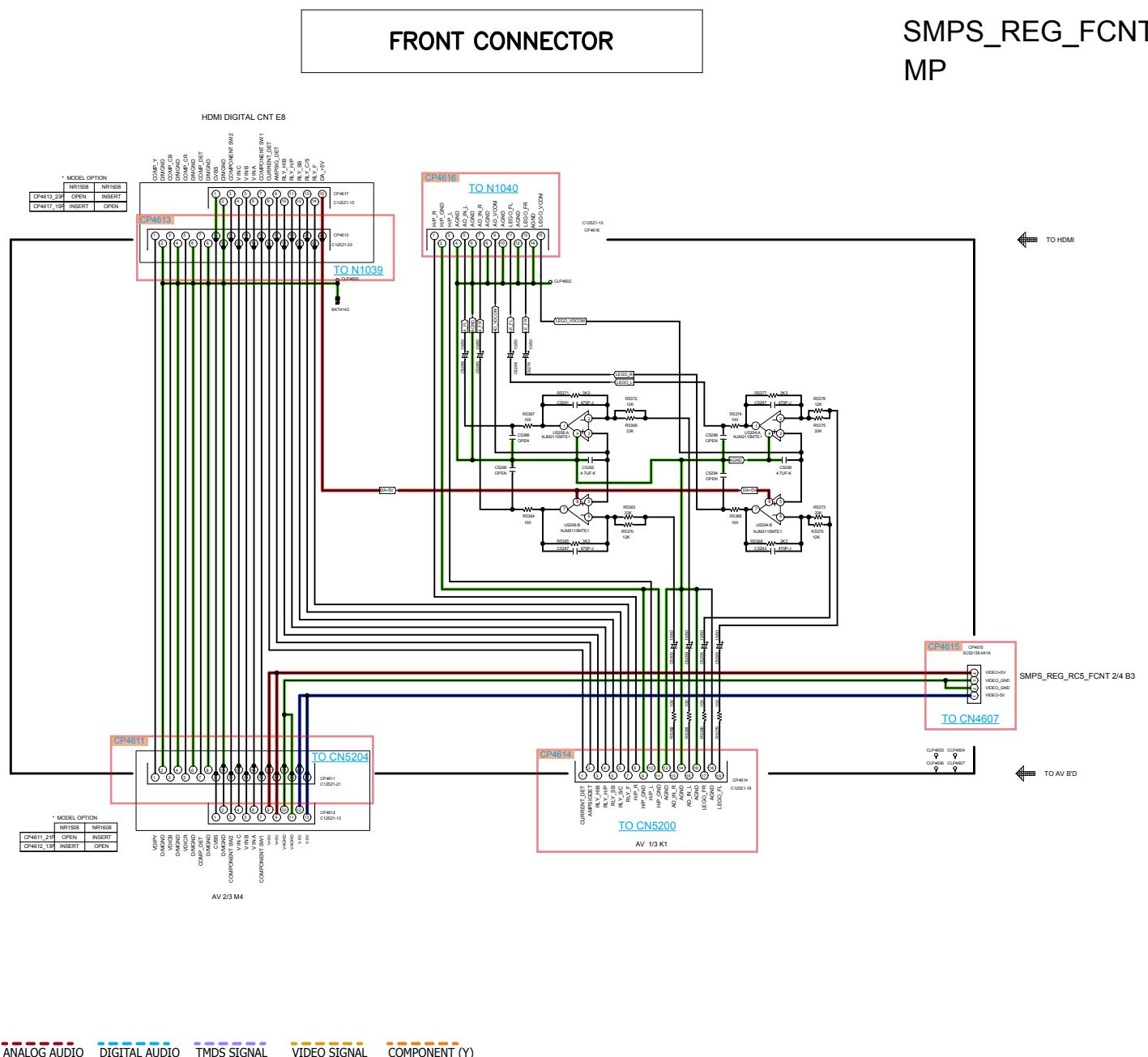
SMPS_REG_FCNT 2/3 MP



⚠ INDICATES SAFETY CRITICAL COMPONENTS.
TO REDUCE THE RISK OF ELECTRIC SHOCK, LEAKAGE CURRENT OR RESISTANCE MEASUREMENTS SHALL BE CARRIED OUT (EXPOSED PARTS ARE ACCEPTABLY INSULATED FROM THE SUPPLY CIRCUIT) BEFORE THE APPLIANCE RETURNED TO THE CUSTOMER.

GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL VIDEO SIGNAL COMPONENT (Y)

SMPS_REG_FCNT 3/3

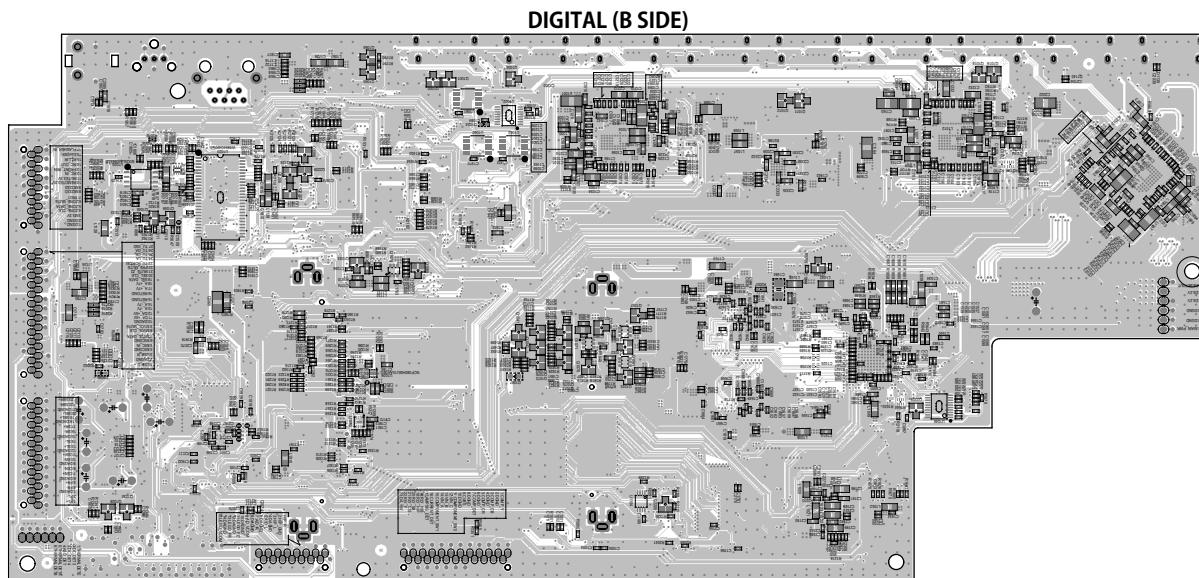
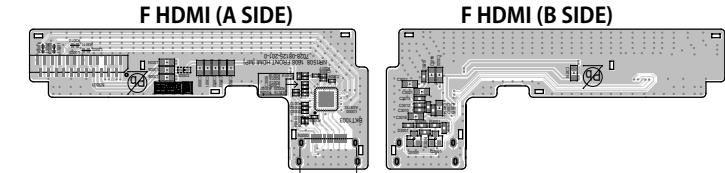
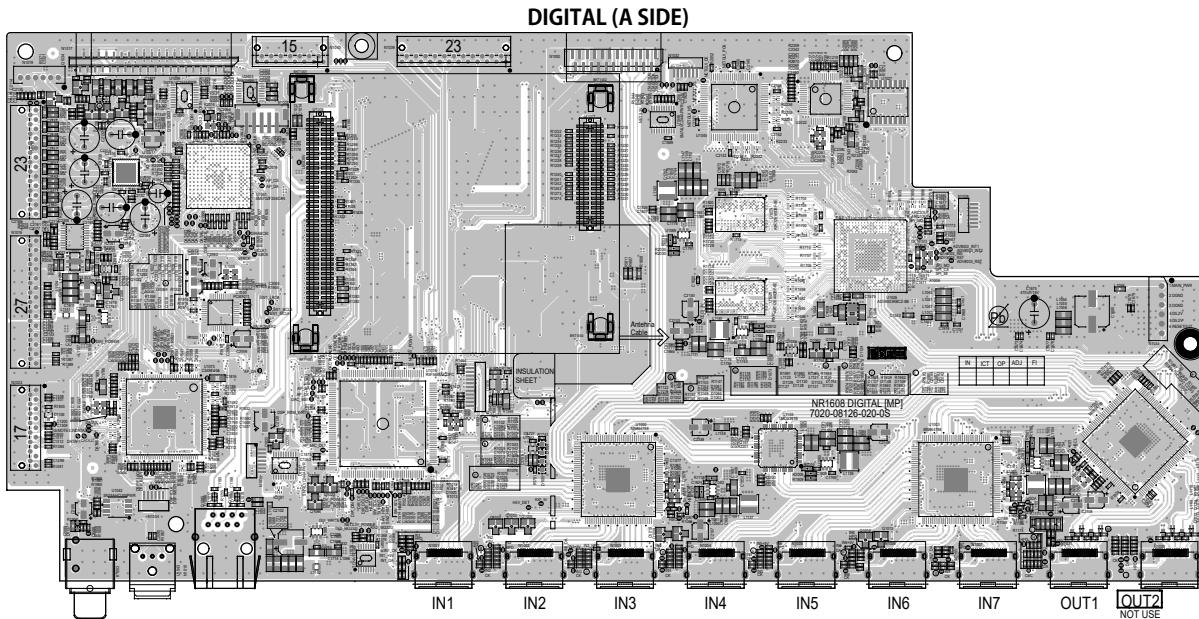


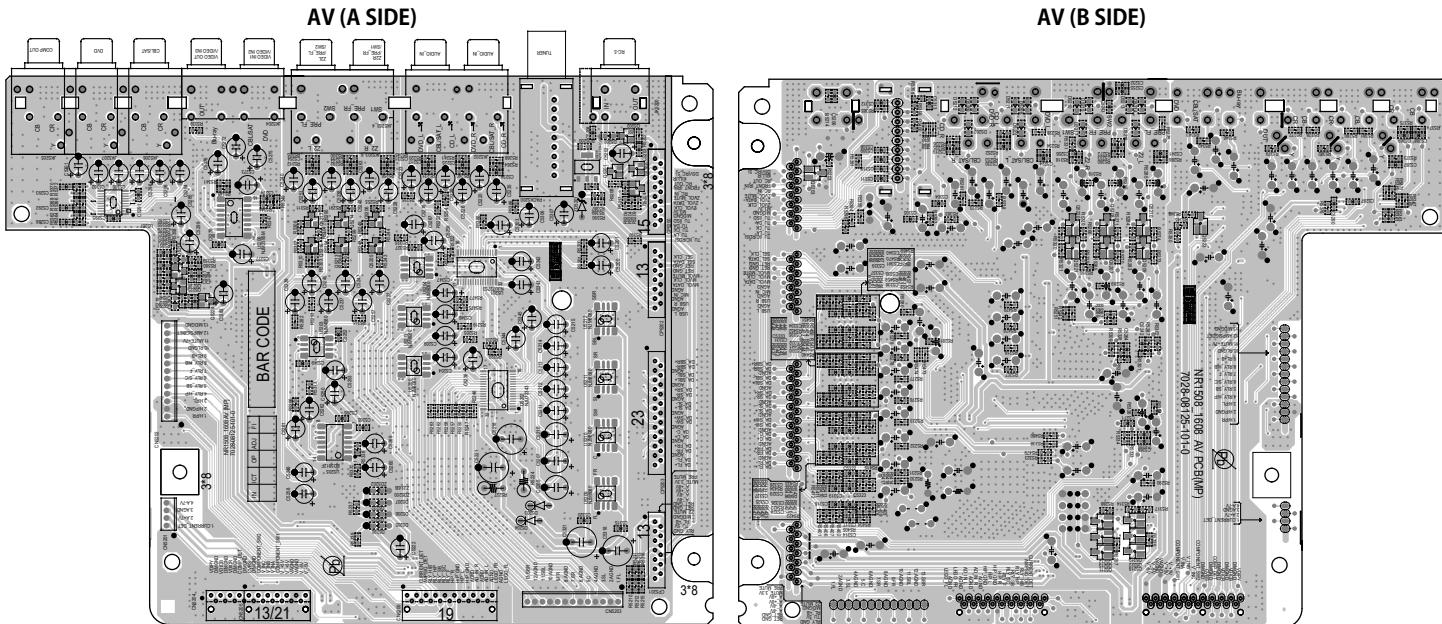
PRINTED CIRCUIT BOARDS

DIGITAL, F HDMI

Lead-free Solder

When soldering, use the Lead-free Solder (Sn-Ag-Cu).





SPK, SIDE CNT, HDMI GUIDE A, HDMI GUIDE B

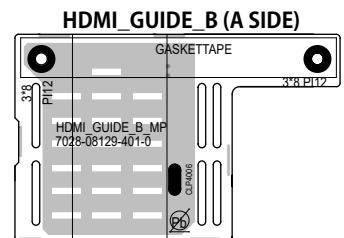
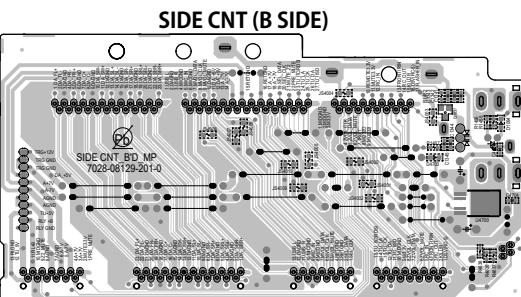
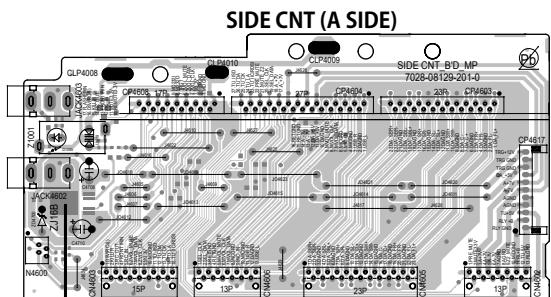
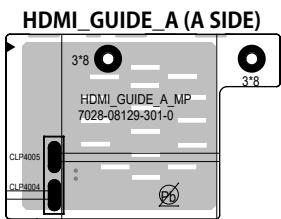
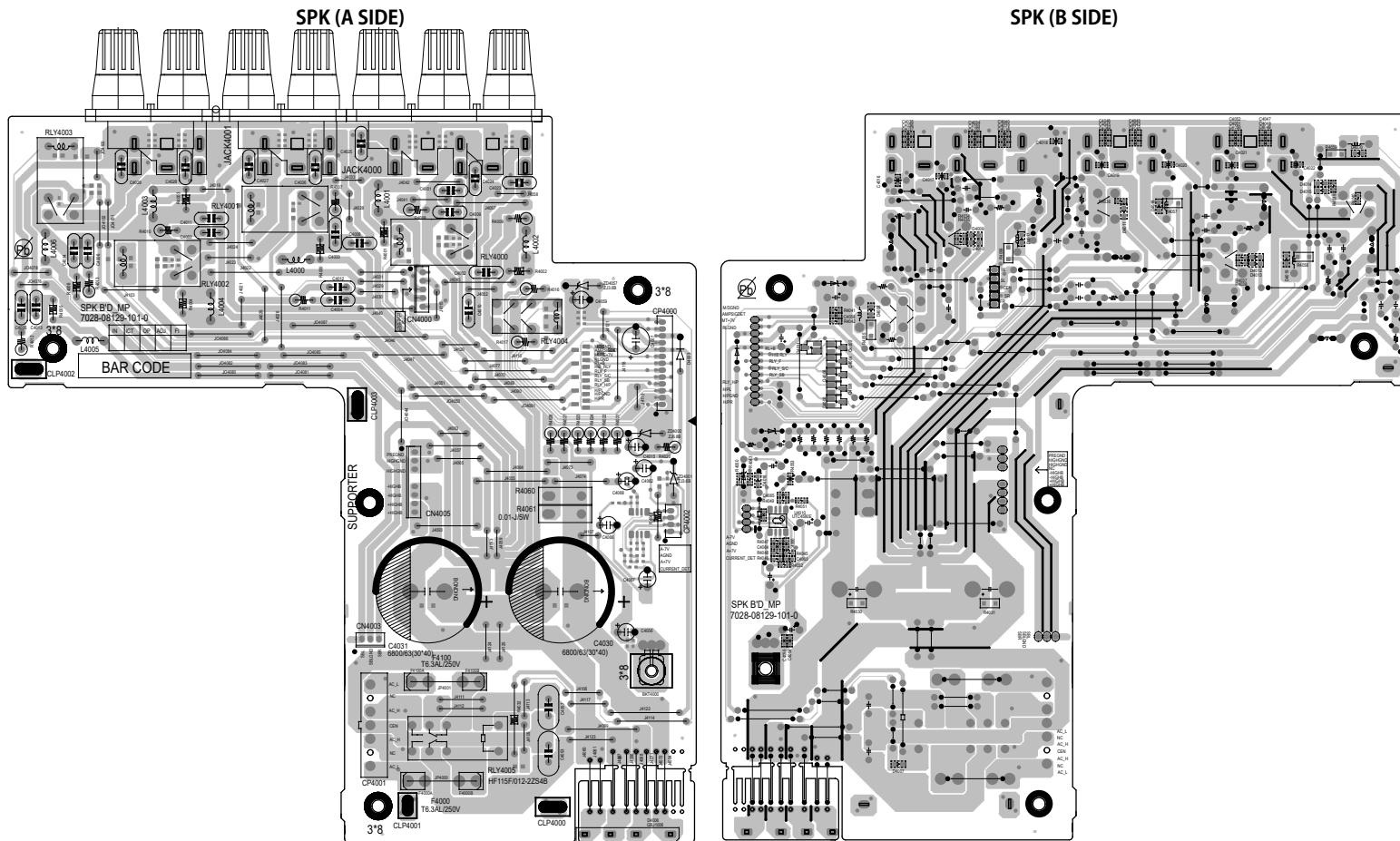
Caution in servicing

Electrical

Mechanical

Repair Information

Updating



AMP, FRONT, MC HP, USB

Caution in
servicing

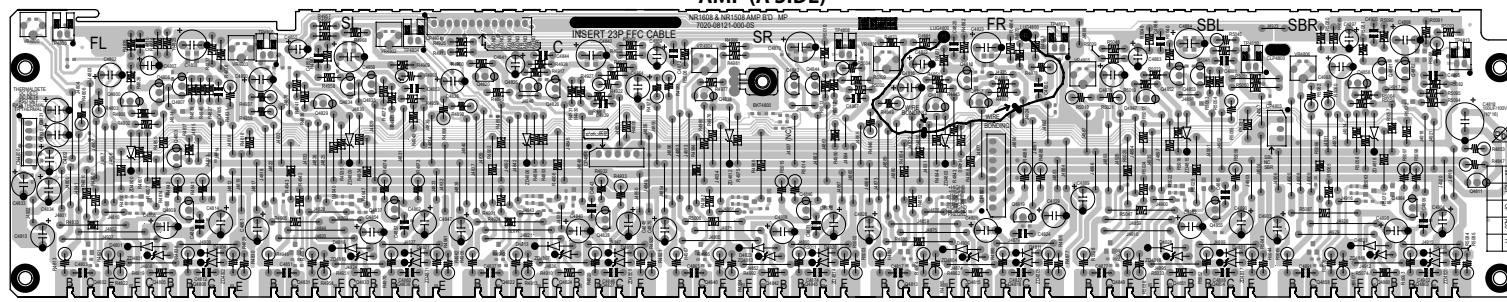
Electrical

Mechanical

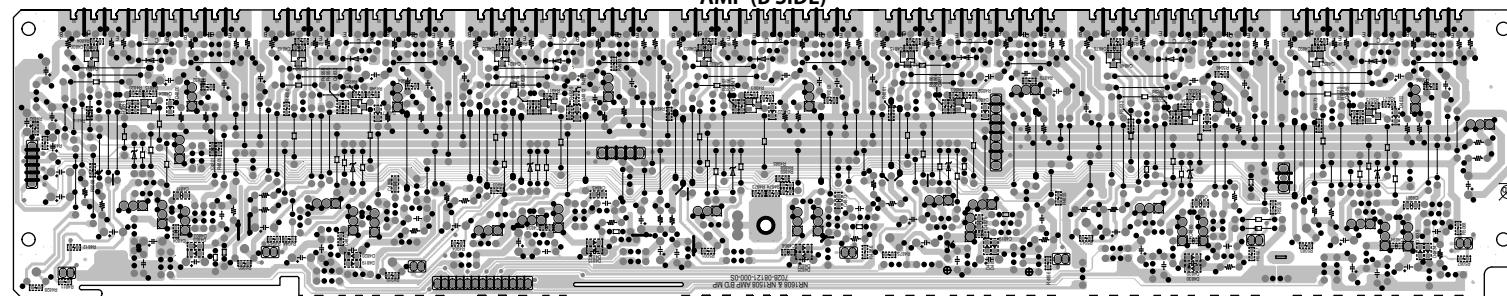
Repair Information

Updating

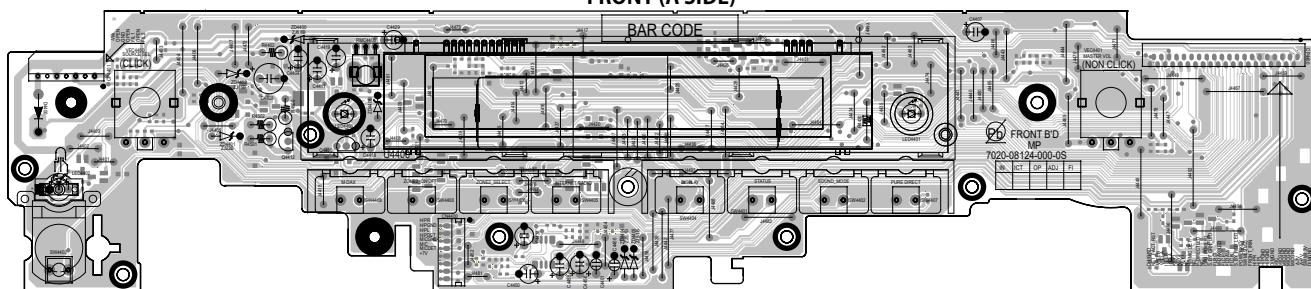
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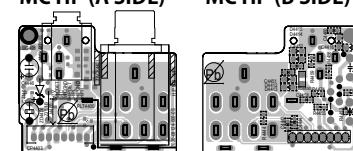
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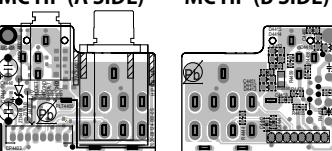
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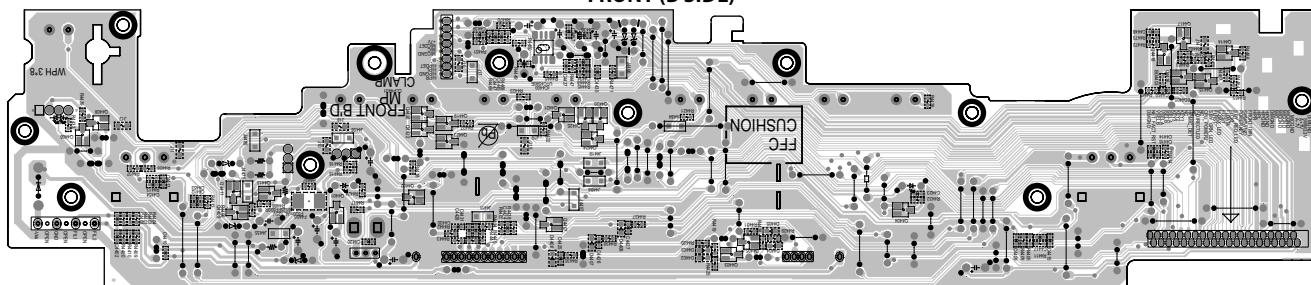
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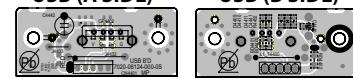
MC HP (B SIDE)



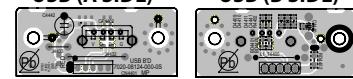
FRONT (B SIDE)



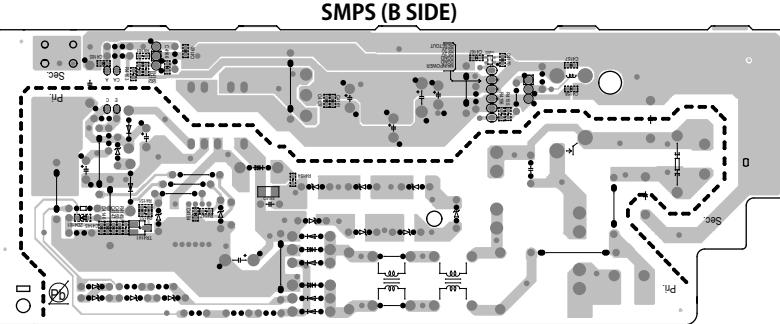
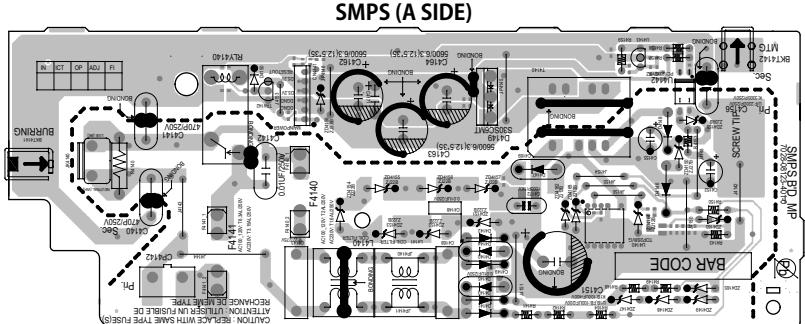
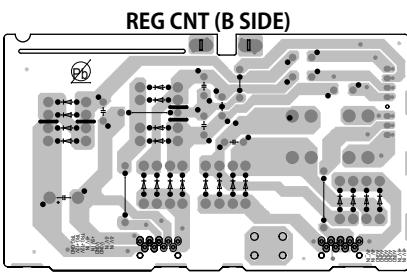
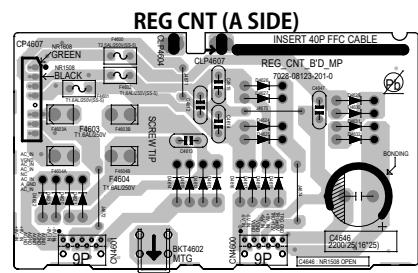
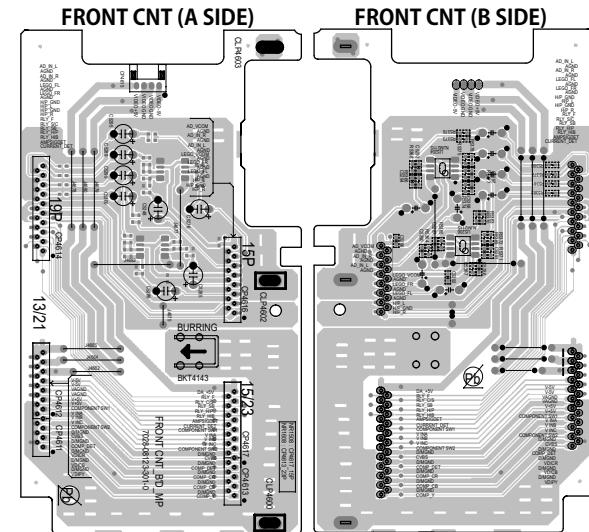
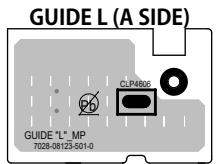
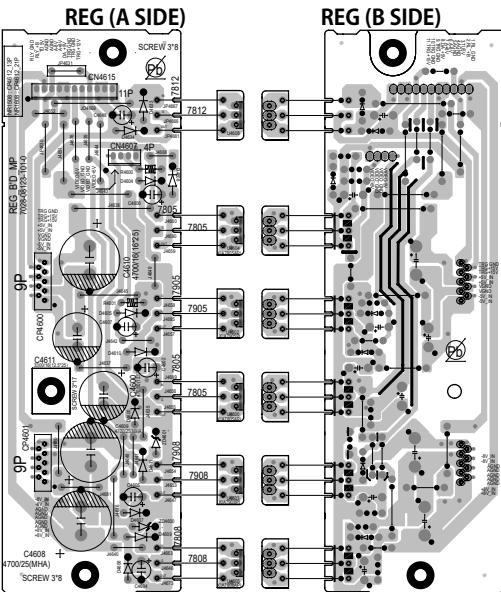
USB (A SIDE)



USB (B SIDE)

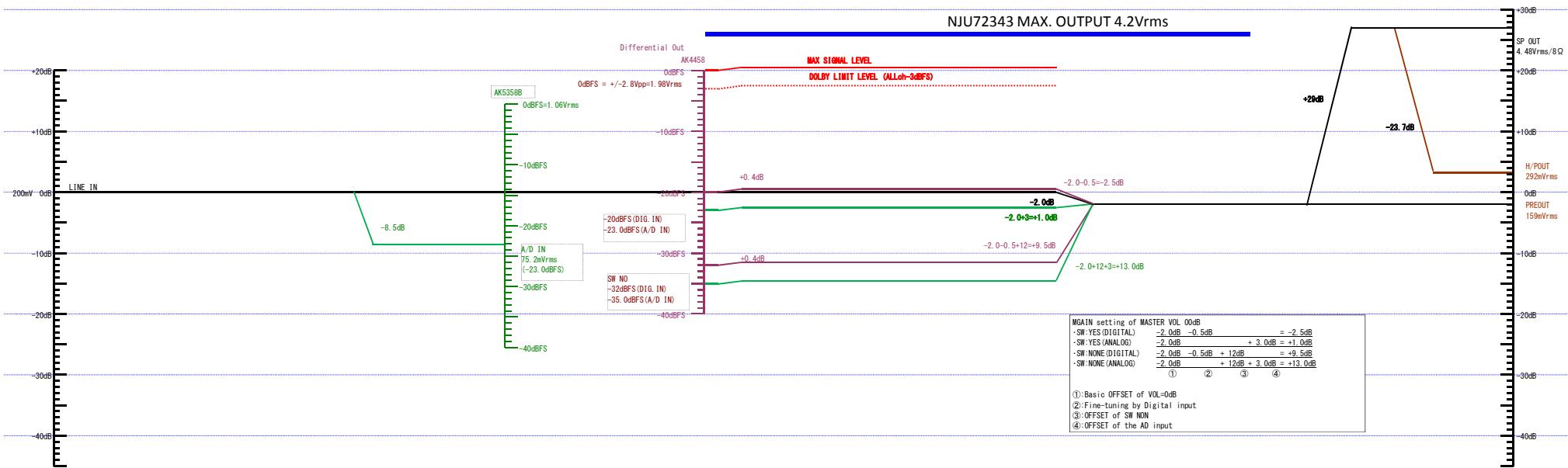
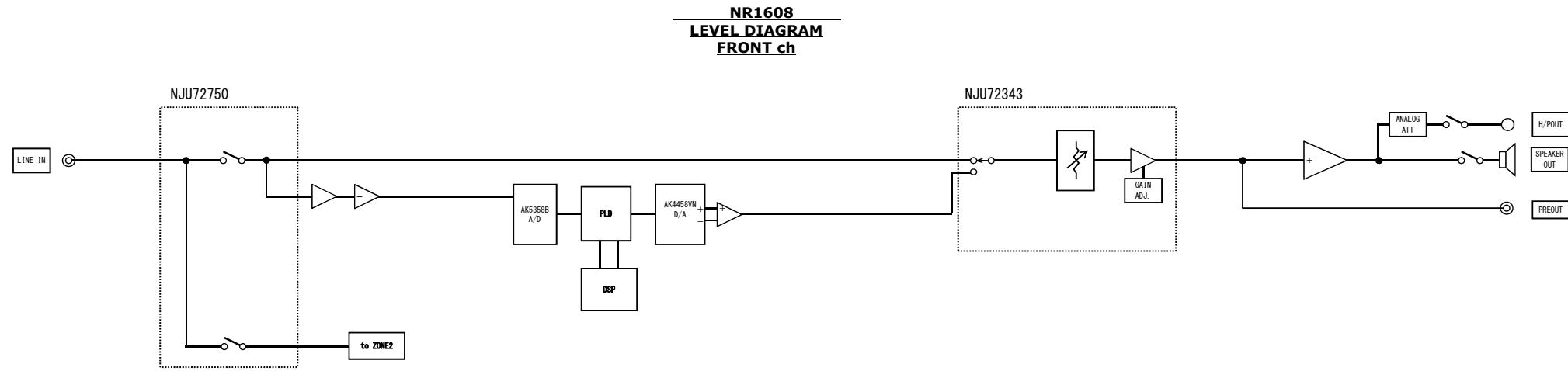


REG, GUIDE L, FRONT CNT, REG CNT, SMPS

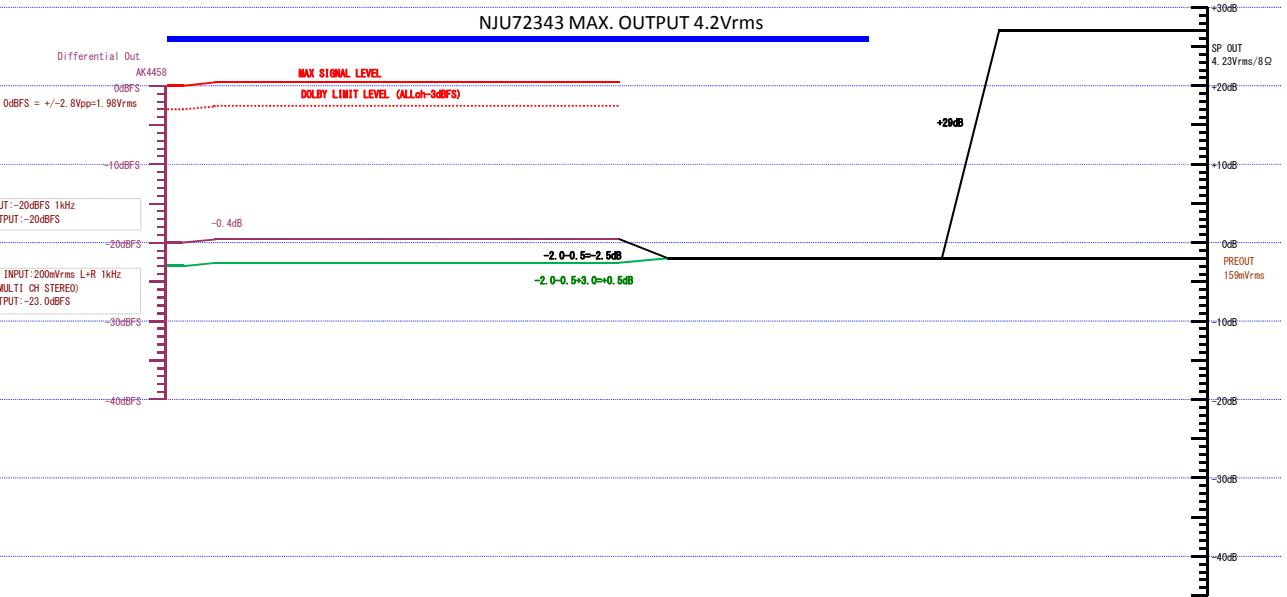
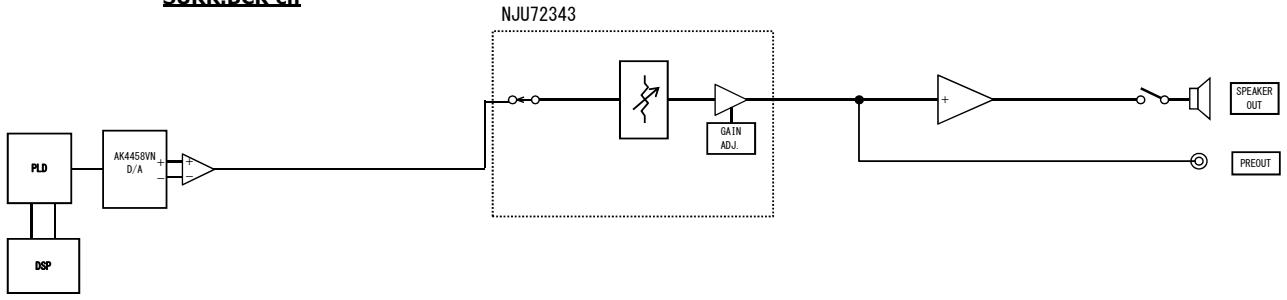


LEVEL DIAGRAM

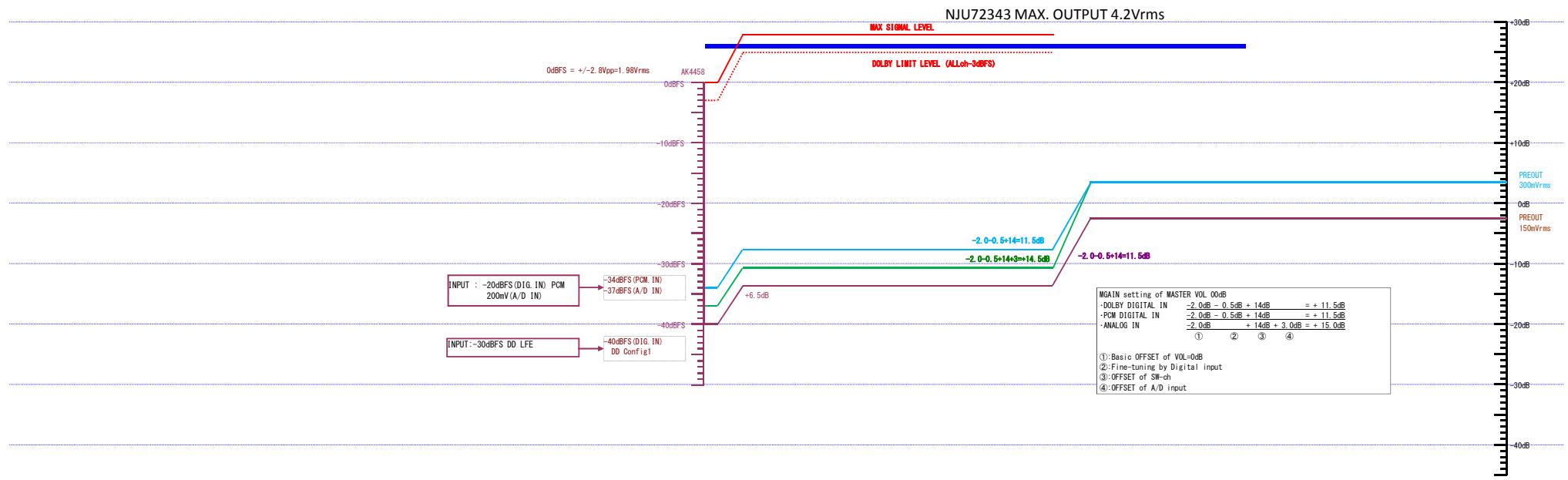
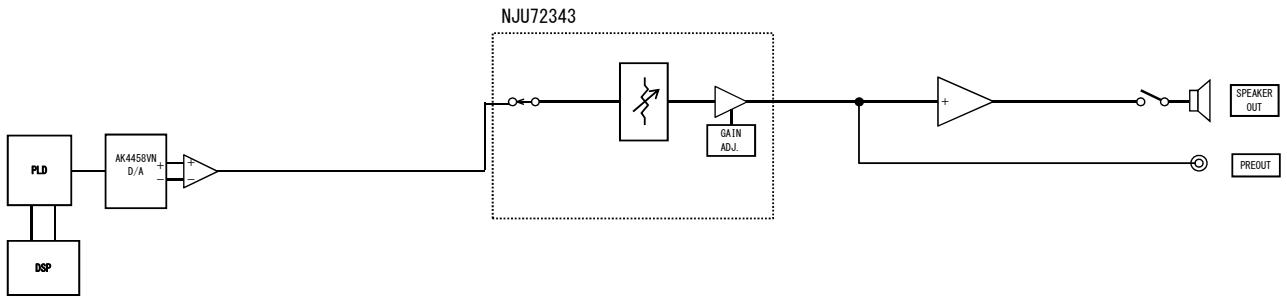
FRONT ch



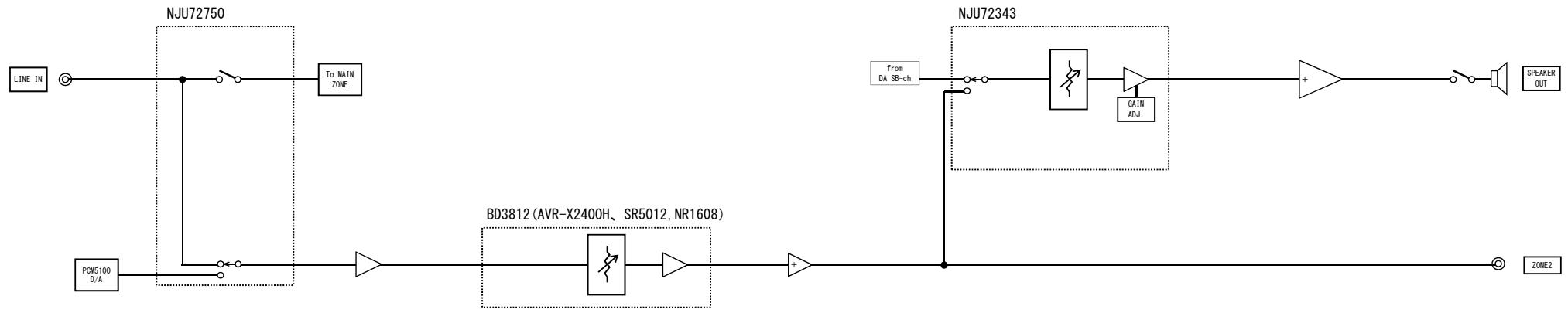
NR1608
LEVEL DIAGRAM
CENTER ch
SURROUND ch
SURR.BCK ch



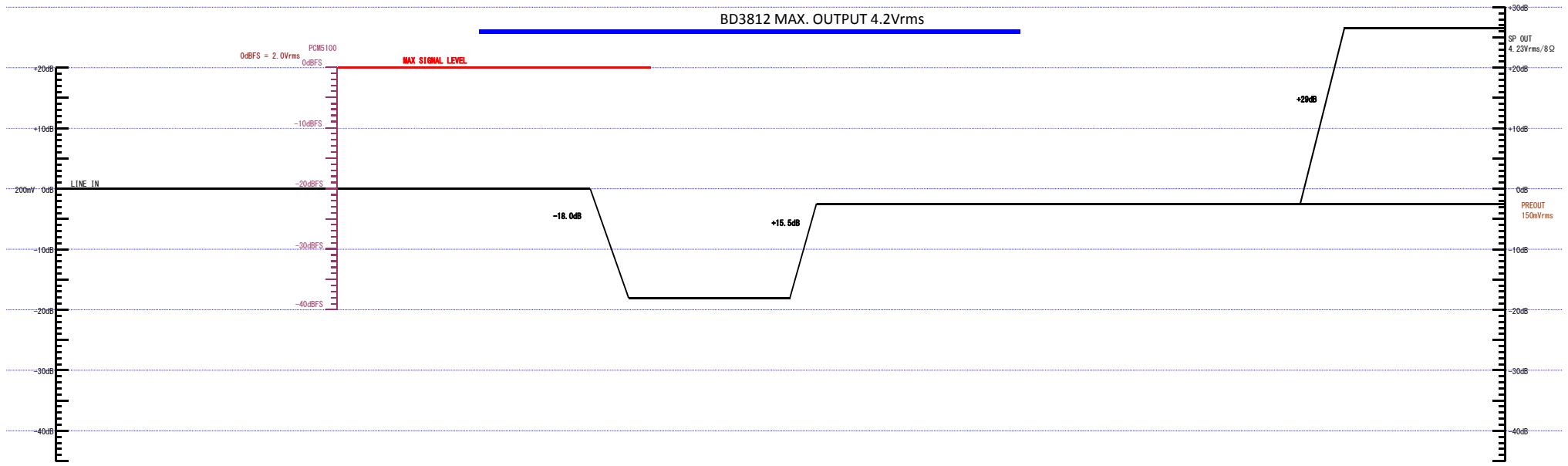
**NR1608
LEVEL DIAGRAM
SUBWOOFER ch**

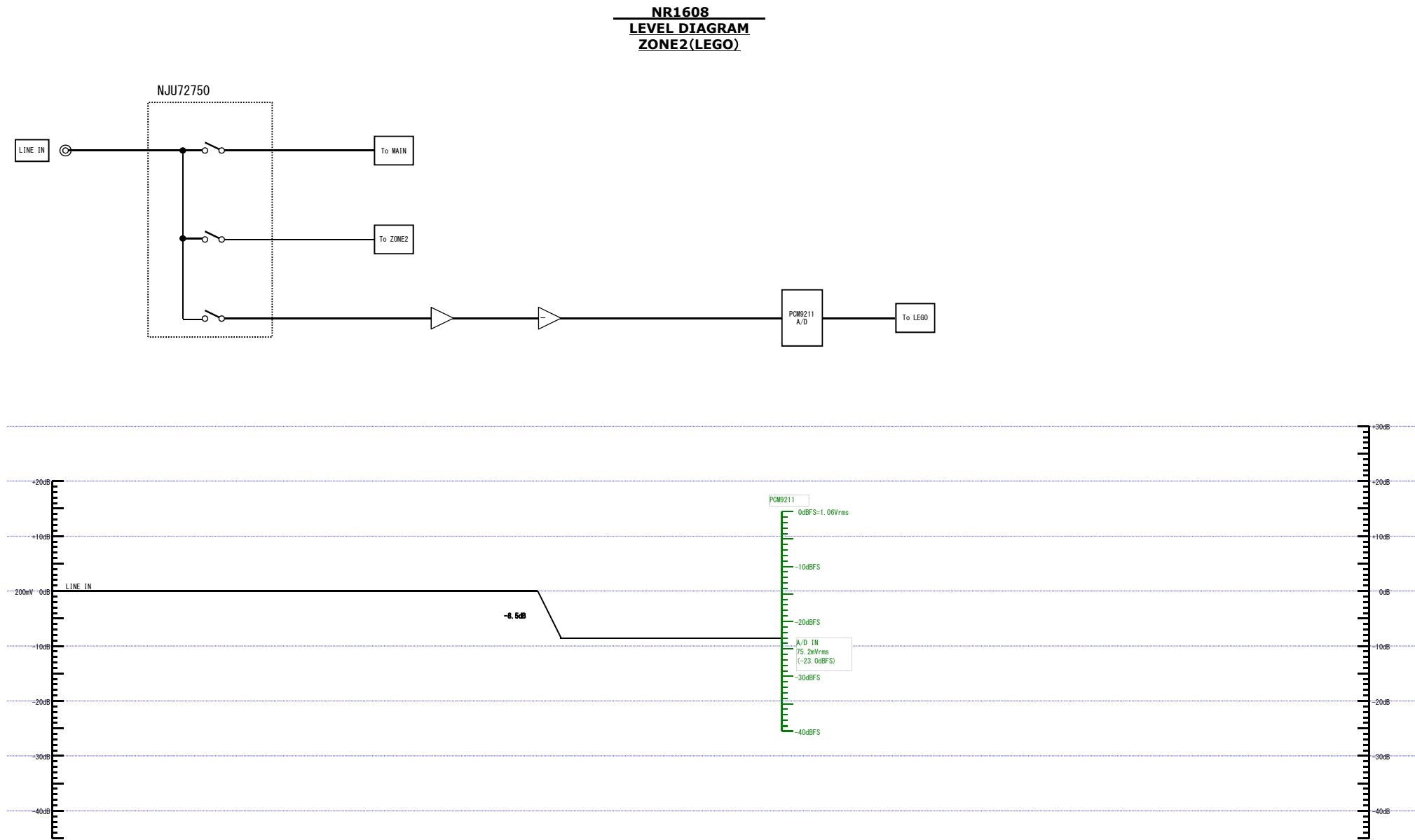


**NR1608
LEVEL DIAGRAM
ZONE2**



BD3812 MAX. OUTPUT 4.2Vrms

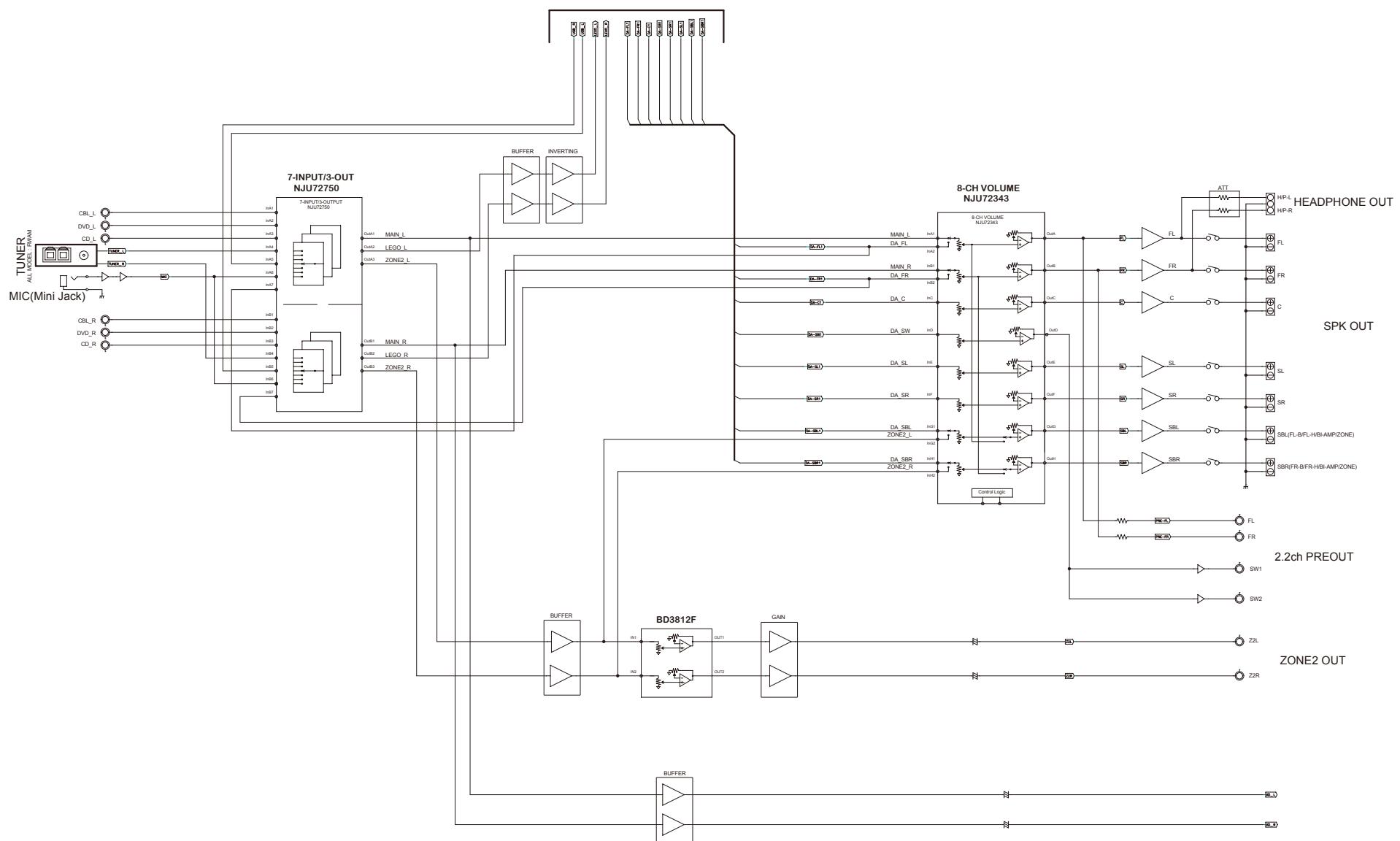




BLOCK DIAGRAM

ANALOG AUDIO DIAGRAM

NR1608 ANALOG AUDIO DIAGRAM
TO DIGITAL AUDIO BLOCK



Caution in
servicing

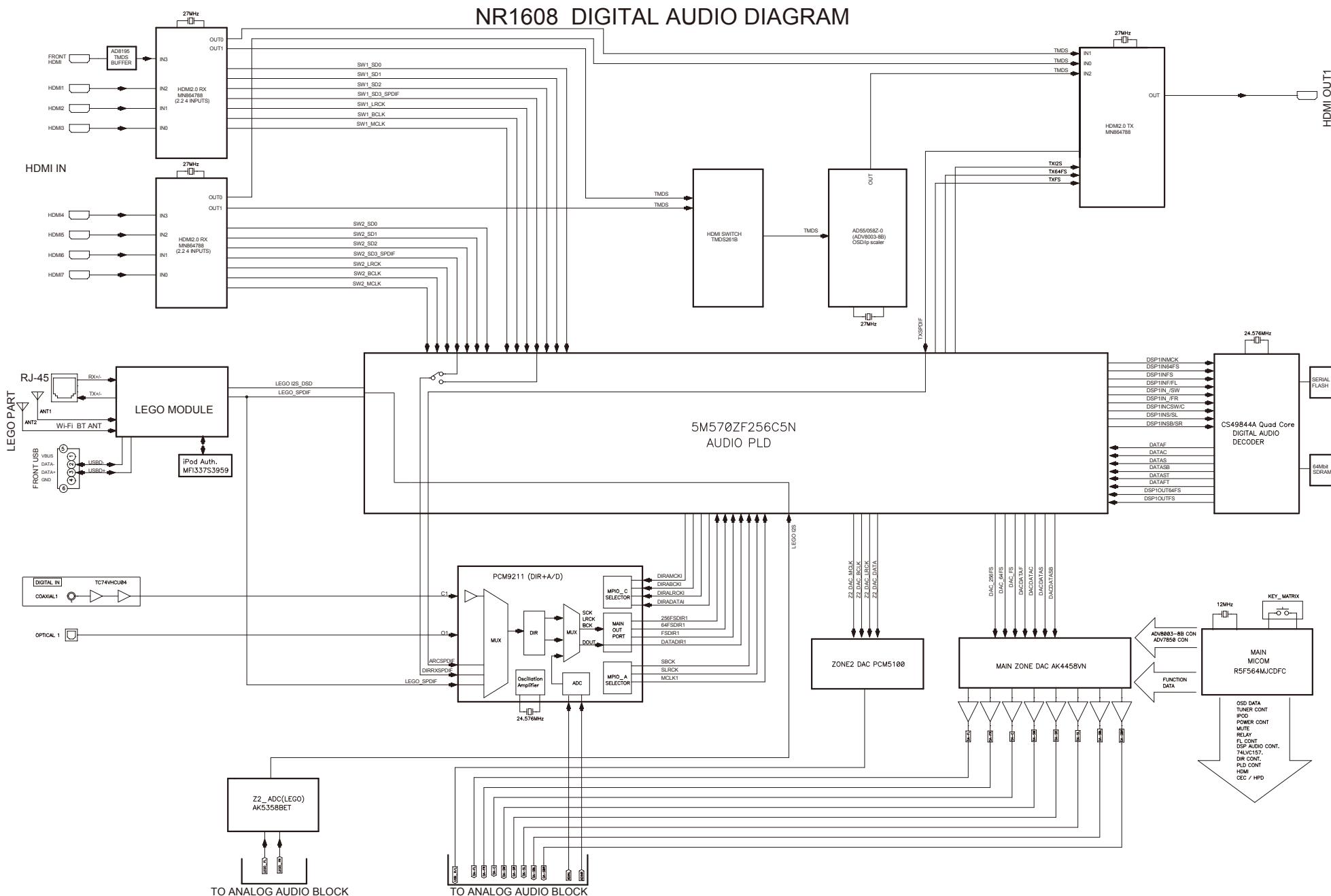
Electrical

Mechanical

Repair Information

Updating

DIGITAL AUDIO DIAGRAM



Caution in servicing

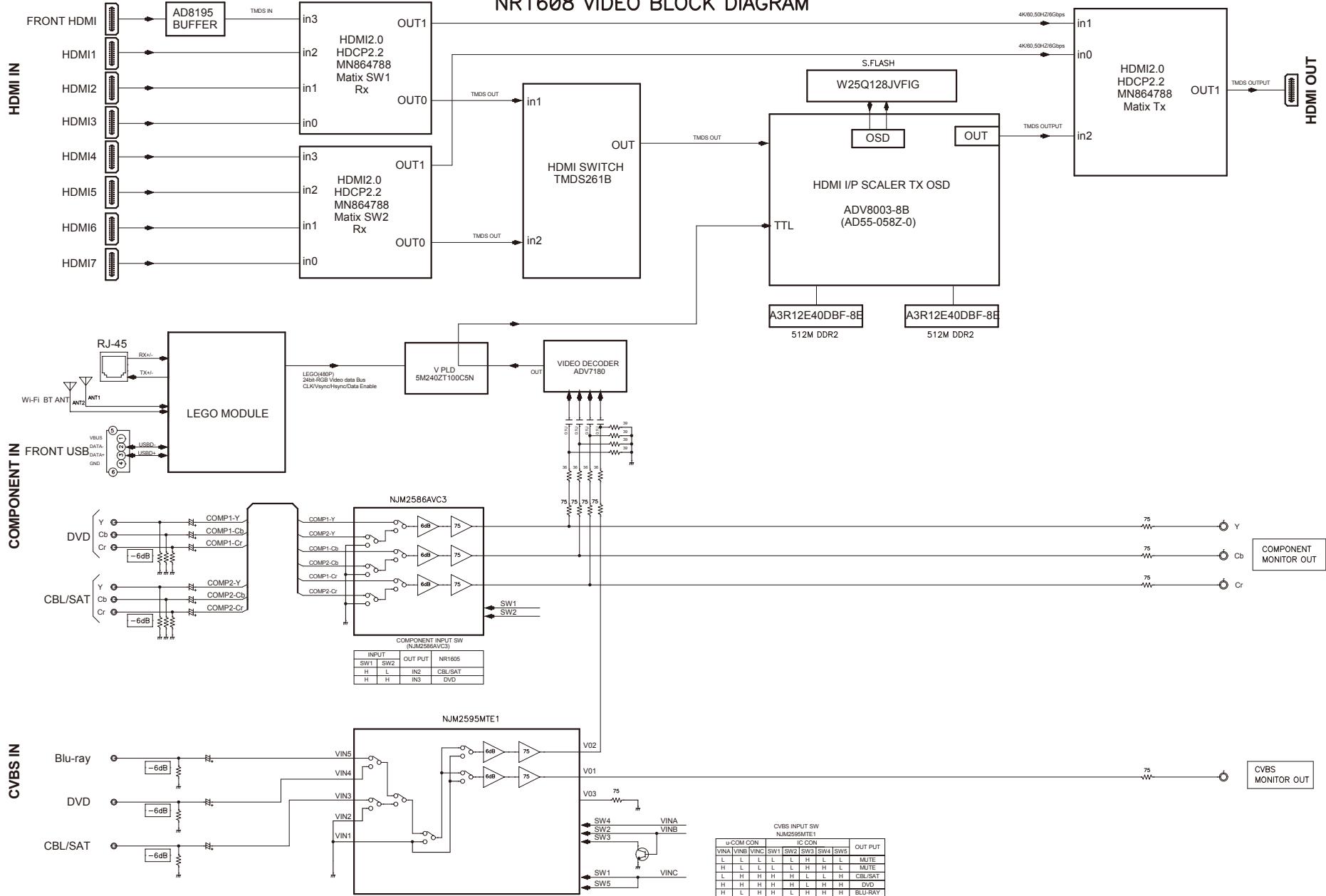
Electrical

Mechanical

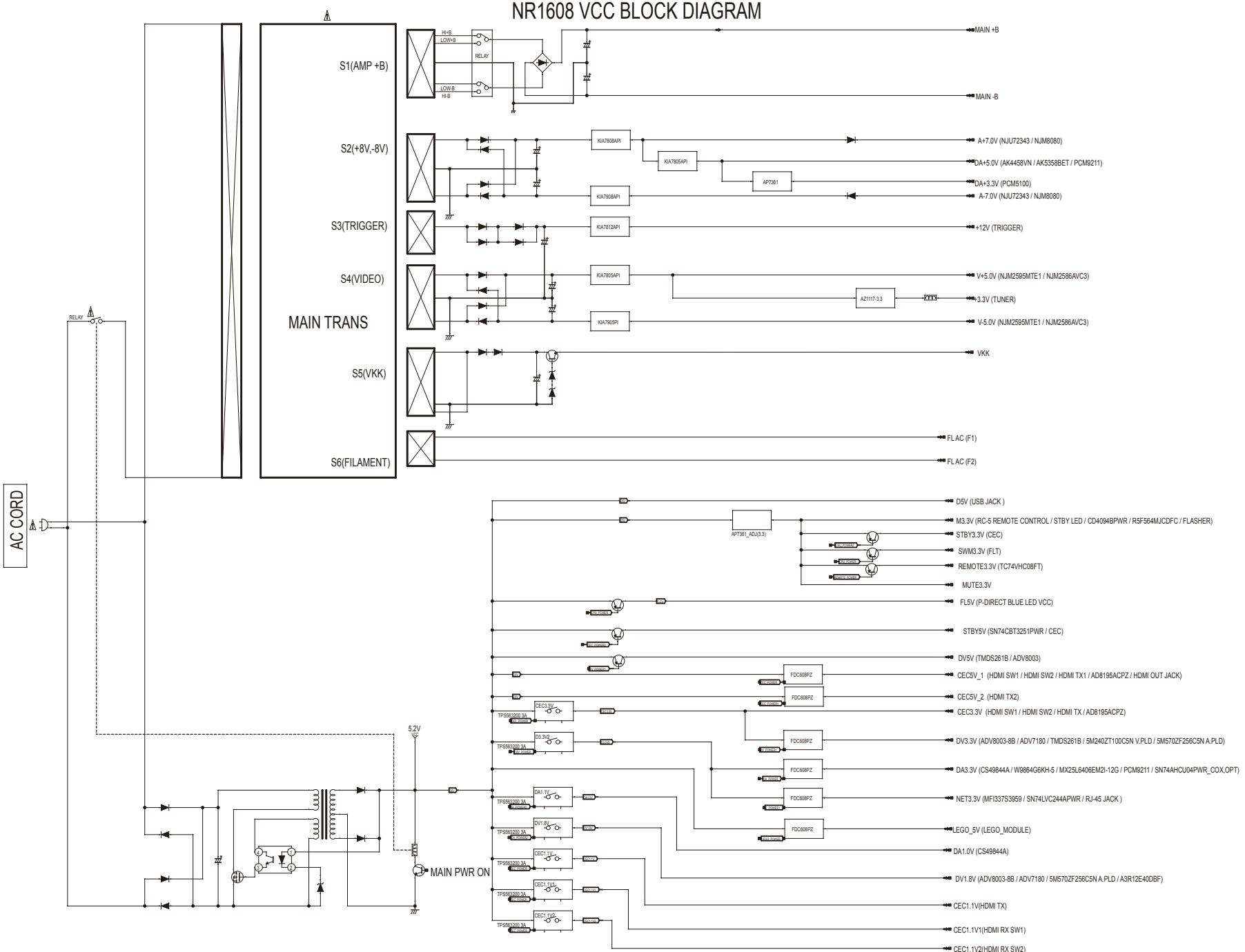
Repair Information

Updating

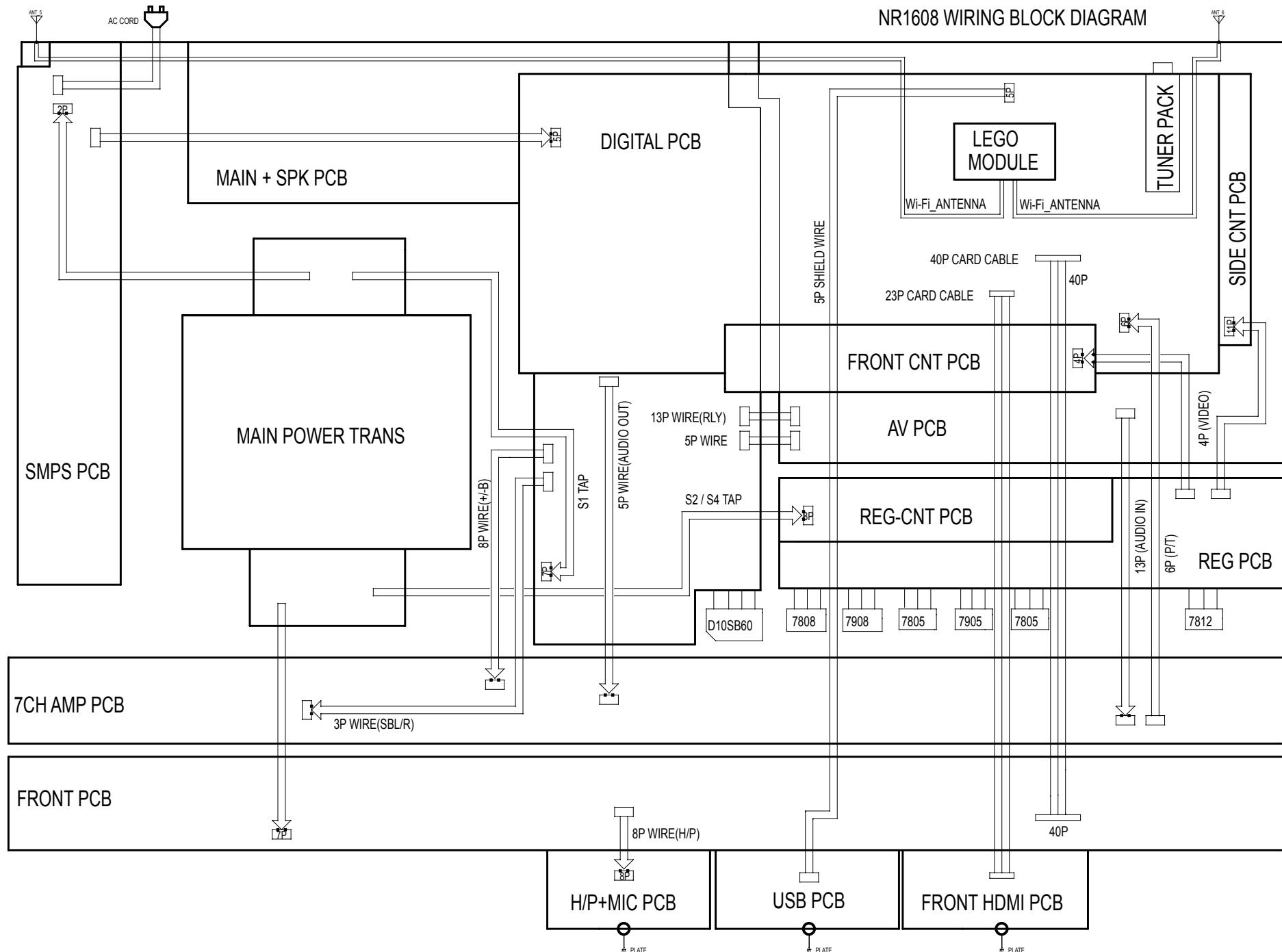
VIDEO DIAGRAM



POWER DIAGRAM



WIRING DIAGRAM



Caution in
servicing

Electrical

Mechanical

Repair Information

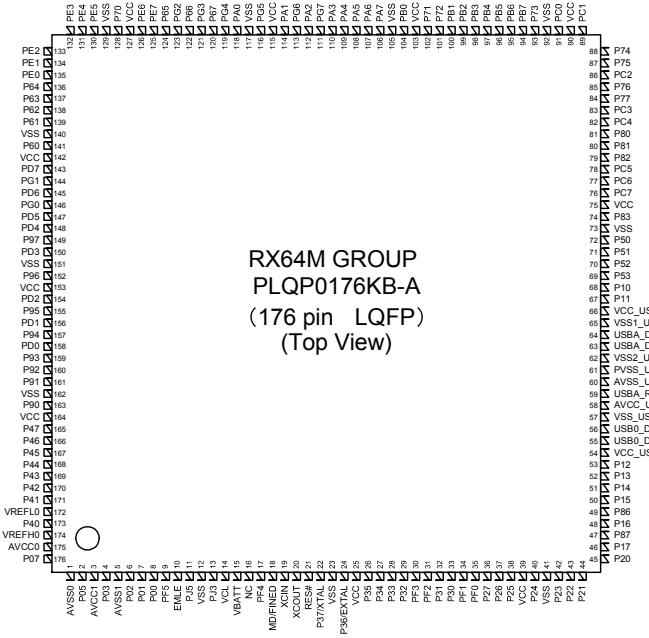
Updating

SEMICONDUCTORS

Only major semiconductors are shown, general semiconductors etc. are omitted to list.
The semiconductor which described a detailed drawing in a schematic diagram are omitted to list.

1. IC's

R5F564MJCDFC (DIGITAL : U1018)



**RX64M GROUP
PLQP0176KB-A
(176 pin LQFP)
(Top View)**

Terminal Functions

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
1	AVSS0	AVSS0	-		-	-	-	Ground pin
2	P05/IRQ13	POWER_KEY	I	M3VPu	I	I	I	Detect Power switch (Release from Wait Mode, Set to interrupt)
3	AVCC1	AVCC1	-		-	-	-	Power supply pin
4	P03/IRQ11	RED_LED	O		L/H	L	H	POWER/STANDBY LED control pin
5	AVSS1	AVSS1	-		-	-	-	Ground pin
6	P02/SCK6/IRQ10/ AN120	REMOTE_POWER	O		L	L	L	232C power supply (REMOTE 3.3V) control pin
7	P01/RXD6/IRQ9/ AN119	RXD_MI232O	I	Pd	I	I	I	External data input port (for AMX/FW update via 232C) :Connector is FFC
8	P00/TXD6/IRQ8/ AN118	TXD_MO232I	O		L	L	L	External data output port (for AMX/FW update via 232C) :Connector is FFC
9	PF5/IRQ4	WHITE_LED (X2400(NA)) / GREEN_LED (X2400(EU/ CH/JP)/S930/ SR5012/ NR1608)	O		L	L	L	POWER LED control pin
10	EMLE	EMLE	I	Pd	-	-	-	E20 Emulator control pin (On chip Emulator is used, this pin should be High. Not used, it should be Low)
11	PJ5	VSEL_A	I	SW3VPu	I	I	I	Master Volume (Rotary encoder) signal input pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
12	VSS	VSS	-		-	-	-	Ground pin
13	PJ3	VSEL_B	I	SW3VPu	I	I	I	Master volume (Rotary encoder) signal input pin
14	VCL	VCL	I		-	-	-	Smoothing capacitor connection pin
15	VBATT	VBATT	-		-	-	-	Power supply pin
16	NC	NC	I	Pd	-	-	-	NC(Pull down)
17	TRST#/PF4	TRST#/NC(NORMRAL)	I/I	Pd	I/I	I/I	I/I	E20 Emulator control pin/When normal operating mode, set to input.
18	MD/FINED	MD	I	M3VPu	I	I	I	Pins for setting the operating mode(select the Boot Mode or User Boot Mode, Single Chip Mode)
19	XCIN	XCIN	I	Pd	-	-	-	NC(Pull down)
20	XCOUNT	XCOUNT	I		-	-	-	NC(open)
21	RES#	RESET	I	M3VPu	-	-	-	Reset signal input pin
22	XTAL/P37	XTAL	I		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
23	VSS	VSS	-		-	-	-	Ground pin
24	EXTAL/P36	EXTAL	-		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
25	VCC	VCC	-		-	-	-	Power supply pin
26	UPSEL/P35(IN)/NMI	DSP_FLAG3	I	DA3VPu	I	I	I	DSP(CS49844A) interrupt signal input pin
27	P34/SCK6/SCK0/ IRQ4	BDOWN	I	M3VPu	I	I	I	Detect power down
28	P33/TIOCD0/RXD6/ RXD0/IRQ3-DS	RC_IN	I	Pd(S930/ X2400/ M3Vpu (SR5012/ NR1608NR))	I	I	I	Remote input
29	P32/TIOCC0/TXD6/ TXD0/IRQ2-DS	NC(S930/ X2400/ NR1608(EU/ JP) / FLASHER_IN (NR1608(NA)/ SR5012)	O/I	-/Pd	L/I	L/I	L/I	Flasher (Remote) input pin (When standby mode, set to interrupt)
30	TMS/PF3	TMS/NC(NORMRAL)	I/I	M3VPu	-/I	-/I	I	E20 Emulator control pin/When normal operating mode, set to input.
31	TDI/PF2/RXD1	TDI_RXD_MITSUBISHI	I/O/I	M3VPu	-/-I	-/-I	I	E20 Emulator control pin/Mitsubishi writer control pin/ When normal operating mode, set to input.
32	P31/IRQ1-DS	TU_IISD	I		L	L	L	TUNER control
33	P30/RXD1	TU_DA	I_O	SW3VPu	L	L	L	TUNER control
34	TCK/FINEC/PF1/ SCK1	TCK/NC(NORMRAL)	I/I/I	M3VPu	-/-I	-/-I	I	E20 Emulator control pin/When normal operating mode, set to input.
35	TDO/TXD1/PF0	TDO_RXD_MITSUBISHI	O/O/I	M3VPu	-/-I	-/-I	I	E20 Emulator control pin/Mitsubishi writer control pin/ When normal operating mode, set to input.
36	P27/SCK1	TU_LA	O		L	L	L	TUNER control
37	P26/TXD1	TU_CK	O	SW3VPu	L	L	L	TUNER control
38	P25/RXD3	TU_IIC/RDSI	O		L	L	L	TUNER control
39	VCC	VCC	-		-	-	-	Power supply pin
40	P24/SCK3	NC(S930/ X2400/ KILL_ IR(SR5012/ NR1608)	O		L	L	L	Front IR disable control pin
41	VSS	VSS	-		-	-	-	Ground pin
42	P23/TXD3	E_RTS_MOEI	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(LEG0) control pin
43	P22/SCK0	E_CTS_MIEO	I	Pd (onboard + BCM58305 Internal Pd)	I	I	I	Ethernet(LEG0) control pin
44	P21/RXD0/IRQ9	E_RXD_MIEO	I	Pd (onboard + BCM58305 Internal Pd)	I	L	I	Ethernet(LEG0) control pin

Caution in servicing

Electrical

Mechanical

Repair Information

Updating

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
45	P20/TXD0/IRQ8	E_TXD_MOE1	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(LEGO) control pin
46	P17/SCK1/TXD3/IRQ7	NET_FACT_RST	O(ODR)	Pu (BCM58305 Internal Pu)	Z	Z	Z	Ethernet(LEGO) control pin
47	P87/TXD10/TIOCA2	NC (S930/X2400) / RC_OUT (SR5012/NR1608)	O		L/H	L/L	L/H	Remote code (RC-5) output pin
48	P16/TXD1/RXD3/IRQ6	NET5V_POWER	O		L	L	L	Ethernet power supply (Net5V) control pin/
49	P86/RXD10	PRE_Z2_MUTE(X2400/SR5012/NR1608) / NC (S930)	O		L	L	L	MUTE for ZONE2 preout control pin
50	P15/RXD1/SCK3/IRQ5	AEXP_STB	O		L	L	L	Expander (MC14094) control pin
51	P14/IRQ4	AEXP_OE	O		L	L	L	Expander (MC14094) control pin
52	P13/TXD2/IRQ3	AEXP_CLK	O		L	L	L	Expander (MC14094) control pin
53	P12/RXD2/IRQ2	AEXP_DATA	O		L	L	L	Expander (MC14094) control pin
54	VCC_USB	VCC_USB	-		-	-	-	Power supply pin
55	USB0_DM	USB0_DM	-		-	-	-	NC(open)
56	USB0_DP	USB0_DP	-		-	-	-	NC(open)
57	VSS_USB	VSS_USB	-		-	-	-	Ground pin
58	AVCC_USBA	AVCC_USBA	-		-	-	-	Power supply pin
59	USBA_PREF	USBA_PREF	-		-	-	-	NC(open)
60	AVSS_USBA	AVSS_USBA	-		-	-	-	Ground pin
61	PVSS_USBA	PVSS_USBA	-		-	-	-	Ground pin
62	VSS2_USBA	VSS2_USBA	-		-	-	-	Ground pin
63	USBA_DM	USBA_DM	-		-	-	-	NC(open)
64	USBA_DP	USBA_DP	-		-	-	-	NC(open)
65	VSS1_USBA	VSS1_USBA	-		-	-	-	Ground pin
66	VCC_USBA	VCC_USBA	-		-	-	-	Power supply pin
67	P11/SCK2/IRQ1	CEC_OUT	O		L	L	-	CEC-D control pin
68	P10/IRQ0	CEC_IN	I	STB3VPu	I	I	I	CEC-D control pin
69	P53	ADV8003_SPI_CS	O	DV3VPu	L	L	L	GUI control pin(ADV8003)
70	P52/RXD2	ADV8003_SPI_MI	I		L	L	L	GUI control pin(ADV8003)
71	P51/SCK2	ADV8003_SPI_CLK	O		L	L	L	GUI control pin(ADV8003)
72	P50/TXD2	ADV8003_SPI_MO	O		L	L	L	GUI control pin(ADV8003)
73	VSS	VSS	-		-	-	-	Ground pin
74	P83/SCK10	IP_RST	O	Pd	I	I	L	Scaler w/ GUI (ADV8003) Reset control pin
75	VCC	VCC	-		-	-	-	Power supply pin
76	UB/PC7/TXD8/IRQ14	UB	I	Pd	-	-	-	Pins for setting the boot mode(select the Boot Mode or User Boot Mode)
77	PC6/RXD8/IRQ13	AVSDA	I_O	DV3VPu	O/L	O/L	L	VIDEO I2C control pin for ADV8003/ ADV7180(except X2400/S930)
78	PC5/SCK8	AVSCL	I_O	DV3VPu	O/L	O/L	L	VIDEO I2C control pin for ADV8003/ ADV7180(except X2400/S930)
79	P82/TXD10	DSP_MOSI	O	DA3VPu	L	L	L	DSP(CS49844A) control pin
80	P81/RXD10	DSP_MISO	I	DA3VPu	L	L	L	DSP(CS49844A) control pin
81	P80/SCK10	DSP_CLK	O	DA3VPu	L	L	L	DSP(CS49844A) control pin
82	PC4/SCK5	DSP_CS	O	DA3VPu	L	L	L	DSP(CS49844A) control pin
83	PC3/TXD5	DSP_FLAG0	I	DA3VPu	L	L	L	DSP(CS49844A) interrupt signal input pin
84	P77/TXD11	DSP_RST	O	Pd	L	L	L	DSP(CS49844A) reset control pin
85	P76/RXD11	DSP_BUSY	I	DA3VPu	L	L	L	DSP BUSY signal input
86	PC2/RXD5	DA_POWER	O		L	L	L	Digital audio power supply (DA3.3V,DA1.2V) control pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
87	P75/SCK11	CEC_POWER2	O		L	L	L	CEC standby power control (for CEC Standby Mode 3)
88	P74	SEL_DATA	O		L	L	L	Audio selector control pin for NJU72750/ 72751(SR5012)
89	PC1/SCK5/IRQ12	DAC_PLD_ERR	I		L	L	L	Detect PLD error (from Audio PLD)
90	VCC	VCC	-		-	-	-	Power supply pin
91	PC0/IRQ14	H/P_RL	O		L	L	L	Headphone relay control pin
92	VSS	VSS	-		-	-	-	Ground pin
93	P73	FRONT_RL	O		L	L	L	Speaker relay control pin
94	PB7/TXD9	HSDA	I/O	CEC3VPu	L	L	L	HDMI I2C control pin for MN864788
95	PB6/RXD9	HSCL	I/O	CEC3VPu	L	L	L	HDMI I2C control pin for MN864788
96	PB5/SCK9	SEL_CLK	O		L	L	L	Audio selector control pin for NJU72750/ 72751(SR5012)
97	PB4	APLD_CS	O		L	L	L	Audio PLD (SM570ZF256C5N) control pin
98	PB3/SCK4/SCK6	APLD_DATA/DAC_DATA	O		L	L	L	Audio PLD (SM570ZF256C5N) control pin/DAC (AK4458VN) control pin
99	PB2	APLD_CLK/DAC_CLK	O		L	L	L	Audio PLD (SM570ZF256C5N) control pin/DAC (AK4458VN) control pin
100	PB1/TXD4/TXD6/IRQ4-DS	DAC_MS	O		L	L	L	DAC (AK4458VN) control pin
101	P72	DAC_RST	O		L	L	L	DAC (AK4458VN) control pin
102	P71	PRE_MUTE	O		-	L	L	MUTE for preout control pin
103	VCC	VCC	-		-	-	-	Power supply pin
104	PB0/RXD4/RXD6/IRQ5-DS	DA_POWER2	O		L	L	L	Digital audio power supply (DA1.0V) control pin
105	VSS	VSS	-		-	-	-	Ground pin
106	PA7	ISEL_A	I	SW3VPu	I	I	I	Input selector (Rotary encoder) signal input pin
107	PA6	ISEL_B	I	SW3VPu	I	I	I	Input selector (Rotary encoder) signal input pin
108	PA5	C/S_RL	O		L	L	L	Speaker relay control pin
109	PA4/TXD5/SSDA5/IRQ5-DS	DSP_ROM_WRITE	O		L	L	L	DSP ROM writing control(When writing, set to High)
110	PA3/RXD5/SSC5	MVOL_MUTE	O		L	L	L	Volume control pin (NJU72343)
111	TRDATA3/PG7	MVOL_CLK	O		L	L	L	Volume control pin (NJU72343)
112	PA2/RXD5	MVOL_DATA	O		L	L	L	Volume control pin (NJU72343)
113	TRDATA2/PG6	ZVOL_DATA(X2400/NR1608/SR5012) / NC (S930)	O		L	L	L	ZONE2 volume control pin (BD3812F)
114	PA1/SCK5/IRQ11	ZVOL_CLK(X2400/NR1608/SR5012) / NC (S930)	O		L	L	L	ZONE2 volume control pin (BD3812F)
115	VCC	VCC	-		-	-	-	Power supply pin
116	TRCLK/PG5	ZVOL_MUTE(X2400/NR1608/SR5012) / NC (S930)	O		L	L	L	ZONE2 volume control pin (BD3812F)
117	VSS	VSS	-		-	-	-	Ground pin
118	PA0	H5V_DET	I	-	I	I	I	HDMI IN 5V detect signal pin
119	TRSYN/PG4	FL_RST	O		L	L	L	FL display control pin
120	P67/IRQ15	FL_CE	O		L	L	L	FL display control pin
121	TRDATA1/PG3	FL_CLK	O		L	L	L	FL display control pin
122	P66	FL_DATA	O		L	L	L	FL display control pin
123	TRDATA0/PG2	SB_RL	O		L	L	L	Speaker relay control pin
124	P65	CPU_POWER_2(S930/X2400/NR1608) / FIL_CTRL(SR5012)	O		L	L	L	CPU power supply control pin(same as 131pin) / Filament Power control pin (for Portal FLD)
125	PE7/IRQ7/AN105	ASO/DC_DET	I	SW3VPu	I	L	I	Protection detect signal input pin (for ASO and DC) (A/D converter)

Caution in servicing

Electrical

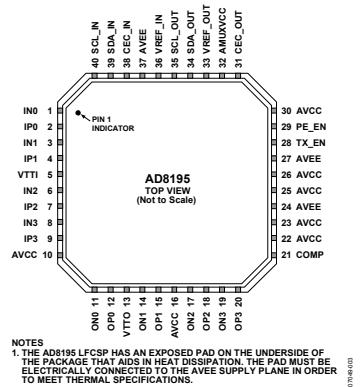
Mechanical

Repair Information

Updating

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
126	PE6/IRQ6/AN104	MIC_DET/H/ P_DET	I	SW3VPu	I	L	I	Headphone insert detect pin/Microphone insert detect pin (A/D converter)
127	VCC	VCC	-		-	-	-	Power supply pin
128	P70	HIGH_B_RL	O		L	L	L	HIGH-B relay control pin
129	VSS	VSS	-		-	-	-	Ground pin
130	PES/IRQ5/AN103	MAIN_POWER	O		L	L	L	Power supply control pin
131	PE4/AN102	CPU_POWER	O		L	L	L	CPU power supply control pin
132	PE3/AN101	AIOS4_WAKE- UP	O		L	L	L	same as NET5V_POWER,NET3.3V_POWER (This port use to control for LEGO standby mode in the future(Low : Deep Standby, High : normal))
133	PE2/RXD12/IRQ7- DS/AN100	AIOS4_STBY_- STATUS	I	Pd	I	I	I	Not used (This port use to detect for LEGO standby status in the future (Low : normal, High : Deep Standby))
134	PE1/TXD12	GUI_WRITE	O		L	L	L	GUI flash rom writing control
135	PE0/SCK12	NET3.3V_- POWER	O		L	L	L	Ethernet power supply control(Net3.3V)
136	P64	D5V_POWER	O		L	L	H	Digital 5V power supply control pin(3.3V and 1.8V generate from 5V)
137	P63	CEC_POWER	O		L	L	-	CEC standby power supply control(CEC5V,CEC3.3V,CEC1.8V)
138	P62	DV_POWER1	O		L	L	L	Digital video power supply (DV5V,DV3.3V) control pin
139	P61	DV_POWER2	O		L	L	L	Digital video power supply (DV1.8V) control pin
140	VSS	VSS	-		-	-	-	Ground pin
141	P60	DIR_DIN	O		L	L	L	DIR (PCM9211) control pin
142	VCC	VCC	-		-	-	-	Power supply pin
143	PD7/IRQ7/AN107	DIR_CE	O		L	L	L	DIR (PCM9211) control pin
144	PG1	DIR_DOUT	I	DA3.3Pu	I	I	I	DIR (PCM9211) control pin
145	PD6/IRQ6/AN106	DIR_CLK	O		L	L	L	DIR (PCM9211) control pin
146	PG0	DIR_RST	O		L	L	L	DIR (PCM9211) control pin
147	PD5/IRQ5/AN113	788_2_HINT	I	CEC3VPu	Z	-	-	HDMI Rx (MN864788) audio interrupt signal det
148	PD4/IRQ4/AN112	SW_SDA	I_O	DV3VPu	O/L	O/L	L	HDMI TMDS switch I2C control pin for TMDS2618
149	P97	DE_RST (NR1608/ SR5012) / NC (X2400/S930)	O	Pd	Z		L	Video decoder (ADV7180) reset control pin
150	PD3/IRQ3/AN111	788_1_HINT	I	CEC3VPu	Z	-	-	HDMI Tx (MN864788) interrupt signal input pin
151	VSS	VSS	-		-	-	-	Ground pin
152	P96	788_1_RST	O	Pd	Z		-	HDMI Tx (MN864788) reset control pin
153	VCC	VCC	-		-	-	-	Power supply pin
154	PD2/IRQ2/AN110	788_2_HINT	I	CEC3VPu	Z	-	-	HDMI Rx (MN864788) interrupt signal input pin
155	P95	788_2_RST	O	Pd	Z		-	HDMI Rx (MN864788) reset control pin
156	PD1/IRQ1/AN109	788_3_HINT	I	CEC3VPu	Z	-	-	HDMI Rx (MN864788) interrupt signal input pin
157	P94	788_3_RST	O	Pd	Z		-	HDMI Rx (MN864788) reset control pin
158	PD0/IRQ0/AN108	A_TO_H/ NET (SR5012/ NR1608)/ NC (S930/X2400)	O		L	L	L	Video PLD control pin (Net GUI:High,A to H:Low)
159	P93/AN117	THERMAL_A	I	SW3VPu	I	L	I	Protection detect signal input pin (for power TR)
160	P92/RXD7/AN116	THERMAL_B	I	SW3VPu	I	L	I	Protection detect signal input pin (for power TR)
161	P91/AN115	SW_SCL	I_O	DV3VPu	O/L	O/L	L	HDMI TMDS switch I2C control pin for TMDS261B
162	VSS	VSS	-		-	-	-	Ground pin
163	P90/TXD7/AN114	THERMAL_E	I	SW3VPu	I	L	I	Protection detect signal input pin (for Heat sink)
164	VCC	VCC	-		-	-	-	Power supply pin
165	P47/IRQ15-DS/ AN007	788_3_HINT	I	CEC3VPu	Z		-	HDMI Rx (MN864788) audio interrupt signal det
166	P46/IRQ14-DS/ AN006	CURRENT_DET	I/O	Pd	I/L	L/L	I/L	Current level monitor pin (A/D converter)
167	P45/IRQ13-DS/ AN005	AMPSIGDET	I	Pd	I	L	I	Signal level monitor pin (AD converter)
168	P44/IRQ12-DS/ AN004	MODE	I		I	I	I	Region setting pin

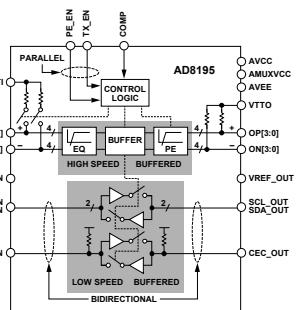
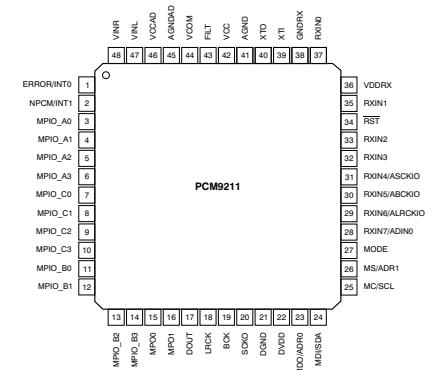
Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
169	P43/IRQ11-DS/ AN003	KEY3	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
170	P42/IRQ10-DS/ AN002	KEY2	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
171	P41/IRQ9-DS/ AN001	KEY1	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
172	VREFL0	VREFL0	-		-	-	-	Ground pin
173	P40	ADC_RST	O		I	L	I	A/D convertor(AK5358) reset control pin
174	VREFH0	VREFH0	-		-	-	-	Power supply pin
175	AVCC0	AVCC0	-		-	-	-	Power supply pin
176	P07/IRQ15	COMP_DET (SR5012/ NR1608)/ NC (S930/X2400)	I	SW3VPu	I	I	I	Component video signal detect pin

AD8195ACPZ (AV : U3000)

NOTES:
† THE AD8195 LFCSP HAS AN EXPOSED PAD ON THE UNDERSIDE OF THE PACKAGE THAT AIDS IN HEAT DISSIPATION. THE PAD MUST BE ELECTRICALLY CONNECTED TO THE AVEE SUPPLY PLANE IN ORDER TO MEET THERMAL SPECIFICATIONS.

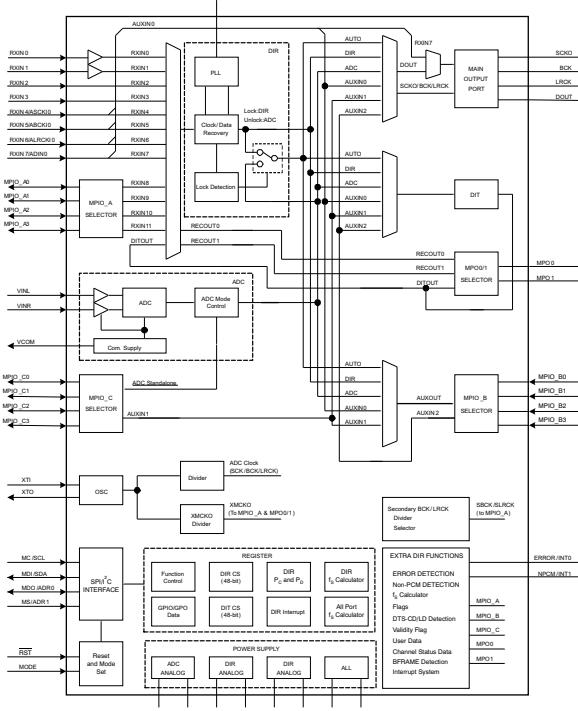
AD8195ACPZ Terminal Function

Pin No.	Mnemonic	Type ¹	Description
1	IN0	HS I	High Speed Input Complement.
2	IP0	HS I	High Speed Input.
3	IN1	HS I	High Speed Input Complement.
4	IP1	HS I	High Speed Input.
5	VTTI	Power	Input Termination Supply. Nominally connected to AVCC.
6	IN2	HS I	High Speed Input Complement.
7	IP2	HS I	High Speed Input.
8	IN3	HS I	High Speed Input Complement.
9	IP3	HS I	High Speed Input.
10, 16, 22, 23, 25, 26, 30	AVCC	Power	Positive Analog Supply. 3.3 V nominal.
11	ON0	HS O	High Speed Output Complement.
12	OP0	HS O	High Speed Output.
13	VTTO	Power	Output Termination Supply. Nominally connected to AVCC.
14	ON1	HS O	High Speed Output Complement.
15	OP1	HS O	High Speed Output.
17	ON2	HS O	High Speed Output Complement.
18	OP2	HS O	High Speed Output.
19	ON3	HS O	High Speed Output Complement.
20	OP3	HS O	High Speed Output.
21	COMP	Control	Power-On Compensation Pin. Bypass to ground through a 10 μ F capacitor.
24, 27, 37, Exposed Pad	AVEE	Power	Negative Analog Supply. 0 V nominal.
28	TX_EN	Control	High Speed Output Enable Parallel Interface.
29	PE_EN	Control	High Speed Preemphasis Enable Parallel Interface.
31	CEC_OUT	LS I/O	CEC Output Side.
32	AMUXVCC	Power	Positive Auxiliary Buffer Supply. 5 V nominal.

AD8195ACPZ Block diagram**PCM9211 (DIGITAL : U1040)****PIN Functions**

NO.	NAME	I/O	PIN		DESCRIPTION
				5-V TOLERANT	
1	ERROR/INT0	O	No	No	DIR Error detection output / Interrupt0 output
2	NPCM/INT1	O	No	No	DIR Non-PCM detection output / Interrupt1 output
3	MPIO_A0	I/O	Yes	Yes	Multipurpose I/O, Group A(1)
4	MPIO_A1	I/O	Yes	Yes	Multipurpose I/O, Group A(1)
5	MPIO_A2	I/O	Yes	Yes	Multipurpose I/O, Group A(1)
6	MPIO_A3	I/O	Yes	Yes	Multipurpose I/O, Group A(1)
7	MPIO_C0	I/O	Yes	Yes	Multipurpose I/O, Group C(1)
8	MPIO_C1	I/O	Yes	Yes	Multipurpose I/O, Group C(1)
9	MPIO_C2	I/O	Yes	Yes	Multipurpose I/O, Group C(1)
10	MPIO_C3	I/O	Yes	Yes	Multipurpose I/O, Group C(1)
11	MPIO_B0	I/O	Yes	Yes	Multipurpose I/O, Group B(1)
12	MPIO_B1	I/O	Yes	Yes	Multipurpose I/O, Group B(1)
13	MPIO_B2	I/O	Yes	Yes	Multipurpose I/O, Group B(1)
14	MPIO_B3	I/O	Yes	Yes	Multipurpose I/O, Group B(1)
15	MPO0	O	No	No	Multipurpose output 0
16	MPO1	O	No	No	Multipurpose output 1
17	DOUT	O	No	No	Main output port, serial digital audio data output
18	LRCK	O	No	No	Main output port, LR clock output
19	BCK	O	No	No	Main output port, Bit clock output
20	SCKO	O	No	No	Main output port, System clock output
21	DGND	-	-	-	Ground, for digital
22	DVDD	-	-	-	Power supply, 3.3 V (typ.), for digital
23	MDO/ADR0	I/O	Yes	Yes	Software control I/F, SPI data output / I2C slave address setting0(2)
24	MDI/SDA	I/O	Yes	Yes	Software control I/F, SPI data input / I2C data input/output(2)(3)
25	MC/SCL	I	Yes	Yes	Software control I/F, SPI clock input / I2C clock input(2)

PCM9211 BLOCK DIAGRAM



PIN		DESCRIPTION		
NO.	NAME	I/O	5-V TOLERANT	
26	MS/ADR1	I	Yes	Software control I/F, SPI chip select / I ² C slave address setting(2)
27	MODE	I	No	Control mode setting, (see the Serial Control Mode section, Control Mode Pin Setting)
28	RXIN7/ADINO	I	Yes	Biphase signal, input 7 / AUXIN0, serial audio data input(2)
29	RXIN6/ALRCKI0	I	Yes	Biphase signal, input 6 / AUXIN0, LR clock input(2)
30	RXIN5/ABCKI0	I	Yes	Biphase signal, input 5 / AUXIN0, bit clock input(2)
31	RXIN4/ASCKI0	I	Yes	Biphase signal, input 4 / AUXIN0, system clock input(2)
32	RXIN3	I	Yes	Biphase signal, input 3(2)
33	RXIN2	I	Yes	Biphase signal, input 2(2)
34	RST	I	Yes	Reset Input, active low(2) (4)
35	RXIN1	I	Yes	Biphase signal, input 1, built-in coaxial amplifier
36	VDDRX	-	-	Power supply, 3.3 V (typ.), for RXIN0 and RXIN1.
37	RXIN0	I	Yes	Biphase signal, input 0, built-in coaxial amplifier
38	GNDRX	-	-	Ground, for RXIN
39	XTI	I	No	Oscillation circuit input for crystal resonator or external XTI clock source input(5)
40	XTO	O	No	Oscillation circuit output for crystal resonator
41	AGND	-	-	Ground, for PLL analog
42	VCC	-	-	Power supply, 3.3 V (typ.), for PLL analog
43	FILT	O	No	External PLL loop filter connection terminal; must connect recommended filter
44	VCOM	O	No	ADC common voltage output; must connect external decoupling capacitor
45	AGNDAD	-	-	Ground, for ADC analog
46	VCCAD	-	-	Power supply, 5.0 V (typ.), for ADC analog
47	VINL	I	No	ADC analog voltage input, left channel
48	VINR	I	No	ADC analog voltage input, right channel

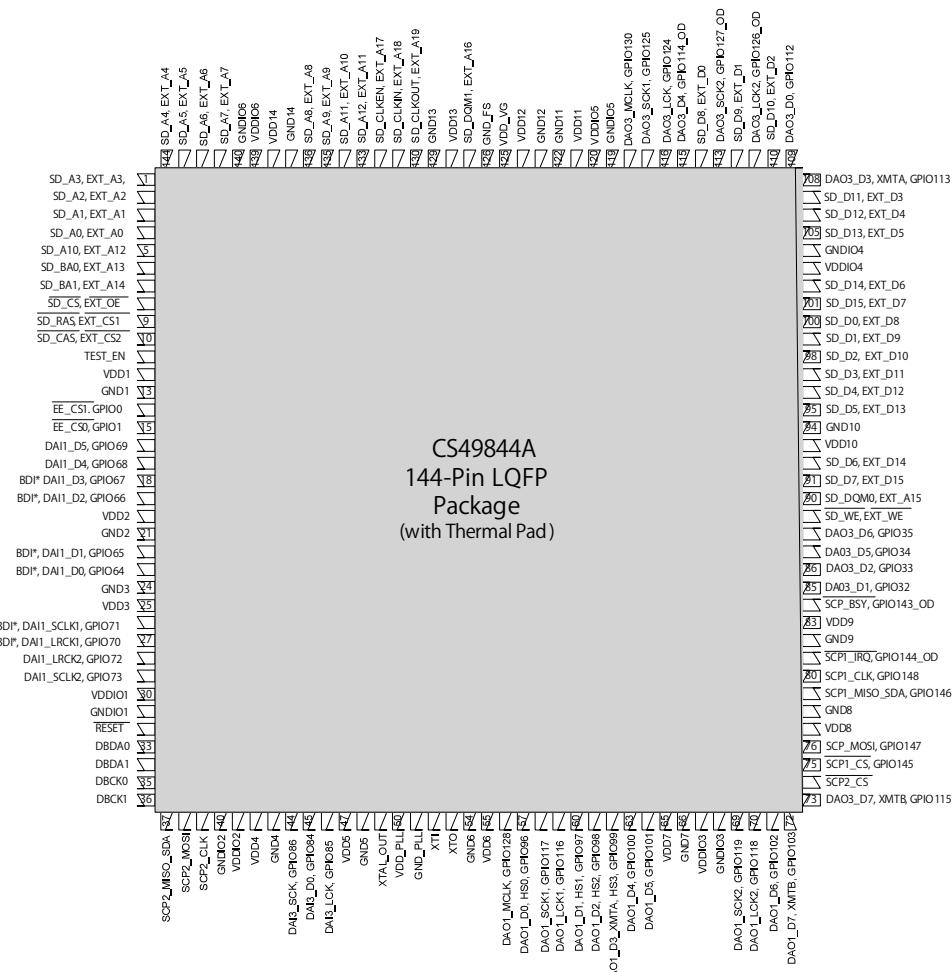
(1) Schmitt trigger input

(2) Schmitt trigger input

(3) Open-drain configuration in I²C mode

(4) Onboard pull-down resistor (50 k Ω , typical)

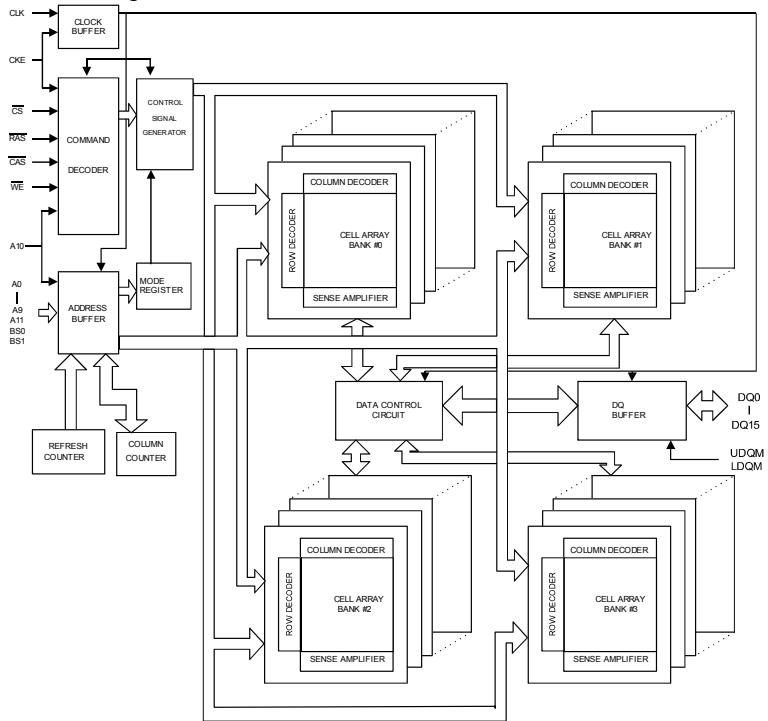
(5) CMOS Schmitt trigger input



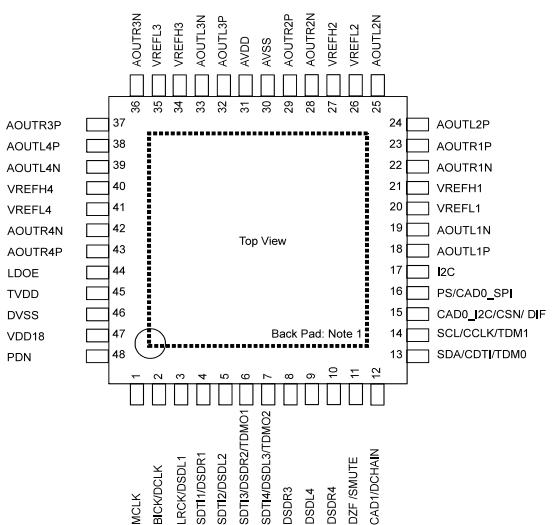
W9864G6KH-5 Pin description

PIN NUMBER	PIN NAME	FUNCTION	DESCRIPTION
23 ~ 26, 22, 29 ~ 35	A0~A11	Address	Multiplexed pins for row and column address. Row address: A0~A11. Column address: A0~A7. A10 is sampled during a precharge command to determine if all banks are to be precharged or bank selected by BS0, BS1.
20, 21	BS0, BS1	Bank Select	Select bank to activate during row address latch time, or bank to read/write during address latch time.
2, 4, 5, 7, 8, 10, 11, 13, 42, 44, 45, 47, 48, 50, 51, 53	DQ0~DQ15	Data Input/ Output	Multiplexed pins for data output and input.
19	\overline{CS}	Chip Select	Disable or enable the command decoder. When command decoder is disabled, new command is ignored and previous operation continues.
18	\overline{RAS}	Row Address Strobe	Command input. When sampled at the rising edge of the clock, \overline{RAS} , \overline{CAS} and \overline{WE} define the operation to be executed.
17	\overline{CAS}	Column Address Strobe	Referred to \overline{RAS}
16	\overline{WE}	Write Enable	Referred to \overline{RAS}
39, 15	UDQM LDQM	Input/output mask	The output buffer is placed at Hi-Z (with latency of 2) when DQM is sampled high in read cycle. In write cycle, sampling DQM high will block the write operation with zero latency.
38	CLK	Clock Inputs	System clock used to sample inputs on the rising edge of clock.
37	CKE	Clock Enable	CKE controls the clock activation and deactivation. When CKE is low, Power Down mode, Suspend mode, or Self Refresh mode is entered.
1, 14, 27	VDD	Power	Power for input buffers and logic circuit inside DRAM.
28, 41, 54	VSS	Ground	Ground for input buffers and logic circuit inside DRAM.
3, 9, 43, 49	VDDQ	Power for I/O buffer	Separated power from Vdd, to improve DQ noise immunity.
6, 12, 46, 52	VSSQ	Ground for I/O buffer	Separated ground from Vss, to improve DQ noise immunity.
36, 40	NC	No Connection	No connection.

W9864G6KH-5 Block diagram



AK4458VN (DIGITAL : U1051)



Pin Function

No.	Pin Name	I/O	Function	PD State
1	MCLK	I	External Master Clock Input Pin	Hi-Z
2	BICK	I	Audio Serial Data Clock Pin in PCM mode	Hi-z
	DCLK	I	DSD Clock Pin in DSD mode	
3	LRCK	I	Input Channel Clock Pin in PCM mode	Hi-Z
	DSDL1	I	Audio Serial Data Input in DSD mode	
4	SDTI1	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDR1	I	Audio Serial Data Input in DSD mode	
5	SDTI2	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDL2	I	Audio Serial Data Input in DSD mode	
6	SDTI3	I	Audio Serial Data Input in PCM mode	
	DSDR2	I	Audio Serial Data Input in DSD mode	100k Ω Pull down
	TDMO1	O	Audio Serial Data Output in Daisy Chain mode	
7	SDTI4	I	Audio Serial Data Input in PCM mode	
	DSDL3	I	Audio Serial Data Input in DSD mode	100k Ω Pull down
	TDMO2	O	Audio Serial Data Output in Daisy Chain mode	
8	DSDR3	I	Audio Serial Data Input in DSD mode	Hi-Z
9	DSDL4	I	Audio Serial Data Input in DSD mode	Hi-Z
10	DSDR4	I	Audio Serial Data Input in DSD mode	Hi-Z
11	DZF	O	Zero Input Detect in I _C Bus or 3-wire serial control mode	
	SMUTE	I	Soft Mute Pin in Parallel control mode. When this pin is changed to "H", soft mute cycle is initiated. When it is returning to "L", the output mute is released.	100k Ω Pull down
12	CAD1	I	Chip Address 0 Pin in I _C Bus or 3-wire serial control mode	
	DCHAIN	I	Daisy Chain Mode select pin in Parallel control mode.	
13	SDA	I/O	Control Data Pin in I _C Bus serial control mode	
	CDTI	I	Control Data Input Pin in 3-wire serial control mode	
	TDM0	I	TDM Mode select pin in Parallel control mode.	
14	SCL	I	Control Data Clock Pin in I _C Bus serial control mode	
	CCLK	I	Control Data Clock Pin in 3-wire serial control mode	
	TDM1	I	TDM Mode select pin in Parallel control mode.	Hi-Z

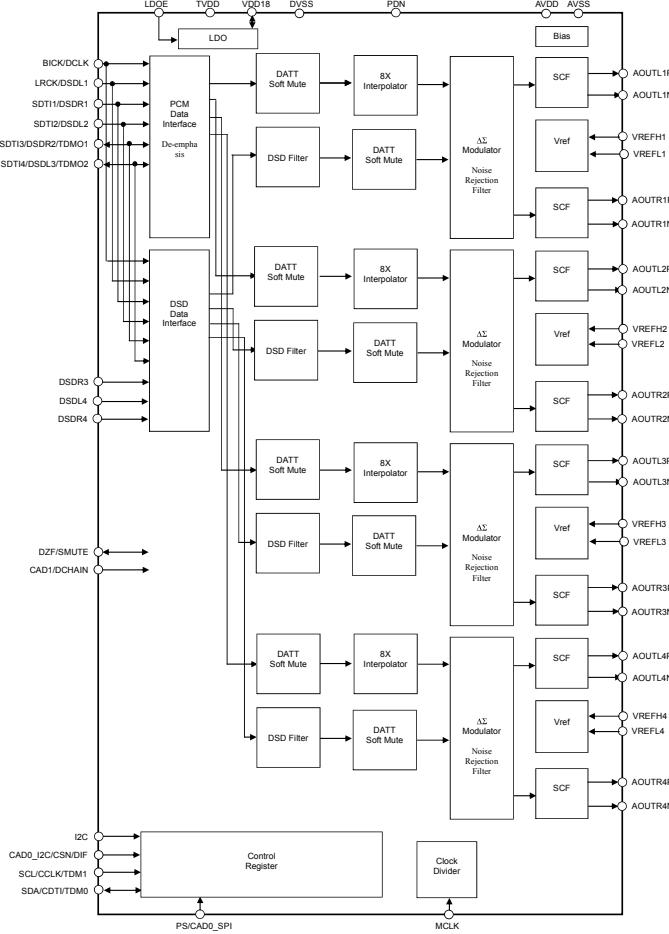
No.	Pin Name	I/O	Function	PD State
15	CAD0_I2C	I	Chip Address 0 Pin in I2C Bus serial control mode	Hi-Z
	CSN	I	Chip Select Pin in 3-wire serial control mode	
	DIF	I	Audio Data Format Select in Parallel control mode. "L": 32-bit MSB, "H": 32-bit I2S	
16	PS	I	(I2C pin = "H") Control Mode Select Pin "L": I2C Bus serial control mode, "H": Parallel control mode.	Hi-Z
	CAD0_SPI	I	(I2C pin = "L") Chip Address 0 Pin in 3-wire serial control mode	
17	I2C	I	Control Mode Select Pin "L": 3-wire serial control mode "H": I2C Bus serial control mode or Parallel control mode.	Hi-Z
18	AOUTL1P	O	Lch Positive Analog Output 1 Pin	Hi-Z
19	AOUTL1N	O	Lch Negative Analog Output 1 Pin	Hi-Z
20	VREFL1	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
21	VREFH1	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
22	AOUTR1N	O	Rch Negative Analog Output 1 Pin	Hi-Z
23	AOUTR1P	O	Rch Positive Analog Output 1 Pin	Hi-Z
24	AOUTL2P	O	Lch Positive Analog Output 2 Pin	Hi-Z
25	AOUTL2N	O	Lch Negative Analog Output 2 Pin	Hi-Z
26	VREFL2	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
27	VREFH2	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
28	AOUTR2N	O	Rch Negative Analog Output 2 Pin	Hi-Z
29	AOUTR2P	O	Rch Positive Analog Output 2 Pin	Hi-Z
30	AVSS	-	Analog Ground Pin	—
31	AVDD	-	Analog Power Supply Pin, 3.0V-5.5V	—
32	AOUTL3P	O	Lch Positive Analog Output 3 Pin	Hi-Z
33	AOUTL3N	O	Lch Negative Analog Output 3 Pin	Hi-Z
34	VREFH3	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
35	VREFL3	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
36	AOUTR3N	O	Rch Negative Analog Output 3 Pin	Hi-Z
37	AOUTR3P	O	Rch Positive Analog Output 3Pin	Hi-Z
38	AOUTL4P	O	Lch Positive Analog Output 4 Pin	Hi-Z
39	AOUTL4N	O	Lch Negative Analog Output 4 Pin	Hi-Z
40	VREFH4	I	Positive Voltage Reference Input Pin, AVDD	Hi-Z
41	VREFL4	I	Negative Voltage Reference Input Pin, AVSS	Hi-Z
42	AOUTR4N	O	Rch Negative Analog Output 4 Pin	Hi-Z
43	AOUTR4P	O	Rch Positive Analog Output 4 Pin	Hi-Z
44	LDOE	I	Internal LDO Enable Pin. "L": Disable, "H": Enable	Hi-Z
45	TVDD	-	Digital Power Supply Pin, 3.0V-3.6V	—
46	DVSS	-	Digital Ground Pin	—
47	VDD18	O	LDO Output Pin (LDOE pin = "H") This pin should be connected to DVSS with 1.0 μ F. (Note 4)	Hi-Z
48	PDN	I	Power-Down & Reset Pin When this pin is "L", the AK4458 is powered-down and the control registers are reset to default state.	Hi-Z

Note 2. All input pins except internal pull-up/down pins should not be left floating.

Note 3. PCM mode and DSD mode are controlled by registers. Daisy Chain mode is controlled by both registers and pins.

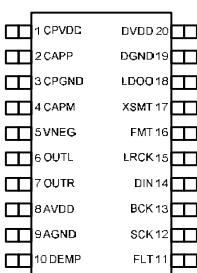
Note 4. This pin outputs DVSS when the LDOE pin = "H" and Hi-z when the LDOE pin = "L".

FUNCTIONAL BLOCK DIAGRAM



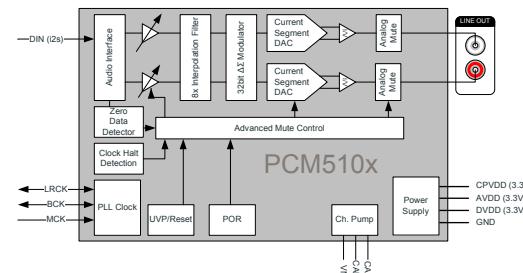
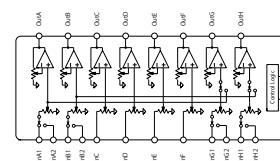
PCM5100 (DIGITAL : U1052)

PCM510X (top view)

**Table 2. TERMINAL FUNCTIONS, PCM510x**

TERMINAL NAME NO.	I/O	DESCRIPTION
CPVDD 1	-	Charge pump power supply, 3.3V
CAPP 2	O	Charge pump flying capacitor terminal for positive rail
CPGND 3	-	Charge pump ground
CAPM 4	O	Charge pump flying capacitor terminal for negative rail
VNEG 5	O	Negative charge pump rail terminal for decoupling, -3.3V
OUTL 6	O	Analog output from DAC left channel
OUTR 7	O	Analog output from DAC right channel
AVDD 8	-	Analog power supply, 3.3V
AGND 9	-	Analog ground
DEMP 10	I	De-emphasis control for 44.1kHz sampling rate ⁽¹⁾ : Off (Low) / On (High)
FLT 11	I	Filter select : Normal latency (Low) / Low latency (High)
SCK 12	I	System clock input
BCK 13	I	Audio data bit clock input
DIN 14	I	Audio data input
LRCK 15	I	Audio data word clock input
FMT 16	I	Audio format selection : I ² S (Low) / Left justified (High)
XSMT 17	I	Soft mute control : Soft mute (Low) / soft un-mute (High)
LDOO 18	-	Internal logic supply rail terminal for decoupling
DGND 19	-	Digital ground
DVDD 20	-	Digital power supply, 3.3V

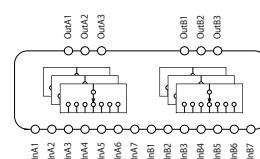
PCM5100 Block Diagram

**Figure 1. PCM510x Functional Block Diagram****NJU72343 (AV : U5202)**

Pin Function

No.	Symbol	Function
1	AREF	Analog reference potential terminal
2	ADR	Address selection terminal
3	InA2	Ach input2
4	InB2	Bch input2
5	InA1	Ach input1
6	InB1	Bch input1
7	InC	Cch input
8	InD	Dch input
9	InE	Ech input
10	InF	Fch input
11	InG1	Gch input1
12	InH1	Hch input1
13	InG2	Cch input2
14	InH2	Dch input2
15	MUTE	External mute control terminal
16	REF	Digital reference terminal

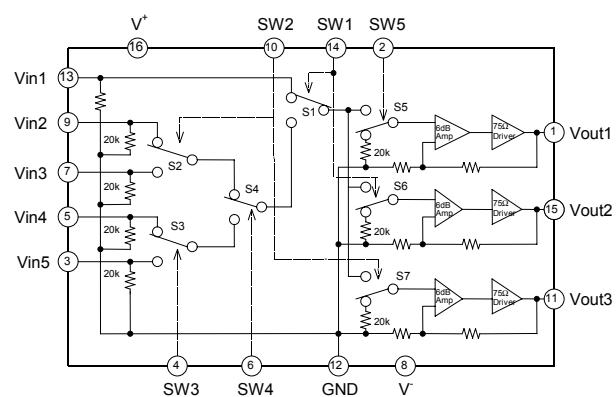
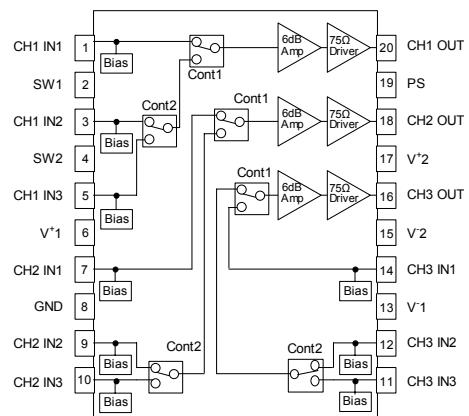
No.	Symbol	Function
17	DATA	IC control data input
18	CLOCK	IC control clock input
19	VDDOUT	Digital power supply output terminal
20	AREF	Analog reference potential terminal
21	OutH	Hch output
22	OutG	Gch output
23	OutF	Fch output
24	OutE	Ech output
25	OutD	Dch output
26	OutC	Cch output
27	OutB	Bch output
28	OutA	Ach output
29	AREF	Analog reference potential terminal
30	V-	negative power supply terminal
31	AREF	Analog reference potential terminal
32	V+	positive power supply terminal

NJU72750A (AV : U5201)

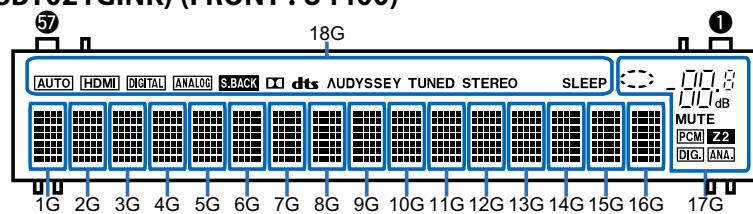
Pin Function

No.	Symbol	Function
1	V+	positive power supply terminal
2	InA1	Ach input1
3	InB1	Bch input1
4	InA2	Ach input2
5	InB2	Bch input2
6	InA3	Ach input3
7	InB3	Bch input3
8	InA4	Ach input4
9	InB4	Bch input4
10	InA5	Ach input5
11	InB5	Bch input5
12	InA6	Ach input6
13	InB6	Bch input6
14	InA7	Ach input7
15	InB7	Bch input7

No.	Symbol	Function
17	DATA	IC control data input
18	CLOCK	IC control clock input
19	NC	-
20	NC	-
21	OutB3	Bch output3
22	OutA3	Ach output3
23	REF_B	Bch reference potential terminal
24	OutB2	Bch output2
25	OutA2	Ach output2
26	REF_A	Ach reference potential terminal
27	OutB1	Bch output1
28	OutA1	Ach output1
29	NC	-
30	ADR0	Address selection pin 0
31	ADR1	Address selection pin 1
32	V-	negative power supply terminal

NJM2595MTE1 (AV : U5206)**NJM2586AVC3(AV : U5207)**

SSOP20-C3

2. FL DISPLAY**FLD (018BT021GINK) (FRONT : U4400)**

PIN CONNECTION

CONNECTION PIN NO.	FUNCTION
1	High Voltage Supply pin
2	Logic Voltage Supply pin
3	Shift Register Clock
4	No pin
5	Test pin
6	Serial Data Input
7	Power GND pin
8	Logic GND pin
9	Chip Select Input pin
10	Reset Input
11	Self-oscillation pin
12	No extend pin
13	Datum Line
14	No pin
15	No pin
16	No pin
17	No pin
18	No pin
19	No pin
20	No pin
21	No pin
22	No pin
23	No pin
24	No pin
25	No pin
26	No pin
27	No pin
28	No pin
29	No pin
30	No pin
31	No pin
32	No pin
33	No pin
34	No pin
35	No pin
36	No pin
37	No pin
38	No pin
39	No pin
40	No pin
41	No pin
42	No pin
43	No pin
44	No pin
45	No pin
46	No pin
47	No pin
48	No pin
49	No pin
50	No pin
51	No pin
52	No pin
53	No pin
54	No pin
55	No pin
56	No pin
57	No pin

NOTE

- 1) F1, F2 ----Filament
- 2) NP -----No pin
- 3) DL -----Datum Line
- 4) NX -----No extend pin
- 5) LGND -----Logic GND pin
- 6) PGND -----Power GND pin
- 7) VH -----High Voltage Supply pin
- 8) VDD -----Logic Voltage Supply pin
- 9) CP -----Shift Register Clock
- 10) DA -----Serial Data Input
- 11) TSA, B --Test pin
- 12) CS -----Chip Select Input pin
- 13) RESET --Reset Input
- 14) OSC ---Pin for self-oscillation
- 15) Solder composition is Sn-3Ag-0.5Cu.
- 16) 17G, 18G --Grid
- 17) Q17G, Q18G --Driver Output Port.
- 18) Field of vision is a minimum of 21.8° from the lower side.

DISASSEMBLY

Flowchart

- 1. WiFi ANT
- 2. FRONT PANEL ASSY
- 3. RADIATOR ASSY
- 4. DIGITAL PCB
- 5. SPK PCB
- 6. TRANS
- 7. SMPS PCB
- 8. REG PCB
- 9. AV PCB

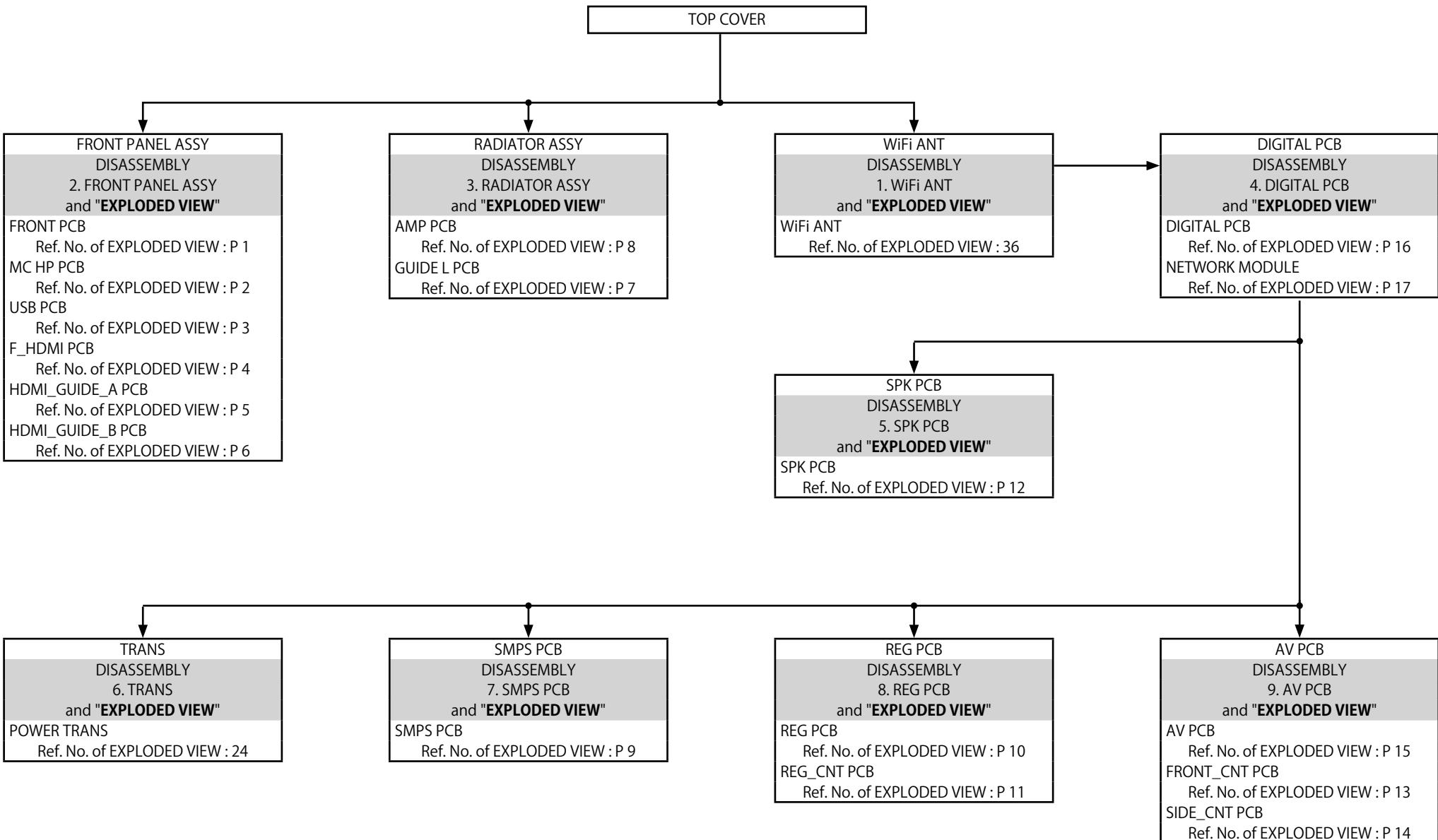
EXPLODED VIEW

PACKING VIEW

DISASSEMBLY

Flowchart

- Remove each part following the flow below.
- Reassemble the removed parts in the reverse order.
- Read "[SAFETY PRECAUTIONS](#)" before reassembling the removed parts.
- If wire bundles are removed or moved during adjustment or part replacement, reshape the wires after completing the work. Failure to shape the wires correctly may cause problems such as noise.
- See "[EXPLODED VIEW](#)"



Caution in servicing

Electrical

Mechanical

Repair Information

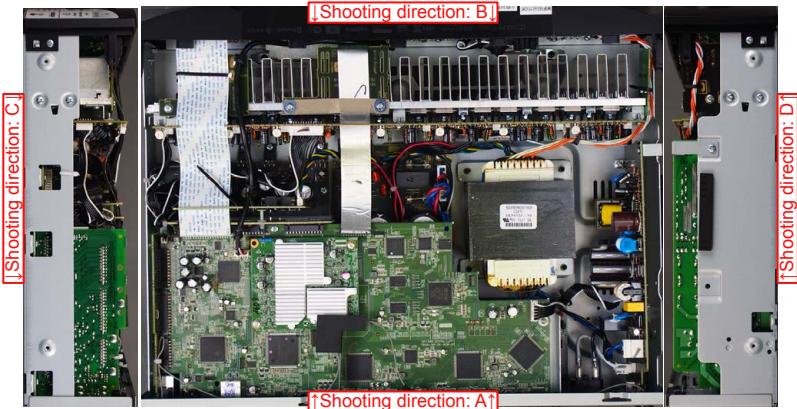
Updating

Explanatory Photos for DISASSEMBLY

- For the shooting direction of each photos used in this manual, see the photo below.
- A, B, C and D** in the photo below indicate the shooting directions of photos.
- The photographs with no shooting direction indicated were taken from the top of the unit.
- Photos of NR1608 U are used in this manual.

The viewpoint of each photograph

(Shooting direction : X) [View from the top]



1. WiFi ANT

Proceeding : **TOP COVER** → **WiFi ANT**

- Remove the INSULATION SHEET. Cut the wire clamps. Remove the tape.

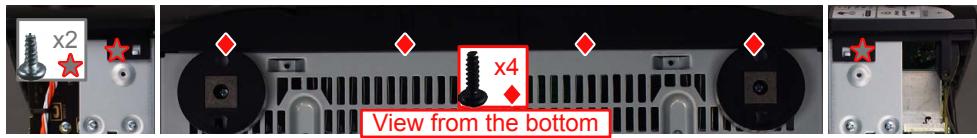


- NOTE :
- If the INSULATION SHEET has been removed, replace with a new sheet.
 - When attaching the INSULATION SHEET, align with the Silk-Print and up to side of the NET-WORK MODULE PCB.
 - Fix with tape in position A.

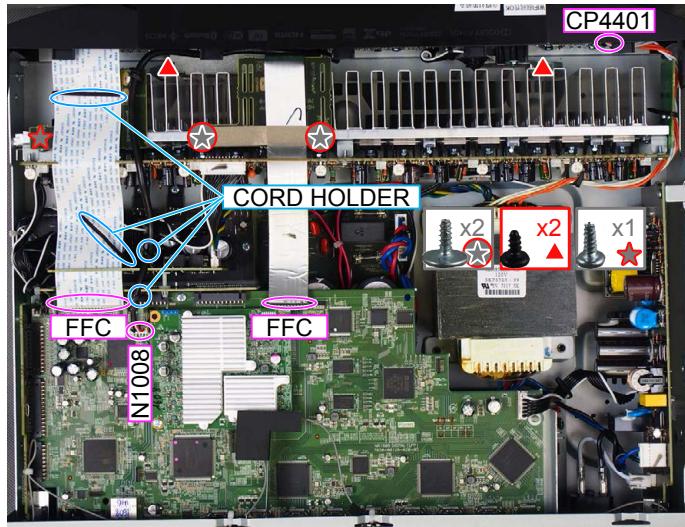
2. FRONT PANEL ASSY

Proceeding : **TOP COVER** → **FRONT PANEL ASSY**

- Remove the screws.



- Remove the screws. Remove the CORD HOLDER and connectors. Remove the FFC.



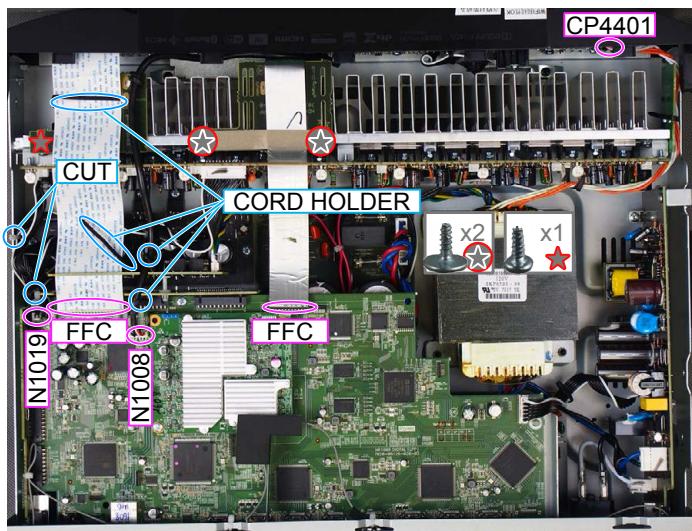
3. RADIATOR ASSY

Proceeding : **TOP COVER** → **RADIATOR ASSY**

- (1) Remove the screws.



- (2) Cut the wire clamps, then remove the CORD HOLDERs and connectors.
Remove the screws. Remove the FFC.



- (3) Remove the CORD HOLDERs and connectors.



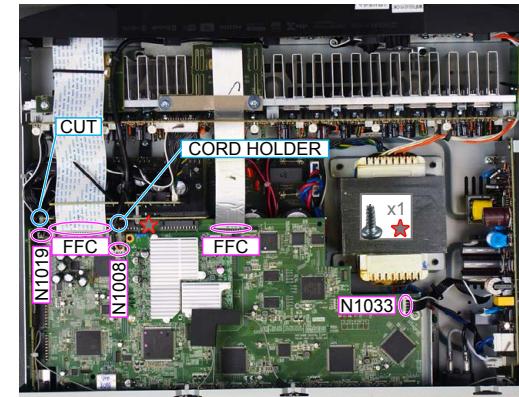
4. DIGITAL PCB

Proceeding : **TOP COVER** → **WiFi ANT** → **DIGITAL PCB**

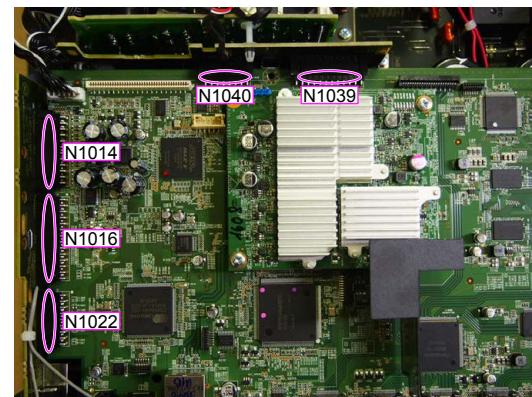
- (1) Remove the screws.



- (2) Cut the wire clamps, then remove the CORD HOLDERs and connectors.
Remove the FFC.



- (3) Remove the connector.



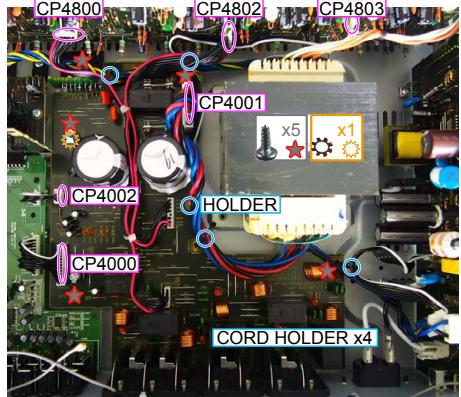
5. SPK PCB

Proceeding : **TOP COVER** → **WiFi ANT** → **DIGITAL PCB** → **SPK PCB**

- (1) Remove the screws.



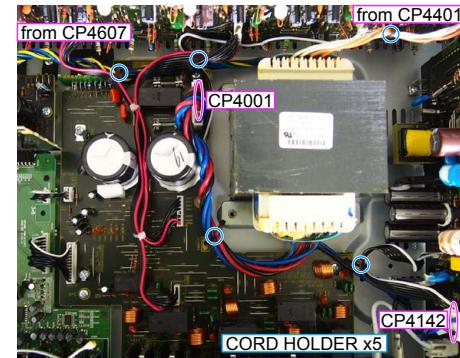
- (2) Remove the screws. Remove the CORD HOLDER and connectors. Remove the HOLDER.



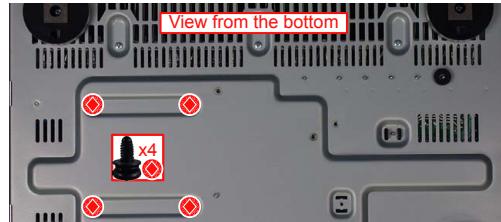
6. TRANS

Proceeding : **TOP COVER** → **WiFi ANT** → **DIGITAL PCB** → **TRANS**

- (1) Remove the CORD HOLDERs and connector wires.



- (2) Remove the screws.



NOTE : It will separate and TRANS will fall from SET, if screws is removed.

7. SMPS PCB

Proceeding : **TOP COVER** → **SMPS PCB**

See "[EXPLODED VIEW](#)" for instructions on removing the SMPS PCB.

8. REG PCB

Proceeding : **TOP COVER** → **REG PCB**

See "[EXPLODED VIEW](#)" for instructions on removing the REG PCB.

9. AV PCB

Proceeding : **TOP COVER** → **COVER** → **DIGITAL PCB** → **AV PCB**

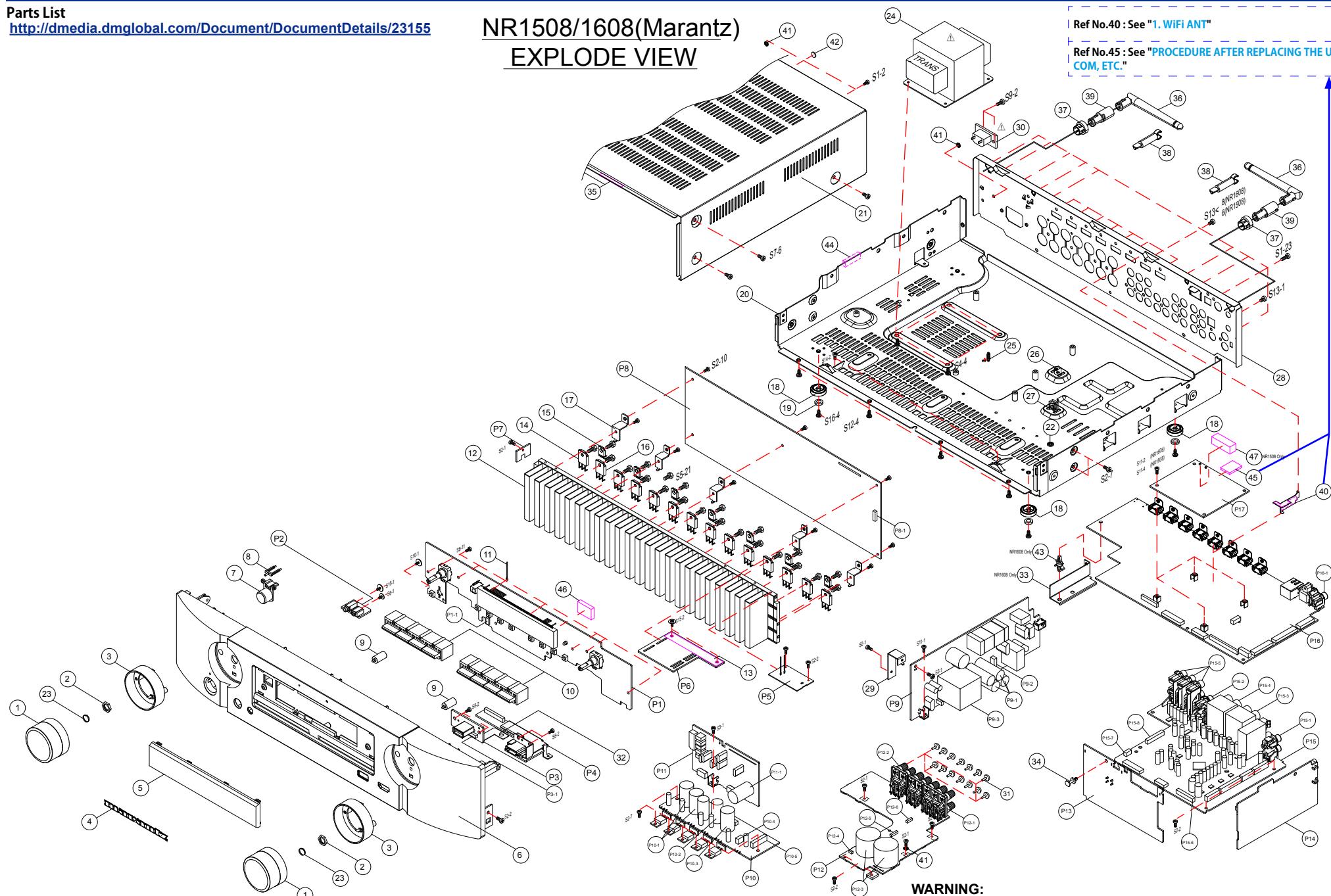
See "[EXPLODED VIEW](#)" for instructions on removing the AV PCB.

EXPLODED VIEW

Parts List

<http://dmedia.dmglobal.com/Document/DocumentDetails/23155>

NR1508/1608(Marantz) EXPLODE VIEW

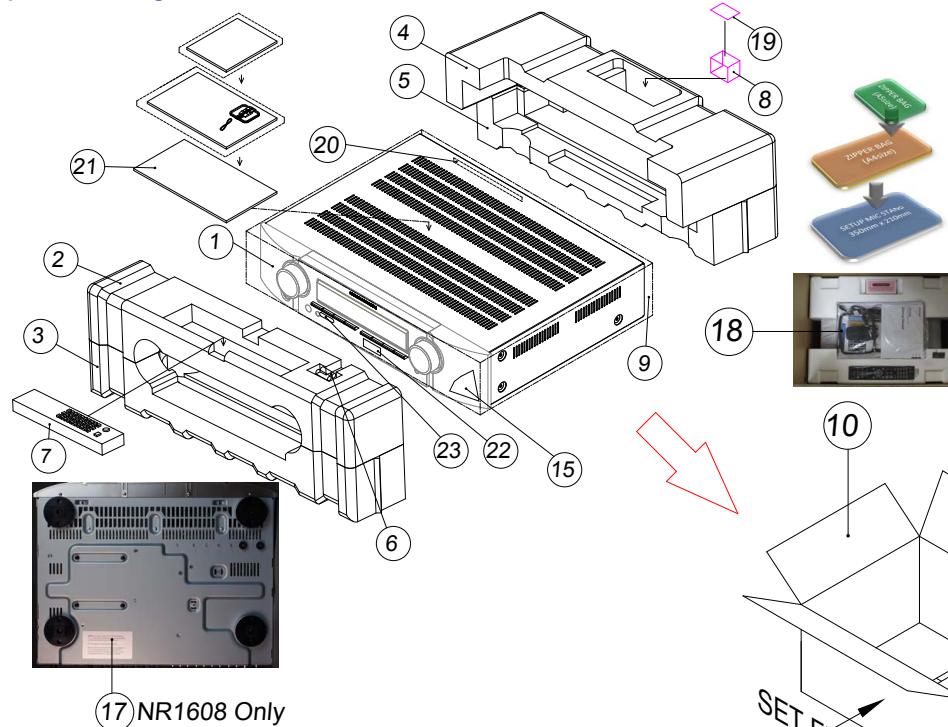


WARNING:
Parts marked with this symbol  have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

PACKING VIEW

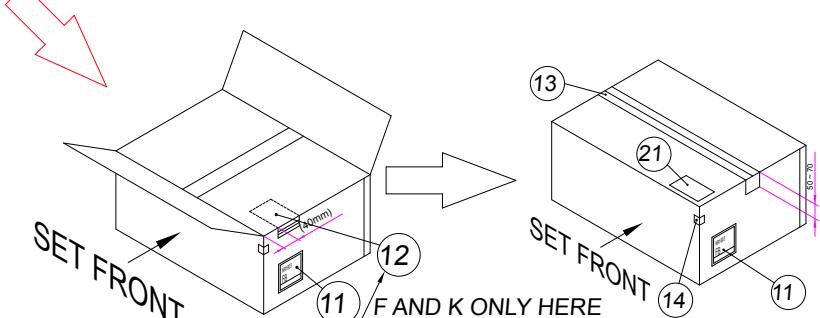
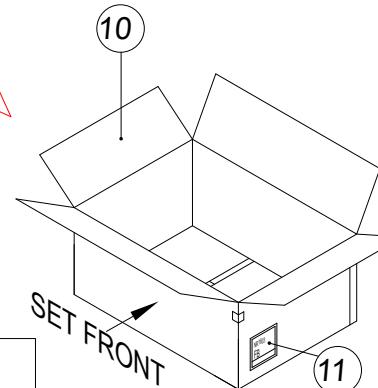
Parts List

<http://dmedia.dmglobal.com/Document/DocumentDetails/23155>



MANUAL POLYBAG ASSY	*MIC ASSY*
<p>POLYBAG CODE: 6337-04006-201-0S ZIPPERBAG(A5size) Notes on RADIO (ALL) Caution on Using Batteries (N Only) SAFETY INFORMATION (ALL) JAPAN POSTCARD (F only) WARRANTY (USA & CANADA) (U only) SPK WIRE LABEL (ALL) Fm Antenna Antenna isolator All Antenna CARD PASS (K only)</p>	<p>POLYBAG CODE: 6330-21071-900-0S ZIPPERBAG(A5size) SETUP insertion sheet INST. MANUAL (CD) (F only) QUICK START GUIDE (ALL) Getting started MIC STAND ASSEMBLY INSTRUCTION SETUP MIC STAND SIZE: 350mm x 210mm This part together with document and zipper bag are supplied.</p>

* POLY BAG PACKING STYLE	* BOX BOTTOM TAPE(O)	* BOX BOTTOM CLIP(X)
<p>TAPE(CLEAR)</p> <p>SET</p> <p>CORD AC</p> <p>ONLY UK PLUG(at store)</p>	<p>13</p>	



Caution in servicing

Electrical

Mechanical

Repair Information

Updating

REPAIR INFORMATION

TROUBLE SHOOTING

- [1. POWER](#)
- [2. Analog video](#)
- [3. HDMI/DVI](#)
- [4. AUDIO](#)
- [5. Network / Bluetooth / USB](#)
- [6. SMPS](#)

HDMI "Rx/Tx" Failure Detection

- [1. Prior checking](#)
- [2. Preparations for checking HDMI Switcher reception/transmission register](#)
- [3. Starting detecting the point of failure](#)
- [4. Device implementation location](#)

CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

SPECIAL MODE

- [Special mode setting button](#)
- [1. Version Display Mode](#)
- [2. PANEL / REMOTE LOCK Selection Mode](#)
- [3-1. Selecting the Mode for Service-related](#)
- [3-2. Protection History Display Mode](#)
- [3-3. Operation Info Mode](#)
- [3-4. TUNER STEP mode \(U / N only\)](#)
- [4. Protection Pass Mode](#)
- [5. Network Initialization Mode](#)
- [6. Clearing the Operation Info](#)

DIAGNOSTIC MODE

- [Service Path Check Mode](#)
- [DIAGNOSTIC PATH DIAGRAM](#)

JIG FOR SERVICING

ADJUSTMENT

Caution in servicing

Electrical

Mechanical

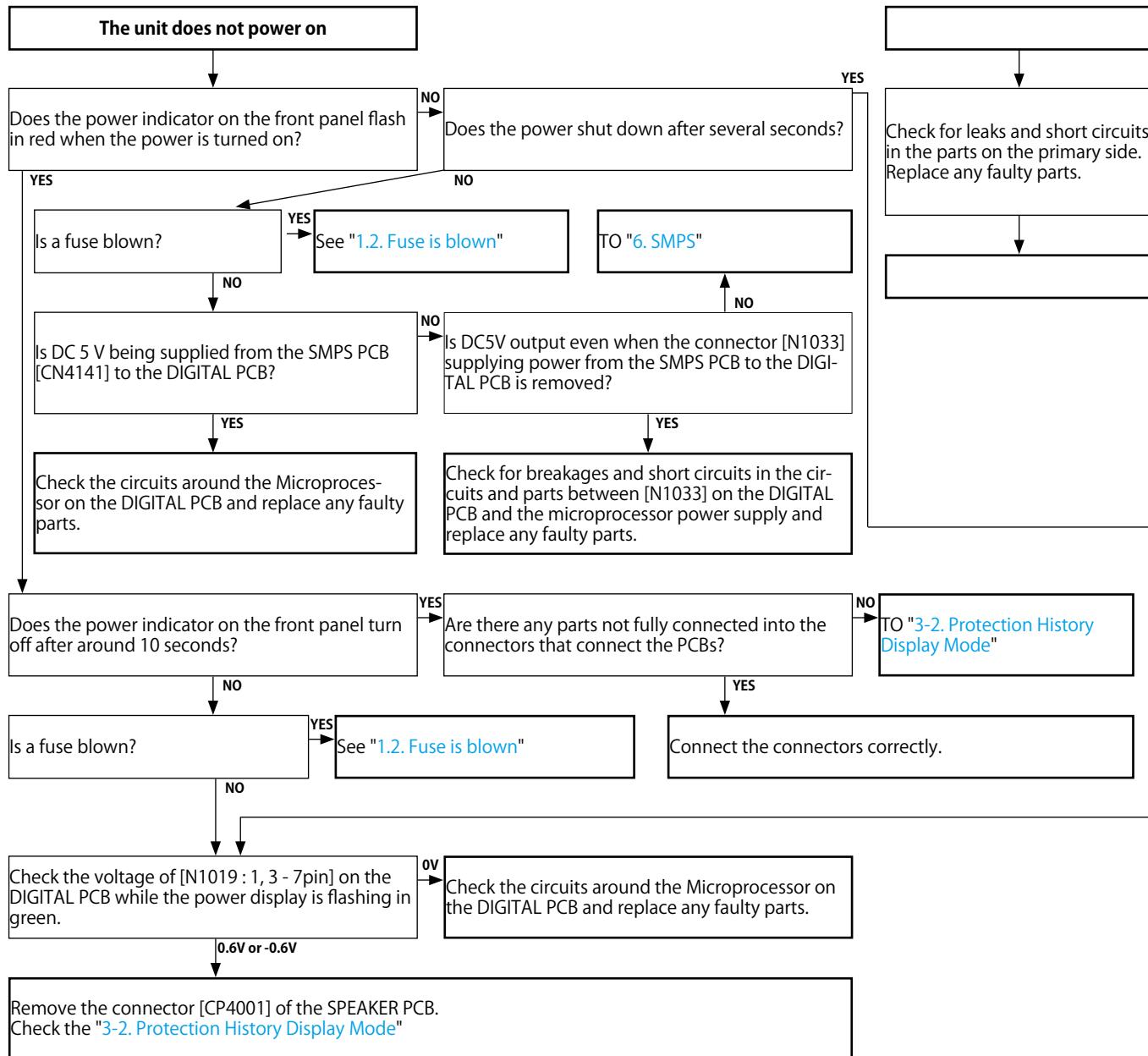
Repair Information

Updating

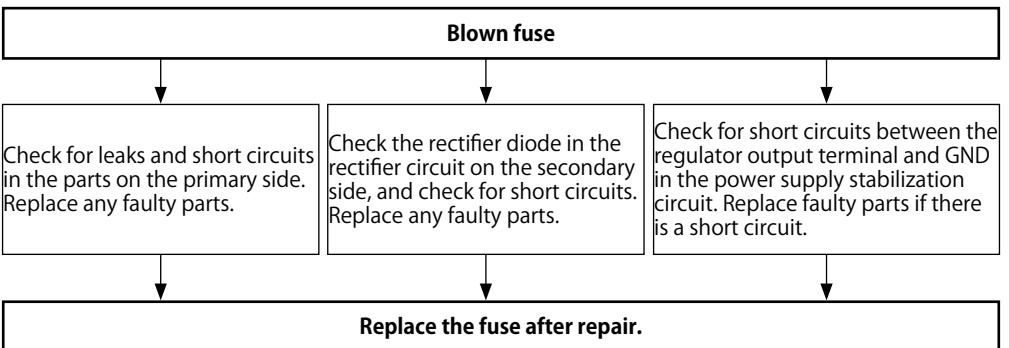
TROUBLE SHOOTING

1. POWER

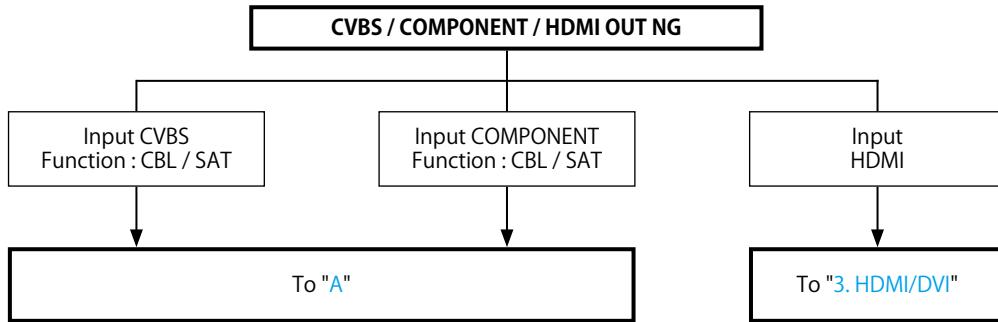
1.1. The unit does not power on



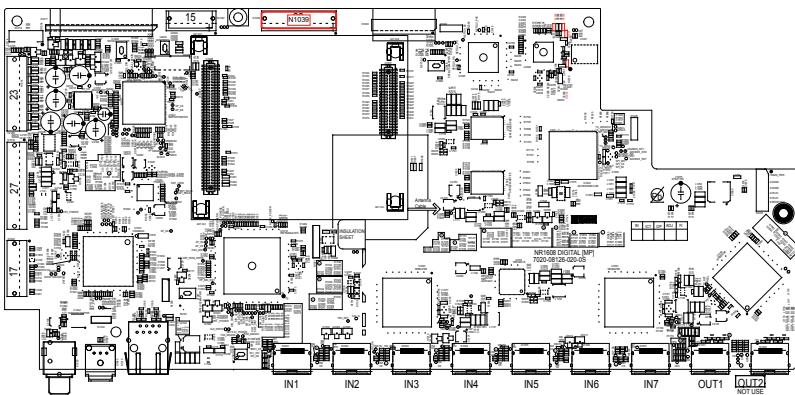
1.2. Fuse is blown



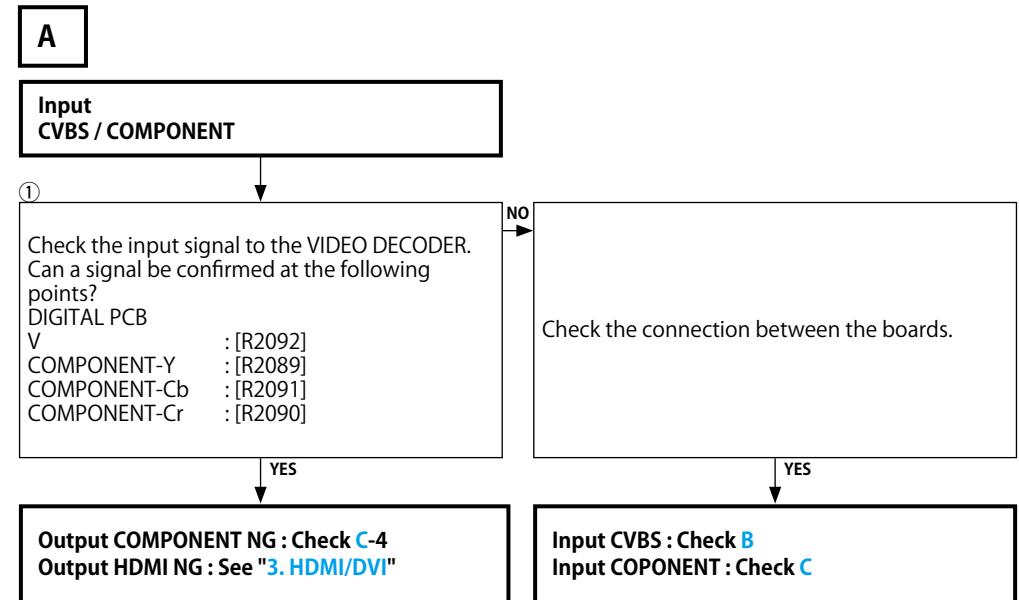
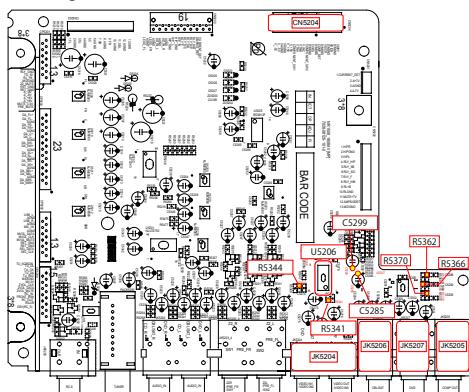
2. Analog video

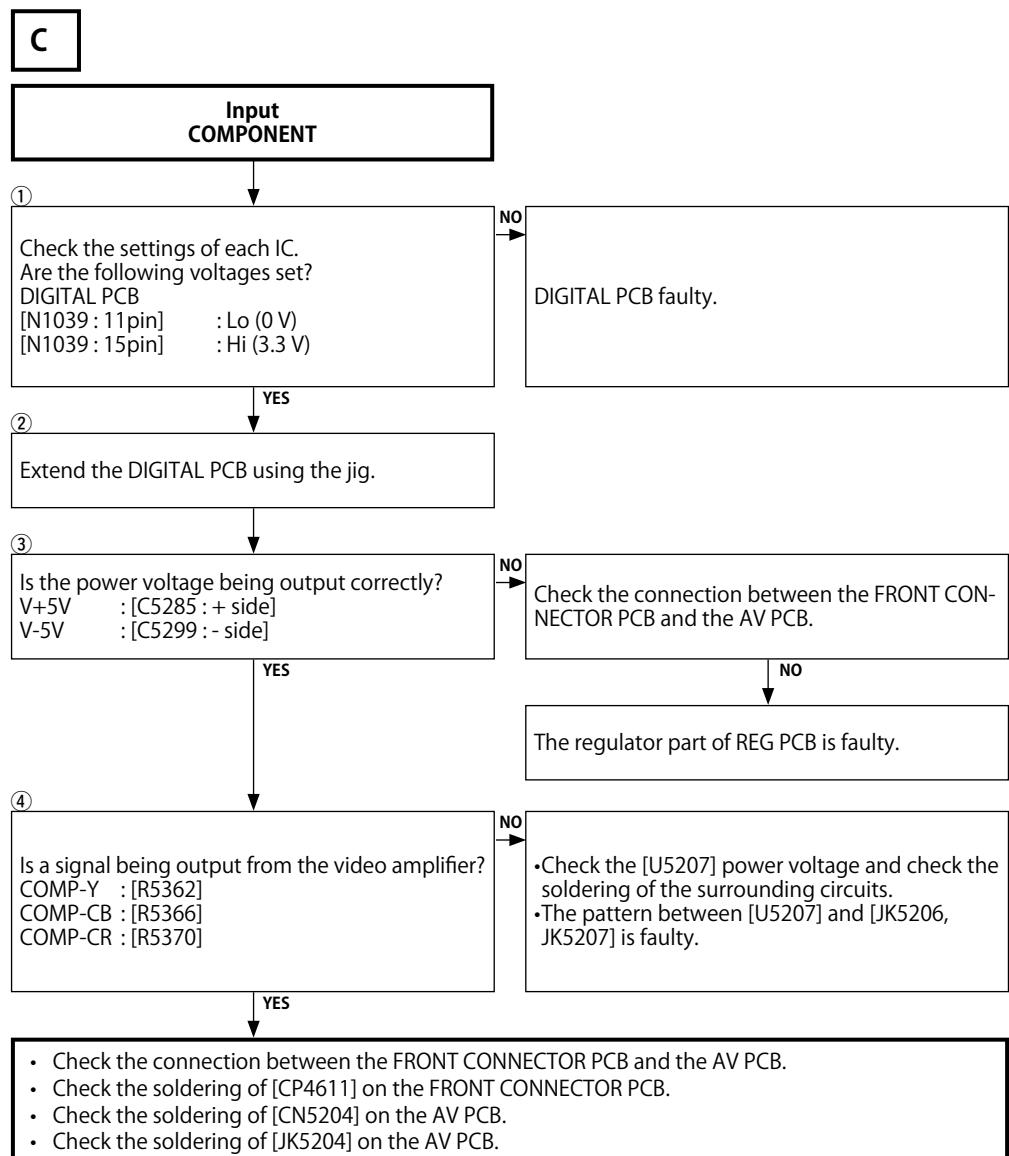
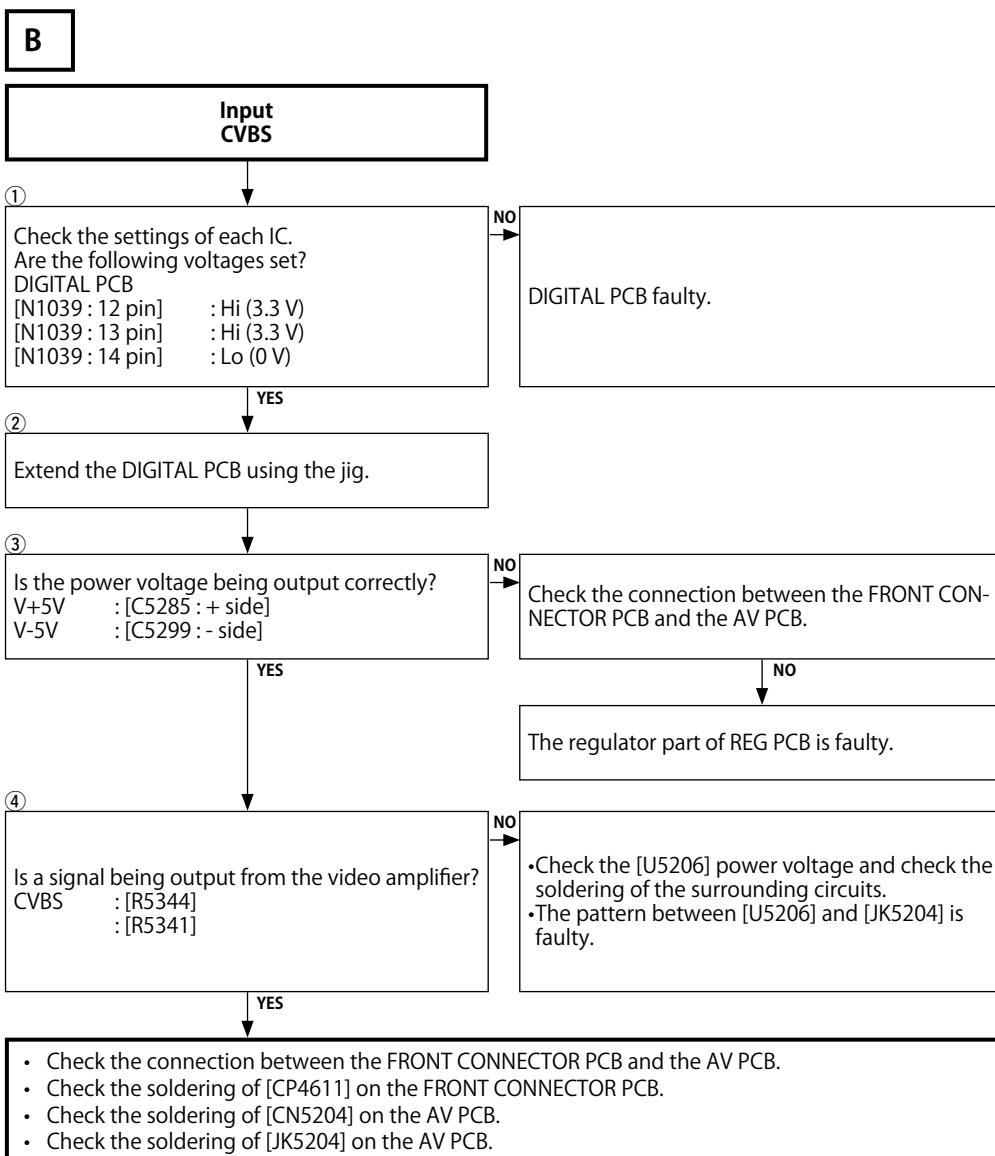


DIGITAL test point



AV test point



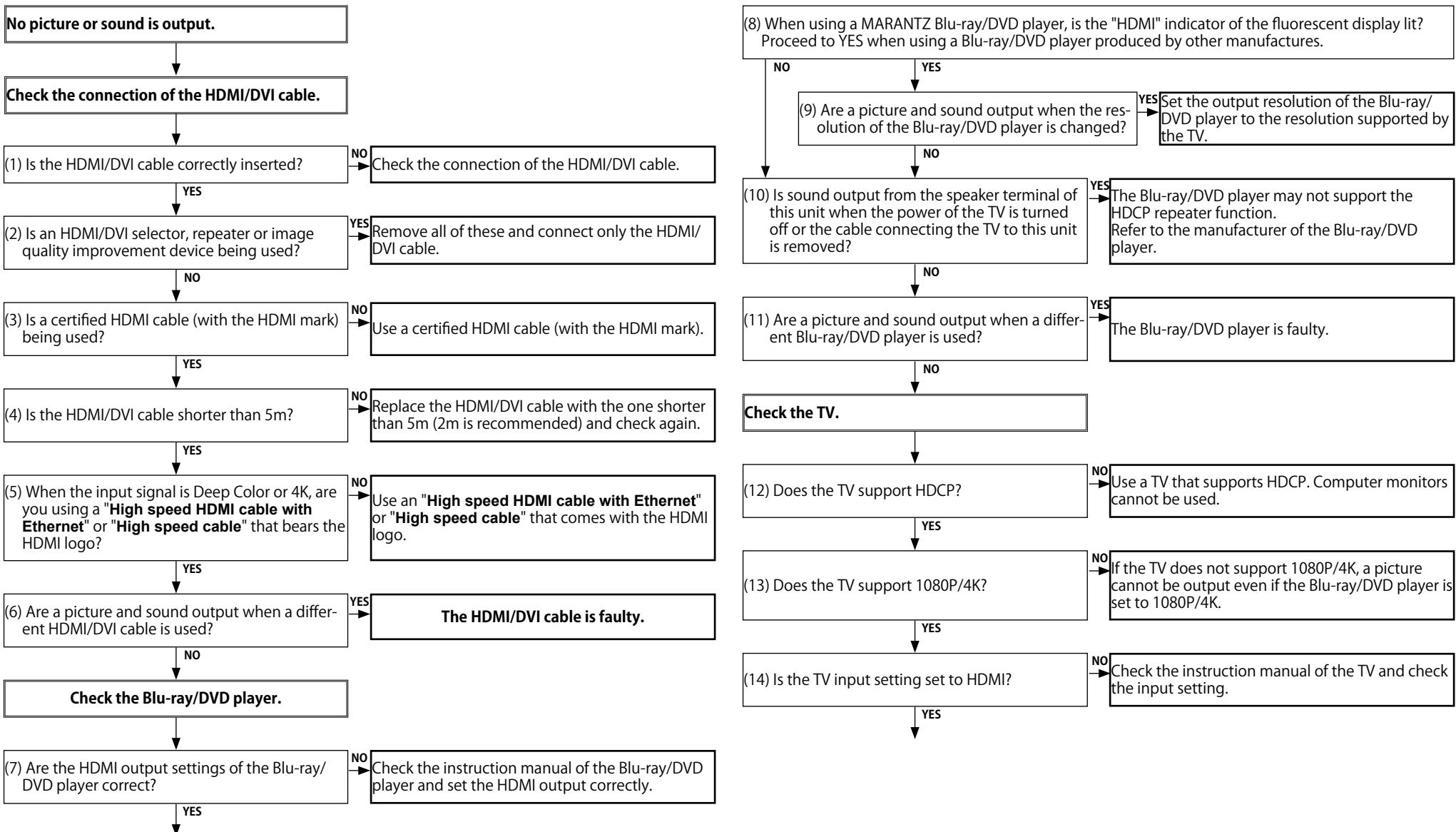


* These instructions refer to the AV PCB unless otherwise specified.

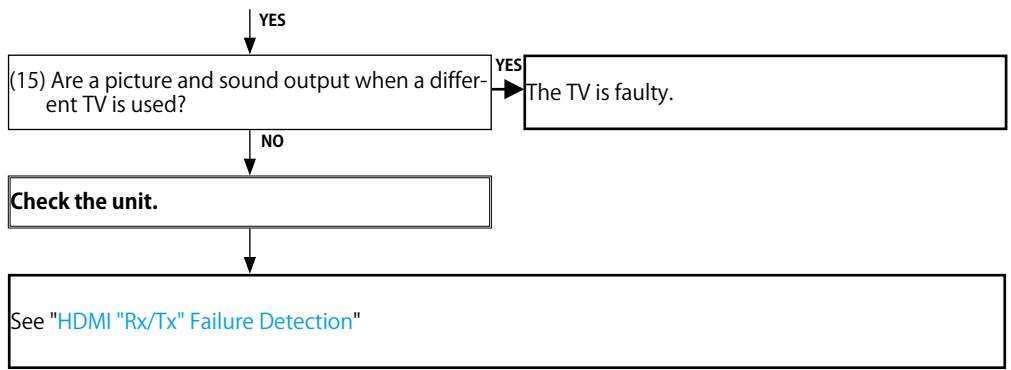
* These instructions refer to the AV PCB unless otherwise specified.

3. HDMI/DVI

3.1. No picture or sound is output (HDMI to HDMI)

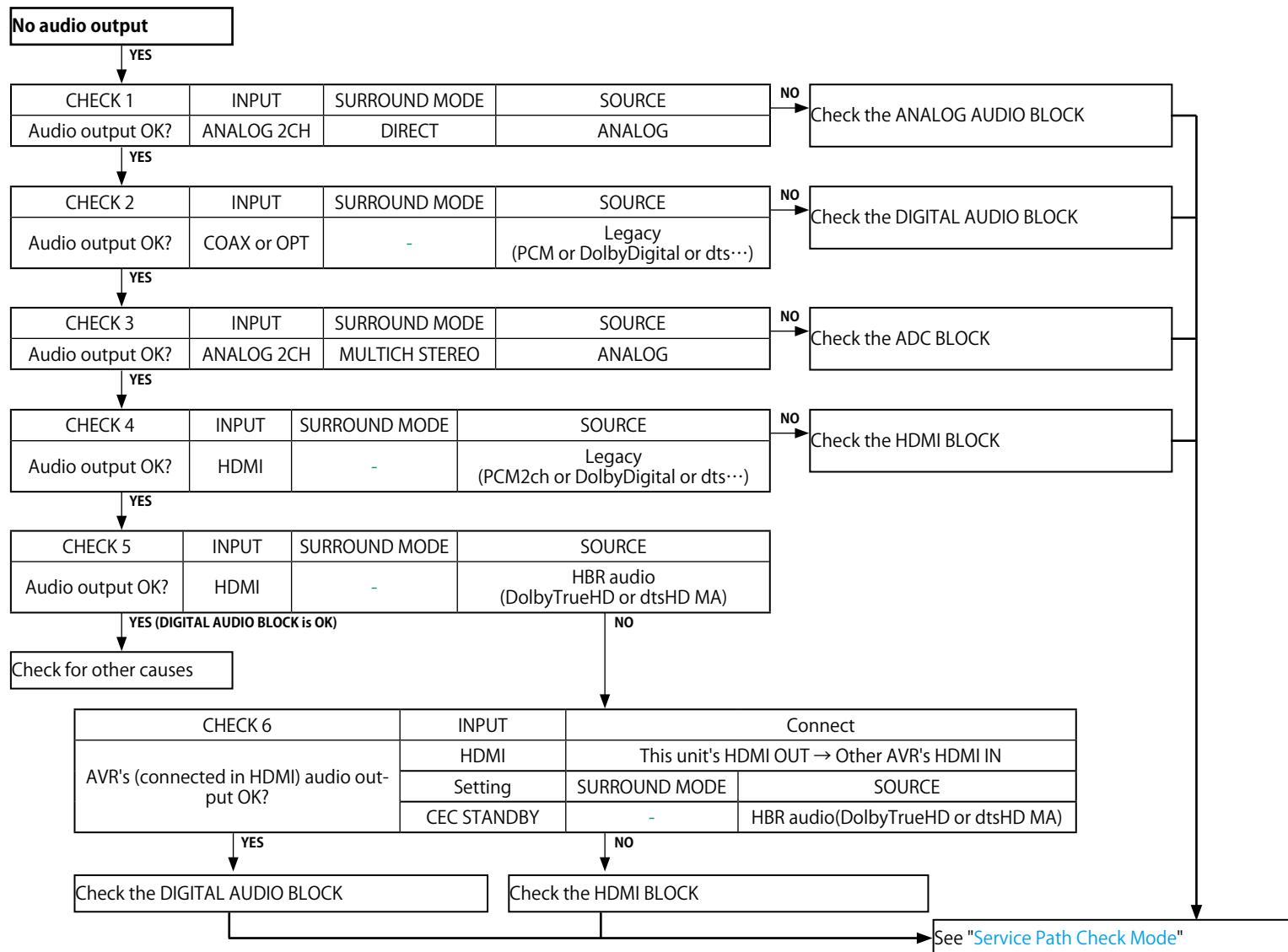


Go to next page.



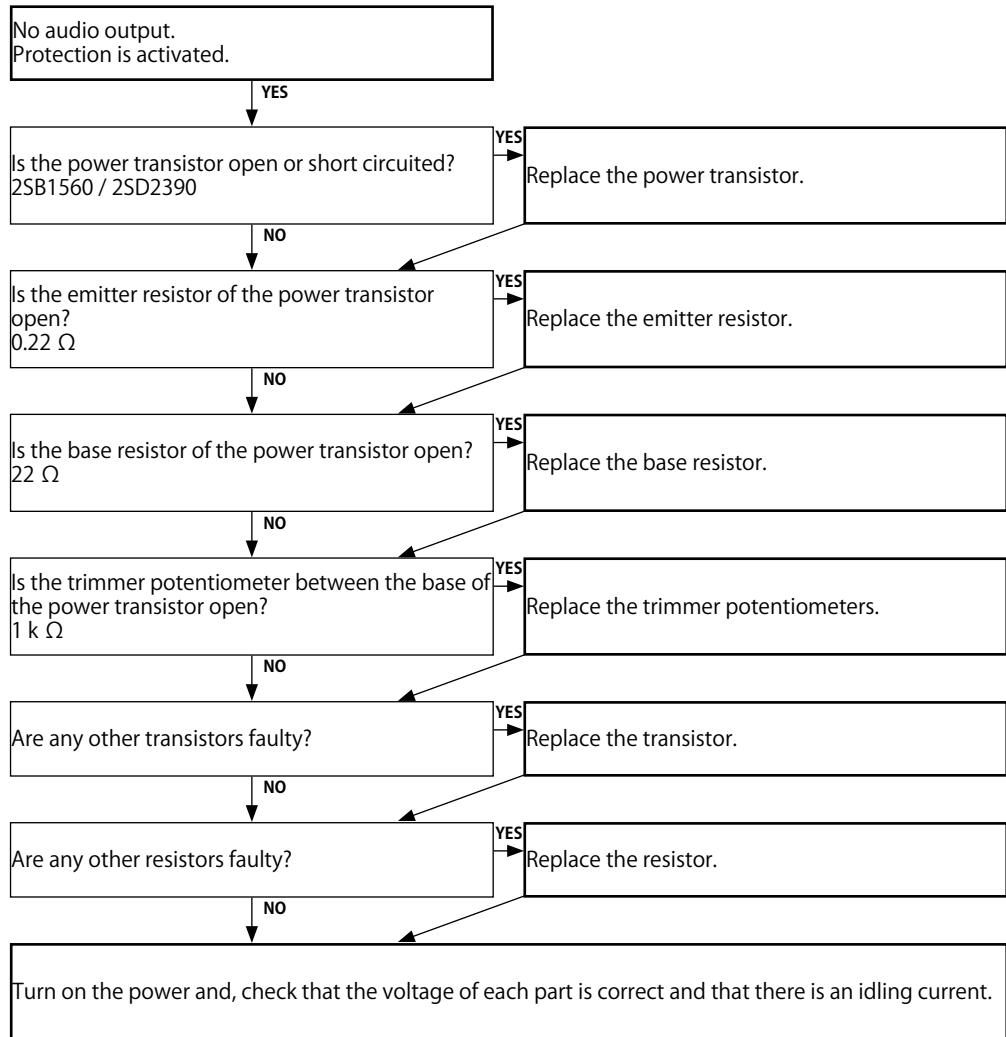
4. AUDIO

4.1. AUDIO CHECK

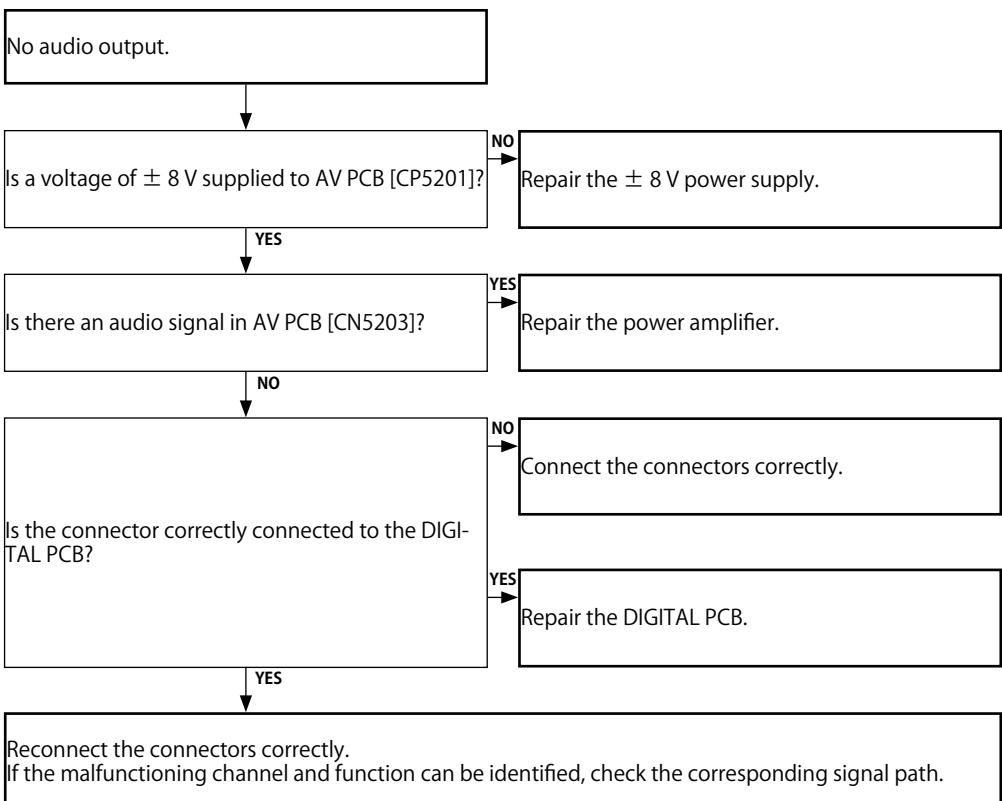


4.2. Power AMP (AMP PCB)

When using the protection pass mode, do not connect speakers to the speaker terminals.

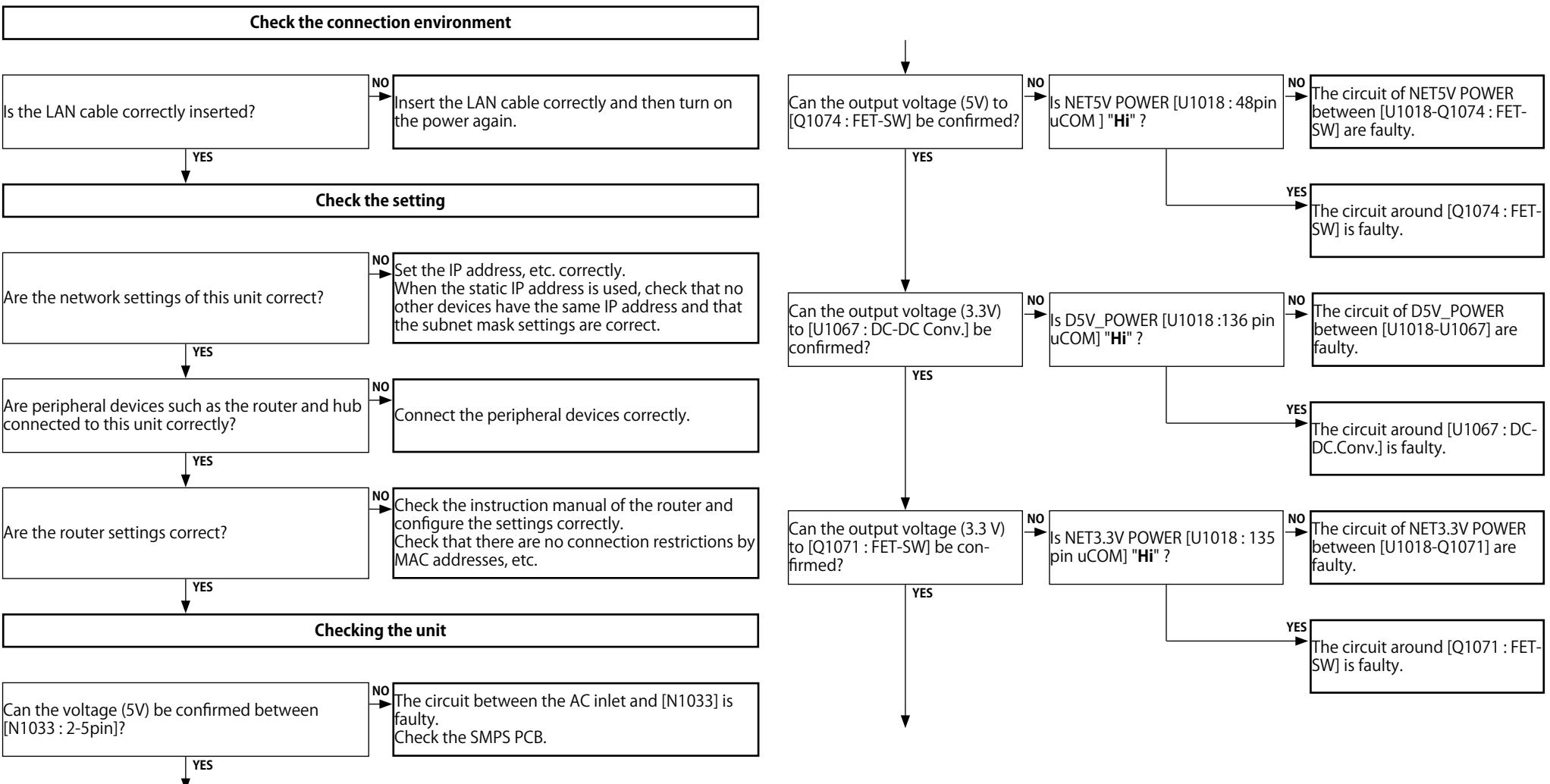


4.3. Analog audio



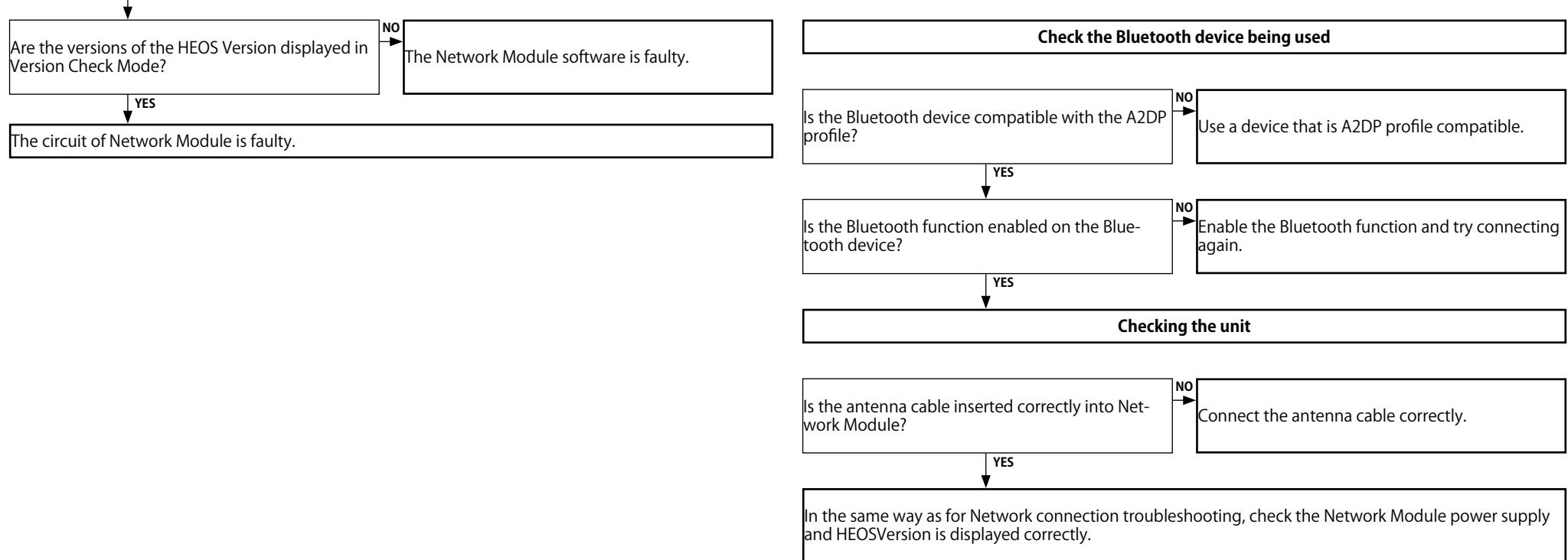
5. Network / Bluetooth / USB

5.1. Cannot connect to the network

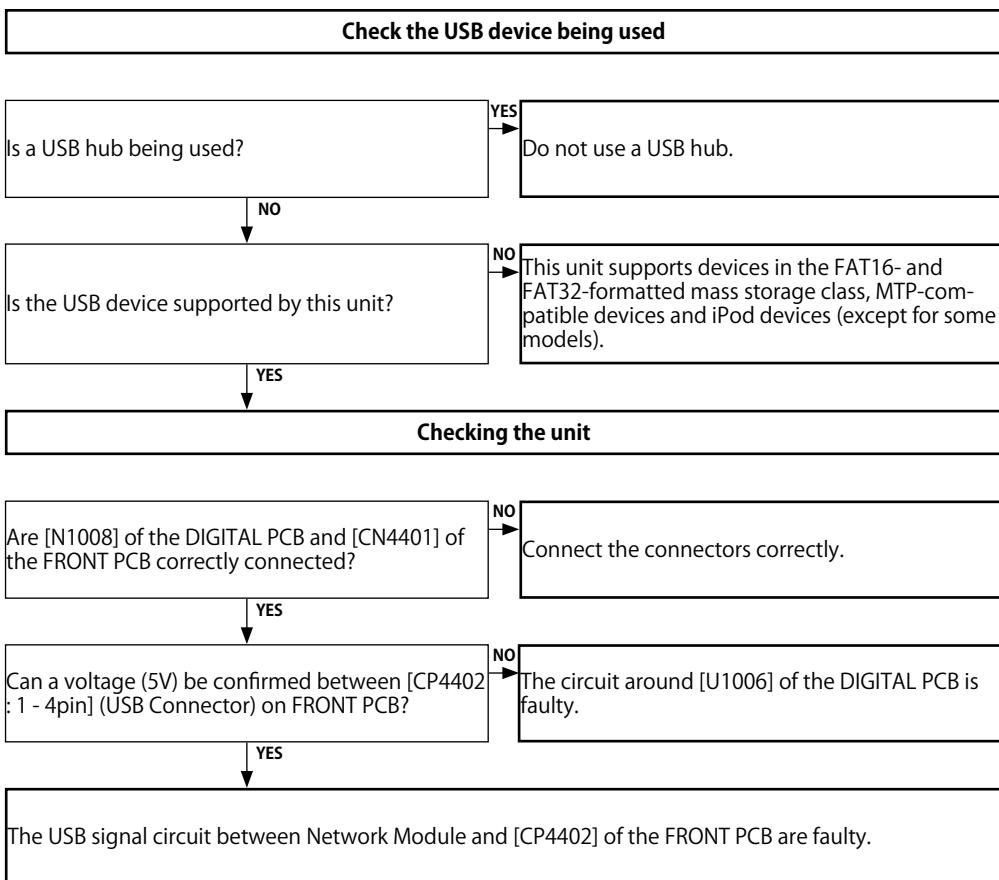


Go to next page.

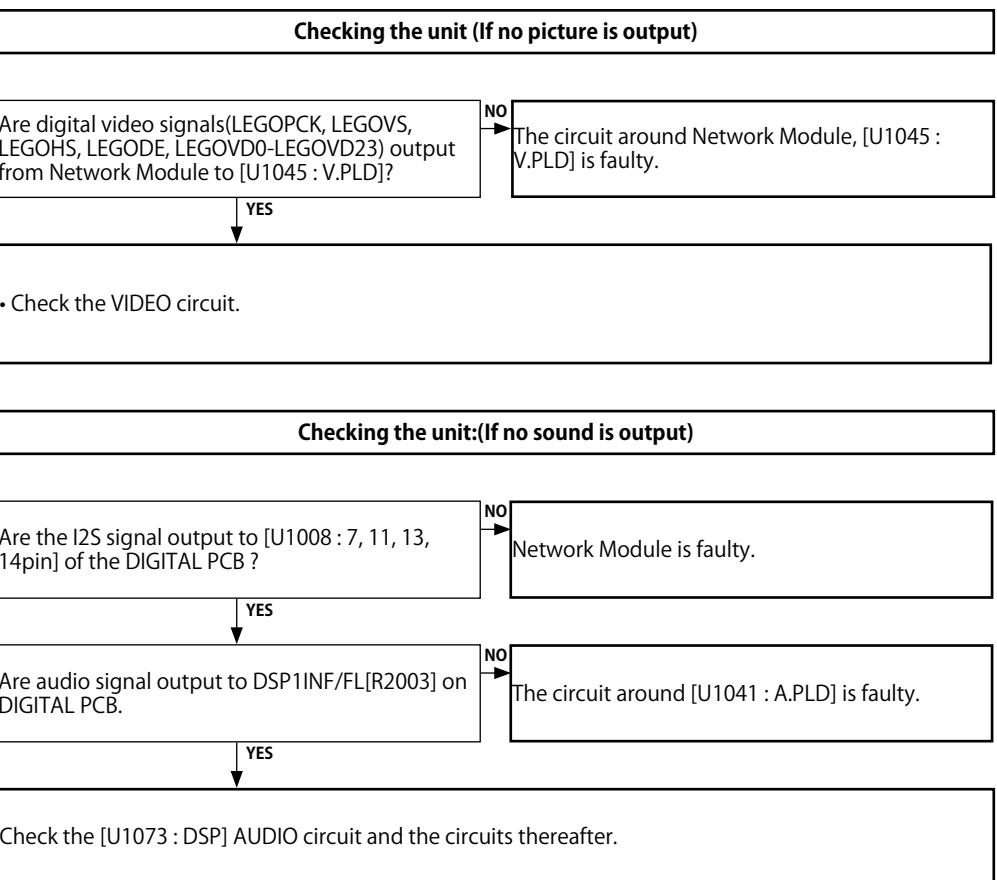
5.2. Cannot establish a Bluetooth connection

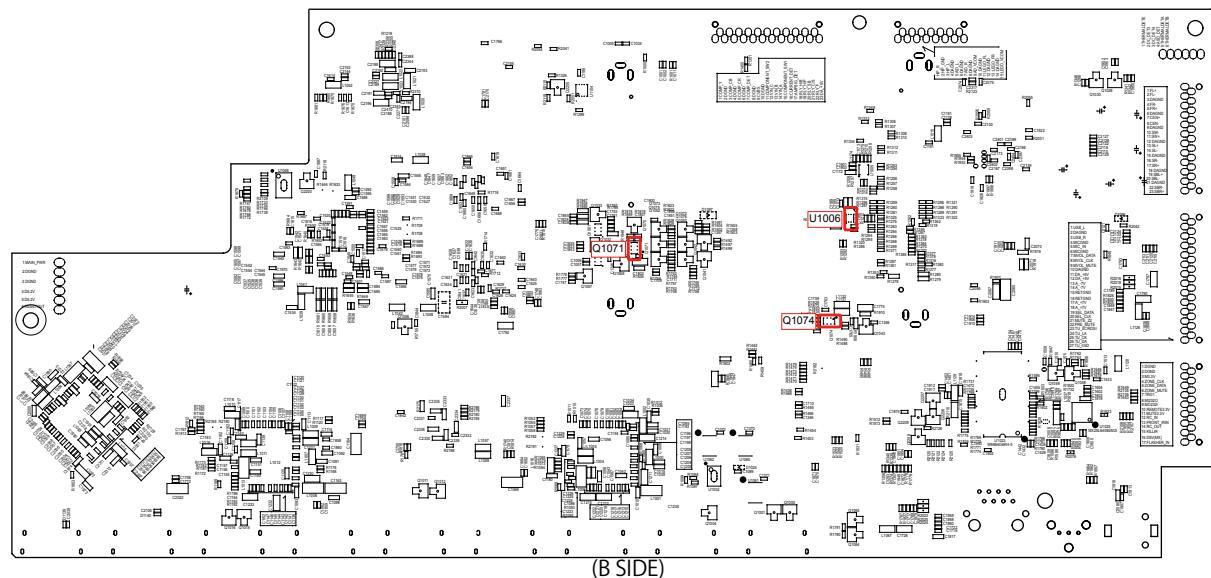
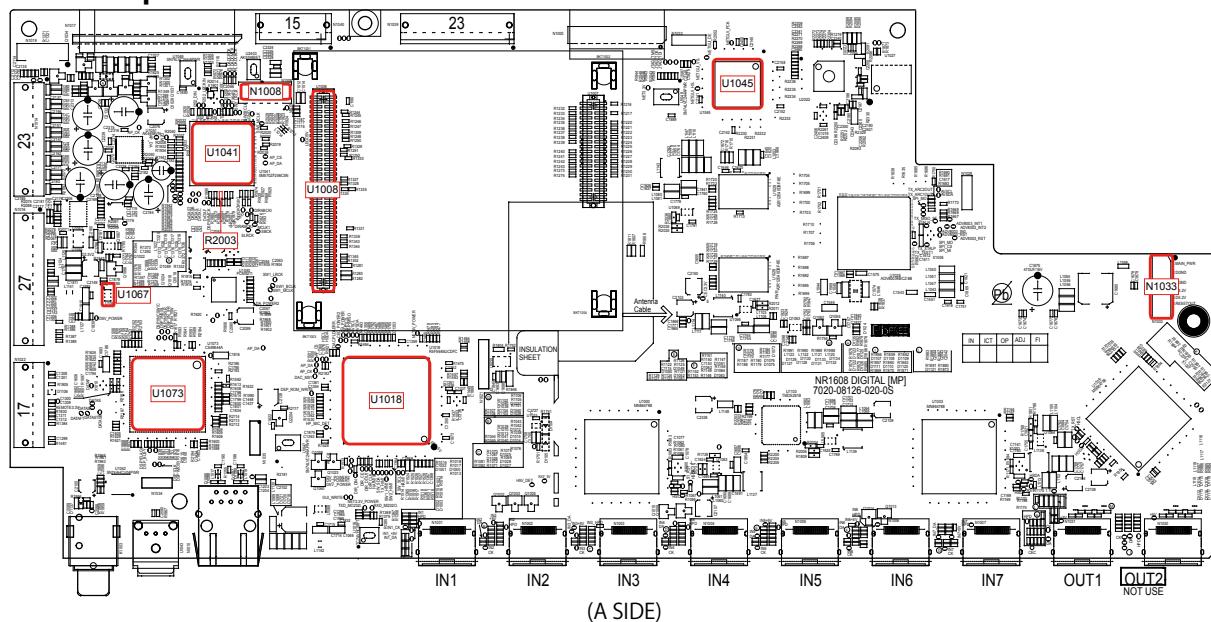
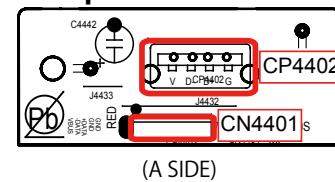


5.3. Cannot recognize the connected USB device

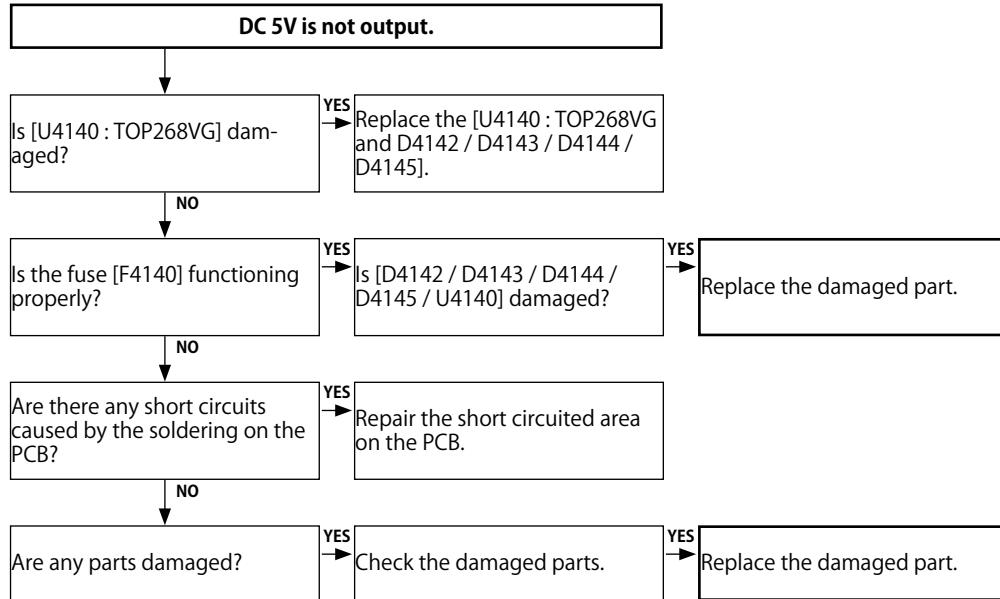


5.4. No picture or sound is output

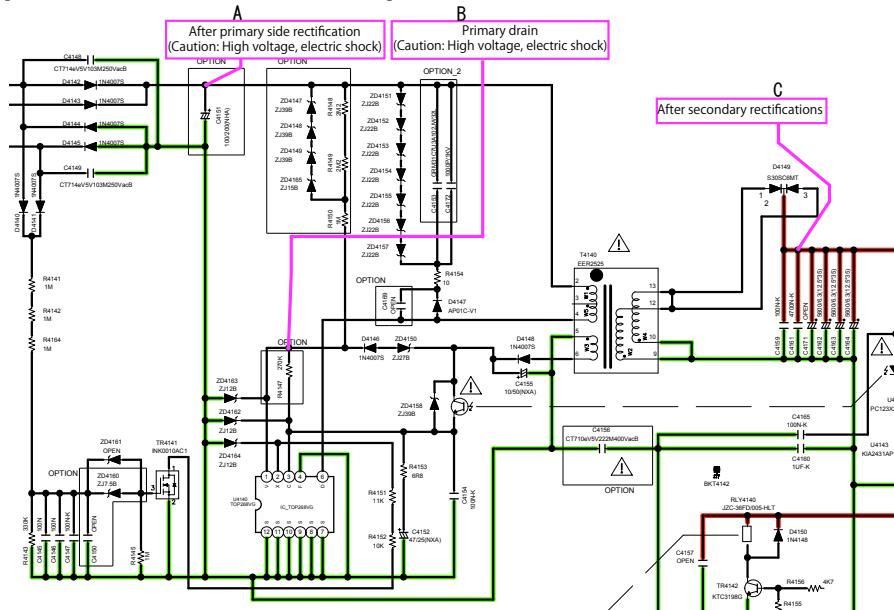


DIGITAL test point**USB test point**

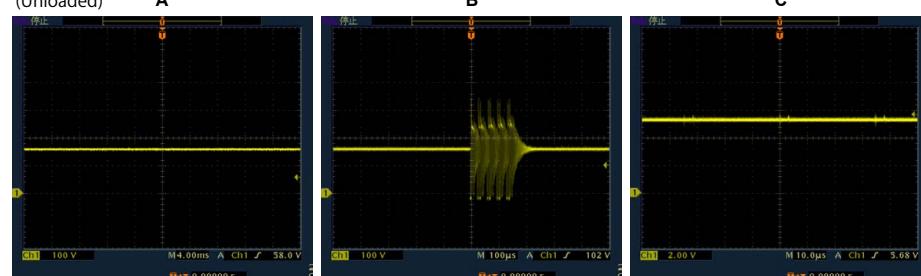
6. SMPS



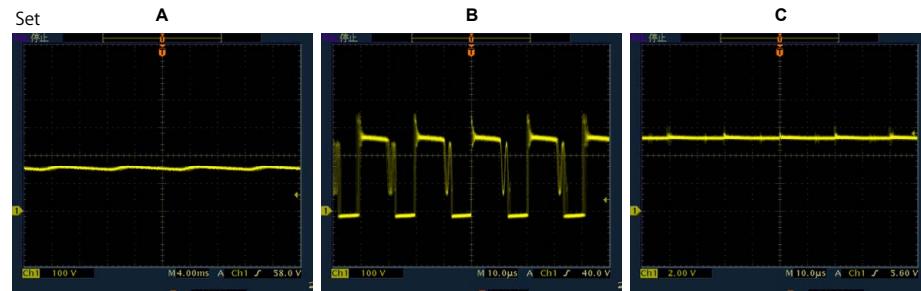
Operation waveform for each part



SMPS unit
(Unloaded)



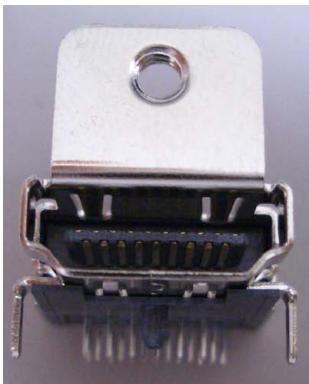
Set



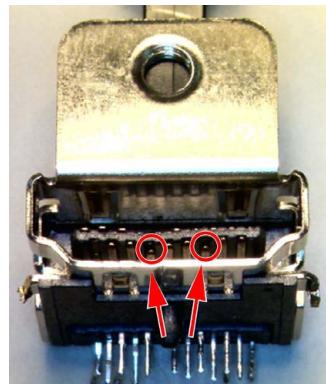
HDMI "Rx/Tx" Failure Detection

1. Prior checking

Check item(0).: Checking the HDMI connector
Checking the condition of the HDMI pin (rear/front).



OK



NG

Check for deformed pins.

There are deformed pins.

Replace the HDMI connector.

None of the pins are deformed.

Check by following the flow chart for "[3. Starting detecting the point of failure](#)".

NOTE :

After checking troubleshooting "[3. HDMI/DVI](#)", check "[3. Starting detecting the point of failure](#)".

Caution in servicing

Electrical

Mechanical

Repair Information

Updating

2. Preparations for checking HDMI Switcher reception/transmission register

2-1. Necessary devices

- 1) Check the product settings.
- 2-a) Player with an HDMI terminal
- 2-b) TV with an HDMI terminal (* NOTE : Do not use a computer monitor.)
- 3) Windows PC
- 4) Serial communication software "termite.exe"
(Download the software from http://www.comphouse.com/software_termite.htm and install it.)
- 5) HDMI cable
- 6) RS-232C Straight cable
- 7) 8U-2120100S WRITING KIT
- 8) oscilloscope

2-2. Device Connection Method

Connect the TV and the AVR to the player using an HDMI cable and connect the AVR to the PC through an RS-232C cable as shown in Figure 1.

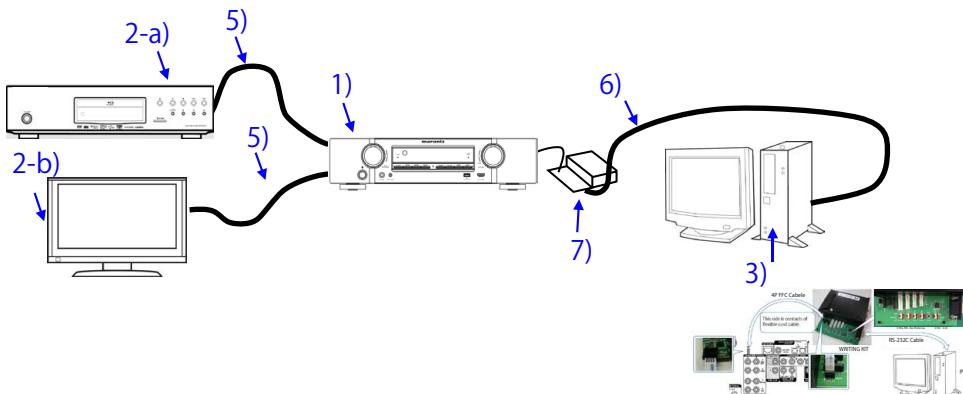


Figure 1 Device Connection Method (NR1608)

2-3. Device configuration method

PC settings : Execute the serial communication program, Termite.exe.

After executing Termite.exe, click [Settings].

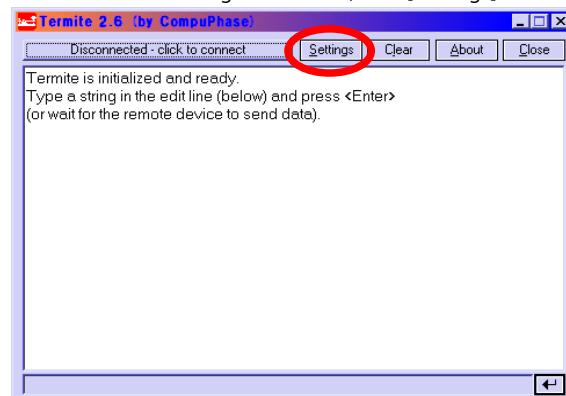


Figure 2 Screen After Executing Termite.exe

The serial port setup screen will be displayed.

Configure the settings as shown in Figure 3 and click the "OK" button.

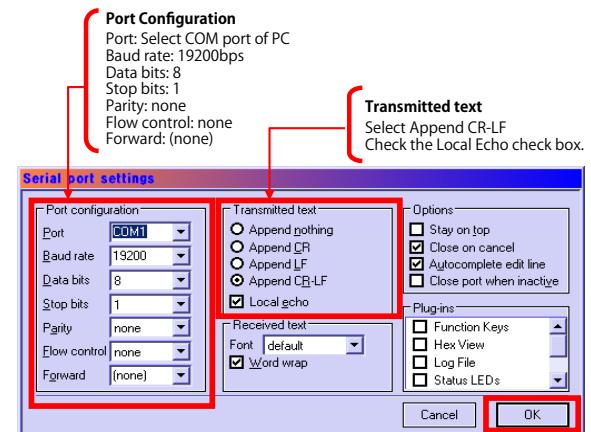


Figure 3 Serial Port Setup Screen

Click the [click to connect] button to start communication.

After a connection is established successfully, the display of the button name will change as shown in Figure 4.

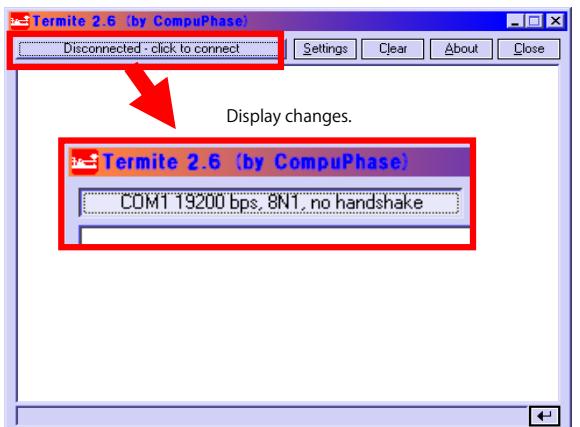


Figure 4 Change of the Display of the Communication Start Button Name

TV settings : Switch to the HDMI input in the AVR connection.

Player settings : Turn the unit power on and configure it to play disks.

AVR settings : While the power is On, hold down buttons "M-DAX" and "ZONE2 SOURCE" for at least 3 seconds.

(Continue to press and hold the buttons until all segments of the FLD volume illuminate.)

※ When the power is turned on after initialization, "**Setup Assistant**" will be displayed.

After exiting "**Setup Assistant**" execute the above.

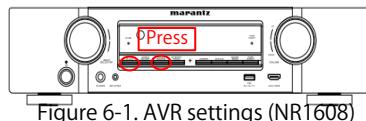


Figure 6-1. AVR settings (NR1608)



Figure 6 FLD Display When Set

When the settings are correct, the following message will be displayed in the window of Termite.

[00]Start Sub CPU Log Mode

(**** is a version of Sub CPU.)

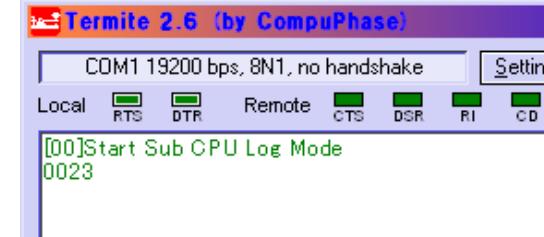


Figure 7 Display of Termite When AVR is Set

The setup is now complete.

Method for sending commands

Enter the command in the transmission command entry section, click the [Send] button and send the command.

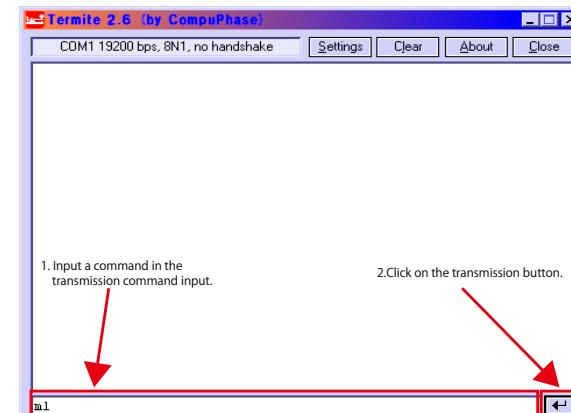


Figure 8 Method for Sending Termite Commands

3. Starting detecting the point of failure

Check item(1).

Check the power supply status and communication status with the CPU of each device.
Start in HDMI Diagnostics mode and follow the procedures below.

(1) Start in HDMI Diagnostics mode

While the power is on, hold down buttons "DIMMER" and "M-DAX" for at least 3 seconds.



"HDMI DIAGNOSTICS" is displayed.

When the mode has switched, start Hardware check.



(2-1) Display when an Error Code is displayed.



↑ Alternating display.



Check the Error Code table items.

Error Code table

Error Code	Check item No.	Description	
H1-01	Check item (6)	Communication Error with HDMI Tx	[U1039 : MN864788]
H1-02	Check item (11)	Communication Error with HDMI SW1	[U1000 : MN864788]
H1-03	Check item (16)	Communication Error with HDMI SW2	[U1003 : MN864788]
H1-04	Check item (29)	Communication Error with TMDS SW	[U1103 : TMDS261B]
H1-05	Check item (30)	Communication Error with VIDEO DECODER	[U2022 : ADV7180]
H1-06	Check item (21)	Communication Error with GUI IC	[U1026 : ADV8003]
H1-08	Check item (31)	Communication Error with DSP	[U1073 : CS49844A]
H1-12	Check item (36)	Communication Error with DIR	[U1040 : PCM9211]
H1-14	Check item (26)	DDR check Error	[U1028, U1029 : A3R12E40DBF-8E]
H1-15	Check item (27)	Communication Error with GUI ROM	[U1027 : W25Q128JVFIQ]

(2-2) Display when an Error is not detected.



Cancel the mode, and proceed to [check item \(2\)](#).

Canceling the selected mode

Press the power button to exit off the power.

Check item(2). : Check operation of the HDMI input terminal.



When the HDMI input terminal of this device is connected to the player correctly, is sound heard from the speaker?

※ When checking, turn the AV amplifier on and off after checking the connection terminal with the player. (To set the same conditions during verification of operation)

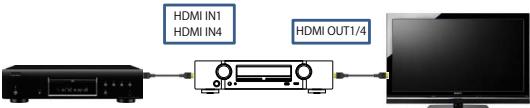
Check that sound is heard from the input terminal of the HDMI 1-7.
Use any of Dolby TrueHD/DTS HD MA/PCM 8ch for the playback audio format.

NO Is the "DIG" indicator illuminated on the FLD?
When the "DIG" indicator is illuminated, the digital audio block is faulty.
If the "DIG" indicator is not illuminated, go to [check item \(41\)](#).
(HDMI RX IC [MN864788] failure detection procedure)

Check that sound is heard from the input terminal of the FRONT AUX.

NO Go to [check item \(48\)](#)
(Front HDMI Buffer IC [AD8195] failure detection procedure)

Check item(3). :
(1) Turn Video Conversion "OFF" on the setup menu.
(Setup Menu - Video - Output Settings - Video Conversion)
(2) Does a video signal come from HDMI OUT to TV correctly?



When the player is connected in order to the HDMI input terminals (HDMI 1, 4), in each case is the player video played back on the TV connected to the HDMI output terminal (HDMI OUT)?

YES

NO Go to [check item \(56\)](#)
HDMI transmission IC [MN864788] failure detection procedure

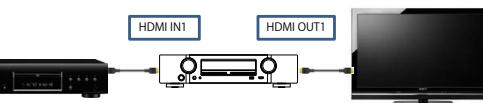
Check item(4). : Check operation of the HDMI output terminal.



When the "SETUP" button on a remote control is pressed, is "MENU" displayed on TV which is connected to the HDMI output terminal on the AVR?

YES

Check item(5). :
(4-1) Turn Video Conversion "ON" on the setup menu.
(Setup Menu - Video - Output Settings - Video Conversion)
(4-2) Does a video signal come from HDMI OUT1 to TV correctly?



When the player is connected to the HDMI input terminals in order, are the images on the player displayed on the TV in both cases?

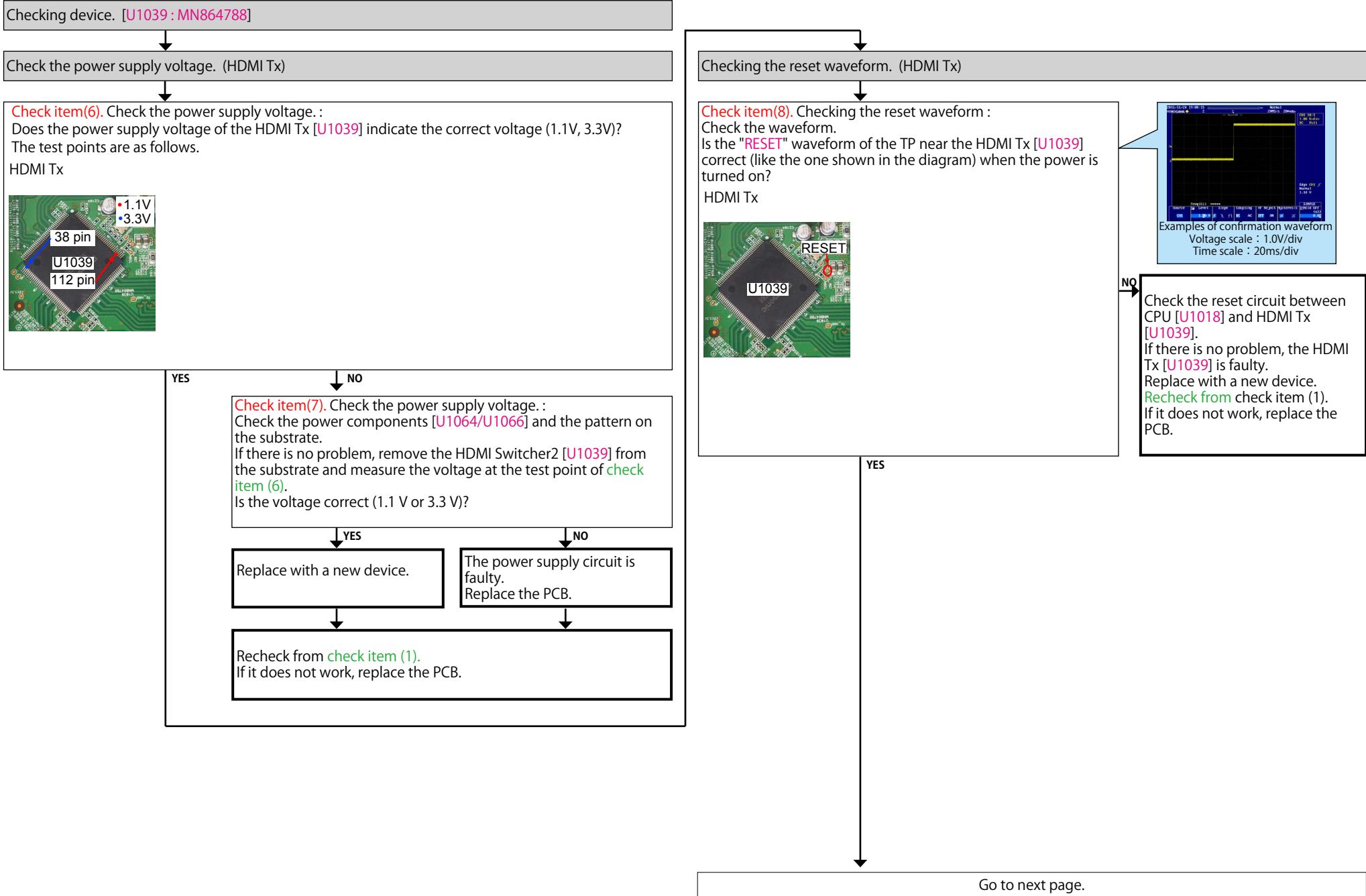
YES

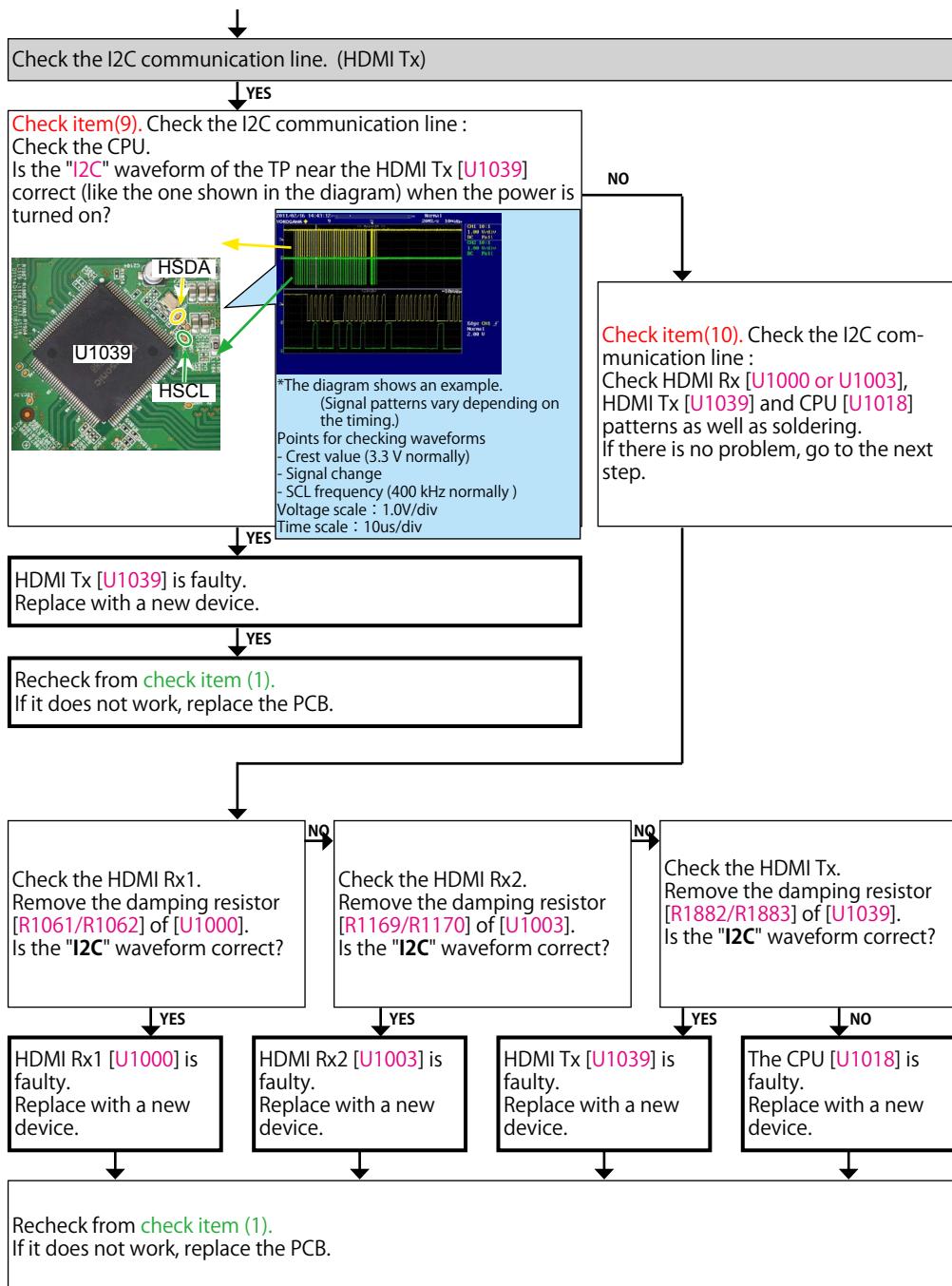
There is no problem with Rx, Tx, and GUI of HDMI as well as IC of SW.

NO

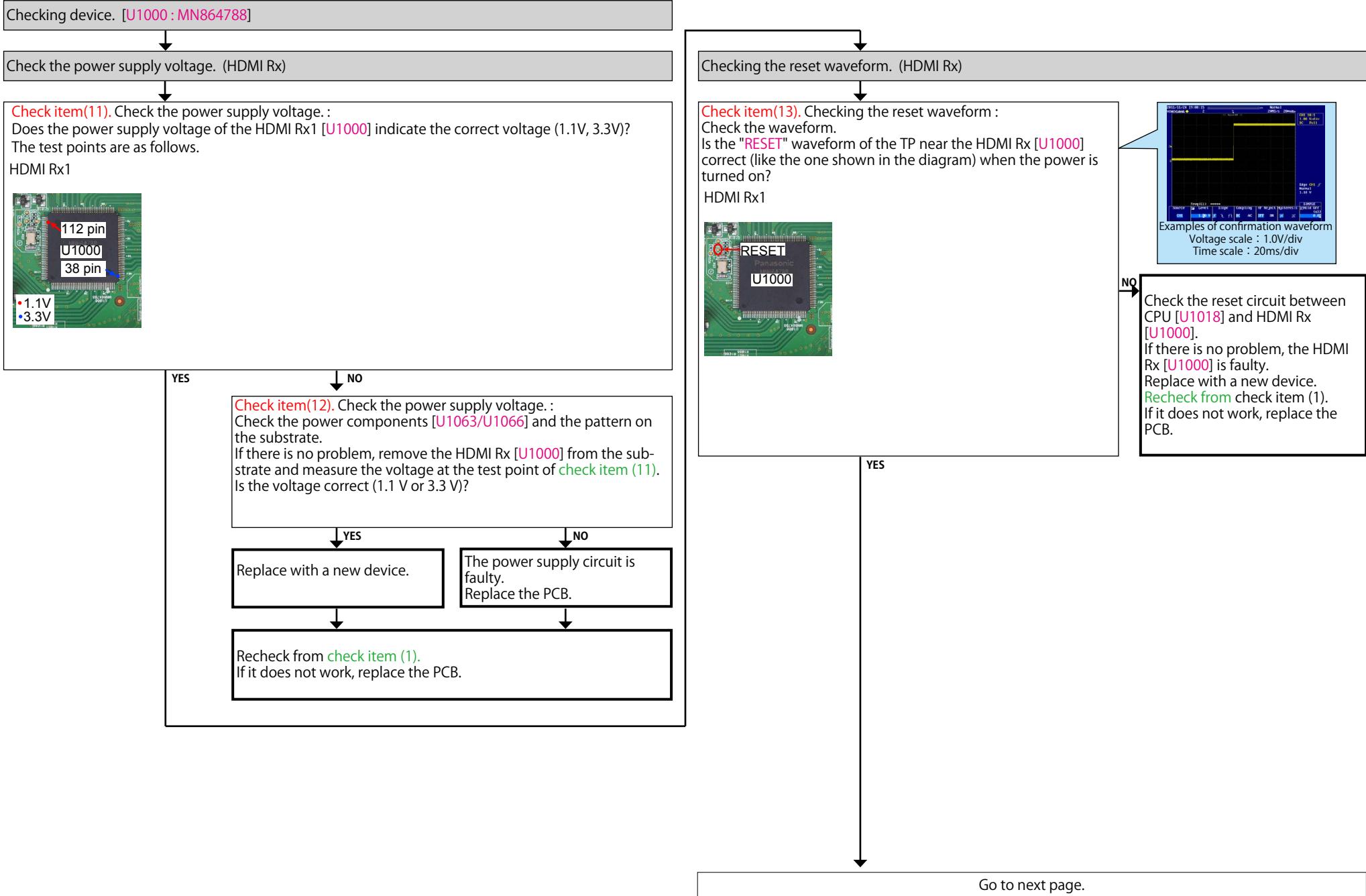
Go to [check item \(65\)](#)
(GUI IC [ADV8003] failure detection procedure 2)

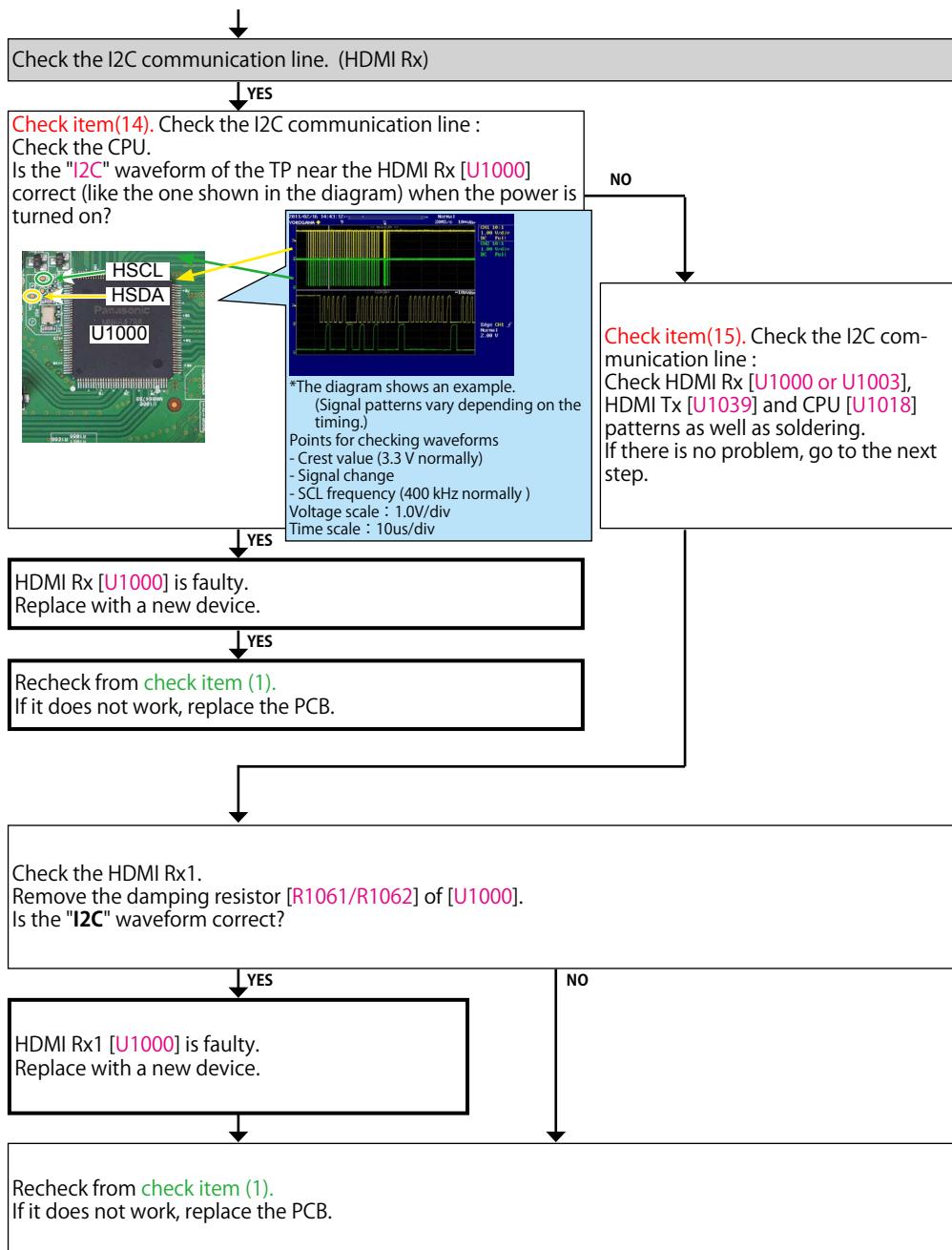
3-1. Error Code H1-01 failure detection procedure



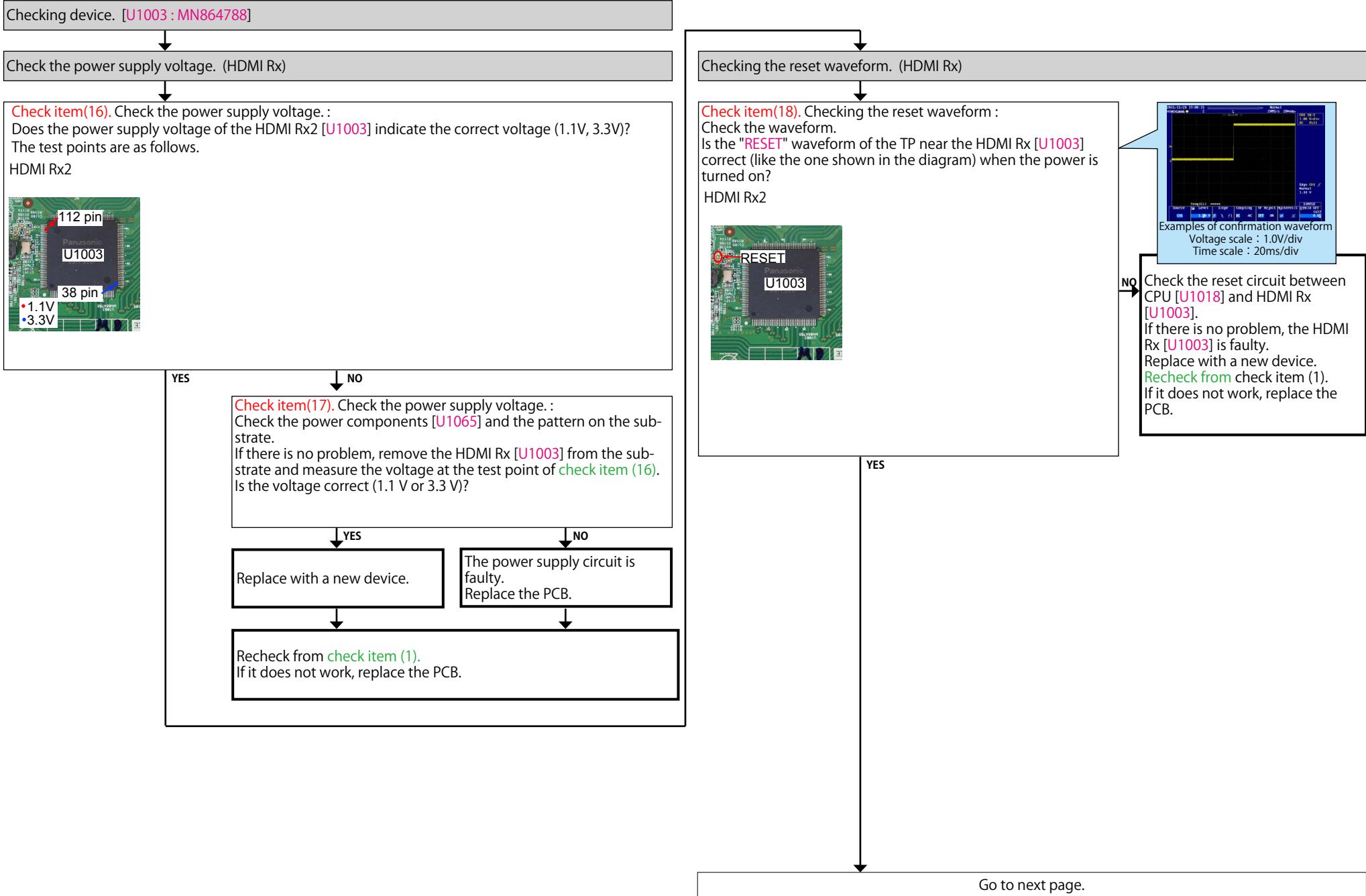


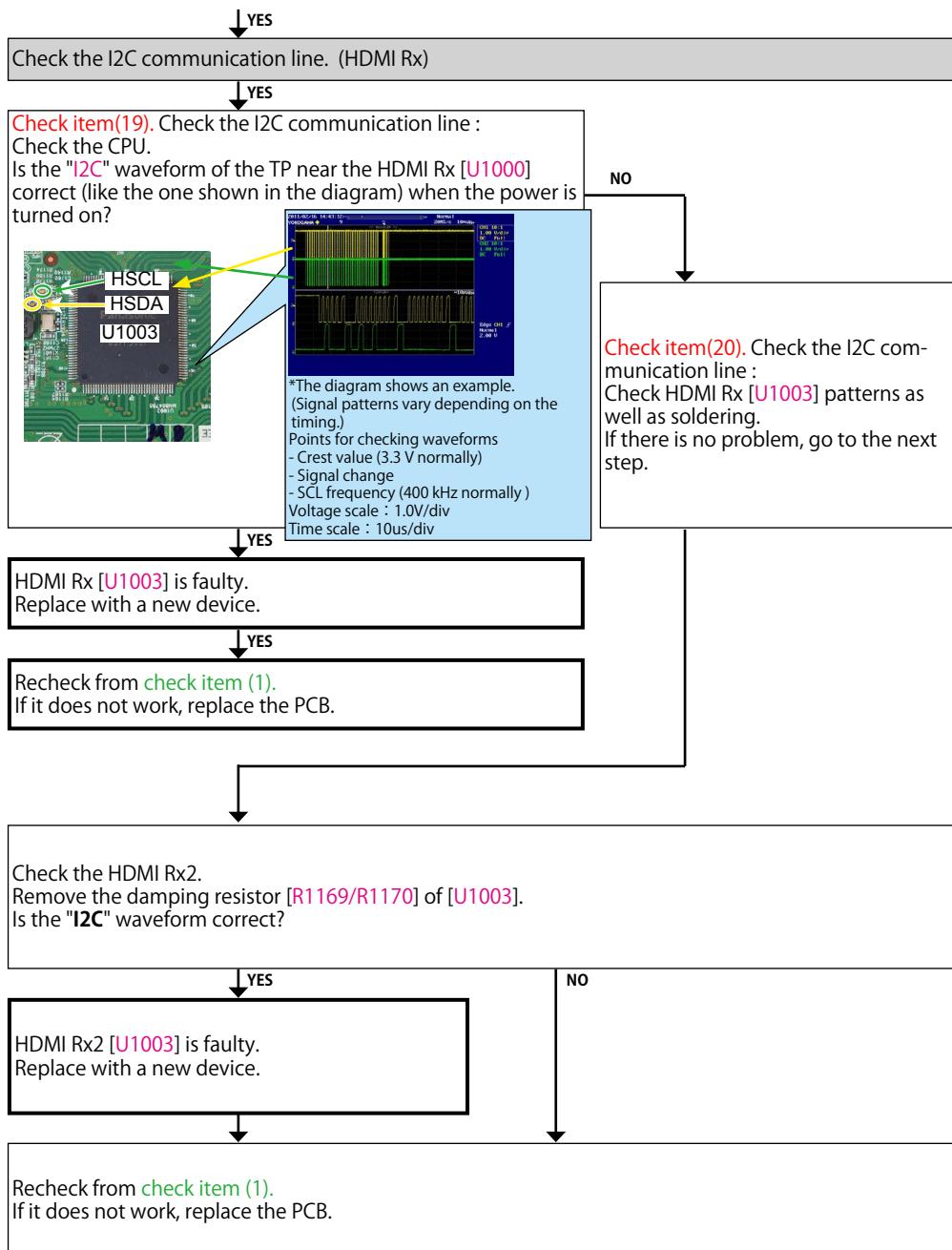
3-2. Error Code H1-02 failure detection procedure



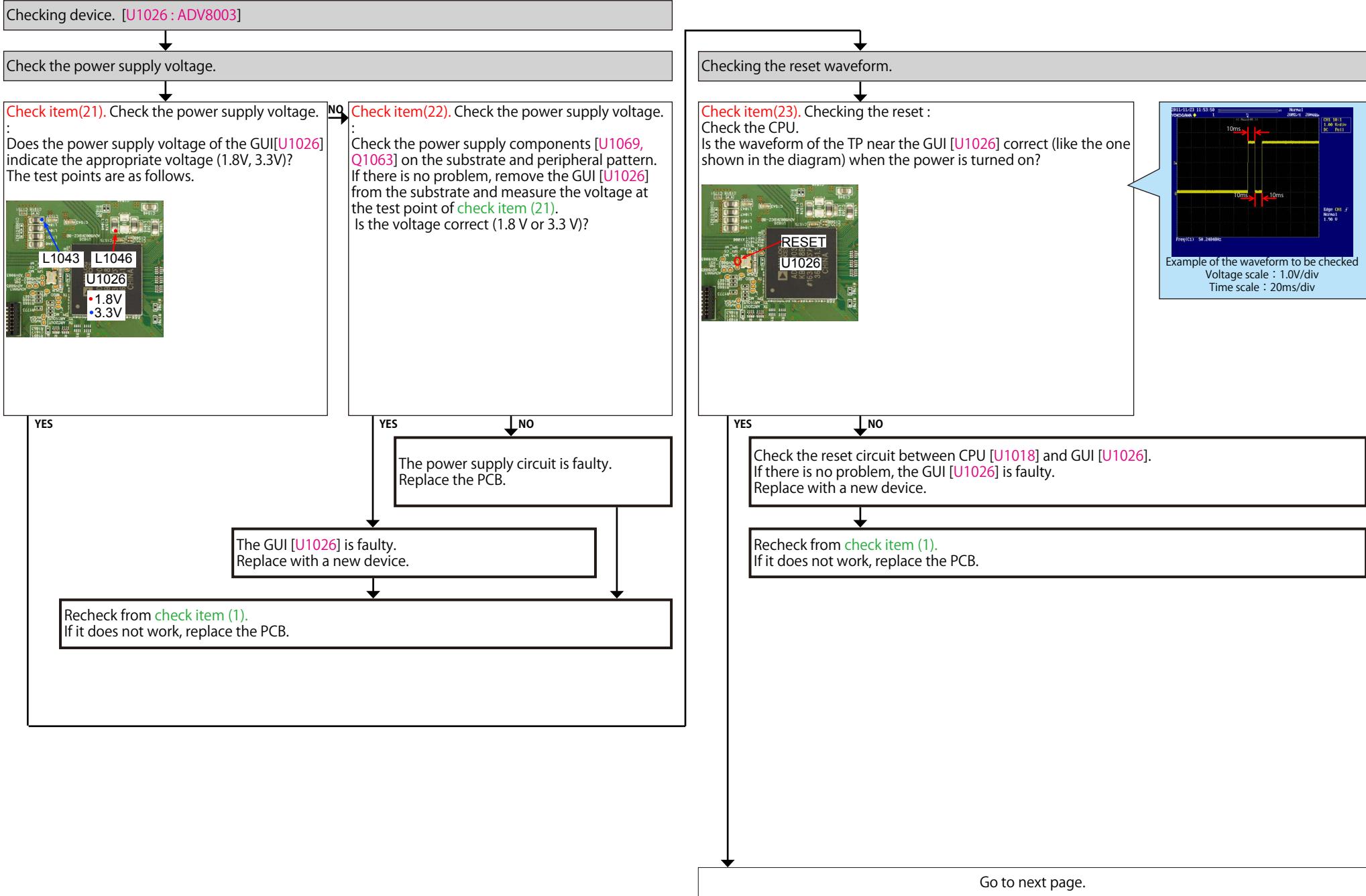


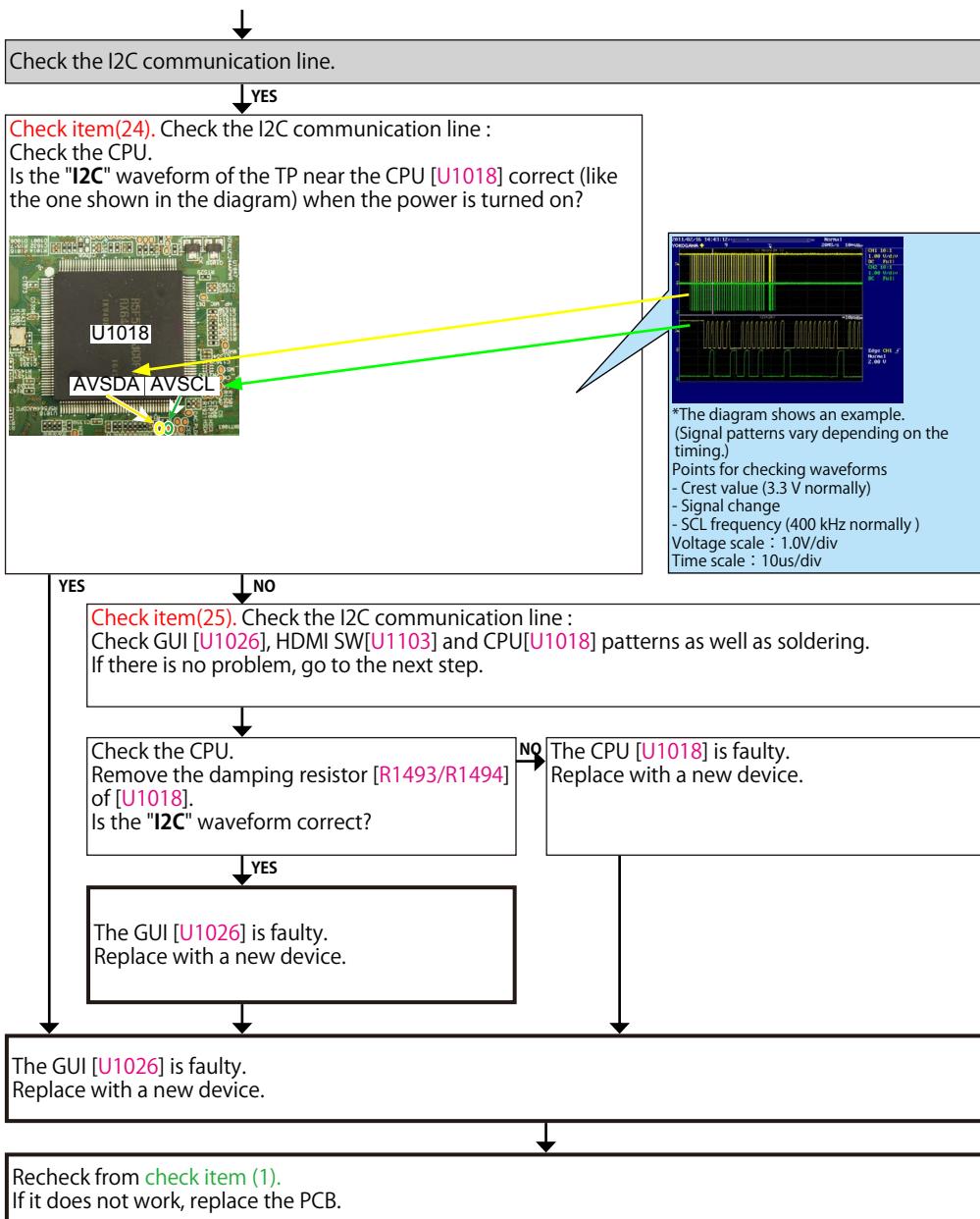
3-3. Error Code H1-03 failure detection procedure





3-4. Error Code H1-06 failure detection procedure





3-5. Error Code H1-14 failure detection procedure

Checking device. [U1028, U1029 : A3R12E40DBF-8E]

Check item(26).

Check soldering of IP SCALER [U1026], DDR2 [U1028/U1029] and its peripheral circuits.
 Check soldering of the resistors [R1688/1689/1692/1695 to 1700/1703 to 1711] between IP SCALER and DDR2.
 If there is no problem with soldering, [U1026/U1028/U1029] is defective. Replace their IC. Or replace the substrate.

3-6. Error Code H1-15 failure detection procedure

Checking device. [U1027 : W25Q128JVFIQ]

Check item(27).

Write to the GUI ROM.

Recheck from [check item \(1\)](#).
 Does Error Code H1-15 continue?

↓ YES

Check item(28).

Replace [U1029] with a new device.

Recheck from [check item \(1\)](#).
 Does Error Code H1-15 continue?

↓ YES

Go to [check item \(21\)](#)

NO

NO

Recheck from [check item \(2\)](#).

3-7. Error Code H1-04 failure detection procedure

Checking device. [U1103 : TMDS261B]

Check item(29).
Replace [U1103] with a new device.

Recheck from [check item \(1\)](#).
Does Error Code H1-04 continue?

NO

YES

Replace the PCB.

Recheck from [check item \(2\)](#).

3-8. Error Code H1-05 failure detection procedure

Checking device. [U2022 : ADV7180]

Check item(30).
Replace [U2022] with a new device.

Recheck from [check item \(1\)](#).
Does Error Code H1-05 continue?

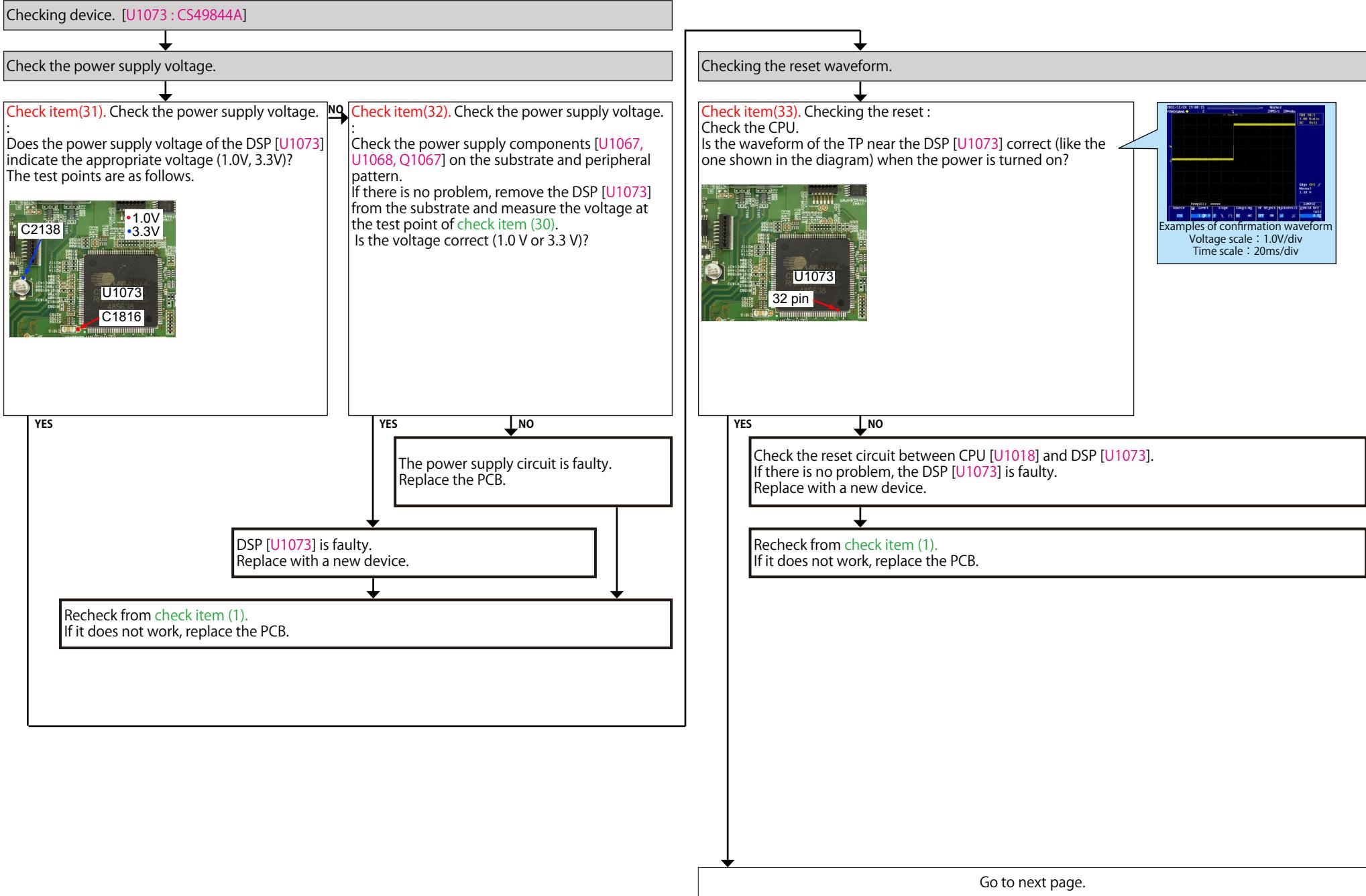
NO

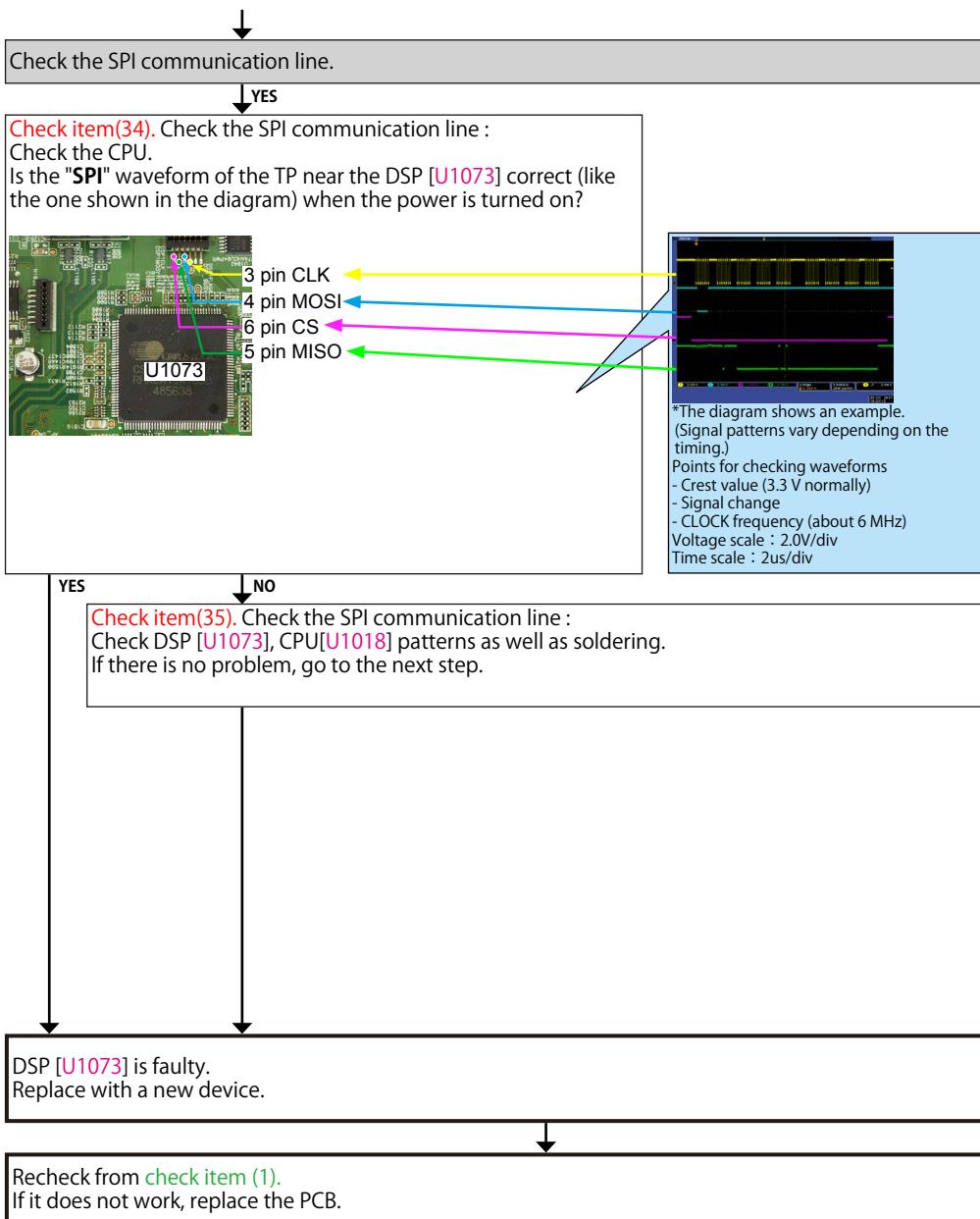
YES

Replace the PCB.

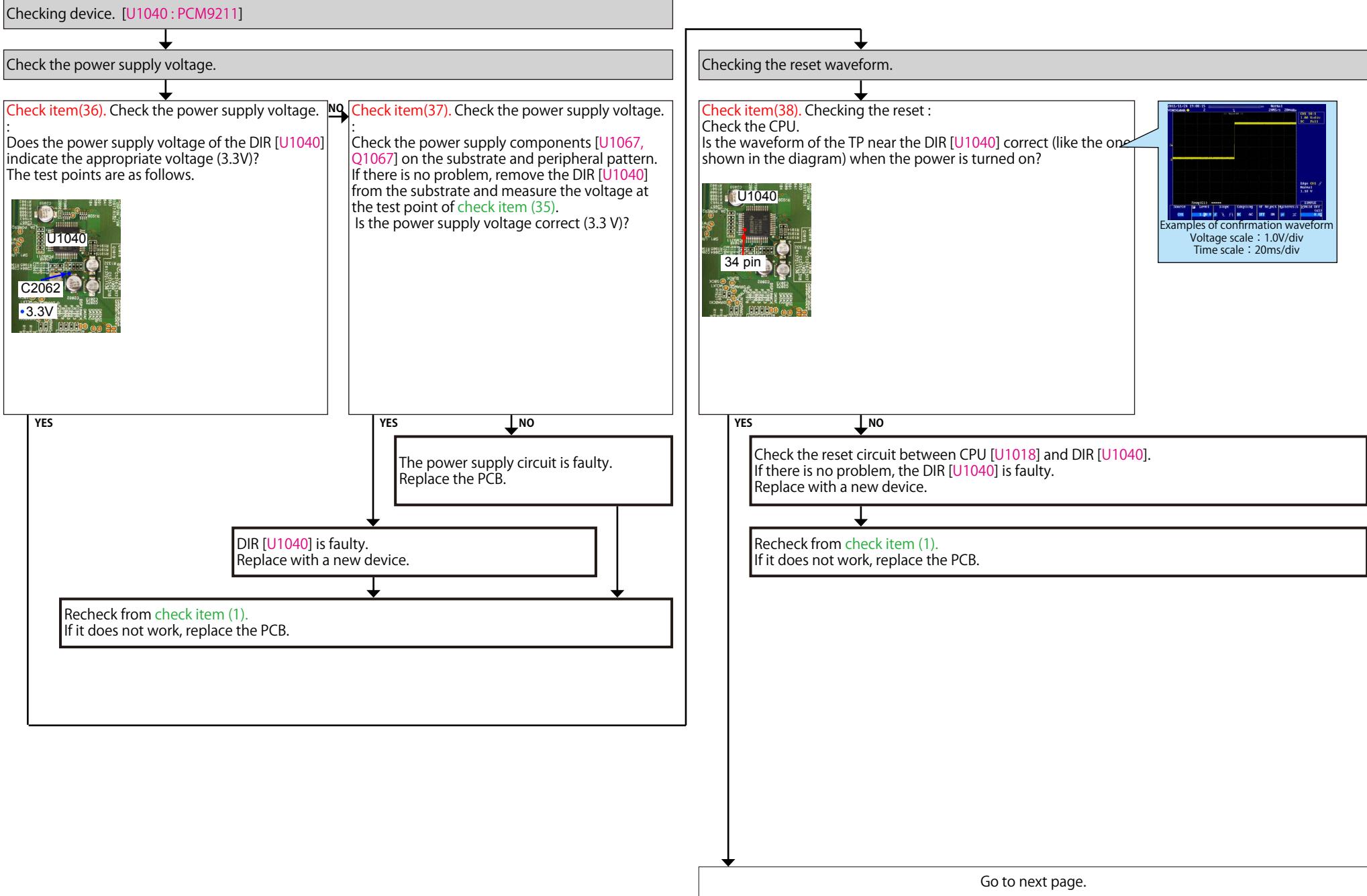
Recheck from [check item \(2\)](#).

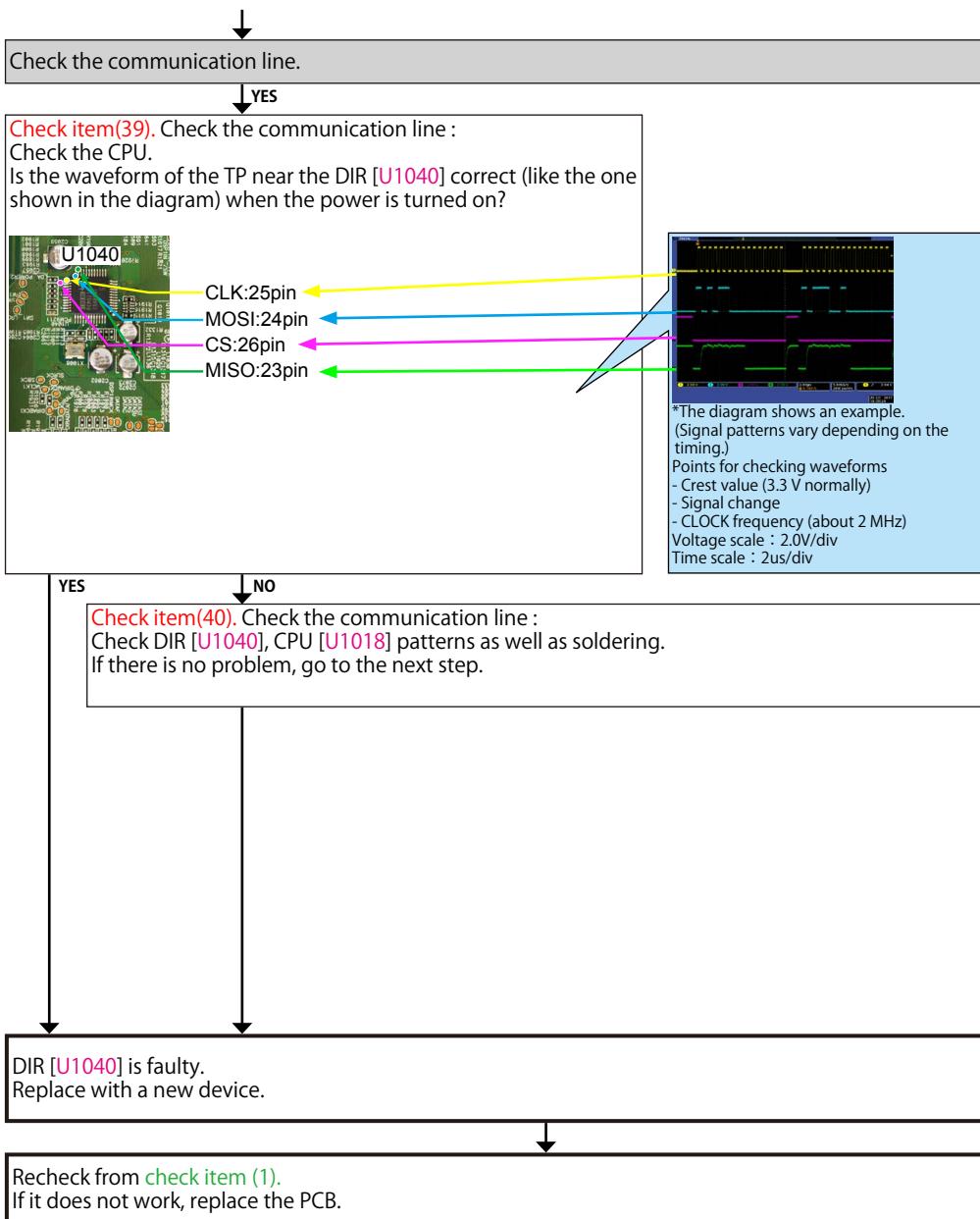
3-9. Error Code H1-08 failure detection procedure





3-10. Error Code H1-12 failure detection procedure





3-11. HDMI Rx [MN864788] failure detection procedure

Checking operation between the HDMI (Rx) device and the player



※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source.
Check the sound output while turning on the player.

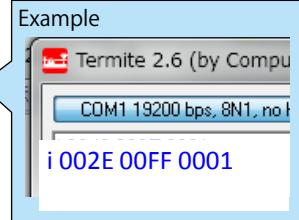
Checking the +5V/DDC status register (HDMI Rx)

Check item(41). Checking the 5V status register :
Send the following command from Termite.exe.

HDMI Rx1 (When checking HDMI inputs 1, 2, and 3)
Send the command "i 002E 00FF 0001".

HDMI Rx2 (When checking HDMI inputs 4, 5, 6, and 7)
Send the command "i 0056 00FF 0001".

Move to the branch destination according to the value returned.



HDMI in 1 ~ 7 "00"
(Detection of 5V is not OK.)

Go to [check item \(43\)](#)

HDMI in1 "44 or 40" HDMI In2 "22 or 20" HDMI In3 "11 or 10"
HDMI In4 "88 or 80" HDMI In5 "44 or 40" HDMI In6 "22 or 20"
HDMI In7 "11 or 10"
(Detection of 5V is OK)

Check item(42). Checking the +5V/DDC status register :
Send the following command from Termite.exe.

HDMI Rx1 (When checking HDMI inputs 1, 2, and 3)
Case of HDMI IN1

Send the command "i 002B 0084 0001".

Case of HDMI IN2

Send the command "i 002B 0054 0001".

Case of HDMI IN3

Send the command "i 002B 0024 0001".

HDMI Rx2 (When checking HDMI inputs 4, 5, 6, and 7)

Case of HDMI IN4

Send the command "i 0053 00B4 0001".

Case of HDMI IN5

Send the command "i 0053 0084 0001".

Case of HDMI IN6

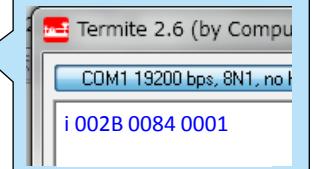
Send the command "i 0053 0054 0001".

Case of HDMI IN7

Send the command "i 0053 0024 0001".

Move to the branch destination according to the value returned.

Example

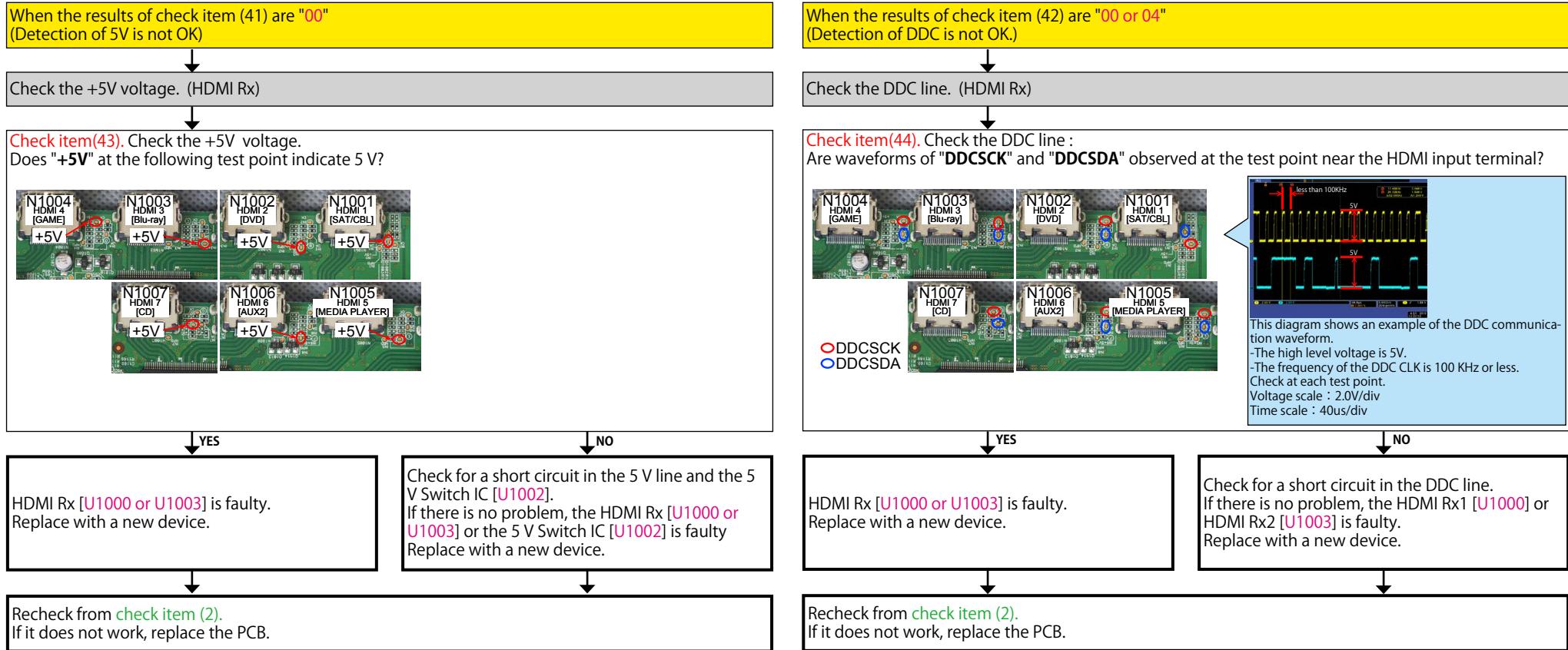


"00 or 04"
(Detection of DDC is not OK.)

Go to [check item \(44\)](#)

"22"
(Detection of DDC is OK)

Go to [check item \(45\)](#)



When the results of check item (42) are "22"
(Detection of DDC is OK.)

Checking the TMDS status register

Check item(45). Checking register of the TMDS CLK detection status register :

Send the following command from Termite.exe.

HDMI Rx1 (When checking HDMI inputs 1, 2, and 3)

Send the command "i 002E 00FF 0001".

Rx2 (When checking HDMI inputs 4, 5, 6, and 7)

Send the command "i 0056 00FF 0001".

When the following value is returned, go to Yes.

HDMI In1 "44" HDMI In2 "22" HDMI In3 "11" HDMI In4 "88" HDMI In5 "44" HDMI In6 "22" HDMI In7 "11"

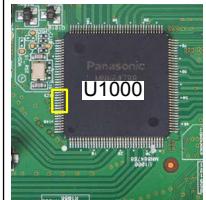
When the following value is returned, go to No.

HDMI In1 "40" HDMI In2 "20" HDMI In3 "10" HDMI In4 "80" HDMI In5 "40" HDMI In6 "20" HDMI In7 "10"

YES

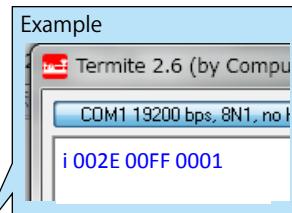
Check item(46). Checking the audio signal output :
Check the audio signal waveform at the following test point.
Is the waveform like the sample?

HDMI Rx1 [U1000]
(When checking HDMI inputs 1, 2, and 3)



129/131/132/133/134/135/136 pin

HDMI Rx2 [U1003]
(When checking HDMI inputs 4, 5, 6, and 7)



NO



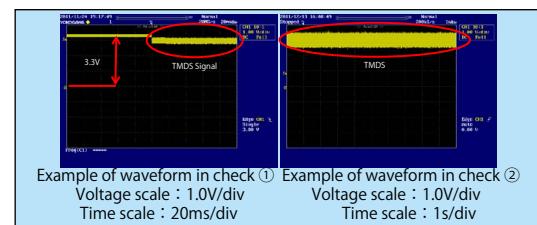
The diagram shows an example of the waveform of pin 129. (I2SO Data)
Waveform check points
- Crest value (3.3 V normally)
- Signal change
Check the waveform of each pin.
Voltage scale : 1.0V/div
Time scale : 500ns/div

The digital audio block is faulty.
Check the digital audio device.
Check "AUDIO" in troubleshooting.
If it does not work, replace the PCB.

YES

NO

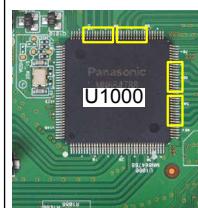
HDMI Rx [U1000 or U1003] is faulty.
Replace with a new device.



Check item (47). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

HDMI Rx1 [U1000]

(When checking HDMI inputs 1, 2, and 3)
(When checking HDMI inputs 4, 5, 6, and 7)



HDMI Rx2 [U1003]

(When checking HDMI inputs 4, 5, 6, and 7)



HDMI In3/7
93/94/96/97/99/100/102/103 pin

HDMI In2/6
80/81/83/84/86/87/89/90 pin

HDMI In1/5
55/56/58/59/61/62/64/65 pin

HDMI In4
42/43/45/46/48/49/51/52 pin

YES

HDMI Rx [U1000 or U1003] is faulty.
Replace with a new device.

Check for a short circuit in the pattern of the TMDS line of the HDMI Rx [U1000 or U1003] from the HDMI input terminal.
If there is no problem, the HDMI Rx [U1000 or U1003] is faulty. Replace with a new device.

Recheck from [check item \(2\)](#).
If it does not work, replace the PCB.

3-12. Front HDMI Buffer IC [AD8195] failure detection procedure

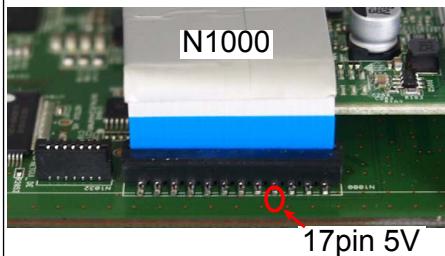
Checking operation between the HDMI (Front HDMI Buffer) and the player



※ In order to check, connect the player to the HDMI terminal and configure the player as AVR source. Check the sound output while turning on the player.

Check the power supply voltage. (HDMI Rx)

Check item(48). Check the power supply voltage. : Does the power supply voltage of the Front HDMI FFC base [N1000] indicate the correct voltage (5V)? The test points are as follows.



YES

NO

Check item(49). Check the power supply voltage. : Check the FETSW [Q1058] and peripheral pattern. If there is no problem, remove the Front HDMI FFC from the substrate and measure the voltage at the test point of [check item \(47\)](#). Is the power supply voltage correct (5 V)?

YES
Front HDMI Buffer [U3000] is faulty. Replace with a new device.

NO
Replace the FET SW [Q1058] and recheck from [check item \(47\)](#). If it does not work, replace the PCB.

Recheck from [check item \(2\)](#). If it does not work, replace the PCB.

Checking the +5V/DDC status register (Front HDMI Buffer)

Check item(50). Checking the 5V status of the register : Send the following command from Termite.exe.

Send the command "i 002E 00FF 0001".

Move to the branch destination according to the value returned.

Example

```
Termite 2.6 (by Compu
COM1 19200 bps, 8N1, no H
i 002E 00FF 0001
```

"00"
(Detection of 5V is not OK.)

Go to [check item \(52\)](#)

"88 or 80"
(Detection of 5V is OK)

Check item(51). Checking the status of the register : Send the following command from Termite.exe.

Send the command "i 002B 00B4 0001".

Move to the branch destination according to the value returned.

Example

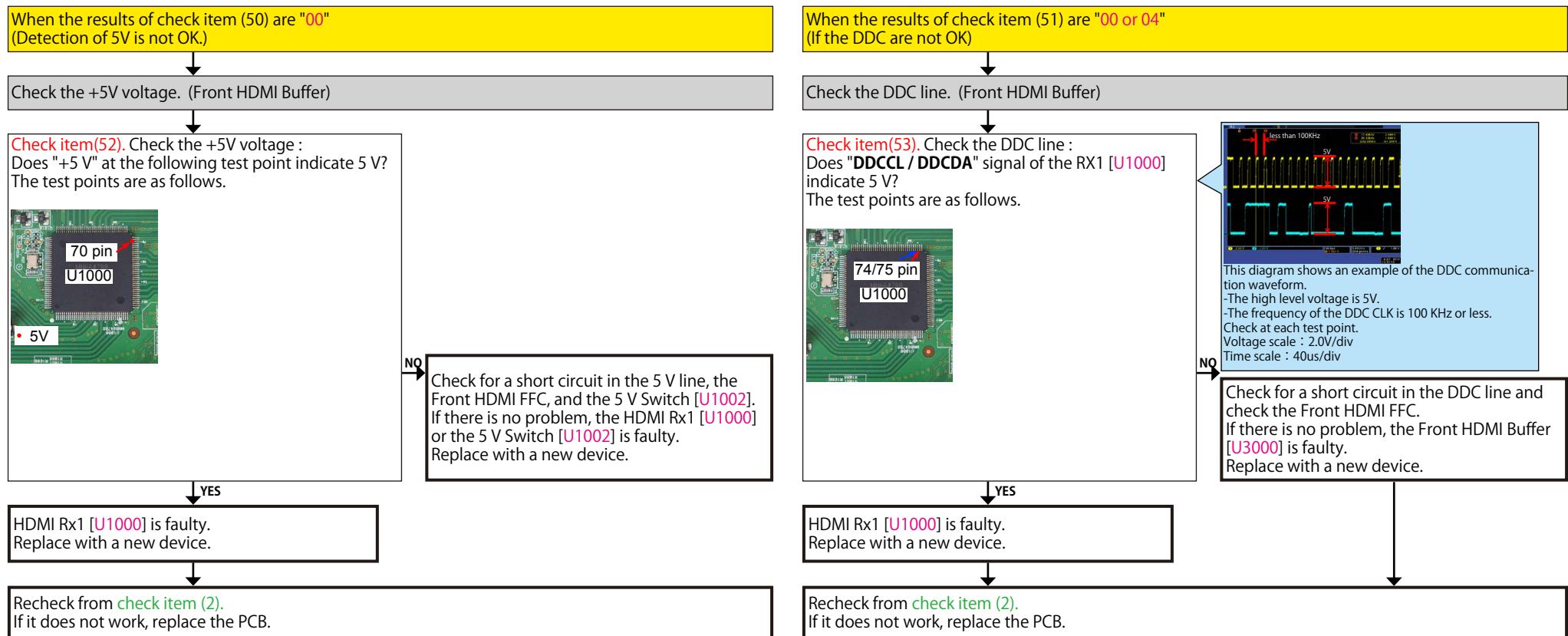
```
Termite 2.6 (by Compu
COM1 19200 bps, 8N1, no H
i 002B 00B4 0001
```

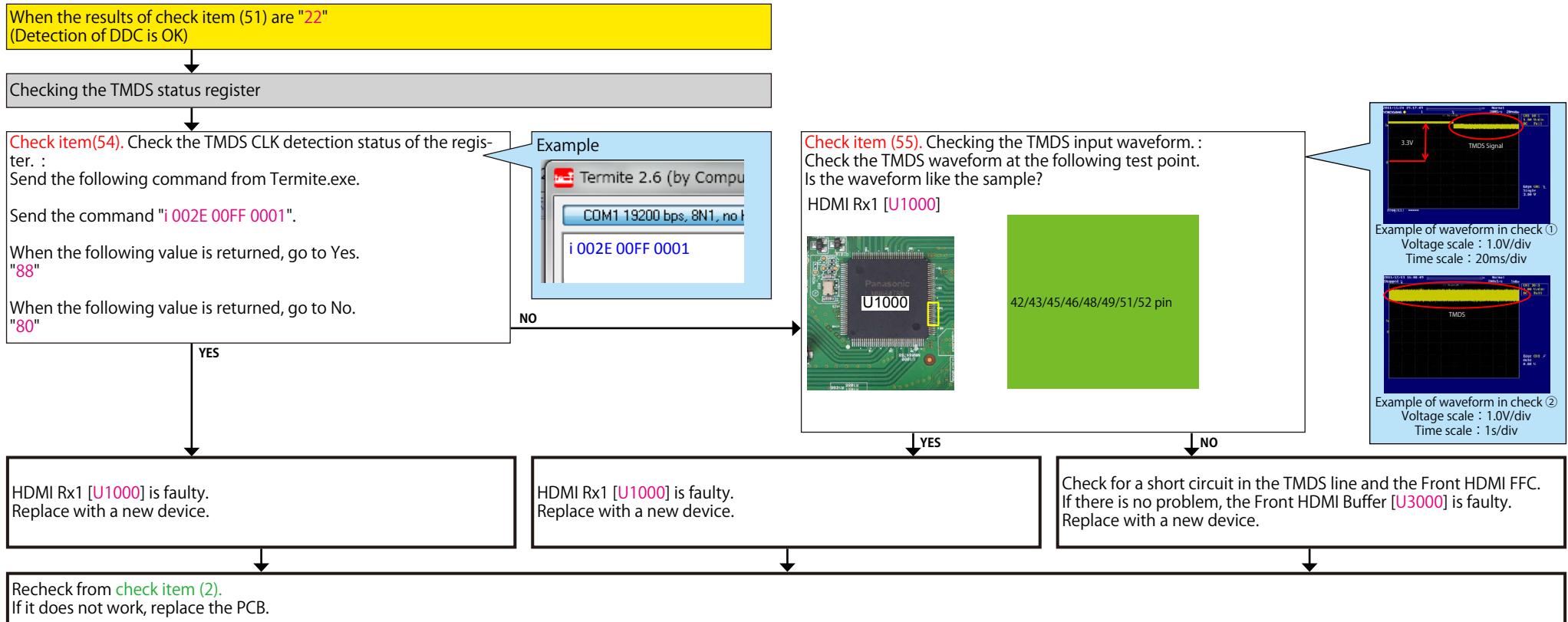
"00 or 04"
(Detection of DDC is not OK.)

Go to [check item \(53\)](#)

"22"
(Detection of DDC is OK)

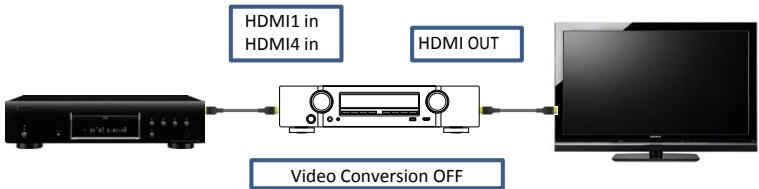
Go to [check item \(54\)](#)





3-13. HDMI transmission IC [MN864788] failure detection procedure

Checking operation between the HDMI (Rx) device and the HDMI device (Tx).
Checking operation between the HDMI (Tx) device and TV.



Checking the TMDS status register (HDMI Rx -> HDMI Tx)

Check item(56). Check the TMDS CLK detection status of the register :
Send the following command from Termite.exe.

Send the command "i 0006 00FF 0001".

When checking the signal path from HDMI1 to HDMI OUT

"72" : Go to Yes.

"74" : Go to No.

When checking the signal path from HDMI4 IN to HDMI OUT

"71" : Go to Yes.

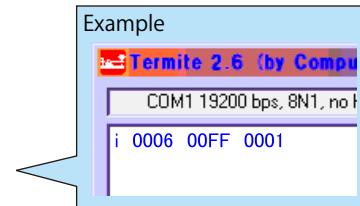
"74" : Go to No.

Check item (57). Checking the TMDS input.:
TMDS waveform at the following points.

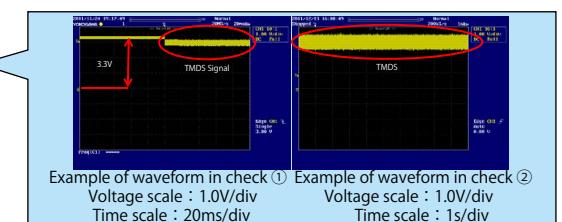


Between HDMI Rx1 and HDMI Tx
80/81/83/84/86/87/89/90 pin

Between HDMI Rx2 and HDMI Tx
93/94/96/97/99/100/102/103 pin



YES
The first operation : Checking between Monitor and the TV.
Go to [check item \(58\)](#)



HDMI Tx [U1039] is faulty.
Replace with a new device.

YES

Recheck from [check item \(3\)](#).
If it does not work, replace the PCB.

NO
If it is NO between HDMI Rx1 and HDMI Tx.
HDMI Rx1 [U1000] is faulty.
Replace with a new device.

NO
If it is NO between HDMI Rx2 and HDMI Tx.
HDMI Rx2 [U1003] is faulty.
Replace with a new device.

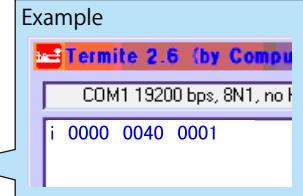
Checking between Monitor and the TV.
Connect Monitor to the TV and check the following items with the TV turned on.

Checking the HPD/RXSENSE status register. (HDMI TX -> Monitor)

Check item(58). Check the HPD and RXSENSE register value of the HDMI TX device. :
Send the following command from Termite.exe.

Send the command "i 0000 0040 0001".

Move to the branch destination according to the value returned.



"30"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Go to [check item \(59\)](#)

"10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

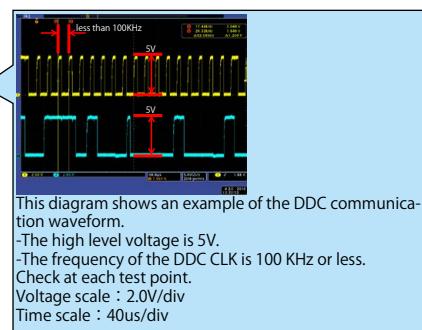
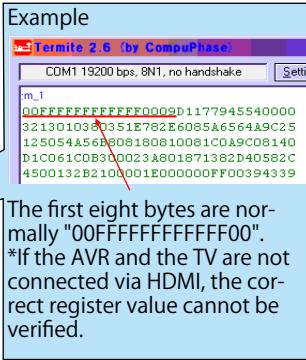
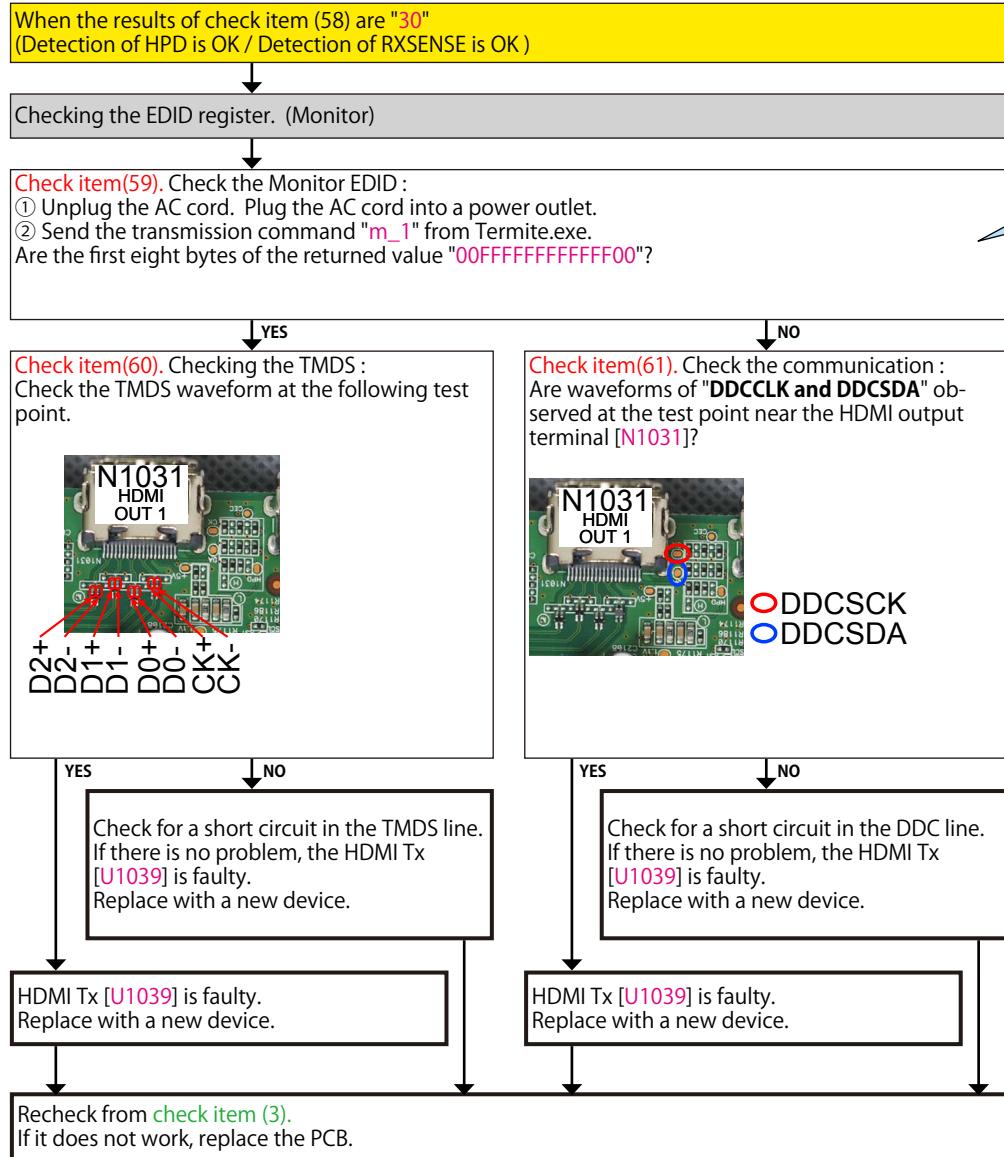
Go to [check item \(62\)](#)

"20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Go to [check item \(63\)](#)

"00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

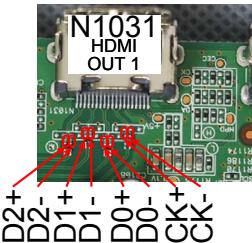
Go to [check item \(64\)](#)



When the results of check item (58) are "10"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the RXSENSE. (Monitor)

Check item(62). Checking the RXSENSE :
Does the test point of RXSENSE close to the HDMI output terminal [N1031] indicate the 3.3V?



YES NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Tx [U1039] is faulty.
Replace with a new device.

HDMI Tx [U1039] is faulty.
Replace with a new device.

Recheck from [check item \(3\)](#).
If it does not work, replace the PCB.

When the results of check item (58) are "20"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (Monitor)

Check item(63). Checking the HPD :
Does the voltage of HPD test point close to the HDMI output terminal [N1031] indicate Hi (3-5 V)?

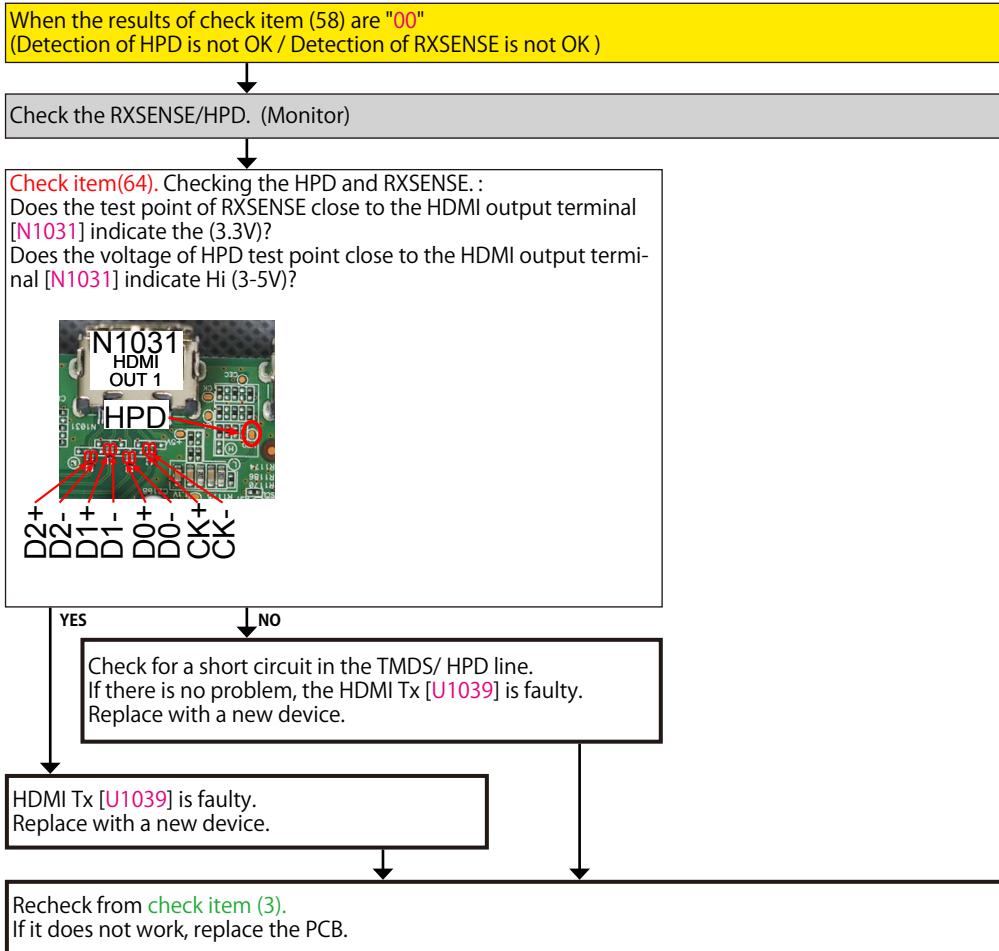


YES NO

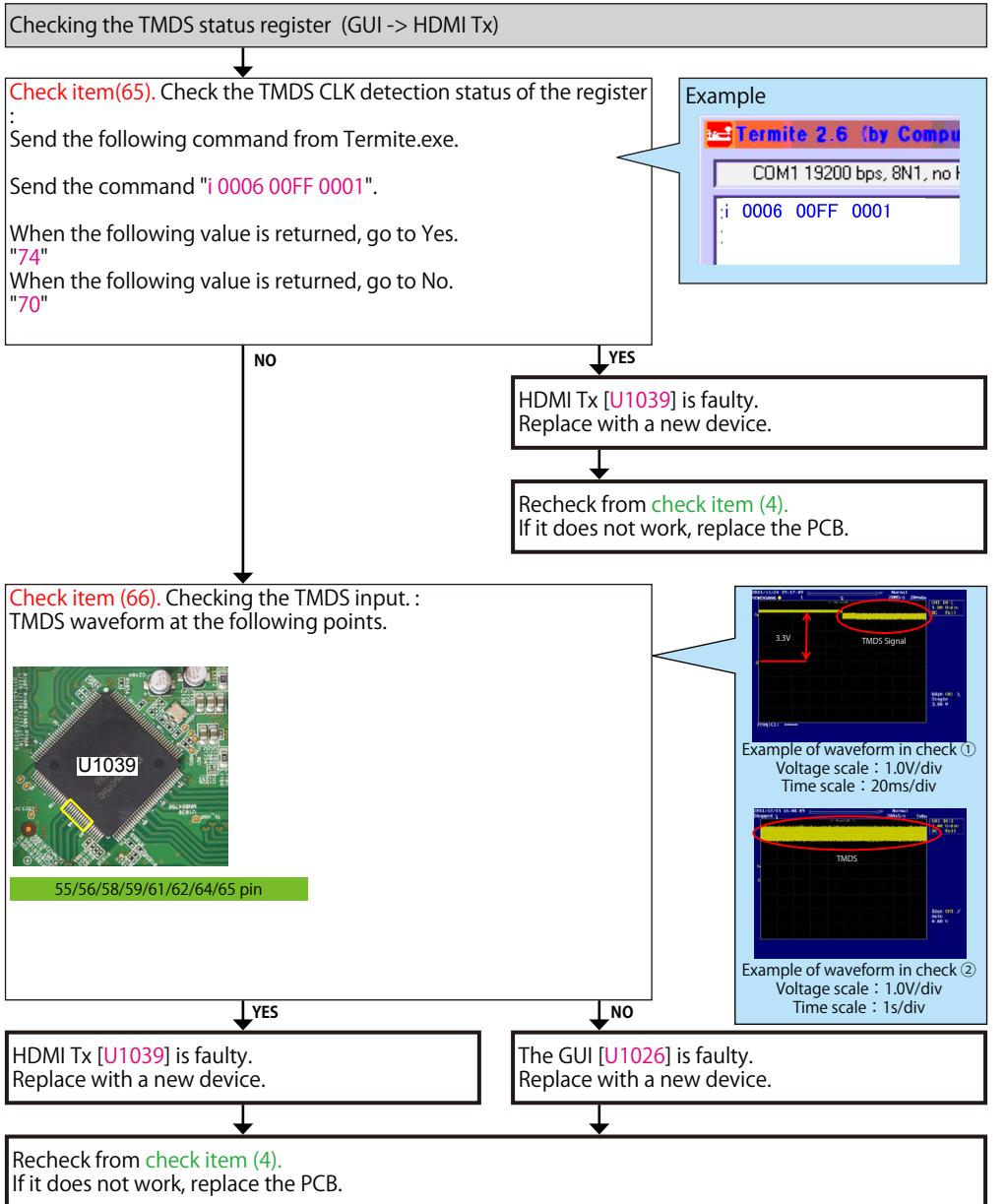
Check for a short circuit in the HPD line.
If there is no problem, the HDMI Tx [U1039] is faulty.
Replace with a new device.

HDMI Tx [U1039] is faulty.
Replace with a new device.

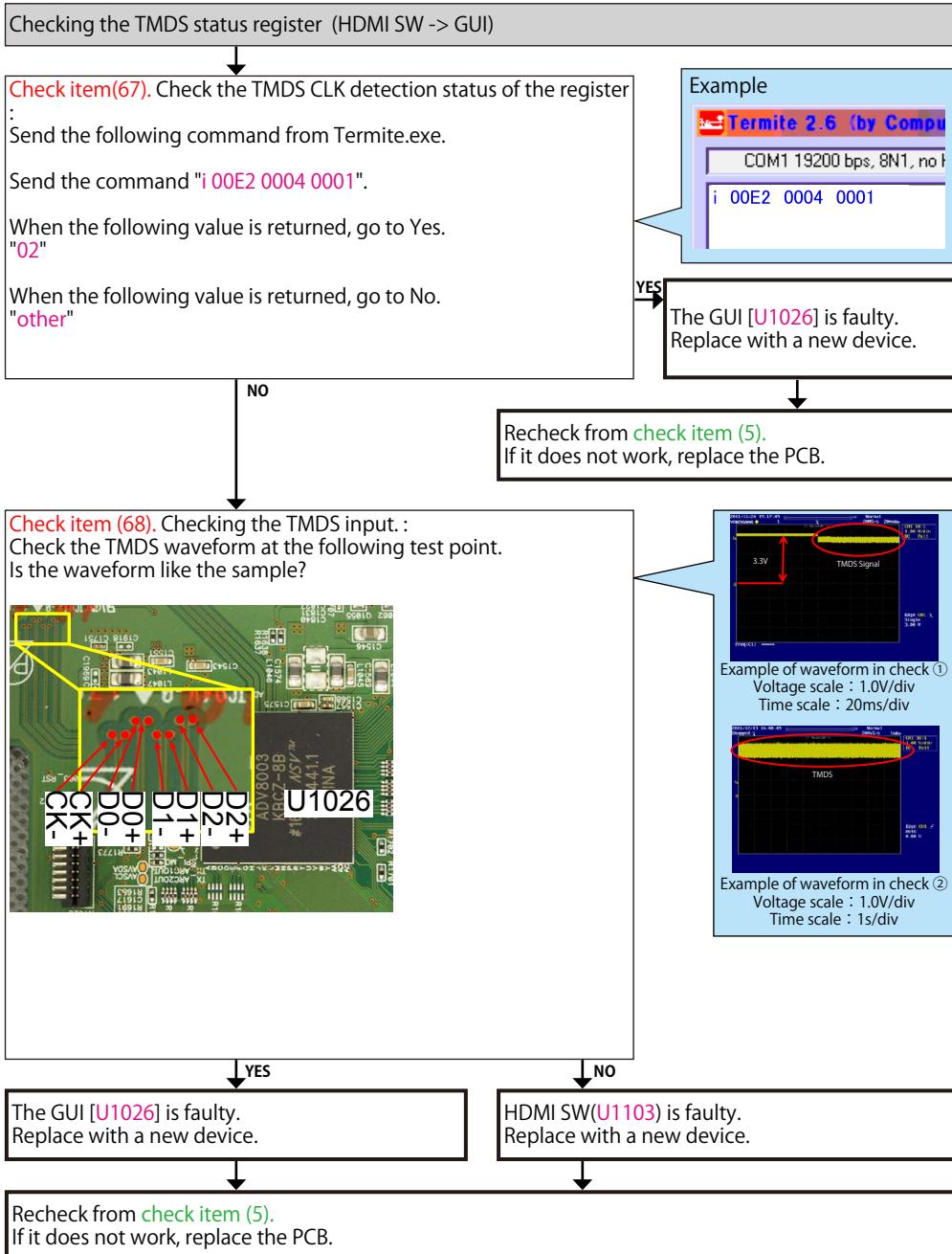
Recheck from [check item \(3\)](#).
If it does not work, replace the PCB.



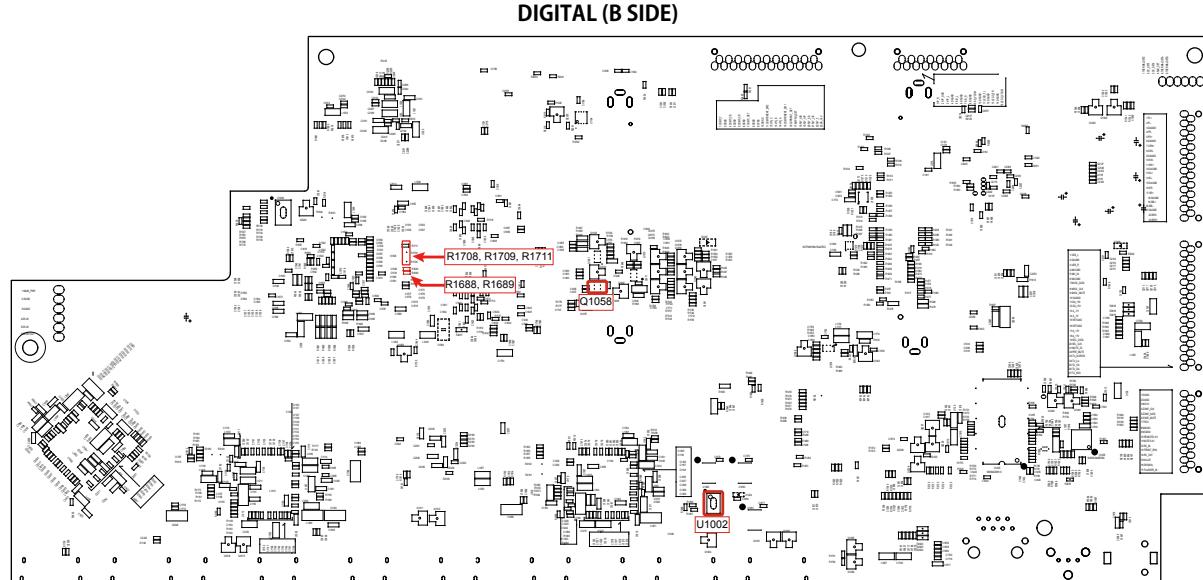
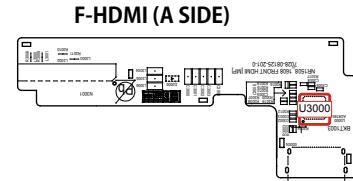
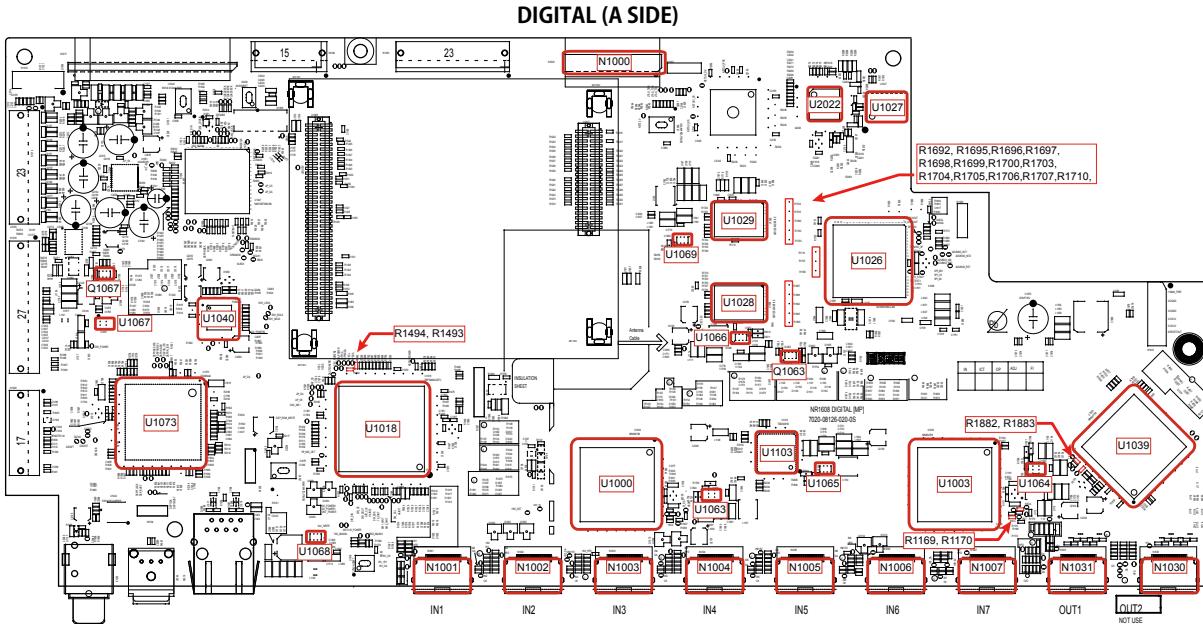
3-14. GUI IC [ADV8003] failure detection procedure



3-15. HDMI SW IC [TMDS261B] failure detection procedure

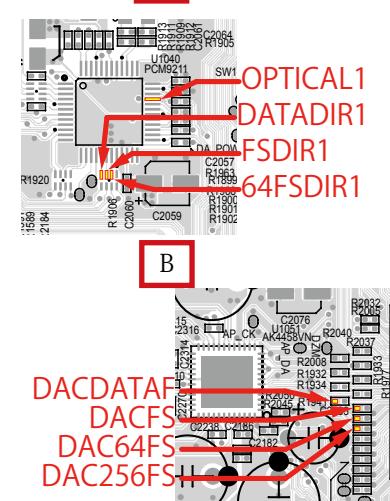
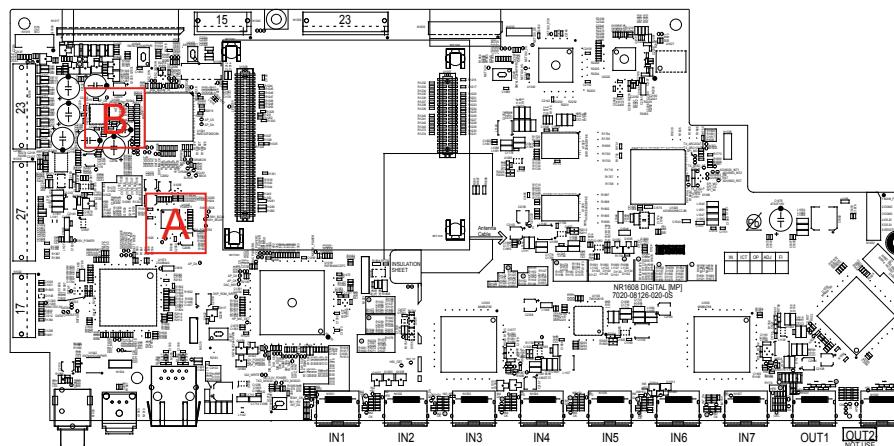
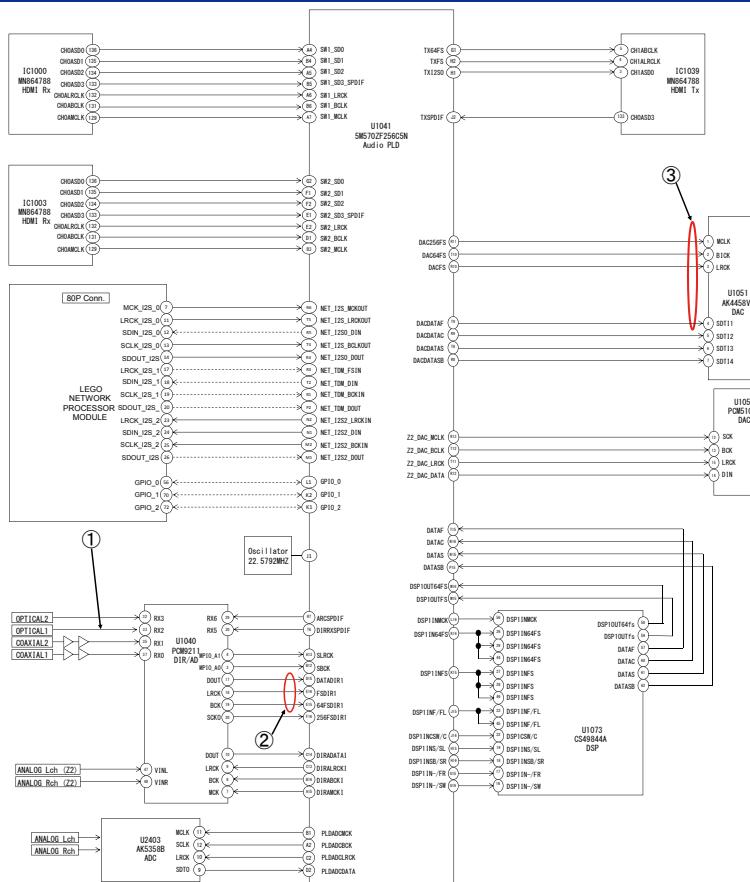
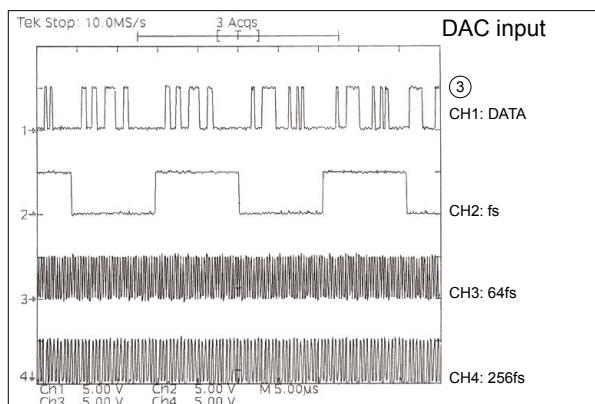
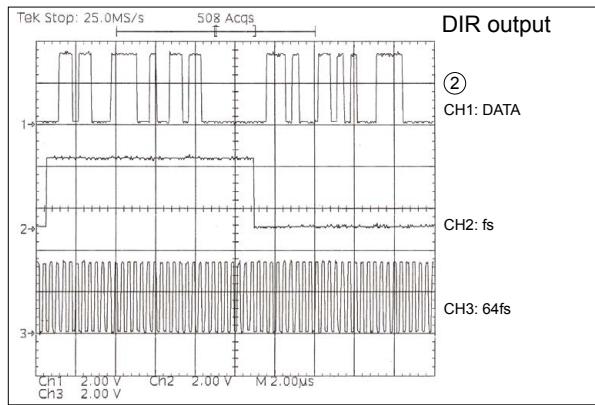
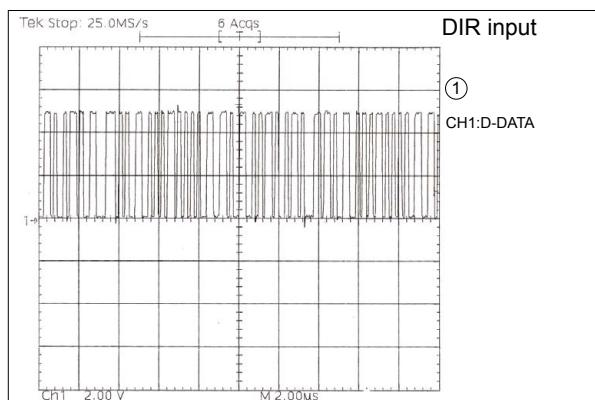


4. Device implementation location



CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

WAVE FORM



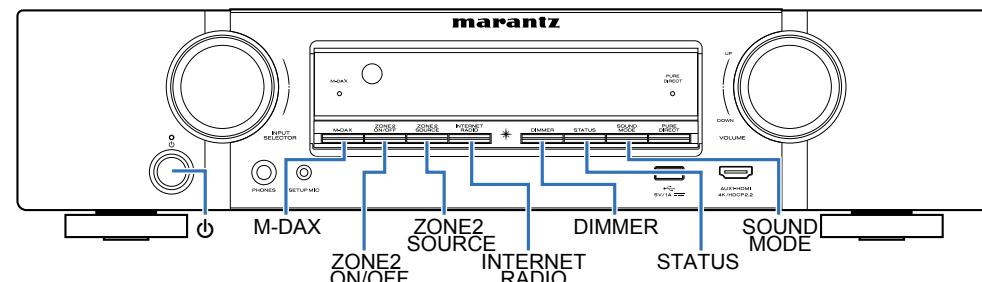
SPECIAL MODE

Special mode setting button

※ No. 1 - 4, 6 - 8: While holding down buttons "A", "B" and "C" simultaneously, press the power button to turn on the power.

※ No. 5, 9: While the power is on, hold down buttons "A" and "B" for at least 3 seconds.

No.	Mode	Button A	Button B	Button C	Descriptions
1	Version Display (u-COM / DSP Error Display)	DIMMER	STATUS	-	Displays the version of firmware such as the main firmware or DSP. Errors that have occurred are displayed. (See 1. Version Display Mode)
2	PANEL / REMOTE LOCK Selection Mode	M-DAX	DIMMER	-	Start this unit in the PANEL/REMOTE LOCK selection mode so that PANEL LOCK and Remote Lock can be switched between On and Off. (See 2. PANEL / REMOTE LOCK Selection Mode) <ul style="list-style-type: none"> •PANEL LOCK Mode (with Volume) •Disables reception from all keys and encoders on the front panel except the power button (including the volume). •PANEL LOCK Mode (without Volume) •Disables reception from all keys and encoders on the front panel except the power button and volume encoder. •PANEL LOCK mode is turned off •Releases the PANEL LOCK.
3	Selecting the Mode for Service-related	ZONE2 SOURCE	STATUS	-	This is a display for turning on each service-related mode. Service-related modes: No. 3-1 - No. 3-4 (See 3-1. Selecting the Mode for Service-related)
3-1	Check the Video/Audio path Mode	↑	↑	-	This is a special mode for service confirmation used during repair work to simplify the confirmation work for the Audio channel / video channel.(See Service Path Check Mode)
3-2	Protection history display mode	↑	↑	-	Displays the protection occurrence history. (See 3-2. Protection History Display Mode)
3-3	Operation Info Mode	↑	↑	-	Displays the accumulated operating time of the unit, the number of times the power was switched on, and the number of occurrences of each protection. (See 3-3. Operation Info Mode)
3-4	TUNER STEP Mode (U and N model only)	↑	↑	-	Enables reception STEP of the ANALOG TUNER to be changed. (See 3-4. TUNER STEP mode (U / N only))
4	Protection Pass Mode	DIMMER	STATUS	SOUND MODE	Enables the power to be turned on when protection detection is disabled. (See 4. Protection Pass Mode)
5	Network Initialization Mode	ZONE2 SOURCE	DIMMER	-	Network module backup data is initialized. (See 5. Network Initialization Mode)
6	User Initialization Mode	M-DAX	ZONE2 SOURCE	-	Initialize the backup data for the MCU and network module. (Settings for the Installer Setup are not initialized.)
7	Factory Initialization Mode	ZONE2 SOURCE	INTERNET RADIO	-	Initialize the backup data only for MCU. (Settings for the Installer Setup are initialized) (Network function settings are not initialized.) (See CAUTION IN SERVICING .)
8	Clearing the Operation Info	DIMMER	INTERNET RADIO	-	Clear the accumulated operating time of the unit, the number of times the power was switched on, and the number of occurrences of each protection. (See 6. Clearing the Operation Info)
9	HDMI Diagnostics Mode	M-DAX	DIMMER	-	This mode is used to identify and solve the cause when there is a connectivity issue with this unit and an HDMI device. For details on the operating methods and diagnosis procedures, see the HDMI Diagnostics and Troubleshooting guide issued on SDI.



1. Version Display Mode

1.1. Actions

Version information is displayed when the device is started in this mode.

1.2. Starting up

While holding down buttons "DIMMER" and "STATUS" simultaneously, press the power button to turn on the power.

then press the "STATUS" button to display the information in section 1.3 on the display.

※ The version list is also displayed on GUI while the version is displayed on the display.

1.3. Display Order

Error information(See "1.4. Error display") → ① Model destination information → ② Serial Number
 → ③ Firmware Package → ④ Main μ -com → ⑤ Main 1st Boot Loader → ⑥ DSP
 → ⑦ Audio PLD → ⑧ Video PLD → ⑨ GUI SFLASH → ⑩ HEOS Version → ⑪ HEOS Build
 → ⑫ HEOS Module → ⑬ HEOS Configuration → ⑭ HEOS Locale → ⑮ Ether Mac Address
 → ⑯ WiFi Mac Address → ⑰ BT Mac Address → ⑱ Audyssey App Interface Version

①Model destination information :

MR1608 ~
~ :Region (U, N, K, F)

②Serial Number :

SN*****

③Firmware Package :

Package ***

④Main μ-com :

M *****

⑤Main 1st Boot Loader :

Main FBL ***

⑥DSP ROM :

DSP ***

⑦Audio PLD :

Audio PLD:***,***

⑧Video PLD :

Video PLD:***,***

⑨GUI SFLASH :

GUI :00\$<***

⑩HEOS Version :

⑩HEOS Version
 @ : Model code,
 \$: Brand code (Non=0, De=1, Mz=2, Mc=3),
 ~ : Region code (U=1, N=2, K=5, F=4, ALL=0),
 * : version

⑪HEOS Build :

HEOS Build
 ↓ "Press "STATUS" button.

⑫HEOS Module :

HEOS Module
 ↓ "Press "STATUS" button.

⑬HEOS Config :

HEOS Config
 ↓ "Press "STATUS" button.
 Production

⑭HEOS Locale :

HEOS Locale
 ↓ "Press "STATUS" button.

⑮Ether MAC Address :

Ether MAC
 ↓ "Press "STATUS" button.

⑯Wi-Fi MAC Address :

Wi-Fi MAC
 ↓ "Press "STATUS" button.

⑰Bluetooth MAC Address :

BT MAC Address
 ↓ "Press "STATUS" button.

⑱Audyssey App Interface Ver :

Audy IFVer:***,***

1.4. Error display

See the table below for descriptions of the displayed errors and countermeasures for these.

If multiple errors occur, only one item is displayed.

The priority order is ②, ③, ④, ⑤, ⑥, ①.

Condition	States	Display	TROUBLE SHOOTING
① Firm Check NG	The model name, brand name and region information written in the firmware are compared to the region settings in the PCB. This error is displayed if the information does not match. "▲" is displayed as the first character if the firmware is not correct (see the illustrations on the right).	<div style="border: 1px solid black; padding: 2px; display: inline-block;">FIRM ERROR</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">▲ Main : **** * * *</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">▲ Mi : ***** * * * * *</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">▲ DSP : : *** , ***</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">▲ Audio PLD : *** , ***</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">▲ Video PLD : *** , ***</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">▲ GUI : **** * * *</div>	<ul style="list-style-type: none"> Check the resistor for setting the region(R1524 / 1525 DIGITAL PCB). Write the firmware for the correct region.
② IP SCALER NG	An error occurs in Loop back Test of the DDR memory which is performed during the initial setting of i/p Scaler(ADV8003).	<div style="border: 1px solid black; padding: 2px; display: inline-block;">IP SCALER ERR 01</div>	<ul style="list-style-type: none"> Check the circuits around the IP SCALER (U1026, DIGITAL PCB) and DDR2 (U1028/1029). If there appear to be no problems, U1026 or U1028/1029 is faulty.
	During the initial setting of i/p Scaler (ADV8003), there is not the reply of the Loop back Test result of the DDR memory .	<div style="border: 1px solid black; padding: 2px; display: inline-block;">IP SCALER ERR 02</div>	
③ GUI Serial Flash NG	If the Main CPU version is not supported by the GUI Serial Flash (ADV8003), "▼" is displayed as the first character of the GUI firmware version.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">▼ GUI UER. ERROR</div> <div style="border: 1px solid black; padding: 2px; display: inline-block;">▼ GUI : **** * * *</div>	<ul style="list-style-type: none"> Check the firmware version.
④ DIR NG	This error is displayed if there is no response from the DIR.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DIR ERROR 01</div>	<ul style="list-style-type: none"> Check the DIR (U1040, DIGITAL PCB) and surrounding circuits.
⑤ DSP NG	The DSP FLAG0 port does not enter "Hi" status while booting a DSP code even after resetting DSP.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DSP ERROR 01</div>	<ul style="list-style-type: none"> Check the DSP (U1073, DIGITAL PCB) and surrounding circuits.
	The DSP FLAG0 port does not enter "Hi" status before issuing a DSP command.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DSP ERROR 02</div>	
	Setting WRITE to "Lo" does not set ACK to "Hi" during DSP data reading.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DSP ERROR 03</div>	
	Setting REQ to "Lo" does not set ACK to "Lo" during DSP data reading.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DSP ERROR 04</div>	
	Setting WRITE to "Hi" does not set ACK to "Hi" during DSP data writing.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DSP ERROR 05</div>	
	Setting REQ to "Lo" does not set ACK to "Lo" during DSP data writing.	<div style="border: 1px solid black; padding: 2px; display: inline-block;">DSP ERROR 06</div>	
⑥ EEPROM NG	An error occurred in a checksum of the EEPROM(** is a block address number).	<div style="border: 1px solid black; padding: 2px; display: inline-block;">BACKUP ERROR</div>	

1.5. Version Display in the Setup Menu

Follow the steps below to display the firmware information.

- (1) Press the "SETUP" button on the remote control.
- (2) Select "General - Information - Firmware".

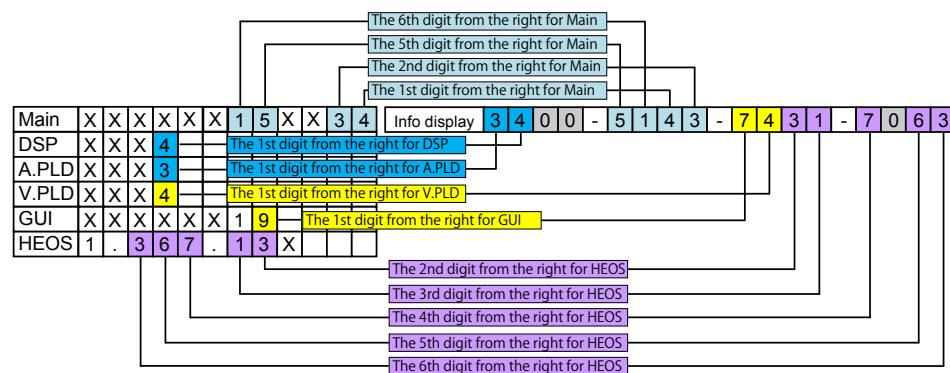
The version information is displayed as a 16-digit number as shown in the screenshot below.



GUI Image

This 16-digit number comprises a part of the version number of each device and module.

Numerics and version numbers correspond as shown below.



※ The firmware version numbers and this 16-digit version information are written in the Service Information.

※ Replace as follows for the 5th to 7th digits of HEOS version.

X.XXX.X → X.XXX.00X

X.XXX.XX → X.XXX.0XX

X.XXX.XXX → X.XXX.XXX

2. PANEL / REMOTE LOCK Selection Mode

2.1. Actions

Switch the PANEL LOCK and REMOTE LOCK modes between on and off.

2.2. Starting up

While holding down buttons "M-DAX" and "DIMMER" simultaneously, press the power button to turn on the power.

Select the desired mode using the "INTERNET RADIO" button, then press the "STATUS" button to confirm.

2.3. Displaying and Selecting Each Mode

The information shown on the display switches each time the "INTERNET RADIO" button is pressed.

Press the "STATUS" button to set the currently displayed mode and restart the device.

The setting with "*" is selected for each mode.

①

FP/VOL LOCK*On

The buttons on the unit and the master volume knob does not function.



②

FP LOCK On

The buttons on the unit does not function.



③

FP LOCK Off

The PANEL LOCK mode is turned off.



④

RC LOCK On

The device cannot be operated by the remote control.



⑤

RC LOCK *Off

The REMOTE LOCK mode is turned off.

3-1. Selecting the Mode for Service-related

3-1.1. Actions

Select diagnostic mode (service path check mode), protection history display mode, or Operation Info mode or TUNER STEP mode.

3-1.2. Starting up

While holding down buttons "ZONE2 SOURCE" and "STATUS" simultaneously, press the power button to turn on the power.

Select the desired mode using the "INTERNET RADIO" button, then press the "STATUS" button to confirm.

3-1.3. Displaying and Selecting Each Mode

The information shown on the display switches each time the "INTERNET RADIO" button is pressed.

Press the "STATUS" button to set the currently displayed mode and restart the device.

①

1. SERVICE CHECK

Service Path Check Mode : See "[DIAGNOSTIC MODE](#)"

The Video and Audio paths can be checked.

This function is convenient for confirming problem paths in the product and checking the paths after repairing.



②

2. PROTECTION

The protection history can be checked.



③

4. OP INFO

Operation Info for the unit can be checked.



④ U and N model only

5. TUNER FREQ SET

Enables reception STEP of the ANALOG TUNER to be changed.



3-1.4. Canceling the selected mode

Press the power button to turn off the power.

3-2. Protection History Display Mode

3-2.1. Actions

This mode enables the unit to record and display the event when the THERMAL, ASO or DC protection is activated.

If protections have been activated multiple times, the latest protection operation is recorded.

3-2.2. Starting up

While holding down buttons "ZONE2 SOURCE" and "STATUS" simultaneously, press the power button to turn on the power.

Select the "2. PROTECTION" using the "INTERNET RADIO" button, then press the "STATUS" button then to confirm.

3-2.3. Protection information and displays

- Press the "STATUS" button in Protection History Display Mode.
- The protection history can be checked.

(a) If no protections has occurred.

NO PROTECT

(b) ASO (if the last protection is ASO)

PRT: ASO

Cause A short circuit occurred between the speaker terminals, or speakers with an impedance outside the rating were connected.

Note : Short circuits in speaker terminals or speakers can be identified.

If the power is turned on in the abnormal state, protection is activated after around 6 seconds and the power is turned off.

(c) DC (if the last protection is DC)

PRT: DC

Cause : DC output of the power amplifier is abnormal.

If the power is turned on in the abnormal state, protection is activated after around 6 seconds and the power is turned off.

(d) THERMAL (if the last protection is THERMAL(A) or THERMAL(B) or THERMAL(E))

PRT: THERMAL A

PRT: THERMAL B

PRT: THERMAL E

Cause : Abnormal heat sink temperature.

If the power is turned on under abnormal conditions, the protection function works immediately and the power is turned off.

(e) Case of CURRENT (when the last protection incident is CURRENT protection)

: CURRENT

Cause : An over current flowed in power amp.

If the power is turned on in the abnormal state, protection is activated after around 90 seconds and the power is turned off.

Caution : These protections may also be activated due to other factors such as disconnection of connectors or operations around the microcomputer.

After viewing the above protection history, press the "STATUS" button to return to the normal display.

3-2.4. Clearing the Protection History

There are two ways to clear the protection history.

- (a) Activate Protection History Display Mode. Press the "STATUS" button to display the protection history. Press and hold the "DIMMER" button for 3 seconds.

PRT:DC

Press and hold the "DIMMER" button for 3 seconds.



PRT:CLEAR

The above message is displayed and the protection history is cleared.



NO PROTECT

- (b) Initialize this unit. (See "[Initializing This Unit](#)")

※ Use the method in **3-2.4. (a)** if you do not want to erase your settings from this unit.

Warning Displays by POWER LED

If the power is turned Off while a protection is being detected, the POWER LED flashes in red to warn you depending on the protection status as follows.

- (a) ASO/DC protection: Flashes at 0.5-second intervals (0.25 seconds lit, 0.25 seconds unlit)
- (b) THERMAL (A/B/E) protection: Flashes at 2-second intervals (1 seconds lit, 1 seconds unlit)
- (c) CURRENT protection: Flashes at 4-second intervals (2 seconds lit, 2 seconds unlit)

3-3. Operation Info Mode

3-3.1. Actions

This mode enables the unit to display the accumulated operating time, power On count and each protection count.

3-3.2. Starting up

While holding down buttons "ZONE2 SOURCE" and "STATUS" simultaneously, press the power button to turn on the power.
Select the "4. OP INFO" using the "INTERNET RADIO" button, then press the "STATUS" button then to confirm.

3-3.3. Operations

Press the "STATUS" button after starting up this device in Operation Info mode.
The following information is displayed in the following order.

- (a) Accumulated operating time

OP Time _____ H
 ↓ "STATUS"
 ↑ Time display

- (b) Power On count

P. On Time _____
 ↓ "STATUS"
 ↑ Count display

- (c) DC / ASO Protection count

**DC: _____ / ASO: _____
 ↓ "STATUS"**

- (d) Thermal Protection (A/B) count

**THM A: _____ / B: _____
 ↓ "STATUS"**

- (e) Thermal Protection (E) count

**THM E: _____
 ↓ "STATUS"**

- (f) Current Protection count

**Current: _____
 ↓ "STATUS"**

(Returns to normal display)

3-4. TUNER STEP mode (U / N only)

3-4.1. Actions

This is a special mode for enabling reception STEP of the ANALOG TUNER to be changed.

3-4.2. Starting up

While holding down buttons "ZONE2 SOURCE" and "STATUS" simultaneously, press the power button to turn on the power.
Select the "5. TUNER FRQ SET" using the "INTERNET RADIO" button, then press the "STATUS" button then to confirm.

3-4.3. Displays

Start up this unit in TUNER STEP mode, select the desired option using the "INTERNET RADIO" button, then enter using the "STATUS" button.

The following information is displayed in the following order.

- (a) AM9 kHz / FM50 kHz is selected

< AM9/FM50 >
 ↓ "INTERNET RADIO" ↑ "ZONE2 SOURCE"

- (b) AM10 kHz / FM200 kHz is selected

< AM10/FM200 >
 ↓ "STATUS"

- (c) Press the power button to turn off the power.

- (d) Press the power button to turn on the power.

4. Protection Pass Mode

4.1. Actions

- This mode allows the power to be turned on without activating protections.
- This mode functions in the same way as normal power-on, except that protections are not activated.
- When using the protection pass mode, do not connect speakers to the speaker terminals.

4.2. Operations

While holding down buttons "**DIMMER**", "**STATUS**" and "**SOUND MODE**" simultaneously, press the power button to turn on the power.

The device returns to the normal display message after the following is displayed.

Protection Pass

This is displayed for 5 seconds before returning to the normal display.

5. Network Initialization Mode

5.1. Actions

The following items are initialized.

- (1) Network setup
- (2) Friendly Name
- (3) Auto Update setting
- (4) Allow Update setting
- (5) Time Zone setting
- (6) Queue list
- (7) Internet Radio recently played station
- (8) Quick Select playback station
- (9) AirPlay Password
- (10) Bluetooth Pairing History

5.2. Operations

When the power is on and the input source is HEOS Music, press and hold the "**ZONE2 SOURCE**" and "**DIMMER**" buttons for more than 3 seconds.

Initializing Display

Network Reset...

Complete Display

Completed

This is displayed for 5 seconds before returning to the normal display.

6. Clearing the Operation Info

6.1. Actions

- Displays the accumulated operating time of the unit, the number of times the power was switched on, and the number of occurrences of each protection.

6.2. Operations

Remove all input/output terminals and the AC plug.

Connect the AC plug again and place the product in standby mode.

While holding down buttons "DIMMER" and "INTERNET RADIO" simultaneously, press the power button to turn on the power.



When "PRODUCT MODE" appears on the display, release the button and press the "power" button and "ZONE2 ON/OFF" to place the product in standby mode.

1.1. Actions

This function is convenient for confirming problem paths in the product and checking the paths after repairing.

The Video and Audio paths can be checked.

The backup data is not rewritten.

1.2. Starting up

While holding down buttons "ZONE2 SOURCE" and "STATUS" simultaneously, press the power button to turn on the power.

Select the "1. SERVICE CHECK" using the "INTERNET RADIO" button, then press the "STATUS" button then to confirm.

The "TUNED", "STEREO" and "RDS" segments are lit in this mode.

1.3. Canceling diagnostic mode

Press the power button to turn off the power.

1.4. Selecting items to check

Press the ① button to switch between video items and audio items.

Press the ② or ③ button to select the previous or next item.

Actions	The unit			Remote control unit		
	①	②	③	①	②	③
	Audio ⇄ Video	PREVIOUS	NEXT	Audio ⇄ Video	PREVIOUS	NEXT
Button	DIMMER	M-DAX	INTERNET RADIO	SLEEP	CURSOR◀	CURSOR▶

1.5. Audio system confirmation items

See the block diagram fig.XXth.

Paths to be confirmed			Display	Settings	What to confirm
1	Analog	fig.01	A01:ANALOG PASS	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : DIRECT Amp assign : Surround Back MAIN ZONE : On ZONE2 : Off	<ul style="list-style-type: none"> • Analog input ⇒ Speaker output (Front L/R) (※ The input source can be switched to any source except CBL/SAT.)
2	DIGITAL (MAIN)	fig.02a fig.02b	A02:DIGITAL	Input Source : CBL/SAT Input Mode : DIGITAL (fixed) Sound mode : MULTI CH STEREO Amp assign : Surround Back Speaker Config ALL Speaker = Small / SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off	<ul style="list-style-type: none"> • Digital input ⇒ Speaker output (Front L/R, Center, Surround L/R, Surround Back L/R) • Digital input ⇒ Pre output (Front L/R, Subwoofer) (※ The input source can be switched to any source except CBL/SAT.)
3	DIGITAL (ZONE2)	fig.03a fig.03b	A03:DIGITAL-Z2	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO Amp assign : ZONE2 MAIN ZONE : On ZONE2 : On	<ul style="list-style-type: none"> • Digital(PCM) input ⇒ Speaker output (Surround Back (ZONE2) L/R) • Digital(PCM) input ⇒ Pre OUT output (ZONE2 L/R)

Paths to be confirmed		Display	Settings	What to confirm	
4	HDMI	fig.04a fig.04b	A05:HDMI	Input Source : CBL/SAT Input Mode : HDMI (fixed) Sound mode : STEREO Amp assign : Surround Back MAIN ZONE : On ZONE2 : Off	• HDMI input ⇒ Speaker output (Front L/R) (※ The input source can be switched to any source except CBL/SAT.)
5	Analog AD (MAIN)	fig.05a fig.05b	A06:AD	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : MULTI CH STEREO Vol 60dB Amp assign : Surround Back Speaker Config ALL Speaker = Small/SW = Yes(2ch) MAIN ZONE : On ZONE2 : Off	• Analog input ⇒ Speaker output (Front L/R, Center, Surround L/R, Surround Back L/R) • Analog input ⇒ Speaker output, SW(20Hz) (Front L/R, Subwoofer) (※ The input source can be switched to any source except CBL/SAT.) (※ Volume 60 is the value when Absolute settings are used. The value is -20 when Relative settings are used)
6	Analog Amp Assign (Amp Assign : ZONE2)	fig.06	A07:ASSIGN-Z2	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : Source Vol 60dB Amp assign : ZONE2 MAIN ZONE : On ZONE2 : On	• Analog input ⇒ Speaker output (Surround Back (ZONE2) L/R) • Analog input ⇒ Pre OUT output (ZONE2 L/R) (※ The input source can be switched to any source except CBL/SAT.) (※ Volume 60 is the value when Absolute settings are used. The value is -20 when Relative settings are used)

1.6. Confirmation items for the video system

See the block diagram fig.XXth.

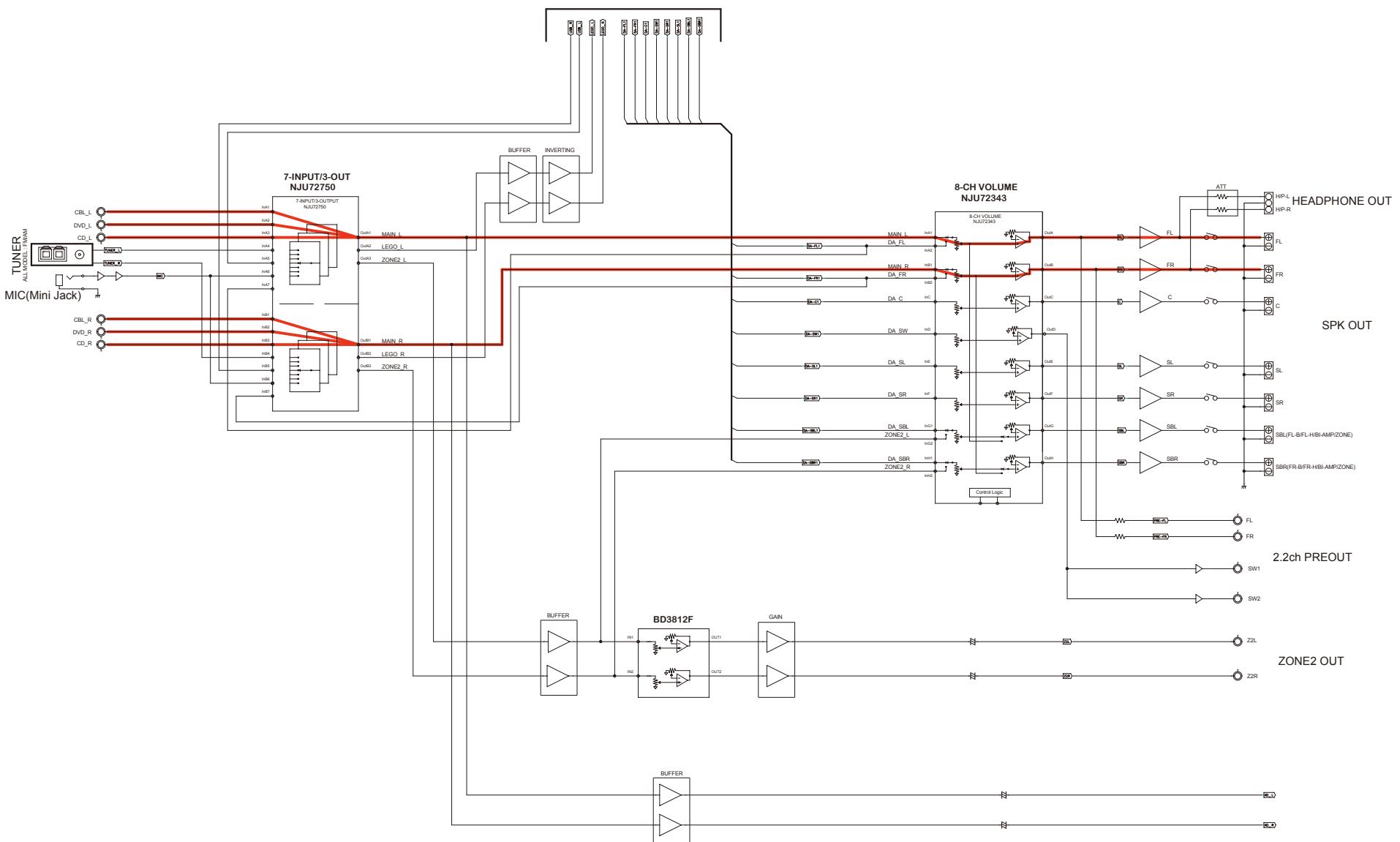
Paths to be confirmed		Display	Settings	What to confirm	
1	Analog Video pass	fig.07	U01:VIDEO PASS	Input Source : CBL/SAT Video Conversion (IP Scaler) : OFF, All sources MAIN ZONE : On ZONE2 : On	• CVBS input ⇒ CVBS output • Component input ⇒ Component output (※ The input source can be switched to any source except CBL/SAT.)
2	Video Convert (Analog or HDMI ⇒ HDMI)	fig.08	U02:V.CONVERT	Input Source : CBL/SAT Video Conversion (IP Scaler) : ON, All sources IP Scaler : "Analog & HDMI", All sources Resolution : "Auto", All sources MAIN ZONE : On ZONE2 : Off	• CVBS input ⇒ IP Scaler ⇒ HDMI output. • Component input ⇒ IP Scaler ⇒ HDMI output. • HDMI input ⇒ IP Scaler ⇒ HDMI output. • ETHERNET input ⇒ IP Scaler ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)
3	HDMI pass (MAIN ZONE)	fig.09	U03:HDMI PASS	Input Source : CBL/SAT Video Conversion (IP Scaler) : OFF, All sources MAIN ZONE : On ZONE2 : Off	• HDMI input (MAIN function) ⇒ HDMI output (MAIN) (※ The input source can be switched to any source except CBL/SAT.)
4	HDMI CEC (Control Monitor : HDMI Monitor1)	fig.10	U04:HDMI CEC	Input Source : CBL/SAT HDMI Control : On MAIN ZONE : On ZONE2 : Off	• When the power supply of a TV is put in the standby mode, make sure that the power supply of this unit is also put in the standby mode. (※ The input source can be switched to any source except CBL/SAT.) • The ARC path can also be checked (check this using the TV input source).

Paths to be confirmed		Display	Settings	What to confirm	
5	HDMI Audio (Audio : AVR)	fig.11a fig.11b	U05:H.AUDIO-AVR	Input Source : CBL/SAT HDMI Control : Off HDMI Audio : AVR (if checking the audio output from AVR)	<ul style="list-style-type: none"> • HDMI input (PCM, DolbyDigital, DTS) ⇒ Speaker output. • HDMI input(HD audio) ⇒ Speaker output. (※ The input source can be switched to any source except CBL/SAT.)
6	HDMI Audio (Audio : TV)	fig.12	U06:H.AUDIO-TV	HDMI Audio : TV (if checking the audio output from TV)	<ul style="list-style-type: none"> • HDMI input (PCM, DolbyDigital, DTS) ⇒ HDMI output (audio output from connected TV) (※ The input source can be switched to any source except CBL/SAT.)
7	GUI	fig.13	U07:GUI MENU ON	Input Source : CBL/SAT Video Conversion (IP Scaler) : ON, All sources IP Scaler : "Analog & HDMI", All sources Resolution : "AUTO", All sources Setup Menu : On MAIN ZONE : On ZONE2 : Off	<ul style="list-style-type: none"> • GUI display ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)

DIAGNOSTIC PATH DIAGRAM

fig.01

NR1608 ANALOG AUDIO DIAGRAM TO DIGITAL AUDIO BLOCK



Caution in servicing

Electrical

Mechanical

Repair Information

Updating

fig.02a

NR1608 DIGITAL AUDIO DIAGRAM

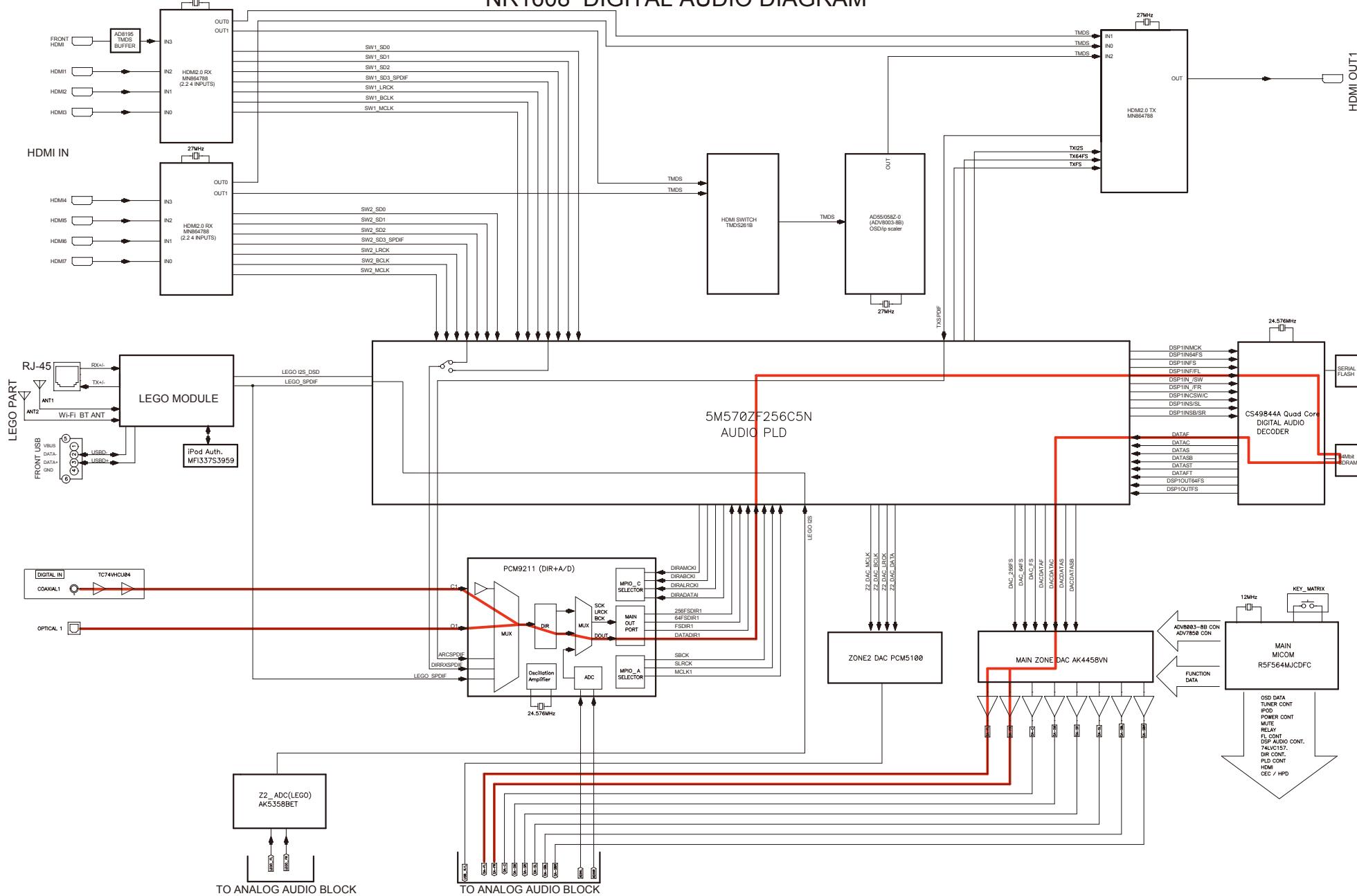


fig.02b

NR1608 ANALOG AUDIO DIAGRAM TO DIGITAL AUDIO BLOCK

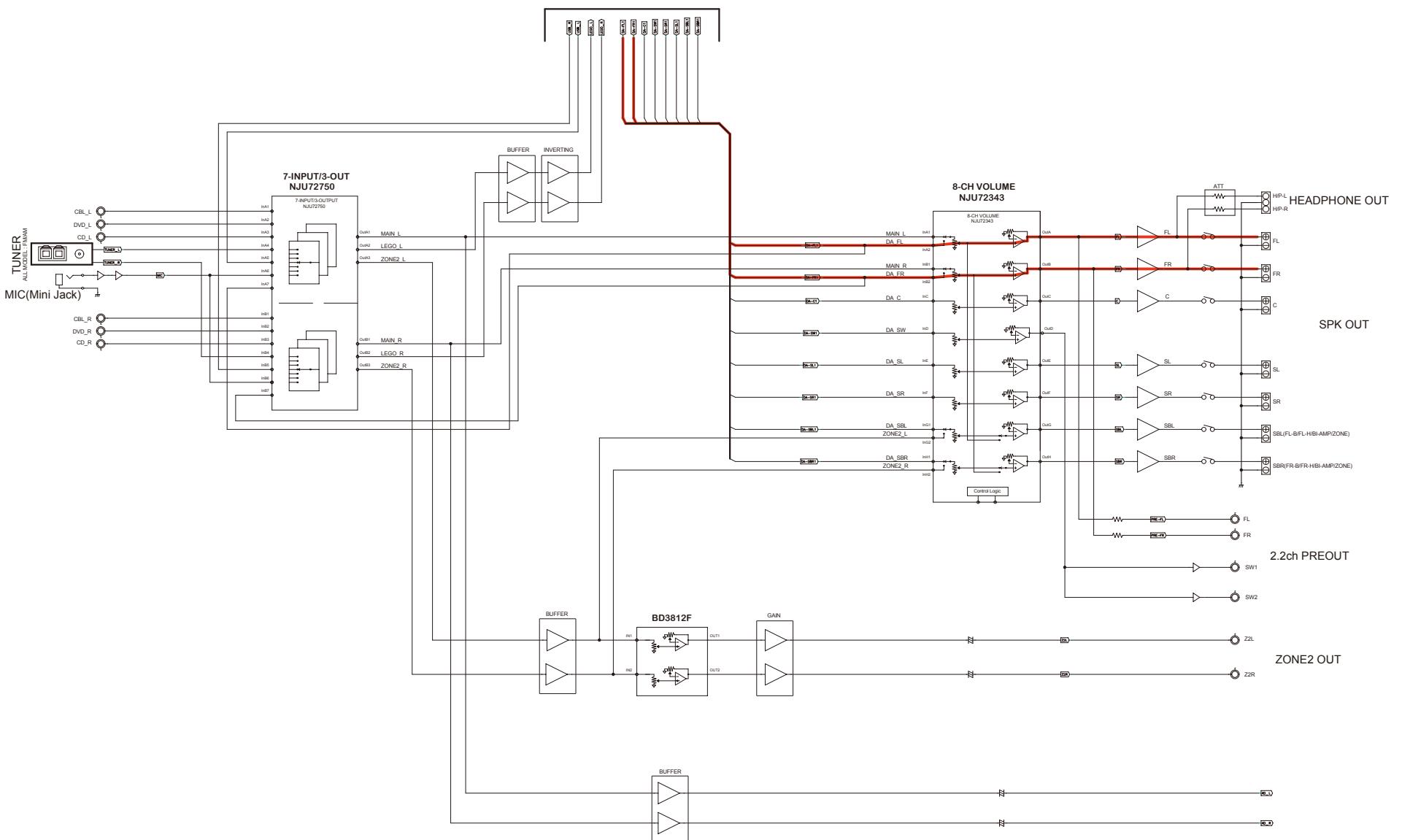


fig.03a

NR1608 DIGITAL AUDIO DIAGRAM

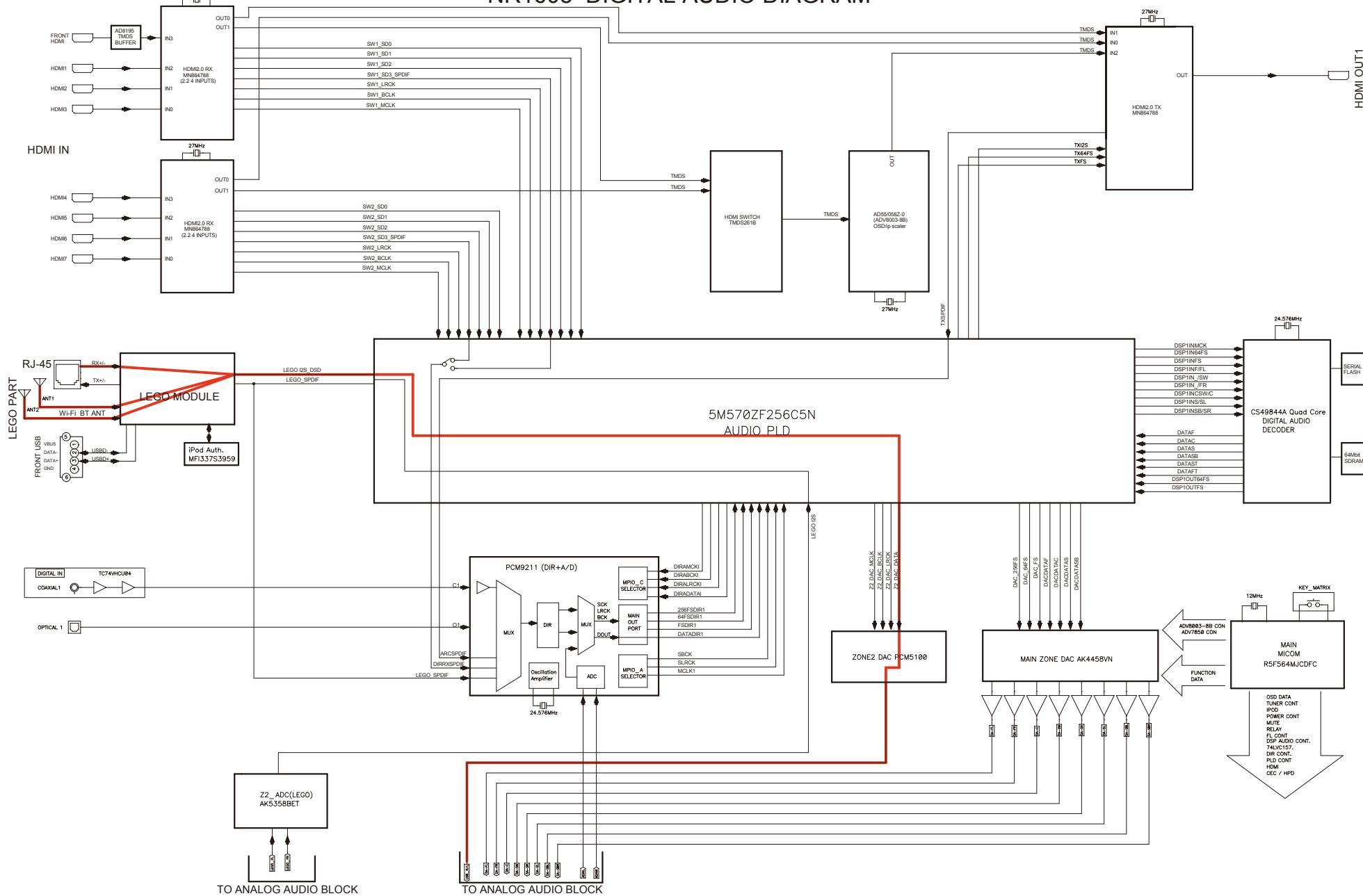


fig.03b

NR1608 ANALOG AUDIO DIAGRAM TO DIGITAL AUDIO BLOCK

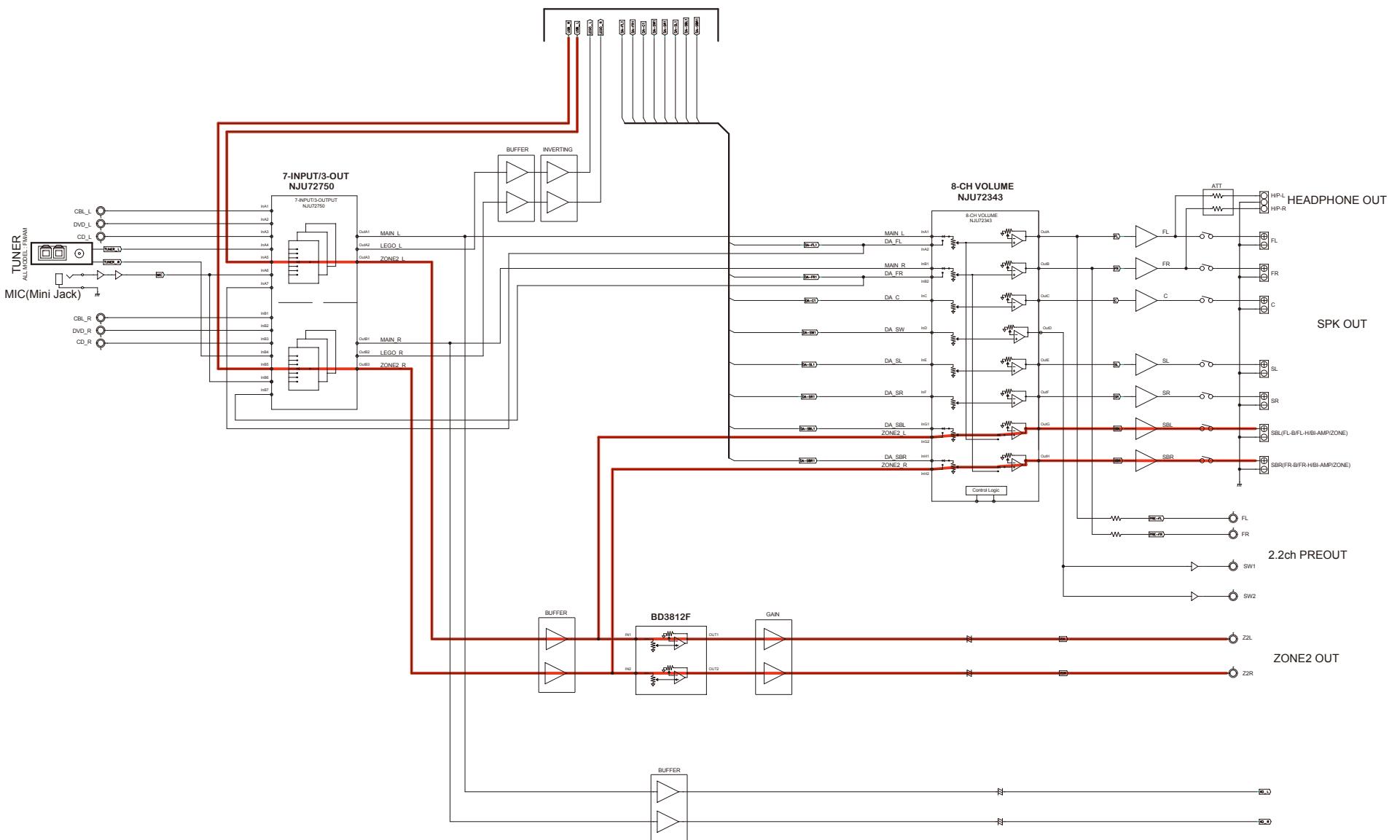


fig.04a

NR1608 DIGITAL AUDIO DIAGRAM

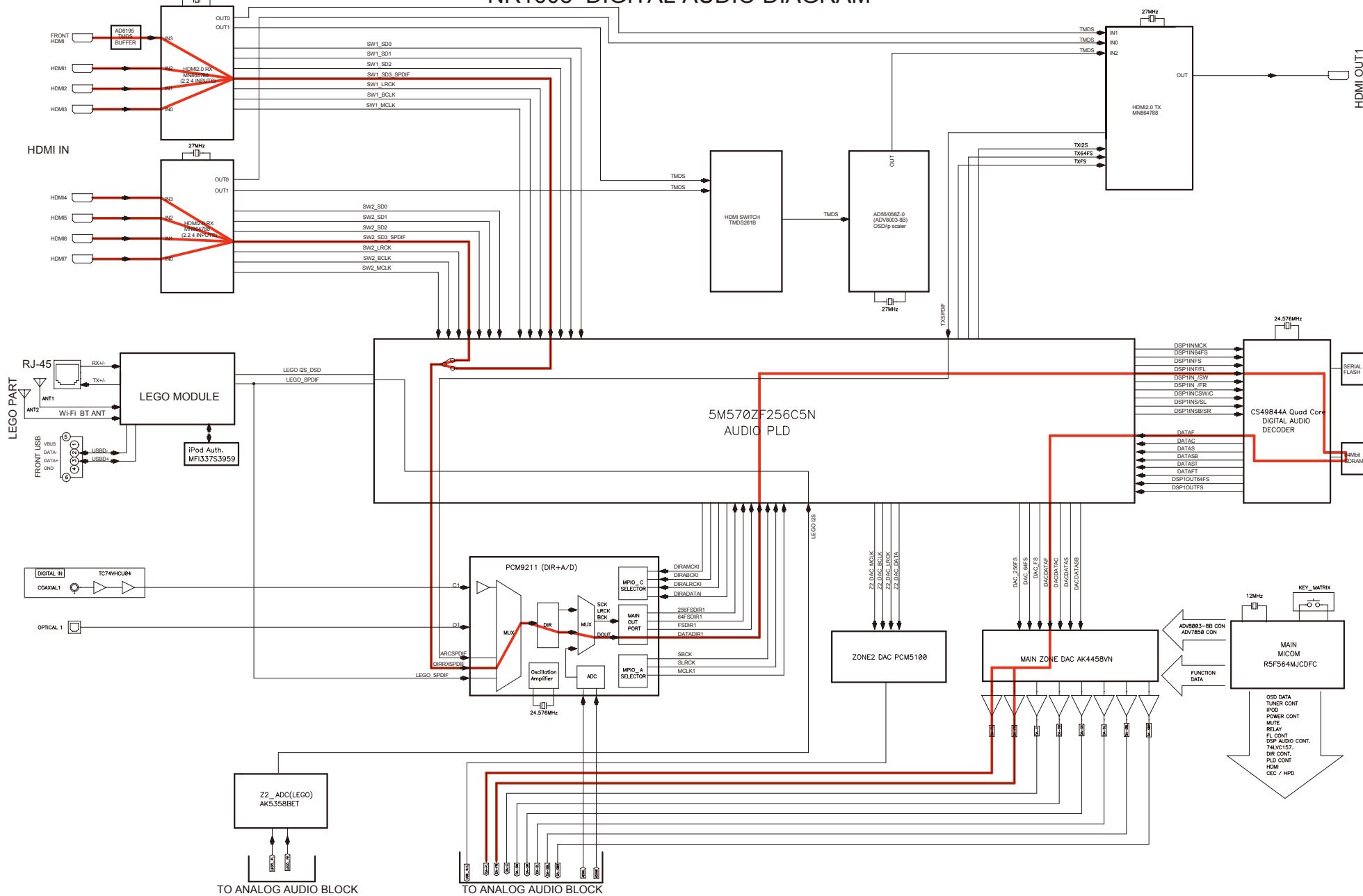


fig.04b

NR1608 ANALOG AUDIO DIAGRAM TO DIGITAL AUDIO BLOCK

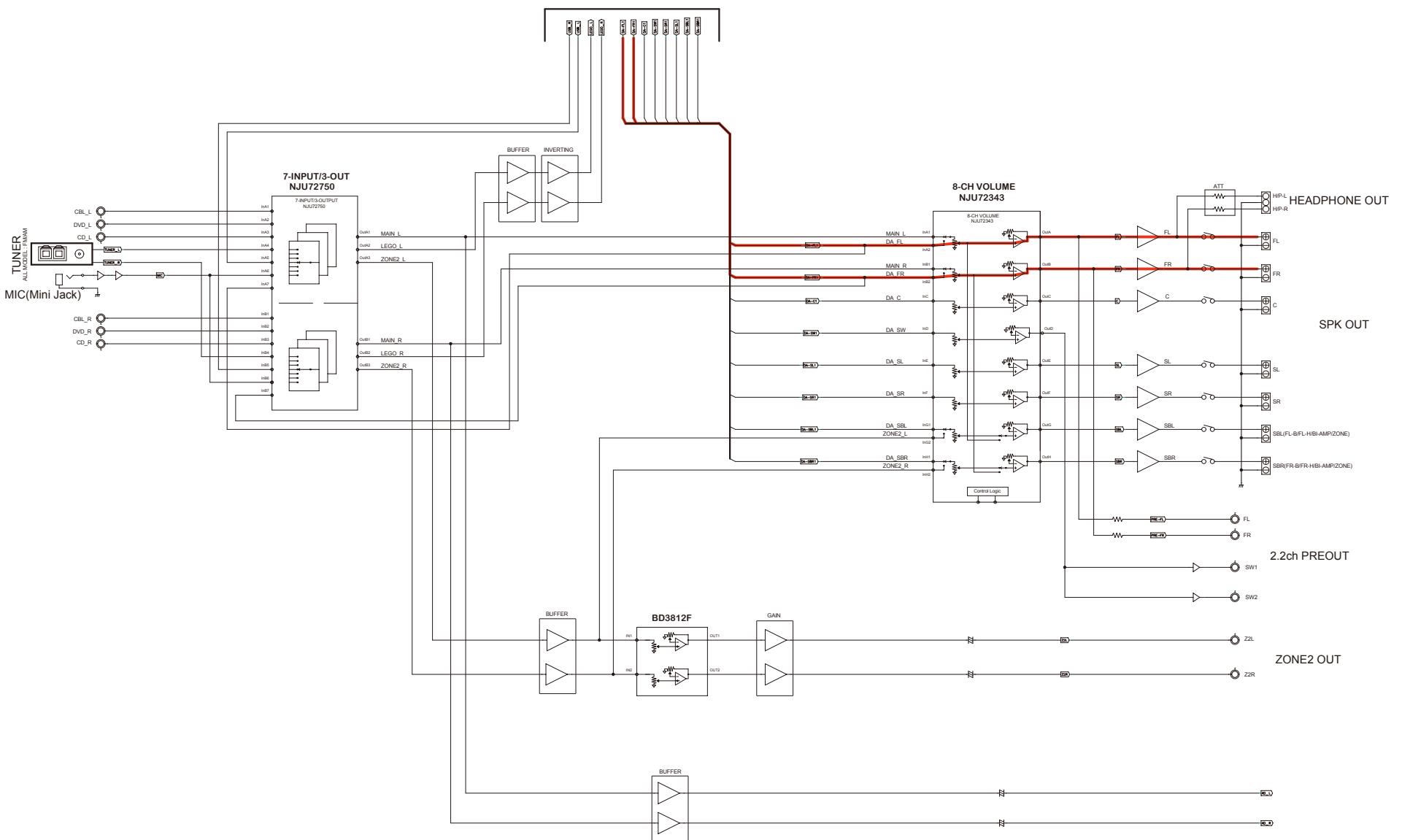


fig.05a

NR1608 DIGITAL AUDIO DIAGRAM

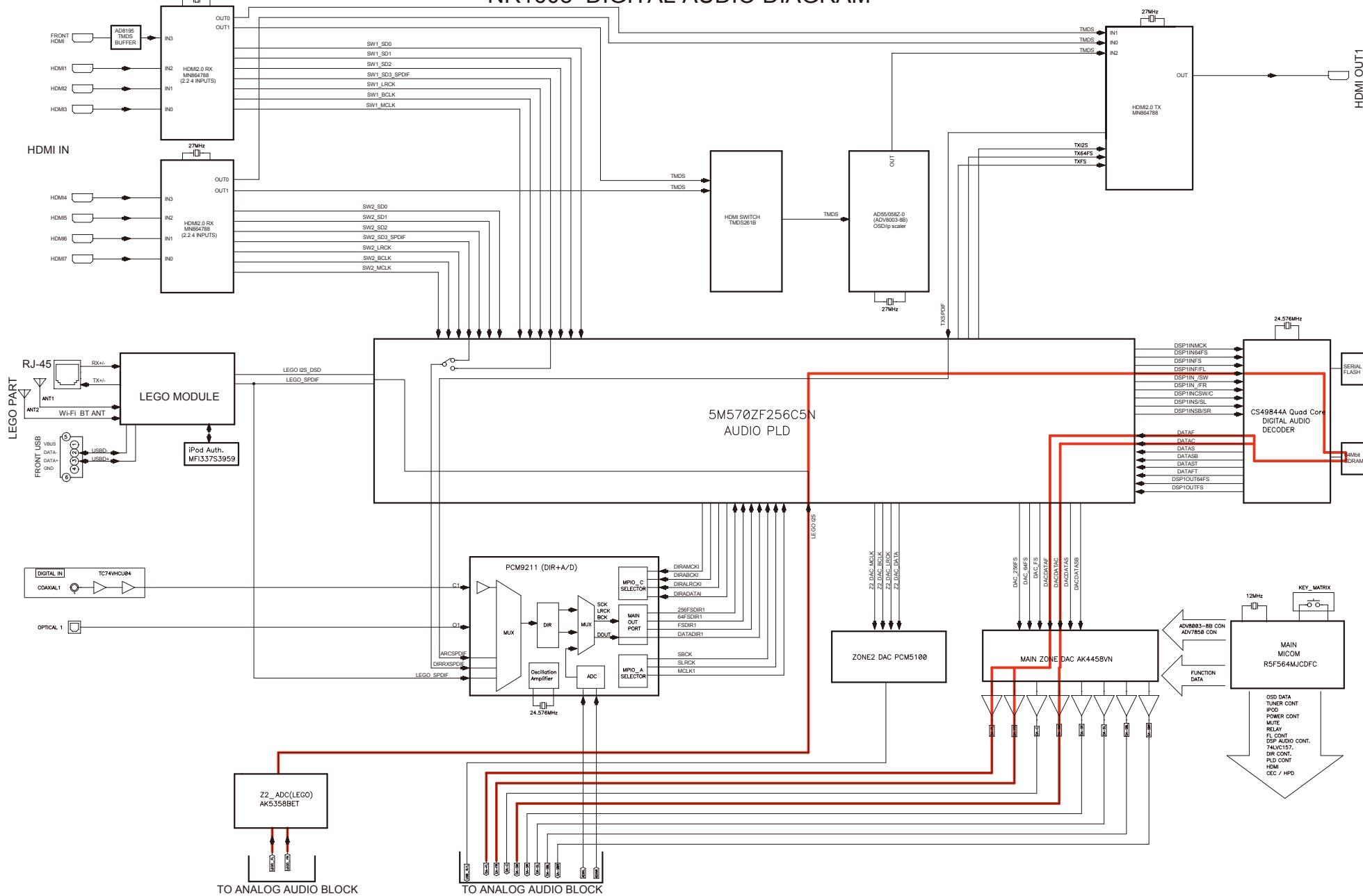


fig.05b

NR1608 ANALOG AUDIO DIAGRAM TO DIGITAL AUDIO BLOCK

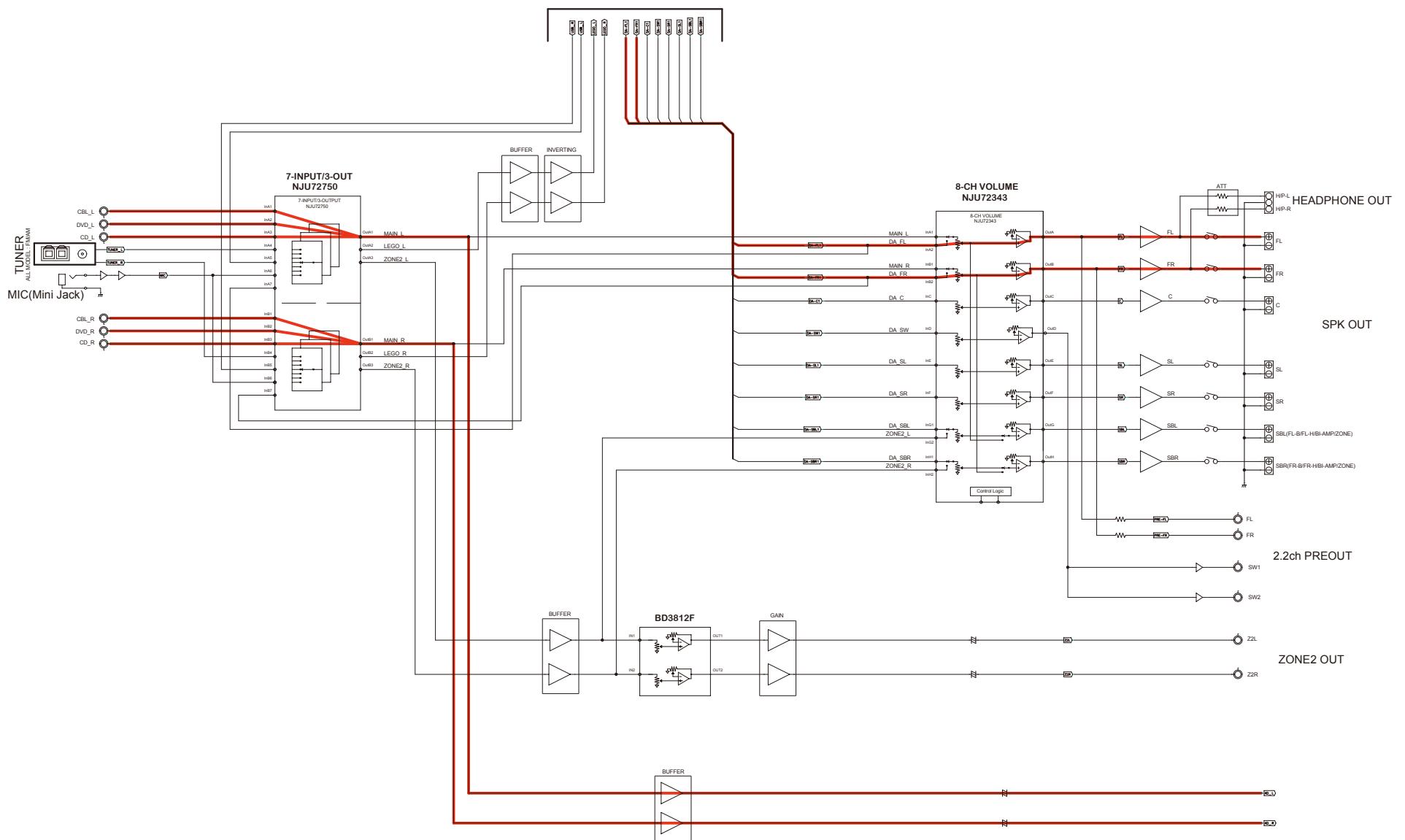


fig.06

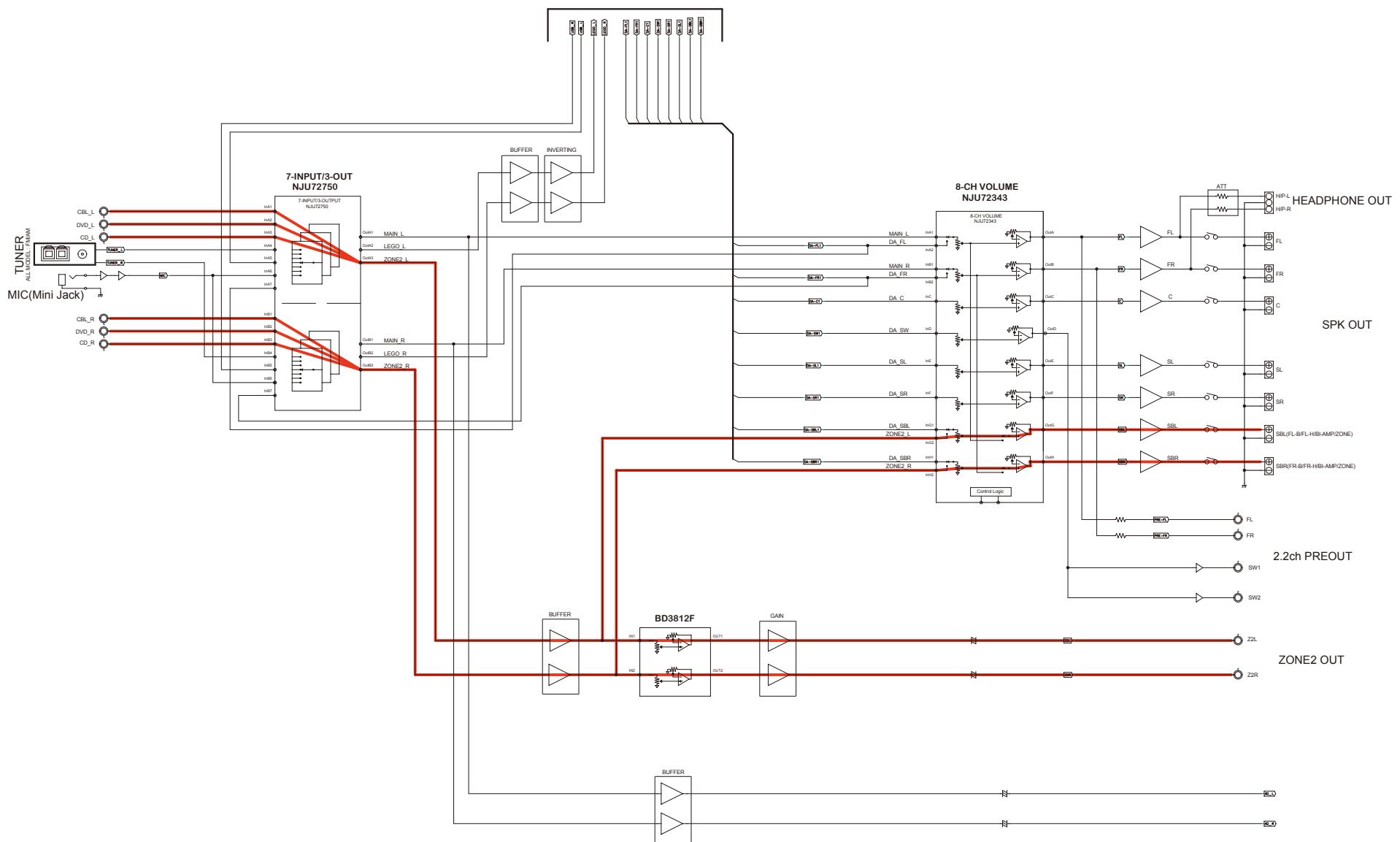
NR1608 ANALOG AUDIO DIAGRAM
TO DIGITAL AUDIO BLOCK

fig.07

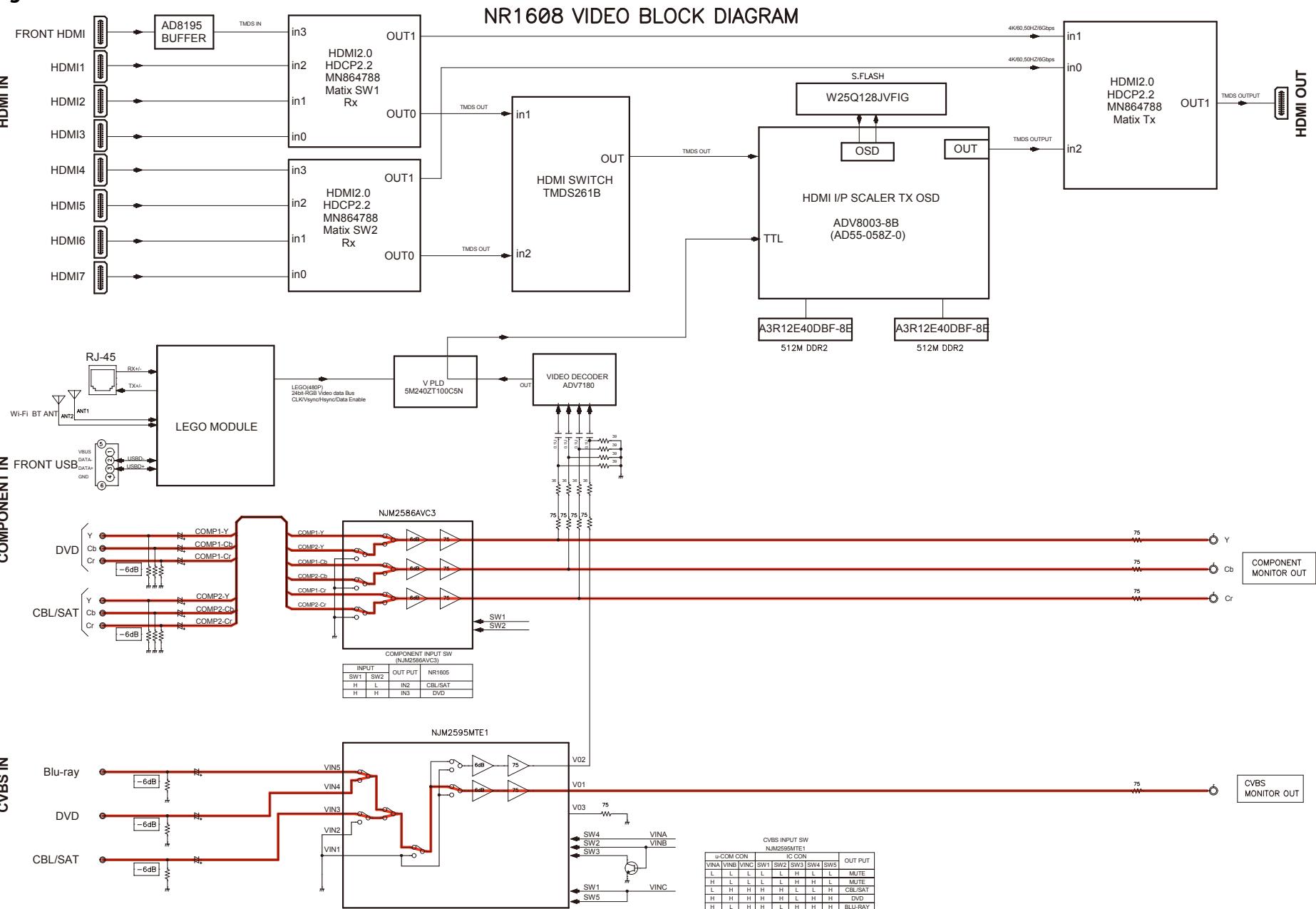


fig.08

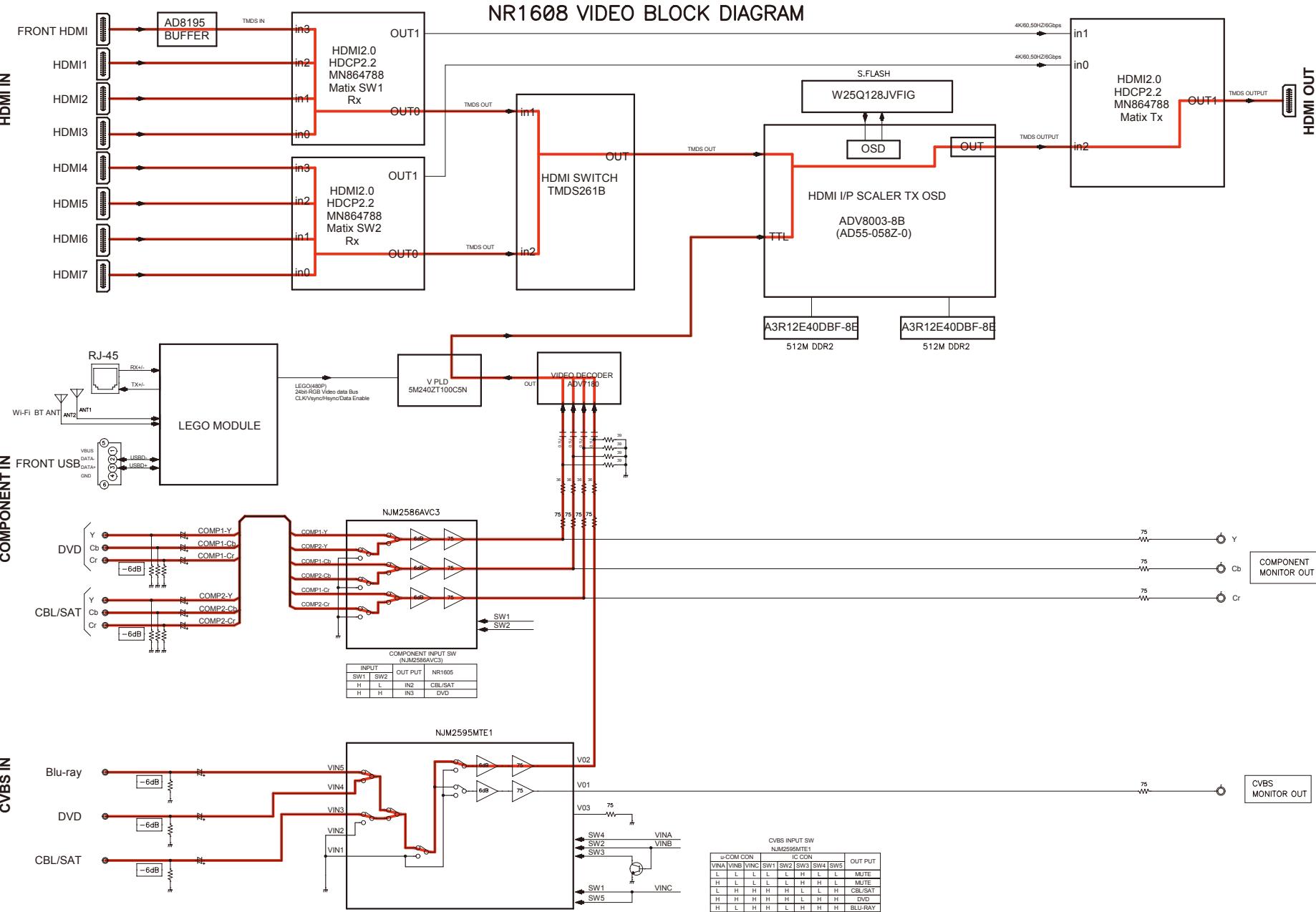


fig.09

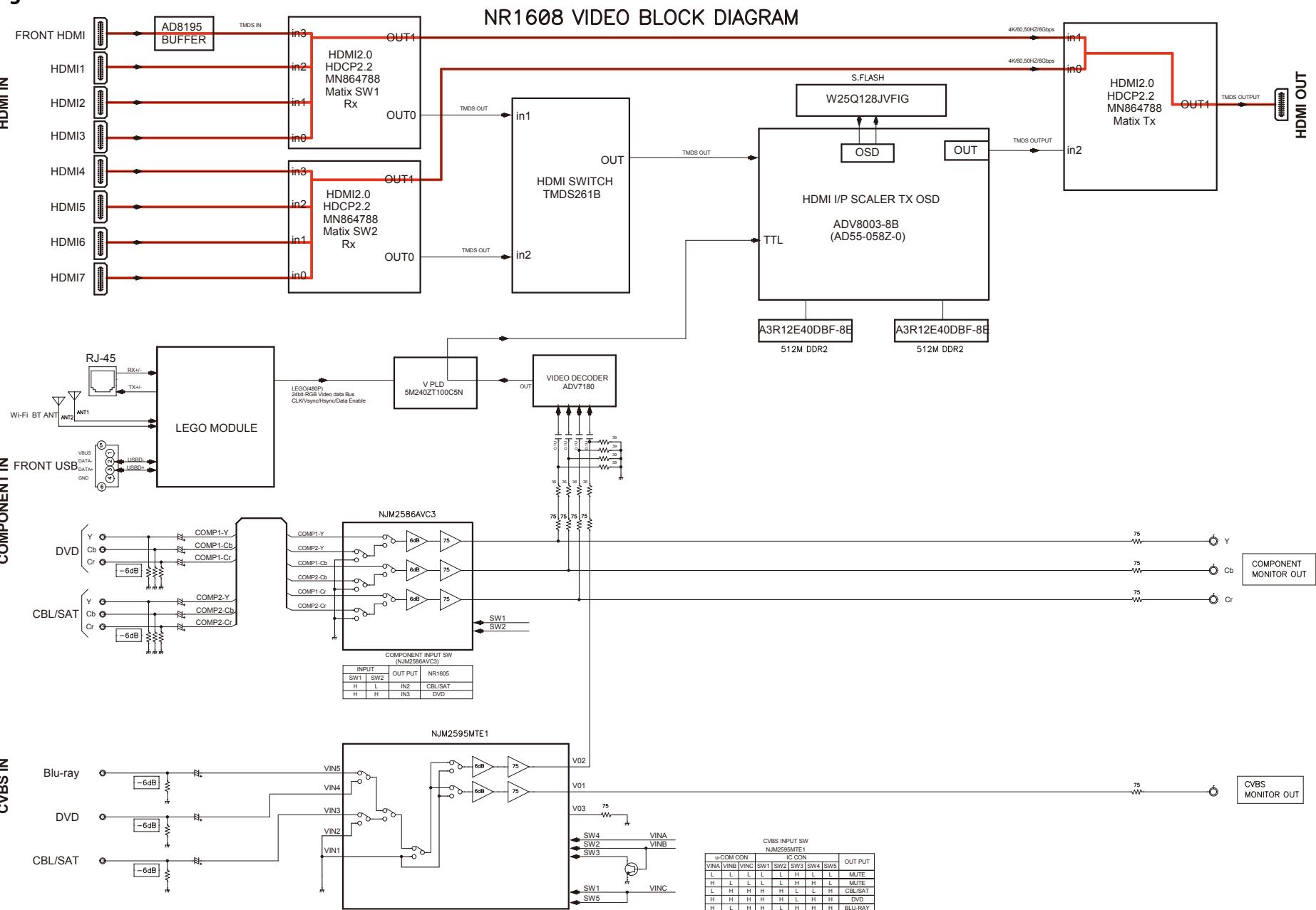


fig.10

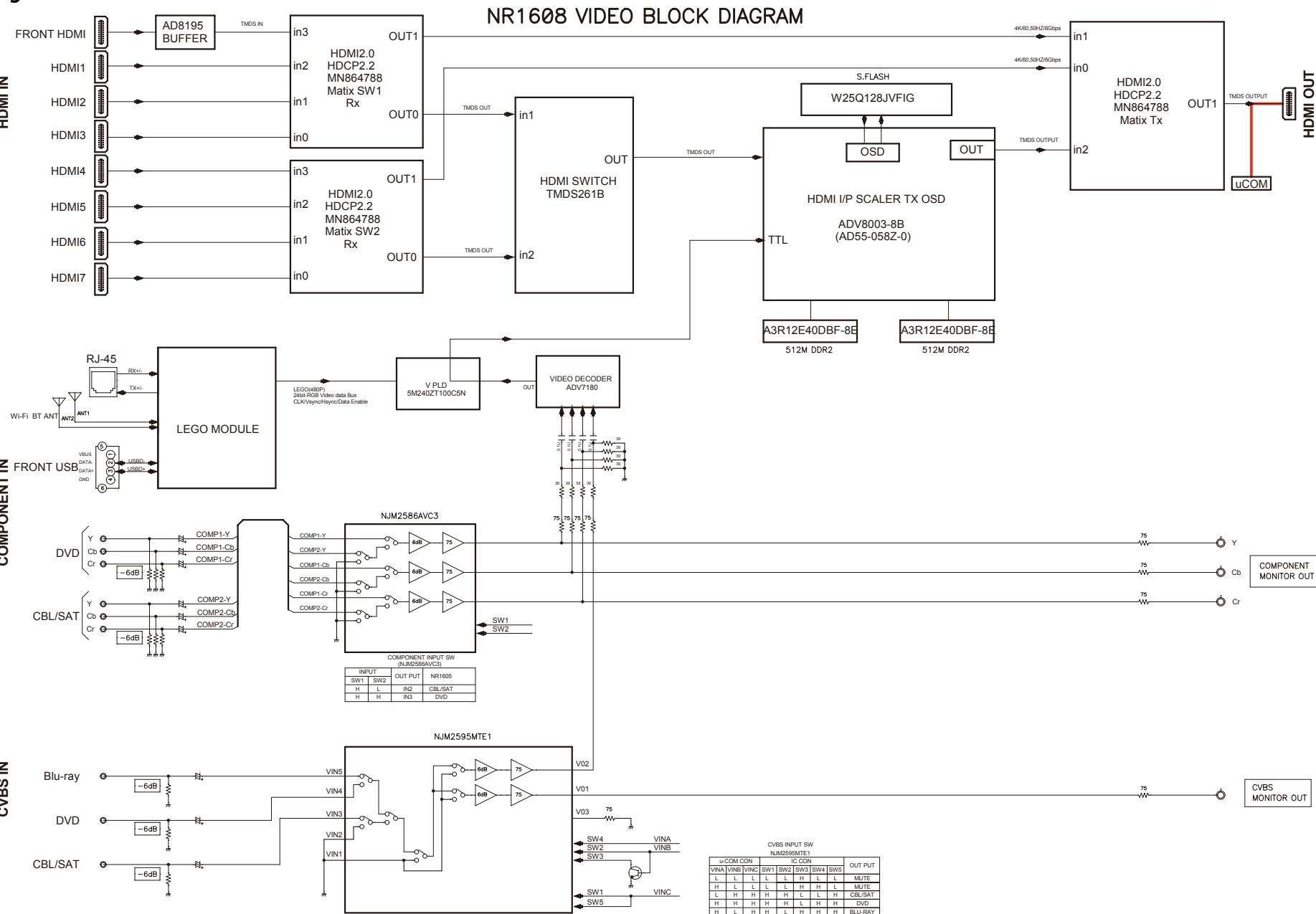


fig.11a

NR1608 DIGITAL AUDIO DIAGRAM

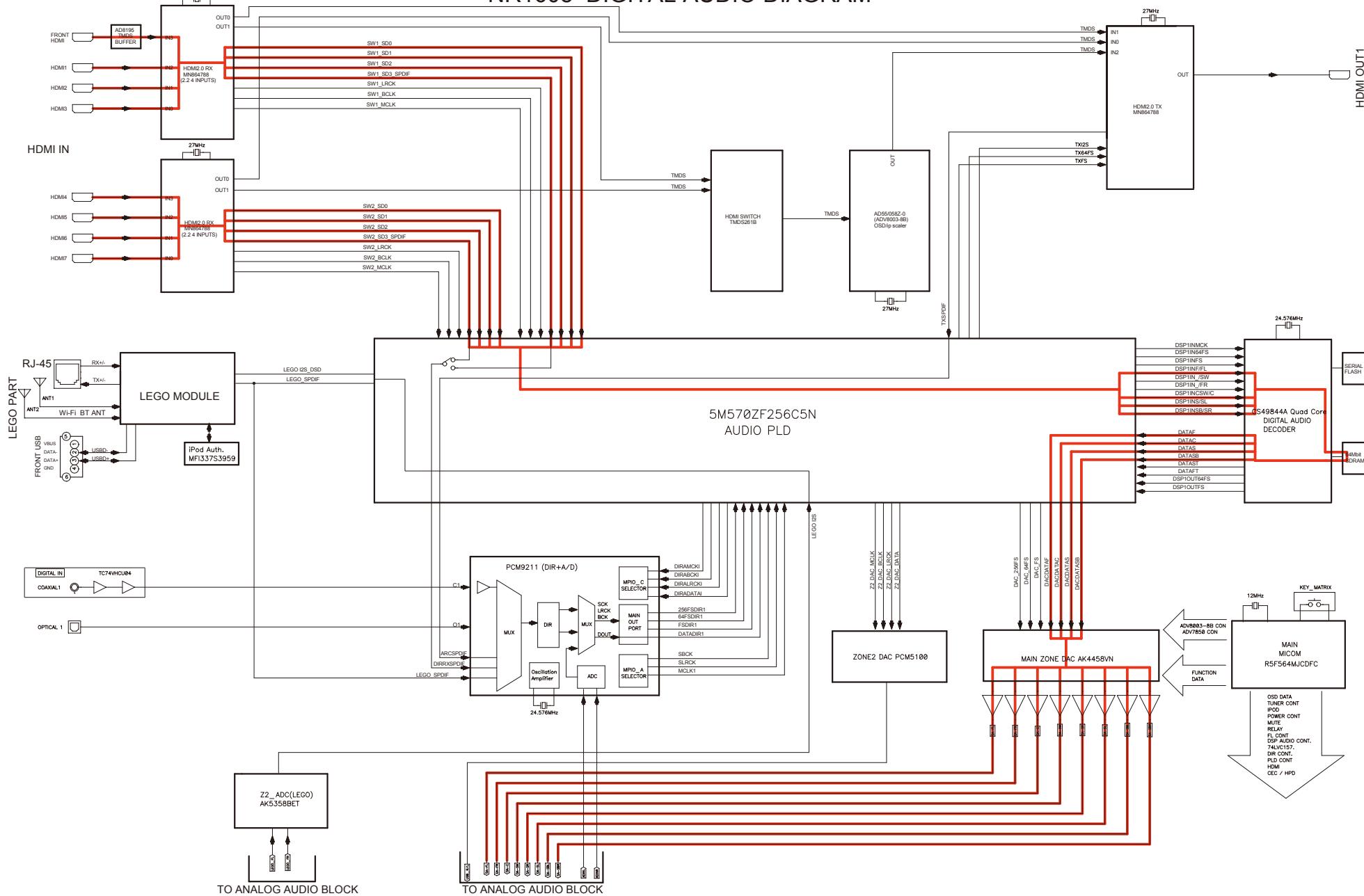


fig.11b

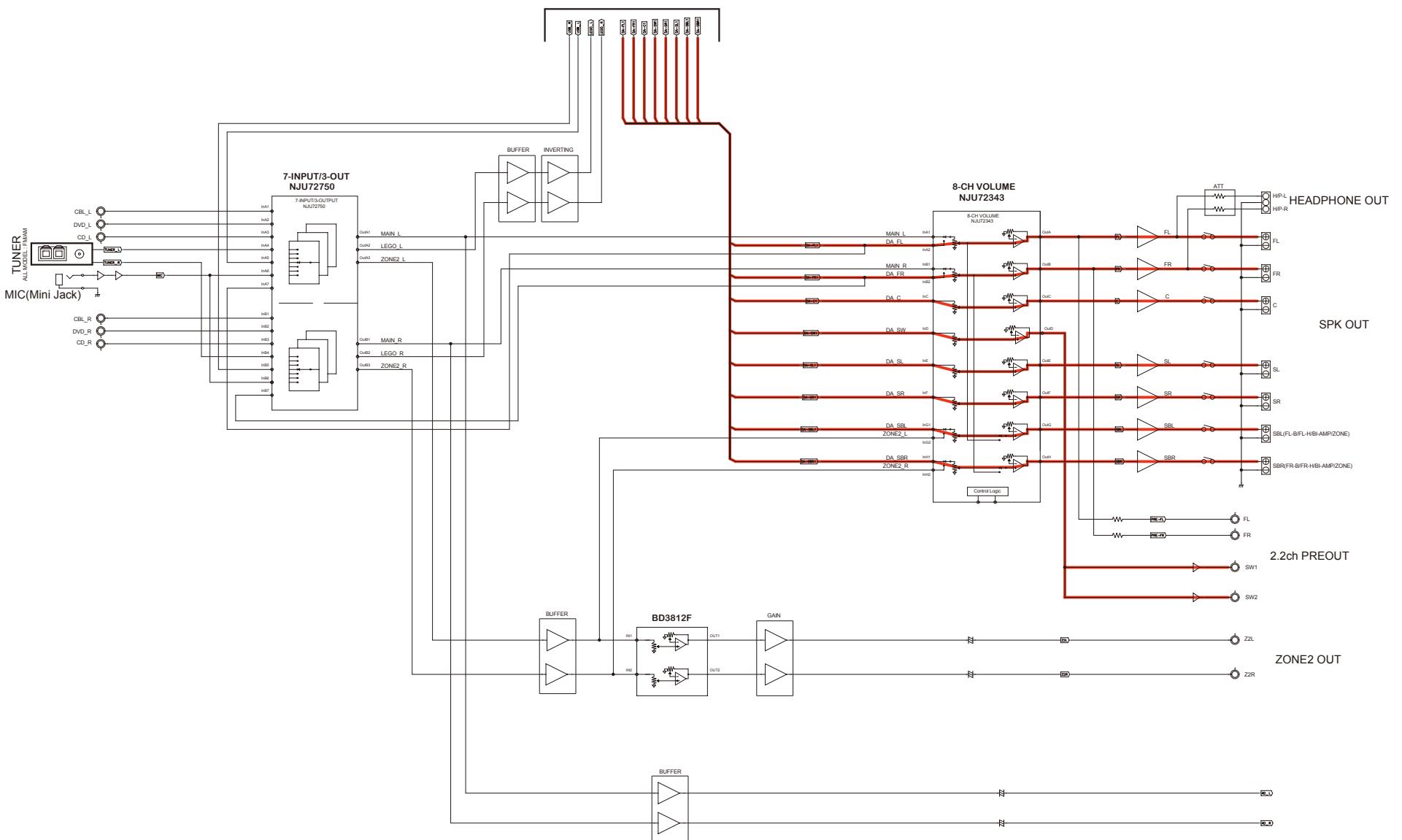
NR1608 ANALOG AUDIO DIAGRAM
TO DIGITAL AUDIO BLOCK

fig.12

NR1608 DIGITAL AUDIO DIAGRAM

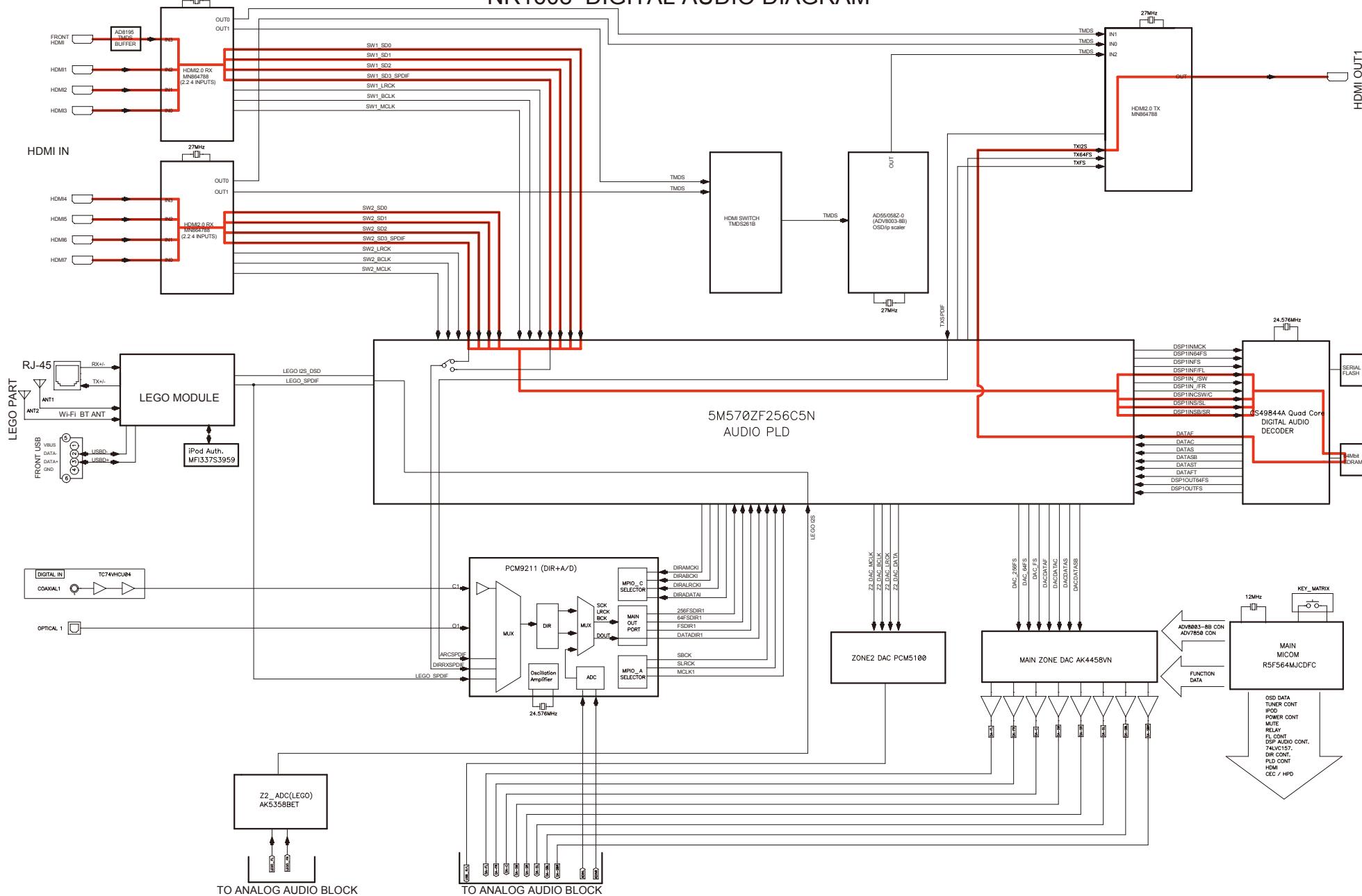
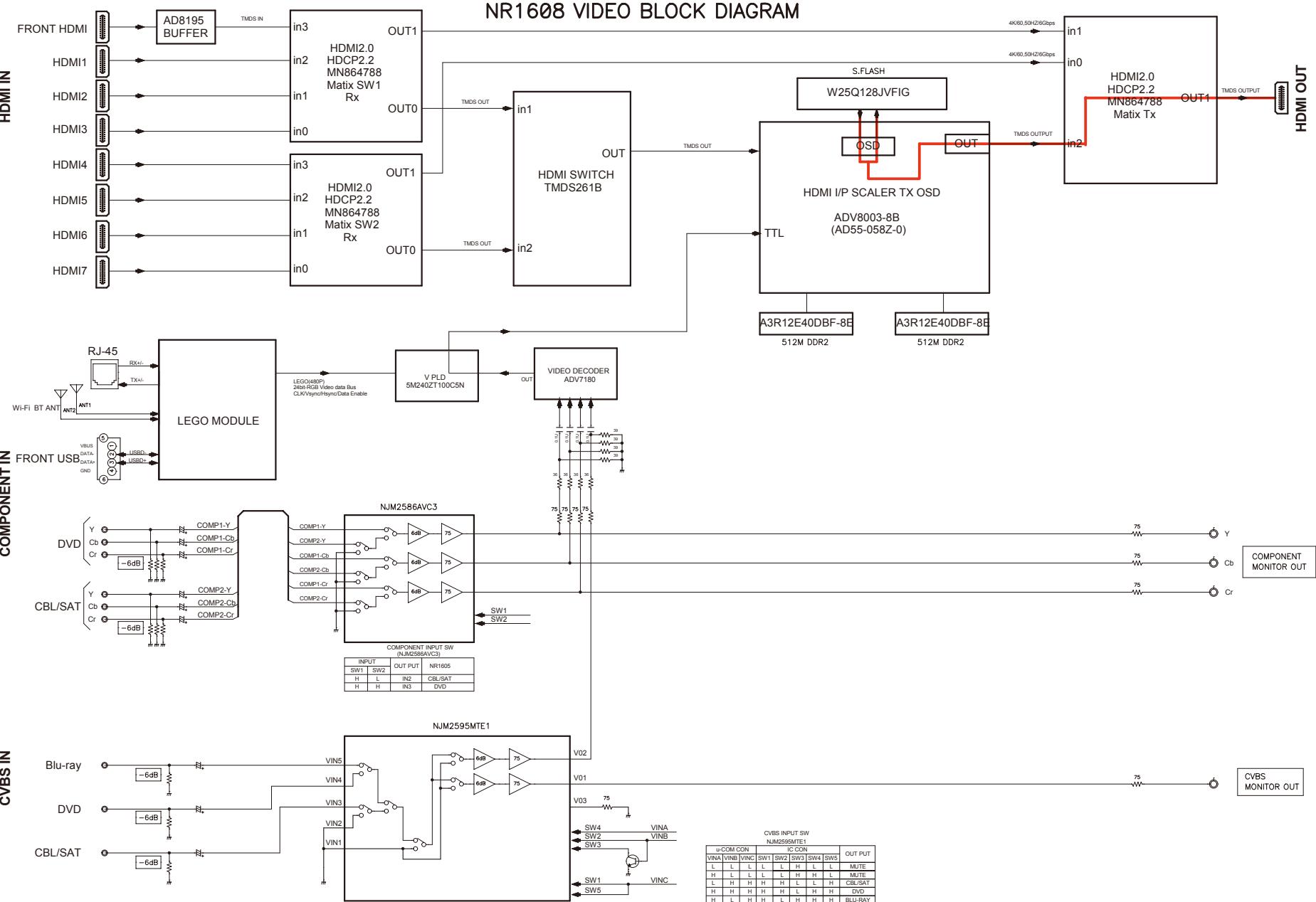


fig.13



JIG FOR SERVICING

Use the following jigs (extension cable kit) when repairing the PCBs.
Order with your dealer for the jigs your dealer if necessary.

CAUTION : Incorrect connections may cause malfunction.

Connection of Jig for DIGITAL PCB

--Items to Be Prepared---

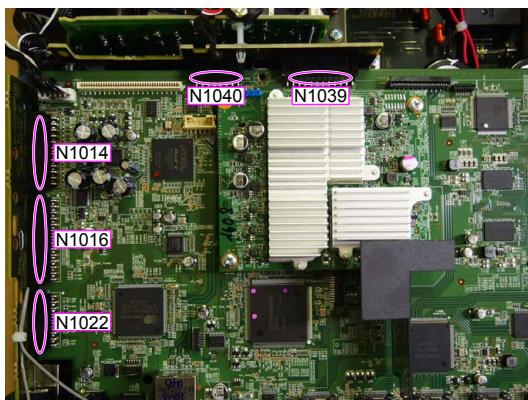
8U-1100845 : EXTENSION UNIT KIT	:	1Set
Insulation sheet (Not supplied)	:	1 sheet
Ground lead (Not supplied)	:	2 pc

-Proceeding-

(1) Remove the screws.



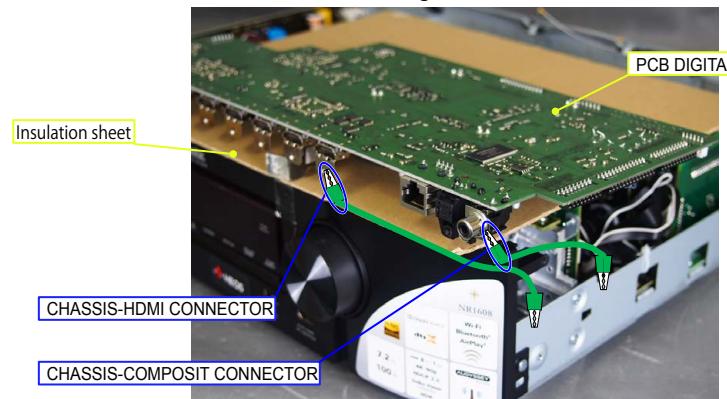
(2) Remove the connector PCB.



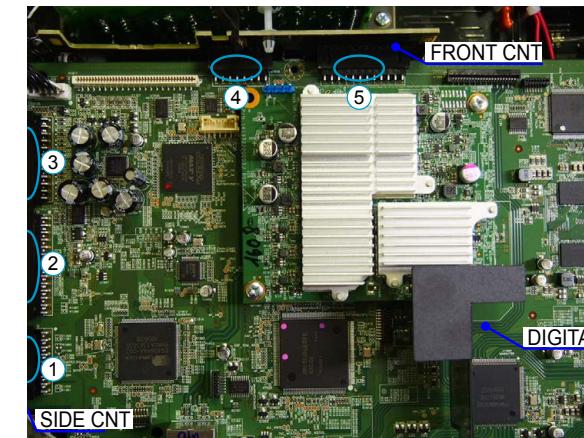
(3) Remove the DIGITAL PCB from the chassis and turn it over.

Place an insulation sheet larger than the PCB underneath the DIGITAL PCB.

※ Connect the earth of the PCB to the chassis using an earth wire, etc.



(4) Connect the expansion cables.



Board-to-Board Connections

No.	Pin	Ref. No.	PCB		Ref. No.	PCB
①	17pin	CP4608	SIDE CNT	↔	N1022	DIGITAL
②	27pin	CP4604	SIDE CNT	↔	N1016	DIGITAL
③	23pin	CP4603	SIDE CNT	↔	N1014	DIGITAL
④	15pin	CP4616	FRONT CNT	↔	N1040	DIGITAL
⑤	23pin	CP4613	FRONT CNT	↔	N1039	DIGITAL

ADJUSTMENT

Adjusting Idling Current

1. Preparation

- (1) Prepare a DC voltmeter.
- (2) Place the unit under normal usage conditions, away from highly ventilated areas such as next to an air conditioning machine or electric fan.

The set requires an ambient temperature of 15°C to 30°C and standard humidity.

(3) Settings of This Unit

- POWER (Power source switch) STANDBY
- SPEAKER (Speaker terminal) No load
(Do not connect equipment such as speakers or dummy resistors.)

2. Adjustment Procedure

- (1) Remove the top cover and turn **VR4800** (ALL Channel) of the AMP PCB counterclockwise(\textcirclearrowleft) as far as possible.

- (2) Connect the DC Voltmeter to the test points.

FRONT-Lch	: TP4800 : VR4800
FRONT-Rch	: TP4802 : VR4801
CENTER ch	: TP4804 : VR4802
SURROUND-Lch	: TP4806 : VR4803
SURROUND-Rch	: TP4808 : VR4804
SURROUND-BACK Lch	: TP4810 : VR4805
SURROUND-BACK Rch	: TP4813 : VR4806

- (3) Connect the power cord to an outlet. Next, press the power button to turn on the power.

- (4) Set this unit as follows.

MASTER VOLUME : "—" (\textcirclearrowleft min.) : turn counterclockwise to the lowest position.

SPEAKER (Speaker terminal) : No load

(Do not connect equipment such as speakers or dummy resistors.)

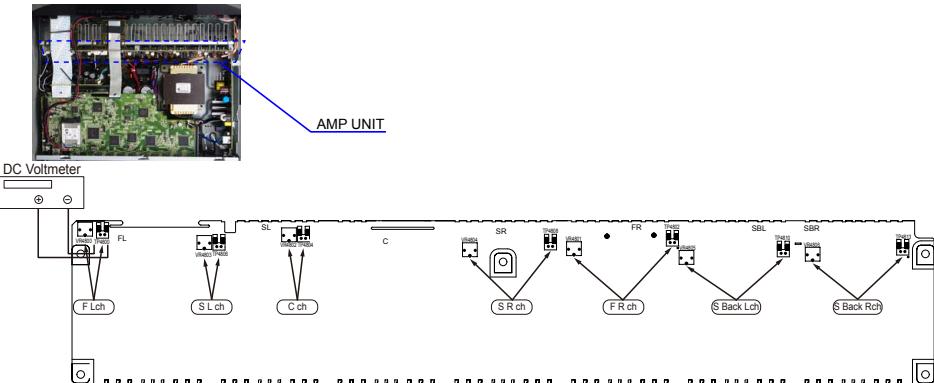
MODE : MCH STEREO

FUNCTION : DVD

- (5) Turn **VR4800** clockwise (\textcirclearrowright) and adjust the voltage of the test point to "**2.0mV \pm 0.5mV DC**" within 2 minutes.

- (6) Check whether the voltage is within the range "**2.0mV +2mV/-1mV DC**" 10 minutes after adjustment.

- (7) Adjust the variable resistance of each channel using the same method.



UPDATING

PROCEDURE AFTER REPLACING THE PCB.

PROCEDURE AFTER REPLACING THE U-COM, ETC.

FIRMWARE UPDATE PROCEDURE

- [1. Items necessary for update](#)
- [2. Updating via USB](#)
- [3. Update method when the DIGITAL PCB or network module is replaced \(Using a USB flash drive\)](#)
- [4. Update Method for Service Region Settings](#)
- [5. Normal Firmware Update Method from USB Flash Drive](#)
- [6. Normal Firmware Update Method from OTA](#)
- [7. About the error codes](#)

Caution in
servicing

Electrical

Mechanical

Repair Information

Updating

PROCEDURE AFTER REPLACING THE PCB.

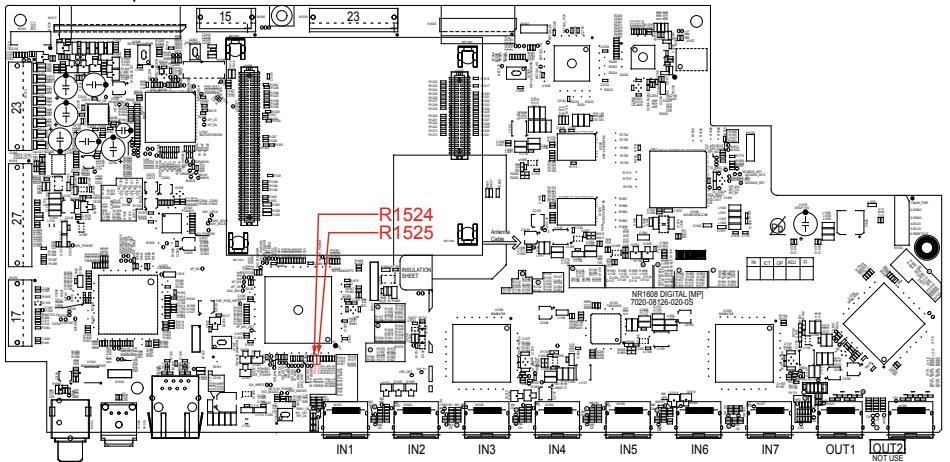
The procedure after replacing the printed circuit boards is as follows.

(1) Change the resistor for setting the region.

Model Area	DIGITAL PCB	
	R1524	R1525
North America (U)	OPEN	0
Europe (N)	0	OPEN
Japan (F)	10k	22k

See the PCB below.

(2) Be sure to replace the software with the latest version.



PROCEDURE AFTER REPLACING THE U-COM, ETC.

The procedure after replacing the u-COM (microprocessor), flash ROM, etc. is as follows.

PCB Name	Ref. No.	Description	Procedure after Replacement	Remark
DIGITAL	U1018	R5F564MJCDFC 32BIT	B	SOFTWARE : Main
DIGITAL	U1025	MX25L6406EM2I-12G 64M	B	SOFTWARE : DSP ROM
DIGITAL	U1027	W25Q128JVFIQ	B	SOFTWARE : GUI ROM
DIGITAL	U1041	5M570ZF256C5N	B	SOFTWARE : AUDIO PLD
DIGITAL	U1045	5M240ZT100C5N	B	SOFTWARE : VIDEO PLD
MODULE	P17	NETWORK MODULE	D, E	SOFTWARE : Network

Procedure after Replacement

A: The software has been written. The software is not written at the time of replacement.

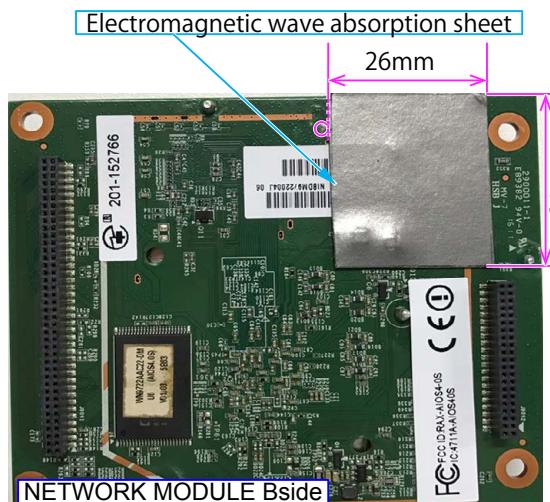
B: The software has been written. The software may need to be rewritten by version updates. Check the version.

C: The software has not been written. The software needs to be written after replacement.
See "[FIRMWARE UPDATE PROCEDURE](#)" for information on writing the software.

D: The software has been written. Be sure to rewrite with the latest software for your service region.
See "[FIRMWARE UPDATE PROCEDURE](#)" for information on writing the software.

E: An Electromagnetic wave absorption sheet [HS05-R050] needs to be attached to the back of NETWORK MODULE.
If the Electromagnetic wave absorption sheet [HS05-R050] has been removed, replace with a new sheet.

Service product numbers are set, for details see the parts list [REF No.45].
Refer to the figure below for details of the attachment position.



FIRMWARE UPDATE PROCEDURE

1. Items necessary for update

Items necessary for update are as follows.

Update Type	Needed Part for Update	Requirement	Offered / not Offered		
			Standard Service Equipment Not offered by D&M	Purchase from D&M Article code	Download from SDI
Via USB	USB flash drive (USB 2.0 : Min 1GB) • We recommend a USB memory device that has an LED installed.	Formatting FAT16 or FAT 32	X	-	" Table 1 " or " Table 2 "
Via OTA	Internet Connection by Broadband Circuit	-	X	-	-
	Modem	-	X	-	-
	Router	-	X	-	-
	Ethernet cable (CAT-5 or greater is recommended)	-	X	-	-

Table 1

Update download file when the DIGITAL PCB or network module is replaced

Model Name	Model Area	Download from SDI
NR1608	ALL	avr_40.prod.update.factory.xxxx.zip

Table 2

Update download file when the firmware is updated (Two files, "HW component" and "LEGO component")

Model Name	Model Area	Download from SDI		
		For HW component		For LEGO component
NR1608 U	North America (U)	Product ID : 100100560100	DPMS_NR1608ALL_LEG0_xxxx.zip	heos_40.prod_x.xxx.xx.zip
NR1608 N	Europe (N)	Product ID : 100100560200		
NR1608 F	Japan (F)	Product ID : 100100560400		

2. Updating via USB

The latest firmware can be downloaded to a USB memory for updates.

2.1. Connecting to the USB Memory

(1) Preparation

- Use a memory that supports USB2.0.
- USB format : Prepare a USB memory formatted in FAT16 or FAT32.
- Do not run the USB memory through a hub.
- Do not connect a computer to the USB port of this unit using a USB cable.
- Do not use an extension cable when connecting the USB unit.
- If a USB memory device cannot be updated, replace it with a different USB memory device and perform the update again.

2.2. Unzipping the Downloaded File

Unzip the downloaded file on your computer.

NRXXXXXXX | USB_NRXXXXXXX_XXXXXXXXXXXX-XXXX.zip



The "firmwares" folder is created upon unzipping the file.

Copy that folder to USB flash drive.

The "firmwares" folder must be in the root directly of the USB flash drive (memory).

3. Update method when the DIGITAL PCB or network module is replaced (Using a USB flash drive)

3.1. File structure on USB flash drive

DIGITAL PCB or network module is replaced onto the USB flash drive in the following structure.

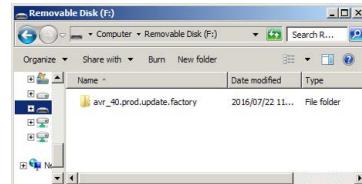
After unzipping the files, store them in the root of the same USB flash drive.

Model Area	Download from SDI
ALL	avr_40.prod.update.factory.xxxx.zip

USB flash drive root

+ avr_40.prod.update.factory
+ xxxxxxxx.ota-download
+ heos_40.prod.update.factory

xxxxxx : Model name
zz : Region



3.2. Start the update.

NOTE :

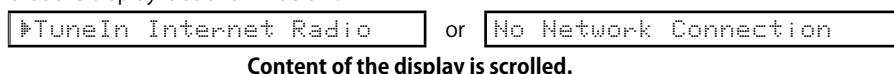
- Remove the LAN cable from this unit when updating.
(Do not connect to a wired or wireless network.)
- The GUI menu setting details and image quality adjustment setting details are initialized when Firmware Factory Restore is performed. Therefore, take a note of the setting details beforehand and reconfigure the settings after update.

(1) Press the power button to turn on the power.

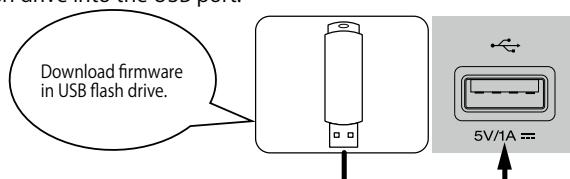
(2) Wait for this unit to start up.

(3) Set the input source to HEOS Music.

Check that the display is as shown below.



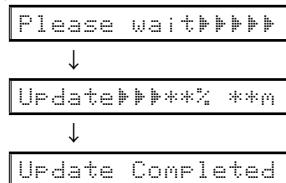
(4) Insert the USB flash drive into the USB port.



(5) USB Update starts automatically.

The Standby LED lights red.

Display during USB update



It takes a maximum of approximately 25 minutes for update to complete.

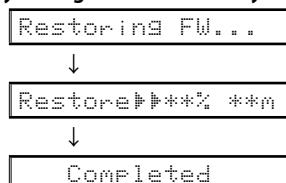
(6) The unit restarts when update is complete.

※When update is complete, the folder name on the USB flash drive changes to "avr_40.prod.update.factory.done". To use the files again, delete the ".done" part.

(7) Execute Firmware Factory Restore.

While holding down buttons "STATUS" and "PURE DIRECT" simultaneously, press the power button to turn on the power.

Display during Firmware Factory Restore



It takes approximately 15 minutes for Firmware Factory Restore to complete.

(8) Execute Service Region Settings.

See "[4. Update Method for Service Region Settings](#)"

(9) Check that the version is the specified version. See "[1. Version Display Mode](#)"

(10) If necessary, use OTA or the USB flash drive to update the firmware to the newest version.

※We recommend using the firmware update method using OTA.

See "[5. Normal Firmware Update Method from USB Flash Drive](#)" or "[6. Normal Firmware Update Method from OTA](#)"

---Cautions on Firmware Update---

- Do not remove the USB flash drive until updating is completed.
- Do not turn off the power until updating is completed.

It takes a maximum of approximately 25 minutes for update to complete.

Once an update is started, normal operations cannot be performed until it is completed.

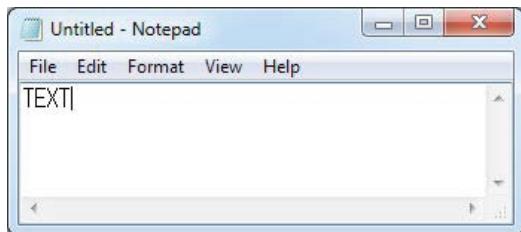
4. Update Method for Service Region Settings

Copy the Service Region Settings from the USB flash drive to this unit.

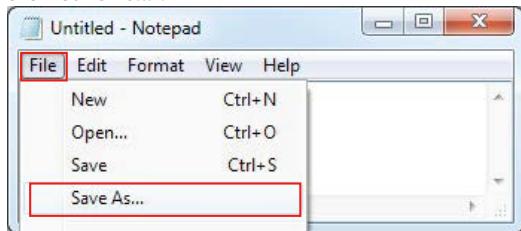
4.1. Creating a Service Region Settings file

(1) Click [Start button] - [Accessories] - [notepad] on the PC to launch the notepad.

(2) Enter "TEXT".



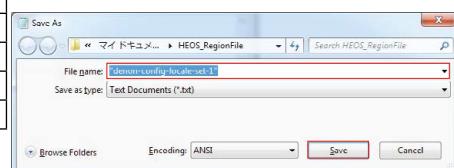
(3) Click "File", and then click "Save As...".



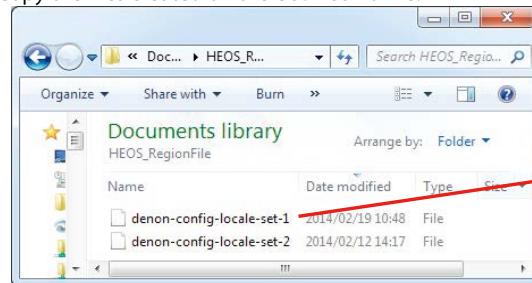
(4) Enter the file name and click the Save button.

NOTE : Enter the file name in double quotation marks. (The file extension is not required.)

Service Region	File name
North America	"denon-config-locale-set-1"
Europe	"denon-config-locale-set-2"
Japan	"denon-config-locale-set-3"
Australia	"denon-config-locale-set-4"
Korea	"denon-config-locale-set-5"
China	"denon-config-locale-set-6"



(5) Copy the files created on the USB flash drive.



4.2. Starting Service Region Settings

NOTE :

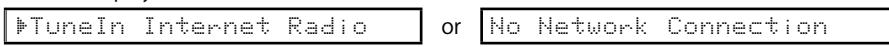
- Remove the LAN cable from this unit when updating.
(Do not connect to a wired or wireless network.)
- We recommend a USB memory device that has an LED installed.

(1) Press the power button to turn on the power.

(2) Wait for this unit to start up.

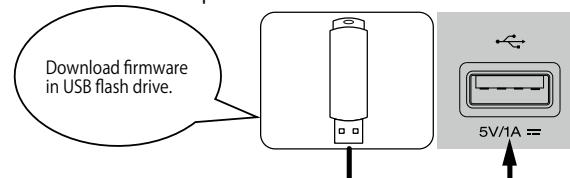
(3) Set the input source to HEOS Music.

Check that the display is as shown below.



Content of the display is scrolled.

(4) Insert the USB flash drive into the USB port.



(5) Wait for at least 10 seconds before removing the USB flash drive.

(If the USB flash drive has an LED, this LED will be flashing. Remove the USB flash drive when the LED stops flashing.)

5. Normal Firmware Update Method from USB Flash Drive

5.1. File structure on USB flash drive

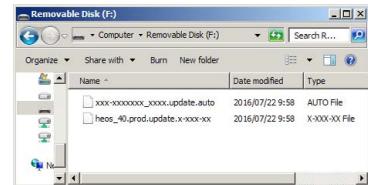
Copy the normal update files onto the USB flash drive in the following structure.

After unzipping the HW component USB update files for the target model and LEGO USB update files, store them in the root of the same USB flash drive.

Model Area	Download from SDI	
	For HW component	For LEGO component
North America (U)	DPMS_NR1608ALL_LEG0_xxxx.zip Product ID : 100100560100	
Europe (N)	DPMS_NR1608ALL_LEG0_xxxx.zip Product ID : 100100560200	heos_40.prod_x.xxx.xx.zip
Japan (F)	DPMS_NR1608ALL_LEG0_xxxx.zip Product ID : 100100560400	

USB flash drive root

+ NR1608xx_xxxx.update.auto
+ heos_40.prod.update.x-xx-xx



5.2. Start normal update

NOTE :

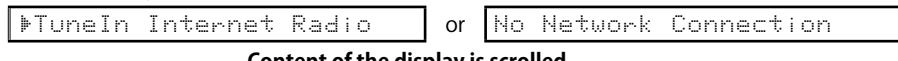
- Remove the LAN cable from this unit when updating.
(Do not connect to a wired or wireless network.)

(1) Press the power button to turn on the power.

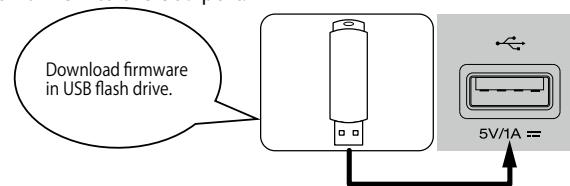
(2) Wait for this unit to start up.

(3) Set the input source to HEOS Music.

Check that the display is as shown below.



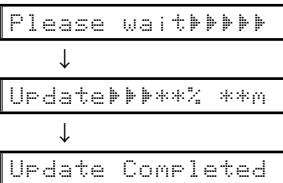
(4) Insert the USB flash drive into the USB port.



(5) USB Update starts automatically.

The Standby LED lights red.

Display during USB update



It takes a maximum of approximately 25 minutes for update to complete.

(6) The unit restarts when update is complete.

(7) After updating the firmware, check the version.

See "1. Version Display Mode"

---Cautions on Firmware Update---

- Do not remove the USB flash drive until updating is completed.
- Do not turn off the power until updating is completed.

It takes a maximum of approximately 25 minutes for update to complete.

Once an update is started, normal operations cannot be performed until it is completed.

The GUI menu settings and image adjustment settings of this unit may be initialized.

Note down the settings before updating, and set them again after updating.

6. Normal Firmware Update Method from OTA

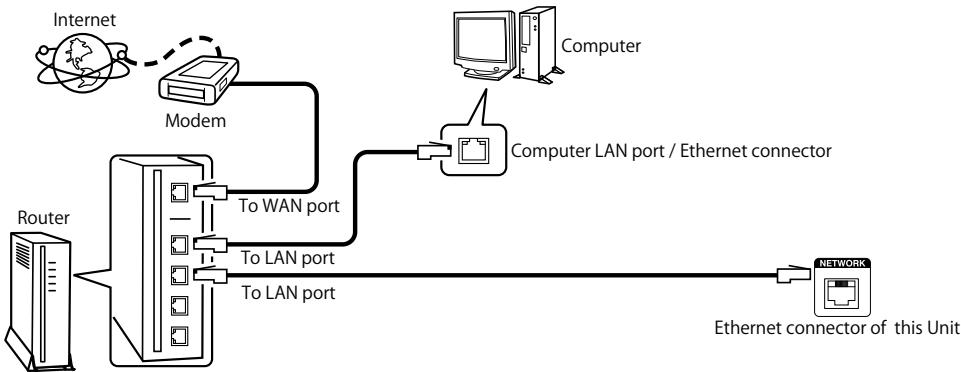
Download the latest firmware from our website and update the firmware.

6.1. Network Connection

(1) System Requirements

- Internet Connection by Broadband Circuit
- Modem
- Router
- Ethernet cable (CAT-5 or greater is recommended)

(2) Setting



6.2. Check and update the firmware

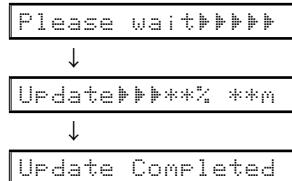
Check if there is a firmware update available. It is also possible to check approximately how long the update will take.

- (1) Press the "SETUP" button on the remote control to display the GUI menu.
- (2) Press the cursor button to select "General" → "Firmware" → "Update" → "Check for Update".
- (3) Check update
 - If the firmware version is anything other than the latest version, select "Update Now" to update the firmware.
 - "No update required. Latest version installed." is displayed when the firmware version is up to date.

(4) OTA Update starts automatically.

The Standby LED lights red.

Display during OTA update



It takes a maximum of approximately 25 minutes for update to complete.

- (5) The unit restarts when update is complete.

- (6) After updating the firmware, check the version.
See "[1. Version Display Mode](#)"

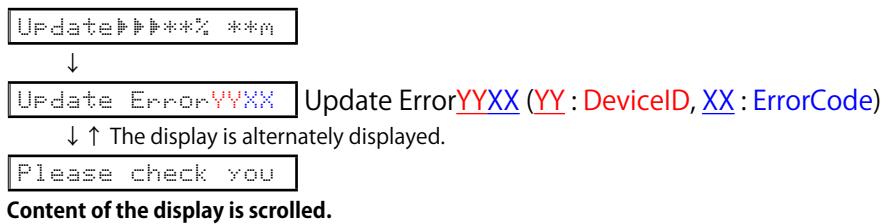
--Cautions on Firmware Update--

- For the update procedure, a proper broadband Internet connection environment and settings are required.
 - Do not turn off the power until updating is completed.
 - It takes a maximum of approximately 25 minutes for update to complete.
- Once an update is started, normal operations cannot be performed until it is completed. The GUI menu settings and image adjustment settings of this unit may be initialized. Note down the settings before updating, and set them again after updating.

7. About the error codes

See the table below for details on error codes and solutions when updating the firmware.

Error codes are displayed in 4 digits, YYXX (YY : DeviceID, XX : ErrorCode).



Remedies

Error Code (YYXX) (DeviceID/ErrorCode)	Remedies
000A	"Connection failed. Please check your network, then try again."
0009	"Update failed. Please check your network, then try again."
0009	"Upgrade failed. Please check your network, then try again."
YY00 YY01 YY02 YY03 YY04 YY07	"Please check your network, unplug and reconnect the power cord, and try again."
YY00 YY01 YY02 YY03 YY04 YY07	"Please unplug and reconnect the power cord, and try again."
0005	"Incompatible update file found on the USB device. Please check the file."
0006	"Update file is corrupted. Please check the file."
000B	"Please contact customer service in your area." ※ Check the power supply and communication lines of each device.

Device ID table

Device ID (YY)	Device Name
00	General
01	Main CPU
0E	Main FBL (No used)
11	DSP1 or DSP
12	DSP2 ※ Except : NR1508/NR1608/SR5012
13	DSP3 ※ Except : NR1508/NR1608/SR5012
14	DSP4 ※ Except : NR1508/NR1608/SR5012
15	Audio PLD
22	Video PLD ※ Except : NR1508
29	GUI
33	LEGO

Error Code table

Type code (XX)	Description
00	Logical error
01	Error during erasing
02	Error during writing
03	Error during verifying
04	No access for the component
05	Package mismatched. Product ID, package version un-matched of the package manifest
06	Unpack dis-available of component package file
07	Time out
08	Latest firmware has already installed.
09	Error during download
0A	Error connection
0B	Hardware Error

--Checking the Firmware Version After the Update---

After updating the firmware, check the version.

See "1. Version Display Mode"

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