

INTEGRATED NETWORK AV RECEIVER

AVR-X1600H
AVR-S750H

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

Click here!

On-line service parts list

AVR-X1600H: <http://dmedia.dmglobal.com/Document/DocumentDetails/25663>

AVR-S750H: <http://dmedia.dmglobal.com/Document/DocumentDetails/25664>

[ONLINE PARTS LIST](#) (P5)

WEB owner's manual

NA: <http://manuals.denon.com/AVRX1600H/NA/EN/index.php>

EU: <http://manuals.denon.com/AVRX1600H/EU/EN/index.php>

AP: <http://manuals.denon.com/AVRX1600H/AP/ZH/index.php>

JP: <http://manuals.denon.com/AVRX1600H/JP/JA/index.php>

NA: <http://manuals.denon.com/AVRS750H/NA/EN/index.php>

EU: <http://manuals.denon.com/AVRS750H/EU/EN/index.php>

Upload is planned for the time of a future press release.

BEFORE SERVICING THIS UNIT**ELECTRICAL****MECHANICAL****REPAIR INFORMATION****UPDATING****Confidential**

BEFORE SERVICING THIS UNIT

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HANDLING THE SEMICONDUCTOR AND OPTICS

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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.

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 reasons, some parts use tapes, tubes or other insulating materials, and some parts are mounted away from the surface of printed circuit boards. Care should also be 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.

⦿ 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 deteriorated 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

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 milliamps, 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:

- (1) ALL RESISTANCE VALUES IN OHM. k=1,000 OHM / M=1,000,000 OHM
- (2) ALL CAPACITANCE VALUES ARE EXPRESSED IN MICRO FARAD, UNLESS OTHERWISE INDICATED. P INDICATES MICRO-MICRO FARAD. N INDICATES NANO FARAD.
- (3) EACH VOLTAGE AND CURRENT ARE MEASURED AT NO SIGNAL INPUT CONDITION.
- (4) CIRCUIT AND PARTS ARE SUBJECT TO CHANGE WITHOUT PRIOR NOTICE.

HANDLING THE SEMICONDUCTOR AND OPTICS

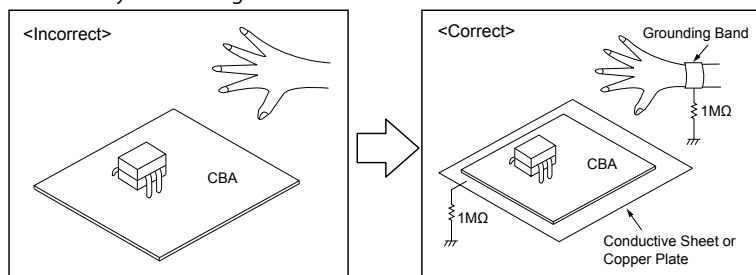
Electrostatic breakdown of the semi-conductors or optical pickup may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

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 workbench 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



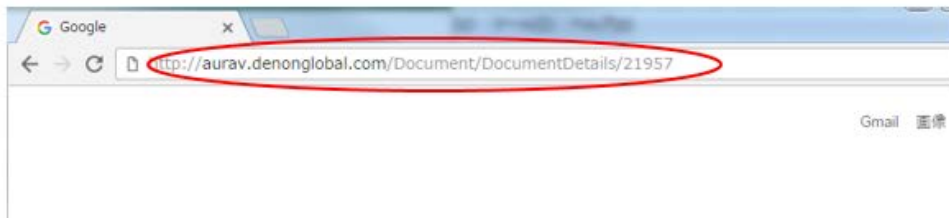
ONLINE PARTS LIST

Accessing the Parts List

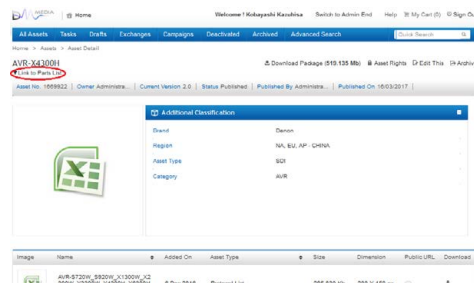
- (1) Access from the Service Manual
 - Click the URL link on the cover of the service manual.
- Examples of display



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) Accessing the Part List from the Model Asset Screen.
 - Display Model Asset from New SDI.
 - Click the section displayed as ▼ Link to Part Lists under the model name.

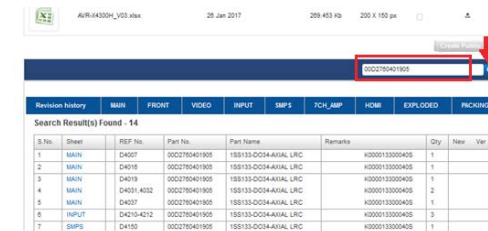


NOTE: If the ▼ Link to Parts List section is not displayed, download the parts table from the Asset list.

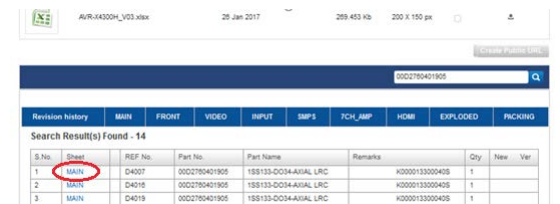
Searching Part Numbers or Ref. Numbers

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.



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



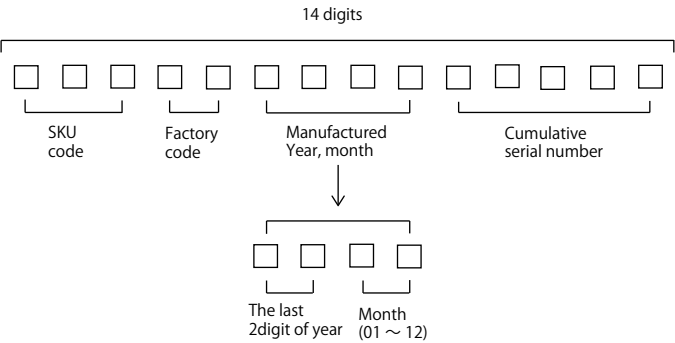
NOTE FOR PARTS LIST

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 and packaging view.
- WARNING:** Parts indicated by the ⚠ mark have critical characteristics. Use ONLY replacement parts recommended by the manufacturer.

SERIAL NUMBER

Serial Number Organization

The 14-digit serial number that contains the code of the manufacturing plant and the manufacturing date.



SKU Code of this Unit

Product SKU	SKU Code
AVRX1600HBKE3	BJE
AVRX1600HBKE2	BJF
AVRX1600HBKE1C	BJG
AVRX1600HK	BJH
AVRS750HBKE3	BJC
AVRS750HBKE2	BJD

POST-SERVICE PRECAUTIONS

Initializing this Unit **AVR-X1600H**

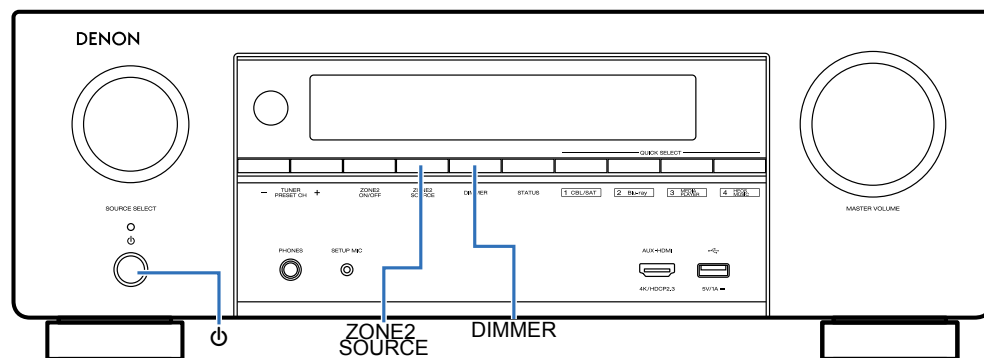
Make sure to initialize this unit after replacing the microcomputer or any peripheral equipment, or the digital PCB.

1. Press the power button to turn off the power.
2. While holding down buttons "**ZONE2 SOURCE**" and "**DIMMER**" 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.

AVR-X1600H



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](#))

Initializing this Unit **AVR-S750H**

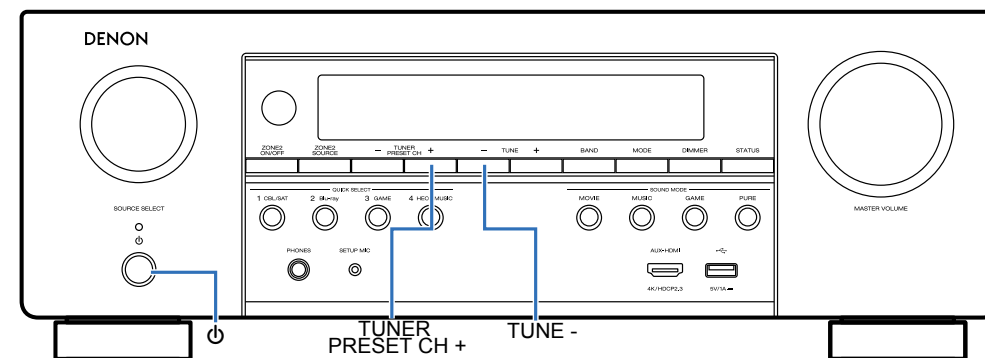
Make sure to initialize this unit after replacing the microcomputer or any peripheral equipment, or the digital PCB.

1. Press the power button to turn off the power.
2. While holding down buttons "**TUNER PRESET CH +**" and "**TUNE -**" 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.

AVR-S750H



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](#))

SCHEMATIC DIAGRAMS

SCH01 HDMI RX
SCH02 HDMI TX
SCH03 OSD
SCH04 DIGITAL SUPPLY
SCH05 MCU
SCH06 MCU LEVEL CHG
SCH07 DIR
SCH08 PLD
SCH09 DSP
SCH10 MAIN DAC
SCH11 NETWORK
SCH12 ANALOG
SCH13-1 MAIN for E3, E1C, S750 model
SCH13-2 MAIN for E2, JP model
SCH14 FRONT HDMI
SCH15 DIFF-AMP
SCH16 PHONO, TUNER
SCH17 FRONT
SCH18 REGULATOR
SCH19 SMPS

PRINTED CIRCUIT BOARDS

DIGITAL, F HDMI, TUNER, PHONO
MAIN for E3, E1C, S750 model
MAIN for E2, JP model
DIFF-AMP, BIAS-TR, FRONT CABLE GUIDE, HDMI CABLE GUIDE, SMPS,
REGULATOR
FRONT, PHONE, USB WIRE GUIDE, STANDBY, MIC, USB

LEVEL DIAGRAM

FRONT ch
CENTER, SURROUND ch
SURROUND BACK ch
SUBWOOFER ch
ZONE2 ch

BLOCK DIAGRAM

ANALOG AUDIO DIAGRAM
DIGITAL AUDIO DIAGRAM
VIDEO DIAGRAM

POWER DIAGRAM

WIRING DIAGRAM

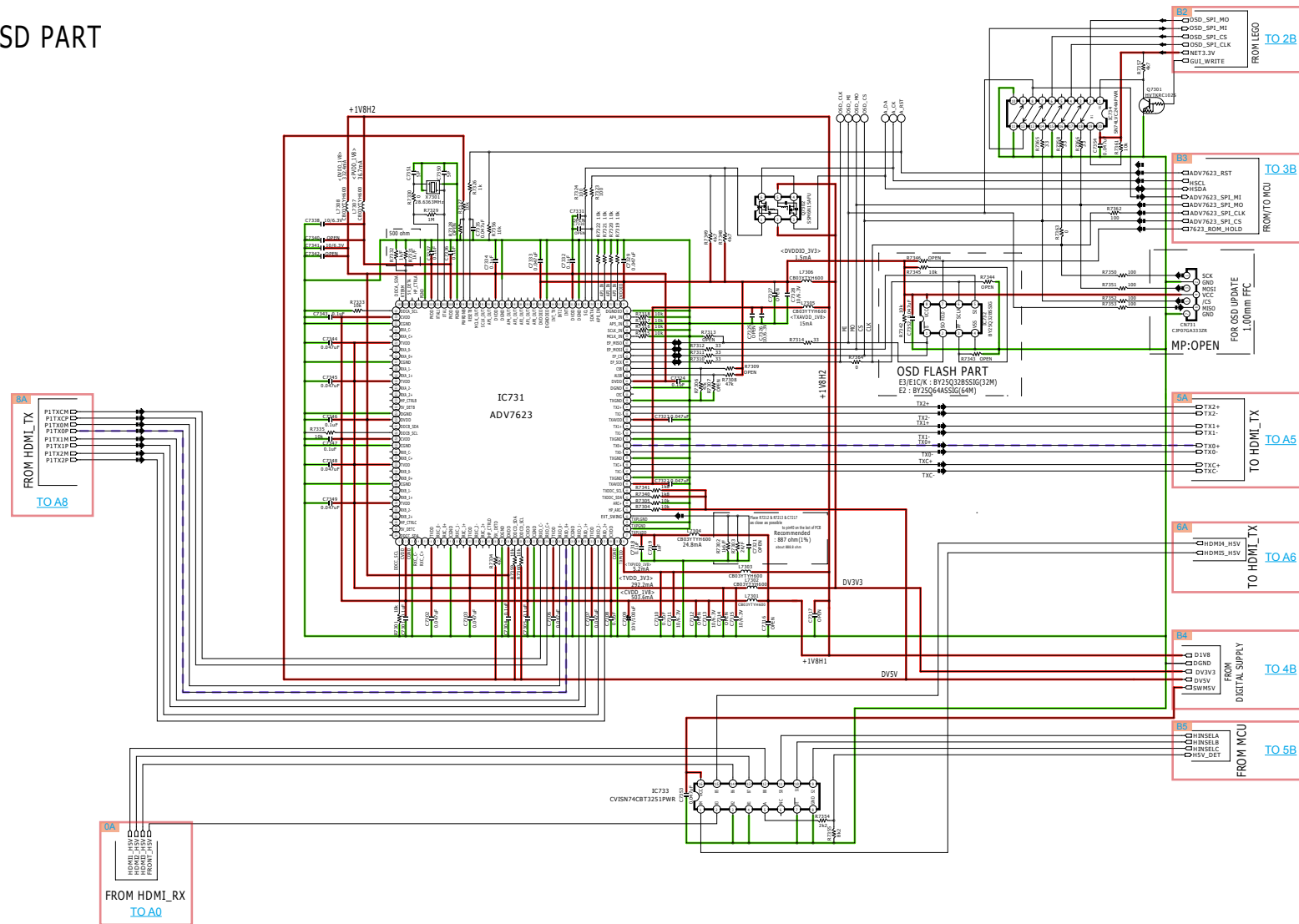
SEMICONDUCTORS

1. IC's
2. FL DISPLAY
3. Remote Code Table

SCH01 HDMI RX



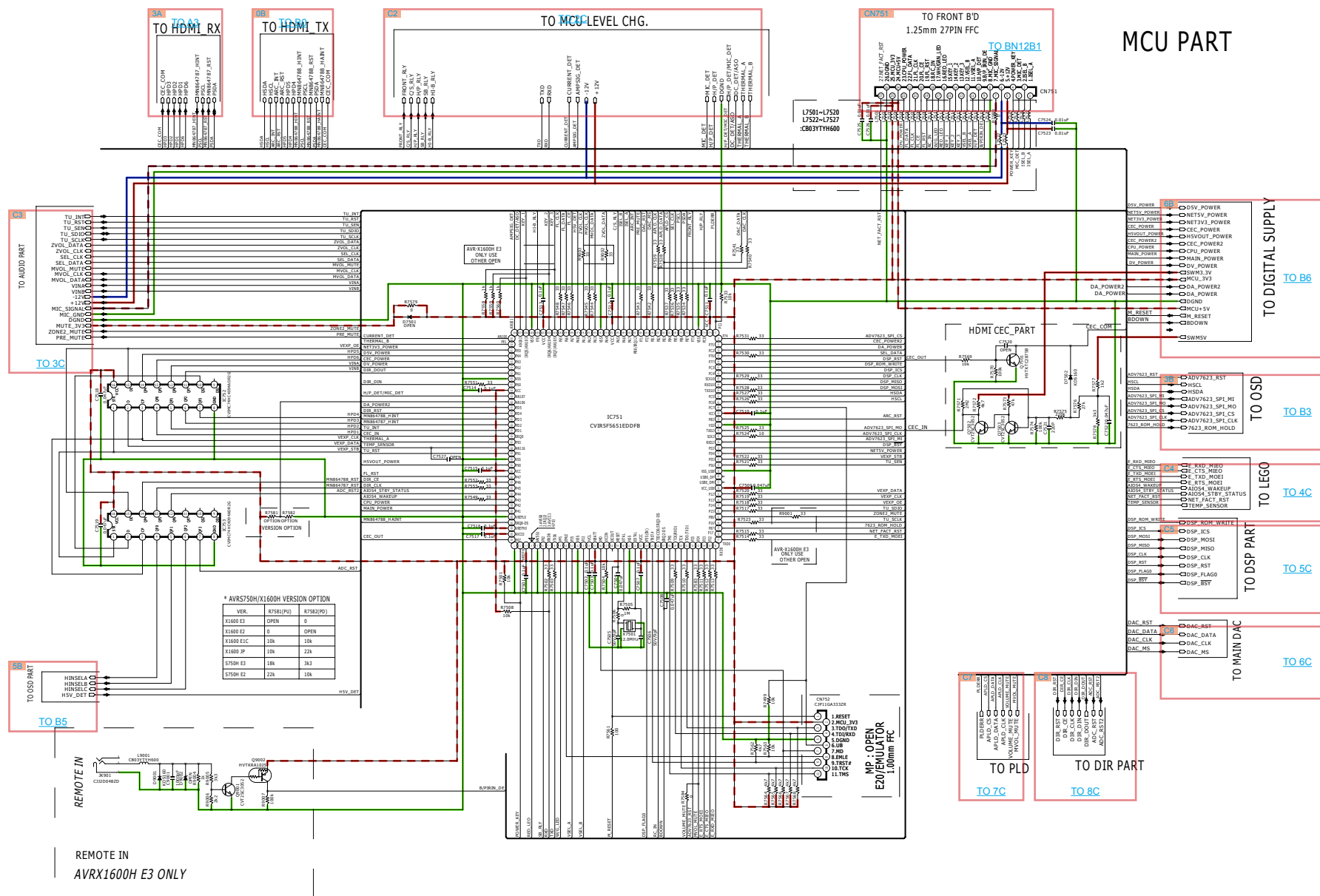
OSD PART



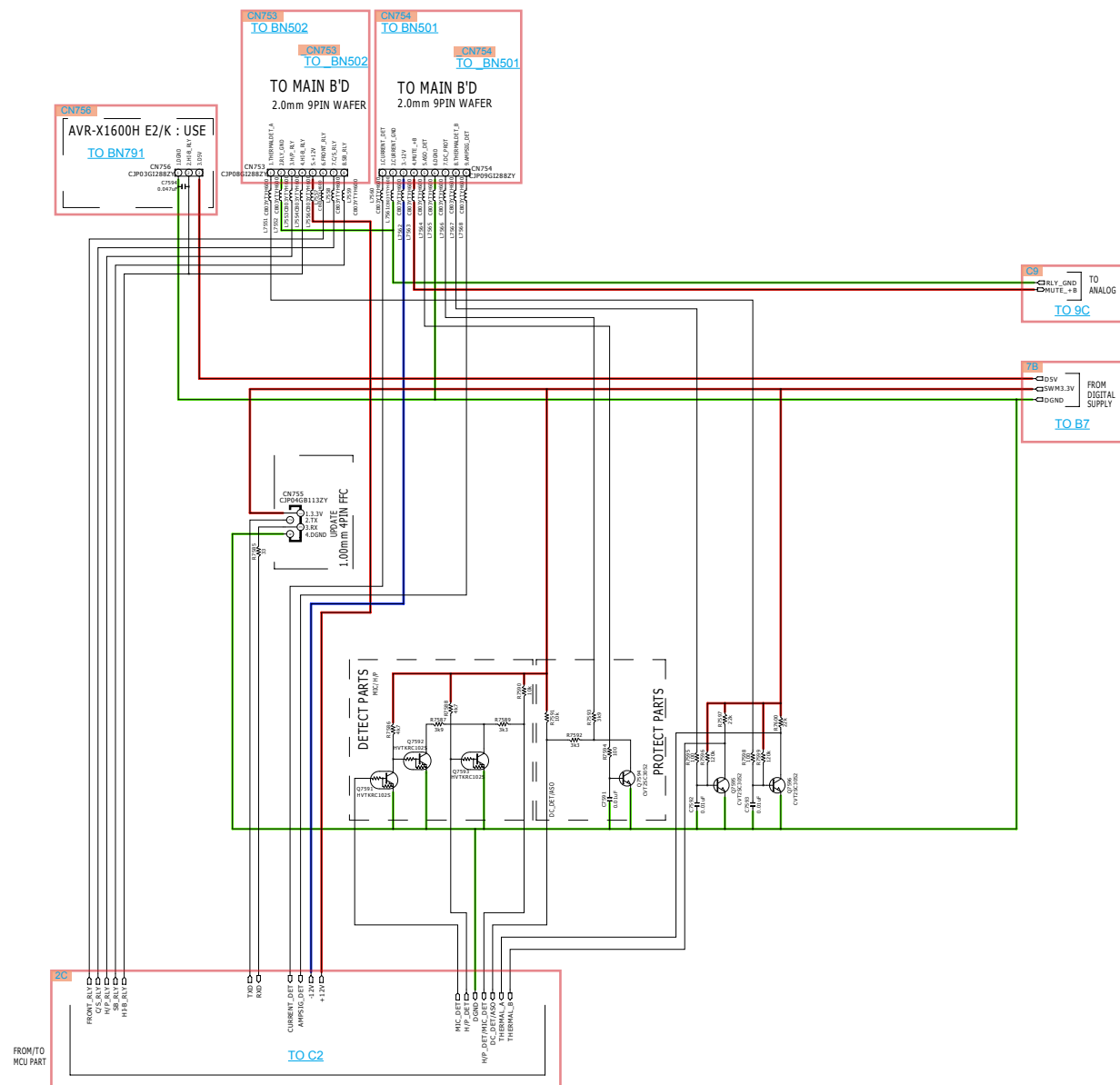
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER

[illegible]

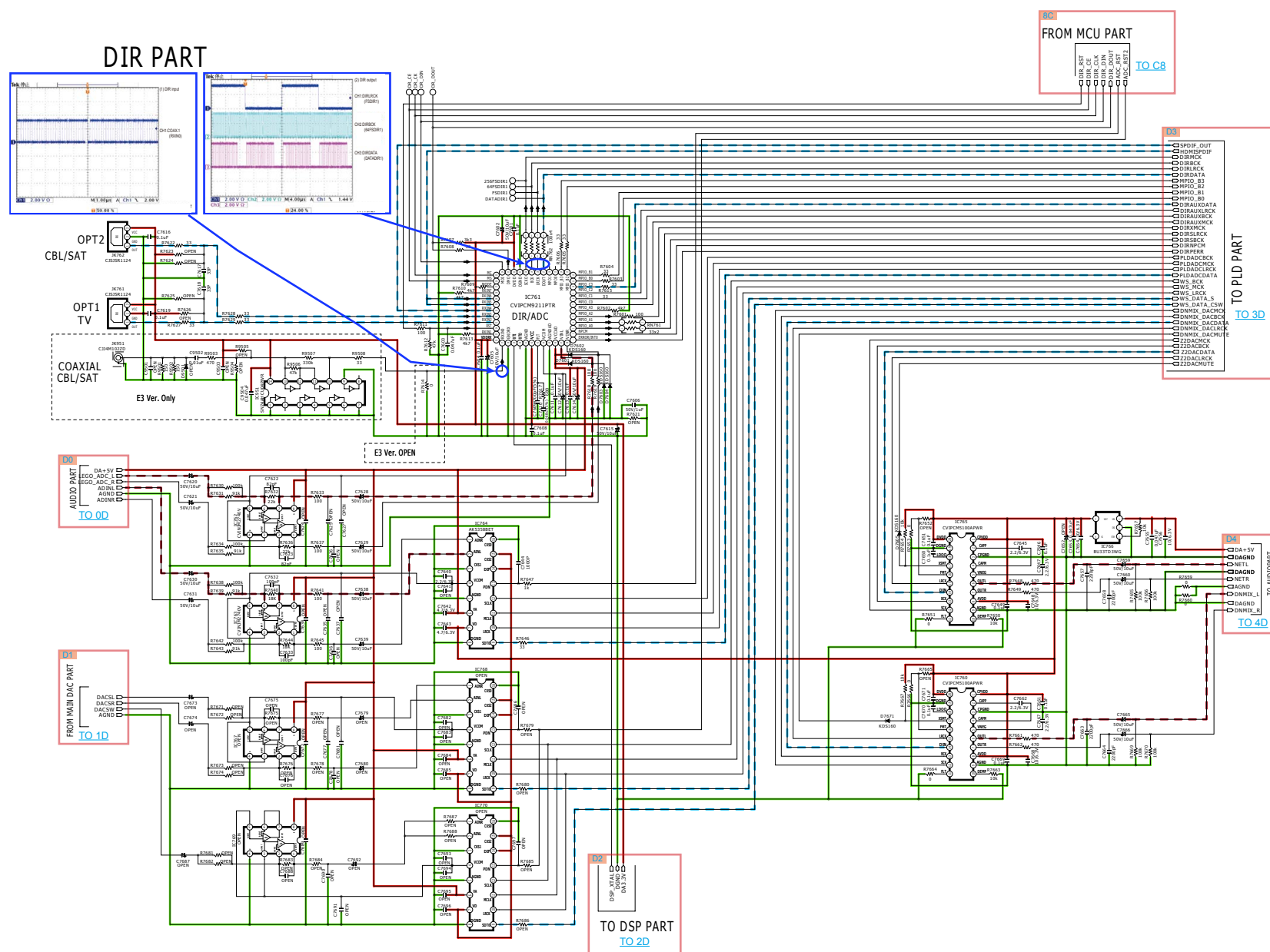
— GND LINE
 — POWER+ LINE
 — POWER- LINE
 --- ANALOG AUDIO
 --- DIGITAL AUDIO
 --- TMDS SIGNAL
 --- ANALOG VIDEO
 --- STBY POWER



MCU_LEVEL_CHG PART

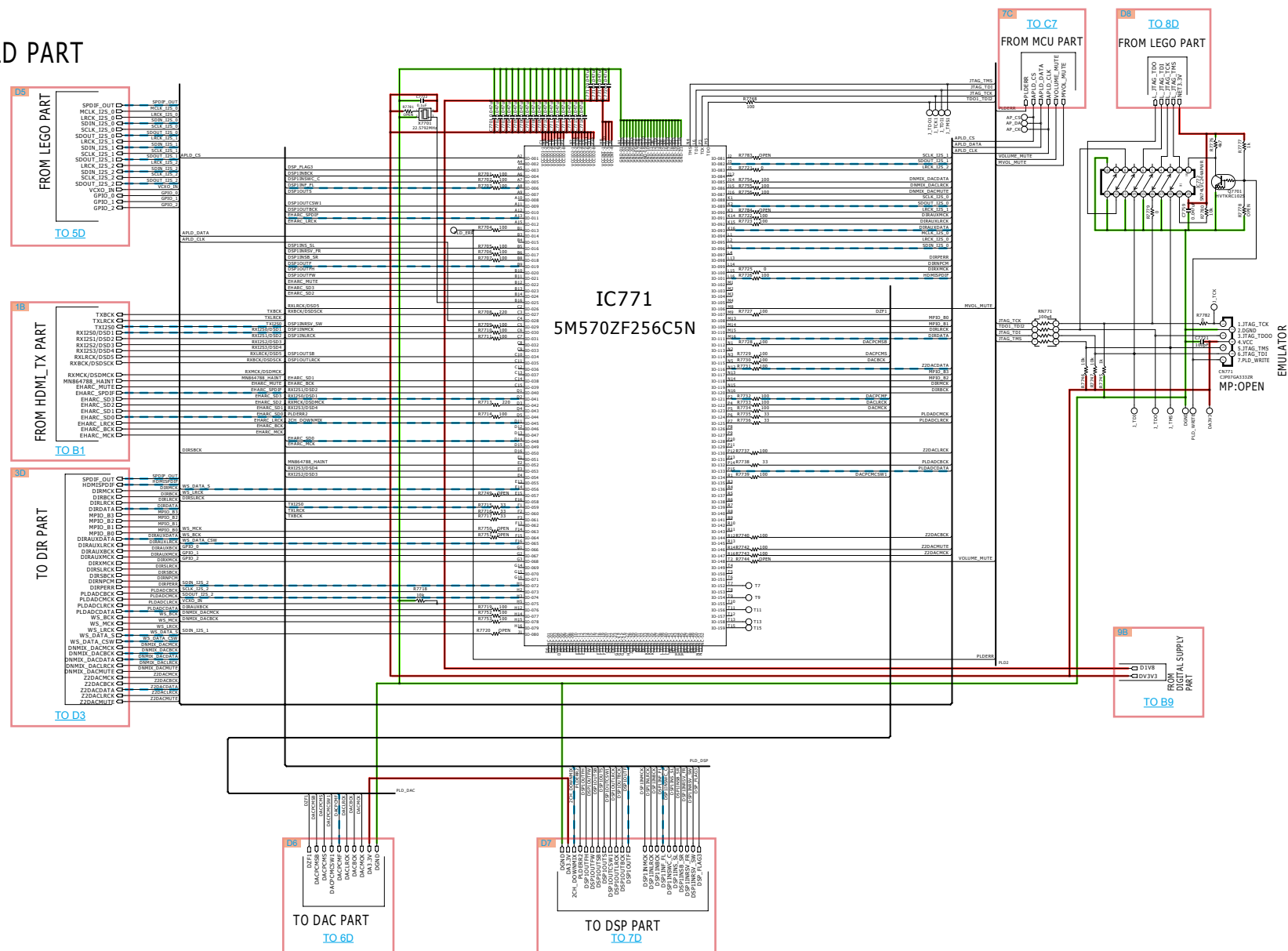


— **GND LINE**
— **POWER+ LINE**
— **POWER- LINE**
- - - **ANALOG AUDIO**
- - - **DIGITAL AUDIO**
- - - **TMDS SIGNAL**
- - - **ANALOG VIDEO**
- - - **STBY POWER**

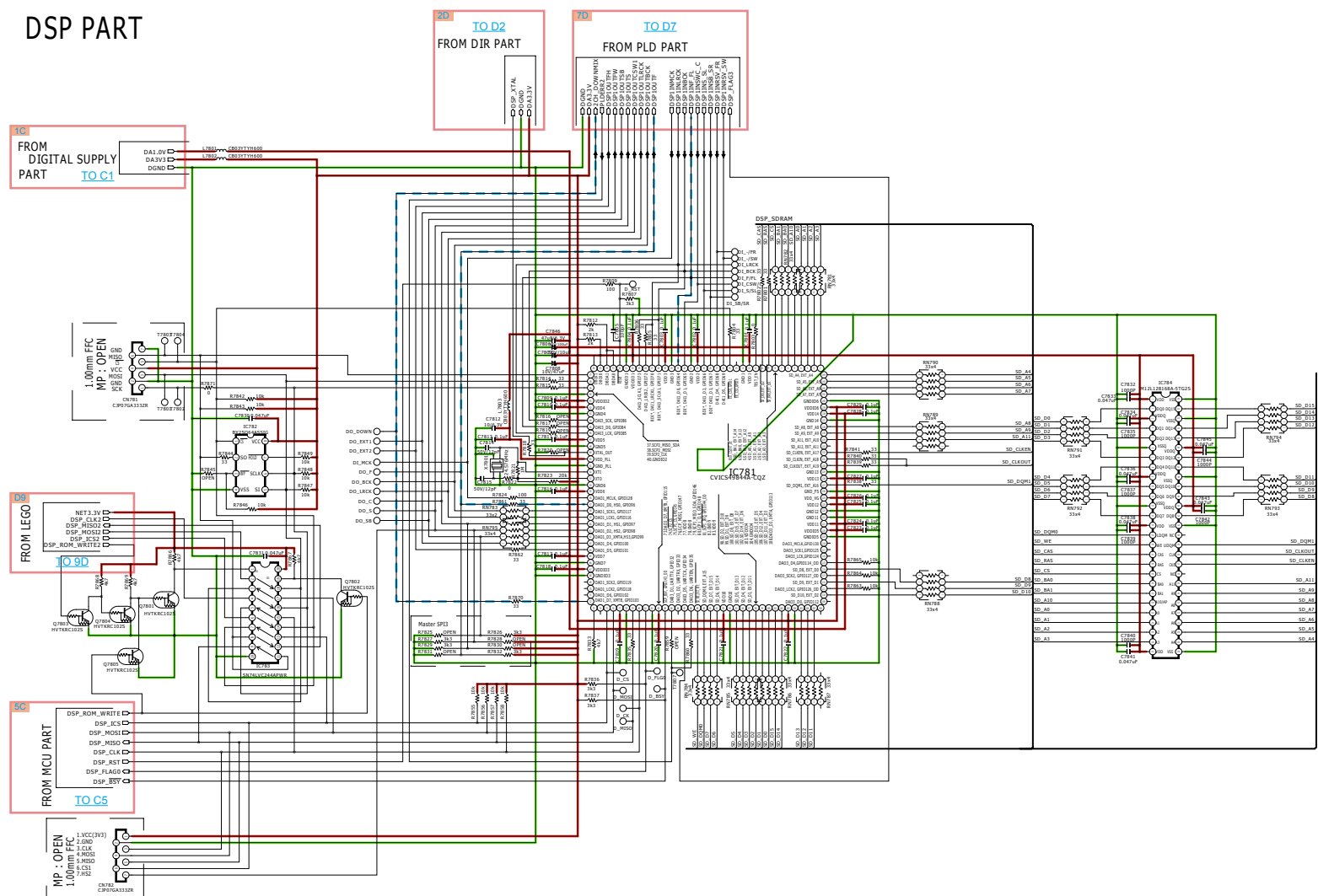


— GND LINE
 — POWER+ LINE
 — POWER- LINE
 --- ANALOG AUDIO
 --- DIGITAL AUDIO
 --- TMDS SIGNAL
 --- ANALOG VIDEO
 --- STBY POWER

PLD PART

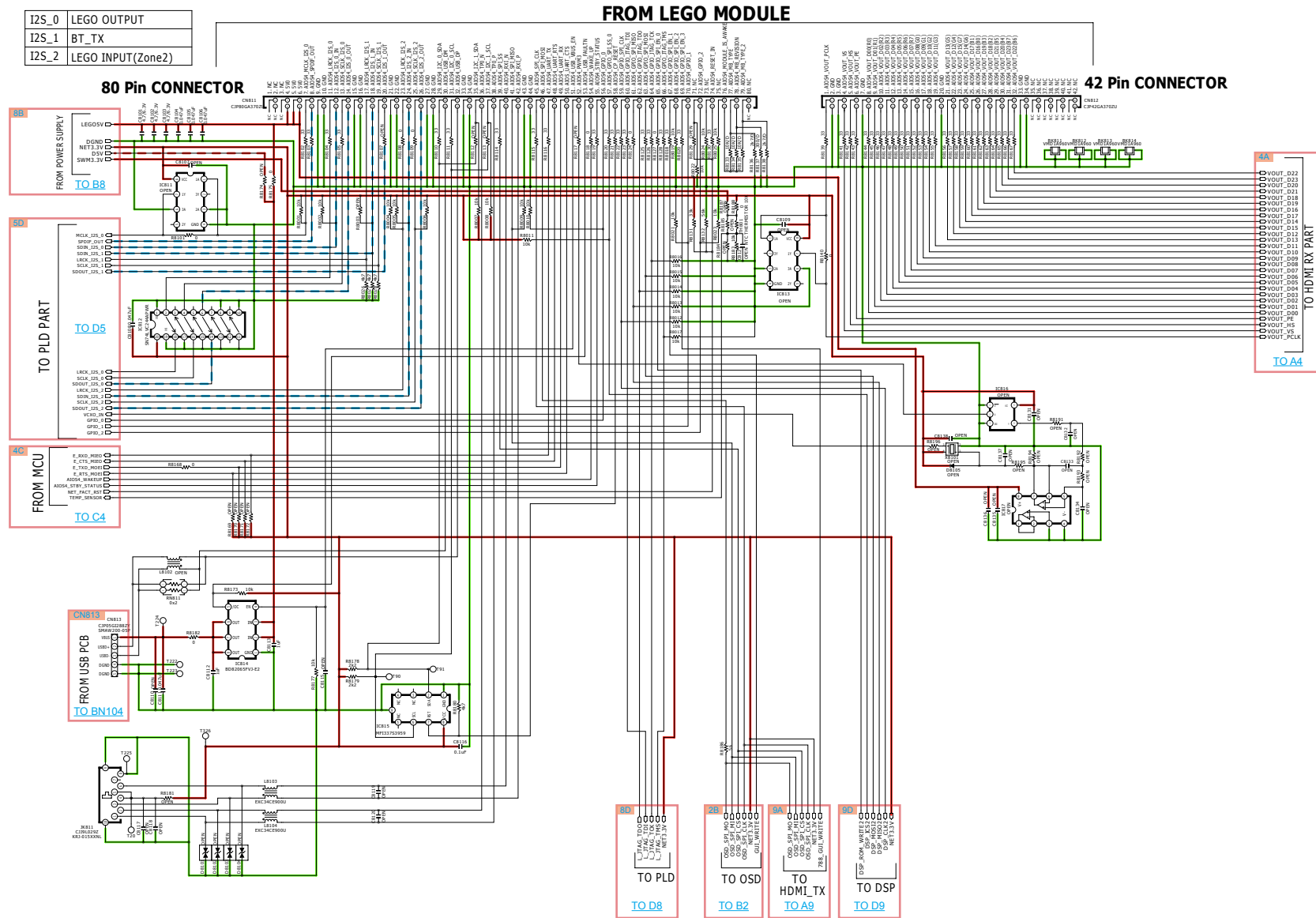


DSP PART

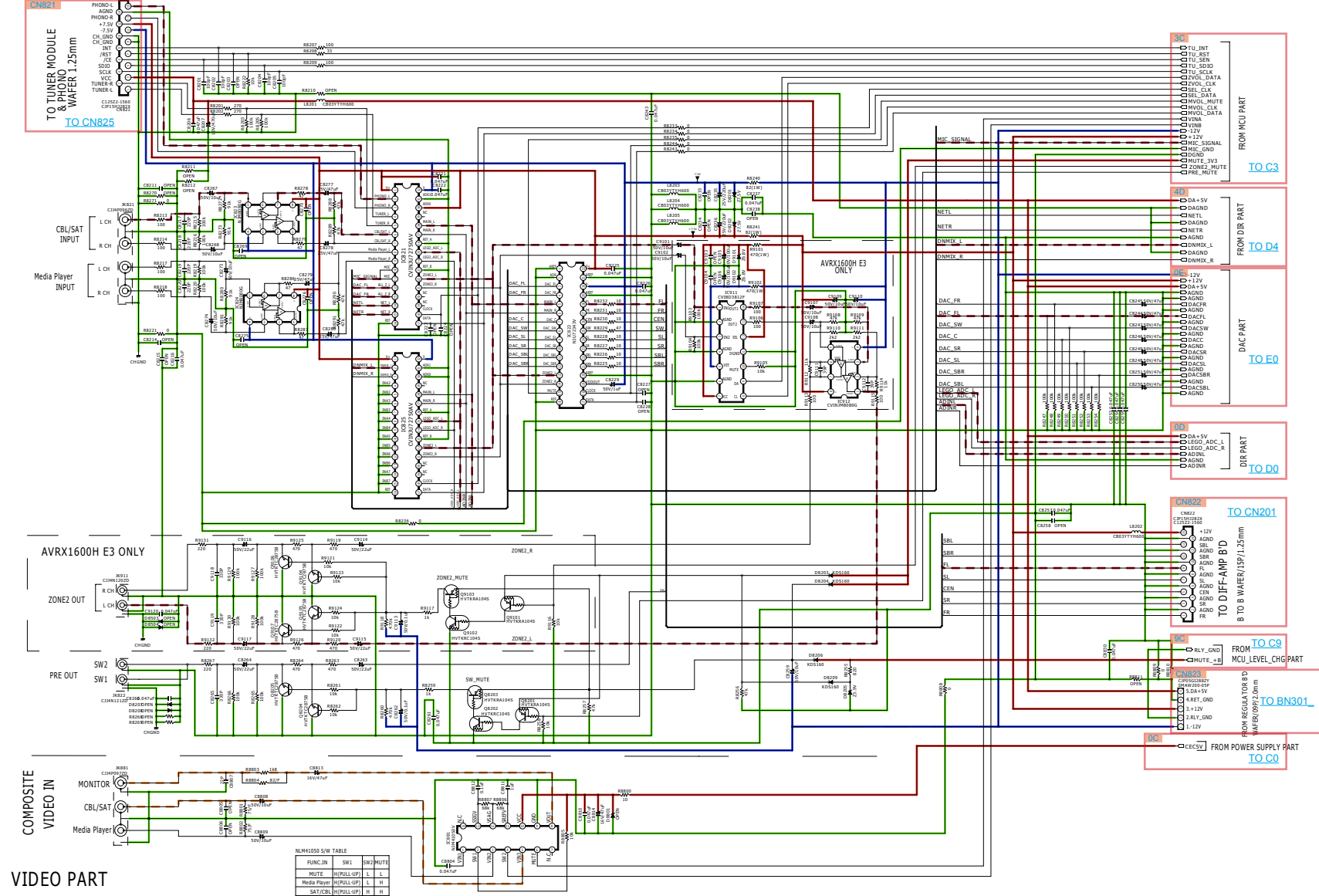


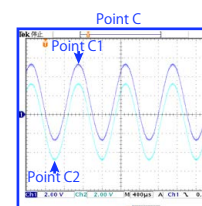
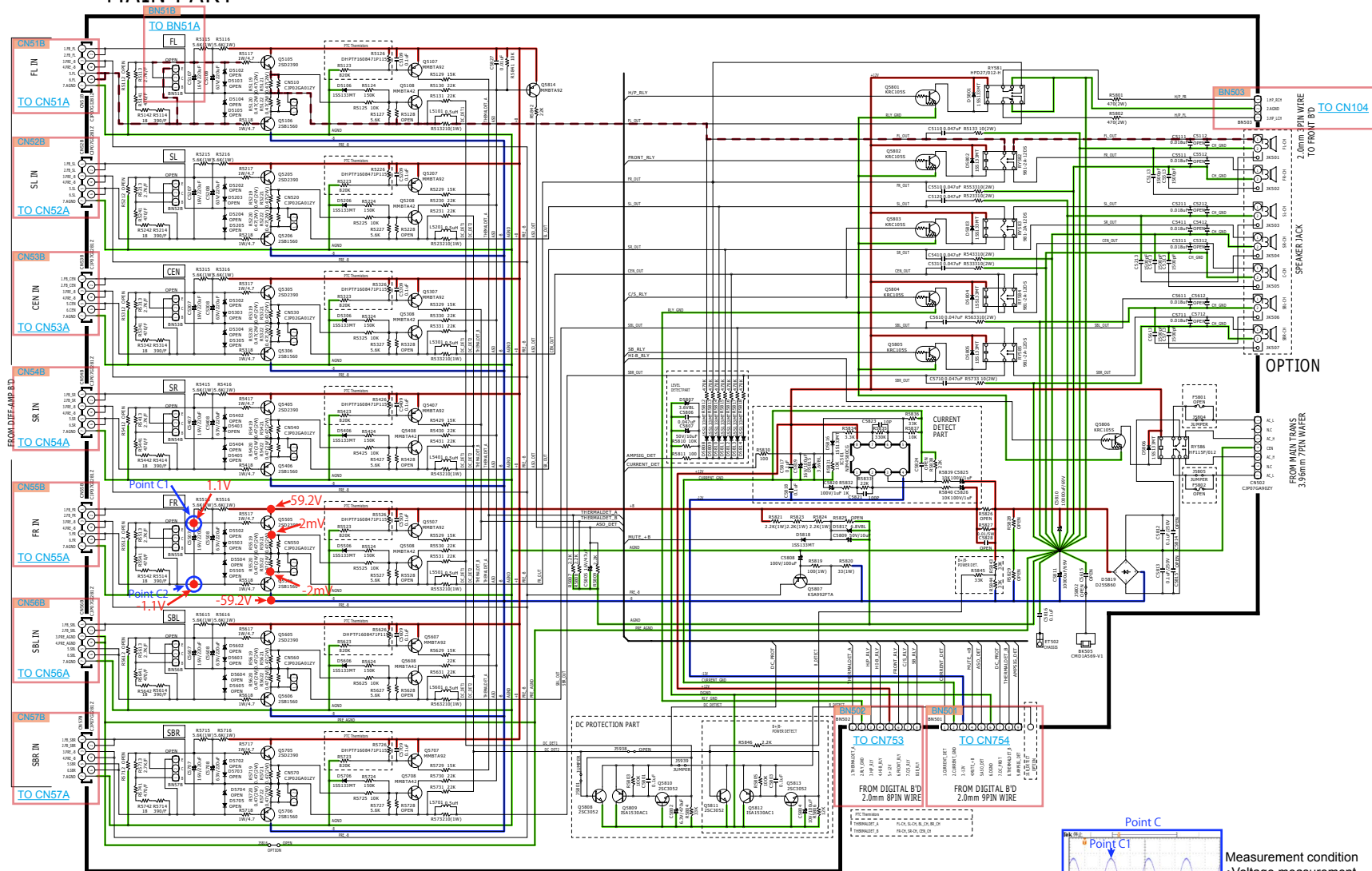
GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMD5 SIGNAL ANALOG VIDEO STBY POWER

I2S_0	LEGO OUTPUT
I2S_1	BT_TX
I2S_2	LEGO INPUT (Zone2)



ANALOG PART





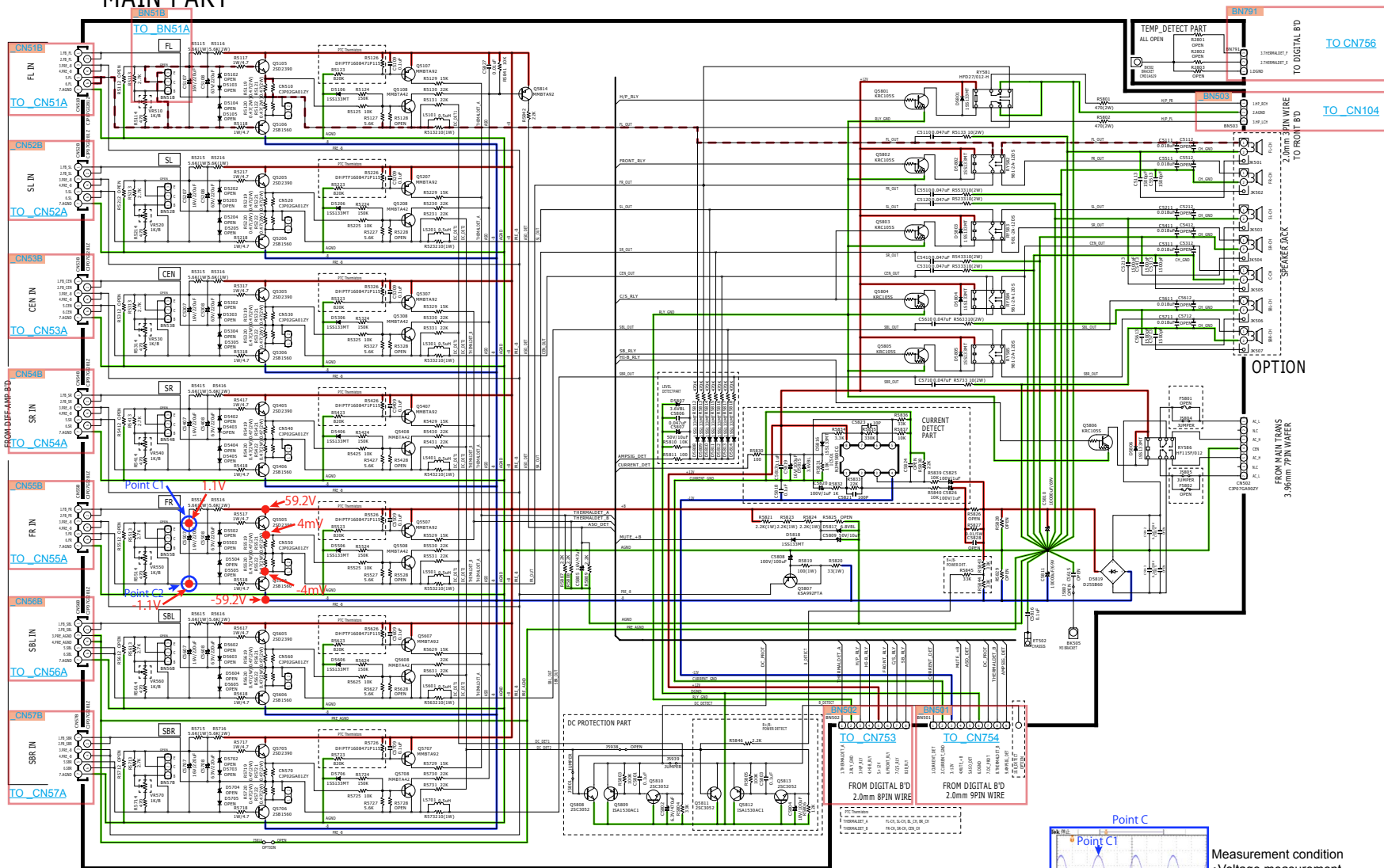
Measurement condition

- Voltage measurement
- No signal
- Waveform measurement

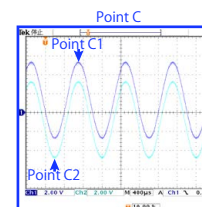
INPUT: 200mVrms / 1KHz (ANALOG)
Surround mode: MCh Stereo
VOL: 70
Speaker load: 8ohms

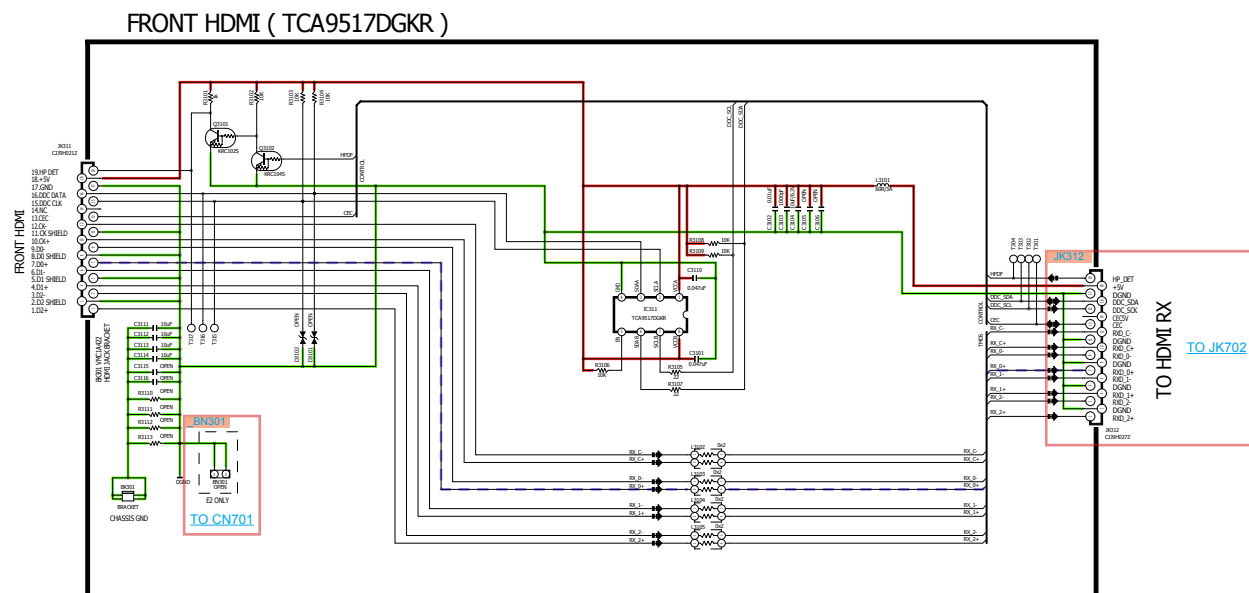
— GND LINE
 — POWER+ LINE
 — POWER- LINE
 --- ANALOG AUDIO
 --- DIGITAL AUDIO
 --- TMDS SIGNAL
 --- ANALOG VIDEO
 --- STBY POWER

MAIN PART

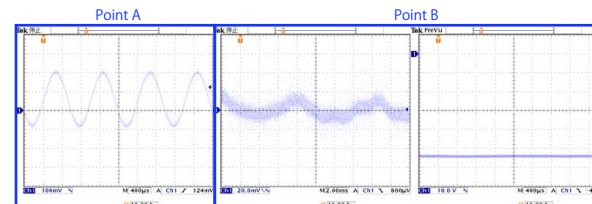
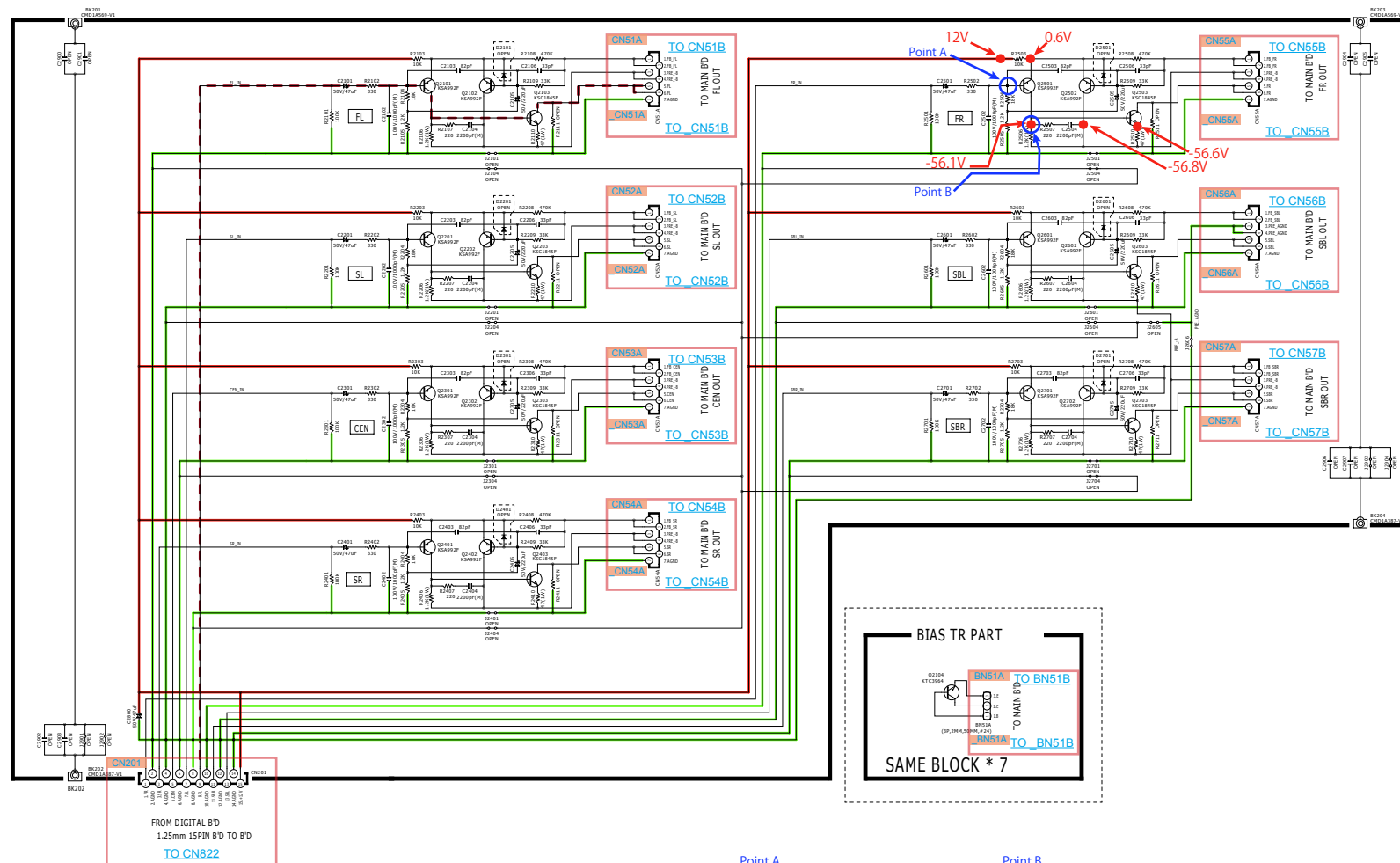


GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER



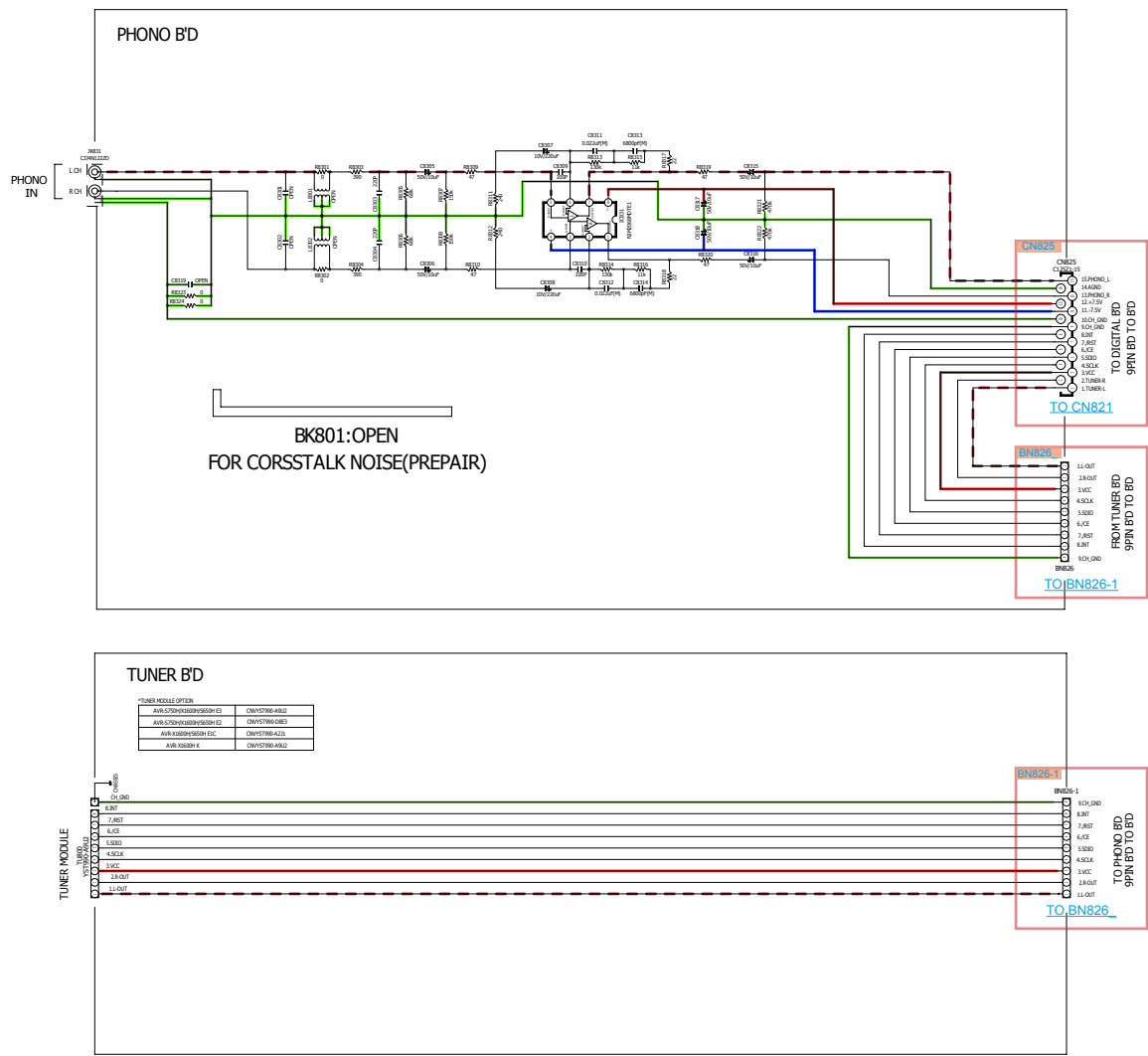


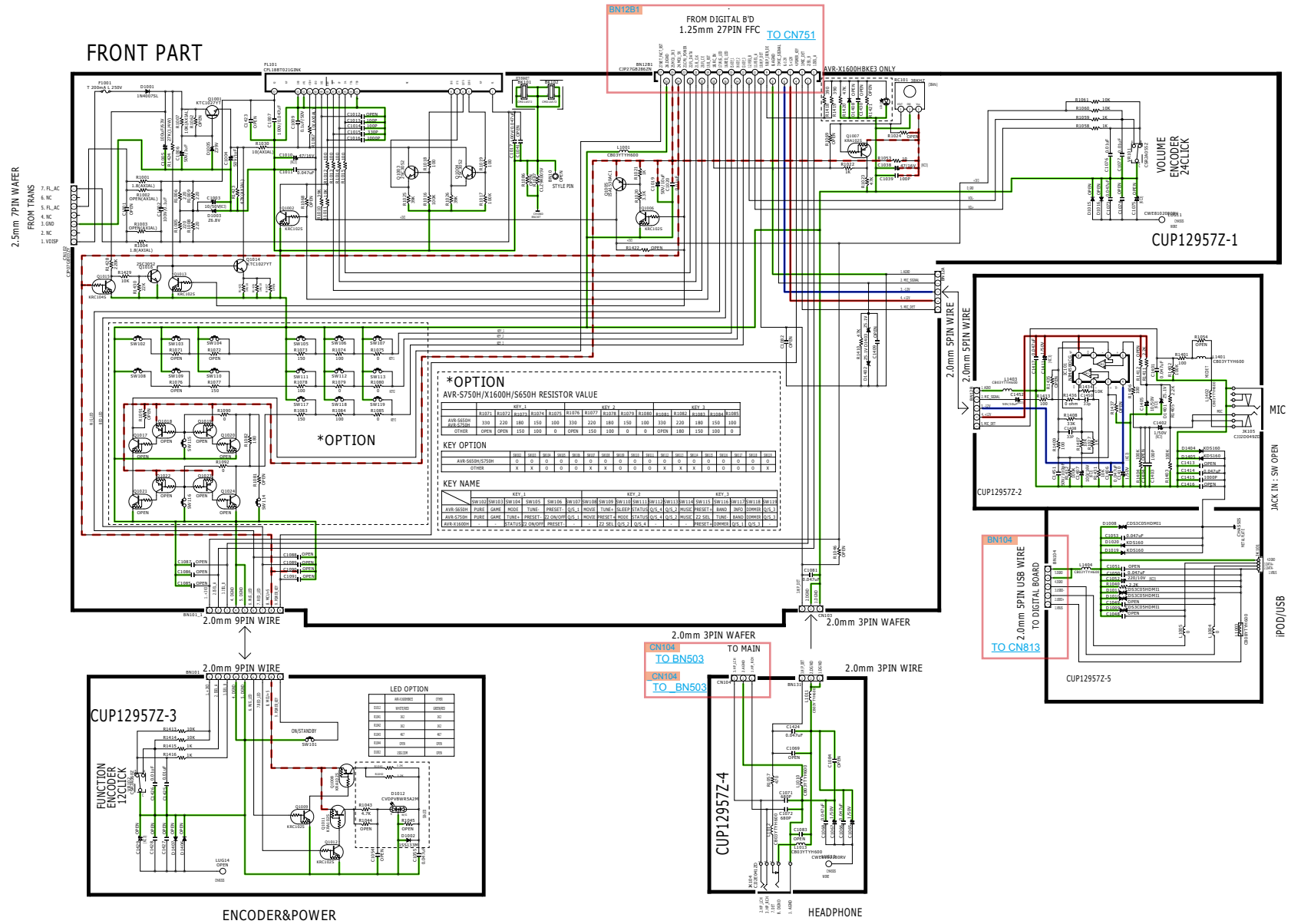
AVR-S750H/X1600H DIFF-AMP PART



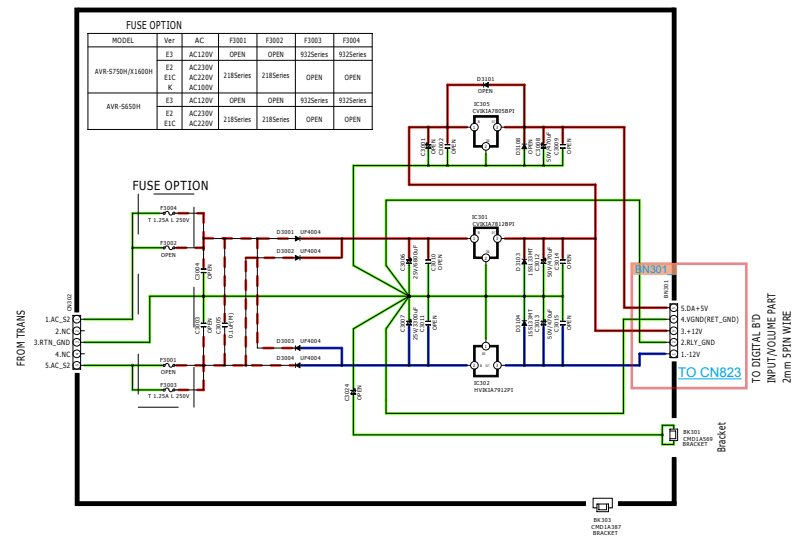
Measurement condition

- Voltage measurement
- No signal
- Waveform measurement
- INPUT: 200mVrms / 1KHz (ANALOG)
- Surround mode: MCh Stereo
- VOL: 70
- Speaker load: 8ohms

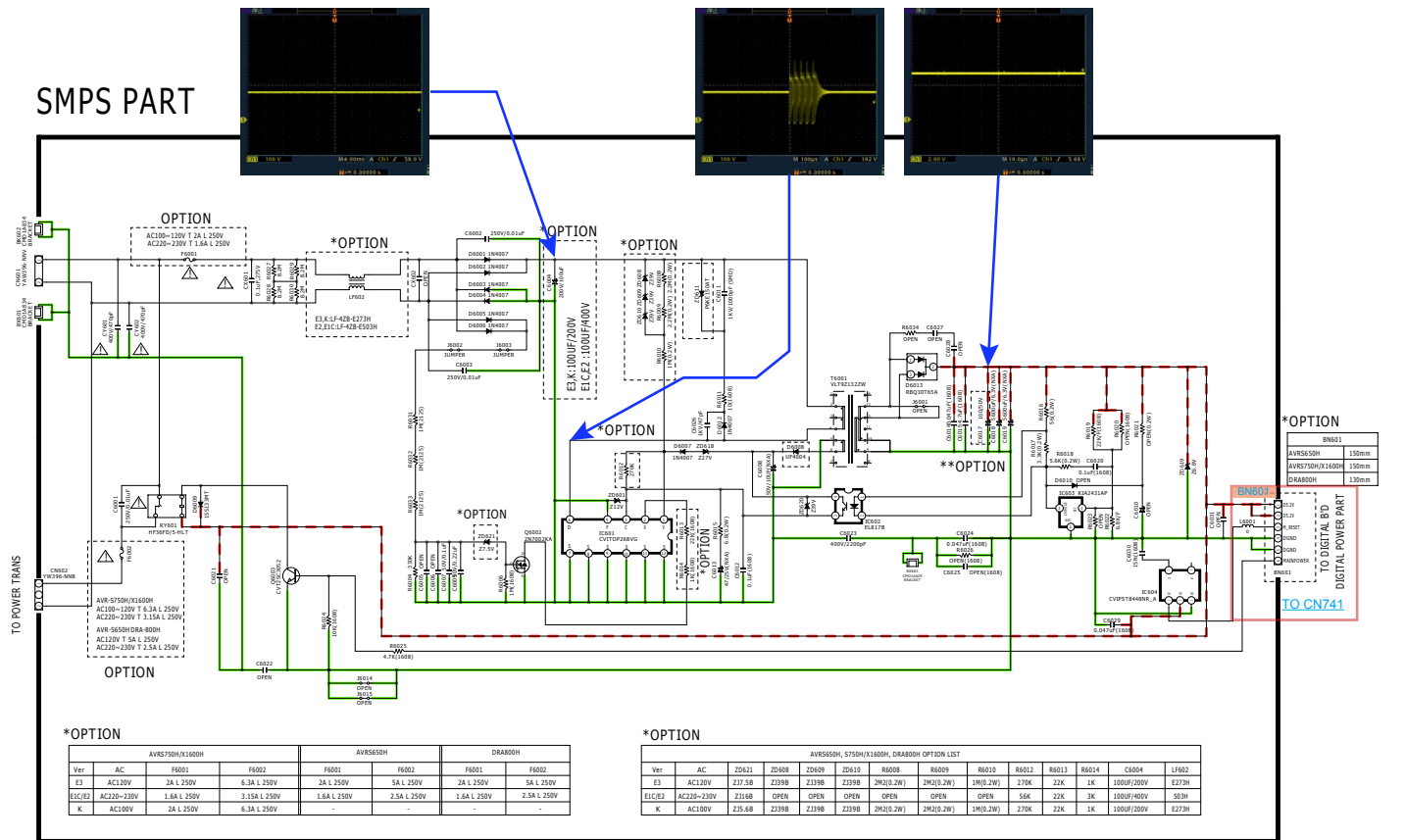




REGULATOR PART



GND LINE POWER+ LINE POWER- LINE ANALOG AUDIO DIGITAL AUDIO TMDS SIGNAL ANALOG VIDEO STBY POWER



**** IMPORTANT SAFETY NOTICE.**  **SPECIAL CHARACTERISTICS.**
IMPORTANT IDENTIFIED BY TRADE NAME. **IMPORTANT FOR SAFETY.** WHEN REPLACING ANY OF THESE COMPONENTS
 USE ONLY MANUFACTURER'S SPECIFIED PARTS.
**** THE UNIT OF RESISTANCE IS OHM.**
 $1K = 1000\text{ OHM}$, $1M = 1000000$.
**** THE UNIT OF CAPACITANCE IS MICROFARAD(μF)**
 $1\mu = 10^{-6}$
**** THIS SCHEMATIC DIAGRAM MAY MODIFY AT ANY TIME WITH THE
 IMPROVEMENT OF PERFORMANCE.**

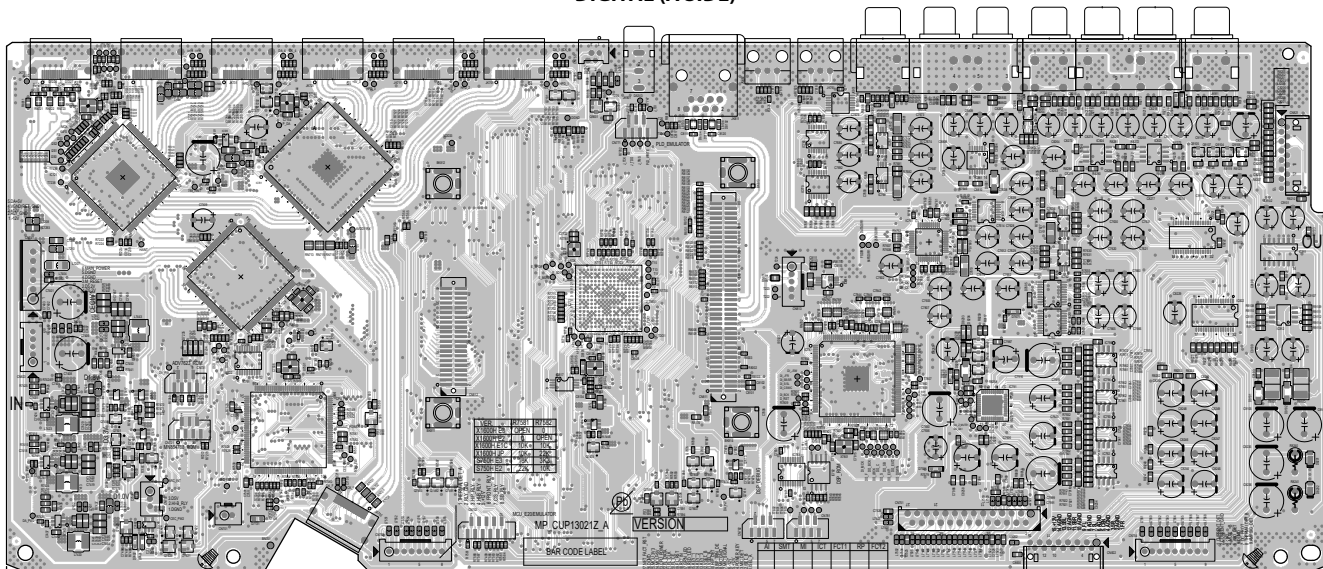
PRINTED CIRCUIT BOARDS

DIGITAL, F HDMI, TUNER, PHONO

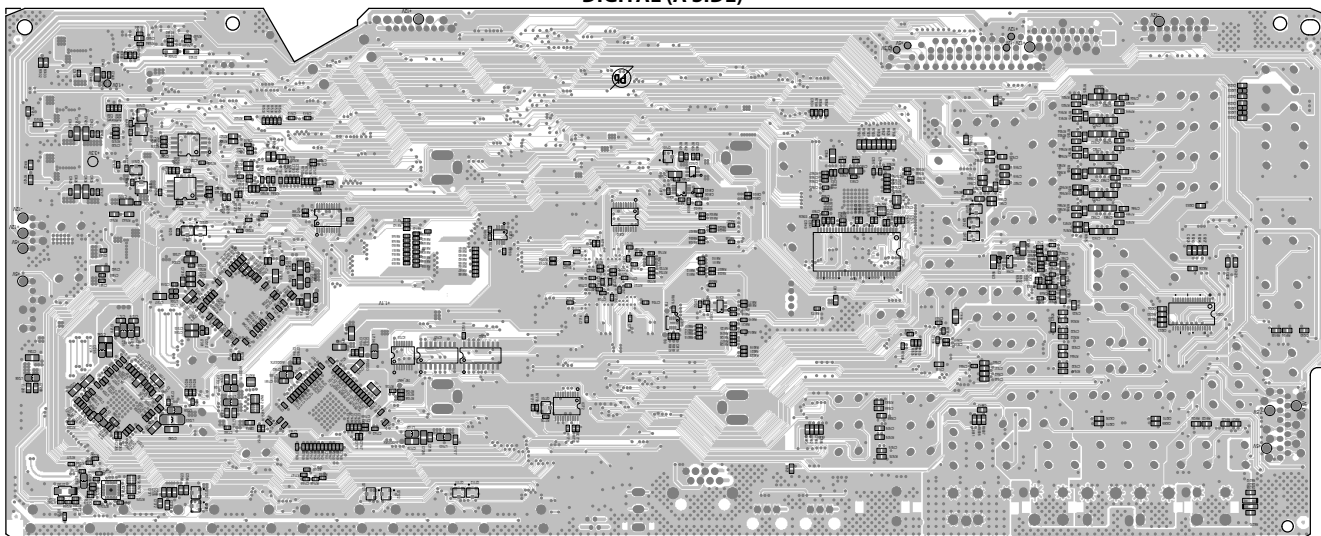
Lead-free Solder

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

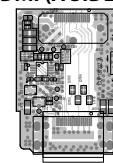
DIGITAL (A SIDE)



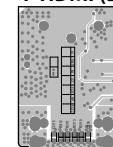
DIGITAL (A SIDE)



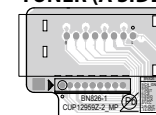
F HDMI (A SIDE)



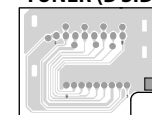
F HDMI (B SIDE)



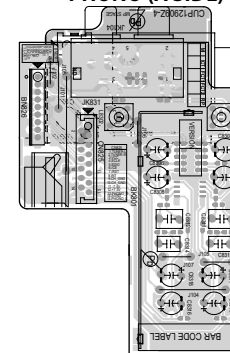
TUNER (A SIDE)



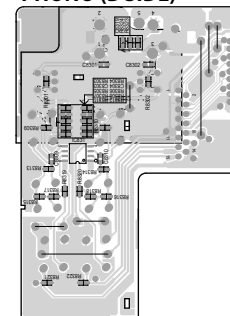
TUNER (B SIDE)



PHONO (A SIDE)



PHONO (B SIDE)



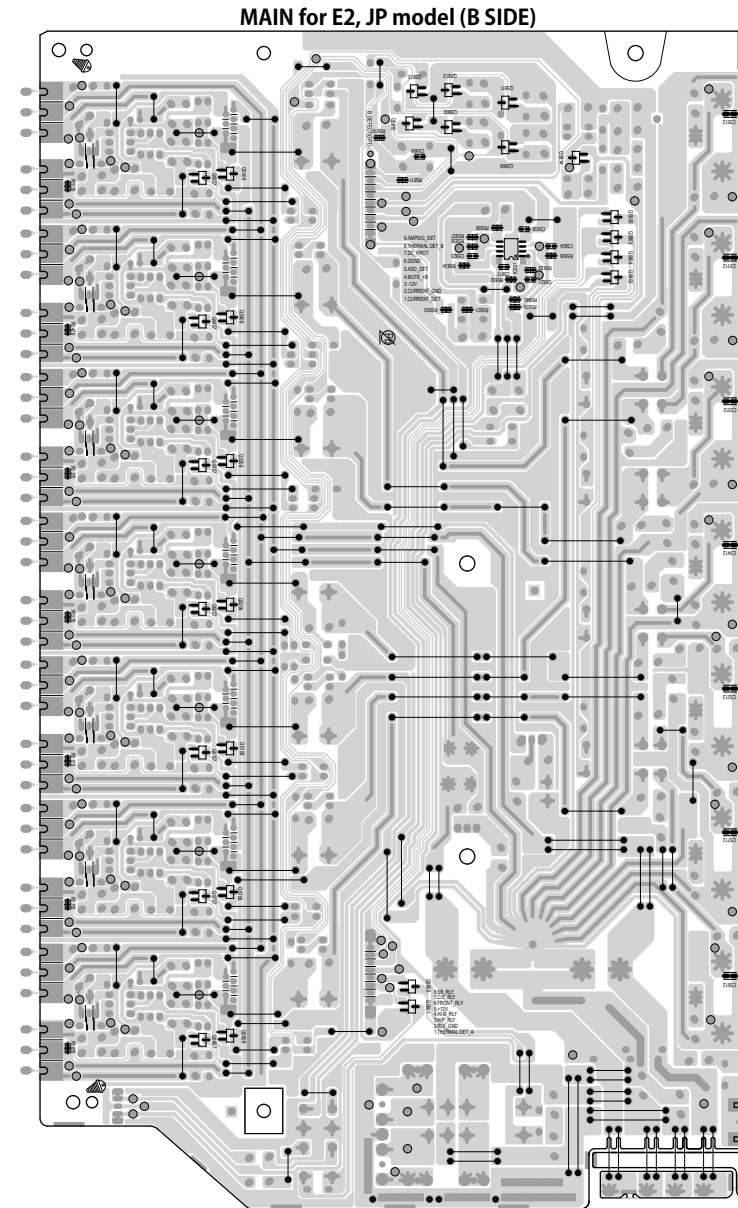
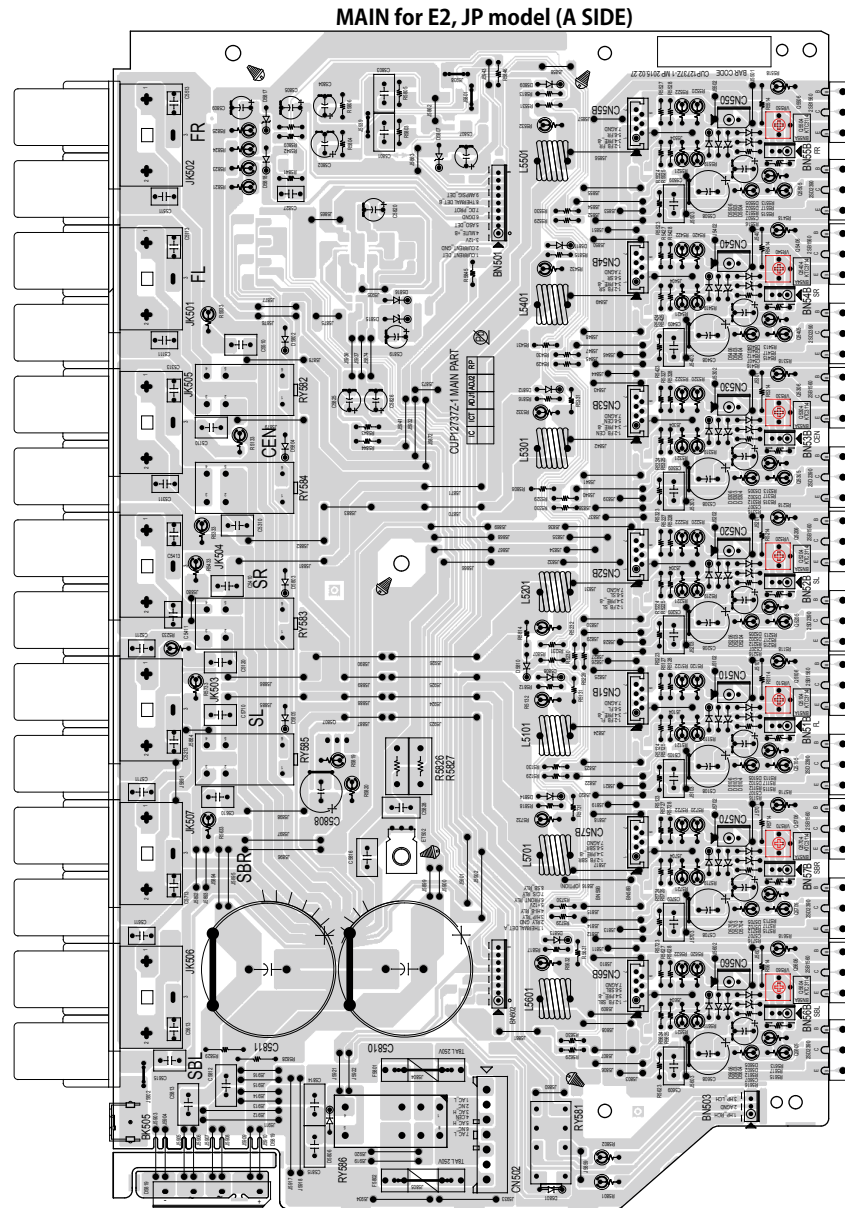
Before Servicing
This Unit

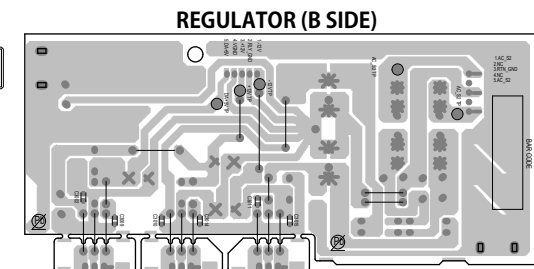
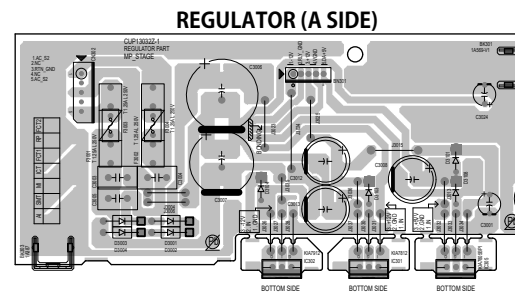
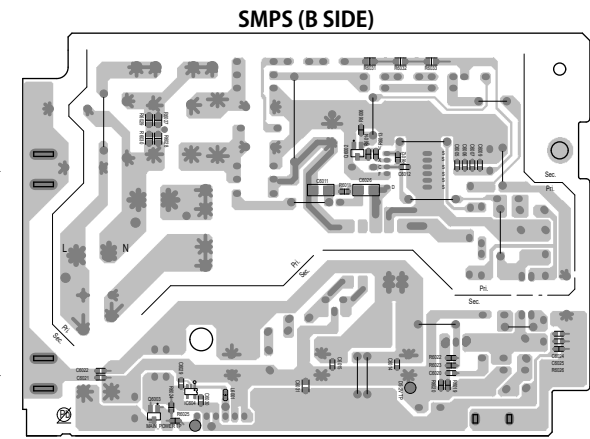
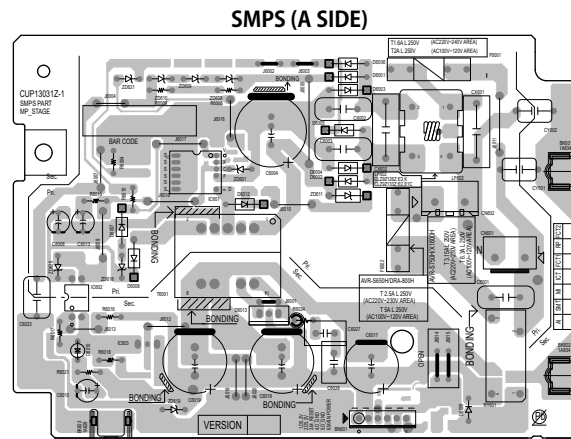
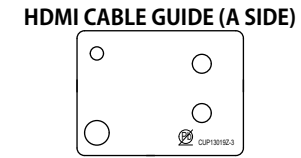
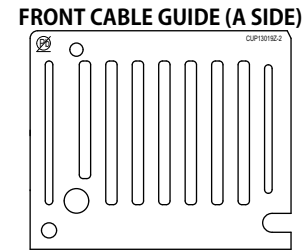
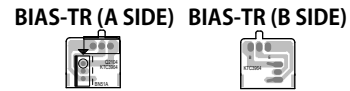
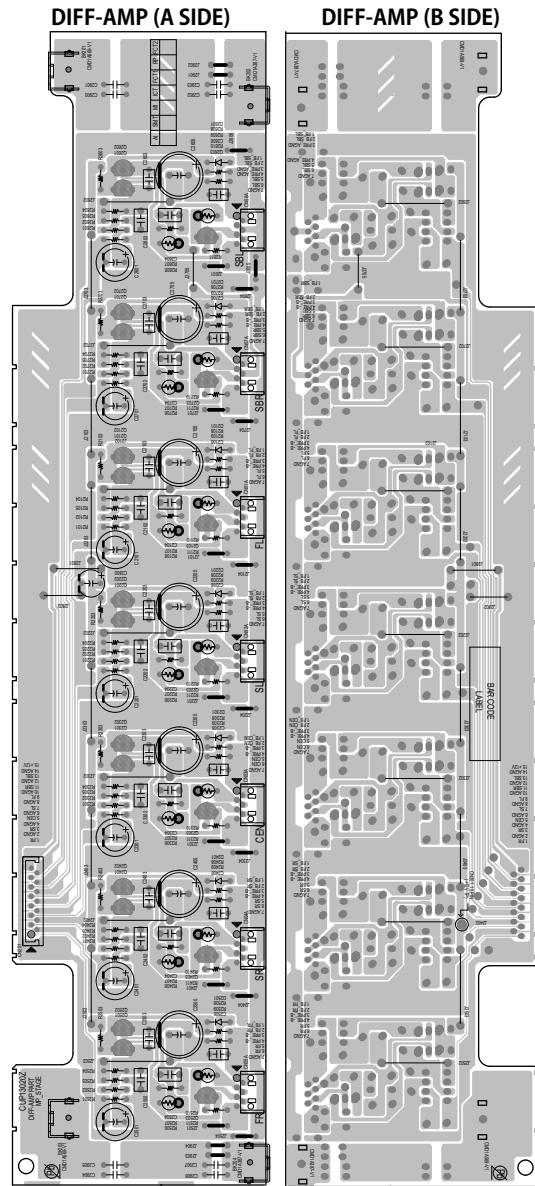
Electrical

Mechanical

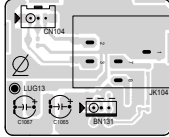
Repair Information

Updating

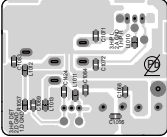




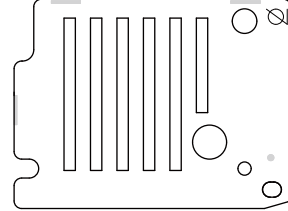
PHONE (A SIDE)



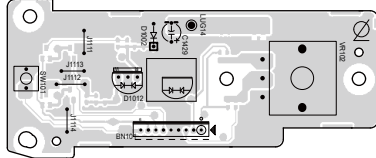
PHONE (B SIDE)



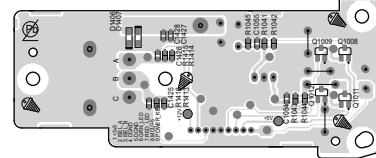
FRONT CABLE GUIDE (A SIDE)



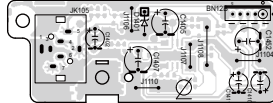
STANDBY (A SIDE)



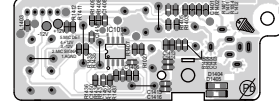
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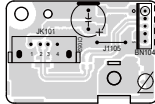
MIC (A SIDE)



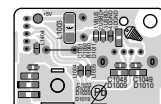
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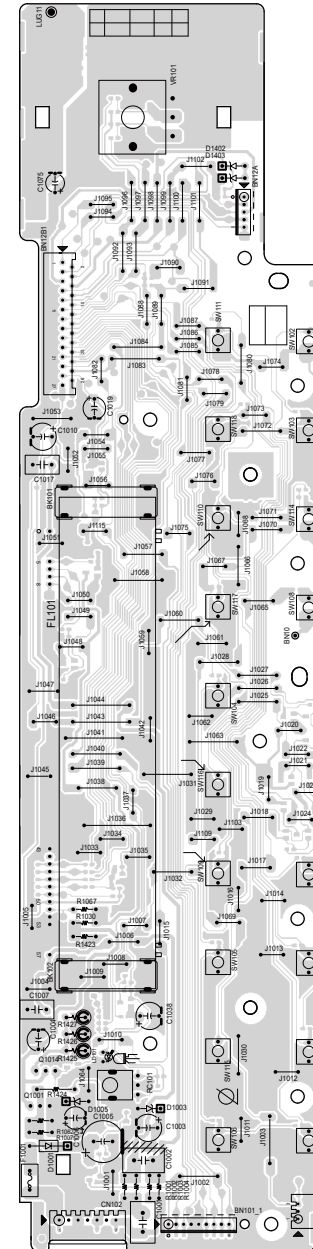
USB (A SIDE)



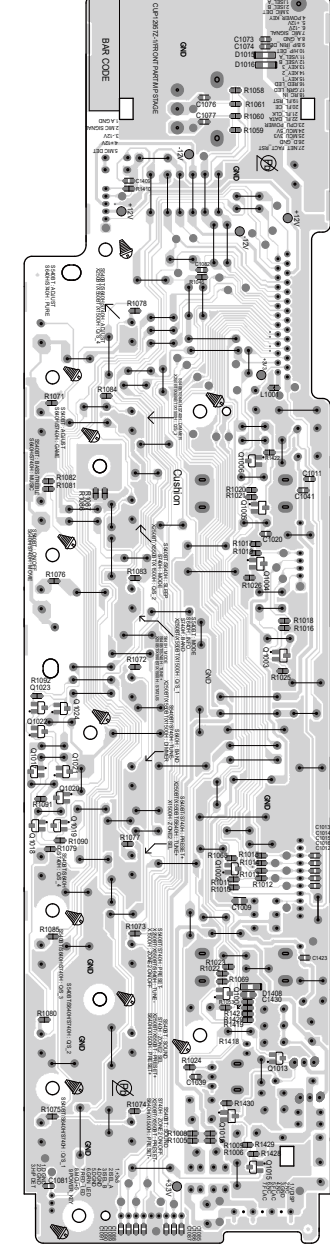
USB (B SIDE)



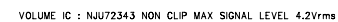
FRONT (A SIDE)



FRONT (B SIDE)

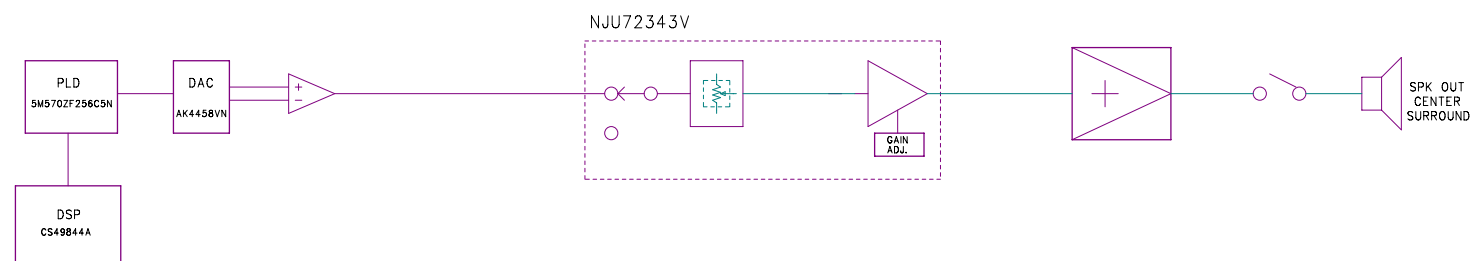


FRONT CHANNEL

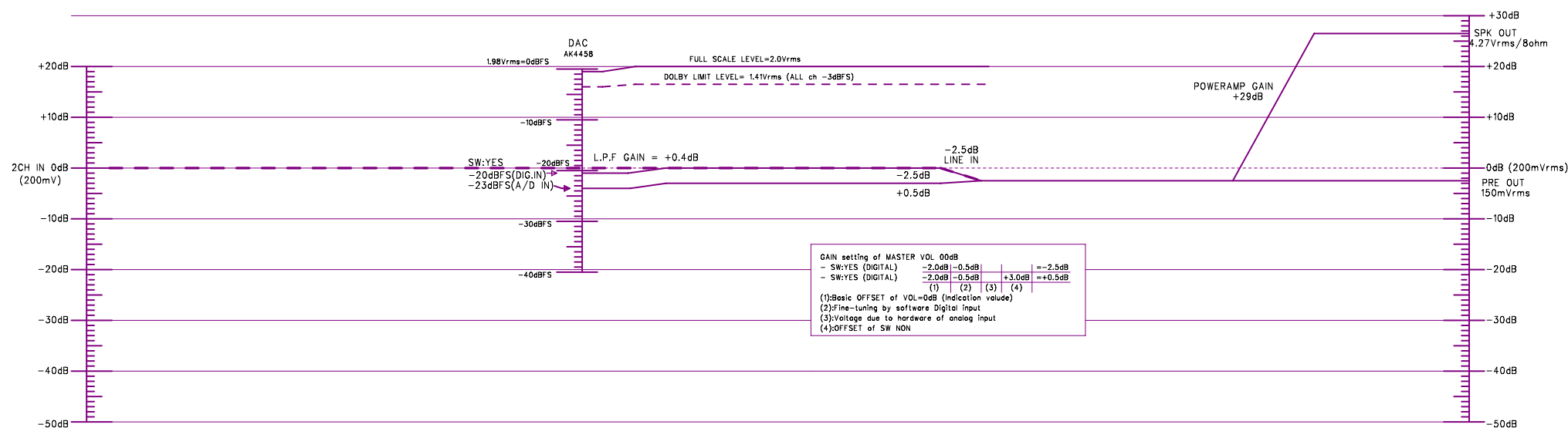


AVRS750H/X1600H LEVEL DIAGRAM

CENTER/SURROUND CHANNEL

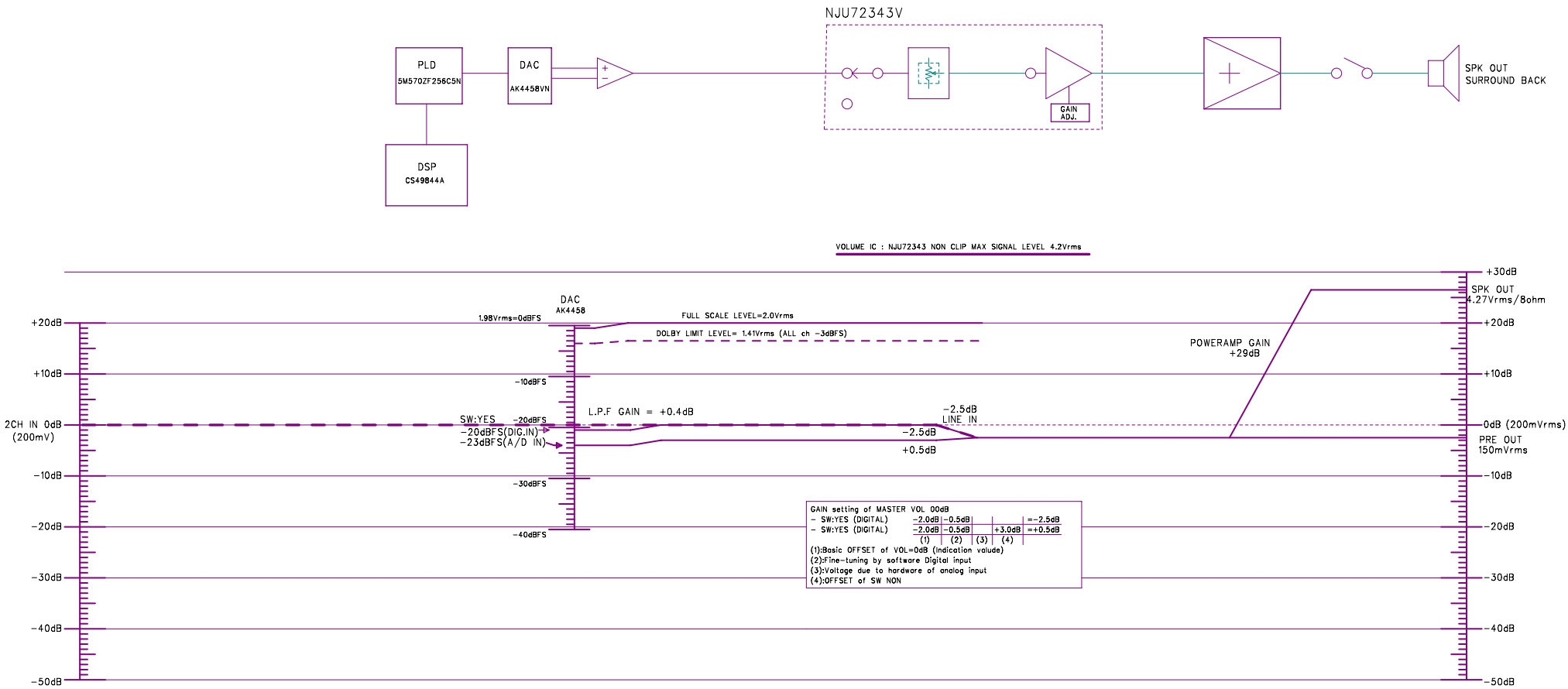


VOLUME IC : NJU72343 NON CLIP MAX SIGNAL LEVEL 4.2Vrms



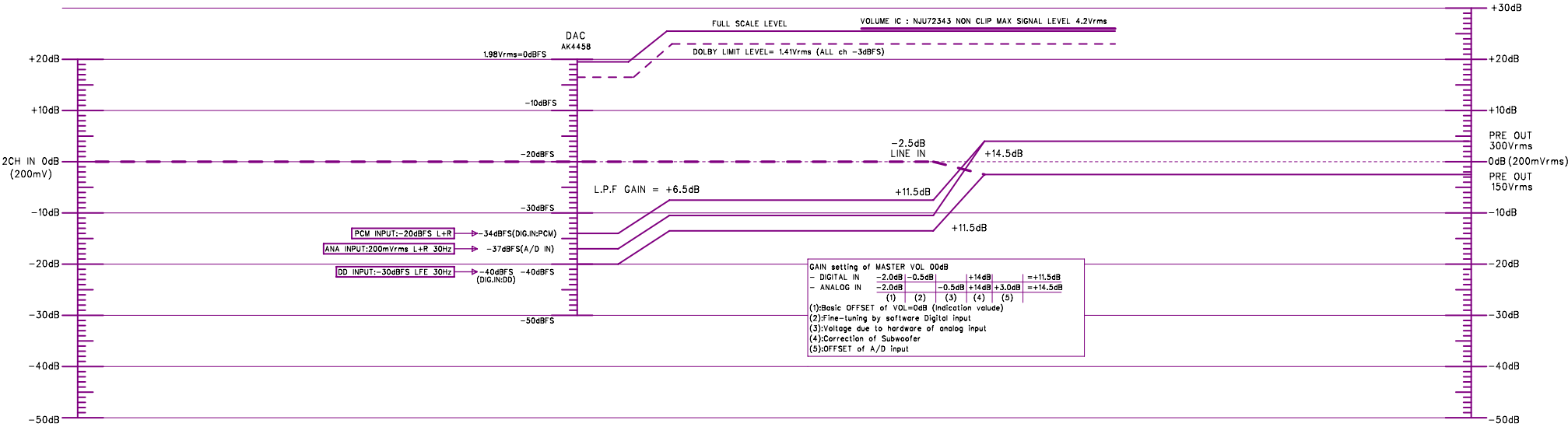
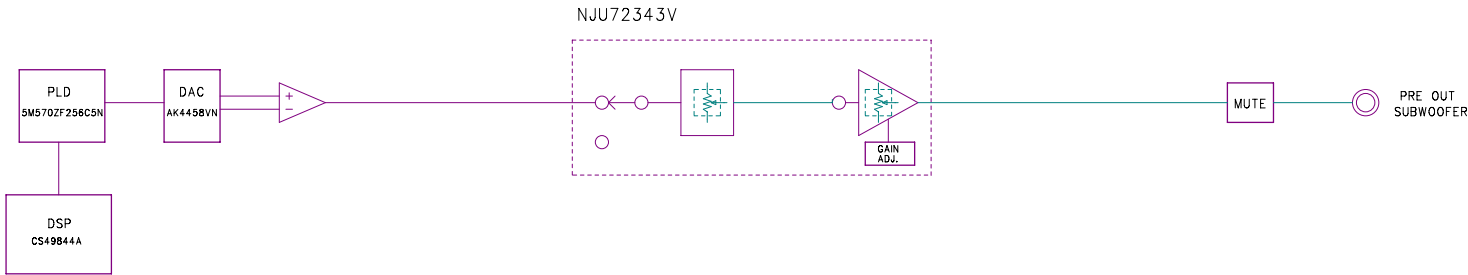
AVRS750H/X1600H LEVEL DIAGRAM

SURROUND BACK CHANNEL

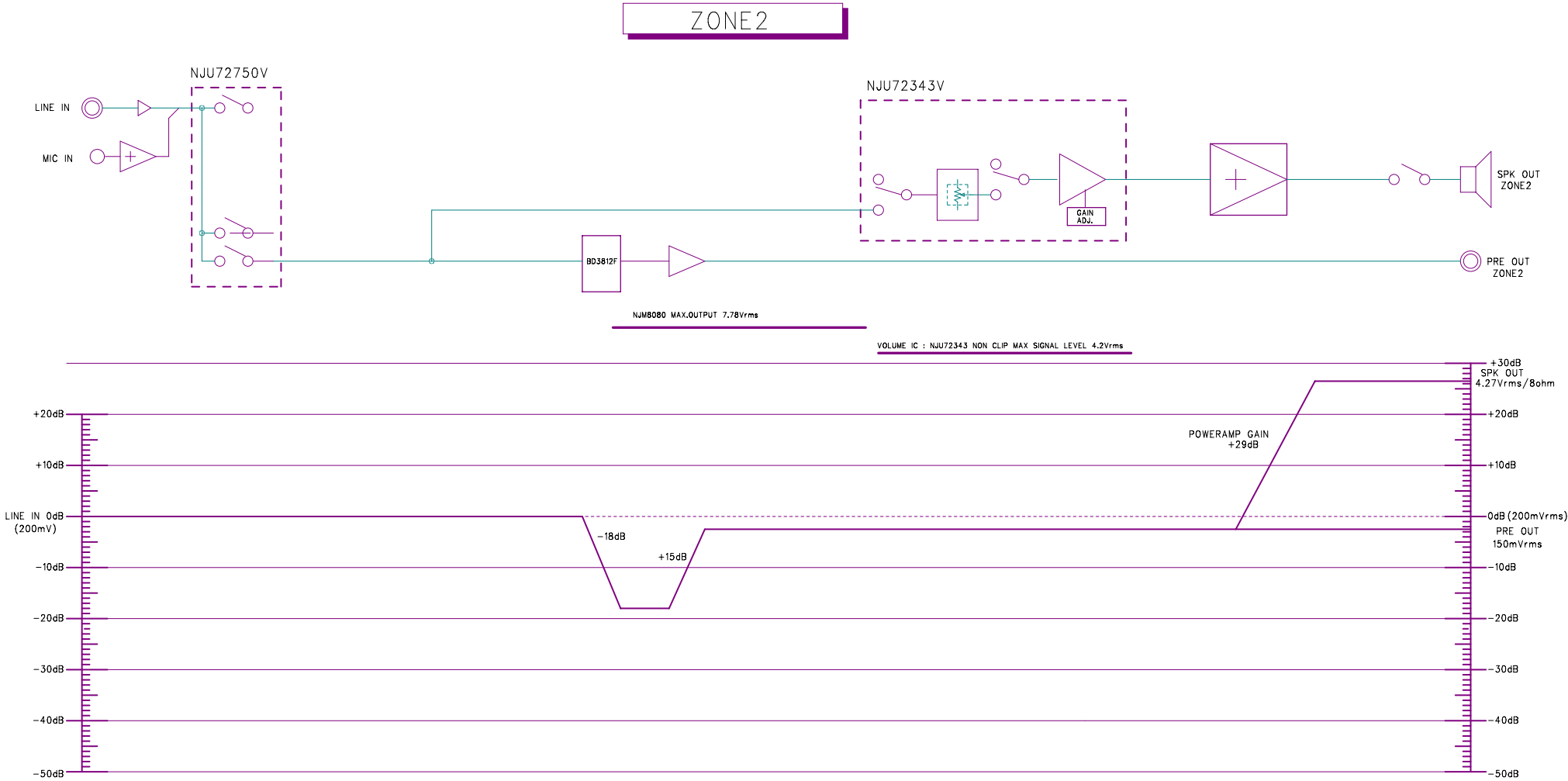


AVRS750H/X1600H LEVEL DIAGRAM

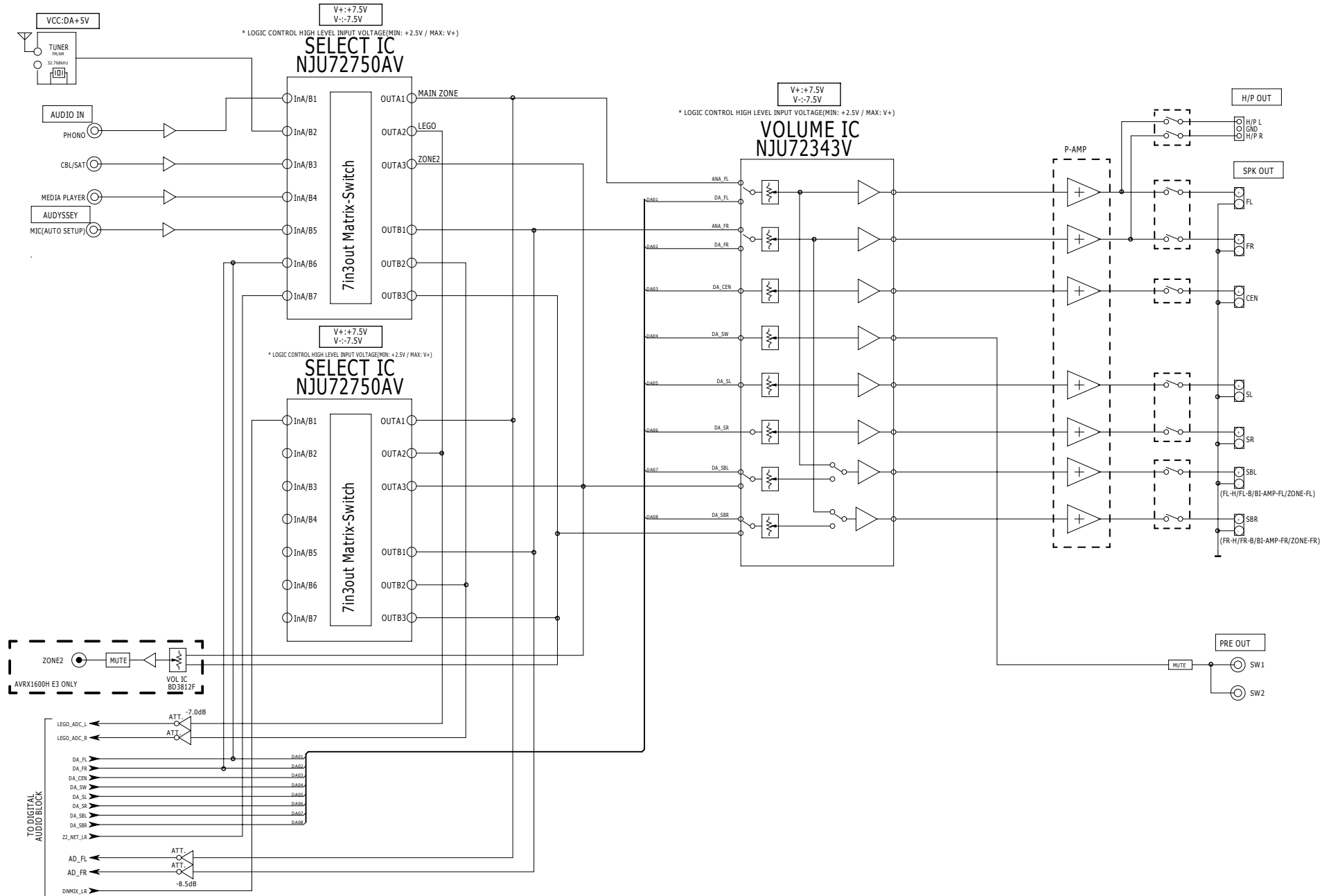
SUBWOOFER CHANNEL



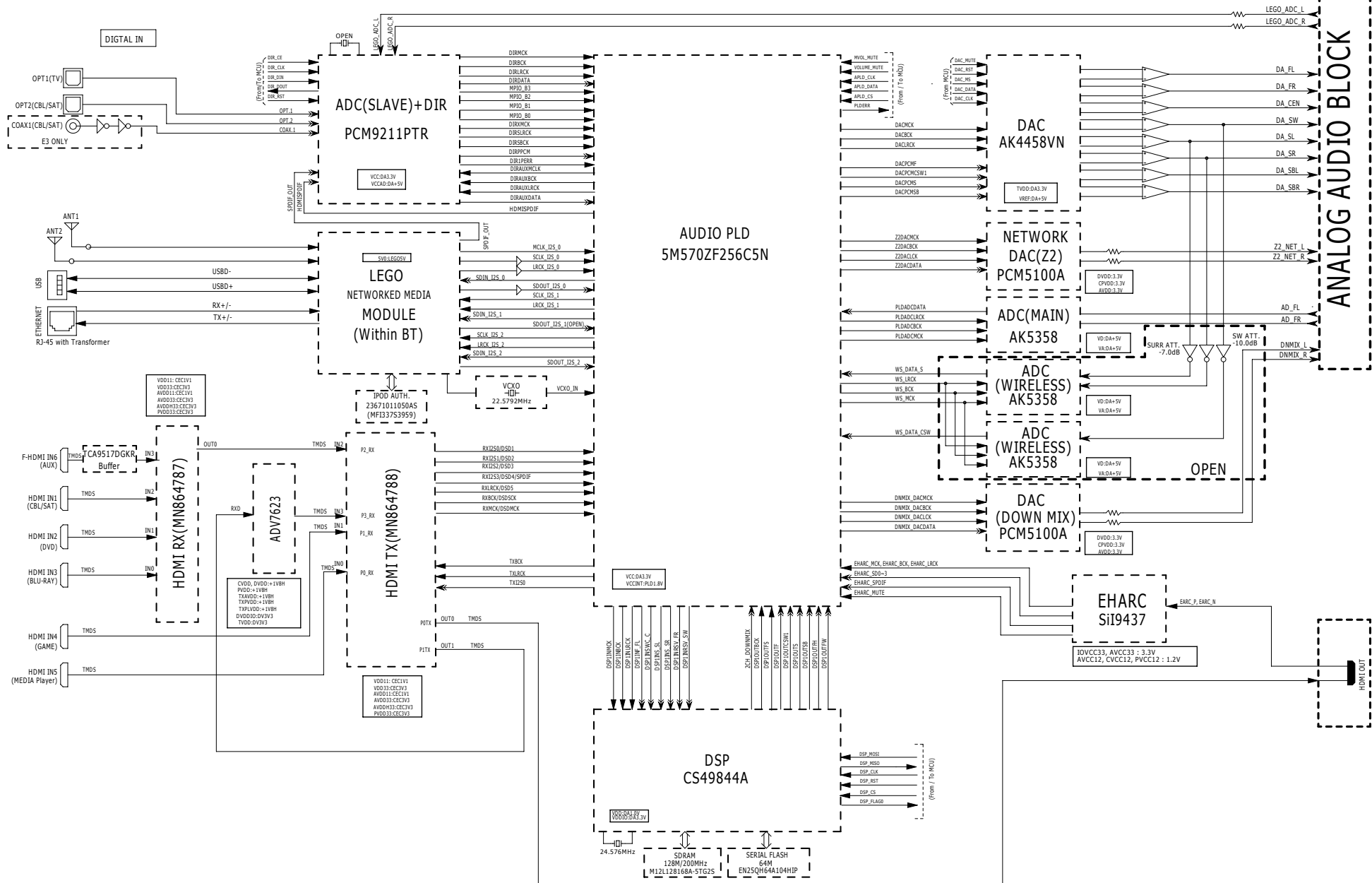
AVRS750H/X1600H LEVEL DIAGRAM



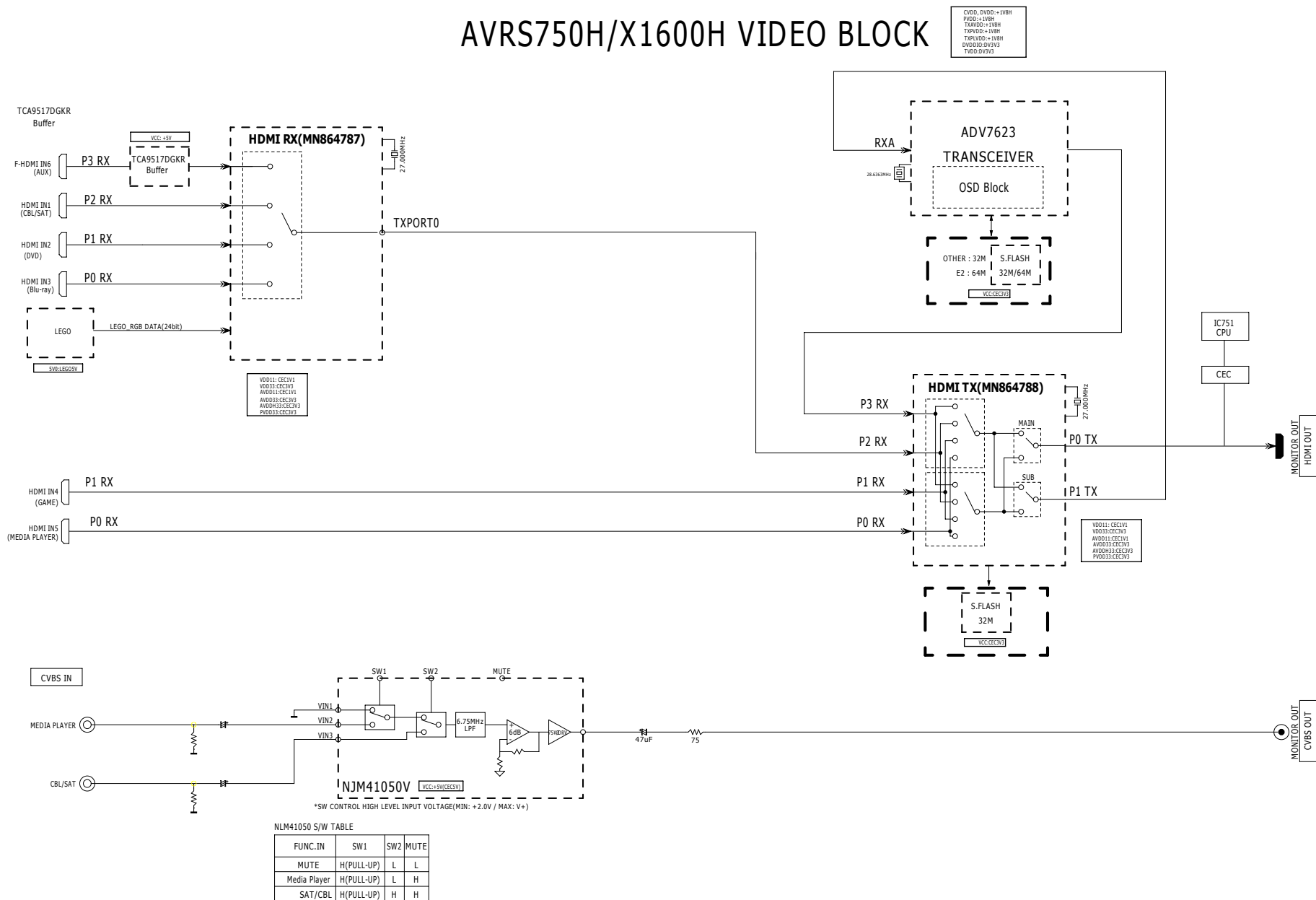
AVRS750H/X1600H ANALOG AUDIO BLOCK



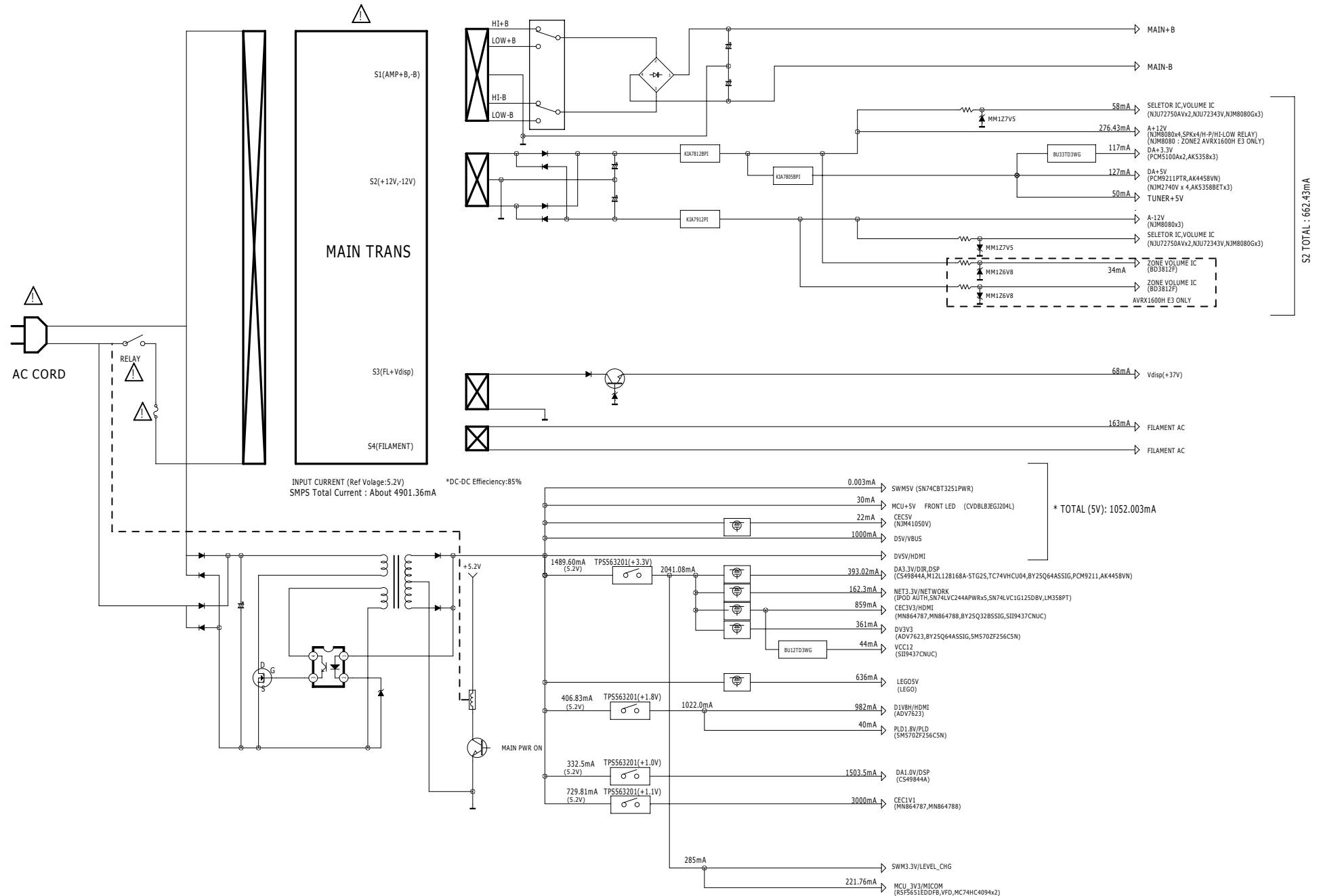
AVRS750H/X1600H DIGITAL AUDIO BLOCK



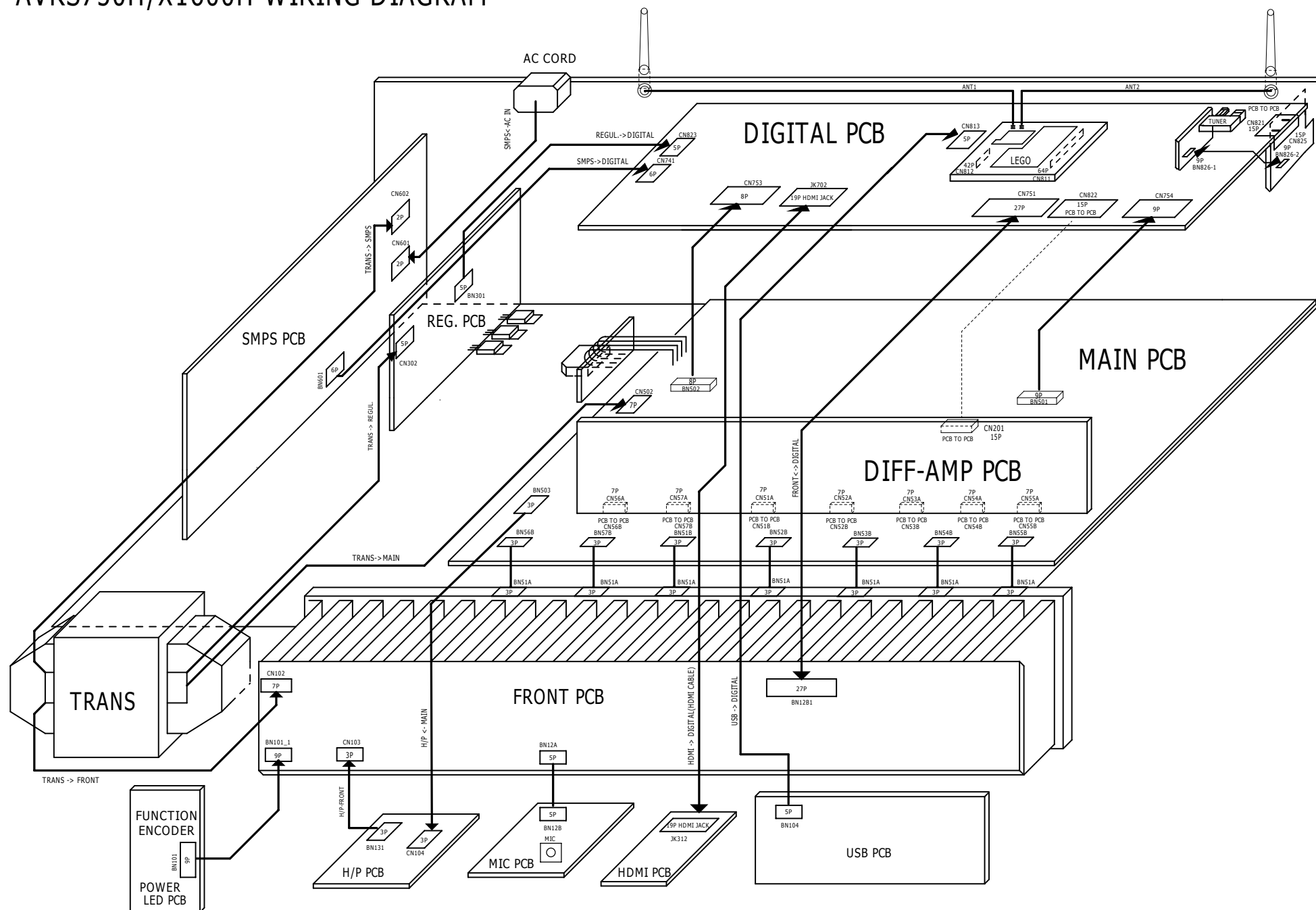
AVRS750H/X1600H VIDEO BLOCK



AVRS750H/X1600H VCC DIAGRAM



AVRS750H/X1600H WIRING DIAGRAM

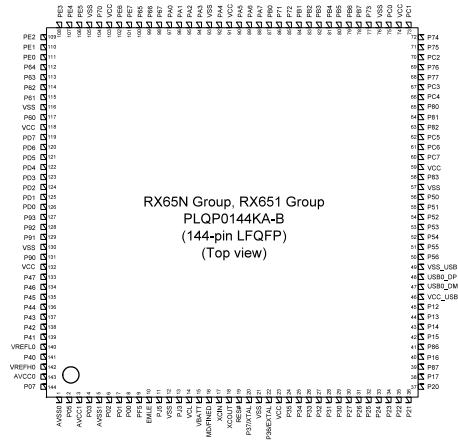


SEMICONDUCTORS

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

R5F5651EDDFB (DIGITAL_MCU : IC751)



Note : This figure indicates the power supply pins and I/O port pins. For the pin configuration, see Table 1.8. List of Pin and Pin Functions (144-Pin LQFP).

R5F5651EDDFB Terminal Functions

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
1	AVSS0	AVSS	-		-	-	-	Ground pin
2	P05/IRQ13	POWER_KEY	I	M3VPu	I	I	I	Detect Power switch (Release from Wait Mode,Set to interrupt)
3	AVCC1	AVCC	-		-	-	-	Power supply pin
4	P03/IRQ11	RED_LED	O		L/H	L	H	POWER/STANDBY LED control pin
5	AVSS1	AVSS	-		-	-	-	Ground pin
6	P02/IRQ10/AN120	SB_RL (X1600H/S750H)/NC (S650H)	O		L	L	L	Speaker relay control pin
7	P01/RXD6/IRQ9/AN119	RXD_MI232O	I	M3VPu	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 (X1600H(NA)/GREEN_LED (X1600H (EU/CH/JP) /S750H/S650H)	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
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	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)
17	XCIN	XCIN	I	Pd	-	-	-	NC(Pull down)
18	XCOUT	XCOUT	I		-	-	-	NC(open)
19	RES#	RESET	I		-	-	-	Reset signal input pin
20	XTAL/P37	XTAL	I		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
21	VSS	VSS	-		-	-	-	Ground pin

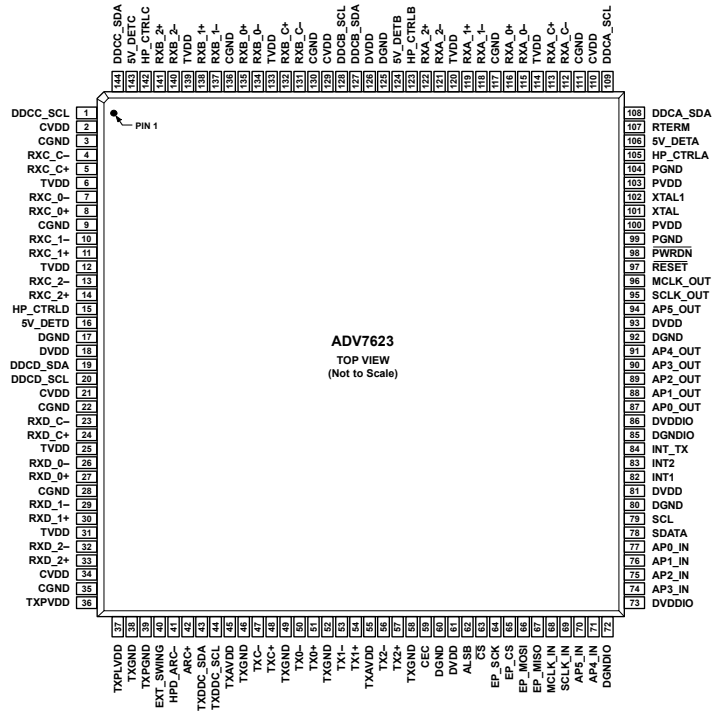
Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
22	EXTAL/P36	EXTAL	-		-	-	-	Pins for a crystal resonator (Xin=12MHz × 10)
23	VCC	VCC	-		-	-	-	Power supply pin.
24	UPSEL/P35(IN)/NMI	DSP_FLAG0	I	DA3VPu (X1600/S750) /Pd (S650)	L	L	L	DSP(CS49844A) interrupt signal input pin(X1600H/S750H) / DSP(ADI) interrupt signal input pin(S650H)
25	TRST#/P34/SCK6/SCK0//IRQ4	TRST#/NC(NORMRAL)	I/I	Pd	I/I	I/I	I/I	E20 Emulator control pin/When normal operating mode,set to input.
26	P33/TIOCD0/RXD6/RXD0/IRQ3-DS	RC_IN	I	Pd	I	I	I	Remote input
27	P32/TXD6/TXD0/IRQ2-DS	BDOWN	I	M3VPu	I	I	I	Detect power down
28	TMS/P31/IRQ1-DS	TMS/NC(NORMRAL)	I/I	M3VPu	-/I	-/I	I	E20 Emulator control pin/When normal operating mode,set to input.
29	TDI/P30/RXD1/IRQ0-DS	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.
30	TCK/FINEC/P27/SCK1/	TCK/NC(NORMRAL)	I/I/I	M3VPu	-/I	-/I	I	E20 Emulator control pin/When normal operating mode,set to input.
31	TDO/P26/TXD1	TDO/TXD_MITSUBISHI	O/O/I	M3VPu	-/I	-/I	I	E20 Emulator control pin/Mitsubishi writer control pin/When normal operating mode,set to input.
32	P25/RXD3	ADV7623_RST	O	Pd	L	L	L	HDMI transceiver w/ GUI(ADV7623) reset control pin
33	P24/SCK3	MVOL_MUTE	O		L	L	L	Volume control pin (NJU72343)
34	P23/TXD3	E_RTS_MOEI	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(Network Module) control pin
35	P22/SCK0	E_CTS_MIEO	I	Pd (onboard + BCM58305 Internal Pd)	I	I	I	Ethernet(Network Module) control pin
36	P21/RXD0/IRQ9	E_RXD_MIEO	I	Pd (onboard + BCM58305 Internal Pd)	I	L	I	Ethernet(Network Module) control pin
37	P20/TXD0/IRQ8	E_TXD_MOEI	O	Pd (BCM58305 Internal Pd)	L	L	L	Ethernet(Network Module) control pin
38	P17/SCK1/TXD3/IRQ7	NET_FACT_RST	O(ODR)	Pu (BCM58305 Internal Pu)	Z	Z	Z	Ethernet(Network Module) control pin
39	P87	7623_ROM_HOLD	O		L	L	L	Flash ROM for GUI control pin
40	P16/TXD1/RXD3/IRQ6	TU_SCLK	O		L	L	L	TUNER control
41	P86	PRE_Z2_MUTE (X1600H (NA)) /NC (X1600H (EU/CH/JP)/S750H/S650H)	O		L	L	L	Mute for zone preout control pin
42	P15/RXD1/IRQ5	TU_SDIO	I_O		L	L	L	TUNER control
43	P14/IRQ4	VEXP_OE	O		L	L	L	Expander (MC74HC4094) control pin
44	P13/TXD2/IRQ3	VEXP_CLK	O		L	L	L	Expander (MC74HC4094) control pin
45	P12/RXD2/IRQ2	VEXP_DATA	O		L	L	L	Expander (MC74HC4094) control pin
46	VCC_USB	VCC_USB	-		-	-	-	Power supply pin
47	USB0_DM	USB0_DM	-		-	-	-	NC(open)
48	USB0_DP	USB0_DP	-		-	-	-	NC(open)
49	VSS_USB	VSS_USB	-		-	-	-	Ground pin
50	P56	TU_SEN	O		L	L	L	TUNER control pin
51	P55/IRQ10	VEXP_STB	O		L	L	L	Expander (MC14094) control pin
52	P54	NET5V_POWER	O		L	L	L	Ethernet power supply (Net5V) control pin/
53	BCLK/P53	DSP_BSY (X1600H/S750H) /NC (S650H)	I	DA3VPu	I	I	I	DSP BUSY signal input

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
54	P52/RXD2	ADV7623_SPI_MI	I		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)
55	P51/SCK2	ADV7623_SPI_CLK	O		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)
56	P50/TXD2	ADV7623_SPI_MO	O		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)
57	VSS	VSS	-		-	-	-	Ground pin
58	P83	ARC_RST	O		L	L	L	Reset control pin for ARC IC
59	VCC	VCC	-		-	-	-	Power supply pin.
60	PC7/TXD8/IRQ14	UB	I	Pd	-	-	-	Pins for setting the boot mode(select the Boot Mode or User Boot Mode)
61	PC6/RXD8/IRQ13	HSCL_(400k)	O	CEC3V/ DV3Pu	L	L	L	VIDEO I2C(SCL) control ADV7623 / Sil9437
62	PC5/SCK8	HSDA_(400k)	I_O	CEC3V/ DV3Pu	L	L	L	VIDEO I2C(SSA) control ADV7623 / Sil9437
63	P82/TXD10	DSP_MOSI	O	DA3VPu	L	L	L	DSP(CS49844A) control pin(X1600H/S750H) / DSP(ADI) control pin(S650H)
64	P81/RXD10	DSP_MISO	I	DA3VPu	L	L	L	DSP(CS49844A) control pin(X1600H/S750H) / DSP(ADI) control pin(S650H)
65	P80/SCK10	DSP_CLK	O	DA3VPu	L	L	L	DSP(CS49844A) control pin(X1600H/S750H) / DSP(ADI) control pin(S650H)
66	PC4/SCK5	DSP_CS	O	DA3VPu	L	L	L	DSP(CS49844A) control pin(X1600H/S750H) / DSP(ADI) control pin(S650H)
67	PC3/TXD5	DSP_ROM_WRITE(X1600H/S750H)/NC(S650H)	O		L	L	L	DSP ROM writing control(When writing,set to High)
68	P77/TXD11	DSP_RST	O	Pd (S750/ X1600)	L	L	L	DSP(CS49844A) reset control pin(X1600H/S750H) / DSP(ADI) reset control pin(S650H)
69	P76/RXD11	SEL_DATA	O		L	L	L	Audio selector control pin for NJU72750
70	PC2/RXD5	DA_POWER	O		L	L	L	Digital audio power supply (DA3.3V,DA1.2V) control pin
71	P75/SCK11	CEC_POWER2	O		L	L	H	CEC standby power control (for CEC Standby Mode 3)
72	P74	ADV7623_SPI_CS	O		L	L	L	HDMI transceiver w/ GUI(ADV7623) control pin (for GUI)
73	PC1/SCK5/IRQ12	DAC_PLD_ERR	I	Pd	L	L	L	Detect DAC/PLD error (from Audio PLD and DAC)
74	VCC	VCC	-		-	-	-	Power supply pin.
75	PC0/IRQ14	H/P_RL	O		L	L	L	Headphone relay control pin
76	VSS	VSS	-		-	-	-	Ground pin
77	P73	FRONT_RL	O		L	L	L	Speaker relay control pin
78	PB7/TXD9	PSDA	I/O	CEC3VPu	O/L	L	L	HDMI I2C (MN864788/787) control pin
79	PB6/RXD9	PSCL	I/O	CEC3VPu	O/L	L	L	HDMI I2C (MN864788/787) control pin
80	PB5	SEL_CLK	O		L	L	L	Audio selector control pin for NJU72750
81	PB4	APLD_CS	O		L	L	L	Audio PLD (5M570ZF256C5N) control pin
82	PB3/SCK4/SCK6	APLD_DATA/DAC_DATA	O/O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458VN) control pin
83	PB2	APLD_CLK/DAC_CLK	O/O		L	L	L	Audio PLD (5M570ZF256C5N) control pin/DAC (AK4458VN) control pin
84	PB1/TXD4/TXD6/IRQ4-DS	DAC_MS	O		L	L	L	DAC (AK4458VN) control pin
85	P72	DAC_RST	O		L	L	L	DAC (AK4458VN) control pin
86	P71	PRE_MUTE	O		L	L	L	MUTE for preout control pin
87	PB0/RXD4/RXD6/IRQ12	ARC_INT	I	IOVcc3VPu	L	L	L	ARC IC interrupt signal input pin
88	PA7	ISEL_A	I	SW3VPu	I	I	I	Input selector (Rotary encoder) signal input pin
89	PA6	ISEL_B	I	SW3VPu	I	I	I	Input selector (Rotary encoder) signal input pin
90	PA5	C/S_RL	O		L	L	L	Speaker relay control pin
91	VCC	VCC	-		-	-	-	Power supply pin.
92	PA4/TXD5/IRQ5-DS	ZVOL_DATA (X1600H (NA)/NC (X1600H (EU)/CH/JP)/S750H/S650H)	O		L	L	L	ZONE volume(BD3812) control pin
93	VSS	VSS	-		-	-	-	Ground pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
94	PA3/RXD5/IRQ6-DS	MVOL_DATA	O		L	L	L	Volume control pin (NJU72343)
95	PA2/RXD5	MVOL_CLK	O		L	L	L	Volume control pin (NJU72343)
96	PA1/MTIOC0B/IRQ11	ZVOL_CLK (X1600H (NA)/NC (X1600H (EU)/CH/JP)/S750H/S650H)	O		L	L	L	ZONE volume(BD3812) control pin
97	PA0	H5V_DET	I	Pd	I	I	I	HDMI IN 5V detect signal pin
98	P67/IRQ15	FL_CE	O		L	L	L	FL display control pin
99	P66	FL_DATA	O		L	L	L	FL display control pin
100	P65	FL_CLK	O		L	L	L	FL display control pin
101	PE7/IRQ7/AN105	KEY3	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
102	PE6/IRQ6/AN104	KEY2	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
103	VCC	VCC	-		-	-	-	Power supply pin.
104	P70	Hi-B_RL	O		L	L	L	HIGH-B relay control pin
105	VSS	VSS	-		-	-	-	Ground pin
106	PE5/IRQ5/AN103	KEY1	I	M3VPu	I	I	I	Key control signalinput pin (When standby mode,set to interrupt)
107	PE4/AN102	DC_DET/ASO	I	SW3VPu	I	I	I	Protection detect signal input pin (for DC and ASO) (A/D converter)
108	PE3/AN101	AMPSIGDET (S750H/X1600H)	I	Pd	I	L	I	Signal level monitor pin (AD converter)
109	PE2/RXD12/IRQ7-DS/AN100	CURRENT_DET	I	Pd	I	L	I	Current level monitor pin (A/D converter)
110	PE1/TXD12	THERMAL_B	I	SW3VPu	I	L	I	Protection detect signal input pin
111	PE0/SCK12	NET3.3V_POWER	O		L	L	L	Ethernet power supply control(Net3.3V)
112	P64	D5V_POWER (NC)	O		L	L	H	Digital 5V power supply control pin(3.3V and 1.8V generate from 5V)(When CEC standby mode3,set to Low)
113	P63	CEC_POWER	O		L	L	H	CEC standby power supply control(CEC5V,CEC3.3V,CEC1.8V)(When CEC standby mode3,set to Low)
114	P62	DV_POWER1	O		L	L	L	Digital video power supply (DV5V,DV3.3V) control pin
115	P61	DIR_DOUT	I	DA3VPu	I	I	I	DIR (PCM9211) control pin
116	VSS	VSS	-		-	-	-	Ground pin
117	P60	DIR_DIN	O		L	L	L	DIR (PCM9211) control pin
118	VCC	VCC	-		-	-	-	Power supply pin.
119	PD7/IRQ7/AN107	H/P_DET/MIC_DET	I	SW3VPu	I	I	I	Headphone insert detect pin/Microphone insert detect pin (A/D converter)
120	PD6/IRQ6/AN106	MODE	I		I	I	I	Region setting pin
121	PD5/IRQ5/AN113	DA_POWER2 (X1600H/S750H)/NC (S650H)	O		L	L	L	Digital audio power supply (D1.0V) control pin
122	PD4/IRQ4/AN112	DIR_RST	O	Pd	L	L	L	DIR (PCM9211) control pin
123	PD3/IRQ3/AN111	MN864788_HINT	I	CEC3VPu	I	I	I	HDMI Tx (MN864788) interrupt signal input pin
124	PD2/IRQ2/AN110	MN864787_HINT	I	CEC3VPu	I	I	I	HDMI Rx (MN864787) interrupt signal det
125	PD1/IRQ1/AN109	TU_GPO2_INT	I		L	L	L	TUNER control pin
126	PD0/TIOC7/IRQ0/AN108	CEC_IN	I	SW3VPu	I	I	I	CEC-D control pin
127	P93/AN117	THERMAL_A	I	SW3VPu	I	L	I	Protection detect signal input pin
128	P92/RXD7/AN116	TEMP_SENSOR	I	NET3.3VPu	I	L	I	Temperature sensor input pin (for SRM)
129	P91/SCK7/AN015	TU_RST	O		L	L	L	TUNER control
130	VSS	VSS	-		-	-	-	Ground pin
131	P90/TXD7/AN114	H5VOUT_POWER	O		L	L	L	HDMI 5V power supply control pin
132	VCC	VCC	-		-	-	-	Power supply pin.
133	P47/IRQ15-DS/AN007	FL_RST	O		L	L	L	FL display control pin
134	P46/IRQ14-DS/AN006	DIR_CE	O		L	L	L	DIR (PCM9211) control pin

Pin	Pin Name	Symbol	I/O	Pu/Pd	STBY	STOP	CEC STBY	Function
135	P45/IRQ13-DS/AN005	DIR_CLK	O		L	L	L	DIR (PCM9211) control pin
136	P44/IRQ12-DS/AN004	AIOS4_STBY_STATUS	I	-	I	I	I	Not used (This port use to detect for Network Module standby status in the future (Low : normal, High : Deep Standby))
137	P43/IRQ11-DS/AN003	AIOS4_WAKEUP	O		L	L	L	same as NET5V_POWER,NET3.3V_POWER (This port use to control for Network Module standby mode in the future(Low : Deep Standby, High : normal))
138	P42/IRQ10-DS/AN002	CPU_POWER	O		L	L	L	CPU power supply control pin
139	P41/IRQ9-DS/AN001	MAIN_POWER	O		L	L	L	Power supply control pin
140	VREFL0	VREFL0	-		-	-	-	Ground pin
141	P40/IRQ8-DS/AN000	MN864788_HAINT	I	CEC3VPu	I	I	I	HDMI Tx (MN864788) interrupt signal input pin(for Audio)
142	VREFH0	VREFH0	-		-	-	-	Power supply pin
143	AVCC0	AVCC0	-		-	-	-	Power supply pin
144	P07/IRQ15	CEC_OUT	O		L	L	-	CEC-D control pin

ADV7623 (DIGITAL_OSD : IC731)



Pin Function Descriptions

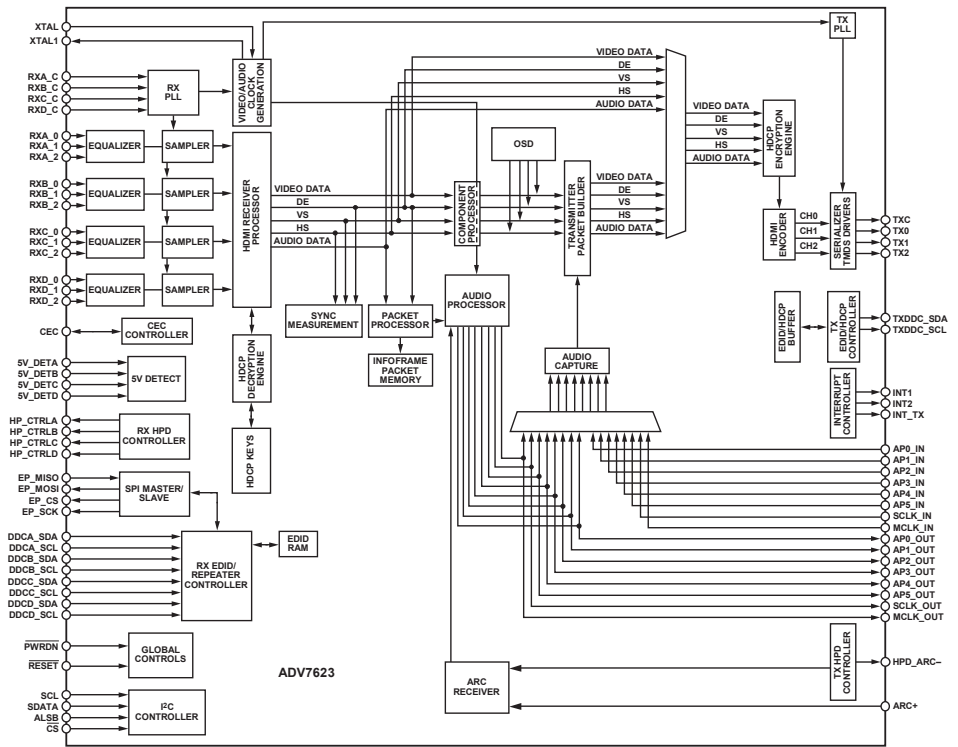
Pin No.	Mnemonic	Type	Description
1	DDCC_SCL	Digital input	HDCP Slave Serial Clock Port C. DDCC_SCL is a 3.3 V input that is 5 V tolerant.
2	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
3	CGND	Ground	TVDD and CVDD Ground.
4	RXC_C-	HDMI input	Digital Input Clock Complement of Port C in the HDMI Interface.
5	RXC_C+	HDMI input	Digital Input Clock True of Port C in the HDMI Interface.
6	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
7	RXC_0-	HDMI input	Digital Input Channel 0 Complement of Port C in the HDMI Interface.
8	RXC_0+	HDMI input	Digital Input Channel 0 True of Port C in the HDMI Interface.
9	CGND	Ground	TVDD and CVDD Ground.
10	RXC_1-	HDMI input	Digital Input Channel 1 Complement of Port C in the HDMI Interface.
11	RXC_1+	HDMI input	Digital Input Channel 1 True of Port C in the HDMI Interface.
12	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).

Pin No.	Mnemonic	Type	Description
13	RXC_2–	HDMI input	Digital Input Channel 2 Complement of Port C in the HDMI Interface.
14	RXC_2+	HDMI input	Digital Input Channel 2 True of Port C in the HDMI Interface.
15	HP_CTRLD	Digital output	Hot Plug Detect for Port D.
16	5V_DETD	Digital input	5 V Detect Pin for Port D in the HDMI Interface.
17	DGND	Ground	DVDD Ground.
18	DVDD	Power	Digital Supply Voltage (1.8 V).
19	DDCD_SDA	Digital I/O	HDCP Slave Serial Data Port D. DDCCD_SDA is a 3.3 V input/output that is 5 V tolerant.
20	DDCD_SCL	Digital input	HDCP Slave Serial Clock Port D. DDCCD_SCL is a 3.3 V input that is 5 V tolerant.
21	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
22	CGND	Ground	TVDD and CVDD Ground.
23	RXD_C–	HDMI input	Digital Input Clock Complement of Port D in the HDMI Interface.
24	RXD_C+	HDMI input	Digital Input Clock True of Port D in the HDMI Interface.
25	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
26	RXD_0–	HDMI input	Digital Input Channel 0 Complement of Port D in the HDMI Interface.
27	RXD_0+	HDMI input	Digital Input Channel 0 True of Port D in the HDMI Interface.
28	CGND	Ground	TVDD and CVDD Ground.
29	RXD_1–	HDMI input	Digital Input Channel 1 Complement of Port D in the HDMI Interface.
30	RXD_1+	HDMI input	Digital Input Channel 1 True of Port D in the HDMI Interface.
31	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
32	RXD_2–	HDMI input	Digital Input Channel 2 Complement of Port D in the HDMI Interface.
33	RXD_2+	HDMI input	Digital Input Channel 2 True of Port D in the HDMI Interface.
34	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
35	CGND	Ground	TVDD and CVDD Ground.
36	TXPVDD	Power	1.8 V Power Supply for Digital and I/O Power Supply. This pin supplies power to the digital logic and I/Os. It should be filtered and as quiet as possible.
37	TXPLVDD	Power	1.8 V Power Supply.
38	TXGND	Ground	TXPVDD Ground.
39	TXPGND	Ground	TXPLVDD Ground.
40	EXT_SWING	Analog input	This pin sets the internal reference currents. Place an 887 Ω resistor (1% tolerance) between this pin and ground.
41	HPD_ARC–	Analog input	Hot Plug Detect Signal. This pin indicates to the interface whether the receiver is connected. It supports 1.8 V to 5 V CMOS logic levels.
42	ARC+	Analog input	Audio Return Channel Input (5 V Tolerant).
43	TXDDC_SDA	Digital I/O	Serial Port Data I/O to Receiver. This pin serves as the master to the DDC bus. It supports a 5 V CMOS logic level.
44	TXDDC_SCL	Digital output	Serial Port Data Clock to Receiver. This pin serves as the master clock for the DDC bus. It supports a 5 V CMOS logic level.
45	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.
46	TXGND	Ground	TXAVDD Ground.
47	TXC–	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
48	TXC+	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
49	TXGND	Ground	TXAVDD Ground.
50	TX0–	HDMI output	Differential Output Channel 0 Complement. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
51	TX0+	HDMI output	Differential Output Channel 0 True. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
52	TXGND	Ground	TXAVDD Ground.
53	TX1–	HDMI output	Differential Output Channel 1 Complement. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
54	TX1+	HDMI output	Differential Output Channel 1 True. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
55	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.

Pin No.	Mnemonic	Type	Description
13	RXC_2–	HDMI input	Digital Input Channel 2 Complement of Port C in the HDMI Interface.
14	RXC_2+	HDMI input	Digital Input Channel 2 True of Port C in the HDMI Interface.
15	HP_CTRLD	Digital output	Hot Plug Detect for Port D.
16	5V_DETD	Digital input	5 V Detect Pin for Port D in the HDMI Interface.
17	DGND	Ground	DVDD Ground.
18	DVDD	Power	Digital Supply Voltage (1.8 V).
19	DDCD_SDA	Digital I/O	HDCP Slave Serial Data Port D. DDCCD_SDA is a 3.3 V input/output that is 5 V tolerant.
20	DDCD_SCL	Digital input	HDCP Slave Serial Clock Port D. DDCCD_SCL is a 3.3 V input that is 5 V tolerant.
21	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
22	CGND	Ground	TVDD and CVDD Ground.
23	RXD_C–	HDMI input	Digital Input Clock Complement of Port D in the HDMI Interface.
24	RXD_C+	HDMI input	Digital Input Clock True of Port D in the HDMI Interface.
25	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
26	RXD_0–	HDMI input	Digital Input Channel 0 Complement of Port D in the HDMI Interface.
27	RXD_0+	HDMI input	Digital Input Channel 0 True of Port D in the HDMI Interface.
28	CGND	Ground	TVDD and CVDD Ground.
29	RXD_1–	HDMI input	Digital Input Channel 1 Complement of Port D in the HDMI Interface.
30	RXD_1+	HDMI input	Digital Input Channel 1 True of Port D in the HDMI Interface.
31	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
32	RXD_2–	HDMI input	Digital Input Channel 2 Complement of Port D in the HDMI Interface.
33	RXD_2+	HDMI input	Digital Input Channel 2 True of Port D in the HDMI Interface.
34	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
35	CGND	Ground	TVDD and CVDD Ground.
36	TXPVDD	Power	1.8 V Power Supply for Digital and I/O Power Supply. This pin supplies power to the digital logic and I/Os. It should be filtered and as quiet as possible.
37	TXPLVDD	Power	1.8 V Power Supply.
38	TXGND	Ground	TXPVDD Ground.
39	TXPGND	Ground	TXPLVDD Ground.
40	EXT_SWING	Analog input	This pin sets the internal reference currents. Place an 887 Ω resistor (1% tolerance) between this pin and ground.
41	HPD_ARC–	Analog input	Hot Plug Detect Signal. This pin indicates to the interface whether the receiver is connected. It supports 1.8 V to 5 V CMOS logic levels.
42	ARC+	Analog input	Audio Return Channel Input (5 V Tolerant).
43	TXDDC_SDA	Digital I/O	Serial Port Data I/O to Receiver. This pin serves as the master to the DDC bus. It supports a 5 V CMOS logic level.
44	TXDDC_SCL	Digital output	Serial Port Data Clock to Receiver. This pin serves as the master clock for the DDC bus. It supports a 5 V CMOS logic level.
45	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.
46	TXGND	Ground	TXAVDD Ground.
47	TXC–	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
48	TXC+	HDMI output	Differential Clock Output. Differential clock output at the TMDS clock rate; supports TMDS logic level.
49	TXGND	Ground	TXAVDD Ground.
50	TX0–	HDMI output	Differential Output Channel 0 Complement. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
51	TX0+	HDMI output	Differential Output Channel 0 True. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
52	TXGND	Ground	TXAVDD Ground.
53	TX1–	HDMI output	Differential Output Channel 1 Complement. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
54	TX1+	HDMI output	Differential Output Channel 1 True. Differential output of the red data at 10x the pixel clock rate; supports TMDS logic level.
55	TXAVDD	Power	1.8 V Power Supply for TMDS Outputs.

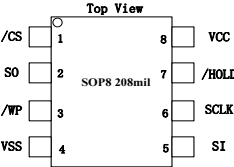
Pin No.	Mnemonic	Type	Description
99	PGND	Ground	PVDD Ground.
100	PVDD	Power	PLL Supply Voltage (1.8 V).
101	XTAL	Miscellaneous analog	Input pin for 28.63636 MHz crystal or an external 1.8 V 28.63636 MHz clock oscillator source to clock the ADV7623.
102	XTAL1	Miscellaneous analog	Crystal Output Pin. This pin should be left floating if a clock oscillator is used.
103	PVDD	Power	PLL Supply Voltage (1.8 V).
104	PGND	Ground	PVDD Ground.
105	HP_CTRLA	Digital output	Hot Plug Detect for Port A.
106	SV_DET A	Digital input	5 V Detect Pin for Port A in the HDMI Interface.
107	RTERM	Miscellaneous analog	This pin sets the internal termination resistance. A 500 Ω resistor between this pin and ground should be used.
108	DDCA_SDA	Digital I/O	HDCP Slave Serial Data Port A. DDCA_SDA is a 3.3 V input/output that is 5 V tolerant.
109	DDCA_SCL	Digital input	HDCP Slave Serial Clock Port A. DDCA_SCL is a 3.3 V input that is 5 V tolerant.
110	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
111	CGND	Ground	TVDD and CVDD Ground.
112	RXA_C-	HDMI input	Digital Input Clock Complement of Port A in the HDMI Interface.
113	RXA_C+	HDMI input	Digital Input Clock True of Port A in the HDMI Interface.
114	SV_DET B	Power	Receiver Terminator Supply Voltage (3.3 V).
115	RXA_0-	HDMI input	Digital Input Channel 0 Complement of Port A in the HDMI Interface.
116	RXA_0+	HDMI input	Digital Input Channel 0 True of Port A in the HDMI Interface.
117	CGND	Ground	TVDD and CVDD Ground.
118	RXA_1-	HDMI input	Digital Input Channel 1 Complement of Port A in the HDMI Interface.
119	RXA_1+	HDMI input	Digital Input Channel 1 True of Port A in the HDMI Interface.
120	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
121	RXA_2-	HDMI input	Digital Input Channel 2 Complement of Port A in the HDMI Interface.
122	RXA_2+	HDMI input	Digital Input Channel 2 True of Port A in the HDMI Interface.
123	HP_CTRLB	Digital output	Hot Plug Detect for Port B.
124	SV_DET B	Digital input	5 V Detect Pin for Port B in the HDMI Interface.
125	DGND	Ground	DVDD Ground.
126	DVDD	Power	Digital Supply Voltage (1.8 V).
127	DDCB_SDA	Digital I/O	HDCP Slave Serial Data Port B. DDCB_SDA is a 3.3 V input/output that is 5 V tolerant.
128	DDCB_SCL	Digital input	HDCP Slave Serial Clock Port B. DDCB_SCL is a 3.3 V input that is 5 V tolerant.
129	CVDD	Power	Receiver Comparator Supply Voltage (1.8 V).
130	CGND	Ground	TVDD and CVDD Ground.
131	RXB_C-	HDMI input	Digital Input Clock Complement of Port B in the HDMI Interface.
132	RXB_C+	HDMI input	Digital Input Clock True of Port B in the HDMI Interface.
133	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
134	RXB_0-	HDMI input	Digital Input Channel 0 Complement of Port B in the HDMI Interface.
135	RXB_0+	HDMI input	Digital Input Channel 0 True of Port B in the HDMI Interface.
136	CGND	Ground	TVDD and CVDD Ground.
137	RXB_1-	HDMI input	Digital Input Channel 1 Complement of Port B in the HDMI Interface.
138	RXB_1+	HDMI input	Digital Input Channel 1 True of Port B in the HDMI Interface.
139	TVDD	Power	Receiver Terminator Supply Voltage (3.3 V).
140	RXB_2-	HDMI input	Digital Input Channel 2 Complement of Port B in the HDMI Interface.
141	RXB_2+	HDMI input	Digital Input Channel 2 True of Port B in the HDMI Interface.
142	HP_CTRL C	Digital output	Hot Plug Detect for Port C.
143	SV_DET C	Digital input	5 V Detect Pin for Port C in the HDMI Interface.
144	DDCC_SDA	Digital I/O	HDCP Slave Serial Data Port C. DDCC_SDA is a 3.3 V input/output that is 5 V tolerant.

ADV7623 Block diagram



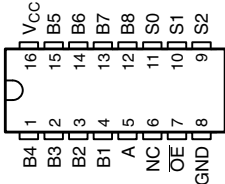
DIGITAL_OSD : IC732

BY25Q32BSSIG (except : E2)
BY25Q64ASSIG (only E2)

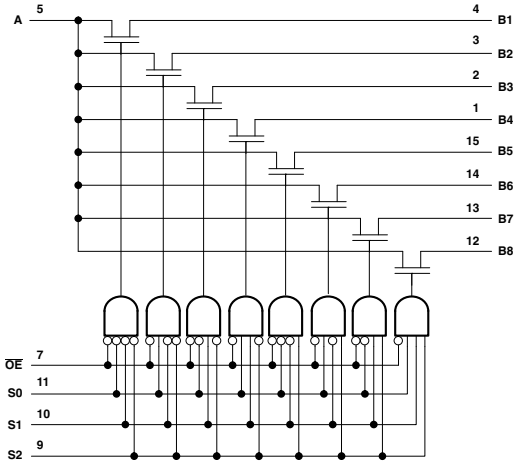


Pin Name	I/O	Description
/CS	I	Chip Select
SO (IO1)	I/O	Serial Output for single bit data Instructions. IO1 for Dual or Quad Instructions.
/WP (IO2)	I/O	Write Protect in single bit or Dual data Instructions. IO2 in Quad mode. The signal has an internal pull-up resistor and may be left unconnected in the host system if not used for Quad Instructions.
VSS		Ground
SI (IO0)	I/O	Serial Input for single bit data Instructions. IO0 for Dual or Quad Instructions.
SCLK	I	Serial Clock
/HOLD (IO3)	I/O	Hold (pause) serial transfer in single bit or Dual data Instructions. IO3 in Quad-I/O mode. The signal has an internal pull-up resistor and may be left unconnected in the host system if not used for Quad Instructions.
VCC		Core and I/O Power Supply

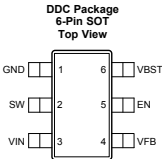
SN74CBT3251PWR (DIGITAL_OSD : IC733)



Block diagram



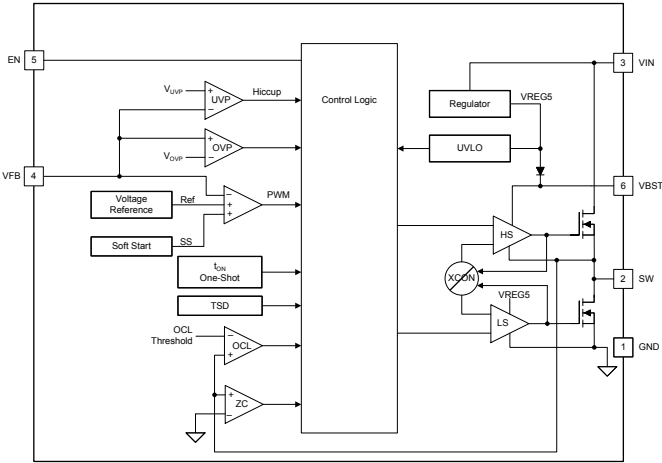
TPS563201 (DIGITAL_DIGITAL SUPPLY : IC741, IC742, IC743, IC744)



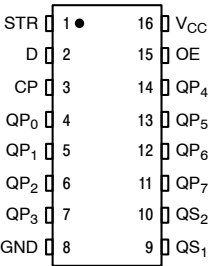
Terminal Functions

PIN		DESCRIPTION
NAME	NUMBER (I/O)	
GND	1(-)	Ground pin Source terminal of low-side power NFET as well as the ground terminal for controller circuit. Connect sensitive VFB to this GND at a single point.
SW	2(O)	Switch node connection between high-side NFET and low-side NFET.
VIN	3(I)	Input voltage supply pin. The drain terminal of high-side power NFET.
VFB	4(I)	Converter feedback input. Connect to output voltage with feedback resistor divider.
EN	5(I)	Enable input control. Active high and must be pulled up to enable the device.
VBST	6(O)	Supply input for the high-side NFET gate drive circuit. Connect 0.1 μ F capacitor between VBST and SW pins.

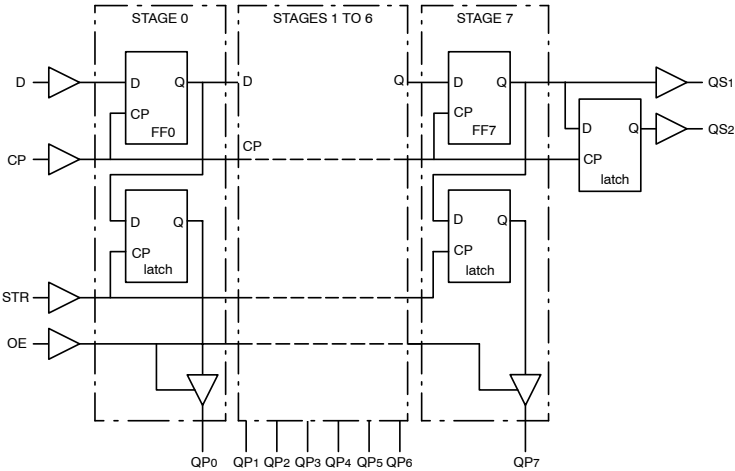
Block diagram



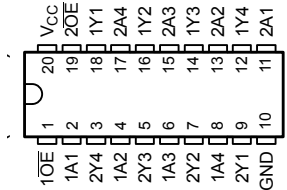
MC74HC4094ADR2G (DIGITAL_MCU : IC752, IC753)



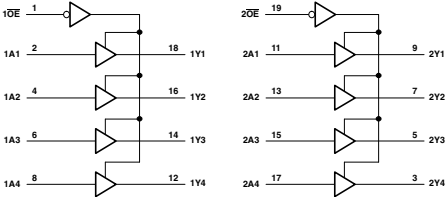
Logic Diagram



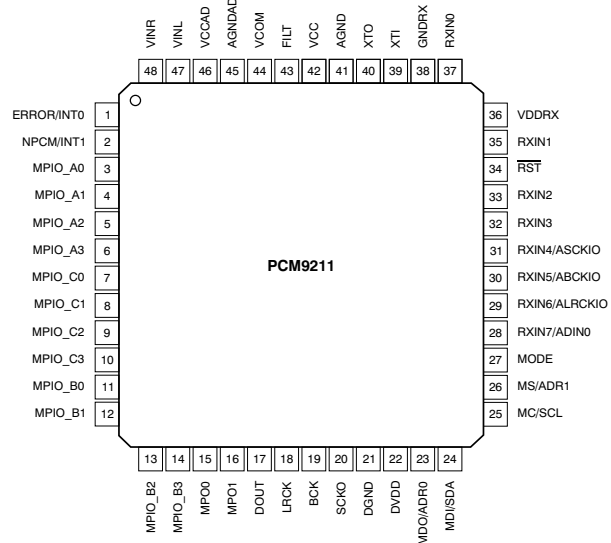
SN74LVC244APWR (DIGITAL_OSD : IC734)
(DIGITAL_PLD : IC772)
(DIGITAL_DSP : IC783)
(DIGITAL_LEGO : IC812)
(DIGITAL_HDMI_TX : IC722)



Block diagram



PCM9211PTR (DIGITAL_DIR : IC761)



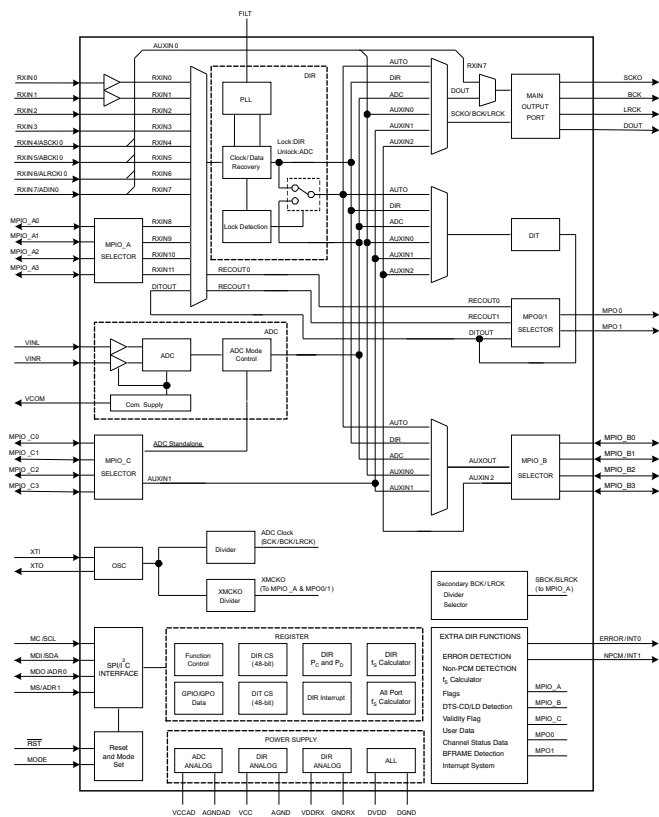
PIN Functions

PIN				DESCRIPTION
NO.	NAME	I/O	5-V TOLERANT	
1	ERROR/INT0	O	No	DIR Error detection output / Interrupt0 output
2	NPCM/INT1	O	No	DIR Non-PCM detection output / Interrupt1 output
3	MPIO_A0	I/O	Yes	Multipurpose I/O, Group A(1)
4	MPIO_A1	I/O	Yes	Multipurpose I/O, Group A(1)
5	MPIO_A2	I/O	Yes	Multipurpose I/O, Group A(1)
6	MPIO_A3	I/O	Yes	Multipurpose I/O, Group A(1)
7	MPIO_C0	I/O	Yes	Multipurpose I/O, Group C(1)
8	MPIO_C1	I/O	Yes	Multipurpose I/O, Group C(1)
9	MPIO_C2	I/O	Yes	Multipurpose I/O, Group C(1)
10	MPIO_C3	I/O	Yes	Multipurpose I/O, Group C(1)
11	MPIO_B0	I/O	Yes	Multipurpose I/O, Group B(1)
12	MPIO_B1	I/O	Yes	Multipurpose I/O, Group B(1)
13	MPIO_B2	I/O	Yes	Multipurpose I/O, Group B(1)
14	MPIO_B3	I/O	Yes	Multipurpose I/O, Group B(1)
15	MPO0	O	No	Multipurpose output 0
16	MPO1	O	No	Multipurpose output 1
17	DOUT	O	No	Main output port, serial digital audio data output
18	LRCK	O	No	Main output port, LR clock output
19	BCK	O	No	Main output port, Bit clock output
20	SCKO	O	No	Main output port, System clock output
21	DGND	–	–	Ground, for digital

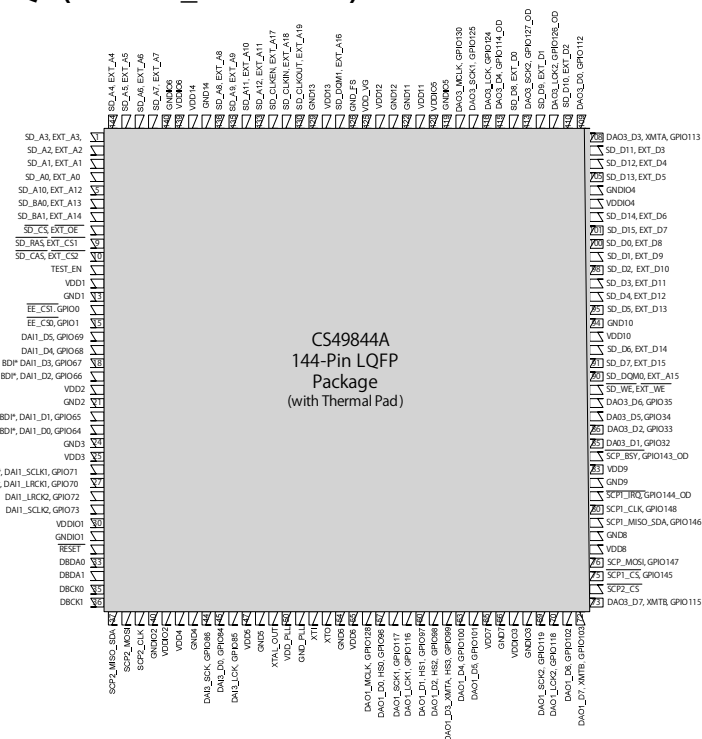
PIN				DESCRIPTION
NO.	NAME	I/O	5-V TOLERANT	
22	DVDD	–	–	Power supply, 3.3 V (typ.), for digital
23	MDO/ADR0	I/O	Yes	Software control I/F, SPI data output / I2C slave address setting0(2)
24	MDI/SDA	I/O	Yes	Software control I/F, SPI data input / I2C data input/output(2) (3)
25	MC/SCL	I	Yes	Software control I/F, SPI clock input / I2C clock input(2)
26	MS/ADR1	I	Yes	Software control I/F, SPI chip select / I2C slave address setting1(2)
27	MODE	I	No	Control mode setting. (see the Serial Control Mode section, Control Mode Pin Setting)
28	RXIN7/ADIN0	I	Yes	Biphase signal, input 7 / AUXIN0, serial audio data input(2)
29	RXIN6/AL-RCKIO	I	Yes	Biphase signal, input 6 / AUXIN0, LR clock input(2)
30	RXIN5/ABCKIO	I	Yes	Biphase signal, input 5 / AUXIN0, bit clock input(2)
31	RXIN4/ASCKIO	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

PCM9211PTR BLOCK DIAGRAM



CS49844A-CQZ (DIGITAL_DSP : IC781)



Before Servicing This Unit

Electrical

Mechanical

Repair Information

Updating

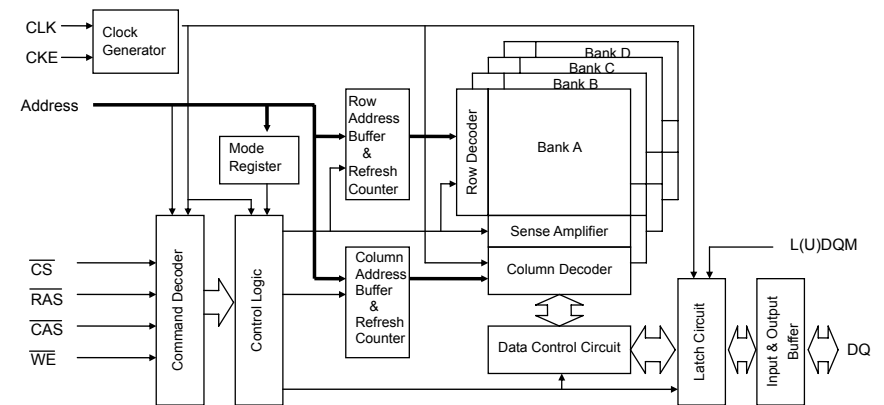
Before Servicing This Unit



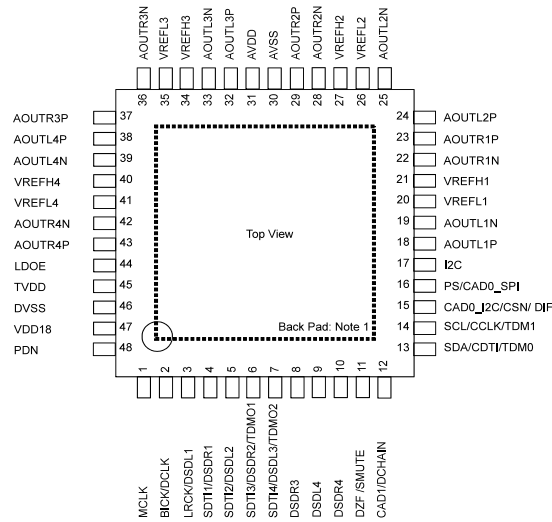
Mechanical



Updating



AK4458VN (DIGITAL_MAIN DAC : IC791)



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	SDT11	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDR1	I	Audio Serial Data Input in DSD mode	
5	SDT12	I	Audio Serial Data Input in PCM mode	Hi-Z
	DSDL2	I	Audio Serial Data Input in DSD mode	
6	SDT13	I	Audio Serial Data Input in PCM mode	100k Ω
	DSDR2	I	Audio Serial Data Input in DSD mode	Pull down
	TDM01	O	Audio Serial Data Output in Daisy Chain mode	
7	SDT14	I	Audio Serial Data Input in PCM mode	100k Ω
	DSDL3	I	Audio Serial Data Input in DSD mode	Pull down
	TDM02	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 I2C Bus or 3-wire serial control mode	100k Ω
	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.	Pull down
12	CAD1	I	Chip Address 0 Pin in I C Bus or 3-wire serial control mode	Hi-Z
	DCHAIN	I	Daisy Chain Mode select pin in Parallel control mode.	
13	SDA	I/O	Control Data Pin in I2C Bus serial control mode	
	CDTI	I	Control Data Input Pin in 3-wire serial control mode	Hi-Z
	TDM0	I	TDM Mode select pin in Parallel control mode.	
14	SCL	I	Control Data Clock Pin in I2C Bus serial control mode	Hi-Z
	CCLK	I	Control Data Clock Pin in 3-wire serial control mode	
	TDM1	I	TDM Mode select pin in Parallel control mode.	

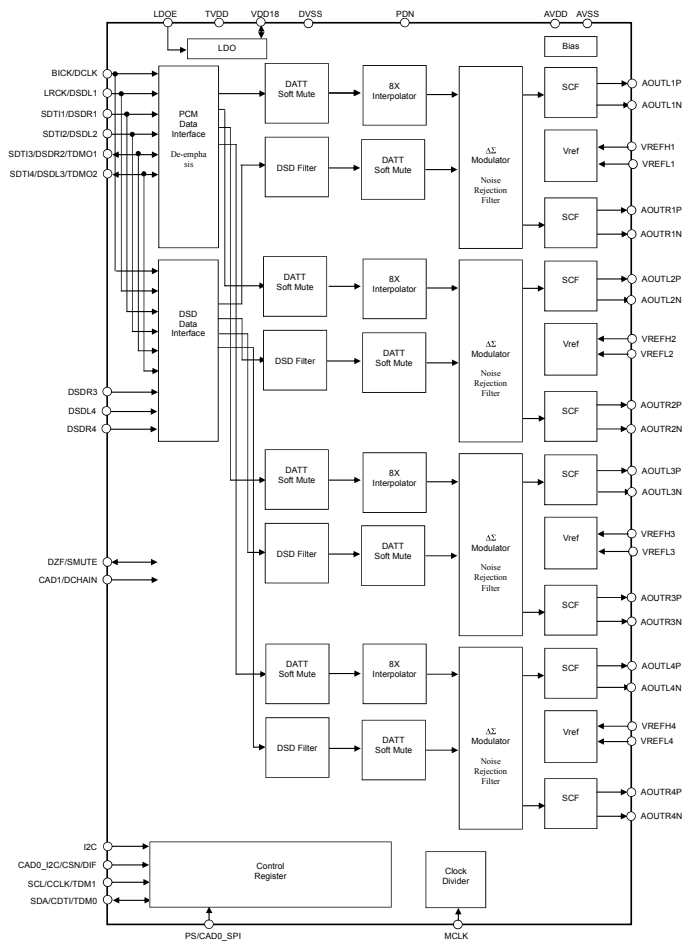
No.	Pin Name	I/O	Function	PD State
15	CAD0_I2C	I	Chip Address 0 Pin in I2C Bus serial control mode	Hi-Z
	CSN	I	Chip Select Pin in 3-wire serial control mode	
	DIF	I	Audio Data Format Select in Parallel control mode. "L": 32-bit MSB, "H": 32-bit I2S	
16	PS	I	(I2C pin = "H") Control Mode Select Pin "L": 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)
		I	1.8V Power Input Pin (LDOE pin = "L")	
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.

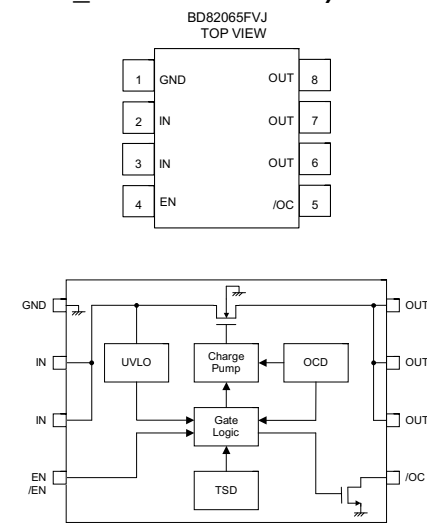
Note 4. This pin outputs DVSS when the LDOE pin = "H" and Hi-z when the LDOE pin = "L".

FUNCTIONAL BLOCK DIAGRAM

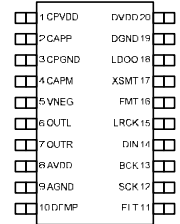


BD82065FVJ-E2 (DIGITAL_NETWORK : IC814)

Block diagram



PCM5100APWR (DIGITAL_NETWORK : IC760, IC765)

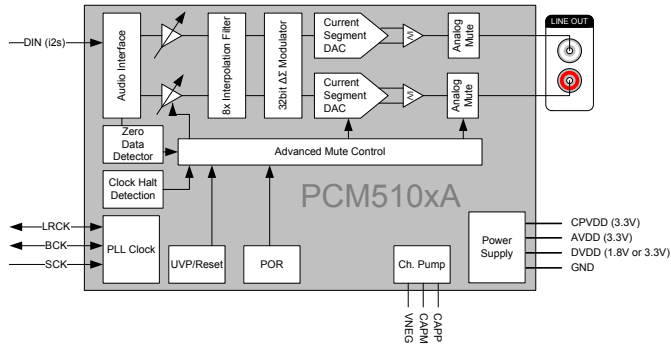


Pin Functions

PIN		TYPE	DESCRIPTION
NAME	NO.		
AGND	9	—	Analog ground
AVDD	8	P	Analog power supply, 3.3 V
BCK	13	I	Audio data bit clock input ⁽¹⁾
CAPM	4	O	Charge pump flying capacitor terminal for negative rail
CAPP	2	O	Charge pump flying capacitor terminal for positive rail
CPGND	3	—	Charge pump ground
CPVDD	1	P	Charge pump power supply, 3.3 V
DEMP	10	I	De-emphasis control for 44.1-kHz sampling rate ⁽¹⁾ ; Off (Low) / On (High)
DGND	19	—	Digital ground
DIN	14	I	Audio data input ⁽¹⁾
DVDD	20	P	Digital power supply, 1.8 V or 3.3 V
FLT	11	I	Filter select : Normal latency (Low) / Low latency (High)
FMT	16	I	Audio format selection : I ² S (Low) / Left-justified (High)
LDOO	18	P	Internal logic supply rail terminal for decoupling, or external 1.8 V supply terminal
LRCK	15	I	Audio data word clock input ⁽¹⁾
OUTL	6	O	Analog output from DAC left channel
OUTR	7	O	Analog output from DAC right channel
SCK	12	I	System clock input ⁽¹⁾
VNEG	5	O	Negative charge pump rail terminal for decoupling, -3.3 V
XSMT	17	I	Soft mute control ⁽¹⁾ ; Soft mute (Low) / soft un-mute (High)

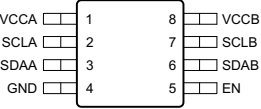
(1) Failsafe LVCMOS Schmitt trigger input

Block diagram



TCA9517DGKR (F-HDMI : IC311)

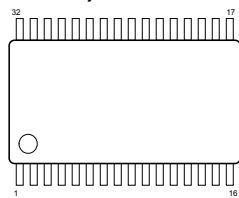
DGK Package
8-Pin VSSOP
Top View



Terminal Functions

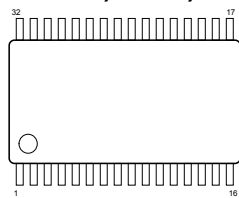
PIN		TYPE	DESCRIPTION
NO.	NAME		
1	VCCA	Supply	A-side supply voltage (0.9 V to 5.5 V)
2	SCLA	Input/Output	Serial clock bus, A-side. Connect to V _{CCA} through a pull-up resistor. If unused, connect directly to ground.
3	SDAA	Input/Output	Serial data bus, A-side. Connect to V _{CCA} through a pull-up resistor. If unused, connect directly to ground.
4	GND	Ground	Ground
5	EN	Input	Active-high repeater enable input
6	SDAB	Input/Output	Serial data bus, B-side. Connect to V _{CCB} through a pull-up resistor. If unused, connect directly to ground.
7	SCLB	Input/Output	Serial clock bus, B-side. Connect to V _{CCB} through a pull-up resistor. If unused, connect directly to ground.
8	VCCB	Supply	B-side and device supply voltage (2.7 V to 5.5 V)

NJU72343 (DIGITAL_ANALOG : IC822)



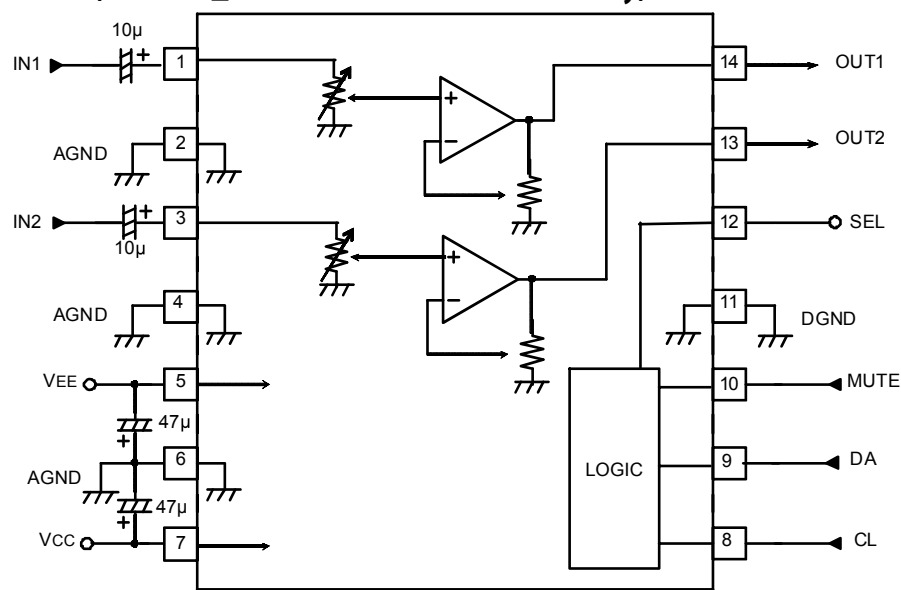
No.	Symbol	Function	No.	Symbol	Function
1	AREF	Analog reference potential	17	DATA	IC control data input
2	ADR	Address selection	18	CLOCK	IC control clock input
3	InA2	Ach input2	19	VDDOUT	Digital power supply output
4	InB2	Bch input2	20	AREF	Analog reference potential
5	InA1	Ach input1	21	OutH	Hch output
6	InB1	Bch input1	22	OutG	Gch output
7	InC	Cch input	23	OutF	Fch output
8	InD	Dch input	24	OutE	Ech output
9	InE	Ech input	25	OutD	Dch output
10	InF	Fch input	26	OutC	Cch output
11	InG1	Gch input1	27	OutB	Bch output
12	InH1	Hch input1	28	OutA	Ach output
13	InG2	Cch input2	29	AREF	Analog reference potential
14	InH2	Dch input2	30	V-	Power supply(-)
15	MUTE	External mute control	31	AREF	Analog reference potential
16	REF	Digital reference potential	32	V+	Power supply(+)

NJU72750A (DIGITAL_ANALOG : IC821, IC825)

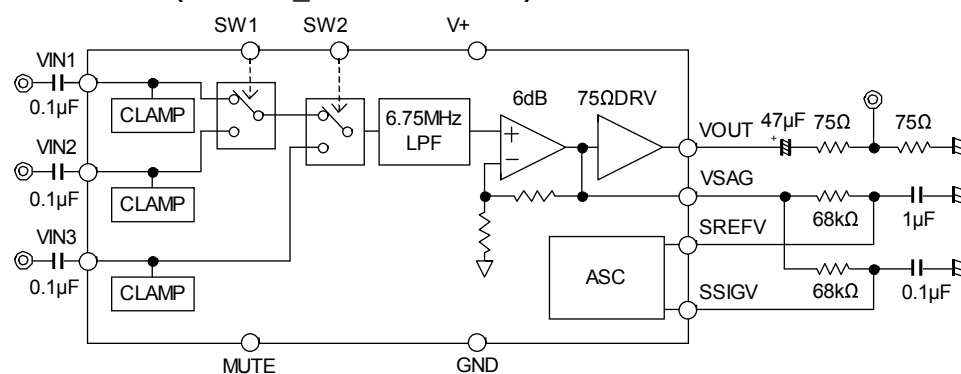


No.	Symbol	Function	No.	Symbol	Function
1	V+	Power supply(+)	17	DATA	IC control data input
2	InA1	Ach input1	18	CLOCK	IC control clock input
3	InB1	Bch input1	19	NC	-
4	InA2	Ach input2	20	NC	-
5	InB2	Bch input2	21	OutB3	Bch output3
6	InA3	Ach input3	22	OutA3	Ach output3
7	InB3	Bch input3	23	REF_B	Bch reference potential
8	InA4	Ach input4	24	OutB2	Bch output2
9	InB4	Bch input4	25	OutA2	Ach output2
10	InA5	Ach input5	26	REF_A	Ach reference potential
11	InB5	Bch input5	27	OutB1	Bch output1
12	InA6	Ach input6	28	OutA1	Ach output1
13	InB6	Bch input6	29	NC	-
14	InA7	Ach input7	30	ADR0	Address selection pin 0
15	InB7	Bch input7	31	ADR1	Address selection pin 1
16	REF	BIAS reference potential	32	V-	Power supply(-)

BD3812F (DIGITAL_ANALOG : IC911 X1600 E3 only)



NJM41050V (DIGITAL_ANALOG : IC881)



TOP268VG (SMPS : IC601)

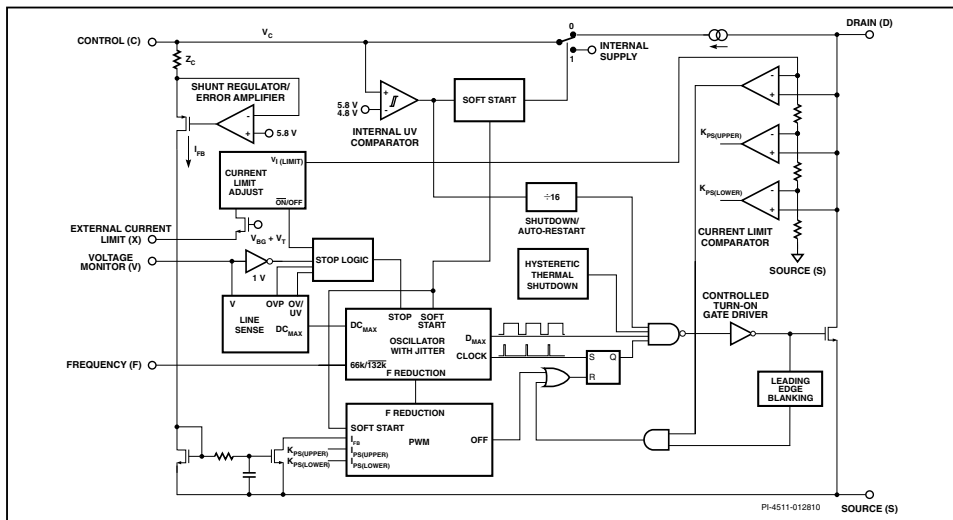


Figure 3. Functional Block Diagram.

Pin Functional Description

DRAIN (D) Pin:

High-voltage power MOSFET DRAIN pin. The internal start-up bias current is drawn from this pin through a switched high-voltage current source. Internal current limit sense point for drain current.

CONTROL (C) Pin:

Error amplifier and feedback current input pin for duty cycle control. Internal shunt regulator connection to provide internal bias current during normal operation. It is also used as the connection point for the supply bypass and auto-restart/compensation capacitor.

EXTERNAL CURRENT LIMIT (X) Pin:

Input pin for external current limit adjustment remote-ON/OFF and device reset. A connection to SOURCE pin disables all functions on this pin. This pin should not be left floating.

VOLTAGE MONITOR (V) Pin:

Input for OV, UV, line feed-forward with D_{C_MAX} reduction, output overvoltage protection (OVP), remote-ON/OFF. A connection to the SOURCE pin disables all functions on this pin. This pin should not be left floating.

FREQUENCY (F) Pin :

Input pin for selecting switching frequency 132 kHz if connected to SOURCE pin and 66 kHz if connected to CONTROL pin. This pin should not be left floating.

SOURCE (S) Pin:

Output MOSFET source connection for high-voltage power return. Primary-side control circuit common and reference point.

NO CONNECTION (NC) Pin:

Internally not connected, floating potential pin.

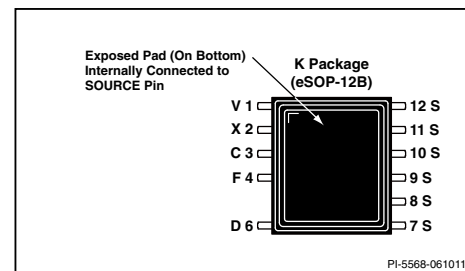
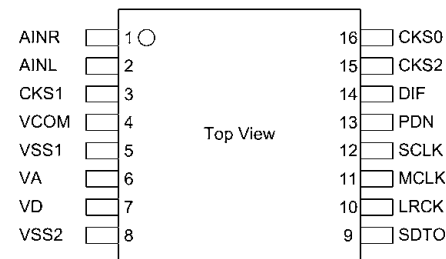


Figure 4. Pin Configuration (Top View).

AK5358BET(DIGITAL_DIR : IC764)

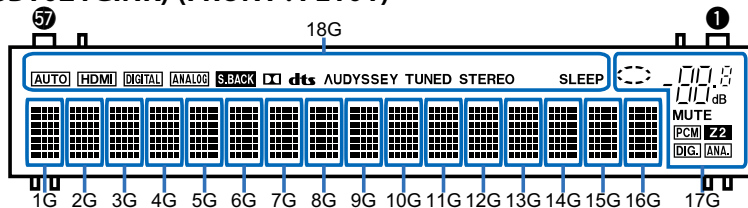


AK5358BET Pin Function

No.	Pin Name	I/O	Function
1	AINR	I	Rch Analog Input Pin
2	AINL	I	Lch Analog Input Pin
3	CKS1	I	Mode Select 1 Pin
4	VCOM	O	Common Voltage Output Pin, $V_A/2$ Bias voltage of ADC input.
5	VSS1	-	Ground Pin
6	VA	-	Analog Power Supply Pin, 4.5 ~ 5.5V
7	VD	-	Digital Power Supply Pin, 2.7 ~ 5.5V
8	VSS2	-	Ground Pin
9	SDTO	O	Audio Serial Data Output Pin "L" Output at Power-down mode.
10	LRCK	I/O	Output Channel Clock Pin "L" Output in Master Mode at Power-down mode.
11	MCLK	I	Master Clock Input Pin
12	SCLK	I/O	Audio Serial Data Clock Pin "L" Output in Master Mode at Power-down mode.
13	PDN	I	Power Down Mode & Reset Pin "H": Power up, "L": Power down & Reset
14	DIF	I	Audio Interface Format Pin "H": 24bit I ² S Compatible, "L": 24bit MSB justified
15	CKS2	I	Mode Select 2 Pin
16	CKS0	I	Mode Select 0 Pin

2. FL DISPLAY

FLD (018BT021GINK) (FRONT : FL101)



PIN CONNECTION

CONNECTION	PIN NO.
F2	57
NP	56
NP	55
NP	54
NP	53
LGND	52
PGND	51

CONNECTION	PIN NO.
VDD	50
OSC	49
RESET	48
CS	47
CP	46
DA	45
TSA	44
TSB	43
NX	42
NX	41
NX	40
NX	39
NX	38
NX	37
NX	36
NX	35
NX	34
NX	33
NX	32
NX	31
NX	30
NX	29
NX	28
NX	27
NX	26
NX	25
NX	24
NX	23
NX	22
NX	21
NX	20
NX	19
NX	18
NX	17
NX	16
NX	15
NX	14
NX	13
NX	12
NX	11
NX	10
NX	9
18G	8
17G	7
Q17G	6
Q18G	5
NP	4
NP	3
NP	2
F1	1

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.

ANODE CONNECTION

	1G	2G	3G	4G	5G	6G	7G	8G	9G	10G	11G	12G	13G	14G	15G	16G	17G(AD3)	18G(AD4)
D0	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	1-1	S9	-
D1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	2-1	3d	-
D2	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	3-1	2d	-
D3	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	4-1	3e	-
D4	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	5-1	2e	-
D5	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	1-2	3c	-
D6	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2-2	2c	-
D7	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3-2	3g	-
D8	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	4-2	2g	-
D9	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	5-2	3f	-
D10	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	1-3	2f	-
D11	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	2-3	3b	-
D12	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	3-3	2b	-
D13	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	4-3	3a	-
D14	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	5-3	2a	-
D15	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	1-4	Dp	-
D16	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	2-4	dB	-
D17	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	3-4	1d	-
D18	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	4-4	1e	-
D19	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	5-4	1c	-
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D21	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	2-5	1f	-
D22	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	3-5	1b	-
D23	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	4-5	1a	[AUTO]
D24	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	5-5	S1	[HDMI]
D25	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	1-6	S2	[DIGITAL]
D26	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	2-6	S3	[ANALOG]
D27	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	3-6	S4	[S.BACK]
D28	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	4-6	S5	[dts]
D29	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	5-6	S6	[AUDYSSEY]
D30	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	1-7	S7	TUNED
D31	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	2-7	S8	STEREO
D32	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	3-7	MUTE	RDS
D33	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	4-7	[PCM]	SLEEP
D34	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	5-7	[Z2]	-
AD1	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	[DIG.]	-
AD2	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	-	[ANA.]	-

3. Remote Code Table

FORMAT SHARP

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ~ C5): 0 1 0 0 0 , EXTENSION BIT (C12,C13): 1 1

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0230000	0 0 0 0 0		RCSHP0230016	0 0 0 0 1	FR LEVEL DOWN
RCSHP0230001	1 0 0 0 0	POWER	RCSHP0230017	1 0 0 0 1	
RCSHP0230002	0 1 0 0 0	FL LEVEL UP	RCSHP0230018	0 1 0 0 1	
RCSHP0230003	1 1 0 0 0	PHONO	RCSHP0230019	1 1 0 0 1	
RCSHP0230004	0 0 1 0 0	CD	RCSHP0230020	0 0 1 0 1	
RCSHP0230005	1 0 1 0 0	TUNER	RCSHP0230021	1 0 1 0 1	
RCSHP0230006	0 1 1 0 0		RCSHP0230022	0 1 1 0 1	SR LEVEL UP
RCSHP0230007	1 1 1 0 0	FL LEVEL DOWN	RCSHP0230023	1 1 1 0 1	SR LEVEL DOWN
RCSHP0230008	0 0 0 1 0	CBUSAT	RCSHP0230024	0 0 0 1 1	VIDEO SELECT
RCSHP0230009	1 0 0 1 0	TV AUDIO	RCSHP0230025	1 0 0 1 1	
RCSHP0230010	0 1 0 1 0	Blu-ray	RCSHP0230026	0 1 0 1 1	
RCSHP0230011	1 1 0 1 0	FR LEVEL UP	RCSHP0230027	1 1 0 1 1	
RCSHP0230012	0 0 1 1 0	AUX	RCSHP0230028	0 0 1 1 1	INPUT MODE ANALOG
RCSHP0230013	1 0 1 1 0	GAME	RCSHP0230029	1 0 1 1 1	CURSOR RIGHT
RCSHP0230014	0 1 1 1 0	MEDIA PLAYER	RCSHP0230030	0 1 1 1 1	STATUS
RCSHP0230015	1 1 1 1 0		RCSHP0230031	1 1 1 1 1	INFO

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0230032	0 0 0 0 1	ENTER	RCSHP0230048	0 0 0 0 1	MUTING
RCSHP0230033	1 0 0 0 1	POWER ON	RCSHP0230049	1 0 0 0 1	MASTER VOLUME UP
RCSHP0230034	0 1 0 0 1	POWER OFF	RCSHP0230050	0 1 0 0 1	MASTER VOLUME DOWN
RCSHP0230035	1 1 0 0 1	DVD	RCSHP0230051	1 1 0 0 1	SL LEVEL UP
RCSHP0230036	0 0 1 0 1	STANDARD (DOLBY/DTS SURR.)	RCSHP0230052	0 0 1 0 1	SL LEVEL DOWN
RCSHP0230037	1 0 1 0 1	SW LEVEL DOWN	RCSHP0230053	1 0 1 0 1	CENTER LEVEL UP
RCSHP0230038	0 1 1 0 1	DSP SIMULATION	RCSHP0230054	0 1 1 0 1	CENTER LEVEL DOWN
RCSHP0230039	1 1 1 0 1	SB/SBL LEVEL UP	RCSHP0230055	1 1 1 0 1	SB/R LEVEL UP
RCSHP0230040	0 0 0 1 1		RCSHP0230056	0 0 0 1 1	SB/R LEVEL DOWN
RCSHP0230041	1 0 0 1 1		RCSHP0230057	1 0 0 1 1	tone CONTROL OFF
RCSHP0230042	0 1 0 1 1		RCSHP0230058	0 1 0 1 1	tone CONTROL ON
RCSHP0230043	1 1 0 1 1	SB/SBL LEVEL DOWN	RCSHP0230059	1 1 0 1 1	
RCSHP0230044	0 0 1 1 1	SW LEVEL UP	RCSHP0230060	0 0 1 1 1	
RCSHP0230045	1 0 1 1 1	FRONT SPEAKER ※ X1600H only	RCSHP0230061	1 0 1 1 1	
RCSHP0230046	0 1 1 1 1	SP-A FRONT ※ X1600H only	RCSHP0230062	0 1 1 1 1	
RCSHP0230047	1 1 1 1 1	SP-B FRONT ※ X1600H only	RCSHP0230063	1 1 1 1 1	

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ~ C5): 0 0 1 1 0 , EXTENSION BIT (C12,C13): 0 1

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0C20000	0 0 0 0 0	ALL BASS DOWN	RCSHP0C20016	0 0 0 0 1	ZONE2 CD
RCSHP0C20001	1 0 0 0 0		RCSHP0C20017	1 0 0 0 1	ZONE2 TUNER
RCSHP0C20002	0 1 0 0 0	SURROUND BACK	RCSHP0C20018	0 1 0 0 1	ZONE2 Blu-ray
RCSHP0C20003	1 1 0 0 0	MASTER VOL PRESET1 (0dB)	RCSHP0C20019	1 1 0 0 1	ZONE2 AUX
RCSHP0C20004	0 0 1 0 0		RCSHP0C20020	0 0 1 0 1	ZONE2 GAME
RCSHP0C20005	1 0 1 0 0	MASTER VOL PRESET2 (20dB)	RCSHP0C20021	1 0 1 0 1	
RCSHP0C20006	0 1 1 0 0	MASTER VOL PRESET3 (40dB)	RCSHP0C20022	0 1 1 0 1	ZONE2 PRESET UP
RCSHP0C20007	1 1 1 0 0	ZONE2 VOL P1 (0dB)	RCSHP0C20023	1 1 1 0 1	ZONE2 PRESET DOWN
RCSHP0C20008	0 0 0 1 0	ZONE2 VOL P2 (20dB)	RCSHP0C20024	0 0 0 1 0	
RCSHP0C20009	1 0 0 1 0	ZONE2 VOL P3 (40dB)	RCSHP0C20025	1 0 0 1 0	ZONE2 MEDIA PLAYER
RCSHP0C20010	0 1 0 1 0	ZONE2 CBL/SAT	RCSHP0C20026	0 1 0 1 0	
RCSHP0C20011	1 1 0 1 0		RCSHP0C20027	1 1 0 1 0	ZONE2 TV AUDIO
RCSHP0C20012	0 0 1 1 0	ZONE3 VOL PRESET1 (0dB)	RCSHP0C20028	0 0 1 1 0	
RCSHP0C20013	1 0 1 1 0	ZONE2 VOL UP	RCSHP0C20029	1 0 1 1 0	STEREO
RCSHP0C20014	0 1 1 1 0	ZONE2 VOL DOWN	RCSHP0C20030	0 1 1 1 0	DIRECT
RCSHP0C20015	1 1 1 1 0	ZONE2 PHONO	RCSHP0C20031	1 1 1 1 0	ZONE3 VOL PRESET2 (0dB)

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0C20032	0 0 0 0 1	SETUP MENU	RCSHP0C20048	0 0 0 0 1	
RCSHP0C20033	1 0 0 0 1		RCSHP0C20049	1 0 0 0 1	
RCSHP0C20034	0 1 0 0 1	ZONE3 VOL PRESET2 (0dB)	RCSHP0C20050	0 1 0 0 1	
RCSHP0C20035	1 1 0 0 1	CURSOR UP	RCSHP0C20051	1 1 0 0 1	
RCSHP0C20036	0 0 1 0 1	CURSOR DOWN	RCSHP0C20052	0 0 1 0 1	
RCSHP0C20037	1 0 1 0 1		RCSHP0C20053	1 0 1 0 1	
RCSHP0C20038	0 1 1 0 1		RCSHP0C20054	0 1 1 0 1	INPUT MODE
RCSHP0C20039	1 1 1 0 1		RCSHP0C20055	1 1 1 0 1	ALL TREBLE UP
RCSHP0C20040	0 0 0 1 1	MULTI CH STEREO	RCSHP0C20056	0 0 0 1 1	ALL TREBLE DOWN
RCSHP0C20041	1 0 0 1 1		RCSHP0C20057	1 0 0 1 1	
RCSHP0C20042	0 1 0 1 1		RCSHP0C20058	0 1 0 1 1	
RCSHP0C20043	1 1 0 1 1		RCSHP0C20059	1 1 0 1 1	
RCSHP0C20044	0 0 1 1 1		RCSHP0C20060	0 0 1 1 1	
RCSHP0C20045	1 0 1 1 1		RCSHP0C20061	1 0 1 1 1	
RCSHP0C20046	0 1 1 1 1		RCSHP0C20062	0 1 1 1 1	ZONE2 DVD
RCSHP0C20047	1 1 1 1 1	CH LEVEL	RCSHP0C20063	1 1 1 1 1	ALL BASS UP

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ~ C5): 0 0 1 1 0 , EXTENSION BIT (C12,C13): 1 0

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0C10032	0 0 0 0 1		RCSHP0C10048	0 0 0 0 1	
RCSHP0C10033	1 0 0 0 1		RCSHP0C10049	1 0 0 0 1	
RCSHP0C10034	0 1 0 0 1		RCSHP0C10050	0 1 0 0 1	
RCSHP0C10035	1 1 0 0 1		RCSHP0C10051	1 1 0 0 1	
RCSHP0C10036	0 0 1 0 1		RCSHP0C10052	0 0 1 0 1	
RCSHP0C10037	1 0 1 0 1		RCSHP0C10053	1 0 1 0 1	
RCSHP0C10038	0 1 1 0 1		RCSHP0C10054	0 1 1 0 1	
RCSHP0C10039	1 1 1 0 1		RCSHP0C10055	1 1 1 0 1	
RCSHP0C10040	0 0 0 1 1		RCSHP0C10056	0 0 0 1 1	
RCSHP0C10041	1 0 0 1 1		RCSHP0C10057	1 0 0 1 1	
RCSHP0C10042	0 1 0 1 1		RCSHP0C10058	0 1 0 1 1	
RCSHP0C10043	1 1 0 1 1		RCSHP0C10059	1 1 0 1 1	
RCSHP0C10044	0 0 1 1 1		RCSHP0C10060	0 0 1 1 1	
RCSHP0C10045	1 0 1 1 1		RCSHP0C10061	1 0 1 1 1	
RCSHP0C10046	0 1 1 1 1		RCSHP0C10062	0 1 1 1 1	
RCSHP0C10047	1 1 1 1 1		RCSHP0C10063	1 1 1 1 1	CURSOR LEFT

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ~ C5): 0 0 1 1 0 , EXTENSION BIT (C12,C13): 1 1

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0C30000	0 0 0 0 0		RCSHP0C30016	0 0 0 0 1	
RCSHP0C30001	1 0 0 0 0	1	RCSHP0C30017	1 0 0 0 1	
RCSHP0C30002	0 1 0 0 0	2	RCSHP0C30018	0 1 0 0 1	DIRECT SEARCH (RDS SEARCH ※ EU only)
RCSHP0C30003	1 1 0 0 0	3	RCSHP0C30019	1 1 0 0 1	
RCSHP0C30004	0 0 1 0 0	4	RCSHP0C30020	0 0 1 0 1	PTY ※ EU only
RCSHP0C30005	1 0 1 0 0	5	RCSHP0C30021	1 0 1 0 1	TUNER PRESET DOWN
RCSHP0C30006	0 1 1 0 0	6	RCSHP0C30022	0 1 1 0 1	TUNER PRESET UP
RCSHP0C30007	1 1 1 0 0	7	RCSHP0C30023	1 1 1 0 1	TUNER BAND
RCSHP0C30008	0 0 0 1 0	8	RCSHP0C30024	0 0 0 1 1	TUNER TUNING MODE
RCSHP0C30009	1 0 0 1 0	9	RCSHP0C30025	1 0 0 1 1	TUNER TUNING UP
RCSHP0C30010	0 1 0 1 0	0	RCSHP0C30026	0 1 0 1 1	TUNER TUNING DOWN
RCSHP0C30011	1 1 0 1 0		RCSHP0C30027	1 1 0 1 1	
RCSHP0C30012	0 0 1 1 0	TUNER MEMORY	RCSHP0C30028	0 0 1 1 1	
RCSHP0C30013	1 0 1 1 0	TUNER SHIFT	RCSHP0C30029	1 0 1 1 1	
RCSHP0C30014	0 1 1 1 0	RT ※ EU only	RCSHP0C30030	0 1 1 1 1	
RCSHP0C30015	1 1 1 1 0		RCSHP0C30031	1 1 1 1 1	DIMMER

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ~ C5): 0 1 0 0 0 , EXTENSION BIT (C12,C13): 1 0

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0210000	0 0 0 0 0		RCSHP0210016	0 0 0 0 1	
RCSHP0210001	1 0 0 0 0		RCSHP0210017	1 0 0 0 1	
RCSHP0210002	0 1 0 0 0		RCSHP0210018	0 1 0 0 1	ZONE3 TV AUDIO
RCSHP0210003	1 1 0 0 0		RCSHP0210019	1 1 0 0 1	ZONE3 CBL/SAT
RCSHP0210004	0 0 1 0 0		RCSHP0210020	0 0 1 0 1	ZONE3 GAME
RCSHP0210005	1 0 1 0 0		RCSHP0210021	1 0 1 0 1	ZONE3 MEDIA PLAYER
RCSHP0210006	0 1 1 0 0		RCSHP0210022	0 1 1 0 1	
RCSHP0210007	1 1 1 0 0		RCSHP0210023	1 1 1 0 1	ZONE3 AUX
RCSHP0210008	0 0 0 1 0	ZONE3 TUNER	RCSHP0210024	0 0 0 1 1	
RCSHP0210009	1 0 0 1 0	ZONE3 PHONO	RCSHP0210025	1 0 0 1 1	
RCSHP0210010	0 1 0 1 0	ZONE3 CD	RCSHP0210026	0 1 0 1 1	
RCSHP0210011	1 1 0 1 0		RCSHP0210027	1 1 0 1 1	
RCSHP0210012	0 0 1 1 0		RCSHP0210028	0 0 1 1 1	
RCSHP0210013	1 0 1 1 0		RCSHP0210029	1 0 1 1 1	ZONE2 ON/OFF
RCSHP0210014	0 1 1 1 0	ZONE3 DVD	RCSHP0210030	0 1 1 1 1	
RCSHP0210015	1 1 1 1 0	ZONE3 Blu-ray	RCSHP0210031	1 1 1 1 1	

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0210032	0 0 0 0 1		RCSHP0210048	0 0 0 0 1	
RCSHP0210033	1 0 0 0 1		RCSHP0210049	1 0 0 0 1	
RCSHP0210034	0 1 0 0 1		RCSHP0210050	0 1 0 0 1	
RCSHP0210035	1 1 0 0 1		RCSHP0210051	1 1 0 0 1	
RCSHP0210036	0 0 1 0 1		RCSHP0210052	0 0 1 0 1	
RCSHP0210037	1 0 1 0 1	ZONE3 VOLUME DOWN	RCSHP0210053	1 0 1 0 1	
RCSHP0210038	0 1 1 0 1	ZONE3 VOLUME UP	RCSHP0210054	0 1 1 0 1	
RCSHP0210039	1 1 1 0 1		RCSHP0210055	1 1 1 0 1	
RCSHP0210040	0 0 0 1 1		RCSHP0210056	0 0 0 1 1	
RCSHP0210041	1 0 0 1 1		RCSHP0210057	1 0 0 1 1	MAIN ZONE ON
RCSHP0210042	0 1 0 1 1	PURE DIRECT ※ X1600H NA only	RCSHP0210058	0 1 0 1 1	MAIN ZONE OFF
RCSHP0210043	1 1 0 1 1		RCSHP0210059	1 1 0 1 1	ZONE2 ON
RCSHP0210044	0 0 1 1 1		RCSHP0210060	0 0 1 1 1	ZONE2 OFF
RCSHP0210045	1 0 1 1 1		RCSHP0210061	1 0 1 1 1	ZONE3 ON
RCSHP0210046	0 1 1 1 1		RCSHP0210062	0 1 1 1 1	ZONE3 OFF
RCSHP0210047	1 1 1 1 1		RCSHP0210063	1 1 1 1 1	

FORMAT: SHARP /DATA CONSTRUCTION 15bits C14 0 C15 0=NOT INVERTED, 1=INVERTED /REMOTE ID: 1
SYSTEM ADDRESS (C1 ~ C5): 0 0 1 0 0 , EXTENSION BIT (C12,C13): 0 1

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0420000	0 0 0 0 0		RCSHP0420016	0 0 0 1 0	DOLBY PL II MUSIC
RCSHP0420001	1 0 0 0 0		RCSHP0420017	1 0 0 0 1	DOLBY PL
RCSHP0420002	0 1 0 0 0		RCSHP0420018	0 1 0 0 1	
RCSHP0420003	1 1 0 0 0	ROCK ARENA	RCSHP0420019	1 1 0 0 1	
RCSHP0420004	0 0 1 0 0	JAZZ CLUB	RCSHP0420020	0 0 1 0 1	
RCSHP0420005	1 0 1 0 0		RCSHP0420021	1 0 1 0 1	
RCSHP0420006	0 1 1 0 0	MONO MOVIE	RCSHP0420022	0 1 1 0 1	
RCSHP0420007	1 1 1 0 0	MATRIX	RCSHP0420023	1 1 1 0 1	
RCSHP0420008	0 0 0 1 0	VIDEO GAME	RCSHP0420024	0 0 0 1 1	
RCSHP0420009	1 0 0 1 0	VIRTUAL	RCSHP0420025	1 0 0 1 1	
RCSHP0420010	0 1 0 1 0		RCSHP0420026	0 1 0 1 1	
RCSHP0420011	1 1 0 1 0		RCSHP0420027	1 1 0 1 1	
RCSHP0420012	0 0 1 1 0		RCSHP0420028	0 0 1 1 1	
RCSHP0420013	1 0 1 1 0	DTS NEO:6 CINEMA	RCSHP0420029	1 0 1 1 1	MultEQ/MultEQ XT
RCSHP0420014	0 1 1 1 0	DTS NEO:6 MUSIC	RCSHP0420030	0 1 1 1 1	
RCSHP0420015	1 1 1 1 0	DOLBY PL II CINEMA	RCSHP0420031	1 1 1 1 1	

No.	Data (C6 ~ C11)	Key Name	No.	Data (C6 ~ C11)	Key Name
RCSHP0420032	0 0 0 0 1		RCSHP0420048	0 0 0 1 1	
RCSHP0420033	1 0 0 0 1		RCSHP0420049	1 0 0 1 1	
RCSHP0420034	0 1 0 0 1		RCSHP0420050	0 1 0 0 1	
RCSHP0420035	1 1 0 0 1		RCSHP0420051	1 1 0 0 1	INPUT MDOE AUTO
RCSHP0420036	0 0 1 0 1		RCSHP0420052	0 0 1 0 1	
RCSHP0420037	1 0 1 0 1		RCSHP0420053	1 0 1 0 1	
RCSHP0420038	0 1 1 0 1		RCSHP0420054	0 1 1 0 1	
RCSHP0420039	1 1 1 0 1		RCSHP0420055	1 1 1 0 1	
RCSHP0420040	0 0 0 1 1		RCSHP0420056	0 0 0 1 1	
RCSHP0420041	1 0 0 1 1		RCSHP0420057	1 0 0 1 1	
RCSHP0420042	0 1 0 1 1		RCSHP0420058	0 1 0 1 1	
RCSHP0420043	1 1 0 1 1		RCSHP0420059	1 1 0 1 1	
RCSHP0420044	0 0 1 1 1		RCSHP0420060	0 0 1 1 1	
RCSHP0420045	1 0 1 1 1		RCSHP0420061	1 0 1 1 1	
RCSHP0420046	0 1 1 1 1		RCSHP0420062	0 1 1 1 1	
RCSHP0420047	1 1 1 1 1		RCSHP0420063	1 1 1 1 1	

FORMAT KASEIKYO

DATA CONSTRUCTION 48bits

DENON CODE																Parity				GENRE1 (*1)			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	*	*	*	*
GENRE2 (*2)																ID (*3)				Parity (*4)			
25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48
*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*

(*4) Parity :

Delimit of each to 8 bits, and add the 3rd byte and the 4th byte and the 5th byte with modulo 2 (exclusive-OR).

3rd byte (17 - 24 bit)

4th byte (25 - 32 bit)

5th byte (33 - 40 bit)

REMOTE ID SETTING: (default ID 1)

ID No.	ZONE/DEVICE	GENRE1 (*1)				GENRE2 (*2)				ID (*3)		
		21	22	23	24	25	26	27	28	39	40	
1	MAIN ZONE	0	0	1	0	1	0	0	0	0	0	SHARP&K4-1
	ZONE2 *	0	0	1	0	1	1	0	0	0	0	SHARP&K4-3
	TUNER	0	0	1	0	1	0	0	0	0	0	SHARP&K4-1
	HEOS MUSIC	0	0	1	0	1	1	1	0	0	0	K4-7
2	MAIN ZONE	0	0	1	0	0	1	0	0	1	0	K4-2
	ZONE2 *	0	0	1	0	0	0	1	0	1	0	K4-4
	TUNER	0	0	1	0	0	1	0	0	1	0	K4-2
	HEOS MUSIC	0	0	1	0	0	0	0	1	1	0	K4-8
3	MAIN ZONE	0	0	1	0	0	1	0	0	0	1	K4-2
	ZONE2 *	0	0	1	0	0	0	1	0	0	1	K4-4
	TUNER	0	0	1	0	0	1	0	0	0	1	K4-2
	HEOS MUSIC	0	0	1	0	0	0	0	1	0	1	K4-8
4	MAIN ZONE	0	0	1	0	0	1	0	0	1	1	K4-2
	ZONE2 *	0	0	1	0	0	0	1	0	1	1	K4-4
	TUNER	0	0	1	0	0	1	0	0	1	1	K4-2
	HEOS MUSIC	0	0	1	0	0	0	0	1	1	1	K4-8

* : AVR-X1600H North America model : ZONE2 is available.

AVR-S750H/AVR-X1600H other than North America: ZONE2 is available when "Assign Mode" is set to "ZONE2".

MAIN ZONE

REMOTE ID SET: 1

DENON CODE				Parity				GENRE1				GENRE2			
4				0				4				1			
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0

REMOTE ID SET: 2-4

DENON CODE				Parity				GENRE1				GENRE2			
4				0				4				2			
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0410001	1	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ALL POWER ON/OFF
RCKSK0410002	0	1	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ALL POWER ON
RCKSK0410003	1	1	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ALL POWER OFF
RCKSK0410005	1	0	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MAIN ZONE ON/OFF
RCKSK0410006	0	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MAIN ZONE ON
RCKSK0410007	1	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MAIN ZONE OFF
RCKSK0410016	0	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY1
RCKSK0410017	1	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY2
RCKSK0410018	0	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY3
RCKSK0410019	1	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY4
RCKSK0410020	0	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY5
RCKSK0410021	1	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY6
RCKSK0410022	0	1	0	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY7
RCKSK0410023	0	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY8
RCKSK0410024	0	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY9
RCKSK0410025	1	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	KEY0
RCKSK0410027	1	1	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR UP
RCKSK0410028	0	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR DOWN
RCKSK0410029	1	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR LEFT
RCKSK0410030	0	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	CURSOR RIGHT
RCKSK0410031	1	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ENTER
RCKSK0410034	0	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	RETURN/BACK
RCKSK0410035	1	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	SETUP MENU
RCKSK0410036	0	0	1	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	MEMORY
RCKSK0410042	0	1	0	1	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	UPGRADE ID ON
RCKSK0410045	1	0	1	1	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	Bilingual Mode (toggle) (JP only)
RCKSK0410112	0	0	0	0	1	1	1	0	0	0	*	*	*	*	*	*	*	*	*	*	VIDEO SELECT
RCKSK0410292	0	0	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 1
RCKSK0410293	1	0	0	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 2
RCKSK0410294	0	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 3
RCKSK0410295	1	1	1	0	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 4
RCKSK0410296	0	0	0	1	0	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	QUICK SELECT 5
RCKSK0410304	0	0	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	STEREO
RCKSK0410305	1	0	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	DIRECT/STEREO
RCKSK0410306	0	1	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	DIRECT
RCKSK0410307	1	1	0	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	PURE DIRECT (X1600H NA only)
RCKSK0410308	0	0	1	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	STANDARD
RCKSK0410309	1	0	1	0	1	1	0	0	1	0	*	*	*	*	*	*	*	*	*	*	DIRECT
RCKSK0410320	0	0	0	0	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	DTS SURROUND
RCKSK0410324	0	0	1	0	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	AUTO SOUND
RCKSK0410329	1	0	0	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MOVIE SURROUND
RCKSK0410330	0	1	0	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MUSIC SURROUND
RCKSK0410331	1	1	0	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	GAME SURROUND
RCKSK0410332	0	0	1	1	0	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	SOUND MODE toggle (Reverse)
RCKSK0410336	0	0	0	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	DSP SIMULATION
RCKSK0410337	1	0	0	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MULTI CH STEREO
RCKSK0410340	0	0	1	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ROCK ARENA
RCKSK0410341	1	0	1	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	JAZZ CLUB
RCKSK0410343	1	1	1	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MONO MOVIE
RCKSK0410344	0	0	0	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	MATRIX
RCKSK0410345	1	0	0	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	VIDEO GAME
RCKSK0410346	0	1	0	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	VIRTUAL
RCKSK0410348	0	0	1	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	Dolby Atmos ON/OFF
RCKSK0410349	1	0	1	1	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	SOUND MODE toggle (Normal)
RCKSK0410352	0	0	0	0	0	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	INPUT MODE SELECT
RCKSK0410353	1	0	0	0	0	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	INPUT MODE ANALOG
RCKSK0410357	1	0	1	0	0	1	1	0	1	0	*										

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0410791	1	1	1	1	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	Graphic EQ ON
RCKSK0410792	0	0	0	1	1	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	Graphic EQ OFF
RCKSK0410822	0	1	1	0	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	All Zone Stereo ON
RCKSK0410823	1	1	1	0	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	All Zone Stereo OFF
RCKSK0410826	0	1	0	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI (CEC) Control ON
RCKSK0410827	1	1	0	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI (CEC) Control OFF
RCKSK0410829	1	0	1	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI Audio Out Select
RCKSK0410830	0	1	1	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI Audio Out TV
RCKSK0410831	1	1	1	1	1	1	0	0	1	1	*	*	*	*	*	*	*	*	*	*	HDMI Audio Out AMP
RCKSK0410834	0	1	0	0	0	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	All Zone Stereo ON/OFF
RCKSK0410836	0	0	1	0	0	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	SLEEP MODE
RCKSK0410857	1	0	0	1	1	0	1	0	1	1	*	*	*	*	*	*	*	*	*	*	Loudness Management ON/OFF
RCKSK0410872	0	0	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (toggle)
RCKSK0410873	1	0	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (OFF)
RCKSK0410874	0	1	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (ON)
RCKSK0410875	1	1	0	1	0	1	1	0	1	1	*	*	*	*	*	*	*	*	*	*	ECO MODE (AUTO)
RCKSK0410945	1	0	0	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH UP/ PAGE Previous
RCKSK0410946	0	1	0	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH DOWN/PAGE Next
RCKSK0410949	1	0	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	OPTION
RCKSK0410950	0	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	PAGE Previous
RCKSK0410951	1	1	1	0	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	PAGE Next
RCKSK0410956	0	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE REPEAT
RCKSK0410957	1	0	1	1	1	1	0	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE RANDOM/SHUFFLE
RCKSK0410970	0	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING UP
RCKSK0410971	1	1	0	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING DOWN
RCKSK0410972	0	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH UP
RCKSK0410973	1	0	1	1	0	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PRESET CH DOWN
RCKSK0410976	0	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE Rewind
RCKSK0410977	1	0	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE BAND FM
RCKSK0410978	0	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE BAND AM
RCKSK0410979	1	1	0	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE Fast Forward
RCKSK0410983	1	1	1	0	1	0	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE SEARCH (RDS)
RCKSK0410992	0	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PLAY/PAUSE
RCKSK0410993	1	0	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE STOP
RCKSK0410994	0	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE PAUSE
RCKSK0410995	1	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE SKIP MINUS/ TUNING DOWN
RCKSK0410996	0	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE SKIP PLUS/TUNING UP
RCKSK0410997	1	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING DOWN
RCKSK0410998	0	1	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	MAIN ZONE TUNING UP

ZONE2

REMOTE ID SET: 1

DENON CODE																Parity		GENRE1				GENRE2					
4				5				2				3				0		4				1					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	1	0	1	1	0

REMOTE ID SET: 2-4

DENON CODE																Parity		GENRE1				GENRE2					
4				5				2				3				0		4				4					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	1	0	0	0	0	1	0

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0430005	1	0	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 POWER ON/OFF
RCKSK0430006	0	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 POWER ON
RCKSK0430007	1	1	1	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 POWER OFF
RCKSK0430016	0	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY1
RCKSK0430017	1	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY2
RCKSK0430018	0	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY3
RCKSK0430019	1	1	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY4
RCKSK0430020	0	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY5
RCKSK0430021	1	0	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY6
RCKSK0430022	0	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY7
RCKSK0430023	1	1	1	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY8
RCKSK0430024	0	0	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY9
RCKSK0430025	1	0	0	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 KEY0
RCKSK0430027	1	1	0	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR UP
RCKSK0430028	0	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR DOWN
RCKSK0430029	1	0	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR LEFT
RCKSK0430030	0	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CURSOR RIGHT
RCKSK0430031	1	1	1	1	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 ENTER
RCKSK0430034	0	1	0	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 RETURN
RCKSK0430036	0	0	1	0	0	1	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 MEMORY
RCKSK0430292	0	0	1	0	0	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 1
RCKSK0430293	1	0	1	0	0	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 2
RCKSK0430294	0	1	1	0	0	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 3
RCKSK0430295	1	1	1	0	0	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 4
RCKSK0430298	0	0	0	1	0	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 QUICK SELECT 5
RCKSK0430368	0	0	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VOLUME UP
RCKSK0430369	1	0	0	0	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VOLUME DOWN
RCKSK0430370	0	1	0	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 VOLUME MUTE
RCKSK0430372	0	0	1	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 VR PRESET1 (0dB)
RCKSK0430373	1	0	1	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 VR PRESET2 (-20dB)
RCKSK0430374	0	1	1	0	1	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 VR PRESET3 (-40dB)
RCKSK0430691	1	1	0	0	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Internet Radio
RCKSK0430692	0	0	1	0	1	1	1	0	1	0	*	*	*	*	*	*	*	*	*	*	Main Zone Source CALL
RCKSK0430698	0	1	0	1	1	1	0	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 CD / PHONO (PHNO)
RCKSK0430704	0	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PHONO
RCKSK0430705	1	0	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNER
RCKSK0430706	0	1	0	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 CD
RCKSK0430711	1	1	1	0	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 HEOS MUSIC
RCKSK0430715	1	1	0	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNER
RCKSK0430716	0	0	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 HEOS MUSIC
RCKSK0430718	0	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 USB
RCKSK0430719	1	1	1	1	0	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNER
RCKSK0430720	0	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 DVD
RCKSK0430721	1	0	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Blu-ray
RCKSK0430722	0	1	0	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TV AUDIO
RCKSK0430723	1	1	0	0	1	0	1	0	1	0	*	*	*	*	*	*	*	*	*	*	ZONE2 CBL/SAT
RCKSK0430725	1	0	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 GAME
RCKSK0430726	0	1	1	0	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 MEDIA PLAYER
RCKSK0430729	1	0	0	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 AUX
RCKSK0430732	0	0	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 DVD/Blu-ray
RCKSK0430735	1	1	1	1	1	0	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 MEDIA PLAYER
RCKSK0430741	1	0	1	0	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 INTERNET RADIO (Recent Play)
RCKSK0430751	1	1	1	1	0	1	1	1	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 Bluetooth
RCKSK0430787	1	1	0	0	1	0	0	0	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 INPUT SOURCE SELECT Right
RCKSK0430788	0	0	1	0	1	0	0	0	0	1	*	*	*	*	*	*	*	*	*	*	ZONE2 INPUT SOURCE SELECT Left
RCKSK0430836	0	0	1	0	0	0	1	0	1	1											

No.	Data										ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
RCKSK0430993	1	0	0	0	0	1	1	1	1	1	*	*	*	*	*	44	45	46	47	48	ZONE2 STOP
RCKSK0430994	0	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 PAUSE
RCKSK0430995	1	1	0	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SKIP MINUS/TUNING DOWN
RCKSK0430996	0	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 SKIP PLUS/TUNING UP
RCKSK0430997	1	0	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING DOWN
RCKSK0430998	0	1	1	0	0	1	1	1	1	1	*	*	*	*	*	*	*	*	*	*	ZONE2 TUNING UP

ANALOG TUNER

REMOTE ID SET: 1

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0		4				1					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	0	0	0

REMOTE ID SET: 2-4

DENON CODE																Parity				GENRE1				GENRE2			
4				5				2				3				0		4				2					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	1	0	0	1	0	0

No.	Data										ID		parity								Key Name						
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48							
RCKSK0410144	0	0	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	TUNING UP
RCKSK0410145	1	0	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	TUNING DOWN
RCKSK0410146	0	1	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	PRESET CH UP
RCKSK0410147	1	1	0	0	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	PRESET CH DOWN
RCKSK0410152	0	0	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	BAND FM/AM
RCKSK0410153	1	0	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	BAND FM
RCKSK0410154	0	1	0	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	BAND AM
RCKSK0410156	0	0	1	1	1	0	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	MODE AUTOMANUAL
RCKSK0410160	0	0	0	0	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	MEMORY
RCKSK0410163	1	1	0	0	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	SEARCH /RDS (EU only)
RCKSK0410166	0	1	1	0	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	PTY (EU only)
RCKSK0410169	1	0	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	PTY (EU only)
RCKSK0410170	0	1	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR UP
RCKSK0410171	1	1	0	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR DOWN
RCKSK0410173	1	0	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR LEFT
RCKSK0410174	0	1	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR RIGHT
RCKSK0410175	1	1	1	1	0	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR ENTER
RCKSK0410176	0	0	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 1
RCKSK0410177	1	0	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 2
RCKSK0410178	0	1	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 3
RCKSK0410179	1	1	0	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 4
RCKSK0410180	0	0	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 5
RCKSK0410181	1	0	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 6
RCKSK0410182	0	1	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 7
RCKSK0410183	1	1	1	0	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 8
RCKSK0410184	0	0	0	1	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 9
RCKSK0410185	1	0	0	1	1	1	0	1	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	Numeric 0
RCKSK0410241	1	0	0	0	1	1	1	1	1	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	RETURN

HEOS MUSIC

REMOTE ID SET: 1

REMOVED SET 1																											
DENON CODE																Parity		GENRE1				GENRE2					
4				5				2				3				0		4				7					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	1	1	1	0

REMOTE ID SET: 2-4

DENON CODE																Parity		GENRE1				GENRE2					
4				5				2				3				0		4				8					
1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
0	0	1	0	1	0	1	0	0	1	0	0	1	1	0	0	0	0	0	0	0	0	1	0	0	0	0	1

No.	Data																ID		parity								Key Name
	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48							
RCKSK0470027	1	1	0	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR UP
RCKSK0470028	0	0	1	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR DOWN
RCKSK0470029	1	0	1	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR LEFT
RCKSK0470030	0	1	1	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	CURSOR RIGHT
RCKSK0470031	1	1	1	1	1	0	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	ENTER
RCKSK0470034	0	1	0	0	0	1	0	0	0	0	0	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	RETURN
RCKSK0470773	1	0	1	0	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	PLAY
RCKSK0470774	0	1	1	0	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	PAUSE
RCKSK0470775	1	1	1	0	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	STOP
RCKSK0470776	0	0	0	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	SKIP PLUS
RCKSK0470777	1	0	0	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	SKIP MINUS
RCKSK0470778	0	1	0	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	REPEAT ONE
RCKSK0470779	1	1	0	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	REPEAT OFF
RCKSK0470780	0	0	1	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	RANDOM ON
RCKSK0470781	1	0	1	1	0	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	RANDOM OFF
RCKSK0470785	1	0	0	0	1	0	0	0	0	1	1	*	*	*	*	*	*	*	*	*	*	*	*	*	*	*	REPEAT ALL

DISASSEMBLY

Flowchart

1. FRONT PANEL ASSY

2. DIGITAL PCB

3. RADIATOR ASSY

4. SMPS PCB

5. REGULATOR PCB

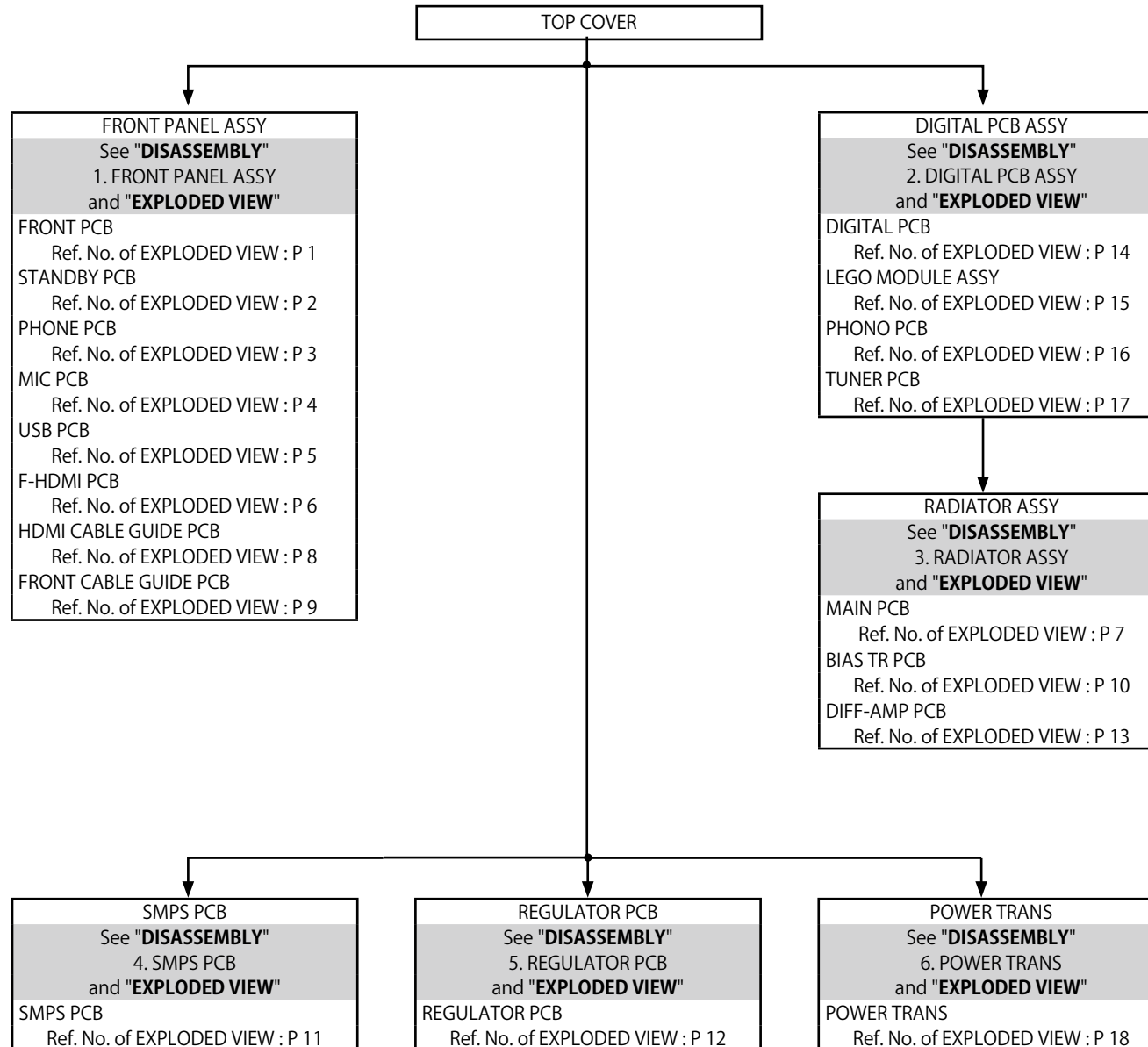
6. POWER TRANS

EXPLODED VIEW

PACKAGING VIEW

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](#)"

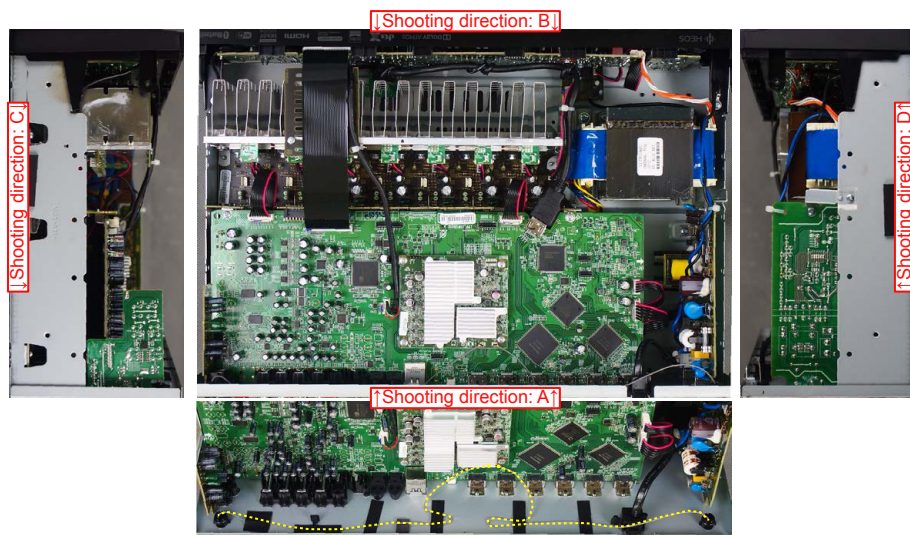


Explanatory Photos for DISASSEMBLY

- 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 AVR-S750H E3 are used in this manual.

The viewpoint of each photograph

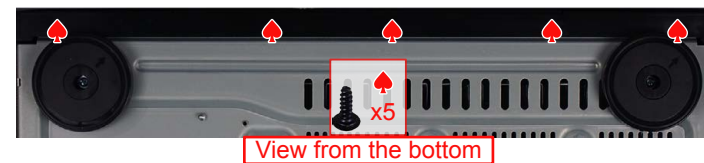
(Shooting direction : X) [View from the top]



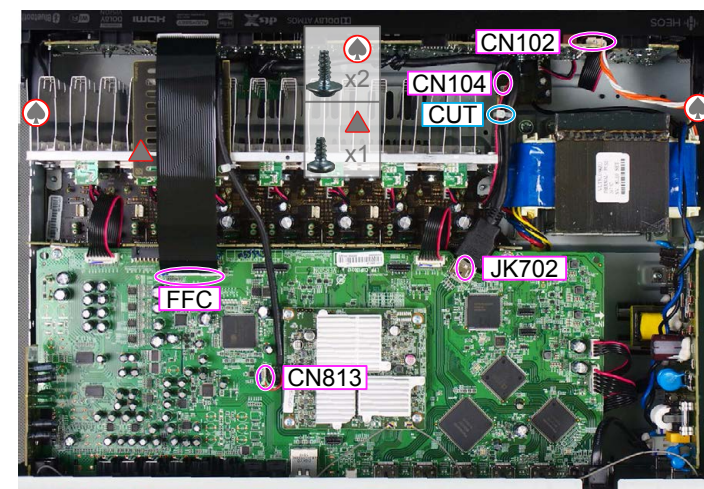
1. FRONT PANEL ASSY

Proceeding : TOP COVER → FRONT PANEL ASSY

- (1) Remove the screws.



- (2) Remove the screws. Cut the wire clamp, then remove the connector.
Remove the FFC.



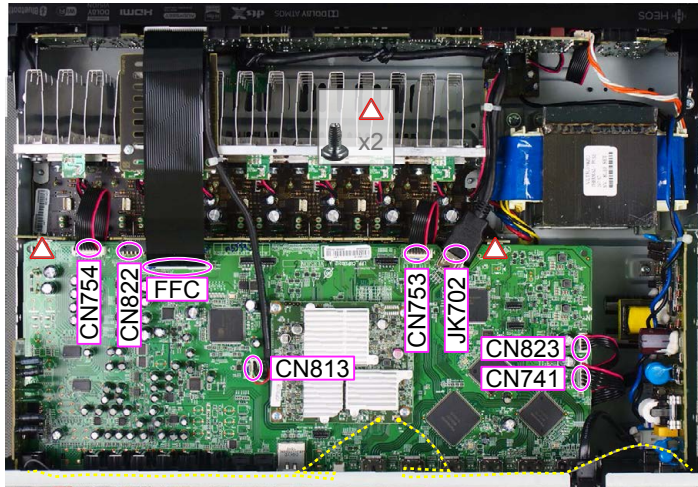
2. DIGITAL PCB

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

(1) Remove the screws.



(2) Remove the screws. Remove the FFC. Remove the connector.



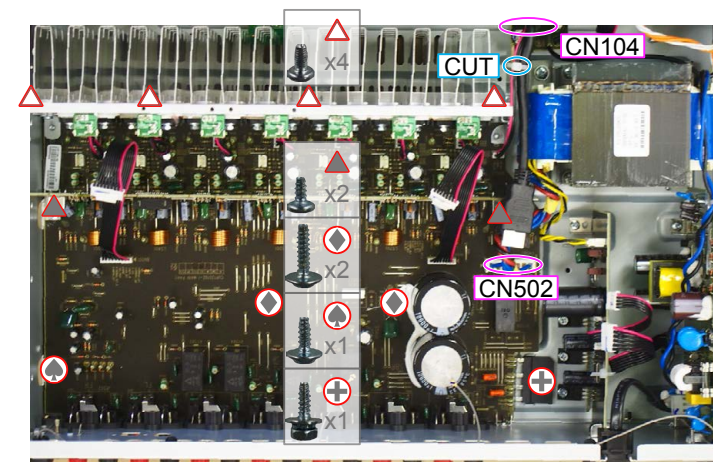
3. RADIATOR ASSY

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

(1) Remove the screws.



(2) Remove the screws. Cut the wire clamp, then remove the connector.



4. SMPS PCB

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

See "EXPLODED VIEW" for instructions on removing the SMPS PCB.

5. REGULATOR PCB

Proceeding : **TOP COVER** → **REGULATOR PCB**

See "EXPLODED VIEW" for instructions on removing the REGULATOR PCB.

6. POWER TRANS

Proceeding : **TOP COVER** → **POWER TRANS**

See "EXPLODED VIEW" for instructions on removing the transformer (TRANS).

EXPLODED VIEW

AVR-X1600H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/25663>

AVR-S750H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/25664>

Precautions when affixing the BADGE

- (1) The BADGE is incredibly fragile, so using the same force as you would when applying a label is likely to cause deformation. Once deformed it is very difficult to return it to its original shape, so take care when handling it.
- (2) Make sure the BADGE is not flat before affixing it.
- (3) Use tweezers to remove the backing paper from the double-sided tape and be careful not to touch the adhesive surface with your fingers.



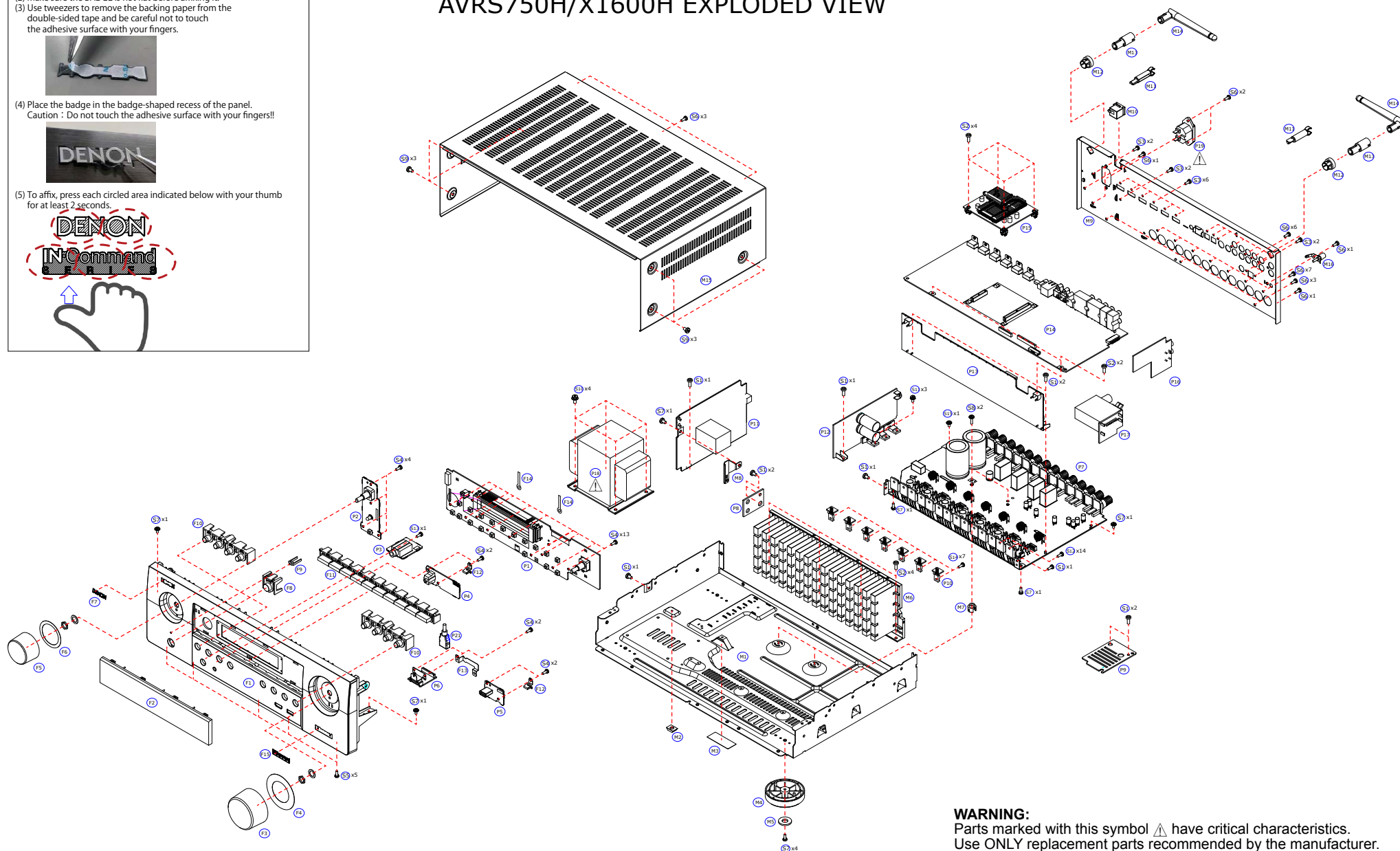
- (4) Place the badge in the badge-shaped recess of the panel.
Caution : Do not touch the adhesive surface with your fingers!!



- (5) To affix, press each circled area indicated below with your thumb for at least 2 seconds.



AVRS750H/X1600H EXPLODED VIEW

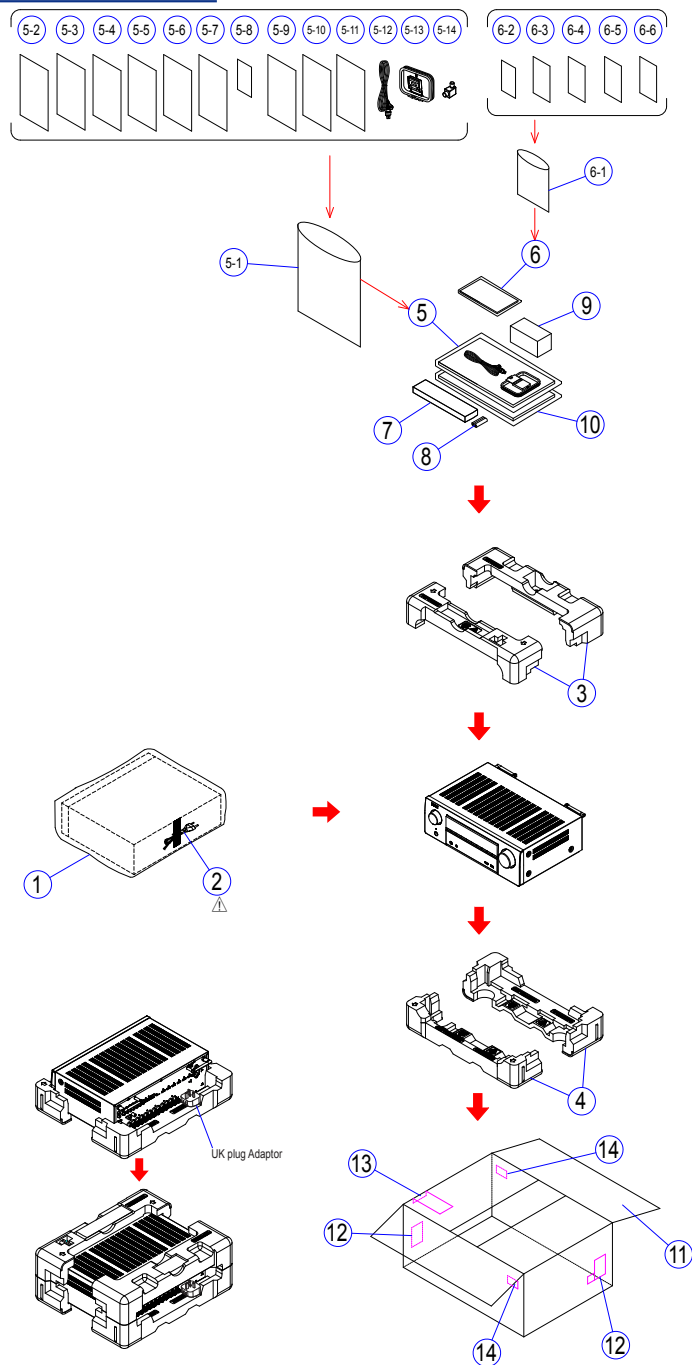


WARNING:
Parts marked with this symbol have critical characteristics.
Use ONLY replacement parts recommended by the manufacturer.

PACKAGING VIEW

AVR-X1600H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/25663>

AVR-S750H Parts List : <http://dmedia.dmglobal.com/Document/DocumentDetails/25664>



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 **AVR-X1600H**

Special mode setting button **AVR-S750H**

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 (E3 / E2 only)
- 3-5. Remote ID Setup Mode
4. Protection Pass Mode
5. Network Initialization Mode
6. Clearing the Operation Info
7. Log Capture feature

DIAGNOSTIC MODE

Service Path Check Mode

DIAGNOSTIC PATH DIAGRAM

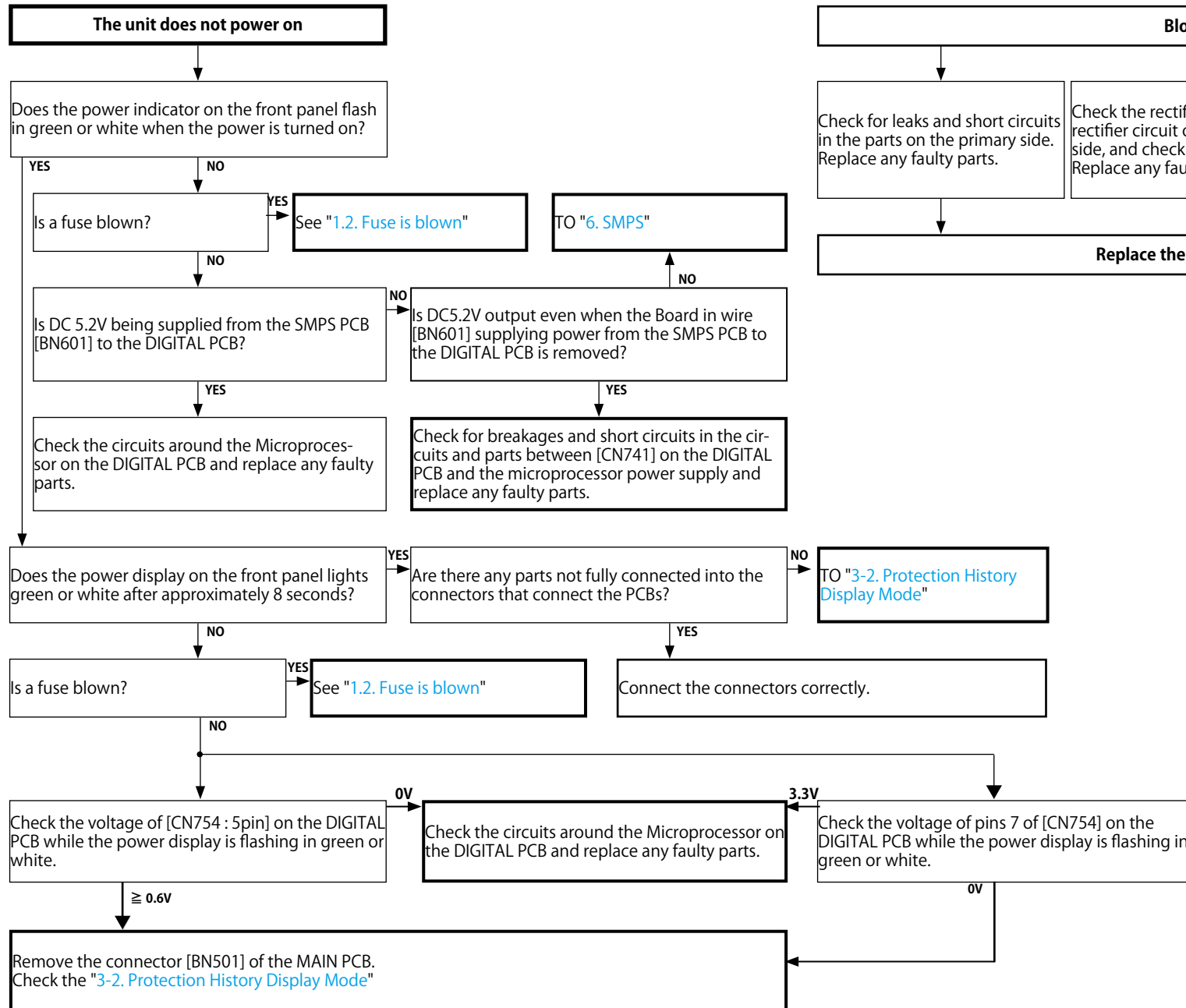
JIG FOR SERVICING

IDLING CURRENT CHECK for E3, E1C, S750 model

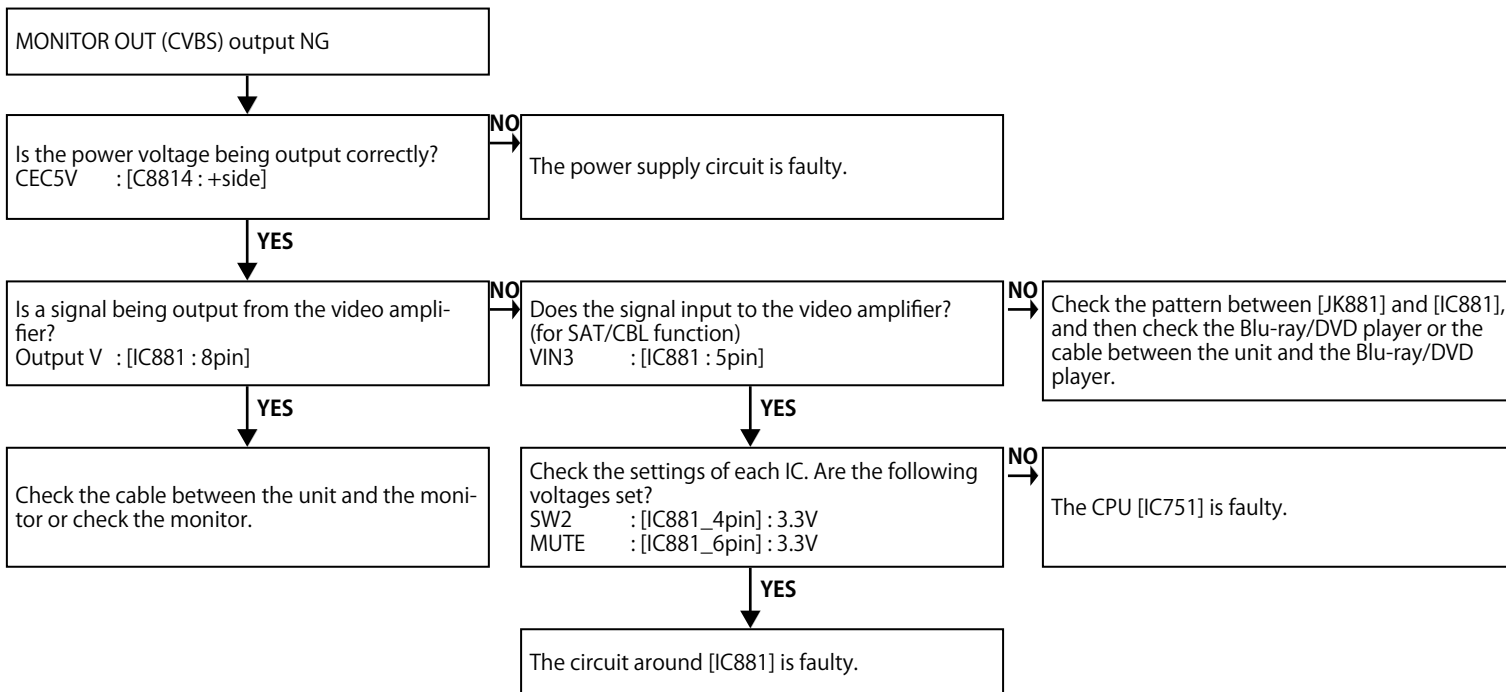
ADJUSTMENT for E2, JP model

1. POWER

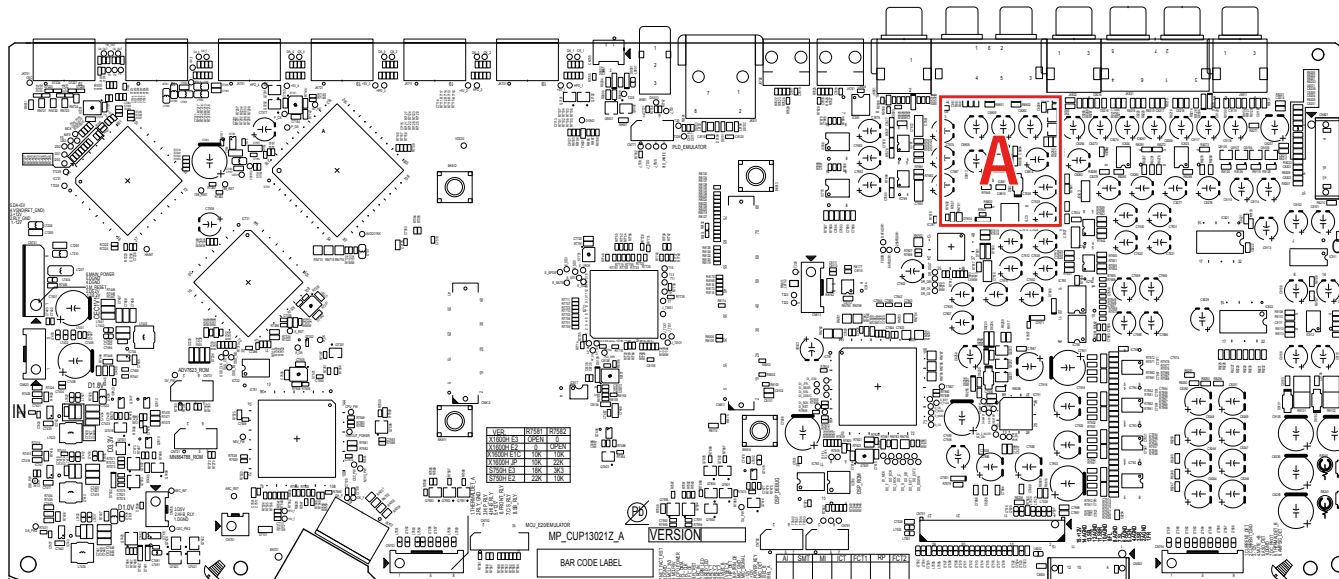
1.1. The unit does not power on



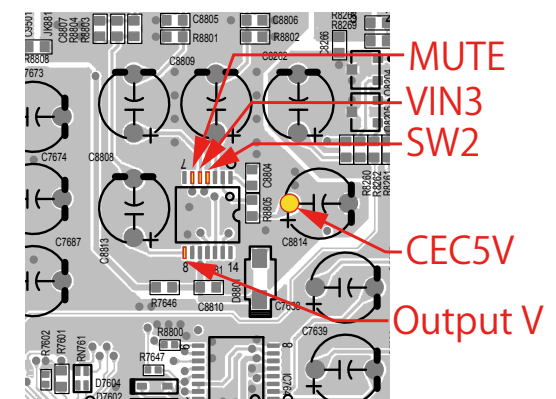
2. Analog video



VIDEO テストポイント

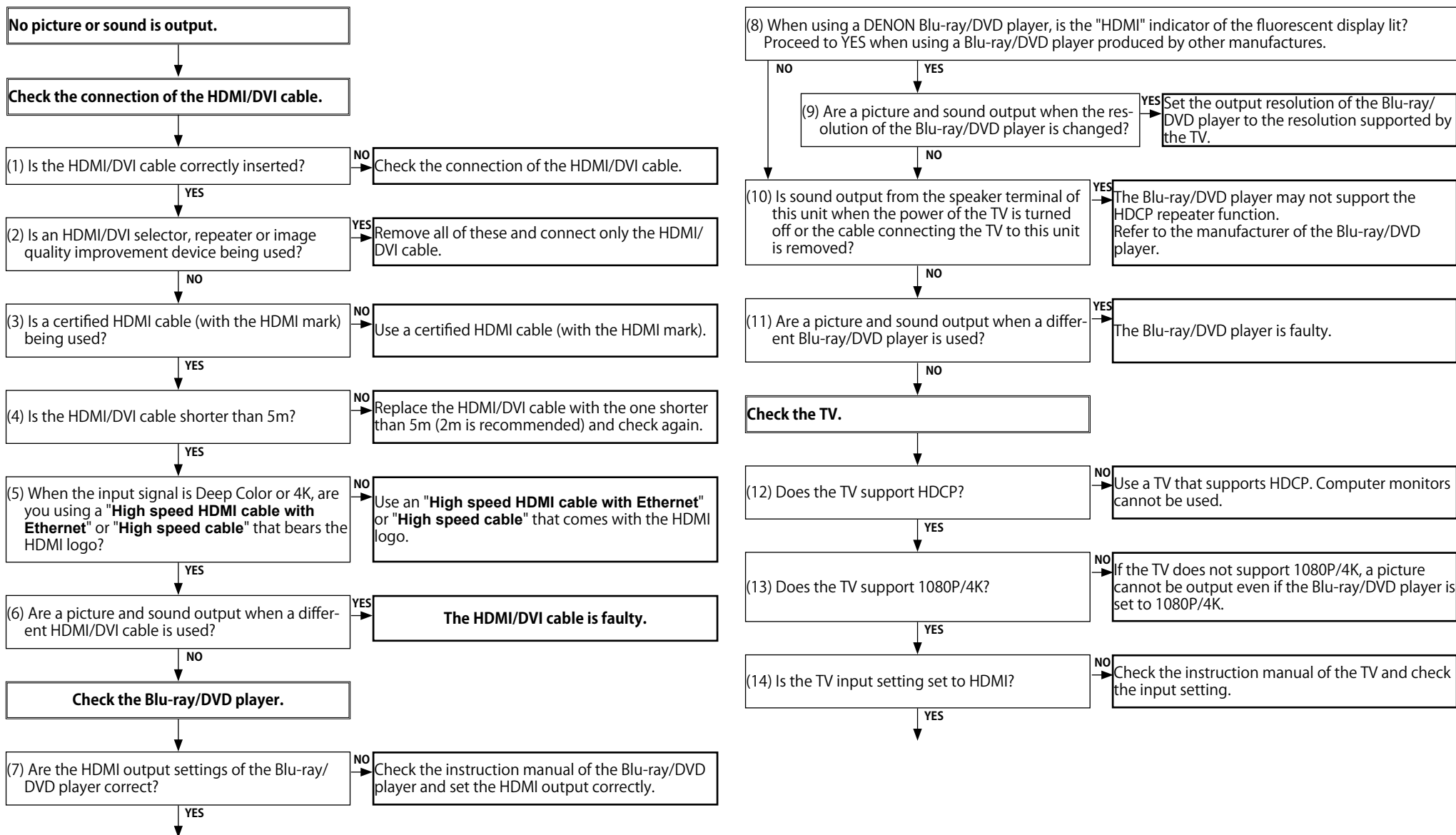


DIGITAL (A SIDE)

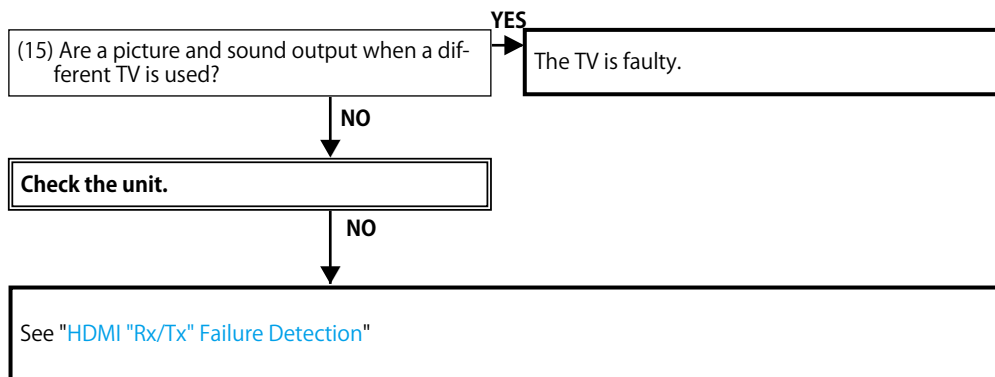


3. HDMI/DVI

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

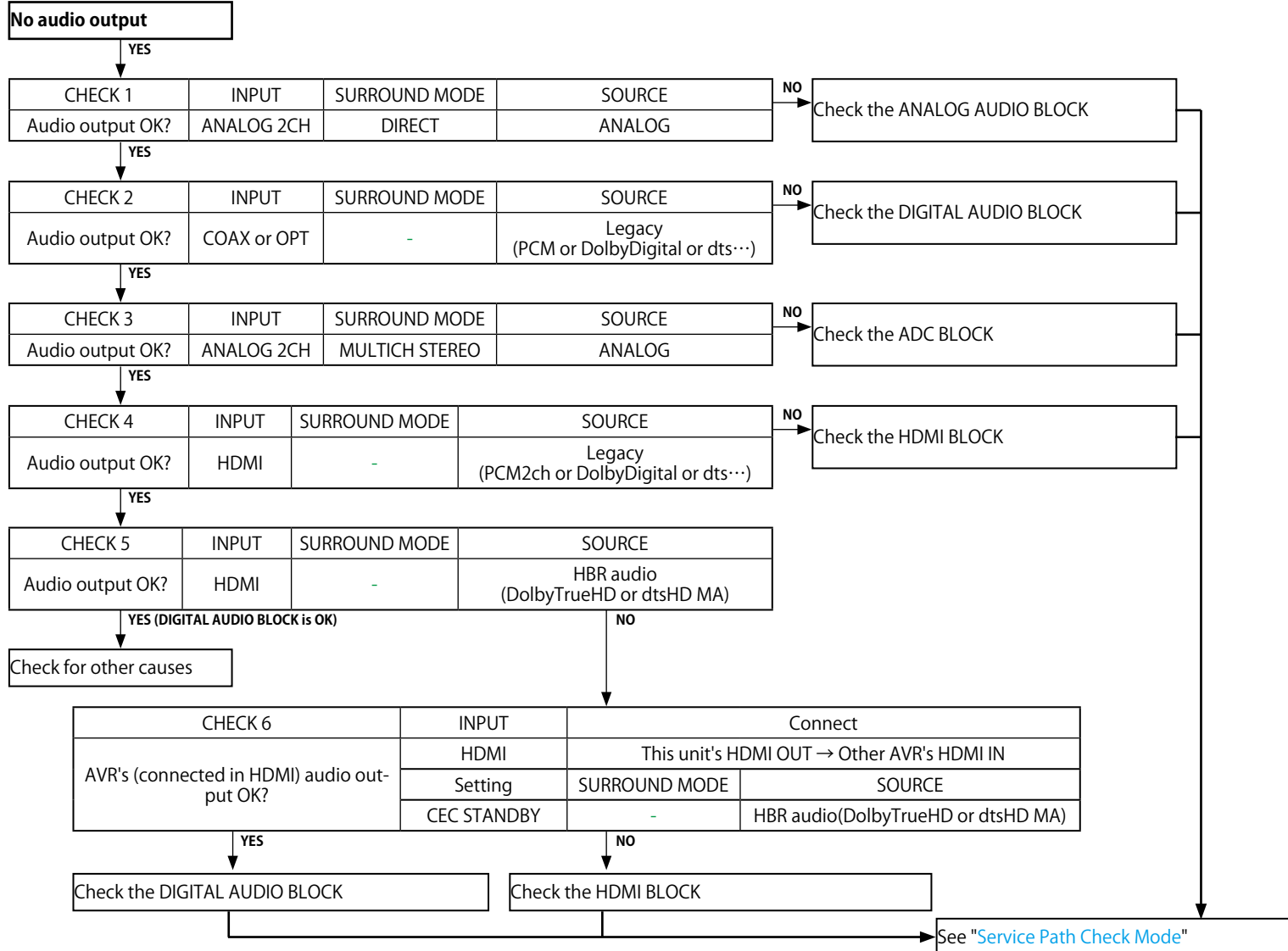


Go to next page.



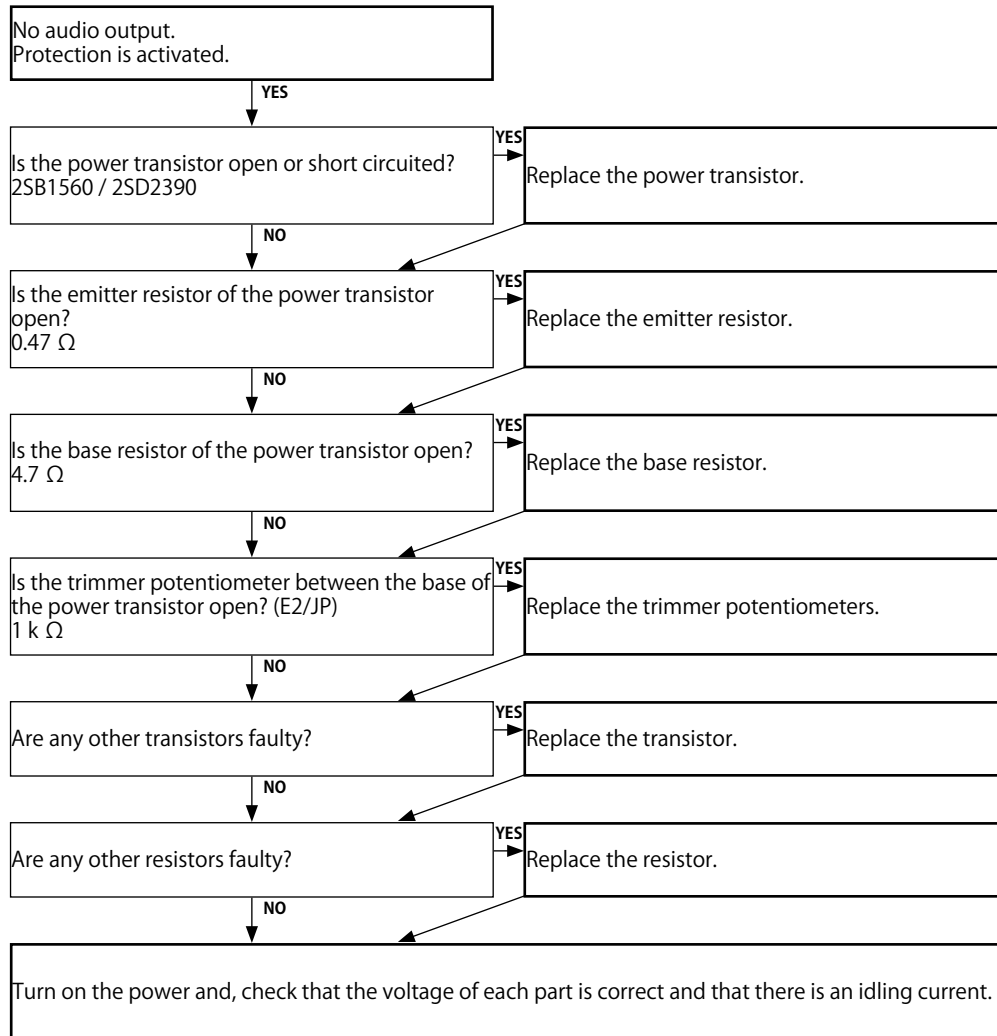
4. AUDIO

4.1. AUDIO CHECK

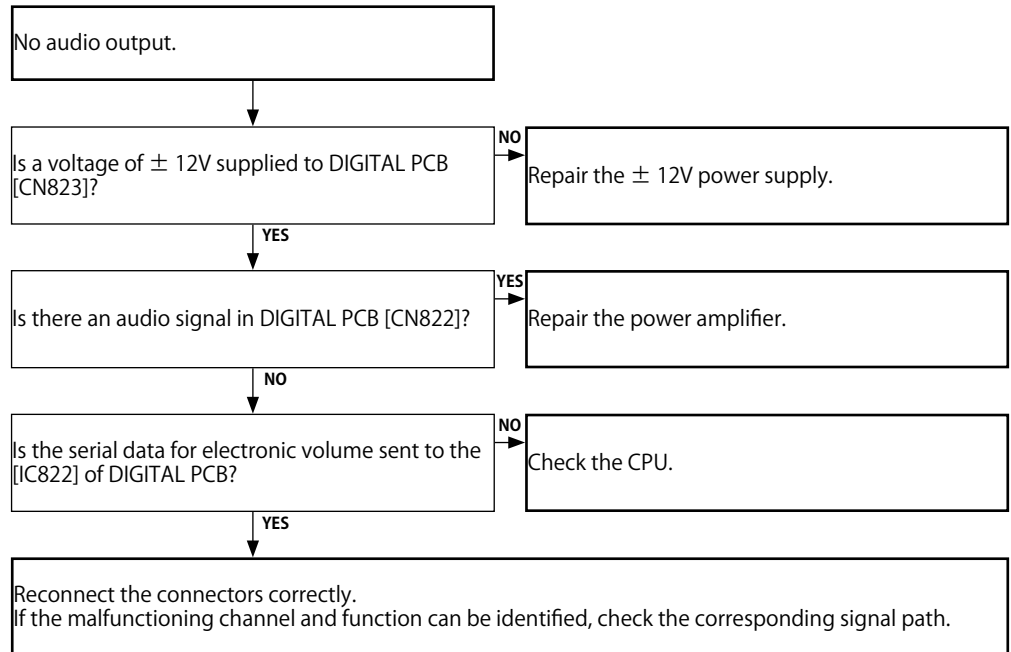


4.2. Power AMP (AMP PCB)

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

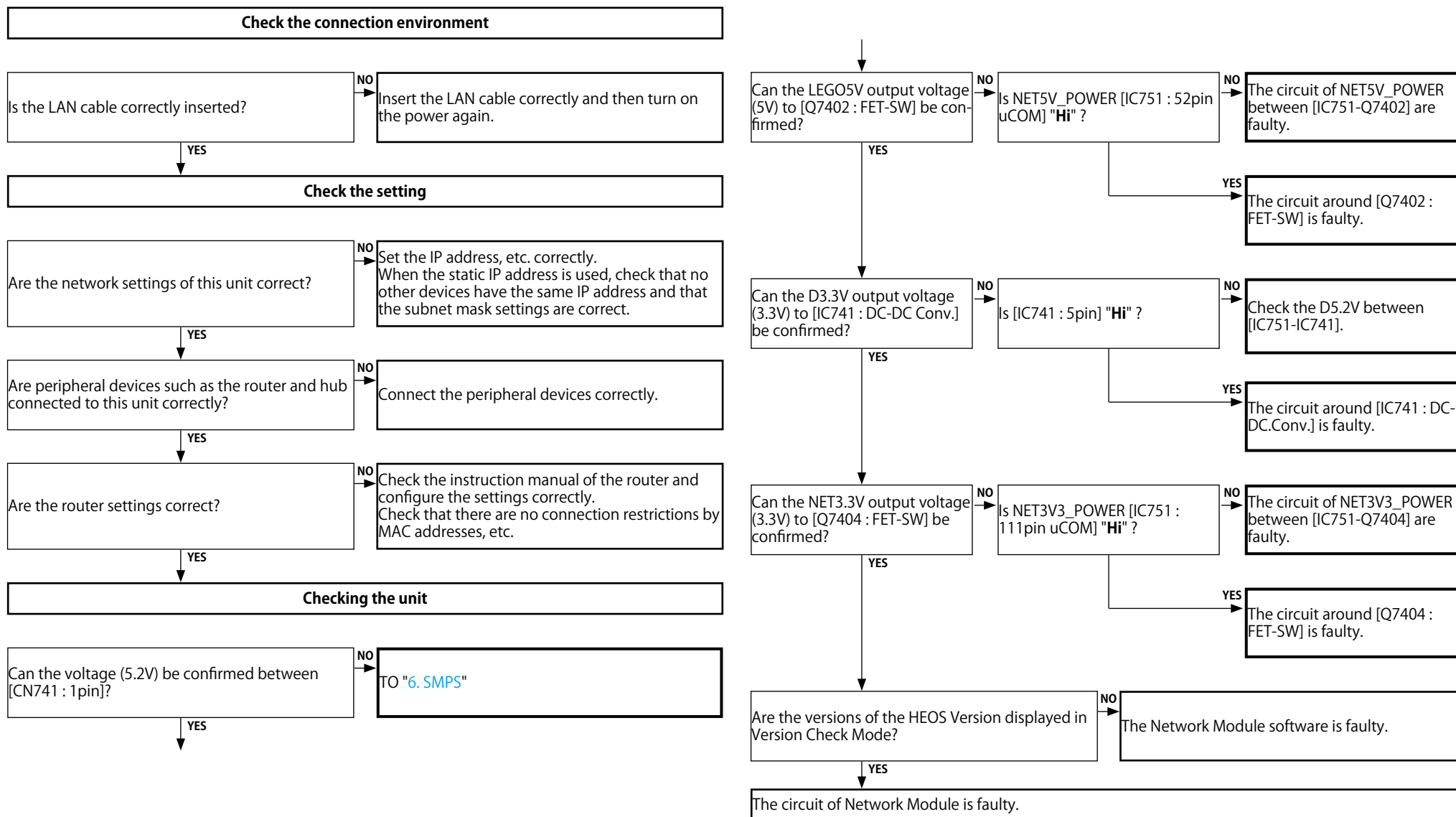


4.3. Analog audio

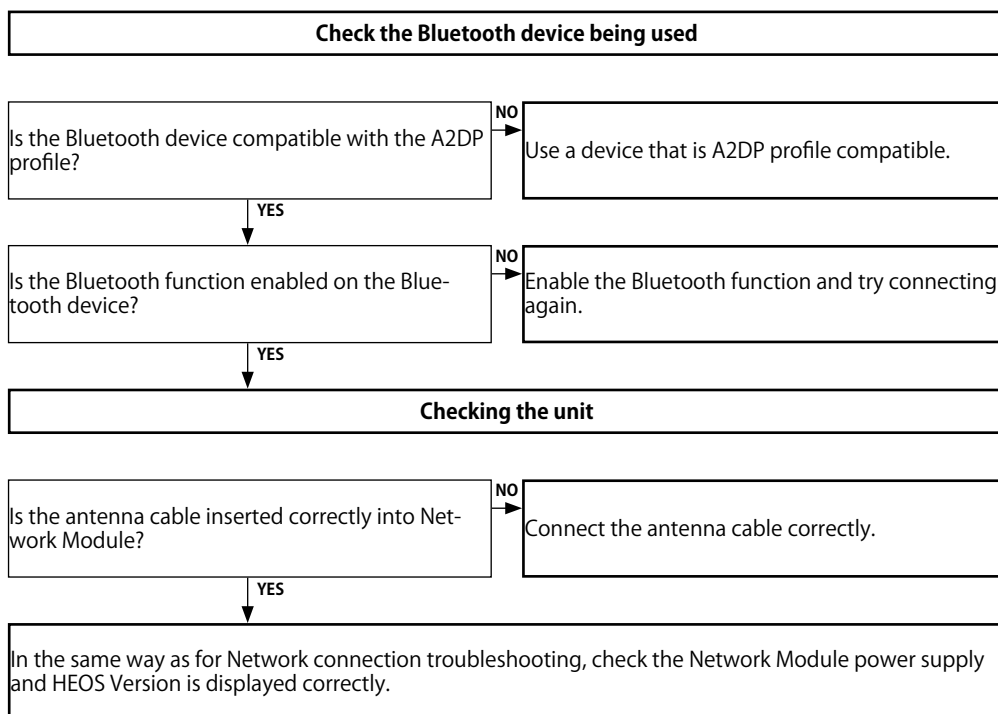


5. Network / Bluetooth / USB

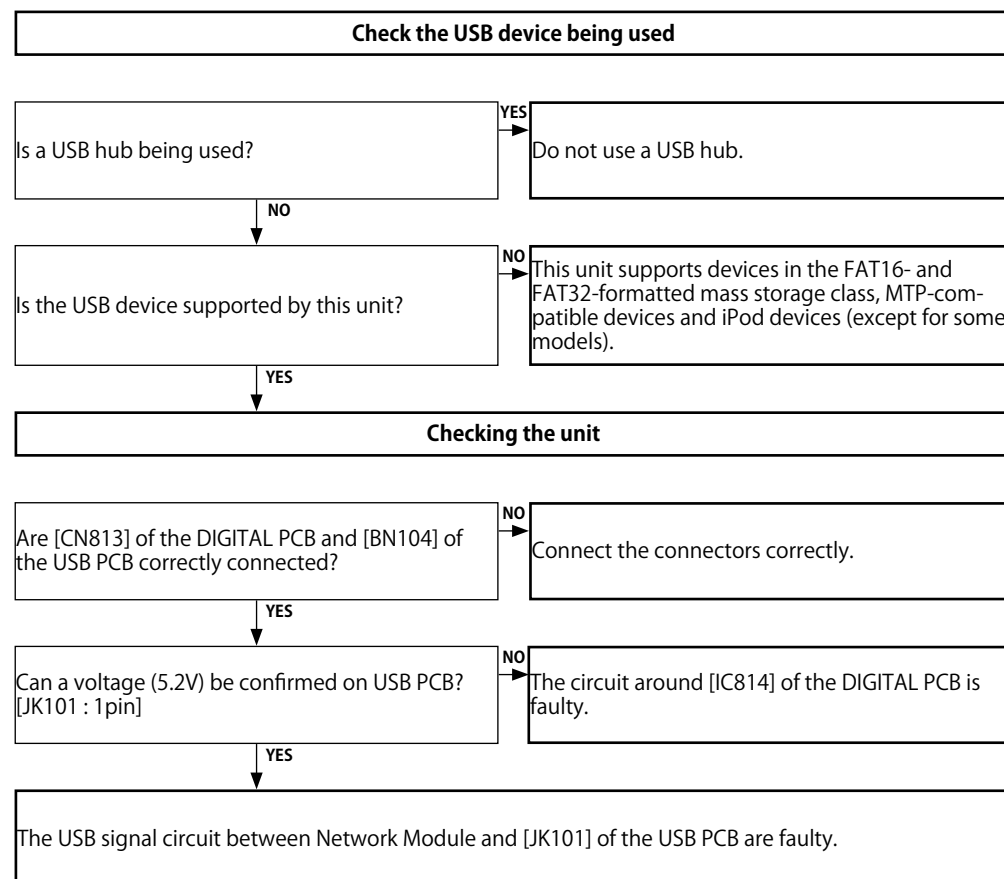
5.1. Cannot connect to the network



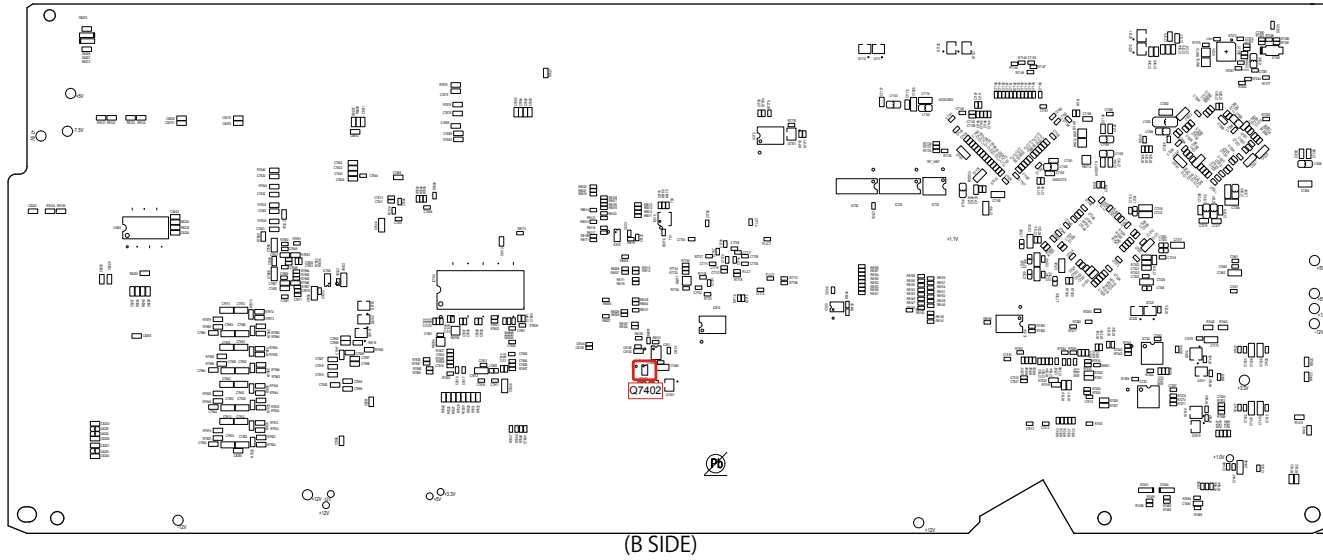
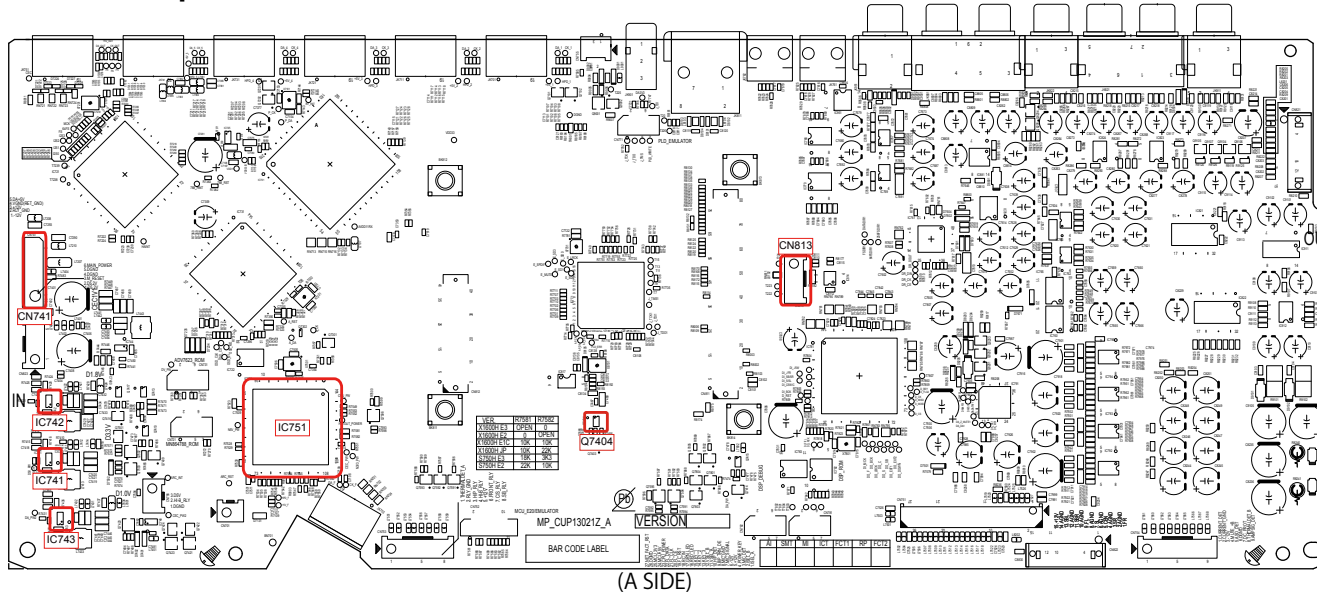
5.2. Cannot establish a Bluetooth connection



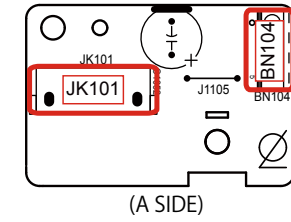
5.3. Cannot recognize the connected USB device



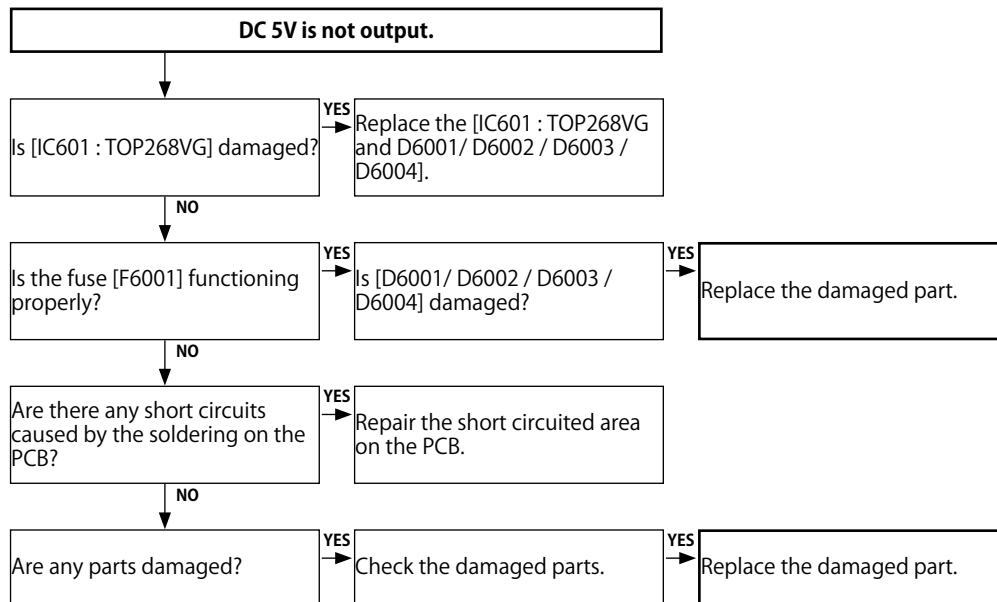
DIGITAL test point



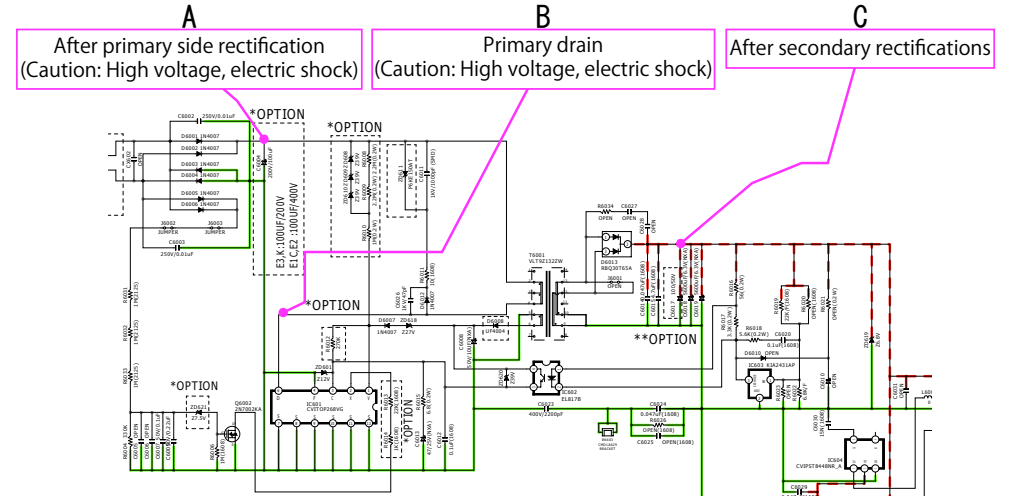
USB test point



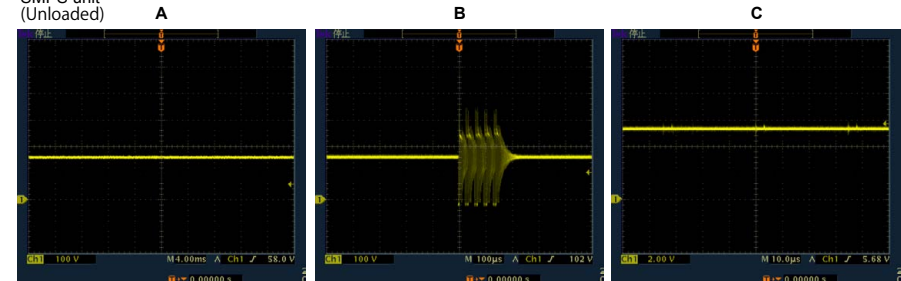
6. SMPS



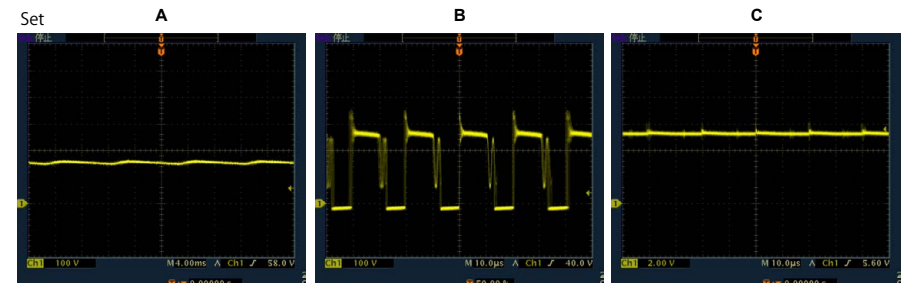
Operation waveform for each part



SMPS unit
(Unloaded)



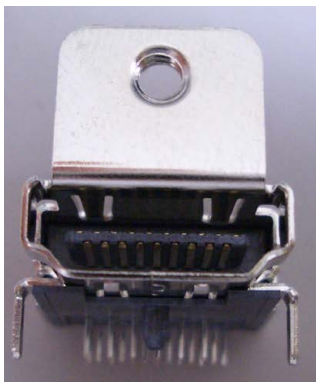
Set



HDMI "Rx/Tx" Failure Detection

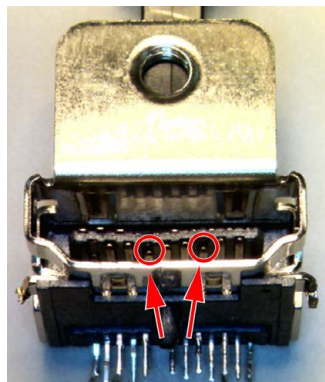
1. Prior checking

Check item(1.) : Checking the HDMI connector
Checking the condition of the HDMI pin (rear/front).



OK

Check for deformed pins.



NG

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](#)".

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.compuphase.com/software_termite.htm and install it.)
- 5) HDMI cable
- 6) RS-232C Straight cable
- 7) 8U-210100S 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.

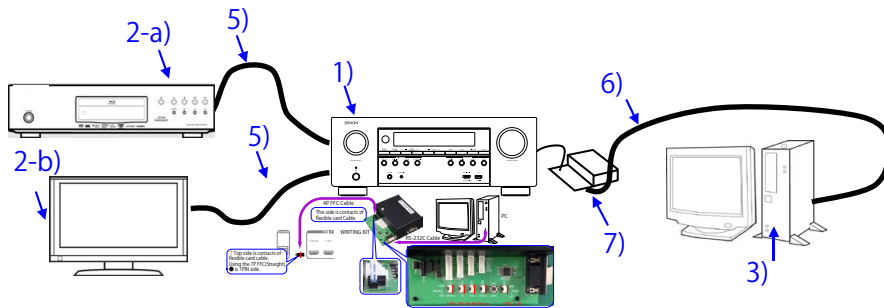


Figure 1 Device Connection Method (AVR-X1600H/AVR-S750H)

2-3. Device configuration method

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

After executing Termite.exe, click [Settings].

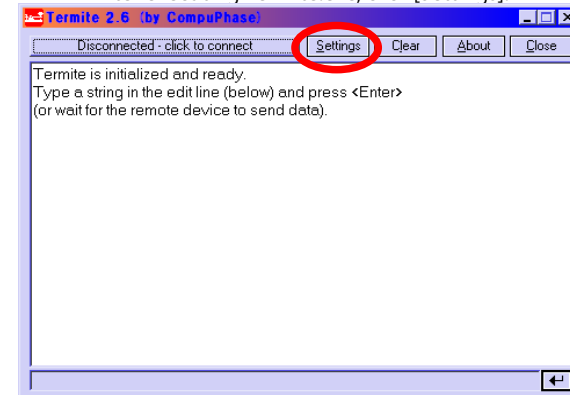


Figure 2. Screen After Executing Termite.exe

The serial port setup screen will be displayed.

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

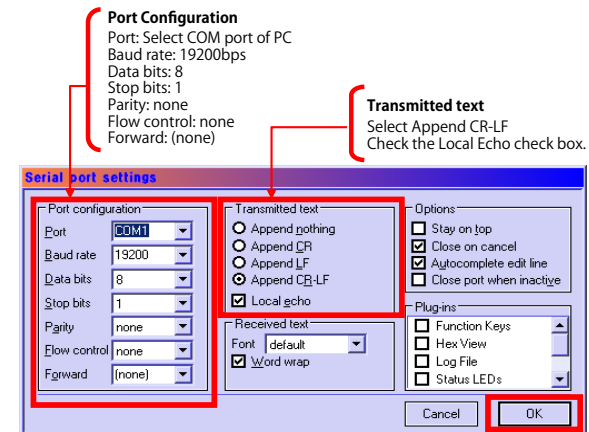


Figure 3. Serial Port Setup Screen

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.

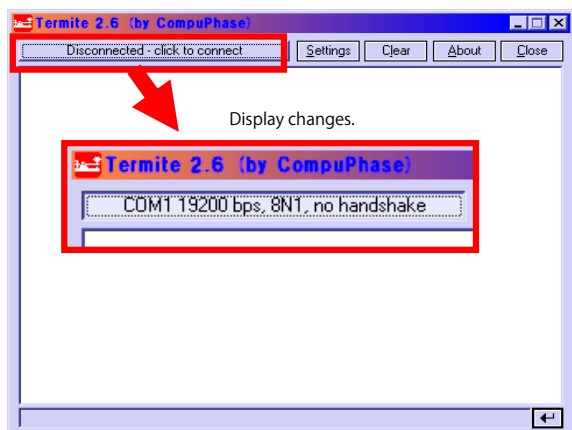


Figure 4. Change of the Display of the Communication Start Button Name

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 "PRESET UP" 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.

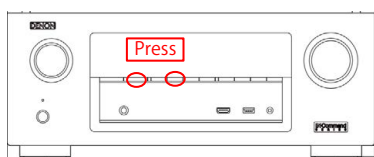


Figure 6-1. AVR settings (AVR-X1600H)

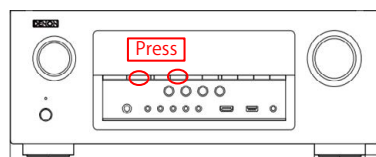


Figure 6-2. AVR settings (AVR-S750H)

for Volume 7 segment
All the indicator Lights

-88.8

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.)

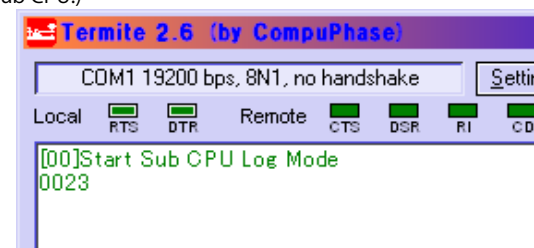


Figure 7. Display of Termite When AVR is Set

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.

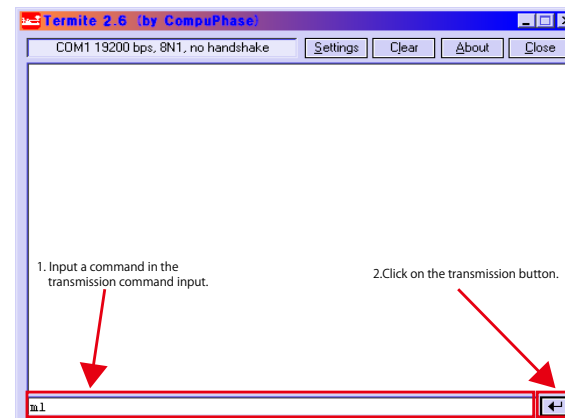


Figure 8. Method for Sending Termite Commands

3. Starting detecting the point of failure

Check item(3.1.).

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

Start in HDMI Diagnostics mode

While the power is on, hold down buttons "TUNER PRESET CH -" and "ZONE2 SOURCE" for at least 3 seconds.

HDMI DIAGNOSTICS

↓ "HDMI DIAGNOSTICS" is displayed.

When the mode has switched, start Hardware Check.

HardwareCheck...



Display when an Error is detected.

Err: H1-XX

↓↑ Alternating display.

Contact support

Check the Error Code table items.

Error Code table

Error Code	Check item No.	Description
H1-01	Check item (3-1.1.)	Communication Error with HDMI Rx/Tx [IC721 : MN864788]
H1-02	Check item (3-2.1.)	Communication Error with HDMI SW [IC701 : MN864787]
H1-07	Check item (3-3.1.)	Communication Error with OSD [IC731 : ADV7623]
H1-08	Check item (3-5.1.)	Communication Error with DSP [IC781 : CS49844A]
H1-12	Check item (3-6.1.)	Communication Error with DIR [IC761 : PCM9211]
H1-15	Check item (3-4.1.)	Communication Error with OSD ROM [IC732 : BY25Q32BSSIG/BY25Q64ASSIG]
H1-16	Check item (3-7.1.)	Communication Error with ARC IC [IC724 : Sil9437]

Display when an Error is not detected.

1 Auto Test

Cancel the mode, and proceed to [check item \(3.2.\)](#).

Canceling the selected mode

Press the power button to exit off the power.

Check item(3.2). : 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 HDMI4, 5.
Use any of Dolby TrueHD/DTSHD MA/PCM 8ch for the playback audio format.

YES

Check that sound is heard from the input terminal of the HDMI1, 2, 3.

YES

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

YES

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 \(3-8.1.\)](#).
(HDMI Rx/Tx IC [[MN864788](#)] failure detection procedure)

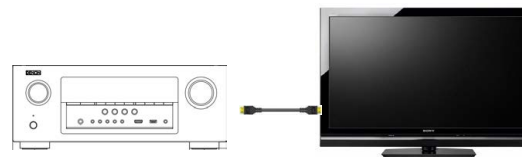
NO

Go to [check item \(3-9.1.\)](#)
(HDMI SW [[MN864787](#)] failure detection procedure)

NO

Go to [check item \(3-10.3.\)](#)
(HDMI DDC Buffer IC [[TCA9517](#)] failure detection procedure)

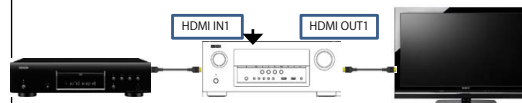
Check item(3.3). : Check operation of the HDMI output terminal.



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(3.4). : Check operation of the HDMI output terminal.



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 \(3-11.1.\)](#)
(OSD [[ADV7623](#)] failure detection procedure)

NO

Go to [check item \(3-12.1.\)](#)
(Between HDMI Tx [[MN864788](#)] & OSD [[ADV7623](#)] failure detection procedure)

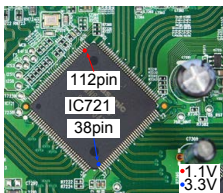
3-1. Error Code H1-01 failure detection procedure

Checking device. (HDMI Rx/Tx)

Check the power supply voltage. (HDMI Rx/Tx)

Check item(3-1.1). Check the power supply voltage. :

Does the power supply voltage of the HDMI Rx/Tx [IC721] indicate the correct voltage (1.1V, 3.3V)?
The test points are as follows.



YES

NO

Check item(3-1.2). Check the power supply voltage. :
Check the power components [IC741/IC744/Q7417] and the pattern on the substrate.
If there is no problem, remove the HDMI Rx/Tx [IC721] from the substrate and measure the voltage at the test point of **check item (3-1.1)**.
Is the voltage correct (1.1V or 3.3V)?

YES

NO

Replace with a new device.

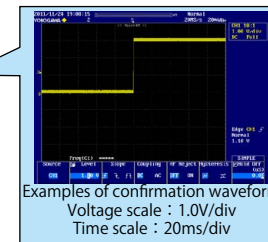
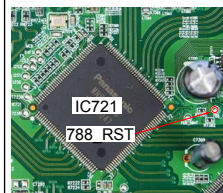
The power supply circuit is faulty.
Replace the PCB.

Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

Checking the reset waveform. (HDMI Rx/Tx)

Check item(3-1.3). Checking the reset waveform :

Check the waveform.
When the power is turned on, is the TP [788_RST] waveform correct (as shown in the figure)?

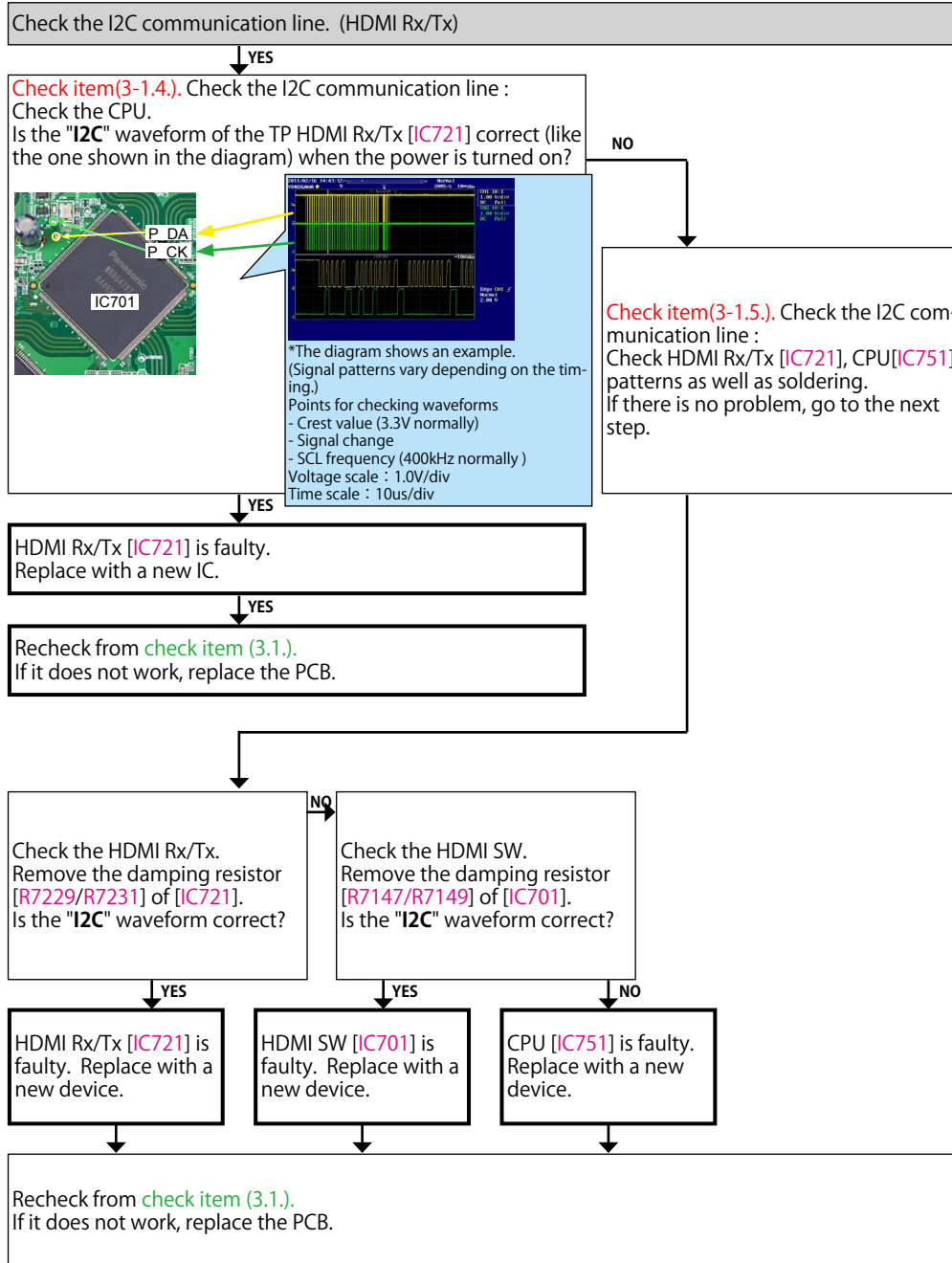


NO

Check the reset circuit between CPU [IC751] and HDMI Rx/Tx [IC721].
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.
Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

YES

Go to next page.

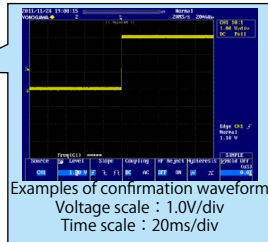
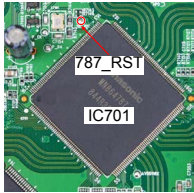


3-2. Error Code H1-02 failure detection procedure

Checking device. (HDMI SW)

Checking the reset waveform. (HDMI SW)

Check item(3-2.1). Checking the reset waveform :
Check the waveform.
When the power is turned on, is the TP"787_RST" waveform correct (as shown in the figure)?



NO

Check the reset circuit between CPU [IC751] and HDMI SW [IC701].
If there is no problem, the HDMI SW [IC701] is faulty.
Replace with a new device.

YES

Check item(3-2.2). Checking the HDMI SW :
Remove the [R7147/R7149].
Is the waveform of "I2C" the correct waveform?

YES

NO

HDMI SW [IC701] is faulty.
Replace with a new device.

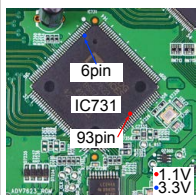
Recheck from **check item (3.1.)**.
If it does not work, replace the PCB.

3-3. Error Code H1-07 failure detection procedure

Checking device. (OSD)

Check the power supply voltage.

Check item(3-3.1). Check the power supply voltage.:
Does the power supply voltage of the OSD [IC731] indicate the appropriate voltage (1.8V, 3.3V)?
The test points are as follows.



Check item(3-3.2). Check the power supply voltage.:
Check the power supply components [IC742/IC741/Q7410] on the substrate and peripheral pattern.
If there is no problem, remove the OSD [IC731] from the substrate and measure the voltage at the test point of **check item (3-3.1)**.
Is the voltage correct (1.8V or 3.3V)?

YES

YES

NO

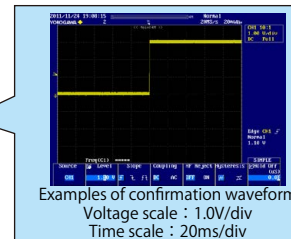
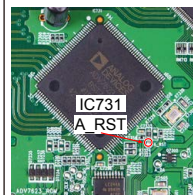
The power supply circuit is faulty.
Replace the PCB.

HDMI OSD [IC731] is faulty.
Replace with a new device.

Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

Checking the reset waveform.

Check item(3-3.3). Checking the reset :
Check the CPU.
When the power is turned on, is the TP"A_RST" waveform correct (as shown in the figure)?



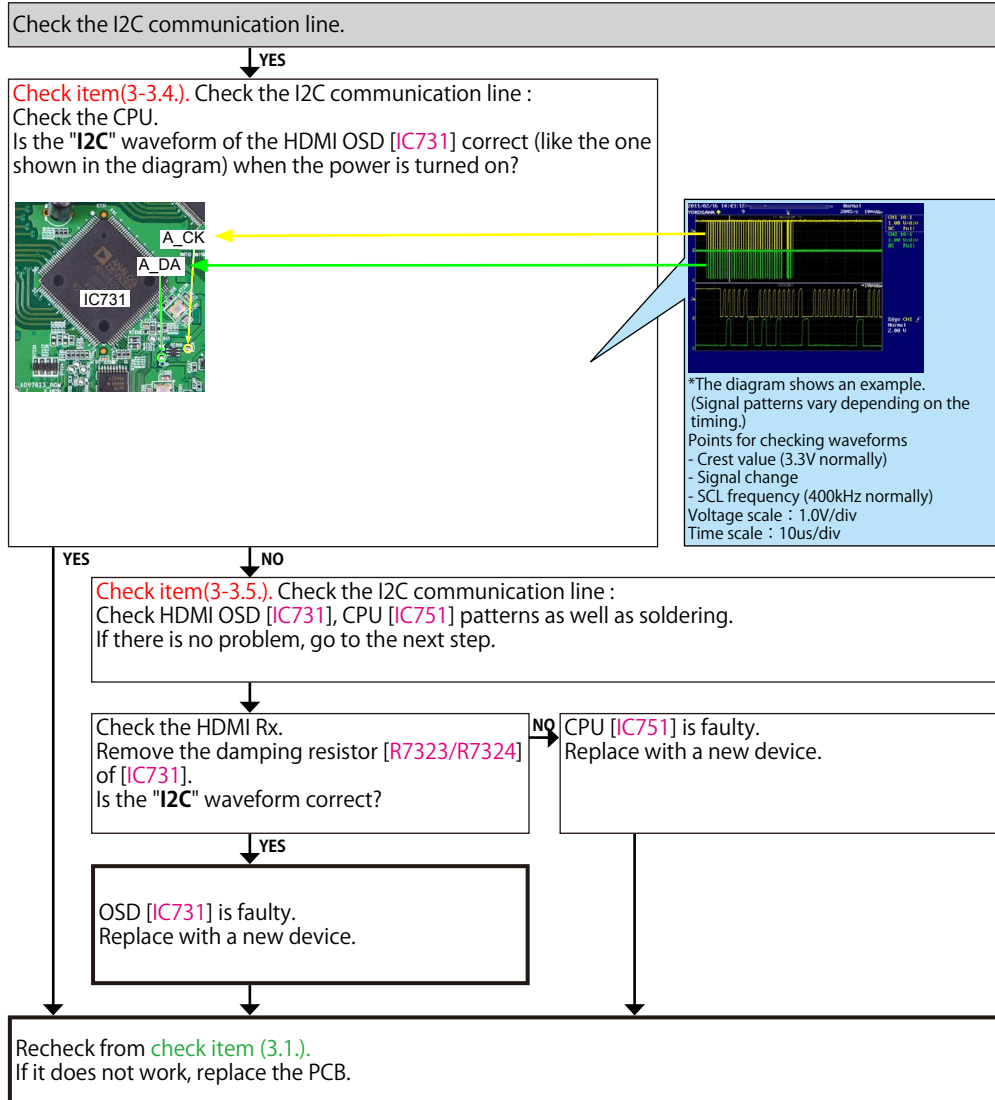
YES

NO

Check the reset circuit between CPU [IC751] and HDMI OSD [IC731].
If there is no problem, the HDMI OSD [IC731] is faulty.
Replace with a new device.

Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

Go to next page.



3-4. Error Code H1-15 failure detection procedure

Checking device. [IC732 : BY25Q32BSSIG(E3, E1C, K)/BY25Q64ASSIG(E2)]

Check item(3-4.1).
Write to the OSD ROM.
Recheck from check item (3.1.).
Does Error Code H1-15 continue?

NO

YES

Check item(3-4.2).
Replace [IC732] with a new device.
Recheck from check item (3.1.).
Does Error Code H1-15 continue?

NO

YES

Go to check item (3-3.1.)

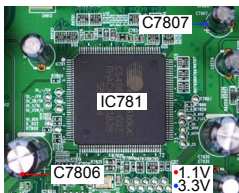
Recheck from check item (3.2.).

3-5. Error Code H1-08 failure detection procedure

Checking device. [IC781 : CS49844A]

Check the power supply voltage.

Check item(3-5.1). Check the power supply voltage.:
Does the power supply voltage of the DSP [IC781] indicate the appropriate voltage (1.0V, 3.3V)?
The test points are as follows.



Check item(3-5.2). Check the power supply voltage.:
Check the power supply components [IC741/ IC743/Q7415] on the substrate and peripheral pattern.
If there is no problem, remove the DSP [IC781] from the substrate and measure the voltage at the test point of **check item (3-5.1)**.
Is the voltage correct (1.0V or 3.3V)?

YES

YES

NO

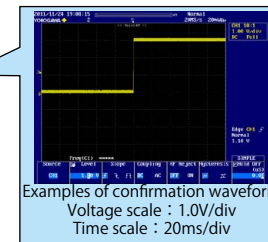
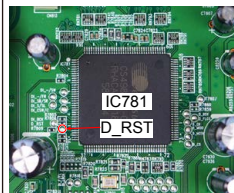
The power supply circuit is faulty.
Replace the PCB.

DSP [IC781] is faulty.
Replace with a new device.

Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

Checking the reset waveform.

Check item(3-5.3). Checking the reset :
Check the CPU.
Is the waveform of the TP near the DSP [IC781] correct (like the one shown in the diagram) when the power is turned on?



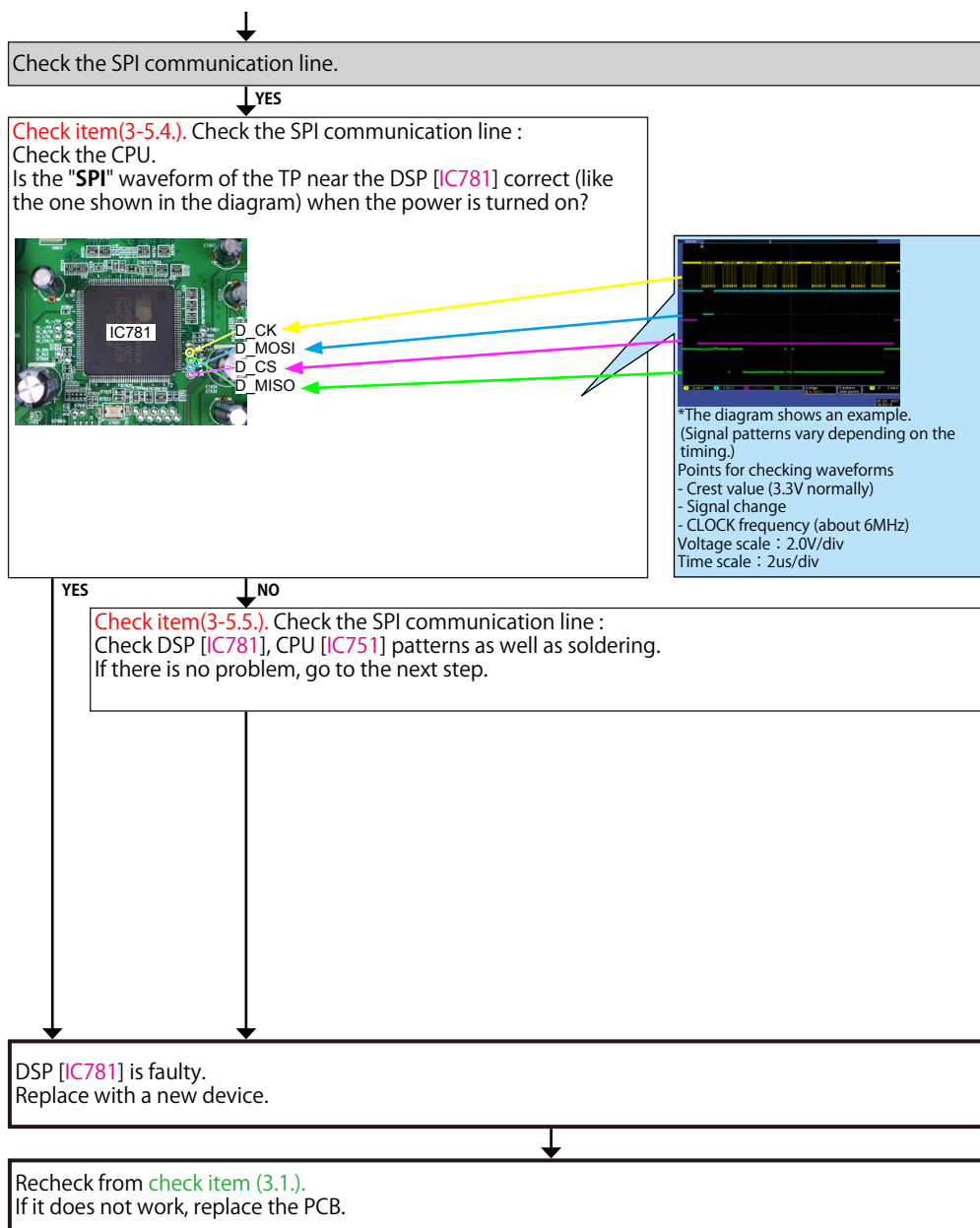
YES

NO

Check the reset circuit between CPU [IC751] and DSP [IC781].
If there is no problem, the DSP [IC781] is faulty.
Replace with a new device.

Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

Go to next page.

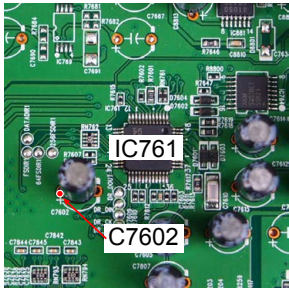


3-6. Error Code H1-12 failure detection procedure

Checking device. [IC761 : PCM9211]

Check the power supply voltage.

Check item(3-6.1). Check the power supply voltage.:
Does the power supply voltage of the DIR [IC761] indicate the appropriate voltage (3.3V)?
The test points are as follows.



YES

Check item(3-6.2). Check the power supply voltage.:
Check the power supply components [IC741/ Q7415] on the substrate and peripheral pattern.
If there is no problem, remove the DIR [IC761] from the substrate and measure the voltage at the test point of **check item (3-6.1).**
Is the power supply voltage correct (3.3V)?

YES

NO

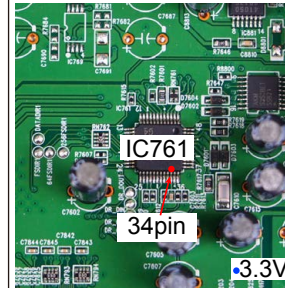
The power supply circuit is faulty.
Replace the PCB.

DIR [IC761] is faulty.
Replace with a new device.

Recheck from **check item (3.1.)**.
If it does not work, replace the PCB.

Checking the reset waveform.

Check item(3-6.3). Checking the reset :
Check the CPU.
When the power is turned on, is the DIR [IC761 : 34pin] waveform correct (as shown in the figure)?

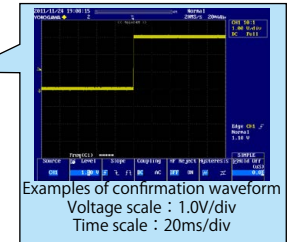


YES

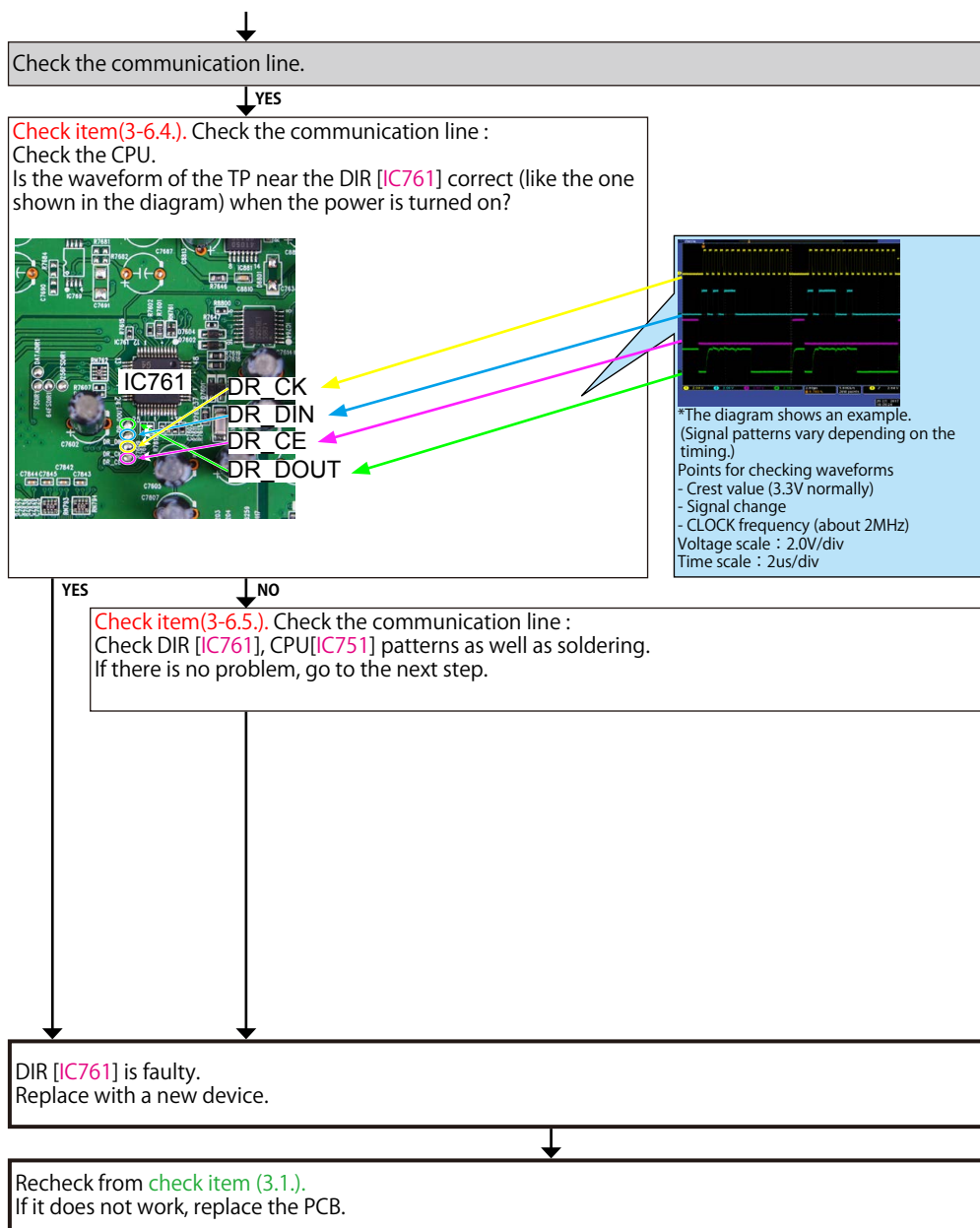
NO

Check the reset circuit between CPU [IC751] and DIR [IC761].
If there is no problem, the DIR [IC761] is faulty.
Replace with a new device.

Recheck from **check item (3.1.)**.
If it does not work, replace the PCB.



Go to next page.

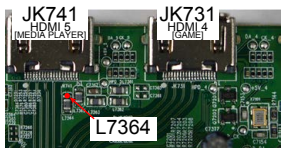


3-7. Error Code H1-16 failure detection procedure

Checking device. [IC724 : SiI9437]

Check the power supply voltage. (ARC IC)

Check item(3-7.1). Check the power supply voltage. :
Does the power supply voltage of the ARC IC [IC724] indicate the correct voltage (1.2V)?
The test points are as follows.



YES

NO

Check item(3-7.2). Check the power supply voltage. :
Check the power components [IC725] and the pattern on the substrate.
If there is no problem, remove the ARC IC [IC724] from the substrate and measure the voltage at the test point of **check item (3-7.1)**.
Is the power supply voltage correct (1.2V)?

YES

Replace with a new device.

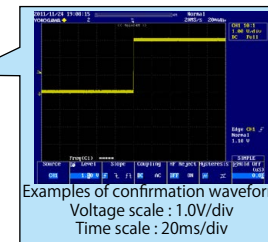
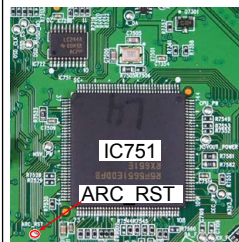
NO

The power supply circuit is faulty.
Replace the PCB.

Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

Checking the reset waveform. (ARC IC)

Check item(3-7.3). Checking the reset waveform :
Check the waveform.
Is the "RESET" waveform of the ARC IC [IC724] correct (like the one shown in the diagram) when the power is turned on?
The test points are follows.



Examples of confirmation waveform
Voltage scale : 1.0V/div
Time scale : 20ms/div

NO

Check the reset circuit between CPU [IC751] and ARC IC [IC724].
If there is no problem, the ARC IC [IC724] is faulty.
Replace with a new device.
Recheck from **check item (3.1)**.
If it does not work, replace the PCB.

YES

Go to next page.

3-8. HDMI Rx [MN864788] failure detection procedure

Checking operation between the HDMI (Rx/Tx) 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.

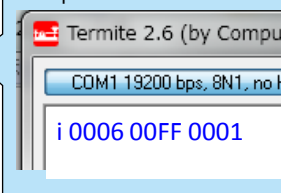
Checking the +5V/DDC status register (HDMI Rx/Tx)

Check item(3-8.1). Checking the 5V status register :
Send the following command from Termite.exe.

Send the command "i 0006 00FF 0001".

Move to the branch destination according to the value returned.

Example



HDMI IN 4, 5 "00"
(Detection of 5V is not OK.)

Go to **check item (3-8.3).**

HDMI IN4 "22 or 20" HDMI IN5 "11 or 10"
(Detection of 5V is OK)

Check item(3-8.2). Checking the DDC status register :
Send the following command from Termite.exe.

Case of HDMI IN4

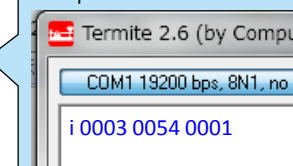
Send the command "i 0003 0054 0001".

Case of HDMI IN5

Send the command "i 0003 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 (3-8.4).**

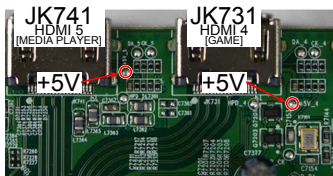
"22"
(Detection of DDC is OK)

Go to **check item (3-8.5).**

When the results of check item (3-8.1.) are "00"
(Detection of 5V is not OK)

Check the +5V voltage. (HDMI Rx/Tx)

Check item(3-8.3.). Check the +5V voltage.
Does "+5V" at the following test point indicate 5 V? [JK731/JK741]



YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

NO

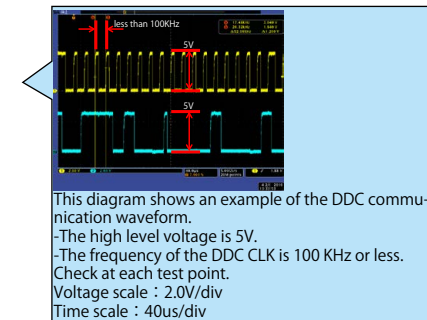
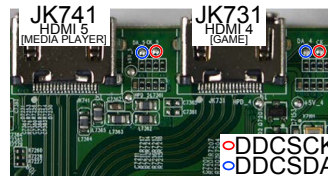
Check for a short circuit in the 5 V line and the 5 V Switch IC [IC733].
If there is no problem, the HDMI Rx/Tx [IC721] or the 5 V Switch IC [IC733] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-8.2.) are "00 or 04"
(Detection of DDC is not OK.)

Check the DDC line. (HDMI Rx/Tx)

Check item(3-8.4.). Check the DDC line :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI input terminal?



YES

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

NO

Check for a short circuit in the DDC line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-8.2.) are "22"
(Detection of DDC is OK.)

Checking the TMDS status register

Check item(3-8.5.). Checking register of the TMDS CLK detection status register :

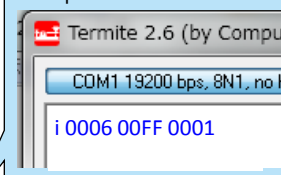
Send the following command from Termite.exe.

HDMI Rx/Tx
Send the command "i 0006 00FF 0001".

When the following value is returned, go to Yes.
HDMI IN4 "22" HDMI IN5 "11"

When the following value is returned, go to No.
HDMI IN4 "20" HDMI IN5 "10"

Example



NO

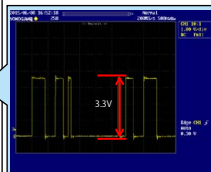
YES

Check item(3-8.7.). Checking the audio signal output :

Check the audio signal waveform at the following test point.
Is the waveform like the sample?



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



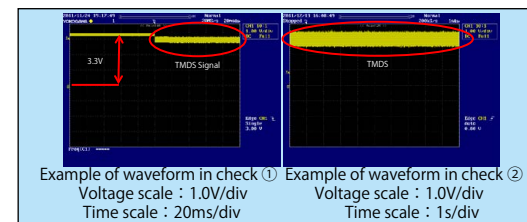
The diagram shows an example of the waveform of pin 129. (I2S0 Data)
Waveform check points
- Crest value (3.3V normally)
- Signal change
Check the waveform of each pin.
Voltage scale : 1.0V/div
Time scale : 20ms/div

YES

NO

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

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.



Check item(3-8.6.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



HDMI IN4
80/81/83/84/86/87/89/90pin

HDMI IN5
93/94/96/97/99/100/102/103pin

YES

NO

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Check for a short circuit in the pattern of the TMDS line of the HDMI Rx/Tx [IC721] from the HDMI input terminal.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

3-9. HDMI SW [MN864787] failure detection procedure

Checking operation between the HDMI (HDMI SW) 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.

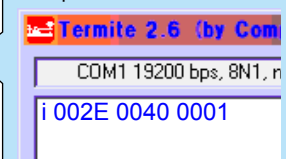
Checking the +5V/DDC status register (HDMI SW)

Check item(3-9.1.). Checking the 5V status 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



HDMI IN1/In2/In3 "00"
(Detection of 5V is not OK.)

Go to check item (3-9.3.).

HDMI IN1 "44 or 40" HDMI IN2 "22 or 20" HDMI IN3 "11 or 10"
(Detection of 5V is OK)

Check item(3-9.2.). Checking the DDC status register :
Send the following command from Termite.exe.

Case of HDMI IN1

Send the command "i 002B 0084 0001".

Case of HDMI IN2

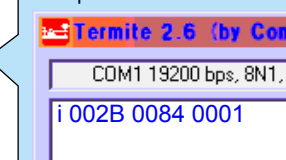
Send the command "i 002B 0054 0001".

Case of HDMI IN3

Send the command "i 002B 0054 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 (3-9.4.)

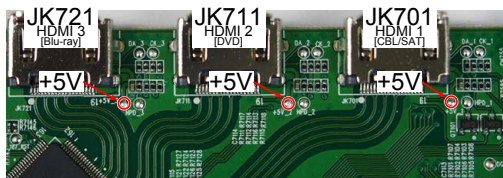
"22"
(Detection of DDC is OK)

Go to check item (3-9.5.)

When the results of check item (3-9.1.) are "00"
(Detection of 5V is not OK)

Check the +5V voltage. (HDMI SW)

Check item(3). Check the +5V voltage :
Does "+5V" at the following test point indicate 5 V? [JK701/JK711/JK721]



YES

HDMI SW [IC701] is faulty.
Replace with a new device.

NO

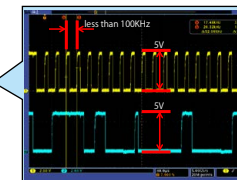
Check for a short circuit in the 5 V line and the 5 V Switch IC [IC733].
If there is no problem, the HDMI SW [IC701] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-9.2.) are "00 or 04"
(Detection of DDC is not OK.)

Check the DDC line. (HDMI SW)

Check item(3-9.4). Check the DDC Line HPD line :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI input terminal [JK701/JK711/JK721]?



This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100 KHz or less.
Check at each test point.
Voltage scale : 2.0V/div
Time scale : 40us/div

YES

HDMI SW [IC701] is faulty.
Replace with a new device.

NO

Check for a short circuit in the DDC line.
If there is no problem, the HDMI SW [IC701] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-9.2.) are "22"
(Detection of DDC is OK.)

Checking the TMDS status register (HDMI SW)

Check item(3-9.5.). Checking register of the TMDS CLK detection status register :

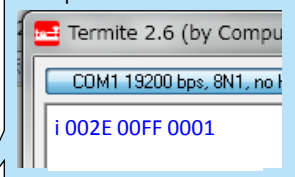
Send the following command from Termite.exe.

HDMI Rx/Tx
Send the command "i 002E 00FF 0001".

When the following value is returned, go to Yes.
HDMI IN1 "44" HDMI IN2 "22" HDMI IN3 "11"

When the following value is returned, go to No.
HDMI IN1 "00" HDMI IN2 "00" HDMI IN3 "00"

Example



NO

YES

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

Check item(3-9.7.). Checking register of the TMDS CLK detection status register :

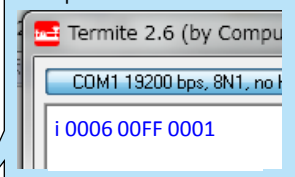
Send the following command from Termite.exe.

Send the command "i 0006 00FF 0001".

When the following value is returned, go to Yes.
"CC or 44"

When the following value is returned, go to No.
"other"

Example



YES

Check item(3-9.8.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



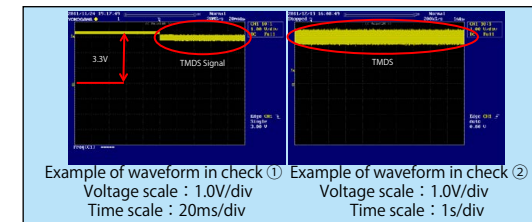
55/56/58/59/61/62/64/65pin

YES

NO

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

HDMI SW [IC701] is faulty.
Replace with a new device.



Example of waveform in check ①

Voltage scale : 1.0V/div

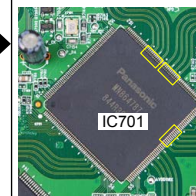
Time scale : 20ms/div

Example of waveform in check ②

Voltage scale : 1.0V/div

Time scale : 1s/div

Check item(3-9.6.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



HDMI IN3
137/138/140/141/143/144/146/1
47pin

HDMI IN2
124/125/127/128/130/131/133/1
34pin

HDMI IN1
83/84/86/87/89/90/92/93pin

YES

NO

HDMI SW [IC701] is faulty.
Replace with a new device.

Check for a short circuit in the pattern of the
TMDS line of the HDMI SW [IC701] from the HDMI
input terminal.
If there is no problem, the HDMI SW [IC701] is
faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

3-10. HDMI DDC Buffer IC [TCA9517] failure detection procedure

Checking operation between the HDMI (HDMI DDC 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.

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

Check item(3-10.3.). 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 Computec)
COM1 19200 bps, 8N1, no t
i 002E 00FF 0001

"00"

(Detection of 5V is not OK.)

Go to **check item (3-10.5.)**

"88 or 80"

(Detection of 5V is OK)

Check item(3-10.4.). 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 Computec)
COM1 19200 bps, 8N1, no t
i 002B 00B4 0001

"00 or 04"

(Detection of DDC is not OK.)

Go to **check item (3-10.6.)**

"22"

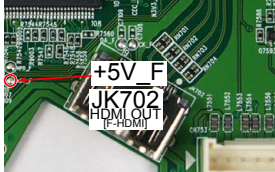
(Detection of DDC is OK)

Go to **check item (3-10.7.)**

When the results of check item (3-10.3.) are "00"
(Detection of 5V is not OK.)

Check the +5V voltage. (HDMI DDC Buffer)

Check item(3-10.5.). Check the +5V voltage.
Does "+5 V" at the following test point indicate 5V?
The test points are as follows. (HDMI SW [IC701])



NO

Check for a short circuit in the 5V line, the Front HDMI FFC, and the 5V Switch [IC733].
If there is no problem, the HDMI SW1 [IC701] or 5V Switch [IC733] is faulty.
Replace with a new device.

YES

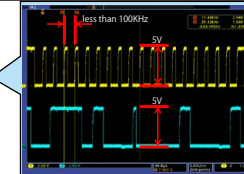
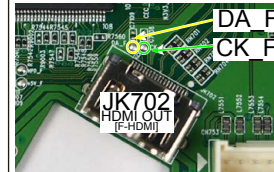
HDMI SW [IC701] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-10.4.) are "00 or 04"
(If the DDC are not OK)

Check the DDC Line. (HDMI DDC Buffer)

Check item(3-10.6.). Check the DDC line :
Does "DDCCL" and "DDCDA" signal of the HDMI SW [IC701] indicate 5 V?
The test points are as follows.



This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100 KHz or less.
Check at each test point.
Voltage scale : 2.0V/div
Time scale : 40us/div

NO

Check for a short circuit in the DDC line and check the FRONT HDMI Cable.
If there is no problem, the HDMI DDC Buffer [IC311] is faulty.
Replace with a new device.

YES

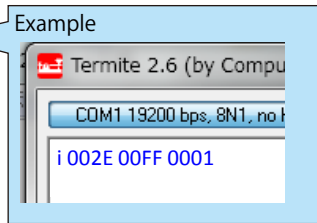
HDMI SW [IC701] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

When the results of check item (3-10.4.) are "22"
(Detection of DDC is OK)

Checking the TMDS status register

Check item(3-10.7.). Check the TMDS CLK detection status of the register.
Send the following command from Termit.exe.
Send the command "i 002E 00FF 0001".
When the following value is returned, go to Yes.
"88"
When the following value is returned, go to No.
"80"



NO

YES

HDMI SW [IC701] is faulty.
Replace with a new device.

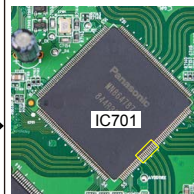
HDMI SW [IC701] is faulty.
Replace with a new device.

Check for a short circuit in the TMDS line and the FRONT HDMI Cable.
If there is no problem, the HDMI DDC Buffer [IC311] is faulty.
Replace with a new device.

Recheck from check item (3.2.).
If it does not work, replace the PCB.

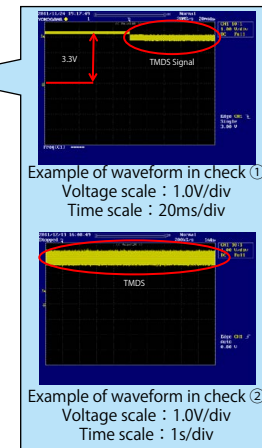
Check item(3-10.8.). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?

HDMI SW [IC701]

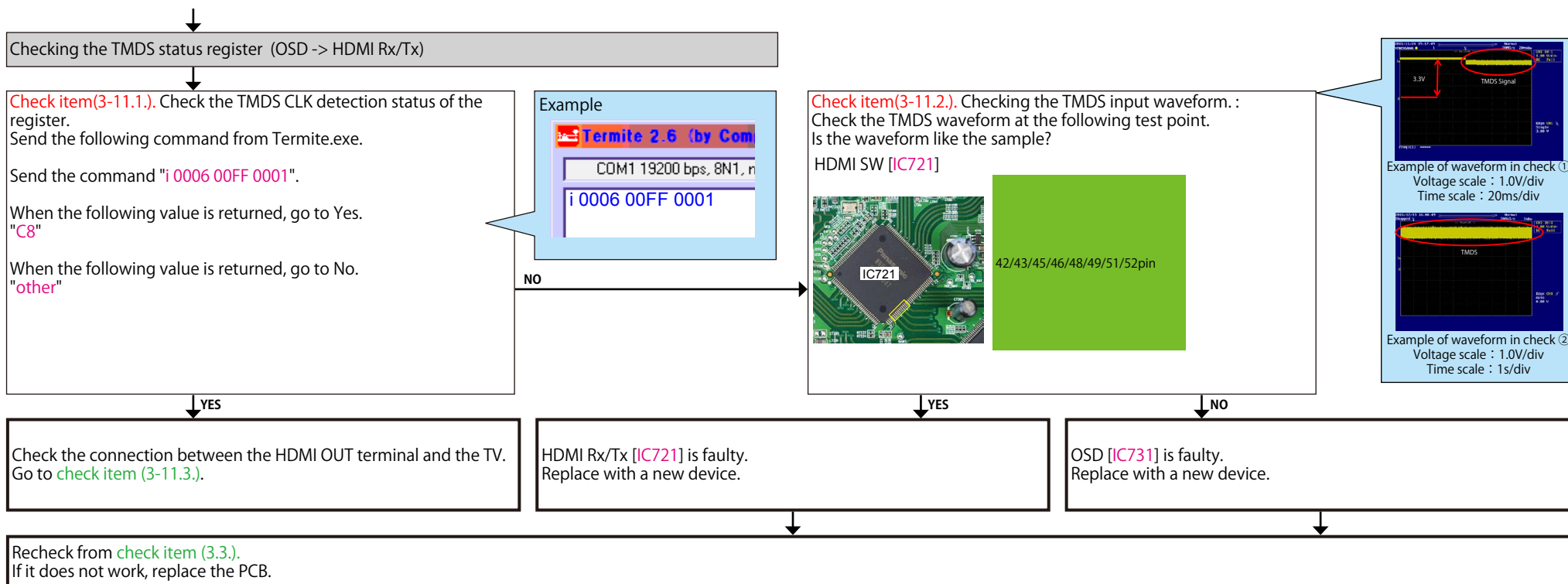


YES

NO



3-11. OSD [ADV7623] failure detection procedure



Check the connection between the HDMI OUT terminal and the TV.
Connect the HDMI OUT terminal and the TV, and then turn on the TV and check the following items.

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

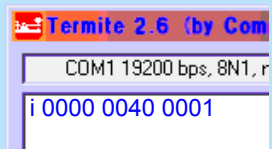
Check item(3-11.3). Check the HPD and RXSENSE register value of the HDMI TX device. :

Send the following command from Termite.exe.

Send the command "i 0000 0040 0001".

Move to the branch destination according to the value returned.

Example



Termite 2.6 (by Com
COM1 19200 bps, 8N1, r
i 0000 0040 0001

"03"

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

Go to [check item \(3-11.4.\)](#)

"01"

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

Go to [check item \(3-11.7.\)](#)

"02"

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

Go to [check item \(3-11.8.\)](#)

"00"

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

Go to [check item \(3-11.9.\)](#)

When the results of check item (3-11.3.) are "03"
(Detection of HPD is OK / Detection of RXSENSE is OK)

Checking the EDID register. (Monitor)

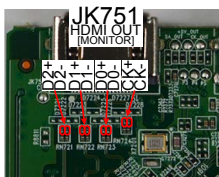
Check item(3-11.4.). Check the Monitor EDID :

- ① Unplug the AC cord. Plug the AC cord into a power outlet.
 - ② Send the transmission command "m_1" from Termit.exe.
- Are the first eight bytes of the returned value "00FFFFFFF00"?

YES

NO

Check item(3-11.5.). Checking the TMDS :
Check the TMDS waveform at the following test point.



YES

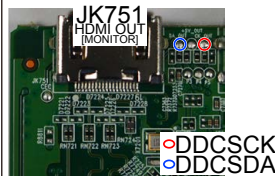
NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Rx/Tx (IC721) is faulty.
Replace with a new device.

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

Check item(3-11.6.). Check communication with the monitor :
Are waveforms of "DDCSCK" and "DDCSDA" observed at the test point near the HDMI output terminal [JK751]?



YES

NO

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

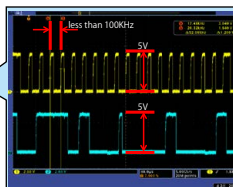
Example

```

Termit 2.6 by CompuPhase
COM1 19200 bps, 8N1, no handshake
[Set]

m_1
00FFFFFFF0009b1177945540000
3213010380151E782E6085A6564A9C25
125054A56B808180810081C0A9C08140
D1C061C0B300023A801871382D40582C
4500132B2100001E000000FF00394339
  
```

The first eight bytes are normally "00FFFFFFF00".
*If the AVR and the TV are not connected via HDMI, the correct register value cannot be verified.

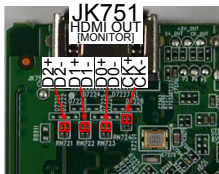


This diagram shows an example of the DDC communication waveform.
-The high level voltage is 5V.
-The frequency of the DDC CLK is 100 KHz or less.
Check at each test point.
Voltage scale : 2.0V/div
Time scale : 40us/div

When the results of check item (3-11.3.) are "01"
(Detection of HPD is OK / Detection of RXSENSE is not OK)

Check the RXSENSE. (Monitor)

Check item(3-11.7.). Checking the RXSENSE :
Does the test point of RXSENSE close to the HDMI output terminal
[JK751] indicate the 3.3 V?



YES NO

Check for a short circuit in the TMDS line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

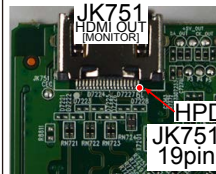
HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

When the results of check item (3-11.3.) are "02"
(Detection of HPD is not OK / Detection of RXSENSE is OK)

Check the HPD. (Monitor)

Check item(3-11.8.). Checking the HPD :
Does the voltage of HPD test point close to the HDMI output terminal
[JK751] indicate "Hi" (3-5 V)?



YES NO

Check for a short circuit in the HPD line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

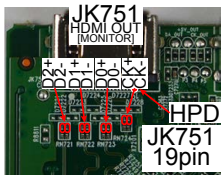
HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

When the results of check item (3-11.3.) are "00"
(Detection of HPD is not OK / Detection of RXSENSE is not OK)

Check the RXSENSE/HPD. (Monitor)

Check item(3-11.9.). Checking the HPD and RXSENSE. :
Does the test point of RXSENSE close to the HDMI output terminal
[JK751] indicate the 3.3 V?
Does the voltage of HPD test point close to the HDMI output terminal
[JK751] indicate "Hi" (3-5 V)?



YES

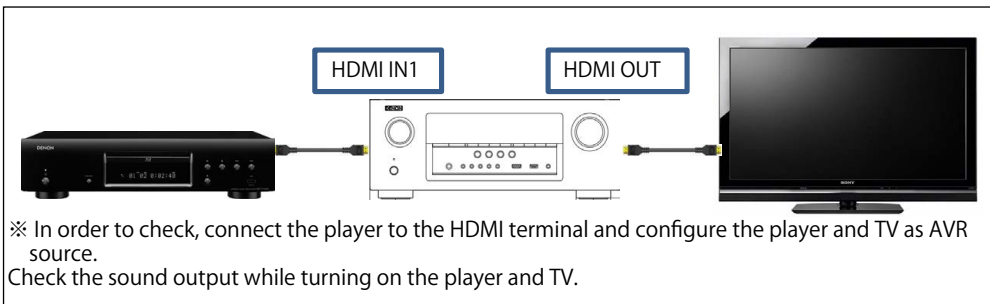
NO

Check for a short circuit in the TMDS/HPD line.
If there is no problem, the HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

Recheck from check item (3.3.).
If it does not work, replace the PCB.

3-12. Fault detection procedure between HDMI Rx/Tx [MN864788] & OSD [ADV7623].



Checking the TMDS status register (Rx/Tx -> OSD)

Check item(3-12.1). Check the TMDS CLK detection status of the register.

Send the following command from Termite.exe.

Send the command "i 00B2 006A 0001".

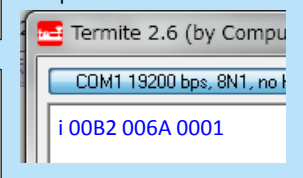
When the following value is returned, go to Yes.

"11"

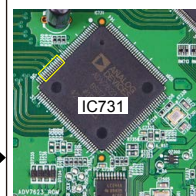
When the following value is returned, go to No.

"00"

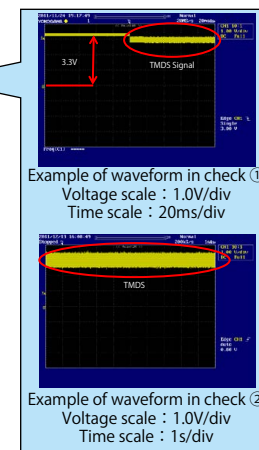
Example



Check item(3-12.2). Checking the TMDS input waveform. :
Check the TMDS waveform at the following test point.
Is the waveform like the sample?



23/24/26/27/29/30/32/33 pin



YES

YES

NO

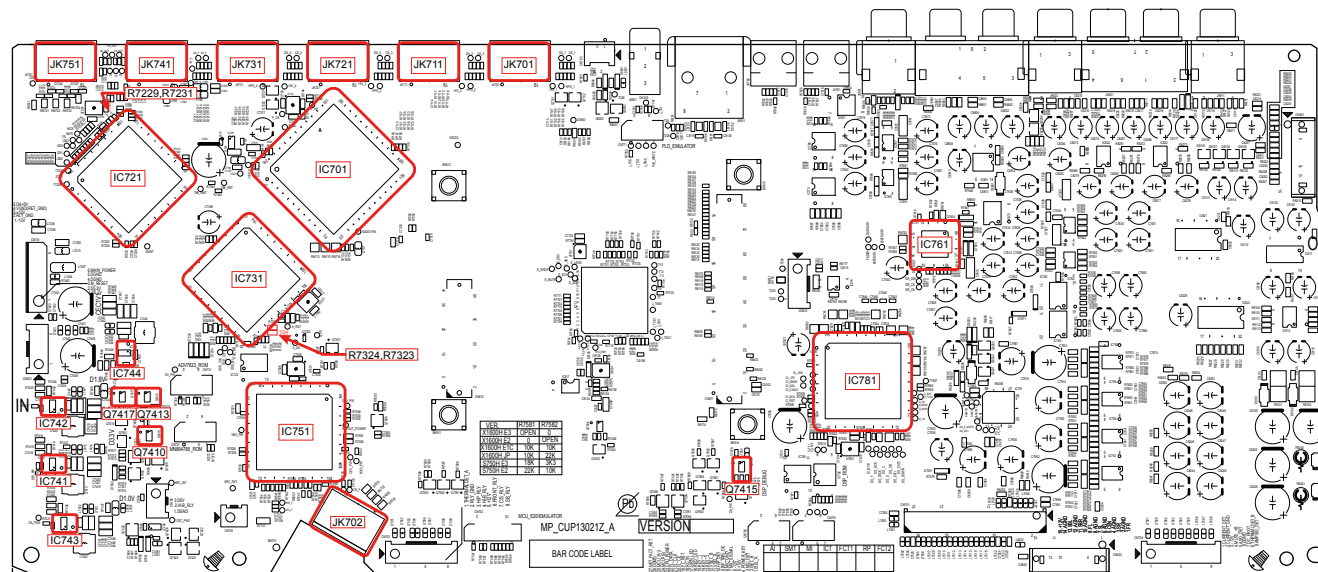
HDMI Rx/Tx [IC721] is faulty.
Replace with a new device.

OSD [IC731] is faulty.
Replace with a new device.

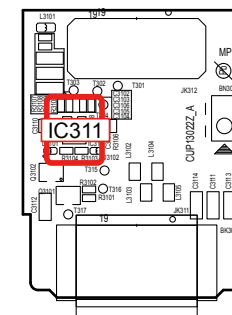
Recheck from check item (3.4).
If it does not work, replace the PCB.

4. Device implementation location

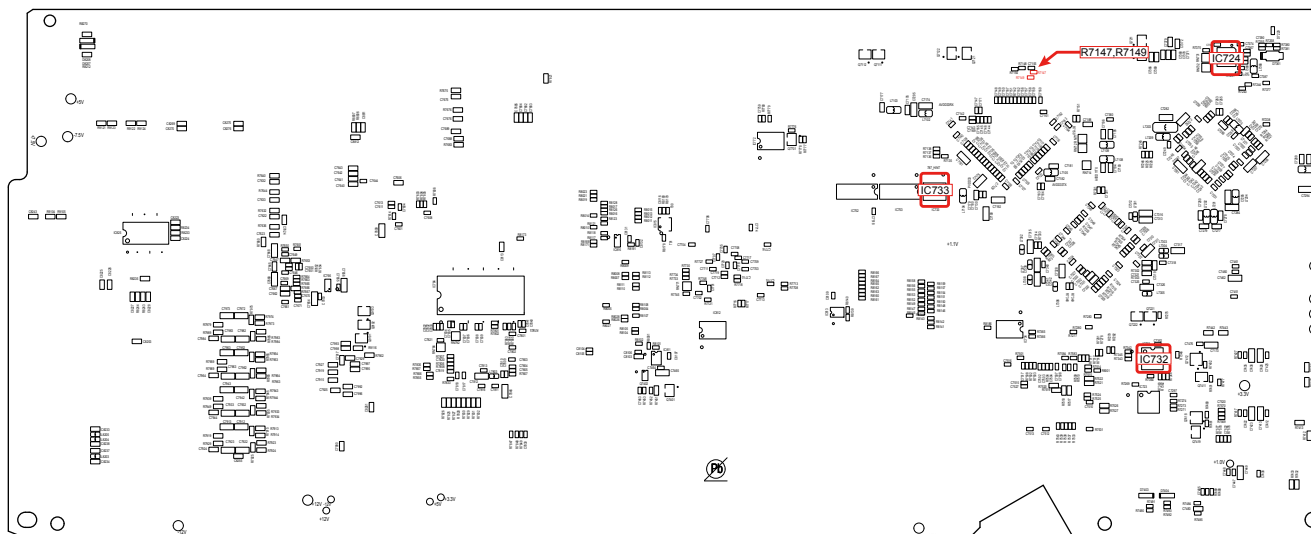
DIGITAL (A SIDE)



F-HDMI (A SIDE)

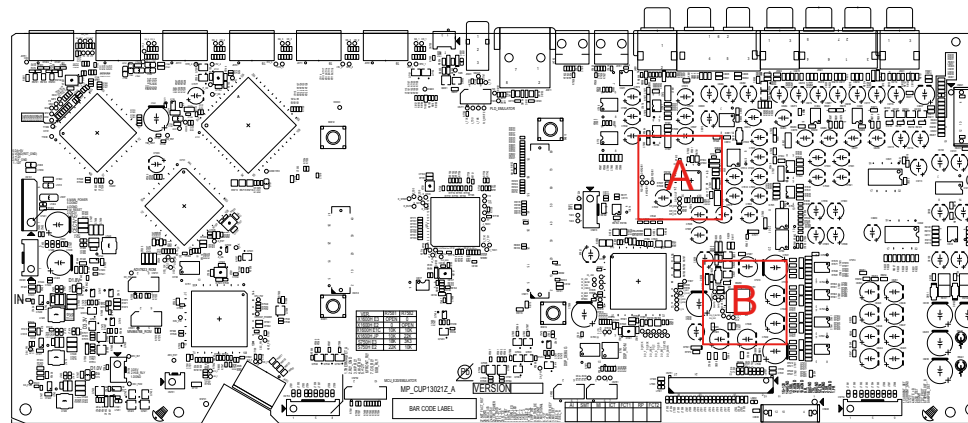
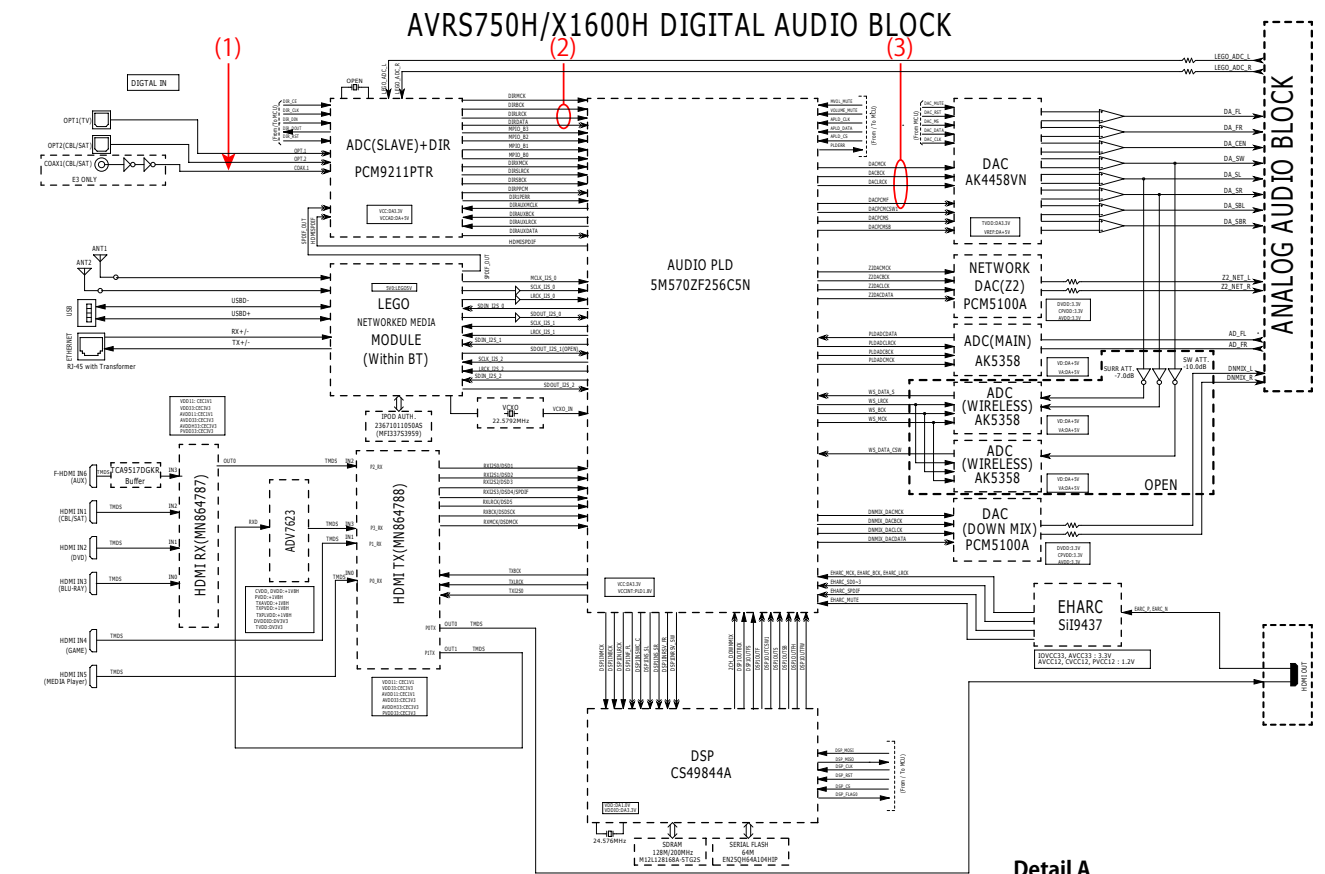
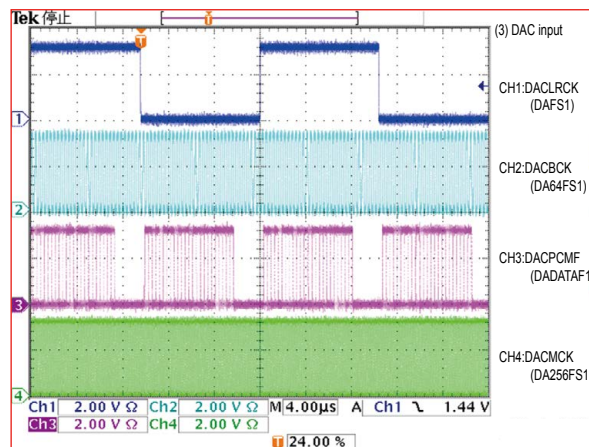
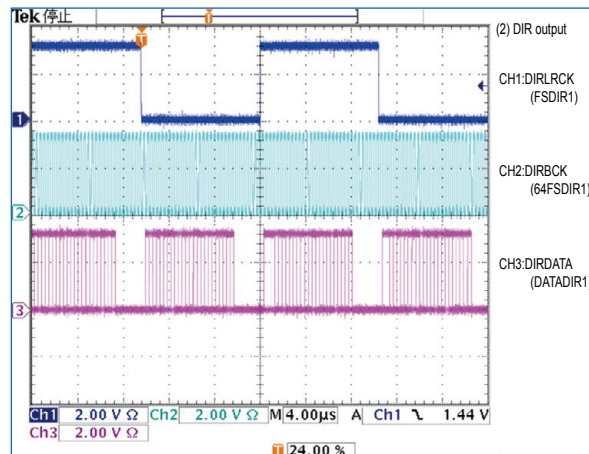
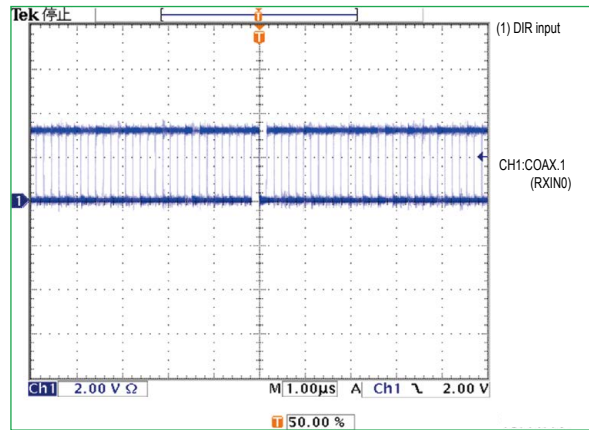


DIGITAL (B SIDE)

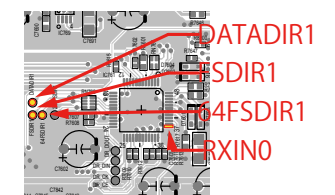


CLOCK FLOW & WAVE FORM IN DIGITAL BLOCK

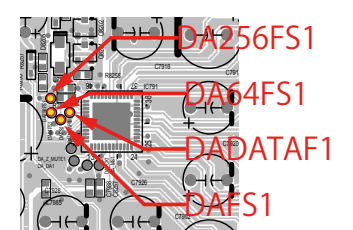
WAVE FORM



Detail A



Detail B



SPECIAL MODE

Special mode setting button AVR-X1600H

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

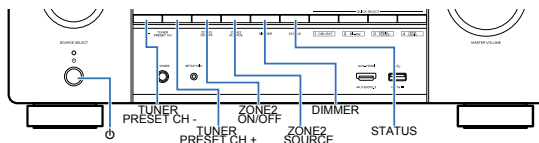
※ No. 5, 9, 10 : While the power is on, hold down buttons "A", "B", and "C" for at least 3 seconds .

No.	Mode	Button A	Button B	Button C	Descriptions
1	Version Display Mode (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	TUNER PRESET CH +	ZONE2 SOURCE	-	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)
3	Selecting the Mode for Service-related	ZONE2 SOURCE	DIMMER	STATUS	This is a display for turning on each service-related mode. Service-related modes : No. 3-1 - No. 3-5 (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 (E3 and E2 model only)	↑	↑	↑	Enables reception STEP of the ANALOG TUNER to be changed. (See 3-4. TUNER STEP mode (E3 / E2 only))
3-5	Remote ID Setup Mode	↑	↑	↑	If there are multiple DENON AV receivers in the same area, this mode prevents other AV receivers from being operated concurrently with this device. (See 3-5. Remote ID Setup Mode)
4	Protection Pass Mode	TUNER PRESET CH +	ZONE2 SOURCE	STATUS	Enables the power to be turned on when protection detection is disabled. (See 4. Protection Pass Mode)
5	Network Initialization Mode	TUNER PRESET CH +	ZONE2 ON/OFF	-	Network module backup data is initialized. (See 5. Network Initialization Mode)
6	User Initialization Mode	TUNER PRESET CH -	TUNER PRESET CH +	-	Initialize the backup data for the MCU and network module. (Settings for the Installer Setup are not initialized.)
7	Factory Initialization Mode	ZONE2 SOURCE	DIMMER	-	Initialize the backup data only for MCU. (Settings for the Installer Setup are initialized) (Network function settings are not initialized.) (See POST-SERVICE PRECAUTIONS)
8	Clearing the Operation Info	ZONE2 SOURCE	STATUS	-	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	TUNER PRESET CH -	ZONE2 SOURCE	-	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.
10	Log Capture feature	TUNER PRESET CH +	ZONE2 SOURCE	STATUS	Acquires the Network Module log. The log is deleted when the Network Module is deleted. (See 7. Log Capture feature)

NOTE : When the volume indicator displays " -00.0 ", the unit has entered a special mode for developers. In this case, the RS-232C communication is not available.

To release this special mode, press and hold the "TUNER PRESET CH +" and "ZONE2 SOURCE" buttons for 3 seconds or more while the power is ON. When the volume indicator returns to the normal display, the RS-232C communication is available.

-00.0
All the indicator Lights



Special mode setting button AVR-S750H

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

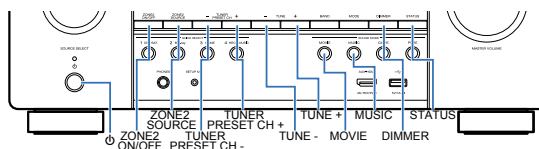
※ No. 5, 9, 10 : While the power is on, hold down buttons "A", "B", and "C" for at least 3 seconds .

No.	Mode	Button A	Button B	Button C	Descriptions
1	Version Display Mode (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	ZONE2 SOURCE	TUNER PRESET CH +	-	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)
3	Selecting the Mode for Service-related	TUNER PRESET CH +	TUNE -	TUNE +	This is a display for turning on each service-related mode. Service-related modes : No. 3-1 - No. 3-5 (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 (E3 and E2 model only)	↑	↑	↑	Enables reception STEP of the ANALOG TUNER to be changed. (See 3-4. TUNER STEP mode (E3 / E2 only))
3-5	Remote ID Setup Mode	↑	↑	↑	If there are multiple DENON AV receivers in the same area, this mode prevents other AV receivers from being operated concurrently with this device. (See 3-5. Remote ID Setup Mode)
4	Protection Pass Mode	ZONE2 SOURCE	TUNER PRESET CH +	TUNE +	Enables the power to be turned on when protection detection is disabled. (See 4. Protection Pass Mode)
5	Network Initialization Mode	ZONE2 ON/OFF	ZONE2 SOURCE	-	Network module backup data is initialized. (See 5. Network Initialization Mode)
6	User Initialization Mode	TUNER PRESET CH -	TUNER PRESET CH +	-	Initialize the backup data for the MCU and network module. (Settings for the Installer Setup are not initialized.)
7	Factory Initialization Mode	TUNER PRESET CH +	TUNE -	-	Initialize the backup data only for MCU. (Settings for the Installer Setup are initialized) (Network function settings are not initialized.) (See POST-SERVICE PRECAUTIONS)
8	Clearing the Operation Info	TUNER PRESET CH +	TUNE +	-	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	ZONE2 SOURCE	TUNER PRESET CH -	-	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.
10	Log Capture feature	MOVIE	MUSIC	-	Acquires the Network Module log. The log is deleted when the Network Module is deleted. (See 7. Log Capture feature)

NOTE : When the volume indicator displays " -00.0 ", the unit has entered a special mode for developers. In this case, the RS-232C communication is not available.

To release this special mode, press and hold the "ZONE2 SOURCE" and "TUNER PRESET CH +" buttons for 3 seconds or more while the power is ON. When the volume indicator returns to the normal display, the RS-232C communication is available.

-00.0
All the indicator Lights



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 GUI SFLASH → ⑨ PIMG → ⑩ Hybrid GUI → ⑪ HEOS Version → ⑫ HEOS Build → ⑬ HEOS Module → ⑭ HEOS Configuration → ⑮ HEOS Locale → ⑯ Restore Version → ⑰ Ether Mac Address → ⑱ Wi-Fi Mac Address → ⑲ BT Mac Address → ⑳ Audyssey App Interface Version

① Model destination information :

AVR-@@@@@@ \\\

@ : Model name (X1600H, S750H)
\\ : Region (E3, E2, E1C, JP)

② Serial Number :

SN%%*****

% : SKU code

③ Firmware Package :

Package :****

④ Main μ -com :

M:*****

⑤ Main 1st Boot Loader :

Main FBL :**.*

⑥ DSP ROM :

DSP :**.*

⑦ Audio PLD :

A.PLD :*****

⑧ GUI SFLASH :

GUI :@@\$~****

@ : Model code

\$: Brand code (Non=0, De=1, Mz=2, Mc=3)

~ : Region code (E3=1, E2=2, E1C=5, JP=4, ALL=0)

* : version

⑨ PIMG :

PIMG :*****

⑩ Hybrid GUI :

HIMG :*****

⑪ HEOS Version :

HEOS Version

↓ "Press "STATUS" button.

*_*_*_*_*_*_*_*_*_*

⑫ HEOS Build :

HEOS Build

↓ "Press "STATUS" button.

⑬ HEOS Module :

HEOS Module

↓ "Press "STATUS" button.

⑭ HEOS Config :

HEOS Config

↓ "Press "STATUS" button.

Development

Production

⑮ HEOS Locale :

HEOS Locale

↓ "Press "STATUS" button.

_

⑯ Restore Version :

RSTR

↓ "Press "STATUS" button.

⑰ Ether MAC Address :

*Ether MAC

↓ "Press "STATUS" button.

*****-*****

⑱ Wi-Fi MAC Address :

*Wi-Fi MAC

↓ "Press "STATUS" button.

*****-*****

⑲ Bluetooth MAC Address :

*BT MAC Address

↓ "Press "STATUS" button.

*****-*****

⑳ Audyssey 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, 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).	FIRM ERROR ▲M:***** ▲Main FBL :**.** ▲DSP :**.** ▲Audio PLD:**.** ▲PIMG :*****	•Check the resistor for setting the region [R7581, R7582, DIGITAL PCB]. •Write the firmware for the correct region. PIMG Error indication •Check the circuits around the Logic [IC722] and SFROM [IC723]. If there appear to be no problems, [IC722] or [IC723] is faulty.
② DIR NG	This error is displayed if there is no response from the DIR.	DIR ERROR 01	•Check the DIR [IC761, DIGITAL PCB] and surrounding circuits.
③ DSP NG	Boot error 1 (After reset the DSP, DSP_Flag0 port is "Low") Boot Error 2 (After reset the DSP, MCU received state error command) Signal Detect Error (No response after input set for 1sec) Mode Change Error (No response after mode change for 1sec) Invalid situation (Detecting invalid situation with autodetect) Busy Error ("Busy" port remains "Low" for 1sec) Output Fs Error (Fs status between MCU output and actual DSP is different) Input Fs Error (Fs status between AutoDetect Msg and ACCN Msg is different) SPI communication error	DSP ERROR 01 DSP ERROR 02 DSP ERROR 03 DSP ERROR 04 DSP ERROR 05 DSP ERROR 06 DSP ERROR 07 DSP ERROR 08 DSP ERROR 09	•Check the DSP [IC781, DIGITAL PCB] and surrounding circuits.
④ BACKUP NG	Error occurred in BACKUP. it is an error of the check sum.	BACKUP ERROR	

1.5. Version Display in the Setup Menu

Follow the steps below to display the firmware information.

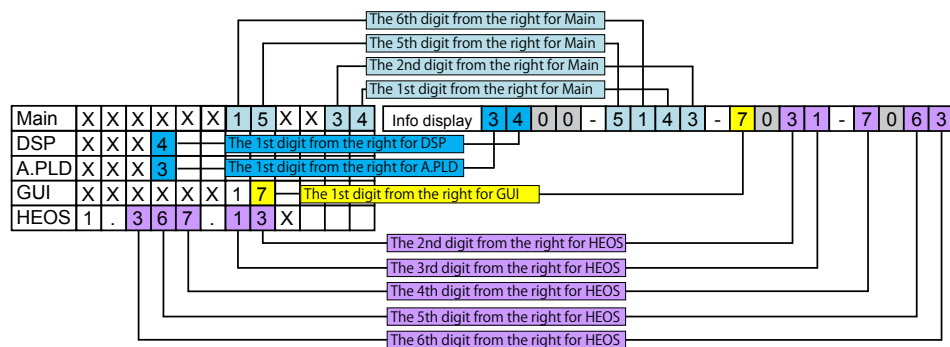
- (1) Press the "**SETUP**" button on the remote control.
- (2) Select "**General - Information - Firmware**".

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.

- 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

⑤

RC LOCK *Off

The REMOTE LOCK mode is turned off.

2.2. Starting up

While holding down buttons "TUNER PRESET CH +" and "ZONE2 SOURCE" simultaneously, press the power button to turn on the power.

Select the desired mode using the "TUNER PRESET CH +/-" 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 "TUNER PRESET CH +/-" 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.

3-1. Selecting the Mode for Service-related

3-1.1. Actions

Select diagnostic mode (service path check mode), protection history display mode, 232C standby clear mode, Operation Info mode, TUNER STEP mode or Remote ID Setup Mode.

3-1.2. Starting up

AVR-X1600H

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

AVR-S750H

- While holding down buttons "TUNER PRESET CH +", "TUNE -" and "TUNE +" simultaneously, press the power button to turn on the power.

Select the desired mode using the "TUNER PRESET CH +/-" 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 "TUNER PRESET CH +" 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 E3 and E2 model only

5.TUNER FRQ SET

Enables reception STEP of the ANALOG TUNER to be changed.



⑤

6.REMOTE ID

This function is for operating only the desired AV receiver.

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

AVR-X1600H

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

AVR-S750H

- While holding down buttons "**TUNER PRESET CH +**", "**TUNE -**" and "**TUNE +**" simultaneously, press the power button to turn on the power.

Select the "**2. PROTECTION**" using the "**TUNER PRESET CH +/-**" 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.

- (1) If no protections has occurred.

NO PROTECT

- (2) 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.

- (3) 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.

- (4) THERMAL (if the last protection is THERMAL(A) or THERMAL(B))

PRT:THERMAL A

PRT:THERMAL B

Cause : Abnormal heat sink temperature.

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

- (5) 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.

- (1) Activate Protection History Display Mode. Press the "**STATUS**" button to display the protection history.

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

- (2) Initialize this unit. (See "[POST-SERVICE PRECAUTIONS](#)")

※ Use the method in **3-2.4. (1)** 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.

- (1) ASO/DC protection: Flashes at 0.5-second intervals (0.25 seconds lit, 0.25 seconds unlit)
- (2) THERMAL(A/B) protection: Flashes at 2-second intervals (1 seconds lit, 1 seconds unlit)
- (3) 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

AVR-X1600H

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

AVR-S750H

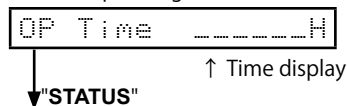
- While holding down buttons "**TUNER PRESET CH +**", "**TUNE -**" and "**TUNE +**" simultaneously, press the power button to turn on the power.

Select the "**4. OP INFO**" using the "**TUNER PRESET CH +/-**" button, then press the "**STATUS**" button then to confirm.

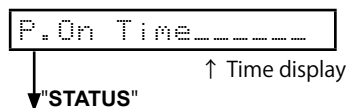
3-3.3. Operations

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

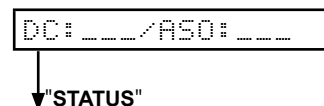
- (1) Accumulated operating time



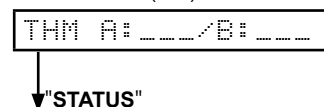
- (2) Power On time



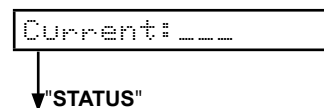
- (3) DC / ASO Protection count



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



- (5) Current Protection count



(Returns to normal display)

3-4. TUNER STEP mode (E3 / E2 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

AVR-X1600H

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

AVR-S750H

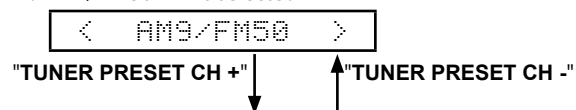
- While holding down buttons "**TUNER PRESET CH +**", "**TUNE -**" and "**TUNE +**" simultaneously, press the power button to turn on the power.

Select the "**5. TUNER FRQ SET**" using the "**TUNER PRESET CH +/-**" button, then press the "**STATUS**" button then to confirm.

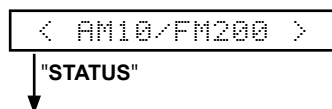
3-4.3. Displays

Start up this unit in TUNER STEP mode, select the desired option using the "**TUNER PRESET CH +/-**" button, then enter using the "**STATUS**" button. The following information is displayed in the following order.

- (1) AM9 kHz / FM50 kHz is selected



- (2) AM10 kHz / FM200 kHz is selected



- (3) Press the power button to turn off the power.
(4) Press the power button to turn on the power.

3-5. Remote ID Setup Mode

3-5.1. Actions

This function allows only the desired AV receiver to be operated if multiple DENON AV receivers are used in the same room.

3-5.2. Starting up

AVR-X1600H

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

AVR-S750H

- While holding down buttons "**TUNER PRESET CH +**", "**TUNE -**" and "**TUNE +**" simultaneously, press the power button to turn on the power.

Select the "**6. REMOTE ID**" using the "**TUNER PRESET CH +/-**" button, then press the "**STATUS**" button then to confirm.

3-5.3. Operations

- (1) When Remote ID Setup mode is activated, the following message is displayed.

REMOTE ID ?

- (2) Press the desired "**QUICK SELECT 1 - 4**" button.

Button	Display
QUICK SELECT 1	REMOTE ID 1
QUICK SELECT 2	REMOTE ID 2
QUICK SELECT 3	REMOTE ID 3
QUICK SELECT 4	REMOTE ID 4

- (3) Press the power button to turn off the power.
(4) Press the power button to turn on the power.

- ※ Only "**QUICK SELECT 1 - 4**" and the POWER button on the unit can be used in Remote ID Setup Mode.
- ※ The remote ID of the remote control supplied with this unit cannot be changed.

NOTE :

If the ID of the unit and remote control do not match, "**AVAMP***" appears on the display of the unit when the remote control is used
(* : own remote control ID).

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

AVR-X1600H

- While holding down buttons "**TUNER PRESET CH +**", "**ZONE2 SOURCE**" and "**STATUS**" simultaneously, press the power button to turn on the power.

AVR-S750H

- While holding down buttons "**ZONE2 SOURCE**", "**TUNER PRESET CH +**" and "**TUNE +**" 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

AVR-X1600H

- When the power is on and the input source is HEOS Music, press and hold the "**TUNERPRESET CH +**" and "**ZONE2 ON/OFF**" buttons for more than 3 seconds.

AVR-S750H

- When the power is on and the input source is HEOS Music, press and hold the "**ZONE2 SOURCE**" and "**ZONE2 ON/OFF**" 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.

AVR-X1600H

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

AVR-S750H

- While holding down buttons "**TUNER PRESET CH +**" and "**TUNE +**" simultaneously, press the power button to turn on the power.

PRODUCT MODE P

When "**PRODUCT MODE**" appears on the display, release the button and press the button "**power**" → "**ZONE2 ON/OFF**" (only AVR-X1600H E3) to place the product in standby mode.

7. Log Capture feature

7.1. Actions

- Acquires the Network Module log.
- The log is deleted when the Network Module is deleted.
If an error occurs, it is acquired without turning off the power of this unit.
- The log can be copied to a writable USB flash drive.
It can also be sent to a server if this unit is connected to the Internet.
- The log is stored in the root folder of the USB flash drive with the name "**logs-<friendlyname>-<number>.tar.gz**".
<friendlyname> indicates the friendly name and <number> indicates the sequence number.
Previous logs on the USB flash drive are not overwritten. The log is encrypted.

7.2. Starting up

AVR-X1600H

- While the power is On, hold down buttons "**TUNER PRESET CH +**", "**ZONE2 SOURCE**" and "**STATUS**" for at least 3 seconds.

AVR-S750H

- While the power is On, hold down buttons "**MOVIE**" and "**MUSIC**" for at least 3 seconds.

7.2.1. If the USB flash drive is connected after starting the unit

- The log is written to the USB flash drive and "**Storing Logs...**" is displayed.
The log is also sent to the server.

Storing Logs...

- When a log package is saved to a USB flash drive, "**USB SUCCESS**" appears in the display for 5 seconds, regardless of whether the upload to the server was successful.

USB SUCCESS

- When saving of the log package fails, "**USB FAILED**" appears in the display for 5 seconds, regardless of whether the upload to the server was successful.

USB FAILED

7.2.2. When the USB flash drive is not connected after startup, and this unit is connected to the Internet.

- The log is sent to the server and the display shows "**Storing Logs...**" for 5 seconds.

Storing Logs...

- When the log package is uploaded, the ticket numbers "**XXXXX**" and "**Push ENTER**" are displayed until the "**Enter**" or "**Back**" button of RC is pressed.

XXXXX Push ENTER

- If the log package upload fails, "**FAILED**" is displayed for 5 seconds.

FAILED

Service Path Check Mode

1.1. Actions

This function is convenient for confirming problem paths in the product and checking the paths after repairing.
The video system and audio system operation paths can be checked.
The backup data is not rewritten.

1.2. Starting up

AVR-X1600H

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

AVR-S750H

- While holding down buttons "**TUNER PRESET CH +**", "**TUNE -**" and "**TUNE +**" simultaneously, press the power button to turn on the power.

Select the "**1. SERVICE CHECK**" using the "**TUNER PRESET CH +/-**" 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	QUICK SELECT 1	QUICK SELECT 2	SLEEP	CURSOR ◀	CURSOR ▶

1.5. Audio system confirmation items

See the block diagram fig.AXXth.

Paths to be confirmed			Display	Settings	What to confirm
1	Analog	fig.A01	A01:ANALOG PASS	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : DIRECT Amp assign : Surround Back MAIN ZONE : On ZONE2 : Off	• Analog input ⇒ Speaker output (Front L/R) (※ The input source can be switched to any source except CBL/SAT.)
2	DIGITAL (MAIN)	fig.A02a fig.A02b	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	• Digital input ⇒ Pre output (Front L/R, Center, Surround L/R, Surround Back L/R) • Digital input ⇒ Pre OUT output (Subwoofer) (※ The input source can be switched to any source except CBL/SAT.)
3	DIGITAL (ZONE2)	fig.A03a fig.A03b	A03:DIGITAL-Z2	Input Source : HEOS Music Input Mode : Auto Sound mode : STEREO ZONE2 Source : HEOS Music Amp assign : ZONE2 MAIN ZONE : On ZONE2 : On	• Digital(PCM) input ⇒ Speaker output (Surround Back (ZONE2) L/R) • Digital(PCM) input ⇒ Pre OUT output (ZONE2 L/R) (Only X1600 E3)

Paths to be confirmed			Display	Settings	What to confirm
4	HDMI	fig.A04a fig.A04b	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 ZONE)	fig.A05a fig.A05b	A06:AD	Input Source : CBL/SAT Input Mode : Analog (fixed) Sound mode : MULTI CH STEREO Vol 60(-20dB) 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 ⇒ Pre OUT output SW(20Hz) (※ 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.A06	A07:ASSIGN-Z2	Input Source : CBL/SAT Input Mode : Auto Sound mode : STEREO Z2 Source : CBL/SAT Vol 60(-20dB) 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) (Only X1600 E3) (※ 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)
7	ZONE2 Downmix (Amp Assign : ZONE2)	fig.A07a fig.A07b	A22:Z2 Downmix	Input Source : CBL/SAT Input Mode : Auto ZONE2 Source : Source ZONE2 Vol : 60 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) (Only X1600 E3) (※ The input source can be switched to any source except CBL/SAT.) (Leave ZONE2 Source as Source.) (※ 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.VXXth.

Paths to be confirmed			Display	Settings	What to confirm
1	Analog Video pass	fig.V01	V01:VIDEO PASS	Input Source : CBL/SAT MAIN ZONE : On ZONE2 : On	• CVBS input ⇒ CVBS output (※ The input source can be switched to any source except CBL/SAT.)
2	HDMI pass	fig.V02	V03:HDMI PASS	Input Source : CBL/SAT MAIN ZONE : On ZONE2 : Off	• HDMI input (except 4K) ⇒ HDMI output (except 4K) • HDMI input (4K) ⇒ HDMI output (4K) & Vol display (※ The input source can be switched to any source except CBL/SAT.)
3	HDMI CEC	fig.V03	V04: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).
4	HDMI Audio (Audio : AVR)	fig.A04a fig.A04b	V05:H.AUDIO-AVR	Input Source : CBL/SAT HDMI Control : Off HDMI Audio : AVR (if checking the audio output from AVR)	• 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.)
5	HDMI Audio (Audio : TV)	fig.V05	V06:H.AUDIO-TV	HDMI Audio : TV (if checking the audio output from TV)	• HDMI input (PCM, DolbyDigital, DTS) ⇒ HDMI output (audio output from connected TV) (※ The input source can be switched to any source except CBL/SAT.)
6	GUI	fig.V06	V07:GUI MENU ON	Input Source : CBL/SAT Setup Menu : On MAIN ZONE : On ZONE2 : Off	• GUI display ⇒ HDMI output. (※ The input source can be switched to any source except CBL/SAT.)

DIAGNOSTIC PATH DIAGRAM

fig.A01

AVRS750H/X1600H ANALOG AUDIO BLOCK

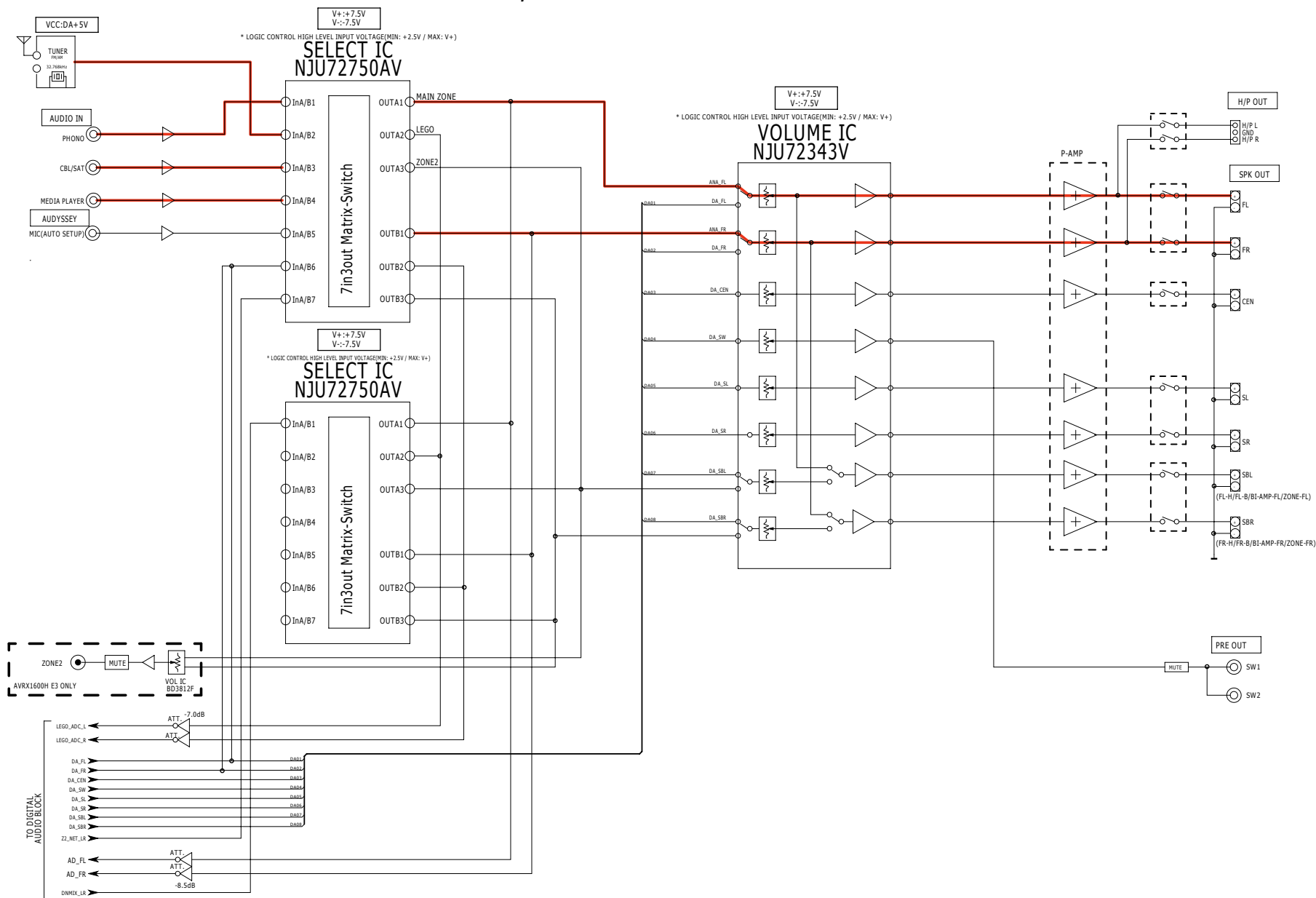


fig.A02a

AVRS750H/X1600H DIGITAL AUDIO BLOCK

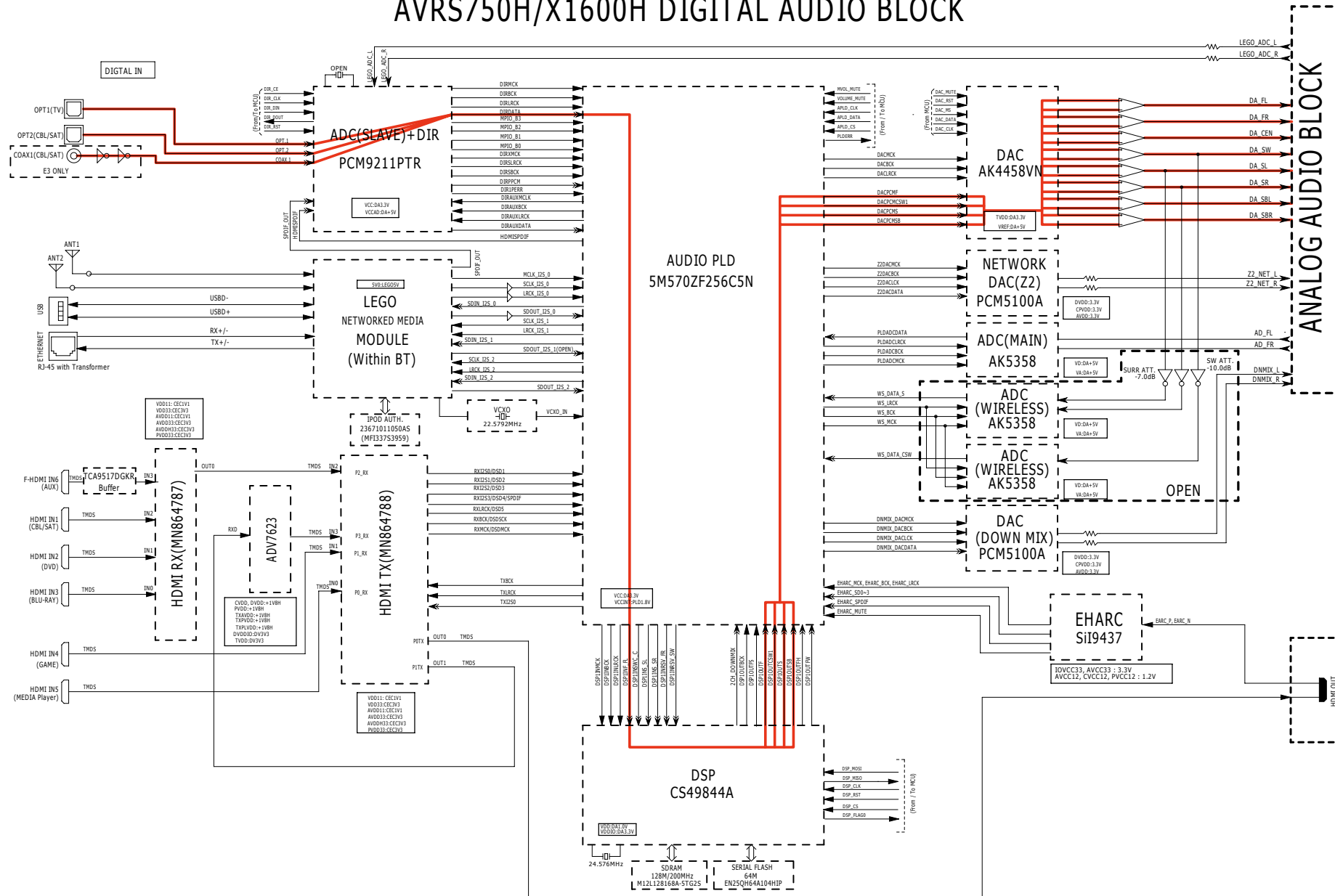


fig.A02b

AVRS750H/X1600H ANALOG AUDIO BLOCK

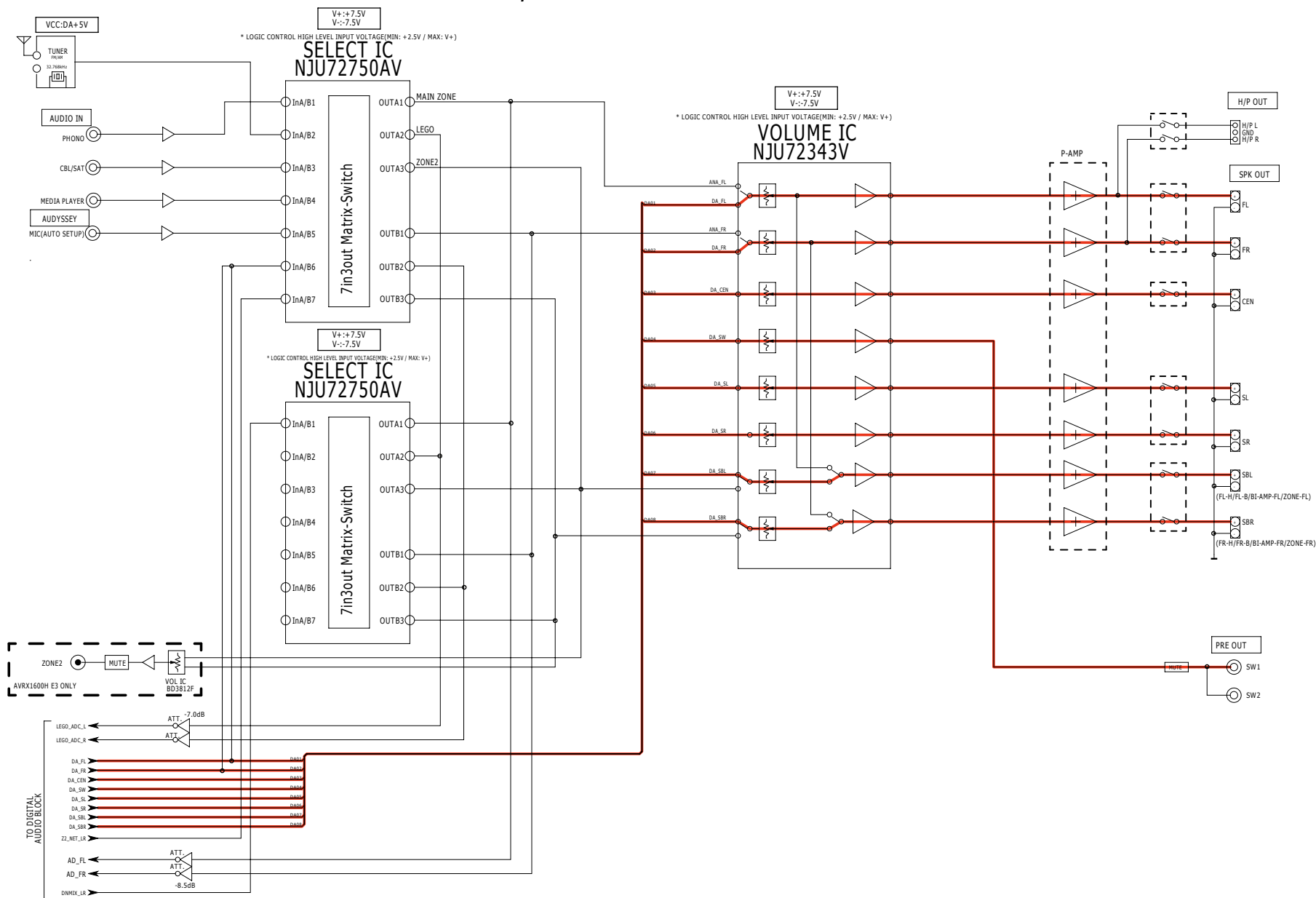


fig.A03a

AVRS750H/X1600H DIGITAL AUDIO BLOCK

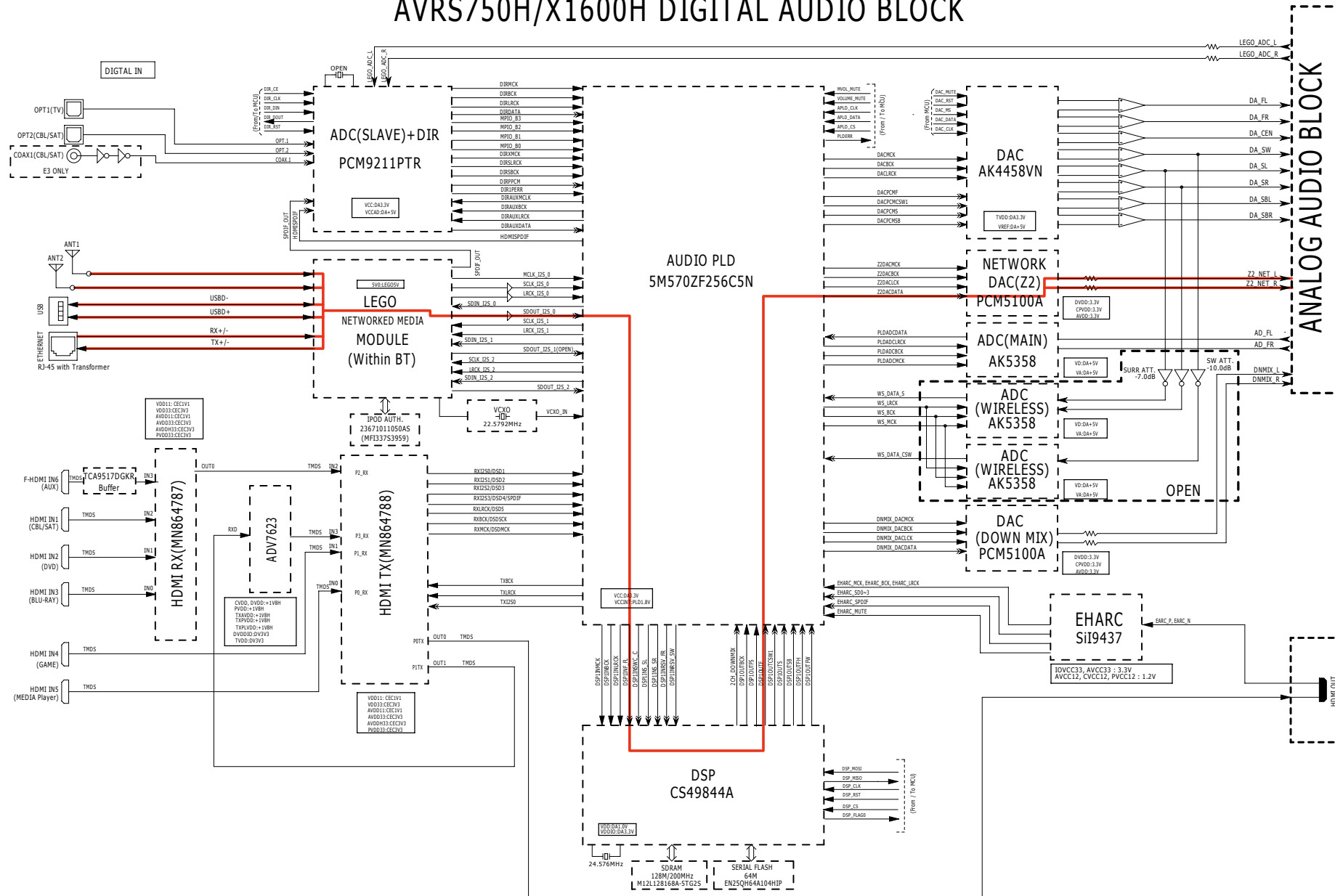


fig.A04a

AVRS750H/X1600H DIGITAL AUDIO BLOCK

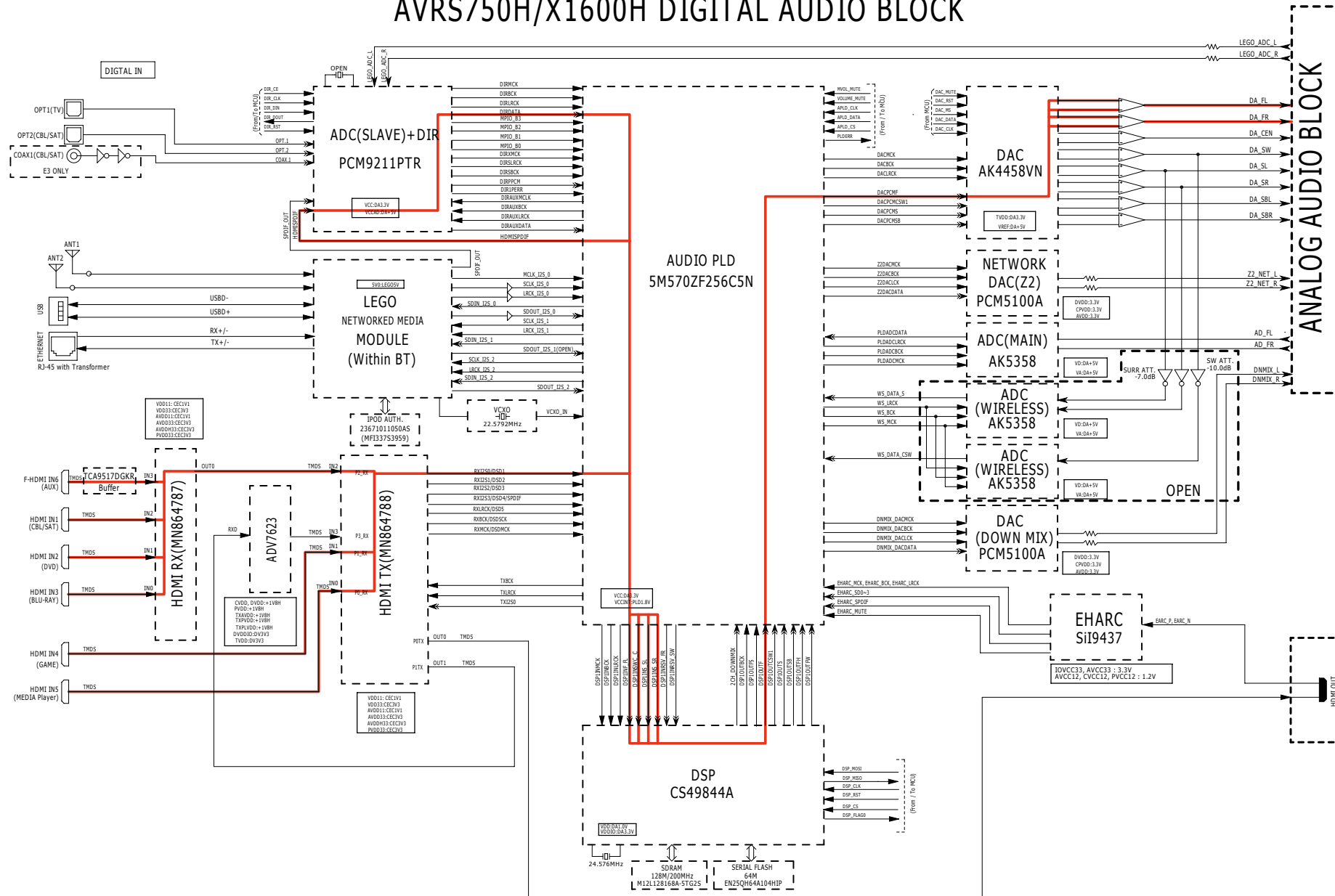


fig.A04b

AVRS750H/X1600H ANALOG AUDIO BLOCK

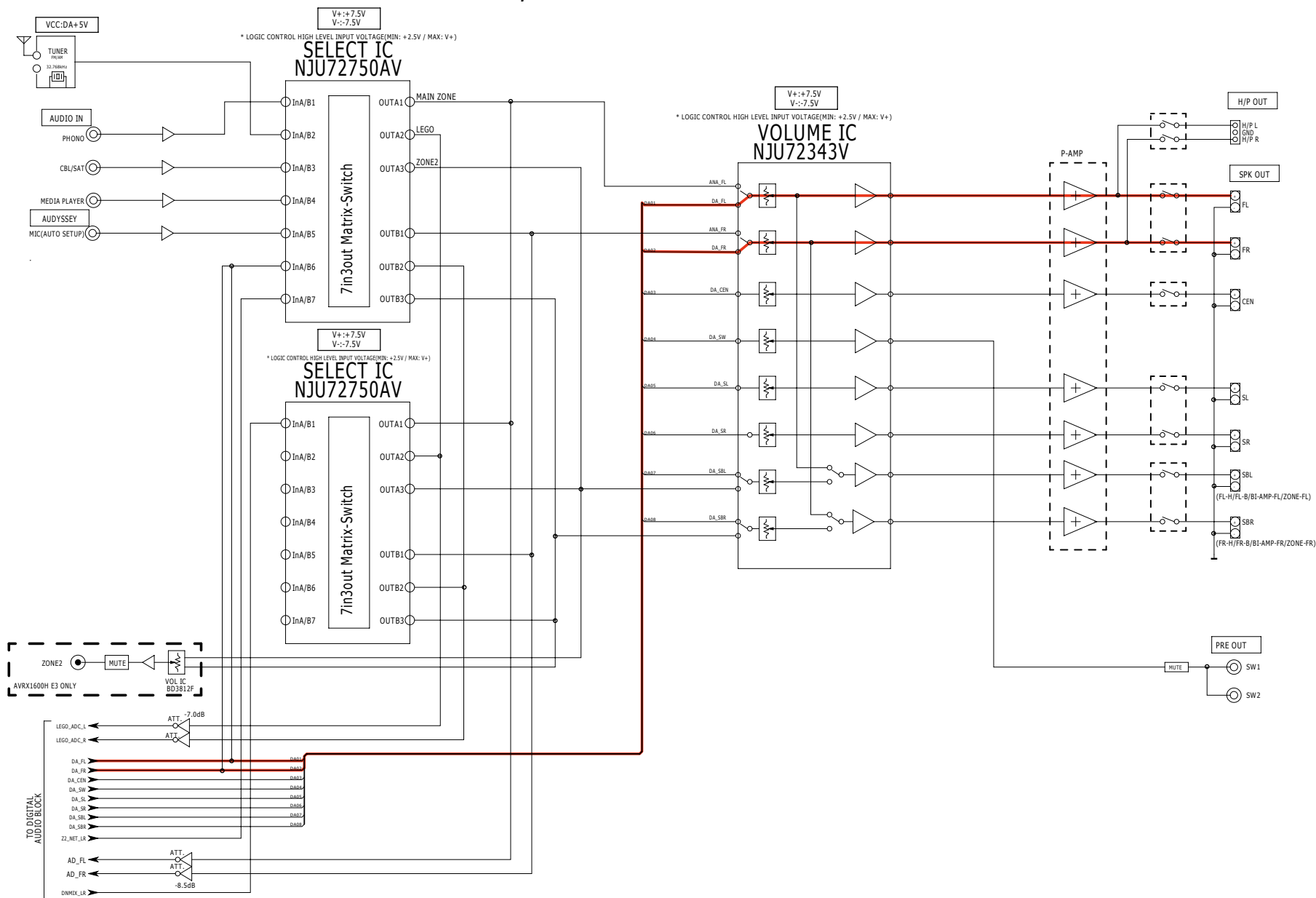


fig.A05a

AVRS750H/X1600H DIGITAL AUDIO BLOCK

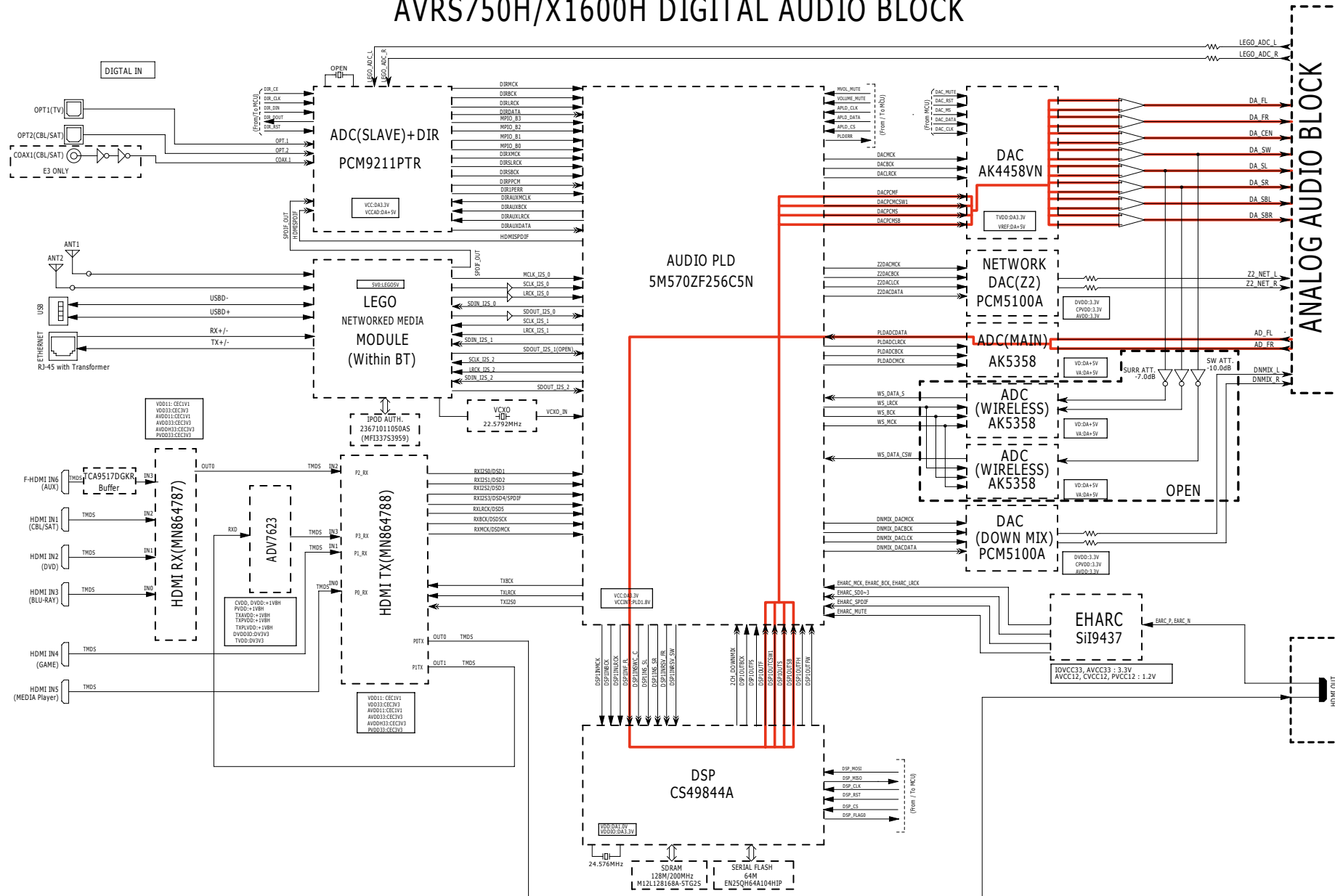


fig.A05b

AVRS750H/X1600H ANALOG AUDIO BLOCK

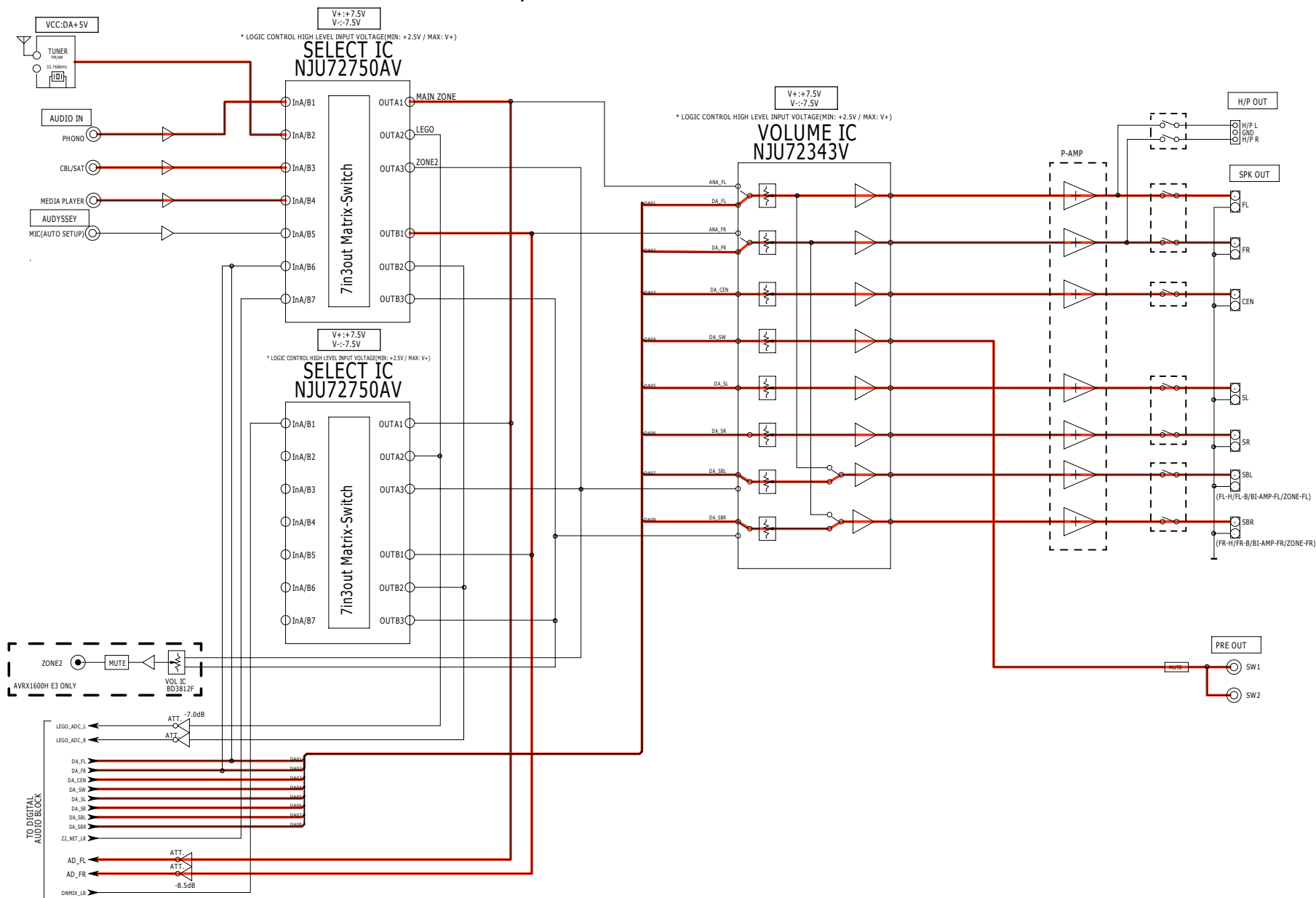


fig.A06

AVRS750H/X1600H ANALOG AUDIO BLOCK

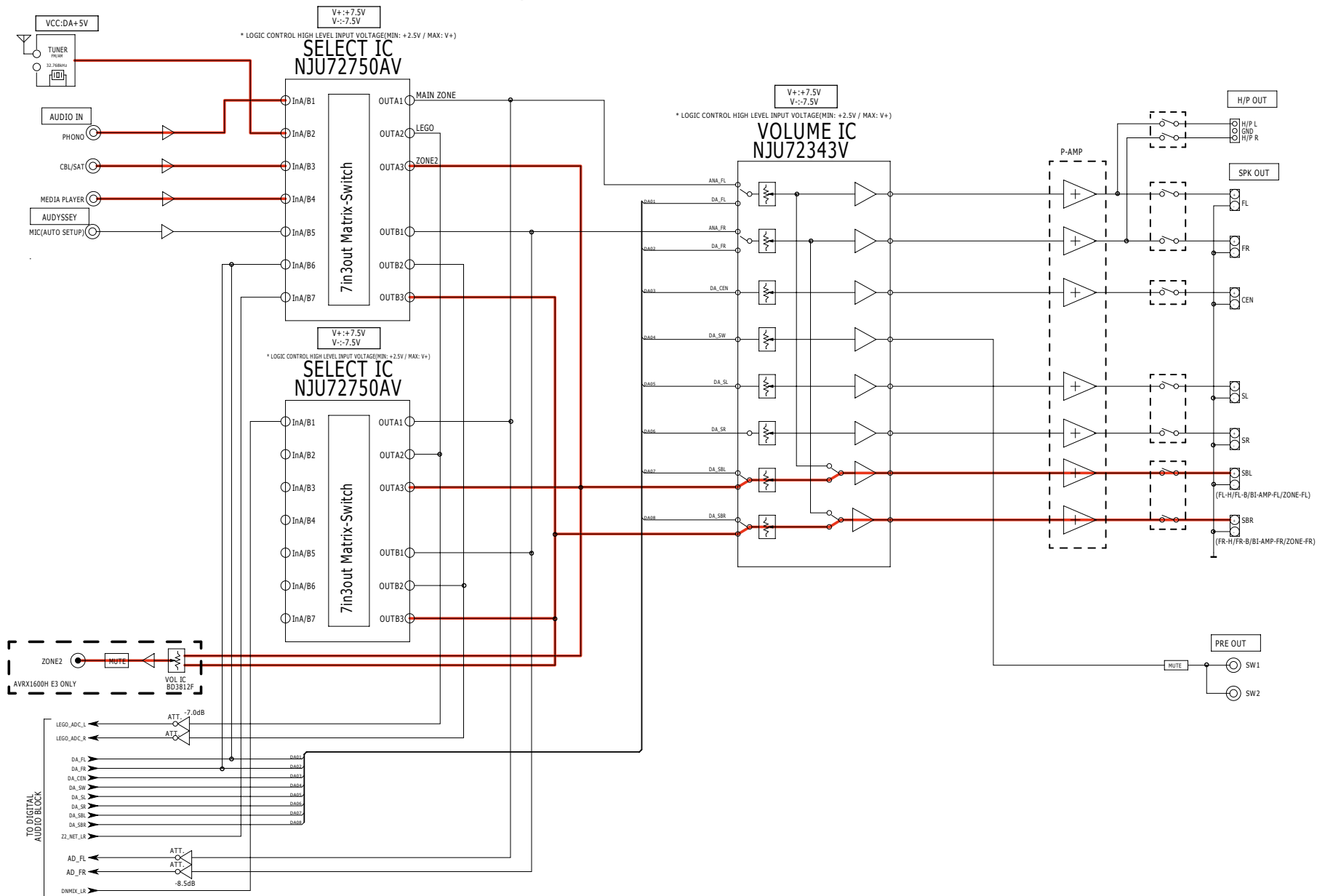


fig.A07a

AVRS750H/X1600H DIGITAL AUDIO BLOCK

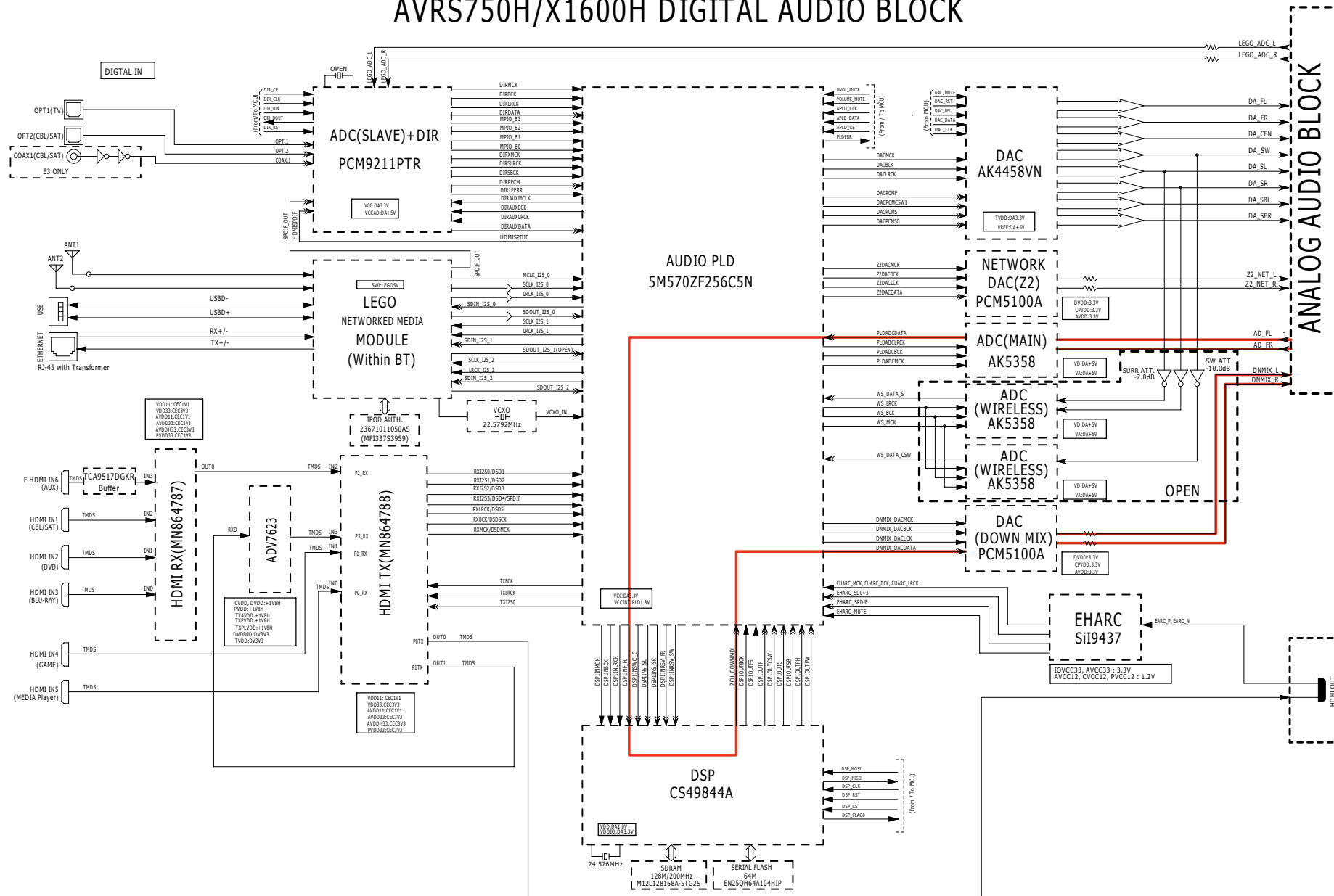


fig.A07b

AVRS750H/X1600H ANALOG AUDIO BLOCK

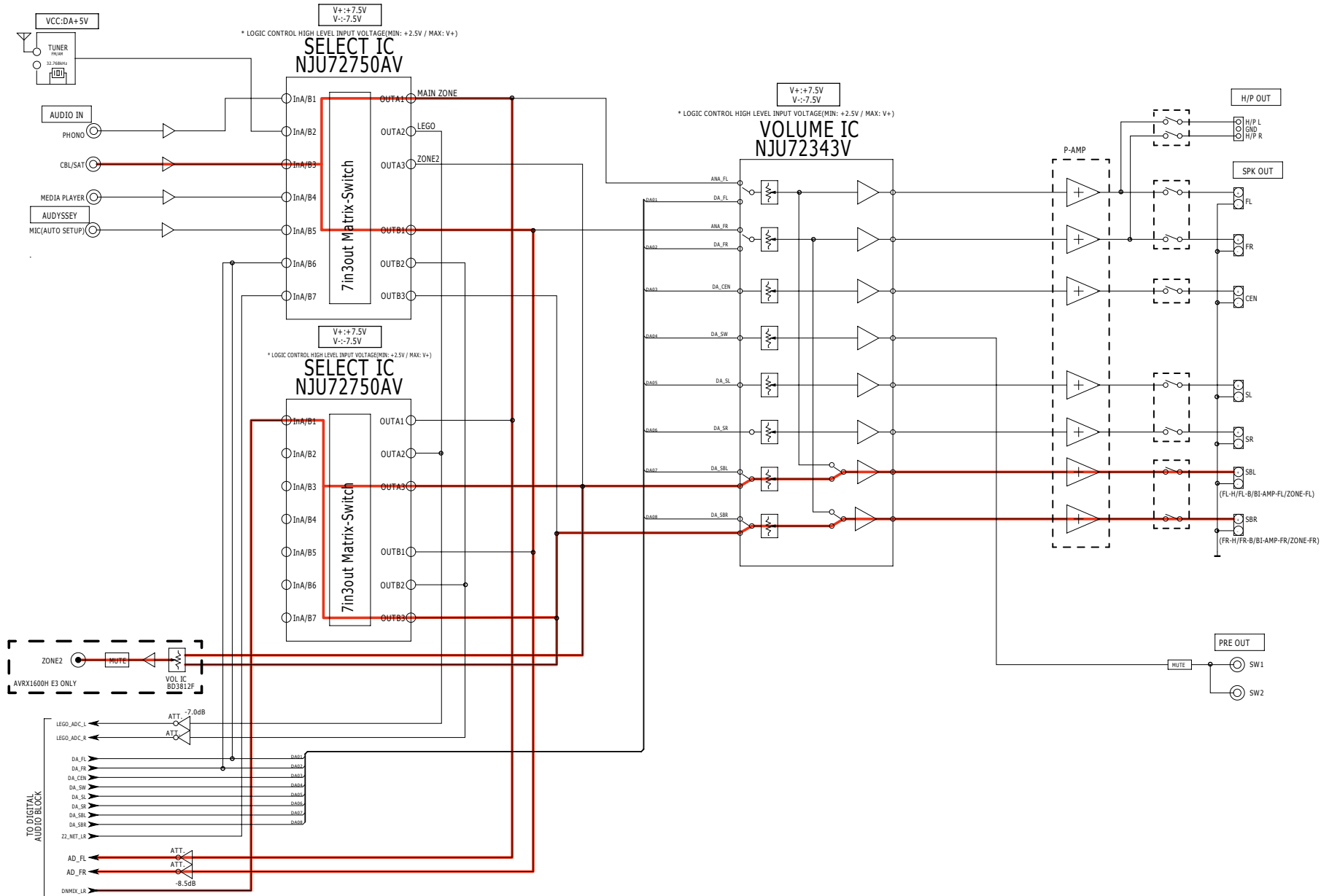


fig.V01

AVRS750H/X1600H VIDEO BLOCK

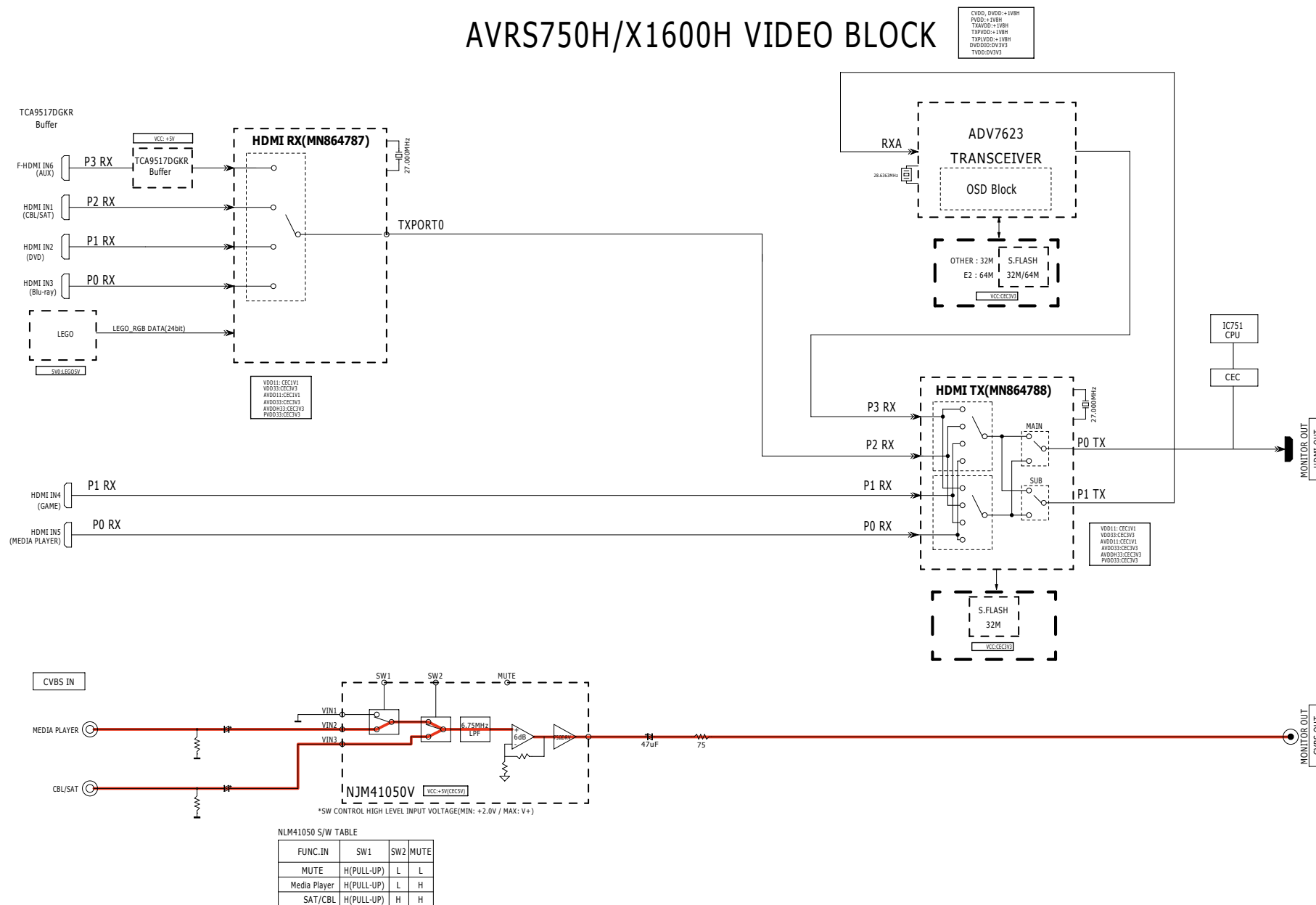


fig.V05

AVRS750H/X1600H DIGITAL AUDIO BLOCK

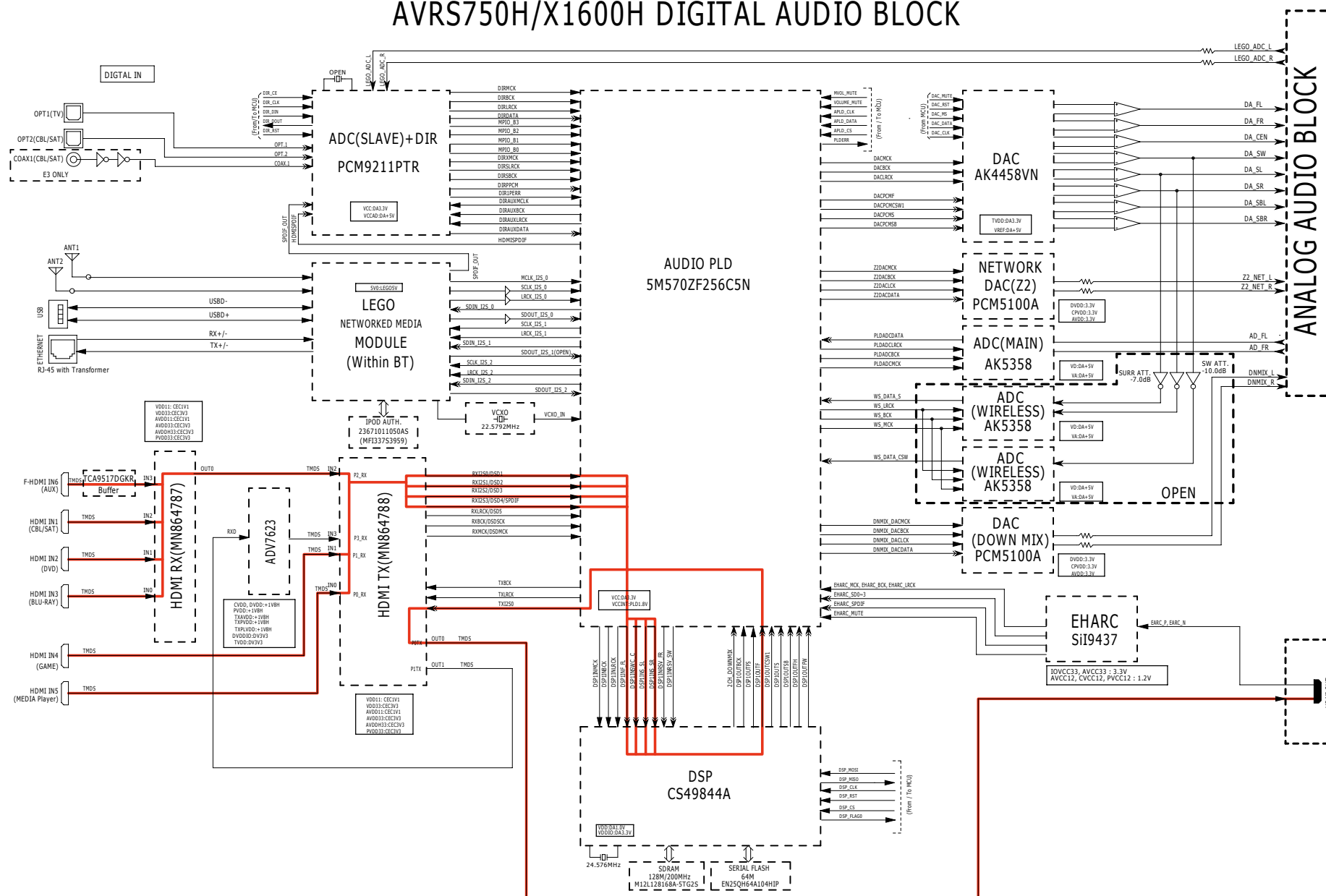
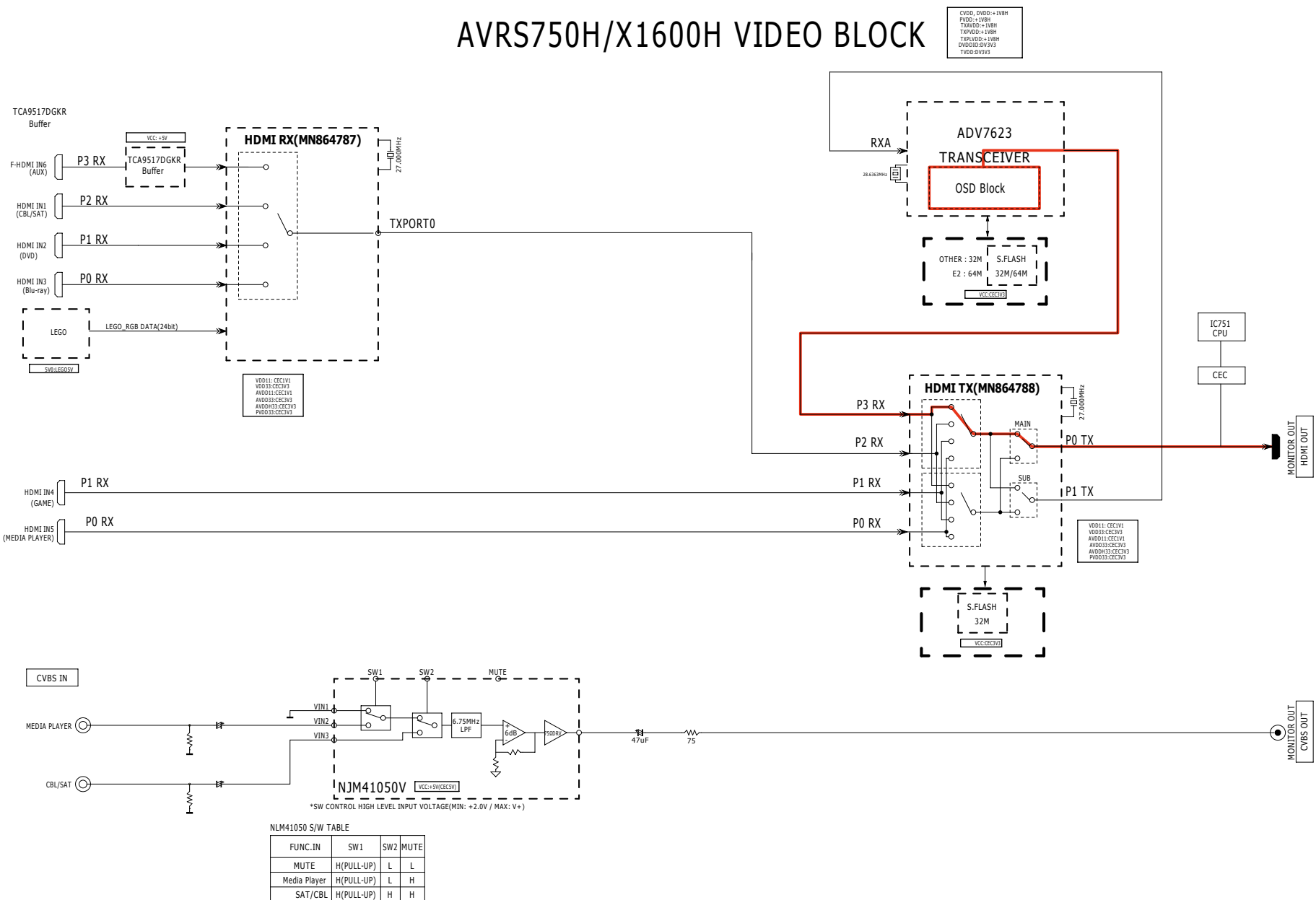


fig.V06

AVRS750H/X1600H VIDEO BLOCK



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---

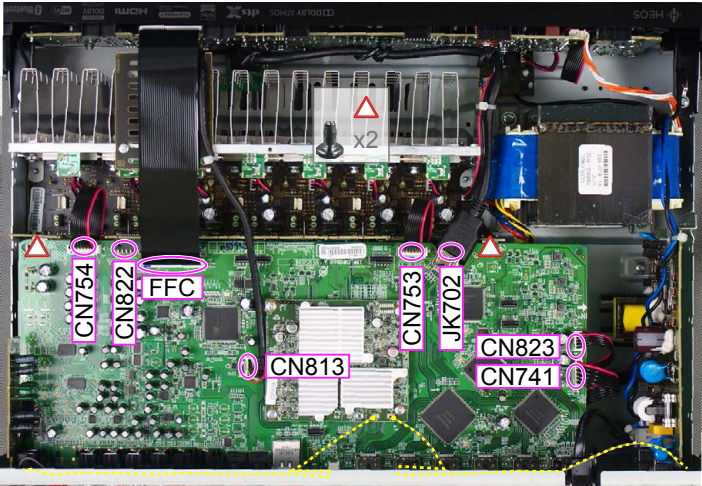
- 8U-110084S : EXTENSION UNIT KIT : 1 Set
- Insulation sheet (Not supplied) : 1 sheet
- Ground lead (Not supplied) : 2 pc

-Proceeding-

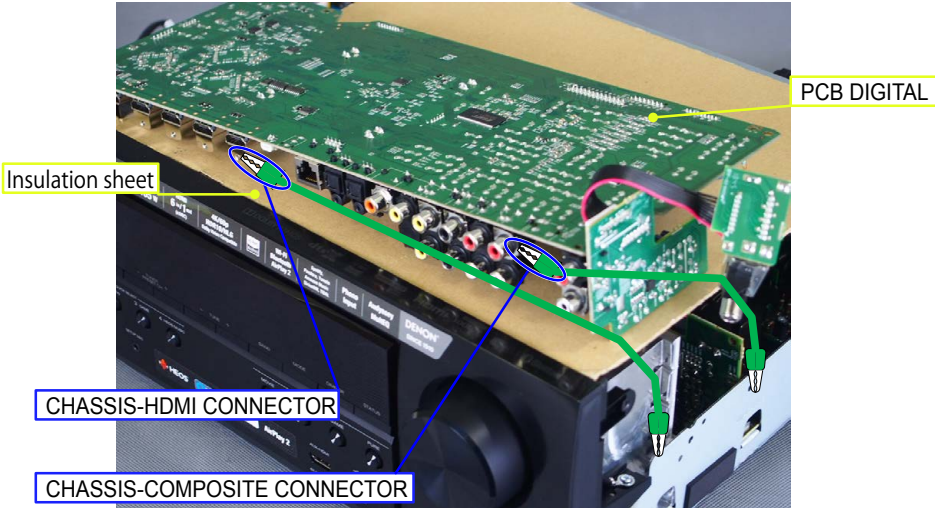
(1) Remove the screws.



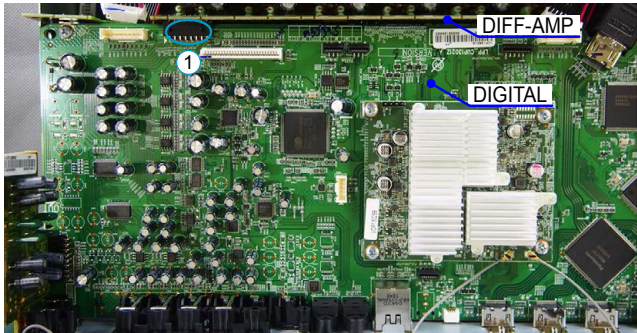
(2) Remove the connector PCB.



- (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	15pin	CN201	DIFF-AMP	↔	CN822	DIGITAL

IDLING CURRENT CHECK for E3, E1C, S750 model

Checking Idling Current

NOTE : Checking the idling current when "**ECO Mode**" is set may damage the Power AMP.

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

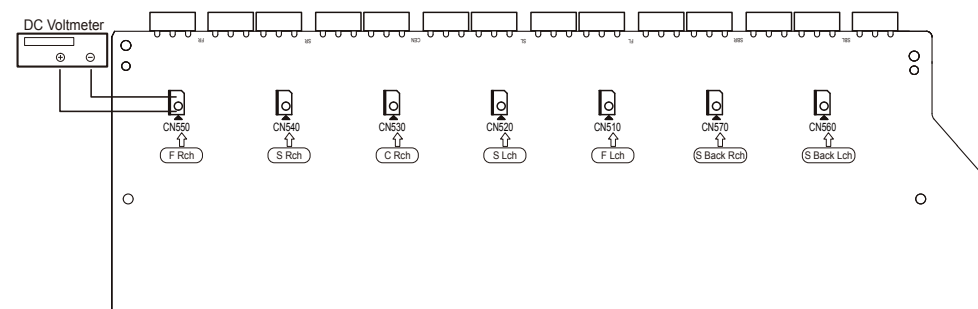
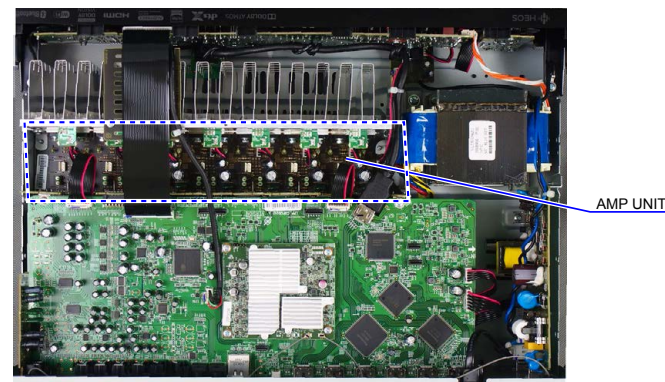
- (1) Make sure that "**ECO Mode**" is off.
 - Press the "**SETUP**" button on the remote control to display the GUI menu.
 - Press the cursor button to select "**General**" → "**ECO**" → "**Mode**" → "**Off**".
- (2) Remove the top cover and turn **VR510** (ALL Channel) of the MAIN PCB counterclockwise(↺) as far as possible.
- (3) Connect the DC Voltmeter to the test points.

FRONT-Lch	: CN510
FRONT-Rch	: CN550
CENTER ch	: CN530
SURROUND-Lch	: CN520
SURROUND-Rch	: CN540
SURROUND-BACK Lch	: CN560
SURROUND-BACK Rch	: CN570
- (4) Connect the power cord to an outlet. Next, press the power button to turn on the power.
- (5) Set this unit as follows.

MASTER VOLUME	: "----" (↺ 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	: TUNER
- (6) Wait 10 minutes after turning on the power and check that the voltage becomes "**2.0mV ± 0.5mV DC**".
- (7) Use the same method to check the voltage of each channel.



ADJUSTMENT for E2, JP model

Adjusting Idling Current

NOTE : Adjusting the idling current when "ECO Mode" is set may damage the Power AMP.

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

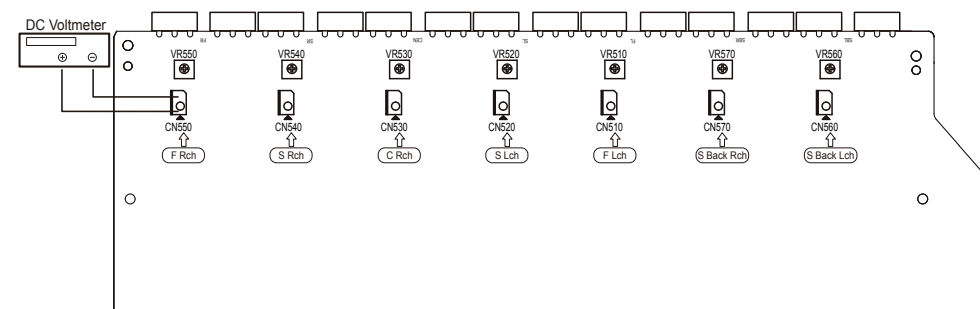
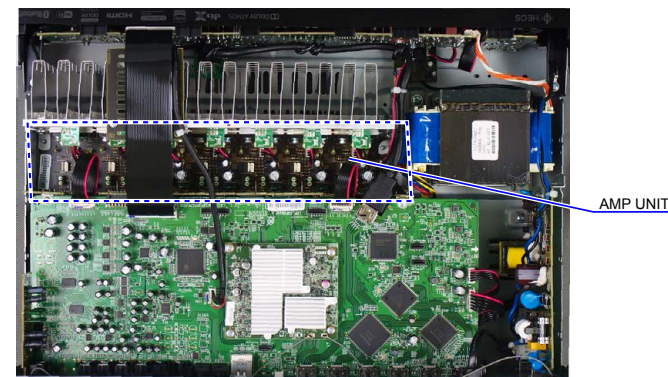
- (1) Make sure that "ECO Mode" is off.
 - Press the "SETUP" button on the remote control to display the GUI menu.
 - Press the cursor button to select "General" → "ECO" → "Mode" → "Off".
- (2) Remove the top cover and turn **VR510** (ALL Channel) of the MAIN PCB counterclockwise(↺) as far as possible.
- (3) Connect the DC Voltmeter to the test points.

FRONT-Lch	: CN510	: VR510
FRONT-Rch	: CN550	: VR550
CENTER ch	: CN530	: VR530
SURROUND-Lch	: CN520	: VR520
SURROUND-Rch	: CN540	: VR540
SURROUND-BACK Lch	: CN560	: VR560
SURROUND-BACK Rch	: CN570	: VR570
- (4) Connect the power cord to an outlet. Next, press the power button to turn on the power.
- (5) Set this unit as follows.

MASTER VOLUME	: "----" (↺ 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	: TUNER
- (6) Turn **VR510** clockwise (↻) and adjust the voltage of the test point to "**4.0mV ± 0.5mV DC**" within 2 minutes.
- (7) Check whether the voltage is within the range "**4.0mV ± 1mV DC**" 10 minutes after adjustment.
- (8) Adjust the variable resistance of each channel using the same method.



PROCEDURE AFTER REPLACING THE PCB.

PROCEDURE AFTER REPLACING THE U-COM, ETC.

FIRMWARE UPDATE PROCEDURE

1. Items necessary for update
2. Update preparation with a USB flash drive
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

PROCEDURE AFTER REPLACING THE PCB.

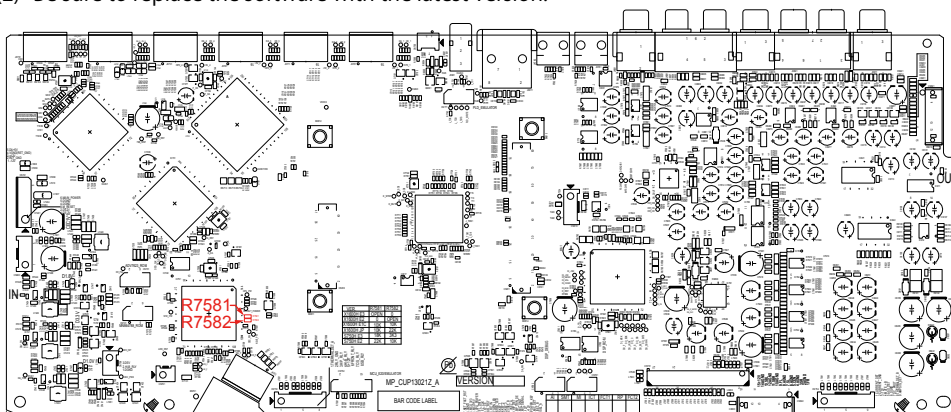
The procedure after replacing the printed circuit boards is as follows.

(1) Change the resistor for setting the region.

Model Area	DIGITAL PCB	
	R7581	R7582
AVR-X1600H (E3)	OPEN	0
AVR-X1600H (E2)	0	OPEN
AVR-X1600H (E1C)	10K	10K
AVR-X1600H (JP)	10K	22K
AVR-S750H (E3)	18K	3.3K
AVR-S750H (E2)	22K	10K

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.

Implement the update method when the DIGITAL PCB or network module is replaced.

PCB Name	Ref. No.	Description	Procedure after Replacement	Remark
DIGITAL	IC751	R5F5651EDDFB	B	SOFTWARE : Main
DIGITAL	IC782	BY25Q64ASSIG	B	SOFTWARE : DSP ROM
DIGITAL	IC732	BY25Q32BSSIG BY25Q64ASSIG (E2 only)	B	SOFTWARE : GUI ROM
DIGITAL	IC723	BY25Q32BSSIG	B	SOFTWARE : 4k GUI
DIGITAL	IC771	5M570ZF256C5N	B	SOFTWARE : AUDIO PLD
MODULE	P15	NETWORK MODULE	D	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 "[3. Update method when the DIGITAL PCB or network module is replaced \(Using a USB flash drive\)](#)" for information on rewriting the software.

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
AVR-X1600H AVR-S750H	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
AVR-X1600HE3	North America (E3)	Product ID : 000101150100	heos_40.prod_x.xxx.xx.zip
AVR-X1600HE2	Europe (E2)	Product ID : 000101150200	
AVR-X1600HJP	Japan (JP)	Product ID : 000101150400	
AVR-X1600HE1C	China (E1C)	Product ID : 000101150500	
AVR-S750HE3	North America (E3)	Product ID : 000101150700	
AVR-S750HE2	Europe (E2)	Product ID : 000101150900	

2. Update preparation with a USB flash drive

You can update the firmware by downloading the latest version with USB flash drive.

2.1. Connecting to the USB flash drive

(1) Preparation

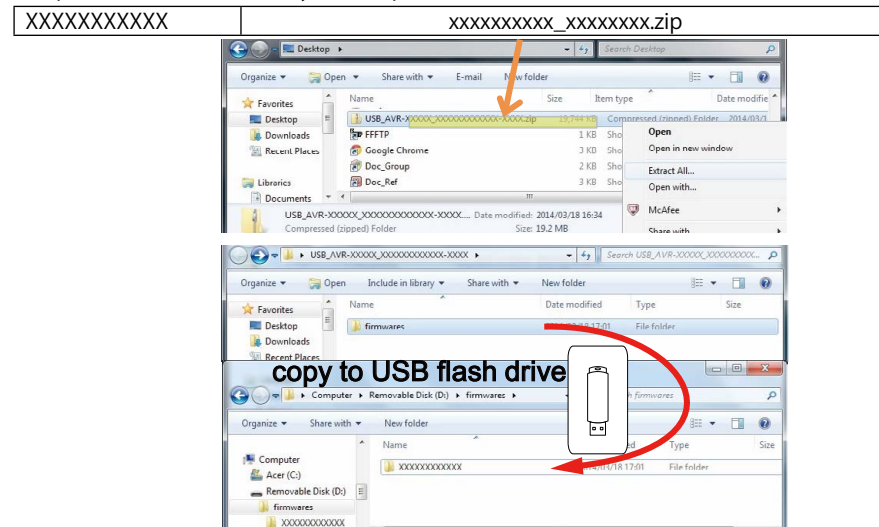
- Windows PC
- USB flash drive format : Prepare a USB flash drive formatted in FAT16 or FAT32.
※We recommend a USB flash drive that has an LED installed.

NOTE :

- Use a memory that supports USB2.0.
- Do not run the USB flash drive 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 flash drive.
- Save the update file on a blank USB flash drive for use.
- If a USB flash drive cannot be updated, replace it with a different USB flash drive and perform the update again.

2.2. Unzipping the Downloaded File

Unzip the downloaded file on your computer.



There are folders or files after unzipping.

Copy these folders or files onto the USB flash drive.

The folders or files must be placed in the root directory of the USB flash drive.

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.

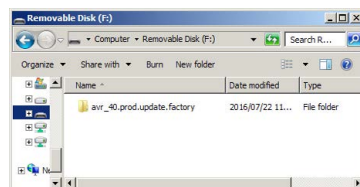
After unzipping the files, store them in the root of the same USB flash drive.

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

USB flash drive root

+ avr_40.prod.update.factory
+ xxxxxxzz.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.
- 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.

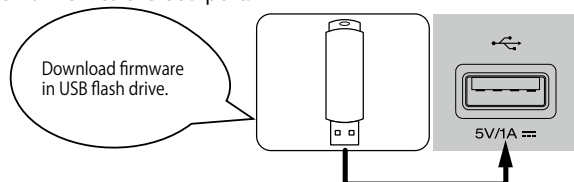
Once an update is started, normal operations cannot be performed until it is completed.

- Press the power button to turn on the power.
- Wait for this unit to start up.
- Set the input source to HEOS Music.
Check that the display is as shown below.

▶TuneIn Internet Radio or No Network Connection

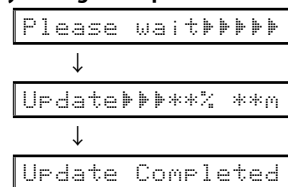
Content of the display is scrolled.

- Insert the USB flash drive into the USB port.



- 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.

- 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.

- Execute Firmware Factory Restore.

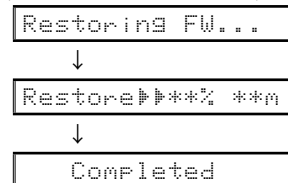
AVR-X1600H

- While holding down buttons "TUNER PRESET CH -" and "DIMMER" simultaneously, press the power button to turn on the power.

AVR-S750H

- While holding down buttons "BAND" and "MODE" 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.

- Execute Service Region Settings.
See "4. Update Method for Service Region Settings"
- Check that the version is the specified version. See "1. Version Display Mode"
- 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"

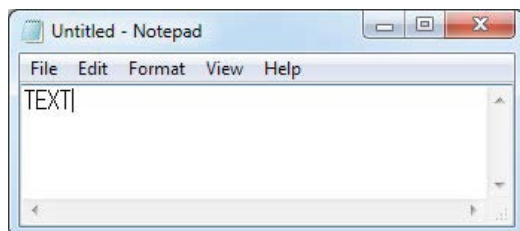
4. Update Method for Service Region Settings

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

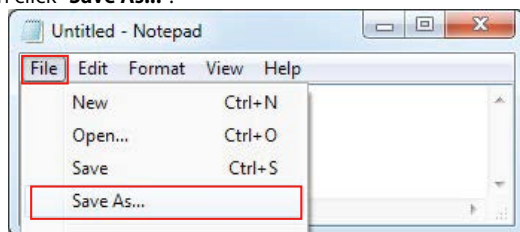
4.1. Creating a Service Region Settings file

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

(2) Enter "TEXT".



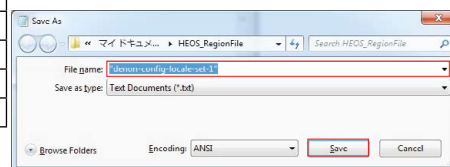
(3) Click "File", and then click "Save As...".



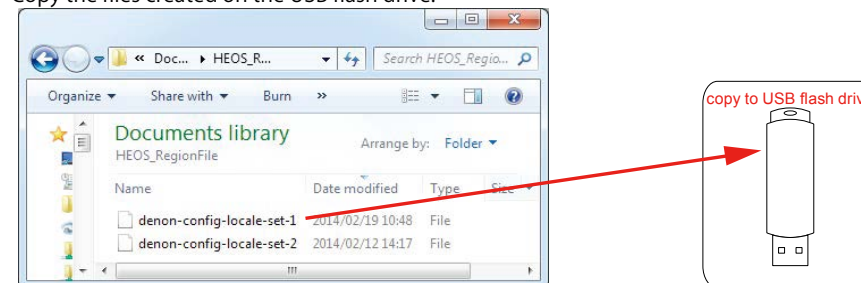
(4) Enter the file name and click the Save button.

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"
Israel	"denon-config-locale-set-7"



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



4.2. Starting Service Region Settings

NOTE :

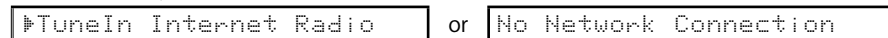
- Remove the LAN cable from this unit when updating. (Do not connect to a wired or wireless network.)
- We recommend a USB memory device that has an LED installed.

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

(2) Wait for this unit to start up.

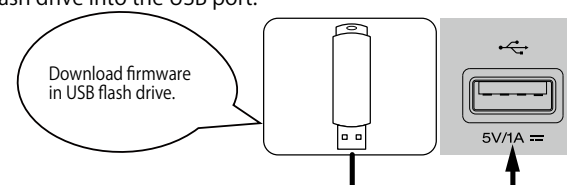
(3) Set the input source to HEOS Music.

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

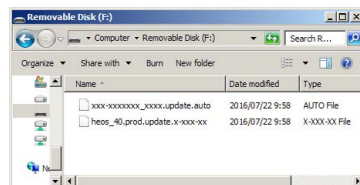
Copy the normal update files onto the USB flash drive in the following structure.

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 (E3)	DPMS_AVR-X1600HE3_LEGO_xxxx.zip Product ID : 000101150100	heos_40.prod_x.xxx.xx.zip
Europe (E2)	DPMS_AVR-X1600HE2_LEGO_xxxx.zip Product ID : 000101150200	
Japan (JP)	DPMS_AVR-X1600HJP_LEGO_xxxx.zip Product ID : 000101150400	
China (E1C)	DPMS_AVR-X1600HE1C_LEGO_xxxx.zip Product ID : 000101150500	
North America (E3)	DPMS_AVR-S750HE3_LEGO_xxxx.zip Product ID : 000101150700	
Europe (E2)	DPMS_AVR-S750HE2_LEGO_xxxx.zip Product ID : 000101150900	

USB flash drive root

+ AVR-xxxxHxx_xxxx.update.auto
+ heos_40.prod.update.x-xxx-xx



5.2. Start normal update

NOTE :

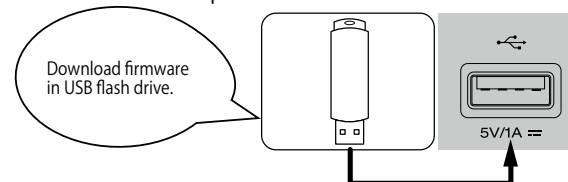
- Remove the LAN cable from this unit when updating.
(Do not connect to a wired or wireless network.)
 - Do not remove the USB flash drive until updating is completed.
 - Do not turn off the power until updating is completed.
 - It takes a maximum of approximately 25 minutes for update to complete.
- 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.

- Press the power button to turn on the power.
- Wait for this unit to start up.
- Set the input source to HEOS Music.
Check that the display is as shown below.

▶TuneIn Internet Radio or No Network Connection

Content of the display is scrolled.

- Insert the USB flash drive into the USB port.



- USB Update starts automatically.
The Standby LED lights red.

Display during USB update

Please wait▶▶▶▶▶
↓
Update▶▶▶▶% *m
↓
Update Completed

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

- The unit restarts when update is complete.
- After updating the firmware, check the version.
See "1. Version Display Mode"

6. Normal Firmware Update Method from OTA

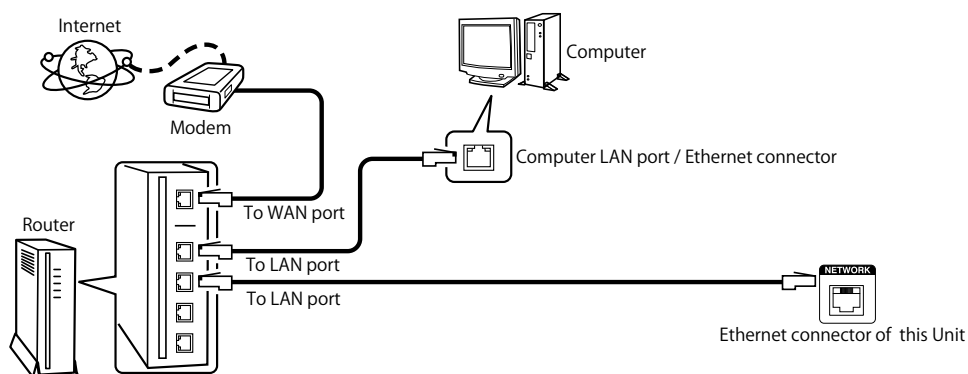
Download the latest firmware from our website and update the firmware.

---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.

6.1. Network Connection

- (1) System Requirements
 - Internet Connection by Broadband Circuit
 - Modem
 - Router
 - Ethernet cable (CAT-5 or greater is recommended)
- (2) Setting

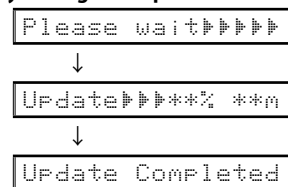


6.2. Check and update the firmware

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" → "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"

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).

Display

Update▶▶▶▶% **n



Update Error**YYXX** Update Error**YYXX** (**YY** : DeviceID, **XX** : ErrorCode)

↓ ↑ The display is alternately displayed.

Please check you

Content of the display is scrolled.

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
0B	Main FBL (No used)
11	DSP1 or DSP
12	DSP2 ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H/X3600H
13	DSP3 ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H/X3600H
19	DSP4 ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H/X3600H
15	Audio PLD
22	Video PLD ※ Except : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H
2A	GUI
2B	PIMG ※ ONLY : DRA-800H/AVR-S650H/S750H/S950H/X1600H/X2600H
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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