

M15 C/AH
SURROUND
SOUND PREAMPLIFIER

SERVICE MANUAL



M15 C/AH

SURROUND
SOUND PREAMPLIFIER

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SECTION 1

SUMMARY

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PRODUCT SAFETY SERVICING GUIDELINES FOR AUDIO PRODUCTS

CAUTION : DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY, NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANY RESULTING PROPERTY DAMAGE OR USER INJURY.

SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER.

WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINESHOCK.

SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED, A CHECK SHOULD BE MADE OF THE FOLLOWING.

SUBJECT : FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.

2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.

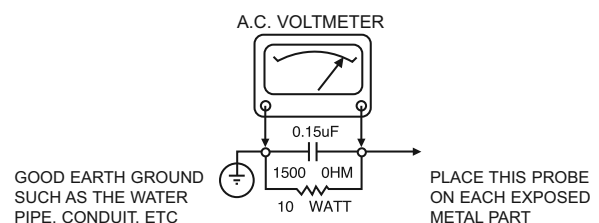
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OR SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.

4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS. FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING A.C. CORD). AND REPLACE IF NECESSARY.

5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.

6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTORS, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES, DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.

7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN A.C. LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET, (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS. HANDLE AND SCREWS) TO BE SURE THE SET IS SAFE TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN A.C. VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER; CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD. 150.V A.C TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER PIPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME. MEASURE THE A.C. VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR. REVERSE THE A.C. PLUG AND REPEAT A.C. VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART. VOLTAGE MEASURED MUST NOT EXCEED 75 VOLTS R.M.S. THIS CORRESPONDS TO 0.5 MILLIAMPS A.C. ANY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



SUBJECT: GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH APROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION IN SERVICE LITERATURE.

SERVICING PRECAUTIONS

CAUTION: Before servicing the Surround sound preamplifier covered by this service data and its supplements and addends, read and follow the SAFETY PRECAUTIONS. NOTE: if unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions in this publication, always follow the safety precautions. Remember Safety First:

General Servicing Precautions

1. Always unplug the Surround sound preamplifier AC power cord from the AC power source before:
 - (1) Removing or reinstalling any component, circuit board, module, or any other assembly.
 - (2) Disconnecting or reconnecting any internal electrical plug or other electrical connection.
 - (3) Connecting a test substitute in parallel with an electrolytic capacitor.
- Caution: A wrong part substitute or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.
2. Do not spray chemicals on or near this Surround sound preamplifier or any of its assemblies.
 3. Unless specified otherwise in this service data, clean electrical contacts by applying an appropriate contact cleaning solution to the contacts with a pipe cleaner, cotton tipped swab, or comparable soft applicator. Unless specified otherwise in this service data, lubrication of contacts is not required.
 4. Do not defeat any plug/socket B+ voltage interlocks with which instruments covered by this service manual might be equipped.
 5. Do not apply AC power to this Surround sound preamplifier and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
 6. Always connect test instrument ground lead to the appropriate ground before connecting the test instrument positive lead. Always remove the test instrument ground lead last.

Insulation Checking Procedure

Disconnect the attachment plug from the AC outlet and turn the power on. Connect an insulation resistance meter (500V) to the blades of the attachment plug. The insulation resistances between each blade of the attachment plug and accessible conductive parts (Note 1) should be more than 1 M-ohm.

Note 1: Accessible Conductive Parts including Metal panels, Input terminals, Earphone jacks, etc.

Electro statically Sensitive (ES) Devices

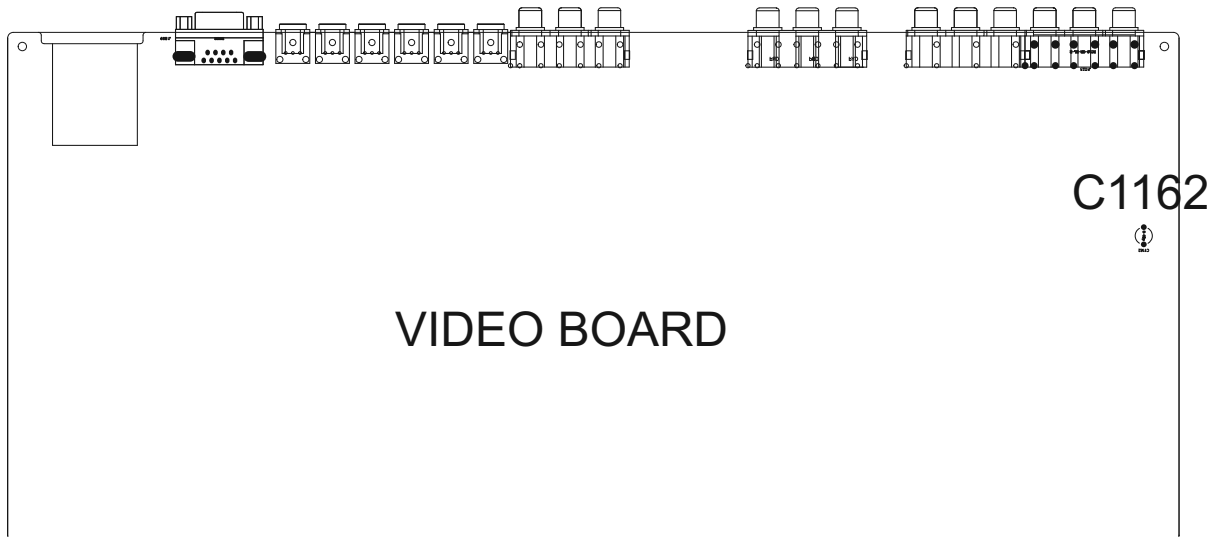
Some semiconductor (solid state) devices can be damaged easily by static electricity. Such components commonly are called Electro statically Sensitive (ES) Devices. Examples of typical Es devices are integrated circuits and some field effect transistors and semiconductor chip components. The following techniques should be used to help reduce the incidence of component damage caused by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed for potential shock reason prior to applying power to the unit under test.
 2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
 3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
 4. Use only an antistatic solder removal device. Some solder removal devices not classified a "anti-static" can generate electrical charges sufficient to damage ES devices.
 5. Do not use Freon propelled chemicals. These can generate electrical charge sufficient to damage ES devices.
 6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil, or comparable conductive material).
 7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- Caution: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Normally harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

ADJUSTMENT PROCEDURE

OSD VCO Oscillation Frequency (VIDEO BOARD)

Connect M15 CVBS monitor out to a TV set. Press “Enter” key on remote control to call OSD out. Then clockwise adjust C1162 and observe the OSD till the characters are just disappear, record the adjustment slot position A; then anticlockwise C1162 to make the OSD characters disappear and record the adjustment slot position B again. Adjust the adjustment slot position in the middle of A and B. Get in “DISPLAY SETUP” OSD Menu and switch the unit in both “NTSC” and PAL” mode, observe the OSD characters, they should be all stable displaying without any flicker.



SOFTWARE VERSION:

TO DISPLAY SOFTWARE VERSIONS, PRESS FRONT PANEL video & audio SIMULTANEOUSLY

SPECIFICATIONS

DECODING FORMATS

Dolby Digital, Dolby Digital EX, Dolby Pro Logic II, Dolby Pro Logic IIx, DTS, DTS ES, DTS Neo:6, DTS 96/24, THX Surround EX, THX Ultra 2

SAMPLING RATES 32kHz, 44.1kHz, 48kHz, 88.2k, 96kHz

MODES EARS, Enhanced stereo, Mono

VIDEO (input and output impedance) 75Ω

THD + NOISE 0.002%

PRE-AMP SECTION LINE LEVEL INPUTS

Input impedance(R + C) 56KΩ/180PF
Frequency response(20Hz to 20KHZ) 20Hz to 20kHz @ +/-0.3dB

LINE LEVEL OUTPUTS

Output impedance 470Ω
Tape Source Z + 2kΩ
Signal/noise ratio >102dB
Maximum Output Level 6Vrms
Multiroom Output (Zone 2) 470Ω

TONE CONTROLS

Bass ±10dB@20Hz
Treble ±10dB@20kHz
Center Dialog ±6dB@1kHz

+12VOLT TRIGGER OUT

Output Voltage +12V +/- 20%
Minimum Output Current >40ma
Maximum Short Circuit Current <60mA

PHYSICAL SPECIFICATIONS

Operating temperature: 5 °C to 35 °C (41 °F to 95 °F)
Operating humidity: 5 % to 90 %
Dimensions (W x H x D) NET 17.13 x 5.24 x 13.98"(435 x 133 x 355mm)
Gross* 17.13 x 5.79 x 14.96"(435 x 147 x 380mm)
Net Weight 15 lbs
Shipping Weight 20 lbs

SECTION 2

CABINET & MAIN CHASSIS

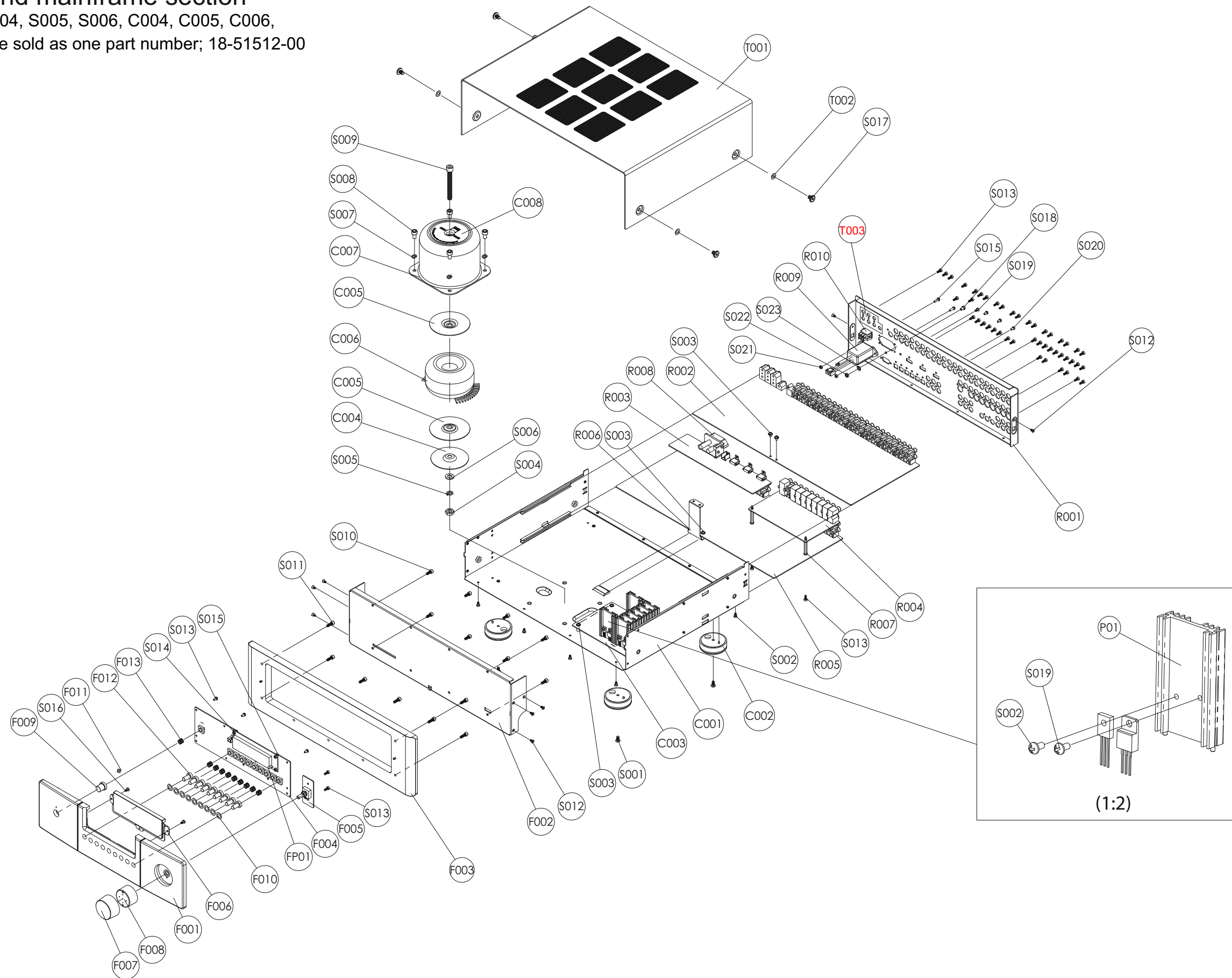
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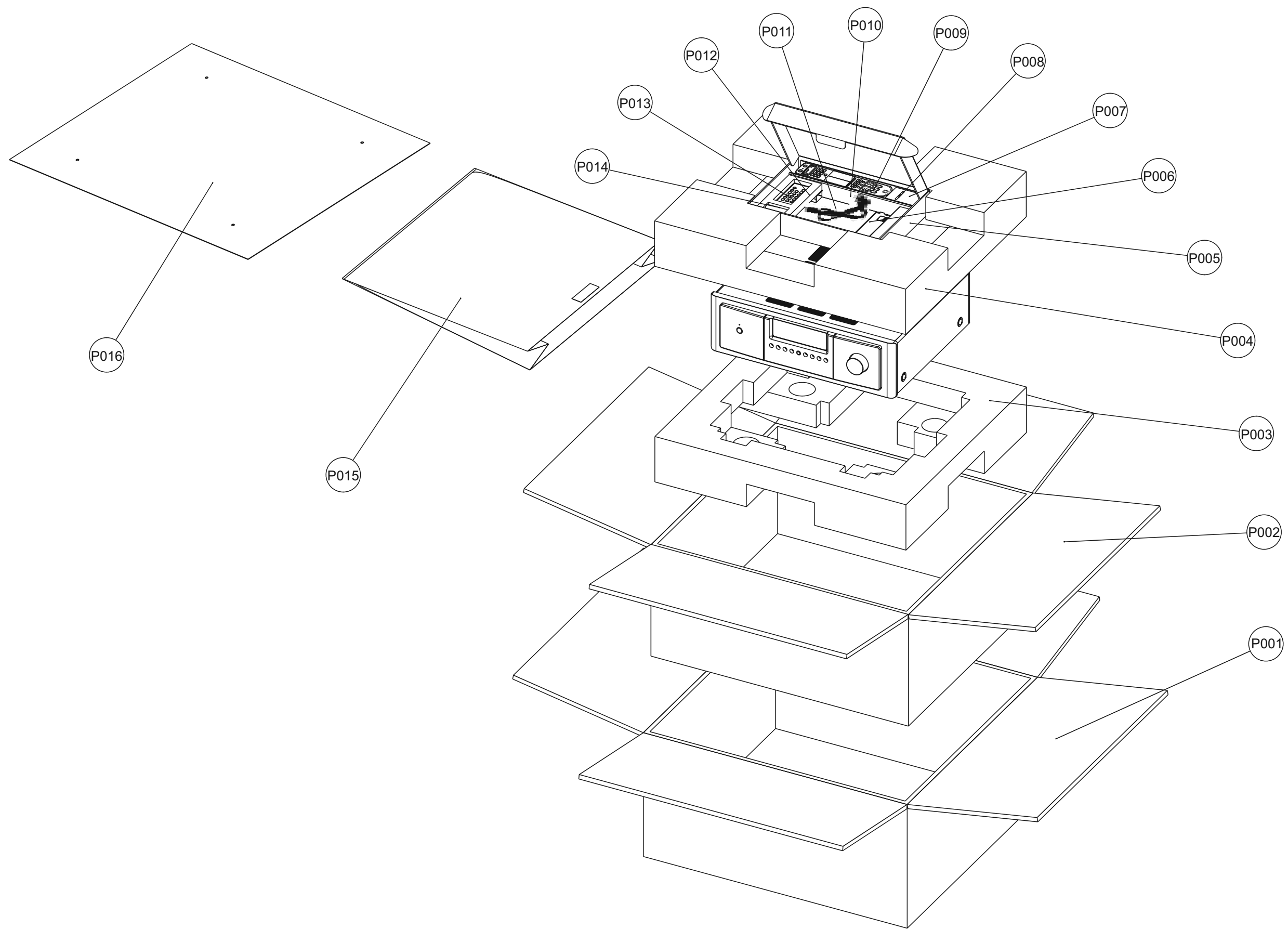
EXPLODED VIEW

1. Cabinet and mainframe section

NOTE: S009, S004, S005, S006, C004, C005, C006, C007, & C008 are sold as one part number; 18-51512-00



2.Packing accessory section



3. EXPLODED VIEW PARTS LIST

REF.NO	PART NO.	DESCRIPTION	Qty.	REF.NO	PART NO.	DESCRIPTION	Qty.
C001	67-043002-0	Chassis	1	S006	63-010816-0	Washers GB97-87 8	1
C002	83-048010-0	Foot Assy	4	S007	63-020616-0	Spring Washers GB93 6	4
C003	01-51506-00	PSU Board	1	S008	61-226508-0	Hex Screws 6X8,	4
C004	66-001008-0	Metal Disc	1	S009	64-208060-1	Bolts GB/T70.1 M8X60	1
C005		Transformer rubber pad	2	S010	61-224508-1	Hex Screws GB/T70.1 4X8	8
C006 ▲	18-51512-00	Transformer	1	S011	61-224512-1	Hex Screws GB/T70.14X12	7
C007	67-043007-0	Shielding Box	1	S012	61-063106-0	Self Taping Screws STF3X6	8
C008	94-043001-0	Transformer label	1	S013	61-023208-0	Self Taping Screws BTB3X8	55
C009	75-043002-0	PCB Guide	4	S014	62-010302-1	M3 Lock-Nut	4
F001	70-043011-0	M15 Fascia 2	1	S015	61-023508-0	Machine Screws MB3X8	6
F002	67-043003-1	Subfascia	1	S016	61-023206-0	Self Taping Screws BTB3X6	3
F003	70-043010-1	M15 Fascia 1	1	S017	61-246508-0	Machine Screws M6X8	4
F004	01-51503-00	FPP Board	1	S018	61-024506-0	Machine Screws MB4X6	1
F005	01-51507-00	Encoder Board	1	S019	61-023106-0	Self Taping Screws STB3X6	11
F006	76-048010-0	Window lens	1	S020	61-023506-0	Machine Screws MB3X6	3
F007	70-048014-0	Knob Skin	1	S021	62-010302-2	M3 Nut	2
F008	75-048020-0	Knob Core	1	S022	62-010402-1	M4 Nut	1
F009	70-048013-0	Power Button	1	S023	40405-063-0404	Spring Washer M4	1
F010	87-048002-0	Button pad	9	S024	86-004002-0	Washer 3X1	4
F011	76-008001-0	LED Lens	1	P01	70-043001-0	HEATSINK 03	8
F012	70-048012-1	Input Button	9				
F013	92-048001-0	Spring for Button	10				
FP01	23-30202-00	VFD	1				
T001	67-043001-0	Top Cover	1				
T002	76-046001-0	Screw Washer	4				
T003	xx-xxxxx-x	Insulation sheet	1				
R001	67-043004-1	Rear Pane! C"	1				
R002	01-51502-00	AUD Board	1				
R003	01-51505-20	Multifunctional Board! C"	1				
R004	01-51504-00	CSS Board	1				
R005	00-51501-20	VID Board ! C"	1				
R006	67-043005-0	VID Bracket	1				
R007	75-043003-0	PCB Spacer	2				
R008 ▲	17-07002-12	AC-Output(AH only)	1				
▲	17-07002-20	AC-Output(C only)	1				
R009 ▲	17-07003-03	AC Inlet	1				
R010 ▲	11-01101-03	Rocker Switch	1				
S001	61-024108-0	Self Taping Screws STB4X8	4				
S002	61-023108-0	Self Taping Screws STB3X8	16				
S003	61-373506-0	Self Taping Screws M3X6	8				
S004	62-010802-0	Nuts GB6170, M8	1				
S005	63-020820-1	Spring Washers GB93 8	1				

PACKING PART LIST

REF.NO	PART NO.	DESCRIPTION	Qty.
P001	88-043001-0	shipping box	1
P002	88-043002-0	Gift box	1
P003	89-043001-1	Polyfoam -Bottom	1
P004	89-043002-1	Polyfoam-Cap	1
P005	87-043003-0	Accessories box	1
P006	30-45150-11	Instruction Manual 1	1
P006	30-45150-12	Instruction Manual 2	1
	30-45150-03	Instruction Manual (Chinese)	1
P007	89-043004-0	Accessories box polyfoam (A)	1
P008	30-28601-00	Batteries	1
P009	HTRM	Remote control (HTRM) NSP	1
P010	88-043004-0	Box sheet	1
	15-17251-20	AC cord (C)	1
P011 ▲	15-17121-10	AC cord (AH)	1
	15-86221-00	AC cord (BC)	1
P015	87-043003-0	Non-woven bag	1
P016	90-005001-0	Polybag	1
P012	89-043003-0	Accessories box polyfoam (B)	1
P013	30-11501-00	Remote control (ZR2)	1
P014	30-25150-00	Batteries AA	4

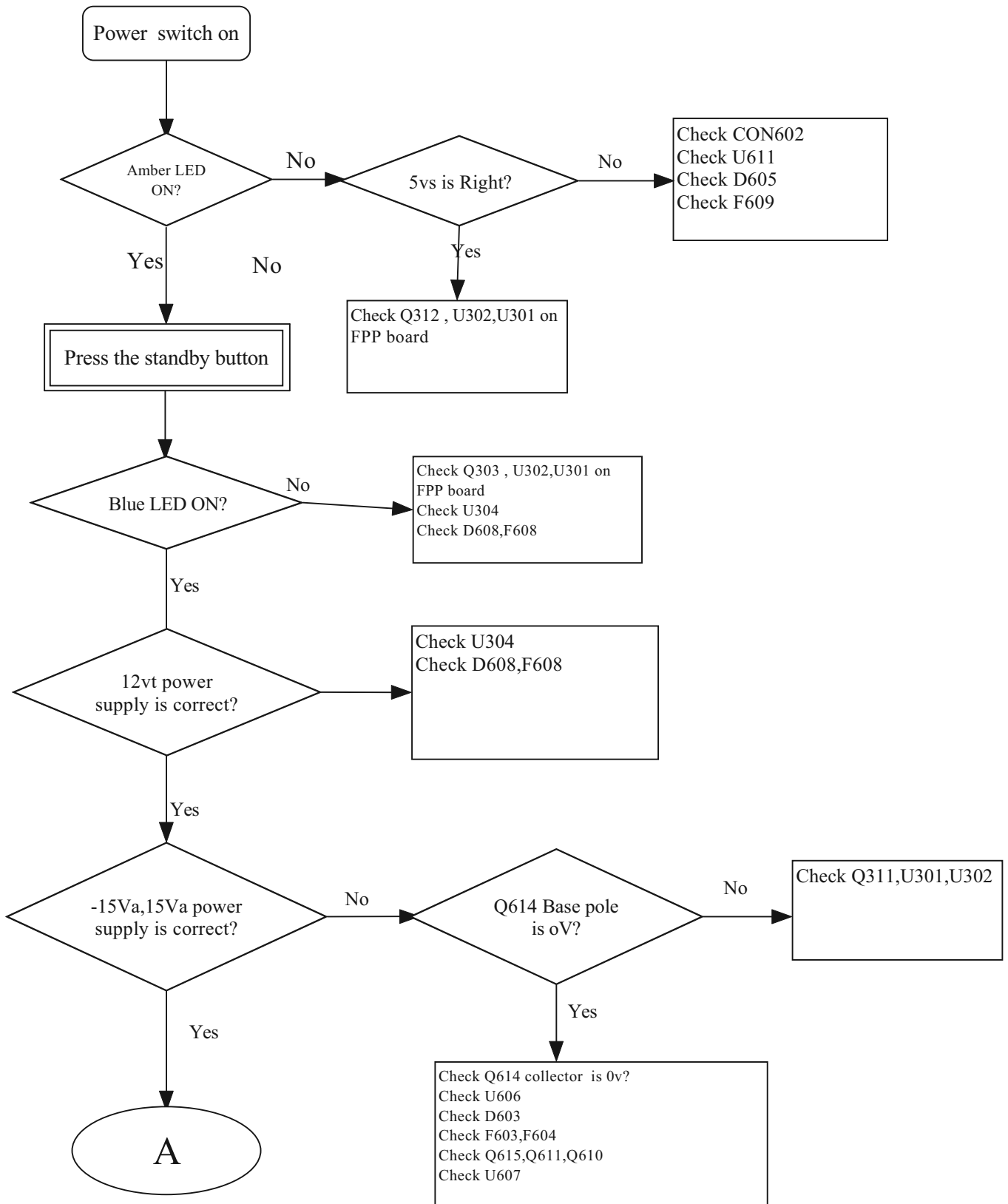
SECTION 3

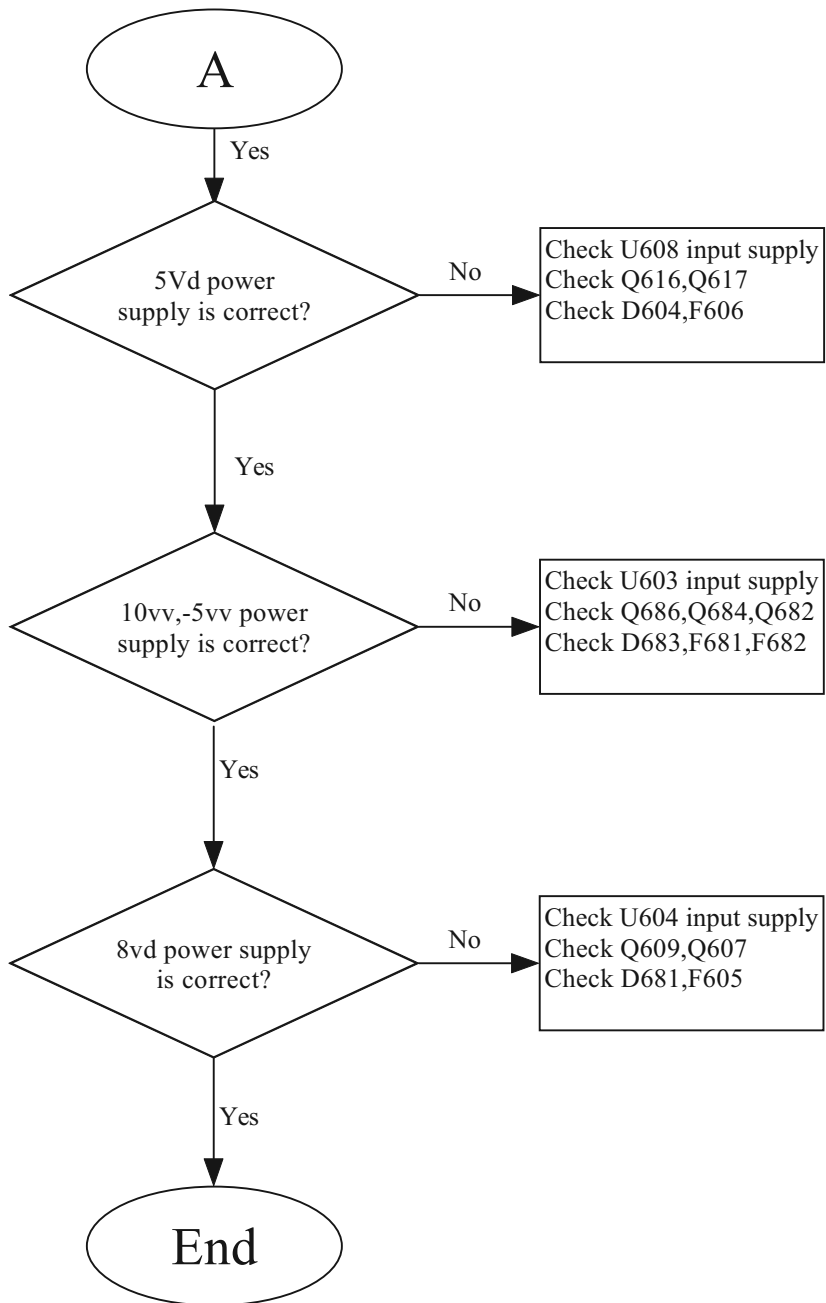
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ELECTRICAL TROUBLESHOOTING GUIDE

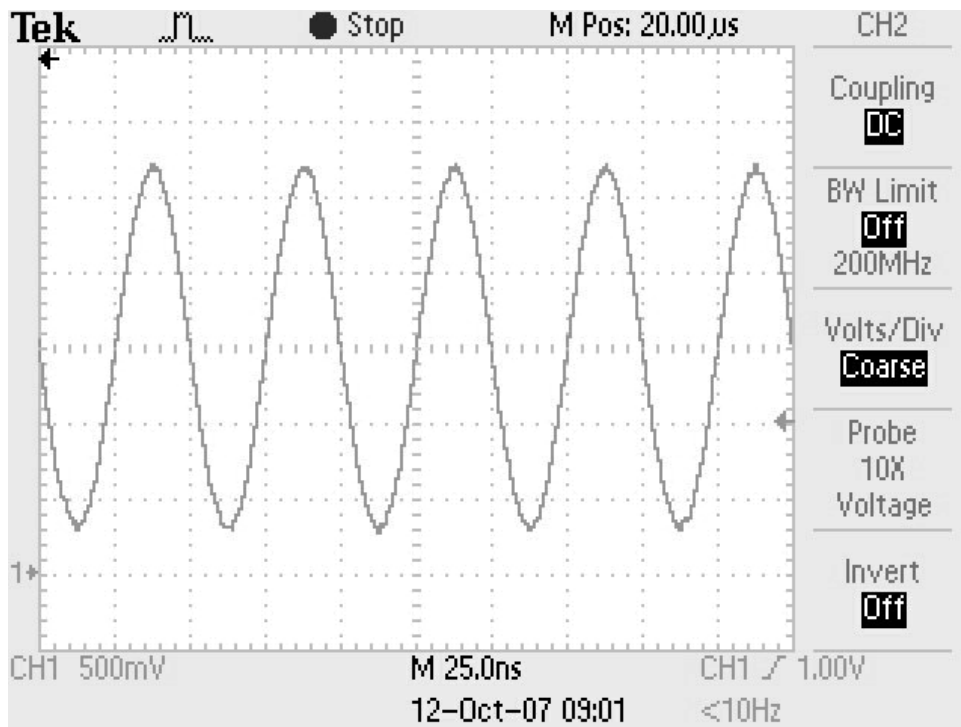
Power check flow



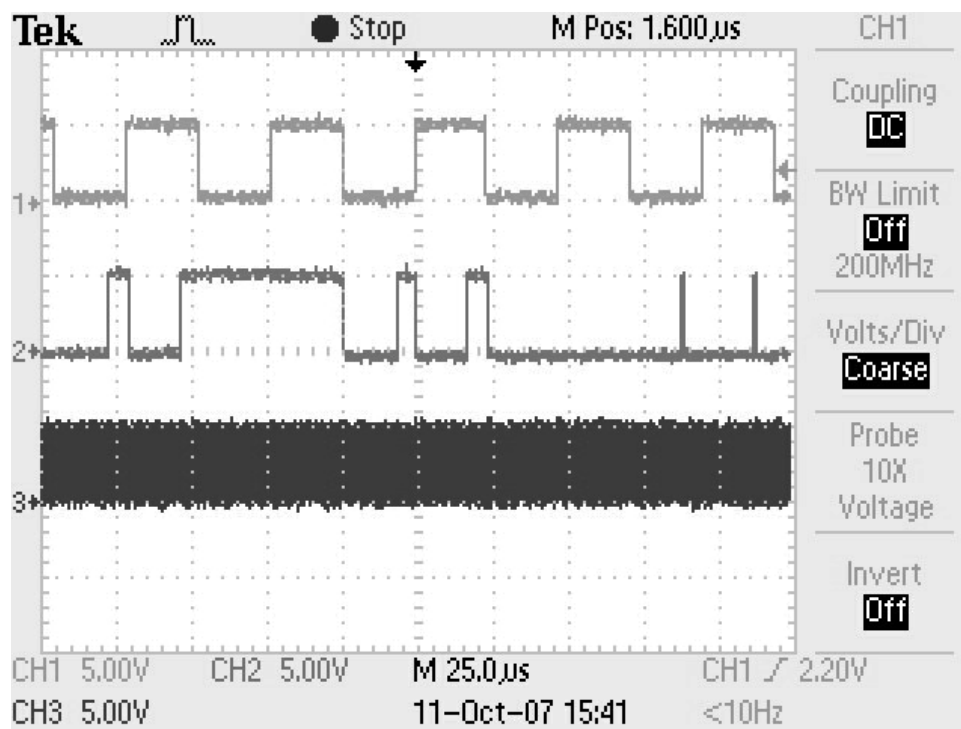


DETAILS AND WAVEFORMS ON SYSTEM TEST AND DEBUGGING

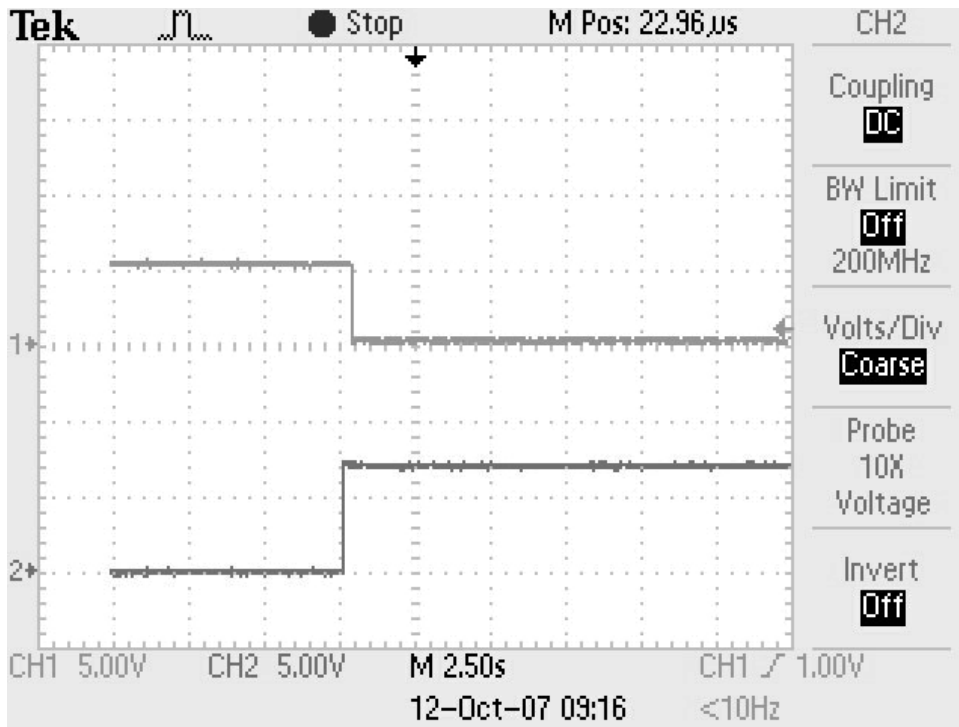
1.DSP clock 20MHz



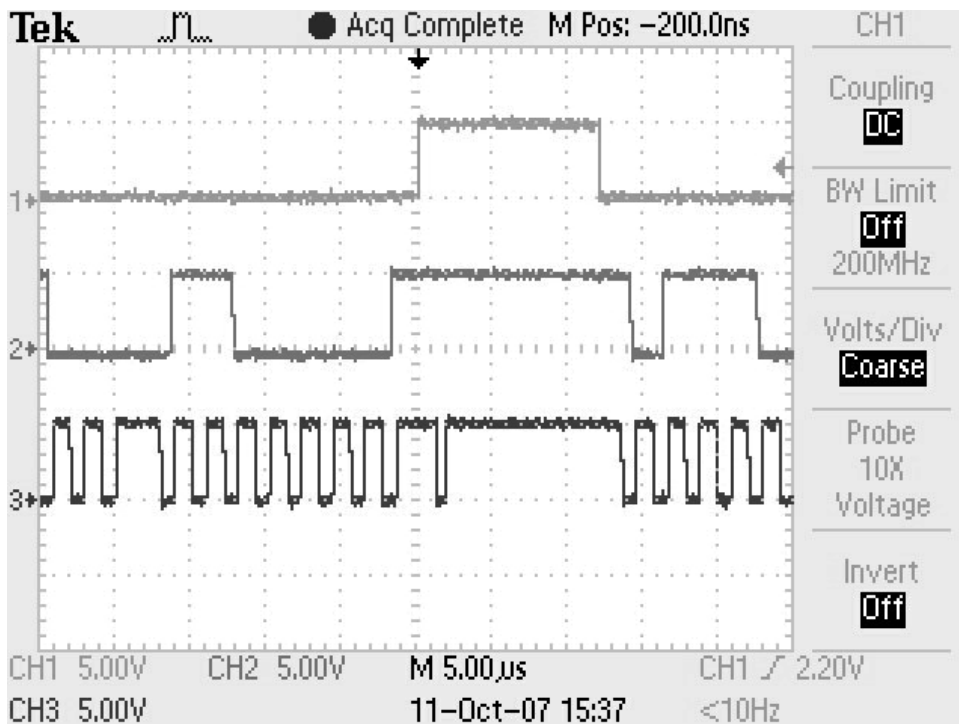
2.Volume control STB(CH1) , DATA(CH2) and CLOCK(CH3)



3. AT89C51 RESET IS HIGH ACTIVE, STB(CH1), +5V(CH2)

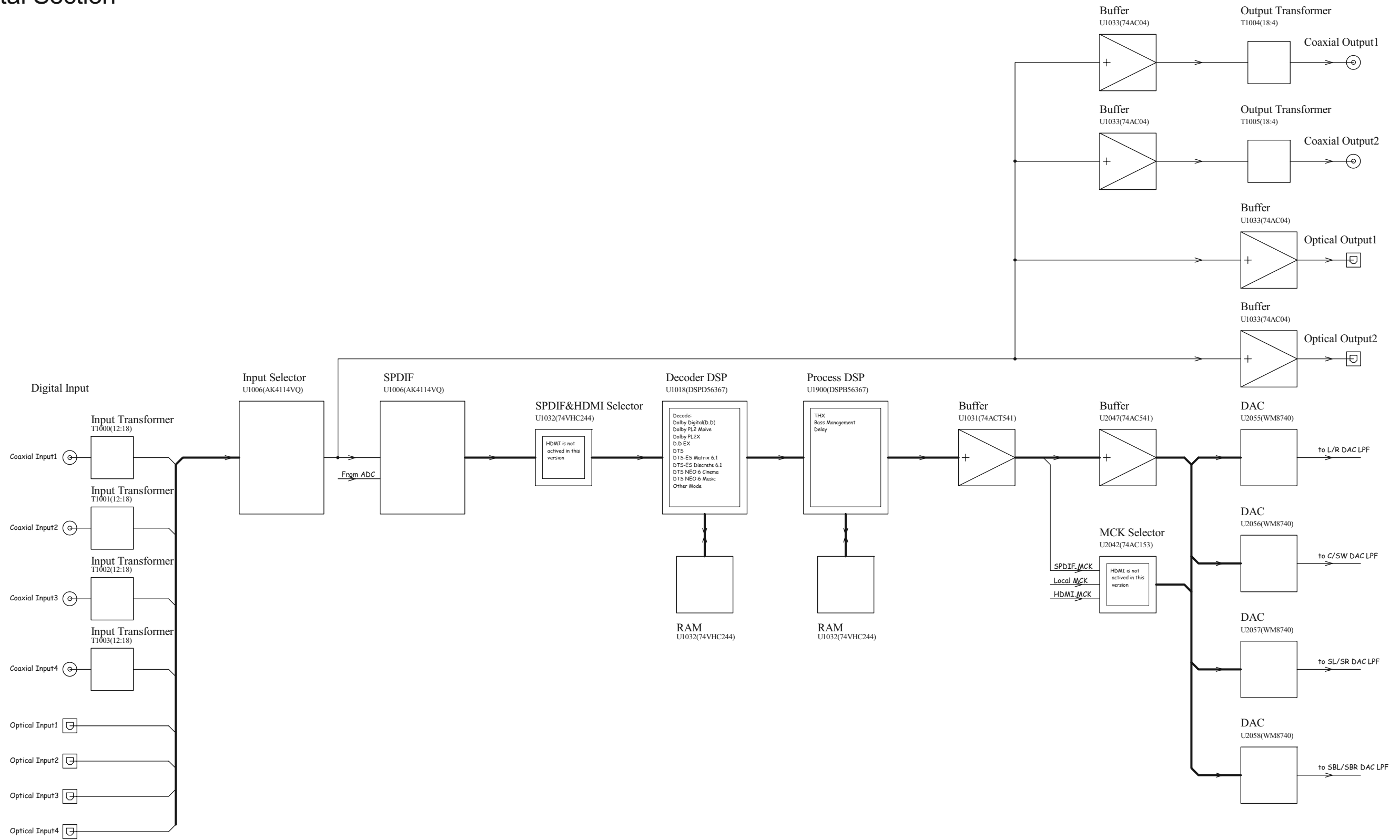


4. WM8740 DAC STB(CH1), DATA(CH2) AND CLOCK(CH3)

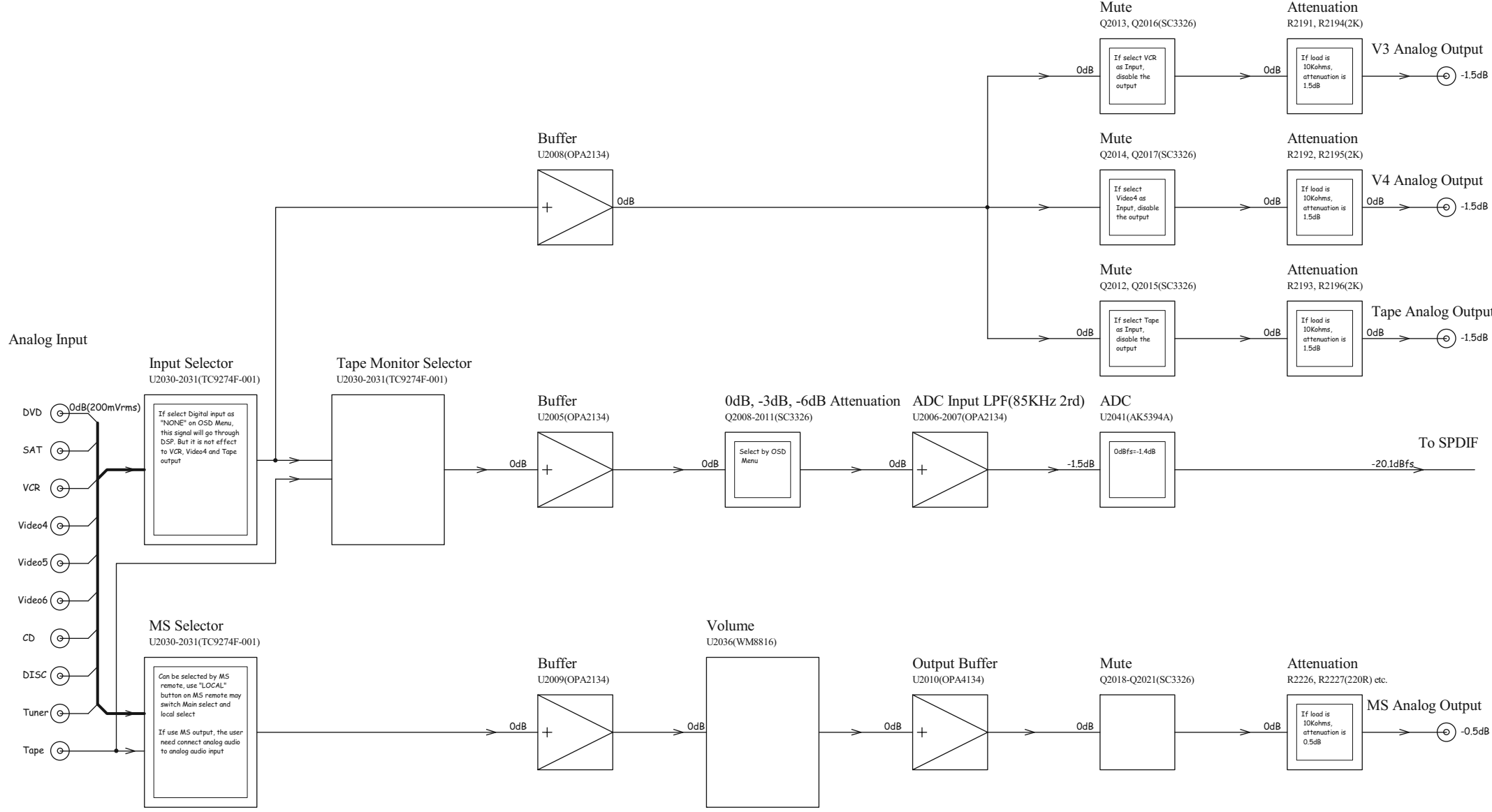


BLOCK DIAGRAM

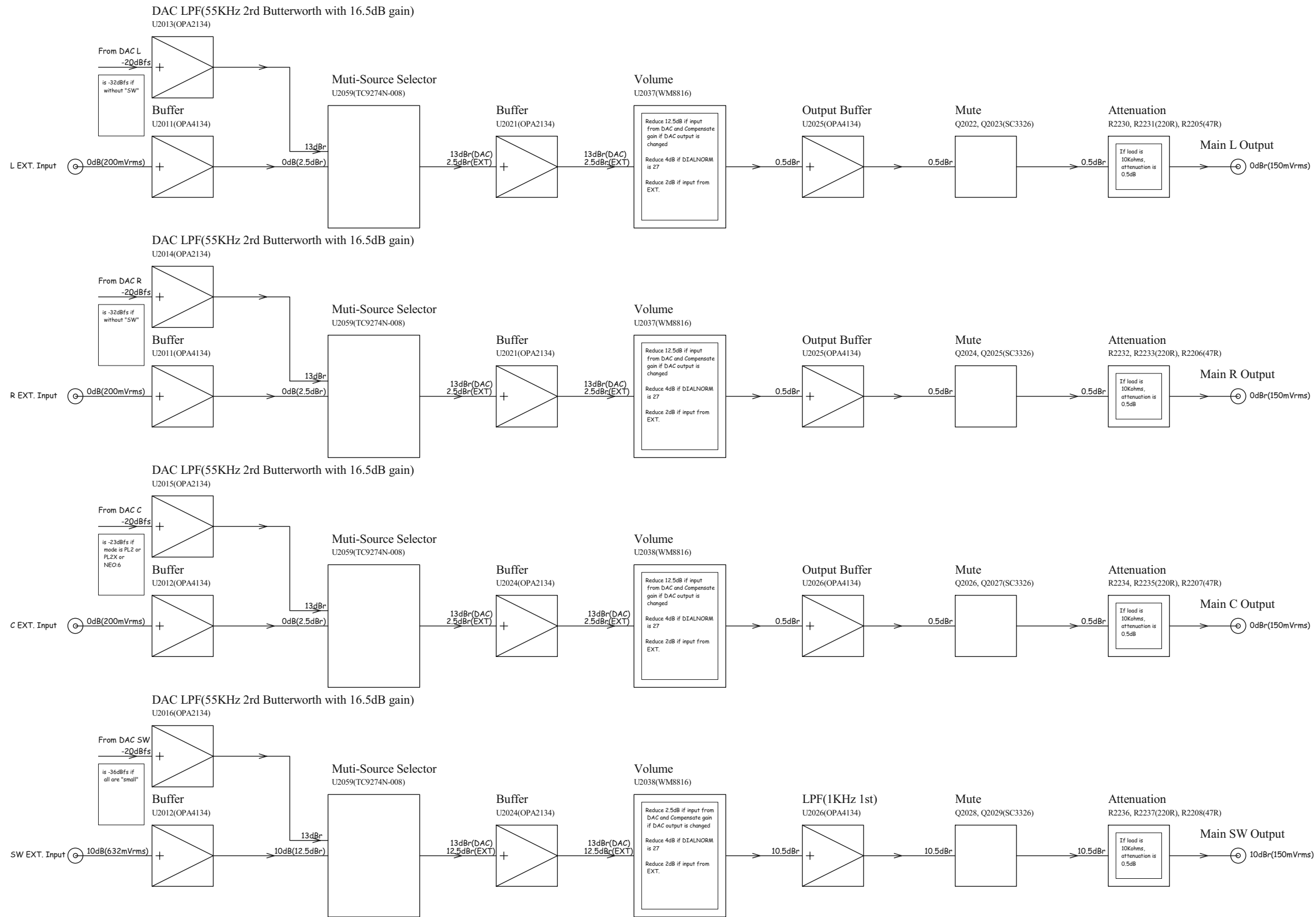
1. Digital Section



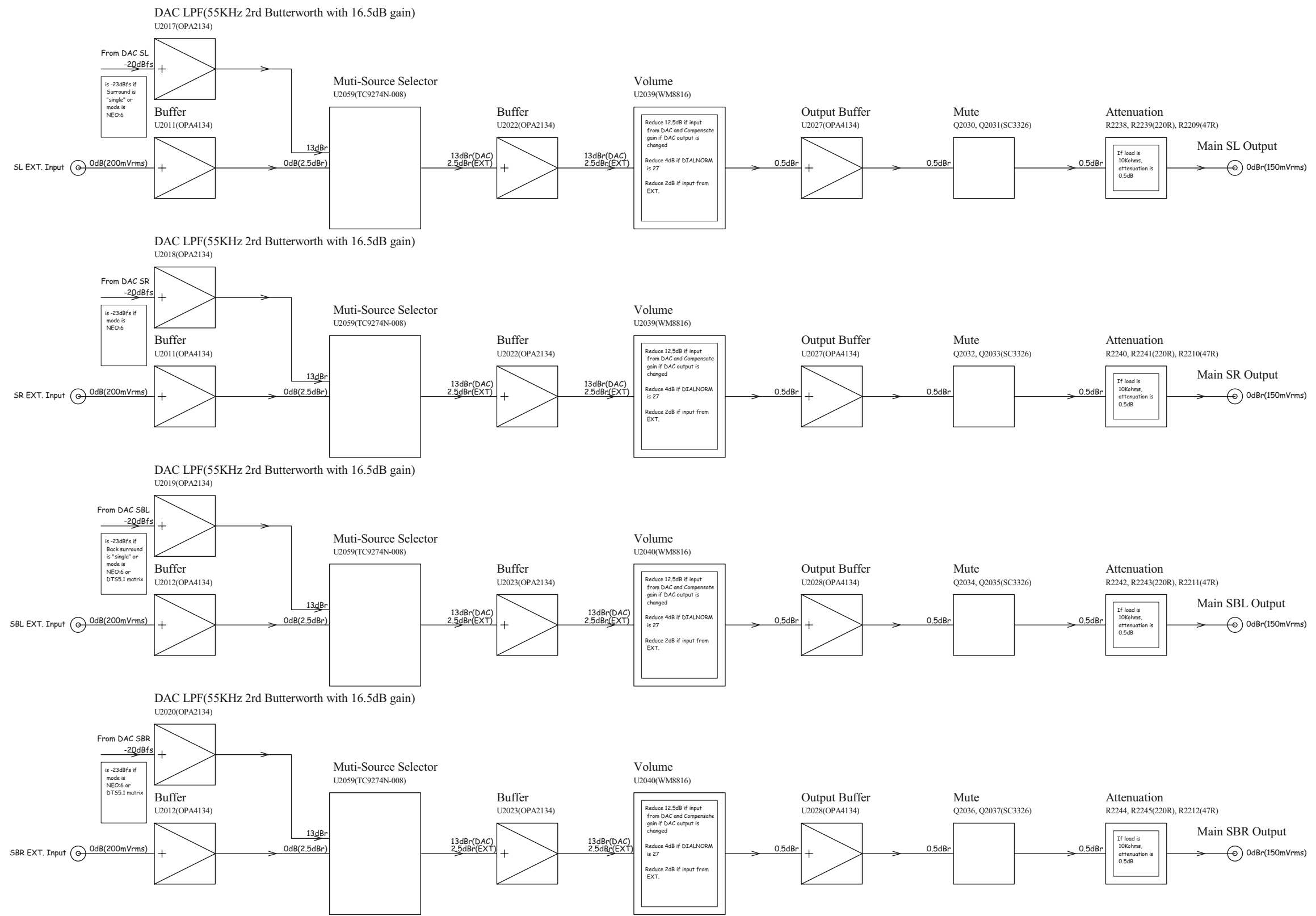
2. Analog Input Section



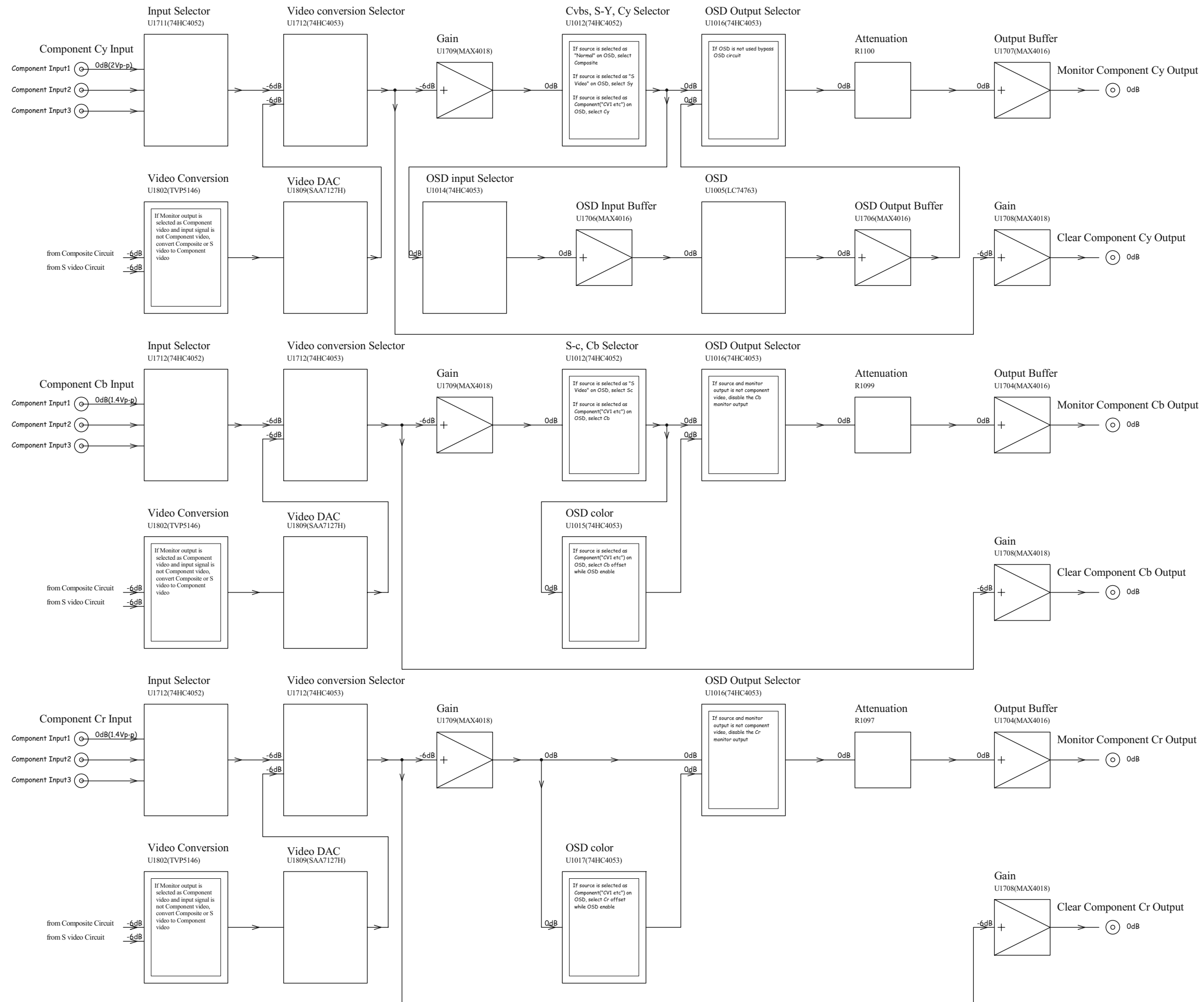
3. Volume and EXT. Section/L/R/C/SW



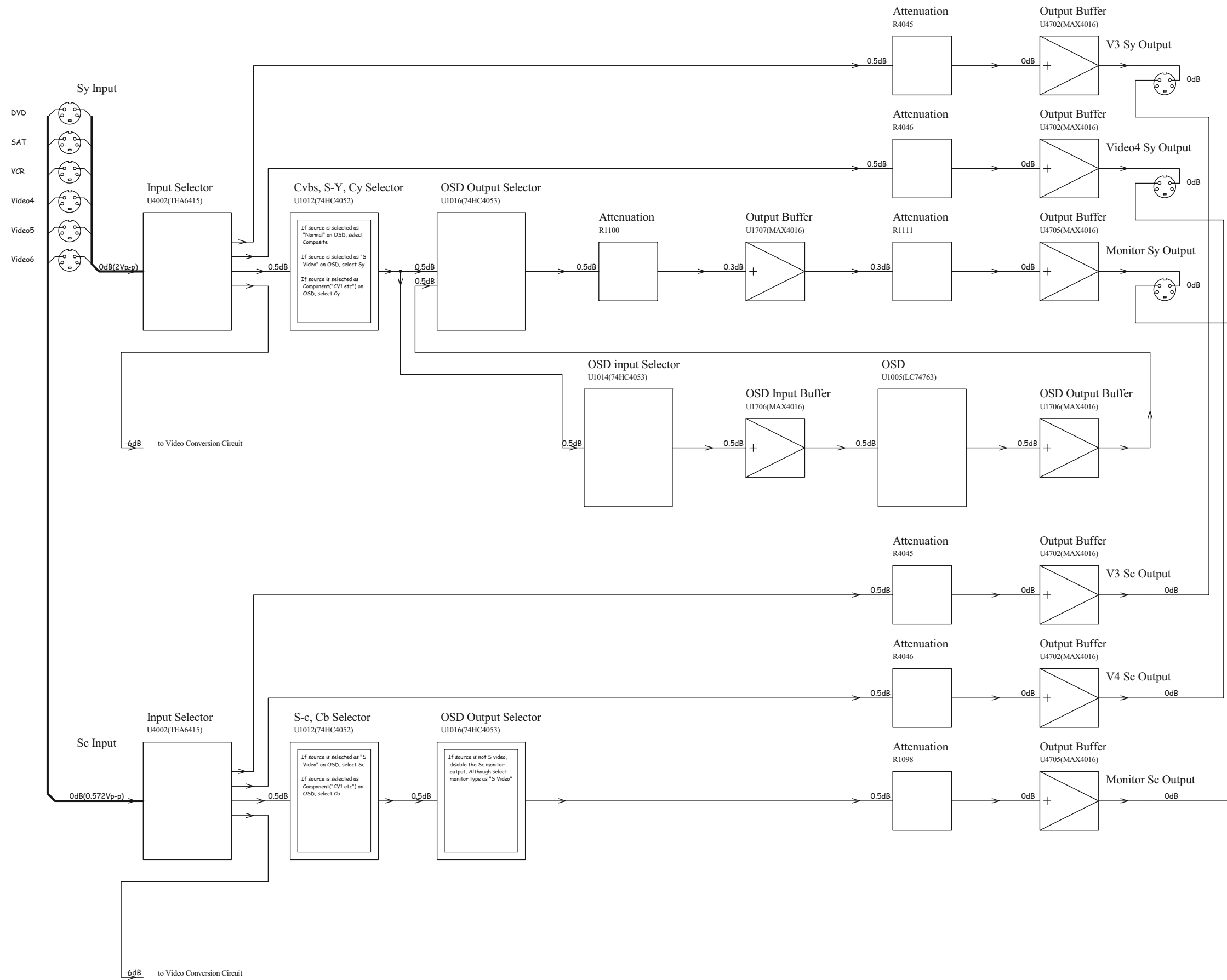
4. Volume and EXT. Section/SL/SR/SBL/SBR



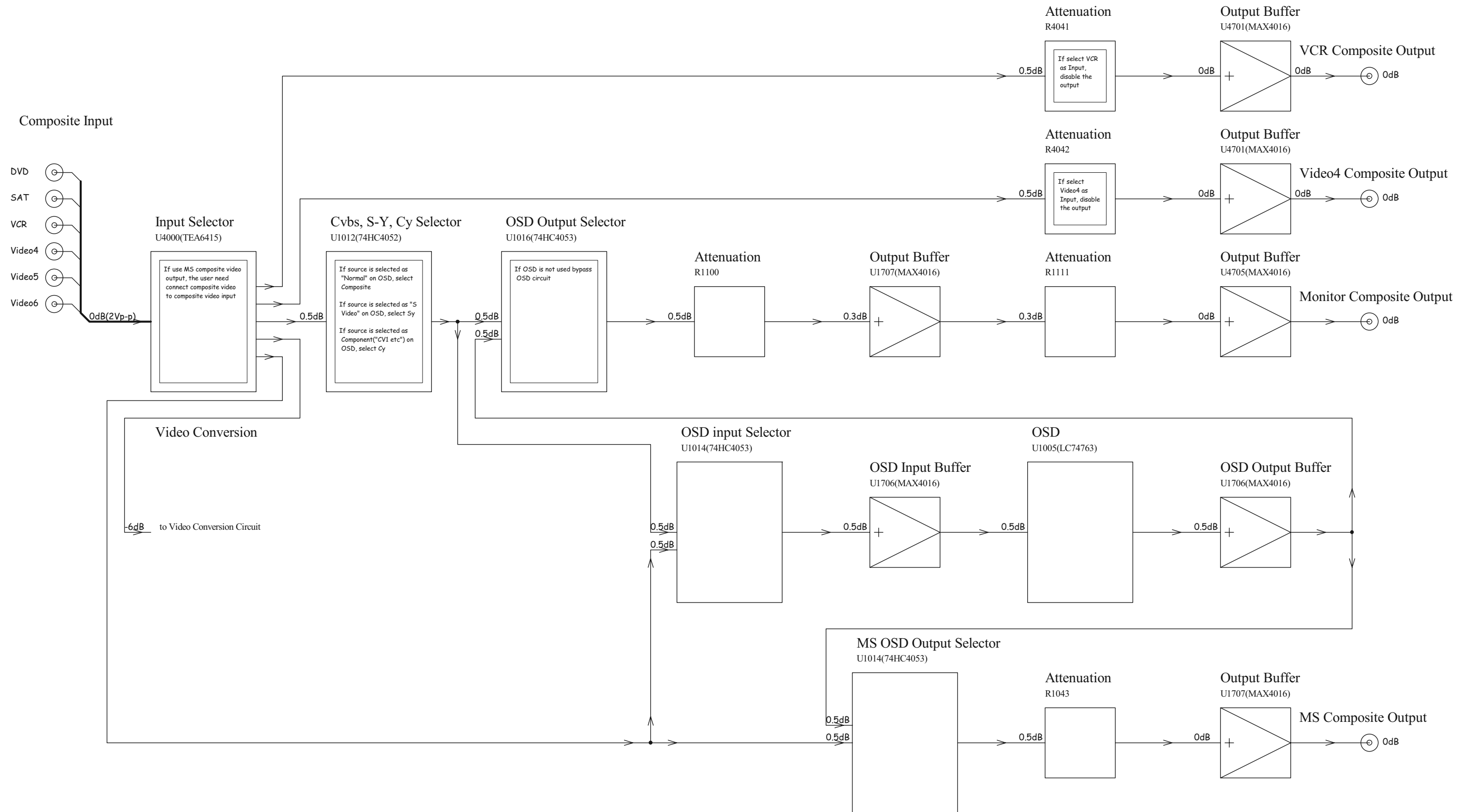
5.Component Video



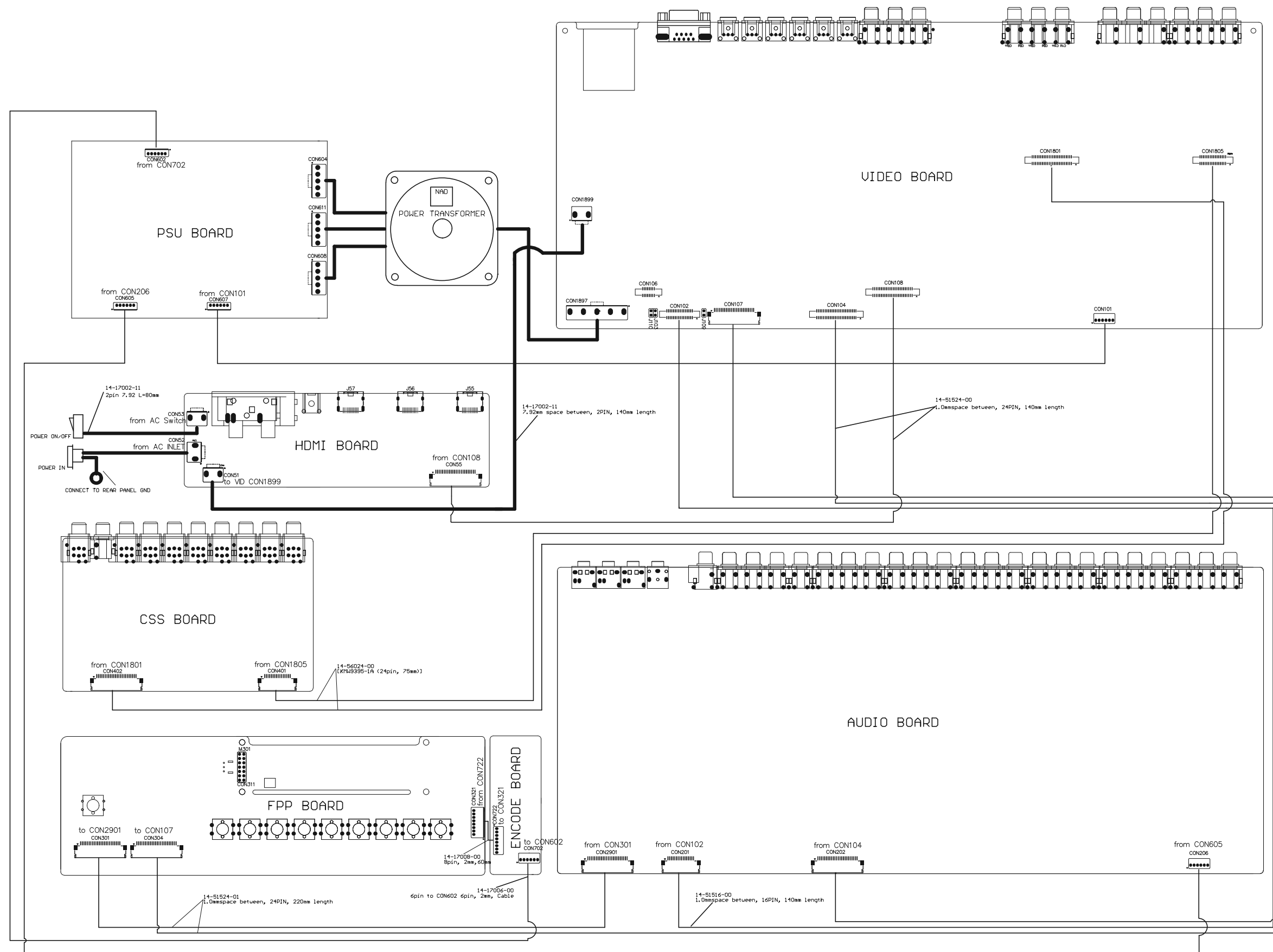
6 . S Video Section



7.Composite Video

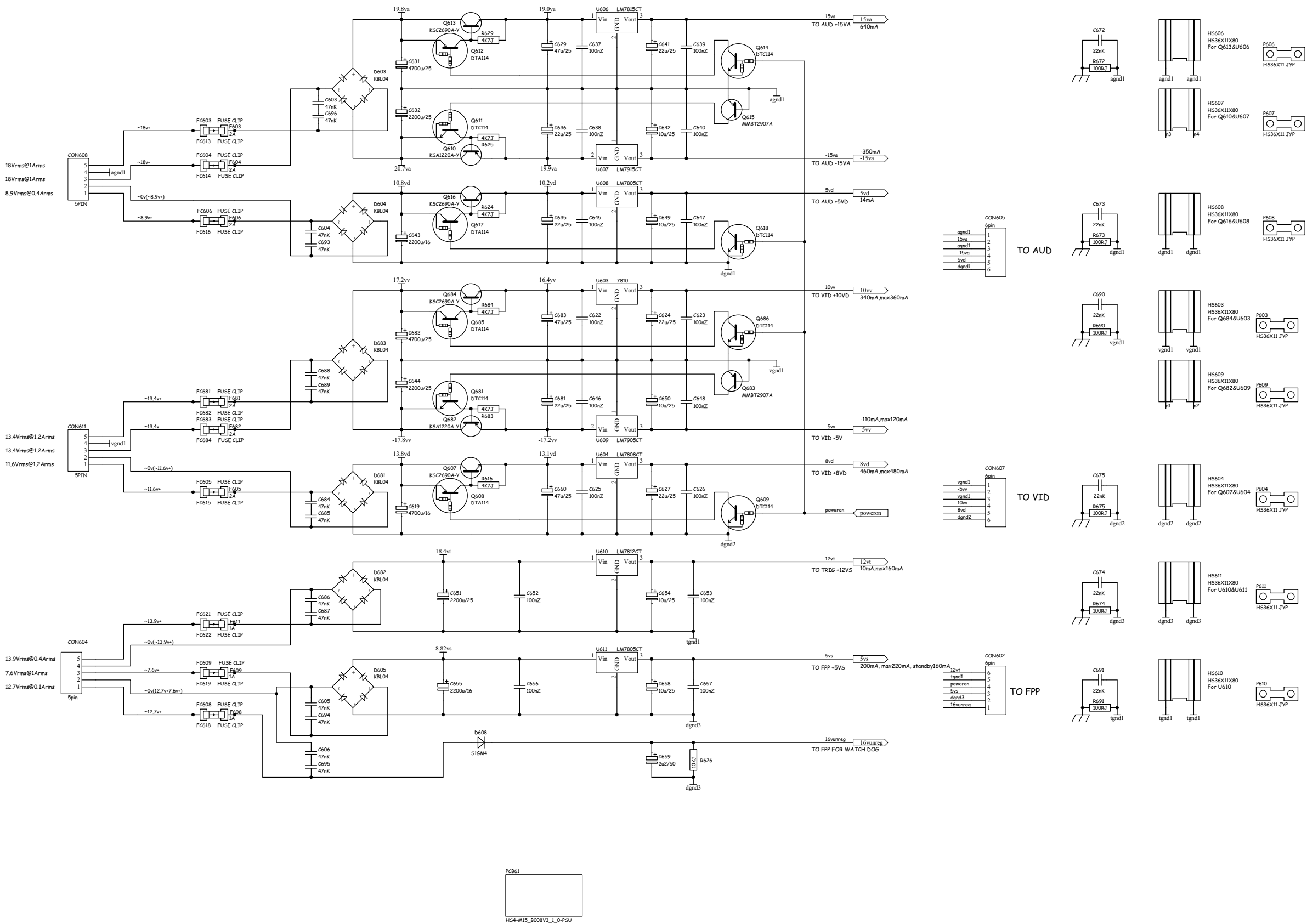


WIRING DIAGRAM

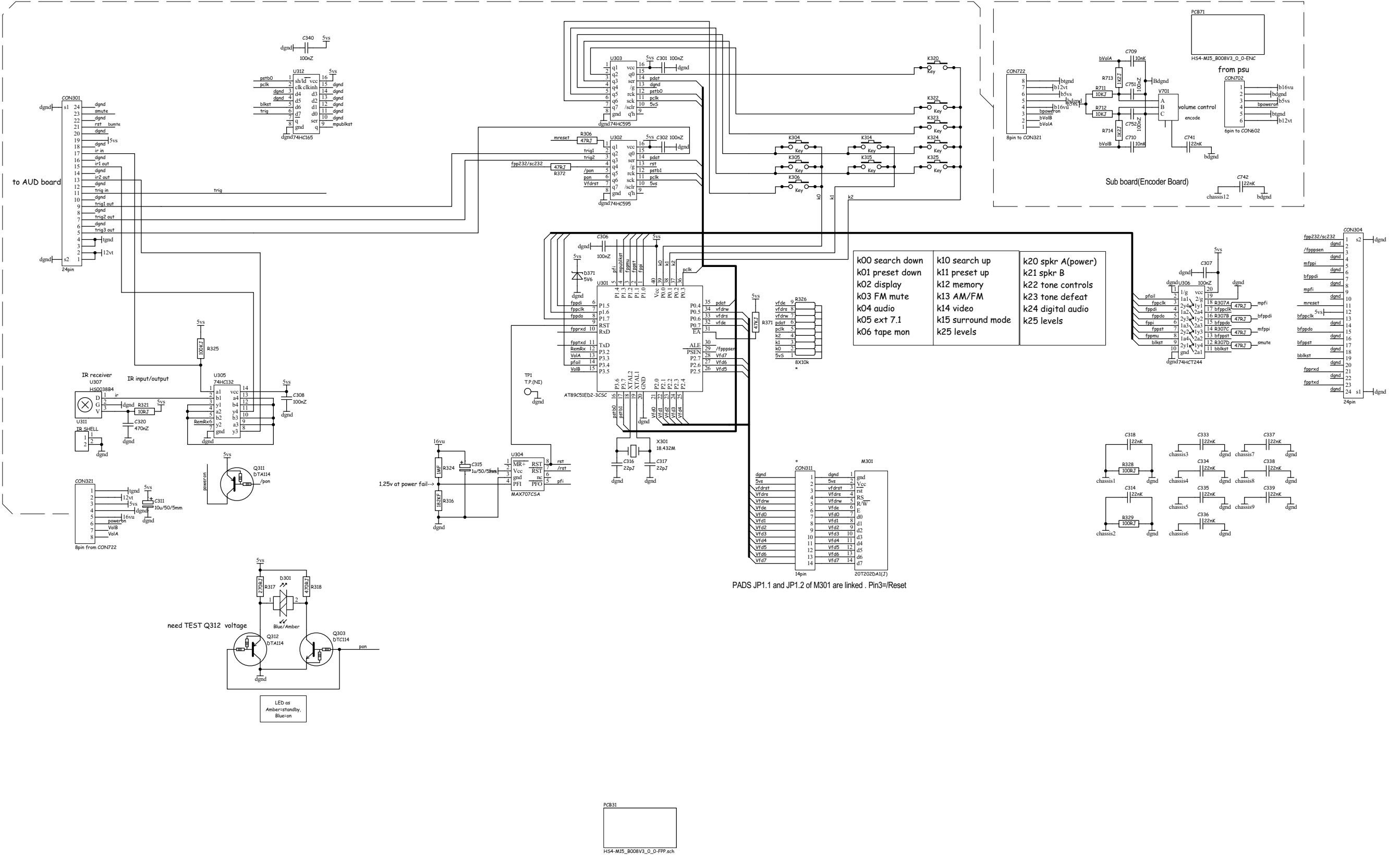


CIRCUIT DIAGRAMS

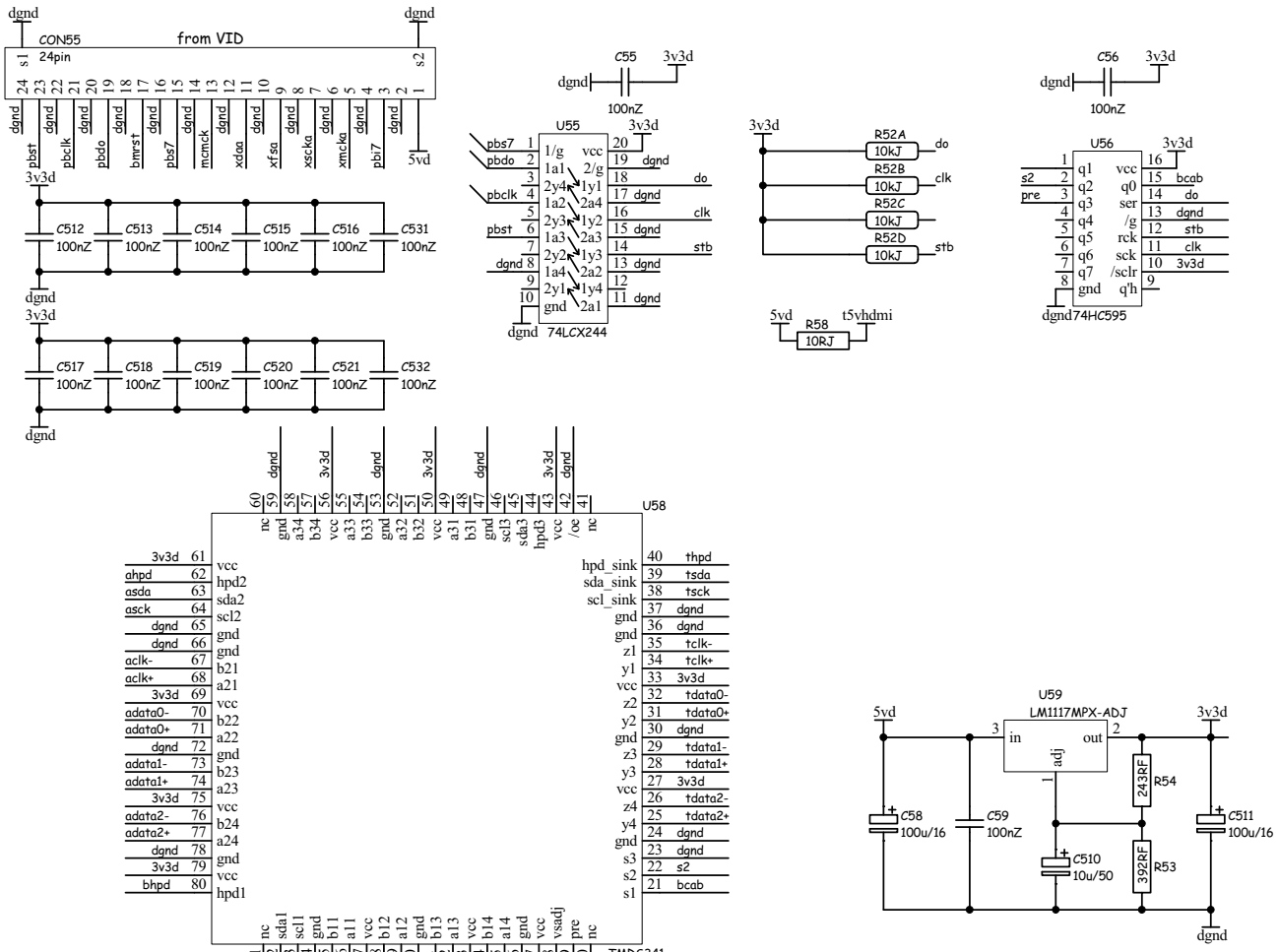
1. POWER SUPPLY CIRCUIT DIAGRAM



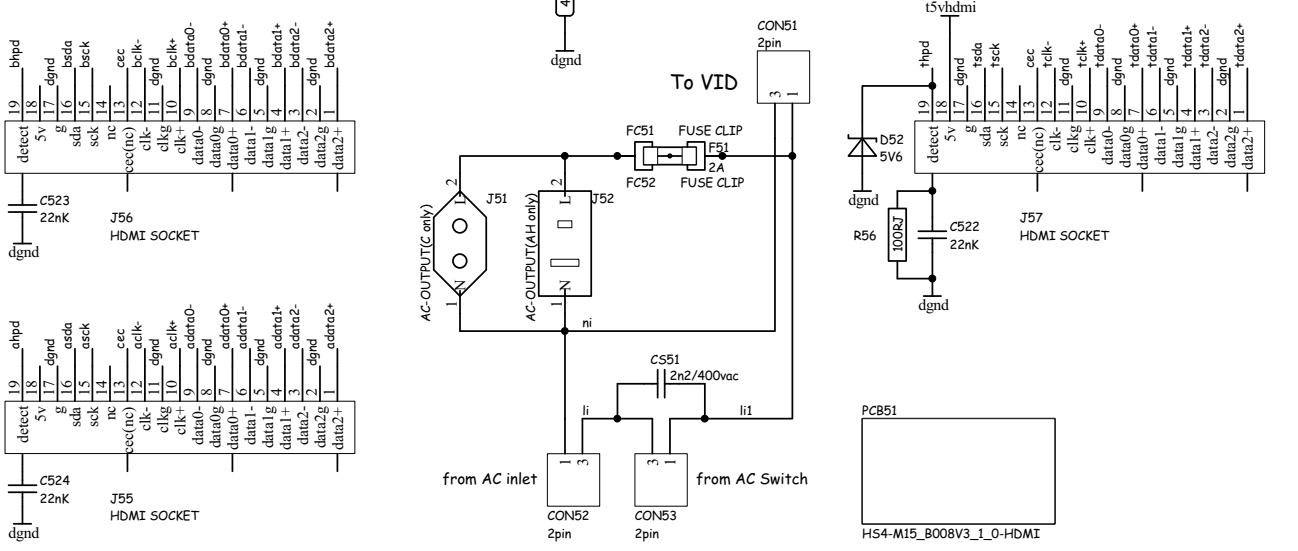
2.FRONT PANEL CIRCUIT DIAGRAM



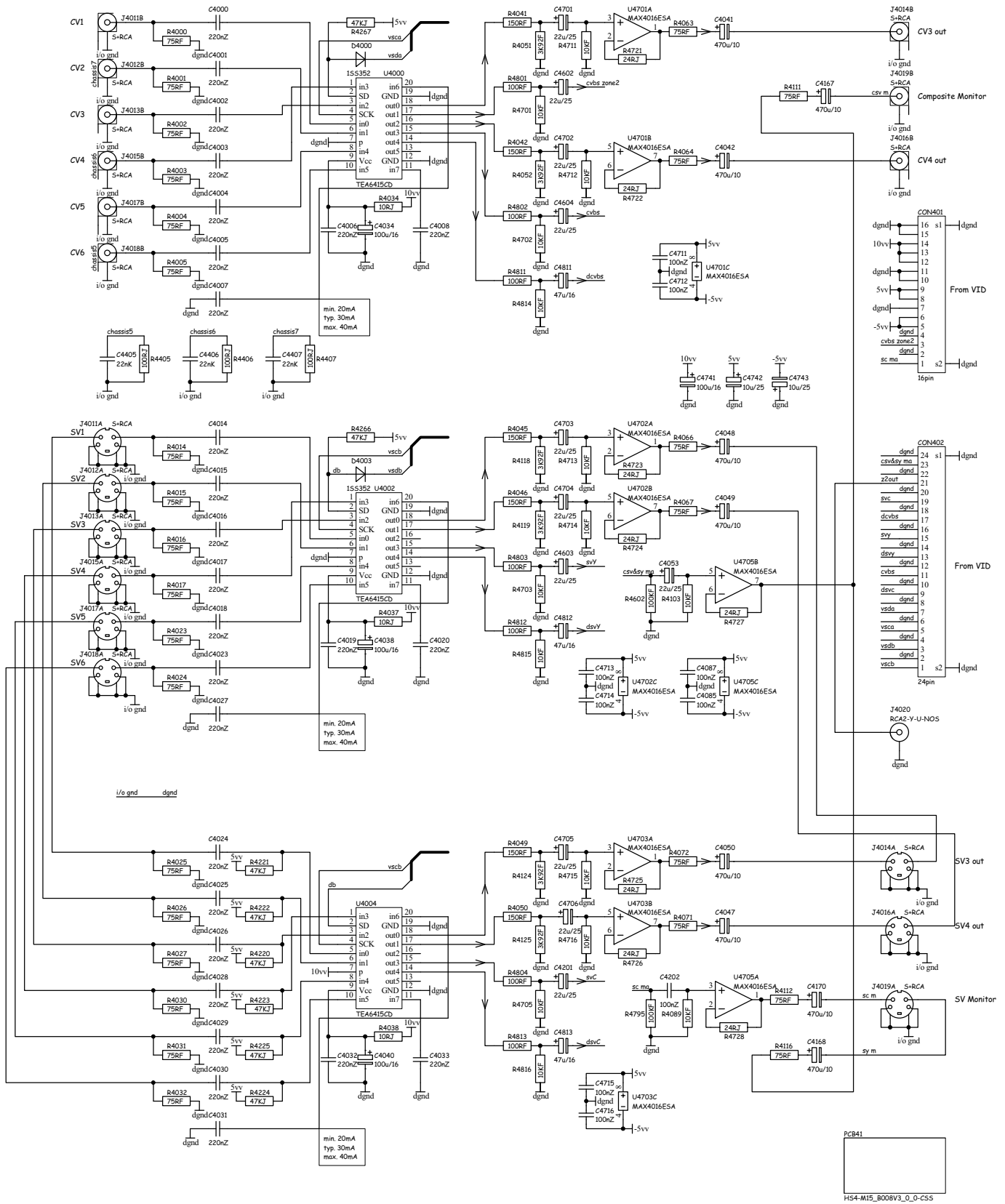
3.HDMI CIRCUIT DIAGRAM



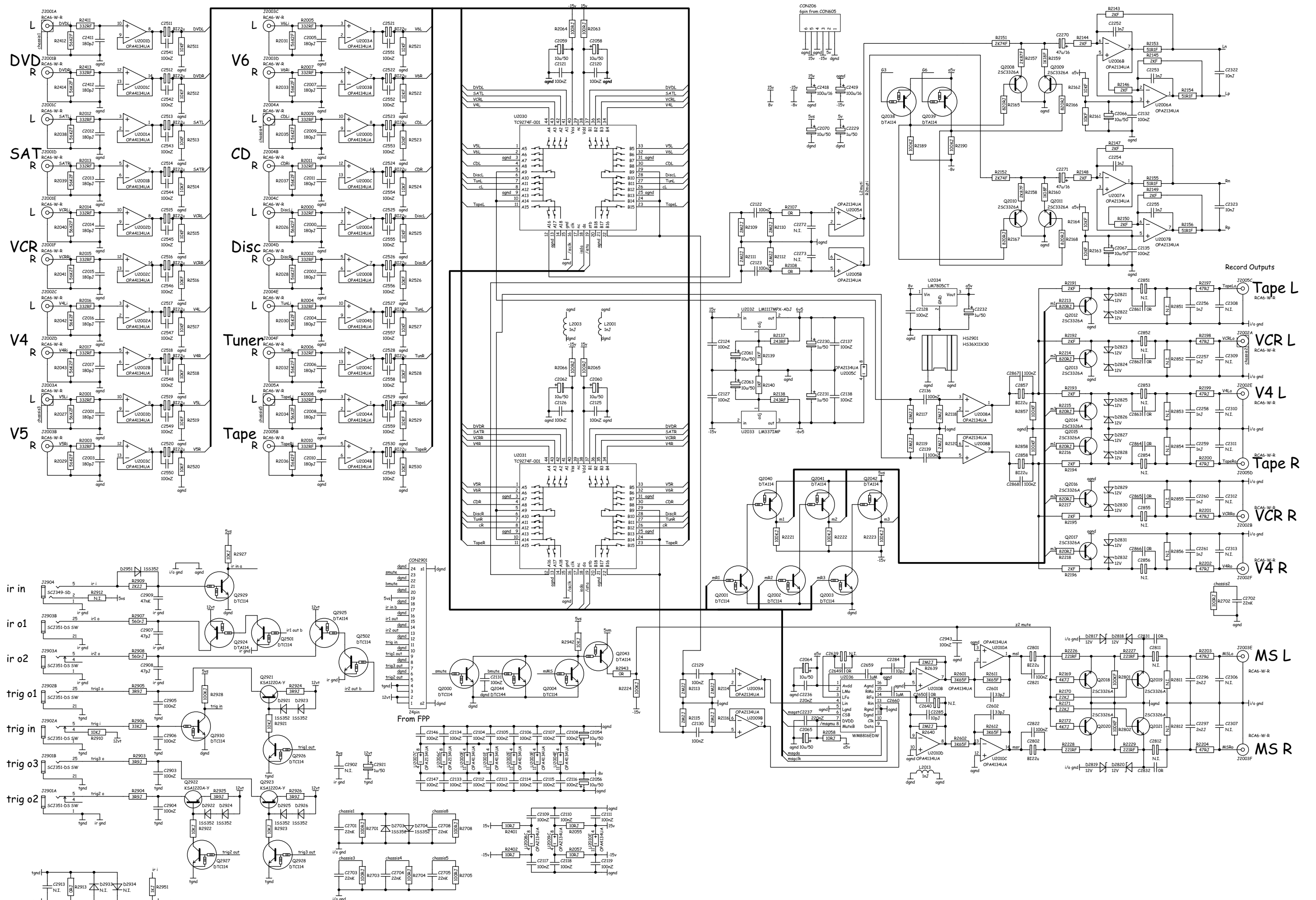
"pre" is output pre-emphasis adjustment, high=3dB



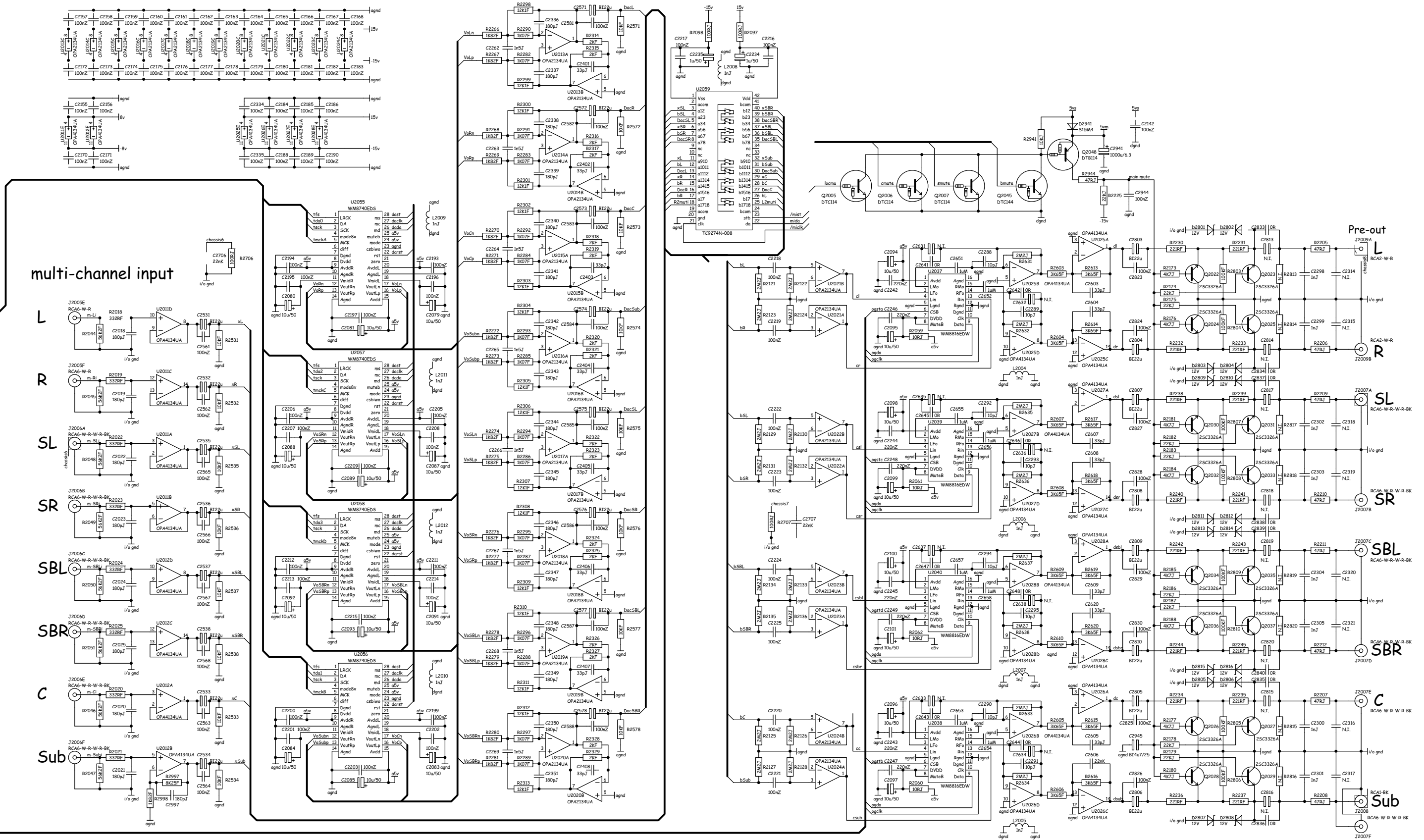
4.CSS CIRCUIT DIAGRAM



5.AUDIO CIRCUIT DIAGRAM-1

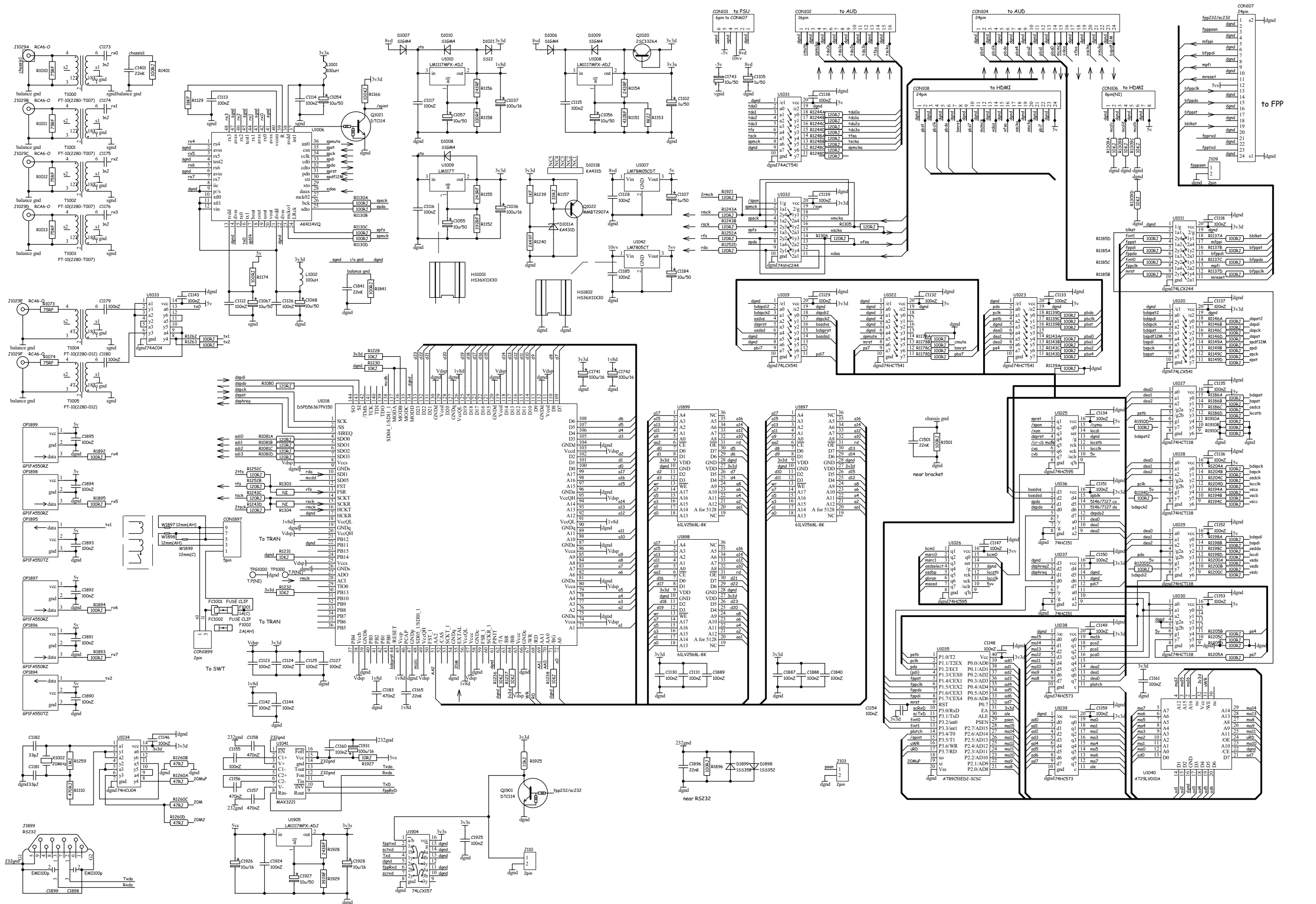


5.AUDIO CIRCUIT DIAGRAM-3

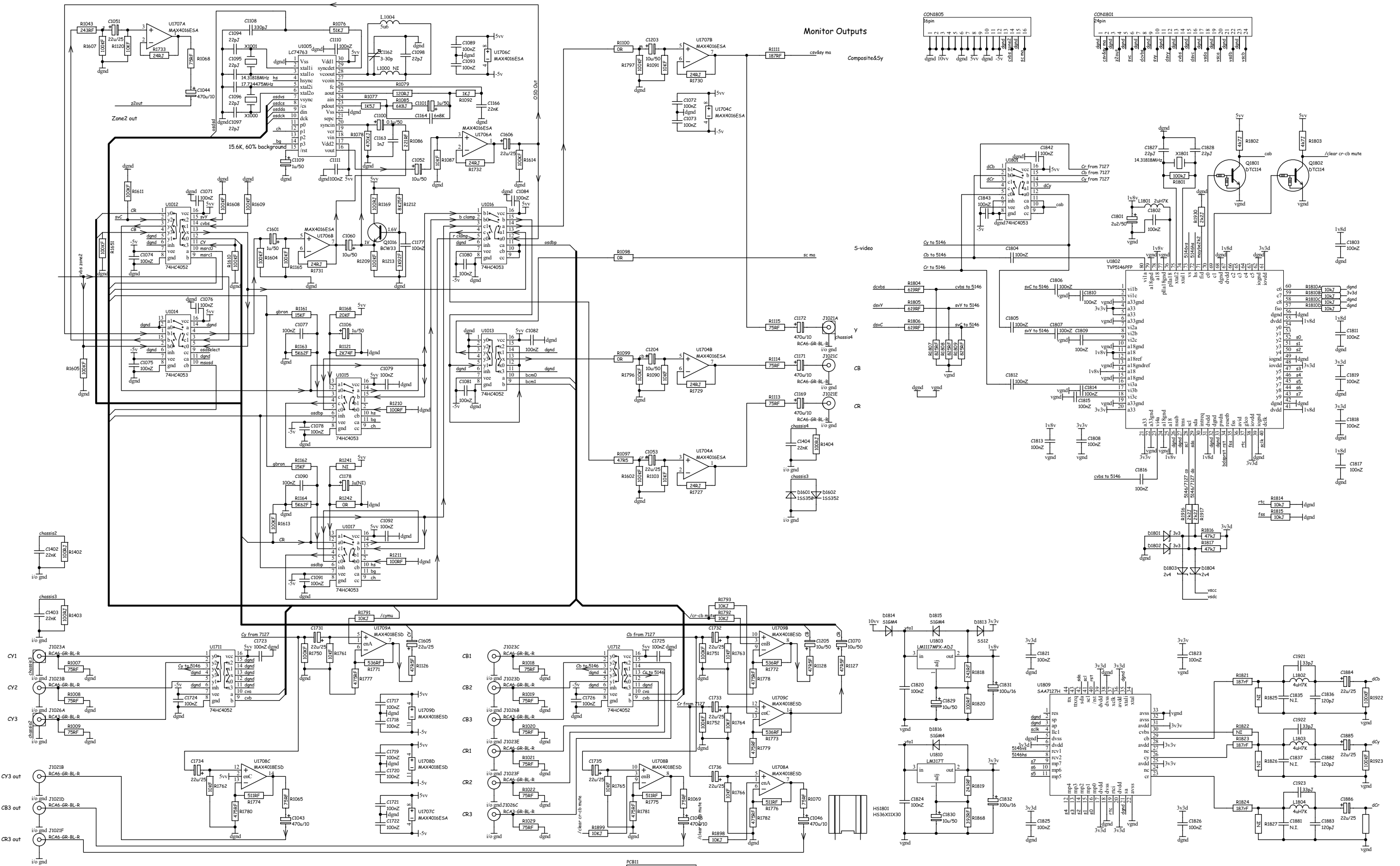


PCB21
H54-M15_8008V3_0_0-AUD

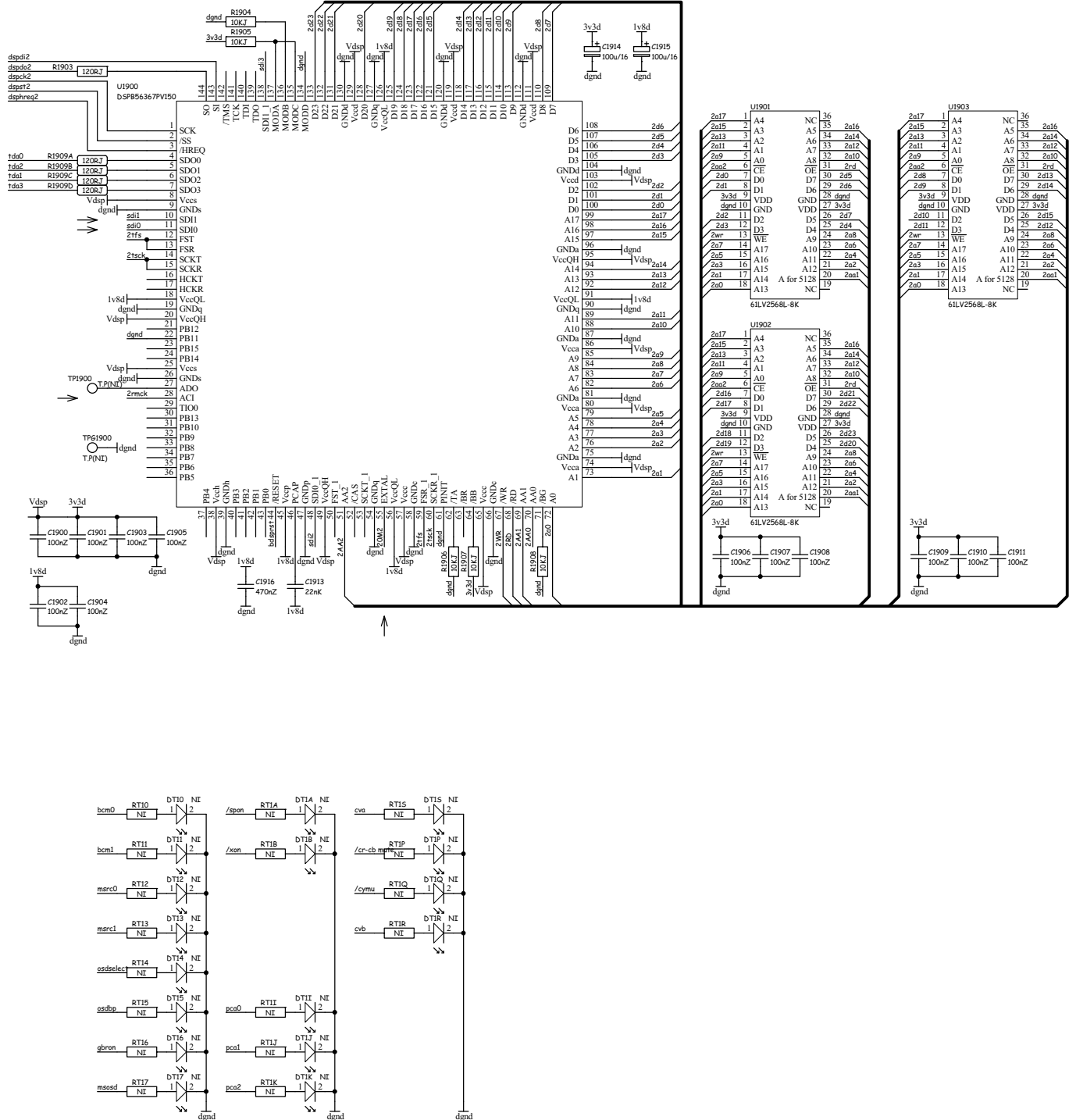
6.VIDEO CIRCUIT DIAGRAM-1



6.VIDEO CIRCUIT DIAGRAM-2



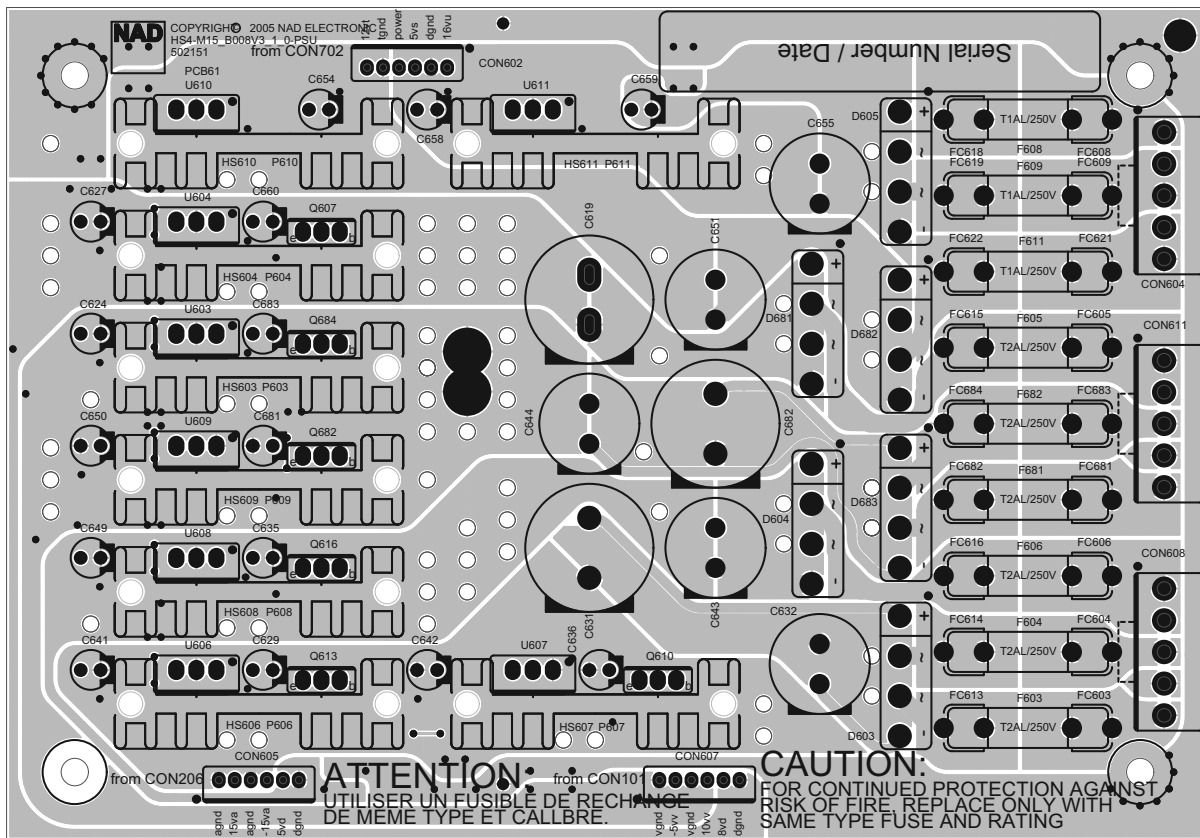
6.VIDEO CIRCUIT DIAGRAM-3



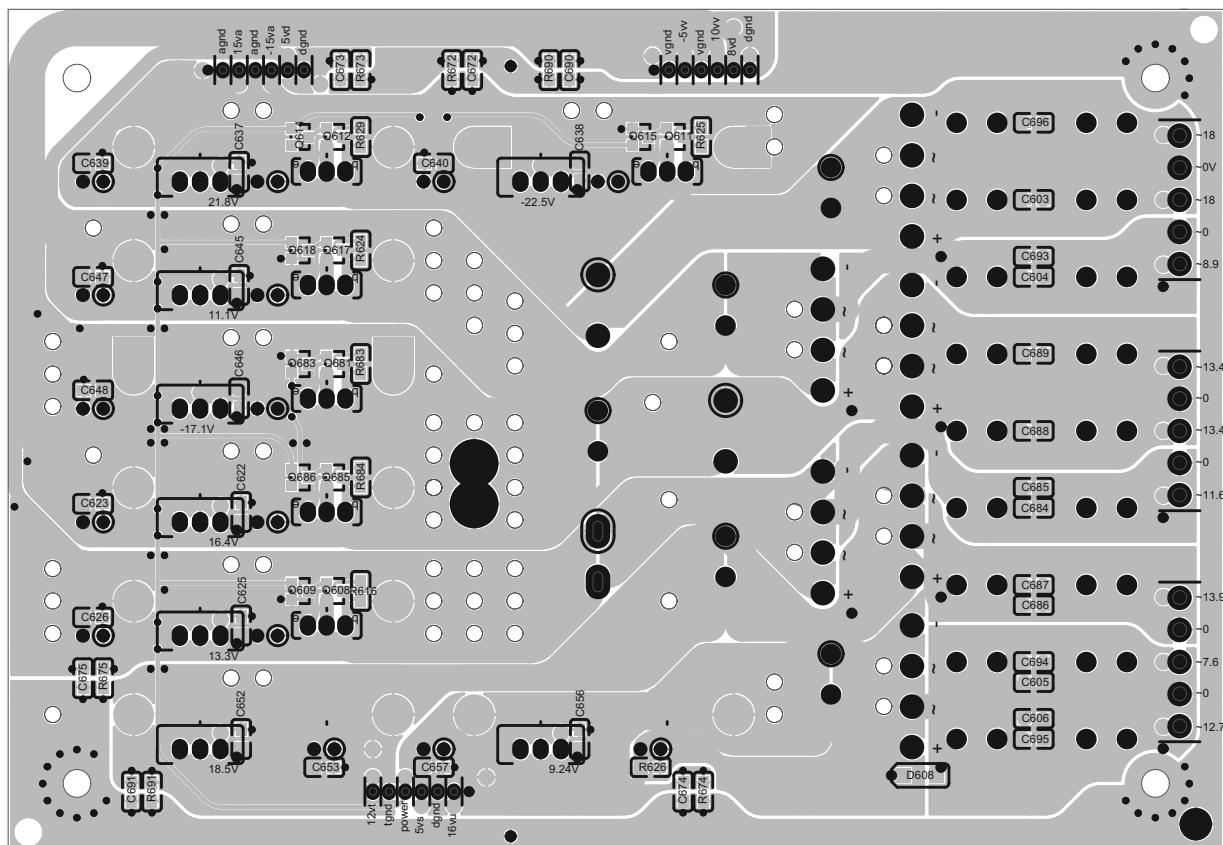
PRINTED CIRCUIT DIAGRAMS

1. POWER SUPPLY BOARD

PSU BOARD- COMPONENT SIDE

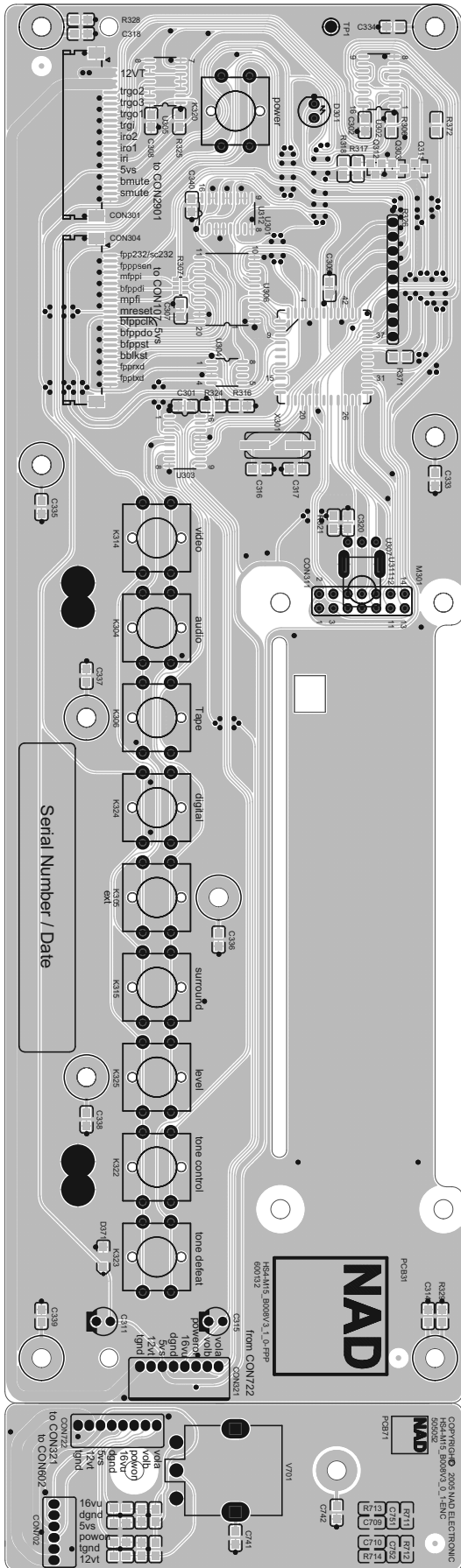


PSU BOARD- COPPER SIDE

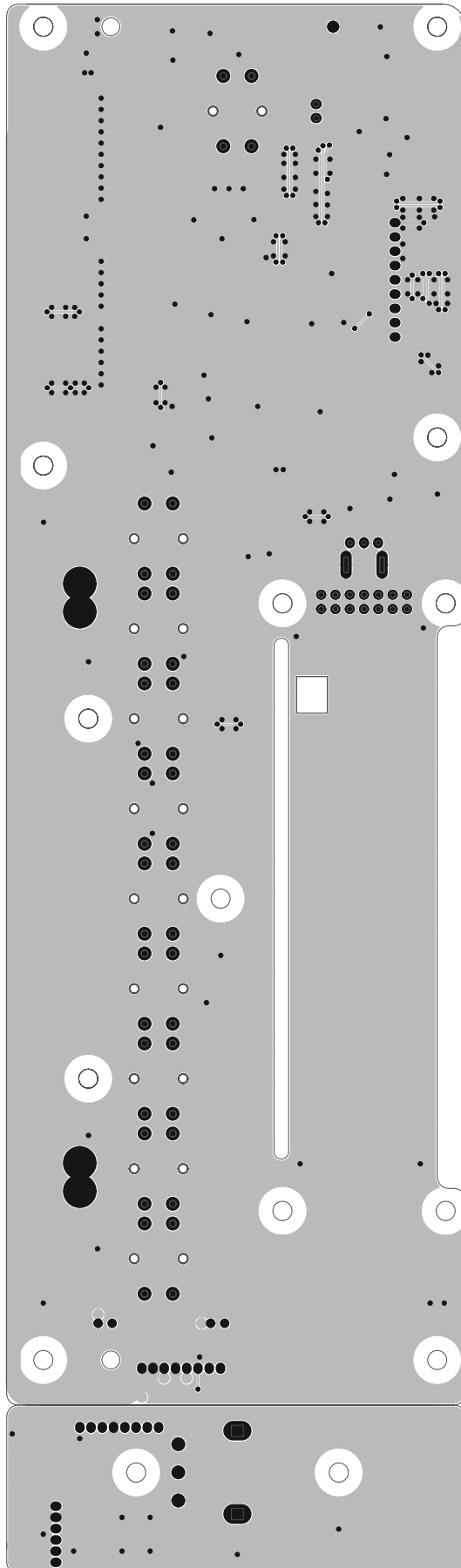


2.FPP BOARD

FPP BOARD-COMPONENT SIDE

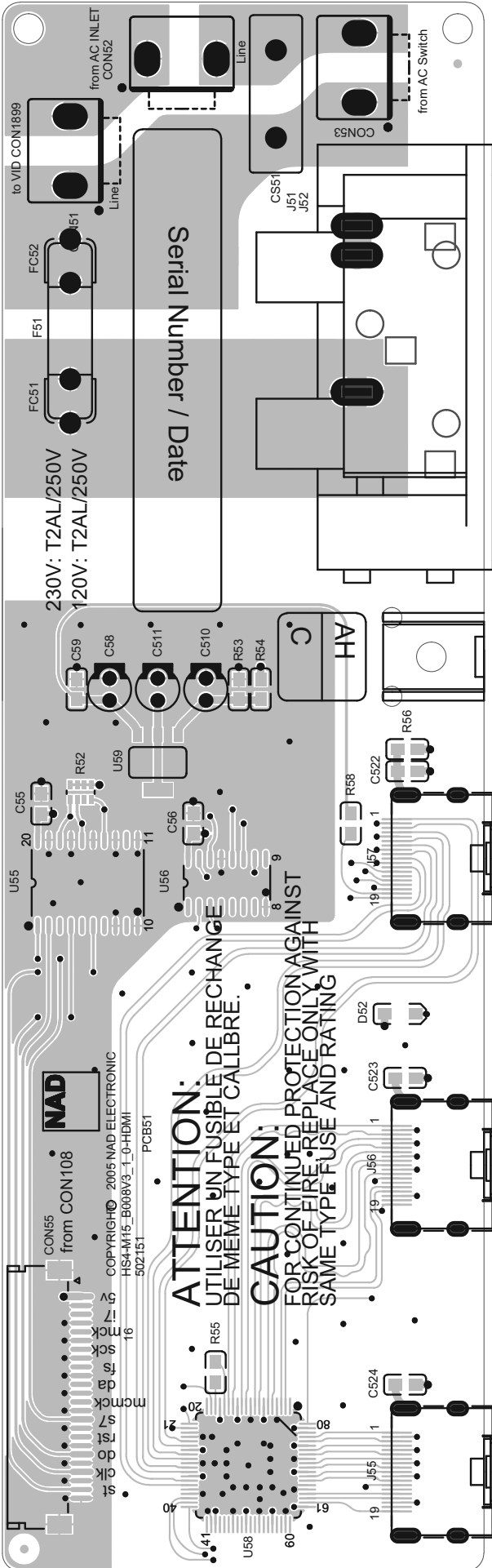


FPP BOARD-COPPER SIDE

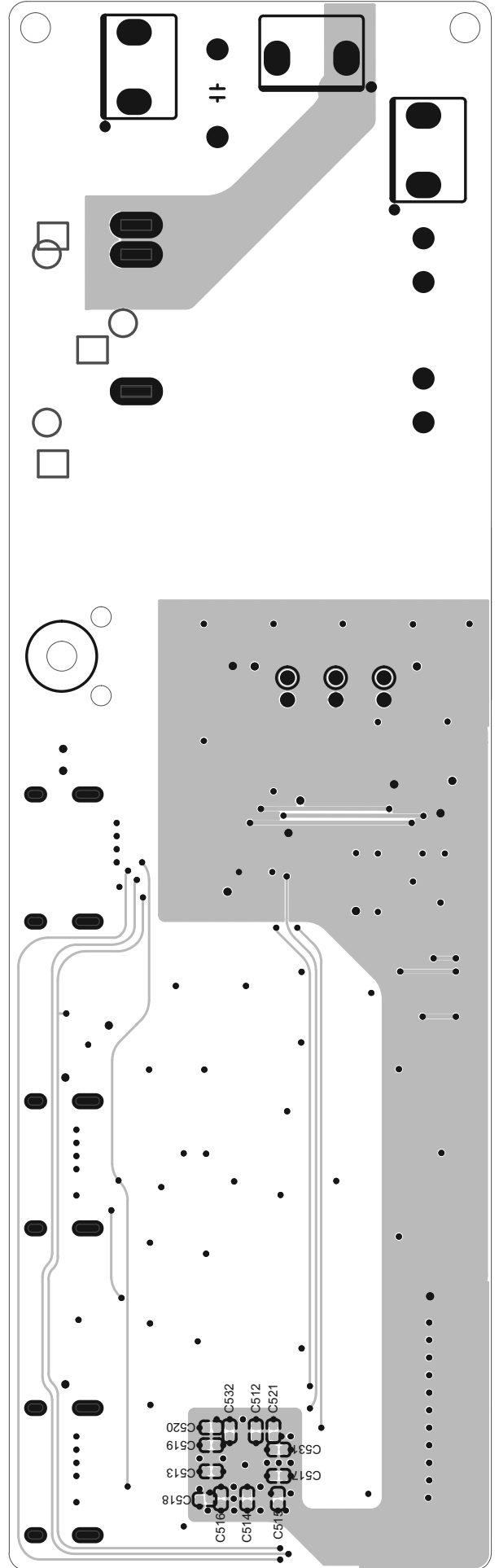


3.HDMI BOARD

HDMI BOARD- COMPONENT SIDE

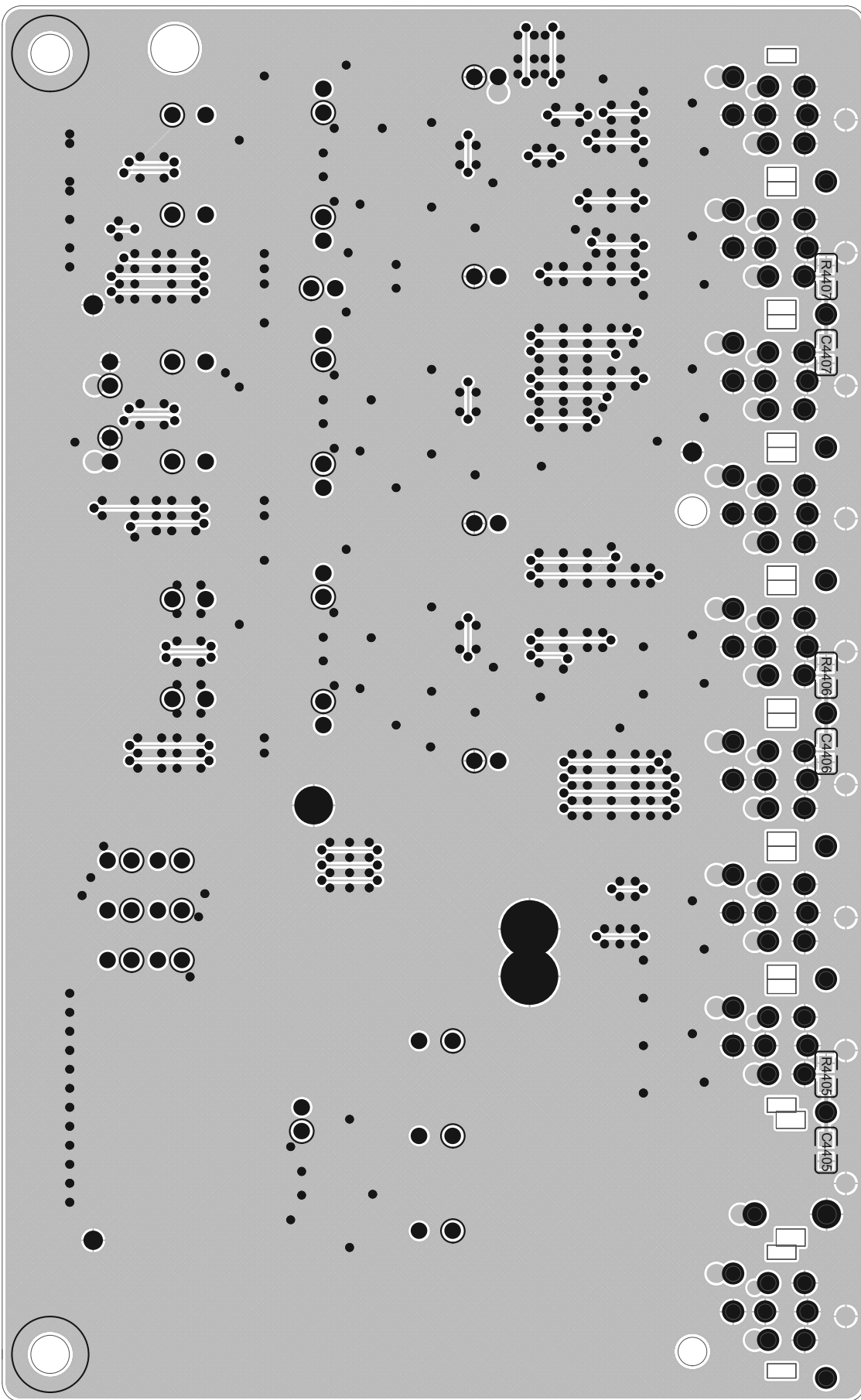


HDMI BOARD- COMPONENT SIDE

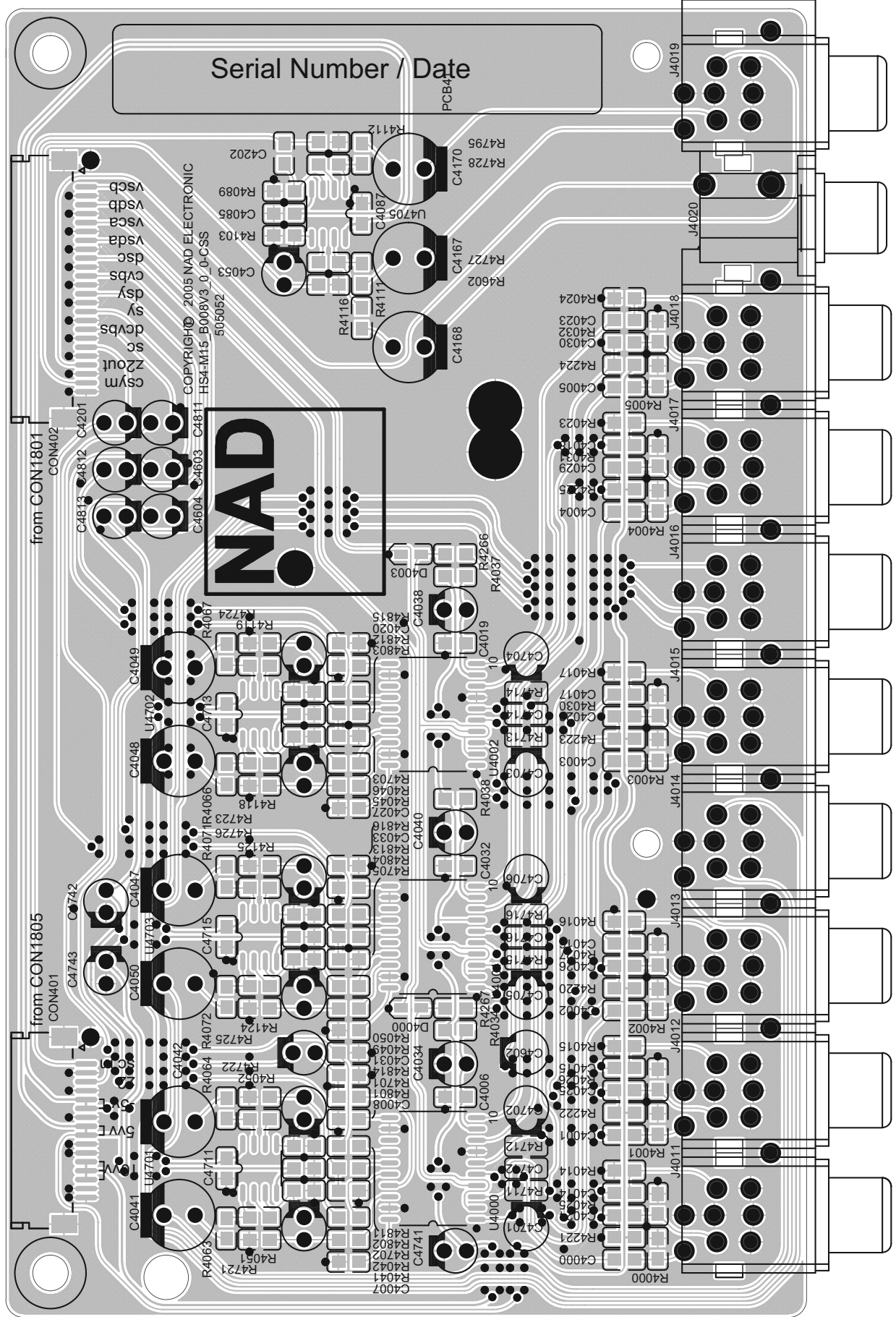


4.CSS BOARD

CSS BOARD-COPPER SIDE

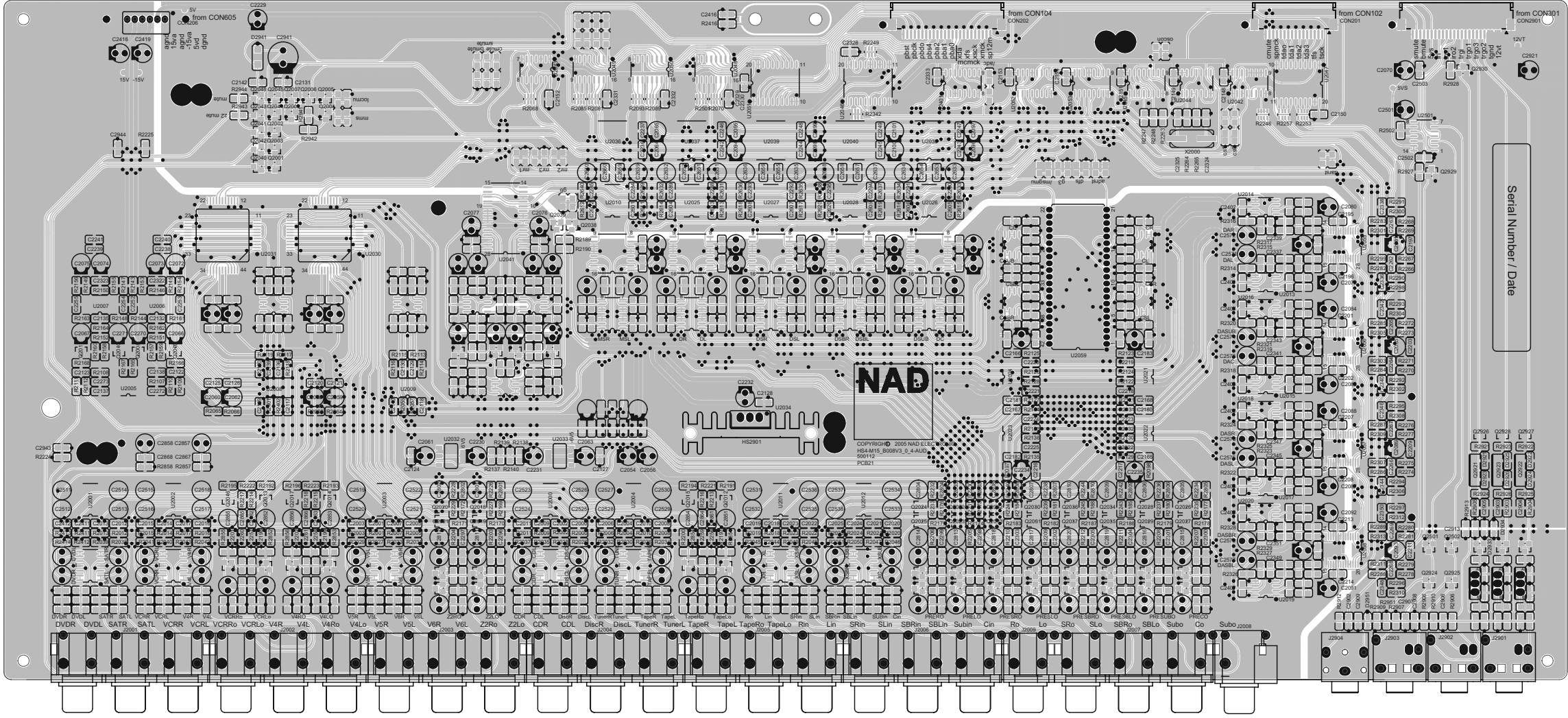


CSS BOARD-COMPONENT SIDE

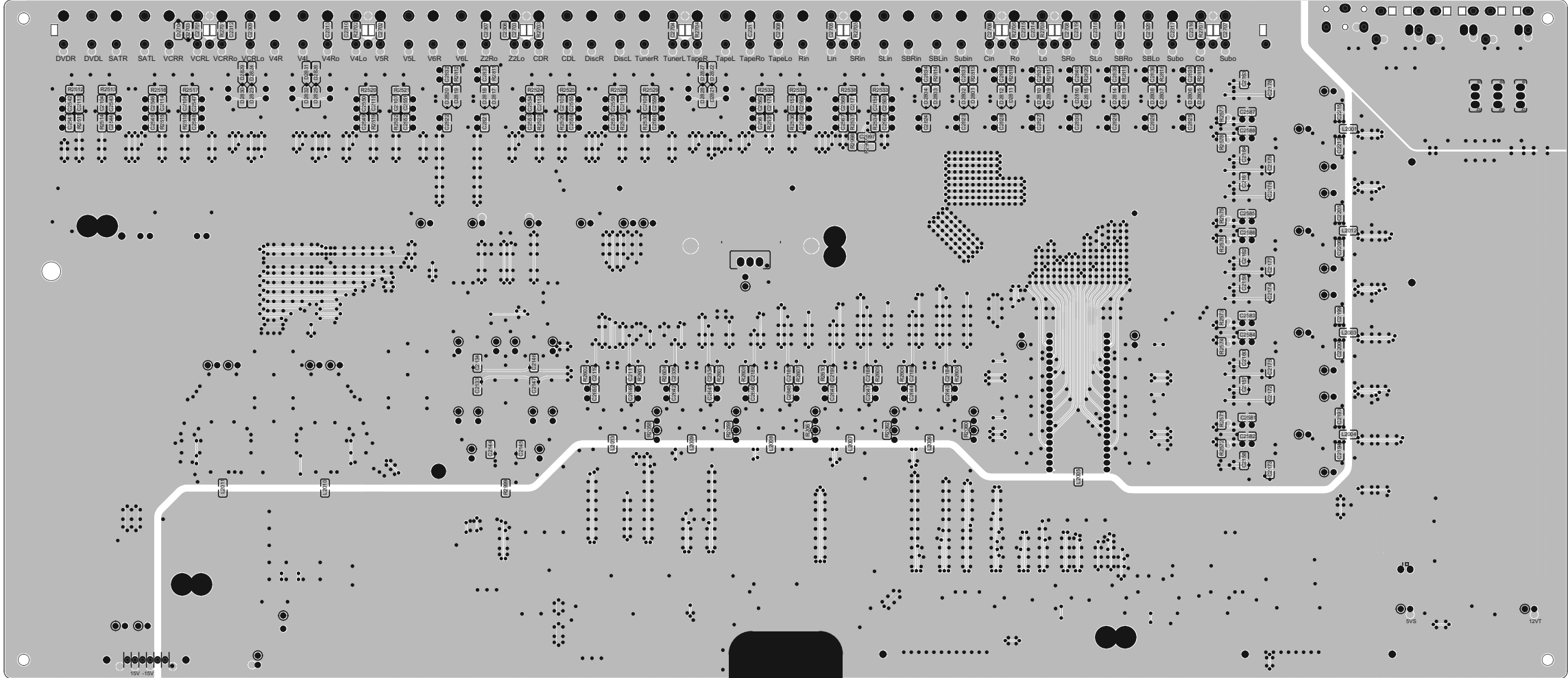


5.AUDIO BOARD

audio board component side

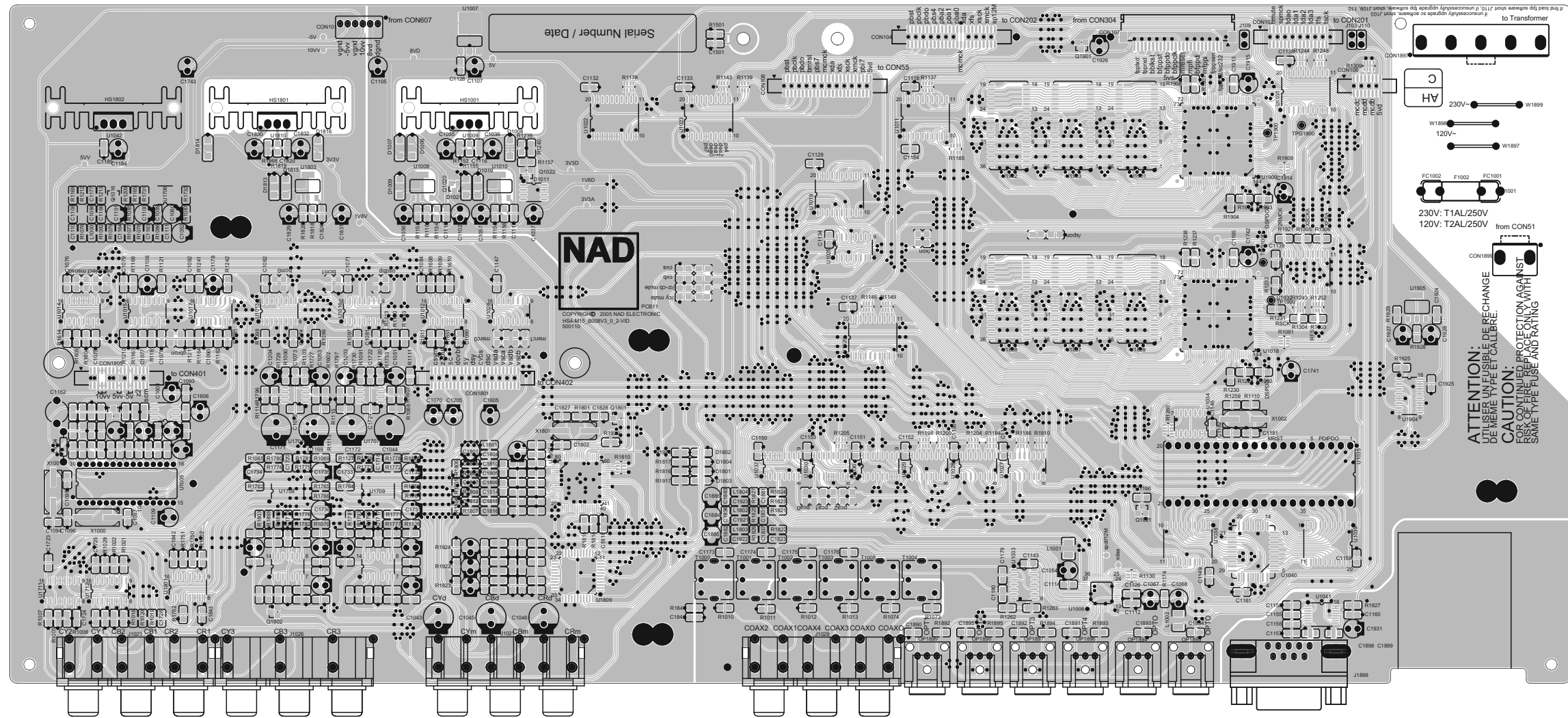


audio board copper side

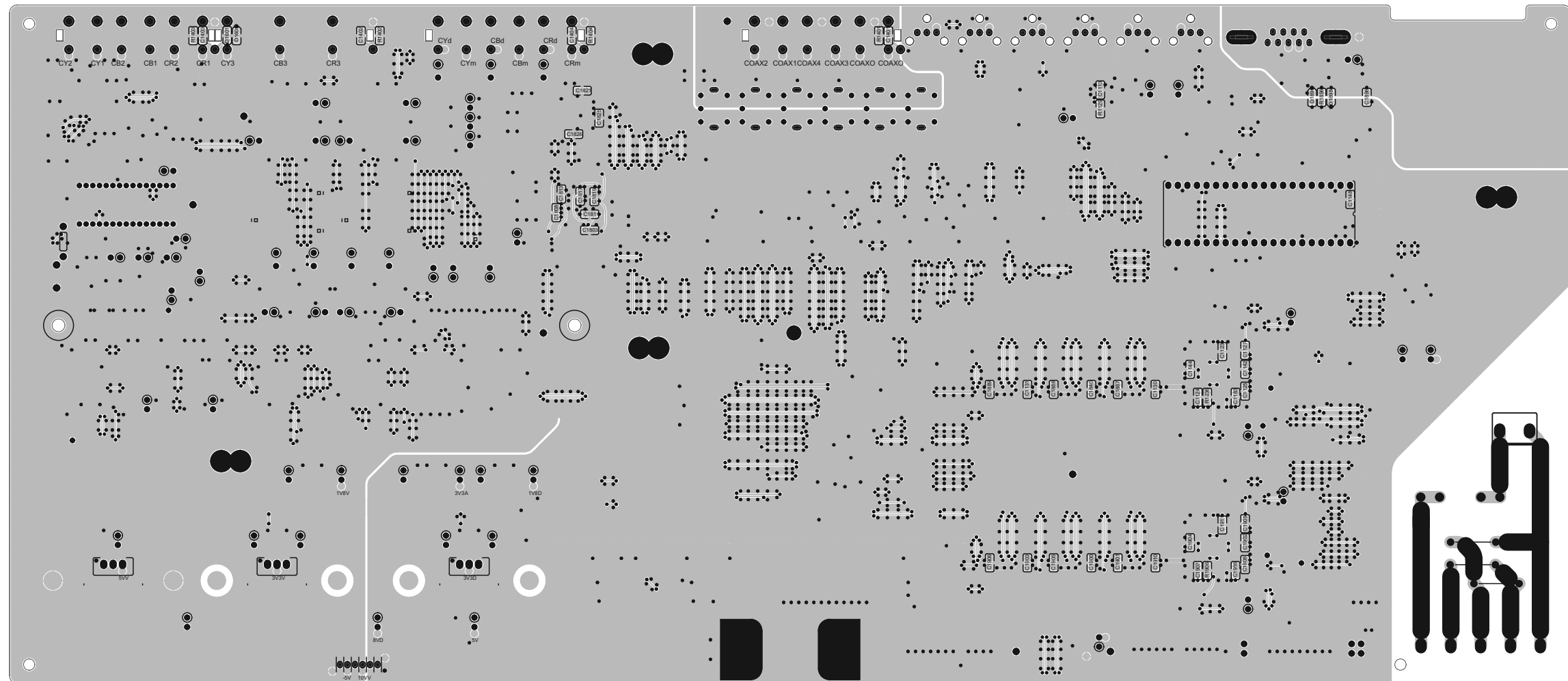


6.VIDEO BOARD

video board component side



video board copper side



SECTION 4 REPLACEMENT PARTS LIST

MODEL :M15 C/AH(NAD)
RUN DATE : HS4-M15_B013_VM1.9

NOTES: ▲ Warning Parts that are shaded are critical With respect to risk of fire or electrical shock.

Reference No.	Part No.	Description
VID(video board)		
DIODES		
D1601 D1602 D1898 D1899	33-40352-01	1SS352
D1803 D1804	33-12409-01	2V4, 0.5W, LL34, Tape
D1801 D1802	33-13309-01	3V3, 0.5W, LL34, Tape
D1006 D1007 D1008 D1009 D1010 D1814 D1815 D1816	33-20004-01	S1GM4,SMA,Tape
D1021 D1813	33-20012-01	SS12,SMA,Tape
TRANSISTORS		
Q1020	31-03326-01	2SC3326A
Q1016	31-00033-01	BCW33
Q1021 Q1801 Q1802 Q1901	31-00114-05	DTC114,SOT23,Tape
Q1022	31-02907-01	MMBT2907A/MMBT2907AL/PMBT2907A, SOT23, Tape
Q1022	or31-02907-02	MMBT2907A/MMBT2907AL/PMBT2907A, SOT23, Tape
ICS		
U1897 U1898 U1899 U1901 U1902 U1903	03-02568-01	61LV2568L-8K
U1033	03-00004-01	74AC04, SOIC0.15inch, Tube/Tape
U1031	03-00541-02	74ACT541, SOIC0.3inch, Tube/Tape
U1036 U1037	03-00151-01	74HC151, SOIC0.15inch, Tube/Tape
U1038 U1039	03-00573-02	74HC573, SOIC0.3inch, Tube/Tape
U1025 U1026	03-00595-01	74HC595, SOIC0.15inch, Tube/Tape
U1012 U1013 U1711 U1712	03-04052-02	74HC4052, SOIC0.15inch, Tube/Tape
U1014 U1015 U1016 U1017 U1801	03-04053-01	74HC4053, SOIC0.15inch, Tube/Tape
U1027 U1028 U1029 U1030	03-00138-01	74HCT138, SOIC0.15inch, Tube/Tape
U1022 U1023	03-00541-03	74HCT541, SOIC0.3inch, Tube/Tape
U1034	03-00004-02	74HCU04, SOIC0.15inch, Tube/Tape
U1011	03-00244-01	74LCX244, SOIC0.3inch, Tube/Tape
U1019 U1020	03-00541-04	74LCX541, SOIC0.3inch, Tube/Tape
U1032	03-00244-02	74VHC244, SOIC0.3inch, Tube/Tape
U1904	03-00157-01	74LCX157, SOIC0.15inch, Tube/Tape
U1006	03-04114-01	AK4114VQ
U1040	03-29010-01	AT29LV010A, 25nS, PLCC
U1900	03-56367-01	DSPB56367PV150
U1018	03-56367-02	DSPD56367PV150
OP1896 OP1897 OP1898 OP1899	03-00550-01	GP1FA550RZ/GP1FA553RZ
OP1894 OP1895	03-00550-00	GP1FA550TZ/GP1FA553TZ
D1011	03-00431-01	KA431D/TL431CD, SOIC0.15inch,Tube
U1005	03-74763-00	LC74763-9012, SDIP0.4inch,Tube
U1007	03-07805-01	LM78M05CDT
U1009 U1810	03-00317-00	LM317T

Reference No.	Part No.	Description
U1008 U1010 U1803 U1905	03-01117-02	LM1117MPX-ADJ, SOT223, Tube
U1042	03-07805-00	LM7805CT
U1041	03-03221-02	MAX3221CAE, SSOP, Tube
U1704 U1706 U1707	03-04016-01	MAX4016ESA, SOIC0.15inch, Tube
U1708 U1709	03-04018-01	MAX4018ESD MAX4018ESD, SOIC0.15inch, Tube
U1809	03-07127-01	SAA7127H, QFP, Tube
U1802	03-05146-01	TVP5146PFP, QFP, Tube
U1035	03-08951-00	AT89C51ED2-3CSIM,DIP0.6,Tube,3.3V
CRYSTALS		
X1001 X1801	04-11432-00	14.31818MHz 49SMD, 14.31818MHz, FL=30PPM, CL=16pF, 300uW, Tape
X1000	04-11772-00	17.734475MHz 49SMD, 17.734475MHz, FL=30PPM, CL=16pF, 300uW, Tape
X1002	04-12002-01	20MHz 49SMD, 20MHz, FL=30PPM, CL=25pF, 300uW, Tape
CAPACITORS		
C1163 C1173 C1174 C1175 C1176	26-10251-11	1nJ NPO 50V
C1164	26-68251-01	6n8K X7R 50V
C1165 C1166 C1401 C1402 C1403 C1404 C1501 C1841 C1896 C1913	26-22351-01	22nK X7R 50V
C1094 C1095 C1096 C1097 C1098 C1827 C1828	26-22051-01	22pJ NPO 50V
C1181 C1182 C1921 C1922 C1923	26-33051-01	33pJ NPO 50V
C1835 C1837 C1881		NI(47pJ NPO 50V)
C1071 C1072 C1073 C1074 C1075 C1076 C1077 C1078 C1079 C1080 C1081 C1082 C1084 C1089 C1090 C1091 C1092 C1093 C1110 C1111 C1112 C1113 C1114 C1115 C1116 C1117 C1118 C1123 C1124 C1125	26-10451-01	100nZ Y5V 50V
C1126 C1127 C1128 C1129 C1130 C1131 C1132 C1133 C1134 C1135 C1136 C1137 C1138 C1139 C1142 C1143 C1144 C1146 C1147 C1148 C1149 C1150 C1151 C1152 C1153 C1154 C1155 C1159 C1160 C1161	26-10451-01	100nZ Y5V 50V
C1177 C1179 C1180 C1185 C1717 C1718 C1719 C1720 C1721 C1722 C1723 C1724 C1725 C1726 C1802 C1803 C1804 C1805 C1806 C1807 C1808 C1809 C1810 C1811 C1812 C1813 C1814 C1815 C1816 C1817	26-10451-01	100nZ Y5V 50V

Reference No.	Part No.	Description
C1818 C1819 C1820 C1821 C1823 C1824 C1825 C1826 C1840 C1842 C1843 C1887 C1888 C1889 C1890 C1891 C1892 C1893 C1894 C1895 C1900 C1901 C1902 C1903 C1904 C1905 C1906 C1907 C1908 C1909 C1910 C1911 C1924 C1925	26-10451-01	100nZ Y5V 50V
C1836 C1882 C1883	26-12151-01	120pJ NPO 50V
C1108	26-33151-01	330pJ NPO 50V
C1156 C1157 C1158 C1183 C1916	26-47421-11	470nZ Y5V 25V
C1178		1u(NI) CD110,1u,50V,20%,
C1100	06-10851-02	CD110,0.1u,50V,20%,D=5,Pitch=2
C1101 C1102 C1105 C1106 C1107 C1109 C1601	06-10951-02	CD110,1u,50V,20%,D=5,Pitch=2
C1801	06-22951-01	CD110,2u2,50V,20%,D=5,Pitch=2
C1052 C1054 C1055 C1056 C1057 C1060 C1067 C1068 C1070 C1184 C1743 C1203 C1204 C1205 C1829 C1830 C1926 C1927 C1928	06-10051-03	CD110,10u,50V,20%,D=5,Pitch=2
C1051 C1053 C1605 C1606 C1731 C1732 C1733 C1734 C1735 C1736 C1884 C1885 C1886	06-22021-00	CD110,22u,25V,20%,D=5,Pitch=2,
C1036 C1037 C1741 C1742 C1831 C1832 C1914 C1915 C1931	06-10111-01	CD110X,100u,16V,20%,D=5,Pitch=2,Pin Length=5
C1043 C1044 C1045 C1046 C1169 C1171 C1172	06-47111-01	CD110,470u,10V,20%,D=8,Pitch=3.5,Pin Length=5
C1162	10-30012-01	3-30p 3-30p,100V,+50,-0%
C1898 C1899	26-10151-11	EMI100p Low ESL Feed Through,0805,X5R,100p,50V,Tape
RESISTORS		
R1099 R1100 R1242 R1098	07-90000-01	0R Thick Film 0805,Tape
R1077	07-90152-01	1K5J Thick Film 0805,Tape
R1239	07-91001-01	1KF Thick Film 0805,Tape
R1092	07-90102-01	1KJ Thick Film 0805,Tape
R1259	07-90105-01	1MJ Thick Film 0805,Tape
R1240	07-92491-01	2K49F Thick Film 0805,Tape
R1121	07-92741-01	2K74F Thick Film 0805,Tape
R1916 R1917 R1930	07-90222-01	2k2J Thick Film 0805,Tape
R1213	07-93921-01	3K92F Thick Film 0805,Tape
R1802 R1803	07-90472-01	4k7J Thick Film 0805,Tape
R1163 R1164	07-95621-01	5K62F Thick Film 0805,Tape
R1085	07-90682-01	6K8J Thick Film 0805,Tape
R1153	07-90822-01	8K2J Thick Film 0805,Tape
R1212	07-98251-01	8K25F Thick Film 0805,Tape

Reference No.	Part No.	Description
R1927	07-90100-01	10RJ Thick Film 0805,Tape
R1087 R1090 R1091 R1103 R1120 R1761 R1762 R1763 R1764 R1765 R1766	07-91002-01	10KF Thick Film 0805,Tape
R1228 R1230 R1231 R1232 R1236 R1237 R1238 R1791 R1792 R1793 R1814 R1815 R1898 R1899 R1904 R1905 R1906 R1907 R1908 R1925	07-90103-01	10KJ Thick Film 0805,Tape
R1309 R1810	07-90103-10	10KJ
R1161 R1162	07-91502-01	15KF Thick Film 0805,Tape
R1129	07-91802-01	18KF Thick Film 0805,Tape
R1168	07-92002-01	20KF Thick Film 0805,Tape
R1727 R1729 R1730 R1731 R1732 R1733	07-90240-01	24RJ Thick Film 0805,Tape
R1157	07-90330-01	33RJ Thick Film 0805,Tape
R1260	07-90470-10	47RJ
R1816 R1817	07-90473-01	47kJ Thick Film 0805,Tape
R1076	07-90513-01	51KJ Thick Film 0805,Tape
R1097	07-94759-01	47R5F Thick Film 0805,Tape
R1007 R1008 R1009 R1010 R1011 R1012 R1013 R1018 R1019 R1020 R1021 R1022 R1029 R1065 R1068 R1069 R1070 R1073 R1074 R1113 R1114 R1115	07-97509-01	75RF Thick Film 0805,Tape
R1165 R1209 R1602 R1604 R1605 R1607 R1608 R1609 R1610 R1611 R1613 R1614 R1651 R1750 R1751 R1752 R1796 R1797 R1922 R1923 R1924	07-91003-01	100KF Thick Film 0805,Tape
R1166 R1801	07-90104-01	100KJ Thick Film 0805,Tape
R1126 R1127 R1128	07-94759-01	47R5F Thick Film 0805,Tape
R1158 R1210 R1211 R1820	07-91000-01	100RF Thick Film 0805,Tape
R1169 R1174 R1262 R1263 R1401 R1402 R1403 R1404 R1501 R1841 R1892 R1893 R1894 R1895 R1896	07-90101-01	100RJ Thick Film 0805,Tape
R1130 R1137 R1139 R1143 R1146 R1149 R1178 R1185 R1186 R1194 R1198 R1200 R1204 R1205 R1910	07-90101-10	100RJ
R1079 R1080 R1305 R1306 R1903 R1921	07-90121-01	120RJ Thick Film 0805,Tape
R1081 R1243 R1244 R1248 R1252 R1909	07-90121-10	120RJ
R1111 R1821 R1824 R1823	07-91870-01	187rF Thick Film 0805,Tape
R1086	07-92210-01	221RF Thick Film 0805,Tape

Reference No.	Part No.	Description
R1043 R1154 R1155 R1156 R1818 R1819 R1928	07-92430-01	243RF Thick Film 0805,Tape
R1152 R1868 R1929	07-93920-01	392RF Thick Film 0805,Tape
R1151	07-94320-01	432RF Thick Film 0805,Tape
R1078	07-90474-01	470KJ Thick Film 0805,Tape
R1110	07-90471-01	470RJ Thick Film 0805,Tape
R1777 R1778 R1779 R1780 R1781 R1782	07-94750-01	475RF Thick Film 0805,Tape
R1774 R1775 R1776	07-95110-01	511RF Thick Film 0805,Tape
R1771 R1772 R1773	07-95360-01	536RF Thick Film 0805,Tape
R1804 R1805 R1806	07-96190-01	619RF Thick Film 0805,Tape
R1807 R1808 R1809	07-98250-01	825RF Thick Film 0805,Tape
R1241 R1303 R1304 R1822 R1825 R1826 R1827		NI
RT1A RT1B RT1I RT1J RT1K RT1P RT1Q RT1R RT1S RT10 RT11 RT12 RT13 RT14 RT15 RT16 RT17		NI 2K2,5%
DT1A DT1B DT1I DT1J DT1K DT1P DT1Q DT1R DT1S DT10 DT11 DT12 DT13 DT14 DT15 DT16 DT17		NI
INDUCTOR		
L1801	08-04279-00	0805, 2u7H, 10%, Tape
L1802 L1803 L1804	08-04479-00	0805, 4u7H, 10%, Tape
L1000		NI 0805, 5u6H, 10%, Tape
L1001 L1002	08-04101-00	1210, 100uH, 10%, Tape
L1004	08-02569-00	LGA0203-5R6K
TRANS		
T1004 T1005	22-22801-20	PT-10(HKS-999-115)
T1000 T1001 T1002 T1003	22-22800-07	PT-10(2280-T007)
FUSES		
F1001 ▲	20-12102-00	1A 5X20mm Delay, 1A, 250VAC
F1002 ▲	20-12202-00	2A 5X20mm Delay, 2A, 250VAC
FC1001, FC1002 ▲	20-20000-00	HF-004/A
CONNECTORS		
J103 J109 J110	13-12502-00	2pin
CON1899	13-23903-01	2pin, 7.92mm, Socket VH3.96A-3Y1(remove pin2)
CON1897	13-23909-04	5pin 5pin, 7.92mm, Socket VH3.96A-9Y1(remove pin2,4,6,8)
CON101	14-17006-01	6pin to CON607 6pin, 2mm, Cable, H JG2.0A-6DW, L=100mm

Reference No.	Part No.	Description
CON106		NI
CON107	13-21024-01	24pin,1mm,Socket,H
CON102 CON1805	13-21016-03	16pin,1mm,Socket,V
CON104 CON108 CON1801	13-21024-02	24pin, 1mm, Socket, V
J1026	17-01003-01	RCA3-GR-BL-R 3 heads,Green-Blue-Red,AV3-8.4-14
J1021 J1023	17-01006-01	RCA6-GR-BL-R 6 heads,Green-Blue-Red,AV6-8.4-13
J1029	17-01006-02	RCA6-O 6 heads,All Orange,AV6-8.4-13
J1899	17-08009-00	RS232 RS232/FS
TP1000 TP1900 TPG1000 TPG1900		T.P(NI) 1PIN
LINKS		
W1897 W1898	21-06121-00	12mm(AH) L=12, D=0.6
W1899	21-06121-00	12mm(C) L=12, D=0.6
PCB		
PCB11	S16-51501-00	HS4-M15_B008V3_0_0-VID
AUD(audio board)		
DIODES		
D2703 D2704 D2921 D2922 D2923 D2924 D2925 D2926 D2951	33-40352-01	1SS352
D2927 D2928 D2929		5V6, LL34, Tape(NI)
D2801 D2802 D2803 D2804 D2805 D2806 D2807 D2808 D2809 D2810 D2811 D2812 D2813 D2814 D2815 D2816 D2817 D2818 D2819 D2820 D2821 D2822 D2823 D2824 D2825 D2826 D2827 D2828 D2829 D2830 D2831 D2832	33-11200-11	12V, LL34, Tape
D2941	33-20004-01	S1GM4,SMA,Tape
TRANSISTORS		
Q2008 Q2009 Q2010 Q2011 Q2012 Q2013 Q2014 Q2015 Q2016 Q2017 Q2018 Q2019 Q2020 Q2021 Q2022 Q2023 Q2024 Q2025 Q2026 Q2027 Q2028 Q2029 Q2030 Q2031 Q2032 Q2033 Q2034 Q2035 Q2036 Q2037	31-03326-01	2SC3326A
Q2038 Q2039 Q2040 Q2041 Q2042 Q2043 Q2924 Q2925	31-00114-01	DTA114, SOT23, Tape
Q2048	31-00114-02	DTB114, SOT23, Tape

Reference No.	Part No.	Description
Q2000 Q2001 Q2002 Q2003 Q2004 Q2005 Q2006 Q2007 Q2501 Q2502 Q2926 Q2927 Q2928 Q2929 Q2930	31-00114-05	DTC114,SOT23,Tape
Q2044 Q2045	31-00144-01	DTC144, SOT23, Tape
Q2921 Q2922 Q2923	31-01220-00	KSA1220A-Y
ICS		
U2044	03-00000-01	74AC00, SOIC0.15inch, Tube/Tape
U2045	03-00109-01	74AC109, SOIC0.15inch, Tube/Tape
U2042	03-00153-01	74AC153, SOIC0.15inch, Tube/Tape
U2047	03-00541-05	74AC541, SOIC0.3inch, Tube/Tape
U2046	03-00244-04	74ACT244, SOIC0.3inch, Tube/Tape
U2043	03-00004-03	74HC04, SOIC0.15inch, Tube/Tape
U2401	03-00137-01	74HC137, SOIC0.15inch, Tube/Tape
U2048 U2049 U2050	03-00138-02	74HC138, SOIC0.15inch, Tube/Tape
U2051	03-00541-06	74HC541, SOIC0.3inch, Tube/Tape
U2052 U2053	03-00595-01	74HC595, SOIC0.15inch, Tube/Tape
U2501	03-07486-02	74HC86, SOIC0.15inch, Tube/Tape
U2041	03-05394-01	AK5394AVS
U2034	03-07805-00	LM7805CT, TO220
U2033	03-00337-01	LM337IMP, SOT223, Tube/Tape
U2032	03-01117-02	LM1117MPX-ADJ, SOT223, Tube/Tape
U2005 U2006 U2007 U2008 U2009 U2013 U2014 U2015 U2016 U2017 U2018 U2019 U2020 U2021 U2022 U2023 U2024	03-02134-00	OPA2134UA, SOIC0.15inch, Tube/Tape
U2000 U2001 U2002 U2003 U2004 U2010 U2011 U2012 U2025 U2026 U2027 U2028	03-04134-00	OPA4134UA, SOIC0.15inch, Tube/Tape
U2030 U2031	03-92740-01	TC9274F-001, QFP, Tube/Tape
U2059	03-92740-08	TC9274N-008, SDIP0.6inch, Tube
U2055 U2056 U2057 U2058	03-08740-01	WM8740EDS, SSOP, Tube/Tape
U2036 U2037 U2038 U2039 U2040	03-08816-01	WM8816EDW, SOIC0.3inch, Tube/Tape
CRYSTALS		
X2000	04-12452-00	24.576MHz 49SMD,24.576MHz,FL=30PPM,CL=25pF, 300uW,Tape
CAPACITORS		

Reference No.	Part No.	Description
C2252 C2253 C2254 C2255 C2256 C2257 C2258 C2259 C2260 C2261 C2298 C2299 C2300 C2301 C2302 C2303 C2304 C2305 L2001 L2003 L2004 L2005 L2006 L2007 L2008 L2009 L2010 L2011 L2012 L2013	26-10251-11	1nJ NPO 50V
C2262 C2263 C2264 C2265 C2266 C2267 C2268 C2269	26-15251-11	1n5J NPO 50V
C2296 C2297	26-22251-21	2n2J NPO 50V
C2322 C2323	26-10351-11	10nJ NPO 50V
C2284 C2285 C2288 C2289 C2290 C2291 C2292 C2293 C2294 C2295	26-10051-01	10pJ NPO 50V
C2503	26-10151-01	100pJ NPO 50V
C2416 C2606 C2701 C2702 C2703 C2704 C2705 C2706 C2707 C2708	26-22351-01	22nK X7R 50V
C2324 C2325 C2401 C2402 C2403 C2404 C2405 C2406 C2407 C2408 C2601 C2602 C2603 C2604 C2605 C2607 C2608 C2609 C2620	26-33051-01	33pJ NPO 50V
C2907 C2908	26-47051-01	47pJ NPO 50V
C2909	26-47351-01	47nK X7R 50V
C2104 C2105 C2106 C2107 C2108 C2109 C2110 C2111 C2112 C2113 C2114 C2115 C2116 C2117 C2118 C2119 C2120 C2121 C2122 C2123 C2124 C2125 C2126 C2127 C2128 C2129 C2130 C2131 C2132 C2133	26-10451-01	100nZ Y5V 50V
C2134 C2135 C2136 C2137 C2138 C2139 C2142 C2144 C2145 C2146 C2147 C2148 C2149 C2150 C2151 C2152 C2153 C2154 C2155 C2156 C2157 C2158 C2159 C2160 C2161 C2162 C2163 C2164 C2165 C2166	26-10451-01	100nZ Y5V 50V
C2167 C2168 C2170 C2171 C2172 C2173 C2174 C2175 C2176 C2177 C2178 C2179 C2180 C2181 C2182 C2183 C2184 C2185 C2186 C2188 C2189 C2190 C2193 C2194 C2195 C2196 C2197 C2199 C2200 C2201	26-10451-01	100nZ Y5V 50V
C2202 C2203 C2205 C2206 C2207 C2208 C2209 C2211 C2212 C2213 C2214 C2215 C2216 C2217 C2218 C2219 C2220 C2221 C2222 C2223 C2224 C2225 C2328 C2329 C2330 C2331 C2332 C2333 C2334 C2335	26-10451-01	100nZ Y5V 50V

Reference No.	Part No.	Description
C2502 C2541 C2542 C2543 C2544 C2545 C2546 C2547 C2548 C2549 C2550 C2551 C2552 C2553 C2554 C2555 C2556 C2557 C2558 C2559 C2560 C2561 C2562 C2563 C2564 C2565 C2566 C2567 C2568 C2581	26-10451-01	100nZ Y5V 50V
C2582 C2583 C2584 C2585 C2586 C2587 C2588 C2821 C2822 C2823 C2824 C2825 C2826 C2827 C2828 C2829 C2830 C2867 C2868 C2903 C2904 C2905 C2906 C2943 C2944	26-10451-01	100nZ Y5V 50V
C2000 C2001 C2002 C2003 C2004 C2005 C2006 C2007 C2008 C2009 C2010 C2011 C2012 C2013 C2014 C2015 C2016 C2017 C2018 C2019 C2020 C2021 C2022 C2023 C2024 C2025 C2336 C2337 C2338 C2339 C2340 C2341 C2342 C2343 C2344 C2345 C2346 C2347 C2348 C2349 C2350 C2351 C2411 C2412 C2997	26-18151-01	180pJ
C2236 C2237 C2238 C2239 C2240 C2241 C2242 C2243 C2244 C2245 C2246 C2247 C2248 C2249	26-22451-01	220nZ Y5V 50V
C2651 C2652 C2653 C2654 C2655 C2656 C2657 C2658 C2659 C2660	26-10521-01	1uK X7R 25V
C2272 C2273 C2306 C2307 C2308 C2309 C2310 C2311 C2312 C2313 C2314 C2315 C2316 C2317 C2318 C2319 C2320 C2321 C2902 R2811 R2812 R2813 R2814 R2815 R2816 R2817 R2818 R2819 R2820 R2851 R2852 R2853 R2854 R2855 R2856 R2912		NI
C2811 C2812 C2813 C2814 C2815 C2816 C2817 C2818 C2819 C2820 C2851 C2852 C2853 C2854 C2855 C2856		NI CD71,22u,16V,20%,D=5mm,Pitch=2mm,Pin Length=5mm
C2229 C2230 C2231 C2232 C2234 C2235 C2921	06-10951-02	CD110,1u,50V,20%,D=5,Pitch=2

Reference No.	Part No.	Description
C2054 C2056 C2058 C2059 C2060 C2061 C2062 C2063 C2064 C2065 C2066 C2067 C2070 C2072 C2073 C2074 C2075 C2076 C2077 C2079 C2080 C2081 C2083 C2084 C2085 C2087 C2088 C2089 C2091 C2092 C2093 C2094 C2095 C2096 C2097 C2098 C2099 C2100 C2101 C2501	06-10051-03	CD110,10u,50V,20%,D=5,Pitch=2
C2511 C2512 C2513 C2514 C2515 C2516 C2517 C2518 C2519 C2520 C2521 C2522 C2523 C2524 C2525 C2526 C2527 C2528 C2529 C2530 C2531 C2532 C2533 C2534 C2535 C2536 C2537 C2538 C2571 C2572 C2573 C2574 C2575 C2576 C2577 C2578 C2801 C2802 C2803 C2804 C2805 C2806 C2807 C2808 C2809 C2810 C2857 C2858	06-22011-04	CD71,22u,16V,20%,D=5mm,Pitch=2
C2270 C2271	06-47011-04	CD110,47u,16V,20%,D=5,Pitch=2,
C2631 C2632 C2633 C2634 C2635 C2636 C2637 C2638 C2639 C2640		NI(CD71,47u,16V,20%,D=5,Pitch=2)
C2418 C2419	06-10111-01	CD110X,100u,16V,20%,D=5,Pitch=2,Pin Length=5
C2941	06-10260-00	CD110X, 1000u, 6V3, D=8mm, Pin Pitch=3.5mm
RESISTORS		
C2641 C2642 C2643 C2644 C2645 C2646 C2647 C2648 C2649 C2650 C2831 C2832 C2833 C2834 C2835 C2836 C2837 C2838 C2839 C2840 C2861 C2862 C2863 C2864 C2865 C2866 R2107 R2108 R2913 R2943 R2944	07-90000-01	0R Thick Film 0805,Tape
R2999	07-90100-01	10RJ Thick Film 0805,Tape
R2907 R2908	07-90561-01	560RJ Thick Film 0805,Tape
R2282 R2283 R2284 R2285 R2286 R2287 R2288 R2289 R2290 R2291 R2292 R2293 R2294 R2295 R2296 R2297	07-91071-01	1K07F Thick Film 0805,Tape
R2159 R2160	07-91181-01	1K18F Thick Film 0805,Tape
R2266 R2267 R2268 R2269 R2270 R2271 R2272 R2273 R2274 R2275 R2276 R2277 R2278 R2279 R2280 R2281 R2998	07-91821-01	1K82F Thick Film 0805,Tape

Reference No.	Part No.	Description
R2951	07-90102-01	1KJ Thick Film 0805,Tape
R2139 R2140	07-91001-01	1KF Thick Film 0805,Tape
R2909	07-90222-01	2K2J Thick Film 0805,Tape
R2264	07-90105-01	1MJ Thick Film 0805,Tape
R2151 R2152	07-92741-01	2K74F Thick Film 0805,Tape
R2157 R2158	07-92871-01	2K87F Thick Film 0805,Tape
R2143 R2144 R2145 R2146 R2147 R2148 R2149 R2150 R2191 R2192 R2193 R2194 R2195 R2196 R2314 R2315 R2316 R2317 R2318 R2319 R2320 R2321 R2322 R2323 R2324 R2325 R2326 R2327 R2328 R2329	07-92001-01	2KF Thick Film 0805,Tape
R2109 R2110 R2111 R2112 R2113 R2114 R2115 R2116 R2117 R2118 R2119 R2120 R2121 R2122 R2123 R2124 R2125 R2126 R2127 R2128 R2129 R2130 R2131 R2132 R2133 R2134 R2135 R2136 R2631 R2632 R2633 R2634 R2635 R2636 R2637 R2638 R2639 R2640	07-90225-01	2M2J Thick Film 0805,Tape
R2601 R2602 R2603 R2604 R2605 R2606 R2607 R2608 R2609 R2610 R2611 R2612 R2613 R2614 R2615 R2616 R2617 R2618 R2619 R2620	07-93651-01	3K65F Thick Film 0805,Tape
R2903 R2904 R2905 R2924 R2925 R2926	07-90399-01	3R9J Thick Film 0805,Tape
R2997	07-98251-01	8K25F Thick Film 0805,Tape
R2161 R2162 R2163 R2164 R2511 R2512 R2513 R2514 R2515 R2516 R2517 R2518 R2519 R2520 R2521 R2522 R2523 R2524 R2525 R2526 R2527 R2528 R2529 R2530 R2531 R2532 R2533 R2534 R2535 R2536 R2537 R2538 R2571 R2572 R2573 R2574 R2575 R2576 R2577 R2578	07-91002-01	10KF Thick Film 0805,Tape
R2910 R2921 R2922 R2923 R2941 R2942 R2927	07-90103-01	10KJ Thick Film 0805,Tape
R2055 R2057 R2058 R2059 R2060 R2061 R2062 R2401 R2402	07-90100-01	10RJ Thick Film 0805,Tape
R2298 R2299 R2300 R2301 R2302 R2303 R2304 R2305 R2306 R2307 R2308 R2309 R2310 R2311 R2312 R2313	07-91212-01	12K1F Thick Film 0805,Tape
R2502	07-90153-01	15KJ Thick Film 0805,Tape


Reference No.	Part No.	Description
R2170 R2171 R2174 R2175 R2178 R2179 R2182 R2183 R2186 R2187	07-90223-01	22kJ Thick Film 0805,Tape
R2906	07-90333-01	33KJ Thick Film 0805,Tape
R2197 R2198 R2199 R2200 R2201 R2202 R2203 R2204 R2205 R2206 R2207 R2208 R2209 R2210 R2211 R2212	07-90470-01	47RJ Thick Film 0805,Tape
R2169 R2172 R2173 R2176 R2177 R2180 R2181 R2184 R2185 R2188	07-90472-01	4K7J Thick Film 0805,Tape
R2153 R2154 R2155 R2156	07-95119-01	51R1F Thick Film 0805,Tape
R2026 R2027 R2028 R2029 R2030 R2031 R2032 R2033 R2034 R2035 R2036 R2037 R2038 R2039 R2040 R2041 R2042 R2043 R2044 R2045 R2046 R2047 R2048 R2049 R2050 R2051 R2412 R2414	07-95622-01	56K2F Thick Film 0805,Tape
R2801 R2802 R2803 R2804 R2805 R2806 R2807 R2808 R2809 R2810 R2857 R2858	07-91003-01	100KF Thick Film 0805,Tape
R2189 R2190 R2221 R2222 R2223 R2224 R2225 R2928	07-90104-01	100KJ Thick Film 0805,Tape
R2063 R2064 R2065 R2066 R2097 R2098 R2416 R2701 R2702 R2703 R2704 R2705 R2706 R2707 R2708	07-90101-01	100RJ Thick Film 0805,Tape
R2068 R2070 R2081 R2085 R2089 R2093 R2501	07-90101-10	100RJ
R2247 R2248 R2263	07-90121-01	120RJ Thick Film 0805,Tape
R2246 R2249 R2253 R2257 R2342	07-90121-10	120RJ
R2226 R2227 R2228 R2229 R2230 R2231 R2232 R2233 R2234 R2235 R2236 R2237 R2238 R2239 R2240 R2241 R2242 R2243 R2244 R2245	07-92210-01	221RF Thick Film 0805,Tape
R2137 R2138	07-92430-01	243RF Thick Film 0805,Tape
R2000 R2001 R2002 R2003 R2004 R2005 R2006 R2007 R2008 R2009 R2010 R2011 R2012 R2013 R2014 R2015 R2016 R2017 R2018 R2019 R2020 R2021 R2022 R2023 R2024 R2025 R2411 R2413	07-93320-01	332RF Thick Film 0805,Tape
R2265	07-90221-01	220RJ Thick Film 0805,Tape
R2165 R2166 R2167 R2168 R2213 R2214 R2215 R2216 R2217 R2218	07-90821-01	820RJ Thick Film 0805,Tape

Reference No.	Part No.	Description
RT2A RT2B RT2C RT2D RT2E RT2F RT2G RT2H RT2I RT2J RT2K RT2L RT2M RT20 RT21 RT22 RT23 RT24 RT26 RT27 RT28 RT29		NI 2K2,5%
DT2A DT2B DT2C DT2D DT2E DT2F DT2G DT2H DT2I DT2J DT2K DT2L DT2M DT20 DT21 DT22 DT23 DT24 DT26 DT27 DT28 DT29		NI
CONNECTORS		
CON206	14-17006-02	6pin from CON605 6pin, 2mm, Cable, H JG2.0A-6DW, L=120mm
CON201	13-21016-01	16pin, 1mm, Socket, H
CON202 CON2901	13-21024-01	24pin, 1mm, Socket, H
J2008	17-01001-07	RCA1-BK 1 heads, Black, AV-8.4-14PB1
J2009	17-01002-09	RCA2-W-R 2 heads, Write-Red, AV2-8.4- 13PB2
J2001 J2002 J2003 J2004 J2005	17-01006-05	RCA6-W-R 6 heads, White-Red, AV6-8.4-13
J2006 J2007	17-01006-04	RCA6-W-R-W-R-BK 6 heads, White-Red- White-Red-Black-Black, AV6-8.4-13
J2904	17-02001-03	SCJ349-SD 3.5mm, Single Dual CH
J2904	or17-02001- 04	ST-323B-04/CKX-3.5-02-3P 3.5mm, Single Dual CH
J2901 J2902 J2903	17-02002-02	SCJ351-DS SW 3.5mm, Double Single CH, SW
PCB		
PCB21	S16-51502-00	HS4-M15_B008V3_0_0-AUD
FPP(front panel board)		
DIODES		
D371	33-15609-03	5V6, LL34, Tape
D301	33-50565-01	Blue/Amber LED, D=5, High Light
TRANSISTORS		
Q311 Q312	31-00114-01	DTA114, SOT23, Tape
Q303	31-00114-05	DTC114, SOT23, Tape
ICS		
U305	03-00132-02	74HC132, SOIC0.15inch, Tube/Tape
U302 U303	03-00595-01	74HC595, SOIC0.15inch, Tube/Tape
U306	03-00244-05	74HCT244, SOIC0.3inch, Tube/Tape
U312	03-00165-01	74HC165, SOIC0.15inch, Tube/Tape

Reference No.	Part No.	Description
U301	03-08951-00	AT89C51ED2-3CSIM,DIP0.6,Tube,3.3V
U307	03-01701-00	HS0038B4
U304	03-00707-01	MAX707CSA/IMP707CSA, SOIC0.15inch
CRYSTALS		
X301	04-11842-00	18.432MHz 49SMD,18.432MHz,FL=30PPM,CL=16pF, 300uW
CAPACITORS		
C314 C318 C333 C334 C335 C336 C337 C338 C339	26-22351-01	22nK X7R 50V
C316 C317	26-22051-01	22pJ NPO 50V
C301 C302 C306 C307 C308 C340	26-10451-01	100nZ Y5V 50V
C320	26-47421-01	470nZ Y5V 25V
C315	06-10951-09	CD50S,1u,50V,20%,D=5mm,Pitch=2mm,P in Length=5mm,Height=5mm
C311	06-10051-04	CD50S,10u,50V,20%,D=5,Pitch=2,Pin Length=5,Height=5mm
RESISTORS		
R324	07-91004-01	1MF Thick Film 0805,Tape
R326	07-01002-09	8X10K 8X10K, Patch=2.54mm, Pin Length=3mm
R321	07-90100-01	10RJ Thick Film 0805,Tape
R371	07-90473-01	47KJ Thick Film 0805,Tape
R306 R372	07-90470-01	47RJ Thick Film 0805,Tape
R307	07-90470-10	47RJ
R328 R329	07-90101-01	100RJ Thick Film 0805,Tape
R325	07-90104-01	100KJ Thick Film 0805,Tape
R316	07-91823-01	182KF Thick Film 0805,Tape
R317	07-90271-01	270RJ Thick Film 0805,Tape
R318	07-90471-01	470RJ Thick Film 0805,Tape
SWITCHES		
K304 K305 K306 K314 K315 K320 K322 K323 K324 K325	11-04101-08	IT-1103AA-1160
CONNECTORS		
CON321	13-22008-01	8pin, 2mm, 弯座, PH系列
CON311	13-12514-03	14PIN 2.54MM,2 Row
CON301 CON304	13-21024-01	24pin, 1mm, Socket, H
TP2 TP3		T.P. 1PIN(NI)
TP1		T.P. TP(NI)

Reference No.	Part No.	Description
M301	23-30202-00	20T202DA1 (J) REVE 5X7 Dot VFD Module
PCB		
PCB31	S16-51503-00	HS4-M15_B008V3_0_0-FPP
	S16-51530-00	
ENC(encoder board)		
CAPACITORS		
C709 C710	26-10351-01	10nK X7R 50V
C751 C752	26-10451-01	100nZ Y5V 50V
C741 C742	26-22351-01	22nK X7R 50V
RESISTORS		
R713 R714	07-90122-01	1K2J Thick Film 0805,Tape
R711 R712	07-90103-01	10KJ Thick Film 0805,Tape
V701	37-16243-00	EC16B243040F(without detent)
CONNECTORS		
CON722	14-17008-00	8pin, 2mm,60mm
CON702	14-17006-00	6pin to CON602 6pin, 2mm, Cable, H
PCB		
PCB71	S16-51507-00	HS4-M15_B008V3_0_0-ENC
	S16-51530-00	
CSS(composite & S video board)		
DIODES		
D4000 D4003	33-40352-01	1SS352
ICS		
U4000 U4002 U4004	03-06415-01	TEA6415CD, SOIC0.3inch, Tube
U4701 U4702 U4703 U4705	03-04016-01	MAX4016ESA, SOIC0.15inch, Tube
CAPACITORS		
C4405 C4406 C4407	26-22351-01	22nK X7R 50V
C4085 C4087 C4202 C4711 C4712 C4713 C4714 C4715 C4716	26-10451-01	100nZ Y5V 50V
C4000 C4001 C4002 C4003 C4004 C4005 C4006 C4007 C4008 C4014 C4015 C4016 C4017 C4018 C4019 C4020 C4023 C4024 C4025 C4026 C4027 C4028 C4029 C4030 C4031 C4032 C4033	26-22451-01	220nZ Y5V 50V

Reference No.	Part No.	Description
C4742 C4743	06-10051-03	CD110,10u,50V,20%,D=5,Pitch=2
C4053 C4201 C4602 C4603 C4604 C4701 C4702 C4703 C4704 C4705 C4706	06-22021-00	CD110,22u,25V,20%,D=5,Pitch=2,
C4811 C4812 C4813	06-47011-04	CD110,47u,16V,20%,D=5,Pitch=2,Pin Length=5
C4034 C4038 C4040 C4741	06-10111-01	CD110X,100u,16V,20%,D=5,Pitch=2,Pin Length=5
C4041 C4042 C4047 C4048 C4049 C4050 C4167 C4168 C4170	06-47111-01	CD110,470u,10V,20%,D=8,Pitch=3.5,Pin Length=5
RESISTORS		
R4051 R4052 R4118 R4119 R4124 R4125	07-93921-01	3K92F Thick Film 0805,Tape
R4089 R4103 R4701 R4702 R4703 R4705 R4711 R4712 R4713 R4714 R4715 R4716 R4814 R4815 R4816	07-91002-01	10KF Thick Film 0805,Tape
R4034 R4037 R4038	07-90100-01	10RJ Thick Film 0805,Tape
R4721 R4722 R4723 R4724 R4725 R4726 R4727 R4728	07-90240-01	24RJ Thick Film 0805,Tape
R4220 R4221 R4222 R4223 R4224 R4225 R4266 R4267	07-90473-01	47kJ Thick Film 0805,Tape
R4000 R4001 R4002 R4003 R4004 R4005 R4014 R4015 R4016 R4017 R4023 R4024 R4025 R4026 R4027 R4030 R4031 R4032 R4063 R4064 R4066 R4067 R4071 R4072 R4111 R4112 R4116	07-97509-01	75RF Thick Film 0805,Tape
R4602 R4795	07-91003-01	100KF Thick Film 0805,Tape
R4801 R4802 R4803 R4804 R4811 R4812 R4813	07-91000-01	100RF Thick Film 0805,Tape
R4405 R4406 R4407	07-90101-01	100RJ Thick Film 0805,Tape
R4041 R4042 R4045 R4046 R4049 R4050	07-91500-01	150RF Thick Film 0805,Tape
CONNECTORS		
CON401	13-21016-01	16pin,1mm,Socket,H
CON402	13-21024-01	24pin, 1mm, Socket, H
J4020	17-01002-06	RCA2-Y-U-NOS 2 heads(delete one),Yellow, 镀厚金(4u)
J4011 J4012 J4013 J4014 J4015 J4016 J4017 J4018 J4019	17-01001-08	S+RCA, RCA镀厚金(4u)(RCA无接地片)
PCB		
PCB41	S16-51504-00	HS4-M15_B007V2_3_2-CSS.sch

Reference No.	Part No.	Description
HDMI(HDMI board)		
DIODES		
D52	33-15609-03	5V6, LL34, Tape
ICS		
U56	03-00595-01	74HC595, SOIC0.15inch, Tube/Tape
U55	03-00244-01	74LCX244, SOIC0.3inch, Tube/Tape
U59	03-01117-02	LM1117MPX-ADJ, SOT223, Tube/Tape
U58	03-00341-01	TMDS341, TQFP80, Tube/Tape
CAPACITORS		
C55 C56 C59	26-10451-01	100nZ Y5V 50V
C512 C513 C514 C515 C516 C517 C518 C519 C520 C521 C531 C532	26-10411-06	100nZ Y5V 16V
C58 C511	06-10111-00	CD110X,100u,16V,20%,D=5,Pitch=5,Pin Length=5
C510	06-10051-00	CD110,10u,50V,20%,D=5,Pitch=5
C522 C523 C524	26-22351-01	22nK X7R 50V
CS51 	05-22242-00	2n2/400vac YA,2n2,400VAC,20%,Pitch=10mm,Pin Length=6-8mm
	78-043002-0	851248-23
RESISTORS		
R58	07-90100-01	10R Thick Film 0805,Tape
R55	07-94641-01	4K64F Thick Film 0805,Tape
R52	07-90103-10	10K×4 0603
R56	07-90101-01	100RJ Thick Film 0805,Tape
R54	07-92430-01	243RF Thick Film 0805,Tape
R53	07-93920-01	392RF Thick Film 0805,Tape
CONNECTORS		
CON55	13-21024-01	24pin, 1mm, Socket, H
CON51 CON52 CON53	13-23903-01	2pin, 7.92mm, Socket
J55 J56 J57	17-08119-00	HMR43-AK5200(WITHOUT POST)
J52	17-07002-12	AC-OUTPUT(AH only)
J51	17-07002-20	AC-OUTPUT(C only)
PCB		
PCB51	S16-51505-00	HS4-M15_B007V3_0_0-HDMI.sch
PSU(power supply board)		

Reference No.	Part No.	Description
DIODES		
D603 D604 D605 D681 D682 D683	33-30442-01	KBL04 4A, 400V
D608	33-20004-01	S1GM4,SMA,Tape
TRANSISTORS		
Q608 Q612 Q617 Q685	31-00114-01	DTA114, SOT23, Tape
Q609 Q611 Q614 Q618 Q681 Q686	31-00114-05	DTC114, SOT23, Tape
Q610 Q682	31-01220-00	KSA1220A-Y
Q607 Q613 Q616 Q684	31-02690-00	KSC2690A-Y
Q615 Q683	31-02907-01	MMBT2907A/MMBT2907AL/PMBT2907A, SOT23, Tape
Q615 Q683	or31-02907-02	MMBT2907A/MMBT2907AL/PMBT2907A, SOT23, Tape
ICS		
U608 U611	03-07805-00	LM7805CT, TO220
U604	03-07808-00	LM7808CT, TO220
U603	03-07810-00	7810, TO220
U610	03-07812-00	LM7812CT, TO220
U606	03-07815-00	LM7815CT, TO220
U609	03-07905-00	LM7905CT, TO220
U607	03-07915-00	LM7915CT, TO220
CAPACITORS		
C672 C673 C674 C675 C690 C691	26-22351-01	22nK X7R 50V
C603 C604 C605 C606 C684 C685 C686 C687 C688 C689 C693 C694 C695 C696	26-47351-01	47nK X7R 50V
C622 C623 C625 C626 C637 C638 C639 C640 C645 C646 C647 C648 C652 C653 C656 C657	26-10451-01	100nZ Y5V 50V
C659	06-22951-03	CD263,2u2,50V,20%,D=5mm,Pitch=2mm, Pin Length=5mm
C642 C649 C650 C654 C658	06-10021-03	CD263,10u,25V,20%,D=5mm,Pitch=2mm, Pin Length=5mm
C624 C627 C635 C636 C641 C681	06-22021-03	CD263,22u,25V,20%,D=5mm,Pitch=2mm, Pin Length=5mm
C629 C660 C683	06-47021-02	CD263,47u,25V,20%,D=5,Pitch=2,Pin Length=5
C643 C655	06-22211-02	CD263,2200u,16V,20%,D=12.5mm,Pitch= 5mm,Pin Length=5mm
C632 C644 C651	06-22221-02	CD263,2200u,25V,20%,D=12.5mm,Pitch= 5mm,Pin Length=5mm
C619	06-47211-00	CD263,4700u,16V,20%,D=16,Pitch=7.5,Pi n Length=5

Reference No.	Part No.	Description
C631 C682	06-47221-01	CD263,4700u,25V,20%,D=18,Pitch=7.5,Pin Length=5
RESISTORS		
R616 R624 R625 R629 R683 R684	07-90472-01	4K7J Thick Film 0805,Tape
R626	07-90103-01	10KJ Thick Film 0805,Tape
R672 R673 R674 R675 R690 R691	07-90101-01	100RJ Thick Film 0805,Tape
FUSES		
F609 F608 F611 ▲	20-12102-00	1A 5X20mm Delay, 1A, 250VAC
F603 F604 F605 F606 F681 F682 ▲	20-12202-00	2A 5X20mm Delay, 2A, 250VAC
FC603 FC604 FC605 FC606 FC608 FC609 FC613 FC614 FC615 FC616 FC618 FC619 FC621 FC622 FC681 FC682 FC683 FC684 ▲	20-20000-00	HF-004/A
CONNECTORS		
CON604 CON608 CON611	13-23905-00	5PIN P3.96/3X3X1.7
CON602 CON605 CON607	13-22006-00	6pin, 2mm, Socket
PCB		
PCB61	S16-51506-00	HS4-M15_B008V3_0_0-PSU

SECTION 5

VERSION HISTORY

SERIAL NUMBER	SOFTWARE VER.	PCB ASSEMBLY VERSION	PARTS CHANGE LIST
START FROM H62M1500419	V1.07	HS4-M15_B008V3_1_0-PSU HS4-M15_B008V3_1_0-HDMI HS4-M15_B008V3_0_0-CSS HS4-M15_B008V3_1_0-AUD HS4-M15_B008V3_0_2-VIDEO HS4-M15_B008V3_0_1-FPP	1.D2941 change from S1GM4 to SS12R2944 2.R2944 change from 0R to 47R 3.R2225 change from 100K to 22K 4.ADD C2945 4.7uF
START FROM H65M15T00821	V1.09	HS4-M15_B008V3_1_0-PSU HS4-M15_B008V3_1_0-HDMI HS4-M15_B008V3_0_0-CSS HS4-M15_B008V3_1_0-AUD HS4-M15_B008V3_0_2-VIDEO HS4-M15_B008V3_0_1-FPP	1.R4267 change from 47K to 10K 2.R4266 change from 47K to 4.7K
H65M15T00943~ H65M15T01020	V1.09	HS4-M15_B008V3_1_0-PSU HS4-M15_B008V3_1_0-HDMI HS4-M15_B008V3_0_0-CSS HS4-M15_B008V3_1_0-AUD HS4-M15_B008V3_3_2-VIDEO HS4-M15_B008V3_0_1-FPP	1.U1035 change from AT89C51ED2-3CSIM to AT89C51ED2-SLSUM 2.U1809 change form SAA7127H to SAA7129AH 3.ADD U1911 MAX4018EDS 4.DELETE C1921,C1922,C1923 5.ADD C1961,C1962 100nZ Y5V 50V 0805 6.C1836 C1832 C1883 change from 120PJ NPO 50V 0805 to NI 7.ADD R1959,L1946~L1954 OR 0805 8.L1802,L1803,L1804 change from 4u7H 10% Tape to 0R 0805 9.ADD R1956 R1957 12R1F 0805 10.ADD R1958 1KF 0805 11.ADD R1944 R1945 R1946 24RJ 0805 12.R1825 R1826 R1827 change from NI to 75RF 0805 13.ADD R1953 R1954 R1955 75RF 0805 14.ADD R1950 R1951 R1952 100RF 0805 15.DELETE R1821 R1823 R1824 R1822 16.ADD,R1963~R1965;C1946~C1960;C1963~C1965;L1963~L1965 NI
H65M15T00943~ H65M15T01020 start from H65M15T01051	V2.0	HS4-M15_B008V3_1_0-PSU HS4-M15_B008V3_1_0-HDMI HS4-M15_B008V3_0_0-CSS HS4-M15_B008V3_1_0-AUD HS4-M15_B008V3_3_2-VIDEO HS4-M15_B008V3_0_1-FPP	software update
start from H6YM15T01211	V2.0	HS4-M15_B008V3_1_0-PSU HS4-M15_B008V3_1_0-HDMI HS4-M15_B008V3_0_0-CSS HS4-M15_B008V3_2_0-AUD HS4-M15_B008V3_3_2-VIDEO HS4-M15_B008V3_1_0-FPP	1.C2252 C2254 change from 1nJ NPO 50V 0805 to 680PJ NPO 50V 2.ADD C2951 C2952 150PJ NPO 50V 3.C58,C511, C510,pitch change from 5mm to 2mm