Blue-Ray Disc Player

MBD7020/12/93

Service
Service
Service

Service Manual

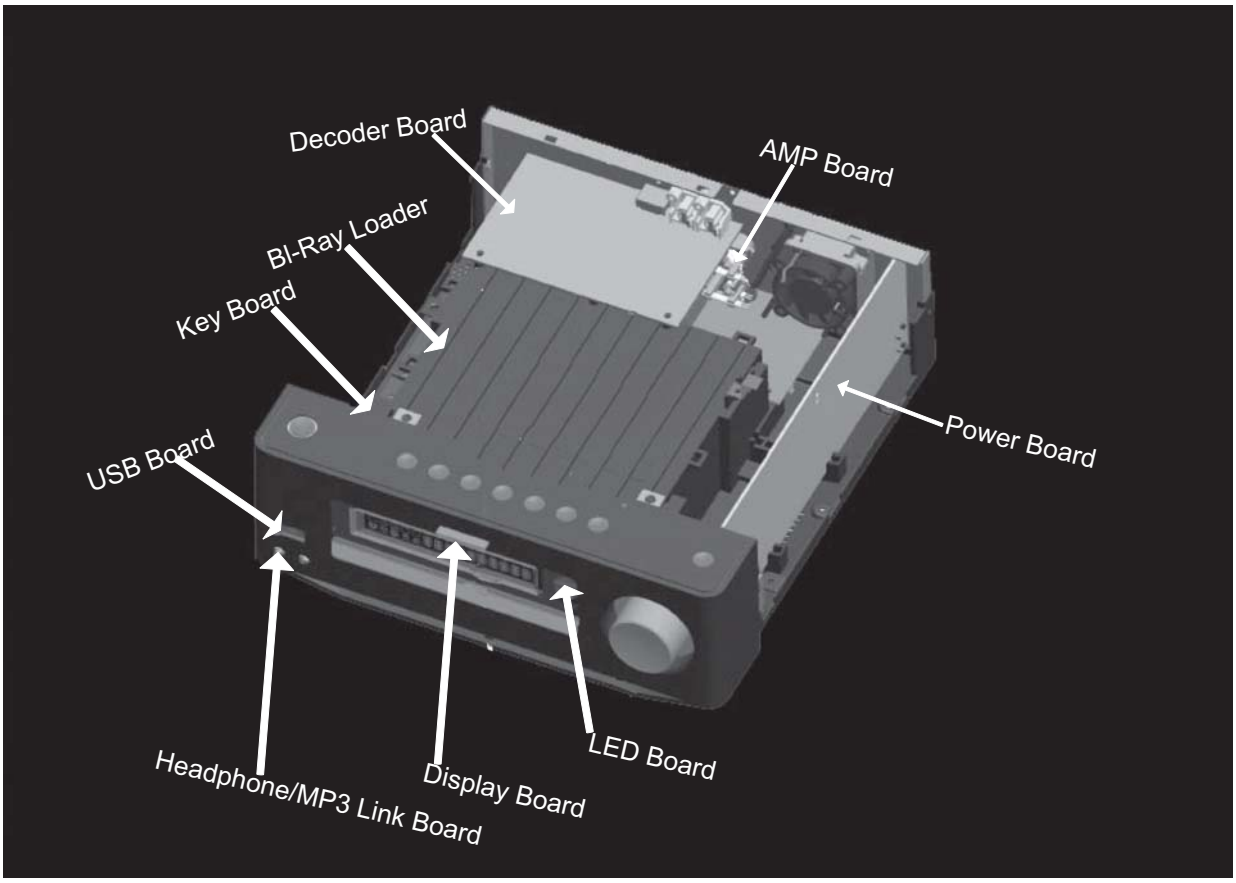
Features \ Feature Different	/12	/93
RDS	√	√
Voltage Selector		
ECO Standby	√	√
DTS		

Published by Sophie-KM 1123 AVM Printed in the Netherlands Subject to modification EN 3141 785 36200

Version 1.0

PHILIPS

Location of PC Boards



Version Variations

Type /Versions: / Service policy / Board in used:	MBD7020										
	/05	/12	/51	/55	/58	/61	/79	/93	/94	/96	/98
LED Board		C						C			
Decoder Board		C						C			
Display Board		C						C			
AMP Board		C						C			
Headphone & MP3 Link Board		C						C			
Power Board		M						M			
USB Board		C						C			
Key Board		C						C			

Type /Versions / Features / Feature diffrence	MBD7020										
	/05	/12	/37	/55	/58	/61	/79	/93	/94	/96	/98
RDS		√						√			
VOLTAGE SELECTOR											
ECO STANDBY - DARK		√						√			
DTS											

* TIPS : C -- Component Lever Repai
M -- Module Lever Repair
√ -- Used

Technical Specification

2 General Specification

2.1 Product family features

2.1.1 Styling and functions

MBD7020 appearances are defined In MUS. MUS is the leading document where product appearance is applicable.

Features	Products	MBD7020 [ALL Stroke Version]
	Design	Refer to MUS[3] for details
Dimension	Height of feet	
	W x D x H (mm)	[250x93.5 x286]mm
Weight	Without packaging	[2.7kg]

Refer to Appendix A for dimensional sketch and tolerances of the set.

2.1.2 Product Interfaces

	Interface		Type	MBD7020 [ALL Storke Version]
	AC Power Input		Detachable Mains cord	+
Back Panel	Composite Analog Video	CVBS	Cinch [Color : Yellow]	+
	Digital Audio	Coaxial	Cinch [Color: Black]	+
	Analog Audio [Line Out]	Left	Cinch [Color : White]	+
		Right	Cinch [Color : Red]	+
	Aux In	Left	Cinch [Color : White]	+
		Right	Cinch [Color : Red]	+
	HDMI		HDMI Type A [Receptacle]	+
	Ethernet		RJ45	+
	USB [for Wi-Fi Dongle use only]		USB Type A Receptacle	+
	M-Boy		3.5MM Jack	+
	iPhone Ready		Mini-Din connector to interface 2K10 Dock accessory	+
	FM Antenna		75 Ohm Jack	+
	Speaker Out	Left	Screw-type [ref:MCD712/MCD909]	+
		Right	Screw-type [ref:MCD712/MCD909]	+
	Upgrade Jack		4 Pins FFC Jack [Color:Red]	+

	Interface	Type	MBD7020 [All Stroke Version]
Front Panel	Headphone	3.5MM Jack	+
	MP3 Link	3.5MM Jack	+
	USB	USB Type A Receptacle [Color: Black]	+

2.1.3 Product Controls

Controls / Indicators		MBD7020 [ALL Stroke Version]	Remark
Buttons	STANDBY-ON	+ (with red LED)	
	Source	+	
	Perset-	+	
	Preset+	+	
	Play /Pause	+	
	Forward	+	
	REV	+	
	Stop	+	
	Eject	+	
Rotary Knob	Volume	+ [with white Led]	● Fade-on and Fade-off effect is required. Refer to UIS for LED detailed behavior
Down Light		+ [with white Led]	● Light cast downward ,bright at the centre and fades towards the sides ● Fade-on and Fade-off effect is required ● Refer to UIS[2] for detail light behavior
Indicator	Standby Indicator	+ [with Red Led]	IIlumination must vanish within 5 seconds after AC mains switch off
VFD Display	1-Line VFD Display	+	● Design must be able to cater for VFD display on/off during standby mode. Refer to UIS for VFD dimming and standby mode behavior

3 Environmental Condition

3.1 Set Operating Condition

Description	Full Specification	Full Function
Ambient Temperature	10°C to 35°C	5°C to 40°C
Maximum Temperature change	11°C per hour	
Absolute Humidity [g/m^3]	3..20	1½..25
Relative Humidity [%]	10..80	5..90
Condensation	Not allowed	
Air pressure	55..110 kPa (55kPa equals an altitude of some 3,800 m)	

3.2 Climatic Tests

3.2.1 Exposure Test (Non-Operating)

Test	Test Conditions	Remarks
Dry Heat Exposure	+70°C , 48 hrs	After a 4 hour recovery to Room Temp (25C), to check the external/internal condition as well as basic functional of the product, including labels.
Cold Exposure	0°C , 4 hrs	
Temperature Change	One Cycle is 3 hrs at +70°C and then 3 hrs at –25°C ; Ramp time is within 1hr. Number of Cycles : 10	

3.2.2 Functional Test (Operating)

Test	Test Conditions	Remarks
Dry Heat Functional	At +40°C , 21 Days	Product should operate normally under these conditions.
Cold Functional	At +5°C , 1 Day	
Cold + Low Line-voltage Startup	At 0°C • Set has to be conditioned at this temperature for minimum of 16hrs with the Mains-Supply switched off.	After the conditioning and the mains supply is switched on , the set shall startup and operate normally.
	• Mains-Voltage to be set at minimum tolerance (refer to Elect HW Robustness – Max/Min Voltage variation) before startup.	This test is a check on the stability of components and robustness of the supply design.
Damp Heat Cyclic	According to IEC 60068-2-30 Db 21 x 24hrs +40°C (9hrs), +25°C (9hrs) RH = 95% 1hr ON , 23 hr OFF	Product should operate normally under these conditions.

4 Performance Specifications

4.1 Audio Performance

4.1.1 Reference levels

Audio inputs		Audio Outputs	
Audio Input Sensitivity (±3dB) rated output power at 1KHz		Audio Output(*1)	
Tuner	FM 67.5KHz,Modulation (Limit:-6dB)	Line Out (Left/Right)	2Vrms ± 2dB
CD / MP3	0dB track (Audio Disc 1 ,Track 1)	Headphone	500mV± 2dB,RL=32Ω
USB	0dB 1KHz sine wave (2.0HS)	Line Out S/N	≥80dB
Aux1(Back)	1V;Rin ≥16KΩ	Amplifier	2 x 50W(10%THD) ± 0.5dB,6 Ω
MP3_Link(Front)	0.5V; Rin ≥16KΩ		

4.1.2 Amplifier Output

Measurements are done with rated speaker impedance.

Description	Specification
Rated Output Power @ 10%THD	50W± 0.5dB
Channel Unbalance(1KHz)	≤|2.0|dB
Crosstalk (20Hz – 20KHz)	≥|50|dB
Frequency Response (30Hz – 16KHz)	≤ ± 3dB
Frequency Response with De-emphasis (20Hz – 20KHz)	≤ +0.5 / -2.0dB
THD+N before clipping (1KHz,5KHz)	≤-0.05%
Hum(Vol min ---Vol max -20db)	≤150nW
Residual Noise (Volume Minimum)	≤40nW
Acoustical	≤26dB

4.1.3 Analogue Audio Headphone Output

CD-DA(PCM)		
Description		Specification
Output Power		≤30mW
Output Level		500mV± 2dB ,RL=32Ω
Load impedance		8Ω to 2KΩ
Channel Unbalance(1KHz)		≤|0.3|dB
Crosstalk	1KHz	≥|65|dB
	16Hz – 20KHz	≥|60|dB
Frequency Response	20Hz – 20KHz	≤ ±3.0dB
Signal –to-Noise Ratio	A-weighted	≥-80dB
Dynamic Range	1KHz	≥|65|dB
	20Hz – 20KHz	≥|65|dB
THD+N	1KHz	≤-65dB
	16Hz – 20KHz	≤-65dB

4.1.4 Analogue Audio Line Output

4.1.4.1 CD-DA (PCM) / Video CD (MPEG-1)

CD-DA(PCM) /Video CD (MPEG-1)		
Description		Specification
Output Voltage		2.0V ± 0.5dB
Channel Unbalance(1KHz)		≤|0.3|dB
Crosstalk	16Hz – 20KHz	≥|55|dB
Frequency Response	20Hz – 20KHz	≤ +0.5/ -2.0dB
Frequency Response with De-emphasis	20Hz – 20KHz	≤ +0.5/ -2.0dB
Signal –to-Noise Rati o	unweighted	≤-80dB
	A-weighted	≤-80dB
Dynamic Range	1KHz	≥|65|dB
	20Hz – 20KHz	≥|65|dB
THD+N	16Hz – 20KHz	≤-65dB
		≤-65dB
Phase Difference Between Channels		
Phase Non-Linearity Level Non-Linearity	-60dB to -90dB	± 1°
Output Polarity		7FFF(H) Positive Pulse at output 8000(H)Negative Pulse at output
Outband Attenuation		≥35dB(Above 40KHz)

4.1.5 Digital Audio Outputs

Standard Reference

- IEC 60958
- IEC 61937

4.1.5.1 Coaxial & Optical Output

Required to support up to bitrate of up to 96KHz SPDIF input.

Description	Specification	Test Condition
Output signal amplitude	0.5 Vpp ± 20%	75Ω termination
Output impedance	75 Ω ± 20%	
DC output voltage	< 0.05 V	75Ω termination
Clock accuracy	< 100 ppm (typical) < 1000 ppm (maximum)	
T_{rise} and T_{fall}	< 0.4 UI	
Intrinsic jitter	< 0.05 UI	Weighted High Pass Filter used (-3dB at 700Hz,-20dB at 70Hz)

For specific TOSLINK requirements, refer to Jeita CP-1212 standard.

4.2 Standard Definition Analog Video Performance

4.2.1 CVBS

Description	Test Signal	Specification	
		NTSC	PAL
Amplitude output	100% White	1000mVpp ± 10%	1000mVpp ± 10%
White bar	100% White	714mV ± 10%	700mV ± 10%
Sync. Amplitude	100% White	286mV ± 10%	300mV ± 10%
Burst Amplitude	75% Color bar	286mV, +1dB / -4dB	300mV, +1dB / -4dB
Burst /chroma ratio	100% Color bar	± 5%	± 5%
S/N luminance	100% White	≥ 60 dB	≥ 60 dB
S/N chroma AM PM	100% Red	 ≥ 57 dB ≥ 57 dB	 ≥ 60 dB ≥ 57 dB
Video Bandwidth 0.5MHz – 4MHz 4.8MHz 5.8MHz	Multi-burst	 -1.5dB -5dB	 +1dB/-1dB -2dB -5dB
Chroma Subcarrier Frequency	75% Color bar	3.579545 MHz ± 25ppm	4.433618MHz ± 30ppm
Chroma / luminance delay	2T pulse	≤ 20ns	≤ 20ns
Subcarrier locked/unlocked	75% Color bar	locked	locked
DC Level	0% Black	≤ 1V	≤ 1V

All figures are to be measured with 75Ω output termination.

4.2.2 Component Video (Y/Pb/Pr)

Description	Test Signal	Specification	
		Interlace/Progressive	
		NTSC	PAL
Amplitude output	100% White	1000mV ± 10%	1000mV ± 10%
White bar	100% White	714mV ± 10%	700mV ± 10%
PbPr peak to peak	75% Color bar	525mV ± 10%	535mV ± 10%
PbPr Output unbalance	75% Color bar	≤ 3%	≤ 3%
Sync. Amplitude	100% White	286mV ± 40mV	300mV ± 10%
S/N on outputs Y Pb / Pr	 100% White 75% Color bar	 ≥60 dB	 ≥60 dB
Video Bandwidth 4.2MHz 5.8MHz	 Multi-burst	 -1.5dB -5dB	 -1.5dB -5dB
Video Bandwidth (Progressive) 8.4MHz 9.6MHz	 Multi-burst	 -1.5dB -5dB	 -1.5dB -5dB
DC Level	0% Black	≤ 1V	≤ 1V

All figures are to be measured with 75Ω output termination.

4.3 High Definition Analog Video Performance

4.3.1 720P Component Video (Y/Pb/Pr)

Test Picture	Parameter		Specification
100% White	Y White Level		700mV± 10%
	Sync Amplitude	Positive Part	300mV± 10%
	Sync Amplitude	Negative Part	300mV± 10%
	Y Amplitude O/P		1000mV± 10%
	S/N Y		≥60dB
0% Black	DC Level Y(Blanking Level)		≤1V
	DC Level P_b(Blanking Level)		≤1V
	DC Level P_r(Blanking Level)		≤1V
75% Color Bar	Pb Amplitude O/P		525mV± 10%
	Pr Amplitude O/P		525mV± 10%
	PbPr Unbalance		≤3%
	Component Vector		Within 5% box
100% Red	S/N Pb		≥60dB
	S/N Pr		≥60dB
Multi-burst	Video Amplitude		
	5MHz		≥-1.5dB
	10MHz		≥-1.5dB
	15MHz		≥-1.5dB
	20MHz		≥-1.5dB
	25MHz		≥-1.5dB
	30MHz		≥-5dB

4.3.2 1080i Component Video (Y/Pb/Pr)

Test Picture	Parameter		Specification
100% White	Y White Level		700mV± 10%
	Sync Amplitude	Positive Pary	300mV± 10%
	Sync Amplitude	Negative Part	300mV± 10%
	Y Amplitude O/P		1000mV± 10%
	S/N Y		≥60dB
0% Black	DC Level Y(Blanking Level)		≤1V
	DC Level P_b(Blanking Level)		≤1V
	DC Level P_r(Blanking Level)		≤1V
75% Color Bar	Pb Amplitude O/P		525mV± 10%
	Pr Amplitude O/P		525mV± 10%
	PbPr Unbalance		≤3%
	Component Vector		Within 5% box
100% Red	S/N Pb		≥60dB
	S/N Pr		≥60dB
Multi-burst	Video Amplitude		
	5MHz		≥-1.5dB
	10MHz		≥-1.5dB
	15MHz		≥-1.5dB
	20MHz		≥-1.5dB
	25MHz		≥-1.5dB
	30MHz		≥-5dB

4.4 FNAC Requirement

MBD7020 is to attain 4 starts fnac rating.

4.5 Sound Requirement

Reference

- MBD7020 Sound Requirement Specification [8]

4.6 FM Tuner

Test conditions:
Power Supply: AC According to Ver
Ref Output :6Ω 1W, sound effect off
FM MONO:22.5KHz Dev, 1KHz Modulation , 75Ω Impedance , 60dBu
FM Stereo: Main+Sub =50KHz,Pilot:10Khz, Composite :40.0KHz
IF: FM IF:10.7MHz

NO	TEST ITEMS		UNIT	NOM.	LIMIT
1	Frequency Range		MHz		87.5
					108
13	TUNING SENS	90MHz	dBf	24~30	19~35
		98MHz	dBf	24~30	19~35
		106MHz	dBf	24~30	19~35
3	-3dB LIMITING POINT		dBf	17	23
2	26dB QUENTING SENSITIVITY	90	dBf	18	22
		98		18	22
		106		18	22
4	FM IF REJEDION 98MHZ S/N=26dB		dB	65	60
5	IMAGE REJECT 98MHZ S/N=26dB		dB	30	25
	SELECTIVITYS	300kHz		30	25
6		>500KHz	dB	55	48
14	TUNING ACCURAY	＜91	dBf		0
		＞91	dBf		±1
7	S/N AWIGHTED	MONO 193	dB	55	50
		ST 193		55	50
		MONO		65	60
		ST		65	60
10	FREQUENCY RSEPOUSE	63Hz	dB		±3
		12.5KHz			±3
8	OVERALL DISTERTION		%	2	3
17	THD 10% POWER		W	50	45
9	MODULATION HUM		dB	55	45
15	STEREO TURNON		dBf	17.5	23.5
16	STEREO CHANNEL SEPARATION	400Hz	dB	26	20
		1KHz	dB	30	26
		5KHz	dB	20	18
14	AUTO TUNING SENG	ALL	dBf	24~30	19~35
19	RDS SENSITIVITY	90Hz	dB	30	36
		98Hz		30	36
		106Hz		30	36
20	RDS 频偏 SENSITIVITY	90Hz	KHz	≤ 0.4	≤ 0.6
		98Hz			
		106Hz			
11	AM SUPPRESSION I/B 48--82dBf		dB	35	30
12	8/9/10 HARMONICS WHISTLE		dB	40	35
18	IF		MHz	10.7	±0.2

4.7 HDMI

Standard Reference

- High-Definition Multimedia Interface Specification version 1.3a
- High-Definition Multimedia Interface Compliance Test Specification version 1.4

4.7.1 USB

Standard Reference:

- USB specification Revision 2.0,dated 27 April 2000
- USB-IF USB 2.0 Electrical Test Specification Version1.03, dated January 2005
- USB-IF Embedded Host Compliance Plan , Revision 1.0, dated August 2006
- USB 1A requirement

4.8 Ethernet

Standard Reference: IEEE802.3-2005
Physical Layer:10/100Base-T
Data rate: 10/100Mbps

With Auto MDI/MDIX

4.9 WiFi

Standard Reference

- IEEE 802..11b Sept 1999
- IEEE802.11g June 2003
- IEEE802.11n Draft 2.0

WiFi-N module is interfaced via USB

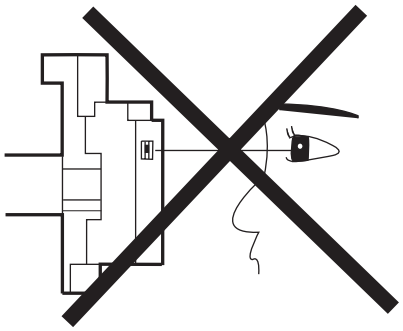
4.10 iPod / iPhone Support

Standard Reference :

- iPod/iPhone Hardware Specification , Release R9
- iPod/iPhone Accessory Testing and Certification Specification ,Release R1
- iPod/iPhone Accessory Protocol Interface Specification , Release R39

Laser Beam Safety Precautions

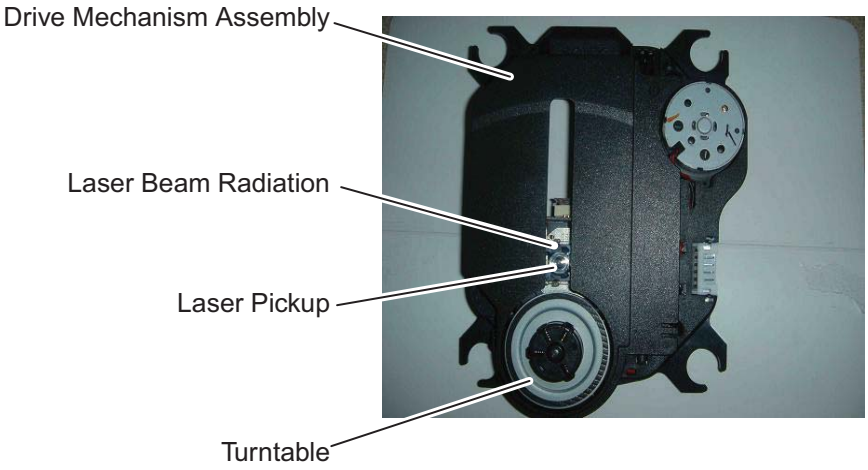
This Blu-Ray player uses a pickup that emits a laser beam.

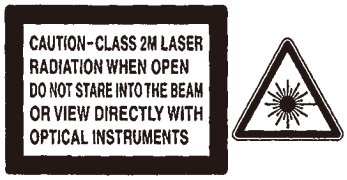


Do not look directly at the laser beam coming from the pickup or allow it to strike against your skin.

The laser beam is emitted from the location shown in the figure. When checking the laser diode, be sure to keep your eyes at least 30 cm away from the pickup lens when the diode is turned on. Do not look directly at the laser beam.

CAUTION: Use of controls and adjustments, or doing procedures other than those specified herein, may result in hazardous radiation exposure.





Location: Inside Top of Blu-Ray mechanism.

Caution: These servicing instructions are for use by qualified service personnel only.To reduce the risk of electric shock do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

Important

Read and understand all instructions before you use your home theater. If damage is caused by failure to follow instructions, the warranty does not apply.

Safety

Riskof electric shock or fire!

- Never expose the product and accessories to rain or water. Never place liquid containers, such as vases, near the product. If liquids are spilt on or into the product, disconnect it from the power outlet immediately. Contact Philips Consumer Care to have the product checked before use.
- Never place the product and accessories near naked flames or other heat sources, including direct sunlight.
- Never insert objects into the ventilation slots or other openings on the product.
- Where the mains plug or an appliance coupler is used as the disconnect device, the disconnect device shall remain readily operable.
- Disconnect the product from the power outlet before lightning storms.
- When you disconnect the power cord, always pull the plug, never the cable.

Riskof short circuit or fire!

- Before you connect the product to the power outlet, ensure that the power voltage matches the value printed on the back or bottom of the product. Never connect the product to the power outlet if the voltage is different.

Risk of injury or damage to the home theater!

- For wall-mountable products, use only the supplied wall mount bracket. Secure the wall mount to a wall that can support the combined weight of the product and the wall mount. Koninklijke Philips Electronics N.V. bears no responsibility for improper wall mounting that results in accident, injury or damage.
- For speakers with stands, use only the supplied stands. Secure the stands to the speakers tightly. Place the assembled stands on flat, level surfaces that can support the combined weight of the speaker and stand.
- Never place the product or any objects on power cords or on other electrical equipment.
- If the product is transported in temperatures below 5°C, unpack the product and wait until its temperature matches room temperature before connecting it to the power outlet.
- Visible and invisible laser radiation when open. Avoid exposure to beam.
- Do not touch the disc optical lens inside the disc compartment.

Risk of overheating!

- Never install this product in a confined space. Always leave a space of at least four inches around the product for ventilation. Ensure curtains or other objects never cover the ventilation slots on the product.

Risk of contamination!

- Do not mix batteries (old and new or carbon and alkaline, etc.).
- Remove batteries if they are exhausted or if the remote control is not to be used for a long time.
- Batteries contain chemical substances, they should be disposed of properly.

Product care

- Do not insert any objects other than discs into the disc compartment.
- Do not insert warped or cracked discs into the disc compartment.
- Remove discs from the disc compartment if you are not using the product for an extended period of time.
- Only use microfiber cloth to clean the product.

Disposal of your old product and batteries

Your product is designed and manufactured with high quality materials and components, which can be recycled and reused.

When this crossed-out wheeled bin symbol is attached to a product it means that the product is covered by the European Directive 2002/96/EC. Please inform yourself about the local separate collection system for electrical and electronic products.
Please act according to your local rules and do not dispose of your old products with your normal household waste.
Correct disposal of your old product helps to prevent potential negative consequences for the environment and human health.

Your product contains batteries covered by the European Directive 2006/66/EC, which cannot be disposed with normal household waste.
Please inform yourself about the local rules on separate collection of batteries because correct disposal helps to prevent negative consequences for the environmental and human health.

Examine the area surrounding the repaired location for damage or deterioration. Observe that screws, parts, and wires have been returned to their original positions. Afterwards, do the following tests and confirm the specified values to verify compliance with safety standards.

1. Clearance Distance

When replacing primary circuit components, confirm specified clearance distance (d) and (d') between soldered terminals, and between terminals and surrounding metallic parts. (See Fig. 1)

Table 1: Ratings for selected area

AC Line Voltage	Clearance Distance (d), (d')
110V~220V	≥ 3.2 mm (0.126 inches)

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

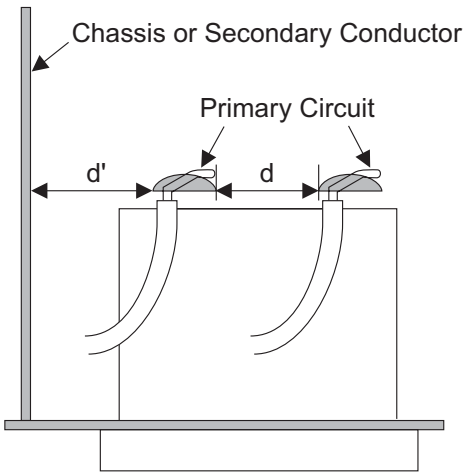


Fig. 1

2. Leakage Current Test

Confirm the specified (or lower) leakage current between B (earth ground, power cord plug prongs) and externally exposed accessible parts (RF terminals, antenna terminals, video and audio input and output terminals, microphone jacks, earphone jacks, etc.) is lower than or equal to the specified value in the table below.

Measuring Method (Power ON):

Insert load Z between B (earth ground, power cord plug prongs) and exposed accessible parts. Use an AC voltmeter to measure across the terminals of load Z. See Fig. 2 and the following table.

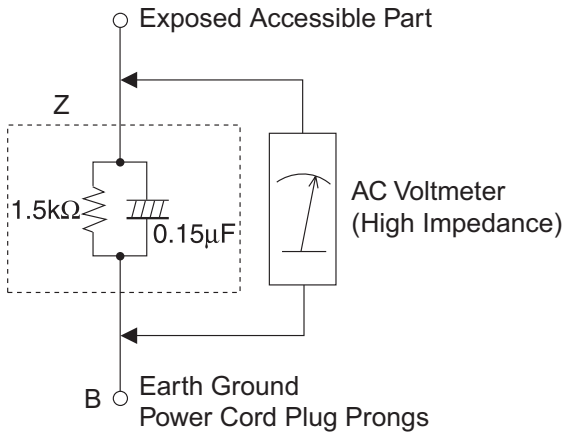


Fig. 2

Table 2: Leakage current ratings for selected areas

AC Line Voltage	Load Z	Leakage Current (i)	Earth Ground (B) to:
110V~220V	0.15 μF CAP. & 1.5 kΩ RES. Connected in parallel	i ≤ 0.5 mA Peak	Exposed accessible parts

Note: This table is unofficial and for reference only. Be sure to confirm the precise values.

Safety Information, General Notes & Lead Free Requirements

1 Safety Instructions

1.1 General Safety

Safety regulations require that during a repair:
- Connect the unit to the mains via an isolation transformer.
- Replace safety components, indicated by the symbol ⚠, only by components identical to the original ones. Any other component substitution (other than original type) may increase risk of fire or electrical shock hazard.

Safety regulations require that after a repair, you must return the unit in its original condition. Pay, in particular, attention to the following points:
- Route the wires/cables correctly, and fix them with the mounted cable clamps.
- Check the insulation of the mains lead for external damage.
- Check the electrical DC resistance between the mains plug and the secondary side:
  1. Unplug the mains cord, and connect a wire between the two pins of the mains plug.
  2. Set the mains switch to the 'on' position (keep the mains cord unplugged!).
  3. Measure the resistance value between the mains plug and the front panel, controls, and chassis bottom.
  4. Repair or correct unit when the resistance measurement is less than 1 MΩ.
  5. Verify this, before you return the unit to the customer/ user (ref. UL-standard no. 1492).
  6. Switch the unit 'off', and remove the wire between the two pins of the mains plug.

1.2 Laser Safety

This unit employs a laser. Only qualified service personnel may remove the cover, or attempt to service this device (due to possible eye injury).

Laser Device Unit	
Type	:AlGaInN(BD) :AlGaInP(DVD) : AlGaInP(CD)
Wavelength	: 650 nm (DVD) : 780 nm (VCD/CD) : 405nm(BD)
Output Power	: 20 mW (DVD+RW writing) : 0.8 mW (DVD reading) : 0.3 mW (VCD/CD reading)
Beam divergence	: 60 degree

CLASS 1
LASER PRODUCT

Figure 2-1

Note: Use of controls or adjustments or performance of procedure other than those specified herein, may result in hazardous radiation exposure. Avoid direct exposure to beam.

2 Warnings

2.1 General

- All ICs and many other semiconductors are susceptible to electrostatic discharges (ESD, ⚠). Careless handling during repair can reduce life drastically. Make sure that, during repair, you are at the same potential as the mass of the set by a wristband with resistance. Keep components and tools at this same potential.
  Available ESD protection equipment:
  – Complete kit ESD3 (small tablemat, wristband, connection box, extension cable and earth cable) 4822 310 10671.
  – Wristband tester 4822 344 13999.
- Be careful during measurements in the live voltage section. The primary side of the power supply, including the heatsink, carries live mains voltage when you connect the player to the mains (even when the player is 'off'!). It is possible to touch copper tracks and/ or components in this unshielded primary area, when you service the player. Service personnel must take precautions to prevent touching this area or components in this area. A 'lightning stroke' and a stripe-marked printing on the printed wiring board, indicate the primary side of the power supply.
- Never replace modules, or components, while the unit is 'on'.

2.2 Laser

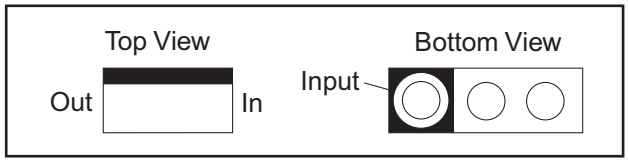
- The use of optical instruments with this product, will increase eye hazard.
- Only qualified service personnel may remove the cover or attempt to service this device, due to possible eye injury.
- Repair handling should take place as much as possible with a disc loaded inside the player.
- Text below is placed inside the unit, on the laser cover shield:

CAUTION VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID EXPOSURE TO BEAM
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING VED ÅBNING UNDGÅ UDSÆTTELSE FOR STRÅLING
ADVARSEL SYNLIG OG USYNLIG LASERSTRÅLING NÅR DEKSEL ÅPNES UNNGÅ EKSPONERING FOR STRÅLEN
VARNING SYNLIG OCH OSYNLIG LASERSTRÅLNING NÄR DENNA DEL ÄR ÖPPNAD BETRAKTA EJ STRÅLEN
VARO! AVATTAESSA OLET ALTTIINA NÄKYVÄLLE JA NÄKYMÄTTÖMÄLLE LASER SÄTEILYLLE. ÄLÄ KATSO SÄTEESEEN
VORSICHT SICHTBARE UND UNSICHTBARE LASERSTRAHLUNG WENN ABDECKUNG GEÖFFNET NICHT DEM STRAHL AUSSETSEN
DANGER VISIBLE AND INVISIBLE LASER RADIATION WHEN OPEN AVOID DIRECT EXPOSURE TO BEAM
ATTENTION RAYONNEMENT LASER VISIBLE ET INVISIBLE EN CAS D'OUVERTURE EXPOSITION DANGEREUSE AU FAISCEAU

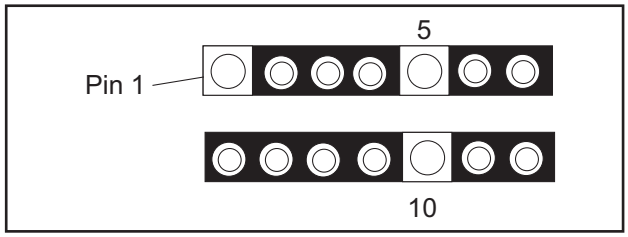
Figure 2-2

Circuit Board Indications

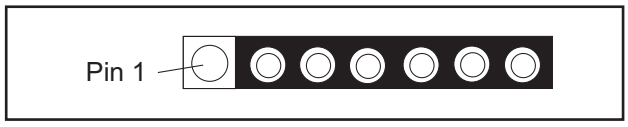
1. The output pin of the 3 pin Regulator ICs is indicated as shown.



2. For other ICs, pin 1 and every fifth pin are indicated as shown.

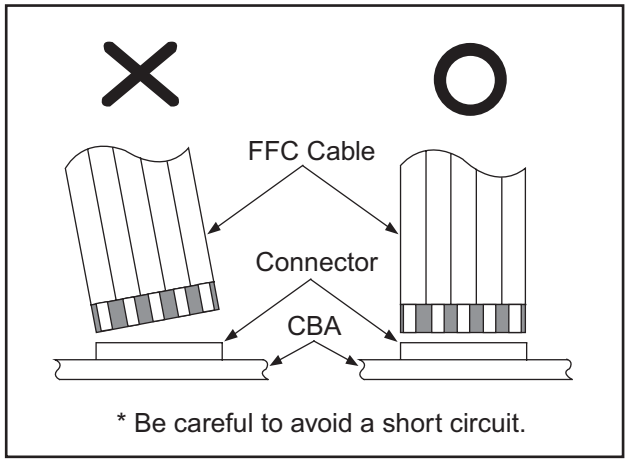


3. The 1st pin of every male connector is indicated as shown.



Instructions for Connectors

1. When you connect or disconnect the FFC (Flexible Foil Connector) cable, be sure to first disconnect the AC cord.
2. FFC (Flexible Foil Connector) cable should be inserted parallel into the connector, not at an angle.



Pb (Lead) Free Solder

When soldering, be sure to use the Pb free solder.

Information about lead-free soldering

Philips CE is producing lead-free sets from 1.1.2005 onwards.

IDENTIFICATION

Regardless of special logo (not always indicated)

One must treat all sets from 1 Jan 2005 onwards, according to the next rule:
Serial Number gives a 14-digit. Digit 5&6 shows the YEAR, and digit 7&8 shows the WEEK.

So from 0501 onwards=from 1 Jan 2005 onwards

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

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

- Use only lead-free solder alloy Philips SAC305 with order code 0622 149 00106. If lead-free solder-paste is required, please contact the manufacturer of your solder-equipment. In general use of solder-paste within workshops should be avoided because paste is not easy to store and to handle.
- Use only adequate solder tools applicable for lead-free solder alloy. The solder tool must be able
  - To reach at least a solder-temperature of 400°C,
  - To stabilize the adjusted temperature at the solder-tip
  - To exchange solder-tips for different applications.
- Adjust your solder tool so that a temperature around 360°C - 380°C is reached and stabilized at the solder joint. Heating-time of the solder-joint should not exceed ~ 4 sec. Avoid temperatures above 400°C otherwise wear-out of tips will rise drastically and flux-fluid will be destroyed. To avoid wear-out of tips switch off un-used equipment, or reduce heat.
- Mix of lead-free solder alloy / parts with leaded solder alloy / parts is possible but PHILIPS recommends strongly to avoid mixed solder alloy types (leaded and lead-free).
  If one cannot avoid or does not know whether product is lead-free, clean carefully the solder-joint from old solder alloy and re-solder with new solder alloy (SAC305).
- Use only original spare-parts listed in the Service-Manuals. Not listed standard-material (commodities) has to be purchased at external companies.

- Special information for BGA-ICs:
  - always use the 12nc-recognizable soldering temperature profile of the specific BGA (for de-soldering always use the lead-free temperature profile, in case of doubt)
  - lead free BGA-ICs will be delivered in so-called 'dry-packaging' (sealed pack including a silica gel pack) to protect the IC against moisture. After opening, dependent of MSL-level seen on indicator-label in the bag, the BGA-IC possibly still has to be baked dry. (MSL=Moisture Sensitivity Level). This will be communicated via AYS-website.
  Do not re-use BGAs at all.
- For sets produced before 1.1.2005 (except products of 2004), containing leaded solder-alloy and components, all needed spare-parts will be available till the end of the service-period. For repair of such sets nothing changes.
- On our website www.atyourservice.ce.Philips.com you find more information to:
  - BGA-de-/soldering (+ baking instructions)
  - Heating-profiles of BGAs and other ICs used in Philips-sets

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

For additional questions please contact your local repair-helpdesk.

How to Remove / Install Flat Pack-IC

1. Removal

With Hot-Air Flat Pack-IC Desoldering Machine:

1. Prepare the hot-air flat pack-IC desoldering machine, then apply hot air to the Flat Pack-IC (about 5 to 6 seconds). (Fig. S-1-1)

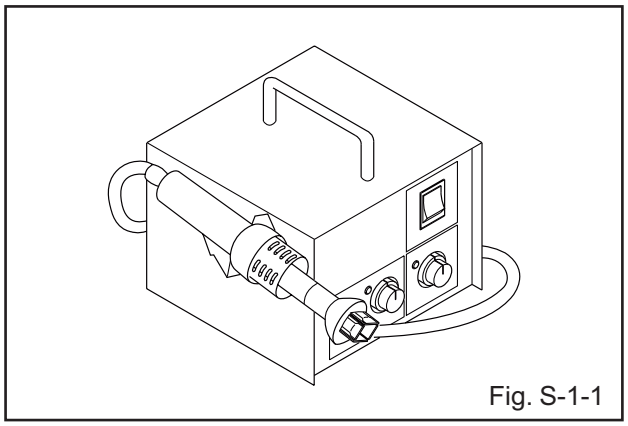


Fig. S-1-1

2. Remove the flat pack-IC with tweezers while applying the hot air.
3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

CAUTION:

1. The Flat Pack-IC shape may differ by models. Use an appropriate hot-air flat pack-IC desoldering machine, whose shape matches that of the Flat Pack-IC.
2. Do not supply hot air to the chip parts around the flat pack-IC for over 6 seconds because damage to the chip parts may occur. Put masking tape around the flat pack-IC to protect other parts from damage. (Fig. S-1-2)

3. The flat pack-IC on the CBA is affixed with glue, so be careful not to break or damage the foil of each pin or the solder lands under the IC when removing it.

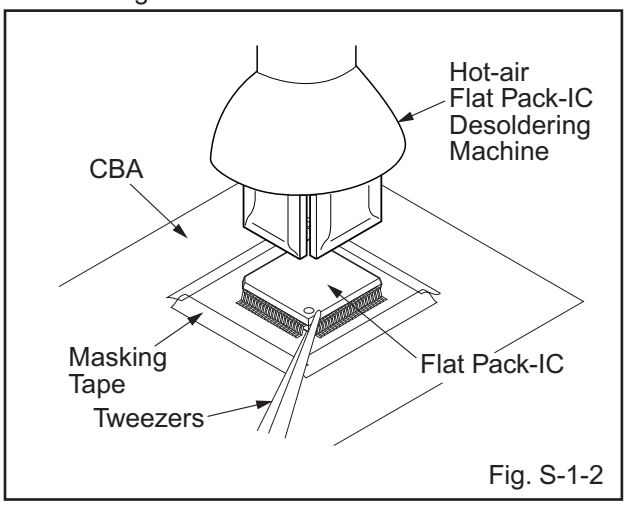


Fig. S-1-2

With Soldering Iron:

1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)

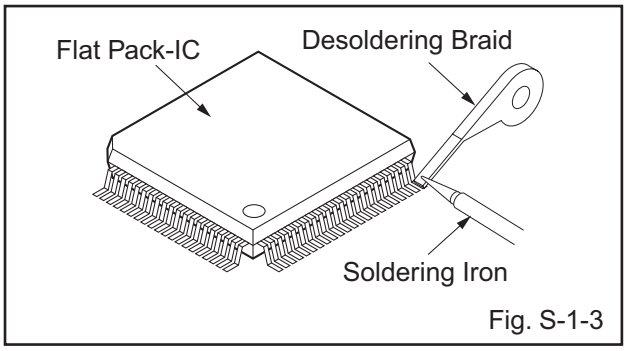


Fig. S-1-3

2. Lift each lead of the flat pack-IC upward one by one, using a sharp pin or wire to which solder will not adhere (iron wire). When heating the pins, use a fine tip soldering iron or a hot air desoldering machine. (Fig. S-1-4)

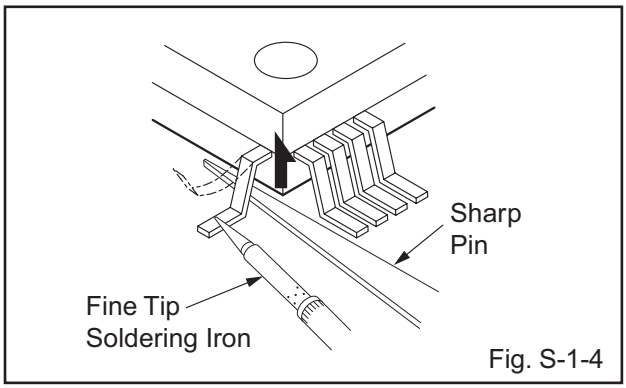


Fig. S-1-4

3. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
4. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

With Iron Wire:

1. Using desoldering braid, remove the solder from all pins of the flat pack-IC. When you use solder flux which is applied to all pins of the flat pack-IC, you can remove it easily. (Fig. S-1-3)
2. Affix the wire to a workbench or solid mounting point, as shown in Fig. S-1-5.
3. While heating the pins using a fine tip soldering iron or hot air blower, pull up the wire as the solder melts so as to lift the IC leads from the CBA contact pads as shown in Fig. S-1-5.
4. Bottom of the flat pack-IC is fixed with glue to the CBA; when removing entire flat pack-IC, first apply soldering iron to center of the flat pack-IC and heat up. Then remove (glue will be melted). (Fig. S-1-6)
5. Release the flat pack-IC from the CBA using tweezers. (Fig. S-1-6)

Note: When using a soldering iron, care must be taken to ensure that the flat pack-IC is not being held by glue. When the flat pack-IC is removed from the CBA, handle it gently because it may be damaged if force is applied.

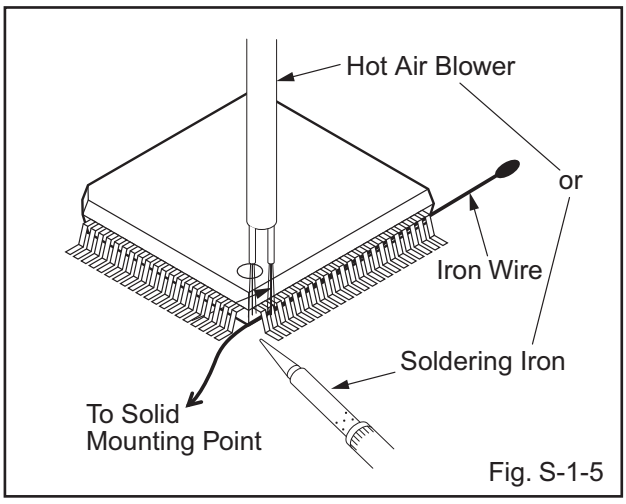


Fig. S-1-5

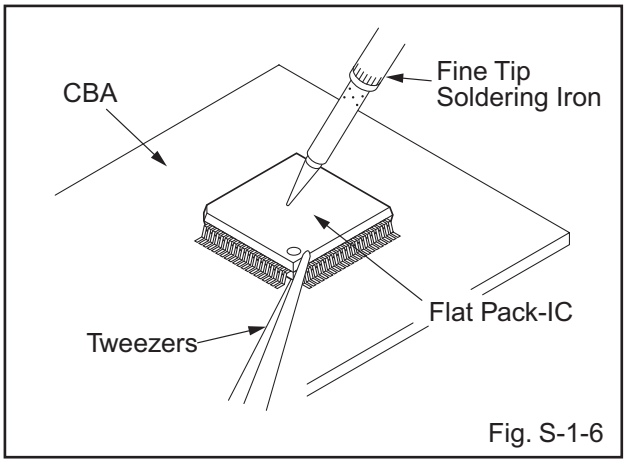


Fig. S-1-6

2. Installation

1. Using desoldering braid, remove the solder from the foil of each pin of the flat pack-IC on the CBA so you can install a replacement flat pack-IC more easily.
2. The "●" mark on the flat pack-IC indicates pin 1. (See Fig. S-1-7.) Be sure this mark matches the 1 on the PCB when positioning for installation. Then presolder the four corners of the flat pack-IC. (See Fig. S-1-8.)
3. Solder all pins of the flat pack-IC. Be sure that none of the pins have solder bridges.

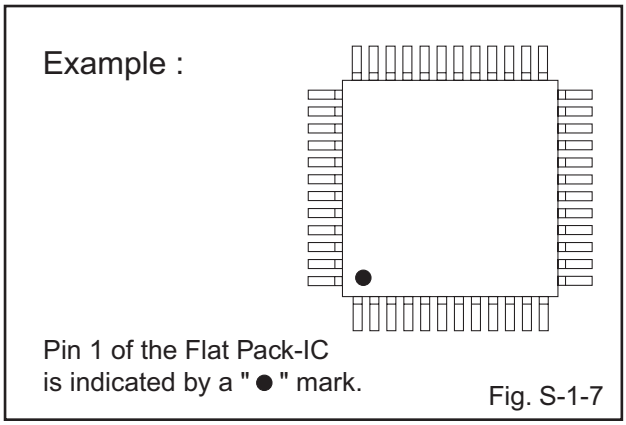


Fig. S-1-7

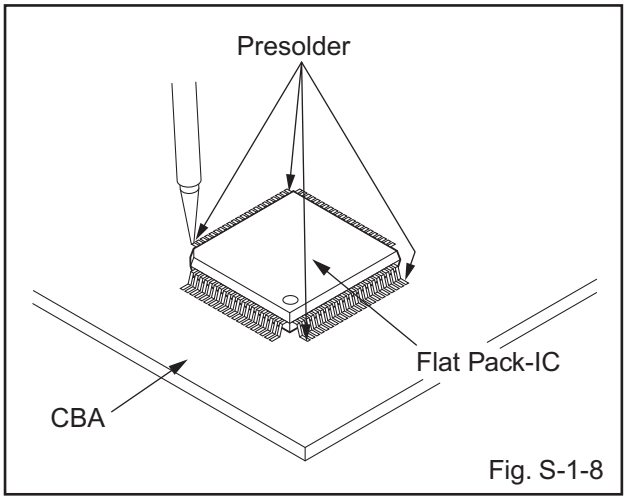


Fig. S-1-8

Instructions for Handling Semi-conductors

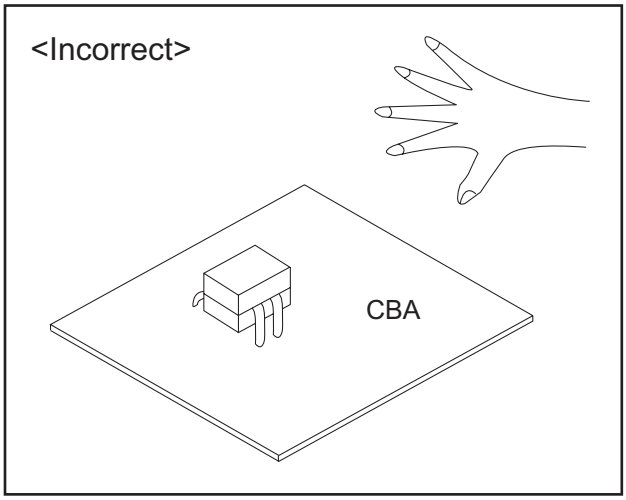
Electrostatic breakdown of the semi-conductors may occur due to a potential difference caused by electrostatic charge during unpacking or repair work.

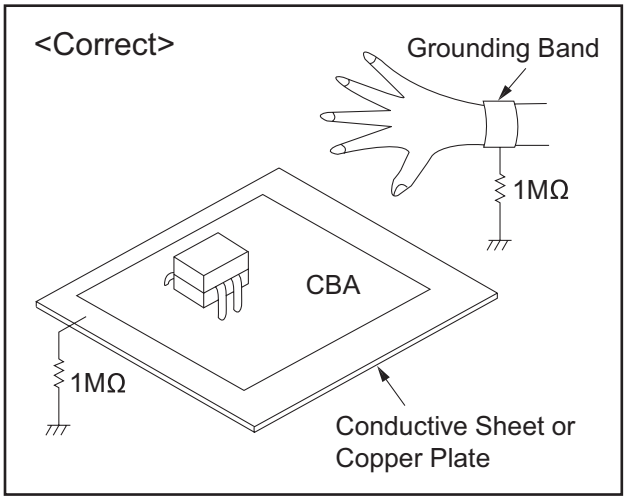
1. Ground for Human Body

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

2. Ground for Workbench

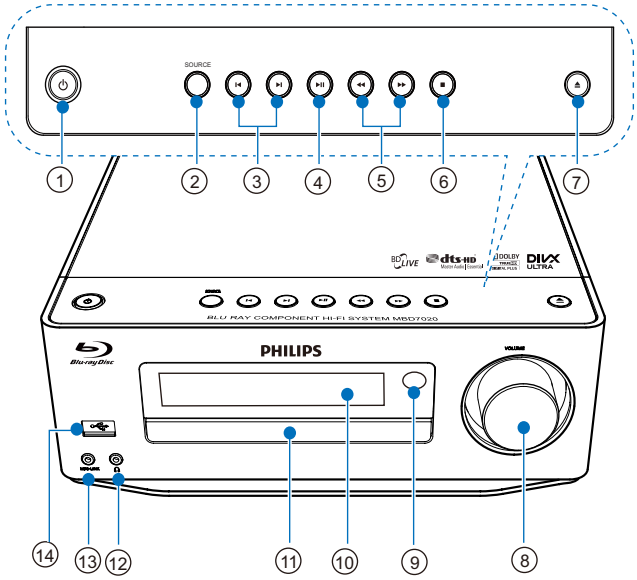
Be sure to place a conductive sheet or copper plate with proper grounding (1 MΩ) on the workbench or other surface, where the semi-conductors are to be placed. Because the static electricity charge on clothing will not escape through the body grounding band, be careful to avoid contacting semi-conductors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





*The following excerpt of the DFU/QSG serves as an introduction to the set. The Complete Direction for Use can be download in different languages from the internet site of Philips Customer care Center : www.support.philips.com

Overview of the main unit



① ⏻
- Turn on this product or switch to Eco Power standby mode.
- When EasyLink is enabled, press and hold for at least three seconds to turn all connected HDMI CEC compliant devices to standby.
- (Press and hold) switch between normal standby mode and Eco Power standby mode.

② SOURCE
- Select a source.

③ ⏮ / ⏭
- Skip to the previous/next track or radio station.
- Skip to the previous/next title or chapter.

④ ▶II
- Start or pause play.

⑤ ◀◀ / ▶▶
- Search backward or forward.
- Tune to a radio station.

⑥ ■
- Stop play.
- (Press and hold) Erase a program.

⑦ ⏏
- Open or close the disc compartment.

⑧ VOLUME
- Adjust volume.
- Adjust time.

⑨ IR sensor
- Detect signals from the remote control. Always point the remote control at the IR sensor.

⑩ Display panel

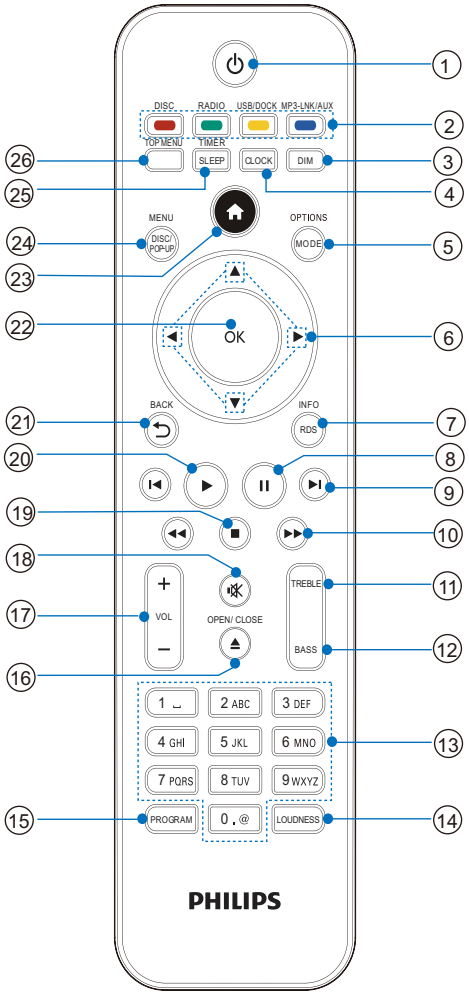
⑪ Disc compartment

⑫ 🎧
- Headphone socket.

⑬ MP3 LINK
- Connect to an external audio device.

⑭ •⟶
- Connectto a USB flash drive.

Remote control



Remote Control

① ⏻
- Turn on this product or switch to Eco Power standby mode.
- When EasyLink is enabled, press and hold for at least three seconds to turn all connected HDMI CEC compliant devices to standby.
- (Press and hold) switch between normal standby mode and Eco Power standby mode.

② Source and color buttons
- Select a source.
- BD-live: Select tasks or options.

③ DIM
- Select a brightness level for the display panel on the main unit.
- (Press and hold) turn on or off the LED light at the bottom of the unit and at the volume knob.

④ CLOCK
- Set the clock.
- Display the set clock.

⑤ MODE/OPTIONS
- Select repeat play modes.
- Select shuffle play modes.
- Access options for the current activity or selection.

⑥ ▲▼◄►
- Navigate through the menus.
- ◄►: Search forward or backward for a radio station.
- ▲▼: Tune to a radio station.

⑦ RDS/INFO (RDS function unavailable for this version)
- Display the current status or the disc information.
- Display the media information (data disc/USB device).

⑧ ⏸
- Pause play.

⑨ ⏮ / ⏭
- Skip to the previous or next title, chapter, or track.
- Skip to the previous/next title or chapter.

⑩ ◀◀ / ▶▶
- Search backward or forward.
- Tune to a radio station.

⑪ TREBLE
- Enable treble adjustment.

⑫ BASS
- Enable bass adjustment.

⑬ Alphanumeric buttons
- Select an item to play.
- Enter numbers/letters/text.

⑭ LOUDNESS
- Turn on or off automatic loudness adjustment.

⑮ PROGRAM
- Program radio stations.

⑯ ⏏ OPEN/CLOSE
- Open or close the disc compartment.

⑰ VOL +/-
- Adjust volume.
- Adjust time.
- Adjust the bass/treble level.

⑱ 🔇
- Mute or restore volume.

⑲ ■
- Stop play.

⑳ ▶
- Start or resume play.

㉑ ⮌ BACK
- Return to a previous display menu.

㉒ OK
- Confirm an entry or selection.

㉓ ⌂
- Access the home menu of this product.

㉔ DISC/POP-UP/MENU
- BD: Access or exit the pop-up menu.
- DVD: Access or exit the disc menu.

㉕ SLEEP/TIMER
- Set the sleep timer.
- Set the alarm timer.

㉖ TOP MENU
- BD: Display the top menu.
- DVD: Display the title menu.

3 Connect

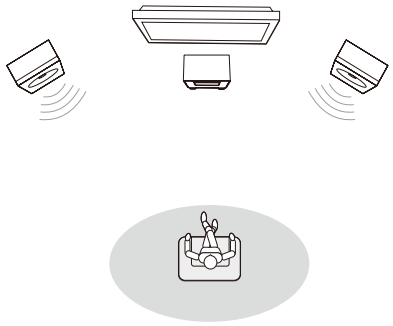
Make the following connections to use this product.

Preparations

1 Place the apparatus near to the TV.
2 Place the front left and right speakers at equal distance from the TV and at an angle of approximately 45 degrees from the listening position.

Note

- To avoidmagnetic interference or unwanted noise,never place this apparatus and speakers too close to any radiation devices.



Basic connections:
- Speakers
- Video
- Audio
- Power

Optional connections:
- Route audio to other devices
  - HDMI-compliant AV receiver/ amplifier
  - Multi-channel AV amplifier/receiver
  - DigitalAV amplifier/receiver
  - Analog stereo system
- FM antenna
- USB flash drive
- iPod/iPhone dock (compatible dock: DCK3060; not supplied)
- Wired/Wireless network

Note

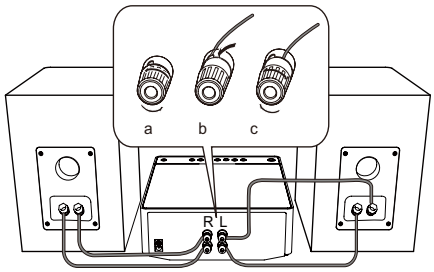
- Refer to the type plate at the back or bottom of the productfor identification and supply ratings.
- Before you make or change any connections, ensure that all the devices are disconnected from the power outlet.

Connect speakers

Note

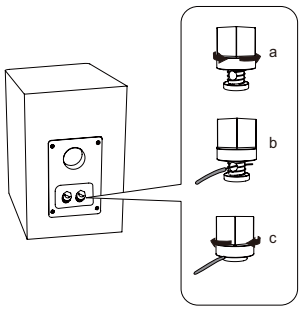
- Insert the stripped portion of each speaker wire into the socket completely.
- For optimal sound,use the supplied speakers only.
- Connect only speakers with impedance that is the same or higher than the supplied speakers.
- TheDEMOjack is only applicable to the demo unit that is not included in the apparatus. Do not attempt to connect any other device to the apparatus through this jack.

For the main unit side:



1 Unscrew the speaker connectors.
2 Insert fully the red end of a speaker cable into the left red (+) connector.
3 Screwthe left red (+) connectorto secure the cable.
4 Insert fully the silver end of a speaker cableinto the left black(-) connector.
5 Screwthe left black(-) connectorto secure the cable.
6 Repeat steps 2-5 to insert the other speaker cable into the right connectors.

For the speaker side:



1 Unscrew the speaker connectors.
2 For the left speaker,identify the speaker cable that is connected to the left connectors on the main unit.
3 Insert fully the red end of the speaker cableinto the red (+) connector.
4 Screwthe red (+) connectorto secure the cable.

5 Insert fully the silver end of the speaker cable into the black(-) connector.

6 Screw the black(-) connector to secure the cable.

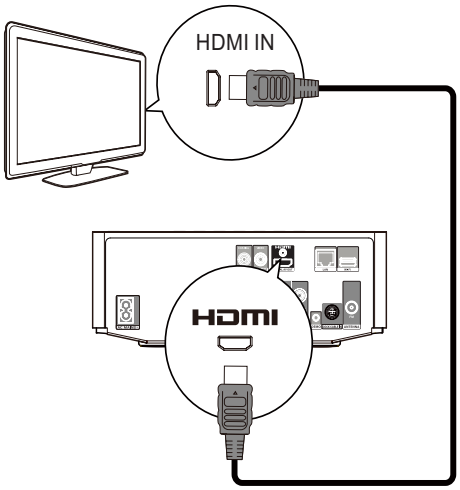
7 Repeat steps 2-6 for the right speaker

Connect video/audio cables

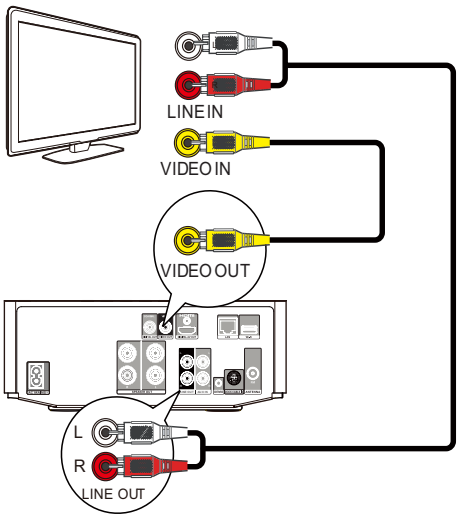
Select the best video connection that the TV can support.

- Option 1: Connect to the HDMI jack (for an HDMI, DVI or HDCP-compliant TV).
- Option 2: Connect to the composite video jack (for a standard TV).

Option 1: Connect to the HDMI jack



Option 2: Connect to the composite video jack



1 Connect a composite video cable to:
- the VIDEO jack on this product.
- the VIDEO input jack on the TV.

2 Connect the audio cables to:
- the LINE OUT/AUDIO-L/R jacks on this product.
- the AUDIO input jacks on the TV.

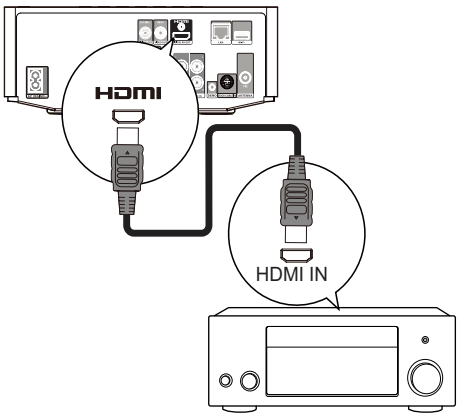
Tip

- The video input jack on the TV might be labeled as A/V IN, VIDEO IN, COMPOSITE or BASEBAND.

Route audio to other devices

You can route the audio from this product to other devices.

Connect to an HDMI-compliant AV receiver/amplifier

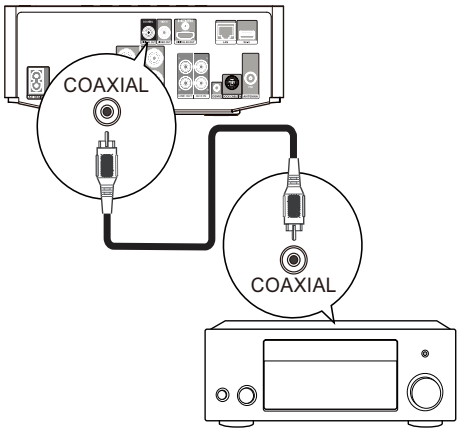


1 Connect an HDMI cable (not supplied) to:
- the HDMI jack on this player.
- the HDMI jack input jack on the device.

Tip

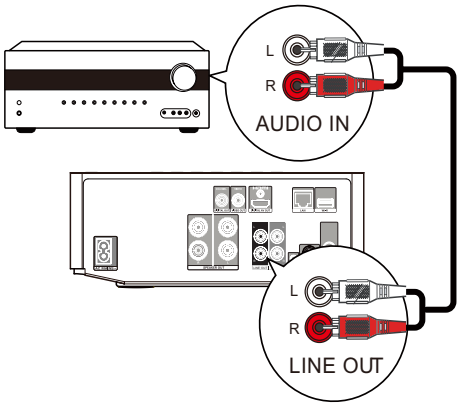
- The HDMI connection provides best audio quality.

Connect to a digital AV amplifier/ receiver



1 Connect a coaxial cable (not supplied) to:
- the COAXIAL jack on this product.
- the COAXIAL/DIGITAL input jack on the device.

Connect an analogue stereo system

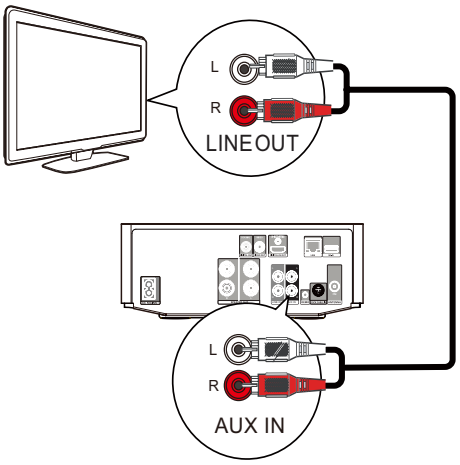


1 Connect the audio cables to:
- the LINE OUT/AUDIO-L/R jacks on this product.
- the AUDIO input jacks on the device.

Route audio from other devices

Route audio from TV or other devices

Use this product to play audio from the TV or other device such as a cable box.

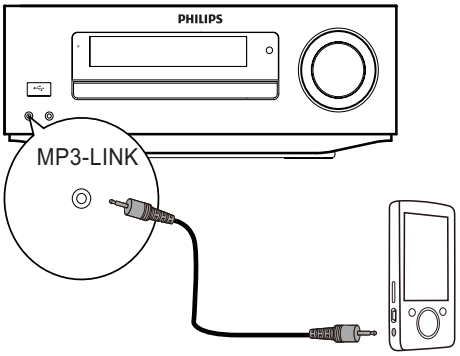


Tip

- Press MP3 LINK/AUX to select the audio output of your connection.

Listen to an audio player

You can listen to an audio player through this unit.



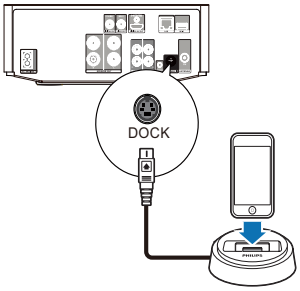
- Connect the supplied MP3 Link cable to the MP3-LINK socket and to the headphone socket on the audio player.

Tip

- Press MP3 LINK/AUX to select the audio output of your connection.

Connect an iPod / iPhone dock

With the connected iPod/iPhone dock,you can charge or listen to music from your iPod/ iPhone through this unit.



- Connect a dock(not supplied) to the DOCK socket on this unit.

Tip

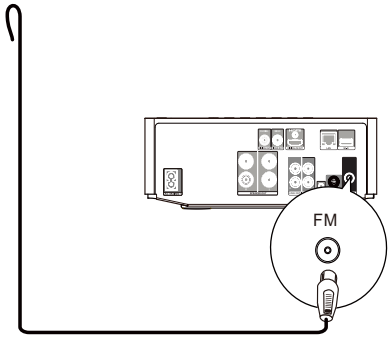
- Press USB / DOCK to select the audio output of your connection.

Connect FM antenna

Tip

- For optimal reception, fully extend and adjust the position of the antenna.
- For better FM stereo reception, connect an outdoor FM antenna to the FM jack.
- The unit does not support MW radio reception.

1 Connect the supplied FM wire antenna to the FM socket on the unit.



Connect a USB device

1 Connect a USB device to the ⇠ (USB) jack on the front panel of this product.

Note

- Press ⌂, and select [Browse USB] in the menu to access the content and play the files.
- Connect a USB device only to the ⇠ jack on the front panel of this product.
- Philips does not guarantee compatibility with all USB devices.

Connect a network

With a wired or wireless connection (see “Get started”> “Setup a network”),you can connect this product to the Internet for software update/BD Live.

Note

- Internet access to Philips website for software update may not be allowed,depending on the router you use or the Internet Service Provider’s policy. Contact your Internet Service Provider for more information.

Connect power

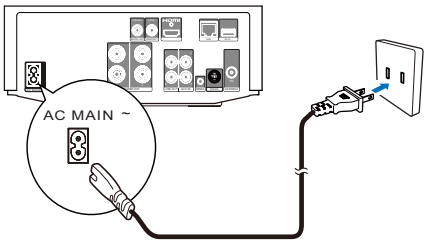
Caution

- Risk of product damage! Ensure that the power supply voltage corresponds to the voltage printed on the back of the unit.
- Before connecting the AC power cord, ensure you have completed all other connections.

Note

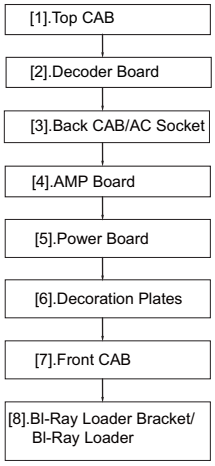
- The type plate is located on the bottom of the product.

1 Connect the AC power cable to:
- this product.
- the wall socket.
- This product is ready to be set up for use.



1. Disassembly Flowchart

This flowchart indicates the disassembly steps to gain access to item(s) to be serviced. When reassembling, follow the steps in reverse order. Bend, route, and dress the cables as they were originally.



2. Disassembly Method

ID/Loc. NO.	Part	Removal		
		Fig.NO.	Remove/Unhook /Unlock/Release/ Unplug/Desolder	Note
[1]	Top CAB	D1	7(A01) D3*12 BA	
[2]	Decoder Board	D2	2(A02)D3X8 PA 3(A03)D3X8 BA	
[3]	Back CAB AC Socket	D3	5 (A04) D3X5 PMTT 1 (A05) D3X8 BA 2 (A06) D3X8 PA	
[4]	AMP Board	D4	1 (A07) D3X8 BM 1 (A08) D3X5 PMTT	
[5]	Power Board	D5	1 (A09) D3X8 BA	
[6]	Decoration Plates	D6	2 (A10) D3X8 FA	
[7]	Front CAB	D7		
[8]	Bl-Ray Loader Bracket/Bl-Ray Loader	D8	4 (A011) D3X5 PM 4 (A012) D3X12 BA	

Note:

(1) Identification (location) No. of parts in the figures

(2) Name of the part

(3) Figure Number for reference

(4) Identification of parts to be removed, unhooked, unlocked, released, unplugged, unclamped, or desoldered.
Axx = Screw, CNxx/Jxx/CONxx = Connector
D3.5X12BA is specification of screw.

* = Unhook, Unlock, Release, Unplug, or Desolder

e.g. 7(A01) = seven Screws

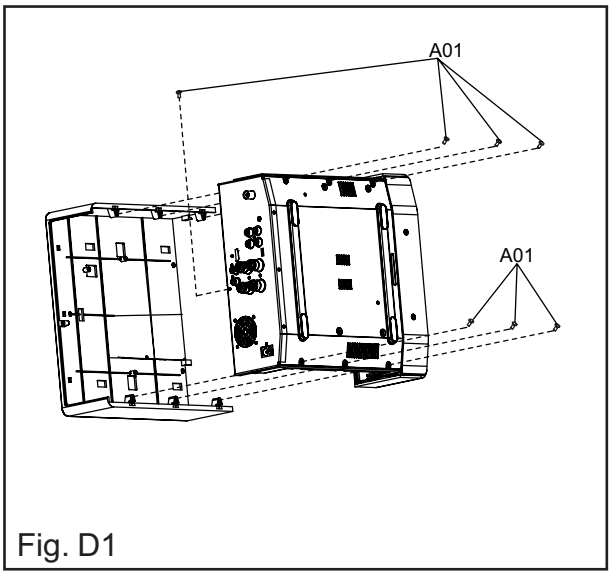


Fig. D1

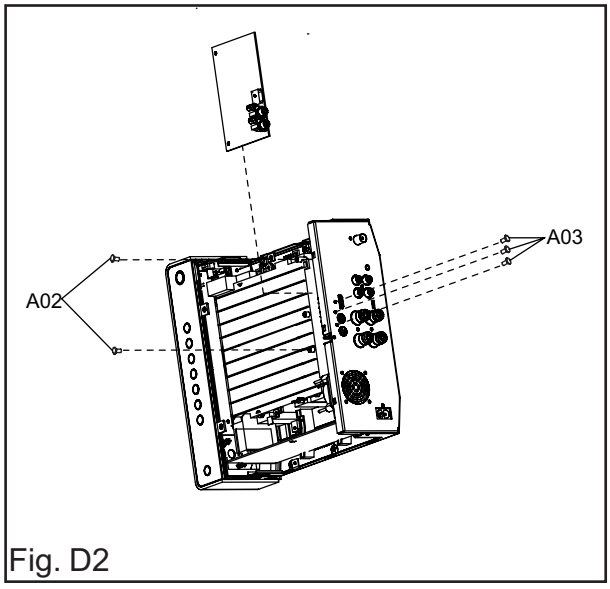


Fig. D2

Cabinet Disassembly Instructions

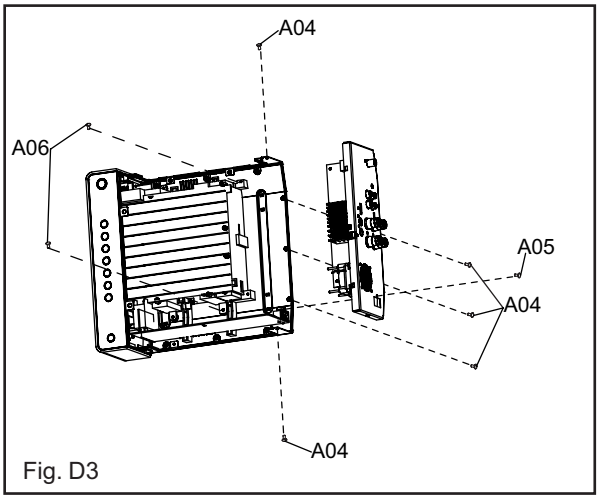


Fig. D3

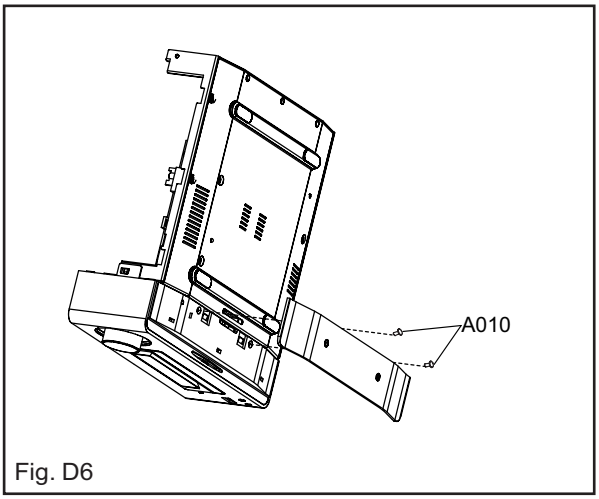


Fig. D6

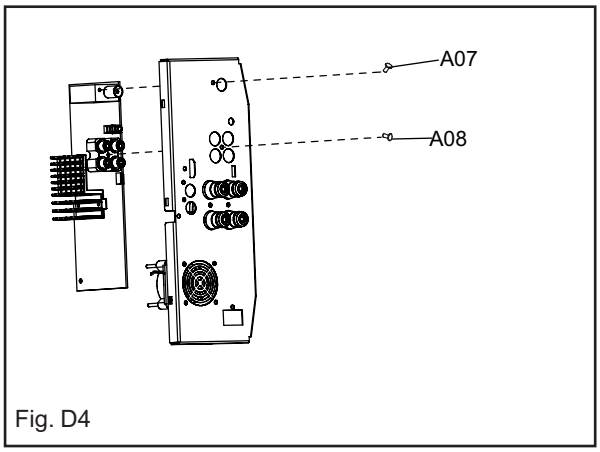


Fig. D4

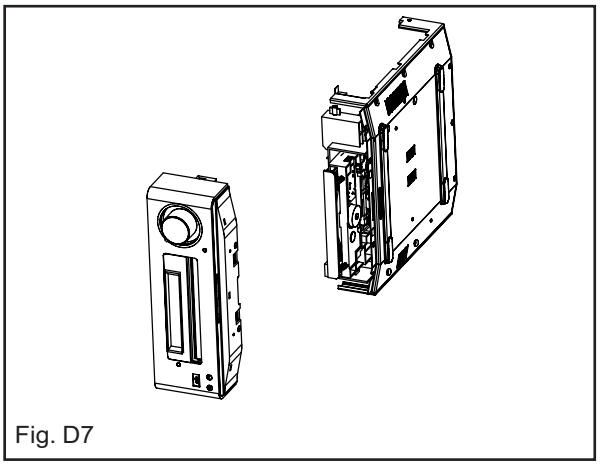


Fig. D7

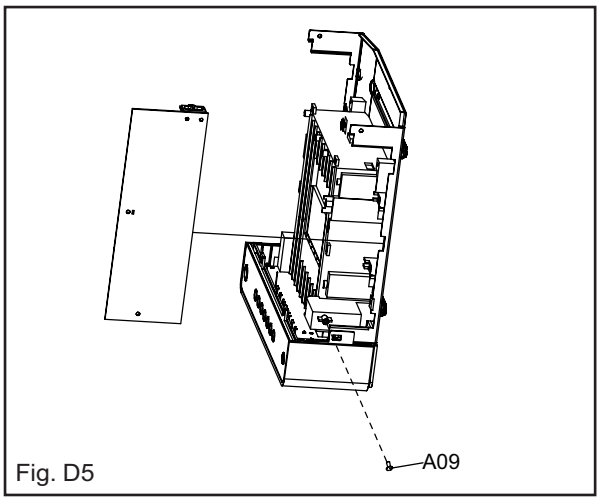


Fig. D5

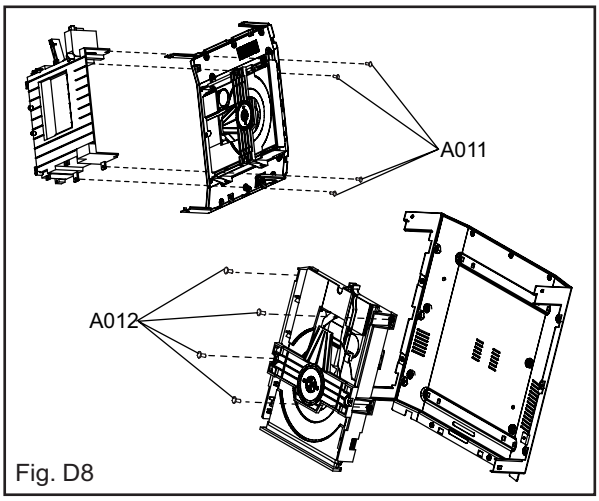
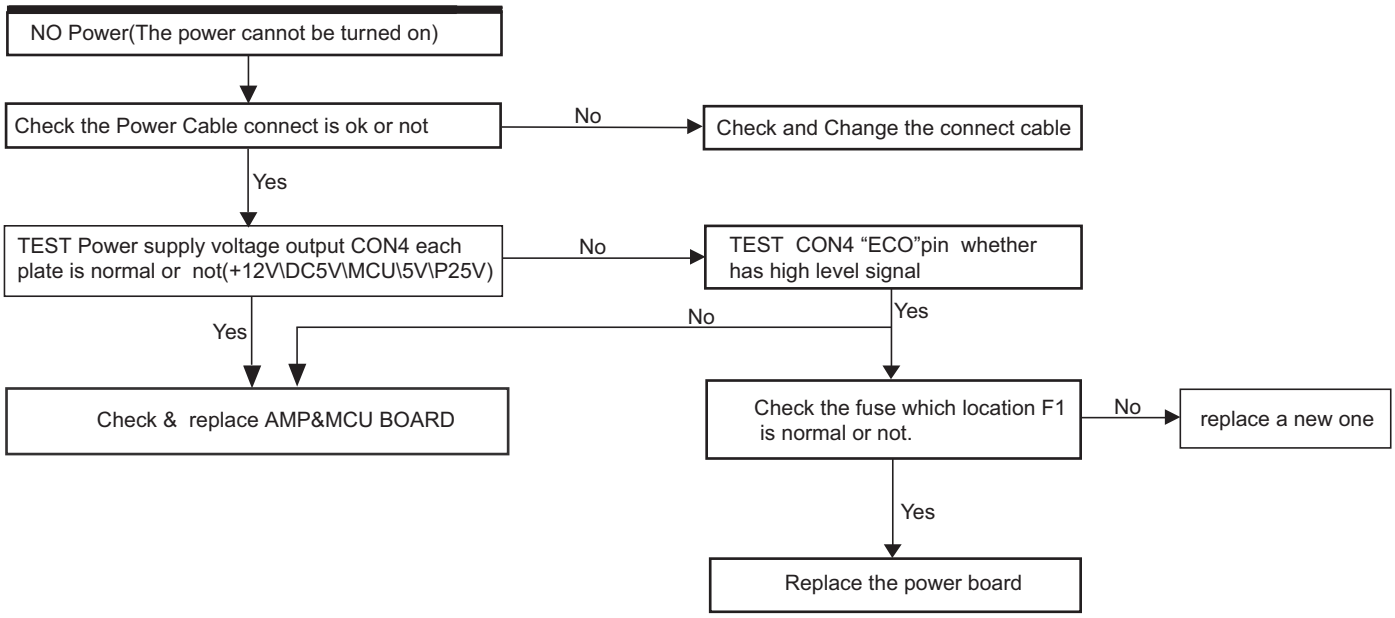


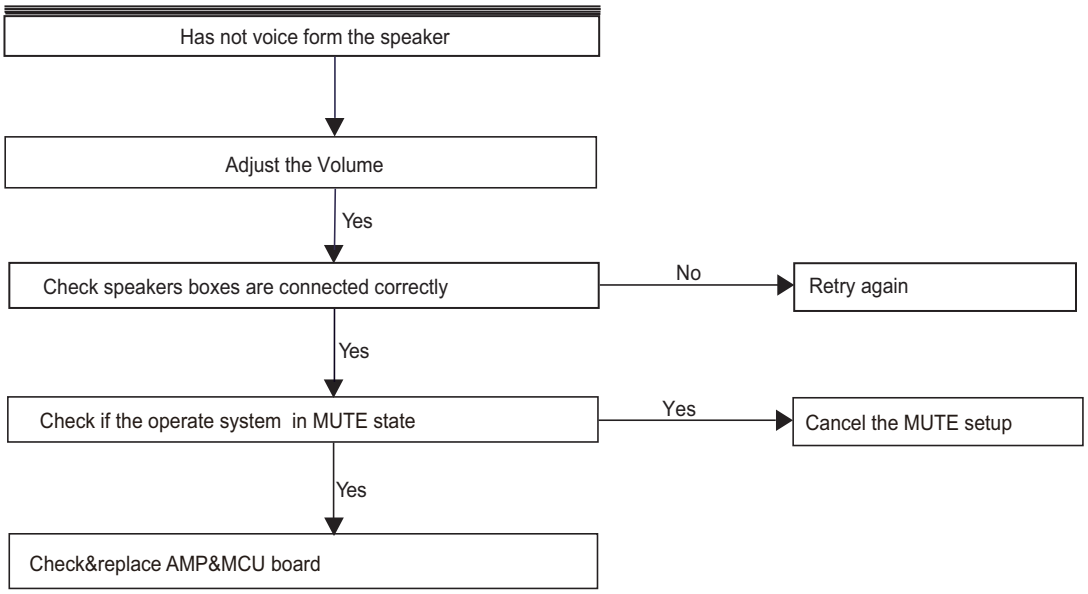
Fig. D8

Troubleshooting

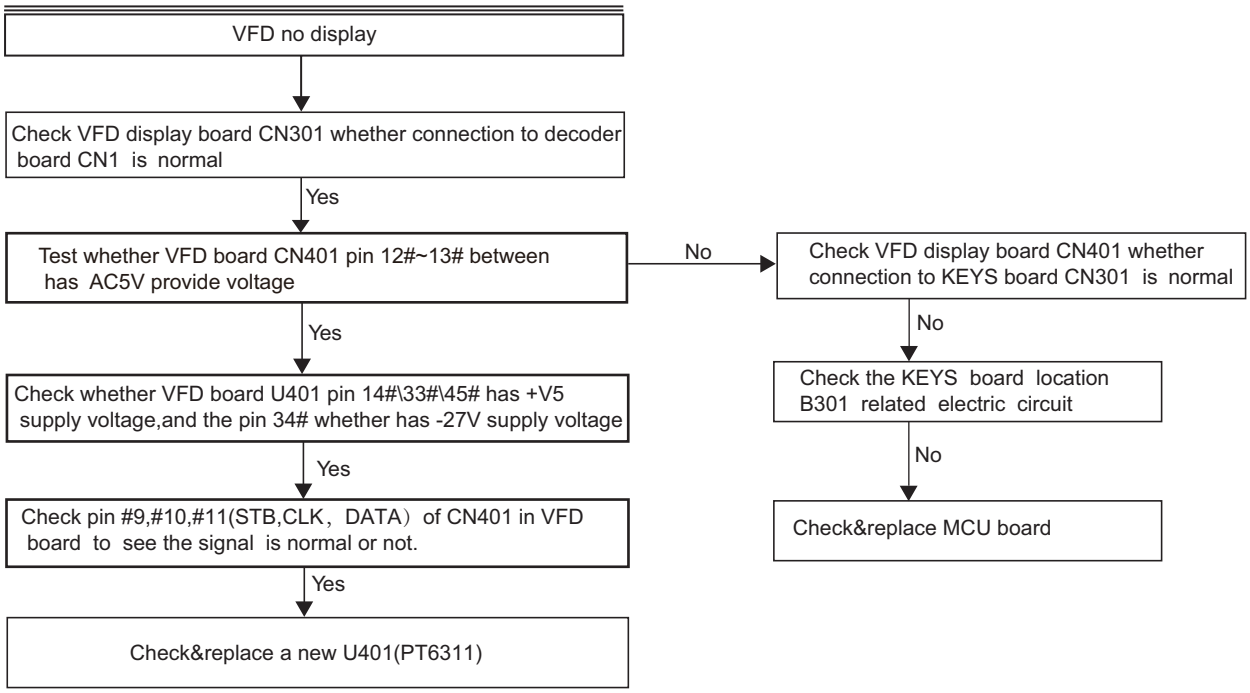
FLOW CHART NO.1



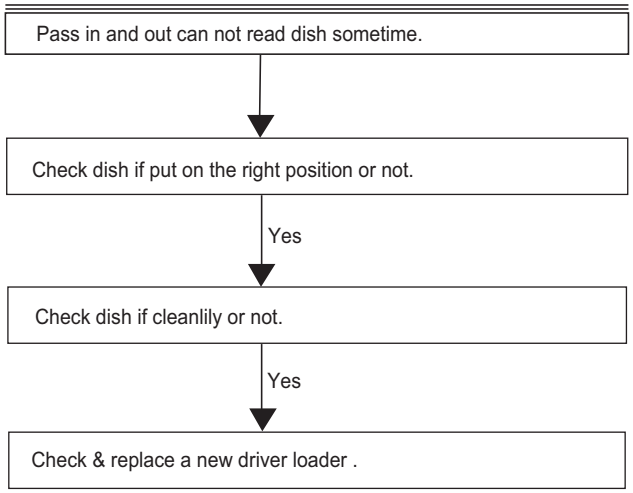
FLOW CHART NO.2



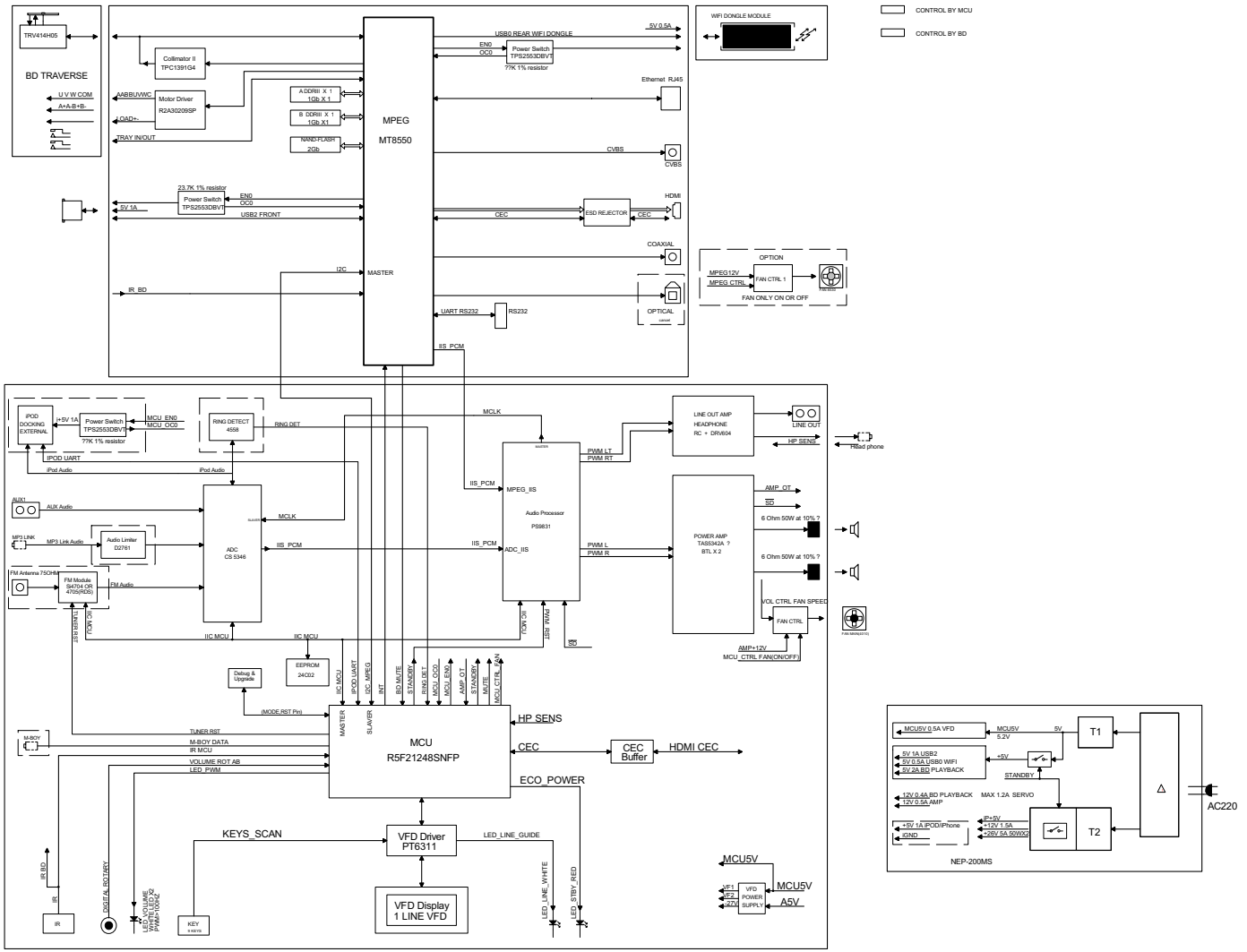
FLOW CHART NO.3



FLOW CHART NO.4

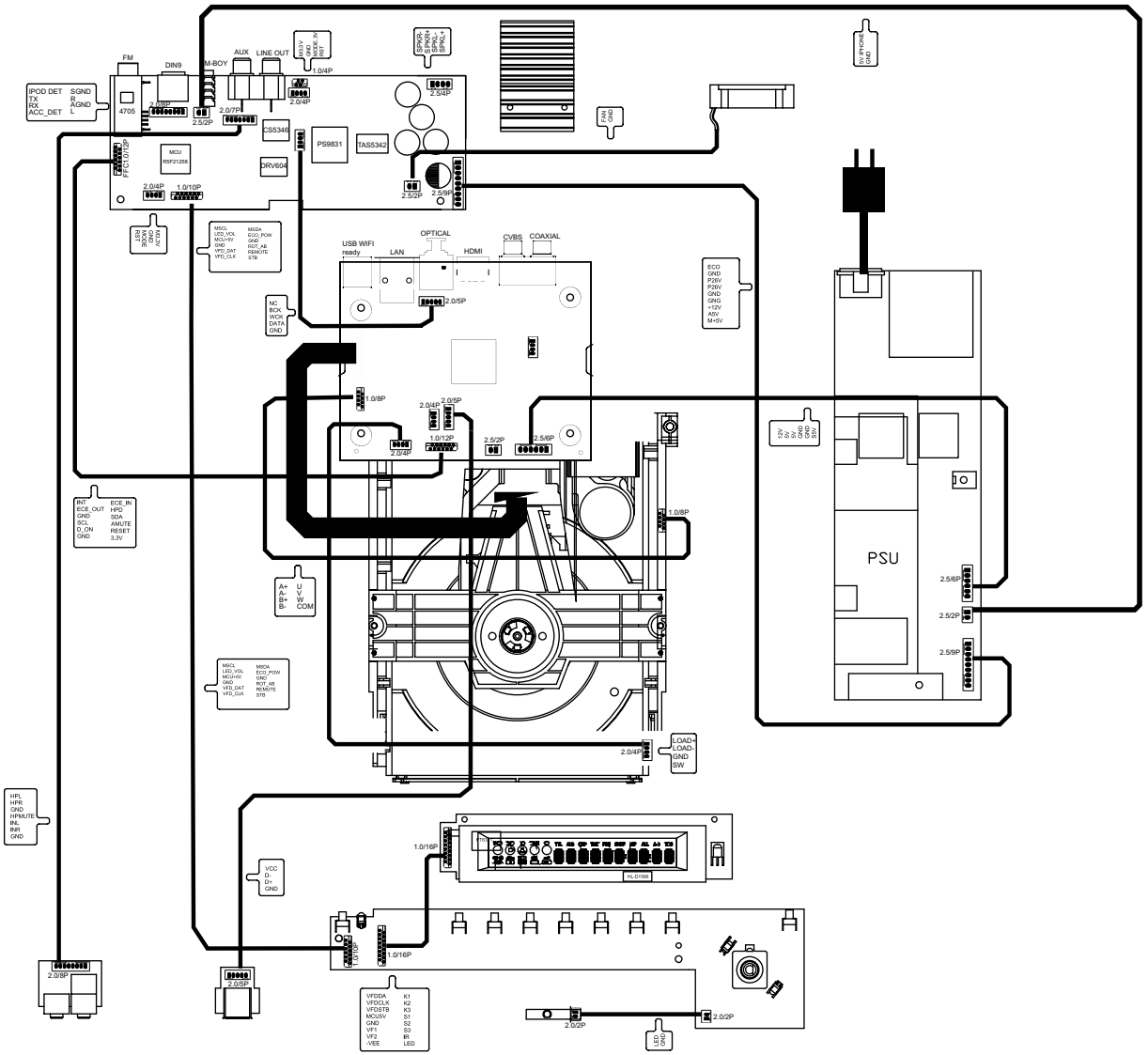


Block Diagram



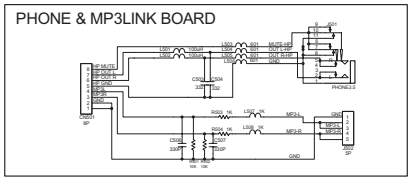
10-1

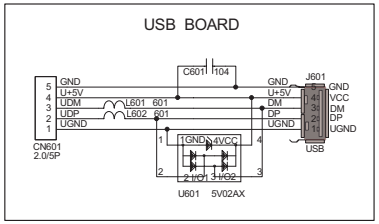
Wiring Diagram

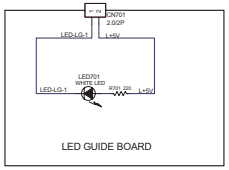


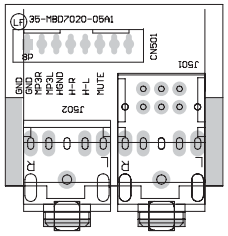
11-1

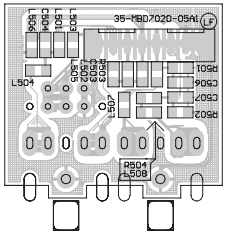
Headphone & MP3 Link and USB、LED Board -- Circuit and Layout Diagram

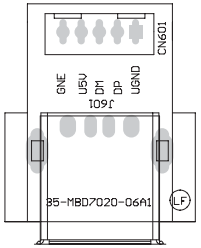


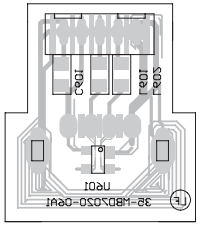


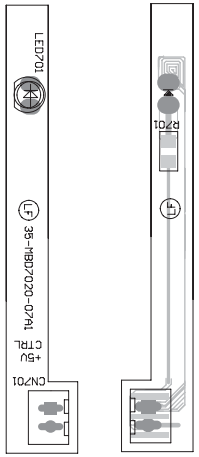




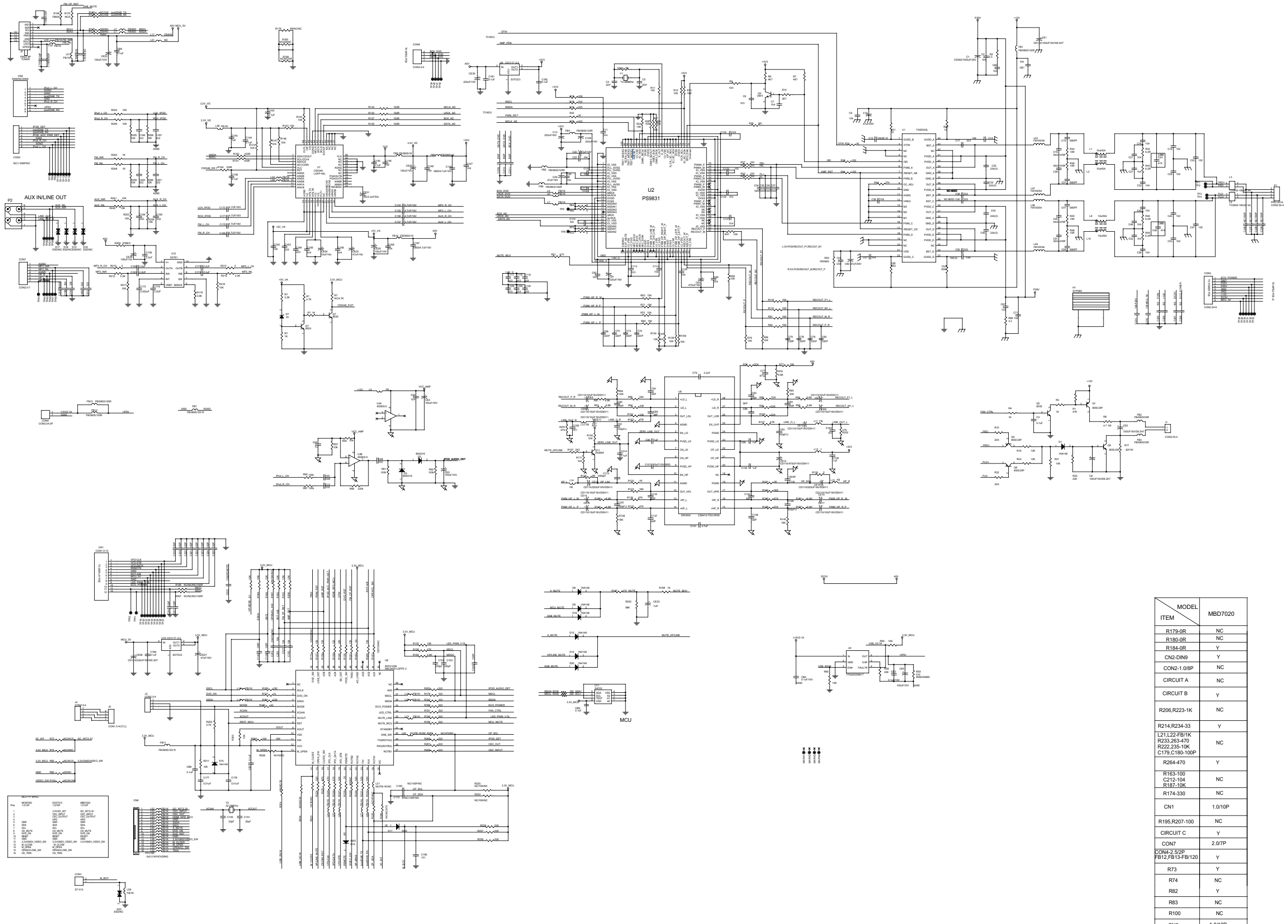








Amp Board -- Circuit Diagram

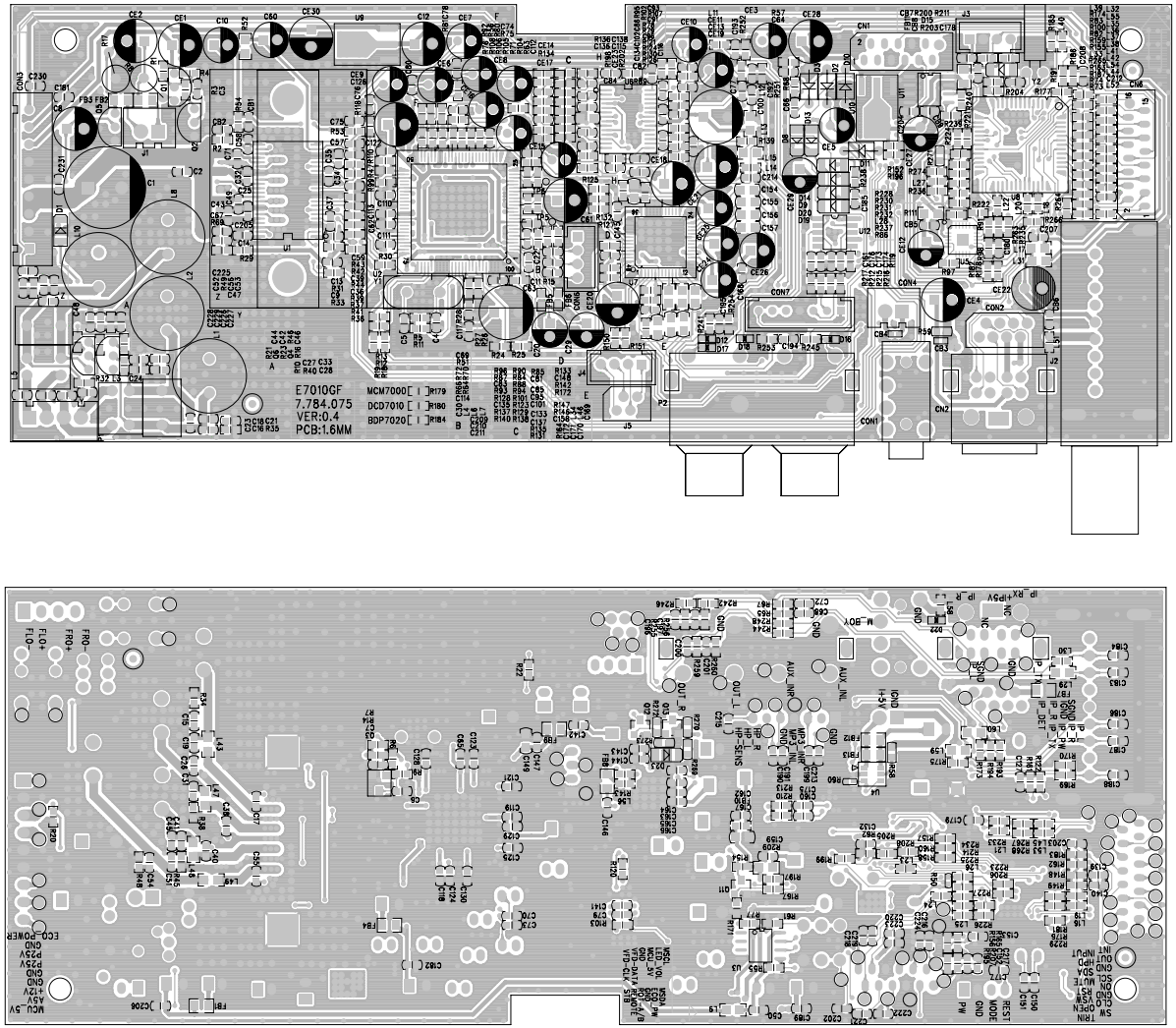


MODEL / ITEM	MBD7020
R179-0R	NC
R180-0R	NC
R184-0R	Y
CN2-DIN9	Y
CON2-1.0/8P	NC
CIRCUIT A	NC
CIRCUIT B	Y
R206,R223-1K	NC
R214,R234-33	Y
L21,L22-FB/1K R233,263-470 R222,235-10K C179,C180-100P	NC
R264-470	Y
R163-100 C212-104 R187-10K	NC
R174-330	NC
CN1	1.0/10P
R195,R207-100	NC
CIRCUIT C	Y
CON7	2.0/7P
CON4-2.5/2P FB12,FB13-FB/120	Y
R73	Y
R74	NC
R82	Y
R83	NC
R100	NC
CN6	1.0/12P

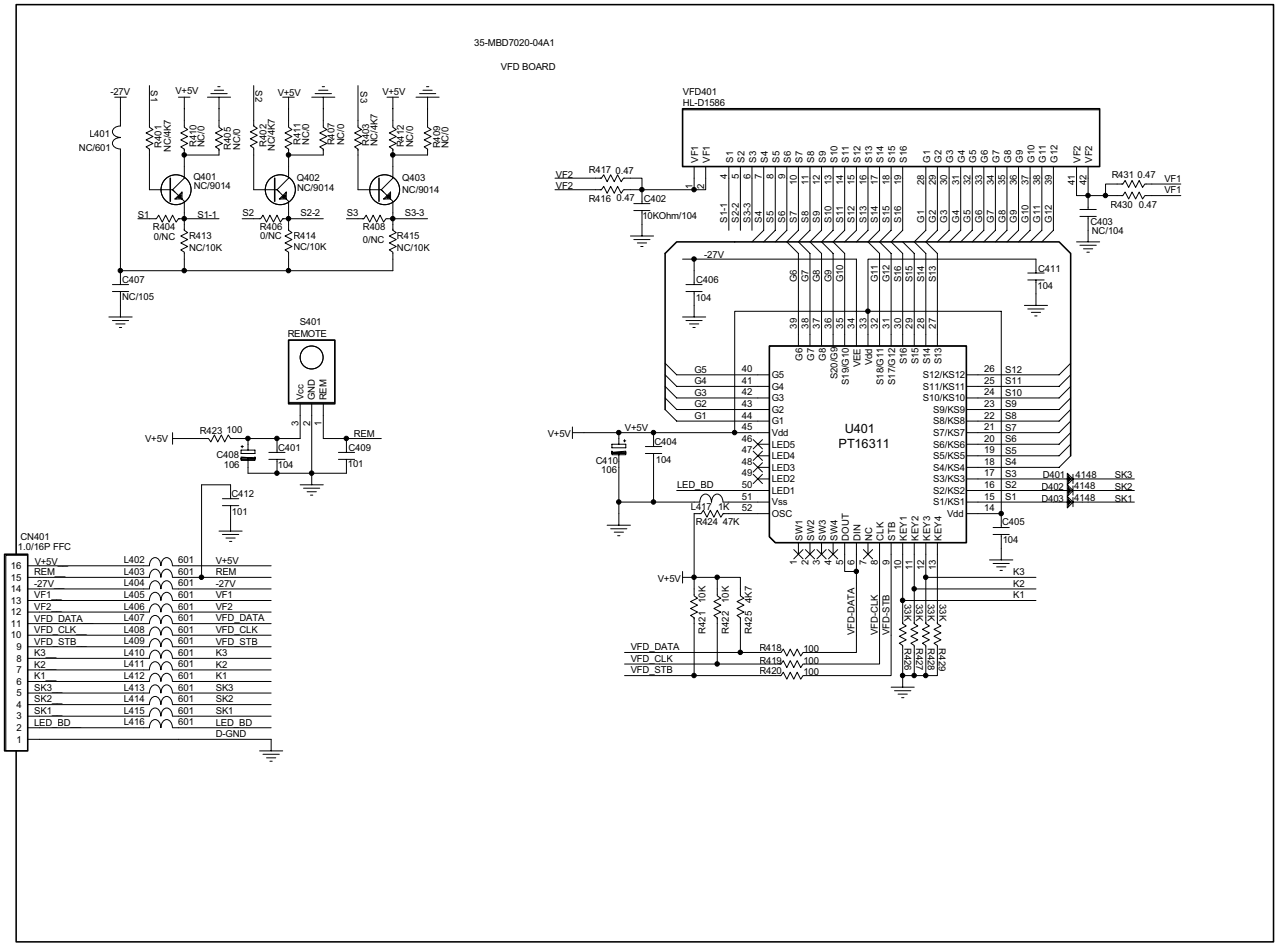
FUNCTION / ITEM	FM	DAB	NOTE
R169-0R	Y	NC	FM-RST
R170-0R	NC	Y	DAB MUTE
R173,175-330	Y	NC	FM-I2C
R193,194-330	NC	Y	DAB-UART TX RX
L17-FB600	Y	Y	
L31-FB600	NC	NC	

12-2

AMP Board -- Layout Diagram

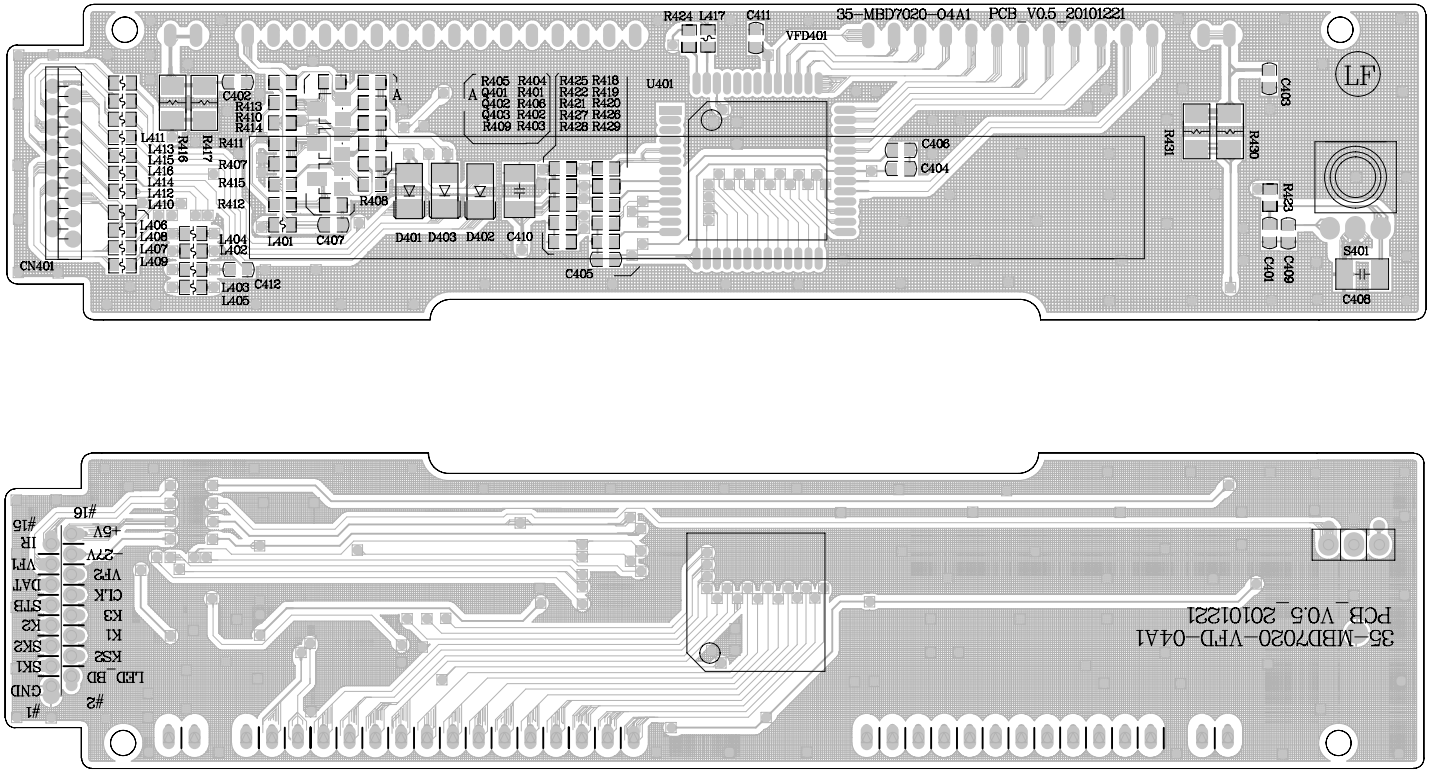


12-3

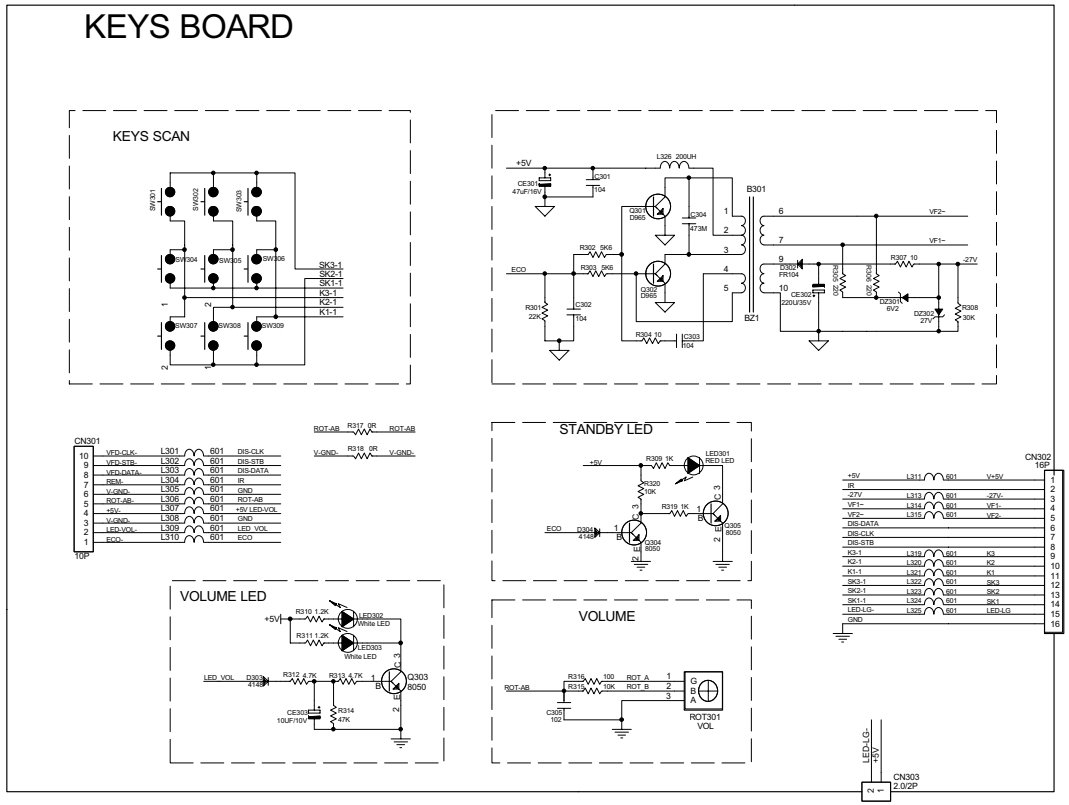

35-MBD7020-04A1
VFD BOARD
U401
PT16311
VFD401
HL-D1586
S401
REMOTE
CN401
1.0/16P FFC

12-4

Display Board -- Layout Diagram

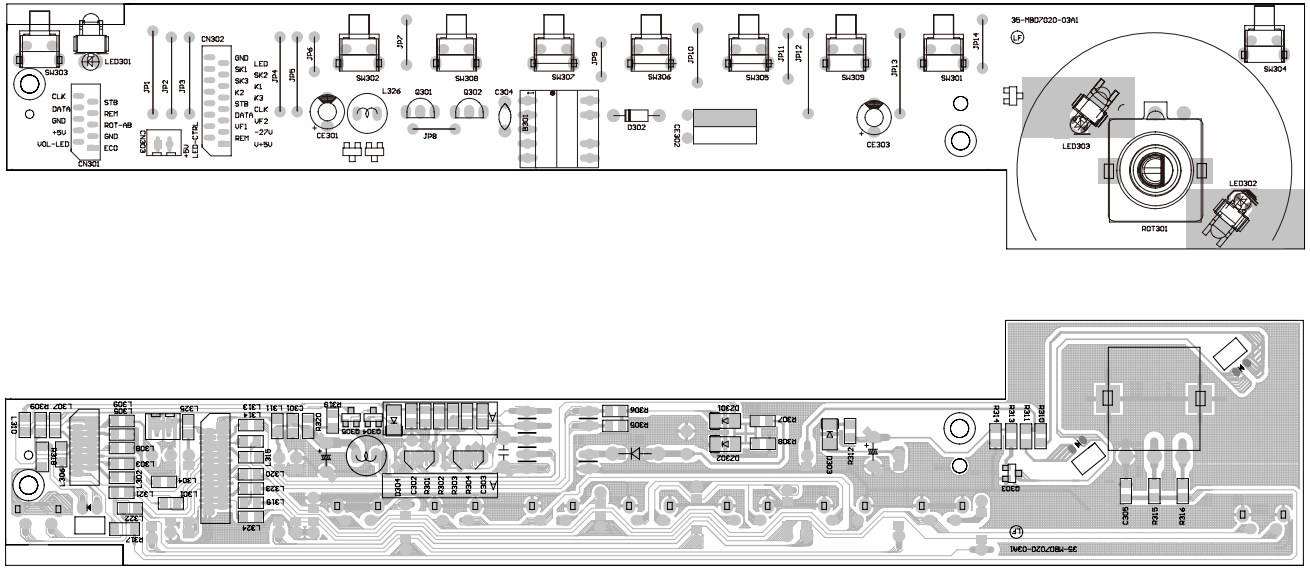


12-5

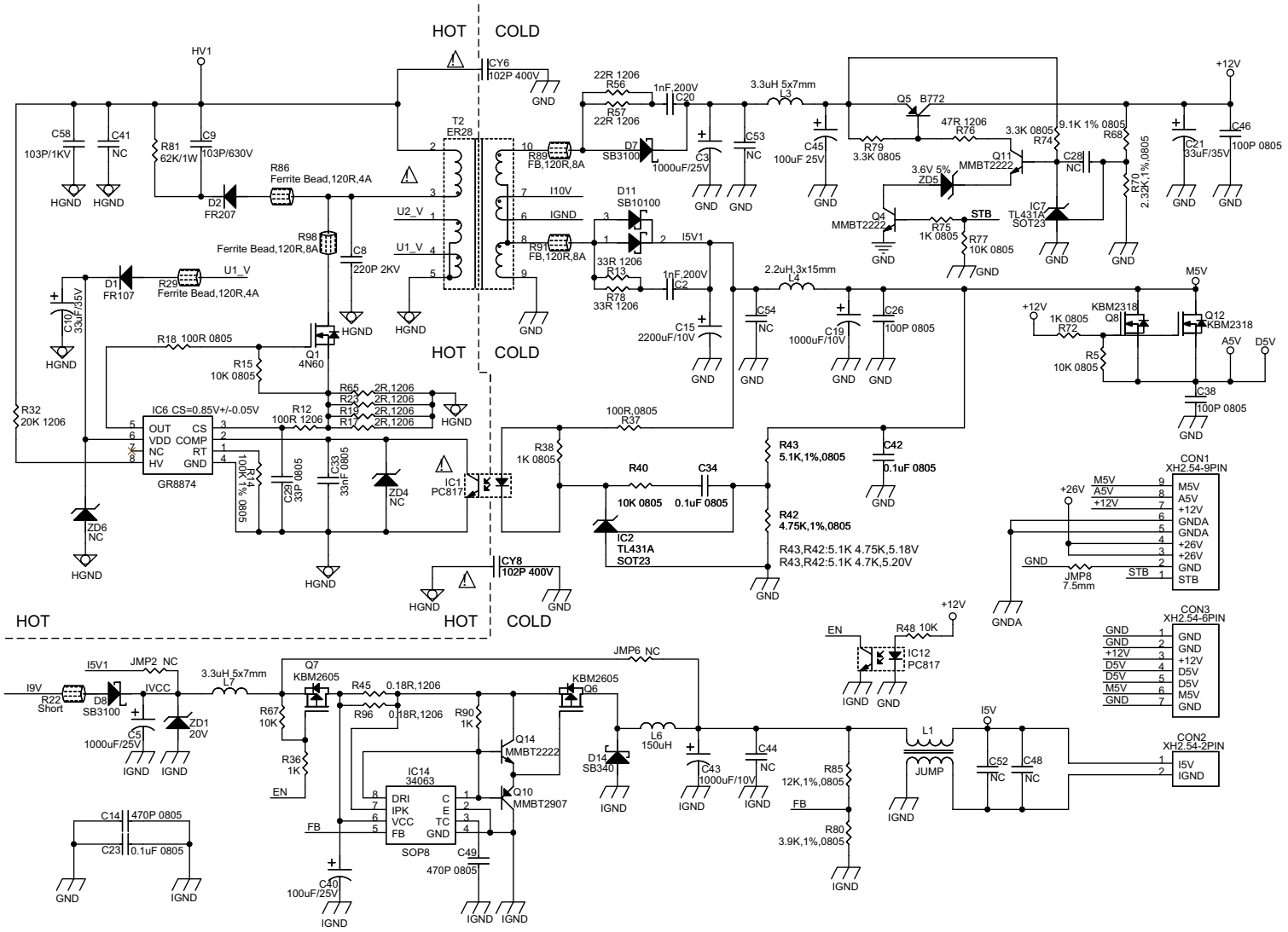

KEYS BOARD
KEYS SCAN
SW301
SW302
SW303
SW304
SW305
SW306
SW307
SW308
SW309
SK3-1
SK2-1
SK1-1
K3-1
K2-1
K1-1
+5V
L326 200UH
CE301 47uF/16V
C301 104
Q307 D965
C304 473M
B301
VF2-
VF1-
ECO
R302 6K8
R303 6K8
Q302 D965
R307 10
-27V
D302 FR104
R305 20
R306 5K1
CE302 220U/35V
DZ301 6V2
DZ302 27V
R308 30K
R301 22K
C302 104
R304 10
C303 104
BZ1
CN301
VFD-CLK-
VFD-STB-
VFD-DATA-
REM-
V-GND-
ROT-AB-
+5V-
V-GND-
LED-VOL-
ECO-
L301 L302 L303 L304 L305 L306 L307 L308 L309 L310
601
DIS-CLK
DIS-STB
DIS-DATA
IR
GND
ROT-AB
+5V LED-VOL
GND
LED_VOL
ECO
10P
ROT-AB R317 0R ROT-AB
V-GND- R318 0R V-GND-
STANDBY LED
+5V
R309 1K
LED301 RED LED
R320 10K
R319 1K
ECO
D304 4148
Q305 8050
Q304 8050
CN302 16P
+5V L311 601 V+5V
IR
-27V L313 601 -27V-
VF1- L314 601 VF1-
VF2- L315 601 VF2-
DIS-DATA
DIS-CLK
DIS-STB
K3-1 L319 601 K3
K2-1 L320 601 K2
K1-1 L321 601 K1
SK3-1 L322 601 SK3
SK2-1 L323 601 SK2
SK1-1 L324 601 SK1
LED-LG- L325 601 LED-LG
GND
VOLUME LED
+5V
R310 1.2K
R311 1.2K
LED302 White LED
LED303 White LED
LED_VOL
D303 4148
R312 4.7K
R313 4.7K
Q303 8050
CE303 10UF/10V
R314 47K
VOLUME
ROT-AB
R316 100
R315 10K
ROT A
ROT B
C305 102
ROT301 VOL
LED-LG-
+5V
CN303 2.0/2P

12-6

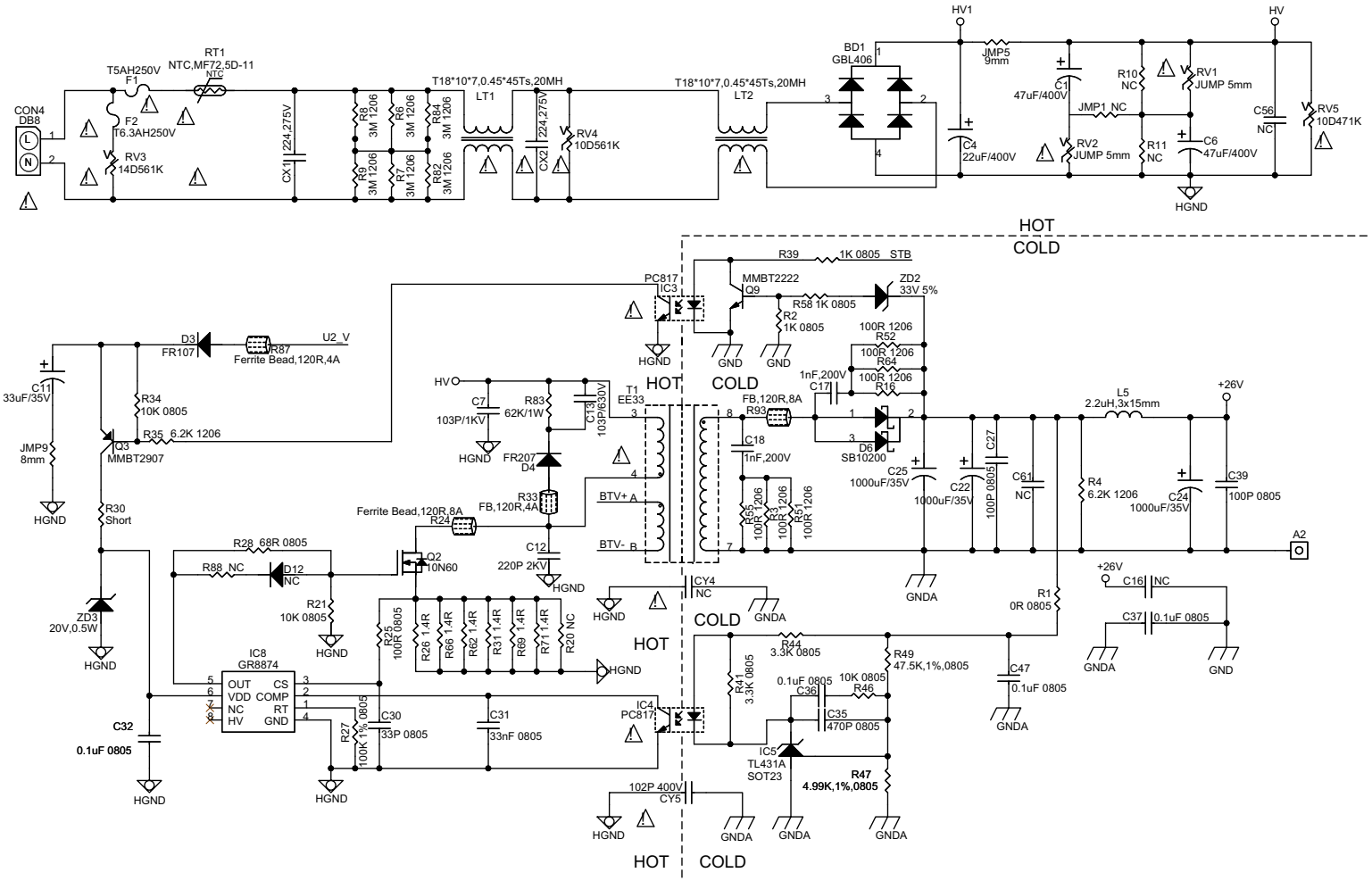
Key Board -- Layout Diagram



12-7

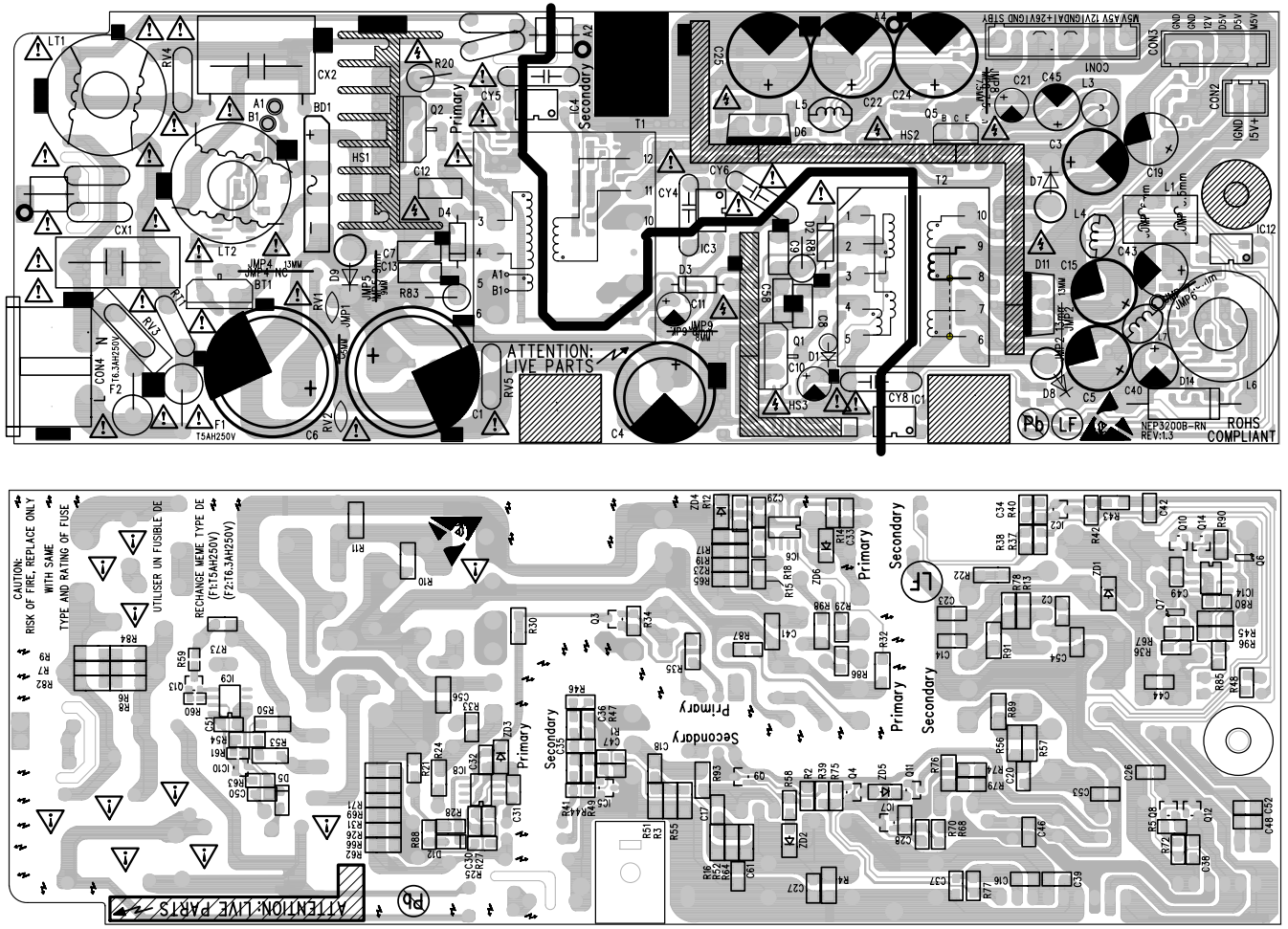

HOT
COLD
HV1
T2
ER28
CY6
102P 400V
GND
22R 1206
R56
22R 1206
R57
1nF 200V
C20
3.3uH 5x7mm
L3
+12V
Q5 B772
47R 1206
R76
3.3K 0805
R74
9.1K 1% 0805
R68
C46
100P 0805
C21
33uF/35V
C58
103P/1KV
C41
NC
R81
62K/1W
C9
103P/630V
D2
FR207
R86
Ferrite Bead,120R,4A
HGND
D7
SB3100
C3
1000uF/25V
C53
NC
C45
100uF 25V
R75
3.3K 0805
3.6V 5%
ZD5
MMBT2222
Q11
C28
NC
R70
2.32K,1%,0805
IC7
TL431A
SOT23
STB
Q4
MMBT2222
R75
1K 0805
R77
10K 0805
U2_V
U1_V
I10V
IGND
D11
SB10100
I5V1
R98
Ferrite Bead,120R,8A
C8
220P 2KV
R91
FB,120R,8A
R89
FB,120R,8A
33R 1206
R13
R78
33R 1206
1nF,200V
C2
2.2uH,3x15mm
L4
M5V
D1
FR107
R29
Ferrite Bead,120R,4A
C10
33uF/35V
R18 100R 0805
Q1
4N60
R15
10K 0805
C15
2200uF/10V
C54
NC
C19
1000uF/10V
C26
100P 0805
KBM2318
Q8
Q12
KBM2318
R72
1K 0805
R5
10K 0805
A5V
D5V
C38
100P 0805
R65 2R,1206
R2 2R,1206
R14 2R,1206
R17 2R,1206
R32
20K 1206
IC6 CS=0.85V+/-0.05V
OUT CS
VDD COMP
NC RT
HV GND
GR8874
R12
100R 1206
100R,0805
R37
R38
1K 0805
R40
10K 0805
C34
0.1uF 0805
R43
5.1K,1%,0805
C42
0.1uF 0805
R42
4.75K,1%,0805
IC2
TL431A
SOT23
R43,R42:5.1K 4.75K,5.18V
R43,R42:5.1K 4.7K,5.20V
100K 1% 0805
C29
33P 0805
C30
33nF 0805
ZD4
NC
IC1
PC817
ZD6
NC
CON1
XH2.54-9PIN
+26V
M5V
A5V
+12V
GNDA
GNDA
+26V
+26V
GND
STB
JMP8
7.5mm
CY8
102P 400V
HOT
COLD
I5V1
JMP2 NC
3.3uH 5x7mm
L7
I9V
R22
Short
D8
SB3100
IVCC
C5
1000uF/25V
ZD1
20V
IGND
Q7
KBM2605
R45
0.18R,1206
R96
0.18R,1206
JMP6 NC
KBM2605
Q6
R67
10K
R36
1K
EN
R90
1K
Q14
MMBT2222
Q10
MMBT2907
IC14
34063
DRI C
IPK E
VCC TC
FB GND
SOP8
FB
C14
470P 0805
C23
0.1uF 0805
C40
100uF/25V
C49
470P 0805
D14
SB340
L6
150uH
C43
1000uF/10V
C44
NC
R85
12K,1%,0805
R80
3.9K,1%,0805
L1
JUMP
I5V
C52
NC
C48
NC
CON2
XH2.54-2PIN
I5V
IGND
EN
R48 10K
IC12
PC817
CON3
XH2.54-6PIN
GND
GND
+12V
D5V
D5V
M5V
GND

12-8

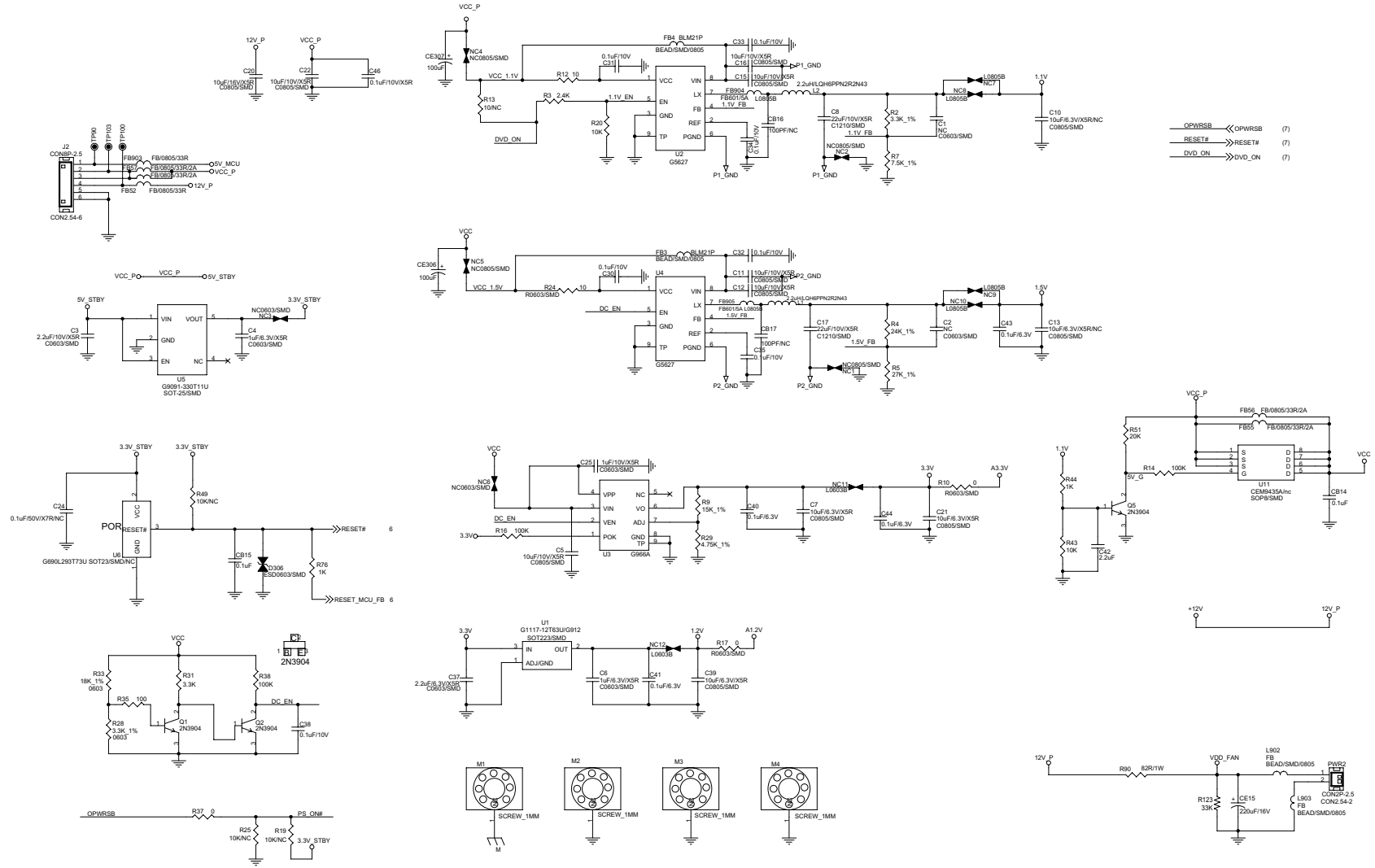

CON4
DB8
T5AH250V
F1
F2
T6.3AH250V
RT1
NTC,MF72,5D-11
RV3
14D561K
CX1
224,275V
R8
3M 1206
R6
3M 1206
R9
3M 1206
R7
3M 1206
R32
3M 1206
T18*10*7,0.45*45Ts,20MH
LT1
CX2
RV4
10D561K
T18*10*7,0.45*45Ts,20MH
LT2
BD1
GBL406
HV1
JMP5
9mm
C1
47uF/400V
C4
22uF/400V
R10
NC
RV1
JUMP 5mm
JMP1 NC
RV2
JUMP 5mm
R11
NC
C6
47uF/400V
C56
NC
RV5
10D471K
HV
HGND
HOT
COLD
R39
1K 0805 STB
PC817
IC3
MMBT2222
Q9
ZD2
33V 5%
R58 1K 0805
R2
1K 0805
GND
GND
100R 1206
R52
100R 1206
R64
100R 1206
R16
1nF,200V
C17
D3
FR107
R87
Ferrite Bead,120R,4A
U2_V
C11
33uF/35V
R34
10K 0805
R35 6.2K 1206
Q3
MMBT2907
JMP9
8mm
R30
Short
HV
C7
103P/1KV
R83
62K/1W
C13
103P/630V
T1
EE33
FR207
D4
R33
FB,120R,4A
Ferrite Bead,120R,8A
R24
BTV+ A
BTV- B
FB,120R,8A
R93
C18
1nF,200V
D6
SB10200
C25
1000uF/35V
C22
1000uF/35V
C27
100P 0805
C61
NC
L5
2.2uH,3x15mm
R4
6.2K 1206
C24
1000uF/35V
C39
100P 0805
+26V
A2
R28 68R 0805
R88 NC
D12
NC
Q2
10N60
C12
220P 2KV
ZD3
20V,0.5W
R21
10K 0805
IC8
GR8874
OUT
VDD
NC
HV
CS
COMP
RT
GND
R25
100R 0805
R26 1.4R
R66 1.4R
R62 1.4R
R31 1.4R
R69 1.4R
R71 1.4R
R20 NC
C32
0.1uF 0805
R27
100K 1% 0805
C30
33P 0805
C31
33nF 0805
CY4
NC
GNDA
R1
0R 0805
C16 NC
C37 0.1uF 0805
R44
3.3K 0805
R49
47.5K,1%,0805
C47
0.1uF 0805
R41
3.3K 0805
0.1uF 0805
C36
10K 0805
R46
C35
470P 0805
IC4
PC817
IC5
TL431A
SOT23
R47
4.99K,1%,0805
102P 400V
CY5

12-9

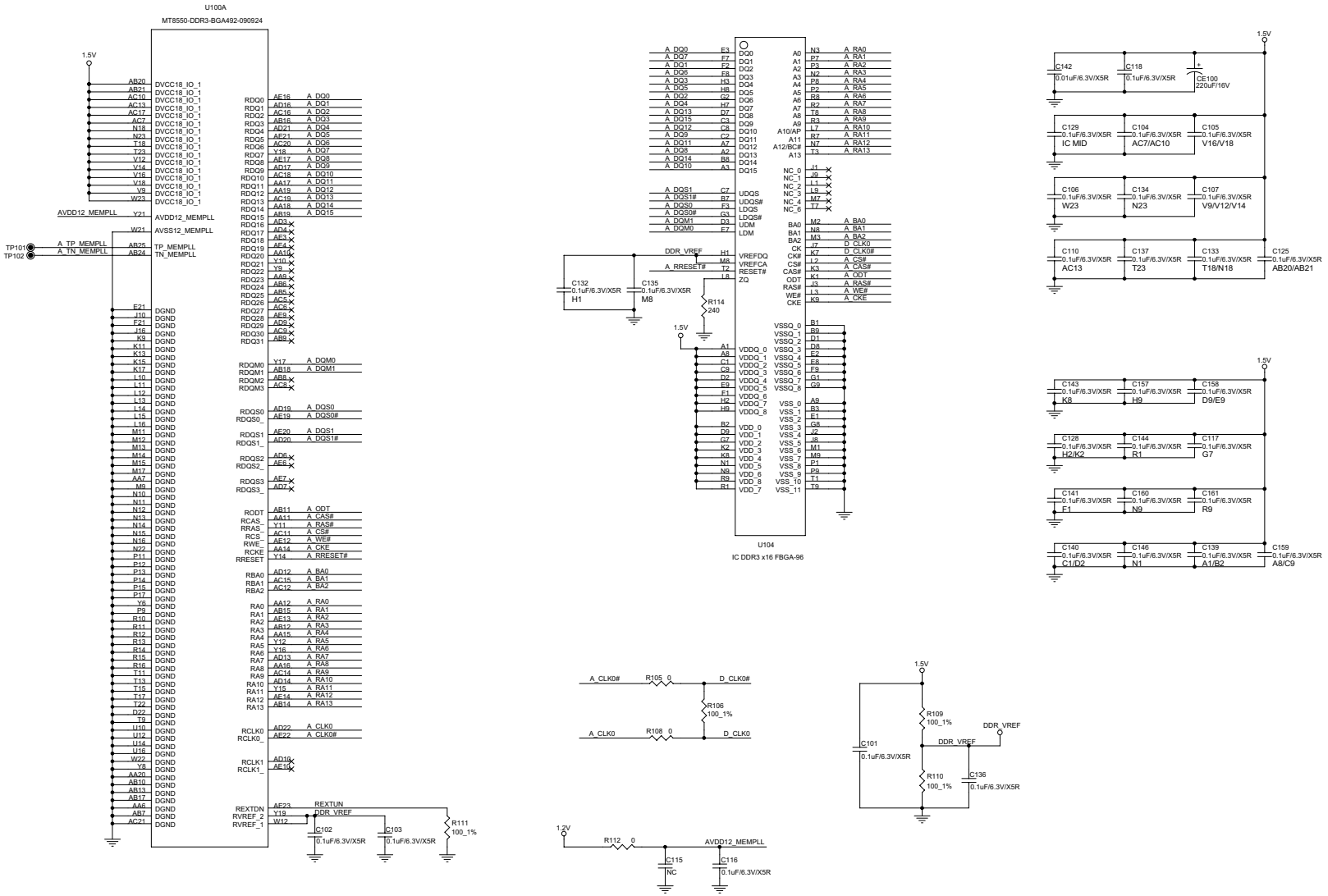
Power Board -- Layout Diagram



12-10

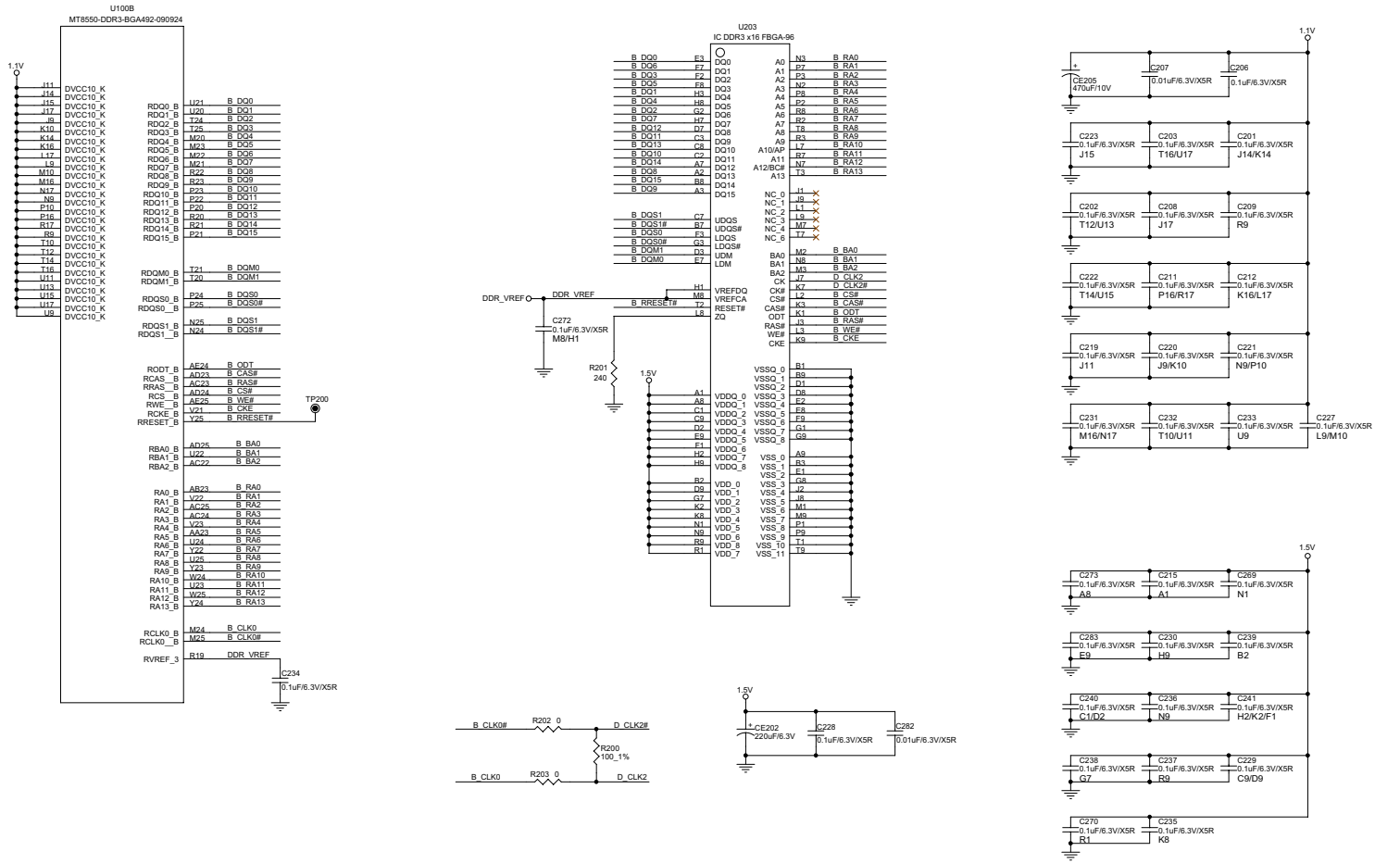

VCC_P
12V_P
C20
10uF/16V/X5R
C0805/SMD
C22
10uF/10V/X5R
C0805/SMD
C46
0.1uF/10V/X5R
CE307
100uF
NC4
NC0805/SMD
FB4 BLM21P
BEAD/SMD/0805
C33 0.1uF/10V
C16 10uF/10V/X5R
C0805/SMD
P1_GND
VCC_1.1V
R12 10
0.1uF/10V
C31
C15 10uF/10V/X5R
C0805/SMD
2.2uH/LQH6PPN2R2N43
L2
FB904
FB601/5A
L0805B
1.1V_FB
NC8
L0805B
L0805B
NC7
1.1V
R13
10/NC
R3 2.4K
1.1V_EN
R20
10K
DVD_ON
VCC
EN
GND
TP
LX
FB
REF
PGND
U2
G5627
CB16
100PF/INC
C14
0.1uF/10V
P1_GND
C8
22uF/10V/X5R
C1210/SMD
1.1V_FB
NC0805/SMD
NC2
R2
3.3K_1%
R7
7.5K_1%
C1
NC
C0603/SMD
C10
10uF/6.3V/X5R/NC
C0805/SMD
OPWRSB
RESET#
DVD_ON
OPWRSB (7)
RESET# (7)
DVD_ON (7)
J2
CON/BP-2.5
TP90
TP103
TP100
FB903 FB/0805/33R
FB51 FB/0805/33R/2A
FB53 FB/0805/33R/2A
FB52 FB/0805/33R
5V_MCU
VCC_P
12V_P
CON2.54-6
VCC_P
VCC_P
5V_STBY
5V_STBY
3.3V_STBY
C3
2.2uF/10V/X5R
C0603/SMD
U5
G9091-330T11U
SOT-25/SMD
VIN
GND
EN
VOUT
NC
NC0603/SMD
NC3
C4
1uF/6.3V/X5R
C0603/SMD
VCC
CE306
100uF
NC5
NC0805/SMD
FB3 BLM21P
BEAD/SMD/0805
C32 0.1uF/10V
C11 10uF/10V/X5R
C0805/SMD
P2_GND
C12 10uF/10V/X5R
C0805/SMD
2.2uH/LQH6PPN2R2N43
L1
FB905
FB601/5A
L0805B
1.5V_FB
NC10
L0805B
NC9
L0805B
1.5V
VCC_1.5V
R24 10
R0603/SMD
0.1uF/10V
C30
U4
DC_EN
VCC
EN
GND
TP
LX
FB
REF
PGND
G5627
CB17
100PF/INC
C35
0.1uF/10V
P2_GND
C17
22uF/10V/X5R
C1210/SMD
1.5V_FB
NC0805/SMD
NC1
R4
24K_1%
R5
27K_1%
C2
NC
C0603/SMD
C43
0.1uF/6.3V
C13
10uF/6.3V/X5R/NC
C0805/SMD
3.3V_STBY
3.3V_STBY
C24
0.1uF/50V/X7R/INC
POR
VCC
RESET#
GND
U6
G690L293T73U SOT23/SMD/INC
R49
10K/INC
RESET#
6
CB15
0.1uF
D306
ESD0603/SMD
R76
1K
RESET_MCU_FB
6
VCC
NC6
NC0603/SMD
C25 1uF/10V/X5R
C0603/SMD
DC_EN
R16 100K
3.3V
C5
10uF/10V/X5R
C0805/SMD
VPP
VIN
POK
NC
VO
ADJ
GND
TP
U3
G966A
R9
15K_1%
R29
4.75K_1%
C40
0.1uF/6.3V
NC11
L0603B
3.3V
R10
0
R0603/SMD
A3.3V
C7
10uF/6.3V/X5R
C0805/SMD
C44
0.1uF/6.3V
C21
10uF/6.3V/X5R
C0805/SMD
VCC_P
FB56 FB/0805/33R/2A
FB55 FB/0805/33R/2A
1.1V
R51
20K
R14
100K
5V_G
R44
1K
R43
10K
C42
2.2uF
Q5
2N3904
U11
CEM9435A/inc
SOP8/SMD
S
S
S
G
D
D
D
D
VCC
CB14
0.1uF
VCC
R33
18K_1%
0603
R31
3.3K
R38
100K
R35 100
DC_EN
R28
3.3K_1%
0603
Q1
2N3904
Q2
2N3904
C38
0.1uF/10V
Q3
2N3904
OPWRSB
R37 0
PS_ON#
R25
10K/INC
R19
10K/INC
3.3V_STBY
3.3V
U1
G1117-12T63U/G912
SOT223/SMD
IN
OUT
ADJ/GND
C37
2.2uF/6.3V/X5R
C0603/SMD
NC12
L0603B
R17 0
R0603/SMD
1.2V
A1.2V
C6
1uF/6.3V/X5R
C0603/SMD
C41
0.1uF/6.3V
C39
10uF/6.3V/X5R
C0805/SMD
+12V
12V_P
M1
M2
M3
M4
SCREW_1MM
M
12V_P
R90 82R/1W
VDD_FAN
L902
FB
BEAD/SMD/0805
PWR2
CON2P-2.5
CON2.54-2
R123
33K
CE15
220uF/16V
L903
FB
BEAD/SMD/0805

12-11

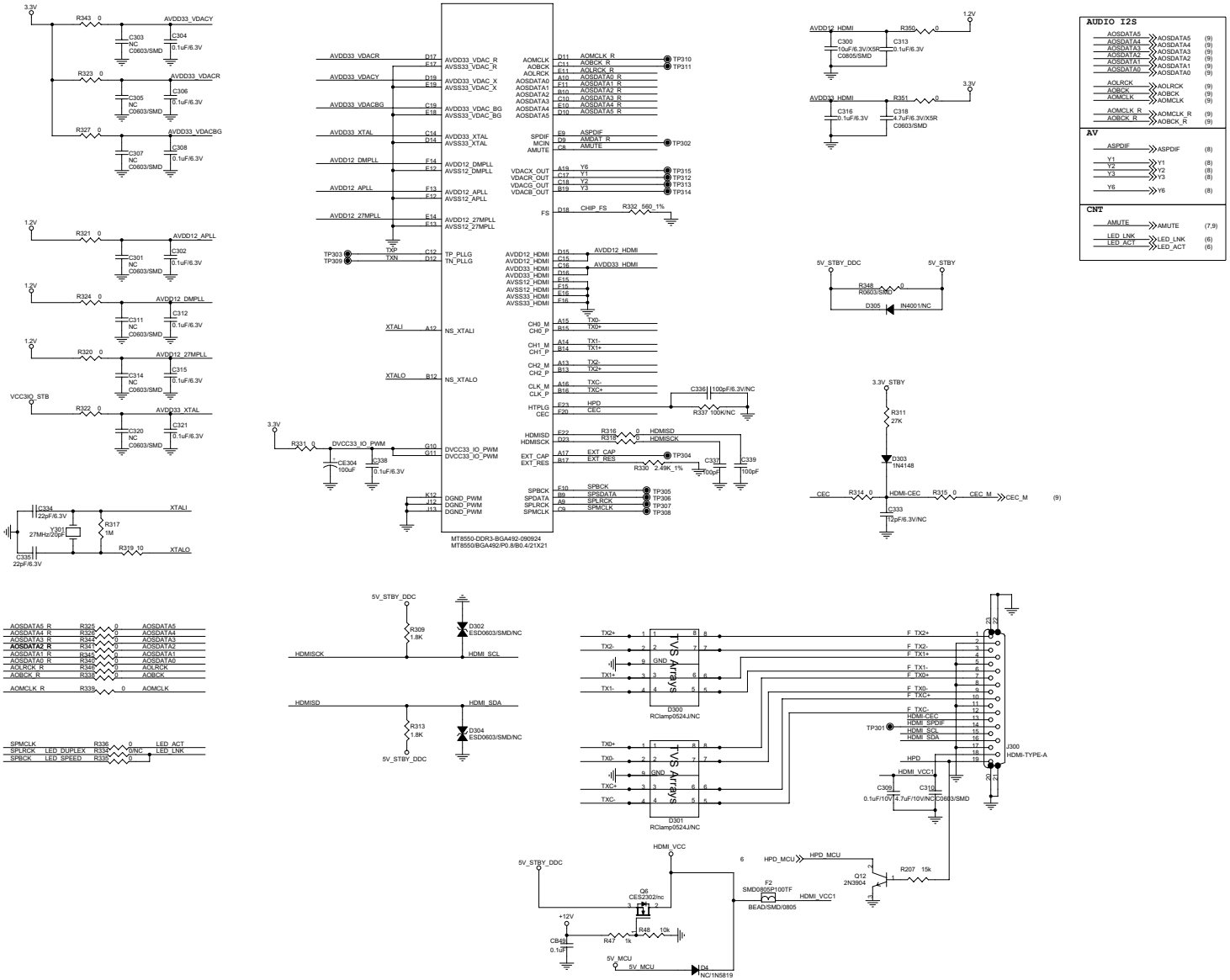

U100A
MT8550-DDR3-BGA492-090924
1.5V
AVDD12_MEMPLL
AVSS12_MEMPLL
TP101
TP102
A_TP_MEMPLL
A_TN_MEMPLL
TP_MEMPLL
TN_MEMPLL
REXTUN
DDR_VREF
C102
0.1uF/6.3V/X5R
C103
0.1uF/6.3V/X5R
R111
100_1%
U104
IC DDR3 x16 FBGA-96
DDR_VREF
C132
0.1uF/6.3V/X5R
H1
C135
0.1uF/6.3V/X5R
M8
R114
240
1.5V
A_CLK0#
A_CLK0
R105 0
R108 0
D_CLK0#
D_CLK0
R106
100_1%
1.2V
R112 0
AVDD12_MEMPLL
C115
NC
C116
0.1uF/6.3V/X5R
C101
0.1uF/6.3V/X5R
R109
100_1%
R110
100_1%
DDR_VREF
C136
0.1uF/6.3V/X5R
1.5V
C142
0.01uF/6.3V/X5R
C118
0.1uF/6.3V/X5R
CE100
220uF/16V
C129
0.1uF/6.3V/X5R
IC MID
C104
0.1uF/6.3V/X5R
AC7/AC10
C105
0.1uF/6.3V/X5R
V16/V18
C106
0.1uF/6.3V/X5R
W23
C134
0.1uF/6.3V/X5R
N23
C107
0.1uF/6.3V/X5R
V9/V12/V14
C110
0.1uF/6.3V/X5R
AC13
C137
0.1uF/6.3V/X5R
T23
C133
0.1uF/6.3V/X5R
T18/N18
C125
0.1uF/6.3V/X5R
AB20/AB21
1.5V
C143
0.1uF/6.3V/X5R
K8
C157
0.1uF/6.3V/X5R
H9
C158
0.1uF/6.3V/X5R
D9/E9
C128
0.1uF/6.3V/X5R
H2/K2
C144
0.1uF/6.3V/X5R
R1
C117
0.1uF/6.3V/X5R
G7
C141
0.1uF/6.3V/X5R
F1
C160
0.1uF/6.3V/X5R
N9
C161
0.1uF/6.3V/X5R
R9
C140
0.1uF/6.3V/X5R
C1/D2
C146
0.1uF/6.3V/X5R
N1
C139
0.1uF/6.3V/X5R
A1/B2
C159
0.1uF/6.3V/X5R
A8/C9

12-12

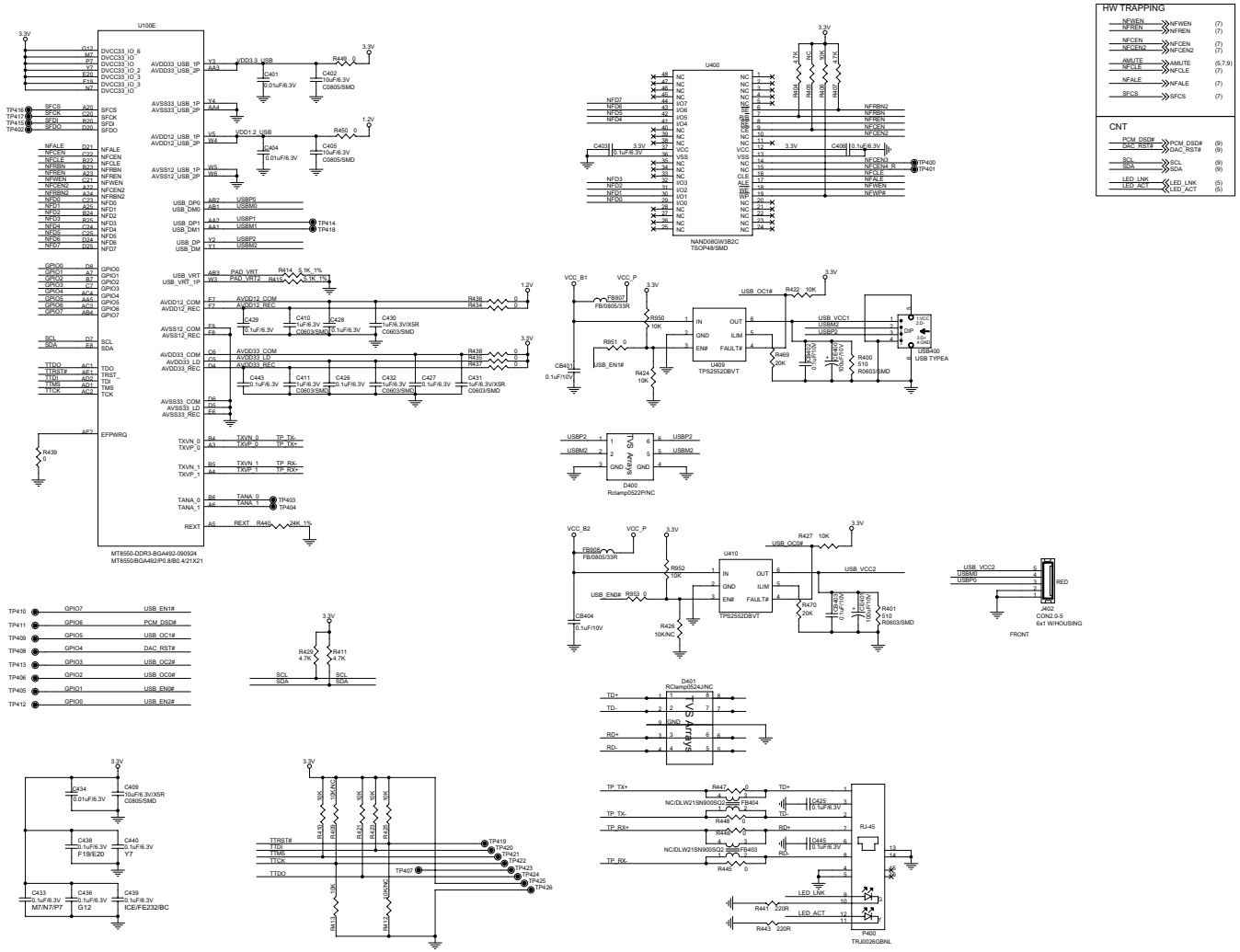
Decoder Board -- Circuit Diagram 3



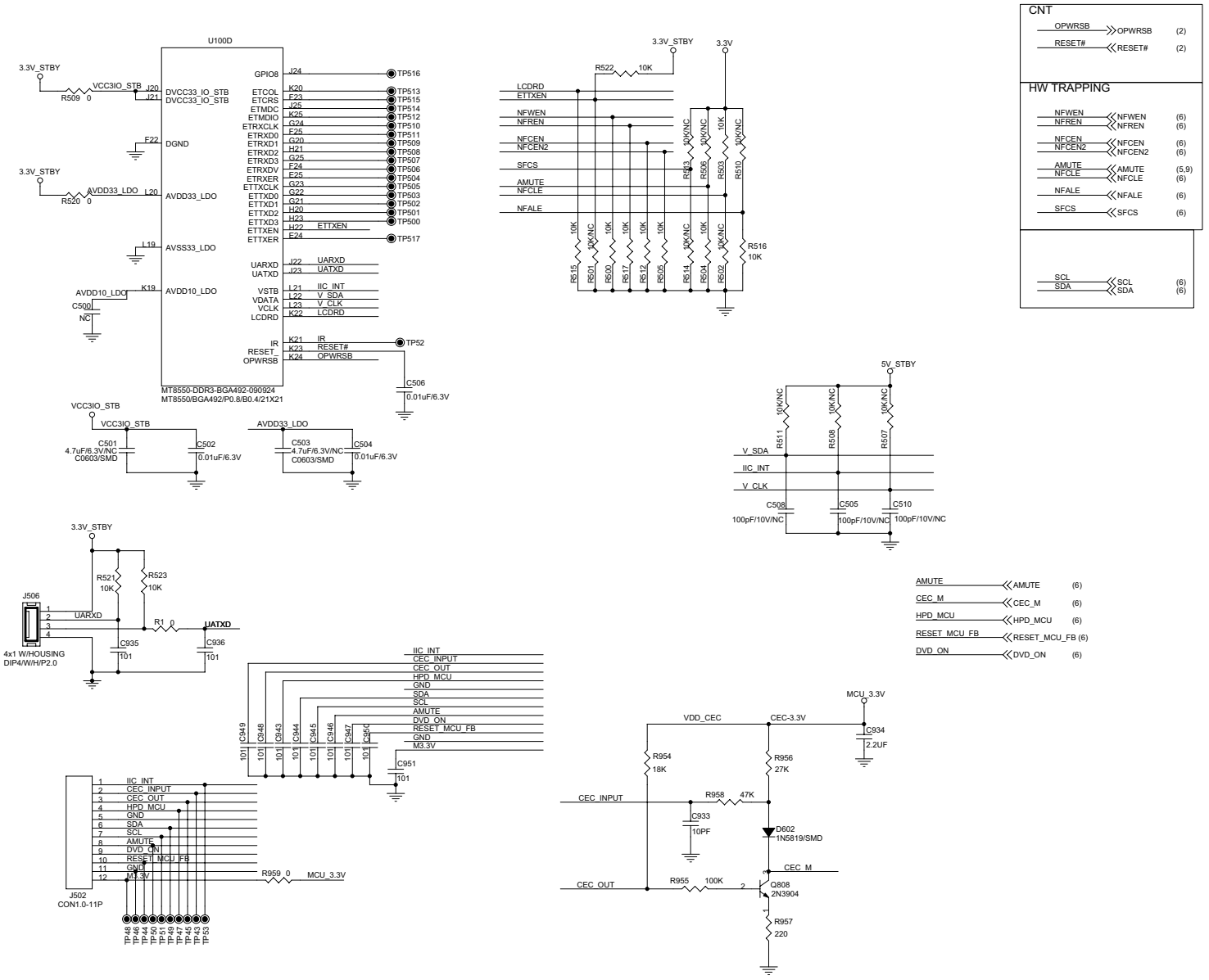
12-13



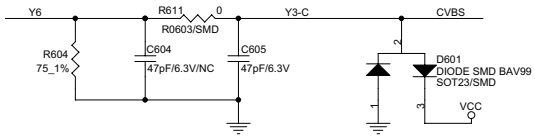
12-14

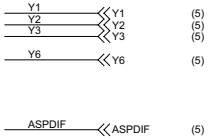

HW TRAPPING
CNT
U100E
MT8550-DDR3-BGA492-090924
MT8550/BGA492/P0.8/BD.4/21X21
U400
NAND08GW3B2C
TSOP48/SMD
U409
TPS2552DBVT
U410
TPS2552DBVT
D400
Rclamp0522PINC
D401
RClamp0524JINC
USB400
USB TYPEA
J402
CON2.0-5
6x1 W/HOUSING
FRONT
P400
TRJ0026GBNL
RJ-45

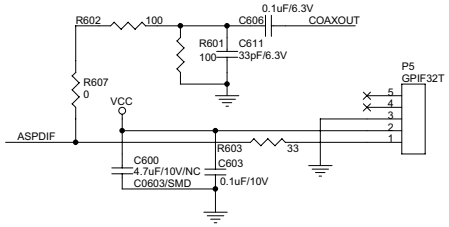
12-15

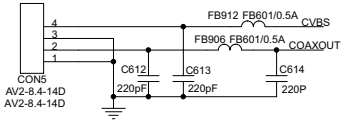

U100D
MT8550-DDR3-BGA492-090924
MT8550/BGA492/P0.8/B0.4/21X21
3.3V_STBY
VCC3IO_STB
AVDD33_LDO
AVDD10_LDO
DGND
AVSS33_LDO
R509 0
R520 0
C500
NC
C501 4.7uF/6.3V/NC C0603/SMD
C502 0.01uF/6.3V
C503 4.7uF/6.3V/NC C0603/SMD
C504 0.01uF/6.3V
C506 0.01uF/6.3V
GPIO8
ETCOL
ETCRS
ETMDC
ETMDIO
ETRXCLK
ETRXD0
ETRXD1
ETRXD2
ETRXD3
ETRXDV
ETRXER
ETXCLK
ETTXD0
ETTXD1
ETTXD2
ETTXD3
ETTXEN
ETTXER
UARXD
UATXD
VSTB
VDATA
VCLK
LCDRD
IR
RESET_
OPWRSB
TP516
TP513
TP515
TP514
TP512
TP510
TP511
TP509
TP508
TP507
TP506
TP504
TP505
TP503
TP502
TP501
TP500
TP517
TP52
IIC_INT
V_SDA
V_CLK
RESET#
R522 10K
R515 10K
R501 10K/NC
R500 10K
R517 10K
R512 10K
R505 10K
R514 10K/NC
R504 10K
R502 10K/NC
R513 10K/NC
R506 10K/NC
R503 10K
R510 10K/NC
R516 10K
R511 10K/NC
R508 10K/NC
R507 10K/NC
C508 100pF/10V/NC
C505 100pF/10V/NC
C510 100pF/10V/NC
5V_STBY
J506
4x1 W/HOUSING DIP4/W/H/P2.0
R521 10K
R523 10K
R1 0
C935 101
C936 101
J502 CON1.0-11P
C949 101
C948 101
C943 101
C944 101
C945 101
C946 101
C947 101
C950 101
C951 101
M3.3V
R959 0
MCU_3.3V
TP48
TP46
TP44
TP50
TP49
TP47
TP45
TP43
TP53
VDD_CEC
CEC-3.3V
CEC_INPUT
CEC_OUT
R954 18K
R956 27K
R958 47K
R955 100K
C933 10PF
C934 2.2UF
D602 1N5819/SMD
Q808 2N3904
R957 220
CNT
OPWRSB
RESET#
HW TRAPPING
NFWEN
NFREN
NFCEN
NFCEN2
AMUTE
NFCLE
NFALE
SFCS
SCL
SDA
CEC_M
HPD_MCU
RESET_MCU_FB
DVD_ON

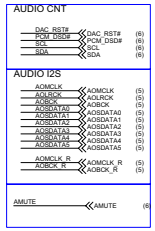
12-16

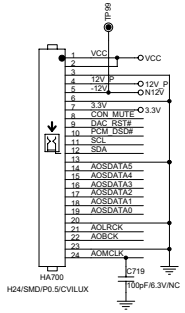

Y6
R611
0
R0603/SMD
Y3-C
CVBS
R604
75_1%
C604
47pF/6.3V/NC
C605
47pF/6.3V
D601
DIODE SMD BAV99
SOT23/SMD
VCC

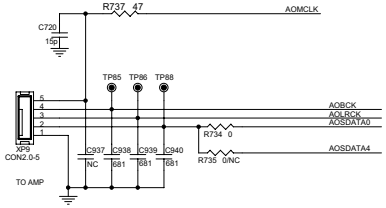

Y1
Y2
Y3
Y6
ASPDIF
Y1 (5)
Y2 (5)
Y3 (5)
Y6 (5)
ASPDIF (5)


R602
100
0.1uF/6.3V
C606
COAXOUT
R601
100
C611
33pF/6.3V
R607
0
VCC
P5
GPIF32T
ASPDIF
R603
33
C600
4.7uF/10V/NC
C0603/SMD
C603
0.1uF/10V

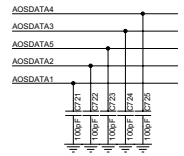

FB912 FB601/0.5A
CVBS
FB906 FB601/0.5A
COAXOUT
C612
220pF
C613
220pF
C614
220P
CON5
AV2-8.4-14D
AV2-8.4-14D

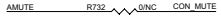

AUDIO CNT
DAC_RST#
PCM_DSD#
SCL
SDA
AUDIO I2S
AOMCLK
AOLRCK
AOBCK
AOSDATA0
AOSDATA1
AOSDATA2
AOSDATA3
AOSDATA4
AOSDATA5
AOMCLK_R
AOBCK_R
AMUTE


TP89
VCC
12V_P
-12V
3.3V
CON_MUTE
DAC_RST#
PCM_DSD#
SCL
SDA
AOSDATA5
AOSDATA4
AOSDATA3
AOSDATA2
AOSDATA1
AOSDATA0
AOLRCK
AOBCK
AOMCLK
HA700
H24/SMD/P0.5/CVILUX
C719
100pF/6.3V/NC

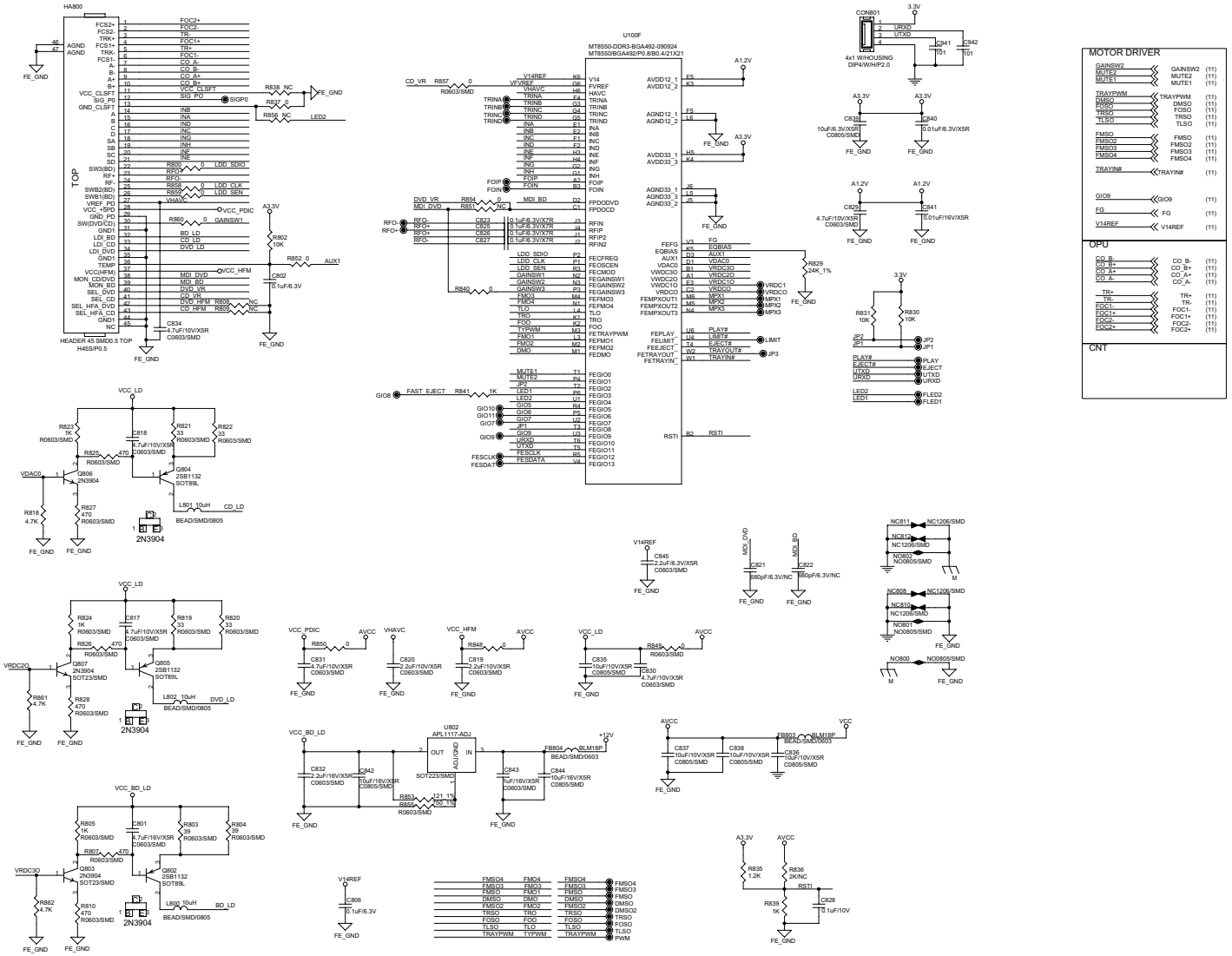

R737 47
AOMCLK
C720
150
TP85
TP86
TP88
AOBCK
AOLRCK
AOSDATA0
AOSDATA4
R734 0
R735 0/NC
C937
C938
C939
C940
NC
681
681
681
XP8
CON2.0-5
TO AMP


GND

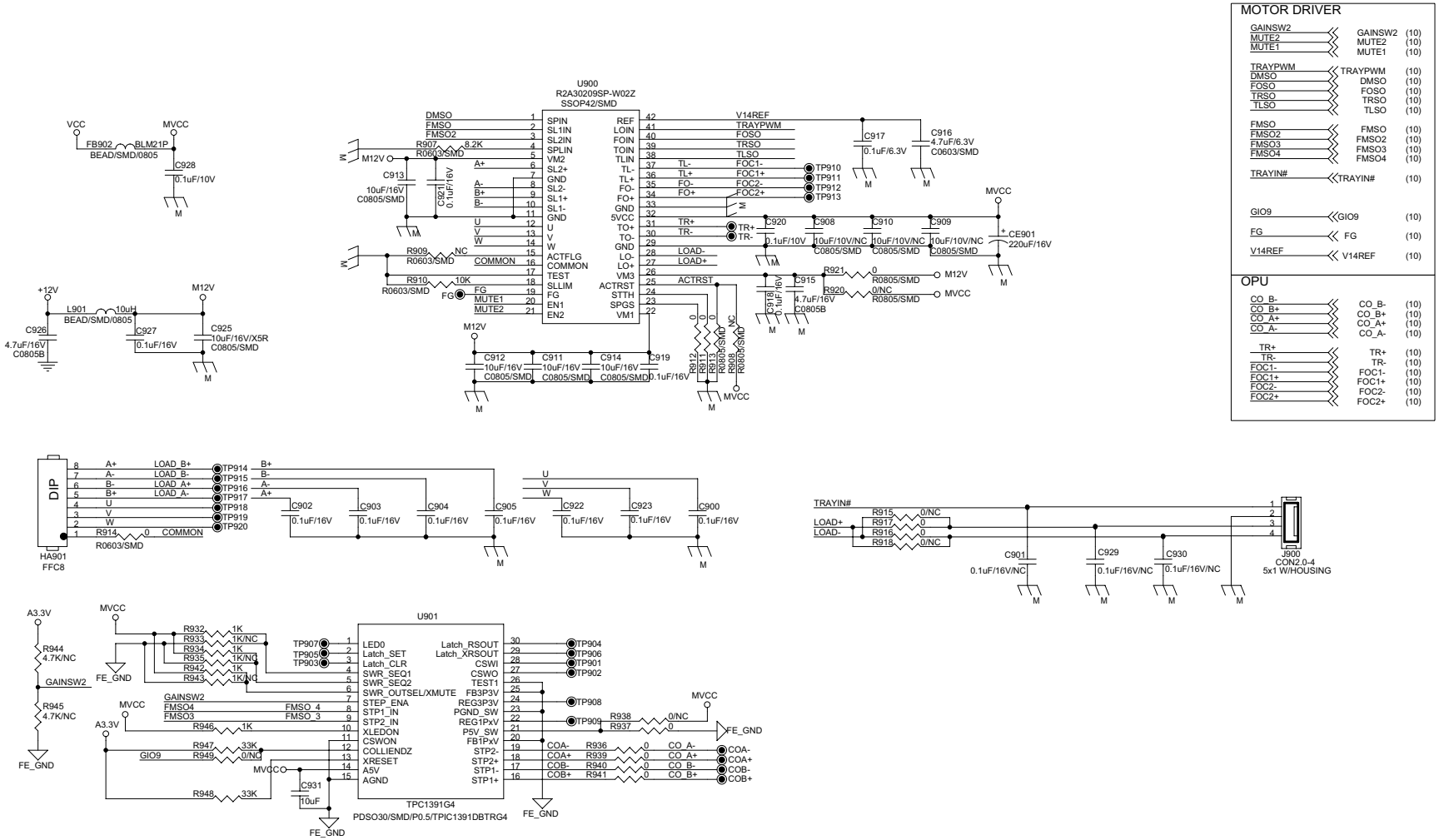

AOSDATA4
AOSDATA3
AOSDATA5
AOSDATA2
AOSDATA1
C721
C722
C723
C724
C725
100pF
NC


AMUTE
R732
0/NC
CON_MUTE

12-17

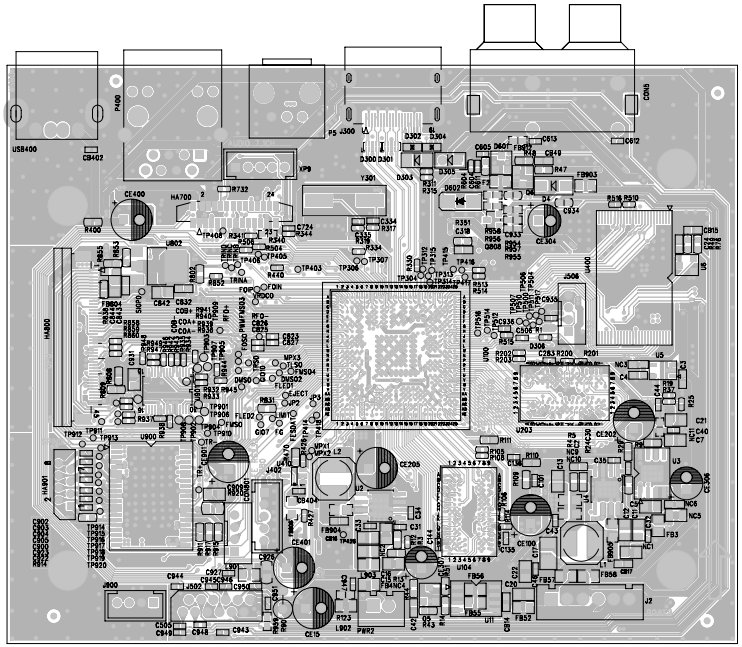

HA800
HEADER 45 SMD0.5 TOP
H45S/P0.5
TOP
U100F
MT8550-DDR3-BGA492-090924
MT8550/BGA492/P0.8/B0.4/21X21
CON801
4x1 W/HOUSING
DIP4/W/HP2.0
MOTOR DRIVER
GAINSW2
MUTE2
MUTE1
TRAYPWM
PMSO
FOSO
TRSO
TLSO
FMSO
FMSO2
FMSO3
FMSO4
TRAYIN#
GIO9
FG
V14REF
OPU
CO_B-
CO_B+
CO_A+
CO_A-
TR+
TR-
FOC1-
FOC1+
FOC2-
FOC2+
CNT
PLAY#
EJECT#
UTXD
URXD
LED2
LED1
2N3904
SOT223/SMD
APL1117-ADJ

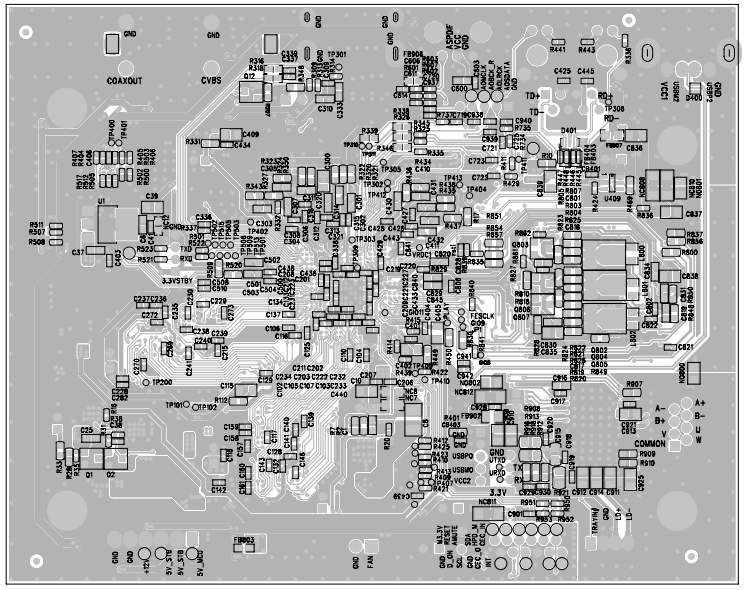
12-18


MOTOR DRIVER
GAINSW2
MUTE2
MUTE1
TRAYPWM
DMSO
FOSO
TRSO
TLSO
FMSO
FMSO2
FMSO3
FMSO4
TRAYIN#
GIO9
FG
V14REF
OPU
CO_B-
CO_B+
CO_A+
CO_A-
TR+
TR-
FOC1-
FOC1+
FOC2-
FOC2+
U900
R2A30209SP-W02Z
SSOP42/SMD
VCC
MVCC
FB902
BLM21P
BEAD/SMD/0805
C928
0.1uF/10V
+12V
M12V
L901
10uH
BEAD/SMD/080S
C926
4.7uF/16V
C0805B
C927
0.1uF/16V
C925
10uF/16V/X5R
C0805/SMD
R907
8.2K
R0603/SMD
C913
10uF/16V
C0805/SMD
C901
0.1uF/16V
R909
NC
R910
10K
C912
C911
C914
C919
C917
0.1uF/6.3V
C916
4.7uF/6.3V
C0603/SMD
C920
C908
C910
C909
CE901
220uF/16V
R921
R920
0
0/NC
R0805/SMD
C915
4.7uF/16V
C0805B
C918
0.1uF/16V
R911
R912
R913
R908
R909
R910
DIP
HA901
FFC8
R914
C902
C903
C904
C905
C922
C923
C900
TRAYIN#
LOAD+
LOAD-
R915
R917
R916
R918
C901
0.1uF/16V/NC
C929
C930
J900
CON2.0-4
5x1 W/HOUSING
A3.3V
R944
4.7K/NC
R945
4.7K/NC
GAINSW2
FE_GND
U901
TPC1391G4
PDSO30/SMD/P0.5/TPIC1391DBTRG4
R932
R933
R934
R935
R942
R943
R946
R947
R948
R949
GIO9
C931
10uF
R938
R937
R936
R939
R940
R941
TP907
TP905
TP903
TP904
TP906
TP901
TP902
TP908
TP909
TP910
TP911
TP912
TP913
TP914
TP915
TP916
TP917
TP918
TP919
TP920

12-19

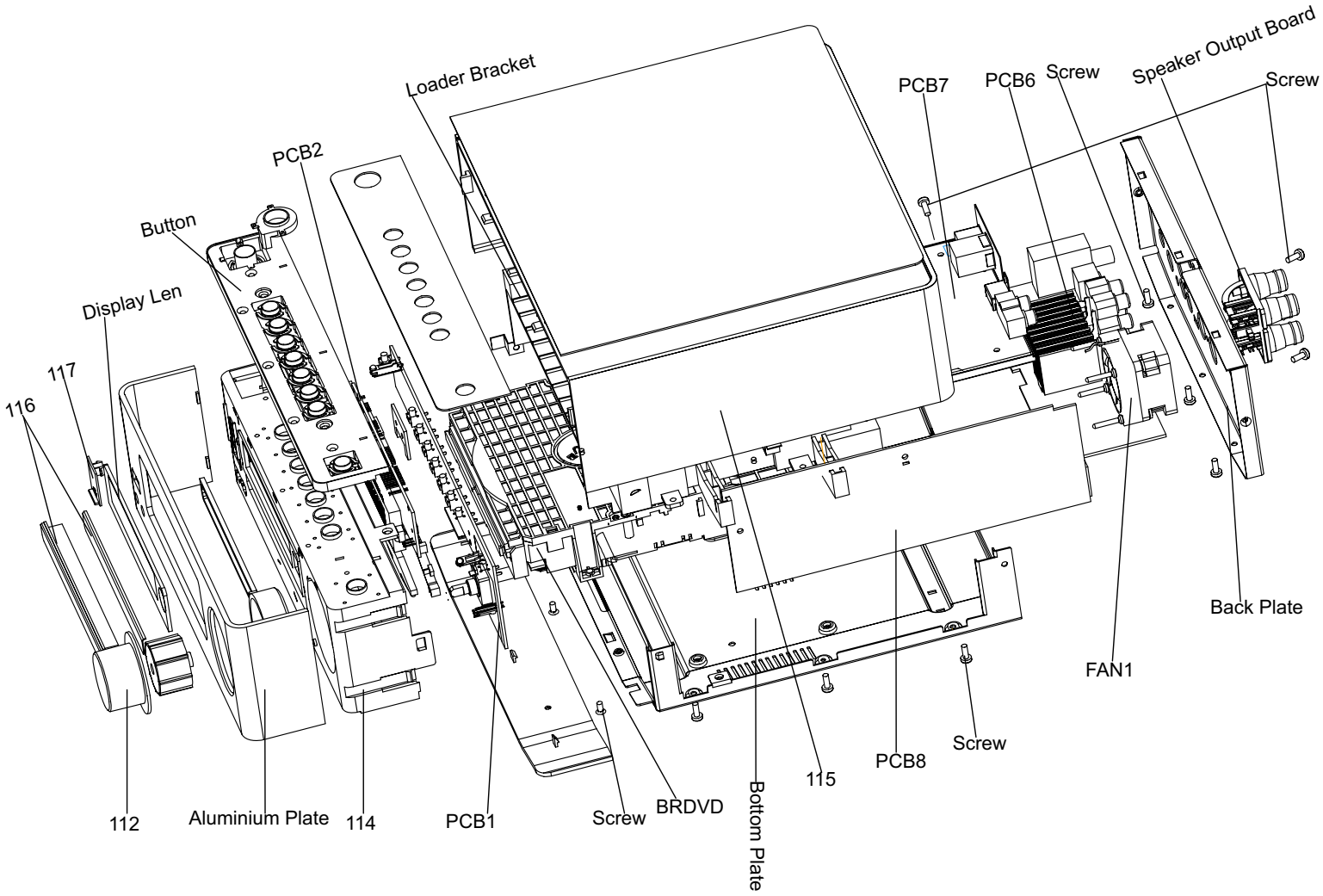
Decoder Board -- Layout Diagram





12-20

Exploded View



13-1

Revision List

Version 1.0
* Initial Release

MBD7020

stroke version /93(China)

repair policy MLR+CLR

Level	Pos. No.	12Nc	Description	Safety	PCM Code	
Mechanical Partlist						
1	112	996510043829	VOLUME KNOB		03-MBD7020-01A101	X
1	BRDVD	996510043814	BL-RAY LOADER MECHANISM		31000296	X
1	PCB8	996510043822	POWER BOARD NEP3200B-12/93 RN	$	32001425	X
1	FAN1	996510042473	MINI FAN RDM4010S-13 12V/0.07A		34000385	X
1	113	996510042497	RADIATOR 31X30X52		37-MBD7020-04A100	X
1	114	996510042494	FRONT CABINET		39-MBD7020-03A200	X
1	115	996510043831	AMP TOP COVER		39-MBD7020-04A101	X
1	116	996510043836	DVD DOOR		39-MBD7020-05A100	X
1	117	996510043838	USB DOOR		39-MBD7020-19A102	X
1	118	996510043857	BUTTON		39-MBD7020-06A101	X
1	119	996510042495	DISPLAY LENS		39-MBD7020-17A101	X
1	FFC1	996510043835	FLAT FLEXIBLE CABLE 8PX250X1.0XB		25004930	X
1	FFC2	996510043821	FLAT FLEXIBLE CABLE 12PX150X1.0XB		25004928	X
1	FFC3	996510043811	FLAT FLEXIBLE CABLE 10PX270X1.0XA		25004787	X
1	FFC4	996510042499	FLAT FLEXIBLE CABLE 16PX90X1.0XA		25004917	X
KEY VOLUME BOARD Partlist						
1	PCB1	996510043812	KEY VOLUME BOARD ASSY		07-MBD7020-03A101	X
2	SW301	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW302	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW303	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW304	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW305	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW306	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW307	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW308	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	SW309	994000004965	LIGHT TOUCH SWITCH KFC-05		23000113	X
2	B301	996510004185	TRANSFORMER EPC13 5V	$	11000403	X
2	Q301	996510015813	TRANSISTOR D965-R -5		17000208	X
2	Q302	996510015813	TRANSISTOR D965-R -5		17000208	X
2	D302	996510002976	DIODE FR104		16000316	X
2	LED301	996510004186	LED DIODE RED		16000120	X
2	ROT301	996510043801	CODER RE16-D1-15F-24		30000122	X
2	LED302	996510021107	LED D3X4 1L034XW31B0CT201		16000427	X
2	LED303	996510021107	LED D3X4 1L034XW31B0CT201		16000427	X
DISPLAY BOARD Partlist						
1	PCB2	996510042505	DISPLAY BOARD ASS'Y		07-MBD7020-04A101	X
2	U401	996510000500	IC PT6311/SC16311/CD16311		19000295	X
2	S401	996510015840	IR SENSOR 1MA81P36D1TD001		21000056	X

2	VFD401	996510042474	DISPLAY VFD VFD27-1201N 27WX118LX6.5	29000529	X

HEADPHONE/MP3 LINK BOARD Partlist

1	PCB3	996510043826	HEADPHONE/MP3 LINK BOARD ASSY	07-MBD7020-05A101	X
2	J501	994000004967	AUX IN JACK CK3511	24000120	X
2	J502	994000004966	HEADPHONE JACK D3.5	24000177	X

USB BOARD Partlist

1	PCB4	996510043828	USB BOARD ASSY	07-MBD7020-06A101	X
2	USB400	996510005830	USB A-TYPE 4 P	24000351	X

LINE GUIDE LED BOARD Partlist

1	PCB5	996510042469	LINE GUIDE LED BOARD ASS'Y	07-MBD7020-07A101	X
2	LED701	996510021107	LED D3X4 1L034XW31B0CT201(WHITE)	16000427	X

AMP BOARD Partlist

1	PCB6	996510043816	AMP BOARD ASSY	07-MBD7020-10A105	X
2	D10	996510000495	DIODE IN60 L26	16000115	X
2	D11	996510000495	DIODE IN60 L26	16000115	X
2	D2	996510000495	DIODE IN60 L26	16000115	X
2	D3	996510000495	DIODE IN60 L26	16000115	X
2	U10	996510042817	IC AMS1117-3.3(SOT-223)	19000871	X
2	U9	996510042817	IC AMS1117-3.3(SOT-223	19000871	X
2	U11	996510043522	IC K24C02D	19000981	X
2	U12	996510002917	IC D2761	19000404	X
2	U3	996510031923	IC 4558(SOP8L)	19000646	X
2	U6	996510042484	IC DRV604 HTSSOP28	19000996	X
2	U7	996510042468	IC CS5346	19000898	X
2	U8	996510043833	IC R5F21258	19000997	X
2	U4	996510042461	IC TPS2553 SOT23DBV-6	19000995	X
2	U2	996510042503	IC PS9831 TQFP100/24BIT-4CH	19000784	X
2	U1	996510042481	IC TAS5342 TSSOP	19000566	X
2	Y2	996510043081	CRYSTAL OSCILLATOR 32.768KHZ 2X6 5PPM	22000124	X
2	Y1	996510042518	CRYSTAL OSCILLATOR FREQ 12.288MHZ 22PPM	22000084	X
2	P2	996510042471	RCA SOCKET 4P AV4-8.4-13	24000518	X
2	J2	996510043528	DAB TUNER PCB KST-MW004FV0-S78B/FM	32001426	X
2	CON1	996500042017	SOCKET ST-3541 4P	25001233	X

DECODER BOARD Partlist

1	PCB7	996510043817	DECODER BOARD ASSY	07-MBD7020-11A102	X
2	Q802	996510043859	TRANSISTOR 2SB1132(SOT89)	17000207	X
2	Q804	996510043859	TRANSISTOR 2SB1132(SOT89)	17000207	X
2	Q805	996510043859	TRANSISTOR 2SB1132(SOT89)	17000207	X
2	U900	996510043834	IC R2A30209SP-W02Z	19000773	X
2	U802	996510042817	IC AMS1117-3.3(SOT-223)	19000871	X

2	U901	996510043837	IC TI TPC1391G4(TSSOP-30)		19000890	X
2	U1	996510043824	IC AP1122(TO-223		19000958	X
2	U409	996510042461	IC TPS2553 SOT23DBV-6		19000995	X
2	U410	996510042461	IC TPS2553 SOT23DBV-6		19000995	X
2	U11	996510043832	IC CEM9435 PMOS(SOP-8)		19001024	X
2	U2	996510043815	IC G5627 (SOP8)		19001013	X
2	U4	996510043815	IC G5627 (SOP8)		19001013	X
2	U3	996510043823	IC G966A (SOP8)		19001014	X
2	U5	996510043858	IC G9091-330T11U-SOT-25		19001015	X
2	Y301	996510043809	CRYSTAL OSCILLATOR 27MHZ 10PPM 20P		22000156	X
2	J300	996510042506	HDMI SOCKET HDMI-AF-01-010039		24000659	X
2	CON5	996510043825	RCA SOCKET 2P AV2-8.4-14		24000679	X
2	P400	996510043813	NETWORK CABLE SOCKET RMS-002E-08W62-G		24000680	X
2	USB400	996510005830	USB A-TYPE 4 P		24000351	X
2	111	996510043862	RADIATOR 49X35X20		37-MBD7020-11A100	X

Accessory Partlist

						X
1	SPKL	996510043861	SPEAKER BOX ASSY-L		08-MBD7020-12A101	X
1	SPKR	996510043827	SPEAKER BOX ASSY-R		08-MBD7020-13A101	X
1	ACC1	996510043818	REMOTE CONTROL		32001461	X
1	ACC2	994000005166	AC LINE CORD 1.8M	$	26000014	X
1	ACC3	994000005078	AUDIO SINGLE WIRE W/RCA 1.5M		27000043	X
1	ACC4	996510022666	DC3.5AUDIO FREGUENCY WIRE 500		27000472	X
1	ACC5	996510043856	DISPLAY BOX		41010539	X
1	ACC6	996510043819	CARTON BOX		41010543	X

History List:

V1.0 Initial release (04/13 2011) partlist for /93