



Micro Component System

Model Name

MM-E330D

Model Code

MM-E330D/EN

SERVICE MANUAL

Micro Component System

Contents



MM-E330D

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2. Product Specification
3. Disassembly and Reassembly
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1. Precaution

Follow these safety instructions while servicing the ESD to prevent damage and to protect against potential hazards such as electrical shock and X-rays.

1.1. Safety Precautions

- 1) When reinstalling the chassis and its assemblies, be sure to restore all of the protective devices, including the control knobs and the compartment covers.
- 2) Make sure that there are no cabinet openings through which people (particularly children) can make contact with dangerous internal components.
- 3) Design Alteration Warning : Never alter or add to the mechanical or electrical design of the unit.
Example : Do not add auxiliary audio or video connectors. Such alterations might create a safety hazard. Also, any design changes or additions will void the manufacturer's warranty.
- 4) Leakage Current Hot Check [Figure 1.1 AC Leakage Test](#) :



WARNING

Do not use an isolation transformer during this test. Use a leakage-current tester or a metering system that complies with American National Standards Institute (ANSI C101.1, Leakage Current for Appliances), and Underwriters Laboratories (UL Publication UL1410, 59.7).

With the unit completely reassembled, plug the AC cord directly into a 120 V AC outlet. With the unit's power switched from the ON to the OFF position, measure the current between a known ground and all exposed metal parts.

Known Grounds - Earth

Known Metal parts - Screwheads, Metal Cabinets, etc.

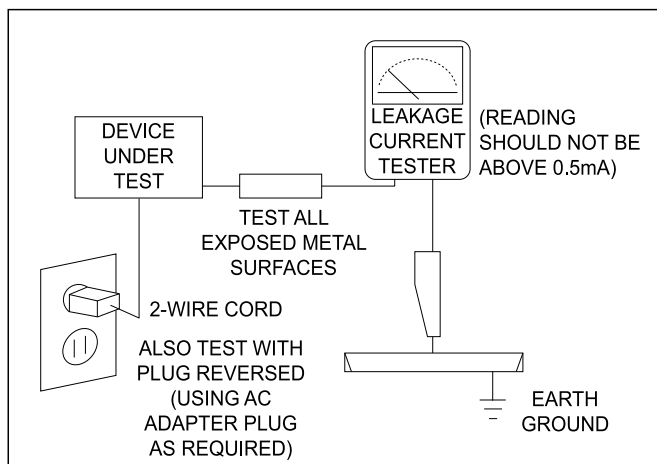


Figure 1.1 AC Leakage Test

5) Insulation Resistance Cold Check :

- (1) With the unit's AC plug disconnected from the AC source, connect an electrical jumper across the two AC prongs.
- (2) Set the power switch to ON.
- (3) Measure the resistance between the shorted AC plug and any exposed metallic parts.

Example : Screwheads, Metal Cabinets, Antenna Port, etc. If any of the exposed metallic parts has a return path to the chassis, the measured resistance should be between 1 and 5.2 megohms. If there is no return path, the measured resistance should be "infinite". If the resistance is outside these limits, a shock hazard might exist.

See [Figure 1.2 Insulation Resistance Test](#)

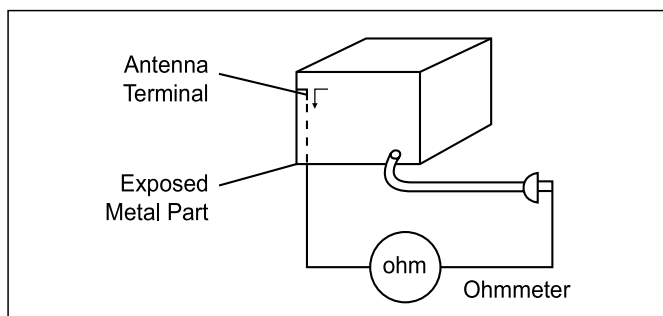


Figure 1.2 Insulation Resistance Test

- 6) Components, parts and wiring that appear to have overheated or that are otherwise damaged should be replaced with parts that meet the original specifications. Always determine the cause of damage or overheating, and correct any potential hazards.
- 7) Observe the original lead dress, especially near the following areas :
Antenna wiring, sharp edges, and especially the AC and high voltage power supplies. Always inspect for pinched, out-of-place, or frayed wiring. Do not change the spacing between components and the printed circuit board. Check the AC power cord for damage. Make sure that no wires or components touch thermally hot parts.
- 8) Product Safety Notice :
Some electrical and mechanical parts have special safety-related characteristics which might not be obvious from visual inspection. These safety features and the protection they give might be lost if the replacement component differs from the original—even if the replacement is rated for higher voltage, wattage, etc.
- 9) Components that are critical for safety are indicated in the circuit diagram by shading, $\triangle_f$ or $\triangle_{\text{fl}}$.
Use replacement components that have the same ratings, especially for flame resistance and dielectric strength specifications. A replacement part that does not have the same safety characteristics as the original might create shock, fire or other hazards.

1.2. Servicing Precautions

- 1) Servicing precautions are printed on the cabinet. Follow them.
- 2) Always unplug the unit's AC power cord from the AC power source before attempting to :
(a) Remove or reinstall any component or assembly, (b) Disconnect an electrical plug or connector, (c) Connect a test component in parallel with an electrolytic capacitor.
- 3) Some components are raised above the printed circuit board for safety. An insulation tube or tape is sometimes used. The internal wiring may be clamped to prevent contact with thermally hot components. Reinstall all such elements to their original position.
- 4) After servicing, always check that the screws, components and wiring have been correctly reinstalled. Make sure that the portion around the serviced part has not been damaged.
- 5) Check the insulation between the blades of the AC plug and accessible conductive parts (examples : metal panels, input terminals and earphone jacks).
- 6) Insulation Checking Procedure :
Disconnect the power cord from the AC source. Connect an insulation resistance meter (500 V) to the blades of the AC plug. The insulation resistance between each blade of the AC plug and accessible conductive parts (see above) should be greater than 1 megohm.
- 7) Never defeat any of the B+ voltage interlocks. Do not apply AC power to the unit (or any of its assemblies) unless all solid-state heat sinks are correctly installed.
- 8) Always connect a test instrument's ground lead to the instrument chassis ground before connecting the positive lead; always remove the instrument's ground lead last.



CAUTION

First read the "Safety Precautions" section of this manual. If some unforeseen circumstance creates a conflict between the servicing and safety precautions, always follow the safety precautions.

1.3. Precautions for Electrostatically Sensitive Devices (ESDs)

Some semiconductor ("solid state") devices are easily damaged by static electricity.

Such components are called Electrostatically Sensitive Devices (ESDs).

Examples include integrated circuits and some field-effect transistors.

The following techniques will reduce the occurrence of component damage caused by static electricity :

- 1) Immediately before handling any semiconductor components or assemblies, drain the electrostatic charge from your body by touching a known earth ground. Alternatively, wear a discharging wrist-strap device. (Be sure to remove it prior to applying power—this is an electric shock precaution.)
- 2) After removing an ESD-equipped assembly, place it on a conductive surface such as aluminum foil to prevent accumulation of electrostatic charge.
- 3) Do not use freon-propelled chemicals. These can generate electrical charges that damage ESDs.
- 4) Use only a grounded-tip soldering iron when soldering or unsoldering ESDs.
- 5) Use only an anti-static solder removal device. Many solder removal devices are not rated as "anti-static" (these can accumulate sufficient electrical charge to damage ESDs).
- 6) Do not remove a replacement ESD from its protective package until you are ready to install it.
Most replacement ESDs are packaged with leads that are electrically shorted together by conductive foam, aluminum foil or other conductive materials.
- 7) Immediately before removing the protective material from the leads of a replacement ESD, touch the protective material to the chassis or circuit assembly into which the device will be installed.
- 8) Minimize body motions when handling unpackaged replacement ESDs. Motions such as brushing clothes together, or lifting a foot from a carpeted floor can generate enough static electricity to damage an ESD.

2. Product Specification

2.1. Product Feature

■ Power

- 2.0 ch : 70 W Total RMS / 800 W PMPO (E330 / E330D)
- 2.0 ch : 20 W Total RMS / 220 W PMPO (E320D)

■ Regional Specialized function

- 1 Tray DISC PLAY
- New Bass Sound System (Called GiGA Sound)

■ Connectivity

- USB : To Enlarge the music play range
- Compatible
 - E330 : MP3, CD/CD-R, RW, WMA
 - E330D / E320D : DVD, DVD±R, DVD±RW, Divx, MP3, CD/CD-R, RW, WMA, WMV, JPEG

2.2. Specifications

■ MM-E320D / MM-E330D Basic Specifications

General	Weight	1.68 Kg (MM-E320D) 1.76 Kg (MM-E330D)
	Dimensions	200 (W) x 142 (H) x 207 (D) mm
	Operating Temperature Range	+5 °C ~ +35 °C
	Operating Humidity Range	10 % to 75 %
FM Tuner	Signal/noise ratio	55 dB
	Usable sensitivity	12 dB
	Total harmonic distortion	0.6 %
Disc (1 Disc)	DVD (Digital Versatile Disc)	Reading Speed : 3.49 ~ 4.06 m/sec.
		Approx. Play Time (Single Sided, Single Layer Disc) : 135 min.
	CD : 12 cm (COMPACT DISC)	Reading Speed : 4.8 ~ 5.6 m/sec.
		Maximum Play Time : 74 min.
Video/Audio	Component Video	Y : 1.0 Vp-p (75 Ω load)
		Pr : 0.70 Vp-p (75 Ω load)
		Pb : 0.70 Vp-p (75 Ω load)
Amplifier	Front speaker output	10 W (8 Ω) x 2 (MM-E320D) 35 W (8 Ω) x 2 (MM-E330D)
	Frequency range	20 Hz ~ 20 KHz
	S/N Ratio	70 dB
	Channel separation	60 dB
	Input sensitivity	(AUX) 900 mV



NOTE

- Samsung Electronics Co., Ltd reserves the right to change the specifications without notice.
- Weight and dimensions are approximate.
- Design and specifications are subject to change without prior notice.
- For the power supply and Power Consumption, refer to the label attached to the product.

■ **MM-E330 Basic Specifications**

General	Weight	1.76 Kg (MM-E330)
	Dimensions	200 (W) x 142 (H) x 207 (D) mm
	Operating Temperature Range	+5 °C ~ +35 °C
	Operating Humidity Range	10 % to 75 %
FM Tuner	Signal/noise ratio	62 dB
	Usable sensitivity	10 dB
	Total harmonic distortion	0.4 %
Disc (1 Disc)	CD : 12 cm (COMPACT DISC)	Reading Speed : 4.8 ~ 5.6 m/sec.
		Maximum Play Time : 74 min.
Video/Audio	Component Video	Y : 1.0 Vp-p (75 Ω load)
		Pr : 0.70 Vp-p (75 Ω load)
		Pb : 0.70 Vp-p (75 Ω load)
Amplifier	Front speaker output	35 W (8 Ω) x 2 (MM-E330)
	Frequency range	20 Hz ~ 20 KHz
	S/N Ratio	70 dB
	Channel separation	60 dB
	Input sensitivity	(AUX) 900 mV

**NOTE**

- Samsung Electronics Co., Ltd reserves the right to change the specifications without notice.
- Weight and dimensions are approximate.
- Design and specifications are subject to change without prior notice.
- For the power supply and Power Consumption, refer to the label attached to the product.

2.3. Specifications Analysis

Model Name	MM-E320D / MM-E330D / MM-E330	MX-C630D
Photo		
OUTPUT POWER	2.0 ch 70 W (E330 / E330D) 2.0 ch 20 W (E320D)	2.0 ch 200 W
FRONT DISPLAY	VFD	VFD
SLEEP	O	O
DIMMER	O	O
CD/DVD	DVD/CD	DVD
MP3	O	O
USB HOST	O	O
CD RIPPING	O	O
TAPE	X	O
AUDIO IN	O	O
HEADPHONE	O	O
FM / RDS	FM	FM
REMOTE KEY	45 KEY / 23 KEY	32 KEY
DUAL VOLTAGE	O	O
SPK IMPENDANCE	8 Ohm	4 Ohm



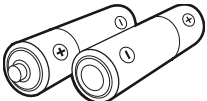
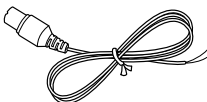
TIP

O : Feature Included

X : Not Included

2.4. Accessories

2.4.1. Supplied Accessories

Accessories	Item	Item code	Remark
	Remote Control	AH59-02427A	Local Samsung Dealer
	Batteries (AAA)	4301-000116	
	Audio Cable	AH39-40001V	
	FM Antenna	AH42-00021A	
	User's Manual	AH68-02458F AH68-02458G AH68-02458H	

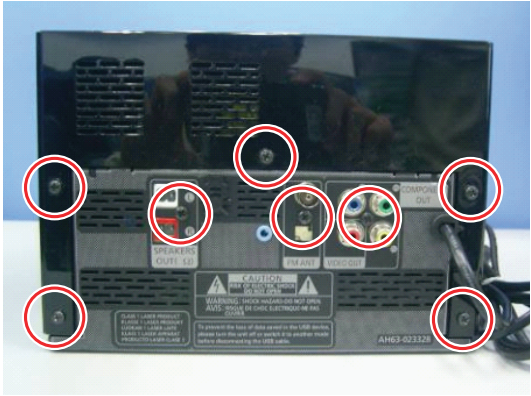
3. Disassembly and Reassembly

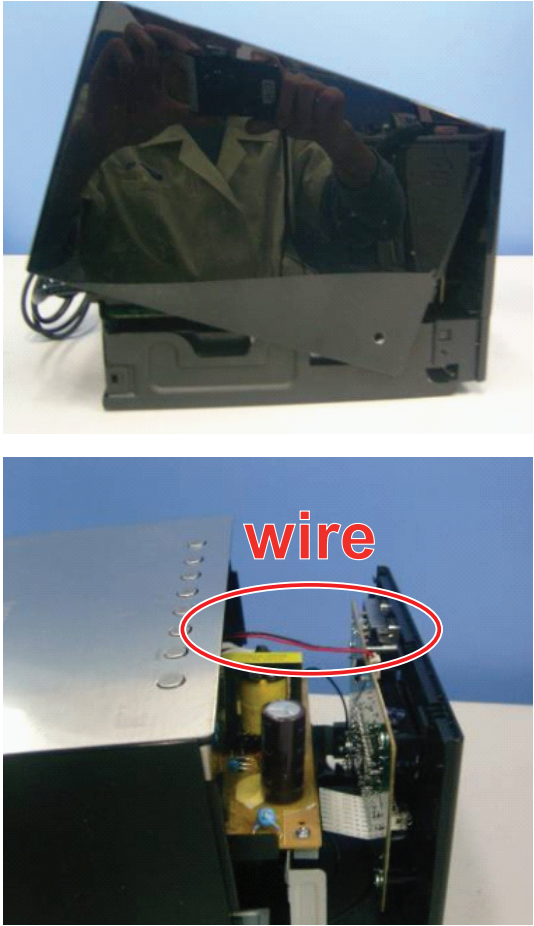
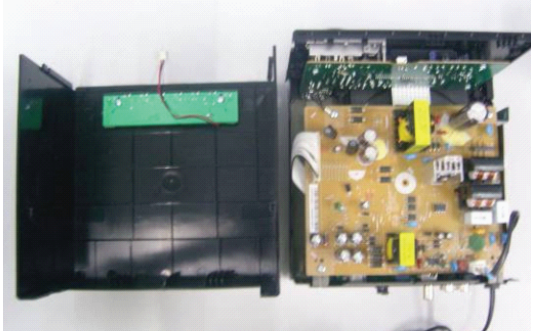
3.1. Main Set Disassembly and Reassembly

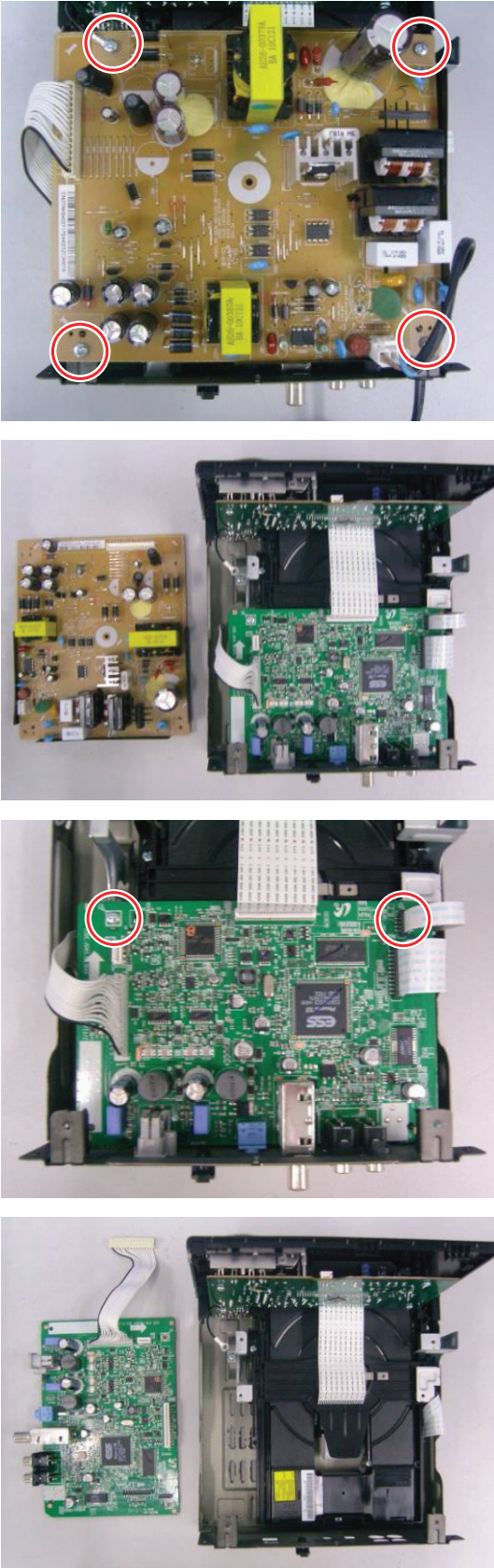


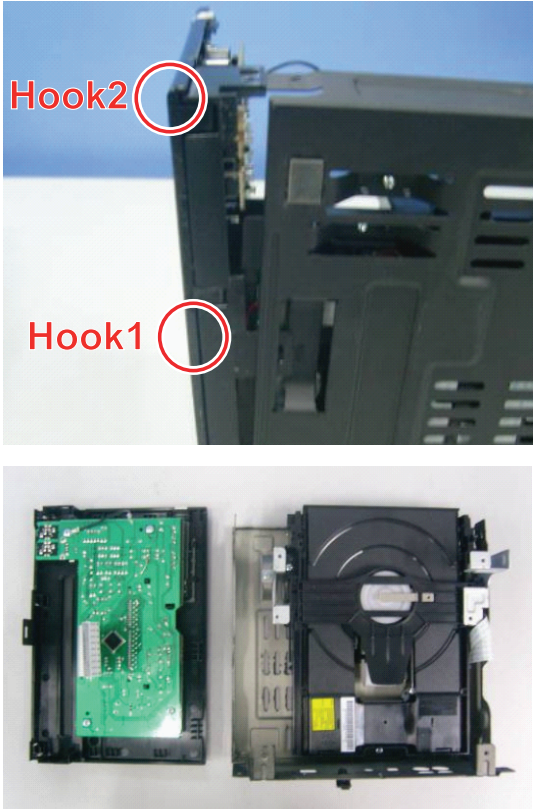
CAUTION

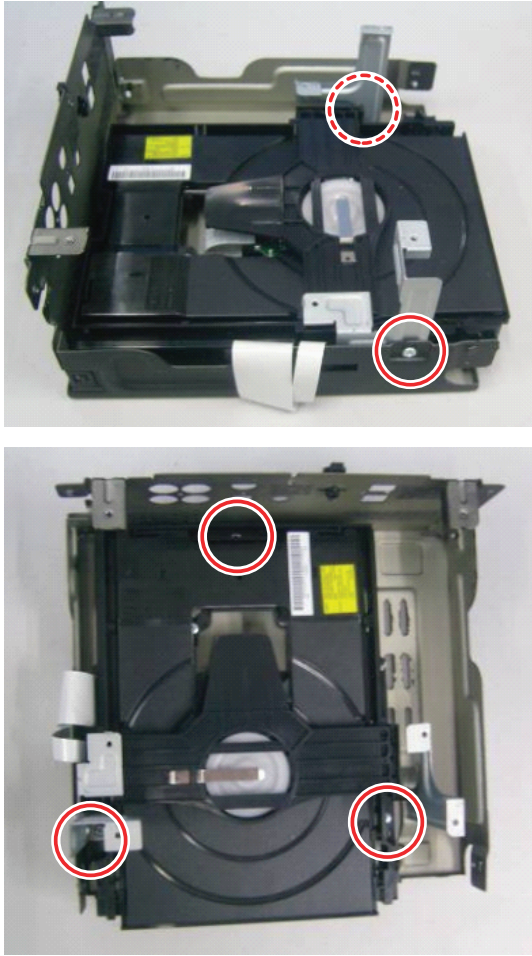
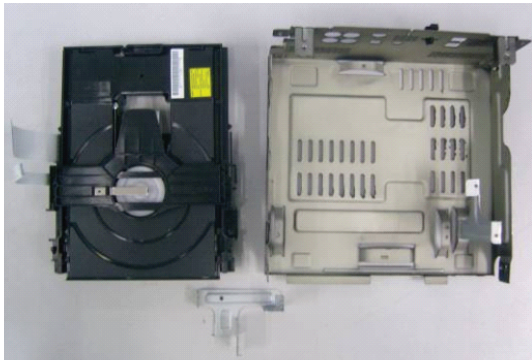
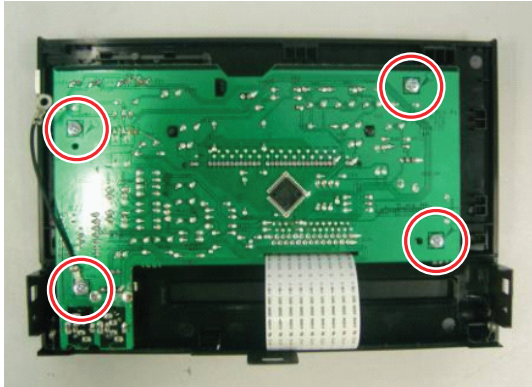
- Be careful to follow the disassembly sequence described in the manual. Otherwise, the product may be damaged.
- Be sure to carefully read and understand the safety instructions before performing any work as the IC chips on the PCB are vulnerable to static electricity.
- In order to assemble reverse the order of disassembly.

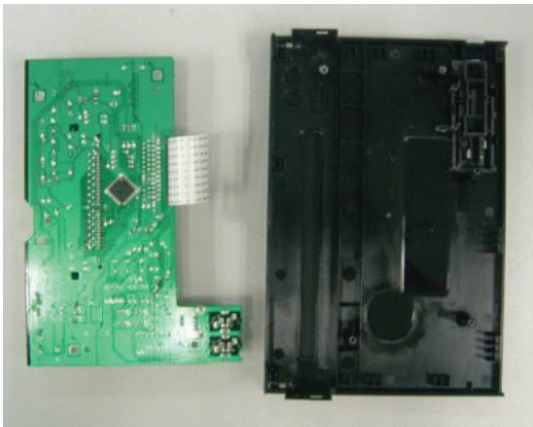
Description	Description Photo
1. Unfasten 10 screws of the set. : BH,+,B,M3,L10,ZPC(BLK),SWRCH18A CAUTION Be careful not to make any scratches as you remove them.	  

Description	Description Photo
2. Separate connect the wire.	 The top photograph shows a person's hands using a screwdriver to remove the back cover of a black electronic device. The bottom photograph shows the internal components of the device, including a yellow capacitor and a green circuit board. A red wire is circled in red and labeled 'wire' in red text.
3. Separate the CABINET-TOP.	 The photograph shows the internal components of the device, including a green circuit board and a yellow capacitor. The components are shown in a disassembled state, with the top cover removed.

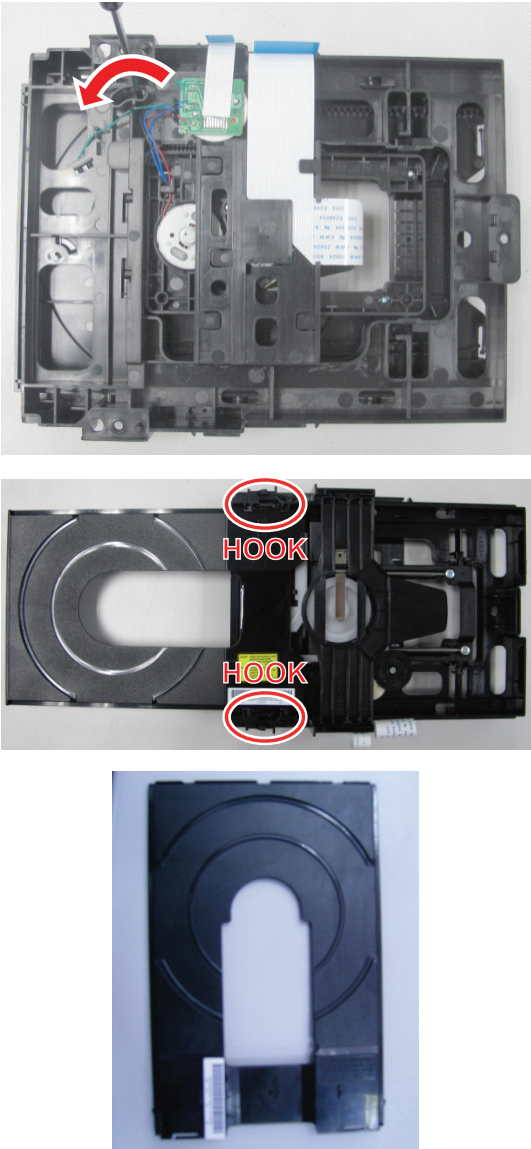
Description	Description Photo
4. Unfasten 6 screws in SMPS PCB, MAIN PCB. : BH,+, -,B,M3,L8,ZPC(WHT),SWRCH18A,ROUND TYPE	

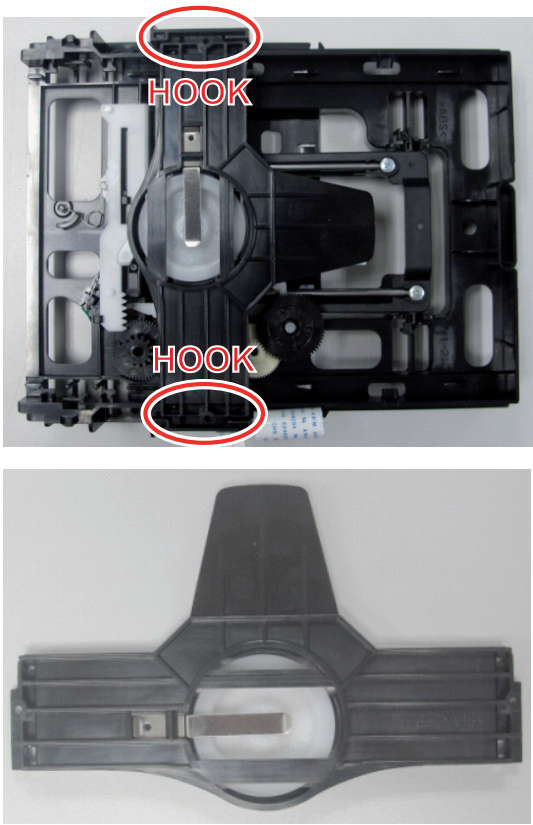
Description	Description Photo
5. Detach two hooks at the same time.	

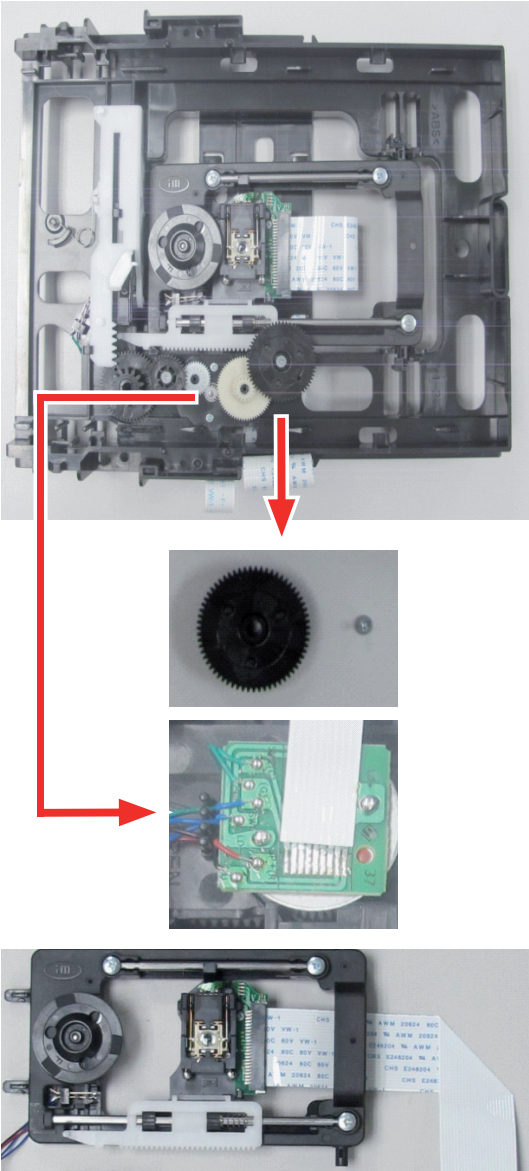
Description	Description Photo
6. Unfasten 5 screws. : BH,+, -,B,M3,L8,ZPC(WHT),SWRCH18A,ROUND TYPE	
7. Separate the DECK and CABINET-BOTTOM.	
8. Unfasten 4 screws. : BH,+, -,B,M3,L8,ZPC(WHT),SWRCH18A,ROUND TYPE	

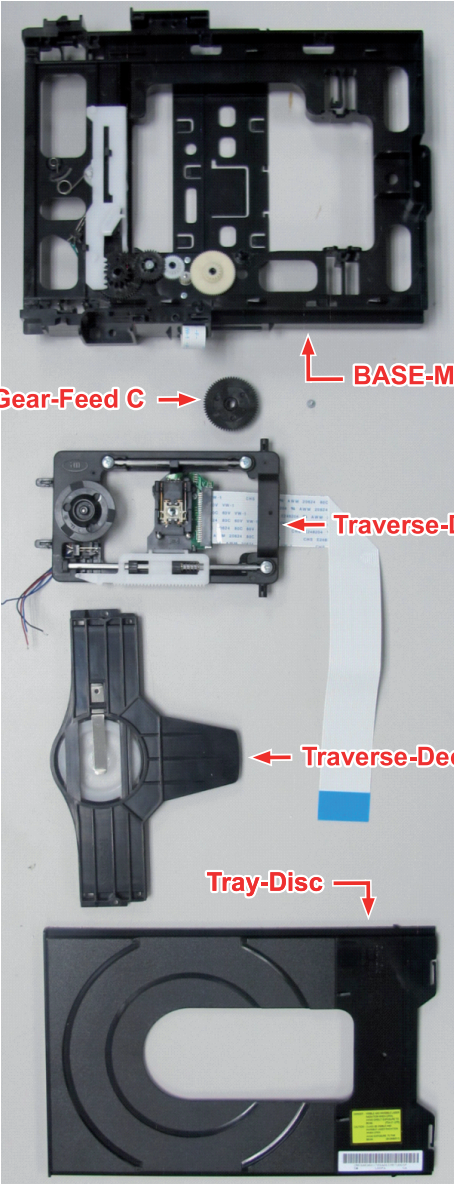
Description	Description Photo
9. Separate the ASSY COVER P-FRONT.	

3.2. DECK Disassembly and Reassembly

Description	Description Photo
1. Separate Tray - Disc from DECK.	

Description	Description Photo
2. Lift up Holder-Cable, separate Traverse-DECK.	

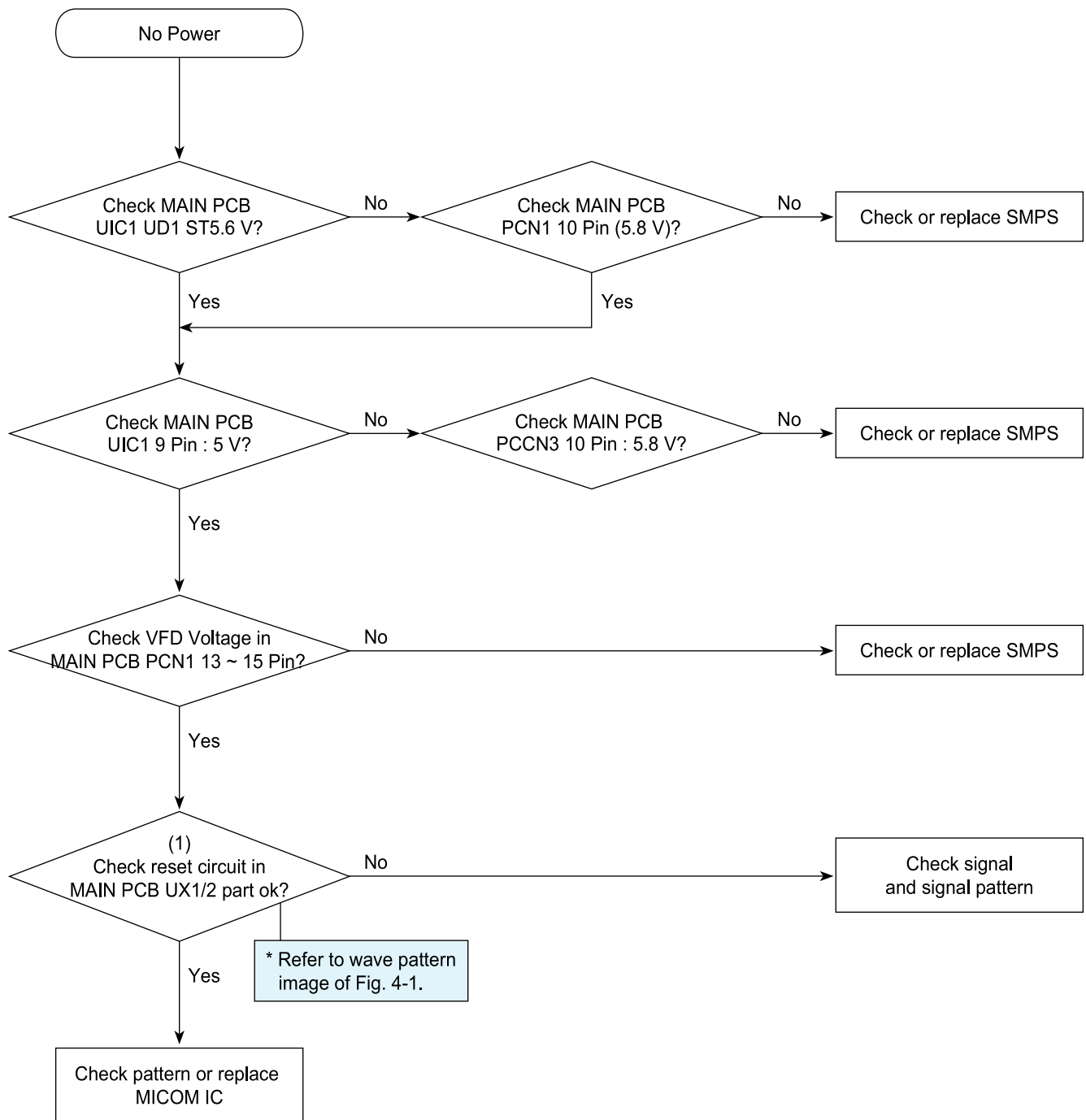
Description	Description Photo
3. Separate Traverse-DECK.	

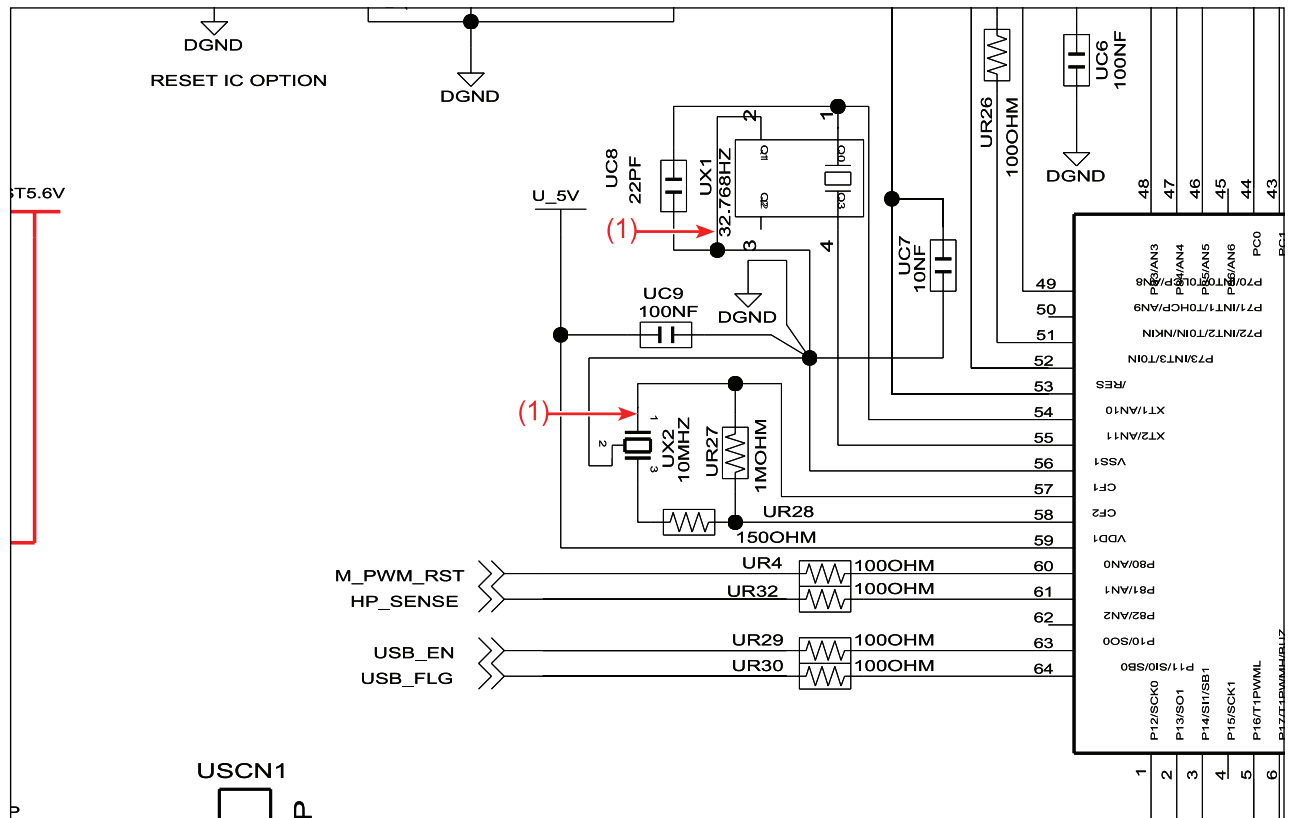
Description	Description Photo
4. Disassemble complete.	 BASE-MAIN Gear-Feed C Traverse-Deck Traverse-Deck Tray-Disc

4. Troubleshooting

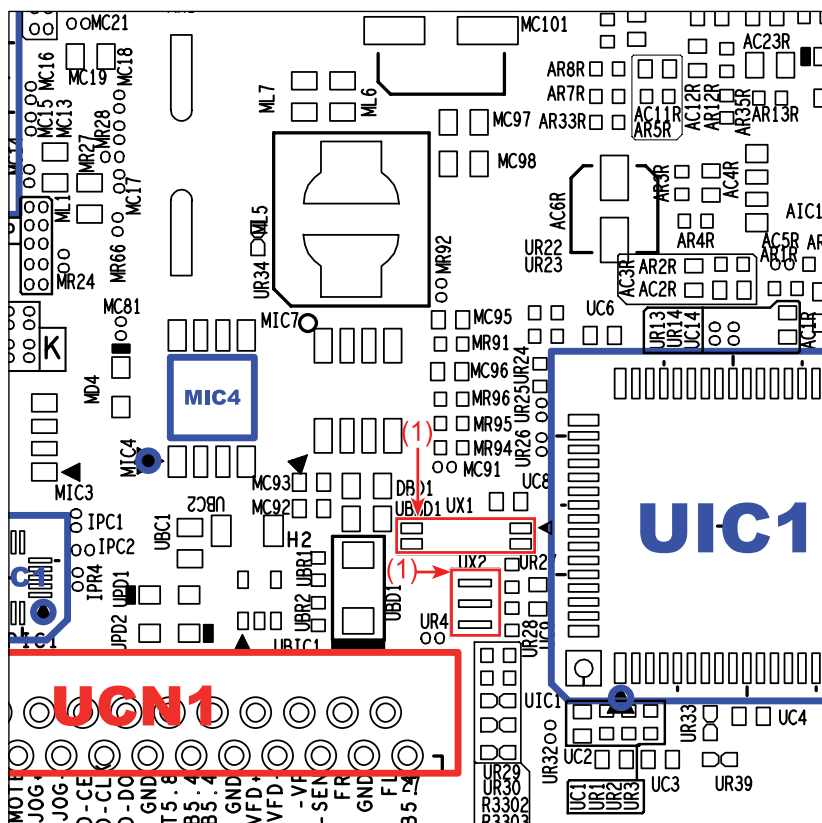
4.1. Checkpoints by Error Mode

Oscilloscope Setting Values	Normal Voltage	24 MHz	32.768 KHz
Voltage/DIV	1 Vol/DIV	1 Vol/DIV	1 Vol/DIV
TIME/DIV	1 uS/DIV	10 ns/DIV	0.1 uS/DIV

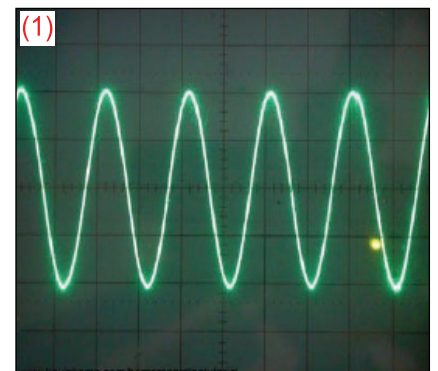
4.1.1. No Power



* 6.6. MAIN-4

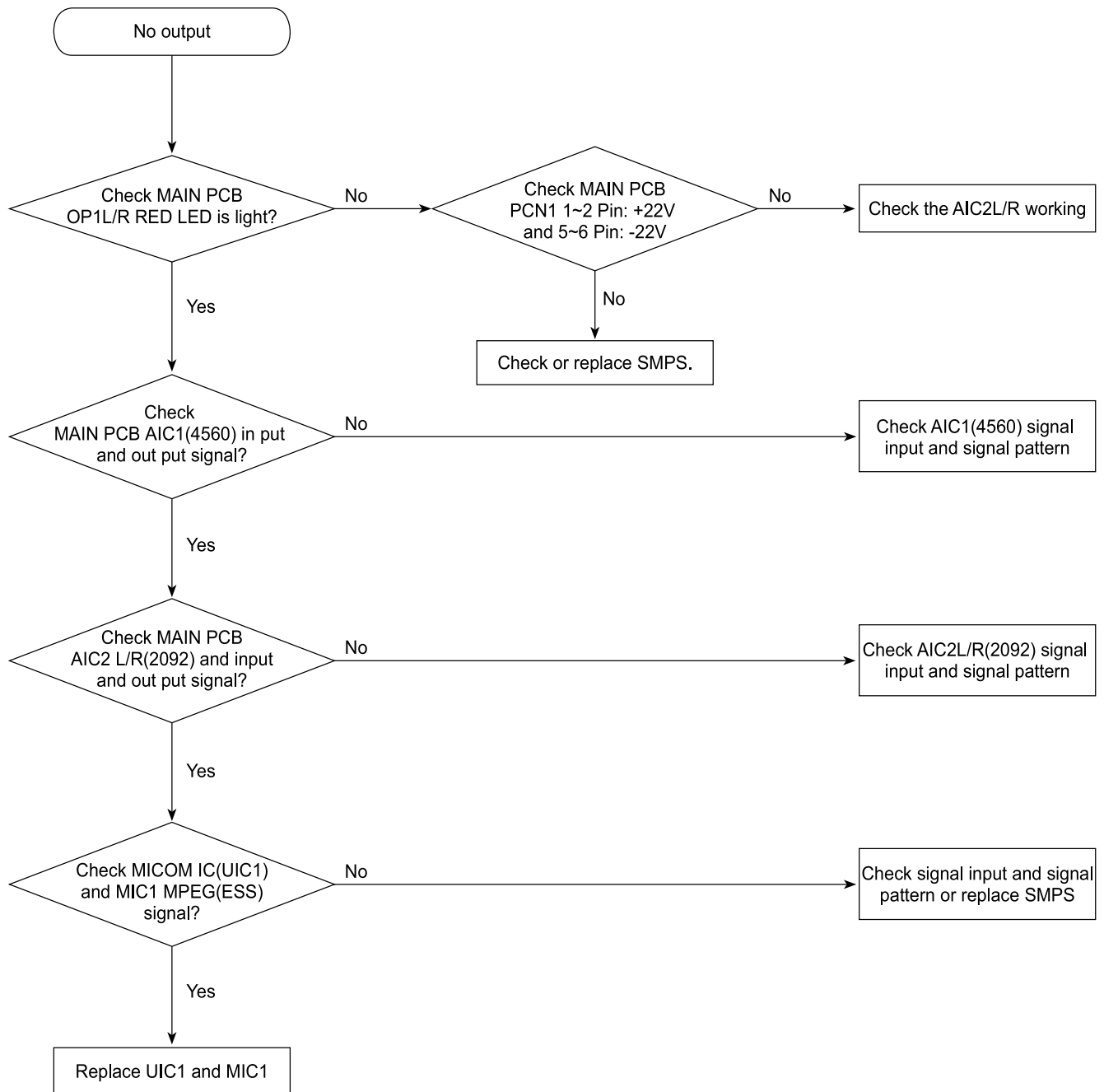


* 5.4. MAIN PCB Top



<Fig. 4-1>

4.1.2. No Output



4.2. Measures to be taken when the Protection Circuit operates

4.2.1. Operation of Power Block Protection Circuit

■ Cases of the SMPS Protection.

- 1) If there is over current at the AMP IC. (Speaker Wire Short)
- 2) If temperature of the AMP IC is over 150 °C.
- 3) There is no power supply for amp.

■ Protection Circuit operates when power problem occurs in the SMPS.

	Location	Pin No.	Protection		Remark
			Open	Short	
SMPS PCB	CNM802	+5.4 V (Pin 9)	X	X	
		+PVDD (+22 V) (Pin 1~2)	X	O	
		-PVDD (about -22 V) (Pin 5~6)	X	O	
		+5.4 VS (Pin 10)	X	O	
		-5 V (Pin 7)	X	X	

4.2.2. Check AMP in Power Protection

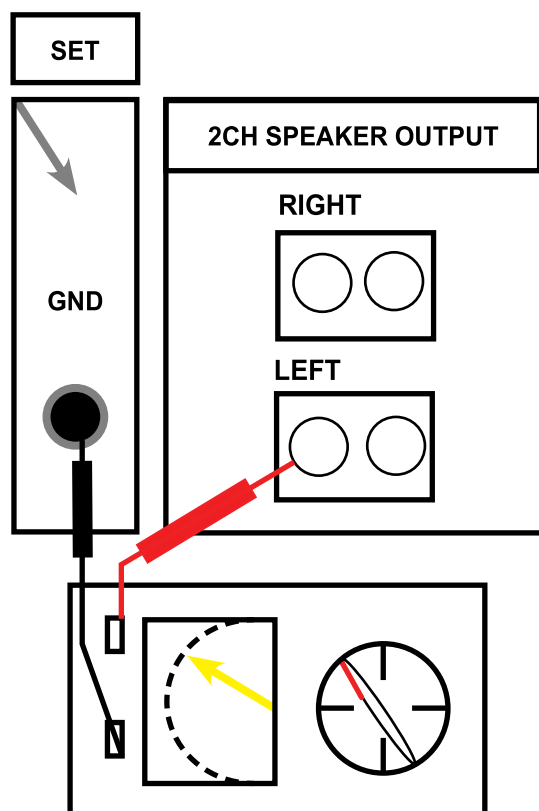
If you think, there are problems at the AMP Part, you can check the PCB without disassembling the set.



CAUTION

Do not connect the power cord during the test!

Measurement Resistance using Tester	
R CH	2 kΩ
L CH	2 kΩ
If Measured Resistance is very different from above numbers, There is a Problem. → AMP Part Problem	



4.3. MICOM, MPEG Initialization & Update

■ Micom Reset & MPEG Reset

- During “No Disc” Displayed, push the “STOP” button 5 second. After displayed “INITIALIZE” set will power off automatically.

■ Micom Update (Only for Flash Micom)

- Method 1) MAIN PCB **OPEN_UCN2** for update JIG. To update Micom, it need Computer, Rom Writer, USB Cables.
- Method 2) Insert USB Memory, and play. “Updating” will be displayed. Set will be power off when finish.

■ Micom & MPEG Version Check

- 1) Power On.
- 2) CD open status.
- 3) Push the number **NEXT** for 5 seconds, check the Micom version.
- 4) Push the number **PREVIOUS** for 5 seconds, check the MPEG version.

■ MPEG Update Method

- 1) Prepare Rom file at USB Memory.
- 2) Insert USB Memory, and play. “Updating” will be displayed and glisten. Set will be power off → on.
- 3) The disc is automatically ejected. (If you use USB memory, detach USB memory.)

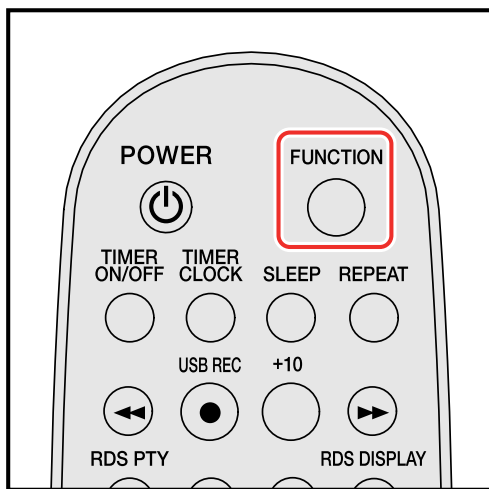
4.4. Buyer-Region Code Setting Method

4.4.1. The inserting method of Region Code after replacing the Main PBA

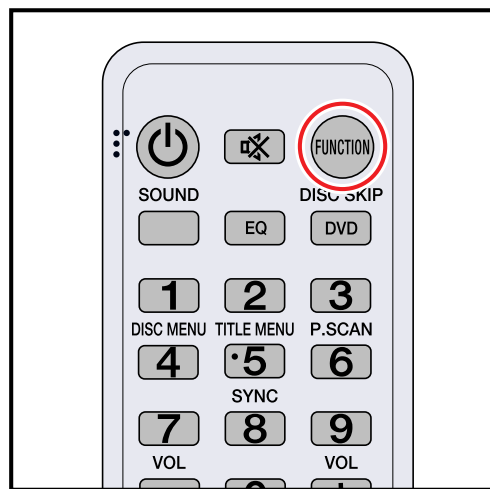
NOTE

- When replacing the Main PBA and System Micom should be inserted the region code.
- The set is not working properly if you don't insert the region code.
- The region code is inserted by the remote control.

1) Press “FUNCTION” button several times to change to AUX mode.

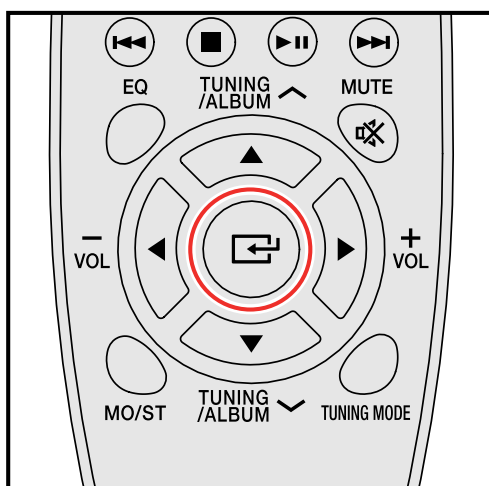


<MM-E330>

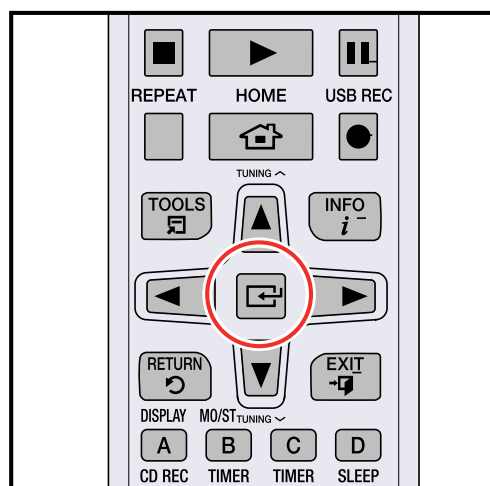


<MM-E320D / MM-E330D>

2) Press “ENTER” button more than 5 seconds.



<MM-E330>



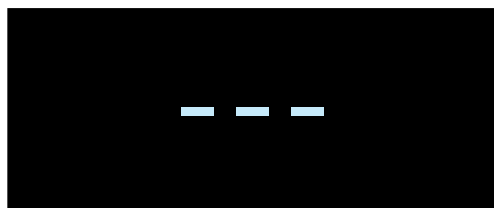
<MM-E320D / MM-E330D>

- 3) After step (2), you can see “TEST – –” on the VFD. Insert number “46” to select Region Code.



- 4) After step (3), you can see “-- --” on the VFD.

Insert the Region Code corresponding model with “0 ~ 9” buttons on the remote control.



- 5) Turn the Power off.

Table 4.1 MM-E330 Option Table

Region Code	Area
60	Africa, Pakistan
61	BRAZIL, CHILE, PERU, ARGENTINA, COMBIA
62	
63	China (semi_mic)
64	Europe
65	HONGKONG
66	JAPAN
67	KOR
68	Latin American
69	Mexico
70	Philippines
71	Russia (full_mic)
72	Russia (semi_mic)
73	South Africa
74	Taiwan
75	USA, CANADA
76	Newzealand
77	England
78	Australia
79	Iran (HACO)
80	India
81	Israel
82	Middle Asia, Moroco, Algeria
83	Indonesia, Asia
84	Singapore

Table 4.2 MM-E330D Option Table

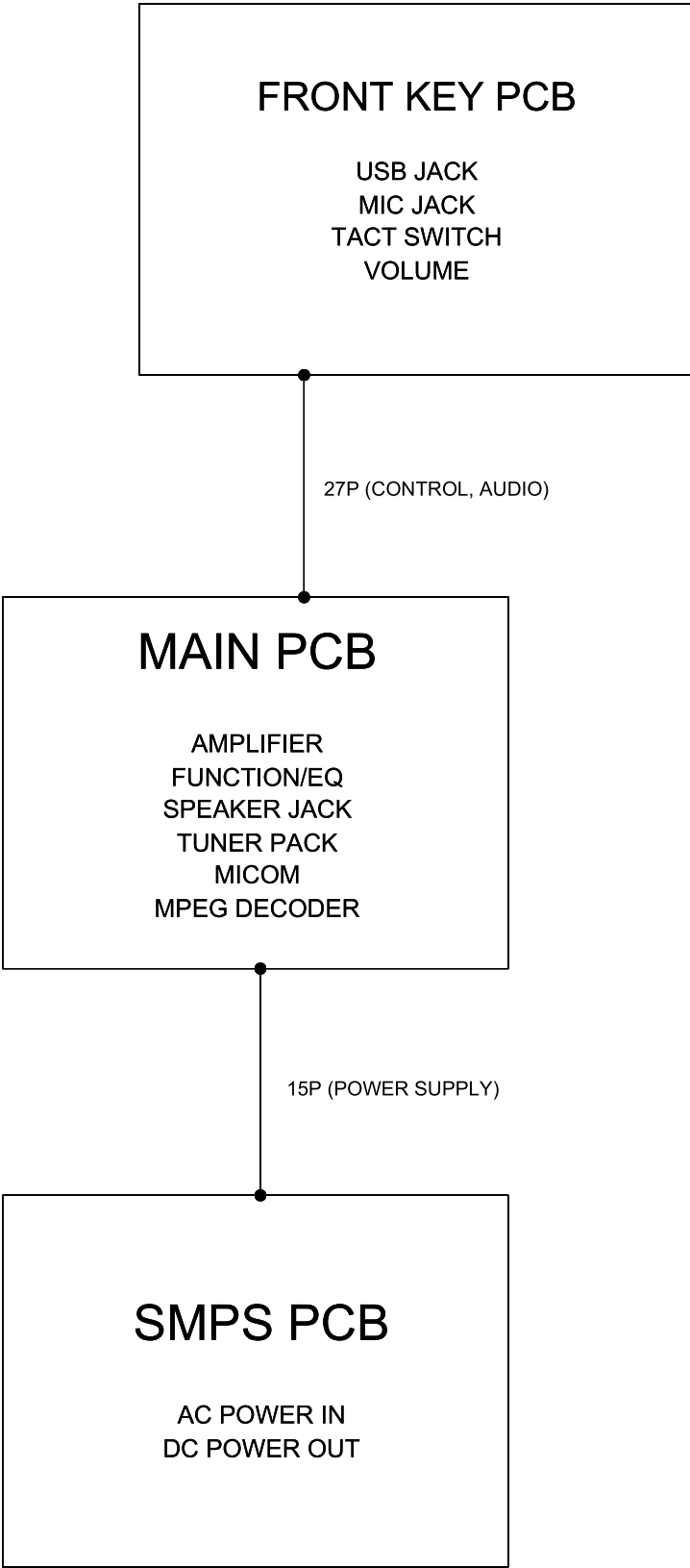
Region Code	Area
90	Africa, Pakistan
91	BRAZIL, CHILE, PERU, ARGINTINA, COMBIA
92	
93	China (semi_mic)
94	Europe
95	HONGKONG
96	JAPAN
97	KOR
98	Latin American
99	Mexico
100	Philippines
101	Russia (full_mic)
102	Russia (semi_mic)
103	South Africa
104	Taiwan
105	USA, CANADA
106	Newzealand
107	England
108	Australia
109	Iran (HACO)
110	India
111	Israel
112	Middle Asia, Morocco, Algeria
113	Indonesia, Asia
114	Singapore

Table 4.3 MM-E320D Option Table

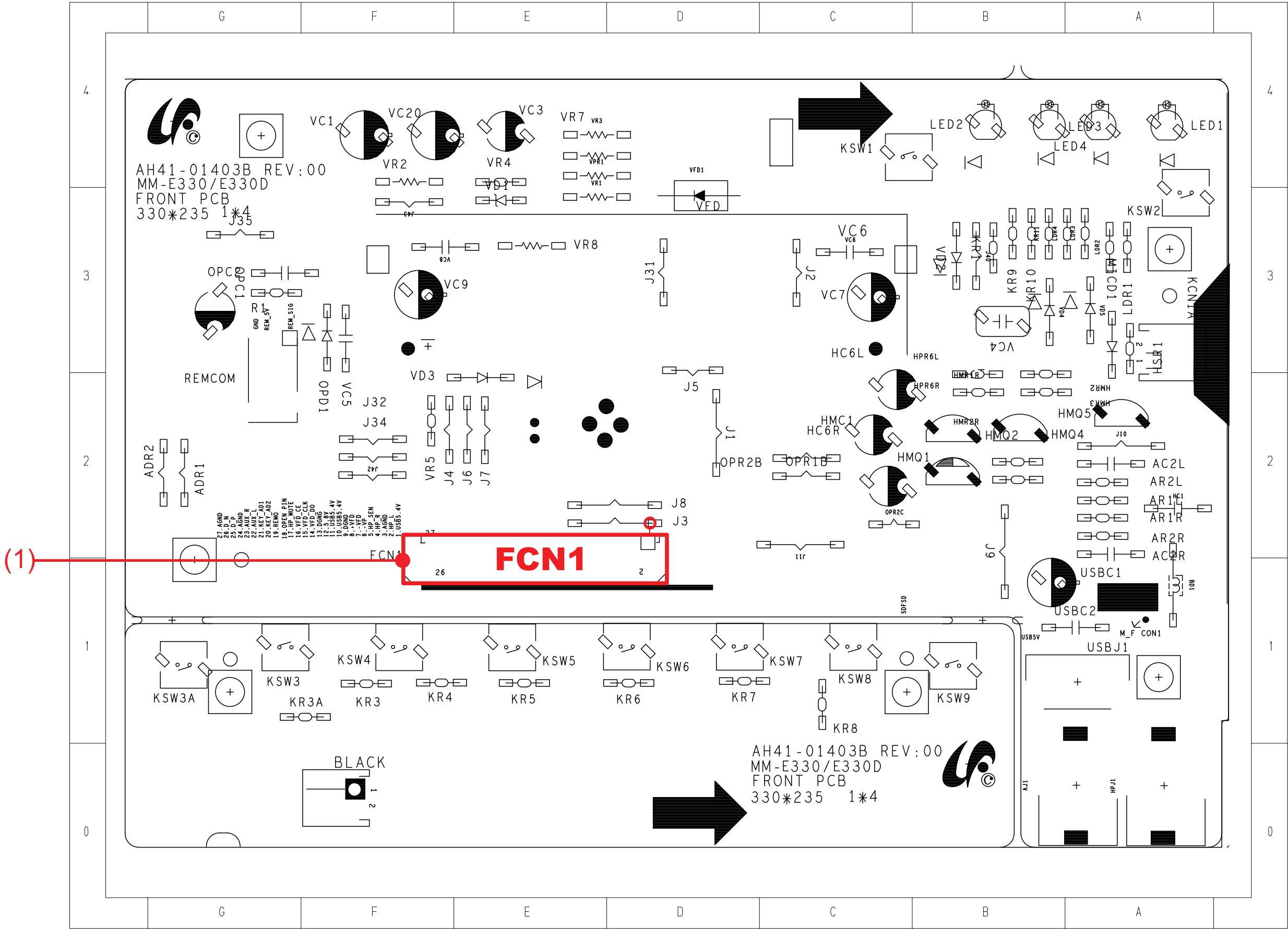
Region Code	Area
30	Africa, Pakistan
31	BRAZIL, CHILE, PERU, ARGENTINA, COMBIA
32	
33	China (semi_mic)
34	Europe
35	HONGKONG
36	JAPAN
37	KOR
38	Latin American
39	Mexico
40	Philippines
41	Russia (full_mic)
42	Russia (semi_mic)
43	South Africa
44	Taiwan
45	USA, CANADA
46	Newzealand
47	England
48	Australia
49	Iran (HACO)
50	India
51	Israel
52	Middle Asia, Morocco, Algeria
53	Indonesia, Asia
54	

5. PCB Diagram

5.1. Wiring Diagram



5.2. FRONT PCB Top

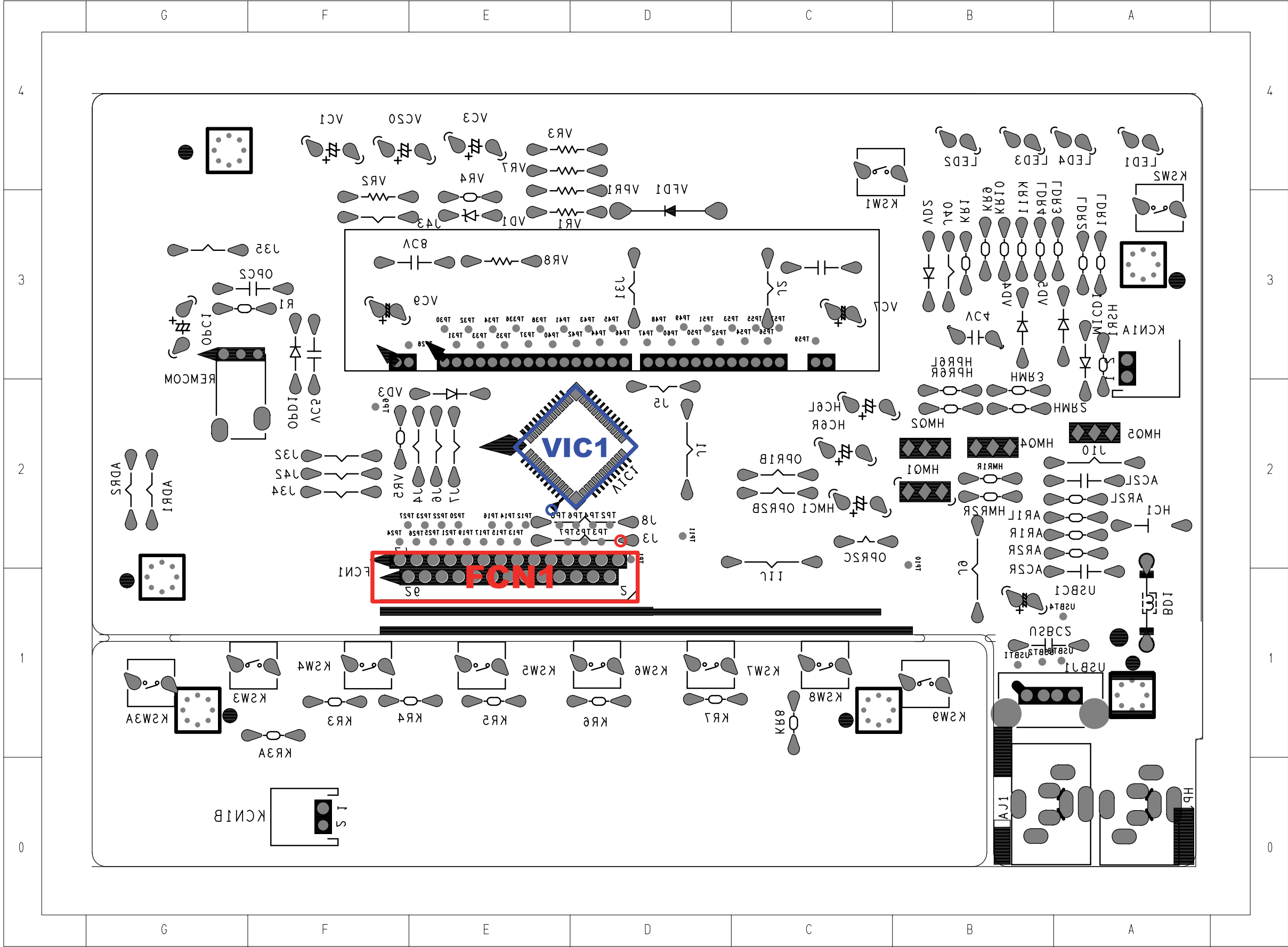


5.2.1. Pin Connection

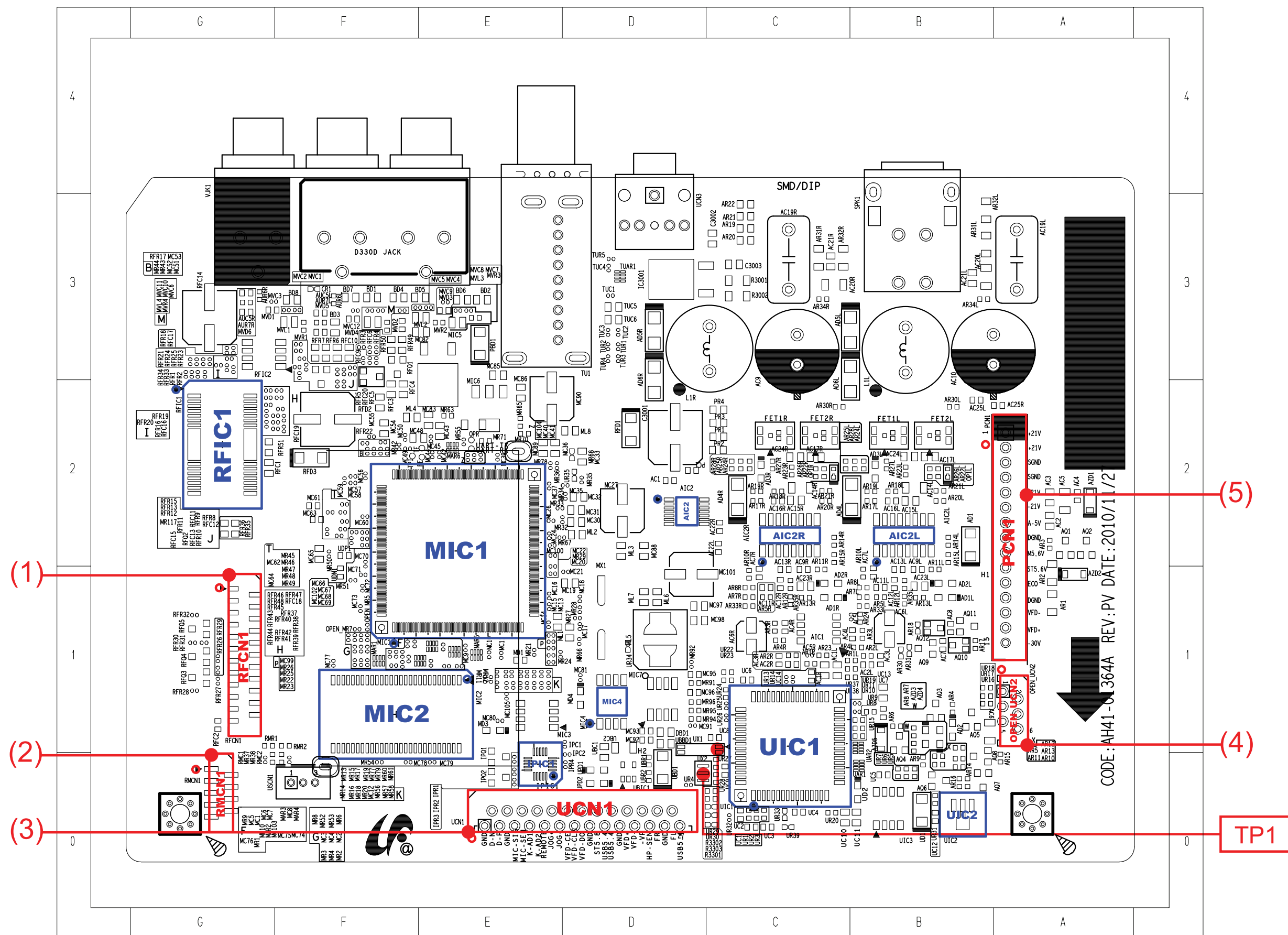
1) FCN1
MAIN PCB Connection

Pin No.	Signal
1	USB 5.4V
2	FL
3	AGND
4	FR
5	HP_SENSE
6	-28V
7	VFD-
8	VFD+
9	DGND
10	USB 5.4V
11	USB 5.4V
12	5.8V
13	DGND
14	VFD_DO
15	VFD_CLK
16	VFD_CE
17	JOG-
18	JOG+
19	REMOTE
20	KEY_AD2
21	KEY_AD1
22	MIC_SENS
23	MIC_SIG
24	GND
25	D+
26	D-
27	GND

5.3. FRONT PCB Bottom



5.4. MAIN PCB Top



5.4.1. Pin Connection

1) RFCN1

CD/DVD Servo Data Connection

Pin No.	Signal
1	CD_VR
2	CD_MPD
3	CD_LD
4	LD_GND
5	SW
6	F-
7	T-
8	T+
9	F+
10	B
11	C
12	D
13	A
14	E
15	F
16	Vcc
17	Vref
18	GND
19	DVD_VR
20	DVD_MPD
21	DVD_LD
22	RF
23	Vcc_5V

2) RMCN1

CD/DVD Servo Control Connection

Pin No.	Signal
1	LOADP_DCMOP
2	LOADP_DCMON
3	SLED_N
4	SLED_P
5	INSW
6	OUTSW
7	DGND
8	DCLOAD_P
9	DCLOAD_N

3) UCN1

Front PCB Connection

Pin No.	Signal
1	GND
2	D-
3	D+
4	GND
5	MIC_SIG
6	MIC_SENS
7	KEY_AD1
8	KEY_AD2
9	REMOTE
10	JOG+
11	JOG-
12	VFD_CE
13	VFD_CLK
14	VFD_DO
15	DGND
16	5.8V
17	USB 5.4V
18	USB 5.4V
19	DGND
20	VFD+
21	VFD-
22	-28V
23	HP_SENSE
24	FR
25	AGND
26	FL
27	USB 5.4V

4) OPEN_UCN2

MICOM Update Port

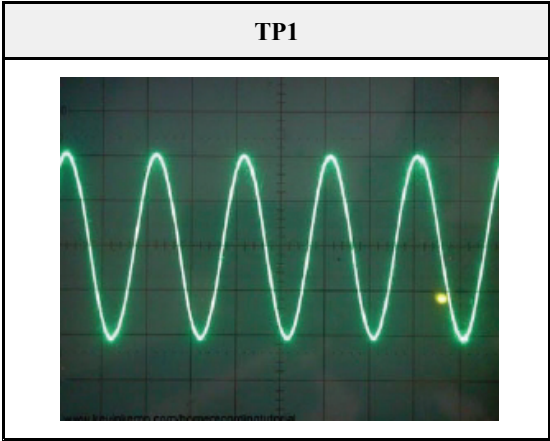
Pin No.	Signal
1	U_5V
2	DBGP2
3	DBGP1
4	DBGP0
5	DGND

5) PCN1

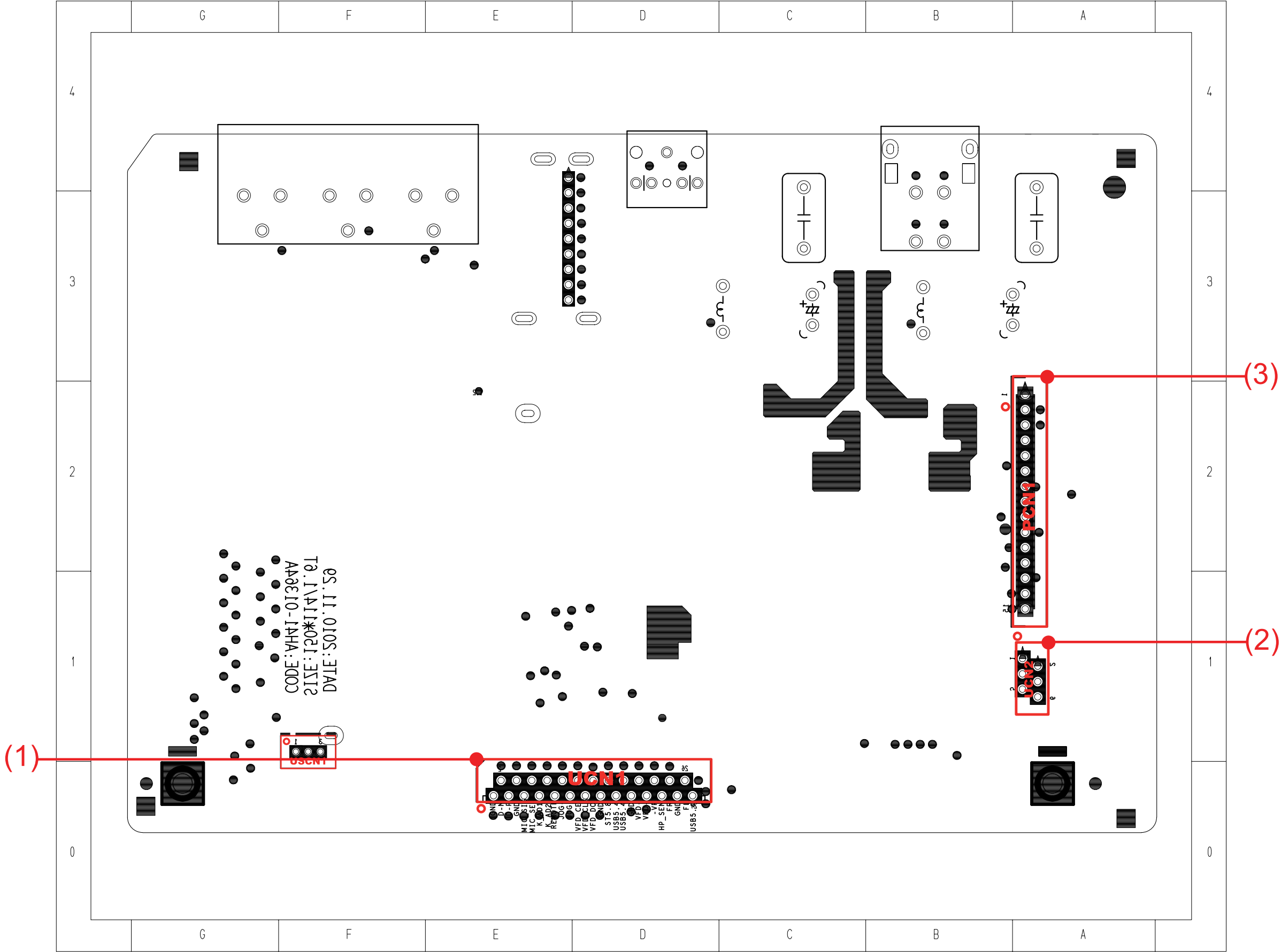
Power Input Connection

Pin No.	Signal
1	PVDD+21V
2	PVDD+21V
3	SGND
4	SGND
5	PVDD-21V
6	PVDD-21V
7	-5V
8	DGND
9	M5.6V
10	5.8V
11	ECO
12	DGND
13	VFD+
14	VFD-
15	-28V

5.4.2. Test Point Wave Form



5.5. MAIN PCB Bottom



5.5.1. Pin Connection

1) UCN1

Front PCB Connection

Pin No.	Signal
1	GND
2	D-
3	D+
4	GND
5	MIC_SIG
6	MIC_SENS
7	KEY_AD1
8	KEY_AD2
9	REMOTE
10	JOG+
11	JOG-
12	VFD_CE
13	VFD_CLK
14	VFD_DO
15	DGND
16	5.8V
17	USB 5.4V
18	USB 5.4V
19	DGND
20	VFD+
21	VFD-
22	-28V
23	HP_SENSE
24	FR
25	AGND
26	FL
27	USB 5.4V

2) OPEN_UCN2

MICOM Update Port

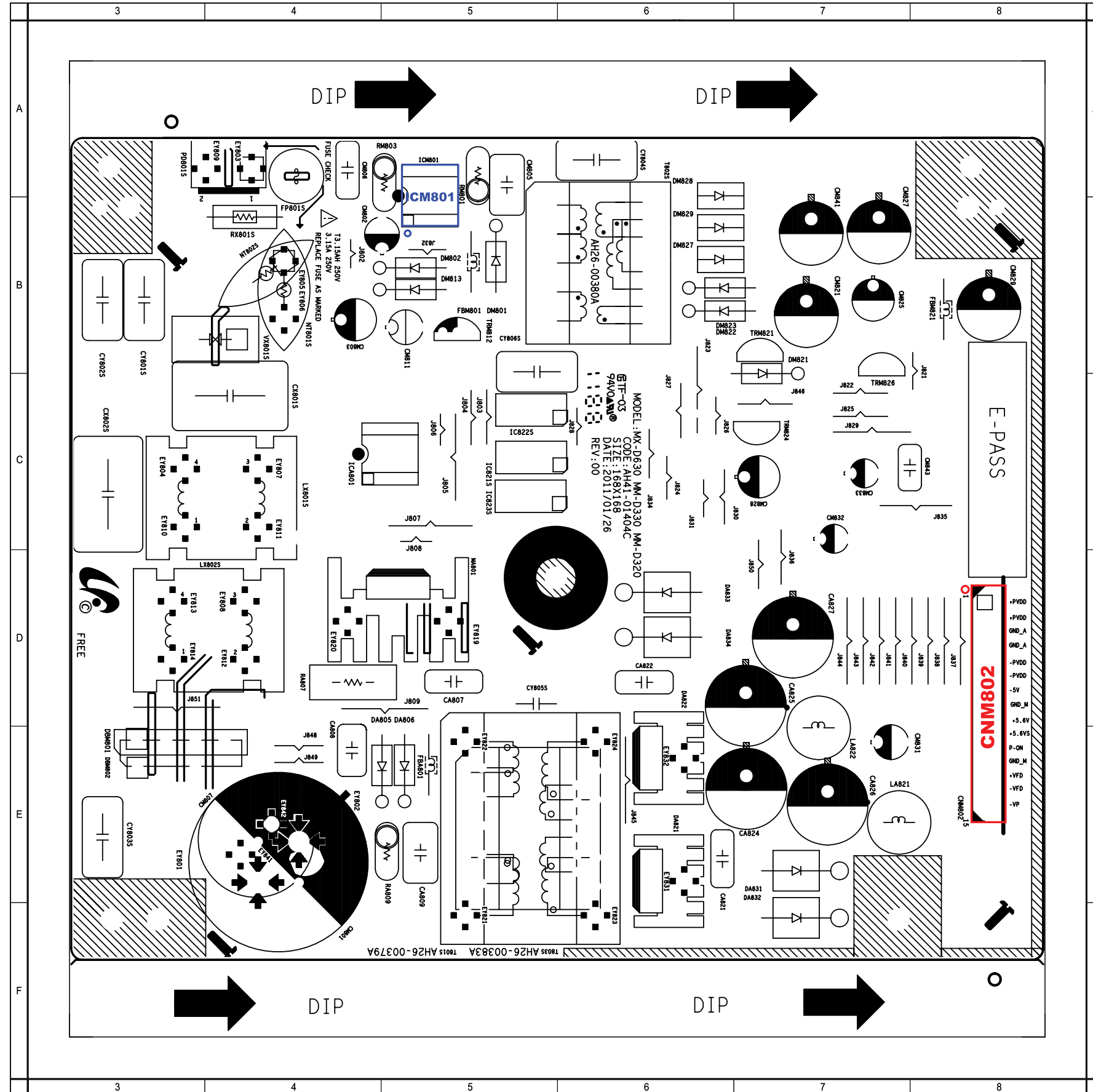
Pin No.	Signal
1	U_5V
2	DBGP2
3	DBGP1
4	DBGP0
5	DGND

3) PCN1

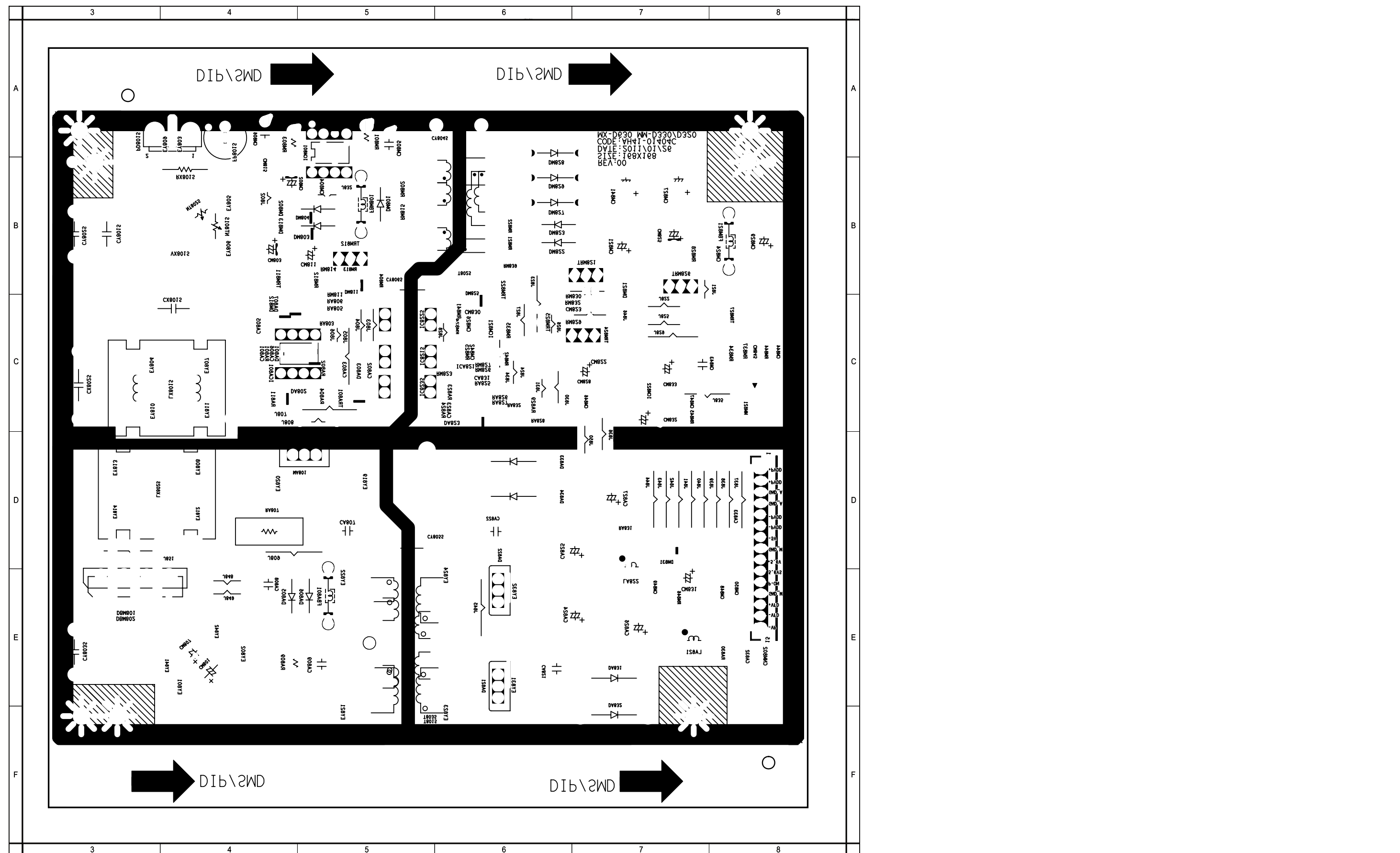
Power Input Connection

Pin No.	Signal
1	PVDD+21V
2	PVDD+21V
3	SGND
4	SGND
5	PVDD-21V
6	PVDD-21V
7	-5V
8	DGND
9	M5.6V
10	5.8V
11	ECO
12	DGND
13	VFD+
14	VFD-
15	-28V

5.6. SMPS PCB Top

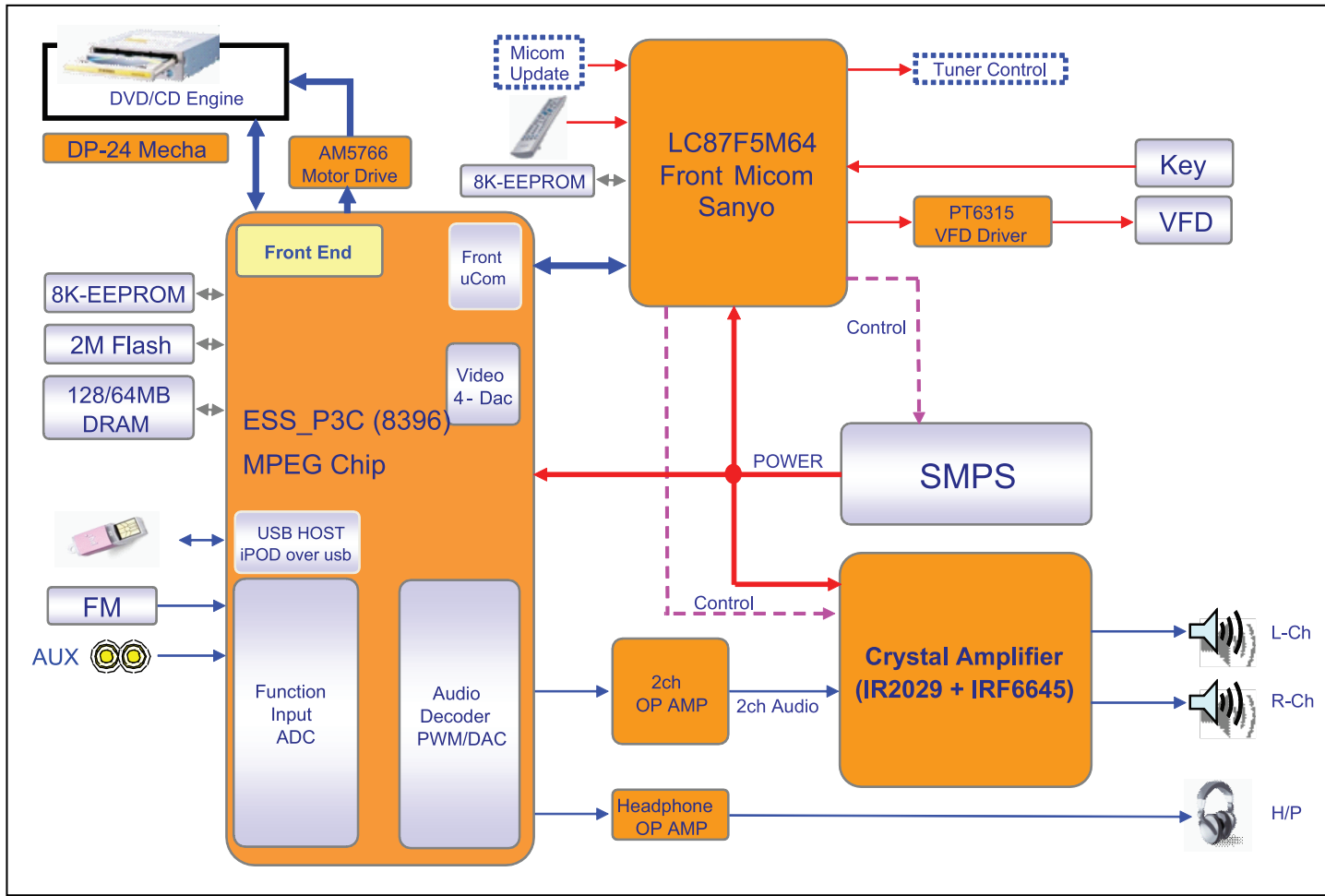


5.7. SMPS PCB Bottom



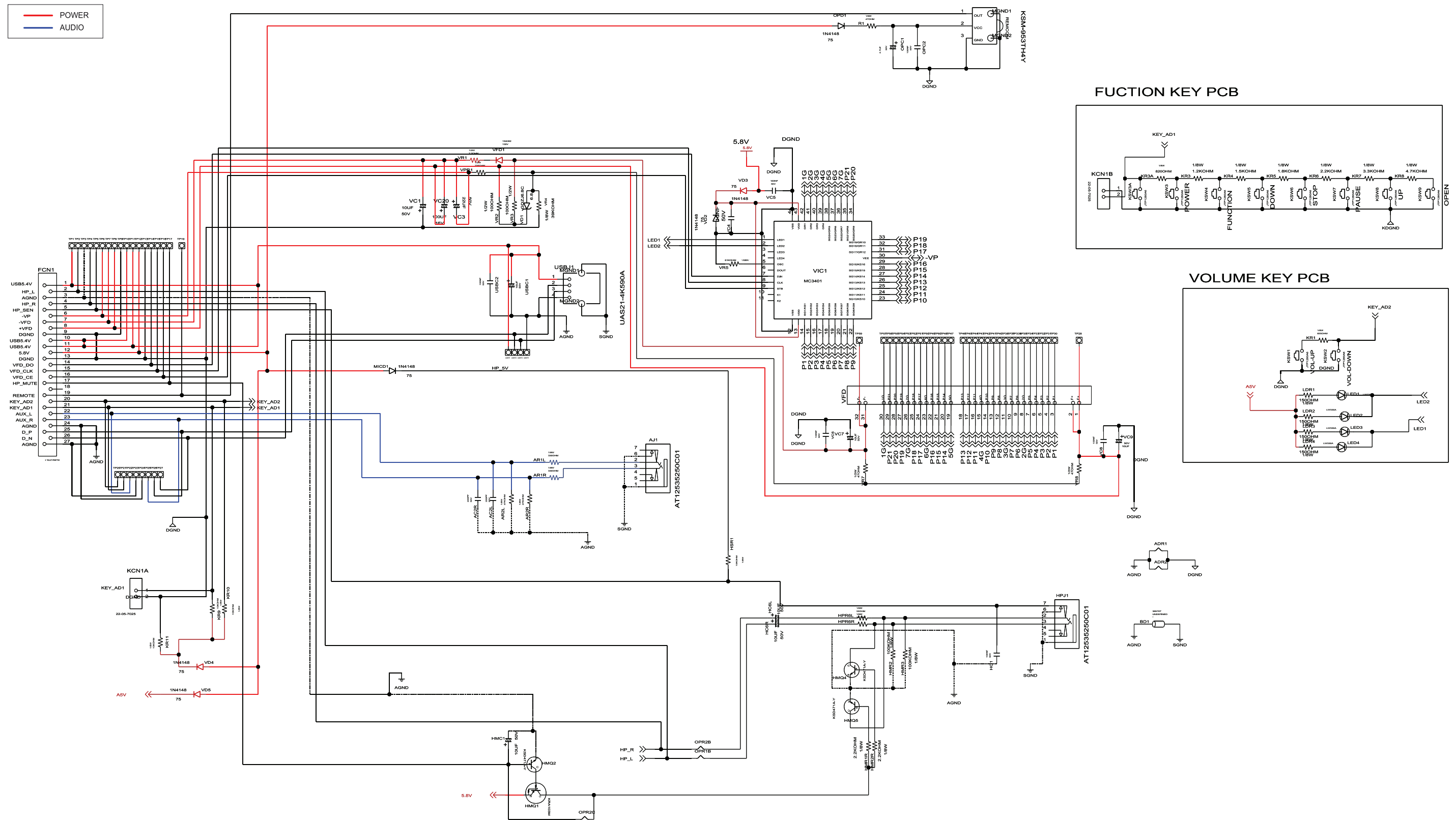
6. Schematic Diagram

6.1. Overall Block Diagram

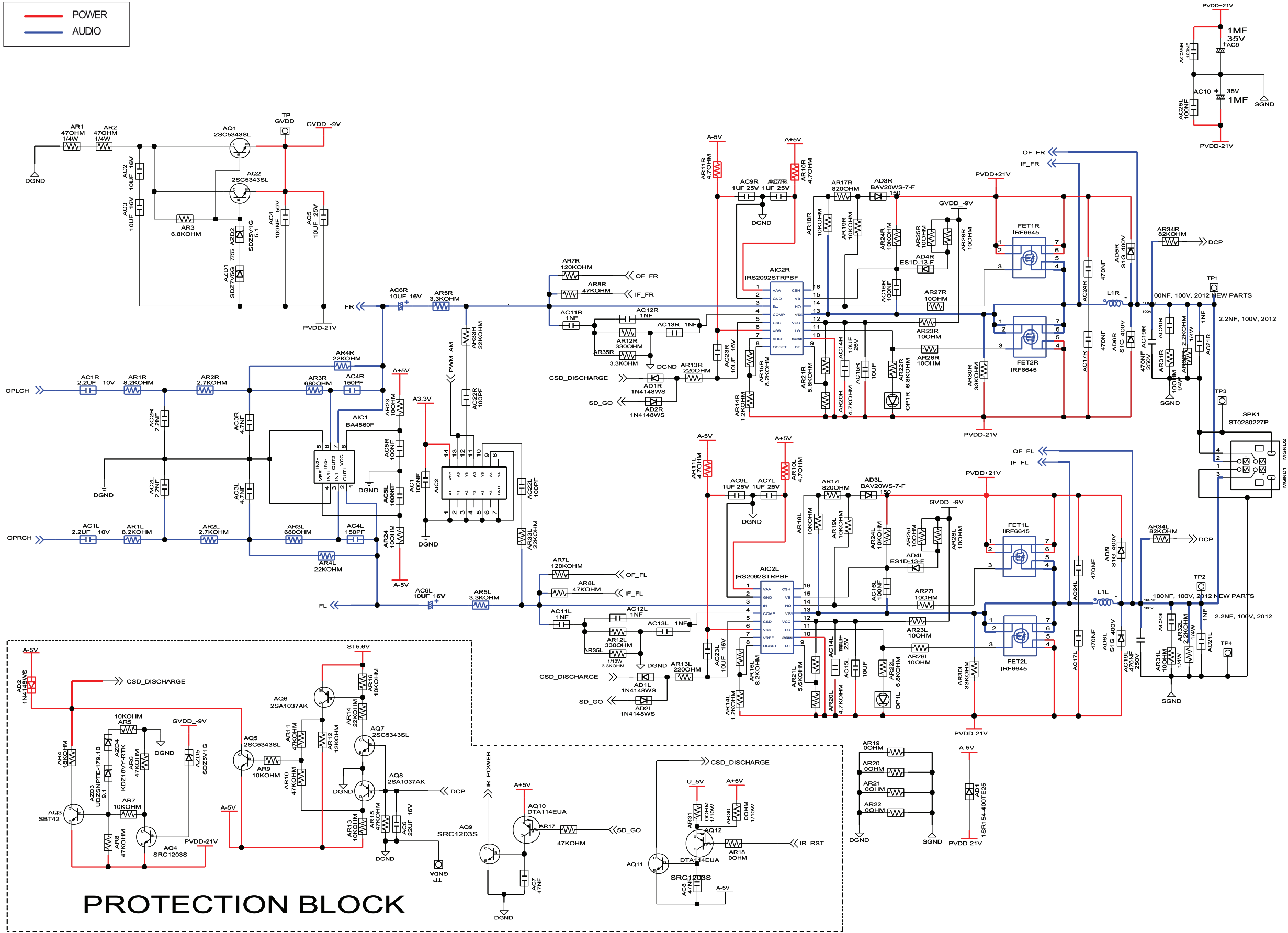


- The Main Micom IC is LC87F5M64. It's smaller version of LC87F5NC8A at last year. MPEG chip is ES8396SCD.
- The Main Micom control every IC in this PCB.
- Video signal is come from DVD Mecha and go to the MPEG IC. Then MPEG IC decode this signal to real video signal.
- Audio signal is come from DVD Mecha, TUNER, AUX, MIC. Then MPEG IC decode and convert to analogue signal.
- This signal go to the Crystal Amplifier. And amplified signal is Low Pass Filtered. This signal is real audio signal.

6.2. FRONT

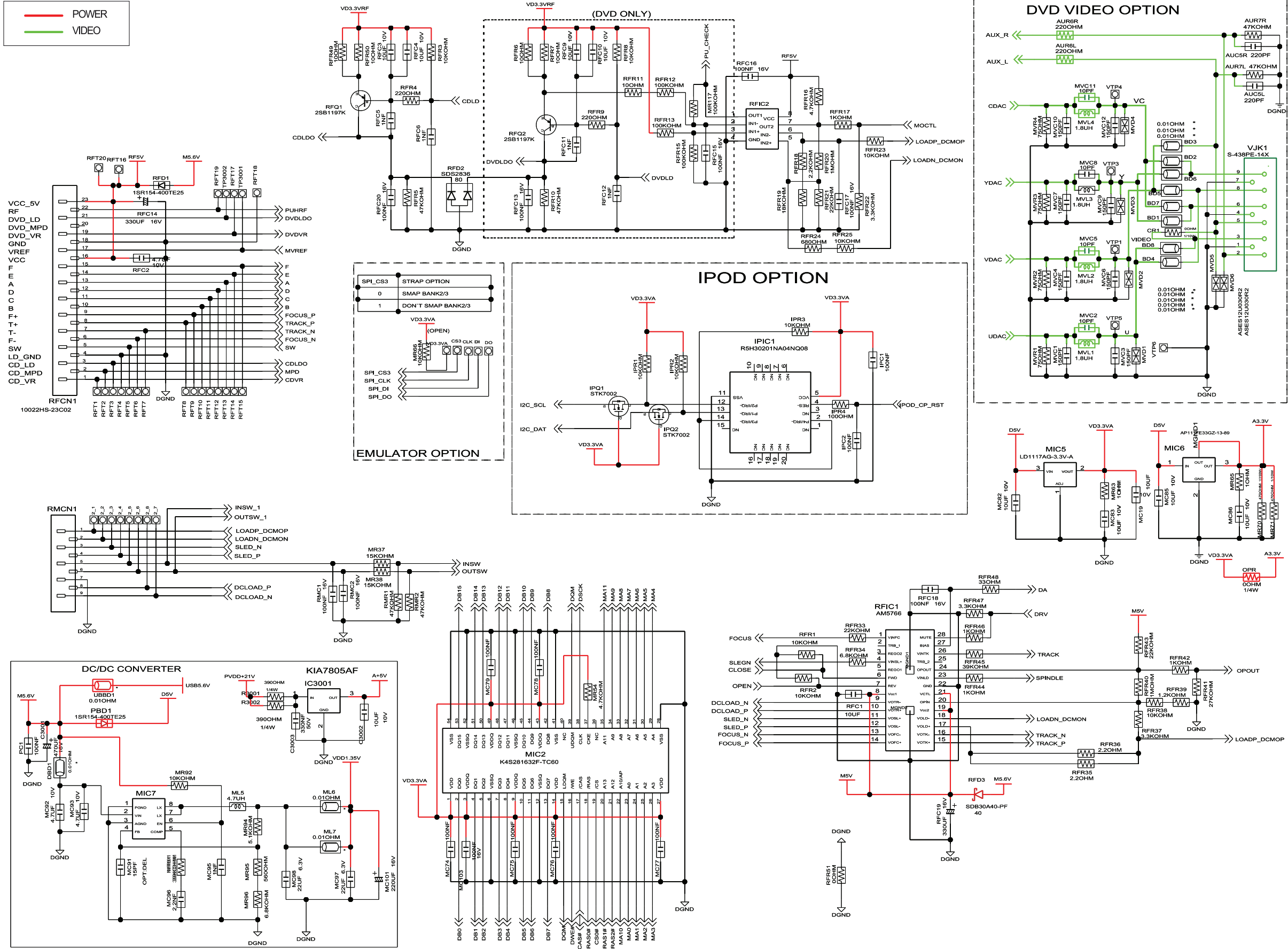


6.3. MAIN-1

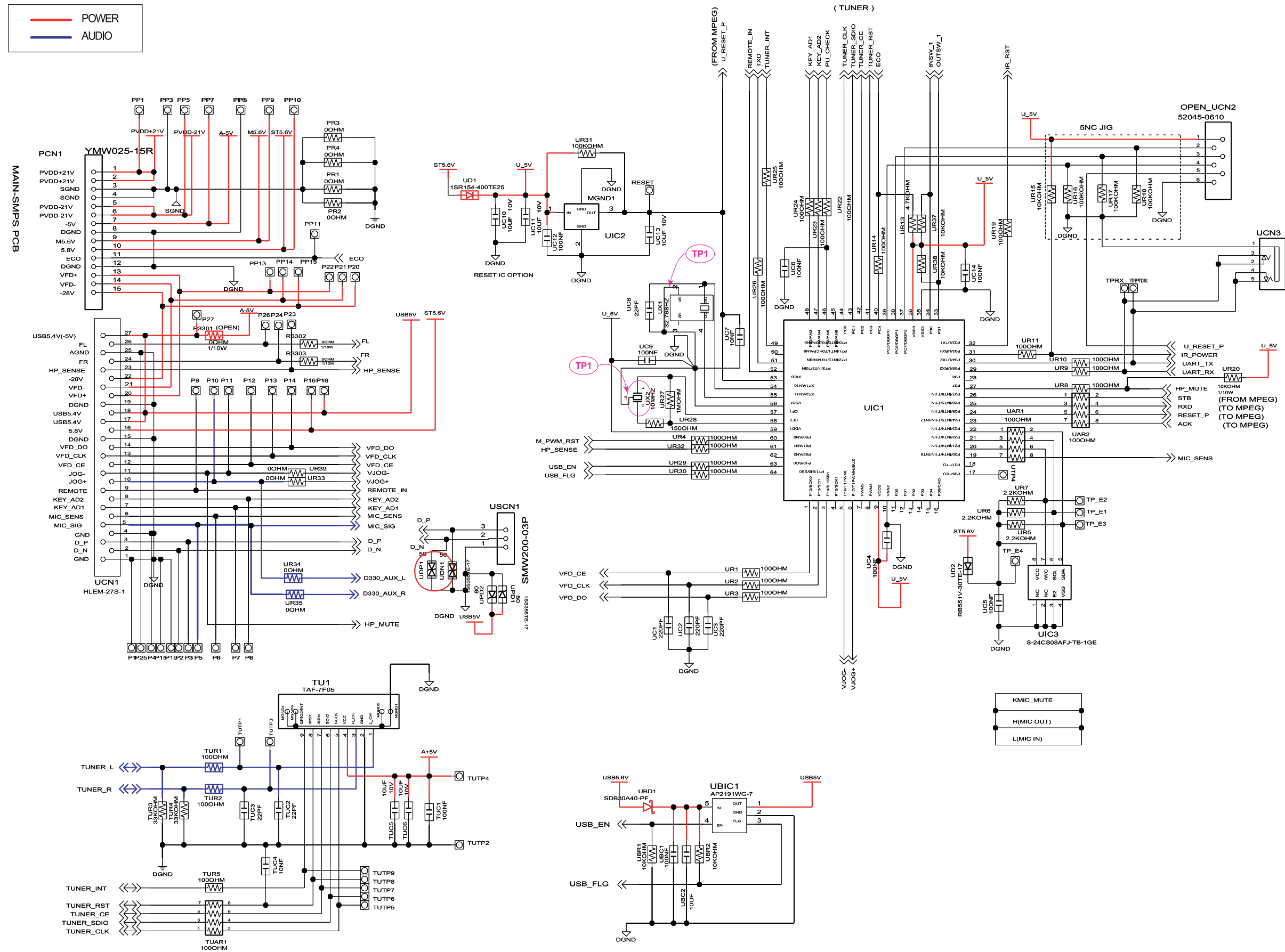




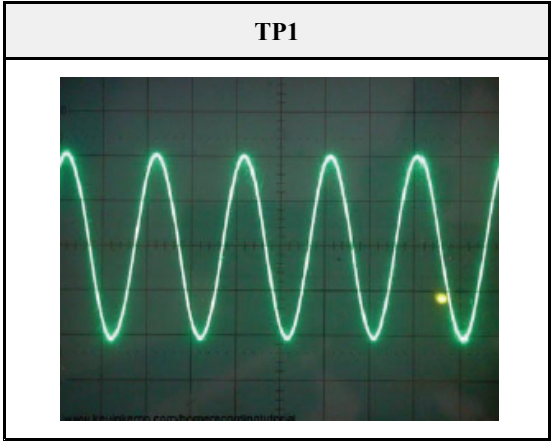
6.5. MAIN-3

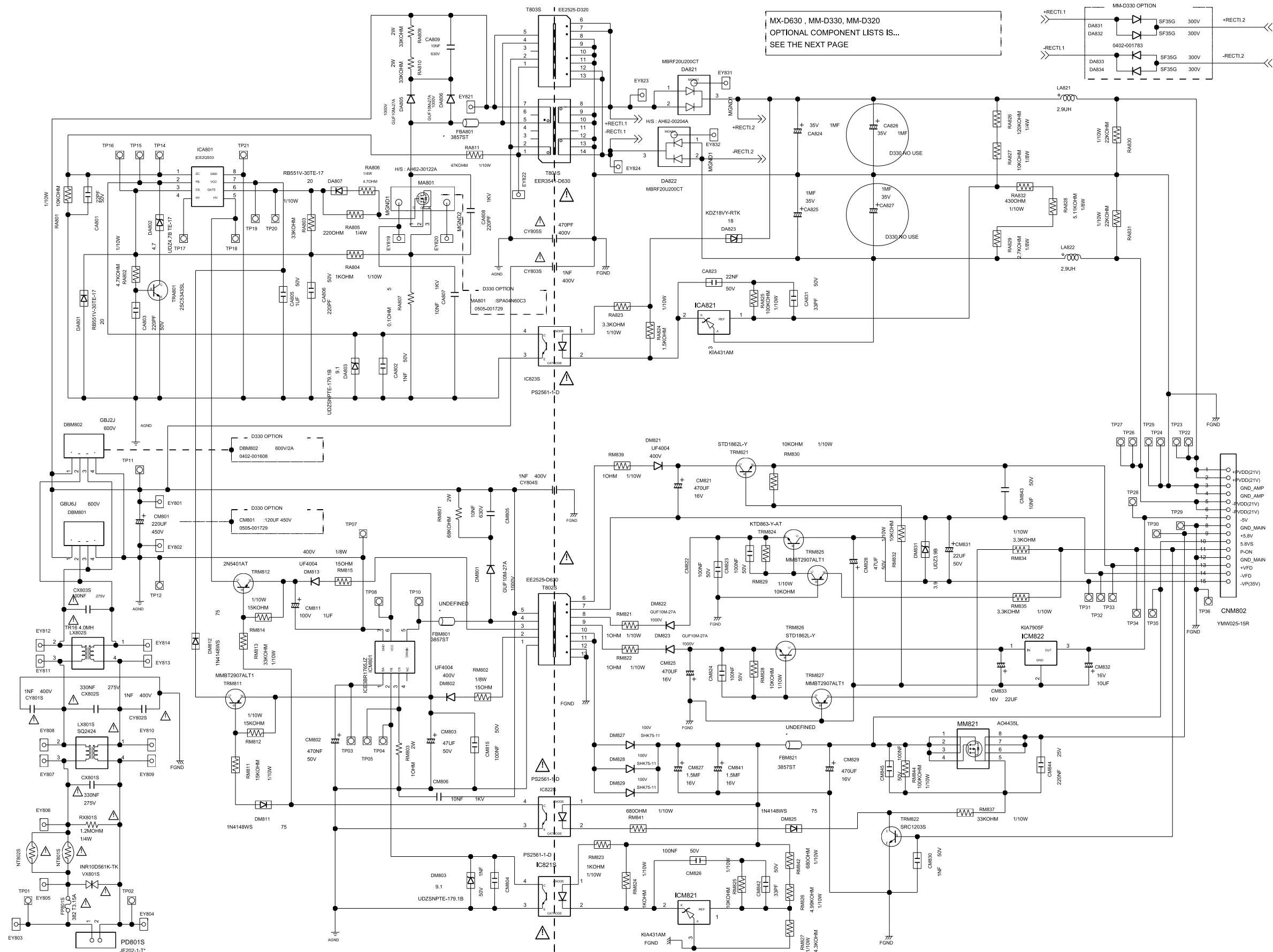


6.6. MAIN-4



6.6.1. Test Point Wave Form







GSPN (GLOBAL SERVICE PARTNER NETWORK)

Area	Web Site
Europe, MENA, CIS, Africa	https://gspn1.samsungcsportal.com
E.Asia, W.Asia, China, Japan	https://gspn2.samsungcsportal.com
N.America, S.America	https://gspn3.samsungcsportal.com

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