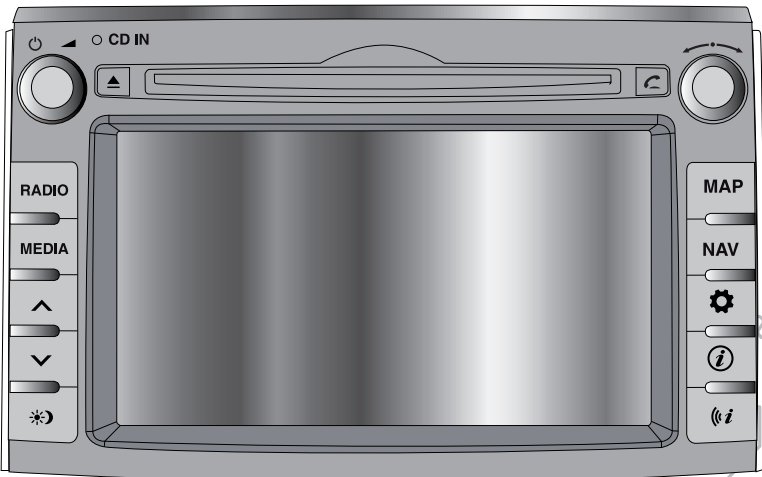


AUDIO & NAVIGATION SYSTEM

SERVICE MANUAL

MODEL: LAN8900EKXM



[CONTENTS]

SECTION 1. SPECIFICATION

SECTION 2. NAME OF EACH PART

SECTION 3. TOTAL WIRING/BLOCK DIAGRAMS

SECTION 4. EXPLODED VIEWS

SECTION 5. MAIN PART

SECTION 6. AUDIO PART

SECTION 7. FRONT PART

SECTION 8. GPS PART

SECTION 9. TROUBLESHOOTING GUIDE

SECTION 1. SPECIFICATION

[CONTENTS]

• SPECIFICATION 1-1

SPECIFICATION

GENERAL

Output Power..... .45 W x 8 CH (Max.)
Power SourceDC 12 V
Speaker impedance..... 2 Ω
Ground System..... Negative
Dimensions (W x H x D)..... 205 x 116 x 202 mm
Net Weight.....2.4 kg

DISPLAY

LCD16.5 cm TFT LCD
Resolution.....800 X 480
Back Light..... CCFL type

CD SECTION

Frequency Response 20 Hz to 20 kHz
S/N Ratio60 dB
Distortion 0.3 %
Channel Separation (1 kHz)50 dB

RADIO SECTION

FM

Frequency Range87.5 to 108 MHz
S/N Ratio50 dB
Distortion 1 %
Usable Sensitivity10 dB μ V

AM (MW)

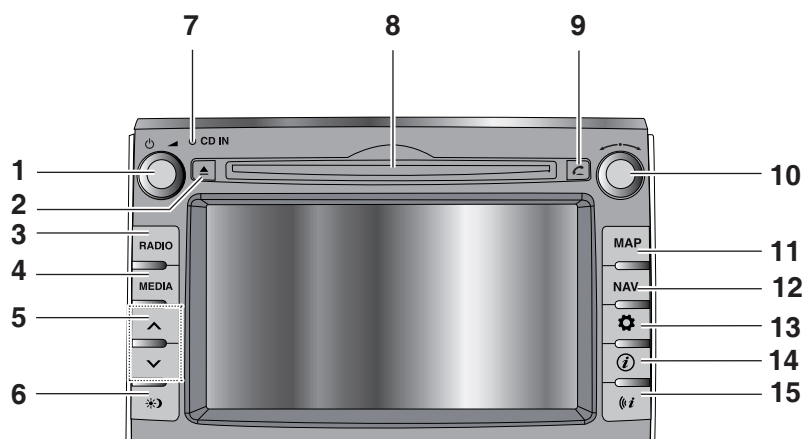
Frequency Range522 to 1620 kHz
S/N Ratio45 dB
Distortion 1.0 %
Usable Sensitivity38 dB μ V

SECTION 2. NAME OF EACH PART

[CONTENTS]

- FRONT..... 2-1
- CONNECTOR TERMINAL FUNCTION..... 2-2

FRONT



1. Left rotary (⏻ / ↶)

- Press: Power on/off
- Turn: Volume control

2. Eject (⏏)

Press to eject a disc from the unit.

3. RADIO

Selects the FM/AM band.

4. MEDIA

Selects a source: CD, USB, iPod, AUX

5. ^ / v

- Press this button.
 - Automatic tuning: **RADIO**
 - Track up/down: **USB** **CD** **iPod**
- Press and hold this button.
 - Search (FF/REW): **USB** **CD** **iPod**

6. Display on/off (⏻)

Press to switch between the display on and off.

7. CD IN indicator light (CD IN)

When a disc is inserted, the indicator is illuminated.

8. Disc slot

9. PHONE (📞)

Use to enable Bluetooth Hands-Free Phone.

10. Right rotary (↻ / ↷)

Rotate it clockwise/counterclockwise.

- Searches the previous or next radio frequency.
 - Manual tuning
- Skips a track/file up/down in all list screen.
- ZOOM IN/ ZOOM OUT
 - Rotate to change the map scale on the map screen.

11. MAP

Press to display the current location map screen.

12. NAV

Press to enter a destination menu.

Various methods for entering a destination are available.

13. SETUP (⚙)

- Press to access system settings.
- Press and hold to check the device ID, the software version, the navigation version, and the map version.

14. Info (i)

Press to view the destination, route, and traffic information when the route guidance is active.

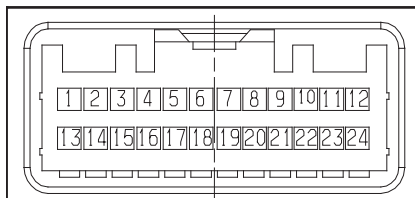
- Destination: Shows the information of current vehicle position and destination.
- Route: Shows the route information from the current vehicle position to the destination.
- Traffic: Shows the traffic information.
 - Traffic Info On Route: The list of traffic information found on the recommended route from the current vehicle position to the destination is displayed.
 - Traffic Info Nearby: The list of traffic information around the current vehicle position is displayed.

15. Repeat voice guidance (🔊)

Press to repeat the voice guidance.

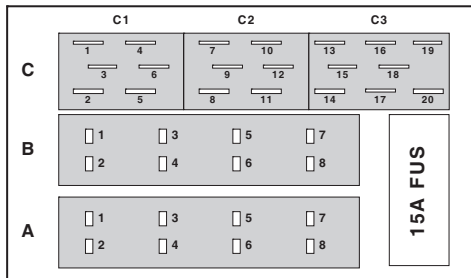
CONNECTOR TERMINAL FUNCTION

A. Additional connector for option 24pin TYCO AMP 1318853



No	NAME
1	SPDIF_OUT+(Option: External AMP)
2	SPDIF_OUT-(Option: External AMP)
3	SPDIF_GND(Option: External AMP)
4	NC
5	NC
6	NAVI_VOICE+(Option: External AMP)
7	XM_AUDIO_R(Option: XM_Ready)
8	XM_AUDIO_L(Option: XM_Ready)
9	AMBIENT
10	NC
11	NC
12	MM_CAN_HIGH(Option: External AMP)
13	CAMERA_B+(Option: Rear_CAMERA)
14	CAMERA_GND(Option: Rear_CAMERA)
15	CAMERA_CVBS(Option: Rear_CAMERA)
16	CAMERA_VGND(Option: Rear_CAMERA)
17	NC
18	NAVI_VOICE-(Option: External AMP)
19	XM_AUDIO_GND(Option: XM_Ready)
20	XM_POWER_GND(Option: XM_Ready)
21	XM_B+(Option: XM_Ready)
22	NC
23	CAN_GND(Option: External AMP)
24	MM_CAN_LOW(Option: External AMP)

B. ISO 36pin POWER CONNECTOR



A. CAR INTERFACE

A1	SPEED
A2	DIRECTION
A3	TAIL SW (ILL+)
A4	+12 V ACC
A5	REMOTE ANTENNA
A6	PWM ILL(ILL-)
A7	+12 V BATT
A8	GROUND

B. SPEAKER OUTPUT

B1	REAR RIGHT+
B2	REAR RIGHT-
B3	FRONT RIGHT+
B4	FRONT RIGHT-
B5	FRONT LEFT+
B6	FRONT LEFT-
B7	REAR LEFT+
B8	REAR LEFT-

C1. CAR INTERFACE

C1	MIC+ (BT, eCall)
C2	Parking
C3	ALT_IN
C4	MIC- (BT, eCall)
C5	Door Unlock
C6	Auto Light

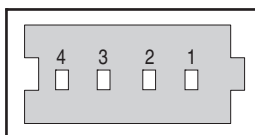
C2. CAR INTERFACE

C7	AUX R-IN
C8	Steering_Wheel Remocon
C9	AUX GND
C10	AUX L-IN
C11	Steering_Wheel Remocon_GND
C12	AUX DETECT

C3. CAR INTERFACE

C13	AUX_VGND
C14	AUX_CVBS_IN
C15	NC
C16	NC
C17	NC
C18	NC
C19	HS CAN L (Option: Remote Display)
C20	HS CAN H (Option: Remote Display)

C. USB CONNECTOR



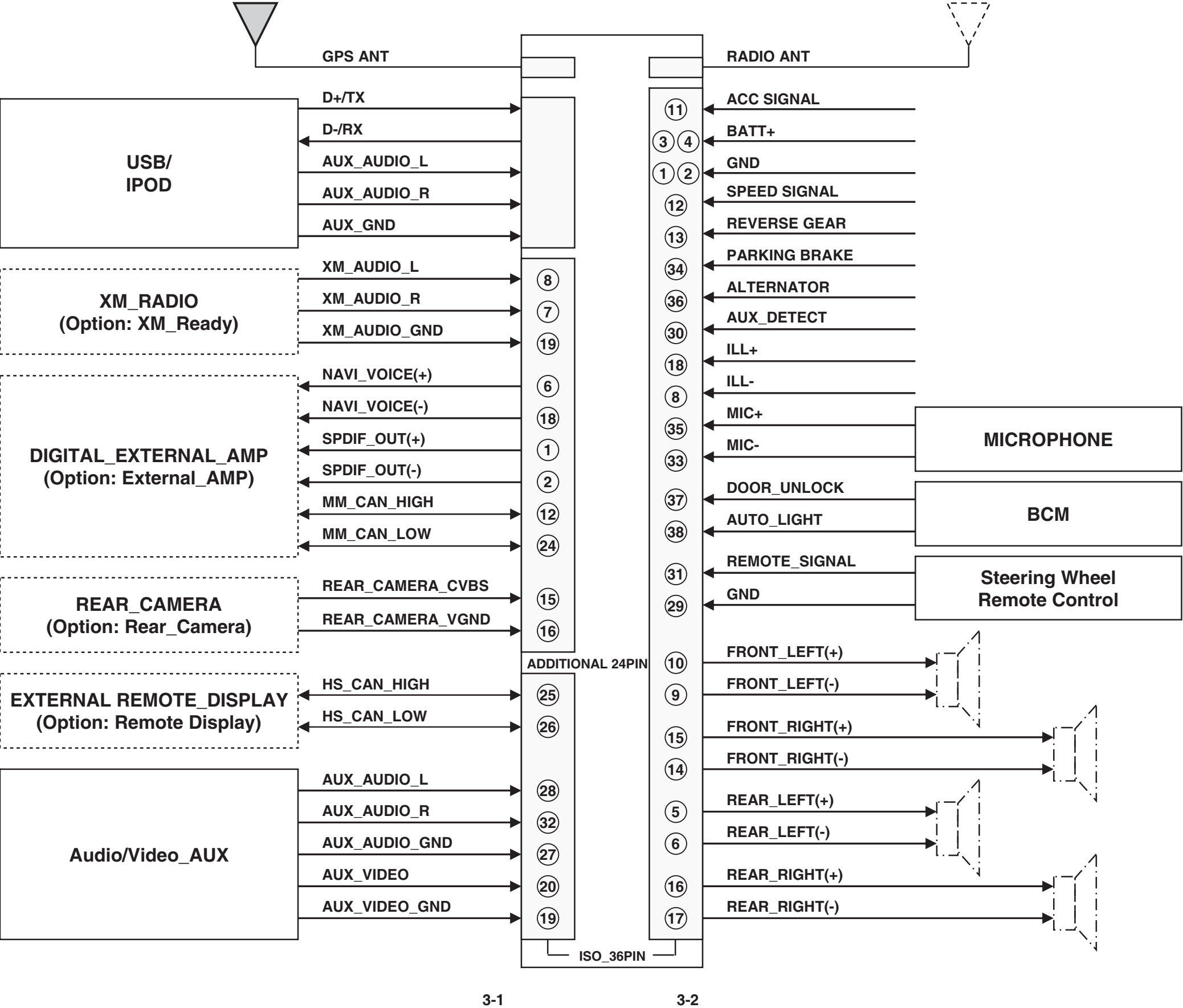
No	NAME
1	USB/IPOD GND
2	USB D+/IPOD_RX
3	USB D-/IPOD_TX
4	USB/IPOD_5 V

SECTION 3. TOTAL WIRING/BLOCK DIAGRAMS

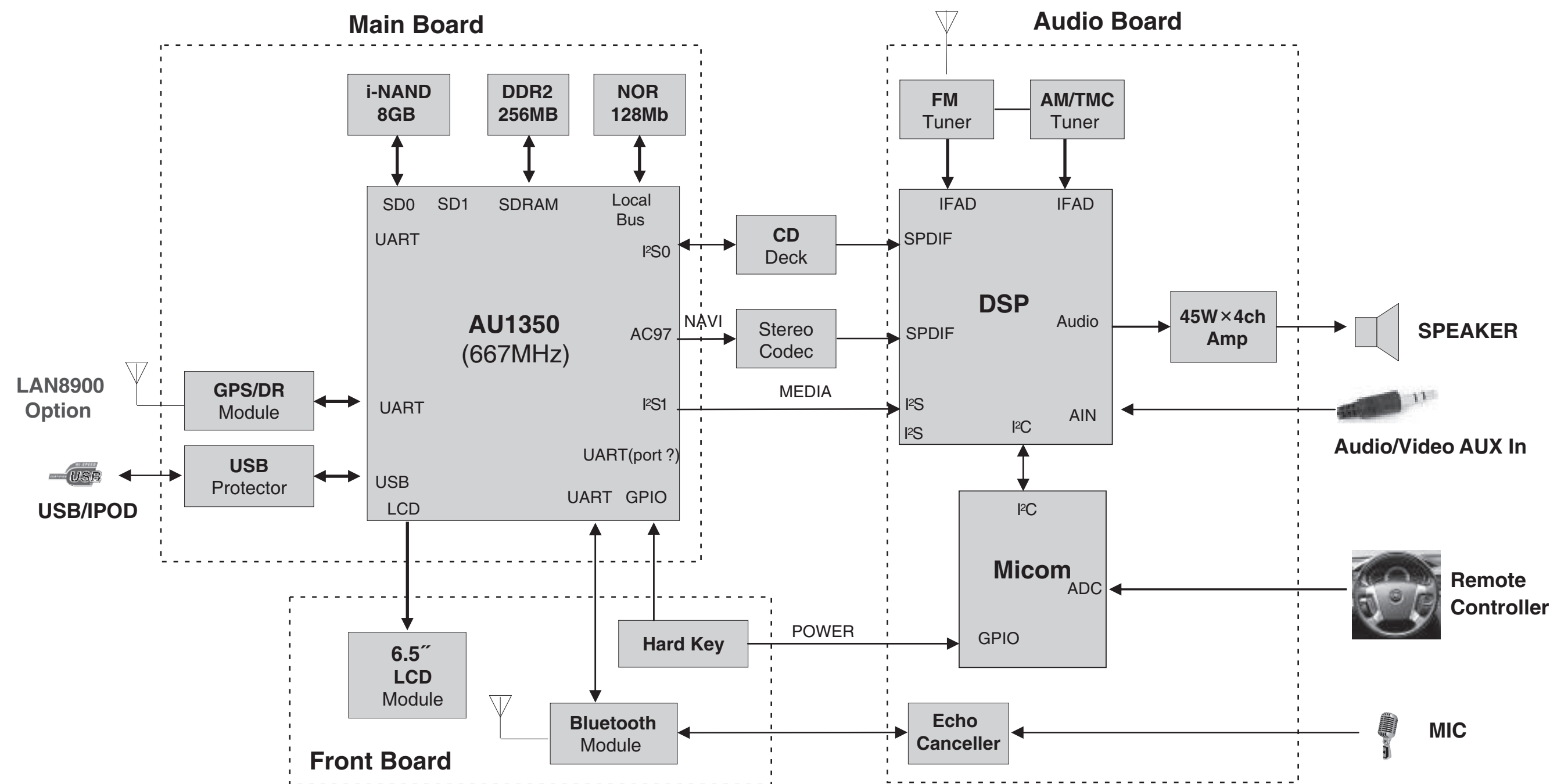
[CONTENTS]

- WIRING DIAGRAM 3-1
- BLOCK DIAGRAM(H/W) 3-3
- BLOCK DIAGRAM(S/W) 3-5

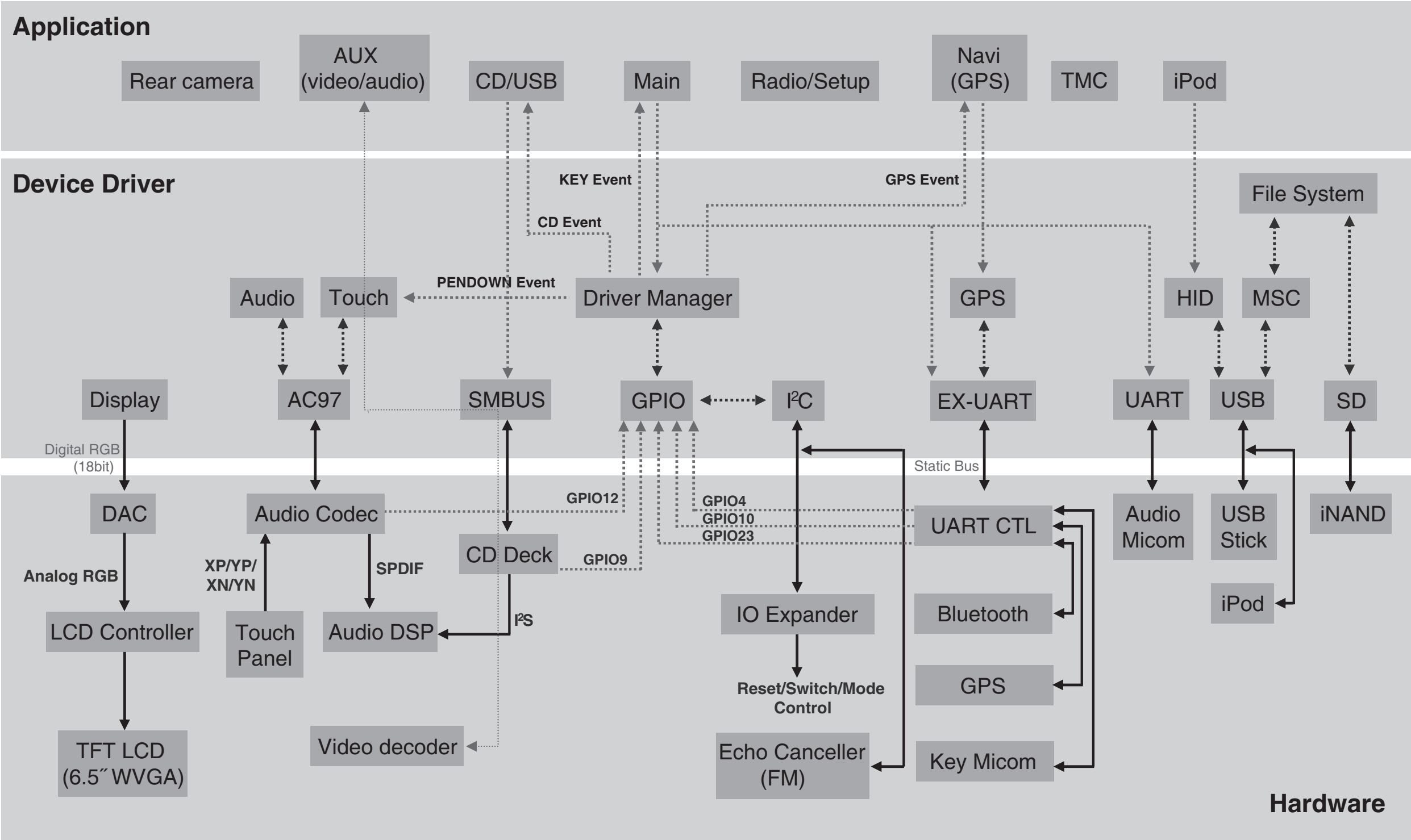
WIRING DIAGRAM



BLOCK DIAGRAM (H/W)



BLOCK DIAGRAM (S/W)

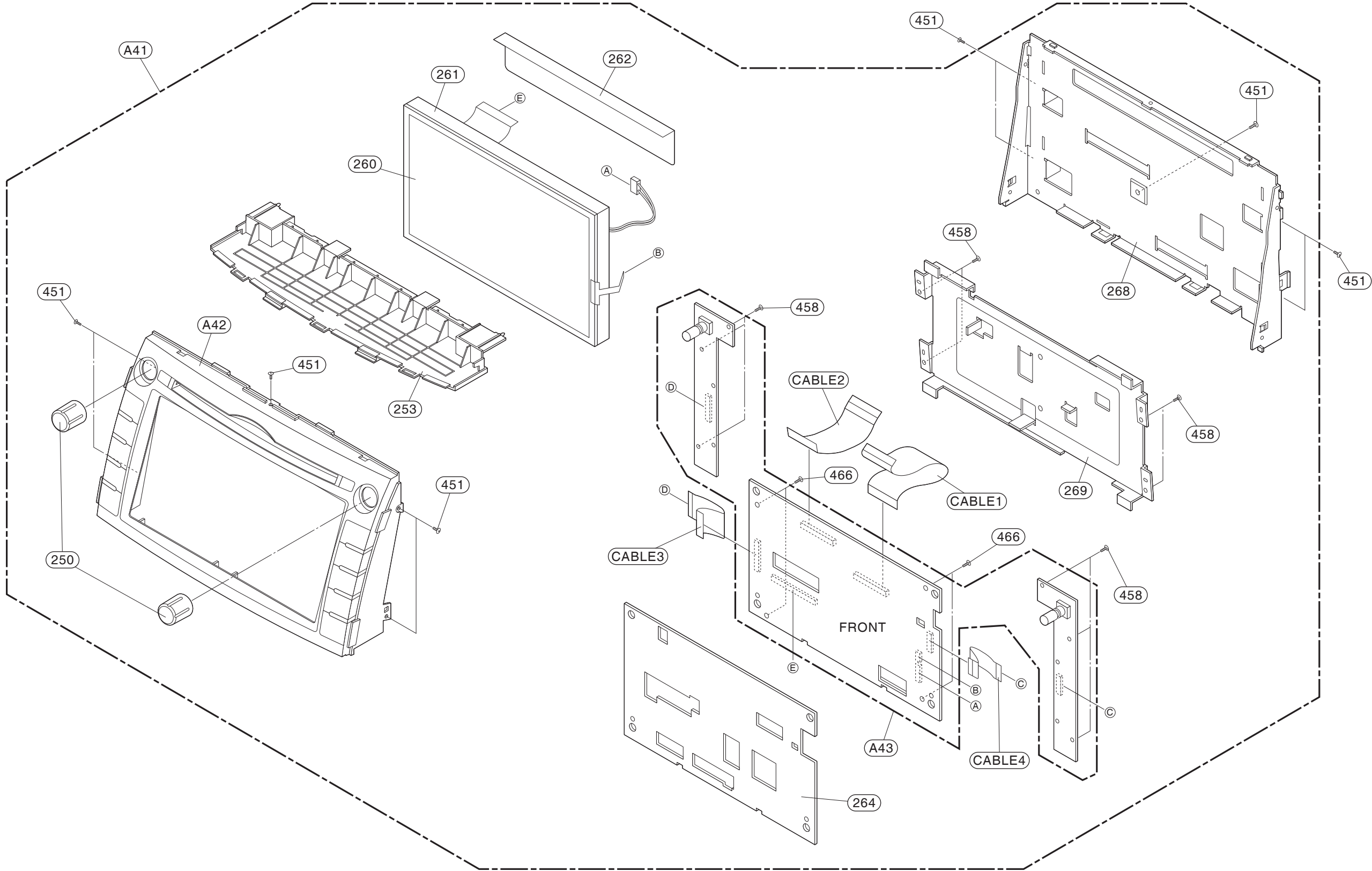


SECTION 4. EXPLODED VIEWS

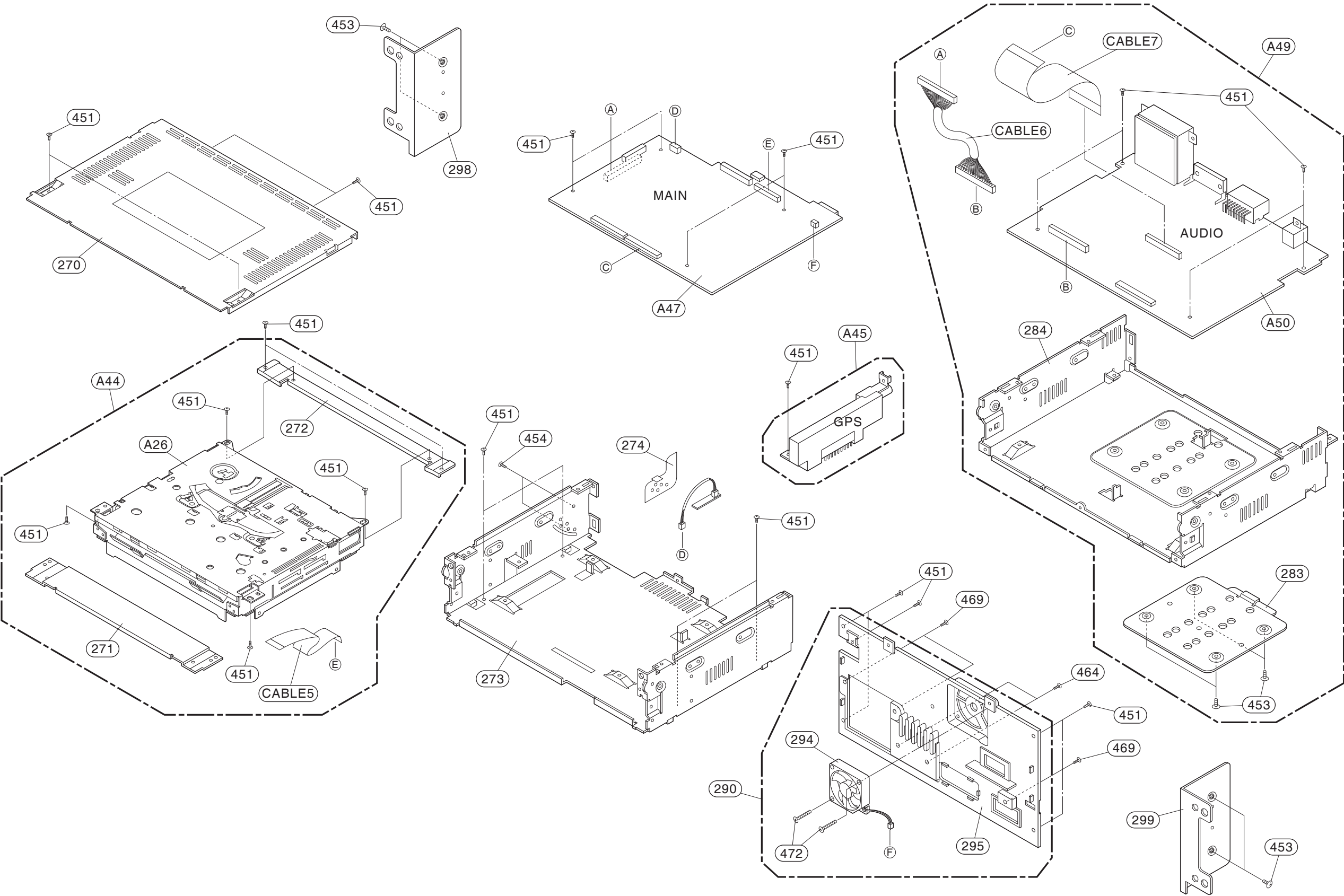
[CONTENTS]

- FRONT PART 4-1
- CABINET & MAIN FRAME PART 4-3

FRONT PART



CABINET & MAIN FRAME PART

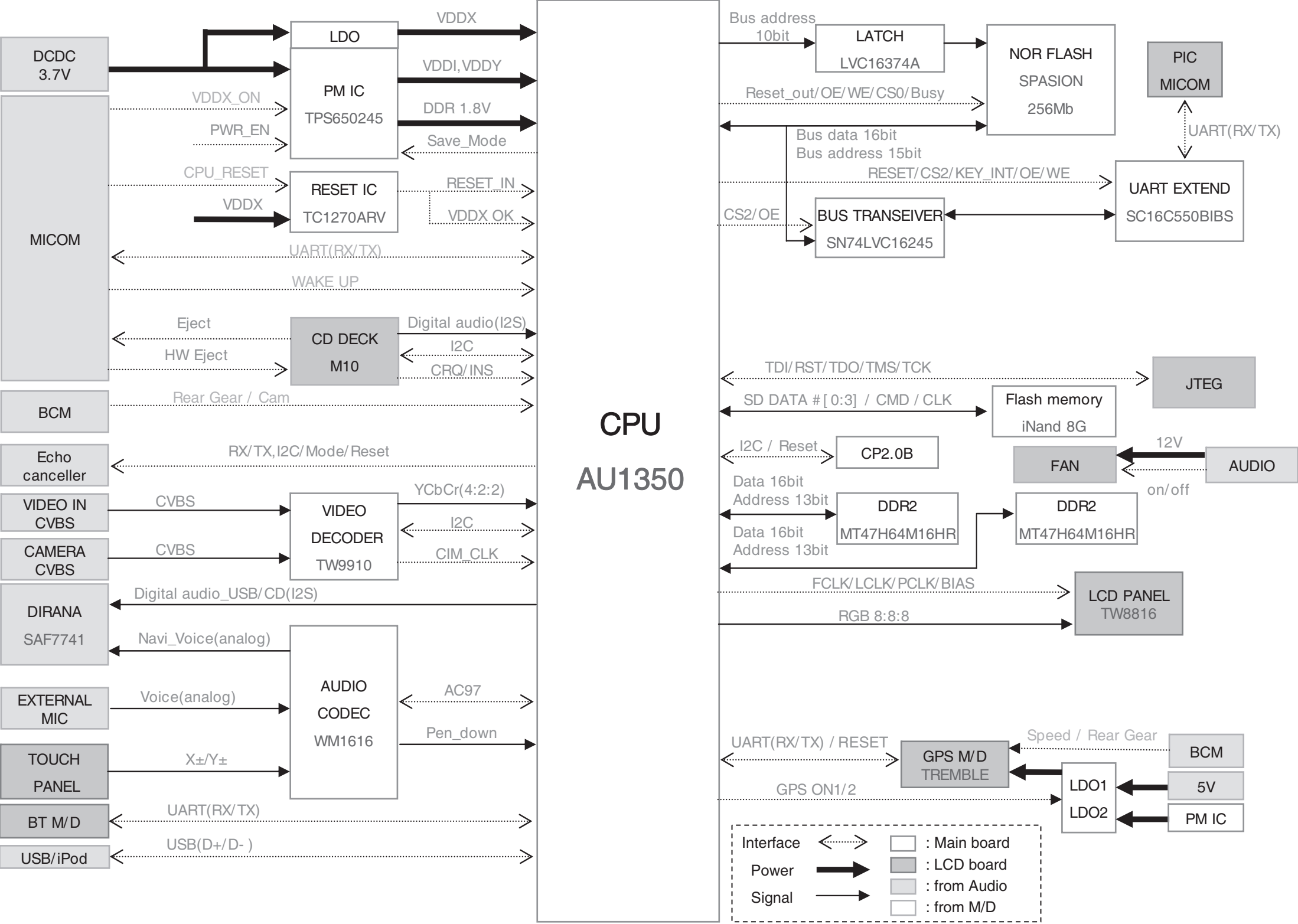


SECTION 5. MAIN PART

[CONTENTS]

- MAIN BLOCK DIAGRAM 5-1
- MAIN CONNECTOR PIN DESCRIPTION 5-3
- MAIN PRINTED CIRCUIT BOARD (TOP VIEW)5-5
- MAIN PRINTED CIRCUIT BOARD (BOTTOM VIEW)5-7

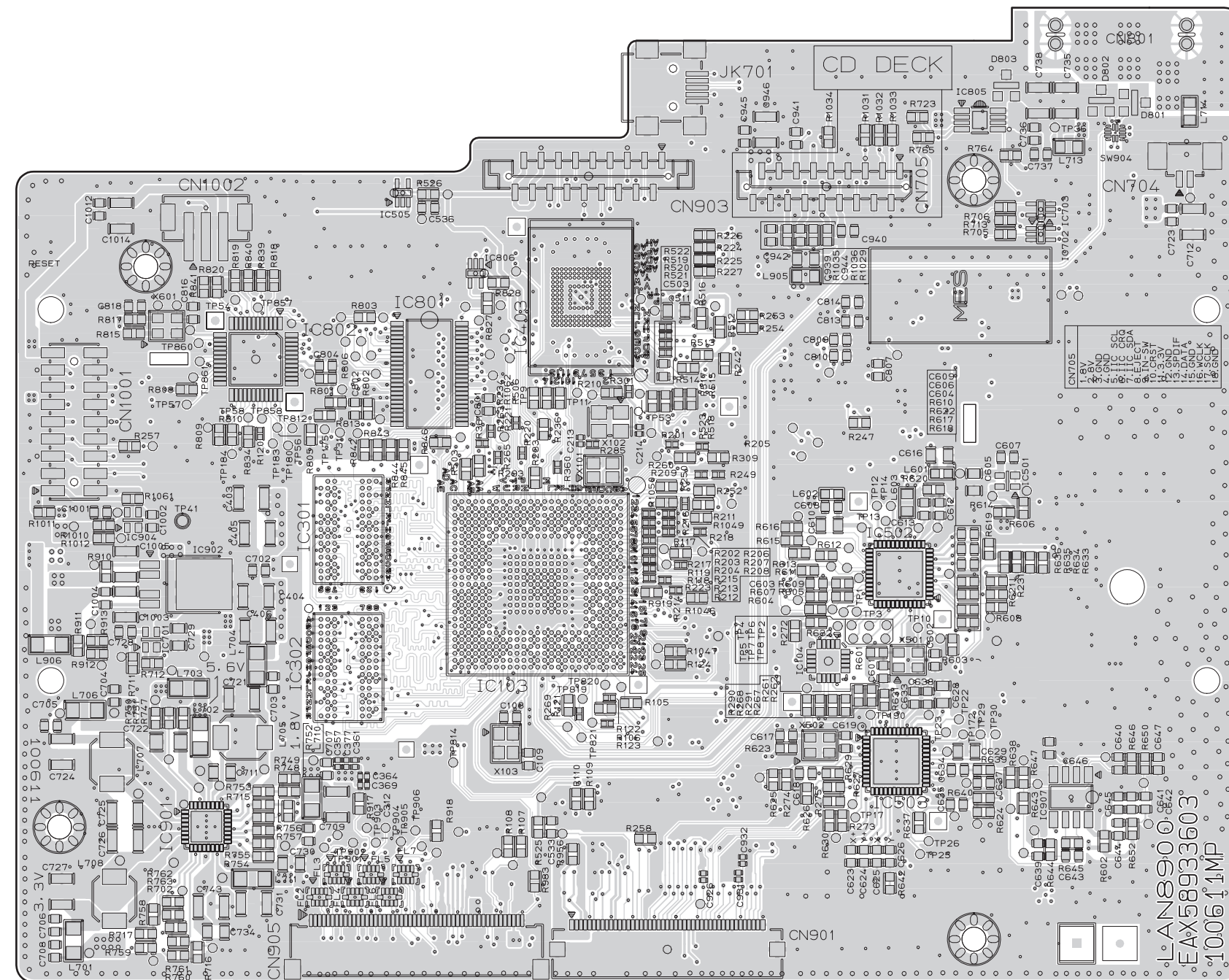
MAIN BLOCK DIAGRAM



MEMO

PIN	NAME	PIN	NAME	PIN	NAME	PIN	NAME
CN301		5	GND	4	R2	49	CVBS_DETECT
1	GND	6	MIC+	5	R3	50	GND
2	D+	7	GND	6	R4	CN1001	
3	D-	8	MIC-	7	R5	1	VCC(3.3 V)
4	VBUS(5 V)	9	GND	8	R6	2	SDRAM(3.3 V)
CN702		10	NAVI_R	9	R7	3	DGND
1	GND	11	NAVI_L	10	G0	4	TX0
2	5 V	12	GND	11	G1	5	RX0
3	FAN_12 V	13	CD_3.3 V_CTL	12	G2	6	TX1
4	GND	14	GND	13	G3	7	RESET
5	USB_5 V	15	T_SENSOR	14	G4	8	RESERVED
6	USB_5 V	16	CD_RESET	15	G5	9	RESERVED
7	GND	17	REVERSE_GEAR	16	G6	10	FORWARD_BACK
8	GND	18	GND	17	G7	11	SPEED
9	CD_8.0 V	19	CD_EMERGENCY	18	B0	12	AGND
10	CD_8.0 V	20	CPU_SLEEP	19	B1	13	ANT_SHORT
11	GND	21	EC_RESET	20	B2	14	ANT_OPEN
12	GND	22	EC_MODE	21	B3	15	GYRO
13	3.75 V	23	DCDC_ON	22	B4	16	AGND
14	3.75 V	24	CD_INSERT	23	B5	17	VCC(5 V)
15	GND	25	CPU_RESET	24	B6	18	DGND
CN705		26	SPEED_PULSE	25	B7	JK701	
1	GND	27	ART_TX	26	GND	1	VCC
2	SCLK	28	ART_EN	27	DCLK	2	D-
3	WCLK	29	ART_RX	28	DDE	3	D+
4	GND	30	CD_SPDIF	29	DHSYNC	4	NC
5	DATA	31	CD_WS	30	DVSYNC	5	GND
6	SPDIF	32	CD_SCK	31	GND		
7	GND	33	CD_SD	32	GND		
8	3.3 V	34	MEDIA_WS	33	TP_YL		
9	CRST	35	MEDIA_SCK	34	TP_XL		
10	INSERT SW	36	MEDIA_SD	35	TP_YH		
11	EJECT	37	GND	36	TP_XH		
12	I2C SDA	38	GND	37	GND		
13	I2C CRQ	39	MICOM_TX	38	3.3 V_BT		
14	I2C SCL	40	MICOM_RX	39	3.3 V_BT		
15	GND	41	EC_DBG_RX	40	3.3 V_BT		
16	GND	42	EC_DBG_TX	41	GND		
17	8 V	43	I2C_SDA_ECHO	42	KEY_RX		
18	8 V	44	I2C_SCL_ECHO	43	KEY_TX		
CN901		45	GND	44	BT_RX		
1	CAMERA_CVBS	CN905		45	BT_TX		
2	CAMERA_GND	1	GND	46	NC		
3	AUX_CVBS	2	R0	47	CVBS		
4	AUX_GND	3	R1	48	CVBS_GND		

MAIN PRINTED CIRCUIT BOARD (TOP VIEW)

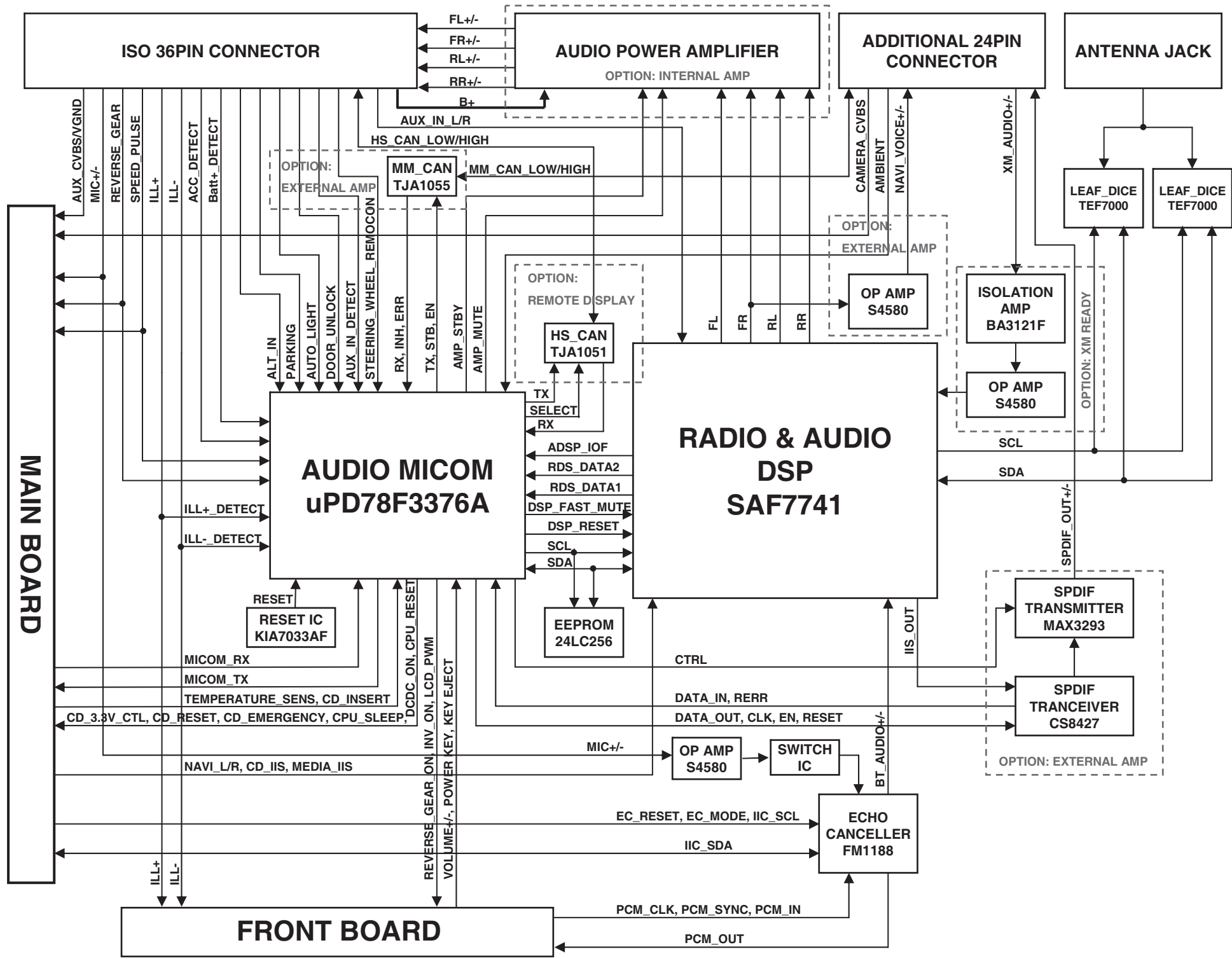


SECTION 6. AUDIO PART

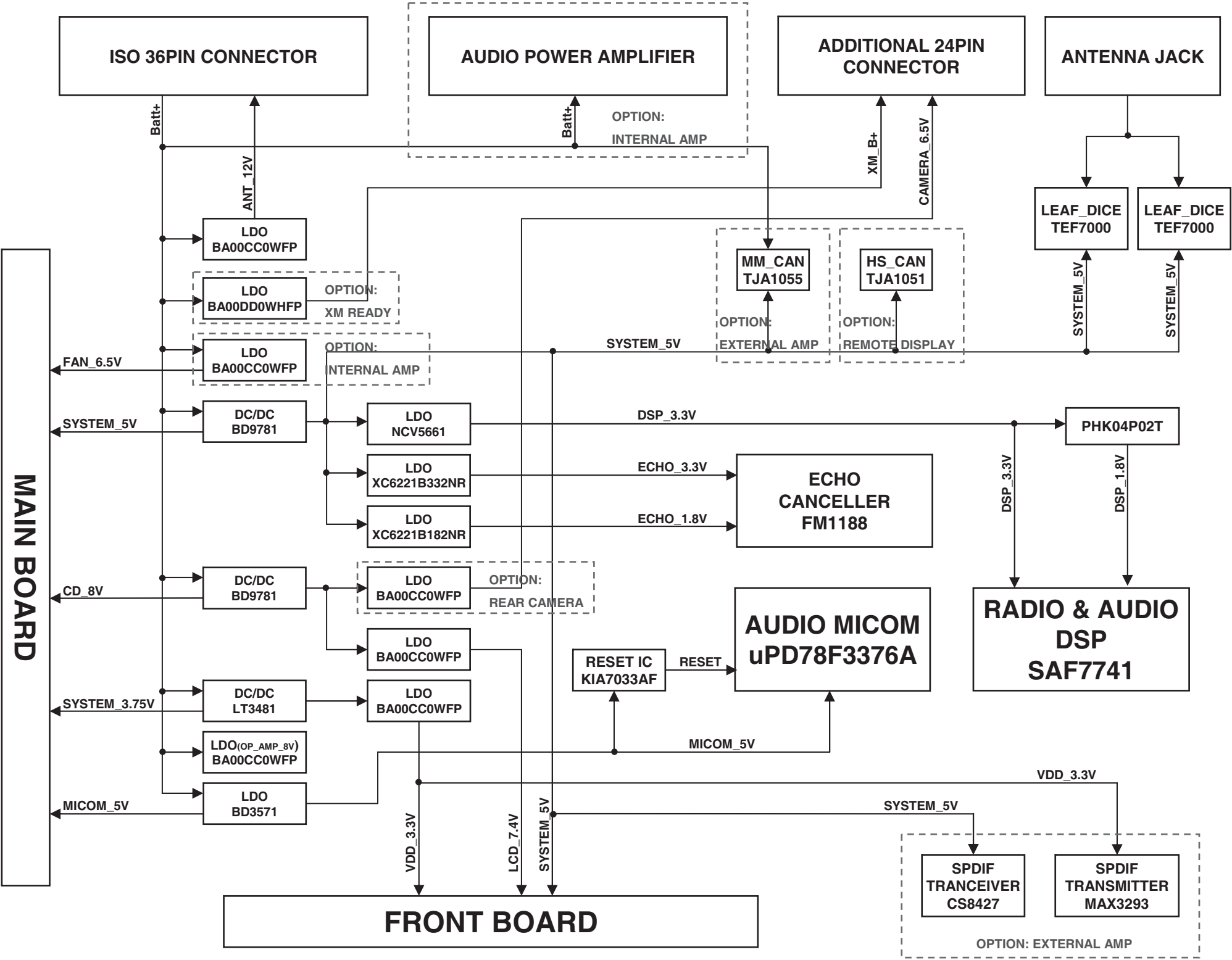
[CONTENTS]

• AUDIO BLOCK DIAGRAM	6-1
• POWER BLOCK DIAGRAM	6-3
• AUDIO CONNECTOR PIN DESCRIPTON	6-5
• AUDIO PRINTED CIRCUIT BOARD (TOP VIEW)	6-7
• AUDIO PRINTED CIRCUIT BOARD (BOTTOM VIEW)	6-9

AUDIO BLOCK DIAGRAM

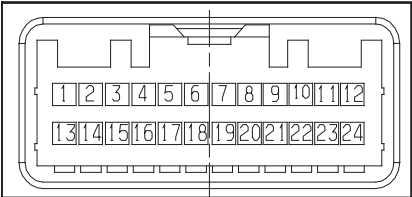


POWER BLOCK DIAGRAM



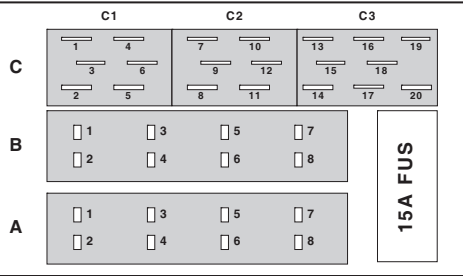
AUDIO CONNECTOR PIN DESCRIPTON

A. Additional connector for option 24pin TYCO AMP 1318853



No	NAME
1	SPDIF_OUT+(Option: External AMP)
2	SPDIF_OUT-(Option: External AMP)
3	SPDIF_GND(Option: External AMP)
4	NC
5	NC
6	NAVI_VOICE+(Option: External AMP)
7	XM_AUDIO_R(Option: XM_Ready)
8	XM_AUDIO_L(Option: XM_Ready)
9	AMBIENT
10	NC
11	NC
12	MM_CAN_HIGH(Option: External AMP)
13	CAMERA_B+(Option: Rear_CAMERA)
14	CAMERA_GND(Option: Rear_CAMERA)
15	CAMERA_CVBS(Option: Rear_CAMERA)
16	CAMERA_VGND(Option: Rear_CAMERA)
17	NC
18	NAVI_VOICE-(Option: External AMP)
19	XM_AUDIO_GND(Option: XM_Ready)
20	XM_POWER_GND(Option: XM_Ready)
21	XM_B +(Option: XM_Ready)
22	NC
23	CAN_GND(Option: External AMP)
24	MM_CAN_LOW(Option: External AMP)

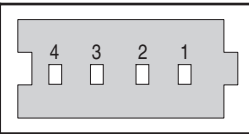
B. ISO 36pin POWER CONNECTOR



A. CAR INTERFACE	
A1	SPEED
A2	DIRECTION
A3	TAIL SW (ILL+)
A4	+12 V ACC
A5	REMOTE ANTENNA
A6	PWM ILL(ILL-)
A7	+12 V BATT
A8	GROUND

B. SPEAKER OUTPUT	
B1	REAR RIGHT+
B2	REAR RIGHT-
B3	FRONT RIGHT+
B4	FRONT RIGHT-
B5	FRONT LEFT+
B6	FRONT LEFT-
B7	REAR LEFT+
B8	REAR LEFT-

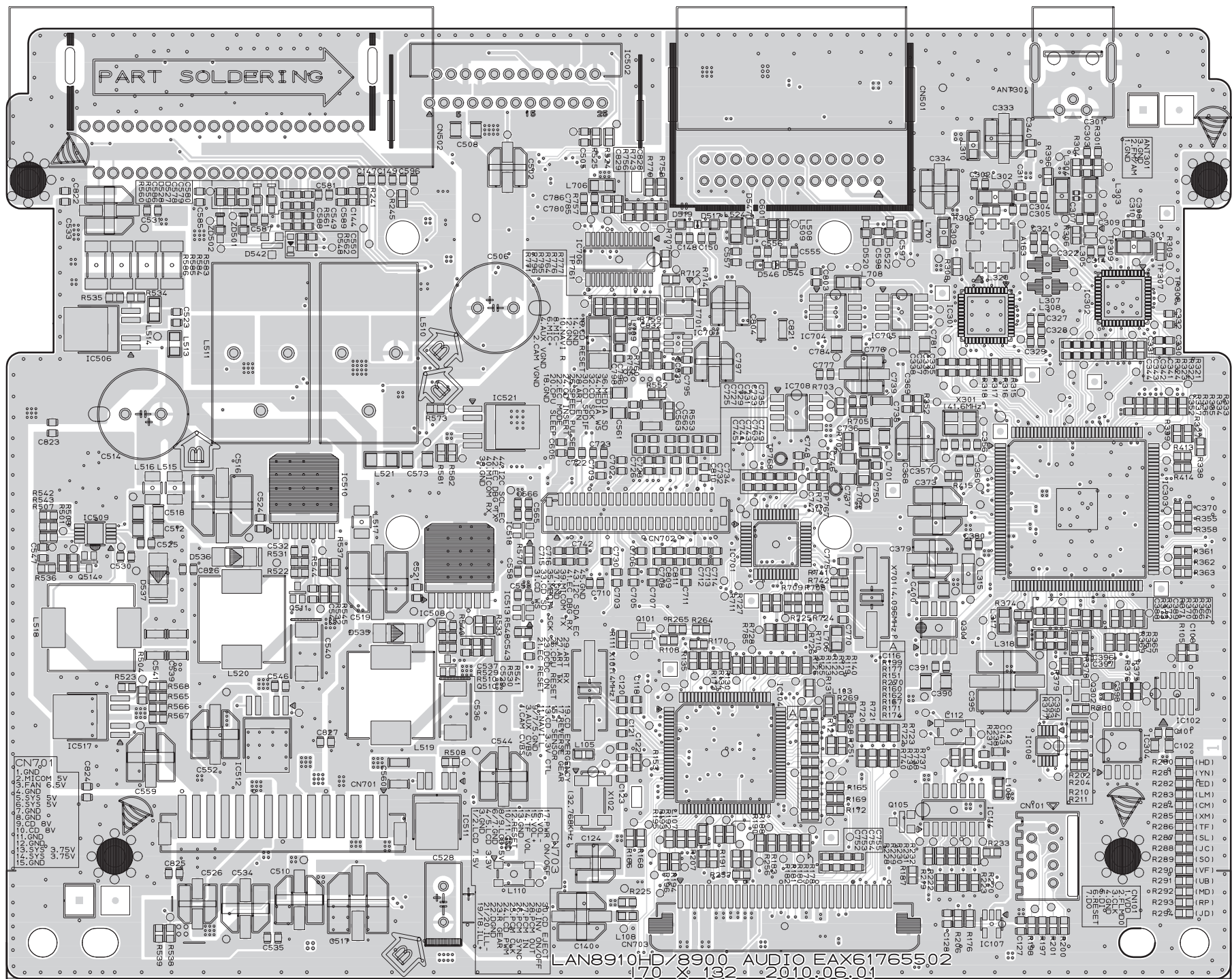
C. USB CONNECTOR



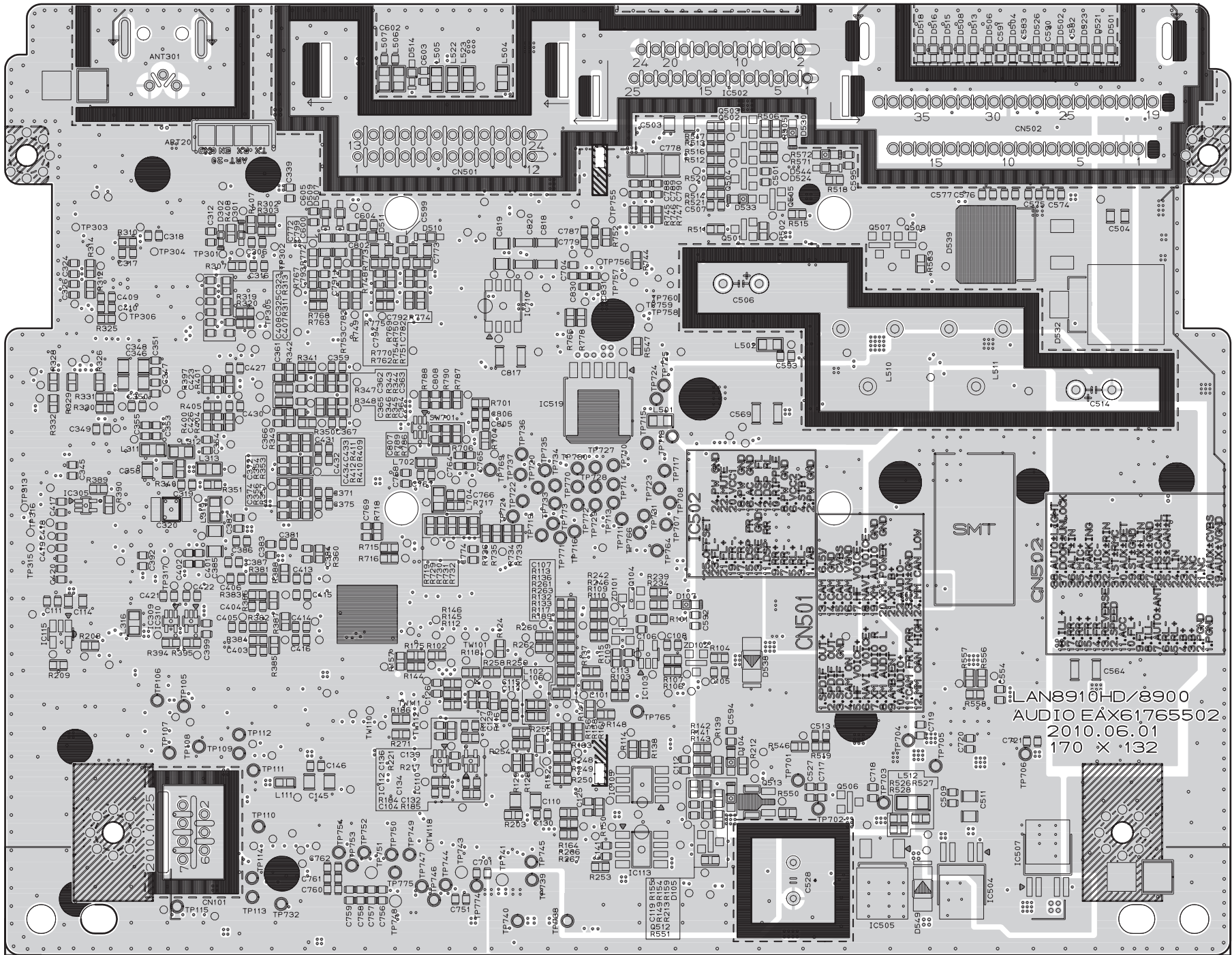
C1. CAR INTERFACE	
C1	MIC+ (BT, eCall)
C2	Parking
C3	ALT_IN
C4	MIC- (BT, eCall)
C5	Door Unlock
C6	Auto Light
C2. CAR INTERFACE	
C7	AUX R-IN
C8	Steering_Wheel Remocon
C9	AUX GND
C10	AUX L-IN
C11	Steering_Wheel Remocon_GND
C12	AUX DETECT
C3. CAR INTERFACE	
C13	AUX_VGND
C14	AUX_CVBS_IN
C15	NC
C16	NC
C17	NC
C18	NC
C19	HS CAN L (Option: Remote Display)
C20	HS CAN H (Option: Remote Display)

No	NAME
1	USB/IPOD GND
2	USB D+/IPOD_RX
3	USB D-/IPOD_TX
4	USB/IPOD_5 V

AUDIO PRINTED CIRCUIT BOARD (TOP VIEW)



AUDIO PRINTED CIRCUIT BOARD (BOTTOM VIEW)

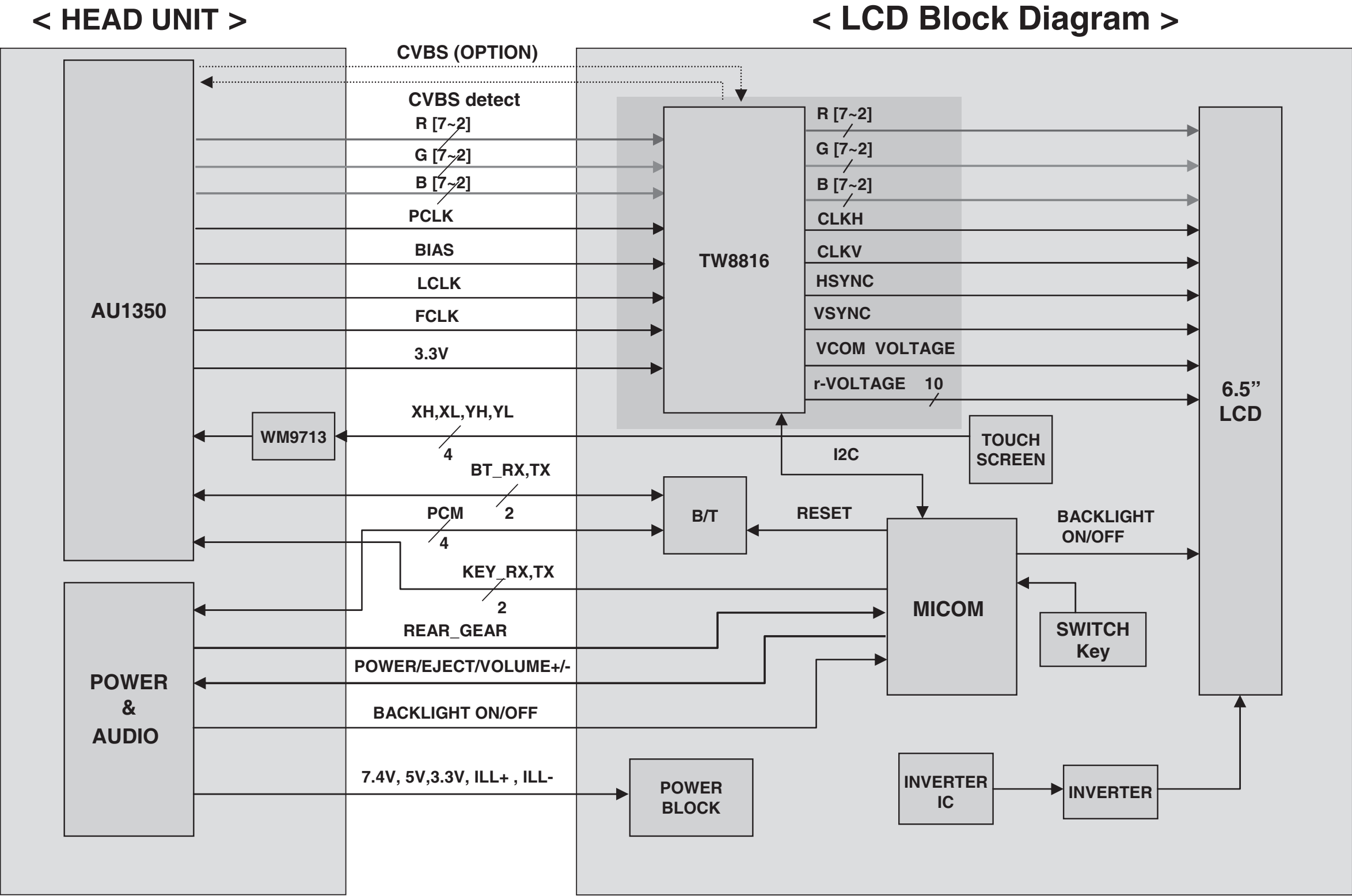


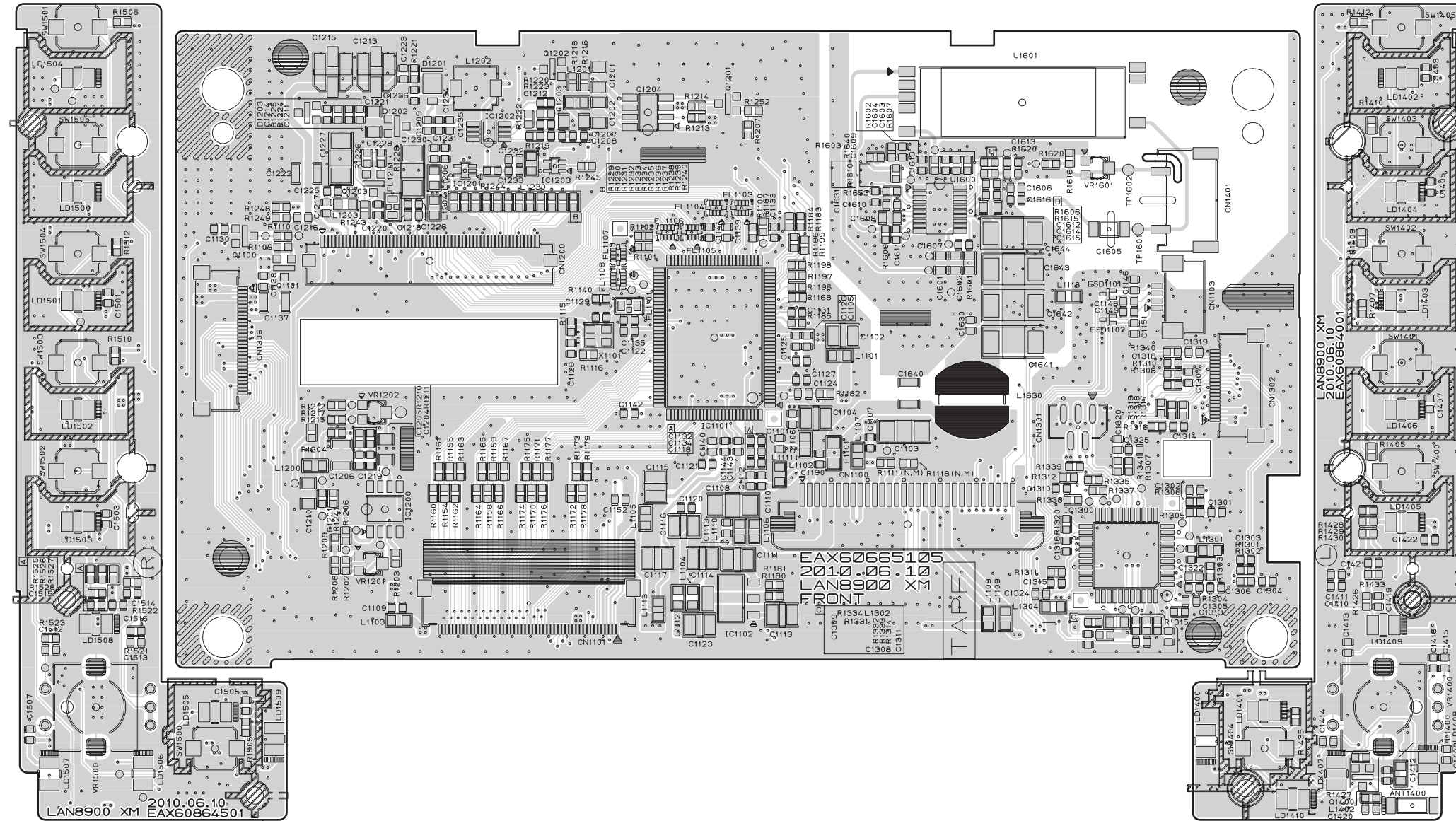
SECTION 7. FRONT PART

[CONTENTS]

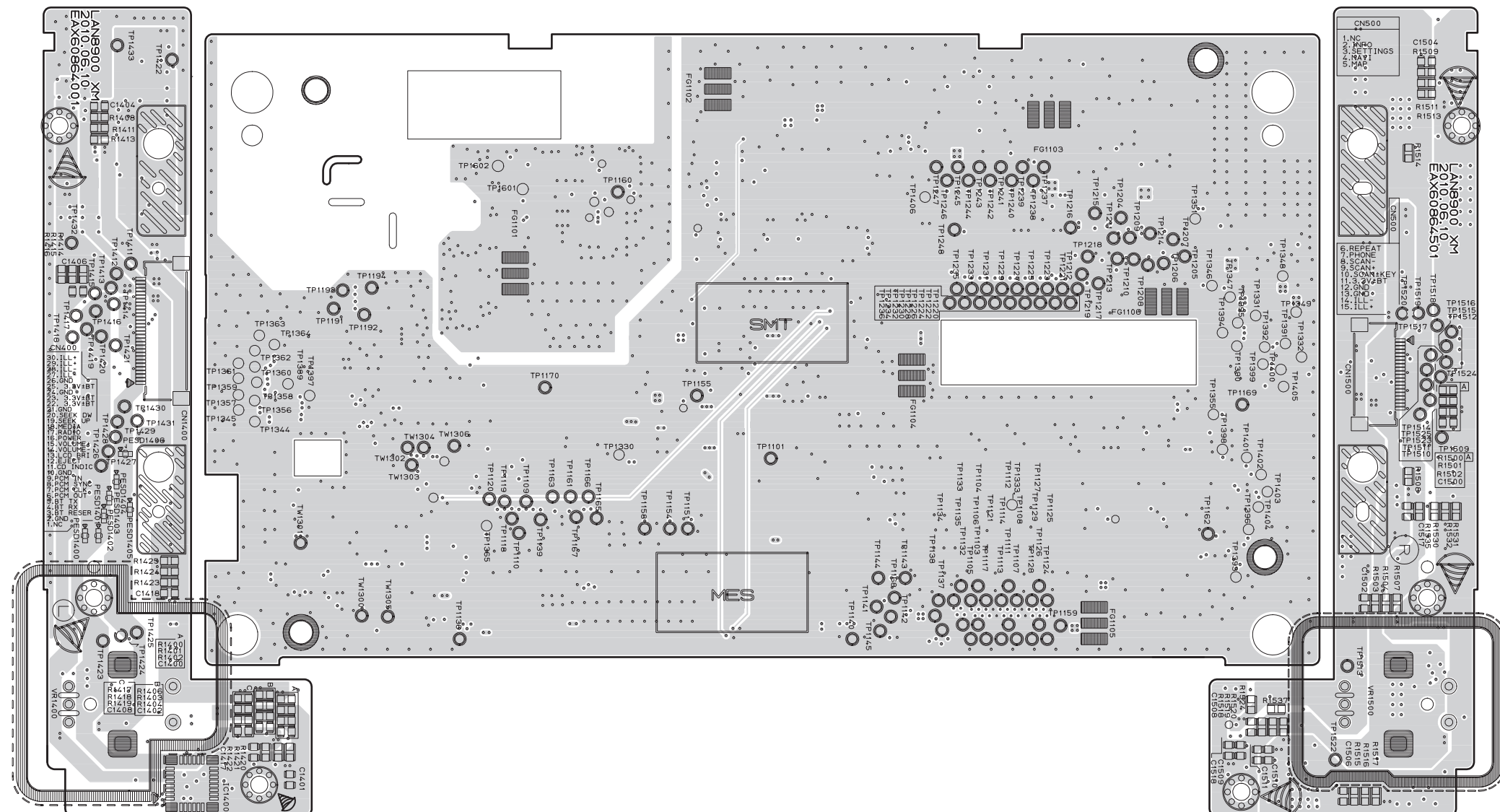
- FRONT BLOCK DIAGRAM 7-1
- FRONT PRINTED CIRCUIT BOARD (TOP VIEW)7-3
- FRONT PRINTED CIRCUIT BOARD (BOTTOM VIEW)7-5

FRONT BLOCK DIAGRAM





FRONT PRINTED CIRCUIT BOARD (BOTTOM VIEW)

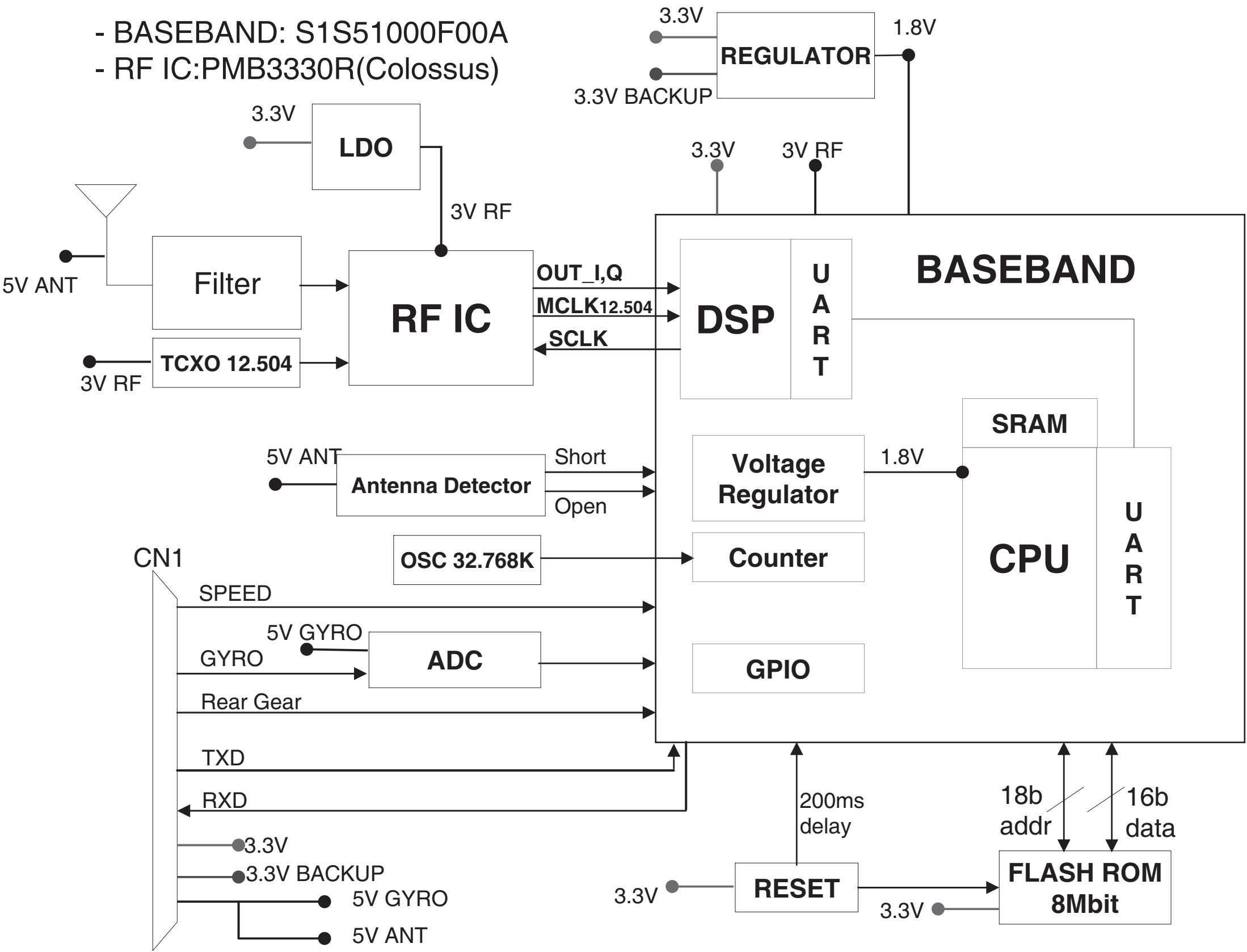


SECTION 8. GPS PART

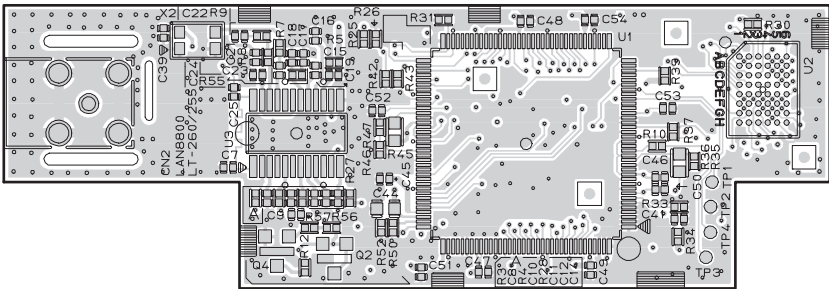
[CONTENTS]

- GPS BLOCK DIAGRAM 8-1
- GPS PRINTED CIRCUIT BOARD (TOP VIEW) 8-3
- GPS PRINTED CIRCUIT BOARD (BOTTOM VIEW) 8-3

GPS BLOCK DIAGRAM



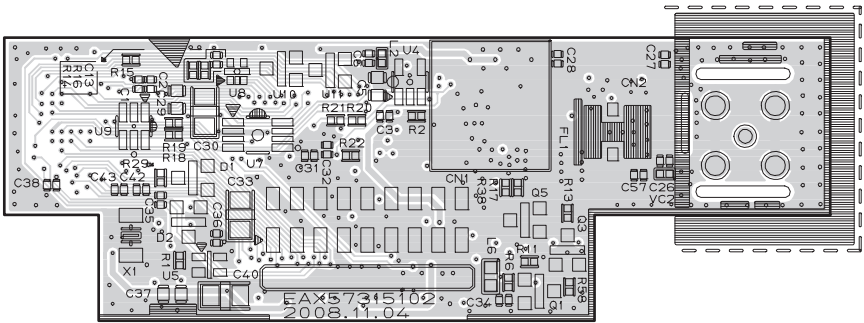
GPS PRINTED CIRCUIT BOARD (TOP VIEW)



MEMO

Handwritten notes area with horizontal lines.

GPS PRINTED CIRCUIT BOARD (BOTTOM VIEW)



Handwritten notes area with horizontal lines.

SECTION 9. TROUBLESHOOTING GUIDE

[CONTENTS]

• GENERAL PART (NAVIGATION)	9-1
-----------------------------------	-----

ÅTrouble Shooting Guide (NAVIGATION)	9-3
--	-----

GENERAL PART (Navigation)

Cannot identify the current location. (GPS not receiving)

GPS cannot be used indoors and must be connected to a power source with ACC in a vehicle in a location where the signal from the sky can be received easily.

When initially connecting the GPS, it usually takes about 10 minutes to be working normally, but the connection speed can differ depending on the weather condition, and surrounding obstacles.

If the GPS connection is unstable for a long period of time, try the following.

- Check if the product is connected to a power source.
- Check if the back of the GPS product is in a location where the sky can be seen well.
- If there are high buildings or if you are under a tree, move to a location where there aren't any obstacles.

Cannot hear the voice guide.

The volume is not set correctly, or it is turned off. Adjust the volume of voice guidance.

There is a difference between the driving road and the road on the map in the product.

Even though GPS is usually very accurate, there is a small margin for error.

When the GPS receiver is installed, there can be an error of about 10m. But for newly built roads, the problem could come from the data update to the map.

Cannot see the map.

Perhaps you cannot see the map even when you have executed the navigation menu.

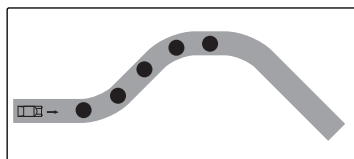
This happens when the data within the memory is damaged. Delete all the data in the memory and install the data again. If the issue persists after installation, contact the A/S center.

The path guide can be different from the actual path. (Path guide error)

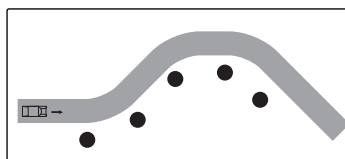
- When the road is closely parallel.
- When the splitting road angle is very small.
- When there is an adjacent road when turning.
- When driving on a road that is narrowing fast.
- When driving through the mountain or where the road is too curvy.
- When the starting, passing and arriving locations are too close within 1km.
- When you have set the starting, passing or arriving location more than 1km away from the road.
- When driving through the tunnel.

Map matching

As mentioned, the GPS systems used by this Navigation System are susceptible to certain errors. Their calculations may on occasion place you in a location the map where no road exists. In this situation, the processing system understands that vehicles travel only on roads, and is able to correct your position by adjusting it to a nearby road. This is called map matching.



With map matching.



With no map matching.

How to update the navigation map and software

To update the navigation map and software, visit the site (<http://www.navigation.com/kia>).

Symptom	Cause	Correction
Power doesn't turn on. The unit doesn't operate.	• The ignition switch is NOT turned ON.	• Turn the ignition switch to ON.
	• The ignition switch is NOT set to ACC.	• Set the ignition switch to ACC.
	• The power of unit is turned OFF.	• Turn the unit on by pressing  on the control panel.
	• Noise and other factors are causing the built-in microprocessor to operate incorrectly.	• Turn the unit off and then on.
Playback is not possible.	• The disc is dirty.	• Clean disc.
	• The loaded disc is of a type this unit cannot play.	• Check what type the disc is.
	• The disc is inserted upside down.	• Insert the disc with the label upward.
	• The files on the disc are an irregular file format.	• Check the file format.
There's no sound.	• The volume level is low.	• Adjust the volume.
	• The mute is on.	• Turn the mute off.

Trouble Shooting Guide

No	Symptom	Correction
1	The Screen is White. Case1) 1) It is partially white screen. 2) All Button is working.	Replace Front Assy's
2	The Screen is White. Case2) 1) It is completely white screen. 2) All Button is not working.	Replace Main BD
3	CD Deck is not Working. 1) No play CD 2) No insert CD	Replace CD Deck
4	No Sound First, Check as below. 1)Check CD Sound 2)Check Radio Sound	Replace Audio BD