15″/20″ COLOR LCD TELEVISION

LCD-A1504
LCD-A2004

The LCD panel is manufactured to provide many years of useful life. Occasionally a few non active pixels may appear as a tiny spec of color. This is not to be considered a defect in the LCD screen.

SPECIFICATIONS

<TUNER>

ANT. Input ---------- 80 dBμV, Video: PAL 87.5%, Audio: 30 kHz dev (1 kHz Sin)
Test Input Signal---------- 400Hz 30% modulation

Description	Condition	Unit	Nominal	Limit
1. Intermediate Freq.	Picture Sound	MHz MHz	45.75 41.25	- -
2. Color Killer Sens.	CH-3	dBμV	20	23
3. AFT Pull In Range (10mV input)	–	MHz	±1.6	±0.7

<LCD PANEL>

Description	Condition	Unit	Nominal	Limit
1. Number of Pixels	Horizontal Vertical	pixels pixels	640 x 3 480	- -
2. Brightness		cd/m^2	450	-
3. Response Time	-	msec	16	-
4. Support Color	-	-	16mil.(8bit)	-
5. Viewing Angle	Horizontal Vertical	° °	-85 to 85 -85 to 70	-

<VIDEO>

Description	Condition	Unit	Nominal	Limit
1. Over Scan	Horizontal Vertical	% %	8.5 6.5	10±5 10±5
2. Color Temperature	- x y	°K	8500 0.29 0.30	- 0.29±0.03 0.30±0.03
3. Resolution	Horizontal Vertical	line line	400 350	<250 <300

<AUDIO>

All items are measured across 8Ω load at speaker output terminal with L.P.F.

Description	Condition	Unit	Nominal	Limit
1. Audio Output Power	10% THD: Lch/Rch	W	1.0/1.0	0.8/0.8
2. Audio Distortion	500mW: Lch/Rch	%	1.0/1.0	<3
3. Audio Freq. Response	–6dB: Lch –6dB: Rch	Hz Hz	50 to 12K 50 to 12K	- -
4. Audio S/N	RF VIDEO 1 VIDEO 2	dB dB dB	60 60 60	45 45 45

Note:
Nominal specifications represent the design specifications. All units should be able to approximate these. Some will exceed and some may drop slightly below these specifications. Limit specifications represent the absolute worst condition that still might be considered acceptable. In no case should a unit fail to meet limit specifications.

Wiring Diagram

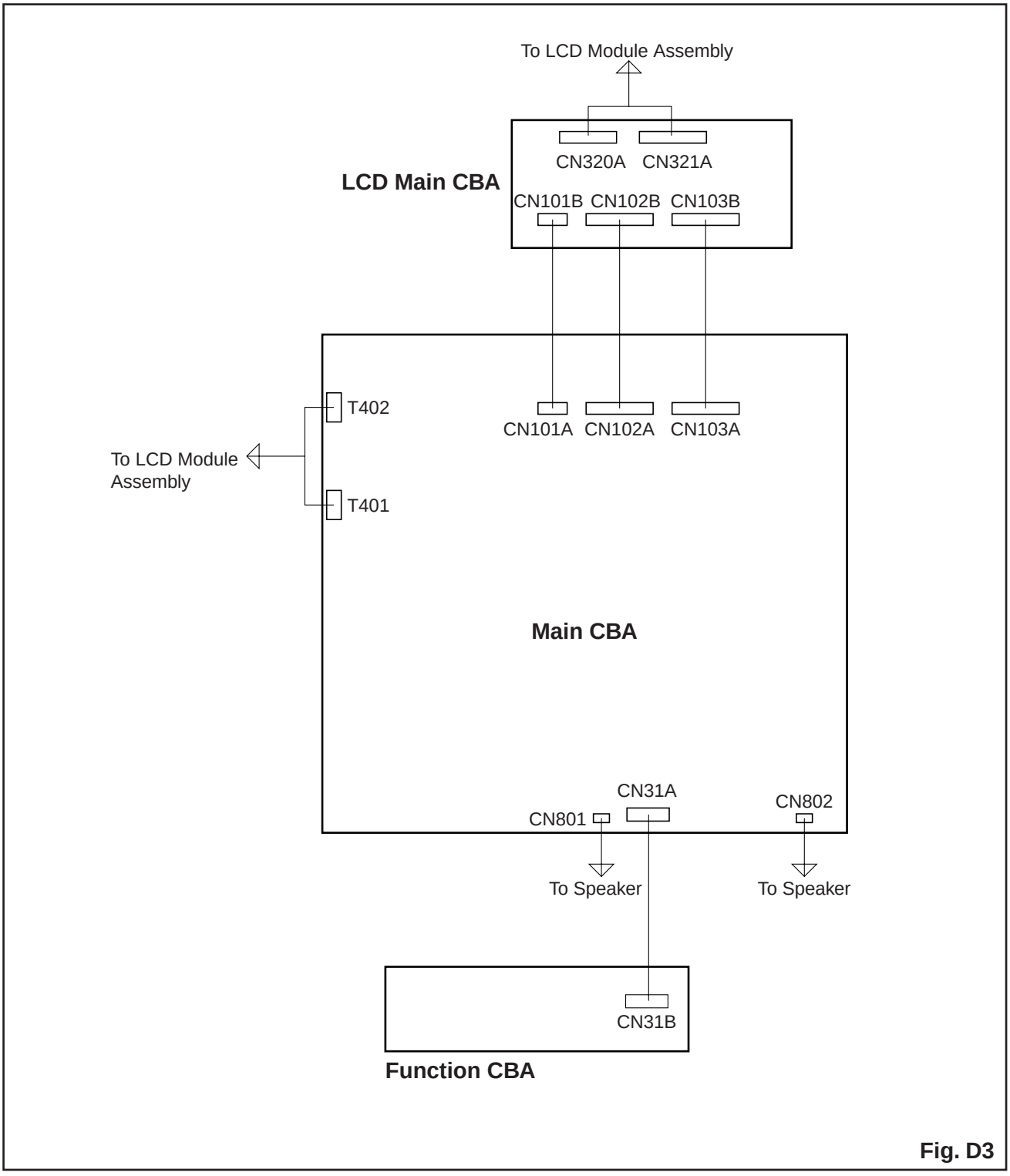


Fig. D3

Cable Wiring Diagram

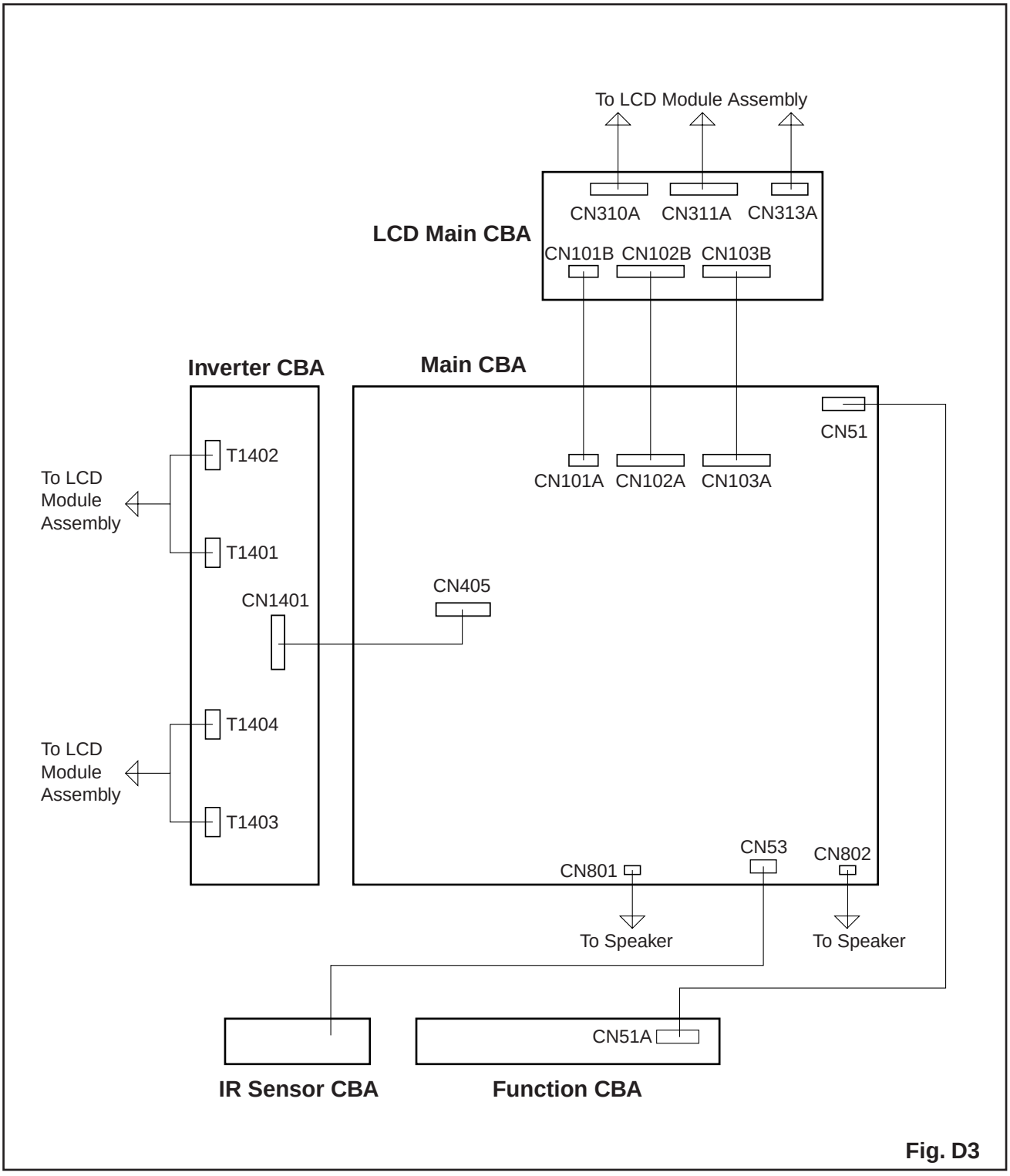


Fig. D3

HOW TO INITIALIZE THE LCD TELEVISION

To put the program back at the factory-default, initialize the LCD television as the following procedure.

How to initialize the LCD television:

1. Turn the power on. (Use main power on the TV unit.)
2. To enter the service mode, press [STANDBY], [2], [7], [1], and [MUTE] buttons on the remote control unit in that order within 5 seconds.
   - To cancel the service mode, press [STANDBY] button on the remote control.
3. To initialize the LCD television, press “DISPLAY” button on the remote control unit.
4. Confirm "FF" indication on the upper right of the screen.

ELECTRICAL ADJUSTMENT INSTRUCTIONS

General Note:

"CBA" is abbreviation for "Circuit Board Assembly."

NOTE:

Electrical adjustments are required after replacing circuit components and certain mechanical parts. It is important to perform these adjustments only after all repairs and replacements have been completed. Also, do not attempt these adjustments unless the proper equipment is available.

Test Equipment Required

1. DC Voltmeter
2. Pattern Generator
3. Color Analyzer

How to Set up the Service mode:

1. Turn the power on. (Use main power on the TV unit.)
2. Press [STANDBY], [2], [7], [1], and [MUTE] buttons on the remote control unit in that order within 5 seconds.

- To cancel the service mode, press [STANDBY] button on the remote control.

1. Initial Setting

General

Enter the Service mode.

Set the each initial data as shown on table 1 below.

Table 1: Initial Data

ITEM	BUTTON (on the remote control)	DATA VALUE	
		LCD-A1504	LCD-A2004
BRT(PAL)	MENU → 1	130	134
CNT(PAL)		174	174
CLR-R(PAL)		78	74
CLR-B(PAL)		78	74
SHR(PAL)		143	143
S-BRT(PAL)	MENU → 2	130	134
S-CNT(PAL)		174	174
S-CLR-R(PAL)		78	74
S-CLR-B(PAL)		78	74
S-SHR(PAL)		143	143
C-BRT(PAL)	MENU → 3	134	134
C-CNT(PAL)		122	132
C-CLR-R(PAL)		156	154
C-CLR-B(PAL)		156	154
C-SHR(PAL)		143	143
BRT(SECAM)	MENU → 4	130	134
CNT(SECAM)		174	174
CLR-R(SECAM)		78	74
CLR-B(SECAM)		78	74
SHR(SECAM)		143	143
S-BRT(SECAM)	MENU → 5	130	134
S-CNT(SECAM)		174	174
S-CLR-R(SECAM)		78	74
S-CLR-B(SECAM)		78	74
S-SHR(SECAM)		143	143
C-BRT(SECAM)	MENU → 6	134	134
C-CNT(SECAM)		122	132
C-CLR-R(SECAM)		156	154
C-CLR-B(SECAM)		156	154
C-SHR(SECAM)		143	143
BRT(NTSC)	MENU → 7	134	134
CNT(NTSC)		172	174
CLR-R(NTSC)		78	70
CLR-B(NTSC)		78	70
TNT(NTSC)		148	148
SHR(NTSC)		143	143
S-BRT(NTSC)	MENU → 8	134	134
S-CNT(NTSC)		172	174
S-CLR-R(NTSC)		78	70
S-CLR-B(NTSC)		78	70
S-TNT(NTSC)		148	148
S-SHR(NTSC)		143	143

ITEM	BUTTON (on the remote control)	DATA VALUE	
		LCD-A1504	LCD-A2004
C-BRT(NTSC)	MENU → 9	134	134
C-CNT(NTSC)		122	132
C-CLR-R(NTSC)		156	154
C-CLR-B(NTSC)		156	154
C-TNT(NTSC)		148	148
C-SHR(NTSC)		143	143
BRIGHT	0	0	0
NORMAL	0	40	65
DARK	0	95	98
COR(C/D/S-1)	VOL. p → 1	131	131
COG(C/D/S-1)	VOL. p → 2	131	131
COB(C/D/S-1)	VOL. p → 3	131	131
DR(C/D/S-1)	VOL. p → 4	145	145
DG(C/D/S-1)	VOL. p → 5	143	143
DB(C/D/S-1)	VOL. p → 6	140	140
SBR(C/D/S-1)	VOL. p → 7	0	0
SBB(C/D/S-1)	VOL. p → 9	0	0
C-COR(C/D/S-2)	VOL. p → 1	131	131
C-COG(C/D/S-2)	VOL. p → 2	131	131
C-COB(C/D/S-2)	VOL. p → 3	131	131
C-DR(C/D/S-2)	VOL. p → 4	145	145
C-DG(C/D/S-2)	VOL. p → 5	143	143
C-DB(C/D/S-2)	VOL. p → 6	140	140
C-SBR(C/D/S-2)	VOL. p → 7	0	0
C-SBB(C/D/S-2)	VOL. p → 9	0	0
7F	VOL. p	FF	FF
LAST POWER		OFF	OFF
SYSTEM		PAL-BG	PAL-BG
NCM		ON	ON
ASPECT		OFF	OFF
RUSSIAN		OFF	OFF

2. +B Adjustment

Purpose: To obtain correct operation.

Symptom of Misadjustment: The picture is dark and the unit does not operate correctly.

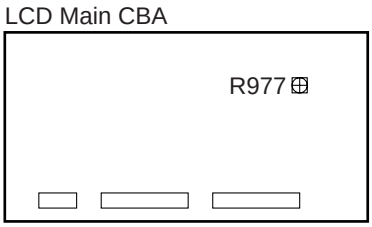
Test Point	Adj. Point
TP401 (+B) TP300 (GND)	VR649
M. EQ.	**Spec.**
DC Voltmeter	+13.0±0.3V DC [LCD-A1504] +21.0±0.3V DC [LCD-A2004]

Note: TP401(+B), TP300(GND), VR649 --- Main CBA

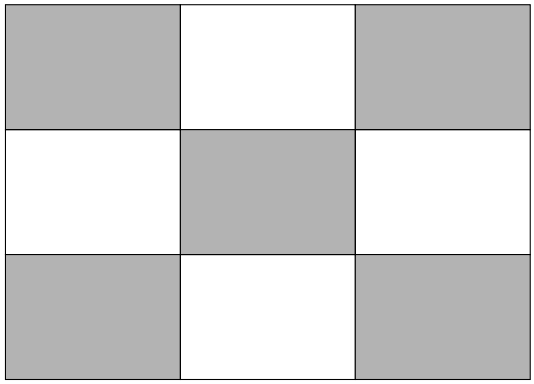
1. Connect DC Volt Meter to TP401 and TP300(GND).
2. Adjust VR649 so that the voltage of TP401 becomes +13.0±0.3V DC [LCD-A1504] or +21.0±0.3V DC [LCD-A2004].

3. Flicker Adjustment

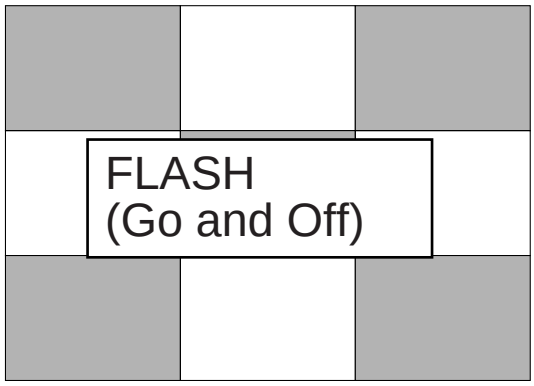
Adjustment Point: R977 (LCD Main CBA)



1. Enter the Service mode.
2. Press “2” button on the remote control unit. The following screen appears.



3. If Flicker Adjustment is not fit, the screen become the following.



4. Adjust R977 so that flash stops.

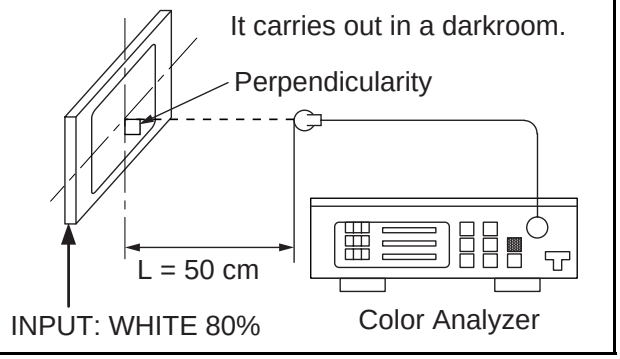
The following adjustment normally are not attempted in the field. Only when replacing the LCD Panel then adjust as a preparation.

4. White Balance Adjustment

Purpose: To mix red, green and blue beams correctly for pure white.

Symptom of Misadjustment: White becomes bluish or reddish.

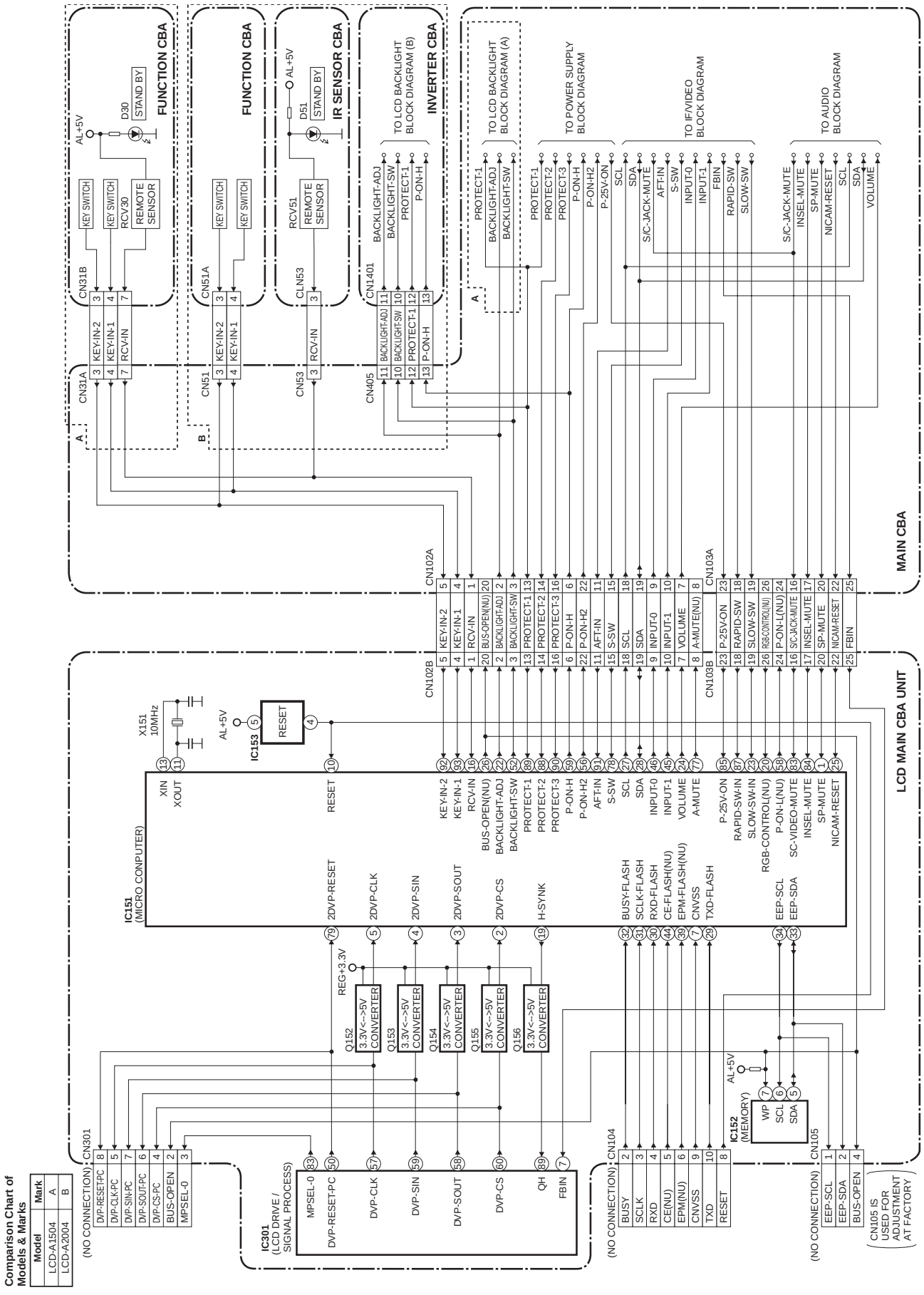
Test Point	Adj. Point	Mode	Input
Screen	VOL. p buttons	**[RF/AV2(CVBS)]** C/D/S-1 **[AV1(RGB)]** C/D/S-2	White Purity (APL 80%) or (APL 40%)
M. EQ.		Spec.	
Pattern Generator, Color analyzer		x: 260 to 320, y: 270 to 330	
Figure			



1. Operate the unit for more than 20 minutes.
2. Input the White Purity (APL 80% or APL 40%).
3. Set the color analyzer to the CHROMA mode and bring the optical receptor to the center on the LCD-Panel surface after zero point calibration as shown above.
   Note: The optical receptor must be set perpendicularly to the LCD Panel surface.
4. **[RF/AV2(CVBS)]**
   Enter the Service mode. Press “VOL p ” button on the remote control unit and select “C/D/S-1” mode.
   [AV1(RGB)]
   Enter the Service mode. Press “VOL p ” button on the remote control unit and select “C/D/S-2” mode.
5. **[RF/AV2(CVBS)]**
   When “x” value and “y” value are not within specification, adjust “DB (C/D/S-1)” or “DR (C/D/S-1)”. Refer to “1. Initial Setting.”
   Note: “DB(C/D/S1)” or “DR(C/D/S1)” must be adjusted within ±10.
   [AV1(RGB)]
   When “x” value and “y” value are not within specification, adjust “C-DB(C/D/S-2)” or “C-DR(C/D/S-2)”. Refer to “1. Initial Setting.”
   Note: “C-DB(C/D/S-2)” or “C-DR(C/D/S-2)” must be adjusted within ±10.
6. Turn the power off and on again. (Main power button on the TV unit.)

BLOCK DIAGRAMS

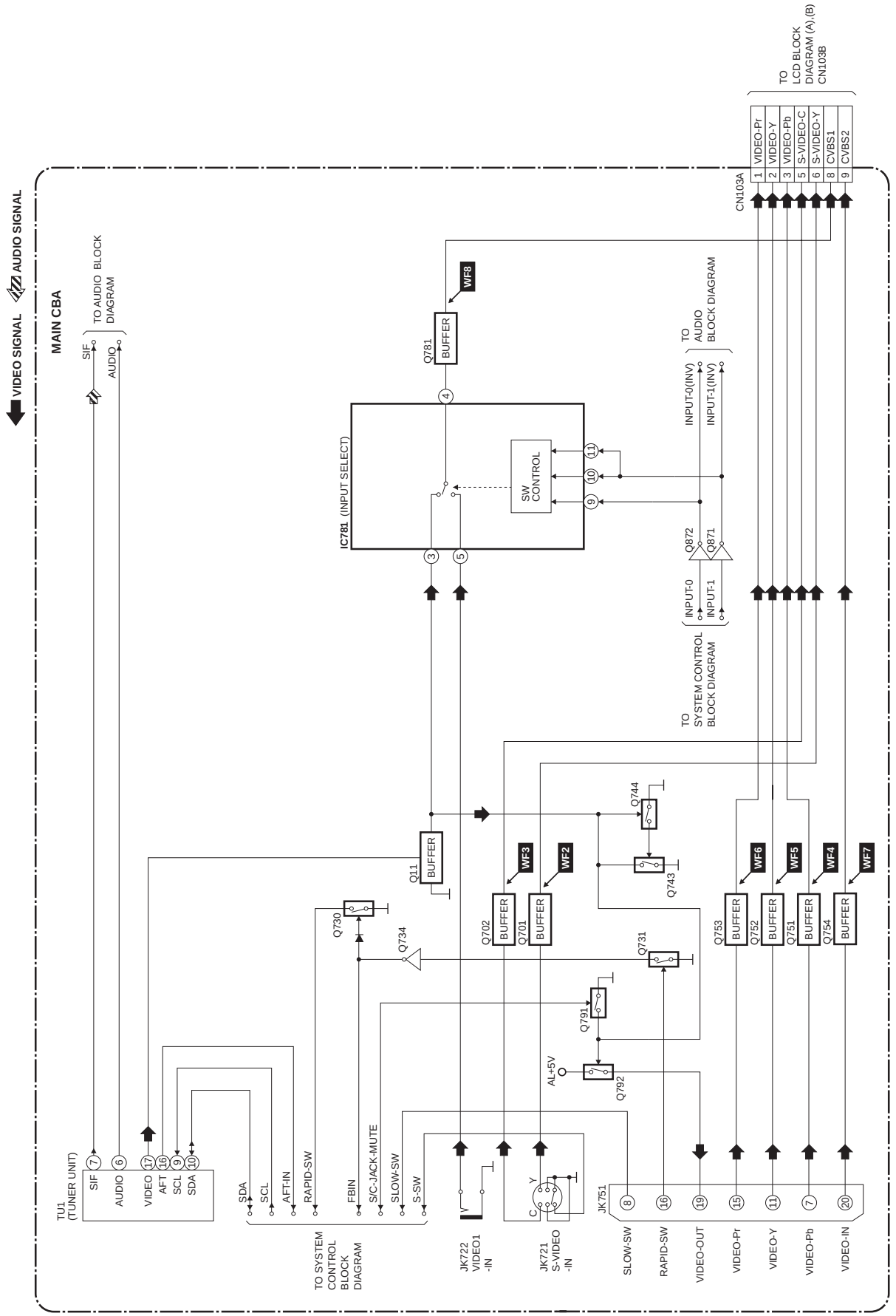
System Control Block Diagram



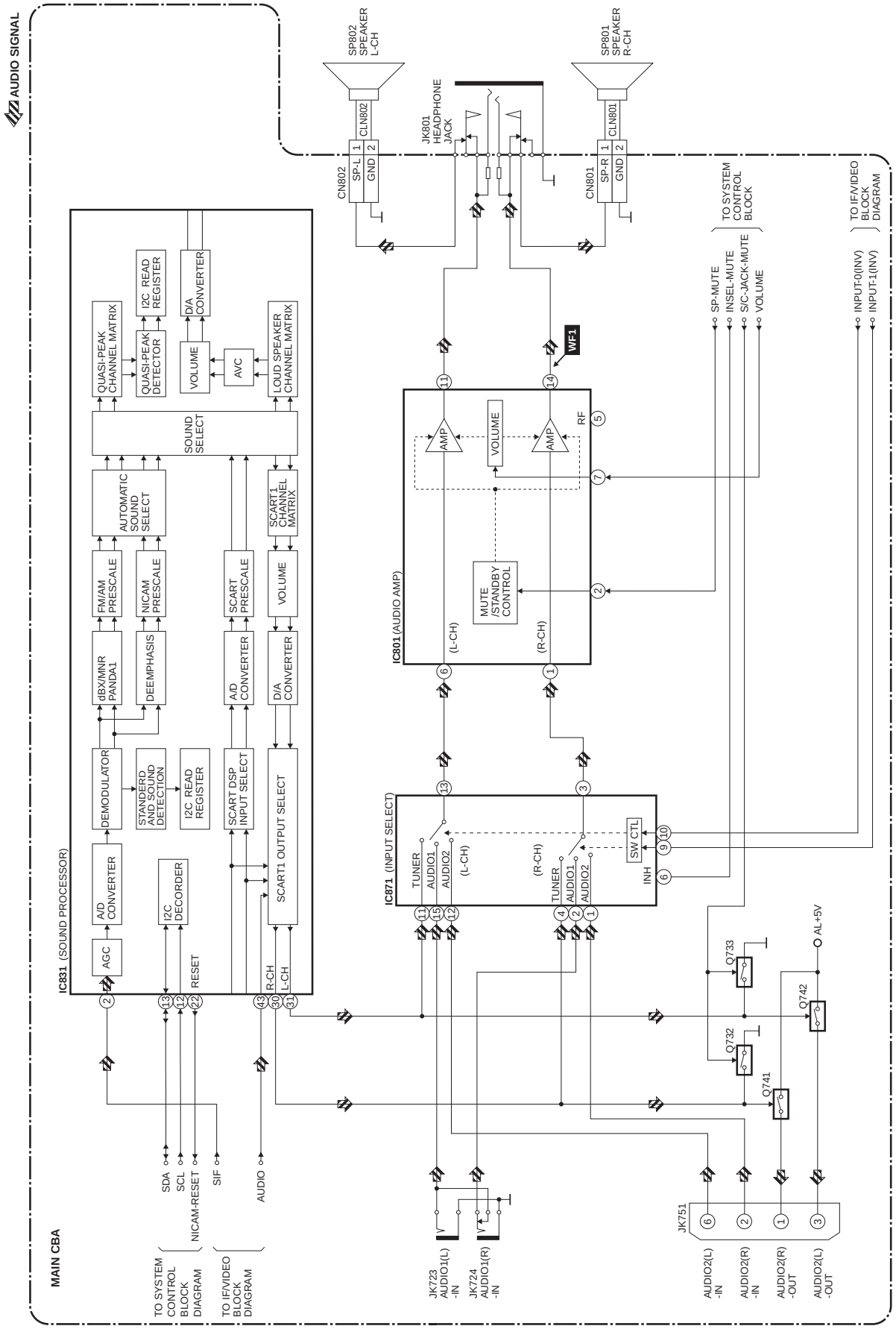
Comparison Chart of Models & Marks

Model	Mark
LCD-A1504	A
LCD-A2004	B

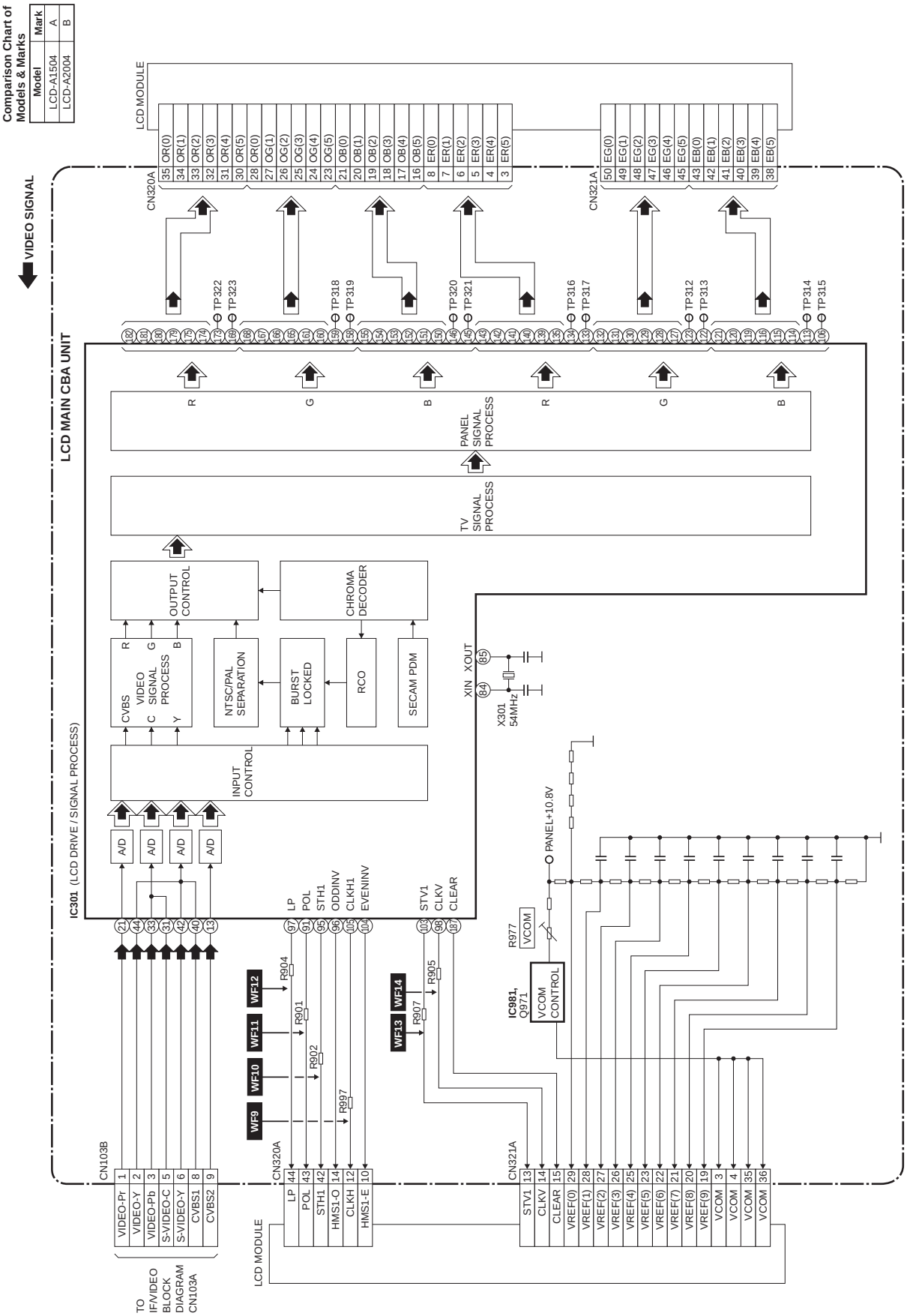
IF/Video Block Diagram



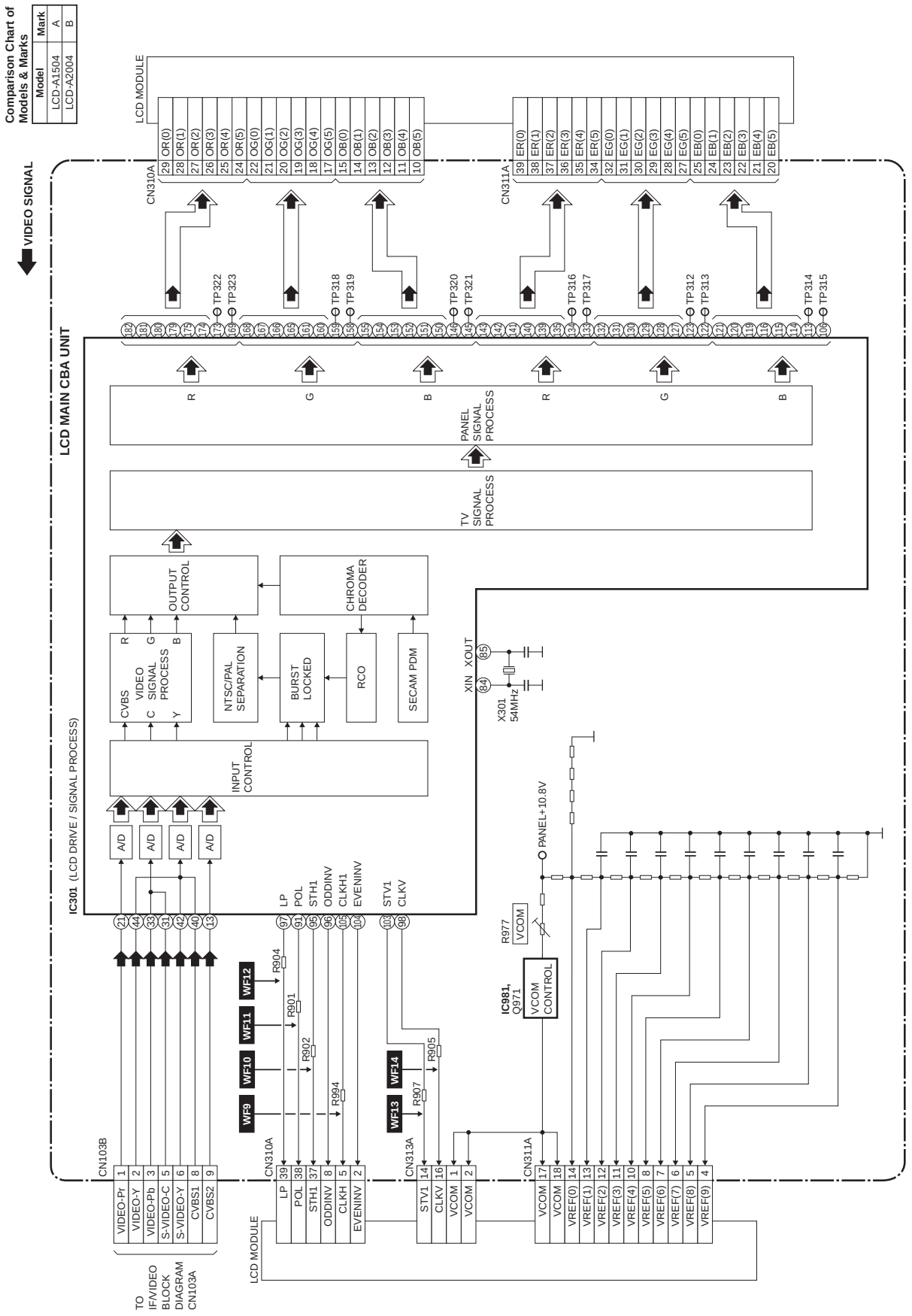
Audio Block Diagram



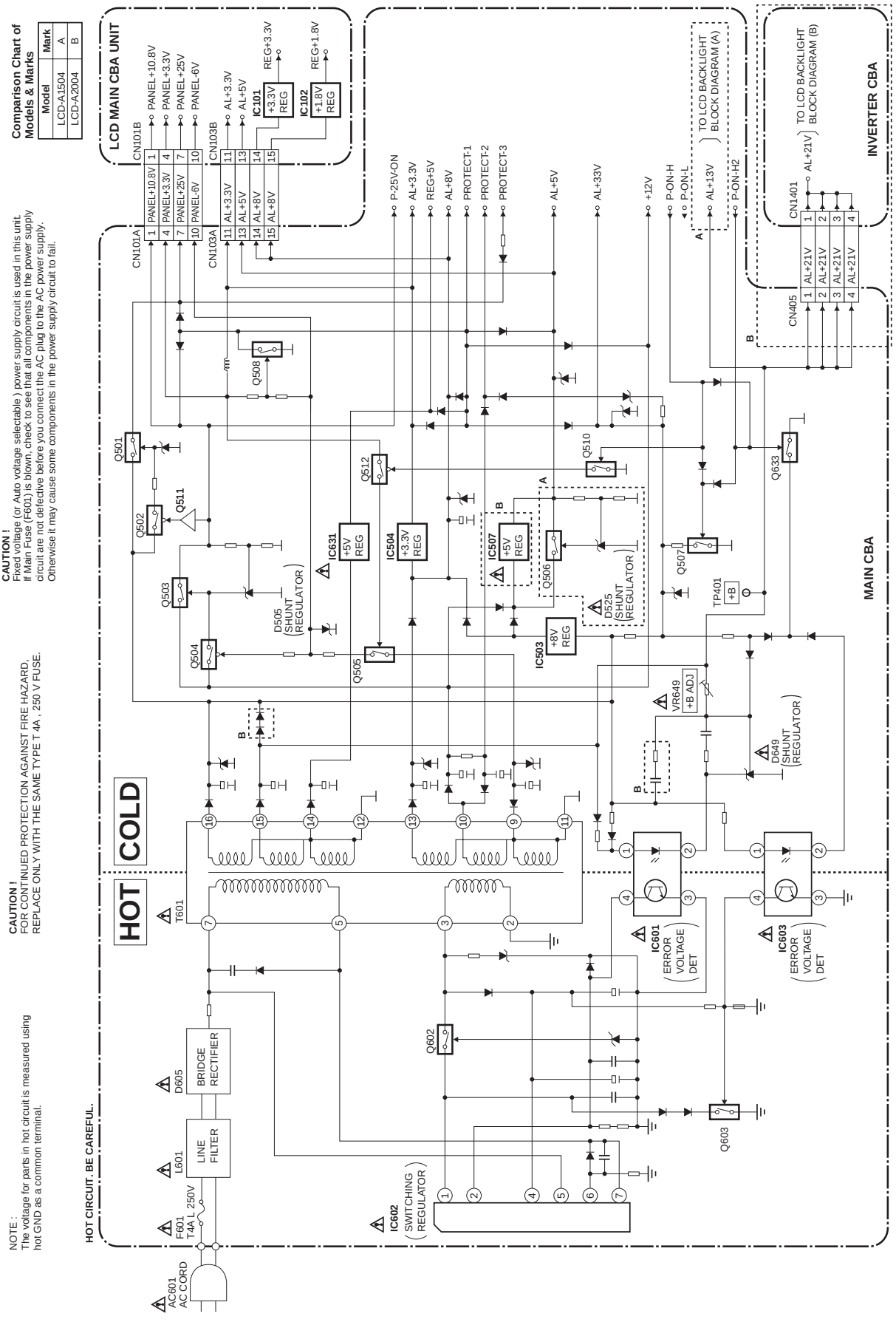
LCD Block Diagram (A)



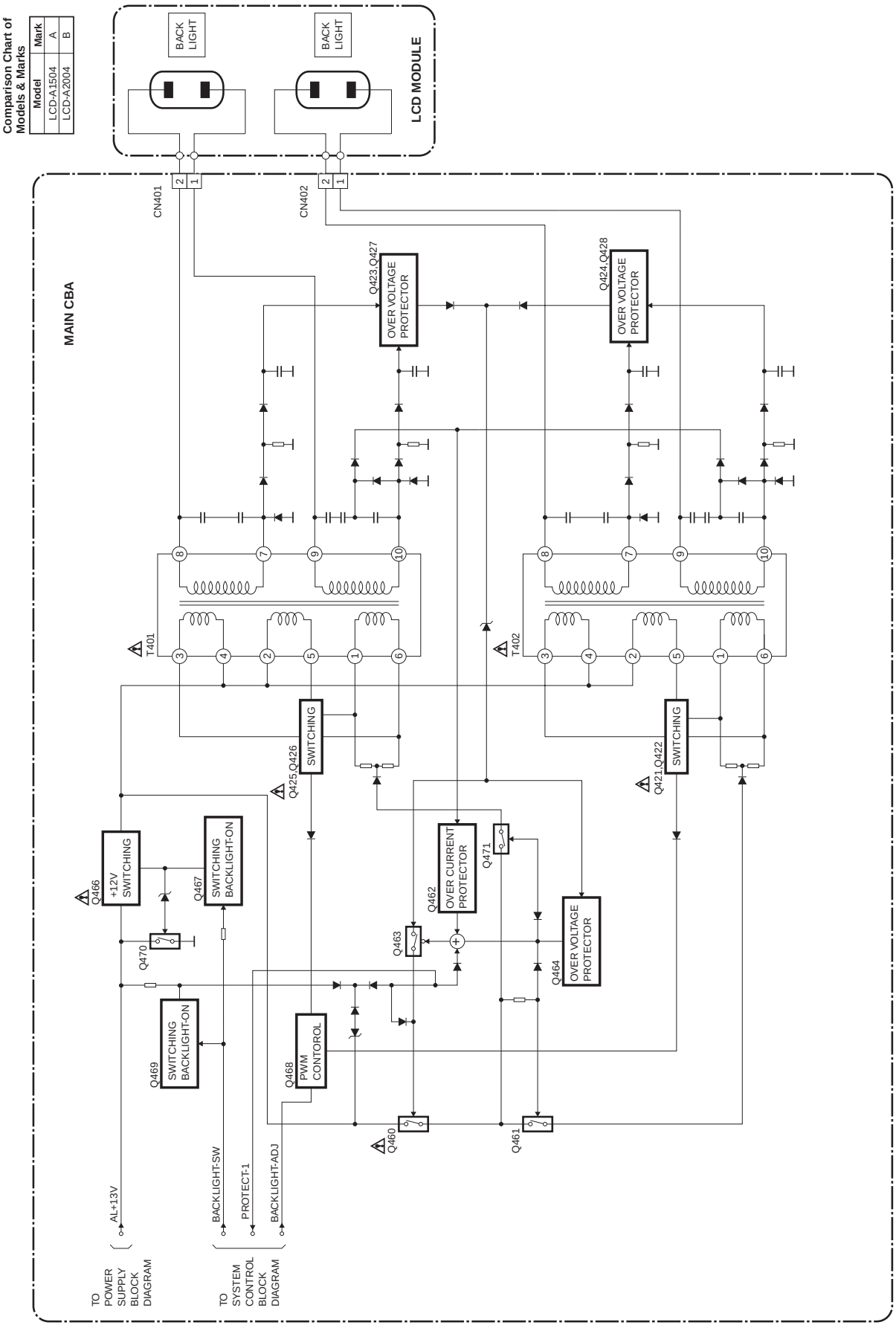
LCD Block Diagram (B)



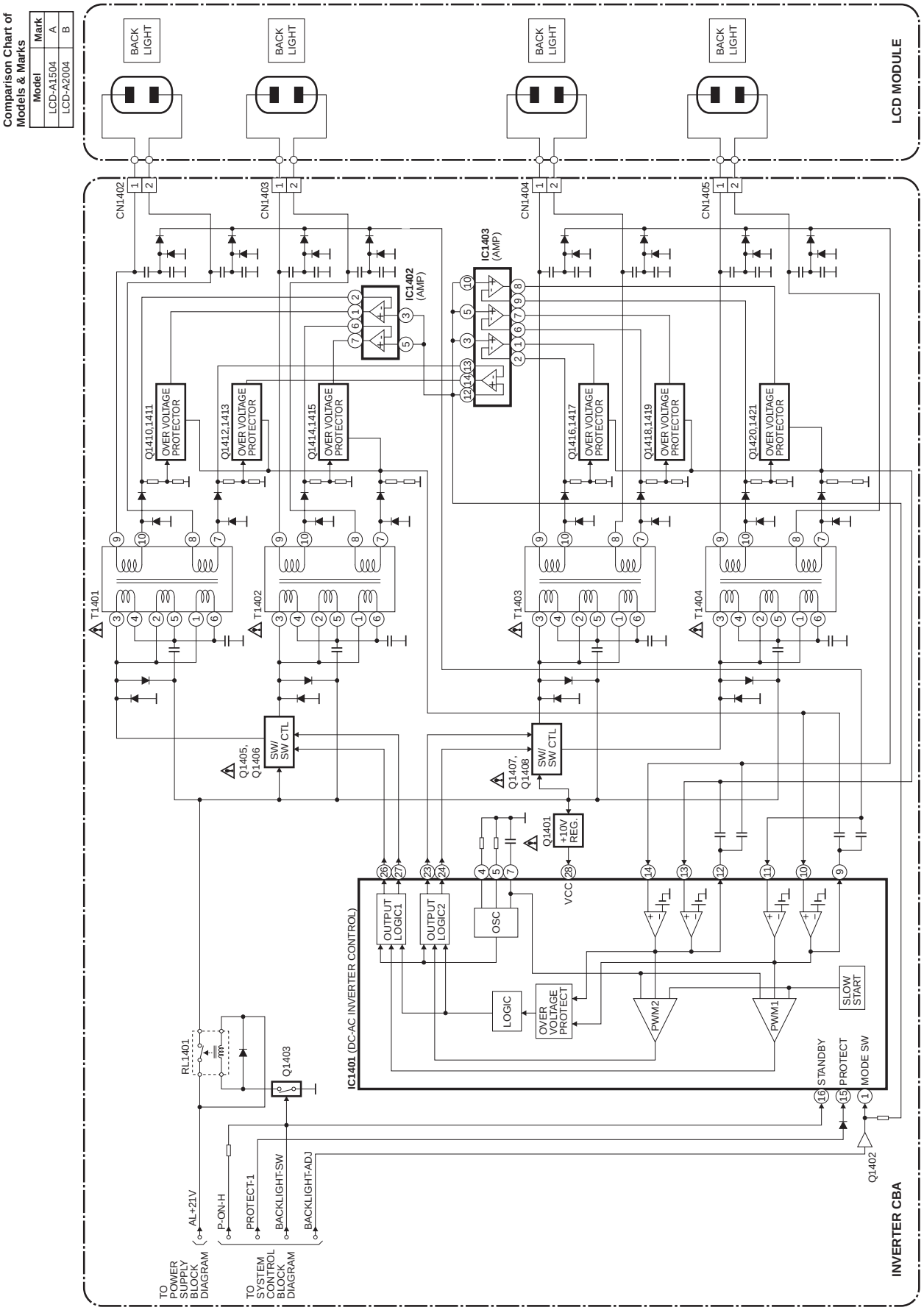
Power Supply Block Diagram



LCD Backlight Block Diagram (A)



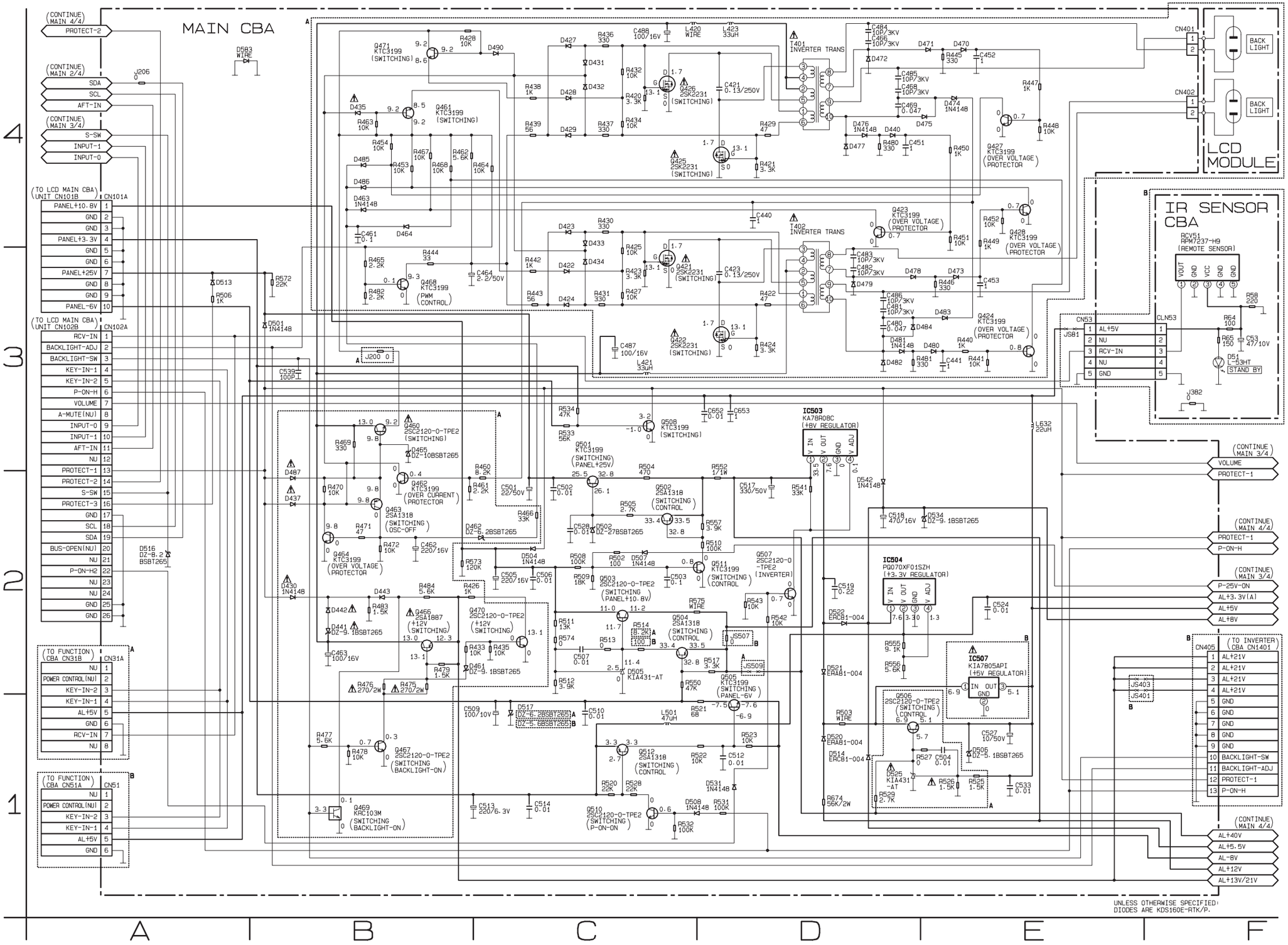
LCD Backlight Block Diagram (B)



Main 1/4 & IR Sensor Schematic Diagram

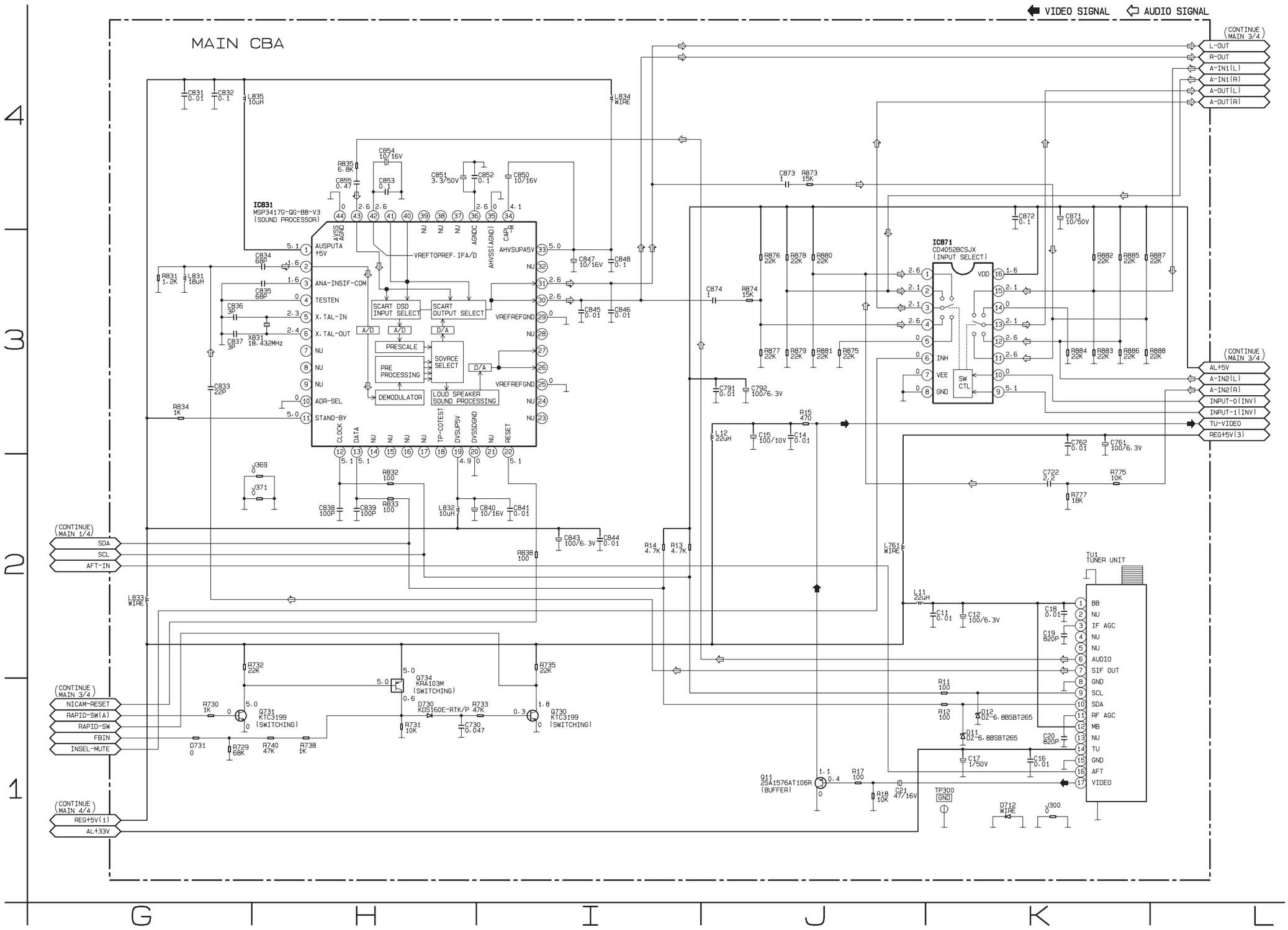
Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B



L4100SCM1

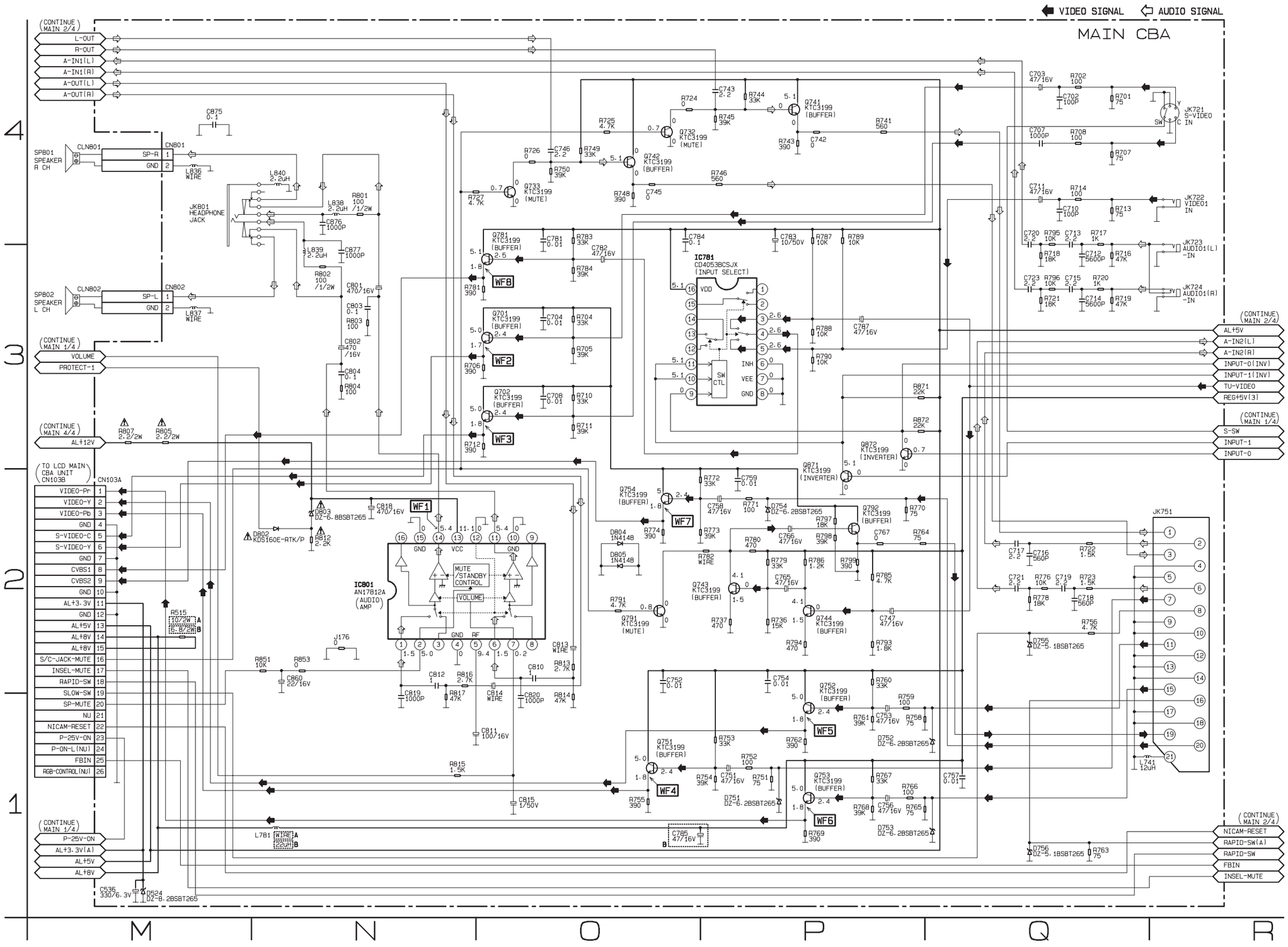
Main 2/4 Schematic Diagram



Main 3/4 Schematic Diagram

Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B



L4100SCM3

Main 4/4 Schematic Diagram

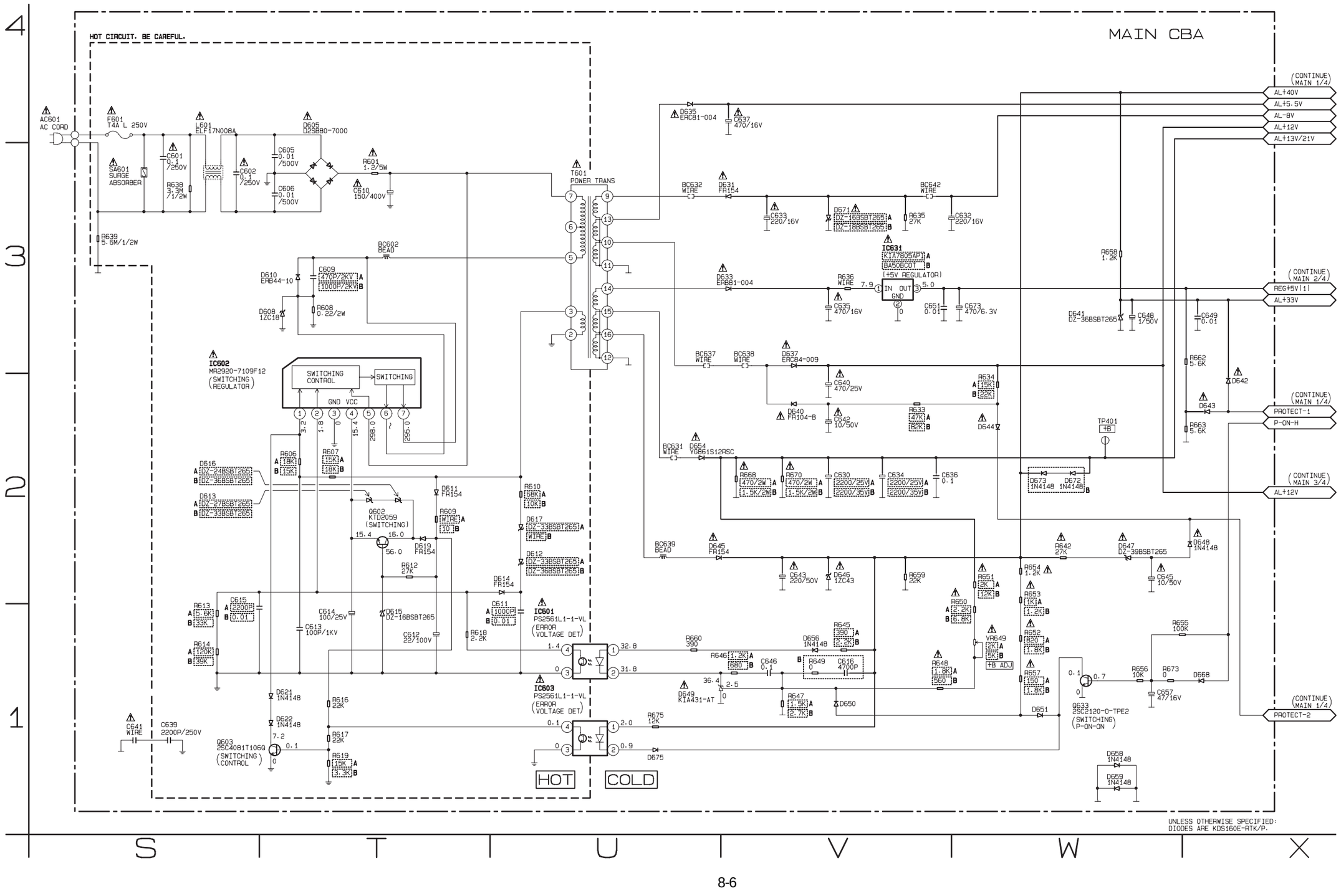
Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B

CAUTION !
For continued protection against fire hazard, replace only with the same type fuse.

NOTE:
The voltage for parts in hot circuit is measured using hot GND as a common terminal.

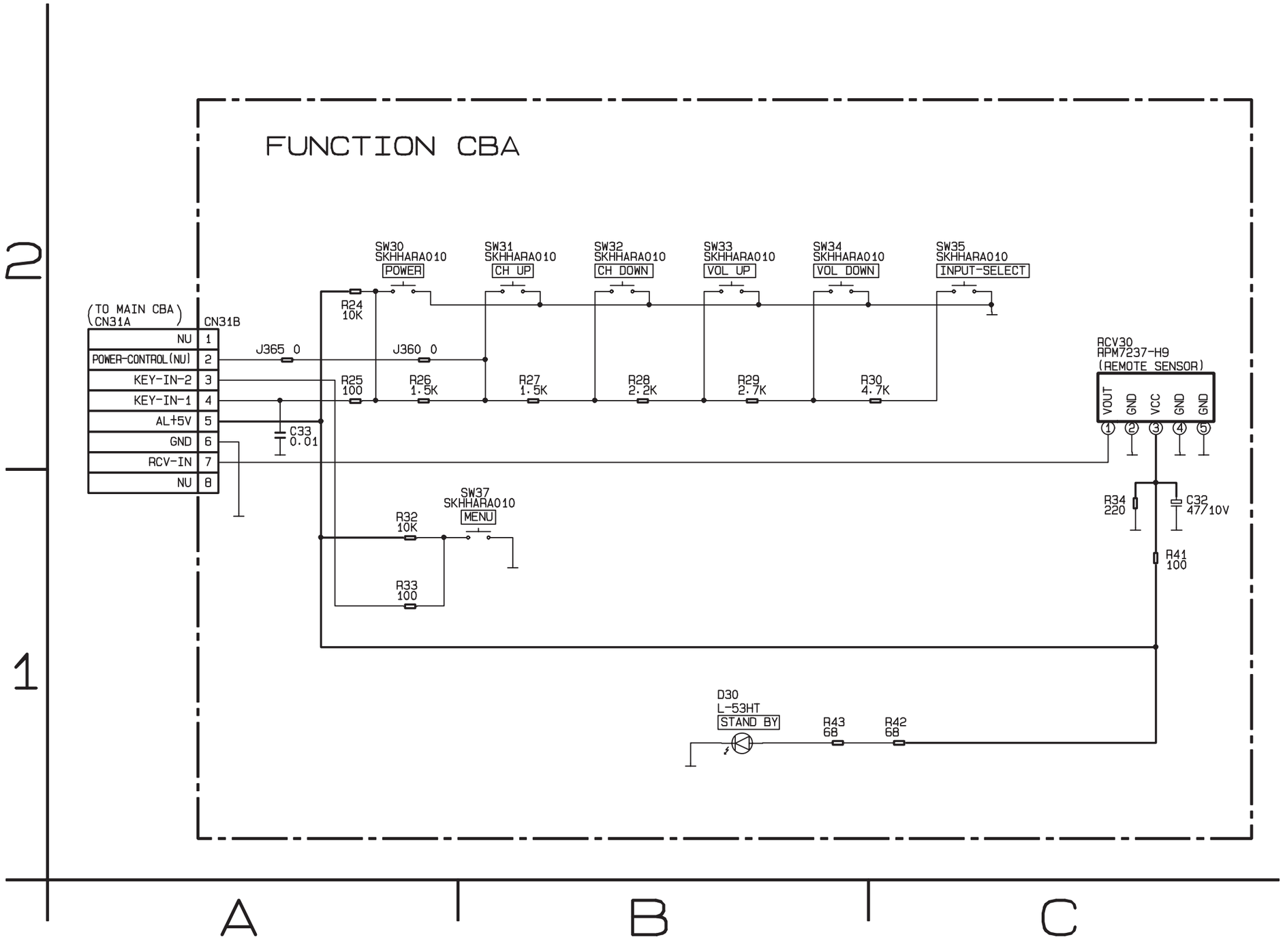
CAUTION !
Fixed voltage (or Auto voltage selectable) power supply circuit is used in this unit. If Main Fuse (F601) is blown , check to see that all components in the power supply circuit are not defective before you connect the AC plug to the AC power supply. Otherwise it may cause some components in the power supply circuit to fail.



Function Schematic Diagram (A)

Comparison Chart of Models and Marks

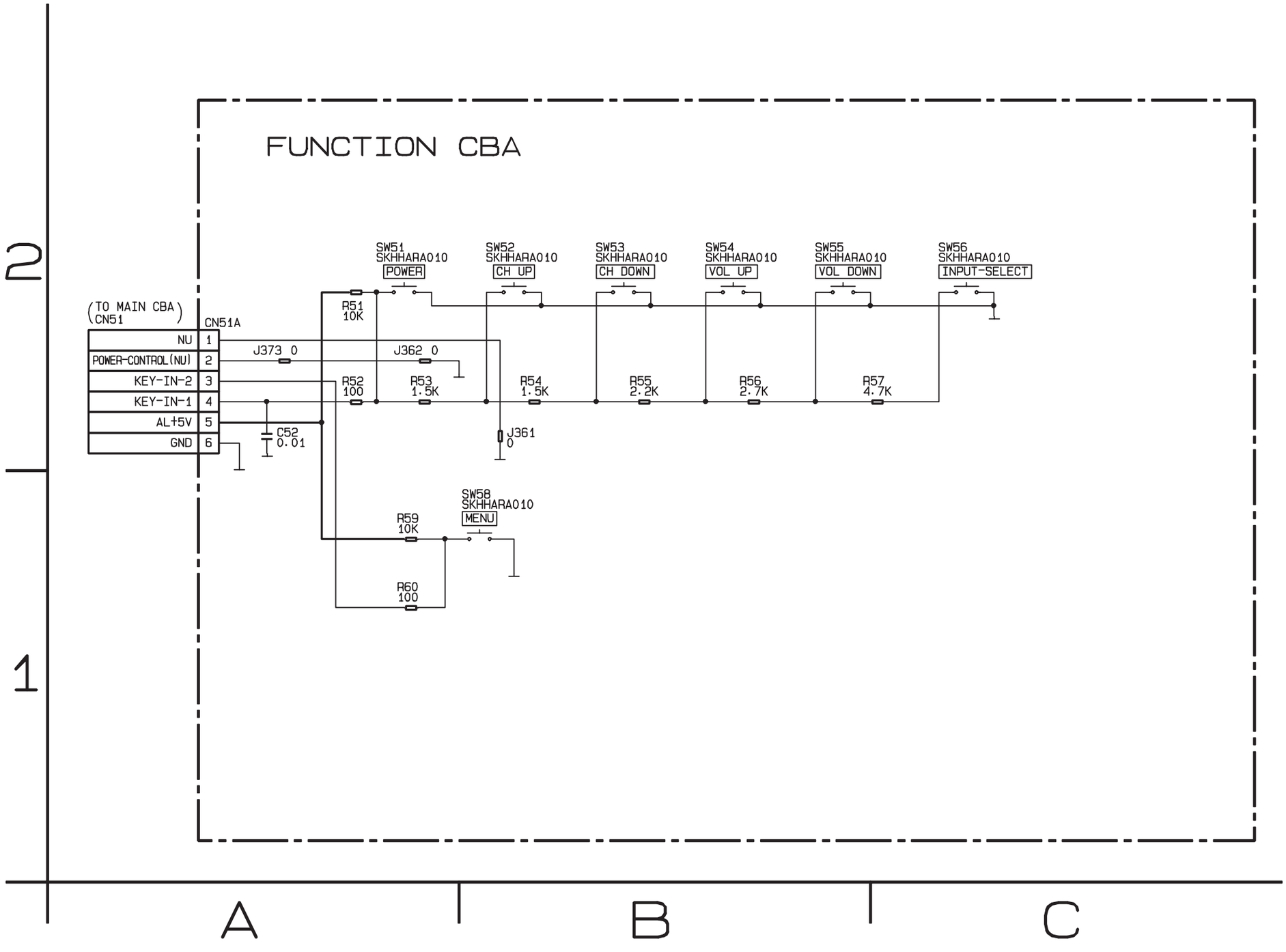
MODEL	MARK
LCD-A1504	A
LCD-A2004	B



Function Schematic Diagram (B)

Comparison Chart of Models and Marks

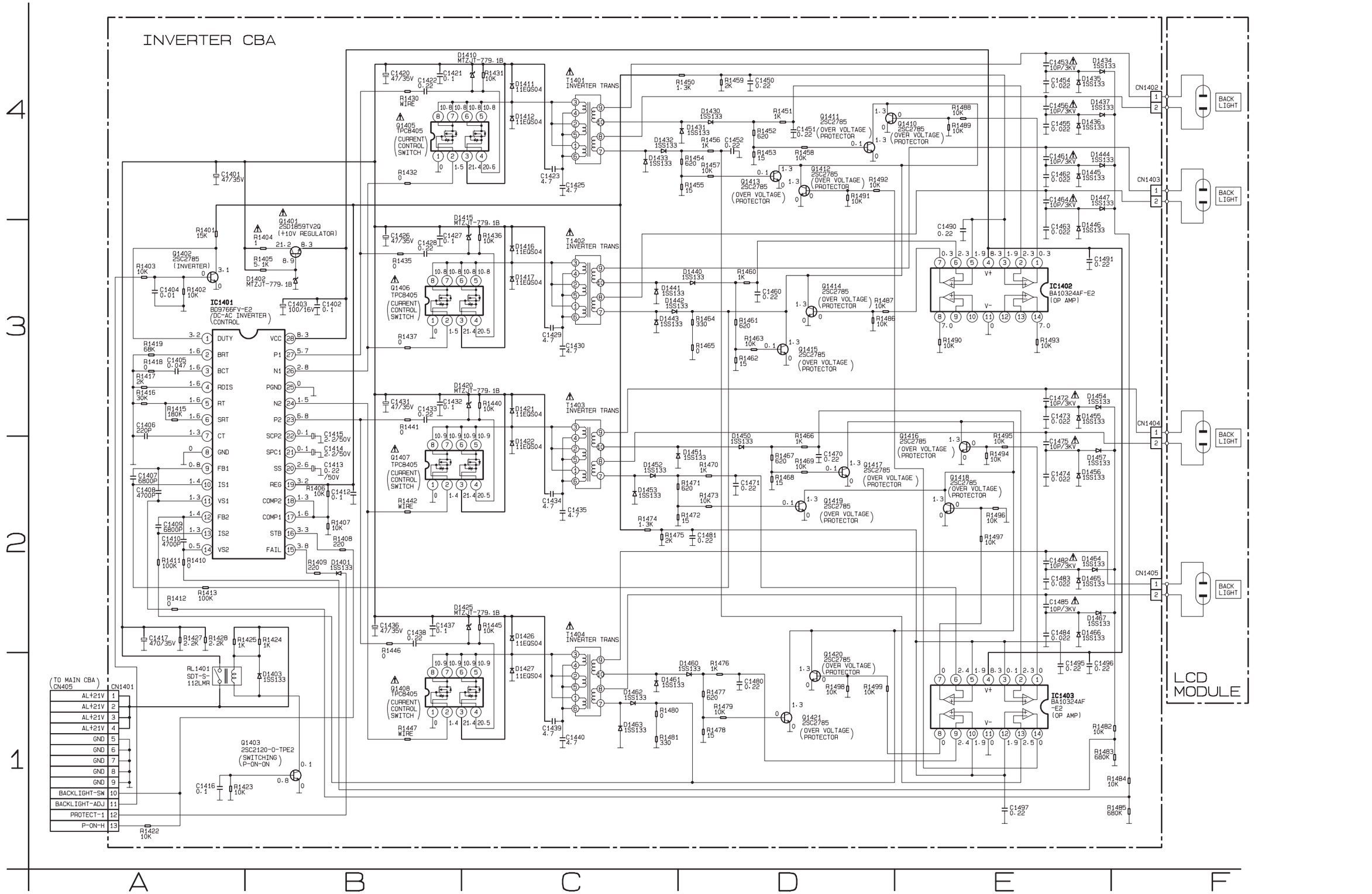
MODEL	MARK
LCD-A1504	A
LCD-A2004	B



Inverter Schematic Diagram (B)

Comparison Chart of Models and Marks

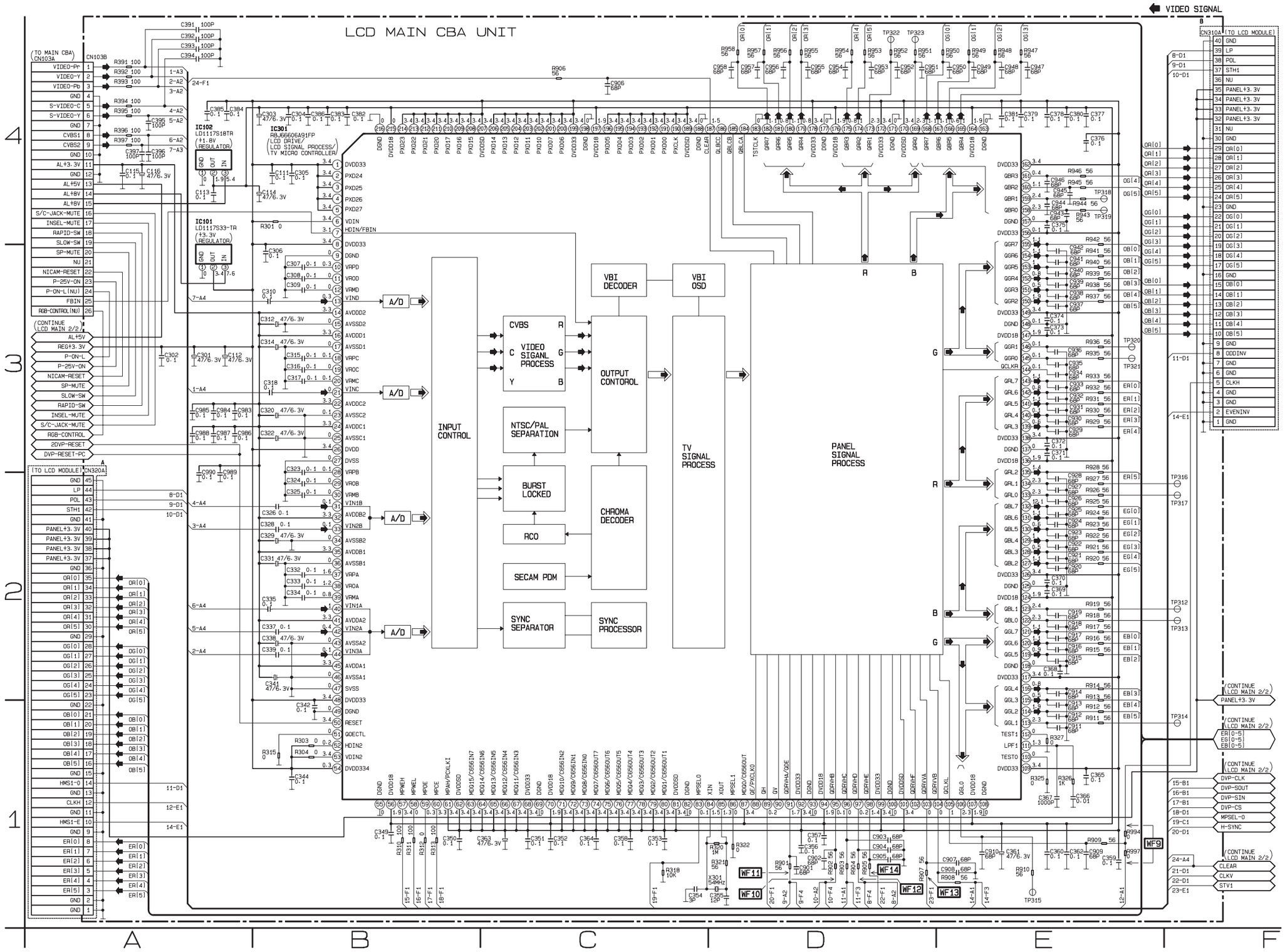
MODEL	MARK
LCD-A1504	A
LCD-A2004	B



LCD Main 1/2 Schematic Diagram

Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B

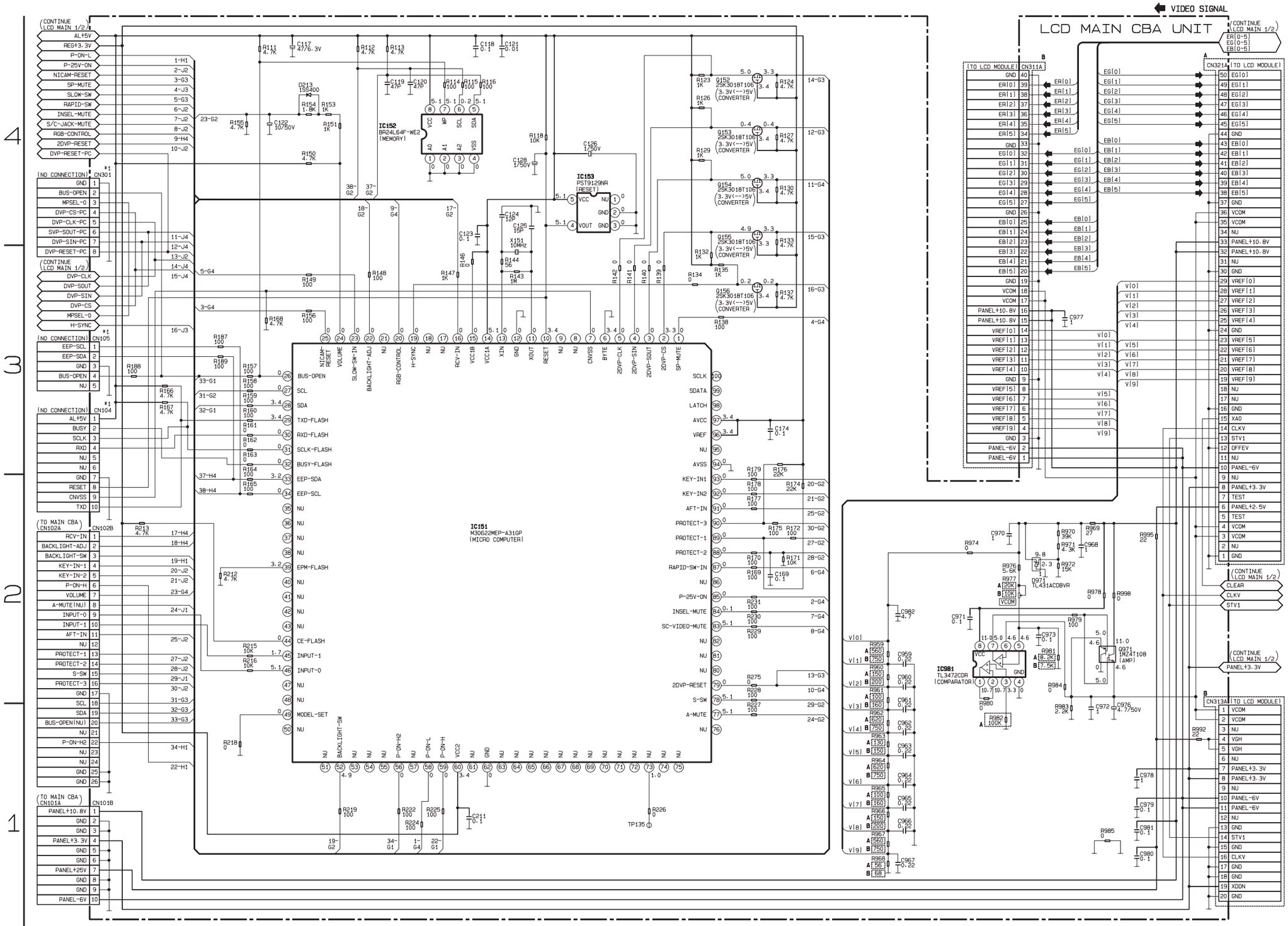


LCD Main 2/2 Schematic Diagram

*1 NOTE :
CN104, CN105, CN301 are used for adjustment at factory.

Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B



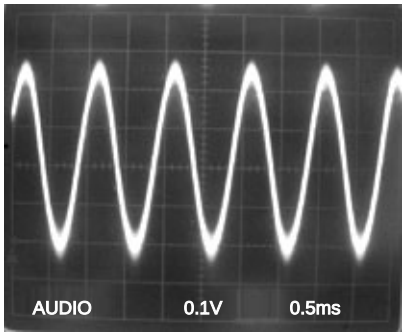
L4100SCL2

WAVEFORMS

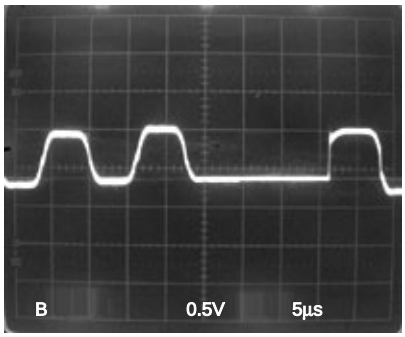
WF1 ~ WF8 = Waveforms to be observed at
Waveform check points.
(Shown in Schematic Diagram.)

Input: PAL Color Bar Signal (with 1kHz Audio Signal)

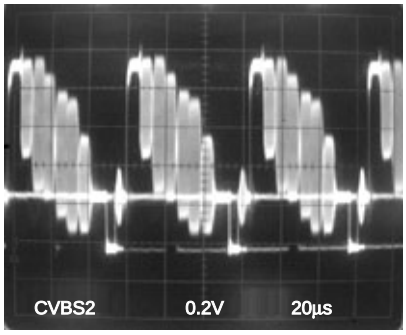
WF1 Pin 14 of IC801



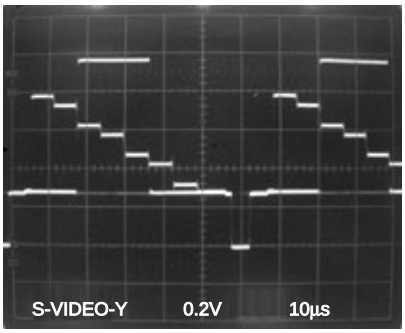
WF4 Q751 EMITTER



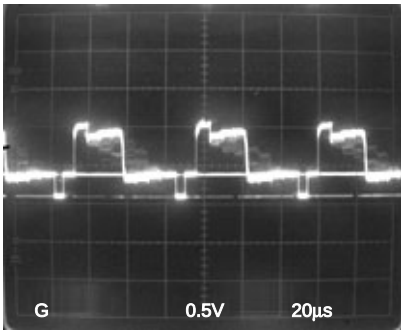
WF7 Q754 EMITTER



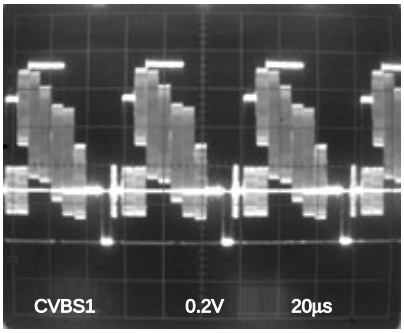
WF2 Q701 EMITTER



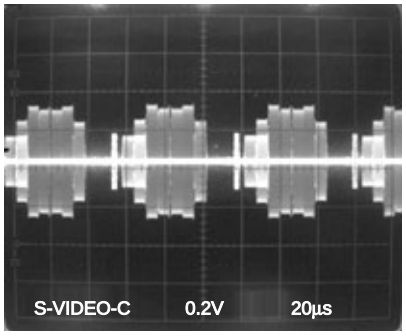
WF5 Q752 EMITTER



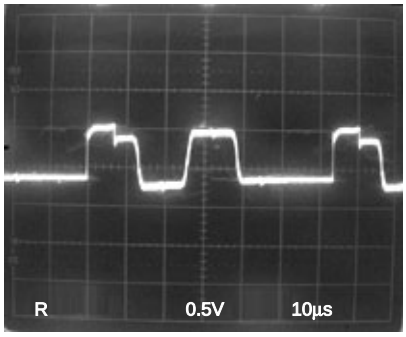
WF8 Q781 EMITTER



WF3 Q702 EMITTER



WF6 Q753 EMITTER



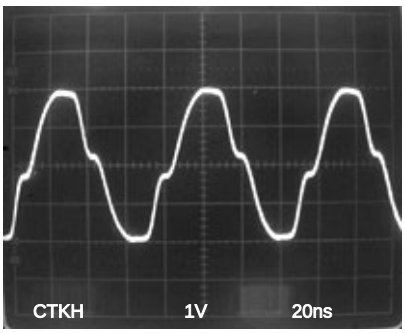
WF9 ~ WF14 = Waveforms to be observed at Waveform check points. (Shown in Schematic Diagram.)

Input: PAL Color Bar Signal (with 1kHz Audio Signal)

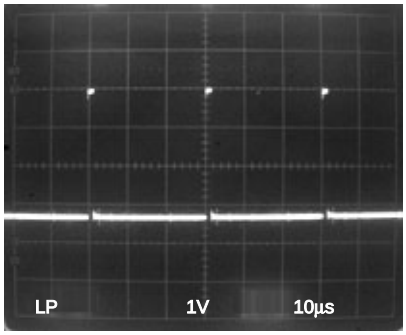
Comparison Chart of Models and Marks

MODEL	MARK
LCD-A1504	A
LCD-A2004	B

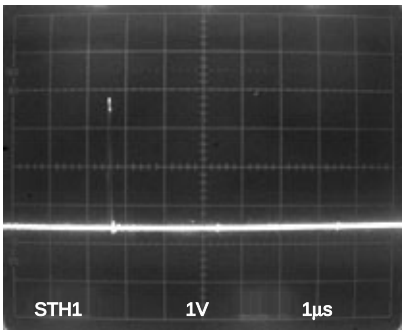
WF9 R997 (A)
R994 (B)



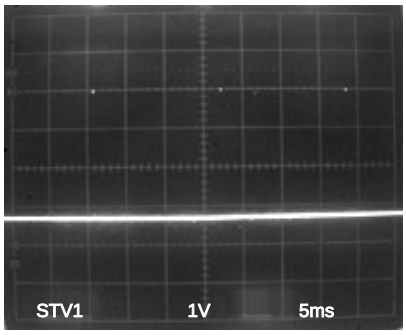
WF12 R904



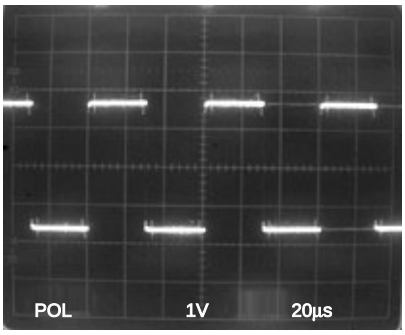
WF10 R902



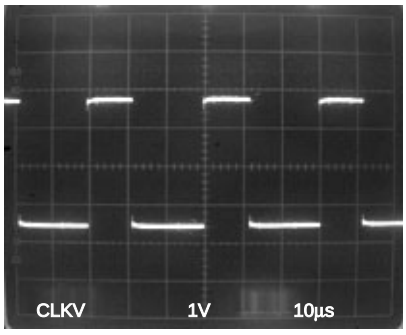
WF13 R907



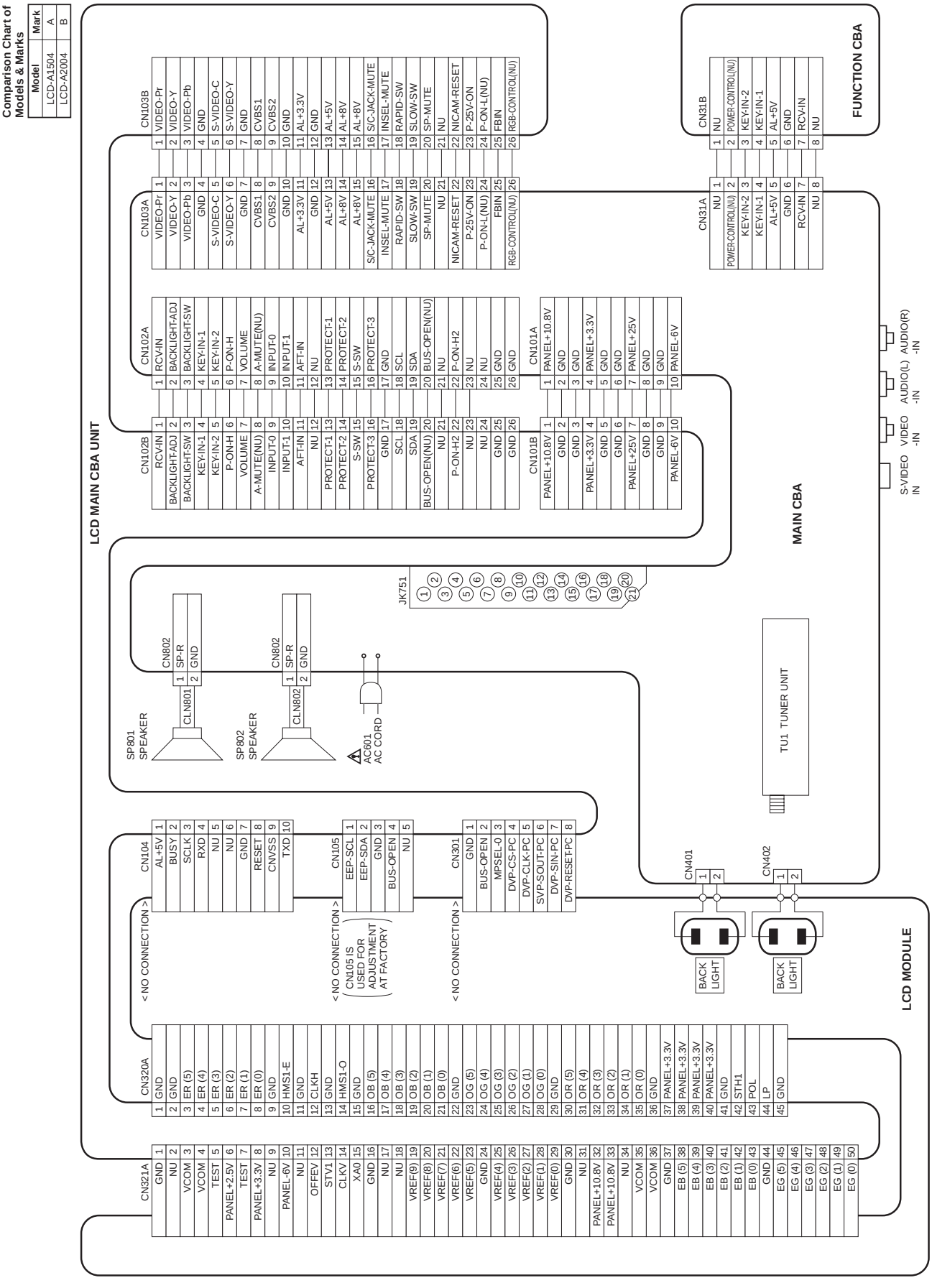
WF11 R901



WF14 R905



WIRING DIAGRAMS (A)



WIRING DIAGRAMS (B)

Comparison Chart of Models & Marks

Model	Mark
LCD-A1504	A
LCD-A2004	B