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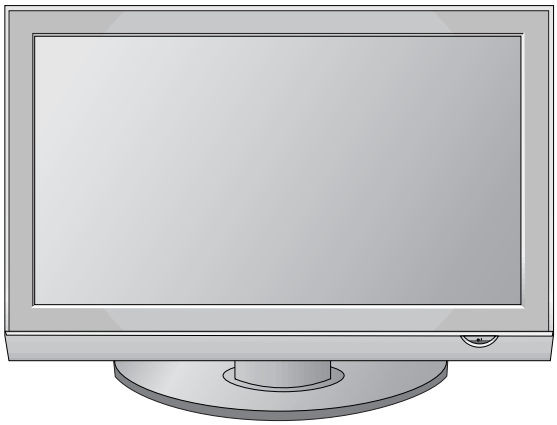
PLASMA TV
SERVICE MANUAL

CHASSIS : PU82C

MODEL : 60PG60 60PG60F-UA

CAUTION

BEFORE SERVICING THE CHASSIS,
READ THE SAFETY PRECAUTIONS IN THIS MANUAL.



SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by ⚠ in the Schematic Diagram and Replacement Parts List.
It is essential that these special safety parts should be replaced with the same components as recommended in this manual to prevent X-RADIATION, Shock, Fire, or other Hazards.
Do not modify the original design without permission of manufacturer.

General Guidance

An Isolation Transformer should always be used during the servicing of a receiver whose chassis is not isolated from the AC power line. Use a transformer of adequate power rating as this protects the technician from accidents resulting in personal injury from electrical shocks.

It will also protect the receiver and it's components from being damaged by accidental shorts of the circuitary that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this monitor is blown, replace it with the same specified type.

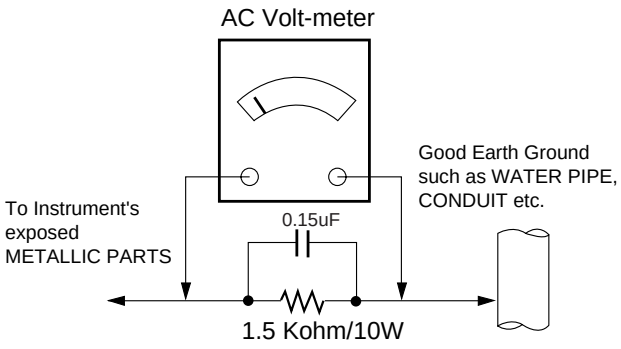
When replacing a high wattage resistor (Oxide Metal Film Resistor, over 1W), keep the resistor 10mm away from PCB.

Keep wires away from high voltage or high temperature parts.

Leakage Current Cold Check(Antenna Cold Check)
With the instrument AC plug removed from AC source, connect an electrical jumper across the two AC plug prongs. Place the AC switch in the on positioin, connect one lead of ohm-meter to the AC plug prongs tied together and touch other ohm-meter lead in turn to each exposed metallic parts such as antenna terminals, phone jacks, etc.
If the exposed metallic part has a return path to the chassis, the measured resistance should be between 1MΩ and 5.2MΩ.
When the exposed metal has no return path to the chassis the reading must be infinite.
An other abnormality exists that must be corrected before the receiver is returned to the customer.

Leakage Current Hot Check (See below Figure)
Plug the AC cord directly into the AC outlet.
Do not use a line Isolation Transformer during this check.
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.
Measure the AC voltage across the resistor using AC voltmeter with 1000 ohms/volt or more sensitivity.
Reverse plug the AC cord into the AC outlet and repeat AC voltage measurements for each esposed metallic part. Any voltage measured must not exceed 0.75 volt RMS which is corresponds to 0.5mA.
In case any measurement is out of the limits sepcified, there is possibility of shock hazard and the set must be checked and repaired before it is returned to the customer.

Leakage Current Hot Check circuit



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SPECIFICATIONS

MODELS		42PG60 (42PG60-UA)	50PG60 (50PG60F-UA)	60PG60 (60PG60F-UA)
Dimensions (Width x Height x Depth)	With stand	41.1 x 28.9 x 12.1 inches 1044.4 x 735.4 x 308.0 mm	48.6 x 33.4x 14.3 inches 1235.6 x 849.3 x 364.1 mm	57.2 x 38.7x 16.2 inches 1455.0 x 985.0 x 414.0 mm
	Without stand	41.1 x 26.7 x 3.1 inches 1044.4 x 680.6 x 79.6 mm	48.6 x 31.2 x 3.1 inches 1235.6 x 792.8 x 79.6 mm	57.2 x 36.4 x 3.3 inches 1455.0 x 924.8 x 84.1 mm
Weight	With stand Without stand	61.7 pounds / 28.0 kg 55.1 pounds / 25.0 kg	96.1 pounds / 43.6 kg 87.5 pounds / 39.7 kg	130.5 pounds / 59.2 kg 113.9 pounds / 51.7 kg
Power requirement Television System Program Coverage External Antenna Impedance		AC100-240V ~ 50/60Hz NTSC-M, ATSC, 64 & 256 QAM VHF 2-13, UHF 14-69, CATV 1-135, DTV 2-69, CADTV 1-135 75 ohm		
Environment condition	Operating Temperature Operating Humidity	32 ~ 104°F (0 ~ 40°C) Less than 80%		
	Storage Temperature Storage Humidity	-4 ~ 140°F (-20 ~ 60°C) Less than 85%		

The specifications shown above may be changed without prior notice for quality improvement.

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ADJUSTMENT INSTRUCTIONS

1. Application Range

This spec sheet is applied all of the PDP TV, PU82C chassis.

2. Specification

(1) Because this is not a hot chassis, it is not necessary to use an isolation transformer. However, the use of isolation transformer will help protect test equipment.
(2) Adjustments must be done in the correct order.
(3) The adjustments must be performed in the circumstance of 25±5°C of temperature and 65±10% of relative humidity if there is no specific designation.
(4) The input voltage of the receiver be must kept 220V, 60Hz when adjusting.
(5) The receiver must be operational for about 15 minutes prior to the adjustments.

1) After receiving 100% white pattern, the receiver must be operated prior to adjustment. (Or 8. Test Pattern condition in EZ - Adjust)
2) Enter into White Pattern
- Press POWER ON Key on the Service Remote Control (S R/C)
- Enter the Ez - Adjust by pressing ADJ Key on the Service Remote Control (S R/C).
- Select 10. Test Pattern using the CH +/- Key and select the White by pressing the direction Key. Display the 100% Full White Pattern.

[Set is activated HEAT-RUN without signal generator in this mode.

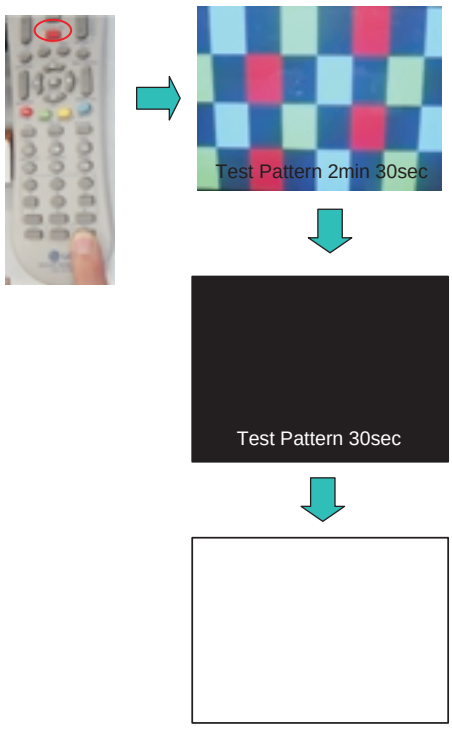
If you turn on a still screen more than 20 minutes (Especially Digital pattern(13 CH), Cross Hatch Pattern), an afterimage may occur in the black level part of the screen.

o HEAT RUN
Preliminary action is applied to the test for afterimage discharge detection, and 100% FULL WHITE PATTERN must be operated automatically.

o Test for afterimage discharge detection
1) Pressing Power On key
- Only operating by pressing Power On key

2) Full Test Pattern(2 min 30sec) --> Full Black Pattern(30sec) --> Full White Pattern(maintenance)
- Full White Pattern when the main power is turned on again after being turned off

3) Pattern Mode is deselected by pressing CH +/-, Exit Key.



[Set is activated HEAT-RUN without signal generator in this mode.

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Each PCB assembly must be checked by check JIG set.
(Because power PCB Assembly damages to PDP Module, especially be careful)

3. PSU(Power Supply Unit) Voltage Adjustment (Va, Vs Voltage Adjustment)

Adjust the voltages Va and Vs supplied from the PSU to the module within the specified range of each module to supply the stable power

3-1. Test Equipment

(1) D.M.M 1EA
(2) Voltage adjustment bar

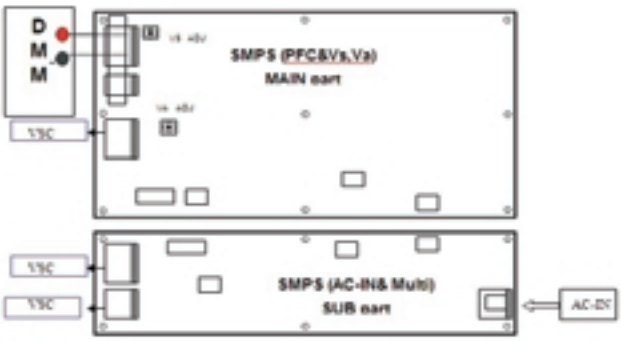
3-2. Adjustment(60”)

(1) Va Voltage Adjustment

1) Connect + terminal of D.M.M to Va pin of P812 and connect – terminal to GND pin of P812.
2) Adjust VR901 voltage to match that of the label on the Top/Right of the panel. (Deviation : ±0.5V)

(2) Vs Voltage Adjustment

1) Connect + terminal of D.M.M to Vs pin of P812 and connect – terminal to GND pin of P812.
2) Adjust VR951 voltage to match that of the label on the Top/Right of the panel. (Deviation : ±0.5V)



Connection Diagram of Power Adjustment for Measuring (Power Board): 60”

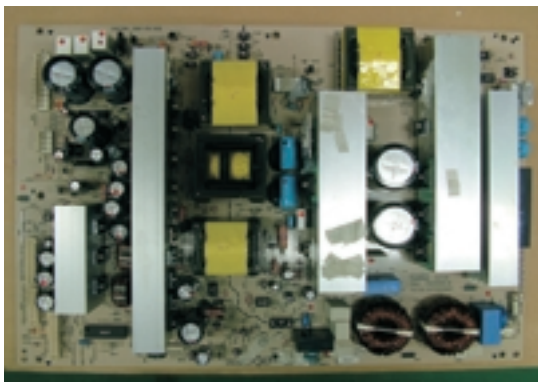
3-3. Adjustment (50”)

(1) Va Adjustment

1) Connect + terminal of D.M.M to Va pin of P12 and connect – terminal to GND pin of P12.
2) Adjust VR951 voltage to match that of the label on the Top/Right of the panel. (Deviation : ±0.5V)

(2) Vs Adjustment

1) Connect + terminal of D.M.M to Vs pin of P12 and connect – terminal to GND pin of P12.
2) Adjust VR901 voltage to match that of the label on the Top/Right of the panel. (Deviation : ±0.5V)



Connection Diagram of Power Adjustment for Measuring (Power Board): 50”

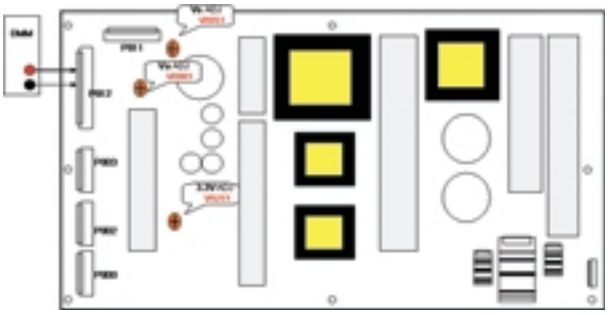
3-4. Adjustment(42”)

(1) Va Voltage Adjustment

1) Connect + terminal of D.M.M to Va pin of P812 and connect – terminal to GND pin of P812.
2) Adjust VR901 voltage to match that of the label on the Top/Right of the panel. (Deviation : ±0.5V)

(2) Vs Voltage Adjustment

1) Connect + terminal of D.M.M to Vs pin of P812 and connect – terminal to GND pin of P812.
2) Adjust VR951 voltage to match that of the label on the Top/Right of the panel. (Deviation : ±0.5V)



Connection Diagram of Power Adjustment for Measuring (Power Board): 42”(EAY32808901)

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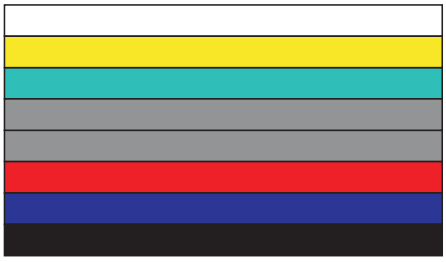
4. Component 480i/1080p RGB 1080p Adjustment

Component 480i/1080p RGB 1080p adjustment to set the black level and the Gain to optimum.

4-1. Test Equipment

(1) Service R/C

(2) 801GF(802B, 802F, 802R) or MSPG925FA Pattern Generator (480i/1080p The Horizontal 100% Color Bar Pattern adjust to within 0.7±0.1Vp-p)



<Fig. 1> Adjustment Pattern: 480i/1080p 60Hz Pattern

[Because the above pattern can differ by the model and pattern for each device, you must check the pattern first.

4-2. ADC 480i Component1 Adjustment

(1) Check the connection Component1 to the Test Equipment. (MSPG-925FA => Model: 209, Pattern: 65)

(2) Select Component1 as the input with 100% Horizontal Color Bar Pattern(HozTV31Bar) in 480i Mode and select 'Normal' in screen.

(3) After receiving signal for at least 1 second, press the ADJ Key on the Service R/C to enter the 'Ez - Adjust' and select the '3. ADC 480i Comp1'.
Pressing the Enter Key to adjust automatically.

(4) When the adjustment is over, 'ADC Component1 Success' is displayed.

(5) If the adjustment has errors, 'ADC Component1 480i Fail' is displayed. And error massage('Component1 Not Connected' or 'Not Valid Format' or 'Check Signal Status') is displayed for 1 second.

4-3. ADC 1080p Component1/RGB Adjustment

(1) Check the connection Component1, RGB to the Test Equipment (MSPG-925FA => Model: 225, Pattern: 65)

(2) Select Component1 as the input with 100% Horizontal Color Bar Pattern(HozTV31Bar) in 1080p Mode and select 'Normal' in screen.

(3) After receiving signal for at least 1 second, press the ADJ Key on the Service R/C to enter the 'Ez - Adjust' and select the '4. ADC 1080p Comp1/RGB'.
Pressing the Enter Key to adjust automatically component1.

(4) When the adjustment is over, 'ADC Component1 Success' is displayed. If the adjustment has errors, 'ADC Component1 1080p Fail' is displayed.

(5) After the Component1 adjustment is over, convert the RGB-DTV Mode and start RGB adjustment.
When the adjustment is over, 'ADC RGB 1080P Success' is displayed.

(6) Readjust after confirming the case Pattern or adjustment condition where the adjustment errors.
Error massage is 'Component1 Not Connected' or 'Not Valid Format' or 'Check Signal Status'.

(7) After adjustment is complete, exit the adjustment mode by pressing the ADJ KEY.

5. EDID(The Extended Display Identification Data)/DDC (Display Data Channel) Download

It is the feature to implement the "Plug and Play" which automatically reconfigures the user'sl environment to directly use by exchanging information without any command directly to the PC or the monitor by the user, which is established by the VESA

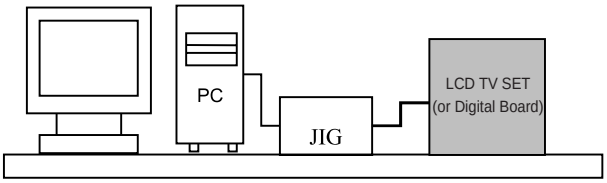
5-1. HDMI EDID Data Input

(1) Required Test Equipment

1) PC, Jig for adjusting DDC. (PC serial to D-sub Connection equipment)
2) S/W for writing DDC(EDID data write & read)
3) D-Sub cable
4) Jig for HDMI Cable connection

(2) Preparation for Adjustments & Setting of Device

1) Set devices as below and turn on the PC and JIG.
2) Open S/W for writing DDC (EDID data write & read). (operated in DOS mode)



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5-2. EDID DATA for PU82C

: EDID for HDMI-1 (DDC (Display Data Channel) Data)
EDID table =

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	80	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	A1	08	00	31	40	45	40	61	40	01	01	01	01
30	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
40	35	00	C4	8E	21	00	00	1E	0E	1F	00	80	51	00	1E	30
50	40	80	37	00	C4	8E	21	00	00	1C	00	00	00	FD	00	30
60	58	1F	64	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	F0

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	18	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	67	03	0C	00	10	00	B8	2D	01	1D	00	72	51	D0	1E	20
20	6E	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C
30	16	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A
40	20	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A
50	D0	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18
60	26	36	80	A0	70	38	1F	40	30	20	25	00	C4	8E	21	00
70	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	00	27

: EDID for HDMI-2 (DDC (Display Data Channel) Data)
EDID table =

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	80	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	A1	08	00	31	40	45	40	61	40	01	01	01	01
30	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
40	35	00	C4	8E	21	00	00	1E	0E	1F	00	80	51	00	1E	30
50	40	80	37	00	C4	8E	21	00	00	1C	00	00	00	FD	00	30
60	58	1F	64	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	F0

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	18	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	67	03	0C	00	20	00	B8	2D	01	1D	00	72	51	D0	1E	20
20	6E	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C
30	16	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A
40	20	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A
50	D0	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18
60	26	36	80	A0	70	38	1F	40	30	20	25	00	C4	8E	21	00
70	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	00	17

: EDID for HDMI-3 (DDC (Display Data Channel) Data)
EDID table =

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	80	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	A1	08	00	31	40	45	40	61	40	01	01	01	01
30	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
40	35	00	C4	8E	21	00	00	1E	0E	1F	00	80	51	00	1E	30
50	40	80	37	00	C4	8E	21	00	00	1C	00	00	00	FD	00	30
60	58	1F	64	11	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	01	F0

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	18	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	67	03	0C	00	30	00	B8	2D	01	1D	00	72	51	D0	1E	20
20	6E	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C
30	16	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A
40	20	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A
50	D0	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18
60	26	36	80	A0	70	38	1F	40	30	20	25	00	C4	8E	21	00
70	00	1A	00	00	00	00	00	00	00	00	00	00	00	00	00	07

: EDID DATA for RGB
EDID table =

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	00	FF	FF	FF	FF	FF	FF	00	1E	6D	01	00	01	01	01	01
10	00	11	01	03	68	73	41	96	0A	CF	30	A3	57	4C	B0	23
20	09	50	4E	A1	08	00	31	40	45	40	61	40	01	01	01	01
30	01	01	01	01	01	01	1B	21	50	A0	51	00	1E	30	48	88
40	35	00	C4	8E	21	00	00	1E	0E	1F	00	80	51	00	1E	30
50	40	80	37	00	C4	8E	21	00	00	1C	00	00	00	FD	00	38
60	4B	1F	3C	09	00	0A	20	20	20	20	20	20	00	00	00	FC
70	00	4C	47	20	54	56	0A	20	20	20	20	20	20	20	00	78

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6. Adjustment of White Balance

6-1. Required Test Equipment

(1) Color Analyzer : CA-210 (CH 10), CA-100(CH-10), CA-100+(CH-10)
=> To adjust color temperature of Plasma, CS-1000 is the Color Analyzer and should be set to use CH 10 in which white, red, green, and blue color are corrected. Conduct the adjustment according to the coordinates for White Balance adjustment in the table below.

(2) Computer for adjusting (necessary for the automatic adjustment, possible to communicate with the RS-232C, Baud Rate : 115200)
(3) Video Signal Generator MSPG-925F 720p, 216Gray (Model :217, Pattern 78)

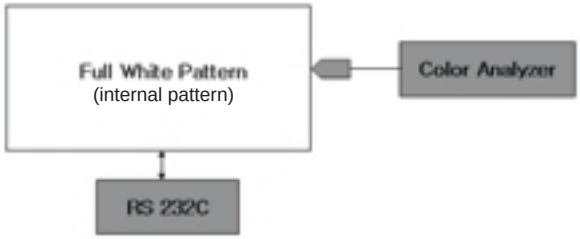
Mode	Coordinate		Color Temperature	ΔUV
	x	y		
Cool	0.276	0.283	11000K	0.000
Medium	0.285	0.293	9300K	0.000
Warm	0.313	0.329	6500K	0.003

[Requirements for Automatic Adjustment

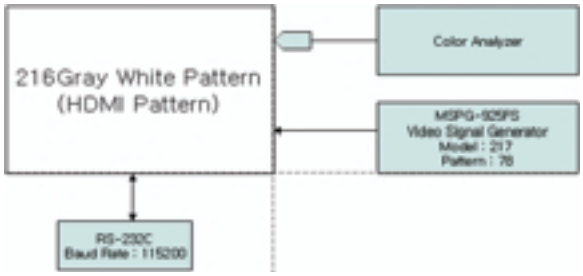
(1) The illuminance of surroundings
10 lux or less; preventing light in surroundings as much as possible

(2) The location of the Probe
1) For PDP: place the color analyzer (CA-100, CA-100+) close to the surface of a module and start the adjustment.
2) For LCD: place the color analyzer (CA-210) close to the surface of a module within 10 cm and keep the probe of the color analyzer at 80° to 100° angle from the surface of a module.

6-2. Connection Diagram of Equipment for Measuring (Automatic Adjustment)



Connection Diagram for Internal Pattern



Connection Diagram for HDMI Input

6-3. White Balance Adjustment Method

Basically it uses the internal pattern but when internal pattern is not possible, you can select HDMI input for adjustment. Through the option at the most bottom part of the Ez Adjust Menu 7.White Balance menu, you can select NONE, INNER and HDMI, and the default is set to INNER. When the adjustment cannot be done with the internal pattern, you can select HDMI input for adjustment.

For manual adjustment, press the ADJ KEY of the adjustment R/C to enter Ez Adjust 7.White-Balance, and the pattern is automatically displayed. (When you set the Option to INNER, the default is always set to INNER)

(1) Connect the set according to the internal pattern or HDMI input in accordance with measuring device connection diagram.
(2) Set the Baud Rate of RS-232C to 115200. It is set to 115200 as default.
(3) Connect the RS-232C Cable to the set.
(4) Connect the HDMI Cable to the set. (Limited to the set with HDMI option)
(5) Select and adjust the model applicable to PU82C chassis from the adjuster.

[RS-232C command used for the automatic adjustment]

RS-232C COMMAND [CMD	ID	DATA]	Meaning
wb	00	00	White Balance Adjustment Start
wb	00	10	Gain Adjustment Start(Internal white pattern)
wb	00	1f	Gain Adjustment End
wb	00	20	Offset Adjustment Start(Internal white pattern)
wb	00	2f	Offset Adjustment End
wb	00	ff	White Balance Adjustment End (Disappear Internal pattern)

ô Wb 00 00-----white balance Automatic Adjustment Start
ô Wb 00 10-----Gain Adjustment start (Internal pattern)
ô Ja 00 ff------Adjustment Data

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ó Jb 00 c0
ó ...
ó Wb 00 1f-----Gain Adjustment End
ó *(wb 00 20(Start), wb 00 2f(End))----- When adjust Off-set
ó Wb 00 ff------White Balance Automatic Adjustment End
(Disappear Inside pattern)

[Adjustment Map]

	RS-232C COMMAND [CMD ID DATA]			Min	CENTER (DEFAULT)			Max
	Cool	Mid	Warm		Cool	Mid	Warm	
R Gain	Jg	Ja	Jd	00	184	192	192	192
G Gain	Jh	Jb	Je	00	187	183	159	192
B Gain	Ji	Jc	Jf	00	192	161	95	192
R Cut					64	64	64	127
G Cut					64	64	64	127
B Cut					64	64	64	127

6-4. Automatic Adjustment

(1) Execute POWER ON(Â) of the adjustment R/C to execute automatic adjustment.
(2) Set the Baud Rate to 115200.
(3) Always start adjustment with “wb 00 00” and end adjustment with “wb 00 ff”
(4) Adjust the offset if necessary

6-5. Manual Adjustment

(1) Required Test Equipment: CA-210 (CH 10), CA-100(CH-10), CA-100+(CH-10)
=> To adjust color temperature of Plasma, CS-1000 is the Color Analyzer and should be set to use CH 10 in which white, red, green, and blue color are corrected. Conduct the adjustment according to the coordinates for White Balance adjustment in the table below.

(2) Enter the ‘Ez - Adjust’ by pressing the ADJ on the Service R/C.
(3) Select 10.TEST PATTERN using the CH + / - KEY and press the Enter KEY to execute a heat run for more than 30 minutes.
(4) Execute a Zero Calibration for CA-210 and put it at distance of less than 10Cm from the PDP module surface center during the adjustment.
(5) Select ‘7. White-Balance’ of ‘Ez - Adjust’ by pressing the ADJ KEY on the Service R/C. Then enter adjustment mode by pressing the Right KEY (G) .
(The internal pattern of full white appears by pressing G)
(6) The adjustment is conducted in three levels of color temperature; COOL, MEDIUM, and WARM.

-When R Gain is Fixed at Default value(192)
Adjust G gain and B gain with decreasing Default values from 192

-When B Gain is Fixed at Default value(192)
Adjust R gain and G gain with decreasing Default values from 192

-When G Gain is Fixed at Default value(192)
Adjust R gain and B gain with decreasing Default values from 192

One of R/G.B Gain should be fixed at 192 and adjust two Gain Value with decreasing the Default values from 192.

(7) Use the Vol. +, - key for adjustment.
(8) When the adjustment is completed, press the ENTER (Á KEY) button to move to the Ez –Adjust screen. Press the ADJ KEY to exit the adjustment mode.

Mode	Color coordinate		Temp	Δuv
	x	y		
Cool	0.276 ± 0.002	0.283 ± 0.002	11,000K	0.000
Medium	0.285 ± 0.002	0.293 ± 0.002	9,300K	0.000
Warm	0.313 ± 0.002	0.329 ± 0.002	6,500K	0.003

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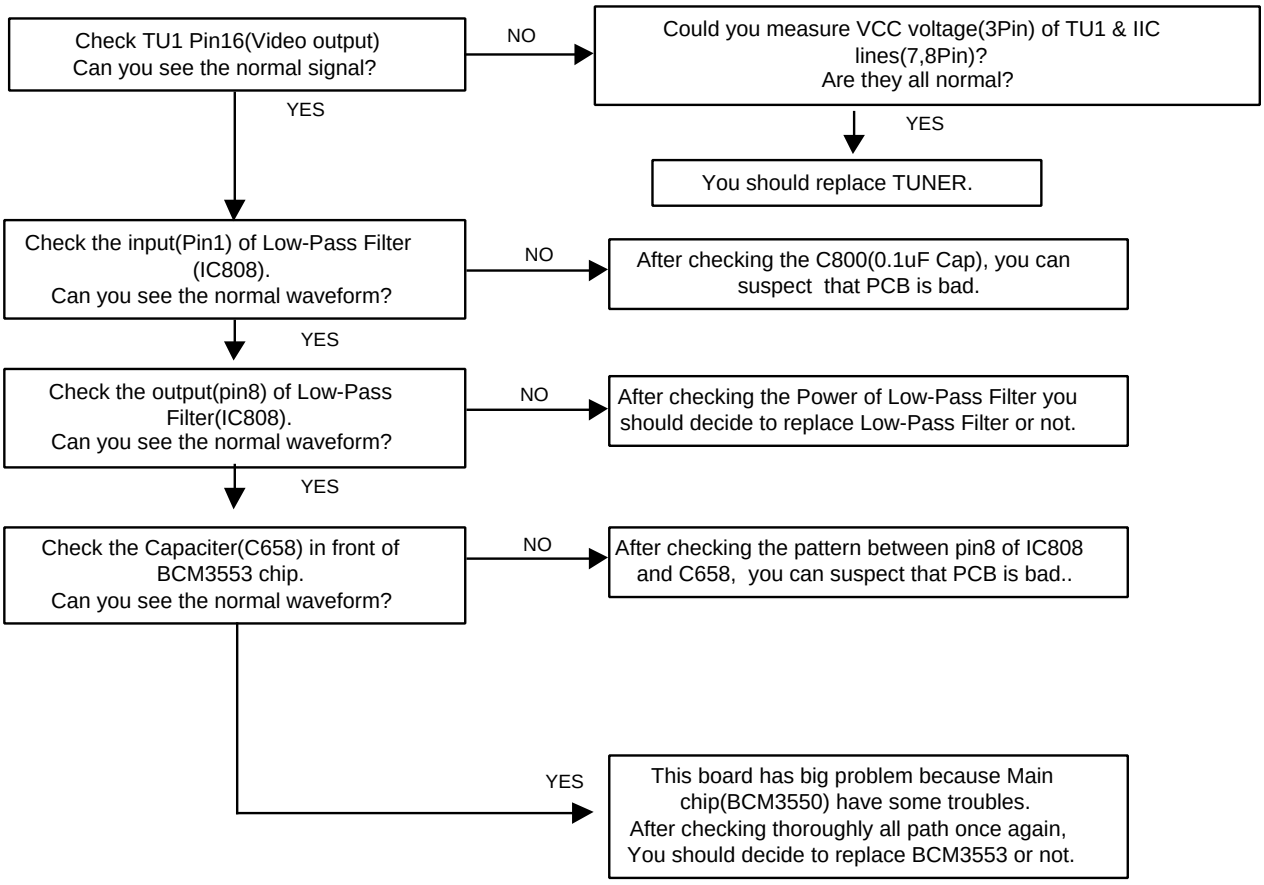
TV/CATV(Analog) doesn t display



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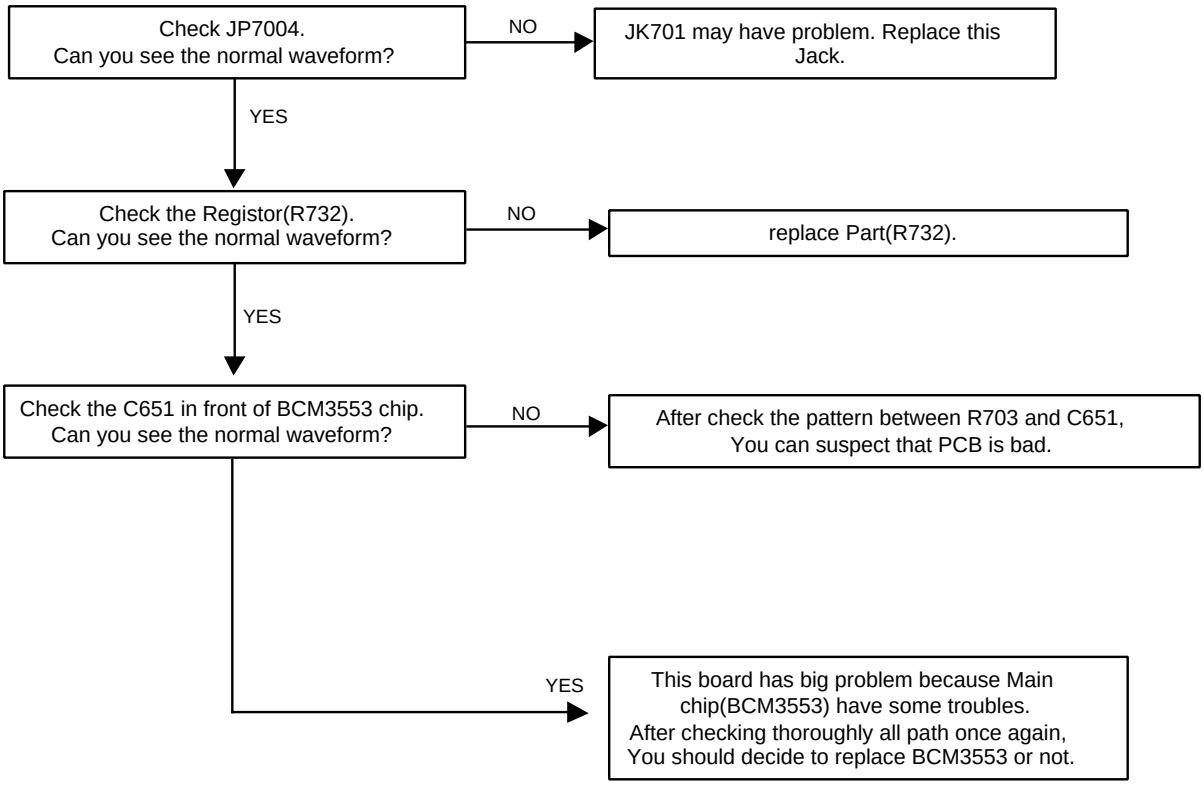
Video doesn t display



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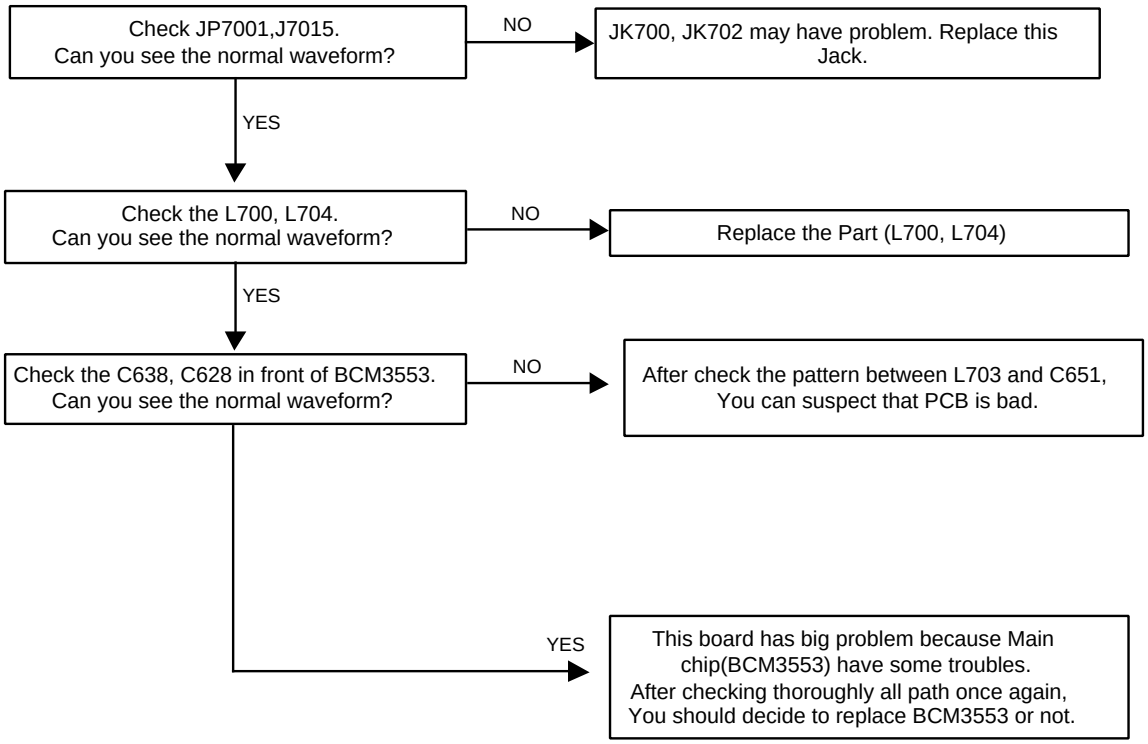
Component doesn t display



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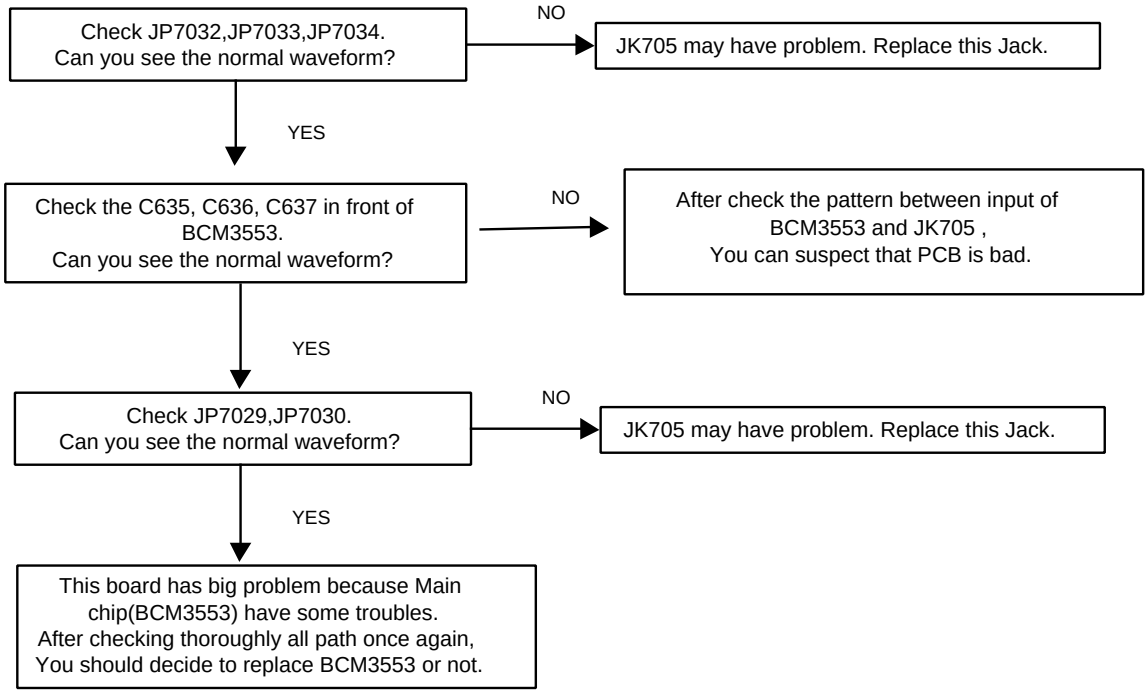

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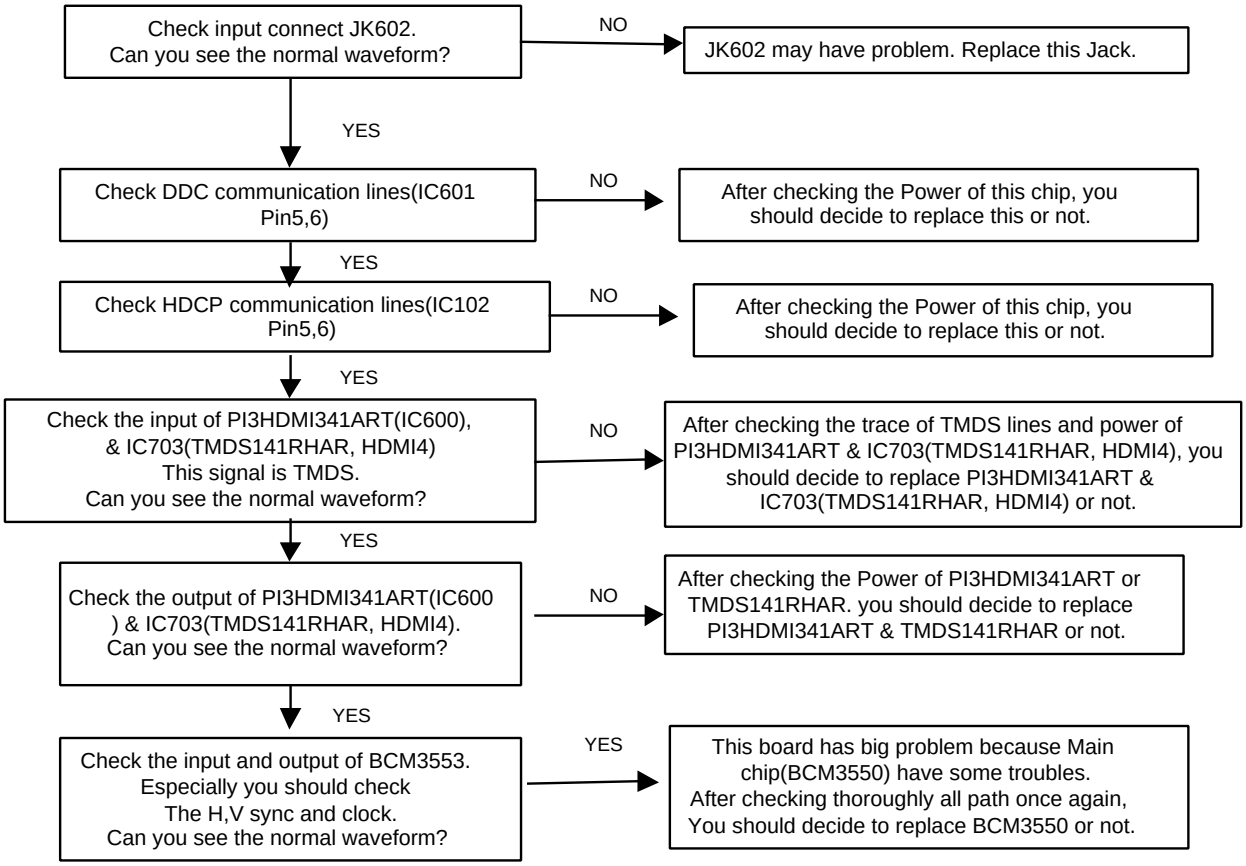

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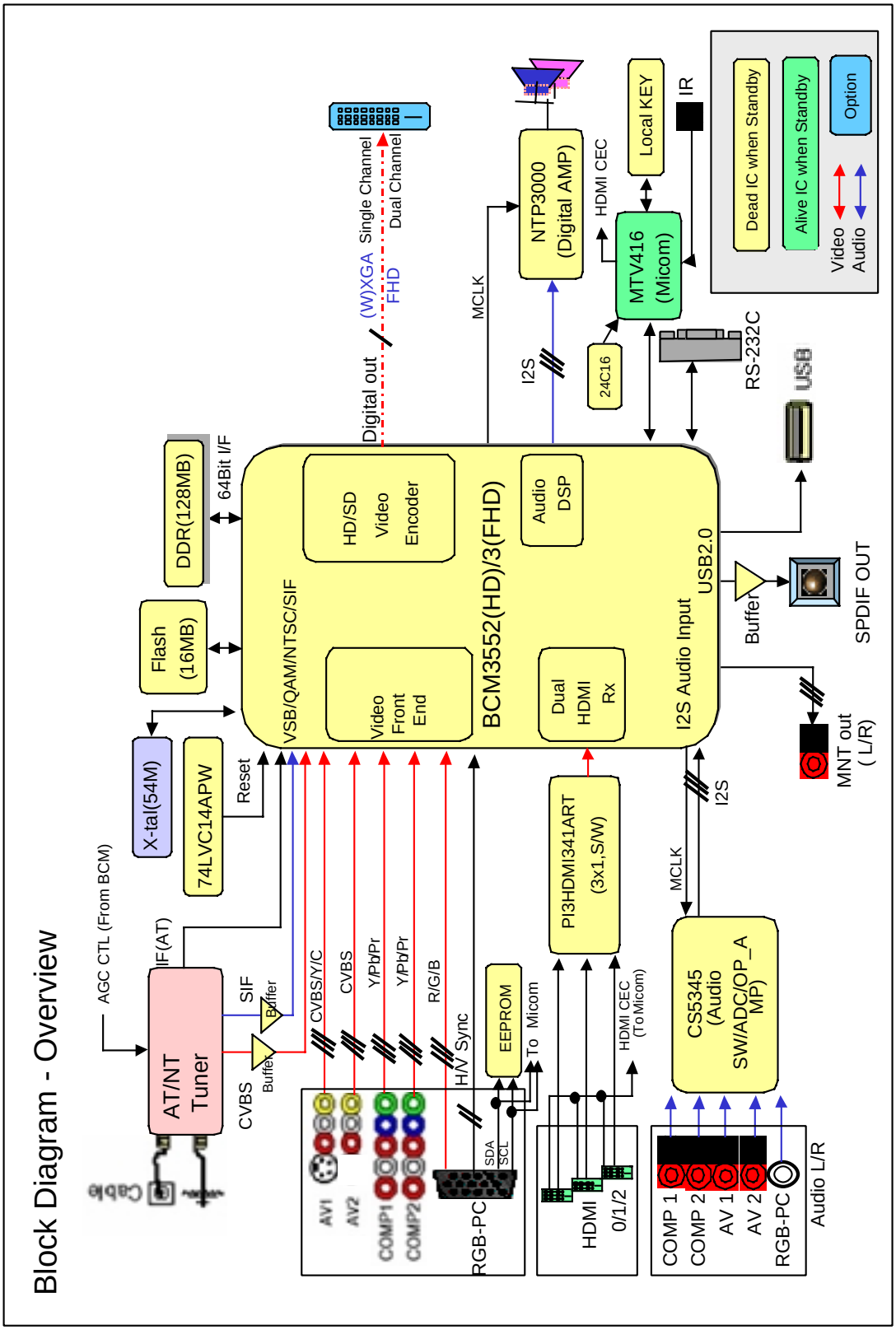

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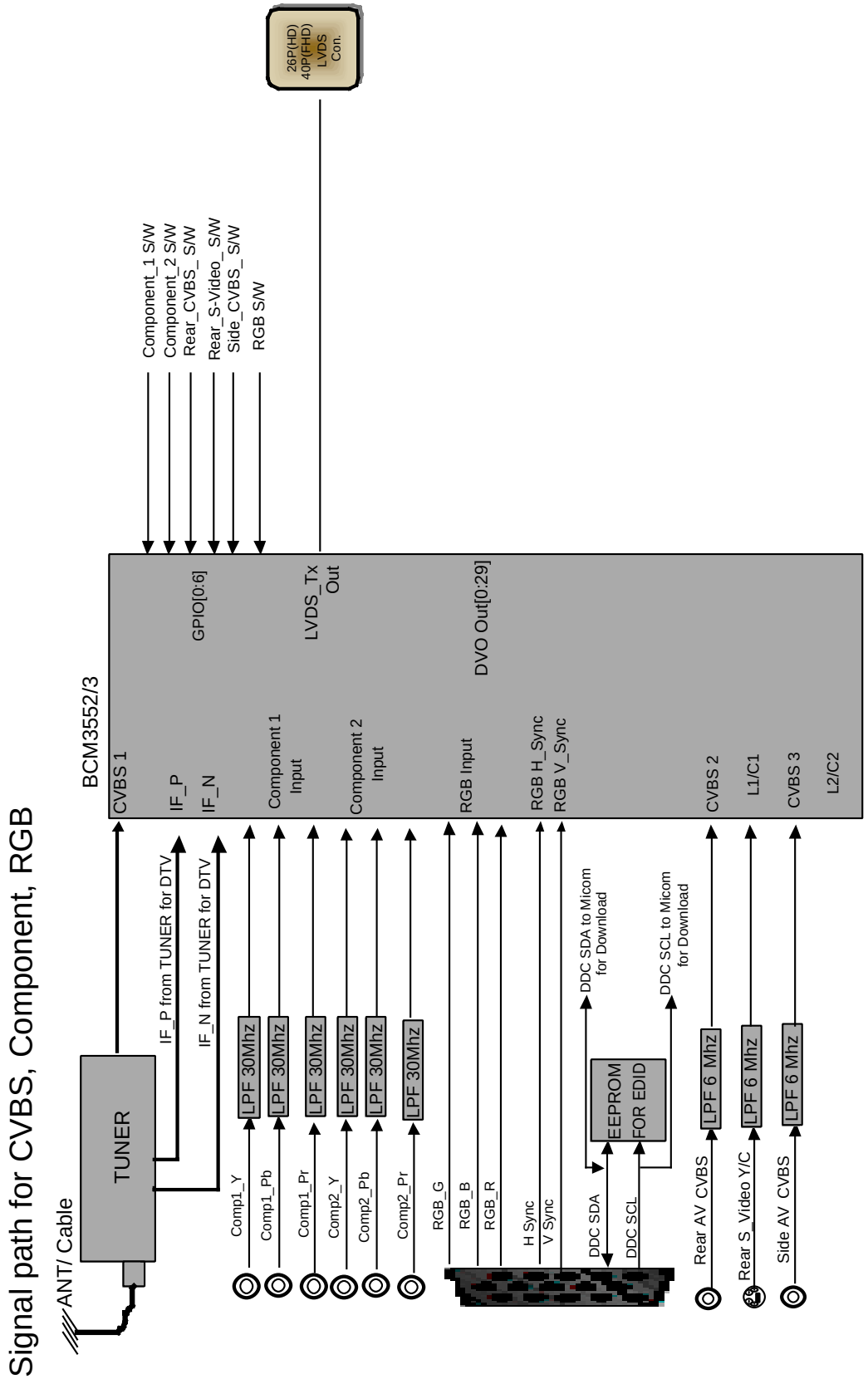

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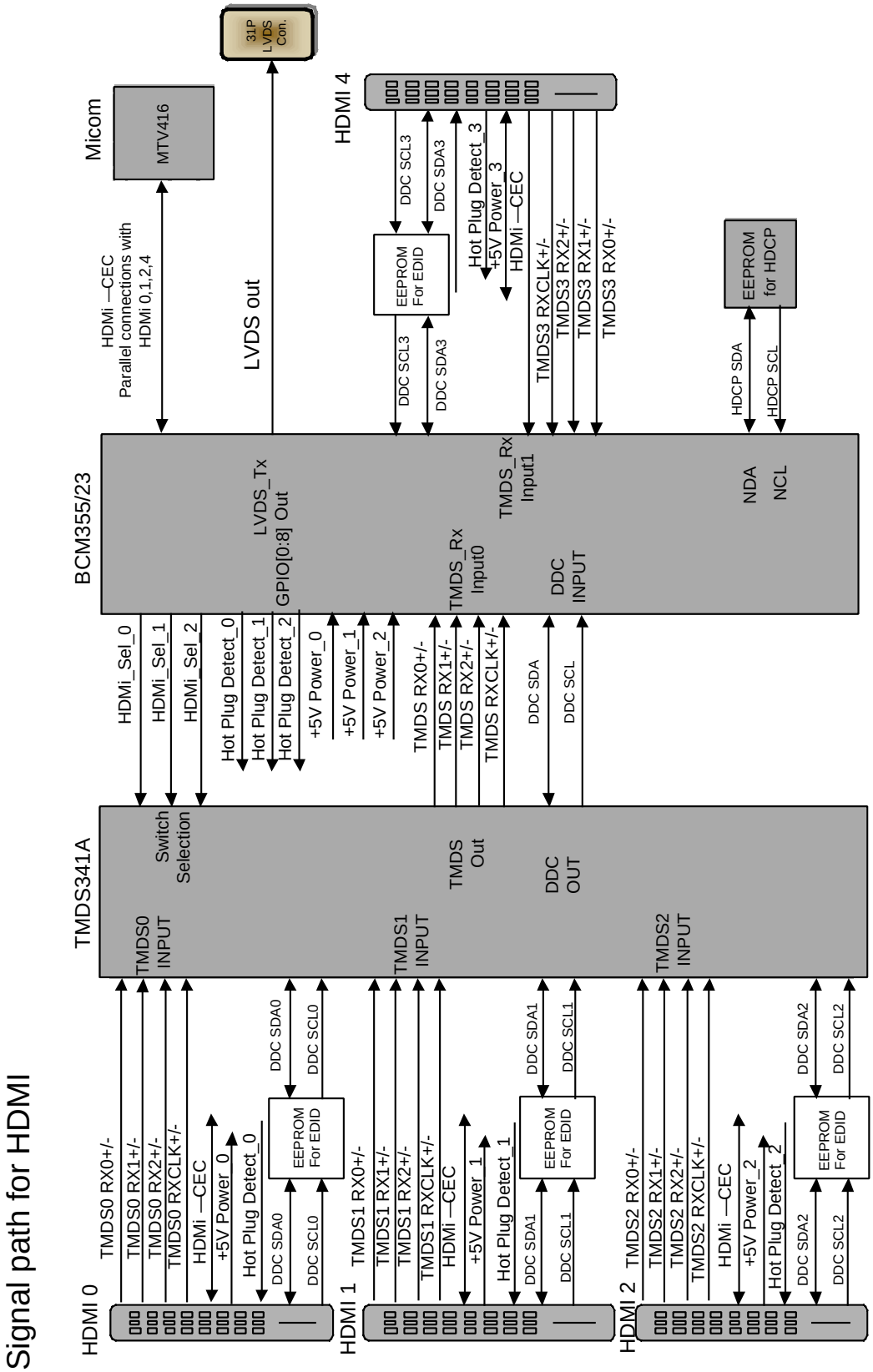

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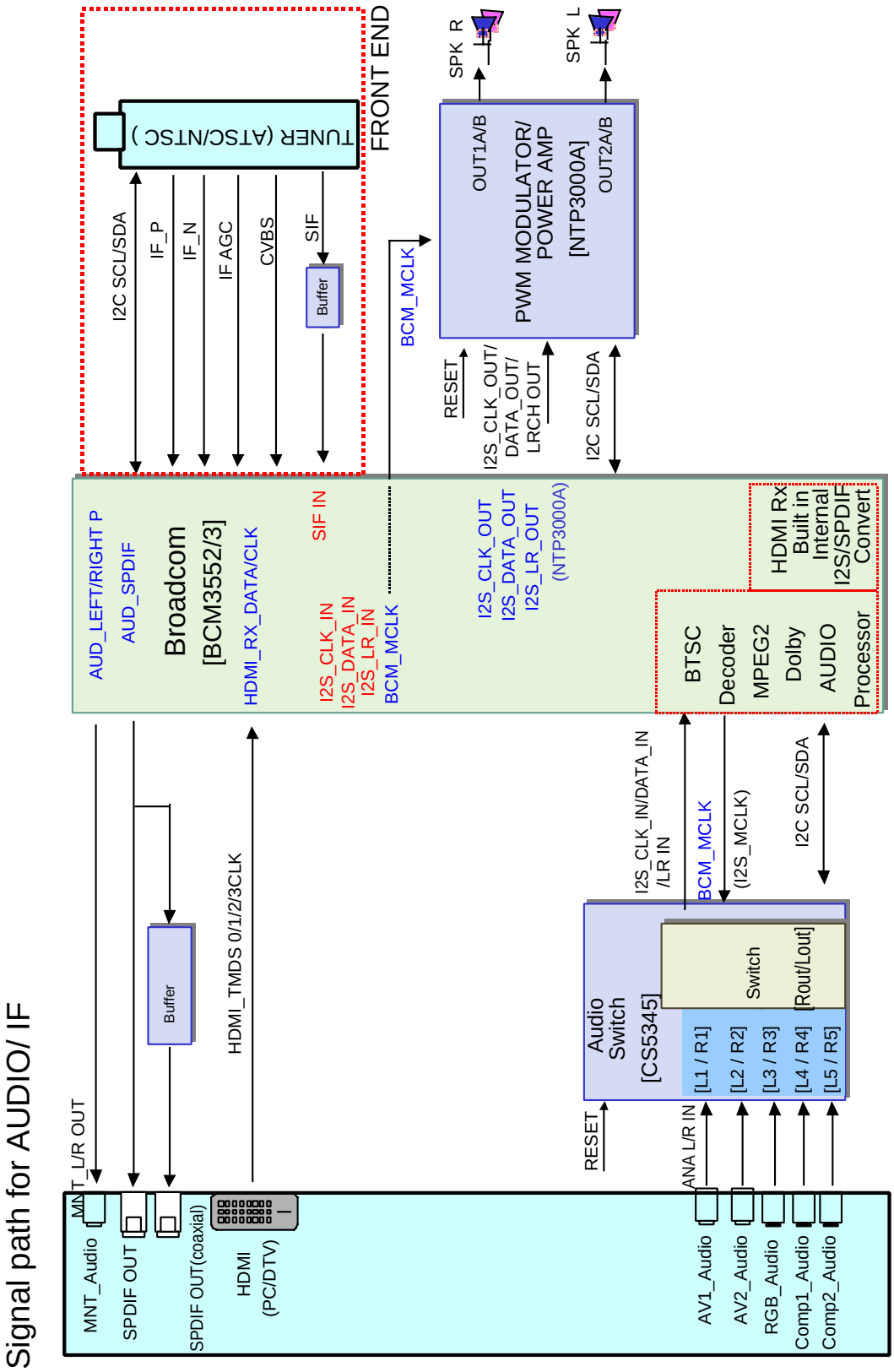

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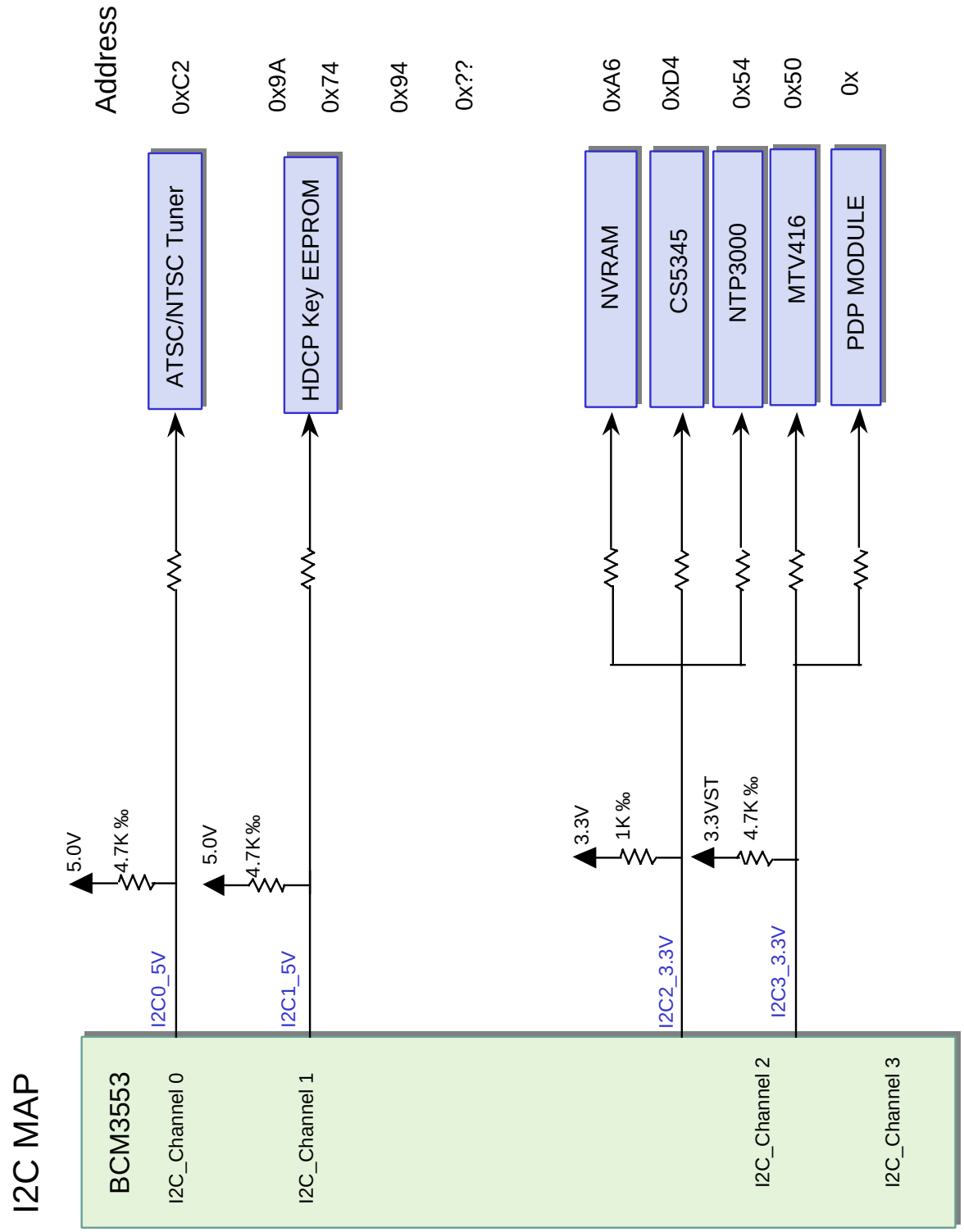

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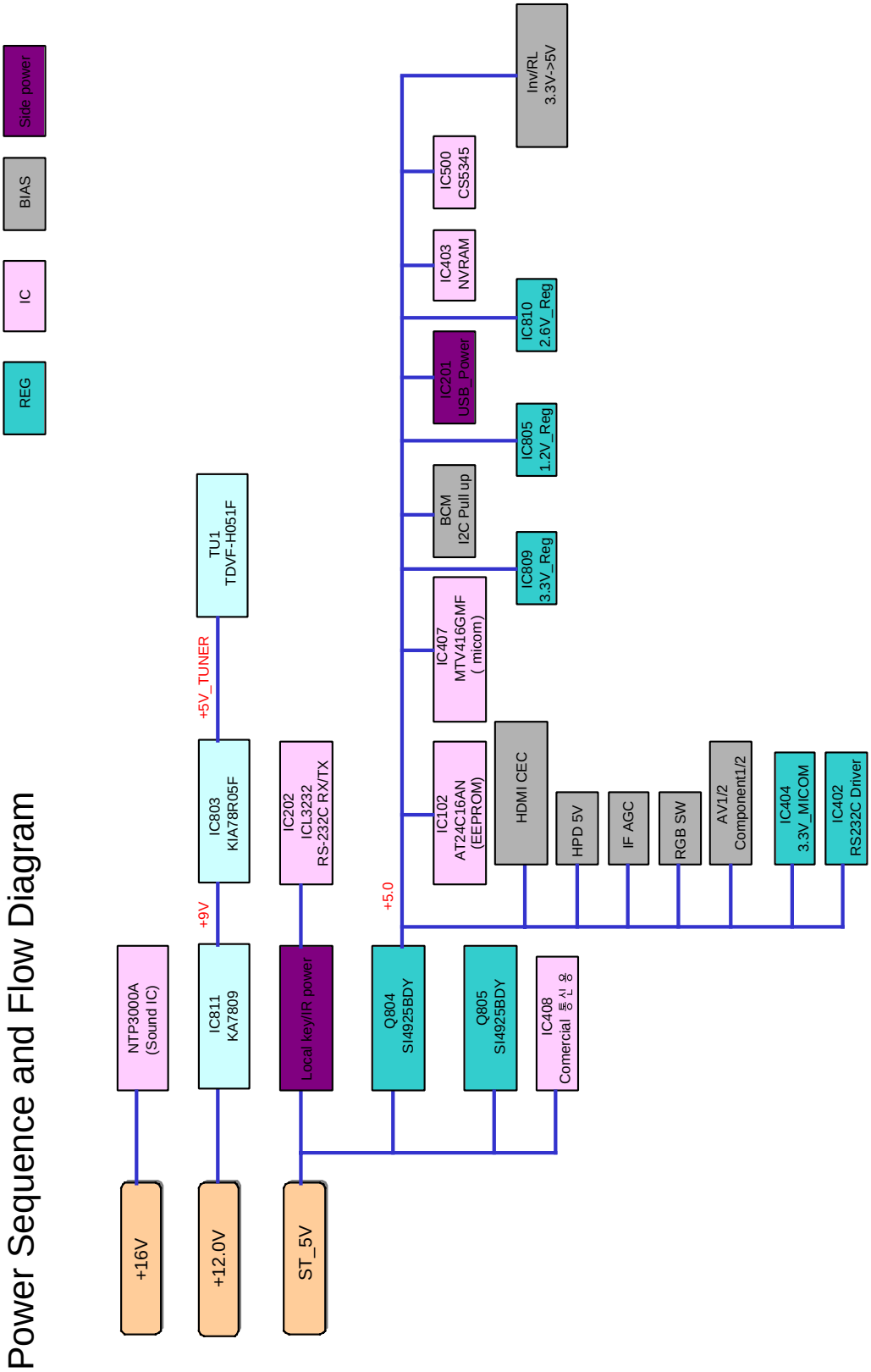

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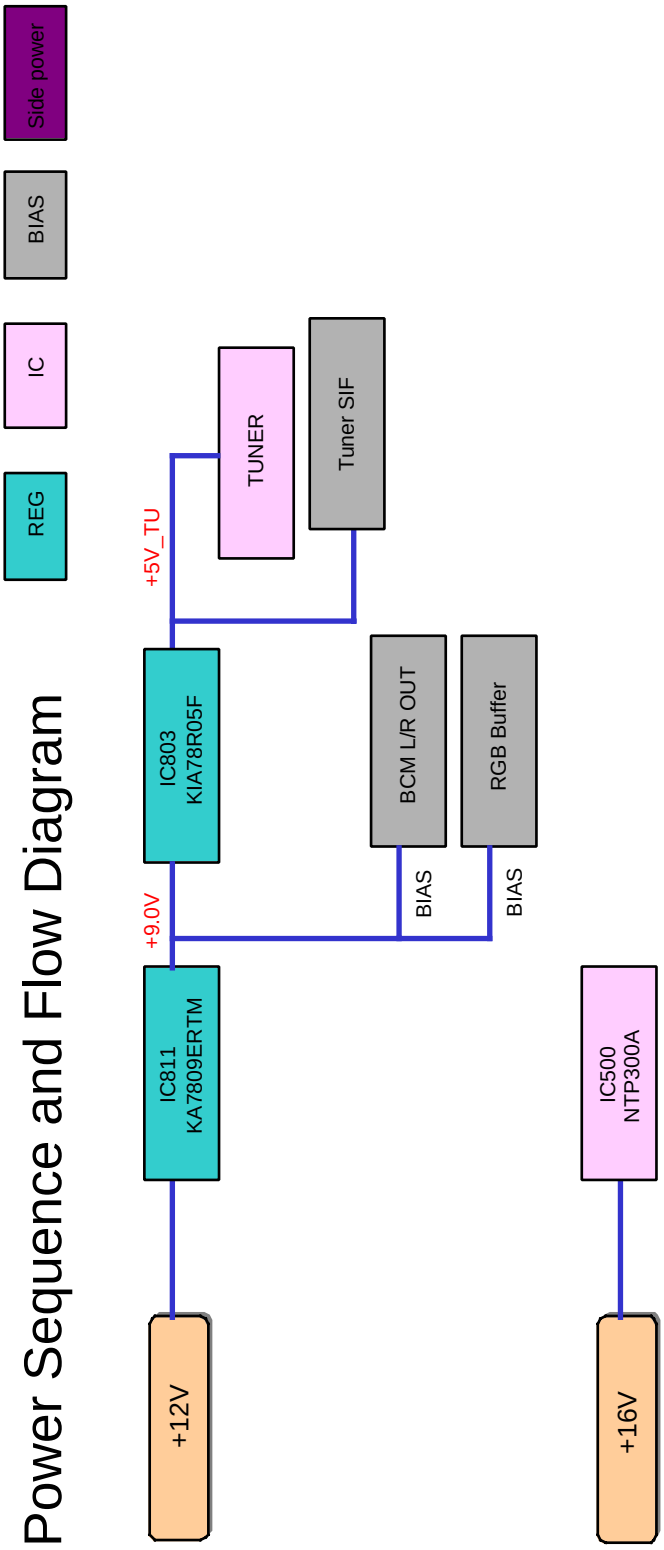

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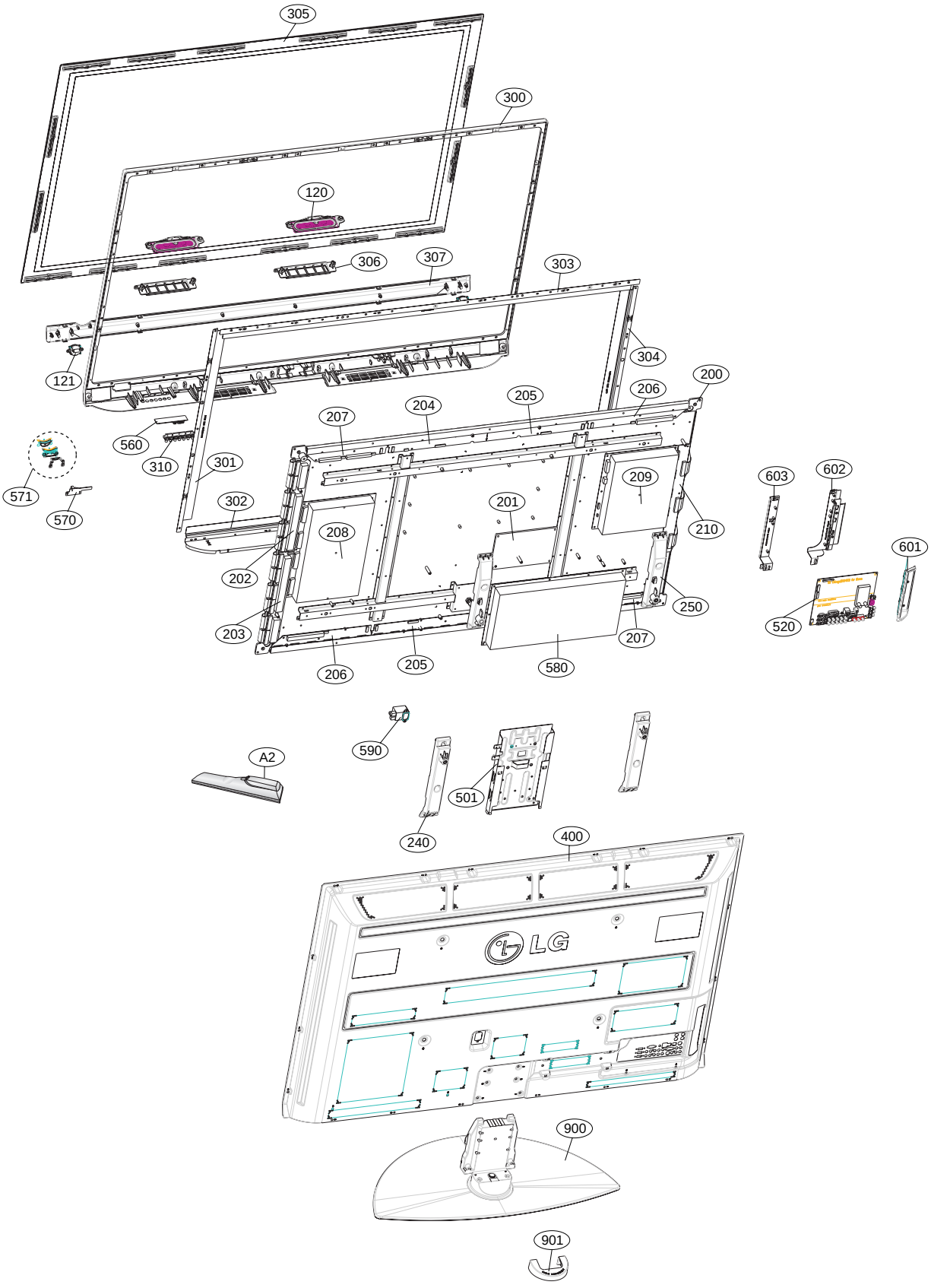

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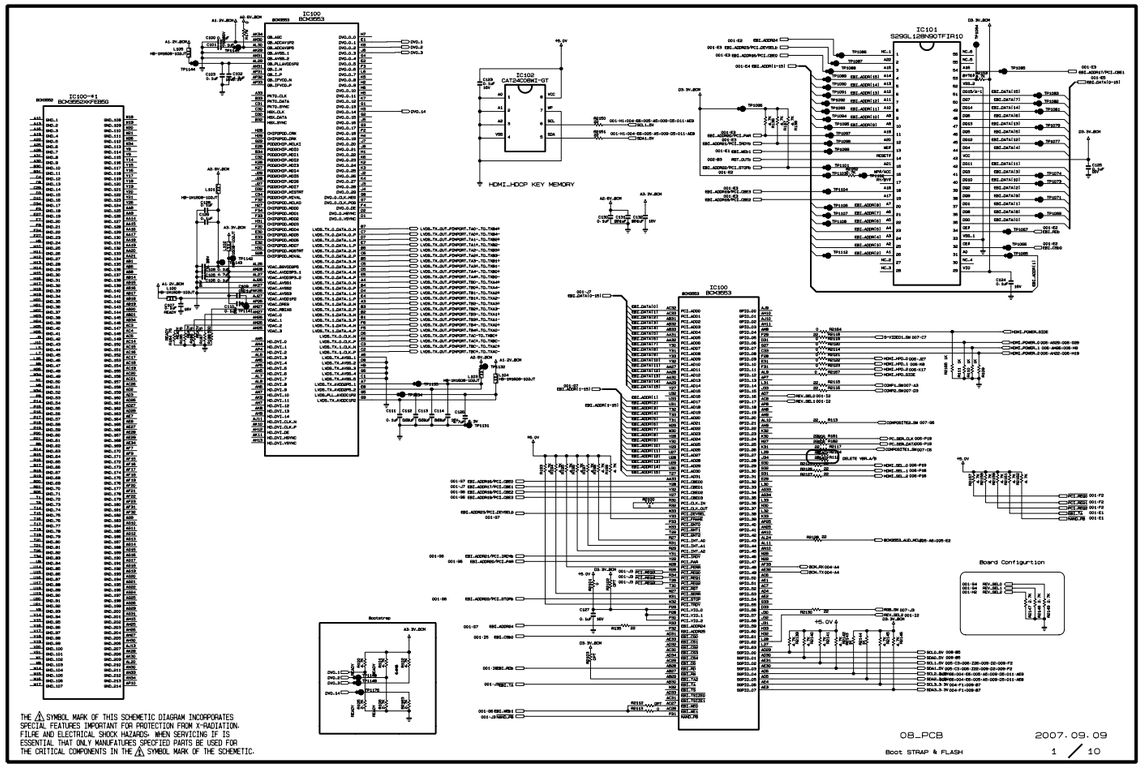

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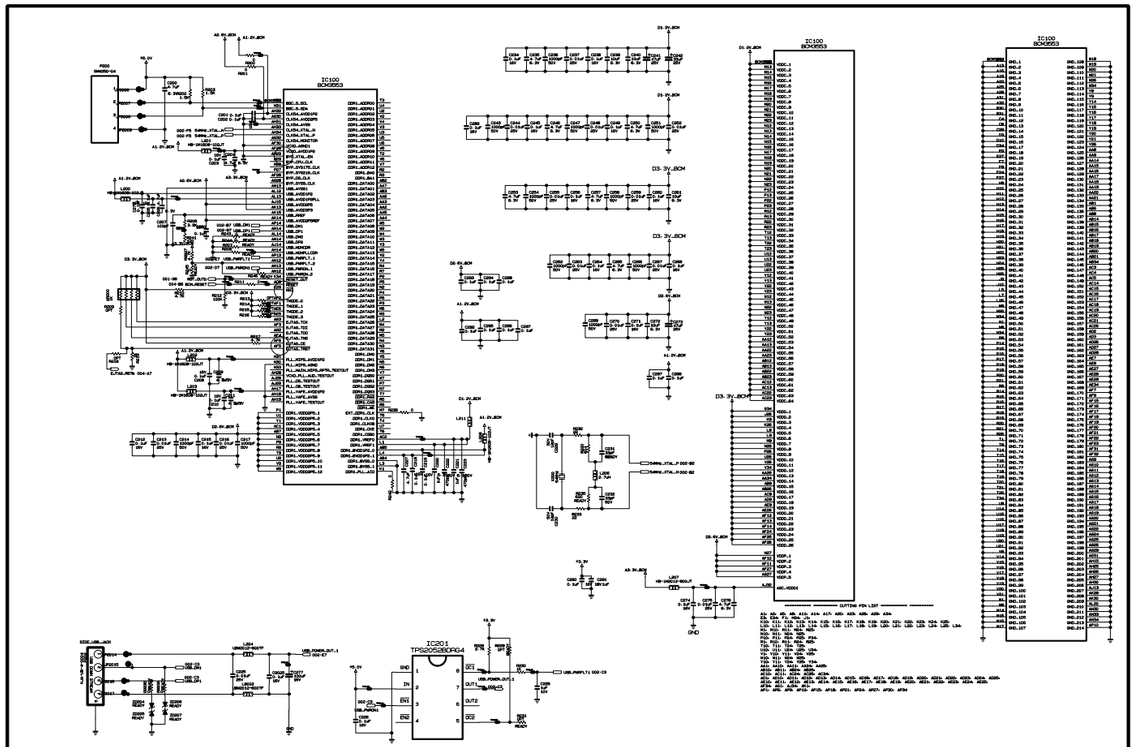

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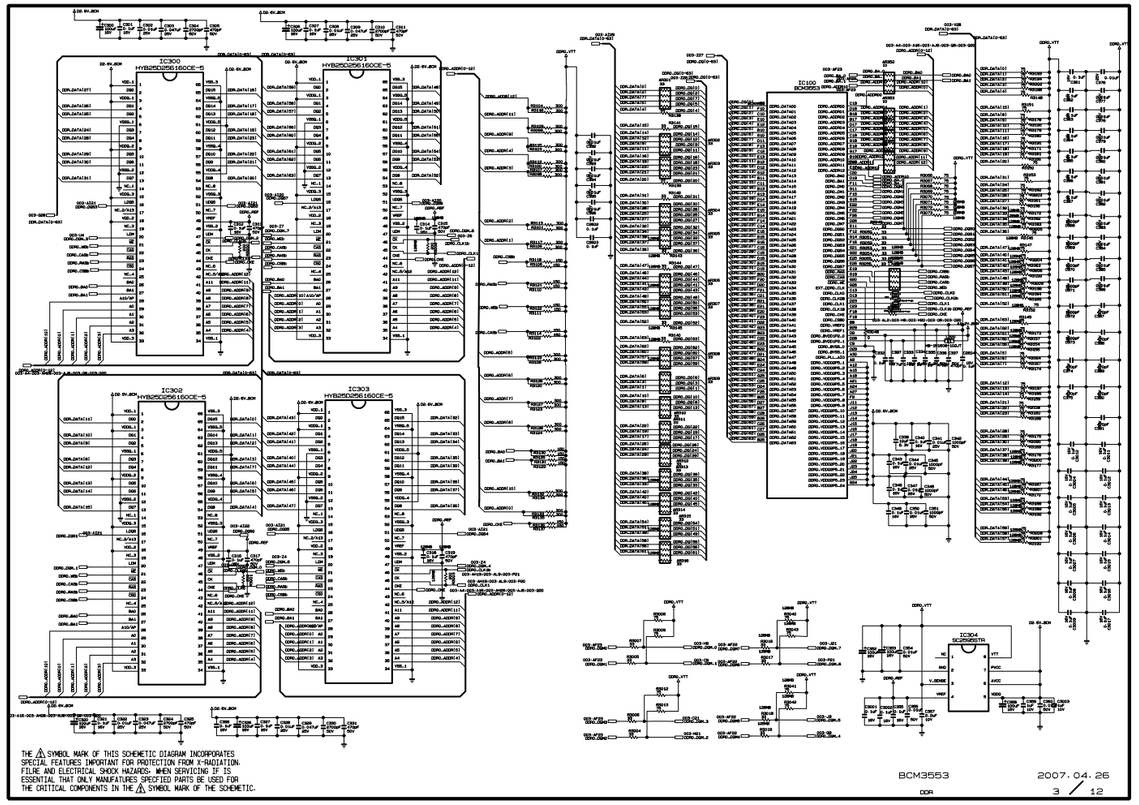

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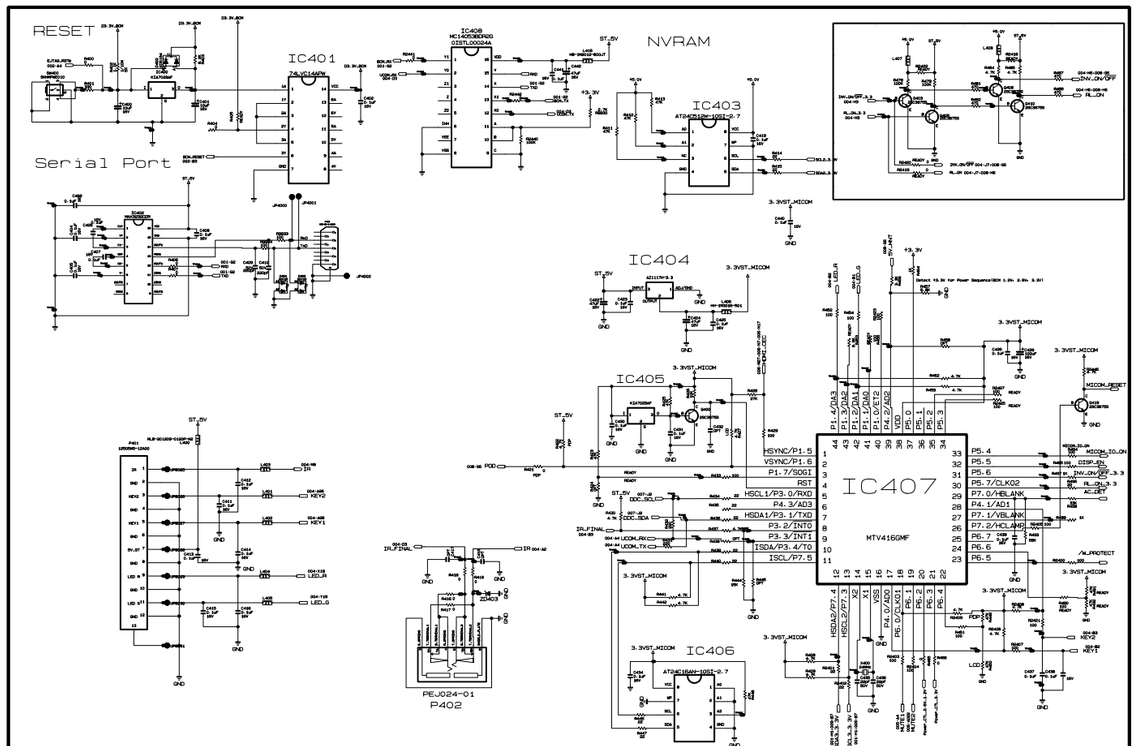

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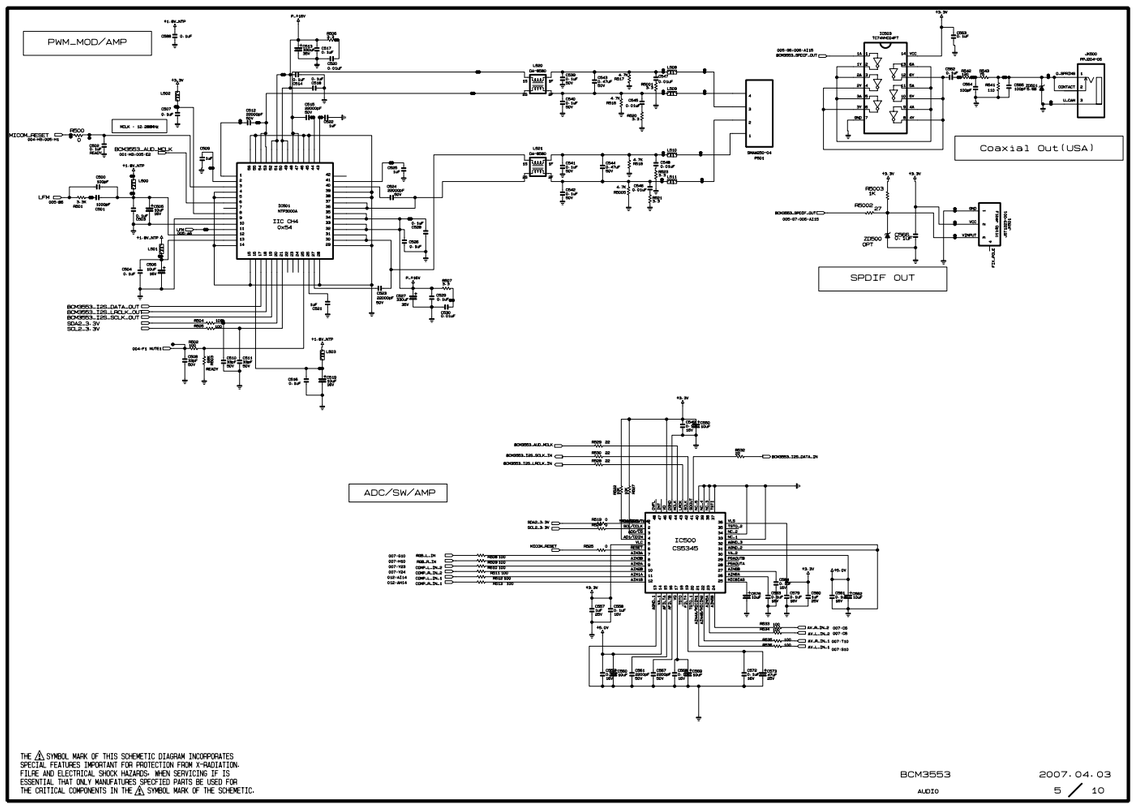

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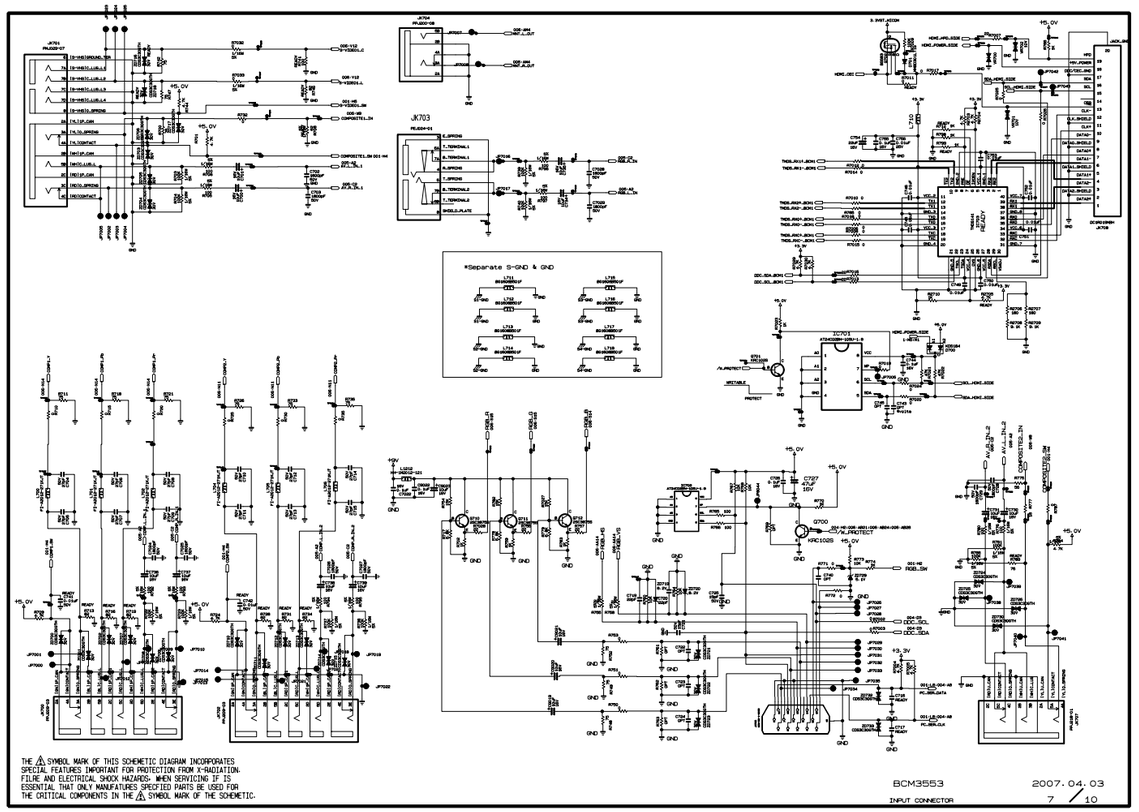
BCM3553 AUDIO 2007.04.03 5 / 10



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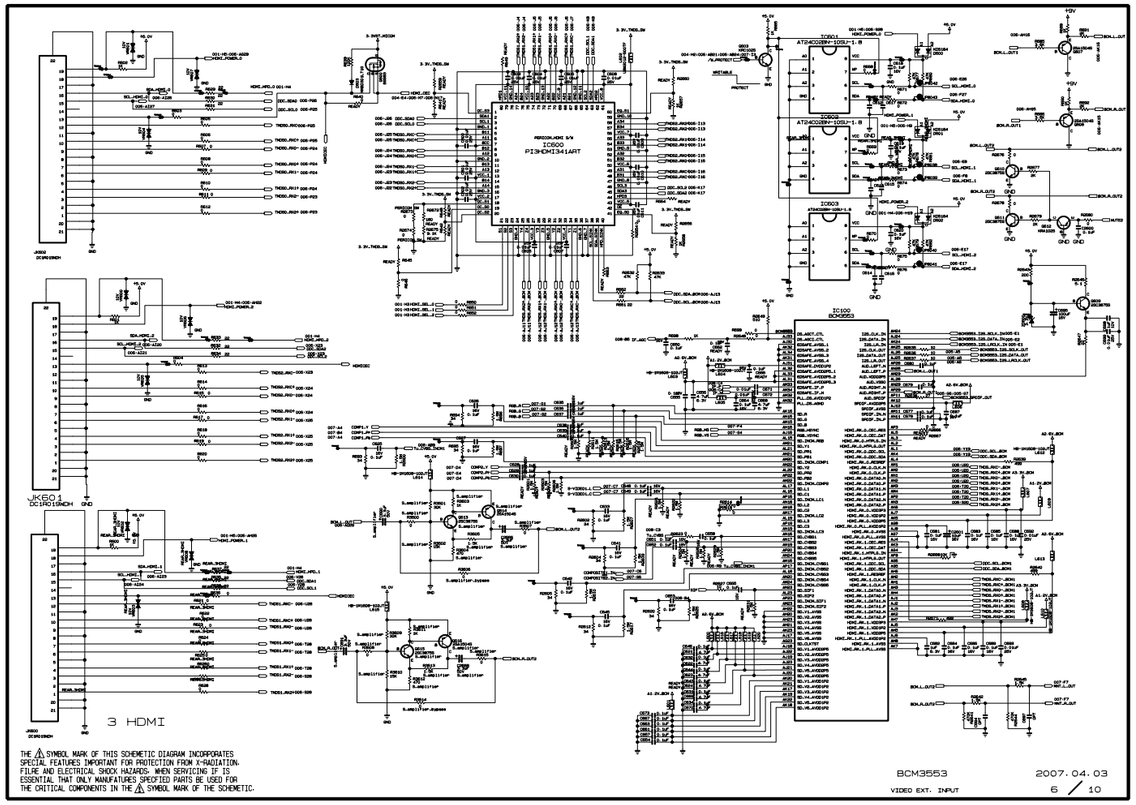

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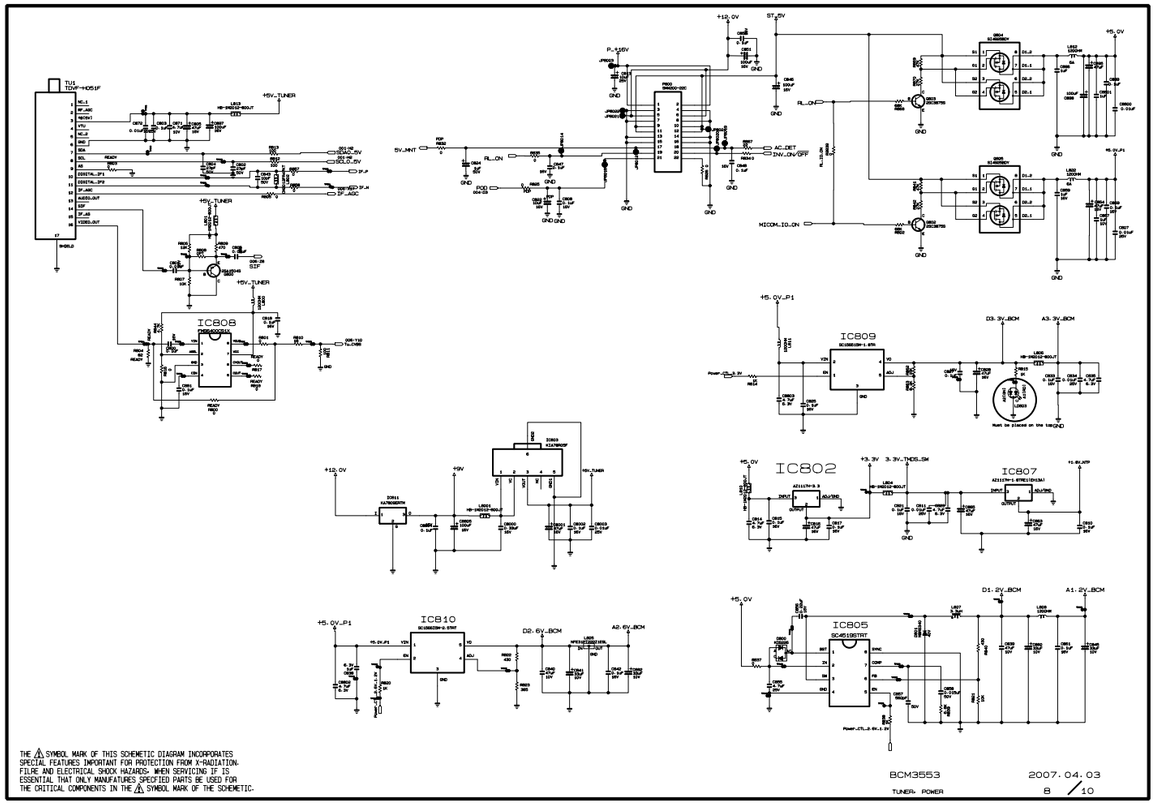
BCM3553 VIDEO EXT. INPUT 2007.04.03 6 / 10



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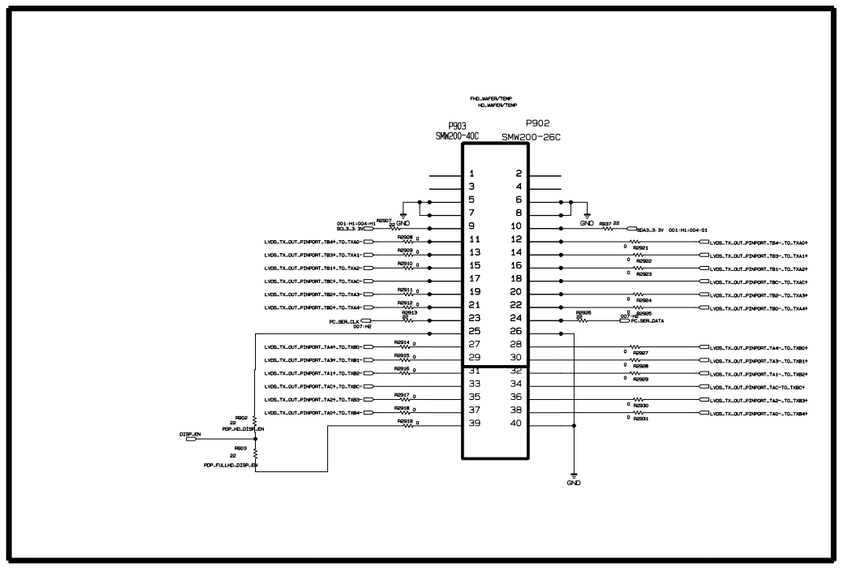

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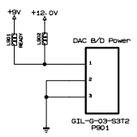

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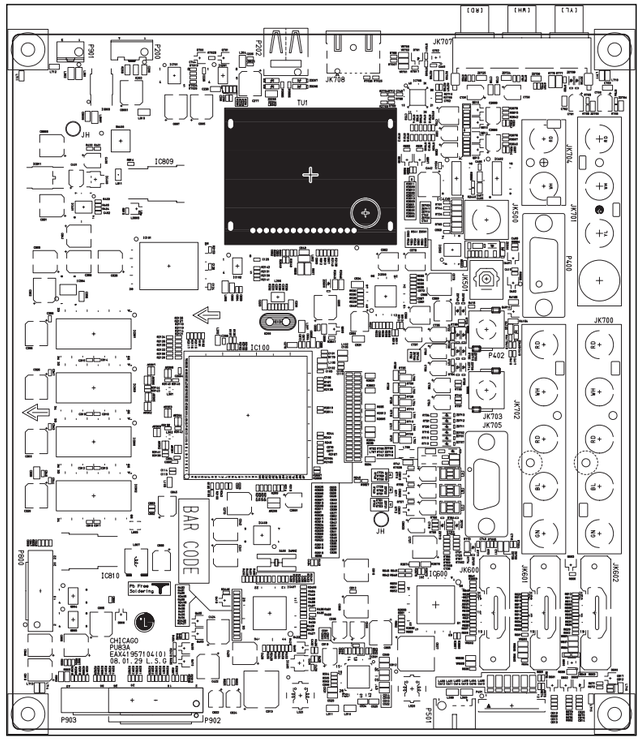

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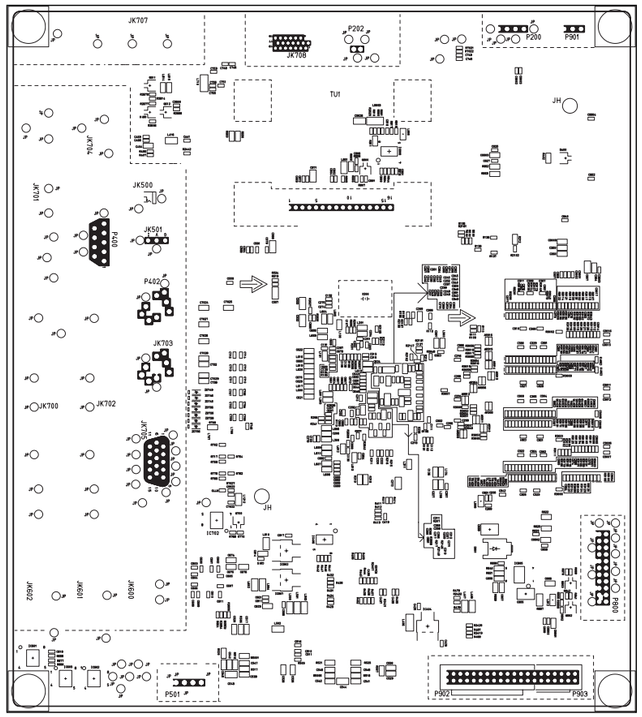

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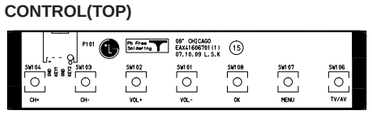

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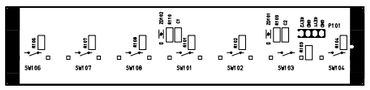

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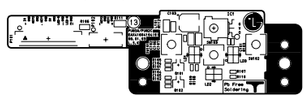

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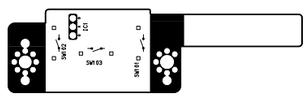

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