Internal Use Only

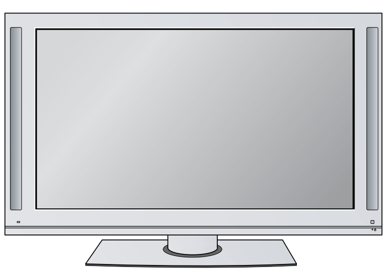
website:http://biz.LGservice.com

LCD TV
SERVICE MANUAL

CHASSIS : LA73A

MODEL : 47LY3DF 47LY3DF-UA

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



CONTENTS

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 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 circuitry that may be inadvertently introduced during the service operation.

If any fuse (or Fusible Resistor) in this TV receiver is blown, replace it with the specified.

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.

Before returning the receiver to the customer,

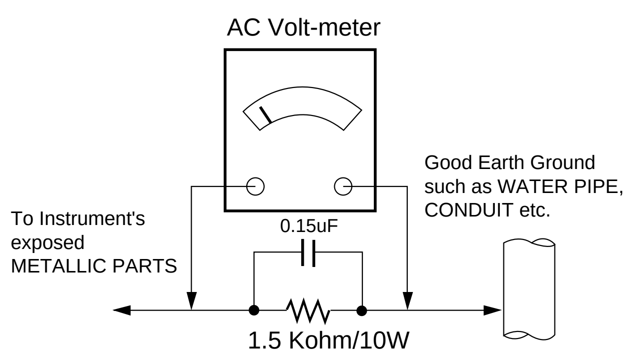
always perform an **AC leakage current check** on the exposed metallic parts of the cabinet, such as antennas, terminals, etc., to be sure the set is safe to operate without damage of electrical shock.

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 position, 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 exposed 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 specified, 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



SERVICING PRECAUTIONS

CAUTION: Before servicing receivers covered by this service manual and its supplements and addenda, read and follow the *SAFETY PRECAUTIONS* on page 3 of this publication.

NOTE: If unforeseen circumstances create conflict between the following servicing precautions and any of the safety precautions on page 3 of this publication, always follow the safety precautions. Remember: Safety First.

General Servicing Precautions

1. Always unplug the receiver AC power cord from the AC power source before;
   a. Removing or reinstalling any component, circuit board module or any other receiver assembly.
   b. Disconnecting or reconnecting any receiver electrical plug or other electrical connection.
   c. Connecting a test substitute in parallel with an electrolytic capacitor in the receiver.
   CAUTION: A wrong part substitution or incorrect polarity installation of electrolytic capacitors may result in an explosion hazard.

2. Test high voltage only by measuring it with an appropriate high voltage meter or other voltage measuring device (DVM, FETVOM, etc) equipped with a suitable high voltage probe.
   Do not test high voltage by "drawing an arc".
3. Do not spray chemicals on or near this receiver or any of its assemblies.
4. Unless specified otherwise in this service manual, clean electrical contacts only by applying the following mixture to the contacts with a pipe cleaner, cotton-tipped stick or comparable non-abrasive applicator; 10% (by volume) Acetone and 90% (by volume) isopropyl alcohol (90%-99% strength)
   CAUTION: This is a flammable mixture.
   Unless specified otherwise in this service manual, lubrication of contacts in not required.
5. Do not defeat any plug/socket B+ voltage interlocks with which receivers covered by this service manual might be equipped.
6. Do not apply AC power to this instrument and/or any of its electrical assemblies unless all solid-state device heat sinks are correctly installed.
7. Always connect the test receiver ground lead to the receiver chassis ground before connecting the test receiver positive lead.
   Always remove the test receiver ground lead last.
8. *Use with this receiver only the test fixtures specified in this service manual.*
   CAUTION: Do not connect the test fixture ground strap to any heat sink in this receiver.

Electrostatically Sensitive (ES) Devices

Some semiconductor (solid-state) devices can be damaged easily by static electricity. Such components commonly are called *Electrostatically Sensitive (ES) Devices.* Examples of typical ES devices are integrated circuits and some field-effect transistors and semiconductor "chip" components. The following techniques should be used to help reduce the incidence of component damage caused by static by static electricity.

1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any electrostatic charge on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging wrist strap device, which should be removed to prevent potential shock reasons prior to applying power to the unit under test.
2. After removing an electrical assembly equipped with ES devices, place the assembly on a conductive surface such as aluminum foil, to prevent electrostatic charge buildup or exposure of the assembly.
3. Use only a grounded-tip soldering iron to solder or unsolder ES devices.
4. Use only an anti-static type solder removal device. Some solder removal devices not classified as "anti-static" can generate electrical charges sufficient to damage ES devices.
5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
6. Do not remove a replacement ES device from its protective package until immediately before you are ready to install it. (Most replacement ES devices are packaged with leads electrically shorted together by conductive foam, aluminum foil or comparable conductive material).
7. Immediately before removing the protective material from the leads of a replacement ES device, touch the protective material to the chassis or circuit assembly into which the device will be installed.
   CAUTION: Be sure no power is applied to the chassis or circuit, and observe all other safety precautions.
8. Minimize bodily motions when handling unpackaged replacement ES devices. (Otherwise harmless motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity sufficient to damage an ES device.)

General Soldering Guidelines

1. Use a grounded-tip, low-wattage soldering iron and appropriate tip size and shape that will maintain tip temperature within the range or 500°F to 600°F.
2. Use an appropriate gauge of RMA resin-core solder composed of 60 parts tin/40 parts lead.
3. Keep the soldering iron tip clean and well tinned.
4. Thoroughly clean the surfaces to be soldered. Use a mall wire-bristle (0.5 inch, or 1.25cm) brush with a metal handle.
   Do not use freon-propelled spray-on cleaners.
5. Use the following unsoldering technique
   a. Allow the soldering iron tip to reach normal temperature. (500°F to 600°F)
   b. Heat the component lead until the solder melts.
   c. Quickly draw the melted solder with an anti-static, suction-type solder removal device or with solder braid.
   CAUTION: Work quickly to avoid overheating the circuitboard printed foil.
6. Use the following soldering technique.
   a. Allow the soldering iron tip to reach a normal temperature (500°F to 600°F)
   b. First, hold the soldering iron tip and solder the strand against the component lead until the solder melts.
   c. Quickly move the soldering iron tip to the junction of the component lead and the printed circuit foil, and hold it there only until the solder flows onto and around both the component lead and the foil.
   CAUTION: Work quickly to avoid overheating the circuit board printed foil.
   d. Closely inspect the solder area and remove any excess or splashed solder with a small wire-bristle brush.

IC Remove/Replacement

Some chassis circuit boards have slotted holes (oblong) through which the IC leads are inserted and then bent flat against the circuit foil. When holes are the slotted type, the following technique should be used to remove and replace the IC. When working with boards using the familiar round hole, use the standard technique as outlined in paragraphs 5 and 6 above.

Removal

1. Desolder and straighten each IC lead in one operation by gently prying up on the lead with the soldering iron tip as the solder melts.
2. Draw away the melted solder with an anti-static suction-type solder removal device (or with solder braid) before removing the IC.

Replacement

1. Carefully insert the replacement IC in the circuit board.
2. Carefully bend each IC lead against the circuit foil pad and solder it.
3. Clean the soldered areas with a small wire-bristle brush.
   (It is not necessary to reapply acrylic coating to the areas).

"Small-Signal" Discrete Transistor Removal/Replacement

1. Remove the defective transistor by clipping its leads as close as possible to the component body.
2. Bend into a "U" shape the end of each of three leads remaining on the circuit board.
3. Bend into a "U" shape the replacement transistor leads.
4. Connect the replacement transistor leads to the corresponding leads extending from the circuit board and crimp the "U" with long nose pliers to insure metal to metal contact then solder each connection.

Power Output, Transistor Device Removal/Replacement

1. Heat and remove all solder from around the transistor leads.
2. Remove the heat sink mounting screw (if so equipped).
3. Carefully remove the transistor from the heat sink of the circuit board.
4. Insert new transistor in the circuit board.
5. Solder each transistor lead, and clip off excess lead.
6. Replace heat sink.

Diode Removal/Replacement

1. Remove defective diode by clipping its leads as close as possible to diode body.
2. Bend the two remaining leads perpendicular y to the circuit board.
3. Observing diode polarity, wrap each lead of the new diode around the corresponding lead on the circuit board.
4. Securely crimp each connection and solder it.
5. Inspect (on the circuit board copper side) the solder joints of the two "original" leads. If they are not shiny, reheat them and if necessary, apply additional solder.

Fuse and Conventional Resistor Removal/Replacement

1. Clip each fuse or resistor lead at top of the circuit board hollow stake.
2. Securely crimp the leads of replacement component around notch at stake top.
3. Solder the connections.
   CAUTION: Maintain original spacing between the replaced component and adjacent components and the circuit board to prevent excessive component temperatures.

Circuit Board Foil Repair

Excessive heat applied to the copper foil of any printed circuit board will weaken the adhesive that bonds the foil to the circuit board causing the foil to separate from or "lift-off" the board. The following guidelines and procedures should be followed whenever this condition is encountered.

At IC Connections

To repair a defective copper pattern at IC connections use the following procedure to install a jumper wire on the copper pattern side of the circuit board. (Use this technique only on IC connections).

1. Carefully remove the damaged copper pattern with a sharp knife. (Remove only as much copper as absolutely necessary).
2. carefully scratch away the solder resist and acrylic coating (if used) from the end of the remaining copper pattern.
3. Bend a small "U" in one end of a small gauge jumper wire and carefully crimp it around the IC pin. Solder the IC connection.
4. Route the jumper wire along the path of the out-away copper pattern and let it overlap the previously scraped end of the good copper pattern. Solder the overlapped area and clip off any excess jumper wire.

At Other Connections

Use the following technique to repair the defective copper pattern at connections other than IC Pins. This technique involves the installation of a jumper wire on the component side of the circuit board.

1. Remove the defective copper pattern with a sharp knife.
   Remove at least 1/4 inch of copper, to ensure that a hazardous condition will not exist if the jumper wire opens.
2. Trace along the copper pattern from both sides of the pattern break and locate the nearest component that is directly connected to the affected copper pattern.
3. Connect insulated 20-gauge jumper wire from the lead of the nearest component on one side of the pattern break to the lead of the nearest component on the other side.
   Carefully crimp and solder the connections.
   CAUTION: Be sure the insulated jumper wire is dressed so the it does not touch components or sharp edges.

SPECIFICATION

NOTE : Specifications and others are subject to change without notice for improvement.

1. Application Range.

This spec sheet is applied to the 47" LCD TV used LA73A chassis.

2. Especificación

Each part is tested as below without special appointment

2.1 Temperature : 25±5°C(77±9°F), CST : 40±5°C
2.2 Relative Humidity : 65±10%
2.3 Power Voltage : Standard input voltage (100~240V@ 50/60Hz)
• Standard Voltage of each products is marked by models
2.4 Specification and performance of each parts are followed each drawing and specification by part number in accordance with BOM .
2.5 The receiver must be operated for about 20 minutes prior to the adjustment.

3. Test method

3.1 Performance : LGE TV test method followed.
3.2 Demanded other specification
Safety : UL, CSA, IEC specification
3.3 EMC : FCC, ICES, IEC specification

4. General Specification(TV)

No.	Item	Specification	Remark
1.	Receiving System	ATSC/64 & 256 QAM/ NTSC-M	
2.	Available Channel	1) VHF : 02~13 2) UHF : 14~69 3) DTV : 02-69 4) CATV : 01~135 5) CADTV : 01~135	
3.	Input Voltage	1) AC 100 ~ 240V 50/60Hz	
4.	Market	NORTH AMERICA	
5.	Screen Size	52 inch Wide(1920 x 1080) 47 inch Wide(1920 x 1080)	52LY3DF 47LY3DF
6.	Aspect Ratio	16:9	
7.	Tuning System	FS	
8.	LCD Module	LC520WU1-SLB1/LC520WU1-SLB2 LC470WU1-SLC1	52LY3DF 47LY3DF
9.	Operating Environment	1) Temp : 0 ~ 40 deg 2) Humidity : ~ 80 %	
10.	Storage Environment	1) Temp : -20 ~ 60 deg 2) Humidity : ~ 85 %	

5. Chrominance & Luminance Specification

No	Item			Min	Typ	Max	Unit	Remark
1.	White peak brightness			400	500		cd/m²	47LY3DF-UA
							cd/m²	
							cd/m²	
2.	Contrast ratio						cd/m²	N/A
3.	Brightness uniformity			80			%	Full white
4.	Color coordinate	RED	X		0.663			+/- 0.03
			Y		0.324			+/- 0.03
		GREEN	X		0.194			+/- 0.03
			Y		0.659			+/- 0.03
		BLUE	X		0.141			+/- 0.03
			Y		0.082			+/- 0.03
		WHITE	X		0.279			+/- 0.03
			Y		0.292			+/- 0.03
5.	Color coordinate uniformity							N/A
6.	Contrast ratio			3500:1	5000:1			52LB5DF-UC
7.	Color Temperature	Cool			11,000			<Test Signal>
		Medium			9,300			HDMI input, With 16-gray pattern
		Warm			6,500			6th bar from right
8.	Color Distortion, DG					10.0	%	
9.	Color Distortion, DP					10.0	deg	
10.	Color S/N, AM/FM			43.0			dB	
11.	Color Killer Sensitivity			-80			dBm	

6. Component Video Input (Y, PB, PR)

No.	Specification			Remark
	Resolution	H-freq(kHz)	V-freq(Hz)	
1.	720*480	15.73	60	SDTV ,DVD 480I
2.	720*480	15.73	59.94	SDTV ,DVD 480I
3.	720*480	31.47	60	SDTV 480P
4.	720*480	31.47	59.94	SDTV 480P
5.	1280*720	45.00	60.00	HDTV 720P
6.	1280*720	44.96	59.94	HDTV 720P
7.	1920*1080	33.75	60.00	HDTV 1080I
8.	1920*1080	33.72	59.94	HDTV 1080I
9.	1920*1080	67.500	60	HDTV 1080P
10.	1920*1080	67.432	59.939	HDTV 1080P
11.	1920*1080	27.000	24.000	HDTV 1080P
12.	1920*1080	26.97	23.94	HDTV 1080P
13.	1920*1080	33.75	30.000	HDTV 1080P
14.	1920*1080	33.71	29.97	HDTV 1080P

7. RGB PC

No.	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel clock(MHz)	Remark	
	PC					DDC
1.	640*350	31.468	70.09	25.17	EGA	X
2.	720*400	31.469	70.08	28.32	DOS	O
3.	640*480	31.469	59.94	25.17	VESA(VGA)	O
4.	640*480	37.861	72.80	31.50	VESA(VGA)	O
5.	640*480	37.500	75.00	31.50	VESA(VGA)	O
6.	800*600	35.156	56.25	36.00	VESA(SVGA)	O
7.	800*600	37.879	60.31	40.00	VESA(SVGA)	O
8.	800*600	48.077	72.18	50.00	VESA(SVGA)	O
9.	800*600	46.875	75.00	49.50	VESA(SVGA)	O
10.	1024*768	48.363	60.00	65.00	VESA(XGA)	O
11.	1024*768	56.476	70.06	75.00	VESA(XGA)	O
12.	1024*768	60.023	75.02	78.75	VESA(XGA)	O
13.	1280*768	47.776	59.870	79.5	CVT(WXGA)	O
14.	1280*768	60.289	74.893	102.25	CVT(WXGA)	O
15.	1360*768	47.712	60.015	85.50	VESA (WXGA)	O
16.	1280*1024	63.981	60.020	108.00	VESA (SXGA)	O
17.	1280*1024	79.976	75.025	135	VESA (SXGA)	O
18.	1600*1200	75.00	60.00	162	VESA (UXGA)	O
19	1920*1080	67.5	60	148.5	HDTV 1080P	O

8. HDMI Input (PC/DTV)

No.	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel clock(MHz)	Remark	
	PC					DDC
1	640*350	31.468	70.09	25.17	EGA	X
2	720*400	31.469	70.08	28.32	DOS	_
3	640*480	31.469	59.94	25.17	VESA(VGA)	_
4	640*480	37.861	72.80	31.50	VESA(VGA)	_
5	640*480	37.500	75.00	31.50	VESA(VGA)	_
6	800*600	35.156	56.25	36.00	VESA(SVGA)	_
7	800*600	37.879	60.31	40.00	VESA(SVGA)	_
8	800*600	48.077	72.18	50.00	VESA(SVGA)	_
9	800*600	46.875	75.00	49.50	VESA(SVGA)	_
10	1024*768	48.363	60.00	65.00	VESA(XGA)	_
11	1024*768	56.476	70.06	75.00	VESA(XGA)	_
12	1024*768	60.023	75.02	78.75	VESA(XGA)	_
13	1280*768	47.776	59.870	79.5	CVT(WXGA)	_
14	1360*768	47.712	60.015	85.50	VESA (WXGA)	_
15	1280*1024	63.981	60.020	108.00	VESA (SXGA)	_
16	1280*1024	79.976	75.025	135	VESA (SXGA)	_
17	1600*1200	75.00	60.00	162	VESA (UXGA)	_
18	1920*1080	67.5	60	148.5	HDTV 1080P	_
	DTV					
1	720*480	31.47	60		SDTV 480P	
2	720*480	31.47	59.94		SDTV 480P	
3	1280*720	45.00	60.00		HDTV 720P	
4	1280*720	44.96	59.94		HDTV 720P	
5	1920*1080	33.75	60.00		HDTV 1080I	
6	1920*1080	33.72	59.94		HDTV 1080I	
7	1920*1080	67.500	60		HDTV 1080P	
8	1920*1080	67.432	59.939		HDTV 1080P	
9	1920*1080	27.000	24.000		HDTV 1080P	
10	1920*1080	26.97	23.94		HDTV 1080P	
11	1920*1080	33.75	30.000		HDTV 1080P	
12	1920*1080	33.71	29.97		HDTV 1080P	

9. General specifications

9-1. 52" LCD MODULE

No	Item	Specification	Unit	Remark
1	Active Screen Size	52.04 inches(1321.816mm) mm		
2	Outline dimension	1236.0(H)x719.2(V)x57.5(D)	mm	
3	Pixel Pitch	0.200x0.600x RGB	mm	
4	Pixel Format	1920 horiz by 1080 vert.		RGB Stripe arrangement
5	Color Depth	10-bit / 1 Billion Color		
6	Luminance, White	500 cd/m2		
7	Power Consumption	Total 261.4 Watt		
8	Weight	23Kg		
9	Display Operating Mode	Transmissive Mode, Normally Black		
10	Surface Treatment	Hard Coating (3H) Anti-glare treatment of the front polarizer		

9-2. 47" LCD MODULE

No	Item	Specification	Unit	Remark
1	Active Screen Size	46.96 inches(1192.87mm) mm		
2	Outline dimension	1096.0(H)x640.0(V)x481(D)	mm	
3	Pixel Pitch	0.5415x0.5415x RGB	mm	
4	Pixel Format	1920 horiz by 1080 vert.		RGB Stripe arrangement
5	Color Depth	8-bit / 16.7M Color		
6	Luminance, White	550 cd/m2		
7	Power Consumption	Total 230.56 Watt		
8	Weight	20.0Kg		
9	Display Operating Mode	Transmissive Mode, Normally Black		
10	Surface Treatment	Hard Coating (3H) Anti-glare treatment of the front polarizer		

9-3. 42" LCD MODULE

No	Item	Specification	Unit	Remark
1	Active Screen Size	42.02 inches(1067.31mm) mm		
2	Outline dimension	983.0(H)x576.0(V)x51.0(D)	mm	
3	Pixel Pitch	0.4845x0.4845x RGB	mm	
4	Pixel Format	1920 horiz by 1080 vert.		RGB Stripe arrangement
5	Color Depth	8-bit / 16.7M Color		
6	Luminance, White	550 cd/m2 (Center 1 point, Typ)	kg	
7	Power Consumption	Total 167.3 Watt(Typ)		
8	Weight	13Kg		
9	Display Operating Mode	Transmissive Mode, Normally Black		
10	Surface Treatment	Hard Coating (3H), Anti-glare treatment of the front polarizer		

9. Customer Menu Setup (Shipment Condition)

No	Item		Condition	Remark
1.	Input Mode		TV02CH	
2.	Volume Level		30	
3.	Mute		Off	
4.	Aspect Ratio		16:9	
5.	Video	EZ Picture	Daylight	
		Contrast	100	
		Brightness	40	
		Color	70	
		Sharpness	70	
		Tint	0	
		Color-temperature	Cool	
		XD	Auto(On)	
		Advanced	Cinema3:2 Mode(Off) Black Level(RF,HDMI=>Low),(AV=>High)(RGB-PC,Component=>Disable)	
6.	Audio	Audio Language	Off	
		EZ Sound	Normal	
		Balance	0	
		Bass	50	
		Front Surround	Off	
		TV Speaker	On	
7.	Timer	Auto clock	Off	
		Manual Clock	Off	
		Off Timer	Off	
		On Timer	Off	
		Sleep Timer	Off	
		Auto Off	Off	
8.	Option	Aspect Ratio	16:9	
		Caption/Text	Off	
		Caption Option	Set By Program	
		Language	English	
		Simplink	On	
9.	Lock	Lock System	Off	
		Set password	On	(Default:0000)
		Block channel	None	
		Movie Rating	Off	
		TV Rating-Children	None	
		TV Rating-General	None	
		Input Block	Off	
10.	Channel Memory		RF : 2, 3, 4, 5, 6, 7, 8, 9, 10, 11, 12, 13, 14, 30, 51, 63 CATV : 15, 16, 17	

ADJUSTMENT INSTRUCTION

1. Scope

These instructions are applied to all of the LCD TV, LA73A Chassis.

2. Designation

2.1 Because this chassis is a non-charge type chassis of power supply insulation, it does not require an insulation type transformer. But it is preferable to use an insulation type transformer between the power supply line and the chassis input side to operate it before the adjustment.

2.2 The adjustment must be done in the accurate order. But it can be changed considering the mass production capability.

2.3 Unless specified specially, the adjustment must be done in an environment with the surrounding temperature of 25 ±5°C and relative humidity of 65 ±10%.

2.4 The input voltage of the receiver during the adjustment must be maintained at 220V, 60Hz.

2.5 Unless specified otherwise, the receiver must be pre-operated for 15 minutes before the adjustment.

○ The pre-operation must be done after receiving 100% White Pattern (06CH).
(Or 8. Test Pattern condition of Ez – Adjust)

○ How to enter White Pattern
A. Press the POWER ON KEY on the adjustment R/C.
B. Or press the ADJ KEY on the adjustment R/C to enter Ez – Adjust
And select 10. Test Pattern using the CH + / - KEY and then select White using the arrow keys to display the 100% FULL WHITE PATTERN.

* In this mode, you can heat run the set without separate signal generator.

Caution) When you keep the still screen on for more than 20 minutes (Especially for internal Digital pattern (13 CH), Cross Hatch Pattern (09CH) with higher black/white contrast), be careful not to create residual image on the black level part.

3. Board adjustment

- Adjust 480i Comp1
- Adjust 1080p Comp1/RGB
- Adjust RF and Video

4. Adjustment method using RS-232C

Adjust the 3 board adjustment items of 3 using the RS-232C according to the "4.1.2 Adjustment order".

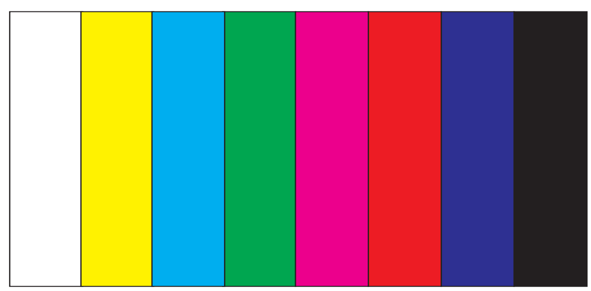
4-1. Necessary details before adjustment

- ad 00 00 Enter ADC adjustment mode.
- kb 00 01 Switch RF input (Input is not switched)
- ad 00 10 Adjust RF and Video (Input is switched and adjusted)
- kb 00 04 Switch component1 input (Input is not switched)
- ad 00 10 Adjust 480i Comp1 (Input is switched and adjusted)
- kb 00 06 Switch RGB-DTV input (Actual input is not switched)
- ad 00 10 Adjust 1080p Comp1/RGB (Input is switched and adjusted)
- ad 00 90 Complete adjustment

4-2. Auto adjustment of RF and Video

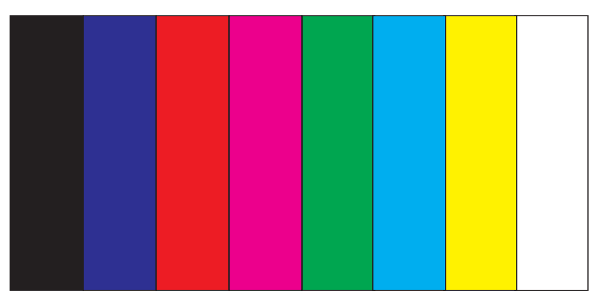
4.2.1 Introduction
This is the adjustment to reduce the color difference of main/sub screen of RF and video signal.

4.2.2 Adjustment method
A. Connect the Video Signal Generator (Master) to TV AV input terminal with AV output.
At this time, when you enter the input pattern as Model : 201(NTSC-M) , Pattern : 33(100% color Bar), the following video is displayed on the screen



Model: 201(NTSC-M), Pattern: 33(100% color Bar)

Note: When the video is shown as follows showing black patterns from the left, it cannot be adjusted

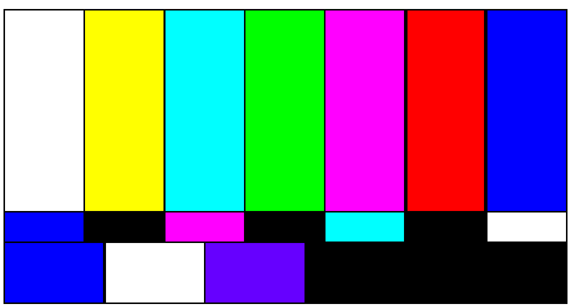


In this case, first press the **Rev button** of Video Signal Generator (Master), to generate the white pattern to be displayed from the left.

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

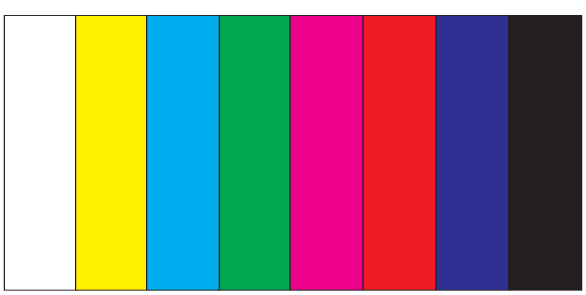
B. When the receiving signal is confirmed after inputting the internal signal, press the ADJ KEY on the adjustment R/C to enter 'EZ-ADJUST'. Select '5.Adjust RF and Video' and press the right key (G) to enter the adjustment mode.

C. When you enter the adjustment mode, the video is automatically set to TV 2CH and the following window is displayed.



D. When the adjustment is completed, a message saying 'RF Configuration Success' is displayed. If the adjustment has failed, a message saying 'RF Configuration Error' is displayed.

E. When the automatic adjustment of RF signal is completed, it is automatically switched to the Video Mode as shown in the above picture, and automatic adjustment for Video Mode is done. When the automatic adjustment is completed, a message saying 'Video Configuration Success' is displayed. If the adjustment has failed, a message saying 'Video Configuration Error' is displayed..



o Check RS-232C operation
Press the Instart of adjustment R/C to enter the 7.Baud Rate menu and set the Baud Rate to 115200 to check the 232-C operation

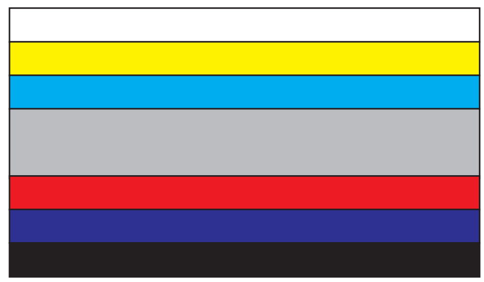
5. Automatic adjustment of Component 480i/1080p RGB 1080p

5.1 Introduction

The Component 480i/1080p RGB 1080p adjustment sets the optimal black level and gain automatically from the analog => digital converter, and is the function to correct the RGB deviation

5.2 Using device

Adjustment remote controller, 801GF (802B, 802F, 802R) or MSPG925FA Pattern Generator
(480i/1080P Horizontal 100% Color Bar Pattern output must be possible and output level must be adjusted accurately to 0.7±0.1Vp-p.)



(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.

5.3 480i Comp1, 1080p Comp1/RGB adjustment method

A. ADC 480i component1 adjustment
- Check Component1 connected condition from the using device.
- (MSPG-925FA : (model :209 , pattern :65)

B. Input Component 100% Horizontal Color Bar Pattern (HozTV31Bar) of 480i Mode that is supported, select the input to Component1 and select the video to 'Normal'.

C. Wait for more than 1 second after receiving the signal and then press the ADJ KEY on the adjustment R/C to enter 'Ez – Adjust'. Select '3. ADC 480i Comp1' and press the Enter KEY to make the automatic adjustment.

D. When the adjustment is normally completed, a message saying "ADC Component1 Success" is displayed.

E. When the adjustment is not normally completed, a message saying 'ADC Component1 480i Fail' is displayed. When the component is not connected, a message saying 'Component1 Not Connected', when the input format is not 480i, a message saying 'Not Valid Format' and when the input signal is not coming out, a message saying 'Check Signal Status' is displayed for 1 second.

F. ADC 1080P Component1/RGB adjustment
- Check the Component1, RGB connected condition from the using device.
- (MSPG-925FA : => model :225 , pattern :65)

G. Input Component 100% Horizontal Color Bar Pattern (HozTV31Bar) of 480i Mode that is supported, select the input to Component1 and select the video to 'Normal'.

H. Wait for more than 1 second after receiving the signal and then press the ADJ KEY on the adjustment R/C to enter 'Ez – Adjust'. Select '4. ADC 1080P Comp1/RGB' and press the Enter KEY to make the automatic adjustment for component 1 first.

I. When the adjustment is normally completed, a message saying "ADC Component1 Success" is displayed, and when the adjustment is not normally completed, a message saying 'ADC Component1 1080P Fail' is displayed.

J. After the Component1 adjustment is completed, it is automatically switch to RGB-DTV Mode to start RGB adjustment. When the adjustment is normally completed, a message saying "ADC RGB 1080P Success" is displayed.

K. When the adjustment is not normally completed, make the adjustment again after checking the pattern or adjustment condition. The error message is as E.

L. When the adjustment is completed, press the ADJ KEY to exit.

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

6.1 Introduction

This has been established by VESA and is the function created to "Plug and Play" by making the computer reconfigure user environment through communication with the monitor automatically without having the user set commands directly to the PC or the monitor so that the user can use it immediately.

When writing EDID, use the DDC2B protocol.

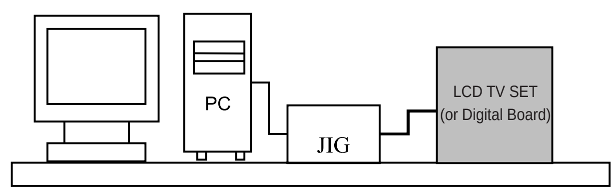
6.2 HDMI EDID Data input

1) Using device

a. Jig for PC, DDC adjustment (PC serial to D-sub connection device)
b. DDC recording S/W (EDID Data Write & Read)
c. D-Sub terminal
d. Separate HDMI Cable connecting JIG is necessary

2) Adjustment preparation and device configuration

e. Configure as Fig., and turn on the PC
f. Turn on the JIG.
g. Run the DDC recording S/W (EDID Data Write & Read). (Execute in DOS mode)



Device configuration diagram for HDMI EDID Data input

6.3 EDID Data for LA73A

- HDMI-1 EDID (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	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	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	8A

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	17	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	66	03	0C	00	10	00	80	01	1D	00	72	51	D0	1E	20	6E
20	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C	16
30	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A	20
40	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A	D0
50	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18	0E
60	1F	00	80	51	00	1E	30	40	80	37	00	C4	8E	21	00	00
70	1C	00	00	00	00	00	00	00	00	00	00	00	00	00	00	41

- HDMI-2 EDID (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	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	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	8A

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	17	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	66	03	0C	00	20	00	80	01	1D	00	72	51	D0	1E	20	6E
20	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C	16
30	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A	20
40	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A	D0
50	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18	0E
60	1F	00	80	51	00	1E	30	40	80	37	00	C4	8E	21	00	00
70	1C	00	00	00	00	00	00	00	00	00	00	00	00	00	00	31

- HDMI-3 EDID (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	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1E	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	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	8A

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	17	F1	47	84	05	03	02	20	22	10	23	15	07	50
10	66	03	0C	00	30	00	80	01	1D	00	72	51	D0	1E	20	6E
20	28	55	00	C4	8E	21	00	00	1E	01	1D	80	18	71	1C	16
30	20	58	2C	25	00	C4	8E	21	00	00	9E	8C	0A	D0	8A	20
40	E0	2D	10	10	3E	96	00	C4	8E	21	00	00	18	8C	0A	D0
50	8A	20	E0	2D	10	10	3E	96	00	13	8E	21	00	00	18	0E
60	1F	00	80	51	00	1E	30	40	80	37	00	C4	8E	21	00	00
70	1C	00	00	00	00	00	00	00	00	00	00	00	00	00	00	21

- RGB EDID 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	18	73	41	96	0A	CF	74	A3	57	4C	B0	23
20	09	48	4C	AF	CF	00	31	40	45	40	61	40	81	80	A9	40
30	01	01	01	01	01	01	66	21	50	B0	51	00	1B	30	40	70
40	36	00	C4	8E	21	00	00	1A	02	3A	80	18	71	38	2D	40
50	58	2C	45	00	C4	8E	21	00	00	1E	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	F6

	0	1	2	3	4	5	6	7	8	9	A	B	C	D	E	F
0	02	03	04	00	0E	1F	00	80	51	00	1E	30	40	80	37	00
10	C4	8E	21	00	00	1C	F1	27	00	A0	51	00	25	30	50	80
20	37	00	C4	8E	21	00	00	1C	00	00	00	00	00	00	00	00
30	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
40	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
50	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
60	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00
70	00	00	00	00	00	00	00	00	00	00	00	00	00	00	00	31

7. White Balance adjustment

7-1. Using device

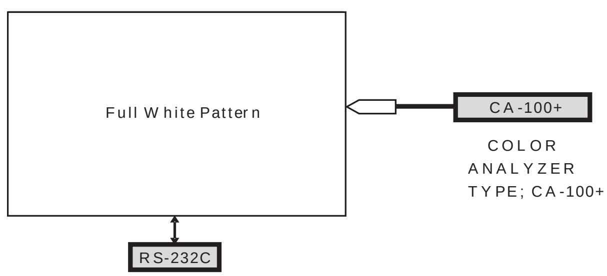
A. Color Analyzer : CA-210 (CH 9)
When adjusting the LCD white balance, use CS-1000 as the color analyzer (CA-210) and channel 9 corrected of Matrix (corrected for White, Red, Green, Blue) and the adjustment must be done in accordance with the White balance adjustment coordinate.

B. Automatic adjuster (Necessary for automatic adjustment, must be able to communicate with RS-232C, Baud Rate : 115200)

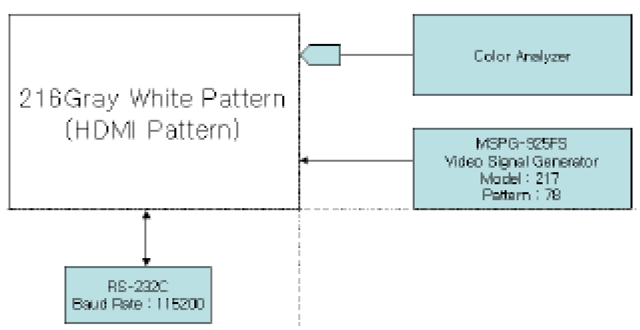
C. Video Signal Generator MSPG-925F 720p, 216Gray(Model : 217, Pattern 78

7-2. Measuring device connection diagram (for automatic adjustment)

=> Connection diagram for internal pattern



=> Connection diagram for HDMI input



7-3. 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)

A. Connect the set according to the internal pattern or HDMI input in accordance with 4.3.2 measuring device connection diagram.
B. Set the Baud Rate of RS-232C to 115200. It is set to 115200 as default.
C. Connect the RS-232C Cable to the set.
D. Connect the HDMI Cable to the set. (Limited to the set with HDMI option)
E. Select and adjust the model applicable to LA73A chassis from the adjuster

Caution) For automatic adjustment, RS-232C Command and Chassis are commonly applied

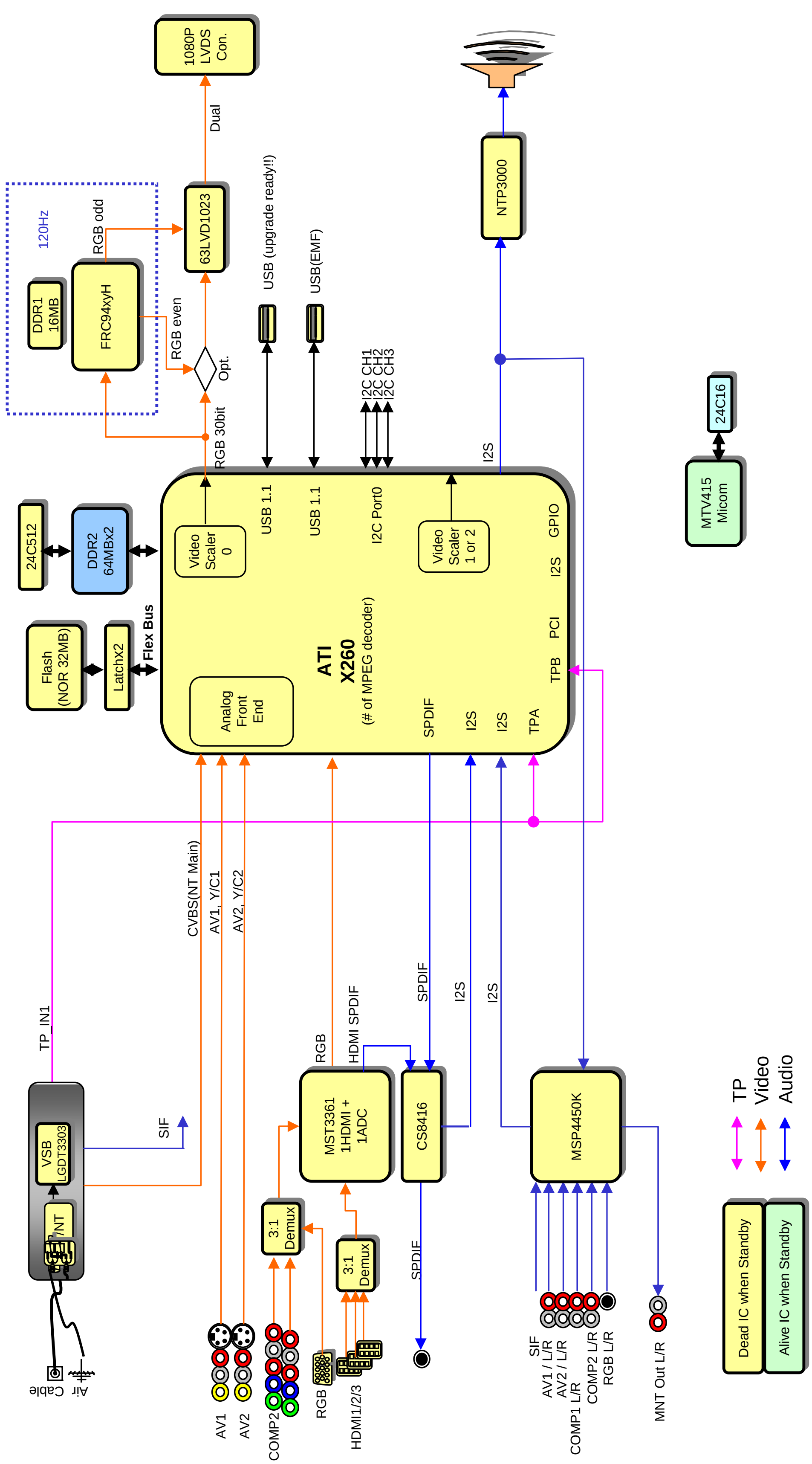
7.3.1 White Balance adjustment (For automatic adjustment)
- Execute Power Only Key of the adjustment R/C to execute automatic adjustment. Set the Baud Rate to 115200.
  : Always start adjustment with "wb 00 00" and end adjustment with "wb 00 ff"
  : Adjust the offset if necessary.

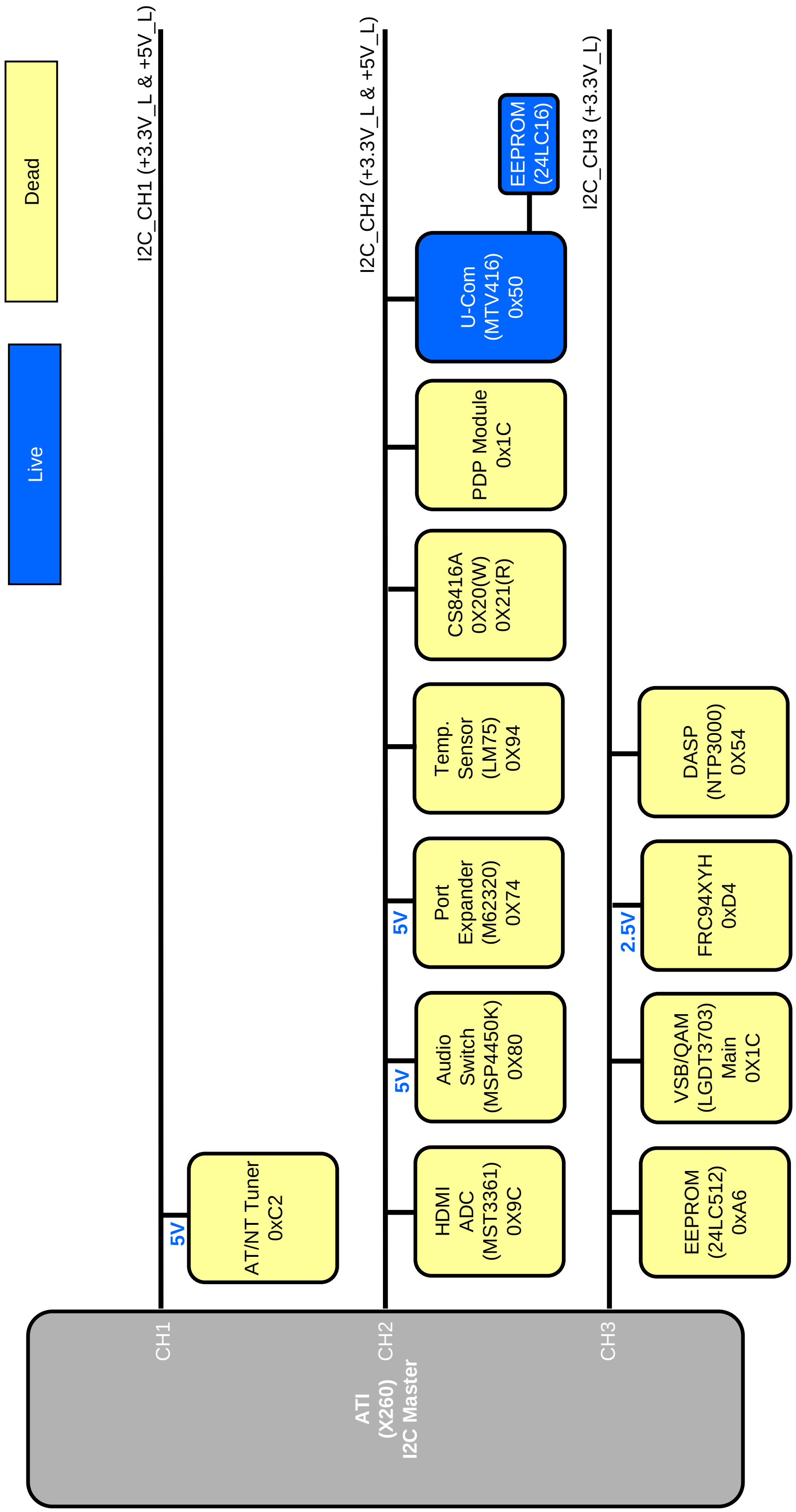
7-4. White Balance adjustment (For manual adjustment)

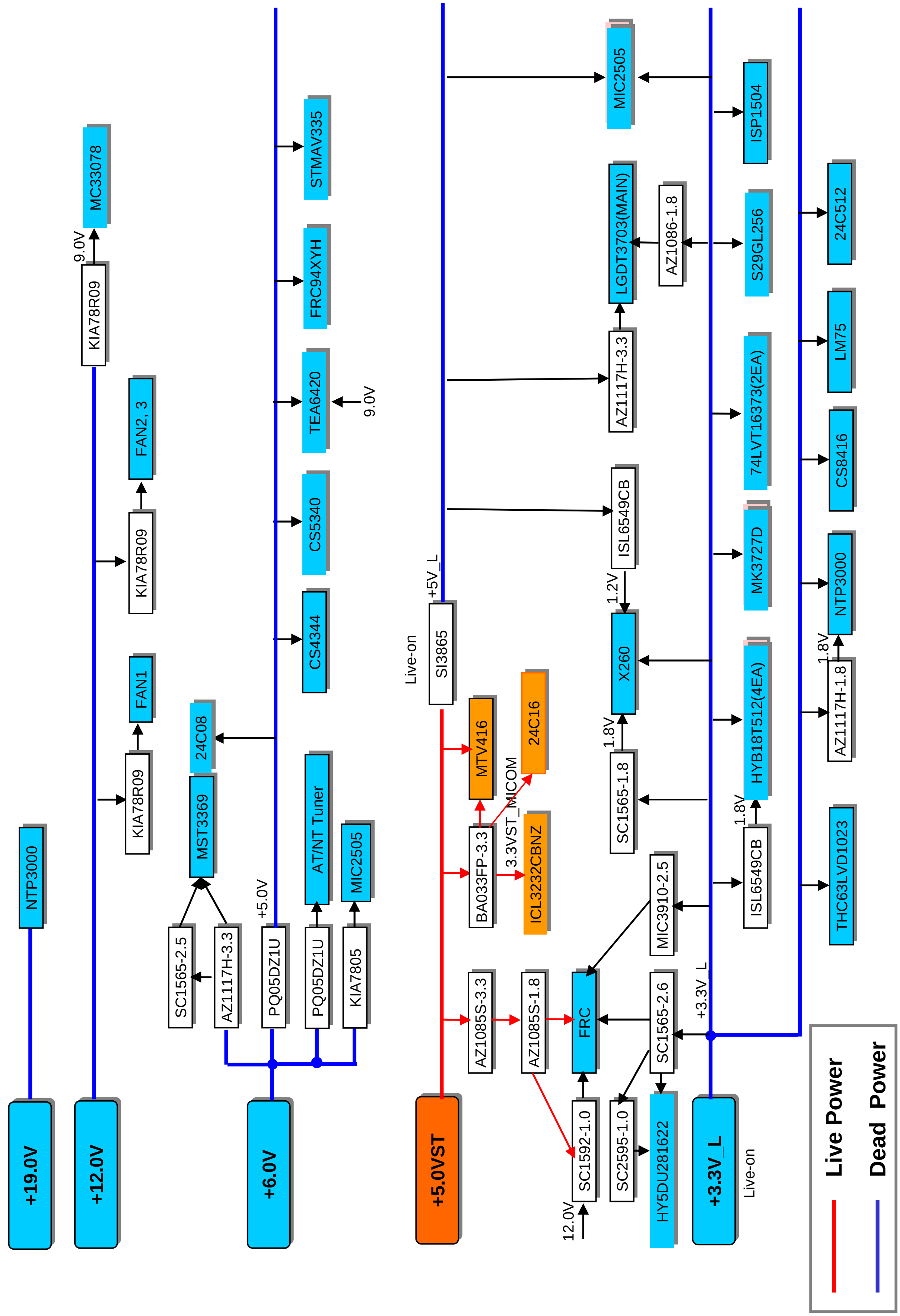
o Using device: CA-210
=> When adjusting the plasma white balance, use CS-1000 as the color analyzer (CA-210) and channel 9 corrected of Matrix (corrected for White, Red, Green, Blue) and the adjustment must be done in accordance with the below White balance adjustment coordinate.

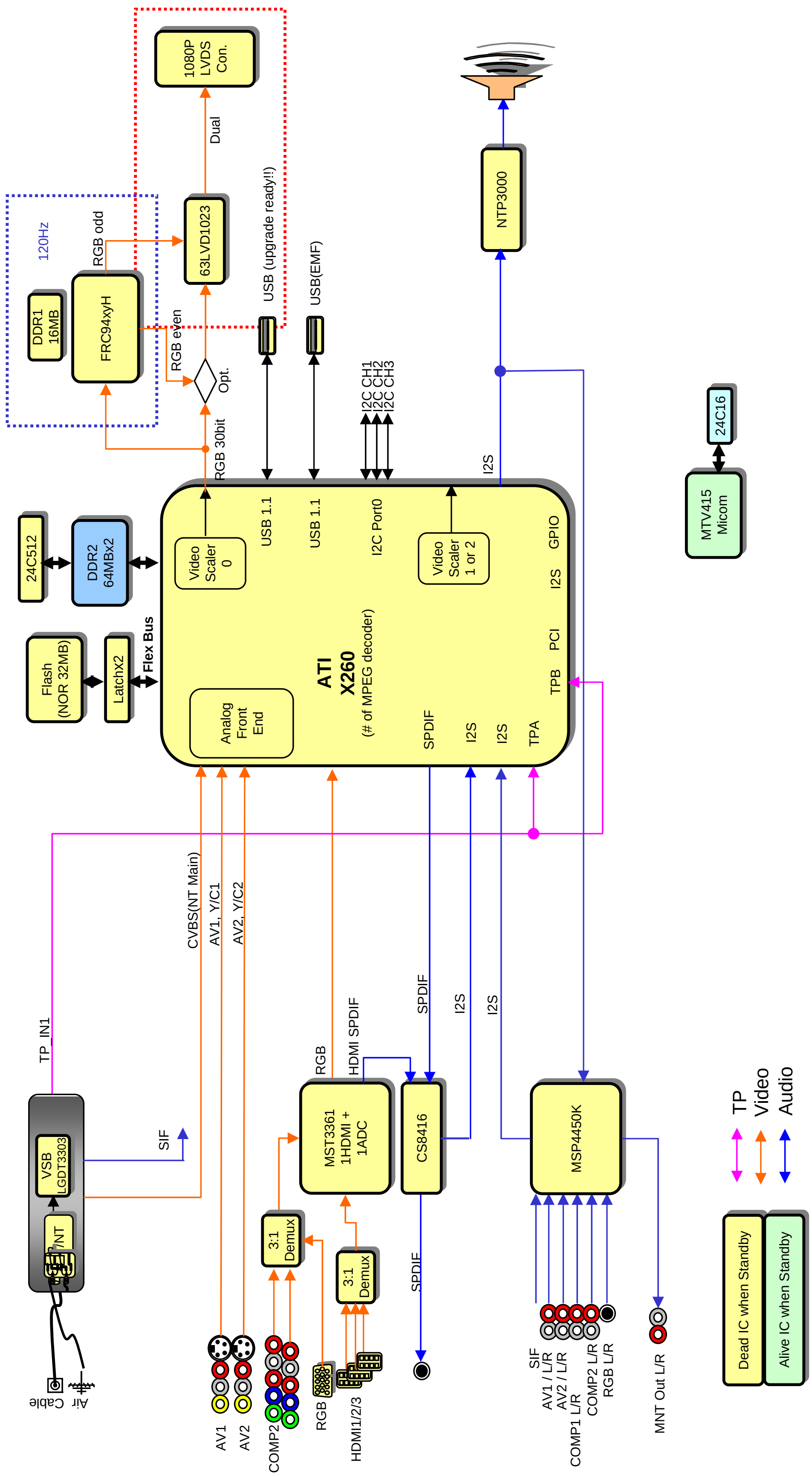
o Manual adjustment must be done in the following order
A. Press the ADJ of adjustment R/C to enter 'EZ-ADJUST'.
B. Select 10.TEST PATTERN using the CH + / - KEY and press the Enter KEY to execute a heat run for more than 30 minutes.
C. Execute a Zero Calibration for CA-210 and put it at distance of less than 10Cm from the LCD module surface center during the adjustment.
D. Press the ADJ of adjustment R/C, select '7.White-Balance' of 'Ez – Adjust' and enter the adjustment mode using the right key (G).
(When you press the ¢∫ button, the screen enters the full white internal pattern..)
E. The adjustment is executed in 3 different white balance of COOL, MEDIUM and WARM.
F. When the white balance is Cool,
Fix B Gain 192, fix R-Cut / G-Cut / B-Cut 64,
and use R Gain / G Gain to adjust the High Light.
When the white balance is Medium,
Fix R Gain 192, fix R-Cut / G-Cut / B-Cut 64,
and use G Gain / B Gain to adjust the High Light.
When the white balance is Warm
Fix R Gain 192, fix R-Cut / G-Cut / B-Cut 64,
and use G Gain / B Gain to adjust High Light.
G. Use the +, - key for adjustment.
H. When the adjustment is completed, press the OK (KEY) button to move to the Ez –Adjust screen. Press the ADJ KEY to exit the adjustment mode.

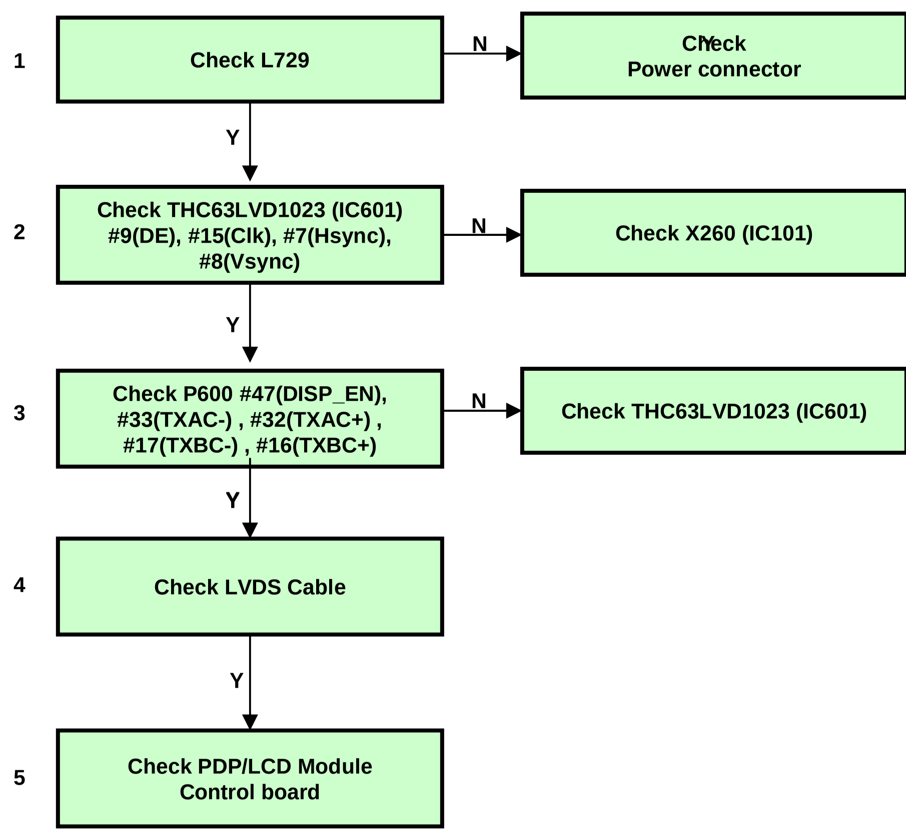
TROUBLESHOOTING & BLOCK DIAGRAM

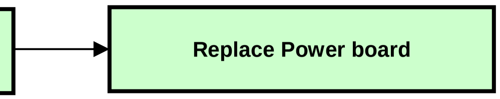



Live
Dead
I2C_CH1 (+3.3V_L & +5V_L)
I2C_CH2 (+3.3V_L & +5V_L)
I2C_CH3 (+3.3V_L)
ATI (X260) I2C Master
CH1
CH2
CH3
5V
AT/NT Tuner 0xC2
HDMI ADC (MST3361) 0X9C
5V
Audio Switch (MSP4450K) 0X80
5V
Port Expander (M62320) 0X74
Temp. Sensor (LM75) 0X94
CS8416A 0X20(W) 0X21(R)
PDP Module 0x1C
U-Com (MTV416) 0x50
EEPROM (24LC16)
EEPROM (24LC512) 0xA6
VSB/QAM (LGDT3703) Main 0X1C
2.5V
FRC94XYH 0xD4
DASP (NTP3000) 0X54


+19.0V
NTP3000
+12.0V
KIA78R09
9.0V
MC33078
KIA78R09
FAN2, 3
KIA78R09
FAN1
+6.0V
SC1565-2.5
AZ1117H-3.3
MST3369
24C08
PQ05DZ1U
+5.0V
PQ05DZ1U
AT/NT Tuner
KIA7805
MIC2505
CS4344
CS5340
TEA6420
9.0V
FRC94XYH
STMAV335
+5.0VST
Live-on
SI3865
+5V_L
MTV416
24C16
BA033FP-3.3
3.3VST_MICOM
ICL3232CBNZ
AZ1085S-3.3
AZ1085S-1.8
FRC
12.0V
SC1592-1.0
SC2595-1.0
HY5DU281622
SC1565-2.6
MIC3910-2.5
SC1565-1.8
1.8V
X260
1.2V
ISL6549CB
AZ1117H-3.3
LGDT3703(MAIN)
AZ1086-1.8
MIC2505
+3.3V_L
Live-on
+3.3V_L
ISL6549CB
1.8V
HYB18T512(4EA)
MK3727D
74LVT16373(2EA)
S29GL256
ISP1504
THC63LVD1023
AZ1117H-1.8
1.8V
NTP3000
CS8416
LM75
24C512
Live Power
Dead Power


1080P LVDS Con.
Dual
63LVD1023
120Hz
DDR1 16MB
FRC94xyH
RGB odd
RGB even
Opt.
RGB 30bit
USB (upgrade ready!!)
USB(EMF)
I2C CH1
I2C CH2
I2C CH3
NTP3000
I2S
24C512
DDR2 64MBx2
Flash (NOR 32MB)
LatchX2
Flex Bus
Video Scaler 0
USB 1.1
USB 1.1
I2C Port0
Video Scaler 1 or 2
GPIO
I2S
PCI
TPB
Analog Front End
ATI X260
(# of MPEG decoder)
SPDIF
I2S
I2S
TPA
24C16
MTV415 Micom
TP_IN1
CVBS(NT Main)
AV1, Y/C1
AV2, Y/C2
RGB
HDMI SPDIF
SPDIF
I2S
I2S
SIF
VSB LGDT3303
NT
MST3361 1HDMI + 1ADC
CS8416
MSP4450K
3:1 Demux
3:1 Demux
SPDIF
Cable
Air
AV1
AV2
COMP2
RGB
HDMI1/2/3
SIF
AV1 / L/R
AV2 / L/R
COMP1 L/R
COMP2 L/R
RGB L/R
MNT Out L/R
TP
Video
Audio
Dead IC when Standby
Alive IC when Standby

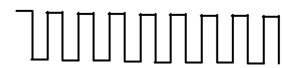




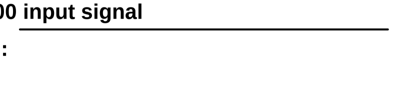
1 : _Check the L729 HIGH.

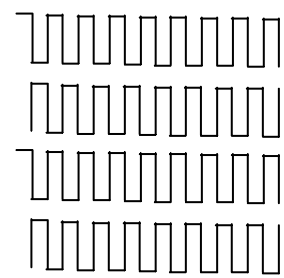
_Check Power connector.

2 : _Check the THC63LVD1023 (IC601) input signal

#(Clk) :  **74.25MHz**

3 : _Check the P600 input signal

#47(DISP_EN) :  **3.3V** **GND**



#33 (TXAC-) : **74.25MHz**

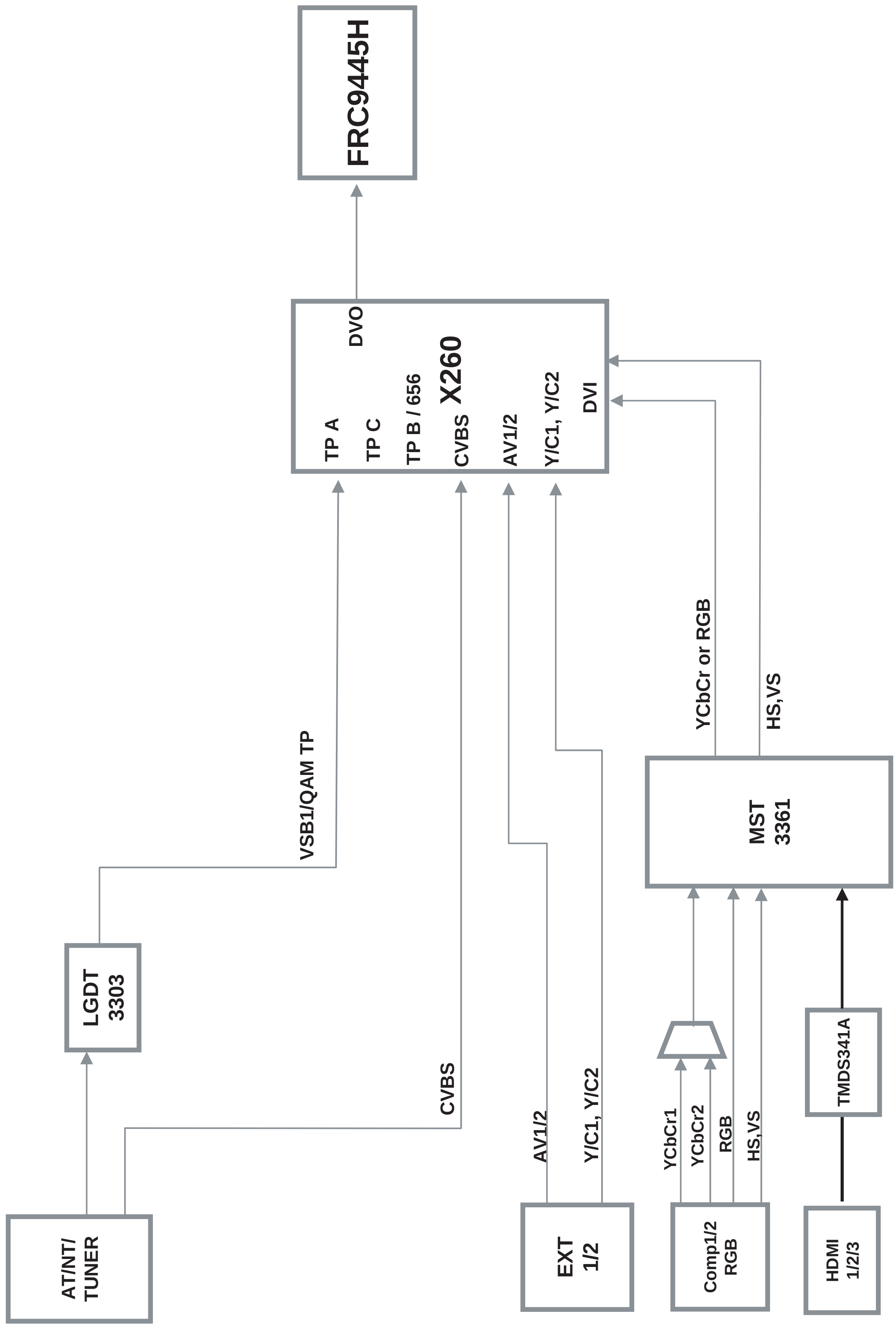
#32 (TXAC+) : **74.25MHz**

#17 (TXBC-) : **74.25MHz**

#16 (TXBC+) : **74.25MHz**

4 : _Check the LVDS Cable

5 : _Check the PDP Module control board


FRC9445H
DVO
TP A
TP C
TP B / 656
X260
CVBS
AV1/2
Y/C1, Y/C2
DVI
YCbCr or RGB
HS,VS
MST
3361
VSB1/QAM TP
LGDT
3303
CVBS
AV1/2
Y/C1, Y/C2
YCbCr1
YCbCr2
RGB
HS,VS
TMDS341A
AT/NT/
TUNER
EXT
1/2
Comp1/2
RGB
HDMI
1/2/3

Check Antenna Cable

↓

Check Tuner
5V, Video out

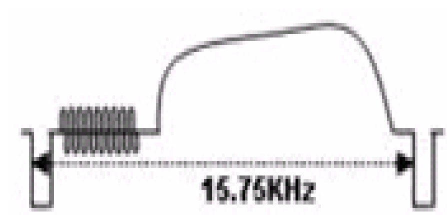
↓

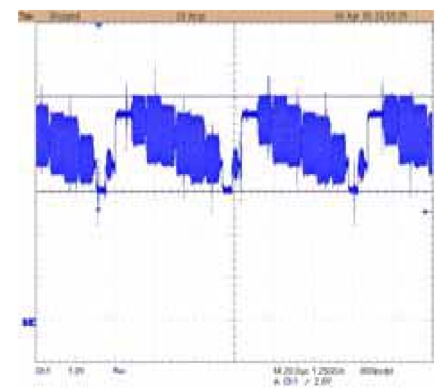
Check CVBS Video Path

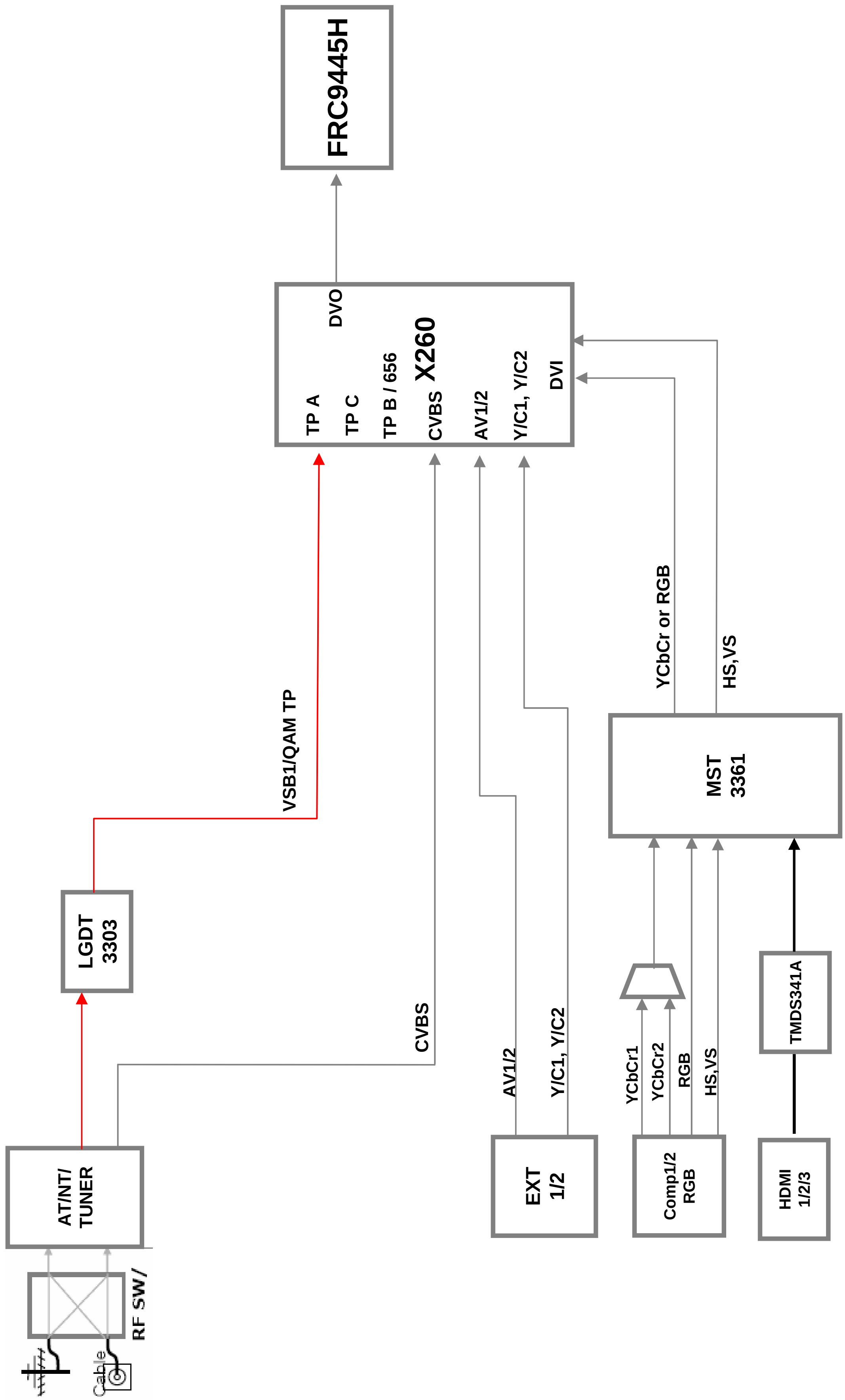
↓

Check X260 inputs
M_TU_CVBS(C2117)

1 : _Check Tuners Vcc and Video out






FRC9445H
DVO
TP A
TP C
TP B / 656
X260
CVBS
AV1/2
Y/C1, Y/C2
DVI
VSB1/QAM TP
YCbCr or RGB
HS,VS
LGDT
3303
MST
3361
CVBS
AV1/2
Y/C1, Y/C2
YCbCr1
YCbCr2
RGB
HS,VS
TMDS341A
AT/NT/
TUNER
EXT
1/2
Comp1/2
RGB
HDMI
1/2/3
RF SW/
Cable

Check Antenna Cable

↓

Check Tuner(TU600), 5V, IF out

↓

Check LGDT3303(IC604) inputs power pins, Osc(25Mhz), IF pin

↓

Check LGDT3303 Outputs

↓

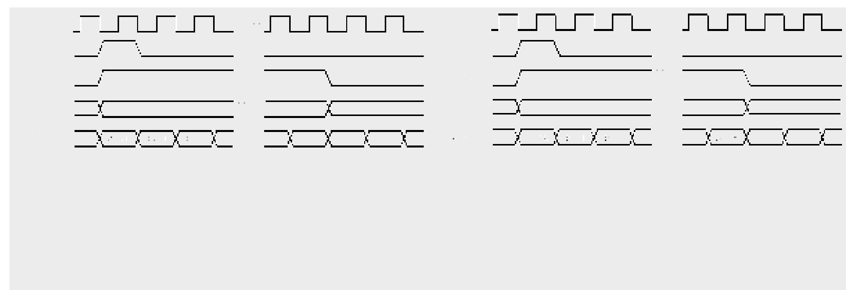
Check X260 INPUT CLK, SOP, Valid, Error, Data

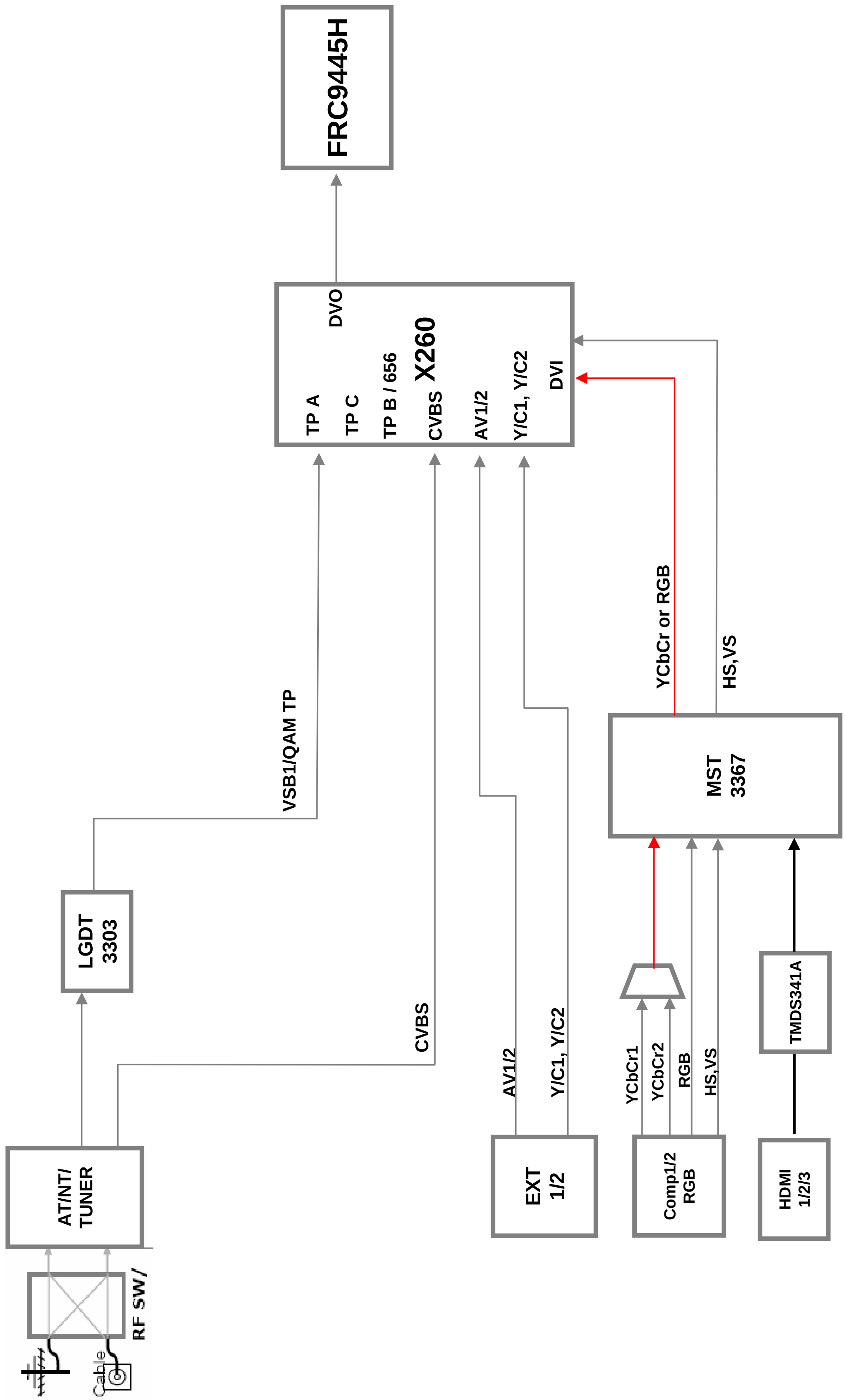
1 : _Check Antenna cable(RF switch, Tuners...)

2 : _Check Tuners Vcc and IF out

Seems to noise

3._ Check X260 Input (CLK, SOP, Valid, Error, Data)




FRC9445H
DVO
TP A
TP C
TP B / 656
X260
CVBS
AV1/2
Y/C1, Y/C2
DVI
VSB1/QAM TP
YCbCr or RGB
HS,VS
MST
3367
LGDT
3303
CVBS
AV1/2
Y/C1, Y/C2
YCbCr1
YCbCr2
RGB
HS,VS
TMDS341A
AT/INT/
TUNER
RF SW/
Cable
EXT
1/2
Comp1/2
RGB
HDMI
1/2/3

1 Check Signal format (supported format?)

↓

2 Check STMAV335(IC403) Power Pins, Comp1(#2,#5,#11), Comp2(#3,#6,#10), RGB(#9,#4,#7) RGB_V,H(R400,R401)

↓

3 Check STMAV335(IC403) outputs #14(MUX_OUT_Y), #13(MUX_OUT_Pb), #8(MUX_OUT_Pr)

↓

4 Check MST3361(IC402) OSC, Power pins,#44(Y_in), #41(Cb_in),#46(Cr_in) #37(H),#38(V)

↓

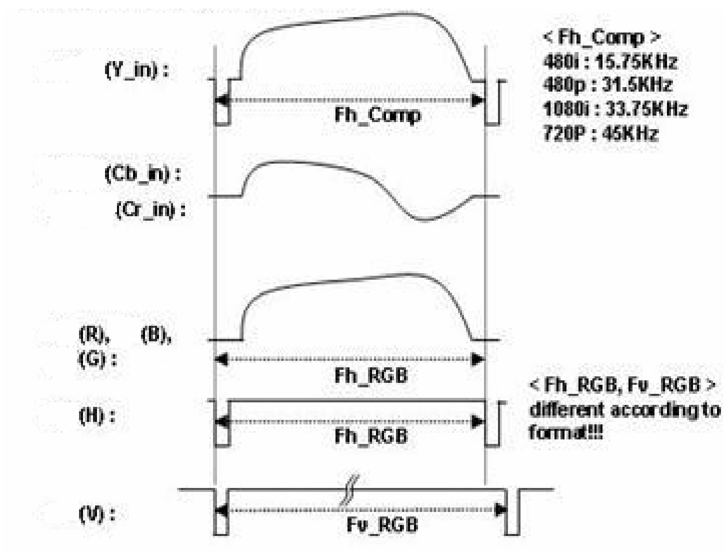
5 Check MST3361(IC402) Outputs V-out (#99) , H-out (#98) , Clock (#96) , Data (30Bit) , DE(#97)

↓

6 Check X260 (IC101) Inputs MST3361_HS(#T6) , MST3361_VS(#T5) , Clock (#P3) , Data (30Bit) , DE(#U6)

1. Check Signal format (ref. owenr smanual)

2. Check STMAV335(IC403) Power Input Signal

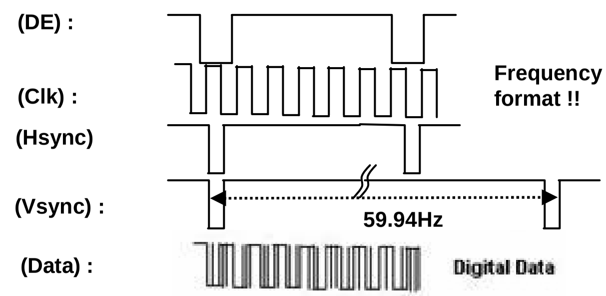


3 : Check STMAV335(IC403) outputs

Signal shape is same (above)

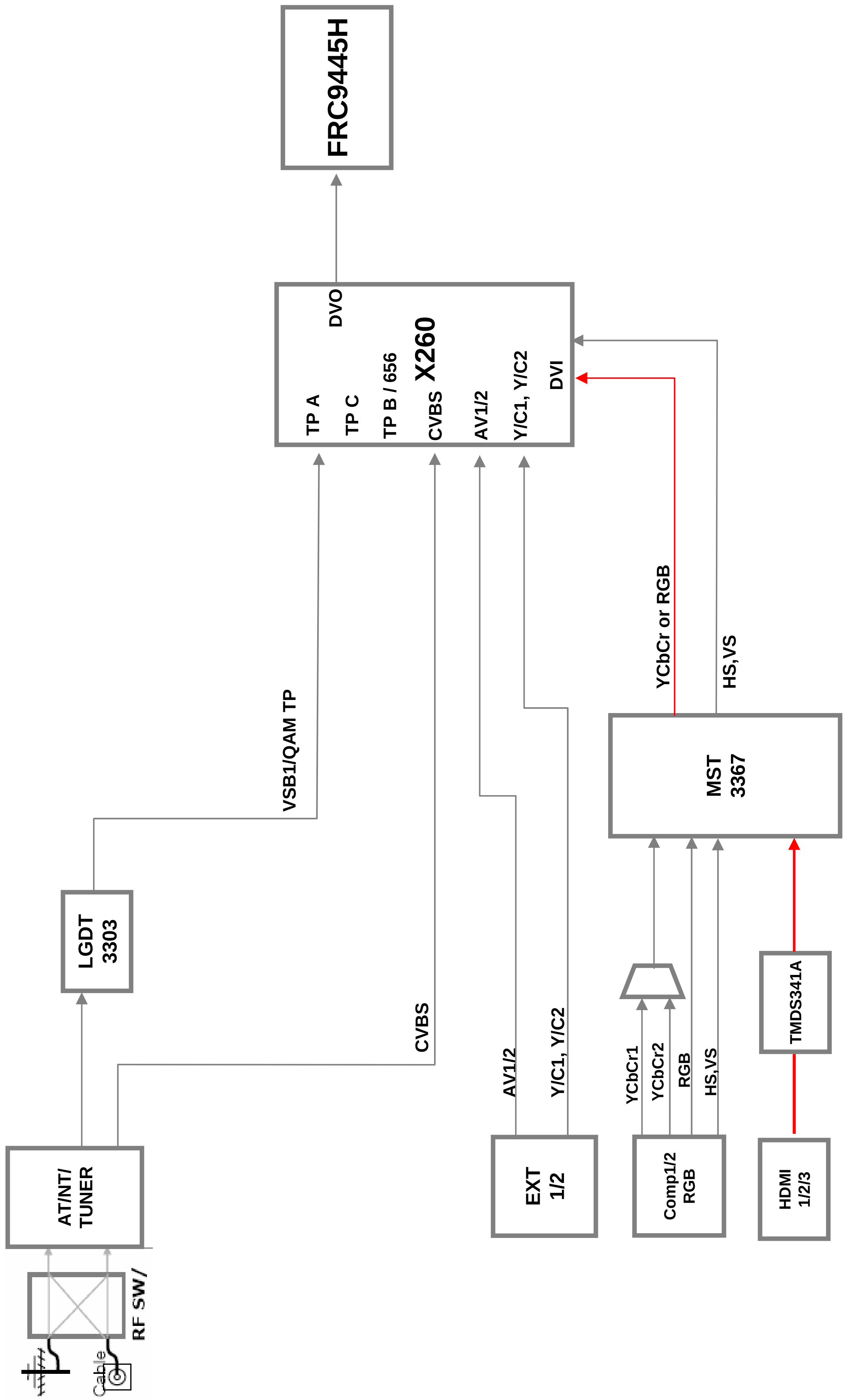
4 : _Check MST3361(IC402) Power pins, Input Signals, Signal Shape is Same (above)

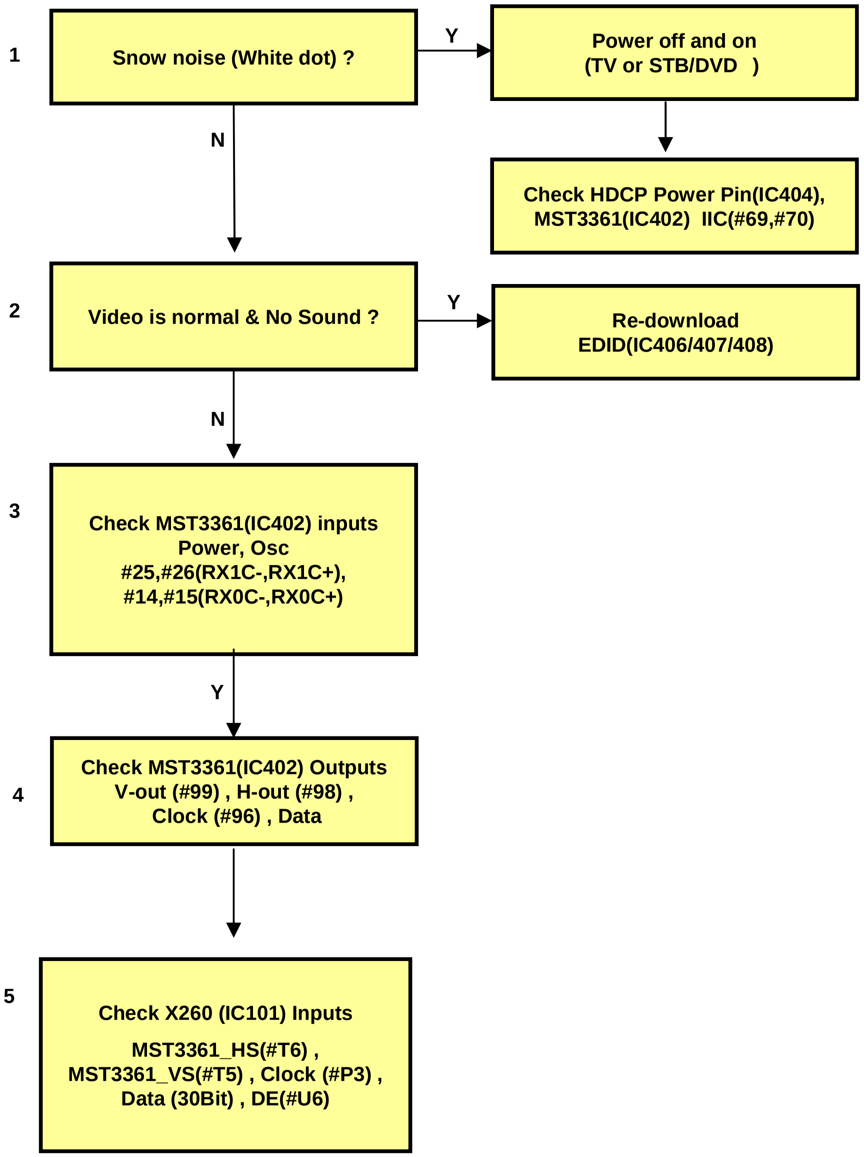
5 : _Check the MST3361(IC402) Output Signals



6 : _Check X260 (IC101) Inputs

_Signal shape is same (above)


FRC9445H
DVO
TP A
TP C
TP B / 656
X260
CVBS
AV1/2
Y/C1, Y/C2
DVI
VSB1/QAM TP
YCbCr or RGB
HS,VS
MST
3367
LGDT
3303
CVBS
AV1/2
Y/C1, Y/C2
YCbCr1
YCbCr2
RGB
HS,VS
TMDS341A
AT/NT/
TUNER
RF SW/
Cable
EXT
1/2
Comp1/2
RGB
HDMI
1/2/3



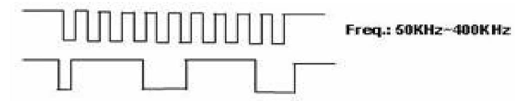
1 : _Check HDCP Error

_Retry power off and on (TV or STB/DVD)

_Check MST3361(IC402) HDCP IIC line (#69,#70)

SCL :

SDA :

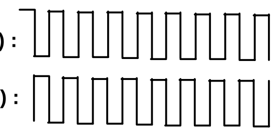


2 : _Check EDID Download

3 : _ MST3361(IC402) inputs

(RX0C-,RX0C+) :

(RX1C-,RX1C+) :



Frequency : Different according to format !!

4 : _Check MST3361(IC402) Outputs

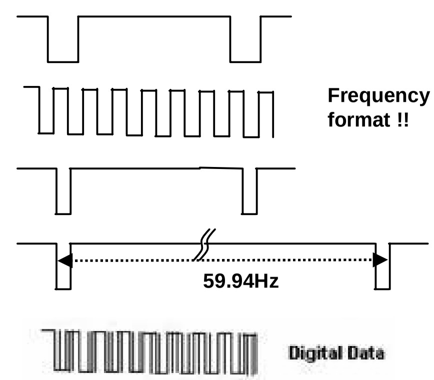
(DE) :

(Clk) :

(Hsync)

(Vsync) :

(Data) :

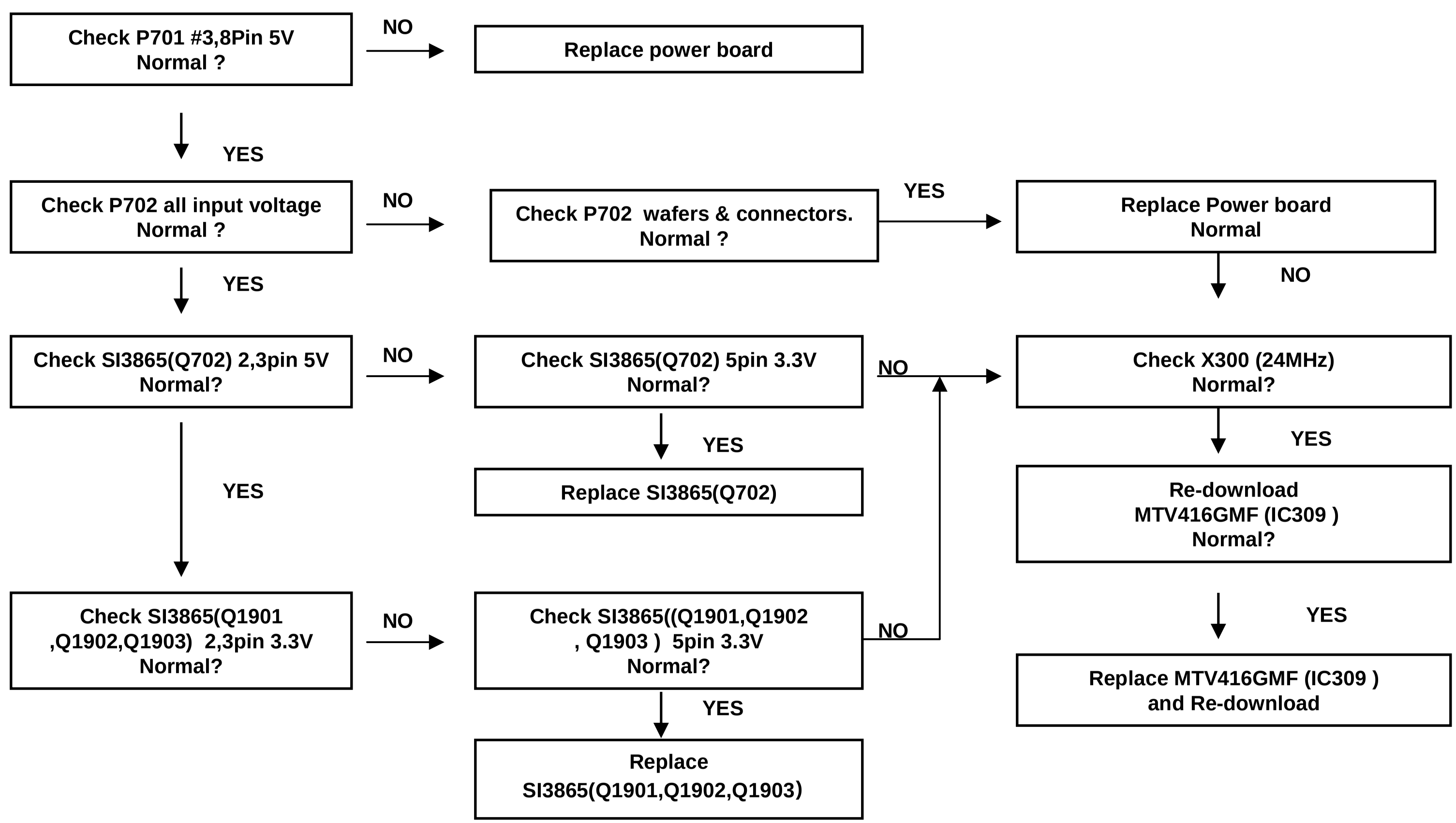


Frequency : Different according to format !!

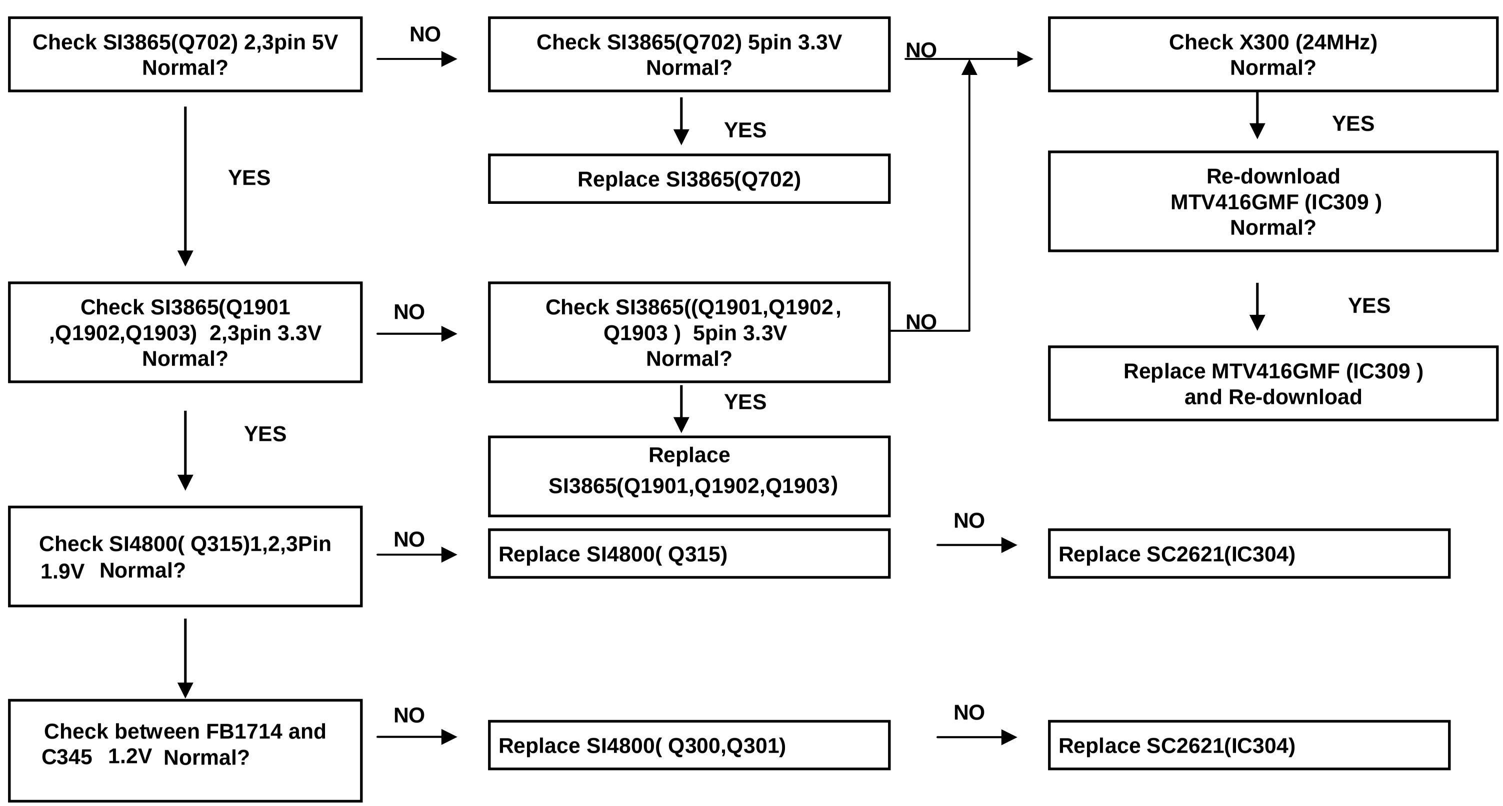
5 : _Check X260 (IC101) Inputs

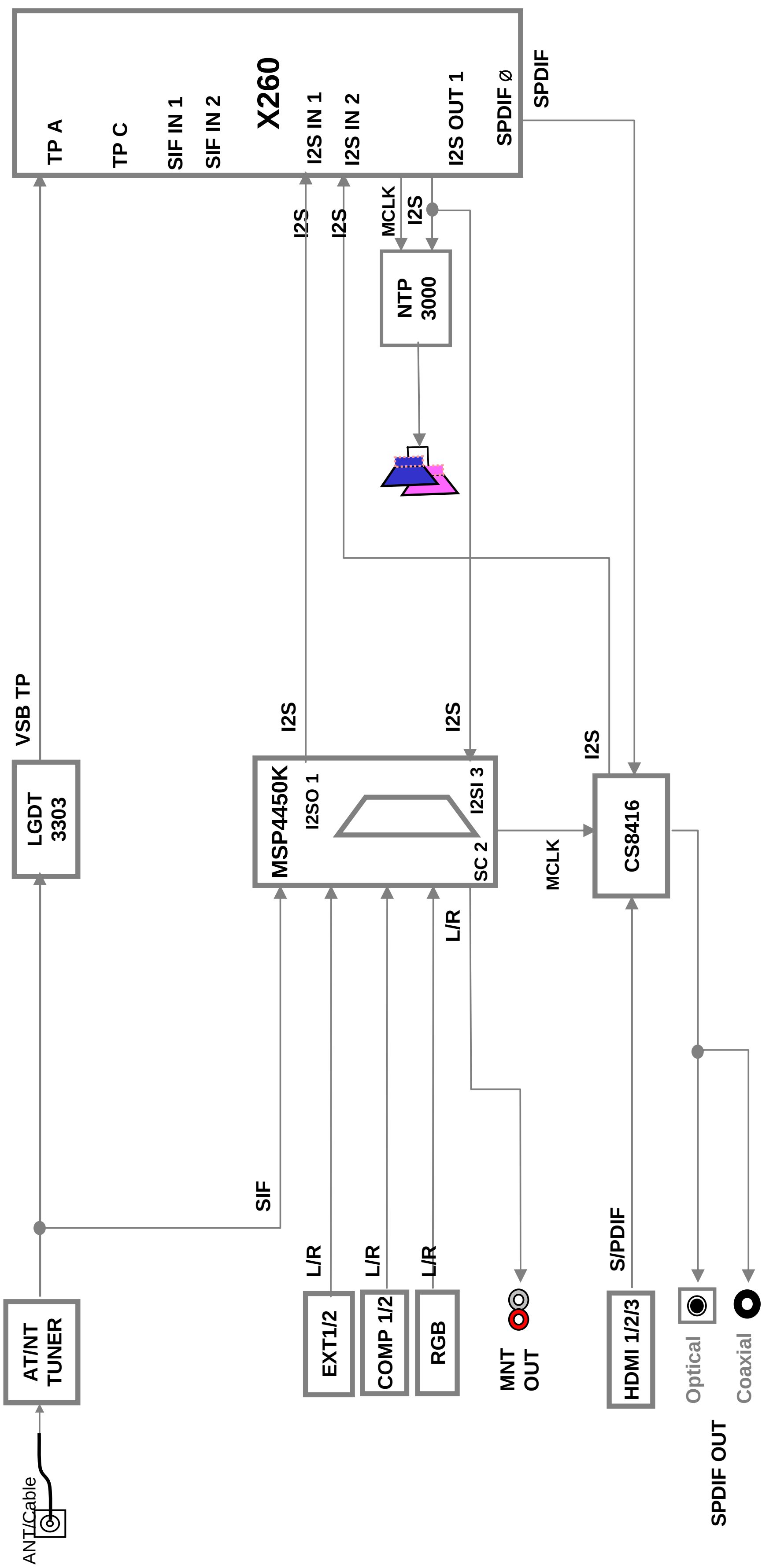
_Signal shape is same (above)

Symptom : TV set out of order on powers



Symptom : No booting




X260
TP A
TP C
SIF IN 1
SIF IN 2
I2S IN 1
I2S IN 2
I2S OUT 1
SPDIF Ø
SPDIF
I2S
I2S
MCLK
I2S
NTP 3000
VSB TP
LGDT 3303
I2S
I2S
MSP4450K
I2SO 1
I2SI 3
SC 2
I2S
MCLK
CS8416
L/R
SIF
L/R
L/R
L/R
S/PDIF
AT/NT TUNER
EXT1/2
COMP 1/2
RGB
MNT OUT
HDMI 1/2/3
Optical
Coaxial
SPDIF OUT
ANT/Cable

All Source Speaker Out

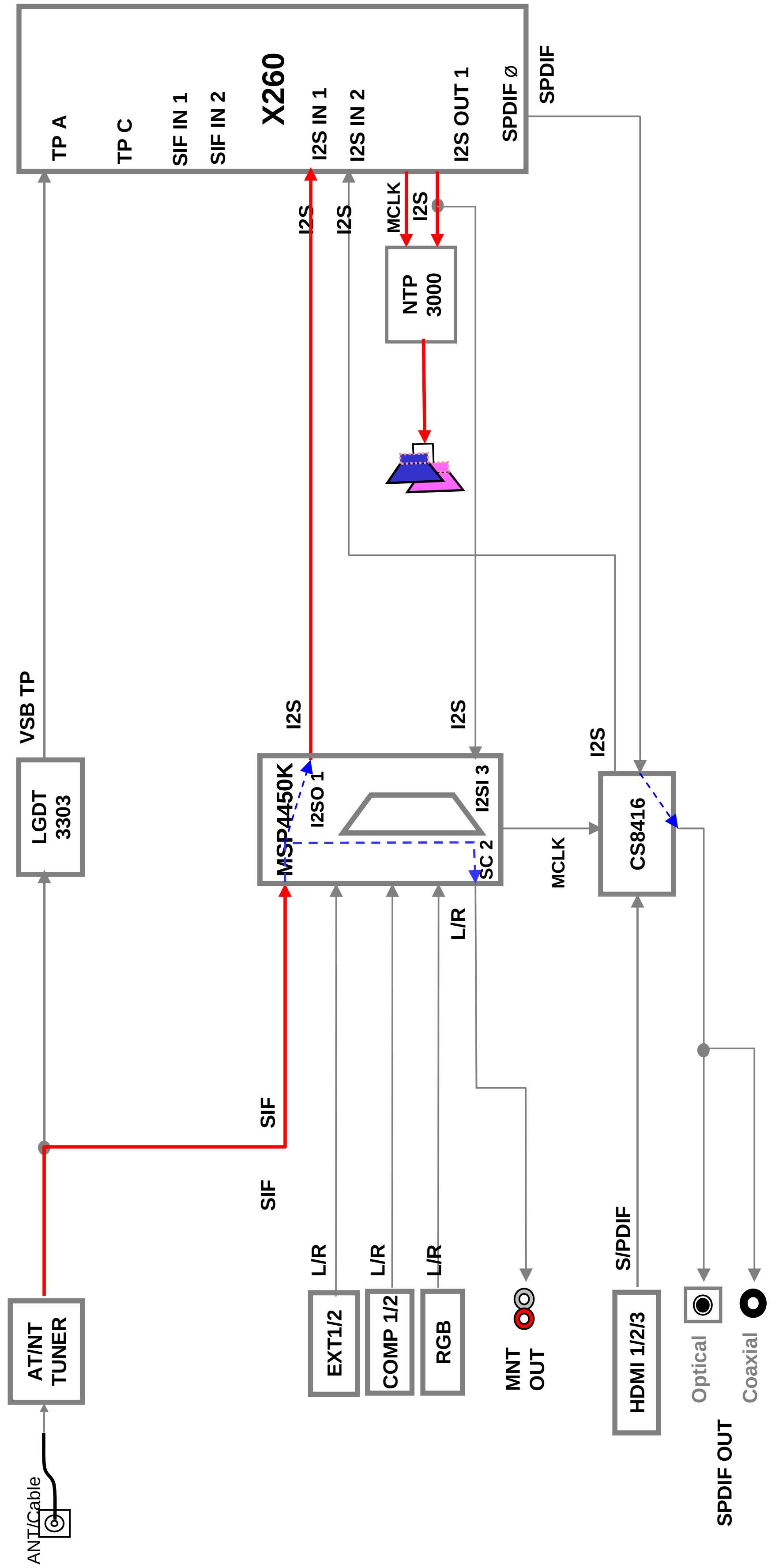
1. Check X260 (IC101) Output
   R153(SCLK), R154(LRCLK), R155(DATA), R156(MCLK)
2. Check NTP3000 (IC505) Power
3. Check NTP3000 (IC505) Inputs pins
   #17(DATA), #18(LRCLK), #19(SCLK), #6(MCLK)
4. Check NTP3000 (IC505) Output
   L510,L511(Left) / L512,L513(Right)
5. Check NTP3000 (IC505) Output
   L515,L516(Left) L517,L518(Right)
6. Check Speaker output wafer
   P502(Left), P501(Right)
7. Check Speaker

Monitor L,R Out

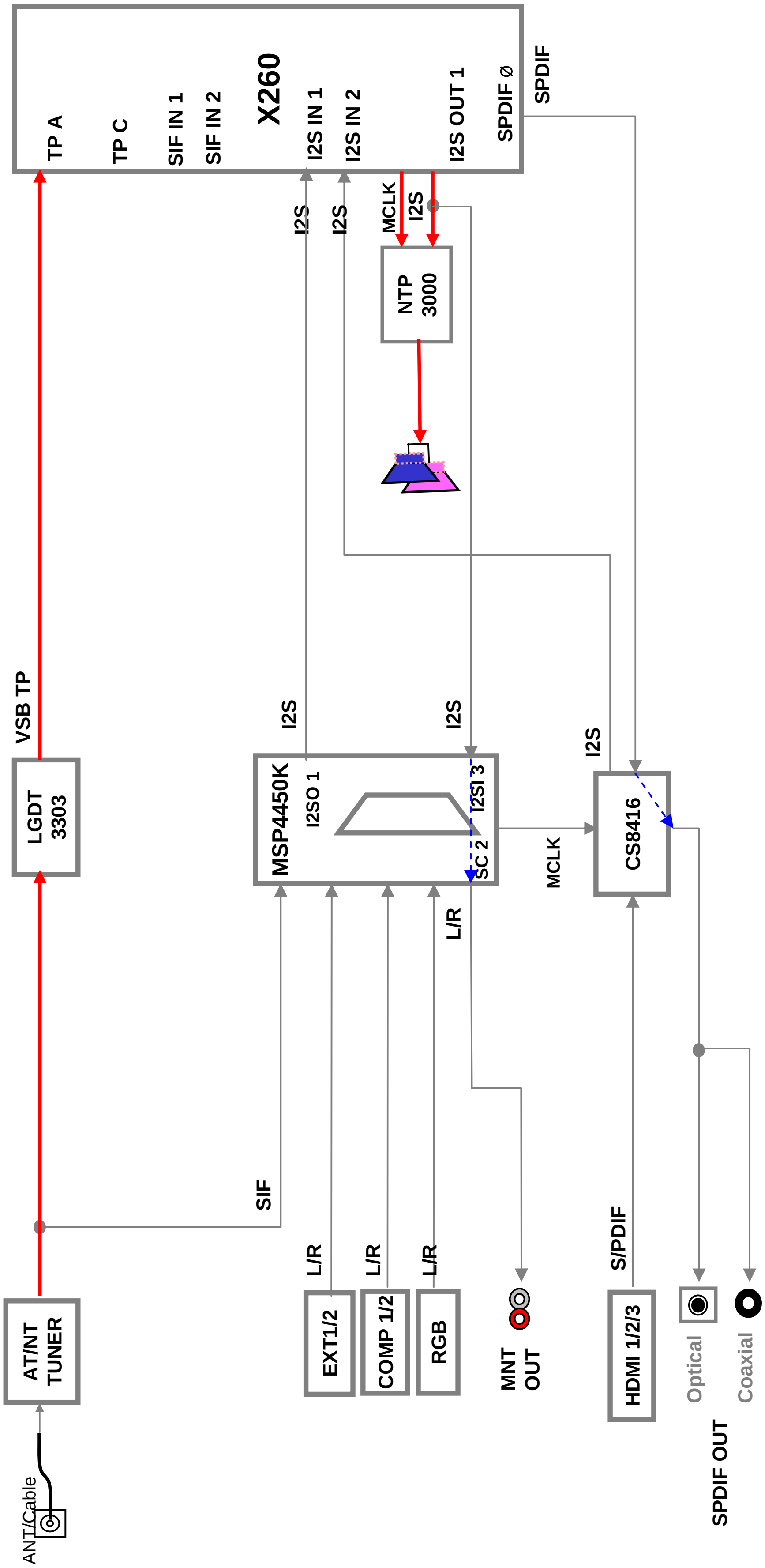
1. If DTV or HDMI input
   Check X260 (IC101) Output
   R153(SCLK), R154(LRCLK), R155(DATA)
   Check MSP4450K (IC508) Input
   R5059(SCLK) R5060(LRCLK), R5061(DATA)
2. If ATV, AV, Component, RGB input
   Check MSP4450K (IC508) Input
   C5016(ATV_SIF), R5041(AV1_R), R5042(AV1_L),
   R5045(AV2_R), R5046(AV2_L), R5048(CMP1_R),
   R5049(CMP1_L), R5051(CMP2_R), R5052(CMP2_L),
   R5055(RGB_R), R5058(RGB_L)
3. Check MSP4450K (IC508) Power
4. Check MSP4450K (IC508) X-tal Input
   X-tal Input (71,72pin) : 18.432MHz
5. Check MSP4450K (IC508) Output
   R5062 (Left), R5063 (Right)
6. Check MNT Output Jack (J704)

Digital Audio Out

1. Check CS8416 (IC501) Power
2. Check CS8416(IC501) Input
   C5006 (X260_SPDIF) or
   C5005 (HDMI_SPDIF)
3. Check CS8416(IC501) Output
   R590 (8416_SPDIF_out)
4. Check SPDIF Jack
   P500 (Optical SPDIF Jack) and
   P501 (Coaxial SPDIF Jack)


X260
TP A
TP C
SIF IN 1
SIF IN 2
I2S IN 1
I2S IN 2
I2S OUT 1
SPDIF Ø
SPDIF
I2S
I2S
MCLK
I2S
NTP 3000
VSB TP
LGDT 3303
I2S
I2S
MSP4450K
I2SO 1
I2SI 3
SC 2
MCLK
I2S
CS8416
L/R
SIF
SIF
L/R
L/R
L/R
S/PDIF
AT/NT TUNER
EXT1/2
COMP 1/2
RGB
MNT OUT
HDMI 1/2/3
Optical
Coaxial
SPDIF OUT
ANT/Cable

1. Check Antenna Cable
2. Check Tuner (TU600)
   5V (3,5,9,17 pin), SIF(18 pin)
3. Check SIF lines
   C6025, C6026
4. Check MSP4450K (IC508) inputs
   C5016, #67pin
5. Check MSP4450K (IC508) outputs
   R5039(SCLK), R5040(LRCLK), R5043(DATA)
6. Check MSP4450K (IC508) Power
7. Check X260 (IC101) Intputs
   R175(SCLK), R176(LRCLK), R177(DATA)
8. Follow the procedure of
   COMMON SOUND OUT


X260
TP A
TP C
SIF IN 1
SIF IN 2
I2S IN 1
I2S IN 2
I2S OUT 1
SPDIF Ø
SPDIF
I2S
I2S
MCLK
I2S
NTP 3000
VSB TP
LGDT 3303
MSP4450K
I2SO 1
I2SI 3
SC 2
I2S
I2S
I2S
CS8416
MCLK
L/R
SIF
AT/NT TUNER
ANT/Cable
L/R
EXT1/2
L/R
COMP 1/2
L/R
RGB
MNT OUT
S/PDIF
HDMI 1/2/3
Optical
Coaxial
SPDIF OUT

1. **Check Antenna Cable**

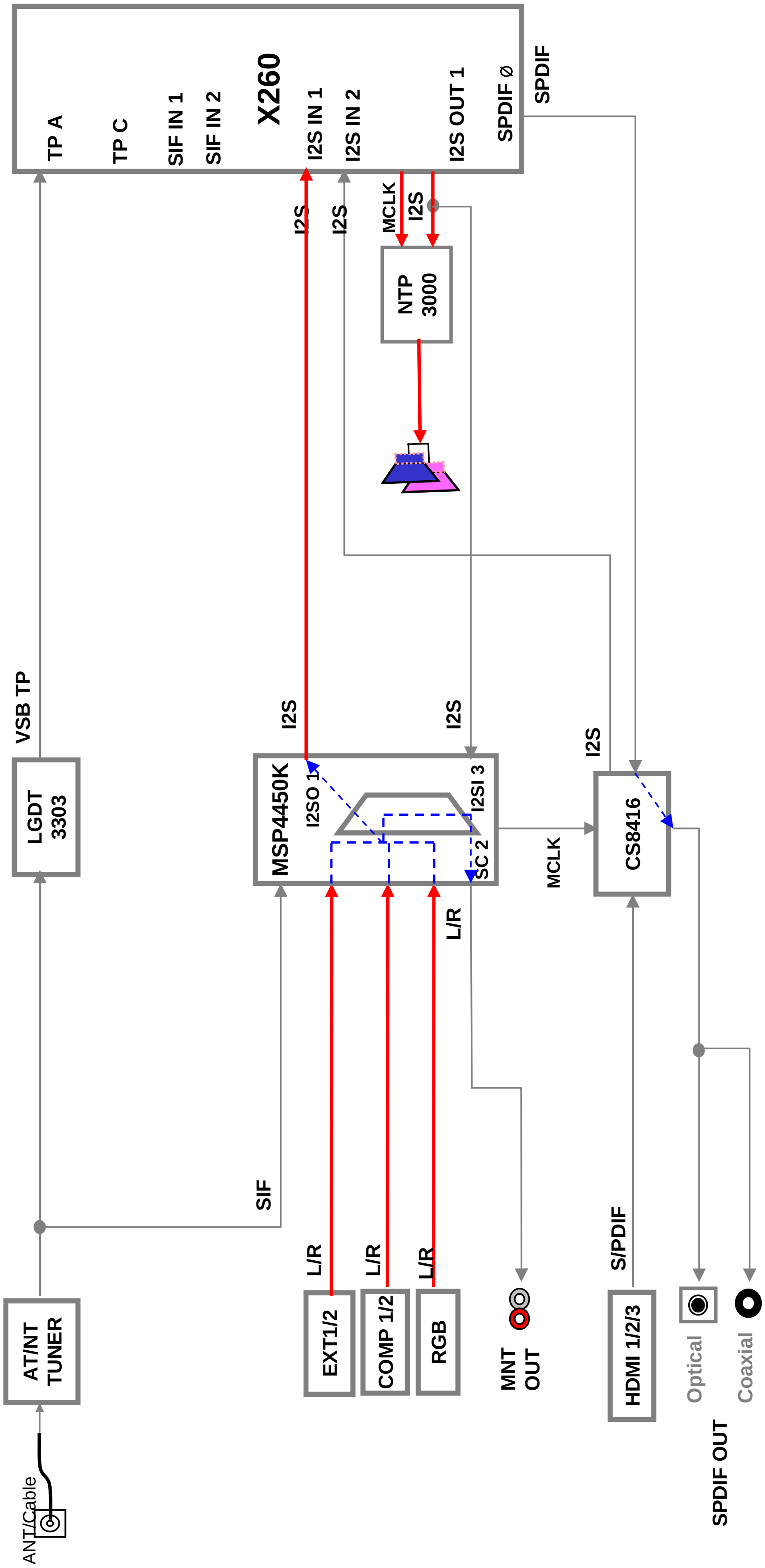
2. **Check Tuner (TU600)**
5V (3,5,9,17 pin), IF_N(15 pin), IF_P(14pin)

3. **Check LGDT3303 (IC604) inputs**
IF_N(#8 pin, C645), IF_P(#7 pin, C644)

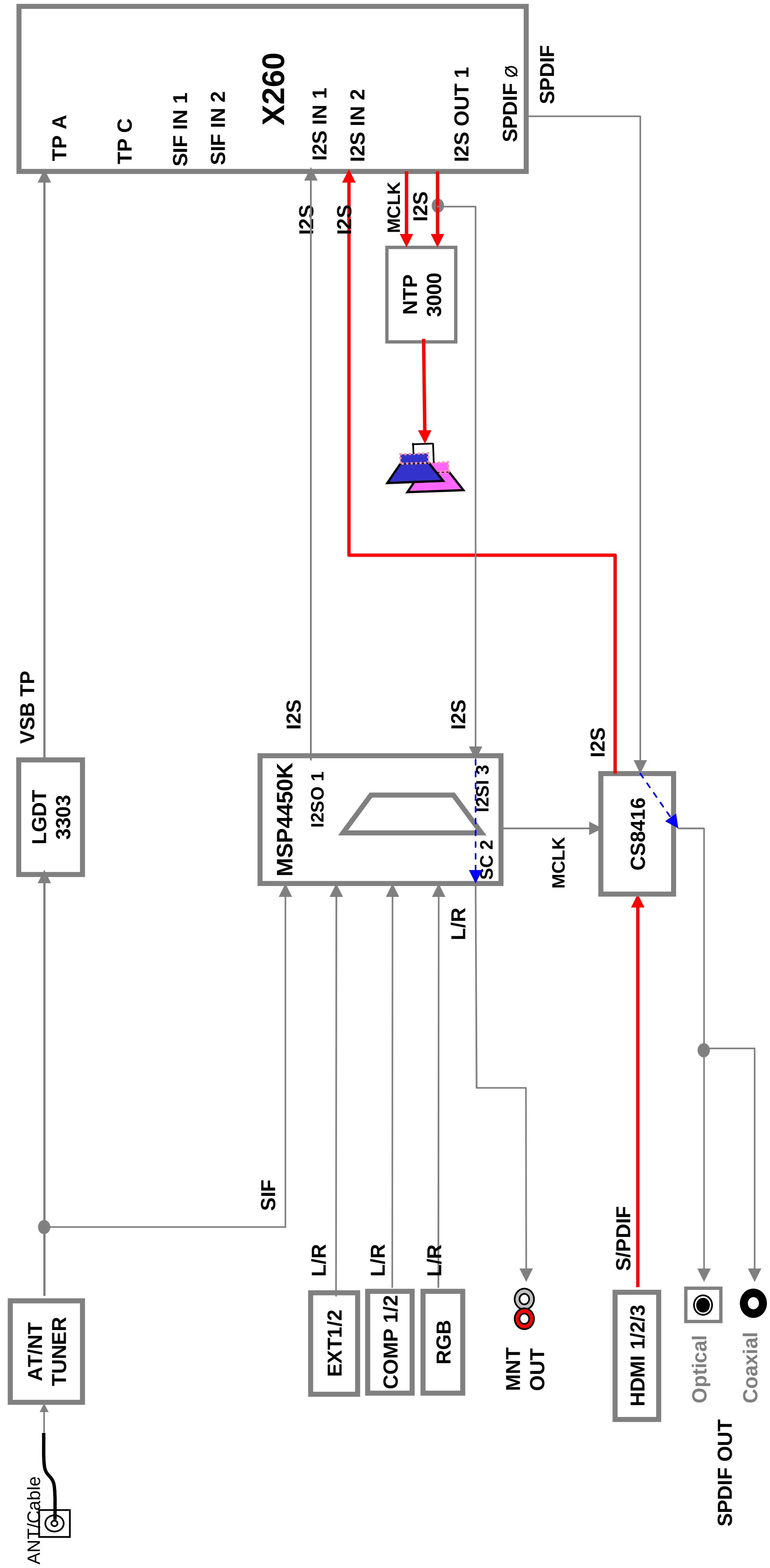
4. **Check LGDT3303 (IC604) outputs**
VSB DATA(AR651, AR656), VSB_CLK(R658)
VSB ERROR, VALID, SOP (AR657)

5. **Check X260 (IC101)**

6. **Follow the procedure of**
COMMON SOUND OUT


X260
TP A
TP C
SIF IN 1
SIF IN 2
I2S IN 1
I2S IN 2
I2S OUT 1
SPDIF Ø
SPDIF
I2S
I2S
MCLK
I2S
NTP 3000
VSB TP
LGDT 3303
I2S
I2S
MSP4450K
I2SO 1
I2SI 3
SC 2
I2S
CS8416
MCLK
L/R
SIF
L/R
L/R
L/R
S/PDIF
AT/NT TUNER
EXT1/2
COMP 1/2
RGB
MNT OUT
HDMI 1/2/3
Optical
Coaxial
SPDIF OUT
ANT/Cable

1. Check AV/COMPONENT/RGB Cable
2. Check MSP4450K (IC508) Inputs
   R5041(AV1_R), 5042(AV1_L),
   R5045(AV2_R), R5046(AV2_L),
   R5048(CMP1_R),R5049(CMP1_L),
   R5051(CMP2_R),5052(CMP2_L),
   R5055(RGB_R), R5058(RGB_L)
3. Check MSP4450K (IC508) outputs
   R5039(SCLK), R5040(LRCLK), R5043(DATA)
4. Check MSP4450K (IC508) Power
5. Check MSP4450K (IC508) X-tal Input
   X-tal Input (71,72pin)
6. Check X260 (IC101) Inputs
   R175(SCLK), R176(LRCLK), R177(DATA)
7. Follow the procedure of
   COMMON SOUND OUT


X260
TP A
TP C
SIF IN 1
SIF IN 2
I2S IN 1
I2S IN 2
I2S OUT 1
SPDIF Ø
SPDIF
I2S
I2S
MCLK
I2S
NTP 3000
VSB TP
LGDT 3303
I2S
I2S
MSP4450K
I2SO 1
I2SI 3
SC 2
I2S
CS8416
MCLK
L/R
SIF
AT/NT TUNER
ANT/Cable
L/R
L/R
L/R
EXT1/2
COMP 1/2
RGB
MNT OUT
S/PDIF
HDMI 1/2/3
Optical
Coaxial
SPDIF OUT

1 **Check HDMI Cable**

2 **Check MST3361 (IC402) output HDMI_SPDIF (R409)**

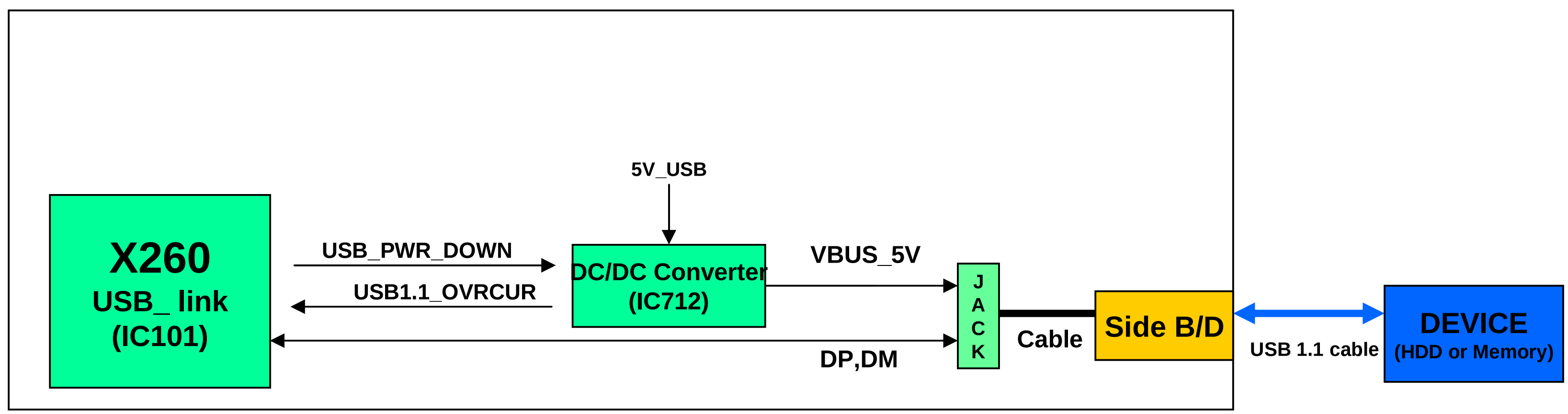
3 **Check CS8416 (IC501) inputs HDMI_SPDIF (C5005)**

4 **Check CS8416 (IC501) outputs DATA(#26), SCLK(#27), LRCLK(#28)**

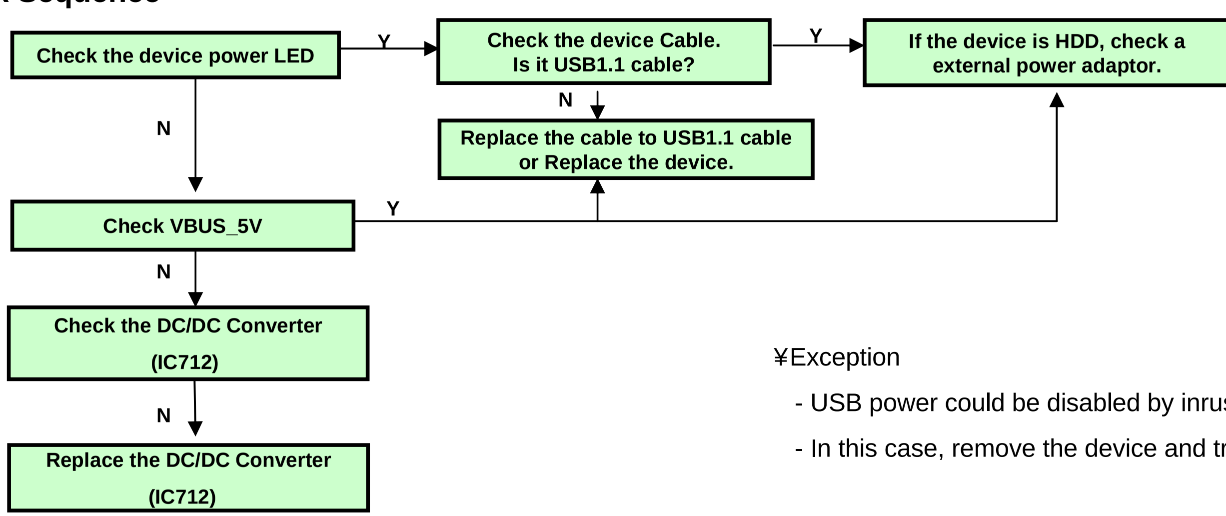
5 **Check X260 (IC101) Inputs SCLK(R175), LRCLK(R176), DATA(R177)**

6 **Follow the procedure of COMMON SOUND OUT**

1. USB 1.1 Block Diagram For EMF



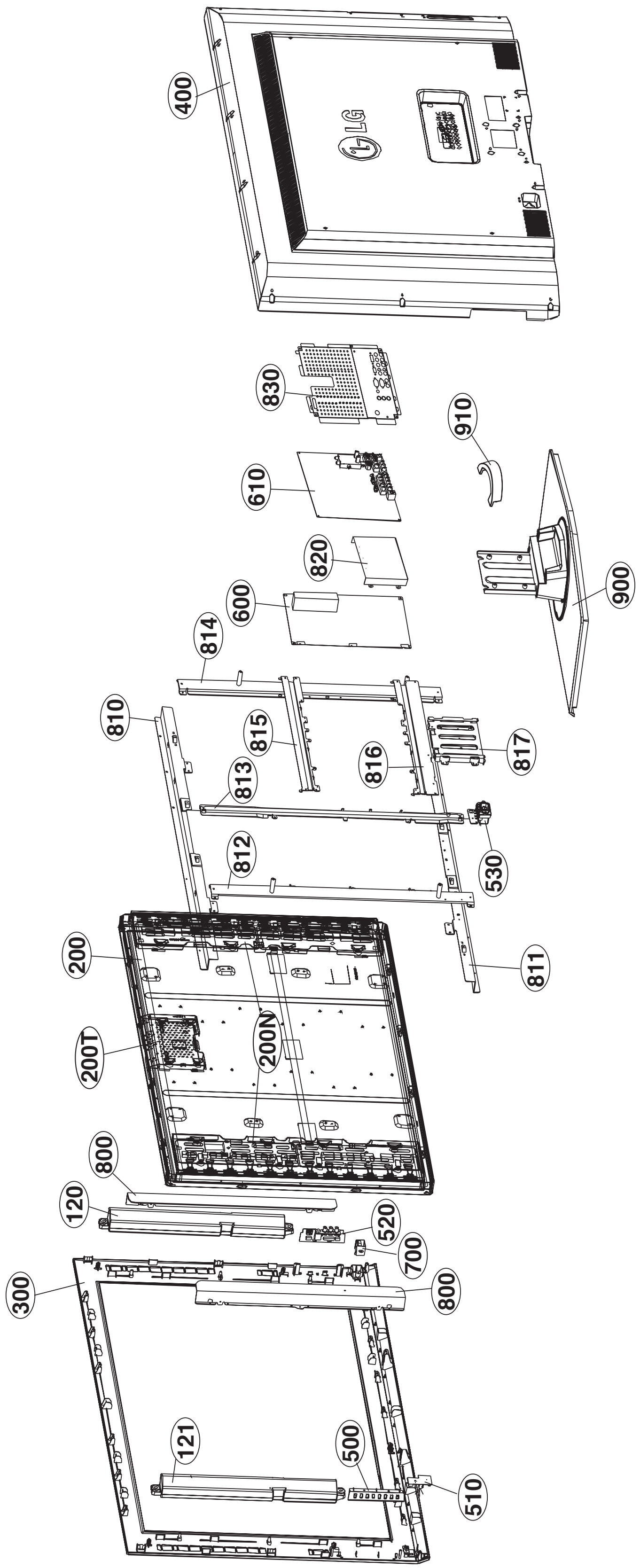
2. Check Sequence

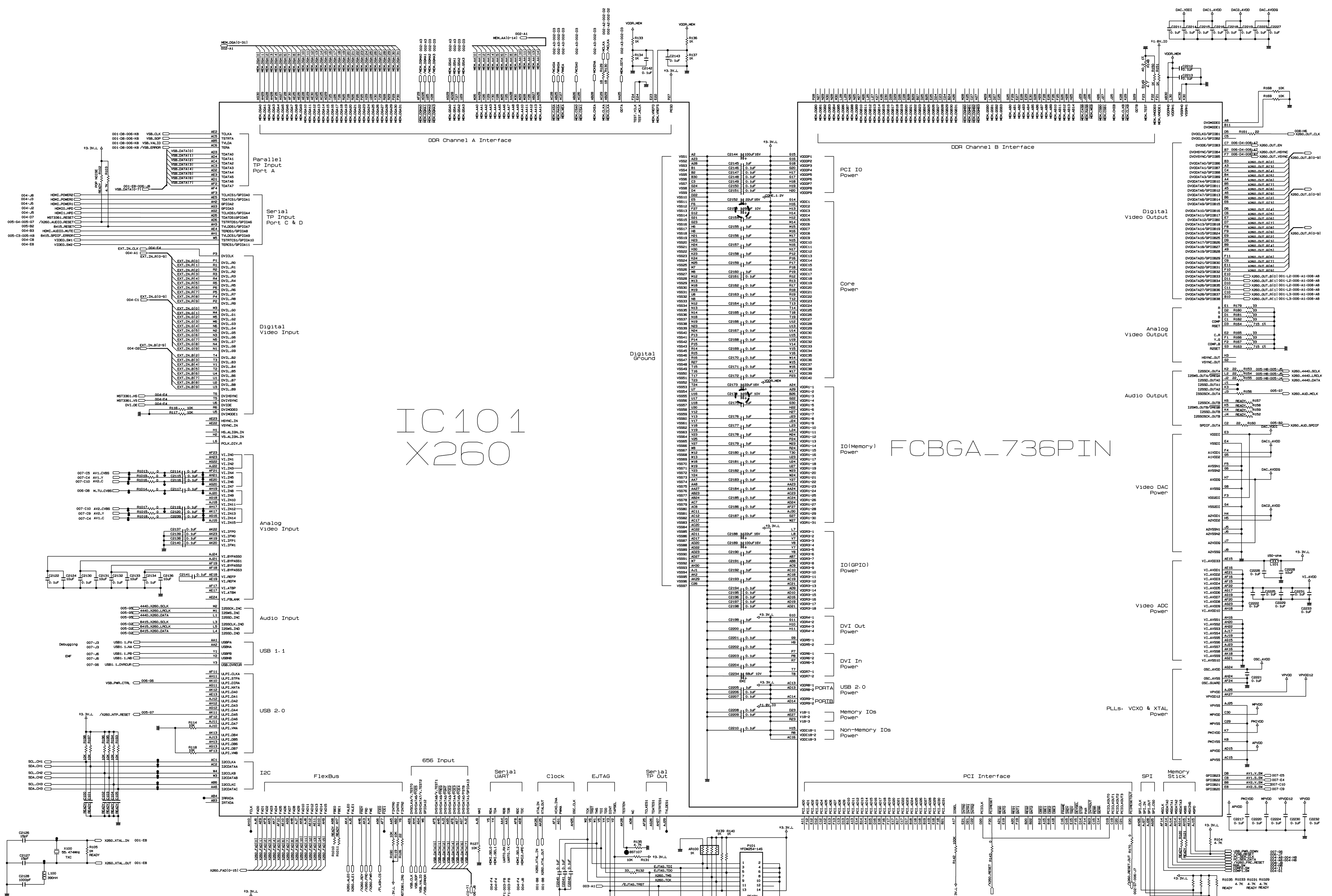


¥Exception

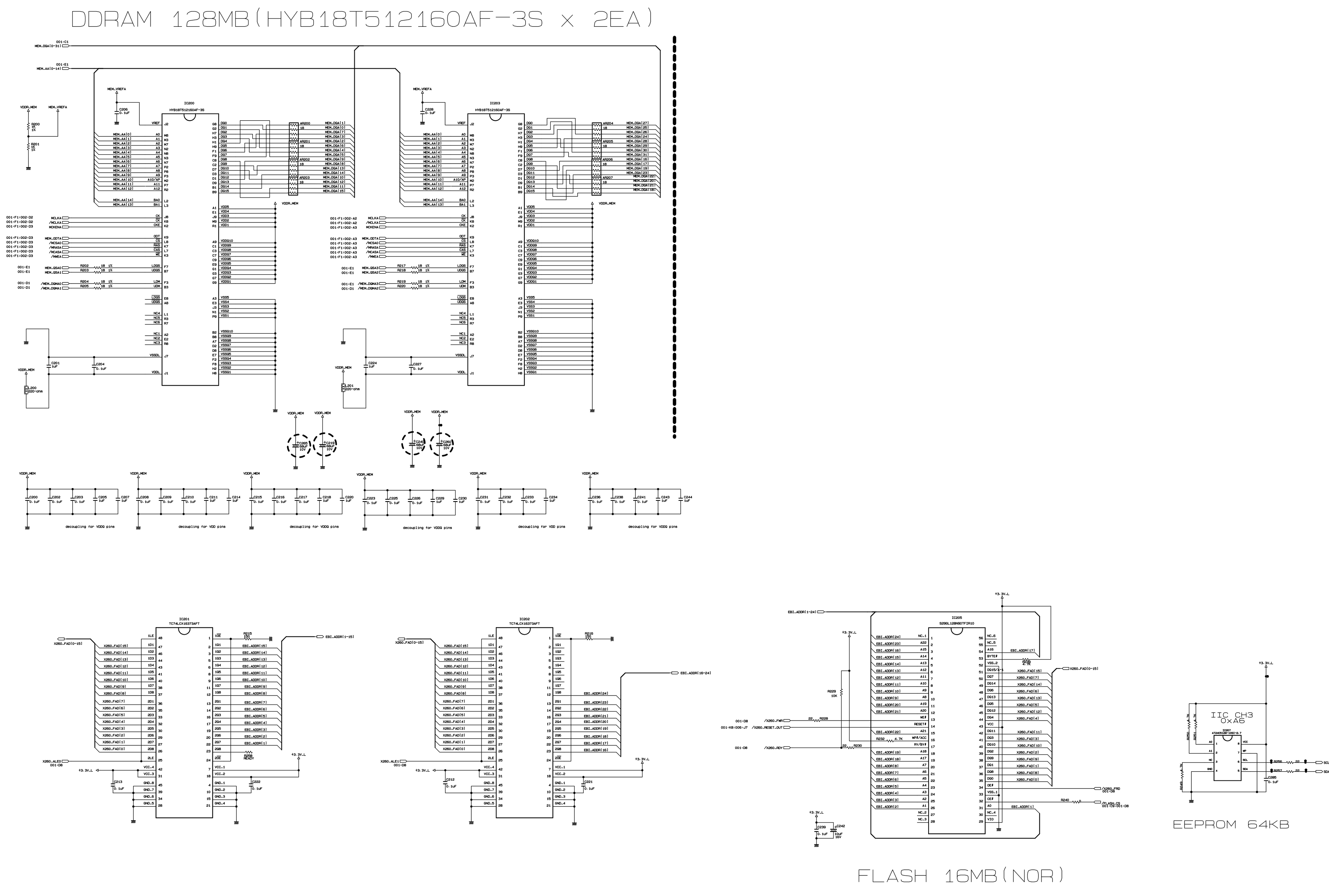
- USB power could be disabled by inrushing current
- In this case, remove the device and try to reboot the TV (AC power off/on)

EXPLODED VIEW

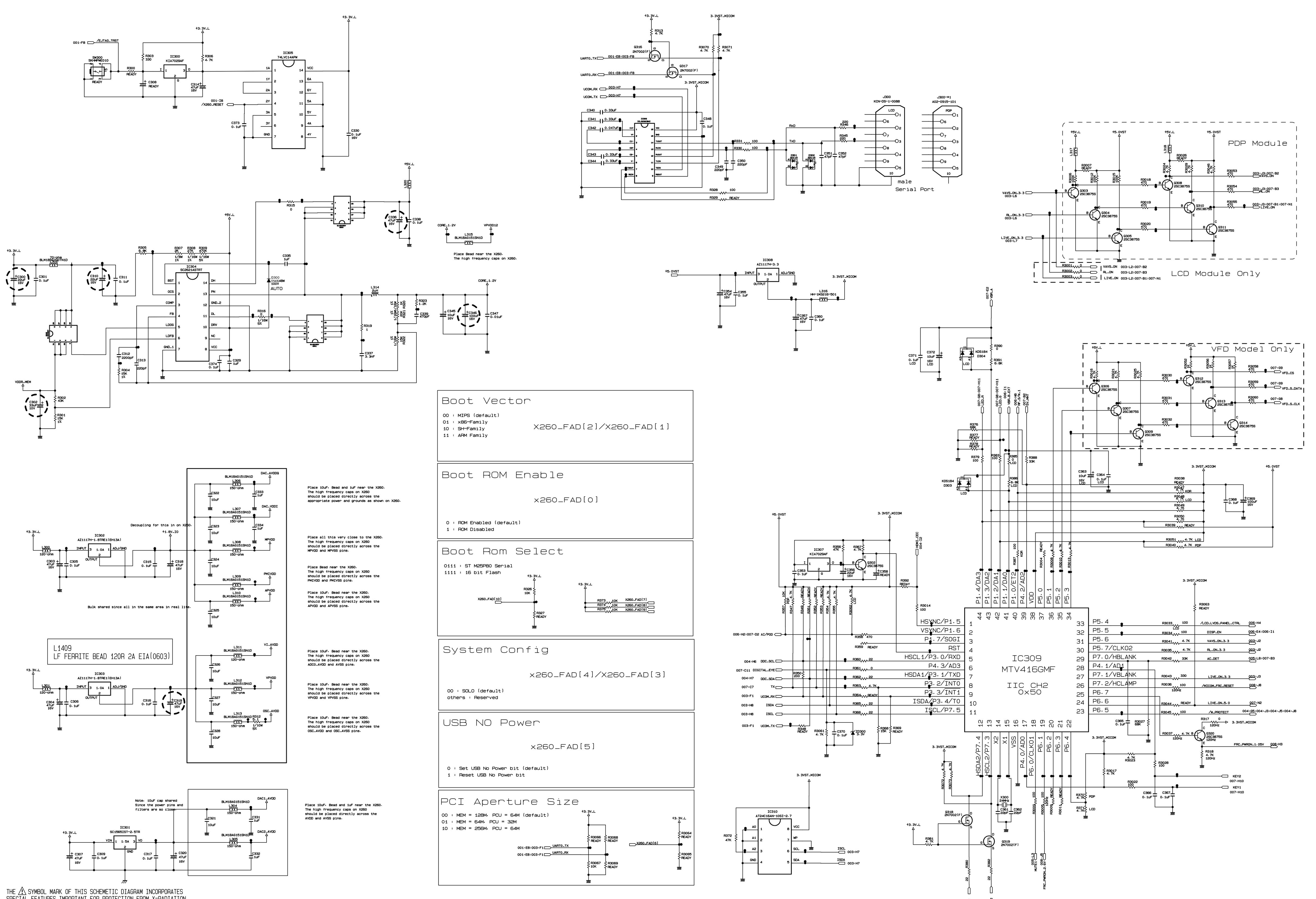




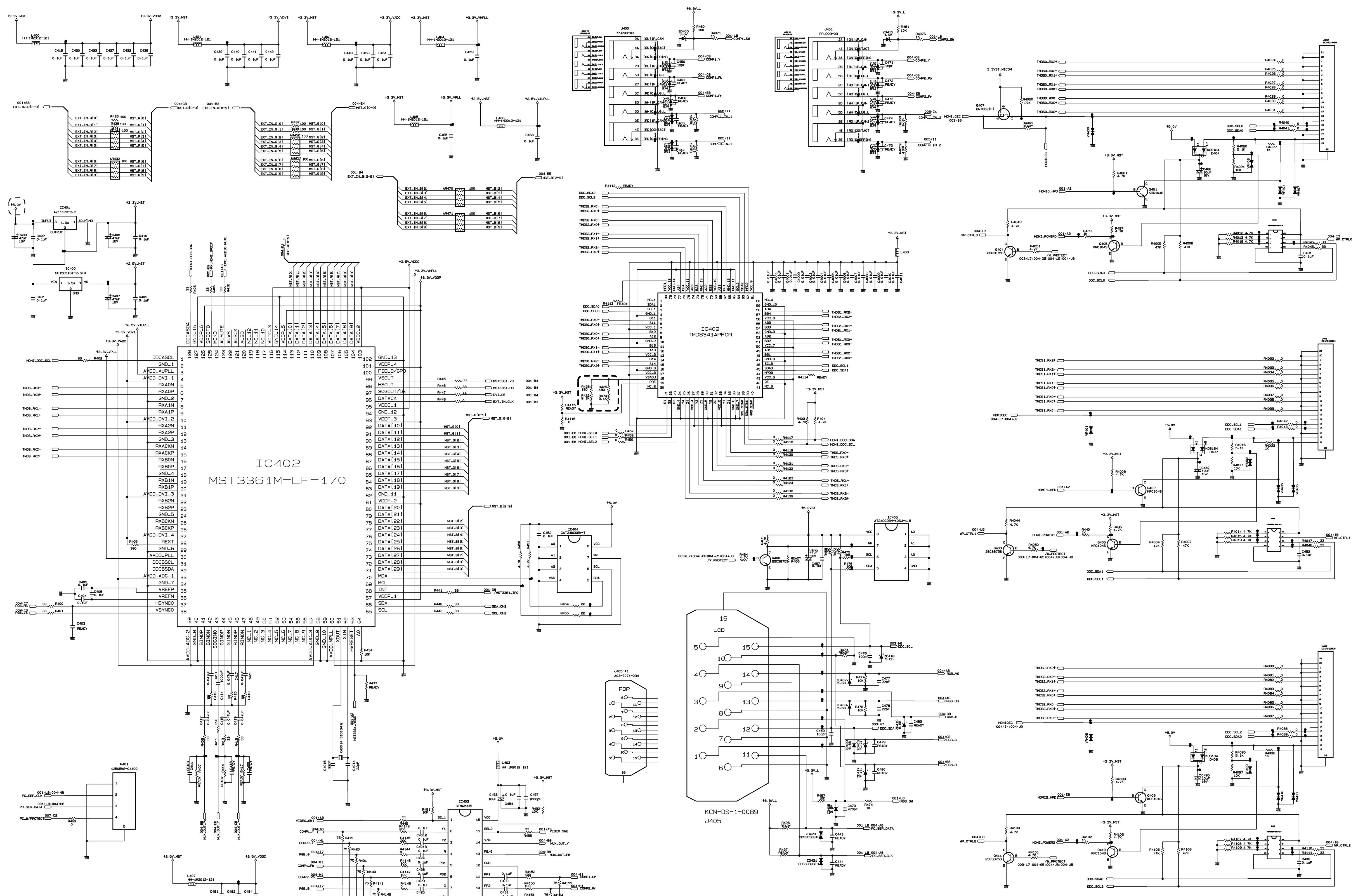
THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.



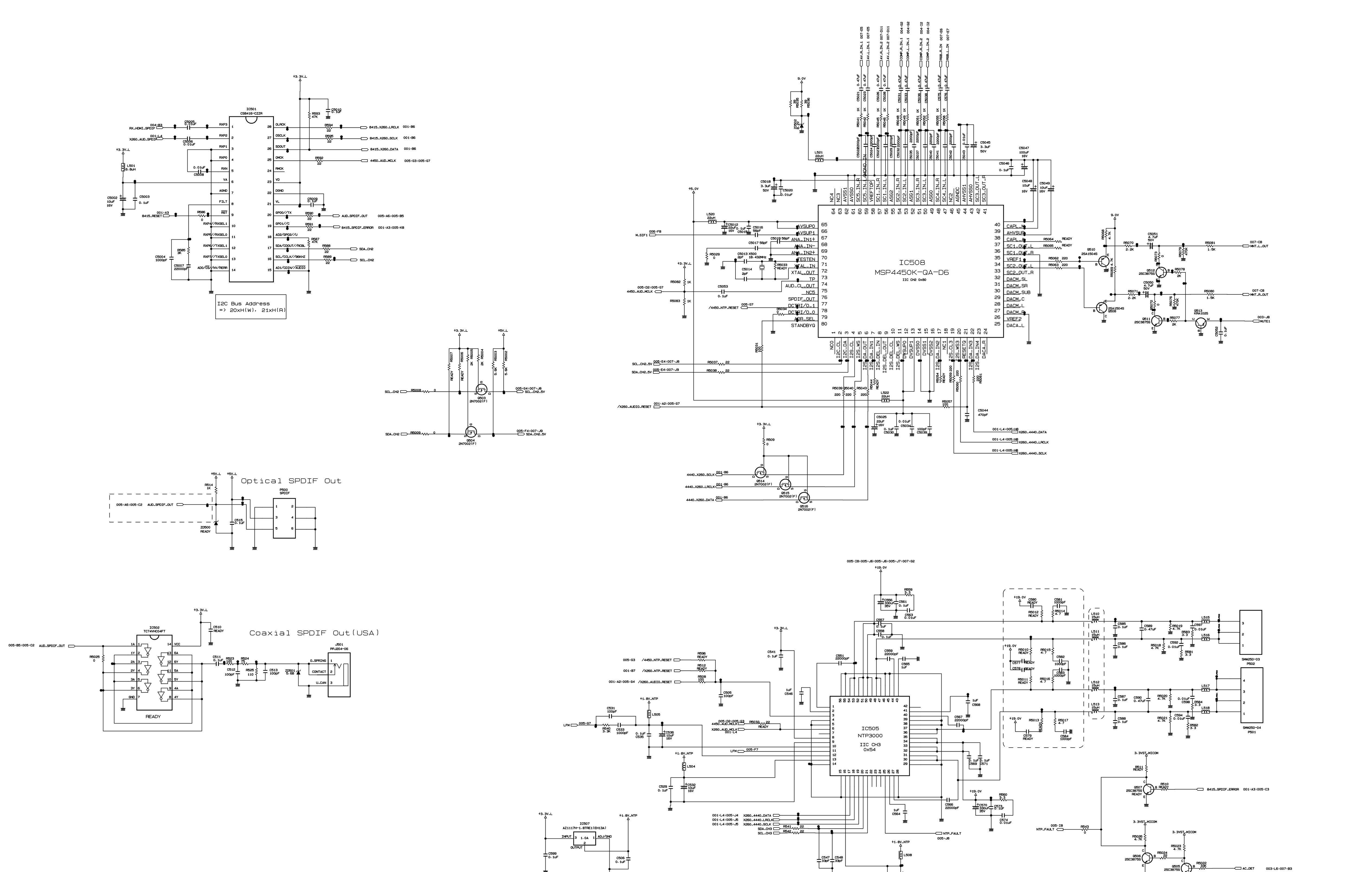
THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.



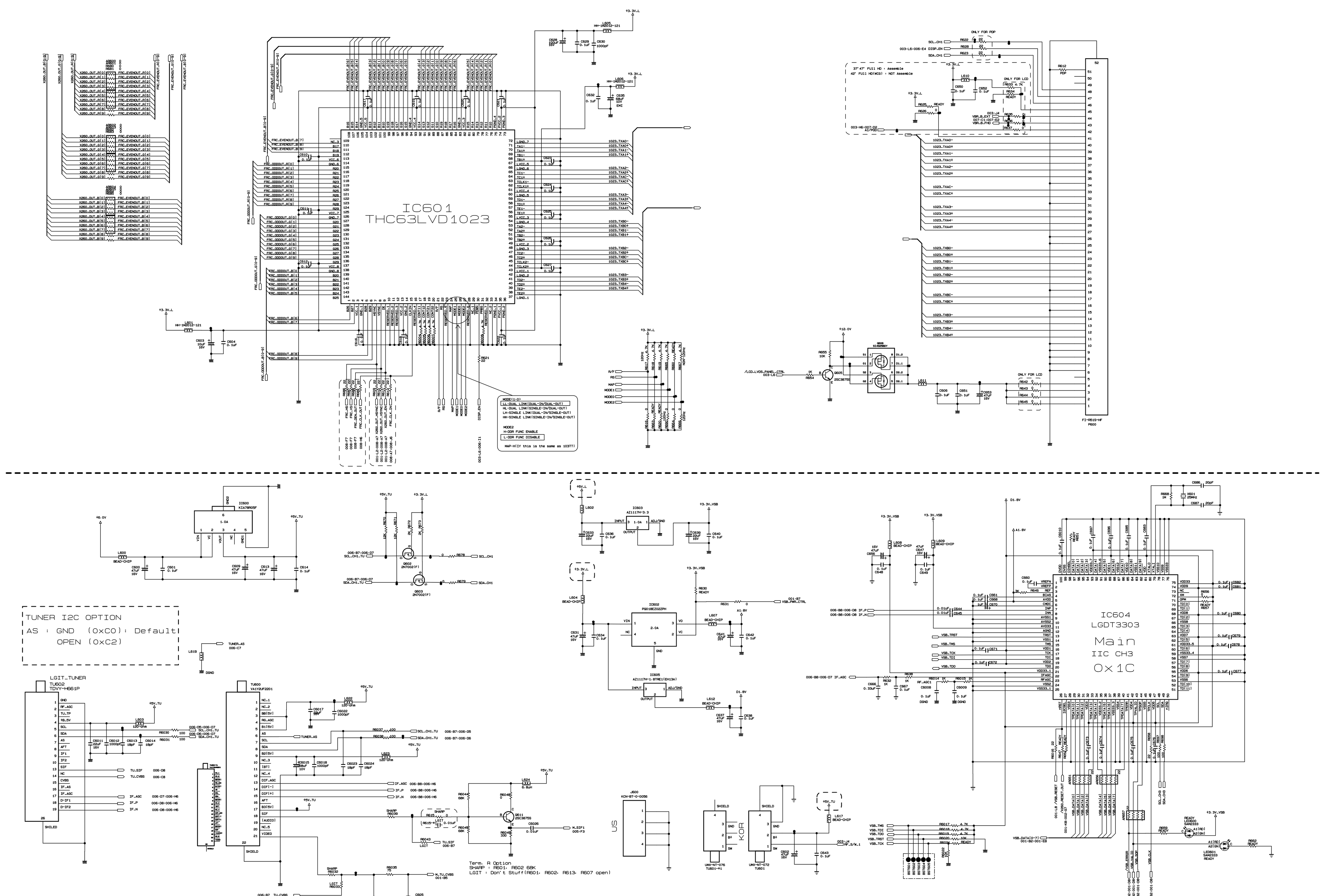
THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.



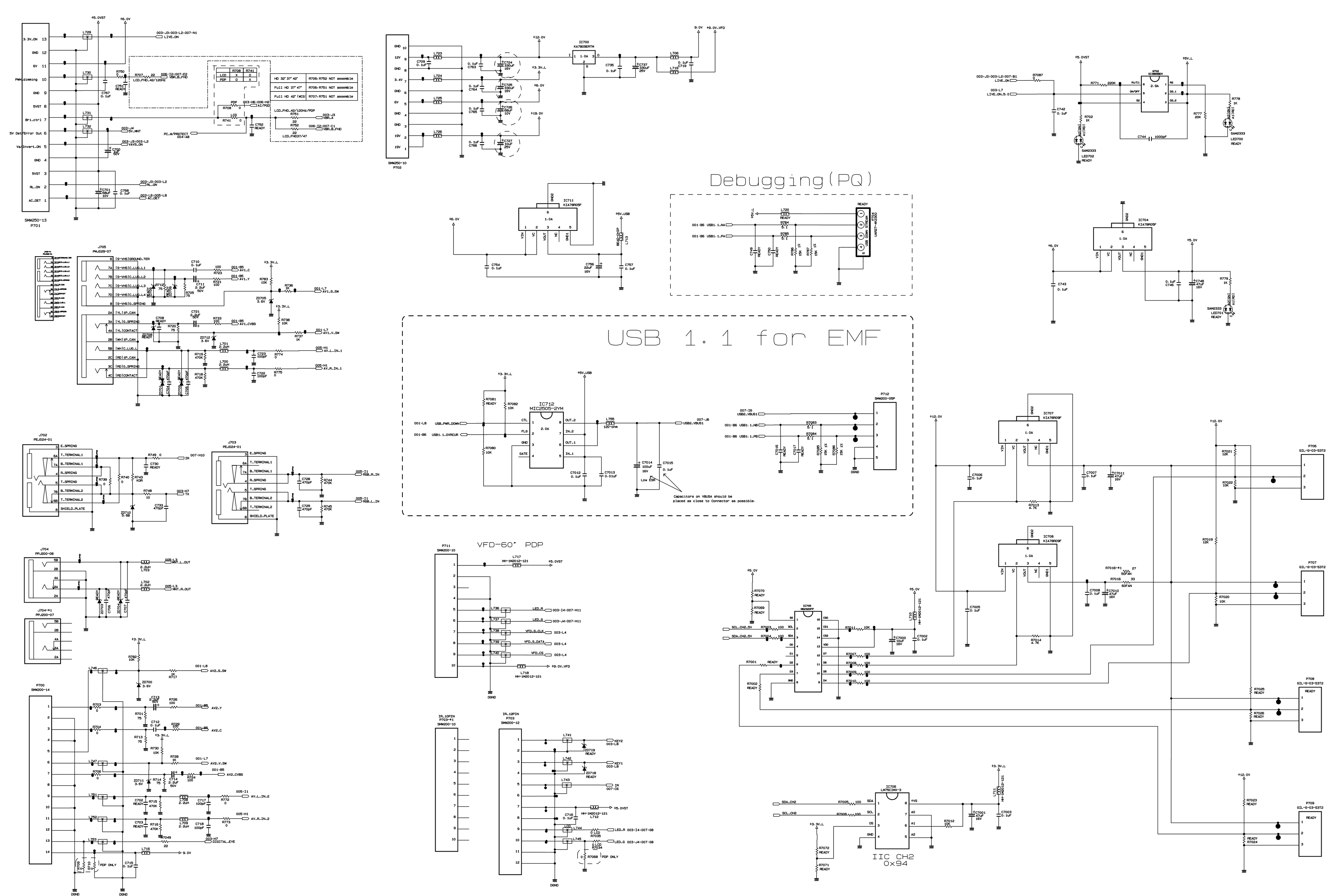
THE ⚠ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IT IS ESSENTIAL THAT ONLY MANUFATURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMATIC.



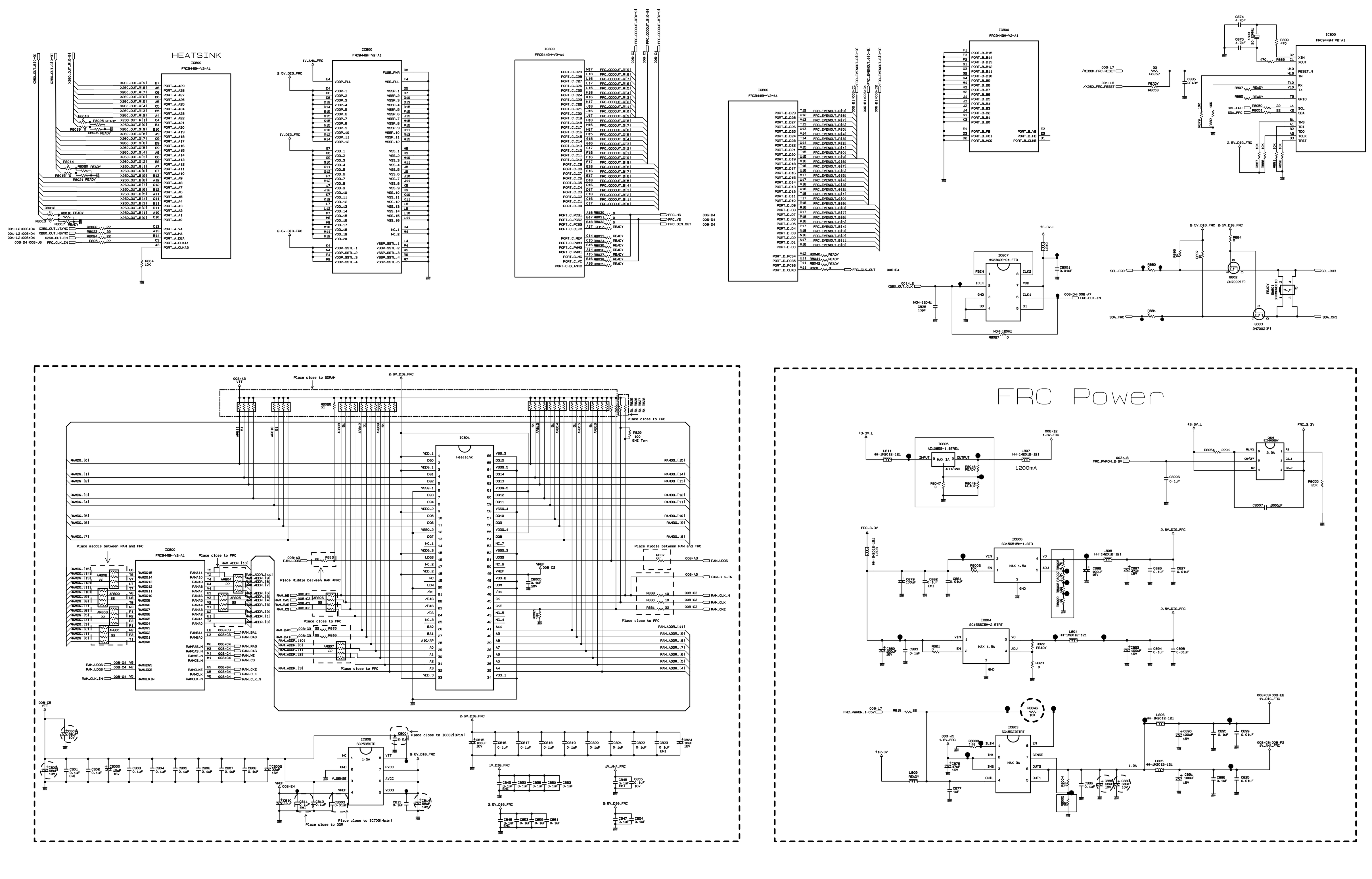
THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.



THE ⚠ SYMBOL MARK OF THIS SCHEMETIC DIAGRAM INCORPORATES
SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION.
FILRE AND ELECTRICAL SHOCK HAZARDS, WHEN SERVICING IF IS
ESSENTIAL THAT ONLY MANUFATURES SPECFIED PARTS BE USED FOR
THE CRITICAL COMPONENTS IN THE ⚠ SYMBOL MARK OF THE SCHEMETIC.

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