



Internal Use Only

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# TELEVISOR A LCD

# MANUAL DE SERVICIO

**CHASIS : LP81A**

**MODELO : 47LG60FR 47LG60FR-MA**

## **ATENCIÓN**

Antes de dar servicio al chasis, lea las PRECAUCIONES DE SEGURIDAD en este manual.



# CONTENIDO

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# PRECAUCIONES DE SEGURIDAD

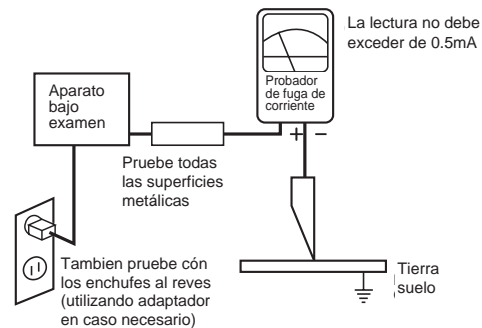
**ADVERTENCIA:** Antes de dar servicio a este chasis, lea "PRECAUCIONES RESPECTO A RADIACION POR RAYOS X", "INSTRUCCIONES DE SEGURIDAD" y "AVISO SOBRE SEGURIDAD DE PRODUCTOS"

## INSTRUCCIONES DE SEGURIDAD

1. Cuando el receptor está en operación, se producen voltajes potencialmente tan altos como 25,000-29,000 voltios. Operar el receptor fuera de su gabinete o con la tapa trasera removida puede causar peligro de choque eléctrico.
  - (1) Nadie debe intentar dar servicio si no está debidamente familiarizado con las precauciones que son necesarias cuando se trabaja con un equipo de alto voltaje.
  - (2) Siempre descargue el ánodo del tubo de la imagen a tierra para evitar el riesgo de choque eléctrico antes de remover la tapa del ánodo.
  - (3) Descargue completamente el alto potencial del tubo de imagen antes de manipularlo. El tubo de la imagen es de alto vacío y, si se rompe, los fragmentos de vidrio salen despedidos violentamente.
2. Si se quemara algún fusible de este receptor de televisión, reemplácelo con otro especificado en la lista de partes.
3. Cuando reemplace tableros o plaquetas de circuitos, cuidadosamente enrolle sus alambres alrededor de las terminales antes de soldar.
4. Cuando reemplace un resistencia de vataje (resistor de película de óxido metálico) en el Tablero o Plaqueta de circuitos, mantenga la resistencia a un mínimo de 10mm de distancia.
5. Mantenga los alambres lejos de componentes de alto voltaje o de alta temperatura.
6. Este receptor de televisión debe conectarse a una fuente de 100 a 240 V AC.
7. Antes de devolver este aparato al cliente, haga una verificación de fuga de corriente sobre las partes metálicas del gabinete expuestas, tales como antenas, terminales, cabezas de tornillos, tapas de metal, palancas de control etc., para estar seguro de que el equipo funciona sin peligro de choque eléctrico. Enchufe el cordón directamente al tomacorriente de la línea de AC 100-240V.

No utilice una línea aislada de transformador durante esta verificación. Use un voltímetro de 1000 Ohmios por voltio de sensibilidad o más, en la forma que se describe a continuación.

Cuando la unidad está ya conectada a la AC, pulse el conmutador primero poniéndolo en "ON" (encendiendo) y luego en "OFF" (apagando), mida desde un punto de tierra conocido, tal como una (cañería de metal, una manija metálica, una tubería etc.) a todas las partes metálicas expuestas del receptor de televisión (antenas, manijas de metal, gabinetes de metal, cubiertas de metal, palancas de control etc.) especialmente cualquiera de las partes metálicas expuestas que puedan ofrecer un camino hacia el chasis. Ninguna medición de corriente eléctrica debe exceder de 0.5 miliamperios. Repita la prueba cambiando la posición del enchufe en el tomacorriente. Cualquier medición que no esté dentro de los límites especificados aquí representan un riesgo potencial de choque eléctrico que debe ser eliminado antes de devolver el equipo al cliente.



## AVISO SOBRE SEGURIDAD DE PRODUCTOS

Muchas de las partes, electricas y mecánicas en este chasis tienen características relacionadas con la seguridad. Estas características frecuentemente pasan desapercibidas en las inspecciones visuales y la protección que proporcionan contra la RADIACION DE RAYOS-X no siempre necesariamente se obtiene al mismo grado cuando se reemplazan piezas o componentes diseñados para voltajes o vatajes mayores, etc. Las piezas que tienen estas características de seguridad se identifican por la marca  $\Delta$  impresa sobre el diagrama esquemático y la marca  $\square$  impresa en la lista de partes. Antes de reemplazar alguno de esos componente, lea cuidadosamente la lista de este manual. El uso de partes de reemplazo que no tengan las mismas características de seguridad, como se especifica en la lista de partes, puede crear Radiación de Rayos-X.

# ESPECIFICACIONES

NOTA: las especificaciones que reflejan mejoras en los productos están sujetos a cambios sin previo aviso.

## 1. Application Range.

This spec sheet is applied to the 37"/42"/47"/52" LCD TV used LP81A chassis.

## 2. Specification

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	Measurement	Result	Remark
1.	Display Screen Device	37" wide Color Display Module 42" wide Color Display Module 47" wide Color Display Module 52" wide Color Display Module			Resolution:1366X768(HD) Resolution:1366X768(HD)/1920*1080(FHD) Resolution:1366X768(HD)/1920*1080(FHD) Resolution:1920X1080(FHD)
2.	Aspect Ratio	16:9			
3.	LCD Module	37" TFT WXGA LCD 42" TFT WXGA LCD 47" TFT WXGA LCD 42" TFT WUXGA LCD 47" TFT WUXGA LCD 52" TFT WUXGA LCD			37" HD MAKER :LPL 42" HD MAKER :AUO, LPL 47" HD MAKER :LPL 42" FHD MAKER : LPL 47" FHD MAKER : LPL 52" FHD MAKER : SHARP
4.	Operating Environment	1) Temp. : 0 ~ 40 deg 2) Humidity : 0 ~ 85%			LGE SPEC
5.	Storage Environment	1) Temp. : -20 ~ 60 deg 2) Humidity : 0 ~ 85 %			
6.	Input Voltage	AC100 ~ 240V, 50/60Hz			

No	Item	Specification	Measurement	Result	Remark		
7.	Power Consumption	Power on (Blue) : LG30/LG50			Volume: 1/8 volume of sound distortion point		
		Power on (White) : LG60					
		≤ TBD	37"	HD			
		≤ 250W	42"	HD			
		≤ 230W		FHD			
		≤ 320W	47"	HD			
		≤ 310W		FHD			
≤ 350W	52"	FHD					
	St-By (Red) ≤ 1.0 W (All)				LG60:St-by Light condition		
8	LCD Module (Maker : AUO, CMO, CPT, LPL, SHARP)	Maker	Inch	(H)x(V)x(D)	unit	Remark	
		AUO(HD)	Outline Dimension	42"	983 x 576 x 52.7	mm	[with inverter]
			Pixel Pitch		0.681 x 0.681	mm	
			Back Light		18 CCFL	mm	
		CMO (FHD)	Outline Dimension	42"	-	mm	
			Pixel Pitch		-	mm	
			Back Light		-	mm	
		LPL(HD)	Outline Dimension	37"	877 x 516.8 x 55.5	mm	[with inverter]
			Pixel Pitch		0.200 x 0.600	mm	
			Back Light		16 EEFL	mm	
			Outline Dimension	42"	983 x 576 x 51	mm	[with inverter]
			Pixel Pitch		0.227 x 0.681	mm	
			Back Light			mm	
			Outline Dimension	47"	1096 x 640 x 51	mm	[with inverter]
			Pixel Pitch		0.76125 x 0.76125	mm	
	Back Light			mm			
LPL(FHD)	Outline Dimension	42"	983 x 576 x 47.3/(51)	mm	[w/o inverter]/(with inverter)		
	Pixel Pitch		0.4845 x 0.4845	mm			
	Back Light			mm			
	Outline Dimension	47"	1096 x 640 x 50/(51)	mm	[w/o inverter]/(with inverter)		
	Pixel Pitch		0.5415 x 0.5415	mm			
	Back Light			mm			
SHARP (FHD)	Outline Dimension	52"	1219.0x706.7x64.64	mm	(W) x (H) x (D)		
	Pixel Pitch		0.600 x 0.600	mm	(H) x (V)		
	Back Light		24CCFL				
	Display Colors		-	-			
	Coating		3H,AG/ 2H, AG		LPL,CMO,AUO / Sharp		

## 5. Chrominance & Luminance Specification

No	Item		Min	Typ	Max	Unit	Maker	Remark	
1	Luminance (W/O PC mode)		400	500		cd/m <sup>2</sup>	AUO 42" HD	-50cm from the surface	
			400	500			LPL 37" HD	- Full White Pattern	
			400	500			LPL 42" HD		
			400	450			LPL 47" HD		
			400	500			LPL 42" FHD		
			400	500			LPL 47" FHD		
			360	450			SHARP 52" FHD		
			2	Color Coordinate	White		X	Typ.	0.280
Y	-0.03	0.290				+0.03			
Red	X				0.640				
	Y				0.330				
Green	X				0.290				
	Y				0.600				
Blue	X				0.150				
	Y				0.060				
White	X	Typ.			0.279	Typ.	LPL 37" (HD) LC370WXN-SAA1	37LG30R/37LG60UR	
	Y	-0.03			0.292				+0.03
Red	X				0.636				
	Y				0.335				
Green	X				0.284				
	Y				0.610				
Blue	X				0.144				
	Y				0.063				
White	X	Typ.			0.279	Typ.	LPL 42" (HD)	42LG30RA-TA	
	Y	-0.03			0.292				+0.03
Red	X				0.635				
	Y				0.344				
Green	X				0.286				
	Y				0.614				
Blue	X				0.146				
	Y				0.061				
White	X	Typ.	0.270.	Typ.	LPL47" (HD)				
	Y	-0.03	0.292				+0.03		
Red	X		0.638						
	Y		0.342						
Green	X		0.296						
	Y		0.615						
Blue	X		0.144						
	Y		0.064						

No	Item		Min	Typ	Max	Unit	Maker	Remark		
	White	X	Typ. -0.03	0.279	Typ. +0.03		LPL 42" (FHD) LC420WUE-SAB1 LC420WUN-SAB1	42LG60FR-TA		
		Y		0.292				42LG50FR-TA		
	Red	X	0.640							
		Y	0.335							
	Green	X	0.289							
		Y	0.610							
	Blue	X	0.144							
		Y	0.066							
	White	X	Typ. -0.03		0.279		Typ. +0.03	LPL 47" (FHD) LC470WUE-SAB1 LC470WUN-SAB1	47LG60FR-MA	
		Y			0.292				47LG50FR-TA	
	Red	X	0.640							
		Y	0.335							
	Green	X	0.289							
		Y	0.610							
	Blue	X	0.144							
		Y	0.066							
	White	X	Typ. -0.03		0.272		Typ. +0.03	SHARP 52" (FHD) LK520D3LZ17	52LG50FR-TA	
		Y			0.277					
	Red	X	0.640							
		Y	0.330							
	Green	X	0.280							
		Y	0.600							
	Blue	X	0.150							
		Y	0.060							
3	Contrast ratio (W/O PC mode)		1000:1		1500:1		AUO 42" (HD)			
			840:1/800:1		1200:1		LPL 32"/37" (HD)			
			800:1	1200:1		LPL 42" (HD)				
			700:1	1200:1		LPL 47" (HD)				
			TBD	1500:1		LPL 42"/47" (FHD)				
			1000:1	1500:1		SHARP 52" (FHD)				
4	Luminance Variation				1.3 (1.25)	All w/o Sharp 52"	(Sharp 52")			

## 6. SET Optical Feature

### 6.1. General feature

- Measurement Condition: Full white/ Vivid => Measure the black luminance after 30 seconds.
- C/R is excepted for PC mode

No	Parameter		Symbol	Value		Unit	Remark
				Min	Typ		
1	37 inch(HD) LPL	Contrast Ratio	Dynamic CR	9000:1	12000:1		
		Surface Luminance, white	LWH (AV/Component/HDMI)	360	450		Cd/m2
	LWH (PC)		250			Cd/m2	
2	42 inch(HD) AUO	Contrast Ratio	Dynamic CR	9000:1	12000:1		
		Surface Luminance, white	LWH (AV/Component/HDMI)	360	450		Cd/m2
	LWH(PC)		250			Cd/m2	
3	42 inch(HD) LPL	Contrast Ratio	Dynamic CR	9000:1	12000:1		
		Surface Luminance, white	LWH (AV/Component/HDMI)	360	450		Cd/m2
	LWH(PC)		250			Cd/m2	
4	47 inch(HD) LPL	Contrast Ratio	Dynamic CR	9000:1	12000:1		
		Surface Luminance, white	LWH(AV/Component/HDMI)	360	450		Cd/m2
	LWH(PC)		250			Cd/m2	
5	42 inch(FHD) LPL	Contrast Ratio	Dynamic CR	9000:1	12000:1		
				TBD	15000 : 1		For 50/60/70 Tool
	Surface Luminance, white	LWH(AV/Component/HDMI)	360	450		Cd/m2	
LWH(PC)		250			Cd/m2		
6	47 inch(FHD) LPL	Contrast Ratio	Dynamic CR	9000:1	12000:1		
				TBD	15000 : 1		For 50/60/70 Tool
	Surface Luminance, white	LWH(AV/Component/HDMI)	360	450		Cd/m2	
LWH(PC)		250			Cd/m2		
7	52 inch(FHD) Sharp	Contrast Ratio	Dynamic CR	9000:1	12000:1		
				TBD	15000 : 1		For 50/60/70 Tool
	Surface Luminance, white	LWH(AV/Component/HDMI)	320	400	Cd/m2		
LWH(PC)		250		Cd/m2			



## 7. Component Video Input (Y, Pb, Pr)

No.	Specification				Remark
	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel clock	
1.	720*480	15.73	59.94	13.500	SDTV, DVD 480I(525I)
2.	720*480	15.75	60.00	13.514	SDTV, DVD 480I(525I)
3.	720*576	15.625	50.00	13.500	SDTV, DVD 576I(625I) 50Hz
4.	720*480	31.47	59.94	27.000	SDTV 480P
5.	720*480	31.50	60.00	27.027	SDTV 480P
6.	720*576	31.25	50.00	27.000	SDTV 576P 50Hz
7.	1280*720	44.96	59.94	74.176	HDTV 720P
8.	1280*720	45.00	60.00	74.250	HDTV 720P
9.	1280*720	37.50	50.00	74.25	HDTV 720P 50Hz
10.	1920*1080	28.125	50.00	74.250	HDTV 1080I 50Hz,
11.	1920*1080	33.72	59.94	74.176	HDTV 1080I
12.	1920*1080	33.75	60.00	74.25	HDTV 1080I
13.	1920*1080	56.25	50	148.5	HDTV 1080P
14.	1920*1080	67.432	59.94	148.350	HDTV 1080P
15.	1920*1080	67.5	60.00	148.5	HDTV 1080P

## 8. RGB Input (Analog PC)

No.	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	640*350	31.468	70.80	25.17	EGA	
2.	720*400	31.469	70.08	28.32	DOS	
3.	640*480	31.469	59.94	25.17	VESA(VGA)	
4.	800*600	37.879	60.31	40	VESA(SVGA)	
5.	1024*768	48.363	60	65	VESA(XGA)	
6.	1280*768	47.776	59.87	79.5	VESA(WXGA)	
7.	1360*768	47.72	59.799	84.75	VESA(WXGA)	
8.	1366*768	47.7	60	84.62	VESA(WXGA)	
9.	1280*1024	63.668	59.895	109.00	SXGA	Only FHD
10.	1400*1050	65.317	59.978	121.75	SXGA	Only FHD
11.	1600*1200	74.537	59.869	161.00	UXGA	Only FHD
12.	1920*1080	66.587	59.934	138.50	WUXGA (Reduced Blanking)	Only FHD

### 9. HDMI Input (PC-Spec. out but display correctly at only HDMI/DVI IN 1 via DVI to HDMI cable)

No.	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel clock(MHz)	Proposed	Remark
1.	720x400	31.468	70.08	28.32		
2.	640x480	31.469	59.94	25.17	VESA(VGA)	
3.	800x600	37.879	60.31	40.00	VESA(SVGA)	
4	1024x768	48.363	60.00	65.00	VESA(XGA)	
5	1280x768	47.776	59.87	79.5	VESA(WXGA)	
6	1360x768	47.72	59.799	84.62	VESA(WXGA)	
7	1366x768	47.7	60	84.62	VESA(WXGA)	
8	1280x1024	63.595	60.0	108.875	SXGA	Only FHD
9	1400x1050	65.160	60.0	122.50	SXGA	Only FHD
10	1600x1200	74.077	60.0	130.375	UXGA	Only FHD
11	1920x1080	66.647	59.988	138.625	WUXGA	Only FHD

### 10. HDMI input ( DTV )

No.	Resolution	H-freq(kHz)	V-freq(Hz)	Pixel clock(MHz)	Proposed	Remark
1	720*480	31.47	59.94	27	SDTV 480P	Support(not spec)
2	720*480	31.5	60	27.027	SDTV 480P	support(not spec)
3	720*576	31.25	50	27	SDTV 576P	support(not spec)
4	1280*720	44.96	59.94	74.176	HDTV 720P	
5	1280*720	45	60	74.25	HDTV 720P	
6	1280*720	37.5	50	74.25	HDTV 720P	
7	1920*1080	28.125	50	74.25	HDTV 1080I	
8	1920*1080	33.72	59.94	74.176	HDTV 1080I	
9	1920*1080	33.75	60	74.25	HDTV 1080I	
10	1920*1080	56.25	50	148.5	HDTV 1080P	
11	1920*1080	67.432	59.94	148.350	HDTV 1080P	
12	1920*1080	67.5	60.00	148.5	HDTV 1080P	
13	1920*1080	27	24	74.25	HDTV 1080P	
14	1920*1080	33.75	30	74.25	HDTV 1080P	

# INSTRUCCIÓN DE AJUSTE

## 1. Application Range

These instructions are applied to all of the LCD TV, LP81A Chassis.

## 2. Notice

- 2.1 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 instrument.
- 2.2 Adjustment must be done in the correct order.
- 2.3 The adjustment must be performed in the circumstance of  $25\pm 5^{\circ}\text{C}$  of temperature and  $65\pm 10\%$  of relative humidity if there is no specific designation.
- 2.4 The input voltage of the receiver must keep 100~220V, 50/60Hz.
- 2.5 Before adjustment, execute Heat-Run for 15 minutes at RF no signal.

## 3. Adjustment items

### 3.1 PCB assembly adjustment items

Download the MSTAR main software (IC801, Mstar ISP Utility)

### 3.2 SET assembly adjustment items

DDC Data input.  
Adjustment of White Balance.  
Factoring Option Data input

## 4. PCB assembly adjustment method (Using MSTAR Download program)

### 4.1 S/W program download

#### 4.1.1 Preliminary steps

- (1) Download method 1 (PCB Assy)  
- HD



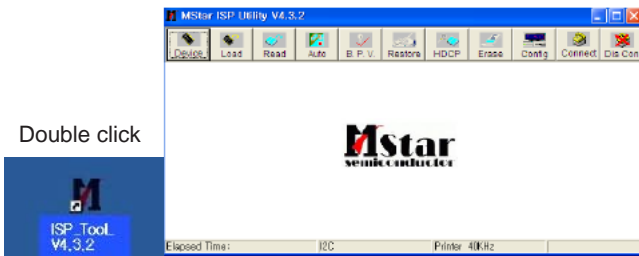
- FHD



- (2) Connect the download jig to D-sub jack

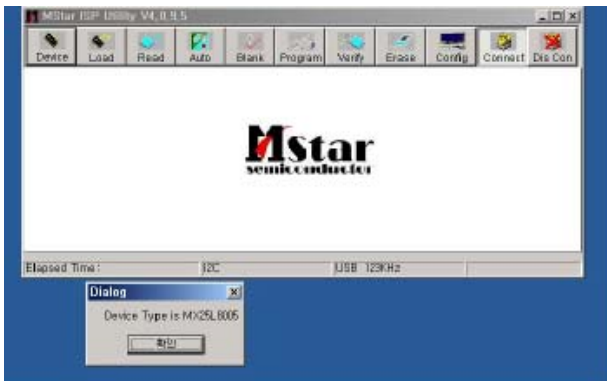
#### 4.1.2 Download steps

- (1) Execute 'ISP Tool' program in PC, then a main window will be opened

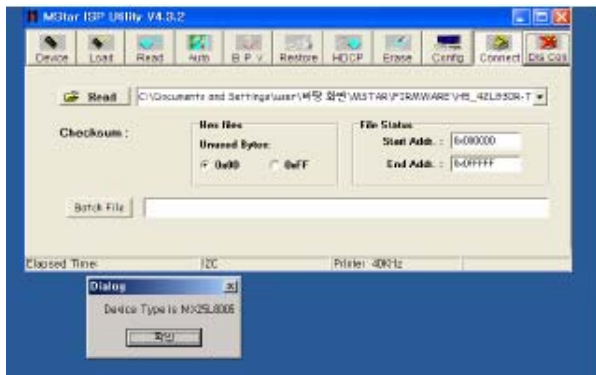


Double click

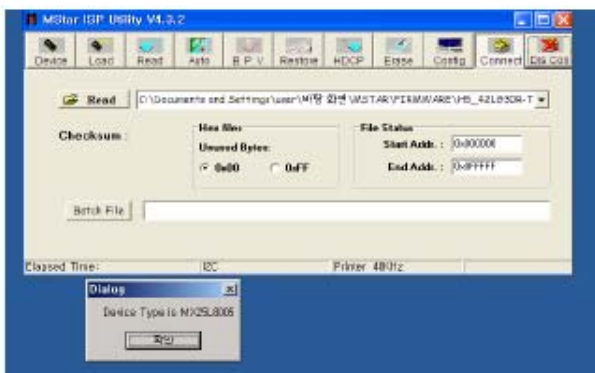
- (2) Click the connect button and confirm "Dialog Box".



- (3) Click the Config button and Change speed E2PROM Device setting : over the 350KHz



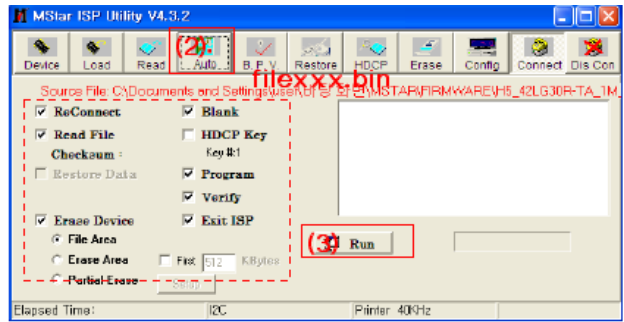
- (4) Read and write bin file  
Click "(1)Read" tab, and then load download file(XXXX.bin) by clicking "Read".



- (5).Click "Auto(2)" tab and set as below

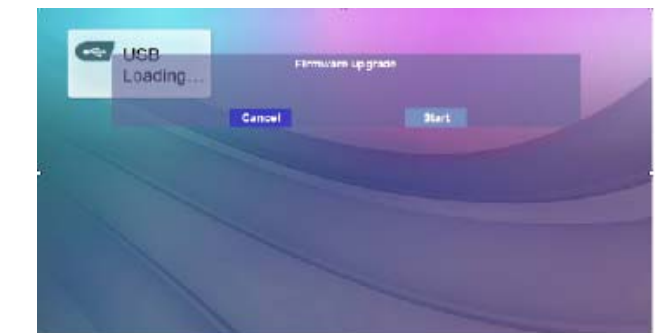
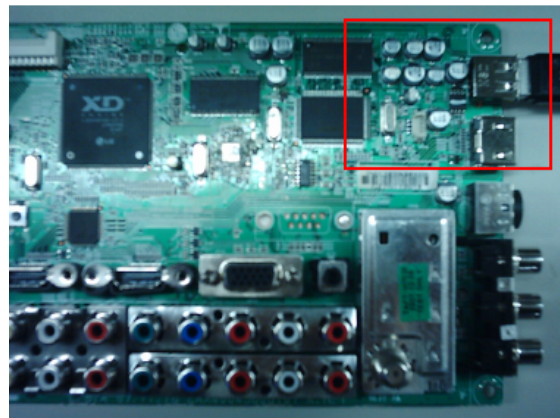
- (6).click "Run(3)".

- (7).After downloading, check "OK(4)" message.

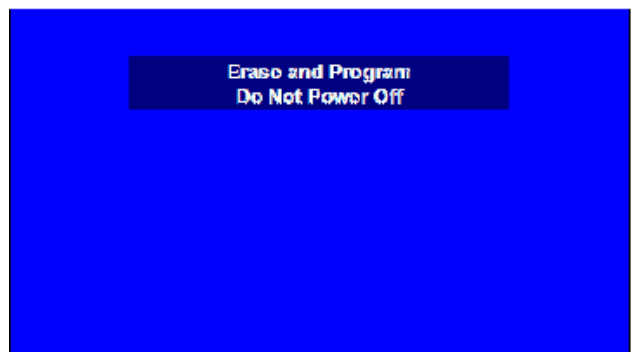


#### # USB DOWNLOAD

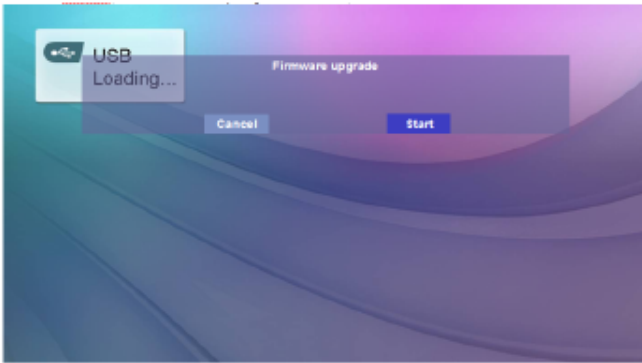
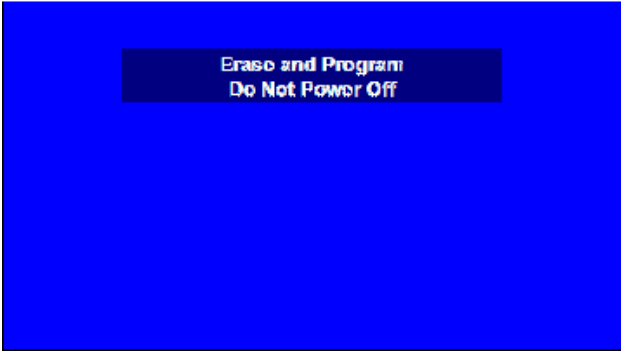
1. Put the USB Stick to the USB socket



2. Automatically detecting update file in USB Stick



- 3. Select "Start" Button and press "ok" button  
Updating is starting.



- 4. Finishing the version updating, you have to put out USB stick and "AC Power" off
- 5. After putting "AC Power" on and check updated version on your TV

**4.2 ADC Process**

- o Required Equipments
  - Remote controller for adjustment
  - MSPG-925F Pattern Generator

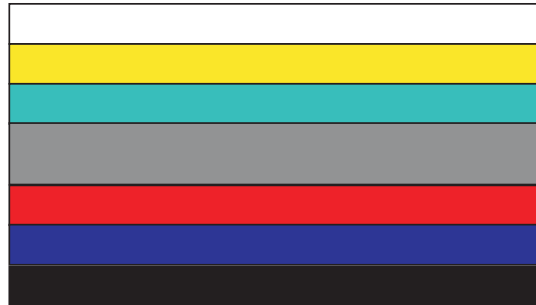
- 4.2.1 Method of Auto RGB Color Balance
  - Convert to RGB PC in Input-source
  - Input the PC 1024x768 @ 60Hz 1/2 Black & White Pattern(MSPG-925F model:60, pattern:54) into RGB



- Adjust by commanding AUTO\_COLOR\_ADJUST(0xF1) 0x00 0x02 instruction.

- 4.2.1.1 Confirmation
  - We confirm whether "0xF3 (offset), 0xF4 (gain)" address of EEPROM "0xBC" is "0xAA" or not.
  - If "0xF3", "0xF4" address of EEPROM "0xBC" isn't "0xAA", we adjust once more
  - We can confirm the ADC values from "0x06~0x0B" addresses in a page "0xBC"
  - \*Manual ADC process using Service Remocon. After enter Service Mode by pushing "ADJ" key, execute "Auto-RGB" by pushing "\_" key at "Auto-RGB".

- 4.2.2 Component input ADC
  - 4.2.2.1 Component Gain/Offset Adjustment7
    - Convert to Component in Input-source
    - Input the Component ( Which has 720p@60Hz YPbPr signal : 100% Color Bar (MSPG-925F Model : 217 / Pattern: 65 ) into Component.



- Adjust by commanding AUTO\_COLOR\_ADJUST (0xF1) 0x00 0x02 instruction

- 4.2.2.2 Confirmation
  - We confirm whether "0xF3 (offset), 0xF4 (gain)" address of EEPROM "0xBC" is "0xAA" or not.
  - If "0xF3", "0xF4" address of EEPROM "0xBC" isn't "0xAA", we adjust once more
  - We can confirm the ADC values from "0x06~0x0B" addresses in a page "0xBC"
  - \*Manual ADC process using Service Remocon. After enter Service Mode by pushing "ADJ" key, execute "Auto-RGB" by pushing "\_" key at "Auto-RGB".

## 5. Adjusting the White Balance

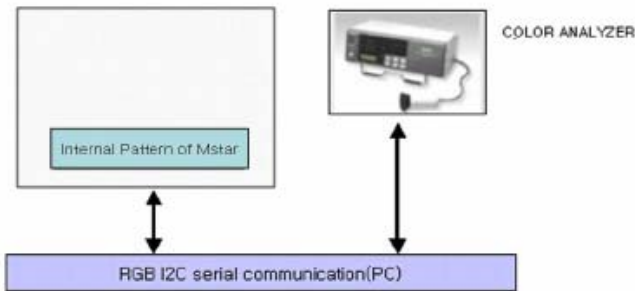
### 5.1 Purpose and Principle for adjustment of the color temperature

- Purpose : Adjust the color temperature to reduce the deviation of the module color temperature.
- Principle : To adjust the white balance without the saturation,  
(Fix the one of R/G/B gain to C0 and decrease the others.)

### 5.2 Adjustment mode : Two modes of Cool and Warm (Medium data is automatically calibrated by the Cool data)

- Required Equipments
- Remote controller for adjustment
- Color Analyzer : CA100+ or CA-210 or same product LCD TV( ch : 9 ),
- Auto W/B adjustment instrument(only for Auto adjustment)

### 5.3 Connecting diagram of equipment for measuring (For Automatic Adjustment)



- (1) Enter the adjustment mode of DDC
  - Set command delay time : 50ms
  - Enter the DDC adjustment mode at the same time heat-run
  - Maintain the DDC adjustment mode with same condition of Heat-run
  - > Maintain after AC off/on in status of Heat-run pattern display)
- (2) Release the DDC adjustment mode
  - Release the adjust mode after AC off/on or std-by off/on in status of finishing the Hear-run mode
  - Release the Adjust mode when receiving the aging off command(F3 00 00) from adjustment equipment
  - Need to transmit the aging off command to TV set after finishing the adjustment.
  - Check DDC adjust mode release by exit key and release DDC adjust mode
- (3) Enter the adjust mode of white balance
  - Enter the white balance adjustment mode with aging command(F3, 00, FF)

\* Luminance min value is 200cd/β≥ in the cool mode( For LCD)

## 6. Adjustment of White Balance

- Adjustment mode : Two modes (Cool and Warm)  
(Medium data is automatically calibrated by the Cool data)
- Color analyzer(CA100+, CA210) should be used in the calibrated ch by CS-1000  
(LCD : CH9, PDP : CH10)
- Operate the zero-calibration of the CA100+ or CA-210, then stick sensor to the module when adjusting.
- For manual adjustment, it is also possible by the following sequence.

- 1) Select white pattern of heat-run by pressing "POWER ON" key on remote control for adjustment then operate heat run longer than 15 minutes.  
(If not executed this step, the condition for W/B may be different.)
- 2) Push "Exit" key.
- 3) Change to the AV mode by remote control.(Push front-AV or Input key)
- 4) Input external pattern(85% white pattern)
- 5) Push the ADJ key two times (entering White Balance mode)
- 6) Stick the sensor to the center of the screen and select each items (Red/Green/Blue Gain and Offset) using ▲/▼ (CH +/-) key on R/C..
- 7) Adjust R/ G/ B Gain using ◀/▶(VOL+/-) key on R/C.
- 8) Adjust two modes (Cool and Warm)  
(Fix the one of R/G/B and change the others)
- 9) When adjustment is completed, Exit adjustment mode using EXIT key on R/C.

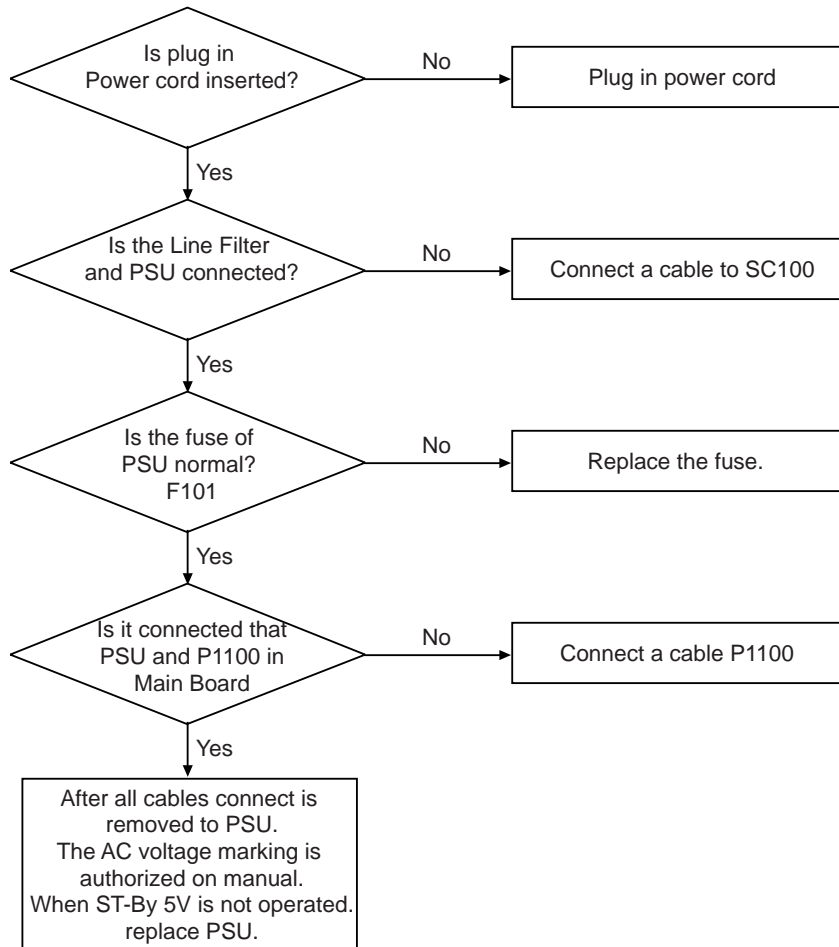
# SOLUCIÓN DE PROBLEMAS

## 1. No power

### 1) Symptom

- 1) It is not discharged minutely from the module.
- 2) Light doesnot come into the front LED.

### 2) Check process

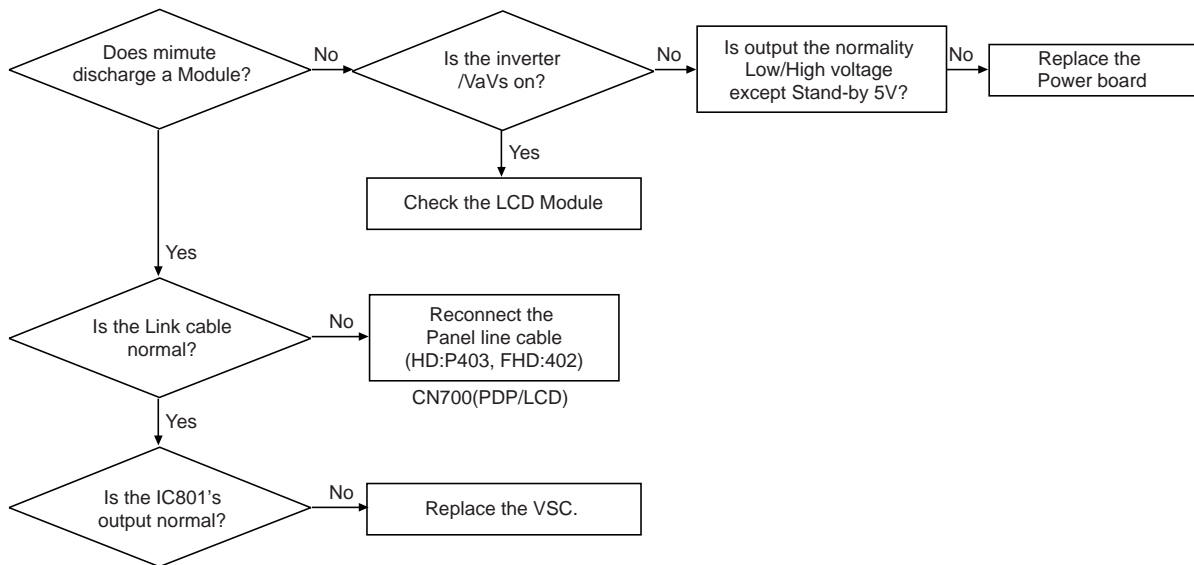


## 2. No Raster

### 1) Symptom

- 1) No OSD and image occur at screen.
- 2) It maintains the condition where the front LED is green

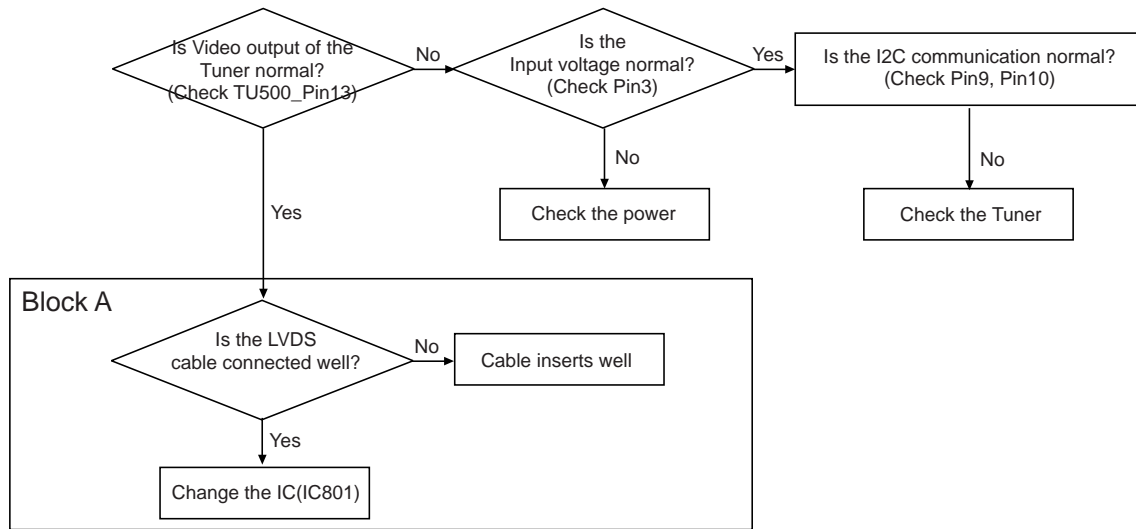
### 2) Check process



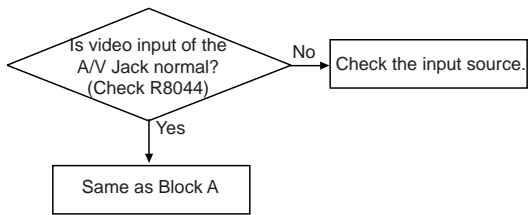


### 3. Unusual display from RF mode.

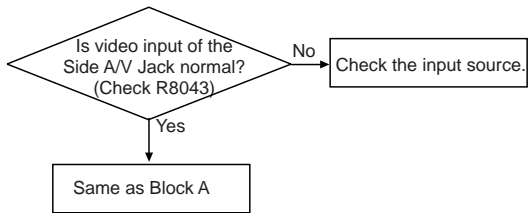
#### 1) Check process



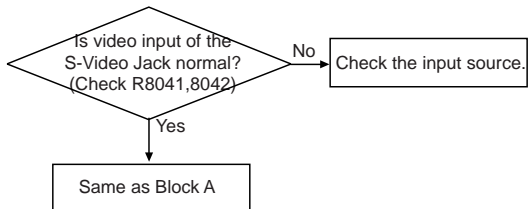
#### 4. Unusual display from rear AV mode



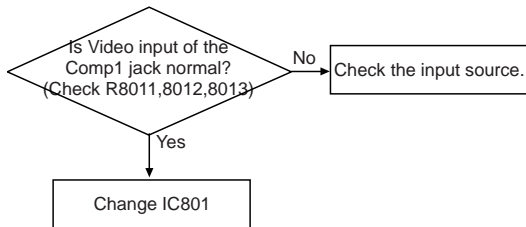
#### 5. Unusual display from Side AV mode.



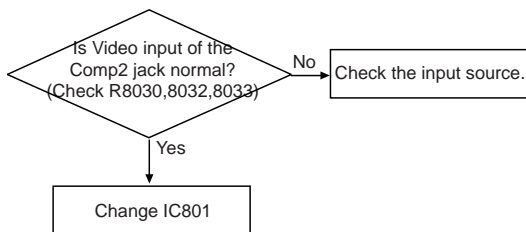
#### 6. Unusual display from Side S-Video mode.



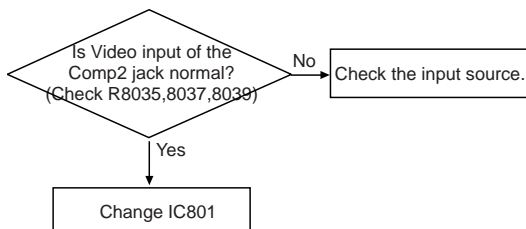
#### 7. Unusual display from component 1 mode.



#### 8. Unusual display from component 2 mode.



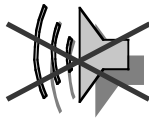
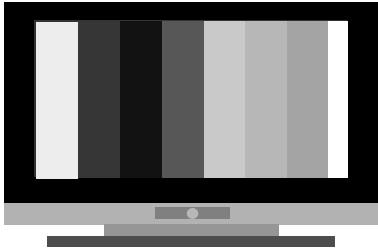
#### 9. Unusual display from RGB mode.



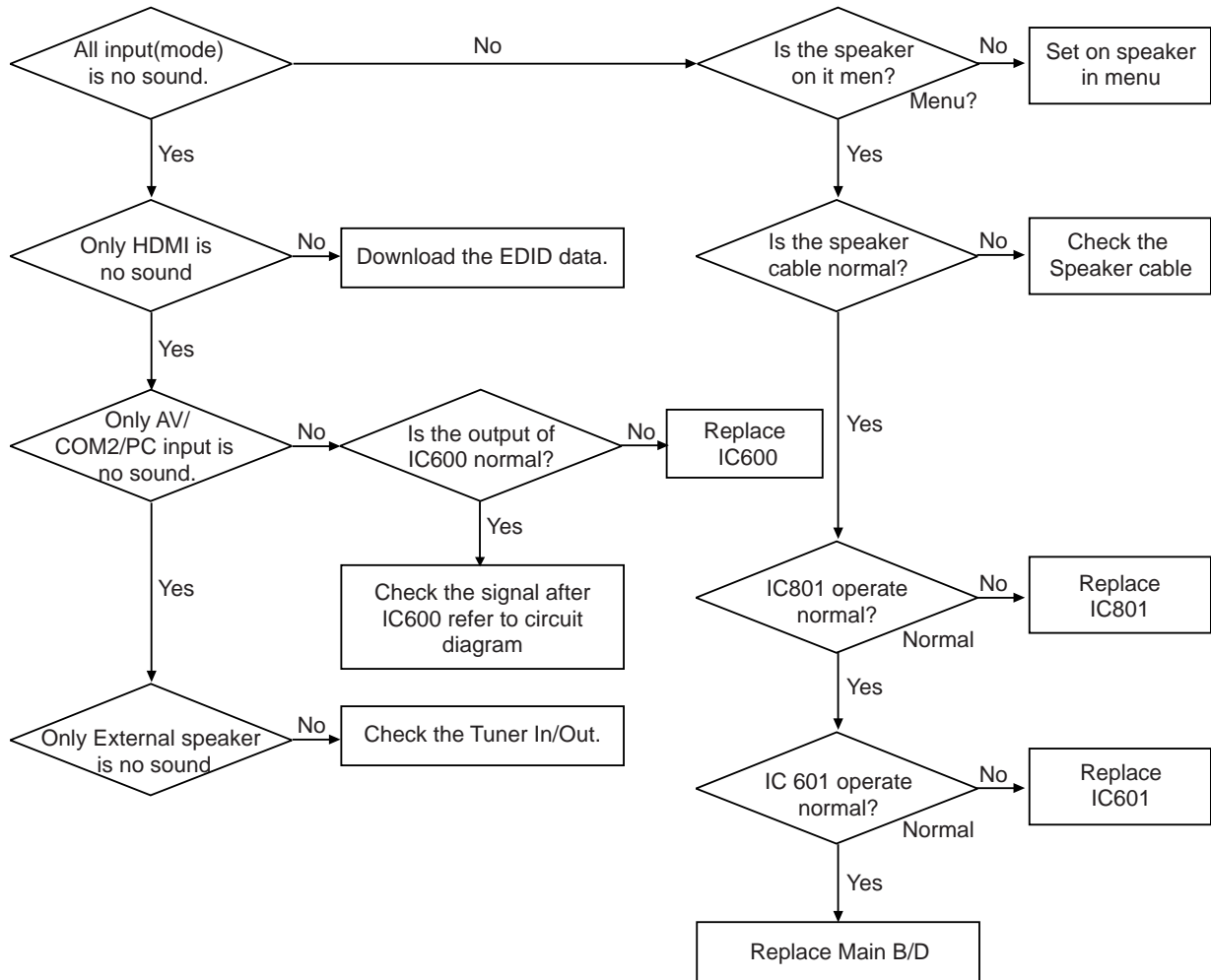
# 10. No Sound

## 10-1 Symptom

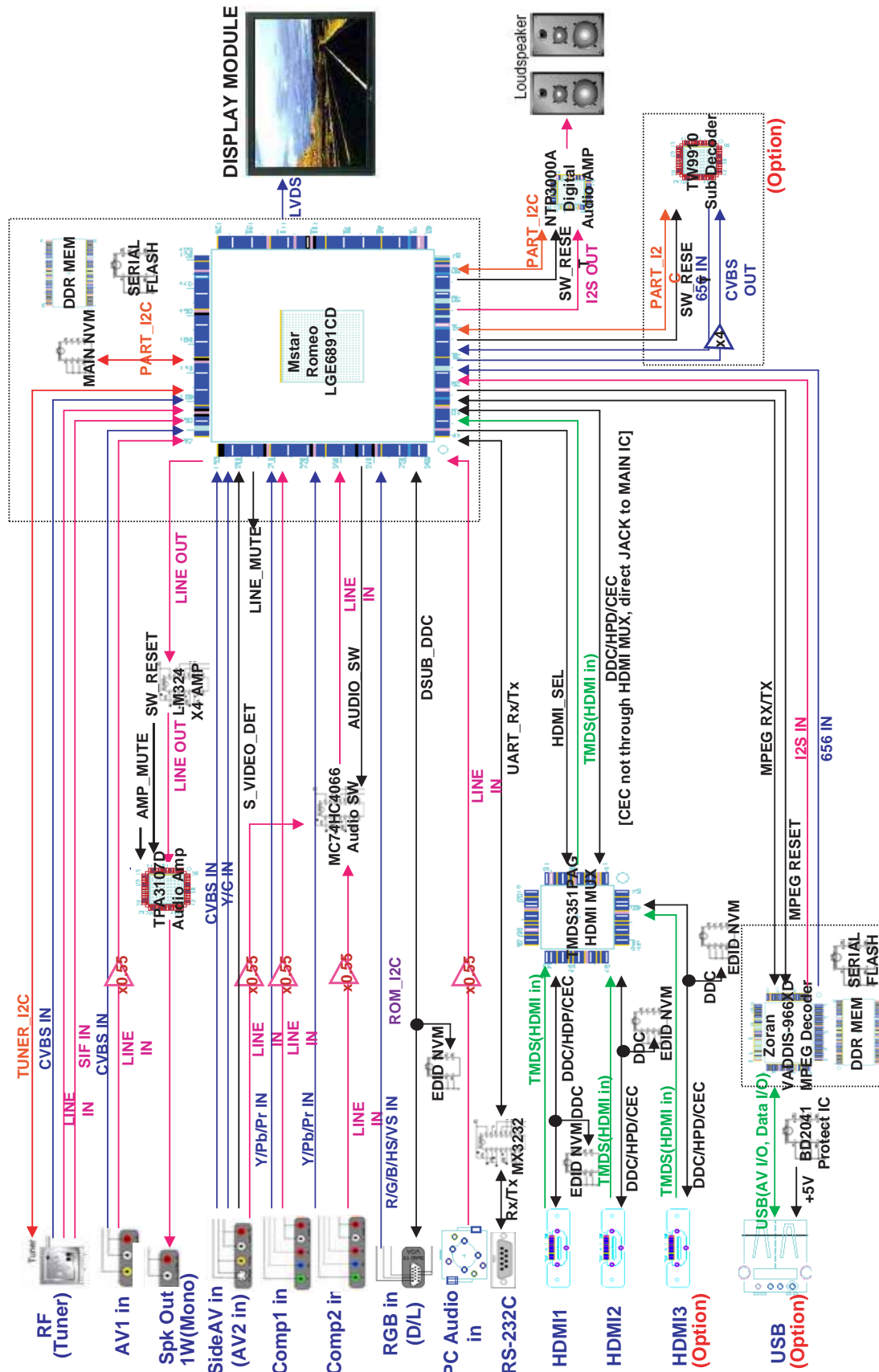
- 1) LED is green.
- 2) Screen display but sound is not output.



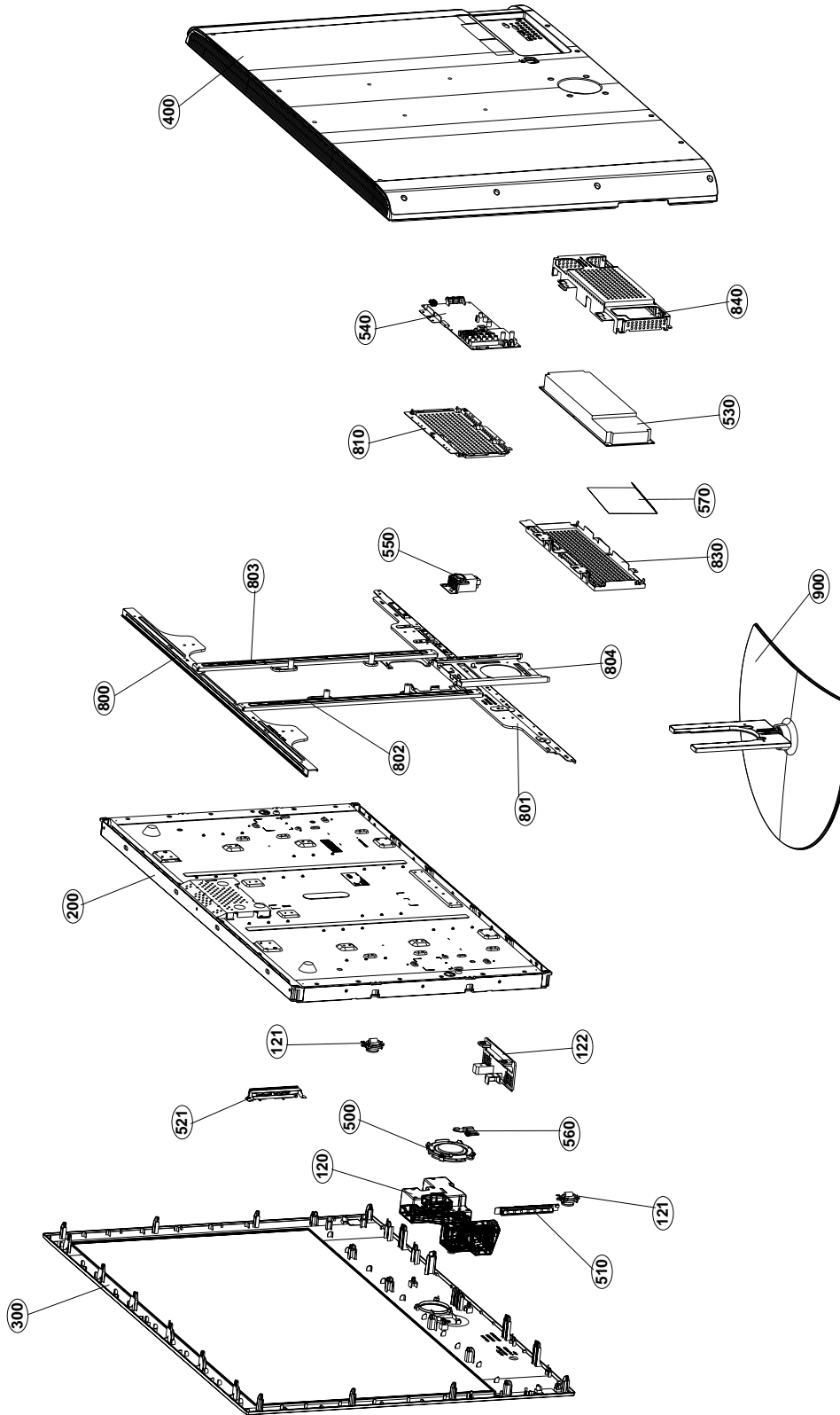
## 10-2 Check process



# DIAGRAMA DE BLOQUE

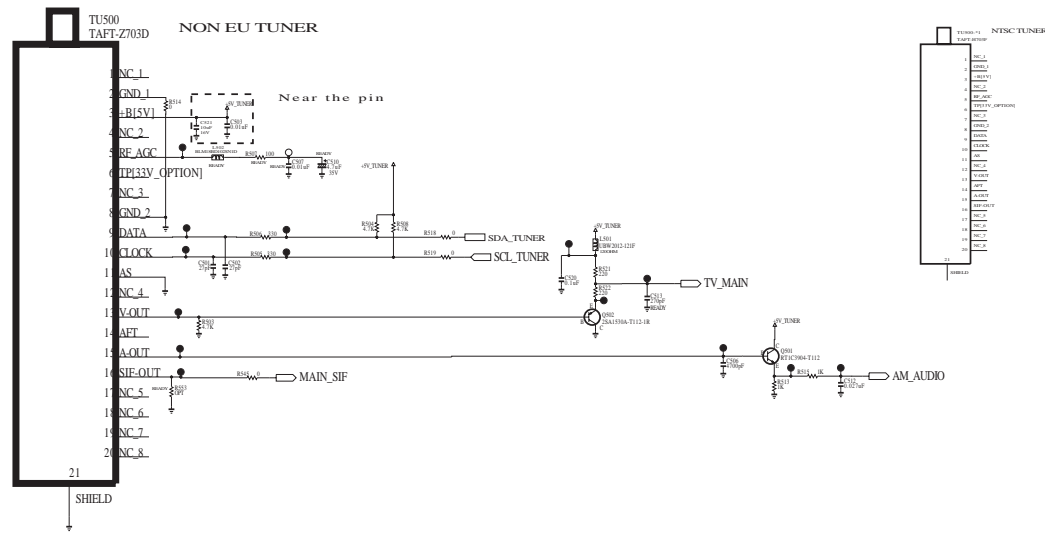


# VISTA EN DESPIECE



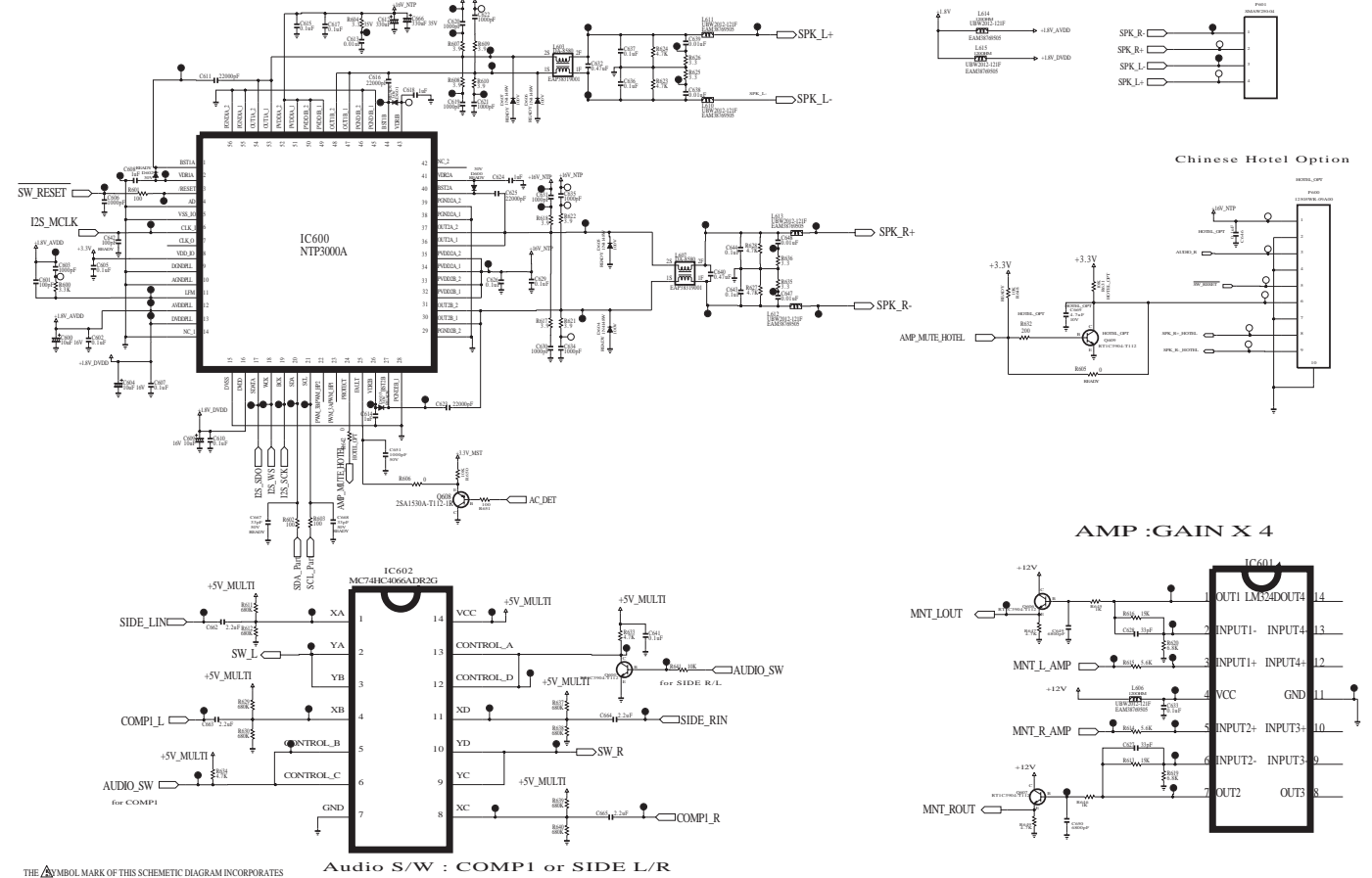


TUNER



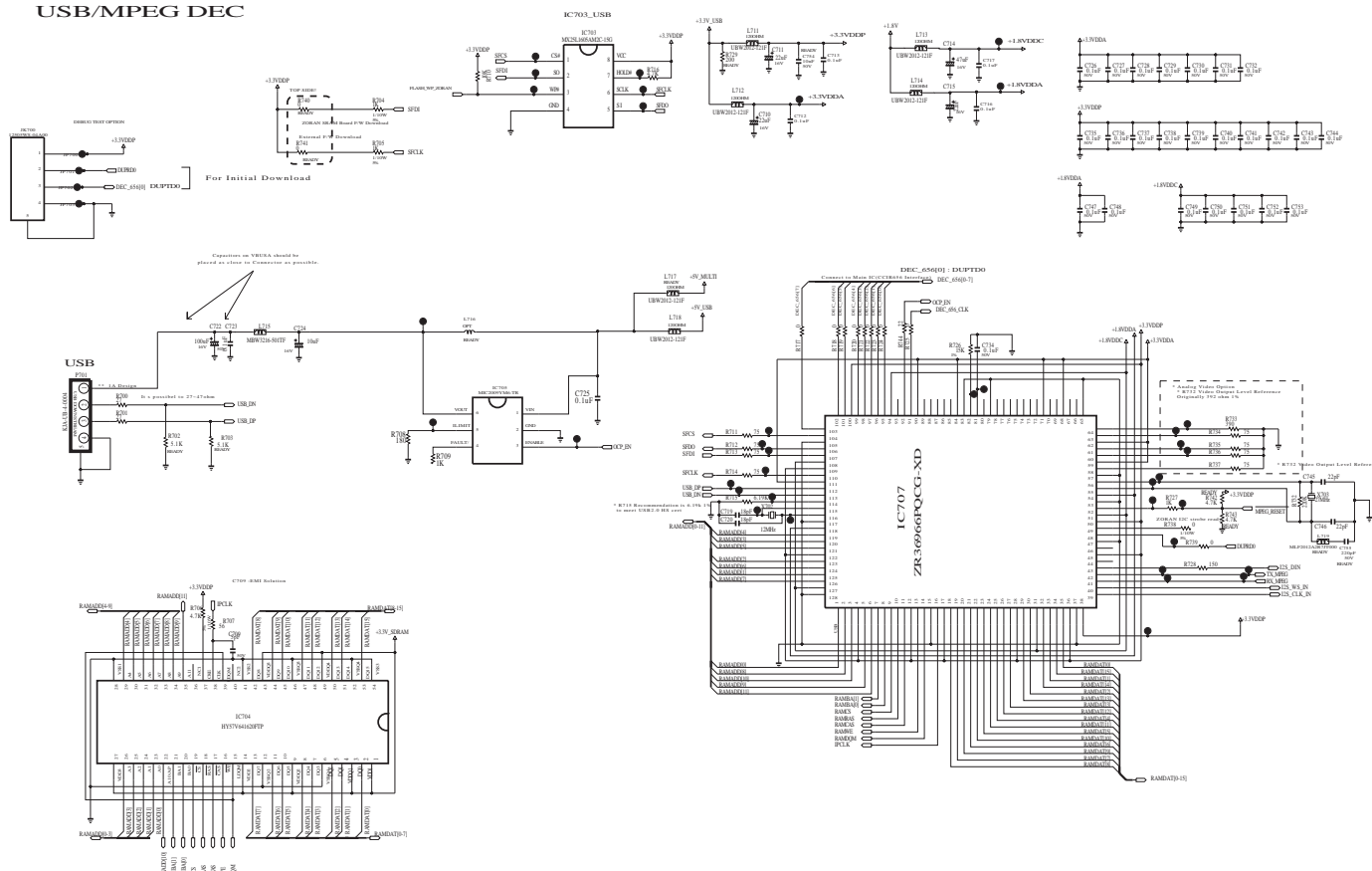
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURER SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

Digital Audio AMP



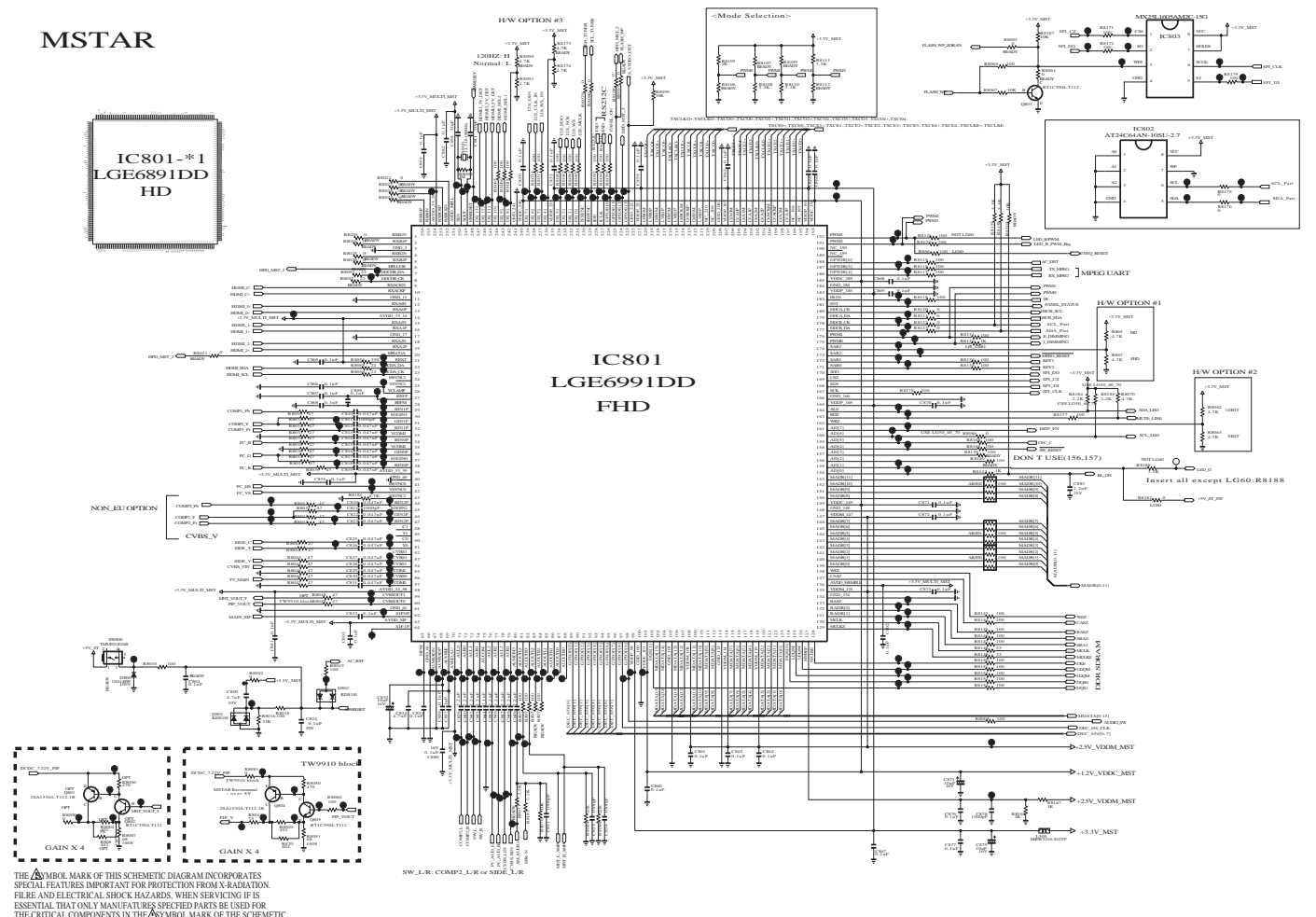
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURER SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

USB/MPEG DEC



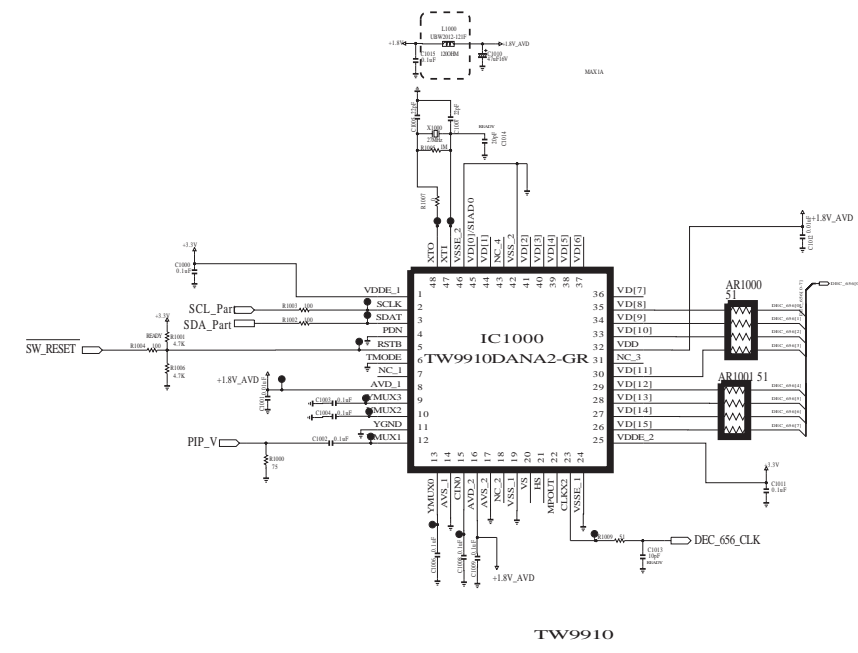
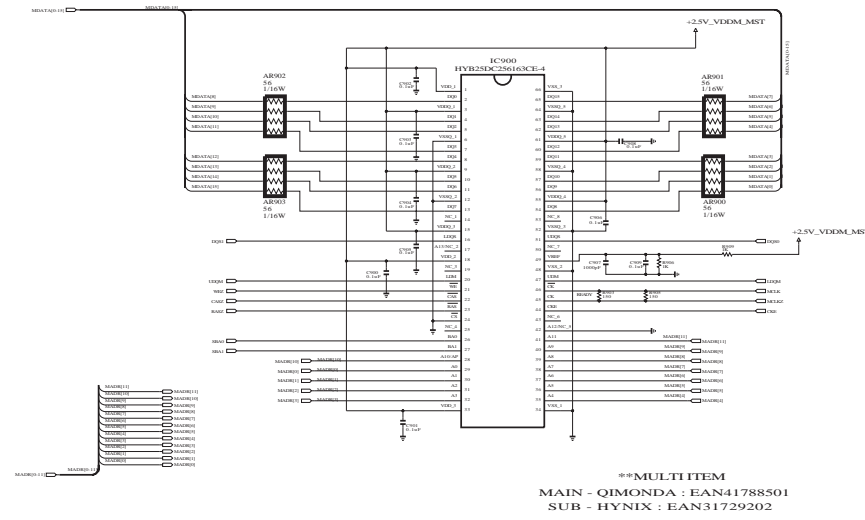
THE SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION, FIRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURER SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE SYMBOL MARK OF THE SCHEMATIC.

MSTAR



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

DDR



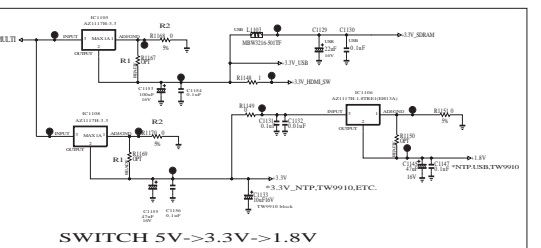
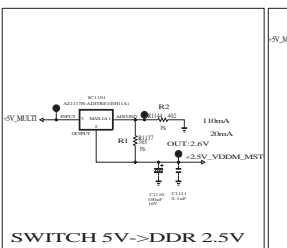
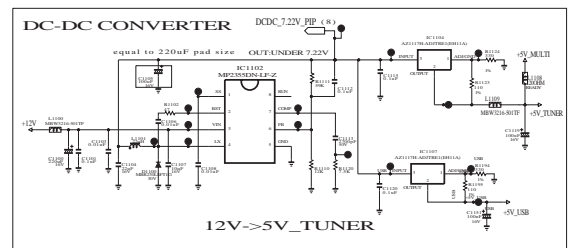
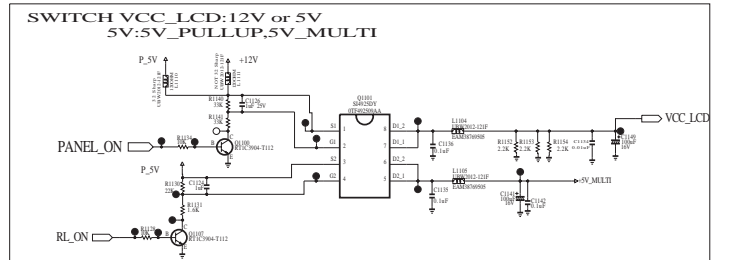
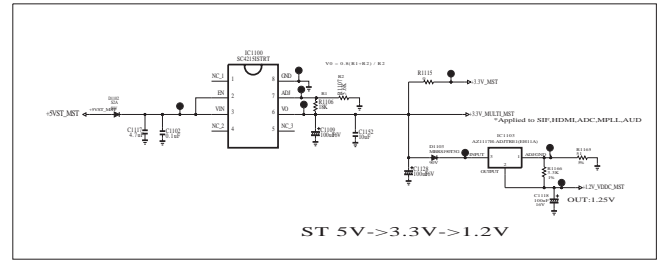
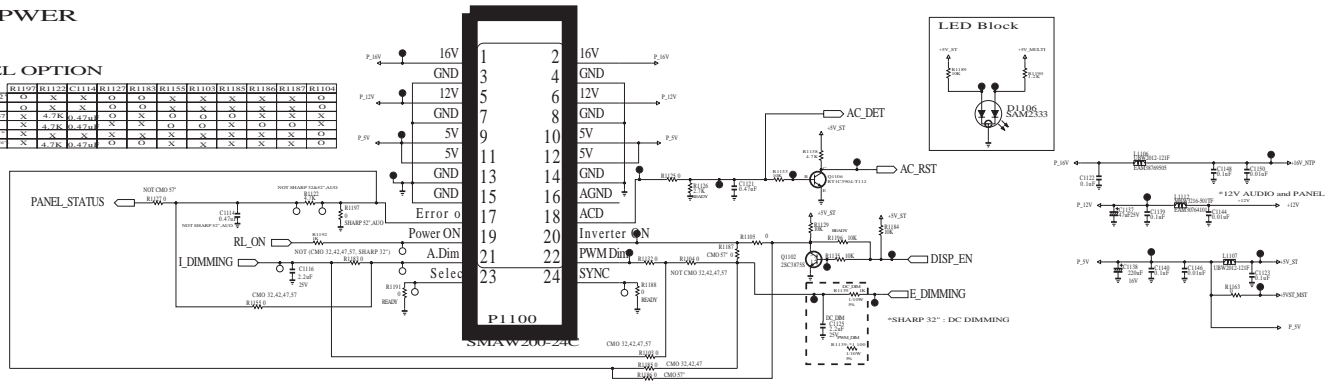
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PPWER

\*PANEL OPTION

	R1109	R1122	R1114	R1129	R1103	R1105	R1128	R1106	R1110
SHARP 3.2	OP	SC	SC	OP	OP	SC	SC	SC	OP
SHARP 3.2	SC	OP	SC	OP	OP	SC	SC	SC	OP
SHARP 3.2	SC	OP	SC	OP	OP	SC	SC	SC	OP



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