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LCD TV

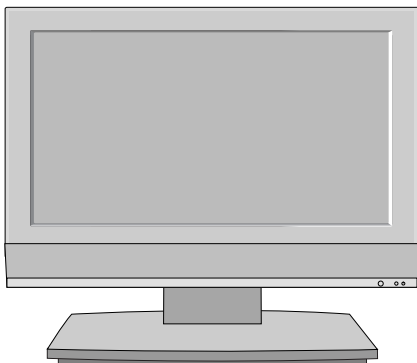
SERVICE MANUAL

CHASSIS : LP68A

MODEL : 20LS5R 20LS5R-ZA

CAUTION

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



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SAFETY PRECAUTIONS

IMPORTANT SAFETY NOTICE

Many electrical and mechanical parts in this chassis have special safety-related characteristics. These parts are identified by \triangle 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 its 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 $1M\Omega$ and $5.2M\Omega$.

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.

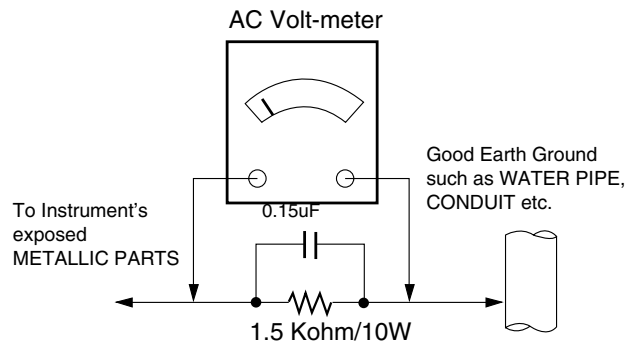
Connect 1.5K/10watt resistor in parallel with a 0.15uF capacitor between a known good earth ground (Water Pipe, Conduit, etc.) and the exposed metallic parts.

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 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 is 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 circuit board 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. General Specification

NO	Item		Content		Remark
1	User Model Name		20LS5R-ZA : PAL/SECAM (EU)		
2	Feature		20.1" LCD TV		
3	Chassis Name		LP 68A		
4	General Scope	External SW & Adj.	PR(▲/▼), VOL(◀▶), OK, MENU, INPUT, POWER		8Keys
5	Power Cord		Length : 1.87±0.04 M Shape : Wall-out, Color : BLACK		NATION
6	Power Adapter		No		
7	LCD Module Feature		Type	TFT Color LCD Module	LPL P/N : EAJ30338001
			Active Display Area	640(H) x 480(V)	
			Pixel Pitch [mm]	0.6375mm(H) x 0.2125mm(V) x RGB	
			Electrical interface	TTL	
			Color Depth	8BIT, 16.7M colors	
			Size [mm]	432(W) x 331.5(H) x 25.0(D)	
			Surface Treatment	Hard Coating(3H) & Anti Glare (HAZE 3%) treatment of the front polarizer	
			Operating Mode	Normally Black	
			Back light Unit	6 CCFL (6 lamps)	
			R/T	Typ	
				25ms(R.T : 12ms + F.T. : 13ms)	

2. Mechanical specification

No.	Item		Content				Remark
1	Product Dimension		Width (W)	Length (D)	Height (H)		
		Before Packing	474.1	184.3	464.6		
		After Packing	537	173	483		
2	Product Weight	Only SET	6.5kg(LPL)				
		With BOX	8.3kg(LPL)				
3	Container Loading Quantity	Individual or Palletizing	20ft		40ft		
			Indi.	Wooden	Indi.	Wooden	
			624	576	1248	1152	
4	Stand Assy	Type	Base detachable				
		Size (W x D x H)	343.9(W) x 184.3(D) x 76.2(H)				
		Tilt Degree	-3(-0/+3) ~ +10(±2) degree				
		Tilt force	Target 1.5Kgf (0.8Kgf ~ 2.0Kgf)				
		Swivel Degree	- NON				
		Swivel Force	- NON				
5	Appearance	General	Refer to Standard of LG(55)G1-1020				

3. Engineering Specification

No.	ITEM	Specification			Remark
1	ENERGY	VIDEO		POWER CONSUMPTION	LED COLOR
	Normal	Active		≤ 60W	Green
	Stand by	Off		≤ 1W(110V) ≤ 1W(220V)	Red
2	D-SUB Pin configuration	1 : RED 3 : Blue 5 : S.T (GND) 7 : Green GND 9 : N.C 11: ID0(GND) 13: H-Sync 15: SCL 2 : Green 4 : ID2 (GND) 6 : RED GND 8 : Blue GND 10 : D-GND 12 :SDA 14 : V-Sync Shell : GND			For service only
3	Control Function	1) Contrast/ Brightness/ Colour/ Sharpness/(Tint) 2) Power On/Off, Input select, Menu, OK, Volume(◀,▶), PR(▲,▼)			

4. Optical Characteristic

No	Item	Specification				Remark
			Min	Tpy	Max	
1	Viewing Angle <CR≥10>	R/L U/D		89/89 89/89		
2	Luminance	Luminance (cd/m ²) White luminance uniformity	320 75%	400 80%		PSM : Dynamic, CSM: Cool White (100 IRE)
3	Contrast Ratio	CR	2400	3000		All white/ All black
4	CIE Color Coordinates	White (Warm) Wx Wy	0.298 0.314	0.313 0.329	0.328 0.344	In AV input PSM : Dynamic White (85 IRE)
		White (Normal) Wx Wy	0.270 0.278	0.285 0.293	0.300 0.308	
		White (Cool) Wx Wy	0.261 0.268	0.276 0.283	0.291 0.298	

5. Outgoing Condition

No	Item		Condition		Remark
1	Power		Off		
2	Volume Level		30		
3	Main Picture Input		TV		
4	Main Last Channel		Pr 01		
5	Mute		Off		
6	STATION	Auto Programme	To set	System Storage from Search	
		Manual Programme	To set	Storage System Band Channel Fine Search Name	
		Programme Edit	To set		
		Favourite Programme	Off		
7	PICTURE	PSM	Dynamic		
			Standard		
			Mild		
			Game		
			User	Contrast	100
				Brightness	50
				Colour	60
				Sharpness	50
				Tint	0
		CSM	Cool		
			Normal		
			Warm		
			User	Red	0
				Green	0
				Blue	0
		Reset	To set		
8	SOUND	SSM	Flat		
			Music		
			Movie		
			Sports		
			User		
		AVL	Off		
		Balance	0		
9	TIME	Clock	-- : --		
		Off time	-- : -- Off		
		On time	-- : --		
			Pr.1 Vol. 30 Off		
		Auto sleep	Off		
10	SPECIAL	Language	English		16 Language
		Country	Others		30 Teletext Language
		Child Lock	Off		

ADJUSTMENT INSTRUCTION

1. Application Range

These documents is applied to 20" LCD TV(chassis : LP68A)

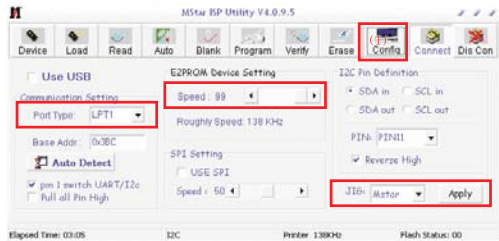
2. Designation

- 1) The adjustment is according to the order which is designated and which must be followed, according to the plan which can be changed only on agreeing.
- 2) Power Adjustment : Free Voltage
- 3) Magnetic Field Condition : Nil.
- 4) Input signal Unit : Product Specification Standard
- 5) Reserve after operation : Above 30 Minutes
- 6) Adjustment equipments: Color Analyzer(CA-210 or CA-110), Pattern Generator (MSPG-925L or Equivalent), DDC Adjustment Jig equipment, SVC remote controller

3. Main PCB check process

3.1. Download

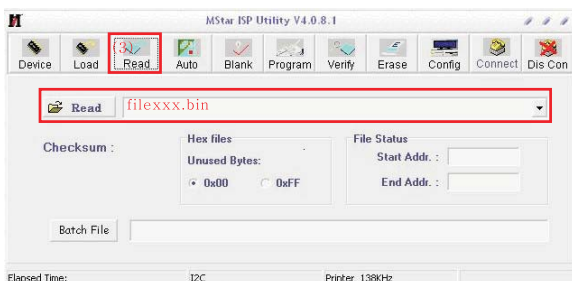
- 1) Execute ISP program "Mstar ISP Utility" and then click "Config" tab.
- 2) Set as below, and check the following tabs.
Port type - Choose the your port type, Normally "LPT1" or "LPT2".
Speed - Choose the speed from 70 to 99.
JIG - Choose the your JIG type, Normally "Mstar" or "LGE".



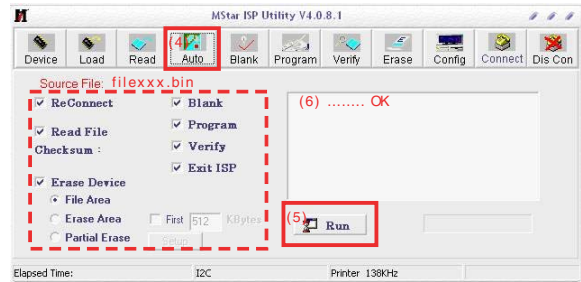
- 3) Click "Read" tab, and then load download file(XXXX.bin) by clicking "Read".



- 4) Click "Auto" tab and set as below, and then click "Run".



- 5) After downloading, check "OK" message.



* APC - After Manual-Insert, executing APC

3.2. ADC Process

- (1) PC input ADC

- 1) Auto RGB Gain/Offset Adjustment

- (a) Convert to PC in Input-source

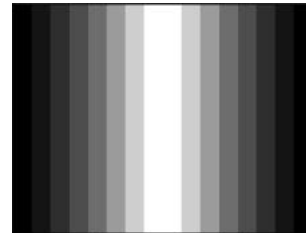
- (b) Signal equipment displays.

Output Voltage : 730 mVp-p

Impress Resolution XGA(1024x768@60Hz)

Pattern:gray pattern that left & right is black and center is white signal(Refer below picture)

(Model:60, Pattern:28 at MSPG925L)



- (c) Adjust by commanding AUTO_COLOR_ADJUST (0xF1) 0x00 0x02 instruction.

- 2) Confirmation

- (a) We confirm whether "0x8C" address of EEPROM "0xB4" is "0xAA" or not.

- (b) If "0x8C" address of EEPROM "0xB4" isn't "0xAA", we adjust once more.

- (c) We can confirm the ADC values from "0x00~0x05" addresses in a page "0xB4".

3.3. Function Check

: Check Input and Signal items (cf. work instruction)

- (1) TV

- (2) AV1 (SCART)

- Input the SCART-RGB signal and check the display.
(MSPG-925F Model: 232, Pattern;12)

- (3) AV2 (CVBS/ S-Video)

- (4) H/P Sound Output

* Display and Sound check is executed by Remote control.

4. Total Assembly line process

4.1. Adjustment Preparation

- (1) Above 30 minutes Heat-run in RF no signal
- (2) 15 Pin D-Sub Jack is connected to the signal of Pattern Generator.

4.2. Confirm color coordinate of AV2

- (1) Set Input to AV2.
- (2) Input signal : CVBS, PAL @ 50Hz
Full White 216/255 gray level (85 IRE, Model : 202
Patter : 78 at MSPG925L)
- (3) Set PSM : Dynamic / CSM : Cool
- (4) Confirm whether $x=0.276\pm0.03$, $y=0.283\pm0.03$, $y\geq0.250$ or not.

4.3. Other quality

- (1) Confirm that each items satisfy under standard condition that was written product spec..
- (2) Confirm Video and Sound at each source.
 - 1) AV
 - (a) Select input AV1 and check whether picture is displayed or not. - Check whether SCART output picture is displayed or not.
 - (b) Select input AV2(S-video) and check whether picture is displayed or not.
 - (c) Select input AV2(CVBS) and check whether picture is displayed or not.
 - 2) TV : Select input TV and check below item.(In Gumi factory)
 - C05(E05) – Check TELETEXT Function (Applicable to the model that has Teletext code set-up item in Product spec)
 - C07(E07) – Check Nicam DUAL
 - C52 (E52) – Check Nicam Stereo
 - * Refer to “6.Preset CH information”

4.4. Power consumption confirmation

- (1) Check if Power LED Color and Power Consumption operate as standard.
- (2) Measurement Condition : 230V~, 50Hz (Analog)
- (3) Confirm Stand-by operation.

4.5. Outgoing condition Configuration

- (1) After all function test, press IN-STOP Key by Service Remote control. And make outgoing condition.
- (2) When pressing IN-STOP key by service remote control, LED is power off in a little time and then automatically LED is changed the stand-by status(RED Color).(Must not AC power OFF at that time)

4.6. Option data setting (SVC OSD setting)

- Tool Option		20LS5R-ZA	REMARK
		8 9 6	
Resolution		0	
Module		0	
TV		1	
SCART		1	
AV2		1	
COMPONENT		0	
PC-RGB		0	
DVI		0	
HDMI		0	
- Area Option [A B]			
(A) 0 : FACTORY MODE OFF 1 : FACTORY MODE ON [Caution] FACTORY MODE ON only used in factory. (B) 0: default Option setting. 1~4: The other Area Option setting.(Reserved) [Caution] Initial Setting of Area Option is [1 0] in production line. After IN-STOP, Area Option will change [0 0]. If Area Option isn't 00 after IN-STOP, must change to 00. (Using ► key on R/C)			
No	Item	Condition	Remark
OPTION 1 [6]			
1	200PR	0	0 : 200 PR Off 1 : 200 PR On
2	ACMS	1	0 : ACMS Off 1 : ACMS On
3	TEXT	1	0 : TOP 1 : FLOF
4	CH+AU	0	0 : Except below area 1 : China, Australia
5	BOOSTER	0	
OPTION 2 [2]			
1	SYS	0	0 : BG//DK/L 1 : BG//DK/M
2	A2 ST	1	Acting FM-ST after checking Nicam
3	I II SAVE	0	0 : I II SAVE Off 1 : I II SAVE On
4	HDEV	0	0 : Except below area 1 : China
5	V-Curve	0	0 : Turbo Volume Off 1 : Turbo Volume On
6	MONO	0	
OPTION 3 [2]			
1	KEY-TYPE	2	2 : 8Key
OPTION 4 [3]			
1	Default Lang	3	
2	Lang	0	Chesky Dansk Deutsch English Español Français Italiano Magyar Nederlands Norsk Polski Português Romaneste Suomi Svenska
3	T- Lang	0	AUSTRIA NORWAY BULGARIA POLAND CROATIA PORTUGAL CZECH RUMANIA DENMARK RUSSIA ENGLAND SERBIA ESTONIA SLOVAKIA FINLAND SLOVENIA FRANCE SPAIN GERMANY SWEDEN GREECE SWITZERLAND HUNGARY TURKEY ITALY ARAB LATVIA HEBREW NETHERLANDS Others
OPTION 5 [9]			
1	2HR-OFF	1	0 : 2 Hour off option -OFF 1 : 2 Hour off option -ON
2	TV-LINK-TUNER	0	
3	FACTORY-MODE	0	0 : EEPROM Write Protection On 1 : EEPROM Write Protection Off
4	CHANNEL-MUTE	1	0 : Channel Mute Off 1 : Channel Mute On

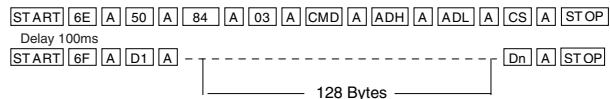
5. Adjustment Command

5.1. Adjustment Command (LENGTH=84)

No.	Adjustment Contents	CMD(hex)	ADR	VAL	Description
1	EEPROM ALL INIT.	E4	00	00	EEPROM all clear
2	EEPROM Read	E7	00	00	EEPROM Read
3	EEPROM Write	E8	00	data	EEPROM Write by some values
4	COLOR SAVE (R/G/B cutoff, Drive, Contrast, Bright)	EB	00	00	Color Save
5	H POSITION	20	00	00 – 100	They have different range each mode, FOS Adjustment
6	V POSITION	30	00	00 – 100	
7	CLOCK	90	00	00 – 100	
8	PHASE	92	00	00 – 100	Drive adjustment
9	R DRIVE	16	00	00 – FF	
10	G DRIVE	18	00	00 – FF	
11	B DRIVE	1A	00	00 – FF	Offset adjustment
12	R CUTOFF	80	00	00 – 7F	
13	G CUTOFF	82	00	00 – 7F	
14	B CUTOFF	84	00	00 – 7F	Bright adjustment
15	BRIGHT	10	00	00 – 3F	
16	CONTRAST	12	00	00 – 64	Luminance adjustment
17	AUTO_COLOR_ADJUST	F1	00	02	Auto COLOR Adjustment
18	CHANGE_COLOR_TEMP	F2	00	0, 1, 2, 3	0: COOL 1: NORMAL 2: WARM 3: USER
19	FACTORY_DEFAULT	F3	00	00	00: Factory mode Off FF: Factory mode On
20	AUTO_INPUTCHANGE	F4	00	00	0: TV 1: AV1 2: AV2 3: Component 4: RGB 5: DVI

5.2. EEPROM DATA READ

(1) Signal Table



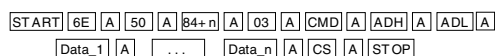
(2) Command Set

Adjustment Contents	CMD(hex)	ADR(hex)	ADL(hex)	Details
EEPROM READ	E7	A0	0	0-Page 0~7F Read
			80	0-Page 80~FF Read
		A2	0	1-Page 0~7F Read
			80	1-Page 80~FF Read
		A4	0	2-Page 0~7F Read
			80	2-Page 80~FF Read
		A6	0	3-Page 0~7F Read
			80	3-Page 80~FF Read

Purpose : To read the appointment Address of E2PROM by 128(80h)-byte

5.3. E²PROM Data Write

(1) Signal Table



LEN : 84h+Bytes
 CMD : 8Eh
 ADH : E²PROM Slave Address(A0,A2,A4,A6,A8),
 Not 00h(Reserved by BufferToEEPROM)
 ADL : E2PROM Sub Address(00~FF)
 Data : Write data

(2) Command Set

No.	Adjustment contents	CMD(hex)	LEN	Details
1	EEPROM WRITE	E8	94	16-Byte Write
2			84+n	n-byte Write

<Purpose>

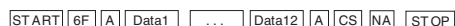
- 1) EDID write : 16-byte by 16-byte, 8 order (128-byte) write (TO "00 – 7F" of "EEPROM Page A4")
- 2) FOS Default write : 16-mode data (HFh, HFI, VF, STD, HP, VP, Clk, ClkPh, PhFine) write
- 3) Random Data write : write the appointment Address of E2PROM

5.4. VRAM Read

- 1) Send CMD(70h) to read Video RAM value from MICOM And save its value to 128-Bytes Buffer(Common Buffer for the use of EDID).



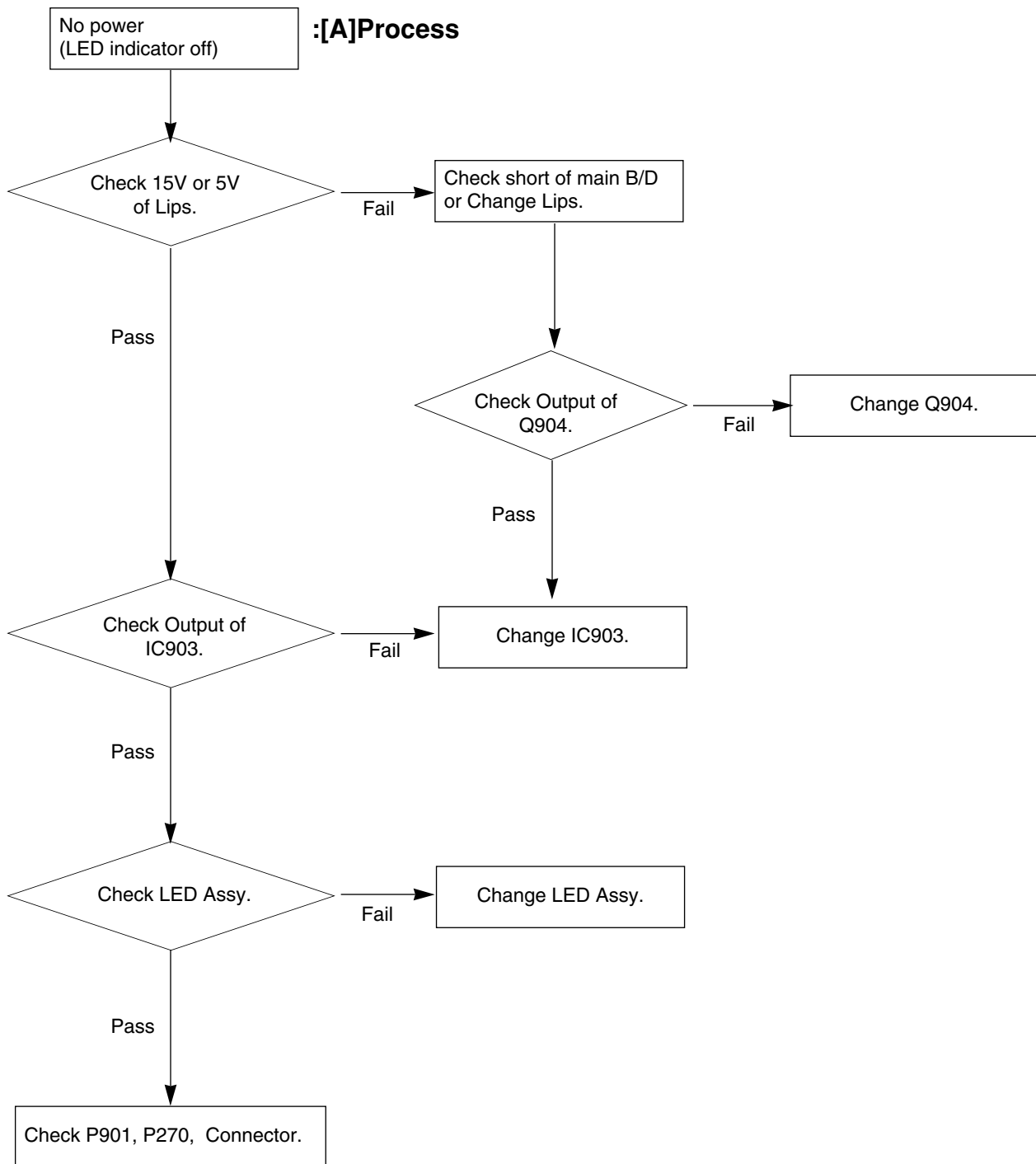
- 2) Delay 500ms(Time to wait and read vVideo RAM from MICOM)
- 3) Be transmitted the contents of MICOM's 128-bytes Buffer to PC.(128th Data is the CheckSum of 127-bytes data : That's OK if the value of adding 128-bytes Data is Zero)

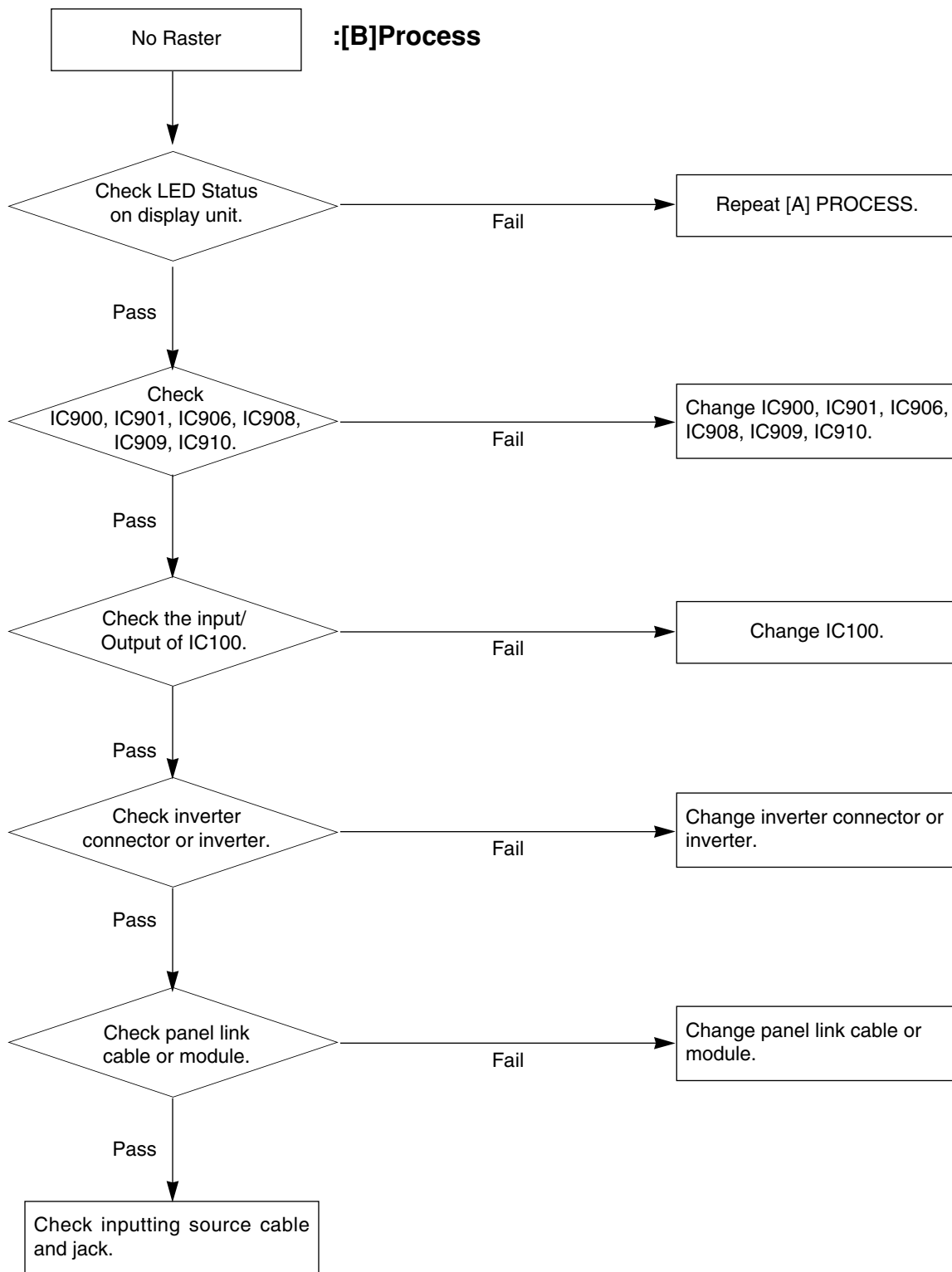


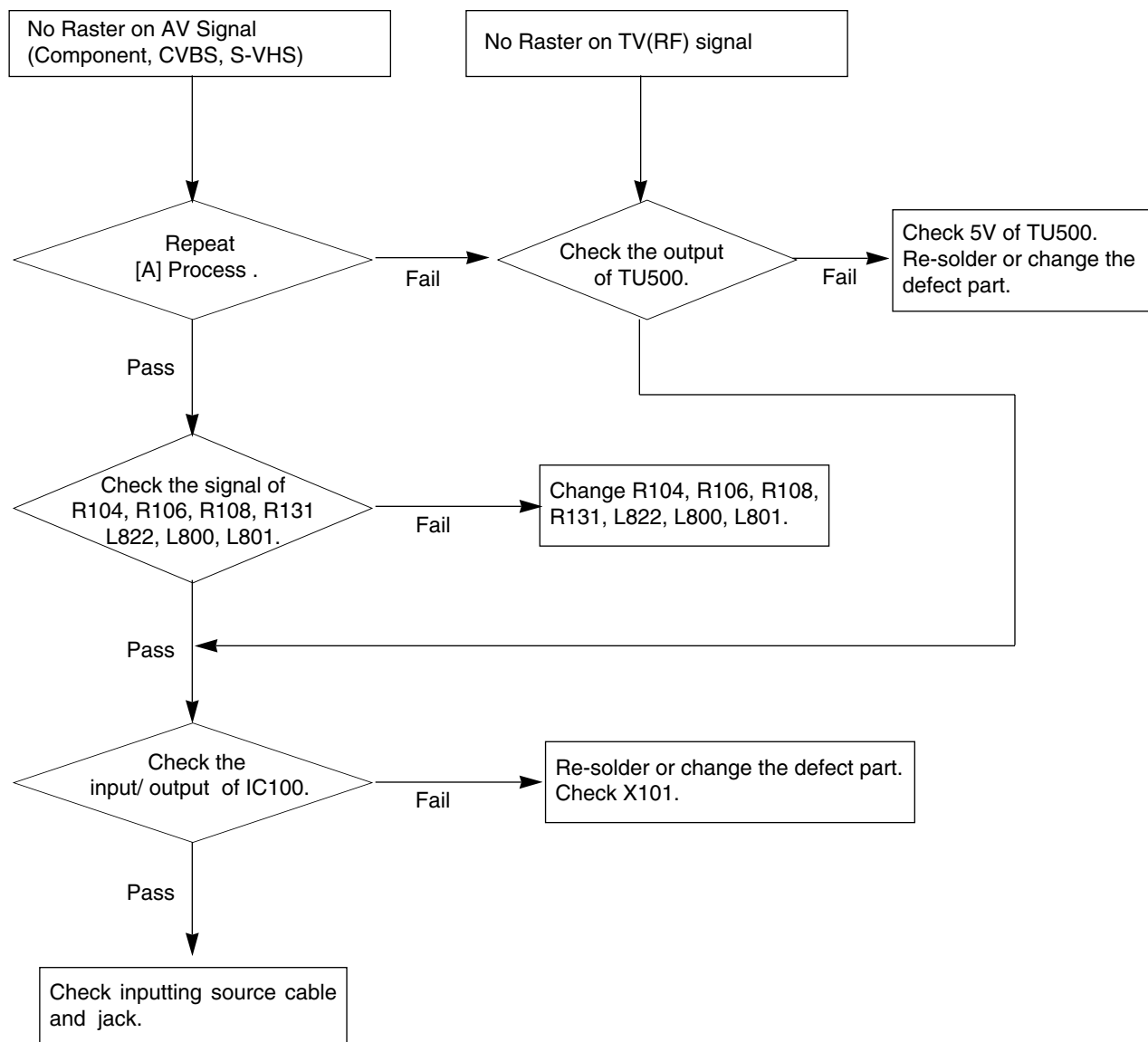
6. Preset CH information

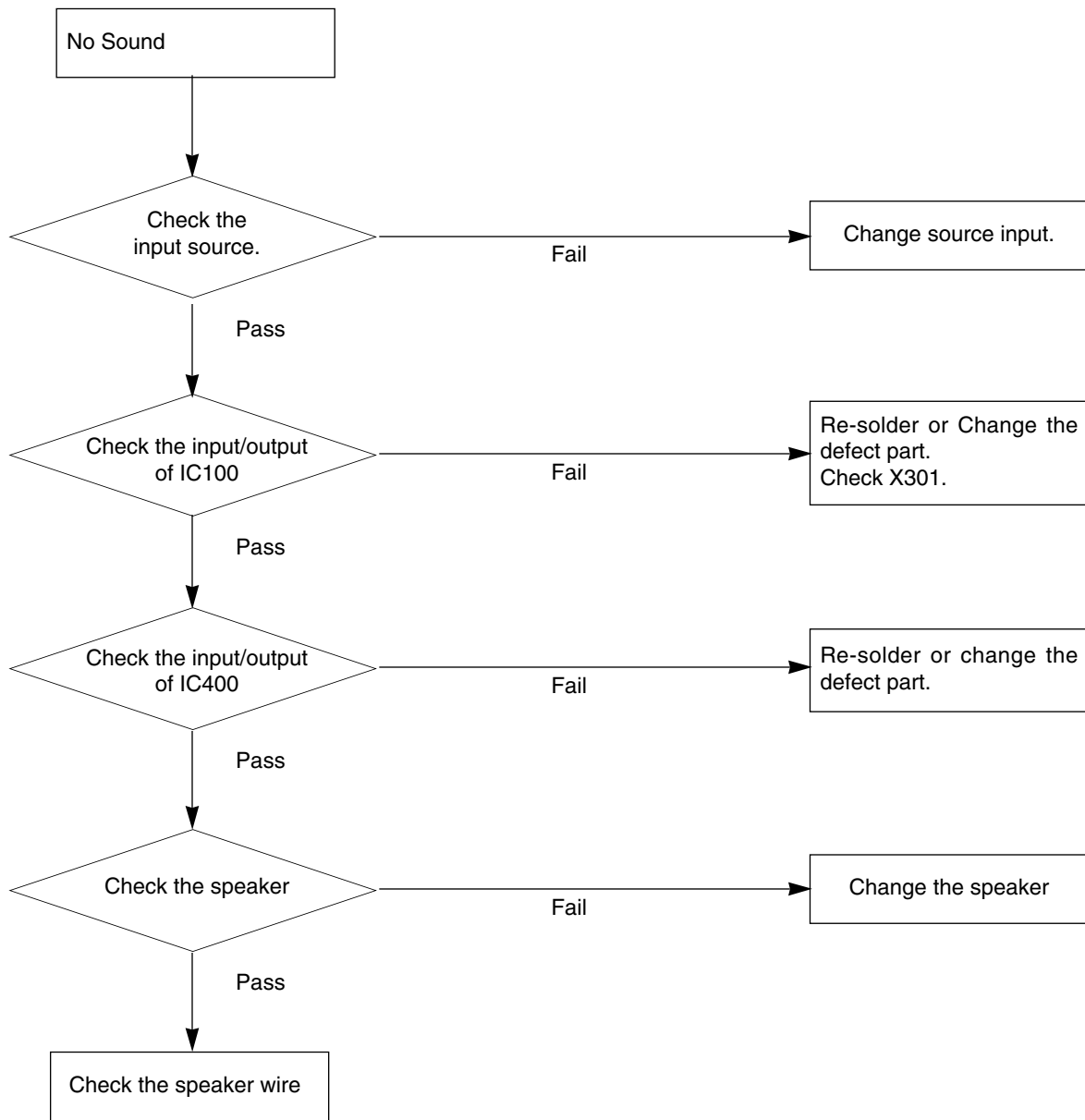
		PIF[MHz]	SYSTEM	VIDEO	SOUND		TXT	NAME
					System	Mode		
LGE Gumi	PR 0	575.25	SECAM-DK	DIGITAL		DUAL		C 34
	PR 1	45.25	PAL-BG	PHILIPS		MONO		C 01
	PR 2	175.25	PAL-BG	PHILIPS		STEREO	FLOF	C 05
	PR 3	231.25	PAL-I	FUBK		MONO		S 11
	PR 4	62.25	SECAM-BG	PHILIPS		DUAL		C 04
	PR 5	189.25	PAL-BG	Crosshatch		DUAL		C 07
	PR 6	703.25	PAL-BG	RGB, WHITE	NICAM	MONO	FLOF	C 50
	PR 7	719.25	PAL-BG	MATRIX C/B		STEREO		C 52
	PR 8	631.25	PAL-I	PHILIPS	NICAM	STEREO		C 41
	PR 9	807.25	PAL-I	Crosshatch	NICAM	STEREO		C 63
	PR 10	55.75	PAL-L	Crosshatch		MONO		C 02
	PR 11	152.75	PAL-L	PHILIPS	NICAM	DUAL		S 07
	PR 12	591.25	PAL-L	Colorbar	NICAM	STEREO		C 36
LGEMA	PR 13	175.25	PAL-B	Crosshatch+Circle	NICAM	DUAL	FLOF	C 05
	PR 14	711.25	PAL-G	DIGITAL	NICAM	STEREO	FLOF	C 51
	PR 15	631.25	PAL-I	Crosshatch	NICAM	STEREO	FLOF	C41
	PR 16	93.25	SECAM-D	DIGITAL		MONO		C 05
	PR 17	62.25	PAL-B	Crosshatch	A2	STEREO		C 04
	PR 18	551.25	PAL-G	Colorbar	A2	DUAL	TOP	C 31
	PR 19	471.25	PAL-I	DIGITAL		STEREO	FLOF	C 21
	PR 20	855.25	PAL-I	DIGITAL		MONO	FLOF	C 69
	PR 21	687.25	NTSC-M	DIGITAL		MONO		C 08
	PR 22	200.25	SECAM-L	DIGITAL	NICAM	DUAL		C 45
	PR 23	663.25	SECAM-L	Crosshatch(16:9)		MONO	FLOF	C 25
	PR 24	189.25	PAL-B			STEREO		C 07
	PR 25	327.25	NTSC-M		A2	STEREO	FLOF	S 24
	PR 26	615.25	PAL-B		NICAM	STEREO	FLOF	C 39
	PR 27	535.25	PAL-BG		NICAM	STEREO		C 29
LGEWA	PR 28	45.25	PAL-BG	Monoscope		MONO	FLOF	C 01
	PR 29	575.25	PAL-DK	Monoscope	NICAM	STEREO	FLOF	C 34
	PR 30	175.25	PAL-BG	SMPTE		MONO		C 04
	PR 31	231.25	PAL-I	Colorbar	NICAM	DUAL		S 11
	PR 32	62.25	PAL-BG	White Raster		MONO		C 04
	PR 33	703.25	SECAM-DK	White Raster		MONO		C 50
	PR 34	719.25	PAL-BG	Crosshatch+Circle		MONO		C 52
	PR 35	591.25	SECAM-L	Colorbar	NICAM	STEREO		C 36
LGENT	PR36	175.25	PAL-B/G	Philips	1Khz			C 05
	PR 37	503.25	PAL-B/G	Color Bar (2)	Ger, Stereo 1K,3Khz		FLOF	C 25
	PR 38	623.25	PAL-B/G	Monoscope	Sweep			C 40
	PR 39	49.75	SECAM D/K	Color Bar(2)	400Hz			C 01
	PR 40	200.25	PAL-D/K	Color Bar	Sweep			C 10
	PR 41	695.25	PAL-D/K	Philips	CHI Dual 1K, 3Khz		FLOF	C 36

TROUBLESHOOTING

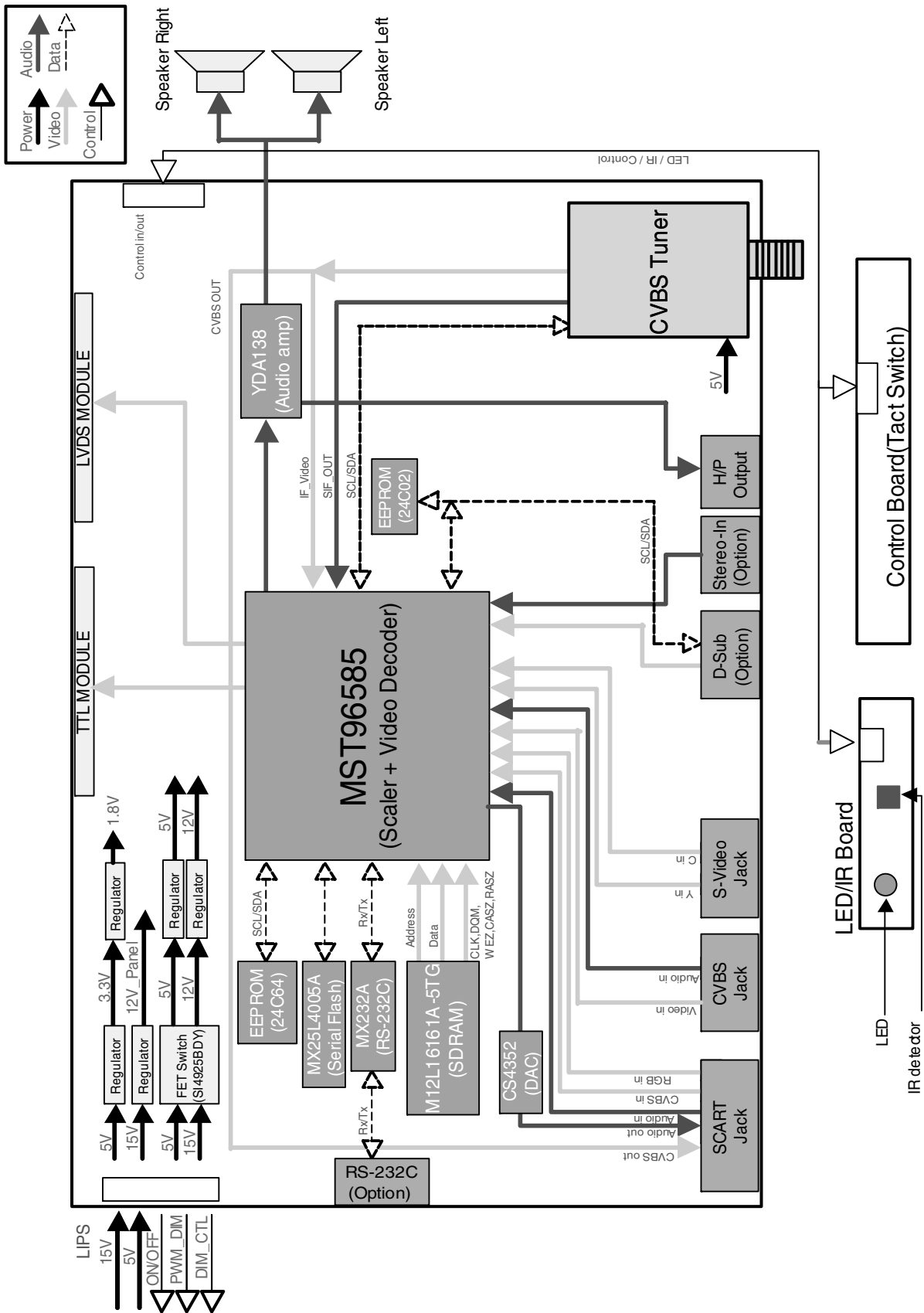








BLOCK DIAGRAM



BLOCK DIAGRAM DESCRIPTION

Power Supply Block (LIPS)

This Block Generates DC Voltage (5V,15V) to Main Control system from AC Power (100-240 V, 50/60 Hz, 1.0A)
Also it has the inverter function that converts input voltage to AC Rms value for the LCD lamp.

Voltage Regulator

Voltage regulator convert the input 5V,15V to proper 1.8V, 3.3V, 5V, 12V for
Main control system.
For shooting heat trouble, we use the voltage regulator IC.

Digital Audio Amplifier

This block is composed of YDA138-EZ and peripheral device
The function of the audio amplifier is that to amplify audio L / R signal transmitted from audio decoder. The audio signal is amplified according to pre-defined DC volume control curve.

Audio / Video Decoder / Scaler

This block is composed of LGE9655 and peripheral devices.

1) Video Decoder

This Block Selects input Video signals (like CVBS, Y/C, SCART RGB) and output LVDS/ TTL signal through Scaler.

On decoding, We can control signal like Contrast, Brightness, Sharpness, Color, tint signals including Adaptive Comb Filter.

2) Audio Decoder

This block analyzes audio input signal through A/V Jack (and PC audio) and Tuner SIF.

The analyzed signals transmitted to audio amplifier.

On decoding, We can control signal like Bass, treble.

3) Scaler

This IC includes A/D Converter and LVDS Transmitter

This IC is directly Inputted Analog Signal and transmits it to LCD Module

4) Micom

This block controls each IC through IIC communication line.

DAC IC (CS4352)

It is composed of CS4352.

The CS4352 is a complete stereo digital-to-analog system including digital interpolation, fifth-order multi-bit delta-sigma digital-to-analog conversion, digital de-emphasis, analog filtering, and on-chip 2 Vrms line-level driver.

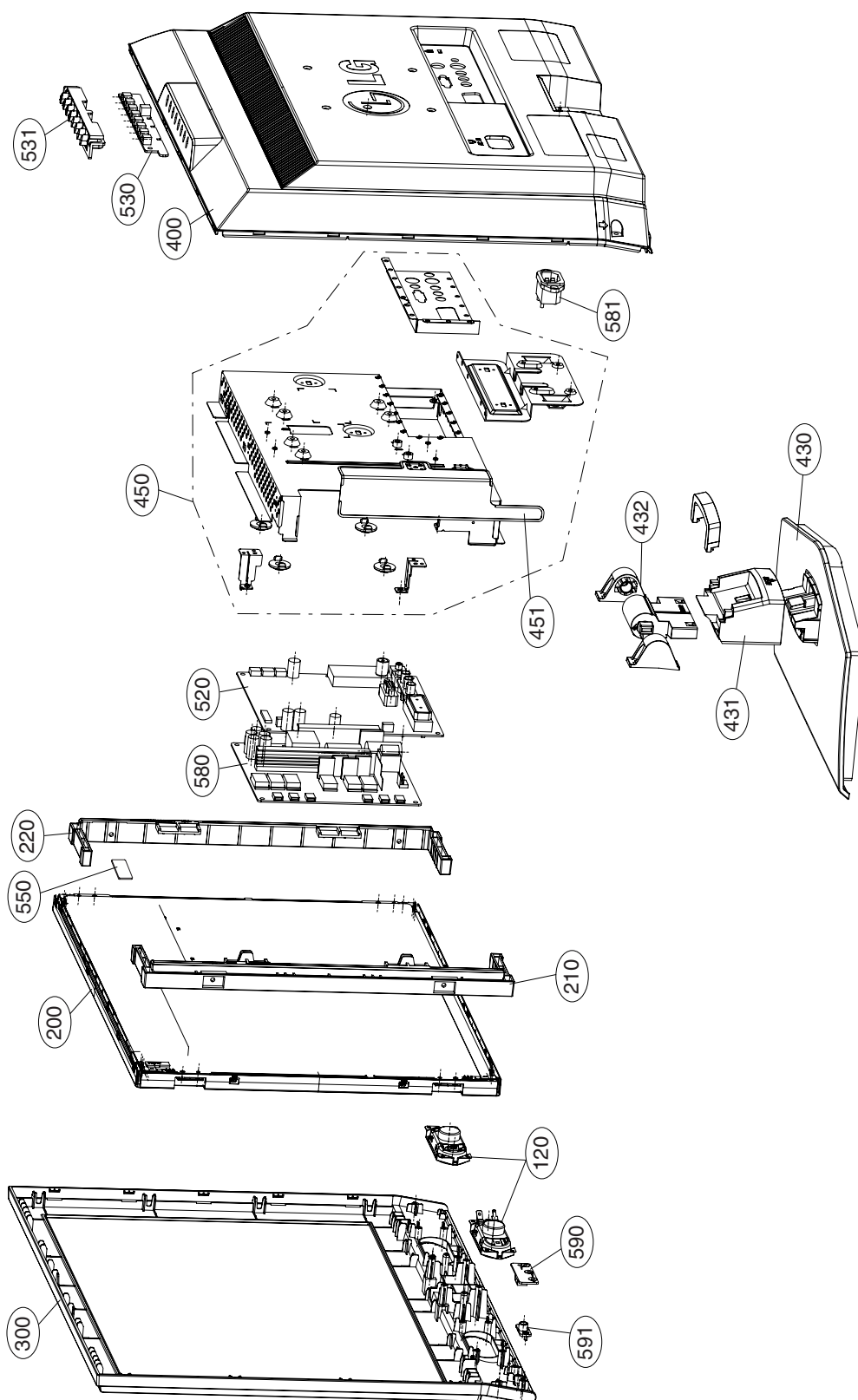
TUNER

Micom controls this through IIC Line.

TUNER makes CVBS/SIF and transmits CVBS/SIF signal to LGE9655.




MEMO

EXPLODED VIEW



EXPLODED VIEW PARTS LIST

* **Note:** Safety mark 

No.		PART NO.	DESCRIPTION
	120	EAB35995501	Speaker,Full Range A11 EN1227C-6710 3W 8OHM 80DB 300HZ 31 X 78.5 X 21 LUG
	200	EAJ30338001	LCD,Module-TFT LC201V02-SDA1 VGA 20.1INCH 640X480 450CD COLOR 72% 4/3 800
	210	MCK36815003	Cover MOLD HIPS 51SF 20LS5R HIPS 51SF MODULE FIX BRACKET (LPL) RIGHT_CKD
	220	MCK36815004	Cover MOLD HIPS 51SF 20LS5R HIPS 51SF MODULE FIX BRACKET (LPL) LEFT_CKD
	300	ABJ32624702	Cabinet Assembly 20LS5R LP68A(BB3) 20" 20LS5R Cabinet Assy_CKD
	400	ACQ32625202	Cover Assembly 20LS5R LP68A(BB3) 20" 20LS5R Back Cover Assy_CKD
	430	ACQ32300802	Cover Assembly 20LS5R LP68A(BB3) 20" STAND BASE ASSY,CKD
	431	MCK36017202	Cover MOLD ABS 380 17LS5R/20LS5R ABS, HF-380 STAND BODY,CKD
	432	ACQ32300504	Cover Assembly 20LS5R LP68A 20" HINGE BODY COVER ASSY,CKD
	450	ADV30635219	Frame Assembly 20LS5R LP68A 20" 20LS5R BB3 PAL_SECAM AV SHIELD_CKD
	451	MGJ32259302	Plate,Shield PRESS SPT 0.3t SHIELD SPT LAMP 20LS1R CSKD OF 01
	520	EBU36061601	Main Total Assembly 20LS5R-ZA BRAND LP68A
		EBU36061602	Main Total Assembly 20LS5R-ZA BRAND LP68A
	530	EBR31760602	PCB Assembly SUB T.T LP68A LS1R-ZK CKD LS1R-ZK CKD
		EBR31760603	PCB Assembly CONTROL T.T LP68A LS1R-ZK SKD LS1R-ZK SKD
	531	MEY30552601	Knob MOLD HIPS 405AF SUB CONTROL KNOB LS1R LS1R CONTROL KNOB
	550	EBR35712602	PCB Assembly,Interface INTERFACE T.T LP68A 20LS1R-ZK CKD 20LS1R-ZK CKD (LPL)
		EBR35712603	PCB Assembly,Interface INTERFACE T.T LP68A 20LS1R-ZK SKD 20LS1R-ZK SKD (LPL)
	580	EAY32636401	Power Supply Assembly AIV-P0032 FREE 20LS1R LCD 20 INCH 4:3 6 LAMP LIPS
	581	EBT36118901	Chassis Assembly POWER(SMPS) - LP68A CORE AC SOCKET C/SKD ASS'Y
	590	EBR32541801	PCB Assembly SUB T.T CL81 Mx21A BZF LED+IR
		EBR32541807	PCB Assembly SUB T.T CL81 / LP68A 17LS5R-ZA / Mx21A LED IR NT PCBA
	591	MES36625301	Indicator MOLD PMMA LED 20LS5R PMMA 7 PHY

REPLACEMENT PARTS LIST

DATE: 2007. 02. 07.

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
CAPACITORS					
C100	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C152	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C102	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C154	0CK105CD56A	C1608X7R1A105KT 1uF 10% 10V X7R -55TO+125C
C103	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C155	0CK224DK56A	CS2012X7R224K500NR 220nF 10% 50V X7R -55TO+
C104	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C156	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C105	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C157	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C
C106	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C158	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C
C107	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C159	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C108	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C161	0CH5200K416	0805N200J500LT 20pF 5% 50V C0G -55TO+125C 2
C1089	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C162	0CH5200K416	0805N200J500LT 20pF 5% 50V C0G -55TO+125C 2
C109	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C164	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105
C1090	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C168	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T
C1091	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C169	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T
C1091	0CK105CD56A	C1608X7R1A105KT 1uF 10% 10V X7R -55TO+125C	C170	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T
C1092	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C171	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T
C1093	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C172	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C110	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C173	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T
C111	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C174	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T
C112	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C176	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C113	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C179	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C114	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C180	0CK153CK56A	0603B153K500CT 15nF 10% 50V X7R -55TO+125C
C115	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C181	0CK153CK56A	0603B153K500CT 15nF 10% 50V X7R -55TO+125C
C116	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C183	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C117	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C184	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C118	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C185	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C121	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C186	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C122	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C187	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C123	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T	C188	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C124	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C190	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C127	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C191	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C128	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C192	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C129	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C194	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C131	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C195	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C132	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C196	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C133	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C197	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C134	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C199	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105
C135	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C	C250	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C137	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C251	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C138	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C252	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V C0G -55TO+125C
C139	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C253	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1
C140	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C253	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C142	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C255	0CC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C
C143	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C261	0CC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C
C144	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C262	0CC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C
C145	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C270	0CC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C
C146	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C271	0CC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C
C148	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C272	0CC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C
C149	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C273	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C150	0CK475CC94A	C1608Y5V0J475ZT 4.7uF -20TO+80% 6.3V Y5V -3	C274	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1
C151	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C274	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
			C275	0CE475WJ6DC	MVK4.0TP35VC4.7M 4.7uF 20% 35V 15MA -40TO+8

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION	LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
C300	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C710	0CC331CK41A	C1608C0G1H331JT 330pF 5% 50V C0G -55TO+125C
C301	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C711	0CC331CK41A	C1608C0G1H331JT 330pF 5% 50V C0G -55TO+125C
C303	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C712	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1
C304	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C713	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1
C306	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C718	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C308	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C720	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V C0G -55TO+125C
C400	0CK225DH94A	C2012Y5V225ZFT 2.2uF -20TO+80% 25V Y5V -30T	C721	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V C0G -55TO+125C
C4000	0CN1040K949	CH UP050 F104Z-B-B Z 100nF -20TO+80% 50V Y5	C722	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V C0G -55TO+125C
C4001	0CN1040K949	CH UP050 F104Z-B-B Z 100nF -20TO+80% 50V Y5	C723	0CC220CK41A	C1608C0G1H220JT 22pF 5% 50V C0G -55TO+125C
C401	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1	C724	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C402	0CK224DH56A	0805B224K250CT 220nF 10% 25V X7R -55TO+125C	C725	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C403	0CK474DK56A	UMK212BJ474KG-T 470nF 10% 50V X7R -40TO+105	C726	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C404	0CK224DH56A	0805B224K250CT 220nF 10% 25V X7R -55TO+125C	C727	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105
C405	0CK105CF94A	0603F105Z160CT 1uF -20TO+80% 16V Y5V -30TO+	C728	0CC331CK41A	C1608C0G1H331JT 330pF 5% 50V C0G -55TO+125C
C406	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1	C731	0CK222CK51A	0603B222K500CT 2.2nF 10% 50V Y5P -30TO+85C
C407	0CK475EF67A	C3216X5R1C475MT 4.7uF 20% 16V X5R -55TO+85C	C732	0CK222CK51A	0603B222K500CT 2.2nF 10% 50V Y5P -30TO+85C
C408	0CK475EF67A	C3216X5R1C475MT 4.7uF 20% 16V X5R -55TO+85C	C738	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105
C409	0CE227WF6DC	MVK8.0TP16VC220M 220uF 20% 16V 80MA -40TO+1	C740	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C410	0CK105CF94A	0603F105Z160CT 1uF -20TO+80% 16V Y5V -30TO+	C741	0CE335WK6D8	MVK4.0TP50VC3.3M 3.3uF 20% 50V 14MA -40TO+1
C411	0CK105CF94A	0603F105Z160CT 1uF -20TO+80% 16V Y5V -30TO+	C742	0CE335WK6D8	MVK4.0TP50VC3.3M 3.3uF 20% 50V 14MA -40TO+1
C412	0CE227WF6DC	MVK8.0TP16VC220M 220uF 20% 16V 80MA -40TO+1	C743	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C413	0CK475EF67A	C3216X5R1C475MT 4.7uF 20% 16V X5R -55TO+85C	C744	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105
C414	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C745	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105
C415	0CK475EF67A	C3216X5R1C475MT 4.7uF 20% 16V X5R -55TO+85C	C746	0CC561CK41A	C1608C0G1H561JT 560pF 5% 50V C0G -55TO+125C
C416	0CE106WFKDC	MVK4.0TP16VC10M 10uF 20% 16V 16MA -40TO+105	C747	0CC561CK41A	C1608C0G1H561JT 560pF 5% 50V C0G -55TO+125C
C417	0CK474DK56A	UMK212BJ474KG-T 470nF 10% 50V X7R -40TO+105	C748	0CE335WK6D8	MVK4.0TP50VC3.3M 3.3uF 20% 50V 14MA -40TO+1
C418	0CK224DH56A	0805B224K250CT 220nF 10% 25V X7R -55TO+125C	C749	0CE335WK6D8	MVK4.0TP50VC3.3M 3.3uF 20% 50V 14MA -40TO+1
C419	0CK105CF94A	0603F105Z160CT 1uF -20TO+80% 16V Y5V -30TO+	C804	0CC561CK41A	C1608C0G1H561JT 560pF 5% 50V C0G -55TO+125C
C420	0CK224DH56A	0805B224K250CT 220nF 10% 25V X7R -55TO+125C	C805	0CC561CK41A	C1608C0G1H561JT 560pF 5% 50V C0G -55TO+125C
C421	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C810	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C
C422	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C821	0CC331CK41A	C1608C0G1H331JT 330pF 5% 50V C0G -55TO+125C
C423	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C822	0CC331CK41A	C1608C0G1H331JT 330pF 5% 50V C0G -55TO+125C
C424	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C823	0CC331CK41A	C1608C0G1H331JT 330pF 5% 50V C0G -55TO+125C
C425	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C880	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C
C426	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C881	0CK473CK56A	C1608X7R1H473KT 47nF 10% 50V X7R -55TO+125C
C427	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C900	0CE477WF6DC	MVK10TP16VC470M 470uF 20% 16V 80MA -40TO+10
C428	0CC102CK41A	C1608C0G1H102JT 1nF 5% 50V C0G -55TO+125C 1	C901	0CE477EH618	KMG5.0TP25VB470M 470uF 20% 25V 471MA -55TO+
C5000	0CH5101K416	C2012C0G1H101JT 100pF 5% 50V C0G -55TO+125C	C902	0CE477EH618	KMG5.0TP25VB470M 470uF 20% 25V 471MA -55TO+
C5001	0CH5101K416	C2012C0G1H101JT 100pF 5% 50V C0G -55TO+125C	C903	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C5002	0CH5470K416	0805N470J500LT 47pF 5% 50V C0G -55TO+125C 2	C904	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C5003	0CH3104K566	0805B104K500CT 100nF 10% 50V X7R -55TO+125C	C906	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C501	0CK103CK56A	0603B103K500CT 10nF 10% 50V X7R -55TO+125C	C906	0CK105CD56A	C1608X7R1A105KT 1uF 10% 10V X7R -55TO+125C
C503	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1	C907	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C504	0CK103CK56A	0603B103K500CT 10nF 10% 50V X7R -55TO+125C	C908	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C505	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1	C909	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C506	0CC390CK41A	C1608C0G1H390JT 39pF 5% 50V C0G -55TO+125C	C911	0CK105DH56A	C2012X7R105KFT 1uF 10% 25V X7R -55TO+125C 2
C507	0CC390CK41A	C1608C0G1H390JT 39pF 5% 50V C0G -55TO+125C	C912	0CE226WF6DC	MVK5.0TP16VC22M 22uF 20% 16V 30MA -40TO+105
C508	0CK103CK56A	0603B103K500CT 10nF 10% 50V X7R -55TO+125C	C913	0CK105DH56A	C2012X7R105KFT 1uF 10% 25V X7R -55TO+125C 2
C510	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C914	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C658	0CC330CK41A	C1608C0G1H330JT 33pF 5% 50V C0G -55TO+125C	C915	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C659	0CC330CK41A	C1608C0G1H330JT 33pF 5% 50V C0G -55TO+125C	C916	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C660	0CC330CK41A	C1608C0G1H330JT 33pF 5% 50V C0G -55TO+125C	C918	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C701	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C919	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C702	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C919	0CK105CD56A	C1608X7R1A105KT 1uF 10% 10V X7R -55TO+125C
C706	0CK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C	C920	0CE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
C921	OCK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C921	OCK105CD56A	C1608X7R1A105KT 1uF 10% 10V X7R -55TO+125C
C926	OCE107WF6DC	MVK6.3TP16VC100M 100uF 20% 16V 80MA -40TO+1
C927	OCC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C
C928	OCK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C934	OCK104CK56A	0603B104K500CT 100nF 10% 50V X7R -55TO+125C
C935	OCE477WF6DC	MVK10TP16VC470M 470uF 20% 16V 80MA -40TO+10
R273	OCC101CK41A	C1608C0G1H101JT 100pF 5% 50V C0G -55TO+125C

DIODES

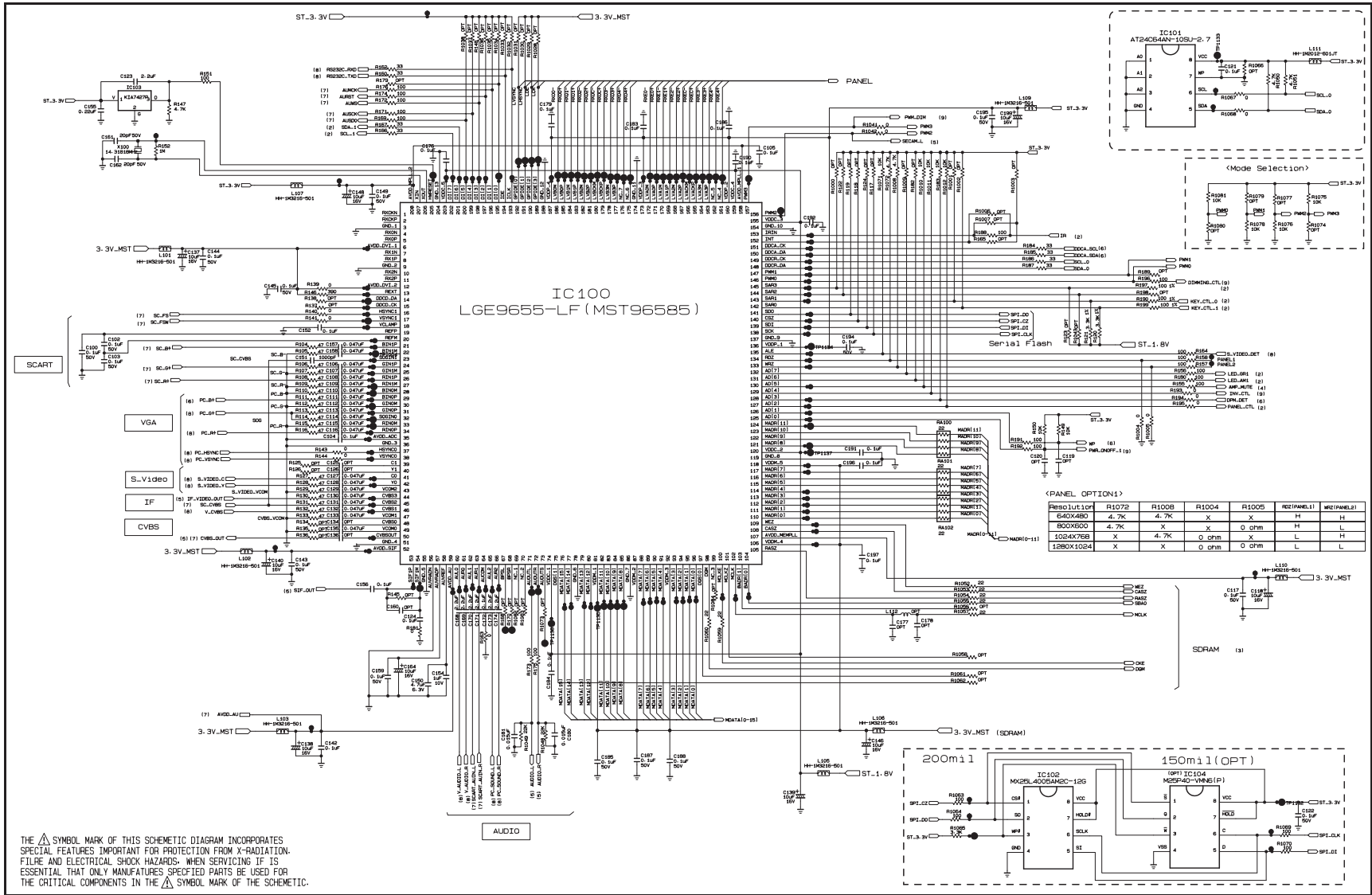
D400	0DS181009AA	KDS181 1.2V 85V 300MA 2A 4NSEC 150MW SOT23
D401	0DS181009AA	KDS181 1.2V 85V 300MA 2A 4NSEC 150MW SOT23
D402	0DS181009AA	KDS181 1.2V 85V 300MA 2A 4NSEC 150MW SOT23
D600	0DS226009AA	KDS226 1.2V 85V 300MA 2A 4NSEC 150MW SOT23
D601	0DS226009AA	KDS226 1.2V 85V 300MA 2A 4NSEC 150MW SOT23
D602	0DS226009AA	KDS226 1.2V 85V 300MA 2A 4NSEC 150MW SOT23
ZD4000	0DZ560009CF	MTZJ5.6B 5.6V 5.45TO5.73V 40OHM 500MW DO34
ZD4001	0DZ560009CF	MTZJ5.6B 5.6V 5.45TO5.73V 40OHM 500MW DO34
ZD5000	0DZRM00178A	UDZS5.1B 5.1V 4.98TO5.2V 80OHM 200MW SOD323
ZD651	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD653	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD655	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD656	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD657	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD700	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD701	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD702	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD703	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD704	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD705	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD706	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD707	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD708	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD709	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD710	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD711	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD712	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD713	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD714	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD800	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD801	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD802	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD803	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD804	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD805	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD806	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD811	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD820	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD821	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD822	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD823	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD824	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD844	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32
ZD845	0DZ560009DA	UDZS5.6B 5.6V 5.49TO5.73V 60OHM 200MW SOD32

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
ICs		
IC100	EAN33715801	LGE9655-LF(MST96585) 300MVTO3.6V,300MVTO1.9
IC101	0IMMRAL026C	AT24C64AN-10SU-2.7 64KBIT 8192x8bit 2.7VTO5
IC103	0IMCRKE004A	KIA7427F -0.3TO7.5V 2.7V 500MW SOT89 R/TP 3
IC300	EAN32236001	M12L16161A-5TG[Shrink 0.11um] 16MBIT 512K X
IC400	EAN33643401	YDA138-EZ(D-3) 9TO13.5V 7mV 0.02% 10W 1.45W
IC700	EAN33594801	CS4352-CZZR 8.55TO12.6 3.13TO3.47 192KHZ 24
IC900	0IMCRAU004A	S1117-33PIC 4.8TO12V 3.3V 2W TO220 ST 3P A
IC901	0IPMGSG016A	LD1086D2T18TR 3.4TO30V 1.8V - D2PAK R/TP 3P
IC906	0ISS780500H	KA78M05RTM 7TO20V 5V - DPAK R/TP 3P FAIRCH
IC907	0IMCRKE010A	KIA7812AF 14.5TO27V 12V 1.3W DPAK R/TP 3P
IC908	0IMCRKE014A	KIA278R12PI 13TO29V 12V 1.5W TO220IS ST 4P
IC909	0IPMGRH001G	BA33BC0FP-E2 4.3TO16V 3.3V 1.2W TO252 ST 3P
IC910	0IPMGRH001G	BA33BC0FP-E2 4.3TO16V 3.3V 1.2W TO252 ST 3P
TRANSISTORS & FETs		
IC903	EBK32753101	SI4925BDY P-CHANNEL MOSFET -30V +-20 -7.1A
Q250	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q251	0TFIR80017B	IRLML5203TRPBF P-CHANNEL MOSFET -30V +-20V
Q252	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q253	0TR390609FA	KST3906-MTF PNP -5V -40V -40V -0.2A -0.0000
Q254	0TR390609FA	KST3906-MTF PNP -5V -40V -40V -0.2A -0.0000
Q400	0TR150400BA	2SA1504S(ASY) PNP -5V -50V -50V -0.15A -0.0
Q402	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q500	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q5001	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q5002	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q501	0TR150400BA	2SA1504S(ASY) PNP -5V -50V -50V -0.15A -0.0
Q504	0TR150400BA	2SA1504S(ASY) PNP -5V -50V -50V -0.15A -0.0
Q507	0TR150400BA	2SA1504S(ASY) PNP -5V -50V -50V -0.15A -0.0
Q508	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q900	0TR387500AA	2SC3875S(ALY) NPN 5V 60V 50V 150MA 100NA 70
Q904	0TR390409AE	KST3904 NPN 6V 60V 40V 200MA 50NA 100TO300
RESISTORS		
R1008	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO
R1010	0RJ1002D677	MCR03EZPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R1011	0RJ1002D677	MCR03EZPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R1012	0RJ1002D677	MCR03EZPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R104	0RJ0472D677	MCR03EZPJ470 47OHM 5% 1/10W 1608 R/TP ROHM
R1041	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W 1608 R/TP ROHM
R1042	0RJ0000D677	MCR03EZPJ000 0OHM 5% 1/10W 1608 R/TP ROHM
R1048	0RJ2202D677	MCR03EZPJ223 22KOHM 5% 1/10W 1608 R/TP ROH
R1049	0RJ2202D677	MCR03EZPJ223 22KOHM 5% 1/10W 1608 R/TP ROH
R105	0RJ0472D677	MCR03EZPJ470 47OHM 5% 1/10W 1608 R/TP ROHM
R1050	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO
R1051	0RJ4701D677	MCR03EZPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO
R1052	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W 1608 R/TP ROHM
R1053	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W 1608 R/TP ROHM
R1054	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W 1608 R/TP ROHM
R1055	0RJ0222D677	MCR03EZPJ220 22OHM 5% 1/10W 1608 R/TP ROHM
R1057	0RJ0472D677	MCR03EZPJ470 47OHM 5% 1/10W 1608 R/TP ROHM

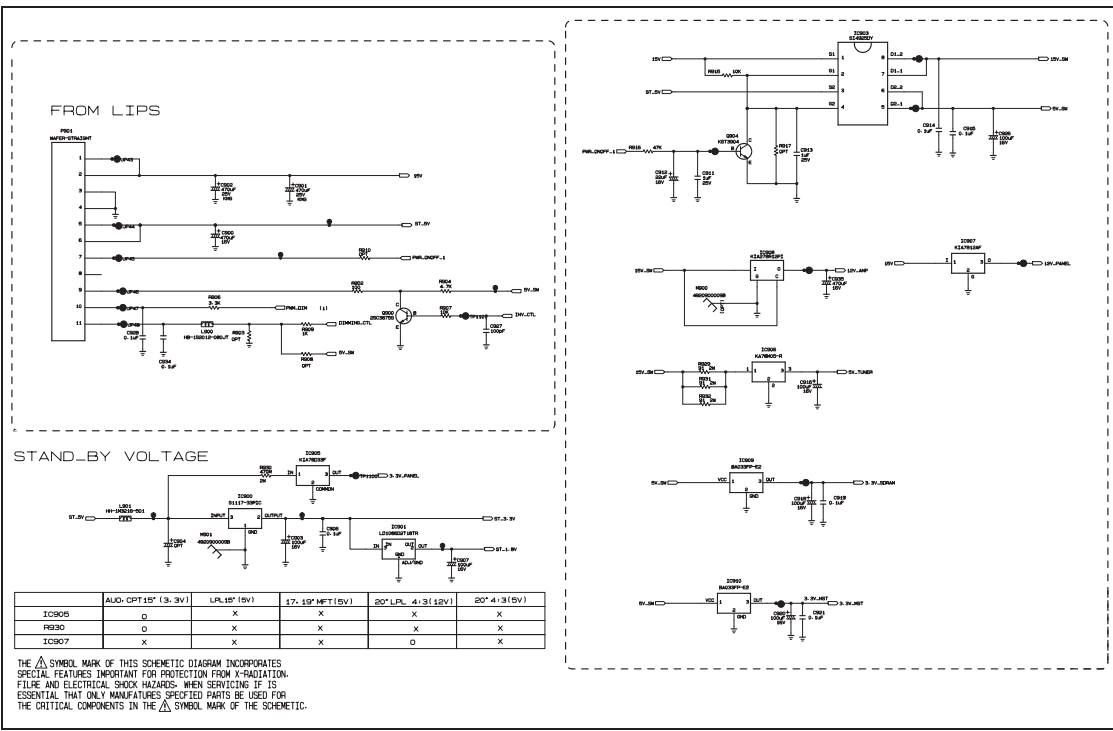
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R403	0RJ1003D677	MCR03EJPJ104 100KOHM 5% 1/10W 1608 R/TP RO	R724	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO
R407	0RJ1500D677	MCR03EJPJ151 150OHM 5% 1/10W 1608 R/TP ROH	R728	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W 2012 R/TP ROHM
R408	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO	R729	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W 2012 R/TP ROHM
R410	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO	R730	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W 2012 R/TP ROHM
R412	0RJ1000D677	MCR03EJPJ101 100OHM 5% 1/10W 1608 R/TP ROH	R731	0RH0222D622	MCR10EZHJ220 22OHM 5% 1/8W 2012 R/TP ROHM
R413	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM	R737	0RJ5600D677	MCR03EJPJ561 560OHM 5% 1/10W 1608 R/TP ROH
R414	0RJ1003D477	MCR03EJPF104 100KOHM 1% 1/10W 1608 R/TP RO	R738	0RJ5600D677	MCR03EJPJ561 560OHM 5% 1/10W 1608 R/TP ROH
R415	0RJ1000D677	MCR03EJPJ101 100OHM 5% 1/10W 1608 R/TP ROH	R739	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R418	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM	R740	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R419	0RJ1001D677	MCR03EJPJ102 1KOHM 5% 1/10W 1608 R/TP ROHM	R741	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R420	0RJ1003D477	MCR03EJPF104 100KOHM 1% 1/10W 1608 R/TP RO	R742	0RJ9101D677	MCR03EJPJ912 9.1KOHM 5% 1/10W 1608 R/TP RO
R421	0RJ1001D677	MCR03EJPJ102 1KOHM 5% 1/10W 1608 R/TP ROHM	R743	0RJ9101D677	MCR03EJPJ912 9.1KOHM 5% 1/10W 1608 R/TP RO
R500	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH	R744	0RJ0222D677	MCR03EJPJ220 22OHM 5% 1/10W 1608 R/TP ROHM
R5001	0RH1501D622	MCR10EZHJ152 1.5KOHM 5% 1/8W 2012 R/TP ROH	R745	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM
R5002	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W 2012 R/TP ROHM	R748	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R5003	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W 2012 R/TP ROHM	R749	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM
R5004	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W 2012 R/TP ROHM	R750	0RJ1001D677	MCR03EJPJ102 1KOHM 5% 1/10W 1608 R/TP ROHM
R5005	0RH1001D622	MCR10EZHJ102 1KOHM 5% 1/8W 2012 R/TP ROHM	R751	0RJ1001D677	MCR03EJPJ102 1KOHM 5% 1/10W 1608 R/TP ROHM
R5005	0RH2001D622	MCR10EZHJ202 2KOHM 5% 1/8W 2012 R/TP ROHM	R800	0RJ0752D677	MCR03EJPJ750 75OHM 5% 1/10W 1608 R/TP ROHM
R501	0RJ0332D677	MCR03EJPJ330 33OHM 5% 1/10W 1608 R/TP ROHM	R801	0RJ0752D677	MCR03EJPJ750 75OHM 5% 1/10W 1608 R/TP ROHM
R502	0RJ0332D677	MCR03EJPJ330 33OHM 5% 1/10W 1608 R/TP ROHM	R802	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM
R506	0RJ2700D677	MCR03EJPJ271 270OHM 5% 1/10W 1608 R/TP ROH	R803	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM
R507	0RJ1000D677	MCR03EJPJ101 100OHM 5% 1/10W 1608 R/TP ROH	R823	0RJ4703D677	MCR03EJPJ474 470KOHM 5% 1/10W 1608 R/TP RO
R508	0RJ2700D677	MCR03EJPJ271 270OHM 5% 1/10W 1608 R/TP ROH	R824	0RJ4703D677	MCR03EJPJ474 470KOHM 5% 1/10W 1608 R/TP RO
R509	0RJ1000D677	MCR03EJPJ101 100OHM 5% 1/10W 1608 R/TP ROH	R825	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R512	0RJ1500D677	MCR03EJPJ151 150OHM 5% 1/10W 1608 R/TP ROH	R826	0RJ0752D677	MCR03EJPJ750 75OHM 5% 1/10W 1608 R/TP ROHM
R513	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH	R827	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R514	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH	R834	0RJ9101D677	MCR03EJPJ912 9.1KOHM 5% 1/10W 1608 R/TP RO
R515	0RJ4700D677	MCR03EJPJ471 470OHM 5% 1/10W 1608 R/TP ROH	R835	0RJ9101D677	MCR03EJPJ912 9.1KOHM 5% 1/10W 1608 R/TP RO
R517	0RJ1500D677	MCR03EJPJ151 150OHM 5% 1/10W 1608 R/TP ROH	R837	0RJ0152D677	MCR03EJPJ150 15OHM 5% 1/10W 1608 R/TP
R518	0RJ3300D677	MCR03EJPJ331 330OHM 5% 1/10W 1608 R/TP ROH	R838	0RJ0152D677	MCR03EJPJ150 15OHM 5% 1/10W 1608 R/TP
R519	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO	R866	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM
R520	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO	R880	0RJ0152D677	MCR03EJPJ150 15OHM 5% 1/10W 1608 R/TP
R652	0RJ2201D677	MCR03EJPJ222 2.2KOHM 5% 1/10W 1608 R/TP RO	R881	0RJ0152D677	MCR03EJPJ150 15OHM 5% 1/10W 1608 R/TP
R653	0RJ2201D677	MCR03EJPJ222 2.2KOHM 5% 1/10W 1608 R/TP RO	R887	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO
R654	0RJ0752D677	MCR03EJPJ750 75OHM 5% 1/10W 1608 R/TP ROHM	R888	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO
R655	0RJ0752D677	MCR03EJPJ750 75OHM 5% 1/10W 1608 R/TP ROHM	R902	0RJ1000D677	MCR03EJPJ101 100OHM 5% 1/10W 1608 R/TP ROH
R656	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM	R904	0RJ4701D677	MCR03EJPJ472 4.7KOHM 5% 1/10W 1608 R/TP RO
R657	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM	R906	0RJ3301D677	MCR03EJPJ332 3.3KOHM 5% 1/10W 1608 R/TP RO
R658	0RJ1000D677	MCR03EJPJ101 100OHM 5% 1/10W 1608 R/TP ROH	R907	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R659	0RJ1000D677	MCR03EJPJ101 100OHM 5% 1/10W 1608 R/TP ROH	R909	0RJ3301D677	MCR03EJPJ332 3.3KOHM 5% 1/10W 1608 R/TP RO
R660	0RJ1001D677	MCR03EJPJ102 1KOHM 5% 1/10W 1608 R/TP ROHM	R915	0RJ1002D677	MCR03EJPJ103 10KOHM 5% 1/10W 1608 R/TP ROH
R661	0RJ0752D677	MCR03EJPJ750 75OHM 5% 1/10W 1608 R/TP ROHM	R916	0RJ4702D677	MCR03EJPJ473 47KOHM 5% 1/10W 1608 R/TP ROH
R702	0RJ1500D677	MCR03EJPJ151 150OHM 5% 1/10W 1608 R/TP ROH	R929	0RX0912K665	RSD02F4J91R0 91OHM 5% 2W 12.0X4.0MM 20.0MM
R703	0RJ0752D477	MCR03EJPF750 75OHM 1% 1/10W 1608 R/TP ROHM	R931	0RX0912K665	RSD02F4J91R0 91OHM 5% 2W 12.0X4.0MM 20.0MM
R704	0RJ0752D477	MCR03EJPF750 75OHM 1% 1/10W 1608 R/TP ROHM	R932	0RX0912K665	RSD02F4J91R0 91OHM 5% 2W 12.0X4.0MM 20.0MM
R705	0RJ0752D677	MCR03EJPJ750 75OHM 5% 1/10W 1608 R/TP ROHM	RA100	0RJ1000C687	RCA86TRJ100R 100OHM 5% 1/16W 4 SMD R/TP 8P
R706	0RJ0752D477	MCR03EJPF750 75OHM 1% 1/10W 1608 R/TP ROHM	RA101	0RJ1000C687	RCA86TRJ100R 100OHM 5% 1/16W 4 SMD R/TP 8P
R707	0RJ1500D677	MCR03EJPJ151 150OHM 5% 1/10W 1608 R/TP ROH	RA102	0RJ1000C687	RCA86TRJ100R 100OHM 5% 1/16W 4 SMD R/TP 8P
R709	0RJ5602D477	MCR03EJPF563 56KOHM 1% 1/10W 1608 R/TP ROH	RA300	0RJ1000C687	RCA86TRJ100R 100OHM 5% 1/16W 4 SMD R/TP 8P
R710	0RJ2402D677	MCR03EJPJ243 24KOHM 5% 1/10W 1608 R/TP ROH	RA301	0RJ1000C687	RCA86TRJ100R 100OHM 5% 1/16W 4 SMD R/TP 8P
R712	0RJ0000D677	MCR03EJPJ000 0OHM 5% 1/10W 1608 R/TP ROHM	RA310	0RJ1000C687	RCA86TRJ100R 100OHM 5% 1/16W 4 SMD R/TP 8P
R715	0RJ4703D677	MCR03EJPJ474 470KOHM 5% 1/10W 1608 R/TP RO	RA311	0RJ1000C687	RCA86TRJ100R 100OHM 5% 1/16W 4 SMD R/TP 8P
R716	0RJ4703D677	MCR03EJPJ474 470KOHM 5% 1/10W 1608 R/TP RO			
R723	0RJ0682D677	MCR03EJPJ680 68OHM 5% 1/10W 1608 R/TP ROHM			

LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
COILs & FILTERs & INDUCTORs		
L101	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L102	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L103	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L106	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L107	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L109	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L110	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L111	6200J00005E	Filter,Bead HH-1M2012-601JT 600OHM 2X1.25X1MM
L252	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L261	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L262	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L270	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L271	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L400	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L401	61409B0002A	Coil,Choke DBF-1030A 30uH - 2.5A 10.8X10MM
L402	61409B0002A	Coil,Choke DBF-1030A 30uH - 2.5A 10.8X10MM
L403	61409B0002A	Coil,Choke DBF-1030A 30uH - 2.5A 10.8X10MM
L404	61409B0002A	Coil,Choke DBF-1030A 30uH - 2.5A 10.8X10MM
L405	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L406	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L407	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L408	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L409	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L410	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L411	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L412	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L501	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
L700	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L701	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L702	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L703	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L704	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L706	6200J00005E	Filter,Bead HH-1M2012-601JT 600OHM 2X1.25X1MM
L707	6200J00005E	Filter,Bead HH-1M2012-601JT 600OHM 2X1.25X1MM
L708	6200J00005E	Filter,Bead HH-1M2012-601JT 600OHM 2X1.25X1MM
L800	0LC0233002A	Inductor,Multilayer,Chip FI-B2012-332KJT 3.3UH 10% 50V
L801	0LC0233002A	Inductor,Multilayer,Chip FI-B2012-332KJT 3.3UH 10% 50V
L820	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L821	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L822	0LC0233002A	Inductor,Multilayer,Chip FI-B2012-332KJT 3.3UH 10% 50V
L880	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L881	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L882	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L900	6210TCE001A	Filter,Bead HB-1S2012-080JT 8OHM 2X1.25X1MM
L901	6210TCE001G	Filter,Bead HH-1M3216-501JT 500OHM
CONNECTOR		
J805	6602T10002E	DF9B-41S-1V 41P 1 STRAIGHT FEMALE SMD TP 3.
J806	6602T10002F	FH12K1-50S-0.5SH 50P 0.50MM FFC/FPC ANGLE B
JA650	6630TGA004H	KCN-DS-0-0089 D-SUB 15P 2.29MM STRAIGHT FEM
LB2	6631T20038G	SMH200 SMH200 600mM 2.00MM 5P UL1061 AWG26
P253	6602T10002F	FH12K1-50S-0.5SH 50P 0.50MM FFC/FPC ANGLE B

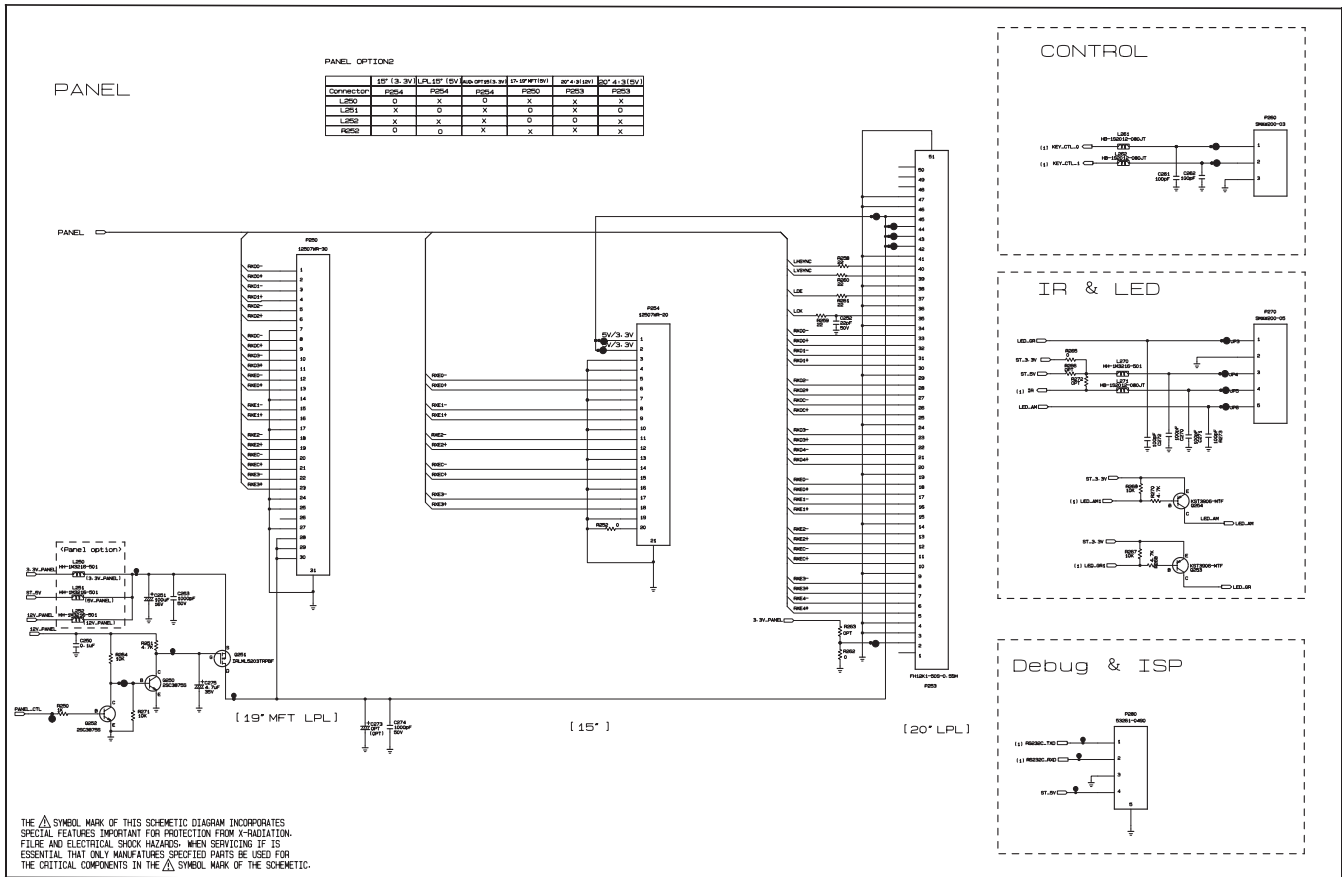
LOC. NO.	PART NO.	DESCRIPTION / SPECIFICATION
P260	6602T20009B	SMAW200-03P 3P 2.00MM 1R ANGLE DIP ST NATUR
P270	6602T20009D	SMAW200-05P 5P 2.00MM 1R ANGLE DIP ST NATUR
P280	6602V12001C	53261-0490 4P 1.25MM 1R ANGLE SMD TP BEIGE
P400	6602T20009C	SMAW200-04P 4P 2.00MM 1R ANGLE DIP ST NATUR
P4000	6602T20009B	SMAW200-03P 3P 2.00MM 1R ANGLE DIP ST NATUR
P5000	6602T20009D	SMAW200-05P 5P 2.00MM 1R ANGLE DIP ST NATUR
P901	6602T20008K	SMW200-11P 11P 2.00MM 1R STRAIGHT DIP ST NA
	6631900024D	SMH200 SMH200 250mM 2.00MM 3P UL1061 AWG26
	6631900026A	SPK CONN(600/300MM) SMH200 35098-9702 35097
	6631900042B	SMH200 SMH200 150mM 2.00MM 11P UL1061 AWG26
JACKs		
JA700	6612M00010A	PSC003-01 21P 21P/1C 3.81MM STRAIGHT DIP TR
JA800	6612F00024C	PSJ014-01 SOCKET 4P ANGLE DIP ST 15X15X10mM
JA820	6612J10003K	PPJ148-07 14.0MM 1RX3C STRAIGHT TR 3PORTS_Y
JA880	6612F00099A	PEJ024-01 1P 4P STRAIGHT TR 3.6MM BLACK DIP
SWITCHes		
SW4000	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
SW4001	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
SW4002	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
SW4003	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
SW4004	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
SW4005	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
SW4006	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
SW4007	140-058B	EVQPB205K 1C1P 15VDC 0.02A VERTICAL 160GF R
OTHERs		
IC102	SAA30688501	S/W,Firmware 2.00 F200 EUROPE FLASH ROM
LED500	0DLBE0138AA	LED,DIP BL-BUBGE301 ROUND 3MM
PA5000	6712SCA232A	Receiver Module TSOP34838SO1 2.7TO5.5V 1.5MA 38KHZ
TU500	EBL35311201	Tuner/Modulator PAL-B/G+I+D/K SECAM-L/L 42.25MHZ
TU500	EBL35311207	Tuner/Modulator PAL-B/G+I+D/K SECAM-L/L 42.25MHZ
X100	6202VDT002B	Crystal SX-1 14.31818MHZ 30PPM(16PF)
	6631900037A	Cable,FFC YSFFC-0.5 x 50 x 150 x G(3/3/10/10) x (0.028 x 0.32)
ACCESSORY		
A1	MFL33997808	Manual,Owners BRAND 19LS4R-ZA/ 20LS5R
A1	MFL33997809	Manual,Owners USER BRAND 19LS4R-ZA/ 20LS5R
A2	SAC30033604	Title 15/20LS1R-ZK, 20/23LS2R-ZK CD MANUAL LP69A
A3	6410TEW010A	Power Cord CEE,LP-34A&H05VV-FX3C
A3	6410TPW003A	Power Cord LP-33 & GFC18N<B90A+LS-60_1.87M_BLK
A4	MKJ32816601	Remote Controller MOLD ABS 380 CL81 20,15LS1R
A5	MCK36017402	Cover MOLD ABS 380 17LS5R/20LS5R ABS, HF-380



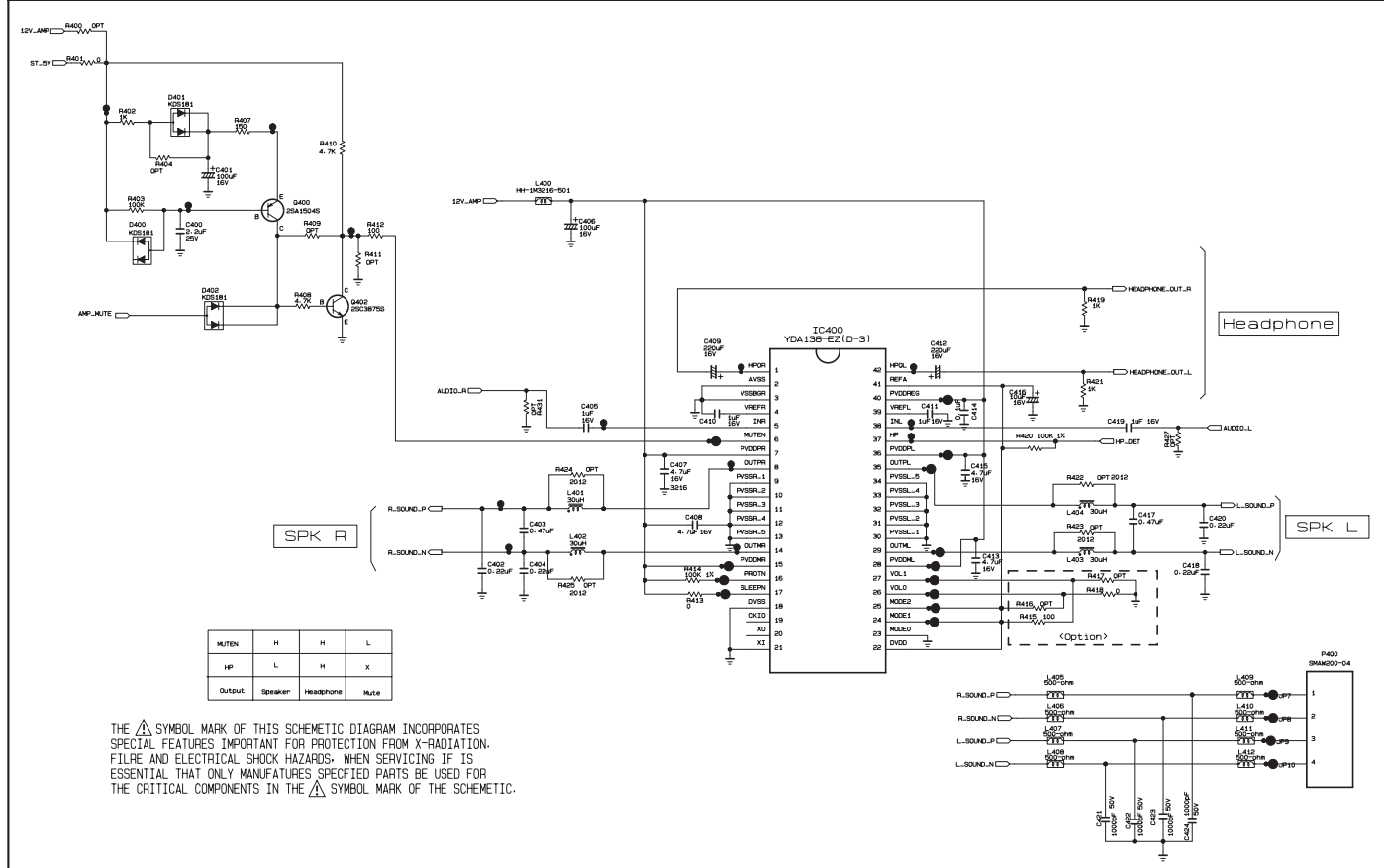
THE Δ SYMBOL MARK OF THIS SCHEMATIC DIAGRAM INCORPORATES SPECIAL FEATURES IMPORTANT FOR PROTECTION FROM X-RADIATION. FILTRE AND ELECTRICAL SHOCK HAZARDS. WHEN SERVICING IF IS ESSENTIAL THAT ONLY MANUFACTURES SPECIFIED PARTS BE USED FOR THE CRITICAL COMPONENTS IN THE Δ SYMBOL MARK OF THE SCHEMATIC.



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