

# Service Manual

## Color Television

**CHASSIS : CN-001GM**

**Model : DTQ-14D4SSF  
DTQ-20D4SSF**



**Caution**

: In this Manual, some parts can be changed for improving their performance without notice in the parts list. So, if you need the latest parts information, please refer to PPL(Parts Price List) in Service Information Center.

## ***TABLE OF CONTENTS***

<b>SAFETY PRECAUTIONS</b> .....	<b>2</b>
PRODUCT SAFTY SERVICING GUIDELINES FOR AUDIO-VIDEO PRODUCS .....	2
PRODUCT SAFTY SERVICING GUIDELINES FOR COLOR TELEVISION RECEIVERS .....	3
<b>SPECIFICATIONS</b> .....	<b>5</b>
<b>BLOCK DIAGRAM</b> .....	<b>6</b>
<b>ALIGNMENT INSTRUCTIONS</b> .....	<b>7</b>
SERVICE MODE ADJUSTMENTS .....	7
ASSEMBLY ADJUSTMENTS .....	9
PARENTAL CONTROL PASSWORD SETTINGS .....	12
<b>SCHEMATIC DIAGRAM</b> .....	<b>13</b>
<b>EXPLODED VIEW</b> .....	<b>14</b>
<b>PRINTED CIRCUIT BOARD</b> .....	<b>16</b>
<b>ELECTRICAL PARTS LIST</b> .....	<b>18</b>

*APPENDIX(Appendix is provide only by internet [<http://svc,dwe.co.kr>])*

<b>IC DESCRIPTION</b> .....	<b>24</b>
<b>TROUBLE SHOOTING GUIDE</b> .....	<b>30</b>
NO POWER .....	30
NO PICTURE .....	31
NO SOUND .....	32
CH DON'T MEMORY or CH SKIP .....	33
NO COLOR .....	34
NO VERTICAL DEFLECTION .....	34
NO ON SCREEN DISPLY .....	35
REMOTE CONTROL DOES NOT OPERATE .....	35

# PRODUCT SAFETY SERVICING GUIDELINES FOR AUDIO - VIDEO PRODUCTS

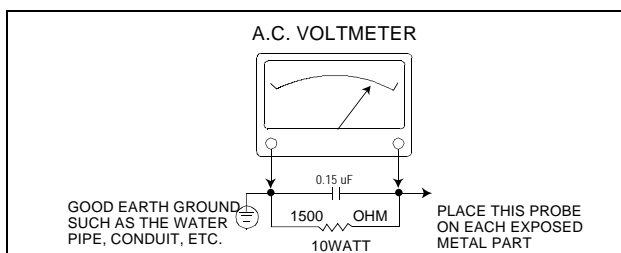
**CAUTION :** DO NOT ATTEMPT TO MODIFY THIS PRODUCT IN ANY WAY. NEVER PERFORM CUSTOMIZED INSTALLATIONS WITHOUT MANUFACTURER'S APPROVAL. UNAUTHORIZED MODIFICATIONS WILL NOT ONLY VOID THE WARRANTY, BUT MAY LEAD TO YOUR BEING LIABLE FOR ANT RESULTING PROPERTY DAMAGE OR USER INJURY. SERVICE WORK SHOULD BE PERFORMED ONLY AFTER YOU ARE THOROUGHLY FAMILIAR WITH ALL OF THE FOLLOWING SAFETY CHECKS AND SERVICING GUIDELINES. TO DO OTHERWISE, INCREASES THE RISK OF POTENTIAL HAZARDS AND INJURY TO THE USER. WHILE SERVICING, USE AN ISOLATION TRANSFORMER FOR PROTECTION FROM A.C. LINE SHOCK.

## SAFETY CHECKS

AFTER THE ORIGINAL SERVICE PROBLEM HAS BEEN CORRECTED, A CHECK SHOULD BE MADE OF THE FOLLOWING:

### SUBJECT: FIRE & SHOCK HAZARD

1. BE SURE THAT ALL COMPONENTS ARE POSITIONED IN SUCH A WAY AS TO AVOID POSSIBILITY OF ADJACENT COMPONENT SHORTS. THIS IS ESPECIALLY IMPORTANT ON THOSE MODULES WHICH ARE TRANSPORTED TO AND FROM THE REPAIR SHOP.
2. NEVER RELEASE A REPAIR UNLESS ALL PROTECTIVE DEVICES SUCH AS INSULATORS, BARRIERS, COVERS, SHIELDS, STRAIN RELIEFS, POWER SUPPLY CORDS, AND OTHER HARDWARE HAVE BEEN REINSTALLED PER ORIGINAL DESIGN. BE SURE, THAT THE SAFETY PURPOSE OF THE POLARIZED LINE PLUG HAS NOT BEEN DEFEATED.
3. SOLDERING MUST BE INSPECTED TO DISCOVER POSSIBLE COLD SOLDER JOINTS, SOLDER SPLASHES OF SHARP SOLDER POINTS. BE CERTAIN TO REMOVE ALL LOOSE FOREIGN PARTICLES.
4. CHECK FOR PHYSICAL EVIDENCE OF DAMAGE OR DETERIORATION TO PARTS AND COMPONENTS, FOR FRAYED LEADS, DAMAGED INSULATION (INCLUDING A.C. CORD), AND REPLACE IF NECESSARY. FOLLOW ORIGINAL LAYOUT, LEAD LENGTH AND DRESS.
5. NO LEAD OR COMPONENT SHOULD TOUCH A RECEIVING TUBE OR A RESISTOR RATED AT 1 WATT OR MORE. LEAD TENSION AROUND PROTRUDING METAL SURFACES MUST BE AVOIDED.
6. ALL CRITICAL COMPONENTS SUCH AS FUSES, FLAMEPROOF RESISTOR, CAPACITORS, ETC. MUST BE REPLACED WITH EXACT FACTORY TYPES. DO NOT USE REPLACEMENT COMPONENTS OTHER THAN THOSE SPECIFIED OR MAKE UNRECOMMENDED CIRCUIT MODIFICATIONS.
7. AFTER RE-ASSEMBLY OF THE SET ALWAYS PERFORM AN A.C. LEAKAGE TEST ON ALL EXPOSED METALLIC PARTS OF THE CABINET. (THE CHANNEL SELECTOR KNOB, ANTENNA TERMINALS, HANDLE AND SCREWS) TO BE SURE THE SET IS SAFE TO OPERATE WITHOUT DANGER OF ELECTRICAL SHOCK. DO NOT USE A LINE ISOLATION TRANSFORMER DURING THIS TEST USE AN A.C. VOLTMETER, HAVING 5000 OHMS PER VOLT OR MORE SENSITIVITY, IN THE FOLLOWING MANNER : CONNECT A 1500 OHM 10 WATT RESISTOR, PARALLELED BY A .15 MFD. 150V A.C. TYPE CAPACITOR BETWEEN A KNOWN GOOD EARTH GROUND (WATER POPE, CONDUIT, ETC.) AND THE EXPOSED METALLIC PARTS, ONE AT A TIME. MEASURE THE A.C. VOLTAGE ACROSS THE COMBINATION OF 1500 OHM RESISTOR AND .15 MFD CAPACITOR. REVERSE THE A.C. PLUG AND REPEAT A.C. VOLTAGE MEASUREMENTS FOR EACH EXPOSED METALLIC PART. VOLTAGE MEASURED MUST NOT EXCEED .75 VOLTS R.M.S THIS CORRESPONDS TO 0.5 MILLIAMPS A.C. MAY VALUE EXCEEDING THIS LIMIT CONSTITUTES A POTENTIAL SHOCK HAZARD AND MUST BE CORRECTED IMMEDIATELY.



### SUBJECT : GRAPHIC SYMBOLS



THE LIGHTNING FLASH WITH ARROWHEAD SYMBOL, WITHIN AN EQUILATERAL TRIANGLE, IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF UNINSULATED "DANGEROUS VOLTAGE" THAT MAY BE OF SUFFICIENT MAGNITUDE TO CONSTITUTE A RISK OF ELECTRIC SHOCK.



THE EXCLAMATION POINT WITHIN AN EQUILATERAL TRIANGLE IS INTENDED TO ALERT THE SERVICE PERSONNEL TO THE PRESENCE OF IMPORTANT SAFETY INFORMATION ON SERVICE LITERATURE.

### SUBJECT : X-RADIATION

1. BE SURE PROCEDURES AND INSTRUCTIONS TO ALL SERVICE PERSONNEL COVER THE SUBJECT OF X-RADIATION. THE ONLY POTENTIAL SOURCE OF X-RAYS IN CURRENT T.V. RECEIVERS IS THE PICTURE TUBE. HOWEVER, THIS TUBE DOES NOT EMIT X-RAYS WHEN THE HIGH VOLTAGE IS AT THE FACTORY SPECIFIED LEVEL. THE PROPER VALUE IS GIVEN IN THE APPLICABLE SCHEMATIC. OPERATION AT HIGHER VOLTAGES MAY CAUSE A FAILURE OF THE PICTURE TUBE OR HIGH VOLTAGE SUPPLY AND UNDER CERTAIN CIRCUMSTANCES, ANY PRODUCE RADIATION IN EXCESS OF DESIRABLE LEVELS.
2. ONLY FACTORY SPECIFIED C.R.T ANODE CONNECTORS MUST BE USED. DEGAUSSING SHIELDS ALSO SERVE AS X-RAY SHIELD IN COLOR SETS. ALWAYS RE-INSTALL THEM.
3. IT IS ESSENTIAL THAT SERVICE PERSONNEL HAVE AVAILABLE AN ACCURATE AND RELIABLE HIGH VOLTAGE METER. THE CALIBRATION OF THE METER SHOULD BE CHECKED PERIODICALLY AGAINST A REFERENCE STANDARD. SUCH AS THE ONE AVAILABLE AT YOUR DISTRIBUTOR.
4. WHEN THE HIGH VOLTAGE CIRCUITRY IS OPERATING PROPERLY THERE IS NO POSSIBILITY OF AN X-RADIATION PROBLEM. EVERY TIME A COLOR CHASSIS IS SERVICED, THE BRIGHTNESS SHOULD BE RUN UP AND DOWN WHILE MONITORING THE HIGH VOLTAGE WITH A METER TO BE CERTAIN THAT THE HIGH VOLTAGE DOES NOT EXCEED THE SPECIFIED VALUE AND THAT IT IS REGULATING CORRECTLY. WE SUGGEST THAT YOU AND YOUR SERVICE ORGANIZATION REVIEW TEST PROCEDURES SO THAT VOLTAGE REGULATION IS ALWAYS CHECKED AS A STANDARD SERVICING PROCEDURE, AND THAT THE HIGH VOLTAGE READING BE RECORDED ON EACH CUSTOMER'S INVOICE.
5. WHEN TROUBLESHOOTING AND MAKING TEST MEASUREMENTS IN A PRODUCT WITH A PROBLEM OF EXCESSIVE HIGH VOLTAGE, AVOID BEING UNNECESSARILY CLOSE TO THE PICTURE TUBE AND THE HIGH VOLTAGE SUPPLY. DO NOT OPERATE THE PRODUCT LONGER THAN IS NECESSARY TO LOCATE THE CAUSE OF EXCESSIVE VOLTAGE.
6. REFER TO HV, B+ AND SHUTDOWN ADJUSTMENT PROCEDURES DESCRIBED IN THE APPROPRIATE SCHEMATIC AND DIAGRAMS (WHERE USED).

### SUBJECT : IMPLOSION

1. ALL DIRECT VIEWED PICTURE TUBES ARE EQUIPPED WITH AN INTEGRAL IMPLOSION PROTECTION SYSTEM. BUT CARE SHOULD BE TAKEN TO AVOID DAMAGE DURING INSTALLATION. AVOID SCRATCHING THE TUBE. OF SCRATCHED REPLACE IT.
2. USE ONLY RECOMMENDED FACTORY REPLACEMENT TUBES.

### SUBJECT : TIPS ON PROPER INSTALLATION

1. NEVER INSTALL ANY PRODUCT IN A CLOSED-IN RECESS, CUBBYHOLE OR CLOSELY FITTING SHELF SPACE, OVER OR CLOSE TO HEAT DUCT, OR IN THE PATH OF HEATED AIR FLOW.
2. AVOID CONDITIONS OF HIGH HUMIDITY SUCH AS: OUTDOOR PATIO INSTALLATIONS WHERE DEW IS A FACTOR, NEAR STEAM RADIATORS WHERE STEAM LEAKAGE IS A FACTOR, ETC.
3. AVOID PLACEMENT WHERE DRAPERIES MAY OBSTRUCT REAR VENTING. THE CUSTOMER SHOULD ALSO AVOID THE USE OF DECORATIVE SCARVES OR OTHER COVERINGS WHICH MIGHT OBSTRUCT VENTILATION.
4. WALL AND SHELF MOUNTED INSTALLATIONS USING A COMMERCIAL MOUNTING KIT, MUST FOLLOW THE FACTORY APPROVED MOUNTING INSTRUCTIONS. A PRODUCT MOUNTED TO A SHELF OR PLATFORM MUST RETAIN ITS ORIGINAL FEET (OR THE EQUIVALENT THICKNESS IN SPACERS) TO PROVIDE ADEQUATE AIR FLOW ACROSS THE BOTTOM, BOLTS OR SCREWS USED FOR FASTENERS MUST NOT TOUCH ANY PARTS OR WIRING. PERFORM LEAKAGE TEST ON CUSTOMIZED INSTALLATIONS.
5. CAUTION CUSTOMERS AGAINST THE MOUNTING OF A PRODUCT ON SLOPING SHELF OR A TILTED POSITION, UNLESS THE PRODUCT IS PROPERLY SECURED.
6. A PRODUCT ON A ROLL-ABOUT CART SHOULD BE STABLE ON ITS MOUNTING TO THE CART. CAUTION THE CUSTOMER ON THE HAZARDS OF TRYING TO ROLL A CART WITH SMALL CASTERS ACROSS THRESHOLDS OR DEEP PILE CARPETS.
7. CAUTION CUSTOMERS AGAINST THE USE OF A CART OR STAND WHICH HAS NOT BEEN LISTED BY UNDERWRITERS LABORATORIES, INC. FOR USE WITH THEIR SPECIFIC MODEL OF TELEVISION RECEIVER OR GENERICALLY APPROVED FOR USE WITH T.V.S OF THE SAME OR LARGER SCREEN SIZE.
8. CAUTION CUSTOMERS AGAINST THE USE OF EXTENSION CORDS, EXPLAIN THAT A FOREST OF EXTENSIONS SPROUTING FROM A SINGLE OUTLET CAN LEAD TO DISASTROUS CONSEQUENCES TO HOME AND FAMILY.

# PRODUCT SAFETY SERVICING GUIDELINES FOR COLOR TELEVISION RECEIVERS

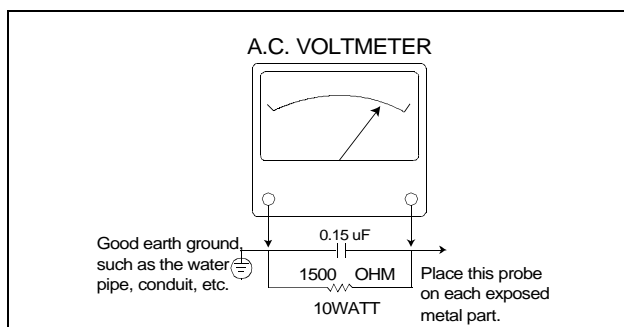
**CAUTION :** Do not attempt to modify this product in any way. Unauthorized modifications will not only void the warranty, but may lead to your being liable for any resulting property damage or user injury. Service work should be performed only after you are thoroughly familiar with all of the following safety checks and servicing guidelines. To do otherwise, increases the risk of potential hazards and injury to the user.

## SAFETY CHECKS

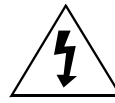
After the original service problem has been corrected, a check should be made of the following:

### SUBJECT : FIRE & SHOCK HAZARD

1. Be sure that all components are positioned in such a way as to avoid possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the repair shop.
2. Never release a repair unless all protective devices such as insulators, barriers, covers, shields, strain reliefs, and other hardware have been reinstalled per original design.
3. Soldering must be inspected to discover possible cold solder joints, frayed leads, damaged insulation (including A.C. cord), solder splashes or sharp solder points. Be certain to remove all loose foreign particulates.
4. Check for physical evidence of damage or deterioration to parts and components, and replace if necessary follow original layout, lead length and dress.
5. No leads or components should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces must be avoided.
6. All critical components such as fuses, flameproof resistors, capacitors, etc. must be replaced with exact factory types. Do not use replacement components other than those specified or make unrecommended circuit modifications.
7. After re-assembly of the set always perform an A.C. leakage test on all exposed metallic parts of the cabinet, (the channel selector knob, antenna terminals, handle and screws) to be sure the set is safe to operate without danger of electrical shock. Do not use a line isolation transformer during this test. Use an A.C. voltmeter, having 5000 ohms per volt or more sensitivity, in the following manner : connect a 1500 ohm 10 watt resistor, paralleled by a 15 mfd. 150V A.C. type capacitor between a known good earth ground (9water pipe, conduit, etc.) and the exposed metallic parts, one at a time. Measure the A.C. voltage across the combination of 1500 ohm resistor and 0.15 MFD capacitor. Reverse the A.C. plug and repeat A.C. voltage measurements for each exposed metallic part. Voltage measured must not exceed 0.75 volts R.M.S. This corresponds to 0.5 milliamp A.C. Any value exceeding this limit constitutes a potential shock hazard and must be corrected immediately.



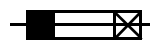
## GRAPHIC SYMBOLS :



The lightning flash with arrowhead symbol, within an equilateral triangle, is intended to alert the service personnel to the presence of uninsulated "dangerous voltage" that may be of sufficiently magnitude to constitute a risk of electric shock.



The exclamation point within an equilateral triangle is intended to alert the service personnel to the presence of important safety information in service literature.



Fuse symbol is printed on pcb adjacent to the fuse, with "RISK OF FIRE REPLACE FUSE AS MARKED". The symbol is explained in the service manual with the following wording or equivalent.

**"CAUTION :** FOR CONTINUED PROTECTION AGAINST FIRE HAZARD, REPLACE ONLY WITH SAME TYPE (4A, 125V)" and **"ATTENTION:** AFIN D'ASSU UNE PROTECTION PERMANENTE CONTRE LES RISQUES D'INCENDIE, REMPLACER UNIQUEMENT PAR UN FUSIBLE DE MEME TYPE ET DE "4A, 125V".

### SUBJECT : X-RADIATION

1. Be sure procedures and instructions to all service personnel cover the subject of X-rays in current T.V. receivers is the picture tube. However, this tube does not emit X-rays when the high voltage is at the factory specified level. The proper value is given in the applicable schematic. Operation at higher voltages may cause a failure of the picture tube or high voltage supply and, under certain circumstances, may produce radiation in excess of desirable levels.
2. Only factory specified C.R.T. anode connectors must be used. Degaussing shields also serve as X-ray shield in color sets. Always re-install them.
3. It is essential that the serviceman has available an accurate and reliable high voltage meter. The calibration of the meter should be checked periodically against a reference standard. Such as the one available at your distributor.
4. When the high voltage circuitry is operating properly there is no possibility of an X-radiation problem. Every time a color chassis is serviced, the brightness should be run up and down while monitoring the high voltage with a meter to be certain that the high voltage does not exceed the specified value and that it is regulating correctly. We suggest that you and your service organization review test procedures so that voltage regulation is always checked as a standard servicing procedure. And that the high voltage reading be recorded on each customer's invoice.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, avoid being unnecessarily close to the picture tube and the high voltage compartment. Do not operate the chassis longer than is necessary to locate the cause of excessive voltage.
6. Refer to HV, B+ and Shutdown adjustment procedures described in the appropriate schematic and diagrams (where used).

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**SUBJECT : IMPLOSION**

1. All direct viewed picture tubes are equipped with an integral implosion protection system, but care should be taken to avoid damage during installation. Avoid scratching the tube. If scratched, replace it.
2. Use only recommended factory replacement tubes.

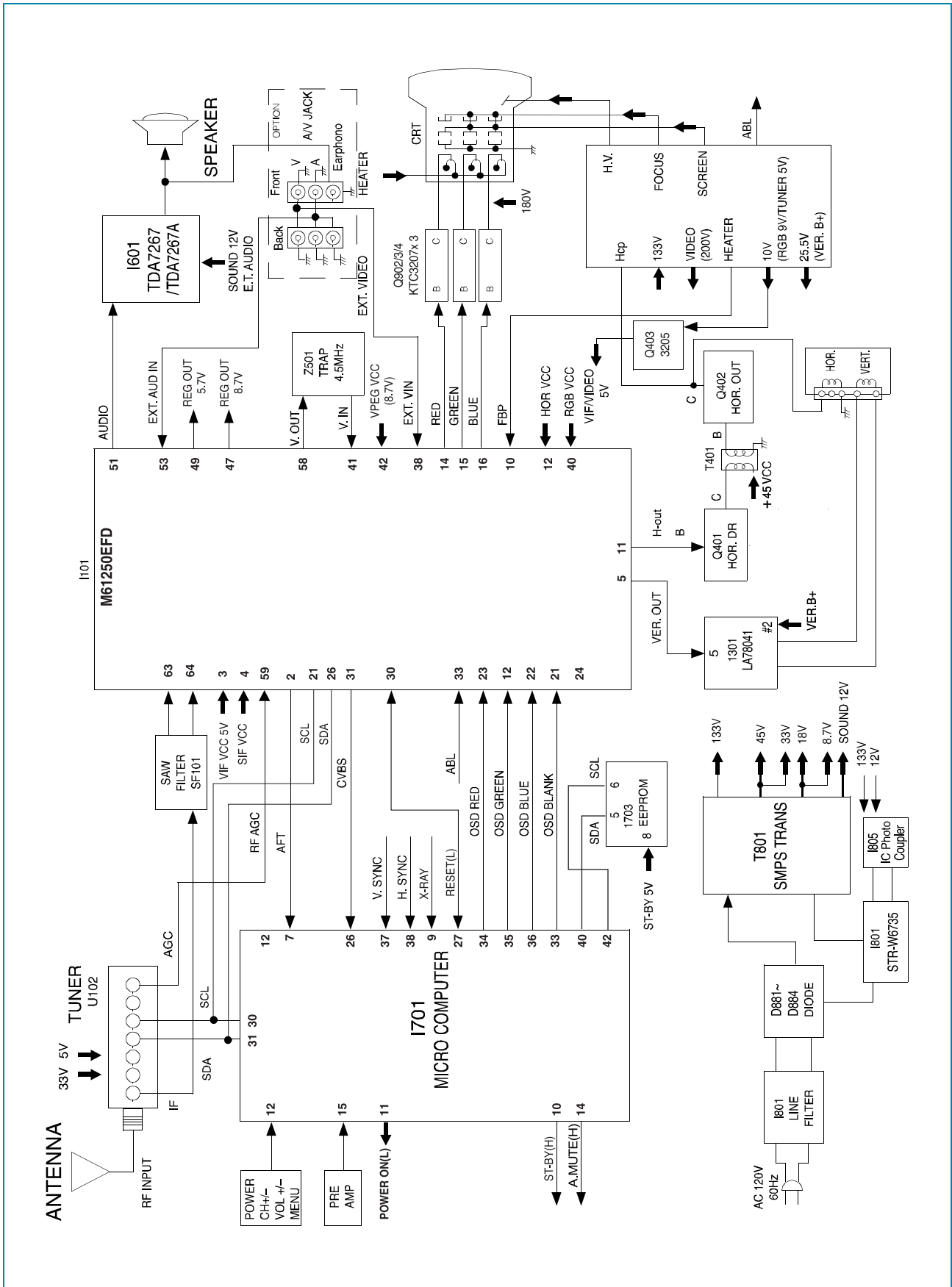
**SUBJECT : TIPS ON PROPER INSTALLATION**

1. Never install any receiver in closed-in recess, cubbyhole or closely fitting shelf space over, or close to heat duct, or in the path of heated air flow.
2. Avoid conditions of high humidity such as : Outdoor patio installations where dew is a factor. Near steam radiators where steam leakage is a factor, etc.
3. Avoid placement where draperies may obstruct rear venting. The customer should also avoid the use of decorative scarves or other coverings which might obstruct ventilation.
4. Wall and shelf mounted installations using a commercial mounting kit, must follow the factory approved mounting instructions. A receiver mounted to a shelf or platform must retain its original feet(or the equivalent thickness in spacers) to provide adequate are flow across the bottom, bolts or screws used for fasteners must not touch and parts or wiring. Perform leakage test on customized installations.
5. Caution customers against the mounting of a receiver on sloping shelf or a tilted position, unless the receiver is properly secured.
6. A receiver on a roll-about cart should be stable on its mounting to the cart. Caution the customer on the hazards of trying to roll a cart with small casters across thresholds or deep pile carpets.
7. Caution customers against the use of a cart or stand which has not been listed by underwriters laboratories, inc. For use with their specific model of television receiver or generically approved for use with T.V.'s of the same or larger screen size.

# SPECIFICATIONS

ITEM	MODEL			REMARK
		DTQ -14D4SSF	DTQ -20D4SSF	
TV STANDARD	NTSC - M			
POWER INPUT	FREE			
POWER CONSUMTION	57WATTS	62 WATTS		
TUNING SYSTEM	FREQUENCY SYNTHESIZER			
TUNING RANGES	VHF : 2 ~ 13 (12) UHF : 14 ~ 69 (56) CATV : 1 ~ 125 (125)			
SOUND OUTPUT	5W+5W			
SPEAKER	8ohm 7.5W			
ANTENA INPUT IMPEDANCE	75ohm Unbalanced			
AUXILIARY INPUT TERMINAL	Front : Video, Audio Rear : Video, Audio			
INTERMEDIATE FREQUENCIES	Picture IF Carrier Frequency : 45.75MHz Sound IF Carrier Frequency : 41.25MHz Color Sub- Carrier Frequency : 3.579545MHz			
REMOTE CONTROL	R-48C04			
SPECIAL FUNCTIONS	3-Language OSD With CAPTION Wakeup On/Off Time Sleep Timer Power Restore			

# BLOCK DIAGRAM



# ALIGNMENT INSTRUCTIONS

## 1. SERVICE MODE ADJUSTMENTS

Follow the steps below whenever service adjustment is required. See Table- A and Table- B to determine if service adjustments are required.

### 1) How to enter the service mode using the user remote control.

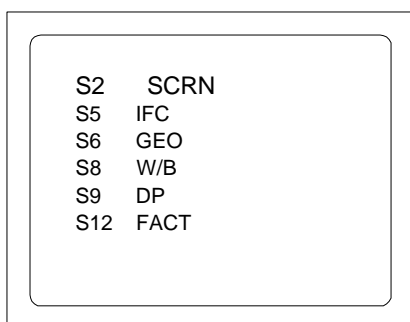
Turn the set on.

Direct the remote control to the reception window of TV.

Push buttons of remote control in sequence as follows.

**1 ® MUTE ® DISPLAY ® MUTE**

Then, the screen will appear as follows.



Using the channel up or channel down button, select the item you wish to adjust.

(The color of selected item turns into the red.)

Press the volume up or down button to enter in the service mode you wish to adjust.

### 2) How to memorize the adjusted values in the service mode.

Must press **DISPLAY** button the state which the screen is displaying each of service menus after all adjustments are completed each of all service menu.

**Table-A : Adjust the values of service mode when a part is replaced.**

PART REPLACED	ADJUSTMENT		NOTES								
	NECESSARY	UNNECESSARY									
I701 (U-COM)		○	Data is stored in I703.								
I101 (MAIN)		○									
I703 (EEPROM)	○		Initial setting values are written from I701. Adjusting Items <table border="1" style="margin-left: 20px;"> <tr><td>S5</td><td>R FAGCD</td></tr> <tr><td>S6</td><td>H.SHIFT/V.SHIFT/V.SIZE</td></tr> <tr><td>S8</td><td>RD/BD/RB/GB/BB</td></tr> <tr><td>S9</td><td>Brightness</td></tr> </table>	S5	R FAGCD	S6	H.SHIFT/V.SHIFT/V.SIZE	S8	RD/BD/RB/GB/BB	S9	Brightness
S5	R FAGCD										
S6	H.SHIFT/V.SHIFT/V.SIZE										
S8	RD/BD/RB/GB/BB										
S9	Brightness										
CRT	○		Adjust items related to picture tube only.(White Balance adjustment)								



# ALIGNMENT INSTRUCTIONS

Table-B

MODE	ADJUSTMENT ITEMS		DATA				REMARKS
			INITIAL		RANGE		
S2	Screen Adjustment		-		-		
S5	Auto Vco		OK		OK, NG		
	VIF VCO Adj		33		0~63		
	Auto Hvco		OK		OK, NG		
	H Vco adj		04		0~7		
	Auto RFAGC		OK		OK, NG		
	RF-DELAY		90		0~125		Align RF AGC threshold
	AGC Point		3.75		3.25/3.5/3.75/4.0		Select AGC reference voltage
	VCO CH NO          AGC CH NO		22	10	-		
S6	H.Shift(Horizontal Shift)		09		0~15		
	V.Shift(Vertical Shift)		02		0~7		
	V.Size(Vertical Size)		38		0~63		
	VBLK Shift		03		0~7		
	VBLK Shift On		NO		NO,YES		
	NO SD POWER OFF		NO		NO,YES		Automatically turn off in 15min for no received signal
S7(1)	Vif F	HTONE SW	0	0	0,1	0,1	
	C Clip Level	White Back	1	0	0,1	0,1	
	TRAP Off	V Free	0	0	0,1	0,1	
	EXT	Gamma Control	0	0	0,1	0~3	
	Y DL Fine	Trap Fine ad	0	0	0~3	0~3	
	Y DL Time	H Free	3	0	0~3	0,1	
	VOUT STOP	WINDOW	0	0	0,1	0,1	
	Fsc Free	Y SW LPF	0	1	0,1	0,1	
V Mute	FM Level	ON	15	ON,OFF	0~30		
S7(2)	Service SW		0		0,1		
	AFC1 Gain		1		0,1		
	AFC2 Gain		0		0,1		
	Analog OSD		0		0,1		
	US/JA SW		4		0~7		
	SYNC DET		0		0,1		
	Auto Slice Down		0		0,1		
	FBL Vth L		1		0,1		
	BGpFbp OFF		0		0,1		
VIF VIDEO OUT GAIN		4		0~7			
S8(1)	RD(Red Drive)		64		0~127		Align RED OUT AC level
	BD(Blue Drive)		64		0~127		Align BLUE OUT AC level
	RB(Red Bias)		128		0~255		Align RED OUT DC level
	GB(Green Bias)		128		0~255		Align Green OUT DC level
	BB(Blue Bias)		128		0~255		Align BLUE OUT DC level
S8(2)	SCR R-BIAS		00		0~255		
	SCR G-BIAS		127		0~255		
	SCR B-BIAS		00		0~255		
	SCR R-DRIVE		63		0~127		
	SCR B-DRIVE		63		0~127		
	SCR BRIGHT		140		0~255		
S9	Brightness		70		0~155		Align common RGB DC level
	Contrast		12		0~27		
	Tint		42		0~77		
	Color		15		0~27		
	Sharpness		38		0~43		
S11	Video Tsharp	SsliceDown2	1	0	0,1	0,1	
	ABCL	SsliceDown1	0	1	0,1	0,1	
	Blackstre.off	OSD level	0	1	0,1	0,1	
	Take off	Killer level	0	1	0,1	0,1	
	ABCL Gain		0		0,1		
	AFT defeat		0		0,1		
	HVBLK off		0		0,1		
	Black stretch discharge		2		0~3		
Black stretch charge		0		0~3			
S12	Forwarding Mode						Factory Initialization

\* indicates the items with different settings each of sets

## 2. ASSEMBLY ADJUSTMENTS

### 1) SCREEN ADJUSTMENT (S2)

- Enter the service mode and select service adjustment S2.
- You can see the one horizontal line on the screen.
- Adjust the Screen Control Volume (located on FBT) so that the horizontal line onscreen may be disappeared.
- Press the volume up or down button to exit in the screen adjustment mode.

#### NOTE

IN THE SCREEN ADJUSTMENT MODE, DON'T PRESS OTHER BUTTONS EXCEPT VOLUME UP OR DOWN BUTTON.

### 2) FOCUS ADJUSTMENT

- Turn in a local station and adjust the Focus Control knob (located on FBT) for best picture details at high light condition.

### 3) RF AGC DELAY ADJUSTMENT (S5)

- Receive a good local channel.
- Enter the service mode and select service adjustment S5.
- You can see the OSD as shown in below.

IF CONTROL	
AUTO VCO ▯	OK
VIF VCO ADJ	33
AUTO HVCO	OK
HVCO ADJ	04
AUTO RFAGC	START
RF-DELAY	90
AGC POINT	3.75
VCO CH NO 22 ▯	AGC CH NO 10

- Select RFAGCD item, press the volume up or down button until noise or beat in picture disappears.
- Press the DISPLAY button to memorize the data.

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## ALIGNMENT INSTRUCTIONS

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### 4) GEOMETRIC ADJUSTMENTS (S6)

- Enter the service mode and select service adjustment S6.

- You can see the OSD as shown in below.

GEOMETRY	
H. SHIFT	09
V. SHIFT	02
V. SIZE	38
VBLK SHIFT	03
VBLK SHIFT ON	NO
NO SD POWER OFF	NO
◆ MOVE ◀▶ ADJUST RECALL:SET	

#### 4-1. Horizontal SHIFT Adjustment

- Select H.SHIFT item, adjust H.SHIFT data value to obtain proper horizontal centering of the internal cross pattern at the left and right of the screen.

#### 4-2. Vertical SHIFT Adjustment

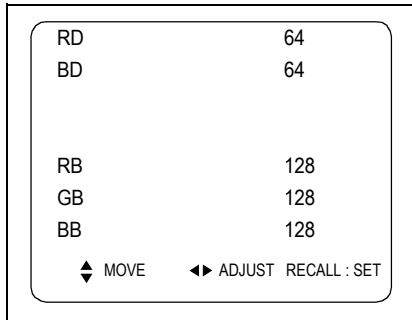
- Select V.SHIFT item, adjust V.SHIFT data value to center the raster properly on the screen.

#### 4-3. Vertical Size Adjustment

- Select "V.SIZE" item, adjust "V.SIZE" data value to proper vertical size as follows.

**5) WHITE BALANCE ADJUSTMENT(S8)**

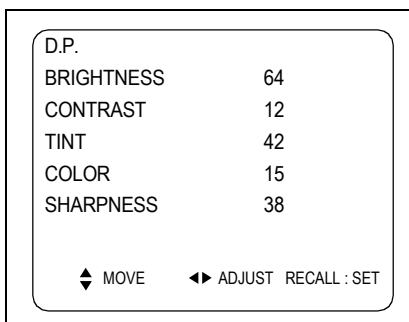
- Receive a good local channel.
- Enter the service mode and select service adjustment S8.
- You can see the OSD as shown in below.



- Using volume up or volume down, adjust service adjustment data of RD/GD/BD and RB/GB/BB until a good gray scale with normal whites is obtained.
- Press the DISPLAY button to memorize the data.

**6) DIGITAL PRESET(D.P) ADJUSTMENTS(S9)****SUBBRIGHTNESS ADJUSTMENT**

- Receive a good local channel.
- Enter the service mode and select service adjustment S9.
- You can see the OSD as shown in below.



- Select Subbrightness item, adjust Subbrightness data value to obtain normal brightness level.
- Press the DISPLAY button to memorize the data.

**CONTRAST**

- Fixed value = 12

**TINT**

- Fixed value = 42

**COLOR**

- Fixed value = 15

**SHARPNESS**

- Fixed value = 38

**7) FACTORY OUTGOING MODE (S12 : FACT)**

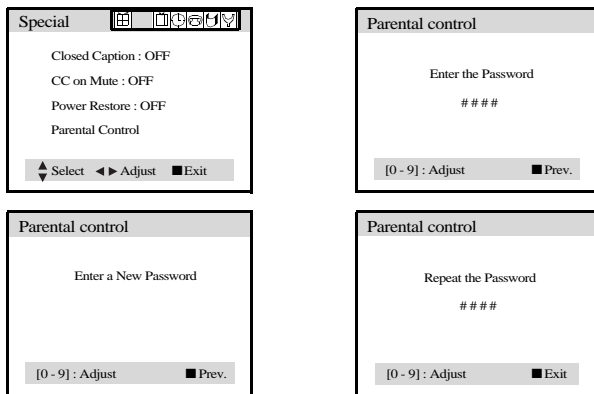
- If you select the S12, then the set becomes factory outgoing status.
- You can see the OSD "outgoing OK"

### 3. PARENTAL CONTROL PASSWORD SETTINGS

If user forget Parental Control Password as follows.

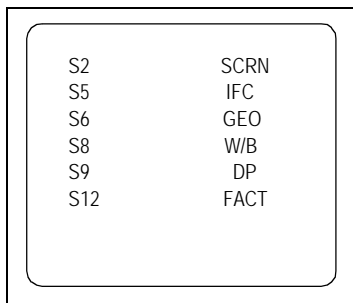
#### 1) CHANGE THE PASSWORD.

- Turn the set on.
- Direct the remote control to the reception window of your TV/VCR
- Using the MENU buttons, select the Special menu.
- Using the the channel up ( ▲ ) or down ( ▼ ) duttons, select prental control.
- Using the volume up ( ► ), set the password Menu.
- Push buttons of remote control in sequence as follows.  
2 → 2 → 1 → 1
- Parental control password is reset.
- Using the 0-9 buttons, enter the password.
- Using the 0-9 buttons, repeat the password.



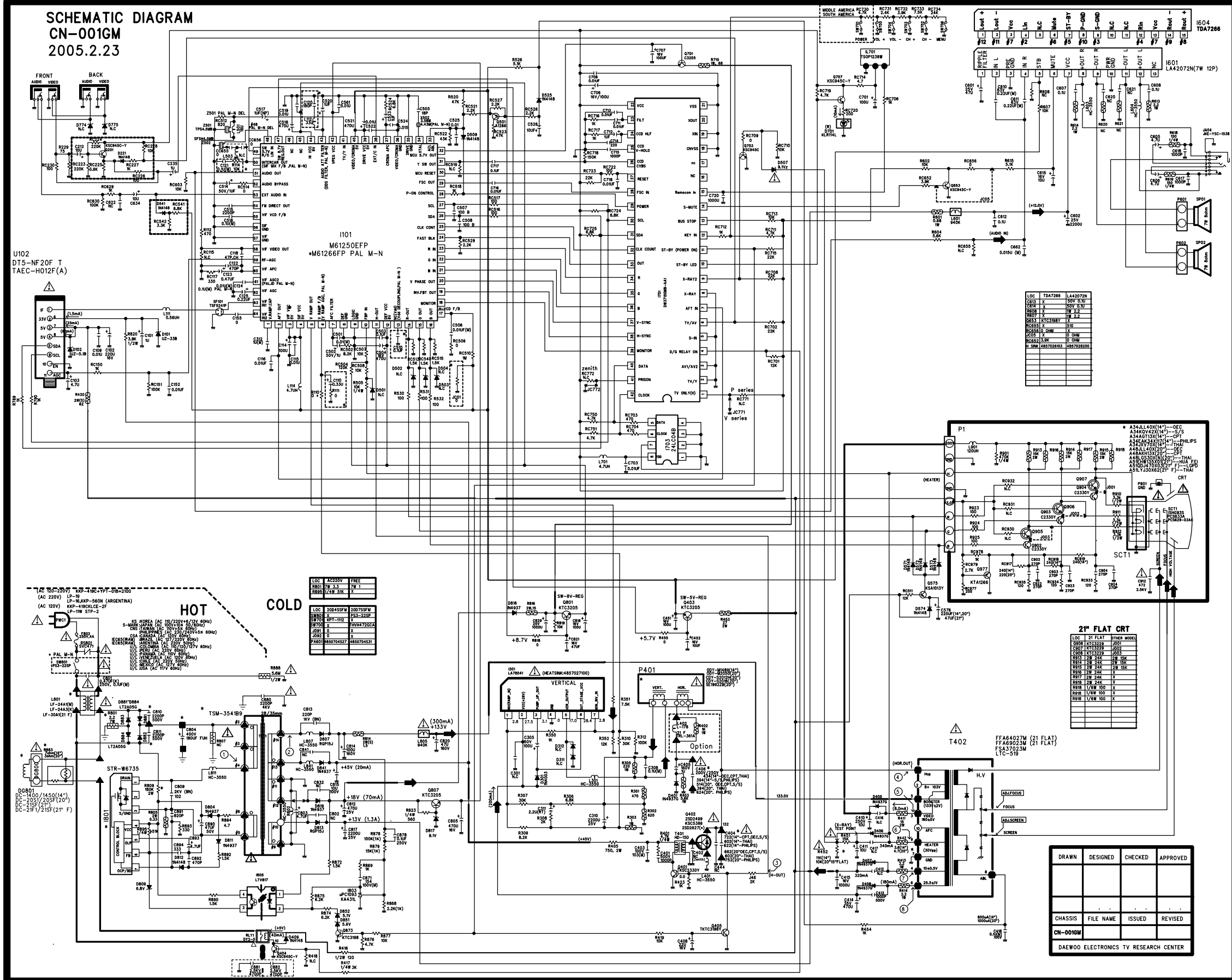
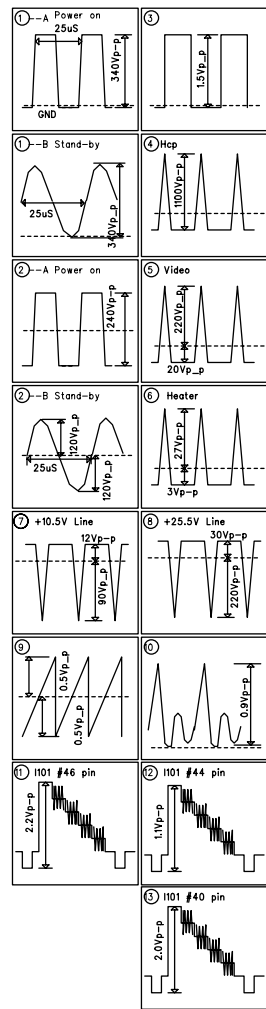
#### 2) RESET THE PASSWORD

- Turn the set on.
- Direct the remote control to the reception window of your TV/VCR.
- Push buttons of remote control in sequence as follows.  
1 → MUTE → DISPLAY → MUTE
- Then, the screen will appear as follows.



- Using the channel up ( ▲ ) or down ( ▼ ) buttons, select S12 FACT.  
Press the volume up ( ► ) button, the set becomes factory outgoing status.
- Parental control password is reset.
- Using the MENU buttons, select the parental control menu, set the new password.

# SCHEMATIC DIAGRAM



**1. CAUTION**

SYMBOL MARKED PARTS IN THE SCHEMATIC DIAGRAM DESIGNATE THE COMPONENTS WHICH HAVE SPECIAL CHARACTERISTICS IMPORTANT FOR SAFETY AND SHOULD BE REPLACED ONLY WITH TYPES IDENTICAL TO THOSE IN ORIGINAL CIRCUIT. DO NOT IGNORE THE SAFETY OF THE RECEIVER THROUGH IMPROPER SERVICING.

**WARNING :**

BEFORE SERVICING THIS CHASSIS READ THE "X-RAY RADIATION PRECAUTION", "SAFETY PRECAUTION" AND "PRODUCT SAFETY NOTICE" IN THE SERVICE MANUAL.

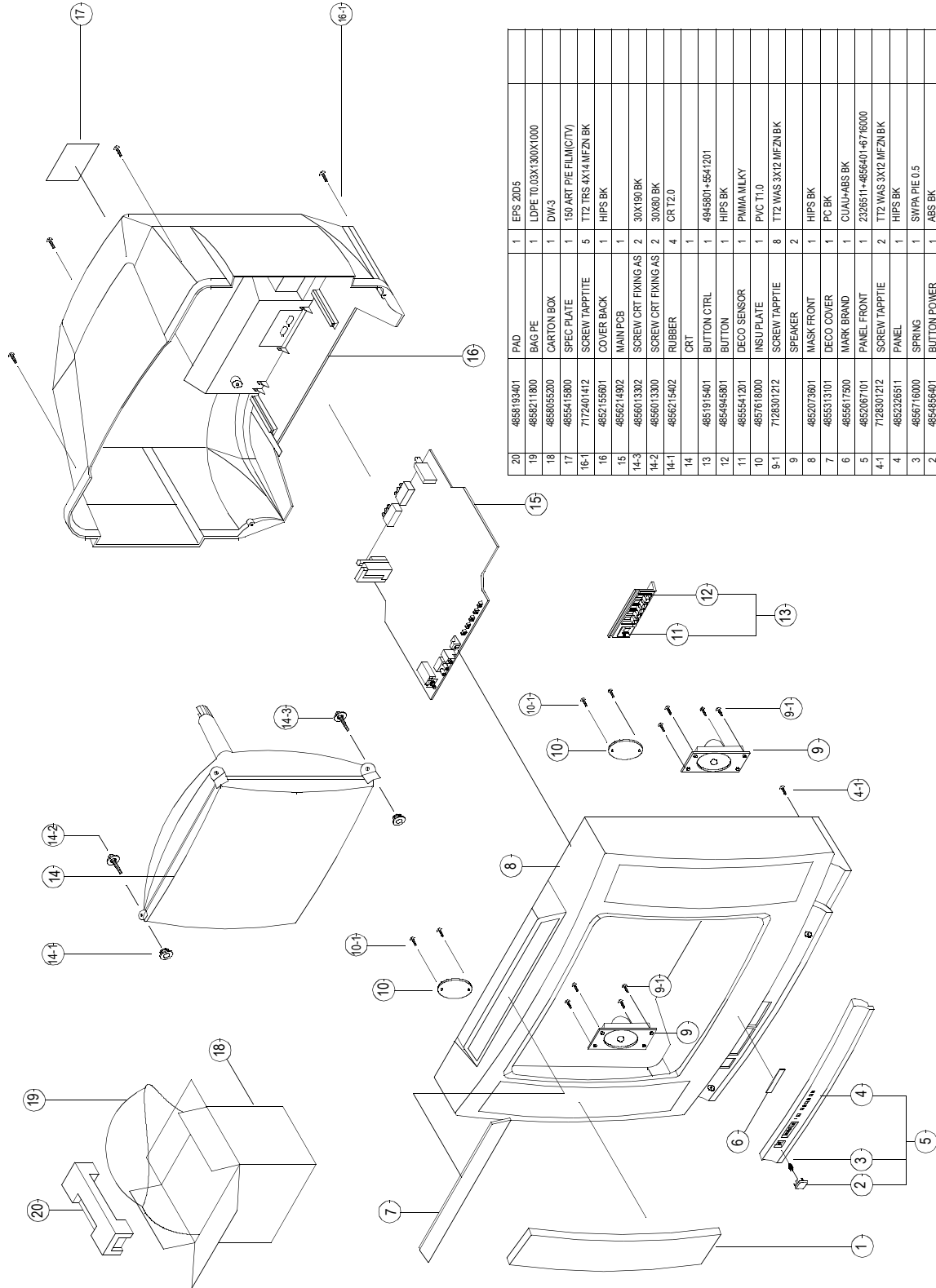
**CAUTION TO THE SERVICE TECHNICIANS :**

BEFORE RETURNING THE RECEIVER TO THE CUSTOMER APPROPRIATE LEAKAGE CURRENT OR RESISTANCE MEASUREMENT SHOULD BE CONDUCTED TO DETERMINE THAT EXPOSED PARTS ARE PROPERLY ISOLATED FROM THE SUPPLY CIRCUIT.

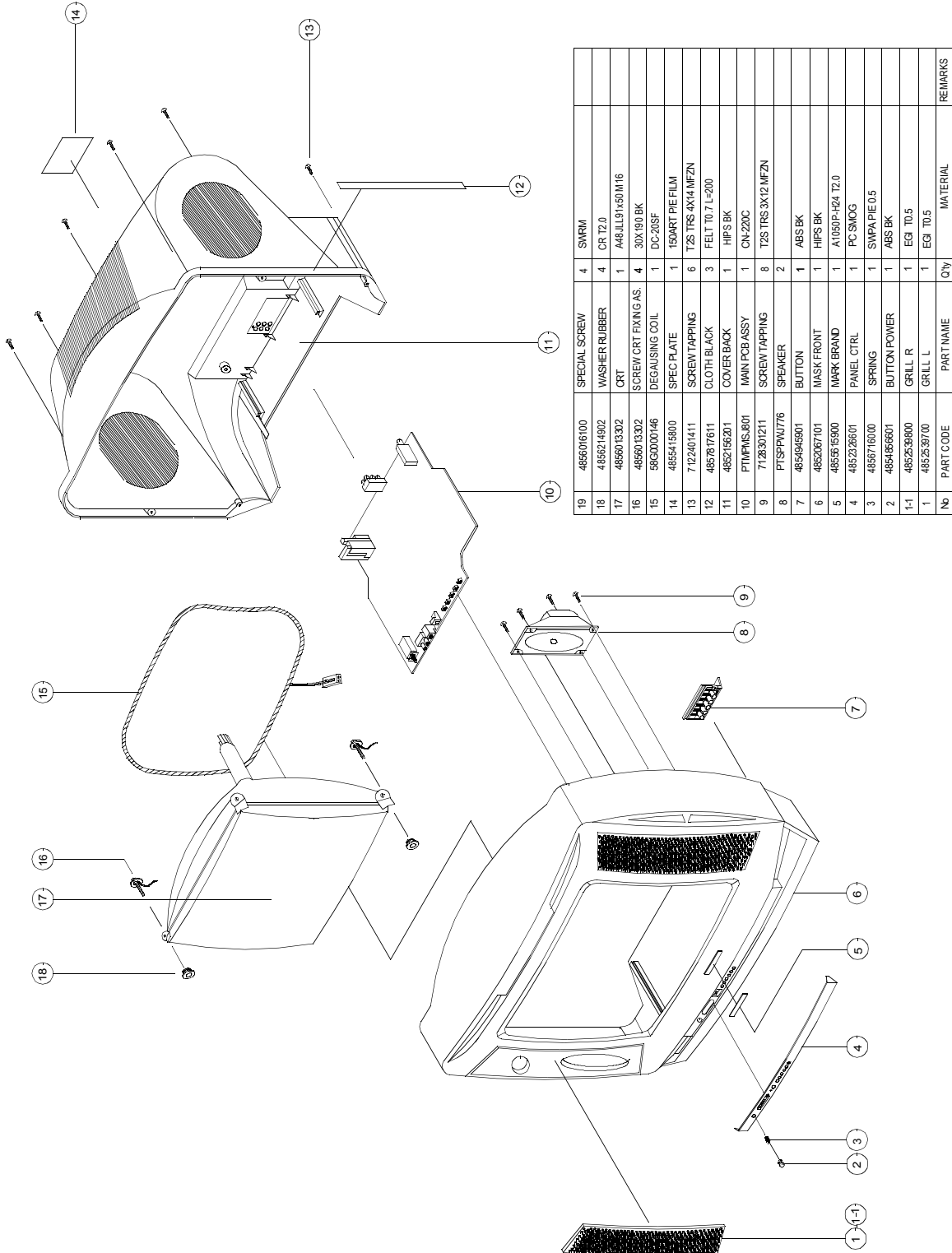
**NOTE :**

- RESISTANCE IS SHOWN IN OHMS. K=1,000 W=1,000,000
- UNLESS OTHERWISE NOTED IN SCHEMATIC, ALL CAPACITOR VALUES LESS THAN 1 ARE EXPRESSED IN pF AND THE VALUES MORE THAN 1 IN uF.
- VOLTAGES READ WITH "L.T.V.M" FROM POINT INDICATE TO CHASSIS GROUND USING A COLOR BAR SIGNAL WITH ALL CONTROLS AT NORMAL LINE VOLTAGE 120 VOLTS AC. VOLTAGE READINGS SHOWN ARE NORMAL VALUES AND MAY VARY ±20% EXCEPT HV.
- IN CASE OF "R" RECEIVER THE COMPONENT WITH THE MARK "S" SHOULD BE USED ONLY.
- THE CIRCUIT DIAGRAM IS A STANDARD ONE. CIRCUITS PRINTED MAY BE SUBJECT TO CHANGE FOR PRODUCT IMPROVEMENT WITHOUT PRIOR NOTICE.

# EXPLODED VIEW



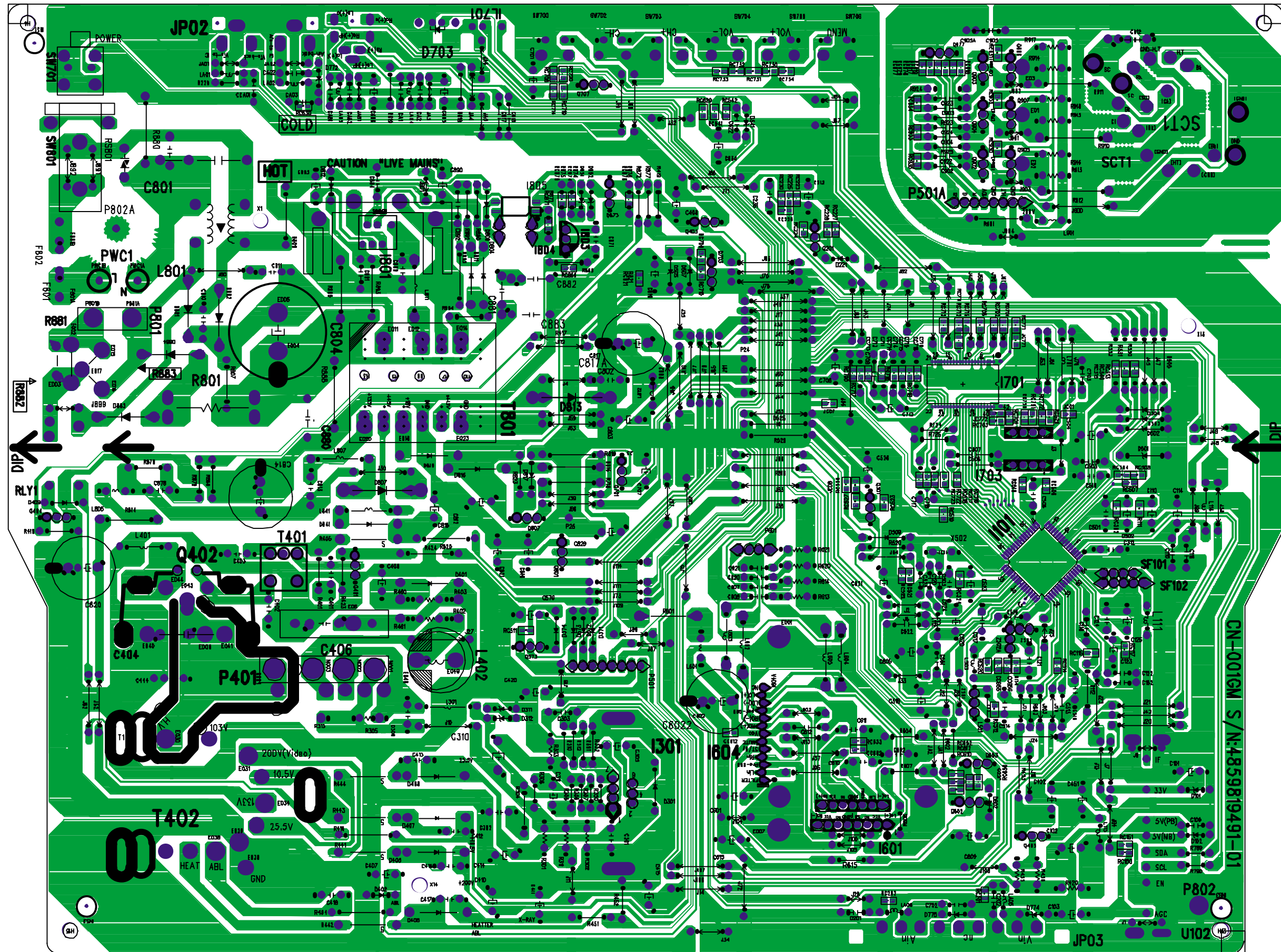
No	PART CODE	PART NAME	QTY	MATERIAL	REMARKS
20	4858193401	PAD	1	EPS 2005	
19	4858211800	BAG PE	1	LDPE 10.03X1300X1000	
18	4858055200	CARTON BOX	1	DW-3	
17	4855415800	SPEC PLATE	1	150 ART PIE FILM(C/TV)	
16-1	7172401412	SCREW TAPPTITE	5	T2 TRS 4X14 MFZN BK	
16	4852155601	COVER BACK	1	HIPS BK	
15	4858214902	MAIN PCB	1		
14-3	4858013302	SCREW CRT FIXING AS	2	30X190 BK	
14-2	4858013300	SCREW CRT FIXING AS	2	30X80 BK	
14-1	4858215402	RUBBER	4	CR T2.0	
14		CRT	1		
13	4851915401	BUTTON CTRL	1	4945801+5541201	
12	4854945801	BUTTON	1	HIPS BK	
11	4855441201	DECO SENSOR	1	PMMA MILKY	
10	4857618000	INSU PLATE	1	PVC T1.0	
9-1	7128301212	SCREW TAPPTITE	8	T2 WAS 3X12 MFZN BK	
9		SPEAKER	2		
8	4852073601	MASK FRONT	1	HIPS BK	
7	4855313101	DECO COVER	1	PC BK	
6	4855617500	MARK BRAND	1	CUAU-ABS BK	
5	4852051701	PANEL FRONT	1	2326511+4856401+6716000	
4-1	7128301212	SCREW TAPPTITE	2	T2 WAS 3X12 MFZN BK	
4	4852328511	PANEL	1	HIPS BK	
3	4856716000	SPRING	1	SWPA PIE 0.5	
2	4854856401	BUTTON POWER	1	ABS BK	
1	4852539601	GRILL	2	EGT 0.5	



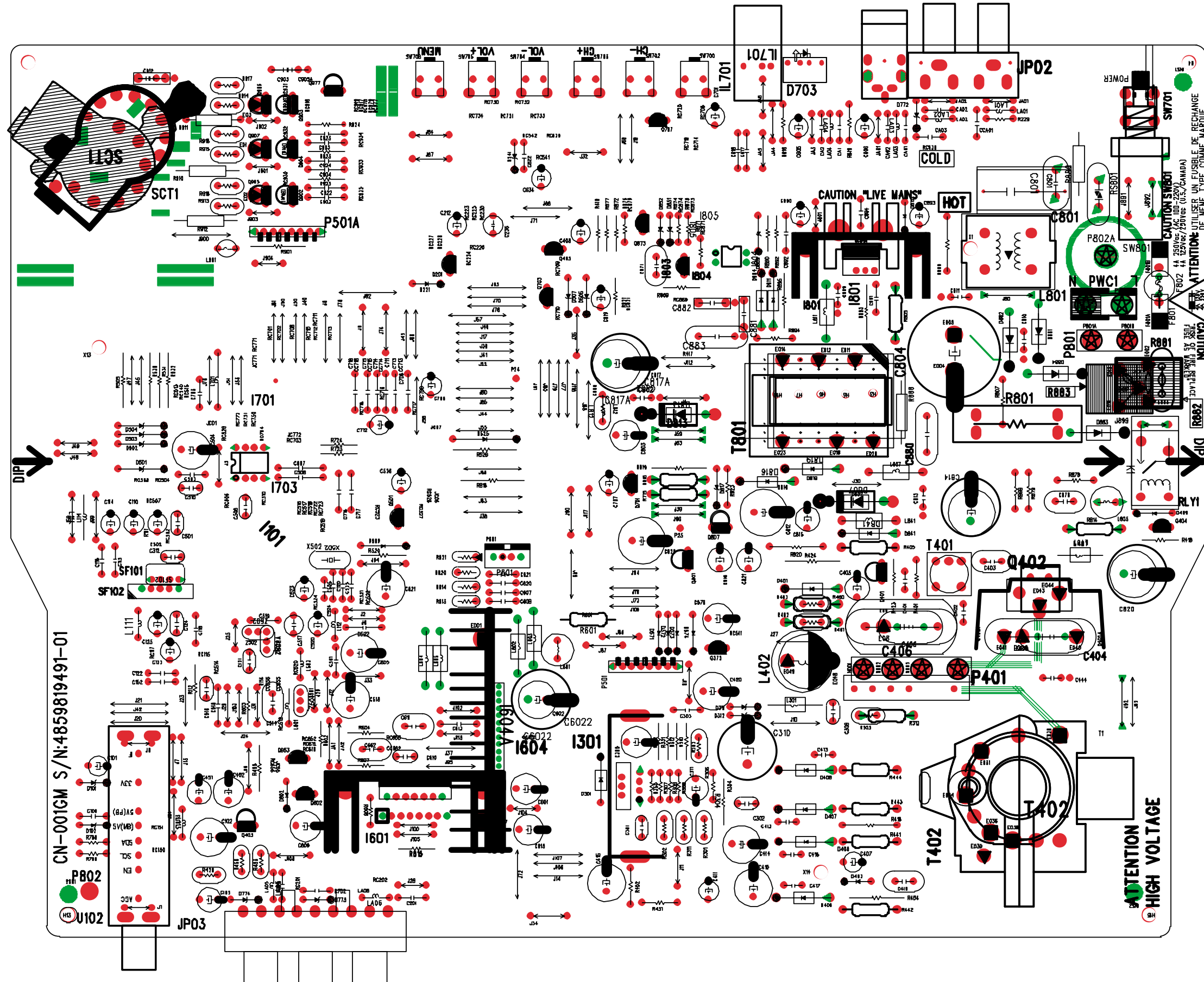
No	PART CODE	PART NAME	QTY	MATERIAL	REMARKS
1	485253800	EG1 TO.5	1	EG1 TO.5	
1-1	485466601	GRILL R	1	ABS BK	
2	485466601	GRILL L	1	ABS BK	
3	485716000	BUTTON POWER	1	SMPA PIE 0.5	
4	485228601	PANEL CTRL	1	PC SMOG	
5	485515800	MARK BRAND	1	A108P-H24 T2.0	
6	485206701	MASK FRONT	1	HIPS BK	
7	485494901	BUTTON	1	ABS BK	
8	PTSPPAU7/6	SPEAKER	2		
9	7128301211	SCREW TAPPING	8	T2S TRS 3X12 MFZN	
10	PTMPMSJ01	MAIN PCB ASSY	1	ON-220C	
11	4852156201	COVER BACK	1	HIPS BK	
12	4857817611	CLOTH BLACK	3	FELT TO.7 L=200	
13	7122401411	SCREW TAPPING	6	T2S TRS 4X14 MFZN	
14	4855415800	SPEC PLATE	1	150ART PIE FILM	
15	59G0000746	DEGAUSSING COIL	1	DC-205F	
16	4858013302	SCREW CRT FIXING AS.	4	30X180 BK	
17	4858013302	CRT	1	A48JL191X50 M18	
18	485214902	WASHER RUBBER	4	CR T2.0	
19	485016100	SPECIAL SCREW	4	SWRM	



# Printed Circuit Board



# Printed Circuit Board



# ELECTRICAL PARTS LIST

## CAUTION

“△” is a safety part, so it must be used the same part.

“®” is a recommendable part for essential stock.

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
ZZ100	48B5748C04	TRANSMITTER REMOCON	R-48C04 (AAA)	
ZZ110	PTACPWHS27	ACCESSORY AS	DTQ-14D4SSF	
00010	4850Q00910	BATTERY	R03NN	
00020	4850A02510	ANT ROD	S3BW216B (L=600 MM)	
00030	4850A00650	TRANS ANT MATCHING	YSC-T-07 BR	
00040	4859000240	ADAPTER	2P15A 300V(D=4.0)	
10000	48586220S1	MANUAL INSTRUCTION	SPAIN	
M821	4858213801	BAG INSTRUCTION	L.D.P.E TO.05X250X400	
ZZ120	PTBCSHH557	COVER BACK AS	DTQ-14D4SSN	
M211	4852155421	COVER BACK	"HIPS(CORE A2,B1)"	
M541	4855415800	SPEC PLATE	150ART P/E FILM (C/TV)	
M781	4857817611	CLOTH BLACK	FELT 200X20X0.7	
ZZ130	PTPKCPH560	PACKING AS	DTQ-14D4SSFN	
10	6520010100	STAPLE PIN	AUTO W65	
M801	4858057300	BOX CARTON	SW-3	
M811	4858192601	PAD	EPS	
M821	4858219201	BAG P.E	P.E FOAM TO.5X1100X950	
ZZ131	58G0000084	COIL DEGAUSSING	DC-1450	
ZZ132	4851944710	CRT GROUND NET	1401S-1015-1P	
ZZ140	PTCACAH725	CABINET AS	DTQ-14D4SSFM	
CRT1	PTRTPW394	CRT AS	"NTSC 14" ITC CRT AS"	△ ®
V01	58D0000082	COIL DY	ODY-M1489	△
V04	2224050029	BOND SILICON	LDC7091 CARTRIDGE	
V05	4850PM001-	PCM	NY-225 (MINI NECK)	
V06	48A96R004-	RUBBER WEDGE	HMR 28 SR (OX54)	
V901	48A96314C2	CRT BARE	A34AGT13X	
CRT1B	4856017302	SCREW CRT FIX	5X25 L80 BK	
CRT1C	4856017306	SCREW CRT FIX	5X25 L140 YL	
M211A	7172401412	SCREW TAPPTITE	TT2 TRS 4X14 MFZN BK	
M681	4856812001	TIE CABLE	NYLON66 DA100	
SP01A	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN	
SP02A	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN	
ZZ200	PTFMSJH557	MASK FRONT AS	DTQ-14D4SSN	
M111	4851114201	PANEL CONTROL ASSY	2326401+4856201+6717900	
M201	4852073421	MASK FRONT	HIPS GY	
M251	4852539901	GRILL L	EGI T0.5	
M252	4852540001	GRILL R	EGI T0.5	
M491	4854944911	BUTTON	ABS BK	
M491A	7178301011	SCREW TAPPTITE	TT2 WAS 3X10 MFZN	
M561	4855613600	MARK BRAND	COPPER T0.4	
ZZ210	PTSPWH522	SPEAKER AS	DTQ-14D4SS	
PA601	4850704S41	CONNECTOR	YH025-04+YRT205+JULW=300	
SP01	4858310910	SPEAKER	SP-5090F03	®
SP02	4858310910	SPEAKER	SP-5090F03	®
ZZ290	PTMPMSH725	PCB MAIN MANUAL AS	DTQ-14D4SSFM	
10	2193102005	SOLDER BAR	SN:PB=63:37 S63S-1320	
30	2291050616	FLUX SOLDER	JS-64T3	
40	2291050301	FLUX SOLVENT	IM-1000	
A1	WP-0BK1015	WIRE LEAD 1007	AWG22 7/0.26 BK 5-100-5	
W001	8P-07026BK	WIRE LEAD	AWG22 7/0.26 BK 1007	
C404	CMYH3C722H	C MYLAR	1.6KV BUP 7200PF H	△
C801	CL1UC3104M	C LINE ACROSS	WORLD AC250V 0.1UF M R.47	
C804	CEYD2G181D	C ELECTRO	400V FHS 180MF (25X35)	
C880	CH1BFE222M	C CERA AC	U/C/V AC400V 2200PF	
D703	DKLR114L—	LED	KLR114L	
I301	PTE2SW7100	HEAT SINK ASS'Y	1LA78040— + 7174300811	
00001	1LA78040—	IC VERTICAL	LA78040	®
0000A	4857027100	HEAT SINK	SPCC T1.0+SN	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I601	PTE2SW6103	HEAT SINK ASS'Y	1TDA7266— + 7174301011	
I601	1TDA7266—	IC AUDIO	TDA7266	®
I601A	4857026103	HEAT SINK	AL EX BK	
I601B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
I703	124LC04B—	IC MEMORY	24LC04B	®
I801	PTP2SW7802	HEAT SINK ASS'Y	1STRW6753- + 7174300811	
00001	1STRW6753-	IC POWER	STR-W6753	△ ®

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
0000A	4857027802	HEAT SINK	AL EX	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
IL701	1TSOP1238W	IC PREAMP	TSOP1238W1	
JP02	4859110250	JACK PIN BOARD	YS-JB9711	
JP03	4859109150	JACK PIN BOARD	PH-JB-9615C	△
L801	5PLF24A1—	FILTER LINE	LF-24A1	
M351	4853530901	HOLDER LED	P.P	
M681	4856812001	TIE CABLE	NYLON66 DA100	
P401	4859240020	CONN WAFER	YFW500-05	
P501	4850708N11	CONNECTOR	BIC-08T-25T+C-20T+JULW=300	
PWC1	4859902910	CORD POWER AS	KKP419C+BL102NG+TUBE=2100	△ ®
Q402	PTA2SW7201	HEAT SINK ASS'Y	T2SD2627YB + 7174300811	
00001	T2SD2627YB	TR HORI	2SD2627LS-YB	®
0000A	4857027201	HEAT SINK	AL T1.0	
0000B	7174300811	SCREW TAPPTITE	TT2 RND 3X8 MFZN	
R419	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R801	RX07B109JP	R CEMENT	7W 1 OHM J BEN 15MM4P	
R802	58C0000116	COIL BEAD	HC-3550R	
R883	DJ140M290L	POSISTOR	J503P63D140M290L	
RLY1	55C0101335	SW RELAY	DY2-5	△
RS801	DSVC471D14	VARISTOR	SVC471D14A (BULK)	△
SCT1	4859303930	SOCKET CRT	ISMG03S INCHANG	
SF101	5PTS5241P	FILTER SAW	TSF5241P	
SW701	5S50101035	SW TACT	KPT-1112 1C-1P	
T401	50D10A3—	TRANS DRIVE	TD-10A3	
T402	50H0000243	FBT	LTC-519	△ ®
T801	50M3541B9-	TRANS SMPS	TSM-3541B9	△
U102	4859726730	TUNER VARACTOR	TAEC-H012F(A)	△ ®
ZZ200	PTMPJ2H725	PCB MAIN CHIP MOUNT B AS	DTQ-14D4SSFM	
I101	1M61250FP-	IC CHIP CHROMA	M61250BFP	
I701	1DW150MAA2	IC CHIP MICOM	DW37150M8-AA2(001G)	
I805	1LTV817C-Q	IC CHIP PHOTO COUPLER	LTV-817C TRAY	
JC06	HRFT000-BA	R CHIP	1/10 0 OHM 1608	
JC771	HRFT000-BA	R CHIP	1/10 0 OHM 1608	
JC772	HRFT000-BA	R CHIP	1/10 0 OHM 1608	
RC115	HRFT471JBA	R CHIP	1/10 470 OHM J 1608	
RC117	HRFT331JBA	R CHIP	1/10 330 OHM J 1608	
RC150	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC151	HRFT104JBA	R CHIP	1/10 100K OHM J 1608	
RC230	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
RC502	HRFT822JBA	R CHIP	1/10 8.2K OHM J 1608	
RC504	HRFT124JBA	R CHIP	1/10 120K OHM J 1608	
RC506	HRFT000-BA	R CHIP	1/10 0 OHM 1608	
RC507	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
RC508	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
RC510	HRFT105JBA	R CHIP	1/10 1M OHM J 1608	
RC511	HRFT123JBA	R CHIP	1/10 12K OHM J 1608	
RC512	HRFT152JBA	R CHIP	1/10 1.5K OHM J 1608	
RC513	HRFT152JBA	R CHIP	1/10 1.5K OHM J 1608	
RC514	HRFT000-BA	R CHIP	1/10 0 OHM 1608	
RC515	HRFT152JBA	R CHIP	1/10 1.5K OHM J 1608	
RC516	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
RC517	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
RC518	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC521	HRFT222JBA	R CHIP	1/10 2.2K OHM J 1608	
RC522	HRFT433JBA	R CHIP	1/10 43K OHM J 1608	
RC523	HRFT473JBA	R CHIP	1/10 47K OHM J 1608	
RC524	HRFT682JBA	R CHIP	1/10 6.8K OHM J 1608	
RC526	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
RC527	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
RC529	HRFT222JBA	R CHIP	1/10 2.2K OHM J 1608	
RC540	HRFT152JBA	R CHIP	1/10 1.5K OHM J 1608	
RC629	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC630	HRFT104JBA	R CHIP	1/10 100K OHM J 1608	
RC652	HRFT392JBA	R CHIP	1/10 3.9K OHM J 1608	
RC656	HRFT000-BA	R CHIP	1/10 0 OHM 1608	

# ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
RC701	HRFT123JBA	R CHIP	1/10 12K OHM J 1608	
RC702	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
RC703	HRFT471JBA	R CHIP	1/10 470 OHM J 1608	
RC704	HRFT471JBA	R CHIP	1/10 470 OHM J 1608	
RC706	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC708	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
RC709	HRFT000-BA	R CHIP	1/10 0 OHM 1608	
RC710	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
RC711	HRFT472JBA	R CHIP	1/10 4.7K OHM J 1608	
RC712	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC713	HRFT103JBA	R CHIP	1/10 10K OHM J 1608	
RC714	HRFT473JBA	R CHIP	1/10 4.7 OHM J 1608	
RC715	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
RC716	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC717	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC718	HRFT154JBA	R CHIP	1/10 150K OHM J 1608	
RC719	HRFT472JBA	R CHIP	1/10 4.7K OHM J 1608	
RC720	HRFT201JBA	R CHIP	1/10 200 OHM J 1608	
RC722	HRFT101JBA	R CHIP	1/10 100 OHM J 1608	
RC723	HRFT223JBA	R CHIP	1/10 22K OHM J 1608	
RC730	HRFT472JBA	R CHIP	1/10 4.7K OHM J 1608	
RC731	HRFT242JBA	R CHIP	1/10 2.4K OHM J 1608	
RC732	HRFT392JBA	R CHIP	1/10 3.9K OHM J 1608	
RC733	HRFT752JBA	R CHIP	1/10 7.5K OHM J 1608	
RC734	HRFT243JBA	R CHIP	1/10 24K OHM J 1608	
RC750	HRFT472JBA	R CHIP	1/10 4.7K OHM J 1608	
RC751	HRFT472JBA	R CHIP	1/10 4.7K OHM J 1608	
RC917	HRFT241JBA	R CHIP	1/10 240 OHM J 1608	
RC918	HRFT241JBA	R CHIP	1/10 240 OHM J 1608	
RC919	HRFT241JBA	R CHIP	1/10 240 OHM J 1608	
RC933	HRFT121JBA	R CHIP	1/10 120 OHM J 1608	
RC934	HRFT121JBA	R CHIP	1/10 120 OHM J 1608	
RC935	HRFT121JBA	R CHIP	1/10 120 OHM J 1608	
RC977	HRFT201JBA	R CHIP	1/10 200 OHM J 1608	
RC978	HRFT102JBA	R CHIP	1/10 1K OHM J 1608	
RC979	HRFT272JBA	R CHIP	1/10 2.7K OHM J 1608	
ZZ200	PTMPJ0H725	PCB MAIN (RHU) AS	DTQ-14D4SSF	
C310	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP	
C406	CMXF2E434J	C MYLAR	250V MPP 0.43MF J (TP)	△ ®
C410	CEXF2E100V	C ELECTRO	250V RSS 10MF (10X20) TP	
C414	CEXF1V471V	C ELECTRO	35V RSS 470MF (10X20) TP	
C415	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C504	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C518	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C521	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C6022	CEXF1E222V	C ELECTRO	25V RSS 2200MF (16X25) TP	
C805	CEXF1C471V	C ELECTRO	16V RSS 470MF (8X12)TP	
C809	CCXB3D102K	C CERA SEMI	2KV BL(N) 1000PF K (T)	
C810	CCXB3A472K	C CERA	1KV B 4700PF K (TAPPING)	
C811	CCXB3A472K	C CERA	1KV B 4700PF K (TAPPING)	
C812	CEXF1E471V	C ELECTRO	25V RSS 470MF (10X16) TP	
C814	CEXF2C101V	C ELECTRO	160V RSS 100MF (16X25) TP	
C817	CEXF1C102V	C ELECTRO	16V RSS 1000MF (10X20) TP	
C820	CEXF2C470V	C ELECTRO	160V RSS 47MF (13X25) TP	
C829	CEXF1E102V	C ELECTRO	25V RSS 1000MF (13X20) TP	
C912	CH1BEE472M	C CERA AC	U/C/V 2.5KV 4700PF TP	△
ZZ200	PTMPJBH725	PCB MAIN M-10 AS	DTQ-14D4SSF	
10	2TM18006BE	TAPE MASKING	6.2X500	
D807	DRGP15J—	DIODE	RGPI5J DO-204AC 600V 1.5A	
D881	DLT2A05G—	DIODE	LT2A05G (TP)	
D882	DLT2A05G—	DIODE	LT2A05G (TP)	
D883	DLT2A05G—	DIODE	LT2A05G (TP)	
D884	DLT2A05G—	DIODE	LT2A05G (TP)	
E002	4856310300	EYE LET	BSR T0.2 (R1.6)	
E003	4856310300	EYE LET	BSR T0.2 (R1.6)	
E004	4856310600	EYE LET	BSR T0.2 (R2.3)	
E005	4856310600	EYE LET	BSR T0.2 (R2.3)	

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
E011	4856310300	EYE LET	BSR T0.2 (R1.6)	
E012	4856310300	EYE LET	BSR T0.2 (R1.6)	
E014	4856310300	EYE LET	BSR T0.2 (R1.6)	
E015	4856310300	EYE LET	BSR T0.2 (R1.6)	
E016	4856310300	EYE LET	BSR T0.2 (R1.6)	
E017	4856310300	EYE LET	BSR T0.2 (R1.6)	
E018	4856310300	EYE LET	BSR T0.2 (R1.6)	△
E020	4856310300	EYE LET	BSR T0.2 (R1.6)	△
E023	4856310300	EYE LET	BSR T0.2 (R1.6)	
E030	4856310600	EYE LET	BSR T0.2 (R2.3)	
E031	4856310600	EYE LET	BSR T0.2 (R2.3)	
E034	4856310600	EYE LET	BSR T0.2 (R2.3)	
E036	4856310600	EYE LET	BSR T0.2 (R2.3)	
E038	4856310600	EYE LET	BSR T0.2 (R2.3)	
E039	4856310300	EYE LET	BSR T0.2 (R1.6)	
E040	4856310300	EYE LET	BSR T0.2 (R1.6)	
E041	4856310300	EYE LET	BSR T0.2 (R1.6)	
E043	4856310300	EYE LET	BSR T0.2 (R1.6)	
E044	4856310300	EYE LET	BSR T0.2 (R1.6)	
P601	485923172S	CONN WAFER	YW025-04 (STICK)	
P801A	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
P801B	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
PWC1A	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
PWC1B	4857417500	TERM PIN	DA-IB0214(D2.3/DY PIN)	
R405	RS02Z751JS	R M-OXIDE FILM	2W 750 OHM J SMALL	
R441	RS02Z150JS	R M-OXIDE FILM	2W 15 OHM J SMALL	
R442	RS01Z369J-	R M-OXIDE FILM	1W 3.6 OHM J (TAPPING)	
R443	RS01Z229J-	R M-OXIDE FILM	1W 2.2 OHM J (TAPPING)	
R444	RS01Z229J-	R M-OXIDE FILM	1W 2.2 OHM J (TAPPING)	
R601	RF01Z688K-	R FUSIBLE	1W 0.68 OHM K (TAPPING)	
R715	RS02Z680JS	R M-OXIDE FILM	2W 68 OHM J SMALL	
R805	RS02Z338JS	R M-OXIDE FILM	2W 0.33 OHM J SMALL	
R814	RS02Z159JS	R M-OXIDE FILM	2W 1.5 OHM J SMALL	
R816	RS02Z150JS	R M-OXIDE FILM	2W 15 OHM J SMALL	
ZZ200	PTMPJRH725	PCB MAIN RADIAL AS	DTQ-14D4SSF	
C101	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C102	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C103	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C114	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C123	CEXF1H478V	C ELECTRO	50V RSS 0.47MF (5X11) TP	
C124	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C125	CEXF1H228V	C ELECTRO	50V RSS 0.22MF (5X11) TP	
C235	CEXD1H229F	C ELECTRO	50V RND 2.2MF (5X11) TP	
C305	CEXF1H101V	C ELECTRO	50V RSS 100MF (8X11.5) TP	
C308	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
C311	CEXD1H229Q	C ELECTRO	50V RT 2.2MF (6.3X11) TP	
C312	CMXL1J105J	C MYLAR	63V MEU 1MF J	
C401	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C403	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C405	CEXF2C109V	C ELECTRO	160V RSS 1MF (6.3X11) TP	
C408	CEXF1C220V	C ELECTRO	RSS 16V 22MF 5*11	
C411	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C413	CCXB2H102K	C CERA	500V B 1000PF K (TAPPING)	
C418	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
C451	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C452	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C501	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C502	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C506	CMXM2A103J	C MYLAR	100V 0.01MF J (TP)	
C514	CMXL1J105J	C MYLAR	63V MEU 1MF J	
C516	CMXM2A104J	C MYLAR	100V 0.1MF J (TP)	
C517	CEXD1H229F	C ELECTRO	50V RND 2.2MF (5X11) TP	
C520	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C523	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C524	CMXM2A153J	C MYLAR	100V 0.015MF J (TP)	
C526	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C576	CEXF1C221V	C ELECTRO	16V RSS 220MF (8X11.5) TP	

# ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
C601	CEXF1C470V	C ELECTRO	16V RSS 47MF (5X11) TP	
C605	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C606	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C610	CMXL1J224J	C MYLAR	63V MEU 0.22MF J (TP)	
C611	CMXL1J224J	C MYLAR	63V MEU 0.22MF J (TP)	
C615	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C634	CEXF1H100V	C ELECTRO	50V RSS 10MF (5X11) TP	
C662	CMXM2A153J	C MYLAR	100V 0.015MF J (TP)	
C701	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C706	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C707	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C712	CEXF1H109V	C ELECTRO	50V RSS 1MF (5X11) TP	
C803	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
C813	CCXB3A221K	C CERA	1KV B 220PF K (TAPPING)	
C815	CEXF2A100V	C ELECTRO	100V RSS 10MF (6.3X11) TP	
C816	CEXF1C101V	C ELECTRO	16V RSS 100MF (6.3X11) TP	
C821	CEXF1C470V	C ELECTRO	16V RSS 47MF (5X11) TP	
C871	CMXL1J154J	C MYLAR	63V MEU 0.15MF J	
C878	CMXL2E104K	C MYLAR	250V MEU 0.1MF K	
C890	CEXF1H470V	C ELECTRO	50V RSS 47MF (6.3X11) TP	
C893	CEXF1H479V	C ELECTRO	50V RSS 4.7MF (5X11) TP	
F802	5FWPS4022L	FUSE	WIDE TL 250V 4A CASE	△ ⊗
I803	1K1A431B—	IC REGULATOR(SHUNT)	KIA431B 2.495V 0.5% TO-92	
L601	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	
L805	58CX430599	COIL CHOKE	AZ-9004Y 940K TP	△
L901	5CPX121J—	COIL PEAKING	120UH J (RADIAL)	
Q401	TKTC3207—	TR	KTC3207 (TP)	
Q403	TKTC3205Y-	TR	KTC3205Y (TP)	
Q404	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q405	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q501	TKTA1266Y-	TR	KTA1266Y (TP)	
Q575	TKTA1275Y-	TR	KTA1275Y (TP)	
Q653	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q701	TKTC3205Y-	TR	KTC3205Y (TP)	
Q703	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q707	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q801	TKTC3205Y-	TR	KTC3205Y (TP)	
Q807	TKTC3205Y-	TR	KTC3205Y (TP)	
Q873	TKSC945CY-	TR	KSC 945C-Y (TAPPING)	
Q902	TKTC3207—	TR	KTC3207 (TP)	
Q903	TKTC3207—	TR	KTC3207 (TP)	
Q904	TKTC3207—	TR	KTC3207 (TP)	
Q977	TKTA1266Y-	TR	KTA1266Y (TP)	
R301	RN01B471JS	R METAL FILM	1W 470 OHM J SMALL	
R302	RN02B621JS	R METAL FILM	2W 620 OHM J SMALL	
R303	RN01B109JS	R METAL FILM	1W 1 OHM J SMALL	
R305	RN01B221JS	R METAL FILM	1W 220 OHM J SMALL	
R403	RN01B562JS	R METAL FILM	1W 5.6K OHM J SMALL	
R453	RN02B220JS	R METAL FILM	2W 22 OHM J SMALL	
R913	RN02B153JS	R METAL FILM	2W 15K OHM J SMALL	
R914	RN02B153JS	R METAL FILM	2W 15K OHM J SMALL	
R915	RN02B153JS	R METAL FILM	2W 15K OHM J SMALL	
SW702	5S50101090	SW TACT	THVH472GCA	
SW703	5S50101090	SW TACT	THVH472GCA	
SW704	5S50101090	SW TACT	THVH472GCA	
SW705	5S50101090	SW TACT	THVH472GCA	
SW706	5S50101090	SW TACT	THVH472GCA	
X502	5XEX3R579C	CRYSTAL QUARTZ	HC-49/U 3.579545M (TP)	
Z501	5PXXT4R5MB	FILTER CERA	XT 4.5MB-TP	
Z502	5PXL4R5MT	FILTER CERA	LT 4.5MH-TP	
ZZ200	PTMPJAH725	PCB MAIN AXIAL AS	DTQ-14D4SSF	
10	2TM14006LB	TAPE MASKING	3M #232 6.0X2000M	
20	2TM10006LB	TAPE MASKING	3M #232-MAP-C 6.2X2000M	
A001	4859819491	PCB MAIN	330X246	
C109	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C115	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C116	CCZF1H103Z	C CERA	50V F 0.01MF Z	

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
C118	CZSL1H470J	C CERA	50V SL 47PF J (AXIAL)	
C122	CCZB1H471K	C CERA	50V B 470PF K (AXIAL)	
C152	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C503	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C505	CZCH1H180J	C CERA	50V CH 18PF J (AXIAL)	
C507	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)	
C508	CCZB1H101K	C CERA	50V B 100PF K (AXIAL)	
C515	CCZB1H222K	C CERA	50V B 2200PF K AXIAL	
C519	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C522	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C525	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C561	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C612	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C617	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
C618	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
C703	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C708	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C711	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C713	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C714	CCZB1H221K	C CERA	50V B 2200PF K (AXIAL)	
C715	CCZB1H102K	C CERA	50V B 1000PF K (AXIAL)	
C716	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C717	CBZF1H104Z	C CERA SEMI	50V F 0.1MF Z	
C718	CCZF1H103Z	C CERA	50V F 0.01MF Z	
C891	CCZB1H821K	C CERA	50V B 820PF K AXIAL	
C892	CCZB1H222K	C CERA	50V B 2200PF K AXIAL	
C894	CCZB1H333K	C CERA	50V B 0.033MF K AXL	
C902	CCZB1H271K	C CERA	50V B 270PF K	
C903	CCZB1H271K	C CERA	50V B 270PF K	
C904	CCZB1H271K	C CERA	50V B 270PF K	
C922	CCZB1H271K	C CERA	50V B 270PF K	
C923	CCZB1H271K	C CERA	50V B 270PF K	
C924	CCZB1H271K	C CERA	50V B 270PF K	
D101	DUZ33B—	DIODE ZENER	UZ-33B	
D301	D1N4004S—	DIODE	1N4004S	
D401	D1N4937G—	DIODE	1N4937G (TAPPING)	
D405	D1N4937G—	DIODE	1N4937G (TAPPING)	
D406	D1N4937G—	DIODE	1N4937G (TAPPING)	
D407	D1N4937G—	DIODE	1N4937G (TAPPING)	
D408	D1N4937G—	DIODE	1N4937G (TAPPING)	
D409	D1N4148—	DIODE	1N4148 (TAPPING)	
D507	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM	△
D509	D1N4148—	DIODE	1N4148 (TAPPING)	
D525	D1N4148—	DIODE	1N4148 (TAPPING)	
D571	D1N4148—	DIODE	1N4148 (TAPPING)	
D572	D1N4148—	DIODE	1N4148 (TAPPING)	
D573	D1N4148—	DIODE	1N4148 (TAPPING)	
D574	D1N4148—	DIODE	1N4148 (TAPPING)	
D804	D1N4937G—	DIODE	1N4937G (TAPPING)	
D809	DMTZJ6R8C-	DIODE ZENER	MTZJ 6.8C	
D811	D1N4937G—	DIODE	1N4937G (TAPPING)	
D812	D1N4148—	DIODE	1N4148 (TAPPING)	
D813	DRGP15J—	DIODE	RG15J DO-204AC 600V 1.5A	
D816	D1N4937G—	DIODE	1N4937G (TAPPING)	
D817	DUZ9R1BM—	DIODE ZENER	UZ-9.1BM	
D819	D1N4937G—	DIODE	1N4937G (TAPPING)	
D841	D1N4937G—	DIODE	1N4937G (TAPPING)	
D851	DMTZJ6R8B-	DIODE ZENER	MTZJ 5.6B	
D852	DUZ5R1B—	DIODE ZENER	UZ-5.1B	
J1	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J10	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J100	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J102	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J103	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J104	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J105	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
J106	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	



# ELECTRICAL PARTS LIST

LOC	PART CODE	PART NAME	DESCRIPTION	REMARK
R307	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
R308	RD-AZ202J-	R CARBON FILM	1/6 2K OHM J	
R309	RD-AZ822J-	R CARBON FILM	1/6 8.2K OHM J	
R310	RD-AZ303J-	R CARBON FILM	1/6 30K OHM J	
R312	RD-AZ104J-	R CARBON FILM	1/6 100K OHM J	
R350	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R351	RD-AZ752J-	R CARBON FILM	1/6 7.5K OHM J	
R352	RD-AZ123J-	R CARBON FILM	1/6 12K OHM J	
R401	RD-4Z472J-	R CARBON FILM	1/4 4.7K OHM J	
R416	RD-2Z121J-	R CARBON FILM	1/2 120 OHM J	
R417	RD-4Z302J-	R CARBON FILM	1/4 3K OHM J	
R423	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R424	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R451	RD-4Z153J-	R CARBON FILM	1/4 15K OHM J	△
R452	RD-4Z113J-	R CARBON FILM	1/4 11K OHM J	△
R454	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R455	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R505	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R520	RD-AZ473J-	R CARBON FILM	1/6 47K OHM J	
R526	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
R530	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R531	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R532	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R602	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R603	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R604	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R607	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R615	RD-AZ512J-	R CARBON FILM	1/6 5.1K OHM J	
R618	RD-4Z151J-	R CARBON FILM	1/4 150 OHM J	
R619	RD-4Z151J-	R CARBON FILM	1/4 150 OHM J	
R724	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R725	RD-AZ682J-	R CARBON FILM	1/6 6.8K OHM J	
R789	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R790	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R809	RD-4Z184J-	R CARBON FILM	1/4 180K OHM J	
R818	85801065GY	WIRE COPPER	AWG22 1/0.65 TIN COATING	
R819	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R820	RD-2Z392J-	R CARBON FILM	1/2 3.9K OHM J	
R823	RD-4Z561J-	R CARBON FILM	1/4 560 OHM J	
R868	RN-4Z2201F	R METAL FILM	1/4 2.20K OHM F	
R869	RD-4Z102J-	R CARBON FILM	1/4 1K OHM J	
R872	RD-4Z152J-	R CARBON FILM	1/4 1.5K OHM J	
R874	RD-AZ102J-	R CARBON FILM	1/6 1K OHM J	
R875	RD-AZ622J-	R CARBON FILM	1/6 6.2K OHM J	
R876	RD-AZ472J-	R CARBON FILM	1/6 4.7K OHM J	
R877	RD-AZ103J-	R CARBON FILM	1/6 10K OHM J	
R878	RN-4Z1003F	R METAL FILM	1/4 100K OHM F	
R879	RN-4Z1502F	R METAL FILM	1/4 15K OHM F	
R888	RC-2Z565KP	R CARBON COMP	1/2 5.6M OHM K	
R890	RD-4Z152J-	R CARBON FILM	1/4 1.5K OHM J	△
R892	RD-4Z152J-	R CARBON FILM	1/4 1.5K OHM J	
R893	RD-4Z331J-	R CARBON FILM	1/4 330 OHM J	
R894	RD-4Z479J-	R CARBON FILM	1/4 4.7 OHM J	
R901	RD-4Z474J-	R CARBON FILM	1/4 470K OHM J	
R910	RD-2Z332J-	R CARBON FILM	1/2 3.3K OHM J	
R911	RD-2Z332J-	R CARBON FILM	1/2 3.3K OHM J	
R912	RD-2Z332J-	R CARBON FILM	1/2 3.3K OHM J	
R923	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R924	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	
R925	RD-AZ101J-	R CARBON FILM	1/6 100 OHM J	

## ELECTRICAL PARTS LIST

### AUTO FREE, 220V DIFFERENTIAL PARTS LIST

LOC	PARTS_NAME	220V		AUTO FREE VOLTAGE	
		S/N	PARTS_DESC.	S/N	PARTS_DESC.
R801	R CEMENT	RX07B339JP	7W 3.3 OHM J BEN 15MM 4P	RX07B109JP	7W 1 OHM J BEN 15MM4P
R895	R CARBON FILM	RD-4Z513J-	1/4 51K OHM J	X	

### DTQ-20D4SSFM\_20D7SSFM DIFFERENTIAL LIST

LOC	PARTS_NAME	DTQ-20D4SSFM		DTQ-20D7SSFM	
		S/N	PARTS_DESC.	S/N	PARTS_DESC.
SW801	SW PUSH	X		5S40101143	PS3-22SP(P.C.B)
SW700	SW TACK	X		5S50101090	THVH472GCA
SW701	SW TACK	5S50101035	KPT-1112 1C-1P	X	
J091	WIRE	85801065GY	AWG22 1/0.65 TIN COATING	X	
J092	WIRE	85801065GY	AWG22 1/0.65 TIN COATING	X	
PA601	CONNECTOR	4850704S27	YH025-04+YRT205+ULW=400	4850704S31	YH025-04+YRT205+ULW800400

### TDA7266\_LA42072N DIFFERENTIAL PARTS LIST

LOC	PARTS_NAME	TDA7266		LA42072N	
		S/N	PARTS_DESC.	S/N	PARTS_DESC.
I601A	HEAT SINK	4857026103	AL EX BK	4857028200	AL EX BK
C613	C CERA	X		CBZF1H104Z	50V F 0.1MF Z
C614	C CERA	X		CBZF1H104Z	50V F 0.1MF Z
R607	R METAL FILM	X		RN01B229JS	1W 2.2 OHM J SMALL
R608	R METAL FILM	X		RN01B229JS	1W 2.2 OHM J SMALL
Q653	TR	TKTC3198Y-	KTC3198Y	X	
RC652	R CHIP	HRFT392JBA	1/10 3.9K OHM J 1608	X	
RC655	R CHIP	X		X	
RC656	R CHIP	HRFT000-BA	1/10 0 OHM 1608	HRFT511JBA	1/10 510 OHM J 1608
JC05	R CHIP	X		HRFT000-BA	1/10 0 OHM 1608



## I. MICOM Outline.

### 1. Abstract.

This specification is 1-Tuner Mono Model for North America, CCD 1-Chip MICOM M37150.  
It is developing software specification for tuning only NTSC system TV F/S.

### 2. H/W Outline.

- 1) ROM : 32K x 8bits.tsc
- 2) RAM : 1152 x 8bits.
- 3) OSD Function.
  - . Screen Display.
    - 32 characters x 2 lines.
  - Characters.
    - 254 patterns programmable.
  - Character display area
    - CC mode : 16 x 26 dots
  - Chatacter color : 8 colors
  - Attribute
    - CC mode : smooth italic, underline, flash, automatic solid space"
    - OSD mode : border
  - Display position
    - Horizontal : 128 levels
    - Vertical : 512 levels

### 3. System Feature.

- The system for TV tuning is Frequency Synthesis type.
- Closed Caption's function is built in IC.
- On Screen Display's function is built in IC.
- Package. : 42 PIN SSOP.
- Tuner (Pre-scaler.) : I2C Bus. --- DT5-NF20F N
- Remote. : R-43A Series
- E2PROM. : 24C04(I2C Bus) ? Apply one byte Read/Write mode.
  
- 6-Local Key. : A/D Input Control.(Power, Ch Up/Down, Vol Up/Down, Menu)
  
- Option S/W : Port Input Option Check.
- IFV/C/D IC :M61250(America, The only NTSC)"

### 4. Function.

- 1) C. C. D. function.
  - A section of C. C. D. operates FCC based specification.
  
- 2) C. C. D. controlled function.

- Closed Caption Mode. (Off<-->C1<-->C2<-->T1<-->T2<-->Off)
- CC On Mute.(Off / On)
- When CC On Mute is On, Output is selected a item of Closed Caption Modes.

### 3) Tuning Function.

- I2C Bus.
- PLL IC Interface.
- FS 181 Channel (AIR 2-69CH, CABLE 1-125CH)"
- AFT Operation(Fine Tuning ) -2.5 ~ Fn ~ +2.5MHz
- AIR/CABLE (STD, HRC, IRC ). Only Cable 5,6CH is that AFT range is cover over broad-band. -2.5MHz ~ Fn ~ +3.5MHz.
- Auto Program.(If a channel is broadcasting, the channel is memorized.)"
- Direct Tuning(0 ~ 9KEY)
- Channel Up/Down.(Memorized Channels) -> The Ch Up/Down buttons on the Remote and on the front panel are same function.
- Search Channel Up/Down.(If No-Memory or only 1CH is Memory)
- Channel Memory.(ADD/DELETE)
- Channel Review Function.
- Last Channel Memory Function.

### 4) OSD Function.

- In Video Mode, Things(Items) that is concerned with Air and Cable disappear in the Menu."
- Channel, AV display.
- Small & Graphic ICON Menu.
- Volume, Picture Control --> I2C Bus Control

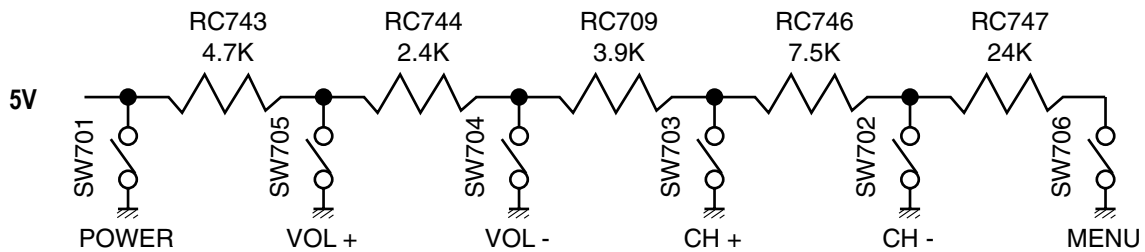
### 5) The Others Function.

- Video/Audio Mute Function.
  - If a Channel is no signal, it is Auto-Power Off Function after 15 minutes."
  - Heat Run Function. --- OSD White Background.
  - Sleep Timer, Wake-Up Time, Off Time Function. "
  - Audio Mode :Mono
  - TV/Line Controlled function- ----- (Option)
  - Prison Controlled function- ----- (Option)
  - 3-Language.(North America : ENG/SPA/FRA ).
  - E2PROM Interface (I2C Bus Control)
  - CH 6 TRAP Function.(IS-31 對應)
  - PLL IC Band Data.(Control Byte 2-->P3~P0)
- VHF L : 1 / VHF H : 2 / CH6 TRAP : 5 (IS-31) AIR(Cable) CH 6 Only UHF : 8

5. The Table of Option and Schedule

PIN	OPTION	REFERENCE	REMARKS
#1	TV ONLY (H)	LOW (DC 0V): VIDEO	(L) : Video Model ("V" Series)
		HIGH (DC 5V) : TV	(H) : No Video Model ("P" Series)
#41	PRISON	LOW (DC 0V): NORMAL	(L) : Normal Video
		HIGH (DC 5V) : PRISON	(H) : Clock Menu (TIME) delete

6. KEY Matrix



KEY	FUNCTION	VALUE(V)
SW701	POWER	0 ~ 0.55
SW705	VOL +	2.25 ~ 2.75
SW704	VOL -	2.76 ~ 3.25
SW703	CH +	3.26 ~ 3.75
SW702	CH -	3.76 ~ 4.25
SW701	MENU	4.26 ~ 4.75

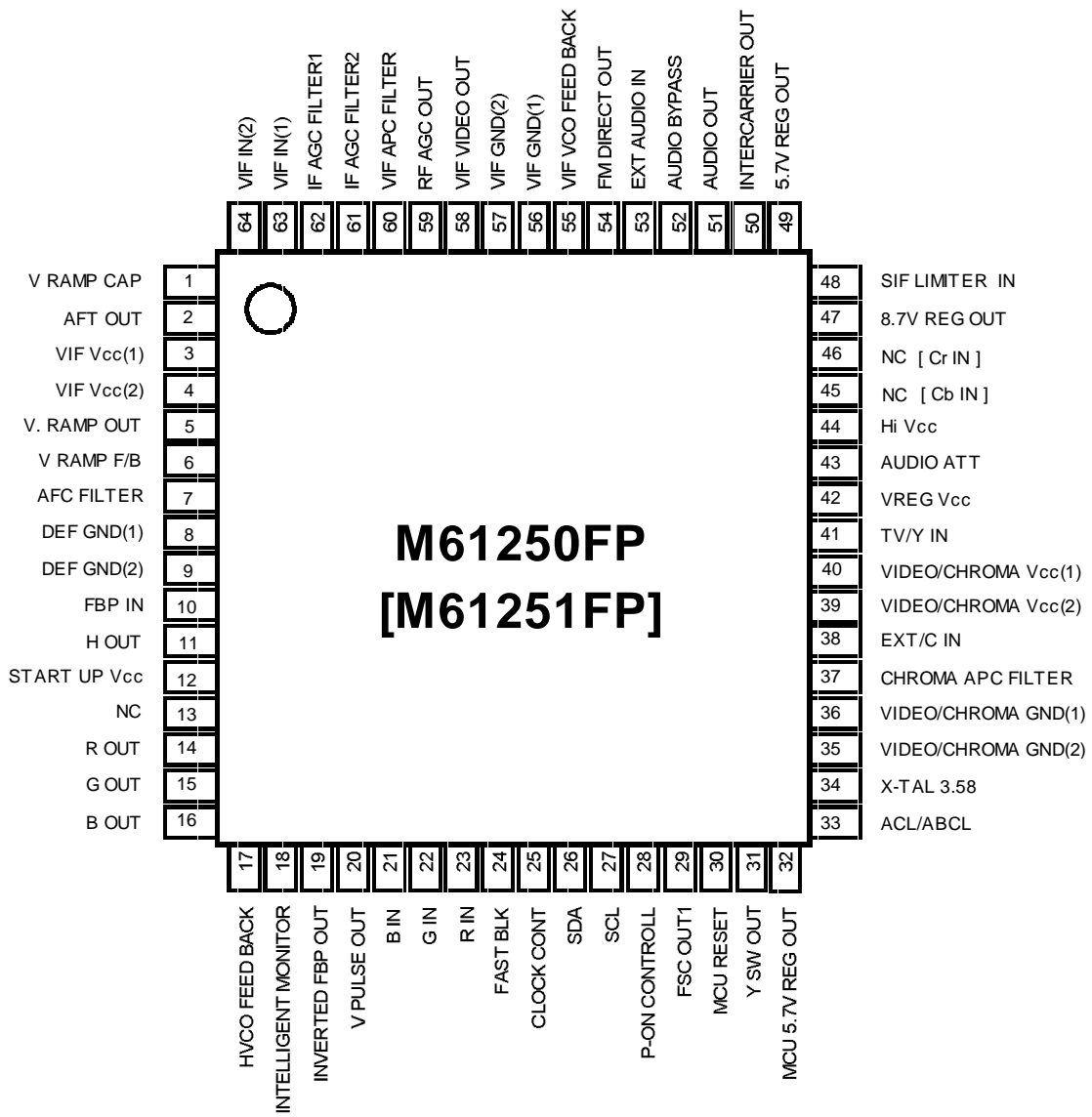
## II. PIN ASSIGN

TV ONLY	1	P11/SCL1	P12/SCL2	42	CLOCK(EEPROM)
TV / Y	2	P00/PWMO	P13/SDA1	41	PRISON
AV1/AV2	3	P01/PWM1	P14/SDA2	40	DATA(EEPROM)
DG ON RELAY	4	P02/PWM2	P16/AD8/TIM2	39	MONITOR
S-IN	5	P03/PWM3/AD1	P50/H SYNC	38	H SYNC
TV/AV	6	P04/PWM4/AD2	P51/V SYNC	37	V SYNC
AFT IN	7	P16	P52/B	36	B
X-RAY	8	P06/INT2/AD4	P53/G	35	G
X-RAY2	9	P07/INT2	P54/R	34	R
ST-BY LED	10	P20/SCLK/AD5	P55/OUT	33	OUT
NC	11	P21/SOUT/AD6	CLKCOUNT/P10	32	CLK COUNT
KEY1	12	P22/SIN/AD7	P30/SDA3	31	SDA
BUS STOP	13	P23/TM3	P31/SCL3	30	SCL
S-MUTE	14	P24/TM2	P15	29	POWER
REMOCON IN	15	P25/INT3	FSCIN	28	FSC IN
NC	16	P26/XIN	RESET	27	RESET
NC	17	P27/XOUT	CVIN	26	CCD CVBS
CNVSS	18	CNVSS	VHOLD	25	CCD V-HOLD
GND	19	X-IN	HLF	24	CCD HLF
NC	20	X-OUT	FILT	23	FILT
VSS	21	VCC	VCC	22	VCC

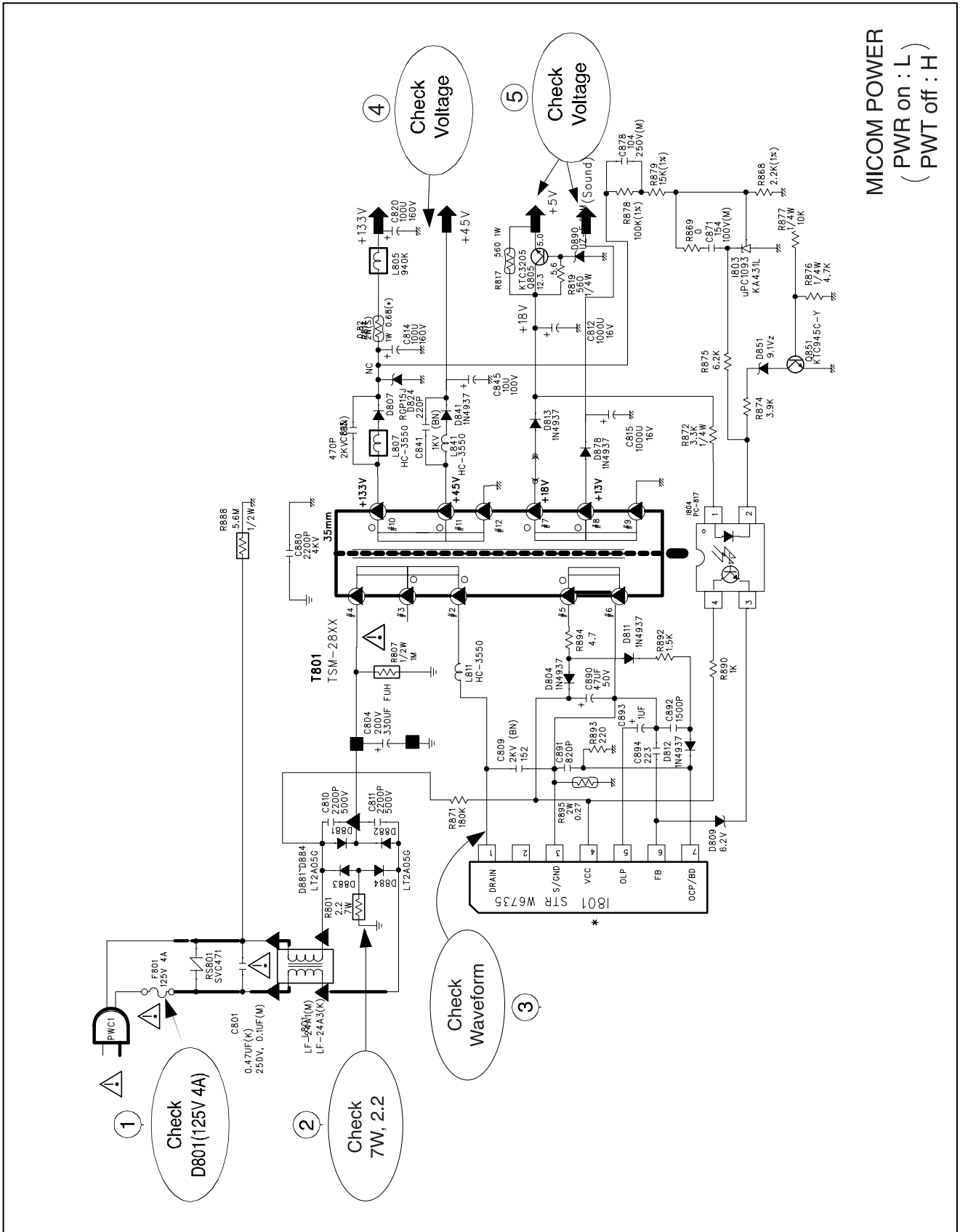
## III. PIN DESCRIPTION

PIN	기호	명칭	I/O	동작설명	비고
1	P11/SCL1	TV ONLY	O	TV ONLY(H), VIDEO(L)	OPTION
2	P00/PWM0	TV/Y	I	CVIN IN	
3	P01/PWM1	AV1/AV2	I	AV1/AV2 SW	
4	P02/PWM2	D/G ON	O	D/G RELAY ON(H)	
5	P03/PWM3/ADI	S-IN	I	S-VHS Jack Signal Input	
6	P04/PWM4/AD2	TV/AV	I	TV/VIDEO SW,TV(H),VIDEO(L)	
7	P05/AD3	AFT IN	I	Default Voltage:3.75V	
8	P06/INT2/AD4	X-RAY	I	B+ PROTECT(L)	
9	P07/INT1	X-RAY2	I	고압 PROTECT, OCP	
10	P20/SCLK/AD5	ST-BY LED	O	POWER OFF --> ST-BY(H)	
11	P21/SOUT/AD6	NC		NC	
12	P22/SIN/AD7	KEY1	I	MENU, VOL+,VOL-, CH+,CH-, POWER	
13	P23/TIM3	BUS STOP	I	FACTORY MODE	
14	P24/TIM2	S-MUTE	O	AUDIO MUTE(H)	
15	P25/INT3	REMOCON	I	Remocon Signal Input	
16	P26/XCIN	NC		NC	
17	P27/XCOUT	NC		NC	
18	CNVSS	CNVSS		GND	
19	X-IN	GND		GND	
20	X-OUT	NC		NC	
21	VSS	VSS		GND(Negative Power Supply)	
22	VCC	VCC	I	+5V(Positive Power Supply)	
23	FILT	FILT	I	Clock Oscillation Filter	
24	HLF	CCD HLF	I/O	I/O for Data Slicer	
25	VHOLD	CCD V-HOLD	I/O	I/O for Data Slicer	
26	CVIN	CCD CVBS	I	Composite Video Signal Input	
27	RESET	RESET	I	MCU RESET:Active(H)	
28	FSC IN	FSCIN	I	Clock Input	
29	P15	POWER	I	Chroma On/Off	
30	P31/SCL3	SCL	I/O	I2C Data IN/OUT	
31	P30/SDA3	SDA	I/O	I2C Data IN/OUT	
32	CLKCONT/P10	CLK CONT	I	CLK CONTROL	
33	P55/OUT	OUT	O	Fast Blanking Control Signal	
34	P54R	R	O	OSD Red Output	
35	P53G	G	O	OSD Green Output	
36	P52B	B	O	OSD Blue Output	
37	P51/V Sync	V Sync	I	Vertical Syn Signal Input	
38	P50/H Sync	H Sync	I	Horixental Syn Signal Input	
39	P16/AD8/TM2	MONTOR	I	Intelligent Monitor	
40	P14/SDA2	SDA2	I	EEPROM Data (--> Micom Data	
41	P13/SDA1	PRISON	I	Prison(H), Normal(L)	OPTION
42	P12/SCL2	SCL2	I	EEPROM Clock (--> Micom Clock	

### IV. M61250(CROMA) Pin Configuration

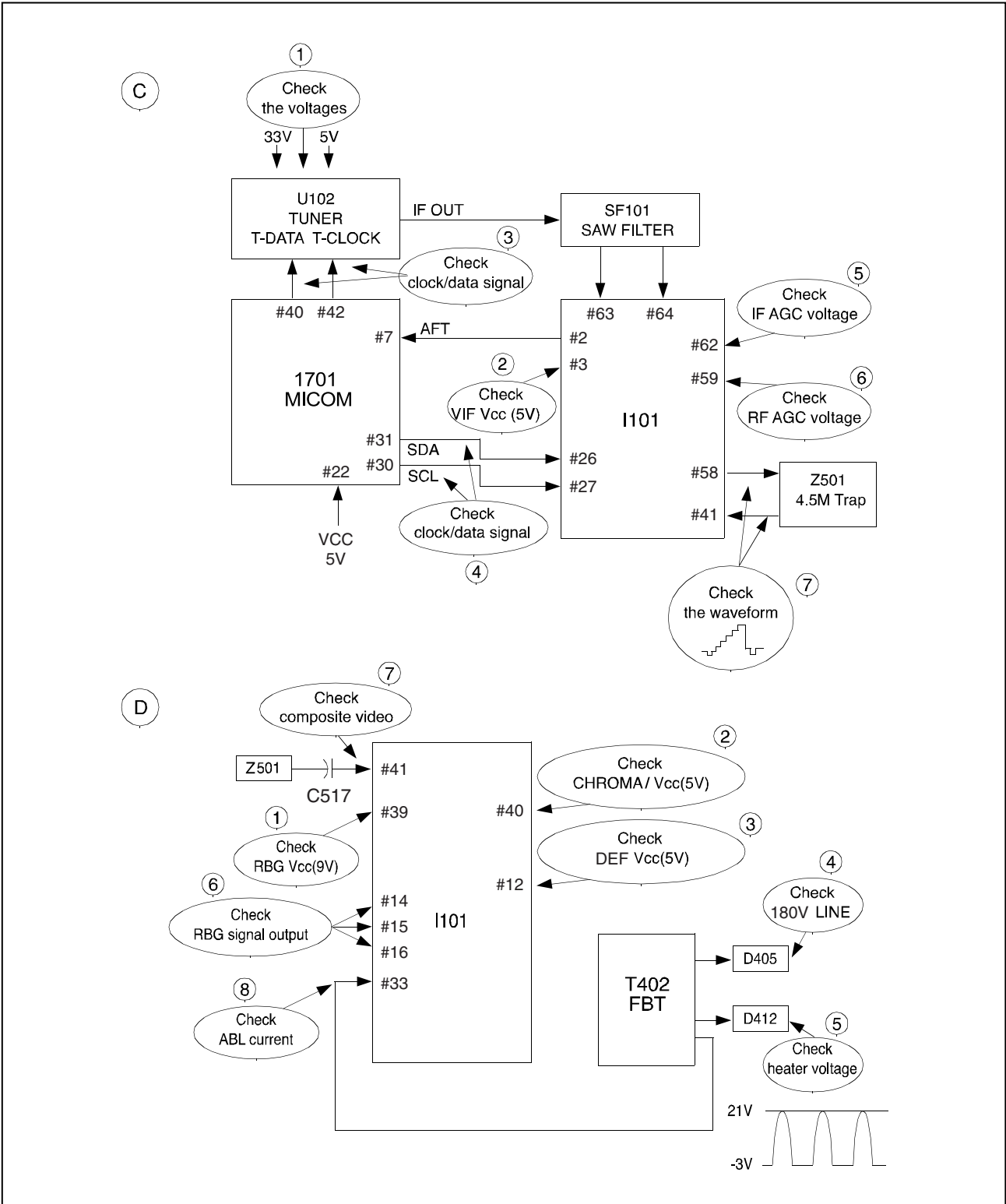


## 1. NO POWER



2. NO PICTURE

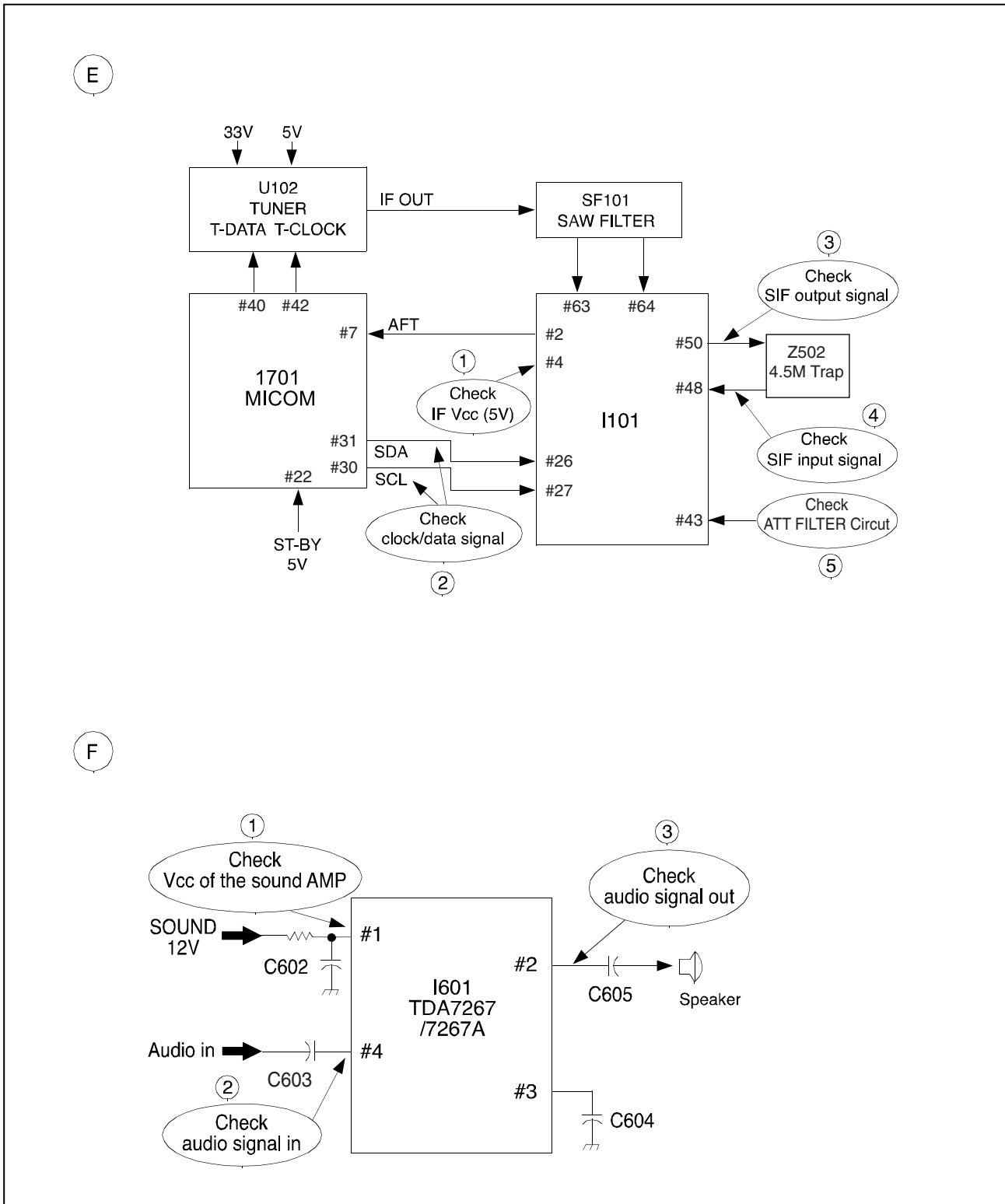
Check the waveform of I101 #58	NG : GO to the figure ㉓
	OK : Go to the figure ㉔





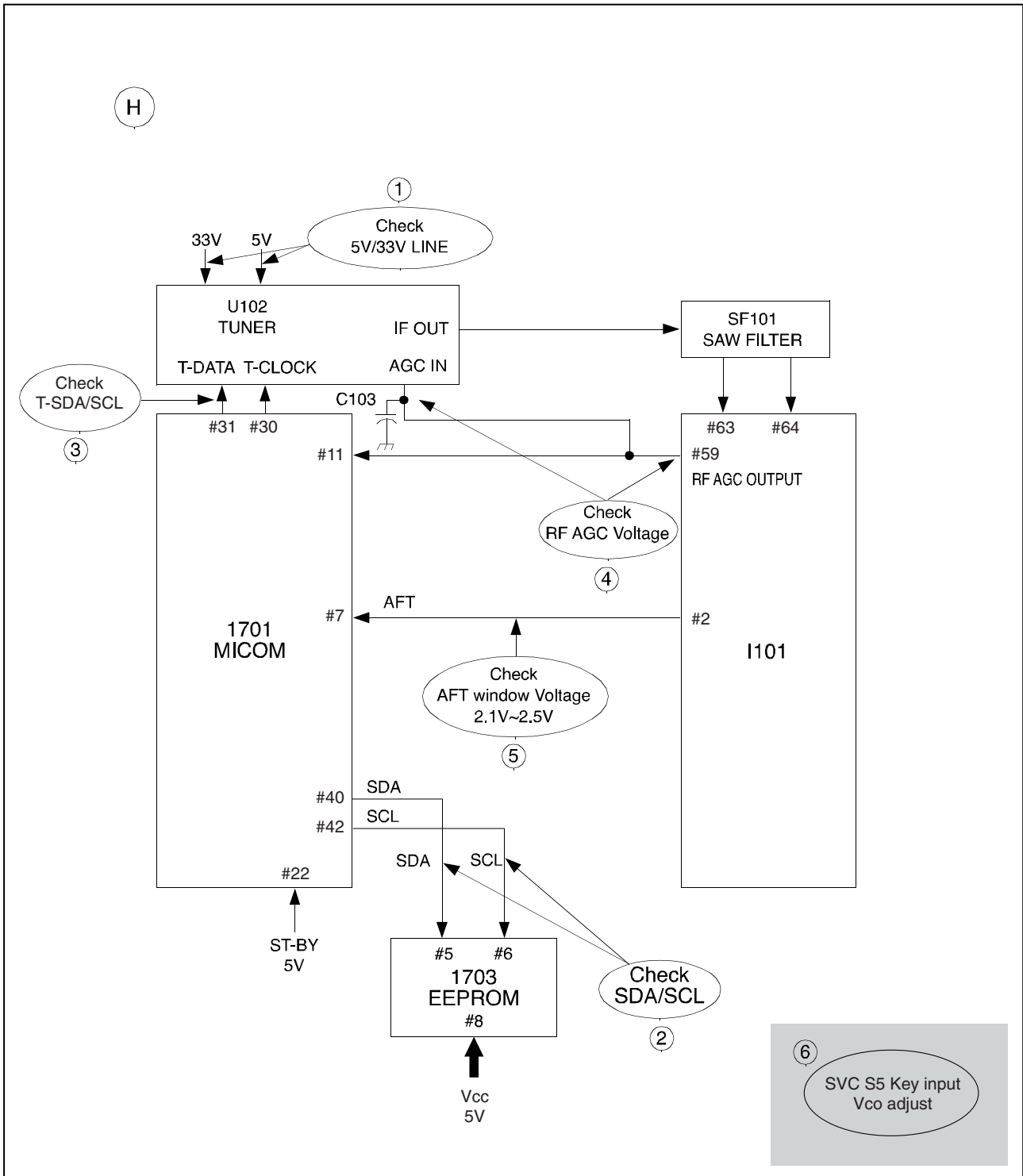
3. NO SOUND

Check audio output signal of I101 #51	NG : Go to the figure ㉔
	OK : Go to the figure ㉕

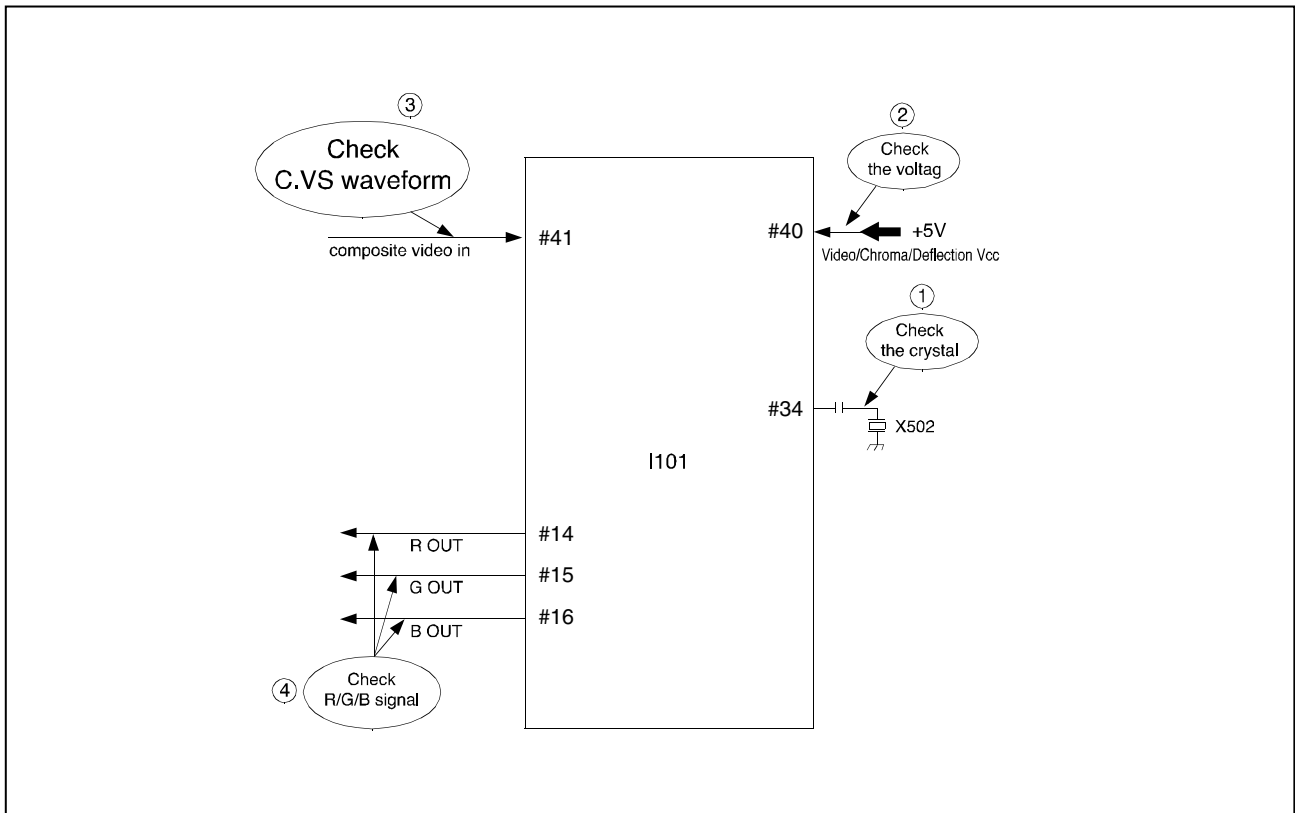


4. CH DON'T STOP

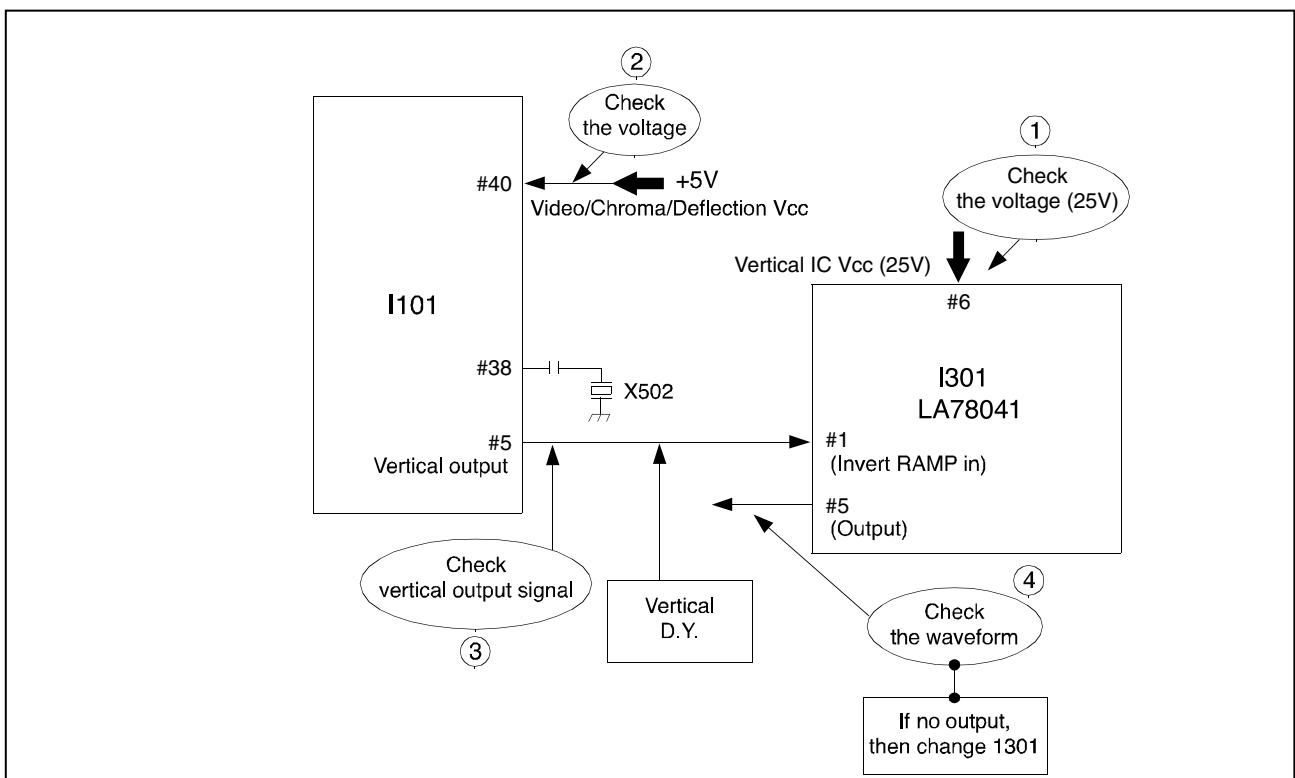
Check the input signal conditions	NG : Loss of signal or weak signal
	OK : Go to the figure (h)



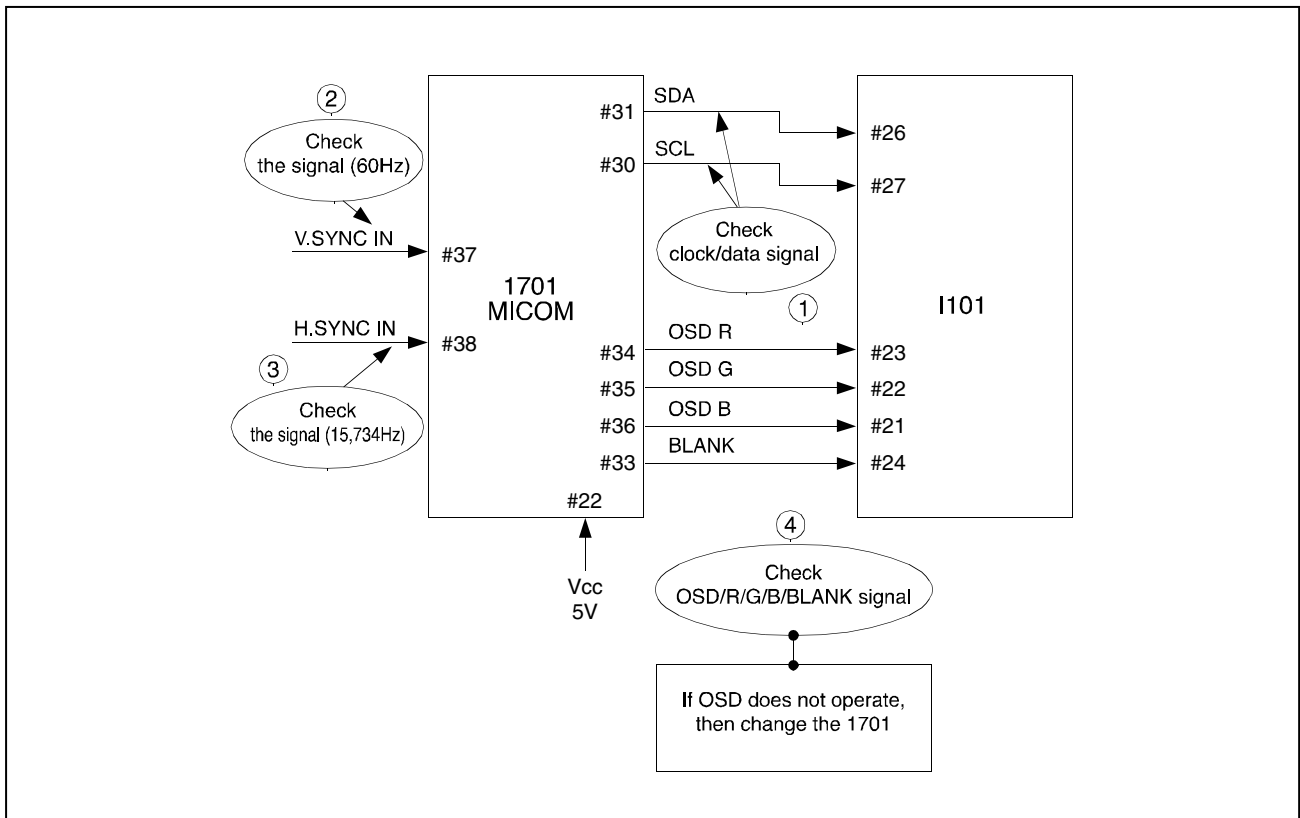
5. NO COLOR



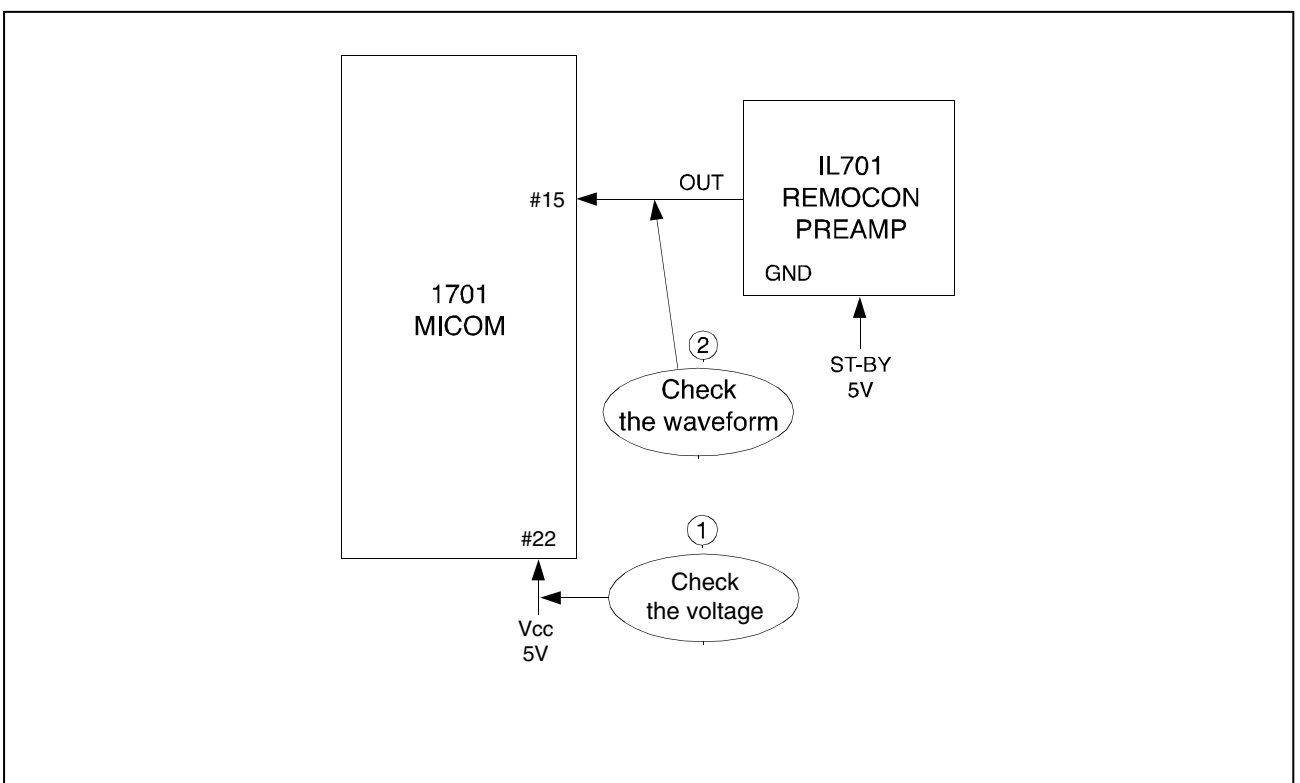
6. NO VERTICAL DEFLECTION



7. NO ON-SCREEN DISPLAY



8. REMOTE CONTROL DOES NOT OPERATE





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