Service Manual

# Model No. **TX-48AS640B TX-48AS640E TX-48ASR650**

LA51 Chassis

## 

This service information is designed for experienced repair technicians only and is not designed for use by the general public. It does not contain warnings or cautions to advise non-technical individuals of potential dangers in attempting to service a product. Products powered by electricity should be serviced or repaired only by experienced professional technicians. Any attempt to service or repair the product or products dealt with in this service information by anyone else could result in serious injury or death.

#### IMPORTANT SAFETY NOTICE =

There are special components used in this equipment which are important for safety. These parts are marked by  $\triangle$  in the Schematic Diagrams, Circuit Board Diagrams, Exploded Views and Replacement Parts List. It is essential that these critical parts should be replaced with manufacturer's specified parts to prevent shock, fire or other hazards. Do not modify the original design without permission of manufacturer.



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# **1** Safety Precautions

## 1.1. General Guidelines

- 1. When conducting repairs and servicing, do not attempt to modify the equipment, its parts or its materials.
- 2. When wiring units (with cables, flexible cables or lead wires) are supplied as repair parts and only one wire or some of the wires have been broken or disconnected, do not attempt to repair or re-wire the units. Replace the entire wiring unit instead.
- 3. When conducting repairs and servicing, do not twist the Fasten connectors but plug them straight in or unplug them straight out.
- 4. When servicing, observe the original lead dress. If a short circuit is found, replace all parts which have been overheated or damaged by the short circuit.
- 5. After servicing, see to it that all the protective devices such as insulation barriers, insulation papers shields are properly installed.
- 6. After servicing, make the following leakage current checks to prevent the customer from being exposed to shock hazards.

## 1.2. Touch-Current Check

- 1. Plug the AC cord directly into the AC outlet. Do not use an isolation transformer for this check.
- 2. Connect a measuring network for touch currents between each exposed metallic part on the set and a good earth ground such as a water pipe, as shown in Figure 1.
- 3. Use Leakage Current Tester (Simpson 228 or equivalent) to measure the potential across the measuring network.
- 4. Check each exposed metallic part, and measure the voltage at each point.
- 5. Reserve the AC plug in the AC outlet and repeat each of the above measure.
- 6. The potential at any point (TOUCH CURRENT) expressed as voltage U<sub>1</sub> and U<sub>2</sub>, does not exceed the following values:
- For a. c.:  $U_1 = 35 V$  (peak) and  $U_2 = 0.35 V$  (peak);

For d. c.: U<sub>1</sub> = 1.0 V,

#### Note:

The limit value of  $U_2 = 0.35$  V (peak) for a. c. and  $U_1 = 1.0$  V for d. c. correspond to the values 0.7 mA (peak) a. c. and 2.0 mA d. c.

The limit value U<sub>1</sub> = 35 V (peak) for a. c. correspond to the value 70 mA (peak) a. c. for frequencies greater than 100 kHz.

7. In case a measurement is out of the limits specified, there is a possibility of a shock hazard, and the equipment should be repaired and rechecked before it is returned to the customer.

#### Measuring network for TOUCH CURRENTS



NOTE - Appropriate measures should be taken to obtain the correct value in case of non-sinusoidal waveforms.

Figure 1

# 2 Warning

# 2.1. Prevention of Electrostatic Discharge (ESD) to 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 electrostatic discharge (ESD).

- 1. Immediately before handling any semiconductor component or semiconductor-equipped assembly, drain off any ESD on your body by touching a known earth ground. Alternatively, obtain and wear a commercially available discharging ESD wrist strap, which should be removed for 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 solder removal device. Some solder removal devices not classified as [anti-static (ESD protected)] can generate electrical charge sufficient to damage ES devices.
- 5. Do not use freon-propelled chemicals. These can generate electrical charges sufficient to damage ES devices.
- 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).
- 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 ham less motion such as the brushing together of your clothes fabric or the lifting of your foot from a carpeted floor can generate static electricity (ESD) sufficient to damage an ES device).

## 2.2. About lead free solder (PbF)

Note: Lead is listed as (Pb) in the periodic table of elements.

In the information below, Pb will refer to Lead solder, and PbF will refer to Lead Free Solder.

The Lead Free Solder used in our manufacturing process and discussed below is (Sn+Ag+Cu).

That is Tin (Sn), Silver (Ag) and Copper (Cu) although other types are available.

This model uses Pb Free solder in it's manufacture due to environmental conservation issues. For service and repair work, we'd suggest the use of Pb free solder as well, although Pb solder may be used.

PCBs manufactured using lead free solder will have the PbF within a leaf Symbol **PbF** stamped on the back of PCB. **Caution** 

- Pb free solder has a higher melting point than standard solder. Typically the melting point is 50 ~ 70 °F (30~40 °C) higher. Please use a high temperature soldering iron and set it to 700 ± 20 °F (370 ± 10 °C).
- Pb free solder will tend to splash when heated too high (about 1100 °F or 600 °C).
   If you must use Pb solder, please completely remove all of the Pb free solder on the pins or solder area before applying Pb solder. If this is not practical, be sure to heat the Pb free solder until it melts, before applying Pb solder.
- After applying PbF solder to double layered boards, please check the component side for excess solder which may flow onto the opposite side. (see figure below)



#### Suggested Pb free solder

There are several kinds of Pb free solder available for purchase. This product uses Sn+Ag+Cu (tin, silver, copper) solder. However, Sn+Cu (tin, copper), Sn+Zn+Bi (tin, zinc, bismuth) solder can also be used.



# 3 Service Navigation

# 3.1. PCB Layout



Board Name	Function
A-Board	Main
P-Board	Power
K-Board	IR/LED/CATS
GK-Board	SWITCH

# 4 Specifications

#### Product fiche

Energy efficiency class	A+
Visible screen size (diagonal)	121 cm / 48 inches
On mode average power consumption (B/	E) 63 W
Annual energy consumption <sup>*1</sup> (B/E)	88 kWh
Rated power consumption (R)	106 W
On mode power consumption / screen area	$a(\mathbf{R}) = 0.010 \text{ W} / \text{cm}^2$
*2	
Standby power consumption 2	0.20 VV
Off mode power consumption	0.20 W
Screen resolution	1 920 (W) × 1 080 (H)
*1: Energy consumption XYZ kWh per year, b	ased on the power consumption of the television operating 4 hours per day for 365 days.
The actual energy consumption will depen	d on how the television is used.
*2: when the TV is turned off with the remote	control and no function is active.
For the information of rated power consumption	on, refer to the label on the TV back cover.
■ TV	
Dimensions (W × H × D)	
	$1087 \text{ mm} \times 676 \text{ mm} \times 260 \text{ mm}$ (With Pedestal) (B/E)
	1.007 mm × 0.52 mm × 57 mm (1V 0my) (B/E)
	1.087 mm $\times$ 677 mm $\times$ 214 mm (With Pedestal) (R)
	$1.087 \text{ mm} \times 632 \text{ mm} \times 57 \text{ mm} (10.0019) (R)$
Mass	
	15.0 kg Net (With Pedestal)
_	14.0 kg Net (IV only)
Power source	AC 220-240 V, 50 / 60 Hz
Panel	LED LCD panel
Sound	
Speaker output	20 W (10 W + 10 W)
Headphones	M3 (3.5 mm) stereo mini Jack × 1
Connection terminals	
AV1 input / output	
SCART	(Audio/Video in, Audio/Video out, RGB in)
AV2 input (COMPONENT / VIDEO)	
VIDEO	RCA PIN Type × 1         1.0 V [p-p] (75 Ω)
AUDIO L - R	RCA PIN Type × 2 0.5 V [rms]
Y	1.0 V [p-p] (including synchronisation)
P <sub>B</sub> /C <sub>B</sub> , P <sub>R</sub> /C <sub>R</sub>	± 0.35 V [p-p]
HDMI 1 / 2 / 3 input	TYPE A Connectors
	HDMI 1 / 3 : 3D, Content Type
	HDMI 2 : 3D, Content Type, Audio Return Channel
	This TV supports "HDAVI control 5" function.
Card slot	Common Interface slot (complies with CI Plus) × 1
ETHERNET	RJ45. IEEE802.3 10BASE-T / 100BASE-TX
USB 1 / 2	·
USB1 / 2:	DC 5 V. Max. 500 mA [Hi-Speed USB (USB 2.0)]
DIGITAL AUDIO output	PCM / Dolby Digital / DTS. Fibre optic
Receiving systems / Band name (B)	
Check the latest information on the available	services at the following website
http://panasonic.net/viera/support	
DVB-T / T2	Digital terrestrial services
(UK)	
PALI	LIHE E21 - 68
(Ireland)	
ΡΔΙ Ι	VHE AI
	CATV S1 - S20
	UHE F21 - F69
	CATV S21 - S41 (Hyperband)
PAL 525/60	Playback of NTSC tape from some PAL Video recorders (VCR) or NTSC disc playback from
	DVD player and recorder
M.NTSC	Playback from M.NTSC Video recorders (VCR)
NTSC (AV input only)	Playback from NTSC Video recorders (VCR)

#### Receiving systems / Band name (E)

Check the latest information on the available services at the following website. (English only)

http://panasonic.net/viera/support		
DVB-C	Digital cable services (MPEG2	and MPEG4-AVC(H.264))
DVB-T / T2	Digital terrestrial services (MPE	EG2 and MPEG4-AVC(H.264))
PAL B, G, H, I, SECAM B, G, SE	CAM L, L'	
	VHF E2 - E12	VHF A - H (ITALY)
	CATV (S01 - S05)	CATV S11 - S20 (U1 - U10)
	VHF H1 - H2 (ITALY)	UHF E21 - E69
	CATV S1 - S10 (M1 - M10)	CATV S21 - S41 (Hyperband)
PAL D. K. SECAM D. K	VHF R1 - R2	VHF R3 - R5
	VHF R6 - R12	UHF F21 - F69
PAL 525/60	Playback of NTSC tape from so	ome PAL Video recorders (VCR)
MNTSC	Playback from M NTSC Video	recorders (VCP)
	Playback from NTSC Video ros	verdere (VCR)
	Playback from NTSC Video rec	corders (VCR)
Receiving systems / Band name (R)		
Check the latest information on the availa	ble services at the following website	e. (English only)
http://panasonic.net/viera/support		
DVB-C	Digital cable services (MPEG2	and MPEG4-AVC(H.264))
DVB-T / T2	Digital terrestrial services (MPE	EG2 and MPEG4-AVC(H.264))
PAL D, K, SECAM D, K		
,	VHF R1 - R2	VHF R3 - R5
	VHF R6 - R12	UHF F21 - F69
PAL 525/60	Playback of NTSC tane from or	ome PAL Video recorders (V/CP)
	Diayback from MNTSC Video	recorders (VCD)
NISC (Av input only)	Playback from NISC Video rec	corders (VCR)
Aerial input		
(UK)	UHF	
(Ireland) / E / R	VHF / UHF	
Operating Conditions		
Temperature:	0 °C - 35 °C	
Humidity:	20 % - 80 % RH (non-condensi	ing)
Built-in wireless LAN	( · · · · · ·	5,
Standard compliance and From	uonov rongo*1	
IEEE802.11a/n (B/E)	5.180 GHz - 5.320 GHz, 5.500	GHZ - 5.580 GHZ, 5.660 GHZ - 5.700 GHZ
IEEE802.11a/n (R)	5.15 GHz - 5.35 GHz, 5.47 GH	z - 5.85 GHz
IEEE802.11b/g/n (B/E)	2.412 GHz - 2.472 GHz	
IEEE802.11b/g/n (R)	2.400 GHz - 2.4835 GHz	
Security	WPA2-PSK (TKIP/AES), WPA-	PSK (TKIP/AES), WEP (64 bit/128 bit)
Bluetooth wireless technology*2		
Standard Compliance	Bluetooth 3.0	
	2.402 GHZ - 2.400 GHZ	
*': The frequency and channel differ deperture The frequency and channel differ deperture	ending on the country. (B/E) ending on the country. Follow the reg	gulations of your country for the frequency range. (R)
* <sup>2</sup> . Not all the Bluetooth compatible device	es are available with this TV. Up to 5	devices can be used simultaneously
(except the 3D Evewear and Touch Pa	ad Controller) (B)	active our be used simulations
Not all the Bluetooth compatible device	es are available with this TV Up to 5	devices can be used simultaneously
(except Touch Pad Controller) (F)		
Not all the Bluetooth compatible device	es are available with this TV. Un to 5	devices can be used simultaneously (R)
3D Evewear (B)		
	165 mm × 38 mm × 166 mm	
Dimensions (W × H × D)		
Dimensions (W × H × D) Mass	Approx 18 g	
Dimensions (W × H × D) Mass	Approx. 18 g	
Dimensions (W × H × D) Mass Usage temperature range	Approx. 18 g 0 °C - 40 °C	20025
Dimensions (W × H × D) Mass Usage temperature range Battery	Approx. 18 g 0 °C - 40 °C Coin-shaped lithium battery CF	R2025
Dimensions (W × H × D) Mass Usage temperature range Battery Operation time	Approx. 18 g 0 °C - 40 °C Coin-shaped lithium battery CF Approx. 75 hours in continuous	R2025 s use of the battery made by Panasonic
Dimensions (W × H × D) Mass Usage temperature range Battery Operation time Materials	Approx. 18 g 0 °C - 40 °C Coin-shaped lithium battery CF Approx. 75 hours in continuous	R2025 s use of the battery made by Panasonic
Dimensions (W × H × D) Mass Usage temperature range Battery Operation time Materials Main body	Approx. 18 g 0 °C - 40 °C Coin-shaped lithium battery CF Approx. 75 hours in continuous Resin	R2025 s use of the battery made by Panasonic

• 3D Eyewear (B) and Touch Pad Controller (B/E) use Bluetooth wireless technology.

- Design and Specifications are subject to change without notice. Mass and Dimensions shown are approximate.
- For the information of the open source software, refer to [eHELP] (Support > Licence).
- This equipment complies with the EMC standards listed below. (B/E) EN55013, EN61000-3-2, EN61000-3-3, EN55020, EN55022, EN55024 (B/E)

# **5** Technical Descriptions

# 5.1. Specification of KEY for CI Plus, DTCP-IP, One-to-One, Widevine, Netflix and HDCP

#### 5.1.1. General information:

1. eMMC (IC8903) for spare parts has the seed of KEY for each.

2. The final KEY data will be generated by Main IC (IC8000) when SELF CHECK was done and are stored in both Main IC (IC8000) and eMMC (IC8903).

All KEY are not generated for all models.

The necessary KEY are only generated and stored depend on the feature of models.

#### 5.1.2. Replacement of ICs:

When Main IC (IC8000) is replaced, eMMC (IC8903) should be also replaced with new one the same time.

When eMMC (IC8903) is replaced, Main IC (IC8000) is not necessary to be replaced the same time.

After the replacement of IC, SELF CHECK should be done to generate the final KEY data.

How to SELF CHECK: While pressing [VOLUME ( - )] button on the main unit, press [MENU] button on the remote control for more than 3 seconds.

TV will be forced to the factory shipment setting after this SELF CHECK.

#### 5.1.3. Model and Keys:

Model No.	Keys					
	One-to-One	CI Plus	DTCP-IP	WIDEVINE	Netflix	HDCP2
	(For USB Rec.)					
TX-48AS640B	None	Yes	Yes	Yes	Yes	Yes
TX-48AS640E	None	Yes	Yes	Yes	Yes	Yes
TX-48ASR650	None	Yes	None	Yes	Yes	Yes

## 6 Service Mode

## 6.1. How to enter into Service Mode

#### 6.1.1. Purpose

After exchange parts, check and adjust the contents of adjustment mode.

While pressing [VOLUME ( - )] button of the main unit, press [ RED ] button of the remote control three times within 2 seconds. **Note:** 

Service Mode can not be entered when 3D signal input. Input 2D signal to enter Service Mode.



#### 6.1.2. Key command

Press the [3/4] button to change the adjustment values or function.

Press the [1/2] button to step up/down through the functions and adjustments.

Press the numerical button [VOLUME (+/-)] to change of each option item.

Press the [OK] button after each adjustment has been made to store the required values.

#### 6.1.3. How to exit

Switch off the power with the [POWER] button on the main unit or the [POWER] button on the remote control.

## 6.1.4. Contents of adjustment mode

- Value is shown as a hexadecimal number.
- Preset value differs depending on models.
- After entering the adjustment mode, take note of the value in each item before starting adjustment.

Main item	Sub item	Sample Data	Remark
ADJUST	CONTRAST	24E	
	COLOR	2E	
	TINT	00	
	SUB-BRT	800	
	BACKLGT	FFF	
	H-POS	0	
	H-AMP	0	
	V-POS	0	
	V-AMP	0	
WB-ADJ	R-GAIN	80	
	G-GAIN	3B	
	B-GAIN	1A	
	R-CENT	71	
	G-CENT	80	
	B-CENT	7B	
OPTION	Boot	ROM	Factory Preset
	STBY-SET	00	
	CLK MODE	00	
	CLOCK	000	
	EMERGENCY	ON	
	Y/C Delay	0	
	OPT 1	00000100	
	OPT 2	11101110	
	OPT 3	0000001	
	OPT 4	0000000	
	EDID-CLK	MID	
SRV-TOOL		00	See Service tool mode
DRV CHECK	USBHDD CHECK	00	See DRV Check-USBHDD Check

## 6.2. Service tool mode

#### 6.2.1. How to access

- 1. Select [SRV-TOOL] in Service Mode.
- 2. Press [OK] button on the remote control.

	SRV-TOOL	]	
			-
Display of Flash ROM maker code —	Flash ROM : 0 - 0		
Display of SOS History	PTCT:00.00.00.00.00.	Time 00000:40 On/Off 0000001	POWER ON TIME/COUNT Press [MUTE] button (3 seconds)

#### 6.2.2. Display of SOS History

SOS History (Number of LED blinking) indication.

From left side; Last SOS, before Last, three occurrence before, 2nd occurrence after shipment, 1st occurrence after shipment. This indication except 2nd and 1st occurrence after shipment will be cleared by [Self-check indication and forced to factory shipment setting].

#### 6.2.3. POWER ON Time, On/Off

Note : To display TIME/COUNT menu, highlight position, then press MUTE for 3 seconds.

Time : Cumulative power on time, indicated hour : minute by decimal

On/Off : Number of On/Off switching by decimal

Note : This indication will not be cleared by either of the self-checks or any other command.

#### 6.2.4. Exit

Disconnect the AC cord from wall outlet or switch off the power with [Power] button on the main unit.

## 6.3. DRV Check - USBHDD Check

- 1. Select [DRV Check USBHDD Check] in Service Mode.
- 2. Press [OK] button on the remote control for more than 3 seconds.



#### 6.4. Hotel mode

#### 6.4.1. Purpose

Restrict a function for hotels.

# 6.4.2. Access command to the Hotel mode setup menu

In order to display the Hotel mode setup menu, please enter the following command (within 2 seconds). [TV]: Vol.[Down] + [REMOTE] : AV (3 times)

Then, the Hotel mode setup menu is displayed.

Hotel Mode	
Hotel Mode	Off
Initial INPUT	Off
Initial POS	Off
Initial VOL Level	Off
Maximum VOL Level	100
Button Lock	Off
Remote Lock	Off
Private Information	Кеер
Change Cha	

#### 6.4.3. To exit the Hotel mode setup menu

Switch off the power with the [POWER] button on the main unit or the [POWER] button on the remote control.

#### 6.4.4. Explain the Hotel mode setup menu

Item	Function
Hotel Mode	Select hotel mode On/Off
Initial INPUT	Select input signal modes.
	Set the input, when each time power is switched
	on.
	Selection :
	Off, Analogue, DVB (B), DVB-C (E/R),
	DVB-T (E/R), AV1, AV2, HDMI1, HDMI2, HDMI3
	<ul> <li>Off: give priority to a last memory.</li> </ul>
Initial POS	Select programme number.
	Selection :
	Off/0 to 99
	<ul> <li>Off: give priority to a last memory</li> </ul>
Initial VOL Level	Adjust the volume when each time power is
	switched on.
	Selection/Range :
	Off/0 to 100
	<ul> <li>Off: give priority to a last memory</li> </ul>
Maximum VOL	Adjust maximum volume.
Level	Range :
	0 to 100
Button Lock	Select local key conditions.
	Selection :
	Off/SETUP/MENU
	<ul> <li>Off: altogether valid</li> </ul>
	<ul> <li>SETUP: only F-key is invalid</li> </ul>
	(Tuning guide (menu) can not be selected.)
	<ul> <li>MENU: only F-key is invalid</li> </ul>
	(only Volume/Mute can be selected.)
Remote Lock	Select remote control key conditions.
	Selection :
	Off/SETUP/MENU
	Off: altogether valid
	<ul> <li>SETUP: only Setup menu is invalid</li> </ul>
	MENU: Picture/Sound/Setup menu are invalid
Private Information	Select private information for VIERA Cast is Keep
	or Reset if Hotel mode is set to [On] when TV
	power on.
	keep/keset
	Keep: private information for VIERA Cast is
	Keep
	Reset: private information for VIERA Cast is
	reset

## 6.5. Data Copy by USB Memory

#### Note:

SD card can not be used for Data Copy.

#### 6.5.1. Purpose

#### (a) Board replacement (Copy the data when exchanging A-board):

When exchanging A-board, the data in original A-board can be copied to USB Memory and then copy to new A-board.



Following data can be copied. User setting data (incl. Hotel mode setting data) Channel scan data Adjustment and factory preset data

#### (b) Hotel (Copy the data when installing a number of units in hotel or any facility):

When installing a number of units in hotel or any facility, the data in master TV can be copied to USB Memory and then copy to other TVs.



Following data can be copied. User setting data (incl. Hotel mode setting data) Channel scan data

#### 6.5.2. Preparation

Make pwd file as startup file for (a) or (b) in a empty USB Memory.

- 1. Insert a empty USB Memory to your PC.
- 2. Right-click a blank area in a USB Memory window, point to New, and then click text document. A new file is created by default (New Text Document.txt).
- 3. Right-click the new text document that you just created and select rename, and then change the name and extension of the file to the following file name for (a) or (b) and press ENTER.

#### File name:

- (a) For Board replacement : boardreplace.pwd
- (b) For Hotel : hotel.pwd

#### Note:

Please make only one file to prevent the operation error.

No any other file should not be in USB Memory.

#### 6.5.3. Data copy from TV set to USB Memory

- 1. Turn on the TV set.
- 2. Insert USB Memory with a startup file (pwd file) to USB terminal.
- On-screen Display will be appeared according to the startup file automatically.
- 3. Input a following password for (a) or (b) by using remote control.
  - (a) For Board replacement : 2770
    - (b) For Hotel : 4850
  - Data will be copied from TV set to USB Memory.
  - It takes around 2 to 6 minutes maximum for copying.
- 4. After the completion of copying to USB Memory, remove USB Memory from TV set.
- 5. Turn off the TV set.

#### Note:

Following new folder will be created in USB Memory for data from TV set.

- (a) For Board replacement : user\_setup
- (b) For Hotel : hotel



#### 6.5.4. Data copy from USB Memory to TV set

- 1. Turn on the TV set.
- 2. Insert USB Memory with Data to USB terminal.
- On-screen Display will be appeared according to the Data folder automatically.
- 3. Input a following password for (a) or (b) by using remote control.
- (a) For Board replacement : 2771
  - (b) For Hotel : 4851
- Data will be copied from USB Memory to TV set.
- 4. After the completion of copying to USB Memory, remove USB Memory from TV set.(a) For Board replacement : Data will be deleted after copying (Limited one copy).
  - (b) For Hotel : Data will not be deleted and can be used for other TVs.
- 5. Turn off the TV set.

#### Note:

- 1. Depending on the failure of boards, function of Data copy for board replacement does not work.
- 2. This function can be effective among the same model numbers.



# 7 Troubleshooting Guide

Use the self-check function to test the unit.

- 1. Checking the IIC bus lines
- 2. Power LED Blinking timing

## 7.1. Check of the IIC bus lines

#### 7.1.1. How to access

#### 7.1.1.1. Self-check indication only:

Produce TV reception screen, and while pressing [VOLUME ( - )] button on the main unit, press [OK] button on the remote control for more than 3 seconds.

#### 7.1.1.2. Self-check indication and forced to factory shipment setting:

Produce TV reception screen, and while pressing [VOLUME ( - )] button on the main unit, press [MENU] button on the remote control for more than 3 seconds.

#### 7.1.2. Screen display

48FHD SELF CHECK COMPLETE					
H14TUN H90STBY H92MEM1 H91MEM2 H17LAN H00FE H96ID H97ID2 H45BT H42WiFi	оккоскоскоск оккоскоск	PEAKS-SOFT PEAKS-EEP LSI-PACKAGE LSI-RELEASE STBY-SOFT STBY-EEP	*. *** **. **. **** *. *** *. ** *. ** *. **. *	MODEL ID	** ******* ****

#### 7.1.3. Check Point

Confirm the following parts if NG was displayed.

DISPLAY	Check Ref. No.	Description	Check Point
H14TUN	TU6705	TUNER	A-BOARD
H90STBY	IC8000	PEAKS-LD6 (STM)	A-BOARD
H92MEM1	IC8000	BLOCK-EEP	A-BOARD
H91MEM2	IC8901	STM EEPROM	A-BOARD
H17LAN	IC8650	ETHERPHY	A-BOARD
H00FE	IC6800	DEMOD	A-BOARD
H96ID		ID	A-BOARD
H97ID2		ID2	A-BOARD
H45BT		BLUETOOTH	A-BOARD/BLUETOOTH
H42WiFi		WiFi	A-BOARD/WiFi

#### 7.1.4. Exit

Disconnect the AC cord from wall outlet or press the [POWER] button on the main unit for 3 seconds to turn off and then turn on automatically.

## 7.2. Power LED Blinking timing chart

#### 1. Subject

Information of LED Flashing timing chart.

2. Contents

When an abnormality has occurred the unit, the protection circuit operates and reset to the stand by mode. At this time, the defective block can be identified by the number of blinks of the Power LED on the front panel of the unit.

Blinking Times	Contents	Check point
1	BL SOS	LCD PANEL
		P-Board
3 (fast blinking)	IROM SOS	A-Board
7	SUB 3.3V	A-Board
9	SOUND SOS	A-Board
		Speaker
12	BE SOS	A-Board
13	EMERGENCY SOS	A-Board

## 7.3. LCD Panel test mode

#### Purpose:

To find the possible failure point where in LCD Panel or Printed Circuit Board when the abnormal picture is displayed. **How to Enter:** 

While pressing [VOLUME ( - )] button of the main unit, press [OPTION] button of the remote control three times within 2 seconds.

#### How to Exit:

Switch off the power with the [POWER] button on the main unit or the [POWER] button on the remote control.

#### How to confirm:

If the abnormal picture is displayed, go into LCD Panel test mode to display the several test patterns.

And then, judge by the following method.

Still abnormal picture is displayed: The cause must be in LCD Panel.

Normal picture is displayed: The cause must be in A board.

#### Remarks:

The test pattern is created by the circuit in LCD Panel.

In LCD Panel test mode, this test pattern is displayed unaffected by signal processing for RF or input signal. If the normal picture is displayed, LCD Panel must be okay and the cause of failure must be in A board.

## 7.4. No Power

#### First check point

There are following 3 states of No Power indication by power LED.

- 1. No lit
- 2. Green is lit then turns red blinking a few seconds later. (See Power LED Blinking timing chart)
- 3. Only red is lit.



# 8 Disassembly and Assembly Instructions

## 8.1. Disassembly Flow Chart for the Unit

This is a disassembly chart.

When assembling, perform this chart conversely.



## 8.2. Disassembly Procedure for the Unit

Lay down the unit so that the rear cover faces upward.

#### 8.2.1. Pedestal

- 1. Remove the 4 screws.
- 2. Remove the Pedestal.



[ASR650] SCREW(4) XYN4+F12FNK

#### 8.2.2. Back Cover

- 1. Remove the 19 screws (A).
- 2. Remove the 8 screws (B).
- 3. Remove the Back Cover.



#### 8.2.3. P-Board

- 1. Remove the 7 screws.
- 2. Disconnect the connectors (P2, P4 and P5).
- 3. Remove the P-Board.



4. Remove the P-Board Barrier.



#### 8.2.4. A-Board

1. Remove the 6 screws (A).



- 2. Disconnect the connectors (A02A, A10, A12, A15, A16 and JK8605).
- 3. Remove the A-Board.



- 4. Remove the 7 screws (B).
- 5. Remove the Heatsink Rear A.



#### 8.2.5. Wi-Fi Dongle and Wi-Fi Cable

- 1. Remove the 1 screw (A).
- 2. Remove the Wi-Fi Dongle.



- 3. Remove the 2 screws (B).
- 4. Remove the Wi-Fi Cable and the Wi-Fi Metal.



#### 8.2.6. Bluetooth Dongle

- 1. Disconnect the connector.
- 2. Remove the 4 hooks.
- 3. Remove the Bluetooth Dongle.
- 4. Remove the 1 screw.
- 5. Remove the Bluetooth Bracket.



### 8.2.7. GK-Board

- 1. Disconnect the connector (GK4).
- 2. Remove the 1 hook.



- 3. Remove the 1 hook.
- 4. Remove the GK-Board and the Key Button Bracket.



#### 8.2.8. VESA Metals

- 1. Remove the 4 screws.
- 2. Remove the 4 VESA Metals.



#### 8.2.9. Bottom Metals

- 1. Remove the 4 screws.
- 2. Remove the 2 Bottom Metals.



#### 8.2.10. K-Board

- 1. Remove the 2 hooks (A).
- 2. Remove the LED Panel Assy.



- 3. Remove the 1 hook (B).
- 4. Remove the 4 hooks (C).
- 5. Remove the K-Board and the LED Panel from the LED Panel Case.
- 6. Disconnect the connector (K10).
- 7. Remove the K-Board from the LED Panel.



## 8.2.11. Speaker L/R

- 1. Disconnect the 2 connectors.
  - 2. Remove the Speaker L/R.



3. Remove the 4 screws.

4. Remove the 2 SP Brackets.



## 8.3. Specification of EMI countermeasures

## 8.3.1. Felt on Back Cover



#### 8.3.2. Felt on Back Cover



## 8.3.3. Felt on Key Button



#### 8.3.4. Felt on AC INLET



#### 8.3.5. Felt on BOTTOM AV BRACKET



#### 8.3.6. WORK INSTRUCTIONS FOR GASKET POSTING



GASKET	-	
PART No.	SIZE	Qty
TEWB772	T5xW10xL10	1pcs

Put a gasket on Resist-stripped point. (Inside of square)





## 8.3.7. WORK INSTRUCTIONS FOR GASKET POSTING

GASKET				
PART No.	SIZE	Qty		
TEWB719	T10xW10xL100	2pcs		



# 9 Measurements and Adjustments

## 9.1. Voltage chart of P-board

Power Supply Name	Test point	Spec	
24V	TP7407	23.4 ± 1.2V	
16V	TP7411	15.7 ± 0.6V	
5VS	TP7501	5.2 ± 0.2V	
PFC	TP7201	390 ± 15V	*HOT

## 9.2. Voltage chart of A-board

Power Supply Name	Test point	Spec
PNL12V	TP4000, TP4001	12V ± 1.2V
SUB5V	TP8704	5.17V ± 0.25V
SUB3.3V	TP8705	3.39V ± 0.15V
HDMI3.3V	TP8710	3.3V ± 0.17V
SUB_AI_3.3V	TP2206	3.3V ± 0.17V
EU_TU_1.8V	TP5704	1.84V ± 0.1V
SUB1.5V	TP8101	1.52V ± 0.08V
SUB1.1V	TP8100	1.21 ± 0.06V
USB-WiFi	TP8620	5.15 ± 0.20V
LNB_PWR_M	TP6703	18V ± 1.0V
LNB_PWR_S	TP6702	18V ± 1.0V
SUB9V	TP5004	9V ± 0.4V
DMD 1.1V	TP5703	1.12V ± 0.11V
SUB_CI_5V	TP8400	5.0V ± 0.5V
USB1	TP8615	5.0V ± 0.25V
USB2	TP8611	5.0V ± 0.25V

## **10 Block Diagram**

10.1. Block Diagram (1/2)



## 10.2. Block Diagram (2/2)





# **11 Wiring Connection Diagram**

## 11.1. Wiring Diagram



## 11.2. Caution statement.

#### Caution:

Please confirm that all flexible cables are assembled correctly. Also make sure that they are locked in the connectors. Verify by giving the flexible cables a very slight pull.

## 11.3. Dressing Wire





NOTE : PASTE AL\_PET TAPE FK310, FK311 ACROSS EARTH AREA OF LVDS FFC EQUALLY.













WIRES MUST NOT BE LYING ON VESA METALS!

