Self Diagnosis Supported model

HISTORY INFORMATION FOR THE FOLLOWING MANUAL:

SERVICE / TRAINING MANUAL

AZ3TK *Chassis*

Segment: P-2F

ORIGINAL MANUAL ISSUE DATE: 3/2012

Version	Date	Subject
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LCD Digital Color TV

SONY®

9-883-879-01

Self Diagnosis Supported model

SERVICE / TRAINING MANUAL

AZ3TK *Chassis*

Segment: P-2F

KDL-40BX455

LCD Digital Color TV

SONY®

9-883-879-01

MODEL LIST

MODEL	COMMANDER	DESTINATION
KDL-32BX355	*RM-YD081*	*BRAZIL*

MODEL	COMMANDER	DESTINATION
KDL-40BX455	*RM-YD081*	*BRAZIL*
KDL-46BX455	*RM-YD081*	*BRAZIL*

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APPENDIX A: ENCRYPTION KEY COMPONENTS A-1

CAUTIONS AND WARNINGS

CAUTION

These servicing instructions are for use by qualified service personnel only. To reduce the risk of electric shock, do not perform any servicing other than that contained in the operating instructions unless you are qualified to do so.

WARNING!!

An isolation transformer should be used during any service to avoid possible shock hazard, in case of live chassis.

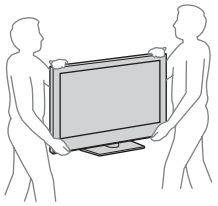
⚠ SAFETY-RELATED COMPONENT WARNING!!

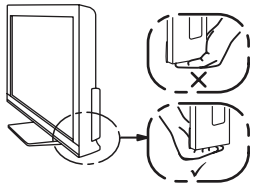
There are critical components used in LCD color TVs that are important for safety. These components are identified with shading and ⚠ mark on the schematic diagrams and the parts list. It is essential that these critical parts be replaced only with the part number specified in the parts list to prevent electric shock, fire, or other hazard.

NOTE: Do not modify the original design without obtaining written permission from the manufacturer or you will void the original parts and labor warranty.

SETTING UP AND CARRYING THE TV

- Disconnect all cables when carrying the TV.
- Carry the TV with the adequate number of people; larger size TVs require two or more people.
- Correct hand placement while carrying the TV is very important for safety and to avoid damage.

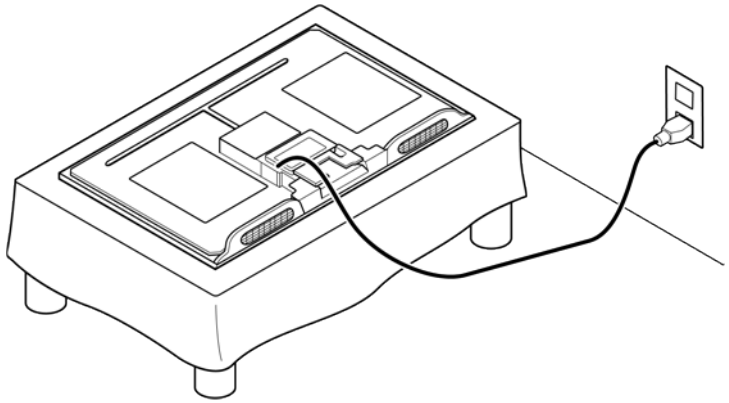




USE CAUTION WHEN HANDLING THE LCD PANEL

When repairing the LCD panel, be sure you are grounded by using a wrist band.
When installing the LCD panel on a wall, the LCD panel must be secured using the 4 mounting holes on the rear cover.

1. Do not press on the panel or frame edge to avoid the risk of electric shock.
2. Do not scratch or press on the panel with any sharp objects.
3. Do not leave the module in high temperatures or in areas of high humidity for an extended period of time.
4. Do not expose the LCD panel to direct sunlight.
5. Avoid contact with water. It may cause a short circuit within the module.
6. Disconnect the AC power when replacing the backlight or inverter circuit.
   (High voltage occurs at the inverter circuit at 650Vrms.)
7. Always clean the LCD panel with a soft cloth material.
8. Use care when handling the wires or connectors of the inverter circuit. Damaging the wires may cause a short.
9. Protect the panel from ESD to avoid damaging the electronic circuit (C-MOS).
10. During the repair, DO NOT leave the Power On for more than 1 hour while the TV is face down on a cloth.



CLEANING THE LCD PANEL

CAUTION: When cleaning the TV, be sure to unplug the power cord to avoid any chance of electric shock.

Clean the cabinet of the TV with a dry soft cloth.

Wipe the LCD screen gently with a soft cloth.

- ☑ Stubborn stains may be removed with a cloth slightly moistened with a solution of mild soap and warm water.
- ☑ If using a chemically pretreated cloth, please follow the instruction provided on the package.
- ☑ Never use strong solvents such as a thinner, alcohol or benzine for cleaning.
- ☑ Periodic vacuuming of the ventilation openings is recommended to ensure proper ventilation.

- ⦸ Do Not use paper towels, any type of abrasive pad, rags, rubber or vinyl materials to clean the screen. Using these materials could easily scratch the screen which may result in permanent damage.
- ⦸ Do Not use any cleaning product containing alkaline/acid cleaner, scouring powder, or volatile solvent, such as alcohol, ammonia, benzine, thinner or insecticide. Using any of these harsh cleaners may result in permanent damage to the screen.
- ⦸ Do Not spray water or detergent directly onto the TV screen . If liquid drips into the bottom of the screen it may cause a failure.

SAFETY CHECK-OUT

After correcting the original service problem, perform the following safety checks before releasing the set to the customer:

1. Check the area of your repair for unsoldered or poorly soldered connections. Check the entire board surface for solder splashes and bridges.
2. Check the interboard wiring to ensure that no wires are “pinched” or touching high-wattage resistors.
3. Check that all control knobs, shields, covers, ground straps, and mounting hardware have been replaced. Be absolutely certain that you have replaced all the insulators.
4. Look for unauthorized replacement parts, particularly transistors, that were installed during a previous repair. Point them out to the customer and recommend their replacement.
5. Look for parts which, though functioning, show obvious signs of deterioration. Point them out to the customer and recommend their replacement.
6. Check the line cords for cracks and abrasion. Recommend the replacement of any such line cord to the customer.
7. Check the antenna terminals, metal trim, “metallized” knobs, screws, and all other exposed metal parts for AC leakage. Check leakage as described in “Leakage Test”.

LEAKAGE TEST

The AC leakage from any exposed metal part to earth ground and from all exposed metal parts to any exposed metal part having a return to chassis, must not exceed 0.5 mA (500 microamperes). Leakage current can be measured by any one of three methods.

1. A commercial leakage tester.
   Follow the manufacturers’ instructions provided with the tester.
2. A battery-operated AC milliammeter.
3. Measuring the voltage drop across a resistor by means of a VOM or battery-operated AC voltmeter. The “limit” indication is 0.75 V, so analog meters must have an accurate low voltage scale. Nearly all battery-operated digital multimeters that have a 2 VAC range are suitable. (see Figure A)

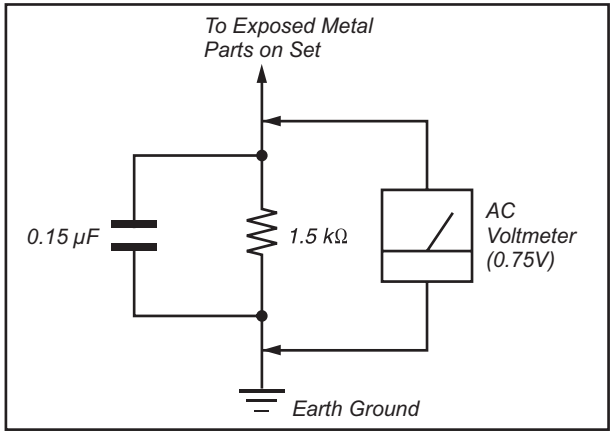


Figure A. Use an AC voltmeter to check AC leakage.

HOW TO FIND A GOOD EARTH GROUND

The cover-plate retaining screw on most AC outlet boxes is at earth ground. Verify the AC outlet box retaining screw ground by connecting a 60W to 100W incandescent (not a neon or fluorescent lamp) between the hot side of the receptacle and the retaining screw. Try both slots, if necessary, to locate the hot side on the line; the lamp should light at normal brilliance if the screw is at ground potential. (see Figure B)

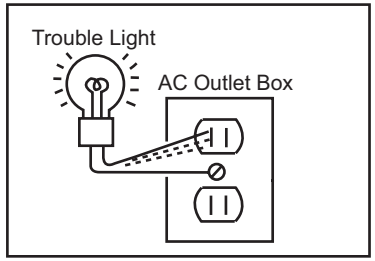


Figure B. Checking for earth ground.

SECTION 1 - FEATURES AND OVERVIEW

FEATURES

The AZ3TK chassis is one of several designs for the 2012 model line of Sony Bravia® LCD televisions. This manual covers the following models:

KDL-32BX355

KDL-40BX455

KDL-46BX455

The BRAVIA® Sync™ BX series LED LCD HDTV

- Brilliant Full HD (1080p) picture quality
- Four HD inputs for a cable box, PS3™ and more[1]
- Share your pictures on the big screen via USB input
- Crisp detail & contrast w/ Clear Resolution Enhancer
- Optimized picture based on what you're watching
- Less grain & a clear picture w/ Digital Noise Reduction
- Theater-like movie viewing with 24p True Cinema
- One remote for multiple devices with BRAVIA® Sync™[2]

1. Cables sold separately.
2. Syncs with BRAVIA® Sync or Theatre Sync™ products.

SPECIFICATIONS

Sistema	
Sistema de televisã	Analógico: NTSC/PAL-M/PAL-N Digital: SBTVD-T
Cobertura de cana	VHF: 2-13 UHF: 14-69 CATV: 1-135
Sistema do Painel	Painel LCD (Tela de Cristal Líquido)
Potência de saída dos Alto-falantes (RMS)	8 W + 8 W (127 V CA, THD*[1] 10% sinal 1 KHz, Alto-falante de 8 Ohms, Nível de entrada 500 mVrms.)
Entradas/Saídas	
CABLE/ANTENNA	Terminal externo de 75 ohms para entradas RF
VIDEO IN 1/2	VÍDEO: 1 Vp-p, 75 ohms não balanceados, sincronizacão negativa ÁUDIO: 500 mVrms (Típico) / Impedância: 47 Kohms
COMPONENT IN	YP BPR (Vídeo componente): Y: 1,0 Vp-p, 75 ohms não balanceado, sincronizacão negativa / PB: 0,7 Vp-p, 75 ohms PR: 0,7 Vp-p, 75 ohms / Formato do sinal: 480i, 480p, 576i, 576p, 720p, 1080i, 1080p ÁUDIO: 500 mVrms (Típico) / Impedância: 47 Kohms
HDMI IN 1/2	HDMI: Vídeo: 480i, 480p, 576i, 576p, 720p, 1080i, 1080p, 1080/24p Áudio: Dois canais lineares PCM 32, 44,1 e 48 kHz, 16, 20 e 24bits, Dolby Digital Entrada do PC
AUDIO OUT	Saída de áudio, Fones de ouvido (minitomada)
DIGITAL AUDIO OUT (OPTICAL)	Sinal óptico PCM/Dolby Digital
PC IN	D-sub 15-pin, analógico RGB, 0,7 Vp-p, 75 ohms, positivo Consulte o Capítulo de Referência de Sinal de Entrada do PC e HDMI IN
PC/HDMI IN 1 AUDIO IN	Minitomada estéreo, 500 mVrms, (Típico) / Impedância: 47 Kohms
USB	Foto, Música e Vídeo

*[1] Distorcão Harmônica Total.

Nome do modelo	KDL-46BX455	KDL-40BX455	KDL-32BX355
Energia e outros			
Requisito de energia	110-220 V CA, 60 Hz		
Consumo de energia em uso	187 W	185 W	109 W
em modo de espera	Menos do que 1 W		
Tamanho da tela (cm)	Aprox. 116,8	Aprox. 101,6	Aprox. 80,0
(polegadas medidas diagonalmente)	46	40	31,5 (classe 32)
Resolucão da tela	1.920 pontos (horizontal) × 1.080 linhas (vertical)		1.366 pontos (horizontal) × 768 linhas (vertical)
Alto-falantes/Área total (2)(mm)	40 × 100		
Dimensões com pedestal (mm)	1.112 × 713 × 278	980 × 639 × 220	790 × 534 × 193
sem pedestal (mm)	1.112 × 675 × 97	980 × 601 × 94	790 × 497 × 91
padrão do furo de montagem da parede (mm)	300 × 300	300 × 300	200 × 200
tamanho do parafuso de montagem da parede (mm)	M6 (comprimento: 8-12mm)		
Peso com pedestal (kg)	20,2	15,6	9,9
sem pedestal (kg)	17,6	14,5	9,3
Acessórios fornecidos comum a todos os modelos	Controle remoto RM-YD081 (1)/Pilhas tamanho AA (2)/Manual de Instrucões (1)/Guia Rápido (1)/Folheto de Instrucões de Seguranca (1)/Licenca de Software (1)/Folheto Ginga (1)/Guia de montagem do pedestal (1)/Pedestal (1 conjunto)/ Parafuso (3)		
Acessórios opcionais	Cabos de conexão / Kit de cinto de seguranca		

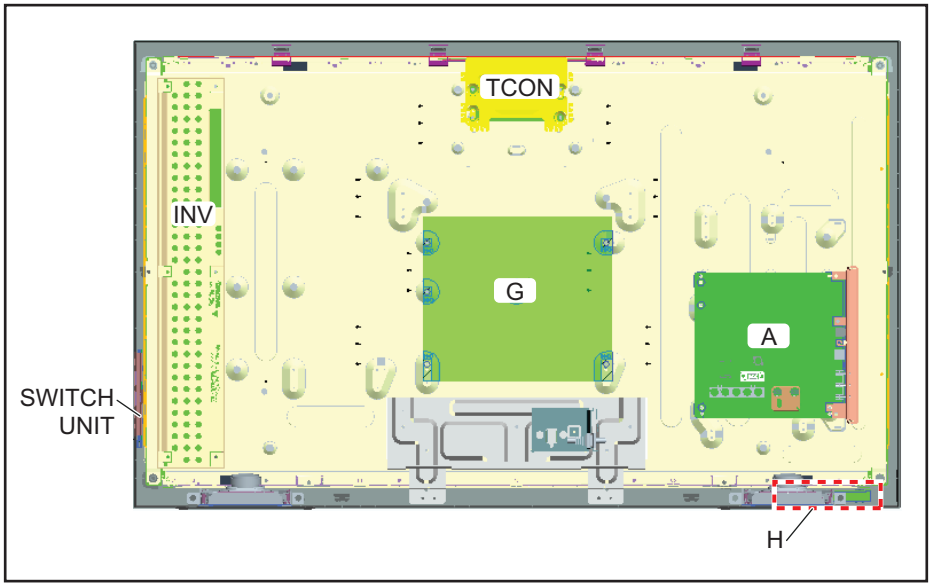
- A disponibilidade dos acessórios opcionais depende do estoque.
- Projeto e especificacões técnicas sujeitos a alteracões sem prévio aviso.
- Os pesos e dimensões são aproximados.

CHASSIS OVERVIEW

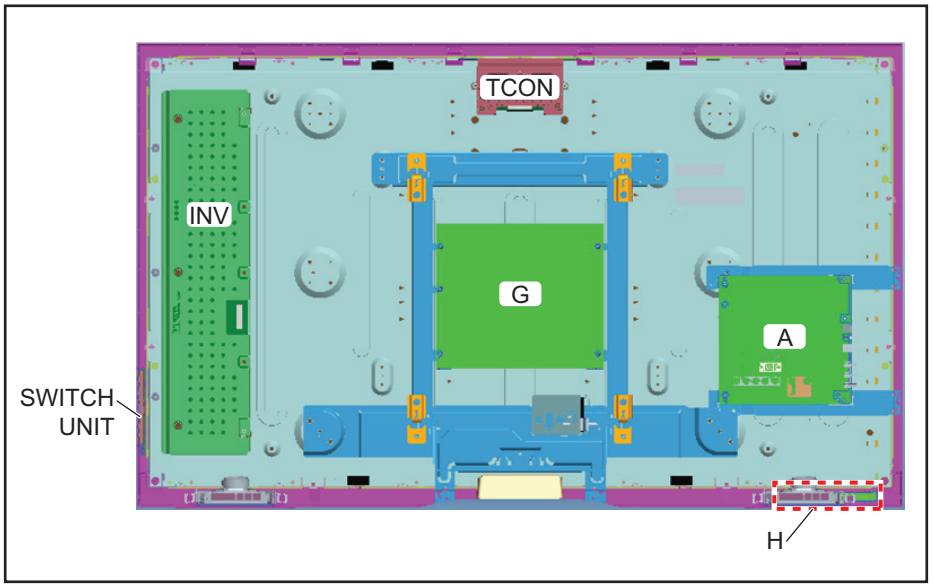
The primary circuits in the AZ3TK chassis consist of a Main Board (A Board), Power Supply Board (G Boards), the IR Board (H Board), the Switch Unit, and the LCD Panel Assembly which includes the TCON Board and the Inverter MT Board.

NOTE: For connector part number information, refer to "Connectors" on page 19. For Wire Dressing information, refer to "Wire Dressing" on page 21.

BOARD LAYOUT FOR KDL-32BX355 ONLY



BOARD LAYOUT FOR KDL-40BX455 ONLY



BOARD LAYOUT FOR KDL-46BX455 ONLY

OVERALL CIRCUIT DESCRIPTION

"Overall Block Diagram" on page 11 provides an overview of the AZ3TK chassis. The following are descriptions of the boards and their functions.

MAIN BOARD

Common to all models utilizing the AZ3TK chassis, the Main Board contains most of the video processing circuitry along with all audio processing. Control of the television is accomplished via a CPU embedded within the MT5366 processor. Below is a list of the key components located on the Main Board.

TUNER

The tuner is a combination ATSC/NTSC unit. It can receive traditional analog NTSC signals via cable or terrestrial along with ATSC digital signals via terrestrial (8VSB) or cable (64 or 256 QAM).

MT5366 PROCESSOR

This IC performs the majority of the necessary audio and video processing on the Main Board.

Analog Video Input Switch: All analog video sources are selected and A/D converted and scaled (if necessary) to 1920 X 1080p 60HZ resolution.

Digital Audio and Video Decoder: The MPEG2 and Digital Dolby audio streams are received from the tuner for decompression. All video sources which are not native 1920 X 1080p 60HZ are scaled to this resolution. Digital audio content is output to the class D amplifier for processing and amplification.

Audio Processing: Analog audio sources are selected and A/D converted directly by the MT5389. The audio information is then processed digitally. Digital audio from the tuner and HDMI sources is also input and processed. Class D amplifier provides the drive for the speakers.

HDMI Input and Switching: The customer can select the HDMI1 through HDMI4 input. Each HDMI input contains a dedicated EDI NVM (not shown) to provide display information data to any device connected via the HDMI inputs.

CPU: The CPU internal to the MT5366 processor controls all aspects of the television functions. Input from the user along with monitoring of critical circuits is also performed by this CPU.

LVDS Transmitter: Integrated into the MT5366 is a Low Voltage Differential Signaling (LVDS) transmitter. This circuit converts the 8-bit parallel RGB video information into a set of high speed serial lines for noise-free transmission to the TCON circuits located internally to the LCD panel.

POWER SUPPLY BOARD

The Power Supply Boards used in these models are the:

- G for all models

There are 2 distinct sections on the power supply:

Standby Supply: Continuously operational as long as AC power is applied, the standby supply generates 3.3VDC for the circuits requiring power while the unit is turned off. An unregulated 15-volt line is present to provide power to the main relay, PFC and main power supply at turn-on.

Main Supply: Once the power supply receives a power-on command from the CPU on the A board, the main switching supply is turned on to provide a regulated 12V source, a dedicated un-regulated 15V for the audio circuits and an unregulated 24V source for the inverter circuit.

IR BOARD

Designated as the H Board, the IR Board contains the power, standby, and timer LED's that is located on this board along with the IR remote receiver and light level sensor.

SWITCH UNIT

This board contains the power, channel and volume up/down, and menu buttons.

LCD PANEL ASSEMBLY

The LCD Panel Assembly includes the LCD Panel, TCON Board, and LED Backlight system.

The LCD Panel contains the actual liquid crystals, color filters, and polarizers. The liquid crystals are manipulated by the applied voltage to pass a specific amount of light - from the backlight - depending on the level of voltage applied.

The TCON performs all the control, timing, charge, and discharge functions driving the operation of the LCD Panel.

A new LCD Panel Assembly from parts will include the following items.

- LCD Panel
- TCON Board (Internal - not available as a replacement part.)
- Inverter MT Board

INVERTER MT BOARD

The inverter receives the unregulated 24V from the Power Supply Board and generates the required high voltage AC to power the backlight lamps. A control line to turn on the inverter (backlights on) is used in conjunction with a dimmer control to vary the light level of the CCFL lamps.

SECTION 2 - TROUBLESHOOTING

Self Diagnosis Supported model

OVERVIEW

This chapter provides information regarding the Self Diagnosis feature in our TVs.

UPDATING THE SOFTWARE

The Self Diagnosis function is designed to provide information regarding the problem with the TV, however, there are several issues that may be resolved by updating the TV software to the latest version. Always check for any issues that are software related. Most symptoms that are correctable by software updates involve communications issues with other devices or minor glitches in the operation of a specific function. Below is a list of some of the symptoms that may be corrected with a software update:

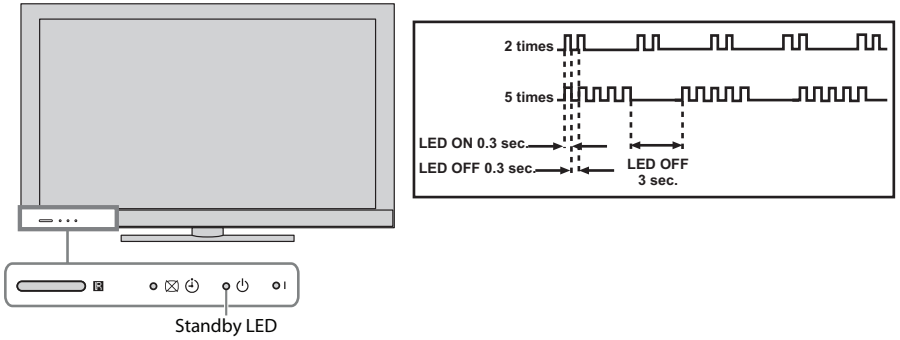
- Fluctuations in picture brightness
- Intermittent picture freezing or noise
- Problems with certain inputs (especially HDMI)
- Intermittent or distorted audio
- Erratic remote control operation
- TV turns on and off by itself
- Loss of color
- Internet connectivity
- Certain features not working correctly (photo or video file viewing)

SELF DIAGNOSIS FUNCTION

Critical voltages and circuit operations are monitored by the CPU on the Main Board. If an error is detected the Self Diagnosis function in the TV will force the TV to shut down by the CPU. The monitored circuit in which the fault occurred will automatically cause the CPU to blink the Standby LED in groups of repeating sequences. The number of times the Standby LED blinks indicates the possible cause of the problem.

Not all of the available protect codes are used in every model. For example, models that don't have the local dimming feature do not use the 4X blink error as this circuit is found in models that are backlit with fluorescent lamps. The information in this section provides guidance in locating the possible component causing the shutdown.

STANDBY LED BLINK COUNT



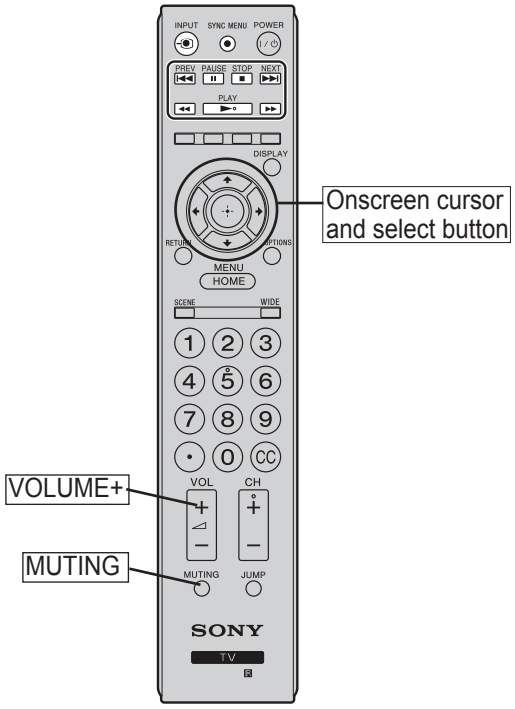
LED DISPLAY & BLINK COUNT

VIEWING THE SELF CHECK DIAGNOSIS HISTORY

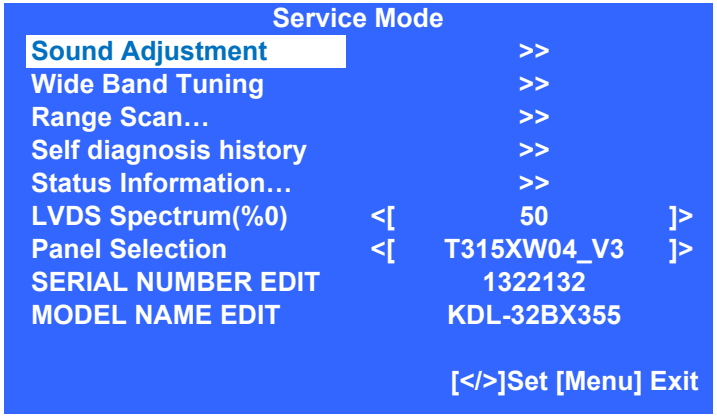
When an error is detected, the Self Check screen records the error that occurred. This is helpful in confirming past occurrences of an error, and for determining if an error is intermittent when the customer is not sure what is causing the television to shut down. If the screen displays a “0”, no error has occurred.

You must got into Service Mode to access the Self Check menu.

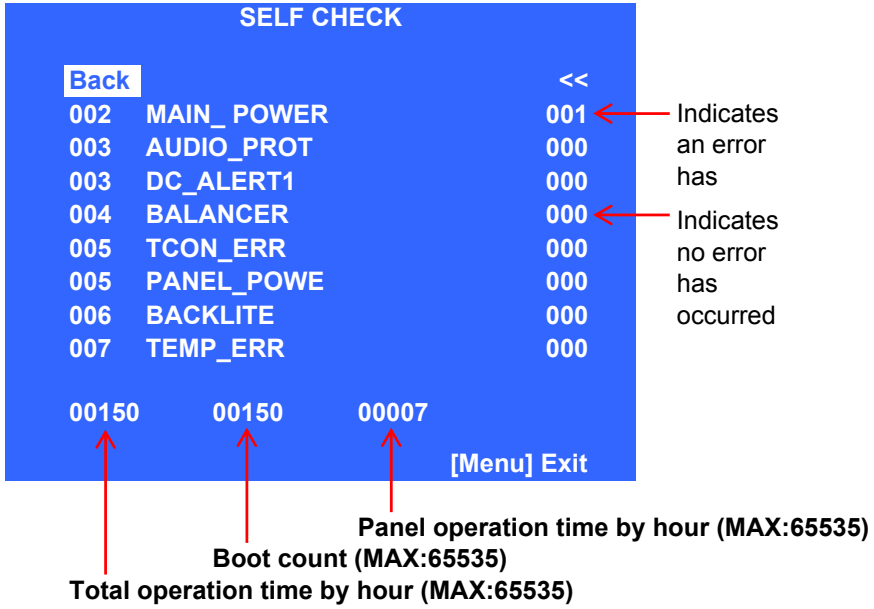
1. TV must be in Standby mode. (Power On).
2. Press the following buttons on the Remote Commander within a second of each other:



RM-YD081



3. To access the **Self diagnosis history** page, press ↓ until Self diagnosis history is highlighted, and then press ⊕.



4. Review the information to determine the most likely source of the error.
5. To exit the Self Check, press MENU.

2X Blink - Main Power Error

A loss of REG12V from the power supply triggers this protect event. The usual cause is a failure of the main switching supply. In some instances, excessive loading on the secondary supply lines can cause the switching regulator to stop, or fail again, if a replacement board is installed.

3X Blink- DC Regulator/Audio Error

The REG 5V and D3.3V source originating on the Main Board is monitored for low-voltage conditions by the CPU. A failure causing a 3X shutdown requires replacing the Main Board.

4X Blink – Balancer Error

NOT USED IN THIS MODEL SERIES

The 4X error code is only used on models incorporating local dimming LED backlighting. If a failure occurs on the LD board or one of the LED's fails in the panel the TV will shut down and display this diagnostic code. Models using conventional non-local dimming LED backlighting do not utilize this error code.

5X Blink - TCON Error/Panel Error

The 5X blink protection mode indicates a communications error with the timing control circuits (TCON Board) has occurred. If the TCON Board is available for replacement, replace it, if not, replace the LCD Panel Assembly. In rare cases a loose or defective LVDS cable could also be the cause.

6X Blink - Backlight Converter System Failure

If the inverter circuits fails to generate high voltage or one or more of the backlight lamps fails to light, the television will shut down and display this diagnostics error. Observing for the presence of backlighting is crucial in determining which component is likely at fault.

If the backlights turn on before the 6X shutdown occurs, it is safe to assume that the inverter circuits are functioning and one of the lamps failed to ignite. Replacing the LCD Panel assembly is necessary. If the backlights never turn on before the 6X shutdown, the Inverter MT Board has failed. If this board is available for replacement, replace it, if not, replace the LCD Panel Assembly.

7X Blink - Temperature Failure

A digital thermometer IC located on the Main Board provides a temperature reading of the chassis and LCD panel. If the temperature exceeds a pre-determined point the TV will shut down. If this problem occurs immediately at turn-on, the temperature sensing IC has failed and replacing the main board is required. If this occurs after the TV has been running for a while, check for ventilation issues that could cause the TV to run hotter than normal.

TRIAGE CHART

Use this general Triage Chart to determine what may possibly be causing the error before going out to the customers location.

1. **Confirm the symptom from the customer.**
2. **Select that symptom from the chart.**
3. **Bring the primary component listed for that sy**
4. **Follow the associated flowcharts in the Training Manual to isolate the board.**

5. Chart Color Code

RED DOT: (Primary) Most likely defective part

BLUE Triangle: (Secondary) Possible defective part

Board	Protection Modes					Power	Video			Audio
	2X	3X	5X	6X	7X	Dead set	No Video	Whole Screen Distortion	Isolated Area Distortion	No Audio
Main Board		●			●*	▲	▲	●		●
Power Supply	●			●***		●				
H										
Inverter				▲*						
LCD Panel			●	●**			●		●	

***NOTE:** REFER TO LCD PANEL SERVICE MANUAL IN REFERENCE LIBRARY DATABASE FOR CORRECT REPLACEMENT PARTS BASED ON SERIAL NUMBER.

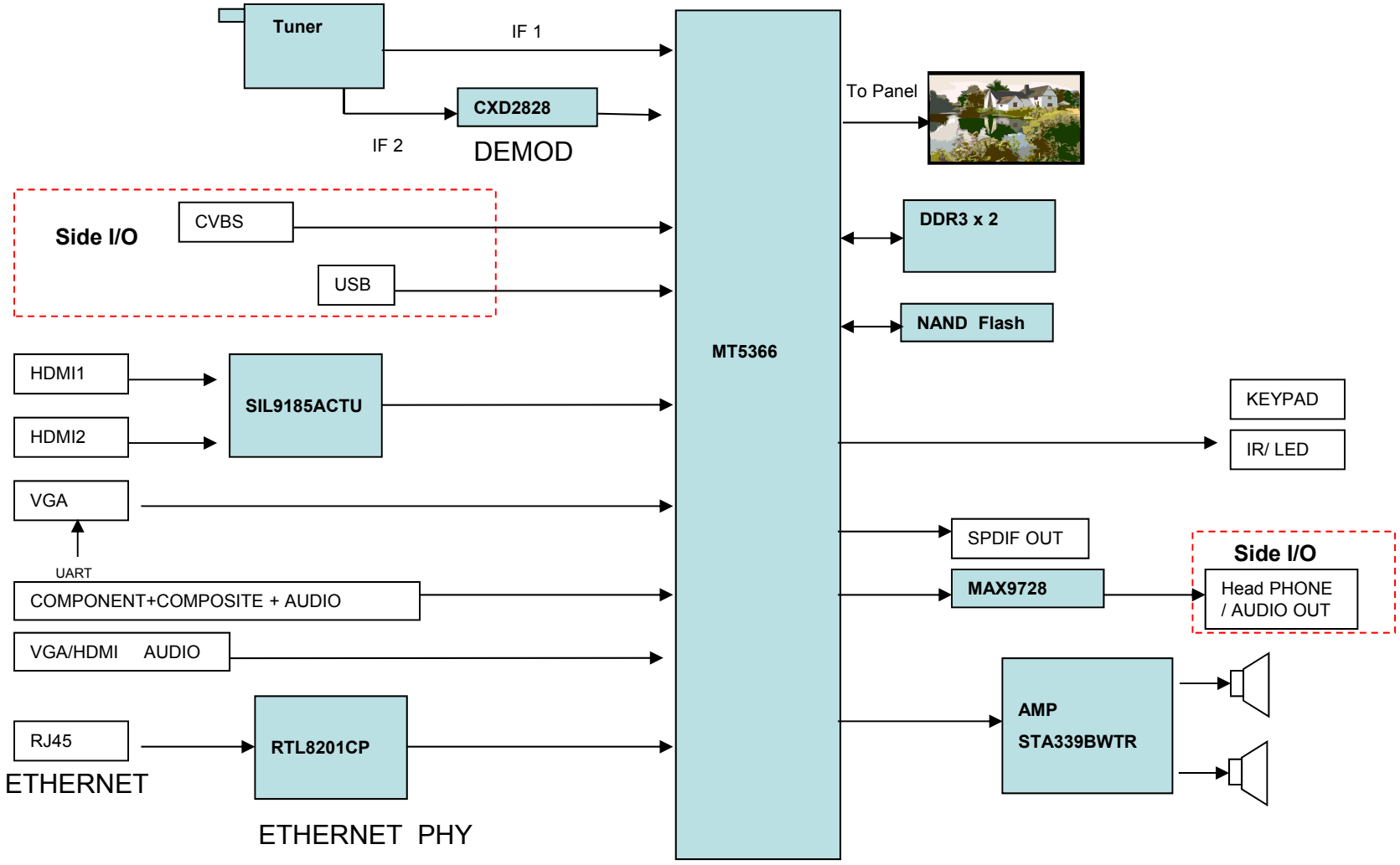
●* TV Immediate Shuts Off After Power ON & 7X

●*Backlight Does NOT Turn ON before TV Shuts Off ▲* Secondary Component**

●Backlight Turns ON before TV Shuts Off**

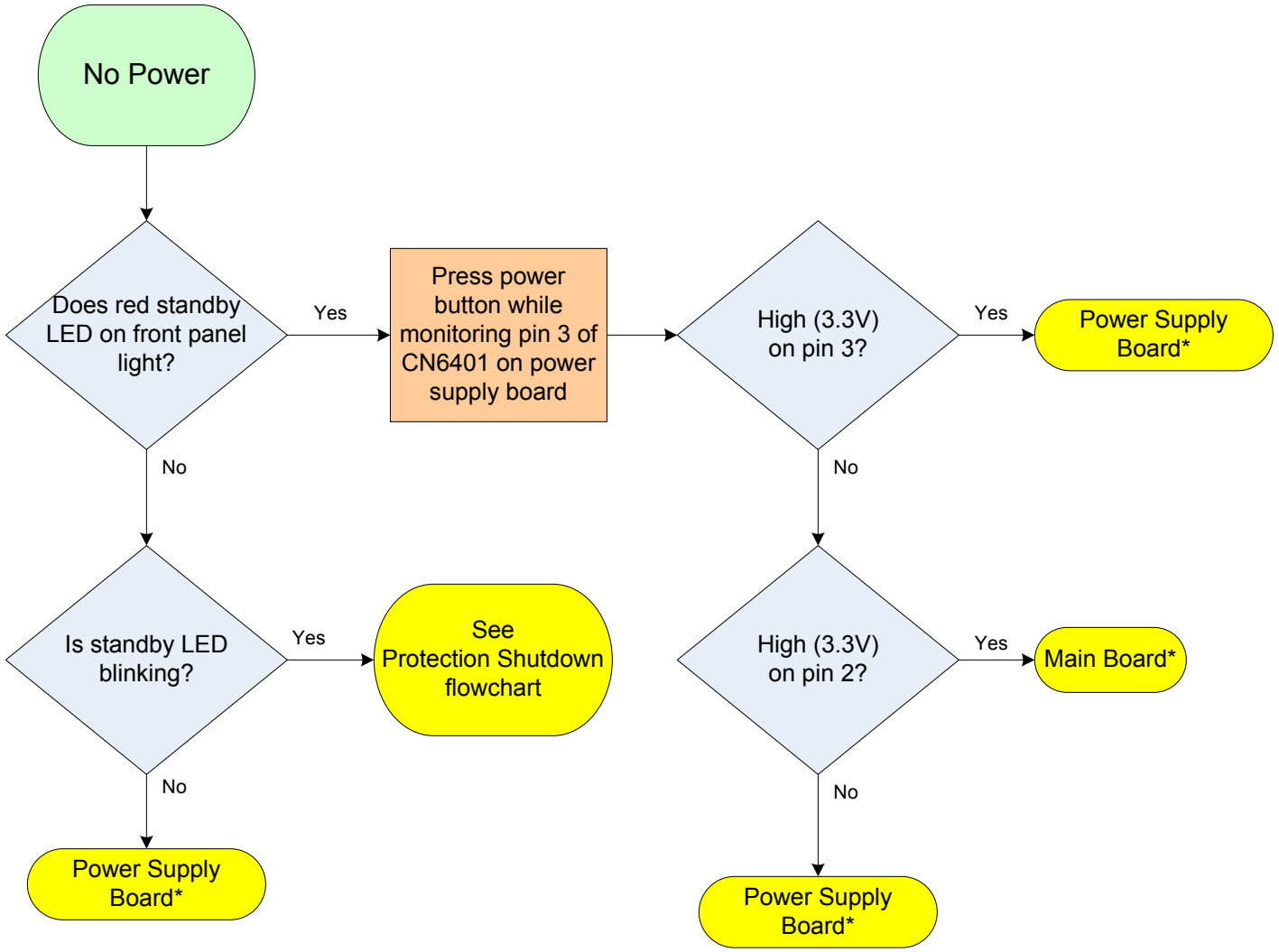
SECTION 3 - FLOW CHARTS AND DIAGRAMS

BLOCK DIAGRAM



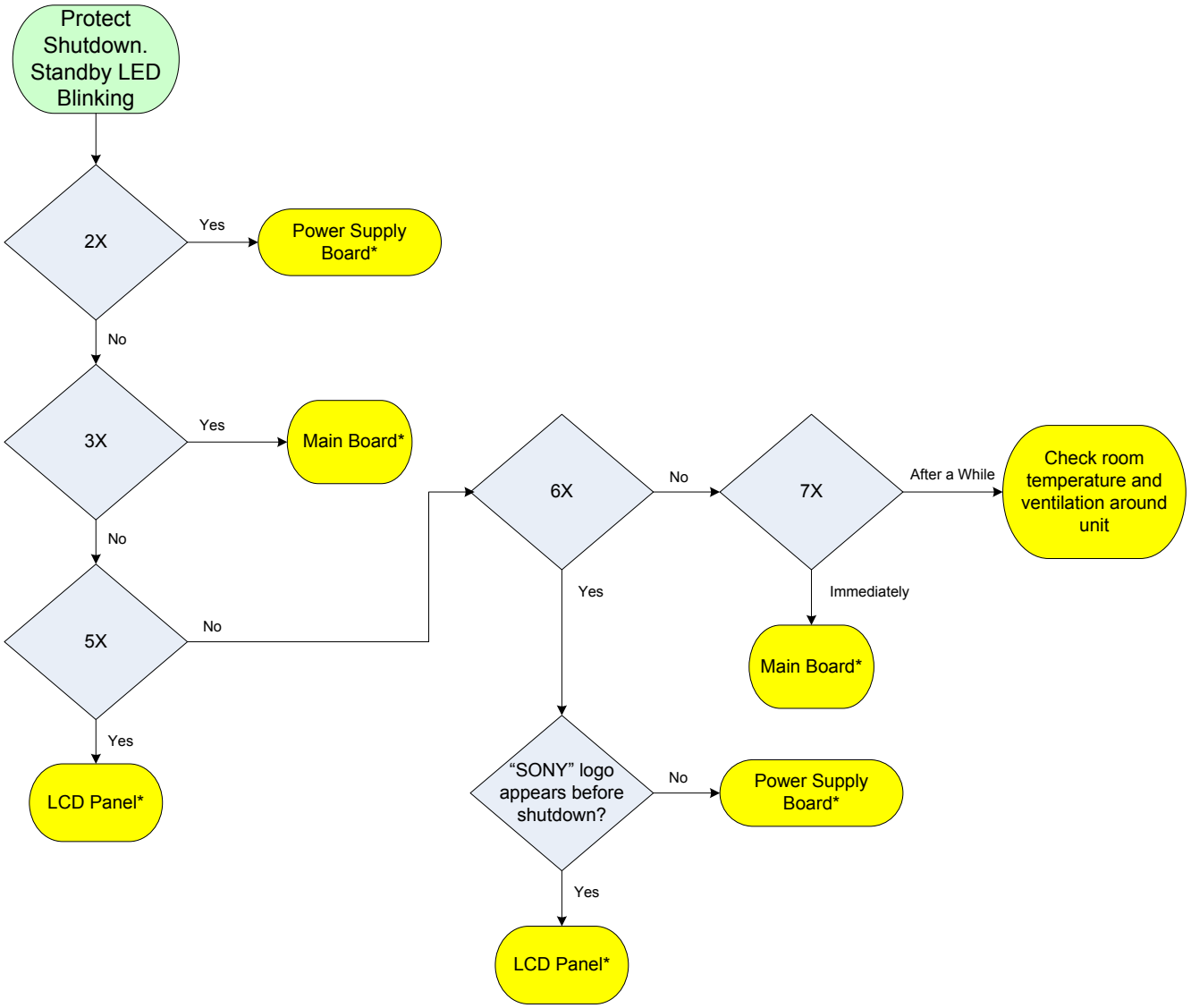
OVERALL BLOCK DIAGRAM

NO POWER



NO POWER FLOWCHART

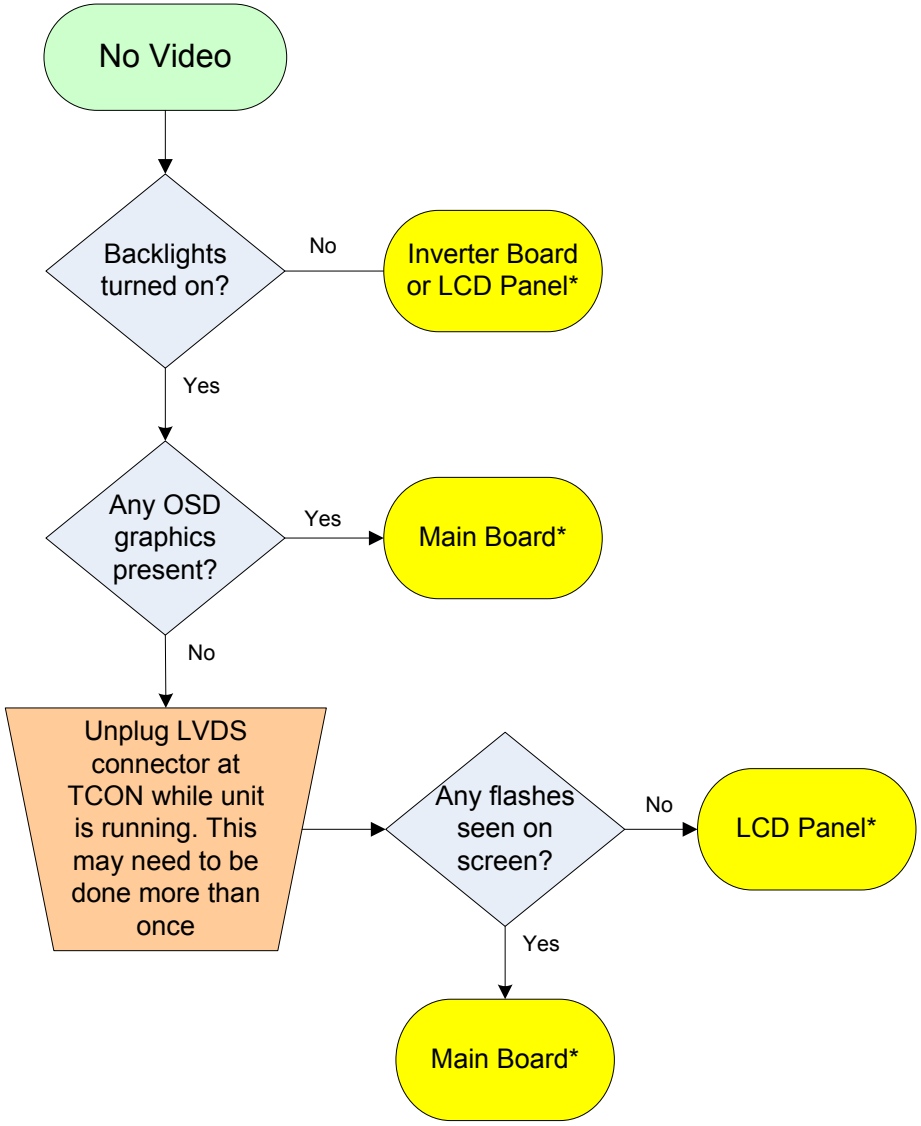
STANDBY LED BLINKING



PROTECTION SHUTDOWN FLOWCHART

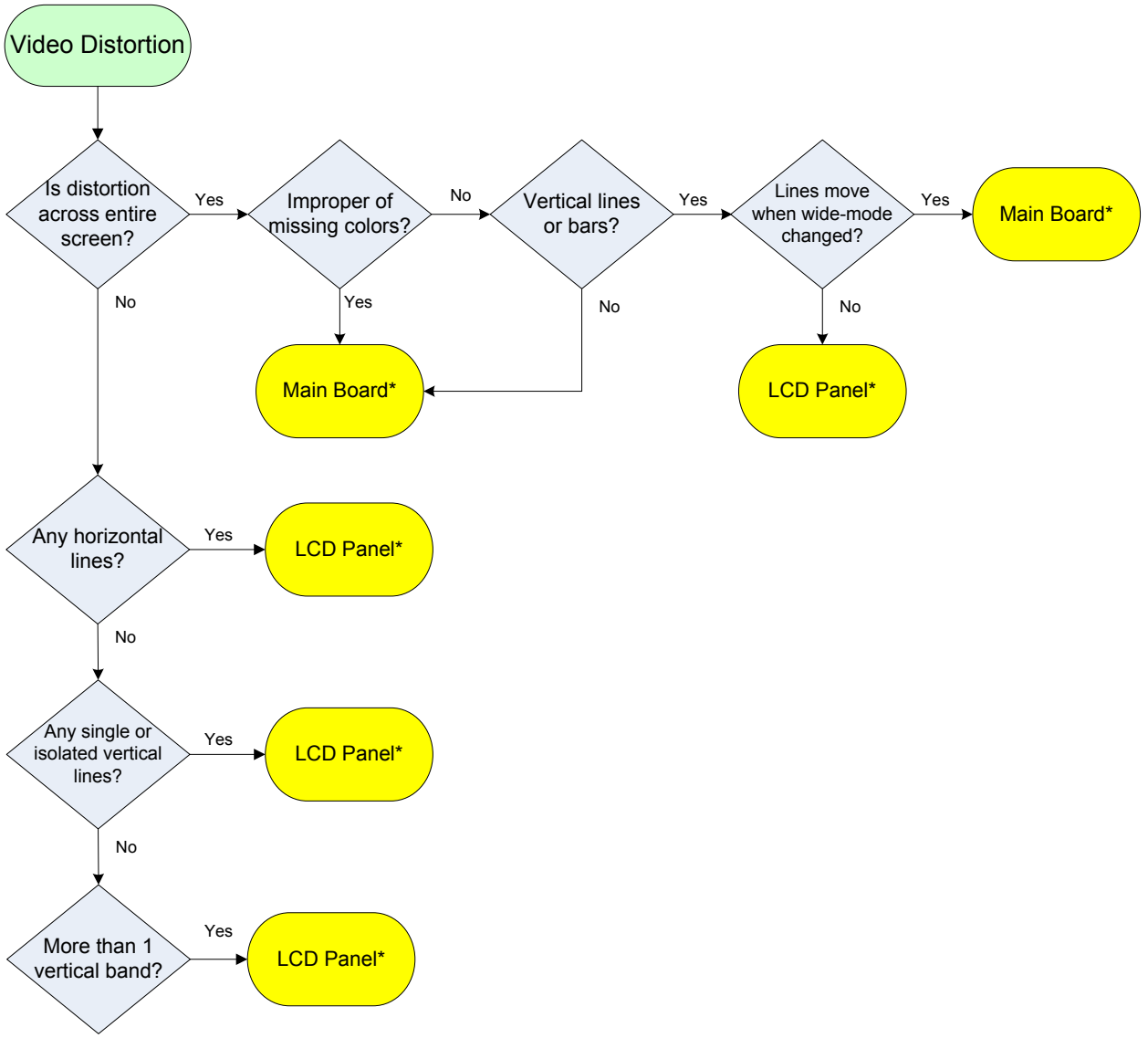
*For Part Number information, Refer to "Section 4 - Disassembly/Part Number Information" on page 16.

NO VIDEO



NO VIDEO FLOWCHART

*For Part Number information, Refer to "Section 4 - Disassembly/Part Number Information" on page 16.



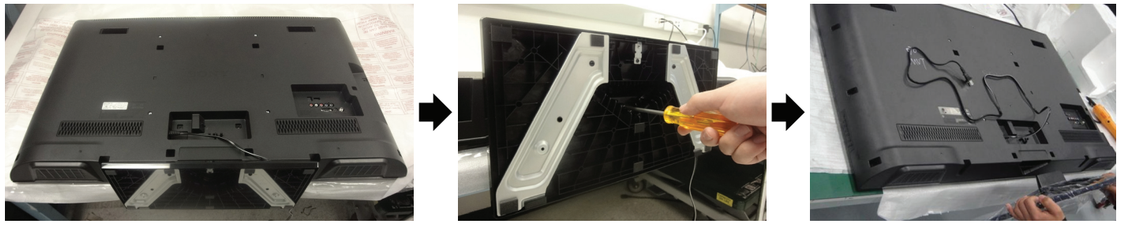
VIDEO DISTORTION FLOWCHART

*For Part Number information, Refer to "Section 4 - Disassembly/Part Number Information" on page 16.

SECTION 4 - DISASSEMBLY/PART NUMBER INFORMATION

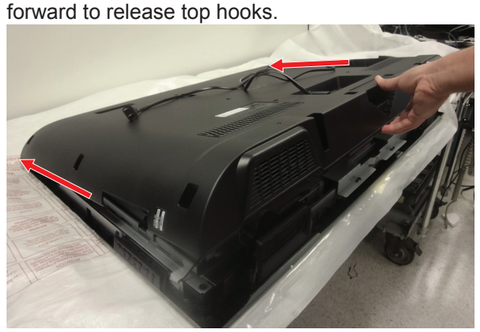
TABLE-TOP STAND AND REAR COVER REMOVAL

Ⓐ Gently place LCD TV face down onto a soft cloth and remove 3 screws from Table-Top Stand.

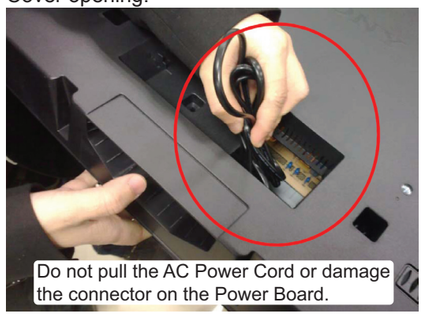


Ⓑ Remove screws from Rear Cover.
15 from KDL-32BX355 Only
17 from KDL-40BX455 Only
19 from KDL-46BX455 Only
CAUTION: Do not damage the Power Board Connector and AC Power Cord when removing the Rear Cover.

Ⓒ Carefully lift Rear Cover from bottom side and push forward to release top hooks.



Ⓓ Hold Power Supply Cord while lifting up Rear Cover, then pass Power Supply Cord through Rear Cover opening.



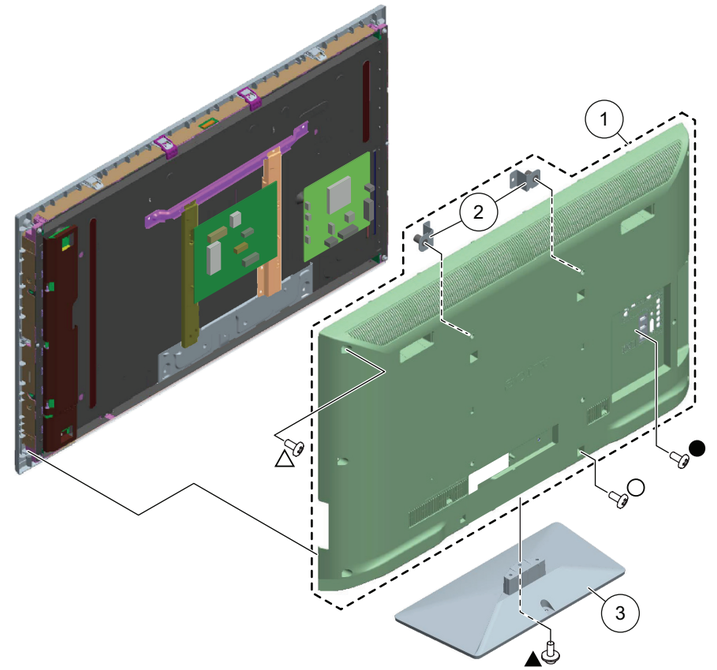
Components not identified by a part number or description are not stocked because they are seldom required for routine service.

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

The component parts of an assembly are indicated by the reference numbers in the far right column of the parts list and within the dotted lines of the diagram.

* Items marked with an asterisk are not stocked since they are seldom required for routine service. Expect some delay when ordering these components.

NOTE: The components identified by a red outline and a 🔒 mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced.
See Appendix A: Encryption Key Components in the back of this manual.

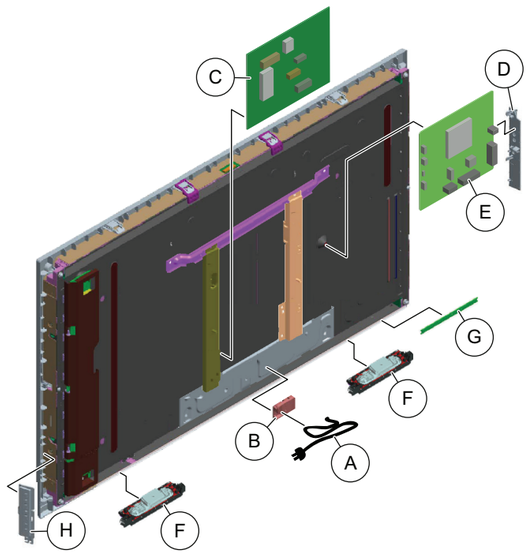


REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
1	4-423-357-01	REAR COVER (32APOT)[2] (KDL-32BX355 ONLY)	
1	4-423-358-01	REAR COVER (40APOT)[2] (KDL-40BX455 ONLY)	
1	4-423-359-01	REAR COVER (46APOT)[2] (KDL-46BX455 ONLY)	
2	4-410-252-01	BRACKET, VESA (APOT)	
3	X-2584-208-1	STAND ASSEMBLY (32APOT) (KDL-32BX355 ONLY)	
3	X-2584-209-1	STAND ASSEMBLY (40APOT) (KDL-40BX455 ONLY)	
3	X-2584-210-1	STAND ASSEMBLY (46APOT) (KDL-46BX455 ONLY)	

REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
▲	2-580-608-01	SCREW, +PSW M5X16 (SCREWS TO ATTACH TABLE-TOP STAND TO LCD TV) For product protection and safety reasons, Sony strongly recommends that you use the screws provided with the TV. CAUTION: These screws cannot be used to secure the TV to the Wall Mount Brackets	
△	2-580-640-01	SCREW, +BVTP2 4X16	
●	2-580-592-01	SCREW, +PSW M3X8	
○	4-159-298-01	SCREW, +PSW M4X10	

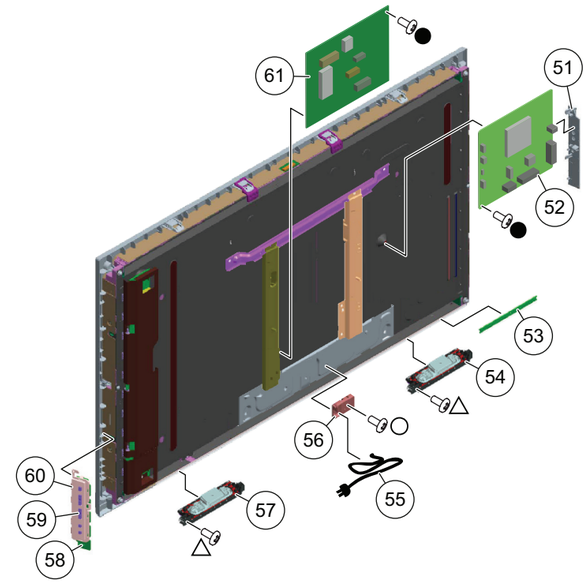
MAIN BOARD (A) AND POWER SUPPLY BOARD (G) REMOVAL

Ⓐ Disconnect Power Supply Cord from G Board.
Ⓑ Release clips and lift-up AC Cover.
Ⓒ Remove screws and disconnect connectors from G Board.
Ⓓ Release clips and slide-out Side Cover.
Ⓔ Remove screws and disconnect connectors from A Board.
Ⓕ Remove screws and disconnect connectors from Left and Right Speakers.
Ⓖ Release clips and disconnect connector from H Board.
Ⓗ Disconnect connector, then tilt Switch Unit left and lift-up.



NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: The components identified by a red outline and a 🔒 mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced.
See Appendix A: Encryption Key Components in the back of this manual.



REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
51	4-410-249-01	COVER, SIDE IO (APOT)	
🔒 52	1-895-178-11	A BOARD, COMPLETE	
		(KDL-32BX355 ONLY)	
		AFTER REPLACING THE MAIN BOARD, YOU MUST UPDATE THE SOFTWARE TO THE LATEST VERSION	
🔒 52	1-895-178-21	A BOARD, COMPLETE	
		(KDL-40BX455 ONLY)	
		AFTER REPLACING THE MAIN BOARD, YOU MUST UPDATE THE SOFTWARE TO THE LATEST VERSION	
🔒 52	1-895-178-31	A BOARD, COMPLETE	
		(KDL-46BX455 ONLY)	
		AFTER REPLACING THE MAIN BOARD, YOU MUST UPDATE THE SOFTWARE TO THE LATEST VERSION	

REF. NO.	PART NO.	DESCRIPTION	[ASSEMBLY INCLUDES]
53	1-895-179-11	H BOARD, MOUNTED	
54	1-858-772-21	SPEAKER 4X10 (TOR)	
⚠ 55	1-839-929-11	POWER-SUPPLY CORD	
56	4-410-250-01	COVER, AC (APOT)	
57	1-858-772-11	SPEAKER 4X10 (TOL)	
58	1-490-189-11	SWITCH UNIT	
59	4-264-270-01	KEY PAD (GT)	
60	4-410-247-01	COVER, KEY (APOT)	
61	1-895-180-11	G BOARD, COMPLETE	
		(KDL-32BX355 ONLY)	
61	1-895-181-11	G BOARD, COMPLETE	
		(KDL-40BX455/46BX455 ONLY)	
△	2-580-640-01	SCREW, +BVTP2 4X16	
○	4-159-298-01	SCREW, +PSW M4X10	
●	2-580-592-01	SCREW, +PSW M3X8	

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

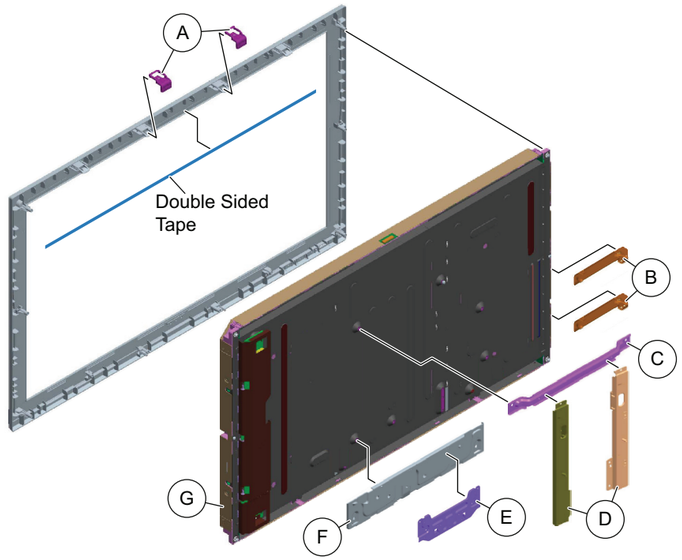
NOTE: The components identified by a red outline and a 🔒 mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced.
See Appendix A: Encryption Key Components in the back of this manual.

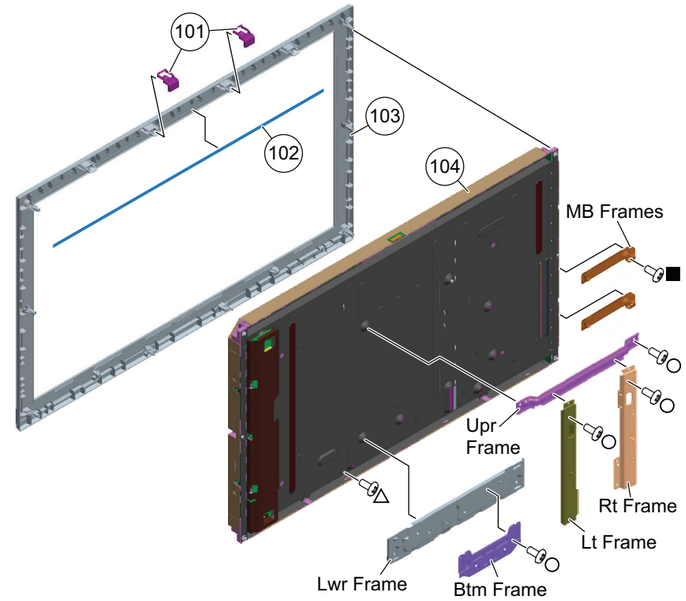
LCD PANEL REMOVAL

CAUTION: The LCD Panel is attached to the Bezel using double-sided tape. (KDL-32BX355 only)

NOTE: The Panel Frames are not included with the LCD Panel and must be reattached to the replacement panel for the KDL-32BX355/46BX455 models only.

Ⓐ Remove Panel Brackets from Bezel.
Ⓑ Remove screws from Main Board Brackets.
Ⓒ Remove screws from Upper Frame.
Ⓓ Remove screws from Left and Right Frames.
Ⓔ Remove screws from Bottom Frame.
Ⓕ Remove screws from Lower Frame.
Ⓖ Remove screws from LCD Panel to detach from Bezel, then carefully lift up LCD Panel.





CLEANING THE LCD PANEL

CAUTION: When cleaning the TV, be sure to unplug the power cord to avoid any chance of electric shock.

Clean the cabinet of the TV with a dry soft cloth, and wipe the LCD screen gently with a soft cloth.

- ☑ Stubborn stains may be removed with a cloth slightly moistened with a solution of mild soap and warm water.
- ☑ If using a chemically pretreated cloth, please follow the instruction provided on the package.
- ☑ Never use strong solvents such as a thinner, alcohol or benzine for cleaning.
- ☑ Periodic vacuuming of the ventilation openings is recommended to ensure proper ventilation.
- ⦸ Do Not use paper towels, any type of abrasive pad, rags, rubber or vinyl materials to clean the screen. Using these materials could easily scratch the screen which may result in permanent damage.
- ⦸ Do Not use any cleaning product containing alkaline/acid cleaner, scouring powder, or volatile solvent, such as alcohol, ammonia, benzine, thinner or insecticide. Using any of these harsh cleaners may result in permanent damage to the screen.
- ⦸ Do Not spray water or detergent directly onto the TV screen . If liquid drips into the bottom of the screen it may cause a failure.

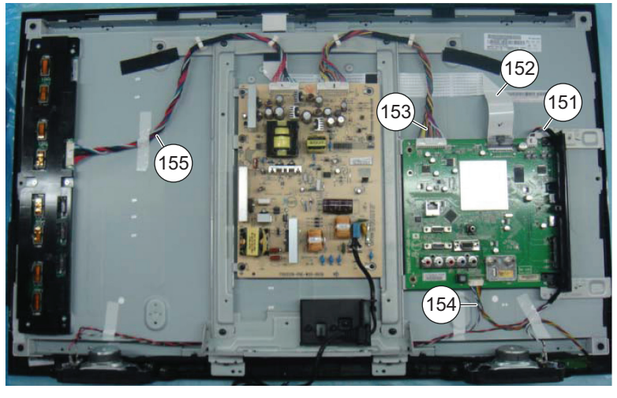
REF. NO.	PART NO.	DESCRIPTION [ASSEMBLY INCLUDES]
101	4-410-251-01	SUPPORT, PNL (APOT)
102	4-428-102-01	MASK TAPE, DOUBLE ADHESIVE (KDL-32BX355 ONLY)
103	4-423-354-01	BEZEL (32APOT) (KDL-32BX355 ONLY)
103	4-423-355-01	BEZEL (40APOT) (KDL-40BX455 ONLY)
103	4-423-356-01	BEZEL (46APOT) (KDL-46BX455 ONLY)

REF. NO.	PART NO.	DESCRIPTION [ASSEMBLY INCLUDES]
104	NA	LCD PANEL
	FOR ALL LCD PANEL AND TCON BOARD PART NUMBER INFORMATION REFER TO THE LCD PANELS SERVICE MANUAL	
△	2-580-640-01	SCREW, +BVTP2 4X16
○	4-159-298-01	SCREW, +PSW M4X10
■	7-685-646-79	SCREW, +BVTP 3X8

NOTE: The components identified by shading and ⚠ mark are critical for safety. Replace only with part number specified.

NOTE: The components identified by a red outline and a 🔒 mark contain confidential information. Specific instructions must be adhered to whenever these components are repaired and/or replaced.
See Appendix A: Encryption Key Components in the back of this manual.

CONNECTORS



REF. NO.	PART NO.	DESCRIPTION [ASSEMBLY INCLUDES]
151	1-910-106-04	CONNECTOR ASSEMBLY 32 4P MB-SP (KDL-32BX355 ONLY)
151	1-910-106-08	CONNECTOR ASSEMBLY 40 4P MB-SP (KDL-40BX455 ONLY)
151	1-910-106-12	CONNECTOR ASSEMBLY 46 4P MB-SP (KDL-46BX455 ONLY)
152	1-910-105-34	(LVDS) CONNECTOR ASSEMBLY 32 (KDL-32BX355 ONLY)
152	1-910-105-33	(LVDS) CONNECTOR ASSEMBLY 40 (KDL-40BX455 ONLY)
152	1-910-105-32	(LVDS) CONNECTOR ASSEMBLY 46 (KDL-46BX455 ONLY)
153	1-910-106-06	CONNECTOR ASSEMBLY 32 14P MB-PSU (KDL-32BX355 ONLY)
153	1-910-106-10	CONNECTOR ASSEMBLY 40 14P MB-PSU (KDL-40BX455 ONLY)
153	1-910-106-14	CONNECTOR ASSEMBLY 46 14P MB-PSU (KDL-46BX455 ONLY)
154	1-910-106-05	CONNECTOR ASSEMBLY 32 12P MB-H&KEY (KDL-32BX355 ONLY)
154	1-910-106-09	CONNECTOR ASSEMBLY 40 12P MB-H&KEY (KDL-40BX455 ONLY)
154	1-910-106-13	CONNECTOR ASSEMBLY 46 12P MB-H&KEY (KDL-46BX455 ONLY)
155	1-910-106-07	CONNECTOR ASSEMBLY 32 14P PSU-INV (KDL-32BX355 ONLY)
155	1-910-106-11	CONNECTOR ASSEMBLY 40 14P PSU-INV (KDL-40BX455 ONLY)
155	1-910-106-15	CONNECTOR ASSEMBLY 46 14P PSU-INV (KDL-46BX455 ONLY)

SCREWS

KDL-32BX355

	P/N	DESCRIPTION	REMARKS	TOTAL
▲	2-580-608-01	SCREW, +PSW M5X16	TABLE-TOP STAND(3)	3
△	2-580-640-01	SCREW, +BVTP2 4X16	RC(9), SPKR-L(2), SPKR-R(2), PNL to BEZ(2)	13
●	2-580-592-01	SCREW, +PSW M3X8	RC TERMINAL AREA(1), A BOARD(4), G BOARD(6)	11
○	4-159-298-01	SCREW, +PSW M4X10	RC(5), AC CVR(1), UPR FRM(2), LT FRM(2), RT FRM(2), BTM FRM(2)	14
■	7-685-646-79	SCREW, +BVTP 3X8	VESA BRKTS(4), MB BRKTS(2)	6

KDL-40BX455

	P/N	DESCRIPTION	REMARKS	TOTAL
▲	2-580-608-01	SCREW, +PSW M5X16	TABLE-TOP STAND(3)	3
△	2-580-640-01	SCREW, +BVTP2 4X16	RC(11), SPKR-L(2), SPKR-R(2), PNL to BEZ(2)	15
●	2-580-592-01	SCREW, +PSW M3X8	RC TERMINAL AREA(1), A BOARD(4), G BOARD(6)	11
○	4-159-298-01	SCREW, +PSW M4X10	RC(5), AC CVR(1), BTM FRM(3)	9
■	7-685-646-79	SCREW, +BVTP 3X8	VESA BRKTS(4), STND BRKTS(6)	10

KDL-46BX455

	P/N	DESCRIPTION	REMARKS	TOTAL
▲	2-580-608-01	SCREW, +PSW M5X16	TABLE-TOP STAND(3)	3
△	2-580-640-01	SCREW, +BVTP2 4X16	RC(13), SPKR-L(2), SPKR-R(2), PNL to BEZ(2),	13
●	2-580-592-01	SCREW, +PSW M3X8	RC TERMINAL AREA(1), A BOARD(4), G BOARD(5)	10
○	4-159-298-01	SCREW, +PSW M4X10	RC(5), AC CVR(1), UPR FRM(2), LT FRM(1), RT FRM(1), LWR FRM(2), BTM FRM(3), MB FRMS(	17
■	7-685-646-79	SCREW, +BVTP 3X8	VESA BRKTS(4), MB FRMS(2), STND BRKT(6)	12

ACCESSORIES AND PACKAGING

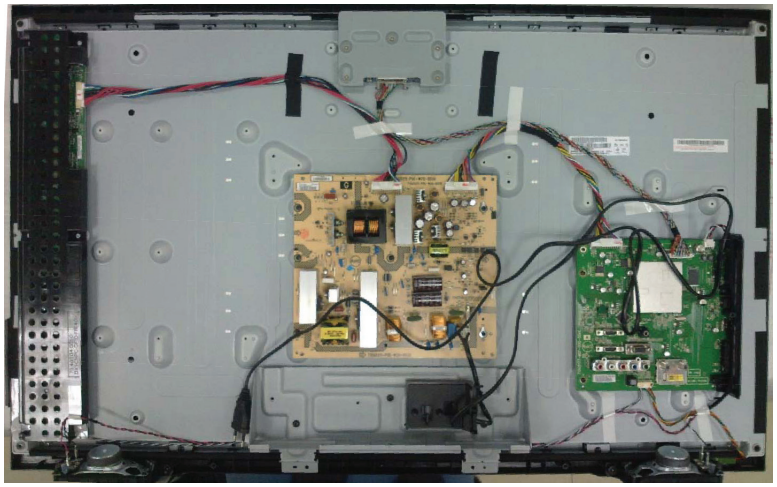
PART NO.	DESCRIPTION
X-2584-211-1	BAG ASSEMBLY, SCREW
1-756-988-21	BATTERY, MANGANESE (R6)
4-415-639-42	GUIDE, QUICK SET UP
4-415-637-42	MANUAL, INSTRUCTION
4-416-690-42	SUPPLEMENT(STAND INSTALLATION)

REMOTE COMMANDER

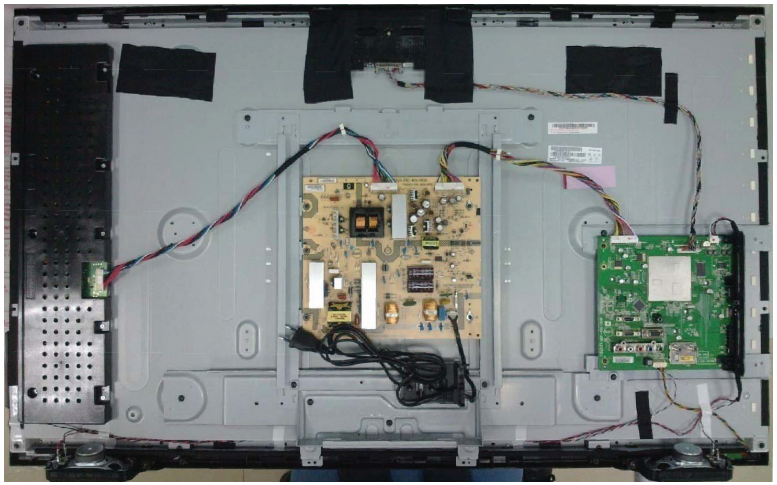
PART NO.	DESCRIPTION
1-489-991-11	REMOTE COMMANDER (RM-YD081)

WIRE DRESSING

WIRE DRESSING FOR KDL-32BX355 ONLY



WIRE DRESSING FOR KDL-40BX455 ONLY



WIRE DRESSING FOR KDL-46BX455 ONLY

SECTION 5 - UPDATES AND ADJUSTMENTS

OVERVIEW

The models in this manual utilize a “generic” type of Main Board, therefore a software update must be performed and certain service adjustment settings must be changed or confirmed whenever the Main Board, LCD Panel, or TCON Board is replaced.

There are 2 reasons for updating the software on the TVs.

- Software updates for customers

  These updates are for enhancements or improvements that have been made to the software after the TV was released.

- Software update for servicers

  These updates are specifically for servicers to use during a service call.

SOFTWARE UPDATES FOR CUSTOMERS

The subject of software updates is very important. The televisions of today have advanced to the point where they are not simply a television anymore. They are evolving into devices that are designed to integrate with numerous other devices found in the home. Some examples are: portable audio and video devices, still cameras, home computer networks and accessing the internet to name a few.

Communications with these varying devices requires that the television be compatible with varying communications protocols. Although standards are detailed for each of these protocols, the real world dictates that occasional errors may occur that could prevent devices from operating or communicating properly.

Keeping the software in the television up-to-date is a procedure that is normally handled by the owner of the television. Most customers who own computers and other digital devices are familiar with and are accustomed to updating the software in their products. If a customer contacts the Sony Customer Support Center and it is deemed to be correctable with a software update, the issue is handled at the customer level.

Software updates can be performed by:

- Customer Manual Downloads: Software updates can be performed by the customer by placing it on a USB device to be loaded onto the TV. The instructions for downloading the software file vary from chassis to chassis and sometimes from model to model. The customer is provided with the instructions to properly format the USB device, unzip the file, and the procedures for loading the software into the television.
- Network Downloads: Internet software updates are becoming more prevalent as more and more models incorporate home network capabilities. This method is the most practical since the television will check for the latest version of software. The models with this type of chassis provide the customer with a choice of turning the automatic software update feature on or off. If set to on, the television will lookup software information while the unit is in standby. If a newer version is available, it will be downloaded and installed without any input from the customer.
- Built-in Tuner: OTA or cable sources having the proper station that is transmitting software update data packets. Although the ability to transmit software update is possible in this way, it is the least common and is reserved for particular situations where a critical update is “forced”, thereby updating the TV without any input from the customer.

SOFTWARE UPDATES FOR SERVICERS

Replacement Main Boards are now stocked with basic software. Once the replacement board is installed in the TV, the most current software needs to be installed using a USB device containing the necessary software.

This new method of supplying Main Boards significantly reduces the complexity of replacing the Main Boards. Information about the LCD panel is stored on the TCON circuits. This information is automatically loaded onto the Main Board when the TV is powered up. With the correct software version the Main Board and/or the TCON can be replaced more efficiently.

SOFTWARE UPDATE RESPONSIBILITY

Software updates are designed to be performed by the customer. Warranty repairs in which the issue can be resolved by a software update ***are not reimbursable***. Most issues involving software updates are handled by the customer service center and should not be directed to an authorized service center. It is the responsibility of the servicer to prevent service calls for issues that involve software updates. Exceptions to this are certain cases whereby the customer is unable or unwilling to perform the task. In this situation, the servicer will be notified and receive the proper authorization for reimbursement.

It is the servicer's responsibility, however, to ***make certain that any TV requiring a legitimate service is running the latest software version and to install it if necessary.***

CHECKING THE SOFTWARE VERSION

The easiest way to check the version of software that is currently on the TV is to access the Contact Sony screen by using the customer menu.

EXAMPLE OF SOFTWARE VERSION LOCATED ON THE CONTACT SONY SCREEN

EXAMPLES OF SOFTWARE CORRECTABLE SYMPTOMS

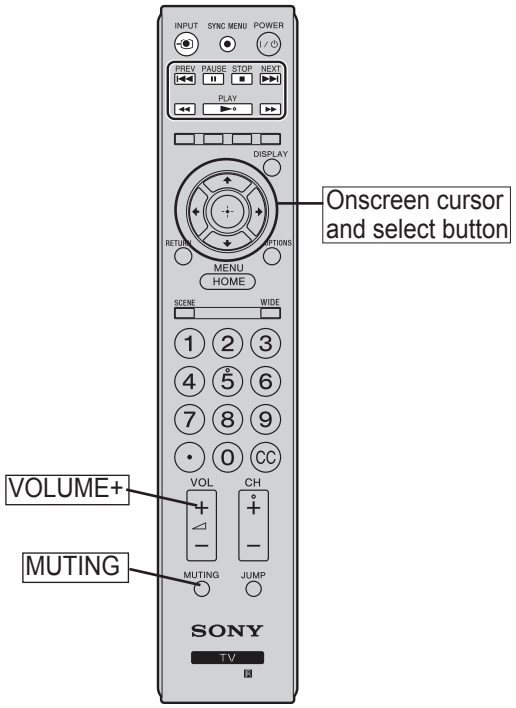
Always check for any known and/or listed issues that are software related. Most symptoms that are correctable by software updates involve communications issues with other devices or minor glitches in the operation of a specific function. Below is a list of some of the symptoms that may be corrected with a software update:

- Fluctuations in picture brightness
- Intermittent picture freezing or noise
- Problems with certain inputs (especially HDMI)
- Intermittent or distorted audio
- Erratic remote control operation
- Unit turns on and off by itself
- Loss of color
- Internet connectivity
- Certain features not working correctly (photo or video file viewing)

ACCESSING SERVICE ADJUSTMENT MODE

Use the following information after replacing the Main Board or the LCD Panel to ensure all features of the TV are available.

1. TV must be in Standby mode. (Power On).
2. Press the following buttons on the Remote Commander within a second of each other:



RM-YD081

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT		1322132	
MODEL NAME EDIT		KDL-32BX355	
		[</>]Set [Menu] Exit	

SAMPLE SERVICE MODE MENU

COMPLETING SERVICE REQUIREMENTS WHEN REPLACING THE MAIN BOARD

The following must be performed after replacing the Main Board to ensure that all of the features for the TV will be available.

- ☑ Viewing the Status Information
- ☑ Adding the Serial Number
- ☑ Selecting the Model Name

VIEWING THE STATUS INFORMATION

After replacing the Main Board, LCD Panel, or TCON Board, you MUST UPDATE the SOFTWARE to the latest version. Verify the latest software is installed before proceeding to the service adjustments.

3. Press ↓ until **Status Information** is selected, then press ⊕.

Main Micro	
SW Version	SONY_2012_TOSCA_1.04
NVM Version:	1
Boot Version:	0.01
Panel Version:	V0.004
PQ Version:	V1.00b
AQ Version:	AQ1.001

4. Verify the latest software version is installed.
5. Do one of the following:
   a. If the latest software is installed, proceed to **Adding the Serial Number**.
   b. If the latest software is not installed, update the software and then proceed to **Adding the Serial Number**.

ADDING THE SERIAL NUMBER

Verify before proceeding to the next step:

☑ Verified Status Information

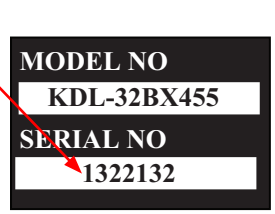
1. TV must be in Standby mode. (Power On).
2. Press the following buttons on the Remote Commander within a second of each other:

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT		1322132	
MODEL NAME EDIT		KDL-32BX355	
		[</>]Set [Menu] Exit	

3. Press ↓ until **Serial Number Edit** is selected, and then press ⊕.

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT	<[	1 3 2 2 1 3 2	]>
MODEL NAME EDIT	<[	KDL-32BX355	]>
		[</>]Set [Menu] Exit	

4. Locate the serial number for the TV on the side of the Rear Cover of the TV.



5. Using the Remote Commander, enter the correct serial number.
6. Proceed to Selecting the Model Name.

SELECTING THE MODEL NAME

Verify before proceeding to the next step:

- ☑ Verified Status Information
- ☑ Added the Serial Number

7. From the Service Mode menu, press ⇩ until **Model Name Edit** is selected, and then press ⊕.

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT	<[	1322132	]>
MODEL NAME EDIT	<[	K D L - 3 2 B X 3 5 5	]>
		[</>]Set [Menu] Exit	

8. Using the Remote Commander, enter the correct Model Name.
9. To save the change, press ⊕.
10. To exit the Self Check, press MENU.

COMPLETING SERVICE REQUIREMENTS WHEN REPLACING THE LCD PANEL

The following must be performed after replacing the LCD Panel.

NOTE: The TCON Board is internal and cannot be replaced.

- ☑ Viewing the Status Information
- ☑ Changing the LVDS Spectrum
- ☑ Selecting the LCD Panel

1. TV must be in Standby mode. (Power On).
2. Press the following buttons on the Remote Commander within a second of each other:

⇦ → ⇨ → MUTING → ⊕ → MUTING → Volume +

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT		1322132	
MODEL NAME EDIT		KDL-32BX355	
		[</>]Set [Menu] Exit	

VIEWING THE STATUS INFORMATION

After replacing the Main Board, LCD Panel, or TCON Board, you MUST UPDATE the SOFTWARE to the latest version. Verify the latest software is installed before proceeding to the service adjustments.

3. Press ↓ until **Status Information** is selected, then press ⊕.

Main Micro	
SW Version	SONY_2012_TOSCA_1.04
NVM Version:	1
Boot Version:	0.01
Panel Version:	V0.004
PQ Version:	V1.00b
AQ Version:	AQ1.001

4. Verify the latest software version is installed.
5. Do one of the following:
   a. If the latest software is installed, proceed to **Changing the LVDS Spectrum**.
   b. If the latest software is not installed, update the software and then proceed to **Changing the LVDS Spectrum**.

CHANGING THE LVDS SPECTRUM

Verify before proceeding to the next step:

☑ Verified Status Information

6. Press ↓ until **LVDS Spectrum (%)** is selected.

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT		1322132	
MODEL NAME EDIT		KDL-32BX355	
		[</>]Set [Menu] Exit	

7. Press ← or → to change the data value.
8. Proceed to Selecting the LCD Panel

SELECTING THE LCD PANEL

Verify before proceeding to the next step:

☑ Verified Status Information

☑ Changed the LVDS Spectrum

9. Press ↓ until **Panel Selection** is selected.

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT		1322132	
MODEL NAME EDIT		KDL-32BX355	
		[</>]Set [Menu] Exit	

10. Press ◄ or ► to select the correct panel for the model being repaired.
11. To save the changes, press ▲ until the Back is selected, then press ⊕.

OPTIONAL SERVICE ADJUSTMENTS

The following are optional adjustments.

ADJUSTING THE SOUND

The following information is to adjust the sound.

1. TV must be in Standby mode. (Power On).
2. Press the following buttons on the Remote Commander within a second of each other:

◄ → ► → MUTING → ⊕ → MUTING → Volume +

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT		1322132	
MODEL NAME EDIT		KDL-32BX355	
		[</>]Set [Menu] Exit	

3. To access the **Sound Adjustment** page, press ⊕.If the

Service Mode Sound Adjust			
Back		<<	
Sound Mode	<[	Standard	]>
EQ [120Hz]	<[	1.1dB	]>
EQ [2000Hz]	<[	1.0dB	]>
EQ [500Hz]	<[	0.9dB	]>
EQ [1.2KHz]	<[	0.8dB	]>
EQ [3KHz]	<[	0.9dB	]>
EQ [7.5KHz]	<[	1.0dB	]>
EQ [12KHz]	<[	1.1dB	]>
Bass Offset	<[		]>
Treble Offset	<[		]>
		[</>]Set [Menu] Exit	

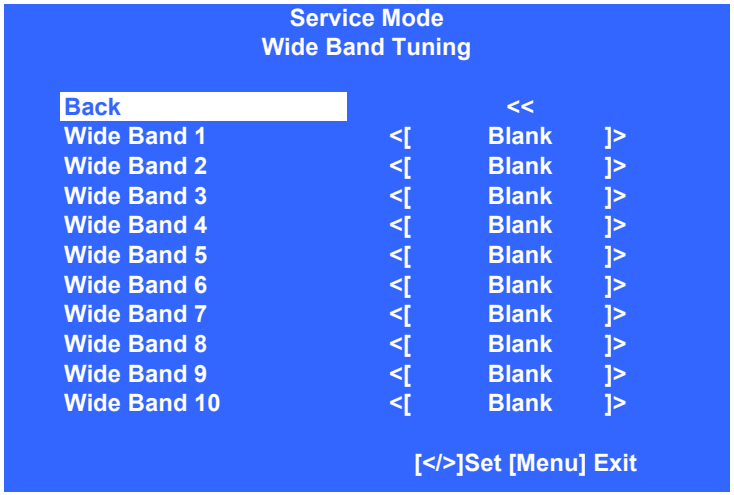
4. Press ▼ until the Sound Mode you want to change is selected.
5. Press ◄ or ► to change the data value.
6. To save the changes, press ▲ until the Back is selected, then press ⊕.

Service Mode			
Sound Adjustment		>>	
Wide Band Tuning		>>	
Range Scan…		>>	
Self diagnosis history		>>	
Status Information…		>>	
LVDS Spectrum(%0)	<[	50	]>
Panel Selection	<[	T315XW04_V3	]>
SERIAL NUMBER EDIT		1322132	
MODEL NAME EDIT		KDL-32BX355	
		[</>]Set [Menu] Exit	

7. Proceed to Wide Band Tuning Adjustments.

WIDE BAND TUNING ADJUSTMENTS

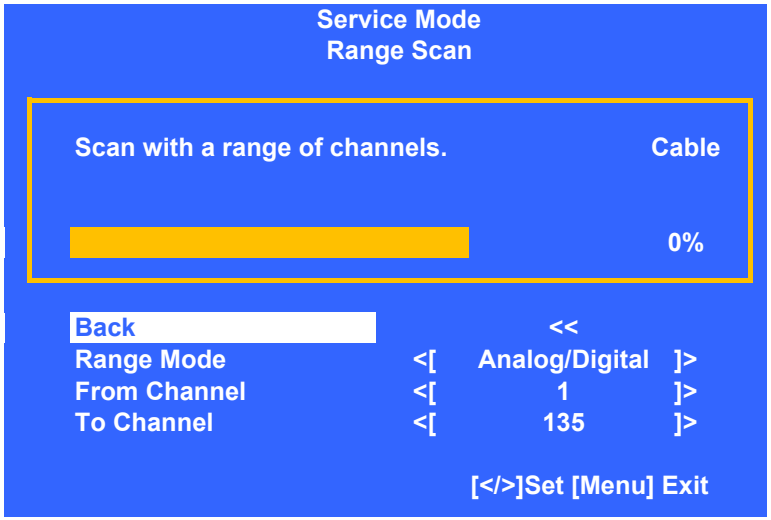
1. Press ↓ until **Wide Band Tuning** is selected, then press ⊕.



2. Press ↓ until the Wide Band option you want to change is selected.
3. Press ← or → to change the data value.
4. To save the changes, press ↑ until the Back is selected, then press ⊕.
5. Proceed to Range Scan Adjustments

RANGE SCAN ADJUSTMENTS

1. Press ↓ until **Range Scan** is selected, then press ⊕.



2. Press ↓ until the Wide Band option you want to change is selected.
3. To change the **Range Mode** press ← or → to change the data value to one of the following:
   - ☑ Analog
   - ☑ Digital
   - ☑ Analog/Digital
4. To start the scan of the **From Channels**, press ← or → then press ⊕.
5. To start the scan of the **To Channels**, press ← or → then press ⊕.
6. To save the changes, press ↑ until the Back is selected, then press ⊕.
7. To exit the Self Check, press MENU.

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APPENDIX A: ENCRYPTION KEY COMPONENTS

Encryption key components developed by Sony Corporation contain confidential information, and shall be handled under the non-disclosure obligations provided in the applicable agreement with Sony Corporation (and/or its subsidiary).

As part of this agreement specific instructions must be adhered to whenever a Circuit Board containing encryption key components is repaired and/or replaced pursuant to the following:

1. In the service manual the Circuit Board(s) containing encryption key components shall be identified with a red outline and a .
2. Only repair boards or components listed in the service manual shall be utilized for replacement and/or repair.
3. Disassembly, decryption, or reverse-engineering component(s) is strictly prohibited.
4. Any board in which the Servicer replaces an encryption key component must be placed back into the set it orignally came from and the replaced defective component MUST BE DESTROYED. Boards cannot be swapped.
5. If a Circuit Board identified with a red outline and a in the service manual is deemed to be defective:
   a. and if a core charge is imposed and is covered under the product warranty, the defective un-repaired or modified board MUST BE RETURNED to Sony.
   b. and if the core charge is NOT covered under the product warranty, the defective un-repaired or modified board MUST BE DESTROYED.
6. If a unit is destroyed (such as field scrap), the Circuit Board identified with a red outline and a in the service manual MUST BE DESTROYED.