Service Manual

MODEL NAME	DOCUMENT NO	REVISION NO	REVISION DATE	PAGE
BSV-4251/4251A	RD(1)	00	03/10/23	1/75

CONTENTS

SPECIFICATIONS

Note : Specification and others are subject to change without notice for improvement.

● **TV**

1.Input Signal :

PAL
SECAM
SD,HD
VGA ~XGA

2. Tuner : PAL
SECAM

2. Input Voltage : AC 100V ~ 240V,@ 50/60Hz, 4A

3. Power Consumption : 320W
Stand-by : 5W

4. PDP Module : PDP42V51000,51300(YBT), 51330(new ASIC) - LGE

5. Speaker Impedance : 8 §Ù

6. Sound Output : 10W + 10W

7. Feature :

- AV Input (Bottom)
- Component1 Input (Bottom, DVD)
- Component2 Input (Bottom, DTV)
- D-SUB (Bottom, RGB 15 pin)
- S-Video Input (Bottom,4Pin DIN)
- SCART1 Input (Bottom, Full)
- SCART2 Input (Bottom, Half)
- Tuner (Bottom, PAL,SECAM)
- External SPK Out (Bottom, SPK Jack)
- Audio Input (Bottom,RCA Jack,AV,Component1/2,S-Video,RGB)
- RS-232C (9 pin) , TCP / IP Support (0~255set)

8. Function :

- ARC
- PIP (PIP Swap,Sound Swap)
- PBP (4:3,16:9)
- MTS
- TTX

9. External Interface

1) AV / COMPONENT Output

ITEM	MIN	TYP	MAX	UNIT
AV Video Input Level	0.85	1.00	1.15	Vpp
AV Sync Input Level	0.24	0.29	0.32	Vpp
AV Burst Input Level	0.14	0.28	0.35	Vpp
AV Video Input Level	0.47	0.63	0.79	V
AV Audio Input L/R	0.47	0.63	0.79	V
Component Video Input Level (Y,Cb/Pb,Cr/Pr)	0.6	0.7	0.8	Vpp
Analog RGB, H/V Input Level	0.6	0.7	0.8	Vpp

2) COMPONENT Mode (Y,Cb/Pb,Cr/Pr)

RESOLUTION	H-Freq(KHz)	V-Freq(Hz)	Proposed
720*480	15.73	60.00	SDTV,DVD 480I
720*576	15.63	50.00	SDTV,DVD 576I
720*480	31.47	59.94	SDTV 480P
1280*720	45.00	60.00	HDTV 720P
1280*720	44.96	59.94	HDTV 720P
1920*1080	33.75	60.00	HDTV 1080I
1920*1080	33.72	59.94	HDTV 1080I

3)SUPPORTIING DISPLAY Mode

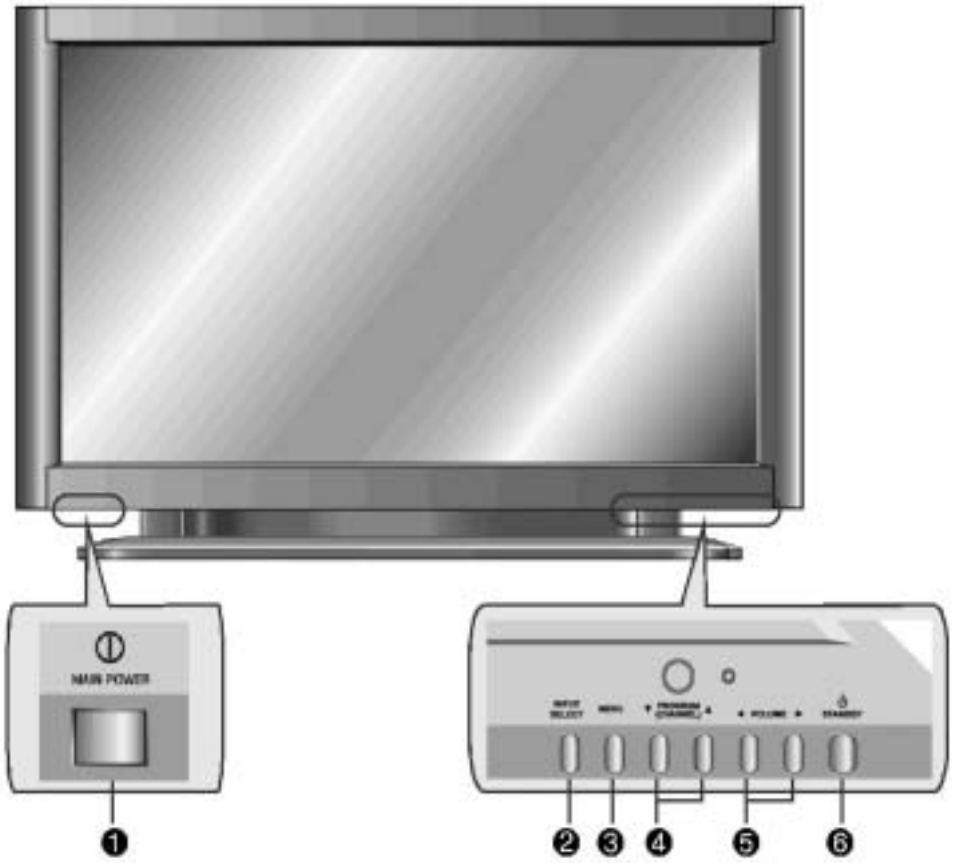
* It is optimal screen when the resolution is 640 * 480

RESOLUTION	H-Freq(KHz)	V-Freq(Hz)
640*480	31,47	60
	37.86	72
	37.50	75
720*400	31.47	70
800*600	35.15	56
	37.88	60
	48.88	72
	46.88	75
1024*768	48.36	60
	56,48	70
	60.02	75

10. RS-232C Signal

Pin No	Pin Name	Spec	Pin No	Pin Name	Spec
1	DCD	NC	6	DSR	NC
2	RXD	12 Vpp	7	RTS	NC
3	TXD	12 Vpp	8	CTS	NC
4	DTR	NC	9	R	NC
5	GND	GND			

CONTROL DESCRIPTIONS



❶ Main Power Button
- Please turn off the main power switch, if the PDP TV will not be used for a long period of time.

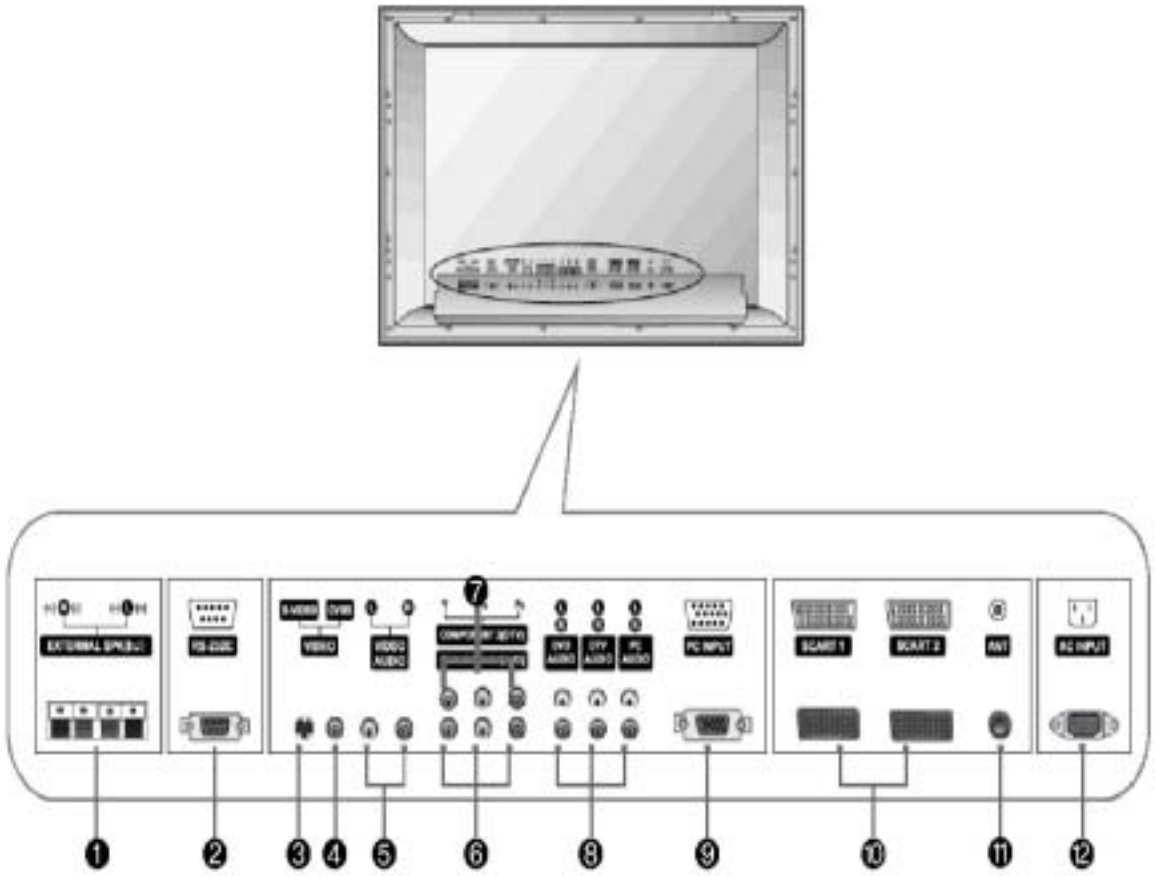
❷ Input Selection Button

❸ Menu key

❹ Program ▼, ▲ Button

❺ Volume ◄, ► Button

❻ Standby



❶ External Speaker Connection Terminal (8Ω)
❷ RS-232C Terminal
❸ S-Video Terminal
❹ AV input (composite)
❺ Audio Input Terminal (S-Video, Composite)
❻ Component 1 (DVD) Input Terminal
❼ Component 2 (DTV) Input Terminal
❽ Audio Input Terminal (DVD, DTV, RGB)
❾ RGB PC Input Terminal
❿ SCART Terminal (Full SCART, Half SCART)
⓫ Antenna Terminal
⓬ AC Input Terminal

OPTIONAL EXTRAS

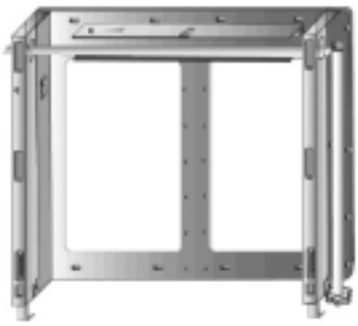
◐Optional extras can be changed or modified for quality improvement without notification new optional extras can be added.

◐Contract your dealer for buying these items.

Speaker

Stand

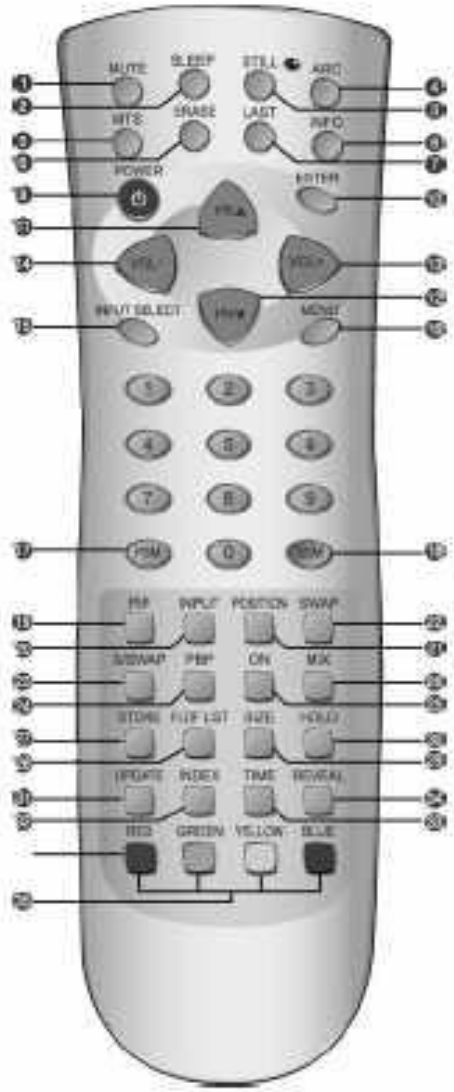
Ceiling - Mount Bracket



Adjustable - Angle
Wall mount

REMOTE CONTROL BUTTONS

※ When using the remote control aim it at the remote control sensor of the Monitor.



1. MUTE : SOUND MUTE KEY
2. SLEEP : SLEEP TIMER KEY
3. STILL : FREEZE KEY
4. ARC : ASPECT RATIO CONTROL KEY
5. MTS : MULTI-TELEVISION SOUND KEY
6. ERASE : NOT AVAILABLE
7. LAST : PREVIOUS PROGRAM KEY
8. INFO : SCREEN INFORMATION KEY
9. POWER : STANDBY ON/OFF KEY
10. ENTER : SAVE THE VALUE
11. PR▲ : PROGRAM +, MENU CONTROL OR PAGE UP KEY, STANDBY ON
12. PR▼ : PROGRAM -, MENU CONTROL OR PAGE DOWN KEY
13. VOL+ : VOLUME + OR MENU CONTROL KEY
14. VOL- : VOLUME - OR MENU CONTROL KEY
15. INPUT SELECT : MAIN INPUT SOURCE SELECT KEY
16. MENU : OSD MENU DISPLAY KEY
17. PSM : PICTURE STATUS MEMORY KEY (CUSTOM, DYNAMIC, STANDARD, MOVIE, MILD)
18. SSM : SOUND STATUS MEMORY KEY (CUSTOM, STANDARD, MUSIC, MOVIE, SPEECH)

◆PIP CONTROL KEY

19. PIP : PIP ON/OFF
20. INPUT : PIP INPUT SELECT KEY
21. POSITION : PIP POSITION CONTROL KEY
22. SWAP : PIP SOURCE SWAP
23. S/SWAP : SOUND SWAP KEY
24. PBP : PIP AND PBP MODE CHANGE

◆TELETEXT CONTROL KEY

25. ON : TEXT ON KEY
26. MIX : MIX WITH TV SCREEN
27. STORE : STORE THE USER DEFINED FAVORITE PAGE
28. FLOF/LIST : EXCHANGE FLOF/LIST MODE
29. SIZE : TELE TEXT SCREEN SIZE KEY
30. HOLD : HOLD FUNCTION DURING TELETEXT DISPLAY
31. UPDATE : DISPLAY CANCEL OR TEXT UPDATE KEY
32. INDEX : TEXT INDEX KEY
33. TIME: TIME DISPLAY KEY
34. REVEAL : SELECT HIDDEN CONTENT DURING TELETEXT DISPLAY
35. RED, GREEN, YELLOW, BLUE : DIRECT ACCESS TELETEXT LINKED PAGE KEY

TELETEXT FUNCTION

Basic Function

■TEXT On/Off

1. Press "ON" once , then displays the Teletext pages.
2. If you press "ON" once more, Text mode is off.

■TOP TEXT

The user guide displays four fields-red, green, yellow and blue at the bottom of the screen. The yellow field denotes the next group and the blue field indicates the next block.

- Group/Block/Page selection

1. With the blue button you can progress block to block.
2. Use the Yellow button to proceed to the next group with automatic overflow to the next block.
3. With the Green button you can proceed to the next existing page with automatic overflow to the next group.
4. The RED button permits to return to previous selection.

■FLOF TEXT

The teletext pages are colour coded along the bottom of the screen and are selected by pressing the corresponding coloured button.

- Page selection

1. Press the Index button to select the index page.
2. You can select the pages, which are colour coded along the bottom line with the same coloured buttons.

Special Teletext Function key

■MIX : In the mix mode display, the underlying video and the teletext page display are both simultaneously visible on the screen. This command turns the display to mix mode and is enabled only in the text mode.

■STORE : This command stores the user defined favorite pages. This command is enabled only if the list mode is active.

■FLOF LIST : This command toggles between list mode and current. Text mode(FLOF, TOP or normal)

■SIZE : Toggle the display page size between double-size top, double-size bottom and normal.

■HOLD : The update of the current display page is halted so that the content will not be changed.

■UPDATE : Press this button to view the updated teletext page.

■INDEX : Return to the index page.

■TIME : When watching a TV program, press this button to display the time at the top right hand corner of the screen.

Press this button again to remove the display.

■REVEAL : Press this button to display the concealed information. Such as solutions of riddles or puzzles.

RED, GREEN, YELLOW, BLUE-In the TOP/FLOF automatic navigation mode, these keys select and display the linked page.

DISPLAY CELL DEFECT SPECIFICATION

[PDP42V51000,51300,51330]

- Display Cell Defect Specifications

Zone	A - Zone	B - Zone	Defect Distance
Non-Ignition Dot (Dark Defect) Cells which are not working. And **Unstable Dot** (Flickering) Cell which repeats On and off	* N ≤ 2[Cells/each W,R,G,B scn] * Total : N ≤ 3 [Cells/Full scn] (No Unstable dot) * 2cell conjunction point : N = 0	* N ≤ 4 [Cells/each W,R,G,B scn] * Total : N ≤ 10 [Cells/Full scn] (Included unstable dot) * 2cell conjunction point : N ≤ 2/100mm Circle/Screen (2Cell defects Within 100mm distance are allowed to 2 Point) * 3cell conjunction point : N =0	* A-Zone : ≥ 100 mm * B-Zone : N ≤ 2 (100mm Circle/scn: 2 point allowed) * A, B-Zone Overlap N ≤ 2 (100mm Circle/scn: 2 point allowed)
Uncontrollable Dot Cell which is brighter or on than other cells around it because of unstable working condition.	* N = 0 [Cells/each R,G,B scn]	* N ≤2 [Cells/each R,G,B scn] * Total : N ≤ 4 [Cells/Full scn]	
Non-Extinguishing Dot (brightness defect) Cell which is always working "ON".	* N = 0	* N = 0	
Total Number of Dot Defects per Entire Panel: N ≤ 17 [Cells / Full scn]			
Stain Cell blob due to local color contamination in white or simple color pattern	* 1 ≤ D ≤ 5, N ≤ 3 (Stain Distance : ≥ 50 mm)		* D : mm
	* D>5, N = 0 (Stain Distance : ≥ 50 mm)		

Quality decision point

* Cell defect definition

- Non-ignition dot(dark defect) : In a ignited cell, the cell that a ignited size is less than 50%.
- Non-extinguishing dot(brightness defect) : In a extinguished cell, the cell that a ignited size is more than 50%.

* Test results are satisfied with each full red, green, blue, black and white test pattern.

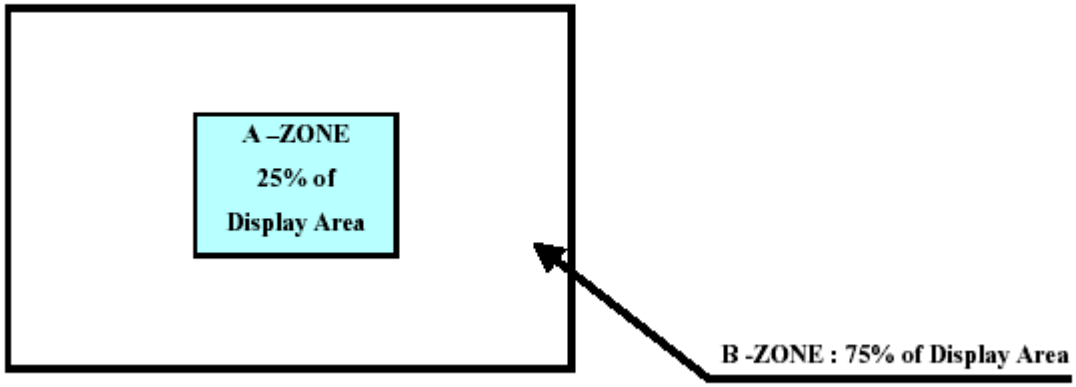
- Specifically, The full white test pattern is used to decide the number of continuous cell defects and Non-Ignition defects, The full black test pattern is used to decide the number of Non-extinguishing cell defects.
- Full white defect is counted only in concluding screen defect and It's excluded in full screen defect.
- The decision distance is 1.6 m(3H) away from the panel, intensity of illumination is between 100 Lux and 200 Lux.

* Cell defects do not increase or progress as time goes.

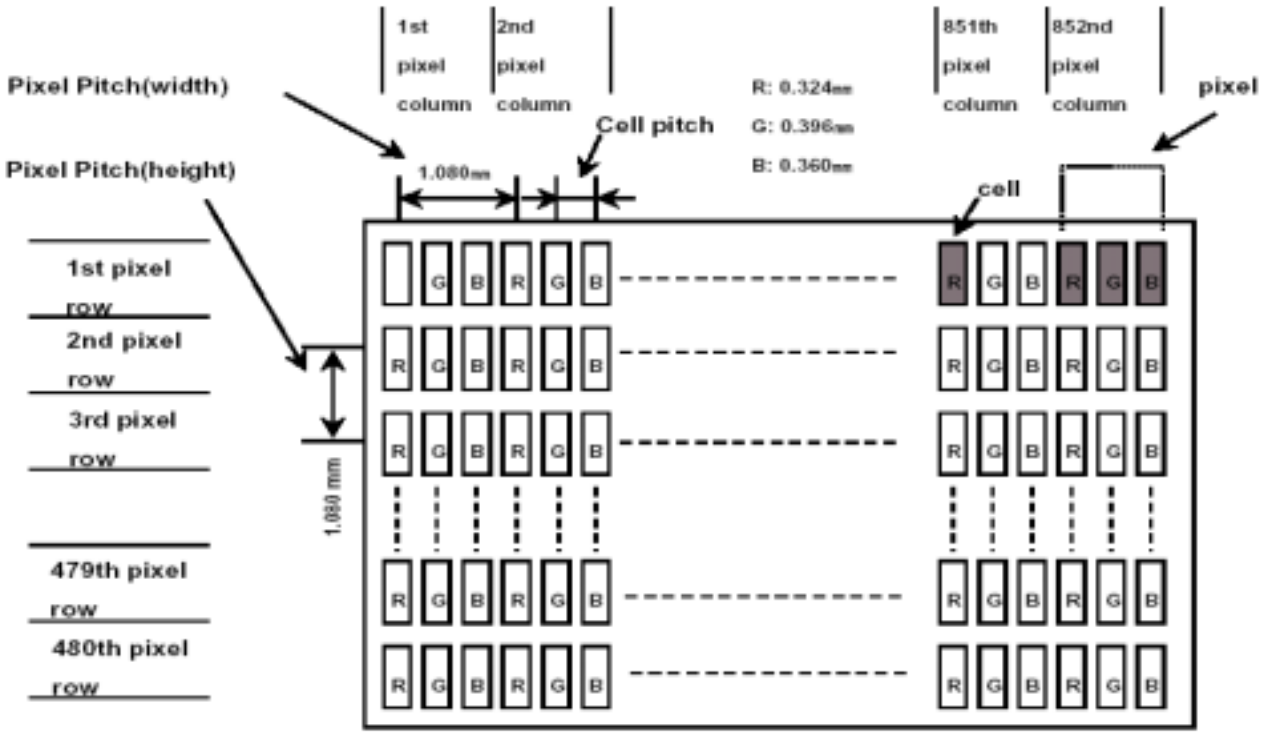
DEFINITION OF CELL DEFECT ZONE

1) Definition of Cell defect Zone

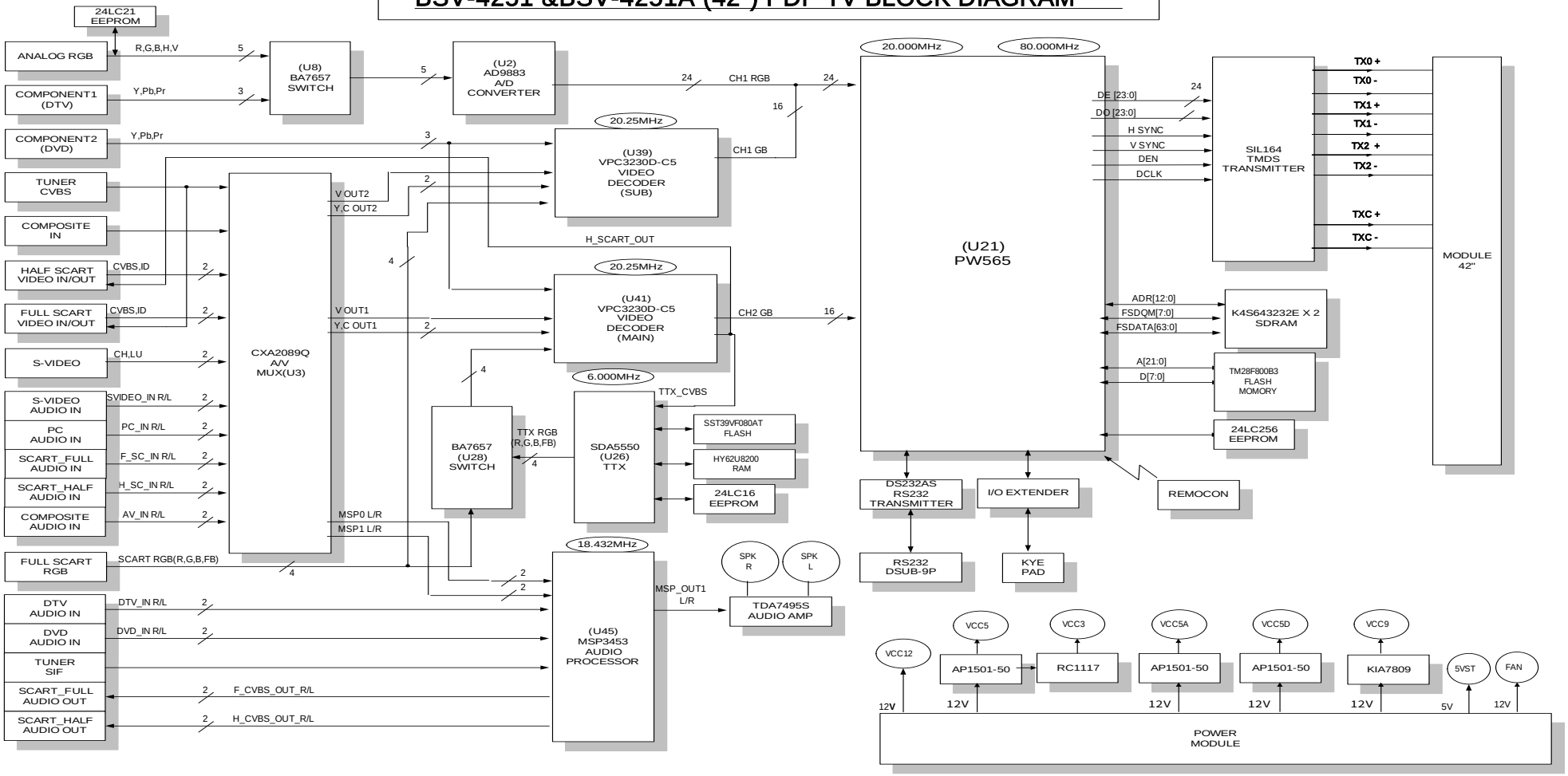
Definition of cell defect Zone



2) Display Dot Diagram



BSV-4251 &BSV-4251A (42") PDP TV BLOCK DIAGRAM



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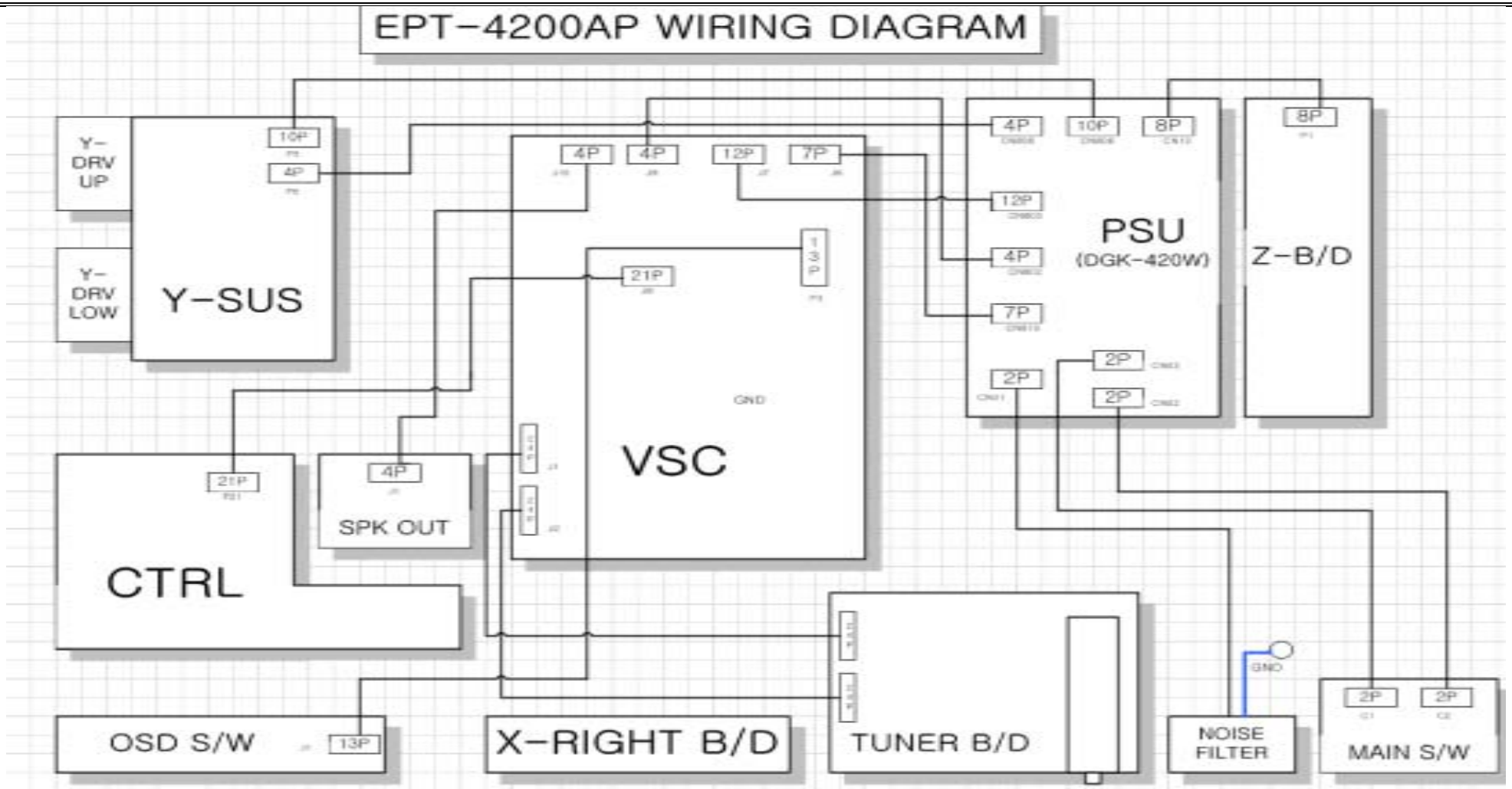

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MODULE FUNCTION & DEFINITION

1. The function of each part

Part name	Main function
Y-Board (Scan Driver)	Execution of the scan and sustain operation connecting scan electrode (Y-electrode) and FPC of panel
Z-Board (Common Sustain Driver)	Execution of the sustain operation connecting sustain electrode (Z-electrode) and FPC of panel
X-Board (Address Driver)	Execution of the address operation connecting the botton plate address electrode (X-electrode) and FPC of panel
Control Board	Distribution to X, Y, Z board after creation of display data and driver timing for an image and sound signal to be input from outside
DC/DC-2 Board	Distribution to X, Y, Z board after conversion from input voltage of Vs, Va, Voc to circuit logic voltage (5V)
FPC (Flexible Plate Circuit)	The pattern connection of PCB and panel
COF (Chip On Film)	It means to integrate a kind of IC Chip with FPC

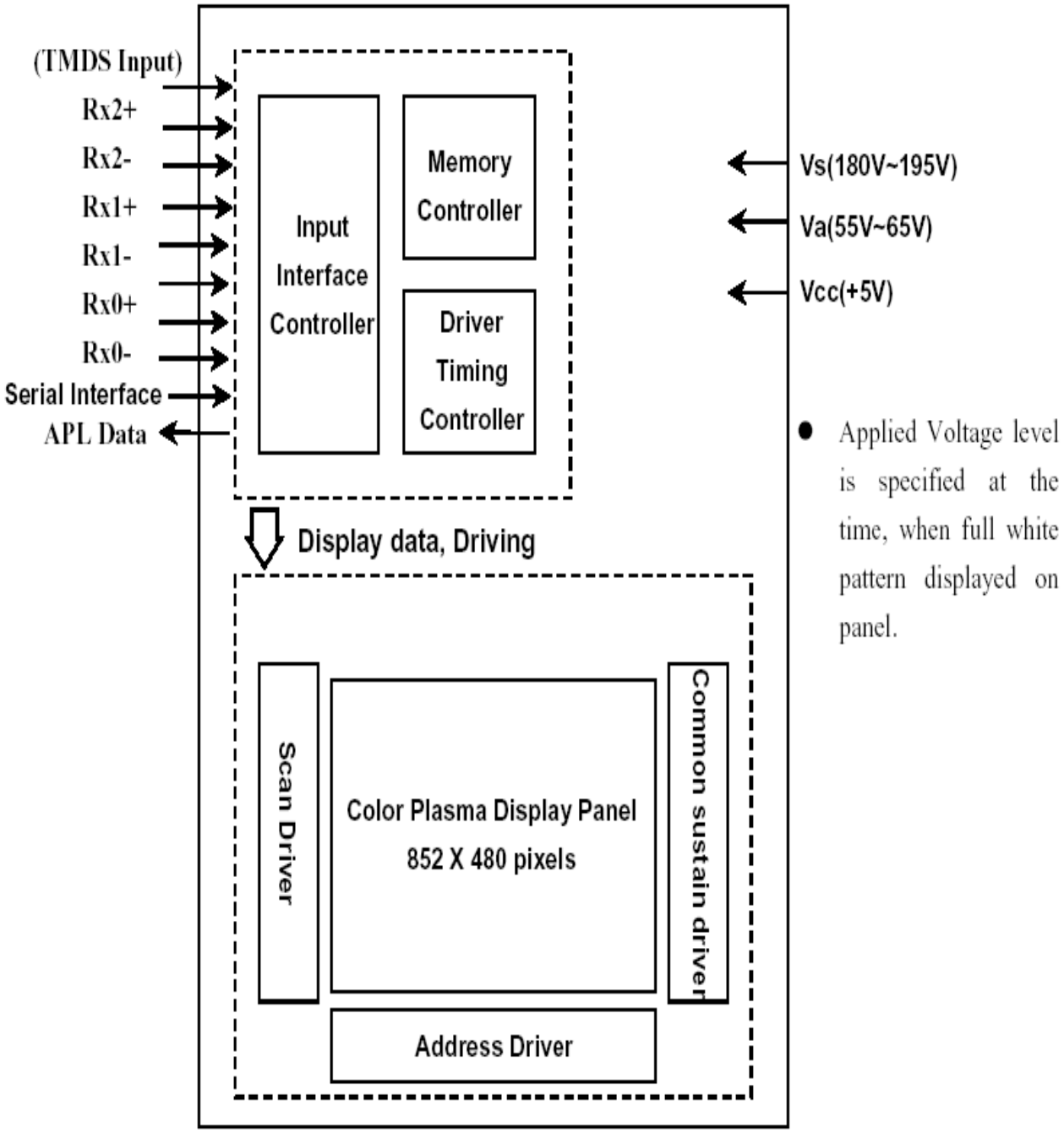
2. A term and definition of defect

2.1 CELL DEFECT

Term	The actual state	A cause
Non lighting Cell Defect	Cell is always “Off”	¢º a different thing or structural defect of Cell
Flashing Cell Defect	Cell repeat On / Off	¢º a different thing or structural defect of Cell
Non-extinguishing Cell Defect	Cell is always “On”	¢º a different thing or structural defect of Cell
High Intensity Cell Defect	A cell is the brighter than others on same color	¢º a different thing or structural defect of Cell

MODULE BASIC CONFIGURATION

[PDP42V51000,51300,51330]



- Applied Voltage level is specified at the time, when full white pattern displayed on panel.

VSC BOARD PIN CONFIGURATION

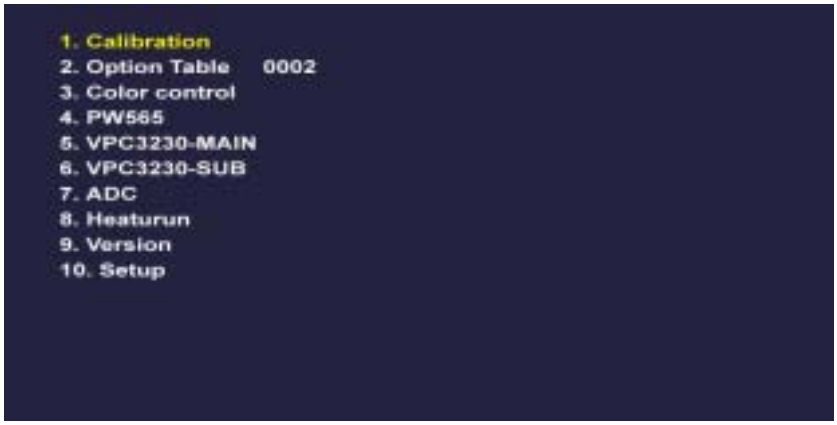
Pin No		I/O	Specification	Description
J7	1 (5V)	I	5V	VSC 5V Input
	2 (5V)	I	5V	VSC 5V Input
	3 (5V)	I	5V	VSC 5V Input
	4 (GND)		GND	5V Ground
	5 (GND)		GND	5V Ground
	6 (GND)		GND	5V Ground
	7 (12V)	I	12V	VSC 12V Input
	8 (12V)	I	12V	VSC 12V Input
	9 (GND)		GND	12V Ground
	10 (GND)		GND	12V Ground
	11 (12V)	I	12V	FAN 12V
	12 (GND)		GND	FAN 12V Ground
J6	1 (AC-DET)	I	5V / 0V	AC POWER DETECT PORT : AC INPUT DETECTING. : AC POWER ON → High , AC POWER OFF → LOW :Turn off the power by power sequence to stabilize PDP MODULE in case of power breakdown.
	3 (5V STBY)	I	5V	5V INPUT PORT FOR VSC STANDBY
	2 (RL-ON)	O	5V / 0V	RELAY CONTROL PORT FOR POWER ON : Relay On → High , Relay off → Low
	6 (5V-MNT)	I	5V / 0V	PDP MODULE STABLE CHECK PORT. : The port to provide control signal to PDP MODULE after the controller stabilized. At the moment, MICOM always check this signal and turn off the power when the signal is low.
	4 (GND)			
	5 (VAVS-ON)	O	5V / 0V	PORT FOR VA/VS OF PDP MODULE. : ON → HIGH , OFF→ LOW :To protect PDP MODULE, Micom turn on the Va/Vs 2 seconds after checking 5V-MNT.
	7 (NC)			No Connection
P2	1 (REMOCON)	I	5V	Monitor transmitter signal input port
	2 (GND)			
	3 (5VST)	O	5V	Stand by 5V Output Port
	4 (GND)			
	5 (LED-R)	O	5V / 0V	RED LED CONTORL OUTPUT PORT : High : Red LED On
	6 (LED-G)	O	5V / 0V	GREEN LED CONTORL OUTPUT PORT : High : Green LED On

	7 (POWER)	I	5V / 0V	LOCAL KEY INPUT PORT FOR POWER
	8 (VOL+)	I	5V / 0V	LOCAL KEY INPUT PORT FOR VOL +
	9 (VOL-)	I	5V / 0V	LOCAL KEY INPUT PORT FOR VOL -
	10 (SRC/SEL)	I	5V / 0V	LOCAL KEY INPUT PORT FOR SOURCE
	11 (MENU)	I	5V / 0V	LOCAL KEY INPUT PORT FOR MENU
	12 (CH-)	I	5V / 0V	LOCAL KEY INPUT PORT FOR CH-
	13 (CH+)	I	5V / 0V	LOCAL KEY INPUT PORT FOR CH+
J9	1 (32V)	I	32V	Audio AMP POWER INPUT PORT
	2 (32V)	I	32V	Audio AMP POWER INPUT PORT
	3 (GND)		0V	Audio AMP POWER GROUND PORT
	4 (GND)		0V	Audio AMP POWER GROUND PORT
J10	1 (L OUT)	O		Audio AMP LEFT OUTPUT PORT(8 §Ù)
	2 (L GND)			Audio AMP LEFT GROUND PORT
	3 (R OUT)	O		Audio AMP RIGHT OUTPUT PORT (8 §Ù)
	4 (R GND)			Audio AMP RIGHT GROUND PORT
J11	1 (S-SCL)			RS-232C CLOCK LINE
	2 (S-SDA)			RS-232C DATA LINE
	3 (FS)			
	4 (GND)		0V	
J1	1 (VCC5)	I	5V	5V Input
	2 (VCC5)	I	5V	5V Input
	3 (SCART_R)	I	0.7Vpp±0.1pp	SCART RED INPUT PORT
	4 (SCART_G)	I	0.7Vpp±0.1pp	SCART GREEN INPUT PORT
	5 (SCART_B)	I	0.7Vpp±0.1pp	SCART BLUE INPUT PORT
	6 (SCART_FB)	I	+1V to +3V / 0V to 0.4V	SCART FAST BLANKING
	7 (GND)		0V	
	8 (FSCART_CVBS_IN)	I	1.0Vpp±3dB	SCART1 CVBS INPUT PORT
	9 (GND)		0V	
	10 (HSCART_CVBS_IN)	I	1.0Vpp±3dB	SCART2 CVBS INPUT PORT
	11 (GND)		0V	
	12 (FSCART_ID)	I	4:3 / 16:9	VIDEO STATUS
	13 (HSCART_ID)	I	4:3 / 16:9	VIDEO STATUS
	14 (GND)		0V	
	15 (F_CVBS_OUT)	O	1.0Vpp±3dB	SCART1 CVBS OUTPUT PORT
	16 (GND)		0V	
	17 (H_CVBS_OUT)	O	1.0Vpp±3dB	SCART2 CVBS OUTPUT PORT
	18 (GND)		0V	
	19 (F_CVBS_L_OUT)	O	0.5Vrms±3dB	SCART1 AUDIO LEFT OUTPUT PORT
	20 (F_CVBS_R_OUT)	O	0.5Vrms±3dB	SCART1 AUDIO RIGHT OUTPUT PORT
	21 (GND)		0V	
	22 (H_CVBS_L_OUT)	O	0.5Vrms±3dB	SCART2 AUDIO LEFT OUTPUT PORT
	23 (H_CVBS_R_OUT)	O	0.5Vrms±3dB	SCART2 AUDIO RIGHT OUTPUT PORT

	24 (GND)		0V	
J2	1 (VCC5)	I	5V	5V INPUT
	2 (F_SC_L_IN)	I	0.5Vrms±3dB	SCART1 AUDIO LEFT OUTPUT PORT
	3 (F_SC_R_IN)	I	0.5Vrms±3dB	SCART1 AUDIO RIGHT OUTPUT PORT
	4 (GND)		0V	
	5 (H_ SC_L_IN)	I	0.5Vrms±3dB	SCART2 AUDIO LEFT OUTPUT PORT
	6 (H_SC_R_IN)	I	0.5Vrms±3dB	SCART2 AUDIO RIGHT OUTPUT PORT
	7 (GND)		0V	
	8 (AFT)	I		
	9 (GND)		0V	
	10 (TUNER_SIF)	I		
	11 (GND)		0V	
	12 (TUNER_CVBS)	I	1.0Vpp±3dB	TV VIDEO INPUT PORT
	13 (GND)		0V	
	14 (SDA3)	I	5V / 0V	DATA LINE
	15 (SCL3)	I	5V / 0V	CLOCK LINE
	16 (GND)		0V	
	17 (VCC12)	I	12V	12V INPUT
	18 (VCC12)	I	12V	12V INPUT
	19 (GND)		0V	
	20 (VCC5A)	I	5V	5V INPUT
	21 (VCC5A)	I	5V	5V INPUT
	22 (GND)		0V	
	23 (GND)		0V	
	24 (GND)		0V	

OSD MENU(FACTORY)

■ FACTORY MODE



FACTORY MODE

„ **1. Calibration**

: Automatic adjustment of white balance for Analogue input (PC) and Component2 (DTV) input.

„ **2. Option Table 0002**

: Initial installation of OSD.

„ **3. Color control**

: Adjustment of contrast and brightness for scaler generating power.

„ **4. PW565**

: Adjustment of contrast and brightness for scaler input port (CH1 or CH2).

„ **5. VPC3230-MAIN**

: Value adjustment for video decoder¡¯s brightness and contrast, color tickness in the main window.

„ **6. VPC3230-SUB**

: Value adjustment for video decoder¡¯s brightness and contrast, color tickness in the sub window.

„ **7. ADC**

: Value adjustment for brightness and contrat, color thickness of analogue RGB, Y,Pb,Pr of AD9883 A/D convertor.

„ **8. Heatrun**

: The mode when you do aging.

„ **9. Version**

: It shows the information of Firmware version and Panel.

„ **10. Setup**

: Installation of TTX language and video, protocol, logo.

CALIBRATION MENU

CALIBRATION MENU

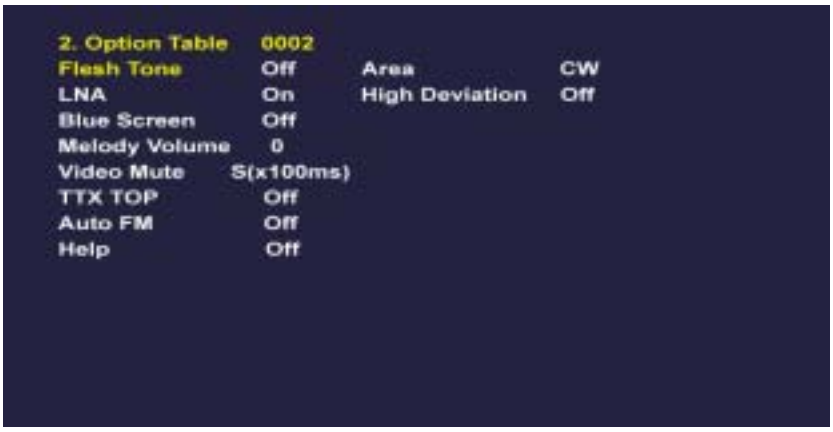
„ **1. PC Calibration**

: Automatic adjustment as the fittest status of white balance for analogue input (PC)

„ **2. DTV Calibration**

: Automatic adjustment as the fittest status of white balance for component2 (DTV) input.

OPTION TABLE MENU



OPTION TABLE MENU

„ Flesh tone

„ LNA(Low Noise Amplifier)

: On/Off Installation of screen quality improv ement fuction, when TV input signal is weak.

„ Blue Screen

: When there are no input signal of the TV and external equipment, you can install the screen color as blue.

„ Melody Volume

: Installation of the melody volume for initial soft power On/Off. The volume is ex-factoried as ¡°0 ¡± due to license.

„ Video Mute

„ TTX TOP

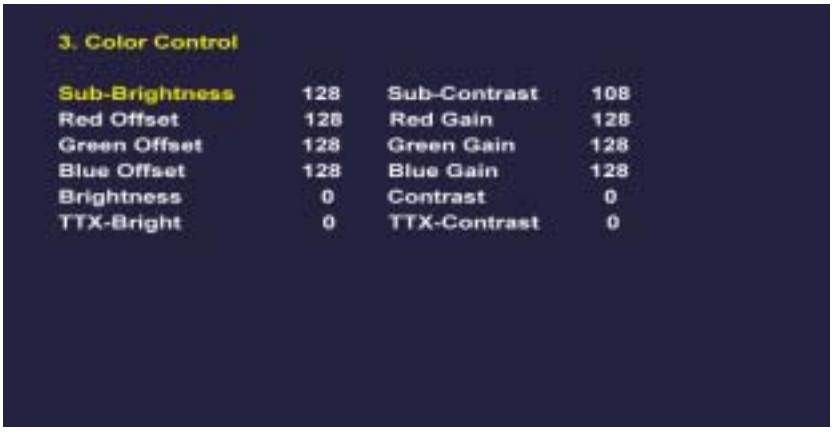
„ Auto FM

„ Help

„ Area

„ High Deviation

COLOR CONTROL MENU



COLOR CONTROL MENU

„ **Sub-Brightness**

: The brightness adjustment of scaler generating power.

„ **Red, Green, Blue Offset**

: The brightness adjustment of each Red, Green, Blue for scaler generating power.

„ **Brightness**

: The brightness adjustment of current screen. Adjustment value of brightness for User Menu

„ **TTX-Bright**

: It is not useful mode.

„ **Sub Contrast**

: Contrast adjustment of scaler generating power.

„ **Red, Green, Blue Gain**

: Contrast adjustment of each Red, Green, Blue for Scaler generating power.

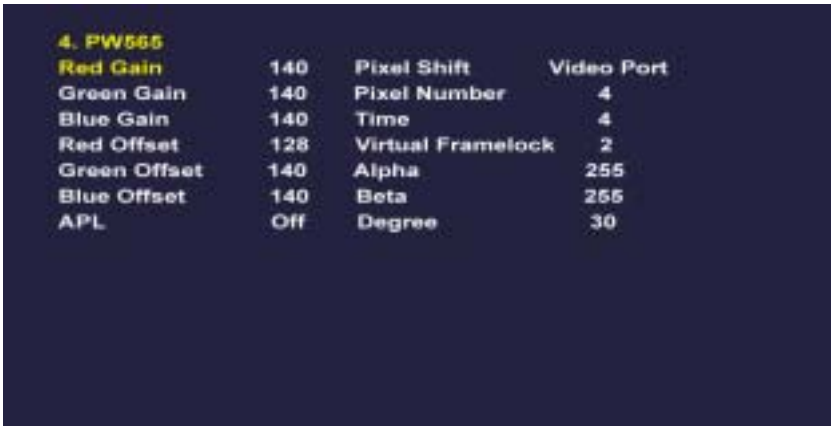
„ **Contrast**

: Contrast adjustment for current screen. The value adjustment of contrast for User Menu

„ **TTX-Contrast**

: It is not useful mode.

PW565 MENU



PW565 MENU

„ **Red,Green,Blue Gain**

: The contrast value adjustment of each Red, Green, Blue for scaler input port (CH1 OR CH2)

„ **Red,Green,Blue Offset**

: The brightness adjustment of each Red, Green, Blue for scaler input port (CH1 OR CH2)

„ **APL**

„ **Pixel Shift**

„ **Pixel Number**

„ **Time**

„ **Virtual Framelock**

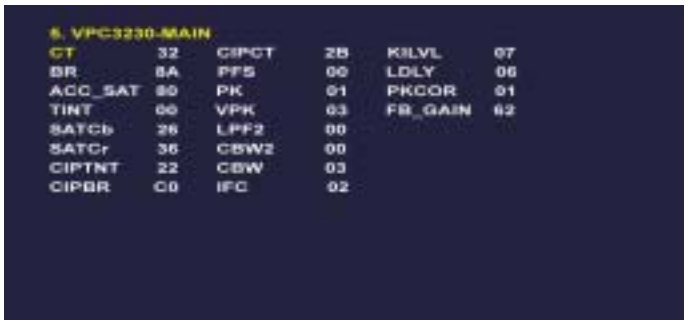
: Installation of flame frequency for panel (50Hz, 60Hz).

„ **Alpha**

„ **Beta**

„ **Degree**

VPC3230-MAIN MENU



VPC3230-MAIN MENU

„ CT

: Contrast adjustment of Composite & S-Video form¡¯s signal.

„ BR

: Brightness adjustment of Composite & S-Video form¡¯s signal.

„ ACC_SAT

„ TINT

: The color sense adjustment of Composite & S-Video form¡¯s signal.

„ SATCb

: The blue color sense adjustment of Component & RGB form¡¯s signal.

„ SATCr

: The red color sense adjustment of Component & RGB form¡¯s signal

„ CIPTNT

: The color sense adjustment of Component & RGB form¡¯s signal.

„ CIPBR

: The brightness adjustment of Component & RGB form¡¯s signal.

„ KILVL

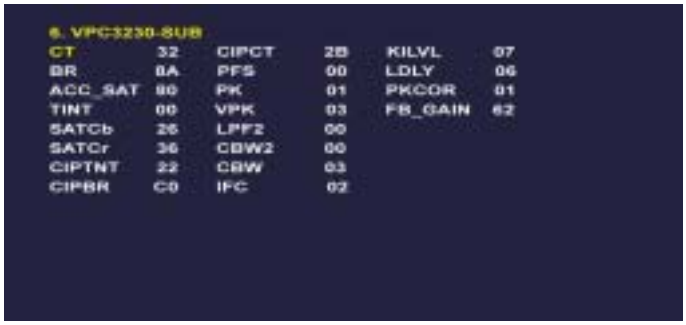
„ LDLY

: The delayed time adjustment of brightness signal.

„ PKCOR

„ FB_GAIN

VPC3230-SUB MENU



VPC3230-SUB MENU

„ CT

: The contrast adjustment of Composite & S-Video form¡¯s signal.

„ BR

: The brightness adjustment of Composite & S-Video form¡¯s signal.

„ ACC_SAT

„ TINT

: The color sense adjustment of Composite & S-Video form¡¯s signal.

„ SATCb

: The blue color sense adjustment of Component & RGB form¡¯s signal.

„ SATCr

: The red color sense adjustment of Component & RGB form¡¯s signal.

„ CIPTNT

: The color sense adjustment of Component & RGB form¡¯s signal.

„ CIPBR

: The brightness adjustment of Component & RGB form¡¯s signal.

„ KILVL

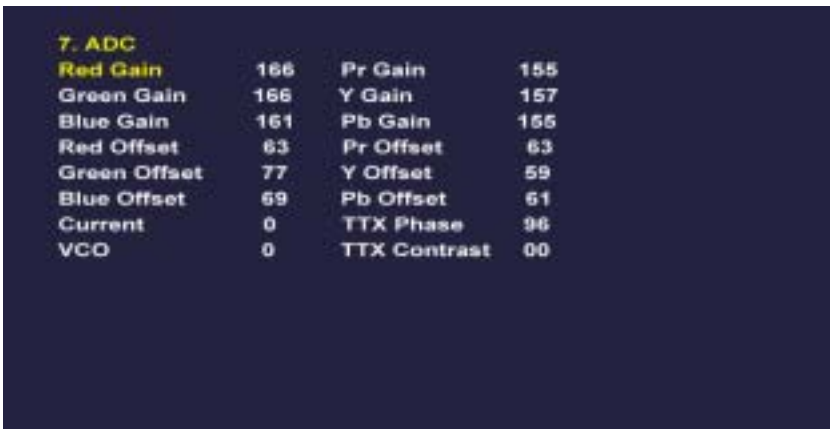
„ LDLY

: The delayed time installation of brightness signal.

„ PKCOR

„ FB_GAIN

ADC MENU



ADC MENU

„ **Red, Green, Blue Gain**

: Control ADC input range (Contrast) of each respective channel.

„ **Red, Green, Blue Offset**

: Control dc offset (Brightness) of each respective channel.

„ **Current**

: Installation of PLL Part VCO Current. (For test)

„ **VCO**

: Installation of PLL Part VCO Range (For test)

„ **Pr, Y, Pb Gain**

: Contrast adjustment of Component2 Pr, Y, Pb signal.

„ **Pr, Y, Pb Offset**

: Brightness adjustment of Component2 Pr, Y, Pb signal.

„ **TTX Phase**

: It is not useful mode.

„ **TTX Contrast**

: It is not useful mode.

HEATRUN MENU

HEATRUN MENU

„ **1. Auto Run**

: It is the mode to change the heatrun pattern as a certain time interval.

„ **2. Luma Ramp (16 Step)**

: It is gray pattern of 16 Step.

„ **3. Luma Ramp (128 Step)**

: It is gray pattern of 128 Step.

„ **4. White 16**

: It is low Gray pattern.

„ **5. White 240**

: It is high gray pattern.

„ **6. Color Bar**

: It is color Bar Pattern.

„ **7. RGB Ramp (32 Step)**

: It is RGB Ramp pattern of 32 Step.

VERSION MENU

VERSION MENU

„ **Version**

: It is to show the Firmware Version.

„ **Release**

: It is to show the date of Firmware revision.

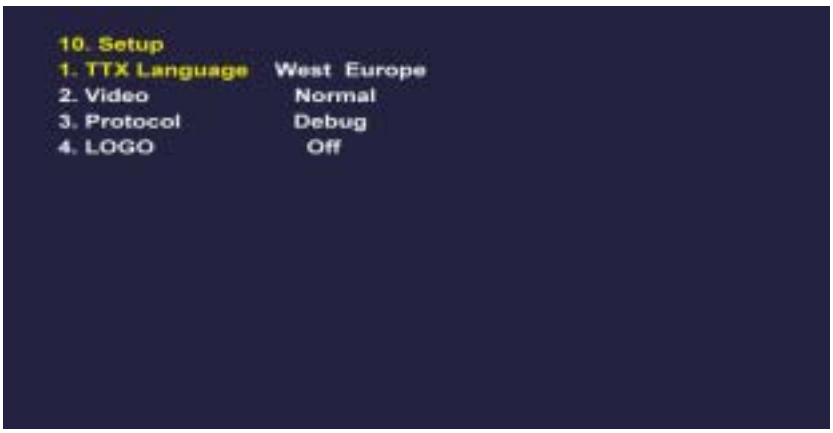
„ **Panel Used Time**

: It is to show the used time of Panel.

„ **Panel Name**

: It is to show the name of the PDP.

SETUP MENU



SETUP MENU

„ **1. TTX Language**

: Installation of initial language of the TTX.

„ **2. Video**

: Video format per country and it is composed of Normal, NTSC, PAL N, M

„ **3. Protocol**

: Installation of communication protocol for remote control.

„ **4. LOGO**

: Installation to show company logo on the screen when power ¡°On¡±(ON/OFF).

DESCRIPTION OF VSC FUNCTIONS

PSM (Picture Status Memory)

Function to adjust picture status to an optimal condition in accordance with the type of program being viewed (standard, moving picture, movie, muted, game).

SSM (Sound Status Memory)

Function to adjust sound status to an optimal condition in accordance with the type of program being viewed (standard, music, movie, news).

ARC (Aspect Ratio Control)

Function to adjust the picture size. (16:9. enlargement 1, enlargement 2, panorama, 4:3)

Panorama

Function to prevent pictures recorded in the 4:3 format from being stretched to the extreme left and right when played on a 16:9 display. Since the focus of the camera is concentrated on the center, it naturally enlarges the picture within the outer perimeter of the screen without expanding the central area.

PIP (Picture In Picture)

Function to enable the simultaneous viewing of two pictures by displaying a small sub-frame within the main picture. The main picture may be viewed with multiple types of input source (Analog/Digital RGB, composite, S-Video, component), while the sub-frame is only available in composite, S-Video or component (480i).

PBP (Picture By Picture) ,Twin Picture

Function to assign two separate signals onto a single screen, thereby enabling the viewer to simultaneously watch different pictures on each half of the display.

PIP Swap Simultaneous Conversion Between Sub and Main Pictures.

Function to convert between the sub-frame and main picture being watched simultaneously.

PIP Sound Swap Simultaneous Conversion Between sub and Main Picture Audio

Function to convert between simultaneous audio streams from the sub-frame and main picture being viewed.

EQUALIZER

Function to control sound according to frequency. (100Hz, 300Hz, 1KHz, 3KHz, 10KHz)

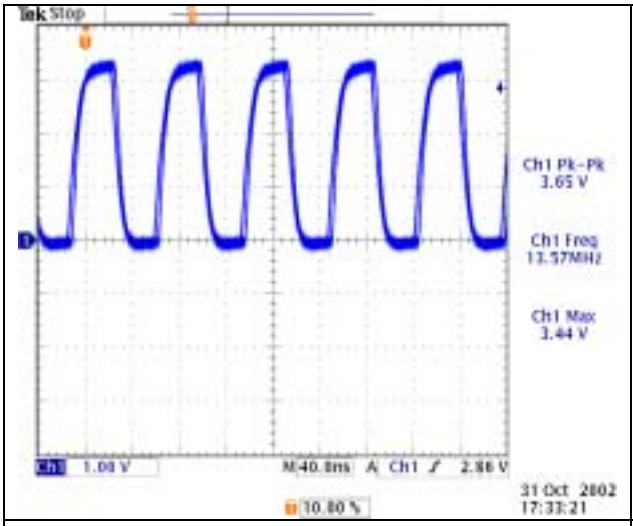
AVL (Auto Volume Leveler)

Function to automatically adjust varying sound levels from each individual broadcasting company to an appropriate volume, in case of watching a television connected to external equipment. This allows to viewer to enjoy a comfortable and stable sound level even when changing the channel.

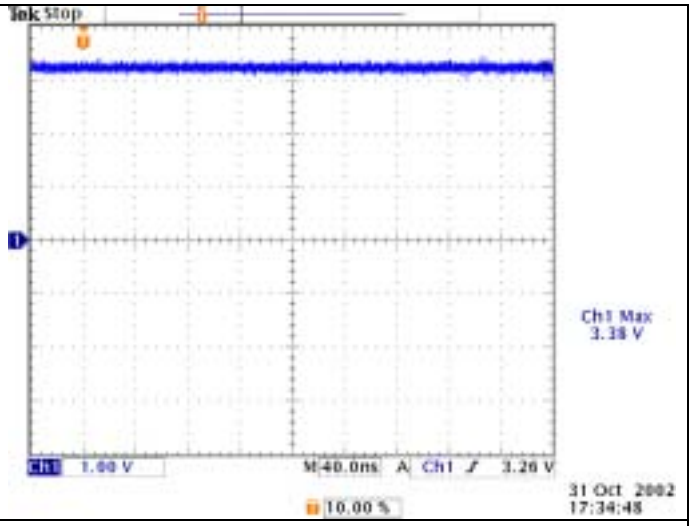
CIRCUIT OPERATION & WAVEFORM

VPC3230D (Video Processor)

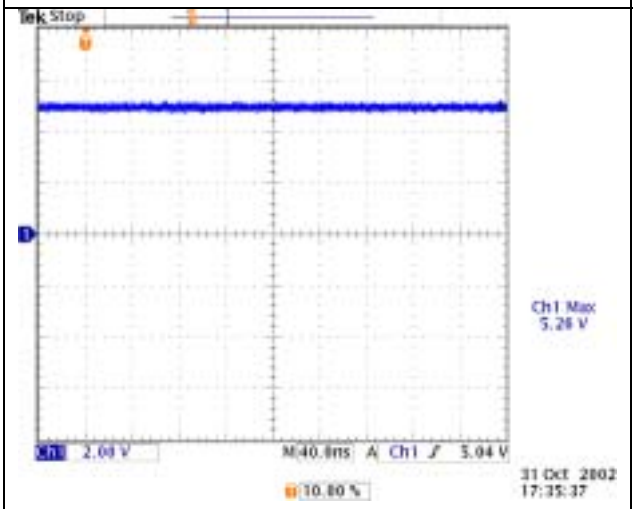
Converts analog pictures (including Composite, S-Video, Component (480i) or the like) to Y-UV digital pictures. Compatible with various TV formats of NTSC, PAL, SECAM, etc.



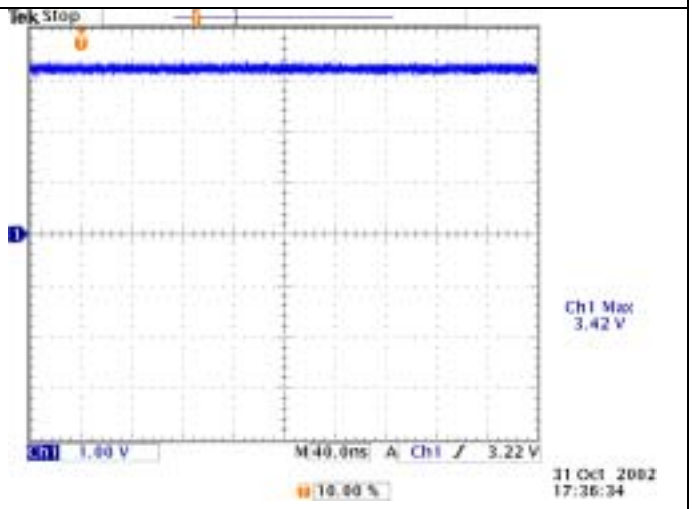
U41 (VPC323OD)_#28_S-LLC1



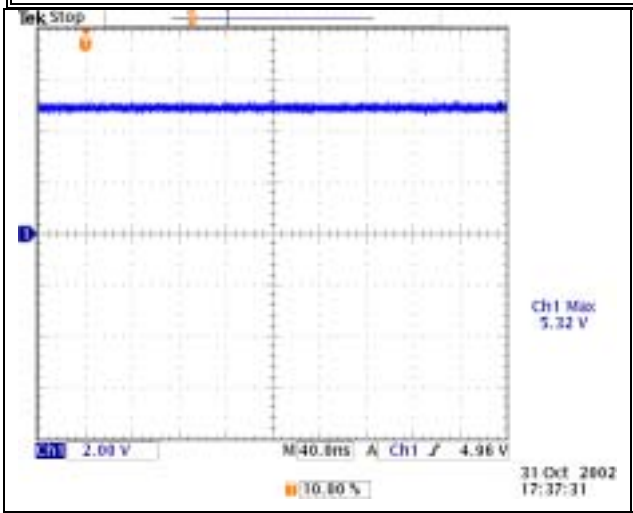
U42 (LM2937-3.3V)_#3_V3.3



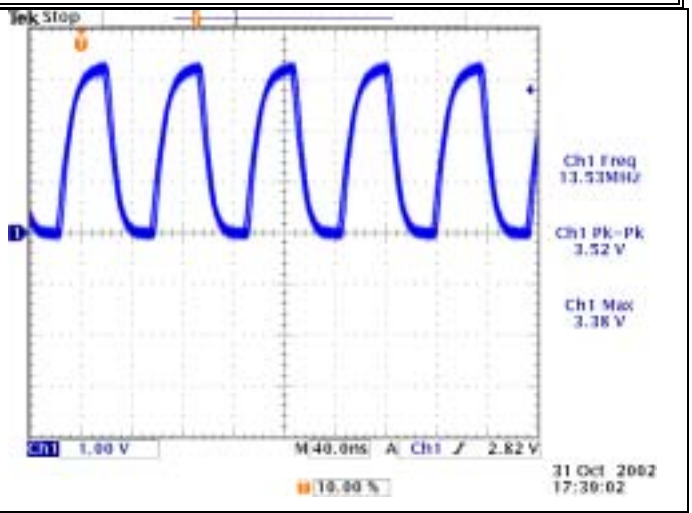
LC18 (STS104B)_#2_VAA3230



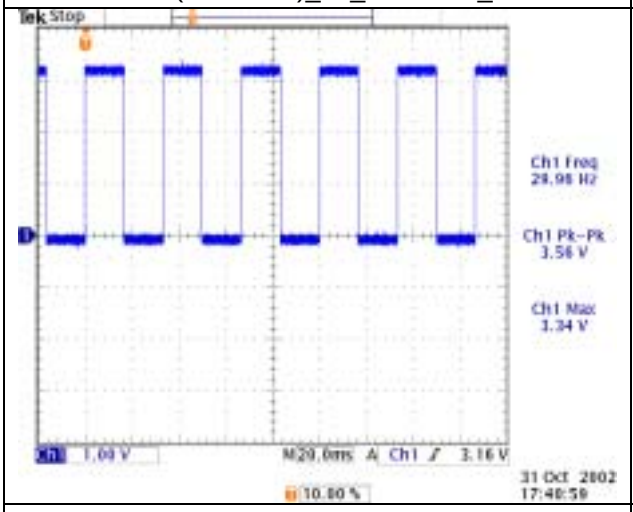
U40 (LM2937-3.3V)_#3_V3.3V-1



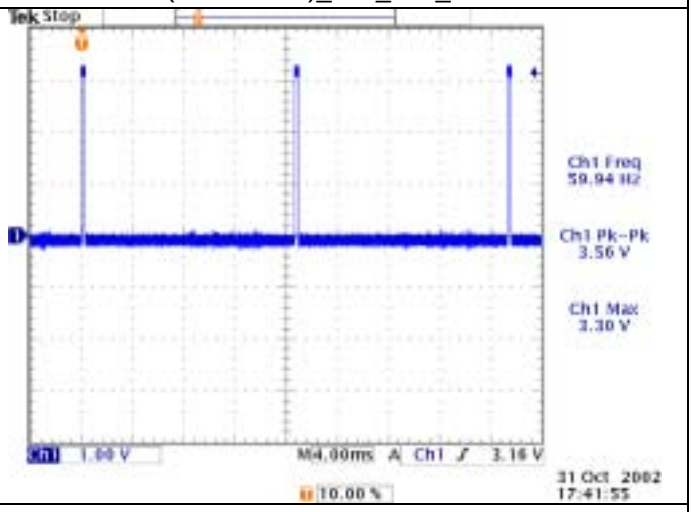
LC16 (STS104B)_#2_VAA3230_1



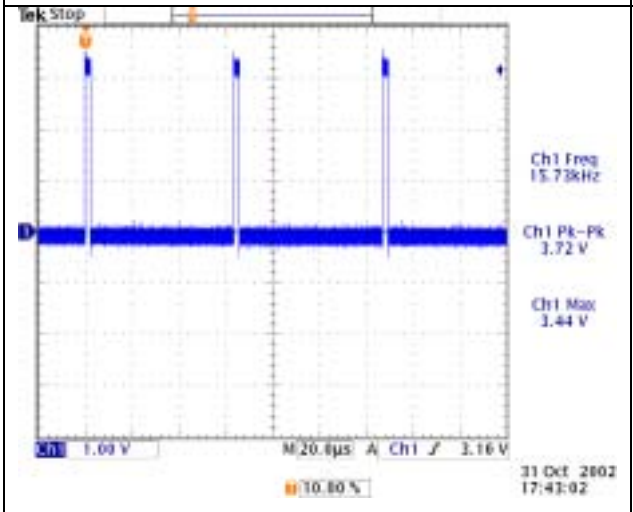
U41 (VPC3230D)_#28_VID_CLK



U41 (VPC3230D)_#53_INTLC



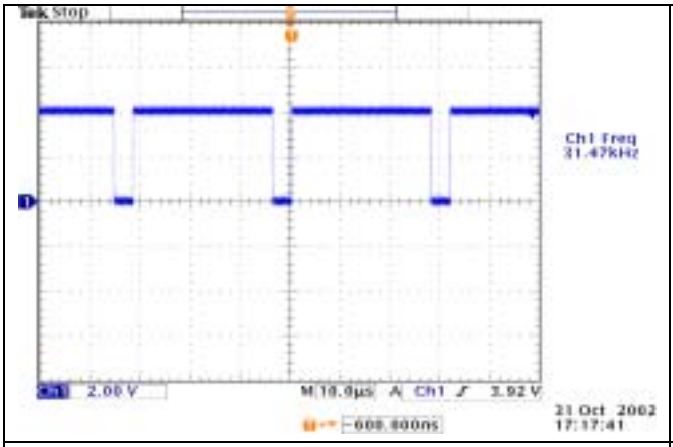
U41 (VPC3230D)_#57_VID-VS



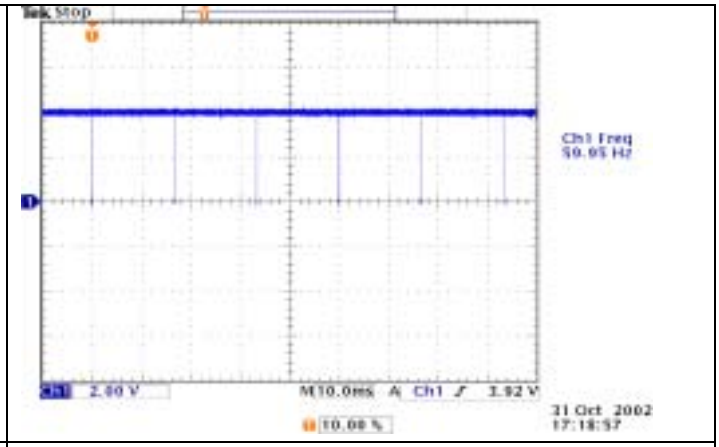
U41 (VPC3230D)_#56_VID-HS

AD9883 (A/D Converter)

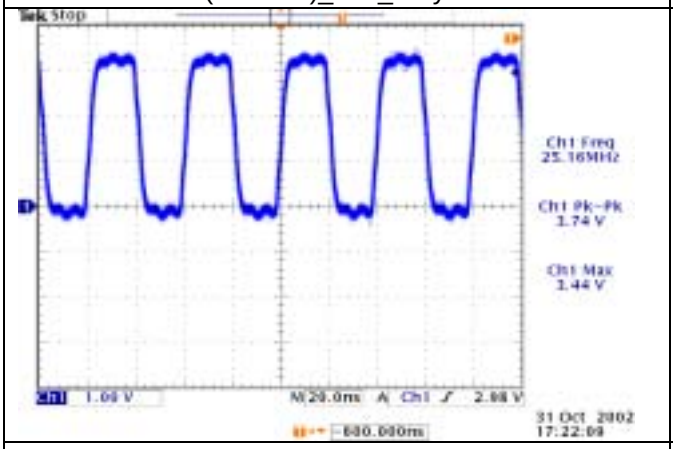
Converts an analog RGB signal to a process able digital signal. Converts a component signal **(480p,** 720p, 1080i) to a digital signal and transmits it to PW565 (Scaler).



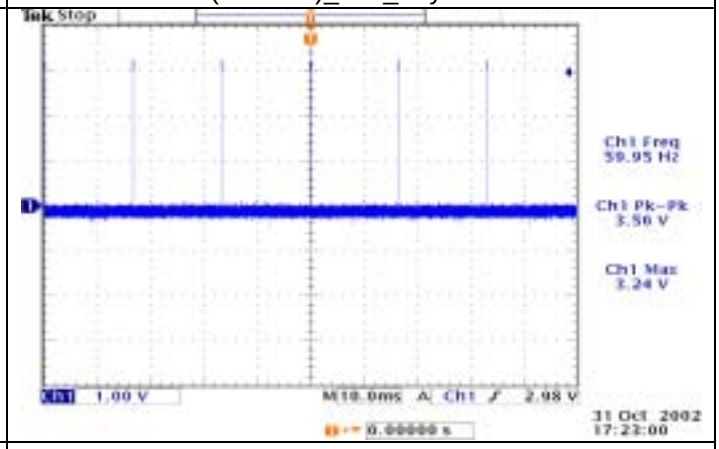
U2 (AD9883)_#30_ Hsync0



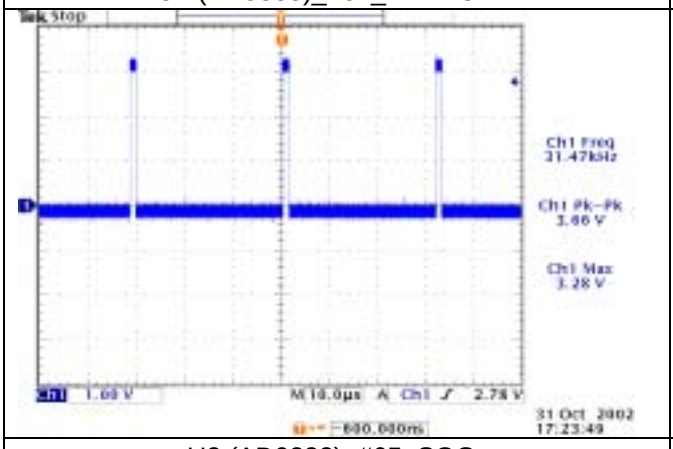
U2 (AD9883)_#31_Vsync0



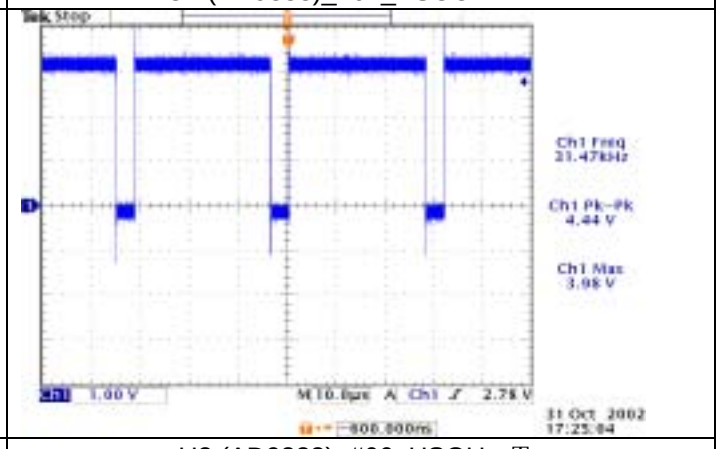
U2 (AD9883)_#67_DATACK



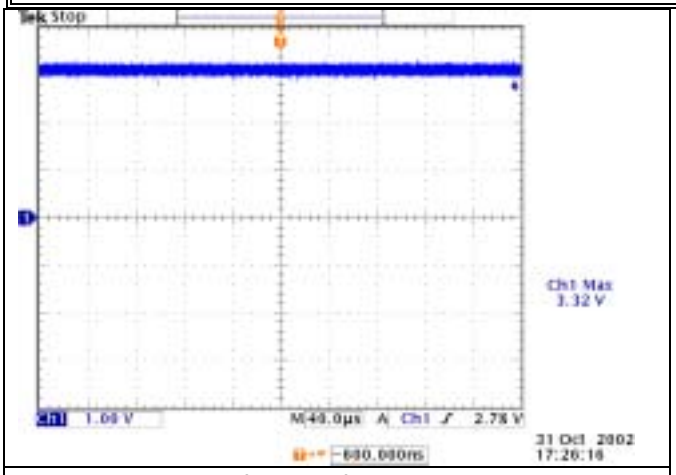
U2 (AD9883)_#64_VSOUT



U2 (AD9883)_#65_SOG



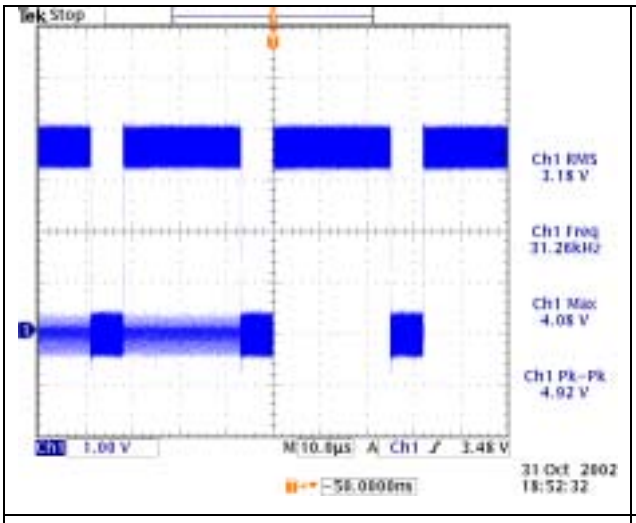
U2 (AD9883)_#66_HSOU T



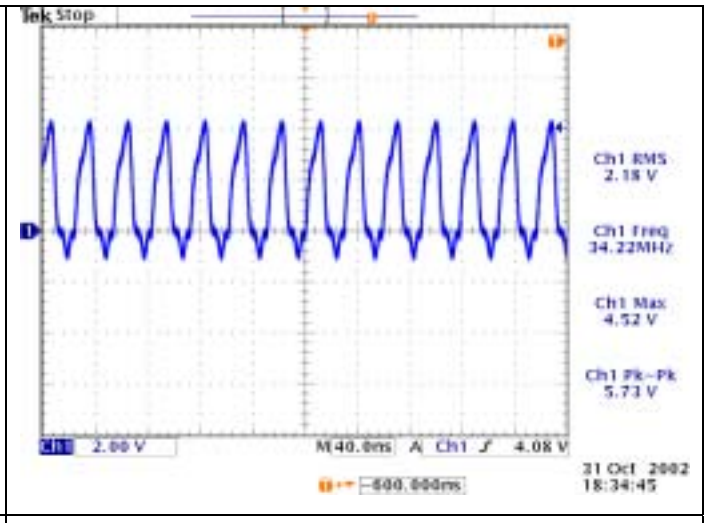
U1 (LM2937)_#3_ VO

PW565 (Scaler)

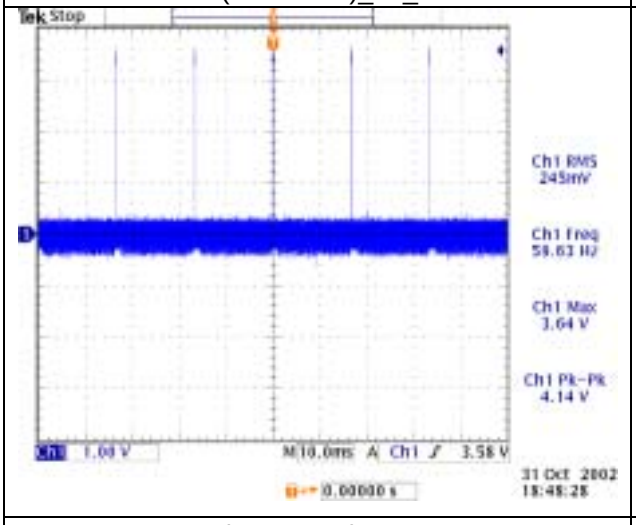
Receives, at the same time, a video signal from VPC3230, an Analog/Digital RGB signal and a Component signal, which are converted at AD9883 and THC63DV151, adjusted to a PDP display, and transmitted to a PDP module. In particular, it receives any PC signal input at various scanning rates and performs scaling to adjust to PDP resolution.



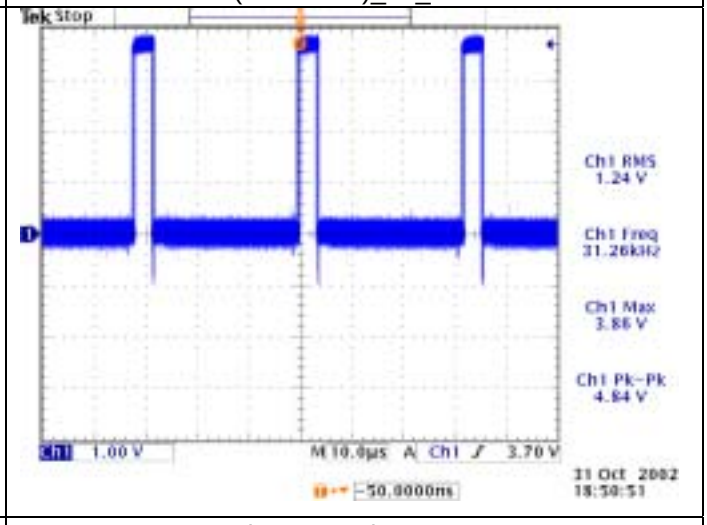
RP12 (R-ARRAY)_#1_DEN



RP12 (R-ARRAY)_#4_DCLK



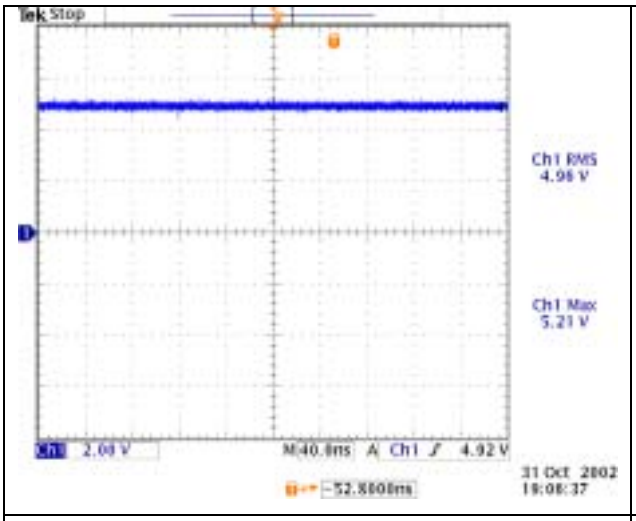
RP12 (R-ARRAY)_#3_DVS



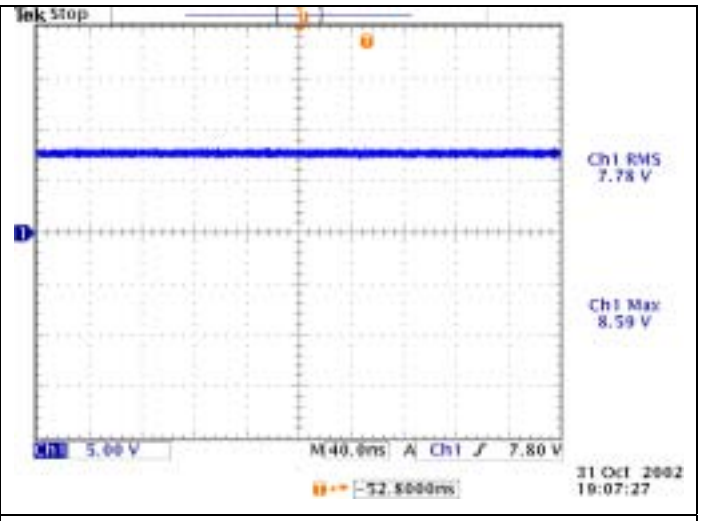
RP12 (R-ARRAY)_#2_DHS

MSP3450 (Sound Processor)

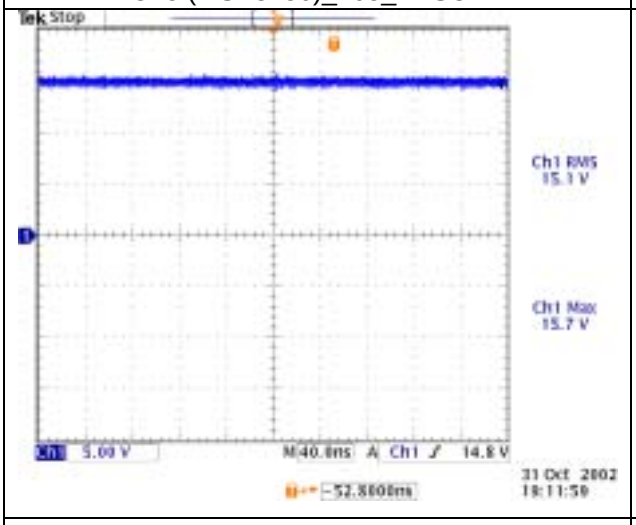
Receives and converts any Sound IF signal from a TV Tuner to a general audio signal (LCD TV).
Also, outputs the desired input signal out of many audio input signal options, and produces a woofer signal or Headphone signal as well as a general Speaker signal (LCD TV).



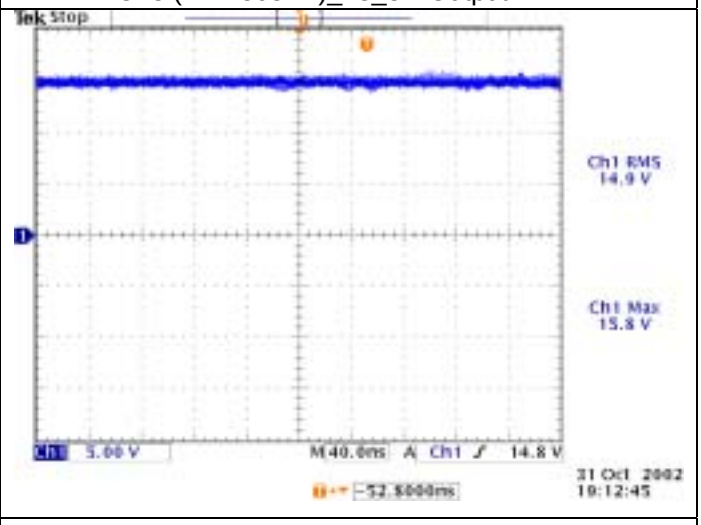
U45 (MSP3450)_#65_AVSUP



U43 (KIA7808AF)_#3_8V-Output

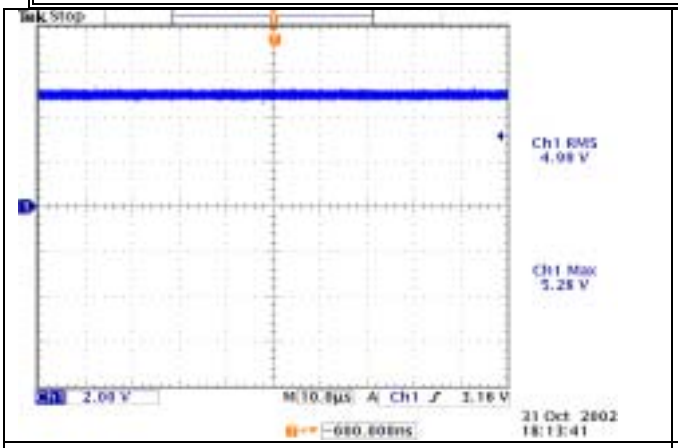


U45(MSP3450)_#36¡±_Audio R-Out

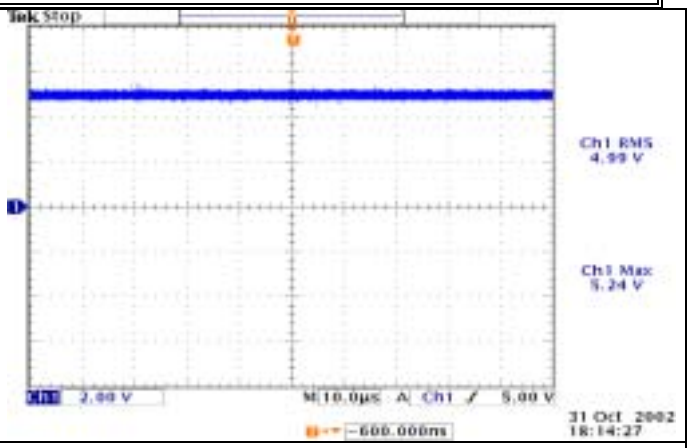


U45(MSP3450)_#36¡±_Audio L-Out

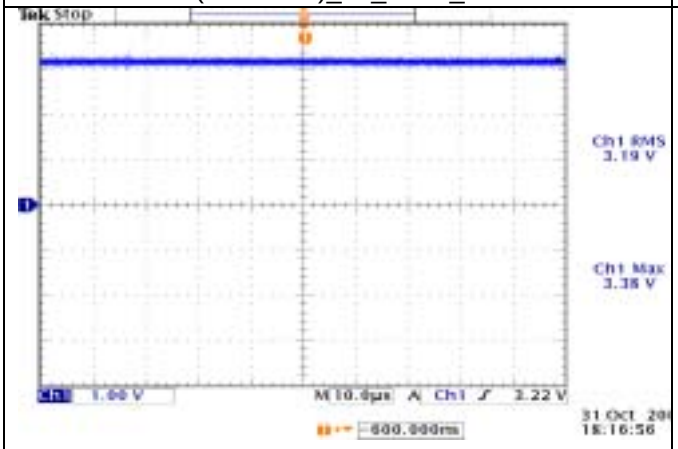
Power & MISC Waveform



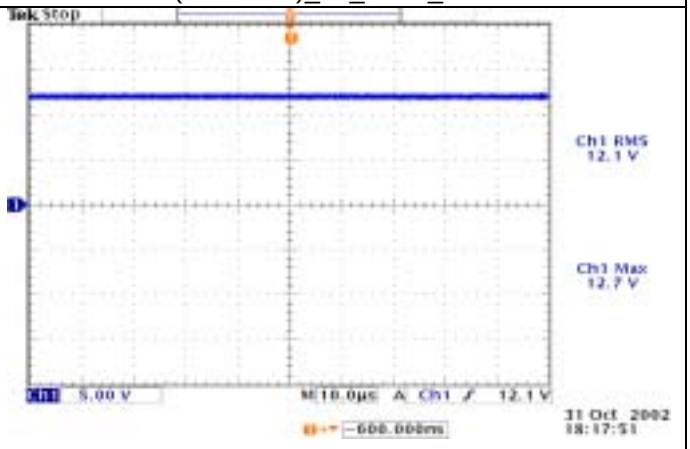
LC20 (STS104B)_#2_C344_5VST



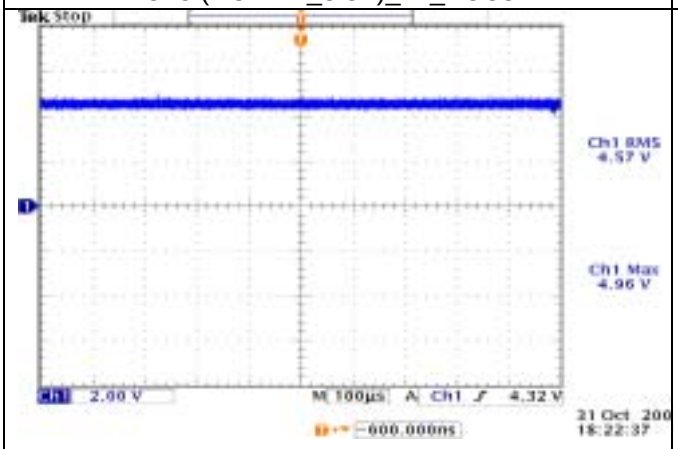
LC21 (STS104B)_#2_C353_5VDD



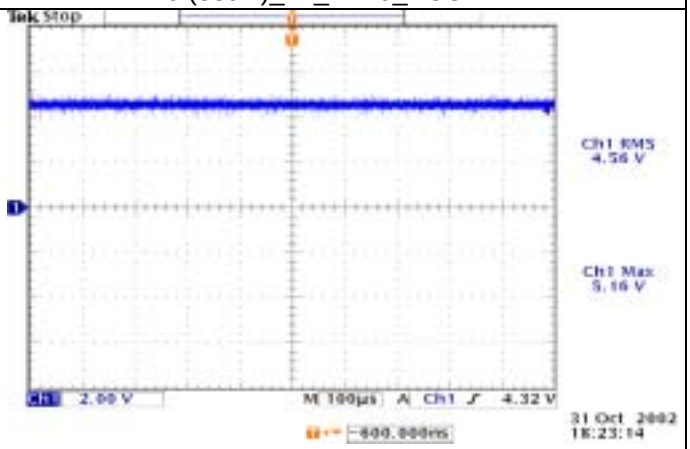
U15 (RC1117_3.3V)_#2_VCC3



L10 (33uH)_#2_R410_VCC12



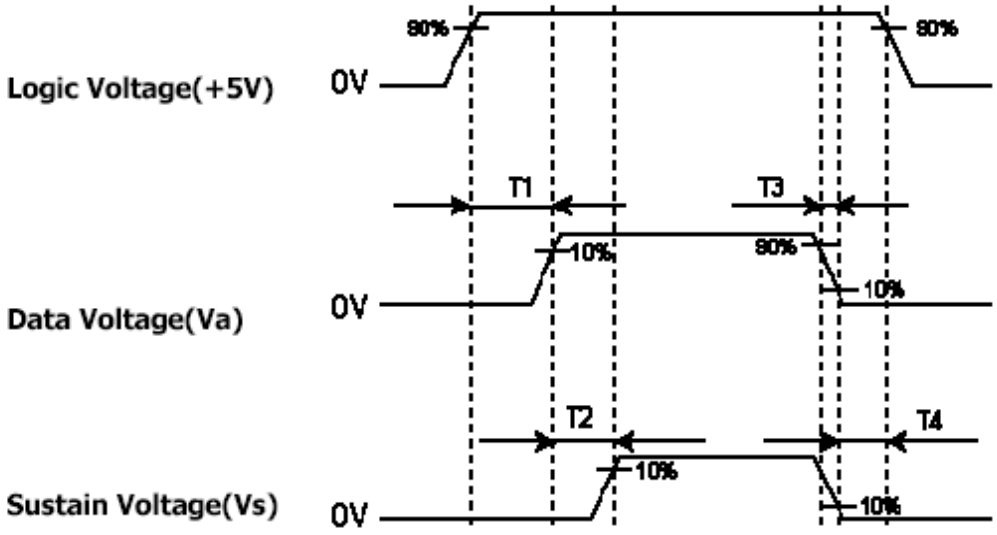
Q33 (MMBT3904)_¡±C¡±_RL_ON



Q30 (MMBT3904)_¡±C¡±_VAVS_ON

MODULE SUPPLY VOLTAGE SEQUENCE

[PDP42V5####]



Power On/Off sequence

Turn On Sequence : +5V → Va → Vs

Turn Off Sequence : Vs → Va → +5V

If power sequence does not meet to above sequence diagram, PDP drivers may have a permanent damage. Even through AC input of power supply is switched ON/OFF, above sequence should be kept.

T1 : Min 1.0 sec, Max 3.0 sec (From 90% of +5V voltage to 90% of Va voltage time)

T2 : Min 0 msec (From 90% of Va voltage to 90% of Vs voltage time)

T3 : Max 200 msec (From 90% of Va,Vs voltage to 10% of Va,Vs voltage time)

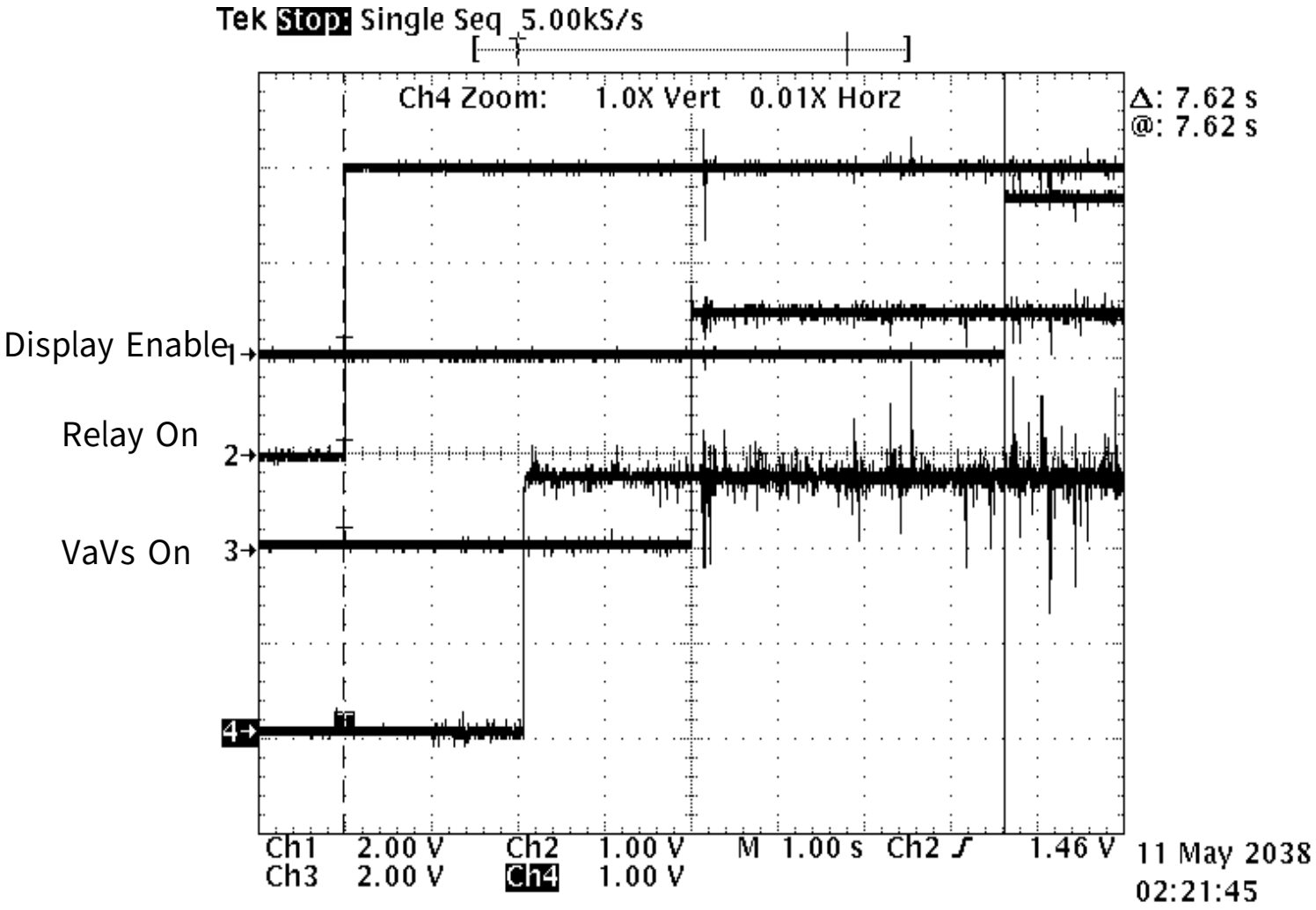
T4 : Min 20 msec (From 10% of Va,Vs voltage to 90% of +5V voltage time)

¡Ü Life Expectancy

The anticipated life-time is estimated more than 25,000 hours of continuous operations .

¡Ø Average life time is the time when the brightness level becomes half of its initial value.

VSC POWER SEQUENCE

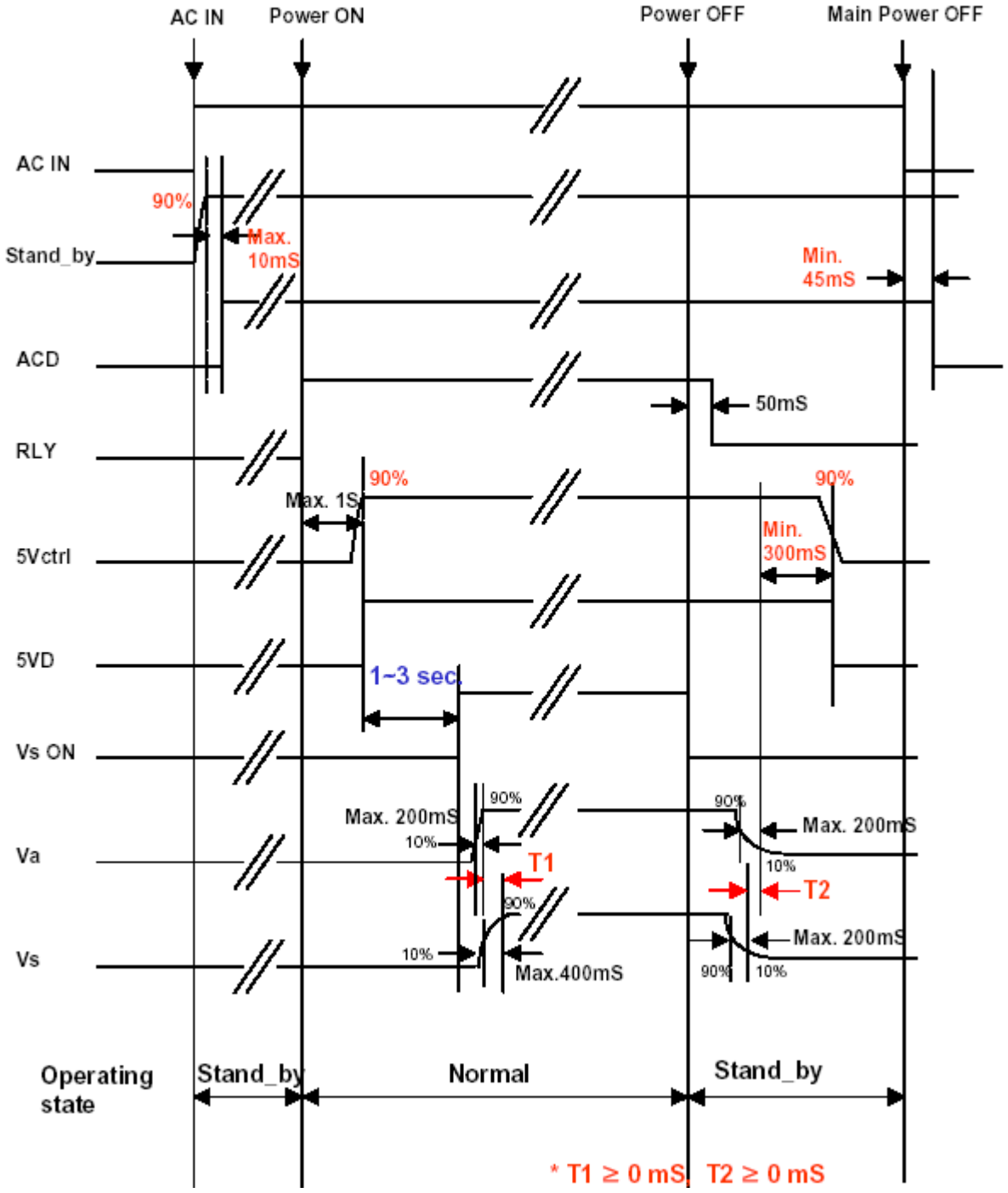


1. After Relay On
- 2. Continue 5Volt Monitoring – If there is no 5Volt more than 10 minutes, then
- power “Off”
- 3. Check if it is OK the 5Volt Mnt first. And then VaVs “On” after 3 seconds .
- 4. VaVs “On” --> waiting 3 seconds --> Display Enable “On”.

5. If 5Volt Mnt “Low” or AC-Det “Low”, immediately Display Enable “Off” and then VaVs “Off”, Relay “Off”.

PSU POWER SEQUENCE

[POWER DGK-420W]



VOLTAGE & W/B ADJUSTMENT

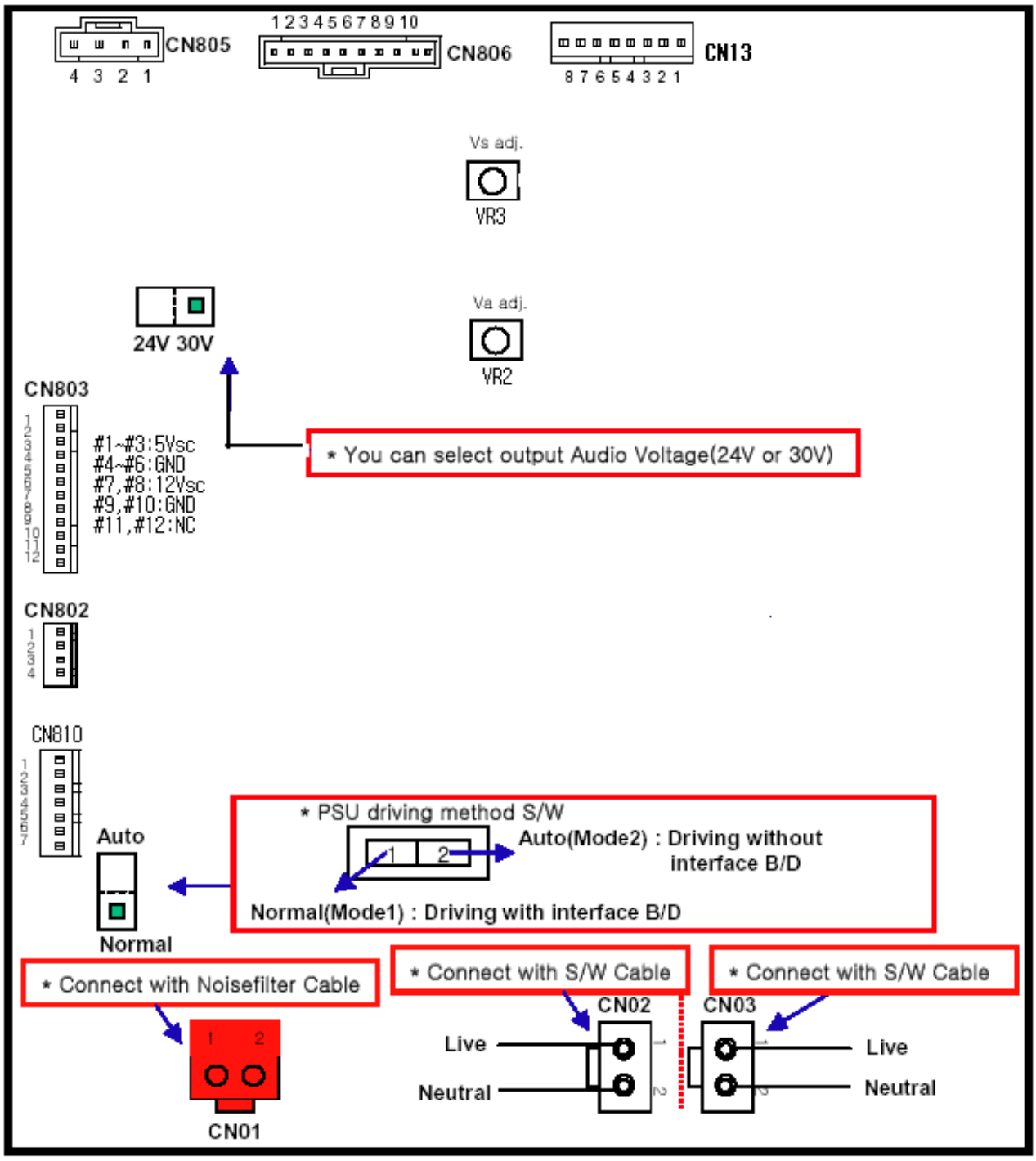
Power PCB Assy Voltage Adjustment

1-1-1. Va Adjustment (Address Voltage Adjustment)
(°¡) Connect pin 9,10 of CN806 to(+) jack of D.M.M
(³ª) After turning the VR2 (Va Adj),Voltage of D.M.M adjustment as same as Va voltage which on Label of panel right/bottom.(Deviation : ± 0.5V)

1-1-2. Vs Adjustment
(°¡) Connect pin 1~3 of CN806 to (+) jack of D.M.M
(³ª) After turning the VR3(Vs Adj),voltage of D.M.M adjustment as same as Vs voltage which indicated on Label of panel right/bottom.(Deviation : ± 0.5V)

Refer to Typical Voltage
1. Va : 65V
2. Vs : 190V

¡Ø Replace PDP Module or Power Board, adjust certainly Power PCB Ass'y Voltage



※ The color of CN01 is red.(The color of CN02, CN03 are natural.)

2. W/B adjustment

2-2. Color temperature (White Balance) adjustment

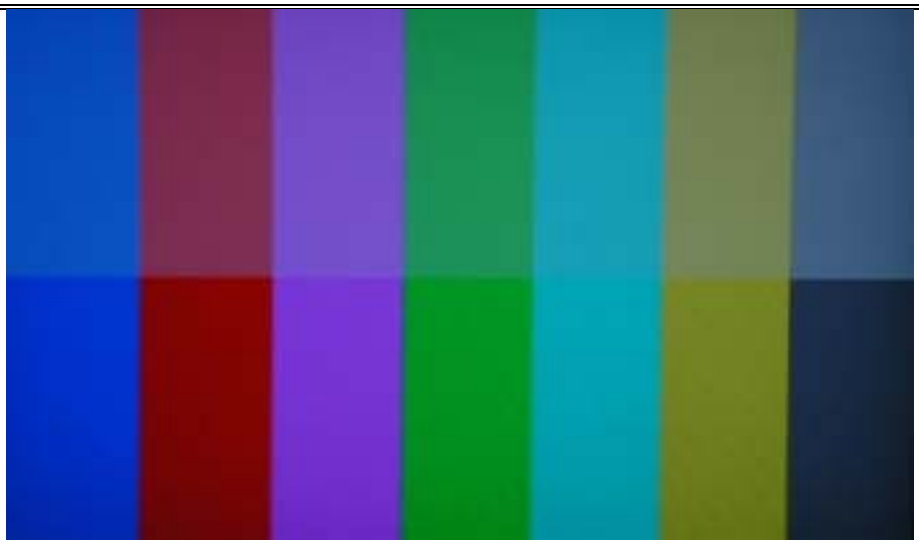
1) How to enter Factory mode for adjustment of White Balance

(1) PDP TV Power ¡°On¡± --> Input select key on Remote control.
(2) Choose composite first and then PDP TV Power ¡°Off¡±.
(3) PDP TV Power ¡°Off¡± and INFO on the R/C ==> ERASE ==> ENTER Key

2) For COMPOSITE adjustment (manual adjustment)

(1) Signal Generator supply the pattern of above picture. **(Timing ¢¡ 386, Pattem ¢¡ 10)**
(2) After movement to 2.color control on Factory Mode2, move to sub menu as choice of volume button .
(3) **After check the Brightness ¢¡ 50, Contrast ¢¡ 90, choose the Sub-Brightn ess.**
(4) Zero calibration¡¯s execution of CA-100 and the sensor should be closed to surface of PDP module.
(5) Adjustment as choice of volume button in order that it becomes **Y= 6.0 ¡¾0.5 cd/m©÷** on the sub brightness.
(6) Color coordinates¡¯ adjustment of Red Offset, Green Offset, Blue Offset using this kind of metho d.
Color coordination ¢¡ x= 0.281 ¡¾0.007, y=0.295 ¡¾0.007, Y= 6.0 ¡¾0.5 cd/m©÷
(Color temperature : 9500° K ¡¾ 500°K)
(7) The Sub-Brightness¡¯ readjustment when it is not satisfied with brightness after adjustment.

3) For DTV adjustment



(1) Signal Generator supply the pattern of above picture.
Timing ¢¡ 395, Pattem ¢¡ 251, Reverse (720P, 60Hz)
(2) After movement to 1.calibration on Factory Mode, move to sub menu as choice of volume button.
(3) After movement to 2. DTV Calibration, choose it with volume button.
(4) If Enter key, it starts the calibratio

4) For PC adjustment

(1) Signal Generator supply the pattern of above picture.
Timing ¢¡ 313, Pattem ¢¡ 609 (1024 x 768, 60Hz)
(2) After movement to 1.calibration on Factory Mode, move to sub menu as choice of volume button .
(3) After movement to 2. PC Calibration, choose it with volume button.
(4) If Enter key, it starts the calibration automatically

How to exit the Factory Mode
INFO ¢¡ LAST ¢¡ ERASE ¢¡ ENTER Key

5) Adjustment verification
Adjustment as volume ¡°0¡± and then 4 times of Enter key

SAFETY PRECAUTIONS
(MODULE USE AND CONSIDERATIONS IN SERVICING)

PDP Module is a display device to be divided into a Panel part and a Drive part. The Panel part consists of Electrodes, Phosphor, various dielectrics and gas, and the Drive part includes electronic circuitry and PCB. When using / handling this PDP Module, pay attention to the below warning and cautions.

⚠ Warning

Indicates a hazard that may lead to death or injury if the warning is ignored and the product is handled incorrectly.

⚠ Caution

Indicates a hazard that can lead to injury or damage to property if the caution is ignored and the product is handled incorrectly.

■. WARNING

(1) Do not supply a voltage higher than that specified to this product. This may damage the product and may cause a fire.

(2) Do not use this product in locations where the humidity is extremely high, where it may be splashed with water, or where flammable materials surround it.
Do not install or use the product in a location that does no satisfy the specified environmental conditions. This may damage the product and may cause a fire.

(3) If a foreign substance (such as water, metal, or liquid) gets inside the product, immediately turn off the power.
Continuing to use the product, it is may cause fire or electric shock.

(4) If the product emits smoke, and abnormal smell, or makes an abnormal sound, immediately turn off the power.
Continuing to use the product, it may cause fire or electric shock.

(5) Do not disconnect or connect the connector while power to the product is on. It takes some time for the voltage to drop to a sufficiently low level after the power has been turned off.
Confirm that the voltage has dropped to a safe level before disconnecting or connecting the connector.

(6) Do not pull out or insert the power cable from/to an outlet with wet hands. It may cause electric shock.

(7) Do not damage or modify the power cable. It may cause fire or electric shock.

(8) If the power cable is damaged, or if the connector is loose, do not use the product: otherwise, this can lead to fire or electric shock.

(9) If the power connector or the connector of the power cable becomes dirty or dusty, wipe it with a dry cloth. Otherwise, this can lead to fire.

(10) PDP Module uses a high voltage (Max.450V dc). Keep the cautions concerning electric shock and do not touch the Device circuitry when handling the PDP Unit. And because the capacitor of the Device circuitry may remain charged at the moment of Power OFF, standing by for 1 minute is required in order to touch the Device circuitry.

CAUTIONS

(1) Do not place this product in a location that is subject to heavy vibration, or on an unstable surface such as an inclined surface. The product may fall off or fall over, causing injuries.

(2) Before disconnecting cable from the product, be sure to turn off the power. Be sure to hold the connector when disconnecting cables. Pulling a cable with excessive force may cause the core of the cable to be exposed or break the cable, and this can lead to fire or electric shock.

(3) This product should be moved by two or more persons. If one person attempts to carry this product alone, he/she may be injured.

(4) This product contains glass. The glass may break, causing injuries, if shock, vibration, heat, or distortion is applied to the product.

(5) The temperature of the glass of the display may rise to 80°C or more depending on the conditions of use. If you touch the glass inadvertently, you may be burned.

(6) If glass surface of the display breaks or is scratched, do not touch the broken pieces or the scratches with bare hands. You may be injured.

(7) PDP Module requires to be handled with care not to be touched with metal or hard materials, and must not be stressed by heat or mechanical impact.

(8) There are some exposed components on the rear panel of this product. Touching these components may cause an electric shock.

(9) When moving the product, be sure to turn off the power and disconnect all the cables. While moving the product, watch your step. The product may be dropped or all, leading to injuries of electric shock.

(10) In order to protect static electricity due to C-MOS circuitry of the Drive part, wear a wrist band to protect static electricity when handling.

(11) If cleaning the Panel, wipe it with a soft cloth moistened with water or a neutral detergent and squeezed, being careful not to touch the connector part of the Panel. And don't use chemical materials like thinner or benzene.

(12) If this product is used as a display board to display a static image, "image sticking" occurs. This means that the luminance of areas of the display that remain lit for a long time drops compared with luminance of areas that are lit for a shorter time, causing uneven luminance across the display.
The degree to which this occurs is in proportion to the luminance at which the display is used. To prevent this phenomenon, therefore, avoid static images as much as possible and design your system so that it is used at a low luminance, by reducing signal level difference between bright area and less bright area through signal processing.

(13) Because PDP Module emits heat from the Glass Panel part and the Drive circuitry, the environmental temperature must not be over 40°C.
The temperature of the Glass Panel part is especially high owing to heat from internal Drive circuitry. And because the PDP Module is driven by high voltage, it must avoid conductive materials.

(14) If inserting components or circuit board in order to repair, be sure to fix a lead line to the connector before soldering.

(15) If inserting high-power resistor(metal-oxide film resistor or metal film resistor) in order to repair, insert it as 10mm away as from a board.

(16) During repairs, high voltage or high temperature components must be put away from a lead line.

(17) This is a Cold Chassis but you had better use a cold transformer for safety during repairs. If repairing electricity source part, you must use the cold transformer.

(18) Do not place an object on the glass surface of the display.
The glass may break or be scratched.

(19) This product may be damaged if it is subject to excessive stresses (such as excessive voltage, current, or temperature).
The absolute maximum ratings specify the limits of these stresses.

(20) The recommended operating conditions are conditions in which the normal operation of this product is guaranteed. All the rated values of the electrical specifications are guaranteed within these conditions. Always use the product within the range of the recommended operating conditions. Otherwise, the reliability of the product may be degraded.

(21) This product has a glass display surface. Design your system so that excessive shock and load are not applied to the glass. Exercise care that the vent at the corner of the glass panel is not damaged.
If the glass panel or vent is damaged, the product is inoperable.

(22) Do not cover or wrap the product with a cloth or other covering while power is supplied to the product.

(23) Before turning on power to the product, check the wiring of the product and confirm that the supply voltage is within the rated voltage range. If the wiring is wrong or if a voltage outside the rated range is applied, the product may malfunction or be damaged.

(24) Do not store this product in a location where temperature and humidity are high. This may cause the product to malfunction. Because this product uses a discharge phenomenon, it may take time to light (operation may be delayed) when the product is used after it has been stored for a long time. In this case, it is recommended to light all cells for about 2 hours (aging).

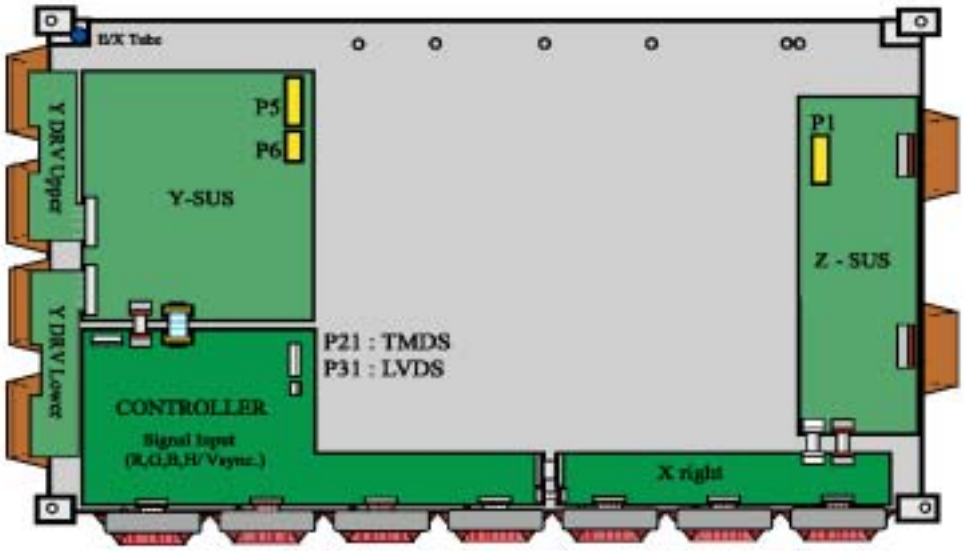
(25) This product is made from various materials such as glass, metal, and plastic. When discarding it, be sure to contact a professional waste disposal operator.

(26) If faults occur due to arbitrary modification or disassembly, Erae Electronics is not responsible for function, quality or other items.

(27) Use of the product with a combination of parameters, conditions, or logic not specified in the specifications of this product is not guaranteed. If intending to use the product in such a way, be sure to consult Erae Electronics in advance.

(28) Within the warranty period, general faults that occur due to defects in components such as ICs will be rectified by Erae Electronics without charge. However, IMAGE STICKING due to misapplying the above (12) provision is not included in the warranty. Repairs due to the other faults may be charged for depending on responsibility for the faults.

¥ . Formation and Specification of Module



External Cable Connection

NO	Connector	Input Signal
1	P1[Z SUS B/D]	5V, Va, Vs
2	P5[Y SUS B/D]	5V, Vs
3	P6[Y SUS B/D]	5V
4	P21, P31[CTRL B/D]	Video Signal

NO	Part No.		Description
1	6871QCH025A	PWB(PCB) ASSY	TMDS CTRL B/D ASSY
2	6871QCH029A	PWB(PCB) ASSY	LVDS CTRL B/D ASSY
3	6871QDH051A	PWB(PCB) ASSY	Y DRV UPPER B/D ASSY
4	6871QDH052A	PWB(PCB) ASSY	Y DRV LOWER B/D ASSY
5	6871QRH034A	PWB(PCB) ASSY	X RIGHT B/D ASSY
6	6871QYH027A	PWB(PCB) ASSY	Y SUS B/D ASSY
7	6871QZH030A	PWB(PCB) ASSY	Z SUS B/D ASSY

TROUBLE SHOOTING

1. Checking for no Picture

A screen doesn if display at all and condition of black pattern or power off.

(1) Check whether the CTRL B/D LED(D1~D4) is turned on or not.
(2) Check the power and signal cable of CTRL B/D.
(3) X B/D, Y B/D, Z B/D is well plugged in.
(4) Check the connection of X B/D, Y B/D and Z B/D to CTRL B/D.
(5) Measure the output wave of X, Y, Z B/D with oscilloscope(more than 200MHz) and find the trouble of B/D by comparing the output wave with below figure.
- Measure Point fo Y B/D : TP (Connector P4 80 pin)
- Measure Point fo Z B/D : Connection part of panel (SUS_OUT)
- Measure Point fo X B/D : L1(RIGHT), L2(LEFT BOTTOM)

(6) Check the SCAN(Y side) IC
(7) Check the DATA(X side) COF IC
(8) Replace the CTRL B/D.

2. Hitch Diagnosis Following Display Condition

2-1. 4/7 or 3/7 of the screen doesn't be shown

(1) Confirm the power connector of X B/D is well plugged in which is correspond to not showing screen.

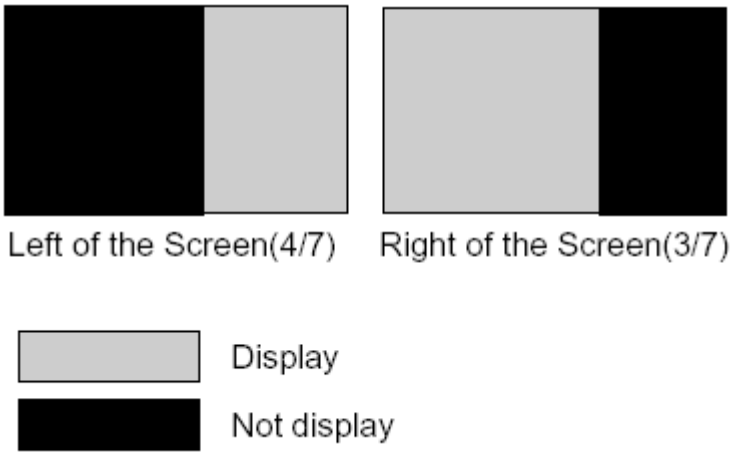
(2) Confirm the connector that is connected between CTRL B/D and X B/D correspond to not showing part.

(3) Replace relevant X B/D.

Relationship between screen and X B/D

Display	X B/D
Left of the Screen 4/7	Right X B/D
Right of the Screen 3/7	Left X B/D

¡Ø Screen Display Form



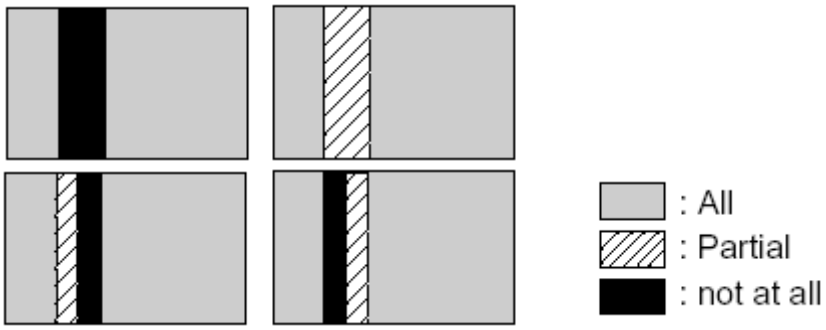
2-2. The screen doesn't be shown as Data COF

(Include not be shown part of Data COF quantity or a part)

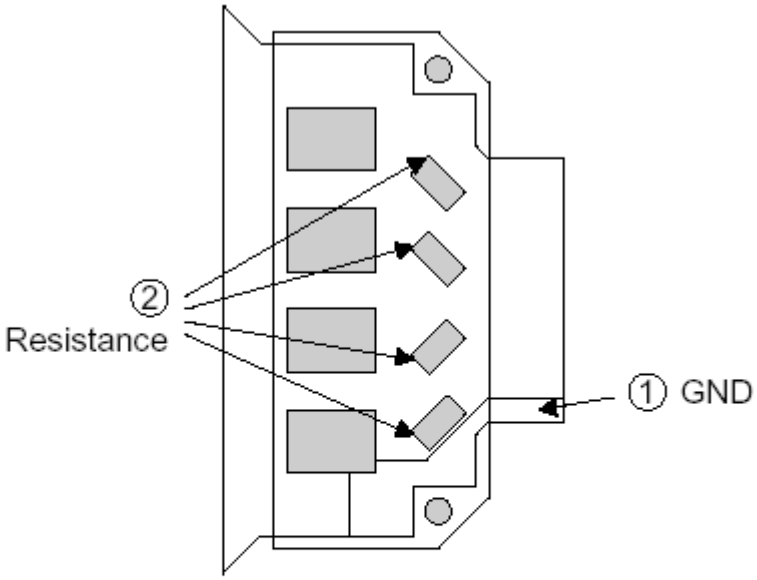
(1) The problem between Data COF and X B/D is more possible that the screen is not be shown as data COF.
(2) Confirm the connector of Data COF is well connected to X B/D. Correspond to the part that screen is not showing
(3) Confirm whether the Data COF is failed and replace X B/D

※ Example of the screen display form

(Anything of the 7 Data COF can be shown beside below pictures)



※ How to examine Data COF IC



- ① ANODE Pattern (GND)
  ② CATHOD Pattern and examine the Diode to the pure or reverse direction.
- Measure the third resistance value

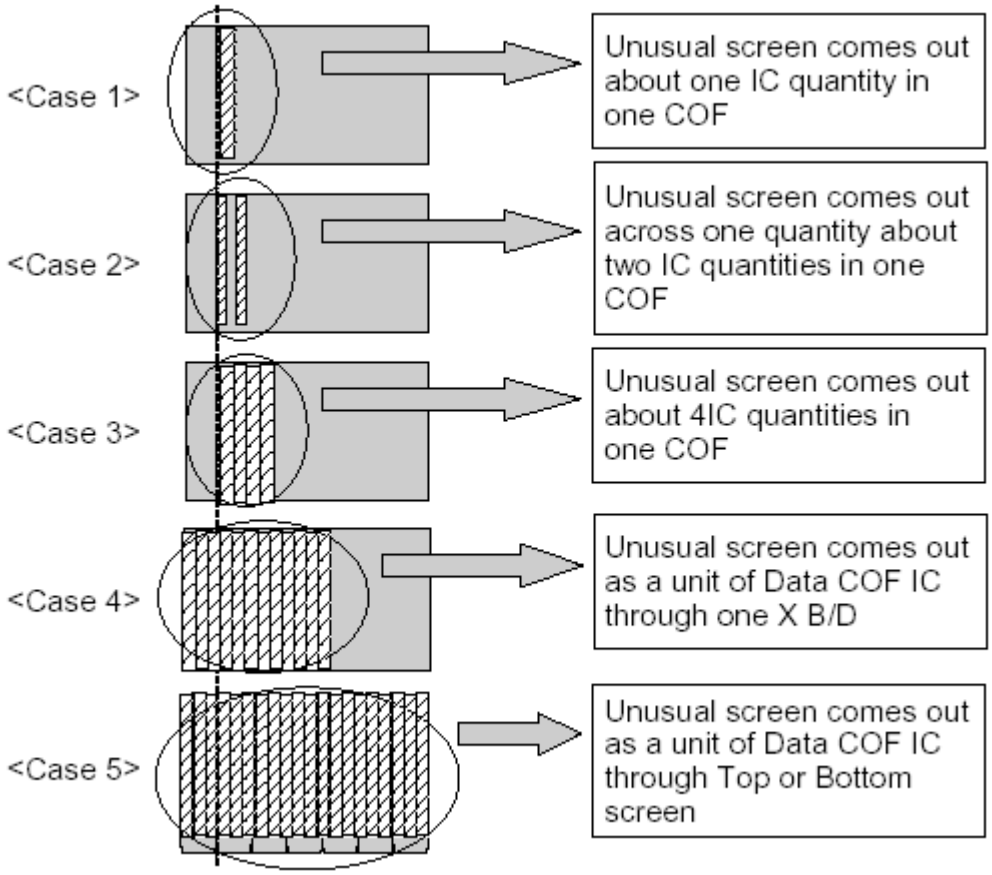
2-3. It Generates Unusual Pattern of Data COF IC unit

(1) In case of generating unusual pattern of Data COF IC unit as below picture, there is problem in the check that is input into Data COF IC

(2) In case of <case 1, 2, 3>
- confirm the connection of Data COF connector
- replace the relevant X B/D

(3) In case of <case 4, 5>
- confirm the connector that is connected from CTRL to X B/D
- Replace relevant XB/D or CTRL B/D

※ Screen Display Form



2-4. Regular Stripe is Generated about the Quantity of one Data COF IC or more

(1) In case of generating regular stripe about the quantity of one Data COF IC, there is problem at the output of outputflatworm of X B/D
In case of generating regular stripe about the quantity of two Data COF IC, that means the data which is conveyed from CTRL B/D doesn't conveyed well.

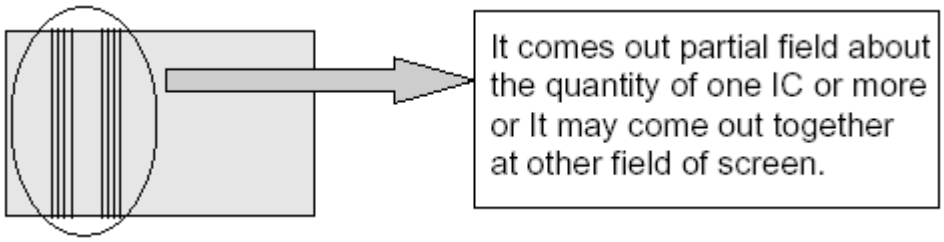
(2) Confirm the XB/D connection connector plugged in well.
Correspond to unusual screen.

(3) Replace relevant XB/D or CTRL B/D.

※ Relationship between screen and X B/D

Display	X B/D
Left Bottom of the Screen 4/7	Right X B/D
Right Bottom of the Screen 3/7	Left X B/D

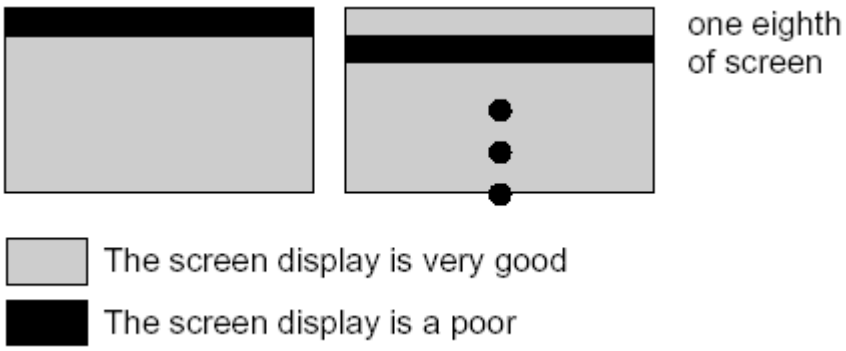
※ **Screen Display Form**



2-5. The screen display has a problem for Scan FFC.

(1) It's may be a problem between Scan FFC and Y B/D.
(2) Check the connection of Y B/D and Scan COF.
(3) If the Scan IC is failed, replace the Y DRV B/D.

. **Screen Display Form**



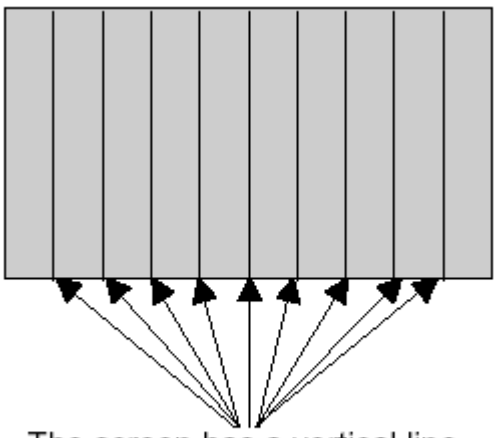
※ **Check a method of SCAN IC**

Change the Vpp Pin into ANODE and GND Pin into CATHOD
and then test the Diode with forward or reverse direction.

2-6. The screen has a vertical line with regular gap.
(A vertical stripe flash at especial color)

(1) This is a problem about control B/D.
(2) Replace Control B/D.

※ Screen Display Form



The screen has a vertical line
with regular gap

2-7. A data copy is happened into vertical direction

(1) In this case, it's due to incorrect marking of scan wave.
(2) Replace a Y DRV B/D or Y SUS B/D.

※ Screen Display Form


<Display Pattern>


<Case 1 : Entire Copy>


<Case 2 : Top Copy>


<Case 3 : Bottom Copy>

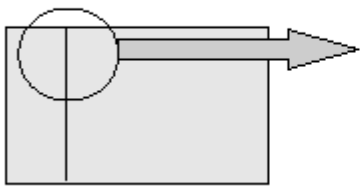

<Case 4 : Entire Copy>

2-8. The screen has one or several vertical line

(1) In this case, It isn't a problem about controller B/D or X B/D.
(2) It may cause followings.
- It's out of order a panel
- Open or short of DATA COF FPC attached panel
- It's out of order a DATA COF attached panel

(3) Replace Module.

※ Screen Display Form



It may show several vertical lines in a quarter or other division part of screen including left case.

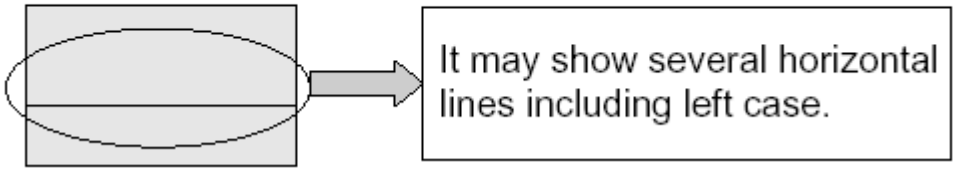
2- 9. The screen has one or several horizontal line

(1) In this case, it isn't a problem about controller B/D or X B/D.

(2) It may cause followings.
- It's out of order a panel
- Open or short of SCAN FPC attached panel
- It's out of order a SCAN IC attached panel

(3) Replace Y DRV B/D

※ Screen Display Form

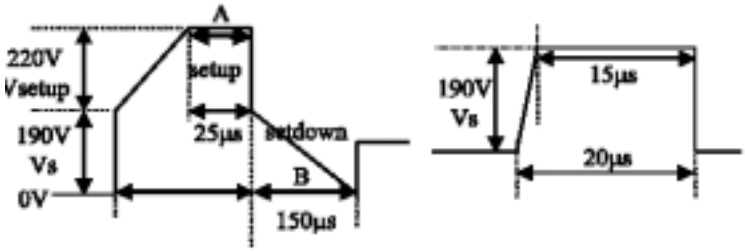


2-10. The screen displays input signal pattern but the brightness is dark

(1) In this case, Z B/D operation isn't complete.
(2) Check the power cord of Z B/D.
(3) Check the connector of Z B/D and Controller B/D.
(4) Replace the Controller B/D or Z B/D.

2-11. The screen displays other color partially on full white screen or happens discharge partially on full black screen.

(1) Check the declination of Y B/D set up, set down wave.
(2) Check the declination of Z B/D ¢«ramp wave.
(3) Measure each output wave with oscilloscope(more than 200MHz) and compare the data with below figure data.
Adjust the Y B/D set up(Test-up:B/C[¥s/¥s])/setdown(Testdown: D[¥s]) and Z B/D ramp(Tramp:F/G[¥s/¥s]) declination by changing VR1/VR2/VR3.
- Measuring Point of Y B/D : P4 (Connector P4 36 pin)
- Measuring Point of Z B/D : B37 (SUS_OUT)



Y Output Voltage Wavefrom Z RAMP Voltage Wavefrom

2-12. A center of screen is darker than a edge of screen at full white pattern.

(1) In this case, it's a problem about Z B/D ramp wave.
(2) Check the connection cable of Z B/D and CTRL B/D.

(3) Replace the Z B/D.

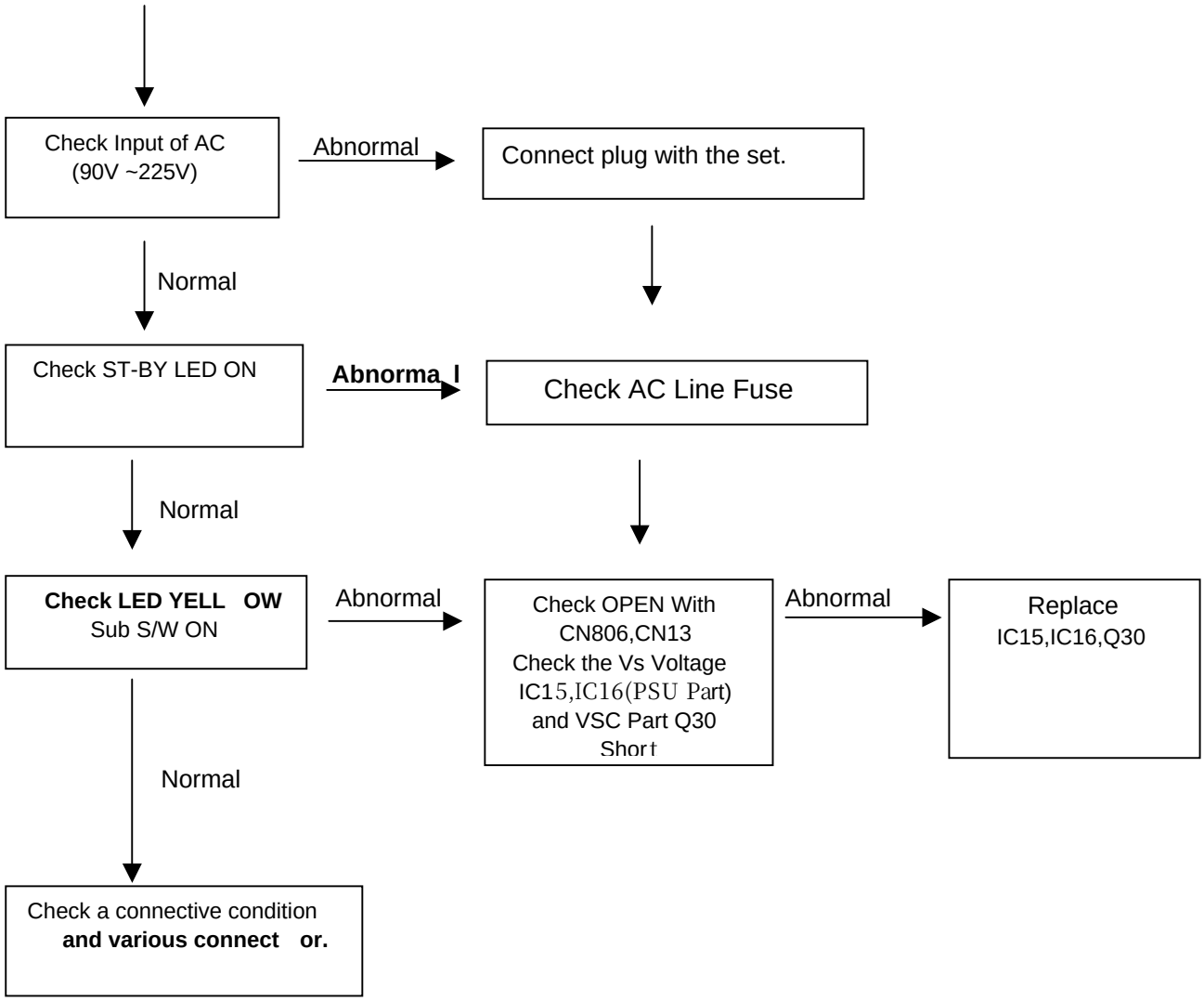
※ Screen Display Form

2-13. It doesn't display a specified brightness at specified color

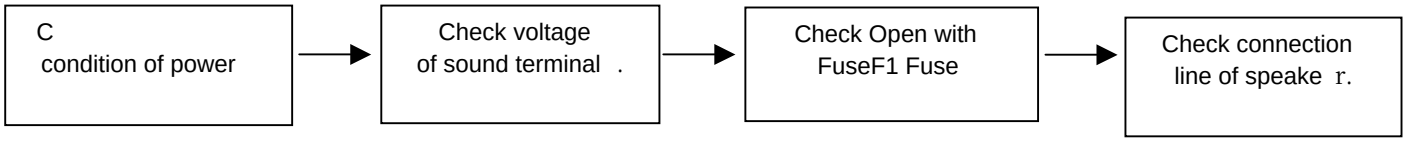
(1) Check the connector of CTRL B/D input signal.
(2) Replace the CTRL B/D.

3-1. No Power

Nothing output of image.

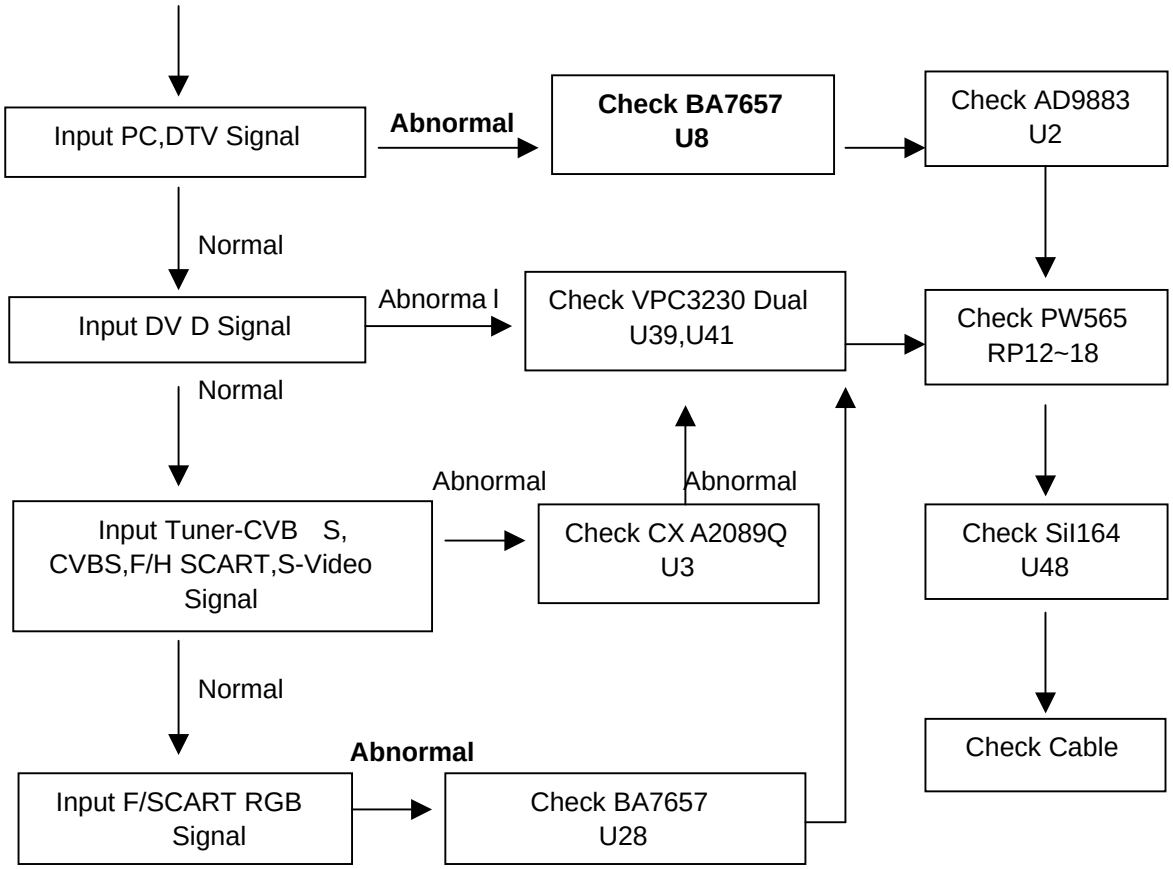


3-2. No Sound



3-3. No Video

Abnormal Picture



3-4. No Sound

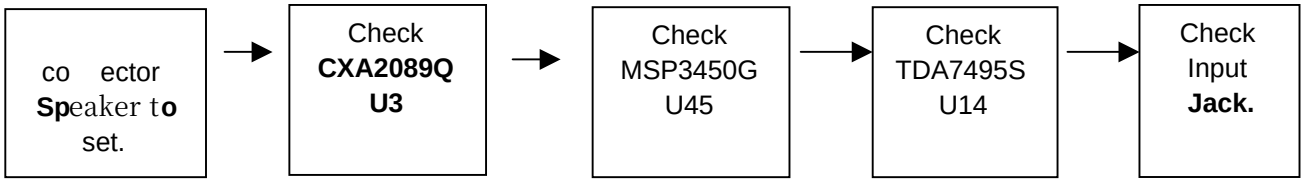


IMAGE STICKING CHARACTERISTICS

1) Image Sticking

The fluorescent substance used in the plasma module loses its brightness with the lapse of lighting time. This deterioration in brightness apprears to be a difference in brightness in relation to the surroundings, and cornes to be recognized as image sticking.

In other words, the image sticking is defined as follows: when the same pattern(of the fixed display)is displayed for a long times, a difference in brightness is caused around the lighting area and non-lighting area due to deterioration in the fluorescent substance.
When the present pattern is changed over to another one, the boundary comes to be seen between the lighting area and non-lighting area due to difference in brightness in the pattern shown shorty before changeover. If this conditions is accumulated, the boundary or image sticking comes to be seen with the naked eyes.

2) Secular change in brightness
The life of brightness, defined as the reduction to half the initial level, is more than 25 thousand hours on average.
Conditions: All white (100% white) input at an ambient temperature of 25℃.
However, this lifetime is not a guarantee value for life and brightness. It should be recognized simply as the data for refernce.

3) Warrenty
Image sticking and faults in brightness and picture elements are excluded from the warranty objects.

4) Cause of deterioration in brightness
A major possible cause of deterioration in brightness is damage in the fluorescent substance due to impact caused by ions generated at the time of plasma discharges.

5) Practical value for Image sticking
The relationship between intergrated lighting time and brightness in this plasma module is described in the attached material. In particular, the deterioration in brightness tends to be accelerated up to 100 hours in the initial period. In the initial period, the fixed display of patterns particularly tends to cause image sticking. The practical value for image sticking is difficult in concrete numerals. As described below, you are advised to take proper measures to make the occurrence of image sticking as slow possible.

6) Proposed measures taken to relieve image sticking
So long as there is the reduction of brightness in the fluorescent substance, it is impossible to the avoid the occurrence of image sticking .Therefore, to relieve image sticking ,we offer you a method of entering an image input that may ensure reluctance to the generation of the difference in brightness reduction among the displayed dots.
The images from TV broadcasting involve a high rate of motion picture displays. Therefore, there is less change of being a cause of difference in brightness reduction among the cells. Even when the fixed patterns are displayed, they generally last for a few minutes. Since the same pattern is less liable to be displayed, there is almost no influence toward image sticking.

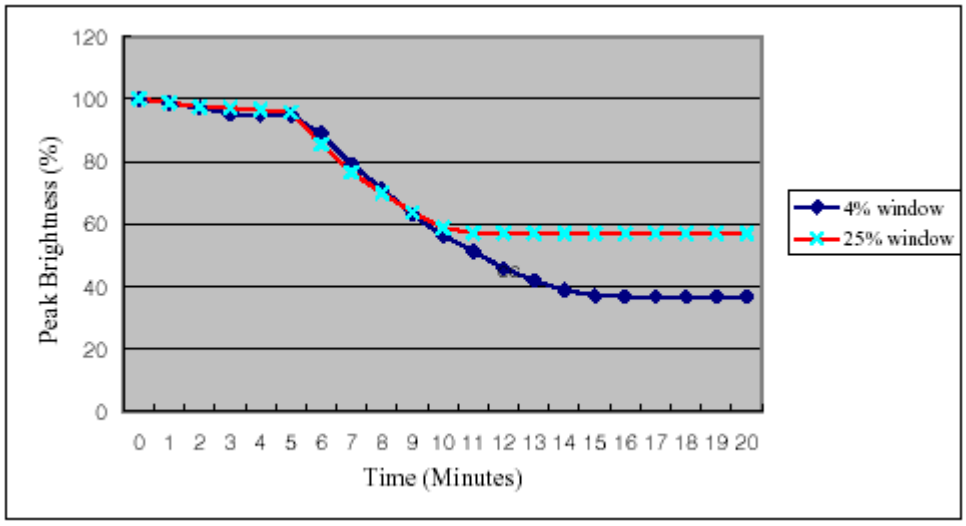
If the fixed patterns tend to be displayed for a long time, however, there occurs a substantial imbalance between the lighting and non-lighting areas, this causing a difference in brightness as a result. In this document , we offer you some proposals of installation, paying attentions to the two points: the reduction of difference of brightness achieved by intergrated lighting time leveling and the method of edge smearing to make image sticking hard to be discerned.
The result from these proposals can, however, greatly depend on the contents of images and operating environment.

Therefore, we consider that it is essential to take the suitable measures in consideration of the customer's operating environment.
Example of Poposal 1: The display position is moved while the fixed display pattern is changed over, or it is scrolled during the display.
Example of Proposal 2: If possible, a pattern of complementary color is incorporated (for intergrated time leveling).
Example of Proposal 3: The fixed pattern and the motion picture display are reciprocally exchanged, in

order to minimize display period of the fixed pattern.
Example of Proposal 4: During operation, the brightness of screen is suppressed as low as possible.
For the display patterns, characters are indicated not on the black ground (non-picture area) but on the colored ground (mixture of R, G,B recommended).

ISM Mode(Image Sticking Minimization Mode)

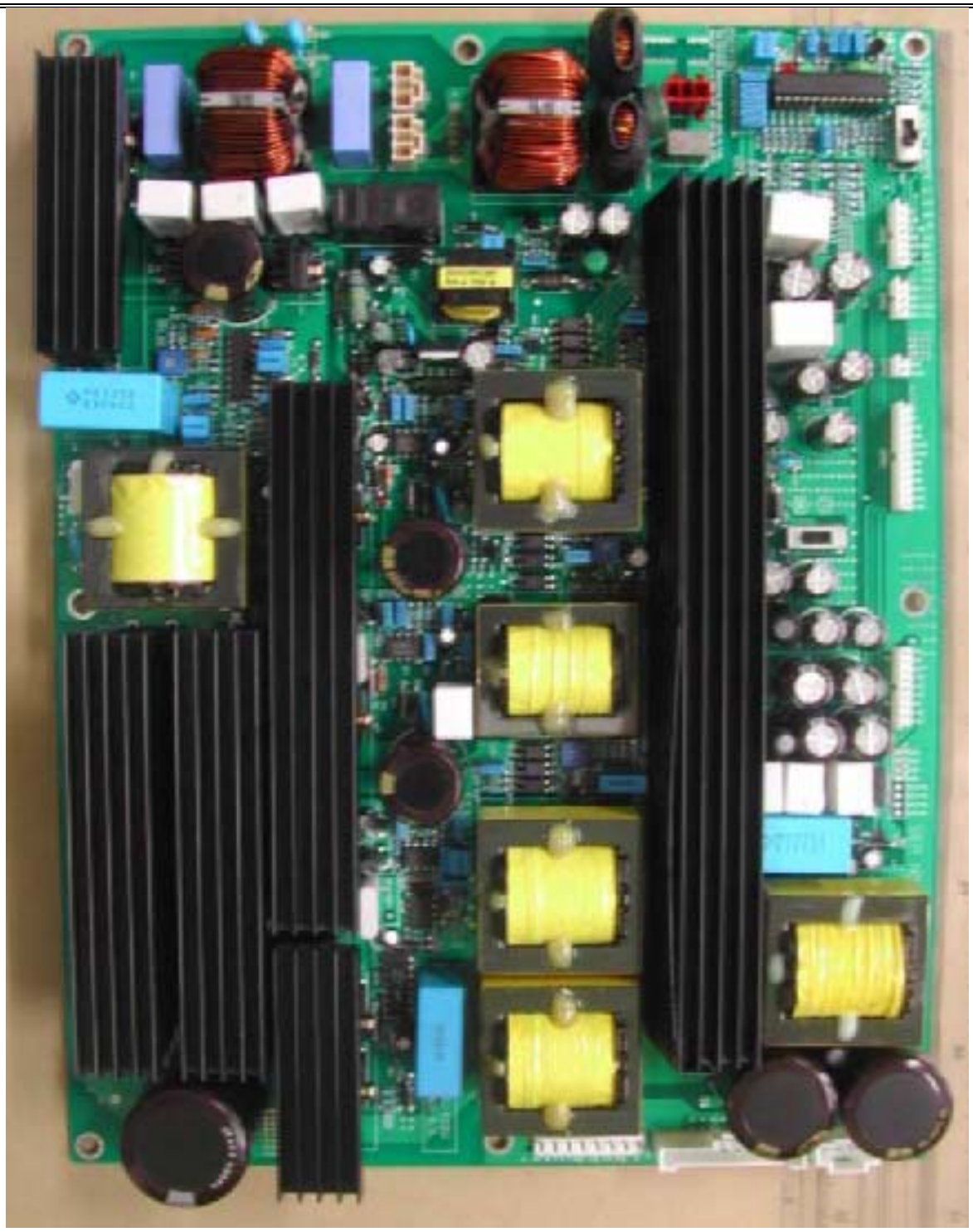
Apart from the above proposal, This module has been equipped with a special method that minimizes the image sticking phenomenon. When in the fixed pattern display mode, the module decreases the brightness over a period of 10 minutes with small steps. The figure blow shows that the decrease in brightness is so small the user will not notice.



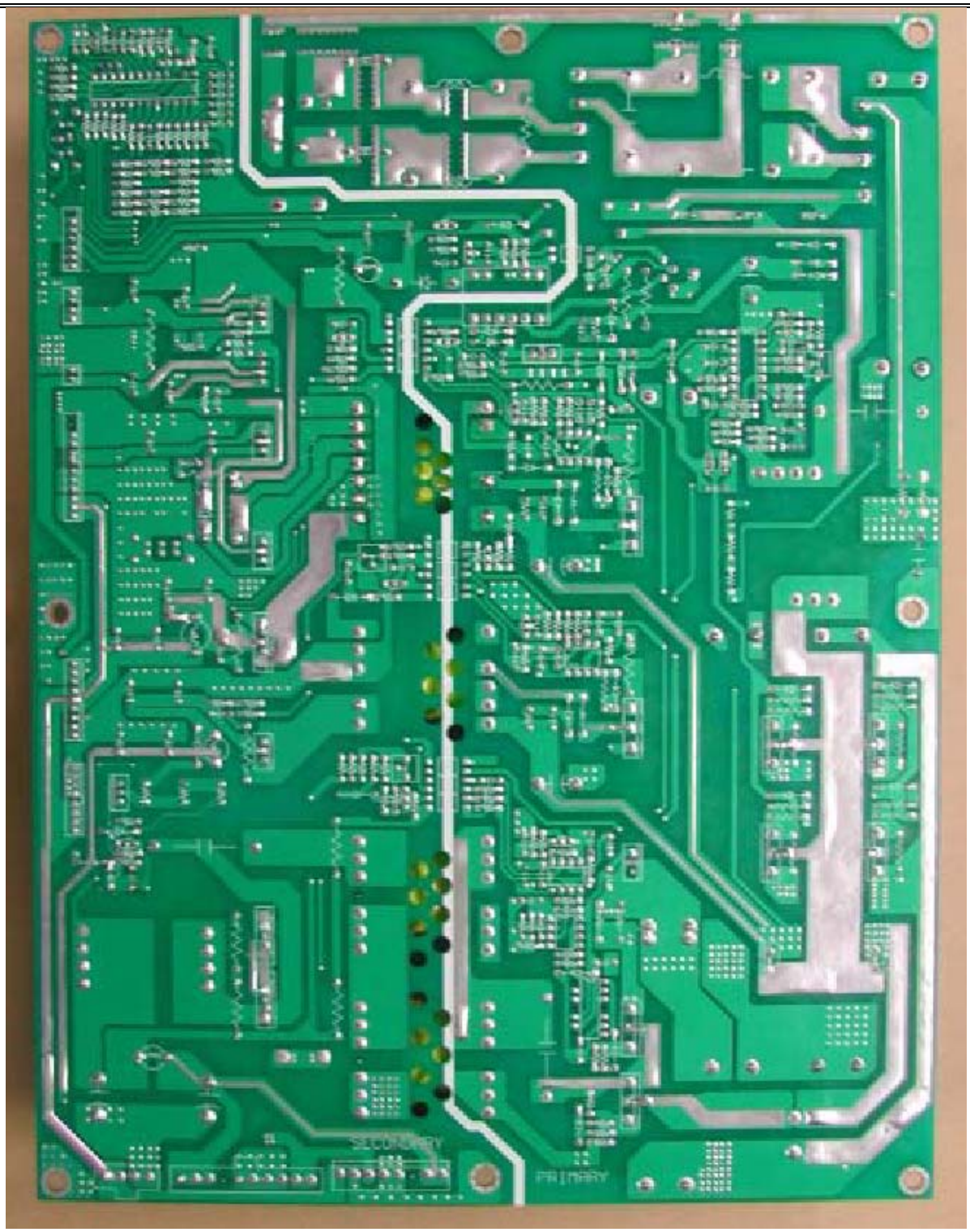
The basis of the evaluation was while the ISM Mode in the module was operating, the brightness decrease about
55 % of its initial value at the white window pattern (1/25 of full white pattern)
ISM operational conditions
1. Detective deviation : The change of APL Data is no less than ±4 and it will remain for more than 5 minutes.
2. Regardless of time, it will not operate where the display load is over 50%.

SCHEMATIC & PRINTED CIRCUIT BOARD & EXPLODE VIEW

¡á PSU(DGK-420W) TOP



■ PSU(DGK-420W) BOTTOM



EXPLODED VIEW PARTS LIST

No	Part no	Description

2	S150110021	MAIN ASSY EPT-4200A(PAL)
3	S15012G021	FRONT FRAME ASSY EPT-4200A(PAL-STD)
4	S15013F016	FRAME FILTER ASSY EPM-4200A(MONITOR-STD)
5	S15014B016	FRAME ASSY EPM-4200B(MONITOR-STD)
2	S15012C021	JACK HOUSING ASSY EPT-4200(PAL)
4	S15014A021	FRONT ASSY EPT-4200A(PAL)
3	S15013C016	HEAT SINK ASSY EPM-4200A
3	S15013B016	MODULE ASSY EPM-4200A
2	S15012F016	AC IN-LET ASSY EPM-4200A
3	S150120036	VSC BOARD ASSY(TOP) EPT-4200AP
2	S150113036	VSC BOARD ASSY EPT-4200AP(PW565)
4	S150130036	VSC BOARD ASSY(BOTTOM) EPT-4200AP
6	S15015B021	OSD PCB ASSY EPT-4200A(TV用_7KEY)
2	S150114036	TUNER BOARD ASSY EPT-4200AP(PW565)
3	S150121036	TUNER BOARD ASSY(SMD) EPT-4200AP(PW565)
2	S150134021	AUDIO OUT B/D ASSY EPM4200A
2	S150112021	POWER S/W ASSY EPT-4200A(PAL-STD)
3	S150132009	POWER S/W PCB ASSY EPM-420AN
5	S150141021	OSD ASSY EPT-4200A(TV用_7KEY)
1	S150111021	PACKING ASSY EPT-4200A(PAL)
2	S15012F021	ACCESSORY ASSY EPT-4200A(PAL)
3	S15013C021	REMOCON ASSY EPT-4200A(PAL)
3	71BELP324	JACK HOUSING AL/PAL TV
3	71BELP315	HEAT SHINK AL 28X28X13
4	71BELP1801	HEAT SINK ASSY AL+SPTH
3	71FELP314	SHIELD VSC-B SPTH-C, 0.5T
2	71FELP313	SHIELD VSC-T SPTH-C, 0.3T
2	70AELM310	BUTTON POWER ABS
2	71AELP126	BRKT SUPP EGI/1T
2	71AELP288	BRKT A EGI/1T
2	71AELP289	BRKT B EGI/1T
2	71AELP310	BRKT IN-LET EGI/1T
2	71AELP311	BRKT VSCEGI/1T
2	71BELP287	BACK AL 1.5T PAINT/KK VERSION
6	71AELP115	BRKT STAND EGI 1.5T
6	71AELP118	BRKT C EGI 1T
6	71AELP284	BRKT D EGI/1T/EPM-420KK
5	71AELP117	BRKT FILTER EGI 1T
6	77A1010540	BLACK SH B FELT 1TX10X540
6	77A1010950	BLACK SH A FELT 1TX10X950
6	71BELP285	FRAME X AL
6	71BELP286	FRAME Y AL
5	70EELM311	LENS PMMA
5	70PELM3298	FRONT A PC/ABS/SILVER/DCDI/STAND BY/7KEY/EPM-4200A
5	72BELR111	PROTECTOR SILICON/25X25X45
6	70AELM460	BUTTON CTRL ABS(7KEY)/EPT-4200(TV用)
6	73DELi046	INSULATION-BUTTON PVC(25X15X0.3T)
7	70AEPM1173	LED GUIDE 4MMX5ΦX3P
4	71HELP246	SUPPORT Y SPC, 1.6t
4	70AELM310	BUTTON POWER ABS

4	71AELP125	BRKT PW EGI 1T
4	73DELi032	INSULATION SW PC 0.5tX70X53
4	AJ-00003	SNAP RIVET DASR 470
3	74B2BN3008FB	T/SCREW BH T 3X8 2S ZB
2	74B2BN3005FW	T/SCREW BH T 3X5 2S ZW
2	74B2BN3008FB	T/SCREW BH T 3X8 2S ZB
4	74B2PN4010FW	T/SCREW PH T 4X10 2S ZW
5	74B2BN3005FW	T/SCREW BH T 3X5 2S ZW
6	74B2BN3005FW	T/SCREW BH T 3X5 2S ZW
5	74B2BN3010FB	T/SCREW PH T 3X10 2S ZB
4	74B2BN3008FW	T/SCREW BH T3X8 2S ZW
4	74A2BZ3006FY	M/SCREW BH M 3X6 ZN
2	74A2FN3008FB	M/SCREW FH M 3X8 ZB
2	74A9BZ3008FB	M/SCREW BH M 3X8 ZB
4	74A9BZ3008FB	M/SCREW BH M 3X8 ZB
4	74A9BZ5012FB	M/SCREW BH M 5X12 ZB
2	74GELC0015	À°°¢º¼Æ® 15"°ø¿ë
2	74GELM006	CHAMFER SCREW TH M 4X8 ZB
2	74GELM007	CHAMFER SCREW PH M 3X10 SPRING WASHER(ϕ8)
4	74GELM006	CHAMFER SCREW TH M 4X8 ZB
3	74GELM007	CHAMFER SCREW PH M 3X10 SPRING WASHER(ϕ8)
2	74GELM008	GRAOUND SCREW PH M 4X10 (SPECIAL)
3	76AZW15D42D15	WASHER SPCC 15X4.2X1.5T ZW
2	50-0007	WIRE ASSY AUDIO OUT 4P EPM-420
2	50-0074	WIRE ASSY AUDIO POWER 4P 250mm
2	50-0075	WIRE ASSY A/D POWER SOURCE 12P 210mm
2	50-0077	WIRE ASSY AC POWER 2P 430mm
2	50-0089	WIRE ASSY OSD 13P 690mm
2	50-0103	WIRE ASSY A/D CONTROL 7P 220mm
2	50-0104	WIRE ASSY PANEL LINK 21P 270mm
2	50-0108	WIRE ASSY FFC 24P 280mm
4	65-0024	PDP MODULE PDP42V51000(42"PDP MODULE)
5	79FELG0013	FILTER GLASS 1142G03E/45%/972X660X3.8T
3	66-0020	TUNER TCPQ9091PD27D(S)
2	66-0049	FAN H35094-57ERA
7	31-0167	PCB E83-U005-02-PB00 REV.00 OSD 7KEY
3	31-0162	PCB E83-U005-00-PB00 REV.00(PAL_VSC)
4	31-0163	PCB E83-U006-11 PB00 REV.00 (PAL_TUNER)
3	31-0146	PCB E83-U004-07-PB00 REV.00 (Audio Out)
4	31-0036	PCB PB-001E EPM420 AC POWER REV.00
2	72SELM044	ACEET TAPE 10X60
2	73DELi051	INSULATION-PS PC,0.45TX80X125
2	73DELi054	INSULATION TN PVC 0.25TX232X342
2	AL-00001	CABLE TIE DACT-100(140mm)
2	AL-00022	수축튜브 ϕ13X0.15X14mm/F4(Z)

REPLACEMENT PARTS LIST(PAL TV)

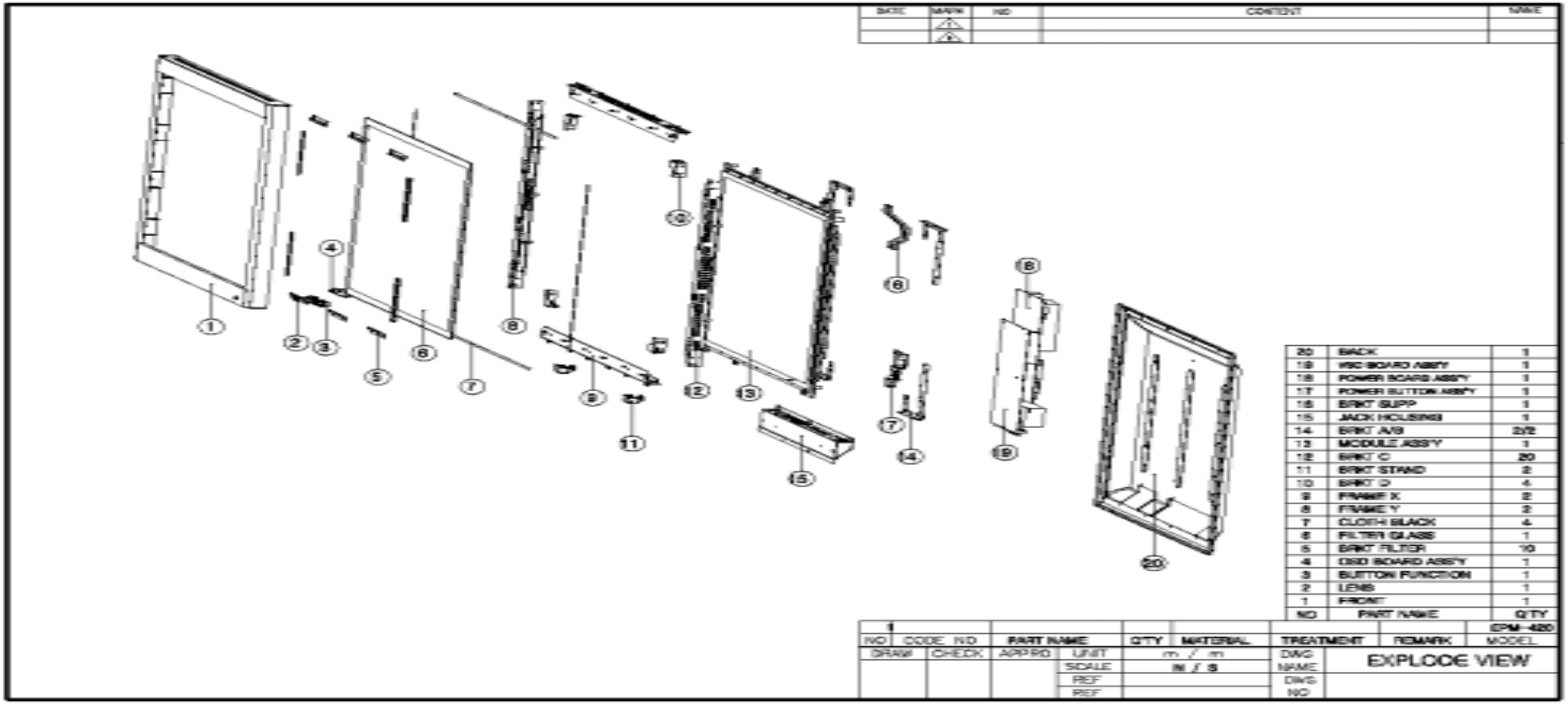
No	Part no	Description
IC		
4	01-0019	IC REG LM2937IMP-3.3 SOT-223
4	01-0020	IC REG LM317EMP SOT-223
4	01-0059	IC REG RC1117S33 SOT-223
4	01-0071	IC REG KIA7809AF D-PAK
4	01-0088	IC REG KIA7805AF D-PAK
4	01-0089	IC REG KIA7808AF D-PAK
4	01-0273	IC REG NCP1117ST18T30
4	01-0040	IC EEPROM 24LC16B SOP-08
4	01-0041	IC EEPROM 24LC21A SOP-08
4	01-0053	IC TTL 74LCX14M SOP-14
4	01-0055	IC TTL SN74LV273A SOP-20
4	01-0057	IC TTL SN74LVC541A SOP-20
4	01-0225	IC MCU HMS87C1102AD SOP-16
4	01-0091	IC TDA7495S MULTI-WATT 15V ST
4	01-0073	IC K4S643232E TSSOP(II)
4	01-0108	IC DS232AS SO-16
4	01-0253	IC VPC3230D-C5 PQFP-80
4	01-0259	IC FDC6561AN-Super SOT-6
4	01-0260	IC MSP3450G PQFT-80
4	01-0261	IC SST39VF080AT-TSOP40
4	01-0262	IC SDA5550 M 3901.A14 9RF
4	01-0263	IC HY62U8200BLLST-85I sTSOP
4	01-0264	IC CXA2089Q
4	01-0265	IC SiI164CT64
4	01-0266	IC BA7657-SOP24
4	01-0278	IC AD9883AKST-140
4	01-0282	IC 24LC256-SOIC8
4	01-0283	IC AP1084K18-TO263
4	01-0284	IC PW565_10Q_BGA
4	01-0285	IC MT28F800B3WG-9T
4	01-0286	IC SN74LVC139AD-SOIC16
4	01-0287	IC SN74LVX74AD-SOIC14
4	01-0288	IC TLC7733QD SOIC-08
3	01-0092	IC ZJY51R5-4P(EMI)
7	33-0003	IR RECEIVER KSM-603LM2(Straight)
TRANSISTOR		
4	02-0012	TR MMBT3904 SOT-23
4	02-0025	TR KTC3875Y SOT-23
4	02-0038	TR KSC1623Y
5	02-0012	TR MMBT3904 SOT-23
5	02-0025	TR KTC3875Y SOT-23
DIODE		
4	04-0005	DIODE BAV99 SOT-23
4	04-0054	DIODE KDS184
4	04-0058	DIODE ZENER Z02W18V-Y
4	04-0030	DIODE ZENER Z02W3.3 SOT-23

4	04-0128	DIODE KDZ8.2EV-RTK
5	04-0127	DIODE 1SR154-400
4	04-0128	DIODE KDZ8.2EV-RTK
3	04-0038	DIODE 1N4004 TP
7	04-0033	LED SAM3270
4	04-0053	LED SR2333-H SOT-23
CAPACITOR		
4	10-0009	CC CHIP 25V 330J 1608 TP
4	10-0016	CC CHIP 16V 224Z 1608 TP
4	10-0017	CC CHIP 16V 474Z 1608 TP
4	10-0021	CC CHIP 25V 102K 1608 TP
4	10-0022	CC CHIP 25V 103Z 1608 TP
4	10-0023	CC CHIP 25V 104Z 1608 TP
4	10-0024	CC CHIP 25V 180J 1608 TP
4	10-0028	CC CHIP 25V 393K 1608 TP
4	10-0029	CC CHIP 25V 473K 1608 TP
4	10-0053	CC CHIP 25V 392K 1608 TP
4	10-0054	CC CHIP 25V 331J 1608 TP
4	10-0057	CC CHIP 10V 684Z 1608 TP
4	10-0058	CC CHIP 25V 200J 1608 TP
4	10-0059	CC CHIP 25V 471J 1608 TP
4	10-0060	CC CHIP 25V 334Z 1608 TP
4	10-0063	CC CHIP 25V 221J 1608 TP
4	10-0189	CC CHIP 25V 105Z 1608 TP
4	10-0197	CC CHIP 25V 682J 1608 TP
5	10-0004	CC CHIP 25V 101J 1608 TP
5	10-0016	CC CHIP 16V 224Z 1608 TP
5	10-0021	CC CHIP 25V 102K 1608 TP
	10-0022	CC CHIP 25V 103Z 1608 TP
5	10-0023	CC CHIP 25V 104Z 1608 TP
5	10-0024	CC CHIP 25V 180J 1608 TP
5	10-0029	CC CHIP 25V 473K 1608 TP
5	10-0049	CC CHIP 25V 560J 1608 TP
5	10-0050	CC CHIP 25V 391J 1608 TP
5	10-0055	CC CHIP 25V 152K 1608 TP
5	10-0059	CC CHIP 25V 471J 1608 TP
5	10-0063	CC CHIP 25V 221J 1608 TP
5	10-0189	CC CHIP 25V 105Z 1608 TP
4	10-0004	CC CHIP 25V 101J 1608 TP
4	10-0023	CC CHIP 25V 104Z 1608 TP
3	10-0052	CC 400V SD222M
7	10-0051	CC 50V 104Z(AXIAL)
4	11-0044	EC SMD MV 16V 22UF (5X5.3) TP
4	11-0045	EC SMD MV 16V 10UF (4X5.3) TP
4	11-0046	
4	11-0048	EC SMD MV 16V 100UF (6.3X5.3) TP
4	11-0049	EC SMD MV 16V 47UF (6.3X5.3) TP
4	11-0051	EC SMD MV 50V 3.3UF (4X5.3)TP
4	11-0055	EC SMD MV 50V 1UF (4X5.3) TP
4	11-0123	EC SMD MV 16V 33UF(6.3X5)TP
4	11-0146	EC SMD MV 16V 330UF (8X10)TP

4	11-0045	EC SMD MV 16V 10UF (4X5.3) TP
4	11-0048	EC SMD MV 16V 100UF (6.3X5.3) TP
4	11-0049	EC SMD MV 16V 47UF (6.3X5.3) TP
3	11-0054	EC SHL 50V 470UF (10X20)
7	11-0042	EC SRA 16V 47UF (6.3X7)
3	11-0010	EC SHL 16V 470UF (8X11.5)
3	11-0054	EC SHL 50V 470UF (10X20)
3	11-0148	EC KMG 50V 1000UF (12.5X25)
3	12-0003	PC PE 50V 104J RST
3	12-0004	PC 10PS 470MJ 12 (10X12.5)
4	13-0002	TC TAJB106M016R (16V 10UF)
JACK		
3	53-0060	JACK PPJ122A-11
3	53-0064	JACK PPJ122-17(AUDIO JACK)
3	53-0068	JACK S 456S-J(CVBS)
3	53-0070	JACK PJ6046B-05
3	53-0055	JACK SCART JACK
3	52-0002	CONNECTOR DHR20-15K-7100 (15PIN D-SUB R/A)
3	52-0124	CONNECTOR MYD-09-2100010(9PIN D-SUB R/A)
3	52-0072	TERMINAL SP 026B
COIL,CORE,BEAD		
4	16-0015	COIL 3.3UH (3216) 50MA
4	16-0016	COIL 10UH (10X10 SMD)1.
4	16-0017	COIL 33UH (12X12 SMD) 2.8A
7	16-0002	COIL 10UH (AXIAL)
2	17-0011	CORE ZCAT 1518-0730-M-K
4	17-0003	BEAD HB-1M2012-221JT
4	17-0004	BEAD HH-1M3216-121JT
4	17-0016	BEAD HB-1M2012-121JT
4	17-0023	BEAD HCB 4516K-600T60
4	17-0023	BEAD HCB 4516K-600T60
5	17-0023	BEAD HCB 4516K-600T60
RESISTOR		
4	14-0001	R ARRAY 164P 000J TP
4	14-0003	R ARRAY 164P 470J TP
4	14-0007	R CHIP 1608 000J TP
4	14-0008	R CHIP 1608 101F TP
4	14-0010	R CHIP 1608 102F TP
4	14-0012	R CHIP 1608 103F TP
4	14-0022	R CHIP 1608 153F TP
4	14-0030	R CHIP 1608 202F TP
4	14-0043	R CHIP 1608 332F TP
4	14-0045	R CHIP 1608 333J TP
4	14-0050	R CHIP 1608 470F TP
4	14-0052	R CHIP 1608 472F TP
4	14-0069	R CHIP 1608 750F TP
4	14-0128	R CHIP 1608 222J TP
4	14-0175	R CHIP 1608 820J TP
4	14-0179	R CHIP 1608 152F TP
4	14-0268	R CHIP 1608 122J TP
4	14-0278	R CHIP 1608 241J TP
4	14-0289	R CHIP 1608 392J TP
4	14-0481	R CHIP 1608 511J TP
5	14-0007	R CHIP 1608 000J TP
5	14-0008	R CHIP 1608 101F TP
5	14-0010	R CHIP 1608 102F TP
5	14-0012	R CHIP 1608 103F TP
5	14-0022	R CHIP 1608 153F TP
5	14-0027	R CHIP 1608 181J TP
5	14-0029	R CHIP 1608 201F TP

5	14-0030	R CHIP 1608 202F TP
5	14-0034	R CHIP 1608 223F TP
5	14-0037	R CHIP 1608 271J TP
5	14-0043	R CHIP 1608 332F TP
5	14-0045	R CHIP 1608 333J TP
5	14-0050	R CHIP 1608 470F TP
5	14-0052	R CHIP 1608 472F TP
5	14-0055	R CHIP 1608 473J TP
5	14-0064	R CHIP 1608 562J TP
5	14-0066	R CHIP 1608 681J TP
5	14-0069	R CHIP 1608 750F TP
5	14-0107	R CHIP 1608 471F TP
5	14-0128	R CHIP 1608 222J TP
5	14-0175	R CHIP 1608 820J TP
5	14-0178	R CHIP 1608 220F TP
5	14-0179	R CHIP 1608 152F TP
5	14-0205	R CHIP 1608 683J TP
5	14-0268	R CHIP 1608 122J TP
5	14-0270	R CHIP 1608 131J TP
5	14-0321	R CHIP 1608 391F TP
5	14-0476	R CHIP 1608 474F TP
4	14-0008	R CHIP 1608 101F TP
4	14-0010	R CHIP 1608 102F TP
4	14-0012	R CHIP 1608 103F TP
4	14-0052	R CHIP 1608 472F TP
4	14-0055	R CHIP 1608 473J TP
4	14-0069	R CHIP 1608 750F TP
3	14-0181	R MOS 2W 470 J
SWITCH		
7	22-0002	S/W TACT KLT-1105(4.3MM)
4	22-0013	S/W AC POWER SDDFC30300
FILTER & CRYSTAL		
3	20-0004	FILTER LINE 4P(12MH)
4	20-0001	FILTER NOISE STS104B 2012.5 TP
5	20-0001	FILTER NOISE STS104B 2012.5 TP
3	60-0033	AC INLET ID-N10BEH(42")
3	19-0007	X-TAL 6.000MHZ
3	19-0009	X-TAL 20.000MHZ
3	19-0010	X-TAL 20.250MHZ 18PF
3	19-0011	X-TAL 18.432MHZ 18PF
3	30-0001	OSCILLATOR 80MHz(3.3V)
ACCESSORIES		
3	27-0004	BATTERY AAA Type(¸Á°£)
3	55-0023	CABLE Scart Cable 1.2M
3	55-0024	CABLE RF-CABLE(PAL) 1P/2.1M
3	57-0130	**P-CORD EL SALVADOR 115V/60HZ F ¿µ±¹Çâ G Type(57-0038)**
3	92AELV0012	POLY BAG-M LDPE 0.08TX300X320
4	60-0031	REMOCON EPT-4200TV (PAL)

EXPLODE VIEW



MODEL NAME	DOCUMENT NO	REVISION NO	REVISION DATE	PAGE
BSV-4251/4251A	RD(1)	00	03/10/23	75/75