

**AOC Service Manual
A42W64AT4**

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1、 SPECIFICATION

1-1 General Specification

Item		Specification		
Panel Spec	Screen size	42 inch plasma display panel		
	Aspect	16:9		
	Display pixels	852 x 480 (WVGA)		
	Effective display size	932mm x 532mm		
	Number of color	16.7 million colors		
	Contrast Ratio	10000:1 (in dark room)		
	Peak brightness	1500 cd/m ²		
TV Mode	TV Tuning	1 Tuners, Air:69 channels Cable:135 channels		
	Sound system	M		
	Color system	ATSC / NTSC		
Video Mode	AV1 (S_Video/Video)	Video RCA x 1	NTSC	Audio: L/R x 1
		S-Video1 x 1	NTSC	
	AV2 (S_Video/Video)	Video RCA x 1	NTSC	Audio: L/R x 1
		S-Video2 x 1	NTSC	
	AV3 / AV4 COMPONENT X 2 (YCbCr/YPbPr)	YCbCr/YPbPrx 2	480i	Audio: L/R x 2
			1080i	
			480P	
720P				
PC Mode	Signal input	Analog : D-Sub 15 pin		
	Plug and play	DDC / 2B		
	Support Frequency	FH:31KHz to 80KHz , FV:50Hz to 85Hz		
	D-Sub Mode	VESA: 640 x 480 VESA: 800 x 600 VESA: 1024 x 768 VESA: 1280 x 1024		
	D-Sub Audio	Earphone (3.5ø)		
DVI Mode	Signal input	Digital : DVI-D 24 pin		
	Plug and play	DDC / 2B		
	DVI Mode	720P 1080i 480P		
	DVI Audio	Earphone (3.5ø)		
Power	Power input sources	AC 100-240V , 50/60Hz		
	Power consumption	≤350W		
Environment	Operation Temperature	+ 0 °C ~ + 40 °C		
	Storage Temperature	- 10 °C ~ + 50 °C		
	Humidity	10% -- 85%		
Dimension	Width x Height x Thickness	1038 x 726.5 x 240 (mm)		
Net weight	With Stand	34Kg		
Accessory	Remote Control Transmitter, Battery X 2, Power Cord, User’s Manual, RCA Cable, D-SUB Cable, DVI Cable.			

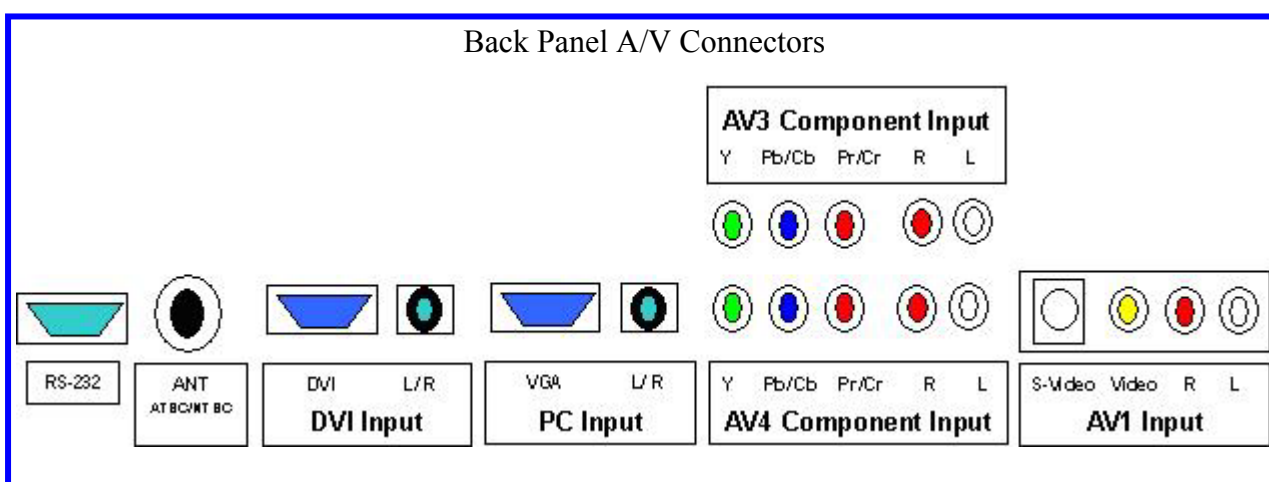
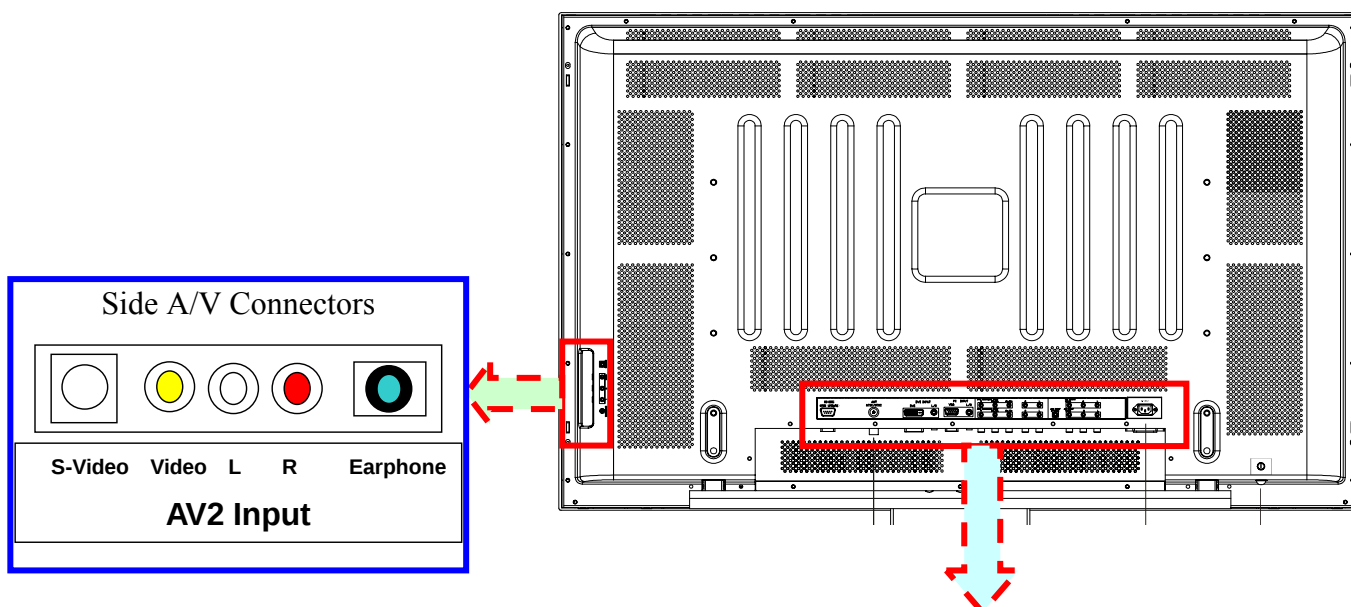
1-2 Feature Summary

The following is the specification summary for the display:

- 107 cm (42") 16:9 Large Screen Flat Panel Plasma Display
- Resolutions: WVGA **852 (H) X 480(V) pixels**, (1 pixel = 1 R, G, B cells)
- **1.095 mm (H) X 1.110mm(V)** pixel pitch.
- Viewing Angle: 160° Vertically and Horizontally
- Internal TV Tuner, Air: 69 channels Cable: 135 channels
- Typical Maximum Contrast Ratio: 10000:1
- Typical Maximum Brightness: **1500 cd/m²**
- ATSC receiver, MPEG-2 decoder
- NTSC receiver, Video decoder
- Dual Video, Dual S-Video
- Dual Y Pb Pr (480i,480p,720p,1080i) HDTV Ready
- PC D-SUB 15Pin INPUT
- D-SUB analog video with rate 50Hz to 85 Hz vertical refresh rate and 31KHz to 80KHz horizontal frequency
- DVI-D Signal (TMDS) INPUT, Support HDTV, SDTV
- Closed Caption / V-chip
- Composite, S-Video, and component video receiver
- MIPS controller
- Auto Scan TV Channels
- Field upgradable firmware
- Universal Power Supply designed for worldwide application
- Operating power consumption less than **350 W**
- Standby power consumption less than 1 W

1-3 External interface

Most of these interfaces are located at the back-panel. There's also a group of connectors located on the side of this device for easier access. The following figures depict these A/V connectors.



1-3-1 Video/Audio Inputs

The following sections specify the video/audio inputs for A42W64AT4.

1-3-1-1 TV Antenna Interface

. TV Antenna Connector

A42W64AT4 shall provide a F-type cable connector with 75 ohms termination on its back panel for reception of radio frequency signals.

. TV Systems

A42W64AT4 shall be capable of receiving the following broadcasting systems in the North America region.

- Analog terrestrial and cable broadcasting in NTSC system and “M” sound system.
- All 18 formats specified for ATSC digital broadcasting
- Clear QAM digital cable broadcasting

. TV Channel Coverage

The RF tuner shall be capable of covering 55.25 to 859.25 MHz and tuning to the following channels:

- VHF: channel 2 through 13
- UHF: channel 14 through 69
- Mid band cable: A1 through A8, A through I
- Super band cable: J through W
- Hyper band cable: AA through ZZ, AAA, BBB
- Ultra band cable: channel 65 through 94, 100 through 125

. Closed Caption

A42W64AT4 shall support closed caption and text mode for both video and TV system. These supports shall include channel ½ and field ½ selectable features.

. V-Chip

A42W64AT4 shall support MPAA grade for movie and TV Parental Guideline for TV. This support shall include changeable password.

1-3-1-2 AV1

A standard definition (SD) analog video/audio source designated as AV1 shall be located on its back panel. It comprises the following electrical connections. Only one of the two video inputs shall be connected.

. S-Video Input

A42W64AT4 shall provide a 4-pin mini-DIN connector for connection to an external S-Video source.

. CVBS Video Input

A42W64AT4 shall provide a RCA type receptacle for connection to an external CVBS source.

. Audio Inputs

A42W64AT4 shall provide two RCA type receptacles for the stereo audio signal associated with AV1 input.

1-3-1-3 AV2

A standard definition analog video/audio source designated as AV2 shall be located at the side of A42W64AT4. It comprises the following electrical connections. Only one of the two video inputs shall be connected.

. S-Video Input

A42W64AT4 shall provide a 4-pin mini-DIN connector for connection to an external S-Video source.

. CVBS Video Input

A42W64AT4 shall provide a RCA type receptacle for connection to an external CVBS source.

. Audio Inputs

A42W64AT4 shall provide two RCA type receptacles for the stereo audio signal associated with AV2 input.

1-3-1-4 AV3

A YPbPr/YcbCr type component video interface designated as AV3 shall be located on its back panel. It comprises the following electrical connections.

. Video Inputs

A42W64AT4 shall provide three RCA type receptacles for connection to an external component video source.

. Audio Inputs

A42W64AT4 shall provide two RCA type receptacles for the stereo audio signal associated with Component1 input.

1-3-1-5 AV4

A YPbPr/YcbCr type component video interface designated as AV4 shall be located on its back panel. It comprises the following electrical connections.

. Video Inputs

A42W64AT4 shall provide three RCA type receptacles for connection to an external component video source.

. Audio Inputs

A42W64AT4 shall provide two RCA type receptacles for the stereo audio signal associated with Component2 input.

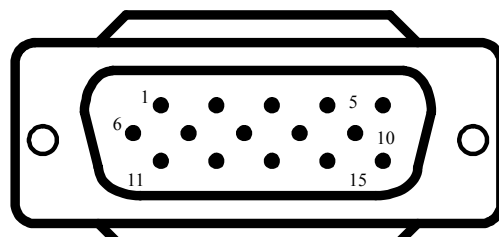
1-3-1-6 PC Input

A42W64AT4 accommodates a VGA type computer connection as specified below.

. Video Input connector

A42W64AT4 shall provide a 15-pin D-Sub connector on its back panel for connection to a VGA type video source. The VGA signal input on the display shall be capable of receiving RGB analog video, H and V syncs, and DDC. The table below specifies pin-outs of this connector.

Analog Connector Pin-outs		
PIN	MNEMONIC	SIGNAL
1	RV	Red Video
2	GV	Green Video
3	BV	Blue Video
4	NC	None
5	GND	Ground (DDC Return)
6	RG	Red GND
7	GG	Green GND
8	BG	Blue GND
9	+5 V	+5 V (from the PC)
10	SG	Sync Ground
11	NC	None
12	SDA	DDC Data
13	HS	Horizontal Sync
14	VS	Vertical Sync
15	SCL	DDC Clock



. Audio Inputs

A42W64AT4 shall provide a 3.5 mm jack for the stereo audio signal associated with VGA input.

. Input Formats

A42W64AT4 shall support the following input format on its VGA input.

Mode	Resolution	Total	Horizontal		Vertical		Nominal Pixel Clock (MHz)
			Nominal Frequency (KHz)	Sync Pola-rity	Nominal Freq. (Hz)	Sync Pola-rity	
VGA	640x480@60Hz	800 x 525	31.469	N	59.940	N	25.175
SVGA	800x600@60Hz	1056 x 628	37.879	P	60.317	P	40.000
XGA	1024x768@60Hz	1344x806	48.363	N	60.004	N	65.000
WXGA	1280x1028@60Hz	1688x1066	64	N	60	P	108

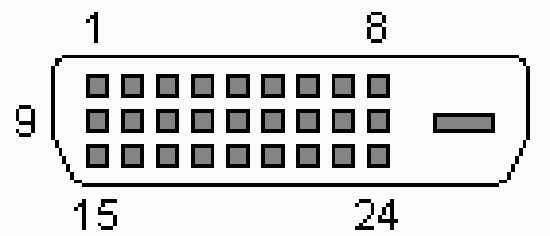
1-3-1-7 DVI

A42W64AT4 shall accommodate a DVI type digital video source as specified in this section.

. Video Inputs

A42W64AT4 shall provide a 24 contact DVI-D receptacle on its back panel for receiving TMDS digital video. The table below specifies pin assignments for the DVI-D connector.

DVI-D Digital connector pin assignments		
PIN	MNEMONIC	SIGNAL
1	TX 2 -	TMDS Data 2 -
2	TX 2 +	TMDS Data 2 +
3	SHLD 2 / 4	TMDS Data 2 / 4 Shield
4	TX 4 -	TMDS Data 4 -
5	TX 4 +	TMDS Data 4 +
6	DDC Clk	DDC Clock
7	DDC Data	DDC Data
8	N/C	No Connect
9	TX 1 -	TMDS Data 1 -
10	TX 1 +	TMDS Data 1 +
11	SHLD 1 / 3	TMDS Data 1 / 3 Shield
12	TX 3 -	TMDS Data 3 -
13	TX 3 +	TMDS Data 3 +
14	+5V	+5V Power (from the PC)
15	GND	Ground (Return for +5V)
16	HPD	Hot Plug Detect
17	TX 0 -	TMDS Data 0 -
18	TX 0 +	TMDS Data 0 +
19	SHLD 0 / 5	TMDS Data 0 / 5 Shield
20	TX 5 -	TMDS Data 5 -
21	TX 5 +	TMDS Data 5 +
22	TX CLK SHLD	TMDS Clock Shield
23	TX CLK +	TMDS Clock +
24	TX CLK -	TMDS Clock -



. Audio Inputs

A42W64AT4 shall provide a 3.5 mm jack for the stereo audio signal associated with DVI input.

. HDCP support

HDCP must be supported on the DVI input. Refer to the High-bandwidth Digital Content Protection System specification version 1.1 for details.

. Input Formats

A42W64AT4 shall support the following input format on its DVI input.

Mode	Resolution	Total	Nominal HFrequency (KHz)	Nominal Vertical Frequency (KHz)	Nominal Pixel Clock Frequency (MHz)
VGA	640x480@60Hz	800 x 525	31.469	59.940	25.175
SVGA	800x600@60Hz	1056 x 628	37.879	60.317	40.000
XGA	1024x768@60Hz	1344x806	48.363	60.004	65.000
720P	1280×720P		45.00	60	74.25
1080i	1920×1080i		33.75	60	74.25
480p	720×480p		31.54	60	27.00

1-3-2 Power Interface

1-3-2-1 Power Connector

A42W64AT4 shall support an IEC C-13/C-14 (Standard) type male power receptacle for connection to AC power source.

1-3-2-2 Power Input Range

The operating range shall be from 100 to 240 VAC sinusoidal. Input power frequency range shall be from 50 to 60 Hz over the specified input voltage range.

1-3-2-3 Power Consumption

. Operating Power

Power consumption for the display over the specified voltage and frequency ranges shall be less than 350 W for the assemblies with speakers.

. Standby Power

A42W64AT4 power also below than one watt in the standby mode.

1-3-3 Service Interface

A42W64AT4 shall provide a 9-pin D-sub connector on its back panel for firmware upgrading purpose. This interface shall conform to RS-232 standard with the following pin-outs.

Pin	Function
1	NC
2	TXD transmitted data
3	RXD received data
4	Shorted with pin 6
5	FG frame ground
6	Shorted with pin 4
7	Shorted with pin 8
8	Shorted with pin 7
9	NC

The method of firmware upgrading please see “**Flash update process**” chapter.

1-4 User interface

1-4-1 Power Indicator

A42W64AT4 shall make use of an LED type indicator located on the front of the display. The LED color shall indicate the power states as given in the following table.

LED colors

Mode	H-Sync	V-Sync	Video	Pw-cons.	Indicator
Power-On	On	On	Active	< 350W	Blue LED
Standby	Off	Off	Off	< 1W	Red LED

1-4-2 Remote Control Receiver

A42W64AT4 shall provide an infra-red (IR) optical detector on its front panel for use as the receiver for remote controller signal. The IR communication protocol shall conform to RC-5 standard. The minimum IR reception angles shall be +/- 30 degrees horizontally and vertically. The required operating distance of the remote control shall be 7 m.

1-4-3 On-Screen Display

A42W64AT4 shall provide an On Screen Display (OSD) system for customer setup. The following table gives the structure of the OSD menus.

Main menu	Sub menu	Function	Default	Reset
SETUP	Tuning Band	To select between Air and Cable System	Air	—
	DTV Signal	To display the signal strength in order to aid the antenna adjustment	—	—
	Auto Ch Search	To automatic scan and store all TV channels	—	—
	Manual Ch Set	To enable or disable channels	—	—
	Channel Label	To rename a channel	—	—
	Manu Language	To select the language for OSD among English, Spanish, French, and Portuguese	English	—
VIDEO	CONTRAST	To adjust the contrast value between 0~100	50	Yes
	BRIGHTNESS	To adjust the brightness value between 0~100	50	Yes
	SHARPNESS	To adjust the sharpness value between 0~100	50	Yes
	COLOR	To adjust the color value between 0~100	50	Yes
	TINT	To adjust the tint value between 0~100	50	Yes
	Aspect Ratio	To select aspect ratio among Normal, Zoom, Wide, and Cinema	Normal	Yes
	Settings	To restore all video settings to factory default	—	—
AUDIO	Audio Language	To select audio language among English, Spanish, French, and Portuguese	English	Yes
	BASS	Sets the bass value between 0~100	31	Yes
	TREBLE	Sets the treble value between 0~100	31	Yes
	BALANCE	Sets the left/right balance value between 0~100	31	Yes
	Restore Default	To restore all audio settings to factory default	—	—
FEATURE	Time Set	To set current time	—	—
	Sleep Timer	To set the timer period to turn off the TV. Selectable values are OFF,30,60 and 90 minutes	OFF	—
	Password Set	To set or change Parental Control password	TBD	—
	Parental Control	To select V CHIP settings	Un-locked	—
	White Screen	To make a White screen by TV itself.	—	—

1-5 External Mounting Requirements

A42W64AT4 shall be designed so that the display enclosure can be easily removed from the base for external mounting applications. When the base is removed, there shall be no additional non-removable parts that are visible from the front of the display

1-6 Environmental Requirements

1-6-1 Temperature Ranges

Operating Temperature (Independent of altitude) 0°C to 40°C
Non-Operating Temperature (Independent of altitude) -10°C to 70°C

1-6-2 Humidity

Operating (non-condensing) 20% to 85%
Non-Operating (38.7°C maximum wet bulb temperature)..... 5% to 85%

1-6-3 Altitude

Operating (0 to 2,000 m)
Non-Operating..... (0 to 3,000 m)

1-6-4 Vibration and Shock

All testing shall be done in each of three mutually perpendicular axes, referenced to the position of the system as it is in front of the user (i.e., front-to-back, side-to-side, and top-to-bottom).

2、Precautions and Notices :

2-1 Precaution of assembly

- (1) Please do not press or scratch PDP panel surface with anything hard.
- (2) Please wipe out PDP panel surface with absorbent cotton or soft cloth in case of it being soiled
- (3) Please wipe out drops of adhesive like saliva and water in PDP panel surface immediately. They might damage to cause panel surface variation and color change
- (4) Do not apply any strong mechanical shock to the PDP panel

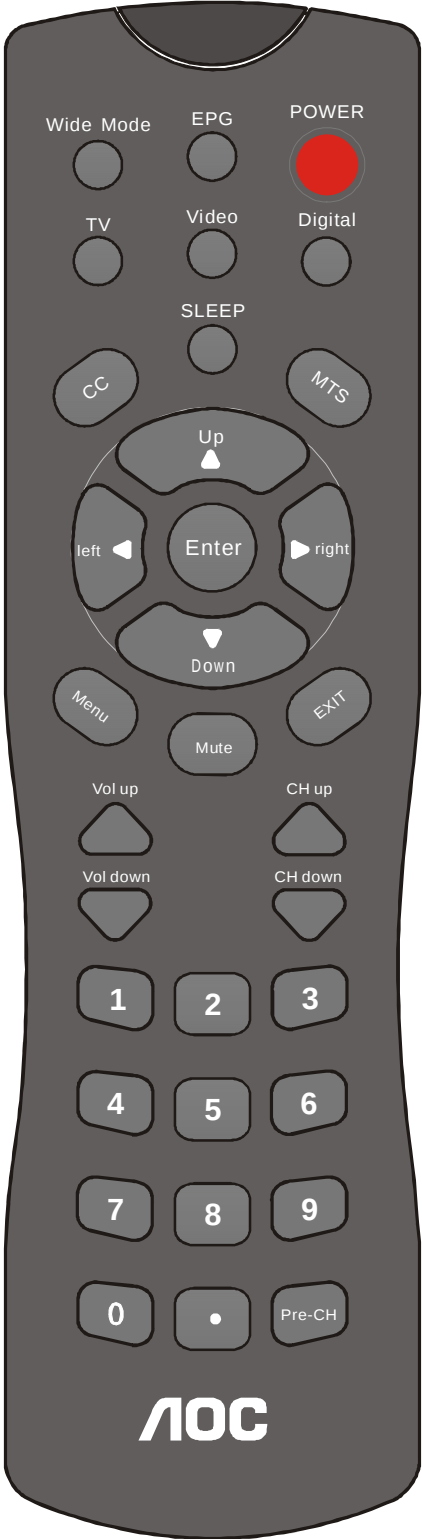
2-2 Precaution of Operation :

- (1) Please be sure to unplug the power cord before remove the back-cover. (make sure the power is turn-off)
- (2) Please do not change variable resistance settings in PDP MODULE; They are adjusted to the most suitable value. If they are changed, it might happen LUMINANCE does not satisfy.
- (3) Please consider that PDP MODULE takes longer time to become stable of radiation characteristic in low temperature than in room temperature.
- (4) Please pay attention to displaying the same pattern for very long-time. Image might stick on PDP.

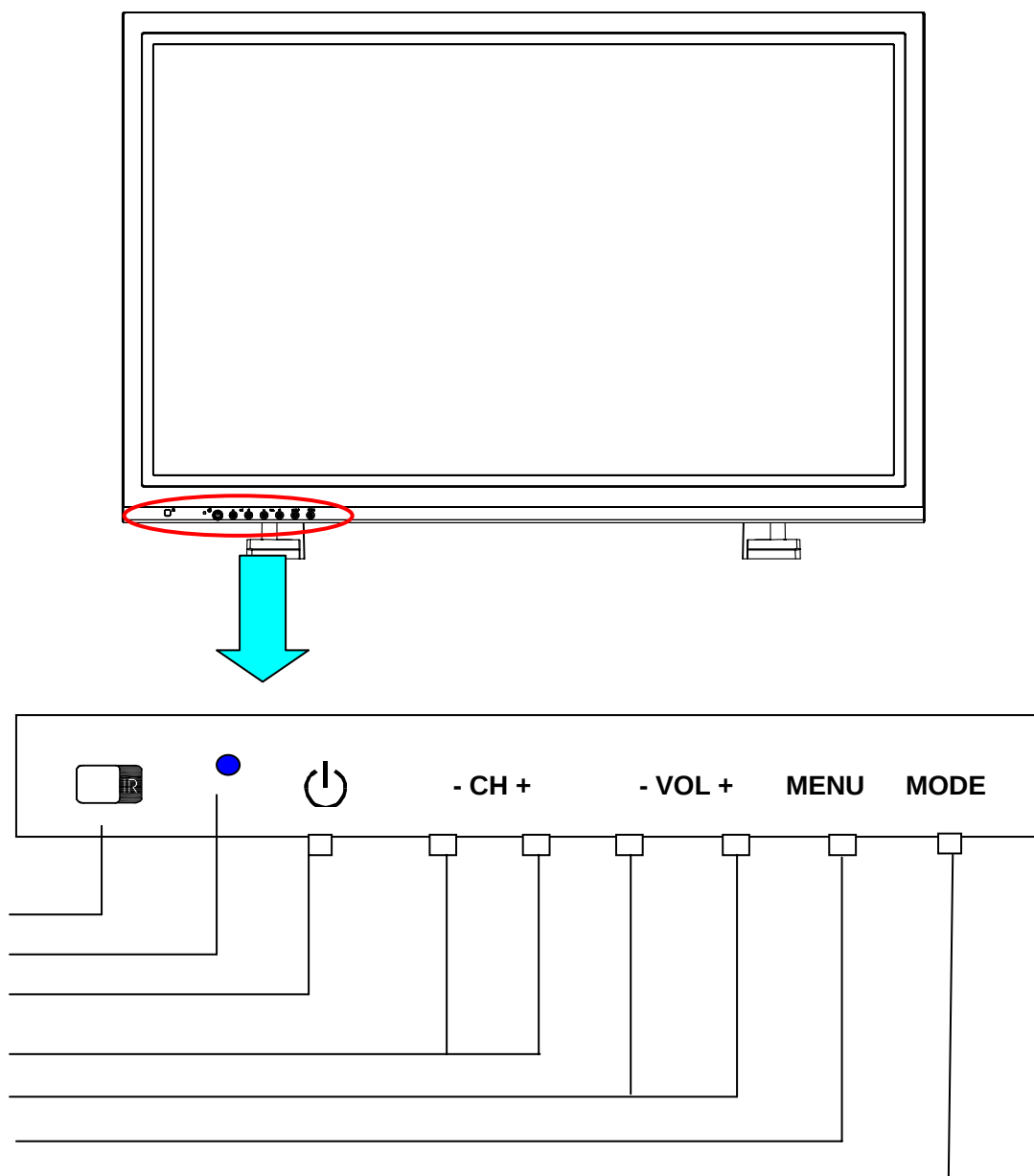
3、 Operation

3-1 Operation of Remote Control Transmitter

A42W64AT4 shall provide an IR remote controller as accessory.

“Wide Mode” Normal, Zoom ,Wide, Cinema display select		“POWER” The TV Set turn on /turn off key
“EPG” Display the state, source		“Video” AV1 CVBS Rear /AV1 S-Video Rear/ AV2 CVBS Side/ AV2 S-Video Side / AV3 component 1/ AV4 component 2
“TV” TV source select, into TV state		“Digital” VGA/DVI source input
“SLEEP” Select timer into power down state. off→30→60→90→off		“MTS” To select audio program options
“CC” To select close caption options(CC1,CC2.....)		“Up▲/Down▼” Move the cursor up and down on the Menu
“ENTER” To enter sub Menu or sub item .		“left◀/right▶” Use left ▶/ right ▶ to select or adjust an item.
“MENU” To enter Menu mode .		“EXIT” To exit Menu or other OSD .
“MUTE” Mute the sound		“CH up / CH down” Press to select the next lower or higher Program number.
“Vol up / Vol down” Press Vol up/ Vol down key to adjust volume .		“Pre-CH” TV channel return, see last TV channel .
“0~9 number” To enter TV channel number		
“●” To enter sub channel number for digital channels .		

3-2 Front panel controls

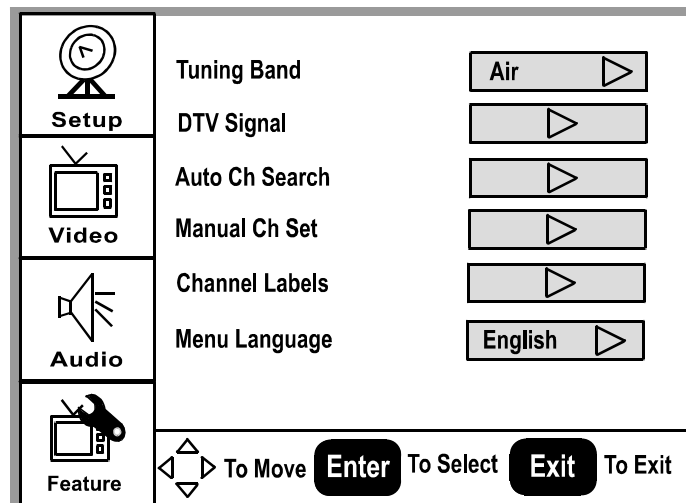


	IR: Remote Control Sensor.
	LED: Power Indicator.
	Power switch: Press to power on or power off the TV set..
-CH+	Down: Press to select the next lower Programme number or move Down in Menu operation. Up: Press to select the next higher Programme number or move up in Menu operation.
-VOL+	Left: Press to decrease the sound volume level or move Left in Menu operation. Right: Press to increase the sound volume level or move Right in Menu operation.
MENU	Menu: Press to enter Menu or exit Menu.
MODE	Mode: Press to select input signal modes or use as Enter in Menu operation.

3-3 OSD MENU Description

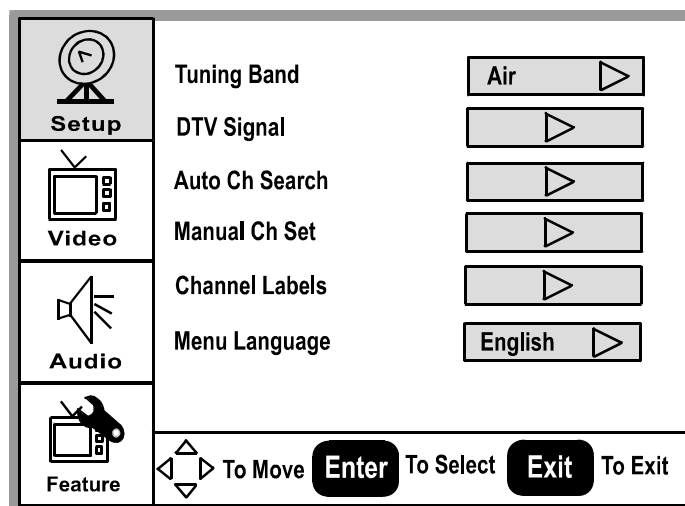
3-3-1 Main MENU

1. Press "MENU" key on remote control or front panel controls to bring up Main Menu.
2. Press "▲" or "▼" to move the cursor up and down the sub menu list.
3. Press "◀" or "▶" to select sub menu item.
4. Press "Enter" to enter sub-item then use "◀" or "▶" to adjust.

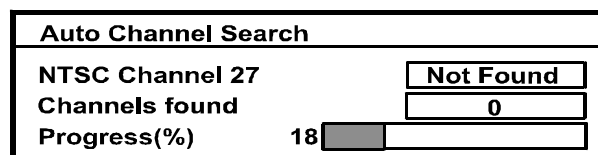
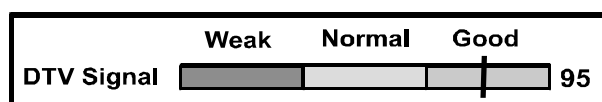


3-3-2 SETUP MENU

1. Tuning Band: Select TV signal source between Air and Cable. Select Cable if you are connecting to a cable box and select Air if you are directly connecting to the antenna.
2. DTV Signal: Display signal strength to aid antenna adjustment.
3. Auto Ch Search: Automatically scan and store all TV channels.
4. Manual Ch Set: Enter channel setup table.
5. Channel Labels: Display and edit channel names.
6. Menu Language: Select language for menu (English→Español→Fañçais→Portuguese).

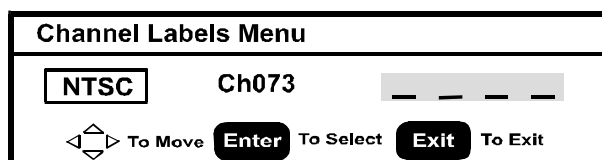


- DTV signal menu indicates signal strength in real-time.
- Auto channel scan menu displays channel number being scanned.
- Manual Channel Set Menu
 - Displays all the channel numbers that are found.
 - Tune either to ATSC or NTSC channels.
 - Add or delete Channel number.
- Channel Labels Menu allows user labeling.



Manual Channel Set Menu									
Tuning Band									NTSC ▶
61	62	63	64	65	66	67	68	69	70
71	72	73	74	75	76	77	78	79	80
81	82	83	84	85	86	87	88	89	90

Navigation controls: ◀▶ To Move, Enter To Select, Exit To Exit



3-3-3 Video MENU

1. Press "▲" or "▼" to move the cursor up or down the sub-item list.
2. Press "Enter" to enter the highlighted sub-item menu.
3. Press "◀" or "▶" to adjust the value of the sub-item.
4. Press "Enter" again to exit the sub-item.

Contrast: Contrast adjustment, 0~100.

Brightness: Brightness adjustment, 0~100.

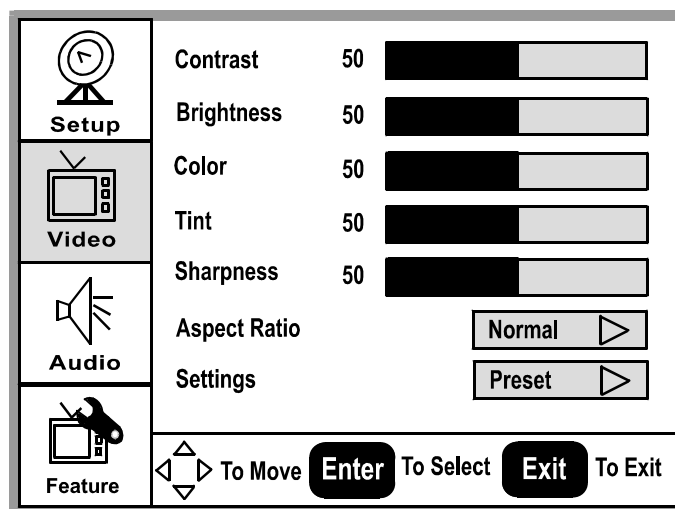
Color: Color chroma adjustment, 0~100.

Tint: Tint adjustment, 0~100.

Aspect Ratio: Aspect Ratio selection.

Normal→Zoom→Wide→Cinema.

Settings: Restore default setting.



3-3-4 Audio MENU

1. Press "▲" or "▼" to move the cursor up or down the sub-item list.
2. Press "Enter" to enter the highlighted sub-item menu.
3. Press "◀" or "▶" to adjust the value of the sub-item.
4. Press "Enter" again to exit the sub-item.

Audio Language:

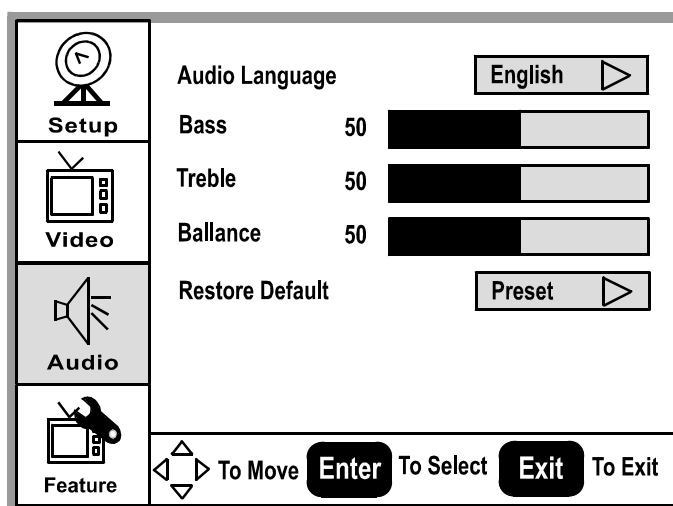
English→Español→Français→Portuguese.

Bass: Bass adjustment, 0 ~ 100.

Treble: Treble adjustment, 0 ~ 100.

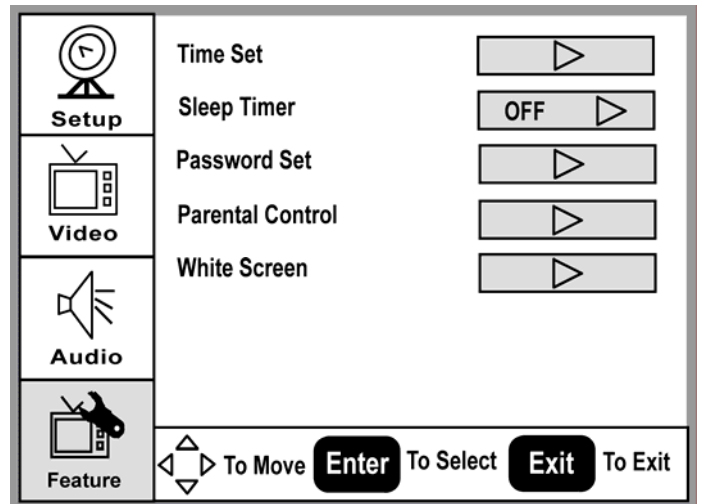
Balance: Balance adjustment, 0 ~ 100.

Restore Default: Restore Audio Language, Treble, Base, and Balance setting to default.



3-3-5 Feature MENU

1. Press “▲” or “▼” to move the cursor up or down the sub-item list.
2. Press "Enter" to enter the highlighted sub-item menu.
3. Press “◀” or “▶” to adjust the value of the sub-item.
4. Press "Enter" again to exit the sub-item.



Time Set: Select minutes into standby
Off → 30 → 60 → 90.

Password Set: Enter and change Parental Control Password.

Parental Control: Setup TV and Movie rating controls.

White Screen: Select White Screen, and press MODE front panel button (Enter on the Remote control). The TV immediately displays the white screen.

Parental Control Menu: Controls viewing of rated TV and Movie programs.

Default password is: 0000.

Important : If you have forgotten your Password. Use the code [0711] to enter into the Password Set menu item to change your password. You can also use the code [0711] to change your Parental Controls settings.

MPAA		TV RATING						
		ALL	FV	L	S	V	D	
NONE	☐	NONE	☐					
G	☐	TV-Y	☐					
PG	☐	TV-Y7	☒	☒				
NC-17	☐	TV-G	☐					
PG-13	☐	TV-PG	☒	☒	☒	☒	☒	
R	☐	TV-14	☒	☒	☒	☒	☒	
X	☐	TV-MA	☒	☒	☒	☒		

◀▶ To Move **Enter** To Select **Exit** To Exit

3-3-6 Closed Captions

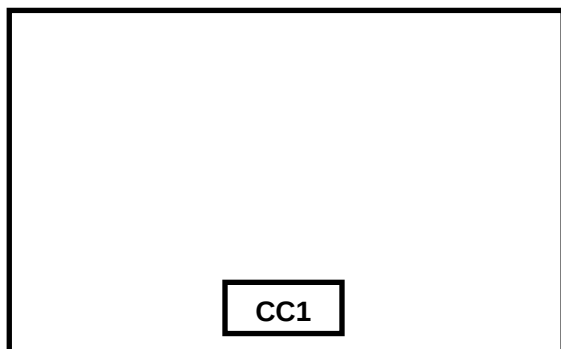
1. Press “CC” key on remote control to select closed captions mode.

NTSC TV: Off CC1 CC2 . . .

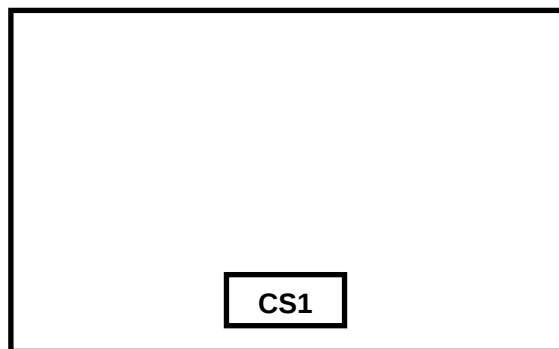
ATSC TV: Off CS1 CS2 . . .

2. Select desired closed caption mode.

3. Closed captioning for analog NTSC channels is transmitted as CC1/CC2/CC3/ CC4. Closed captioning for digital channels is transmitted as CS1/CS2/CS3/CS4/ CS5/CS6 or occasionally CC1/CC2/CC3/CC4. You need to select the option you want for analog channels and digital channels separately.



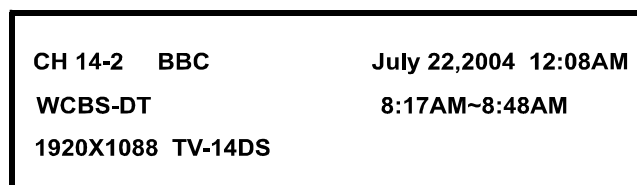
☐ NTSC TV



☐ ATSC TV

3-3-7 EPG

Press the “EPG” key on the remote control to display the Electronic Program Guide (EPG). A message window will be displayed on screen.



☐ EPG Message Window

3-3-8 TV channel arrangement

Each digital channel may comprise of several sub-channels.

To select a digital channel using the remote control:

1. Enter main channel number.
2. Press the “.” key.
3. Enter the sub-channel number.



4、 Trouble shooting chart

If replace “IMAGE BOARD”, Please re-do “DDC writing” program & “WHITE-BALANCE” & Flash Update.

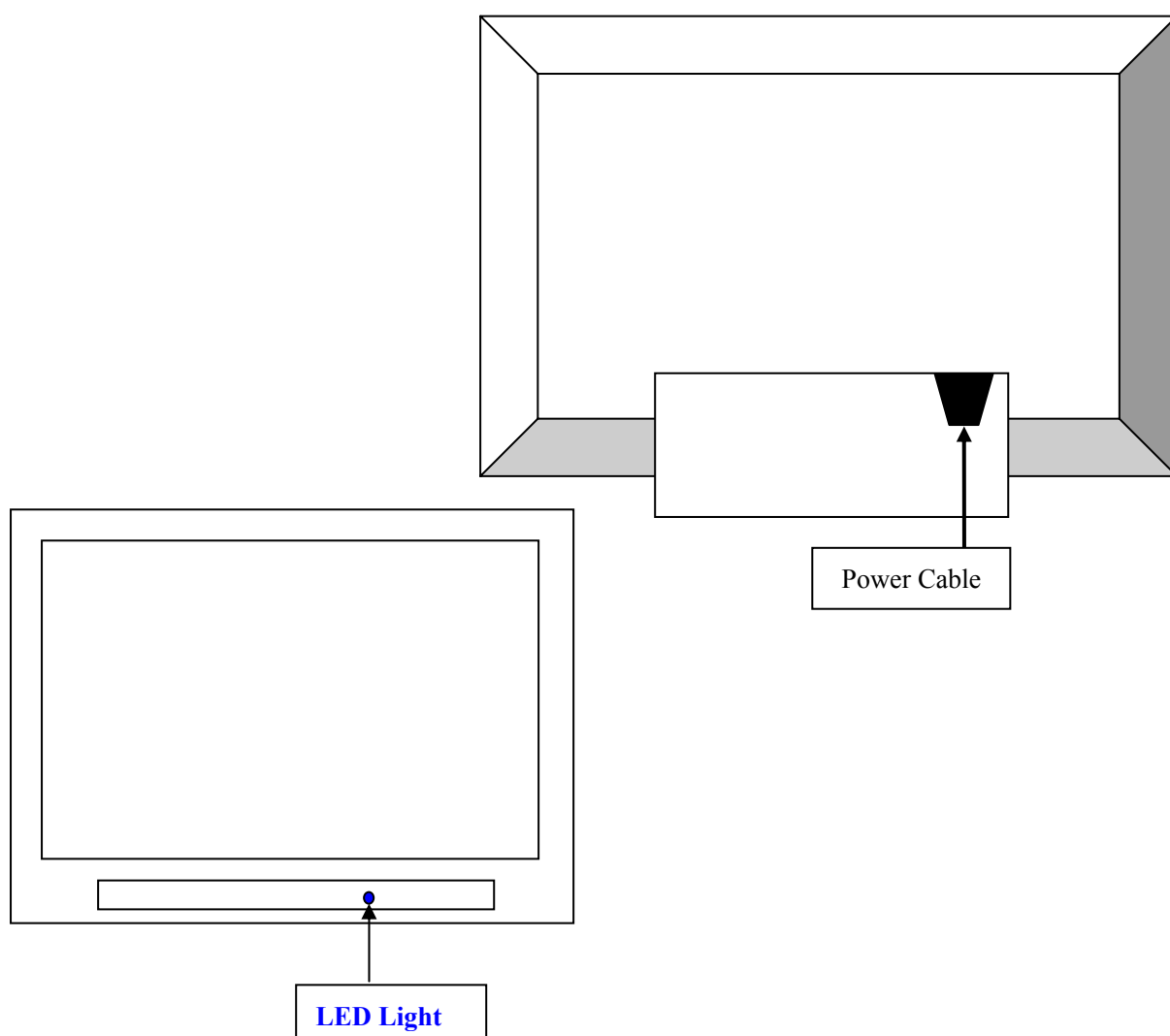
If replace PANEL module, Please re-do “white-balance adjust”

4-1 PANEL Trouble shooting

Please reference the “PANEL Service Manual”.

4-2 Turn PDP on and Check:

Plug power cord into pdp set, and the color of LED is red;



If PDP under the normal working, display of LED is blue. Then, the screen show is nor dark. If the color of LED is red under standby state, you should press the “power” bottom of remote control or you should press the front standby key. Then, turn PDP TV on.

If it is nothing about OSD or display on screen, service PDP.
The procedure and maintain the step meet as follows:

4-2-2 Solution process of whole PDP:

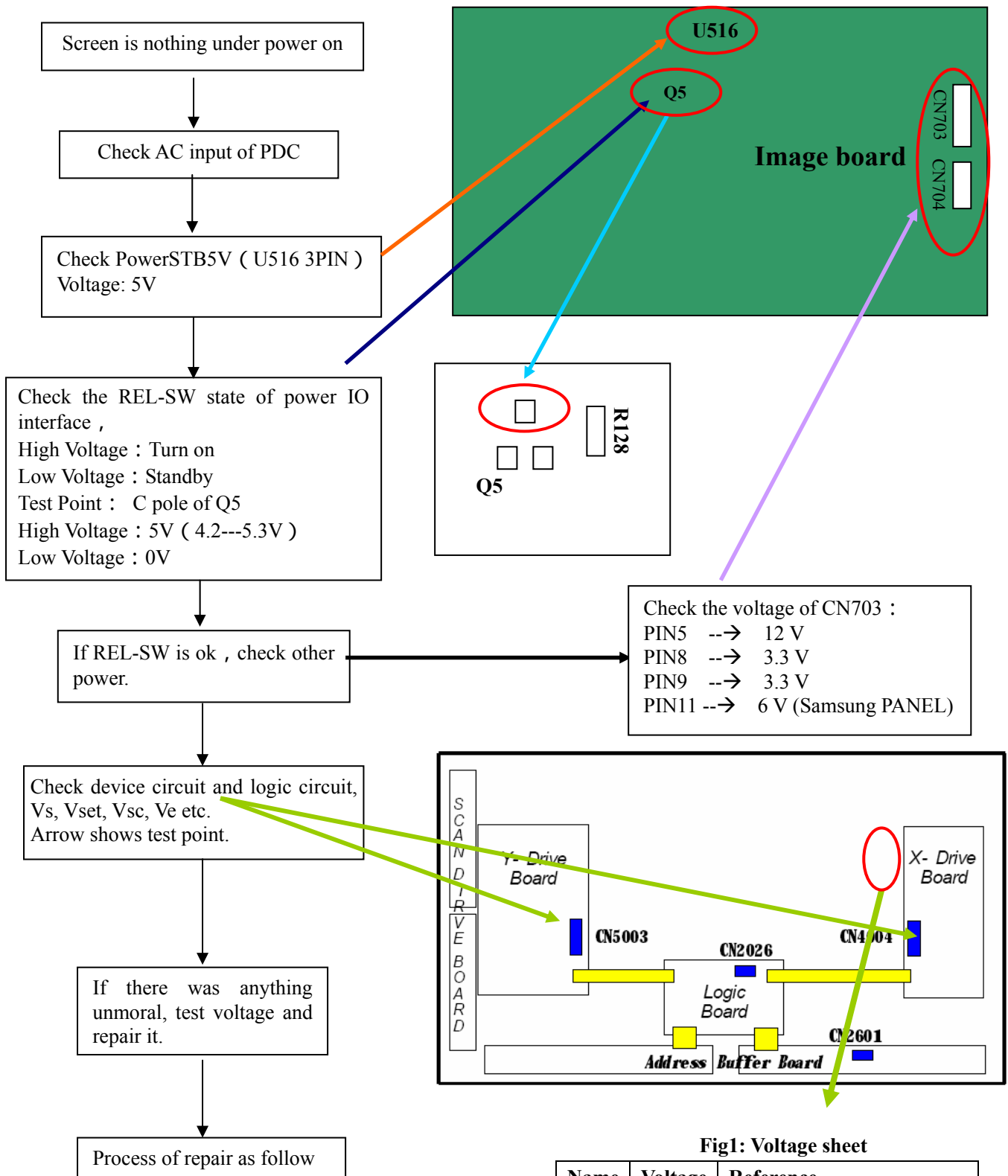
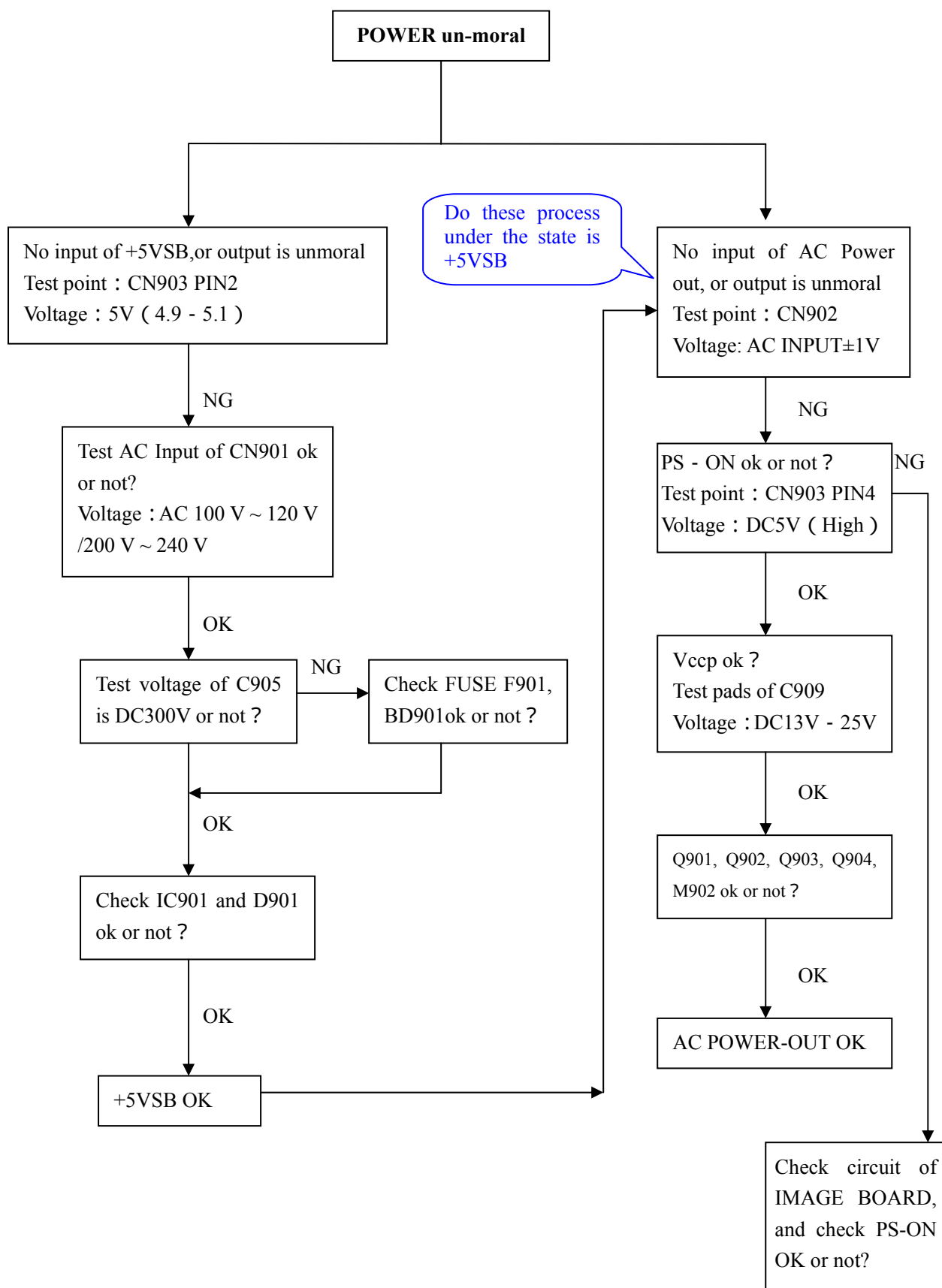


Fig1: Voltage sheet

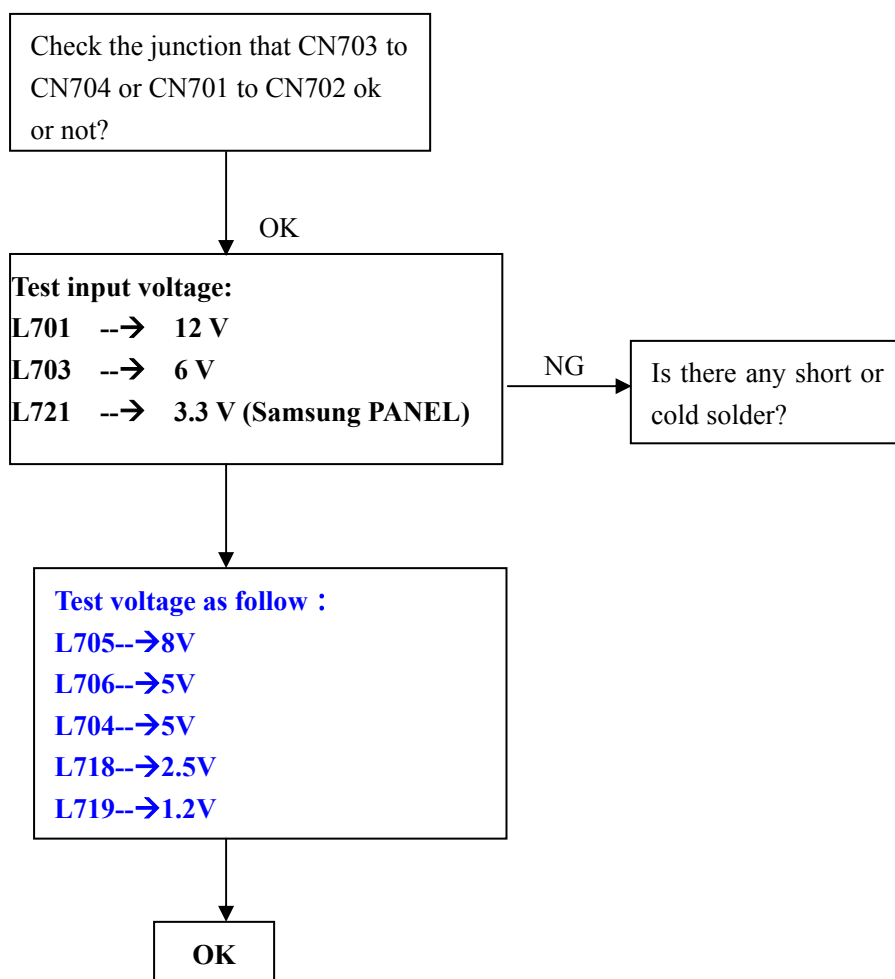
Name	Voltage	Reference
VS	209V	Voltage for driving sustain
VA	70V	Voltage for driving address
VE	82V	Voltage for driving X-bias
VSET	198V	Voltage for driving reset
Vscan	-198V	Voltage for driving scan
Vg	15V	Voltage for driving FET
D3V3	3.5V	Voltage for driving logic

4-2-3 STB POWER Solution process

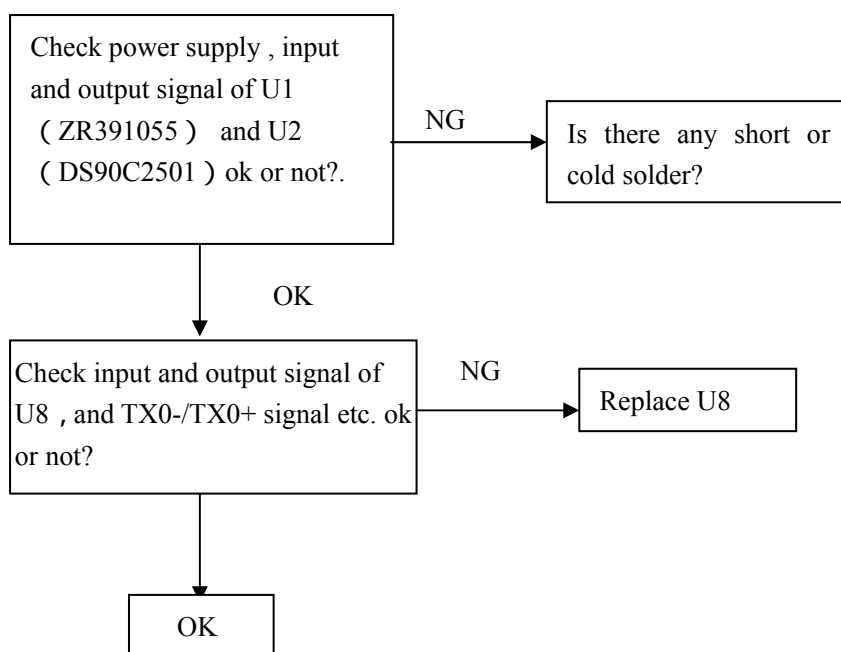


Note : Must distinguish connect Grand point of Power primary and secondary level.

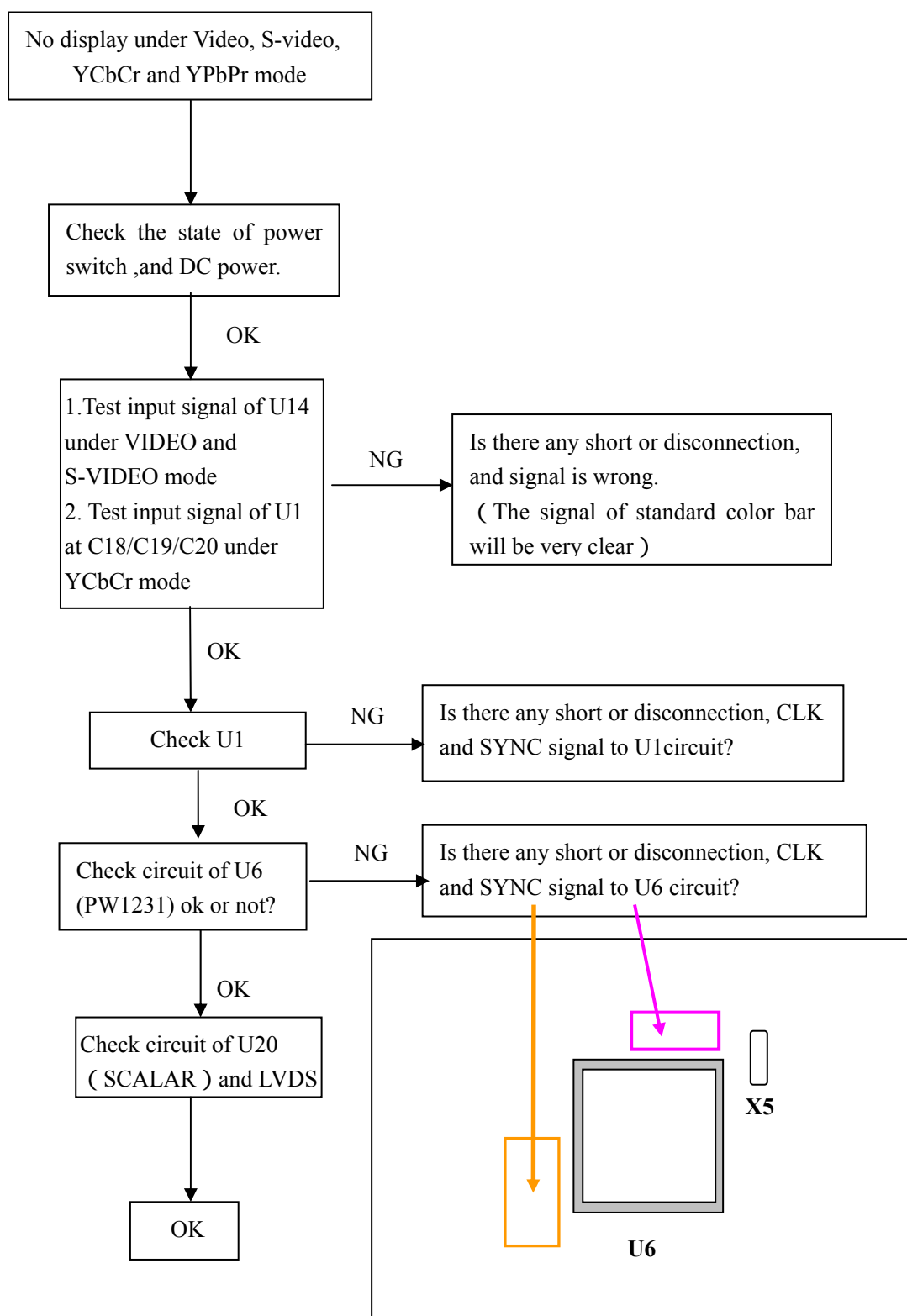
4-2-4 Solution processes for DC Power



4-2-5 Solution processes for SCALER



4-2-6 Solution processes VIDEO



5、 White-Balance Adjustment

5-1 Equipments list

Chroma7100	1set
VG828 video signal generator	1set
Chroma-2326	1set

5-2 Preparation and Adjustment process

1、 Preparation:

- Connect rear Video port of PDP with AV port of VG-828.
- Connect component port of PDP with YPbPr port of VG-828
- Connect VGA port of PDP with corresponding port of Chrom2326
- Turn power of PDP and test instrument on.
- Before open lens, Press O-CAL of Chrom-7100 and revise lens.

2、 Adjustment process

AV Adjustment

- 1). Change to Video mode, you can press “SOURCE” of remote. Press “Vol - ”, adjust volume until Min. Then press number key “6543”and enter factory Menu.
- 2). Press “SOURCE” and change to Video Rear mode
- 3). When setting of VG-828 is TIM946/PAT922, 32 Gray steps. Then, see the color of picture is deflection or not. And the Gray steps distinguish 28 steps from 32steps or not.

. If dark of Gray is deflection, press “CH+/-”and adjust:

1. White.BRoCVBS (vMin=0,vMax=100,vDef=50) →50,
2. White.BBoCVBS (vMin=0,vMax=100,vDef=50) →50,
3. White.BGoCVBS (vMin=0,vMax=100,vDef=50) →50,

. If sharpness of Gray is deflection, press “CH+/-”and adjust:

4. White.BRgCVBS (vMin=0,vMax=100,vDef=50) →50,
5. White.BBgCVBS (vMin=0,vMax=100,vDef=50) →50,

- 4). When the Gray is ok, change input signal to white picture at P936, Use colored analysis instrument Chroma7100 measure colors temperature value of picture at present (whether Chroma7100 is it given to picture center to pop one's head), On pressing the remote controller such as the specification of going beyond "program + /- "key choose following the projects adjust :

4. White.BRgCVBS (vMin=0,vMax=100,vDef=50) →50,
5. White.BBgCVBS (vMin=0,vMax=100,vDef=50) →50,

- 5). When adjustment about white is ok, changes signal to P822 that Gray steps picture. The Gray picture has no deflection color, and the Gray steps distinguish 28 steps from 32 steps

Note: The white balance is adjusted in the course, will influence each other to adjust in the adjustment of gray steps and white picture, and need to change repeatedly.

Please notice that can't enter the mode of the factory in every station homework after adjusting and finishing, so as not to miss movements and revise the white balance data again.

VGA Adjustment

Setting of Chroma2326 as follows:

Gray picture: TIM4/PAT48

White picture: TIM4/PAT105

Change to VGA mode, press “CH+/-” and adjust following items. Method same as AV mode:

- 6. White.BRoVga (vMin=0,vMax=100,vDef=50) →50,
- 7. White.BBoVga (vMin=0,vMax=100,vDef=50) →50,
- 8. White.BGoVga (vMin=0,vMax=100,vDef=50) →50,
- 9. White.BRgVga (vMin=0,vMax=100,vDef=50) →50,
- 10. White.BBgVga (vMin=0,vMax=100,vDef=50) →50,

Note: Press “Source” and change mode that Video Rear to VGA, then adjustment items of white balance same as Video Rear First, press “CH+/-” and adjust under the VGA mode. (White.BBgCVBS(vMin=0,vMax=100,vDef=50)→50 CVBS change to VGA)

COMPONENT Adjustment:

- 1). VG828 setting as follow :

Gray picture : TIM954/PAT922

White picture : TIM954/PAT936

- 2). Change to COMPONENT1 mode , press “CH+/-” and adjust following items. Method same as AV mode :

- 1. White.BRoVga (vMin=0,vMax=100,vDef=50) →50,
- 2. White.BBoVga (vMin=0,vMax=100,vDef=50) →50,
- 3. White.BGoVga (vMin=0,vMax=100,vDef=50) →50,
- 4. White.BRgVga (vMin=0,vMax=100,vDef=50) →50,
- 5. White.BBgVga (vMin=0,vMax=100,vDef=50) →50,

Adjustment stand of white Balance : $x=299\pm15$, $y=315\pm15$

6、 DDC program and test

6-1 Equipments list and prepare

DDC tester	1PCS
PC	1SET
D-SUB cable	1PCS
DVI cable	1PCS
Barcode Reader	1SET

Prepare before test:

1. Turn on the power of your PC and programmer, then make good connection of them.
2. Connect the D-SUB wire and DVI wire to the DDC program equipment and the PDP monitor.

6-2 Program and test process

1. Choose different DDC menu according to different customer , do use PAGE DOWN/PAGE UP to go to the submenu and parent menu until find the right model. Press enter to access the program interface. There will be shown RGB on the screen. Then switch to RGB program on the DDC connector. Press any key to access RGB program interface ,then there will be “input serial no. :” prompt on the screen.
2. Use Bar Readers to read the serial no to the program ,then make sure the serial no you have read is the same as on the barcode. Then set the PDP to blue screen mode, press enter to start.
3. Watch the information of the program, it means programmed OK when the following interface come out.
please CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number :
****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture :****、 Checksum :
** (same as the last byte of data table, reference to the note of RGB programming picture) and so on.
4. Press Enter to access RGB DDC test interface , follow the DDC test picture , CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number : ****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture ****、 Video Input : Analog、 Checksum : ** (same as the last byte of data table, reference to the note of RGB programming picture) and so on.
5. Press any key to access DVI program interface, there will be “DVI” shown on the screen. Switch the of switch on the DDC connector, press any key to access DVI program interface, there will be “input serial no. :” promote.
6. Use Bar Readers to read the serial no to the program , then make sure the serial no you have read is the same as on the barcode. Then set the PDP to blue screen mode, press enter to start.
7. Watch the information of the program, it means programmed OK when the following interface come out.
please CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number :
****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture :****、 Checksum :
** (same as the last byte of data table, reference to the note of DVI programming picture) and so on.
8. Press Enter to access DVI DDC test interface , follow the DDC test picture , CHECK Manufacturer Name、 Vendor Assigned Code、 Model Name、 Serial Number : ****[????????****](same as Barcode)、 Week of Manufacture :**, Year of Manufacture ****、 Video Input : Analog、 Checksum : ** (same as the last byte of data table, reference to the note of DVI programming picture) and so on. If the recording is failure, check the connection of equipment and record again from the step4.If all of these work does not take work ,please ask IE department for help.
9. Notice :the “?” and “*” symbol will be changed according to the year of manufacture ,and so on.

7、Flash Update

7-1 The list of Instrument

- 1、Prepare 1 piece of RS232 cable (The Pin connection see the Figure-1 , If difference, please re-connect the cable) and 1 set of PC.
- 2、 Connect the RS232 cable with PC and PDP(See the Figure-2).

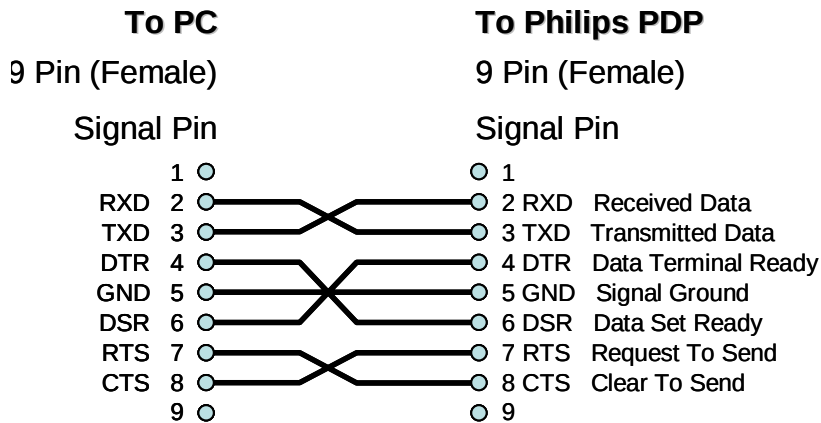


Figure-1

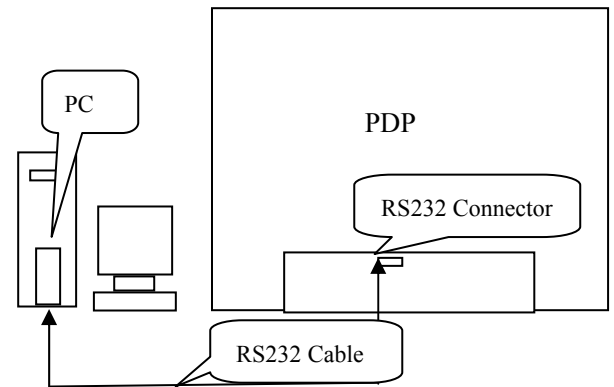


Figure-2

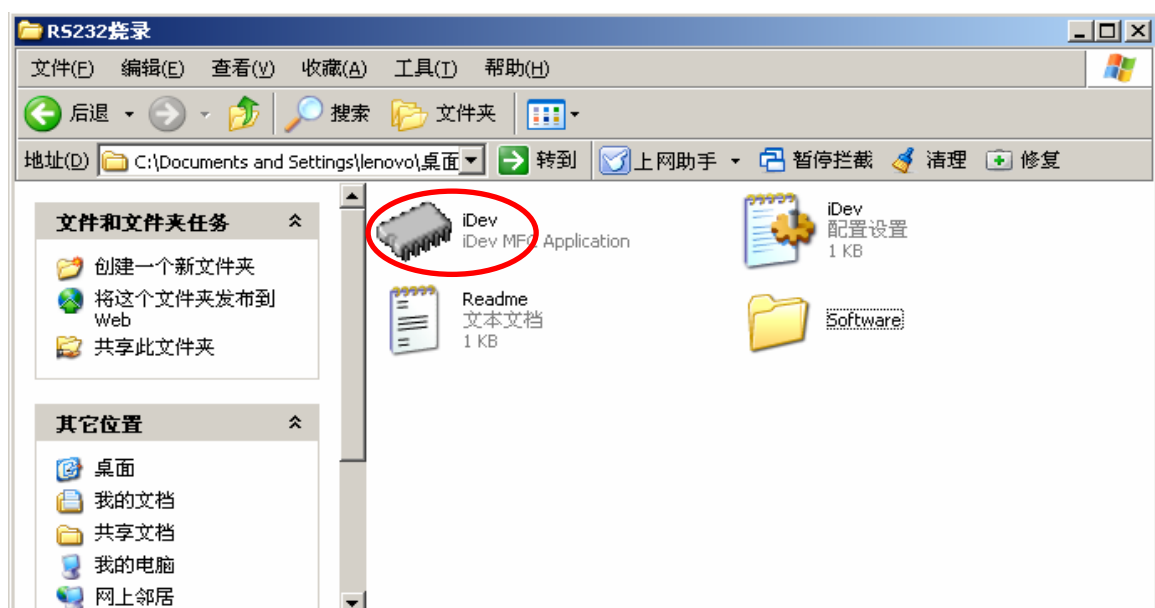
7-2 The operation explaining Flash Update

Note: Operation Under the situation of PDP working normally.

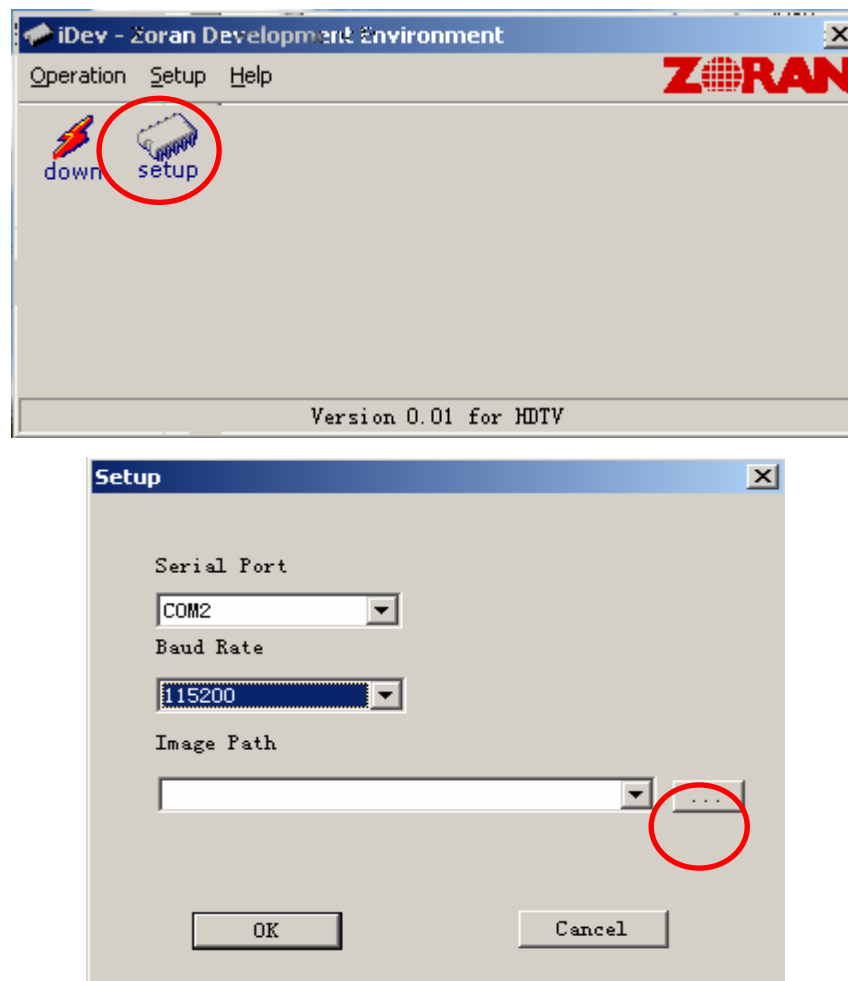
The iDev is a Windows utility that installs hex files into the FLASH ROM of the target Image Processor system. iDev is a Windows-based application.

Downloading is done through an RS-232 connection, which is bidirectional and serial.

Step 1: Open the file iDev (You should

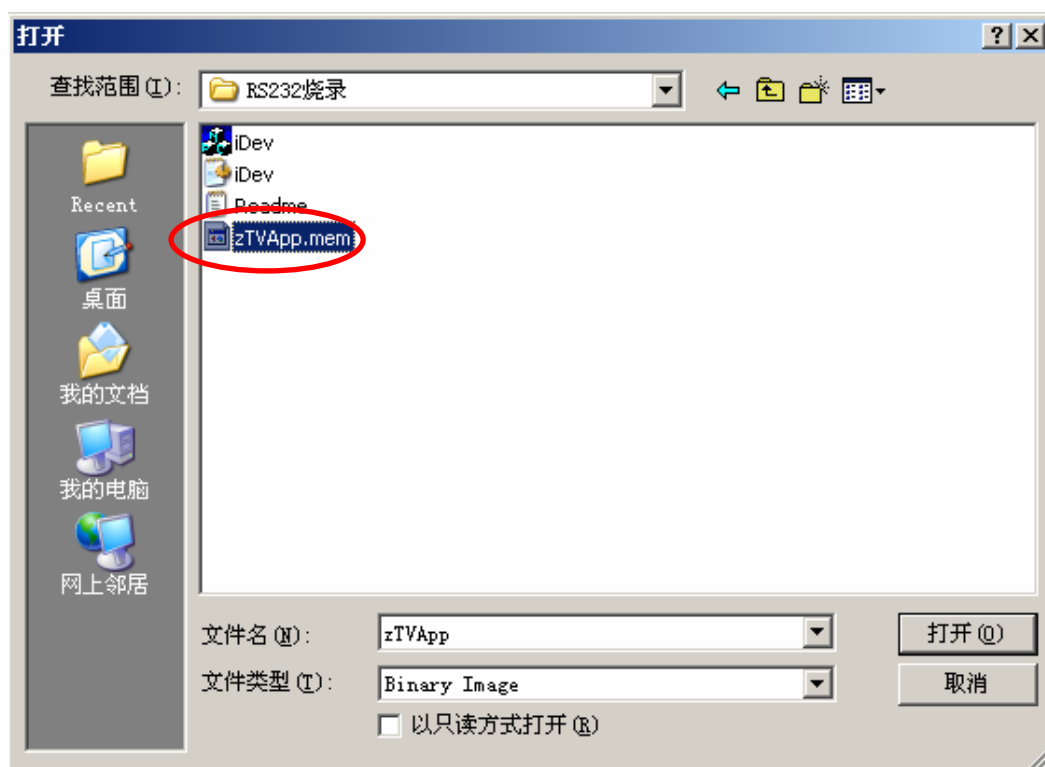


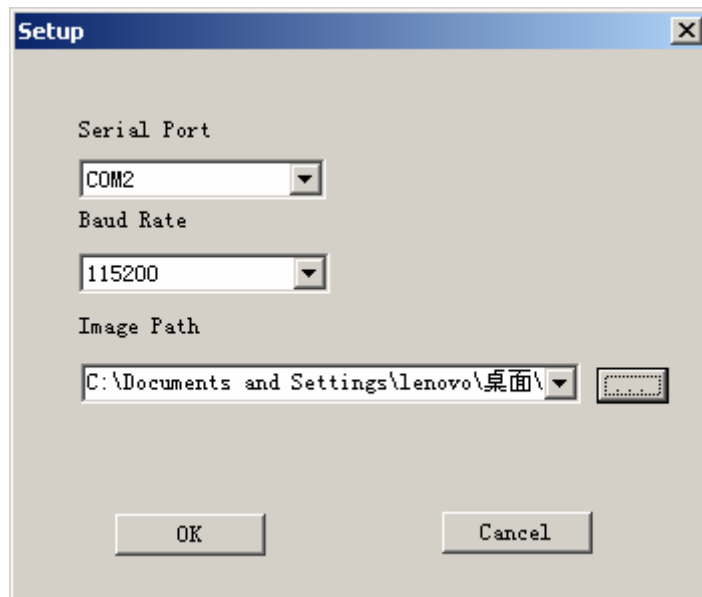
Step 2: Choose the director of the file to flash



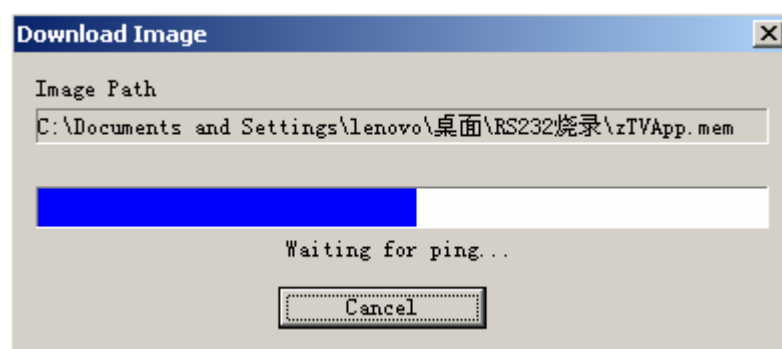
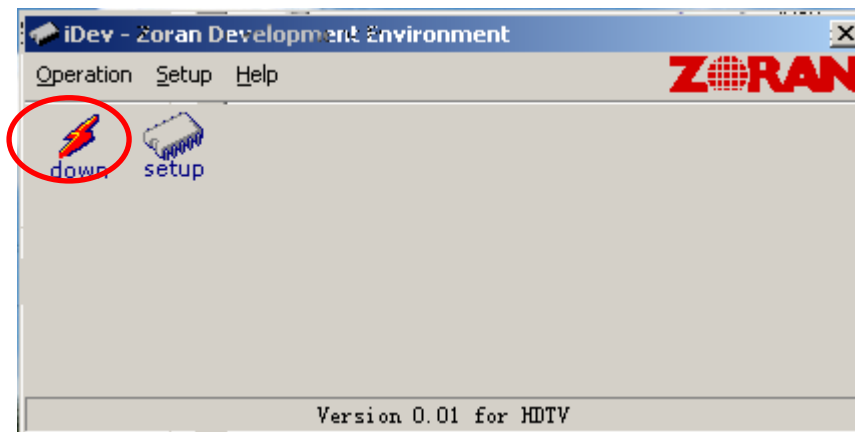
Note: Connect the computer's serial port (usually COM1) to the serial port of the ZORAN evaluation board using a null modem cable, and select speed.

Step 3: Flash only the file required





Step 5: Press reset or cycle the power from the Evaluation Board and click “down”



Step 6: View hex file flashing progress, after the files have been downloaded, Click “Close” to exit

8、 Software Platform Reference TV Application

8-1 Introduction

This document describes Phobos's reference TV application, supporting the basic control functionalities required to watch television. The reference application is designed to assist Phobos customers in implementing a DTV system, using the Generation9-Elite IC and its APIs. This reference application is intended to support U.S. based terrestrial analog/digital broadcasting(NTSC/ATSC), and includes Electronic Program Guide (EPG), closed captioning, and parental control, as well as basic TV controls and underlying A/V decoding. The reference TV application layer lies on top of Phobos's Cougar API middleware that provides the Transport/Audio/Video/graphics driver functionalities as a chip-independent set of APIs.

8-1-1 Supported Functions

The supported application functions are:

- Power control
- Source selection
- Channel change (up/down, recall and direct digit key input)
- Volume and mute control
- Closed caption selection
- Electronic program guide
- Menus: audio, video, setup, feature

8-2 The Phobos Reference TV Application

This chapter describes basic TV controls such as channel changing, source selection, and mute/volume control. These basic functionalities are made available through the combination of GUI and standardized TV APIs. The application also utilizes the results of PSIP parsing and decoding of EIA708/608 data. These are used to support closed captioning and parental control, both of which are required on television sets sold within the U.S.

In addition to **Tuner**, **AV Input** and **Channel Map** APIs, the reference application uses a set of **Control Array** APIs to control the hardware blocks. These provide a standardized way to control the various hardware blocks in the TV chassis.

8-2-1 Power Control

The current reference application does not support standby power control as part of this implementation. Instead, pressing the power button on the remote and front panel controls the display and audio outputs only. A power-on configures the system based on Control Array values stored in non-volatile memory.

8-2-2 Source Selection

The Reference platform has analog/digital baseband inputs as well as transport input through ATSC digital channel. The **TV/Input** button cycles through the input sources:

1. RF
2. Front Composite (shared with S-video)
3. Rear Composite (shared with S-video)
4. YPbPr Component 1
5. YPbPr Component 2
6. VGA
7. HDMI input

The displayed banner for changing source is the same as the channel banner, except for displaying source number and name.

8-2-3 Channel Change

There are three ways to select a channel in the reference TV application: channel up/down, digital, and last buttons in remote controller.

- Pressing the channel **up** or **down** key tunes to the next highest or lowest channel in the selected channel map; a channel in a different channel group (analog or digital) is tuned at the limits of the available scan. The channel map is established through the Auto Program menu, which automatically removes any no signal channels. After channel scanning, the channels are grouped as digital channels and analog channels.
- For digital channels, the channels are sorted on the virtual channel number. Further manual editing of the channel list can be done through the Manual Channel Set menu. If no channels are enabled in the selected channel map after initial power on, then the channel up/down keys select the channel number next to the current channel, and determine the analog or digital channel based on the availability of signal.
- Channels can be directly accessed by pressing the digit keys on the remote controller. The channel selected is tuned immediately if the **OK** key is pressed, or will be tuned automatically after two seconds of inactivity following the last entered digit. If the entered digit keys starts with a zero (“0”), the channel number will be tuned to the second digit (for instance, the digits **03**, entered in sequence, will tune immediately to channel 3). Any channel may be selected by this method, regardless of its presence or absence in the current channel map.
- Pressing the **Last** key in the remote control tunes the channel selected prior to the currently tuned channel. For ATSC channels, it selects the sub-program number as well as the channel number.

The above channel-change operations are implemented via the **Tuner** and **Channel Map** APIs.

After tuning, the application displays the information of the currently-tuned channel. This includes:

1. Channel number [Ch 9-1]
2. Channel Label [for instance, KQED]
3. Current Time [for instance, 12:30 PM]
4. Rating information [for instance, TV-PG]

The virtual channel number will be displayed if the current channel is digital. The channel label is extracted from input signal if there is no label setting for the current channel. The channel label can be explicitly set with Channel Labels menu, which will use **TLChMapSetChannelName** to store the label.

8-2-4 Volume and Mute Control

Pressing the volume **Up** or **Down** button changes the current volume in the Control Array and applies this change to the hardware block. The range of control is determined by the Control Array; the current implementation has a range from 0 to 63. Pressing either of the volume keys clears the mute audio mode of operation, if previously set. If no button is pressed for five seconds after pressing the last volume **Up** or **Down** button, the volume display will be automatically removed.

The reference application supports audio **mute** or **unmute** by pressing the **Mute** key. When mute is enabled, the audio is muted, displaying an icon on upper right side. The mute condition is cleared when the TV is powered off.

Pressing the **Mute** key invokes the mute icon on the right corner of screen.

8-2-5 Closed Caption Selection

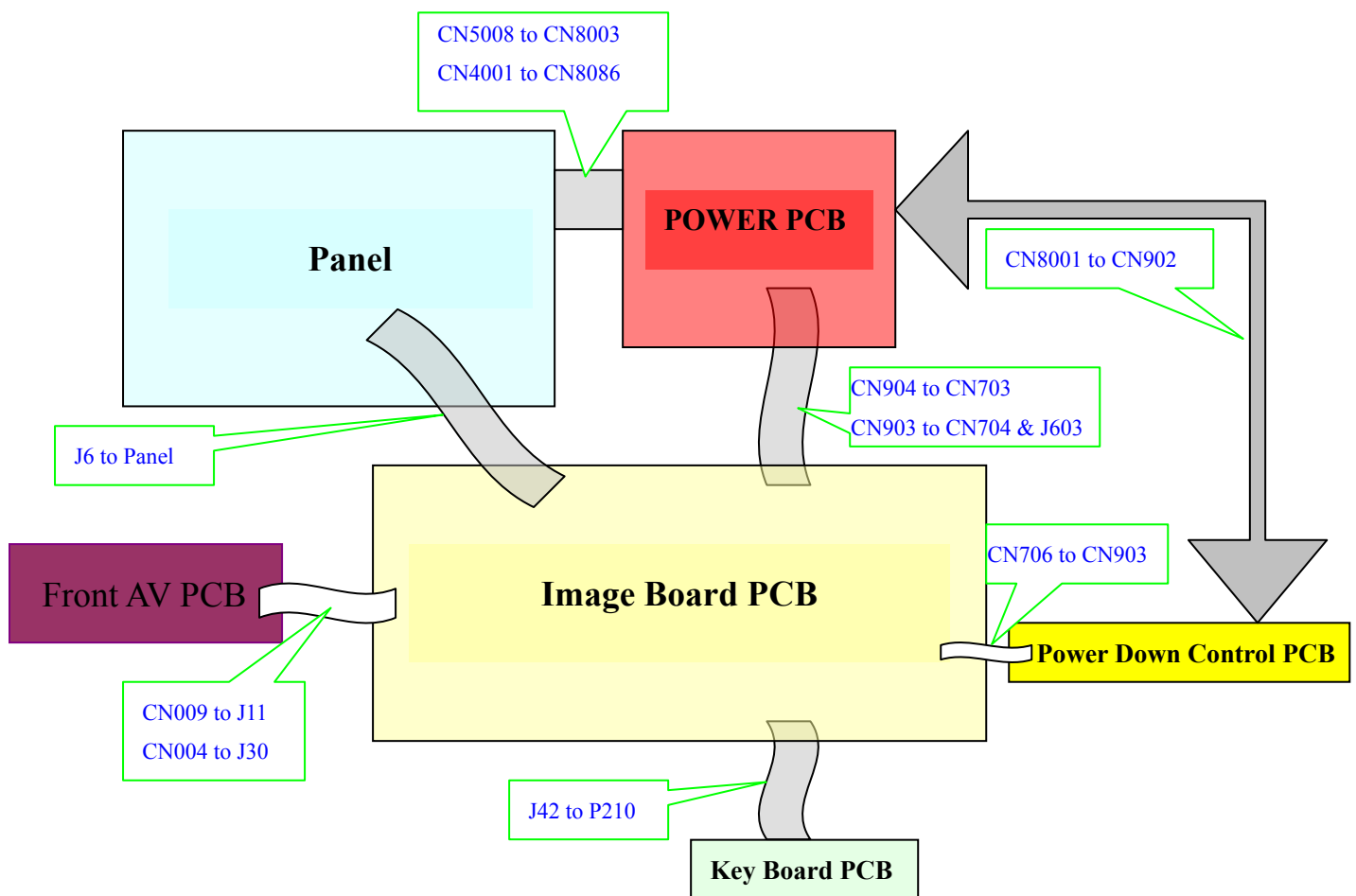
This section describes how to enable **Closed Caption** (CC) on the Phobos TV application. When the TV is switched ON, captions are disabled by default. The user switches captions ON using the **[SUBTITLE]** key on, a new language/CC option is displayed near the bottom center of the display. The sequence of options available are listed below (depending upon the stream type- ATSC/NTSC).

For ATSC, **English – Spanish – French –Portuguese-Off**

For NTSC, **CC1 – CC2 – CC3 – CC4 – Off** The displayed CC option can be set either, it is set automatically after two seconds.

9、 Block diagram & Explain

9-1 PDP block diagram and functions



Function of Board:

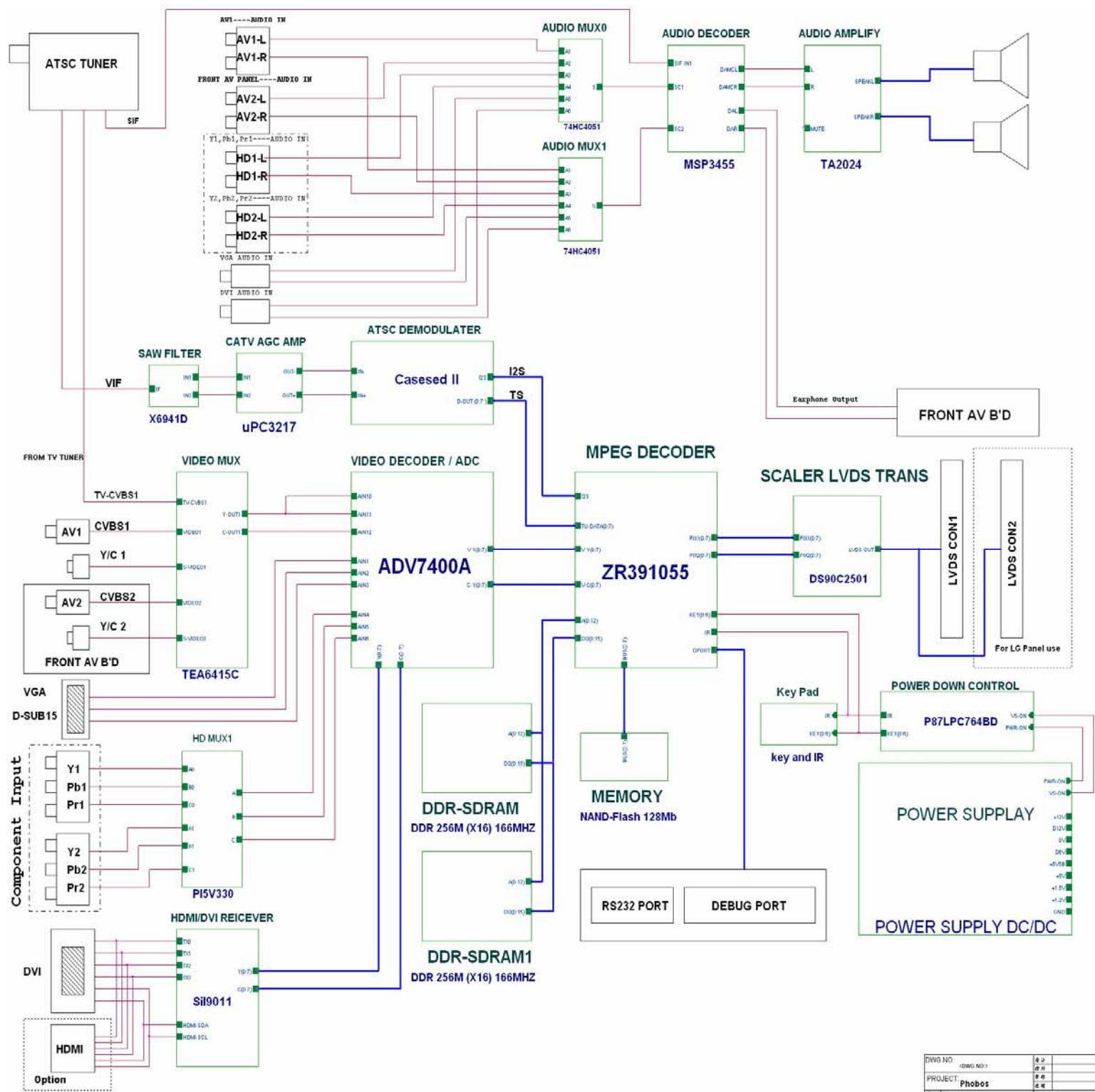
- 1) IMAGE Board : Control all input signals, Decode the video signal, De-interlace, and send digital signals (LVDS signal) sent from image Board and display
- 2) PDC Board: Power Down Control Board
- 3) SIDE AV Board: The input signal interface
- 4) Power Board: Supply Power for Panel and Image Board
- 5) KEY Board: POWER, Signal Source, MENU, CH+, CH - / VOL +, VOL -
- 6) Power ON /OFF: Turn power on/off

Part apt to decrease:

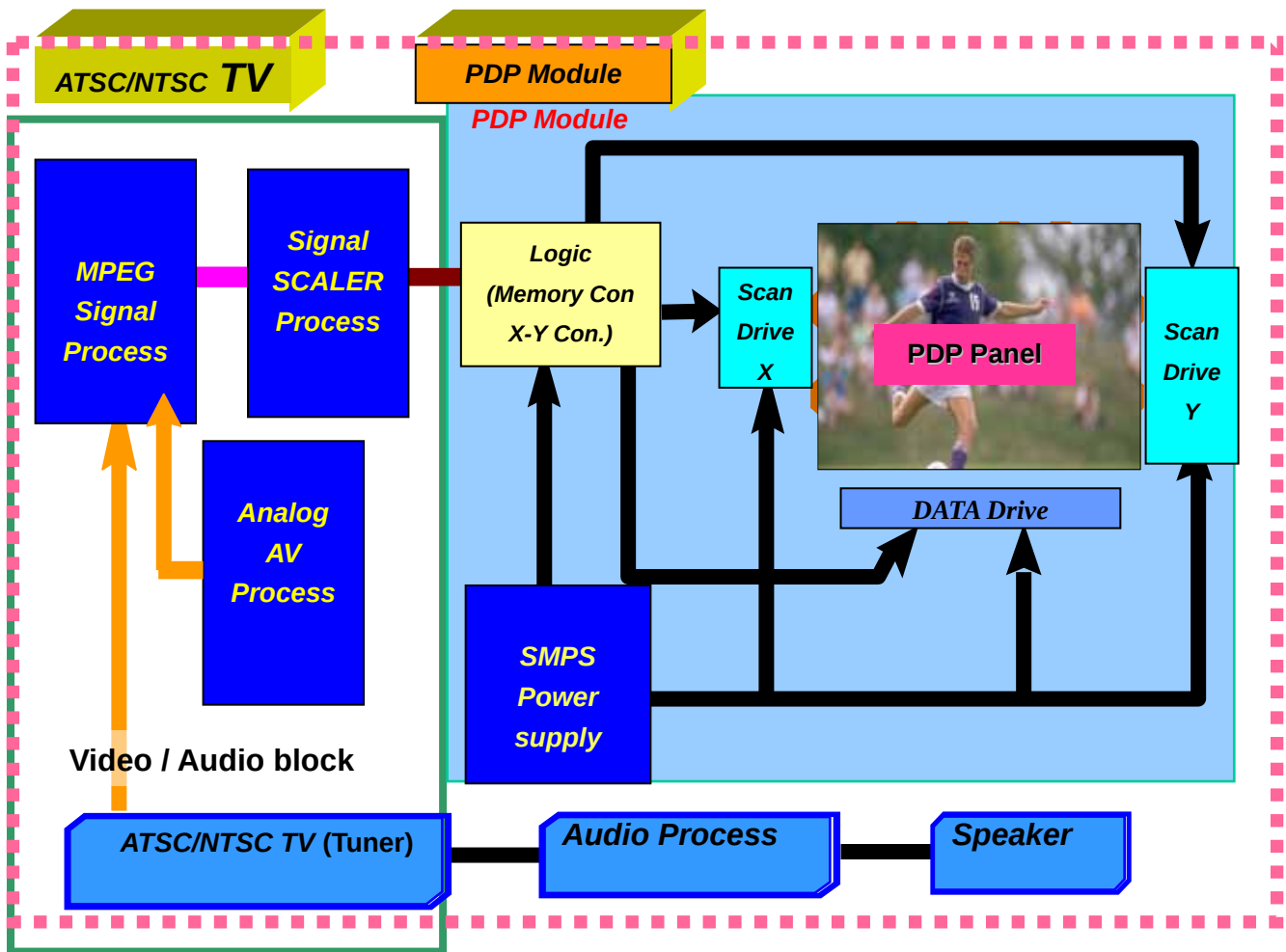
- 1) BEZEL, REAR COVER& GLASS FILTER
- 2) Panel
- 3) Terminal Board's RCA plug

9-2 Image board block diagram and signal introduce/process

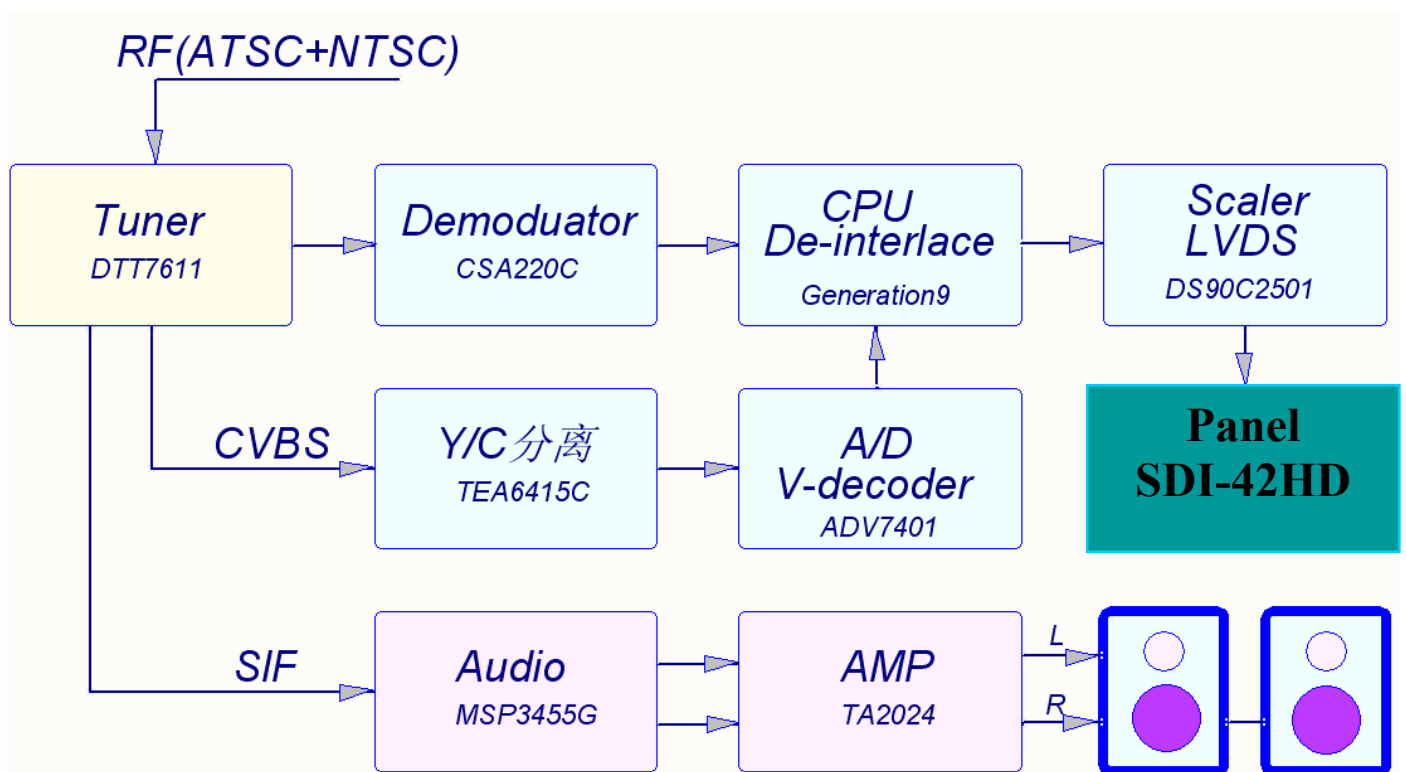
9-2-1 Image board block diagram



DWG NO:	REV NO:	DATE
PROJECT: Phobos		
Rev	Document Number	



9-2-2 Signal introduce/process



ATSC+NTSC TV RF signal are separated into 2 way output when enter into Tuner. One is NTSC (Analog signal) that output video signal by mixing, amplifying, demodulating. Video signal are separated into Y/C signal through TEA6415C, and transferred into ITU601 through ADV7401, then send into Video-audio process chip Generation9. Tuner output SIF audio signal to MSP3450G to process, amplify, then put in D-type amplifier TA2024.

The other ATSC (Digital signal, ATSC channel bandwidth is 6MHZ) via Tuner transferred into **TS-stream** through 44MHZ intermediate frequency amplify, ASW filter, QAM/OFDM demodulate, then enter into Generation-9 to MPEG decode, video part revert into video signal through coding, and transferred into double-field TTL signal by this chip process. Then put into Scaler and LVDS drive chip DS90C2501, through coding output 5 pair LVDS signal to drive PDP panel module. Digital audio signal from Generation-9 revert into Audio signal to MSP3450G through PCM decoding.

Program information in TS-stream be parsed and stored, user could know related program information through OSD query menu. For multi-program TS-stream, user could appoint to see some program in this stream through program guide EPG.

AV, S-video, YPBPR, DVI, D-Sub and each Audio signal through two group of 74HC4052 switch with ATSC audio signal together put into MSP3450G, through alt, woof, balance, volume, SRS, BEE process, then amplify by D power amplifier TA2024, output to loud-speaker.

9-2-2 Input signal introduce

1. **VIDEO:** transmit bright & chroma signal , it is general ,its picture quality is equal to the general VCD.
S-VIDEO transmit the bright and the chroma single, and can reduce/control the cross-interfere , it is better than the Video.
2. **RGB&D-SUB**(Pc interface): general RGB simulative input interface .
3. **YCbCr(NTSC/PAL):** is composed of one bright and two chromatism signals U/V. due to the eye is more sensitive for bright than chroma , RGB via the formulae $Y=0.39R+0.50G+0.11B$ to transform into one bright and two chromatism signals $U(R-Y)$, $V(B-Y)$.
4. **VIDEO、S-VIDEO、YCBCR:** the frequency 15.6KHZ 50(PAL)/60HZ(NTSC), interleaved simulative signal.
5. **YPbPr:** non-interlaced signal, belong to DTV scope, support 480P,720P,1080i format, current is NTSC.
6. **DVI :** digital Visual Interface, has 29pin (DVI-I) and 25pin (DVI-D), now many top grade display card own it.

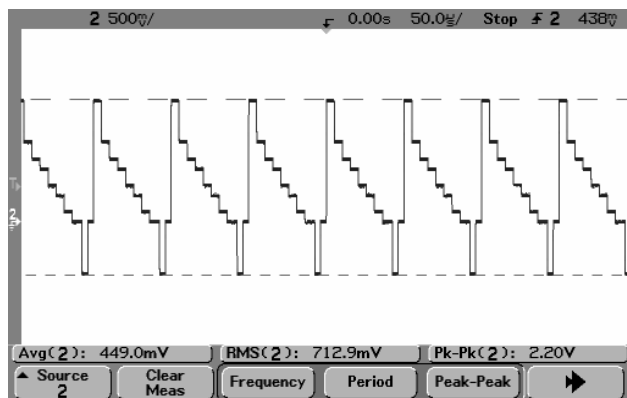
10、Waveform of signal

10-1 Waveform of input signal

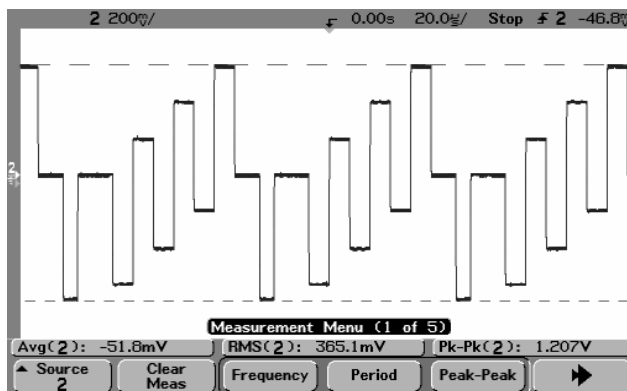
(Instrument outputs the sub board signal , Instrument : VG828/ TG19CC/Oscilloscope)

YCbCr: Timing946 Pattern946 color bar picture

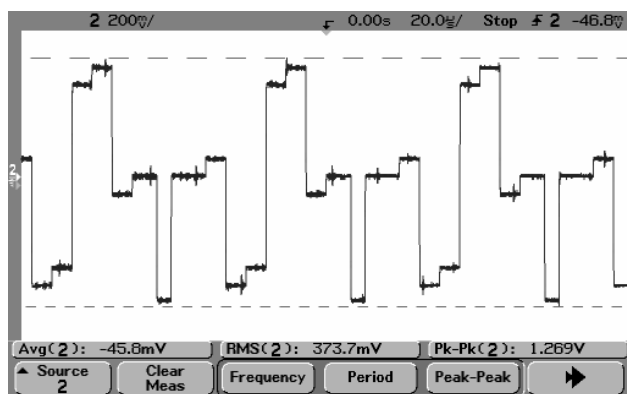
Y Luminance Signal



R Red Signal

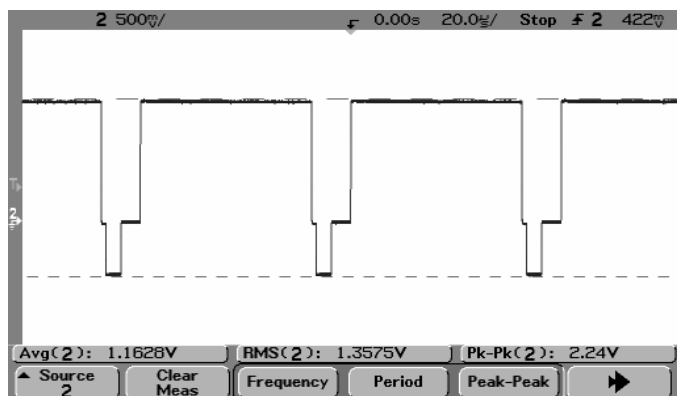


B Blue Signal



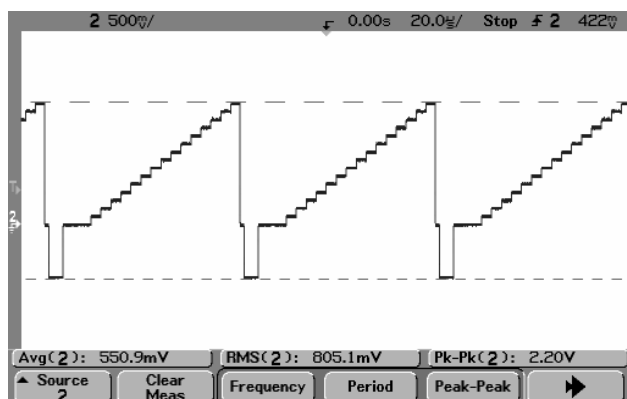
YCbCr: Timing 949 Pattern936 Full White Picture

Y Luminance Signal

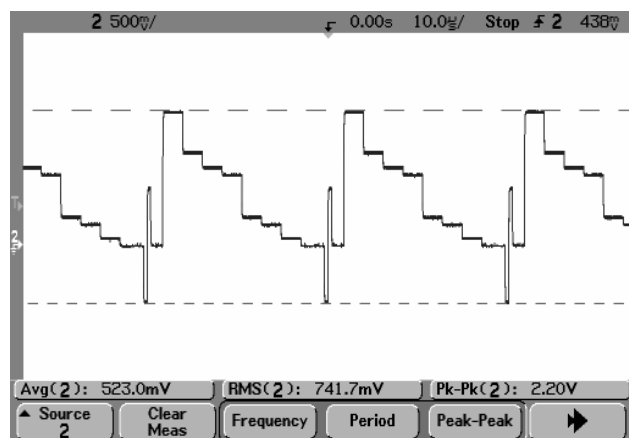


YCbCr:Timing 949 Pattern921 Gray Picture

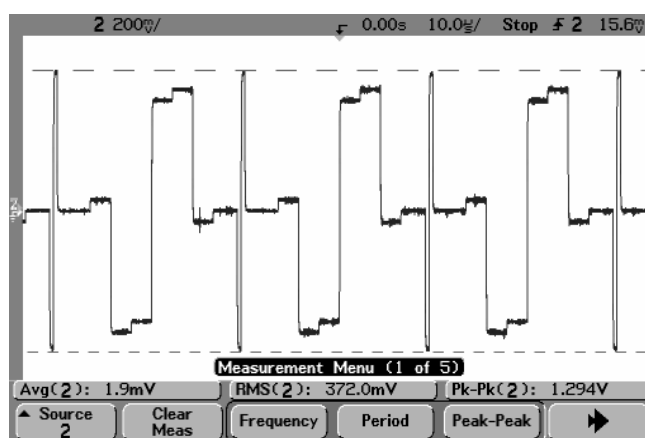
Y Luminance Signal



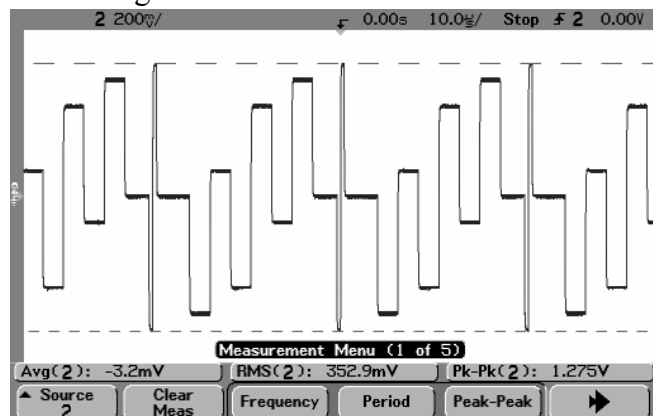
YPbPr:Timing955 Pattern946Color Bar Picture
Y Luminance Signal



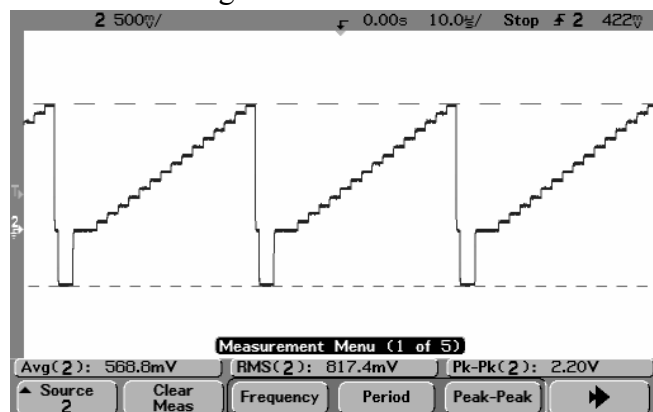
R Red Signal



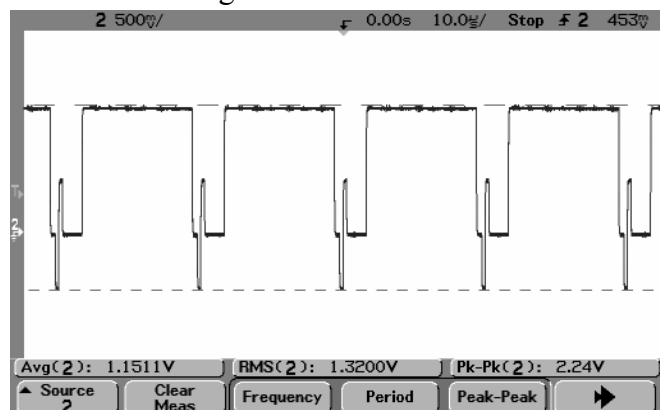
B Blue Signal



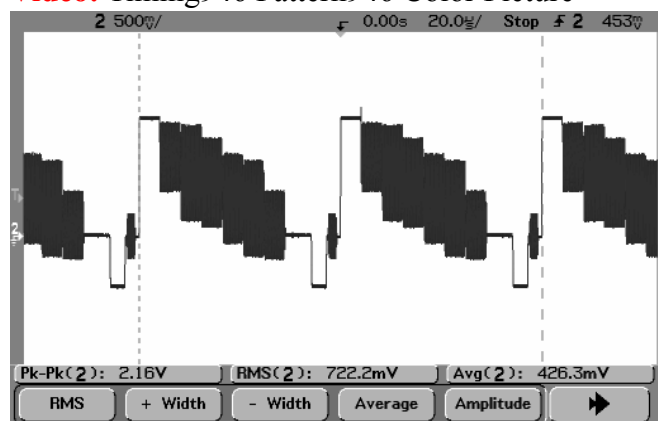
YPbPr:Timing953 Pattern921 Gray Picture
Y Luminance Signal



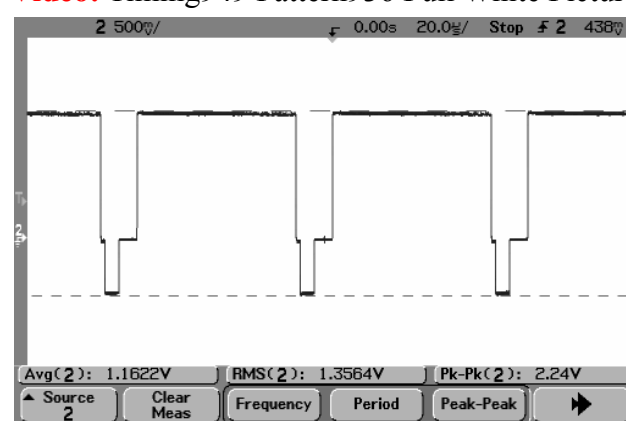
YPbPr:Timing954 Pattern936 Full white picture
Y Luminance Signal



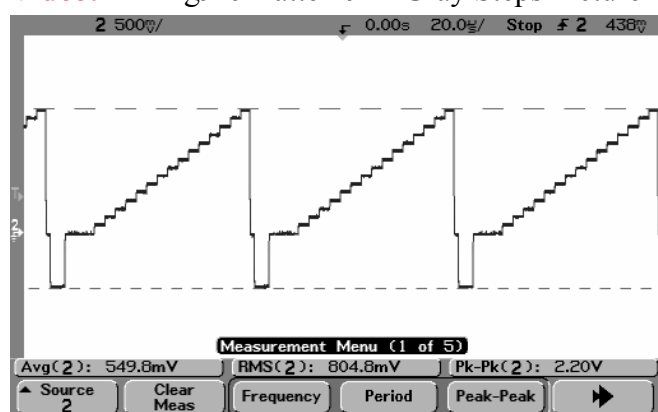
Video: Timing946 Pattern946 Color Picture



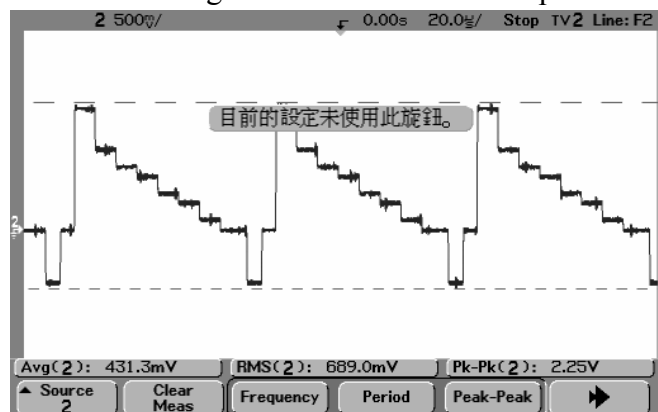
Video: Timing949 Pattern936 Full White Picture



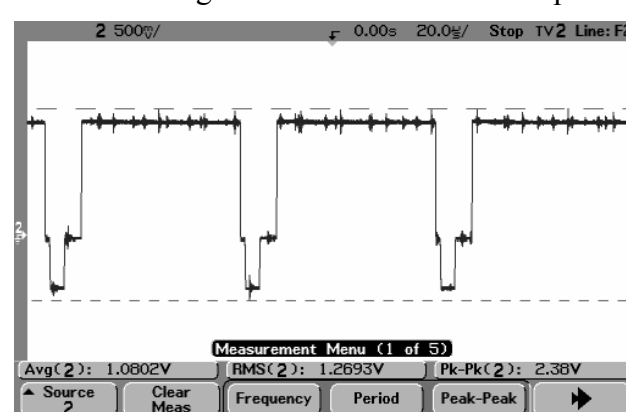
Video: Timing949 Pattern921 Gray Steps Picture



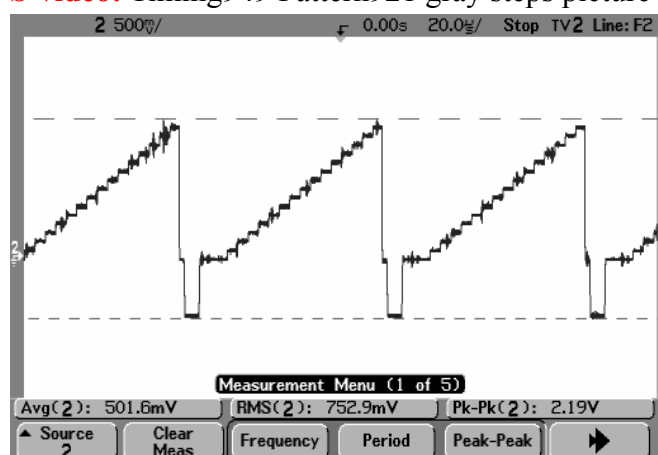
S-video: Timing946 Pattern946 color bar picture



S-video: Timing949 Pattern936 Full white picture



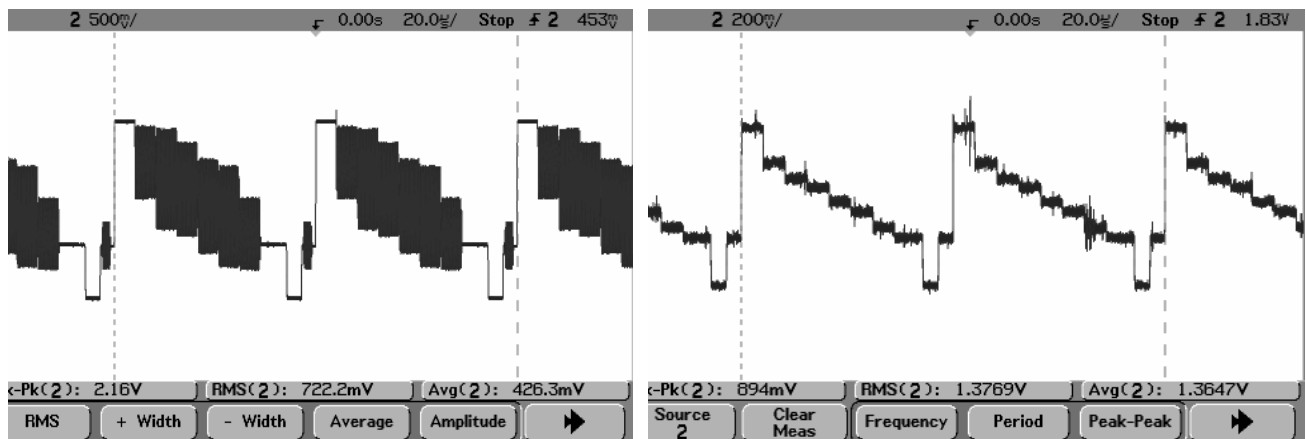
S-video: Timing949 Pattern921 gray steps picture



10-2 Signal waveform in the image board

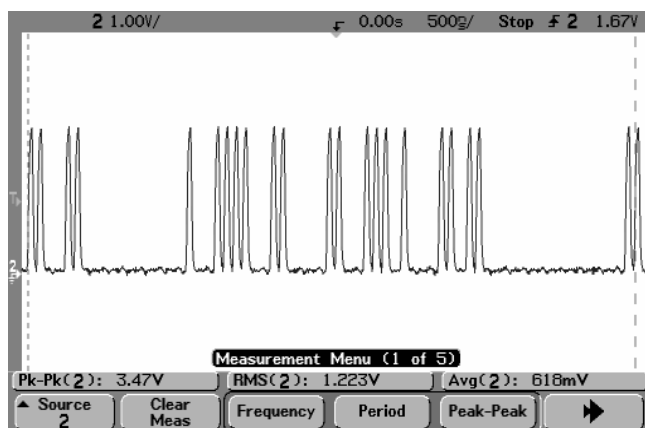
Video: Timing946 Pattern946 color bar picture

U14 (Y/C separate) In (pin3 C136)/(pin20 C142) U14 (Y/C separate) Out pin18/17 R119/R120



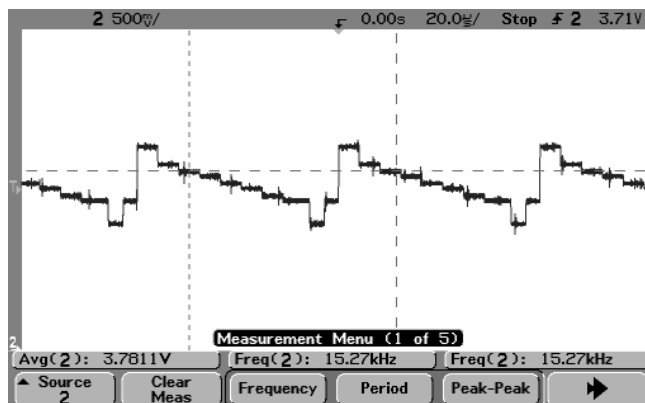
Video: Timing 949 Pattern936 white picture

U7 decoder output 8bit digital signal:

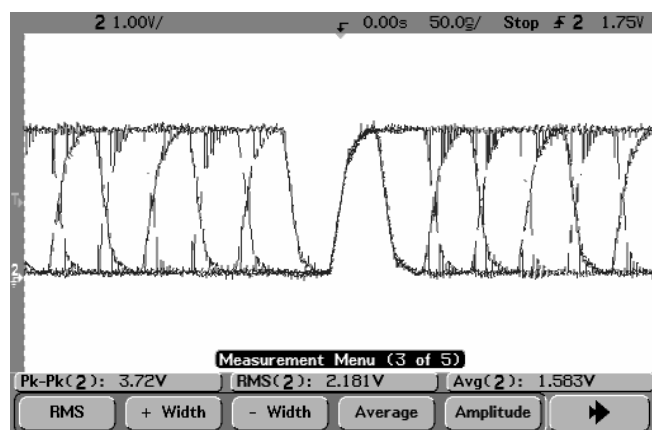


S-Video: Timing 946 Pattern946 color bar picture

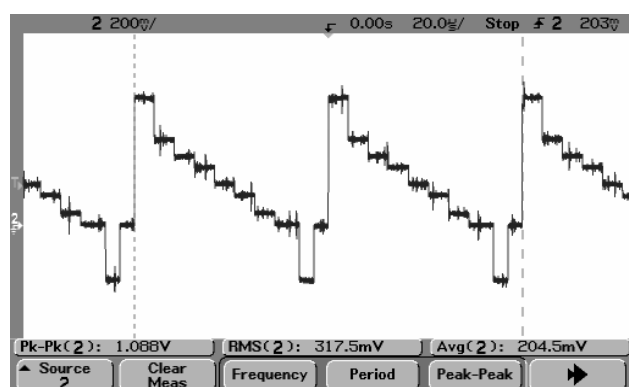
U14 pin8, pin10



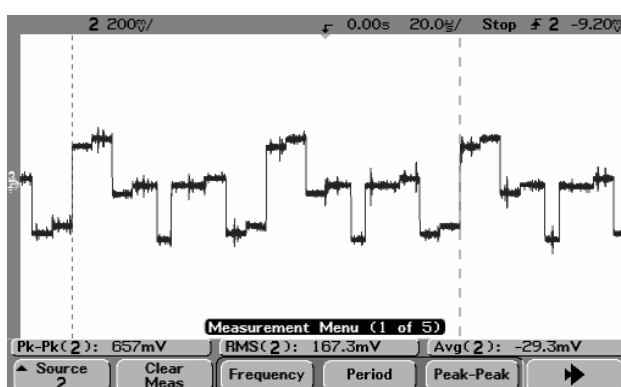
S-Video: Timing 949 Pattern 946 color bar picture
U7 8bit digital signal output:



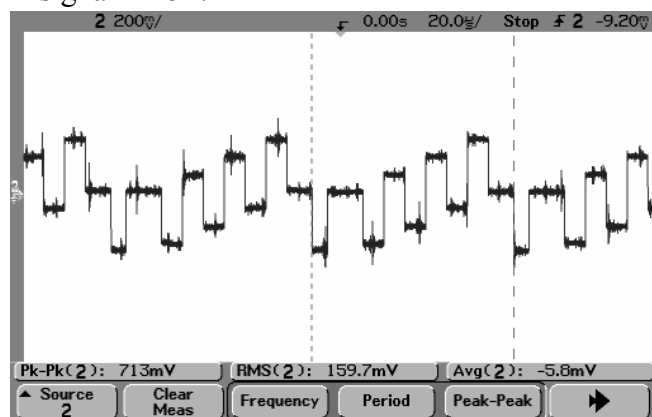
YCbCr: Timing 946 Pattern 946 Full white picture
Y signal—L55



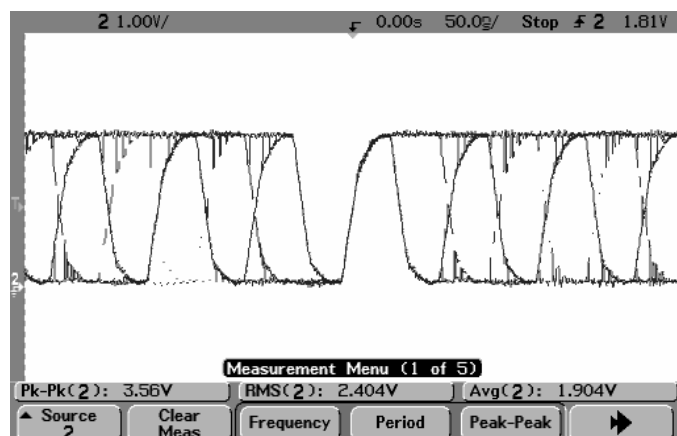
R signal—L53



B signal—L54:

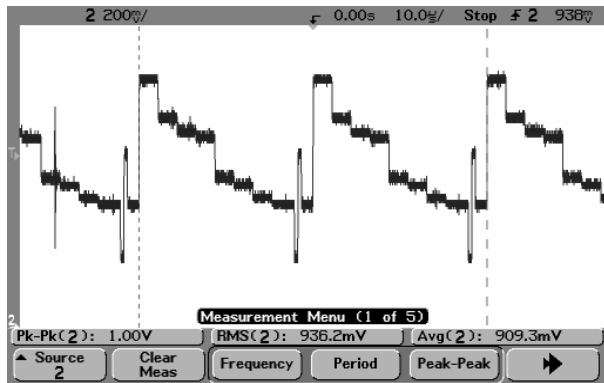


YCbCr: Timing 949, 946 Pattern 921, 936, 946 gray scale, color bar, white picture
U7 decoder output 8bit digital signal waveform

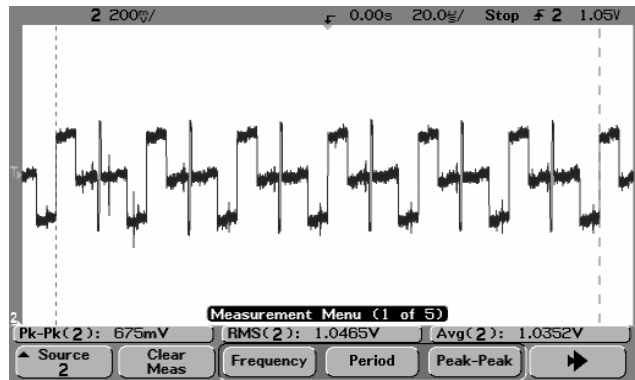


YPbPr: Timing 955 PATTERN946 color bar picture

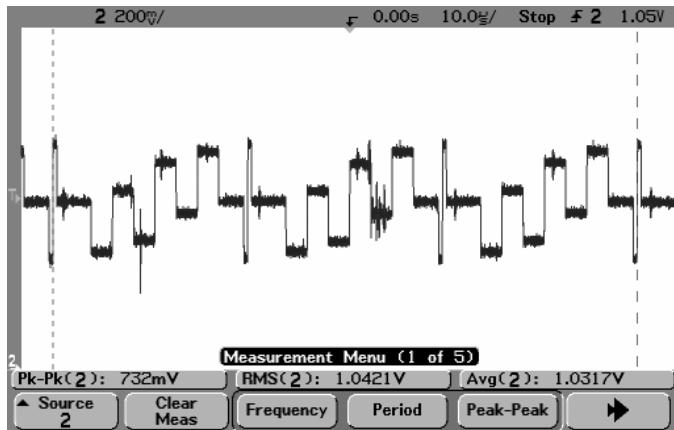
Y signal—L55



R signal—L53



B signal—L54

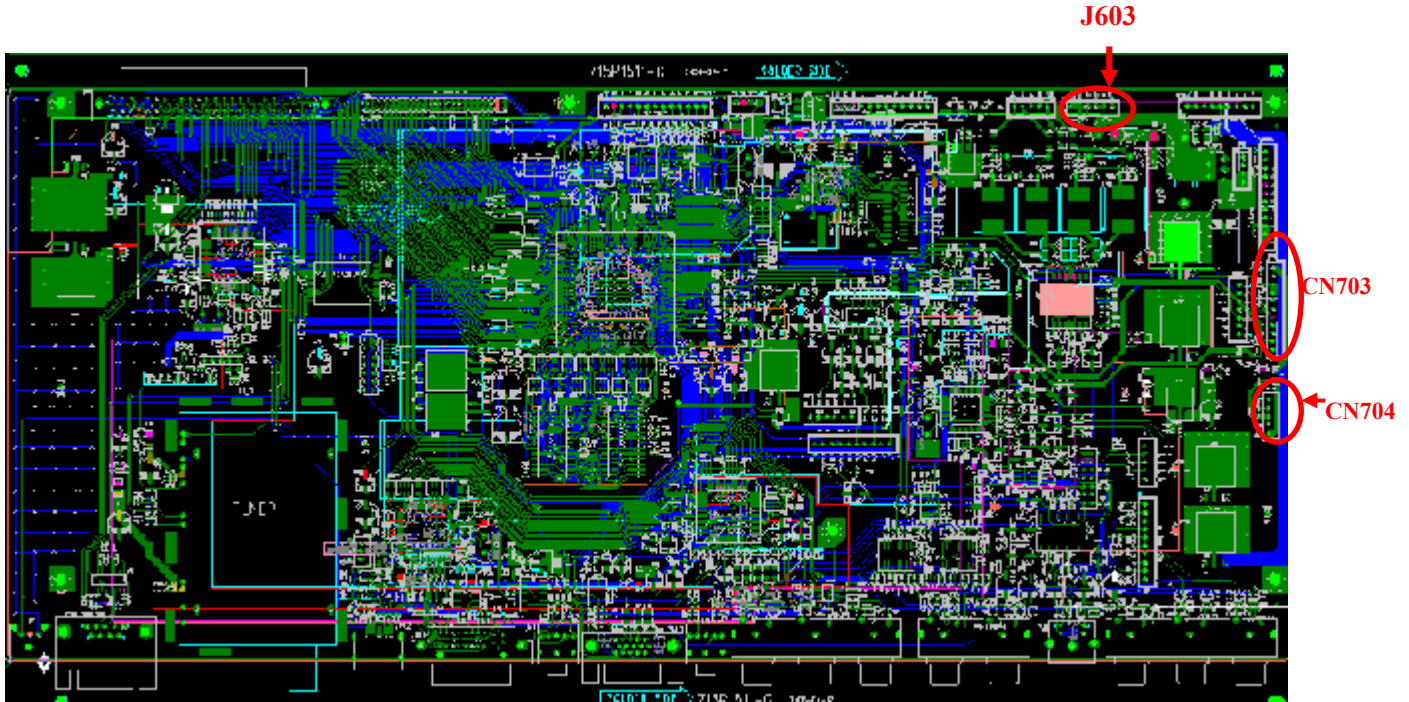


11、 Check and Measure

11-1 Image board

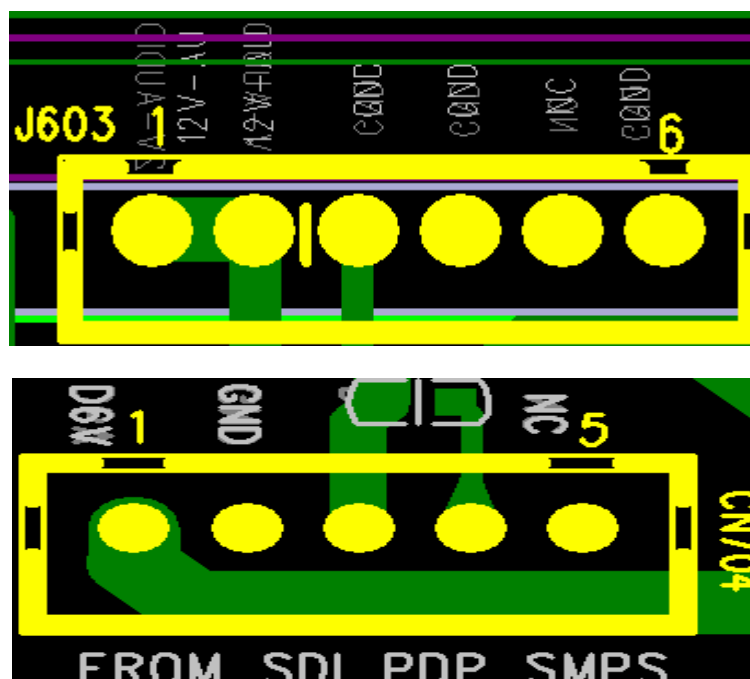
Test the power of each chip with the universal meter, to ground impedance and earth situation.

11-1-1 Power Check and Measure

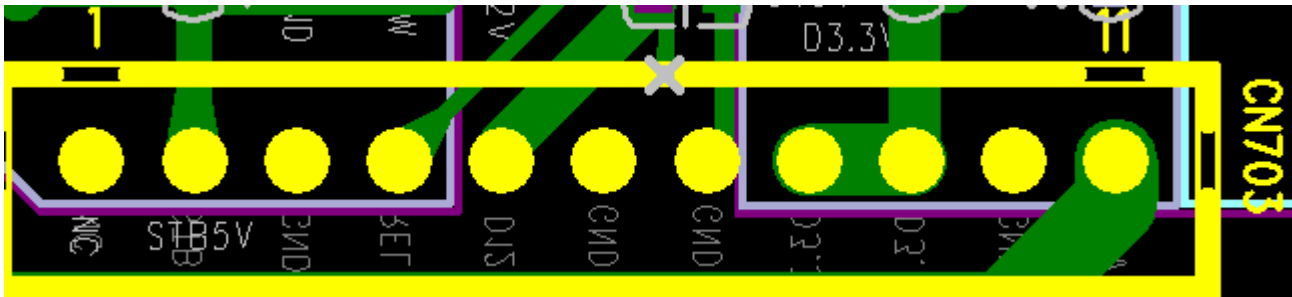


Supply with getting red arrow point three interface J603, CN703 and CN704 that identification come out for power, image of board with the interface among having picture, it corresponding power make detection method separately among following several picture. :(Only for SUMWUNG POWER)

- . In the following the first picture it is successively 1 to 6 pin of J603 from left to right: Among them, 1pin and 2pin connect 12V voltage; 3pin, 4pin and 5pin are digital earth; The second picture it is 1 to 5 pin of CN704 from left to right: Among them, 2pin and 4pin of CN704 connect digital earth, 1pin of CN704 connect D6V voltage, 3pin of CN704 connect D12V voltage ,The following picture shows:



. In the following picture it is successively 1 to 11 pin of CN703 from left to right. Among them, The second pin connects STB5V ,3pin , 6pin , 7pin and 10pin are grounded digitally, 5in connect D12V voltage, 8pin and 9pin connect D3.3V voltage,11pin connect D6V voltage .The following picture shows:

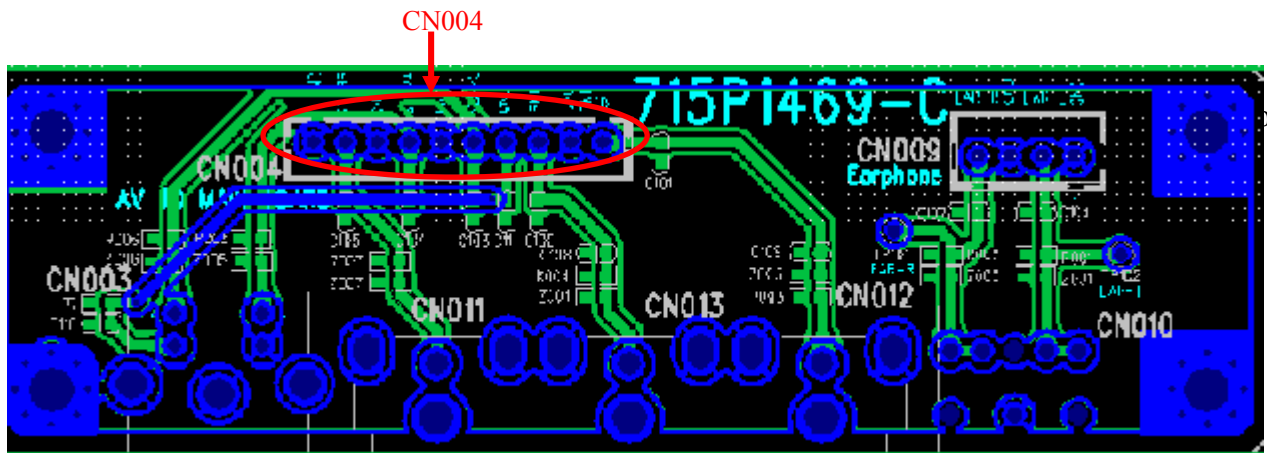


11-1-2 Voltage value of IC necessary

Voltage	Corresponding IC position and pin	
3.3V	U706 Pin3; U704 Pin3; U710 Pin3; U2 Pin38; U9 Pin13; U13 Pin3; U10 Pin91;	D40 Pin5; D41 Pin5; U68 Pin3; U30 Pin3, Pin1; J32 Pin7; U48 Pin26; U52 Pin20
STB5V	CN703 Pin2; E708; R301; R635; R68	
5V	L722,L713; L706,C718,E717; CN706(PDC Board) Pin2;	TP9; R126,R128; L216,L217; R301,R635,R638
6V	U709 Pin3; U702 Pin3; U711 Pin3;	CN703 Pin10; L703; C702
12V	J603 Pin1,Pin2; U701 Pin3; R322; L702,E711; CN703 Pin5; L701;	TP8; U601 Pin29,Pin30,Pin33; C700; U602 Pin8; U12 Pin2,Pin4; C695

11-2 SIDE AV Board

The picture below is AV SIDE board, The interface pointed out in order to provides the power for Audio board. The enlarged interface picture show in its connection.



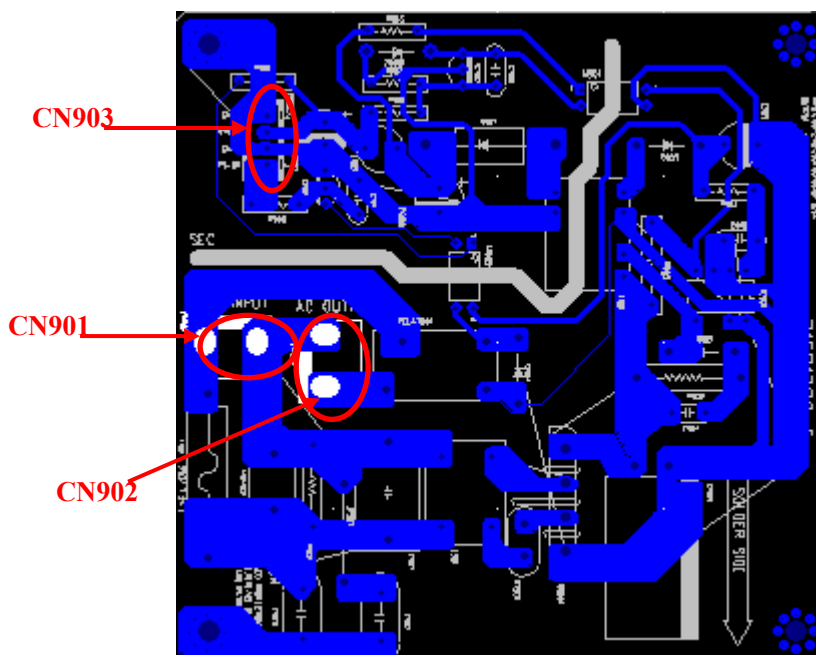
11-3 PDC Board

The following picture show PDC Board, among them getting red difference label about connection with PDC Board and main board, power board and switch of board.

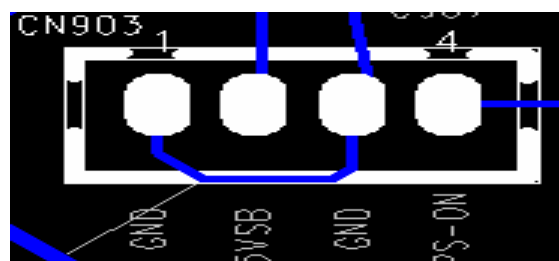
CN901: Connect with P9Z1 of Power Switch Board;

CN902: Connect with CN8001 of Power Board;

CN903: Connect with CN706 of Imager Board.

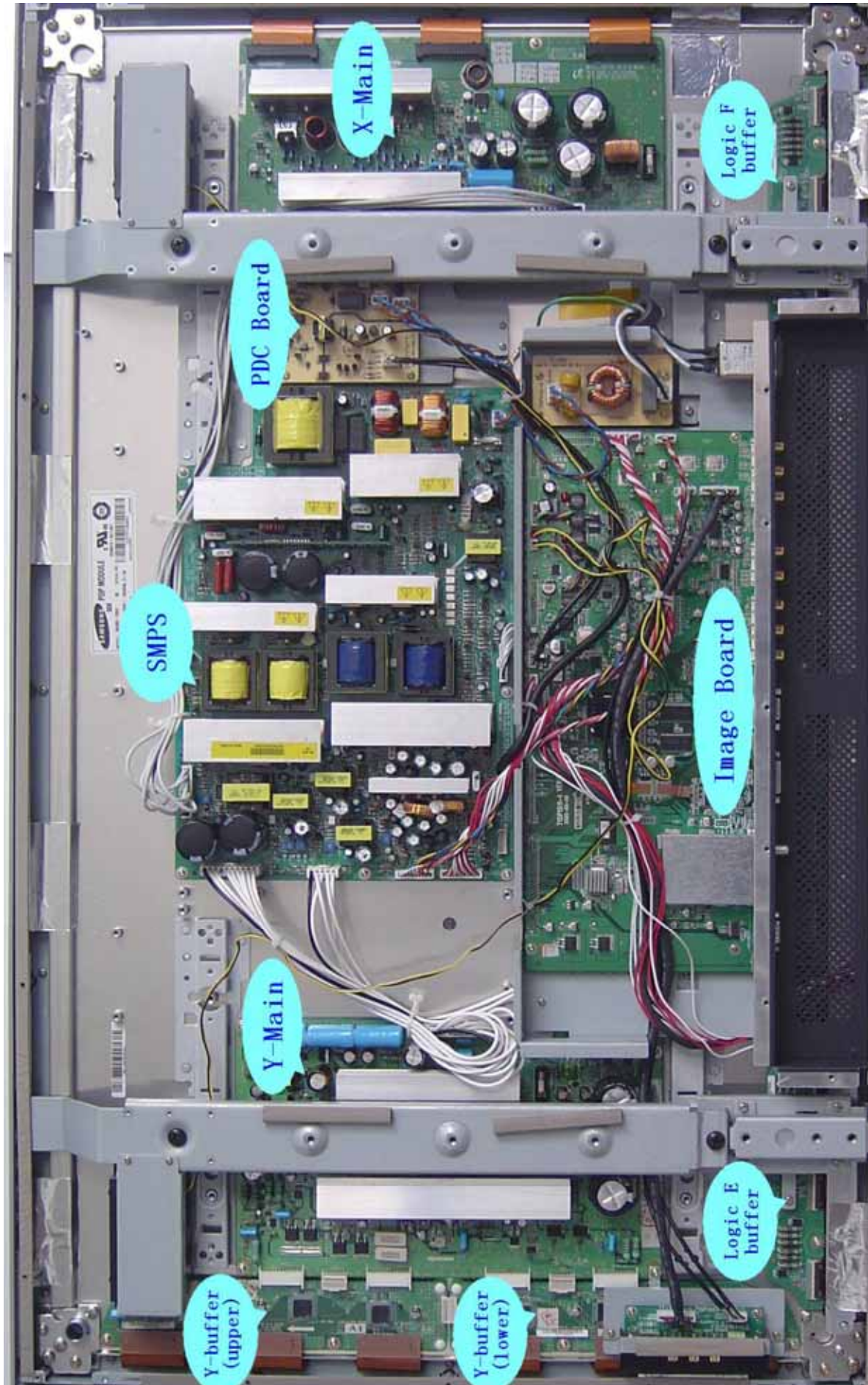


The following picture shows the pin connection of CN903:

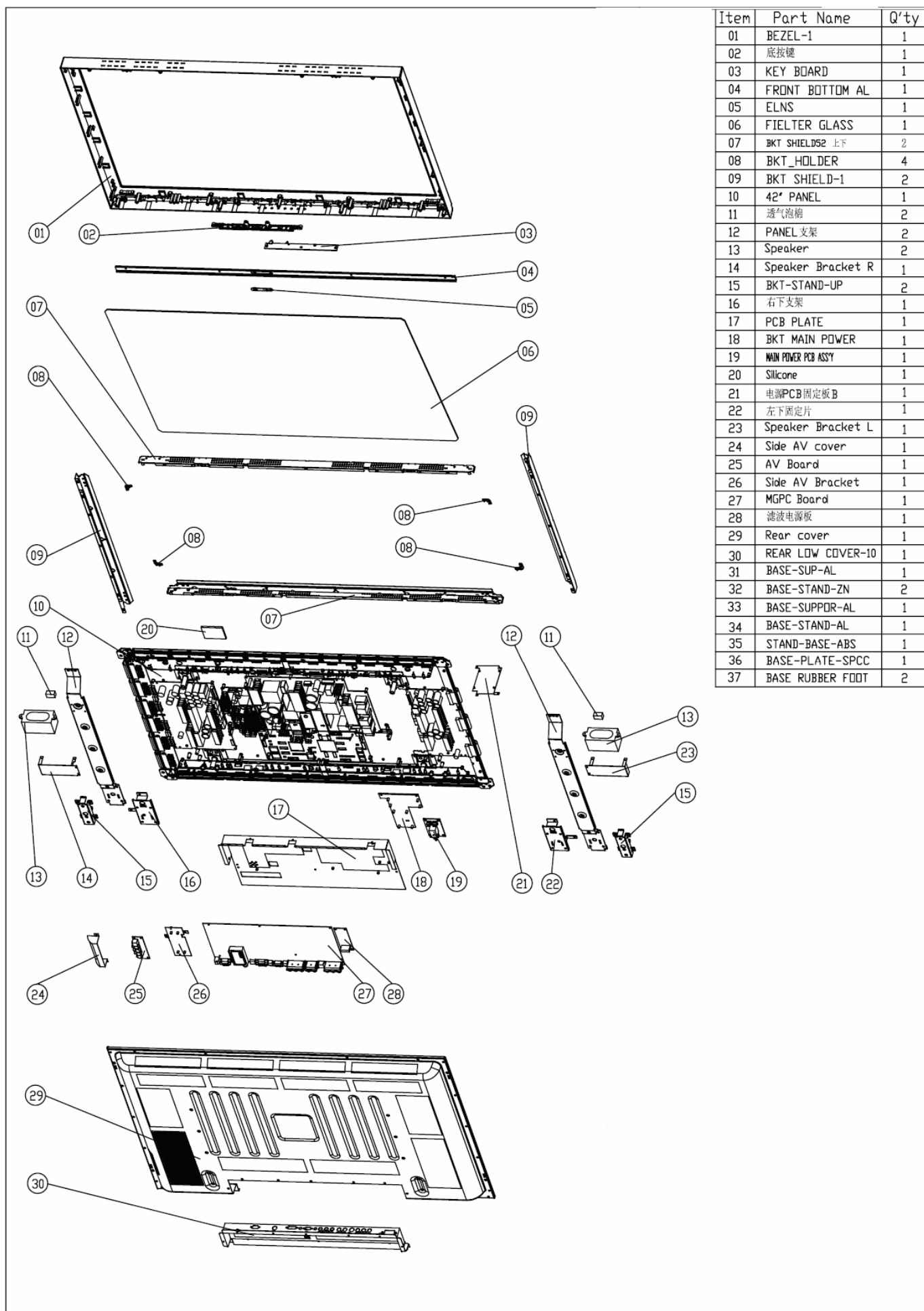


12、 Mechanical Introduction

12-1 PDP Internal view



12-2 Mechanical of cabinet front disassembly



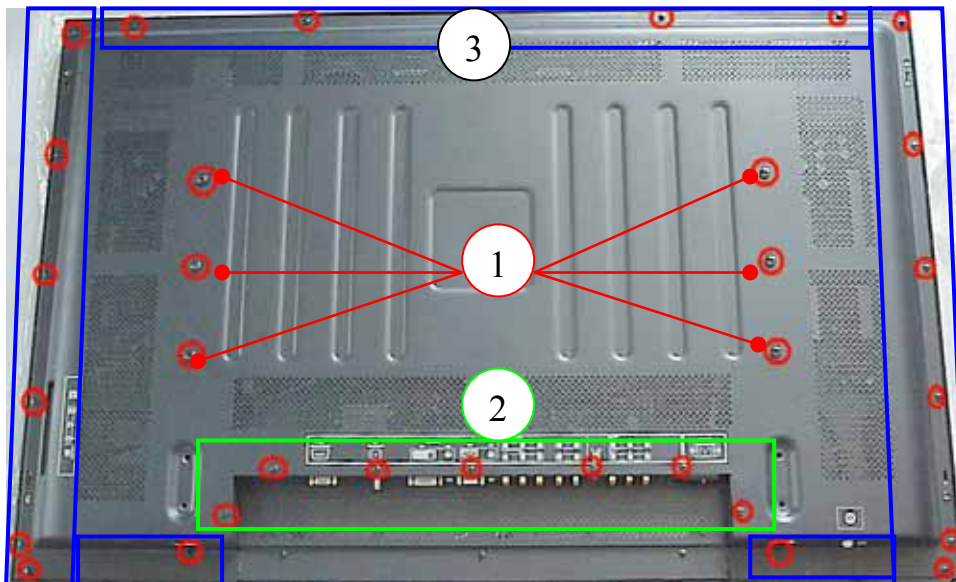
12-3 Disassembly and assembly

12-3-1 PDP stand removal



- 4) Unplug the AC power and all signal cables.
- 5) Place the PDP upside down on a tabletop (use a protection sheet or EPE bag), Take care, that this is flat and free from obstacles like screws, to prevent damaging the fragile PDP glass filter (1).
- 6) Remove the four black colored screws around the stand holder (2).
- 7) Remove the Base assembly from PDP as the direction arrowhead showed (3).

12-3-2 Back Cover Removal



- 1) Remove the six big black colored screws in the panel holder as the red-circle showed (1).
- 2) Remove the seven black colored screws around the terminals as the green-pane showed (2).
- 3) Remove the eighteen black colored screws around the back cover as the blue-pane showed (3).



- 4) Carefully prize up the back cover from the left of the PDP (5).

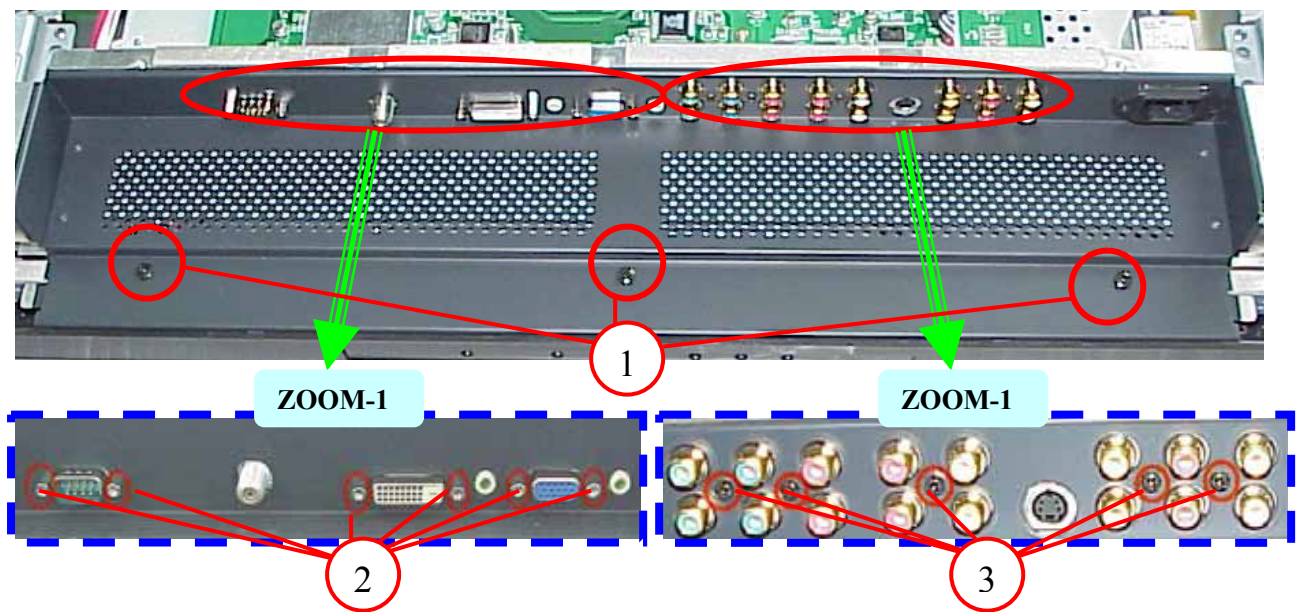


- 5) Carefully remove the Back Cover from the top of the PDP, and store in a safe place.

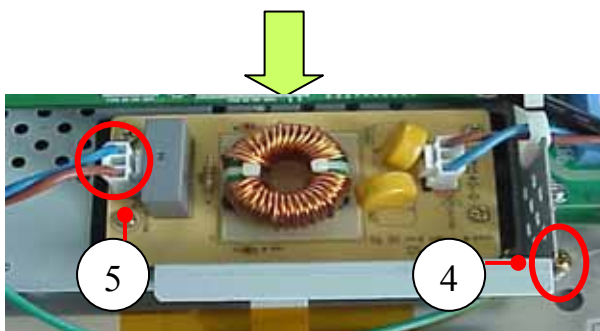


- 6) Done.

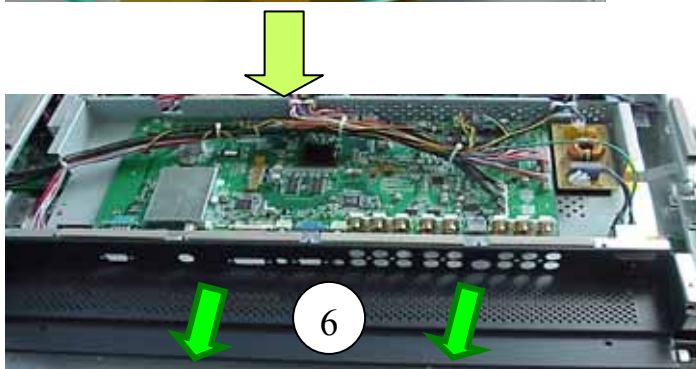
12-3-3 Rear Low Cover removal



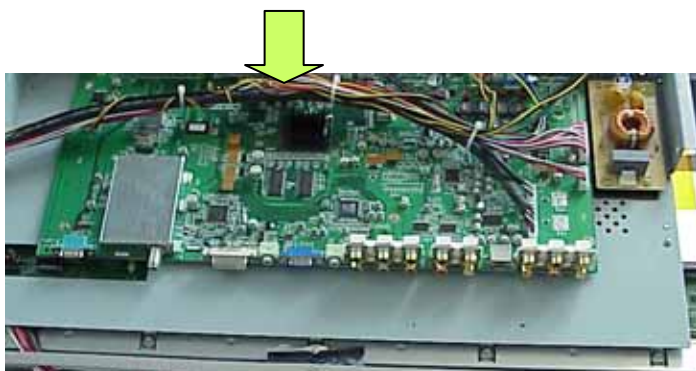
- 1) Remove the three black screws in Rear low cover (1).
- 2) Carefully use a allen screwdriver to remove the six silver colored allen screws M3*6mm (2).
- 3) Remove the five black screws (3).



- 4) Remove the one silver screws and remove the GND cable (4).
- 5) Disconnect the AC cable from AC FILTER Board (5).

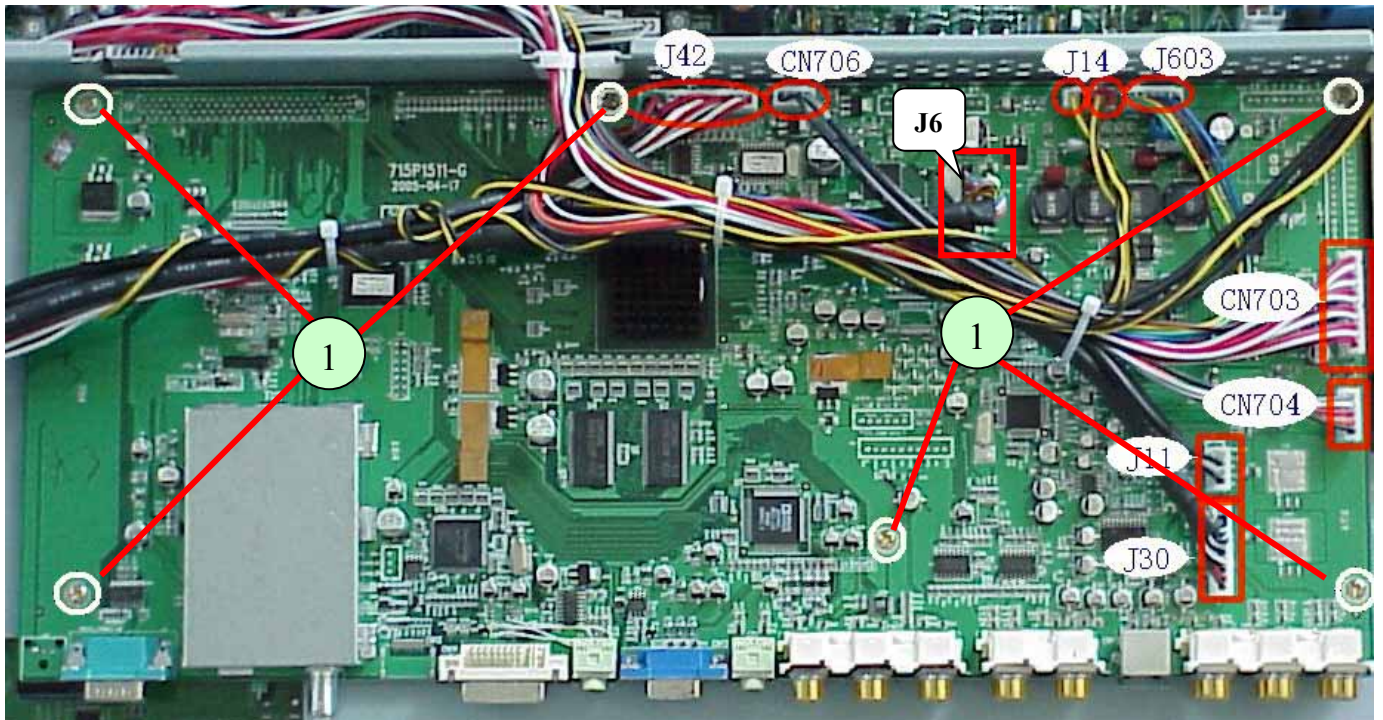


- 6) Remove the Rear Low Cover as the direction arrowhead showed (6).

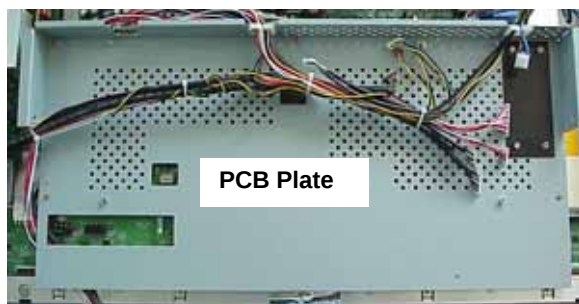
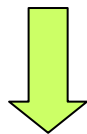


- 7) Done.

12-3-4 Main Board(MGPC) removal

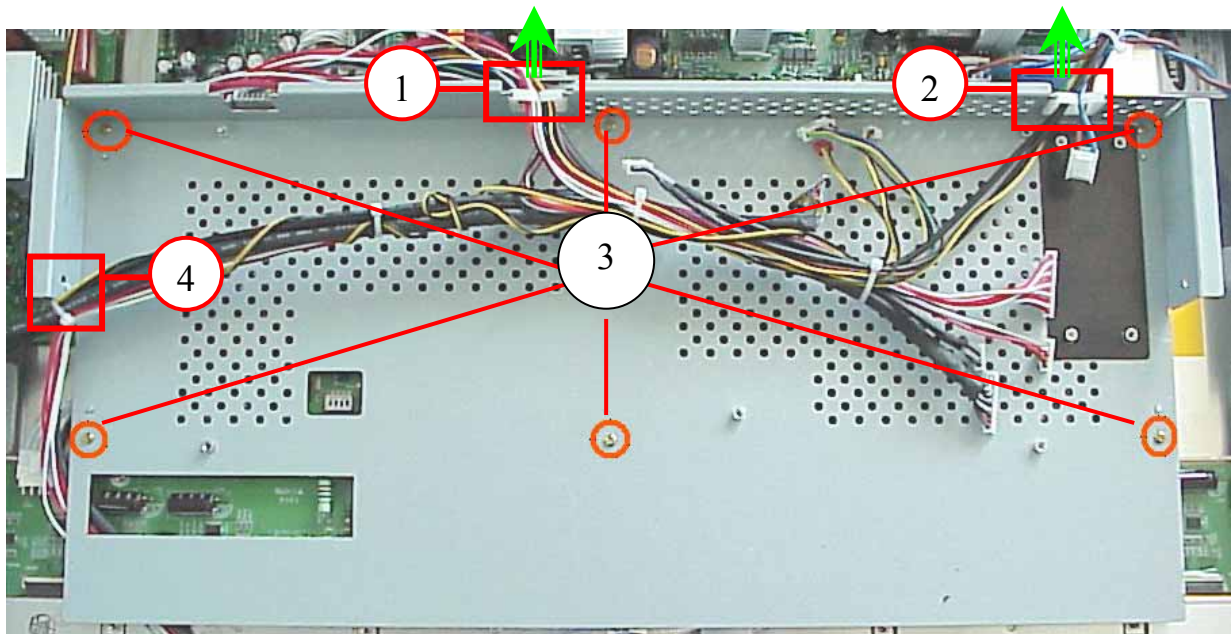


- 1) Disconnect the all connectors(J42,CN706,J14,J603,CN703,CN704,J11,J30 and J6 form M GPC(main board). See the above figure.
- 2) Remove the six silver screws from MGPC(main board)(1).



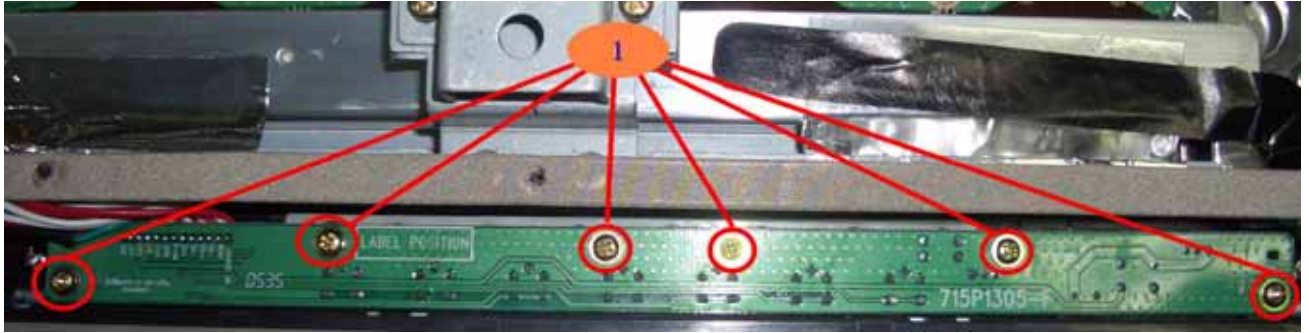
- 3) Remove the MGPC board from PCB plate.
- 4) Done.

12-3-5 PCB Plate Removal



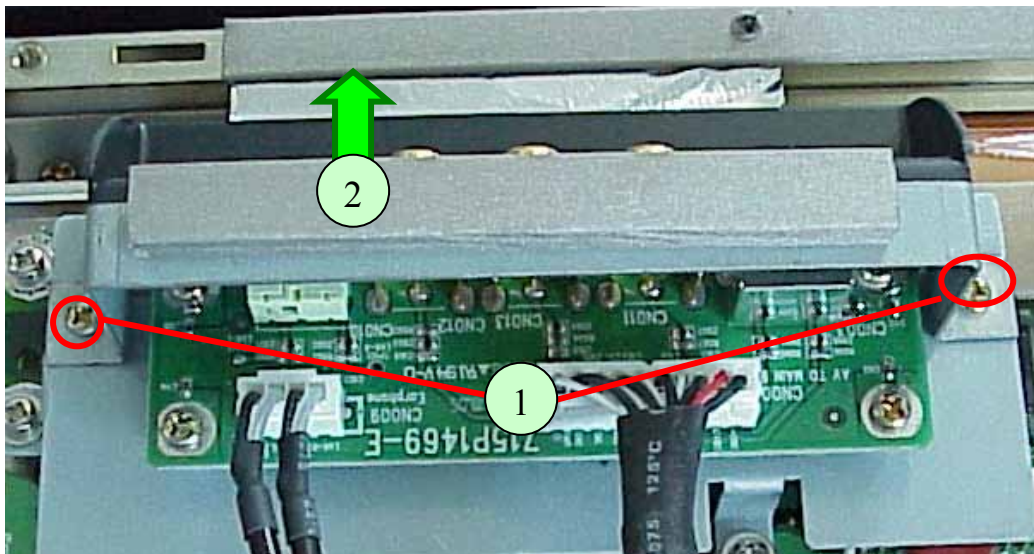
- 1) Remove the two Cable Clips from the PCB Plate(1)(2).
- 2) Remove the six sliver screws(3).
- 3) Cut the cable tie(4), Note, please carefully cut it, don't make the cable damage.
- 4) Remove the PCB Plate

12-3-6 Key Board Remove

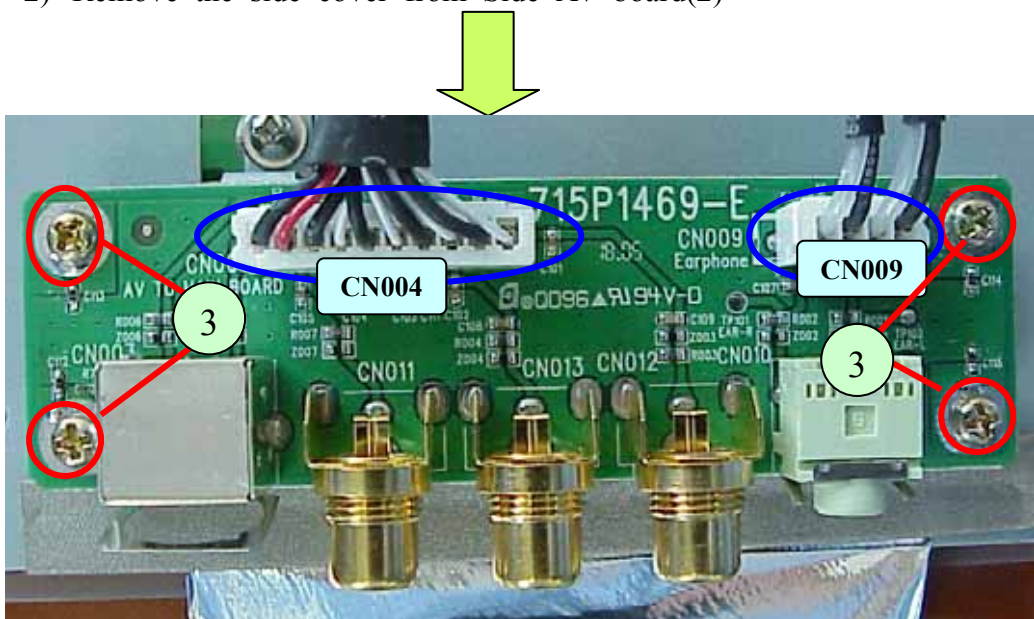


- 1) Remove the Six silver screws(1) to disassemble the key board from the bezel.

12-3-7 Side AV Board Removal

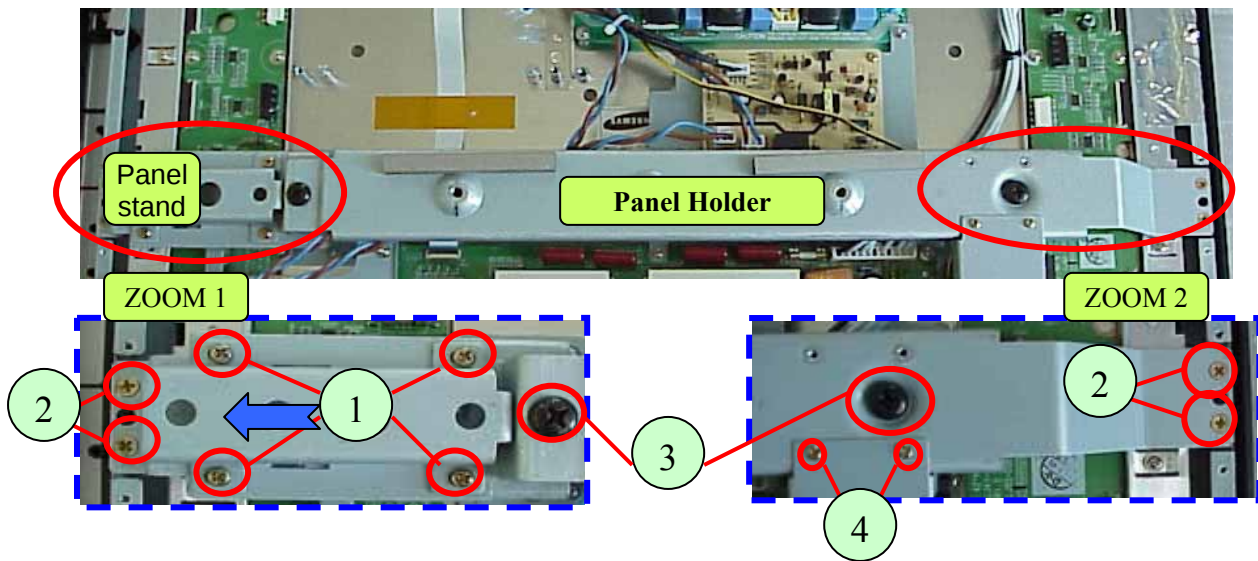


- 1) Remove the two silver screws (1).
- 2) Remove the side cover from Side AV board(2)

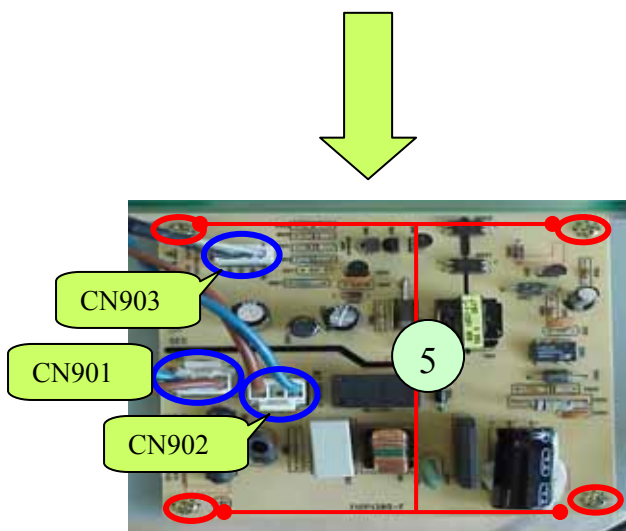


- 3) Disconnect the CN004 and CN009 from Side AV board.
- 4) Remove the four silver screws (3).

12-3-8 PDC (power down control) Board Removal

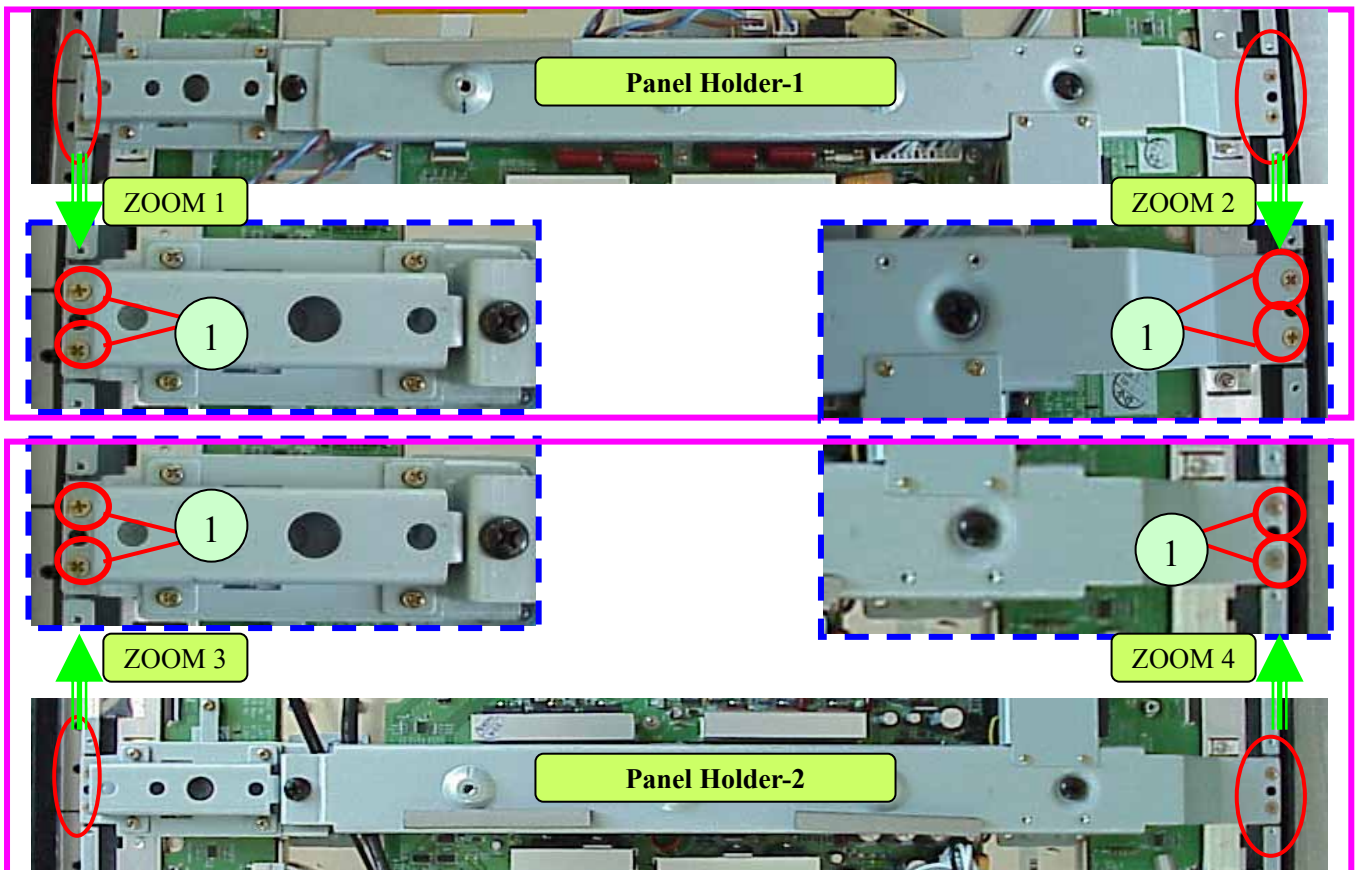


- 1) Remove the four sliver screws (1) and remove the panel stand from panel holder as the direction arrowed showed.
- 2) Remove the four silver flat screws (2).
- 3) Remove the two black screws (3)
- 4) Remove the two silver screws (4)
- 5) Remove the panel holder from PDP.

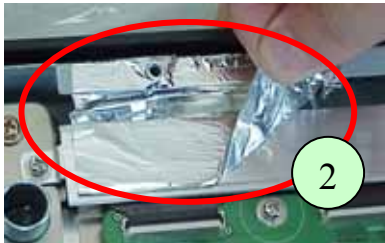


- 6) Disconnect CN901,CN902 and CN903 from PDC board.
- 7) Remove the four sliver screws (5), and remove the PDC board.

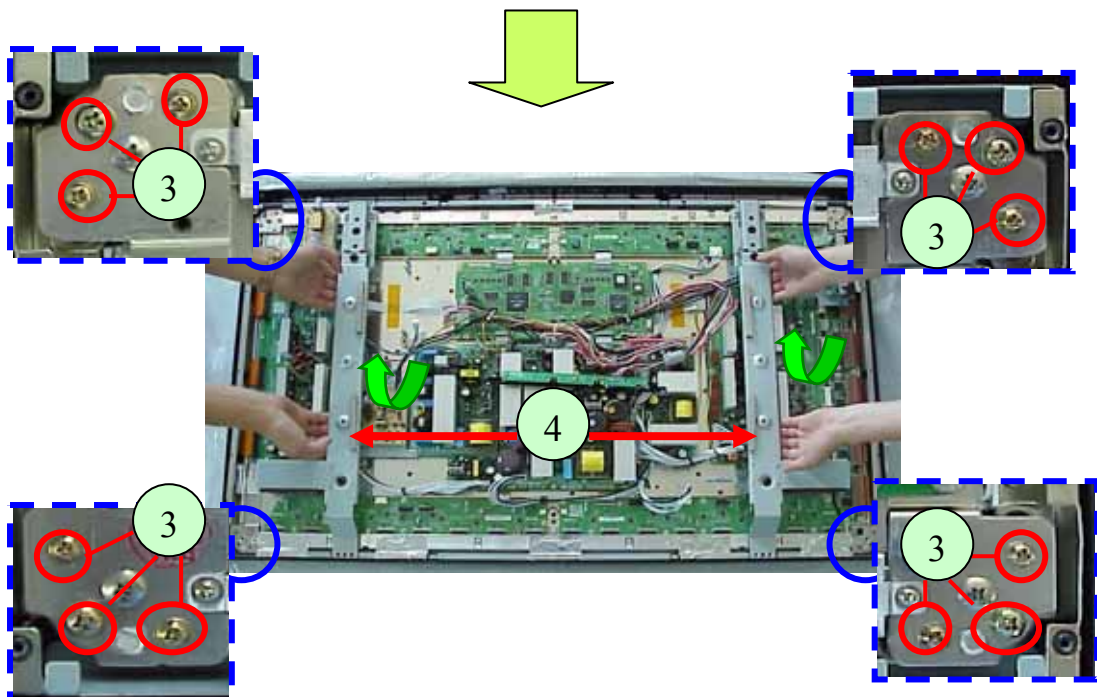
12-3-9 Panel Module Removal



1) Remove the eight silver flat screws around the two panel holder (1).

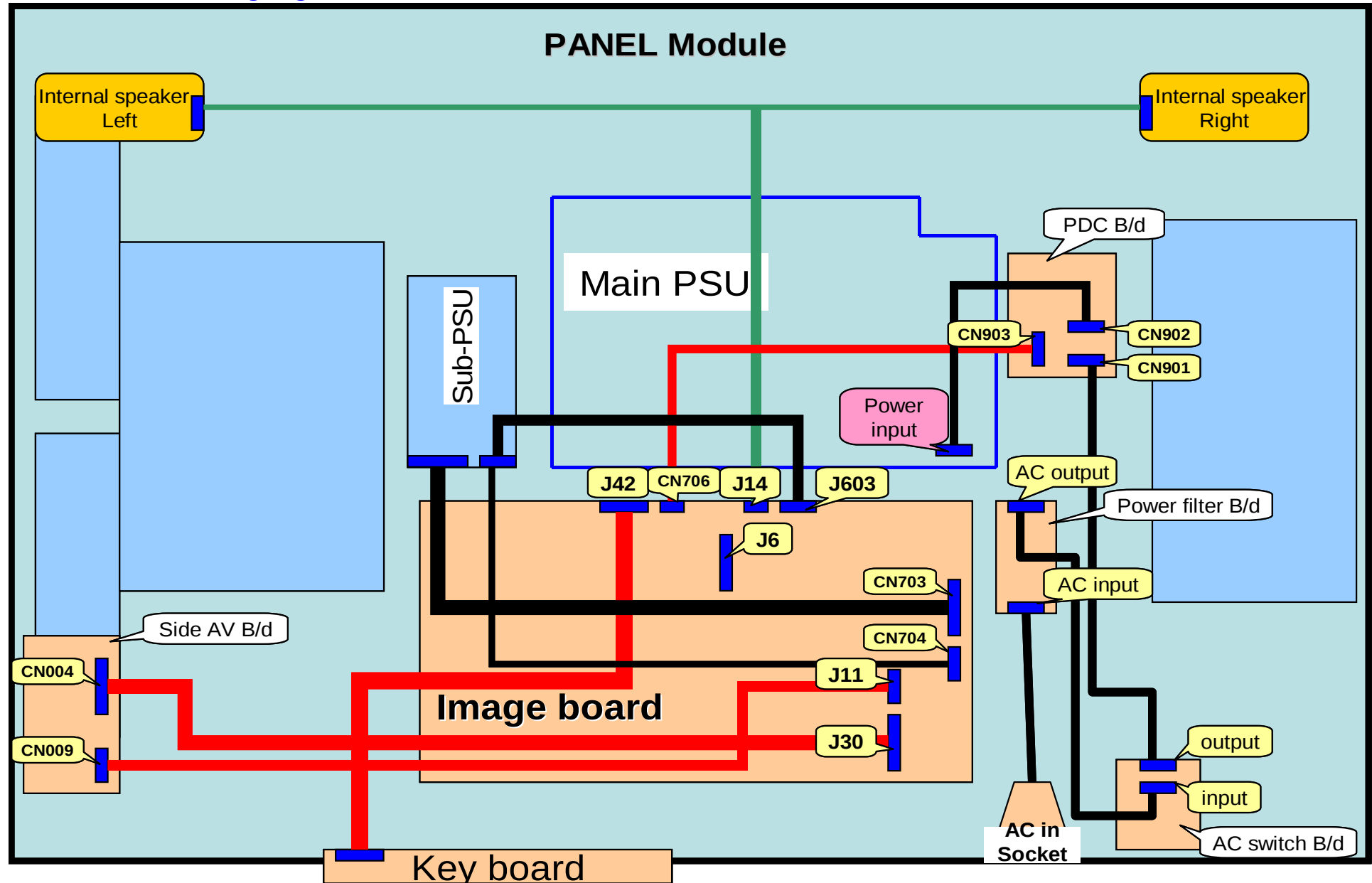


- 2) Remove all the aluminum foil around the panel (2), after assemble the new panel, must re-affix the aluminum foil, if it's broken must change a new one, otherwise, the EMI can be affected.
- 3) Remove the twelve silver screw around the PANEL corner (3).
- 4) Two people hold the panel holder 1 and 2 respectively, then uplift the panel module and move it out form the front cover(Bezel), and store in a safe place.



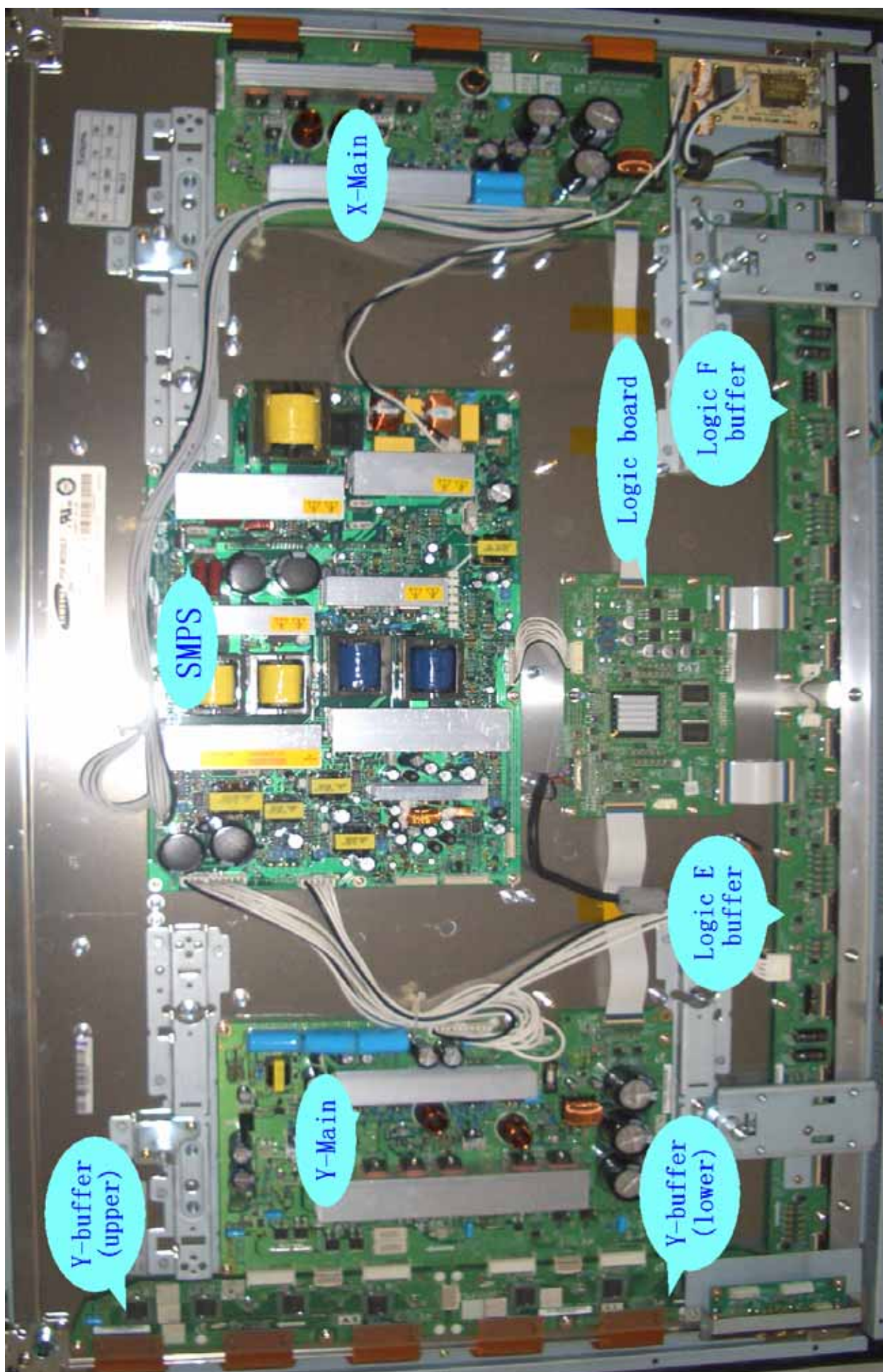
12-4 Block Wiring diagram

12-4-1 PDP boards block wiring diagram



No.	Pin Connection	Name	Pin function
1	J42 to Key board	MGPC key control signal output	J42 Connector(13 Pins): Pin 1= GND Pin 2= +5VSB Pin 3= IR Pin 4= ENTER Pin 5= LED-B Pin 6=LED-A Pin 7=KEY6 Pin 8=CH+ Pin 9= CH- Pin 10=VOL+ Pin 11=VOL- Pin 12=MENU Pin 13=TV video
2	CN706 to CN903	PDC board DC output, and MGPC standby PDC power control output	CN706 Connector(4 Pins): Pin 1,3= GND Pin 2=+5VSB Pin 4=REL-SW CN903 Connector(4 Pins): Pin 1,3= GND Pin 2=+5VSB Pin 4=PS-ON
3	J14 to speaker	MGPC audio signal output	J14 Connector (2 Pins+2 Pins): LO+/COMLO- and RO+/COMRO-
4	J603 to Sub-PSU	MGPC audio circuit power input	J603 Connector(6 Pins): Pin 1,2=+12V Audio Pin 3,4,6=GND Pin 5 = NC
5	CN703 to Sub-PSU	MGPC power input and relay control output	CN703 Connector(11 Pins): Pin 1=NC Pin 2=STB5V Pin 4=Relay-SW Pin 5=D12V Pin 8,9=D3.3V Pin 11=D6V Pin 3,6,7,10 =GND
6	CN704 to Sub-PSU	MGPC power input	CN704 Connector(5 Pins): Pin 1=D6V Pin 3=D12V Pin 2,4=GND Pin 5=NC
7	J11 to CN004	To Earphone output	J11 Connector(5 Pins): Pin 1,3=GND Pin 2=EAR-L Pin 4 = EAR-R Pin 5=Phone-on
8	J30 to CN009	Side AV signal input	J30 Connector(10 Pins): Pin 1,3,5,9=GND Pin 2=CVBS IN-2 Pin 4=FRONT-Y Pin 6=FRONT-C Pin 7=FRONT-AV-SEL Pin 8=SM-L Pin 10=SM-R
9	J6 to Panel Logic b/d	MGPC LVDS signal output	J6 LVDS connector(31 Pins): Pin 1,8,9=NC Pin 2,4,6,11,14,15,18,19, 22,23,26,27,30,31=GND Pin 12=TXE3p Pin 13=TXE3m Pin 16=TXECp Pin 17=TXECm Pin 20=TXE2p Pin 21=TXE2m Pin 24=TXE1p Pin 25=TXE1m Pin 28=TXE0p Pin 29=TXE0m

12-4-2 Panel Wiring diagram



13、 Image board PCB LAYOUT

13-1 Image board PCB LAYOUT

13-2 Key board PCB LAYOUT

13-3 Side AV board PCB LAYOUT

13-4 PDC board PCB LAYOUT

Detail LAYOUT diagram please see the attached file “715P1511-G-4-17.pcb”.

[715P1511-1C](#)

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Page 19 - Power and Gnd 5
Page 20 - GPIOs Table

Stuffing Options DTV Module

A) R3 - OUT Power-On Auto-Read Operation DISABLED
(for Samsung 256M ONLY). *
R3 - OUT Power-On Auto-Read Operation ENABLED
(for Samsung 256M ONLY).
B) TP1-TP18 - IN -For R&D board only. *
TP1-TP18 - OUT - For final board rev.
C) R7- IN, R8 - OUT Normal boot-up from SPI.*
R7- OUT, R8 - IN Boot-up from NAND flash.
D) R525, R528 - OUT *
R525, R528 - IN - LCD Backlight levels setup.
E) D49,R583,R585 - IN, R584, R586 - OUT -- External Vref tor G9 DACs *
D49,R583,R585 - OUT, R584, R586 - IN -- Intomal Vref tor G9 DACs *
F) R342, R343 - IN, RS232 Utility card enable.
R342, R343 - OUT, G-Link connector enable.

Note: * - Default setting.

Revision History

Revision	Description	P. Mgr.	Date
A	Initial Release		
D2	U9 IC setting and power bypass changes		
D2	R342, R343 , MSP34XX , TA2024 added WSD		

Utility Board Jumper Options

1) J[22,23,24] = Boot DeviceSelection
111 = boot from LB 8-bit data device with EXTERNAL PCI clock
110 = boot from LB 16-bit data device with EXTERNAL PCI clock
101 = boot from I2C 16-bit address 400 KHz device
100 = boot from I2C 16-bit address 100 KHz device
011 = boot from LB 8-bit data device with internal PCI clock (27 MHz)
010 = boot from LB 16-bit data device with internal PCI clock (27 MHz)
001 = boot from SPI 24-bit address/ 8-bit data device, 1 MHz clock
000 = boot from SPI 16-bit address/ 8-bit data device, 1 MHz clock
2) J27 - OFF - EJTAG mode
J27 - ON - JTAG mode
3) J16 - ON, J20 - 2-3 -- U23 Flash - CS0, U24 StrataFlash - CS1
J16 - OFF, J20 - 1-2 -- U23 Flash - CS Disc., U24 StrataFlash - CS0
4) J17 - ON, - U24 StrataFlash memory contents cannot be altered.
5) J18 - OFF - StrataFlash device in x16 mode,
J18 - ON- StrataFlash device in x8 mode.

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Notes: (unless otherwise stated)

1. All resistors are listed in ohms and are 5%, 1/16W, Metal Film (0603 form factor)
2. All capacitors are listed in microfarads, and are 10%, 25V, ceramic, X7R (0603 form factor)
3. All inductors are listed in microhenries, and are 5%, 100ma, non-wound (0805 form factor)
4. "Signal Ports" and "Off Page Connectors" are Global, and transition between sheets.
5. Signal "Names" without "Signal Ports" or "Off Page Connectors" are Local, and only connect like named signals on the same sheet.

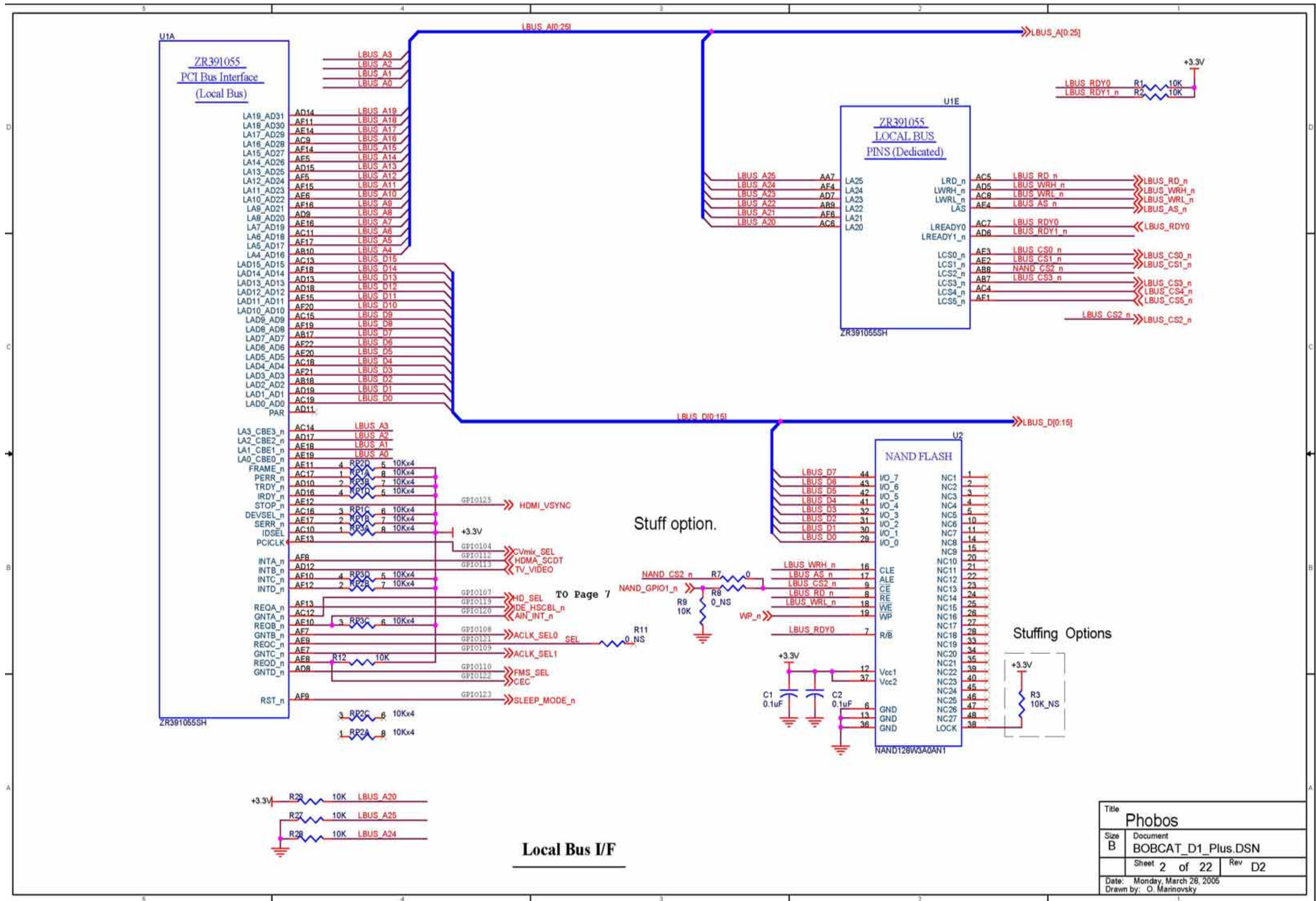
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ATSC PDP TV

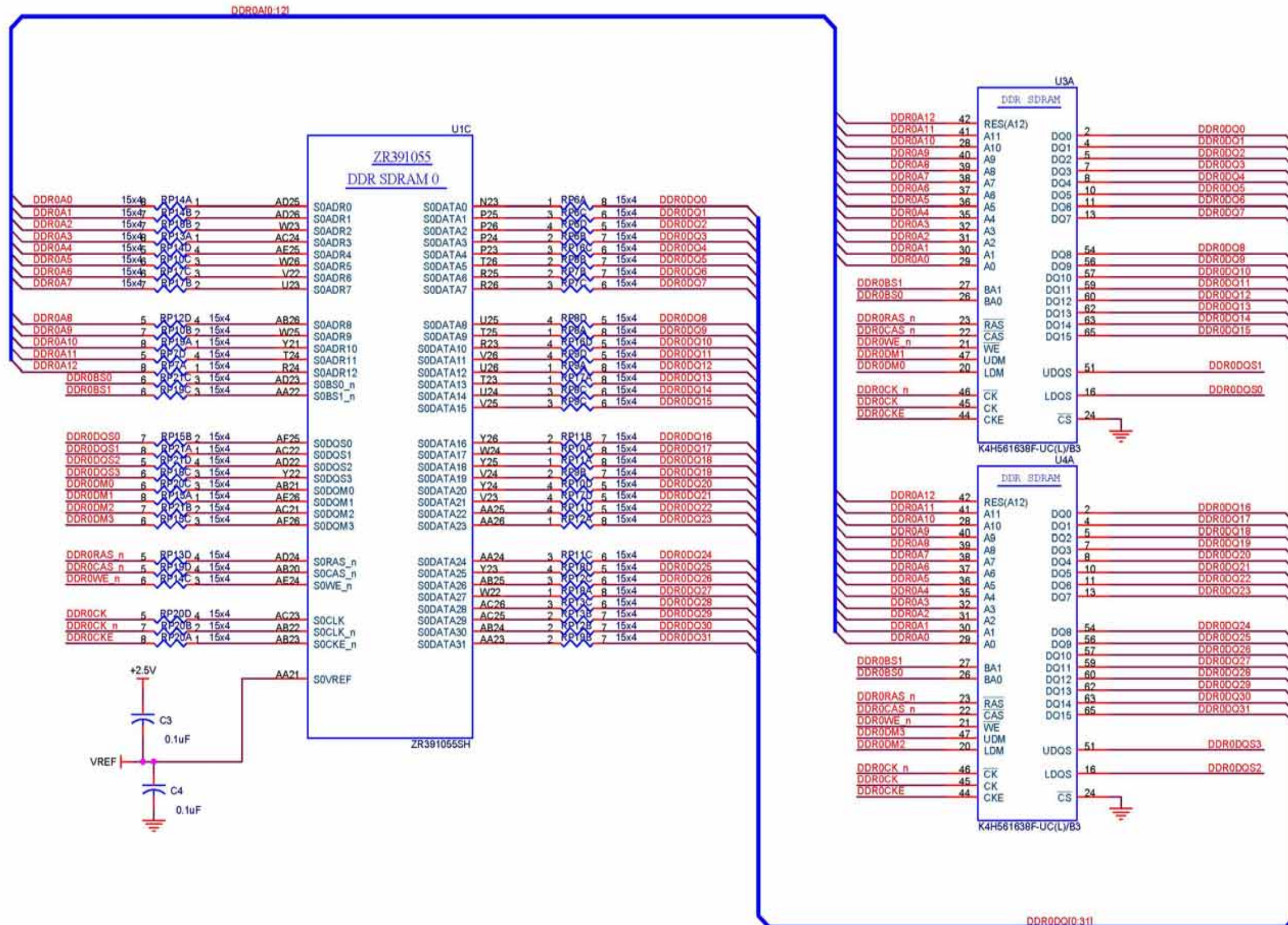
OTP

VP

PDP RD , NO.10 JiuXian Road
ChaoYang BeiJing , China
(0086) 010-64326699 EXT 8618

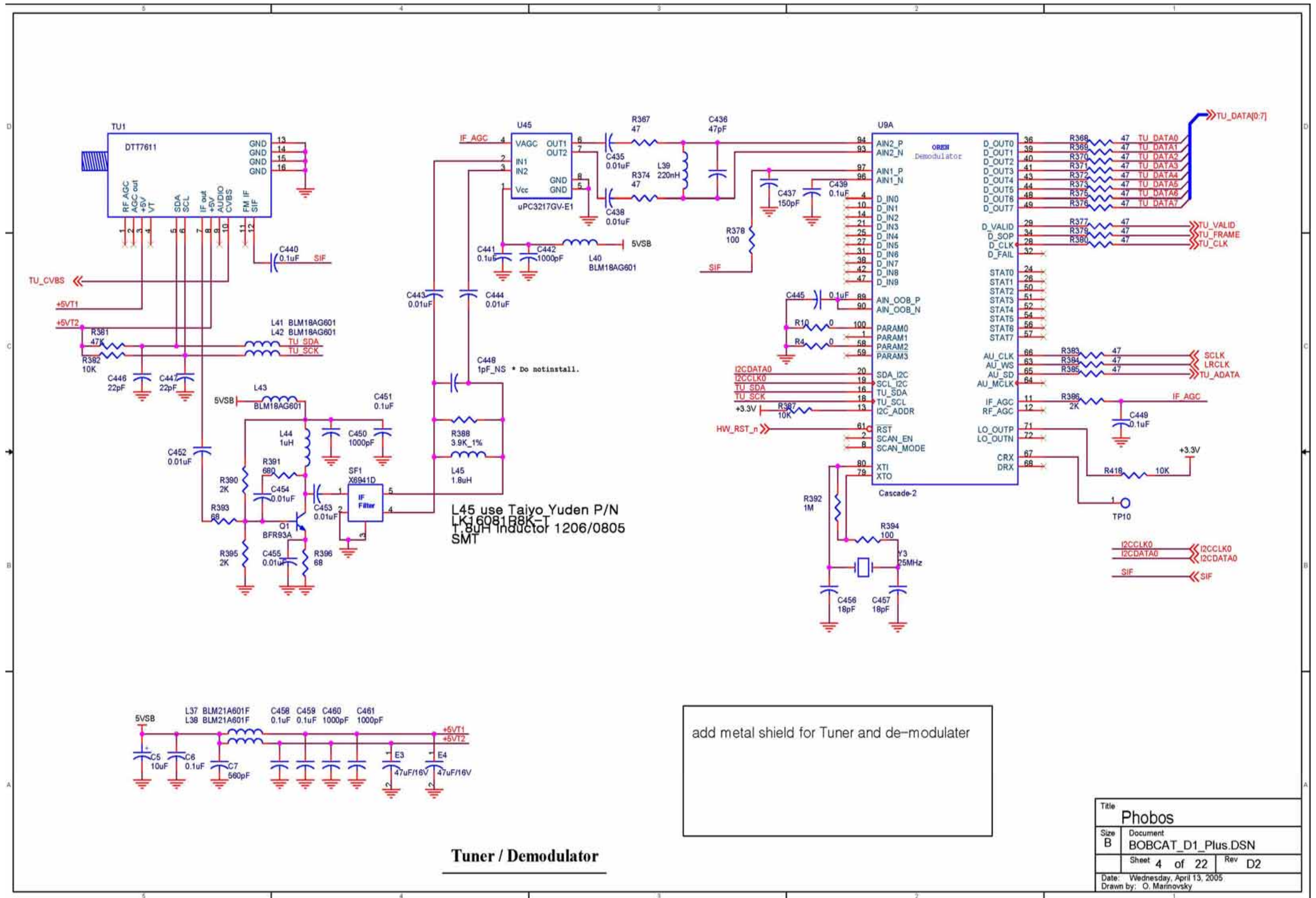
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Fab. <Fab #>	Applications	Phobos D2
Assy. <Assy #>	Marketing	Size B
Schem N/A	Operations	Document
Tree <Tree #>	Product Mgr.	BOBCAT_D1_Plus.DSN
		Sheet 1 of 22
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		Date: Monday, March 28, 2005
		Drawn by: O. Marinovsky

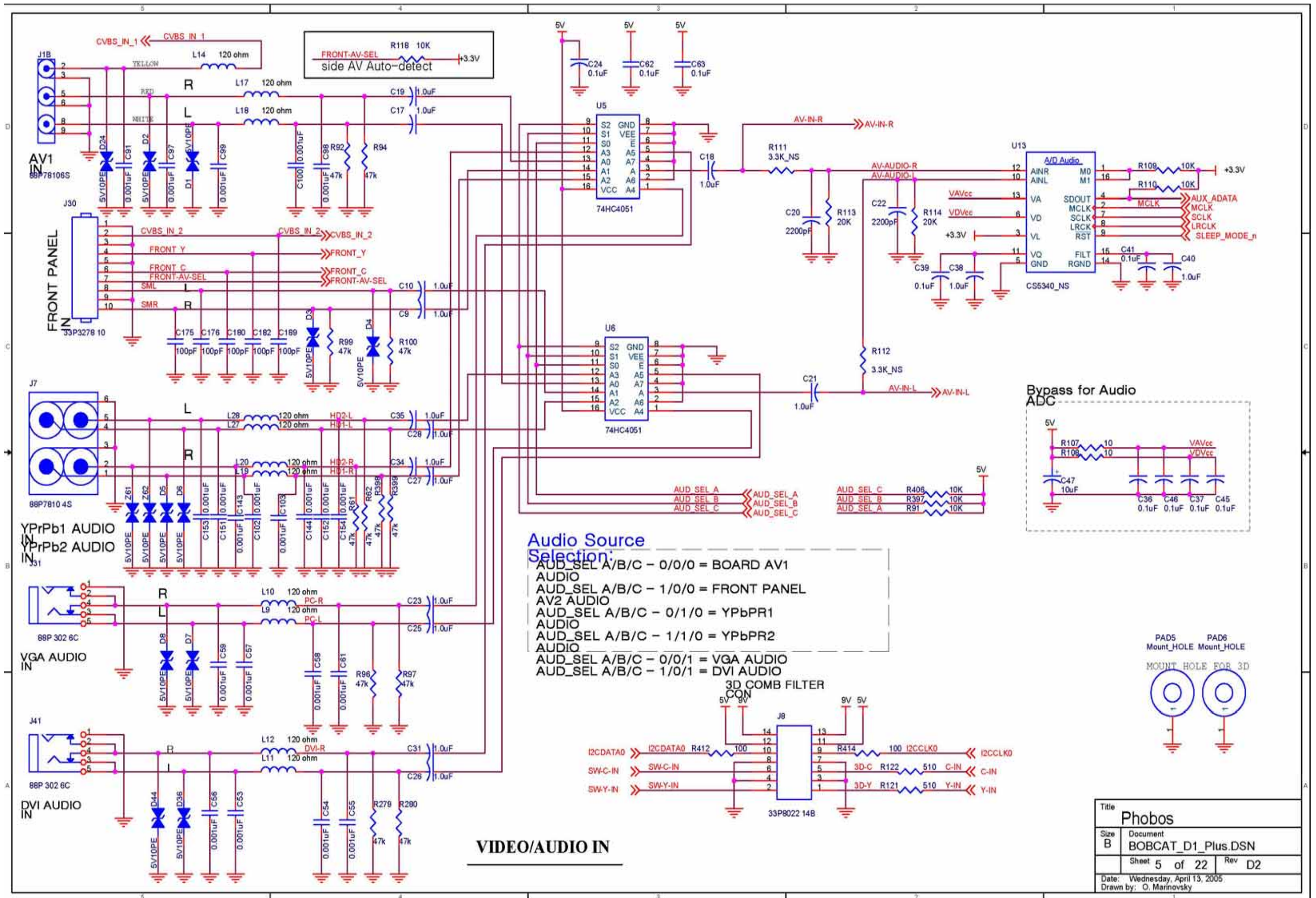


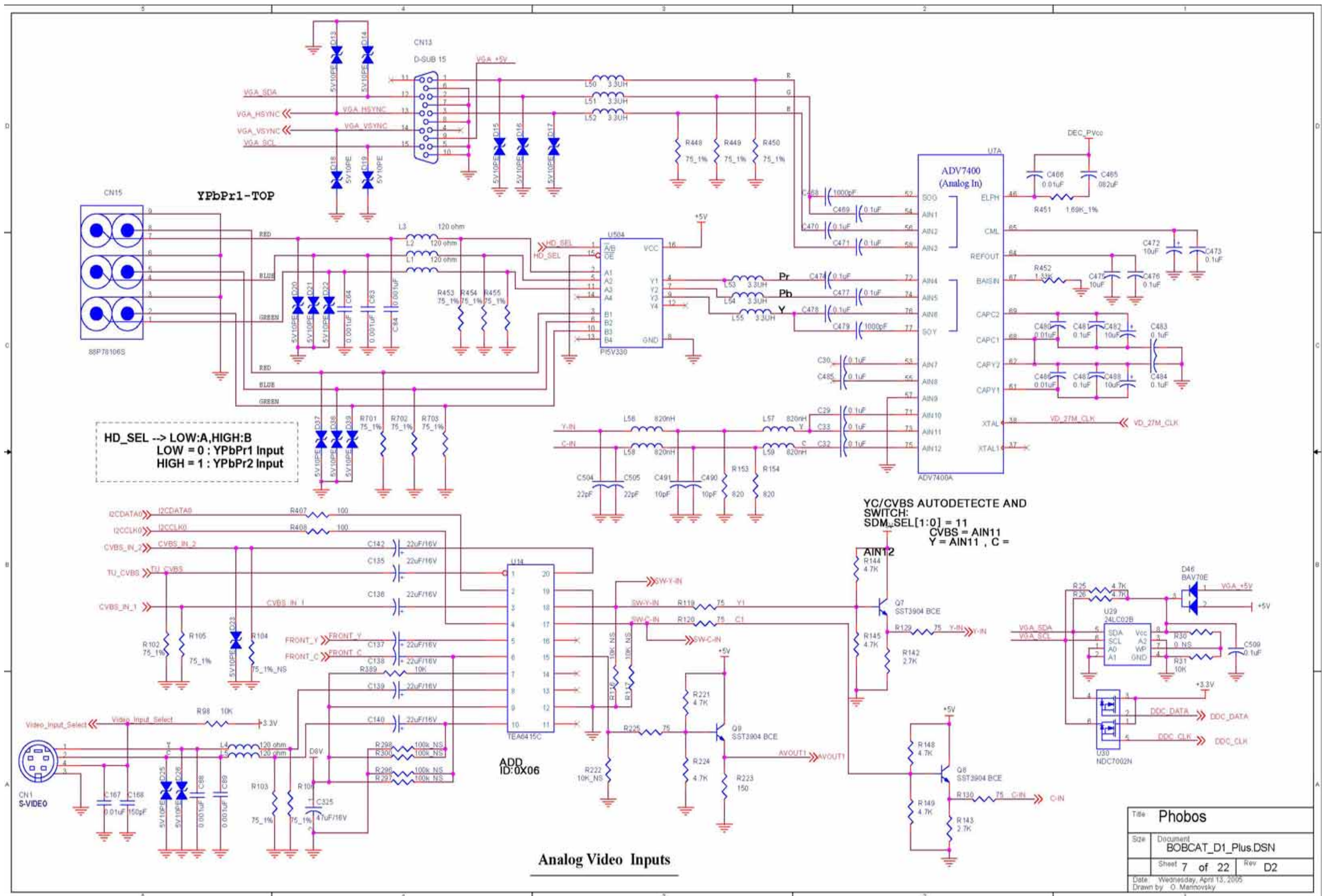


DDR SDRAM 0 I/F

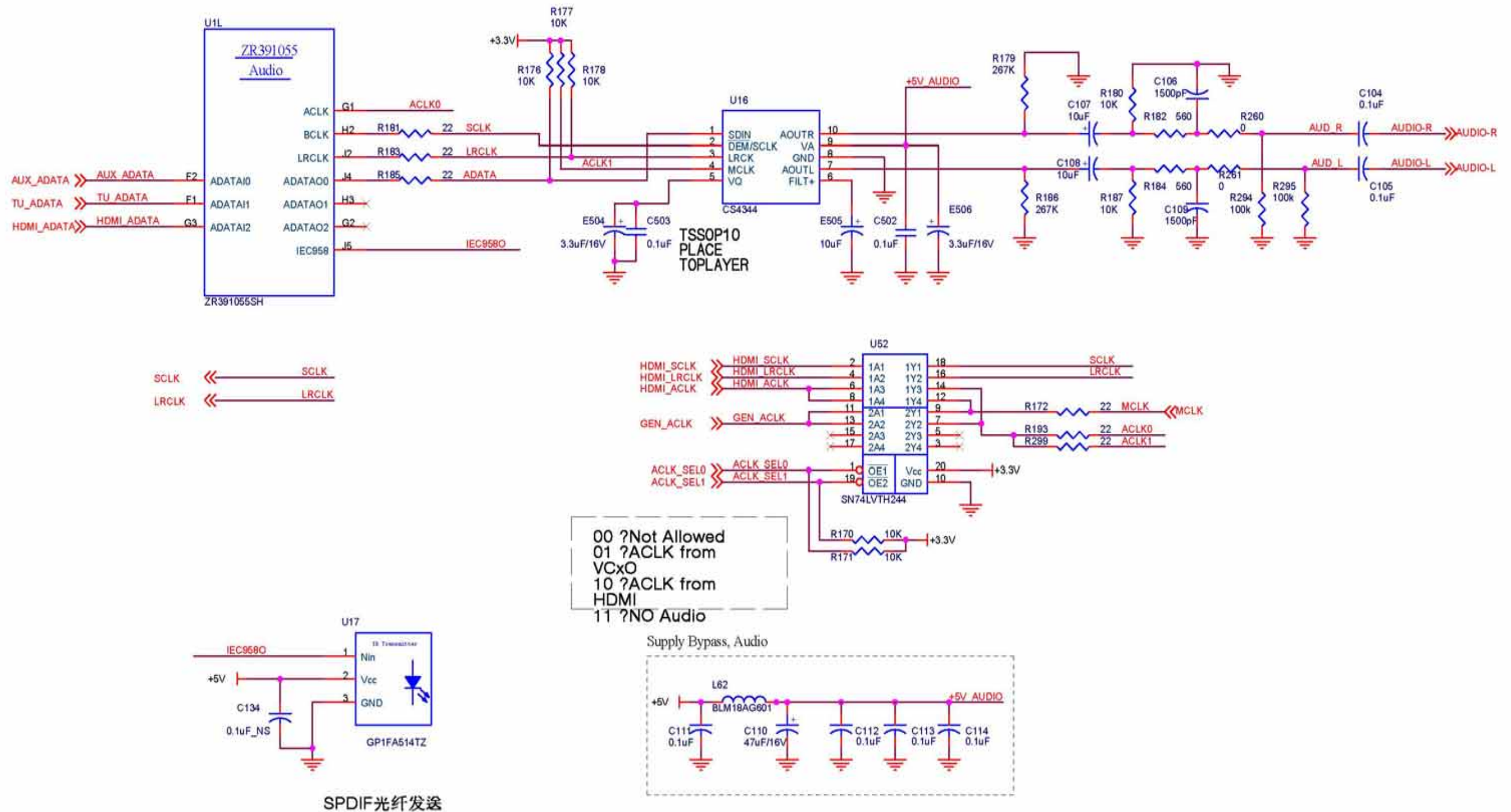
Title		Phobos	
Size	Document	BOBCAT_D1_Plus.DSN	
B	Sheet	3 of 22	Rev D2
Date: Monday, March 28, 2005			
Drawn by: O. Marinovsky			





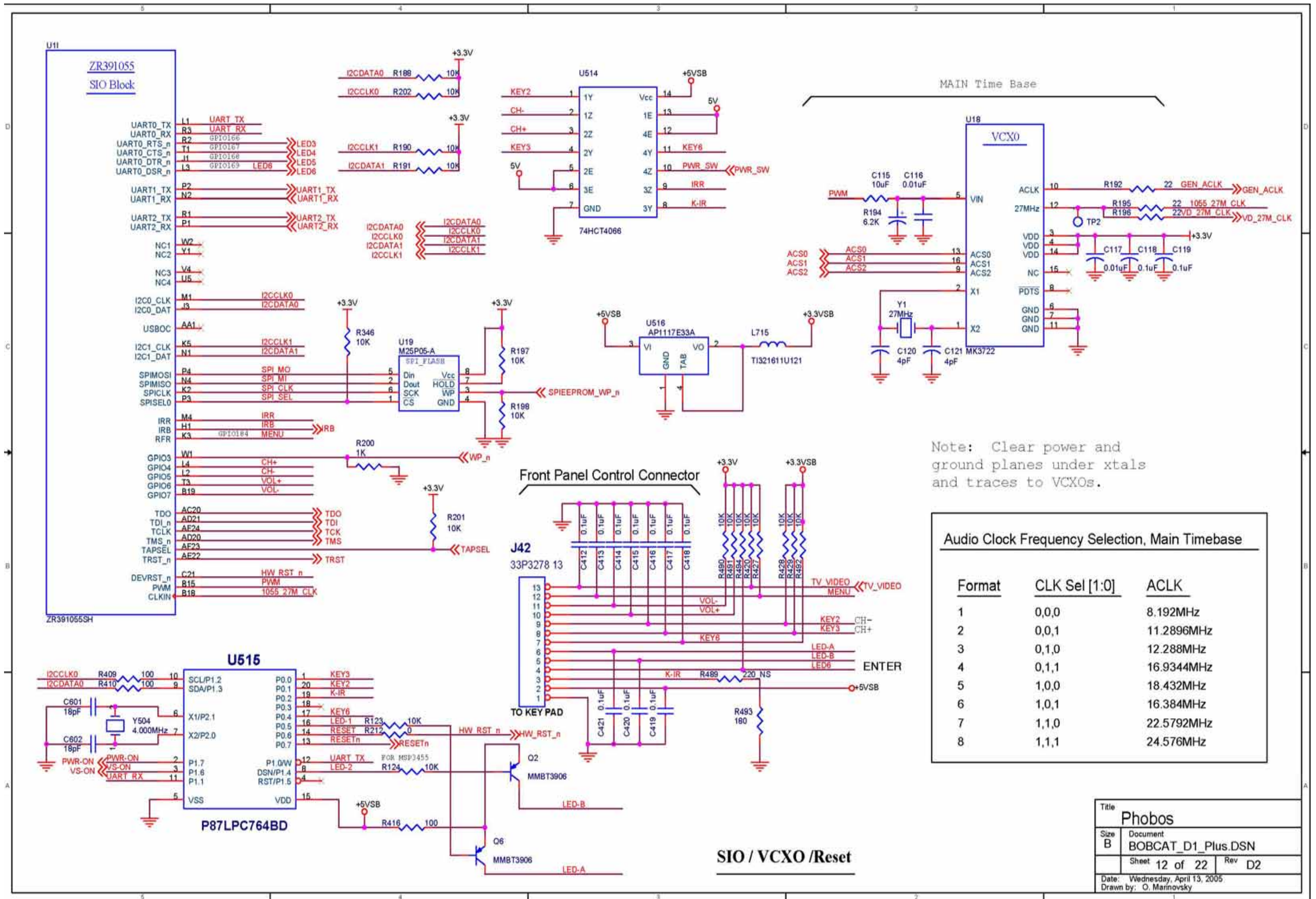


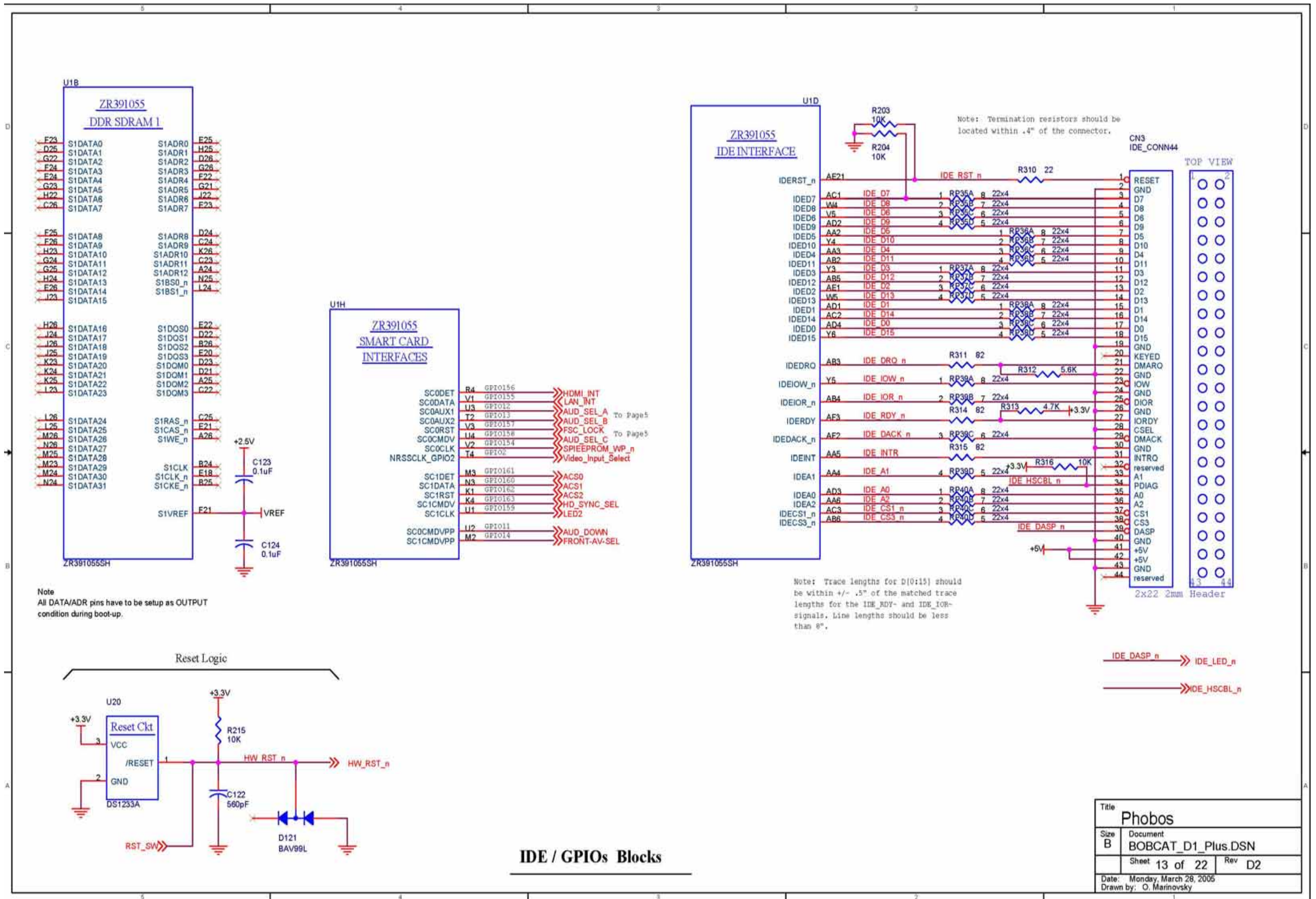
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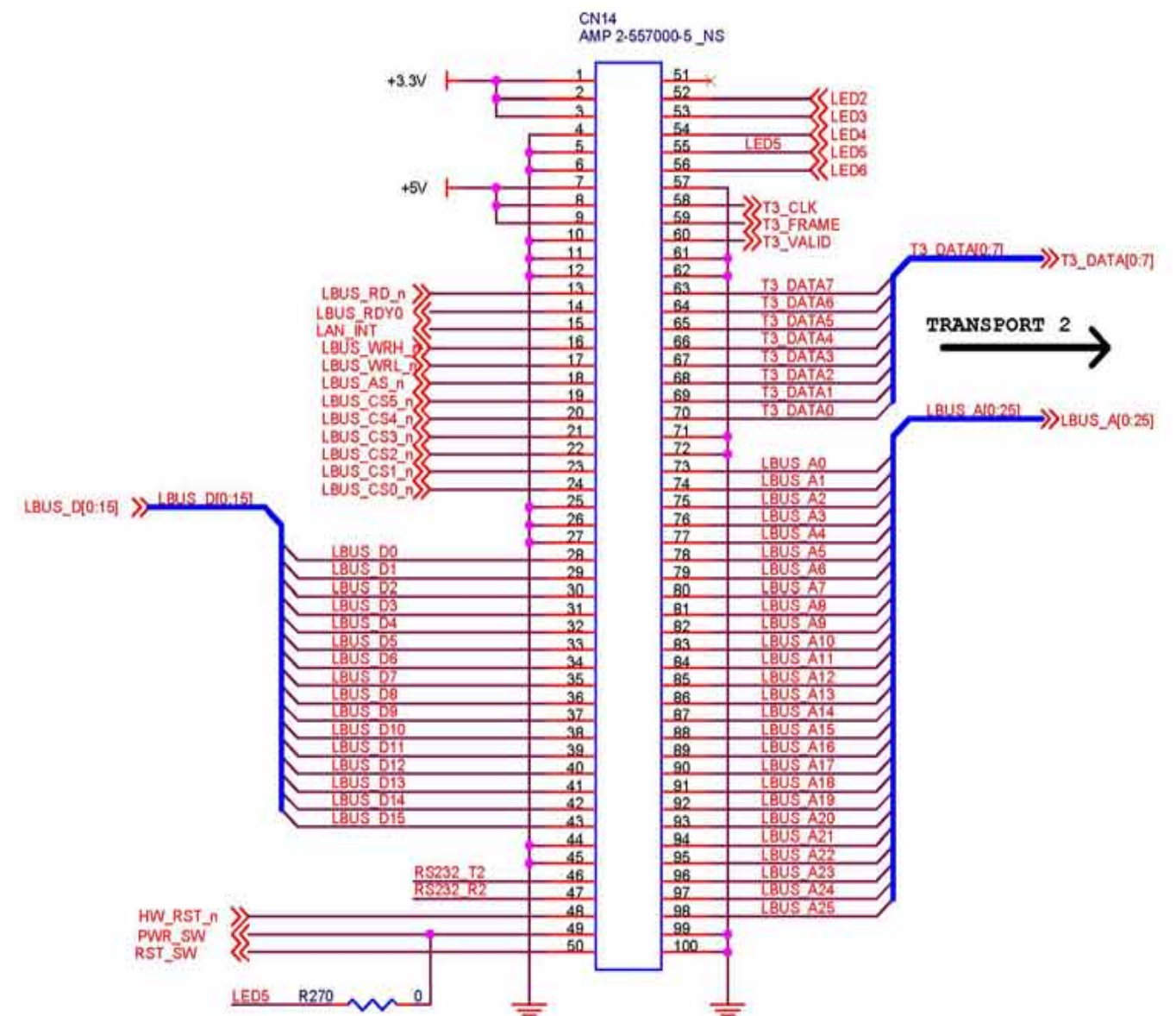
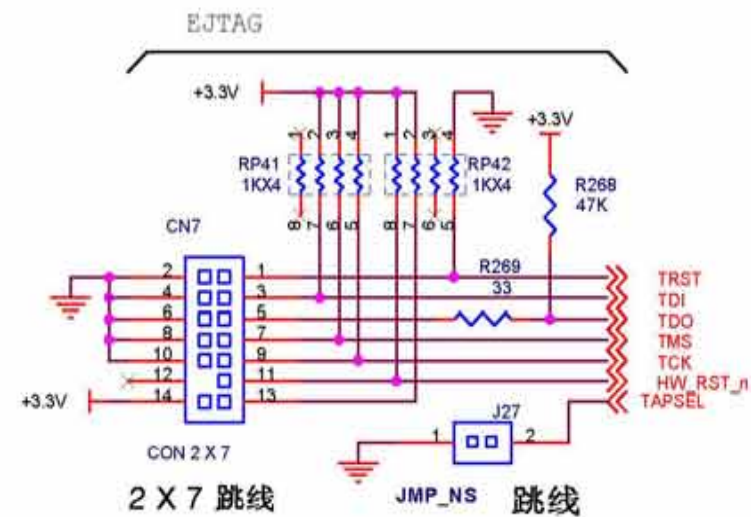
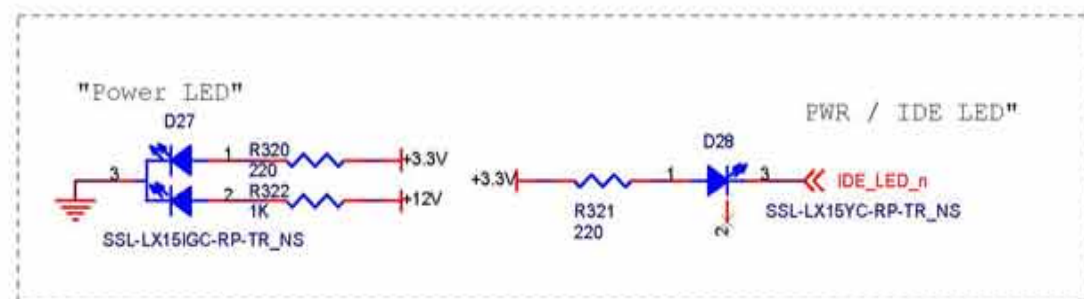
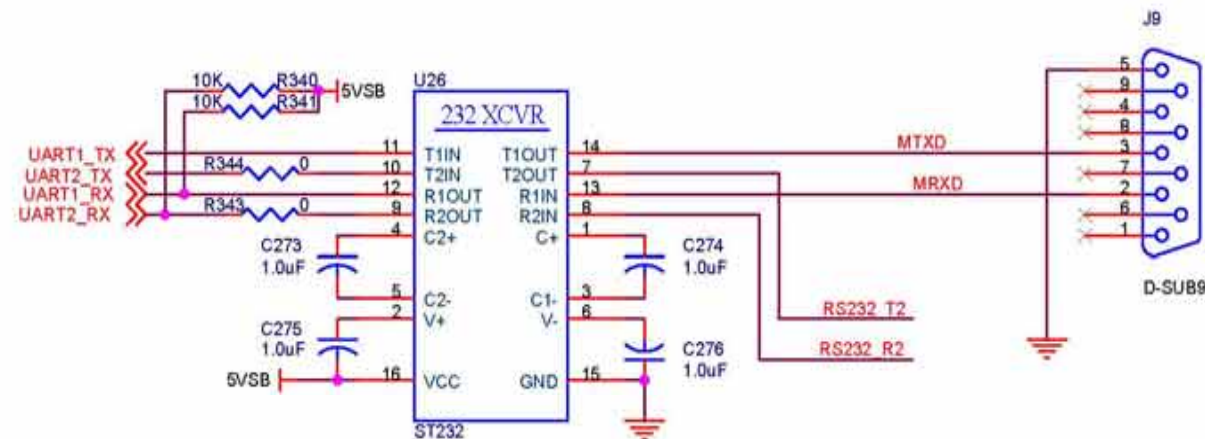


Audio Interface

Title	Phobos		
Size	Document	BOBCAT_D1_Plus.DSN	
	Sheet	11 of 22	Rev D2
Date: Wednesday, April 13, 2005			
Drawn by: O. Marnovsky			

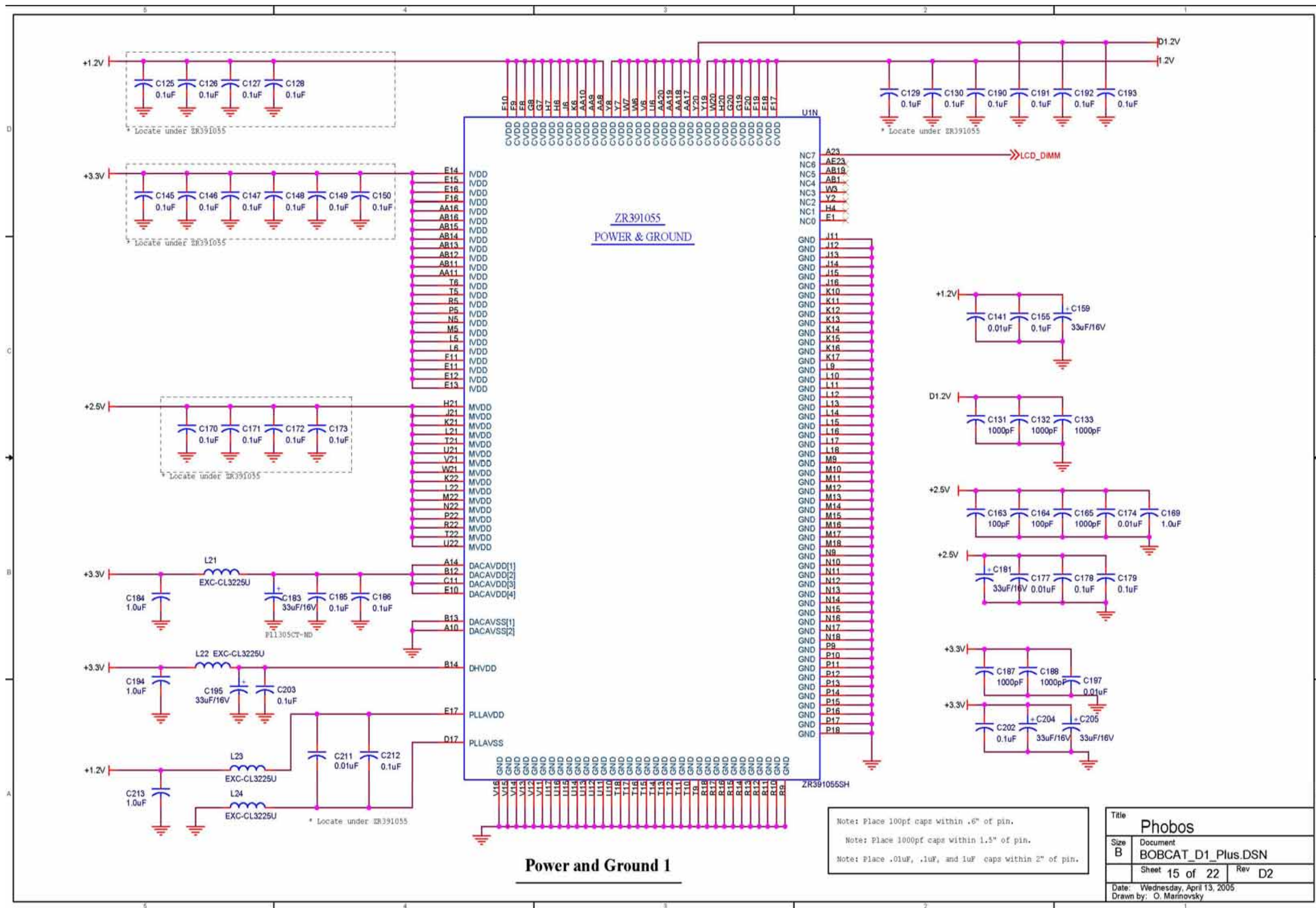


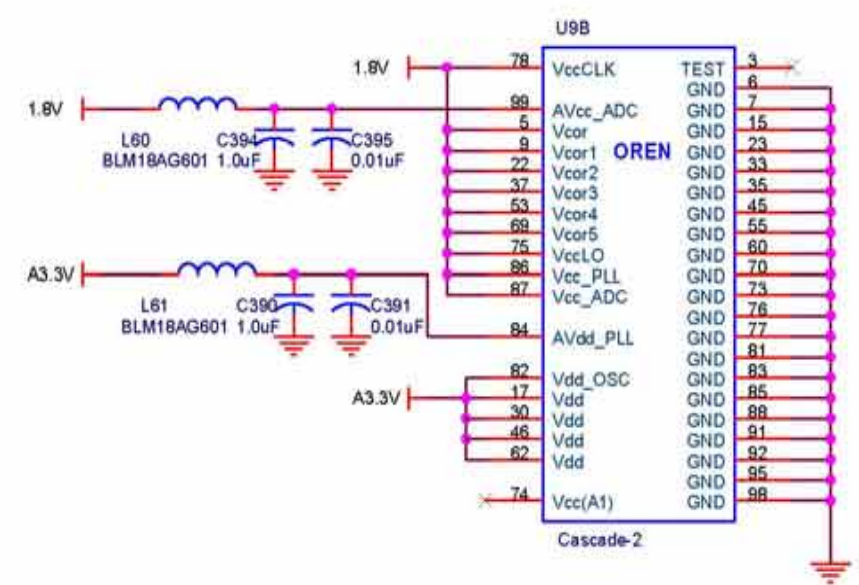
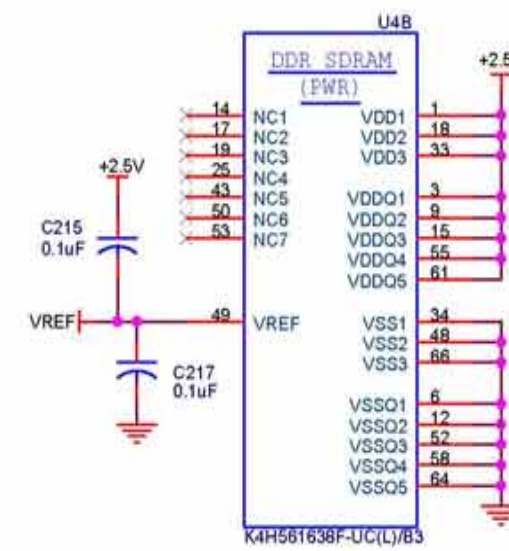
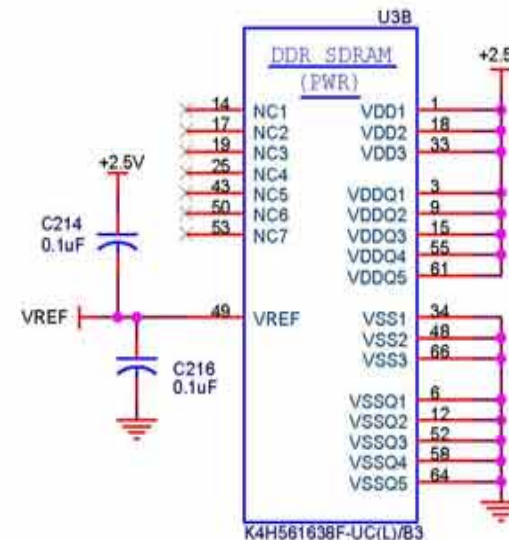
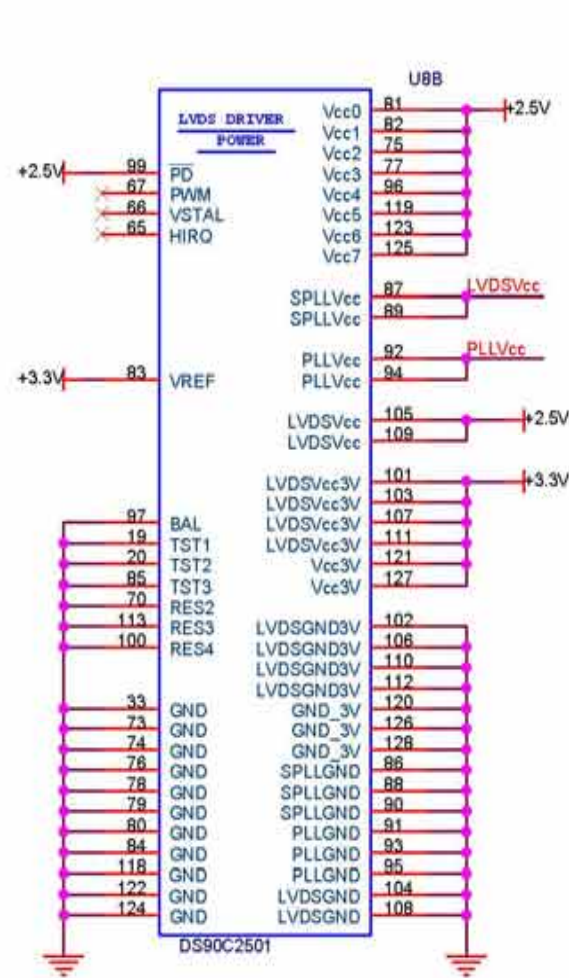




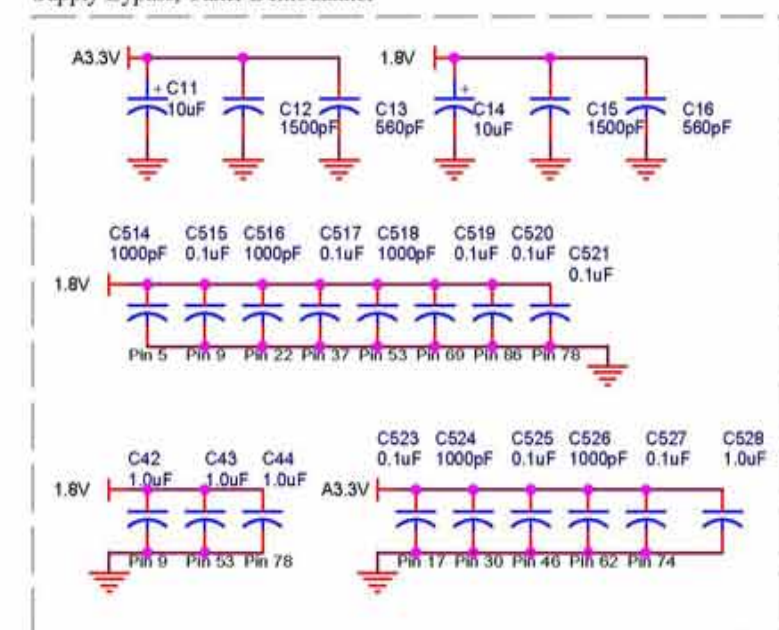
Utility / JTAG Connectors

Title		Phobos	
Size	Document	BOBCAT_D1_Plus.DSN	
	Sheet	14 of 22	Rev D2
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Drawn by: O. Marnovsky			

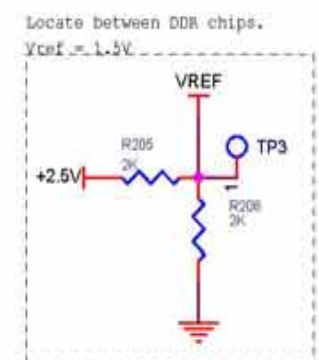
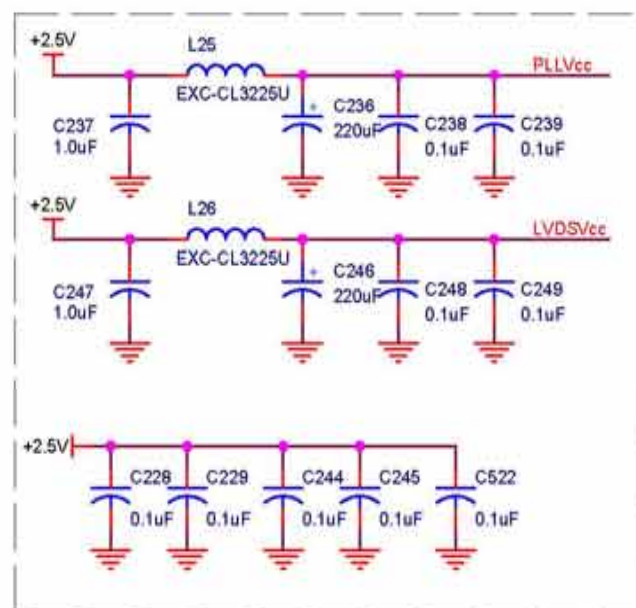




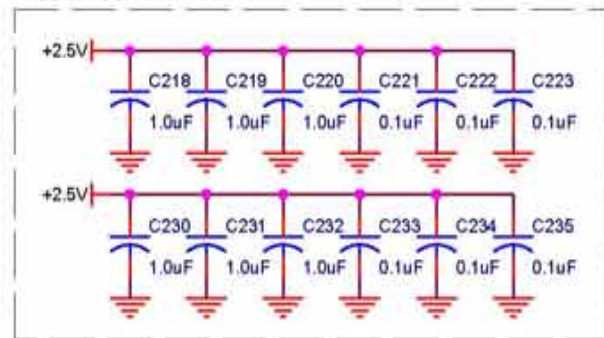
Supply Bypass, Tuner Demodulator



Supply Filters/Bypass, LVDS

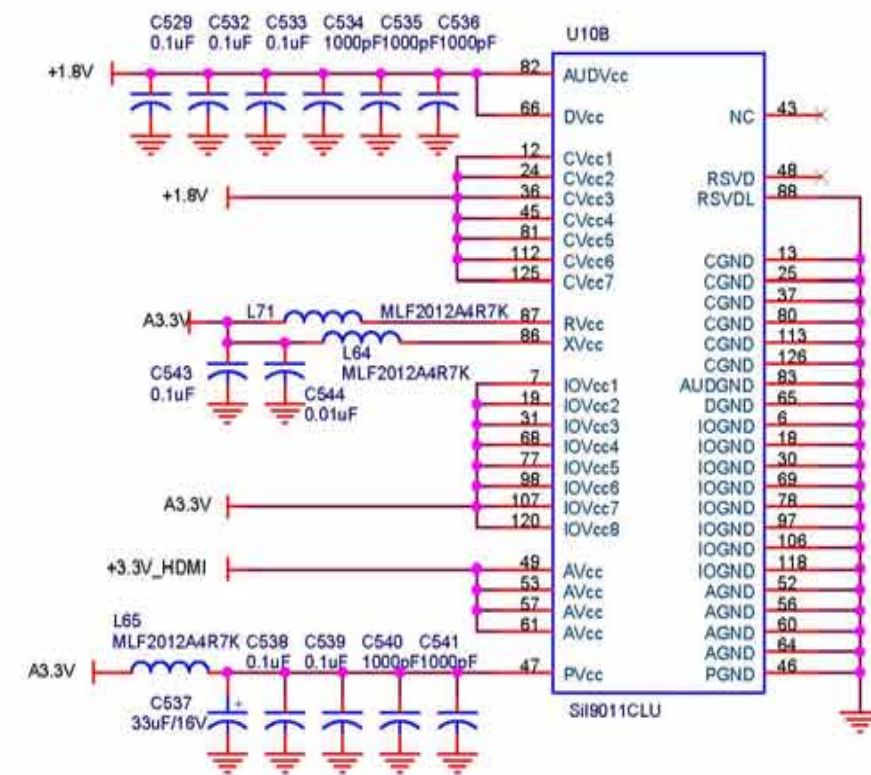


Supply Bypass, DDR S0

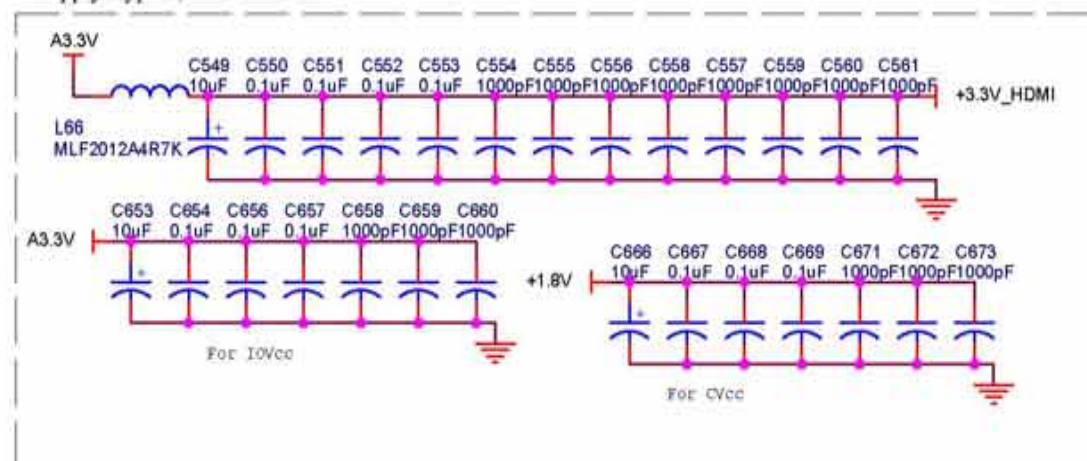


Power and Ground 2

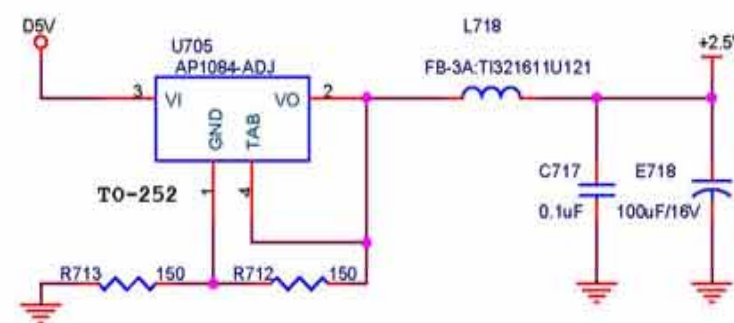
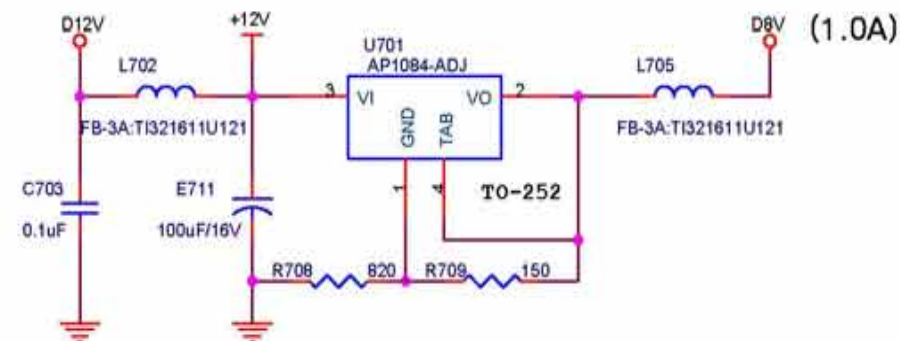
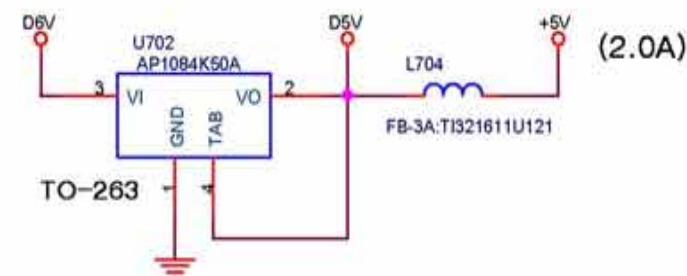
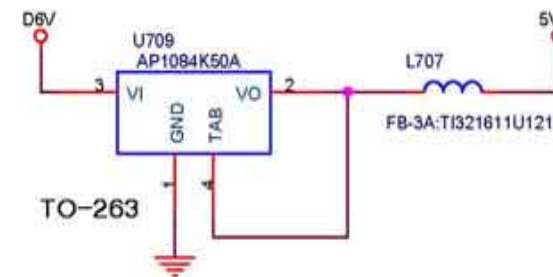
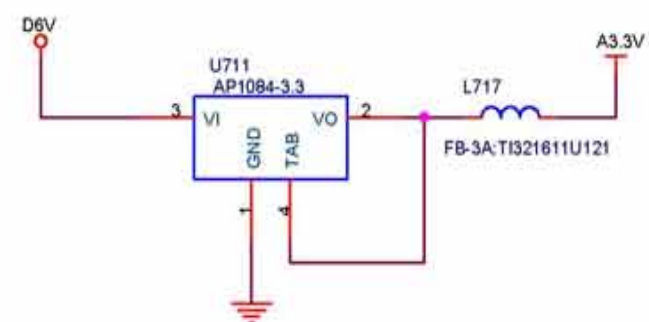
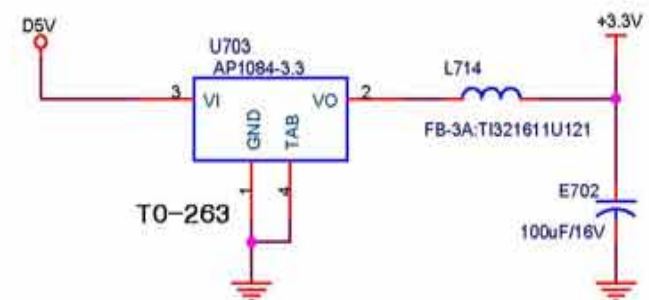
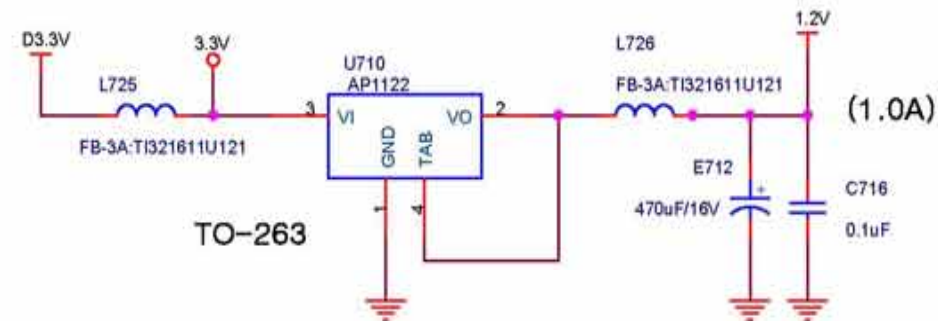
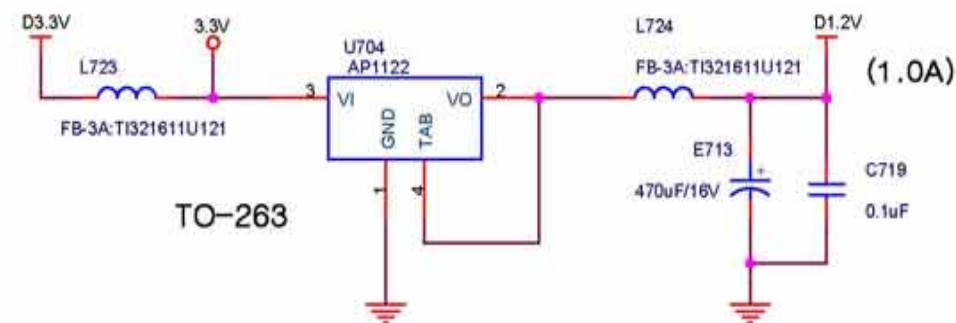
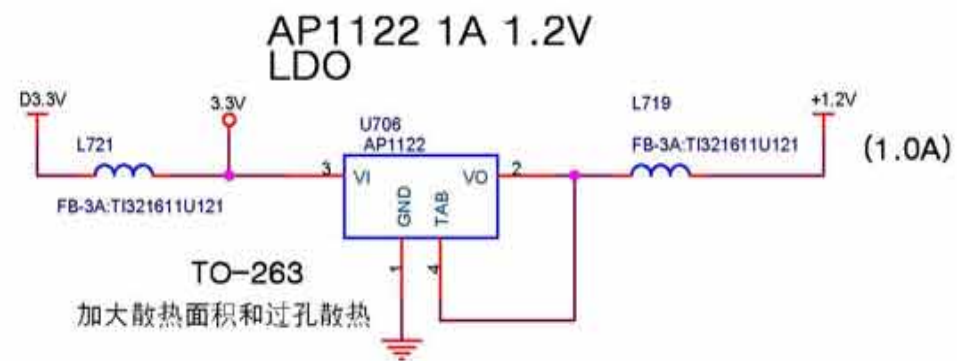
Title		Phobos	
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Supply Bypass, HDMI Receiver



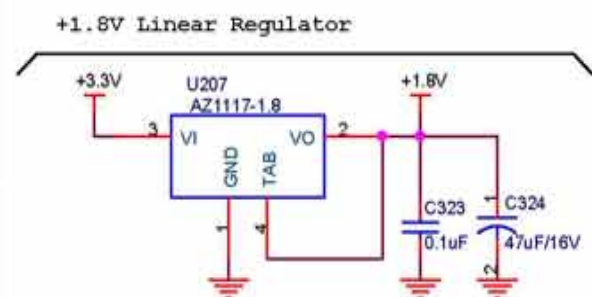
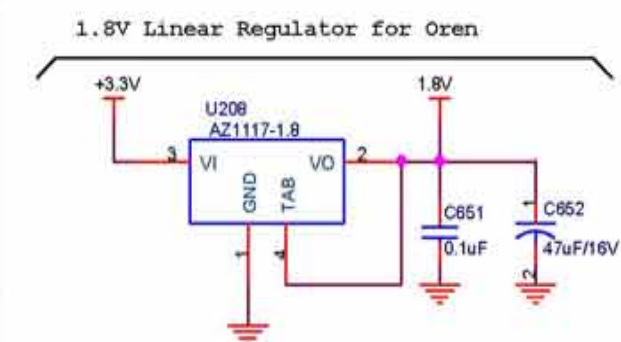
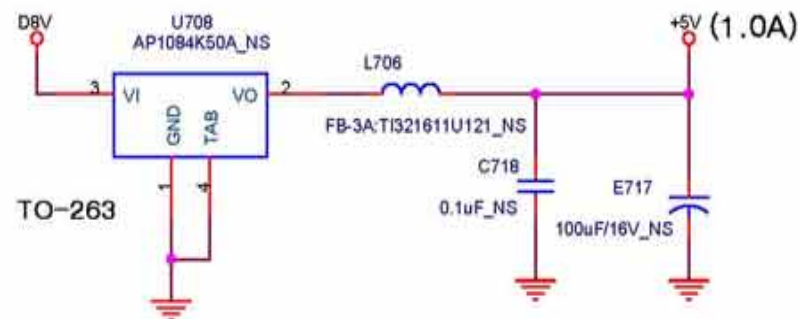
Title			Phobos		
Size	Document				
B	BOBCAT_D1_Plus.DSN				
	Sheet	17 of 22	Rev	D2	
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Drawn by: O. Marinovsky					



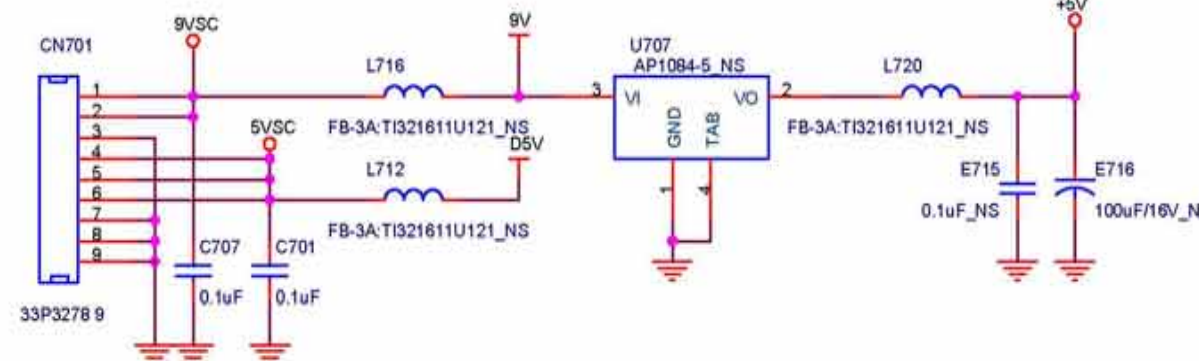
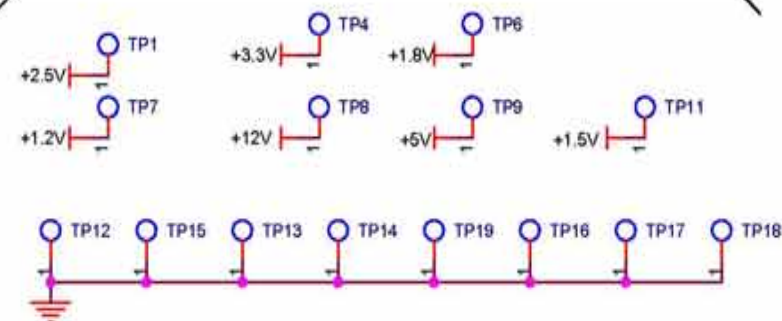
1.2V - 2A (2.8A MAX)
2.5V - 1.6A (2.6A MAX)
3.3V - 1.5A (2.3A MAX)
5.0V - 0.5A (1A MAX)

Power & Ground 4

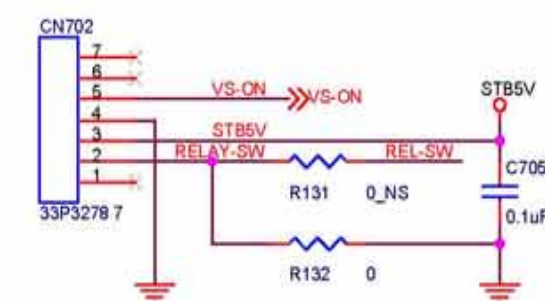
Title	Phobos		
Size	Document	BOBCAT_D1_Plus.DSN	
Sheet	18 of 22	Rev	D2
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Drawn by:	O. Marinovsky		



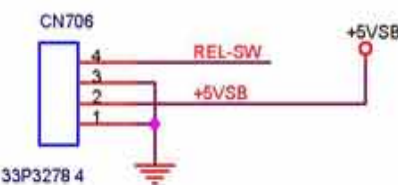
POWER TEST POINTS



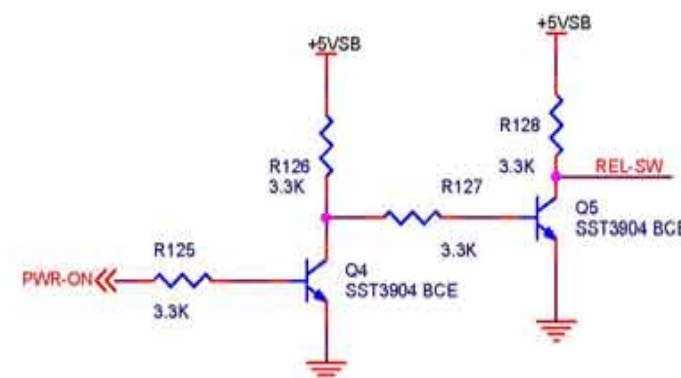
FROM LG PDP
PSU



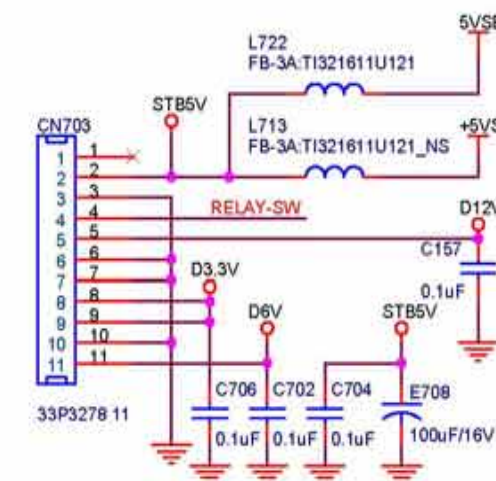
FROM LG PDP
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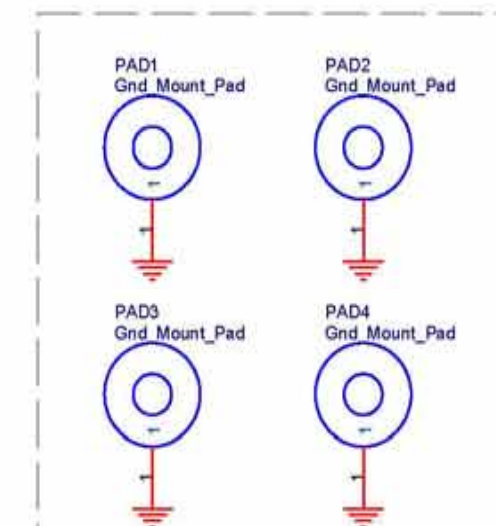
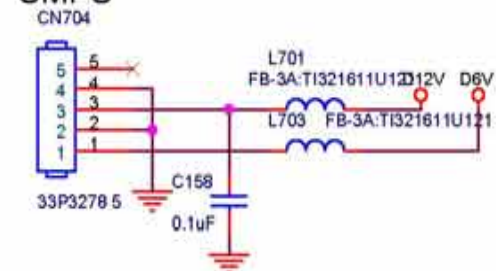
STB PDC POWER CON



NO
USE



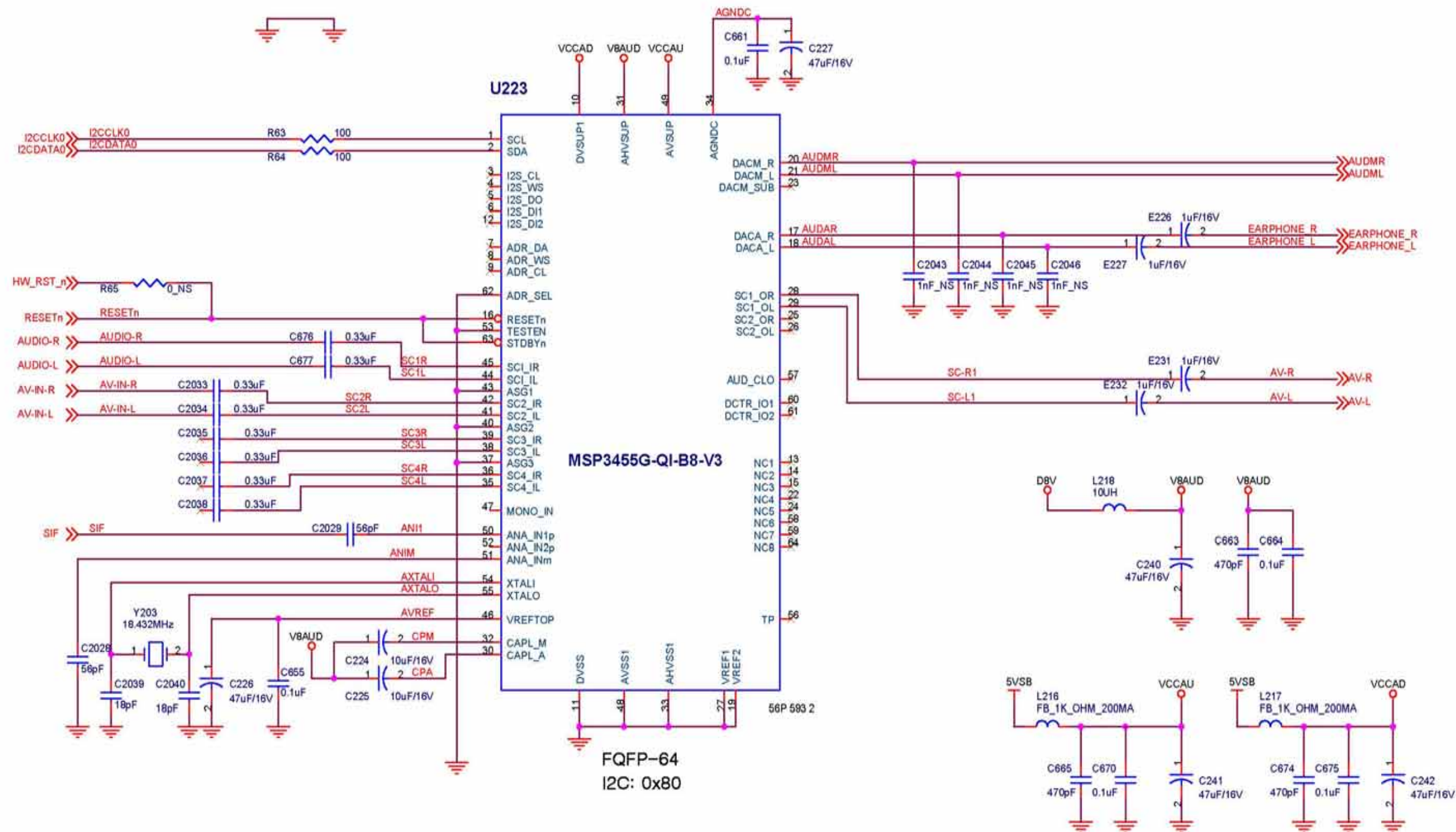
FROM SDI PDP
SMPS



Grounded Mounting Holes, PCB

Power & Ground 5

Title	Phobos
Size	Document
B	BOBCAT_D1_Plus.DSN
Sheet	19 of 22
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Title		Phobos	
Size	Document	BOBCAT_D1_Plus.DSN	
	Sheet	20 of 22	Rev D2
Date: Wednesday, April 13, 2005			
Drawn by: O. Marnovsky			

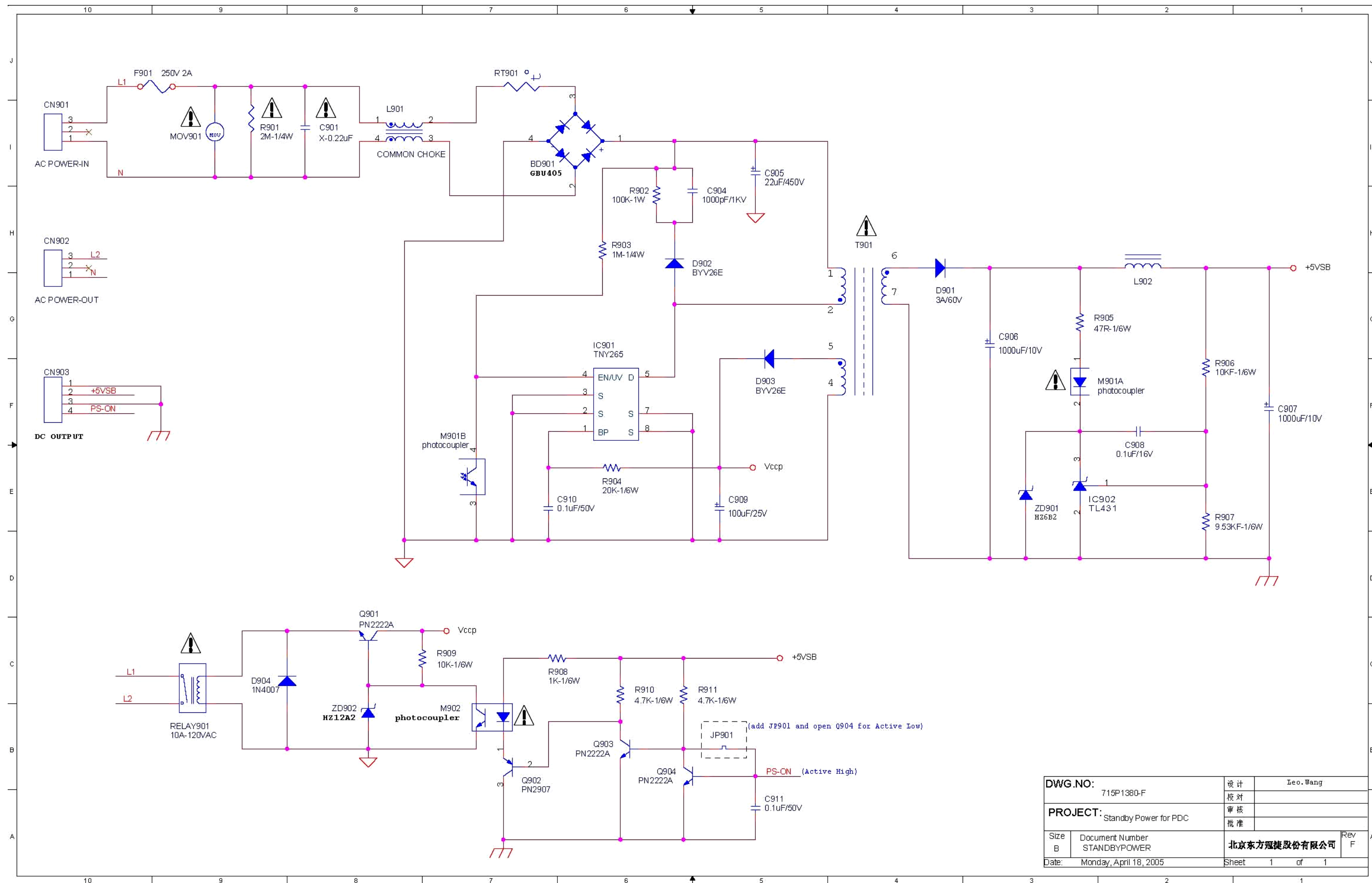
GPIO Pin Table

<u>Signal</u>	<u>ZR391055 GPIO #</u>	<u>Function</u>	<u>Setting</u>
LCD_ON	0	LCD backlight ON/OFF control.	Active high.
NAND_GPIO1_n	1	Allow to boot-up from NAND FLASH	Active low.
Video_Input_Select	2	Composite - Y/C Video Input recognition.	1 = Composite, 0 = Y/C
WP~	3	NAND FLASH WR protection	1 = WR Enable, 0 = protected.
CH +	4	Tuner control / Setup error	Active low.
CH -	5	Tuner control / Setup error	Active low.
VOL +	6	VOL control / Setup error	Active low.
VOL -	7	VOL control / Setup error	Active low.
AUD_DOWN	11	AUD_DOWN MUTE	
AUD_SEL_A	12	AUDIO IN Select	(see table p.05)
AUD_SEL_B	13	AUDIO IN Select	(see table p.05)
AUD_SEL_C	14	AUDIO IN Select	(see table p.05)
CVmix_SEL	104	Analog video composite summer	
HD_DOWN	107	Head Phone MUTE	Active low
ACLK_SEL0	108	ACLK select source - HDMI/CLK GEN	Active low.
ACLK_SEL1	109	ACLK select source - HDMI/CLK GEN	Active low.
FMS_SEL	110	RGB out filter select HD/SD	
HDMI_SCDT	112	HDMI Signal Detect	Active high.
TV_VIDEO	113	VIDEO IN Select / FP SW	Active low.
IDE_HSCBL_n	119		Active low.
AIN_INT_n	120	Analog Decoder IC Int.	Active low.
HD_SEL	121	2 COMPONENT SIGNAL SW	(see table p.07)
CEC	122	HDMI control	
SLEEP_MODE_n	123	LOW PWR mode control	Active low.
HDMI_VSYNC	125	SYNC signal control from HDMI source.	
SPIEEPROM_WP_n	154	SPI EEPROM Wright protection.	Active low.
LAN_INT	155	Ethernet IC Int.	Active high.
HDMI_INT	156	HDMI IC Int.	Active high.
FSC_LOCK	157	Subcarrier Frequency Lock	
LCD_PWM	158	LCD PWM Control.	
ACS0	161	Audio Clock Freq. Sel bit 0 (Main)	(see table p11)
ACS1	160	Audio Clock Freq. Sel bit 1 (Main)	(see table p11)
ACS2	162	Audio Clock Freq. Sel bit 2 (Main)	(see table p11)
HD_SYNC_SEL	163	HD_SYNC_SEL	
LED2	159	LED D2 Control	1 = off, 0 = lit
LED3	166	LED D3 Control	1 = off, 0 = lit
LED4	167	LED D4 Control	1 = off, 0 = lit
LED5	168	LED D5 Control	1 = off, 0 = lit
LED6	169	LED D6 Control	1 = off, 0 = lit
MENU	184	SEL / FP SW	Active low.

<u>DS90C2501 GPIO#</u>	<u>Function</u>	<u>Setting</u>
0	LVDS Control	
1	COLOR Function	Active low.
2	DUAL Function	Active high.

GPOIs Table

Title		
Phobos		
Size B	Document BOBCAT_D1_Plus.DSN	
	Sheet 22 of 22	Rev D2
Date: Monday, March 28, 2005 Drawn by: O. Marinovsky		



DWG.NO: 715P1380-F		设计	Leo.Wang
PROJECT: Standby Power for PDC		校对	
		审核	
		批准	
Size B	Document Number STANDBYPOWER	北京东方冠捷股份有限公司	
Date: Monday, April 18, 2005	Sheet 1 of 1	Rev F	