RD-JT40/RD-JT41

SERVICE MANUAL

Caution

Be sure to read this manual before servicing. To assure safety from fire, electric shock, injury, harmful radiation and materials, various measures are provided in this Acer DLP projector. Be sure to read cautionary items described in the manual to maintain safety before servicing.

Service Warning

1. When replace the lamp, to avoid burns to yor fingers. The lamp becomes too hot.
2. Nevr touch the lamp bulbwith a finger or anything else. Never drop it or give it a shock. They may cause bursting of the bulb.
3. This projector is provided with a high voltage circuit for the lamp. Do not touch the electric parts of powrer unit (main), when turn on the pojector.
4. Do not touch the exhaust fan, during operation.

Contents

1. SPECIFICATIONS

Projector Specifications

Technical Specifications

Note: All specifications are subject to change without notice.

General	
Product name	Personal Projector
Model name	RD-JT40 1024*768XGA
	RD-JT41 800*600SVGA
Optical	
Display system	1-CHIP DMD
Lens F/Number	F/2.6
Lamp	210W NSH lamp
Electrical	
Power supply	AC100 ~ 240V, 3.5A, 50/60 Hz (Automatic)
Power consumption	330 W (Max)
Mechanical	
Dimensions	308mm/12in (W) x 95mm/3.7in (H) x 238mm/9.4in (D)
Operating temperature range	10°C ~ 40°C
Weight	6.9 lbs (3.1 Kg)
Input terminal	
Computer input	
RGB input	D-sub 15-pin (female)
Video signal input	
S-VIDEO	Mini DIN 4-pin port x1
VIDEO	RCA jack x1
HDTV signal input	YPBPR RCA jack x3
Audio signal input	
Audio 1	Mini jack stero port
Audio 2	RCA jack L, R x2
Output	
USB mouse connector	A/B series x1
Speaker	2 watt x 1
Control	
RS-232C	9-pin x1

Service Information

Accessories (included in the Standard Package)

Description of parts	Part No.
Power cord (EU)	27.82718.281
Power cord (US)	27.01818.000
Power cord (UK)	27.01018.000
VGA signal cable	50.J0508.502
Video cable	50.73213.501
S-Video cable	50.72920.011
PC audio cable	50.74405.501
Soft carrying case	98.J3402.001
HDTV cable	50.J2401.001
USB mouse cable	50.73213.501
Remote control	98.J3401.001
3-2 converter	22.91007.011

Optional Accessories (not included in the Standard Package)

Description of parts	Part No.
Mac adapter (switchable)	20.20118.A15
Spare lamp module	60.J3416.CB1

2. Spare Parts List

Item No:99.J3477.L11 Projector LG RD-JT40 spare parts list

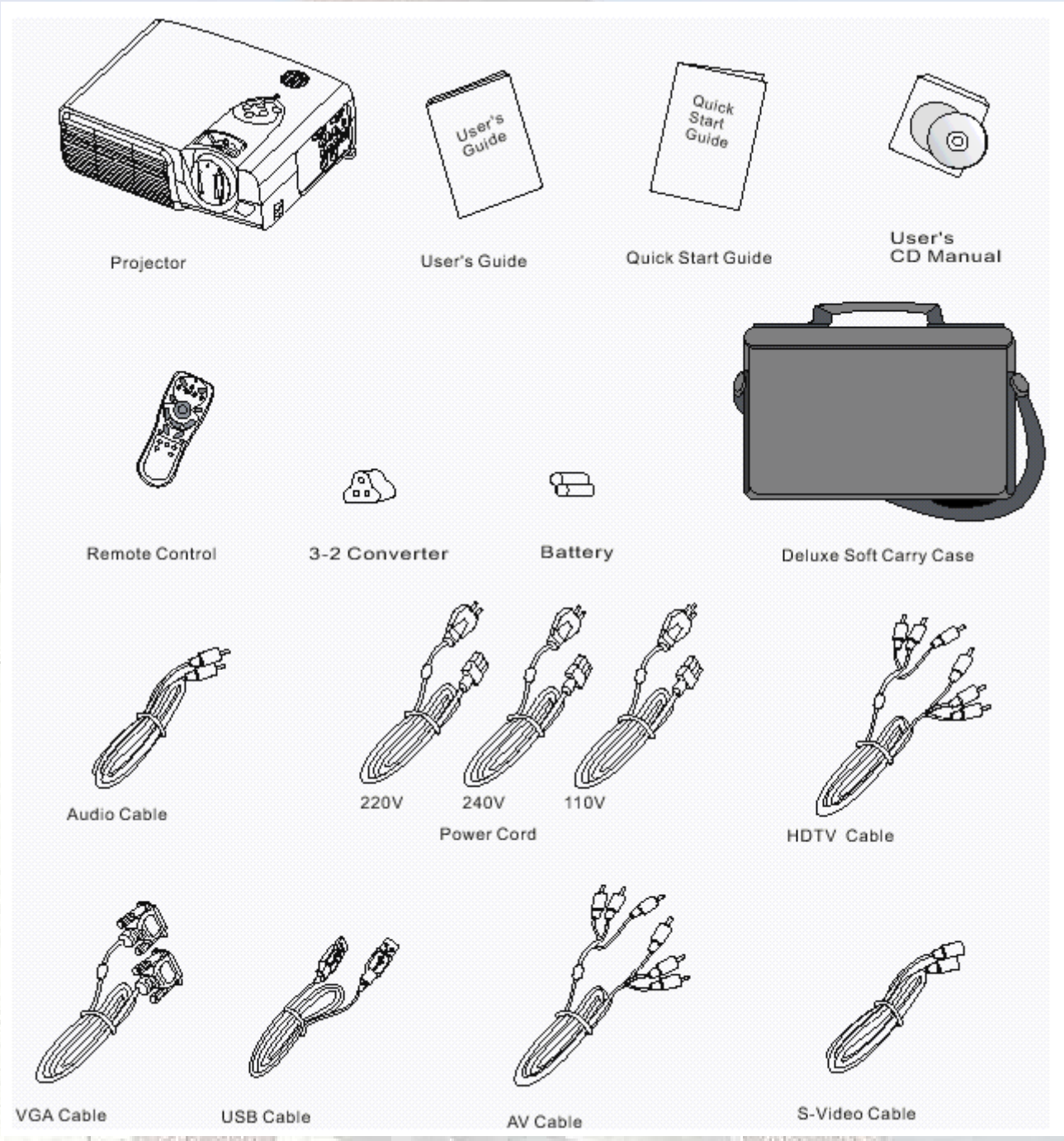
Parts No	Description
55.J3405.001	PCBA FAN CONTROL/B DX660
55.J3408.001	PCBA DC-DC/B DX660
60.J3419.001	ASSY PFC MODULE DX660
55.J3407.001	PCBA PFC CONTROL/B DX660
60.J3477.L11	ASSY ENGINE DX660-L11
55.J3419.001	PCBA THERMAL/B DX660
60.J3403.021	ASSY LOWER CASE P838 DX660/LG
42.J3415.001	FOOT REAR SILICON BLA. DX660
65.J3406.001	ADJUST FOOT FRONT MARS
55.J3401.001	PCBA DMD/B DX660
55.J3402.031	PCBA MAIN/BD LG DX660
60.J3414.031	ASSY OPTICAL ENG. DX660/LG
55.J3404.001	PCBA CHIP/B DX660
60.J3415.021	ASSY HSG DMD DX660/LG
71.01076.001	IC DIGITA IMAG DMD1076-7LGA11
60.J3404.001	ASSY BALLAST MODULE DX660
60.J3405.002	ASSY REAR FAN HLD MODULE DX66
60.J3407.021	ASSY REAR CVR MODULE DX660/LG
60.J3409.001	ASSY CAP LENS TRANS. DX660
60.J3412.061	ASSY UPPER CASE P896 DX660/LG
55.J3403.001	PCBA KEYPAD BD DX660
60.J3416.001	ASSY LAMP MODULE U DX660
60.J3482.001	ASSY REMOTE+CABLE LG DXS660
27.01018.000	CORD H05VV-F 13A250V 1830MM U
27.01818.000	CORD SVT#18*3C 10A125V 1830US
27.82718.281	CORD H05VV-F 10A250V EUR BLK
50.73213.501	CABLE 4P USB A-B 1800MM BLACK
50.J0508.502	SIGNAL/C 15/15P 2500MM/BLK
50.J7111.501	CABLE A/V (G.B.R)1800 BLK 784
50.72918.001	CABLE A/V RCA(R,W,Y)1500MM
50.72920.011	C.A MIN-DIN 4P S-VIDEO W/S 15
50.74405.501	CABLE AUD PC99PT284C/PT577C B
98.J3403.001	REMOTE CONTROLLER DXS660 LG
98.J3404.001	SOFT CASE DXS660 LG

Item No:99.J3877.L11 Projector LG RD-JT41 spare parts list

Parts No	Description
55.J3405.001	PCBA FAN CONTROL/B DX660
55.J3408.001	PCBA DC-DC/B DX660
60.J3419.001	ASSY PFC MODULE DX660
55.J3407.001	PCBA PFC CONTROL/B DX660
60.J3877.L11	ASSY ENGINE DS660-L11
55.J3419.001	PCBA THERMAL/B DX660
60.J3403.021	ASSY LOWER CASE P838 DX660/LG
42.J3415.001	FOOT REAR SILICON BLA. DX660
65.J3406.001	ADJUST FOOT FRONT MARS
60.J3406.061	ASSY INTERFACE MODULE DS660/L
55.J3801.001	PCBA DMD/BD FOR DS660
55.J3804.M21	PCBA MAIN/BD FOR LG DS660
60.J3410.001	ASSY BOX LAMP DX660
60.J3411.001	ASSY BKT BLOWER DX660
60.J3414.041	ASSY OPTICAL ENG. DS660/LG
55.J3802.001	PCBA DMD CHIP/BD FOR DS660
60.J3415.021	ASSY HSG DMD DX660/LG
71.08460.000	IC DIGITAL IMAG DMD8460 LGA11
60.J3404.001	ASSY BALLAST MODULE DX660
60.J3405.002	ASSY REAR FAN HLD MODULE DX660
60.J3407.021	ASSY REAR CVR MODULE DX660/LG
60.J3409.001	ASSY CAP LENS TRANS. DX660
60.J3412.071	ASSY UPPER CASE P896 DS660/LG
55.J3403.001	PCBA KEYPAD BD DX660
60.J3413.071	ASSY SUB U/C P896 DS660/LG
60.J3416.001	ASSY LAMP MODULE U DX660
60.J3417.021	ASSY DOOR LAMP P838 DX660/LG
60.J3481.001	ASSY MANU+WARRANTY LG
60.J3482.001	ASSY REMOTE+CABLE LG DXS660
98.J3403.001	REMOTE CONTROLLER DXS660 LG
98.J3404.001	SOFT CASE DXS660 LG

3. Shipping Contents

The Projector is shipped with the cables required for connection to standard PC or laptop computers. Carefully unpack and verify that you have all the items shown below. If any of these items are missing, please contact personnel at the place of purchase.

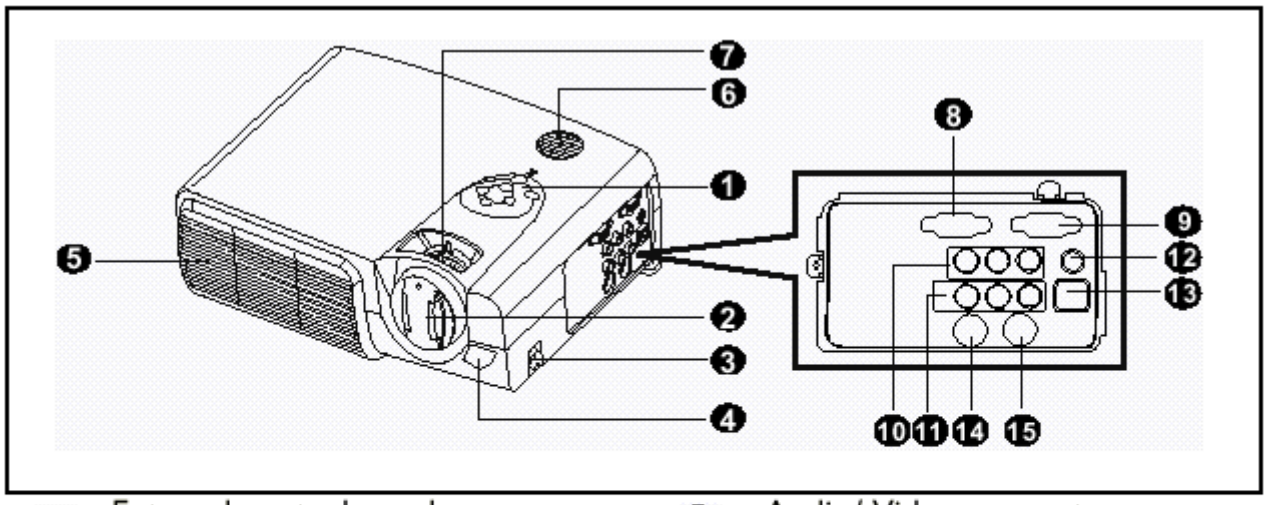


Optional Accessories

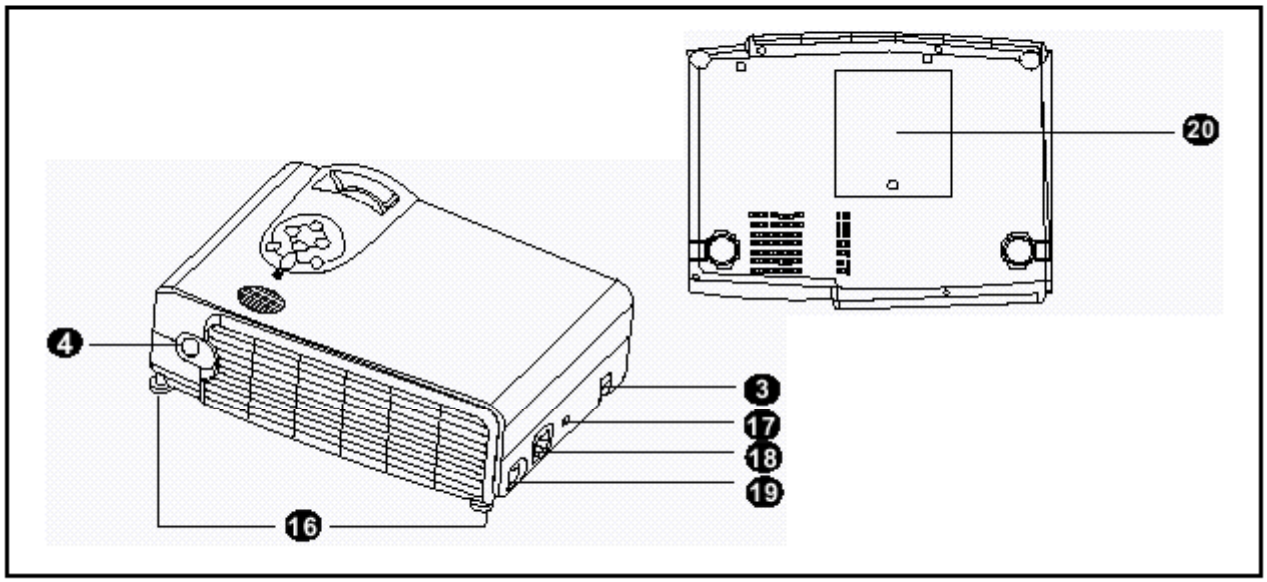
1. Macintosh adapter
2. 210W Lamp module

4. Projector Description

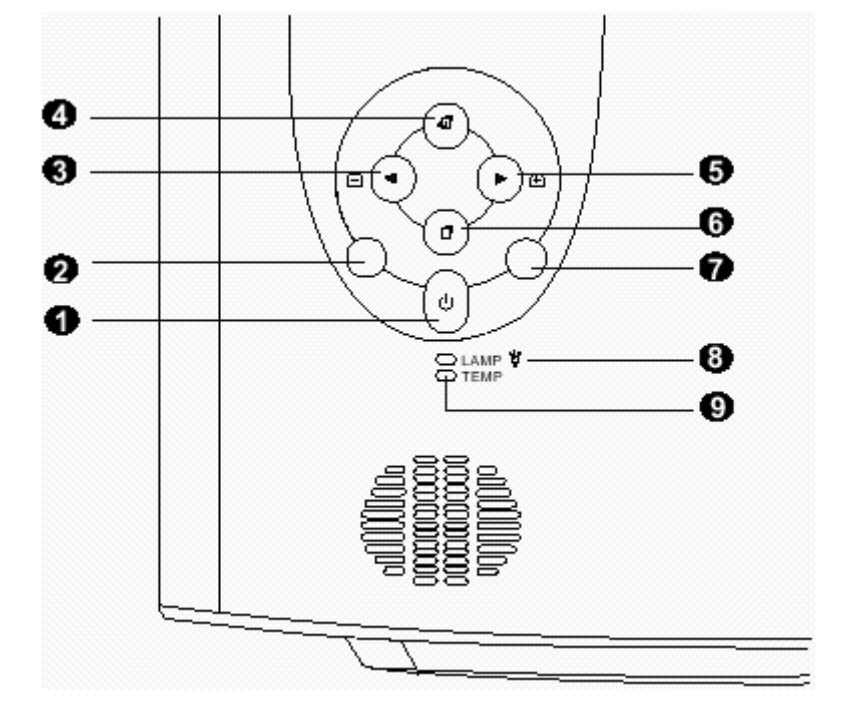
Projector



1	External control panel (see next page)	11	Audio/ Video connector
2	Projection lens	12	Audio jack
3	Front adjuster	13	USB mouse connector
4	IR remote sensor	14	S-Video jack
5	Ventilation grill	15	RS 232 control port
6	Speaker	16	Rear adjuster feet
7	Projection lens adjuster	17	Kensington lock
8	RGB signal input	18	AC power cord inlet
9	RGB signal output	19	Main power switch
10	YPBPR connector	20	Lamp door



External Control Panel



❶ Power

Presses the **Power** key to turn the projector on or off.

❷ Auto

Automatically determines the best picture settings for current received signals.

❸ Left/ Keystone - **❹ Exit**

❺ Right/ Keystone + **❻ Menu**

Menu will display the menu system on screen. Press **Menu** again to access the sub-menus. **Left** and **Right** help you navigate among choices and settings in the menus and sub-menus. However, when the on-screen menu is not activated, the **Left** and **Right** buttons will function as **Keystone +/-** hot keys.

Press the **Exit** button to go back to the main menu. Press **Exit** again to leave the menu system.

❼ Source

Selects signal sources from among PC, Video, S-Video and YPBPR.

❽ Lamp Indicator

The Lamp Indicator will light up when the lamp needs service, cooling or replacement. See "Lamp Information" on page 20 for more detailed information.

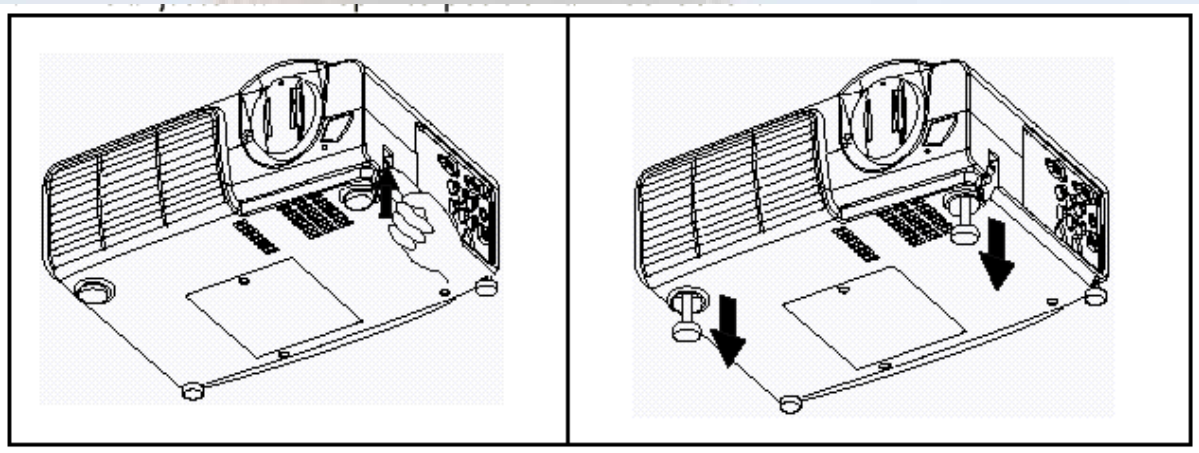
❾ Temp indicator

The Temp indicator will flash when the system temperature is too high, which may occur if the projector is operated improperly. See "Temp Information" on page 22 for more detailed information.

Adjuster

The projector is equipped with 2 quick-release adjuster feet. Push the buttons to adjust its tilt angle.

1. Lift the projector up and press the adjuster button to release the adjuster.
2. The adjuster will drop into position and be locked.



Projector Features

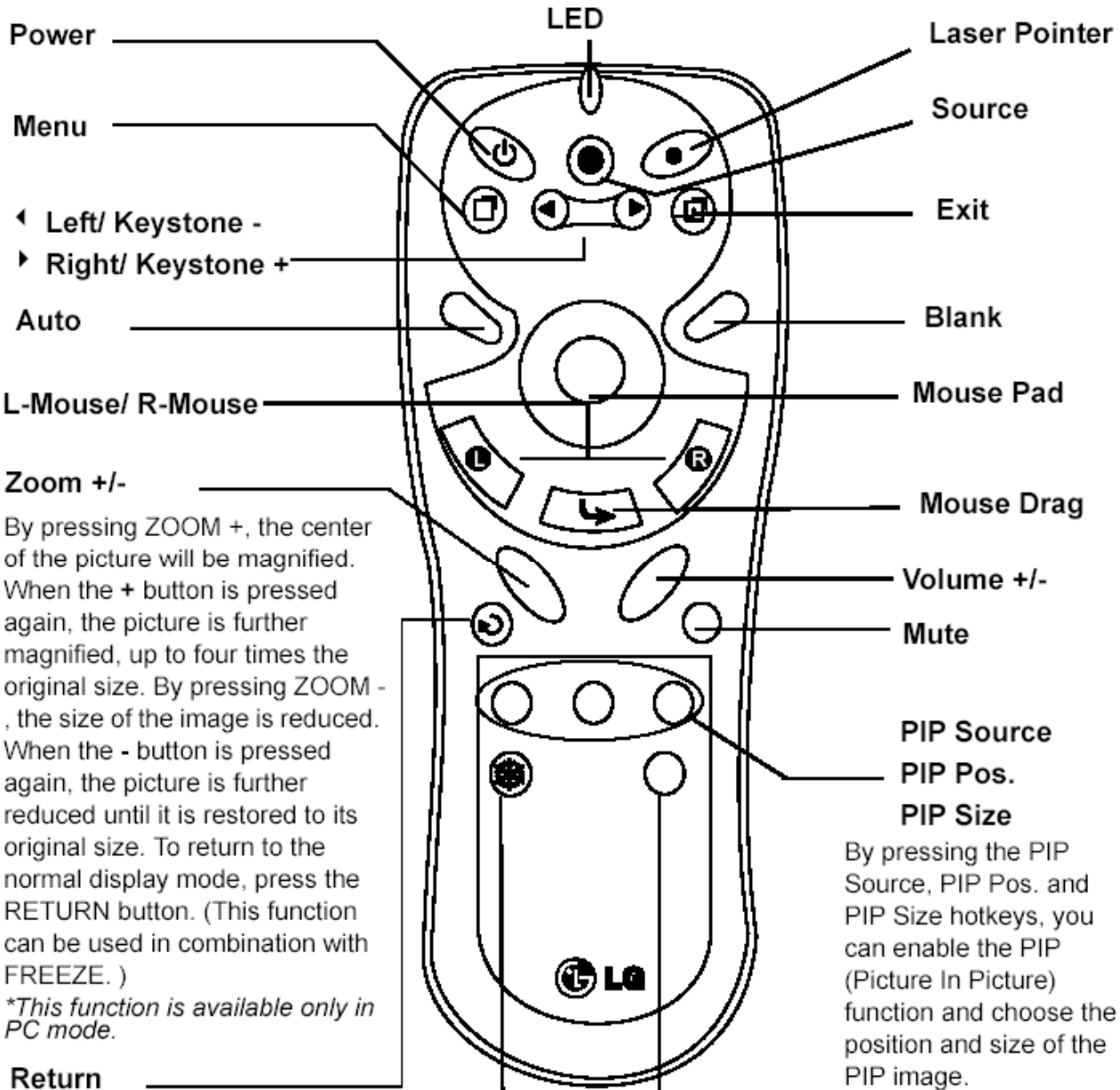
The projector integrates high-performance optical engine projection and a user-friendly design to deliver high reliability and ease of use. The projector offers the following features:

- Small and light for portability
- Full-function remote control with laser pointer/ remote mouse function
- Hight quality manual zoom lens
- One-key auto-adjustment to display the best picture quality
- Easy digital keystone correction through hot keys to correct distorted images
- Adjustable color balance control for data/video display
- Ultra-high brightness projection lamp
- Ability to display 16.7 million colors
- On-screen menus in 8 languages: English, French, German, Italian, Spanish, Korean, Simplified Chinese, and Traditional Chinese.
- Switchable Normal/ Video mode for data/ video display
- Powerful AV function to provide high quality AV picture
- HDTV compatibility (YPBPR)

Note: The brightness of the projected image will vary depending on the ambient lighting conditions and contrast/brightness settings.

5. Remote Control Description

The remote control sensors are located in the front/ back of the projector. The distance between the sensor and the remote control should not exceed 6 meters.

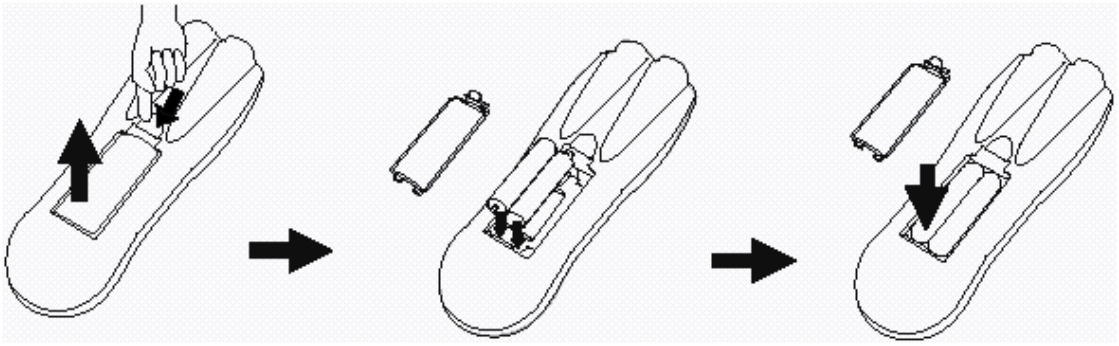


Installing or Replacing Batteries

❶ Push and slide the battery compartment lid in the direction shown.

❷ Install batteries as indicated by the diagram inside the compartment.

❸ Position the lid over the compartment and snap it back into place.



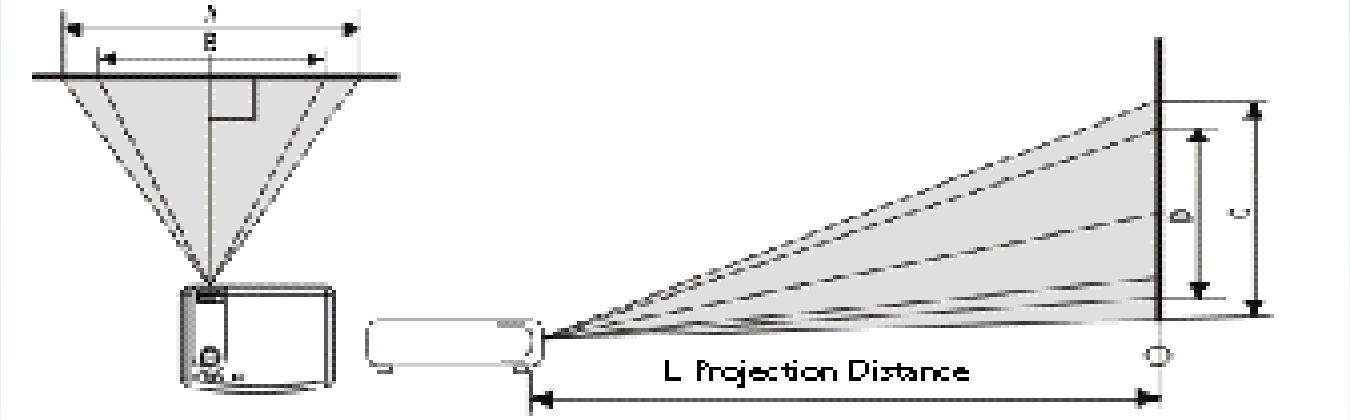
⚠ Caution

Avoid excessive heat and humidity. There may be danger of an explosion if batteries are incorrectly replaced. Replace only with the same or equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.

6. INSTALLATION

Screen Size

Place the projector at the required distance from the screen according to the desired picture size (see the table below).



Screen Size (Max.)			L. Projection distance (cm/in)	Screen Size (Min.)		
Diagonal (cm/in)	A. Width (cm/in)	C. Height (cm/in)		Diagonal (cm/in)	B. Width (cm/in)	D. Height (cm/in)
77/30.4	61.8/24	46.3/18	100/39	63/24.9	50.7/20	38.0/15
154/60.8	123.65/49	92.7/36	200/79	127/49.9	101.3/40	76.0/30
232/91.2	185.3/73	138.9/55	300/118	190/74.7	151.9/60	113.9/45
309/121.5	247.0/97	185.2/73	400/157	253/99.7	202.5/80	151.9/60
386/151.9	308.7/122	231.6/91	500/197	316/124.6	253.2/100	189.9/75
463/182.3	370.5/146	277.9/109	600/236	380/149.5	303.8/120	227.9/90
541/213.1	432.2/170	324.18/128	700/276	443/174.6	354.4/140	266.2/105
617/243.1	494.0/194	370.5/146	800/315	506/199.4	405.1/160	303.8/120
695/273.5	555.7/219	416.7/164	900/354	570/224.3	455.7/180	341.8/135
772/303.9	617.5/243	463.11/182	1000/394	633/249.2	506.3/200	379.8/150

Connecting to Various Equipment

HDTV description

The projector is capable of displaying various High Definition TV display modes. Some of these sources are:

- Digital-VHS (D-VHS) player
- DVD player
- Satellite Dish HDTV receiver
- DTV tuners

Most of these sources will provide an analog component video output, a standard VGA output, or a YPBPR (default) format.

The projector is capable of accepting HDTV data through a YPBPR connector. Use a HDTV cable that came with your projector to display HDTV images.

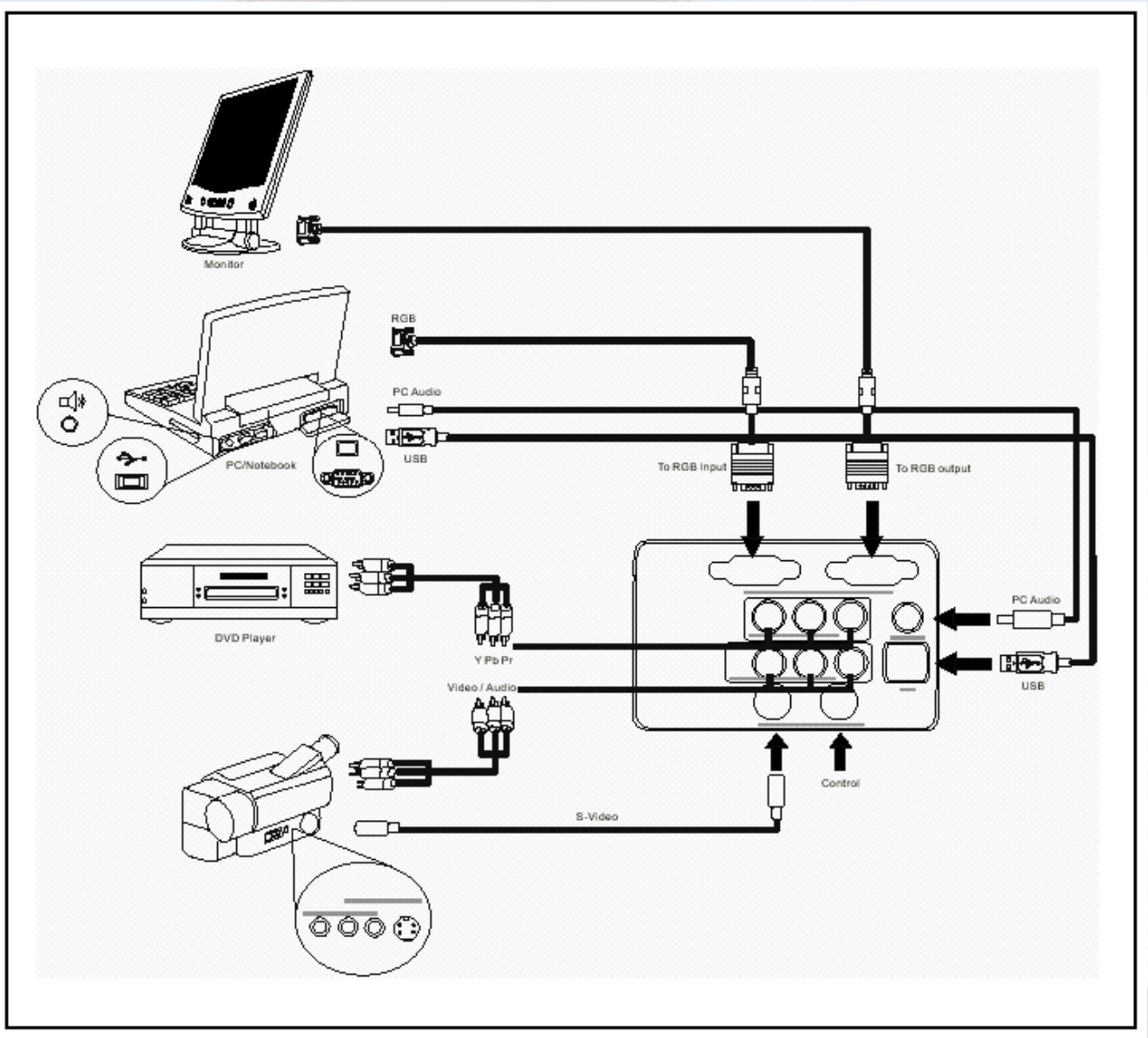
The following standards are supported in the HDTV function:

- 480i
- 480p
- 720p
- 1080i

Please refer to "Menu System" on page 13 for information on the HDTV OSD selections.

Connecting to Various Equipment

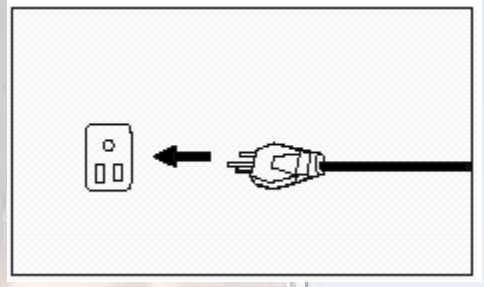
It only takes a few seconds to connect your projector to your desktop or notebook computer, VCR, or other systems. However, a Mac adapter (an optional accessory) is needed for connection to Macintosh computers.



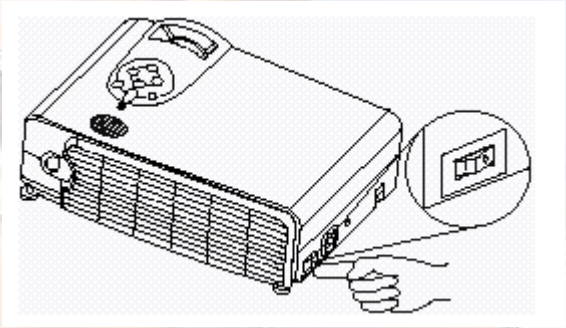
7. OPERATION

Start Up

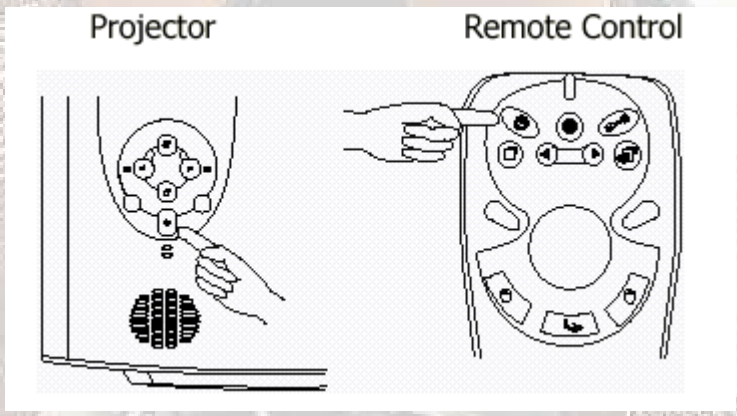
1. Plug the power cord into a wall socket.



2. Turn on the main power switch.



3. Press POWER to start the unit. The back-lit POWER key flashes green and stays green when the power is turned on

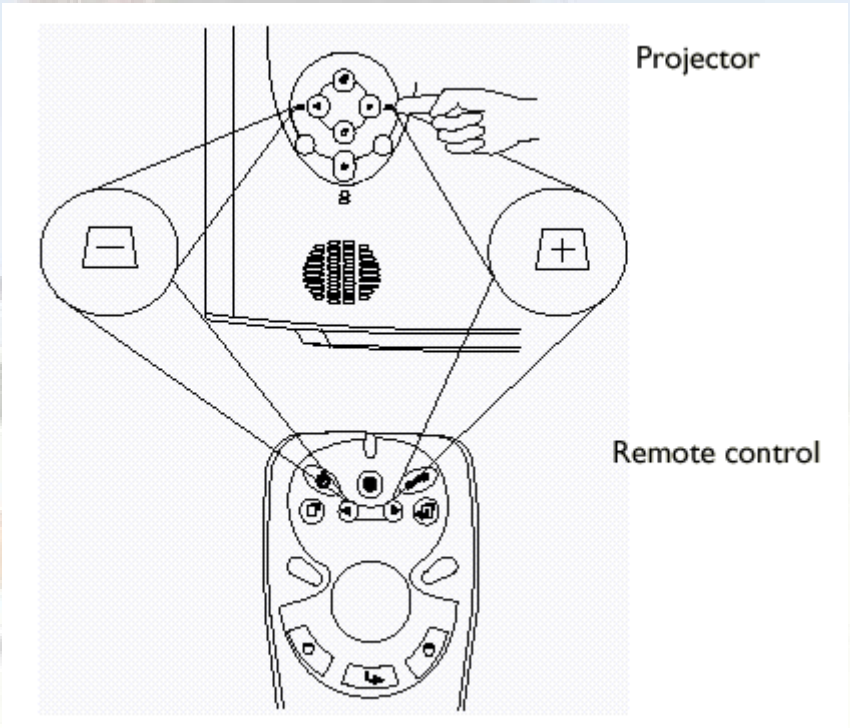


(When the power is turned off, there is a 60-second cooling period before the projector can be re-started.)

4. Switch on all connected equipment.

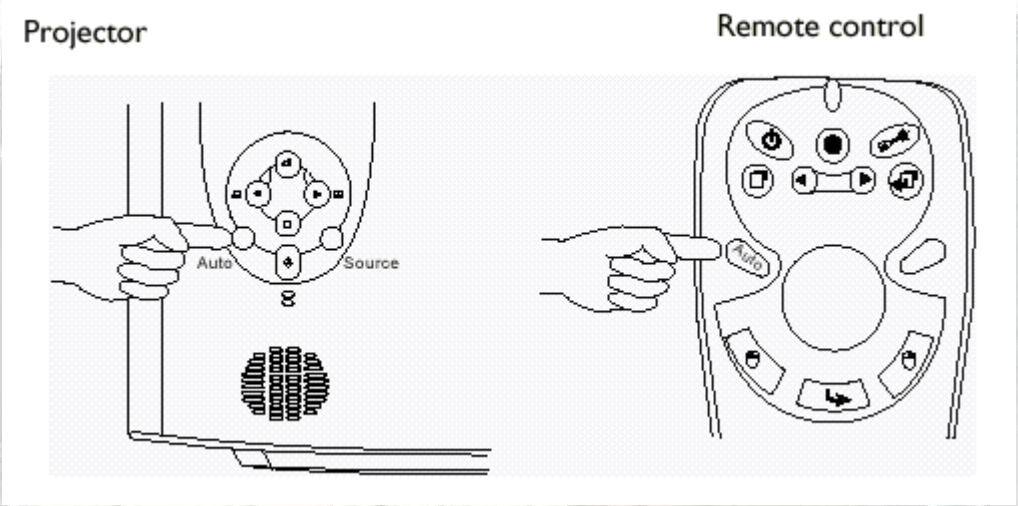
Digital Keystone Correction

Keystoning refers to the situation where the projected image is noticeably wider at either the top or bottom. To correct this, press KEYSTONE +/- (hot key) on the control panel of the projector or on the remote control, and then adjust the sliding bar labeled Keystone, as needed. Press **+** to correct keystoning at the top of the image. Press **-** to correct keystoning at the bottom of the image.



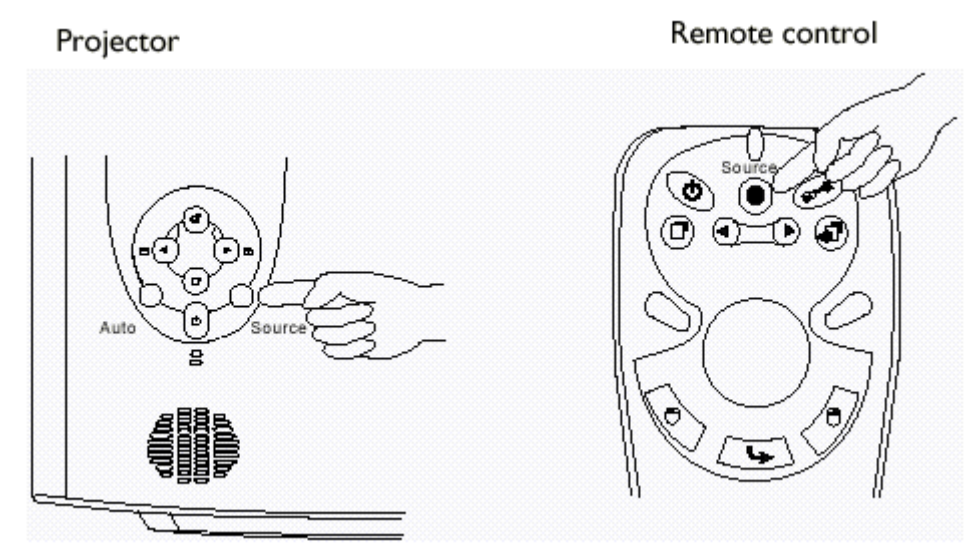
Auto Adjustment

In some cases, you may need to optimize the picture quality. To do this, press the AUTO key on the control panel of the projector or on the remote control. Within 3 seconds, the built-in Intelligent Auto Adjustment function will re-adjust settings to provide the best picture quality.



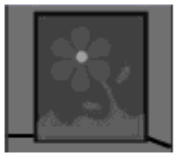
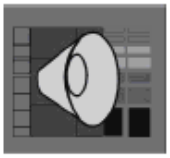
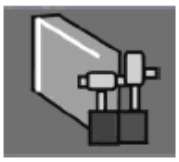
Source Selection

When several input sources are available, press the SOURCE key to make a selection from the control panel of the projector or the remote control.

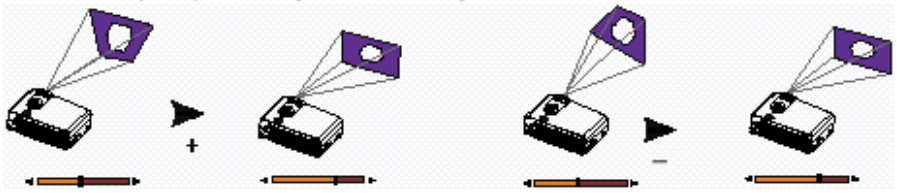
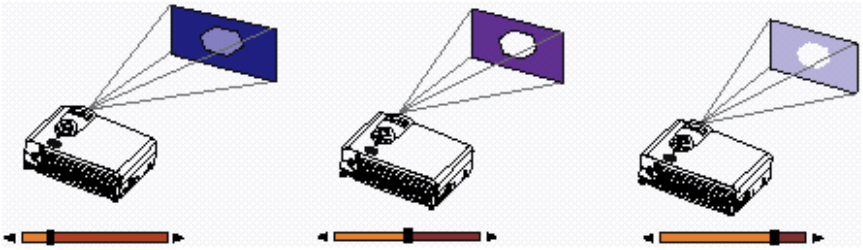
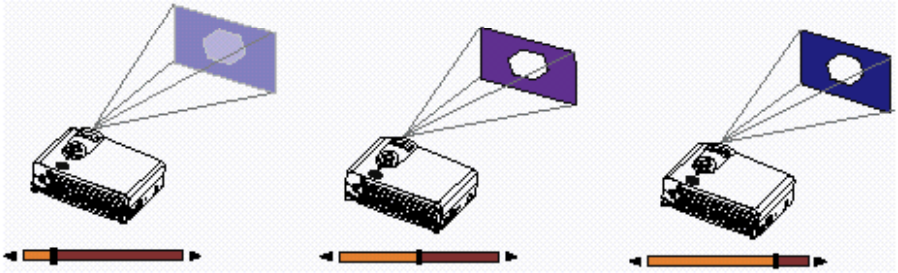
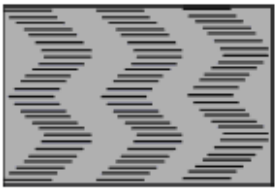


Menu System

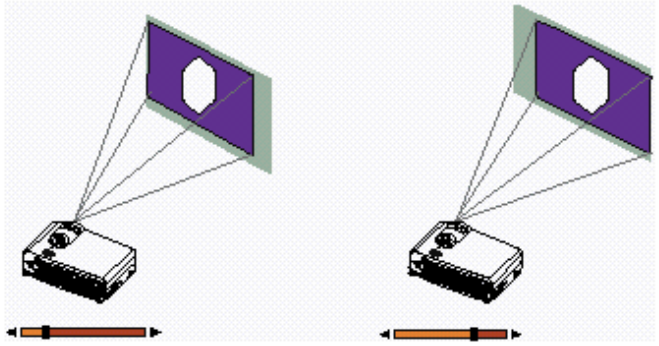
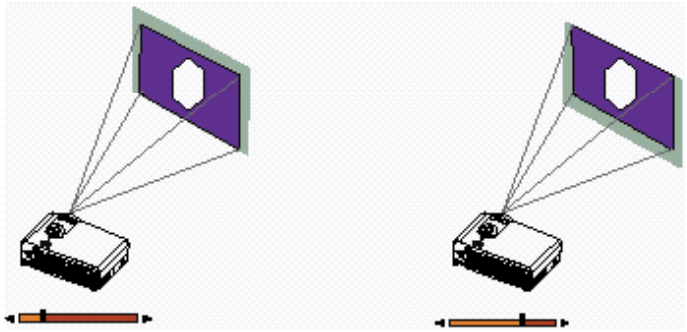
Press **Menu** for the main menu, and then press ◀ or ▶ to select a sub-menu. Press **Menu** again to select items in the sub-menu.

Menu Bar					
Sub-menu	**Display**	**Image**	**Source**	**Control**	**PIP**
PC	Keystone Brightness Contrast Phase H.Size	Ratio H-position V-position Color Temp Information	Mirror Source Volume Treble Bass Mute	Langauge OSD Setup Default Video Mode Lamp hour	Main page: PIP Source PIP Size PIP Pos. H. Position V.Position More Options Sub Page: Brightness Contrast Color Tint Sharpness System
Y/Pb/Pr		Ratio H-position V-position Color Tint Color Temp			
Video	Keystone Brightness Contrast Color Tint	Ratio System Sharpness Color Temp Information			

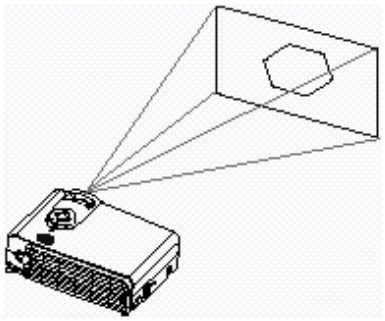
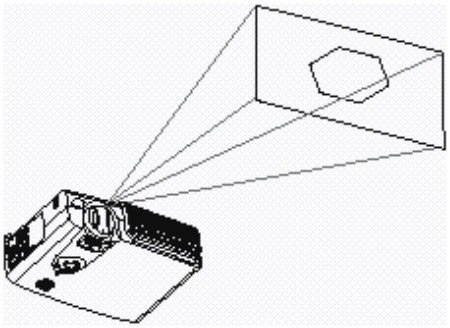
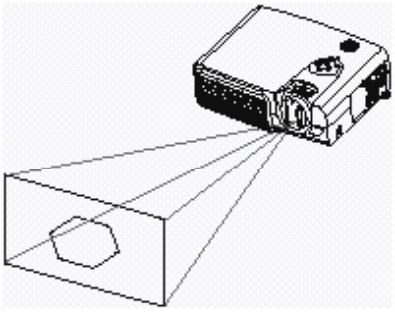
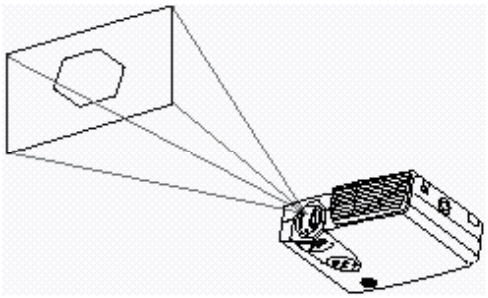
1. Display Menu

FUNCTION	DESCRIPTION
Keystone	Corrects any keystoning of the image. 
Brightness	Adjusts the brightness of the image. 
Contrast	Adjusts the degree of difference between dark and light in the image. 
Phase	Adjusts to avoid the occurrence of flicker.  ***This function is not available when the input mode is Video or S-Video.***
H.Size	Adjusts to fit in the desired image size. ***This function is not available when the input mode is Video or S-Video.***
Color	Increases or decreases the color range (R, G, B) of the image. ***This function is not available when the input mode is PC.***
Tint	Adjusts the image to make it appear more red or blue. ***This function is not available when the input mode is PC.***

2. Image Menu

FUNCTION	DESCRIPTION
Ratio	Users have 3 options for the image ratio. 1. 1:1 2. 4:3 3. 16:9
H-position	Adjusts the horizontal position of the projected image. 
V-position	Adjusts the vertical positon of the projected image. 
Color Temp.	Adjusts the color temperature to fit your preference.
Information	Shows the current resolution.
System	System information will be shown: 1. Auto 2.NTSC 3. PAL 4.SECAM ***The default setting for System is Auto.***
Sharpness	Adjusts the image to make it look sharper or softer. ***This function is not available when the input mode is PC or YPBPR.***
Color	Increases or decreases the color range (R, G, B) of the image. ***This function is not available when the input mode is PC.***
Tint	Adjusts the image to make it appear more red or blue. ***This function is not available when the input mode is PC.***

3. Source Menu

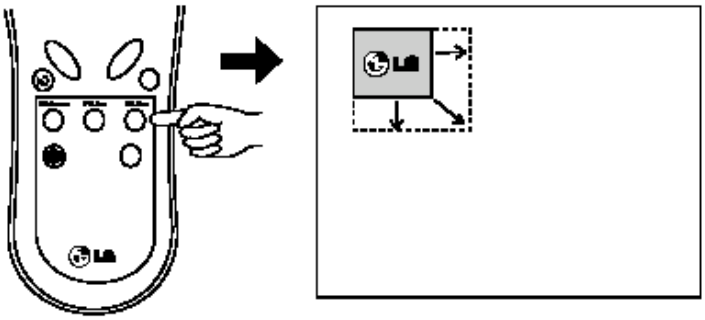
FUNCTION	DESCRIPTION
Mirror	**1.** Default  **2.** Ceiling mounted projection  **3.** Rear screen projection  **4.** Ceiling mounted and rear-screen projection 
Source	Selects the input source from among PC, Video, S-Video, and YPBPR.
Volume	Adjusts the volume level. 
Treble	Adjusts the treble level. 
Bass	Adjusts the bass level. 
Mute	**Off**  **On** 

4. Control Menu

FUNCTION	DESCRIPTION
Language	Language sets the language for the OSD control menus. Use the 3 / 4 key to select the desired language from among English, French, German, Italian, Spanish, Korean, Simplified Chinese and Traditional Chinese.
OSD	**OSD Pos.** Selects a desired OSD position.
	OSD Time Sets the length of time the OSD will remain active after the last time you pressed the button. The range is from 5 to 60 seconds in 5-second increments.
Setup	**Source scan** When selected, activates the Source scan function.
	Keystone hold When selected, preserves the last keystone correction value even when the projector is restarted.
	Mirror hold When selected, preserves the last mirror correction value even when the projector is restarted.
	Blank time Determines the length of time before the projector is shut off when Blank is activated.
	Auto off Sets the length of time before the system is shut off when no input is detected.
	User logo Enables the user to define the logo screen that will display during start-up. Three modes are available: Default (BOXLIGHT logo), black screen and blue screen.
Default	Returns all settings to their factory preset values.
Video Mode	Selects video mode.
Lamp hour	Shows lamp usage time.

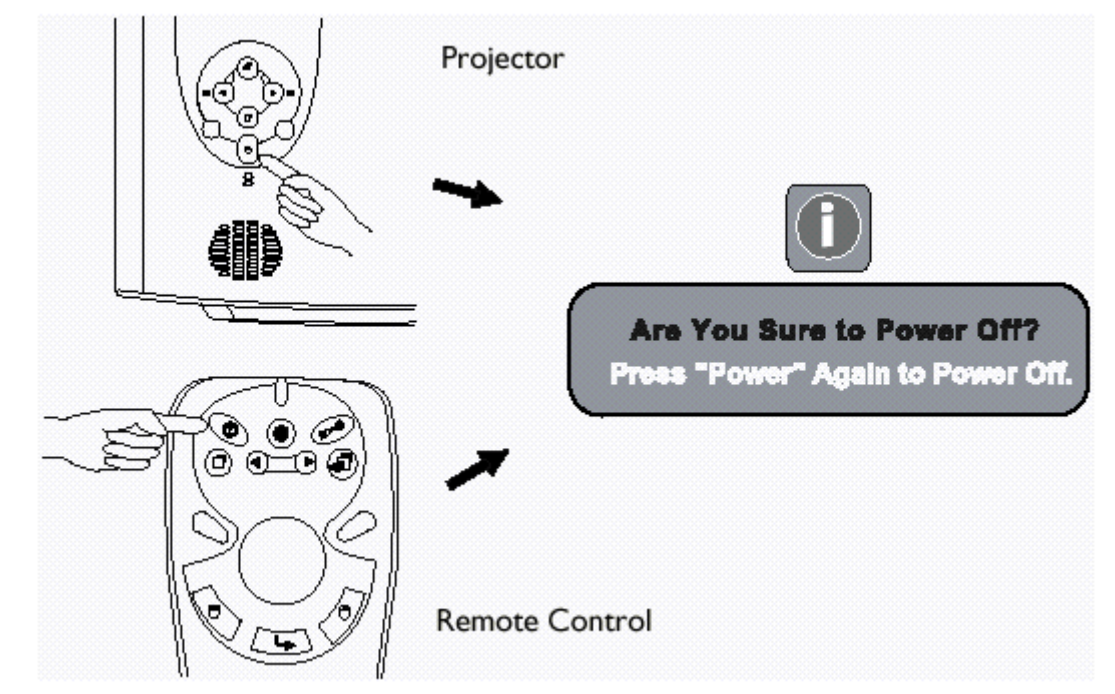
5. PIP Menu

These functions are available only when the input mode is PC and the PIP source is Video or S-Video

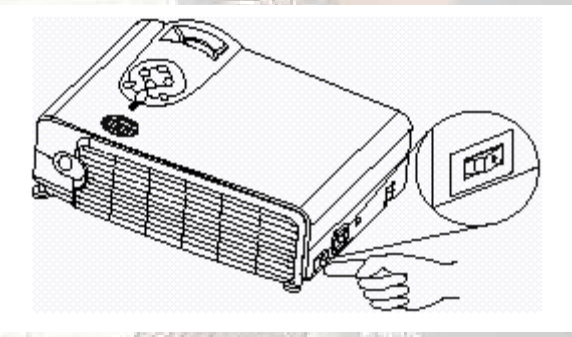
FUNCTION	DESCRIPTION
PIP Source	Selects the source for the PIP. 1. Off 2. Video 3. S-Video
PIP Size	Enables use of the ◂ or ▸ key to scroll through the three alternatives: Small, Medium, Large. 
H Position	Adjusts the horizontal position of the PIP image.
V Position	Adjusts the vertical position of the PIP image.
More Options	Enables use of the ◂ or ▸ key to select more PIP functions including Brightness, Contrast, Color, Tint, Sharpness and System.
Brightness	Adjusts the brightness of the PIP image.
Contrast	Adjusts the degree of difference between dark and light for the PIP image.
Color	Increases or decreases the color range (R, G, B) of the image.
Tint	Adjusts the image to make it appear more red or blue.
Sharpness	Adjusts the image to make it appear sharper or softer
System	Selects PIP image systems: NTSC, PAL, SECAM

8. Shutdown

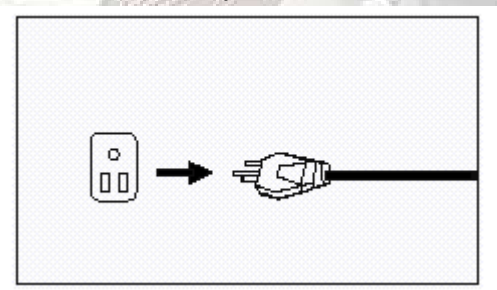
1. Press POWER and a warning message will appear. To turn off the projector, press POWER again.



2. The fan will continue to run for approximately two minutes.
3. Turn off the main power switch.



4. Disconnect the power cord from the wall socket.



Caution

Please do not unplug the power cord before POWER is shut down or during the two-minute cooling process. If the projector is not properly shut down, to protect the lamp, the system will detect this and cool the lamp for two minutes automatically before turning on again.

9. MAINTENANCE

Lamp Information

Use and Replacement of the Lamp

When the lamp Indicator lights up red or a message appears suggesting the time of lamp replacement, please install a new lamp or consult your dealer. An old lamp could cause a malfunction in the projector and in rare instances may even explode.

Lamp LED Indicators

Lamp Life Indicators	When the LED lights up red, it is warning you that lamp usage has exceeded 1500 hours. Replace the projection lamp with a new one immediately.
The Lamp is not properly attached	LED lights up red.
The temperature is too high	When the projector's internal temperature is too high for the projector to operate safely, the LED blinks orange and the lamp turns off automatically. The LED keeps blinking while the unit is off. If the LED light is off, the operation and temperature of the projector's lamp are normal.

⚠ Caution

The LAMP indicator will light up if the lamp becomes too hot. Turn off the power and let the projector cool for 45 minutes. If the LAMP indicator is still red when turning the power on, please contact your dealer.

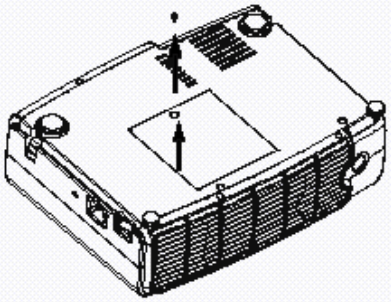
10. Lamp Replacement

Caution

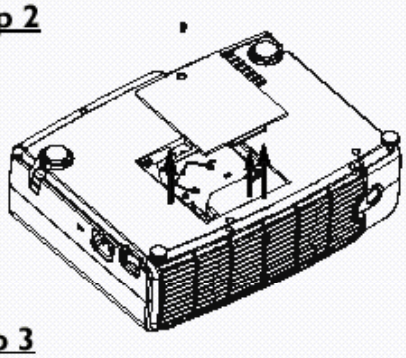
To reduce the risk of electrical shock, always turn off the projector and disconnect the power cord before changing the lamp

1. Press the **POWER** button to switch off the projector. Disconnect the power cord from the outlet and the projector.
2. Loosen the screw and remove the lamp cover. If the lamp is hot, avoid burns by waiting 45 minutes until the lamp has cooled.
3. Loosen the 3 screws. (It is strongly recommended that you use a magnetic-head screwdriver.) Pull the handle to remove the lamp housing. If the screws are not loosened completely, they could injure your fingers. Do not insert your hand into the box after the lamp is removed. If you touch the optical components inside, this could cause color unevenness in projected images.
4. Replace the lamp with a new one. Insert it into the projector, and tighten the screws firmly. Loose screws may cause a bad connection, which may result in malfunction.
5. Re-install the lamp cover and tighten the screw. **Do not turn on the power with the lamp cover removed.** Whenever the lamp is replaced, reset the total lamp operation time. **Do not reset if the lamp is not replaced as this could cause damage.**

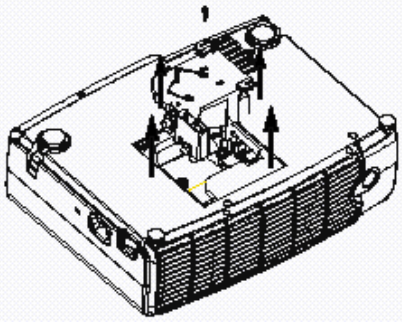
Step 1



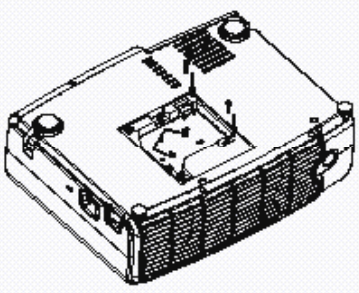
Step 2



Step 3



Step 4



Caution

To reduce the risk of severe burns, allow the projector to cool for at least 45 minutes before replacing the lamp.

The reduce the risk of injuries to fingers and damage to internal components, use caution when removing lamp glass that has shattered into sharp pieces.

To reduce the risk of injuries to fingers and/or compromising image quality by touching the lens, do not touch the empty lamp compartment when the lamp is removed.

This lamp contains mercury. Consult your local hazardous waste regulations to dispose of this lamp in a proper manner.

Resetting Lamp Hours

If you replace the lamp after 1500hours of operation, please follow the instructions below within 10 minutes of powering on.

OSD	FUNCTION
	Press the Exit button on the projector for 3 seconds to display the total used lamp time.
	• Press the MENU button on the projector during the lamp hour message. An adjustment message will appear. • Press ◀ or ▶ to reset lamp hours or press EXIT to leave.

Temp Information

When the LED lights up, it is warning you of the following possible problems:

1. The internal temperature is too high.
2. The fans are not working.

Turn off the projector and contact qualified service personnel for further help.

11. TROUBLE SHOOTING

Common Problems & Solutions

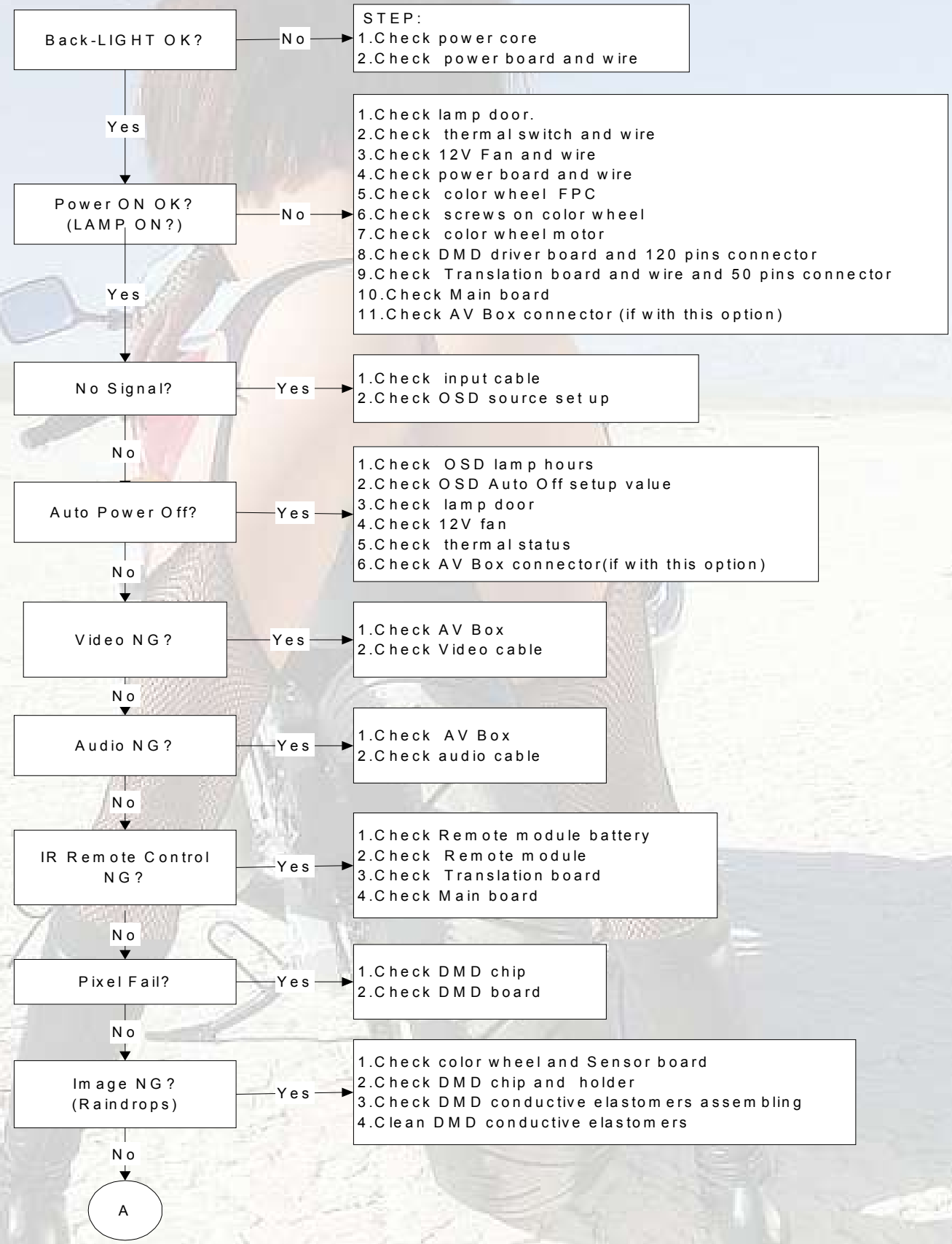
PROBLEMS	TRY THESE SOLUTIONS
NO POWER	◆ Make sure the power cord is inserted snuged into the AC adapter socket. ◆ Make sure the power cord is inserted snuged into the power outlet. ◆ Toggle the power switch to the position "I" ◆ Wait two minutes after the projector is turned off before turning the projector back on.
NO PICTURE	◆ Check for the proper input source. ◆ Ensure all cables are connected properly. ◆ Adjust the brightness and contrast. ◆ Remove the lens cap.
TRAPEZOID IMAGE ON THE SCREEN	◆ Reposition the unit to improve its angle on the screen. ◆ Use the **Keystone** correction key on the control panel of the projector or the remote control unit.
POOR COLOR	◆ Select the correct video system. ◆ Adjust brightness, contrast, or saturation.
BLURRED IMAGE	◆ Press **Auto** on the control panel of the projector or the remote control unit to get better picture quality. ◆ Adjust the focus. ◆ Reposition the unit to improve its projection angle. ◆ Ensure the distance between the unit and screen is within the adjustment range of the lens.
REMOTE CONTROL DOES NOT WORK	◆ Replace the batteries with new ones. ◆ Make sure there is no obstacle between the remote control and the projector. ◆ Stand within 4 meters (13 feet) of the projector. ◆ Make sure nothing is blocking the front and rear receivers.

Status Messages

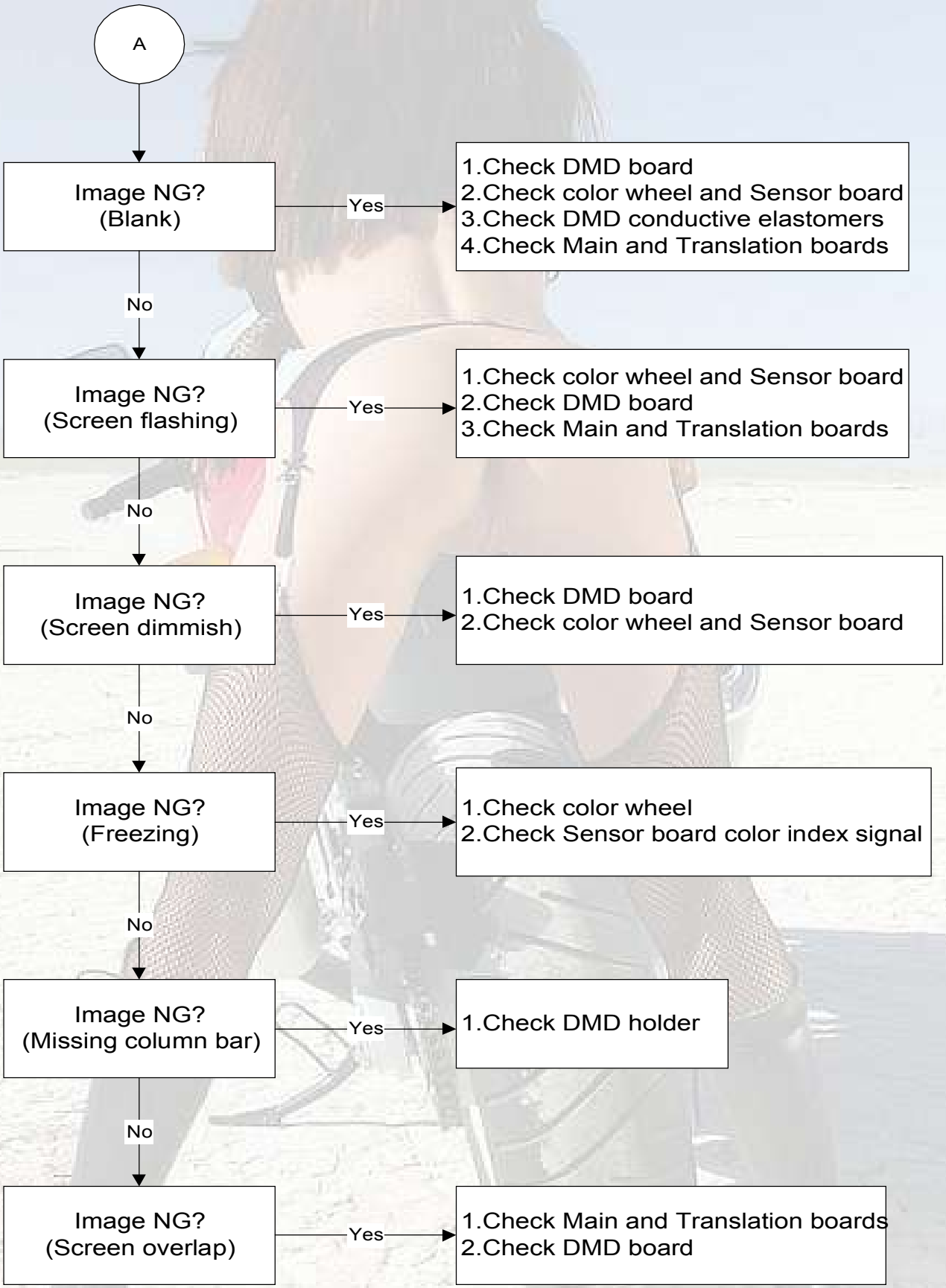
On-Screen Messages	Description
SEARCHING	Projector is searching for input.
ACQUIRING SIGNAL	Projector has identified the input signal and is running the auto image adjustment function.
OUT OF RANGE	Input signal frequency exceeds the projector's range.
LAMP WARNING – CHANGE LAMP AND RESET LAMP TIMER!	The lamp has been in operation for 1400 hours. Install a new lamp for optimal performance.
OUT OF LAMP USAGE TIME. CHANGE THE LAMP!	The lamp has been in operation for 1480 hours, and the power will turn off after 20 hours.
OUT OF LAMP USAGE TIME. YOU HAVE TO CHANGE THE LAMP!	The lamp has been in operation for over 1500 hours. The warning message will display for 30 seconds every 5 minutes after you turn on the projector and the power will turn off automatically after 10 minutes.

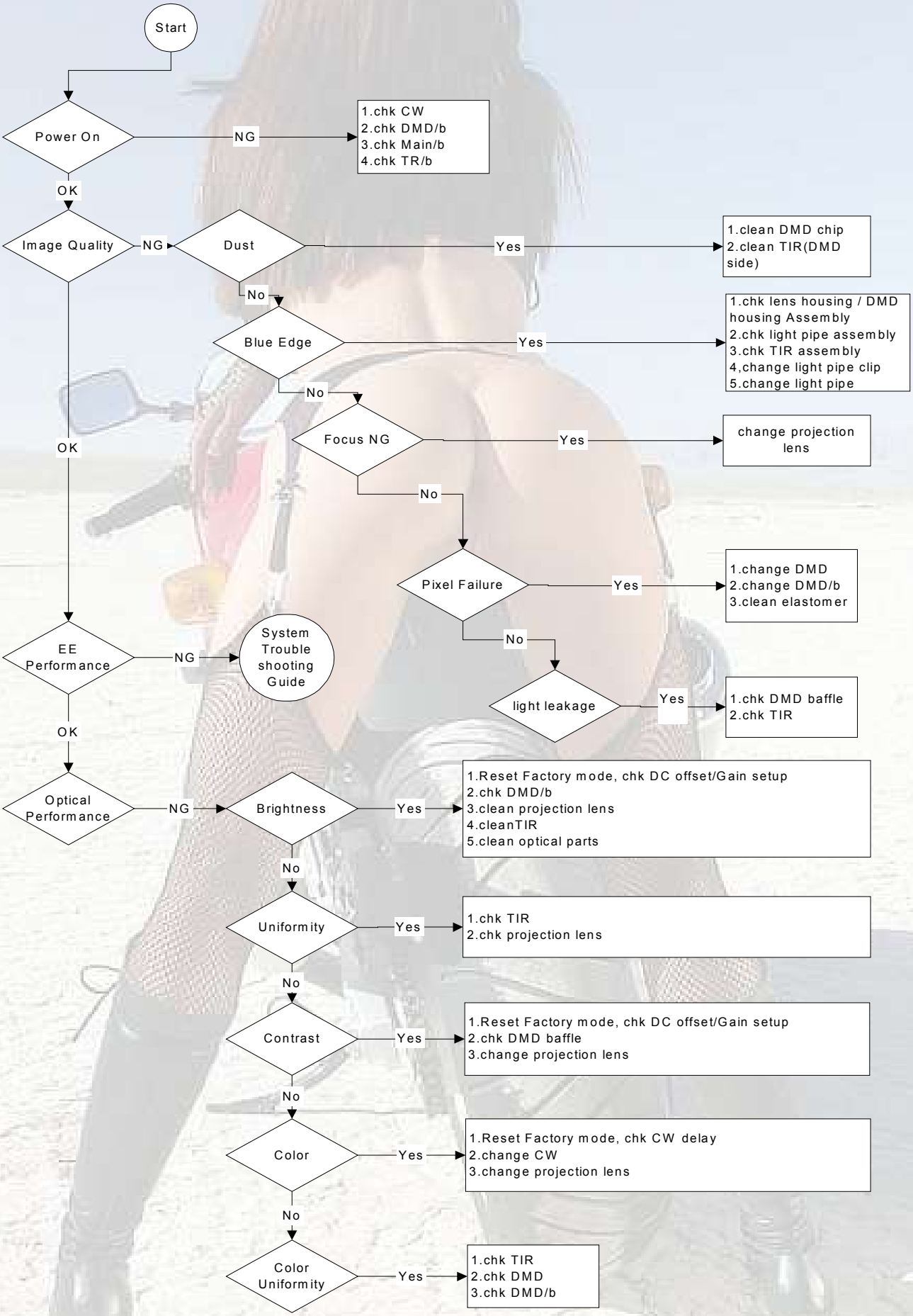
1. Final Assembly Trouble Shooting Guide

System Trouble Shooting Flow Char

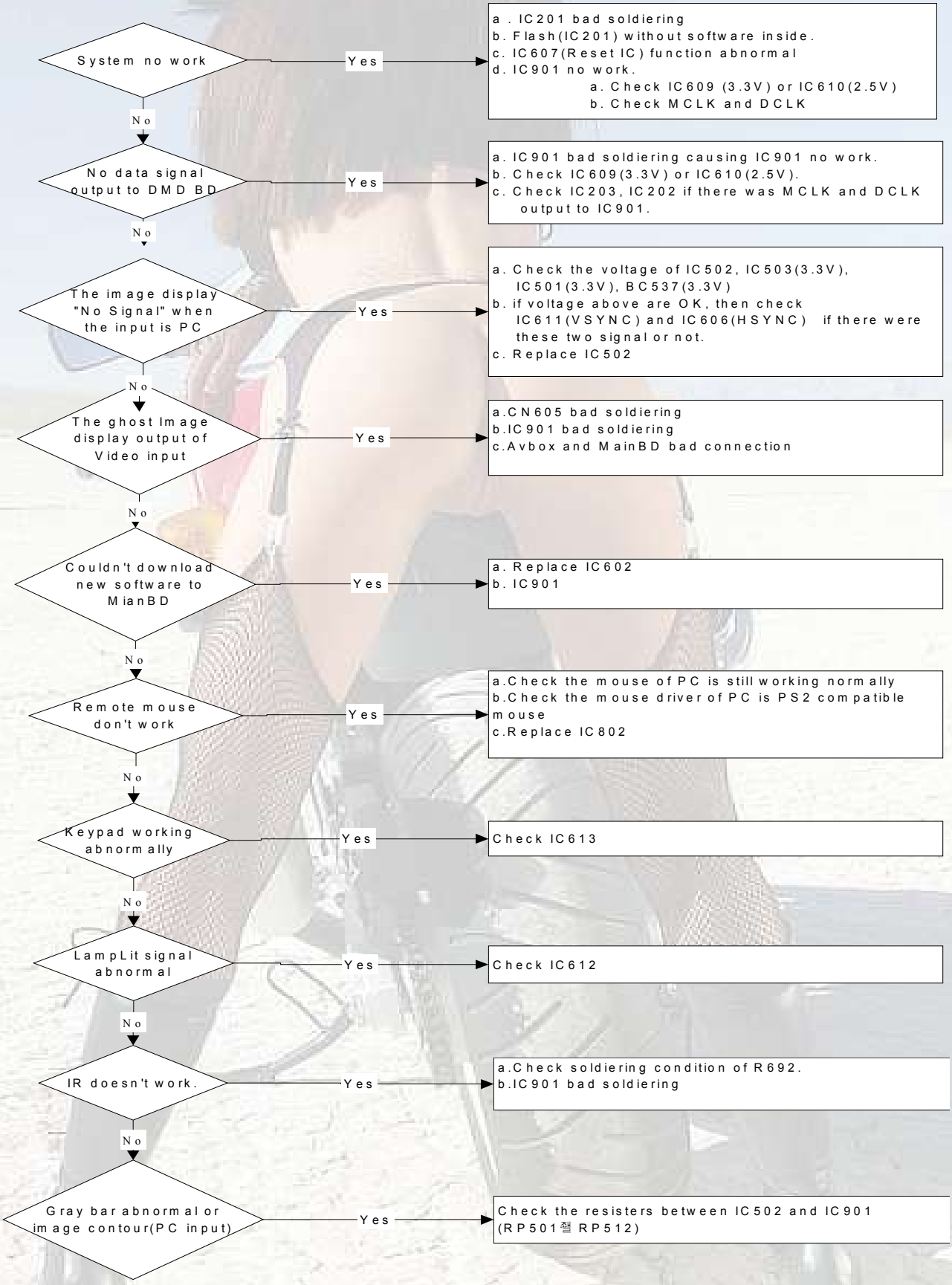


2. Engine Assembly Trouble Shooting Guide

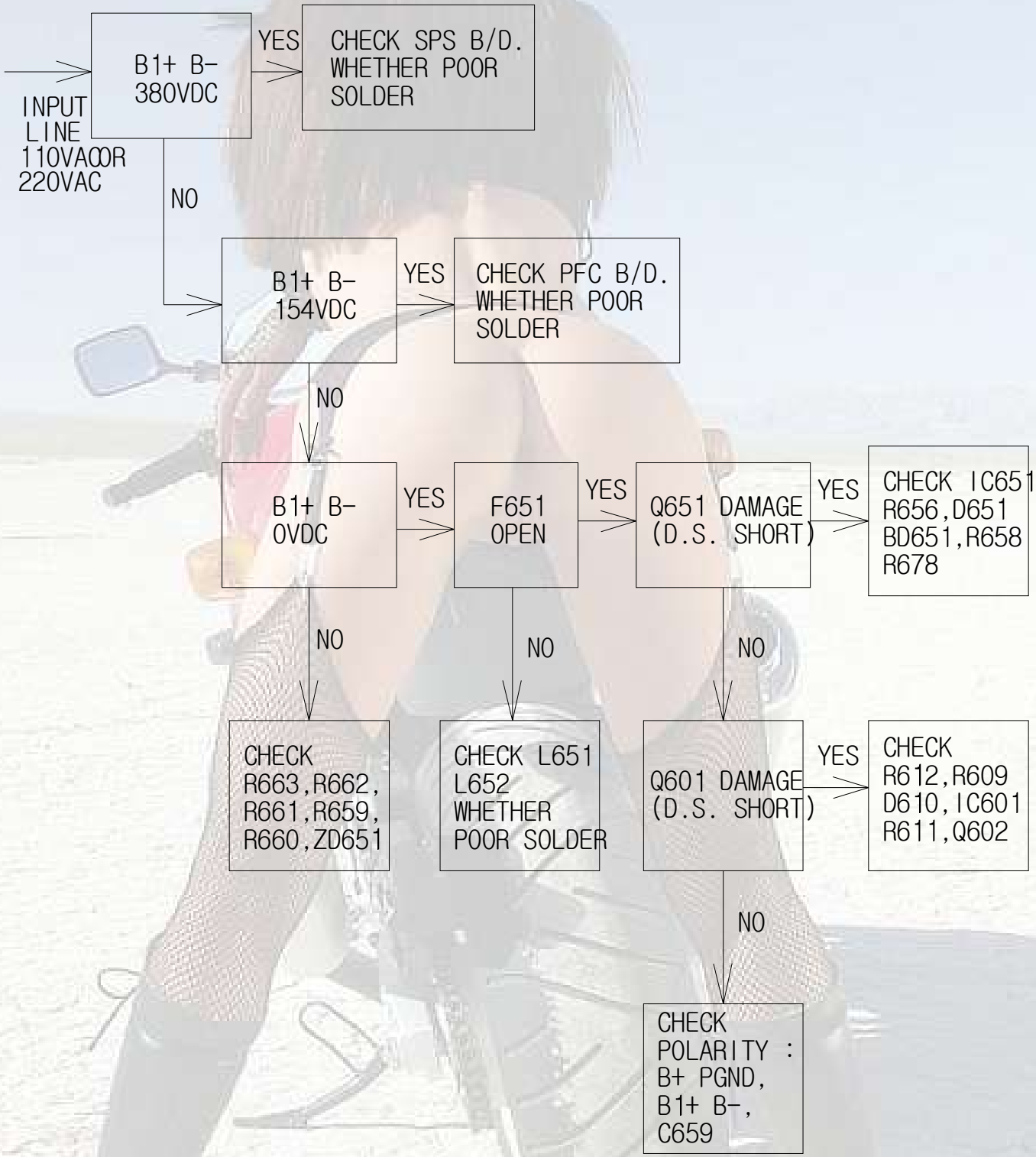




3. Main Board Trouble Shooting Guide

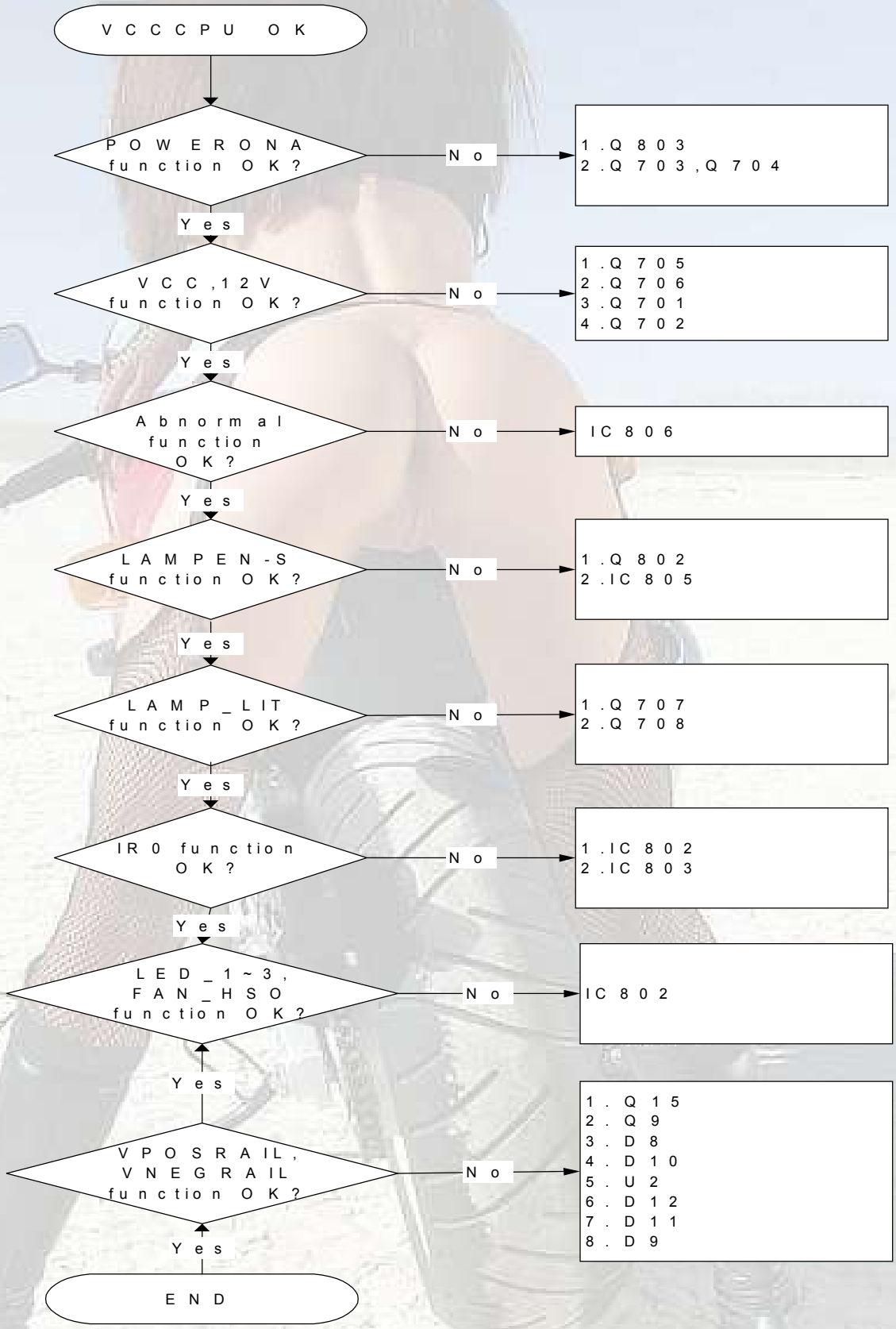


4. Power Supply Trouble Shooting Guide



5. Translation Board Trouble Shooting Guide

DS660 Translation Board Trouble Shooting Guide



6. DMD Board Trouble Shooting Guide

- Check power voltages.
- Check clocks from oscillator (58 MHz), from ASIC (58 MHz and 116 MHz), from FPGA (9.667 MHz and 2.4 MHz), to Hitachi (14 MHz), to motor controller (9.667 MHz)
- Verify HSYNC, VSYNC, ACTDATA, SYNCVALID, POWERGOOD, RESETZ from computer or source at 60 Hz. Verify these signals meet TI specified timing per Hardware ICD.
- Verify color wheel index running at 120 Hz
- If no color wheel spinning, check data transfer on the following lines: MTRDATA, MTRCLK, MTRSELZ.
- Verify phase lock of color wheel by checking rising edge of Index 275 us after Vsync
- If previous steps are verified, microcontroller is OK.
- Verify motor_spin line from microcontroller to FPGA is logic high.
- Verify hardware LAMPEN to ballast. Lamp type must be set to appropriate type if problems with getting LAMPLIT appear.
- 3.5 seconds after LAMPLIT, DMD should become active (unpark) and display an image.
- Verify reset (HRESETZ, pin 1) from FPGA to microcontroller only goes low once during the lamp strike period. LAMPLIT should be stable after microcontroller last reset.
- If everything else verified, but still no image, perform the following checks:
- Check DMD voltages at output of generation circuits, but also out of SR16 IC (be careful not to probe on pins or the device could be damaged): VBIAS (22-25v), VRESET (-26V), VCC2 (7.5V). Please attached file for reset waveform.
- Check voltage enables from FPGA are active as appropriate. If not, output drivers may be blown from previous probing.
- Be sure two reset lines are not tied together or the device WILL be damaged.
- Verify I2C communication by reading system status and microcontroller version. Verify READY bit in Status Byte.
- Set curtain mode to Full Green and verify green is displayed over entire screen. Repeat for Red and Blue. This checks for functionality of TI electronics between ASIC and DMD.
- If colors are wrong, check color wheel is spinning the correct direction. Put unit in red curtain mode and use a photosensor to verify that red is displayed 220 uS after color wheel Index.
- Use spoke light test register number 0x0E to verify sequence color transitions occur during wheel spoke interval. See Software ICD for register 0x0E.

Other suggestions:

- Be sure front end electronics are sending one pixel per clock.
- Elastomer and DMD are aligned properly to pads.
- Check data transfer on the following lines: PBCLKZ, PBDAT0, PBDAT1.
- If Color wheel has difficulty in starting or is unstable, the timing capacitors may need to be adjusted to match the motor parameter.

12. Timing Chart

Resolution	H Sync (kHz)	V Sync (Hz)	Remark
640x350	31.5	70.1	
640x400	37.9	85.1	VESA
720x400	31.5	70.0	
720x400	37.9	85.1	VESA
640x480	31.5	60.0	VESA
640x480	37.9	72.8	VESA
640x480	35	66.7	Macintosh
640x480	43.3	85.0	VESA
800x600	35.2	56.3	VESA
800x600	37.9	60.3	VESA
800x600	46.9	75.0	VESA
800x600	48.1	72.2	VESA
800x600	53.7	85.1	VESA
832x624	49.7	74.5	Macintosh
1024x768	48.4	60.0	VESA
1024x768	56.5	70.1	VESA
1024x768	60.0	75.0	VESA
1024x768	68.7	85.0	VESA
1280x1024	64.0	60.0	VESA

DMD Image Specification

1. SCOPE

This document specifies the image quality requirements applicable to the DLP™ XGA Component Set. The Component Set provides the DLP™ XGA Projector with digital imaging functionality based on Digital Micromirror Device (DMD) technology.

2. Definitions

2.1 Blemish

A blemish is an obstruction, reflection, or refraction of light that is visible, but out of focus in the projected image under specified conditions of inspection (see Table 1). It is caused by a particle, scratch, or other artifact located in the image illumination path.

2.2 Dark pixel

A single pixel or mirror that is stuck in the OFF position and is visibly darker than the surrounding pixels.

2.3 Bright pixel

A single pixel or mirror that is stuck in the ON position and is visibly brighter than the surrounding pixels.

2.4 Unstable pixel

A single pixel or mirror that does not operate in sequence with parameters loaded into memory. The unstable pixel appears to be flickering asynchronously with the image.

2.5 Adjacent pixel

Two or more stuck pixels sharing a common border or common point, also referred to as a cluster.

2.6 Streaks

Artifact resulting from locallized variation in mirror tilt angle relative to surrounding mirrors. They are similar in appearance to window scratches but appear at the mirror level. Streaks appear as faint diagonal or arcing patterns in the image.

2.7 Sea of Mirrors (SOM)

SOM is a rectangular array of off-state mirrors surrounding the active area.

2.8 Eyecatcher

A small localized light “spot” which has high spatial frequency and high differential brightness. These are due to various DMD window or window aperture “defects” including: digs, voids, particles and scratches.

2.9 Border Artifacts

All variations of these artifacts are acceptable under this image quality specification.

Border artifacts are a general category of image artifacts that may show up on screen in the area outside of the active array. Border artifacts include: Exposed Bond Wires, Exposed Metal 2, and Reflective Edge.

2.9.1 Bond Wires

Bond Wires attach the die to the superstructure. If visible, they will appear as short light

parallel lines outside of the Sea of Mirrors (SOM).

2.9.2 Exposed Metal 2

Exposed Metal 2 is due to a shift in positioning of either the die or the window aperture which may allow light to be reflected off of the layer of metal 2 that is below the super structure (mirrors). This defect is located at the outer edge of the SOM.

2.9.3 Reflective Edge

Reflective Edge is light that may reflect from the edge of the DMD's window aperture onto the projection screen. It will appear as a thin diffuse line outside of the SOM.

2.10 Two Zone Blue 60 Screen

The Two Zone Blue 60 screen is used to test for major dark blemishes. Refer to Figure 1 for configuration. All areas of the screen are colored a Microsoft Paintbrush blue 60 (green and red set at 0, blue set at 60).

NOTE: If linear degamma is not used then the Microsoft Paintbrush values must be adjusted to match the degamma table being used in order to generate an equivalent blue level on the test screen image.

2.11 Two Zone Gray 10 Screen

The Two Zone Gray 10 screen is used to test for major light blemishes. Refer to Figure 1 for configuration. All areas of the screen are colored a Microsoft Paintbrush gray 10 (green, red, and blue set at 10).

NOTE: If linear degamma is not used then the Microsoft Paintbrush values must be adjusted to match the degamma table being used in order to generate an equivalent gray level on the test screen image.

3. ACCEPTANCE REQUIREMENTS

3.1 Conditions of Acceptance

All DMD image quality defects must be determined under the following projected image test conditions:

a. Projector degamma shall be linear.
b. Projector error diffusion shall be "off"
c. Projector brightness and contrast settings shall be set to nominal.
d. The diagonal size of the projected image shall be a minimum of 60 inches.
e. The projection screen shall be 1X gain.
f. The projected image shall be inspected from an 8 feet minimum viewing distance.
g. The image shall be in focus during all Table 1 tests.

3.2 Test Sequence

Tests shall be run in the sequence listed in Table 1.

TABLE 1. Image Quality Specification

SEQ #	TEST	SCREEN	ACCEPTANCE CRITERIA
1	Major Dark Blemish	Two Zone Blue 60	1. No blemish will be darker than Microsoft Blue 60 in the Critical Zone 2. □ 2 blemishes in the Non-Critical Zone 3. No blemish will be > ½" long/diameter
2	Major Light Blemish	Two Zone Gray 10	1. No blemish will be lighter than Microsoft Gray 10 in the Critical Zone 2. □ 2 blemishes in the Non Critical Zone 3. No blemish will be > ½" long/diameter
3	Eyecatcher	Gray 10	1. No eyecatcher will be lighter than Microsoft Gray 10
	Streaks	Blue 60 Gray 10 White	1. No streaks
	Projected Images	Any screen	1. No adjacent pixels 2. No bright pixels (Active Area) 3. □ 1 bright pixel (SOM) 4. □ 4 dark pixels 5. □ 6 minor blemishes 6. No DMD window aperture shadowing on the Active Area 7. No unstable pixels in Active Area

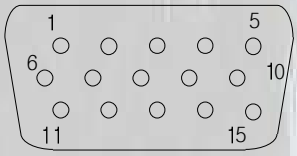
Notes:

1. Projected blemish numbers include the count for the shadow of the artifact in addition to the artifact itself, so that the count usually represents a single artifact on the window.
2. No blemish shall be more than 5 inches long or have a total area of more than 5 square inches on a 60 inch diagonal projected image. (□ ½ inch for Major Blemish tests)
3. During all Table 1 tests, projected images shall be inspected in accordance with the conditions of inspection specified in Section 3.
4. The rejection basis for all cosmetic DMD defects (scratches, nicks, particles) will be the projected image tests referenced in Table 1.
5. Any other image quality issue not specifically defined in this document shall be acceptable.
6. Black screens shall not be used as a basis for rejecting DMDs for image quality.

14. Electrical Interface Character

Interface Definition

- 15 pin definition of the mini D-sub male for DDC1/2B protocol



Pin	Definition	Pin	Definition	Pin	Definition	Pin	Definition
1	Red video	2	Green Video	3	Blue Video	4	Monitor ID bit 2
5	Return	6	Red Video Return	7	Green Video Return	8	Blue Video Return
9	+5 Volt Supply (Mandatory Supply)	10	Sync. Return	11	Monitor ID bit 0	12	Bi-directional data (SDA)
13	Horizontal Sync	14	Vertical Sync	15	Data clock (SCL)		

- Video & Component Input

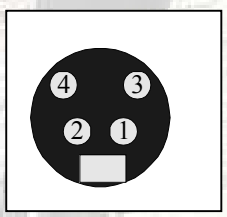
Composite input

Component input

Pi	Definition	Pi	Definition	Pi	*Definition*
1	Composite video input	2	Audio input (left channel)	3	Audio input (right channel)
4	Luminance video input	5	B-Y Chroma input	6	R-Y Chroma input

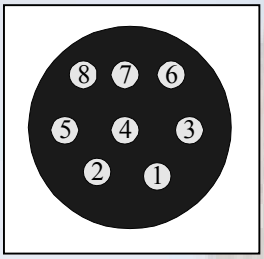
- 3.5 mm phone plug is used for stereo audio signal input.

- S-Video input



Pin	Description
1	GND
2	GND
3	Luminance
4	Chroma

- Control Port



Pin	Description	Pin	Description
1	Reserved	2	Reserved
3	TX	4	Reserved
5	Reserved	6	Reserved
7	RX	8	GND

15. Final Assembly Alignment Procedure

Unless other specified, all alignments should meet the following conditions:

1. All power on and power off condition should be last for more than 5 minute. i.e. no power on is permitted if UUT(Unit under test) had not been power off and last for more than 5 minute since last power on.
2. Brightness and contrast should be measured only 5 minute or more after lamp is on.
3. UUT should be placed at a distance ranges from 1.5 to 5 meter.
4. Applied timing should be 1024*768 @65Hz (XGA); 800*600@60Hz (SVGA)

Before test, be sure the following configurations are done properly:

1. Turn off light in test chamber.
2. Test chamber condition as per ANSI IT7.215-1992.
3. Connect DSUB cable to Graphics port of UUT.
4. Connect stereo input to stereo input of UUT.
5. Connect RCA terminal to Video input of UUT.
6. Connect S terminal to S-Video input of UUT.
7. Connect AC power cord to UUT.

(A) Video EE Check

Equipment: VG828, DVD Player

Aspect Ratio: 4:3

Channel	Prime Mode	Timing	Pattern	Item	Criteria
Composite Video	*	NTSC (H: 15.73KHz, 29.96Hz, I)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct Color Noise Acceptable
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Only Color Noise Acceptable
			PT976 64Gray & Color	Gray & Color Check	64 Step
			PT863 Text	EM Character	EM distinguish Color Noise Acceptable
			Movie	Video Essential	
		PAL (H: 15.63KHz, 25Hz, I)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct Color Noise Acceptable
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Only Color Noise Acceptable

Channel	Prime Mode	Timing	Pattern	Item	Criteria
S-Video	*	NTSC (H: 15.73KHz, 29.96Hz, I)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
			PT976 64Gray & Color	Gray & Color Check	64 Step
			PT863 Text	EM Character	EM distinguish
			Movie	Video Essential	
		PAL (H: 15.63KHz, 25Hz, I)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
YcbCr	*	NTSC (H: 15.73KHz, 29.96Hz, I)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
			PT976 64Gray & Color	Gray & Color Check	64 Step
			PT863 Text	EM Character	EM distinguish
			Movie	Video Essential	
		PAL (H: 15.63KHz, 25Hz, I)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
YPbPr	*	480p (H: 31.54KHz, 60.08Hz, p)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
			PT976 64Gray & Color	Gray & Color Check	64 Step

			PT863 Text	EM Character	EM Clear
			Movie	Video Essential	
		720p (H: 45.00KHz, 60Hz, p)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	2 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		1080I (H: 33.75Khz, 30Hz, I)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	4 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Only interlace jitter acceptable

(B) PC EE Check:

Equipment: Chroma 2250, CL-100

Aspect Ratio: 4:3

Channel	Prime Mode	Timing	Pattern	Item	Criteria
DSB	*	1024*768@85Hz (68.677KHz, 84.997Hz)	PT5 SMPTE 3	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
			PT48 32 Gray	Gray Check	32 Step
			PT85 Text	Character	Clear
			PT46 10 Gray	ColorTemp@80 %Gray	
				Cool (1)	(0.272,0.283) ±0.02
				Standard (2)	(0.281,0.311) ±0.02
				Warm (3)	(0.313,0.329) ±0.02
			Picture Phone Lady	Picture check	
		640*400@70Hz (31.47KHz, 70.08Hz)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		640*480@60Hz	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line

		(31.469KHz, 59.94Hz)		Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		640*400@85 Hz (43.269KHz, 85.008Hz)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		800*600@60 Hz (37.879KHz, 60.317Hz)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		800*600@75 Hz (46.875KHz, 75Hz)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	1 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		800*600 @85Hz (53.67KHz, 85.06Hz)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	2 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		1024*768@60Hz (48.4KHz, 60Hz)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	2 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable
		1024*768@75Hz (60.023KHz, 75.029Hz)	PT2 Master Pattern	Gray	0-100%
				H&V Res.	2 Line
				Color	Hue, Sat need correct
				Smear	Not acceptable
				Linearity	As optical spec
				Jitter, Swing, Snack, Ring, Cross-talk	Not Acceptable

(C) Optical Check

Equipment: Chroma 2250, CL-100

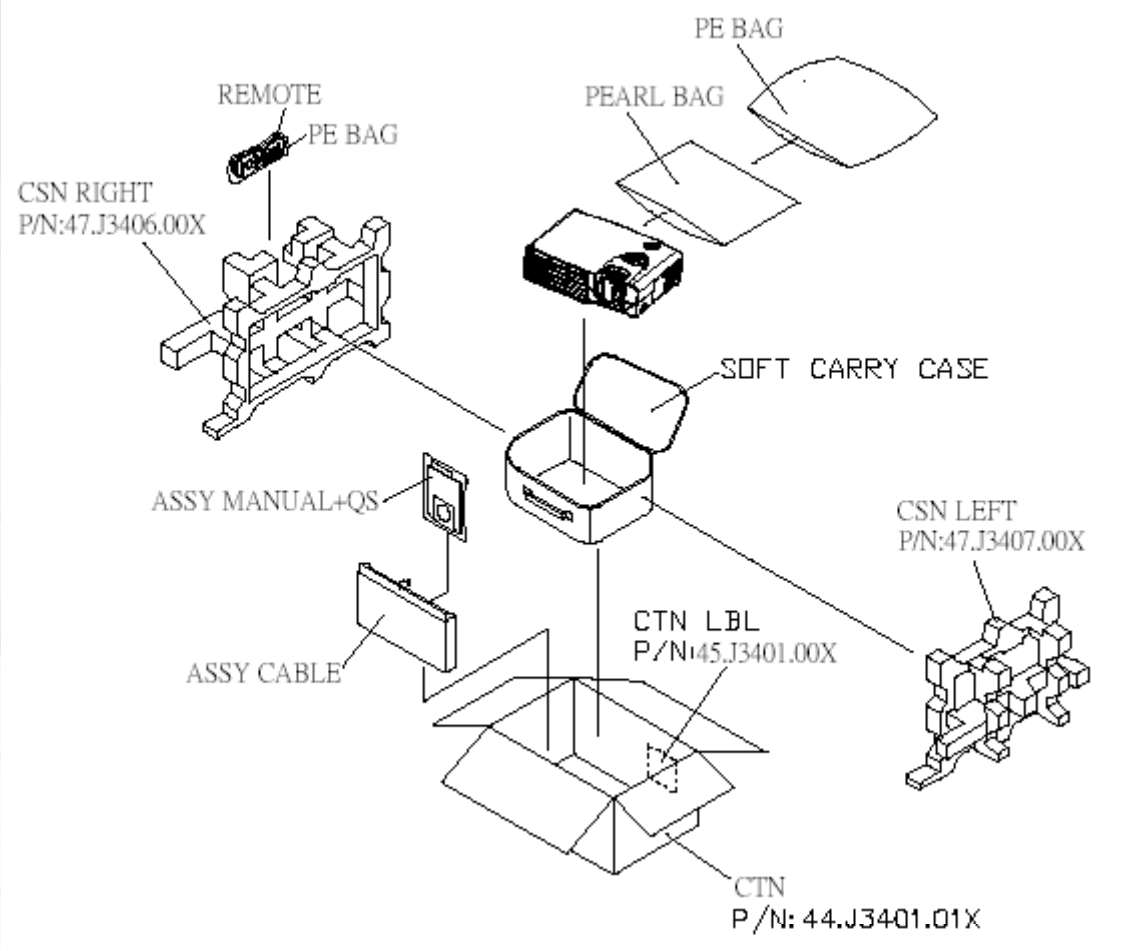
Aspect Ratio: 4:3

User OSD setting: (PC), 30 gray

Final Check				
Step	**Screen**	**Check Items**	**Acceptance Criteria**	**Equipment**
1.Brightness	100% W Pattern	ANSI Lumens	>=450@PC mode	
		Uniformity	>=70%	
2.Contrast Ratio	Checker Board	ANSI C/R	>=130:1	
3.Color	R Pattern	Chromaticity Coordinate x, y	□<=0.04	
	G Pattern	Chromaticity Coordinate x, y	□<=0.04	
	B Pattern	Chromaticity Coordinate x, y	□<=0.04	
	100% W Pattern	Chromaticity Coordinate x, y	□<=0.04	
		Uniformity	□<=0.04	
	50% W Pattern	Chromaticity Coordinate x, y	□<=0.04	
		Uniformity	□<=0.04	
4.DMD	Blue 180 Pattern	Dark Blemish	<=6	
		Dark pixel	<=4	
	Gray 30 Pattern	Bright Blemish	<=6	
		Bright pixel	=0	

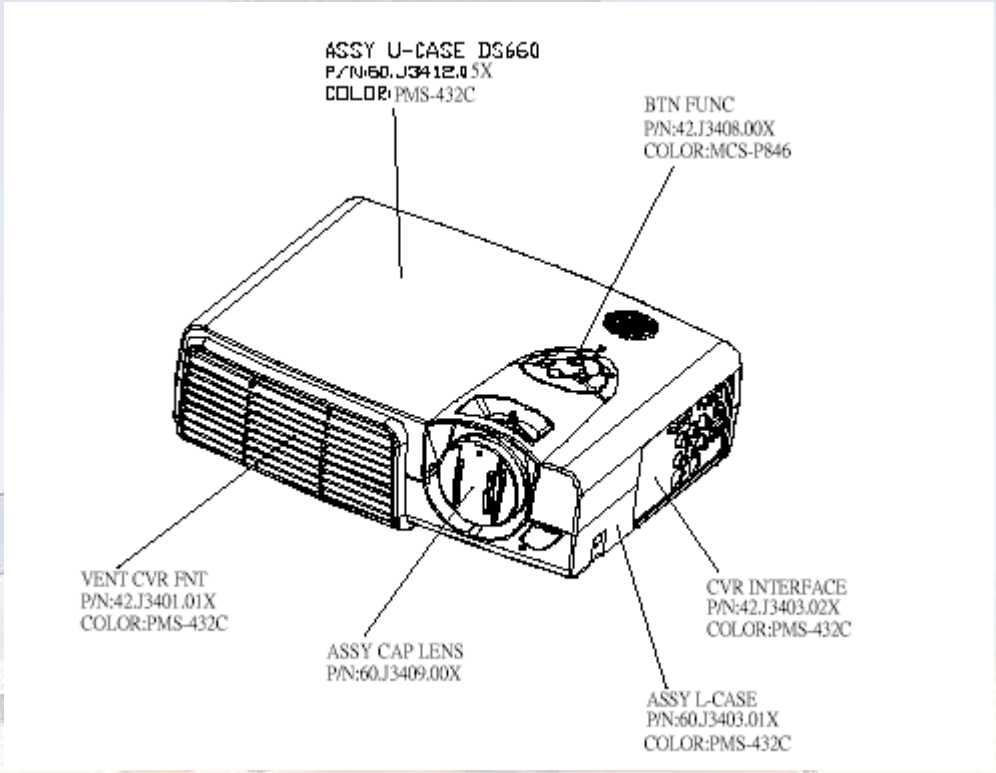
Inspection			
Step	**Check Items**	**Acceptance Criteria**	**Equipment**
1.Apperance	CHK Appearance	C315	
2.Buttom	CHK Functionality	Shinning and No Stuck	
3.Front / Rear Foot	CHK Functionality	Adjustable	
4.Zoom / Focus Ring	CHK Functionality	Adjustable	
5.CFM	Measure Air Flow	>= TBD CFM	
6.PC	SMPTE133 Pattern	Jitter	PC
		Geometry	
		Focus/Ring	
	Color Ramp Pattern	Stuck Bit	
		Flashing	
	Phone Lady picture	Tint	
		General Picture Quality	
7.Video (RCA, S-Video)	Static pattern (SMPTE133 Pattern)	Flicker	DVD Player
		Stuck Bit	
	Dynamic movie (Toy Story/ Video Essential)	Tint	
		Noise	
		General Picture Quality	
8.Audio		Input / Output	DVD Player
9.OSD/Remote			PC input
10.Hi-Pot			High Power Generator

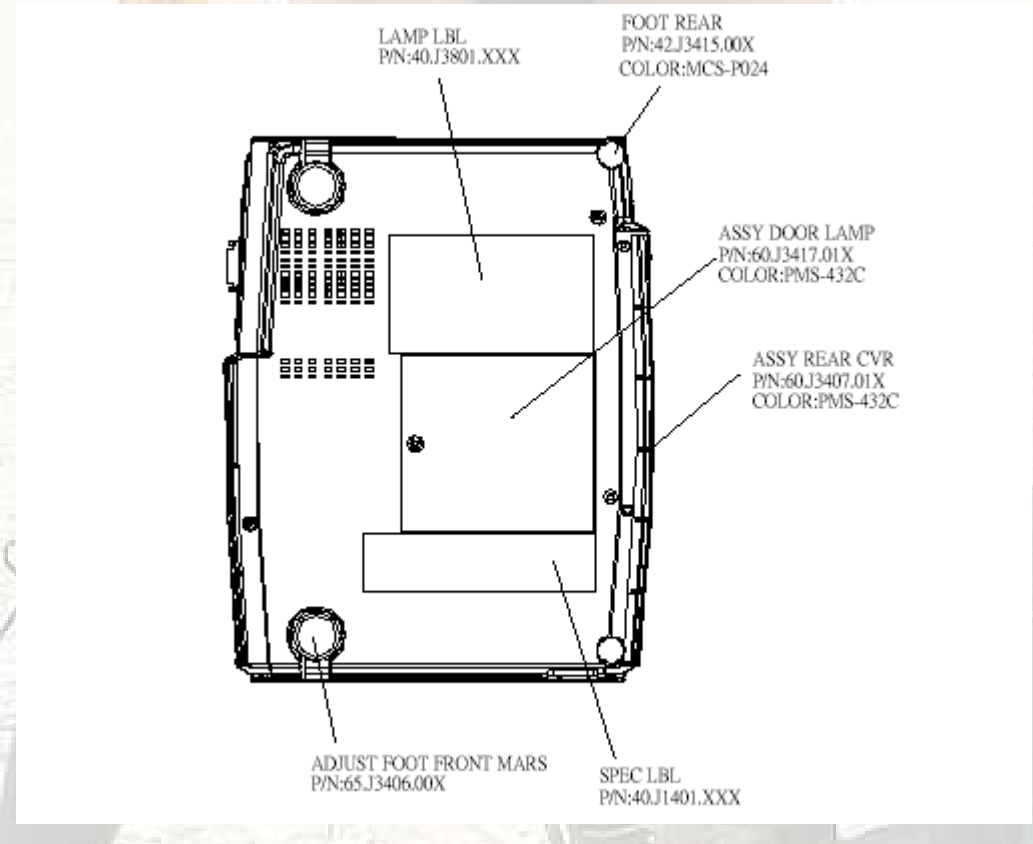
16. PACKING DESCRIPTION



CTN LBL PRINTING:

17. APPEARANCE DESCRIPTION





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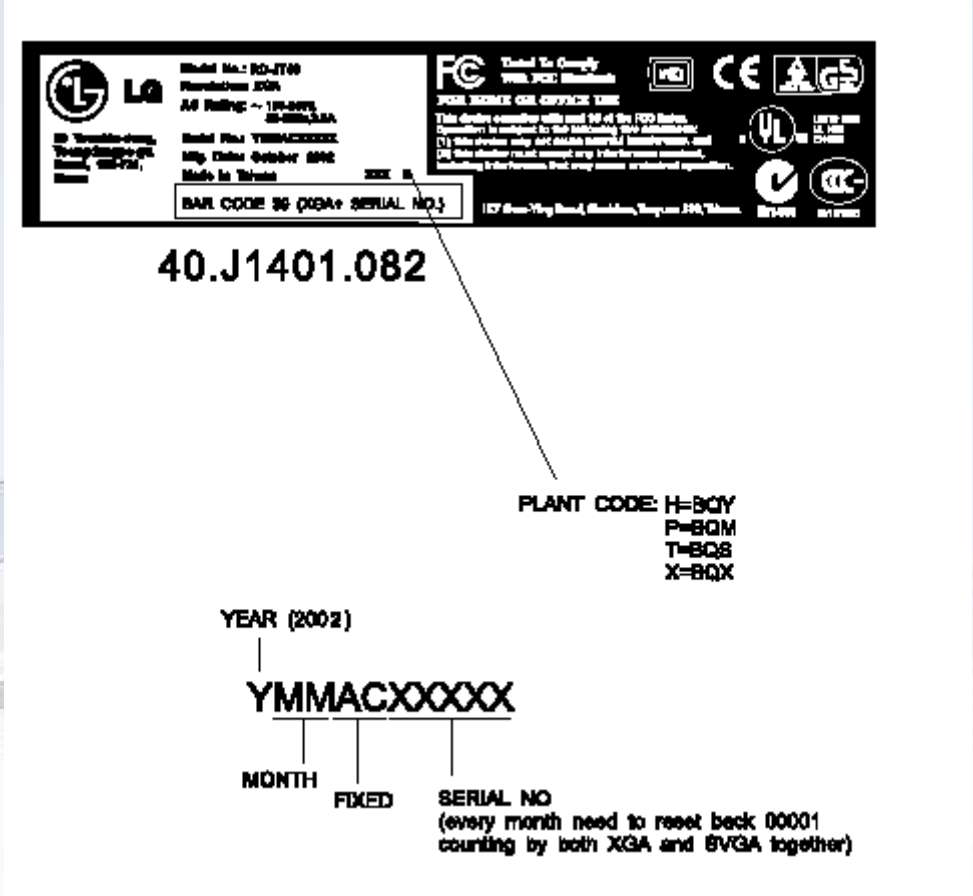
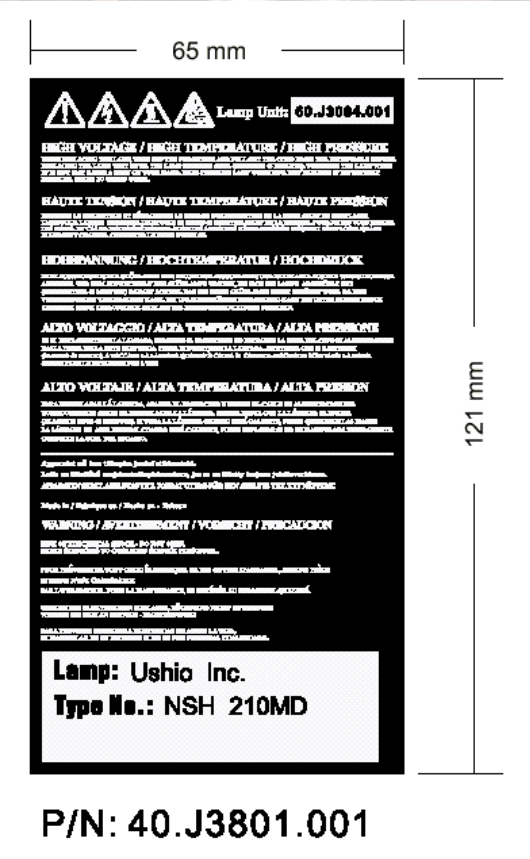
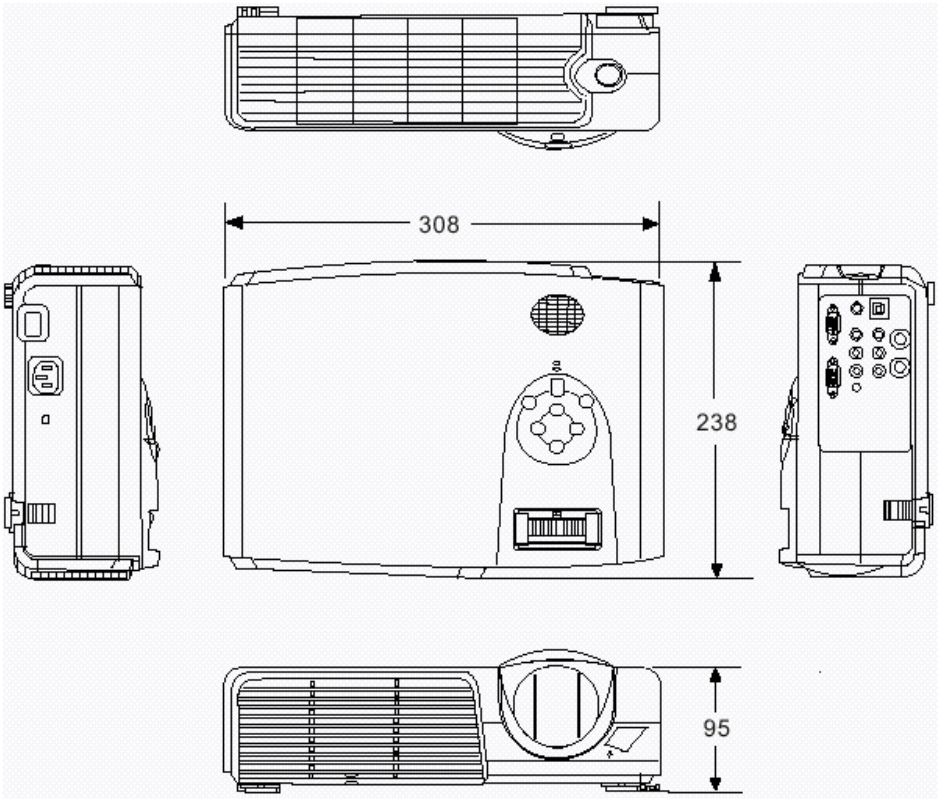


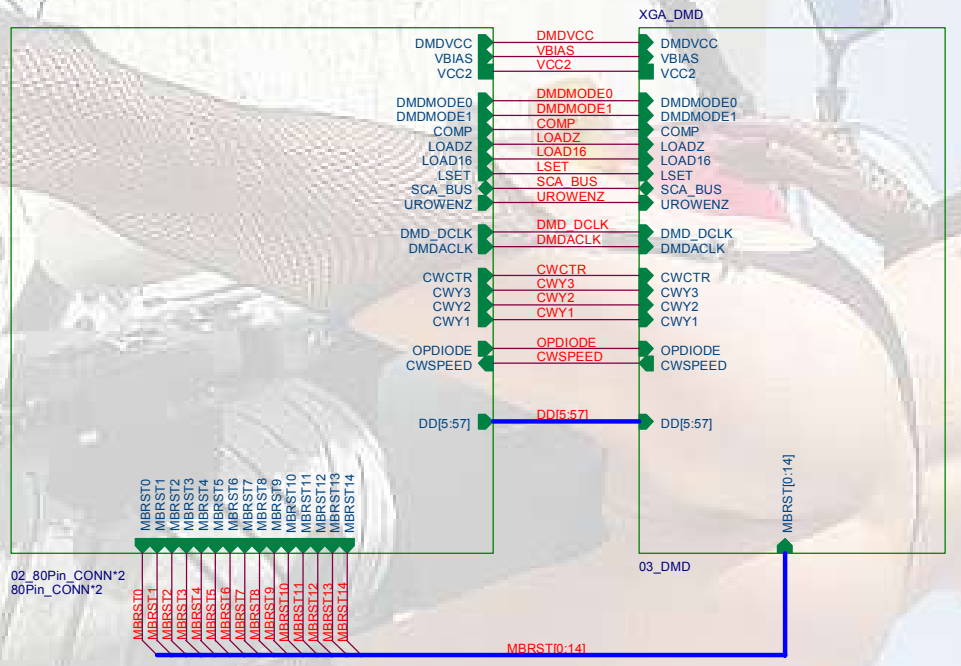
LAMP LBL PRINTING



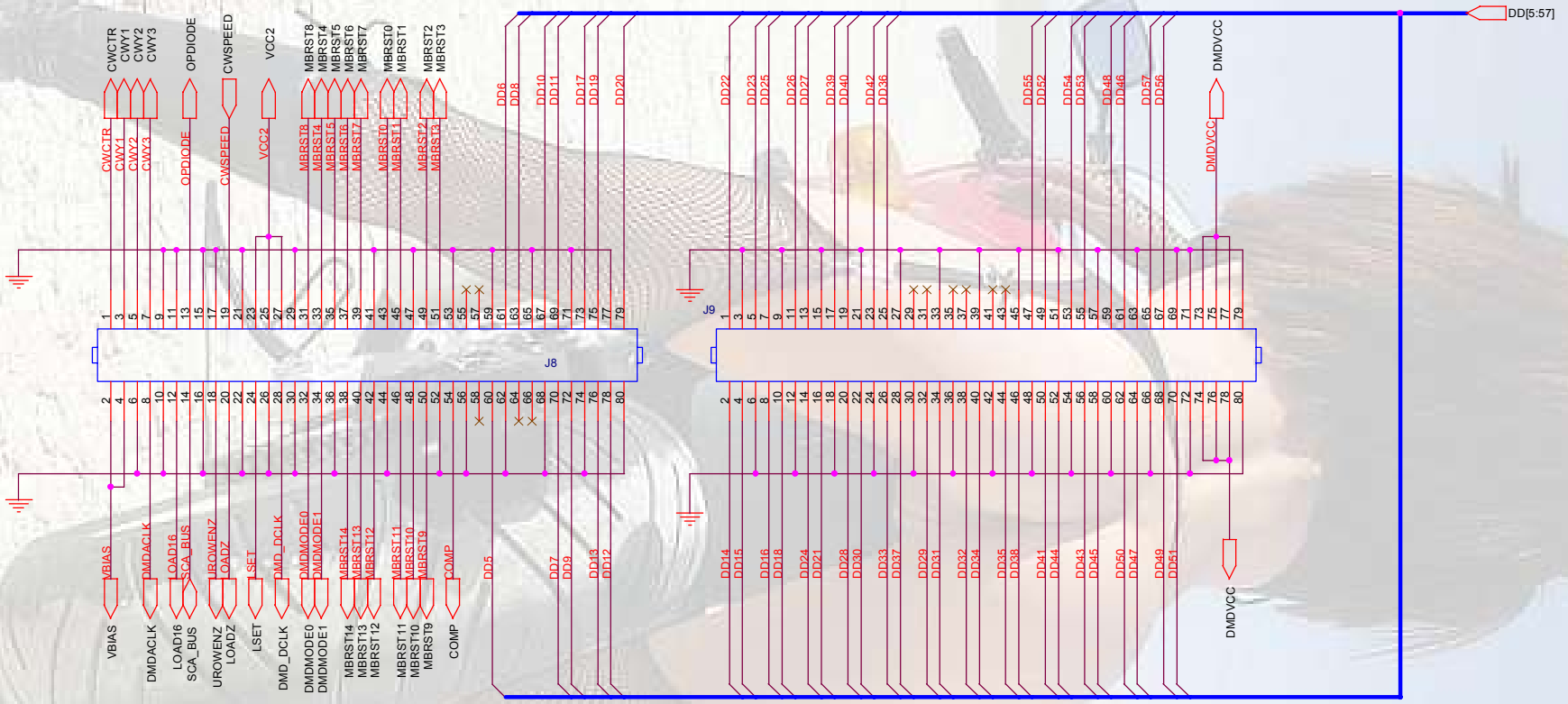
18. Dimensions



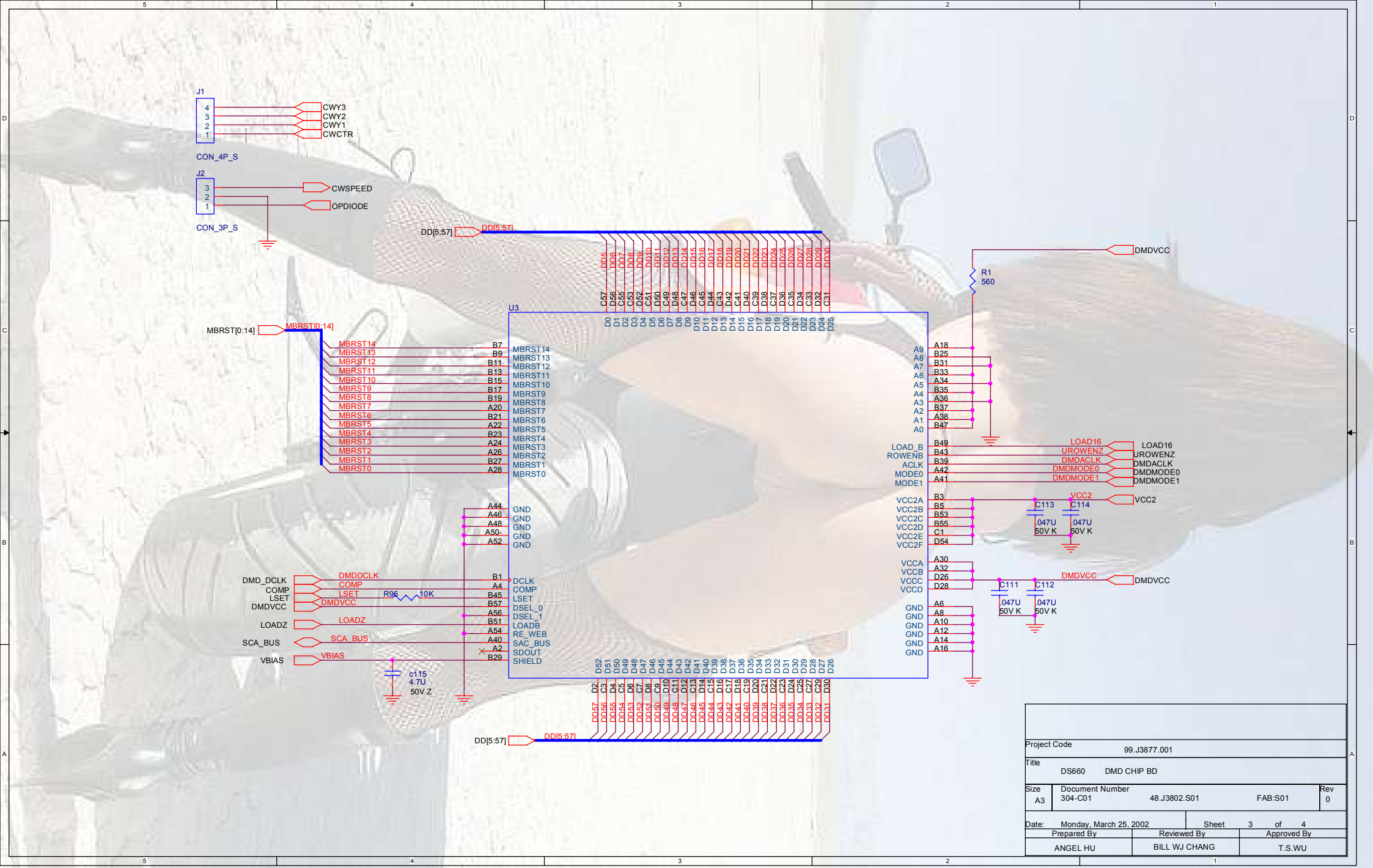
Unit: mm



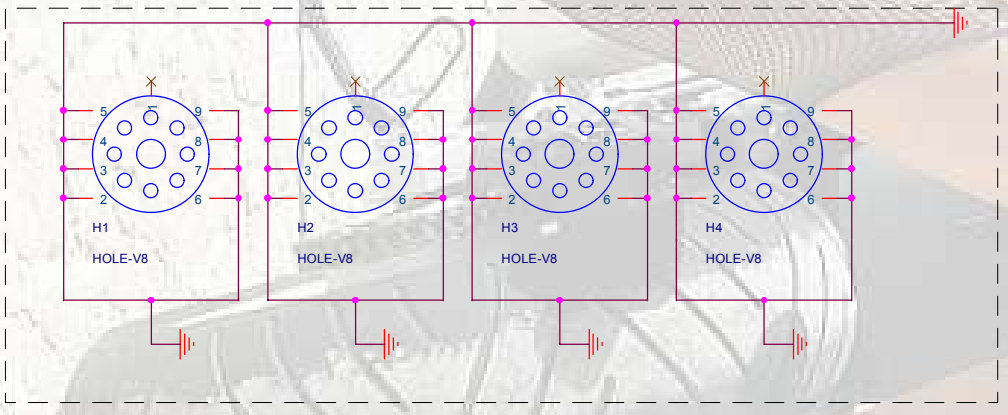
Project Code	99.J3877.001		
Title	DS660 DMD CHIP BD		
Size A3	Document Number 304-C01 48.J3802.S01 FAB:S01		Rev 0
Date: Monday, March 25, 2002	Sheet 1 of 4		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	T.S.WU	



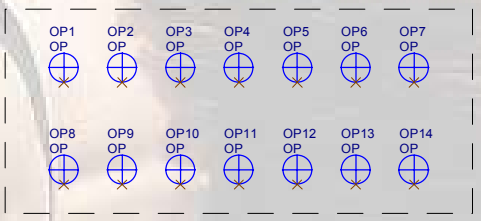
Project Code	99.J3877.001		
Title	DS660 DMD CHIP BD		
Size A3	Document Number 304-C01 48.J3802.S01 FAB:S01		Rev 0
Date: Monday, March 25, 2002		Sheet 2 of 4	
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	T.S.WU	



Screw Holes



Optical Points



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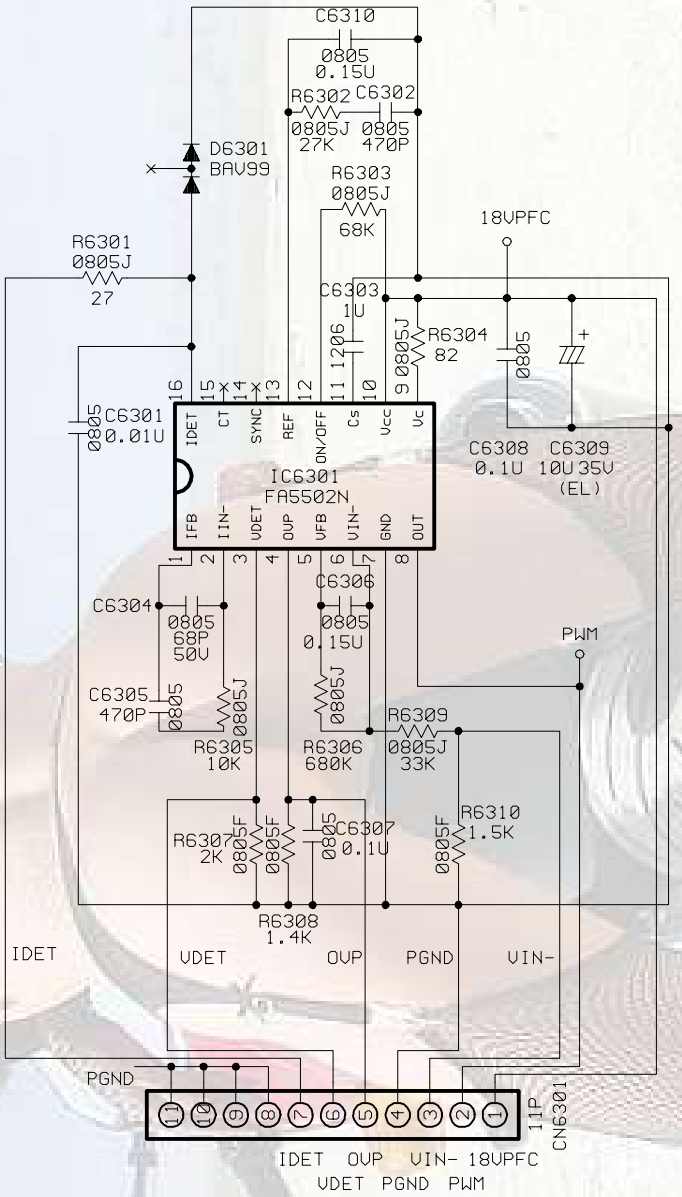
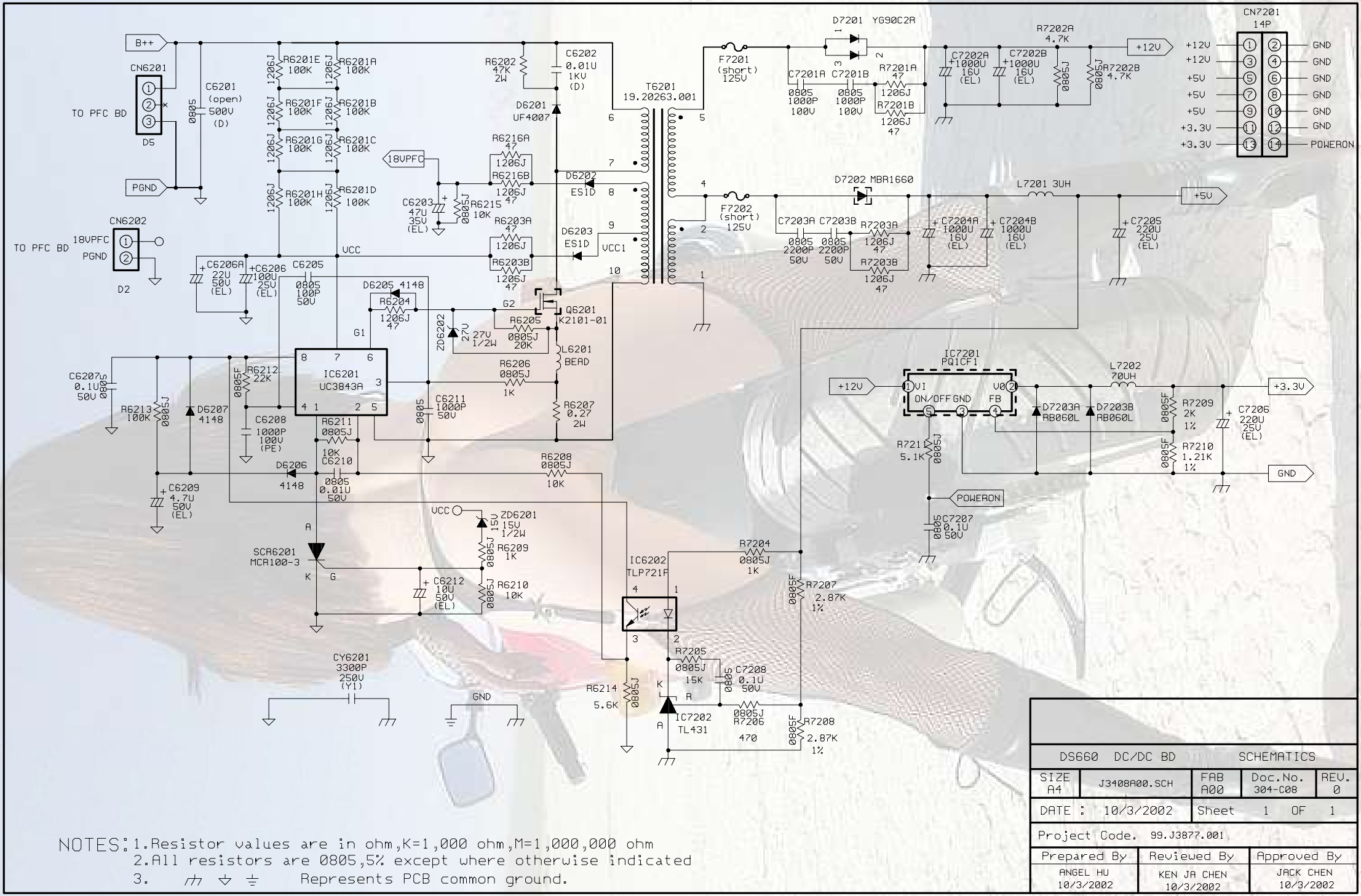
Title	DS660 DMD CHIP BD		
Size: A3	Document Number: 304-C01 48.J3802.S01 FAB:S01		Rev: 0
Date: Monday, March 25, 2002		Sheet 4 of 4	
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	T.S.WU	



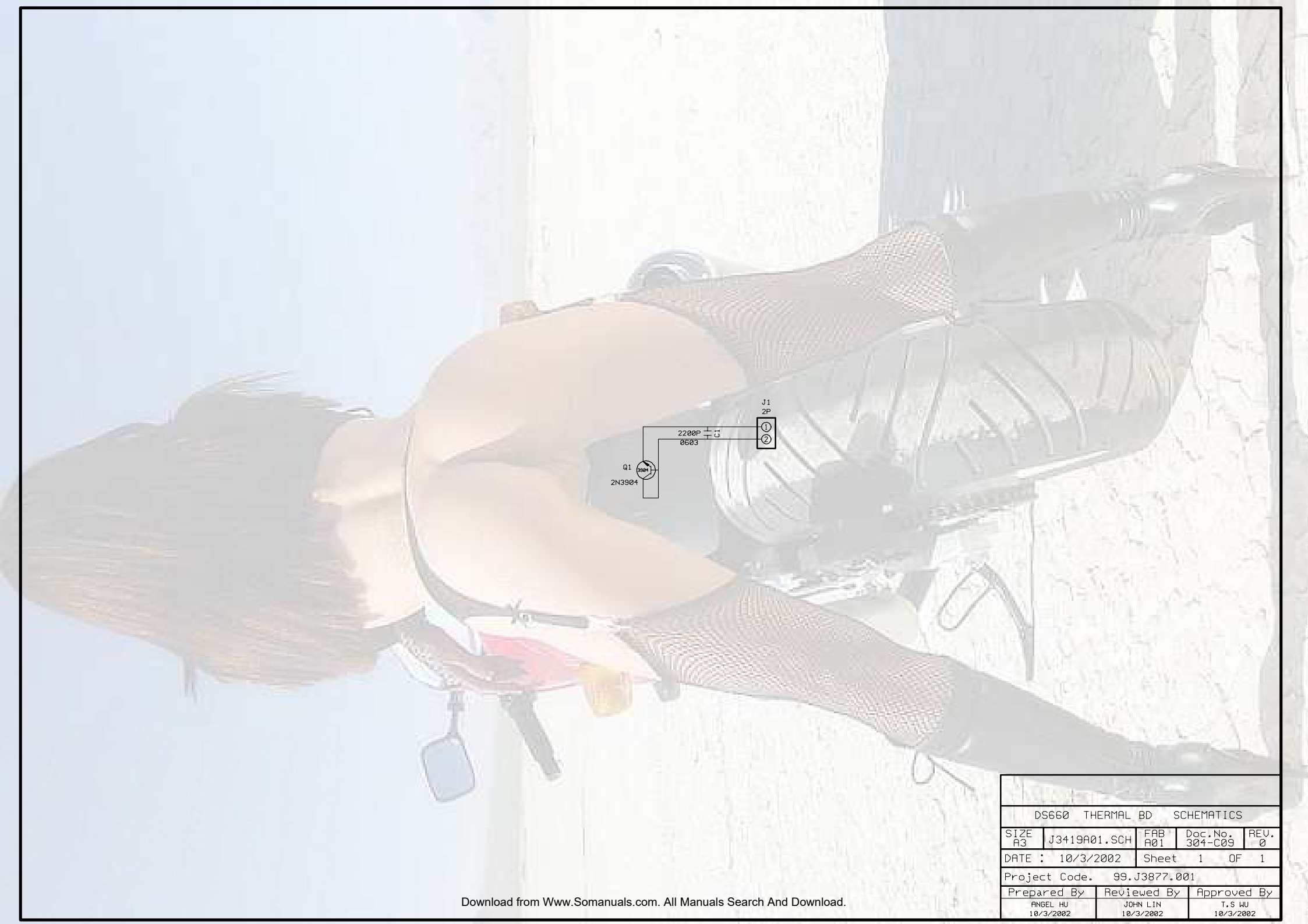
NOTES:
1. Resistor values are in ohm, K=1,000 ohm, M=1,000,000 ohm
2. All resistors are 1/8 watt, 5% except where otherwise indicated
3. ⏚ ⏚ ⏚ Represents PCB common ground.

DS660 PFC CONTROL BD SCHEMATICS				
SIZE A4	J3407A00.SCH	FAB A00	Doc.No. 304-C07	REV. 0
DATE : 10/3/2002		Sheet 1 OF 1		
Project Code. 99.J3877.001				
Prepared By	Reviewed By	Approved By		
ANGEL HU 10/3/2002	KEN JA CHEN 10/3/2002	JACK CHEN 10/3/2002		

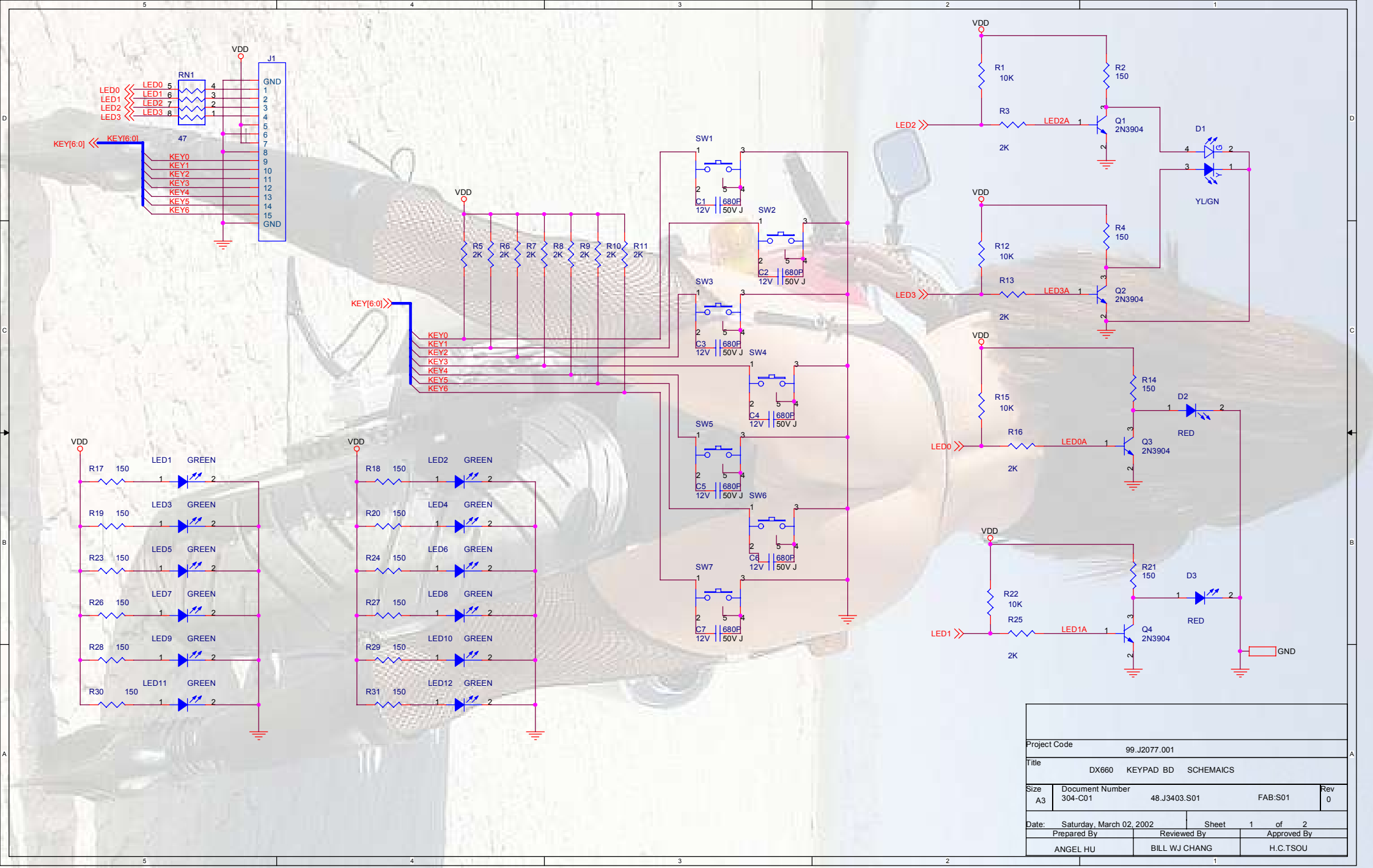


NOTES: 1.Resistor values are in ohm,K=1,000 ohm,M=1,000,000 ohm
2.All resistors are 0805,5% except where otherwise indicated
3. ⏚ ⏚ ⏚ Represents PCB common ground.

DS660 DC/DC BD			SCHEMATICS	
SIZE A4	J3408A00.SCH	FAB A00	Doc.No. 304-C08	REV. 0
DATE : 10/3/2002		Sheet 1 OF 1		
Project Code. 99.J3877.001				
Prepared By	Reviewed By	Approved By		
ANGEL HU 10/3/2002	KEN JA CHEN 10/3/2002	JACK CHEN 10/3/2002		

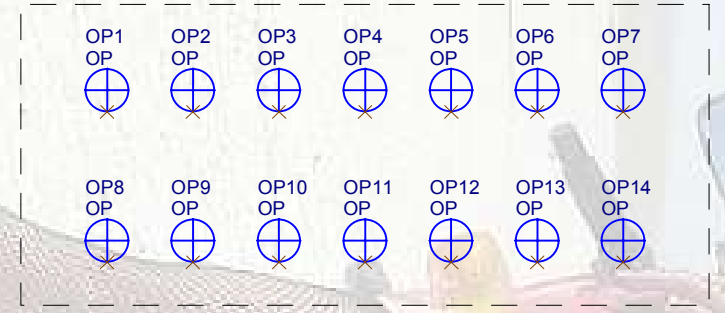


DS660 THERMAL BD SCHEMATICS				
SIZE A3	J3419A01.SCH	FAB A01	Doc.No. 304-C09	REV. 0
DATE : 10/3/2002		Sheet 1 OF 1		
Project Code. 99.J3877.001				
Prepared By	Reviewed By	Approved By		
ANGEL HU 10/3/2002	JOHN LIN 10/3/2002	T.S WU 10/3/2002		

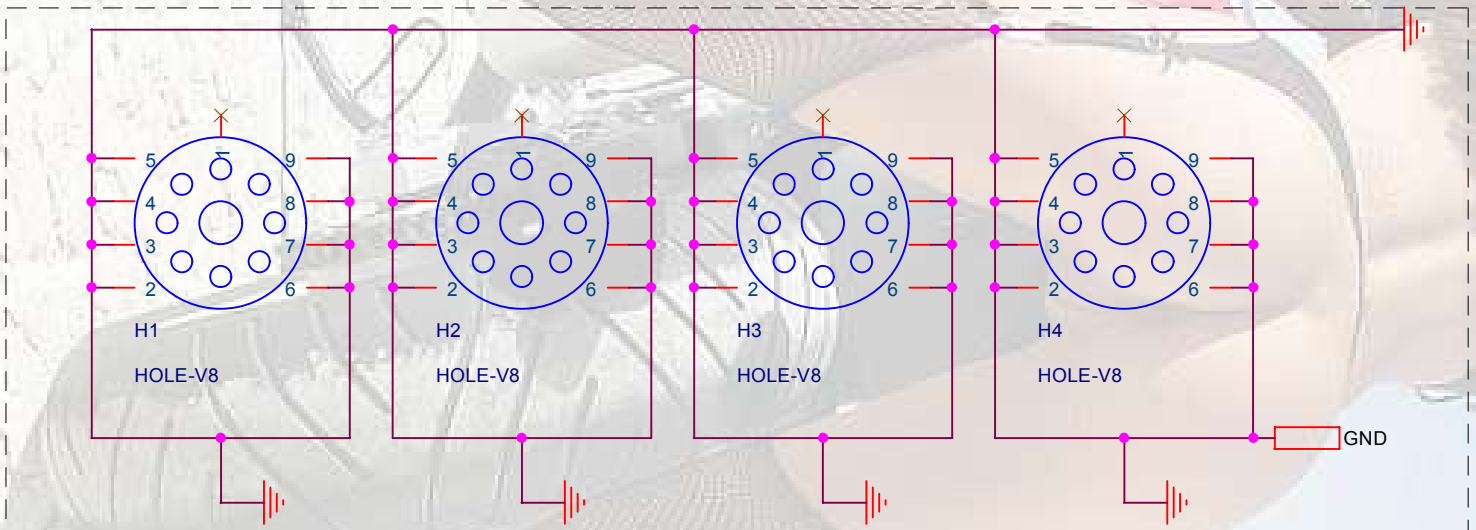


Project Code	99.J2077.001		
Title	DX660 KEYPAD BD SCHEMAICS		
Size A3	Document Number 304-C01 48.J3403.S01 FAB:S01		Rev 0
Date: Saturday, March 02, 2002	Sheet 1 of 2		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	

Optical P oints



Screw Holes



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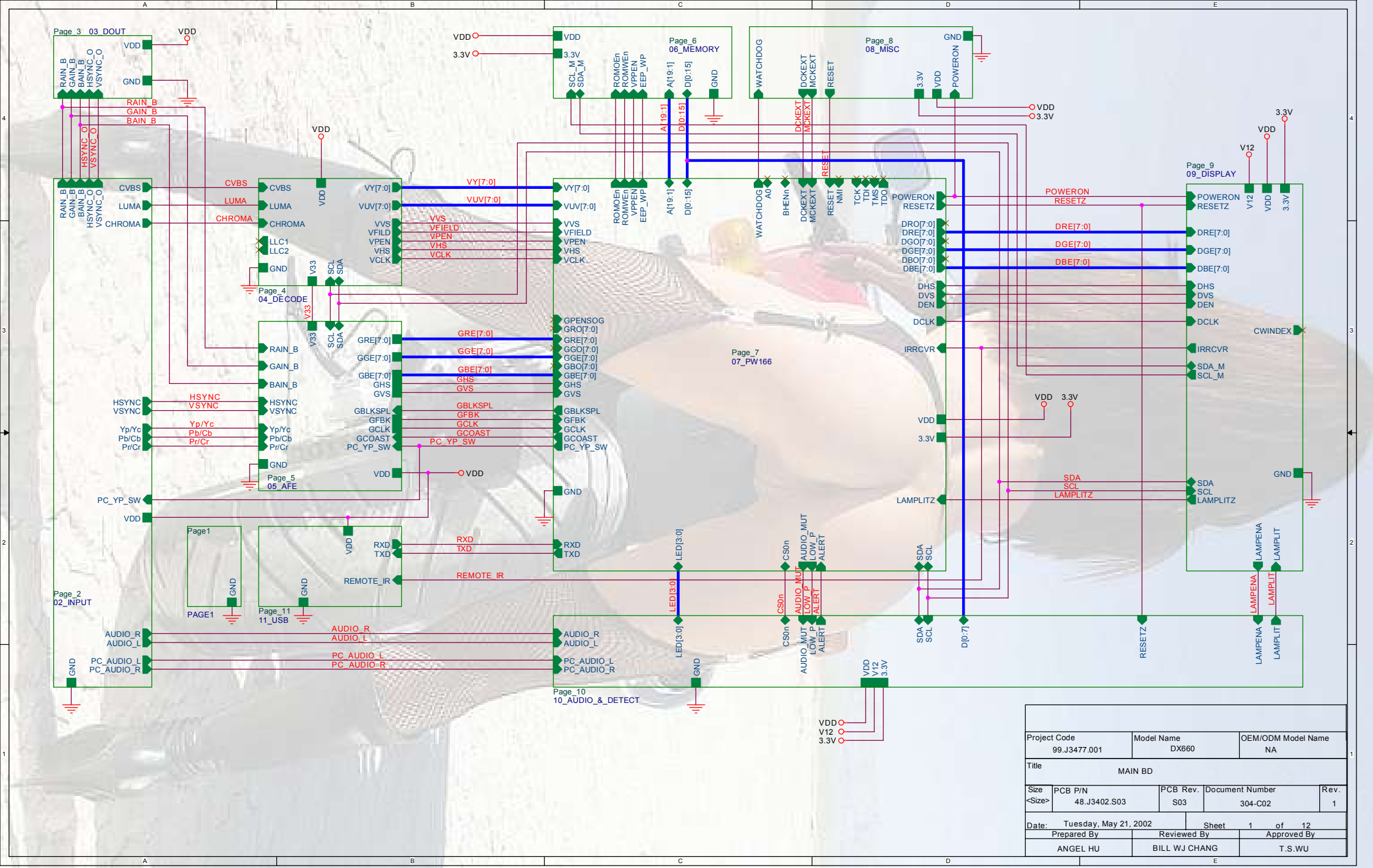
Title	DX660 KEYPAD BD SCHEMAICS		
Size A3	Document Number 304-C01 48.J3403.S01 FAB:S01		Rev 0
Date: Saturday, March 02, 2002		Sheet 2 of 2	
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	



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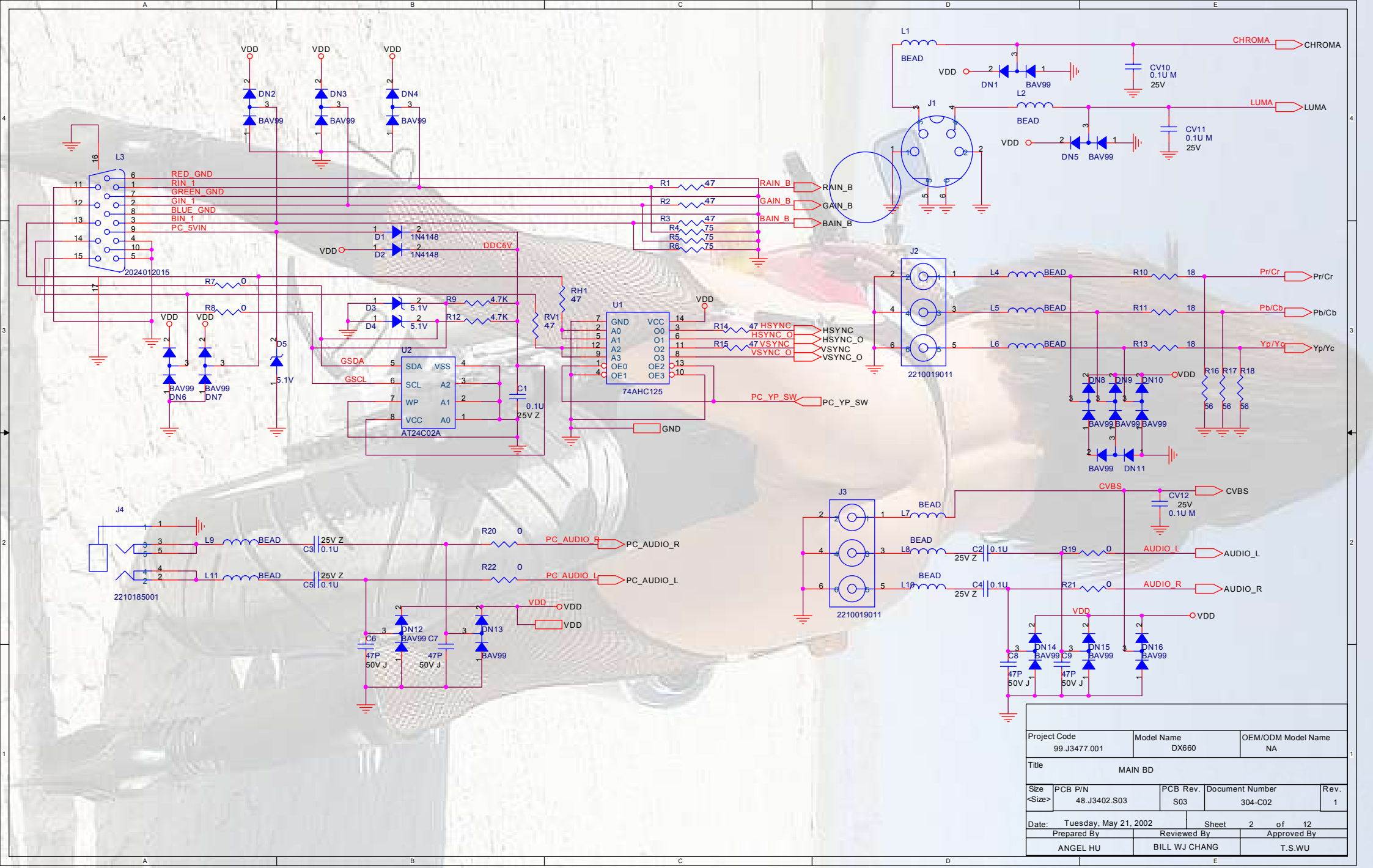
Title: MAIN BD		
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 1 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU



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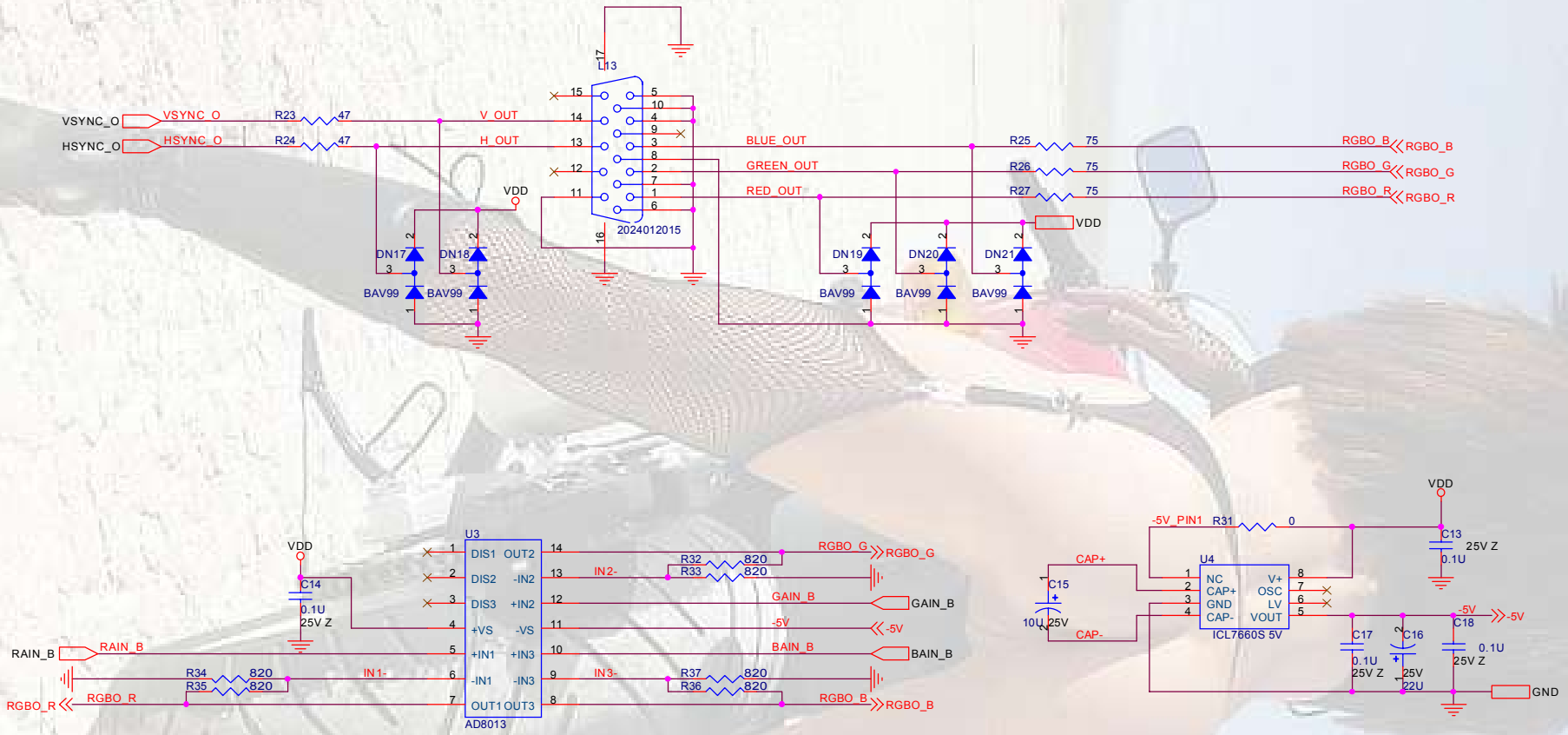
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 2 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU



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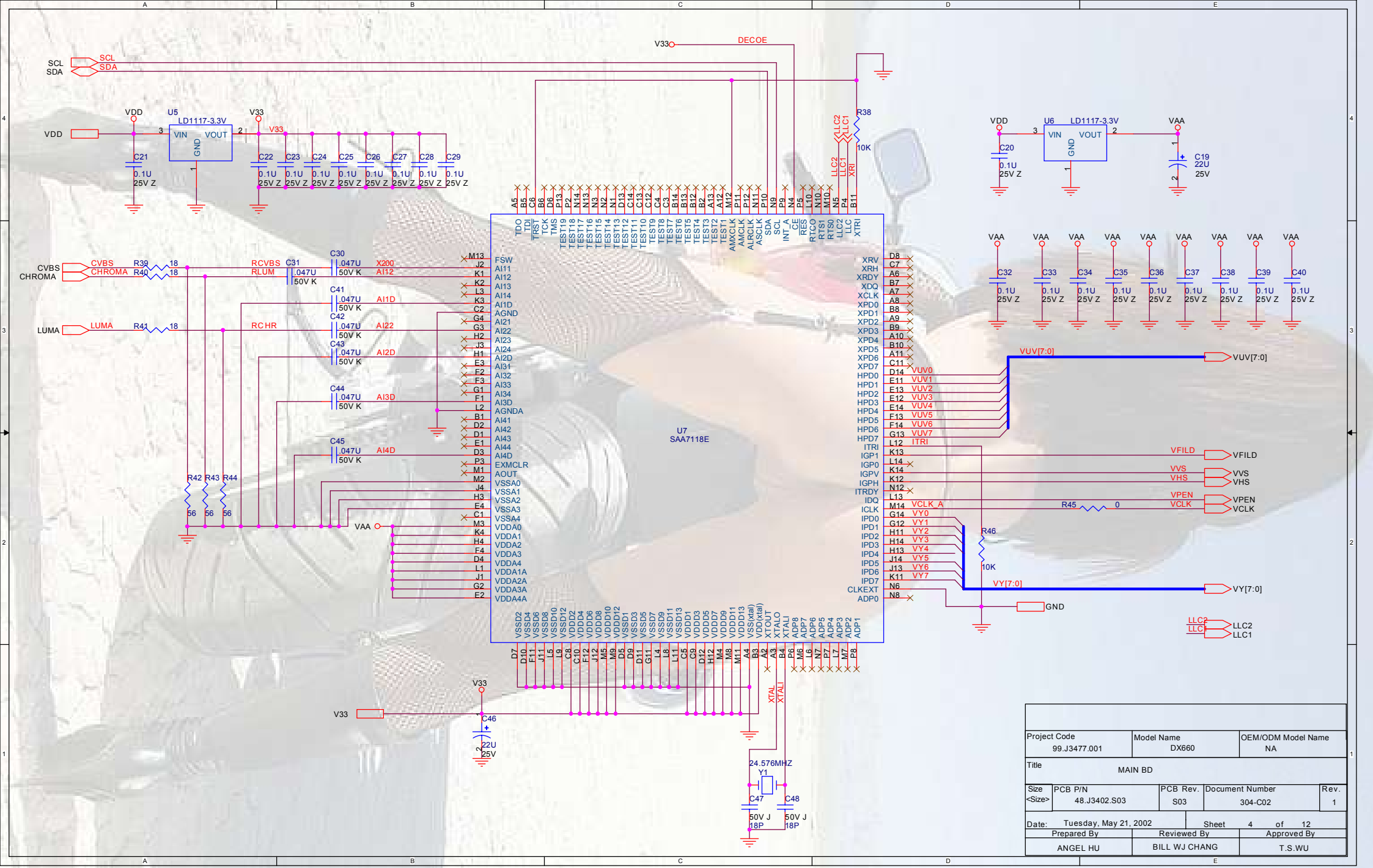
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 3 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU



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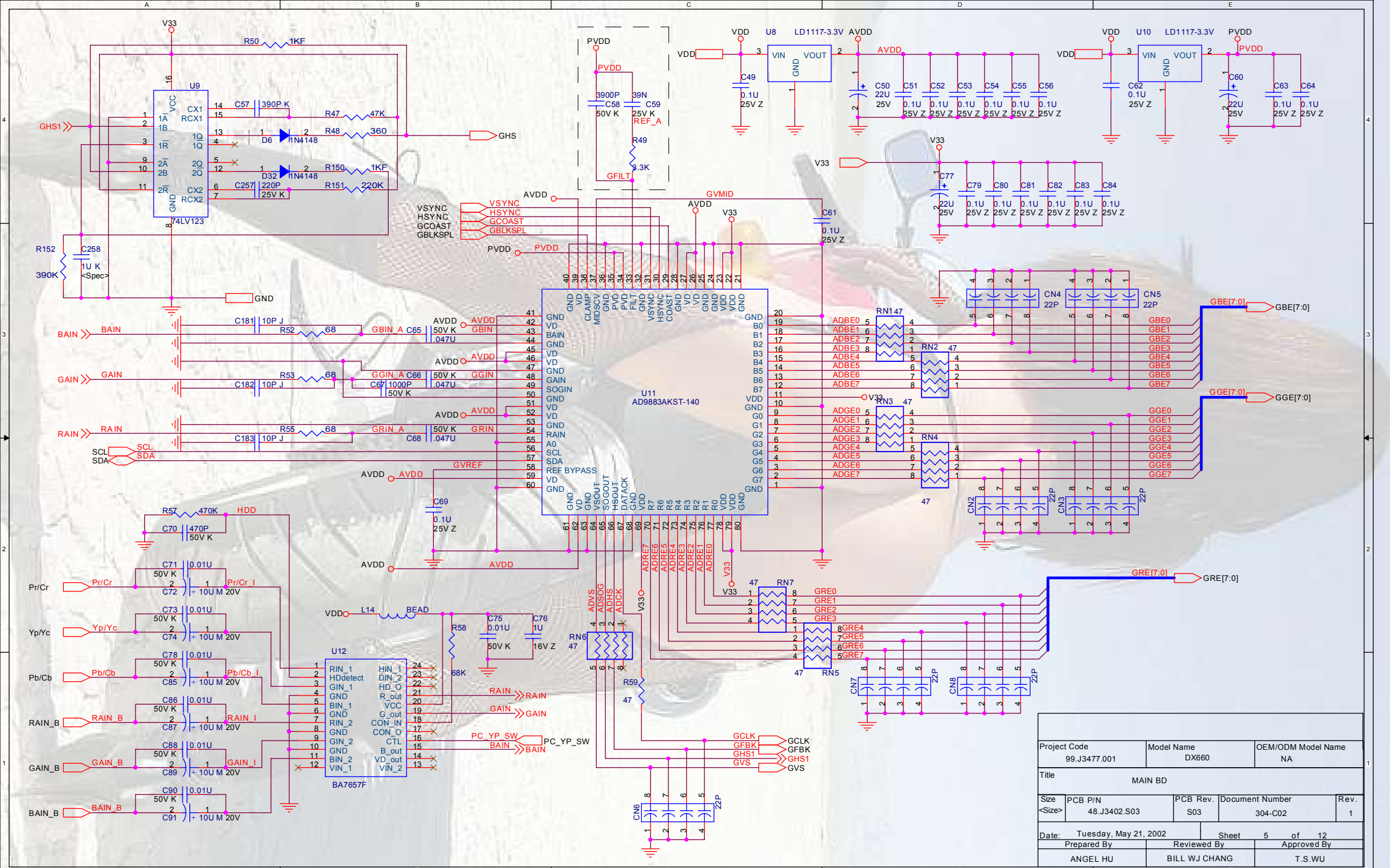
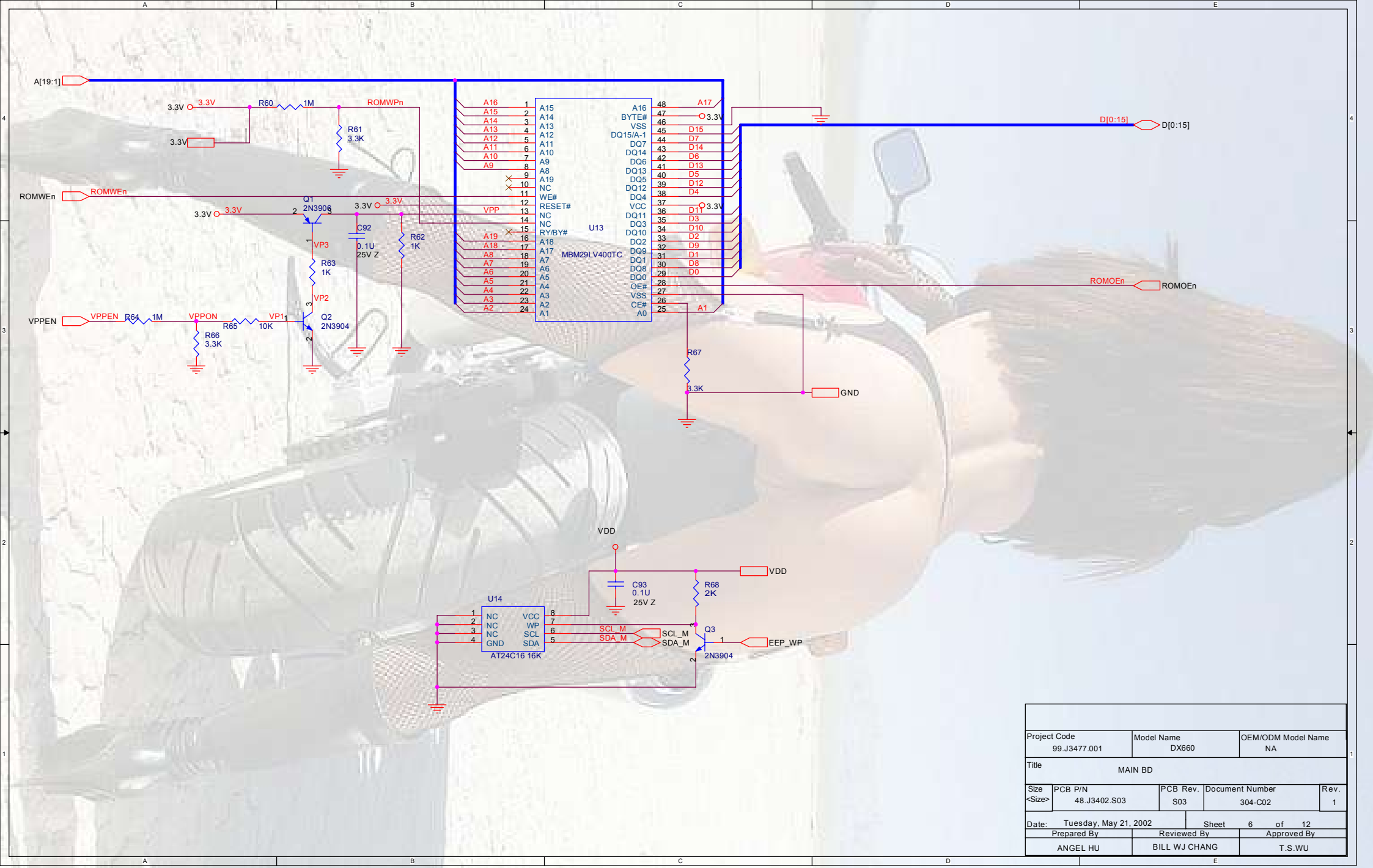
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 4 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU





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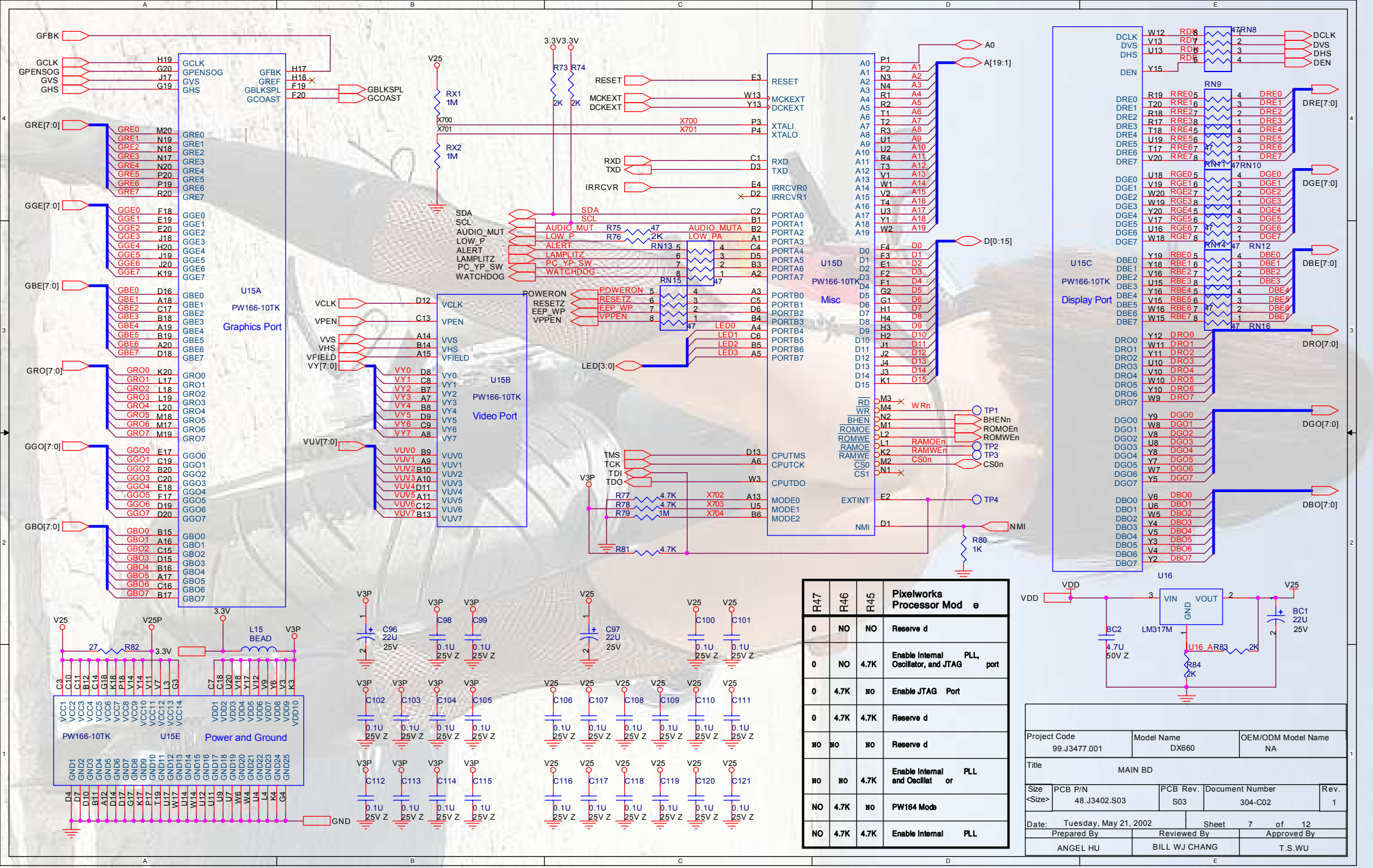
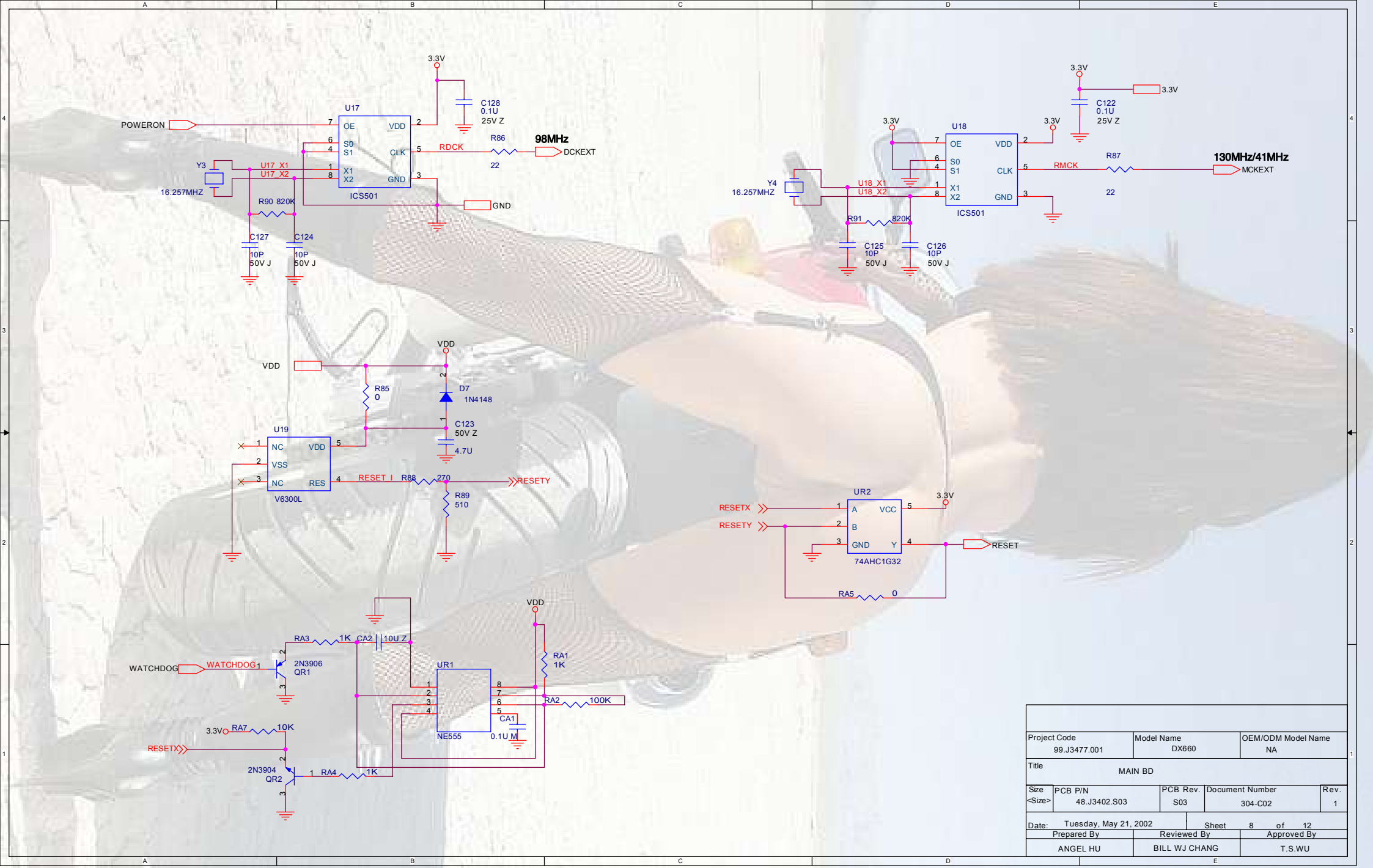
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02	Rev.: 1	
Date: Tuesday, May 21, 2002	Sheet 6 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU



R47	R46	R45	Pixelworks Processor Mod e
0	NO	NO	Reserve d
0	NO	4.7K	Enable Internal PLL, Oscillator, and JTAG port
0	4.7K	NO	Enable JTAG Port
0	4.7K	4.7K	Reserve d
NO	NO	NO	Reserve d
NO	NO	4.7K	Enable Internal PLL and Oscillat or
NO	4.7K	NO	PW164 Mode
NO	4.7K	4.7K	Enable Internal PLL

Project Code: 99.J3477.001	Model Name: DX660	OEM/ODM Model Name: NA
Title: MAIN BD		
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 7 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU



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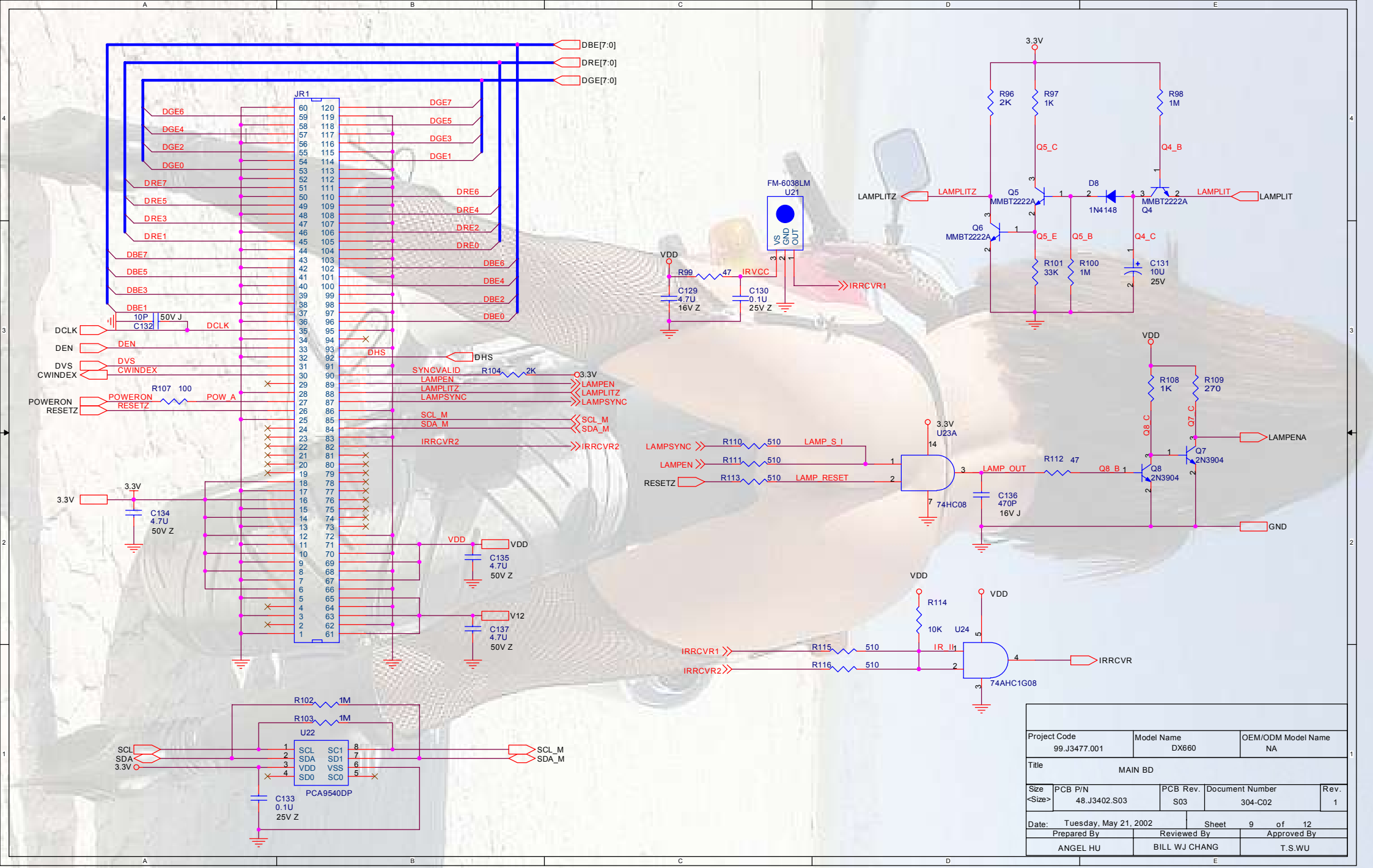
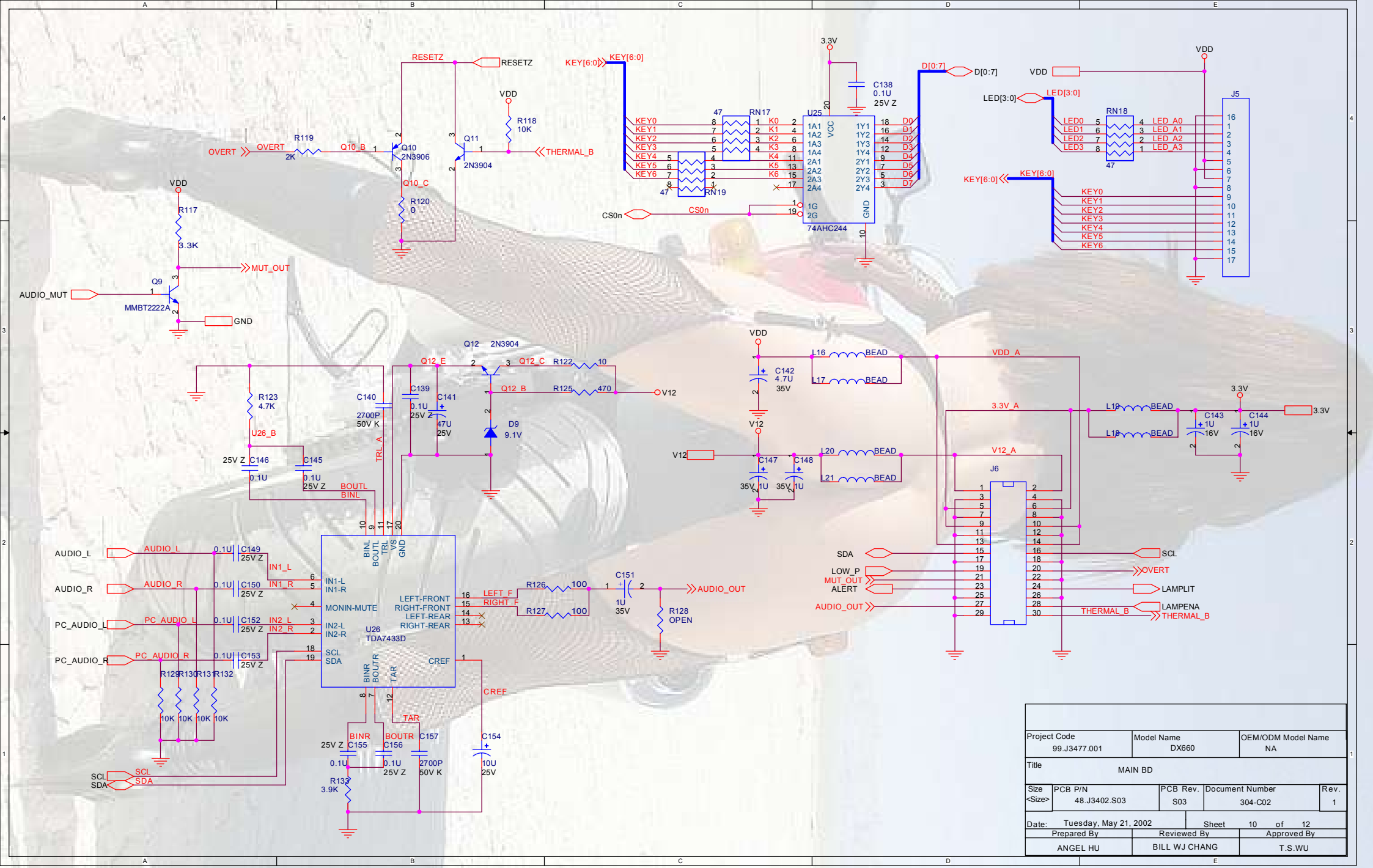
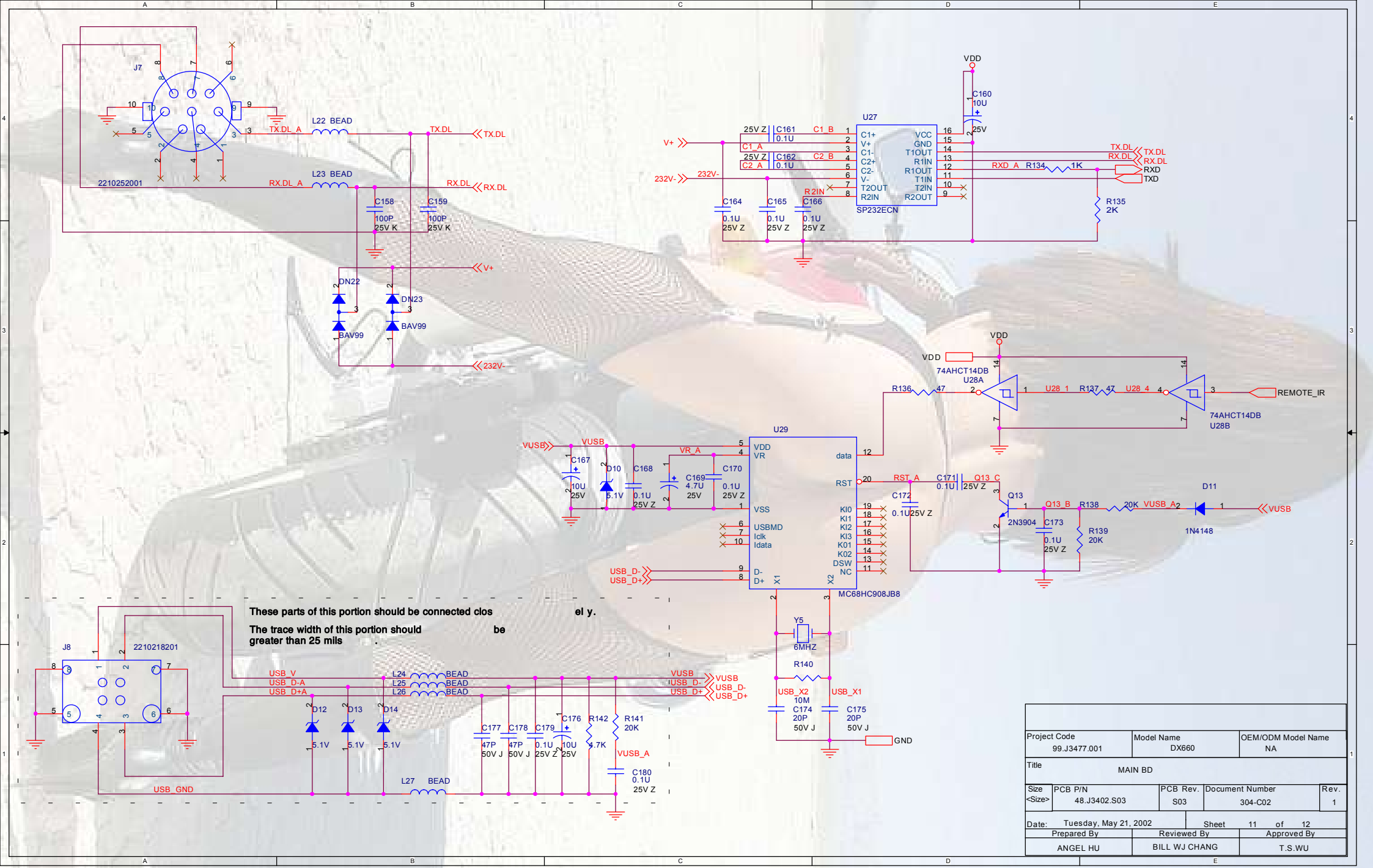
Title: MAIN BD		
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 8 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU





Project Code: 99.J3477.001	Model Name: DX660	OEM/ODM Model Name: NA
Title: MAIN BD		
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02	Rev.: 1	
Date: Tuesday, May 21, 2002	Sheet 10 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU



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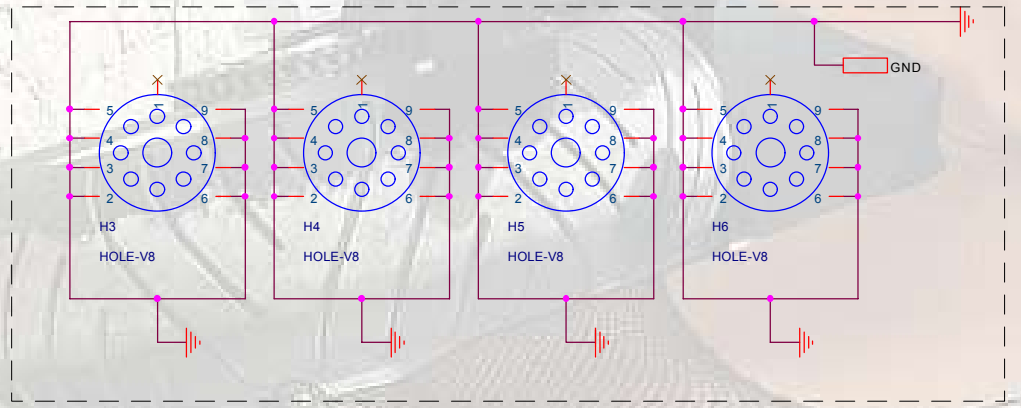
Title: MAIN BD		
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 11 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU

Screw Holes



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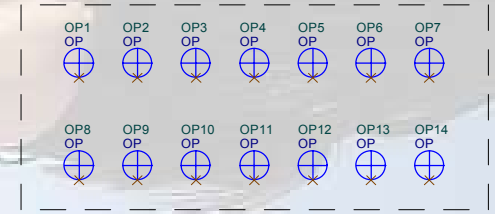

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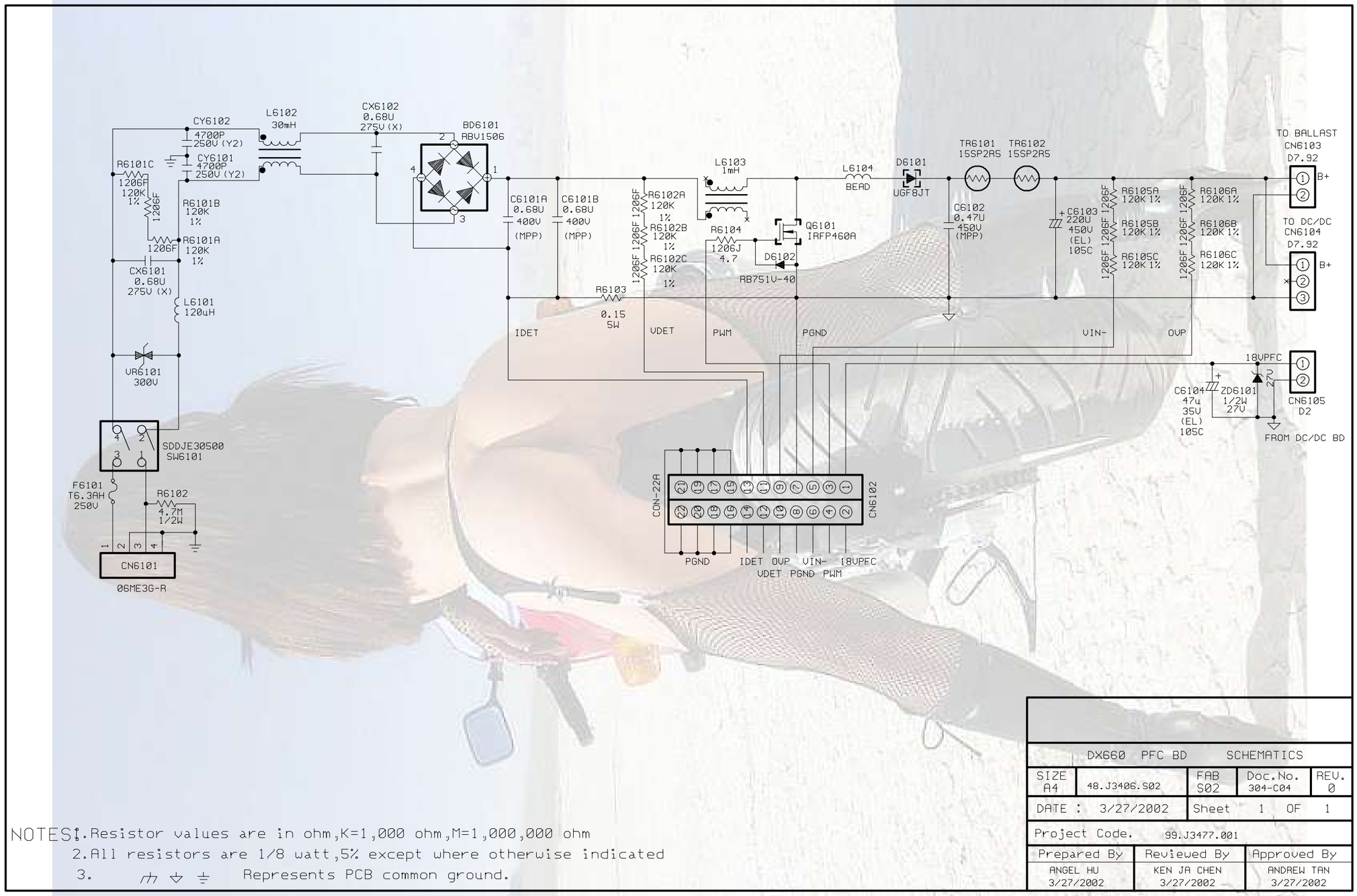
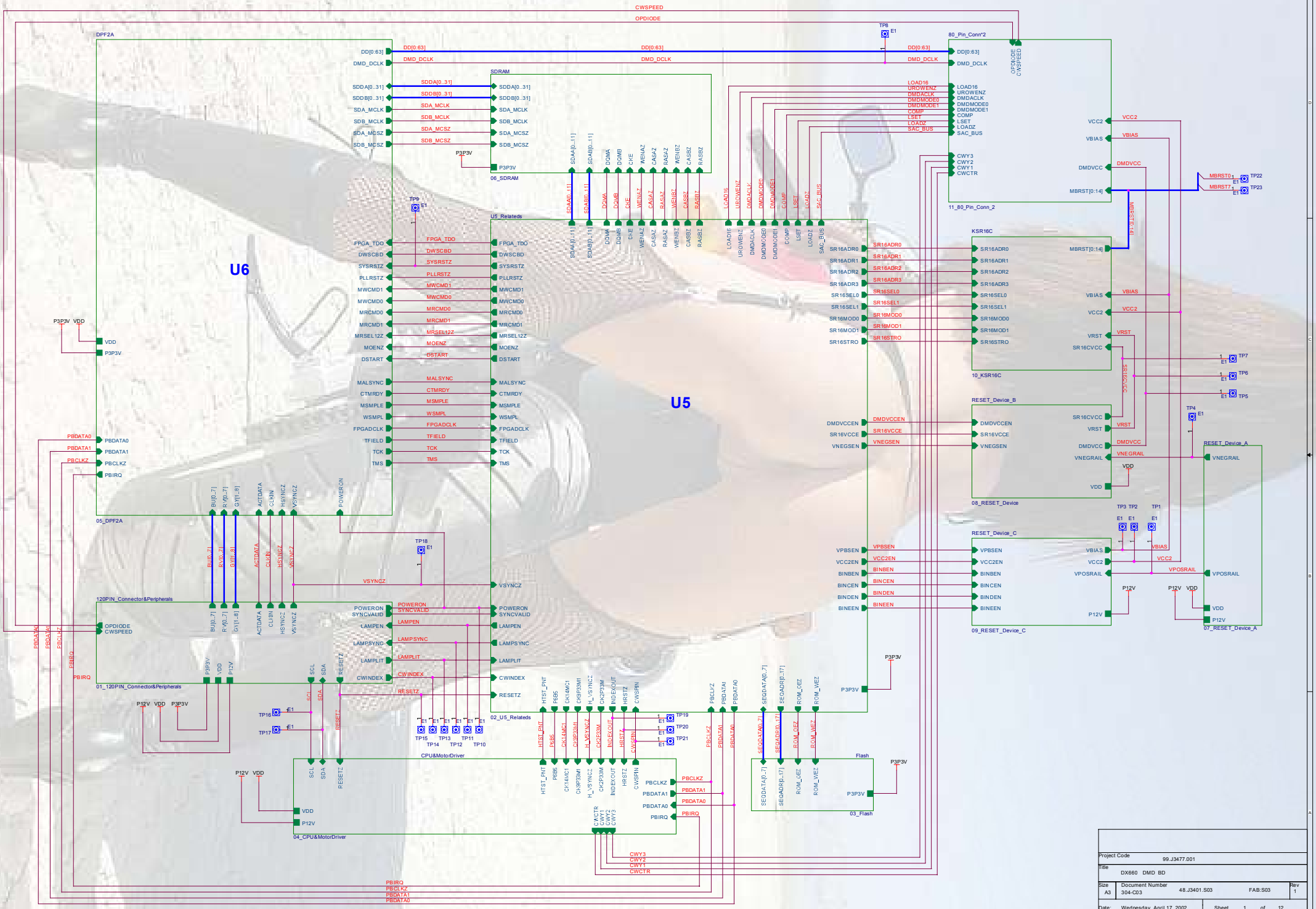
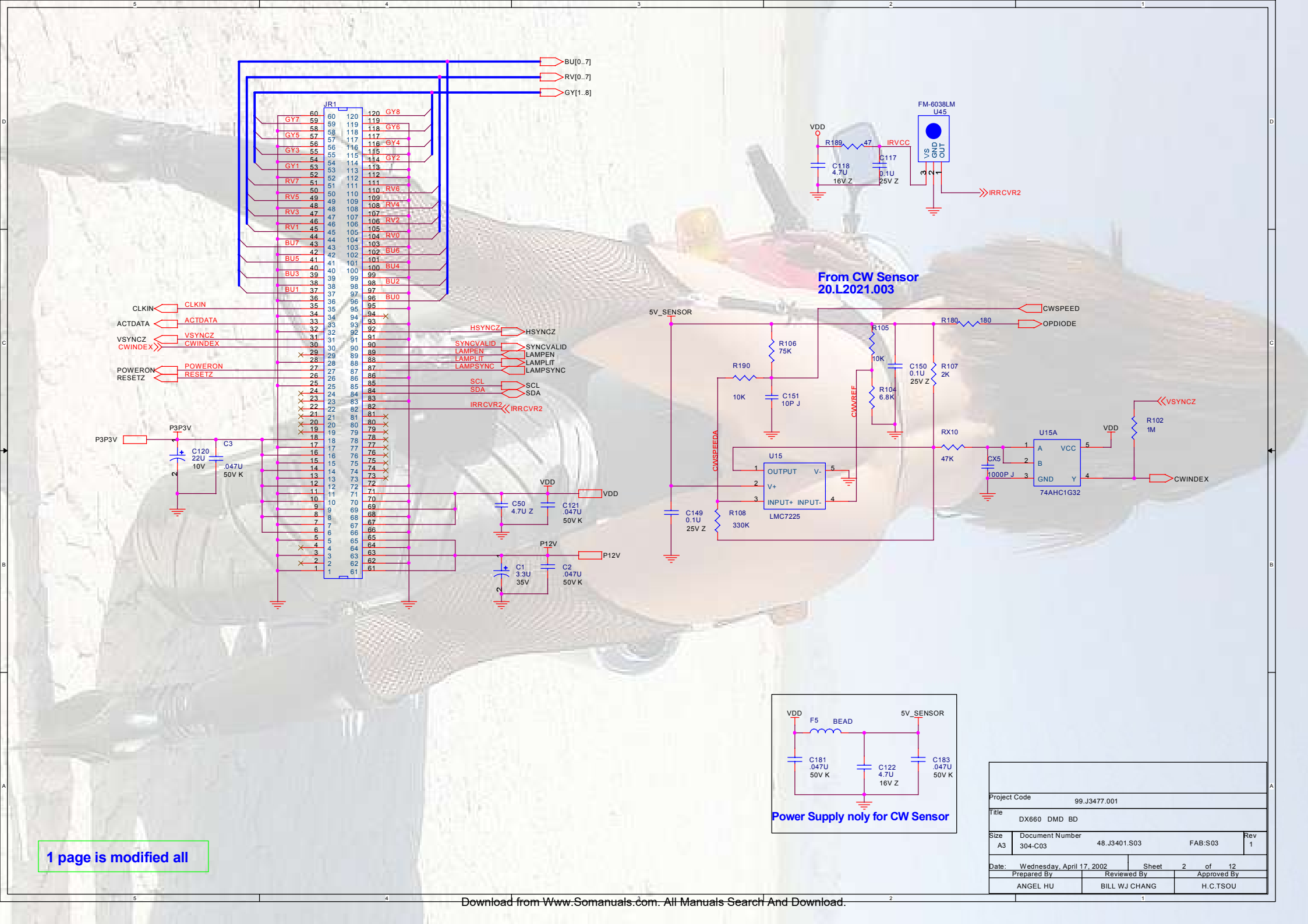
Title: MAIN BD		
Size: <Size>	PCB P/N: 48.J3402.S03	PCB Rev.: S03
Document Number: 304-C02		Rev.: 1
Date: Tuesday, May 21, 2002	Sheet 12 of 12	
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU

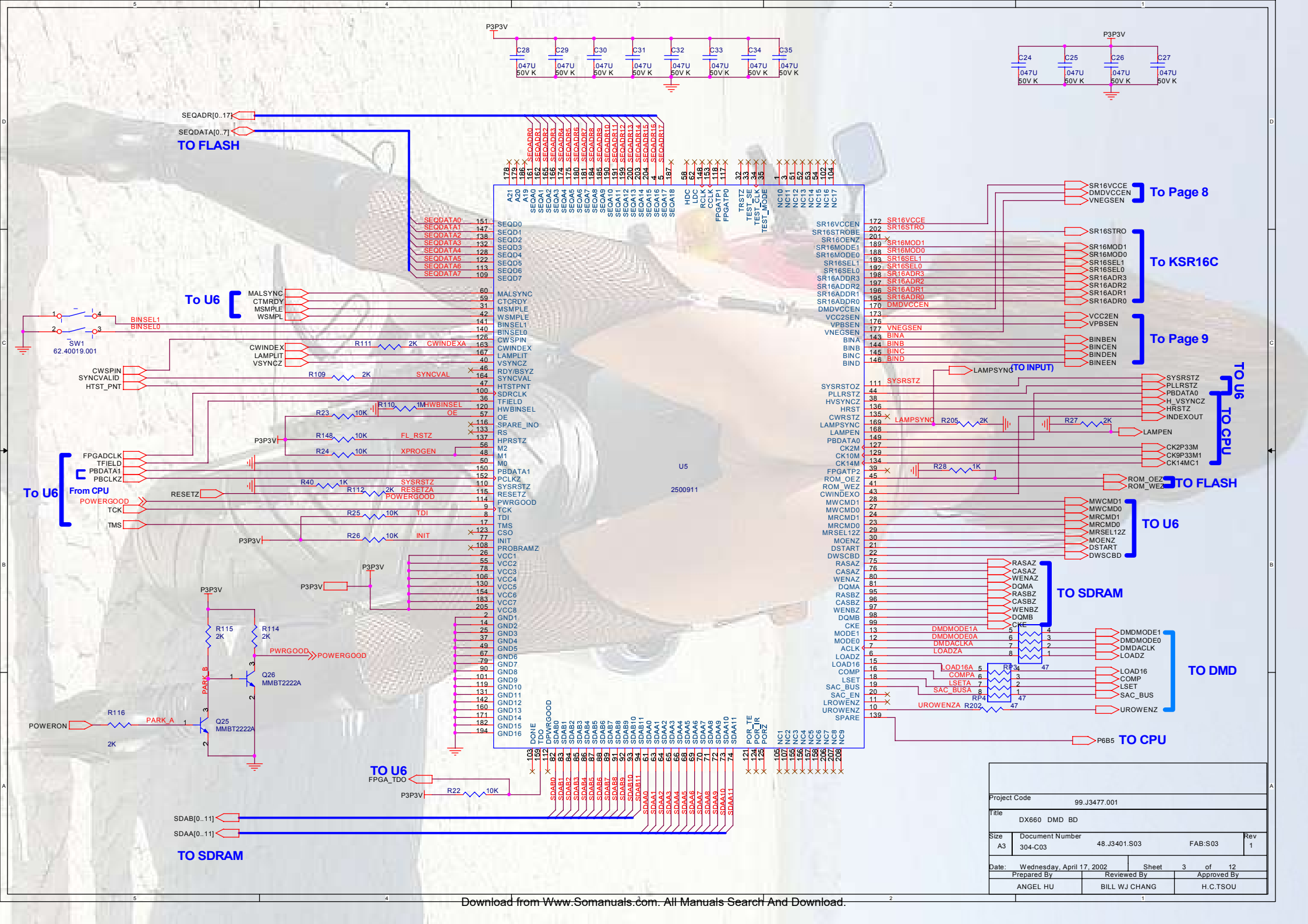


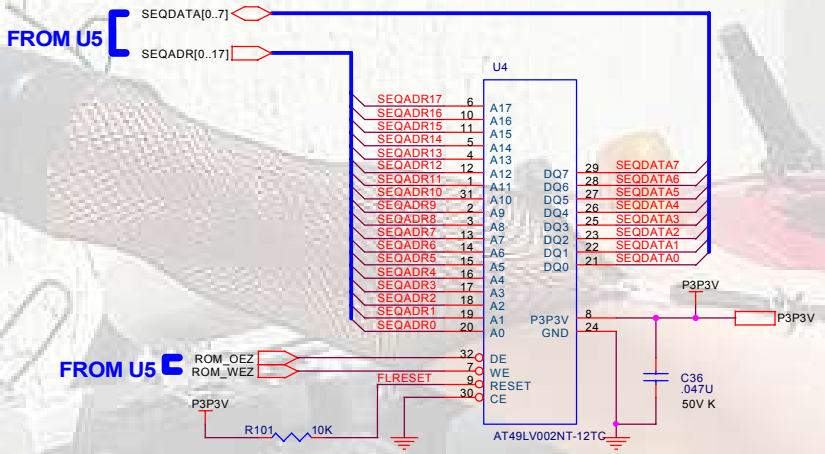
NOTES:
1. Resistor values are in ohm, K=1,000 ohm, M=1,000,000 ohm
2. All resistors are 1/8 watt, 5% except where otherwise indicated
3. ⏚ ⏚ ⏚ Represents PCB common ground.

DX660 PFC BD SCHEMATICS				
SIZE A4	48.J3406.S02	FAB S02	Doc.No. 304-C04	REV. 0
DATE : 3/27/2002		Sheet 1 OF 1		
Project Code. 99.J3477.001				
Prepared By	Reviewed By	Approved By		
ANGEL HU 3/27/2002	KEN JA CHEN 3/27/2002	ANDREW TAN 3/27/2002		

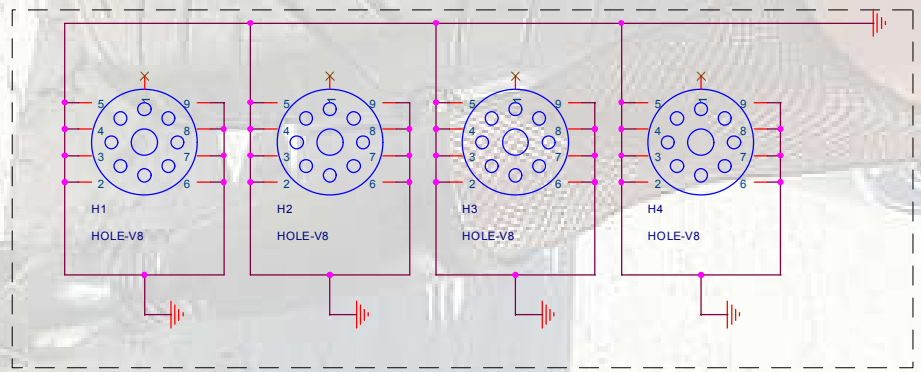








Screw Holes



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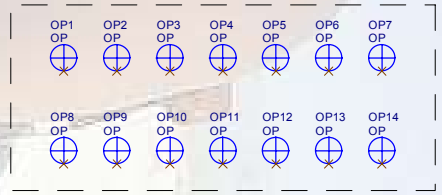
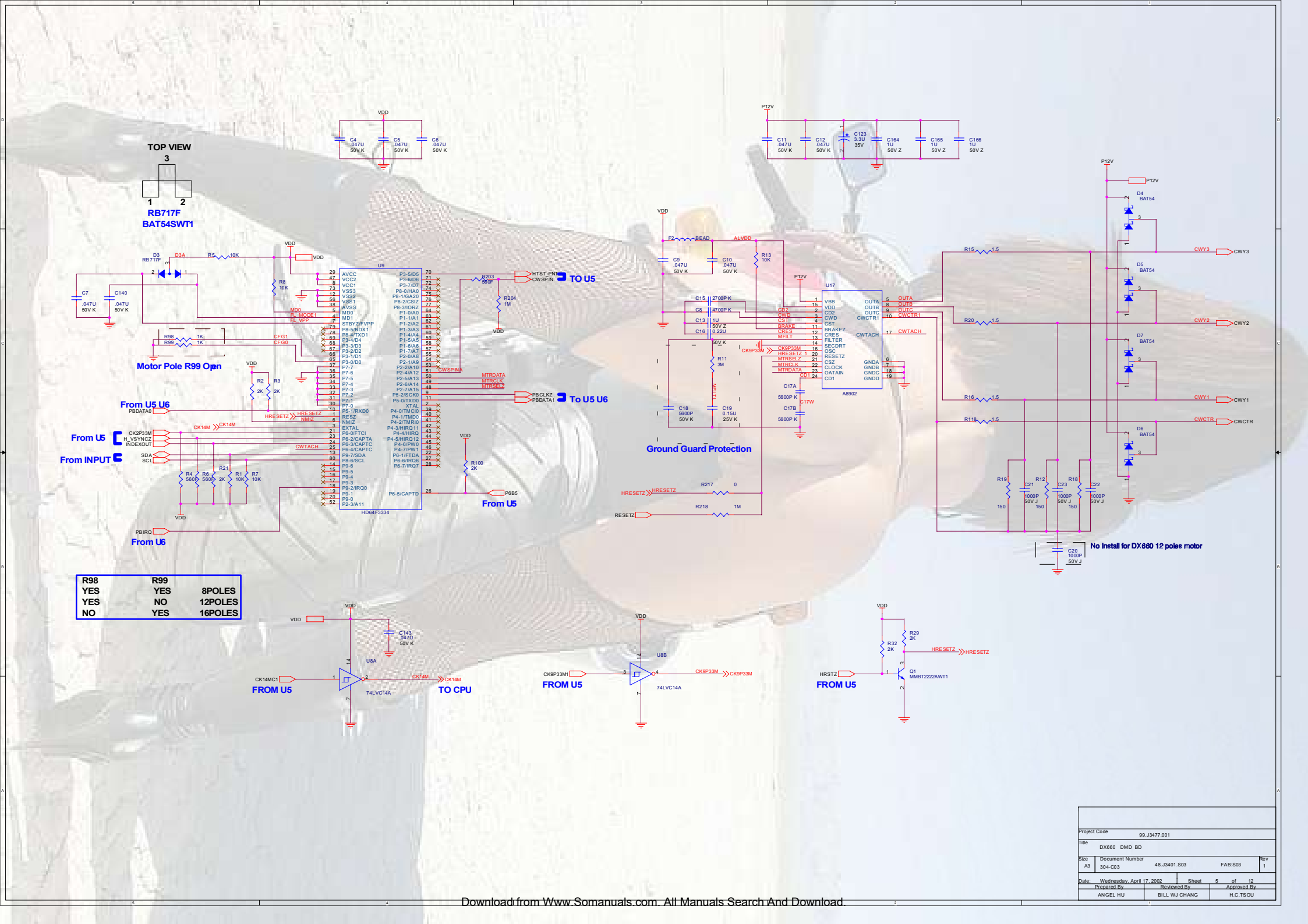
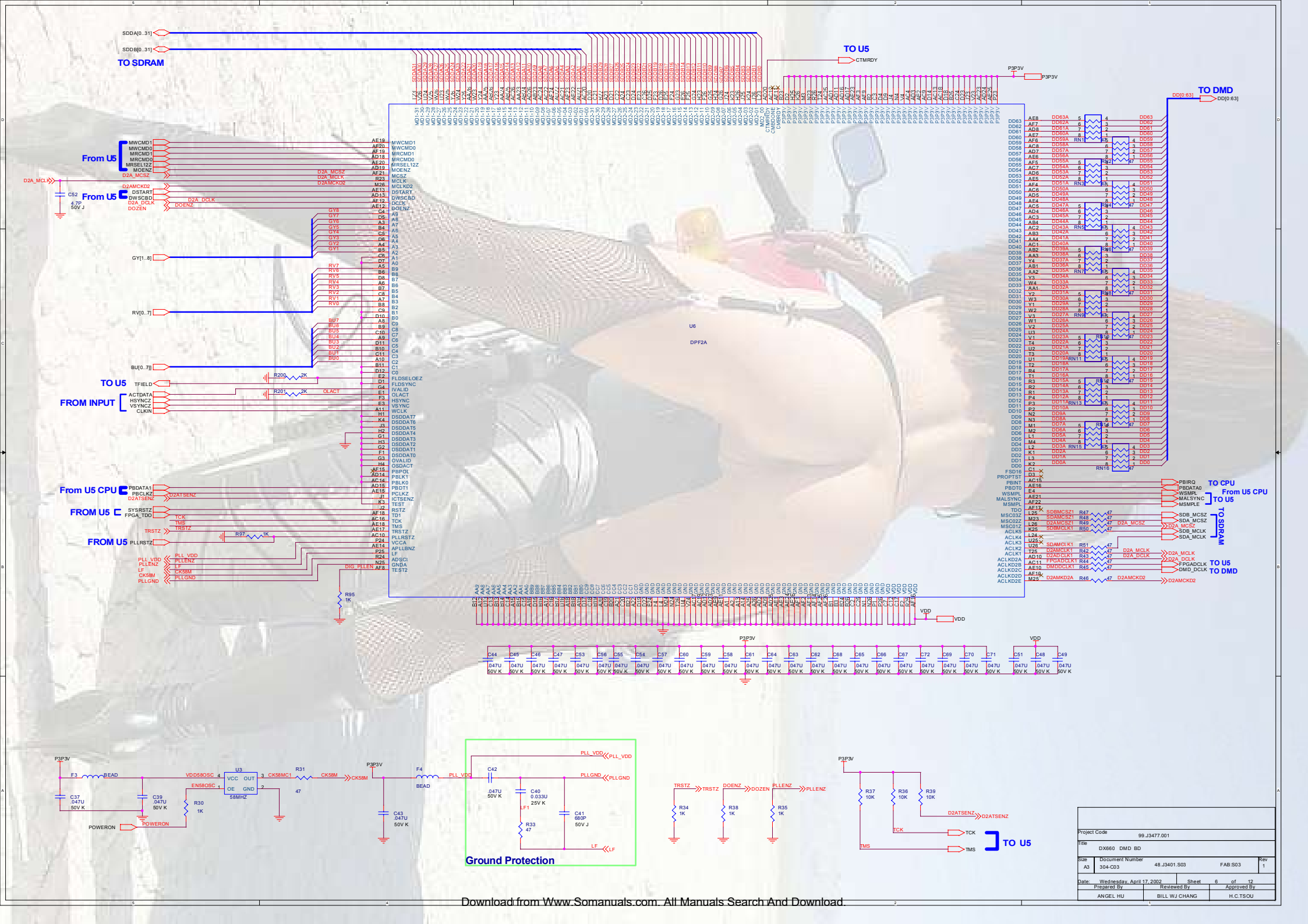
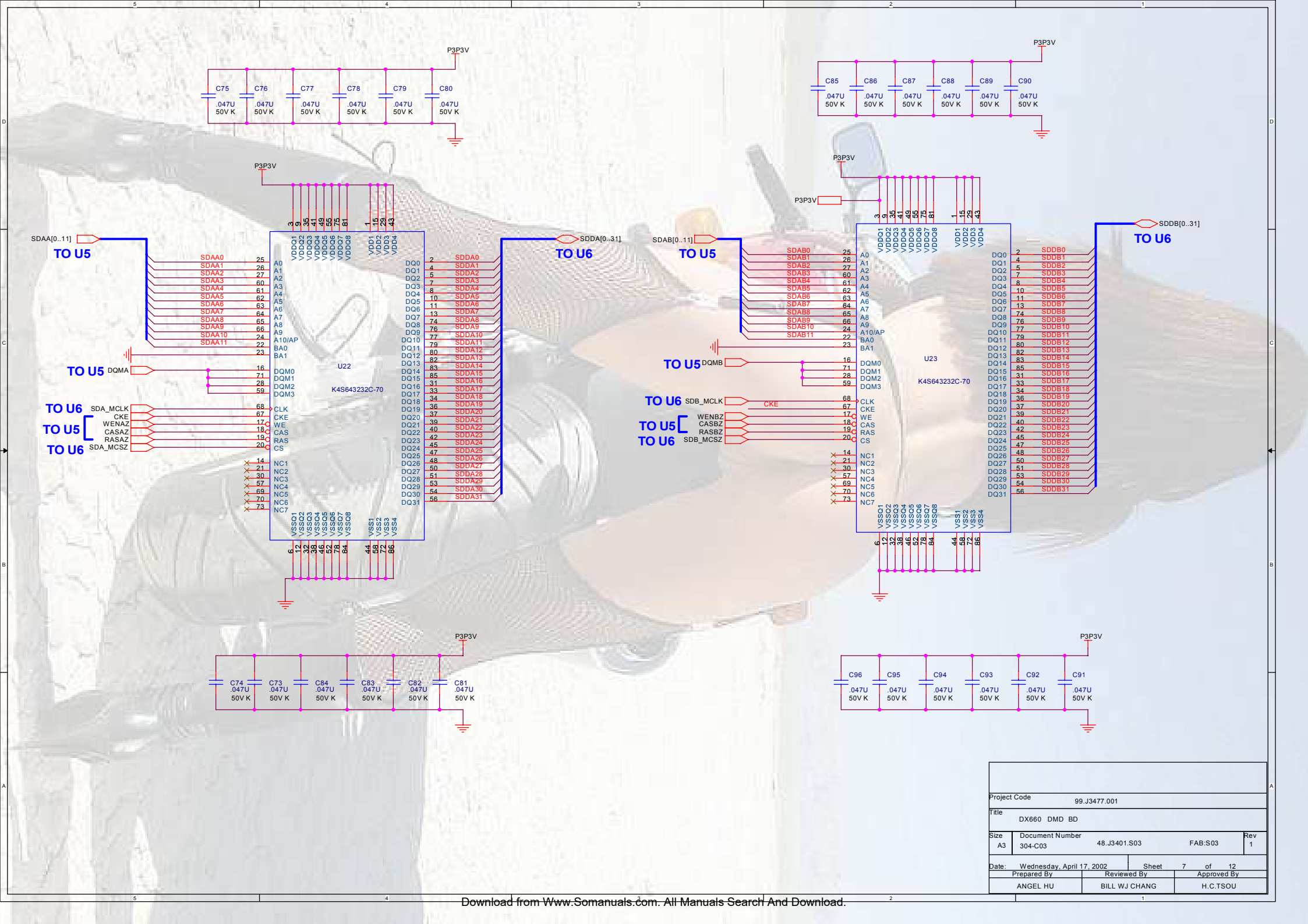
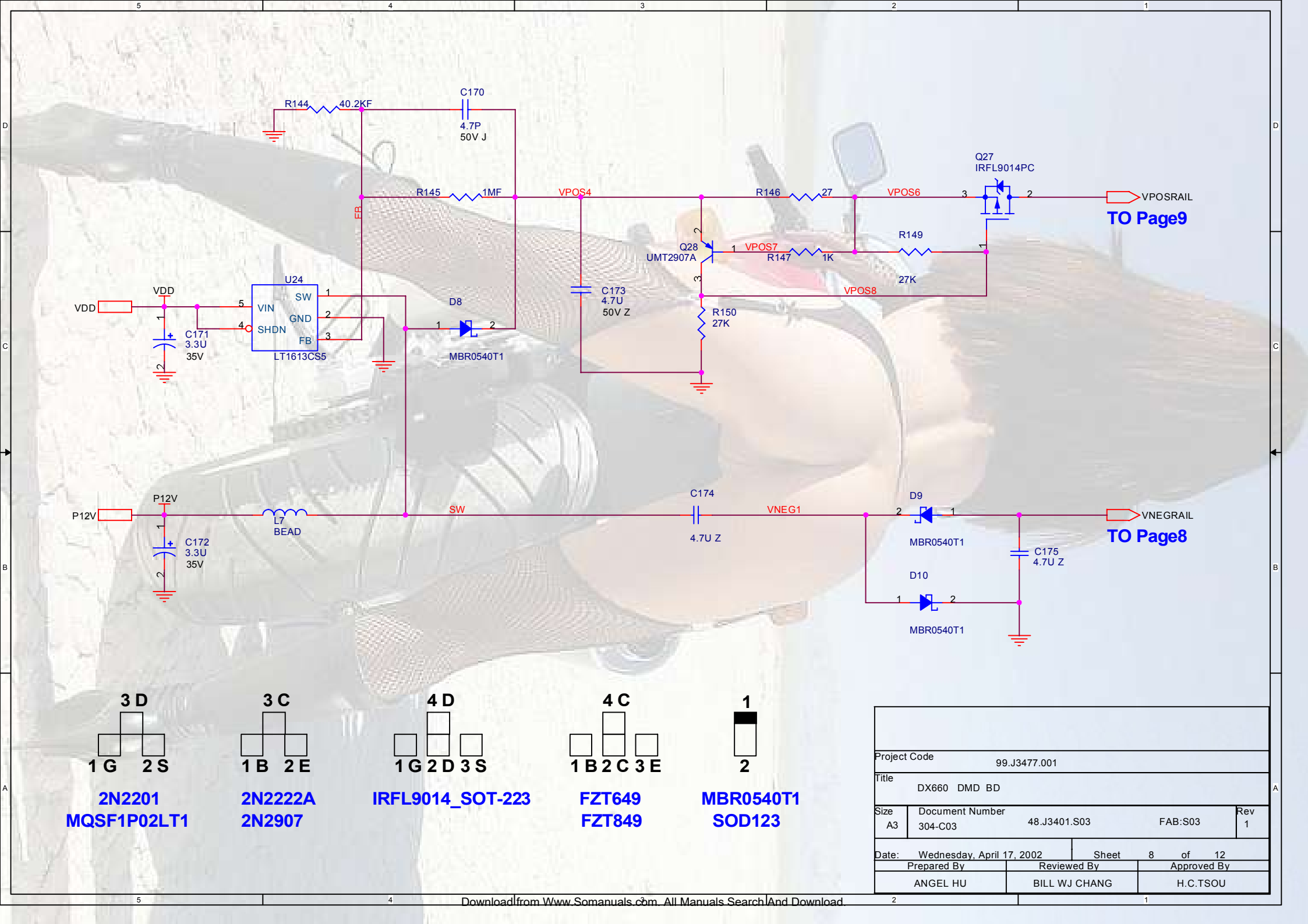


Project Code	99.J3477.001		
Title	DX660 DMD BD		
Size A3	Document Number 304-C03	48.J3401.S03	FAB:S03 Rev 1
Date: Wednesday, April 17, 2002	Sheet 4 of 12		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	









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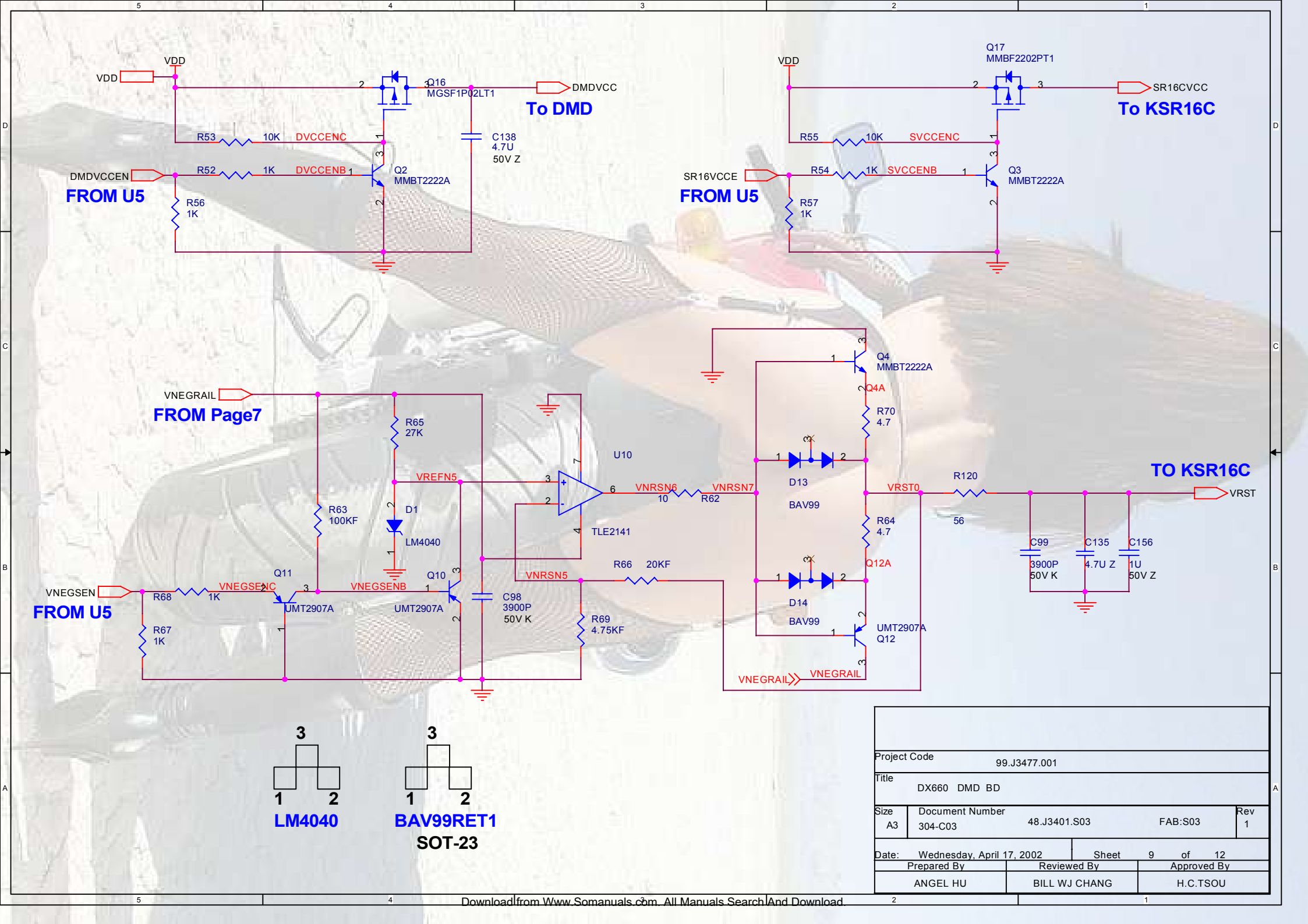
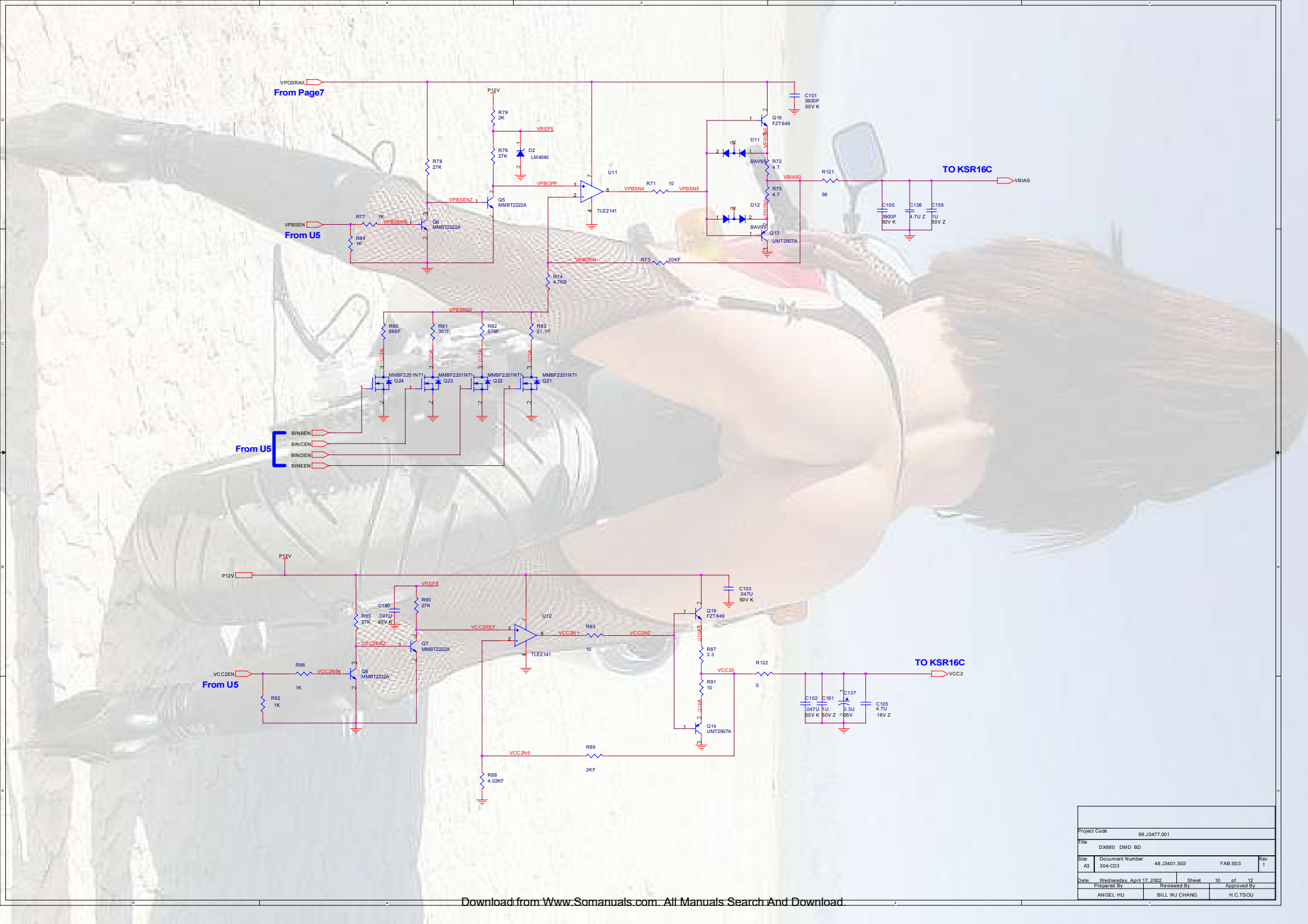
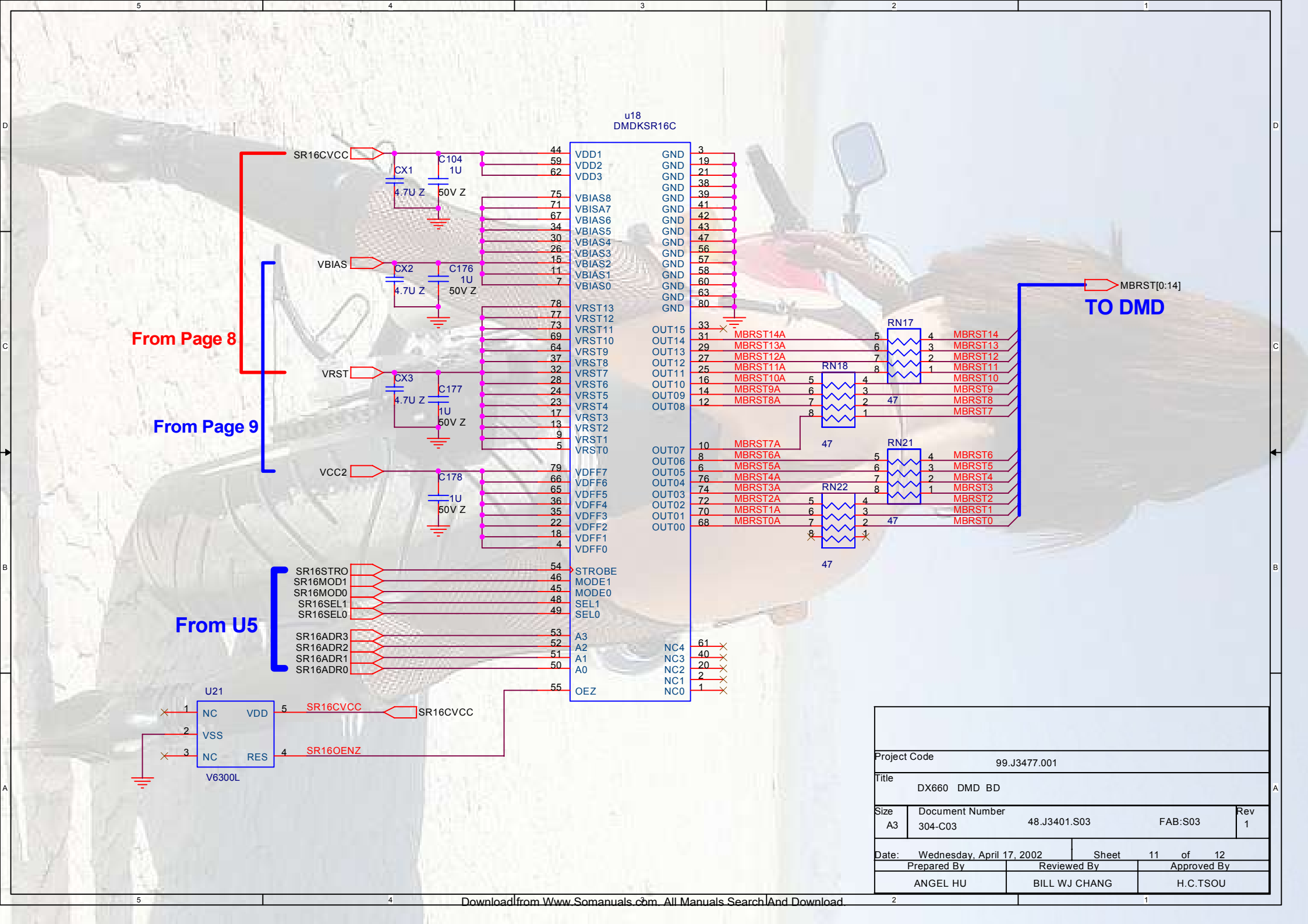
Title	DX660 DMD BD		
Size A3	Document Number 304-C03	48.J3401.S03	FAB:S03 / Rev 1
Date: Wednesday, April 17, 2002	Sheet 8 of 12		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	



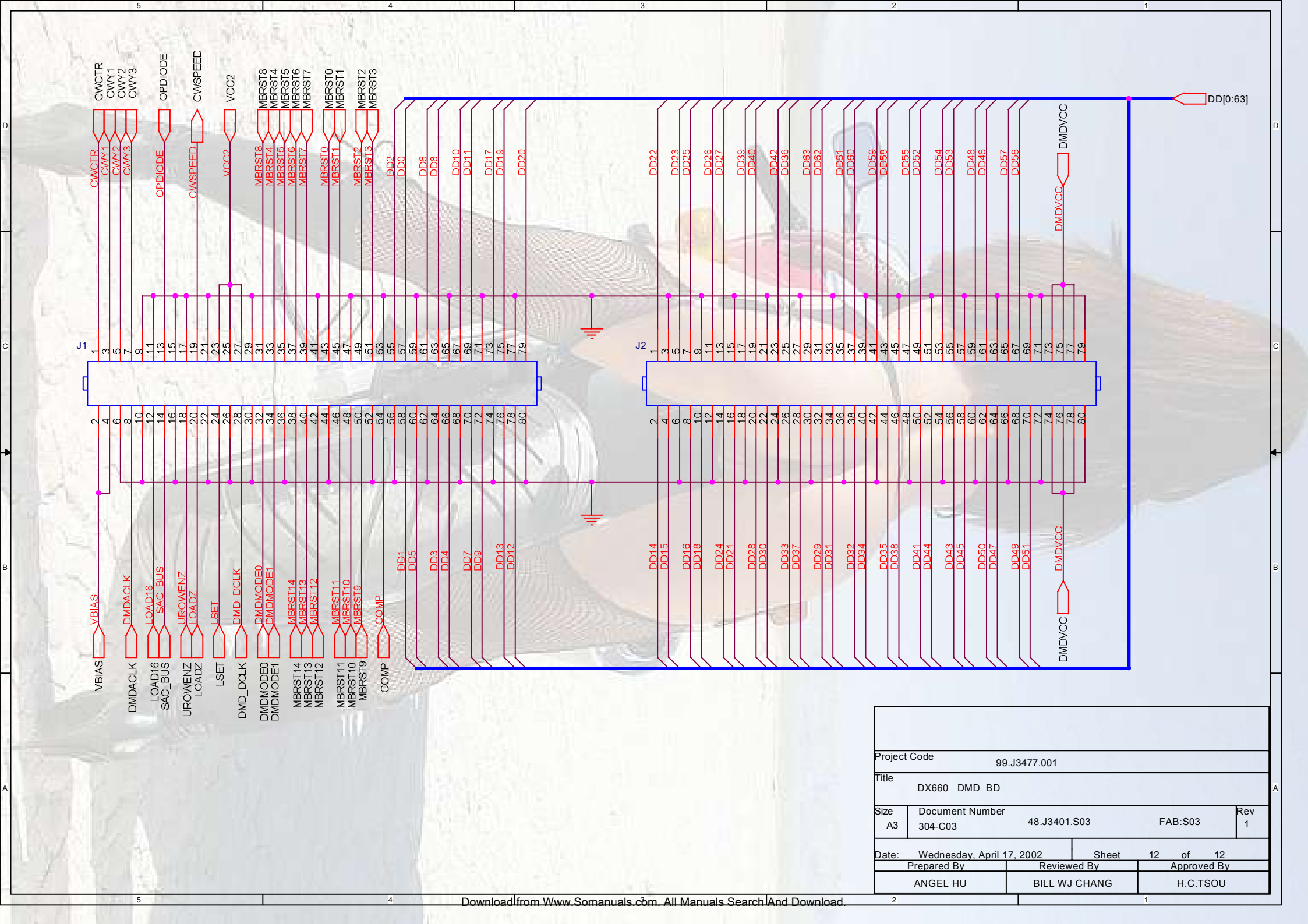
Project Code	99.J3477.001		
Title	DX660 DMD BD		
Size A3	Document Number 304-C03 48.J3401.S03 FAB:S03		Rev 1
Date: Wednesday, April 17, 2002	Sheet 9 of 12		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	



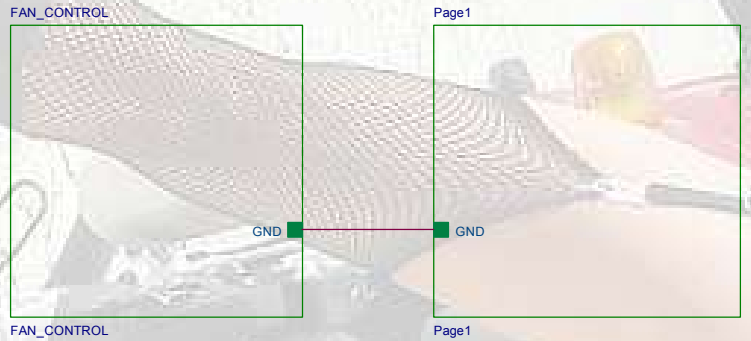
Project Code	99.J3477.001		
Title	DX660 DMD BD		
Size A3	Document Number 304-C03	48.J3401.S03	FAB.S03 Rev 1
Date: Wednesday, April 17, 2002	Sheet 10 of 12		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	



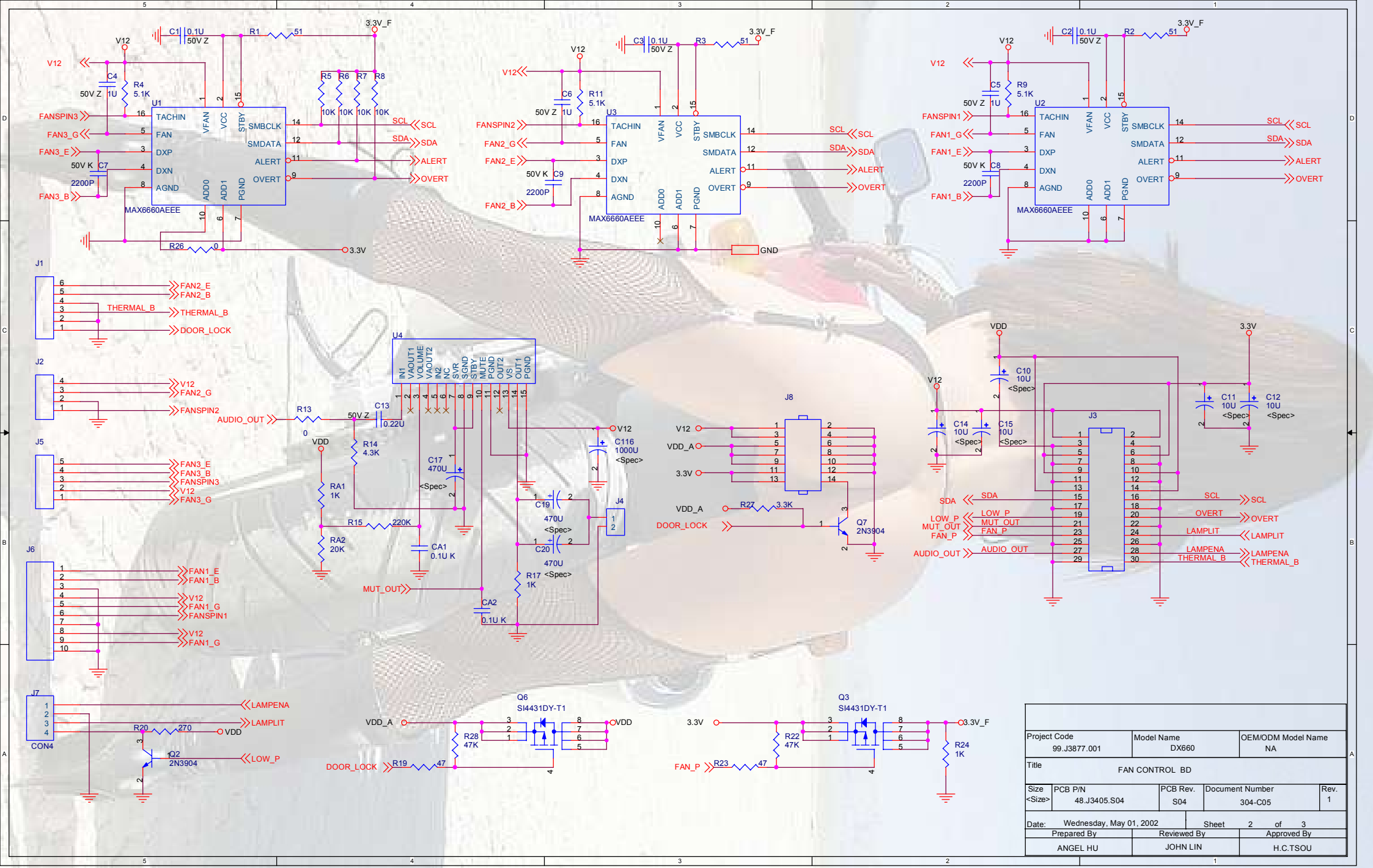
Project Code	99.J3477.001		
Title	DX660 DMD BD		
Size A3	Document Number 304-C03	48.J3401.S03	FAB:S03 Rev 1
Date: Wednesday, April 17, 2002	Sheet 11 of 12		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	



Project Code	99.J3477.001		
Title	DX660 DMD BD		
Size A3	Document Number 304-C03 48.J3401.S03 FAB:S03		Rev 1
Date: Wednesday, April 17, 2002		Sheet 12 of 12	
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	H.C.TSOU	



Project Code: 99.J3877.001	Model Name: DX660	OEM/ODM Model Name: NA
Title: FAN CONTROL BD		
Size: <Size>	PCB P/N: 48.J3405.S04	PCB Rev.: S04
Document Number: 304-C05		Rev.: 1
Date: Wednesday, May 01, 2002	Sheet 1 of 3	
Prepared By: ANGEL HU	Reviewed By: JOHN LIN	Approved By: H.C.TSOU



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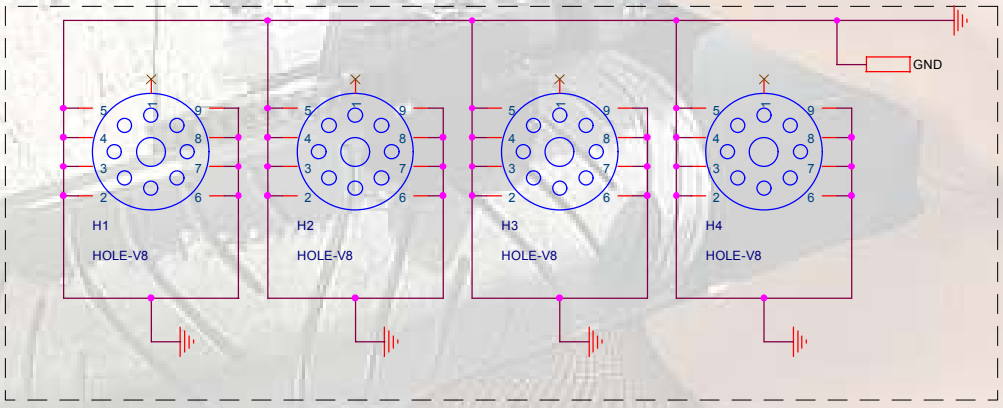
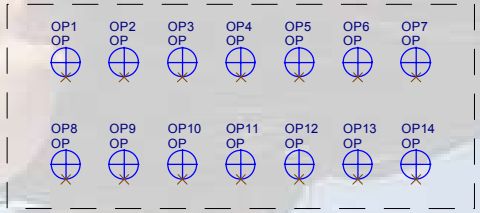
Size: <Size>	PCB P/N: 48.J3405.S04	PCB Rev.: S04
Document Number: 304-C05	Rev.: 1	
Date: Wednesday, May 01, 2002	Sheet 2 of 3	
Prepared By: ANGEL HU	Reviewed By: JOHN LIN	Approved By: H.C.TSOU

Screw Holes



Optical Points



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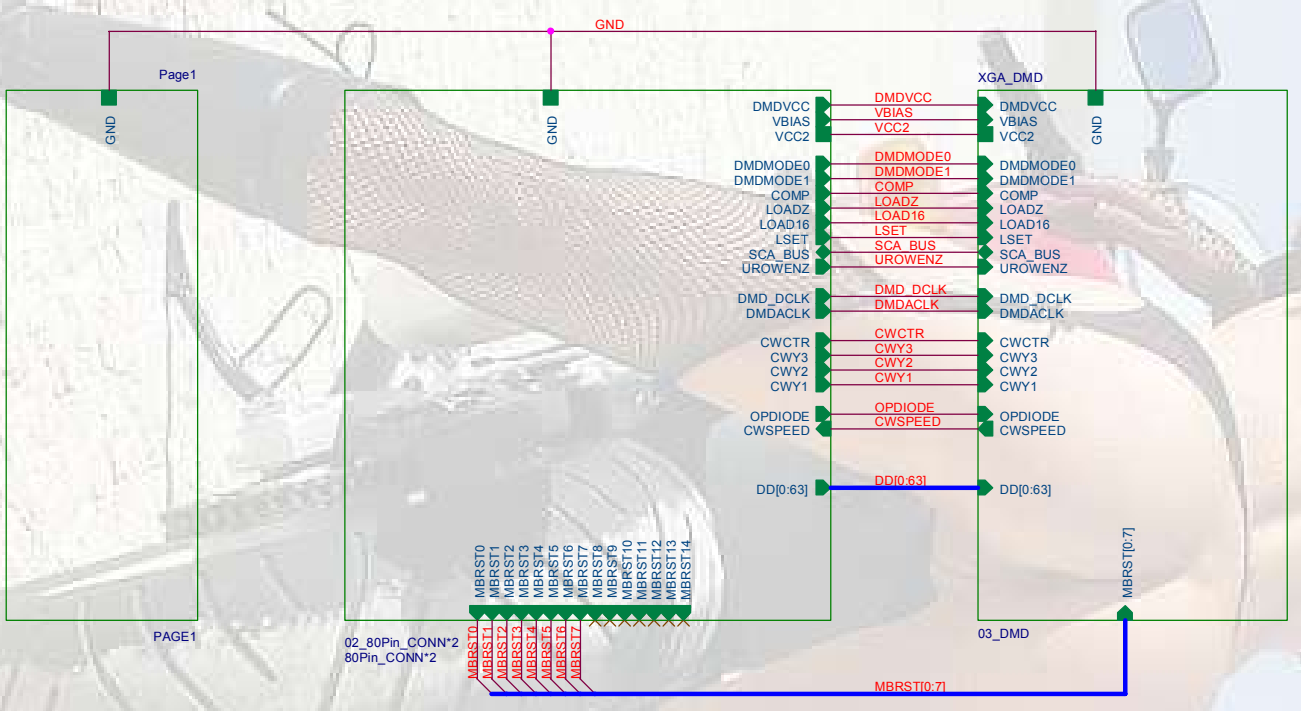
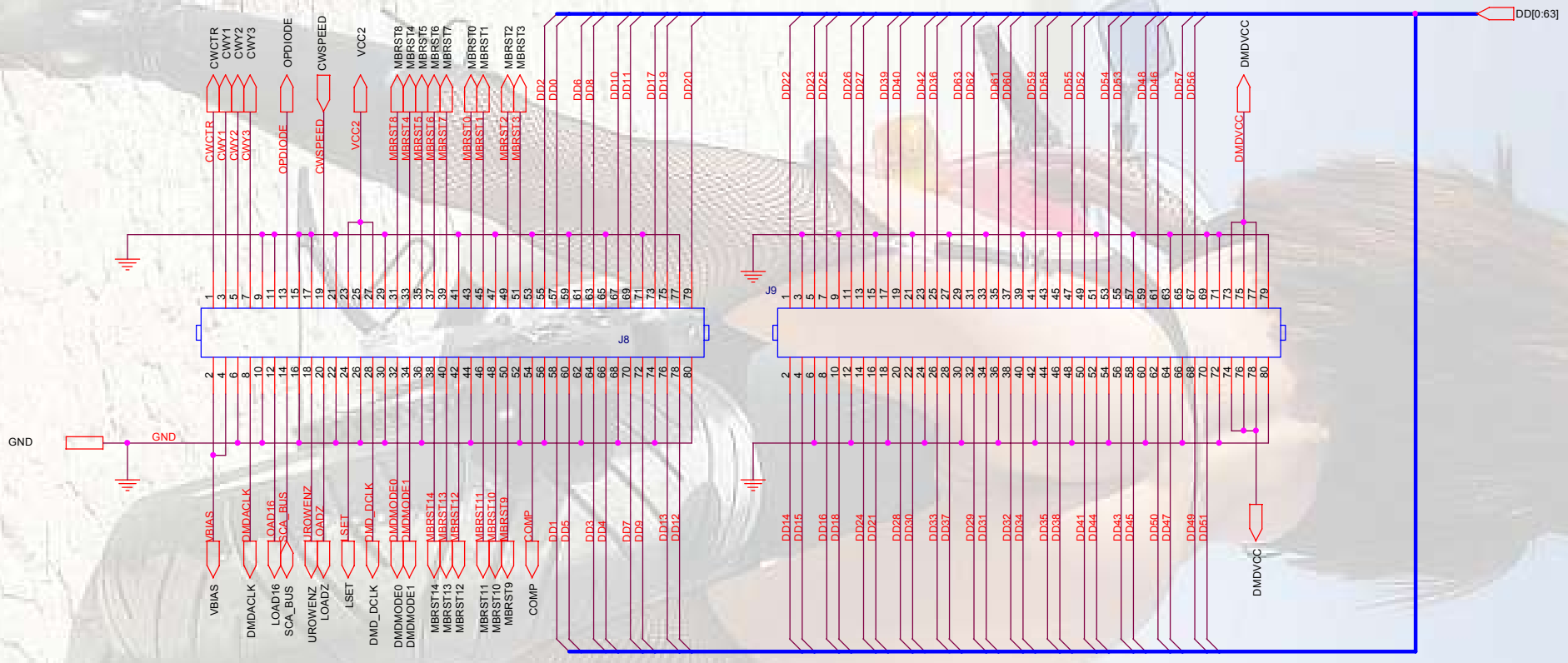
Title: FAN CONTROL BD		
Size: <Size> / PCB P/N: 48.J3405.S04	PCB Rev.: S04	Document Number: 304-C05 / Rev.: 1
Date: Wednesday, May 01, 2002	Sheet 3 of 3	
Prepared By: ANGEL HU	Reviewed By: JOHN LIN	Approved By: H.C.TSOU



Project Code	99.J3477.001		
Title	DX660 CHIP BD		
Size: A3	Document Number: 304-C06 48.J3404.S02	FAB:S02	Rev: 0
Date: Saturday, April 27, 2002	Sheet 1 of 4		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	T.S.WU	



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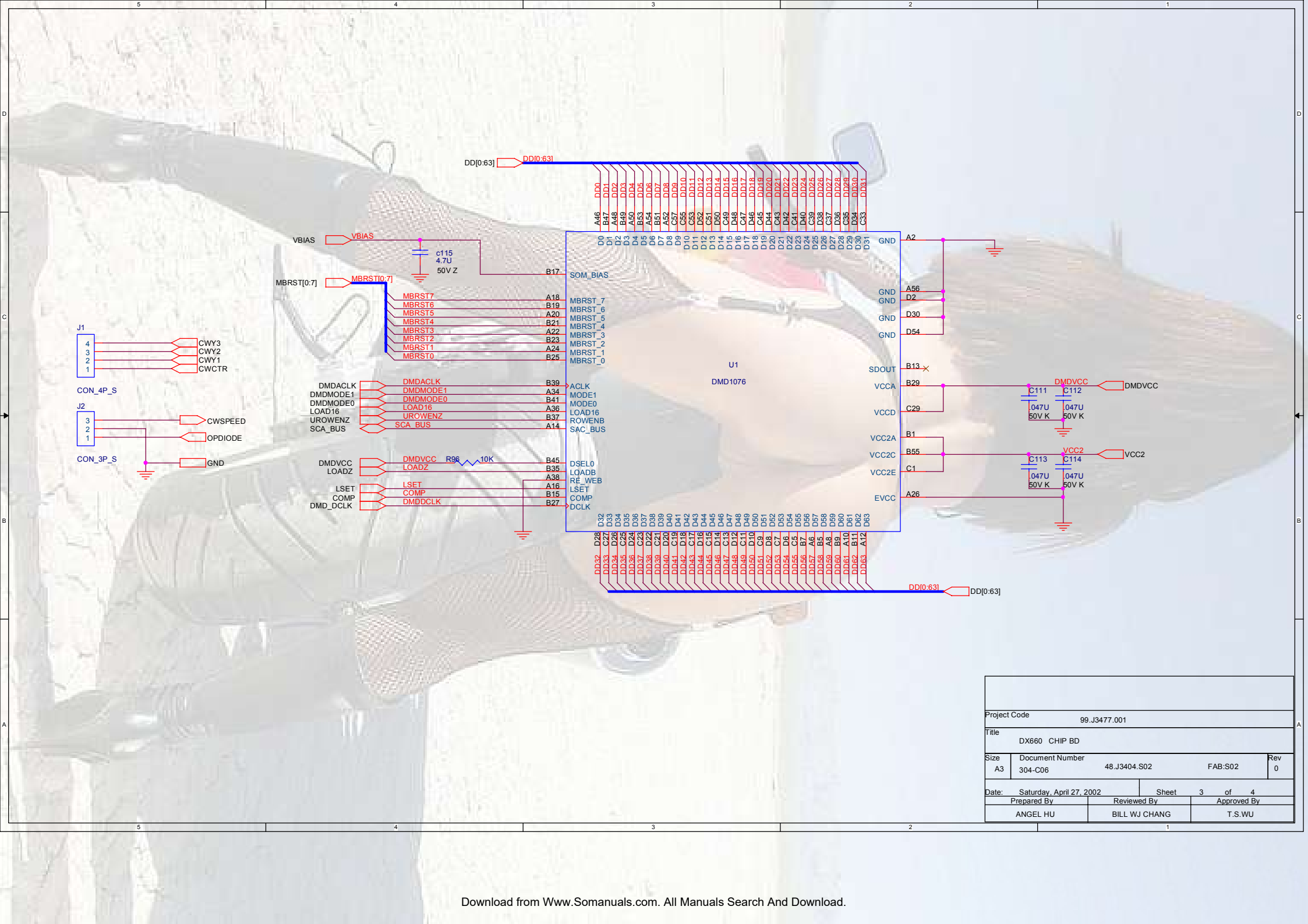
Title	DX660 CHIP BD		
Size A3	Document Number 304-C06 48.J3404.S02	FAB:S02	Rev 0
Date: Saturday, April 27, 2002	Sheet 2 of 4		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	T.S.WU	



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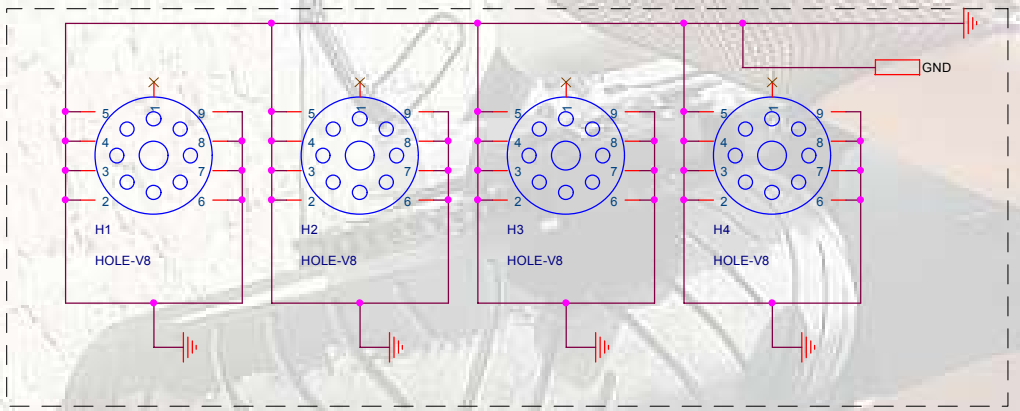
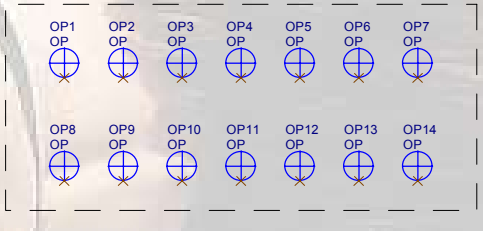
Title	DX660 CHIP BD		
Size A3	Document Number 304-C06 48.J3404.S02	FAB:S02	Rev 0
Date: Saturday, April 27, 2002	Sheet 3 of 4		
Prepared By	Reviewed By	Approved By	
ANGEL HU	BILL WJ CHANG	T.S.WU	

Screw Holes



Optical Points



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Title	DX660 CHIP BD		
Size: A3	Document Number: 304-C06 48.J3404.S02	FAB:S02	Rev: 0
Date: Saturday, April 27, 2002	Sheet 4 of 4		
Prepared By: ANGEL HU	Reviewed By: BILL WJ CHANG	Approved By: T.S.WU	