

Service
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221TE4LB/57
231TE4LB/57
221TE4LB/55
231TE4LB/44
231TE4LB/55
231TE4LB/45



Service Manual

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SAFETY NOTICE

ANY PERSON ATTEMPTING TO SERVICE THIS CHASSIS MUST FAMILIARIZE HIMSELF WITH THE CHASSIS AND BE AWARE OF THE NECESSARY SAFETY PRECAUTIONS TO BE USED WHEN SERVICING ELECTRONIC EQUIPMENT CONTAINING HIGH VOLTAGE

CAUTION: USE A SEPARATE ISOLATION TRANSFORMER FOR THIS UNIT WHEN SERVICING

REFER TO BACK COVER FOR IMPORTANT SAFETY GUIDELINES

Revision List

[illegible]

Important Safety Notice

Read and understand all instructions before you use your TV. If damage is caused by failure to follow instructions, the warranty does not apply.

Safety

- Risk of electric shock or fire!
 - Never expose the TV to rain or water. Never place liquid containers. Such as vases, near the TV. If liquids are split on or into the TV, disconnect the TV from the power outlet immediately. Contact Philips Consumer Care to have the TV checked before use.
 - Never place the TV, remote control or batteries near naked flames or other heat source, including direct sunlight. To prevent the spread of fire, keep candles or other flames away from the TV, remote control and batteries at all time.
- 
- Never insert objects into the ventilation slots or other openings on the TV.
 - When the TV is swiveled ensure that no strain is exerted on the power cord. Strain on the power cord can loosen connections and cause arcing.
- Risk of short circuit or fire!
 - Never expose the remote control or batteries to rain, water or excessive heat.
 - Avoid force coming onto power plugs. Loose power plugs can cause arcing or fire.
- Risk of injury or damage to the TV!
 - Two people are required to lift and carry a TV that weights more than 25 kg.
 - When stand mounting the TV, use only the supplied stand. Secure the stand to the TV tightly. Place the TV on a flat, level surface that can support the combined weight of the TV and stand.
 - When wall mounting the TV, use only a wall mount that can support the weight of the TV. Secure the wall mount to a wall can support the combined weight of the TV and wall mount. Koninklijke Philips Electronics N.V. bears on responsibility for improper wall mounting that result in accident, injury or damage.
- Risk of injury to children! Follow these precautions to prevent the TV from toppling over and causing injury to children:
 - Never place the TV on a surface covered by a cloth or other material that can be pulled away.
 - Ensure that no part of the TV hangs over the edge of the surface.
 - Never place the TV on tall furniture (such as a bookcase) without anchoring both the furniture and TV to the wall or a suitable support
 - Educate children about the dangers of climbing on furniture to reach the TV.
- Risk of overheating! Never install the TV in a confined space. Always leave a space of at least 4 inches around the TV for ventilation. Ensure curtains or other objects never cover the ventilation slots on the TV.
- Risk of damage to the TV! Before you connect the TV to the power outlet, ensure that the power voltage matches the value printed on the back of the TV. Never connect the TV to the power outlet if the voltage is different.
- Risk of injury, fire or power cord damage! Never place the TV or any objects on the power cord.
- To easily disconnect the TV power cord from the power outlet, ensure that you have full access to the power cord at all times.

- When you disconnect the power cord, always pull the plug, never the cable.
- Disconnect the TV from the power outlet and aerial before lightning storms. During lightning storms, never touch any part of the TV, power cord or aerial cable.
- Risk of hearing damage! Avoid using earphones or headphones at high volumes or for prolonged periods of time.
- If the TV is transported in temperatures below 5°C, unpack the TV and wait until the TV temperature matches room temperature before connecting the TV to the power outlet.

Screen Care

- Avoid stationary images as much as possible. Stationary images are images that remain on-screen for extended periods of time. Examples include: on-screen menus, black bars and time displays. If you must use stationary images, reduce screen contrast and brightness to avoid screen damage.
- Unplug the TV before cleaning.
- Clean the TV and frame with a soft, damp cloth. Never use substances such as alcohol, chemicals or household cleaners on the TV.
- Risk of damage to the TV screen! Never touch, push, rub or strike the screen with any object.
- To avoid deformations and color fading, wipe off water drops as soon as possible.

Recycling



Your product is designed and manufactured with high quality materials and components, which can be recycled and reused. When you see the crossed-out wheeled bin symbol attached to a product, it means the product is covered by the European Directive 2002/96/EC:



Never dispose of your product with other household waste. Please inform yourself about the local rules on the separate collection of electrical and electronic products. The correct disposal of your old product helps prevent potentially negative consequences for the environment and human health.

Your product contains batteries covered by the European Directive 2006/66/EC, which cannot be disposed of with normal household waste.

Please inform yourself about the local rules on the separate collection of batteries. The correct disposal of batteries helps prevent potentially negative consequences for the environment and human health.

The most updated user manual on line

The contents of the user manual are subject to change. Please refer to www.philips.com/support for the most updated user manual info reference.

1. General Specifications

Model		221TE4L/223TE4L
Picture / Display	Aspect Ratio	16:9
	Resolution	1920 x 1080 @ 60Hz
Panel Typical	Pixel Pitch	221TE4L: 0.24825(H) x 0.24825(W)mm 231TE4L: 0.265(H) x 0.265(W) mm
	Brightness:	250cd/m ²
	Contrast	1000:1
Rear Connectors		AV INPUT
		COMPONENT INPUT (Y Pb Pr and AUDIO L/R)
		PC IN (VGA and AUDIO IN)
		HDMI
		SPDIF OUT
		TV ANTENNA
Side Connectors		HDMI
		USB
		HEADPHONE
Power Consumption		221TE4L < 55W 223TE4L < 60W
Standby		<1W
AC-input		100 V ~ 240 V, 50/60±3Hz
Temperature	Operating	0°C ~ 40 °C
	Storage	-10°C ~ 50°C
Tuner	NuTune FK1604	NTSC Front-end (Vertical Mount)
	Television System	PAL-M/PAL-N / ISDB-T, Sound System: M
	Channel Coverage	VHF: 2 through 13; UHF: 14 through 69, Cable TV
	Frequency range	55.25MHz to 859.25MHz
	IF Frequency	Analog Picture: 45.75MHz Analog Sound: 41.25MHz
	Impedance	75 ohm terminated

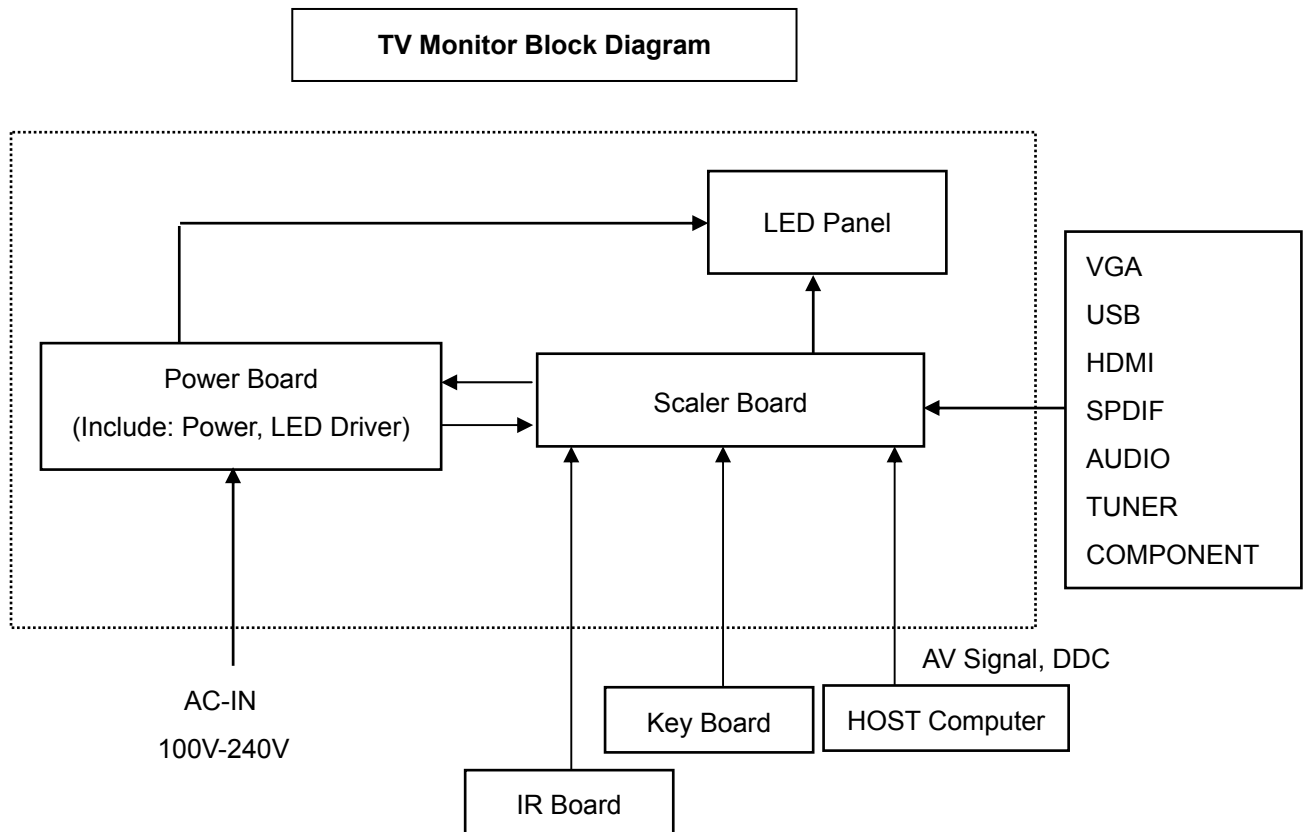
Note: Product information is subject to change without notice. For detailed product information, go to

www.philips.com/support

2. TV Monitor Description

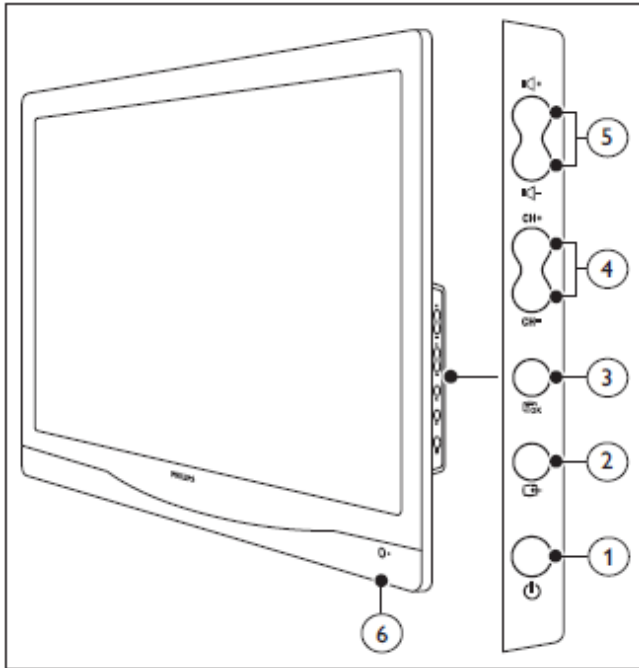
The TV monitor will contain a scaler board, a power board, an IR board and a key board. The scaler board houses the flat panel control logic, brightness control logic and DDC.

The power board will provide AC to DC Inverter voltage to drive the backlight of panel and the scaler board chips each voltage.



3. Operating Instructions

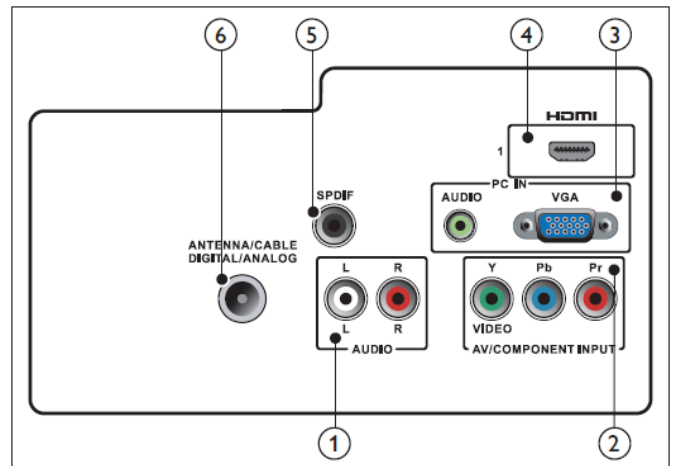
3.1 Front and side controls



1. **POWER:** Switch the monitor on or off. The monitor is not powered off completely unless it is physically unplugged.
2. **SOURCE:** Select an input source. Return to the previous screen or exit from the on-screen menu.
3. **MENU/OK:** Display the on-screen menu. Confirm a selection.
4. **CH +/-:** Switch to the next or previous channel.
5. **VOL +/-:** Increase or decrease volume.
6. **Power Indicator:** Red LED: RC standby mode. / PC standby mode.

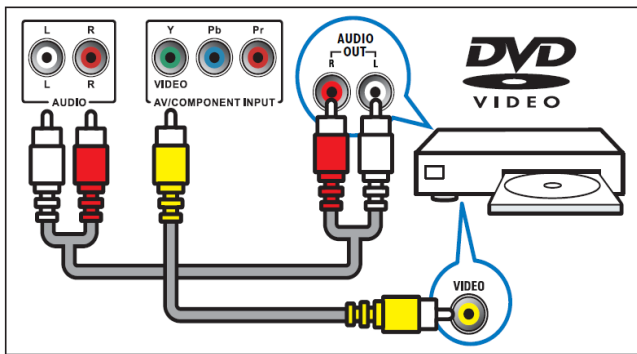
3.2 Connection Overview

Back Connector



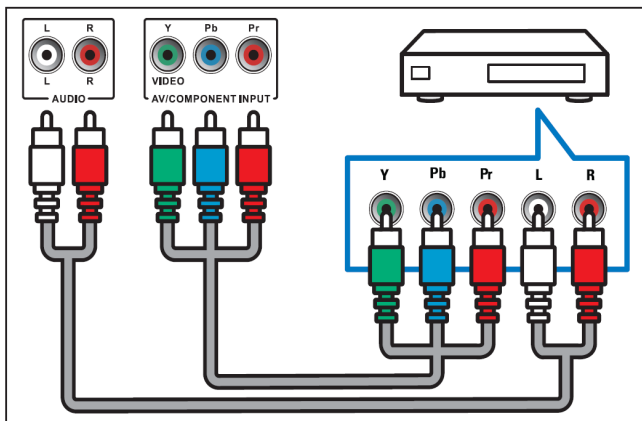
1. AV INPUT

Audio and video input from an AV device



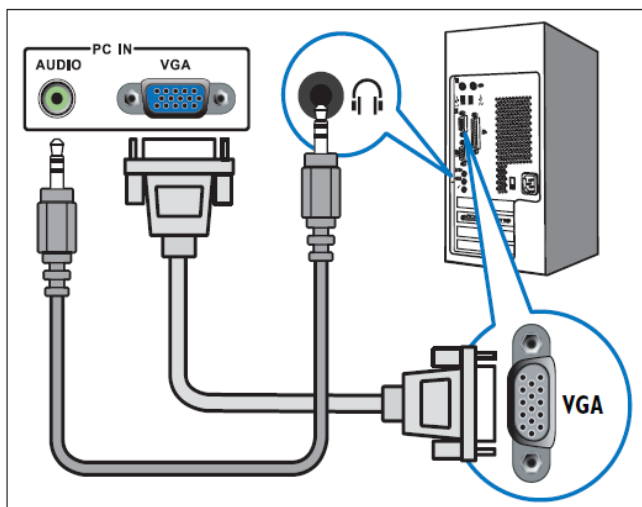
2. COMPONENT INPUT (Y Pb Pr and AUDIO L/R)

Analogue audio and video input from analogue or digital devices such as DVD players or game consoles.



3. PC IN (VGA and AUDIO IN)

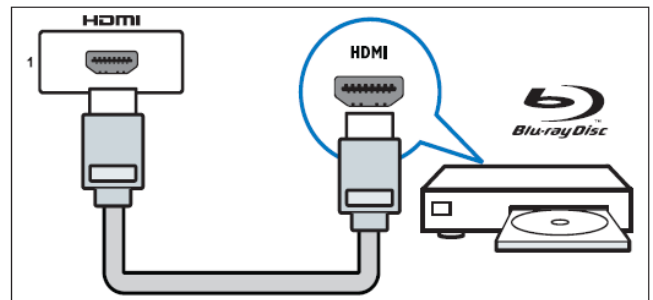
Audio and video input from a computer



The connection via VGA requires an additional audio cable.

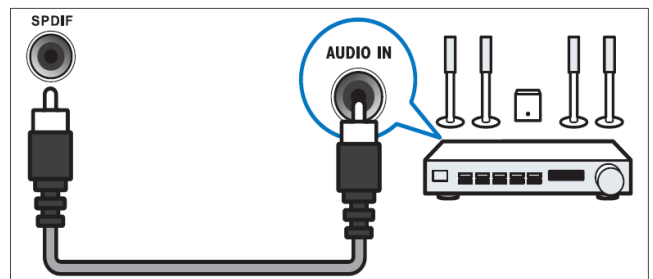
4. HDMI

Digital audio and video input from high-definition digital devices such as Blu-ray players



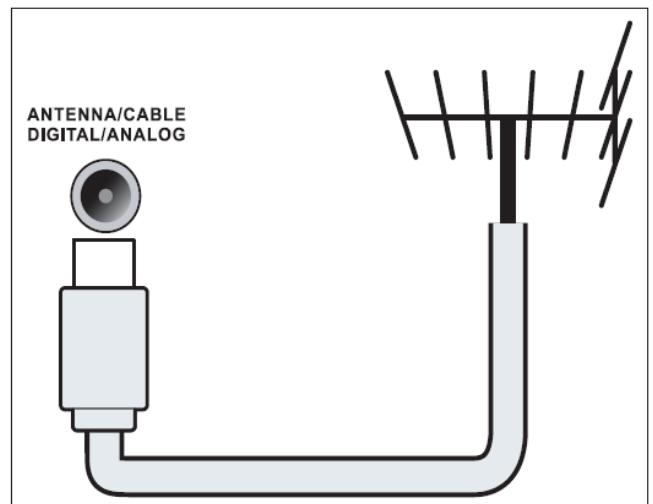
5. SPDIF OUT

Digital audio output to home theaters and other digital audio systems.

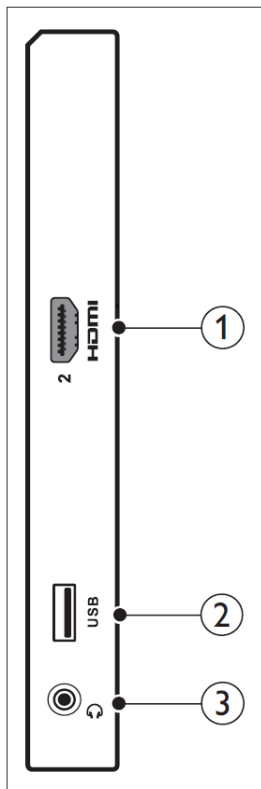


6. TV ANTENNA

Signal input from an antenna, cable or satellite

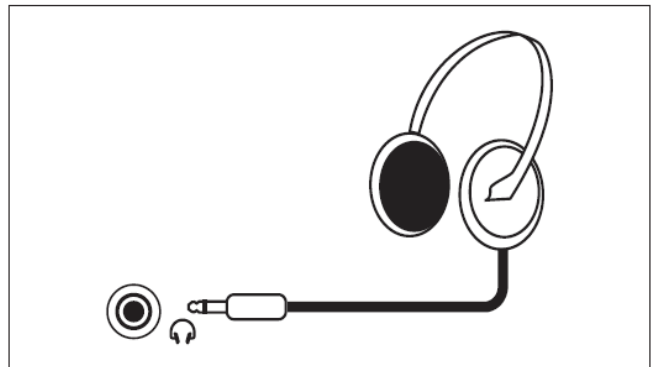


Side connector



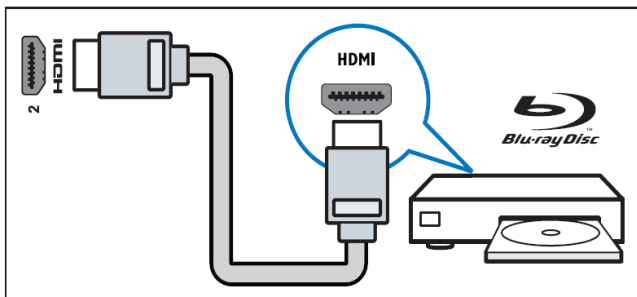
3. HEADPHONE

Audio output to your headphones.



1. HDMI

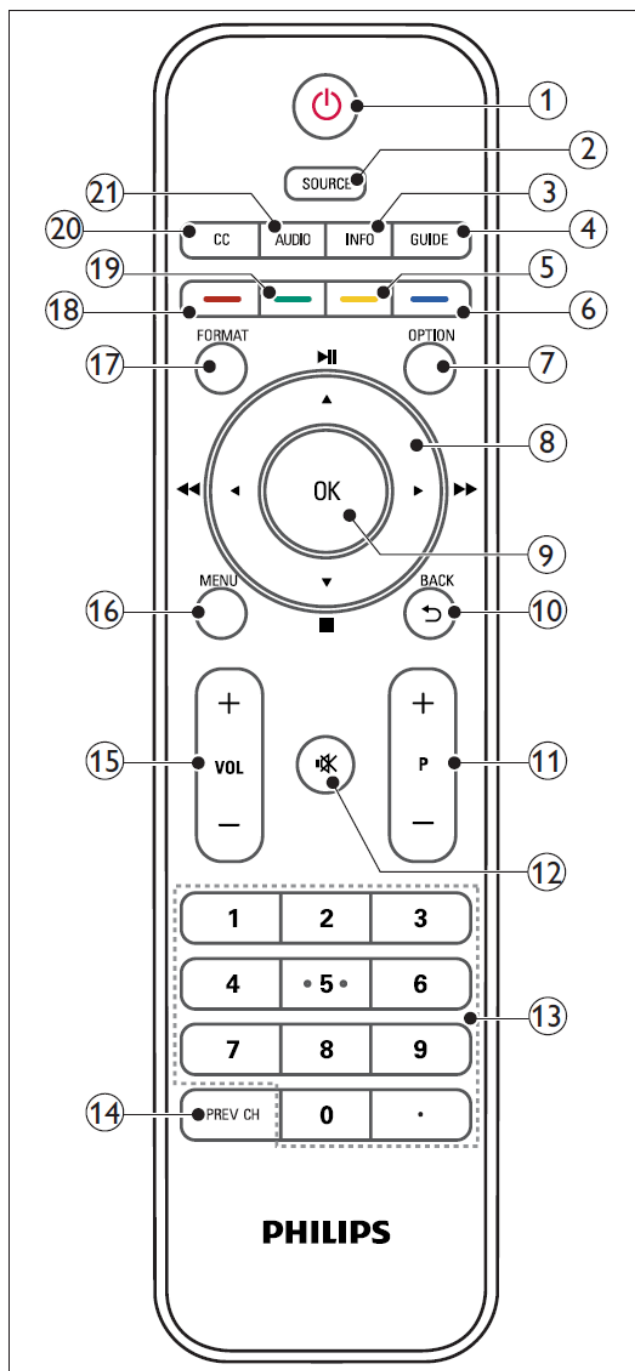
Digital audio and video input from high-definition digital devices such as Blu-ray players.



2. USB

For music and photo

3.3 Remote Control



1. (Standby-On)

- Switch the monitor to standby if the monitor is on.
- Switch the monitor on if the monitor is in standby.

2. SOURCE

Select connected devices.

3. INFO

Display or hide the information screen about the selected channel.

4. GUIDE

Switch the Electronic Program Guide On or Off.

5. (Yellow button)

Set the block channels in channel menu.

6. (Blue button)

Delete the channel in channel menu.

7. OPTION

Press to display a list of options.

8. (Navigation buttons)

(No functions)

Navigate through the menus.

9. OK

Confirm an entry or selection.

10. BACK/

- Return to the previous screen.
- Return to the last viewed channel.

11. P +/-

Switch to the next or previous channel.

12. (Mute)

Switch the sound On or Off.

13. 0-9 (Numeric buttons)

Select a channel or setting.

14. PREV CH

- Return to the previous screen.
- Return to the last viewed channel.

15. VOL +/-

Increase or decrease the volume.

16. MENU

Press to open or close the on-screen menu.

17. FORMAT

Switch to different aspect ratio.

18. (Red button)

- Set the favorite channel.
- Set the default setting for some options.

19. (Green button)

Set the skip channels in channel menu.

20. CC

Switch the closed caption mode.

21. AUDIO

Switch stereo mode.

4. Input/ Output Specification

4.1 Input Signal Connector

Analog Connector

Pin No.	Description	Pin No.	Description	Pin No.	Description
1	Red Video	6	Red Ground	11	RXD
2	Green Video	7	Green Ground	12	Serial Data for DDC
3	Blue Video	8	Blue Ground	13	H-Sync.
4	TXD	9	No Pin!	14	V-Sync.
5	Ground	10	Sync Ground	15	Serial Clock for DDC

HDMI Connector

Pin No.	Description	Pin No.	Description	Pin No.	Description
1	TMDS Data2+	8	TMDS Data0 shield	15	SCL
2	TMDS Data2 shield	9	TMDS Data0-	16	SDA
3	TDMS Data2-	10	TMDS Clock+	17	DDC/CEC Ground
4	TMDS Data1+	11	TMDS Clock Shield	18	+5V Power
5	TMDS Data1 shield	12	TMDS Clock-	19	Hot Plug Detect
6	TMDS Data1-	13	CEC		
7	TMDS Data0+	14	NC		

USB

Pin No.	Description	Pin No.	Description
1	VCC	3	DATA+
2	DATA-	4	GND

4.2 Factory Preset Modes

Computer Formats

Resolution	Refresh Rate
640x 480	60Hz
640 x 480	72Hz
640 x 480	75Hz
720 x 400	70Hz
800 x 600	56Hz
800 x 600	60Hz
800 x 600	72Hz
800 x 600	75Hz
1024 x 768	60Hz
1024 x 768	70Hz
1024 x 768	75Hz
1280 x 1024	60Hz
1440 x 900	60Hz
1680 x 1050	60Hz
1920 x 1080	60Hz

Video Formats:

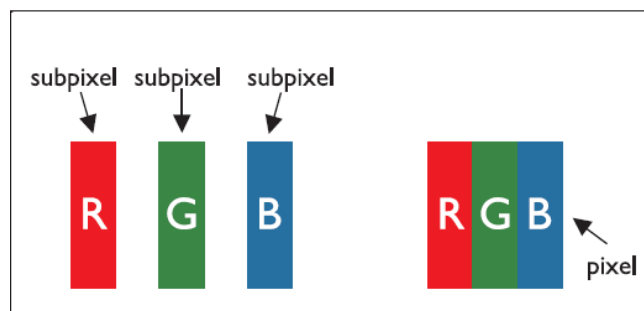
Resolution	Refresh Rate
480i	60Hz
480p	60Hz
576p	50Hz
720p	50Hz, 60Hz
1080i	50Hz, 60Hz
1080p	24Hz, 50Hz, 60Hz

4.3 Pixel Defect Policy

Philips strives to deliver the highest quality products.

We use some of the industry's most advanced manufacturing processes and practice stringent quality control. However, pixel or sub pixel defects on a flat monitor panel are sometimes unavoidable. No manufacturer can guarantee that all panels will be free from pixel defects, but Philips guarantees that any monitor with an unacceptable number of defects will be repaired or replaced under warranty. This notice explains the different types of pixel defects and defines

acceptable defect levels for each type. In order to qualify for repair or replacement under warranty, the number of pixel defects on a monitor panel must exceed these acceptable levels. For example, no more than 0.0004% of the sub pixels on a monitor may be defective. Furthermore, Philips sets even higher quality standards for certain types or combinations of pixel defects that are more noticeable than others. This policy is valid worldwide.



Pixels and Sub pixels

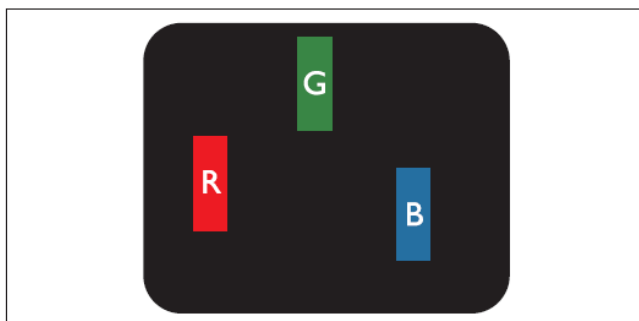
A pixel, or picture element, is composed of three sub pixels in the primary colors of red, green and blue. Many pixels together form an image. When all sub pixels of a pixel are lit, the three colored sub pixels together appear as a single white pixel. When all are dark, the three colored sub pixels together appear as a single black pixel. Other combinations of lit and dark sub pixels appear as single pixels of other colors.

Types of Pixel Defects

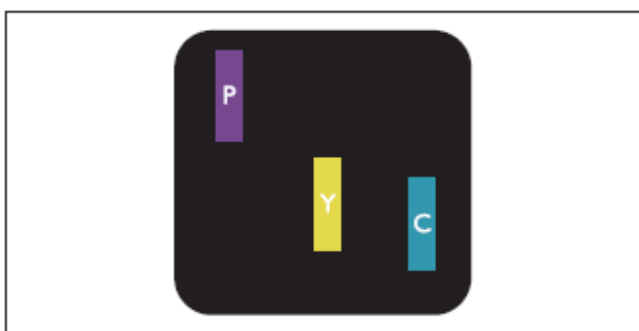
Pixel and sub pixel defects appear on the screen in different ways. There are two categories of pixel defects and several types of sub pixel defects within each category.

Bright Dot Defects: Bright dot defects appear as pixels or sub pixels that are always lit or 'on'. That is, a bright dot is a sub-pixel that stands out on the screen when the monitor displays a dark pattern.

These are some types of bright dot defects:



One lit red, green or blue sub pixel



Two adjacent lit sub pixels:

- Red + Blue = Purple
- Red + Green = Yellow
- Green + blue = Cyan (Light Blue)

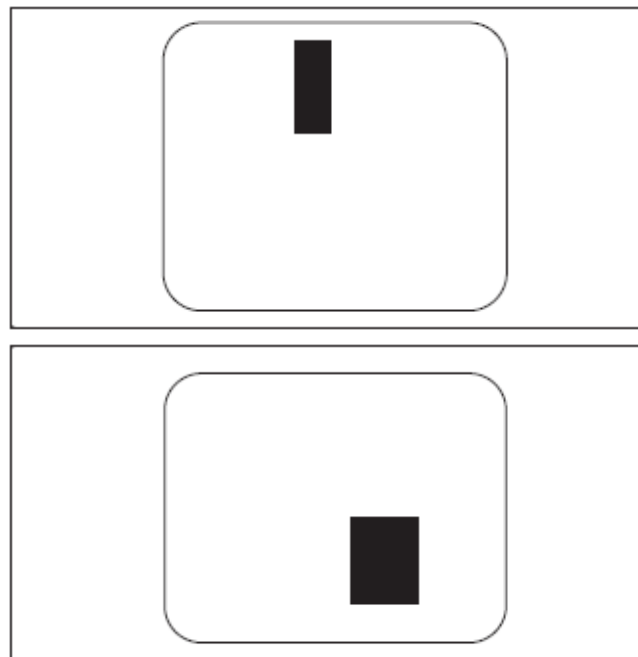


Three adjacent lit sub pixels (one white pixel)

Note:

A red or blue bright dot must be more than 50 percent brighter than neighboring dots while a green bright dot is 30 percent brighter than neighboring dots.

Black Dot Defects: Black dot defects appear as pixels or sub pixels that are always dark or 'off'. That is, a dark dot is a sub-pixel that stands out on the screen when the monitor displays a light pattern. There are some types of black dot defects:



Proximity of Pixel Defects

Because pixel and sub pixels defects of the same type that are near to one another may be more noticeable, Philips also specifies tolerances for the proximity of pixel defects.

Pixel Defect Tolerances

In order to qualify for repair or replacement due to pixel defects during the warranty period, a Philips flat monitor panel must have pixel or sub pixel defects exceeding the tolerances listed in the following tables.

BRIGHT DOT DEFECTS	ACCEPTABLE LEVEL
MODEL	221TE4L / 231TE4L
1 lit subpixel	3
2 adjacent lit subpixels	1
3 adjacent lit subpixels (one white pixel)	0
Distance between two bright dot defects*	>15mm
Total bright dot defects of all types	3

BLACK DOT DEFECTS	ACCEPTABLE LEVEL
MODEL	221TE4L / 231TE4L
1 dark subpixel	5 or fewer
2 adjacent dark subpixels	2 or fewer
3 adjacent dark subpixels	0
Distance between two black dot defects*	>15mm
Total black dot defects of all types	5 or fewer

TOTAL DOT DEFECTS	ACCEPTABLE LEVEL
MODEL	221TE4L / 231TE4L
Total bright or black dot defects of all types	5 or fewer

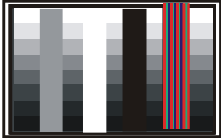
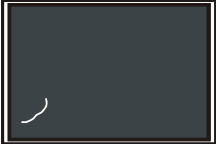
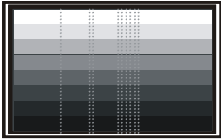
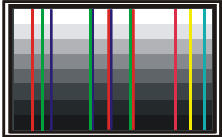
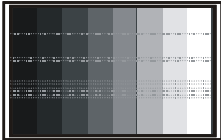
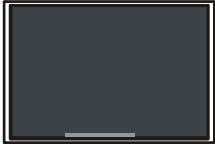
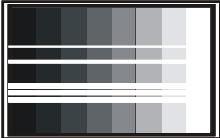
**Note:**

1 or 2 adjacent sub pixel defects = 1 dot defect

4.4 Failure Mode Of Panel

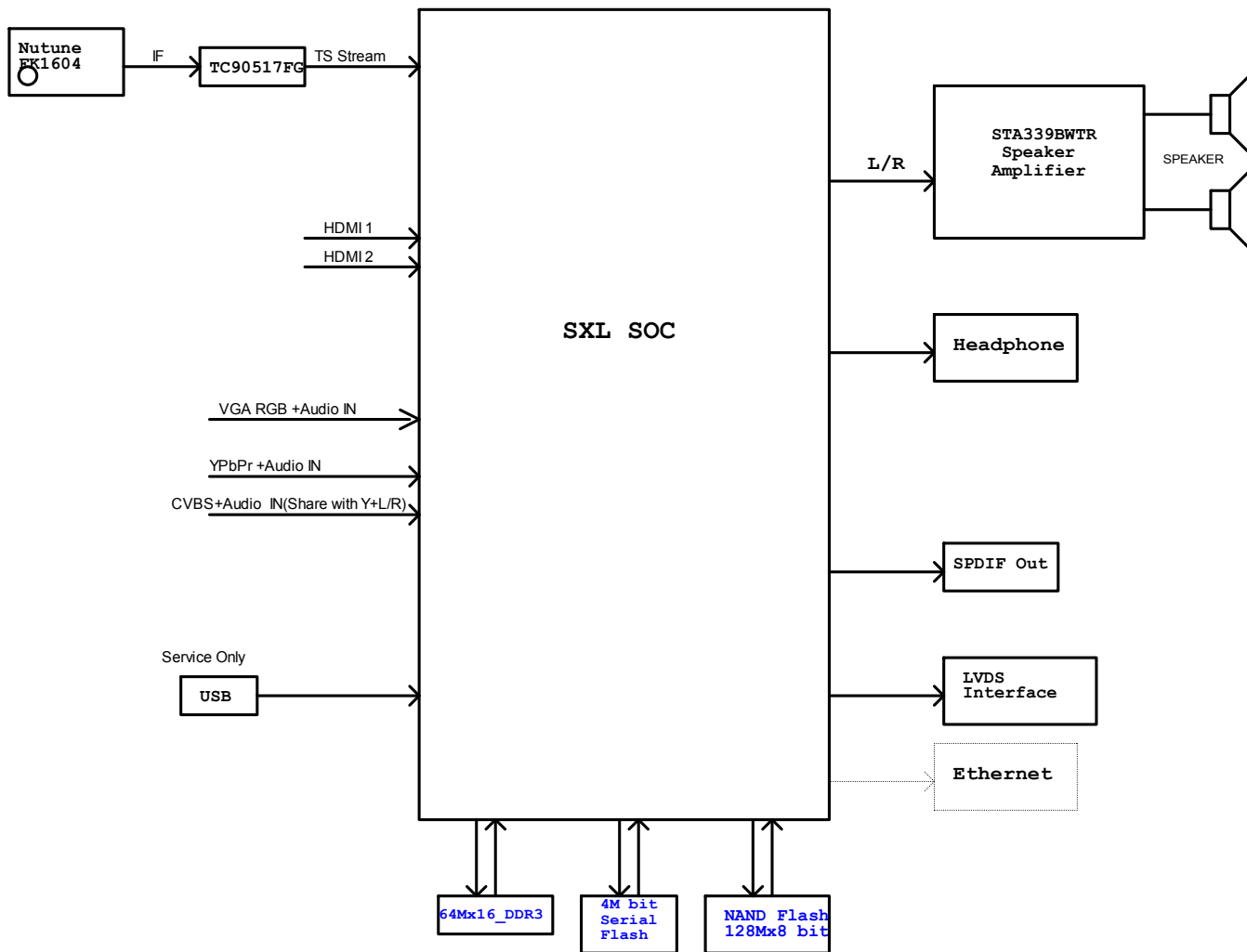
Quick reference for failure mode of LCD panel

this page presents problems that could be made by LCD panel.
It is not necessary to repair circuit board. Simply follow the mechanical instruction on this manual to eliminate failure by replace LCD panel.

Failure description	Phenomenon		
		Polarizer has bubbles	
Vertical block defect		Polarizer has bubbles	
Vertical dim lines			
Vertical lines defect (Always bright or dark)		Foreign material inside polarizer. It shows liner or dot shape.	
Horizontal block defect		Concentric circle formed	
Horizontal dim lines		Bottom back light of LCD is brighter than normal	
Horizontal lines defect (Always bright or dark)		Back light un-uniformity	
Has bright or dark pixel		Backlight has foreign material. Black or white color, liner or circular type	

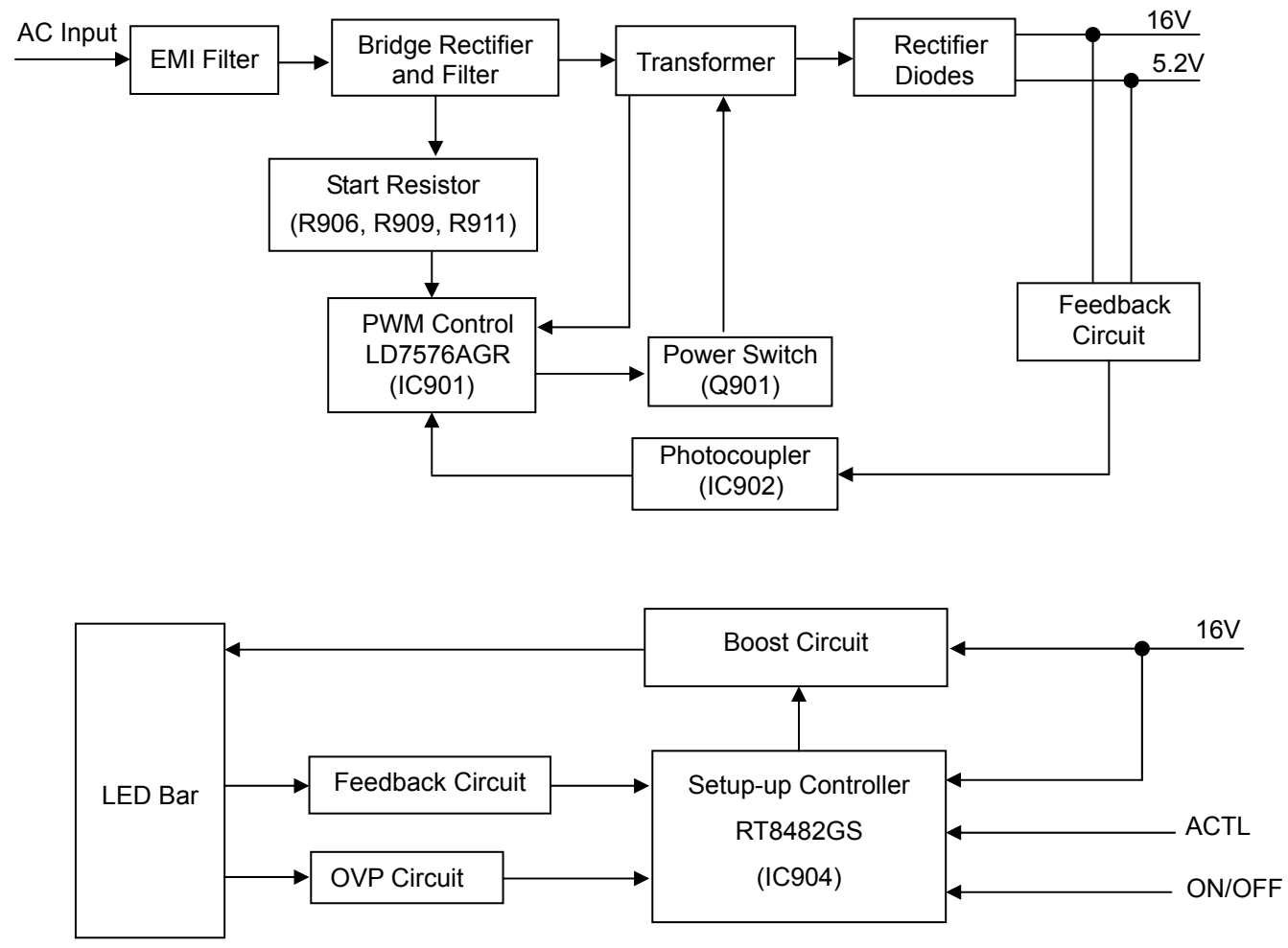
5. Block Diagram

5.1 Scaler Board

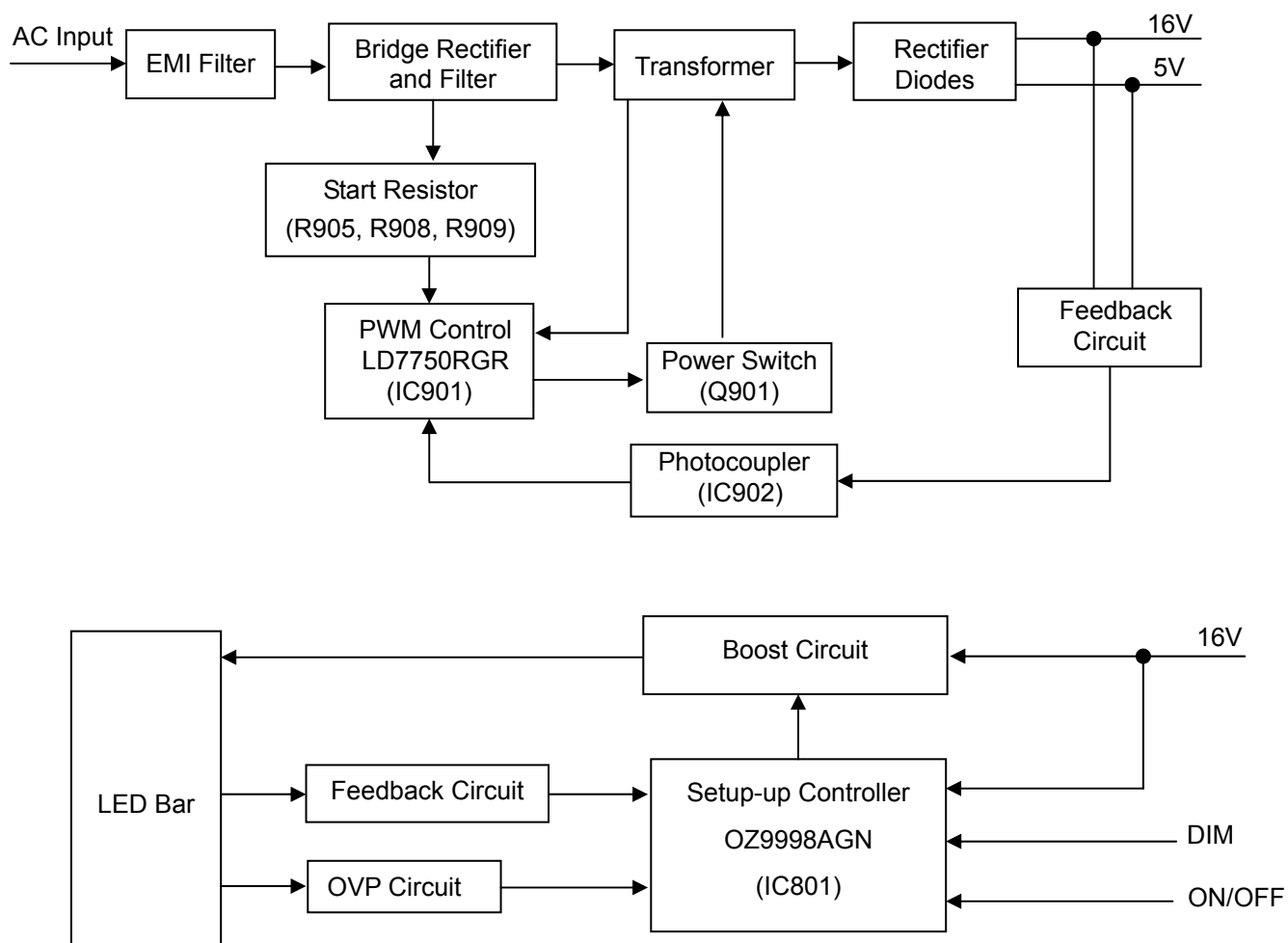


5.2 Power Board

221TE4L



231TE4L

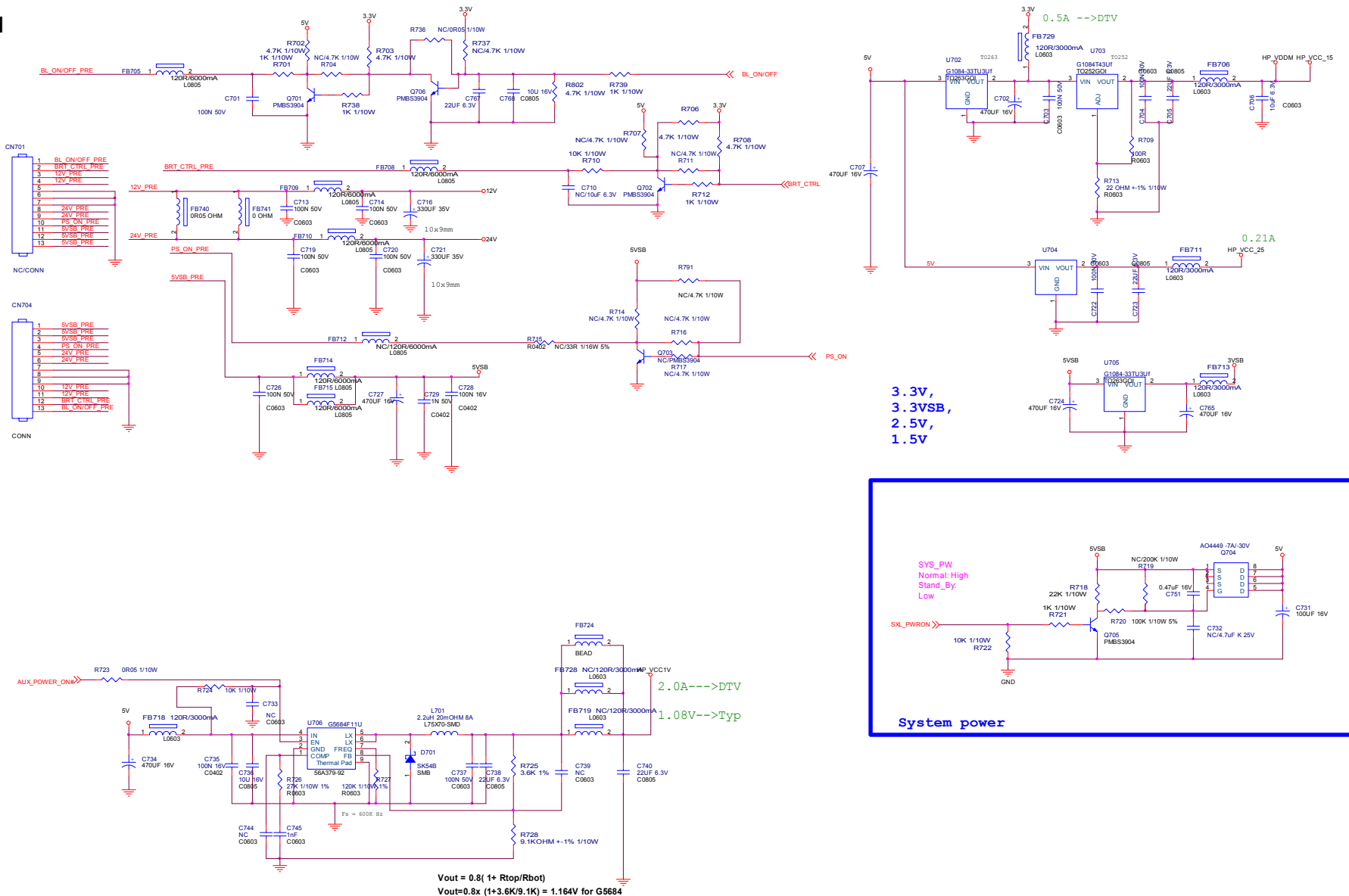


6. Schematic

6.1 Scaler Board (715G4786M01000005K, 715G5440M01000005K)

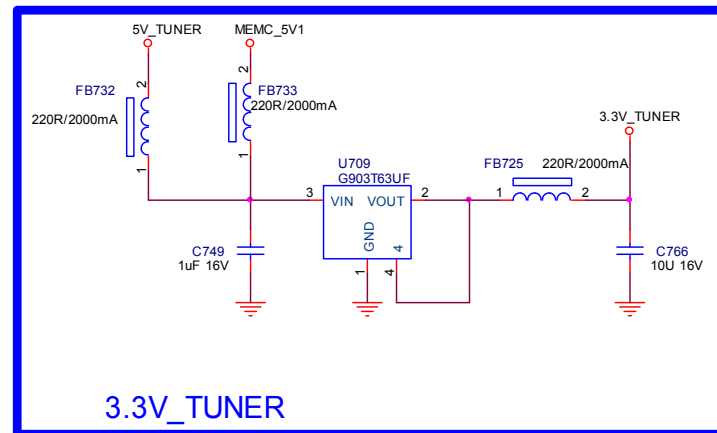
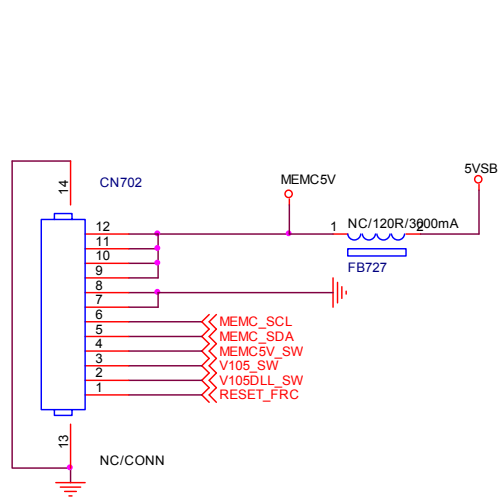
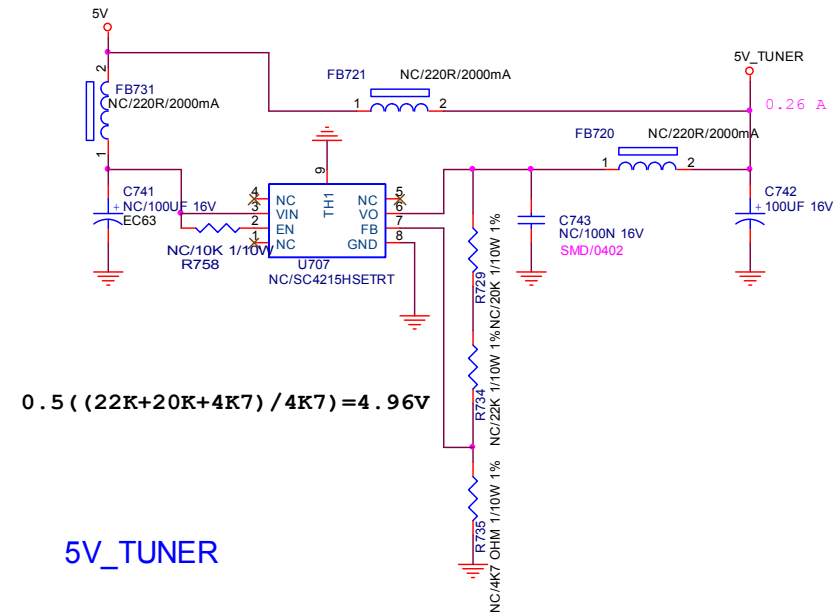
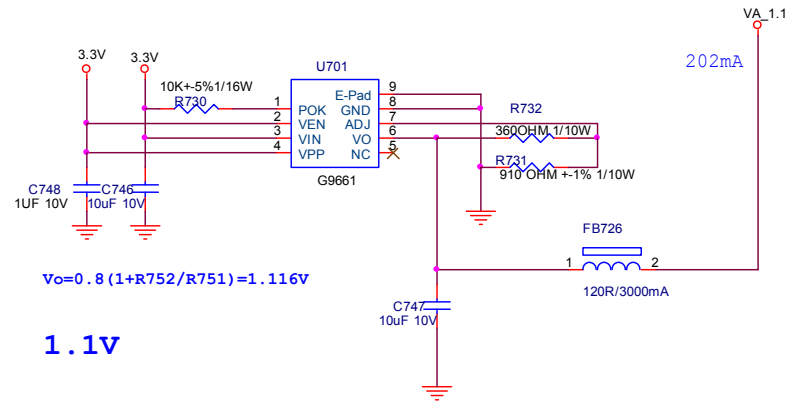
Remark: Parts position can be searched by using FIND function in PDF.

Power 1



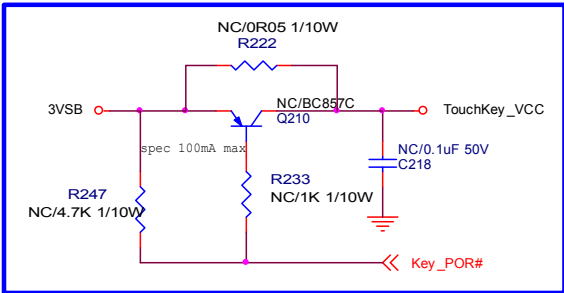
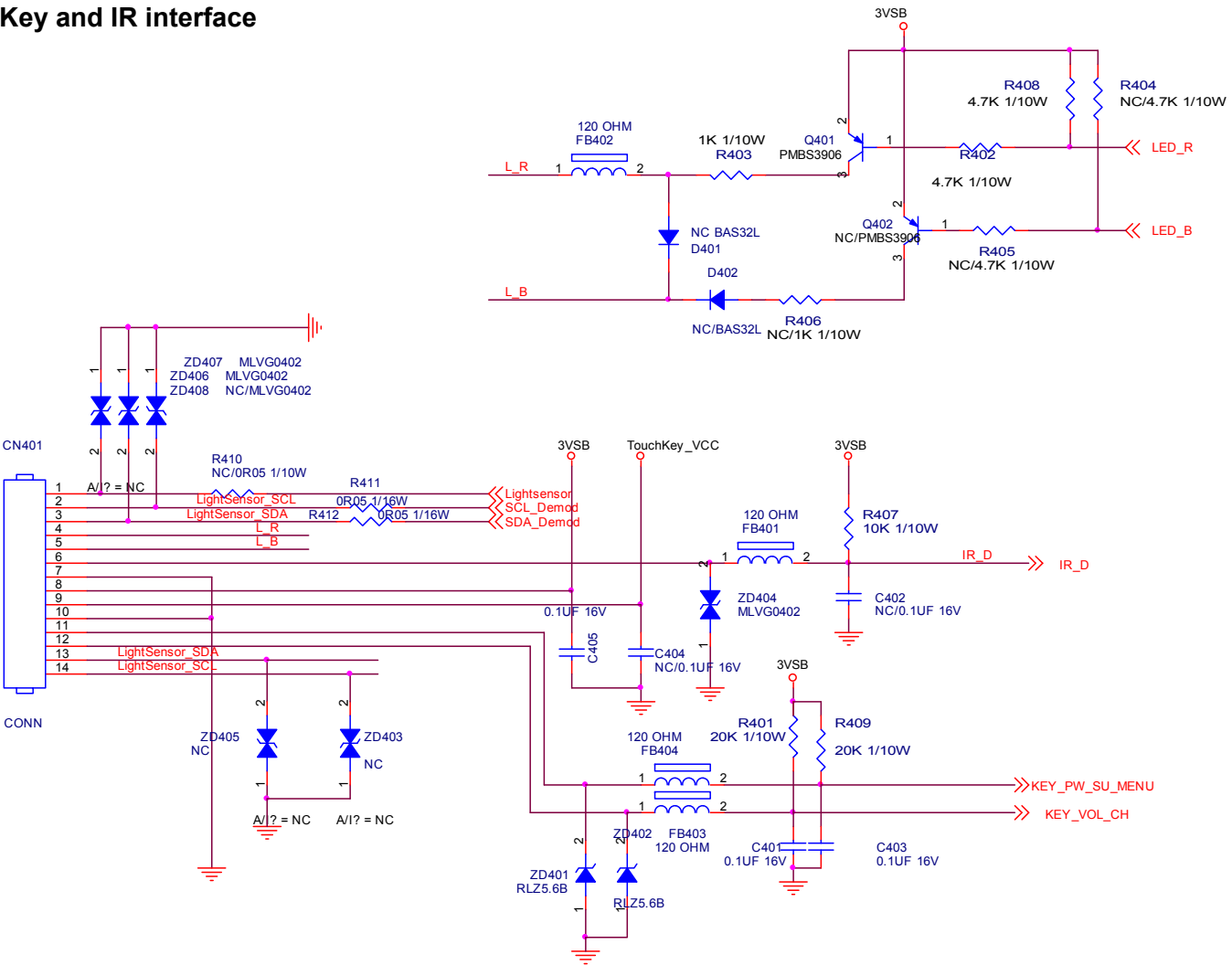
Remark: Parts position can be searched by using FIND function in PDF.

Power 2



Remark: Parts position can be searched by using FIND function in PDF.

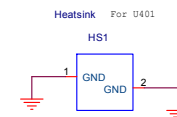
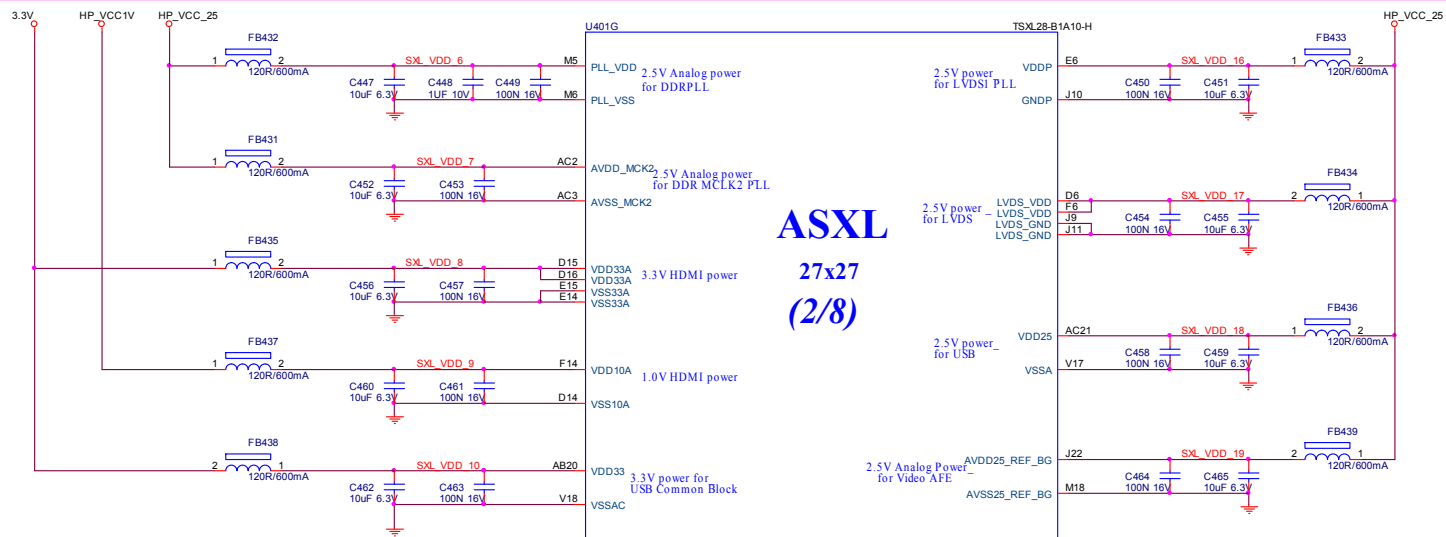
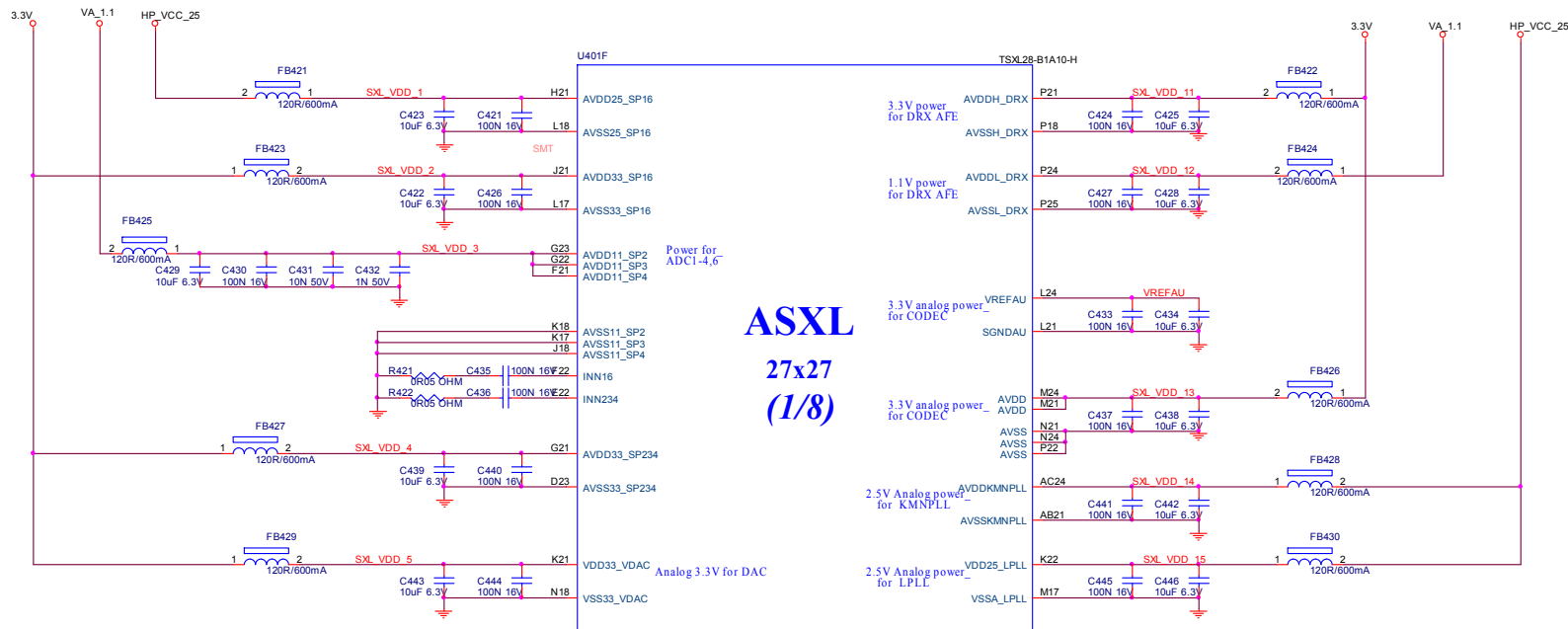
Key and IR interface



For ITE touch keypad IC only

Remark: Parts position can be searched by using FIND function in PDF.

SXL_1/2_Power 1

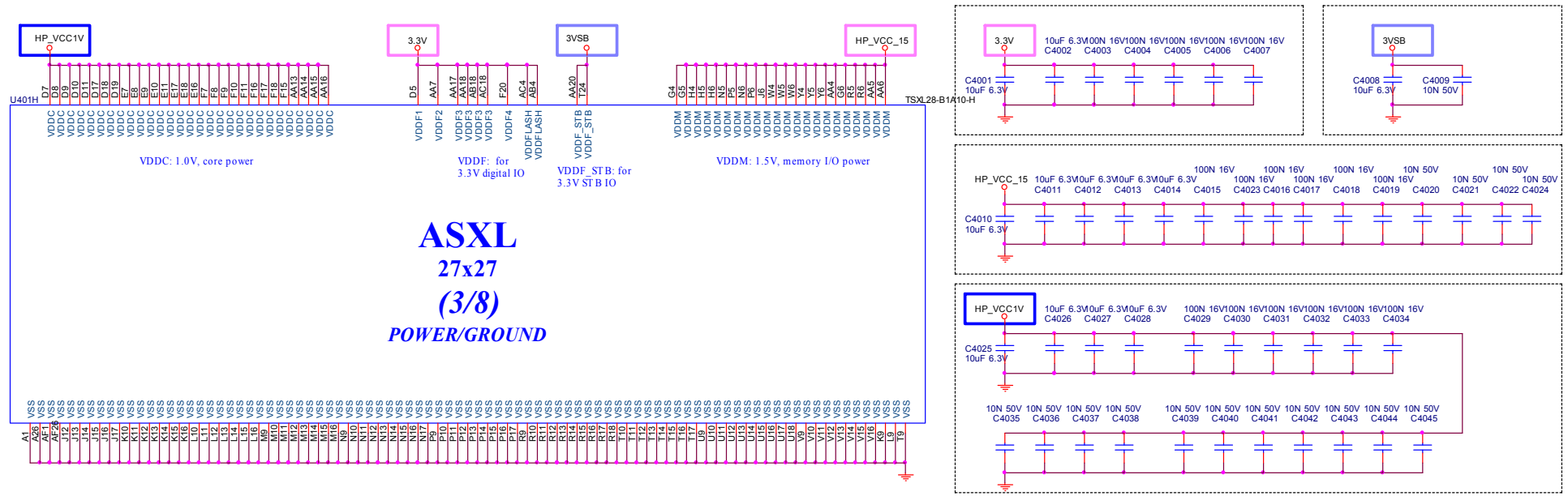


Shielding, only show on PCB, not draw on schematic.

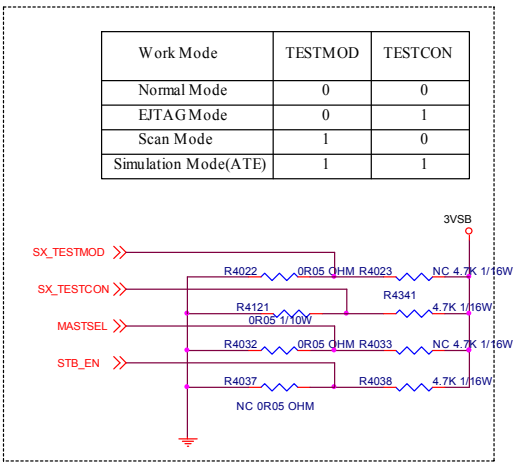
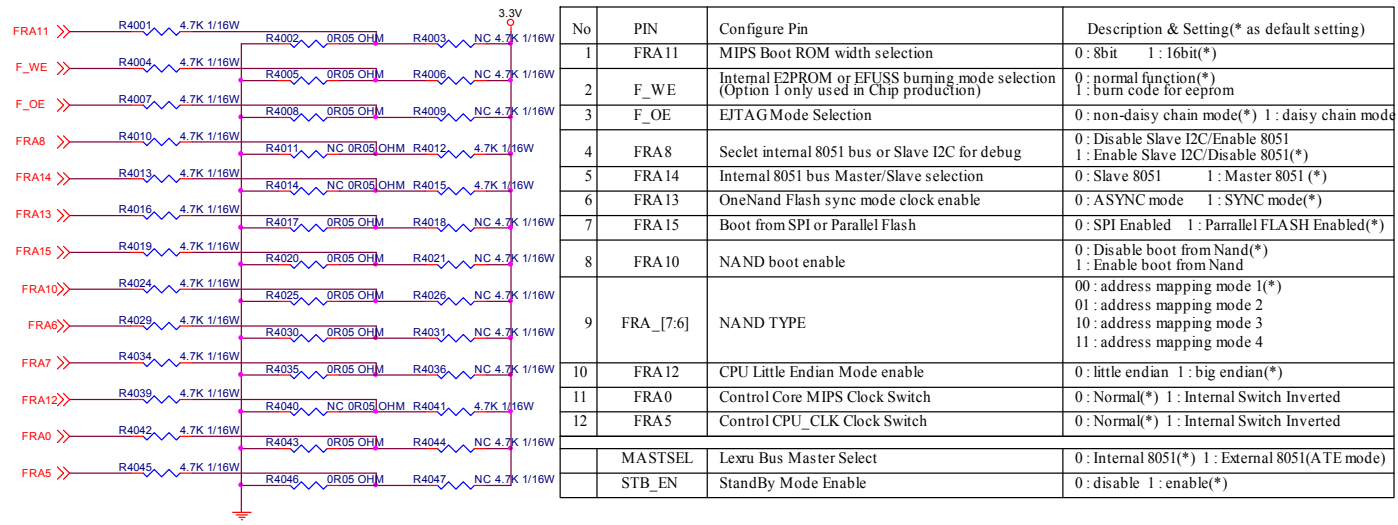


Remark: Parts position can be searched by using FIND function in PDF.

SXL_3_Power 2/ Config



Boot from SPI (System Config NAND+SPI)

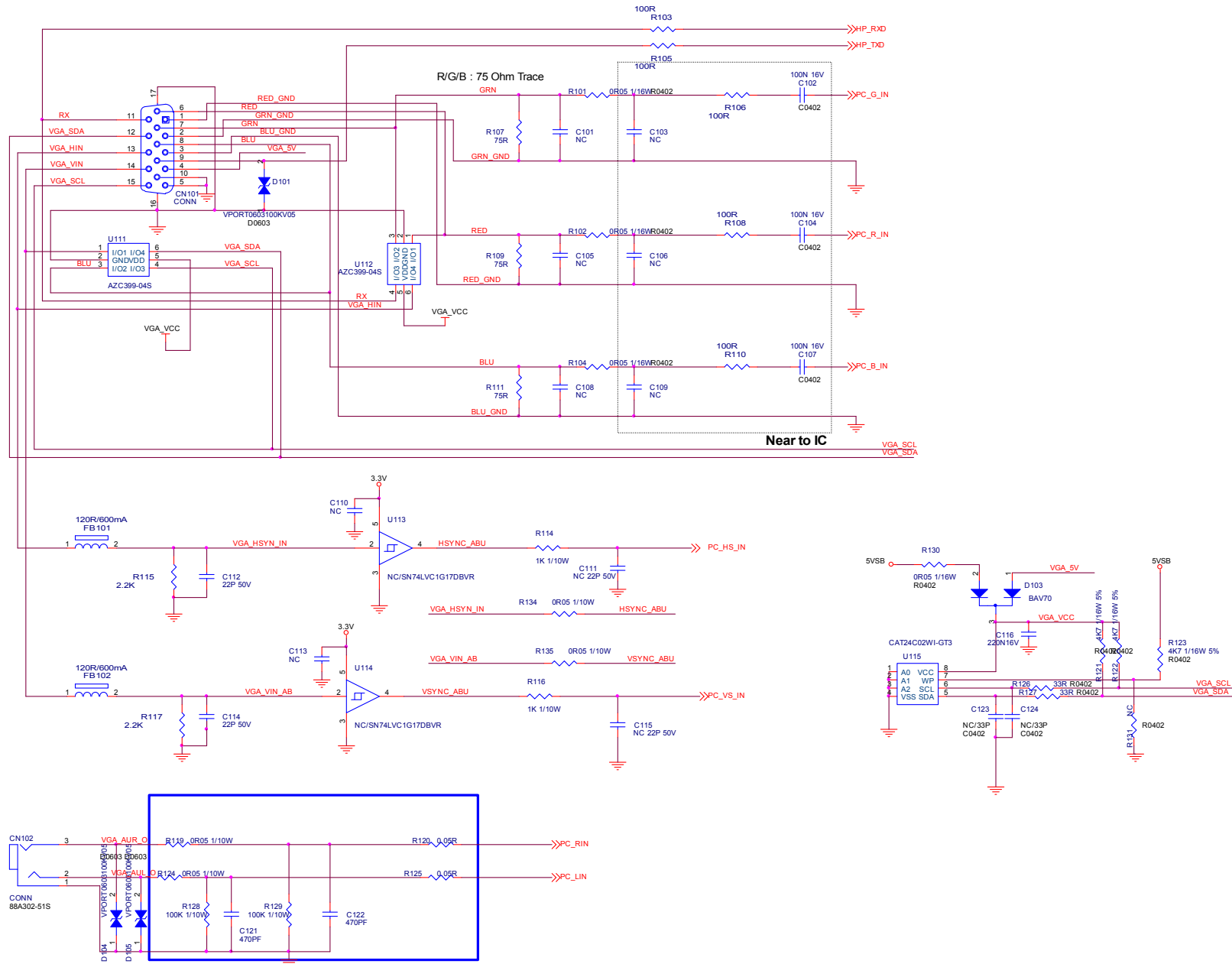


Work Mode	TESTMOD	TESTCON
Normal Mode	0	0
EJTAG Mode	0	1
Scan Mode	1	0
Simulation Mode(ATE)	1	1

No	PIN	Configure Pin	Description & Setting(* as default setting)
1	FRA11	MIPS Boot ROM width selection	0 : 8bit 1 : 16bit(*)
2	F_WE	Internal E2PROM or EFUSS burning mode selection (Option 1 only used in Chip production)	0 : normal function(*) 1 : burn code for eeprom
3	F_OE	EJTAG Mode Selection	0 : non-daisy chain mode(*) 1 : daisy chain mode
4	FRA8	Seclet internal 8051 bus or Slave I2C for debug	0 : Disable Slave I2C/Enable 8051 1 : Enable Slave I2C/Disable 8051(*)
5	FRA14	Internal 8051 bus Master/Slave selection	0 : Slave 8051 1 : Master 8051 (*)
6	FRA13	OneNand Flash sync mode clock enable	0 : ASYNC mode 1 : SYNC mode(*)
7	FRA15	Boot from SPI or Parallel Flash	0 : SPI Enabled 1 : Parallel FLASH Enabled(*)
8	FRA10	NAND boot enable	0 : Disable boot from Nand(*) 1 : Enable boot from Nand
9	FRA_[7:6]	NAND TYPE	00 : address mapping mode 1(*) 01 : address mapping mode 2 10 : address mapping mode 3 11 : address mapping mode 4
10	FRA12	CPU Little Endian Mode enable	0 : little endian 1 : big endian(*)
11	FRA0	Control Core MIPS Clock Switch	0 : Normal(*) 1 : Internal Switch Inverted
12	FRA5	Control CPU_CLK Clock Switch	0 : Normal(*) 1 : Internal Switch Inverted
	MASTSEL	Lexu Bus Master Select	0 : Internal 8051(*) 1 : External 8051(ATE mode)
	STB_EN	StandBy Mode Enable	0 : disable 1 : enable(*)

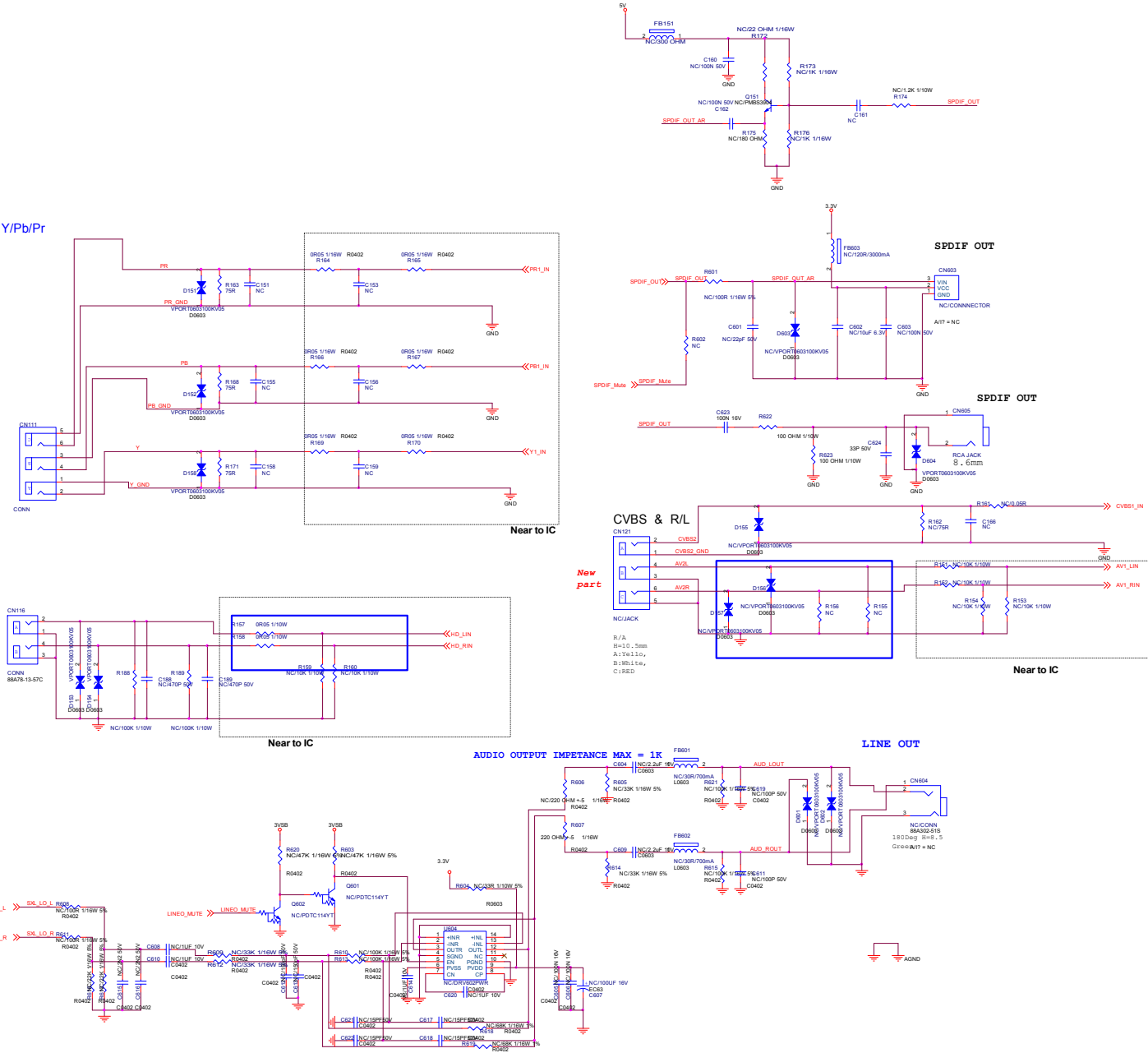
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VGA Input



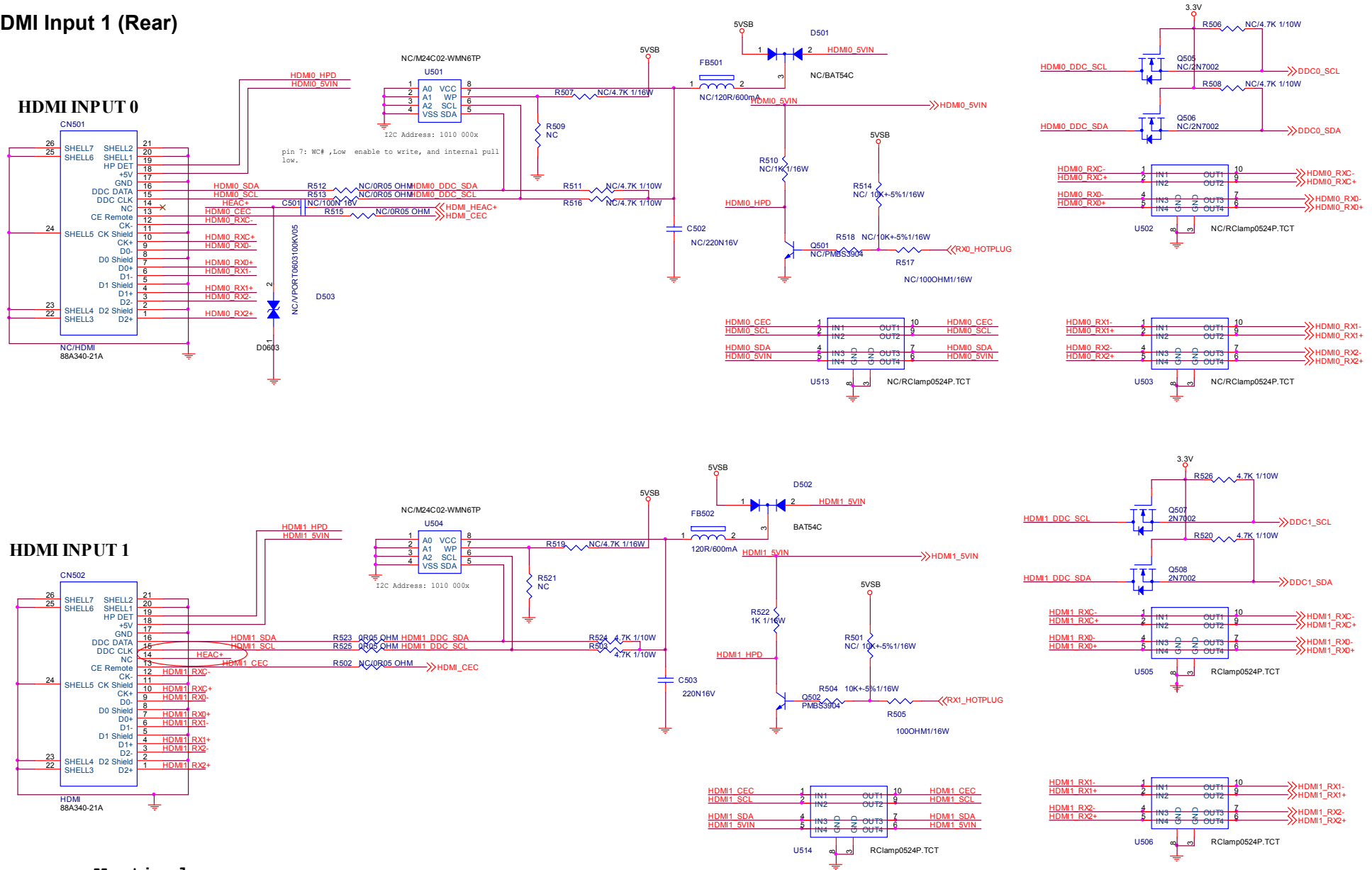
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AV In/ Audio Out



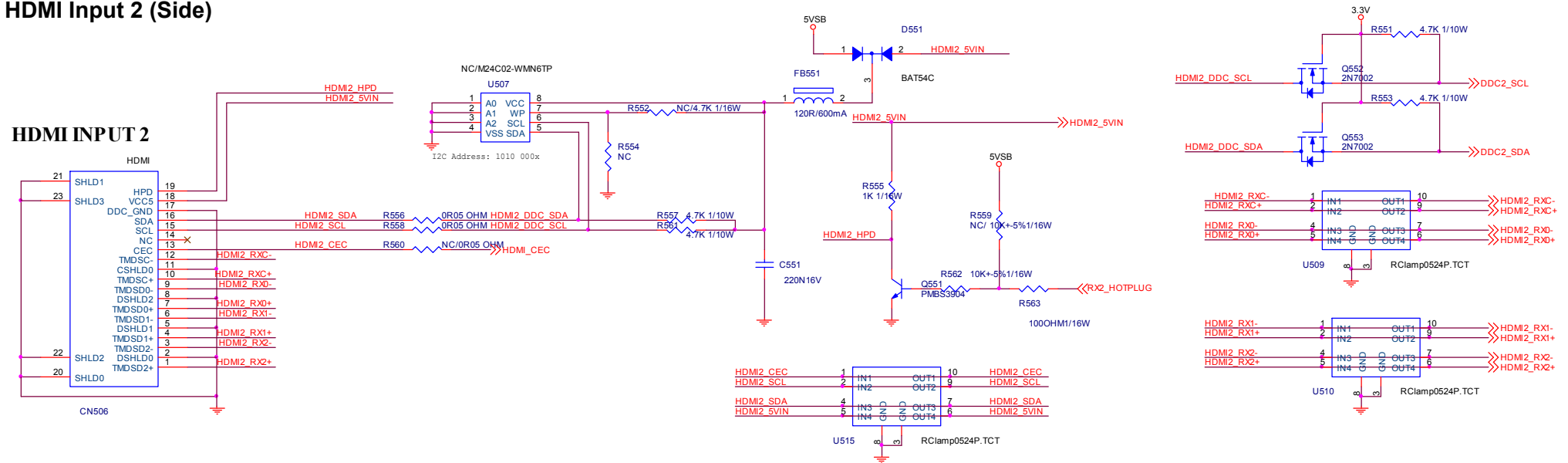
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HDMI Input 1 (Rear)



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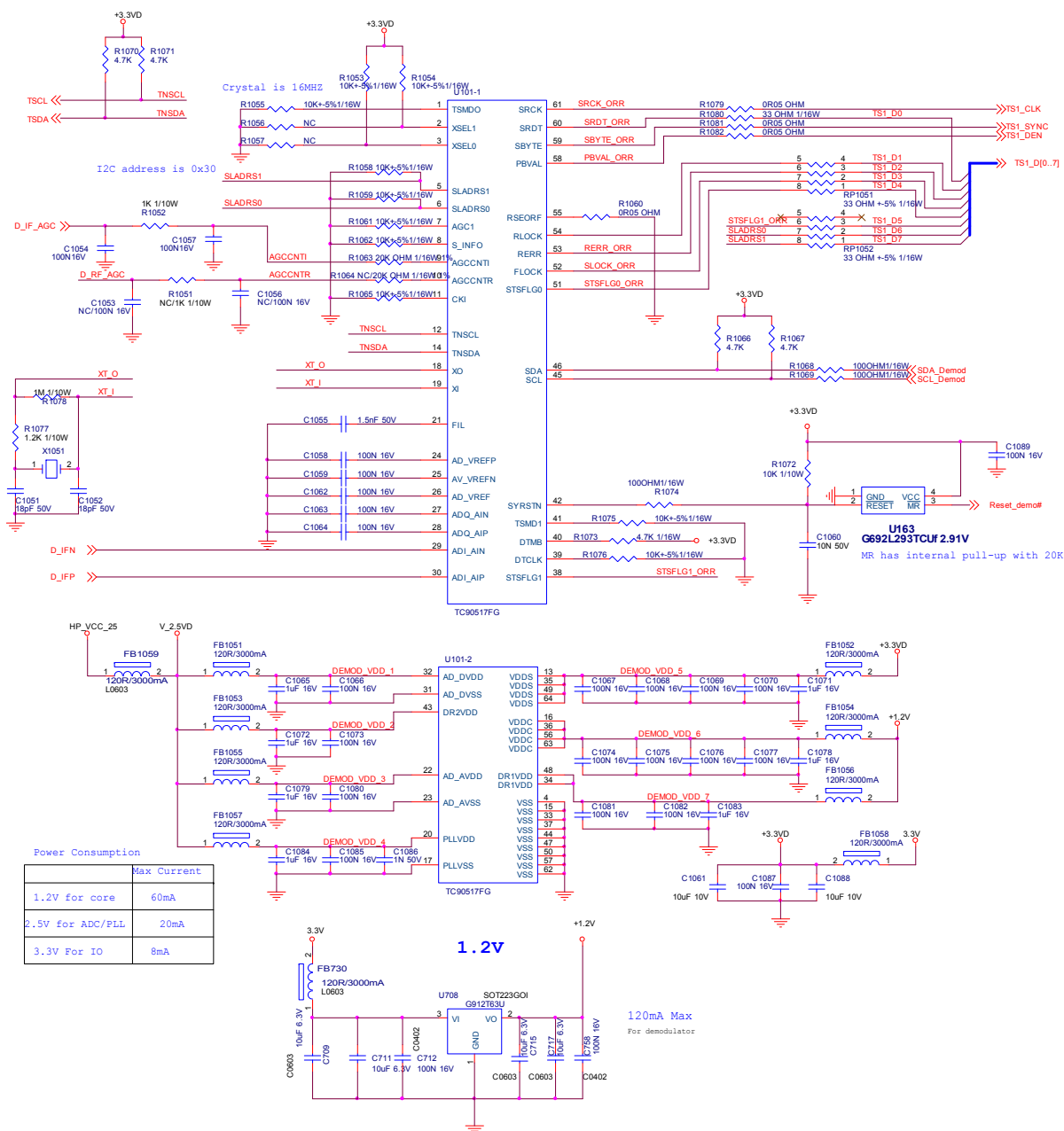
HDMI Input 2 (Side)



Horizontal

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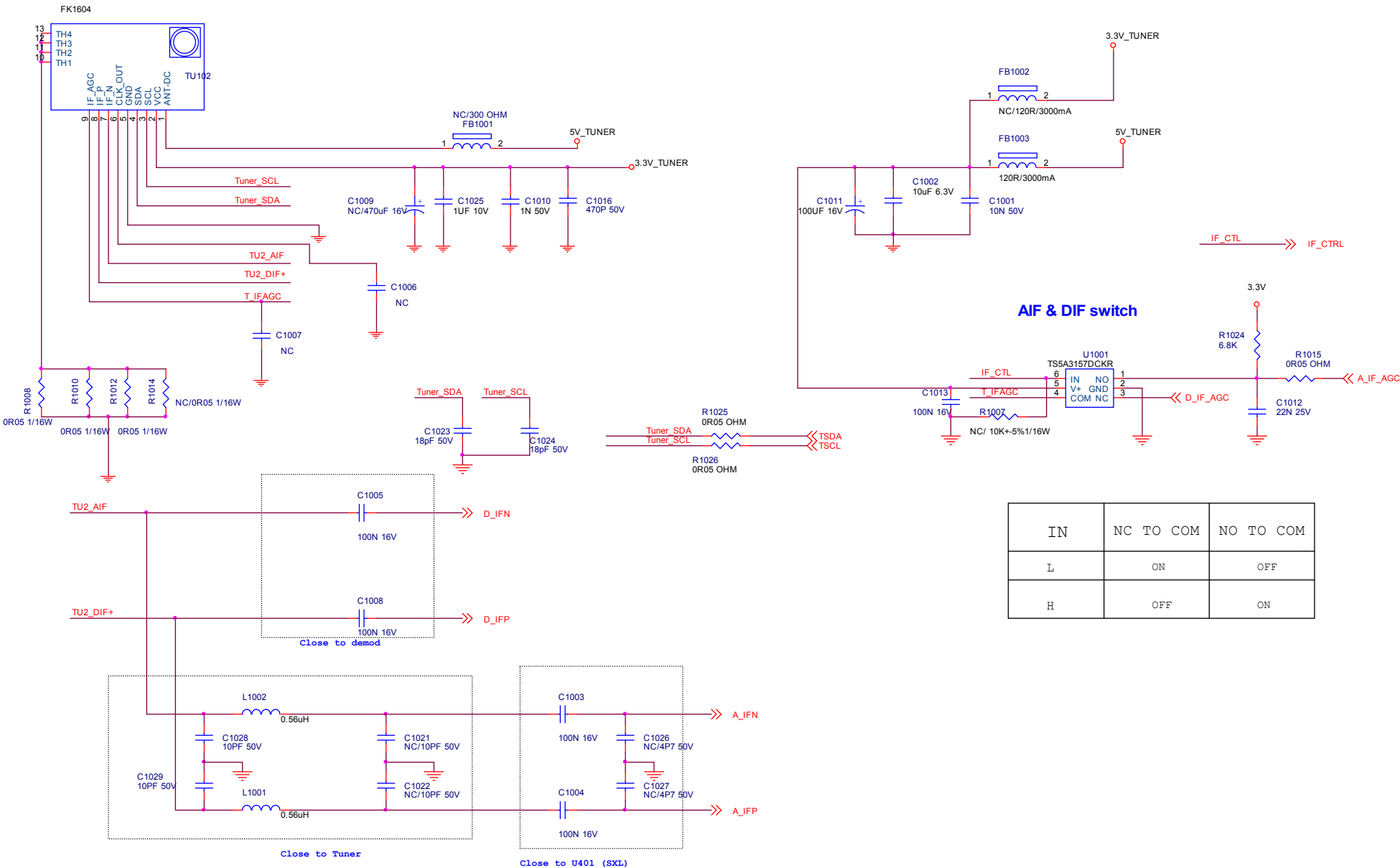
Demodulator



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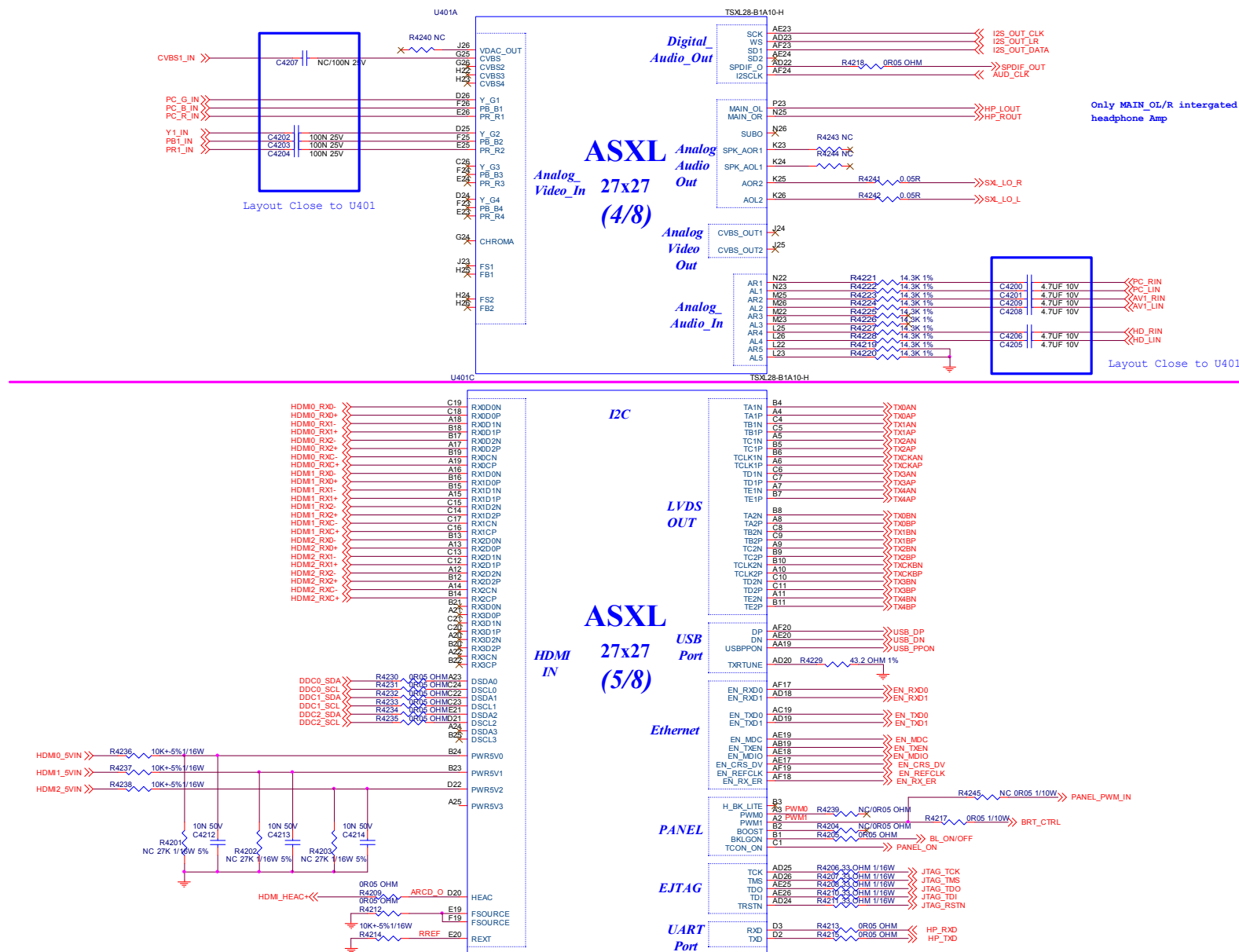
Tuner

NuTune FK1604



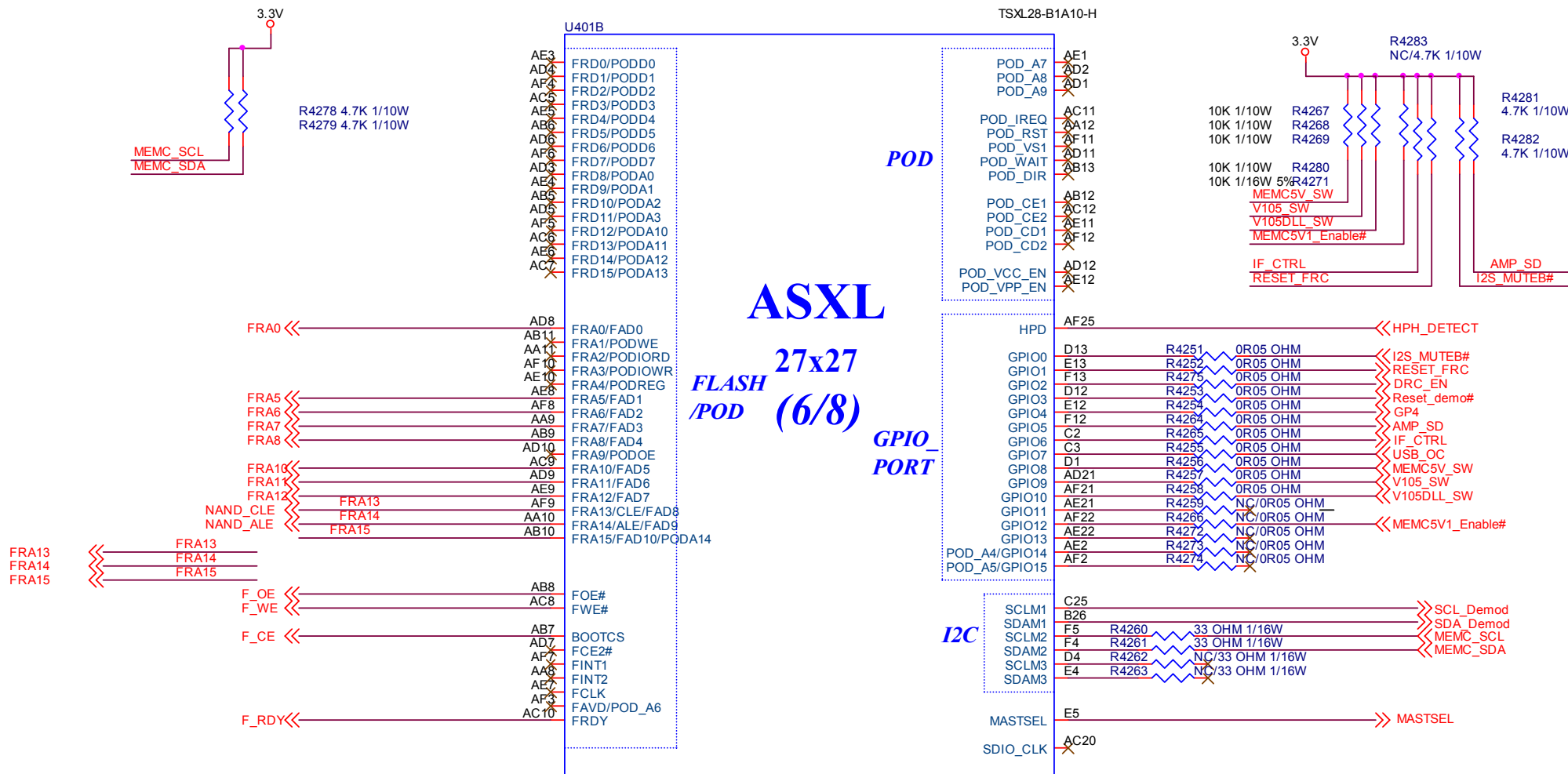
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SXL_4/5_AV_InOut_PanelUsbLan



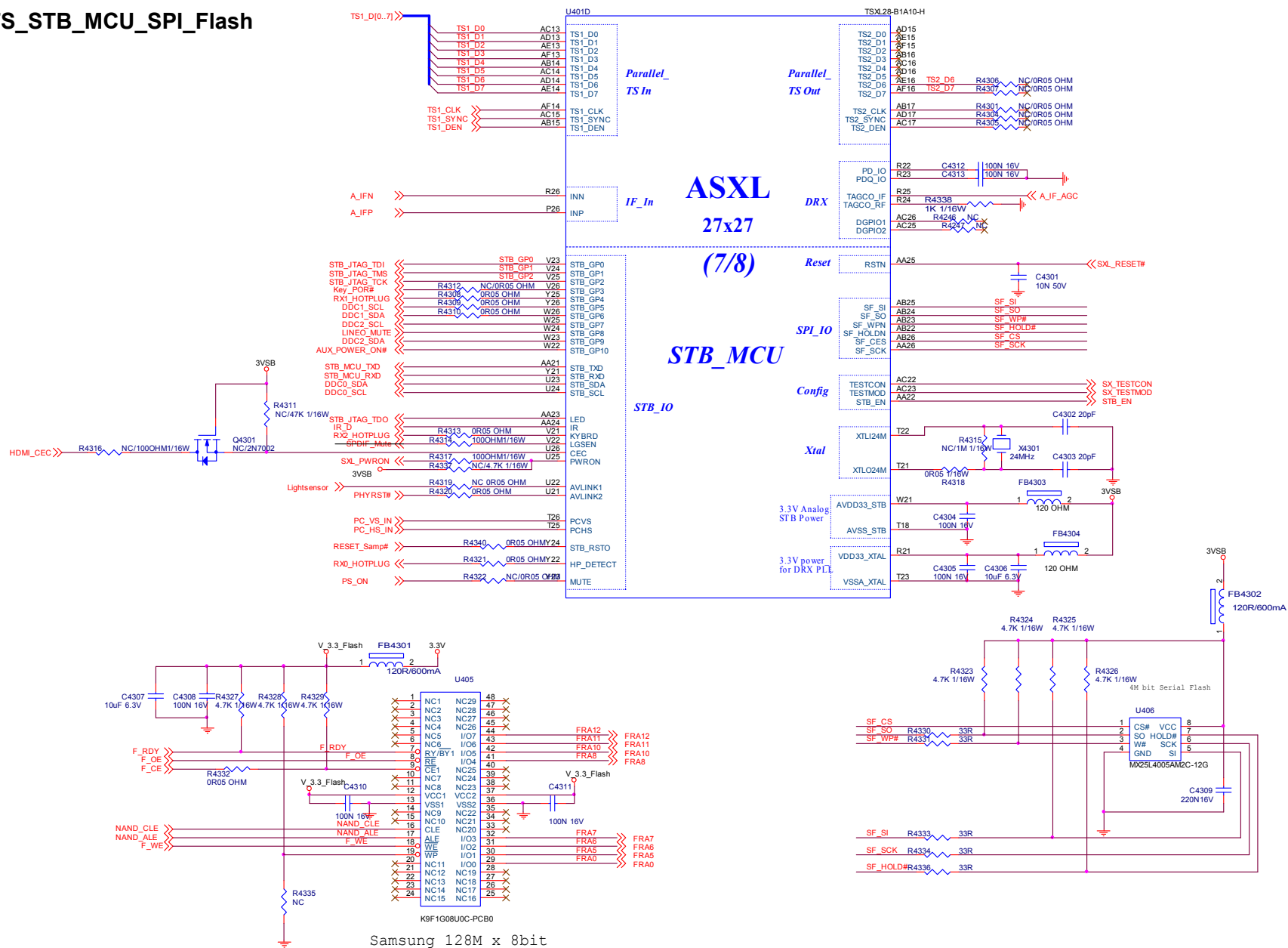
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SXL_6_Flash_CI_GPIO



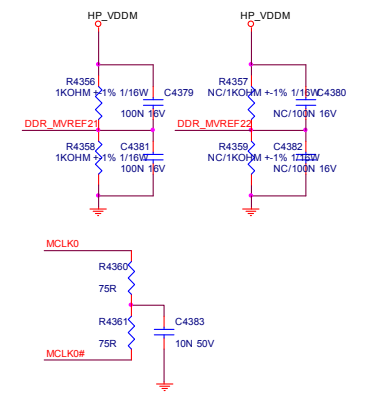
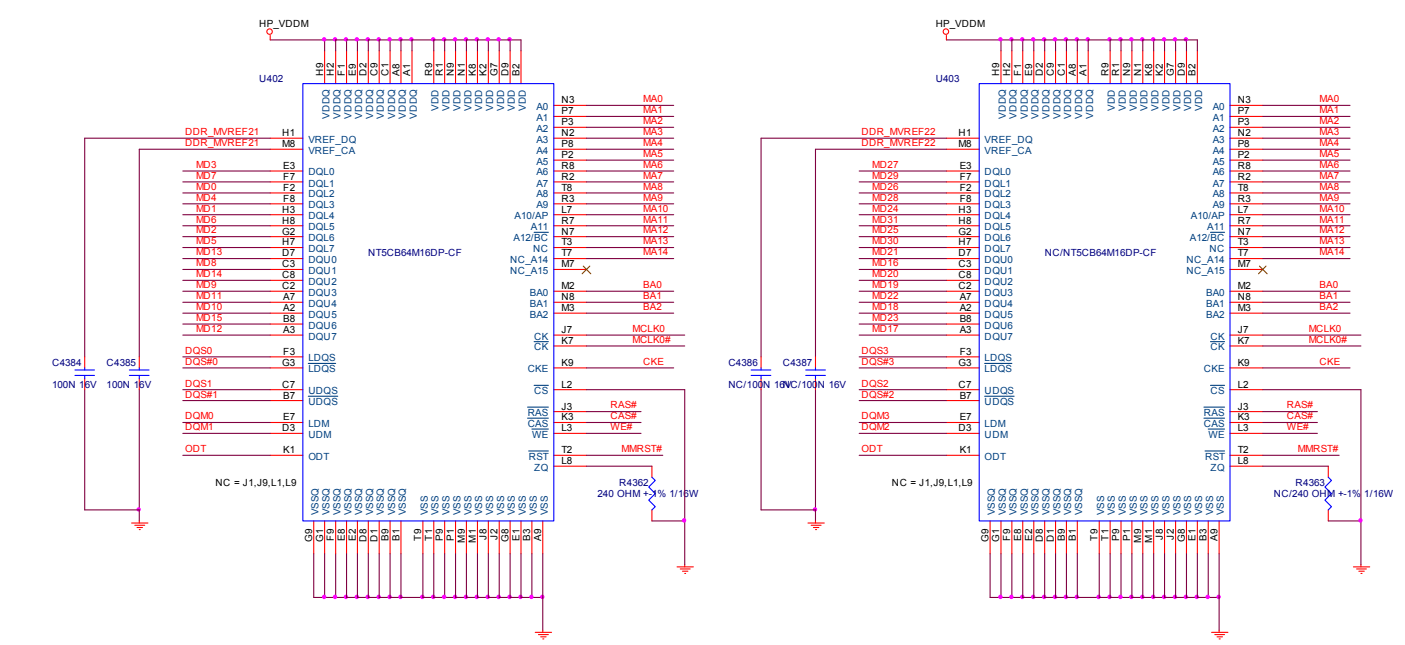
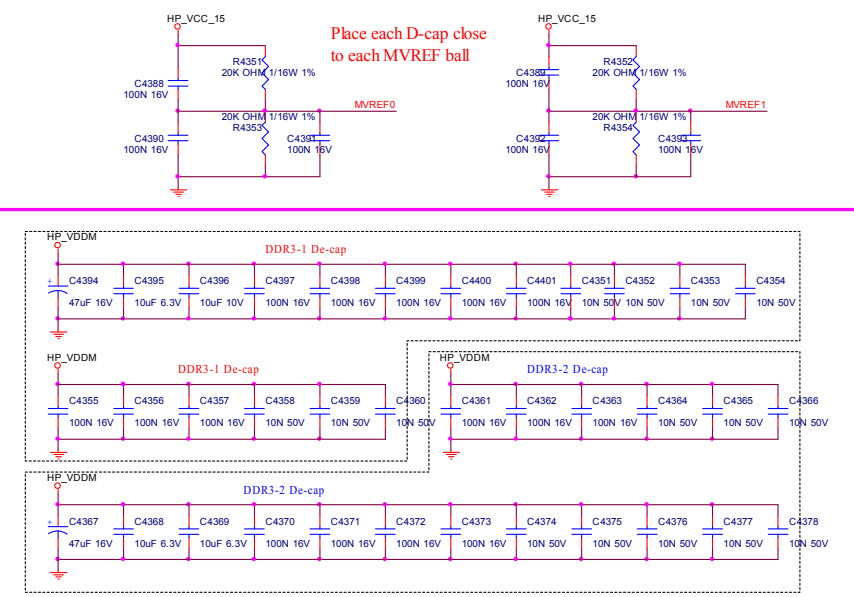
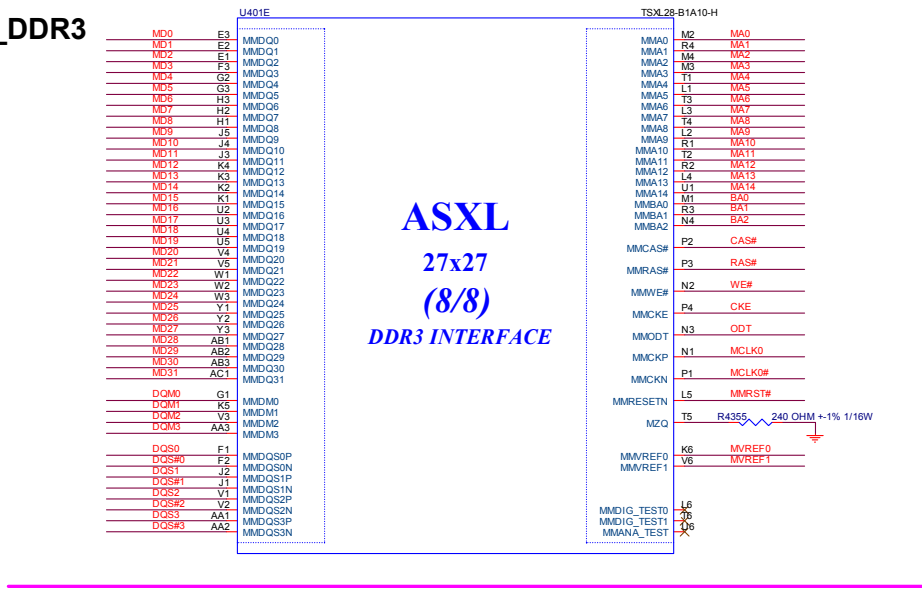
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SXL_7_TS_STB_MCU_SPI_Flash



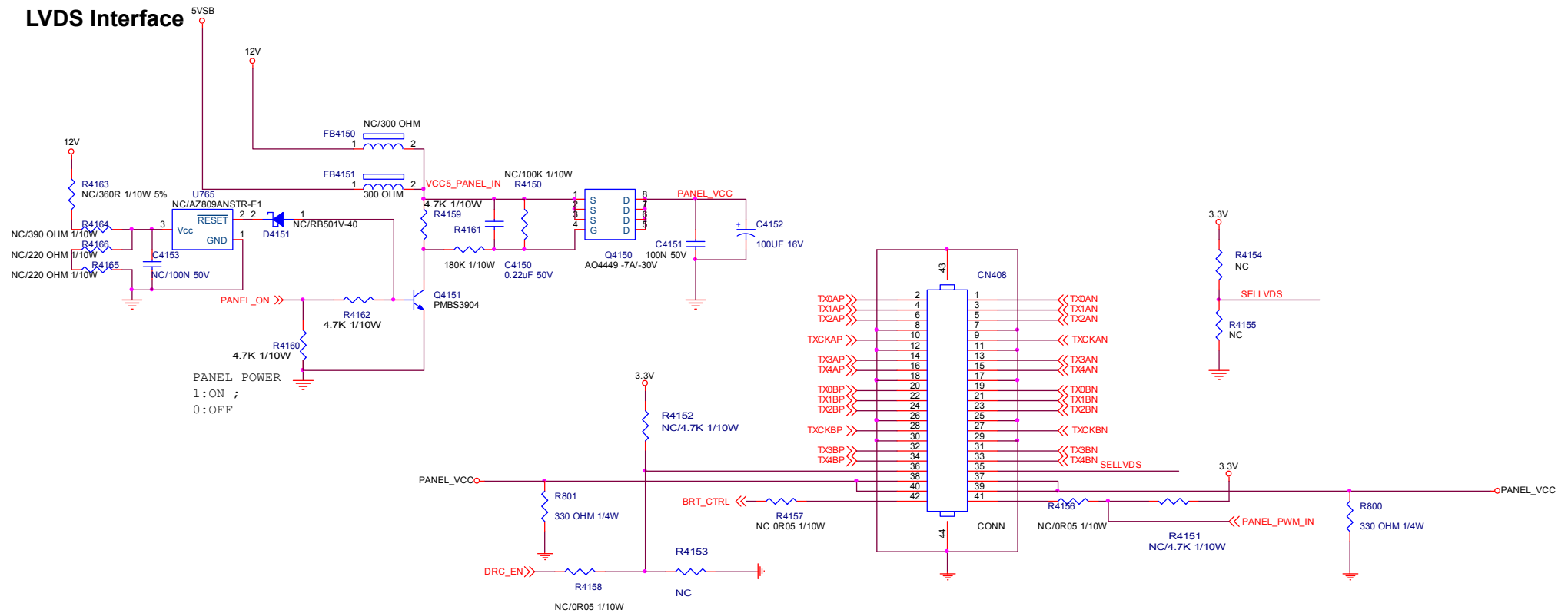
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SXL_8_DDR3



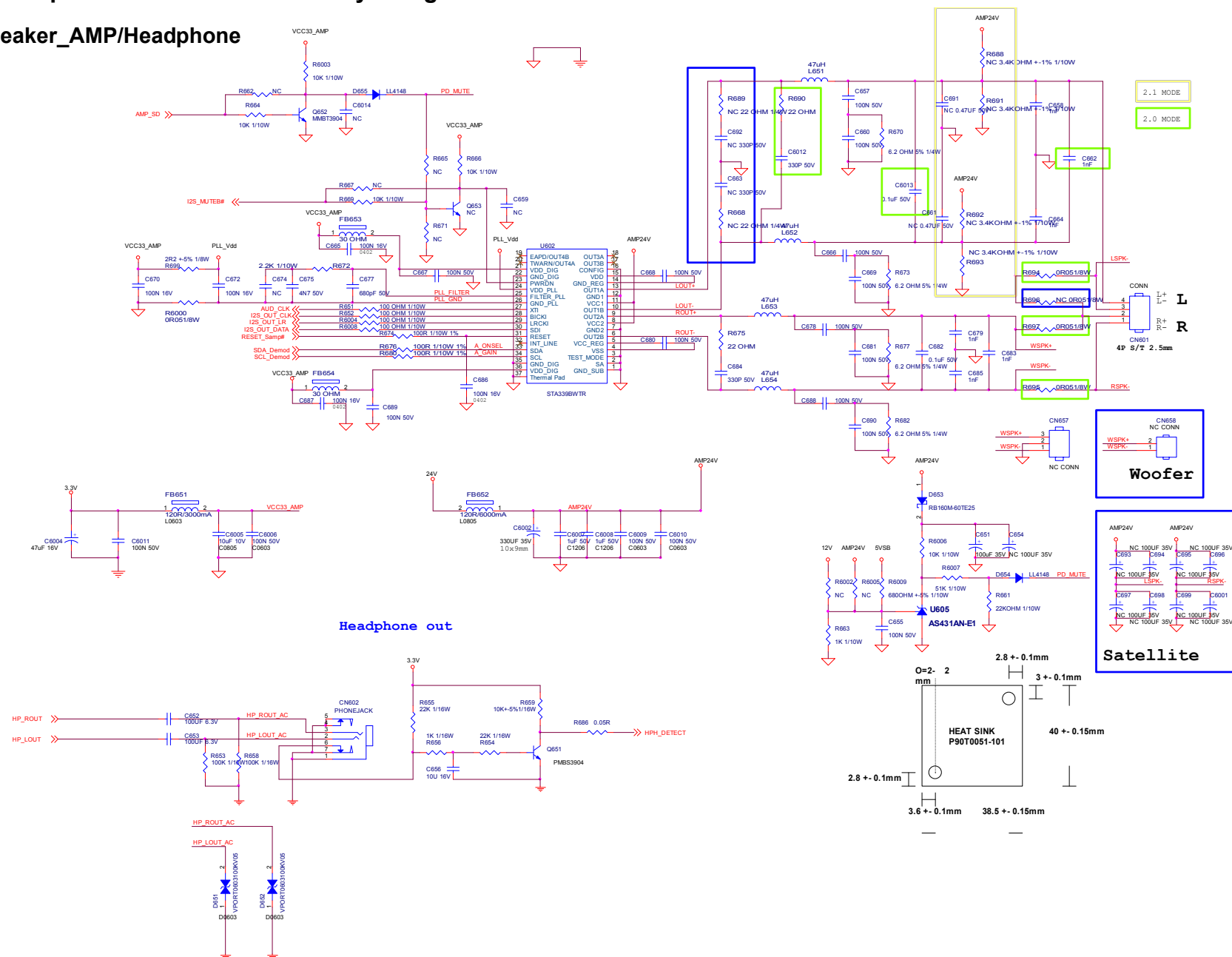
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LVDS Interface



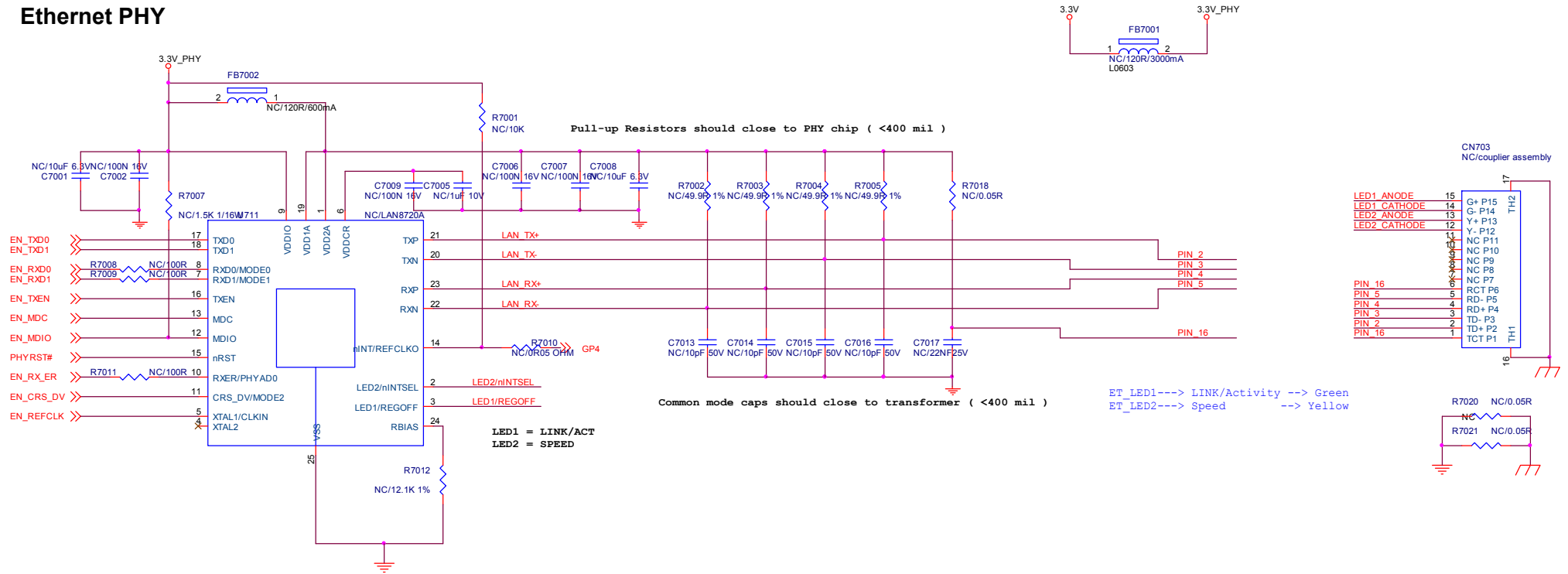
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Audio_Speaker_AMP/Headphone

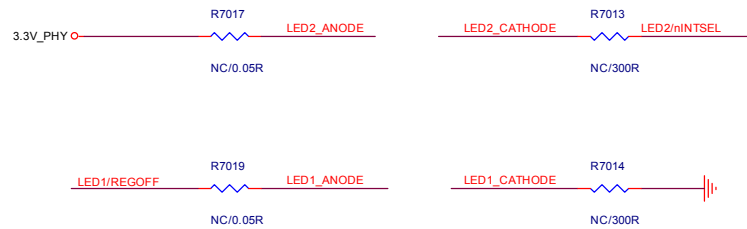


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Ethernet PHY

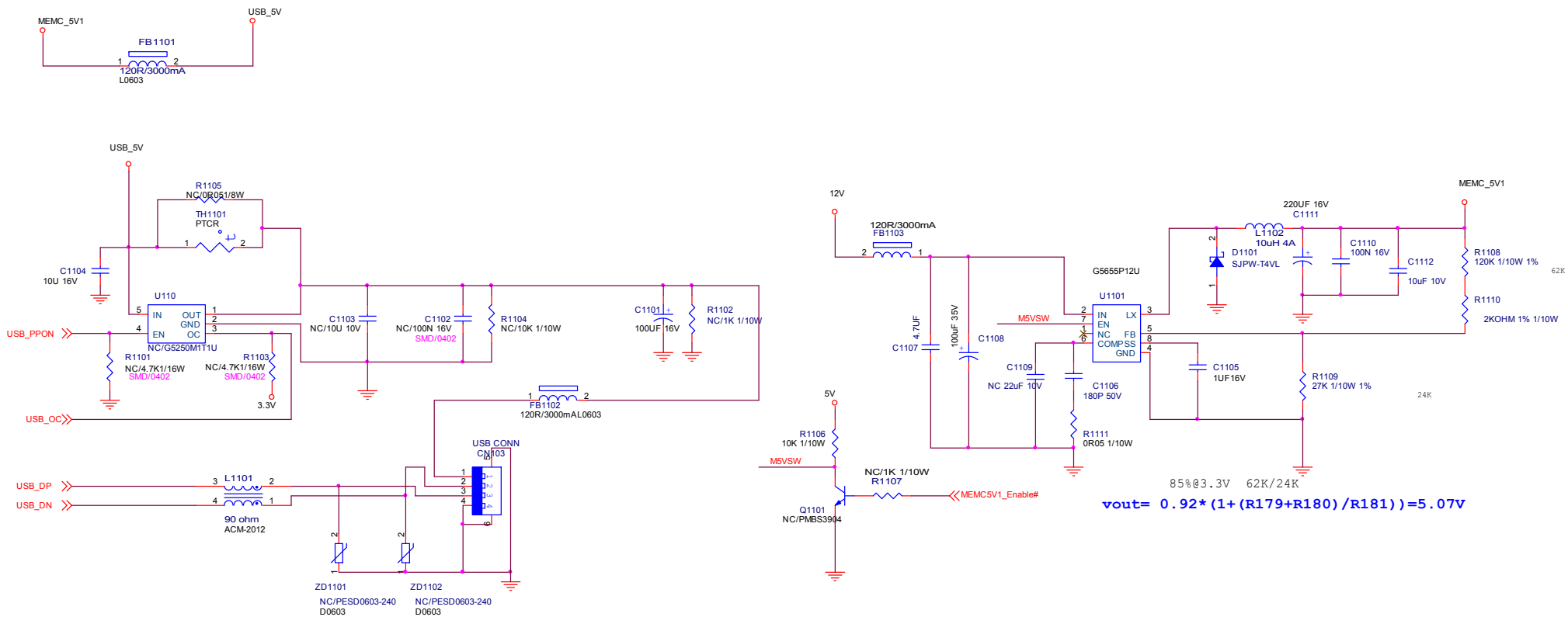


REGOFF & INTSEL Configuration Resistors



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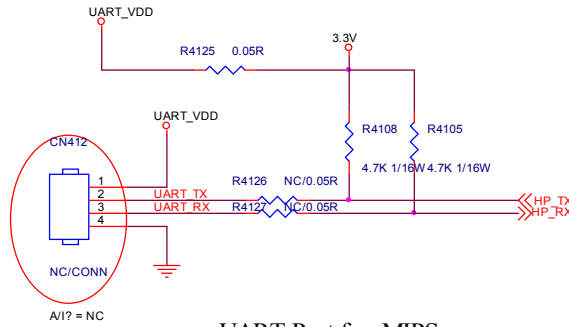
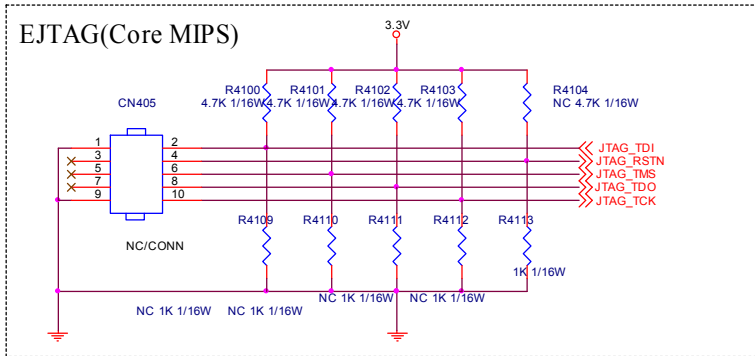
USB



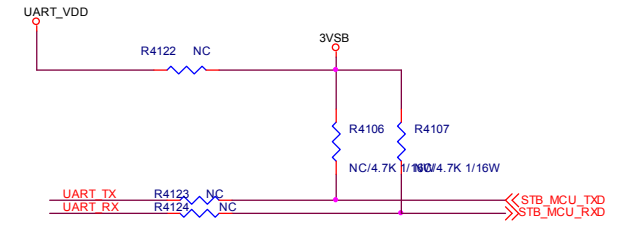
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Debug Interface

EJTAG(Core MIPS)

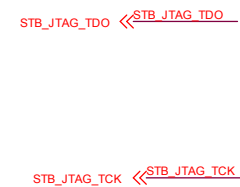
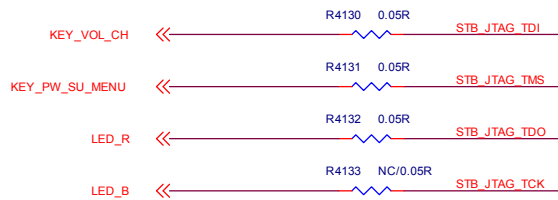
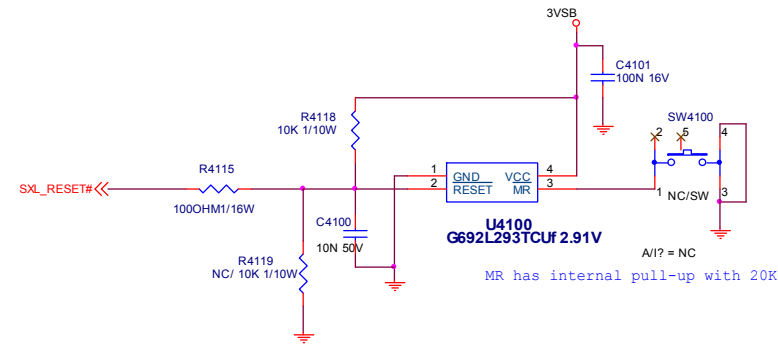
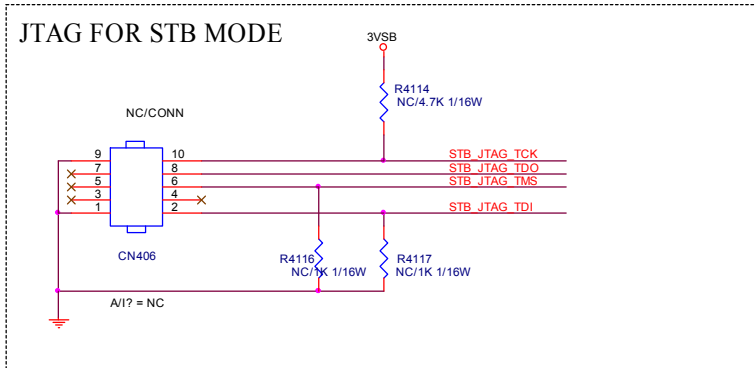


UART Port for MIPS



UART Port for STB MCU

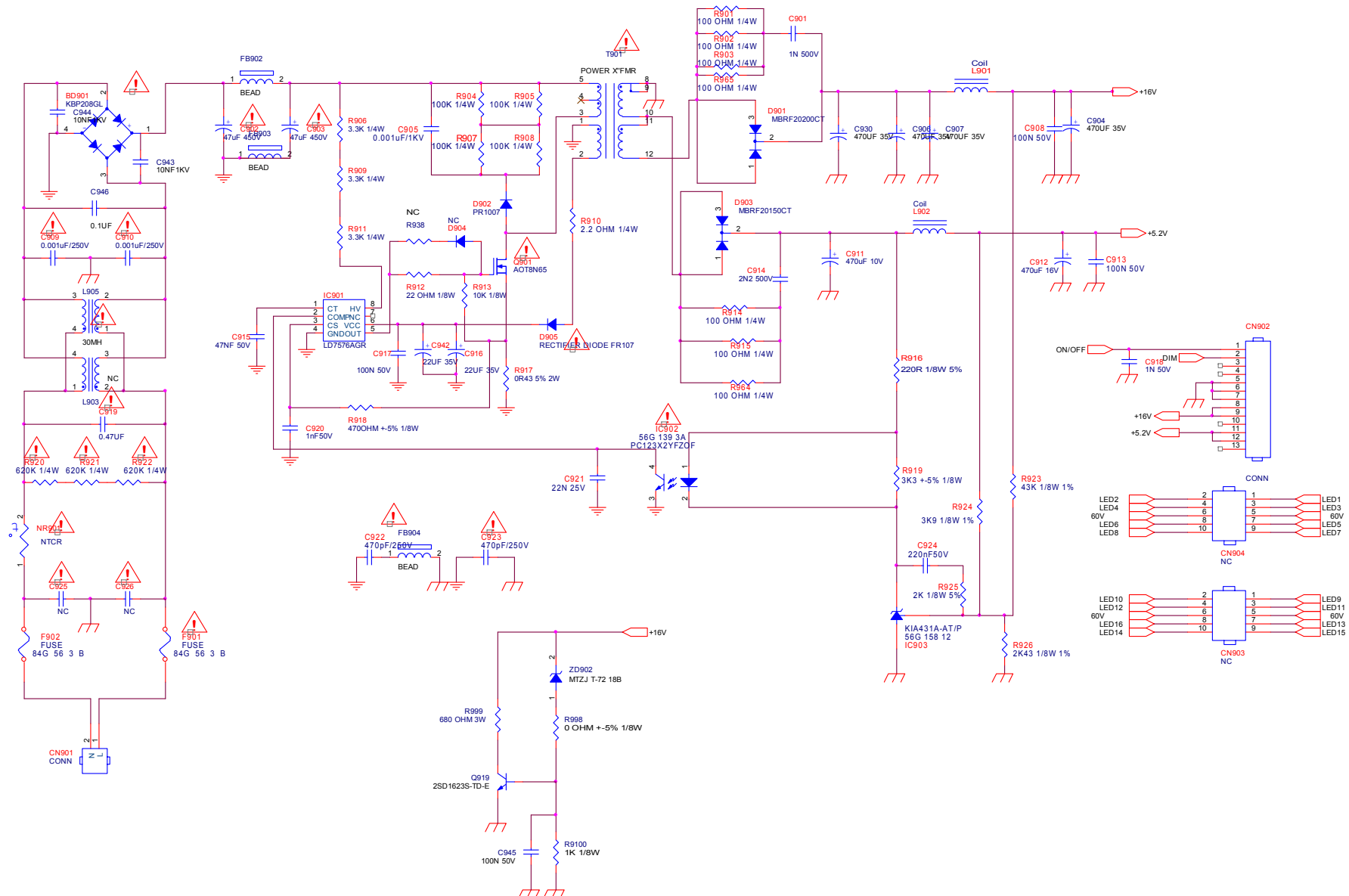
JTAG FOR STB MODE



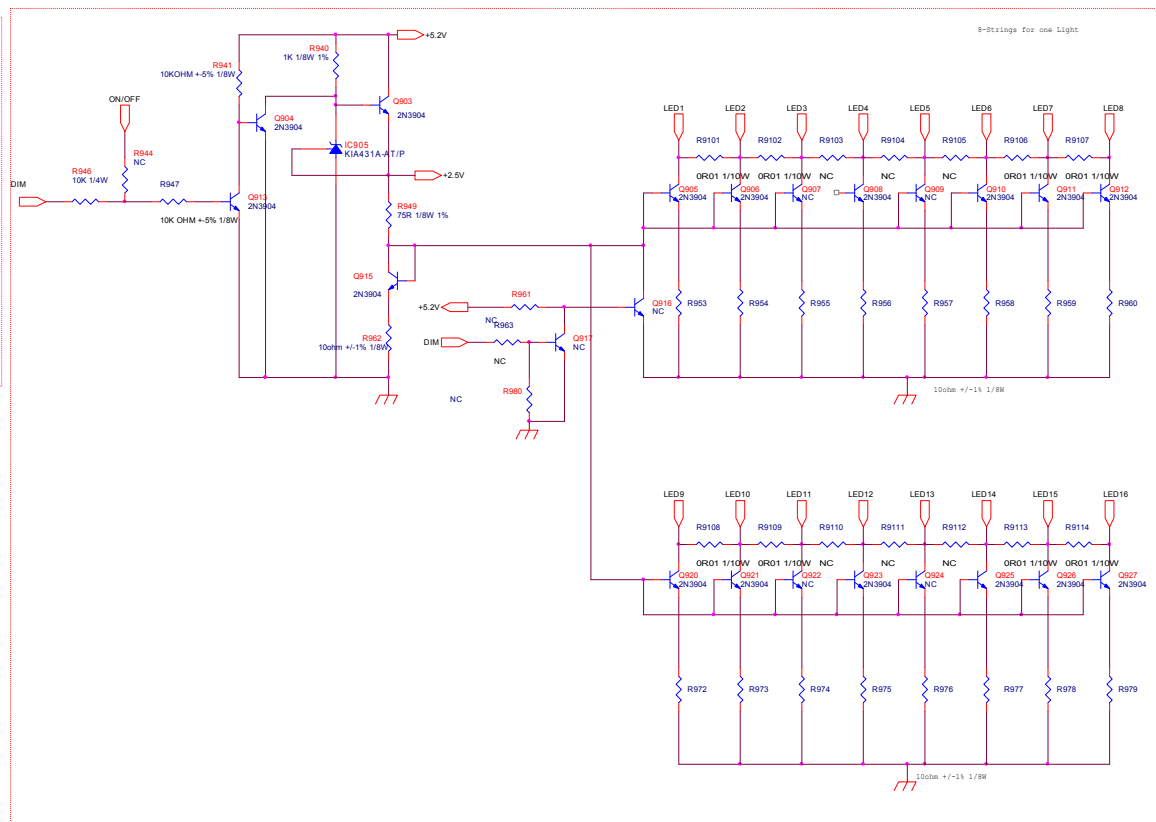
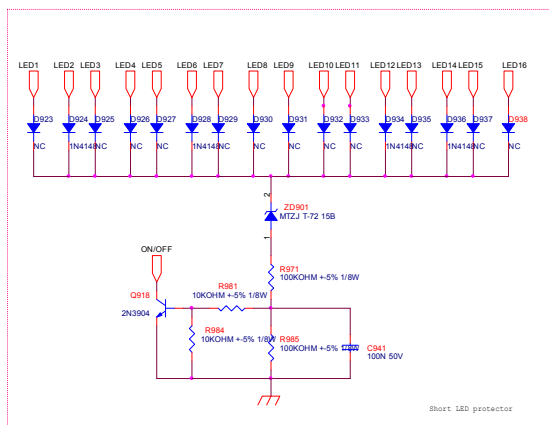
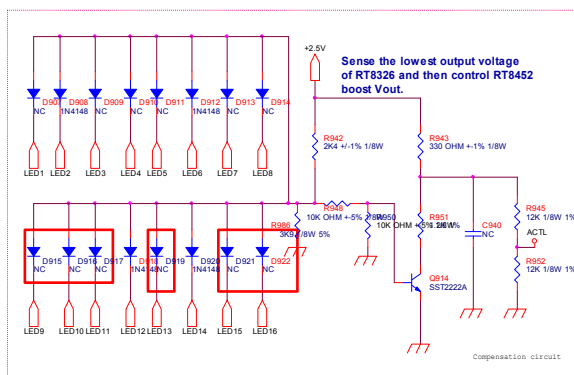
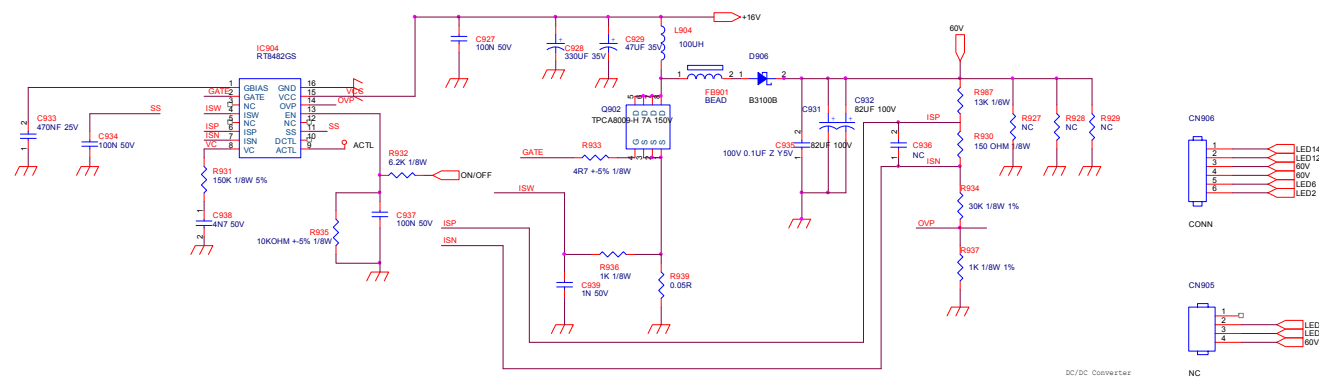
6.2 Power Board

221TE4L 715G4313P03000003S

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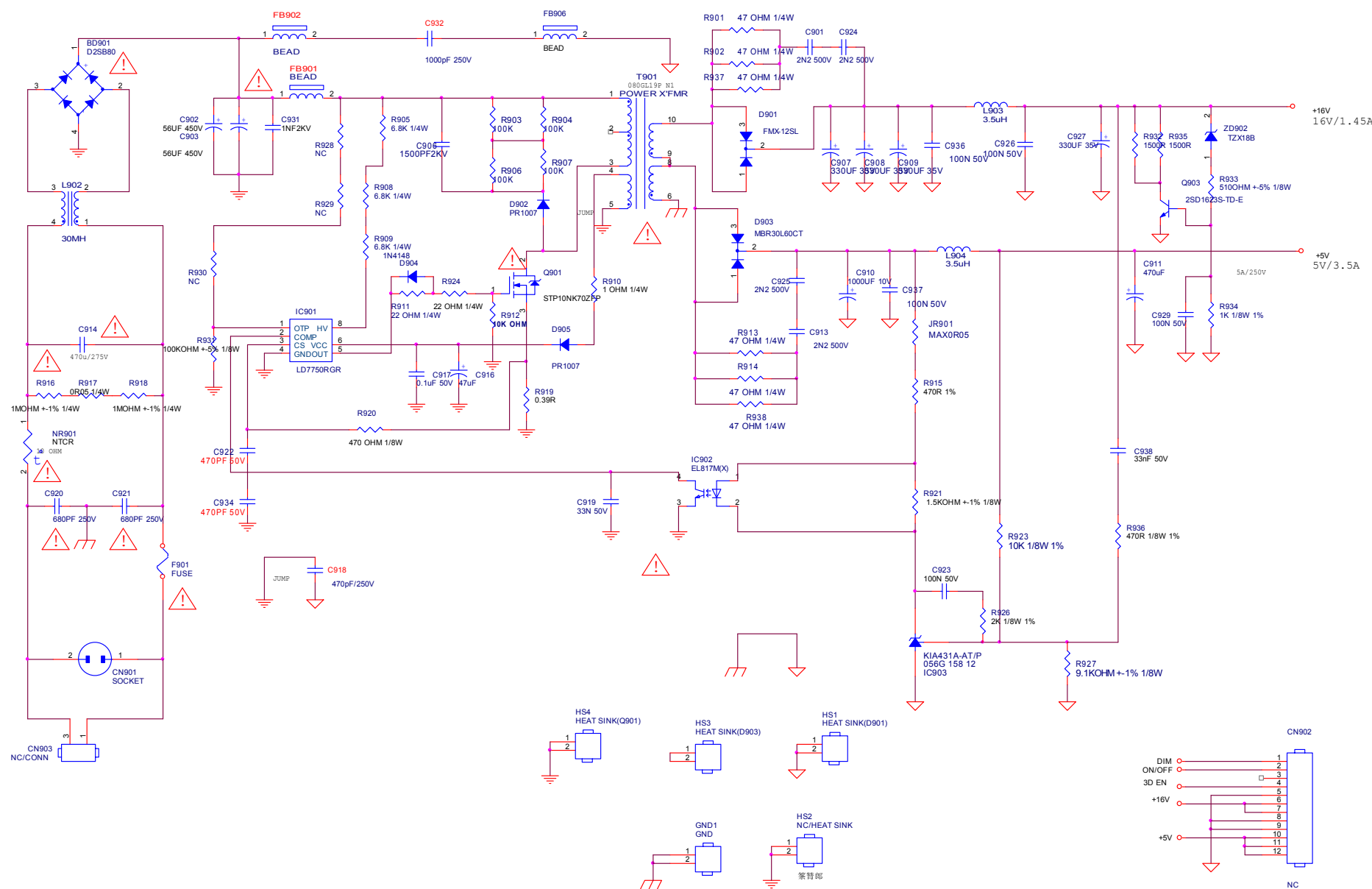


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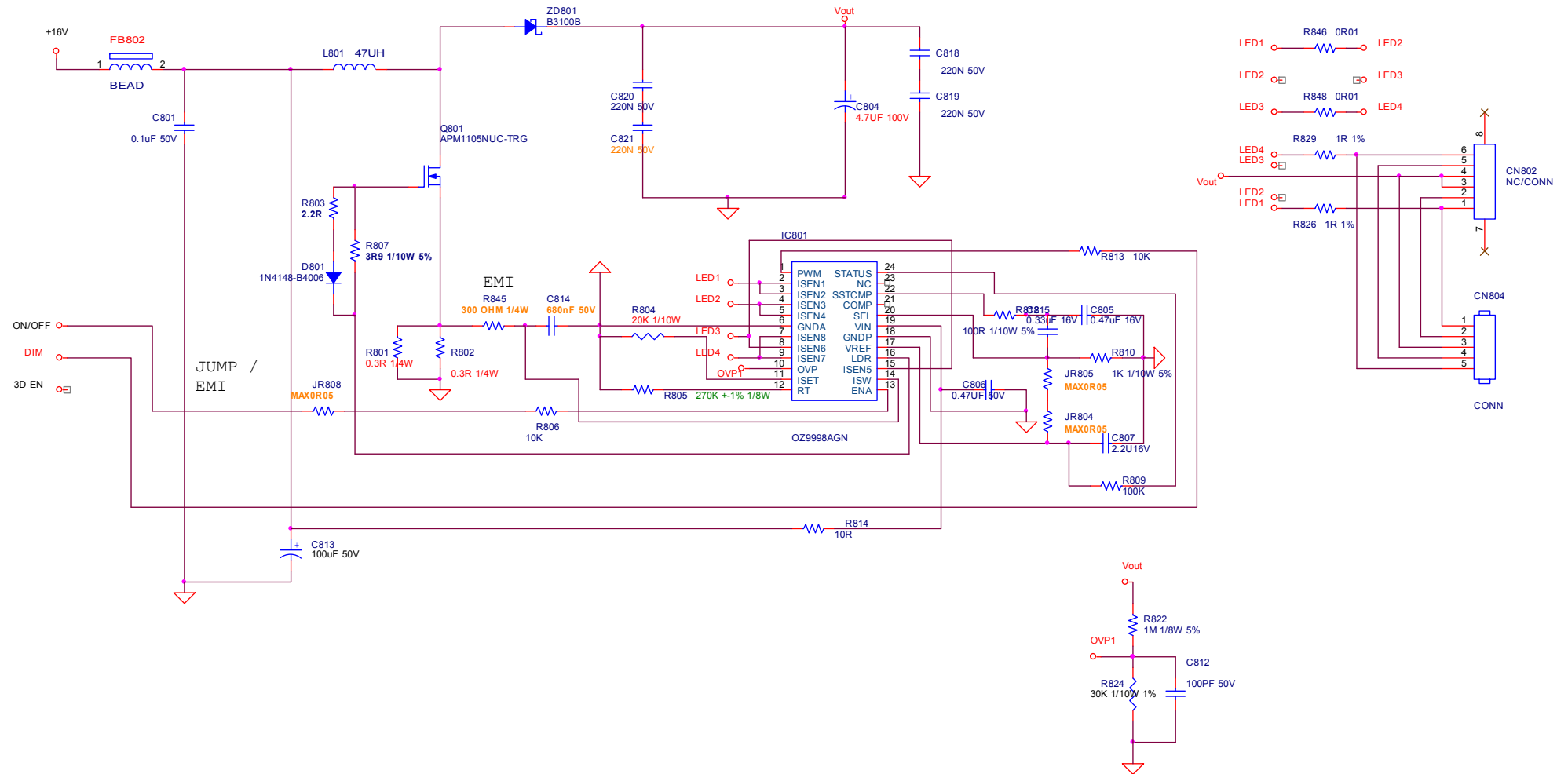
231TE4L 715G3973P01W22003M

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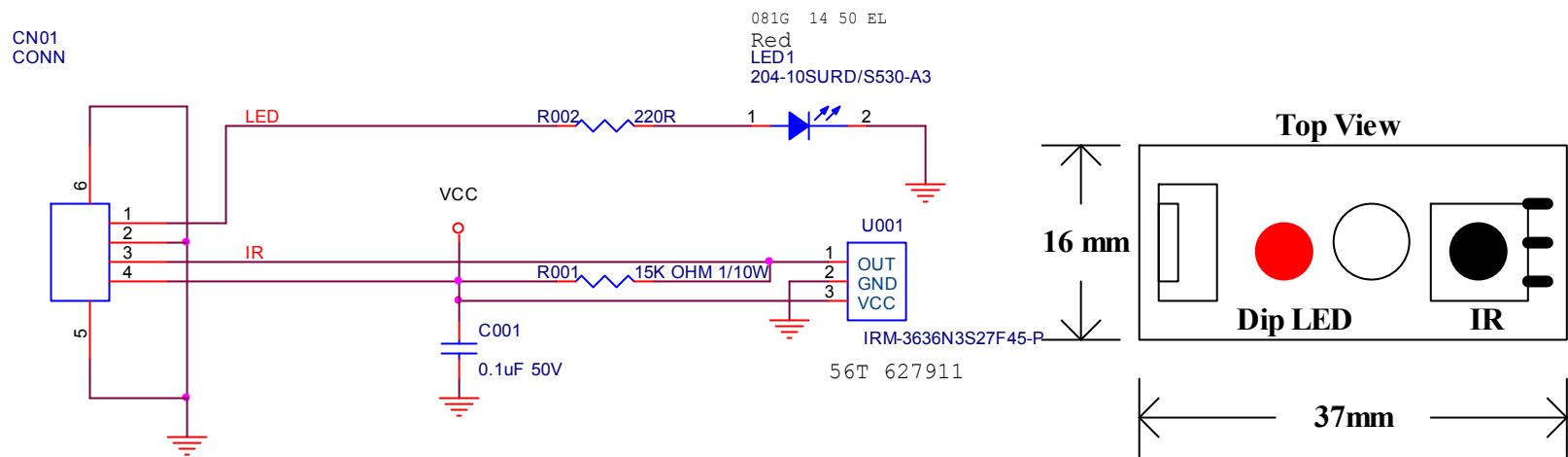
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N.C



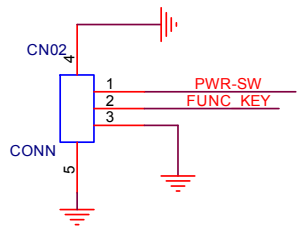
6.3 IR Board (715G5061R02002004M)

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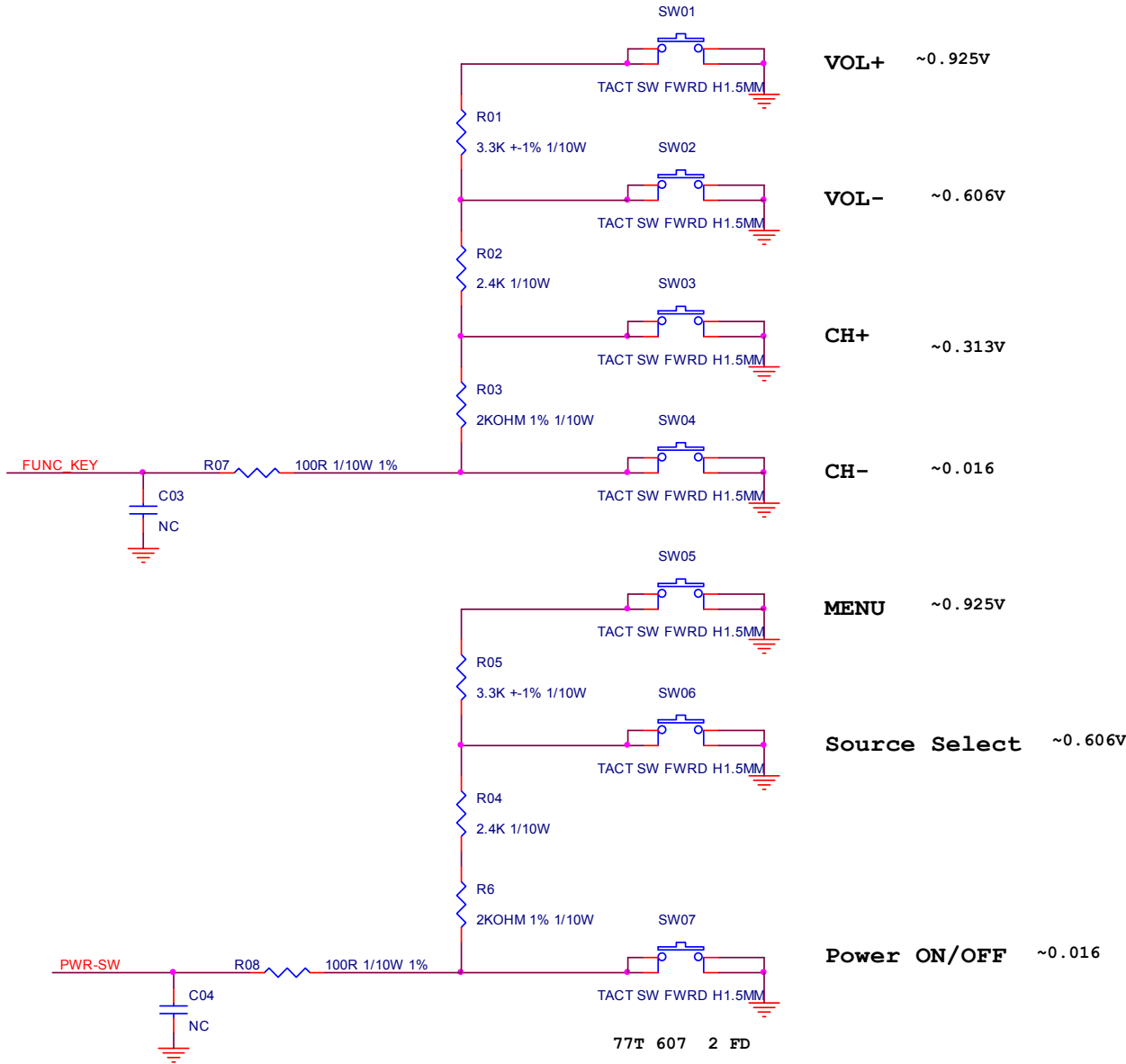


6.4 Key Board (715G5205K01000004S)

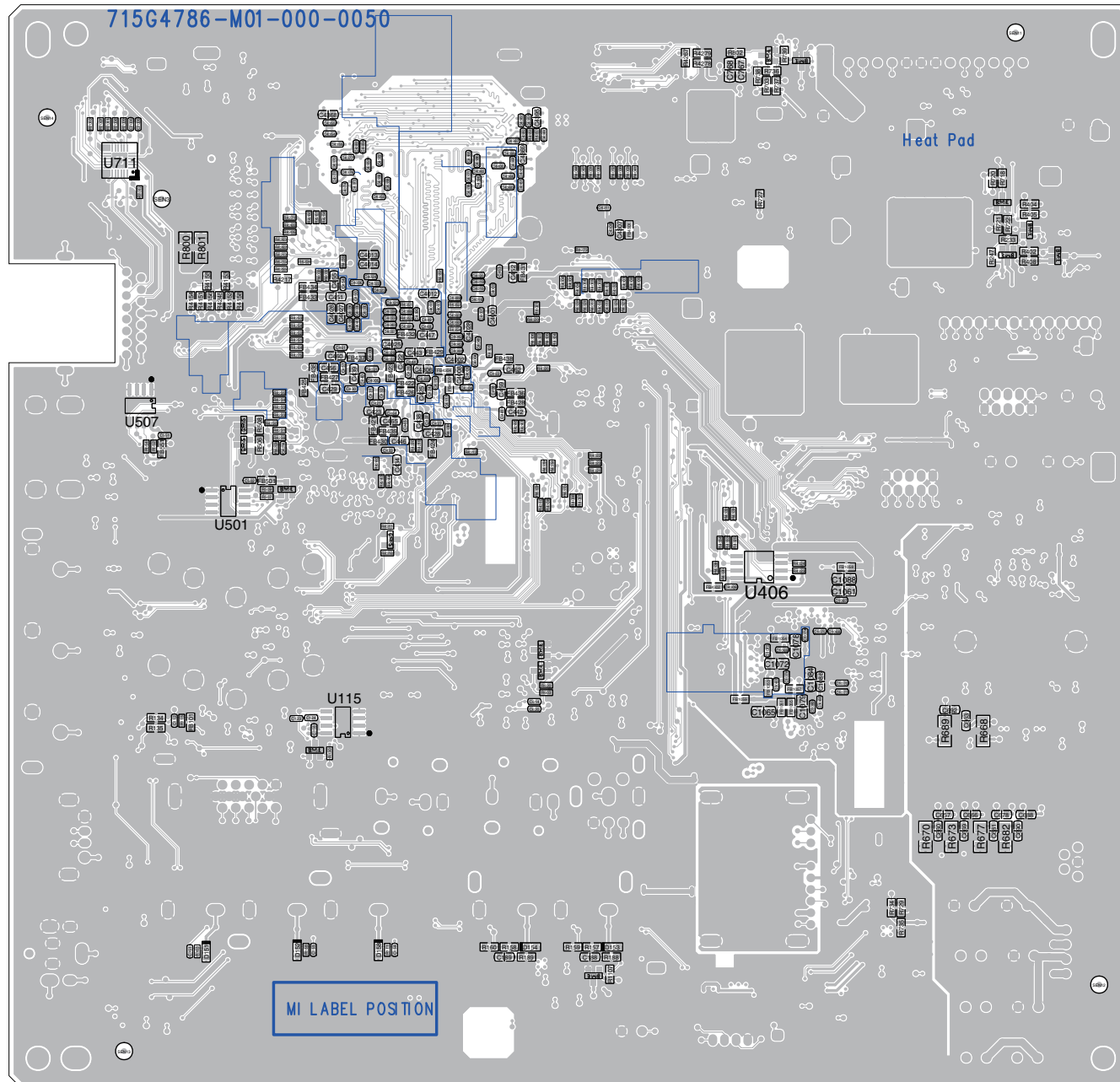
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033G8032 3F HR



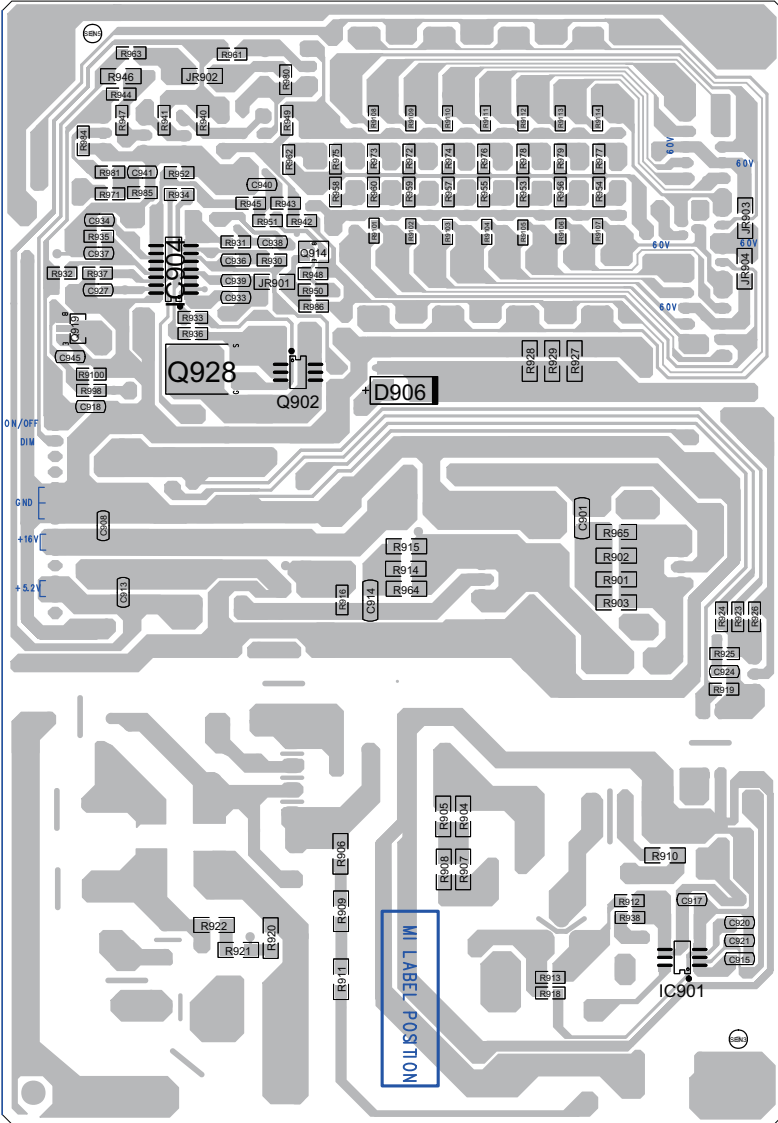
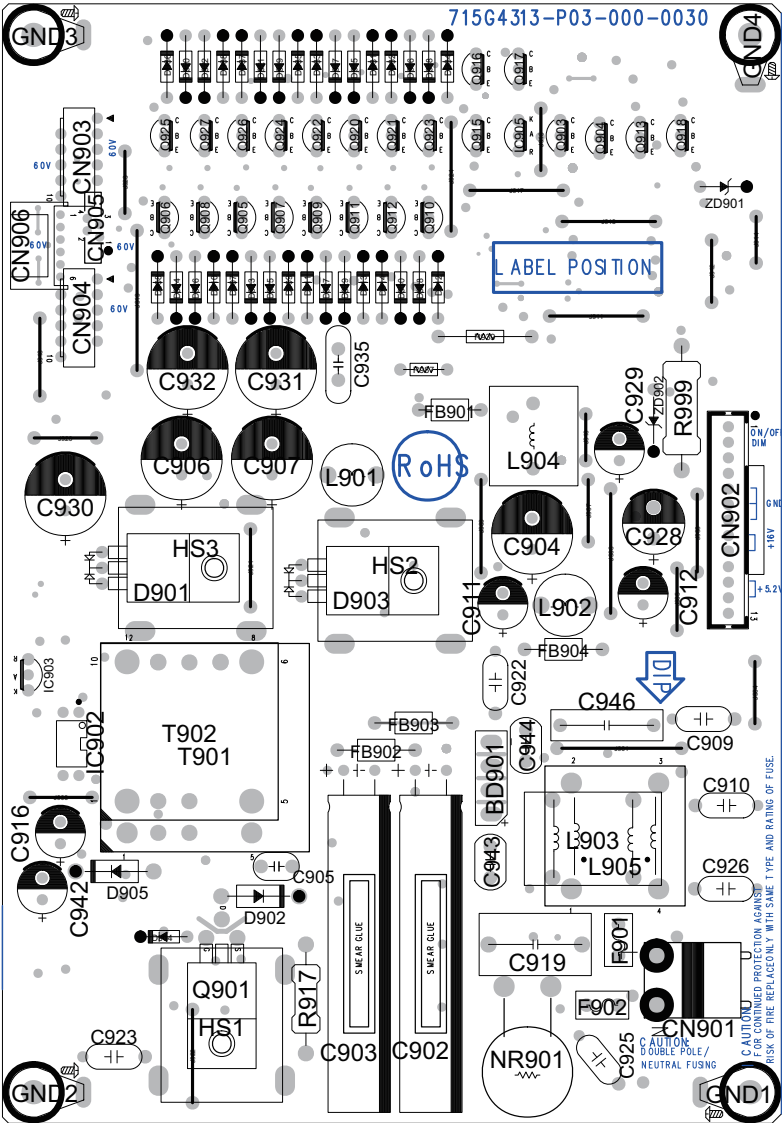
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7.2 Power Board

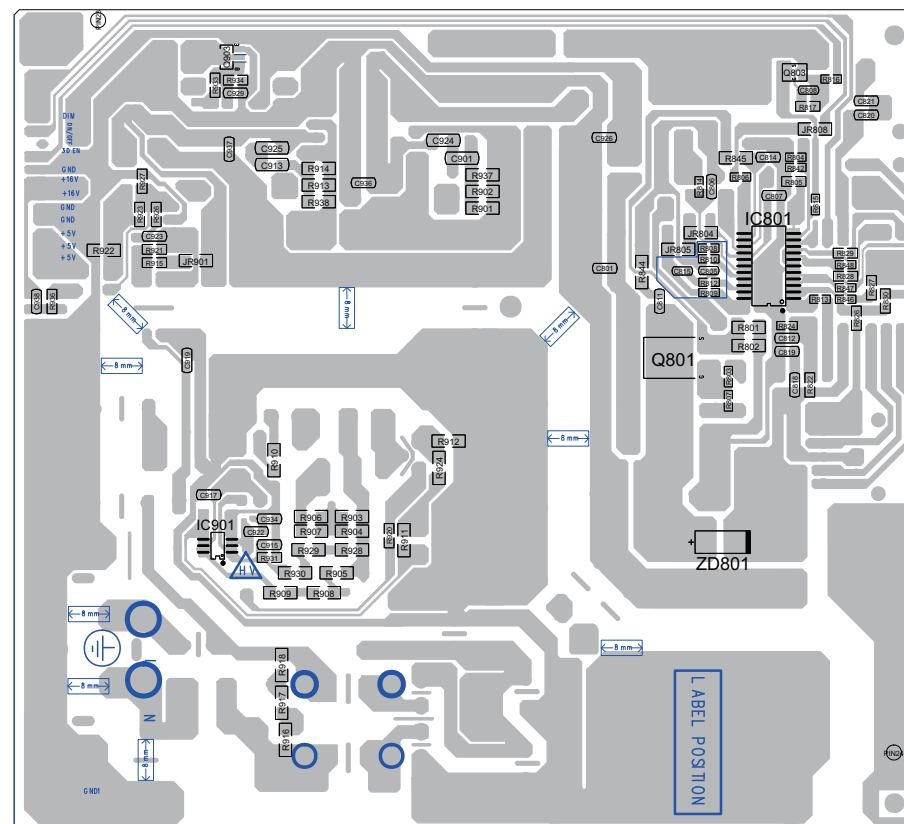
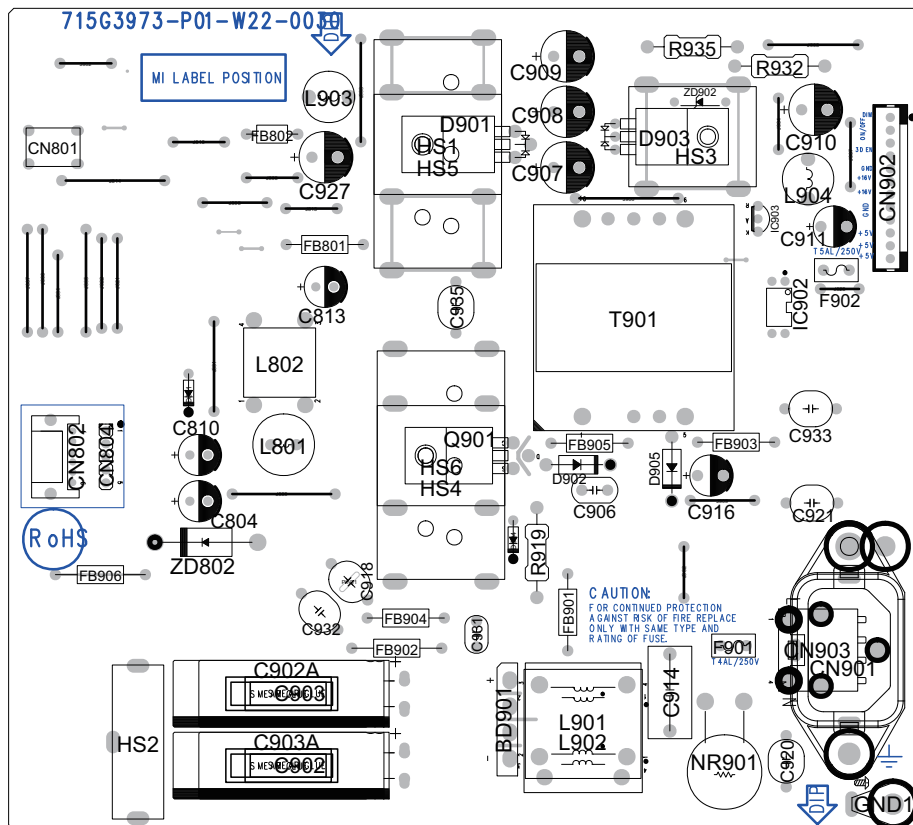
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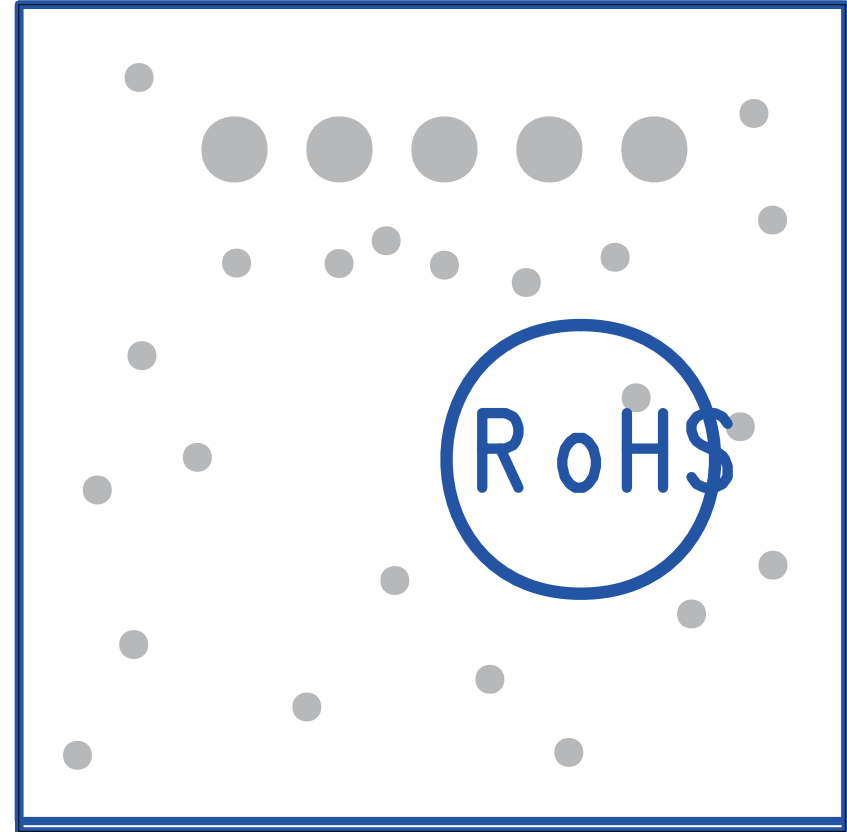
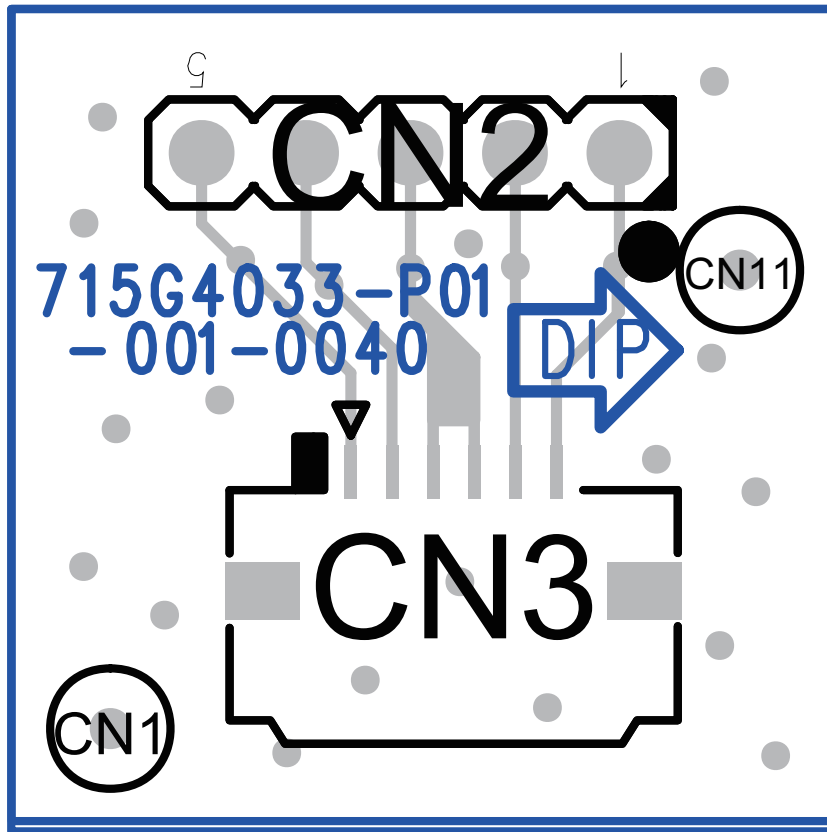
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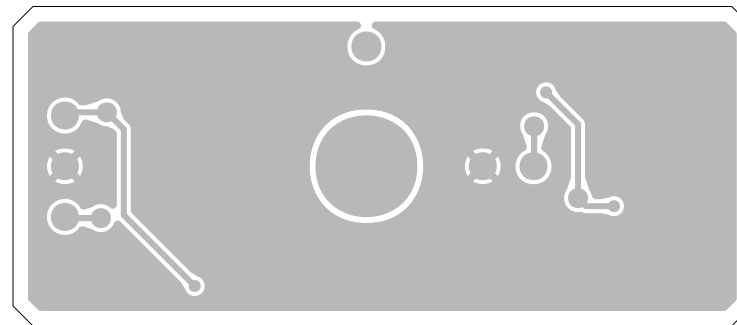
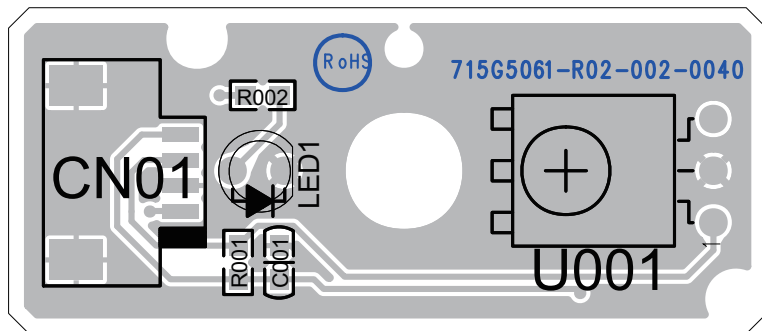


231TE4L (715G4033P01001004S)

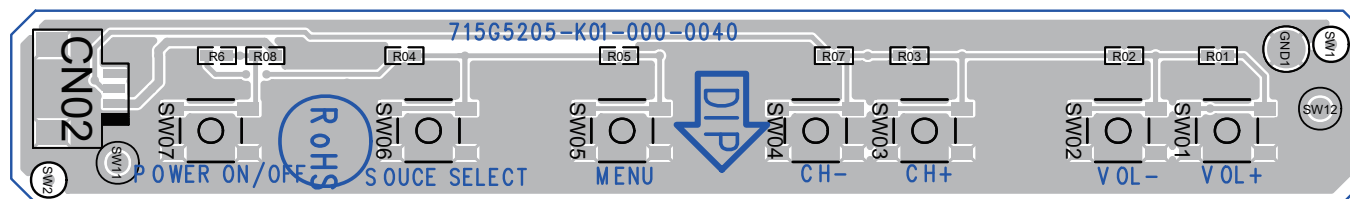
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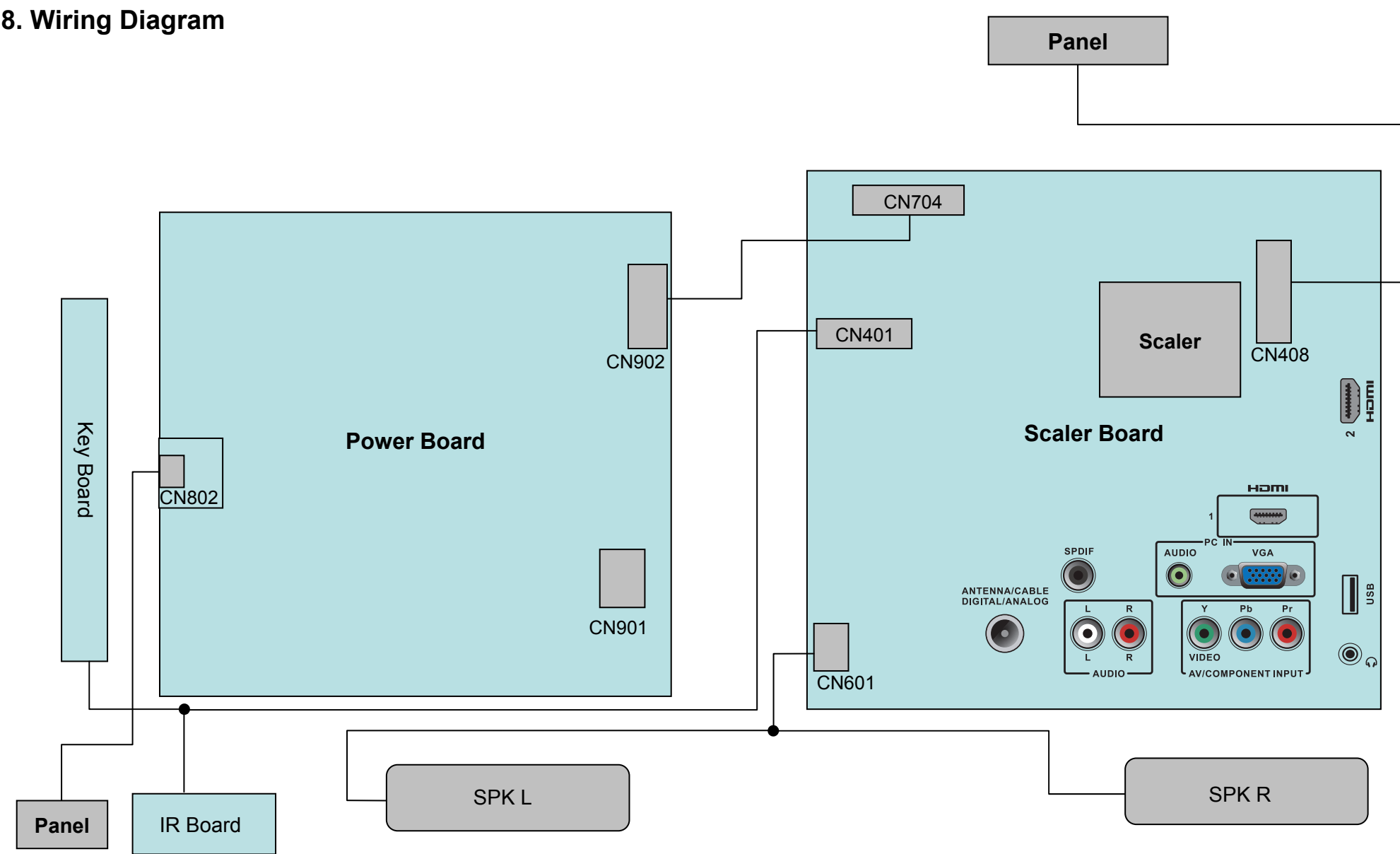
7.3 IR Board (715G5061R02002004M)



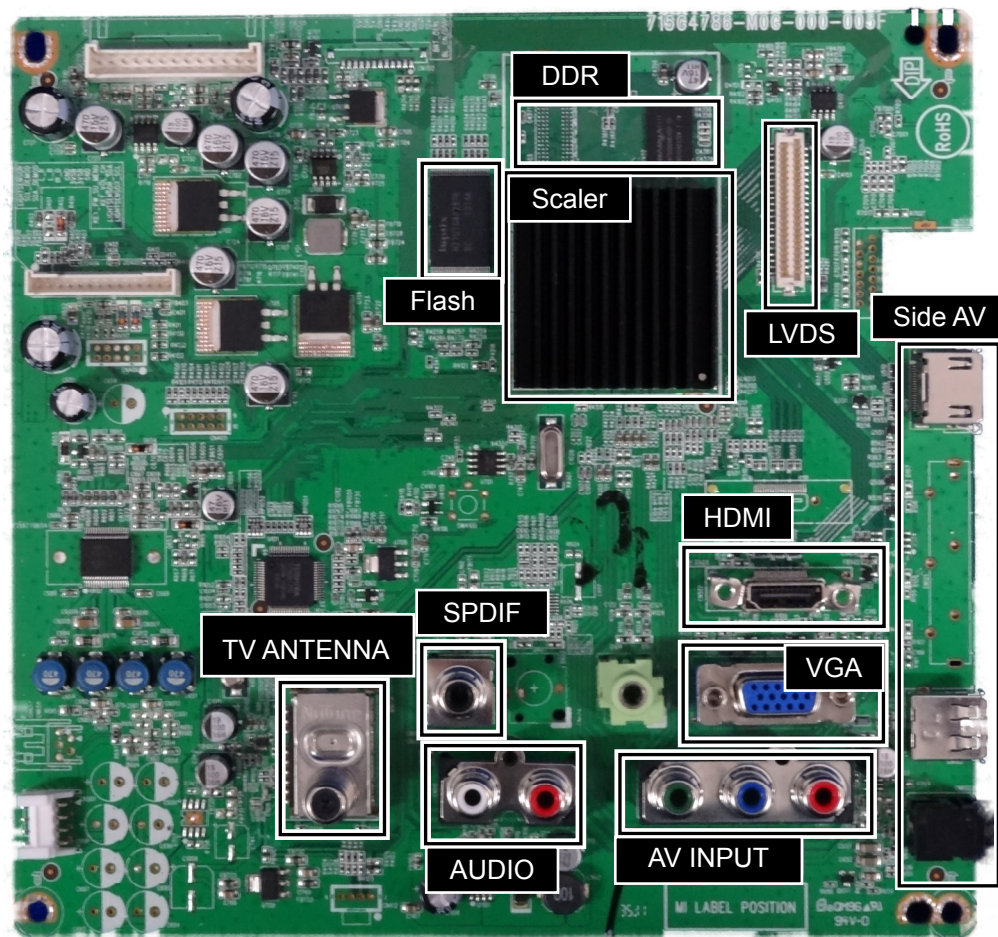
7.4 Key Board (715G5205K01000004S)



8. Wiring Diagram



9. Scaler Board Overview

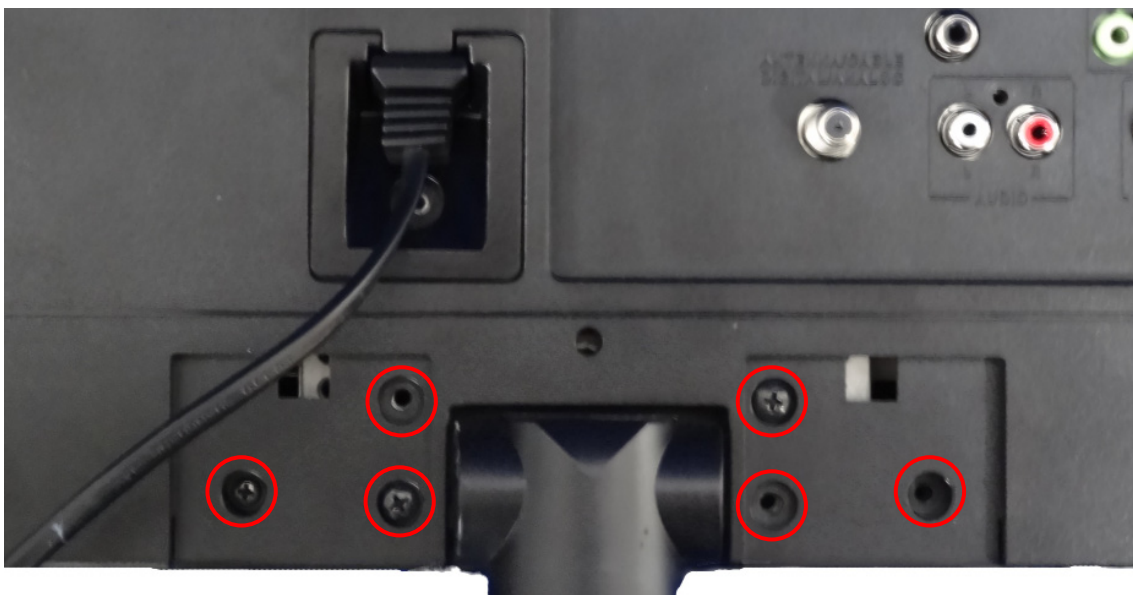


10. Mechanical Instructions

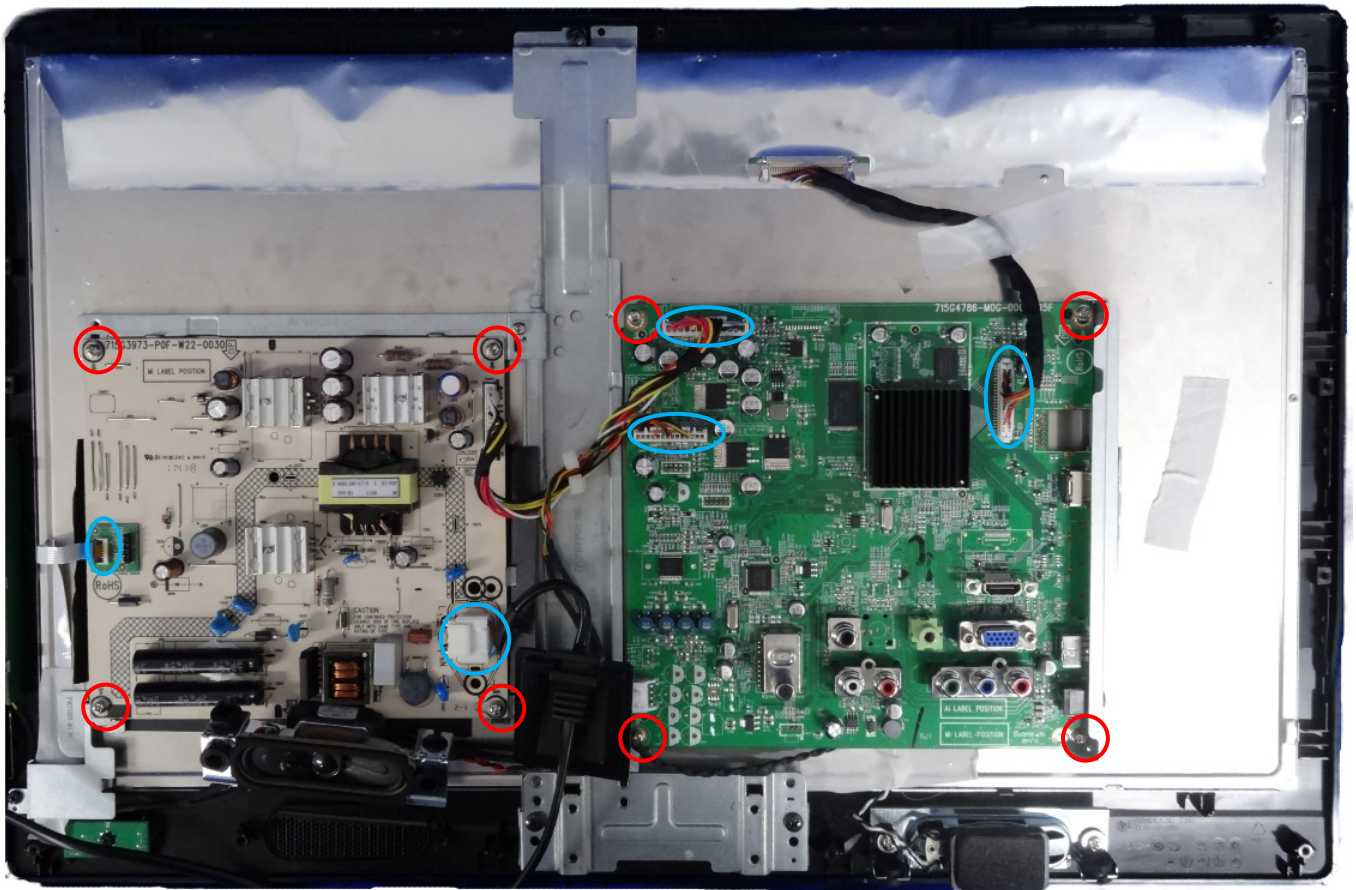
Take 231TE4L disassembly for example

Carefully place the TV monitor face down on a smooth surface. Be careful to avoid scratch and injury during the process of uninstall.

1. Using a cross-head screwdriver unscrew **six** screws that secure rear cover to the TV monitor.
2. Pull down the plate screw cap and unscrew the **six** screws to remove the rear cover.



3. Disconnect the cables and unscrew the screws that secure scaler board and power board to the main frame, and remove the boards.



4. Unscrew the screws that secure IR board, speakers and main frame to the bezel, and remove the bezel.



11. Trouble Shooting

This section describes commonly encountered issues and accompanying solutions.

General TV issues

1. The TV does not switch on

- Disconnect the power cable from the power outlet. Wait for one minute then reconnect it.
- Check that the power cable is securely connected.

2. The remote control is not working properly:

- Check that the remote control batteries are correctly inserted according to the + / - orientation.
- Replace the remote control batteries if they are flat or weak.
- Clean the remote control and TV sensor lens.

3. The standby light on the TV blinks red

- Disconnect the power cable from the power outlet. Wait until the TV cools down before reconnecting the power cable. If the blinking reoccurs, contact Philips Consumer Care.

4. You forgot the code to unlock the TV lock feature

- Enter '5351'.

5. The TV menu is in the wrong language

- Change the TV menu to your preferred language.
- When turning the TV on/off/to standby, you hear a creaking sound from the TV chassis:
- No action is required. The creaking sound is normal expansion and contraction of the TV as it cools and warms up. This does not impact performance.

TV channel issues

1. Previously installed channels do not appear in the channel list:

- Check that the correct channel list is selected.

2. No digital channels were found during the installation

- Check that the TV supports DVB-T or DVB-C in your country. See the listed countries on the back of the TV.

Picture issues

1. The TV is on, but there is no picture:

- Check that the antenna is properly connected to the TV.
- Check that the correct device is selected as the TV source.

2. There is sound but no picture:

- Check that the picture settings are correctly set.

3. There is poor TV reception from an antenna connection:

- Check that the antenna is properly connected to the TV.
- Loud speakers, unearthed audio devices, neon lights, high buildings and other large objects can influence reception quality. If possible, try to improve the reception quality by changing the antenna direction or moving devices away from the TV.
- If reception on only one channel is poor, fine tune this channel.

4. There is poor picture quality from connected devices:

- Check that the devices are connected properly.
- Check that the picture settings are correctly set.

5. The TV did not save your picture settings:

- Check that the TV location is set to the home setting. This mode offers you the flexibility to change and save settings.

6. The picture does not fit the screen; it is too big or too small:

- Try using a different picture format.

7. The picture position is incorrect:

- Picture signals from some devices may not fit the screen correctly. Check the signal output of the device.

Sound issues**1. There is a picture but no sound from the TV:**

Note: If no audio signal is detected, the TV automatically switches the audio output off — this does not indicate malfunction.

- Check that all cables are properly connected.
- Check that the volume is not set to 0.
- Check that the sound is not muted.

2. There is a picture but the sound quality is poor:

- Check that the sound settings are correctly set.

3. There is a picture but sound comes from one speaker only:

- Verify that sound balance is set to the centre.

HDMI connection issues**There are problems with HDMI devices:**

- Note that HDCP support can delay the time taken for a TV to display content from a HDMI device.
- If the TV does not recognize the HDMI device and no pictures are displayed, try switching the source from one device to another and back again.
- If there are intermittent sound disruptions, check that output settings from the HDMI device are correct.
- If a HDMI-to-DVI adaptor or HDMI to •DVI cable is used, check that an additional or AUDIO IN (mini-jack only).

Computer connection issues

The computer display on the TV is not stable:

- Check that a supported resolution and refresh rate is selected on the computer.
- Set the TV picture format to unscaled.

Contact us

If you cannot resolve your problem, refer to the FAQs for this TV at www.philips.com/support.

If the problem remains unresolved, contact Philips Consumer Care in your country as listed in this User Manual.



Warning:

Do not attempt to repair the TV yourself. This may cause severe injury, irreparable damage to your TV or void your warranty.



Note:

Make a note of your TV model and serial number before you contact Philips. These numbers are printed on the back of the TV and on the packaging

12. ISP Instruction

For the procedure you will require:

1. A personal computer with web browsing capability.
2. An archive utility that supports the ZIP-format (e.g. WinZip for Windows or StuffIt for Mac OS).
3. Preferably empty USB memory stick.

Note: Only FAT/DOS-formatted portable memory is supported.

Software upgrades procedure

1. Prepare a U-disk; the file system of FAT is the best choice.
2. Change the “.pkg” software file name to “upgrade.pkg” and copy it to U-disk root directory.
3. TV AC off, and insert the U-disk with F/W changed to the USB port of TV as below figure.



4. After TV AC on, TV will detect the F/W in the U-disk to upgrade automatically. During this process, it is forbid to AC off TV and unplug the U-disk. TV will restart after upgrade.
5. Unplug the U-disk and restart TV.
6. Press “menu+1999+recall” by RC to open factory menu and check the software version as below figure. If the version information is not the same as the F/W in U-disk, please redo upgrade.(Take 42pfl5300/t3 for example)



13. White Balance, Luminance Adjustment

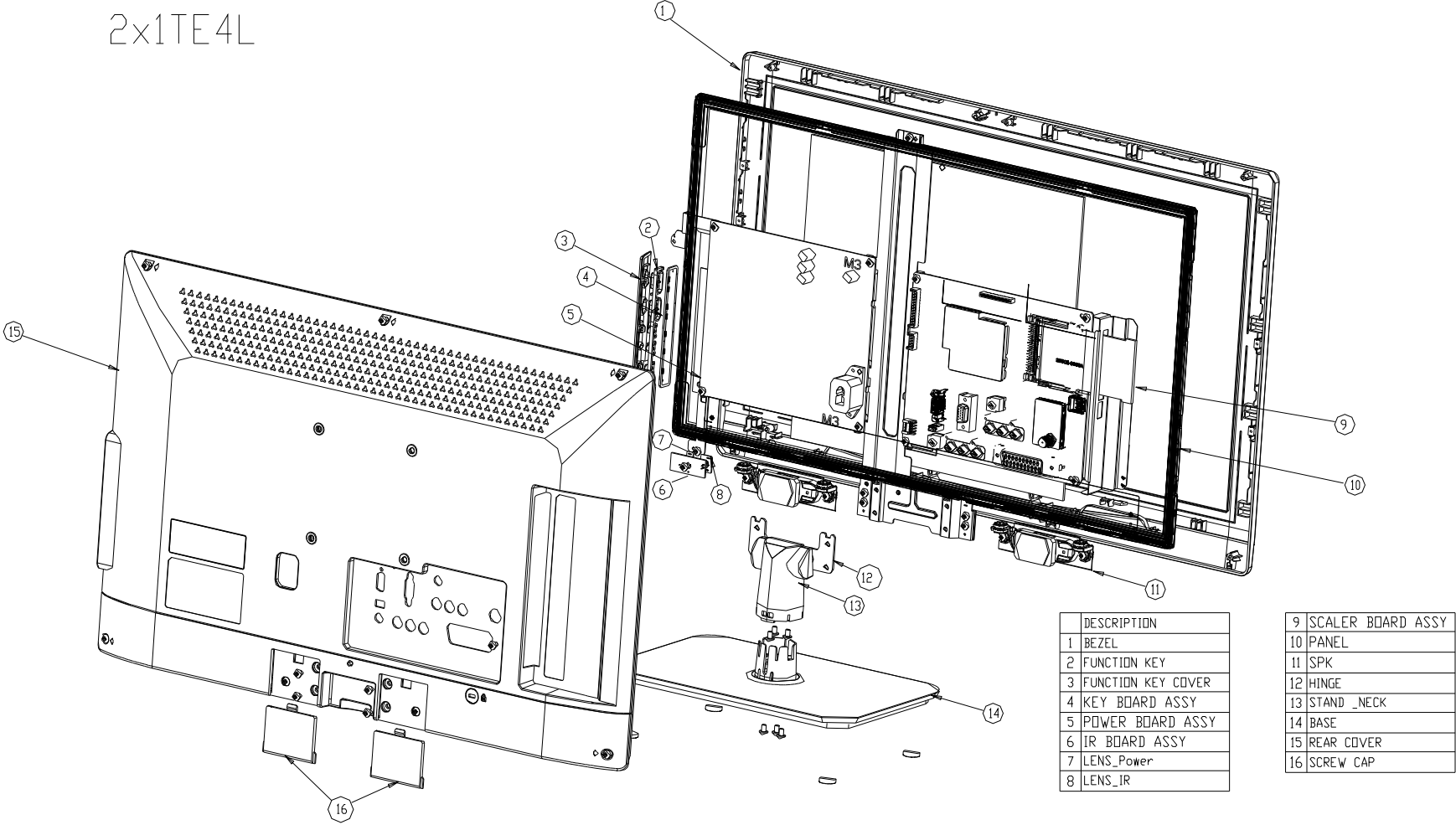
It is not necessary to adjust the white balance of this set.

Enter into the factory mode

Press the MENU button, and then press Number key 1→9→ 9→9 on the remote control to enter the factory mode.

14. Monitor Exploded View

2x1TE4L



15. Recommended & Spare Parts List

Note: The parts information listed below are for reference only, and are subject to change without notice. Please go to <http://cs.tpv.com.cn/hello1.asp> for the latest information

221TE4LB/57

Item	Location	PCM Codes	Description	Remark
1	XM114	P34T0859AFLZ1L01BA	BEZEL _21.5MMD	
2	XM409	A33T0996AFL 1L0100	KEY_FUNC(SK10-19)	
3	XM125	A33T0995AFLX1L0100	COVER_FUNCTION --	
4	XM003	KEPFBXZ2C	KEY BOARD ASSY	
5	XM004	PLTV1C554XXZVC	POWER BOARD ASSY	
6	XM010	IRPFBXZ2C	IR BOARD ASSY	
7	XM408	P33T0257 1 1C0100	LENS_POWER	
8	XM408	P33T0274ABV 1C0100	LENS IR	
9	XM002	756TXBCB0TS0320002	SCALER BOARD ASSY(CBPFBTASX1C)	
10	E750	750GBU215H3103N000	LCD M215HW03 V100 XM AUO	
11	SP01	078G0035566 YL	SPEAKER 8 OHM 3.5W 100X27mm 140mm YES	
11	SP02	078G0035566 YR	SPEAKER 8 OHM 3.5W 100X27mm 200mm YES	
12	XM118	A37T0162011CKD	HINGE	
13	XM119	P34T0814AFL 1L0100	STAND _NECK	
14	XM117	P34T0862AFL 1L0100	BASE	
15	XM113	A34T1996AFLZBL01BA	REAR COVER 22	
16	XM131	P33T0275AFL 1L0100	SCREW CAP	
	XM129	705TXBBCP11	705 ASSY FOR BRAZIL PACKING	
	E08902	089G 725CAA DB	D-SUB CABLE	
	XM405	092GB1TX1A36GH	CONSIGN 1.5V R03-B500-01S(white crust£©	
	ECN704	095G801313DX08	HARNESS 13P-13P 160mm	
	ECN906	095G8014 6D946	HARNESS 6P-6P(CI1406S) 220mm	
	ECN401	095G801414DY18	HARNESS 14P-4P+3P 450/470mm	
	ECN408	095G8018 3DY10	HARNESS 30P-42P 180mm	
	XM404	098GRABD5NEPHR	REMOTE PHILIPS RC2143619/01	
	ECN901	389G224A15NJR800X5	AC POWER CORD 1500+80mm	
	XM105	705TXBCK006	BASE SCREW	
	XM126	A33T0907AFL 1L0100	AC COVER	
	XM202	Q44G600027V 9A	CARTON	
	XM213	Q45G2010M0101A	PE BAG FOR MANUAL	
	XM203	Q45T 99609100	EPE COVER	
	XM205	705TXCCS044048	EPS ASSY	
	XM202	X44GCA1081302A	ARTWORK CARTON	
	XM130	705TXBBCA11	705 ASSY FOR BRAZIL PCBA	
	U115	056G1133956	IC CAT24C02WI-GT3 SO-8	

62	Meridian 4			
	U405	056G2233 50	FLASH H27U1G8F2BTR-BC 1Gb TSOP1-48	
	U406	056G2233X01	FLASH MX25L4006EM2I-12G 4M SOP8L 200 mil	
	SMTF-U406	100TPTAI003S2X	PHILIPS_221TE4LB_SA_FLASH_V2.04_5D40	
	SMTF-U405	100TPTAI004S2X	PHP_221TE4LB_SA_Nand_Flash_V2.05_B453	
	SMTF-U115	100TPTAIV02S1D	PHILIPS_221TE4LB_SA_VGA_EDID_V2.02_2200	
	U401	056G 562467	SCALER TSXL28-B1A10-H BGA	
	U402	056G 615144	DRAM NT5CB64M16DP-CF 1Gb BGA-96	
	U1001	056G 7SB157 F	IC NC7SB3157P6X MAA06A SC-70 FAIRCHILD	
	U163	056G 643 27	IC G692L293TCUf 2.91V SOT-143	
	U111	056G 662502	IC ESD AZC199-04S.R7G SOT23-6L	
	X1051	093G 22SX01 YC	CRYSTAL YC 49USMD 16.000MHz 20PPM 18PF	
	X4301	093G 22SX02 YC	CRYSTAL YC 49U/SMD 24MHz 20PPM 18PF	
	U001	056G 627 48	IR RECEIVER IRM-3636N3S27F45-P 36KHZ	
	U001	356G0927048	IR RECEIVER IRM-3636N3S27F45-P 36K	
	IC901	056G 379529	AC/DC CONVERTER IC LD7576AGR SOP-7	
	IC904	056G 700 2	IC RT8482GS SOP-16	
	IC902	056G 139 10	IC TLP781F PHOTOCOUPLER DIP-4	
	IC902	056G 139 3A	PC123Y22FZOF SHARP	
	IC903	056G 158 10 T	DC/DC AS431AZTR-E1 150MA 40V TO-92	
	IC903	056G 158 12	SHUNT REGULATOR KIA431A-AT/P TO-92	
	F901	084G 56 3 B	FUSE 3.15A 250V	
	F901	084G 56 3W	FUSE 3.15A 250V	
	T901	080GL32P 27 L	X'FMR 480UH 10% 10UH PT-013361-5 EFD30	
	T901	080GL32P 27 N	X'FMR 480UH 10% 10UH YUVA-1429 EFD30	

Service Kit

Description	Part No.	Picture
ISP Tool	USB	

16. General Product Specification

Please refer to the 191V2 and 221V2 Product Specification the next page:

221TE4L Page 64-102

231TE4L Page 103-141

TELEVISION/MONITOR SAFETY GUIDELINES FOR THE PROFESSIONAL SERVICE TECHNICIAN

Safety Checks

After the original service problem has been corrected, a complete safety check should be made. Be sure to check over the entire set, not just the areas where you have worked. Some previous service may have left an unsafe condition, which could be unknowingly passed on to your customer. Be sure to check all of the following:

Fire and Shock Hazard

1. Be sure all components are positioned in such a way as to avoid the possibility of adjacent component shorts. This is especially important on those chassis which are transported to and from the service shop.
2. Never release a repaired unit unless all protective devices such as insulators, barriers, covers, strain reliefs, and other hardware have been installed in accordance with the original design.
3. Soldering and wiring must be inspected to locate possible cold solder joints, solder splashes, sharp solder points, frayed leads, pinched leads, or damaged insulation (including the ac cord). Be certain to remove loose solder balls and all other loose foreign particles.
4. Check across-the-line components and other components for physical evidence of damage or deterioration and replace if necessary. Follow original layout, lead length, and dress.
5. No lead or component should touch a receiving tube or a resistor rated at 1 watt or more. Lead tension around protruding metal surfaces or edges must be avoided.
6. Critical components having special safety characteristics are identified with an asterisk by the Ref. No. in the parts list and enclosed within a broken line * (where several critical components are grouped in one area) along with the safety symbols on the schematic diagrams and/or exploded views.
7. When servicing any unit, always use a separate isolation transformer for the chassis. Failure to use a separate isolation transformer may expose you to possible shock hazard, and may cause damage to servicing instruments.
8. Many electronic products use a polarized ac line cord (one wide pin on the plug.) Defeating this safety feature may create a potential hazard to the service and the user. Extension cords which do not incorporate the polarizing feature should never be used.
9. After reassembly of the unit, always perform a leakage test or resistance test from the line cord to all exposed metal parts of the cabinet. Also check all metal control shafts (with knobs removed), antenna terminals, handles, screws, etc. to be sure the unit may be safely operated without danger of electrical shock.

* Broken line

Implosion

1. All picture tubes used in current model receivers are equipped with an integral implosion system. Care should always be used, and safety glasses worn, whenever handling any picture tube. Avoid scratching or otherwise damaging the picture tube during installation.
2. Use only replacement tubes specified by the manufacturer.

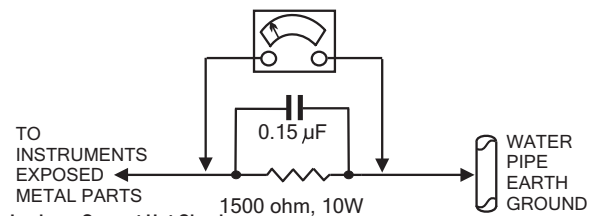
X-radiation

1. Be sure procedures and instructions to all your service personnel cover the subject of X-radiation. Potential sources of X-rays in TV receivers are the picture tube and the high voltage circuits. The basic precaution which must be exercised is to keep the high voltage at the factory recommended level.
2. To avoid possible exposure to X-radiation and electrical shock, only the manufacturer's specified anode connectors must be used.
3. It is essential that the service technician has an accurate HV meter available at all times. The calibration of this meter should be checked periodically against a reference standard.
4. When the HV circuitry is operating properly there is no possibility of an X-radiation problem. High voltage should always be kept at the manufacturer's rated value - no higher - for optimum performance. Every time a color set is serviced, the brightness should be run up and down while monitoring the HV with a meter to be certain that the HV is regulated correctly and does not exceed the specified value. We suggest that you and your technicians review test procedures so that HV and HV regulation are always checked as a standard servicing procedure, and the reason for this prudent routine is clearly understood by everyone. It is important to use an accurate and reliable HV meter. It is recommended that the HV recorded on each customer's invoice, which will demonstrate a proper concern for the customer's safety.
5. When troubleshooting and making test measurements in a receiver with a problem of excessive high voltage, reduce the line voltage by means of a Variac to bring the HV into acceptable limits while troubleshooting. Do not operate the chassis longer than necessary to locate the cause of the excessive HV.

6. New picture tubes are specifically designed to withstand higher operating voltages without creating undesirable X-radiation. It is strongly recommended that any shop test fixture which is to be used with the new higher voltage chassis be equipped with one of the new type tubes designed for this service. Addition of a permanently connected HV meter to the shop test fixture is advisable. The CRT types used in these new sets should never be replaced with any other types, as this may result in excessive X-radiation.
7. It is essential to use the specified picture tube to avoid a possible X-radiation problem.
8. Most TV receivers contain some type of emergency "Hold Down" circuit to prevent HV from rising to excessive levels in the presence of a failure mode. These various circuits should be understood by all technicians servicing them, especially since many hold down circuits are inoperative as long as the receiver performs normally.

Leakage Current Cold Check

1. Unplug the ac line cord and connect a jumper between the two prongs of the plug.
2. Turn on the power switch.
3. Measure the resistance value between the jumpered ac plug and all exposed cabinet parts of the receiver, such as screw heads, antennas, and control shafts. When the exposed metallic part has a return path to the chassis, the reading should be between 1 megohm and 5.2 megohms. When the exposed metal does not have a return path to the chassis, the reading must be infinity. Remove the jumper from the ac line cord.

**Leakage Current Hot Check**

1. Do not use an isolation transformer for this test. Plug the completely reassembled receiver directly into the ac outlet.
2. Connect a 1.5k, 10w resistor paralleled by a 0.15µf. capacitor between each exposed metallic cabinet part and a good earth ground such as a water pipe, as shown above.
3. Use an ac voltmeter with at least 5000 ohms volt sensitivity to measure the potential across the resistor.
4. The potential at any point should not exceed 0.75 volts. A leakage current tester may be used to make this test; leakage current must not exceed 0.5 milliamps. If a measurement is outside of the specified limits, there is a possibility of shock hazard. The receiver should be repaired and rechecked before returning it to the customer.
5. Repeat the above procedure with the ac plug reversed. (Note: An ac adapter is necessary when a polarized plug is used. Do not defeat the polarizing feature of the plug.)

Picture Tube Replacement

The primary source of X-radiation in this television receiver is the picture tube. The picture tube utilized in this chassis is specially constructed to limit X-radiation emissions. For continued X-radiation protection, the replacement tube must be the same type as the original, including suffix letter, or a Philips approved type.

Parts Replacement

Many electrical and mechanical parts in Philips television sets have special safety related characteristics. These characteristics are often not evident from visual inspection nor can the protection afforded by them necessarily be obtained by using replacement components rated for higher voltage, wattage, etc. The use of a substitute part which does not have the same safety characteristics as the Philips recommended replacement part shown in this service manual may create shock, fire, or other hazards.

WARNING: Before removing the CRT anode cap, turn the unit **OFF** and short the HIGH VOLTAGE to the CRT DAG ground.
SERVICE NOTE: The CRT DAG is not at chassis ground.