


Please check the notes appearing in red on the schematic pages. In addition, please check the Errata document of the respective product (the potential issues discovered/reported are going to appear in the Errata first). Follow the guidance provided in the relevant Carrier Board Design Guide. Please carefully review your designs against all of the sections of the Carrier Board Design Guide before proceeding with manufacturing your custom carrier board. The documents referenced are available on our Developer Website.

REVISION HISTORY

1. Design Revision V1.0 : Preliminary design  
Date: 29th April 2014
2. Design Revision V1.1 :
  - PowerSupply.SchDoc : Commented Barrel Power Supply Connector X2 as not assembled
  - Renamed ExpansionPort.SchDoc to ExtensionConnector.SchDoc
  - DigitalPeripheral.SchDoc, ExtensionConnector.SchDoc : Renamed net names from PIN\_XXX to SODIMM\_XXX for GPIO pins
  - DigitalPeripheral.SchDoc, ExtensionConnector.SchDoc : New SODIMM pins assigned to connector X9 as GPIOs (SODIMM\_135, SODIMM\_98, SODIMM\_133, SODIMM\_103, SODIMM\_101, SODIMM\_97, SODIMM\_85, SODIMM\_79, SODIMM\_45, SODIMM\_55 and SODIMM\_63)
  - ExtensionConnector.SchDoc : Connector X9, rearranged PWM signals : PWM\_A (Pin \_41), PWM\_B (Pin \_42), PWM\_C (Pin \_43) and PWM\_D (Pin \_44)
  - USB.SchDoc: Added USB client (only) circuit and connector X4 (Micro-B Type). Components not assembled
  - DigitalPeripheral.SchDoc : Updated Note 11, SD Card Boot Mode Option. Only Colibri T20 supports SD Card boot mode
  - Ethernet.SchDoc : Added Note 15, about SODIMM\_191 (ETH\_AGND) pin. Added error notes for ETH\_TX0\_P/N signalsDate: 01th Sept 2014
3. Design Revision V1.2 :
  - PowerSupply.SchDoc :TVS diode D1 has been replaced with the higher rating TVS diode (Reverse Standoff Voltage = 22V, Breakdown Voltage = 24.4V (Min)). Part Number of IC1 has been updated to AP6503
  - PowerSupply.SchDoc: Capacitor C7 value has been updated to 10nF. Capacitor C32 (not assembled) value has been updated . Note 1 has been updated, MECH6 (Fiducial, Top side) has been removed. MECH10, MECH11, MECH12, MECH13, MECH14, MECH15, JPM1 and JPM2 have been added
  - PowerSupply.SchDoc, USB.SchDoc, ExtensionConnector.SchDoc : Power supply port name has been updated (+5V\_PWR\_IN --> PWR\_IN and +5V --> PWR\_IN\_FILT). Voltage rarting of the capacitors (C2, C3, C6, C7, C11, C34, and C35) has been updated. Comments referring to Note 1 have been added
  - Ethernet.SchDoc : Ethernet signal polarity (ETH\_TX0\_P/N) issue has been fixed. ETH\_GND (SODIMM\_191) has been directly connected to GND signal. ETH\_SPEED and ETH\_LINK\_ACT signal connection to the connector X5 have been updated. R73 and R74 have been added in parallel with the Jumper JP1
  - USB.SchDoc: R57 (0R) has been added in serise with the pin 2 (V\_IN) of the USB power switch (IC3), as an assembly option. R48 has been replaced with Jumper JP2
  - AnalogPeripheral.SchDoc, ExtensionConnector.SchDoc: Connector X10 has been added to the extension connector schematic. Audio signals (AUDIO\_MIC\_IN, AUDIO\_LINEIN\_L/R, AUDIO\_HEADPHONE\_L/R, AUDIO\_HEADPHONE\_GND) have been connected to the connector X10. C38, C39, C40, C41 and C42 have been added
  - DigitalPeripheral.SchDoc, ExtensionConnector.SchDoc : SODIMM\_65, SODIMM\_75, SODIMM\_81, SODIMM\_94 and SODIMM\_96 signals have been connected to the connector X10. R58, R59, R60, R75 and R76 have been added. Note 9 has been updated
  - DigitalPeripheral.SchDoc, ExtensionConnector.SchDoc : Conenctor X11 (6 pins, 1.27mm pitch) has been added to the extension connector schematic. SODIMM\_170, SODIMM\_172, SODIMM\_174, SODIMM\_176, SODIMM\_178 and SODIMM\_180 have been connected to the connector X11
  - ExternalRTC.SchDoc : RTC power circuit has been updatedDate: 20th March 2015

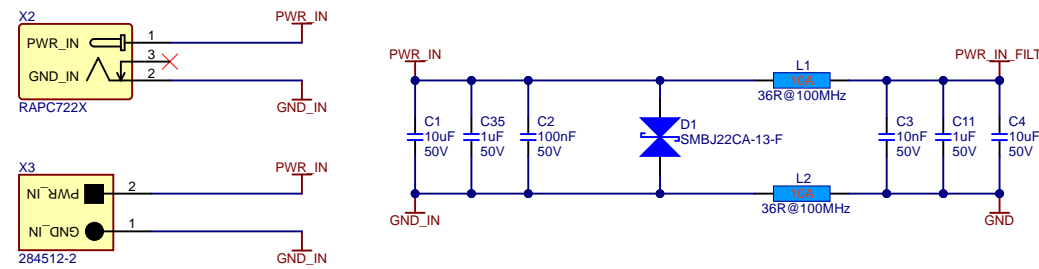
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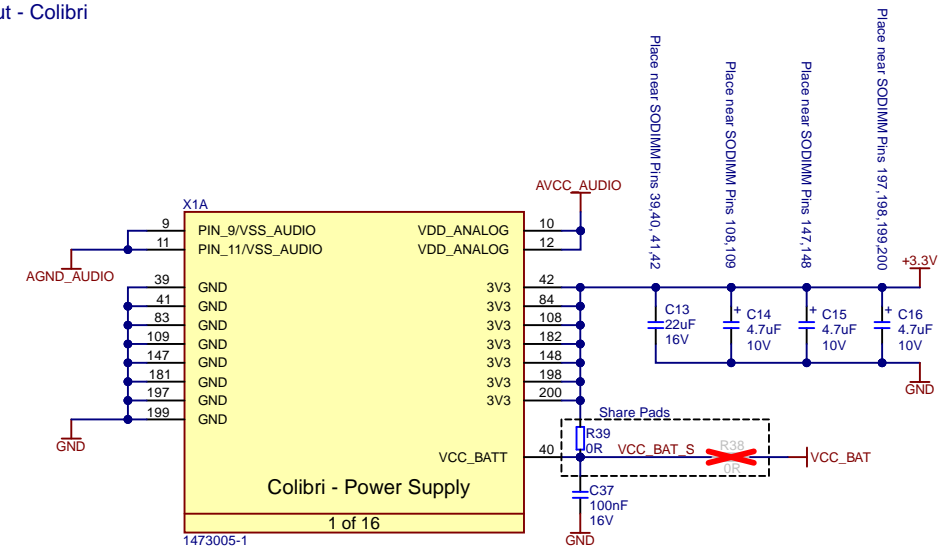
Title <i>Viola</i>			Toradex AG Ebenastrasse 10 Horw 6048 Switzerland
Size: A3	Number:2	Revision:V1.2	
Date: 10/18/2022	Time: 9:45:12 PM	Sheet 2 of 12	
File: RevisionHistory.SchDoc			

### Input Power- Overvoltage Protection and EMI Filter

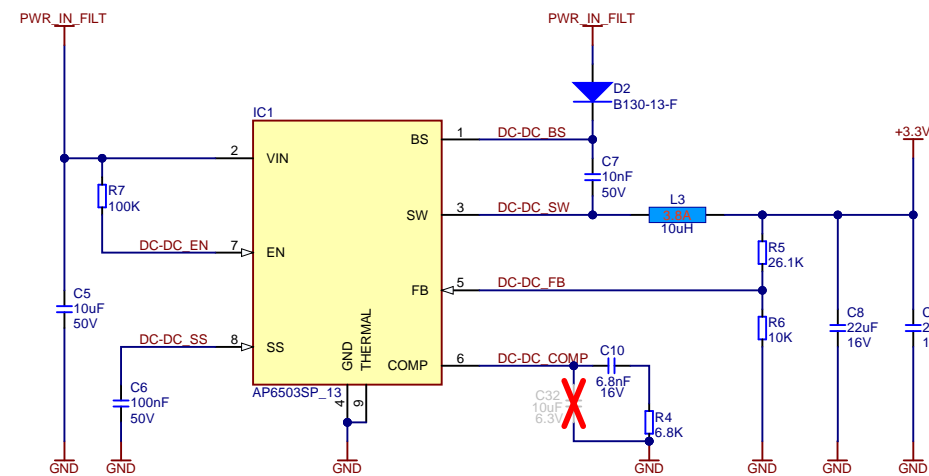


**Note 1:**  
Recommended Power Supply: Voltage: 5V, +/- 0.25V, Current: 5A (MAX)  
IMPORTANT: Power supply is not reverse polarity and overvoltage protected.

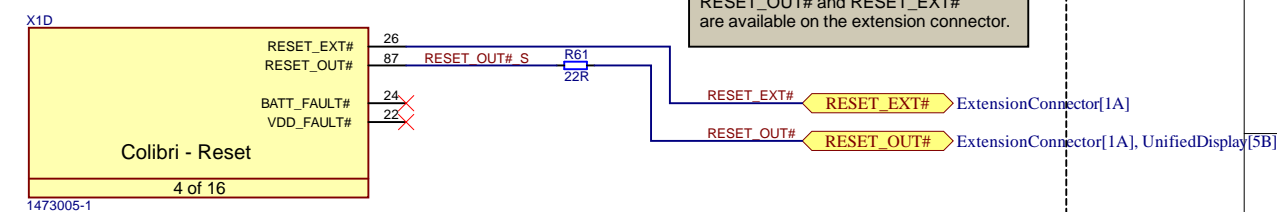
### Power Input - Colibri



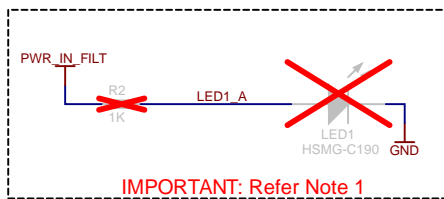
DC/DC Buck Regulator: PWR\_IN\_FILT to 3.3V, 3A



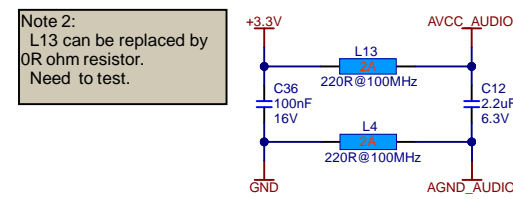
## Power Reset and Control - Colibri



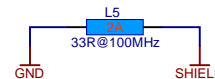
### Input Power- Power-On Indication



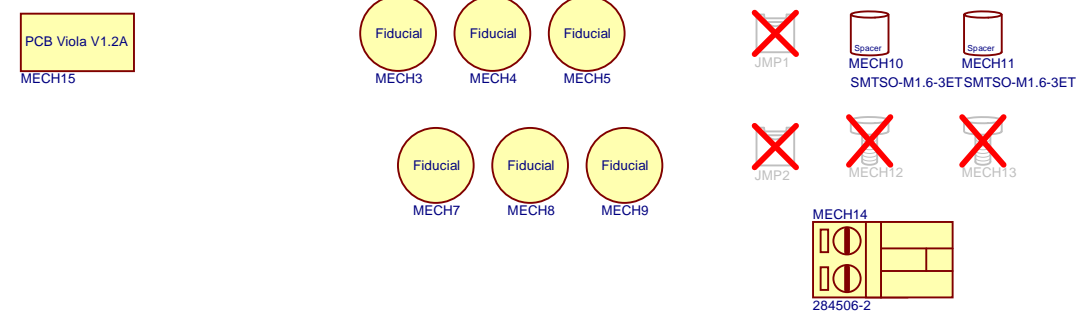
## Analogue/Audio Power

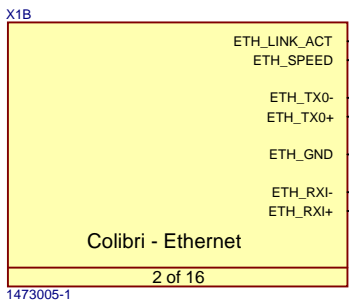


ESD Shield



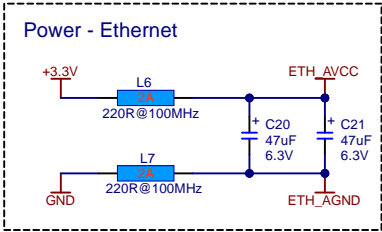
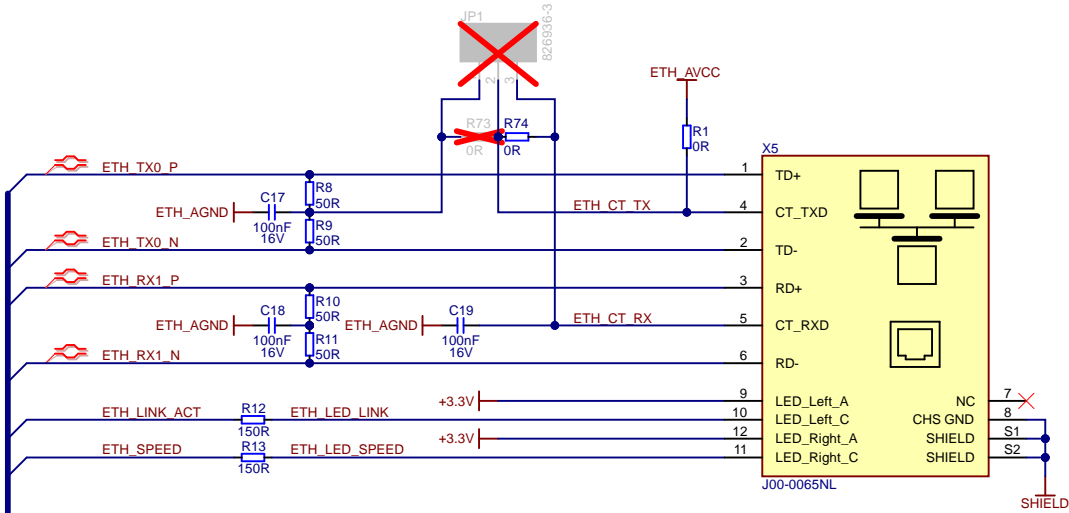
Mechincal

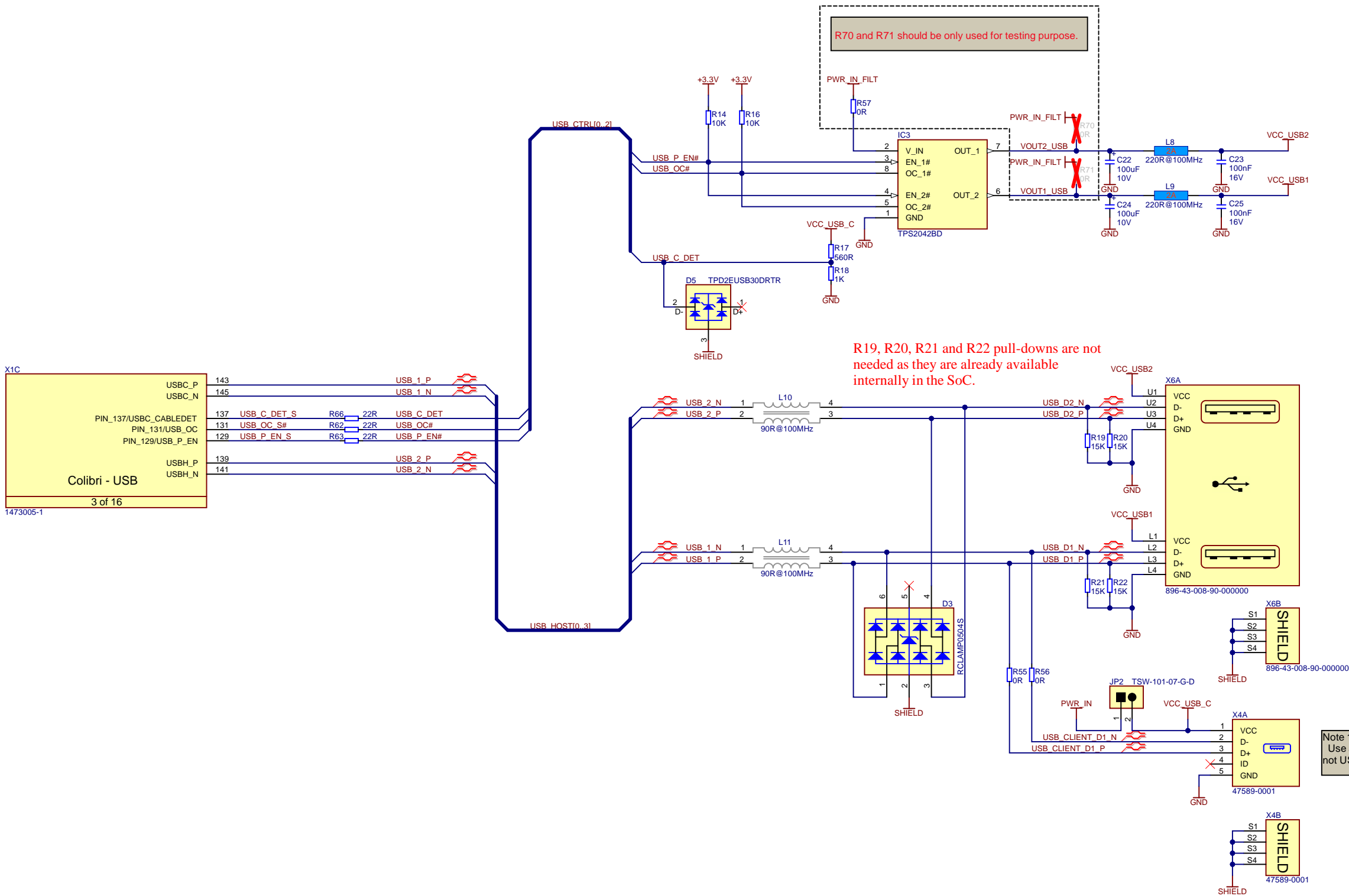




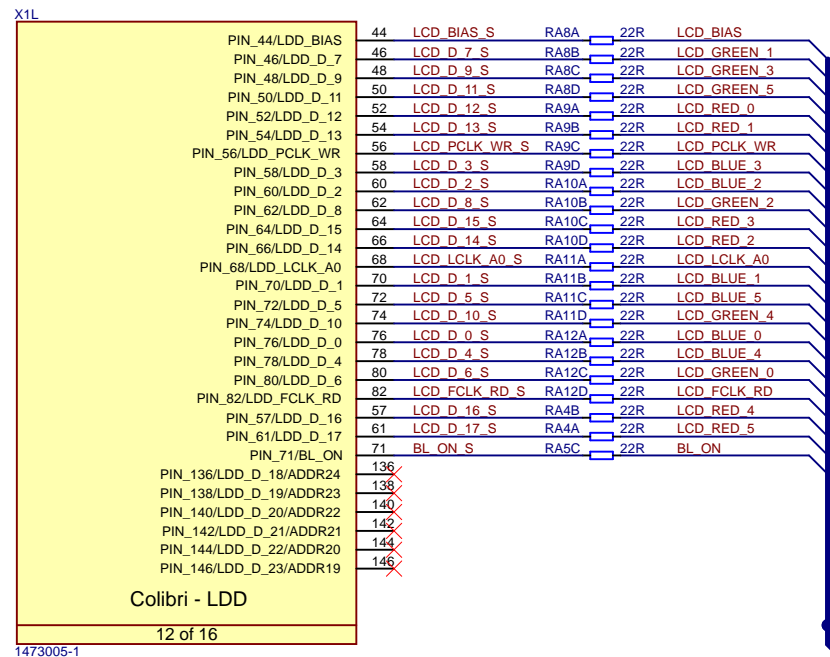
**WARNING:**  
The LED signals are prone to backfeed to the module if the Ethernet PHY rails are powered off while the carrier board rails are still on. Therefore, decoupling the ETH\_LINK\_ACT and ETH\_SPEED signals from the LEDs is recommended. To prevent ETH LED backfeeding issues an external buffer circuit is required. Check the relevant section of the Colibri Carrier Board Design Guide for details.

Note 4:  
PIN 1-2 = DM9000E ON PXA270  
PIN 2-3 = DM9000A/ASIX on other module





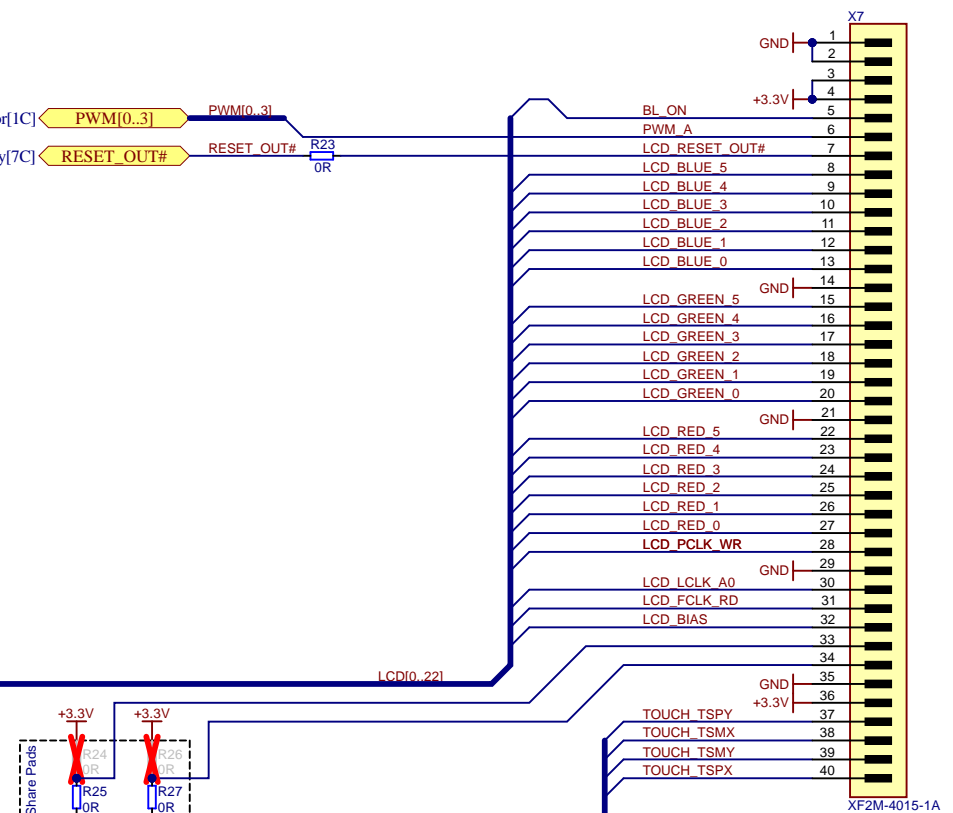
# RGB Display Signals - Colibri



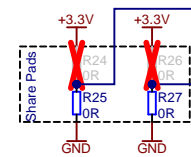
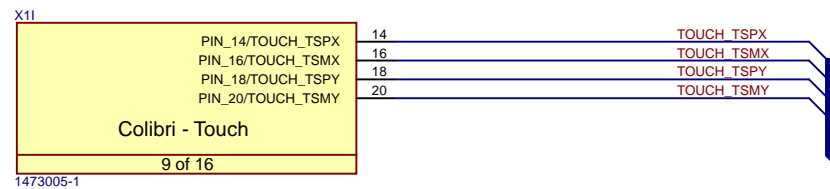
Note 5: LCD COLOR MAPPING 18bps

LCD_D_0_S	->	LCD_BLUE_0
LCD_D_1_S	->	LCD_BLUE_1
LCD_D_2_S	->	LCD_BLUE_2
LCD_D_3_D	->	LCD_BLUE_3
LCD_D_4_D	->	LCD_BLUE_4
LCD_D_5_D	->	LCD_BLUE_5
LCD_D_6_D	->	LCD_GREEN_0
LCD_D_7_D	->	LCD_GREEN_1
LCD_D_8_D	->	LCD_GREEN_2
LCD_D_9_D	->	LCD_GREEN_3
LCD_D_10_D	->	LCD_GREEN_4
LCD_D_11_D	->	LCD_GREEN_5
LCD_D_12_D	->	LCD_RED_0
LCD_D_13_D	->	LCD_RED_1
LCD_D_14_D	->	LCD_RED_2
LCD_D_15_D	->	LCD_RED_3
LCD_D_16_D	->	LCD_RED_4
LCD_D_17_D	->	LCD_RED_5

# Unified Interface Display Connector

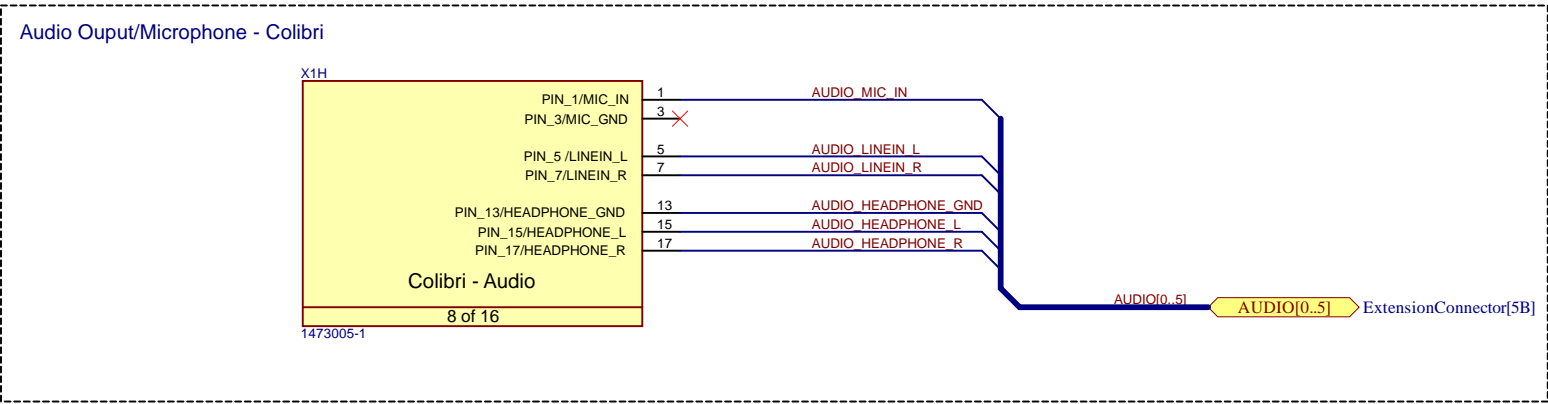
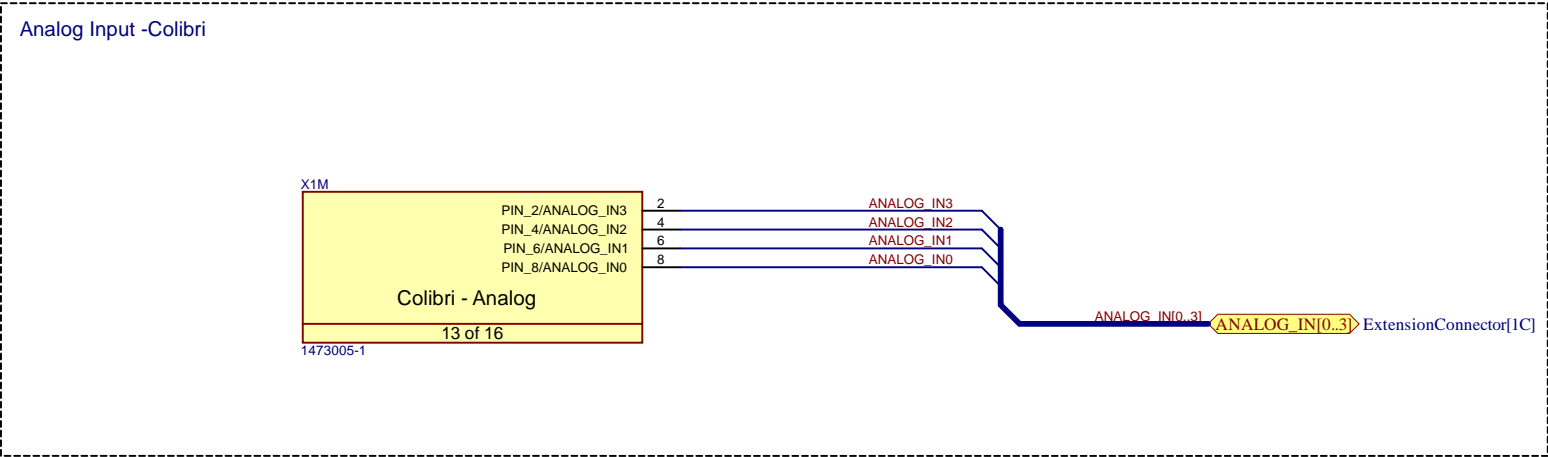


# Display Touch Signals - Colibri

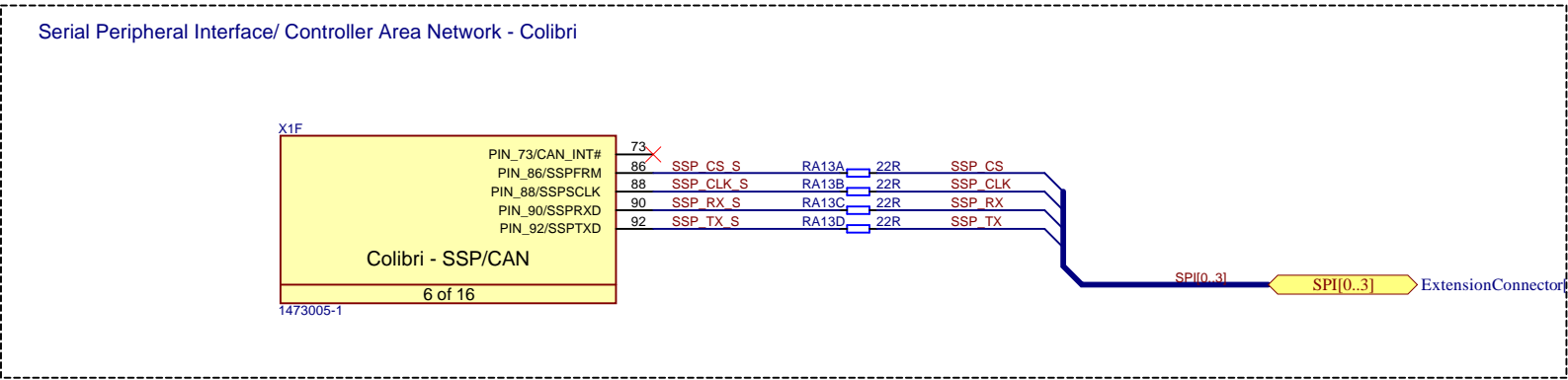
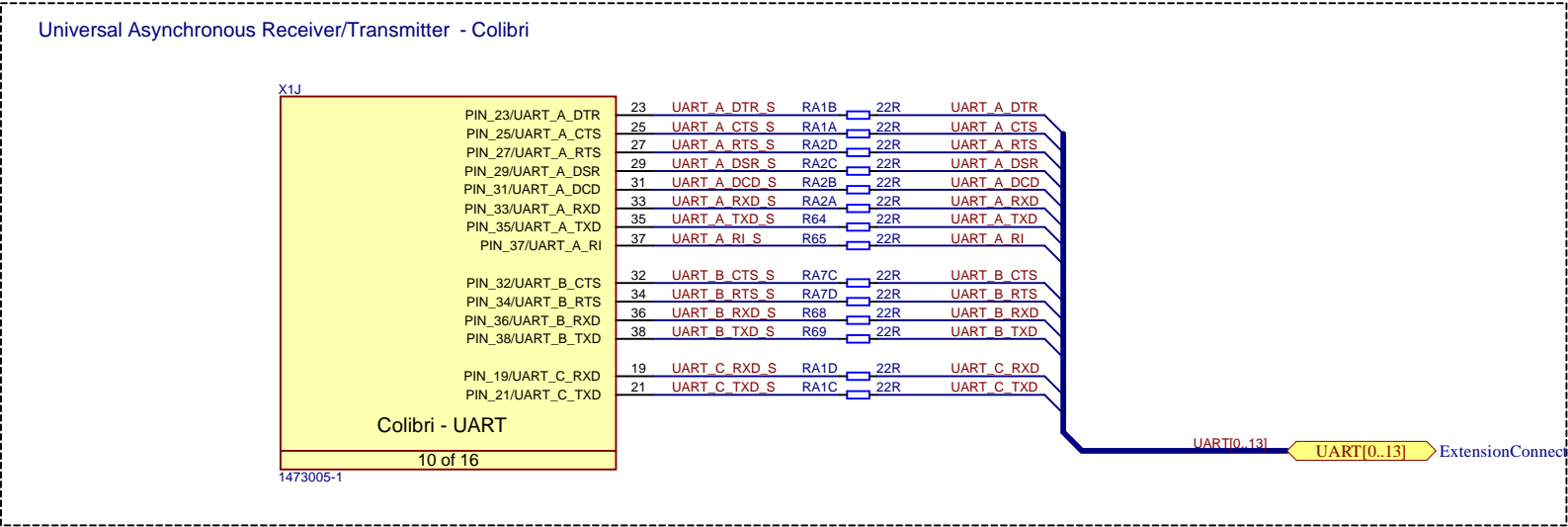
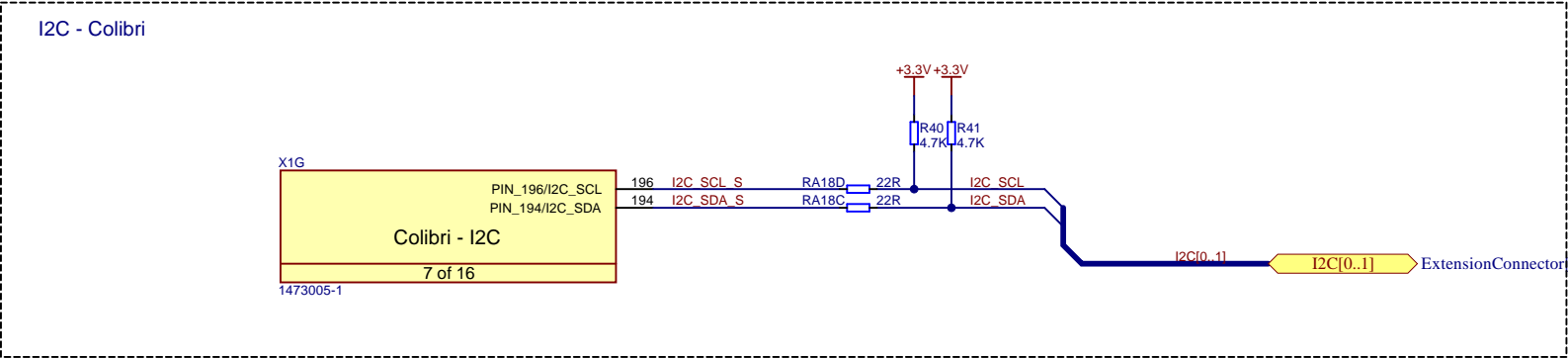


Title <i>Viola</i>			<i>Toradex AG Ebenaustrasse 10 Horw 6048 Switzerland</i>
Size: <i>A3</i>	Number: <i>6</i>	Revision: <i>V1.2</i>	
Date: <i>10/18/2022</i>	Time: <i>9:45:13 PM</i>	Sheet <i>6</i> of <i>12</i>	
File: <i>UnifiedDisplay.SchDoc</i>			

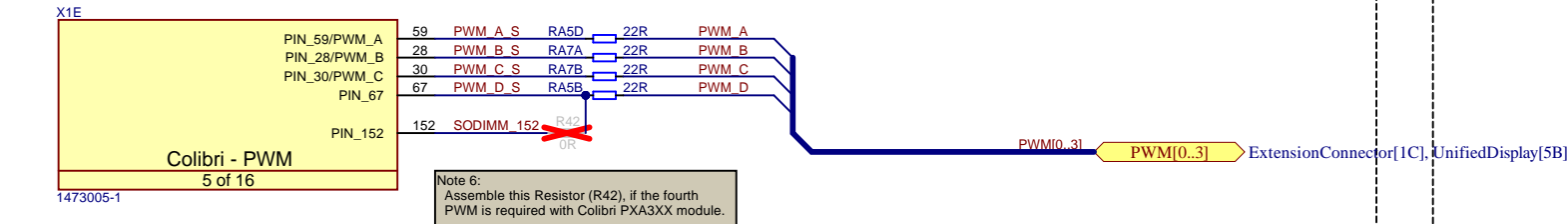




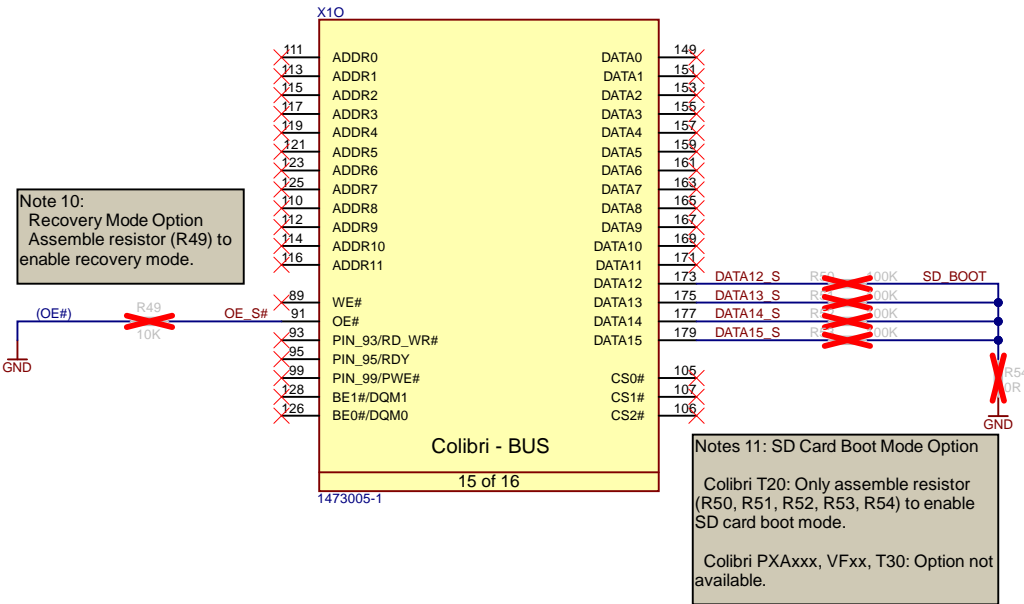




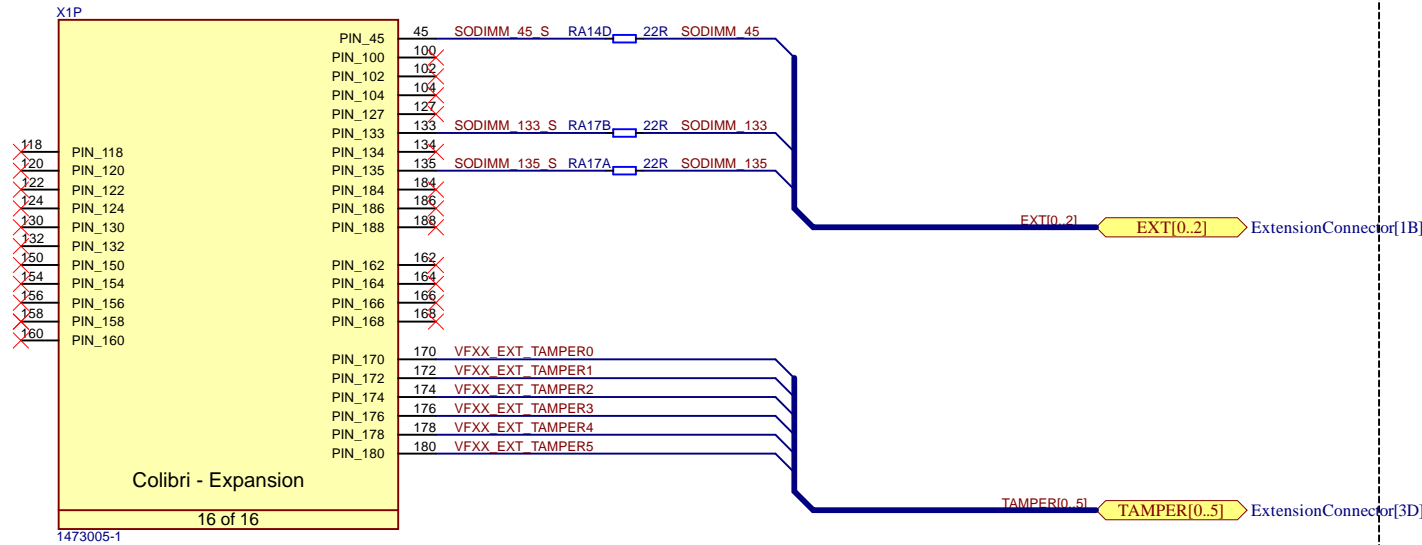
PWM Output - Colibri



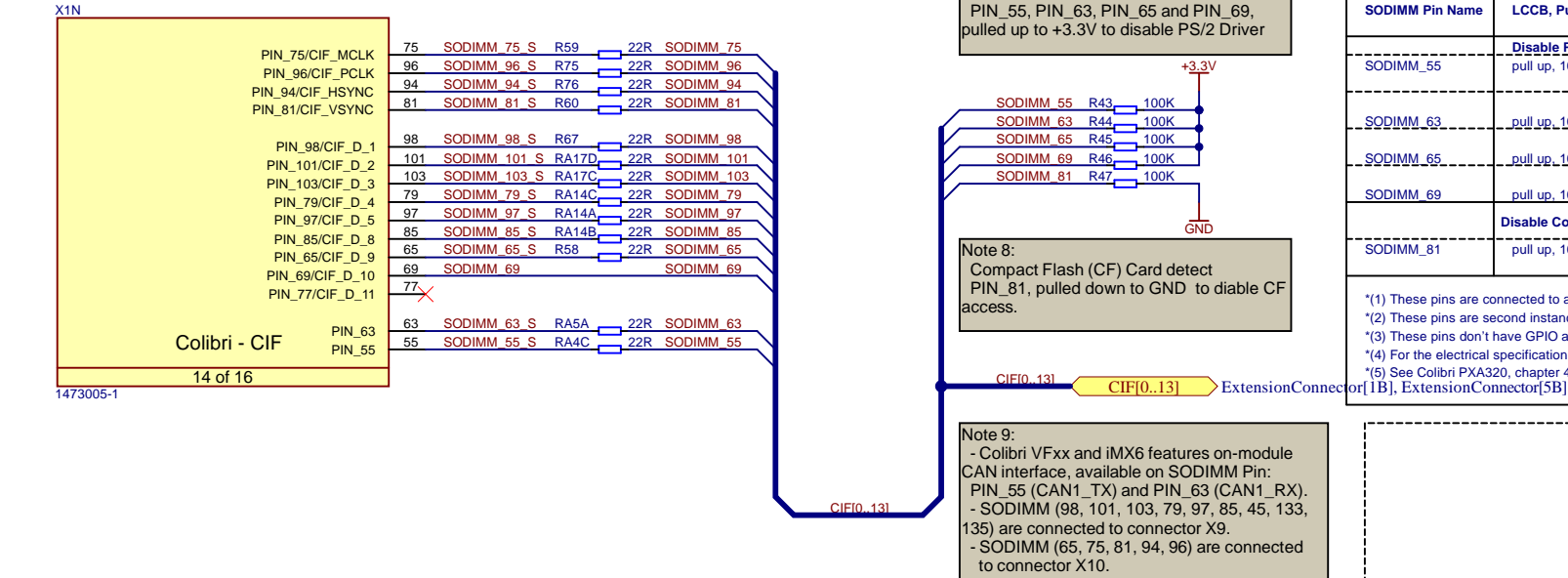
SDCard boot mode, Recovery mode - Colibri



GPIO Output - Colibri



Module Specific (PS/2, CAN) - Colibri



SODIMM Pin Name	LCCB, Pulled Up/Down	Colibri PXA270	Colibri PXA300	Colibri PXA310XT	Colibri PXA310	Colibri PXA320	Colibri Txx	Colibri VFxx
SODIMM_55	Disable PS/2 Driver pull up, 100K to +3.3V	GPIO19	GPIO80	GPIO80	GPIO10_2 *(2)	GPIO78 *(4)	SDA1 / (PS2 Mouse GPIO)	GPIO / PTB17 / CAN1_TX
SODIMM_63	pull up, 100K to +3.3V	GPIO14	GPIO31 *(1)	GPIO31 *(1)	GPIO9_2 *(2)	GPIO42 / GPIO105 *(5)	SCL1 / (PS2 Mouse GPIO)	GPIO / PTB16 / CAN1_RX
SODIMM_65	pull up, 100K to +3.3V	GPIO106	GPIO48 / GPIO124	GPIO48 / GPIO124	GPIO48 / GPIO124	GPIO58 / GPIO124 *(5)	CIF_DD<9>, SDA2 / (PS2 Mouse GPIO)	CIF_DD<9> / PTB19 / Keyboard_Out<3> GPIO / PTD30
SODIMM_69	pull up, 100K to +3.3V	GPIO20	GPIO77 *(1)	GPIO77 *(1)	GPIO8_2 *(2)	GPIO75 *(4)	SCL2 / (PS2 Mouse GPIO)	
SODIMM_81	Disable Compact Flash Driver pull up, 100K to GND	GPIO84	CIF_VSYNC(GPIO52) / GPIO83 *(3)	CIF_VSYNC(GPIO52) / GPIO83 *(3)	CIF_VSYNC(GPIO52) / GPIO83 *(3)	CIF_VSYNC / GPIO81 *(5)	CIF_VF (VSYNC)	CIF_VSYNC / PTB7

\*(1) These pins are connected to an SODIMM pin and to an extension connector pin. Be careful by using these pins when using the extension connector.  
\*(2) These pins are second instance GPIOs. See Colibri PXA300/310 datasheet, chapter 4.5 GPIO for more details.  
\*(3) These pins don't have GPIO as alternate function 0. See Colibri PXA300/310, chapter 4.5 GPIO for more details.  
\*(4) For the electrical specification please refer to PXA320 Processor Electrical, Mechanical and Thermal Specification Datasheet.  
\*(5) See Colibri PXA320, chapter 4.6 GPIO for more details. Multiplexed pin



Title	Viola	Toradex AG Ebenaustrasse 10 Horw 6048 Switzerland
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		Sheet 10 of 12

