



XILINX

ALL PROGRAMMABLE™

KCU105 Software Install and Board Setup

March 2015

XTP352

Revision History

Date	Version	Description
03/06/15	1.0	Initial version. Added AR63771.

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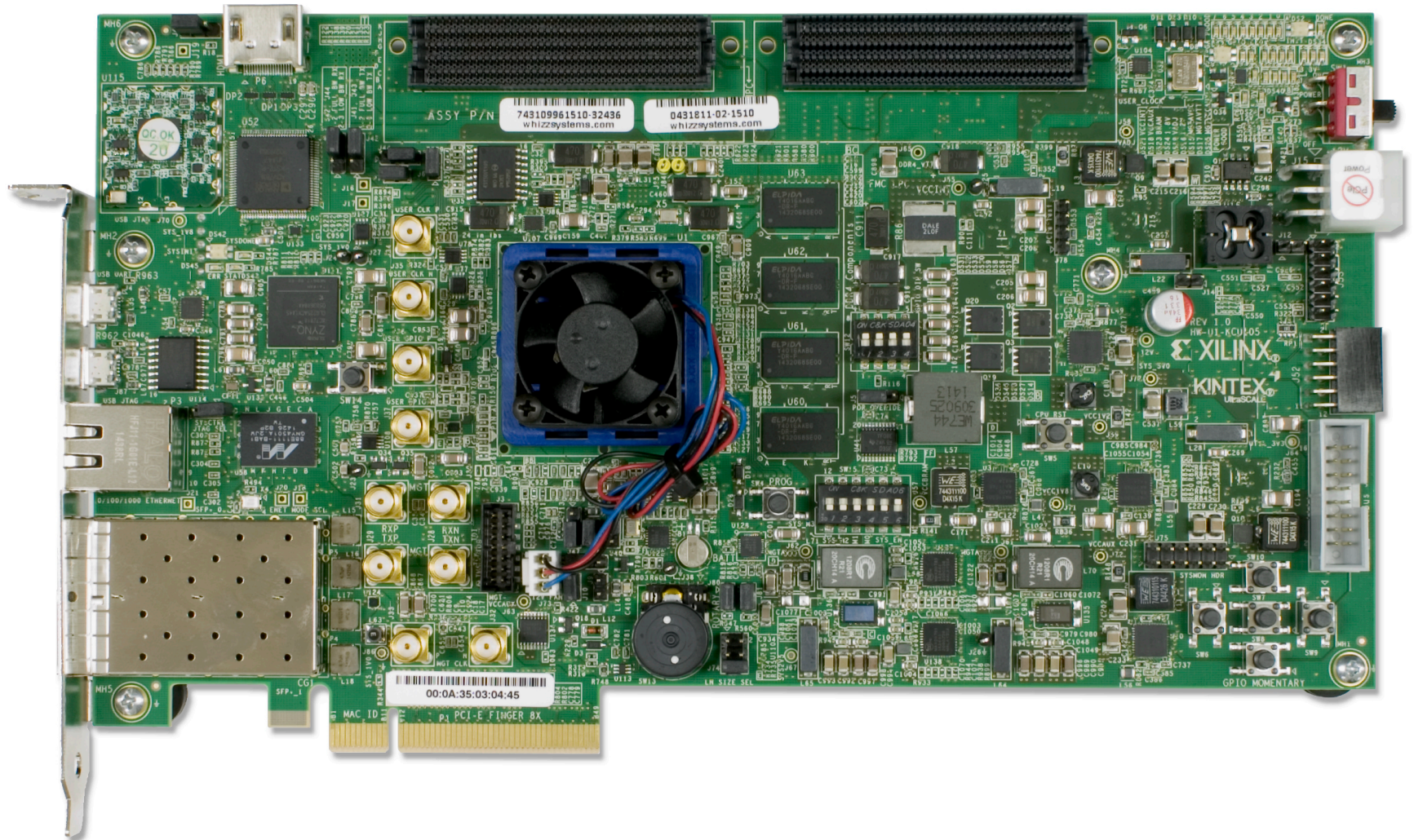
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KCU105 Software Install and Board Setup

- Xilinx KCU105 Board
- Software Requirements
- KCU105 Hardware Setup
- UART Driver Install
- Ethernet Setup
- Optional Hardware Setup
- References

Note: This presentation applies to the KCU105

Xilinx KCU105 Board

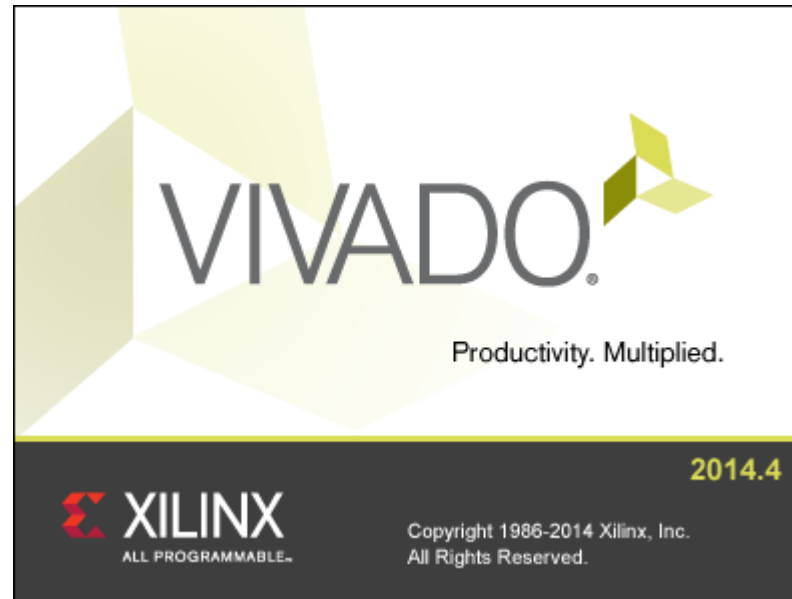


Note: Presentation applies to the KCU105

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Software Requirements

- **Xilinx Vivado Design Suite 2014.4.1, Design Edition with SDK**
 - Note: The Board Interface Test requires use of 2014.4.1 for proper operation
 - 2014.4.1 is installed on top of 2014.4



KCU105 Hardware Setup

► Kit Hardware contents

- KCU105 Board
- Two SFP Modules and fiber optic Patch cable
- XM107 FMC Loopback board
- PCIe Loopback board (not shown)
- Two Micro USB cables
- Mini USB cable
- Power supply



KCU105 Hardware Setup

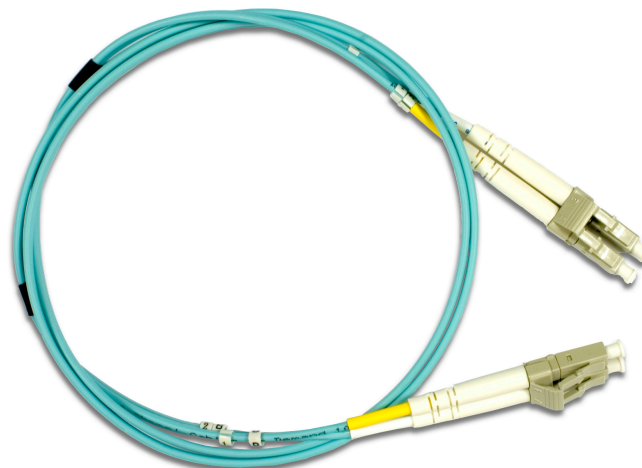
➤ Two Avago SFP+ Optical Transceivers

- <http://www.avagotech.com>
- Part number: AFBR-709ASMZ
- 10Gb Ethernet, 850 nm, 10GBASE-SR/SW, SFP+ Transceiver



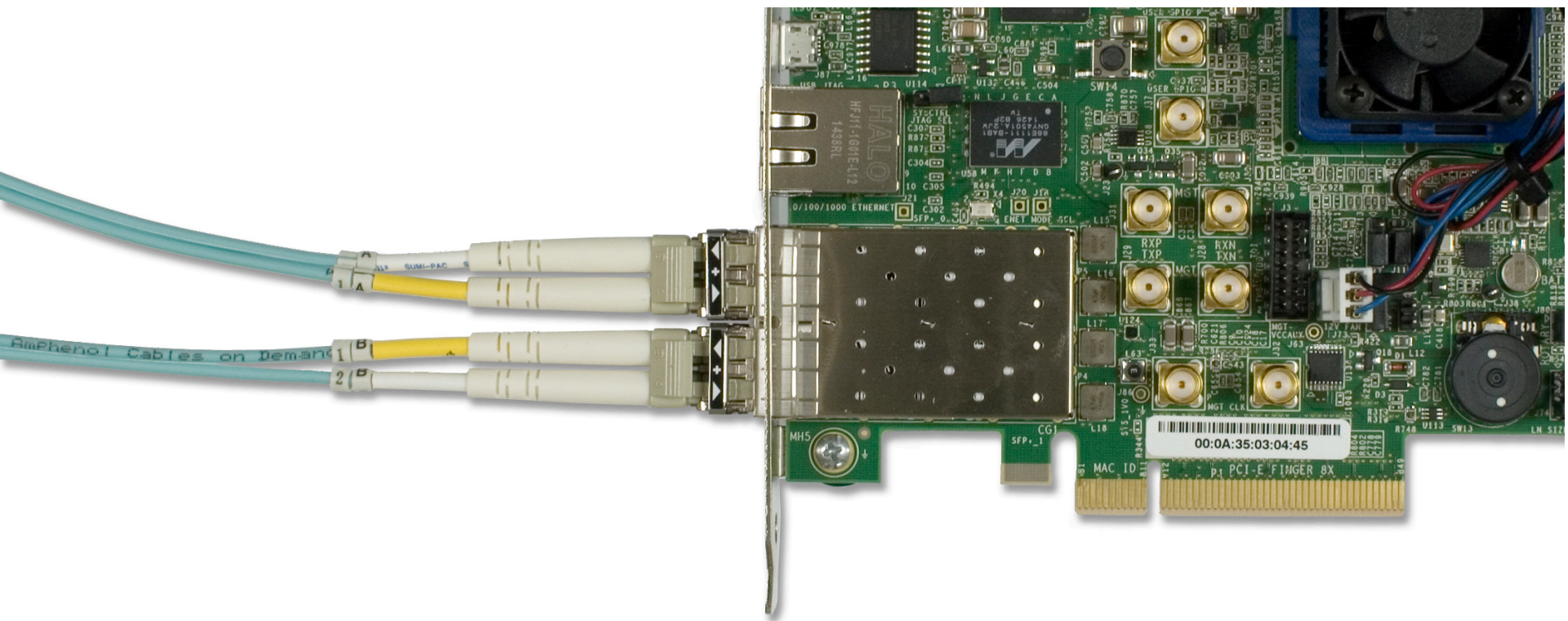
➤ Optical Patch cable

- Amphenol [Cables on Demand](#)



KCU105 Hardware Setup

- Insert these transceivers into the SFP cages (P4 & P5)
- Connect the two transceivers with the included Optical Patch cable
 - Remove the protective plastic caps before inserting



Note: Presentation applies to the KCU105

KCU105 Hardware Setup

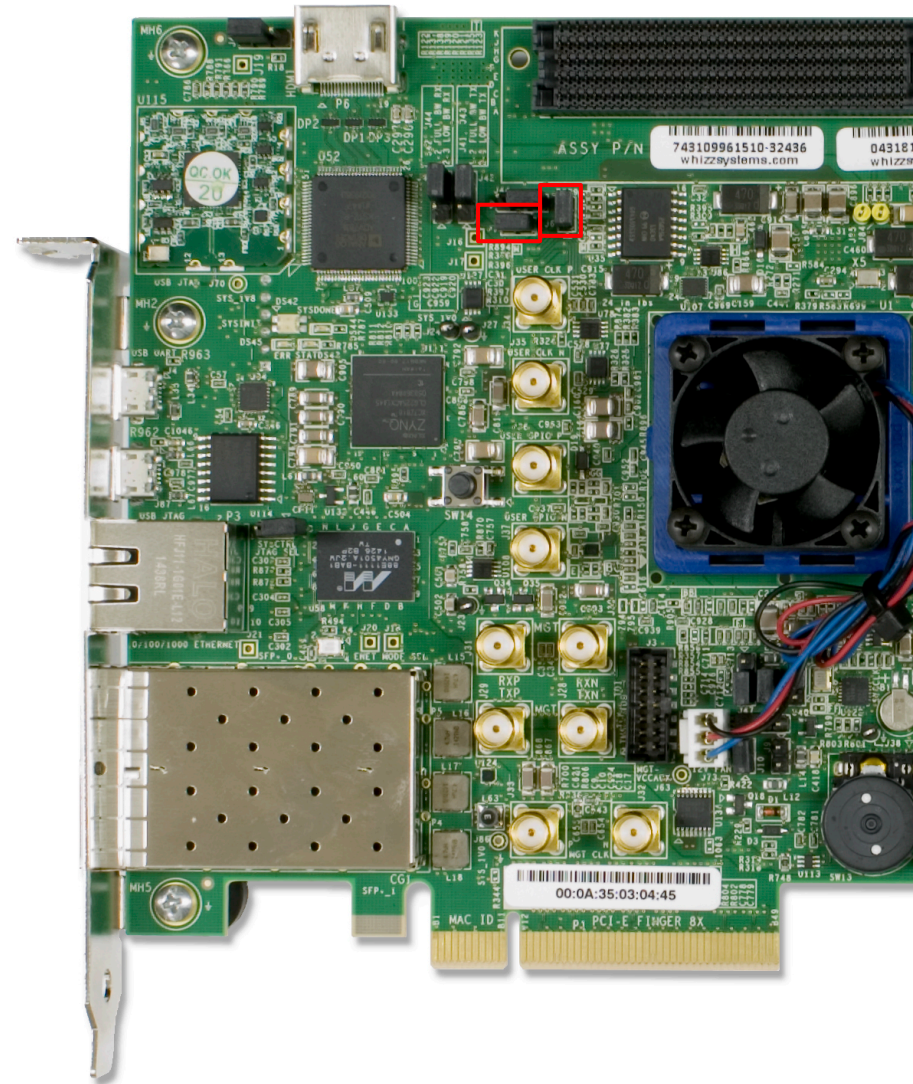


- **Warning:** These Optical transceivers contain lasers!
- **As per the manufacturer's datasheet:**
 - Class 1 Eye safe per requirements of IEC 60825-1 /CDRH
- **Wikipedia notes:**
 - A Class 1 laser is safe under all conditions of normal use....It is important to realize that certain lasers classified as Class 1 may still pose a hazard when viewed with a telescope or microscope of sufficiently large aperture
- **Therefore, when working with lasers, please observe the following caution:**



KCU105 Hardware Setup

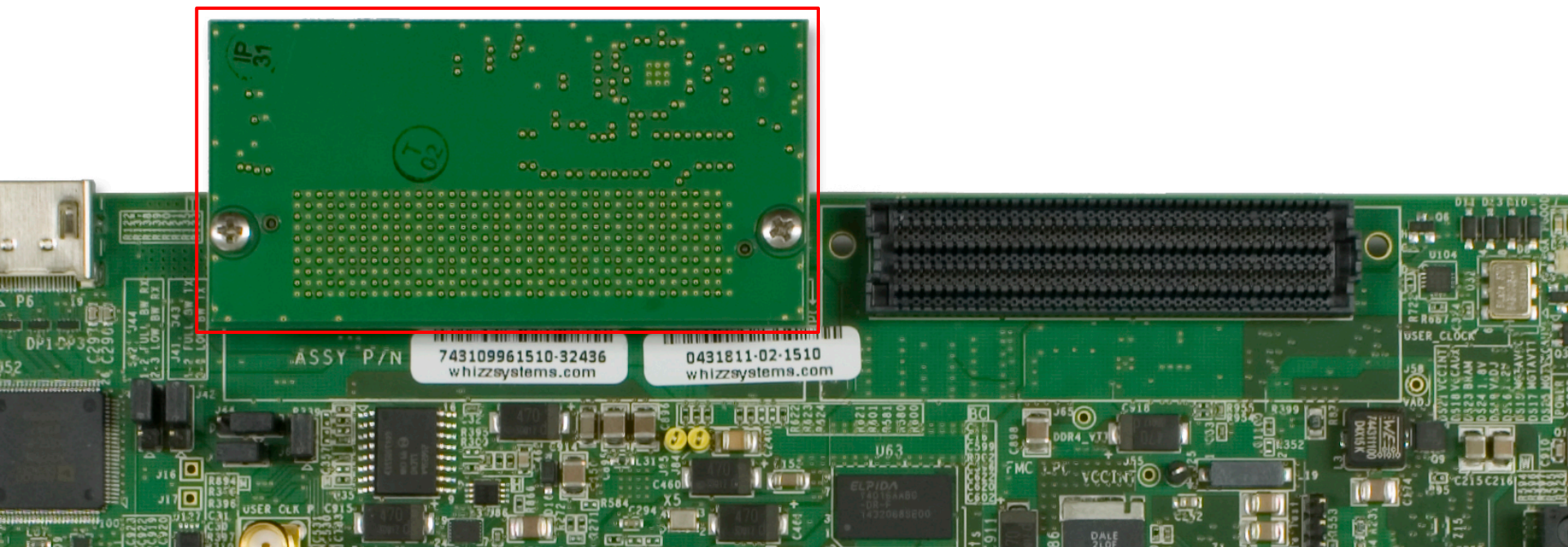
- Ensure that jumpers are installed on J6 and J7
 - Required for the IBERT SFP test



Note: Presentation applies to the KCU105

KCU105 Hardware Setup

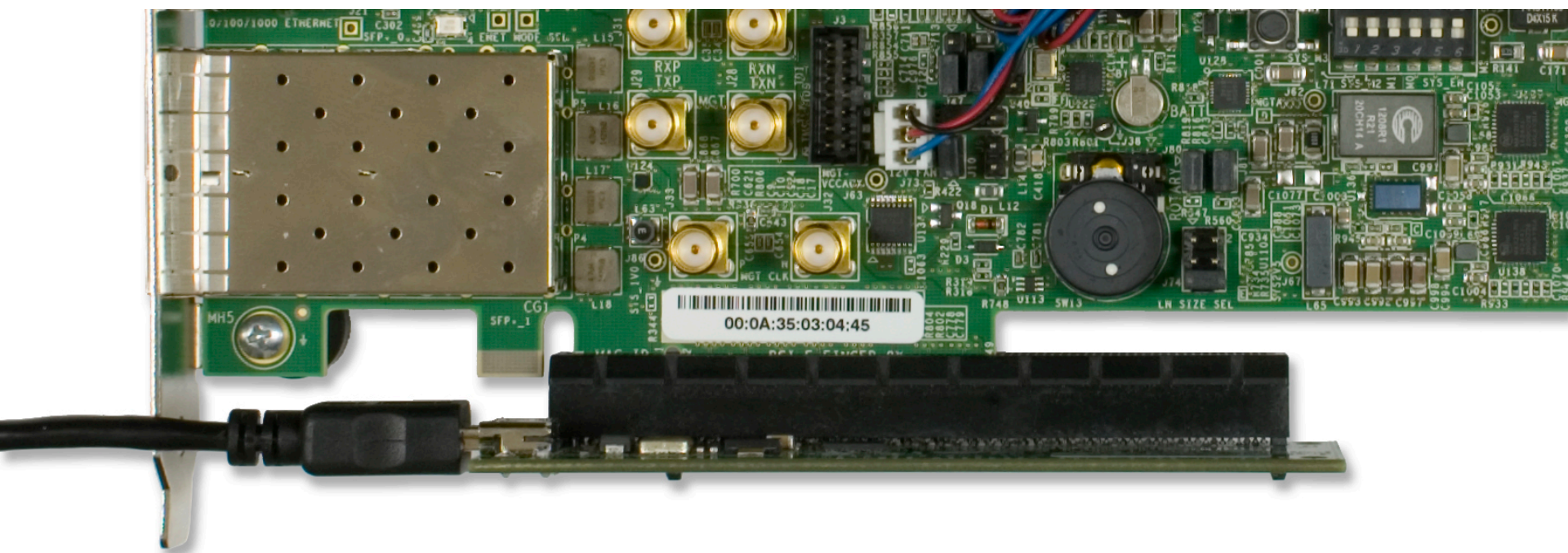
- Attach the FMC XM107 board to the FMC HPC connector (J22)



Note: Presentation applies to the KCU105

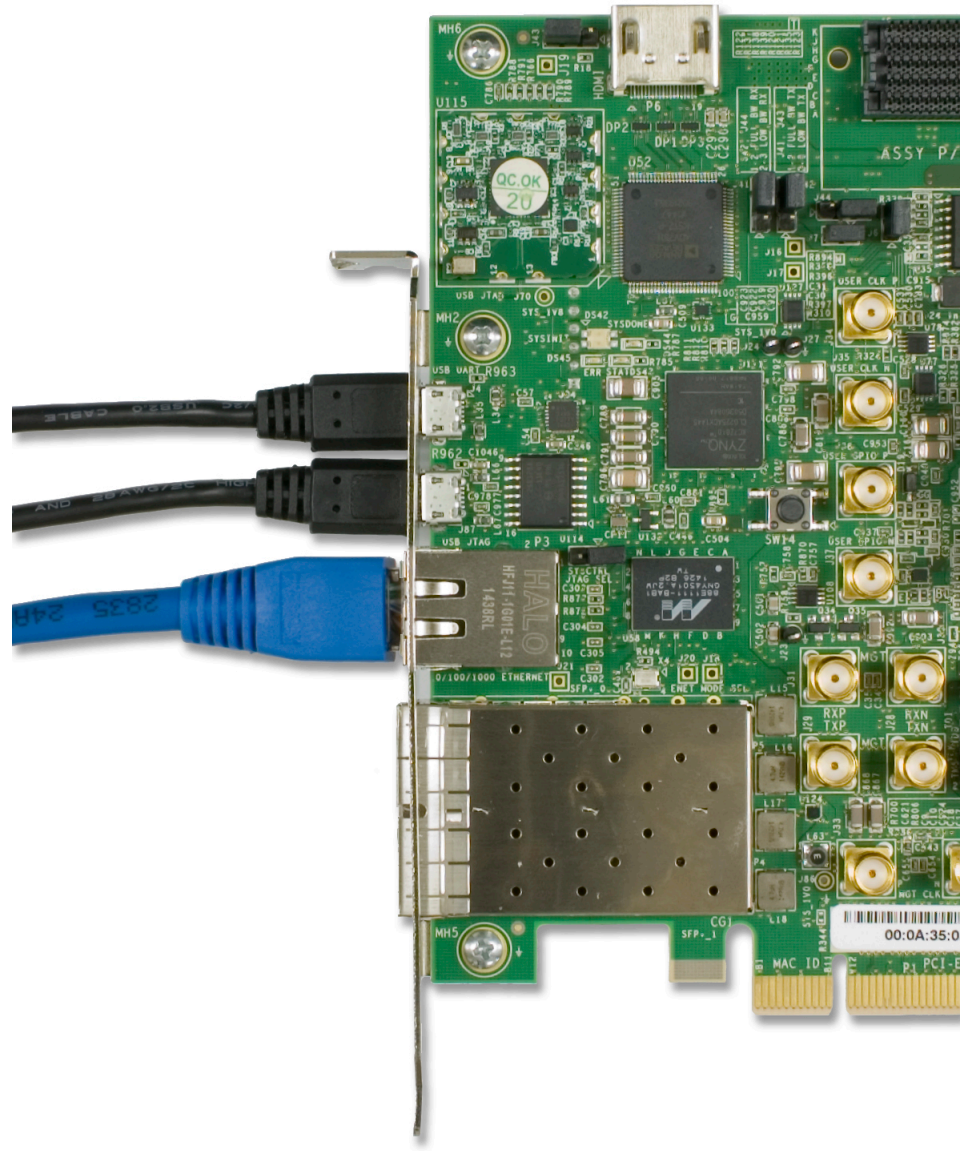
KCU105 Hardware Setup

- Connect a mini USB cable to the PCIe Loopback card for power
 - Connect this cable to your PC
- Attach to the PCIe connector (P1) on the KCU105



KCU105 Hardware Setup

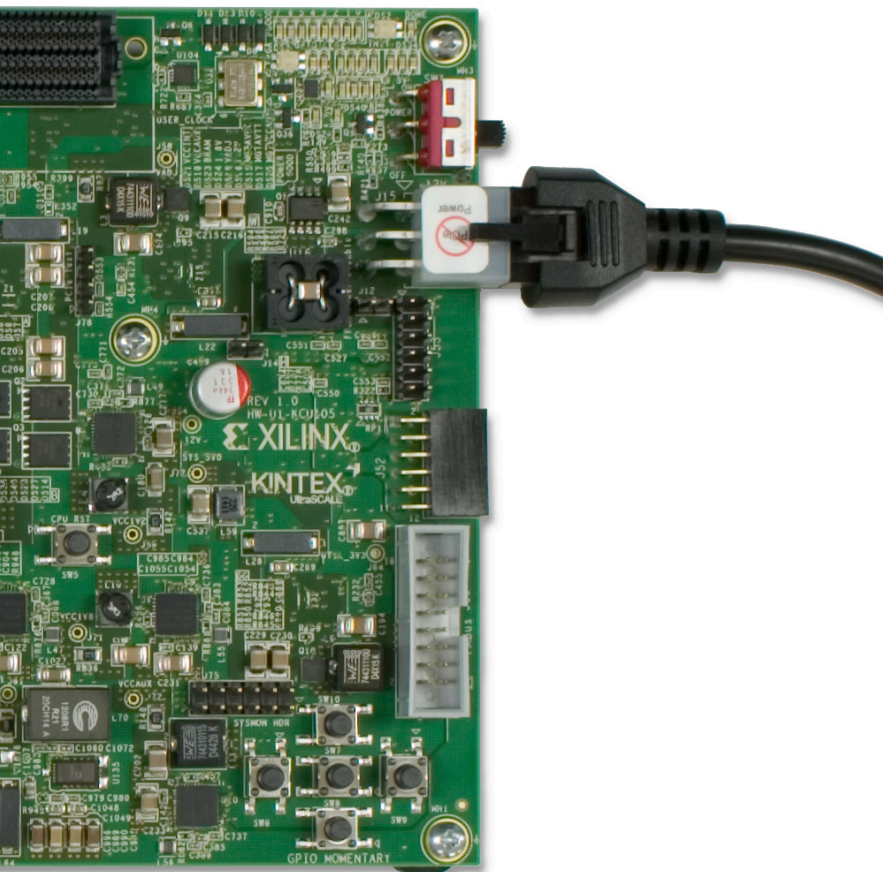
- Connect a USB Type-A to Micro-B cable to the USB UART connector (J4) on the KCU105 board
- Connect a USB Type-A to Micro-B cable to the USB JTAG (Digilent) (J87) connector on the KCU105 board
- Connect the Ethernet cable to P3
- Connect these cables to your PC



Note: Presentation applies to the KCU105

KCU105 Hardware Setup

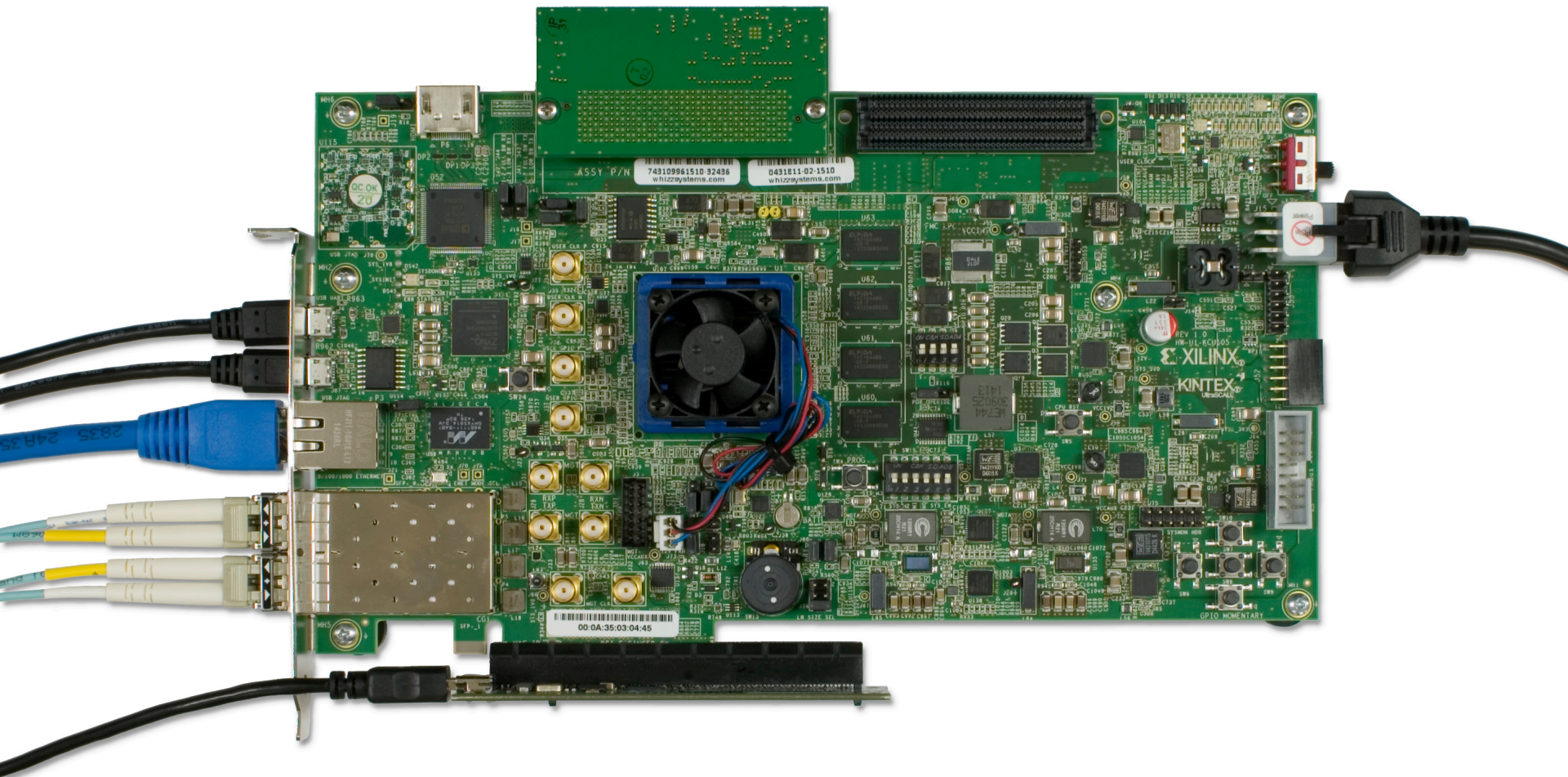
- Connect the power supply to the KCU105 (J15)
 - Connect this cable a power outlet



Note: Presentation applies to the KCU105

KCU105 Hardware Setup

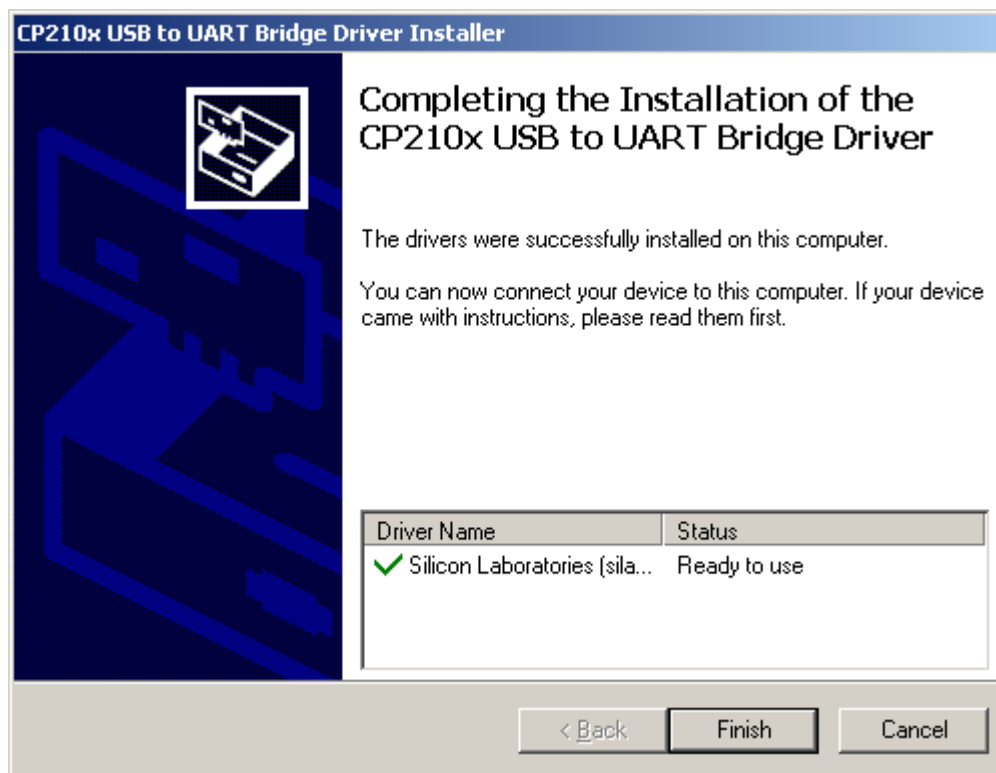
- Board connected with all Kit items installed
- Power on the KCU105 board for the UART driver installation



UART Driver Install

➤ Install Si Labs CP210x USB UART Drivers

- Refer to [UG1033](#) for details on installing the USB to UART Drivers



UART Driver Install

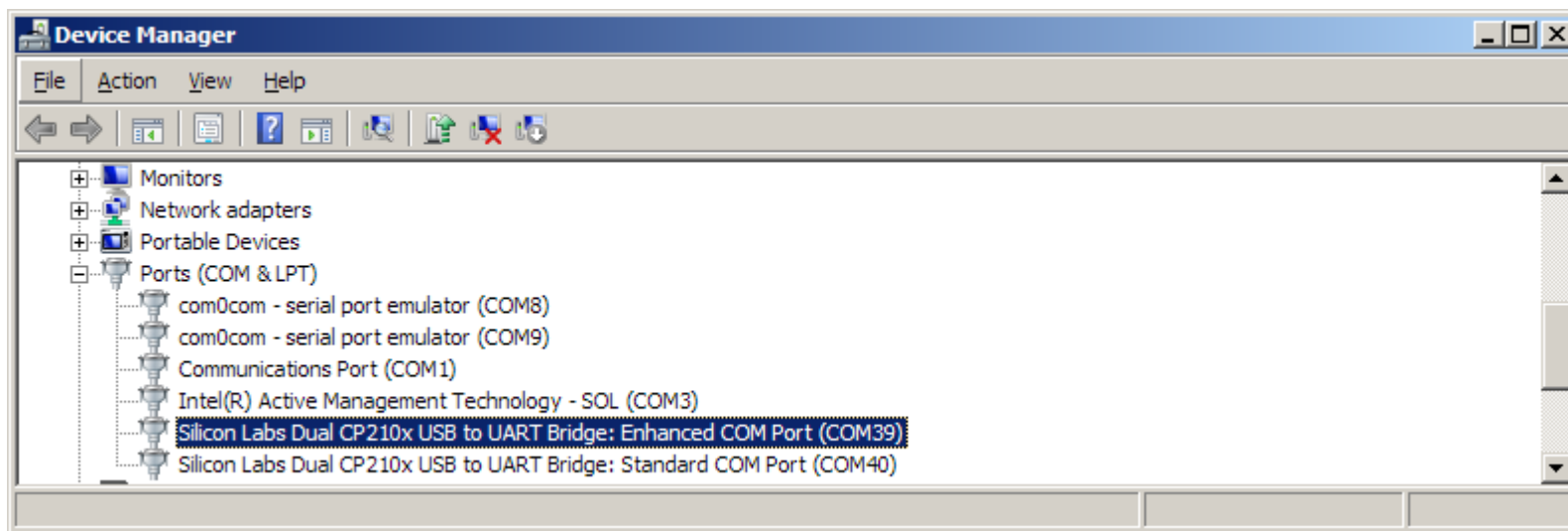
➤ Determine the COM Port numbers for your system

➤ Open the Device manager

Control Panel → System → Device Manager

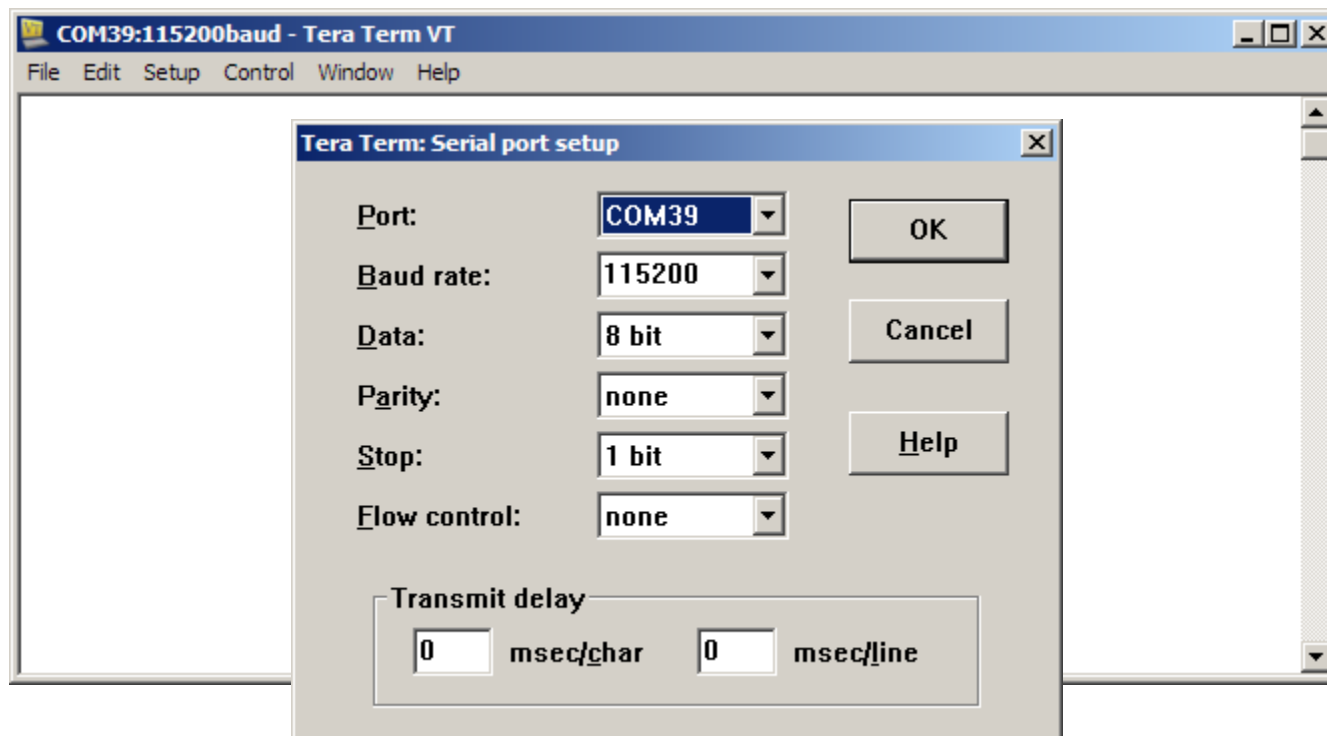
- There will be two “Silicon Labs Dual CP210x” COM ports, **Standard** and **Enhanced**
- The Standard COM Port is the FPGA UART COM Port
- The Enhanced COM Port is the System Controller COM Port
- The COM Port numbers **will vary** from system to system

➤ These COM Port Numbers will be used in several of the tutorials



Terminal Setup

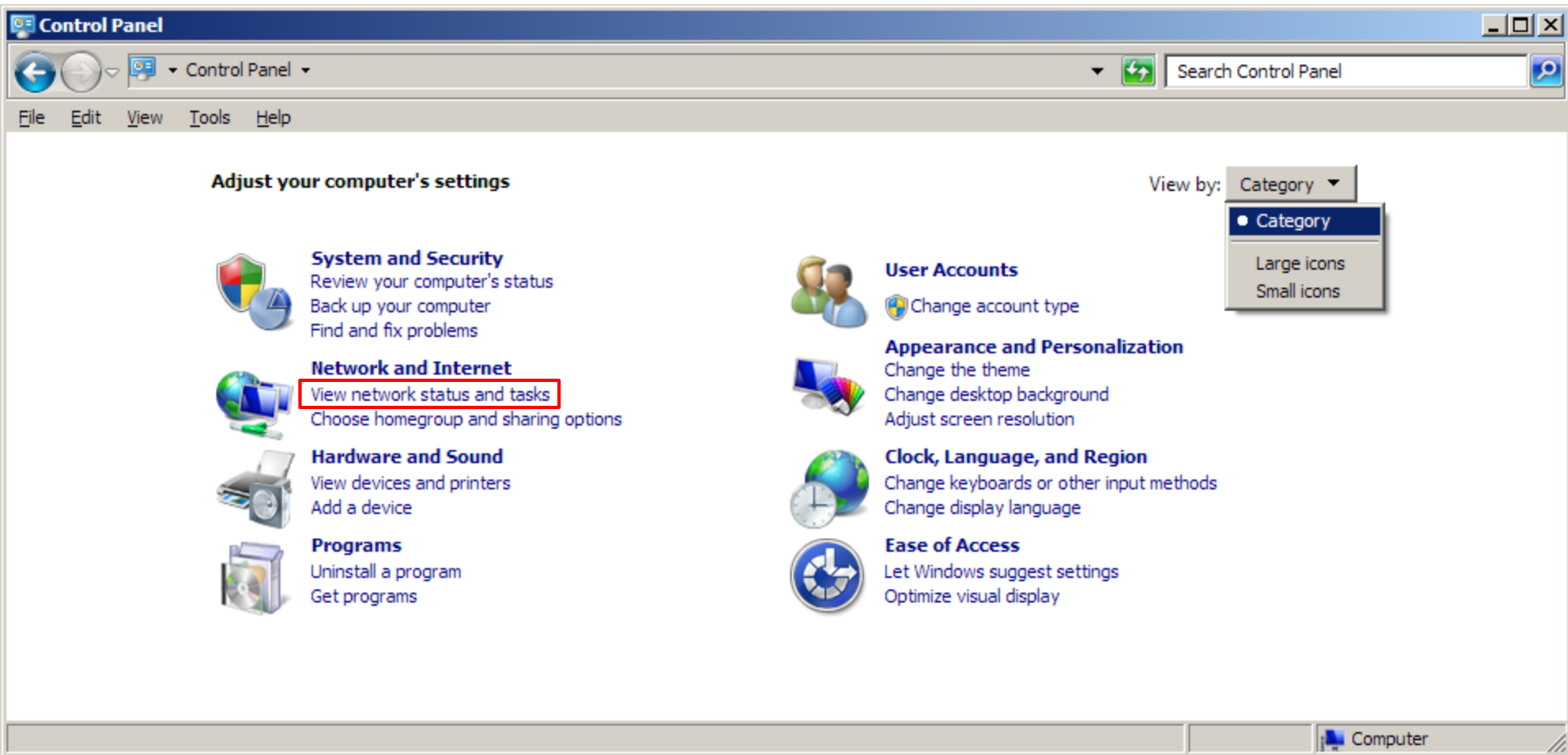
- Refer to [UG1036](#) regarding Tera Term installation
- Board Power must be on before starting Tera Term
- Start the Terminal Program
 - Select your USB Com Port
 - Set the baud to **115200**



Note: See AR63771 regarding SDK Terminal Program

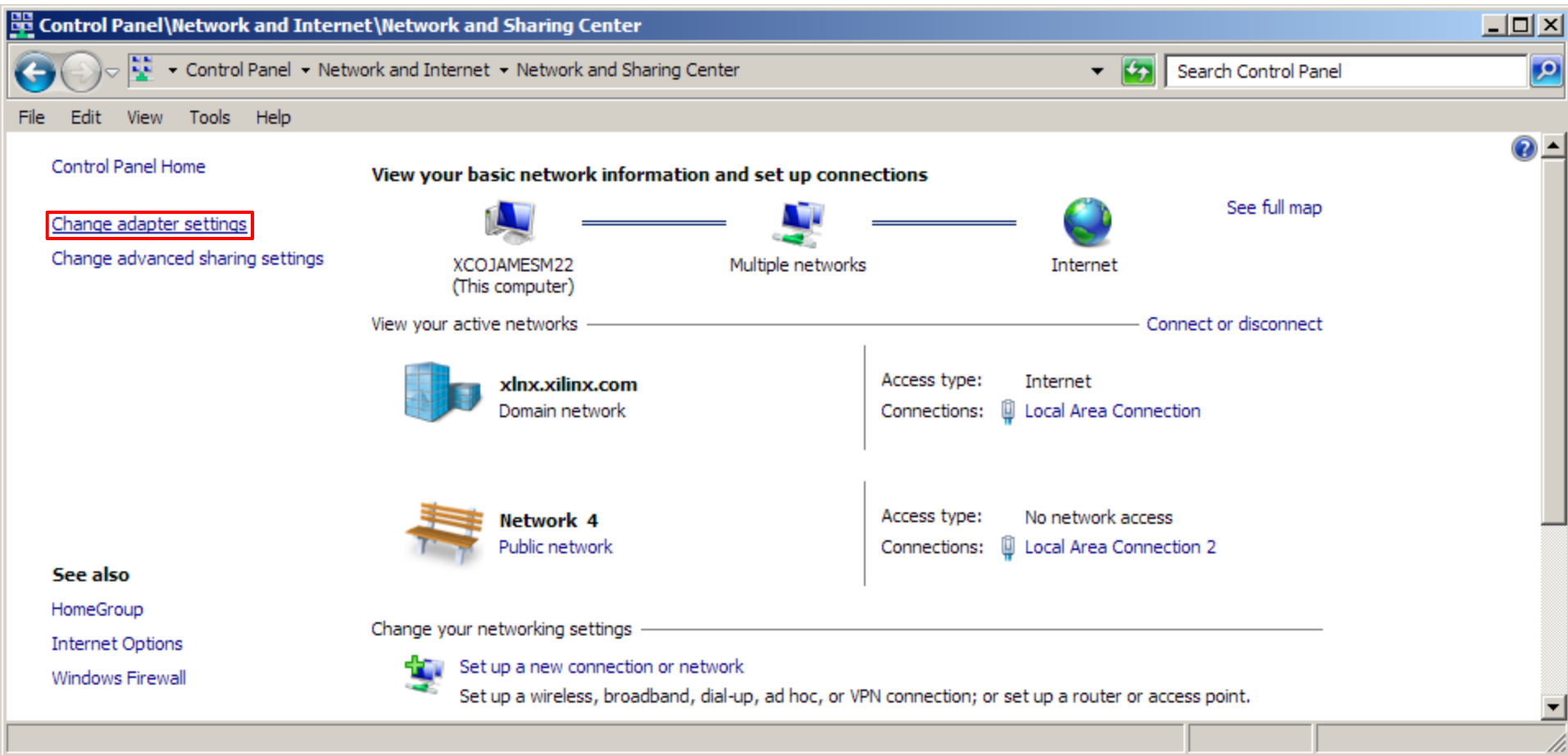
Ethernet Setup

- Open the Windows Control Panel
 - Set to View by Category
- Click on “View network status and tasks”



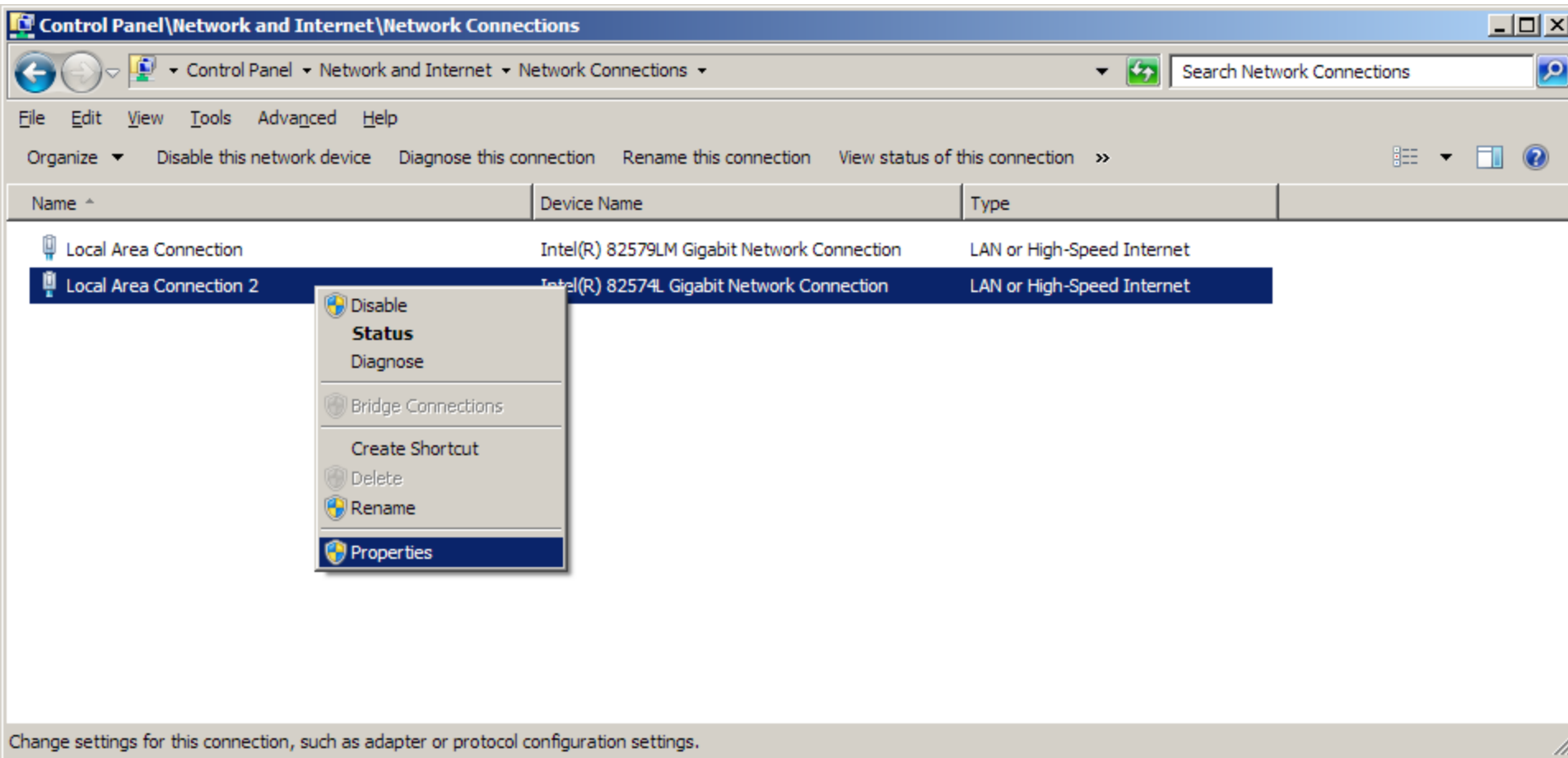
Ethernet Setup

➤ Click on “Change adapter settings”



Ethernet Setup

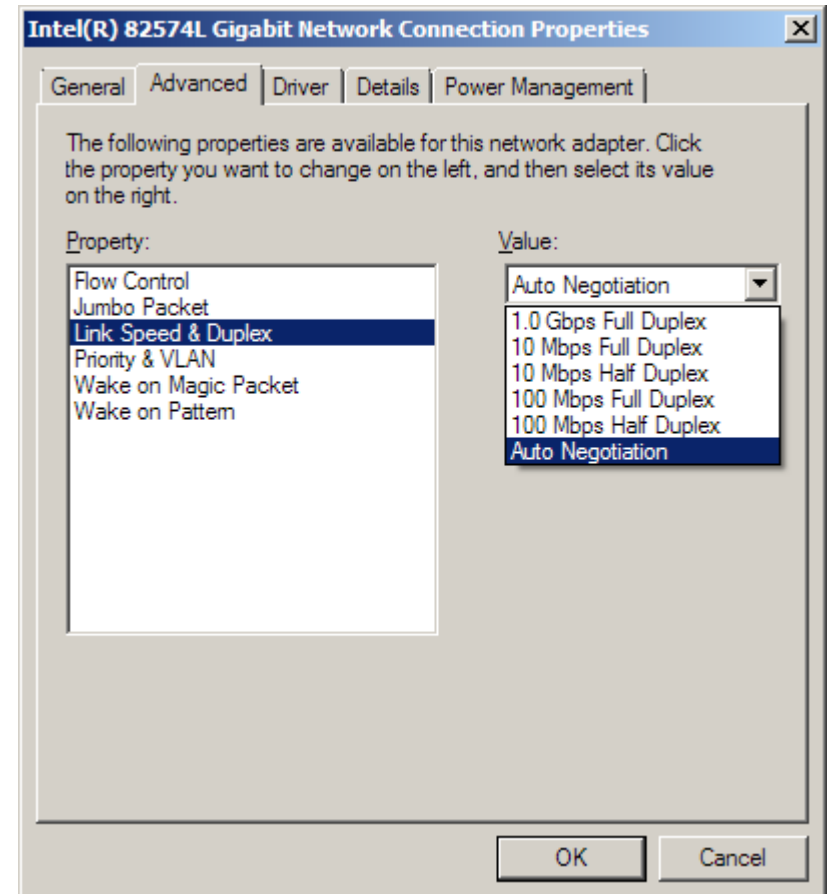
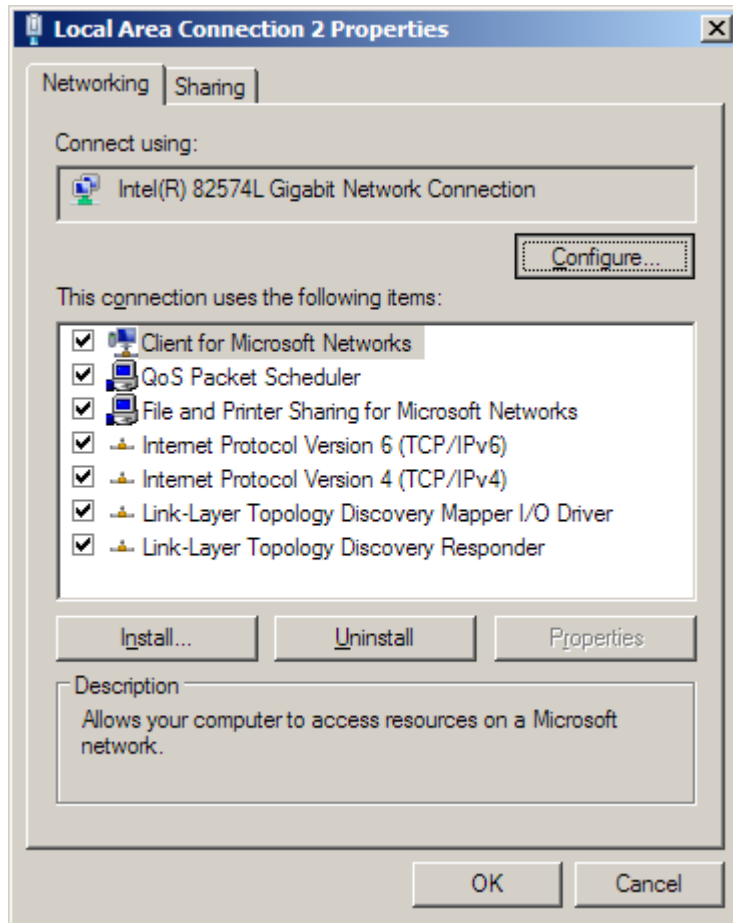
- Right-click on the Gigabit Ethernet Adapter that you will be using for this test and select Properties



Ethernet Setup

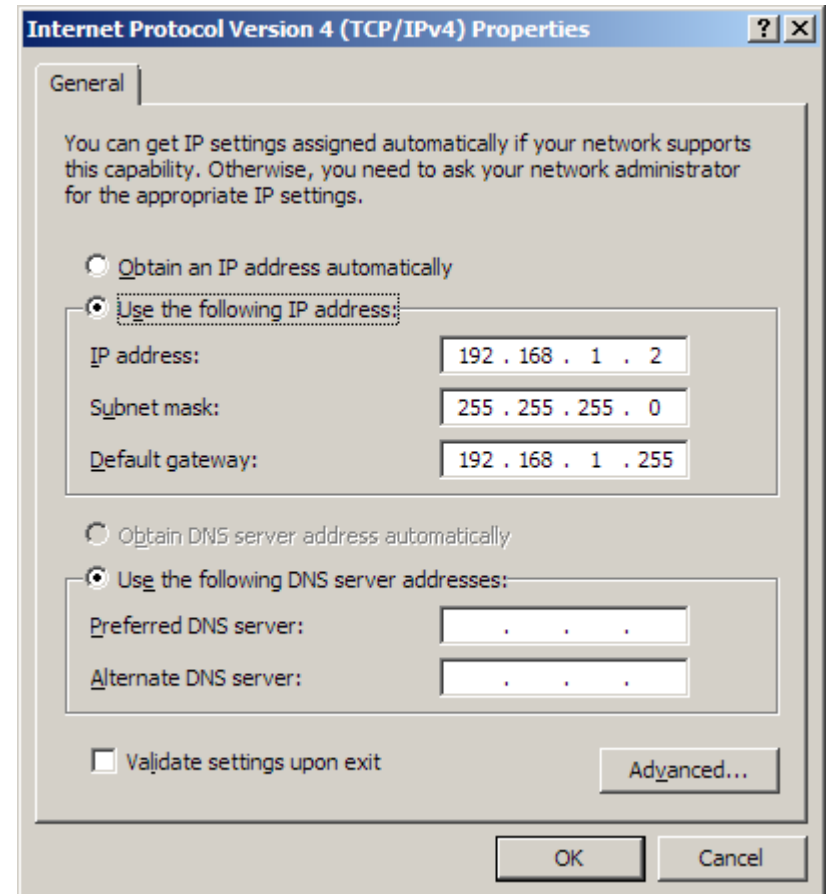
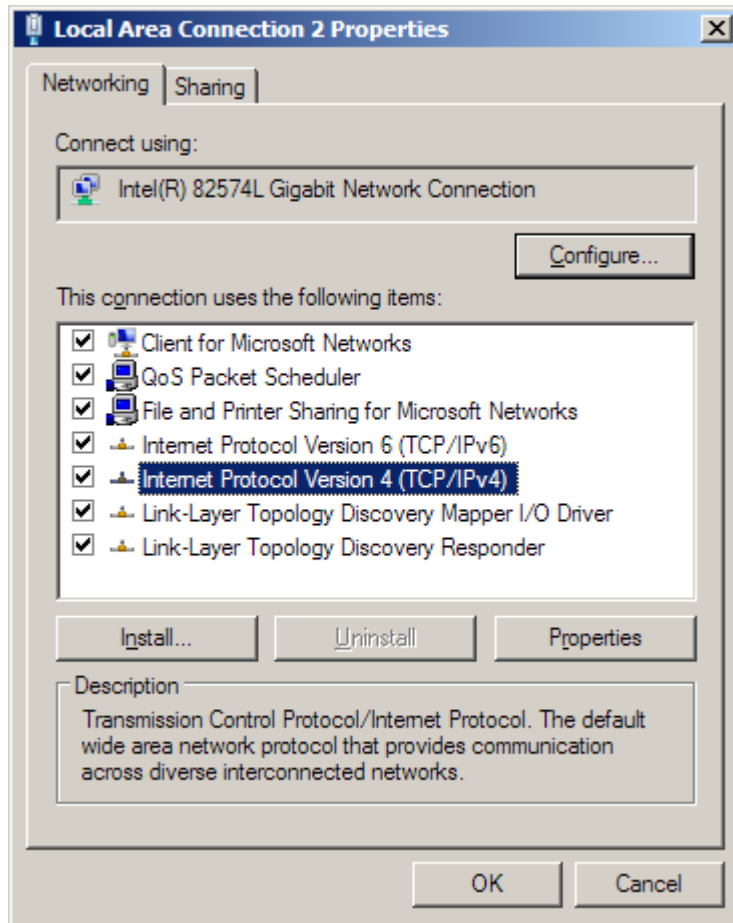
➤ Click Configure

- Set the Link Speed & Duplex to Auto Negotiation then click OK



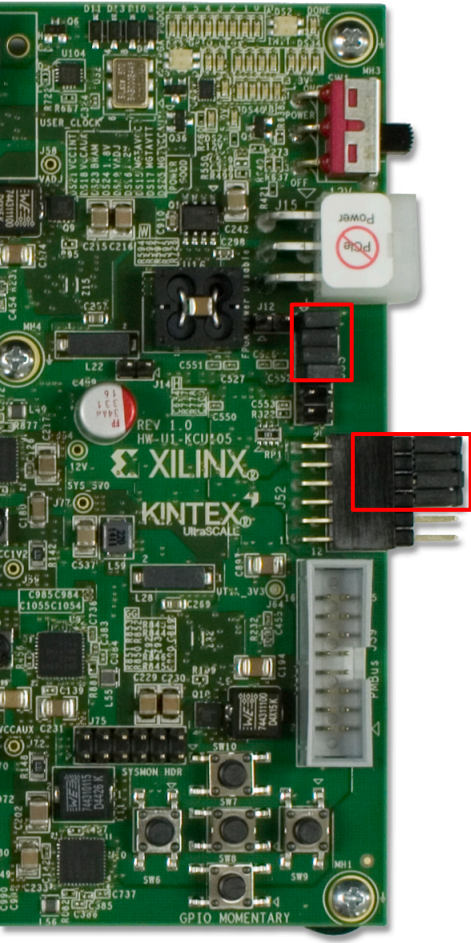
Ethernet Setup

- Reopen the properties after the last step
- Double-click the Internet Protocol Version 4
- Set your host (PC) to this IP Address:



Note: Remember to restore your IP settings when finished

Optional Hardware Setup



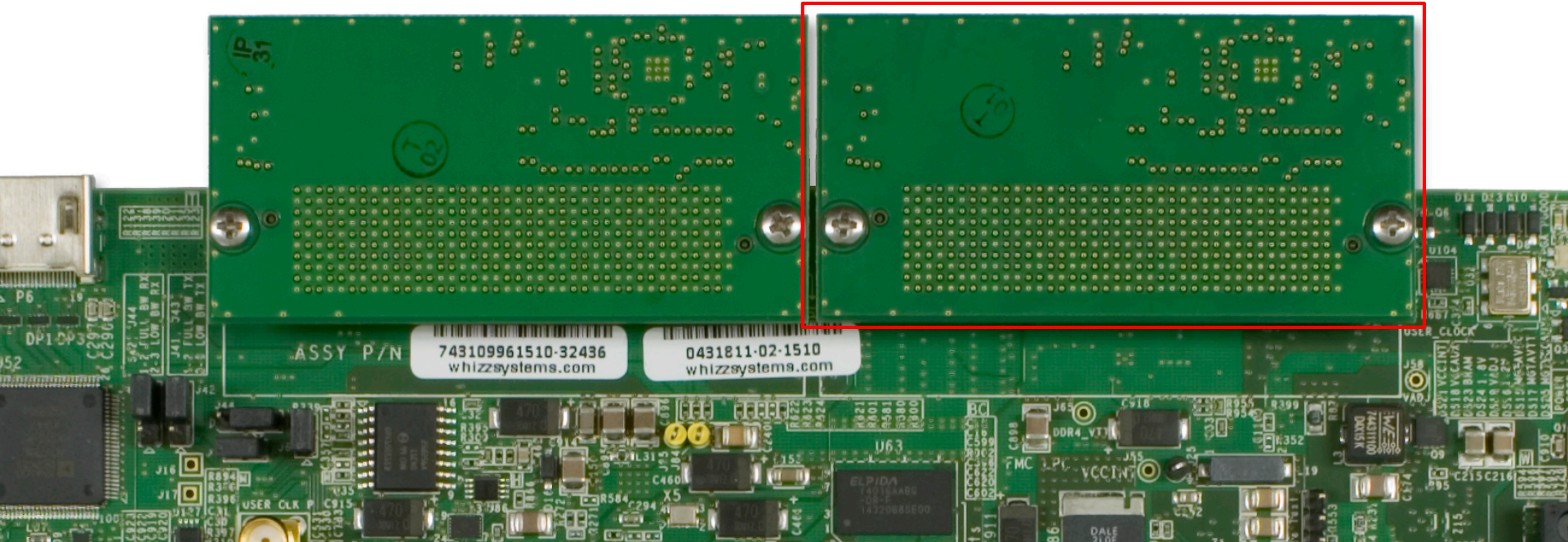
➤ Connect PMOD headers

➤ Both J52 and J53:

- 1 to 2
- 3 to 4
- 5 to 6
- 7 to 8

Optional Hardware Setup

- Attach a second FMC XM107 board to the FMC LPC connector (J2)
- Available through [Whizz Systems](#)



Note: Presentation applies to the KCU105

Optional Hardware Setup

➤ Five SMA Cables

- www.rosenbergerna.com
- Part number:
72D-32S1-32S1-00610A

➤ SMA Quick connects

- RADIALL
- Part number: R125791501
- Available [here](#) or [here](#)



Optional Hardware Setup

➤ Hook up the SMA cables as shown

➤ IBERT Test:

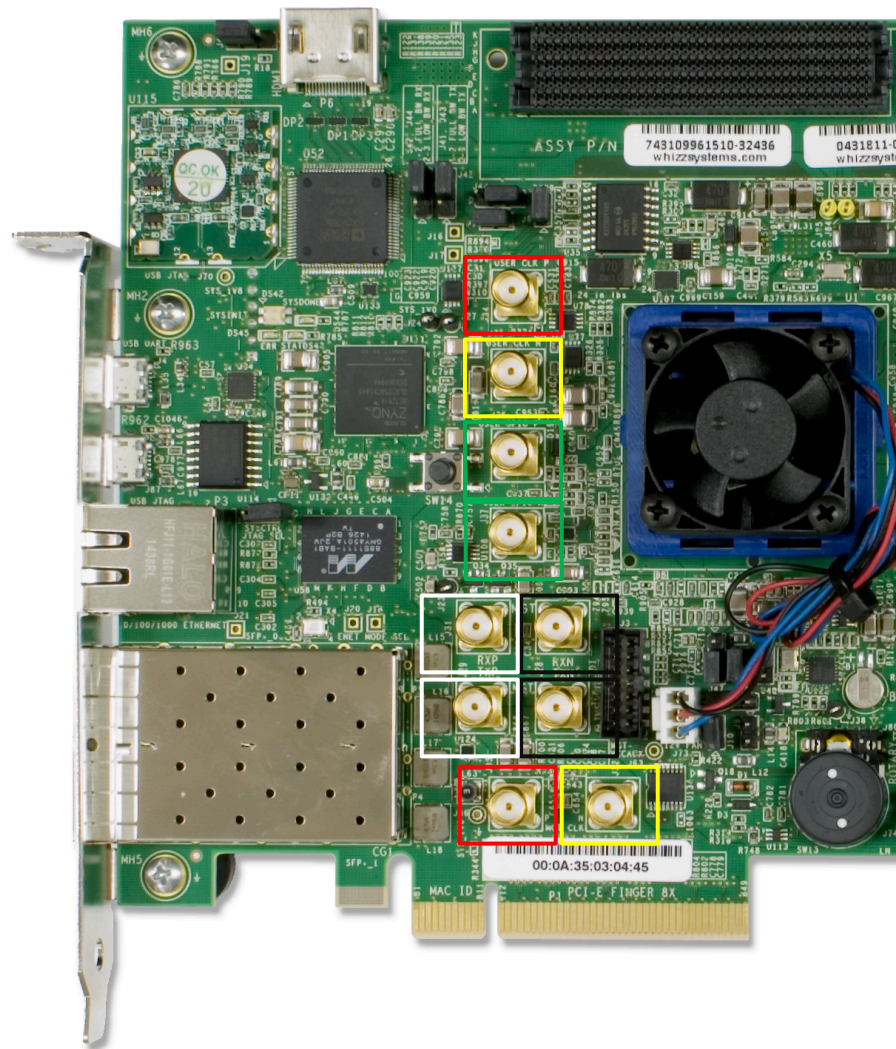
- J29 to J31 (White)
- J28 to J30 (Black)

➤ Clocking Test

- J33 to J34 (Red)
- J32 to J35 (Yellow)

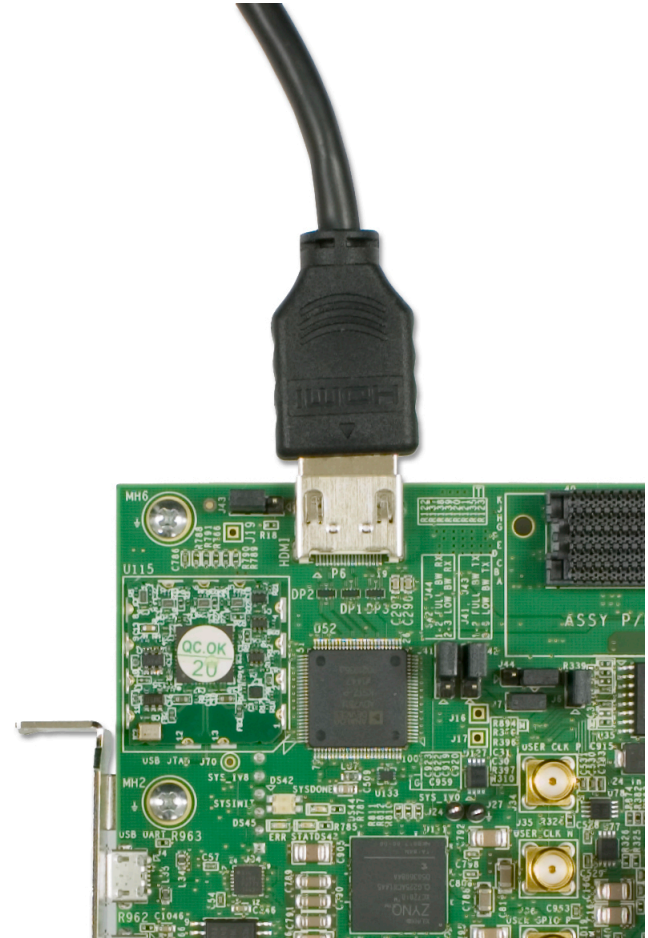
➤ User SMA Loopback

- J36 to J37 (Green)



Optional Hardware Setup

- Using a common HDMI cable, connect an HDMI Monitor to the HDMI port (P6)





References

References

➤ Vivado Release Notes

- Vivado Design Suite User Guide - Release Notes – UG973
 - http://www.xilinx.com/support/documentation/sw_manuals/xilinx2014_4/ug973-vivado-release-notes-install-license.pdf
- Vivado Design Suite 2014.x - Vivado Known Issues
 - <http://www.xilinx.com/support/answers/59464.html>
- Vivado 2014.4 Update (2014.4.1) Release Notes
 - <http://www.xilinx.com/support/answers/63635.htm>

➤ Vivado Programming and Debugging

- Vivado Design Suite Programming and Debugging User Guide – UG908
 - http://www.xilinx.com/support/documentation/sw_manuals/xilinx2014_4/ug908-vivado-programming-debugging.pdf



Documentation

Documentation

➤ Kintex UltraScale

- Kintex UltraScale FPGA Family
 - <http://www.xilinx.com/products/silicon-devices/fpga/kintex-ultrascale.html>

➤ KCU105 Documentation

- Kintex UltraScale FPGA KCU105 Evaluation Kit
 - <http://www.xilinx.com/products/boards-and-kits/kcu105.html>
- KCU105 Board User Guide – UG917
 - http://www.xilinx.com/support/documentation/boards_and_kits/kcu105/ug917-kcu105-eval-bd.pdf
- KCU105 Evaluation Kit Quick Start Guide User Guide – XTP391
 - http://www.xilinx.com/support/documentation/boards_and_kits/kcu105/xtp391-kcu105-quickstart.pdf
- KCU105 - Known Issues Master Answer Record
 - <http://www.xilinx.com/support/answers/63175.html>