

Lab 10: USB to Serial UART Converter Design - Soldering and Testing

COEN-4720 Embedded Systems

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1. Objective

The objective of this lab is to solder and test the USB to Serial UART converter that you designed in lab 1.

2. Lab Assignment

Follow the instructions from the videos below to solder all your components and then do testing.

- 7) USB to UART Serial Converter - Part 7: Soldering;
<https://www.youtube.com/watch?v=Kl9dPHjpTGs>
- 8) USB to UART Serial Converter - Part 8: Testing and Programming and Arduino;
<https://www.youtube.com/watch?v=vrjB3BWouZs>

First you must solder all your components. Do first the FTDI chip and only after you done with it do the remaining through-hole components.

Then, use the provided Arduino sketch as a starting example to do testing as in the video #8 above. Create a new STM32CubeIDE project with a program that replicates the Arduino sketch; this is a simple program that just sends repeatedly characters c,r,i,s. In your implementation, you must replace those with the characters of your own first name. Then, you must use the oscilloscope in the lab to duplicate the testing shown in the video. You must include in your report a figure or more documenting the sending of your own first name characters.

You must write a report to describe what you did, what problems you faced and how you solved them. Upload the report on D2L using the file naming convention: **lab10_report_lastname.pdf**.

3. Optional

Follow the instructions from the video below to design and 3D print your own enclosure for your USB to UART Serial Converter:

- 9) USB to UART Serial Converter - Part 9: 3D Printed Enclosure Designed in Autodesk Fusion 360;
<https://www.youtube.com/watch?v=6EWKOvSFG48>

You can print it in the lab.