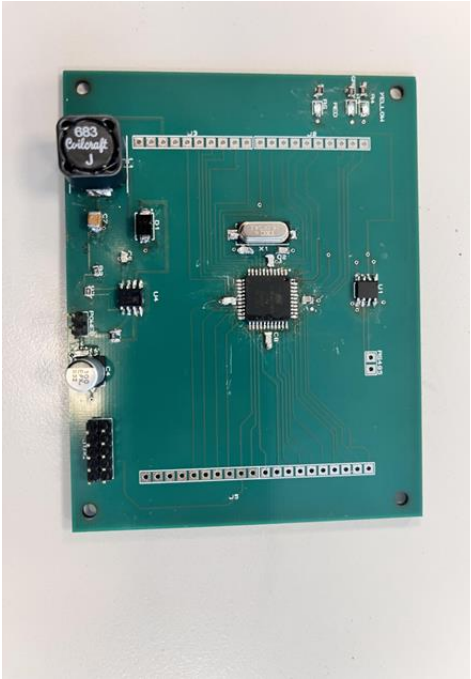


PCB ASSIGMENT

Justyna Kluska

The main goal of this assignment is to design, implement and test a small communications development board from scratch . The project focuses on carefully designing the PCB layout and considering basic EMC principles. The ultimate objective is to make an LED blink.

1. Design

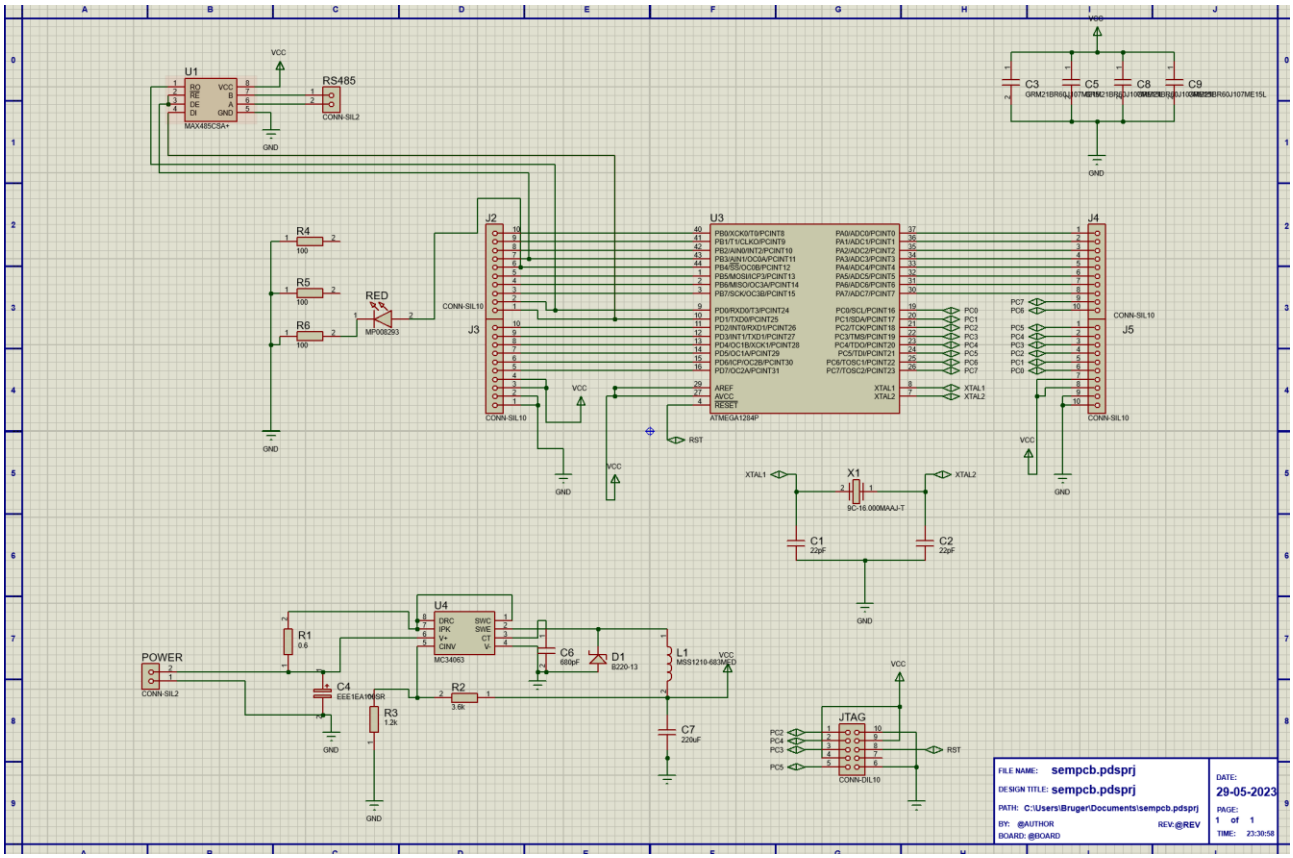


Figure 1 – schematic

To design the board, we had to research and select the following components: Switched-Mode Power Supply, MAX485 transceiver chip, JTAG, and Microchip components for microcontrollers and integrated circuits. For the DC-DC we use the MC34063 D datasheet to calculate component values.

2. Implementation

Layout:

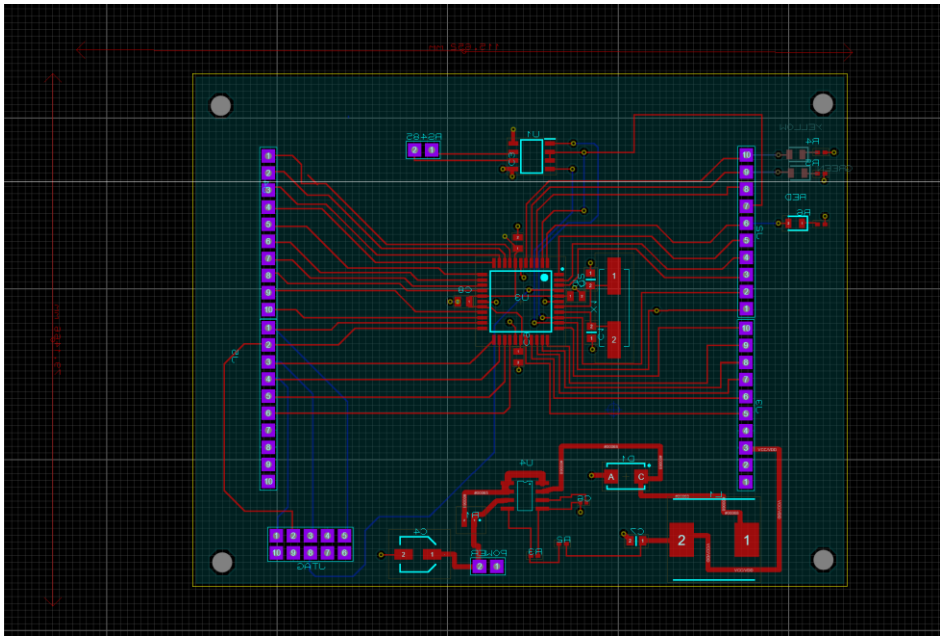


figure 2 – Layout top copper

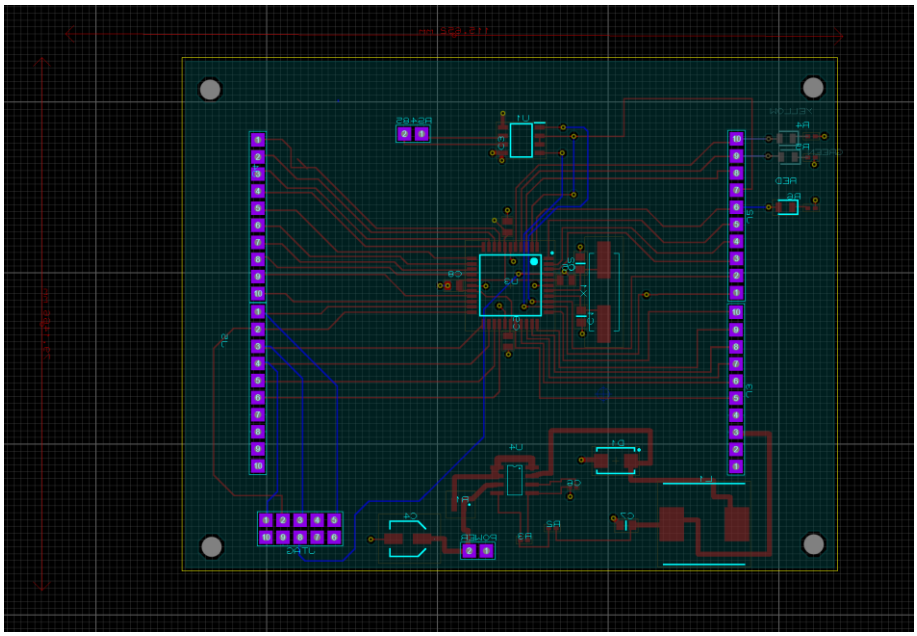


Figure 3 – Bottom copper

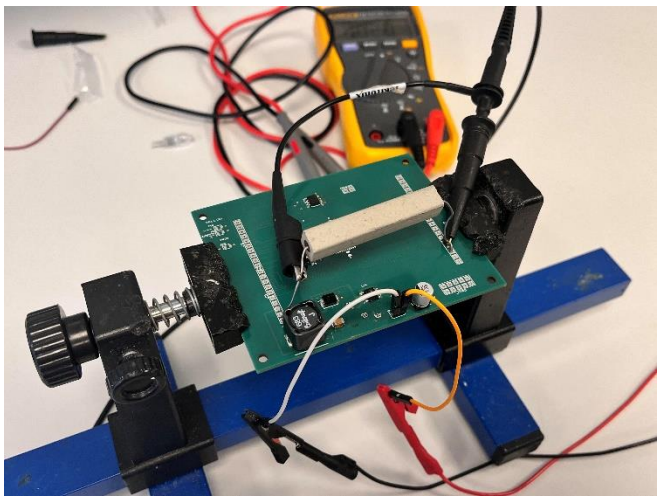
I successfully completed the PCB board layout for this project, incorporating a four-layer design. Inner 1 Layer was dedicated to power distribution, ensuring efficient and Inner Layer 2 was dedicated to the ground plane. After creating an acceptable layout, I prepared a lists of SMD components from Farrell to be ordered.

References	Value	Amount	Manufacturer code	Price per 1000
C1 - C2	22pF	2	VJ0805A220JXAAC	0.618 kr
C3,C5,C8,C9	100uF	4	GRM21BR60J107ME15L	4,27 kr
C4	10uF	1	EEE1EA100SR	0,851 kr
C6	680 pF	1	CC0805JRNPO9BN681	0,176kr
C7	220uF	1	GRM32ER60J227ME05K	3,54 kr
R1	0.6k	1	RL0805FR-070R6L	0,24kr
R2	3.6k	1	ERA6AEB362V	0,344kr
R3	1.2k	1	MCWR08X1201FTL	0,0314kr
R4-R6	100	3	CPF0805B100RE1	0,0426kr

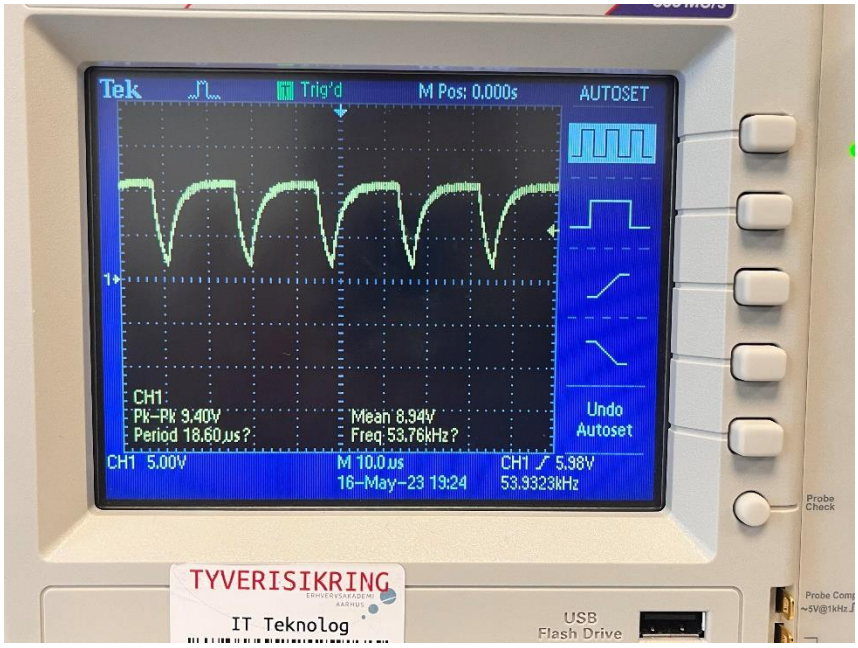
Figure 4 – List of components

3. Test

At first, we soldered a power supply on the board to test if the switch mode power supply works and gives the voltage of 5V without burning the board. After soldering all necessary components for power supply I tested it with 47 Ω resistor, and connecting ground and power pins to the external power supply.



The voltage of the device is around 5v so I soldered the rest of the components to check if the LED will light up.



After finishing soldering all the components on the board, I wanted to check if I can read the serial number, but after connecting the JTAG I couldn't get the device work and couldn't find the error.