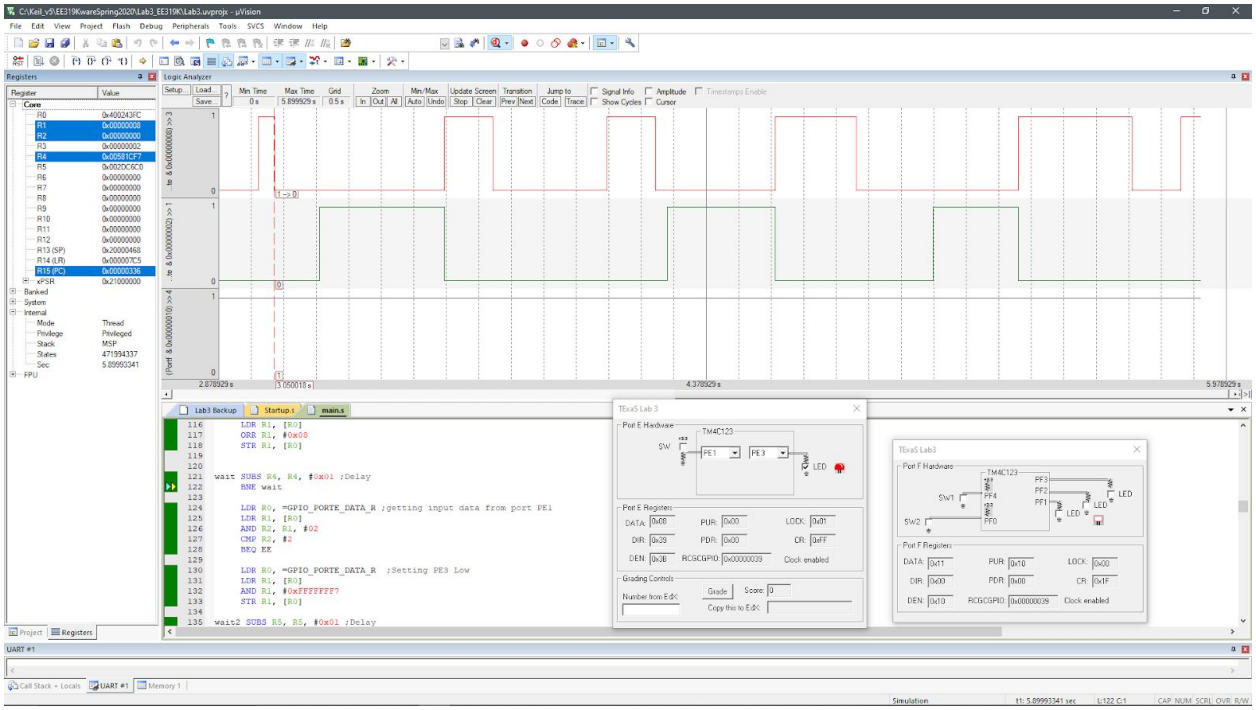

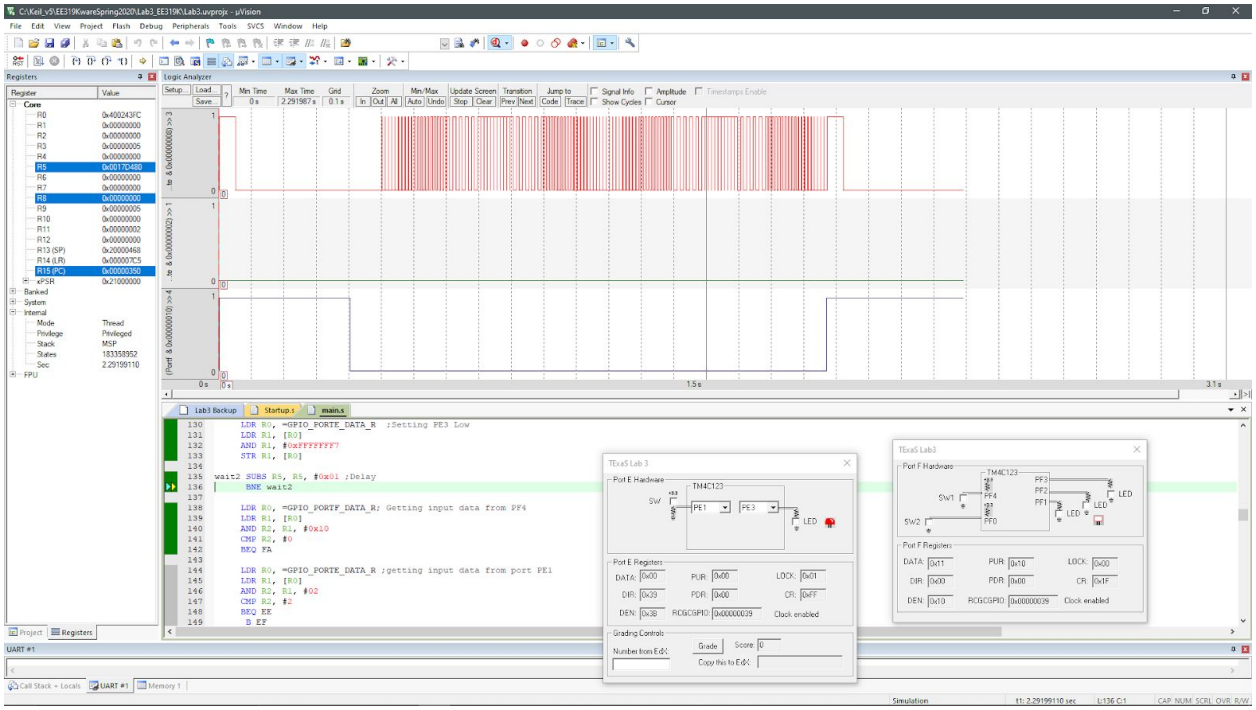

Parameter	Value	Units	Conditions
Resistance of the	9.91k		with power off and

10kΩ resistor, R1		ohms	disconnected from circuit (measured with ohmmeter)
Supply Voltage, $V_{+3.3}$	3.29V	volts	Powered (measured with voltmeter)
Input Voltage, V_{PE1}	0	volts	Powered, but with switch not pressed (measured with voltmeter)
Resistor current	0	mA	Powered, but switch not pressed $I=V_{PE1}/R1$ (calculated and measured with an ammeter)
Input Voltage, V_{PE1}	3.297	volts	Powered and with switch pressed (measured with voltmeter)
Resistor current	0.33	mA	Powered and switch pressed $I=V_{PE1}/R1$ (calculated and measured with an ammeter)

Row	Parameter	Value	Units	Conditions
1	Resistance of the 220Ω resistor, R19	217.7	ohms	with power off and disconnected from circuit (measured with ohmmeter)
2	+5 V power supply V_{+5}	5.15	volts	(measured with voltmeter relative to ground, *notice that the +5V power is not exactly +5 volts*)
3	TM4C123 Output, V_{PE2} input to ULN2003B	0	volts	with **PE2** = 0 (measured with voltmeter relative to ground). We call this V_{OL} of the TM4C123.
4	ULN2003B Output, pin 16, V_{k-} LED k-	3.8	volts	with **PE2** = 0 (measured with voltmeter relative to ground). This measurement will be weird, because it is floating.

5	LED a+, V_{a+} Bottom side of R19 (anode side of LED)	5.15	volts	with **PE2** = 0 (measured with voltmeter relative to ground). This measurement is also weird, because it too is floating.
6	LED voltage	0	volts	calculated as V_{a+} - V_{k-}
7	LED current (off)	0	mA	calculated as (V_{+5} - V_{a+})/R19 and measured with an ammeter
8	TM4C123 Output, V_{PE2} input to ULN2003B	0	volts	with **PE2** = 1 (measured with voltmeter relative to ground). We call this V_{OH} of the TM4C123.
9	ULN2003B Output pin 16, V_{k-} LED k-	3.227	volts	with **PE2** = 1 (measured with voltmeter relative to ground). We call this V_{OL} or $V_{CE(sat)}$ of the ULN2003B.
10	LED a+, V_{a+} Bottom side of R19 (anode side of LED)	2.58	volts	with **PE2** = 1 (measured with voltmeter relative to ground)
11	LED voltage	1.86	volts	calculated as V_{a+} - V_{k-}