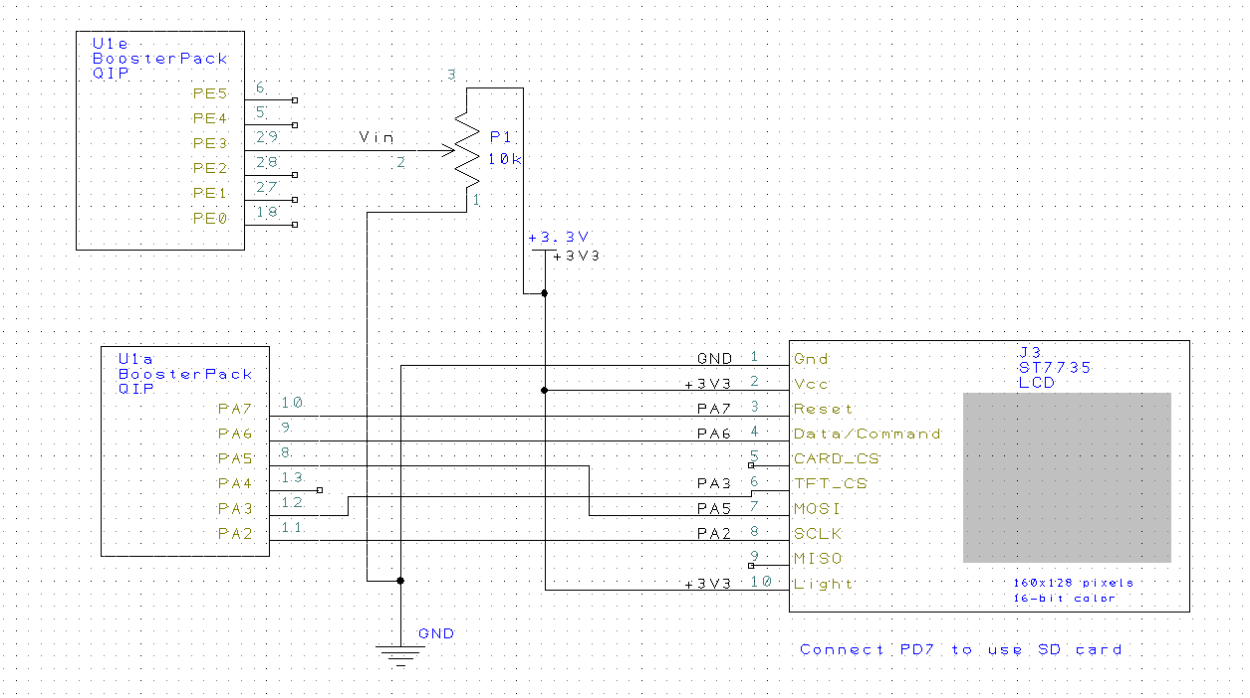
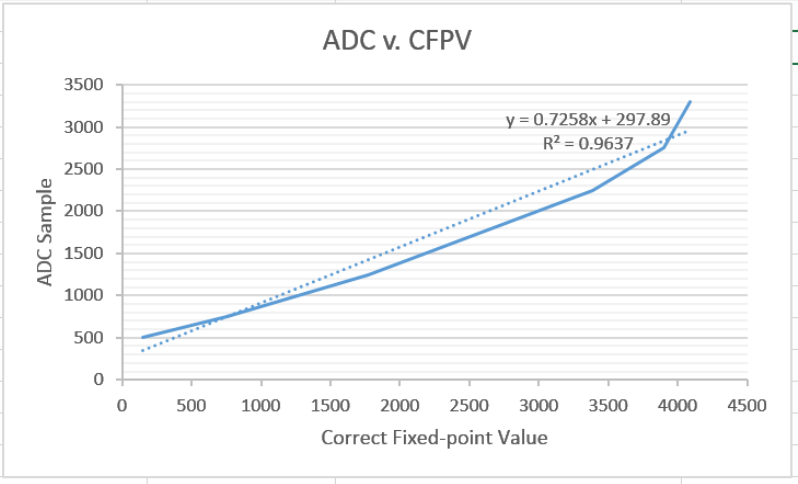
```
int main(void){
 //TExaS_Init();                                          //bus clock = 80 MHz
 // your Lab 8
 ST7735_InitR(INITR_REDTAB);  // Initializes LCD
                    SysTick_Set();
  PortF_Init();
  ADC_Init();


                    uint32_t out;
                    EnableInterrupts();
 while(1){
                    if(ADCStatus == 1)
                    {
                              PF3 ^= 0x08;
                              Position = ADCMail;
                              out = Convert(Position);
                              PF3 ^= 0x08;                                   // end of Convert Profile
                              PF2 ^= 0x02;
                              ST7735_SetCursor(0,0);
                              LCD_OutFix(out);
                              ST7735_OutString("cm ");
                              PF2 ^= 0x02;
                              ADCStatus = 0;
 }


}
          }
```

```
void SysTick_Handler(void){
GPIO_PORTF_DATA_R ^= 0x02;
        ADCMail = ADC_In();
        ADCStatus = 1;
        GPIO_PORTF_DATA_R ^= 0x02;
}

uint32_t Convert(uint32_t input){
  input=input*7258;
        input = input / 10000;
        input=input+297;
        if(input<1){
                input= input/4;
        }
  return input;
}

int delay;
void ADC_Init(void){
        SYSCTL_RCGCGPIO_R |= 0x00000010;                    //activating clock for
portE & F
        delay = SYSCTL_RCGCGPIO_R;
        delay = SYSCTL_RCGCGPIO_R;
        delay = SYSCTL_RCGCGPIO_R;
        GPIO_PORTE_DIR_R &= ~0x04;                    //making PE2 input
        GPIO_PORTE_DEN_R &= ~0x04;
        GPIO_PORTE_AFSEL_R |= 0x04;
        SYSCTL_RCGCADC_R |= 0x01;                    //activate ADC0
        delay = SYSCTL_RCGCADC_R;
```

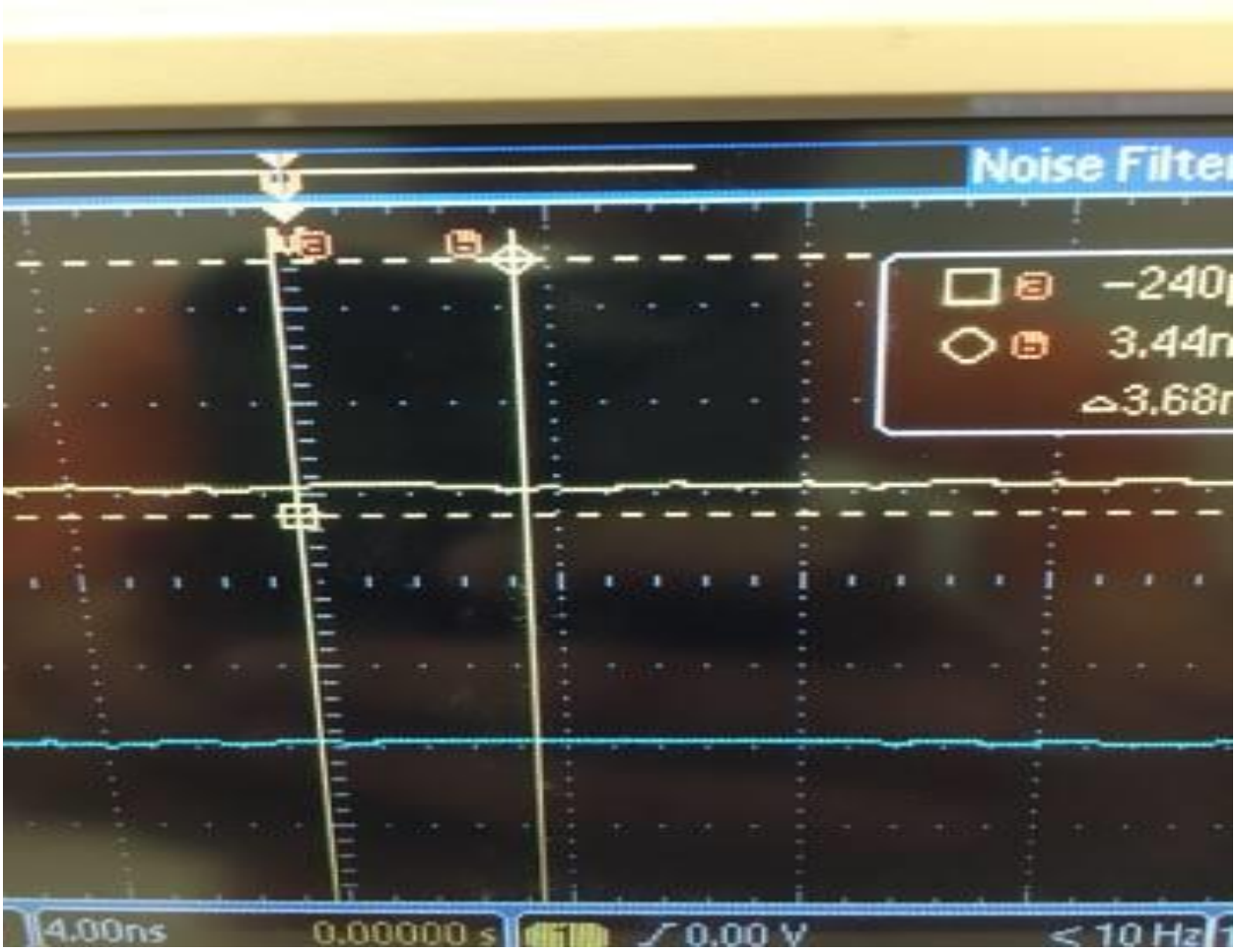
```
        delay = SYSCTL_RCGCADC_R;
        delay = SYSCTL_RCGCADC_R;
        ADC0_PC_R = 0x01;
        //configure for max of 125K
        ADC0_SSPRI_R = 0x0123;                                  //SEQUENCER 3 is
highest priority
        ADC0_ACTSS_R &= ~0x0008;                                //disable sample sequencer 3
        ADC0_EMUX_R &= ~0xF000;                                 //seq3 software trigger
        ADC0_SSMUX3_R = (ADC0_SSMUX3_R & 0xFFFFFFF0 ) + 1;    //channel Ain2 (PE2)
        ADC0_SSCTL3_R = 0x0006;         //NO TS0 D0, yes IE0 END0
        ADC0_IM_R &= ~0x0008;                                   //disable SS3
interrupt
        ADC0_ACTSS_R |= 0x0008;                                 //ENABLE SEQ3
}

//------------ADC_In------------
// Busy-wait Analog to digital conversion
// Input: none
// Output: 12-bit result of ADC conversion
        unsigned int result;
uint32_t ADC_In(void){
        ADC0_PSSI_R = 0x0008;
        while((ADC0_RIS_R & 0x08) == 0){}
        result = ADC0_SSFIFO3_R & 0xFFF;
        ADC0_ISC_R = 0x0008;

  return result;
}
```

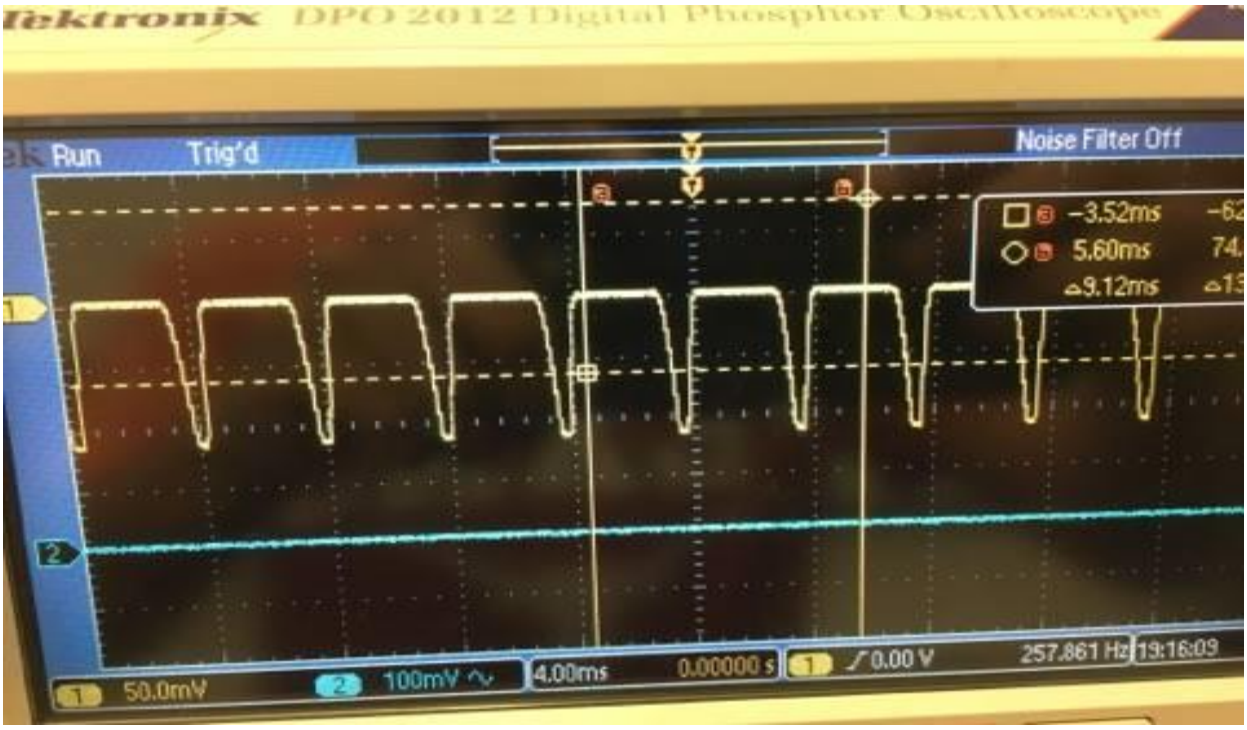


Position	Analog Input	ADC Sample	Correct Fixed-point Value	Measured Fixed-point Value
0.5	0.299	150	500	410
0.75	0.898	759	750	868
1.25	1.328	1769	1250	1629
2.25	2.832	3385	2250	2845
2.75	3.174	3900	2750	3233
3.3	3.269	4090	3300	3376



True Position (xti)	Measured Position (xmi)	Error (xti-xmi)
0.449	0.5	-0.051
0.76	0.75	0.01
1.3	1.25	0.05
2.96	2.25	0.71
3.26	2.75	0.51
3.26	3.3	-0.04




Tektronix DPO 2012 Digital Phosphor Oscilloscope
Run
Trig'd
Noise Filter Off
-3.52ms
5.60ms
Δ9.12ms
50.0mV
100mV
4.00ms
0.00000 s
0.00 V
257.861 Hz
19:16:09