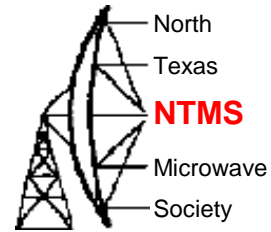


# Arduino Controlled DigiLO

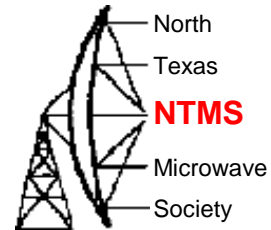
## Portable WSS (Weak Signal Source)

# Arduino Controlled DigiLO



- Q5Signal DigiLO
  - VCO Voltage Controlled Oscillator
  - 2 Form factors
    - Fully produced with dip settings
    - Raw board
  - Used in the DEMI 10 GHZ kit

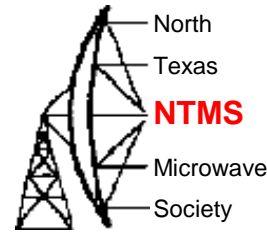
# Arduino Controlled DigiLO



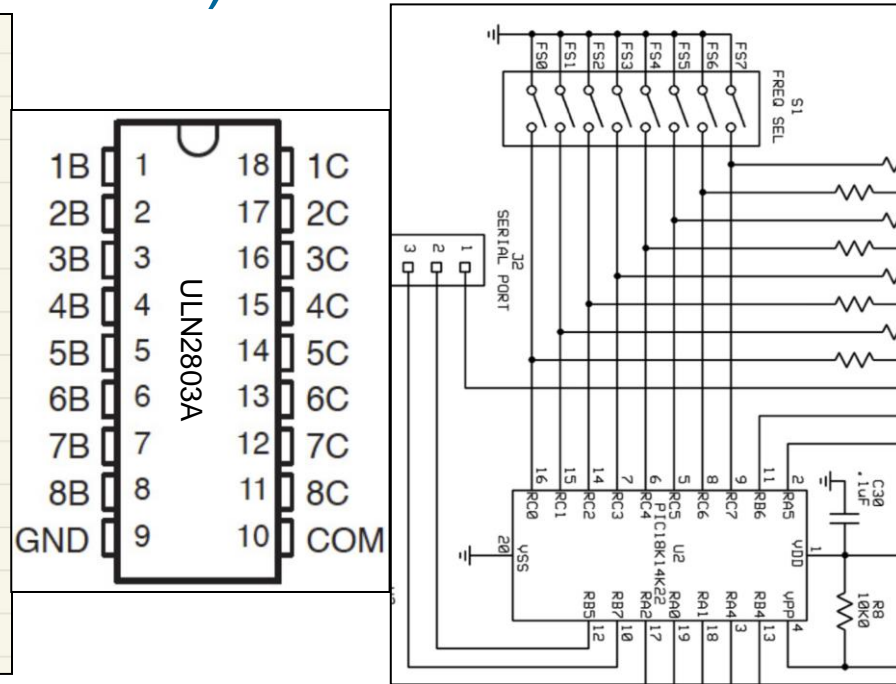
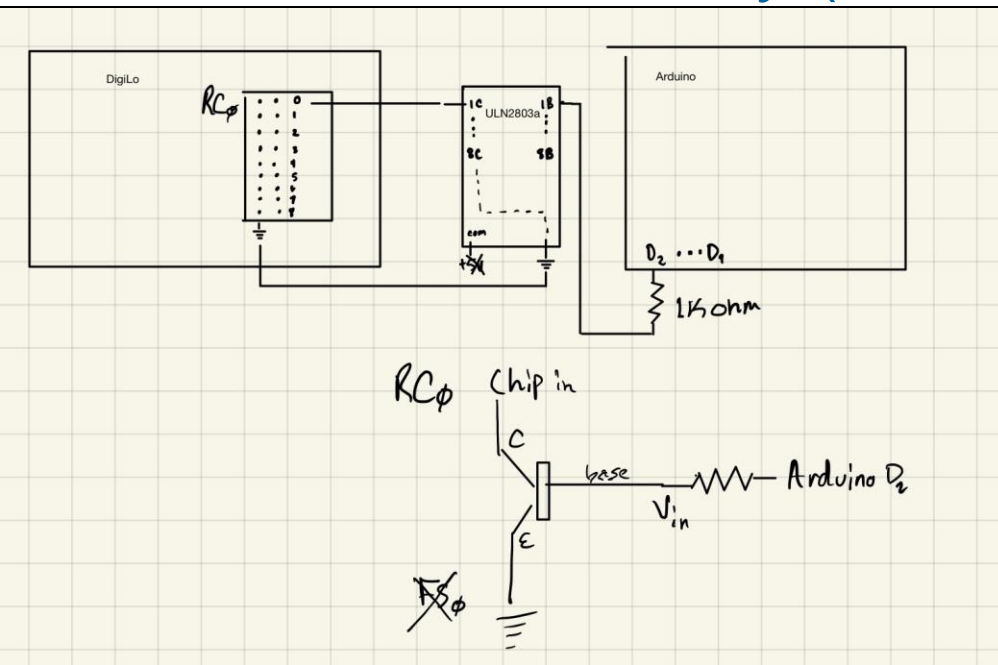
- Controlling the frequencies

digiLO Frequency Table for Firmware v19.9.1										
INDEX	FREQ	FREQ SELECT JUMPERS								SUGGESTED APPLICATION
		7	6	5	4	3	2	1	0	
0	116.000									144-28
1	194.000								X	222-28
2	404.000							X		432-28
3	758.000							X	X	902-144
4	874.000						X			902-28
5	759.000						X		X	903-144
6	875.000						X	X		903-28
7	1152.000						X	X	X	1296-144
8	1268.000					X				1296-28
9	2160.000					X			X	2304-144
10	2276.000					X		X		2304-28
11	3312.000					X		X	X	3456-144
12	3428.000					X	X			3456-28
13	5616.000					X	X		X	5760-144
14	5732.000					X	X	X		5760-28
15	120.000				X					144-144

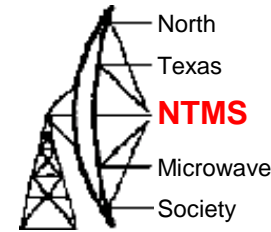
# Arduino Controlled DigiLO



- Using the Arduino to set the jumper values
  - Transistor array (ULN2803A)



# Arduino Controlled DigiLo



- The Arduino sketch
  - A byte is handy
  - Decimal values are converted to binary to set the digital I/O pins on the Arduino.

digiLO Frequency Table for Firmware v19.9.1									
INDEX	FREQ	FREQ SELECT JUMPERS							SUGGESTED APPLICATION
		7	6	5	4	3	2	1	
0	116.000								144-28
1	194.000							X	222-28
2	404.000						X		432-28
3	758.000					X	X		902-144
4	874.000					X			902-28
5	759.000					X	X		903-144
6	875.000					X	X		903-28
7	1152.000					X	X	X	1296-144
8	1268.000				X				1296-28
9	2160.000				X			X	2304-144
10	2276.000				X	X			2304-28
11	3312.000				X	X	X		3456-144
12	3428.000				X	X			3456-28
13	5616.000				X	X	X		5760-144
14	5732.000				X	X	X		5760-28

INDEX	FREQ	7	6	5	4	3	2	1	0	SUGGESTED APPLICATION
46	3456.033		X	X	X	X	X	X		10368.100 MHz / 3 WSS
47	3456.014		X	X	X	X	X	X		24192.100 MHz / 7 WSS

```

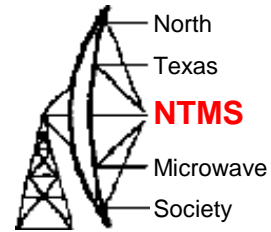
const int BTNUPIN = 12;
const int BTNDOWN = 13;
const int NBRFREQUENCIES = 15; // Number of available frequencies

// Variable definitions/initializations
int selected = 0; // The decimal value of the frequency being considered
int buttonUpdate = 0; // Just the Up button low to start off
int buttonDown = 0; // Just the Down button low to start off
int buttonCenter = 0; // Just the Center button low to start off
int nextFrequency = 0; // The index of next freq selected
int selectedFreq = 0; // The decimal value of the selected frequency value set
int pin_FreqSel[NBRFREQUENCIES] = {5, 1, 3, 4, 6}; // Decimal values for binary switch values
double arr_FreqSel[NBRFREQUENCIES] = {176.000, 194.000, 404.000, 874.000, 875.000, 1152.000, 1268.000, 2160.000, 2276.000, 3312.000, 3428.000, 5616.000, 5732.000}; // Decimal frequency mapping 0 to NBRFREQUENCIES decimal
milliDelay selectedValueTimer; // Timer object for timing out selections

void setBinaryValue(int decimalValue) // (Set the transistor array values as a byte (8 bits on/off) as passed in as decimal
{
    digitalWrite(OPIN1)HIGH && (decimalValue & B00000001);
    digitalWrite(OPIN2)HIGH && (decimalValue & B00000010);
    digitalWrite(OPIN3)HIGH && (decimalValue & B00000100);
    digitalWrite(OPIN4)HIGH && (decimalValue & B00001000);
    digitalWrite(OPIN5)HIGH && (decimalValue & B00010000);
    digitalWrite(OPIN6)HIGH && (decimalValue & B00100000);
    digitalWrite(OPIN7)HIGH && (decimalValue & B01000000);
    digitalWrite(OPIN8)HIGH && (decimalValue & B10000000);
}

void displayCurrentSelectedIndexAndFrequencyOnLCD() // Print the current frequency that is set
    
```

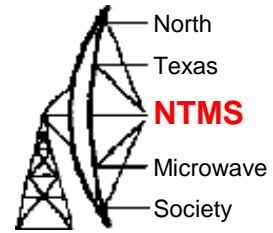
# Arduino Controlled DigiLO



## • Parts List

- Q5Signal DigiLO
- Arduino Nano
- ULN2803A 18 Pin (2 form factors PCB Dip or SMA Breadboard Module)
- IC2 Display .91 Inch OLED (Blue Display Color)
- 1 5-Way Tactile Switch (Up/Down/Left/Right/Center Click)
- 2 Female SMA Through-hole PCB Edge Mount Solder-In Type
- 2"x3" Solder Perf Board
- 1 5mm 3-Pin Dual Bi-Color Diffused Common Cathode LED (Red/Green)
- Right angle Single Row 40-pin 2.54 Male Header (Pack of 10)
- Straight Single Row 40-pin Male Header (Pack of 10)
- 8 1/4W 1K Ohm Resistors (2 form factors, thru-hole or 1206 SMD)
- 3.94"x2.36"x0.98" Plastic Enclosure Case Junction DIY Project Box
- Short and Medium Length Female-Female Breadboard Jumper Wires
- DC Power Socket Connector, Threaded 5.5mmx2.1mm Female Panel Mounting Adapter Power Jack
- Optional 12V to 9V 1.7A Step-Down Miniature DC-DC Converter Power Supply Module

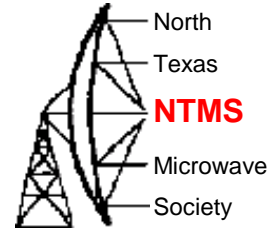
# Arduino Controlled DigiLO



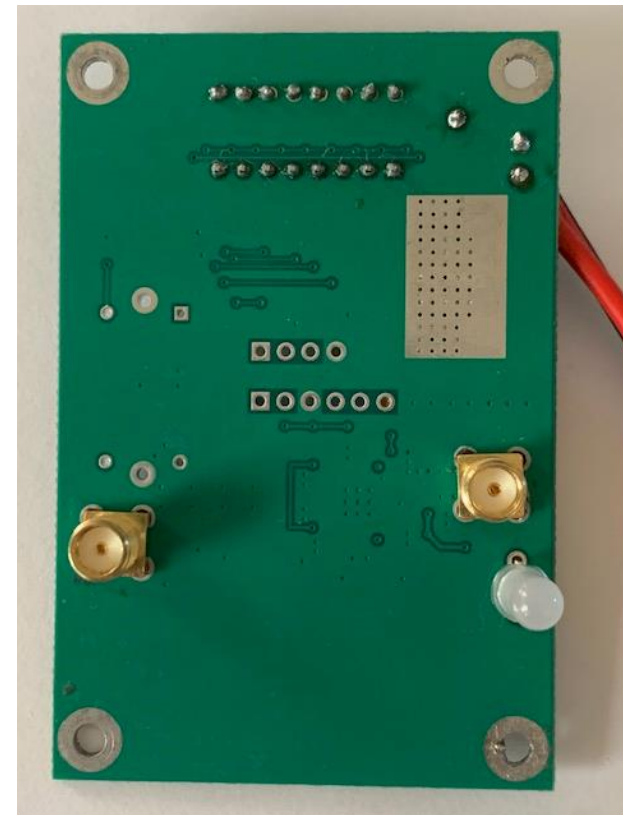
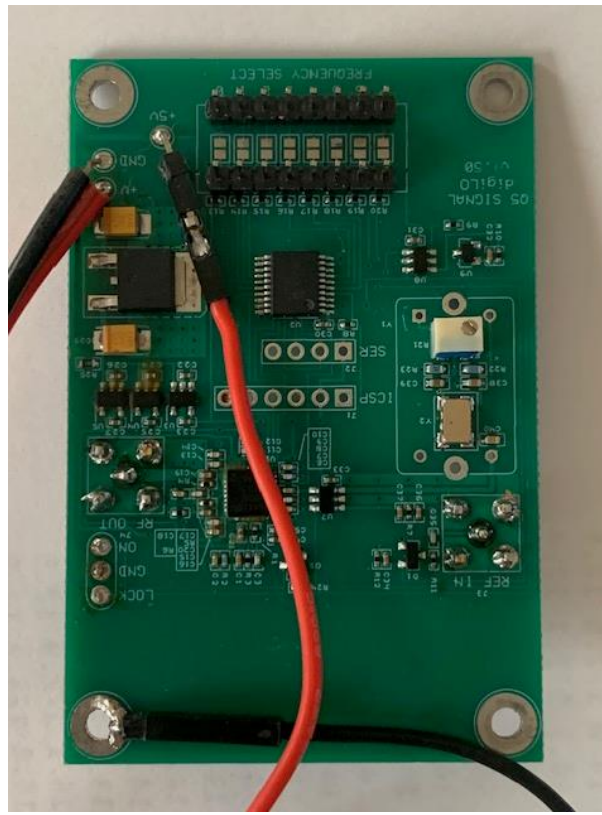
- Final Assembly & Testing



# Arduino Controlled DigiLO

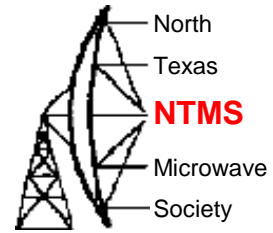


## Prepping the DigiLO

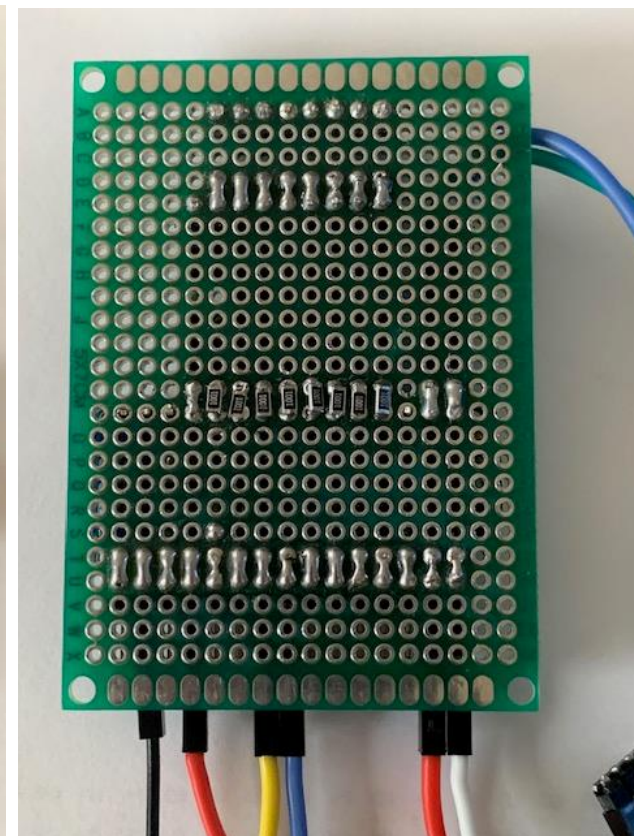
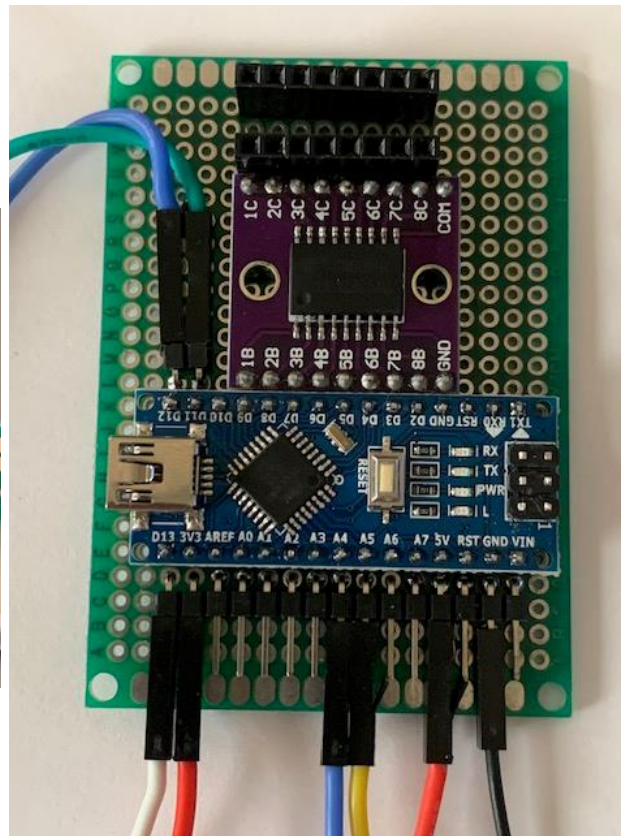
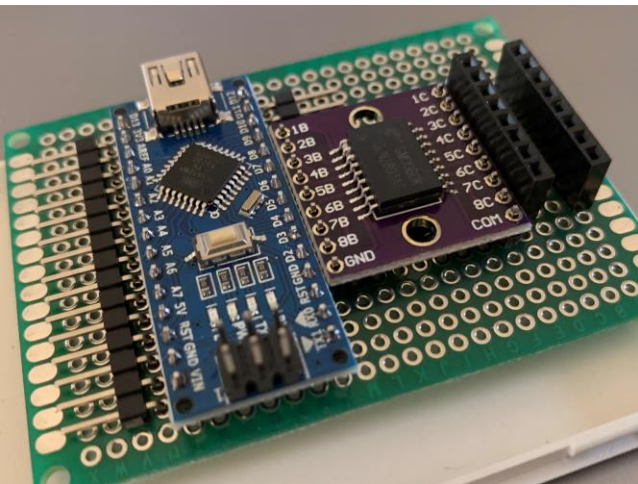




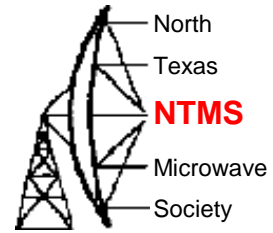
# Ardurino Controlled DigiLO



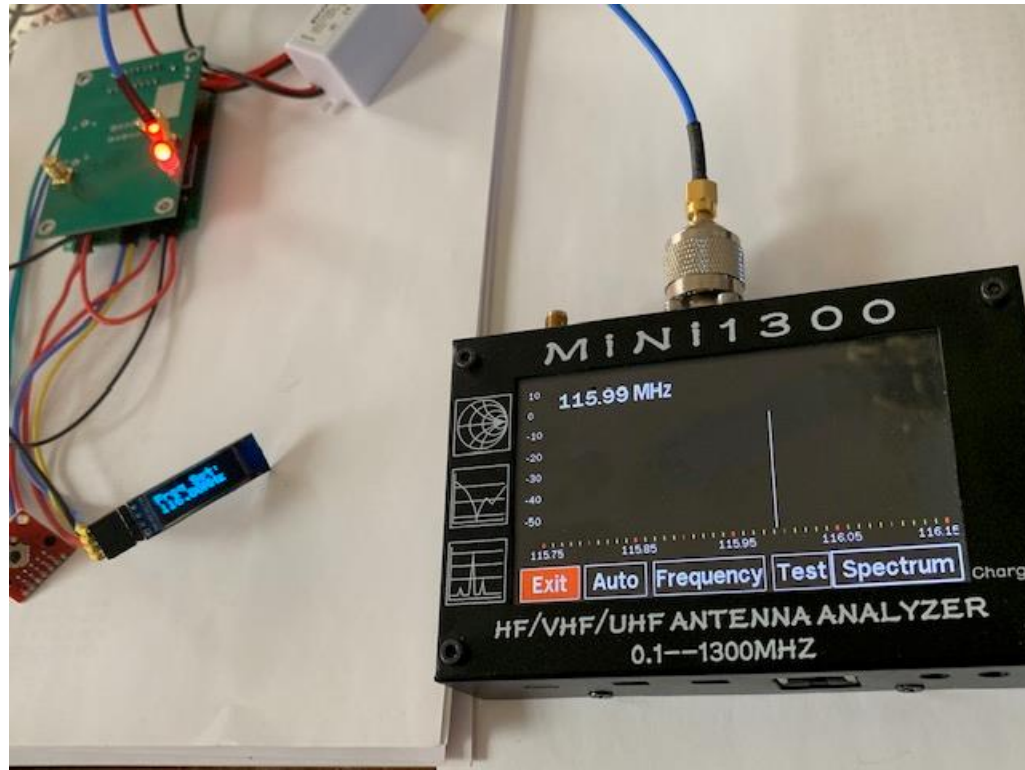
## Prepping the Arduino & Transistor Array Project Board



# Arduino Controlled DigiLO



Testing

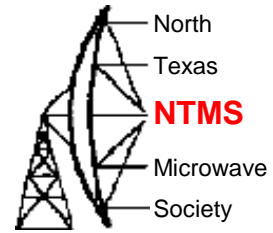


Final Assembly





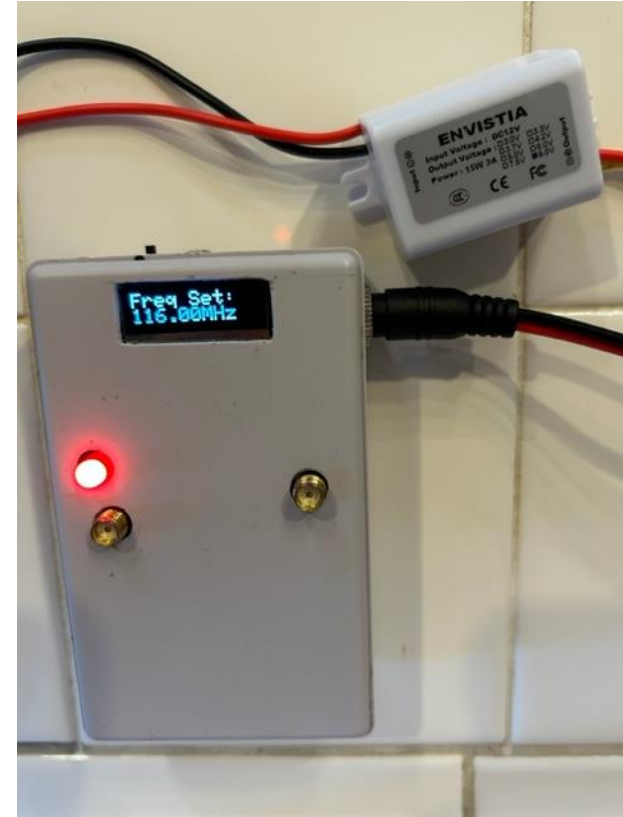
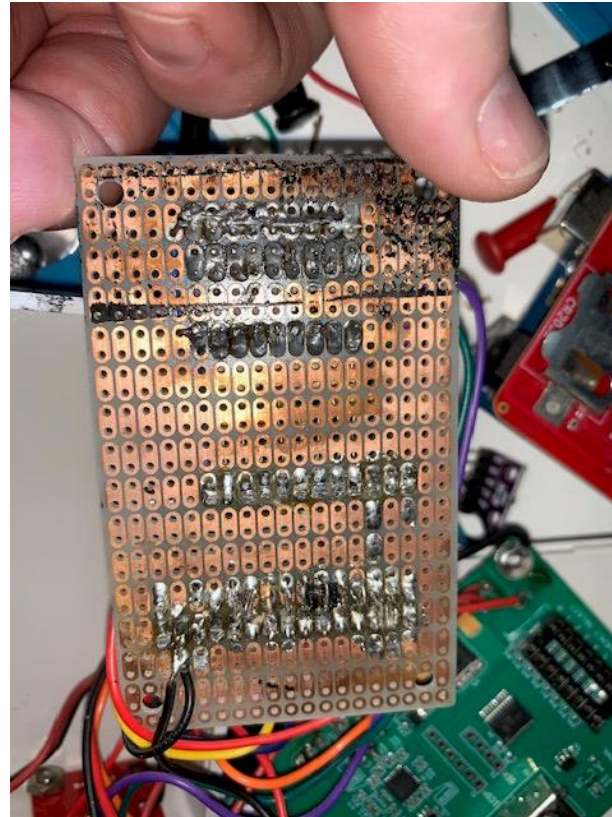
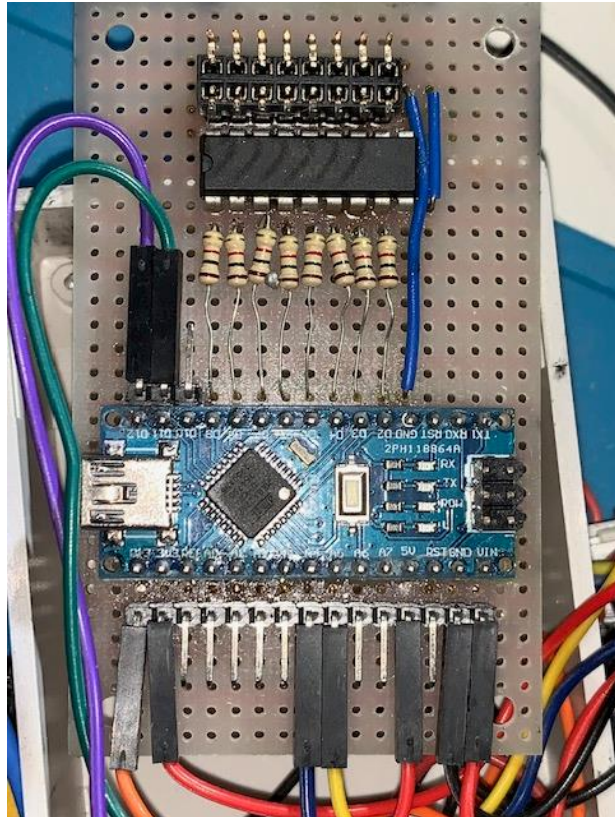
# Arduino Controlled DigiLO



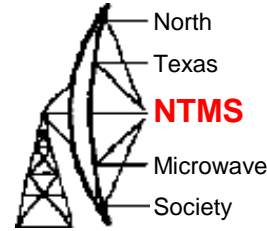
First Example - Front

First Example - Back

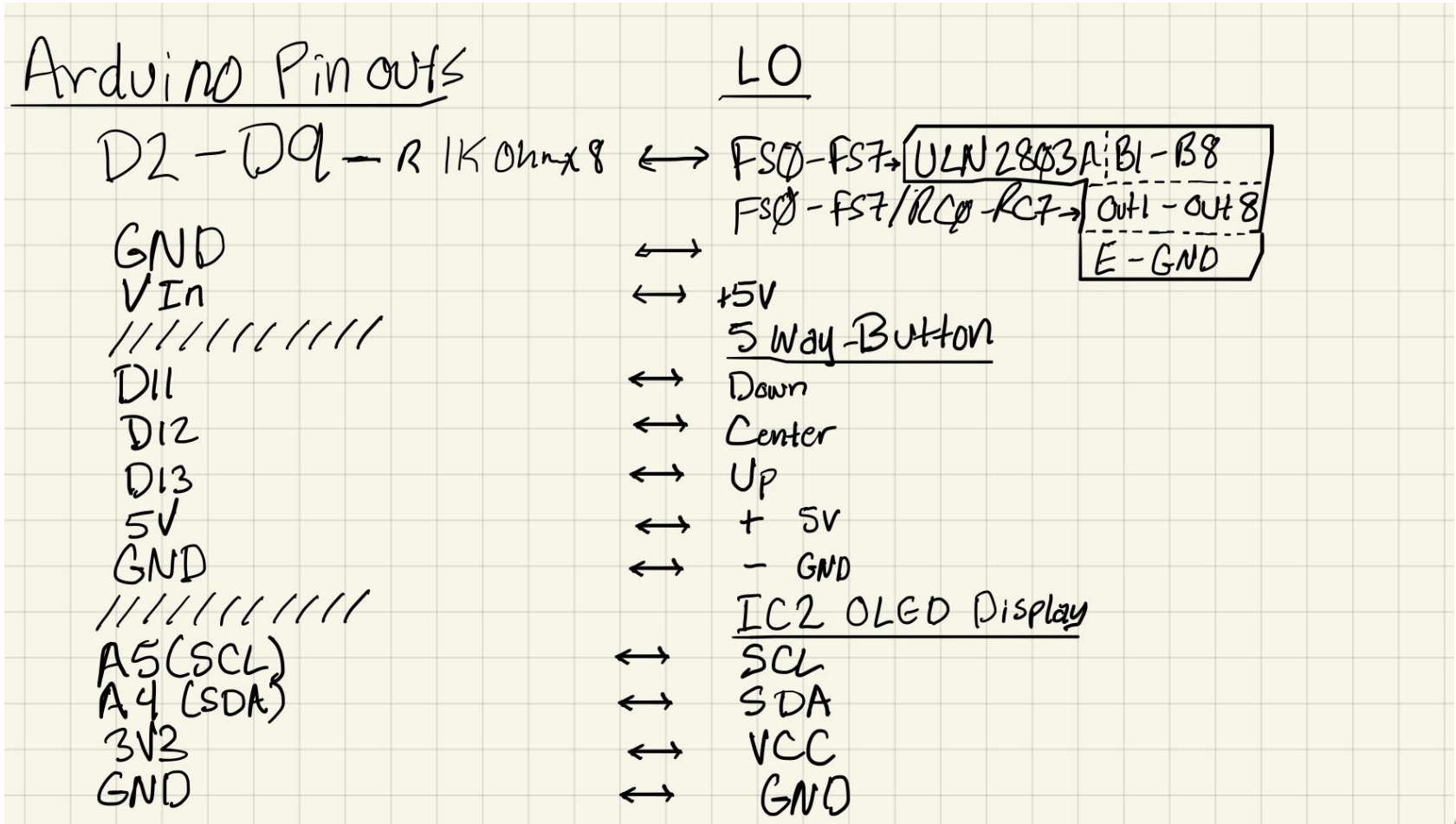
First Example – Completed



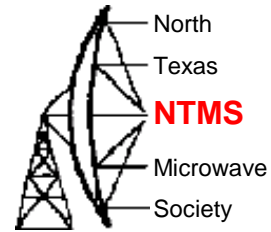
# Arduino Controlled DigiLO



## Arduino Pinouts



# Arduino Controlled DigiLO



- Future consideration
  - Digital pin consumption – shift registers
  - Driving high voltage devices simultaneously