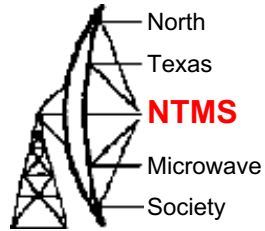


Arduino Controlled DigiLO

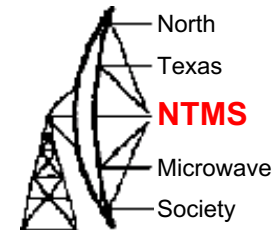
Portable WSS
(Weak Signal Source)

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

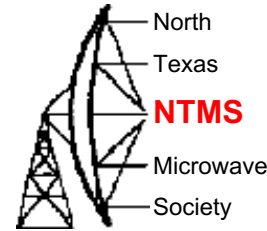
Arduino Controlled DigiLO



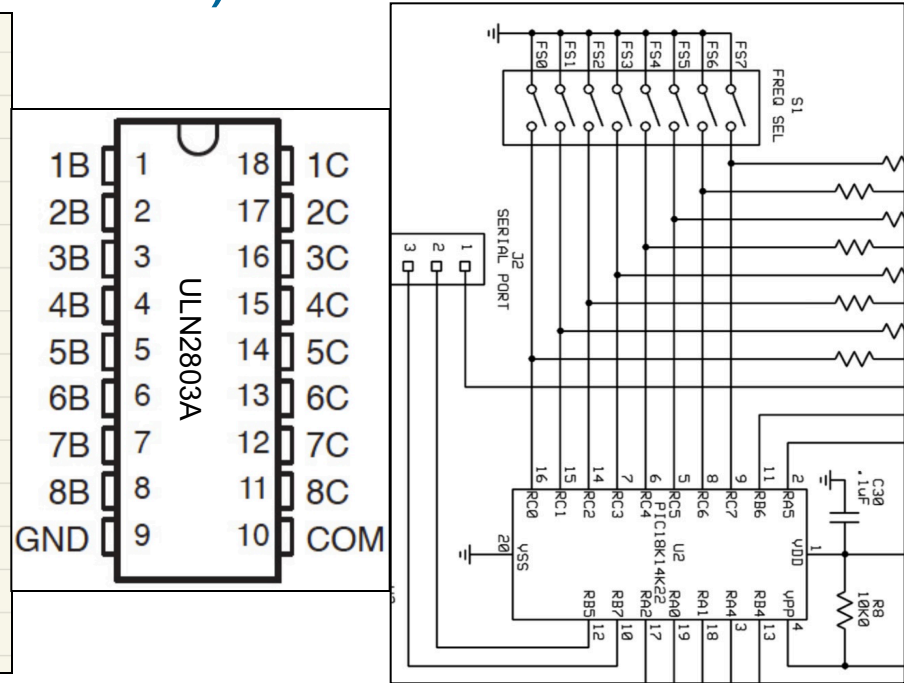
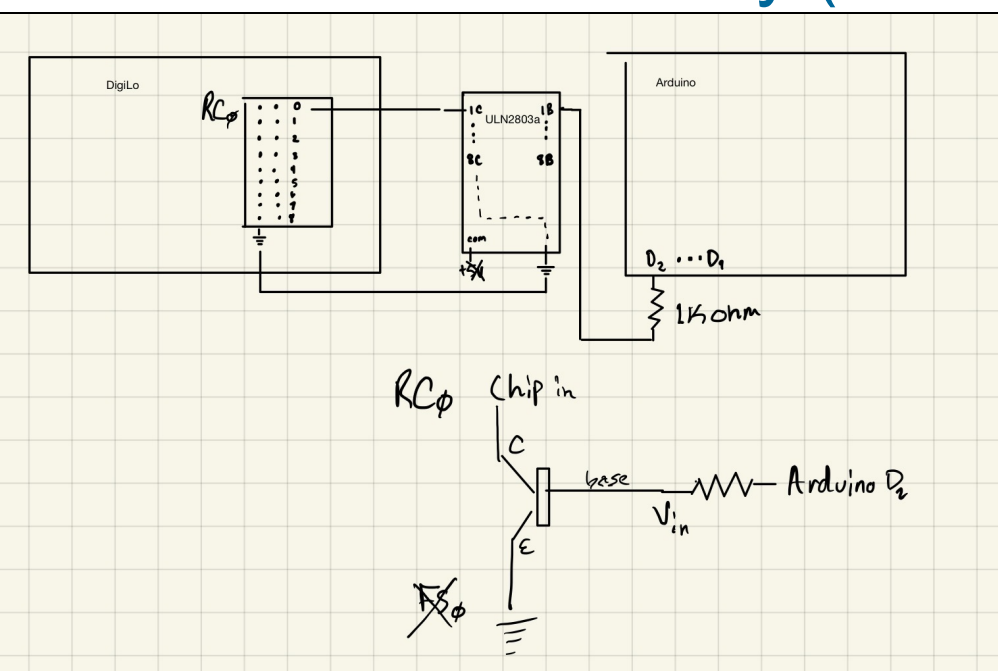
- Controlling the frequencies

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

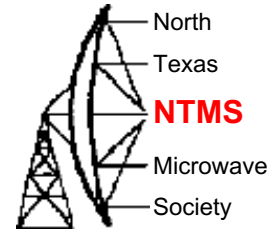
Arduino Controlled DigiLO



- 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		10368.100 MHz / 3 WSS
47	3456.014				X	X	X	X		24192.100 MHz / 7 WSS

```

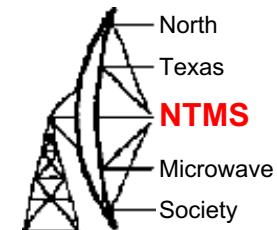
const int BTNUPRN = 12;
const int BTNDNPN = 13;
const int NBRFREQUENCIES = 15; // Number of available frequencies

// Variable definitions/initializations
int selected = 0; // (Use decimal value) Index of the frequency being considered
int buttonUpState = 0; // (Just the Up button low to start off)
int buttonDownState = 0; // (Just the Down button low to start off)
int centerButtonState = 0; // (Just the Center button low to start off)
int microwaveState = 0; // (Just the microwave button low to start off)
int selectedFreq = 0; // (Use decimal value) Index of the frequency value set
int pin_FreqSel[NBRFREQUENCIES] = {5, 1, 2, 4, 3}; // (Decimal values for binary switch values)
double pin_FreqSelFreq[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)
int ledDelay selectValueTimer; // 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(OPIN7) 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(OPIN2) HIGH && (decimalValue & B10000000);
}

void digitalWritePin(int pin, bool value) // (Set the pin to the correct transceiver that is set
    
```

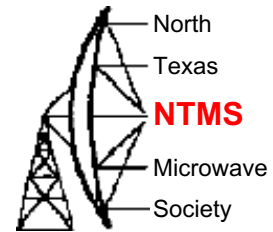
Arduino Controlled DigiLO



• Parts List

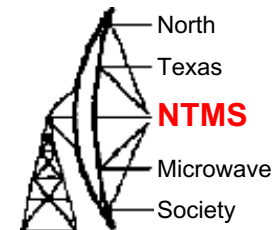
- Q5Signal DigiLO
- Arduino Nano
- ULN2803A 18 Pin (2 form factors PCB Dip or SMA Breadboard Module)
- IC2 Display .91 Inch OLED (Blue Display Color)
- 1 5-Way Tactile Switch (Up/Down/Left/Right/Center Click)
- 2 Female SMA Through-hole PCB Edge Mount Solder-In Type
- 2"x3" Solder Perf Board
- 1 5mm 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

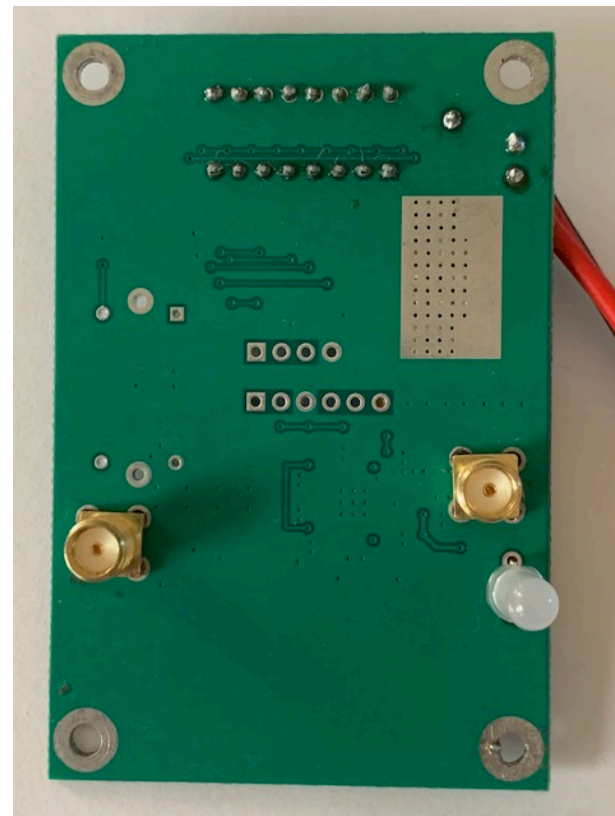
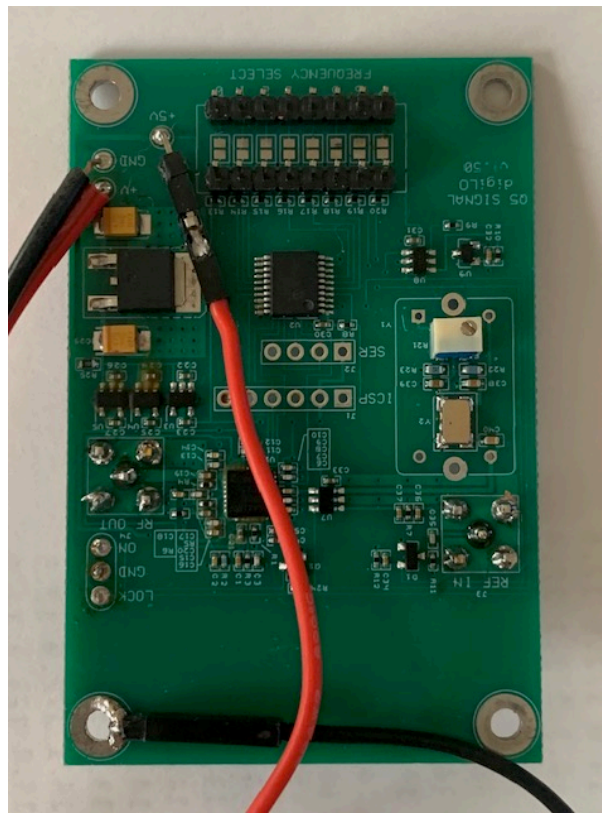
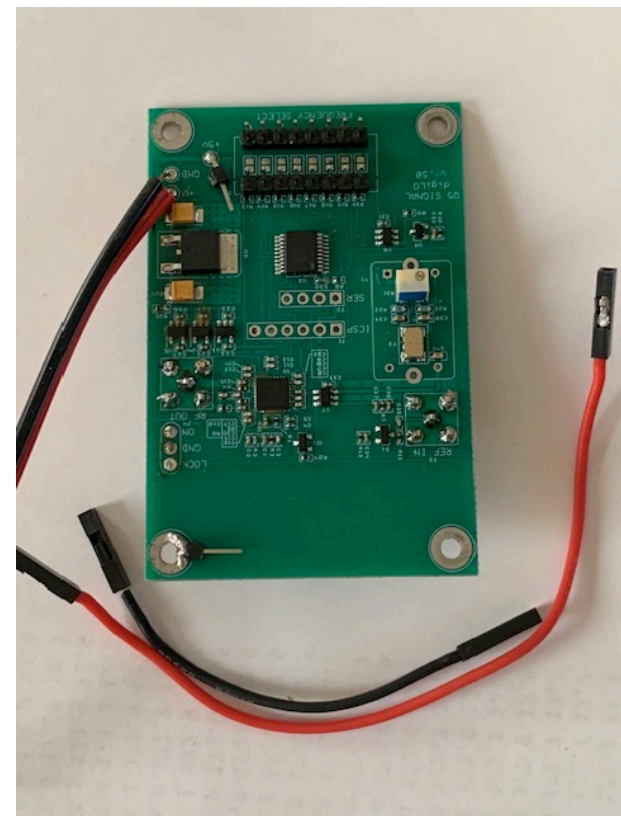


- Final Assembly & Testing

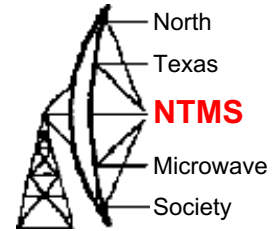
Arduino Controlled DigiLO



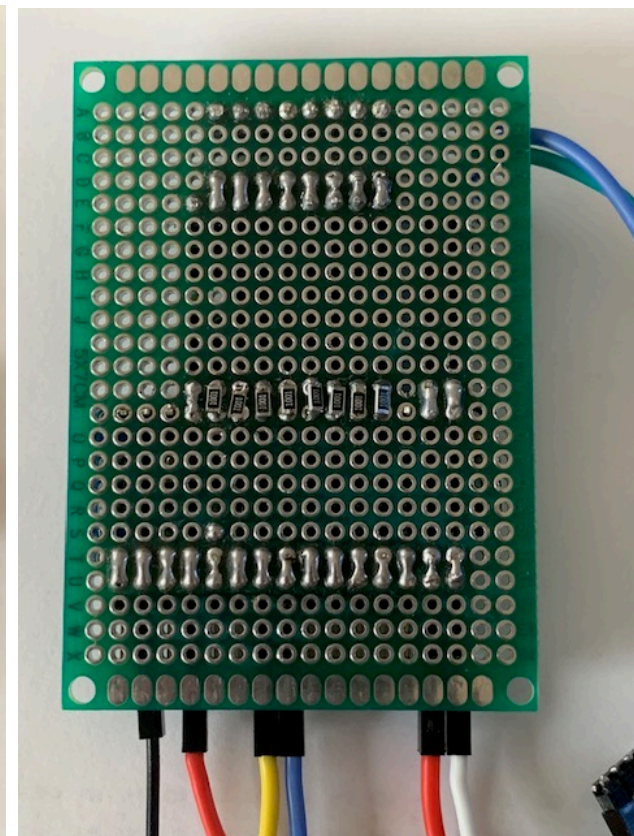
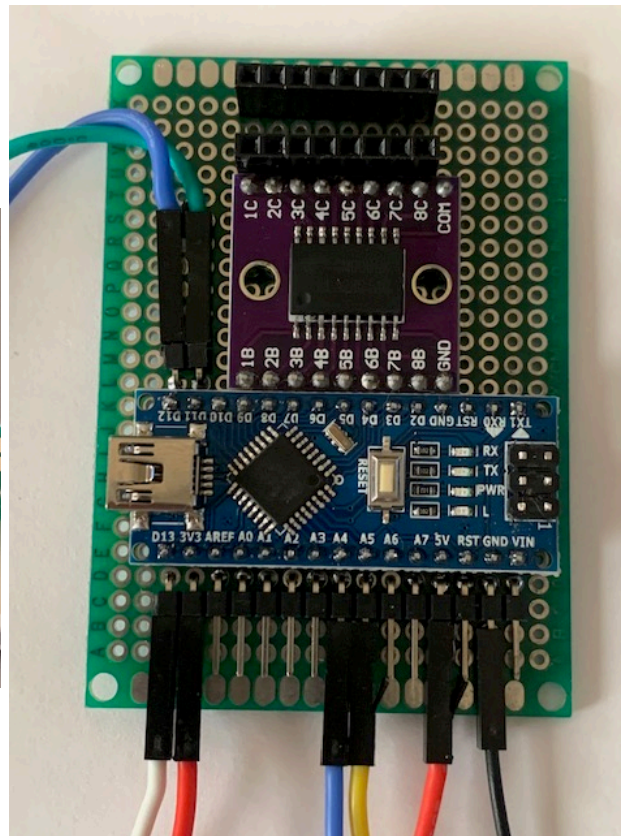
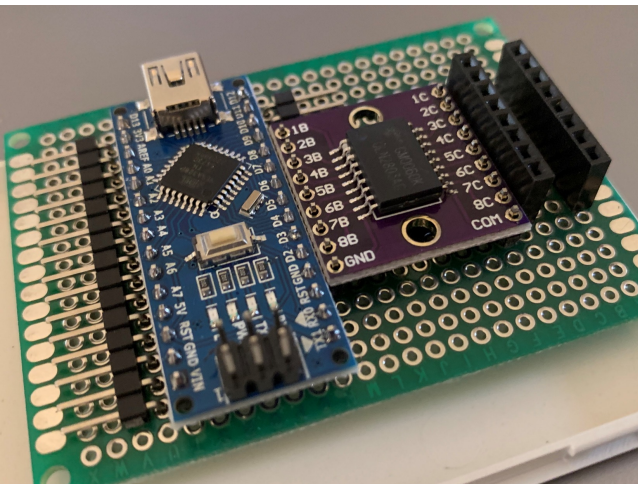
Prepping the DigiLO



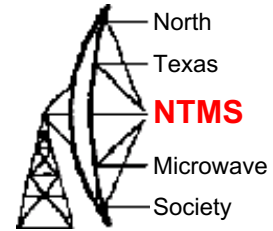
Ardurino Controlled DigiLO



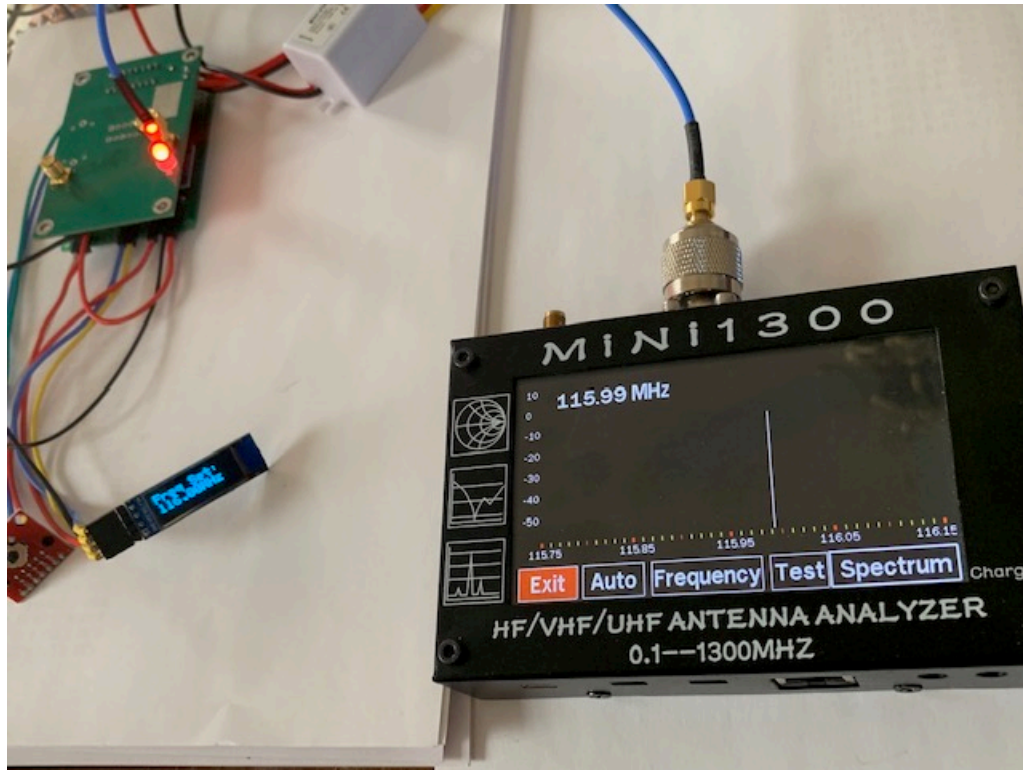
Prepping the Arduino & Transistor Array Project Board



Arduino Controlled DigiLO



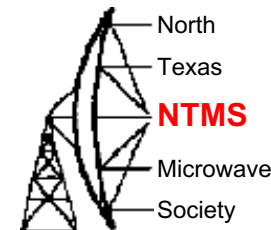
Testing



Final Assembly



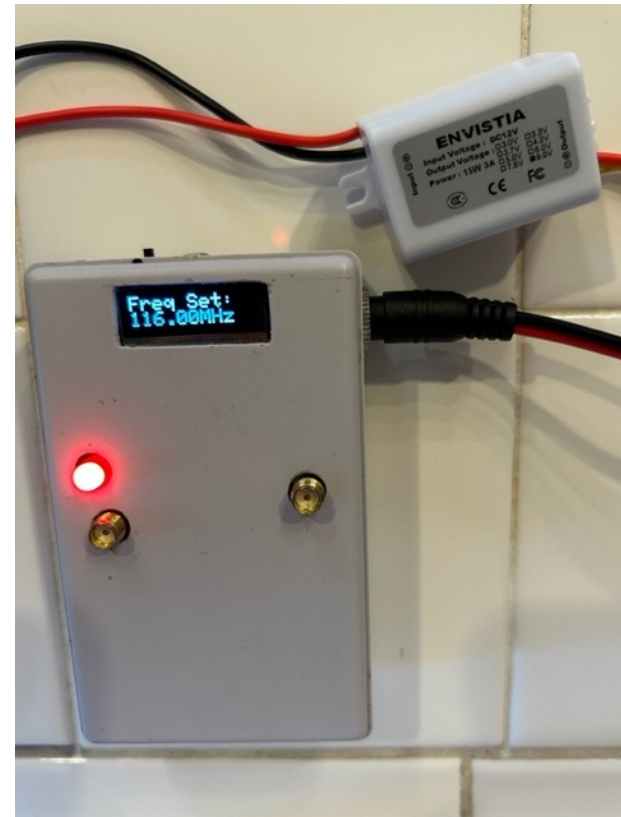
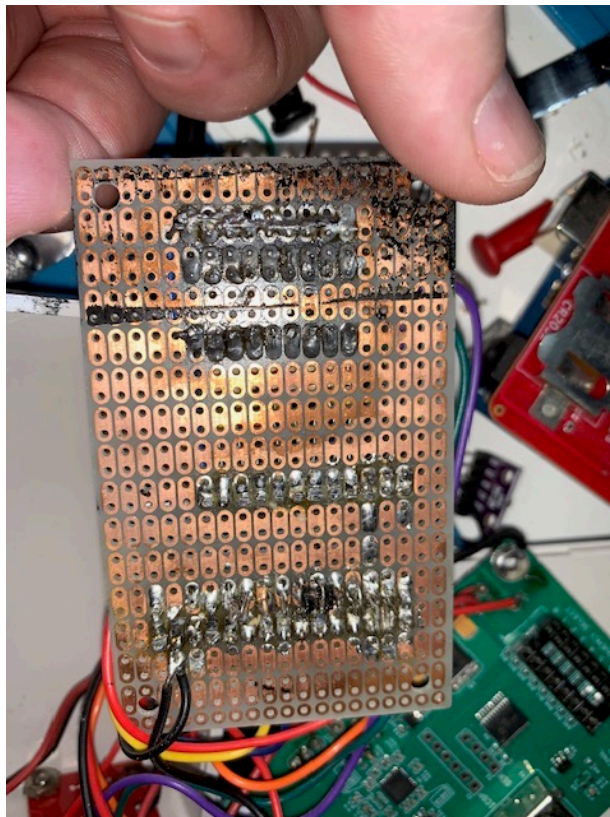
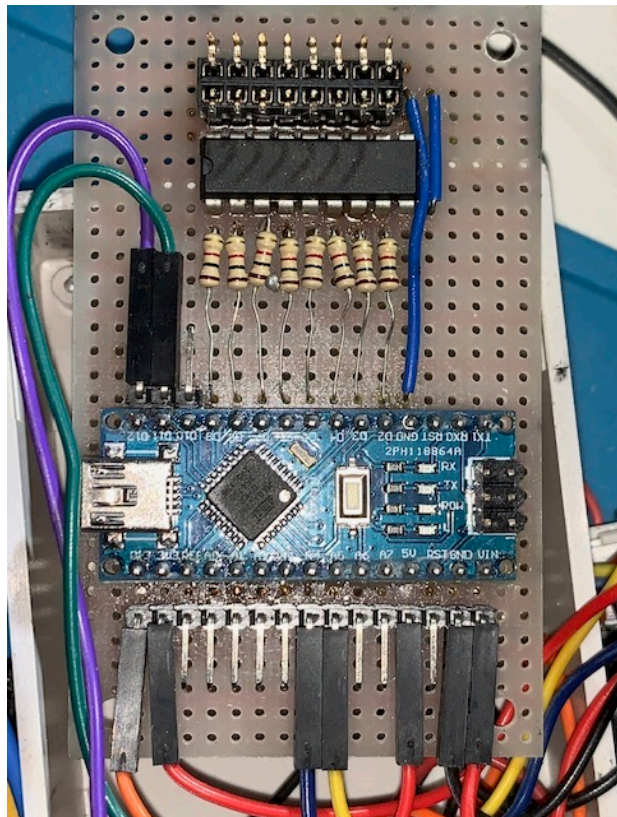
Arduino Controlled DigiLO



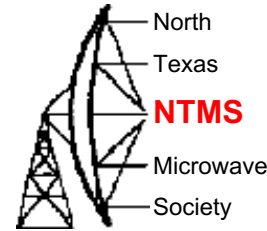
First Example - Front

First Example - Back

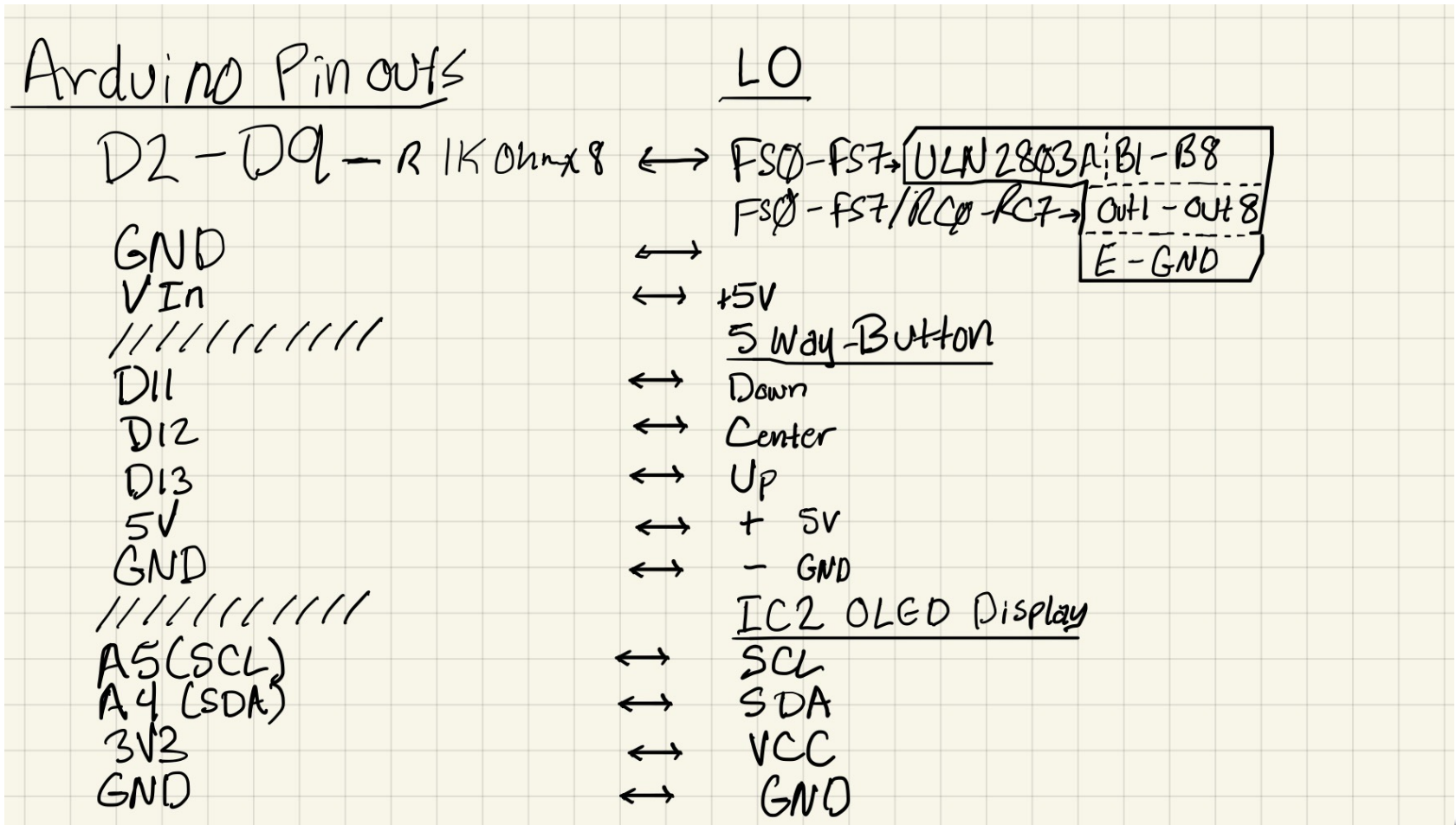
First Example – Completed



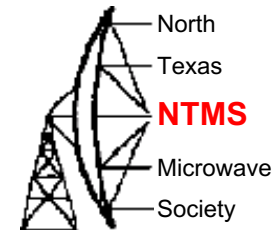
Arduino Controlled DigiLO



Arduino Pinouts

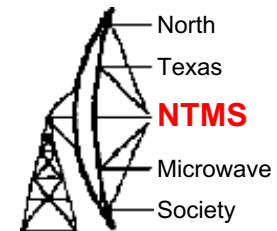


Arduino Controlled DigiLO



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

Arduino Controlled DigiLO



Questions?