

## simpleST

```
/*
 Shuttle Tuned PLL VFO for BITX40 Raduino
 Don Cantrell,ND6T v 1.1 22 April 2017
 Compiles under Etherkit Si5351 library v 2.0.1
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 Simplified sketch. No metering but with idle indicator.
 Eliminated unnecessary updating.
 */
#include <si5351.h>
Si5351 si5351;
#include <LiquidCrystal.h>
LiquidCrystal lcd(8,9,10,11,12,13);

int tune; //Tuning knob position
unsigned long post = 0; // Time post
float BFO = 11.99855e6; //My I.F. frequency
float LO = BFO -7.2e6; //I.F. minus starting frequency

void setup() {
  lcd.begin(16, 2);

  si5351.init(SI5351_CRYSTAL_LOAD_8PF,24999020L,0); //My actual ref osc freq.
  si5351.set_pll(SI5351_PLL_FIXED, SI5351_PLLA);
  si5351.set_freq(LO * 100, SI5351_CLK2); //Program the synthesizer

  lcd.setCursor(0,0); ///////////////Splash////////////////////
  lcd.print("simpleST");
  lcd.setCursor(0,1);
  lcd.print("ver. 1.1");
  delay(2000);
}

void loop() {
  tune = analogRead(A7); //Read the input on analog pin 7:
  if (tune>560)up(); //Establish tuning direction
  if (tune<464)down(); //and idle zone
  if(millis()-post<50) show(); //Display the frequency
}

//****Functions****

void show() { //Display subroutine
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print ((BFO-LO)/1e3,3); //Calculate & show frequency
  if(tune>560)lcd.print(" >");//Tuning direction indicators
  if(tune<464)lcd.print(" <");
  if(tune>464 && tune<560) lcd.print(" I"); //Idle indicator
  lcd.print(" KHz");
}
}
```

```
void down() {
  LO = LO + (pow((464 - tune)/5,3)/100); //Increase local osc frequency (decreases
T/R freq)
  si5351.set_freq(LO * 100, SI5351_CLK2); //Program the synthesizer
  delay(300); // To ease tuning
  post=millis(); //Display
}

void up() {
  LO = LO - (pow((tune - 560)/5,3)/100); //Decrease local osc frequency (increases
T/R freq)
  si5351.set_freq(LO * 100, SI5351_CLK2); //Program the synthesizer
  delay(300); // To ease tuning
  post=millis(); //Display
}
```