

simpleSTsk

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/*
 Shuttle Tuned PLL VFO for BITX40 Raduino with CW
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 Compiles under Etherkit Si5351 library v 2.0.6
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 Simplified sketch. No metering but with idle indicator.
 Straight key only
 */
#include <si5351.h>
Si5351 si5351;
#include <LiquidCrystal.h>
LiquidCrystal lcd(8,9,10,11,12,13);

int tune; //Tuning knob position
int offset=700; //CW offset
float QSK=1.5; //Delay (in seconds)for semi-QSK
long count = 0; //Timeout counter
unsigned long post = 0; // Time post
float BFO = 11.99855e6; //My I.F. frequency
float LO = BFO -7.2e6; //Local Oscillator frequency 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

  pinMode(5, INPUT_PULLUP); // Key input on Plug 3 pin 3
  pinMode(6, OUTPUT); //Sidetone from Plug 3 pin 2
  pinMode(7, OUTPUT); // T/R keying for CW Plug 3 pin 1

  lcd.setCursor(0,0); ///////////////Splash////////////////////
  lcd.print("simpleSTsk");
  lcd.setCursor(0,1);
  lcd.print("ver. 1.0.1");
  delay(2000);
  post=millis(); //Set starting time post
}

void loop() {
  if(digitalRead(5)==LOW) CW();//If the key is pressed go to CW mode
  digitalWrite(7, LOW); // Restore T/R relays from CW mode

  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
}
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//****Functions****

void show() { //Display
  lcd.clear();
  lcd.setCursor(0, 0);
  lcd.print ((BFO-L0)/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
}

void CW() { //CW mode, Straight Key only
  digitalWrite(7,HIGH); // Key T/R relays and do the setup while they activate
  while (count < (QSK*1300)){ // Delay time after last action to return to normal
SSB
  while(digitalRead(5)==LOW){ //Key down
    si5351.set_freq(((BFO-L0)-offset) * 100 , SI5351_CLK1);
    tone(6,offset); //Sidetone
    count=0; //Reset counter
  }
  si5351.output_enable(SI5351_CLK1, 0); // Unkey transmit
  noTone(6);
  count++;
  }
  count=0; //Reset counter
}

```