**HF ham band transceiver controller By H.Rahimi EP4HR ( ep4hr@yahoo.com)**

This Project is a controller for HF ham band transceiver .Main parts of project is Arduino Mega 2560

and AD9850 DDS module .

I use Arduino Mega because it has 54 digital pin and 16 analog pin and there is not any limitation for

Input and output pin .

Also in this project I use AD9850 DDS module for produce RF signal for receiver and transmitter.

This circuit has this capability :

-Produce stable RF signal for receiver with plus or minus IF frequency. (I use 10 MHz IF but it can be change) and show RX frequency .

-Produce stable RF signal for transmitter with plus or minus TX IF frequency. . (I use 10 MHz IF but it can be change) and show TX frequency .

-Use two VFO A or B and split mode

-Use two antenna port A or B

-Use AGC fast or slow

-Use modulation switch for USB , LSB and CW . It is very easy to add mode like AM or FM .

-Use up and down switch for Band .Band are from 3.5 MHz to 28 MHz .It is very easy to add other band like 1.8 MHz .

-Read receiving signal (S meter ) and show it by bar .(By use AGC signal of receiver maximum 1 volt for S equal to 59 and use a potentiometer for more than 1 volt ).

-Read transmitter power signal (PWR) ) and show it by bar .(some sample of TX Power must be change to DC and maximum 1 volt maximum power and use a potentiometer for more than 1 volt ).

-Read DC power supply of transmitter and show it by number. (Maximum to 20 volt).

For change frequency use a rotary switch and Key switch of rotary for change step frequency from 10 Hz to 1 MHz .According to frequency software active a digital pin for use RF filter bank .

It is better use buffers for each out put digital pin like 74HC240 for protection of Arduino.

Hardware requirement :

-Arduino Mega 2560

-AD9850 DDS module

- LCD 20 x 4

-Two pieces 5K potentiometer for

-One piece 10K potentiometer for adjust LCD contrast

-Eight pieces pushbutton switch

- A rotary switch

-Resistor 2K ,330 ohm ,620 ohm , 1K ,3.3K ,2.2K ,100 ohm ,1K(two pieces of each )

Chang IF frequency :

It is possible to change IF frequency also change frequency plus or minus from RX or TX frequency.

In this line can change frequency IF in Hertz :

int\_fast32\_t iffreq = 10000000; // Intermedite Frequency + Amount to subtract (+) from base frequency.

Here IF frequency is 10MHz

In this line can change IF plus or minus from RX or TX frequency:

if (GoIF == 1){frequency=frequency+iffreq;}; //If pin = low, Add the IF frequency.

If use( –) sign IF frequency subtract from frequency and if use (+) sign IF frequency added to frequency .

If have any question or want change software according to your radio project can drop mail to

[ep4hr@yahoo.com](mailto:ep4hr@yahoo.com) or contact via <https://github.com/ep4hr>