

# EME161A WIDEBAND PLL KIT

## SOFTWARE NOTES:

**Please note that Mini-Kits does not recommend that you try to change the frequencies as the software is buggy. Repeated presses of the optional program button can lockup the software indefinitely. The PIC will then need to be replaced with a fresh software install.**

This software, version 1 of SYNTH.ASM is used to control a SP5055 programmable synthesizer using a PIC 12F629.

The software has been setup for TX use over the range 1.15 GHz to 1.3 GHz. The file has been renamed to PLL\_TX12.ASM to reflect these settings.

4 default channel frequencies have been set as follows.

Channel 1 = 1250 MHz.

Channel 2 = 1283 MHz.

Channel 3 = 1207.5 MHz.

Channel 4 = 1219.5 MHz.

\*\*\* NORMAL MODE \*\*\*

1) This is the mode that will be enabled when power is first applied.

2) The PLL frequency is set by switches S1 and S2.

S2	S1	
open	open	= channel 1
open	closed	= channel 2
closed	open	= channel 3
closed	closed	= channel 4

3) A brief press of the optional press button ( PROG ) puts the pic into the ENTER CHANNEL FREQUENCY MODE.

**Please note that the software is buggy, & can be locked up indefinitely with repeated presses of the optional program button. The PIC will then need to be replaced with a fresh software install.**

\*\*\* ENTER CHANNEL FREQUENCY MODE \*\*\*

1) ENTER CHANNEL FREQUENCY MODE is entered from the NORMAL MODE by pressing the optional press button briefly, the led should flash quickly for 1 second. The new frequency result will be save to the currently selected channel as defined by S1 and S2.

2) The frequency is entered starting with the GHz digit. Each brief press of the button, adds 1 GHz to the frequency. ie 1 press, sets the frequency to 1,xxx,xxx KHz. The LED is turned on for 1/4 second as the button is released as an aid to check that the PIC recognized the button press.

3) A long press of the button (1 sec) selects the next digit, i.e. 100 MHz digit. The LED will light after the button has been pressed for 1 second, and once the button is released the LED will go out. Then each brief press of the button, adds 100 MHz to the frequency. i.e. 2 presses sets the frequency to 1,2xx,xxx KHz. Again the LED is turned on for 1/4 sec as the button is released.

4) A long press of the button (1 sec) selects the next digit, i.e. 10 MHz digit, etc.

5) If you enter more than 9 in any digit position, the extra presses are ignored as indicated by the LED not going on as the button is released.

6) If a 0 needs to be entered in a digit position, don't briefly press the button, but press the button for 1 second (until the LED lights) to select the next digit.

7) You can enter digits down to the 1 KHz position. Any digits entered in the 100 Hz, 10 Hz or 1 Hz position are ignored, as indicated by the led not going on as the button is released.

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9) You can save the frequency at any stage. i.e., to enter a frequency of 1,200,000 KHz (1.2 GHz) Briefly press the button 1 time, to enter 1 GHz. Press the button for 1 second to select the 100 MHz position. Briefly press the button 2 times, to enter 200 MHz. Press the button until the LED flashes to save the result to the currently selected channel as defined by S1 and S2.

10) If the button is not pressed for 13 seconds you will be return to the NORMAL MODE, and any changes made to the channel frequency will be ignored.

## GENERAL COMMENTS

To minimize disturbance to the PLL, the divider info that sets the PLL, is sent by the PIC to the PLL only if the frequency needs to be changed. (i.e. after a channel change or after manual frequency changes)

When the frequency is changed, it is assumed that the PLL is unlocked. The PIC checks the PLL status continuously until the PLL locks. Once locked, status checks are made every second. if the PLL goes out of lock, continuous checks are started again. (to disable the checks every second, change the 'LOCK\_TM' equate to 255)