

## ***Agricultural Electronics: Advanced Agricultural Electronics Networks Development***

Spring 2010

BAE 5030 – Section 352

### **Homework Assignment #2**

**Due: February 9, 2010**

### **Examination of clocking in low-power microcontrollers**

1. Examine the file “msp430x20x3\_ta\_04.c” in the TI MSP430 Code Examples set. If you do not have this file, it can be found on the page at:  
<http://focus.ti.com/docs/toolsw/folders/print/ez430-f2013.html>  
Compile and test this file with the eZ430 Stick Development tool. Determine if the code works and describe why if not and how if it works. Modify the code to produce a 0.5 Hz flash rate for the LED. Turn in an electronically document consisting of the source file with rigorous comments for each line of code.
2. Design a laboratory test to determine the power consumption of the above “working” code. Your laboratory test should allow you to determine power consumption at two significantly different clock speeds as well as with the CPU running at full speed. Assume you will have a breadboard with a 5V supply available. In addition, you will have components for a cable to allow your MSP430F2013 target to be plugged into the breadboard. You will have to solder in the connector to the target board. You should provide a circuit diagram and a test protocol to answer this question. We will conduct the test on a laboratory breadboard.