Jesse Belanger

EC 450

Homework 4

3/4/2015

**Procedure:**

To measure the frequencies, I hooked up an oscilloscope to my Lanchpad between pin P1.1 and a GND pin. I have no concrete information to qualify how accurate this piece of equipment was, but the numbers I used to calculate the frequency for each part were based rather precisely off of the data the oscilloscope presented to me. Some of the measured values could be closer to the desired values, however the parameters given are those which gave the best possible values.

**Part 1:**

Parameters: DCOCTL = 0x60, BCSCTL1 = 0x07

These parameters set DCO = 3, RCO = 7, and set all other bit fields to zero (i.e. default as described by the homework assignment page). I obtained a measurement of 1.042 MHz, which is around what would be expected of a 1MHz default clock.

**Part 2:**

Parameters: DCO = 0xE0, RSEL = 0x0F

For this part, I read through some of the system clock/DCO materials to find out what the different bit fields mean and how to use them. On one of the MSP430G2553’s datasheets I came across its DCO table, which said that the maximum range for the chip would be 16 – 26 MHz. To get into the range, DCO had to be set to 7, and RSEL to 15. My chip’s maximum operating frequency tested at 18.696 MHz.

**Part 3:**

Parameters: DCO = 0x60, RSEL = 0x0B

I again referenced the DCO table for this part to determine what parameters might be best. The closest I was able to get to 4 MHz was 3.86 MHz, with DCO = 3 and RSEL = 11. I tried to see if I could get any closer to 4 MHz by increasing RSEL to 12, but that increased the frequency to 5.12 MHz, which was not as close as ~3.9 MHz.