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EC 450

3/4/15

Professor Giles

Homework #4: DCO Calibration

**Procedure**

In order to find the desired parameters, I used a PicoScope in order to read the output voltage from one of the pins whose output was being XOR’d. In addition, I recorded the period of the WDT. I was then able to calculate the frequency of the WDT based off the period and converted it into the cycles of the DCO by multiplying the period by the total cycles of the WDT (1024). I repeated this process for the three required setting by changing the register values in the DCOCTL and BCSCTL1 registers.

**Settings of MSP430G2553**

The DCO was altered using the DCOCTL & BCSCTL1 registers.

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| **DCO Speed** | **DCO** | **MOD** | **RSEL** | **DCO Freq.(MHz)** | **WDT Freq.(KHz)** |
| Default | 3 | 0 | 7 | 1.11 | 1.08 |
| Maximum | 7 | 0 | 15 | 19.69 | 19.23 |
| Tuned to ~4 MHz | 3 | 3 | 11 | 4.01 | 3.92 |

**Accuracy**

The readings of the PicoScope may have not been the most accurate because I eyeballed the period of the WDT. This may have led to inaccuracies in the frequencies of the measured speeds. The MSP430 is also a temperature sensitive device which could possible effect the DCO & WDT frequencies.