

KEYWORDS:**RC OSCILLATOR, CALIBRATION, OSCCAL, ATTINY**

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Writing the Calibration Byte to the OSCCAL Register in ImageCraft ICCtiny

Introduction

ATTiny devices are able to run on internal RC Oscillator. The frequency of this kind of Oscillator can vary from device to device and therefore the internal RC Oscillator of each device is tested in production. The result of this test is a calibration value (the Calibration Byte), which is stored in the signature of the device. To make the internal RC Oscillator run at a frequency that match the frequency specified in the datasheet, the Calibration Byte should, during programming of the device, be read from the signature and copied into the Flash or EEPROM memory of the device. At run-time the Calibration Byte should be read from Flash/EEPROM and written into the OSCCAL Register.

Example of Implementation

The example below is assuming that the Calibration Byte is stored in Flash memory. The example shows how the Calibration Byte can be written to the OSCCAL Register when using the ICCtiny Compiler from ImageCraft. The best way to solve this in ICCtiny is to use a function.

Declare this in your C file:

```
extern char readflash(int addr);
```

Then you can call it like this:

```
OSCCAL = readflash(0x100); // or whatever address
```

Here's readflash(). Put this in a file with a .s extension and add it to your project file list!

```
.export "Z_readflash"
.text
Z_readflash:
    mov r29,r30
    mov r30,r15
    mov r31,r14
    lpm
    mov r15,r0
    mov r30,r29
    ret
```

This is a general purpose assembly code that allows reading of any byte in the Flash memory. Note that the address is a byte address.