SCMF Test Board

Operator's Instruction Manual

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SCMF Test Board

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SECTION 1.0 GETTING STARTED

1.1 Introduction

The SCMF Test Board is an assembled and tested PC Board That demonstrates the Multiple Output and Single Output series of reconfigurable oscillators.

The Test Board consists of a circuit board assembly with 6 SMA connectors, which allow frequency measurement of the 6 available outputs. The board can also interface with a microcontroller through the I^2C connector for reconfiguration of the oscillators.

With optional adaptor sockets, the 14 pin SMT multiple output and the 8 pin SMT single output oscillators can be reconfigured.

Equipment supplied with the SCMF Test Board.

Software CD for creating JEDEC files for reconfiguration.

Required Equipment.

Compatible PC running Windows 98SE/ME/2000/XP

Optional Equipment

SC3600 Socket (used to measure and reconfigure the 8 pin Single Output SMT oscillator)
SC3700 Socket (used to measure and reconfigure the 14 pin Multiple Output Smt oscillator)

1.2 Software Installation

Insert the enclosed CD. If Setup does not auto start, then run Setup from the CD.

This installation will install the JEDEC Creator program.

SECTION 2.0 JEDEC Creator

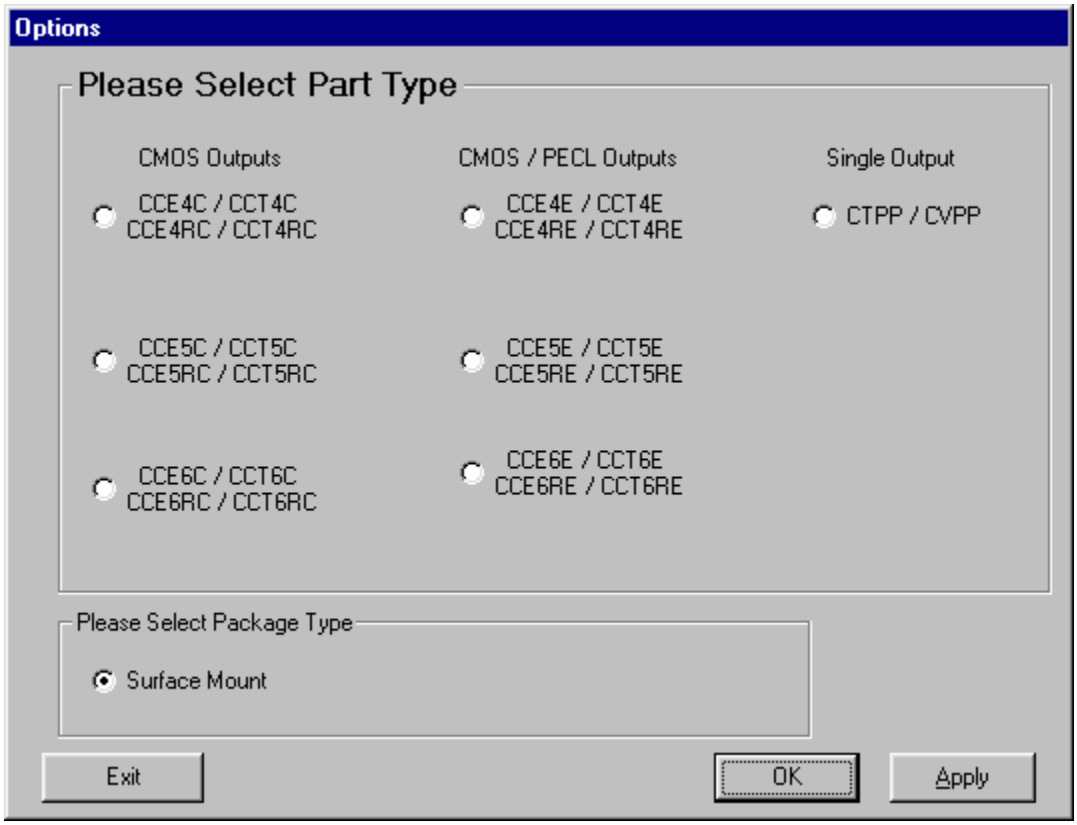
2.1 Running the JEDEC Creator Program

Note: If you do not wish to create JEDEC files you can skip this section and proceed to the Using the SCMF Test Board.

From the desktop, click on the JEDEC Creator Icon. 

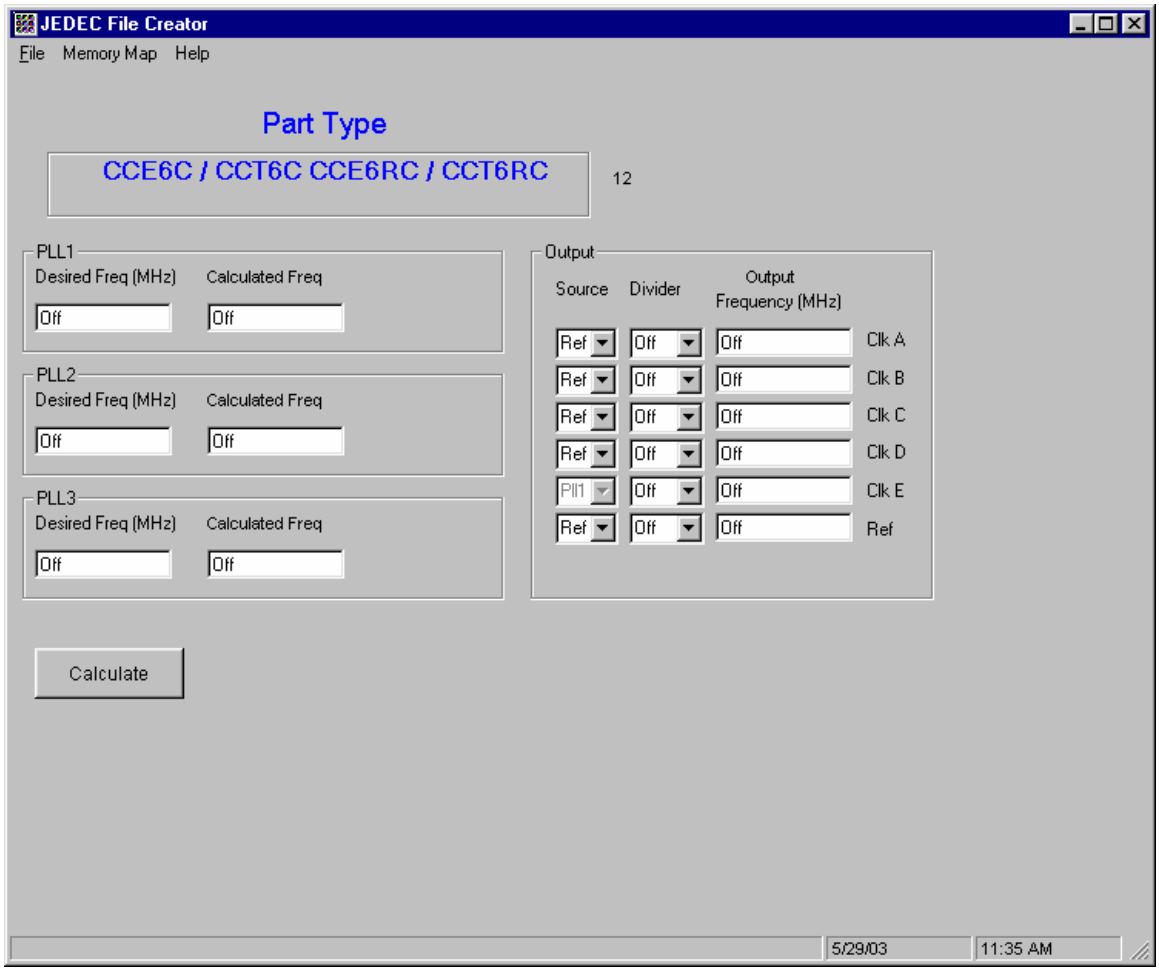
The program can also be run by double clicking JedecCreator.exe from the directory from which it was loaded during installation.

The Options screen should now be visible.



Please select the type of part to be programmed and package type. Select OK when ready.

The main screen should now be visible.

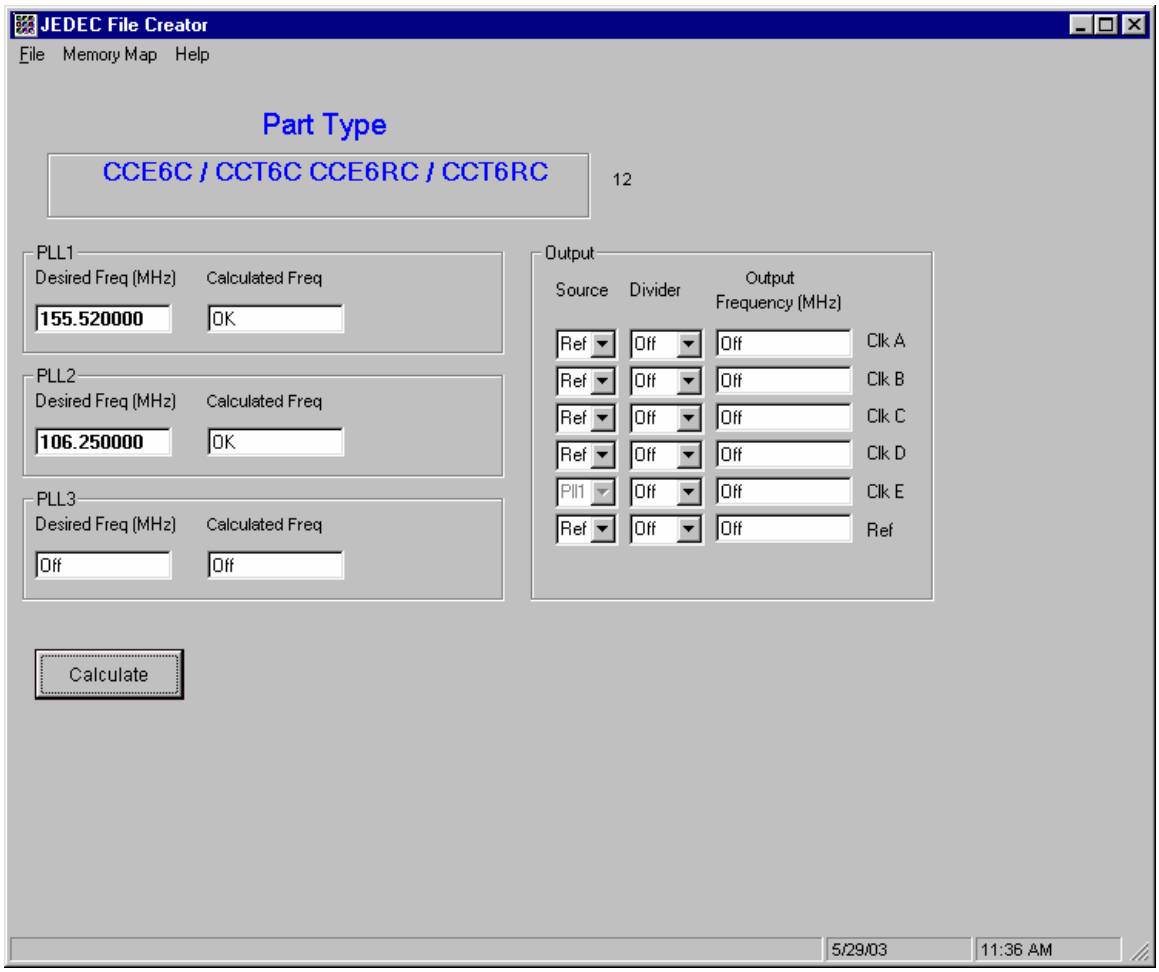


2.1.1 Entering PLL Frequencies

The first step is to enter a PLL frequency. Allowable PLL frequencies are from 100 MHz to 400 MHz.

Note: The calculation of a PLL frequency is very complex. Not all frequencies have solutions. If a PLL frequency cannot be calculated, an error message will be displayed.

Suppose we need output frequencies of 155.52 MHz, 38.88 MHz, 53.125 MHz and 106.25 MHz. Since 155.52 MHz can be divided by 4 to get 38.88 MHz and 106.25 can be divided by 2 to get 53.125, we will be using 155.52 and 106.25 as our PLL frequencies. We can now enter PLL 1 as 155.52 and PLL 2 as 106.25. Enter these frequencies into the PLL1 and PLL2 box and hit the Calculate button. Notice that as we enter new numbers the Calculate button turns green indicating that we have made some changes. The screen should look like this.



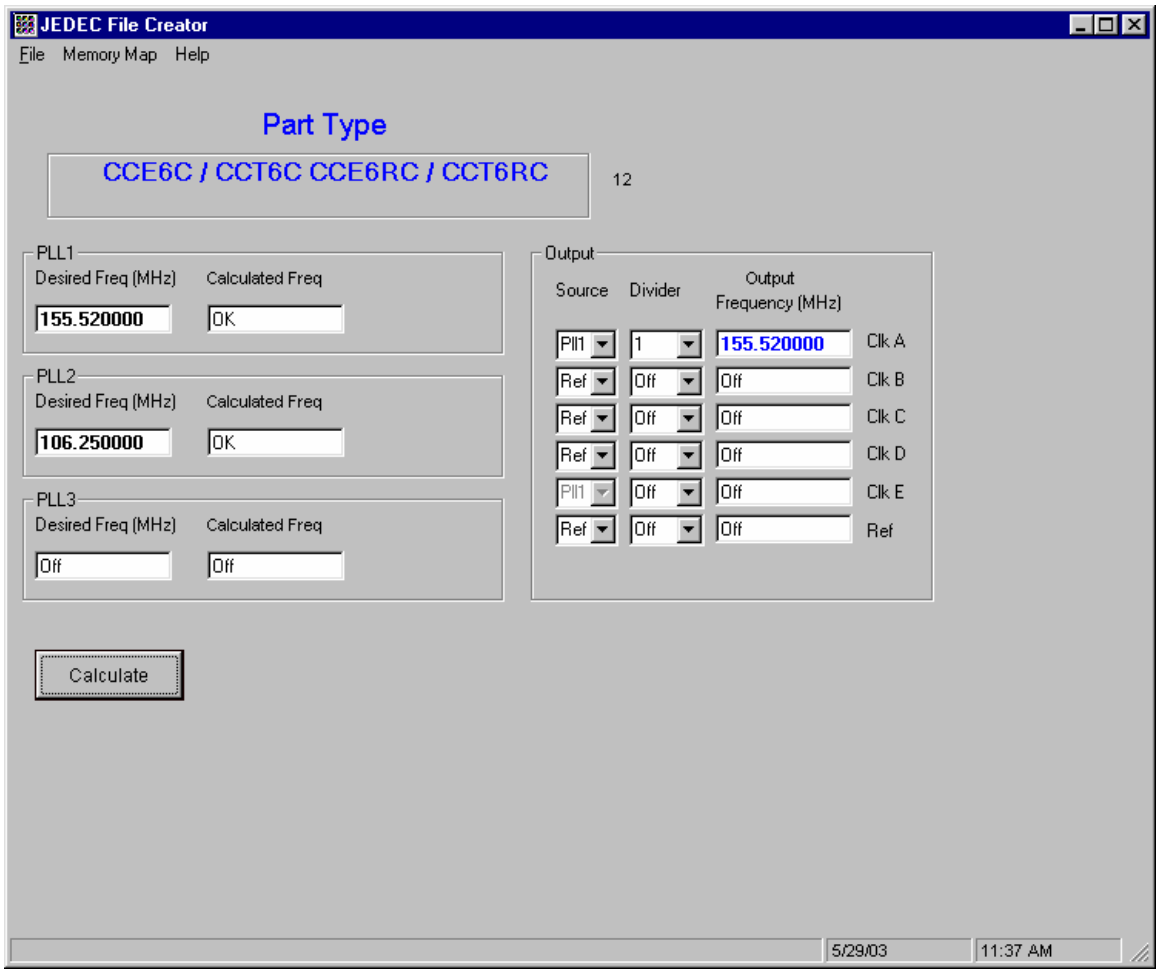
The OK in the Calculated Freq box indicates that the program has found acceptable values for the PLL frequency and we can proceed to the next step.

2.1.2 Selecting Divider Values

One of our desired output frequencies is 155.52 MHz. Lets setup that frequency for Output A.

Under source for Clk A, click on the drop down box. A choice of possible source frequencies are Ref, PLL1, PLL2, PLL3. The Ref or Reference frequency can be used as a source instead of a PLL frequency. The Ref frequency is determined at startup when the part was selected. If you look at the Main Screen, you will see a number next to the Part Type. This is the Ref Frequency for this setup.

Lets select PLL1 as the source for Clk A. Next lets select a divider for Clk A. Since we want 155.52 as an output, our divider will be 1. You can select divider values from 1 to 127. Click on the Calculate button and the screen should look like this.



You have just setup Clk A for 155.52 MHz.

Lets setup Clk B. Since we want 38.88 MHz as Clk B, click source B dropdown box and select PLL1. Click Divider B dropdown box and select 4. Click the Calculate button. You have just setup Clk B for 38.88 MHz.

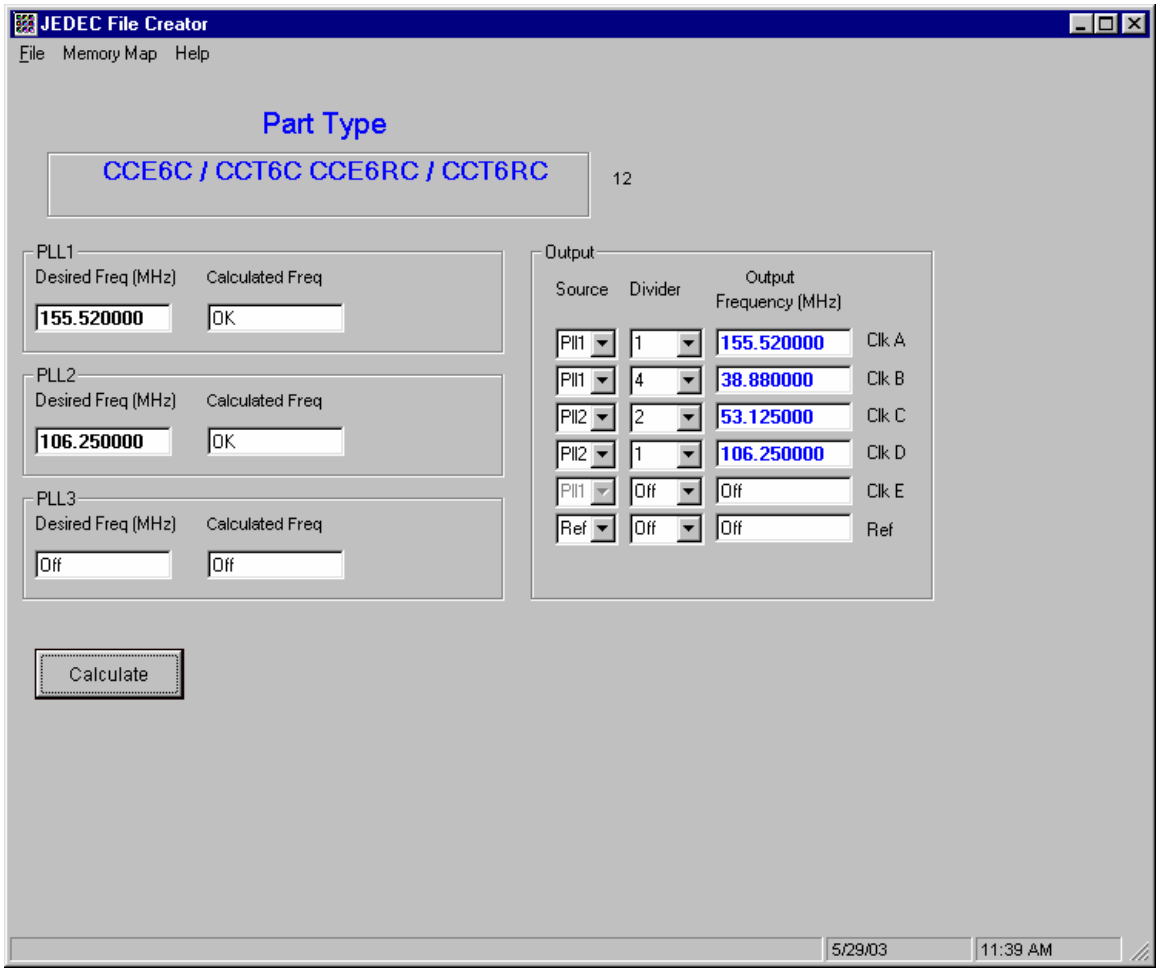
Lets setup Clk C and Clk D.

Click source C dropdown box and select PLL2. Click Divider C dropdown box and select 2.

Click source D dropdown box and select PLL2. Click Divider D dropdown box and select 1.

Click the Calculate button.

The screen should look like this.

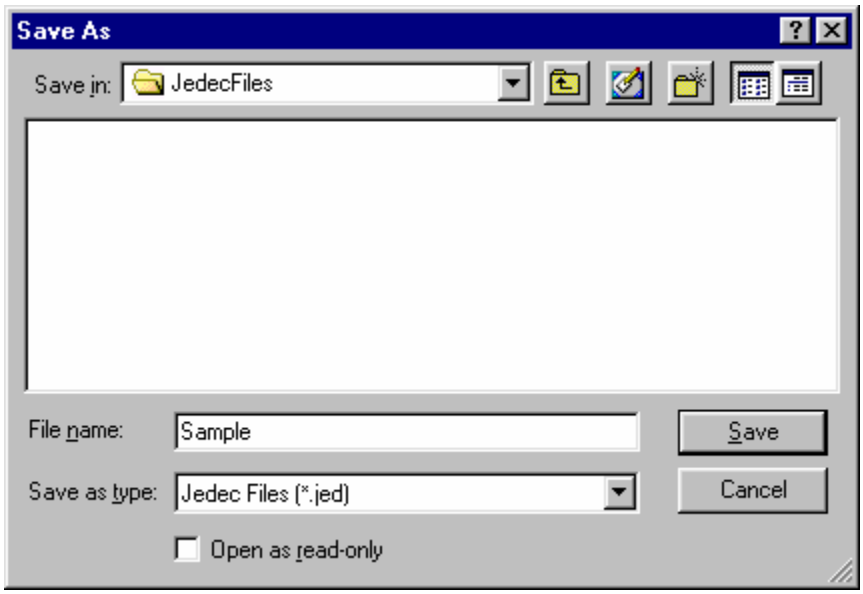


You are now ready to create the JEDEC file.

2.1.3 Saving the file to disc.

If all looks good it is time to save the file to disc.

From the File dropdown box, select Save As.



Enter a file name and click on the Save Button

The JEDEC file is now created.

SECTION 3.0 Using the SCMF Test Board.

3.1 Introduction

The SCMF Test Board is designed to measure and reconfigure the Multiple Frequency Output and Single Frequency Output family of oscillators from Cardinal Components.

The SCMF Test Board consists of the following basic components.

The 6 test SMA connectors, which can be used for frequency measurement.

The I^2C connector, which can be used by a microcontroller for reconfiguring the Multi and Single output oscillators using I^2C Protocol.

Onboard EEPROM for storing custom configurations for easy reconfiguration of the oscillator.

3.2 Setting up the SCMF Test Board

3.2.1 Making measurement with the SCMF Test Board

Lets start by setting up the SCMF Test Board for frequency measurement only.

When using the SCMF Test Board as a stand-alone unit, 5 Volts DC must be applied to the board. Attach a cable from the SCMF Test Board 5 Volt input to a 5 Volt DC source. Make sure that JP3 is correct. See Figure 1 for details.

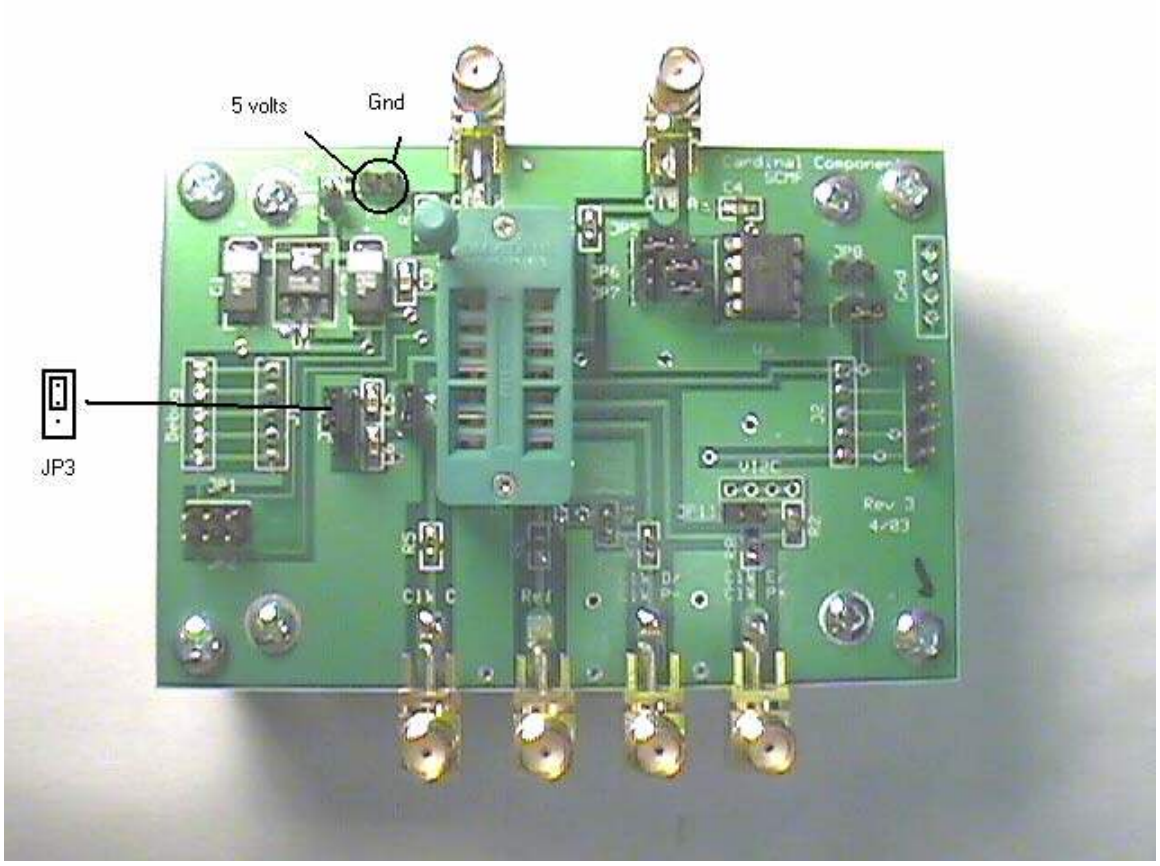


Figure 1

If 5 volts was applied to the board and JP3 is configured correctly, it is time to install a part. Using the SC3600 adaptor socket for measuring a Single Output part or the SC3700 adaptor socket if measuring a Multiple Output part, insert the oscillator and adaptor into the ZIF socket. Marked on the board at the SMA connectors are the Clock outputs. There is also a Ref output. This output will be active only on parts programmed for 6 outputs. If a single output part is used, the output is always on Clk C. Refer to the appropriate datashets for details.

3.2.2 Connecting the I^2C interface

The SCMF Test Board has an I^2C connection which can be used by a microcontroller for reconfiguration and EEPROM access. The pin outs for this connection are shown if Figure 2.

Please note: If there is a 3.3 volt source available, then the SClk, SData, Gnd and VI^2C (3.3 volts) can all be connected to the board through the I^2C connector. If this is the case, a 5 volt source is not needed and jumper J3 must be in position 2 as shown.

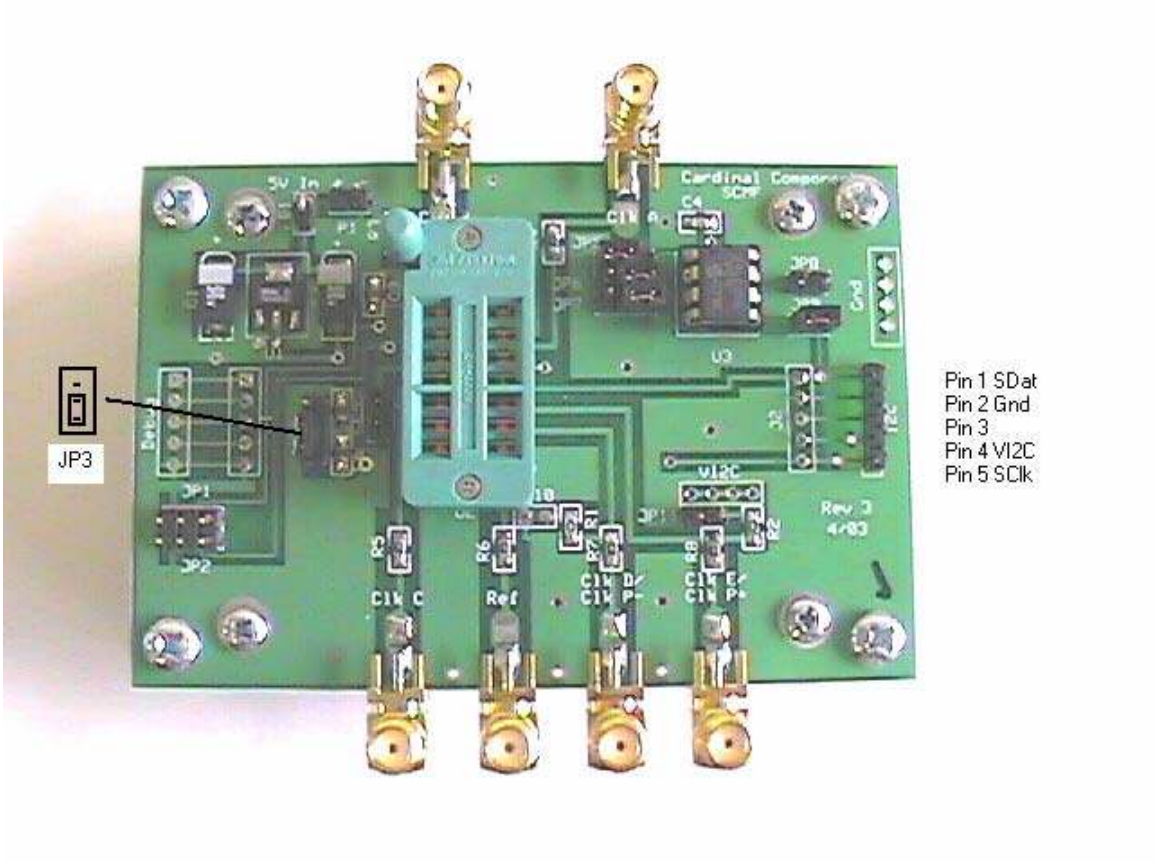


Figure 2

3.2.3 Reconfiguring an Oscillator

Using the hex file created by the Jedec Creator program, the memory address and data information can be programmed into the oscillator. See Figure 3 for a typical hex file.

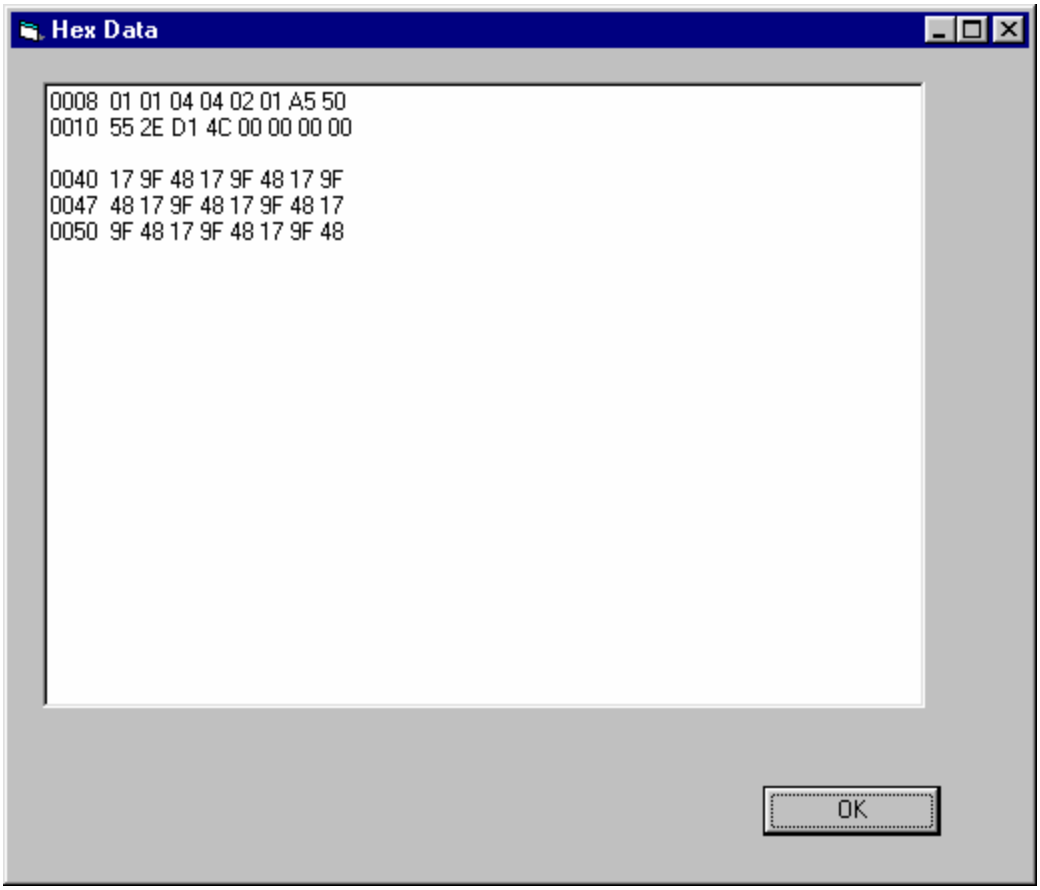


Figure 3

Reconfiguring the oscillator should be done in 2 blocks. The first block is memory location 08_h to 17_h and the second block is memory location 40_h to 57_h. Figure 3 shows a typical hex file with address and data values. The address of the oscillator is $D2_h$. Communication to the SCMF Test Board uses the standard 2 wire Clk, Data Protocal.

3.2.4 Using the onboard EEPROM

The EEPROM on the SCMF Test Board is a 32K x 8 (256k bit) Serial Electrically Erasable PROM. Writing and Reading to the EEPROM is done in the same way as Writing to the oscillator. The address of the EEPROM is AC_h, (default) but can be changed by jumpers JP5-JP7 (See EEPROM configuration chart below).

Address	JP5	JP6	JP7
A0			
A2			
A4			
A6			
A8			
AA			
AC			
AE			

EEPROM Configuration Chart

The EEPROM can be used to store multiple configurations. By doing a memory transfer from the EEPROM to the oscillator, reconfiguration of the oscillator can easily be achieved. The SCMF Test Board shows the ease of testing and reconfigurating the Single and Multiple output family of oscillators from Cardinal Components.

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