

1. Board Control Utility

1.1 Introduction

This host-based command line utility provides a way to configure, control and monitor the TMX320VC5510 Prototype Board without requiring the user to write a custom utility. This is accomplished without the use of an emulator or the JTAG port. It is accomplished using the PCI2040's PCI bus interface between the host and the target DSP. The utility uses the board's Win32 user-mode DLL to interface with the board.

The board control utility provides the following capabilities:

- Display board's PCI configuration
- Display PCI2040 device configuration information
- Configure the board and PCI2040 device
- Control the DSP and board resets
- Interrupt C55x DSP
- Read and write C55x DSP HPI registers
- Read and write C55x DSP memory
- Read and write Flash memory

1.2 Operation

NOTE: The board control utility is executed from the DOS command prompt with the command **evm55xctrl**. Command parameters follow the command using dashes.

1. Verify that the utility provides on-line help (-?). Also verify that the -h command line option can be used for help. A description of each command line parameter should be provided.

The first screen should look like the following:

```
C:\>evm55xctrl -?

TMS320VC5510 Board Control Utility, Version 2.00
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Syntax:
  evm55xctrl [options]

Options <Default parameter values in parentheses>:
  -?|-h      Display summary of command syntax and options.
  -bi        Display board information.
  -cp        Display CPLD registers.

Press any key to continue (Ctrl-C to abort).
```

2. Verify that the utility provides information about the board (**-bi**). The information should display that the board type is a “TMX320VC5510 Prototype Board” and the revision is 0.
3. Verify that the CPLD registers can be displayed (**-cp**). The display should show the raw CPLD register values in hex and a list of the board state in textual format.

The display should look like the following:

```
C:\>evm55xctrl -cp
=====
=          CPLD Register Values      =
=====
CNTL      : 0x00
STAT1     : 0x17
STAT2     : 0x08
CPLDREV   : 0x06  <6>
SEM0      : 0x00  <Not Owned>
SEM1      : 0x00  <Not Owned>

=====
=          Board State            =
=====
DSP Reset  : NO    Board Voltage : GOOD
TBC Reset  : NO    TBC Ready   : YES
DSP Mode   : MC    NMI          : NO
DSPINT5   : NO    HINT MASK   : NO
User Switch 1: ON    User Switch 0: ON
DSP_EHPIENA: YES   Daughterboard: NO
HINT       : NO    HREADY       : YES
Semaphore 0 : NO    Semaphore 1 : NO
```

4. Verify that the Erase Flash memory sector function works on a single Flash memory sector as follows:

- First erase the flash sector we will write to: **evm55xctrl -e 0**. When a sector is erased all data values within that sector are set to F's (all bits are one).
- Then write to the sector to verify that we can erase it. Write data to the first sector by doing the following: **evm55xctrl -mw 0x200000 0xABCD 0x20**. This will write the value of 0xABCD to the first 32 locations in Flash memory.
- Verify that the Flash memory has these values in it by doing the following:
evm55xctrl -mr 0x200000 0x20
- Erase the first Flash sector: **evm55xctrl -e 0**
- Verify that the Flash memory was erased by doing the following:
evm55xctrl -mr 0x200000 0x20
All values should be 0xFFFF.

```

MS Command Prompt
C:\>evm55xctrl -mw 0x200000 0xABCD 0x20
Writing 0xABCD, with count = 0x0020, to DSP memory address 0x200000.

C:\>evm55xctrl -mr 0x200000 0x20
Memory Display Starting at 0x200000
=====
0x200000: ABCD ABCD ABCD ABCD ABCD ABCD ABCD ABCD
0x200008: ABCD ABCD ABCD ABCD ABCD ABCD ABCD ABCD
0x200010: ABCD ABCD ABCD ABCD ABCD ABCD ABCD ABCD
0x200018: ABCD ABCD ABCD ABCD ABCD ABCD ABCD ABCD

C:\>evm55xctrl -e 0
Flash memory sector #0 was successfully erased.

C:\>evm55xctrl -mr 0x200000 0x20
Memory Display Starting at 0x200000
=====
0x200000: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
0x200008: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
0x200010: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
0x200018: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF

C:\>

```

5. Verify that the Erase Flash memory sector works on the entire Flash memory device as follows:

- Perform initial Flash device erase: **evm55xctrl -e -1**
- Write to first sector: **evm55xctrl -mw 0x200000 0x1234 0x10**
- Verify first sector was written: **evm55xctrl -mr 0x200000 0x10**
- Write to last sector: **evm55xctrl -mw 0x27FFF0 0x5678 0x10**
- Verify last sector was written: **evm55xctrl -mr 0x27FFF0 0x10**
- Perform Flash device erase: **evm55xctrl -e -1**
- Verify first sector was erased (all F's): **evm55xctrl -mr 0x200000 0x10**
- Verify last sector was erased (all F's): **evm55xctrl -mr 0x27FFF0 0x10**

All locations of the Flash device should show 0xFFFF when it is erased as shown in the following screen capture:



```
MS Command Prompt

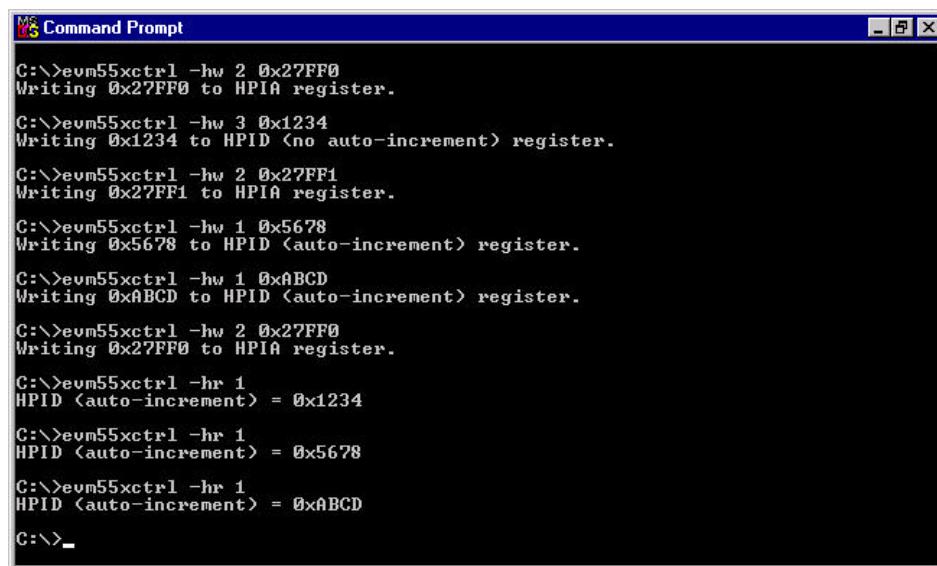
C:\>evm55xctrl -mr 0x200000 0x10
Memory Display Starting at 0x200000
=====
0x200000: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
0x200008: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF

C:\>evm55xctrl -mr 0x27FFF0 0x10
Memory Display Starting at 0x27FFF0
=====
0x27FFF0: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
0x27FFF8: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF

C:\>_
```

6. Verify that the HPI registers can be read and written by doing the following:

- evm55xctrl -hw 2 0x27FF0
- evm55xctrl -hw 3 0x1234
- evm55xctrl -hw 2 0x27FF1
- evm55xctrl -hw 1 0x5678
- evm55xctrl -hw 1 0xABCD
- evm55xctrl -hw 2 0x27FF0
- evm55xctrl -hr 1 (Expect value of 0x1234)
- evm55xctrl -hr 1 (Expect value of 0x5678)
- evm55xctrl -hr 1 (Expect value of 0xABCD)



```
MS Command Prompt

C:\>evm55xctrl -hw 2 0x27FF0
Writing 0x27FF0 to HPIA register.

C:\>evm55xctrl -hw 3 0x1234
Writing 0x1234 to HPID <no auto-increment> register.

C:\>evm55xctrl -hw 2 0x27FF1
Writing 0x27FF1 to HPIA register.

C:\>evm55xctrl -hw 1 0x5678
Writing 0x5678 to HPID <auto-increment> register.

C:\>evm55xctrl -hw 1 0xABCD
Writing 0xABCD to HPID <auto-increment> register.

C:\>evm55xctrl -hw 2 0x27FF0
Writing 0x27FF0 to HPIA register.

C:\>evm55xctrl -hr 1
HPID <auto-increment> = 0x1234

C:\>evm55xctrl -hr 1
HPID <auto-increment> = 0x5678

C:\>evm55xctrl -hr 1
HPID <auto-increment> = 0xABCD

C:\>_
```

7. Verify that interrupts can be sent to the DSP from the host.
 - ❑ Load the example DSP program called intrtest.out as follows:
evm55xctrl -l intrtest.out
 - ❑ Test the external interrupt 5 by doing: **evm55xctrl -ru -id 2**

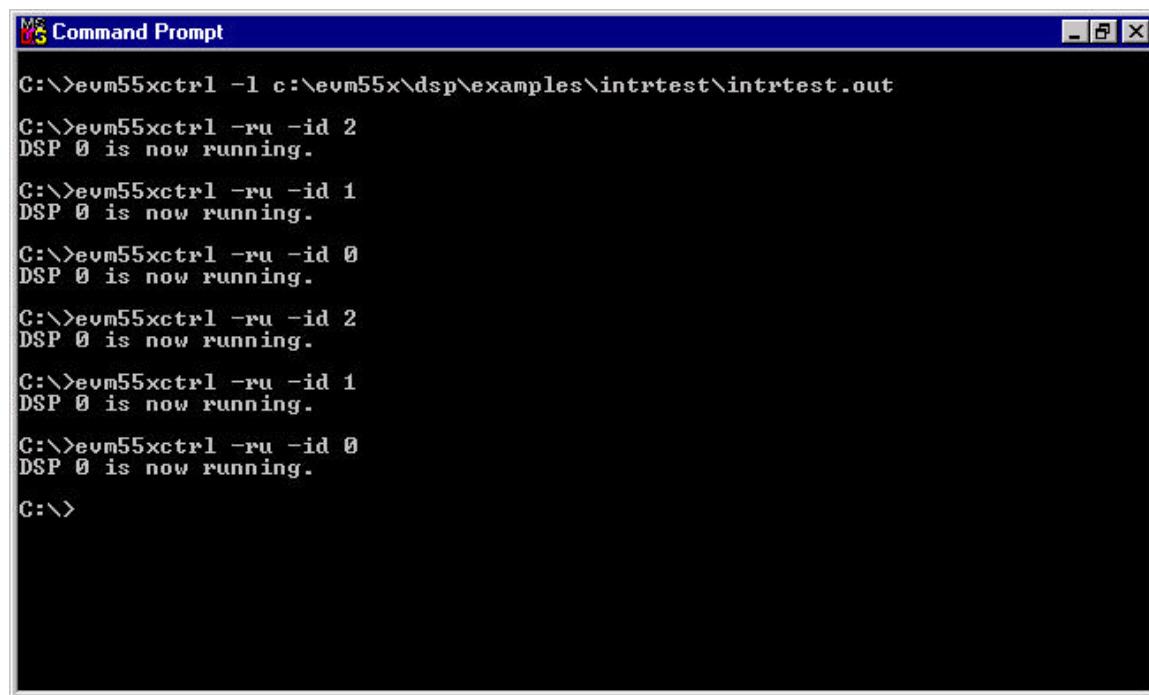
NOTE: This is a good example of how the **-ru** command parameter is used. The utility assumes that the DSP is in the reset state unless the **-ru** command parameter is used to override this default assumption. In this particular case, it is important to add it since the DSP must be running the test application during this test procedure.

- ❑ Note that the third user LED is illuminated.
- ❑ Test the NMI interrupt by doing **evm55xctrl -ru -id 1**
- ❑ Note that the second user LED is illuminated.

NOTE: There is a silicon bug that causes missed DSPINT interrupts, so this interrupt is not reliable.

- ❑ Test the DSPINT interrupt by doing **evm55xctrl -ru -id 0**
- ❑ Note that the first user LED is illuminated.

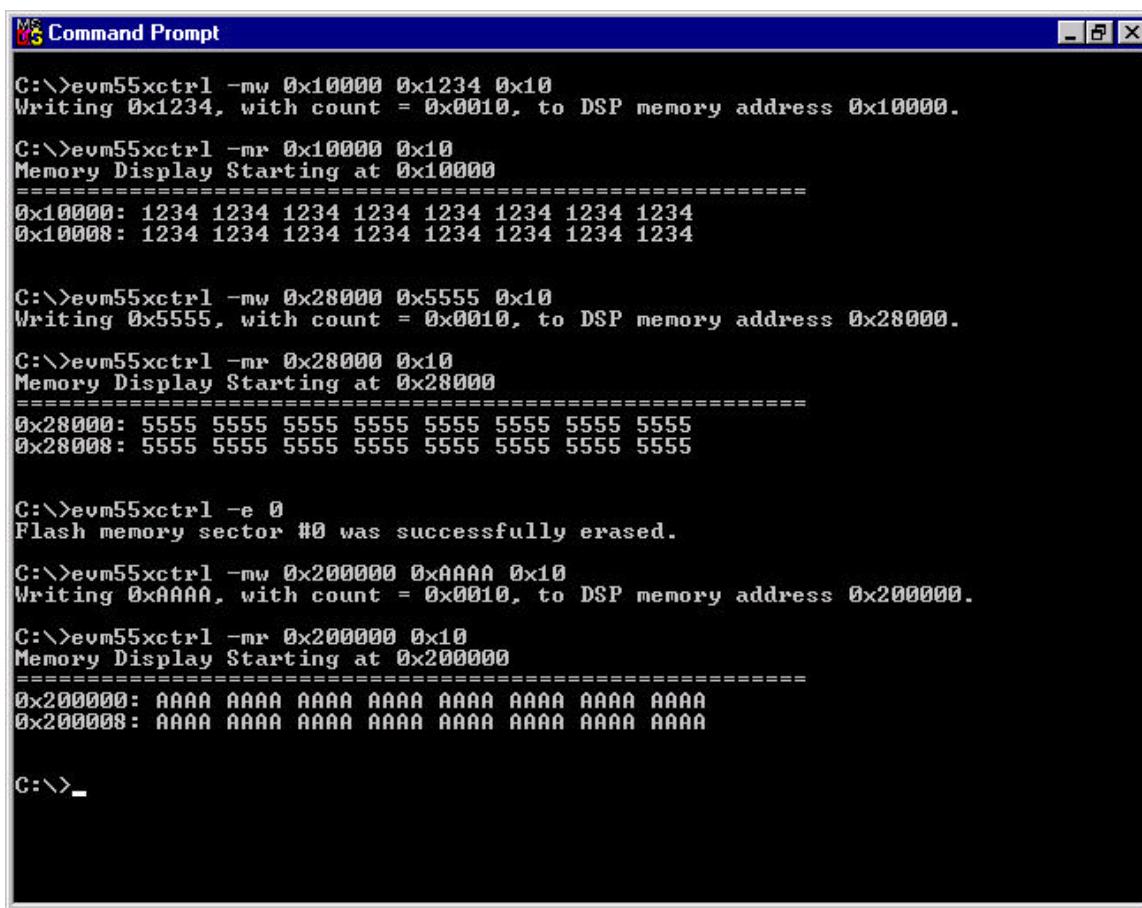
If you repeat the **-id 2**, **-id 1** and **-id 0** again, the LEDs should extinguish.



```
MS Command Prompt
C:\>evm55xctrl -l c:\evm55x\dsp\examples\intrtest\intrtest.out
C:\>evm55xctrl -ru -id 2
DSP 0 is now running.
C:\>evm55xctrl -ru -id 1
DSP 0 is now running.
C:\>evm55xctrl -ru -id 0
DSP 0 is now running.
C:\>evm55xctrl -ru -id 2
DSP 0 is now running.
C:\>evm55xctrl -ru -id 1
DSP 0 is now running.
C:\>evm55xctrl -ru -id 0
DSP 0 is now running.
C:\>
```

This test procedure tested several other functions including DSP COFF application loading, DSP execution control and full HPI access from the host. The **-l** and **-id** command parameters were tested.

8. Verify that DSP memory can be written and read:
- Write(fill) a block of DSP on-chip memory: **evm55xctrl -mw 0x10000 0x1234 0x10**
 - Read memory to verify that it was written: **evm55xctrl -mr 0x10000 0x10**
 - Write(fill) a block of DSP off-chip memory (SBSRAM): **evm55xctrl -mw 0x28000 0x5555 0x10**
 - Read memory to verify that it was written: **evm55xctrl -mr 0x28000 0x10**
 - Erase Flash memory: **evm55xctrl -e 0**
 - Write (fill) a block of DSP off-chip memory (Flash): **evm55xctrl -mw 0x200000 0xAAAA 0x10**
 - Read Flash memory to verify that it was written: **evm55xctrl -mr 0x200000 0x10**



```

MS Command Prompt

C:\>evm55xctrl -mw 0x10000 0x1234 0x10
Writing 0x1234, with count = 0x0010, to DSP memory address 0x10000.

C:\>evm55xctrl -mr 0x10000 0x10
Memory Display Starting at 0x10000
=====
0x10000: 1234 1234 1234 1234 1234 1234 1234 1234
0x10008: 1234 1234 1234 1234 1234 1234 1234 1234

C:\>evm55xctrl -mw 0x28000 0x5555 0x10
Writing 0x5555, with count = 0x0010, to DSP memory address 0x28000.

C:\>evm55xctrl -mr 0x28000 0x10
Memory Display Starting at 0x28000
=====
0x28000: 5555 5555 5555 5555 5555 5555 5555 5555
0x28008: 5555 5555 5555 5555 5555 5555 5555 5555

C:\>evm55xctrl -e 0
Flash memory sector #0 was successfully erased.

C:\>evm55xctrl -mw 0x200000 0xAAAA 0x10
Writing 0xAAAA, with count = 0x0010, to DSP memory address 0x200000.

C:\>evm55xctrl -mr 0x200000 0x10
Memory Display Starting at 0x200000
=====
0x200000: AAAA AAAA AAAA AAAA AAAA AAAA AAAA AAAA
0x200008: AAAA AAAA AAAA AAAA AAAA AAAA AAAA AAAA

C:\>_

```

9. Verify the “quiet” mode of operation that may be useful in batch file processing:
- evm55xctrl -mw 0x10000 0x1234 0x10** (Note: Writing... message).
 - evm55xctrl -q -mw 0x10000 0x1234 0x10** (Note: No message is displayed).

The following display shows how “quiet” mode works.

```
C:\>evm55xctrl -mw 0x10000 0x1234 0x10
Writing 0x1234, with count = 0x0010, to DSP memory address 0x10000.

C:\>evm55xctrl -q -mw 0x10000 0x1234 0x10
C:\>_
```

10. Verify the reset board command parameter (**-rb**).
 - ❑ Load blink application: **evm55xctrl -l blink.out**
 - ❑ Note that the three user LEDs are blinking in sequence.
 - ❑ Reset the board: **evm55xctrl -rb**
 - ❑ Note that the blinking LEDs are stopped since the board was reset and the DSP stays halted until unreset.
11. Verify the reset DSP, unreset DSP and run DSP parameters work properly (**-rd**, **-ru**).
 - ❑ Load the blink application:
evm55xctrl -l blink.out
 - ❑ Note that the three user LEDs are blinking in sequence.
 - ❑ Reset the DSP: **evm55xctrl -rd 1**
 - ❑ Note that the LEDs stop blinking.
 - ❑ Unreset the DSP: **evm55xctrl -rd 0**
 - ❑ Note that the LEDs still aren't blinking since the DSP must be put in run mode in HPI boot mode by setting the RESET bit in the HPIC.
 - ❑ Run the DSP: **evm55xctrl -ru**
 - ❑ Note that the three user LEDs are again blinking in sequence.

```
C:\>evm55xctrl -l \evm55x\dsp\examples\blink\blink.out
C:\>evm55xctrl -rd 1
DSP 0 successfully reset.

C:\>evm55xctrl -rd 0
DSP 0 successfully removed from reset.

C:\>evm55xctrl -ru
DSP 0 is now running.

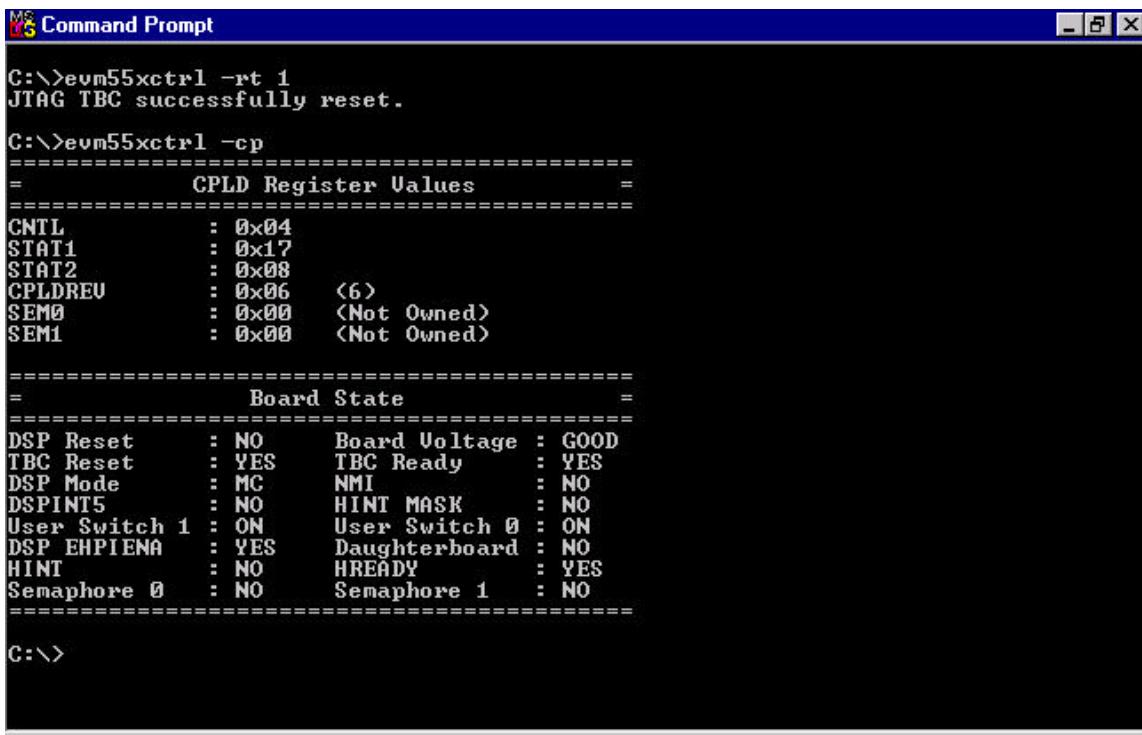
C:\>_
```

12. Verify that the JTAG TBC reset can be controlled (**-rt**).
 - ❑ Display the CPLD registers to verify that the JTAG TBC is not reset first:
evm55xctrl -cp
 - ❑ Reset the JTAG TBC: **evm55xctrl -rt 1**
 - ❑ Display the CPLD registers to verify that the JTAG TBC is in reset:

evm55xctrl -cp

- Unreset the JTAG TBC: **evm55xctrl -rt 0**
- Display the CPLD registers to verify that the JTAG TBC is in reset:
evm55xctrl -cp

The following display shows what the CPLD registers look like with the JTAG TBC in reset:



MS Command Prompt

```
C:\>evm55xctrl -rt 1
JTAG TBC successfully reset.

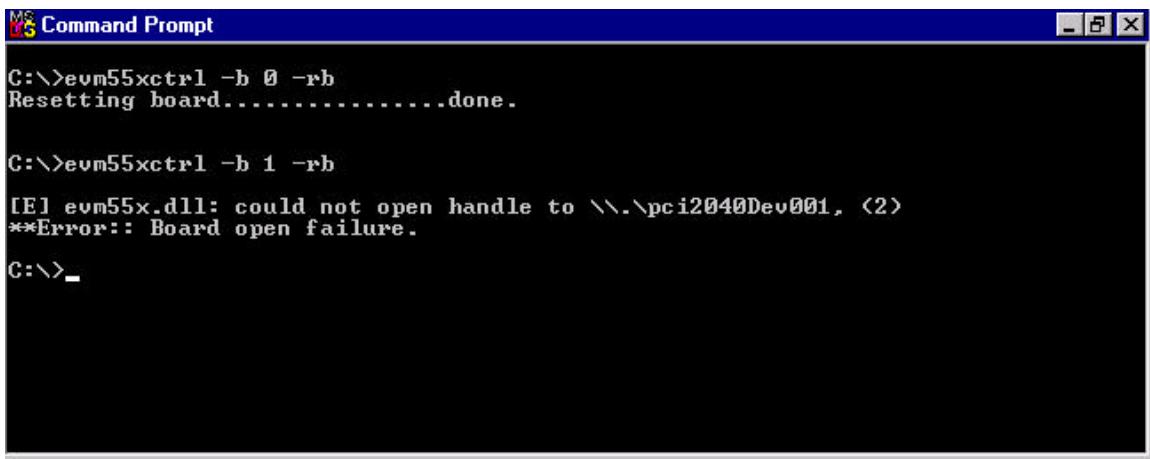
C:\>evm55xctrl -cp
=====
=          CPLD Register Values      =
=====
CNTL      : 0x04
STAT1     : 0x17
STAT2     : 0x08
CPLDREU   : 0x06  <6>
SEM0      : 0x00  <Not Owned>
SEM1      : 0x00  <Not Owned>

=====
=          Board State      =
=====
DSP Reset  : NO    Board Voltage : GOOD
TBC Reset   : YES   TBC Ready  : YES
DSP Mode    : MC    NMI        : NO
DSPINT5    : NO    HINT MASK  : NO
User Switch 1: ON    User Switch 0: ON
DSP EHPiena : YES   Daughterboard: NO
HINT        : NO    HREADY      : YES
Semaphore 0  : NO    Semaphore 1: NO
```

13. Verify that the board number selection parameter is operational (-b).

- Reset board number 0: **evm55xctrl -b 0 -rb**
- Reset board number 1: **evm55xctrl -b 1 -rb** (NOTE: There should be an error message since only one board is installed).

The following display shows what happens when a board is addressed, but it is not installed. This is what it should do with only one board installed in the system. Board indices are zero-based, so the first board is board #0.



MS Command Prompt

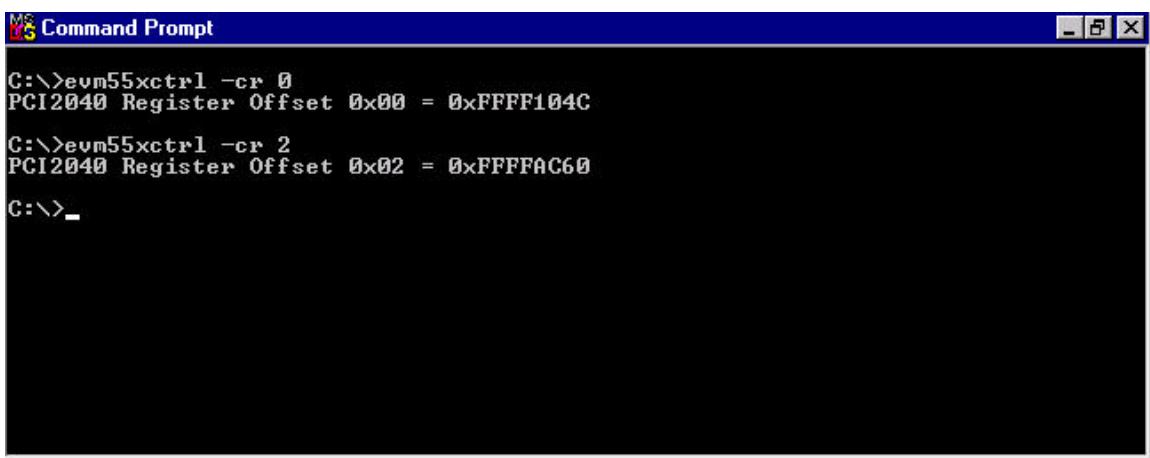
```
C:\>evm55xctrl -b 0 -rb
Resetting board.....done.

C:\>evm55xctrl -b 1 -rb
[!] evm55x.dll: could not open handle to \\.\pci2040Dev001, (2)
**Error::: Board open failure.

C:\>_
```

14. Verify that the PCI2040 configuration registers can be read (-cr).

- Read the first configuration register: **evm55xctrl -cr 0**
- Note that the lower word is 0x104C (TI Vendor ID)
- Read the second configuration register: **evm55xctrl -cr 2**
- Note that the lower word is 0xAC60 (PCI2040 Device ID)



MS Command Prompt

```
C:\>evm55xctrl -cr 0
PCI2040 Register Offset 0x00 = 0xFFFF104C

C:\>evm55xctrl -cr 2
PCI2040 Register Offset 0x02 = 0xFFFFAC60

C:\>_
```

15. Verify that the PCI2040 configuration registers can be written (-cw).

- Write to GPIO register: **evm55xctrl -cw 0x44 0x3C** (Verify lower byte is 0x3C)
- Write to GPIO register: **evm55xctrl -cw 0x44 0x30** (Verify lower byte is 0x30)

The following screen shows the expected values. NOTE: Pre 2.01 versions incorrectly display the value of the register offset (0x44 in this case).



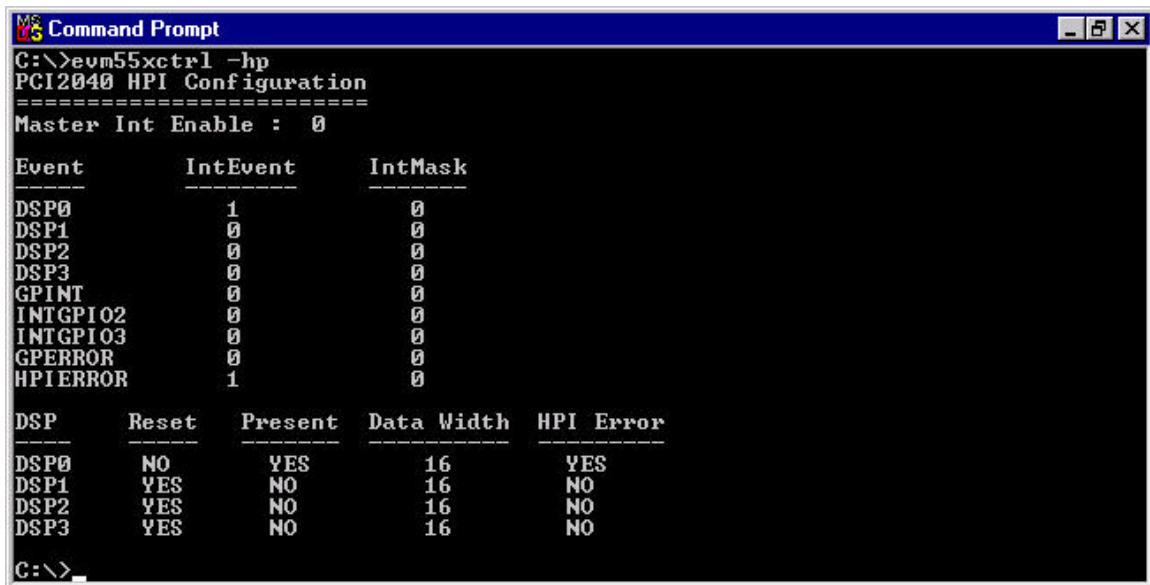
```
MS Command Prompt
C:\>evm55xctrl -cw 0x44 0x3C
Write PCI2040 Register Offset 0x44
=====
Wrote: 0x3c
Read : 0xffffffff3c

C:\>evm55xctrl -cw 0x44 0x30
Write PCI2040 Register Offset 0x44
=====
Wrote: 0x30
Read : 0xffffffff30

C:\>
```

16. Verify that the debug command parameter works (**-d**).
 - Reset the board in debug mode: **evm55xctrl -d -rb**
 - Note that you have to hit a key to step through the board reset process and that descriptions of each step are provided (Opening HPI, Reading type board and revision, Resetting board, Closing HPI connection, Closing Board).

17. Verify that the PCI2040 HPI configuration registers can be displayed (**-hp**).
 - Display the HPI configuration registers by doing: **evm55xctrl -hp**
 - Verify that DSP0 is not reset, it is present and its data width is 16.



```
MS Command Prompt
C:\>evm55xctrl -hp
PCI2040 HPI Configuration
=====
Master Int Enable : 0

Event      IntEvent      IntMask
-----
DSP0        1            0
DSP1        0            0
DSP2        0            0
DSP3        0            0
GPINT       0            0
INTGPIO2    0            0
INTGPIO3    0            0
GPERROR     0            0
HPIERROR    1            0

DSP      Reset      Present      Data Width      HPI Error
-----
DSP0    NO        YES        16          YES
DSP1    YES       NO         16          NO
DSP2    YES       NO         16          NO
DSP3    YES       NO         16          NO

C:\>
```

18. Verify that the Prototype Board's PCI configuration information can be displayed (**-p**).
 - Display the Prototype Board's PCI configuration : **evm55xctrl -p**
 - Verify at least that the PCI Vendor ID is 0x104C and the Device ID is 0xAC60.

```
MS Command Prompt
C:\>evm55xctrl -p
=====
=          PCI2040 Configuration Registers      =
=====
00:VendorID      = 0x104C    3C:IRQLine      = 0x0009
02:DeviceID      = 0xAC60    3D:IRQPin       = 0x0001
04:Command        = 0x0142    3E:MinGnt      = 0x0000
06:Status         = 0x0A10    3F:MaxLat      = 0x0000
08:RevisionID     = 0x0000    44:GPIOSelect   = 0x0030
09:ProgIf          = 0x104C    45:GPINData     = 0x003F
0A:SubClass        = 0x0040    46:GPDirCntl   = 0x0000
0B:BaseClass       = 0x000B    47:GPOutData    = 0x0000
0C:CacheLineSize   = 0x0008    48:GPBInTyp     = 0x0000
0D:LatencyTimer    = 0x0000    4C:MiscControl  = 0x8127
0E:HeaderType      = 0x0000    4F:Diagnostic   = 0x0000
0F:BIST           = 0x0000    50:PMCapID      = 0x0001
10:HPICSRBar      = 0xFDFFF000 51:PMNext       = 0x0000
14:CSpaceBar       = 0xFDFF0000 52:PMCap        = 0xFE11
18:GPBBar          = 0xFDFFEC00 54:PMCtl1Stat  = 0x0000
2C:SubVendorID     = 0x104C    58:HPICSRIOBar = 0x0000
2E:SubSysID        = 0xAC80    5C:HSCapID      = 0x0000
34:CapPointer      = 0x0050    5D:HSNext       = 0x0000
                                         5E:HCSR          = 0x0000
C:\>
```

19. Verify that the initialization command parameter works (-x).

- Attempt to run evm55xctrl after Code Composer Studio is executed.
- You should find that it doesn't work properly because of the state of the board.
- Run the same command with the -x option and verify that it executes properly.

2. DSP Application Loader Utility

2.1 Introduction

This host-based command line utility provides a way to load and execute a DSP application without requiring the user to write a custom utility or use the debugger. It is accomplished using the PCI2040's PCI bus interface between the host and the target DSP. The utility uses the board's Win32 user-mode DLL to interface with the board.

2.2 Operation

NOTE: The DSP application loader utility is executed from the DOS command prompt with the command **evm55xload**. Command parameters follow the command using dashes.

1. Verify that the utility provides on-line help (-?). Also verify that the -h command line option can be used for help. A description of each command line parameter should be provided.

The first screen should look like the following:

```

MS Command Prompt
C:\>evm55xload -?
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.01
Copyright <c> 2001 by DNA Enterprises, Inc.

Syntax:
  evm55xload filename [options]

  filename  Load file name -- the name of the COFF file to be
            processed and loaded on the CS5x EVM.

Options <Default parameter values in parentheses>
  -? !h      Help -- Display this summary of command syntax and options.
  -b num     Selects specific EVM target board <Default = 0>.
  -c         Clear bss -- Set all bss section variables to zero.
  -d         Dump -- Display all data via the standard output stream.
            and download COFF file.
            Note: This can be a large amount of data. The -d
            option enables the -v <verbose> option.

  -i name    Input file -- File containing data to be sent to board's
            <input.dat> PCI interface once the DSP is running with the COFF load.

  -o name    Output file -- File to store data retrieved from the board's
            <output.dat> PCI interface once the DSP is running with the COFF load.

  -ls        Output file size limit <16-bit words> -- Used with -o option to
            limit the size of the output file.

  -lt        Output file time limit <sec> -- Used with -o option to limit
            how long data is accepted from the board.

  -q         Suppresses output to the display.

  -s         Writes data to standard output stream but does not write data
            to DSP memory. This option enables the -v option.

  -v         Verbose -- Display basic COFF file information via the
            standard output stream.

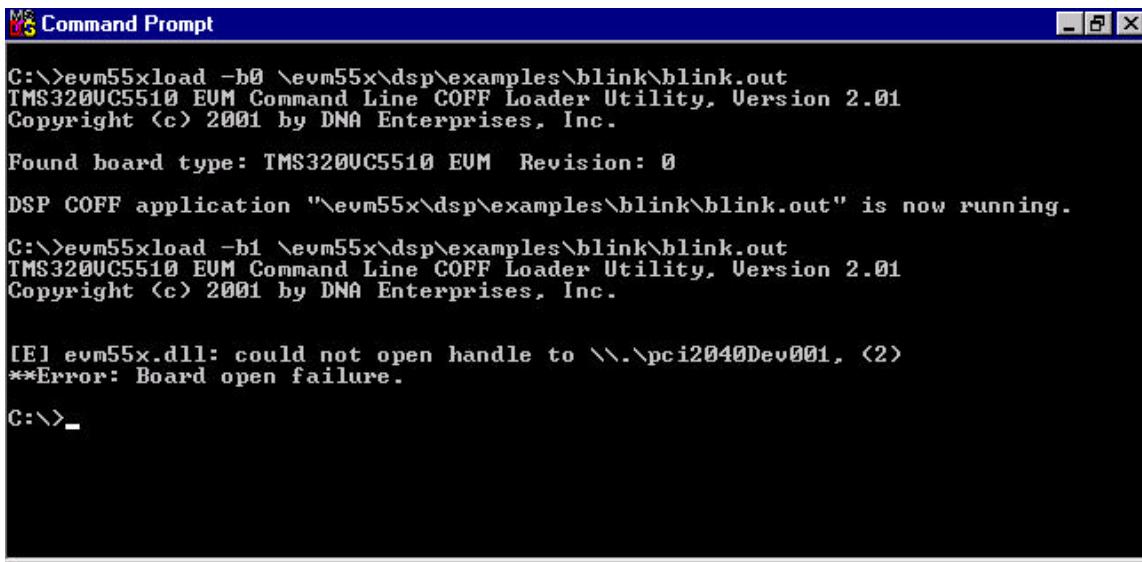
  -z         Debug -- Displays loader status and wait for key press after
            each step.

C:\>_

```

2. Verify that the board number selection parameter is operational (**-b**).
 - Reset board number 0: **evm55xload -b0 blink.out**
 - Reset board number 1: **evm55xload -b1 blink.out** (NOTE: There should be an error message since only one board is installed).

The following display shows what happens when a board is addressed, but it is not installed. This is what it should do with only one board installed in the system. Board indices are zero-based, so the first board is board #0.



MS Command Prompt

```
C:\>evm55xload -b0 \evm55x\ dsp\examples\blink\blink.out
TMS320UC5510 EVM Command Line COFF Loader Utility, Version 2.01
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320UC5510 EVM Revision: 0

DSP COFF application "\evm55x\ dsp\examples\blink\blink.out" is now running.

C:\>evm55xload -b1 \evm55x\ dsp\examples\blink\blink.out
TMS320UC5510 EVM Command Line COFF Loader Utility, Version 2.01
Copyright <c> 2001 by DNA Enterprises, Inc.

[!] evm55x.dll: could not open handle to \\.\pc i2040Dev001, <2>
**Error: Board open failure.

C:\>_
```

3. Verify that the COFF display function works using the **-d** command parameter.
 - Type: **evm55xload -d blink.out > blink.txt**
 - Type: **notepad blink.txt** and verify that the display data is similar to the listing below.

```
[010004]:0x6d6(bytes):
0x010004: 31ec 004e 4c94 9c78
0x01000c: 024c e346 5246 7246
0x010014: f546 8346 a246 9246
0x01001c: 6246 8446 0446 1446
0x010024: 2446 3446 4446 5446
0x01002c: 6446 7446 a446 5646
0x010034: 1646 31ec 008e 4c9c
0x01003c: 016c 2401 31ec 008e
0x010044: 0084 8990 8a90 8b90
0x01004c: 8c90 8d90 8e90 8f90
0x010054: 8790 b246 016c 7701
0x01005c: 193c 016c 6200 6650
0x010064: fe4e 31ed 0008 4684
0x01006c: 0092 31a6 8400 0400
0x010074: 2106 6022 31ec 00be
0x01007c: 0284 0050 0b24 00eb
0x010084: edb5 bf00 6fed ff08
0x01008c: ebfe b500 0092 1642
0x010094: 1604 edee 0831 8400
0x01009c: 6144 9200 ed00 0831
0x0100a4: 8400 6142 9200 ed00
0x0100ac: 0831 8400 9248 6c00
0x0100b4: 0101 4e0e 5002 4862
0x0100bc: 4e04 ebfd 0800 31ed
0x0100c4: 0008 4684 0092 0076
0x0100cc: 9820 31aa 8400 1200
0x0100d4: 90a4 6621 ed64 0831
0x0100dc: 8400 9248 3c00 4a14
0x0100e4: 2225 7ba0 0100 5090
0x0100ec: 2200 ed04 1800 31ec
0x0100f4: 00be 0284 31c9 8400
0x0100fc: eb00 186b 31ed 0008
0x010104: 4884 0092 043c 034e
0x01010c: 0448 2020 7e4a 0448
0x010114: 31eb 0008 4684 0448
0x01011c: 31eb 0008 4884 0448
0x010124: ff4e 1f3e 8012 21f0
0x01012c: 6404 aa2d 0403 280a
0x010134: 03f9 0888 03df 4215
0x01013c: 101a 3811 ff18 9011
0x010144: 520e 22ac 6f1b 01b0
0x01014c: 4807 8000 1407 5b4a
0x010154: 0048 0780 9a14 534a
0x01015c: 31ec ffee ffff 1f3e
0x010164: e012 21f0 e464 c3ed
0x01016c: 6208 9200 4a00 4e77
0x010174: 4801 4e04 76ff a000
0x01017c: 6c48 0101 6cad 0401
0x010184: 3de1 7604 6400 6c48
0x01018c: 0401 6c10 0401 3de1
0x010194: 7614 6400 6c48 0401
0x01019c: 6c10 0401 3de1 7624
0x0101a4: 6400 6c48 0401 4a10
0x0101ac: 4e54 c4ff 0800 1101
0x0101b4: 0108 7676 0210 a9b8
0x0101bc: 9961 08ec c990 9a61
0x0101c4: 2476 b802 61a9 ec99
0x0101cc: 9008 61c9 469a 3cb3
0x0101d4: e60b 0061 1b3c 61e6
0x0101dc: ec00 be31 0000 e645
0x0101e4: 0061 31ec 00be 4600
0x0101ec: 61e6 ec00 be31 0060
0x0101f4: e600 1061 31ec 60be
0x0101fc: 0400 61e6 ec00 be31
0x010204: 0060 e603 3061 31ec
0x01020c: 60be 0500 61e6 ec00
0x010214: be31 0060 e606 0061
0x01021c: 31ec 60be 0700 61e6
0x010224: 7600 0210 a9b8 9961
0x01022c: 08ec c990 9a61 1076
```

0x010234:	b803	61e6	9a00	1076
0x01023c:	b801	61fb	ffff	769a
0x010244:	0210	a9b8	9961	ff7d
0x01024c:	99ef	61c9	769a	0224
0x010254:	a9b8	9961	08ec	c990
0x01025c:	9a61	2476	b803	61e6
0x010264:	9a00	2476	b801	61fb
0x01026c:	ffff	769a	0224	a9b8
0x010274:	9961	ff7d	99ef	61c9
0x01027c:	7a9a	ff00	7e0a	00ff
0x010284:	7a00	0100	7e1a	0007
0x01028c:	2811	1010	3807	31ec
0x010294:	00be	4a00	61c0	007a
0x01029c:	1a01	007a	0aff	077e
0x0102a4:	1100	ff7e	0000	1028
0x0102ac:	31ec	00be	4900	0710
0x0102b4:	c038	e661	0131	8400
0x0102bc:	464a	3cb2	4e04	4801
0x0102c4:	4e04	c4ff	7600	c800
0x0102cc:	2398	124a	a498	fb21
0x0102d4:	0000	9ec8	76f4	1400
0x0102dc:	a9a8	1200	a498	e621
0x0102e4:	1400	f49e	31aa	8400
0x0102ec:	a94b	1200	a49c	0421
0x0102f4:	2c74	a53c	016c	c406
0x0102fc:	9423	8467	00a4	016c
0x010304:	af06	a53d	4052	0ale
0x01030c:	c000	a900	c900	0031
0x010314:	4b84	0076	4814	9522
0x01031c:	183d	016c	4606	014e
0x010324:	0448	31a4	8400	484b
0x01032c:	4e04	76ef	7800	aa98
0x010334:	0031	4b84	9812	21a4
0x01033c:	20fb	2002	f49e	20e6
0x010344:	9e20	fbe4	4000	e600
0x01034c:	0002	04e6	3c00	6ca5
0x010354:	0601	23af	c4a4	e61e
0x01035c:	0018	0076	5864	1ef8
0x010364:	002d	016c	af06	0423
0x01036c:	007b	9401	1ac9	0076
0x010374:	5864	1ef8	002d	016c
0x01037c:	af06	0423	007b	9401
0x010384:	1cc9	12e6	f800	2d1e
0x01038c:	7600	6400	6c58	0601
0x010394:	23af	7b04	0100	c994
0x01039c:	7614	6400	f858	2d1e
0x0103a4:	6c00	0601	23af	7b04
0x0103ac:	0100	c994	df16	051a
0x0103b4:	18df	1115	0207	1110
0x0103bc:	da08	901c	1aec	c990
0x0103c4:	df06	0514	12df	1115
0x0103cc:	0207	1110	da08	9016
0x0103d4:	f07e	9900	08c9	0ae6
0x0103dc:	fb00	1f0c	fbff	ff0e
0x0103e4:	e6ff	0010	4890	0840
0x0103ec:	4990	3940	20a4	4b90
0x0103f4:	6b40	31ec	00ce	0000
0x0103fc:	31ec	00ae	0000	016c
0x010404:	3c05	114e	0448	c646
0x01040c:	c746	0448	fd4e	00c4
0x010414:	4922	007c	a901	00ca
0x01041c:	0904	fb24	ff02	a9ff
0x010424:	7c02	0100	caa9	6502
0x01042c:	a989	7c02	0100	caa9
0x010434:	0402	f519	00a9	007c
0x01043c:	a901	00ca	1904	4edc
0x010444:	4803	4e04	c4ff	4a00
0x01044c:	ec28	be31	0060	f400
0x010454:	ff61	4afe	ec35	be31
0x01045c:	0060	f400	ff61	4afd
0x010464:	ec29	be31	0060	f400

0x01046c:	ff61	4afb	3e1d	4a14
0x010474:	221b	0449	d309	1a3c
0x01047c:	9012	21a0	6404	3cd6
0x010484:	122a	a090	0421	d964
0x01048c:	634a	043c	014e	0448
0x010494:	ff4e	00c4	284a	31ec
0x01049c:	60be	0000	61f5	0100
0x0104a4:	354a	31ec	60be	0000
0x0104ac:	61f5	0200	294a	31ec
0x0104b4:	60be	0000	61f5	0400
0x0104bc:	1d4a	143e	1b4a	4922
0x0104c4:	0904	3cd3	121a	a090
0x0104cc:	0421	d664	2a3c	9012
0x0104d4:	21a0	6404	4ad9	3c63
0x0104dc:	4e04	4801	4e04	c4fd
0x0104e4:	4a00	e613	0102	274a
0x0104ec:	02e6	4a02	e622	0402
0x0104f4:	1d4a	143e	344a	4922
0x0104fc:	0904	3ce8	121a	a090
0x010504:	0421	e464	2a3c	9012
0x01050c:	21a0	6404	4ae0	ec63
0x010514:	be31	0060	a900	d902
0x01051c:	9961	8963	00a4	ff08
0x010524:	4a22	a405	0800	68ff
0x01052c:	043c	034e	0448	0876
0x010534:	b801	61e6	9a00	0448
0x01053c:	f34e	00c4	04eb	eb85
0x010544:	9508	0ceb	eba5	b510
0x01054c:	14eb	76c5	0008	22b8
0x010554:	c949	9a61	04ed	0408
0x01055c:	2400	04ed	a9bf	7661
0x010564:	0308	c9b8	9a61	04ed
0x01056c:	a9bf	7673	0408	c9b8
0x010574:	9a61	04ed	a9bf	7675
0x01057c:	0508	c9b8	9a61	08ed
0x010584:	0408	2400	08ed	a9bf
0x01058c:	7661	0608	c9b8	9a61
0x010594:	08ed	a9bf	7673	0708
0x01059c:	c9b8	9a61	08ed	a9bf
0x0105a4:	7675	0808	c9b8	9a61
0x0105ac:	0ced	0408	2400	0ced
0x0105b4:	a9bf	7661	0908	c9b8
0x0105bc:	9a61	0ced	a9bf	7673
0x0105c4:	0a08	c9b8	9a61	0ced
0x0105cc:	a9bf	7675	0b08	c9b8
0x0105d4:	9a61	10ed	0408	2400
0x0105dc:	10ed	a9bf	7661	0c08
0x0105e4:	c9b8	9a61	10ed	a9bf
0x0105ec:	7673	0d08	c9b8	9a61
0x0105f4:	10ed	a9bf	7675	0e08
0x0105fc:	c9b8	9a61	14ed	0408
0x010604:	3c00	14ed	a9bf	7661
0x01060c:	0f08	c9b8	9a61	14ed
0x010614:	a9bf	7673	1308	c9b8
0x01061c:	9a61	14ed	a9bf	7675
0x010624:	1008	c9b8	9a61	14ed
0x01062c:	a9bf	7677	1108	c9b8
0x010634:	9a61	14ed	a9bf	7679
0x01063c:	1208	c9b8	9a61	0d4e
0x010644:	0448	fb4e	00c4	02c5
0x01064c:	04c8	193c	04d6	d359
0x010654:	0502	00a5	016c	af06
0x01065c:	0423	06c4	04f4	0300
0x010664:	1c76	b800	61e6	9a00
0x01066c:	61dc	9900	f463	61dc
0x010674:	9900	6404	dff9	0504
0x01067c:	06df	1115	0507	04df
0x010684:	1115	0711	1110	7e02
0x01068c:	1020	c990	9a61	06a9
0x010694:	1a3d	a812	2194	e466
0x01069c:	61dc	9900	e463	61dc

```
0x0106a4:  9900  7404  4ef9  4805
0x0106ac:  4804  4e05  46ff  c582
0x0106b4:  2300  4c40  de0f  0300
0x0106bc:  8346  0422  014e  0448
0x0106c4:  ff4e  8246  00c5  4023
0x0106cc:  0f4c  00de  4603  4483
0x0106d4:  4e04  4801  2004
-- Writing Code: byte addr 0x010004, byte cnt 0x6d6

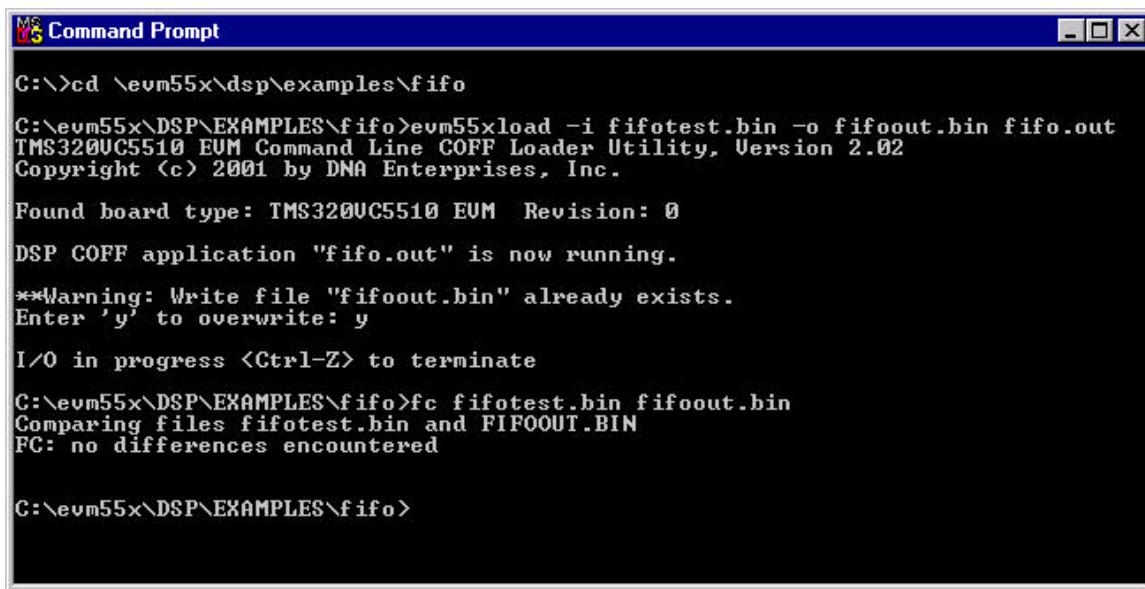
[010700]:0x100(bytes):
0x010700: 016a ad06 5e20 2180
0x010708: 016a ad06 5e20 2180
0x010710: 016a ad06 5e20 2180
0x010718: 016a ad06 5e20 2180
0x010720: 016a ad06 5e20 2180
0x010728: 016a ad06 5e20 2180
0x010730: 016a ad06 5e20 2180
0x010738: 016a ad06 5e20 2180
0x010740: 016a ad06 5e20 2180
0x010748: 016a ad06 5e20 2180
0x010750: 016a ad06 5e20 2180
0x010758: 016a ad06 5e20 2180
0x010760: OTMX320VC5510 Prototype Board Command Line COFF Loader Utility, Version 2.01
Copyright (c) 2001 by DNA Enterprises, Inc.

Found board type: TMX320VC5510 Prototype Board Revision: 0

DSP COFF application "blink.out" is now running.
16a ad06 5e20 2180
0x010768: 016a ad06 5e20 2180
0x010770: 016a ad06 5e20 2180
0x010778: 016a ad06 5e20 2180
0x010780: 016a ad06 5e20 2180
0x010788: 016a ad06 5e20 2180
0x010790: 016a ad06 5e20 2180
0x010798: 016a ad06 5e20 2180
0x0107a0: 016a ad06 5e20 2180
0x0107a8: 016a ad06 5e20 2180
0x0107b0: 016a ad06 5e20 2180
0x0107b8: 016a ad06 5e20 2180
0x0107c0: 016a ad06 5e20 2180
0x0107c8: 016a ad06 5e20 2180
0x0107d0: 016a ad06 5e20 2180
0x0107d8: 016a ad06 5e20 2180
0x0107e0: 016a ad06 5e20 2180
0x0107e8: 016a ad06 5e20 2180
0x0107f0: 016a ad06 5e20 2180
0x0107f8: 016a ad06 5e20 2180
-- Writing Code: byte addr 0x010700, byte cnt 0x100

[013898]:0x42(bytes):
0x013898: 0100 8400 0000 0000
0x0138a0: 0200 8400 0042 0000
0x0138a8: 0000 0200 8400 0044
0x0138b0: 0000 0000 0200 8400
0x0138b8: 0046 0100 1201 0200
0x0138c0: 8400 0048 0100 1201
0x0138c8: 0100 8400 004a 0000
0x0138d0: 0100 8400 004b 0000
0x0138d8: 0000
Writing Code: byte addr 0x013898, byte cnt 0x42
```

4. Verify that the file I/O features are provided (-i, -o, -ls, -lt).
- ❑ Go to the DSP *fifo* example directory: **cd ..\evm\target\examples\fifo**
 - ❑ Type: **evm55xload -i fifotest.bin -o fifoout.bin fifo.out**
 - ❑ Note that the utility will not end until you press <Ctrl-Z>.
 - ❑ Verify that the file input/output worked by doing a file comparison between the input and output files: **fc fifotest.bin fifoout.bin**



```
MS Command Prompt

C:\>cd \evm55x\dsp\examples\fifo
C:\evm55x\EXAMPLES\fifo>evm55xload -i fifotest.bin -o fifoout.bin fifo.out
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.02
Copyright (c) 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM Revision: 0
DSP COFF application "fifo.out" is now running.

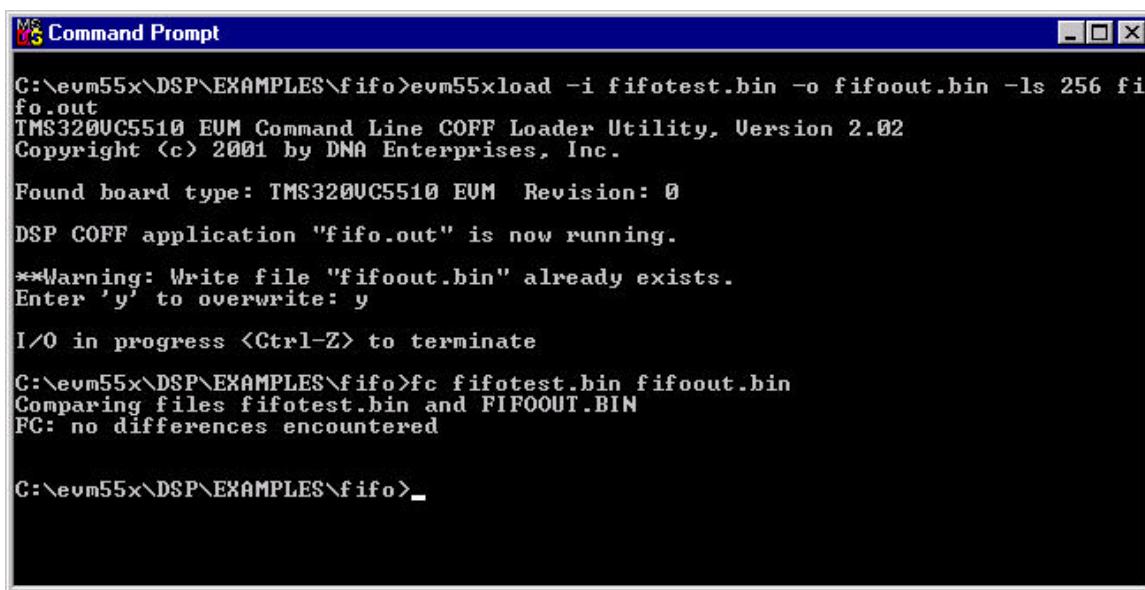
**Warning: Write file "fifoout.bin" already exists.
Enter 'y' to overwrite: y

I/O in progress <Ctrl-Z> to terminate

C:\evm55x\EXAMPLES\fifo>fc fifotest.bin fifoout.bin
Comparing files fifotest.bin and FIFOOUT.BIN
FC: no differences encountered

C:\evm55x\EXAMPLES\fifo>
```

- ❑ Verify that the **-ls** option works limiting the size of the output file by typing: **evm55xload -i fifotest.bin -o fifoout.bin -ls 256 fifo.out**
- ❑ Note that the utility ended without pressing <Ctrl-Z>.
- ❑ Verify that the file input/output worked by doing a file comparison between the input and output files: **fc fifotest.bin fifoout.bin**



```
MS Command Prompt

C:\evm55x\EXAMPLES\fifo>evm55xload -i fifotest.bin -o fifoout.bin -ls 256 fi
fo.out
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.02
Copyright (c) 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM Revision: 0
DSP COFF application "fifo.out" is now running.

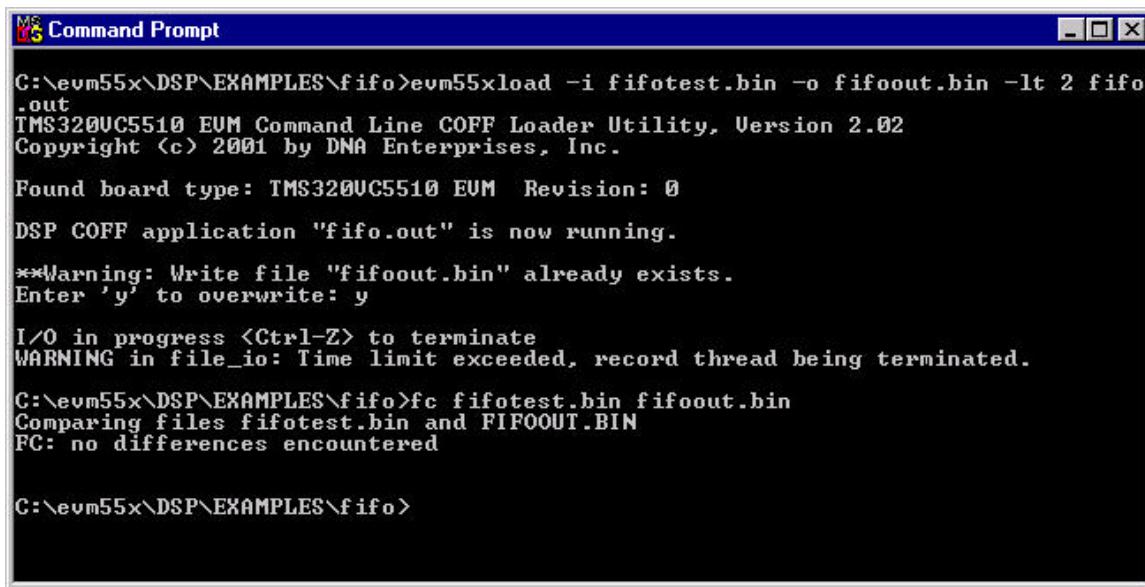
**Warning: Write file "fifoout.bin" already exists.
Enter 'y' to overwrite: y

I/O in progress <Ctrl-Z> to terminate

C:\evm55x\EXAMPLES\fifo>fc fifotest.bin fifoout.bin
Comparing files fifotest.bin and FIFOOUT.BIN
FC: no differences encountered

C:\evm55x\EXAMPLES\fifo>
```

- ❑ Verify that the **-lt** option works limiting the time of the output file by typing:
evm55xload -i fifotest.bin -o fifoout.bin -lt 2 fifo.out
- ❑ Note that the utility ended without pressing <Ctrl-Z> and displayed a message that noted that the time limit was exceeded.
- ❑ Verify that the file input/output worked by doing a file comparison between the input and output files: **fc fifotest.bin fifoout.bin**



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The command entered is `C:\evm55x\DSP\EXAMPLES\fifo>evm55xload -i fifotest.bin -o fifoout.bin -lt 2 fifo.out`. The output shows the EVM Command Line COFF Loader Utility version 2.02 running on a TMS320VC5510 board. It prompts for confirmation to overwrite an existing file ("fifoout.bin") and then compares the files "fifotest.bin" and "FIFOOUT.BIN" using the "fc" command, reporting no differences.

```
C:\evm55x\DSP\EXAMPLES\fifo>evm55xload -i fifotest.bin -o fifoout.bin -lt 2 fifo.out
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.02
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM Revision: 0
DSP COFF application "fifo.out" is now running.

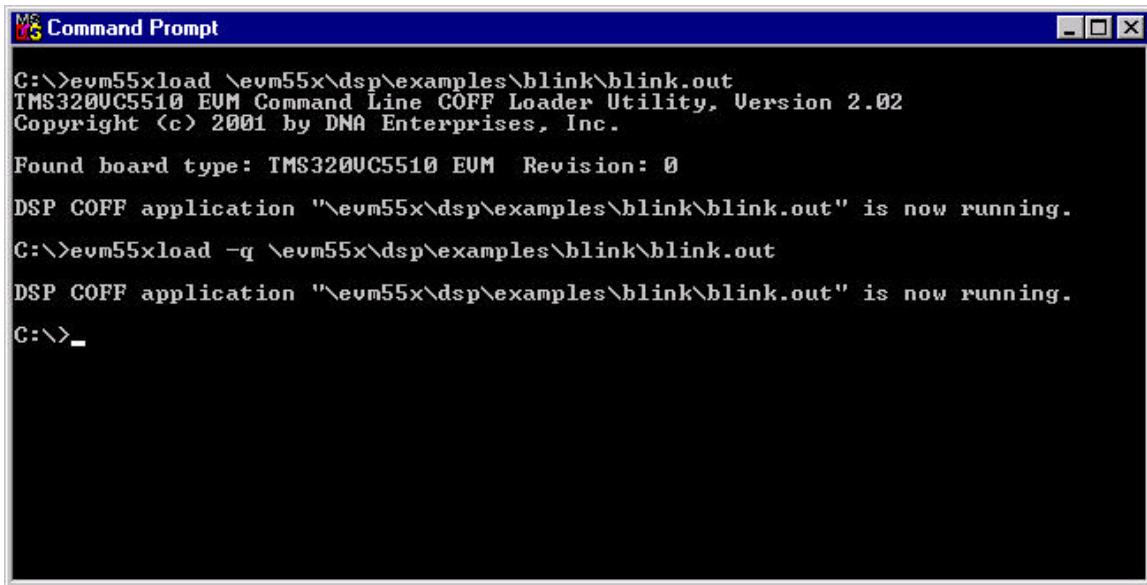
**Warning: Write file "fifoout.bin" already exists.
Enter 'y' to overwrite: y

I/O in progress <Ctrl-Z> to terminate
WARNING in file_io: Time limit exceeded, record thread being terminated.

C:\evm55x\DSP\EXAMPLES\fifo>fc fifotest.bin fifoout.bin
Comparing files fifotest.bin and FIFOOUT.BIN
FC: no differences encountered

C:\evm55x\DSP\EXAMPLES\fifo>
```

5. Verify that the quiet mode of the utility works (**-q**).
 - ❑ You can go back to the root directory: **cd **
 - ❑ Load a DSP application without being in quiet mode:
evm55xload blink.out
 - ❑ Verify that the information about the program is displayed.
 - ❑ Load a DSP application while in quiet mode:
evm55xload -q blink.out
 - ❑ Verify that the information about the program is *not* displayed.



MS Command Prompt

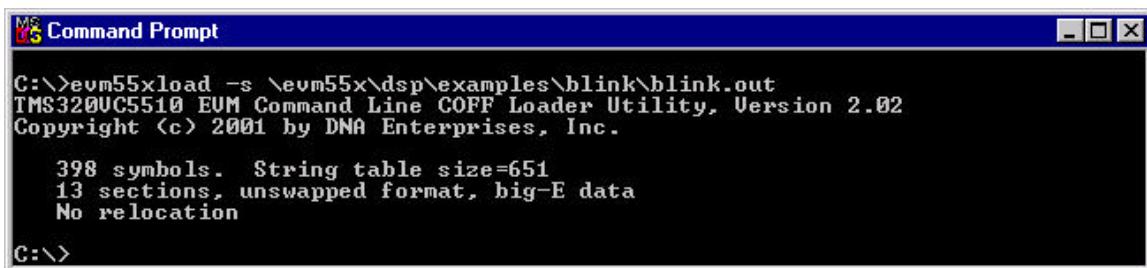
```
C:\>evm55xload \evm55x\dsp\examples\blink\blink.out
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.02
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM Revision: 0
DSP COFF application "\evm55x\dsp\examples\blink\blink.out" is now running.

C:\>evm55xload -q \evm55x\dsp\examples\blink\blink.out
DSP COFF application "\evm55x\dsp\examples\blink\blink.out" is now running.

C:\>_
```

6. Verify that the show command line parameter is operational (-s).
 - Type: **evm55xload -s blink.out**
 - Verify that information is shown about the DSP COFF file as shown below.



MS Command Prompt

```
C:\>evm55xload -s \evm55x\dsp\examples\blink\blink.out
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.02
Copyright <c> 2001 by DNA Enterprises, Inc.

398 symbols. String table size=651
13 sections, unswapped format, big-E data
No relocation

C:\>
```

7. Verify that the application loader's verbose mode is operational (-v).
 - Type: **evm55xload -v blink.out**
 - Verify that the verbose information about the COFF file loading is shown.

MS Command Prompt

```
C:\>evm55xload -v \evm55x\ dsp\examples\blink\blink.out
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.02
Copyright (c) 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM Revision: 0
 398 symbols. String table size=651
 13 sections, unswapped format, big-E data
 No relocation
-- Writing Code: byte addr 0x010004, byte cnt 0x6d6

-- Writing Code: byte addr 0x010700, byte cnt 0x100

-- Writing Code: byte addr 0x013898, byte cnt 0x42

DSP COFF application "\evm55x\ dsp\examples\blink\blink.out" is now running.
C:\>
```

8. Verify that the step-by-step, debug mode of the application loader is provided (-z).
 - Type: **evm55xload -z blink.out**
 - Verify that you must press a key to step through the COFF loading process and messages are displayed for each step that is performed as shown below.

MS Command Prompt

```
C:\>evm55xload -z \evm55x\ dsp\examples\blink\blink.out
TMS320VC5510 EVM Command Line COFF Loader Utility, Version 2.02
Copyright (c) 2001 by DNA Enterprises, Inc.

Debug enabled.
Opening board.
Reading board type and revision.
Found board type: TMS320VC5510 EVM Revision: 0
Resetting TMS320VC5510 EVM board.
Opening HPI.
Initializing DSP.
Loading COFF file into DSP memory.

DSP COFF application "\evm55x\ dsp\examples\blink\blink.out" is now running.

Beginning play/record process (if used).
Closing TMS320VC5510 EVM board.

C:\>
```

3. Board Confidence Test Utility

3.1 Introduction

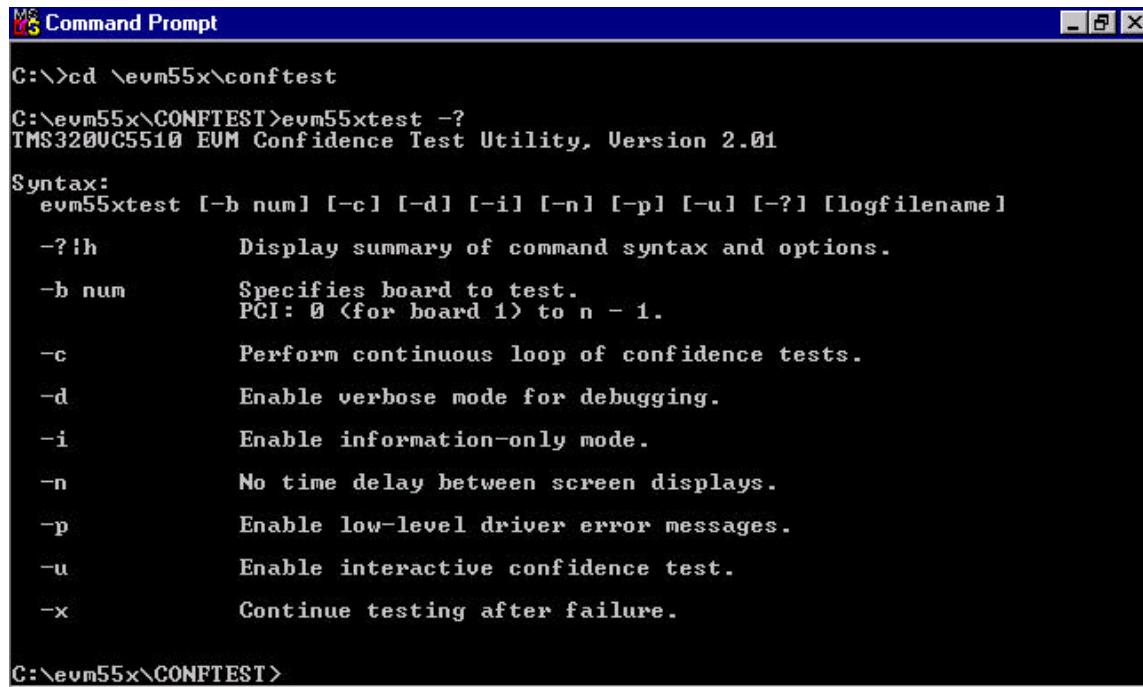
This host-based command line utility provides a way to test the TMX320VC5510 Prototype Board, enabling the user to verify proper installation and operation of the board. The testing includes checkout of the PCI2040 PCI bridge, DSP, external memory and audio codec. This automated utility provides pass/fail indications for each of these items. This utility provides the user with confidence that the board is working properly.

3.2 Operation

NOTE: The board confidence test utility is executed from the DOS command prompt with the command **evm55xtest**. Command parameters follow the command using dashes. This utility should be executed from the Utilities directory.

1. Verify that the utility provides on-line help (-?). Also verify that the **-h** command line option can be used for help. A description of each command line parameter should be provided.

The first screen should look like the following:



```
MS Command Prompt
C:\>cd \evm55x\conftest
C:\evm55x\CONFTEST>evm55xtest -?
TMS320VC5510 EVM Confidence Test Utility, Version 2.01

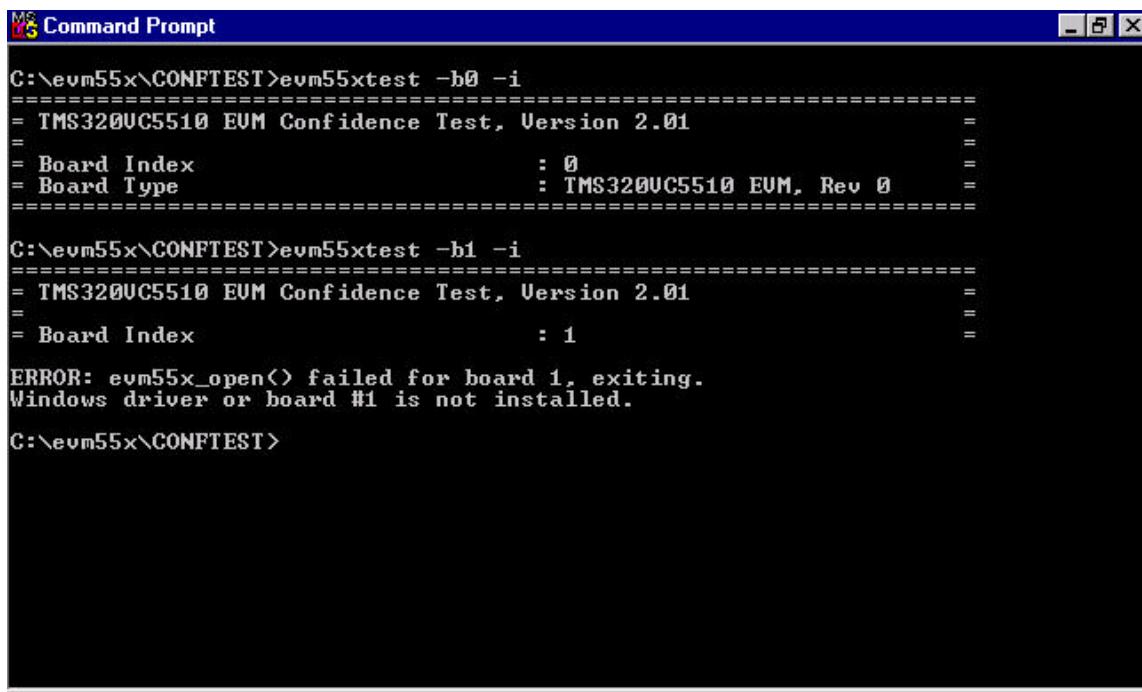
Syntax:
  evm55xtest [-b num] [-c1 [-d] [-i] [-n] [-p] [-u] [-?]] [logfilename]

  -?|-h      Display summary of command syntax and options.
  -b num     Specifies board to test.
             PCI: 0 <for board 1> to n - 1.
  -c          Perform continuous loop of confidence tests.
  -d          Enable verbose mode for debugging.
  -i          Enable information-only mode.
  -n          No time delay between screen displays.
  -p          Enable low-level driver error messages.
  -u          Enable interactive confidence test.
  -x          Continue testing after failure.

C:\evm55x\CONFTEST>
```

2. Verify that the board number selection parameter and the information-only mode is operational (-b, -i).
 - ❑ Type: **evm55xtest -b0 -i**
 - ❑ Verify that information about the board index, type and revision is displayed.
 - ❑ Type: **evm55xtest -b1 -i**
 - ❑ Verify that the board type is not displayed and a message states that board #1 is not installed.

The following display shows what happens when a board is addressed, but it is not installed. This is what it should do with only one board installed in the system. Board indices are zero-based, so the first board is board #0.



MS Command Prompt

```
C:\evm55x\CONFTEST>evm55xtest -b0 -i
=====
= TMS320VC5510 EVM Confidence Test, Version 2.01
=
= Board Index          : 0
= Board Type           : TMS320VC5510 EVM, Rev 0
=====

C:\evm55x\CONFTEST>evm55xtest -b1 -i
=====
= TMS320VC5510 EVM Confidence Test, Version 2.01
=
= Board Index          : 1
=====
ERROR: evm55x_open() failed for board 1, exiting.
Windows driver or board #1 is not installed.

C:\evm55x\CONFTEST>
```

3. Verify that the confidence test can run in a continuous loop mode that can be useful for long-term testing without user intervention or monitoring. (-c). Also verify that logging to a file is operational by including a filename at the end of the command line.
 - ❑ Type: **evm55xtest -c evm55xtest.log**
 - ❑ Verify that the test continually loops.

```

MS Command Prompt - evm55xtest -c evm55xtest.log
=====
C:\evm55x\CONFTEST>evm55xtest -c evm55xtest.log
=====
= TMS320VC5510 EVM Confidence Test, Version 2.01 =
=
= Board Index : 0 =
= Board Type   : TMS320VC5510 EVM, Rev 0 =
=====
Beginning Confidence Test ...
Win32 DLL <evm55x.dll> Revision: 2.2 - Build 1
Testing Win32 DLL and Low-Level Driver access.....PASSED.
=====
=          CPLD Registers Dump =
=====
CNTL      : 0x00
STAT1     : 0x17
STAT2     : 0x08
CPLDREU   : 0x06  <6>
SEM0      : 0x00  <Not Owned>
SEM1      : 0x00  <Not Owned>
=====
Will proceed in 5 seconds....
-
```

- ❑ At the end of one of the test loops (there is a pause for five seconds between loops), press <Ctrl-C> to end the continuous loop.

```

MS Command Prompt
=====
===== AIC27 Codec Confidence Tests =====
=====
DSP 0: AIC27 Codec Left Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Right Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Left/Right Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Line In Loopback Test.....PASSED.
DSP 0: AIC27 Codec Mic In Loopback Test.....PASSED.

=====
Continuous Loop Mode Status:
Loop Count = 2
Total Test Failures = 0
=====
Tests will re-start in 5 seconds...
Press Ctrl-C to quit testing at any time.

Testing Aborted: 09:28:32 AM on Mar 07, 2001
=====
Continuous Loop Test Results:
Loop Count = 2
Total Test Failures = 0
=====

C:\evm55x\CONFTEST>_

```

- ❑ Type: **notepad evm55xtest.log** and verify that the test results were stored to the file.

An example of a test log after two test loops is provided below.

```
=====
= TMX320VC5510 PROTOTYPE BOARD Confidence Test, Version 2.04      =
=
= Board Index: 0
= Board Type: TMX320VC5510 PROTOTYPE BOARD, Rev 0
=====
Test Started: 09:26:06 AM on Mar 07, 2001

Beginning Confidence Test ...

Win32 DLL (evm55x.dll) Revision: 2.2 - Build 1

Testing Win32 DLL and Low-Level Driver access.....PASSED.

=====
=          CPLD Registers Dump      =
=====
CNTL      : 0x00
STAT1     : 0x17
STAT2     : 0x08
CPLDREV   : 0x06  (6)
SEM0      : 0x00  (Not Owned)
SEM1      : 0x00  (Not Owned)
=====

Will proceed in 5 seconds.....

=====

=====          Board State      =====
=====
DSP Interrupt Mask: NO
DSP NMI      : NO
TBC Reset    : NO
DSP Reset    : NO
HINT Mask    : NO
User Switch 1: ON
User Switch 0: ON
DSP EHPENA   : ON
DSP Operating Mode: MC
TBC Ready   : YES
DSP Core Voltage: OK
Daughterboard: NONE
DSP-Host Interrupt: NOT ACTIVE
DSP HREADY   : READY
Semaphore 0  : NOT OWNED
Semaphore 1  : NOT OWNED
=====

Will proceed in 5 seconds.....

=====

=====          On-board PCI Controller (PCI2040) Settings      =====
=====
VendorID      = 0x104C
DeviceID      = 0xAC60
Command       = 0x142
Status        = 0xA10
RevisionID    = 0x0
ProgIf        = 0x104C
SubClass      = 0x40
BaseClass     = 0xB
CacheLineSize = 0x8
LatencyTimer  = 0x0
HeaderType    = 0x0
BIST          = 0x0
HPICSRBar    = 0xFFFFF000
```

```
CMenuBar      = 0xFDFF0000
GPBBar       = 0xFDFFEC00
SubVendorID   = 0x104C
SubSysID     = 0xAC80
CapPointer    = 0x50
```

Will proceed in 5 seconds....

```
=====
===== On-board PCI Controller (PCI2040) Settings =====
=====
```

```
IRQLine      = 0x9
IRQPin       = 0x1
MinGnt       = 0x0
MaxLat       = 0x0
GPBSelect    = 0x30
GPBInData   = 0x3F
GPBOutData  = 0x0
GPBInType   = 0x0
MiscControl  = 0x8127
Diagnostic   = 0x0
PMCapID     = 0x1
PMNext      = 0x0
PMCap       = 0xFE11
PMCntrlStat = 0x0
HPICSRIOBar = 0x0
HSCapID     = 0x0
HSNext      = 0x0
HCSR        = 0x0
```

Will proceed in 5 seconds....

```
=====
===== JTAG Confidence Test =====
```

```
JTAG Test Bus Controller Test.....PASSED.
```

```
=====
===== Memory Confidence Tests =====
```

```
DSP 0: Int. DARAM Memory Test (A5).....PASSED.
DSP 0: Int. DARAM Memory Test (WALK).....PASSED.
DSP 0: Int. DARAM Memory Test (ADDR).....PASSED.
DSP 0: Int. DARAM Memory Test (PULSE).....PASSED.
```

```
DSP 0: Int. SARAM Memory Test (A5).....PASSED.
DSP 0: Int. SARAM Memory Test (WALK).....PASSED.
DSP 0: Int. SARAM Memory Test (ADDR).....PASSED.
DSP 0: Int. SARAM Memory Test (PULSE).....PASSED.
```

```
DSP 0: SBSRAM Data Bus Test .....PASSED.
DSP 0: SBSRAM Address Bus Test .....PASSED.
DSP 0: SBSRAM Device Test .....PASSED.
```

```
=====
===== DSP Clocks Confidence Test =====
```

```
DSP 0: Clocks Test (150 MHz).....PASSED.
```

```
=====
===== DSP Revision Confidence Test =====
```

```
DSP 0:DSP Revision Test.....PASSED.
    TMX320VC5510 Die ID = 0x0C017955C11120FE
    TMX320VC5510 Rev ID = 0x8050
```

```
=====
===== LED Confidence Test =====
```

```
DSP 0: Observe that the three user LEDs are blinking.....PASSED.
```

```
=====
===== Semaphore Confidence Tests =====
=====
DSP 0: Semaphore Test (Host-Owned).....PASSED.
DSP 0: Semaphore Test (DSP-Owned).....PASSED.

=====
===== DSP Interrupt Confidence Tests =====
=====
DSP 0: Host-to-DSP Interrupt Tests.....PASSED.
DSP 0: DSP-to-Host Interrupt Tests.....PASSED.

=====
===== AIC27 Codec Confidence Tests =====
=====
DSP 0: AIC27 Codec Left Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Right Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Left/Right Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Line In Loopback Test.....PASSED.
DSP 0: AIC27 Codec Mic In Loopback Test.....PASSED.

=====
Continuous Loop Mode Status:
Loop Count      = 1
Total Test Failures = 0
=====

Tests will re-start in 5 seconds...

Press Ctrl-C to quit testing at any time.

=====
===== JTAG Confidence Test =====
=====
JTAG Test Bus Controller Test.....PASSED.

=====
===== Memory Confidence Tests =====
=====
DSP 0: Int. DARAM Memory Test (A5).....PASSED.
DSP 0: Int. DARAM Memory Test (WALK).....PASSED.
DSP 0: Int. DARAM Memory Test (ADDR).....PASSED.
DSP 0: Int. DARAM Memory Test (PULSE).....PASSED.

DSP 0: Int. SARAM Memory Test (A5).....PASSED.
DSP 0: Int. SARAM Memory Test (WALK).....PASSED.
DSP 0: Int. SARAM Memory Test (ADDR).....PASSED.
DSP 0: Int. SARAM Memory Test (PULSE).....PASSED.

DSP 0: SBSRAM Data Bus Test .....PASSED.
DSP 0: SBSRAM Address Bus Test .....PASSED.
DSP 0: SBSRAM Device Test .....PASSED.

=====
===== DSP Clocks Confidence Test =====
=====
DSP 0: Clocks Test (150 MHz).....PASSED.

=====
===== DSP Revision Confidence Test =====
=====
DSP 0:DSP Revision Test.....PASSED.
    TMX320VC5510 Die ID = 0x0C017955C11120FE
    TMX320VC5510 Rev ID = 0x8050

=====
===== LED Confidence Test =====
=====
```

```
DSP 0: Observe that the three user LEDs are blinking.....PASSED.
```

```
=====
```

```
===== Semaphore Confidence Tests =====
```

```
=====
```

```
DSP 0: Semaphore Test (Host-Owned).....PASSED.
```

```
DSP 0: Semaphore Test (DSP-Owned).....PASSED.
```

```
=====
```

```
===== DSP Interrupt Confidence Tests =====
```

```
=====
```

```
DSP 0: Host-to-DSP Interrupt Tests.....PASSED.
```

```
DSP 0: DSP-to-Host Interrupt Tests.....PASSED.
```

```
=====
```

```
===== AIC27 Codec Confidence Tests =====
```

```
=====
```

```
DSP 0: AIC27 Codec Left Channel Tone Test.....PASSED.
```

```
DSP 0: AIC27 Codec Right Channel Tone Test.....PASSED.
```

```
DSP 0: AIC27 Codec Left/Right Channel Tone Test.....PASSED.
```

```
DSP 0: AIC27 Codec Line In Loopback Test.....PASSED.
```

```
DSP 0: AIC27 Codec Mic In Loopback Test.....PASSED.
```

```
=====
```

```
Continuous Loop Mode Status:
```

```
Loop Count = 2
```

```
Total Test Failures = 0
```

```
=====
```

```
Tests will re-start in 5 seconds...
```

```
Press Ctrl-C to quit testing at any time.
```

```
Testing Aborted: 09:28:32 AM on Mar 07, 2001
```

```
=====
```

```
Continuous Loop Test Results:
```

```
Loop Count = 2
```

```
Total Test Failures = 0
```

```
=====
```

4. Verify that the debugging mode of the confidence test is operational (**-d**).

- Type: **evm55xtest -d**
- Verify that the utility prompts you to press any key at various points and displays what it is doing at each step. This allows you to see exactly where a failure may be occurring if the confidence test does not pass.

The following is an example screen that shows this:

```

Command Prompt - evm55xtest -d
DSP 0: Int. DARAM Memory Test <PULSE>.....PASSED.
Press any key to continue <Ctrl-C to abort>.
Running SARAM memory test <A5> on DSP 0.....PASSED.
DSP 0: Int. SARAM Memory Test <A5>.....PASSED.
Press any key to continue <Ctrl-C to abort>.
Running SARAM memory test <WALK> on DSP 0.....PASSED.
DSP 0: Int. SARAM Memory Test <WALK>.....PASSED.
Press any key to continue <Ctrl-C to abort>.
Running SARAM memory test <ADDR> on DSP 0.....PASSED.
DSP 0: Int. SARAM Memory Test <ADDR>.....PASSED.
Press any key to continue <Ctrl-C to abort>.
Running SARAM memory test <PULSE> on DSP 0.....PASSED.
DSP 0: Int. SARAM Memory Test <PULSE>.....PASSED.

Press any key to continue <Ctrl-C to abort>.
Loading SBSRAM test on DSP 0.....Sent...
Loaded DSP executable 'memtst.out' is now running!
Press any key to continue <Ctrl-C to abort>.
Press any key to continue <Ctrl-C to abort>.
DSP 0: SBSRAM Data Bus Test .....Sent...
0
1
Press any key to continue <Ctrl-C to abort>.
Getting Test Result.
Press any key to continue <Ctrl-C to abort>.
Test Result = 0

PASSED.
Press any key to continue <Ctrl-C to abort>.

```

5. Verify that the first several screens of CPLD and PCI2040 information are displayed without five second delays between them when the no time delay option is used (**-n**).
 - Type: **evm55xtest -n**
 - Verify that the first few display screens are quickly displayed without time delays.
6. There is a **-p** option that enables low-level driver error/warning messages to be displayed. By default, these messages are turned off. There isn't a way to demonstrate the display of these messages unless there are actual errors/messages.
7. The **-s** option that stops at the end of execution is intended only for use with the control panel GUI application (evm55xgui.exe). It will be tested in that section.
8. Verify that the interactive mode of the confidence test is operational (**-u**).
 - Type: **evm55xtest -u**
 - Verify that you must press any key to step through the confidence test. This is similar to the debug mode (**-d**), but low-level debug information is not displayed.
9. The **-x** option enables the confidence test to keep running after a test failure. By default, the confidence test utility stops immediately when an failure occurs. There is one exception. In the continuous loop mode, the **-x** option is implicit.

4. Flash Utility

4.1 Introduction

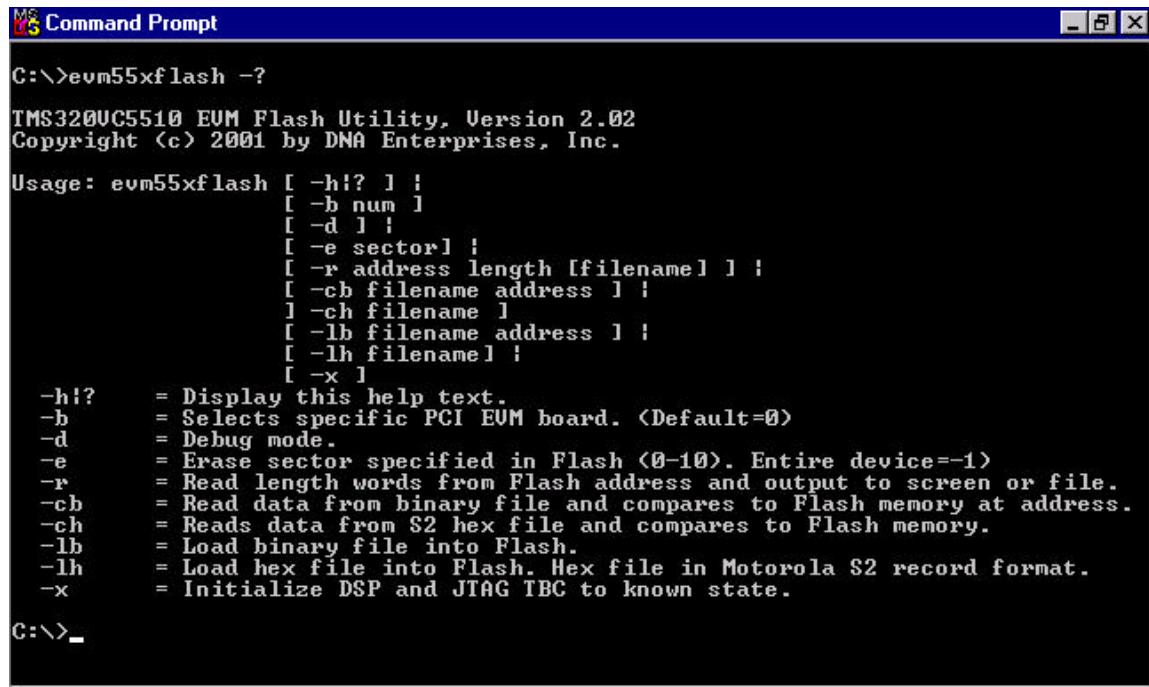
This host-based command line utility provides a way to program, read, and manipulate the on-board Flash memory device, without requiring the user to write a custom utility or use the debugger. It is accomplished using the PCI2040's PCI bus interface between the host and the target DSP. The utility uses the board's Win32 user-mode DLL to interface with the board. This utility assumes the Motorola M2 HEX file format.

4.2 Operation

NOTE: The Flash utility is executed from the DOS command prompt with the command **evm55xflash**. Command parameters follow the command using dashes.

1. Verify that the utility provides on-line help (-?). Also verify that the -h command line option can be used for help. A description of each command line parameter should be provided.

The first screen should look like the following:



```
MS-DOS Command Prompt
C:\>evm55xflash -?

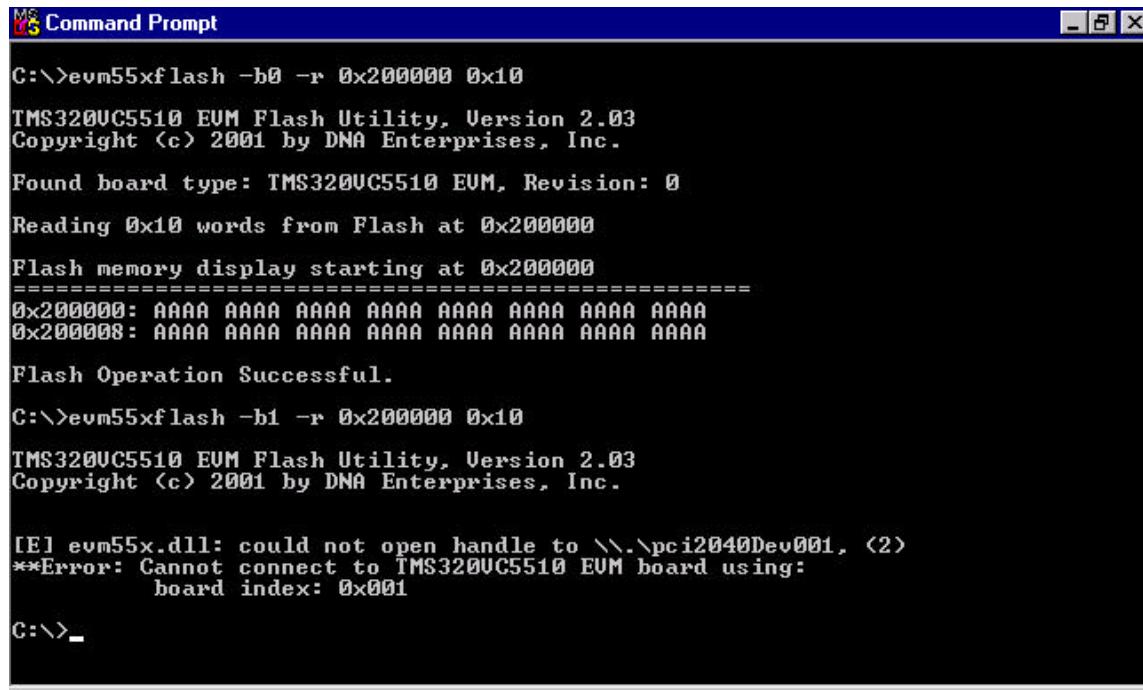
TMS320VC5510 EVM Flash Utility, Version 2.02
Copyright <c> 2001 by DNA Enterprises, Inc.

Usage: evm55xflash [ -h? ] [
[ -b num ] [
[ -d ] [
[ -e sector ] [
[ -r address length [filename] ] [
[ -cb filename address ] [
] -ch filename ] [
[ -lb filename address ] [
[ -lh filename ] [
[ -x ] [
-h?      = Display this help text.
-b      = Selects specific PCI EVM board. <Default=0>
-d      = Debug mode.
-e      = Erase sector specified in Flash <0-10>. Entire device=-1>
-r      = Read length words from Flash address and output to screen or file.
-cb     = Read data from binary file and compares to Flash memory at address.
-ch     = Reads data from S2 hex file and compares to Flash memory.
-lb     = Load binary file into Flash.
-lh     = Load hex file into Flash. Hex file in Motorola S2 record format.
-x      = Initialize DSP and JTAG TBC to known state.

C:\>-
```

2. Verify that the board number selection parameter is operational (**-b**).
 - Type: **evm55xflash -b0 -r 0x200000 0x10**
 - Verify that the board was found and data was displayed.
 - Type: **evm55xflash -b1 -r 0x200000 0x10**
 - Verify that the board was not found since it is not installed.

The following display shows what happens when a board is addressed, but it is not installed. This is what it should do with only one board installed in the system. Board indices are zero-based, so the first board is board #0.



```

Windows Command Prompt
C:\>evm55xflash -b0 -r 0x200000 0x10
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
Reading 0x10 words from Flash at 0x200000
Flash memory display starting at 0x200000
=====
0x200000: AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA
0x200008: AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA AAAAAA

Flash Operation Successful.

C:\>evm55xflash -b1 -r 0x200000 0x10
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

[E] evm55x.dll: could not open handle to \\.\pci2040Dev001, <2>
**Error: Cannot connect to TMS320VC5510 EVM board using:
   board index: 0x001

C:\>_

```

3. Verify that a binary file can be used to program the Flash and that it can be checked against the file. Also verify that Flash can be displayed. (**-lb**, **-cb**, **-r**).
 - Type: **evm55xflash -lb ..\target\examples\fifo\fifotest.bin 0x200000**
 - Verify that a message is displayed that states that the Flash was programmed successfully.
 - Type: **evm55xflash -cb ..\target\examples\fifo\fifotest.bin 0x200000**
 - Verify that a message is displayed that states that the binary file contents and the Flash memory are the same.
 - Type: **evm55xflash -r 0x200000 0x40**
 - Verify that a sequential data pattern from 0 to 0x3F is programmed in Flash.

The screen capture below shows the expected results.

```

MS Command Prompt
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
Erasing Flash sector 0 before programming
Erase complete!
Programming Flash from 0x200000 - 0x2000FF
Flash was programmed with binary file "\evm55x\ dsp\examples\fifo\fifotest.bin" successfully.

Flash Operation Successful.

C:\>evm55xflash -ch \evm55x\ dsp\examples\fifo\fifotest.bin 0x200000
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
Comparing file data to Flash block 0x200000 - 0x2000FF...<Matched>
Binary file data and Flash memory are the same. Flash is okay.

Flash Operation Successful.

C:\>evm55xflash -r 0x200000 0x40
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
Reading 0x40 words from Flash at 0x200000
Flash memory display starting at 0x200000
=====
0x200000: 0000 0001 0002 0003 0004 0005 0006 0007
0x200008: 0008 0009 000A 000B 000C 000D 000E 000F
0x200010: 0010 0011 0012 0013 0014 0015 0016 0017
0x200018: 0018 0019 001A 001B 001C 001D 001E 001F
0x200020: 0020 0021 0022 0023 0024 0025 0026 0027
0x200028: 0028 0029 002A 002B 002C 002D 002E 002F
0x200030: 0030 0031 0032 0033 0034 0035 0036 0037
0x200038: 0038 0039 003A 003B 003C 003D 003E 003F

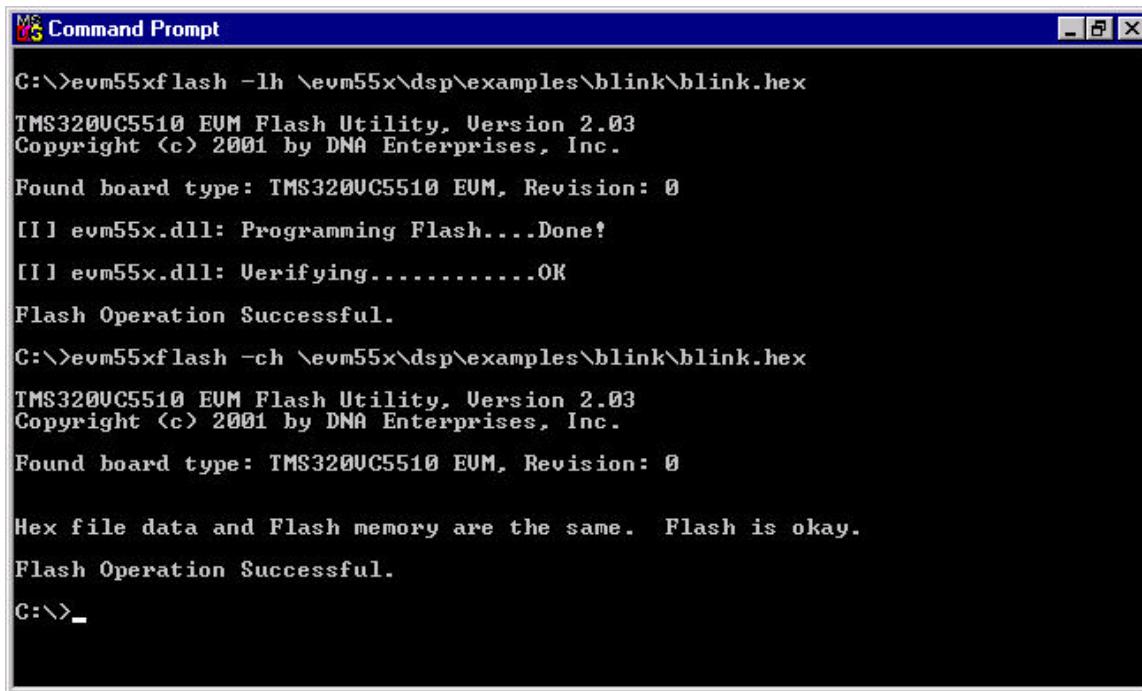
Flash Operation Successful.

C:\>_

```

4. Verify that a Motorola S2 record hex file can be used to program the Flash and that it can be checked against the file. (-lh, -ch).
 - Type: evm55xflash -lh ..\target\examples\blink\blink.hex
 - Verify that a message is displayed that states that the Flash was programmed successfully.
 - Type: evm55xflash -ch ..\target\examples\blink\blink.hex
 - Verify that a message is displayed that states that the hex file contents and the Flash memory are the same.
 - Temporarily switch DIP switches 4 and 8 to the ON (down position) to select 32-bit EMIF boot.
 - Press the reset button on the board and verify that the three user LEDs light up and extinguish in sequence. This verifies that the Flash was programmed successfully, and the Prototype Board can boot from Flash.
 - Set the DIP switches 4 and 8 back to their default OFF (up position) to select HPI boot mode.

The screen capture below shows the expected results.



A screenshot of a Windows Command Prompt window titled "Command Prompt". The window contains the following text output from the EVM Flash Utility:

```
C:\>evm55xflash -lh \evm55x\ dsp\examples\blink\blink.hex
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
[I] evm55x.dll: Programming Flash....Done!
[I] evm55x.dll: Verifying.....OK
Flash Operation Successful.

C:\>evm55xflash -ch \evm55x\ dsp\examples\blink\blink.hex
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

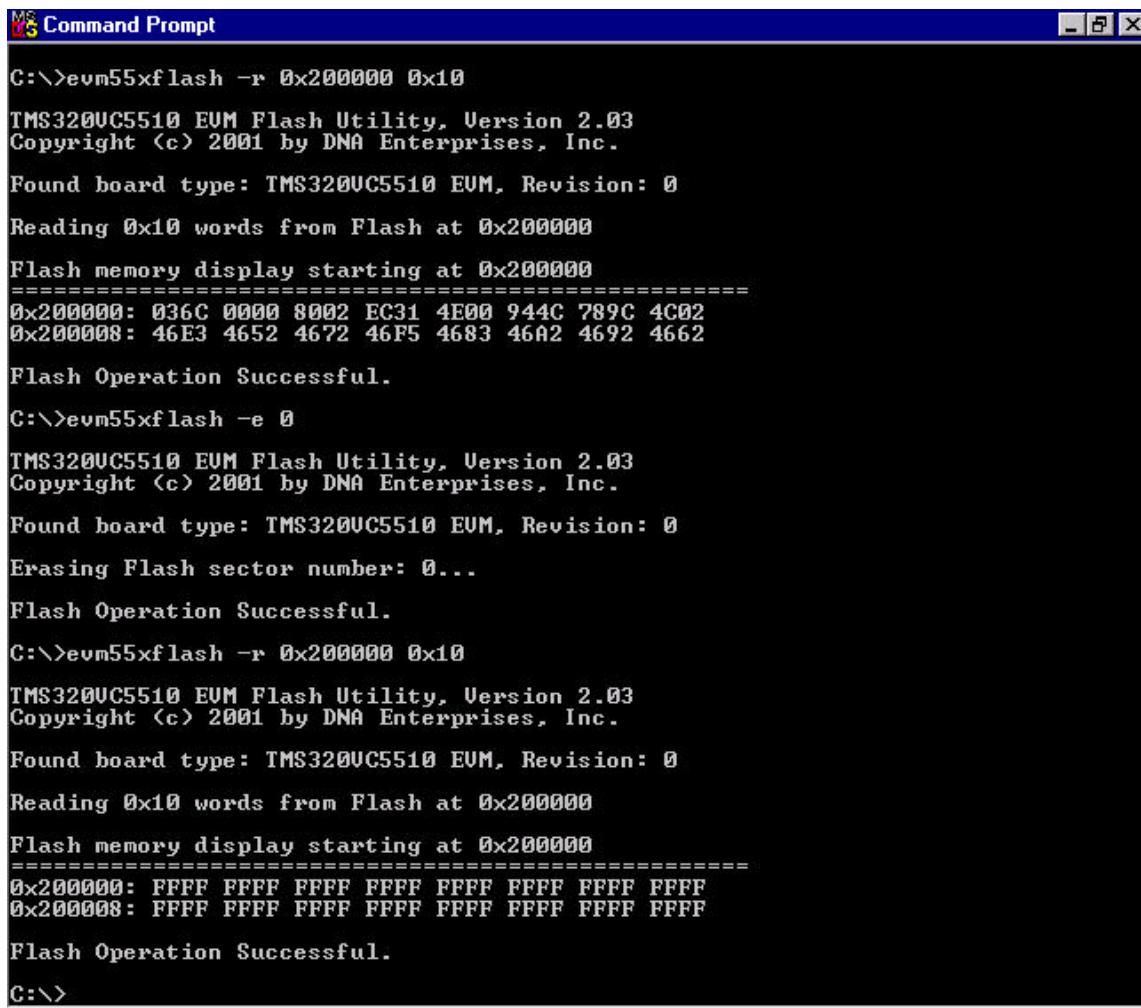
Found board type: TMS320VC5510 EVM, Revision: 0

Hex file data and Flash memory are the same. Flash is okay.
Flash Operation Successful.

C:\>_
```

5. Verify that a Flash sector can be erased (-e).
 - Type: **evm55xflash -r 0x200000 0x10**
 - Verify that the data is not all 0xFFFF's.
 - Type: **evm55xflash -e 0**
 - Type: **evm55xflash -r 0x200000 0x10**
 - Verify that the data is all 0xFFFF's.

The screen capture below shows what the results should look like.



The image shows a Windows Command Prompt window titled "Command Prompt". The window contains the following text output from the TMS320VC5510 EVM Flash Utility:

```
C:\>evm55xflash -r 0x200000 0x10
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
Reading 0x10 words from Flash at 0x200000
Flash memory display starting at 0x200000
=====
0x200000: 036C 0000 8002 EC31 4E00 944C 789C 4C02
0x200008: 46E3 4652 4672 46F5 4683 46A2 4692 4662

Flash Operation Successful.

C:\>evm55xflash -e 0
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
Erasing Flash sector number: 0...
Flash Operation Successful.

C:\>evm55xflash -r 0x200000 0x10
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Found board type: TMS320VC5510 EVM, Revision: 0
Reading 0x10 words from Flash at 0x200000
Flash memory display starting at 0x200000
=====
0x200000: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
0x200008: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF

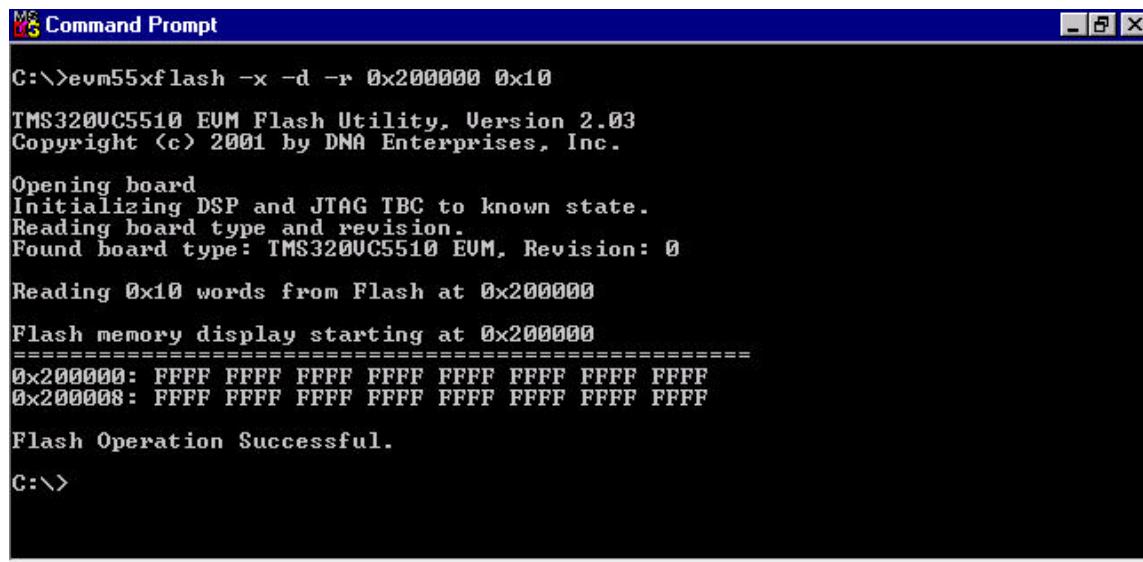
Flash Operation Successful.

C:\>
```

6. Verify that the debug information mode is operational (**-d**).

- Type: **evm55xflash -x -d -r 0x200000 0x10**
- Verify that debug information is provided (Opening board, Initializing DSP...).

Note: The **-x** option is intended to only be required after using Code Composer Studio which leaves the DSP in an unknown state that needs to be initialized prior to host access. You can run CCS first before doing this step to verify that it doesn't work without using the **-x** option.



The screenshot shows a Windows Command Prompt window titled "Command Prompt". The window contains the following text output from the evm55xflash command:

```
C:\>evm55xflash -x -d -r 0x200000 0x10
TMS320VC5510 EVM Flash Utility, Version 2.03
Copyright <c> 2001 by DNA Enterprises, Inc.

Opening board
Initializing DSP and JTAG TBC to known state.
Reading board type and revision.
Found board type: TMS320VC5510 EVM, Revision: 0

Reading 0x10 words from Flash at 0x200000
Flash memory display starting at 0x200000
=====
0x200000: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF
0x200008: FFFF FFFF FFFF FFFF FFFF FFFF FFFF FFFF

Flash Operation Successful.

C:\>
```

5. Board Reset Utility

5.1 Introduction

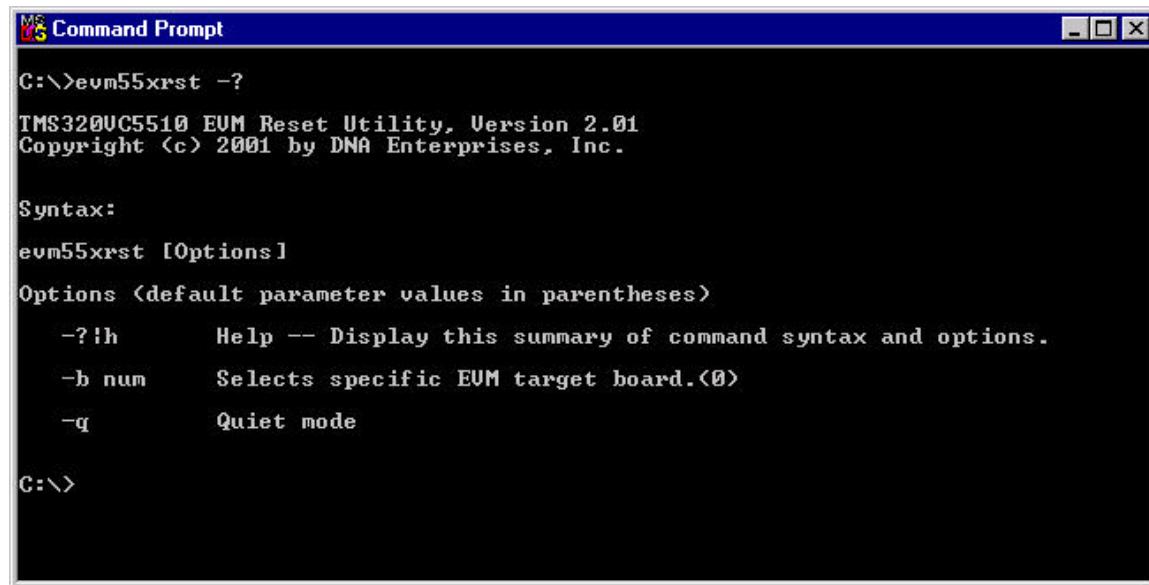
This host-based command line utility provides a way to reset the board into a known state, without requiring the user to write a custom utility or use the debugger. It is accomplished using the PCI2040's PCI bus interface between the host and the target DSP. The utility uses the board's Win32 user-mode DLL to interface with the board.

5.2 Operation

NOTE: The board reset utility is executed from the DOS command prompt with the command **evm55xrst**. Command parameters follow the command using dashes.

1. Verify that the utility provides on-line help (-?). Also verify that the -h command line option can be used for help. A description of each command line parameter should be provided.

The first screen should look like the following:



MS Command Prompt

```
C:\>evm55xrst -?

TMS320VC5510 EVM Reset Utility, Version 2.01
Copyright (c) 2001 by DNA Enterprises, Inc.

Syntax:
evm55xrst [Options]
Options (default parameter values in parentheses)
-?|-h      Help -- Display this summary of command syntax and options.
-b num     Selects specific EVM target board.<0>
-q         Quiet mode

C:\>
```

2. Verify that the board number selection parameter is operational (**-b**).

- Type: **evm55xrst -b0**
- Verify that the board was found and was reset.
- Type: **evm55xrst -b1**
- Verify that the board was not found since it is not installed.

The following display shows what happens when a board is addressed, but it is not installed. This is what it should do with only one board installed in the system. Board indices are zero-based, so the first board is board #0.

```
MS Command Prompt
C:\>evm55xrst -b0
TMS320VC5510 EUM Reset Utility, Version 2.01
Copyright <c> 2001 by DNA Enterprises, Inc.

Board type      : TMS320VC5510 EUM
Board revision: 0
CPLD revision : 6

Resetting TMS320VC5510 EUM board.
Resetting TMS320VC5510 DSP.
Unresetting TMS320VC5510 DSP <HPI Boot Mode>.
Writing infinite branch at HPI boot address <0x10000>.
Running DSP.

C:\>evm55xrst -b1
TMS320VC5510 EUM Reset Utility, Version 2.01
Copyright <c> 2001 by DNA Enterprises, Inc.

[EE] evm55x.dll: could not open handle to \\.\pci2040Dev001, <2>
**Error: Board open failure.

C:\>
```

3. Verify that the quiet mode of operation is provided (**-q**).

- Type: **evm55xrst -q**
- Verify that no messages are displayed. The board was reset, but no output is provided to the screen in the quiet mode.

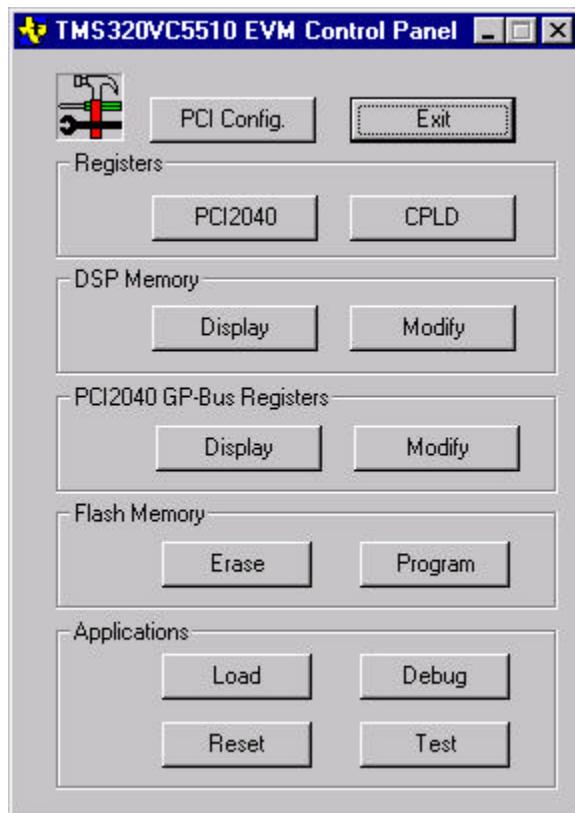
```
MS Command Prompt
C:\>evm55xrst -q
C:\>
```

6. Board Control Panel GUI

6.1 Introduction

This host-based GUI utility provides a graphical method to control the TMX320VC5510 Prototype Board.

The Board Control Panel GUI provides a user interface as shown below.



There are several buttons presented by the control panel that provide the functions listed below:

- PCI Config. – Displays information on the PCI configuration of the TMX320VC5510 Prototype Board such as Vendor/Device IDs, base address registers and interrupt assignment.
- Registers/PCI2040 – Displays the PCI2040 register values in an easy-to-read graphical method that uses radio buttons. Some radio buttons simply display read-only information, while others allow user control to update PCI2040 register values.
- Registers/CPLD – Displays the CPLD register values in an easy-to-read graphical method that uses radio buttons. Some radio buttons simply display read-only information, while others allow user control to update CPLD register values.
- DSP Memory/Display – Displays the contents of any memory on the board including on-chip, SBSRAM and Flash memory. Enter the start address and length in words to display and select the Read Memory button.
- DSP Memory/Modify – Allows individual DSP memory locations or a block of memory (fill) to be modified by the user.
- PCI2040 GP-Bus Registers/Display – Displays the contents of the registers mapped into the PCI2040's General-Purpose bus. These registers include the JTAG TBC (first 32 addresses) and the CPLD registers (second 32 addresses). Note that the register offsets are on PCI DWORD boundaries.
- PCI2040 GP-Bus Registers/Modify – Allows JTAG TBC and CPLD registers mapped on the PCI2040's General-Purpose bus to be modified directly.
- Flash Memory/Erase – Erases the complete Flash memory or any specified sector.
- Flash Memory/Program – Programs the Flash memory with a selected Motorola S2 hex file.
- Applications/Load – Loads and runs a selected DSP COFF application.
- Applications/Debug – Executes Code Composer Studio for debugging.
- Applications/Reset – Resets the Prototype Board to a known state looping at address 0x10000.
- Applications/Test – Executes the Prototype Boards confidence test. The confidence test is spawned of into a console window.

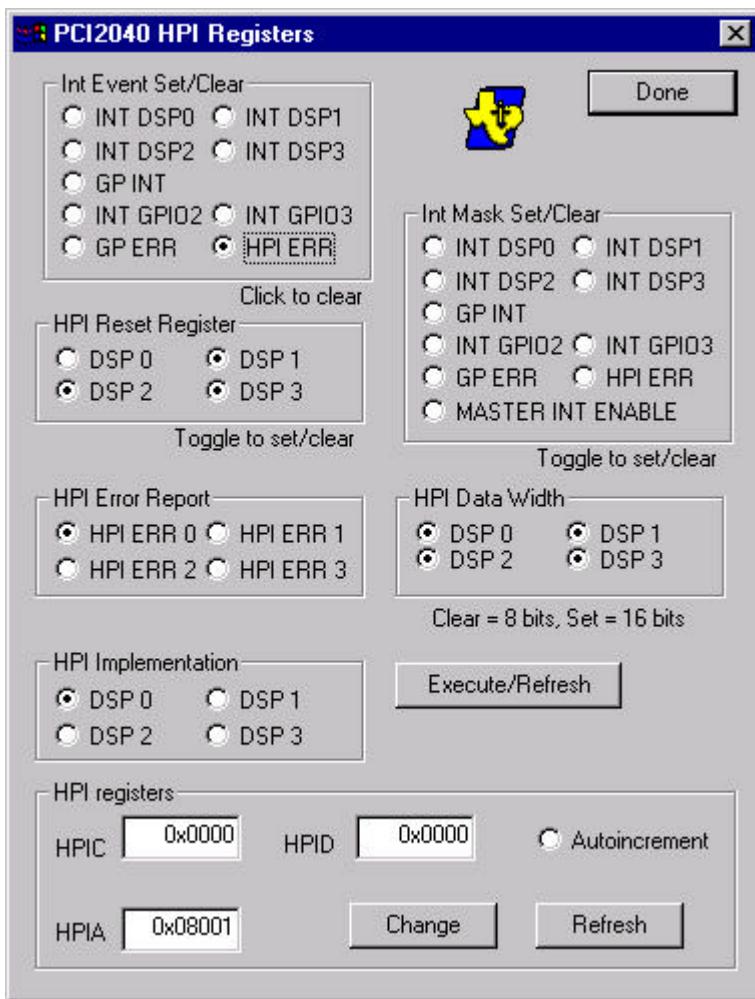
6.2 Operation

1. Verify that you can run the *evm55xgui* utility from three places:
 - Go to the Windows Start button Run... option and type: **evm55xgui**
 - Verify that the control panel is displayed. Click on **Exit** to quit.
 - Go to the DOS command prompt and type: **evm55xgui**
 - Verify that the control panel is displayed. Click on **Exit** to quit.
 - Go to the Windows Start Programs menu and select **Prototype Board GUI Control Panel** from the **TMX320VC5510 Prototype Board Host Utilities** folder.
 - Verify that the control panel is displayed. Do *not* exit at this time.
2. Verify that the PCI configuration of the Prototype Board can be displayed
 - Click on the **PCI Config.** Button.
 - Verify that the PCI configuration is displayed including the Vendor ID of 0x104C and the Device ID of 0xAC60.
 - Click on the **Done** button to return to the control panel.

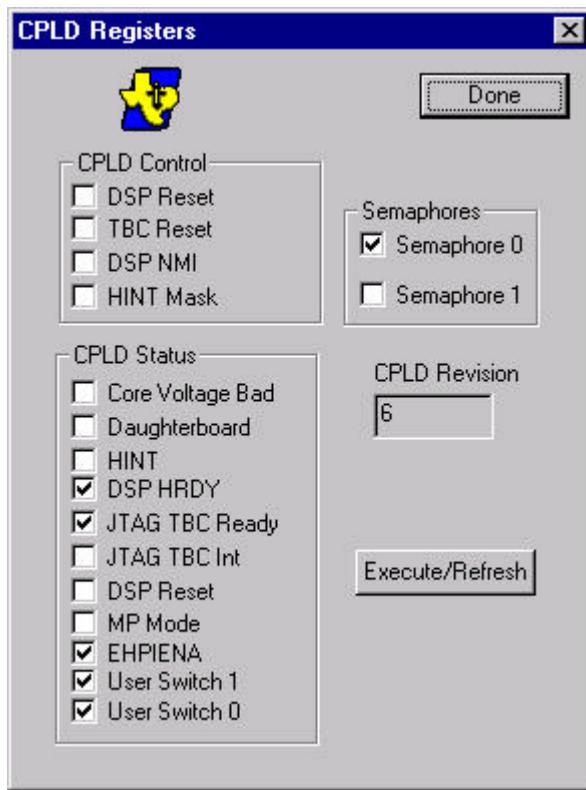
The screen capture below shows the PCI configuration information:



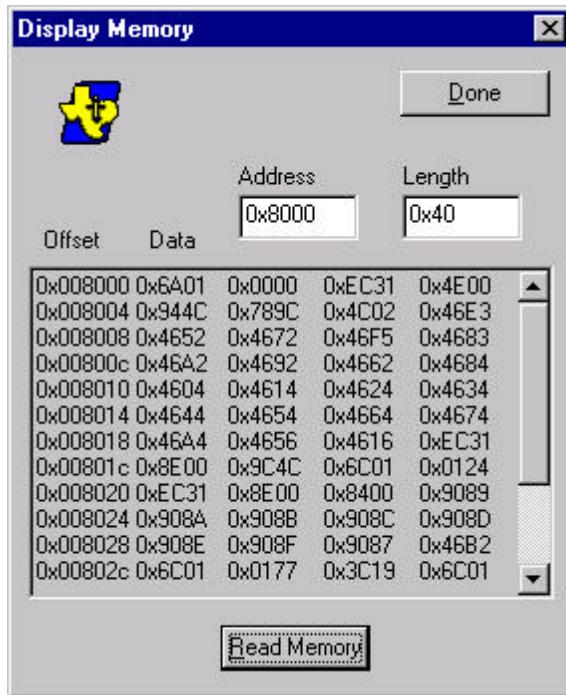
3. Verify that PCI2040 registers can be displayed.
 - Click on the **PCI2040** button in the *Registers* group.
 - Note that the HPI Data Width is set to 16 bits and the DSP 0 HPI Implementation is selected.
 - Click on the **Done** button to return to the control panel.



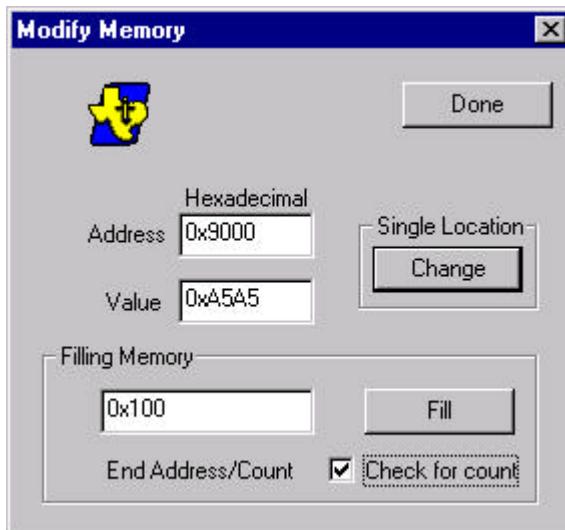
4. Verify that CPLD registers can be displayed.
 - ❑ Click on the **CPLD** button in the *Registers* group.
 - ❑ Verify that CPLD revision is displayed. Note that you can modify the CPLD registers directly from this dialog box.
 - ❑ Verify that the core voltage is not bad and that the TBC and DSP are ready.
 - ❑ Click on the **Done** button to return to the control panel.



5. Verify that DSP memory can be displayed.
 - ❑ Click on the **Display** button in the *DSPMemory* group.
 - ❑ Select a memory start address and length of data to display and click on the **Read Memory** button. For example, enter address 0x8000 and length of 0x40.
 - ❑ Verify that data is displayed similar to the screen below.
 - ❑ Click on the **Done** button to return to the control panel.

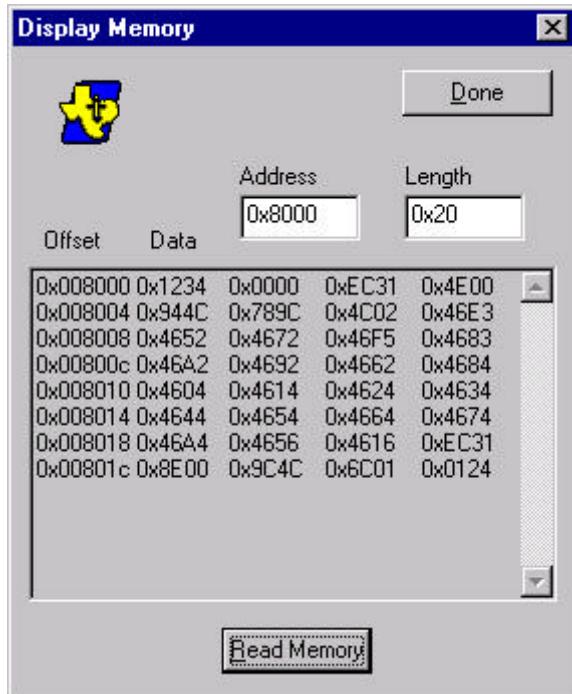


6. Verify that DSP memory can be modified.
 - ❑ Click on the **Modify** button in the *DSPMemory* group.
 - ❑ Type in address **0x8000** and a value of **0x1234**. Click on the **Change** button.
 - ❑ Type in address **0x9000** and a value of **0xA5A5**. In the *Filling Memory* box, enter **0x100** and check the count box. Click on the **Fill** button.



- ❑ Click on the **Done** button to return to the control panel.
- ❑ Click on the **Display** button in the *DSP Memory* group.
- ❑ Use the default address of **0x8000** with size of **0x20** and click on the **Read Memory** button.

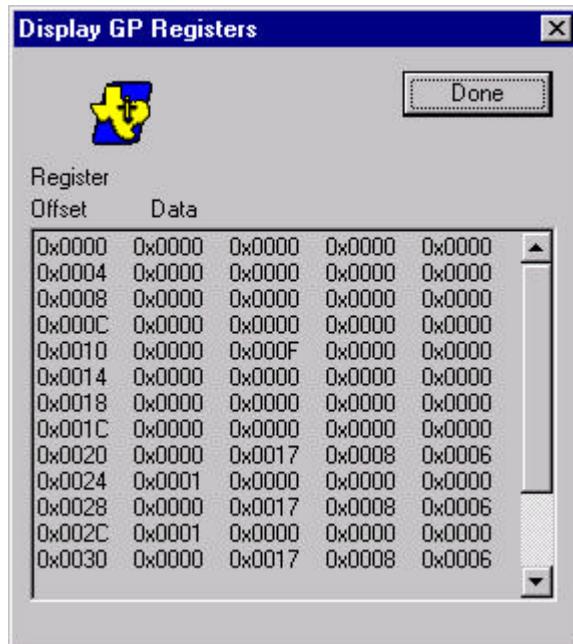
- ❑ Verify that the value at address 0x8000 is 0x1234.



- Click on the **Done** button to return to the control panel.

7. Verify that PCI2040 GP-Bus registers can be displayed.

 - Click on the **Display** button in the *PCI2040 GP-Bus Registers* group.
 - Verify that the registers are displayed similar to below.
 - Click on the **Done** button to return to the control panel.



8. Verify that PCI2040 GP-Bus registers can be modified.
 - ❑ Click on the **Modify** button in the *PCI2040 GP-Bus Registers* group.
 - ❑ Set the register offset of **0xC**, and set the value to **0xDEAD**.
 - ❑ Click on the **Change** button.
 - ❑ Verify that the value field remains set to **0xDEAD**. This is what was read from the register after the **Change** button was selected.
 - ❑ Set the register offset value to **0xD**.
 - ❑ Set the value field to **0xBEEF**, set the *Ending Offset/Count* field to **2**, set the *Check for count* box and click on the **Fill** button.



- ❑ Click on the **Done** button to return to the control panel.
- ❑ Click on the **Display** button in the *PCI2040 GP-Bus Registers* group.
- ❑ Verify that the register value at offset 0xC is 0xDEAD and the values at offsets 0xD and 0xE are 0xBEEF as shown below.

Register				
Offset	Data			
0x0000	0x0000	0x0000	0x0000	0x0000
0x0004	0x0000	0x0000	0x0000	0x0000
0x0008	0x0000	0x0000	0x0000	0x0000
0x000C	0xDEAD	0xBEEF	0xBEEF	0x0000
0x0010	0x0000	0x000F	0x0000	0x0000
0x0014	0x0000	0x0000	0x0000	0x0000
0x0018	0x0000	0x0000	0x0000	0x0000
0x001C	0x0000	0x0000	0x0000	0x0000
0x0020	0x0000	0x0017	0x0008	0x0006
0x0024	0x0001	0x0000	0x0000	0x0000
0x0028	0x0000	0x0017	0x0008	0x0006
0x002C	0x0001	0x0000	0x0000	0x0000
0x0030	0x0000	0x0017	0x0008	0x0006

- ❑ Click on the **Done** button to return to the control panel.

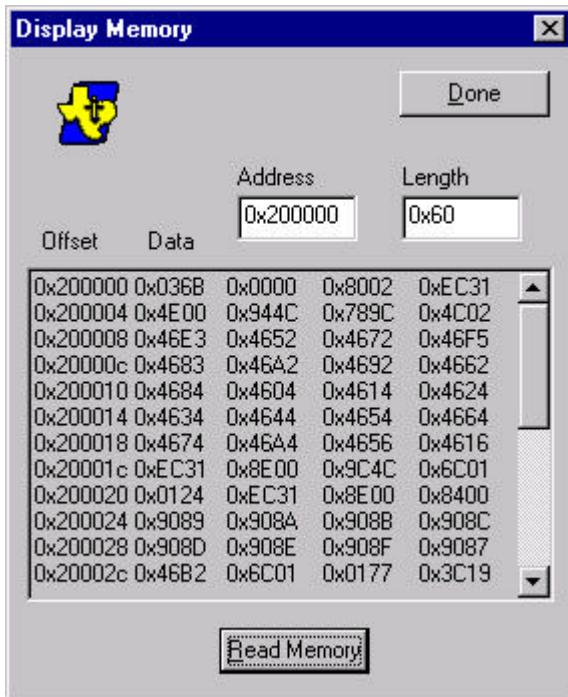
9. Verify that Flash memory can be programmed and erased.
- ❑ Click on the **Program** button in the *Flash Memory* group.
 - ❑ A file dialog box will be displayed. Browse to the \evm55x\dsp\examples\blink directory and select the file **blink.hex**. Click on the **Open** button.



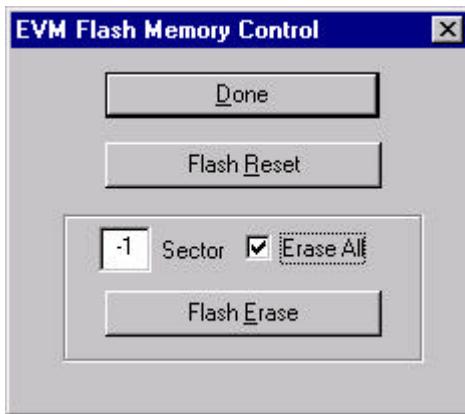
- ❑ There will be a delay of several seconds while the Flash memory is being programmed. When it is done a message box should be displayed.



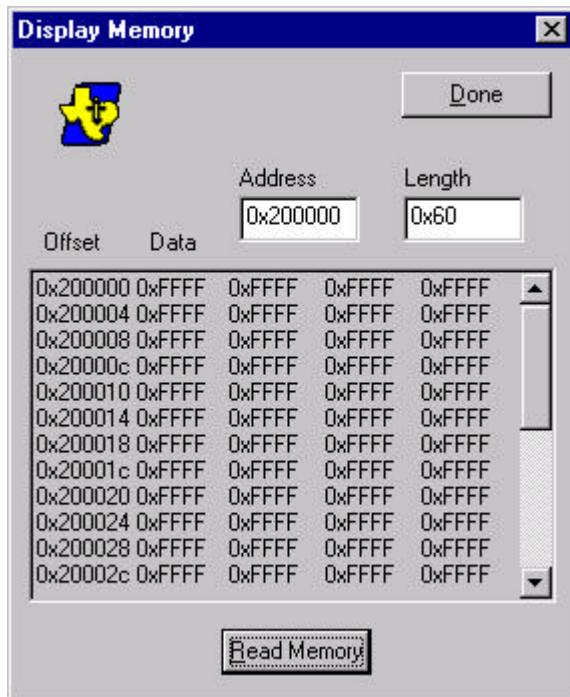
- ❑ Click on the **OK** button to return to the control panel.
- ❑ Click on the **Display** button in the *DSP Memory* group.
- ❑ In the *Address* field, type **0x200000**. In the *Length* field, type **0x60**. Click on the **Read Memory** button to display the Flash memory contents.
- ❑ Verify that the Flash memory contents are displayed as shown below.



- ❑ Click on the **Done** button to return to the control panel.
- ❑ Click on the **Erase** button in the *Flash Memory* group.
- ❑ Click on the **Erase All** checkbox and click on the **Flash Erase** button.

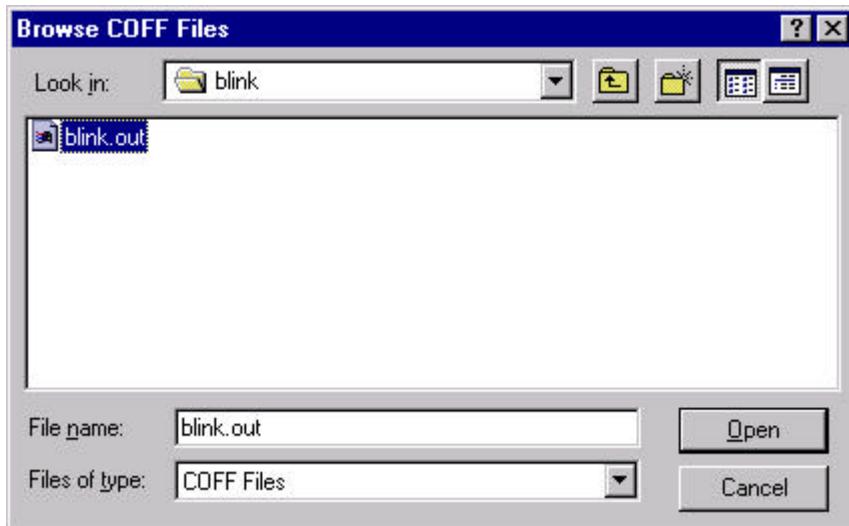


- ❑ Click on the **Done** button to return to the control panel.
- ❑ Click on the **Display** button in the *DSP Memory* group.
- ❑ In the *Address* field, type **0x200000**. In the *Length* field, type **0x60**. Click on the **Read Memory** button to display the Flash memory contents.
- ❑ Verify that the Flash memory contents are displayed as shown below (all 0xFFFF's).
- ❑ Click on the **Done** button to return to the control panel.



10. Verify that DSP applications can be loaded and executed.

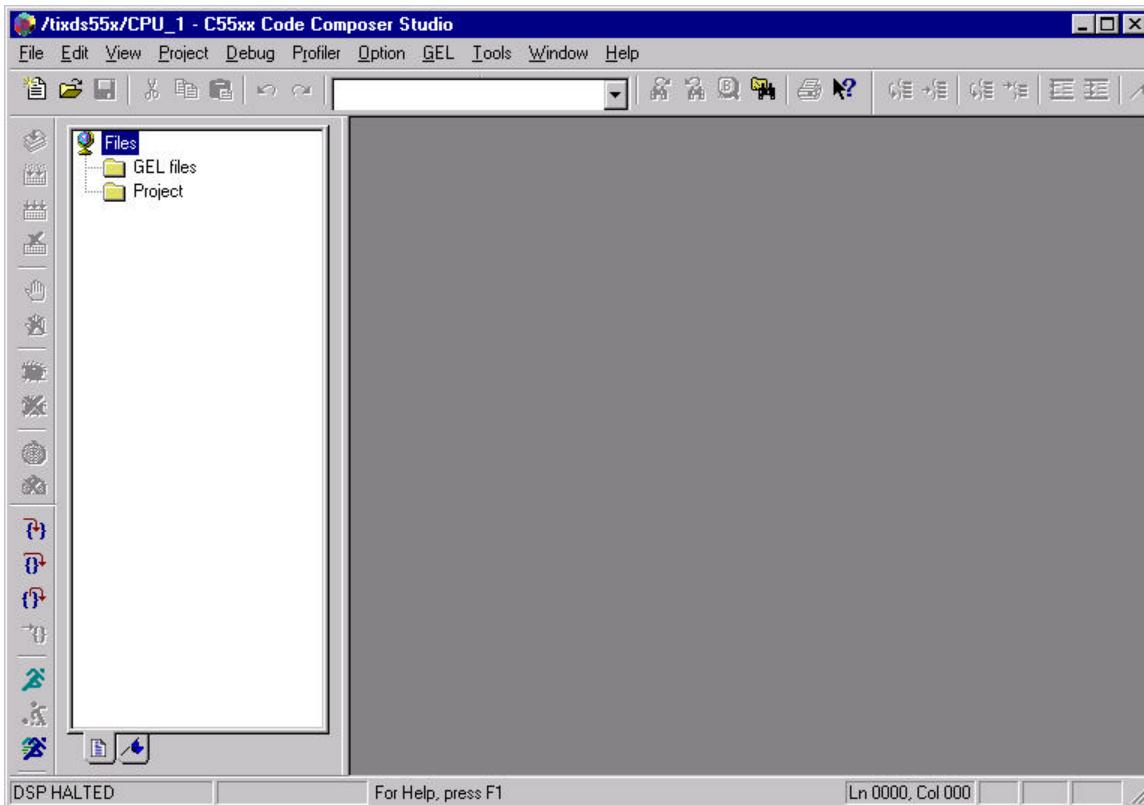
- ❑ Click on the **Load** button in the *Applications* group.
- ❑ Browse to select the **blink.out** file in the ..\target\examples\blink folder, and click on the **Open** button.



- ❑ Verify that the blink.out application was loaded and is running by checking that the three user LEDs are illuminated and extinguished sequentially.

11. Verify that Code Composer Studio can be invoked from the control panel.

- Click on the **Debug** button in the *Applications* group.
- Verify that Code Composer Studio is invoked.



- Click on the [X] button in the upper right corner of CCS and verify that the application is quit and the control panel is the focus again.

12. Verify that the board can be reset from the control panel.

- Click on the **Reset** button in the *Applications* group.
- Click on the **Load** button in the *Applications* group.
- Browse to select the **blink.out** file in the ..\target\examples\blink folder, and click on the **Open** button.
- Verify that the blink.out application was loaded and is running by checking that the three user LEDs are illuminated and extinguished sequentially.
- Click on the **Reset** button in the *Applications* group.
- Verify that the LEDs stop sequencing.

13. Verify that the confidence test can be invoked from the control panel.

- Click on the **Test** button in the *Applications* group.
- Verify that a DOS window pops up and the confidence test should start up.

```
MS C:\WINNT\system32\cmd.exe
=====
= TMS320VC5510 EVM Confidence Test, Version 2.01 =
=
= Board Index : 0 =
= Board Type : TMS320VC5510 EVM, Rev 0 =
=====
Beginning Confidence Test ...
Win32 DLL (evm55x.dll) Revision: 2.2 - Build 2
Testing Win32 DLL and Low-Level Driver access.....PASSED.
=====
= CPLD Registers Dump =
=====
CNTL : 0x00
STAT1 : 0x17
STAT2 : 0x08
CPLDREV : 0x06 <6>
SEM0 : 0x00 <Not Owned>
SEM1 : 0x00 <Not Owned>
=====
Will proceed in 5 seconds....
```

- ❑ At the end of the confidence test, a message should be displayed to press any key to return to the control panel.

```
MS C:\WINNT\system32\cmd.exe
=====
DSP 0: Host-to-DSP Interrupt Tests.....PASSED.
DSP 0: DSP-to-Host Interrupt Tests.....PASSED.
=====
===== AIC27 Codec Confidence Tests =====
=====
DSP 0: AIC27 Codec Left Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Right Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Left/Right Channel Tone Test.....PASSED.
DSP 0: AIC27 Codec Line In Loopback Test.....PASSED.
DSP 0: AIC27 Codec Mic In Loopback Test.....PASSED.
=====
===== Flash Memory Confidence Tests =====
=====
<<<WARNING>>> Test will erase Flash memory.
Press 'Y' key to perform test. Press any other key to skip -> n
=====
===== TMS320VC5510 EVM Confidence Test Complete =====
=====
Press any key to return to the control panel.
```

- ❑ Press any key to return to the control panel.
- ❑ Click on the **Exit** button on the control panel to quit the GUI testing.