

Notes on using Analog Devices' DSP, audio, & video components from the Computer Products Division  
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## Using the ADSP-2106x/21020 EZ-ICE DBWIN Utility

*Last Modified: 6/13/96*

### QUESTION:

**I am using the SHARC ( or ADSP-21020) EZ-ICE and I am trying to download an executable file to the target. I first invoke WICE060.EXE and load in the architecture file. When I then try to load the .EXE file, the emulator is unable to load the program and responds with the error message "Failure in GUI\_COFF\_LOAD\_FILE."**

### SOLUTION:

First verify that the code was compiled on a PC and not on a SUN machine with our UNIX development tools. If the latter were the case you would then need to use the CSWAP utility on the PC (this tool is provided with our floating point development tools software and is located in the \21K\BIN\ subdirectory), since executable files created with our UNIX tools have a different format from those created with a PC. The CSWAP utility is a COFF File conversion program to convert executables between platforms. The conversion can be done as follows:

**C:> CSWAP sun.exe [-o] dos.exe**

If the code was compiled on the PC, then no conversion is necessary, and we can rule this out as the cause of the error.

There are some other some tests we can perform to determine if the EZ-ICE or the target system is not functioning properly. The "Failure in GUI\_COFF\_LOAD\_FILE" error message can also be the result of the ICE's inability to write to the target's external memory. If the target is our SHARC EZ-LAB, there is a diagnostic utility called DIAG21K.EXE that is included with the EZ-LAB installation diskettes that will allow you to perform some simple memory tests.

Try loading & dumping memory to see if the ICE is able to write something to target board's external memory. Set the MEMORY\_VERIFY option to equal YES in the WICE060.INI or WICE020.INI file (located in the C:\WINDOWS directory, see Figure 1 for an example .ini file). After you make the modification, make sure you save your changes. The ICE may run a little slower because of memory verification, but an error message will come up on the screen notifying the user that the ICE cannot accurately write to memory. If this test fails, then the target memory system is either not configured correctly or is defective. You may see an error message like "Failed to get WIN\_MEM\_GET" if there is a memory problem. Check to see if the memory system is configured correctly. The WAIT register (or PMWAIT and DMWAIT registers for the 21020 case) must be set by the user with the proper wait mode and wait states for any external memory system used on the target.

### FIGURE 1 Example WICE060.INI File

; wice060.ini file  
; A Windows based, ADSP-21060 Emulator initialization  
; file which is sought in the host's Windows directory.

```
[startup_sect]
ach_file=
exe_file=
```

```
[user_sect]
base_address=0x340
do_reset=yes
```

```
; "memory_verify=[yes|no]" controls whether target memory
writes are verified.
; Default is "no".
memory_verify=no          <----- change to yes for memory test.
command_timeout=0
font_size=10
```

```
[system_sect]
verbose=yes
; "scope_loop=[yes|no]" controls self-test sequence at
startup time.
; Default is "no".
scope_loop=no             <----- change to yes for scan
test & opcode test
status_timeout=250
initial_focus=0
node_ir_widths=5
dma_stop=no
```

2) Additional testing can be done to verify that the JTAG port is working correctly. To do this, change the SCOPE\_LOOP option to ON in the WICE060.INI file

and save your changes. We'll also need to use the Windows Debug Monitor utility (DBWIN.EXE - located in the C:\WINDOWS directory, you can also drag this file from the windows directory in file manager and drop it into the the same group where your EZ-ICE icons are located). The DBWIN utility will allow us to see more detailed information on what the EZ-ICE is doing by capturing messages sent by the emulator program. By setting SCOPE\_LOOP = ON in the .ini file, a serial bit stream is sent to the JTAG port and returned back. The results of this scan test will then be displayed by DBWIN.

To begin the test, first start DBWIN.EXE, then start WICE060.EXE. The emulator will respond with the following message:

**"Running Raw JTAG Scan Test, hit a key to end . . ."**

The DBWIN screen will then provide information on the number of packets sent and the of valid packets correctly returned. If the number of valid packets returned is not quite 100 % (for example, 99.5%), there may be a problem with the JTAG/EZ-ICE hardware or the problem can be caused by a defective ribbon cable.

An example of what the DBWIN's updated screen will look like after the user terminates the scan test:

```
VALDLL: hModule 0x0002
VALDLL: not loaded
1 JTAG device(s) detected on JTAG chain
Entered RAW JTAG scope loop test - press any key to exit
51642 valid packets out of 51642 total packets, 100.0 % valid
```

After you stop the JTAG raw scan test, an Opcode Test is immediately performed on the target DSP. This test will verify if the target DSP is correctly functioning by sending a single instruction stream to be executed by the DSP. The emulator should be respond with the following message:

**"Running Opcode Scan Test, hit a key to end . . ."**

If this test fails, the DSP may be defective, or you should take a closer look at potential high speed design issues ( i.e. decoupling capacitors, ground plane, ....). Upon hitting a key to terminate the Opcode Test, the user will see an updated DBWIN screen similar to the following:

```
Entered Opcode Scan scope loop test- press any key to exit
222300 valid packets out of 222300 total packets, 100.0 % valid
```

If the JTAG Scan Test and Opcode Test pass without any problem, it would be safe to assume that the ICE is operating correctly and is not defective. The Memory Verification Test can then be done to see if the target system's memory is incorrectly configured or defective.

In summary, the "Failure in GUI\_COFF\_LOAD\_FILE" error message can be caused by:

- 1) Failure to use CSWAP to convert an executable file from a UNIX to PC platform.
- 2) Incorrectly configured external memory or defective memory.
- 3) Defective JTAG/EZ-ICE hardware or ribbon cable ( JTAG scan test failure).
- 4) Defective DSP or improper board layout (Opcode Test failure).