# 2008T CDX & SOFTWARE UPDATE TEST INSTRUCTIONS

**PURPOSE:**

The purpose of these instructions is to outline the process of testing the functionality of both the CDX computer and the dialysis machine software update process.

**EQUIPMENT NEEDED:**

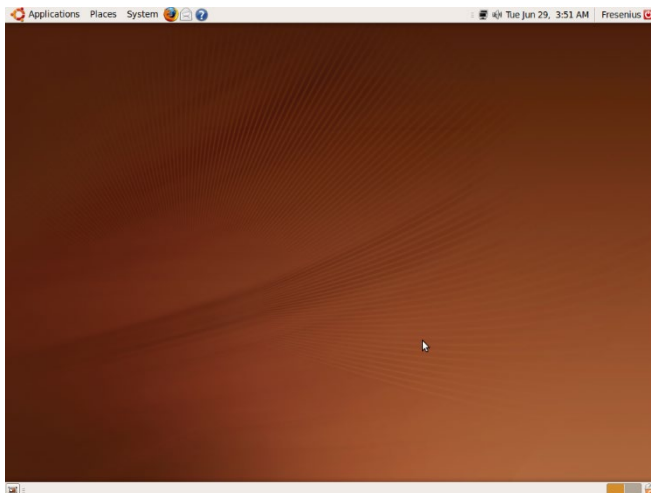2008T CDX & Software Update Test Kit (P/N 190755)

**PROCEDURES:**

The following sections need to be performed in order to verify the functionality of both the CDX computer and the dialysis machine software update process:

- CDX Functionality Test

- Software Update Functionality Test

➢ **CDX Functionality Test**

There are different versions of the Linux Operating System (Linux OS) installed on the 2008T CDX computer.  To properly test the CDX functionality, perform the following steps to identify the operating system.

1. Power on the 2008T machine.

2. Once the machine has completely powered on, press the blue key on the keyboard.

3. The screen will change to show the Linux Operating System screen.

4. To determine which CDX Functionality Test to perform, identify the installed operating system using Figure 1.



<div align="center">
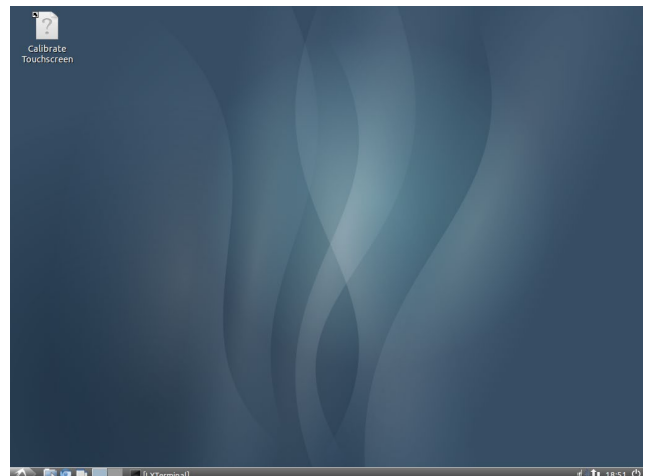
Ubuntu 9.04 OS        Lubuntu 12.04/14.04.4 OS

**Figure 1 – Linux OS Screen**

</div>

**WARNING:** *Use recommended ESD procedures when handling electronic devices.*

**NOTE:**  If the CDX screen does not look like one of the screens in Figure 1, power the machine off and remove the currently installed Compact Flash or mSATA on the UI-MICS w/CDX board and install the Compact Flash or mSATA included in the 2008T CDX & Software Update Test Kit.  Once installed, return to step 1.


5. In order to test the system properly, the Linux Operating System needs to be identified. Press the Ctrl Alt T at the same time on the keyboard to bring up a Terminal screen.

6. On the Terminal screen type lsb_release –a and press the Enter key.

7. Locate the "Description:" line in the on screen results; this is the Linux Operating System version.  Proceed accordingly:

   - For Ubuntu 9.04 OS, go to page 3.

   - For Lubuntu 12.04 OS, go to page 6.

   - For Lubuntu 14.04 OS, go to page 9.

## CDX Functionality Test (Ubuntu 9.04 OS)

**NOTE:** Since the 2008T has an internal Wi-Fi adapter, the Linux OS will attempt to locate any wireless access point nearby. If it finds any, cancel or escape out of any prompts or messages that show up. The Wi-Fi will be tested as part of the CDX test script.

1. Place the wireless router (included in the kit) on top of the machine and power it on.

2. Locate the Ethernet cable that is included with the wireless router.

3. Plug one end of the Ethernet cable into the Ethernet port on the rear of the machines card cage.

4. Plug the other end into one of the LAN ports on the back of the router. These are usually numbered ports. Do not connect into the Internet port.

5. Plug in the CDX Test Script flash drive (included in the kit) into the USB port on rear of the machines card cage.

6. "Media Folder" should auto-start and open showing the "Scripts" folder. If the flash drive does not auto-start, then open the "Media Folder" under "Places," Double-click the CONFIRM key to open the "Scripts" folder.

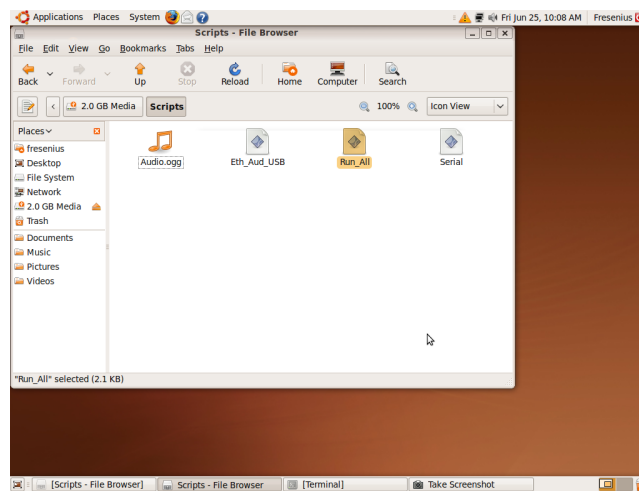7. Select the "Run_All" file and double-click the CONFIRM key (Figure 2).



**Figure 2**

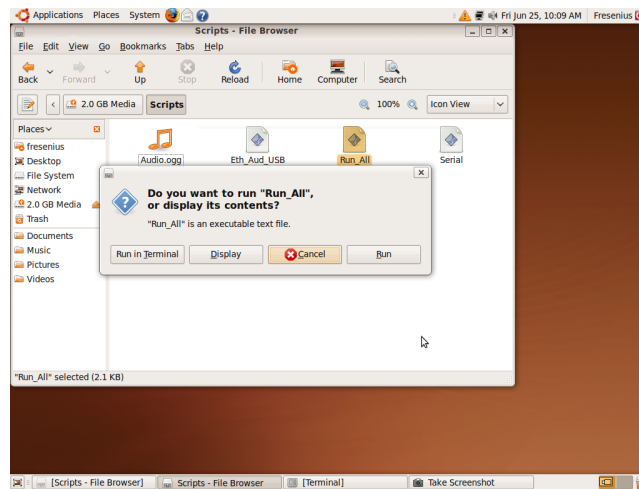8.  Click the "Run in Terminal" option (Figure 3).



**Figure 3**

9.  Once the "Run in Terminal" button is clicked, an active terminal running the scripts will be displayed (Figure 4).
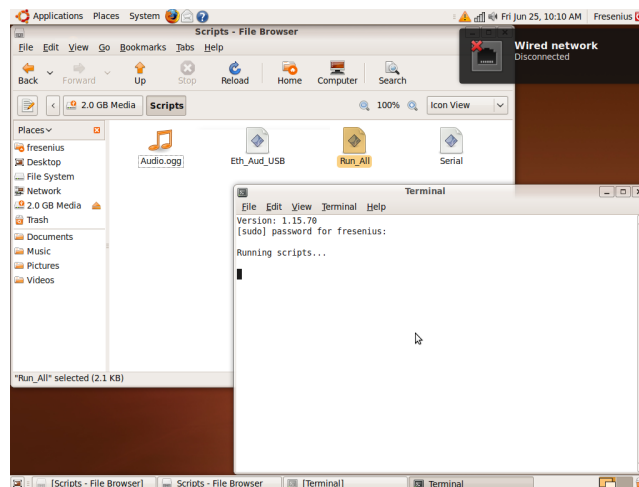


**Figure 4**

10. Once the script for the Ethernet and Wireless test is complete, the tester will be prompted with "Do you want to play the song? y or n".

11. Select "y" on the keyboard and then press the ENTER key.

12. The screen will prompt you with "Do you hear the audio? y or n?".  Do not answer right away; wait at least 10 to 15 seconds for the audio file to become loud enough to be heard.

13. Answer the question by selecting "y" or "n" on the keyboard and then press the ENTER key. Your response is used to conclude the speaker test results.

14. Once all script tests are complete, a text document named "Test_Results" will automatically open with the tests' results (Figure 5).
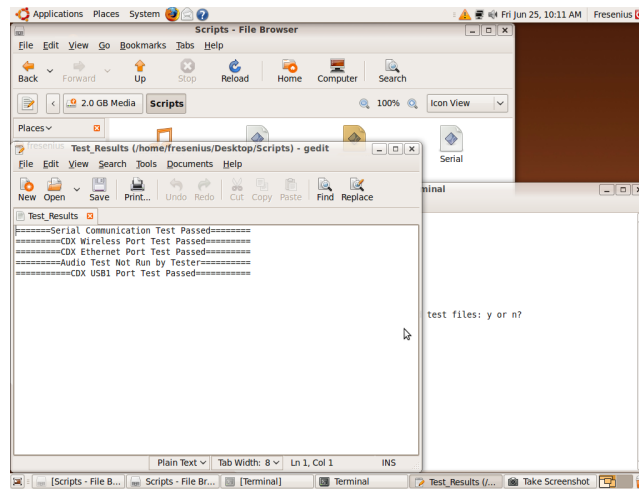


**Figure 5**

> **NOTE:** There could be some output on the terminal which is dependent on failures. This can be used to debug problems.

15. Once the tests are completed, "Do you want to delete the files: y or n?" will be prompted. If all of the tests have passed in the Test Results screen, these files should be deleted before the product is released for use. If failures occur, these files can be used to troubleshoot.

CDX Script Troubleshooting Tips:

- Reset the wireless router to default setting. Refer to the routers operator's manual for assistance.

- The Wi-Fi test uses an SSID of linksys; make sure the wireless routers SSID is set correctly.

- The Ethernet and Wi-Fi are tested by sending data packets (pinged) to the wireless router address 192.168.1.1; make sure the routers address setup is using the same configuration.

- Locate the "Test_Results" document in the Scripts folder located on the desktop to further investigate failures.

- Ping results are output to files named Eth_Results and Wireless_Results and can also be found in the Scripts folder.

16. **IMPORTANT STEP:** If the compact flash or mSATA was swapped in order to perform these tests, reinstall the original compact flash or mSATA before releasing the machine for use.

**WARNING:** *Use recommended ESD procedures when handling electronic devices.*

**CDX Functionality Test (Lubuntu 12.04 OS)**

1.  Place the wireless router (included in the kit) on top of the machine and power it on.

2.  Locate the Ethernet cable that is included with the wireless router.

3.  Plug one end of the Ethernet cable into the Ethernet port on the rear of the machines card cage.

4.  Plug the other end into one of the LAN ports on the back of the router.  These are usually numbered ports.  Do not connect into the Internet port.

5.  Plug in the CDX Test Script flash drive (included in the kit) into the USB port on rear of the machines card cage.

6.  Verify that the "Removable medium is inserted" dialogue box pops up indicating the drive has been mounted (see Figure 6).  If the flash drive does not auto-mount, then remove the USB flash and then plug it back into the rear of the card cage.
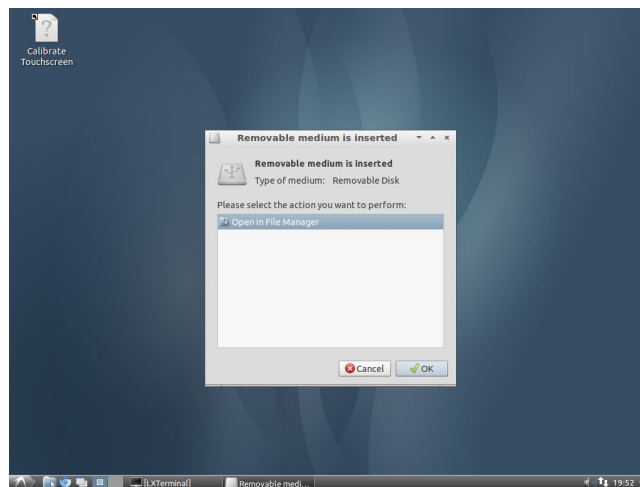

**Figure 6**

7.  Open the Applications Menu.  Select "System Tools" from the menu and then choose the entry named "CDX Test Scripts.".  Click the "CDX Test Scripts" option (Figure 7).
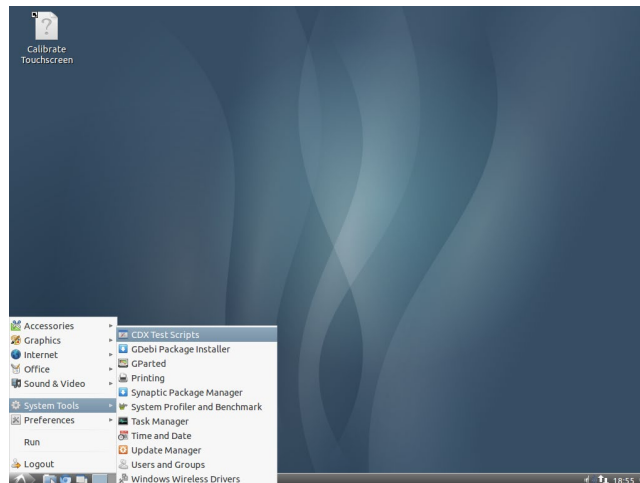

**Figure 7**

8.  Once the scripts are selected from the Applications Menu, an active terminal running the scripts will be displayed.  Once the script for the Ethernet and Wireless test is complete, the tester will be prompted with "Do you want to play the song: y or n?" (Figure 8)
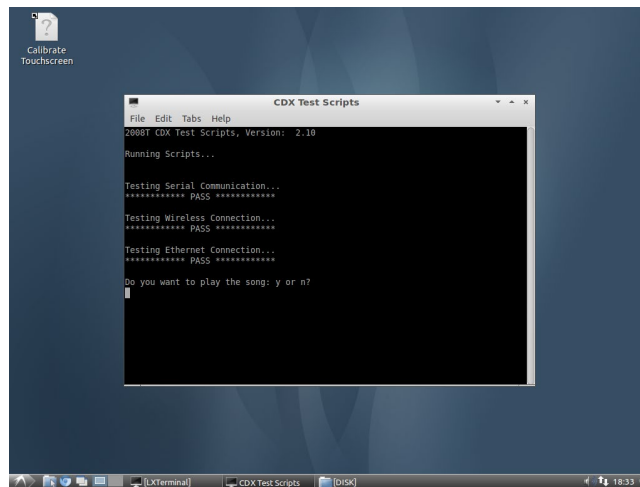


**Figure 8**

9.  Select "y" on the keyboard and then press the ENTER key.

10. The screen will prompt you with "Do you hear the audio: y or n?"  (Figure 9).  Do not answer right away; wait at least 10 to 15 seconds for the audio file to become loud enough to be heard.
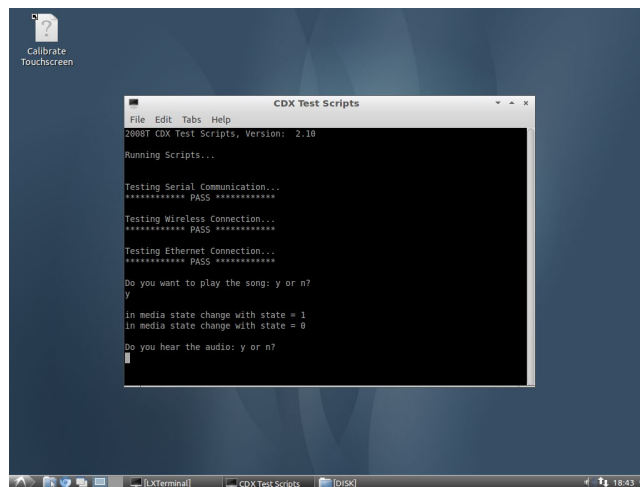


**Figure 9**

11. Answer the question by selecting "y" or "n" on the keyboard and then press the ENTER key. Your response is used to conclude the speaker test results.

12. Once all script tests are complete, a text document named "Test_Results" located in the "/usr/bin/Scripts/" folder can be viewed with the tests' results (see Figure 10).
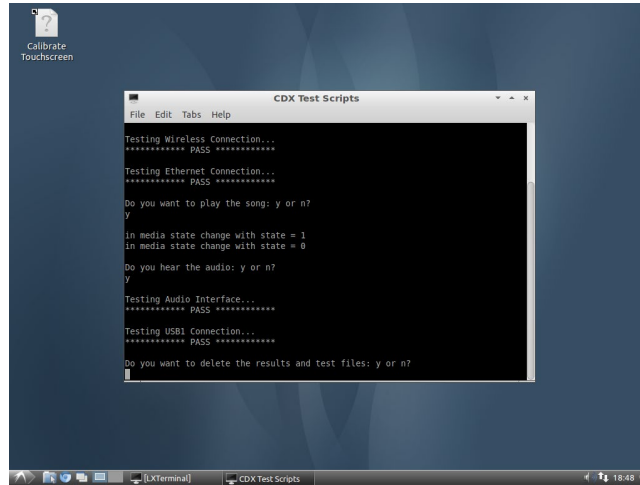


**Figure 10**

**NOTE:** There could be some output on the terminal which is dependent on failures. This can be used to debug problems.

13. Once the tests are completed, "Do you want to delete the files: y or n?" will be prompted. If all of the tests have passed in the Test Results screen, these files should be deleted before the product is released for use. If failures occur, these files can be used to troubleshoot.

    CDX Script Troubleshooting Tips:

    ▪ Reset the wireless router to default setting. Refer to the routers operator's manual for assistance.

    ▪ The Wi-Fi test uses an SSID of linksys; make sure the wireless routers SSID is set correctly.

    ▪ The Ethernet and Wi-Fi are tested by sending data packets (pinged) to the wireless router address 192.168.1.1; make sure the routers address setup is using the same configuration.

    ▪ Locate the "Test_Results" document in the Scripts folder in the "/usr/bin/" directory to further investigate failures.

    ▪ Ping results are output to files named Eth_Results and Wireless_Results and can also be found in the Scripts folder.

14. **IMPORTANT STEP:** If the compact flash or mSATA was swapped in order to perform these tests, reinstall the original compact flash or mSATA before releasing the machine for use.

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**CDX Functionality Test (Lubuntu 14.04 OS)**

**NOTE:**   Before continuing, perform the process outlined in Appendix A to configure the memory window in the CDX Gen 3 BIOS.

1.  Place the wireless router (included in the kit) on top of the machine and power it on.

2.  Locate the Ethernet cable that is included with the wireless router.

3.  Plug one end of the Ethernet cable into one of the LAN ports on the back of the router. These are usually numbered ports.  Do not connect into the Internet port.

4.  Plug in the CDX Test Script flash drive (included in the kit) into the USB port on rear of the machines card cage.

5.  Verify that the "Removable medium is inserted" dialogue box pops up indicating the drive has been mounted (see Figure 11).  If the flash drive does not auto-mount, then remove the USB flash and then plug it back into the rear of the card cage.
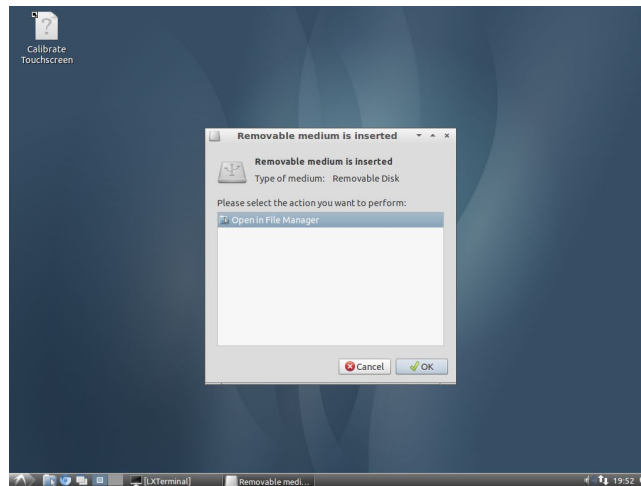


**Figure 11**

6.  Open the Applications Menu.  Select "System Tools" from the menu and then choose the entry named "CDX Test Scripts.".  Click the "CDX Test Scripts" option (Figure 12).
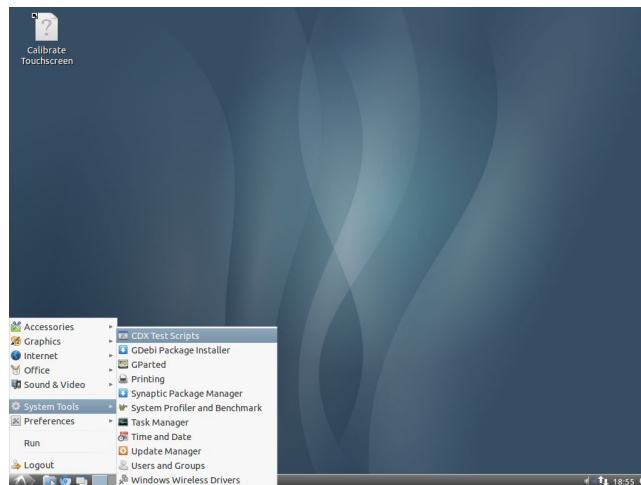


**Figure 12**

7. Once the scripts are selected from the Applications Menu, an active terminal running the scripts will be displayed. Verify that the Serial Communication and Wireless Connection Tests Passed.

8. When prompted on the screen, plug the Ethernet cable into the Ethernet Port on the back of the machine and press any key on the keypad to continue the test.

9. Observe the results outputted to the Lxterminal and verify that the Ethernet Connection Test passed.

10. Once the script for the Ethernet test is complete, the tester will be prompted with "Do you want to play the song: y or n?" (Figure 13)
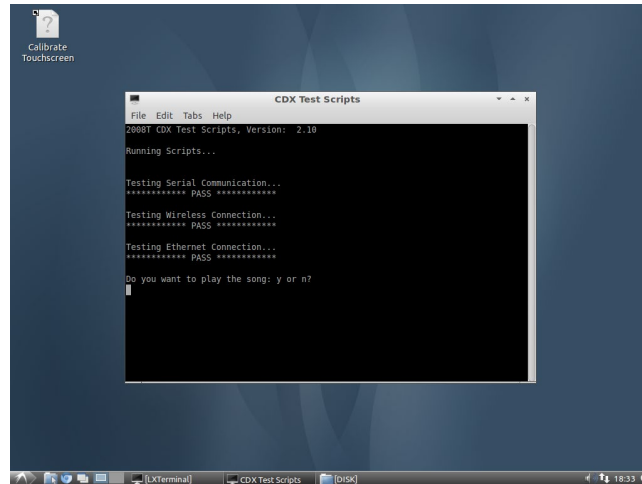

**Figure 13**

11. Select "y" on the keyboard and then press the ENTER key.

12. The screen will prompt you with "Do you hear the audio: y or n?" (Figure 14). Do not answer right away; wait at least 10 to 15 seconds for the audio file to become loud enough to be heard.
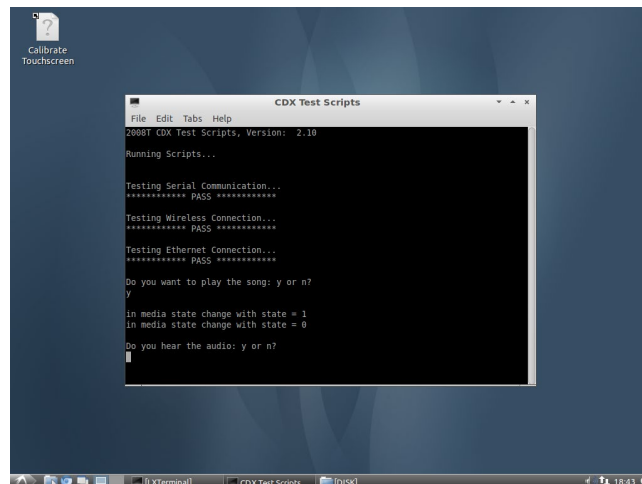

**Figure 14**

13. Answer the question by selecting "y" or "n" on the keyboard and then press the ENTER key. Your response is used to conclude the speaker test results.

14. Once all script tests are complete, a text document named "Test_Results" located in the "/usr/bin/Scripts/" folder can be viewed with the tests' results (see Figure 15).
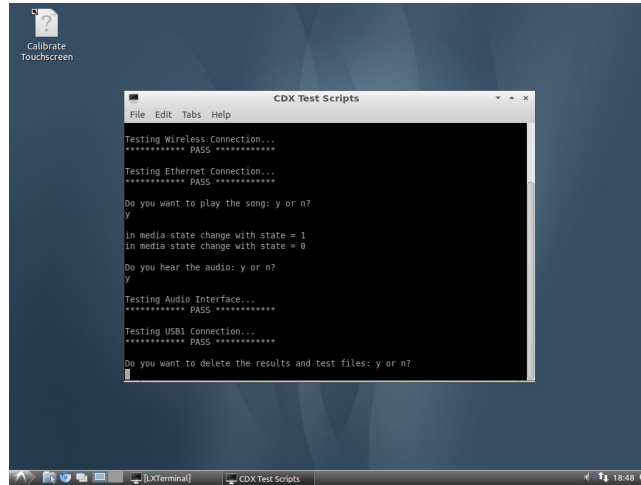

**Figure 15**

**NOTE:** There could be some output on the terminal which is dependent on failures. This can be used to debug problems.

15. Once the tests are completed, "Do you want to delete the files: y or n?" will be prompted. If all of the tests have passed in the Test Results screen, these files should be deleted before the product is released for use. If failures occur, these files can be used to troubleshoot.

CDX Script Troubleshooting Tips:

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▪ The Wi-Fi test uses an SSID of linksys; make sure the wireless routers SSID is set correctly.

▪ The Ethernet and Wi-Fi are tested by sending data packets (pinged) to the wireless router address 192.168.1.1; make sure the routers address setup is using the same configuration.

▪ Locate the "Test_Results" document in the Scripts folder in the "/usr/bin/" directory to further investigate failures.

▪ Ping results are output to files named Eth_Results and Wireless_Results and can also be found in the Scripts folder.

16. **IMPORTANT STEP:** If the compact flash or mSATA was swapped in order to perform these tests, reinstall the original compact flash or mSATA before releasing the machine for use.

**WARNING:** *Use recommended ESD procedures when handling electronic devices.*

➢ **Software Update Functionality Test**

1. Put the machine into Service Mode.

**NOTE:** The machine is placed into Service Mode, by turning the machine power on and waiting for the message Press CONFIRM for Service Mode to appear.  Once it appears, press the CONFIRM key and the message will change to Machine in Service Mode.  After the System Initializing process is complete, the machine will be in Service Mode.

2. Plug in the CDX Test Script flash drive (included in the kit) into the USB port located on the right-hand side of the display/fascia assembly.  The port is covered by a protective flap.

3. On the Service Mode screen, select the Update Software screen button and press the CONFIRM key.  The screen will change.

4. Select Functional Board screen button and then press the CONFIRM key.

5. Select the Start Update screen button and then press the CONFIRM key.

6. Press the CONFIRM key again and the CDX Test Script flash drive will be searched for a valid Functional Software file.  Since the flash drive does not contain update software, the test passes when the screen displays the message, "NO FILE FOUND FROM USB".

**NOTE:** If the USB device is not communicating properly or is otherwise disconnected, the message "NO COMM. FROM USB" is displayed.

## Appendix A

CDX Gen 3 BIOS Memory Window Configuration

The CDX Gen 3 system has 4GB of RAM memory.  When booting into a 32 bit OS, only 1.9GB of memory will be available. FKC, for example, uses a USB memory stick with a 32 bit installer to install an image.  The lack of available memory will cause the FKC installer software to fail claiming there is less than 2GB of memory.

The resolution is to configure the CDX Gen 3 BIOS correctly. The following step outlines this process.

1.  Power on the 2008T machine

2.  Using the blue key on the keyboard select the CDX screen

3.  As soon as the America Megatrends (AMI) screen appears press the <Del> key to enter the BIOS setup

4.  The main BIOS screen appears as shown. If the project version does not show SOM 9461, then stop here.
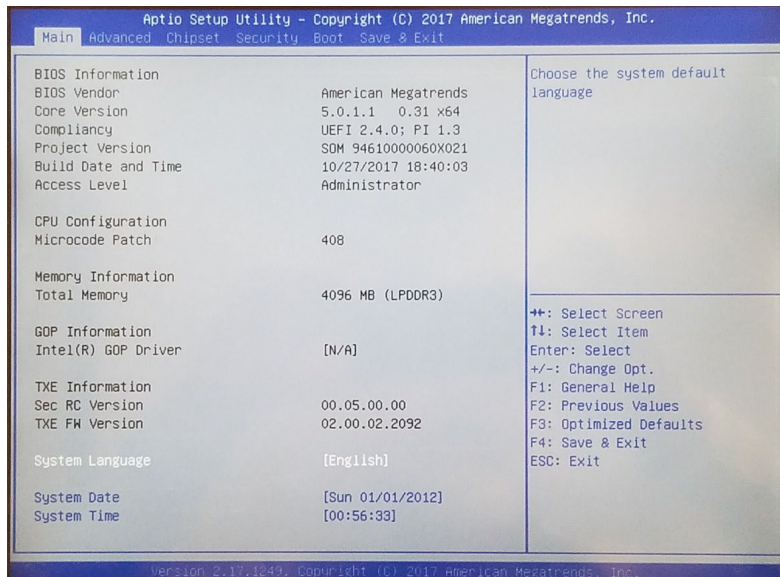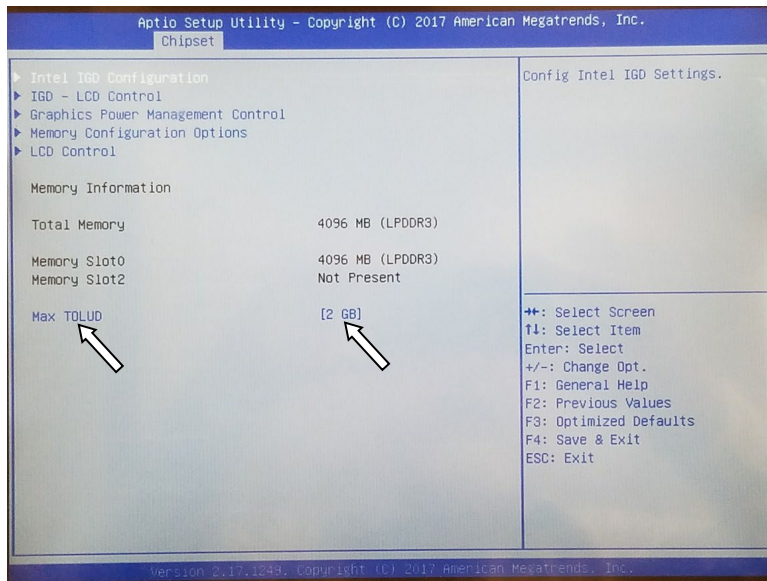


5.  Using the right arrow key, highlight "Chipset"
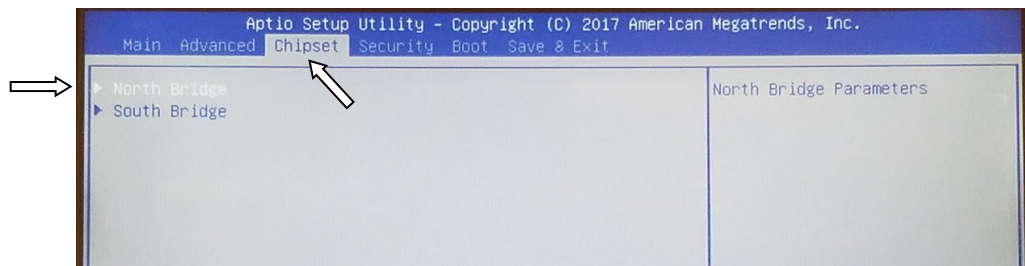


6.  The line for "North Bridge" should already be highlighted.  If not, use the up and down arrow keys to highlight "North Bridge".

7.  Once highlighted, press the <Enter> key

8.  The North Bridge configuration screen will appear



9.  At the bottom left of this page is the setting "Max TOLUD". The default setting is 2GB

10. Using the up and down arrow keys to highlight this setting

11. Press the <Enter> key

12. A popup menu will appear showing several values for this parameter
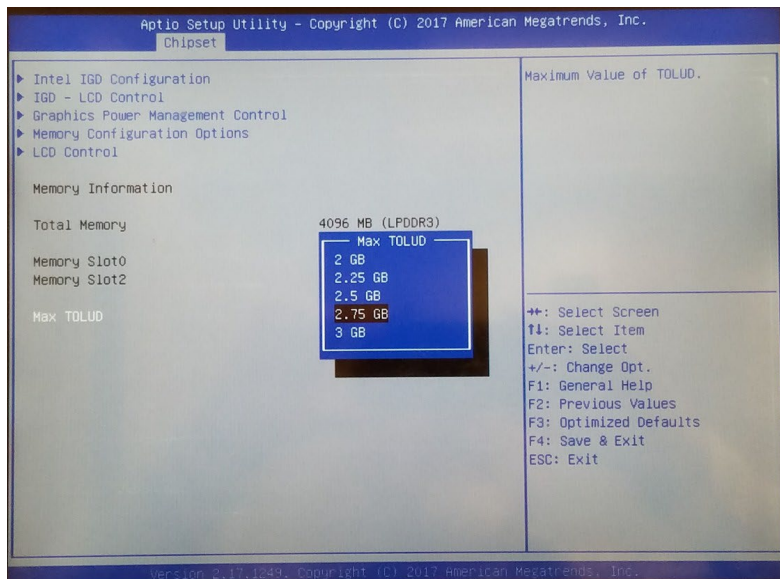


13. Use the up and down arrow keys to highlight the 2.75GB settings

14. Press the <Enter> key

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15. The North Bridge configuration page will re-appear.  Note that the parameter for "Max TOLUD" is now set for 2.75GB
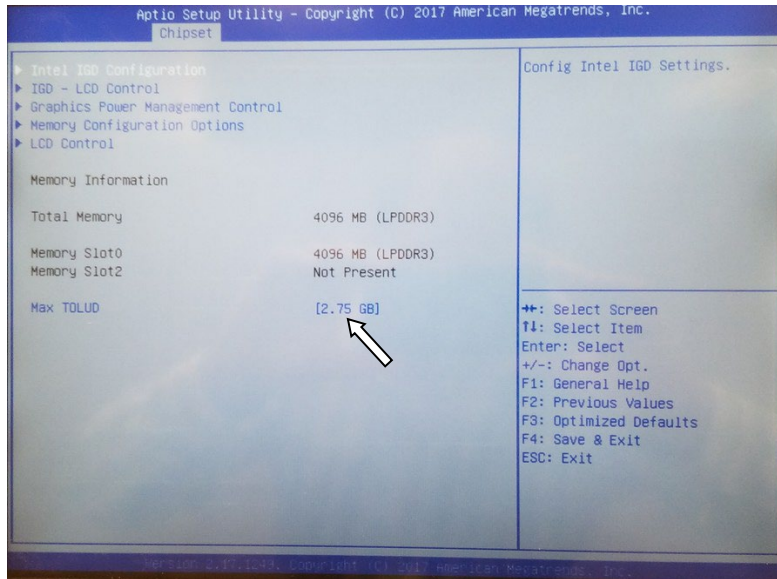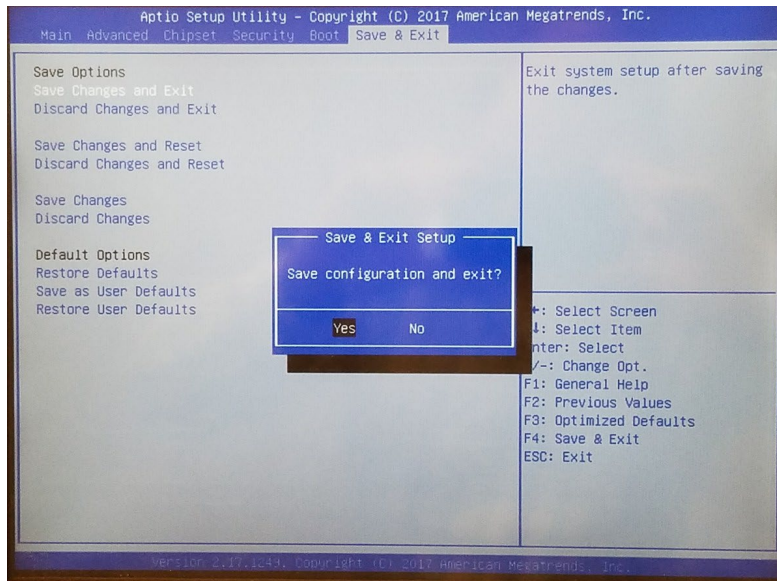


16. Press the <Esc> key once and the Chipset configuration page will return.

17. Use the right arrow key to highlight "Save & Exit"

18. The "Save & Exit" screen will appear
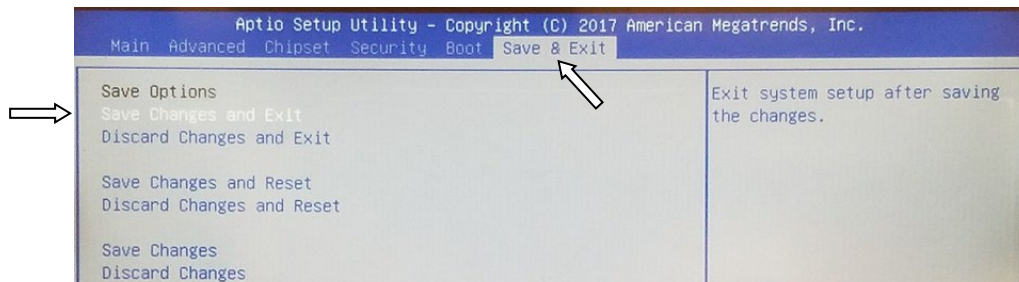


19. The "Save Changes and Exit" should be highlighted, if not Use the up and down arrow keys to highlight it

20. Press the <Enter> key

21. The "Save configuration and exit" prompt will appear



22. Verify that "Yes" is highlighted, if not use the left and right arrow keys to highlight it.

23. Press the <Enter> key

24. The machine will save the changes and reboot.