e-Stewards Laptop Battery Test Bench

Description and Instructions v. 2.0.7

July 22, 2015

The e-Stewards Laptop Battery Test Bench program is designed to assist in determining the acceptability of batteries entering the reuse market in accordance with the criteria of the E-Stewards Standard v2.0. This criteria has been revised and is found in Sanctioned Interpretation #2 of the e-Stewards Standard.

The new test is designed to be conducted on the laptop while containing the battery and is accomplished in about 10 minutes after the laptop has been fully charged and then unplugged. It is only designed and meant to be used for laptop batteries.

The program is a small Linux-based program (an ISO file) that can be loaded into each laptop's device system's memory via boot media (CD, USB) to be removed after the program loads, so other systems can be booted with the same media, thus allowing multi system testing with minimal media. The program is loadable on a variety of platforms. The program does the following:

CAPACITY DETERMINATION

First the tester reads the smart chip to determine the percentage of original OEM capacity of the fully charged used battery as well as the present capacity after fully charging. These two figures are to be provided in accordance with the standard to all buyers and receivers of the batteries or laptop containing the battery.

LOAD TEST

To be acceptable to send to customers, e-Stewards the battery needs to survive and pass a 10 minute stress, high-load test. Using Prime95, the system is stressed to raise power demand for a 10 minute period. If the drop in mAh is greater than 25% at any time during that period, or if the computer/battery cannot complete the test, the battery fails.

Prime95 stresses the processor (CPU) and it will cause the system to generate higher temperatures. Loud fan noise is normal. If the system powers off during Test 3 this is likely due to a bad/dead battery or a cooling system problem (i.e clogged fan vent or a fan not functioning).

REPORTED RESULTS

At the end of the load test the Tester lets you know if the Battery passed and the Tester also reports the OEM Capacity, and the Present Capacity. Those are two values that will need to be reported to customers in accordance with the Standard (see Sanctioned Interpretation).

Instructions

Downloading and loading the Tester

First, the ISO file found on the e-Stewards website needs to be burned to a CD/DVD, or alternatively, use "USBWriter" software to download and write the ISO to the USB stick. Download at:

http://sourceforge.net/projects/usbwriter/files/USBWriter-1.3.zip/download

Instructions for this software can be found at:

http://sourceforge.net/p/usbwriter/wiki/Documentation/unetbootin

Once you have the media with the ISO, insert the CD or USB media into the laptop to be tested and restart that device. It will then boot right into the tester.

Note: If you are having difficulty transferring the ISO file on the website to bootable media that functions, please contact Angelo Godbey (angelo@ban.org) at BAN.

Starting the Tester

1. The system should be fully charged and then unplugged from the power grid and then turned off.

2. Insert USB stick or CD into system and boot from USB or CD. On a Mac you need to push the option key down after turning the machine on until the menu screen appears and you can choose the boot media (e.g. CD). On a PC it will normally boot from the media automatically. If not, you need to go into the BIOS and change the boot order.

3. First a debug, test option screen appears. Hit enter on Test option unless you wish to create a debug report to send to our engineers.

4. Run the test by following the on-screen instructions.

5. When the test is finished, the user can eject test media if they have not already done so, and/or power off the unit. The current beta release does not allow for using software controlled CD eject buttons (i.e. all Apple laptops, HP Envy, etc). The user needs to power cycle the laptop and use other methods to eject the media.

Happy Testing. We would love to hear your input on this tester.

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