



BAPCo[®] EEcoMark v2 User Guide

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1.0 General

1.1 Terminology

UUT (Unit Under Test): The system running the EEcoMark v2 workload for energy consumption evaluation.

Controller: System running the Harness software, which manages the EEcoMark v2 workloads on the UUT.

Power meter: Device for measuring power consumption of the UUT.

2.0 Setup

2.1 Minimum System Requirements

Controller

- CPU: Intel Celeron 420 or greater (or equivalent)
- RAM: 512MB or higher
- HDD: 5GB free space

Under Under Test

- CPU: Intel Celeron 420 or greater (or equivalent)
- RAM: 1GB or higher
- HDD: 5GB free space

2.2 Hardware Setup

Refer to Figure 1 for HW setup

- Connect UUT to meter with USB cable
- Connect UUT to gigabit Ethernet switch
- Connect Controller to gigabit Ethernet switch
- Connect meter to Controller over GPIB interface
- Connect meter to power outlet

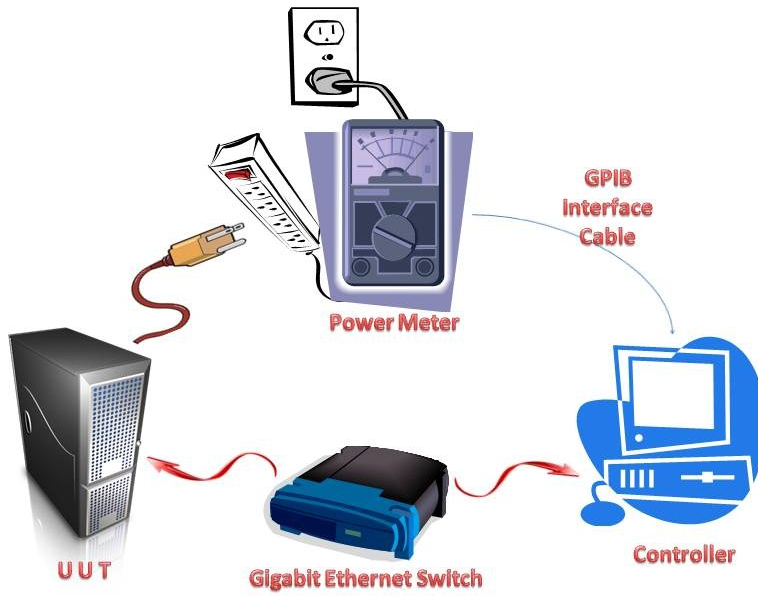


Figure 1

2.3 Software Setup

- Install UUT software from the EEcoMark v2 DVD on UUT system
- Install Controller software from the EEcoMark v2 DVD on Controller system
- Install meter driver software on Controller system

3.0 Configuration

3.1 Guidelines

For best results when running EEcoMark v2, BAPCo recommends following these guidelines when preparing test systems.

- Administrative rights: An account with administrative privileges is required to install and run EEcoMark v2 on the UUT and Controller.
- User Account Control: Disable UAC on both the Controller and the UUT
- Uninstall known conflicting software: Pre-existing software installations may conflict with the software installed by EEcoMark v2.
- Require password on wake up: Disable this option under the advanced power management properties for the profile being used for the test.
- Screen saver: Disable screen saver.
- Windows Defender: Disable Windows Defender.
- Firewalls: Disable any firewall software.
- Windows Update: Disable Windows update.
- Anti-virus software: Uninstall AV software.
- Wake on LAN: Enable Wake on LAN in the UUT BIOS, if supported.

4.0 Usage

4.1 Running EEcoMark v2

Configure the test

Launch the Controller GUI by double clicking the BAPCo shortcut on the desktop. The Controller GUI will appear (Figure 2)

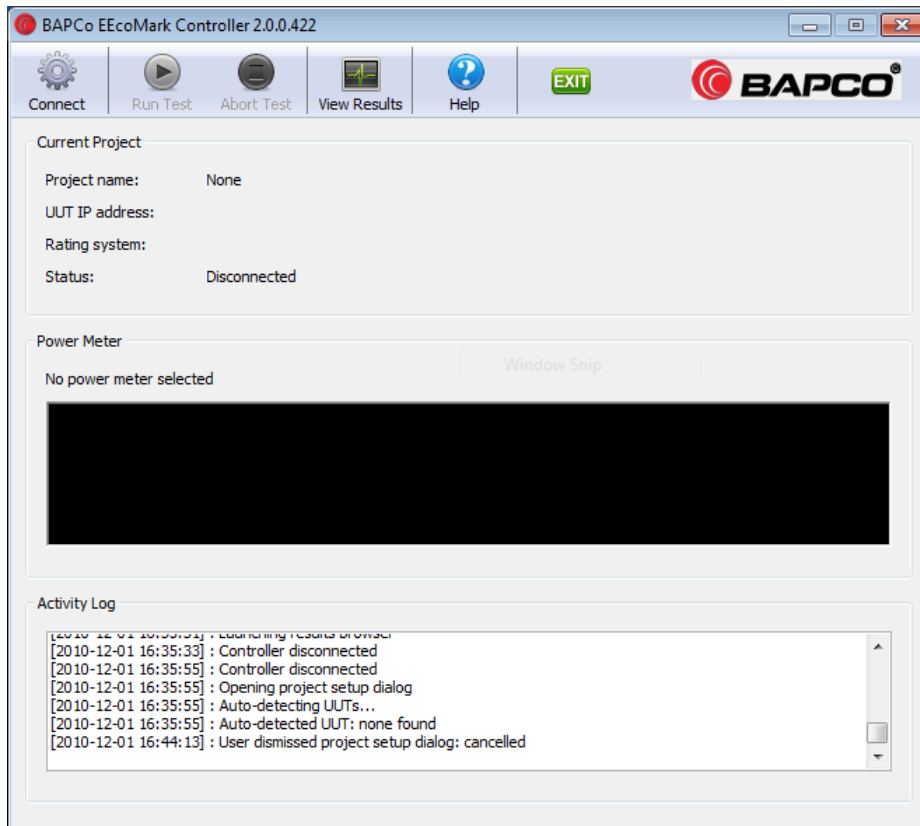


Figure 2

- Click 'Connect' to access the connection dialog box pictured below.
 - Input project name and UUT IP address. The UUT and Controller must be on the same subnet.
 - Select a rating system.
 - Select a meter. Note: the selected meter must be the same as the meter being used for the test.
 - Note: The EEcoMark Version 2 rating system does not report Energy Star 4.0 or 5.0 results in the results browser. To test for energy regulation compliance, please

select either the Energy Star 4.0 or Energy 5.0 rating system template.

- Choose the meter address, if different from the provided default.
- Click 'OK' to commit the values (Figure 3)

The screenshot shows a dialog box titled "UUT and Meter Connection". It features a close button in the top right corner. The main area contains the following elements:

- Project name:** A text input field.
- UUT IP address:** A dropdown menu with a "Refresh" button to its right.
- Rating system:** A dropdown menu currently set to "EEcoMark Version 2" with an "Advanced" button to its right.
- Power Meter:** A section enclosed in a rounded rectangle containing:
 - Meter type:** A dropdown menu set to "Null meter (simulated readings)".
 - Meter connection:** A dropdown menu set to "Null port".

At the bottom of the dialog are "OK" and "Cancel" buttons.

Figure 3

The 'Run test' button is now green, indicating that the Controller is connected and ready to start EEcoMark v2. Click the 'Run Test' button to execute the test (Figure 4).

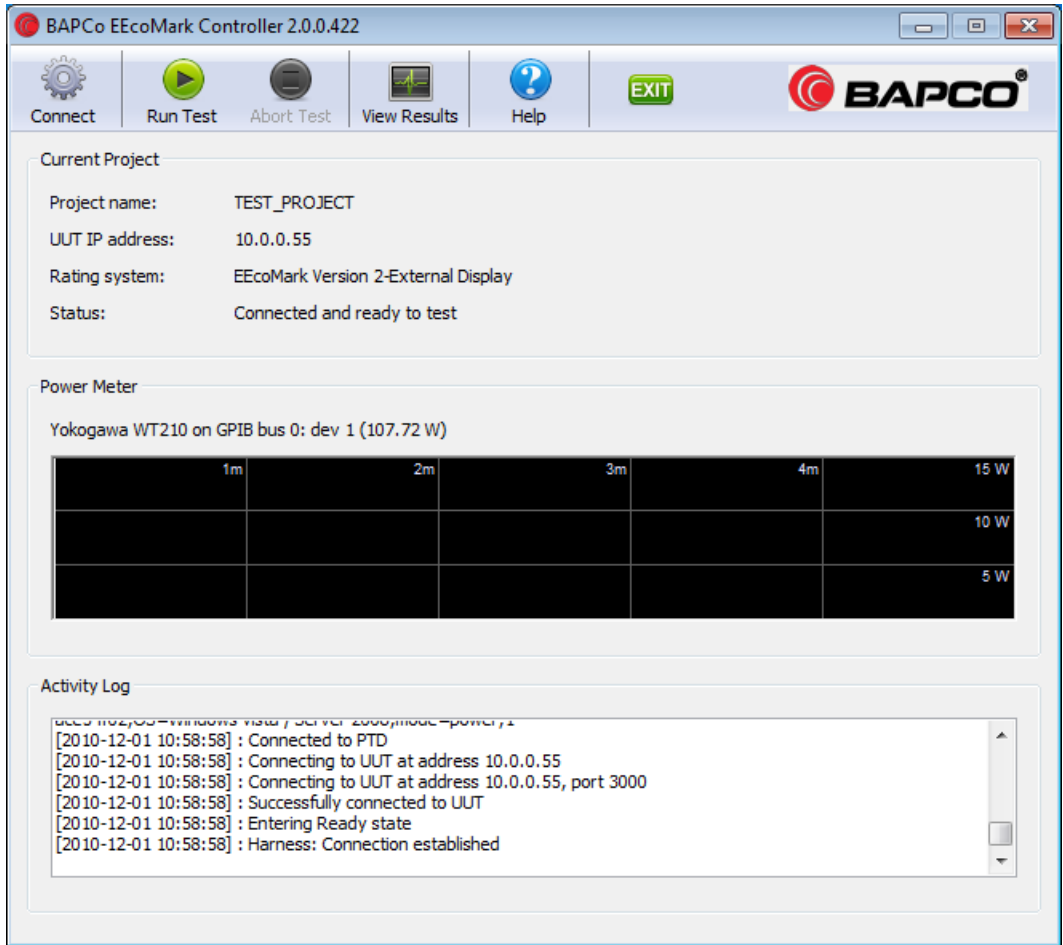


Figure 4

Command line parameters

- --verbose, -v: enable verbose logging. Example: eecomarkcontroller.exe -v
- --config, -c: specify path to config file (requires project parameter).
- Example: eecomarkcontroller.exe -c="C:\path\config_file.cfg" -p=new_project
- --project, -p: specify projectname. Example: eecomarkcontroller.exe -p=new_project.
- --iterations, -i: specify the number of iterations to run the EEcoMark v2.

Note: When using the --iterations command line parameter, WOL (WakeOnLan) must be supported and enabled on the UUT in order for EEcoMark v2 to automatically cycle from the completion of one iteration to the start of the next iteration.

--scenarios, -r: Specify which scenario(s) to EXCLUDE (PRAdvanced, PRBasic, MRCreate, or MRConsume). When specifying multiple scenarios each item is separated by a comma with no spaces.

--help, -h: Displays help.

4.2 Viewing Results

The results browser will appear on the Controller system at the conclusion of a successful test and display the scores for the completed run. Expected run time for the active workload portion is approximately 75 minutes, though this may vary with UUT configuration.

To view results for energy regulation compliance testing executed using either the Energy Star 4.0 or Energy Star 5.0 rating system, click on the 'Categories' tab in the results browser window.

Results from previous tests can be viewed by using the drop down menu to select the project file to load in the results browser. For additional details, click the corresponding tab to display the desired information.

The default location for results files is: C:\Program Files\BAPCo\EEcoMarkController\Results

Results Summary Tab (Figure 5)

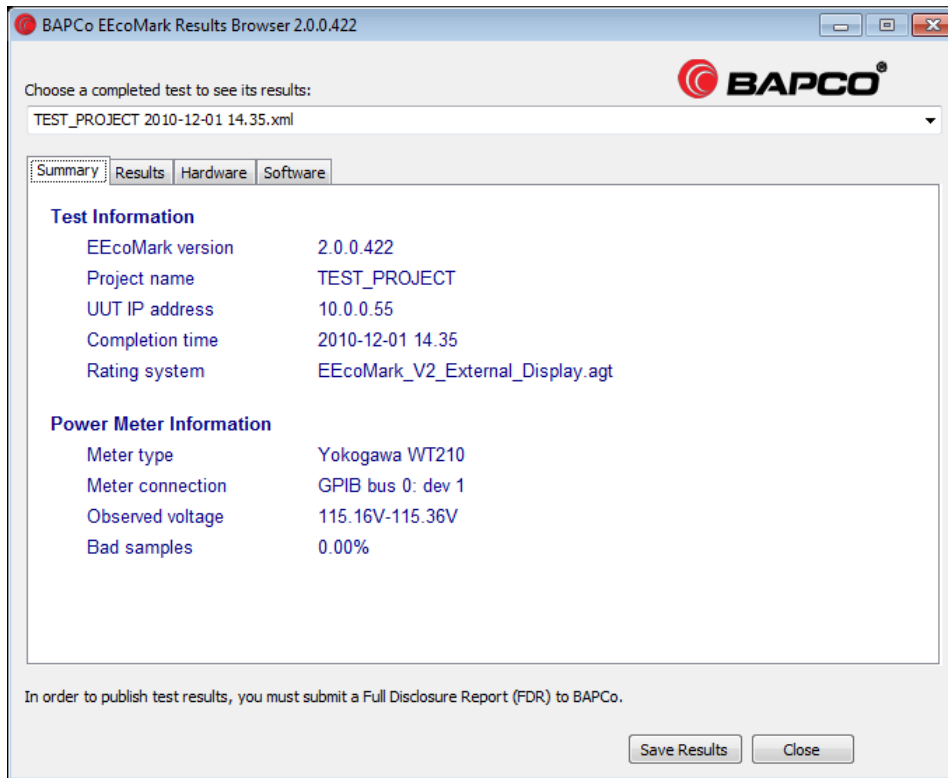


Figure 5

Results Hardware Tab (Figure 6)

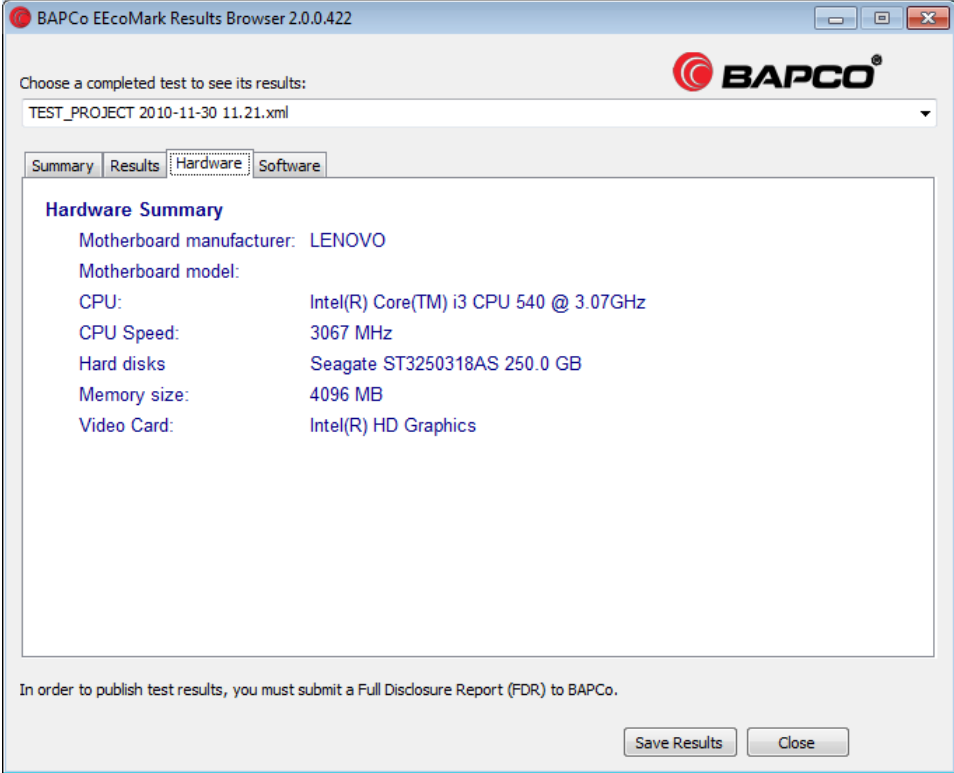


Figure 6

Results Software Tab (Figure 7)

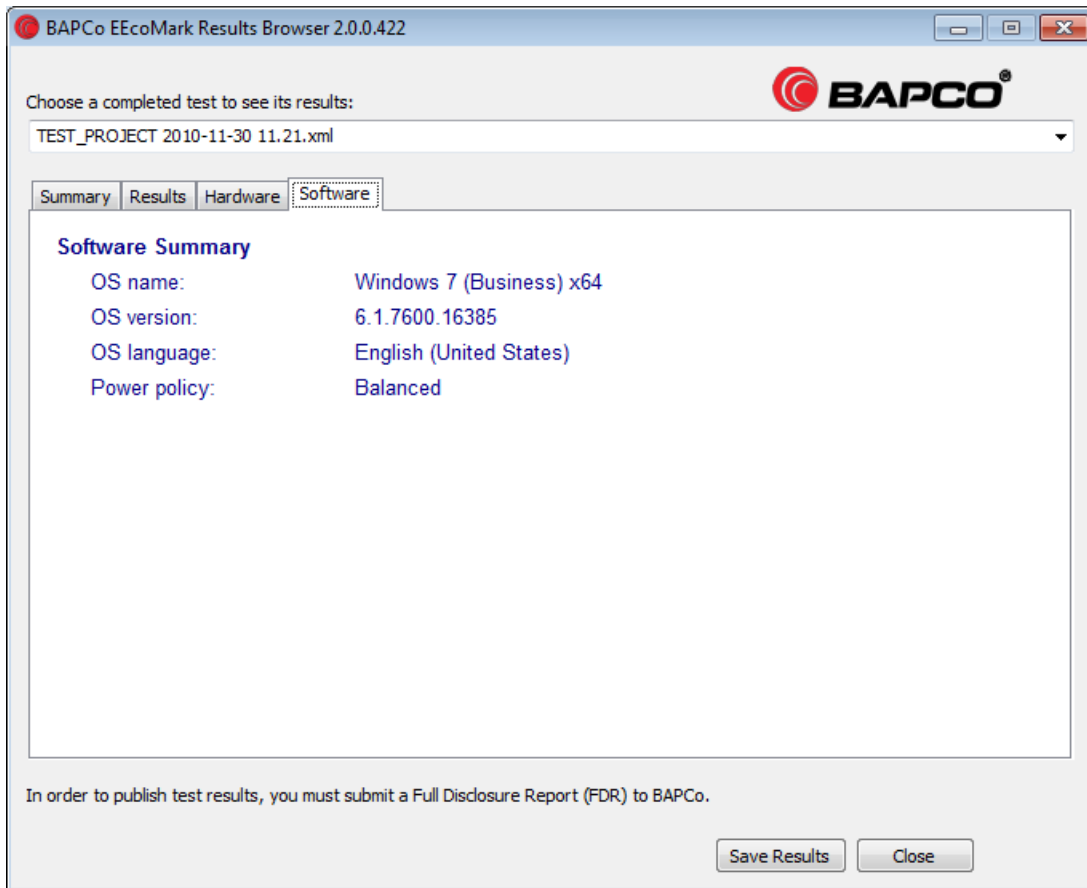


Figure 7

Results Scoring Tab (Figure 8)

The screenshot shows the BAPCo EEcoMark Results Browser 2.0.0.422 window. The title bar includes the text "BAPCo EEcoMark Results Browser 2.0.0.422" and standard window controls. Below the title bar is the BAPCo logo and the instruction "Choose a completed test to see its results:". A dropdown menu shows "TEST_PROJECT 2010-11-30 11.21.xml". There are four tabs: "Summary", "Results" (which is selected), "Hardware", and "Software".

The main content area displays "Iteration #1" and a table with the following data:

	idle shortterm	idle longterm	sleep	Productivity Basic	Productivity Advanced	Media Rich Creation	Media Rich Consumption
Avg Pwr (W)	27.98	30.09	1.74	--	--	--	--
Time (Sec)	--	--	--	1365	221	758	777
Energy (Wh)	--	--	--	12.22	2.41	9.41	7.45
Performance	--	--	--	98.43	101.02	100.91	--

Below the table, "Iteration #2" is visible but mostly obscured by a scrollbar. At the bottom of the window, there is a note: "In order to publish test results, you must submit a Full Disclosure Report (FDR) to BAPCo." and two buttons: "Save Results" and "Close".

Figure 8

Results Scoring Tab (Figure 9)

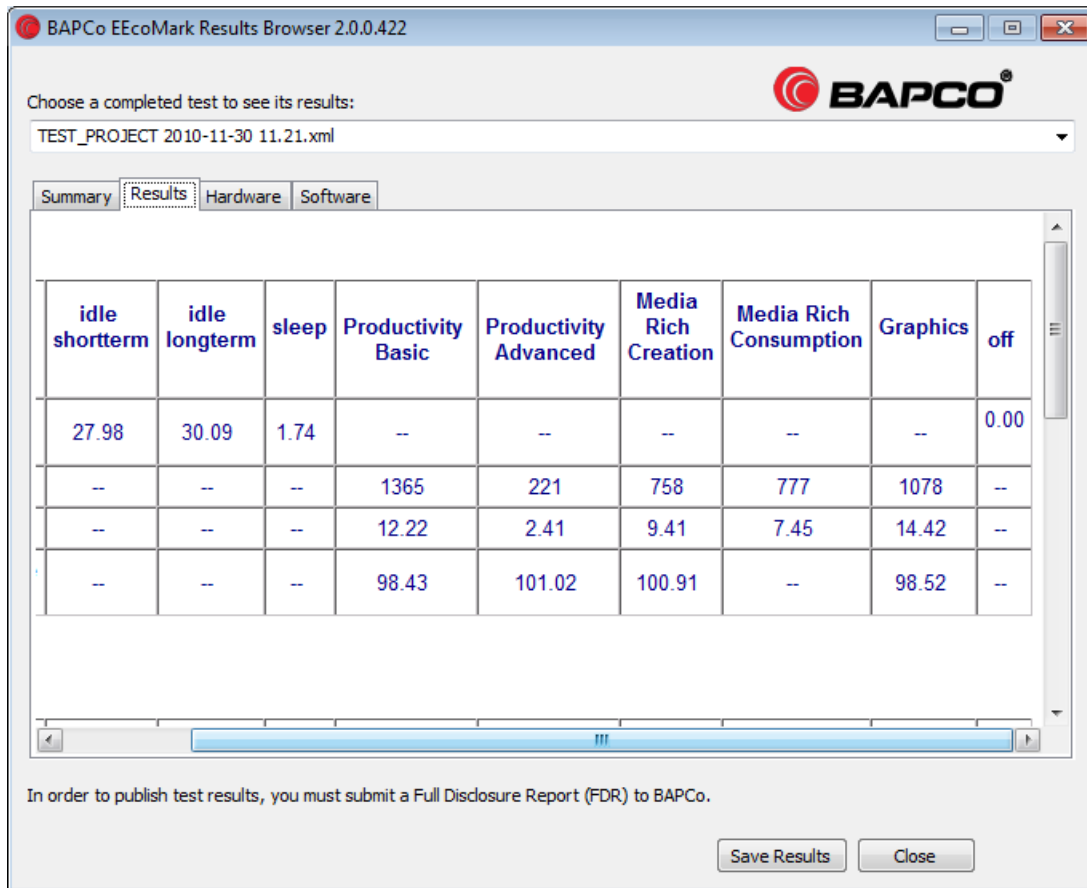


Figure 9

4.3 Submitting Results (FDR Submission)

BAPCO accepts test results for publication at www.bapco.com

Launch the Controller GUI, and click the View Results button.

Select the desired project from the drop down menu.

Click the 'Save FDR' button and choose a path to save the file.

Email the FDR to report@bapco.com.

5.0 Applications

5.1 Applications Installed and/or used by EEcoMark v2

EEcoMark v2 applications list (grouped by scenario)

Productivity Basic

- Microsoft® Internet Explorer® 9
- Microsoft® Excel 2007
- Microsoft® Outlook 2007
- Microsoft® PowerPoint® 2007
- Microsoft® Word 2007
- WinZip 11

Productivity Advanced

- Microsoft® Excel 2007
- Microsoft® Word 2007

Media Creation

- Adobe® Photoshop® Elements 6
- iTunes 7.6 (and QuickTime 7.4)
- Windows Live Movie Maker 14
- Windows Media Player 11
- Media Creation Consumption
- iTunes 7.6
- Windows Media Player 11

Graphics

- Adobe® Flash® Player 9
- Adobe® Premiere® Elements 9
- Adobe® Photoshop® Elements 6
- Microsoft® Internet Explorer® 9
- Windows Live Movie Maker 14
- Windows Media Player 11

6.0 Workloads

6.1 Productivity Basic Scenario

The Productivity Basic scenario models creating and replying to emails, viewing and modifying a presentation, working with text documents, and spreadsheets. Web browsing and archiving and unarchiving digital photos are also included.

6.2 Productivity Advanced Scenario

The Productivity Advanced scenario models working with text documents to save as PDF, mail merge, and word count operations. Actions performed in Microsoft Excel include financial calculations and inventory management.

6.3 Media Creation Scenario

The Media Creation scenario models the usage of media tools in content creation. Actions include converting music files to MP3 format, working with digital photos, and encoding a movie project at low and medium quality resolutions.

6.4 Media Consumption Scenario

Windows Media Player is used to play back media files: an audio track, a short movie titled 'Obey the Squirrel', and a clip from the movie 'Elephant's Dream'.

6.5 Graphics Scenario

The Graphics scenario models playback of HD video in a media player, viewing of video content in a web browser, and the creation of video content.

7.0 Support

7.1 Error Log Locations

Error logs are located in the following locations

- Controller log - C:\Program Files\BAPCo\EEcoMarkController\Results\Project_Name\logfile.txt
- UUT test log - C:\Program Files\BAPCo\EEcoMarkUUT\Bin\message.csv
- EEcoMark error screen shot - C:\Program Files\BAPCo\EEcoMarkController\Results\Project_Name\error.jpg

7.2 Contacting BAPCo Support

If an error occurs during a test, please do the following:

Verify that the EEcoMark v2 installation is the latest available version by checking the version number. Updates can be downloaded from BAPCo, if the installation is down level.

If the installation is the latest version, check the BAPCo website to see if the problem is a known issue with a posted fix, or workaround procedure

If the error still occurs, collect the files listed above in Section 7.1.

Archive the error files using an archive utility such as 7zip, Winzip, etc.

Email the archive to support@bapco.com.

Include details of the failing configuration: CPU, OS and service pack level, failure rate, steps to reproduce the failure, etc

Frequently Asked Questions

- Does all OEM add-on software need to be removed from the OS installation?
- Is a power meter required to run the benchmark?
- Can the Controller support more than one UUT?
- Does EEcoMark v2 require two systems to run (one UUT and one Controller)?
- How do I interpret EEcoMark v2 performance scores?
- How do I connect the power meter, UUT, and Controller?
- Which meter(s) does EEcoMark v2 support?
- What is the default Device ID (DevID) for the power meter?
- Which non-English language operating systems does EEcoMark v2 support?
- Where are Results/FDR files located?
- Does EEcoMark v2 support multiple iterations?
- Can EEcoMark v2 be used to evaluate Energy Star v4 or v5 compliance on non-US voltages?

Does all OEM add-on software need to be removed from the OS installation?

For best results, BAPCo recommends that any known conflicting software be removed from the installation. This includes, but is not necessarily limited to, any applications that are included with the benchmark such as Microsoft Office 2007, Adobe Photoshop Elements, WinZip, et al.

Is a meter required to run the benchmark?

No. EEcoMark v2 can be run without a power meter by selecting the 'null meter' option when setting up the test parameters in the Controller GUI. However, when selecting the 'null meter' option, power data readings are simulated and will not reflect the actual energy consumption of the system.

Can the Controller support more than one UUT?

A given Controller system may be used with several UUT systems. However, the Controller can only be connected to and interact with one UUT at a time.

Does EEcoMark v2 require two systems to run (one UUT and one Controller)?

Yes. EEcoMark v2 requires that the Controller and UUT be installed on separate systems.

How do I interpret EEcoMark v2 performance scores?

EEcoMark v2's performance scores are normalized to 100 on the calibration system to provide a reference point for interpreting scores from other systems. Productivity Basic, Productivity Advanced, and Media Rich Creation scenarios provide performance scores. The Media Rich Consumption scenario does not produce a performance score. Power consumption scores are not part of the calibration normalization.

EEcoMark performance scores are calibrated using the following reference system:

- Lenovo M90 Series Tower
- Processor: Intel Core i3-540 Processor (3.06GHz,4M Cache)
- Operating System: Windows 7 Professional 64bit
- RAM: 4GB PC3-1333MHz SDRAM (2 DIMMs)
- Graphics: Integrated Video
- Audio: Integrated High Definition Audio
- HDD: 250GB capacity, 8M Cache, 7200RPM SATA II
- Optical Drive: DVD Recordable
- Networking: Integrated Gigabit Ethernet

How do I configure the power meter to work with EEcoMark v2?

Refer to this diagram to connect the power meter, UUT, and Controller. Note that the drivers for the meter to be used in testing will need to be installed on the Controller system.

Which meter(s) does EEcoMark v2 support?

EEcoMark v2 supports the following power meters: Yokogawa WT210, Yokogawa WT3000, and WATTS UP Pro. The list of supported meters is also available in a drop down menu from the Controller GUI.

What is the default DevID for the power meter?

This setting may vary according to the specific power meter being used. For example, the default DevID for the Yokogawa WT210 power meter is DevID 1. The DevID is visible on the Controller by opening the National Instruments driver control panel. All connected meters are listed with their corresponding DevIDs. Note that DevID only applies to meters connected using the GPIB interface. Serial attached meters do not use DevIDs.

Which non-English language operating systems does EEcoMark v2 support?

EEcoMark v2 supports the following languages with the keyboard set to "US English": English, French, German, Japanese.

EEcoMark v2 supports the following languages with the keyboard settings at default: German, Japanese. Additional languages may be included in future updates to the benchmark.

Where are the Results/FDR files located?

By default, these files are located on the Controller system at

C:\Program Files\BAPCo\EEcoMarkController\Results.

When saving FDRs using the 'Save FDR' function within the results browser, the user also may select an alternative path to save the FDR. For Vista installed UUT systems, if UAC is enabled on the Controller, results files are saved in:

C:\Users\'account_name'\AppData\Local\VirtualStore\ProgramFiles\BAPCo\EEcoMarkController\Results.

Does EEcoMark v2 support multiple iterations?

Yes, EEcoMark v2 supports multiple iterations under the following conditions: The Controller will attempt to wake the UUT by sending the Magic Packet for 5 minutes after the conclusion of the 'Off' measurement. If the UUT supports Wake on LAN and Wake on LAN is enabled, the UUT should wake up and begin the next iteration. If Wake on Lan is not supported by the UUT and/or Wake on LAN is disabled, the Controller will halt its attempt to wake the UUT at the end of the 5 minute timeout. Note: For UUT system that do not support Wake on LAN, but are manually powered on before the 5 minute timeout expires, the FDR for that run will indicate that the UUT supports Wake on LAN and that Wake on LAN was enabled for the test.

Can EEcoMark v2 be used to evaluate Energy Star v4 or v5 compliance on non-US voltages?

Yes, EEcoMark v2 can be used used to evaluate Energy Star compliance on non-US voltages. This requires downloading the Worldwide Voltage Support add on from the BAPCo Support page.