ENERGY STAR Computers Final Draft Stakeholder Webinar

July 9, 2013

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Outline

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1	Introduction
2	Definitions and Scope
3	Notebook & Desktop Requirements
4	Systems with No Sleep Mode
5	Incentives
6	Workstations
7	Other Issues
8	Closing Remarks and Timeline

Introduction

- Final Draft Specification and Test Method released July 2, 2013
- Numerous stakeholder conversations, testing, and data analysis went into Final Draft
  - EPA conducted additional analysis and outreach following Draft 3
  - Goal is now to present Final Draft and ensure it is ready for finalization

Written Comments

- In addition to making verbal comments during today's call, stakeholders are encouraged to submit written comments to computers@energystar.gov

Comment Deadline
Tuesday, July 23, 2013

- EPA and DOE thank stakeholders in advance for any final comments.

Outline

Definition Changes

- Graphics
  - Stakeholders requested changes to the graphics definitions to align with ErP Lot 3 and Ecma 383.
  - EPA proposes the following:

Graphics Processing Unit (GPU): An integrated circuit, apart from the CPU, designed to accelerate the rendering of either 2D and/or 3D content to displays. A GPU may be mated with a CPU, on the system board of the computer or elsewhere to offload display capabilities from the CPU.

Discrete Graphics (dGfx): A graphics processor (GPU) with a local memory controller interface and local graphics-specific memory.

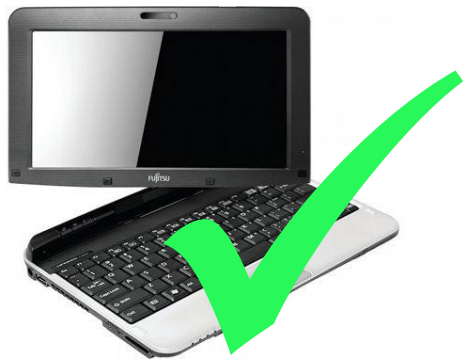
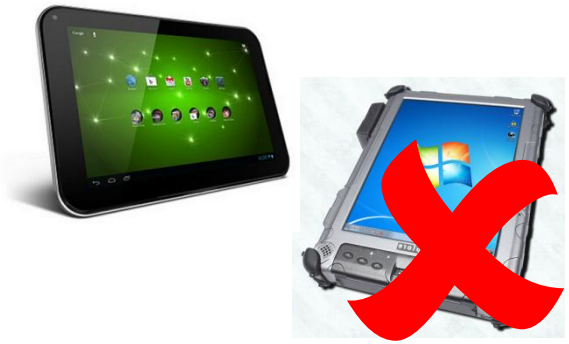
Integrated Graphics (iGfx): A graphics solution that does not contain a discrete GPU.

Definitions and Scope

- POS systems based on Desktop Computers are included
- Must include:
  - Processor, motherboard, and memory
  - Standard desktop computer operating system
- Others excluded

Definitions and Scope

- Notebook definition has been expanded to include models with reversible screens and integrated keyboards—formerly referred to as “Tablet Computers”
- Products without keyboards continue to be excluded
- “Slate/Tablets” (new) definition and requirements TBD

Notebook Computer (Included)	Products w/o Keyboards (Excluded)
	

Note on Slate/Tablets

- EPA intends to include these products in the v6.1 update
- This update will be final prior to the v6.0 effective date
  - April 2014
- V6.1 will include provisions for testing and labeling Slate/Tablets (e.g. iPad, MS Surface Pro, etc.)
- EPA will formally engage stakeholders in developing v6.1 immediately after v6.0 is final
  - Starting August 2013

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Notebook, Desktop, Integrated Desktop Requirements

- EPA has changed the categorization for Notebooks, Desktops, and Integrated Desktops based on ITI proposal
  - ITI category system makes better distinctions between products based on capabilities and use
  - Includes a further Integrated Graphics (I3) category to acknowledge Switchable Graphics systems

Category Name	Graphics Capability
0	Any Graphics dGfx ≤ G7
I1 **I2** **I3**	Integrated or Switchable Graphics
D1 **D2**	Discrete Graphics dGfx ≤ G7

Notebook, Desktop, Integrated Desktop Allowances

- Some decreases to allowances for high-end Desktops
  - Split between Base Allowance and Graphics Allowances
- Some increases to allowances for Notebooks
  - Entirely through increases to Graphics Allowances

Base Allowances

- Desktops, Integrated Desktops:

Category Name	Graphics Capability	Performance Score, *P*	TEC_{BASE} (kWh)
0	Any Graphics dGfx ≤ G7	*P* ≤ 3	69.0
I1	Integrated or Switchable Graphics	3 < *P* ≤ 6	112.0
I2		6 < P ≤ 7	120.0
I3		*P* > 7	135.0
D1	Discrete Graphics dGfx ≤ G7	3 < *P* ≤ 9	118.0 → **115.0**
D2		*P* > 9	137.0 → **135.0**

- Notebooks:
  - No changes
  - Performance score error for iGfx has been noted (*P* = 9 → *P* = 8)

Discrete Graphics Allowances

- Desktops, Int. Desktops: **Decreased** for G5–G7
- Notebooks: **Increased** for G1–G3

Graphics Category		Desktop	Integrated Desktop	Notebook
	G1 *(FB_BW ≤ 16)*	36		11 → **14**
	G2 *(16< FB_BW ≤ 32)*	51		18 → **20**
	G3 *(32 < FB_BW ≤ 64)*	64		24 → **26**
	G4 *(64 < FB_BW ≤ 96)*	83		32
	G5 *(96 < FB_BW ≤ 128)*	113 → **105**		42
	G6 *(FB_BW > 128; Width < 192 bits))*	125 → **115**		48
	G7 *(FB_BW > 128; Width ≥ 192 bits)*	157 → **130**		60

Outline

Systems Lacking Sleep Mode

- EPA has spoken with stakeholders regarding computers without a Sleep Mode
  - Always-on-always-connected (AOAC) or Connected Sleep
  - Basically a lower-power Long Idle Mode
- EPA proposes that computers without Sleep Mode:
  - Shall not have to meet Power Management requirements with the exception of Display Sleep Mode
  - Shall not receive the Full Network Connectivity incentive
  - Will not be tested in Sleep Mode and Long Idle State power will be used instead in calculations, e.g.:

    $(P_{SLEEP} \times T_{SLEEP})$ is replaced by $(P_{LONG\_IDLE} \times T_{SLEEP})$;

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Full Network Connectivity

- EPA has modified mode weightings for Notebooks
  - Will provide further incentive for proxying
  - Models with Connected Sleep/always-on-always-connected (AOAC) functionality would have to use conventional weightings

Mode Weighting	Conventional	Full Network Connectivity			
		Base Capability	Remote Wake	Service Discovery / Name Services	Full Capability
T_{OFF}	25%	**25%**	**25%**	**25%**	**25%**
T_{SLEEP}	35%	**39%**	**41%**	**43%**	**45%**
$T_{LONG\ IDLE}$	10%	8%	7%	6%	5%
$T_{SHORT\ IDLE}$	30%	28%	27%	26%	25%

Switchable Graphics

- Maintained Switchable Graphics allowance
  - Equal to 50% of the G1 graphics allowance
  - Applies to Desktops, Integrated Desktops only

Product Type	Switchable Graphics Allowance (kWh)
Desktops and Integrated Desktops	18

- Must be enabled by default

Energy Efficient Ethernet (EEE)

- EPA has added an Energy Efficient Ethernet Incentive
  - 0.2 W or converted to kWh based on usage profile
  - Applies to all Computers types that ship with IEEE 802.3az compliant Gigabit Ethernet ports
  - Based on the Small Network Equipment specification

Outline

Workstation Requirements

- To qualify a workstation for ENERGY STAR, performance must be tested against the following benchmarks:
  1. Linpack
  2. SPECviewperf
- Maximum power and benchmark (partial load) tests
- DOE also supports the development of a new workstation benchmark for Version 7.0

Workstation Data Reporting

- Maximum Power Test (for qualification and reporting):

Linpack	– Value of the Linpack Array Size ("n") – Simultaneous Instances of Linpack Running (count) – Compiler Optimizations
SPEC-viewperf	– Configuration Options
Both	– Measured Maximum Power (P_{MAX}) at 115 V (W) – Measured Maximum Power (P_{MAX}) at 230 V (W) – Calculated Power Consumption Requirement (P_{TEC_MAX}) (W)

Workstation Data Reporting

- Benchmark Tests (will not be published):

Linpack	– Benchmark Time to Completion (s) – Benchmark Performance Score (Gflops) – Energy Consumed During Benchmark Test at 115 V (Wh) – Energy Consumed During Benchmark Test at 230 V (Wh)
SPEC-viewperf	– Results (fps): Catia, EnSight , LightWave, Maya, ProE, SW, TCVIS, SNX – Benchmark Time to Completion (s) – Energy Consumed During Benchmark Test at 115 V (Wh) – Energy Consumed During Benchmark Test at 230 V (Wh)

Outline

Test Method Updates

- Benchmark testing of workstations with Linpack and SPECviewperf
  - CINEBENCH and SPEC CPU2006 have been removed from the list
  - Linpack and SPECviewperf shall be configured for maximum performance

- Models without a Sleep Mode need not be tested in Sleep Mode
  - Power shall be measured in lowest-latency user-activated mode that is enabled by default

Test Method Updates

- To harmonize with international standards, DOE has replaced ECMA 383 with IEC 62623 Ed. 1.0
  - IEC and ECMA standards have identical test methods

- LMD repeatability requirements of within 0.4 percent (± 2 digits) of displayed value specified in Draft 3 deleted from Final Draft
  - Consistent with the ENERGY STAR Version 6.0 Specification for Displays

Power Supply Requirements

- EPA has updated the power supply requirements for consistency with other ENERGY STAR specifications.
- EPS
  - Requirements reference 10 CFR Part 430 Federal Test Method for testing single- and multiple-voltage EPSs
  - Both single- and multiple-voltage EPSs shall meet the International Level V efficiency requirement, but only single-voltage EPSs shall be labeled
- IPS
  - Requirements shall remain the same (80Plus Bronze)

- Requirements apply to all computer types
- The following data shall be reported:
  - IPS: Efficiency data at each loading point
  - EPS: Average efficiency

Reporting Requirements

- EPA has updated the Qualified Product Exchange (QPX) reporting requirements for submitting data to EPA
- Requirements have been revised to reflect:
  - ITI categorization for Notebooks, Desktops, and Integrated Desktops
  - New requirements and incentives

- Additional instructions have been provided to ensure consistency in reported data
- Draft requirements will be released shortly for stakeholder review

Labeling Requirements

- EPA has revised the partner commitments to permit further labeling options
- Physical Labeling:

a. The label shall be on the top or front of the product if the top or front of the product has a contiguous, coplanar surface area not used for touch input or display that is greater than or equal to 0.625 in square;

b. Otherwise, the label shall be on the reverse side of the screen;

- Electronic Labeling:

a. Must appear at system start-up, and must display for a minimum of 5 seconds; or

b. Must appear within the system power settings dialog window. EPA will consider alternative proposals for electronic labeling on a case-by-case basis.

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Open Questions

- The line is now open for any other questions.

Timeline

Event	Date
Final Draft Published	July 2, 2013
Final Draft Webinar	**Today, July 9, 2013**
Final Draft Comments	July 23, 2013
Final Specification Published	Early August 2013
Version 6.0 Effective	April 28, 2014
Version 6.1 Development	Starting late summer

Written Comments

- Thank you to everyone for your helpful feedback on the Final Draft specification and test method
- In addition to making verbal comments during today's call, stakeholders are encouraged to submit written comments to computers@energystar.gov

Comment Deadline
Tuesday, July 23, 2013

Thank you!

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