

***Monitor Memorandum of Understanding (Version 3.0)
between The United States Environmental Protection Agency
and***

I. Common Agreements and Principles

- A. This is a voluntary agreement between _____ ("ENERGY STAR[®] Partner" or "Partner") and the United States Environmental Protection Agency ("EPA"), by which _____ joins the ENERGY STAR Program. The terms of this MOU shall apply to monitors sold by Partner under its own brand name(s).
- B. ENERGY STAR Partner and EPA agree that the primary purpose of the ENERGY STAR Program is to promote the manufacturing and marketing of energy-efficient equipment, thereby potentially reducing combustion-related pollution.
- C. ENERGY STAR Partner and EPA agree that the use of energy-efficient equipment may also increase profits and competitiveness for businesses.
- D. ENERGY STAR Partner and EPA agree that the ENERGY STAR Program may also improve or enhance equipment's useful lifetime, customer satisfaction, and overall product quality.
- E. ENERGY STAR Partner and EPA agree that publicizing the ENERGY STAR Program is important to demonstrate the following: the concern of Partner for the environment, the vitality of the free enterprise system in reducing costs, and the capability of voluntary programs to achieve environmental goals.
- F. ENERGY STAR Partner and EPA agree that maintaining public confidence in the ENERGY STAR Program is critical to achieving the shared goals of Partner and EPA.
- G. ENERGY STAR Partner and EPA agree that the integrity of the ENERGY STAR Program and the ENERGY STAR logo depends on consumer recognition of the ENERGY STAR logo as a means of identifying products in a particular market that are more energy-efficient than conventional products. Therefore, ENERGY STAR Partner and EPA will work together to revise the technical specifications as necessary. ENERGY STAR Partner agrees that EPA can initiate a review of compliance guidelines at any time, if necessary.
- H. ENERGY STAR Partner and EPA agree that membership in the ENERGY STAR Program is essential to the cooperative effort to achieve the shared goals stated above.

II. Definitions

- A. Monitor: For purposes of this MOU, a monitor is defined as a cathode-ray tube (CRT), flat panel display (e.g., a liquid crystal display), or other display device and its associated electronics. This definition is intended primarily to cover standard monitors designed for use with computers. For purposes of this MOU, however, the following may also be considered a monitor: mainframe terminals, and physically separate display units.
- B. First Low-Power or "Sleep" Mode: Sleep mode is defined as the reduced power state that the monitor model enters after receiving instructions from a computer or via other functions. A blank screen and reduction in power consumption characterize this mode. The monitor returns to full-power mode upon sensing a request from a user.
- C. Second Low-Power or "Deep-Sleep" Mode: Deep-Sleep mode is defined as the second reduced power state that the monitor enters after receiving instructions from a computer or via other functions. A significant reduction in power consumption characterizes this mode. The monitor returns to full-power mode upon sensing a request from a user.

III. Entry into Force and Duration

- A. Both parties agree that any previously executed MOU between the parties on the subject of ENERGY STAR-compliant computers, integrated computer systems, and monitors shall be terminated effective June 30, 1999, except as provided for in Section III.D below.
- B. Both parties agree that as technologies and markets change, it may become desirable to revise the specifications and/or product categories contained in this MOU. ENERGY STAR Partner and EPA agree to work together to revise the specifications and/or product categories in the MOU if and when changes in technology and/or markets make these revisions desirable and necessary. ENERGY STAR Partner and EPA also agree that a reasonable effort should be made to consider the ideas and opinions of all ENERGY STAR Monitor Partners and other interested parties when revising the specifications contained in this MOU.
- C. Both parties agree that the terms of this MOU shall become effective on July 1, 1999, although Partner may choose, at its discretion, to implement the terms of this MOU prior to this date.
- D. Both parties agree to the following schedule for phasing in the new specifications contained in this MOU:
 - 1. Monitors that Partner first ships *before July 1, 1999* may be qualified under Section IV.B of the ENERGY STAR Computer and Monitor MOU (Version 2.0) as amended. Once such models are qualified as ENERGY STAR-compliant, they may continue to bear the ENERGY STAR logo until the models are phased out of the market (i.e., the new specifications will not apply retroactively to products qualified previously).
 - 2. Monitors that Partner first ships *on or after July 1, 1999* must be qualified under the specifications outlined in Section IV.D of this agreement.

- E. Both parties agree that this agreement may be terminated by Partner or EPA at any time, and for any reason, with no penalty. However, the parties agree that termination for non-compliance would occur only in accordance with the procedures set out in Section VII of this agreement.

IV. ENERGY STAR Partner's Responsibilities

A. Reading and Understanding Logo Use Guidelines

ENERGY STAR Partner affirms that it has read, understands, and will abide by the Guidelines for Proper Use of the ENERGY STAR Name and International Logo.

B. Appointment of Liaison

Partner agrees to appoint a responsible company representative as liaison with EPA for the ENERGY STAR Program and to notify EPA within one month of any change in liaison responsibility. (Attachment A)

C. Measuring and Testing Equipment

Power consumption of a monitor shall be measured and tested from the AC source to the unit. Partner must measure a representative sample of the configuration of all the models that it ships to the customer, but the Partner does not need to consider power consumption changes that may result from component additions made by the user after sale of the product. See EPA's testing procedure guidelines for more information.

Partner is responsible for only applying the ENERGY STAR logo to its monitors that meet the ENERGY STAR criteria. Partner shall self-certify those products that it determines are compliant. Partner may submit compliant product information to EPA on a voluntary basis using the product information form, if it wishes to have such products included in the ENERGY STAR Product Listing.

D. Product Qualification for the ENERGY STAR Logo

ENERGY STAR Partner agrees to introduce one or more models of monitors that meet the specifications outlined below.

An ENERGY STAR-compliant monitor shall have the capability to automatically enter two successive low-power modes. In the first low-power "sleep" mode, the monitor shall consume 15 watts or less after receiving instructions from a computer or via other functions. If the monitor continues to be idle, upon instructions from the CPU or via other functions, it shall enter a second low-power "deep sleep" mode. An ENERGY STAR-compliant monitor in this second low-power mode shall consume 8 watts of electricity or less. Monitors that have the capability to proceed automatically from active mode to a low-power mode of 8 watts or less comply with the power consumption requirements of this agreement. Upon resumption of user activity, the monitor shall automatically return to full operational capability. It is recommended that for activity not initiated by the user, the monitor will remain in its low-power mode.

If the monitor includes a USB hub/ports, it shall be tested without any devices or an upstream cord connected to the hub/ports.

E. Customer Education

1. Identification of Qualifying Products in the Marketplace

ENERGY STAR Partner must ensure that consumers have a quick and easy method of determining which of its products are ENERGY STAR compliant. To achieve this goal, EPA recommends that Partner place the ENERGY STAR logo on all qualified monitor models, their packaging, and product-related materials such as brochures, manuals, and advertisements. EPA also recommends that Partner place the ENERGY STAR logo on all product-related material published on Partner's Web site(s).

2. Product Literature

It is important that consumers understand the power-management feature of their equipment. Accordingly, Partner shall provide general information to users regarding the ENERGY STAR features of the monitor. This information might include the following: a description of the method for changing the power-management settings or default times, a description of the ENERGY STAR Program, and a discussion of the savings associated with using the power-management feature. Partner may determine the best manner through which to disseminate this general information to users. Examples of acceptable approaches include user's manual, on-line tutorial or Internet Web site, special brochures included in the shipping box, etc. Brochures and advertisements shall be worded to avoid misleading statements. **See Guidelines for Proper Use of the ENERGY STAR® Name and International Logo.**

F. Employee Education

Partner agrees to make available general information about the ENERGY STAR Program to all of its employees whose jobs are relevant to the development, marketing, sales, and service of ENERGY STAR-compliant monitors.

G. Information Sharing

At EPA's request, Partner will attempt to locate customers who have profited from the program and are willing to share information about performance and savings, as well as employees who have contributed in its success. This customer- or employee-supplied information is to be without reference or endorsement of specific Partner, specific products, or other supply sources.

H. Endorsement

ENERGY STAR Partner agrees that it will not construe, claim, or imply that its participation in the Program constitutes EPA approval, acceptance, or endorsement of anything other than Partner's commitment to the Program. ENERGY STAR Partner understands that participation in the ENERGY STAR Program does not constitute EPA endorsement of ENERGY STAR Partner or its products. In addition, since the EPA will not officially approve any individual test reports submitted by Partner, Partner may not include misleading statements in product literature or sales presentations that imply a product is approved or certified by the EPA, e.g., Partner shall not make claims such as "This monitor is EPA-approved," "This monitor is EPA-certified," or any similar statement intended to convey an EPA endorsement.

I. Voluntary Actions

ENERGY STAR Partner agrees that the activities it undertakes connected with this MOU are

not intended to provide services to the federal government and that Partner will not submit a claim for compensation to any federal agency.

V. EPA's Responsibilities

A. Appointment of Liaison

EPA agrees to designate a single liaison point for the ENERGY STAR Program, and to notify Partner within one month of any change in liaison responsibilities. Please send signed MOU and other correspondence to this person. (Attachment A)

B. Product Testing

EPA agrees to accept the product certification by the Partner when qualifying ENERGY STAR-compliant products. This certification may be self-determined by the Partner or determined by an independent third party. While this is a self-certifying process, EPA reserves the right to conduct tests on products bearing the ENERGY STAR logo from either the open market or other available sources. EPA may request Partner to voluntarily provide products to be tested by EPA.

C. Consumer Acceptance

EPA agrees to make an effort to encourage consumer acceptance of products introduced under this agreement and bearing the ENERGY STAR logo.

D. Public Recognition

EPA agrees to provide Partner with recognition for its public service in protecting the environment by performing analyses about the pollution prevented by corporate participants and providing this and other program information to appropriate news media sources for publication.

E. Consumer Education

EPA agrees to promote energy-efficient equipment and to inform consumers about the ENERGY STAR Program and ENERGY STAR logo by writing articles and/or cooperating with the news media by sharing information, where appropriate.

F. Public Service Advertisements

EPA agrees to work with Partner independently and/or in conjunction with other Partners to coordinate the placement of advertisements to promote energy-efficient equipment, educate consumers about the ENERGY STAR Program and logo, and provide Partner with due recognition for its public service in protecting the environment.

VI. Use of the ENERGY STAR Logo

A. Associating Logo with Qualifying Models

It is the responsibility of the Partner to associate EPA, the ENERGY STAR logo and name, and the ENERGY STAR Program only with those specific models that qualify under the terms and conditions of this MOU. **See Guidelines for Proper Use of the ENERGY STAR® Name and International Logo.**

B. ENERGY STAR Materials

EPA agrees to loan Partner, at no charge, materials from which Partner can reproduce the ENERGY STAR logo.

C. Referring to the ENERGY STAR Logo

When the ENERGY STAR logo is used, Partner agrees that it shall be accompanied by the following statement: “As an ENERGY STAR[®] Partner, [Company] has determined that this product meets the ENERGY STAR guidelines for energy efficiency.” When the ENERGY STAR logo is applied directly to the product or product packaging, Partner may place this statement in the user’s manual. **See Guidelines for Proper Use of the ENERGY STAR Name and International Logo.**

D. Registered Marks

ENERGY STAR Partner understands that the ENERGY STAR[®] name and the ENERGY STAR logo are registered marks of the United States Environmental Protection Agency, and are subject to the provisions of Title 15, Chapter 22, United States Code, the various state laws applicable to trademarks, and this Memorandum of Understanding. As such, the Partner shall note this registered status, as appropriate. This includes: (a) expressing the ENERGY STAR name in all capital letters (It is also appropriate to use a slightly larger point size for the first letter of each word, e.g., twelve point for the E and S, and ten point for the other letters.), and (b) including the registered symbol,[®] *each time* the ENERGY STAR name or logo appears in a brochure, poster, advertisement, or other document (i.e., ENERGY STAR[®]). The registered mark statement “ENERGY STAR is a U.S. registered mark” may also be used *in addition* to the registered symbol to indicate the registered status of the mark. **See Guidelines for Proper Use of the ENERGY STAR[®] Name and International Logo.**

E. Endorsement

Under no circumstances shall the ENERGY STAR name or logo be used in a manner that would imply EPA endorsement of the Partner, its products, or its services.

F. Altering Logo

ENERGY STAR Partner agrees not to alter the ENERGY STAR logo except in the ways described in the Guidelines for Proper Use of the ENERGY STAR[®] Name and International Logo.

G. Termination of Agreement

If either EPA or Partner terminates this Agreement, Partner will no longer be entitled to apply the ENERGY STAR logo to newly manufactured products, and will no longer make reference to the ENERGY STAR Program so as to construe continuing involvement in the program. Any products bearing the logo that have been shipped by the Partner prior to program termination, and are no longer in the Partner’s possession (e.g., products on display or inventoried by retail stores or distributors), may continue to bear the logo.

VII. Conflict Resolution

A. Good Faith Principle

Each party agrees to exercise good faith as a general principle for resolving conflicts under the ENERGY STAR Office Equipment Program.

B. Notification of Problems

Both parties agree to informally notify each other if any problems or issues arise under the ENERGY STAR Office Equipment Program and to work together to provide maximum public confidence in the program.

C. Procedure for Addressing Non-Compliant Products

1. If EPA receives information that one or more monitor models claimed by Partner as ENERGY STAR-compliant may not meet all of the terms of this MOU, or if EPA believes Partner is using the ENERGY STAR logo improperly, then EPA will immediately notify Partner and attempt to address and resolve the problem informally.
2. If these informal discussions do not produce a mutually agreeable resolution, EPA shall notify Partner in writing that Partner shall be terminated from the ENERGY STAR Office Equipment Program unless it undertakes the specific corrective actions sought by EPA. Partner agrees to reply to EPA in writing within 20 business days of receiving EPA's letter. At that time, Partner shall agree to do one of the following: (a) undertake in a timely and effective manner, the corrective actions sought by EPA; or (b) voluntarily terminate this agreement. If Partner does not respond to EPA's letter within 20 business days, or responds but does not agree to either (a) or (b), then this agreement is terminated.

D. Notification in Writing

If Partner believes that EPA is not meeting all of its commitments, Partner agrees to formally notify EPA in writing. EPA agrees to respond in writing within 20 business days of receiving Partner's letter. At that time, EPA will do one of the following: (a) undertake the corrective actions sought by Partner, or (b) explain why such corrective actions cannot be undertaken.

VIII. Freedom of Information Act and Confidential Business Information

Both parties understand that information provided by Partner to EPA will be treated pursuant to EPA's public information regulations under 40 Code of Federal Regulations, Part Two.

* * * *

The undersigned hereby execute this Memorandum of Understanding on behalf of their respective parties. The signer of this agreement affirms that he/she has the authority to commit Partner to participation in the ENERGY STAR Office Equipment Program.

For the U.S. Environmental Protection Agency (EPA):

Signature: _____ Date: _____

Name: Kathleen Hogan
Title: Director, Climate Protection Partnerships Division

For
Signature: _____ Date: _____

Name: _____

Title: _____

ATTACHMENT A

Please complete and return with the signed Memorandum of Understanding.

EPA Contact:

Mailing Address:

Craig Hershberg
Manager, ENERGY STAR Office Equipment
US EPA
Ariel Rios Bldg.
1200 Pennsylvania Ave., NW
(Mail Code 6202 J)
Washington, DC 20460

Overnight Delivery Address:

Craig Hershberg
Manager, ENERGY STAR Office Equipment
US EPA
1310 L Street, NW
Washington, DC 20005
(202) 343-9120

Partner's Contacts:

Primary Contact (to receive all program administrative materials):

Name:
Title:
Address:
City, State, ZIP:
Telephone Number:
Fax Number:
E-mail Address:
Location of US Headquarters (if applicable):

Marketing/PR Contact (to receive marketing and communications materials):

Name:
Title:
Address:
City, State, ZIP:
Telephone Number:
Fax Number:
E-mail Address:

Customer Service Contact (to be given to the public for further information on products):

Telephone number:
Fax Number:
Web Site:

ATTACHMENT B

TEST CONDITIONS FOR ENERGY STAR® COMPLIANCE MEASUREMENT FOR MONITORS

In order to reduce confusion and increase consistency, the following protocol should be followed when measuring power consumption of monitors for compliance with the ENERGY STAR Monitor MOU.

Outlined below are the minimum test conditions that should be established when performing the power measurement. These are necessary in order to ensure that ENERGY STAR compliance is based on common characteristics of monitor models.

A description of the test conditions and a discussion of testing equipment can also be found below.

I. TEST CONFIGURATION

The monitor should be tested as shipped. If it includes any USB hub(s)/Port(s), no devices or an upstream cord should be connected to the hub/ports when the monitor is being tested.

II. TEST CONDITIONS

Line Impedance: < 0.25 ohm

Total Harmonic Distortion: < 5%

Input AC Voltage:¹ 115 VAC RMS +/- 5V RMS

Input AC Frequency:¹ 60 Hz +/- 3 Hz

Ambient Temperature: 25 deg. C +/- 3 deg. C

III. TESTING EQUIPMENT

The goal is to accurately measure the true power consumption² of the monitor. This necessitates the use of a true RMS wattmeter. There are many models to choose from, but manufacturers will need to exercise care in selecting an appropriate model. The following factors should be considered when purchasing a meter and setting up the actual test.

¹ If products will be sold in Europe or Asia, testing should also be performed at the appropriate machine-rated voltage and frequency. For example, products destined for European markets might be tested at 230 V and 50 Hz.

² True power is defined as the product of the voltage, current, and the power factor (volts x amps x power factor), and is typically reported as Watts. Apparent Power is defined as the product of voltage and current (volts x amps) and is usually expressed in terms of VA or volt-amps. The power factor for equipment with switching power supplies is always less than 1.0, so true power is always less than apparent power.

Crest Factor³

Monitors that contain switching power supplies draw current in a waveform different from typical sinusoidal current. While virtually any wattmeter can measure a standard current waveform, it is more difficult to select a wattmeter when irregular current waveforms are involved.

It is critical that the wattmeter selected be capable of reading the current drawn by the monitor without causing internal peak distortion (i.e., clipping off the top of the current wave). This requires a review of the meter's crest factor⁴ and of the current ranges available on the meter. Better meters will have higher crest factors, and more choices of current ranges.

When preparing the test, the first step should be to determine the peak current (amps) associated with the monitor being measured. This can be accomplished using an oscilloscope. Then a current range must be selected that will enable the meter to register the peak current. Specifically, the full scale value of the current range selected multiplied by the crest factor of the meter (for current) must be greater than the peak current reading from the oscilloscope.

For example, if a wattmeter has a crest factor of 4, and the current range is set on 3 amps, the meter can register current spikes of up to 12 amps. If measured peak current is only 6 amps, the meter would be satisfactory. The other concern to be aware of is that if the current range is set too high in order to register peak current, it may lose accuracy in measuring the non-peak current. Again, with more current range choices and higher crest factors, manufacturers will get better results.

Frequency Response

Another issue to consider when selecting a wattmeter is the frequency response rating of the meter. Electronic equipment that contains switching power supplies causes harmonics (odd harmonics typically up to the 21st). These harmonics must be accounted for in power measurement, or the power consumption data will be inaccurate. Accordingly, EPA recommends that manufacturers purchase wattmeters that have a frequency response of at least 3 kHz. This will account for harmonics up to the 50th, and is recommended by IEC 555.

Resolution

Manufacturers should choose a meter that can provide resolution of 0.1 W.

³ The crest factor for a sinusoidal 60 Hz current waveform is always 1.4. The crest factor for a current waveform associated with a monitor containing a switching power supply will always be greater than 1.4 (though typically no higher than 8). The crest factor of a current waveform is defined as the ratio of the peak current (amps) to the RMS current (amps).

⁴ The crest factor of a wattmeter is often provided for both current and voltage. For current, it is the ratio of the peak current to the RMS current in a specific current range. When only one crest factor is given, it is usually for current. An average true RMS wattmeter has a crest factor in the range of 2:1 to 6:1.

Accuracy

Catalogues and specification sheets for wattmeters typically provide information on the accuracy of power readings that can be achieved at different range settings.

Calibration

To maintain their accuracy, wattmeters should be calibrated with a standard that is traceable to the U.S. National Bureau of Standards (NBS).

Continuing Verification

This testing procedure (protocol) describes the method by which a single unit may be tested for compliance. An ongoing testing process is highly recommended to ensure that products from different production runs are in compliance with the MOU. A model may qualify as ENERGY STAR-compliant if testing indicates that 95 percent of the units sold under this model name/number will meet the specifications contained within the MOU.