The External Power Supply International Efficiency Marking Protocol

What is the international efficiency marking protocol?
The international efficiency marking protocol provides a system for power supply manufacturers to designate the minimum efficiency performance of an external power supply, so that finished product manufacturers and government representatives can easily determine a unit's efficiency. This mark does not serve as a consumer information label, but rather demonstrates the performance of the external power supply when tested to the internationally supported test method (this test method can be found at www.energystar.gov/powersuppliesdevelopment).

What does the international efficiency mark look like?
The international efficiency mark consists of a Roman numeral (I – VII) and is to be printed on the power supply nameplate, as shown below. The scale is designed with I being the least stringent (least efficient) level and VII being the highest (most efficient). To date, levels I – V have been set and levels VI and beyond have been reserved for future use as more stringent levels are established. The use of Roman numerals avoids any potential conflict with consumer efficiency labeling schemes. The text "EFFICIENCY LEVEL:" shown below may be omitted.

Format:	Roman numeral: I, II, III, IV, V, VI, or VII.
Font:	Times Roman preferred (or other plain serif fonts).
Size:	Legible and indelible.
Color:	Text to contrast with the nameplate background.
Placement:	On the power supply nameplate; however, exact location is at the discretion of the manufacturer. An example is provided below.

Who should adopt the international efficiency marking protocol?
The international efficiency marking protocol provides further opportunities for coordination between China, Australia, and the United States, which have worked over the past year to develop the external power supply energy-efficiency specification. Other countries are welcome to adopt the protocol and require manufacturers to mark products sold in their respective country, state, or region with the appropriate efficiency level.

ENERGY STAR will require manufacturers to follow the international efficiency marking protocol as of January 1, 2006. See External Power Supply Eligibility Criteria for details.

How will manufacturers benefit from using the international efficiency mark?
Over time, the marking system will be adopted and recognized around the world. As such, power supply manufacturers will not have to use different marks for each market into which they sell their products. The mark also will not require much space on the nameplate and was intentionally selected to avoid confusion with other non-energy related markings that already appear on external power supplies.

How should the international efficiency marking protocol be implemented?
The nameplate of single voltage external ac-dc and ac-ac power supplies must be clearly and permanently marked with a Roman numeral from the sequence I (least efficient) to VII (most efficient) that corresponds to specific minimum Active and No-Load efficiency levels. The performance requirements for each Roman numeral are shown in the table below.

To determine the appropriate Roman numeral, manufacturers: 1) compare the unit's Active and No-Load test data with the performance requirements at each level of the Roman numeral scale, and 2) choose the highest Roman numeral where the power supply meets BOTH the Active and No-Load requirements.

Table 1 provides a brief description of the regulatory significance of each level as of March 1, 2005. The specific performance requirements for each level are provided in Table 2.

Table 1: Performance Level Descriptions

Mark	Description	Proposed Effective Date
I	Used if none of the criteria are met	Immediately
II	Entry level minimum energy performance level. Reserved for Chinese mandatory standard level to be set by China's CNIS	Late 2005
III	US: Adopted EPA ENERGY STAR level Tier 1 - (voluntary)	2005 – January 1
	China: Proposed CECP level (voluntary)	2005 – January 1
	California: Adopted CEC Tier 1 standard (mandatory)	2006 – July 1
	Australia: Proposed Minimum Energy Performance Standard (mandatory)	2006 – April 1
IV	California: Adopted CEC Tier 2 standard (mandatory)	2008 – January 1
	Australia: Proposed Initial "High Efficiency" category (voluntary)	2008 – April 1
V	Future voluntary EPA ENERGY STAR Tier 2 level – actual level to be determined	2006 – July 1
VI and higher	Reserved for future levels	Some future date

Figure 2 illustrates the levels on this scale for average active mode efficiency only. As of this writing, the labeling programs in both the US and China have agreed to adopt level **III** in their respective programs. In addition, the California Energy Commission has adopted this level in its mandatory Title 20 appliance standards set to take affect in 2006, more than a year later than the effective dates of the aforementioned voluntary programs, and Australia plans to do the same.

Table 2: Energy Performance Requirements for Each Numeral

Mark	**Performance Requirements**			
	Nameplate Power Output (P_{no})	**No Load Power**	**Nameplate Power Output (Pno)**	**Average Efficiency**
I	Used if none of the criteria are met			
II	No criteria established to date. Reserved for future use.			
III	0 to <10 watts 10 to 250 watts	≤ 0.5 ≤ 0.75	0 to 1 watt >1 to 49 watts >49 to 250 watts	≥ 0.49 x P_{no} ≥ 0.09Ln(P_{no})+0.49 ≥ 0.84
IV	0-<1 10-≤	0 to <10 watts 10 to 250 watts	≤ 0.5 ≤ 0.5	0 to 1 watt >1 to 51 watts >51 to 250 watts	≥ 0.5 x P_{no} ≥ 0.09Ln(P_{no})+0.5 ≥ 0.85
V	ENERGY STAR TIER 2 – Levels not yet established. Reserved for future use.			
VI and higher	RESERVED FOR FUTURE USE			