

Comments on Draft 1 Version 2.0 ENERGY STAR External Power Supplies Specification

Submitted by:

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Comments:

Dear Robin,

Let me present FRIWO's view and comments to the Energy Star draft of V 2.0.

Friwo is a leading manufacturer of chargers for the mobile phone industry. The R&D center is located in Germany while the production is in China. Our customers are Motorola, Nokia, Samsung, LG and others.

Please let me comment the draft of the V2.0 as follows:

It is absolutely important to drive down the waste of energy and especially on chargers for mobile phone applications because of the huge amount of chargers used all over the world.

Especially for external power supplies for mobile phones and taking the end users behaviour in mind it would

even save more energy by increasing the required efficiency and decrease the allowed no load power consumption.

(The typical end user will take the charger from the mains, if at all, much later than the phone is fully charged and during that the charger will only consume stand by power)

From the data you send we can get the information that not so many charger failed due to the fact that the no load

power consumption is higher than 0,3W) This mean that there is a potential to save energy by decreasing these limits.

On the other hand EPS for wide range have been considered as two different units (115V and 230V) under efficiency aspects. This imply that already 26% of all listed units would meet the V2.0 efficiency requirement. This is not the case.

1) Proposal for (>1W to <36W)

First Step V2.0 from July 2008 onwards:

- increase the efficiency requirement by 3,5% instead of 7%
- decrease the No Load Power Consumption by 50 mW to 250mW

Second Step V2.0 from 2010 onwards:

- increase the efficiency requirement by another 4%
- decrease the No Load Power Consumption by another 100 mW to 150mW

2) Proposal for Reporting V2.0 from July 2008 onwards:

- Use Level V to show that products launched after July 2008 meet the Energy Star requirements V2.0

- Products which have been launched before July 2008 are in line with Energy Star level IV need not to be redesigned
- Report EPS for widerange as one unit not as two different once (115V and 230V)

Kind regards,
Reinhold Schulz

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Example 1:

Output voltage 5V, output current 350mA, output power = 1.75W

Given that a 1Ah battery is charged once a day (3h full load, 21h no load) the total energy consumption is calculated as follows:

Current requirements:

$$\text{min efficiency} = 0.09 * \ln(1.75) + 0.49 = 54.04\%$$

$$\text{max no load power} = 0.5W$$

$$\text{total energy consumption per day} = 3h * 1.75W / 0.5404 + 21h * 0.5W = \underline{\underline{20.21 Wh}}$$

V 2.0 draft requirements:

$$\text{min efficiency} = 0.08 * \ln(1.75) + 0.585 = 62.98\%$$

$$\text{max no load power} = 0.3W$$

$$\text{total energy consumption per day} = 3h * 1.75W / 0.6298 + 21h * 0.3W = \underline{\underline{14.64Wh}}$$

FRIWO - proposal 1st step:

$$\text{min efficiency} = 0.08 * \ln(1.75) + 0.54 = 58.48\%$$

$$\text{max no load power} = 0.25W$$

$$\text{total energy consumption per day} = 3h * 1.75W / 0.5848 + 21h * 0.25W = \underline{\underline{14.22 Wh}}$$

FRIWO - proposal 2nd step:

$$\text{min efficiency} = 0.08 * \ln(1.75) + 0.57 = 61.48\%$$

$$\text{max no load power} = 0.15W$$

$$\text{total energy consumption per day} = 3h * 1.75W / 0.6148 + 21h * 0.15W = \underline{\underline{11.69Wh}}$$

Example 2:

Output voltage 5V, output current 1A, output power = 5W

Given that a 2Ah battery is charged once a day (2h full load, 22h no load) the total energy consumption is calculated as follows:

Current requirements:

$$\text{min efficiency} = 0.09 * \ln(5) + 0.49 = 63.48\%$$

$$\text{max no load power} = 0.5W$$

$$\text{total energy consumption per day} = 2h * 5W / 0.6348 + 22h * 0.5W = \underline{\underline{26.75Wh}}$$

V 2.0 draft requirements:

$$\text{min efficiency} = 0.08 * \ln(5) + 0.585 = 71.38\%$$

$$\text{max no load power} = 0.3W$$

$$\text{total energy consumption per day} = 2h * 5W / 0.7138 + 22h * 0.3W = \underline{\underline{20.61Wh}}$$

FRIWO - proposal 1st step:

$$\text{min efficiency} = 0.08 * \ln(5) + 0.54 = 66.88\%$$

$$\text{max no load power} = 0.25W$$

$$\text{total energy consumption per day} = 2h * 5W / 0.6688 + 22h * 0.25W = \underline{\underline{20.45Wh}}$$

FRIWO - proposal 2nd step:

$$\text{min efficiency} = 0.08 * \ln(5) + 0.57 = 69.88\%$$

$$\text{max no load power} = 0.15W$$

$$\text{total energy consumption per day} = 2h * 5W / 0.6988 + 22h * 0.15W = \underline{\underline{17.61Wh}}$$