Optimizing efficiency on conventional transformer based low power AC/DC standby power supplies

This article describes the research results for simple and cheap methods to reduce the idle- and load-losses in very low power conventional transformer based power supplies intended for standby usage. In this case "very low power" means 50 Hz/230 V-AC to 5 V-DC@1 W. The efficiency is measured on two common power supply topologies designed for this power level. The two described topologies uses either a series (or linear) or a buck regulation approach. Common to the test power supplies is they either are using a standard cheap off-the-shelf transformer, or one, which are loss optimized by very simple means.

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