

# WHITE PAPER

## ENERGY CONSUMPTION ESPRIMO P3520 E-STAR 5.0

Issue: June 2009

In order to strengthen the leadership in implementing European environmental protection regulations, Fujitsu Technology Solutions provides all important energy information about their products. With the publication of energy consumption values and the typical Annual Energy Consumption (AEC), we join the proposal from the preparatory studies for the EU Commission regarding energy using products (e.g. <http://www.ecocomputer.org>).

Fujitsu Technology Solutions is also taking significant effort to reduce the energy consumption in data centres by providing highest energy efficiency with PRIMERGY servers. To underline these efforts Fujitsu Technology solutions joined the “Green Grid” and “Climate Savers Computing” initiatives and publishes SPECpower benchmark results for PRIMERGY servers.

### A. Web page addresses for information on Energy, Environment and End-of-life treatment

Fujitsu Technology Solutions supports important information for energy, environment and End-of-life treatment on basis of European directives and beyond, for:

Energy: <http://ts.fujitsu.com/energy>

Environment: <http://ts.fujitsu.com/environment>

End-of-life treatment: <http://ts.fujitsu.com/recycling>

### B. Software to use hardware power management

All Clients are designed to use the hardware power management potential efficiently. The defaults for the power management settings ex factory even exceed the Energy Star shipment requirements.

Settings in Microsoft® Windows® for	Desktop, Notebook	Notebook (Battery)
Turn off the display	10 min	5 min
Turn off the hard disc	15 min	5 min
Standby	20 min	15 min
Hibernating	60 min	60 min

DeskView Energy provides additionally the possibility for remote settings of the power management values by an administrator. DeskView Energy is part of the standard software for Clients of Fujitsu.

### C. Power Consumption and typical Annual Energy Consumption for Clients

#### Intel® Core™2 Duo E8600

Operational modes (Energy Star Version 4.0 based) Configuration Information	Modes used in Energy Star calculator	power consumption for standard configuration 2 GB, HDD, ODD, Windows® Vista™
Related Processor for power consumption		Intel® Core™2 Duo E8600
Power consumption: Maximum (S0*, running appl., CD in use) 1)		84 W
Power consumption: Idle (S0, running OS, Idle-mode)		45 W
	On-mode 2)	48.9 W
Power consumption: Standby (S3*, energy saving mode, WOL enabled)	Standby-Modus	1.6 W
Power consumption: Minimum (ACPI status S5*, soft off, WOL enabled)	Off-mode 3)	0.9 W
Power consumption: Minimum (ACPI status S5, soft off, wake up power button)		0.9 W
Typical Annual Energy Consumption (WOL enabled) 4)		108.1 kWh/year
Heat dissipation, WOL enabled (MJ, 1 W = 3.6 kJ/h)		389.1 MJ/year
Heat dissipation, WOL enabled (kBTU, 1 W = 3.4121 BTU/h)		368.8 kBTU/year

#### Intel® Core™2 Quad 9550

Operational modes (Energy Star Version 4.0 based) Configuration Information	Modes used in Energy Star calculator	power consumption for standard configuration 2 GB, HDD, ODD, Windows® Vista™
Related Processor for power consumption		Intel® Core™2 Quad 9550
Power consumption: Maximum (S0*, running appl., CD in use) 1)		92 W
Power consumption: Idle (S0, running OS, Idle-mode)		47 W
	On-mode 2)	51.5 W
Power consumption: Standby (S3, energy saving mode, WOL enabled)	Standby-Modus	1.6 W
Power consumption: Minimum (ACPI status S5*, soft off, WOL enabled)	Off-mode 3)	0.9 W
Power consumption: Minimum (ACPI status S5, soft off, wake up power button)		0.9 W
Typical Annual Energy Consumption (WOL enabled) 4)		113.5 kWh/year
Heat dissipation, WOL enabled (MJ, 1 W = 3.6 kJ/h)		408.6 MJ/year
Heat dissipation, WOL enabled (kBTU, 1 W = 3.4121 BTU/h)		387.3 kBTU/year

The typical Annual Energy Consumption (AEC) is calculated similar to the energy calculator of Energy Star: [www.eu-energystar.org](http://www.eu-energystar.org)

1) The Maximum Mode is measured according to SYSTEST 32 of Fujitsu for PCs (to be replaced by Energy Star standard benchmarking tool when available).

2) The "On-mode" is determined by the proposal of the European MEEuP Product Cases Report (2005) based on the MEEuP Methodology Report for the European Commission (2005):  
"On-mode" for Home PC is calculated by: 80% Idle, 20% full load / maximum,

“On-mode” for Office PC is calculated by: 90% Idle, 10% full load / maximum.

3) Display power consumption of 0.0 watt in Off-Mode realized either with 0-Watt-Power-Save-Mode on selected SCENICVIEW display models or switched monitor outlet on power supply unit of certain PC models.

4) Power management is set to normal. The choice of use for calculation is Home / Busy Office with the following usage patterns:

Power measurement at: 230 V / 50 Hz

Hours / day	Consumer: Home (300 days/a)	Business:
On-mode 2)	2	8
Standby-Modus	9	2
Off-mode 3)	13	14

Other day’s per year are calculated in Off-mode; WOL: Wake on LAN

\*) ACPI: Advanced Configuration and Power Interface specification, an open industry standard, first released in December 1996

ACPI S0: Working, the normal working state of the computer

ACPI S3: known as Suspend to RAM (STR), Standby in versions of Windows through Windows Vista

ACPI S5: Soft Off - some components remain powered so the computer can “wake up” from input from the keyboard, clock, modem, LAN or USB device

Disclaimer:

This document is informal only. All energy consumption values are achieved by laboratory testing of the system configuration listed above. Your product may perform differently, depending on your user behaviour and on the software, components and peripherals you are using. Direct comparison of values from other systems is not possible because there are no existing standards for measurement procedures and tools for maximal/peak power consumption.

The energy consumption for Business Clients, Home PC and Displays is measured according to the measurement methods of the current Energy Star program, the international standard IEC 62301 and the established internal standard test program SYSTEST32 of Fujitsu Technology solutions for the maximum value.

The energy consumption for PRIMERGY Server is measured according to the measurement methods of the current SPECpower benchmark setup and related equipment.

This document may change without notice. Fujitsu Technology solutions will update the information in line with technical progress.

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<http://ts.fujitsu.com/aboutus>

Take back and Recycling information:

<http://ts.fujitsu.com/recycling>

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