

# Green IT strategies and criteria

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## Prescriptive context

Notwithstanding Consip S.p.A. has always dedicated great attention to environmental matters, European Directives acknowledgement first and Green Public Procurement introduction later gave a huge contribution in terms of innovative approach in public purchasing.

In Italy, such regulations were adjusted consistently to the internal legal system, towards the emanation of the National Action Plan GPP. This document was created by a committee made up of the Ministry of Finance, Ministry of Environment, Consip S.p.A. and several other Italian Public Institutions environmentally engaged.

Cooperation of all mentioned Institutions made individualization of several eco-goals possible, which help Public Sector to increase their sensitiveness and attention to any eco-compatible product and service.

Green Procurement guidelines are basically a tool used by public bodies for environmental criteria integration into the entire purchasing procedure, in order to encourage spreading of products and services, which have the lower environmental impact possible.

Besides those guidelines, Consip S.p.A., and in particular its IT Business Area, collaborated with the Italian Ministry of Environment on the drawing of a document containing all minimal environmental criteria, which must be contained in each tender or framework agreement prepared by any public body for IT products and services. In addition, this kind of toolkit marks also a list of defined improvement criteria, which adoption is awarded.

## Environmental goals in IT workplace

<p><b>Design</b></p>			<p><b>Production</b></p>
<ul style="list-style-type: none"> <li>• Increase of energy efficiency</li> <li>• Cost reduction</li> <li>• Environmental impact reduction</li> </ul>		<ul style="list-style-type: none"> <li>• Reduction/elimination of use of hazardous substances</li> <li>• Decrease of environmental impacts</li> <li>• Optimization of carriage and packaging</li> </ul>	
<ul style="list-style-type: none"> <li>• Correct energy use management</li> <li>• Information management on environmental impacts</li> <li>• Use of alternative sources of energy</li> </ul>		<ul style="list-style-type: none"> <li>• Reuse</li> <li>• Recycling e decomposability</li> <li>• Recycling of consuming materials</li> </ul>	
<p><b>Use</b></p>			<p><b>End of Life</b></p>

## From strategy to fulfilment

GPP strategy for tenders concerning Information Technology workplace wants to face some basic environmental matters, which seem to be extremely relevant in our context and, in particular, it is driven by three main goals:

1. **Efficiency and Savings of sources use**, especially Energy - to reach such a result, reduction of traditional energy sources and increase of energy efficiency towards use of alternative ones, become high strategical approaches. Therefore, in all IT tenders, products marked by Energy Star or equivalent, in their last approved version, are strictly recommended.
2. **Reduction of use of hazardous substances** - to reduce this kind of use, minimal criteria must be defined in order to offer only products, which life cycle is whether free or low containing of hazardous substances. Therefore, in all IT tenders, it is completely forbidden to use such substances, if their quantities exceed the prescriptive limits, as defined by RoHS Directive.
3. **Product waste reduction** - to contain quantity of waste, it is necessary to adopt products easily reuseable, decomposable and recycleable, having also a low packaging volume. Therefore, in all IT tenders, besides conformity to WEEE Directive, guarantee extension for 3 years and spare parts availability for 5 years up to delivery date are highly recommended.

## From strategy to fulfilment

In order to reach those three prior goals, it has been decided to proceed in accordance with the following methodology:

1. **Rules selection which refer to ecolables** and to standards worked out on an European level (Ecolabel, Nordic Swan, Der Blaue Engel) in case of major strictness as regards to basic ones
2. **Analysis of ecolabel differences**
3. **Individuation of environmentally supportable characteristics** in line with strategic goals
4. **Selection of general criteria concerning environmental supportability** for electronic office equipment
5. **Market research** towards dispensing questionnaire and meetings with trade associations
6. **Individuation of specific criteria of environmental supportability**  
addressed to each commodity

## Environmental Criteria for Notebook

	Criteria	Verification
Energy Efficiency	All products shall have an Energy Star label according to the version of Energy Star that is applicable at the time of declaration and that can be found at <a href="http://www.energystar.gov">www.energystar.gov</a>	The tenderer shall submit documentation showing that the Energy Star label requirements are fulfilled.
	Additional points shall be awarded in proportion to the decrease of the Typical Energy Consumption (ETEC) value compared to the minimum value allowed for the configuration.	<p>The tenderer shall submit a test report carried out according to the Energy Star test methods for the computer models.</p> <p>Appropriate means of proof are:</p> <ol style="list-style-type: none"> <li>Energy Star documents showing the ETEC value of the device in relation to the supply voltage of 230V;</li> <li>a test report produced by an accredited laboratory according to the UNI EN ISO 17025 and carried out according to the Energy Star test methods, showing ETEC value of the device in relation to the supply voltage of 230V.</li> </ol> <p>In both cases the documentation submitted must be related to the device in the specific configuration offered, or may be related to a more advanced configuration in terms of processor, memory, GPU, etc.</p>

## Environmental Criteria for Notebook

	Criteria	Verification
Battery Performance and Efficiency	The battery in the base configuration must have an autonomy of at least 300 minutes in the "performance and battery test" mode.	The tenderer shall submit a test report carried out according to benchmark BAPCO MobileMark2012.
	Additional points shall be awarded in relation to the increase of the device autonomy configured with the secondary battery, compared to the minimum value allowed for the configuration. It is noted that, in the case where the secondary battery is natively used together with the basic one, the autonomy of the device must be reported with the concurrent use of two batteries.	The tenderer shall submit a test report carried out according to benchmark BAPCO MobileMark2012
	Additional points shall be awarded if at least one battery provided (primary or secondary) will be able to maintain at least 70% of the nominal capacity after 800 charge/discharge cycles (life cycle extension of the batteries). This points will be higher if both batteries (primary and secondary) will presenting the above mentioned characteristics. Points will also be awarded if the above-mentioned characteristics are related to the individual cells constituting the batteries, rather than to the entire ones. battery.	Test report carried out according to conditions specified in par. 7.6.1 of IEC EN 61960 'endurance in cycles'.



## Environmental Criteria for Notebook

	Criteria	Verification
Maintenance	Additional points shall be awarded in relation to the extension of maintenance services up to 60 months.	The applicant shall declare the compliance with this requirement in the offer. The requirement will be part of the contract clauses.
Device Weight	The equipment shall have a weight not exceeding the requirement set out for each lot. The weight refers to the basic configuration, complete, including optical disc, hard disk, RAM and battery.	Requirement verified by Consip during the technical verification procedure.
	Additional points shall be awarded in relation to the decrease of the device weight compared to the minimum value allowed for the configuration. The weight refers to the basic configuration, complete, including optical disc, hard disk, RAM and battery.	Requirement verified by Consip during the technical verification procedure.

## Environmental Criteria for Notebook

	Criteria	Verification
Display	The backlight of the display shall not contain any mercury.	Test report, produced by a recognized body according to the test procedures provided by IEC 62321, showing that the mercury content is not detectable. It presumes compliance to hold an eco-label showing that the requirement is fulfilled.
Sound emissions	The 'declared A-weighted sound power level', in accordance with ISO 9296, shall not exceed: <ul style="list-style-type: none"> <li>– 35 dB (A) in the idle mode,</li> <li>– 40 dB (A) in hard-disk operating.</li> </ul>	The applicant shall provide a report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that the noise emission levels have been measured in accordance with ISO 7779 and declared in accordance with ISO 9296. It presumes compliance with the requirement to hold an eco-label showing that the requirement is fulfilled.
Sound emissions	Additional points shall be awarded if the 'declared A-weighted sound power level', in accordance with ISO 9296, is: <ul style="list-style-type: none"> <li>•LWAd ≤ 30 dB(A) ) in the idle mode;</li> <li>•LWAd ≤ 34 dB(A) in hard disk operating.</li> </ul>	The applicant shall provide a test report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that noise emissions levels have been measured in accordance with ISO 7779 and declared in accordance with ISO 9296.

## Test Reports - some examples

Battery Performance and Efficiency

### Criteria

The battery in the base configuration must have an autonomy of at least 300 minutes in the "performance and battery test" mode.

### Verification

The tenderer shall submit a test report carried out according to benchmark BAPCO MobileMark2012.

Test Summary		
Scenario	Productivity 2007	
Project Name	2013-02-25 10.45 - portatili12_lotto1_thinkpad_L530	
Battery Life Rating	375 minutes	
NOTE: MobileMark 2007 utilizes a battery-life rating system. The productivity battery-life is qualified by the corresponding performance, observed while obtaining that battery-life. <b>To attain a system performance score/rating please refer to the latest SYSmark release.</b>		
Performance Qualification	307	
Additional Details		
Battery Status at Beginning of Test	100%	
Battery Status at the End of Test	0%	
Iteration 1	Iteration 2	Iteration 3
307	329	333



\* Attention: the example refers to the old version of the benchmark

# Test Reports - some examples

Battery Performance and Efficiency

Additional points shall be awarded if at least one battery provided (primary or secondary) will be able to maintain at least 70% of the nominal capacity after 800 charge/discharge cycles (life cycle extension of the batteries). This points will be higher if both batteries (primary and secondary) will presenting the above mentioned characteristics. Points will also be awarded if the above-mentioned characteristics are related to the individual cells constituting the batteries, rather than to the entire ones. battery.

Test report carried out according to conditions specified in par. 7.6.1 of IEC EN 61960 'endurance in cycles'.

✦ BATTERY #2

Residual Capacity Battery Trend			
Battery Test ID	#2	Rated Capacity	5200 mAh
Charging/Discharging Cycle for Accurate Measurement:			50
step	Cycle iteration	Capacity	Residual Capacity Battery %
1	50	5348	102,85%
2	100	5341	102,71%
3	150	5321	102,32%
4	200	5285	101,64%
5	250	5238	100,74%
6	300	5176	99,53%
7	350	5101	98,10%
8	400	5011	96,36%
9	450	4911	94,45%
10	500	4790	92,11%
11	550	4666	89,73%
12	600	4515	86,83%
13	650	4351	83,68%
14	700	4134	79,50%
15	750	3933	75,63%
16	800	3655	70,29%
17	850	3431	65,98%

## 2. METHODOLOGY REFERENCE

The methodology for battery endurance test in cycle has been developed according IEC 61960 norm Edition 2.0 (2011-06), and implies a set of criteria to evaluate the performance of secondary lithium cells and batteries. This report shows the results obtained by using this methodology.



## 6. PROCEDURE DESCRIPTION

The procedure was setup according to IEC61960 Edition 2.0 (2011-06), with special reference on section 7.6 *Endurance in cycles*, first and second paragraph. Below the description of the procedure tasks followed to accomplish the measurement.



## Test Reports - some examples

Energy Efficiency

Additional points shall be awarded in proportion to the decrease of the Typical Energy Consumption (ETEC) value compared to the minimum value allowed for the configuration. Point will be awarded as follow:

- 60% <ETEC <= 80% TEC requirement (0,3 points);
- ETEC <= 60% TEC requirement (0,5 points)

**TEST REPORT**  
IEC 62301 (Edition 2.0 - 2011-01)  
Household electrical appliances – Measurement of standby power  
and  
**ENERGY STAR®**  
Program Requirements Product Specification for Computers – Eligibility Criteria –  
Version 5.2

TAB. 2: Test Results @ 230VAC – 50 Hz

TEST RESULTS FOR OFF, SLEEP AND IDLE MODES

Operational Mode	Measured Power (W)
Off Mode Testing ..... [W]:	0.241
Sleep mode testing ..... [W]:	0.561
Idle Mode Testing: ..... [W]:	5.032

TEC CALCULATION

Mode	Power [W]	Weighting [%]
Off	0.241	60
Sleep	0.561	10
Idle	5.032	30

$E_{TEC} [kWh / year] = (8760/1000) * ((P_{OFF} * T_{OFF}) + (P_{SLEEP} * T_{SLEEP}) + (P_{IDLE} * T_{IDLE}))$       14.982

EVALUATION OF RESULTS

Notebook Category A

$E_{TEC\_MAX}$ requirement [kWh / year]	≤ 40.0
$E_{TEC}$ measured [kWh / year]	14.982
Result	PASS

The tenderer shall submit a test report carried out according to the Energy Star test methods for computers.

Appropriate means of proof are:

- Energy Star documents showing the ETEC value of the device in relation to the supply voltage of 230V [...]



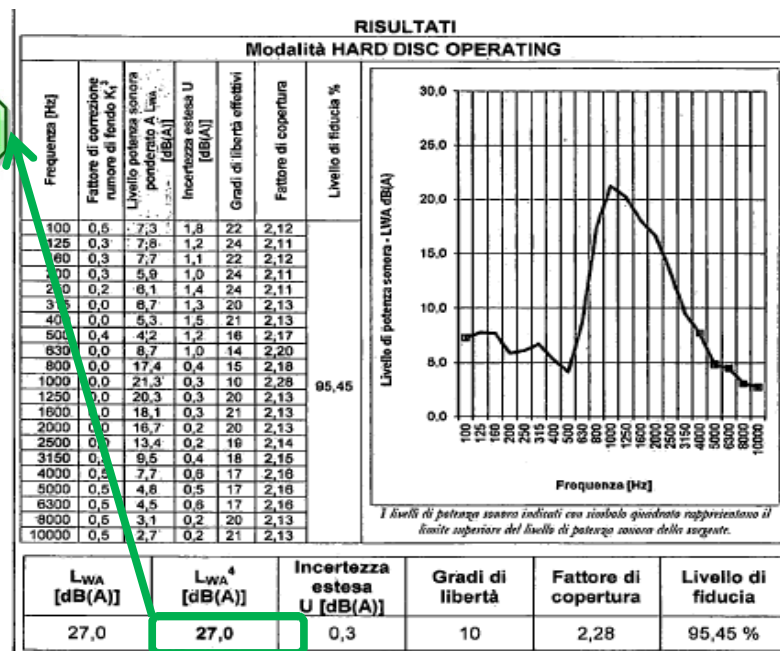
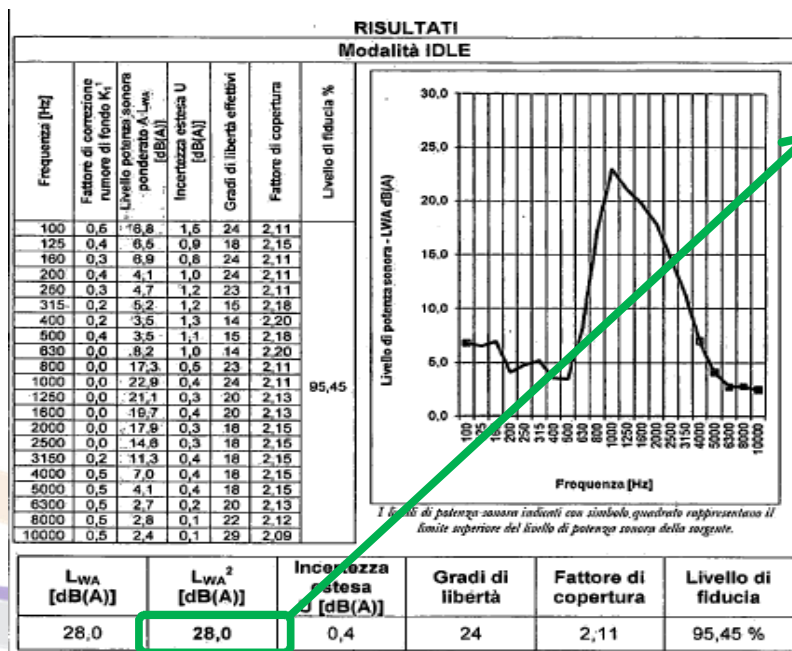
# Test Reports - some examples

## Sound emissions

The 'declared A-weighted sound power level', in accordance with ISO 9296, shall not exceed:

- 30 dB (A) in the idle mode,
- 34 dB (A) in hard-disk operating.

The applicant shall provide a report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that the noise emission levels have been measured in accordance with ISO 7779 and declared in accordance with ISO 9296.



## Environmental Criteria for Computer Desktop

	Criteria	Verification
Energy Efficiency	All products shall have the Energy Star 5.0 label or equivalent	Documentation showing that the Energy Star label requirements are fulfilled.
	<p>Additional points shall be awarded in proportion to the decrease of the Typical Energy Consumption (ETEC) value compared to the minimum value allowed as following:</p> <ul style="list-style-type: none"> <li>-75% TEC requirement <math>\geq</math> ETEC &gt; 65% TEC requirement (1 point)</li> <li>-65% TEC requirement <math>\geq</math> ETEC &gt; 60% TEC requirement (2 points)</li> <li>- ETEC <math>\leq</math> 60% TEC requirement (3 points)</li> </ul>	Test report carried out according to the Energy Star 5.0 test methods showing that the TEC value of the device, in relation to the supply voltage of 230V, is compliant with the value declared.

## Environmental Criteria for Computer Desktop

	Criteria	Verification
User Manual	Additional points shall be awarded if the tenderer shall guarantee the availability of instruction containing information on the use of the device energy-saving functions.	The tenderer shall provide instruction manual or information sheets containing the required information on the use of the device energy-saving functions. It presumes compliance with the requirement to hold an eco-label showing that the requirement is fulfilled.
Maintenance / spare parts	Additional points shall be awarded if the tenderer shall guarantee: the availability of spare parts for at least 5 years from the time of purchase; the extension of maintenance services up to 60 months.	The applicant shall declare the compliance with these requirement in the offer. The requirement will be part of the contract clauses.
Plastic parts marking	Additional points shall be awarded if plastic parts > 25 g and covering a flat surface of more than 200 mm <sup>2</sup> carry permanent labelling in accordance with the latest versions of ISO 11469.	Disassembly instructions showing the plastic parts marked in accordance with the latest versions of ISO 11469.



## Environmental Criteria for Computer Desktop

	Criteria	Verification
Recyclable Design	Additional points shall be awarded if products are designed as to allow an easy (manual) disassembly for recycling purposes, in order to separate metal and plastic parts in covers/housing.	Disassembly instructions showing that the requirement is fulfilled.
Sound Emissions	The 'declared A-weighted sound power level', in accordance with ISO 9296, shall not exceed 40 dB (A) in the idle mode.	The applicant shall provide a test report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that noise emission levels have been measured in accordance with ISO 7779 and declared in accordance with ISO 9296. It presumes compliance to hold an eco-label showing that the requirement is fulfilled.

## Environmental Criteria for Monitor

	Criteria	Verification
Energy Efficiency	All product shall have the Energy Star 5.0 for Display label or equivalent.	The tenderer shall submit documentation showing that the Energy Star label requirement are fulfilled.
	Additional point will be awarded if the Maximum Sleep Mode Power Requirement is < 0,5 watts	The tender shall submit documentation carried out according to the Energy Star 5.0 test methods showing that the requirement is fulfilled.
Maintenance / spare parts	Additional points shall be awarded if the tenderer shall guarantee: the availability of spare parts for at least 5 years from the time of purchase; the extension of maintenance services up to 60 months	The applicant shall declare the compliance with these requirement in the offer. The requirement will be part of the contract <b>clauses</b> .
Vertical tilt	Additional points shall be awarded if is possible to tilt the display in the vertical plane.	<b>Technical sheets</b> showing that the requirement is fulfilled.

## Environmental Criteria for Imaging Equipment

	Criteria	Verification
Energy Efficiency	All products shall have an Energy Star label according to the version of Energy Star that is applicable at the time of declaration and that can be found at <a href="http://www.energystar.gov">www.energystar.gov</a>	The tenderer shall submit documentation showing that Energy Star label requirement is fulfilled.
Recycled paper	Imaging equipment shall be capable of processing recycled paper made of 100 % post-consumer paper that meets the requirements of EN 12281:2002 also in double printing mode	The tenderer shall provide a declaration of compliance carried out by the producer or documentation (instruction manual or information sheets) showing that the requirement is fulfilled.
User Manual	A copy of the booklet or user manual or equivalent, shall be provided in italian or if not available in english, with instructions on how to maximise the environmental performance of the equipment.	The tenderer shall provide a digital form of the booklet or user manual or of all relevant pages of the user manual with informations as specified in the requirement .
Design for Disassembly	The equipment shall be designed for disassembly.	Disassembly instructions detailing dismantling procedures and diagrams/scheme of the imaging equipment. (ie. <b>RAL-UZ 122, ed. 2009</b> o <b>RAL-UZ 171, ed.2012</b> ). It presumes compliance to hold an eco-label showing that the requirement is fulfilled.

## Environmental Criteria for Imaging Equipment

### Criteria

#### Hazardous Substances and Heavy Metals

- **Azo-colorants that might release carcinogenic aromatic amines** appearing on the list of aromatic amines according to Annex XVII to Regulation (EC) No 1907/2006, shall not be used in toners and inks supplied.
- Only those substances which are listed as so-called existing substances in Annex II to Commission Regulation (EC) No 2032/2003 may be added as **active biocides to inks supplied**. No substances may be added to toners and inks (including solid inks) supplied which contain **mercury, cadmium, lead, nickel or chromium-VI-compounds** as constituents. Production-related contamination by heavy metals can't be higher than 100 ppm. Exempted are high molecular weight complex nickel compounds
- In accordance with classification criteria set out by Council Directive 67/548/EC, Directive 67/548/EC, Regulation (EC) No 1272/2008, no substances may be added to toners and inks (including solid inks) supplied with the **following R phrases** or which meet the requirements for such classification: R50, R50/53, R51/53, R59 R45, R49, R40, R46, R48, R60, R61, R60/61, R60/63, R61/62, R62, R63, R62-63, R64, R23, , R24, R25, R26, R27, R28, R39/23/24/25/26/27/28, R68/20/21/22, R48/25/24/23, R48/20/21/22, R65, R42, R43, R39-41, R29, R31, R32

### Verification

*Material Safety Data Sheets* compliant with Regulation (EC) 1907/2006 shall be provided and showing that substances requirements are fulfilled. *Material Safety Data Sheets* for toners have to show a negative AMES Test.

# Environmental Criteria for Imaging Equipment

	Criteria	Verification
Substances Emissions	<p>The product must fulfil the maximum limit values expressed below for the substances indicated:</p> <ul style="list-style-type: none"><li>- TVOC <math>\leq 18,0</math> mg/h (Colour Printing ) or <math>\leq 10,0</math> mg/h (Monochrome printing )</li><li>- Benzene <math>\leq 0,05</math> mg/h</li><li>- Styrene <math>\leq 1,0</math> mg/h (Monochrome printing ) or <math>\leq 1,8</math> mg/h (Colour Printing )</li><li>- Ozone* <math>\leq 3.0</math> mg/h (Colour Printing ) or <math>\leq 1.5</math> mg/h (Monochrome printing )</li><li>- Dust* <math>\leq 4.0</math> mg/h</li><li>- Not identified single substances VOC <math>\leq 0,09</math> mg/h</li></ul> <p>* Dust and Ozone limits refers only to electrophotographic devices</p>	<p>The applicant shall provide a test report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that the emission rates have been measured in accordance with the requirements described in Der Blaue Engel RAL UZ 171, ed. 2012 - Appendix S-M -“Test method for the determination of emissions from hardcopy devices” or equivalent.</p> <p>Product with Der Blaue Engel (RAL UZ 171, ed. 2012) ecolabel or equivalent presumes compliance with the requirement.</p>

## Environmental Criteria for Imaging Equipment

	Criteria	Verification
Sound Emissions	<p>The limit value <math>LWAd,lim,bw</math> for monochrome printing shall be determined in dependence of the operating speed <math>Sbw</math> given to one decimal place according to the following formula:  <math>LWAd,lim,bw = (59 + 0.35 * Sbw) \text{ dB(A)}</math></p> <p><math>LWAd,lim,bw</math> = A-weighted sound-power level in dB(A) for monochrome printing to be complied with, given to one decimal place,  <math>Sbw</math> = operating speed for monochrome printing in pages per minute.</p> <p>Accordingly, the following applies to the limit <math>LWAd,lim,co</math> for colour printing on parallel systems:  <math>LWAd,lim,co = (61 + 0.30 * Sco) \text{ dB(A)}</math></p> <p><math>LWAd,lim,co</math> = A-weighted sound-power level in dB(A) for colour printing to be complied with, given to one decimal place,  <math>Sco</math> = operating speed for colour printing in pages per minute.</p>	<p>The applicant shall provide a report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that the noise emission levels have been measured in accordance with ISO 7779 and declared in accordance with ISO 9296.</p> <p>It presumes compliance with the requirement to hold an eco-label showing that the requirement is fulfilled (ie. Nordic Swan (ver. 5.4), Der Blaue Engel (RAL UZ 171, ed. 2012, RAL UZ 122, ed. 2009), Eco Mark Product Category No.122, ver. 2.11).</p>

## Environmental Criteria for Server

	Criteria	Verification
Energy Efficiency	<p>Additional points will be awarded if a report carried out according with SPECPOWER certify an Overall ssj_ops / watt value at least of 4500.</p>	<p>Energy Efficiency reports carried out in accordance with the benchmark SPecpower_ssj2008 (ie prepared in accordance with the "Full Disclosure Report" provided by SPEC and that can be found at website <a href="http://www.spec.org/power_ssj2008">http:// www.spec.org/power_ssj2008</a>), certifying the "Overall ssj_ops / watt" value and showing that the requirement is fulfilled. This benchmark will be run on the server configurations with the CPU offered installed.</p>
	<p>Additional points will be awarded in proportion to the increase of the power supplies energy efficiency as defined in par. 3.6 test procedures provided by EPRI Generalized Internal Power Supply Efficiency Test Protocol available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a> This points will be awarded if both devices offered (single processor server and dual processor server) will present the above-mentioned characteristics.</p>	<p>Power supply energy efficiency test reports or documents certifying the 80 Plus label. The applicant shall provide a test report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that the power supply energy efficiency and ITHD value have been measured in accordance with the test procedures provided by EPRI Generalized Internal power Supply Efficiency test Protocol (available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a> ) in relation to the supply voltage of 230V, as specified in par. 5.1.2 1.1 and 1.2 of the Specification. It presumes compliance with the requirement to hold the " 80 Plus Silver ", "80 Plus Gold "and "80 Plus Platinum" depending on the efficiency levels declared.</p>

## Environmental Criteria for Server

	Criteria	Verification
Energy Efficiency	Additional points will be awarded in proportion to the increase of the power supplies energy efficiency taking into account the ITHD value (20% Load).	Power supply energy efficiency test reports or documents certifying the 80 Plus label. The applicant shall provide a test report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that the power supply energy efficiency and ITHD value have been measured in accordance with the test procedures provided by EPRI Generalized Internal power Supply Efficiency test Protocol (available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a> ) in relation to the supply voltage of 230V, as specified in par. 5.1.2 1.1 and 1.2 of the Specification. It presumes compliance with the requirement to hold the "80 Plus Silver", "80 Plus Gold" and "80 Plus Platinum" depending on the efficiency levels declared.
Energy Efficiency and Heat Dissipation	The server energy consumption in relation to its maximum configuration (maximum number of power supplies, maximum number of processors, maximum memory, etc.) must not exceed 1.300VA. Considering the maximum configuration, the heat dissipation from server must not exceed 4.500BTU per hour.	Technical sheets or brochure or other technical documentation showing that the requirement is fulfilled.



## Environmental Criteria for Server

	Criteria	Verification
Rack airflow	The perforated doors for massive front-to-rear airflow must be over 78%.	Technical sheets, brochure or other technical documents showing that the requirement is fulfilled.
Server weight	The weight of the server in its maximum configuration must not exceed 52 kg	Technical sheets, brochure or other technical documents showing that the requirement is fulfilled.
Server height and accessories	The server must be mechanically contained in a Cabinet 19 rack, with height less than or equal to 2U. The product must be delivered and equipped with all the accessories (rails and telescopic rails, screws specific, nuts, etc.) required to build up the device and to facilitate maintenance services.	Technical sheets, brochure or other technical documents showing that the requirement is fulfilled.
Server height	Additional points with me awarded if server height is 1U.	Technical sheets, brochure or other technical documents showing that the requirement is fulfilled.

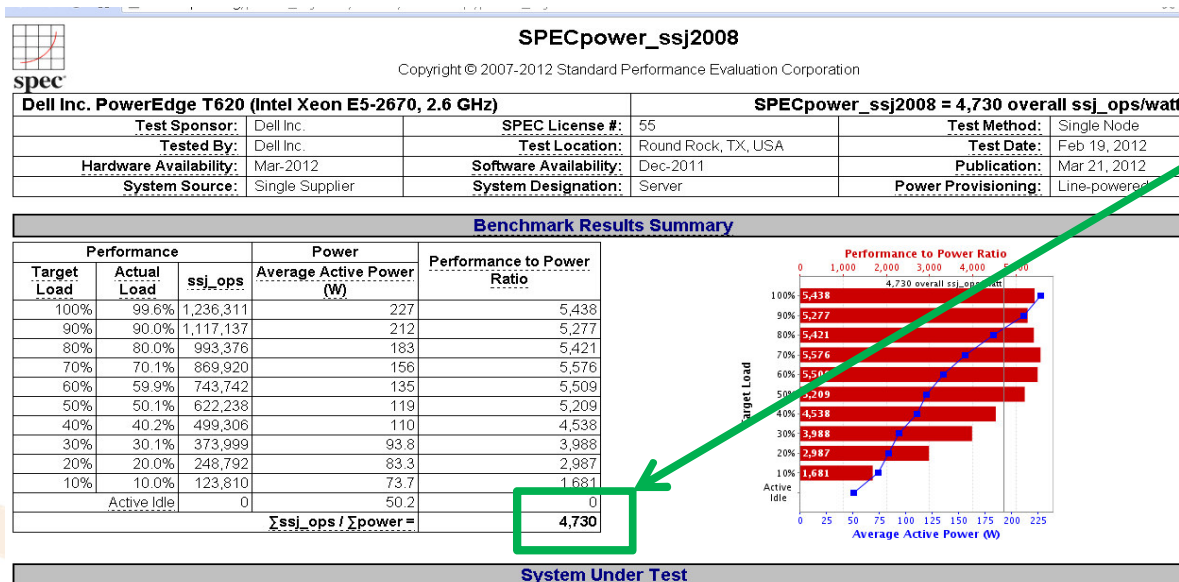
# Test Reports - some examples

## Criteria

Additional points will be awarded if a report carried out according with SPECPOWER certify an Overall ssj\_ops / watt value at least of 4500.

## Verification

Energy Efficiency reports carried out in accordance with the benchmark SPecpower\_ssj2008 (ie prepared in accordance with the "Full Disclosure Report" provided by SPEC and that can be found at website [http://www.spec.org/power\\_ssj2008](http://www.spec.org/power_ssj2008)), certifying the "Overall ssj\_ops / watt" value and showing that the requirement is fulfilled. This benchmark will be run on the server configurations with the CPU offered installed.

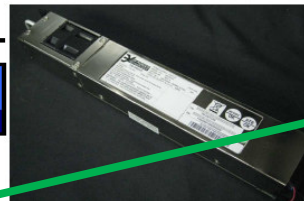


# Test Reports - some examples

	Criteria	Verification
Energy Efficiency	<p>Additional points will be awarded in proportion to the increase of the power supplies energy efficiency taking into account the ITHD value (20% Load) as specified below:</p> <ul style="list-style-type: none"> <li>-10% ≤ ITHD &lt; 15% (0,25 points)</li> <li>-10% &lt; ITHD (0,5 points)</li> </ul>	<p>Power supply energy efficiency test reports or documents certifying the 80 Plus label. The applicant shall provide a test report carried out by a laboratory accredited under EN ISO/IEC 17025, certifying that the power supply energy efficiency and ITHD value have been measured in accordance with the test procedures provided by EPRI Generalized Internal power Supply Efficiency test Protocol (available at <a href="http://www.efficientpowersupplies.org">www.efficientpowersupplies.org</a>) in relation to the supply voltage of 230V, as specified in par. 5.1.2 1.1 and 1.2 of the Specification. It presumes compliance with the requirement to hold the "80 Plus Silver", "80 Plus Gold" and "80 Plus Platinum" depending on the efficiency levels declared.</p>

## 80 PLUS Verification and Testing Report

TYPICAL EFFICIENCY (50% Load):	90.07%
AVERAGE EFFICIENCY :	88.36%
80 PLUS COMPLIANT:	YES



I <sub>RMS</sub> A	PF	I <sub>THD</sub> (%)	Load (%)	Fraction of Load	Input Watts	External Fan Power	DC Terminal Voltage (V)/ DC Load Current (A)			Output Watts	Efficiency %
							12V	5Vsb			
0.29	0.5916	15.03	10%	Low	71	12.00	12.05/2.41	5.02/0.29	30	77.13%	
0.40	0.7683	13.52	20%	Typical	71	12.00	12.04/4.78	5.01/0.57	60	85.23%	
0.78	0.9279	10.04	50%	Typical	167	16.80	12.03/11.93	4.99/1.43	151	90.07%	
1.50	0.9733	9.83	100%	Full	335	16.80	12.02/23.84	4.97/2.85	301	89.78%	

\* 10% load results are for informative purposes only and not included in certification requirements.

\*\* Fan power is not included in the efficiency calculations