EU GPP Criteria for Imaging Equipment

Green Public Procurement (GPP) is a voluntary instrument. This document provides the EU GPP criteria developed for the imaging equipment product group. The accompanying Technical Background Report provides full details on the reasons for selecting these criteria and references for further information.

For each product/service group two sets of criteria are presented:

- The core criteria are those suitable for use by any contracting authority across the Member States and address the key environmental impacts. They are designed to be used with minimum additional verification effort or cost increases.

- The comprehensive criteria are for those who wish to purchase the best products available on the market. These may require additional verification effort or a slight increase in cost compared to other products with the same functionality.

1. Definition and Scope

This document covers procurement actions for purchase and leasing of **imaging equipment devices**.

For the purposes of these criteria, the product group of "Imaging equipment" shall comprise products which are used in the office and their function is:

i) to produce a printed image (paper document or photo) through a marking process either from a digital image (provided by a network/card interface) or from a hardcopy through a scanning/copying process or/and

ii) to produce a digital image from a hard copy through a scanning/copying process.

This criteria set applies to products which are marketed as printers, copiers and multifunctional devices (MFD).

The criteria do not cover the following product kinds:
- other type of imaging equipment devices i.e. fax machines, digital duplicators, mailing machines, scanners.
- large products which are not typically used in office equipment with the following technical specifications:
  - Standard monochrome format products with maximum speed over 66 A4 images per minute;
  - Standard colour format products with maximum speed over 51 A4 images per minute

(speed to be rounded to the nearest integer as prescribed in the ENERGY STAR agreement).

The definitions of the products and of printing service included in the scope of this product group are as follows:

A "***printer***" is a commercially available imaging product that serves as a hard copy output device, and is capable of receiving information from single-user or networked computers, or other input devices (e.g., digital cameras). The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as printers, including printers that can be upgraded into MFDs in the field.

A "***copier***" is a commercially available imaging product whose sole function is the production of hard copy duplicates from graphic hard copy originals. The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as copiers or upgradeable digital copiers.

A "***multifunction device (MFD)***" is a commercially available imaging product, which is a physically integrated device or a combination of functionally integrated components that performs two or more of the core functions of copying, printing, scanning, or faxing. The copy functionality as addressed in this definition is considered to be distinct from single sheet convenience copying offered by fax machines. The unit must be capable of being powered from a wall outlet or from a data or network connection. This definition is intended to cover products that are marketed as MFDs or multifunction products (MFPs).

2. Key Environmental Impacts

The key environmental impacts from imaging equipment are strongly associated with the consumption of paper. Further, significant environmental impacts are associated with: a) energy consumption in the use phase, b) use of hazardous constituents and material selection in the product design, c) resource efficient product design including design of cartridges. Other impacts are related to the indoor air quality and to the disturbance due to acoustic noise.

Key Environmental Areas in imaging equipment life cycle and Key Environmental Impacts	GPP Approach
Key environmental areas • Paper consumption (relevant for impacts to all environmental categories) • Energy consumption in the use phase of imaging equipment (relevant for impacts to all environmental categories) • Use of hazardous substances and their environmental consequences (relevant for impacts to human toxicity, ecotoxicity, eutrophication,) • Indoor air emissions and acoustic noise (relevant for impacts to human health) Key environmental impacts: • The following key environmental impact categories along the product life cycle are covered: global warming, acidification, ecotoxicity, human toxicity, eutrophication, resource depletion, energy consumption.	• Purchase products with efficient paper management • Purchase energy efficient models • Purchase products with a limited amount of hazardous constituents • Purchase products which are resource efficient, generate little waste and facilitate reuse and recycling • Purchase products with low indoor emissions and acoustic noise

The order of impacts does not necessarily reflect their importance.

Detailed information about the imaging equipment product group, including the information about related legislation and other sources, can be found in the Technical Background Report.

3. EU GPP Criteria for Imaging Equipment

Based on data and information in the Technical Background Report the following sets of EU GPP criteria for purchase of environmental friendly (i.e. with low environmental impacts throughout the lifecycle) and energy efficient imaging equipment devices are proposed:

3.1 EU GPP criteria for imaging equipment	
Core criteria	**Comprehensive criteria**
SUBJECT MATTER	**SUBJECT MATTER**
Purchase of environmental friendly and energy efficient imaging equipment devices	Purchase of environmental friendly and energy efficient imaging equipment devices
TECHNICAL SPECIFICATIONS	**TECHNICAL SPECIFICATIONS**
Double side printing Imaging equipment devices with a maximum operating speed for monochrome printing/copying of 30 ipm (images per minute) or more for A4 size paper shall be equipped with an automatic double-side print/copy unit (a duplex-unit). The duplex printing and/or copying function shall be set as default in the original software provided by the manufacturer. **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed	**Double side printing** Imaging equipment devices with a maximum operating speed for monochrome printing/copying of 25 ipm (images per minute) or more for A4 size paper shall be equipped with an automatic double-side print/copy unit (a duplex-unit). The duplex printing and/or copying function shall be set as default in the original software provided by the manufacturer. **Verification**

requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.	Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.
Multiple page printing and/or copying in one paper sheet Imaging equipment devices shall offer as a standard feature the capability to print and/or copy several pages of a document on one sheet of paper when the product is managed by original software provided by the manufacturer (printer driver). **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.	**Multiple page printing in one paper sheet** Imaging equipment devices shall offer as a standard feature the capability to print and/or copy several pages of a document on one sheet of paper when the product is managed by original software provided by the manufacturer (printer driver). **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.
Energy efficiency All products shall meet the requirements of the latest ENERGY STAR specifications for imaging equipment available at: www.eu-energystar.org	**Energy efficiency** All products shall meet the requirements of the latest ENERGY STAR specifications for imaging equipment available at: www.eu-energystar.org

Verification Products holding a relevant Type 1 Eco-label fulfilling the listed requirements and products awarded the Energy Star v.2.0 label (or if applicable a more recent one) will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.	**Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements and products holding the Energy Star v.2.0 label (or if applicable a more recent one) will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.
User instructions for green performance management Environmental performance guide for the particular imaging equipment device (covering paper management functions, energy efficiency functions, waste management of the product and of consumables ink and/or toner cartridges) in written form as a separate part of the user manual and in digital form accessible via the manufacturers website shall be provided. Additionally, interactive training instructions regarding the paper management functions, energy efficiency functions, waste management of the product and of consumables ink and/or toner cartridges for the particular imaging equipment device shall be	**User instructions for green performance management** Environmental performance guide for the particular imaging equipment device (covering paper management functions, energy efficiency functions, waste management of the product and of consumables ink and/or toner cartridges) in written form as a separate part of the user manual and in digital form accessible via the manufacturers website shall be provided. Additionally, interactive training instructions regarding the paper management functions, energy efficiency functions, waste management of the product and of consumables ink and/or toner cartridges for the particular imaging equipment device shall be

provided via a software or be available via a website. **Verification** A copy of the instruction manual shall be supplied to the authority. This manual shall be available for access on the manufacturer's website. A technical dossier from the manufacturer demonstrating that these requirements have been met.	provided via a software or be available via a website. **Verification** A copy of the instruction manual shall be supplied to the authority. This manual shall be available for access on the manufacturer's website. A technical dossier from the manufacturer demonstrating that these requirements have been met.
	Resource efficiency: Minimum recycled and reused content The external plastic casing parts shall have in total a post-consumer recycled and/or reused content of not less than 10 % by mass. **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.

	Resource efficiency for cartridges: Design for reuse of toner and/or ink cartridges The products must accept reused (remanufactured) toner and/or ink cartridges. Any cartridge provided or recommended for use in the product shall be designed for reuse with no technical barriers via chips, compatibility of cartridge and printer software which hamper reusing the cartridge. **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.
	Availability of high volume ink cartridges Monochrome high volume inkjet cartridges with a performance of minimum 1500 page yield shall be available for imaging equipment (applying inkjet technology) of printing speed of 30 images-per-minute or more.

	Verification Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier or a declaration from the manufacturer demonstrating that these requirements have been met is also accepted.
	Acoustic noise For devices with a printing function the 'Declared A-weighted Sound Level' (L_{WAd}) according to the methods specified in ISO 7779 3rd edition (2010) shall not exceed the limits set by the following formula: $\boldsymbol{L_{WAd,lim,bw} = 37 + 20*\log(S_{bw}+ 8)\ dB}$ Where $\mathbf{S_{bw}}$ = images per minute for monochrome images $\boldsymbol{L_{WAd,lim,bw}}$ = A-weighted sound power level limit for monochrome printouts given in dB and $\boldsymbol{L_{WAd,lim,co} = 38 + 20*\log(S_{co}+ 8)\ dB}$ Where $\mathbf{S_{co}}$ = images per minute for colour images $\boldsymbol{L_{WAd,lim,co}}$ = A-weighted sound power level limit for colour printouts given in dB

	The devices shall additionally not exceed 75 (dB) L_{WAd} except for devices with a printing speed over 71 ipm. **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.
	AWARD CRITERIA
Points will be awarded	**Points will be awarded**
1. Design for recycling, end-of-life management and disassembly A. The external plastic casings, the cables, and the recommended for use by the manufacturer (OEM) cartridges of weight 25gr or more of the imaging equipment offered does not contain brominated aromatic substances used as flame retardants nor PVC. B. The imaging device offered is easy to dismantle by professionally trained personnel using the tools usually available to them, for the purpose of repairs and replacements of worn-out parts, upgrading older or obsolete	**1. Design for recycling, end-of-life management and disassembly** A. The external plastic casings, the cables, and the recommended for use by the manufacturer (OEM) cartridges of weight 25gr or more of the imaging equipment offered does not contain brominated aromatic substances used as flame retardants nor PVC. B. The imaging device offered is easy to dismantle by professionally trained personnel using the tools usually available to them, for the purpose of repairs and replacements of worn-out parts, upgrading older or obsolete parts, and separating parts and materials, ultimately for recycling or

parts, and separating parts and materials, ultimately for recycling or reuse. **Verification** Regarding point A. Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A declaration from the manufacturer that the requirements have been met is also accepted. The applicant shall declare the substances used as flame retardants. Regarding point B. Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that the requirements have been met is also accepted. This technical dossier from the manufacturer shall contain either a completed "checklist for recyclable design" indicating that all the requirements have been met (s .Annex 1) or a technical report showing the dismantling of the imaging equipment with an exploded diagram of the imaging equipment labelling the main components as well as identifying any hazardous substances in these components. This diagram shall be in written and audiovisual format which shall be available in the manufacturer website. Information regarding hazardous substances shall be provided to the authority in the form of a list of materials identifying material type, quantity used and position on the imaging	reuse. **Verification** Regarding point A. Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A declaration from the manufacturer that the requirements have been met is also accepted. The applicant shall declare the substances used as flame retardants. Regarding point B. Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that the requirements have been met is also accepted. This technical dossier from the manufacturer shall contain either a completed "checklist for recyclable design" indicating that all the requirements have been met (s .Annex 1) or a technical report showing the dismantling of the imaging equipment with an exploded diagram of the imaging equipment labelling the main components as well as identifying any hazardous substances in these components. This diagram shall be in written and audiovisual format which shall be available in the manufacturer website. Information regarding hazardous substances shall be provided to the authority in the form of a list of materials identifying material type, quantity used and position on the imaging equipment.

equipment.	
2. Printouts produced after cancelation Points can be awarded to imaging equipment devices based on their performance regarding the maximum number of pages which are printed after the user has cancelled the printing process for monochrome one side printing. The measurement shall be conducted using the measurement procedure described in Annex 2. The following formula shall be used: a = b (1-0.05x) Where: a = points awarded using this criterion t for the offered imaging device b = maximum points that can be awarded from this criterion x = number of maximum printouts produced after cancelling printing if x is over 20 pages no points can be awarded **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply.	**2. Printouts produced after cancelation** Points can be awarded to imaging equipment devices based on their performance regarding the maximum number of pages which are printed after the user has cancelled the printing process for monochrome one side printing. The measurement shall be conducted using the measurement procedure described in Annex 2. The following formula shall be used: a = b (1-0.05x) Where: a = points awarded using this criterion t for the offered imaging device b = maximum points that can be awarded from this criterion x = number of maximum printouts produced after cancelling printing if x is over 20 pages no points can be awarded **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier or a declaration from the manufacturer demonstrating that these requirements have been met is also

A technical dossier or a declaration from the manufacturer demonstrating that these requirements have been met is also accepted.	accepted.
	3. Substances in plastic parts hazardous to health Plastic parts heavier than 25g do not contain substances or preparations (including additives used as flame retardants) that are assigned any of the following risk phrases as defined in Council Directive No. 1272/2008: • R45 (may cause cancer). • R46 (may cause heritable genetic damage). • R60 (may impair fertility). • R61 (may cause harm to the unborn child). **Verification:** Products holding a relevant Type 1 ecolabel fulfilling the listed criteria will be deemed to comply. Other appropriate means of proof will also be accepted.

4. Indoor air emissions

In the use phase the product does not emit the below listed pollutants in amounts higher than the maximum emission rates given below:

Substance	Emission rate Print phase (mg/h)		Emission rate Ready phase (mg/h).	
	Colour Printing Total in ready + print phase	Monochrome printing Total in ready + print phase	Desktop products	Floor-mounted equipment (Volume >250 litres)
TVOC	18	10	1	2
Benzene	<0.05	<0.05		
Styrene	1.8	1.0		
Non identifiable VOC	1.8	1.0		
Ozone*	3.0	1.5		
Dust*	4.0	4.0		

*applies only for Electrophotography (laser) printing technology

All the above emission rates must be measured in accordance with

	the requirements described in ECMA-328 5th edition (based on Annex C9. Model for RAL-UZ 122 Option) or Blue Angel: RAL-UZ 122 Version June 2006. **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier from the manufacturer demonstrating that these requirements have been met is also accepted.
	5. Mercury in fluorescent lamps Imaging equipment devices in which mercury or its compounds is not intentionally be added to the backlights displays used. **Verification** Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier or a declaration from the manufacturer demonstrating that these requirements have been met is also accepted.
	6. Energy efficiency in standby mode

	Imaging equipment device which fulfils the requirement: "the power consumption of the networked product with low network availability in the modes with networked standby which the product is switched into by the power management function does not exceed 2,00 W" Verification Products holding a relevant Type 1 Eco-label fulfilling the listed requirements will be deemed to comply. A technical dossier or a declaration from the manufacturer demonstrating that these requirements have been met is also accepted.
CONTRACT PERFORMANCE CLAUSE	**CONTRACT PERFORMANCE CLAUSE**
1. The contractor shall guarantee the availability of spare parts for at least 5 years from the time that production ceases. 2. Guarantee for repair or replacement of minimum 5 years shall be given. **Verification**	1. The contractor shall guarantee the availability of spare parts for at least 5 years from the time that production ceases. 2. Guarantee for repair or replacement of minimum 5 years shall be given. **Verification**

Products holding a relevant Type 1 ecolabel fulfilling the listed criteria will be deemed to comply. Other appropriate means of proof will also be accepted.	Products holding a relevant Type 1 ecolabel fulfilling the listed criteria will be deemed to comply. Other appropriate means of proof will also be accepted.

Explanatory notes

In procuring imaging equipment, contracting authorities may let separate contracts (covering, for example, design, equipment supply, and installation) to different contractors. In such cases, different contractors may therefore be responsible for ensuring that different criteria are met.

Award Criteria: Contracting authorities will have to indicate in the contract notice and tender documents how many additional points will be awarded for each award criterion. Environmental award criteria should, altogether, account for at least 20% of the total points available.

Cost Considerations

Life cycle costing

The contracting authority may optionally carry out a life cycle cost assessment, or to require the bidder to carry out such an assessment. Such an assessment should include the initial cost of the installation, its estimated lifetime (indicatively 6 years is considered the average lifetime of imaging equipment), and operational costs including costs of inks and/or toner consumables, of electricity consumption together with their estimated life. All this will finally result to the calculation of the total cost of imaging equipment over its lifetime. In this respect, the contracting authority will need to estimate the prices for inks and/or toner consumables as well as energy. In case it is relevant i.e. for electricity the rate at

which this increases may also be covered. It shall be highlighted that the operational costs rely mainly on the purchase of consumables (inks and toner cartridges) and on a second level on electricity consumed and these are far over the initial purchase price of the imaging devise.

It is recommended to apply a “total cost of ownership methodology” when awarding the contract. This means that instead of considering just the purchase price of the product when assessing the one offering best value for money, the contracting authority will consider the life cycle cost (LCC) over the estimated period of ownership of the device. This would cover the purchase price, the cost of maintenance and other services, the cost of energy consumption and other consumables (such as paper and ink) for a device, and any disposal costs. This will allow the authority to take into account environmental aspects in both the quality assessment (through environmental technical specifications and/or award criteria) and the price (through inclusion of the Life cycle cost).

The EU Energy Star website has a useful tool for calculating the possible financial savings of buying a more efficient product: http://www.eu-energystar.org/calculator.htm. Based on this life cycle costing calculator can be identified that the main operational costs for imaging equipment are related mainly to the purchase of ink or toner consumables and to paper. Further, the cost is related to the electricity consumption.

As with any electricity-using product, purchasing energy efficient models is generally a win-win option – reducing running costs, and also reducing environmental impacts. Generally, the energy efficiency of the product has relatively little impact on the purchase price, certainly if you are aiming for a model within the 25% most efficient on the market.

ANNEX 1. Checklist for recyclable design

A: Structure and Connection Technology

	Components made of materials incompatible with each other are connected separably or via separation aids	Case parts, chassis, electric modules, toner modules	M	☐

Important connections are those between case and chassis as well as those between chassis and electric modules. Their separability is a prerequisite for separate use/recycling of modules and materials as well as for a quick and save separation of pollutant-containing components. Adhesive labels (e.g. company logos and labels) are concerned as well.
The term "separation aids" stands, for example, for predetermined breaking points.

	Electric modules are easily traceable and removable	Entire unit, including lamps	M	☐

Minimum recycling strategy means: removal of the pollutant freight.
Electric modules and components according to Annex III, ElektroG (Electrical and Electronic Equipment Act), as, for example, batteries and condensers involving the risk of pollutant-containing ingredients as well as mercury-containing fluorescent lamps must be easily traceable and separable.

	Disassembly can be done with universal tools exclusively	Case, chassis, electric modules	M	☐

"The term „universal tool" stands for general commercial tools.

	Necessary points of application and working space for disassembly tools have been taken into consideration	Case parts, chassis, electric modules	M	☐

A point of application is the point from where the impact is transferred from tool to connecting element. Sufficient working space is needed for the execution of the tool's separating movement.
This requirement particularly refers to snap connections which, unlike during assembly, often require tools to be disconnected.

	Screwed connections between modules can be separated with no more than three tools	Case parts, chassis, electric modules	M	☐

Standardized and uniform connection elements facilitate disassembly. The less tools must be changed the easier is assembly and disassembly.
A tool is characterized by the type of drive (e.g. cross recession) and the drive size (spanner size).

	Disassembly can be done by a single person	Entire unit	M	☐

An optional number of snap connections of the same joining direction may be assembled at a time but not always be disassembled if the re-entrant angle is ≥ 90°. This requirement shall be considered not fulfilled if more than two connections must be separated at a time.

	Case parts are free from electronic modules	Case parts	M	☐

With regard to a clean and quick pollutant removal and separation of the electronic parts all electric modules must be connected to the chassis. The case may not contain any electronic modules. Here, a control element attached to the case and case parts which simultaneously perform the functions of the chassis are not considered as case parts.

	The manufacturer did a trial disassembly (e.g. according to A.1 - A.11) and prepared a test report focussing on the weak-points	Entire unit	M	☐

B: Selection and Marking of Materials

	The variety of materials forming plastic components performing comparable functions are limited to one material	Case parts, chassis mechanical parts (≥ 25g)	M	☐

The smaller the number of materials the more efficient are separation and recycling processes. This requirement shall not apply to parts that have been reused as can be proved.

	The coating of plastic components has been limited to the minimum necessary	Case parts, toner and ink modules	M	☐

Large-area layers of lacquer, vapour depositions and printings on plastic components require additional removal processes if recycling by the material is to be done thereafter. Reasons shall be given if metallic coatings are used. Laser-produced labelings shall not be considered as printings. This requirement shall not apply to parts case that have been reused, as can be proved.

	The materials and material compounds used can be recycled by the material	Case parts, chassis, toner modules	M	☐

This means that recyclate materials identical to the original material (original recycling) can be obtained.

	The proportional use of recyclate material is permitted	Case parts, chassis, toner and ink modules	M	☐

A real "cycle" does not exist before the manufacturer actually uses recyclate goods or promises to do so along with the product specification.

	Components and materials under Annex III to ElektroG (Electrical and Electronic Equipment Act) can be easily exchanged	Entire unit	M	☐

	Material selection according to B.1-B.5 has been done and recorded in writing	Case parts, chassis, toner modules	M	☐

	Plastic parts > 25 g according to EN/ ISO 11469: considering ISO 1043 are marked	Entire unit	M	☐

Plastics marking enables all recycling companies to do a type-specific sorting and separation of plastics

C: Longevity

	At least 50% of the components of the device, except for standard parts, are identical in design to those in other devices of the same manufacturer and the same performance category and generation	Entire unit	M	☐

	The use of reprocessed modules or components is possible and permissible	Entire unit	M	☐

The manufacturer shall be prepared to use modules and components as spare parts or ETN-parts in the product, provided that they have been reprocessed under his guidance - (ETN- equivalent to new)

	Toner or ink modules can be reprocessed	Toner and ink modules, except for containers	M	☐

Reuse should not be prevented by constructive measures

All Requirements have been met and answered „Yes“?	M	☐

Place:
Date:

Applicant:
(Signature of authorized representative and company stamp)

ANNEX 2. Reporting of printouts produced after cancelation

The manufacturer shall report the number of paper sheets which are printed or copied after the user has cancelled the printing or copying process separately for one-side printing and for double-side printing based on the measurement method described below.

Measurement method for the assessment of the reporting of number of printouts produced after cancelation

The following measurement method is proposed:
The devices shall be tested in the following modes while operating in high performance (speed and print quality):

- One side monochrome printing
- Double side monochrome printing
- One side colour printing
- Double side colour printing

In all cases A-4 size paper having a weight per unit area of 70 to 80 g/m2 shall be used for the printouts. The double side printing test is only applicable only for devices equipped with automated duplex unit.

The same monochrome and colour sample will be used as the test sample as was used in the measurement of indoor emissions in Blue Angel Ecolabel criteria RAL-UZ122:2006-04 (also available via http://www.ps.bam.de/RALUZ122E/) originating from JBMS-74-1.

The printing process shall start and shall be interrupted (cancelled) when the forth printout leaves the internal printing part and is on the respective casing part available and ready for the user to take. The cancelation can be made either using the software cancelling option or if available via a button directly on the hardware.

The number of paper sheets printed after the printing cancelation shall be reported.
The final reported value shall be the average of three tests.
The following table shall be completed:

Table 1 Form for reporting the number of printouts produced after cancelation

Tested operation	Speed in ipm	Number of printouts printed after cancelation
One side monochrome printing		
Double side monochrome printing		
One side colour printing		
Double side colour printing		

In case of copiers the same test measurement procedure shall be used.