Appendix 1. The scope of restrictions on hazardous substances that shall apply to the product.

1(a) Hazard derogations that reflect substitutions made by manufacturers

Substance group	**Scope of restriction**	**Concentration limits (where applicable)**	**Assessment and verification**
(i) Flame retardants	Flame retardants that are classified with Group 3 hazards are derogated for use in the following sub-assemblies: - CPU solder resist, build-up and core - Populated motherboard (including RAM and graphics units) - Internal and external power supply units - Data storage drives - Internal connectors and sockets *Derogation condition:* - Test results shall demonstrate that the motherboard laminate material does not emit carcinogenic PAHs at > 5.0 g/kg, when burnt in conditions simulating improper WEEE disposal. The PAHs to be quantified are listed in Appendix 1(c)(v). - Printed circuit boards shall be compatible with recycling (see criterion 4(a)).	n/a	Declaration by the sub-assembly supplier supported by classification data.for the substances used and test reports for the derogation conditions. *Test method:* ISO 19700 or IEC 60695-7-50 using fire type 1b with a heat flux of 50 kW/m^2 as specified by the US EPA. Quantification according to ISO 11338.
	Flame retardants and their synergists classified with Group 3 hazards are derogated for use in *external power cables and power packs*. *Derogation condition:* - Test results shall demonstrate that the cable does not emit carcinogenic PAHs at > x.x g/kg, when burnt in conditions simulating improper WEEE disposal. The PAHs to be quantified are listed in Appendix 1(c)(v).	n/a	Declaration by the sub-assembly supplier supported by classification data.for the substances used. *Test method:* ISO 19700 or IEC 60695-7-50 using fire type 1b with a heat flux of 50 kW/m^2 as specified by the US EPA. Quantification according to ISO 11338.
	Flame retardants and their synergists classified with Group 2 and 3 hazards are derogated for use in *external plastic casings and bezel*s.	n/a	Declaration by the sub-assembly supplier supported by classification data.for the

	Derogation condition: Plastic components containing flame retardants shall be compatible with recycling (see criterion 4(a)).		substances used.
(ii) Plasticisers	Plasticisers that are classified with Group 3 hazards are derogated for use in *external power cables and power packs, casings and internal wiring.*	n/a	Declaration to be obtained from the sub-assembly supplier supported by classification data.for the substances used.

1(b) Hazard restrictions applying to substances that may be present in sub-assemblies or components

Substance group	**Scope of restriction**	**Concentration limits (where applicable)**	**Assessment and verification**
(i) Coolant	Working fluids that are ozone depleting substances classified with H420 shall not be used in the cooling system of computers.	n/a	A declaration to be provided by the applicant together with details of the heat transfer medium used in the computers cooling system.

1(c) Restrictions applying to substances that may be present in the final product

Substance group	**Scope of restriction**	**Concentration limits (where applicable)**	**Assessment and verification**
(i) Flame retardants	PTFE used as a non-dripping agent in *external plastic casings and bezels* shall be manufactured without the use of PFOA or its higher homologues.	n/a	Declaration from the PTFE manufacturer to be obtained obtained by the sub-assembly supplier.
(ii) Plasticisers	The following plasticisers that are classified with Group 1 hazards shall not be present in *external power cables and power packs:* DEHP, BBP, DBP, DIBP, DMEP, DIPP, DPP, DnPP and DnHP.	Sum total concentration limit of 0.1%	Declaration by the sub-assembly supplier supported by a test report. *Test method:* Solvent extraction followed by GC-MS
	The following plasticisers that are classified with Group 1 hazards shall not be present in *external power cables*	Sum total concentration limit of 0.1%	Declaration by the sub-assembly supplier supported

	and power packs: Medium Chained Chlorinated Paraffins (MCCP's) Alkanes C14-17		by a test report. *Test method:* XRF (non-destructive) as specified by IEC 62321—3-1
(iii) Polymer stabilisers	Lead (H360, H372, H400, H410) shall not be present in *external power cables, internal wiring and connecting cords*.	0.1%	Declaration by the sub-assembly supplier supported by a test report. *Test method:* IEC 62321-3-1
	Organotin compound stabilisers that are classified with Group 1 and 2 hazards shall not be present in *external power cables and power packs*.	n/a	Declaration to be obtained from the sub-assembly supplier supported by classification data.for the substances used.
(iv) Polymer colourants	Colourants used in *external power cables, plastic casings and bezels* shall not contain lead, chromium VI, cadmium, dyes that may cleave to carcinogenic aryl amines or any other colourant compound or degradation product included in the IEC 62474 declarable substances list.	Lead and chromium VI 0.1% Cadmium 0.01% Other compounds 0.1%	Declaration to be obtained from the sub-assembly supplier. *Test method:* IEC 62321-3-1 for lead, chromium VI and cadmium

(v) Polymer contaminants	The following Polycyclic Aromatic Hydrocarbons (PAHs) classified with Group 1 hazards shall not be present at concentrations greater than or equal to the individual and sum total concentration limits in any external plastic or man-made rubber surfaces of: - Notebooks and tablets; - Peripheral keyboards, - Mice, - Stylus and trackpads; - External power cables. The non-presence of the following PAHs shall be verified: *PAH's restricted by the REACH Regulation:* Benzo[a]pyrene, Benzo[e]pyrene, Benzo[a]anthracene, Chrysen, Benzo[b]fluoranthene, Benzo[j]fluoranthene, Benzo[k]fluoranthene Dibenzo[a,h]anthracene, *Additional PAH's subject to restriction:* Acenaphthene Acenaphthylene Anthracene Benzo[ghi]perylene Fluoranthene Fluorene Indeno[1,2,3-cd]pyrene Naphthalene Phenanthrene Pyrene	The individual concentrations limit for the eight REACH restricted PAHs shall be 1 ppm The sum total concentration limit for the 18 listed PAHs shall not be greater than 10 ppm	Test report to provided by the applicant for relevant parts of the identified parts of the product. *Test method*: ZEK 01.4-08
(vi) Biocides	Biocides intended to provide a hygiene (anti-bacterial) function shall not be added to plastic or rubber parts of keyboards and peripherals.	n/a	Declaration to be provided by the sub-assembly supplier.
(vii) Metal solder and contacts	RoHS exemption 7b relating to the use of lead solder in small-scale servers shall not be permitted.	0.1%	Declaration to be provided by the manufacturer or final assembler identifying the alternative solder used. *Test method:* IEC 62321-3-1

	RoHS exemption 8b relating to the use of cadmium in metal contacts shall not be permitted.	0.01%	Declaration to be obtained from the final assembler of the product identifying the alternative contact metal used. *Test method:* IEC 62321-3-1
(viii) Metallic coatings	Hexavalent chromium shall not be present in metallic coatings applied to any parts of a computer.	0.1%	Declaration to be obtained from the final assembler of the product supported by a test report for the coating or coatings used. *Test method*: IEC 62321-7-1
(ix) Vapour discharge	Mercury shall not be present in the backlight units of screens. *Supporting requirement:* Products shall be externally labelled with the mercury free logo as described in Ecodesign Regulation xxxx/xxx/EU.	0.1 mg per lamp	A declaration to be obtained from the screen unit manufacturer. *Test method*: Ecodesign will not require testing
(x) Fining agents	Arsenic and its compounds shall not be used in the manufacturing of screen glass or glass used in track pad surfaces.	0.0050%	A declaration to be obtained from the screen glass manufacturer supported by an analytical testing report. *Test method*: to be specified

(xi) Cleaning agents and degreasers	The following substances classified with Group 1 and 2 hazards shall not be present in parts of the final product treated in the final assembly plant and, for those specified, shall be controlled in the final assembly process: *Propanal, benzene, isobenzofurandione, n-hexane and chlorinated organic solvents.* *Manufacturing process restrictions:* The manufacturer shall verify that the following 8 hour TWA's occupational exposure limit values are respected: Benzene <1.0 ppm (<3.25 mg/m^3) n-hexane 20 ppm (72 mg/m^3)	0.1% for each individual substance	Declaration supported by monitoring data from the final product assembly plant to be provided by the applicant.

1(d) Derogations applying to specific substances or groups of substances

Substance group	**Scope of restriction**	**Concentration limits (where applicable)**	**Assessment and verification**
(i) Stainless steel	Stainless steel containing nickel classified with H351, H373 and H412 classified with is derogated for use in casings, bolts, nuts, screws and brackets.	Nickel 8 – 13%	Declaration to be obtained from the sub-assembly manufacturer
(ii) Battery cathode and electrolyte	Lithium cobalt oxide, lithium manganese dioxide, lithium iron phosphate and lithium cobalt nickel manganese cathodes contained within portable computer battery cells and which are classified with the hazards H361, H330, H331, H372 and H412 and H413 are derogated for use. *Derogation condition:* The manufacturer shall verify that, where contained within the cathode, the following 8 hour TWA's occupational exposure limit values are respected: Nickel 0.005 mg Ni/m^3 Cobalt x.x mg Ni/m^3	20 – 40% by weight	Declaration by the battery or cell manufacturer supported by classification data for the cathode and electrolyte used and monitoring data from the manufacturing plant.
	Electrolyte solvents and salts contained within portable computer battery cells and which are classified with the hazards H301, H311, H372 and H373 are derogated for use.	1.0 – 5.0% by weight	

(iii) Doping and luminescence	Doping substances classified with H301, H331, H400, H410, H411, H412 and H413 are derogated for use in the chip and diode of LED lamps.	n/a	Declaration to be obtained from the sub-assembly manufacturer supported by classification data. .
	Luminescent substances classified with H350, H351, H361f, H372 and H373 are derogated for use in LED and OLED screen units.		

Appendix 2. Additional durability test specifications for notebook computers

Temperature stress	*Specification:* The notebook shall be subjected to three 24 hour exposure cycles in a test chamber for each extreme of temperature, which shall be -29^{o}C and 63^{o}C - *Functional requirement:* The test shall be carried out for an operational and non-operational notebook. The notebook shall be checked that it functions following each routine.	IEC 60068 Part 2: A and B
Screen resilience	*Specification:* 60kg/cm^{2} static load to be applied to the centre of the screen lid with the notebook placed on a flat surface. The test shall be repeated x times. The screen shall be flexed by pushing and pulling each top corner with a force of 20 N applied x,xxx times in each direction. *Functional requirement:* The screen surface and pixels shall be inspected for the absence of lines, spots and cracks after each application of a loading.	The test equipment and setup used shall be confirmed by the applicant.
Water ingress	*Specification:* 0.2 litres of water is to be poured evenly over the keyboard of the notebook, drained away after 3 seconds, the notebook inverted on its side for 45 seconds and then tested for functionality after 2 minutes. The test shall be repeated x times. *Functional requirement:* The notebook shall remain operational during and after the test. The notebook shall then be dismantled and visually inspected so as to pass the IEC 60529 acceptance conditions for water ingress.	Acceptance conditions: IEC 60529 (water ingress)
Keyboard	*Specification:* 10 million random keystrokes shall be applied to the keyboard. The number of keystrokes shall be weighted to reflect the most commonly used keys. *Functional requirement:* The keys shall then be inspected for their integrity and functionality.	The test equipment and setup used shall be confirmed by the applicant.

Screen hinge	*Specification:* The screen shall be fully opened and then closed 20,000 times. *Functional requirement:* The screen shall then be inspected for any loss of stability and hinge integrity.	The test equipment and setup used shall be confirmed by the applicant.

Appendix 3. Outline procedure for a product disassembly test

Terms and definitions

- Target parts and components: Parts and/or components that are targeted for the extraction process.
- Disassembly step: An operation that finishes with the removal of a part or with a change of tool.

Operating conditions for the extraction

- Personnel: The test shall be carried out by one person.
- Test sample: The sample product to be used for the test shall be undamaged.
- Tools for extraction: The extraction operations shall be performed using manual or power-driven standard commercially available tools (i.e. pliers, screw-drivers, cutters and hammers as defined by ISO 5742, ISO 1174, ISO 15601).
- Extraction sequence: The extraction sequence shall be documented and, where the test is to be carried out by a third party, information provided to those carrying out the extraction.

Recording of the test conditions and steps

- Documentation of steps: The individual steps in the extraction sequence shall be documented and the tools associated with each step shall be specified.
- Recording media: Photos shall be taken and a video recorded of the extraction of the components. The video and photos shall enable clear identification of the steps in the extraction sequence.