



UL 110

Standard for Sustainability for Mobile Phones

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Standard for Sustainability for Mobile Phones, UL 110

Second Edition, Dated March 24, 2017

Summary of Topics

This revision of ANSI/UL 110 dated November 6, 2018 includes corrections to the revisions dated September 28, 2018 as follows:

Title of subsection 8.1.1 replaced with the correct title.

Title to subsection 9.2.2 referenced in Appendix A was corrected.

Text that has been changed in any manner or impacted by UL's electronic publishing system is marked with a vertical line in the margin.

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UL 110

Standard for Sustainability for Mobile Phones

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Second Edition

March 24, 2017

This ANSI/UL Standard for Safety consists of the Second Edition including revisions through November 6, 2018.

The most recent designation of ANSI/UL 110 as an American National Standard (ANSI) occurred on September 28, 2018. ANSI approval for a standard does not include the Cover Page, Transmittal Pages, and Title Page.

Comments or proposals for revisions on any part of the Standard may be submitted to UL at any time. Proposals should be submitted via a Proposal Request in UL's On-Line Collaborative Standards Development System (CSDS) at <https://csds.ul.com>.

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INTRODUCTION

1 General

1.1 This Standard is designed to reduce adverse environmental and social impacts associated with the design, manufacture, use, and end of life management of mobile phones. Prior to establishment of this Standard, there were various criteria to define the sustainability of mobile phones; however, they were not coordinated or combined into a set of metrics. The goal of this Standard is to establish a set of multi-sustainability performance criteria addressing the life cycle impacts of the product that may be used to evaluate the sustainability performance of mobile phones.

2 Scope

2.1 This Standard establishes multiple attribute sustainability criteria for mobile phones, covering the mobile phone, accessories shipped in the box with the mobile phone, and packaging.

2.2 The criteria in this Standard were developed based on the life cycle stages of mobile phones and corporate sustainability performance factors. Sustainability factors considered in this Standard are:

- a) Materials;
- b) Energy use;
- c) End of life management and extension of useful life;
- d) Packaging;
- e) Corporate practices;
- f) Manufacturing and operations.

Credit for innovations in these, or other factors not listed, is also addressed in this Standard.

2.3 This standard includes two types of criteria:

- Product criteria: Applies to the product declared to conform to the standard.
- Corporate criteria: Applies to the manufacturer that declares products to conform to this standard for at least the applicable operations.

Unless designated as corporate, criteria in this standard are product criteria.

3 Units of Measurement

3.1 For the purposes of this Standard, values shall be reported in accordance with the requirements of the specific criteria and shall be in the International System of Units (SI).

4 Undated References and Regional Conformity

4.1 Any undated reference to a code or standard appearing in this Standard shall be interpreted as referring to the latest edition of that code or standard. The exception shall be in the case where the criterion explicitly states a certain version or date to be used. In the case of EU Directives, which contain an adoption date in their title, when the EU repeals a directive and replaces it with a new directive, or otherwise edits and updates a directive, the new directive will apply as the referenced directive upon its enforcement date, unless otherwise explicitly stated in the normative reference.

4.2 With regard to being region or country specific, there are the two following options for criteria:

- If the criterion does not specify, the criterion shall be declared the same in all countries or regions for which the product is declared to conform to this standard. The approach used to conform to the criterion may vary by country or region; or
- The criterion may specify, "A manufacturer may declare this criterion differently in each country or region for which the product is declared to conform to this standard."

Note: Region means countries and territories whose independence may not be recognized by all countries (e.g., Taiwan).

4.3 For instances where there are multiple accessory combinations covered under a criterion, and for which there are not material differences associated with the product, the manufacturer shall choose a representative combination.

4.4 For instances where supplier documentation or test reports are covered under a criterion, the documentation must have been generated:

- within 2 years of when the impacted item was first sold on the market, or
- within 2 years of when the documentation was obtained, or
- when changes were most recently made to the impacted part that impacts the aspects to which the documentation applies,

whichever is most recent.

5 Glossary

5.1 For the purpose of this Standard, the following definitions apply.

5.1.1 3TG MINERALS –

- a) Columbite-tantalite (coltan), cassiterite, gold, wolframite, or their derivatives, which are limited to tantalum, tin, and tungsten, unless the U.S. Secretary of State determines that additional derivatives are financing conflict in the Democratic Republic of the Congo or an adjoining country; or
- b) Any other mineral or its derivatives determined by the U.S. Secretary of State to be financing conflict in the Democratic Republic of the Congo or an adjoining country.

Source: U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Section 1502, and the Securities and Exchange Commission Rule.

5.2 ACCESSORIES – Components used external to the mobile phone, such as cables and external power supplies, essential to the operation of and shipped in the box with the mobile phone, not including the mobile phone. Printed materials and packaging are excluded. For instances where there are multiple accessory combinations associated with the product, and for which there are not material differences relevant to the aspects germane to the criterion, the manufacturer shall choose a representative combination.

5.3 AUTHORIZED REPAIR SERVICE PROVIDERS – A service provider is an entity or facility that has been provided permission directly by the mobile phone manufacturer to provide repair services. Manufacturer authorized service centers are entities or facilities approved by the manufacturer to perform service on the product, including partnerships with wireless carriers and local 3PLs (third-party logistic providers).

5.4 *Deleted*

5.5 BIOBASED PLASTIC CONTENT – The amount of biogenic carbon in a biosourced monomer(s) or filler(s) as determined by ASTM D6866, Standard Test Methods for Determining the Biobased Content of Solid, Liquid, and Gaseous Samples Using Radiocarbon Analysis multiplied by the percentage (by weight) of the components of the polymer(s) or filler(s) that originate from the bio-sourced monomer(s) in the compound. Biogenic carbon is derived, in whole or in significant part, from biological products or renewable domestic agricultural materials (including plant, animal, and marine materials) or forestry materials.

5.6 CHEMICAL ABSTRACT SERVICES (CAS) NUMBER – A unique numerical identifier assigned to every chemical by the CAS division of the American Chemistry Council.

5.7 *Deleted*

5.8 CONSUMER – Individual and institutional purchaser of the product.

5.8.1 DISPLAY ASSEMBLY – A collection of assembled electronic components that displays data utilizing liquid crystal, LED, or other display technologies, as they are assembled into the product (i.e. may include a housing or casing).

5.9 ENVIRONMENTAL MANAGEMENT SYSTEM (EMS) – Part of an organization's management system used to develop and implement its environmental policy and manage its environmental aspects. (Reprinted from ISO 14050 Environmental management – Vocabulary.)

5.10 EUTROPHICATION – The process whereby a body of water receives excess nutrients that stimulate excess plant growth, usually resulting in the depletion of dissolved oxygen.

5.11 FIBER BASED – Materials primarily derived from natural fiber, including but not limited to wood, hemp, kenaf, palm, bamboo, starch, straw, cellulose and bagasse. A material that is composed of or derived from biological materials, including renewable agricultural (plant, animal, and marine) and/or forestry materials.

5.12 FINAL ASSEMBLY – The assembly process for a product after which it is sold directly to a customer, retail store or other distribution channel, without further assembly or manufacture, and does not include non-physical (e.g. software/firmware installation on the product) and/or packaging processes or services.

5.13 GLOBAL WARMING – The sustained increase of the average temperature of the earth's atmosphere, resulting in climatic change, due to the increased emission of greenhouse gases.

5.14 GRI STANDARDS – A sustainability reporting framework that can be used to measure and report on the economic, environmental, and social performance of an organization.

5.15 Deleted

5.16 HOMOGENEOUS MATERIAL – A homogeneous material is either:

- 1) A material with a uniform composition throughout; or
- 2) A material that consists of a combination of materials, that cannot be disjointed or separated into different materials by mechanical actions such as unscrewing, cutting, crushing, grinding or abrasive processes.

5.17 HOUSING – External enclosure of the mobile phone that provides protection to the internal components of a mobile phone. Secondary cases on top of, or attached or applied to the exterior of the manufacturer's original housing; and a mobile phone display, buttons and connection ports; are not included.

5.18 LIFE CYCLE ASSESSMENT – Compilation and evaluation of the inputs, outputs and the potential environmental impacts of a product system throughout its life cycle. (Reprinted from ISO 14050 Environmental management – Vocabulary.)

5.19 MANUFACTURER – The legal entity that is the owner or the licensee of the brand or trademark under which the mobile phone in the scope of this standard is placed on the market and

- Manufactures a mobile phone, and/or
- Has a mobile phone designed or manufactured, and/or
- Acquires a mobile phone for sale under their brand or trademark

5.20 MECHANICALLY DISJOINTED – The materials can, in principle, be separated by mechanical actions such as:

- Unscrewing;
- Cutting;
- Crushing;
- Grinding; and
- Abrasive processes.

(Reprinted from the UK RoHS Guidance Producer Support Booklet.)

5.21 MOBILE PHONE – A wireless handheld device that is designed to send and receive transmissions through a cellular radiotelephone service including only the device itself and not packaging or accessories. Slates/tablets, as defined in the most recent applicable version of ENERGY STAR specification, are excluded from this definition.

5.22 NON-PROPRIETARY TOOL – Legally available for purchase by the general public. If patented, the patent is available for licensing under Fair, Reasonable, and Non-Discriminatory terms.

5.23 OZONE DEPLETION – The destruction of the stratospheric ozone layer which shields the earth from ultraviolet radiation harmful to life.

5.24 PACKAGING – A container enclosing the product along with any required protective materials designed to contain and protect from the point of manufacture to the point of sale. The packaging includes any individual assembled parts of the packaging such as, but not limited to, any interior or exterior blocking, bracing, cushioning, weatherproofing, exterior strapping, coatings, closures, inks, labels, bags, and films. The packaging does not include additional protective packaging used when transporting to a customer or reseller nor does it include printed information such as warranties and user guides.

5.24.1 PLASTIC – A material that contains, as an essential ingredient, one or more organic polymeric substances of large molecular weight, is solid in its finished state, and, at some stage in its manufacture or processing into finished articles can be shaped by flow. Rubber, textiles, adhesives, and paint, which may in some cases meet this definition are not considered plastics. Thermoset plastic and 3-D printed plastic are within the scope of this definition.

Adapted, with permission from ASTM D883-12 Standard Terminology Relating to Plastics, copyright ASTM International, 100 Barr Harbor Drive, West Conshohocken PA 19428. A copy of the complete standard may be obtained from ASTM, www.astm.org.

5.25 POINT OF SALE (POS) PACKAGING – The packaging that contains the mobile phone and accessories as packaged for sale to the user.

5.26 POST-CONSUMER RECYCLED MATERIAL – Material that was used by an end-user which is no longer being used for its intended purpose.

5.27 PRE-CONSUMER RECYCLED MATERIAL – Material diverted from the waste stream during a manufacturing process having never reached the end user. Excluded is the reutilization of materials generated in a manufacturing process and capable of being reused as a substitute for raw material without being modified in any way.

5.28 PRIMARY ENERGY DEMAND – The demand for energy found in nature that has not been subjected to any conversion or transformation process. It is energy contained in raw fuels as well as other forms of energy received as input to a system.

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5.29 PRIMARY RECYCLERS – The entity(ies) that is contracted by the manufacturer or its agent to provide recycling services. A manufacturer may have multiple primary recyclers (i.e. regional providers).

5.30 PRODUCT – The distinct mobile phone device identified by a unique stock keeping unit (SKU) identified and created to be available for sale to and used by a mobile phone end user and including all accessories contained in the POS packaging.

Note: The product does not include the packaging (see 5.24).

5.31 QUALIFIED REPAIR SERVICE PROVIDERS – Companies and organizations which provide repair services for mobile phones that have demonstrated qualifications through training and experience. May include organizations that have partnerships with wireless carriers and local third-party logistics providers.

5.32 RECYCLED CONTENT – The proportion of pre-consumer and/or post-consumer recycled material, by mass, in a product or packaging.

5.33 REFURBISHMENT – The process by which electronic products or components are restored to a defined condition in function and form that is comparable to, or better than, a new mobile phone or component. The mobile phone or component's composition and design is not changed significantly. Refurbishment may include repair or replacement of a consumable item such as an EMC or quick-release tape, or of parts or components associated with repair.

5.34 RENEWABLE ENERGY – Energy derived from resources that are naturally replenished and can be sustained indefinitely. Potential sources include, but are not limited to, solar electric (photovoltaic), solar thermal, wind, geothermal, bio-gas, biomass, low-impact hydro and renewable cogeneration on-site or off-site, on- or off-grid.

5.35 REUSE – Using an object again, for its original purpose or as repurposed, without significantly altering the physical form of the object although the object may be cleaned, repaired or refurbished between uses. (Reprinted from IEEE Std. 1680.2-2012, Standard for Environmental Assessment of Imaging Equipment.)

5.36 UNIQUE SUPPLIER PARTS – Parts, components, or materials in the product manufacturers' Bill of Materials of the product that have a unique part number defined by the parts manufacturer.

5.37 WASTE – Material from the generator or holder that does not possess characteristics or meet technical specifications for use in the marketplace without further processing and will be discarded or released to the environment.

COMPLIANCE, EVALUATION AND ASSESSMENT CRITERIA

6 Evaluation and Assessment Criteria

6.1 General

6.1.1 This standard recognizes three levels of environmental performance. To conform to this standard, a product shall meet all required criteria. Products are certified to a specific achievement level by meeting all required criteria and a percentage of optional points, as described below.

6.1.2 For each optional criterion a total number of possible points is specified. No minimum number of optional points is needed from within each environmental performance category. The total number of points needed may be obtained by any combination of total points available. Overall, a maximum of 119 points are available (excluding criteria from which a particular product is excluded, or that are not applicable), not including innovation points. No more than eight innovation points, as described in this Standard, are permitted to be assigned to a candidate product. Innovation points achieved are added to the numerator and not the denominator.

6.2 Levels of achievement

6.2.1 Three levels of achievement are available within this Standard: Bronze, Silver and Gold. Table 6.1 below identifies the levels, with the associated points needed to achieve each level.

Table 6.1
Achievement Level – Optional Points Needed

Level of Achievement	Points Needed
Bronze	Required
Silver	Required criteria + 50% of available optional points
Gold	Required criteria + 75% of available optional points

6.2.2 Table 6.2 lists the required criteria for this Standard and Appendix A contains the full list of criteria in this standard.

Table 6.2
Required Criteria

Category	Criteria
MATERIALS	7.1.1, 8.1.1, 9.1.1, 9.2.1, 9.2.4, 9.2.5
ENERGY USE	10.1.1, 10.1.3
END OF LIFE MANAGEMENT	11.1.1, 11.2.1, 11.3.1, 11.4.1, 11.5.1, 11.6.1, 11.7.1, 11.8.1
PACKAGING	12.2.1, 12.4.1, 12.5.1, 12.7.1, 12.8.1
CORPORATE PRACTICES	13.1.1
MANUFACTURING AND OPERATIONS	15.2.1, 15.3.1

MATERIALS

7 Supply Chain Management of Materials

7.1 Compliance with the European Union REACH Regulation

7.1.1 Required – Compliance with the European Union REACH Regulation

The manufacturer shall disclose in accordance with Article 33 disclosure requirements for Substances of Very High Concern (SVHC) under the European REACH regulation.

7.2 Reduction of European Union REACH Candidate SVHC substances

7.2.1 Optional – Reduction of European Union REACH Candidate SVHC substances

The product articles shall not contain applicable substances included in the Candidate List of Substances of Very High Concern (SVHC) and REACH Annex XIV (List of Substances Subject to Authorization) above 0.1% weight by weight, as per Article 33 paragraph 1 of the European Union REACH regulation and interpreted according to the European Chemicals Agency "Guidance on requirements for substances in articles C"¹, excluding uses and levels allowable under the European Union RoHS directive and amendments.

Substances on the Candidate List of SVHC that have a Date of Inclusion on the Candidate List of two years or more prior to the date the product is first declared to conform to this criterion are subject to this requirement.

In order to identify applicable substances, manufacturers may pre-screen the European Union REACH Candidate List and Annex XIV using IEC 62474 Material Declaration for Products of and for the Electrotechnical Industry.

Manufacturer shall utilize a system to ensure that the product articles do not contain these substances above 0.1% weight by weight, as per Article 33 paragraph 1 of the European Union REACH regulation and interpreted according to the European Chemicals Agency "Guidance on requirements for substances in articles." The system may include supplier management and trustworthiness assessment, Supplier Material Declaration, Disclosure to manufacturer, or analytical testing, to ensure that the product does not contain these substances.

Point value: 6

¹<http://echa.europa.eu/guidance-documents/guidance-on-reach>

7.3 Substitutions assessment

7.3.1 Optional – Substitutions assessment

The manufacturer shall provide documentation showing that a recognized competent and reliable scientific manufacturer or supplier expert, or such an expert in partnership with the manufacturer, has performed a chemical hazard assessment of alternatives to one or more substances that:

- a) Is on the "Declarable Substances List" of IEC 62474, Material Declaration for Products of and for the Electrotechnical Industry; or
- b) Has been assessed using the GreenScreen® for Safer Chemicals⁴ protocol and achieved a Benchmark™ score of 1 or 2.

This evaluation shall be based on assessment tools equivalent to the U.S. EPA's Design for the Environment Alternative Assessment Methodology²(including but not limited to the Green Screen for Safer Chemicals methodology). The assessment shall cover human health and environmental endpoints including but not limited to those listed in U.S. EPA's Design for the Environment Program Alternatives Assessment Criteria for Hazard Evaluation³. All assessments shall consider the health and environmental impacts of transformation products associated with combustion.

Assessments shall be conducted on at least one substance used in the declared product or that has been used in previous products manufactured within 5 years prior to declaration of conformity to this standard.

All assessments shall be conducted by an assessor with the following qualifications:

- a) A degree in chemistry, chemical engineering, biology, toxicology, environmental sciences, or a related field relevant to the subject matter in the assessment;
- b) Training in conducting assessments using one of the above referenced methodologies, provided by recognized experts in conducting such assessments;
- c) Experience in conducting at least one assessment that has been peer reviewed by experts in the field or published in relevant journals or in repositories of reviewed assessments.

Assessments shall include the following information:

- a) Name of assessor.
- b) Demonstration that assessor meets the applicable qualifications.
- c) Whether the assessment has been verified by an independent third-party.
- d) Date of the assessment and date of expiration (if applicable).

If the manufacturer cannot identify one or more substances that meet the conditions of (a), then the manufacturer must select one or more substances meeting the conditions of (b) in order to claim this criterion

The manufacturer shall indicate whether it replaced the target substance with a lower-hazard substance to serve the same function in the product, based upon the results of the assessment. The manufacturer shall determine the weighting of hazard endpoints evaluated and provide documentation supporting its decision.

A manufacturer may only claim these points if it elects to use a lower-hazard alternative (e.g. higher-benchmark), or if the assessment demonstrates the target substance represents a lower hazard alternative (e.g. higher-benchmark) than the evaluated potential alternatives. An evaluation performed on a substance used in a manufacturer's prior-shipped product is considered sufficient if the application is relevant to the product to which this standard is being applied, and if the evaluation has been completed within 3 years of declaring conformity to this criterion.

Point value: 6

²<https://www.epa.gov/saferchoice/design-environment-alternatives-assessments>

³<https://www.epa.gov/saferchoice/alternatives-assessment-criteria-hazard-evaluation>

⁴<http://www.greenscreenchemicals.org>

7.4 Requesting and receiving substance inventory

7.4.1 Optional – Requesting substance inventory

The manufacturer shall request information from suppliers on the inventory of substances in the materials, components, and parts contained in the mobile phone and have a documented process, and a system or tool, to manage that information as defined below.

Requesting information: The manufacturer shall demonstrate that requests were made to suppliers of the materials, components, and parts in the mobile phone to disclose a unique identifier (e.g. CAS, EC, MITI, ECHA), or substance name if a unique identifier is not available; or the material trade name if the substance is manufactured by a party other than the supplier to whom the request is being made; for the inventory of substances comprising either:

- materials, components, and parts encompassing at least 90% of the total mobile phone mass, or
- at least 90% of the directly contracted suppliers of materials, components, and parts.

"Request" means one or more of the following:

- The manufacturer, or an agent or supplier of the manufacturer, has requested this information in writing from the supplier directly (e.g. email, letter) and has documented acknowledgement of receipt that could include demonstrated engagement from the supplier, or
- A contract, agreement, or purchase order between the supplier and the manufacturer (or between the supplier and an intermediary supplier [e.g. contract manufacturer]) requires the supplier to provide this information, or
- A specification or other document to which the supplier is held by the manufacturer or an intermediary supplier that requests to provide this information.

Managing substance information: The manufacturer shall have a documented process for collecting the information requested above; and an information management system or tool to address the nature and quantity of parts, suppliers and information relevant to the requested substance information. The system or tool shall include a means of recording the collected information that is used to calculate the percentage of directly contracted suppliers for the mobile phone (including a list of all suppliers) or percentage mass of the mobile phone (including a list of all parts and their masses).

Point value: 3

7.4.2 Optional – Receiving substance inventory

The manufacturer shall demonstrate that it has received, validated, and is maintaining an inventory of the substances in accordance with 7.4.1 contained in the materials, components, and parts contained in the mobile phone at the percentage mass level specified in Table 7.1.

The following equation shall be used to calculate the percentage:

$$\% \text{ mass of substances inventoried in the mobile phone} = (\text{Mass of substances inventoried} / \text{Total mass of the mobile phone}) \times 100$$

In the calculation, only the portion of materials, components, and parts for which substance inventory information is received from the supplier shall be counted in the numerator. If a supplier withholds disclosure on the basis of confidential business information, the mass of the undisclosed substances shall not be included in the numerator.

For an instance where there are multiple suppliers for a given material, component, or part, at a minimum the manufacturer shall select which inventoried supplier mass to include in the calculation.

Manufacturer demonstrates it has a system to validate and maintain information which has been collected. Examples may include but are not limited to requiring suppliers to notify the manufacturer when a change in the part or material is made, collecting signed declarations of conformity from the supplier, performing analytical testing, and other methods for checking or updating the information over time. It shall remain the manufacturer's discretion whether to conduct analytical testing to validate the substance inventory information, and is not a requirement of this criterion.

Substances consumed in the manufacturing process which are not retained in the finished part or material, components, or parts received by the manufacturer (i.e. process chemicals, volatile compounds), are not covered by this criterion.

Point value: maximum 5

Table 7.1
Percentage Mass Levels

Metric	Points Awarded
Inventory of substances that comprise >25% mass of the mobile phone	2
Inventory of substances that comprise >50% mass of the mobile phone	3
Inventory of substances that comprise >75% mass of the mobile phone	4
Inventory of substances that comprise >90% mass of the mobile phone	5

8 Sustainable Materials Use

8.1 Post-consumer recycled and biobased plastic content

If filler materials or additives are used in post-consumer recycled and/or biobased plastics, the calculation of the post-consumer recycled and/or biobased plastic content is made by dividing the weight of the post-consumer recycled and/or biobased plastic by the full weight of the plastic material, including additives and fillers, in the part or product. Only additives or filler content that is derived from a recycled feedstock may be used towards recycled content claims.

8.1.1 Required – Declaration of post-consumer recycled and biobased plastics content

Manufacturer shall declare both the minimum percentage of post-consumer recycled plastic content, and minimum percentage of biobased plastic content, each calculated as a percentage of total plastic (by weight) in the product. This declaration shall be available to the public through the manufacturer's website, or other publicly accessible electronic resources.

The following may be excluded from the calculation of percentage: printed circuit boards, labels, cables, connectors, electronic components, optical components, electrostatic discharge (ESD) components, electromagnetic interference (EMI) components, films, coatings and adhesives.

Demonstration of conformance shall include a supplier letter stating minimum percentage of post-consumer recycled and biobased plastic content in material supplied to manufacturer or to manufacturer's part supplier, and documentation of calculation; and is not required if a declaration is zero content.

Note: A declaration of 0% is acceptable for this criterion.

If the product does not contain any non-excluded plastics, "Not Applicable" may be declared.

8.1.2 Optional – Post-consumer recycled plastic and biobased plastic content in the mobile phone

The use of any combination of post-consumer recycled and biobased plastic content in the mobile phone – calculated as a percentage of total plastic (by weight) in the mobile phone – shall be awarded points on a sliding scale as shown in Table 8.1.

The following may be excluded from the calculation of percentage: printed circuit boards, labels, cables, connectors, electronic components, optical components, ESD components, EMI components, films, coatings and adhesives.

If the mobile phone does not contain any non-excluded plastics, "Not Applicable" may be declared.

Point value: maximum 4

Table 8.1
Post-Consumer Recycled Content and Biobased Content
 (measured as a percentage of the total weight of plastic in the mobile phone)

Total Combined Post-Consumer Recycled Content and Biobased Content	Points Awarded
1% – 5%	1
> 5% – 10%	2
> 10% – 25%	3
> 25%	4

Note: Verification of biobased content can be determined using ASTM D6866-04a.

8.1.3 Optional – Post-consumer recycled plastic and biobased plastic content in accessories

The use of post-consumer recycled plastic and biobased plastic content in the accessories – calculated as a percentage of total plastic (by weight) in the accessories – shall be awarded points on a sliding scale as shown in Table 8.2.

The following may be excluded from the calculation of percentage: printed circuit boards, labels, cables, connectors, electronic components, optical components, ESD components, EMI components, films, coatings and adhesives.

If the accessories do not contain any non-excluded plastics, "Not Applicable" may be declared.

Point value: maximum 3

Table 8.2
Post-Consumer Recycled Content and Biobased Content of Accessories
 (measured as a percentage of the total weight of plastic in the accessories)

Total Combined Post-Consumer Recycled Content and Biobased Plastic Content	Points Awarded
1% – 5%	1
> 5% – 10%	2
> 10%	3

9 Substances of Concern

Note: The limits set in this section are derived from legislation and IEC 62474, Material Declaration for Products of and for the Electrotechnical Industry.

9.1 Compliance with the European Union RoHS Directive

9.1.1 Required – Compliance with the European Union RoHS Directive

The product shall meet the restricted substance requirements of the European Union RoHS Directive and its amendments, including exemptions to these limits.

Technical documentation, as required in Article 7(b) of the European Union RoHS Directive, shall be generated per standard IEC 63000, Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances.

9.2 Restrictions of substances

9.2.1 Required – Restrictions of extractable nickel

Metal or metal coated exterior surfaces of the product and accessories that can be touched with a test finger complying with IEC 60065, Audio, video and similar electronic apparatus – Safety requirements, shall not release nickel in excess of $0.5 \mu\text{g}/\text{cm}^2$. It is acceptable to perform the tests using a representative sample, across multiple products that use the same material. Determination of accessible parts can alternatively be determined per methods defined in IEC 62368-1, Audio/video, information and communication technology equipment – Part 1: Safety requirements.

All samples shall undergo simulated wear in accordance with EN 12472 Method for the simulation of wear and corrosion for the detection of nickel release from coated items. The level of nickel release of both metal exterior surfaces, and metal coated exterior surfaces after simulated wear, shall be determined by EN 1811 Reference test method for release of nickel from products intended to come into direct and prolonged contact with the skin.

In lieu of analytical testing, the manufacturer may provide documentation regarding the materials used in the manufacture of the exterior surface that sufficiently demonstrates that nickel has not been used. Such documentation includes, but is not limited to, formulations of specific components and design specifications.

9.2.2 Optional – Restriction of phthalates in the product

Phthalates listed in the Candidate List of Substances of Very High Concern (SVHC) and REACH Annex XIV (List of Substances Subject to Authorization) shall not exceed 1,000 ppm in homogeneous plastic materials used in the product.

Technical documentation, as required in Article 7(b) of the European Union RoHS Directive, can be generated per standard IEC 63000, Technical documentation for the assessment of electrical and electronic products with respect to the restriction of hazardous substances or through product testing.

Manufacturers that declare products to conform to criterion 7.2.1 shall have two options to achieve points under this criterion:

Option 1: If product conforms to both 7.2.1 and 9.2.2. – 2 points

Option 2: Product conforms to 7.2.1 and 9.2.2 and manufacturer also demonstrates that phthalates listed in IEC 62474 Phthalates Selected Group 2 do not exceed 1000 ppm in homogenous plastic materials used in the product. – 4 points.

Point value: maximum 4

9.2.3 Optional – Restriction of bromine and chlorine

In accordance with Table 9.1, plastic materials in the mobile phone and/or wire, cables, and external power supply shall not exceed 1000 ppm chlorine and 1000 ppm bromine.

Point value: maximum 6

Table 9.1
Restriction of Bromine and Chlorine

Plastic Materials for the Following	Points Awarded
Mobile phone	3
Wire, cables, and external power supply	3

9.2.4 Required – Restriction of cadmium and mercury in the mobile phone battery cell

Each battery cell contained in the product shall, at a cell level, contain not more than 20 ppm cadmium and 5 ppm mercury as per European Union Directive 2006/66/EC on batteries and accumulators and waste batteries and accumulators and its amendments, including European Union Directive 2013/56/EU of 20 November 2013.

9.2.5 Required – Restriction of substances in textile and leather

Textile and leather used in the product shall not contain:

- Pentachlorophenol (including salts and esters) in a concentration greater than 0.1% by weight.
- Dibutyltin and dioctyltin above 1000 ppm (see ISO 17353 Water quality – Determination of selected organotin compounds – Gas chromatographic method).
- Azo dyes and colorants listed in Appendix 9 of Annex XVII of European Union REACH Regulation, in concentrations above 0.003% by weight in the finished articles or in the dyed parts thereof, according to the testing methods listed in Appendix 10 of Annex XVII of European Union REACH Regulation.
- Dimethylfumarate above 0.1 ppm.

ENERGY USE

10 Energy Use Requirements

10.1 Mobile phone battery charging system efficiency

This Section is applicable to the mobile phone's battery charging system. This includes the model of external power supply (EPS) recommended publicly by the manufacturer for primary use with the mobile phone, tested as a system for use with the mobile phone and made publicly available to the purchaser, by the manufacturer. Applies to a covered EPS irrespective of whether it is included in the Point of Sale (POS) packaging or sold separately and does not apply to the wireless and inductive aspects of a charging system.

If the product is declared to conform to this standard in countries or regions with only one voltage and frequency, then the EPS(s) shall only be tested once at that voltage and frequency. If the product is declared to conform to this standard in countries or regions with different voltage and frequency combinations, the relevant EPS shall be tested at both 115 V/60 Hz and 230 V/50 Hz, as representative voltages and the least efficient set of test results shall be considered for the standard.

Regarding "primary use", if a manufacturer recommends multiple external power supplies publicly without designating one as "primary", the manufacturer shall designate one of the recommended external power supplies for the purposes of meeting the criteria in this section.

10.1.1 Required – Battery charger systems

Until June 13, 2018, the product shall meet the requirements of the California Energy Commission's (CEC's) Battery Charger Systems and Self-Contained Lighting Controls Rulemaking requirements regarding "Maximum 24 hour charge and maintenance energy (Wh)"⁵.

After June 13, 2018, the product shall meet the requirements of the Federal Energy Conservation Standards for Battery Chargers; Final rule⁶.

Note: Inductive charging systems are exempt from these requirements.

⁵<http://www.energy.ca.gov/appliances/>

⁶<https://www.regulations.gov/document?D=EERE-2008-BT-STD-0005-0256>

10.1.2 Optional – Reduction of energy consumption of battery charging systems

The product shall receive points according to Table 10.1 for demonstrating a reduction in:

- Until June 13, 2018, the CEC's "Maximum 24 hour charge and maintenance energy (Wh)", in accordance with the requirements in the version of the CEC's Battery Charger Systems and Self-Contained Lighting Controls.
- After June 13, 2018, the Federal Energy Conservation Standards for Battery Chargers; Final rule⁷.

A manufacturer may declare this criterion differently in each country or region for which the product is declared to conform to this standard.

⁷<https://www.regulations.gov/document?D=EERE-2008-BT-STD-0005-0256>

Table 10.1
Reduced Levels of Maximum 24 hour Charge and Maintenance Energy (Wh) of Battery Charging Systems

Until June 13, 2018 Reduced Levels of Maximum 24 Hour Charge and Maintenance Energy Less Than $[12 \times N + 1.6 \times \text{Battery Capacity}]$ where N = number of charger ports	After June 13, 2018 Reduced Unit Energy Consumption (UEC)	Points Awarded
10%	10%	5
20%	20%	10
30%	30%	15

Point value: maximum 15

10.1.3 Required – External power supply energy efficiency

The external power supply for the product shall meet the efficiency requirements of the version of the U.S. Department of Energy (DOE) Efficiency Regulations for External Power Supplies for “Maximum Power in No-Load Mode (W)” for direct EPS in effect at the time the product is declared to conform to this standard. This DOE requirement for direct EPS shall apply to products with both direct and indirect EPSs⁸.

⁸http://www.ecfr.gov/cgi-bin/text-idx?SID=fba80ca090b28fe501e63140182934dc&mc=true&node=pt10.3.430&rgn=div5#se10.3.430_132

10.1.4 Optional – Reduced maintenance mode power

The external power supply for the product shall exceed the efficiency requirement of the version of the U.S. Department of Energy (DOE) Efficiency Regulations for External Power Supplies for “Maximum Power in No-Load Mode (W)” for direct EPS that is in effect at the time the product is declared to conform to this criterion, to achieve the points indicated in Table 10.2.

A manufacturer may declare this criterion differently in each country or region for which the product is declared to conform to this standard.

Table 10.2
No-Load Power Consumption Following DOE’s Level VI Efficiency Requirement Implementation

No-Load Power Consumption	Points Awarded
At least 20% below the DOE Level VI threshold (> 0.065 W and ≤ 0.08 W)	6
At least 35% below the DOE Level VI threshold (≤ 0.065 W)	10

Point value: maximum 10

This DOE requirement⁹ for direct EPS shall apply to products with both direct and indirect EPSs.

⁹<http://www.regulations.gov/#!documentDetail;D=EERE-2008-BT-STD-0005-0219>

END OF LIFE MANAGEMENT AND EXTENSION OF USEFUL LIFE

11 End of Life Management

11.1 Take-back program

11.1.1 Required – Take-back program (Corporate criterion)

Manufacturer shall provide a take-back program for products declared to conform to this Standard, either directly or through a contracted third-party. The program shall be publicly disclosed to the user through the manufacturer’s website.

In jurisdictions where there are existing laws and/or regulations which establish a program for the collection and recycling of products, demonstration of compliance with those legal requirements satisfies the requirements of this criterion for that country or region.

This requirement is applicable only in countries or regions for which the product is declared to conform to this standard.

11.2 Primary recyclers third party certified

11.2.1 Required – Primary recyclers third party certified (Corporate criterion)

Primary recyclers for programs in 11.1.1 shall achieve both of the following:

- a) Certification to an Environmental Management System (ISO 14001, RIOS, EMAS (EU Eco-Management and Audit Scheme) or similar standard) and;
- b) At least one of the following:
 - 1) Certification to The Responsible Recycling (“R2”) Standard for Electronics Recyclers, or
 - 2) Certification to e-Stewards Standard for Responsible Recycling and Reuse of Electronic Equipment, or
 - 3) Certification to WEEELABEX, or
 - 4) Evidence of annual audits of all primary recyclers, conducted by qualified third party auditors, to demonstrate recyclers meet the requirements of a program that meets the Recycling Program Minimum Technical Requirements in Appendix B, or
 - 5) Certification to EN 50625.

In jurisdictions where there are existing laws and/or regulations which establish a program for the collection and recycling of products, demonstration of participation in a jurisdictionally sanctioned program satisfies the requirements of this criterion for that country or region.

For products declared to conform with this standard in the U.S. and Canada, manufacturers shall conform with (b)(1) or (b)(2) above.

11.3 Rechargeable battery removability/replacement

11.3.1 Required – Battery removability/replacement by qualified repair service providers or authorized repair providers

All rechargeable batteries that can provide primary power shall be removable and replaceable by qualified repair service providers or authorized repair providers with the use of non-proprietary tools or without the use of any tools and without functional damage that would preclude re-use or refurbishment of the mobile phone.

The instructions showing how the batteries can be removed shall be made available to qualified repair service providers or authorized repair providers, upon request. The manufacturer shall provide information on how to recycle used batteries in electronic or printed format, or on the battery.

The instructions showing how the batteries can be removed shall also specify who (e.g. end-users, service centers, waste treatment facilities, etc.), in the view of the manufacturer, are the appropriate parties to remove the battery.

11.3.2 Optional – Battery removability instructions

Removal of embedded rechargeable batteries that can provide primary power by qualified repair service providers and authorized repair providers shall be achievable without the use of tools for removal of the battery alone (i.e. use of tools to get to the battery is acceptable).

Information on how to obtain removal instructions in accordance with 11.3.1 shall be posted on the manufacturer's website.

Point value: 1

11.3.3 Optional – Battery removability/replacement without use of tools

All rechargeable batteries that can provide primary power shall be removable and replaceable by the user without the use of any tools and without functional damage that would preclude re-use or refurbishment of the mobile phone.

Information on how to obtain the instructions specified in 11.3.1 applicable for user removable batteries (without the use of any tools) shall be one of the following:

- a) Provided with the product; or
- b) Publicly available on the manufacturer's website.

Point value: 2

11.4 Ease of disassembling mobile phone

11.4.1 Required – Ease of disassembling mobile phone

Screws, snaps, latches, or other joining or sealing technique in the housing of the mobile phone shall be removable, detachable, or the attached parts separable with the use of standard torx, phillips, blade drivers, or non-proprietary tools, to allow access to the display assembly, primary circuit board, and battery that can provide primary power by a qualified repair service provider or authorized repair provider without causing functional damage that would preclude re-use or refurbishment of the mobile phone.

Exemption: An instance where an adhesive tape is used for electromagnetic compatibility (EMC) compliance does not fall under the requirements of this criterion.

11.4.2 Optional – Further ease of disassembling mobile phone

The following points shall be awarded:

- a) If the product utilizes the same screw head design and size to remove every part required to remove the display assembly and primary circuit board. Point value: 2
- b) If the product utilizes the same screw head design and size to remove every part required to remove batteries: Point value: 2

Point value: maximum 4

11.5 Feature to erase user data from mobile phone

11.5.1 Required – Feature to erase user data from mobile phone

The mobile phone shall include a software function or option that will allow the user to erase all user data from the mobile phone's internal storage.

11.6 Repair and refurbishment

11.6.1 Required – Repair and refurbishment

The manufacturer shall meet one of the following options. The options selected in this criterion may be declared differently in each country or region for which the product is declared to conform to this standard.

Option 1:

The manufacturer shall provide the following repair and disassembly information that contains a sufficient amount of detail to perform the tasks identified in the documentation online for use by qualified repair service providers: applicable documentation required for repair or disassembly of the mobile phone, which may include one or more of the following: step-by-step disassembly instructions with required tools, exploded diagram of parts and compatibility chart or other indication of which parts apply to the mobile device (if needed); product specifications; maintenance procedures; or troubleshooting information.

This documentation shall be available in one or more of the following formats: Adobe PDF, or HTML, or IEEE 1874:2013 "oManual".

OR

Option 2:

The manufacturer shall commit to making field replaceable service parts, and the manuals and diagnostic tools required to replace those parts, available under fair and reasonable terms within 90 days of the product release to qualified repair service providers.

The manufacturer shall select or develop and disclose a publicly available program administered by a third party (e.g. CompTIA Mobility+, CompTIA A+) to which qualified repair service providers can become qualified to repair their mobile phones.

Service manuals shall be available as HTML or IEEE 1874:2013 "oManual", and licensed under the Creative Commons (CC-BY 4.0 or compatible license).

OR

Option 3:

One or more authorized repair providers shall be available for services including: troubleshooting, repair, and (if applicable) replacement of the product. The manufacturer shall publicly communicate a means to send or bring the product for such services.

11.6.2 Optional – Further repair and refurbishment

The manufacturer complies with at least 2 options of 11.6.1.

Point value: 2

11.7 Availability of replacement parts

11.7.1 Required – Availability of replacement parts

The manufacturer shall publicly document on their website that replacement of parts or product service is made available for a minimum of three years after end of production of the mobile phone.

11.8 Notification regarding and the identification of materials and components requiring selective treatment

11.8.1 Required – Notification regarding and the identification of materials and components requiring selective treatment

The manufacturer shall provide or make such information available to reuse and recycling facilities to identify the presence and location of materials and components requiring selective treatment, as are listed in Annex VII in the European Union WEEE Directive 2012/19/EU.

PACKAGING

12 Packaging

12.1 Use of fiber based packaging materials

12.1.1 Optional – Use of recyclable fiber based packaging materials

The POS packaging shall be composed of fiber based materials at a minimum percentage of overall packaging mass as described in Table 12.1. Material that is coated with wax or latex coatings shall not count towards the achievement of this criterion but should be included in the denominator.

Point value: maximum 4

Table 12.1
Recyclable Fiber Content

Percentage of Fiber-Based Material	Points Awarded
≥ 70%	2
≥ 90%	4

12.2 Separability and labeling of plastics in packaging

12.2.1 Required – Separability and labeling of plastics in packaging

All dissimilar packaging components ≥ 25 g shall be separable without the use of tools. Separability requirement does not apply to tape or labels affixed to plastic bags or wraps, staples, and top sheet adhered to chipboard, corrugate or other paperboard, or films, coatings or adhesives.

All plastic components ≥ 25 grams shall be clearly marked with material type in accordance with ASTM D7611/D7611M, DIN6120, or ISO 11469/1043. Marking requirement does not apply to plastic parts that individually weigh less than 25 g or with surface area less than 50 cm²; tape; plastic protective and stretch wraps and labels, or films, coatings or adhesives; or plastic pieces when, due to shape, marking is not possible.

12.3 Use of post-consumer recycled plastic packaging

12.3.1 Optional – Use of post-consumer recycled plastic packaging

POS packaging shall either:

- Contain post-consumer recycled plastic at 15% or greater based on the percent by mass of post-consumer recycled plastic content used as a percentage of total mass of plastic packaging (excluding plastic protective and stretch wraps, films, and coatings);
- Contain less than 5 g of plastic packaging (excluding plastic protective and stretch wraps, films, and coatings).

Point value: 1

Only additives or filler content that is derived from a recycled feedstock may be used towards recycled content claims.

12.4 Expanded polystyrene packaging (EPS) restriction

12.4.1 Required – Expanded polystyrene packaging (EPS) restriction

POS packaging shall not contain expanded polystyrene (EPS).

12.5 Recycled content in fiber packaging

12.5.1 Required – Recycled content in fiber-based packaging

All chipboard and corrugated fiberboard packaging materials shall contain recycled content in accordance with Table 12.2 based on a supplier declaration. Recycled content is calculated as a percentage of the total weight for each material category. Additives or fillers are not considered recycled fiber, except in the case where the additive or filler is derived from a recycled feedstock.

Table 12.2
Recycled Content in Fiber-Based Packaging

Material Category	Recycled Content in Material
Chipboard (excluding top sheet)	80%
Corrugated fiberboard (excluding top sheet)	35%

Note 1: Requirements do not apply to top sheet that is applied as an outer layer to another fiber-based packaging component, and onto which product branding, images and regulatory information may be printed.

Note 2: ASTM D996 Standard for Packaging Definitions shall be used to define the categories in Table 12.2.

12.6 Environmentally preferable virgin fiber-based packaging and printed content

12.6.1 Optional – Environmentally preferable virgin fiber-based in POS packaging

The total virgin fiber-based materials in the POS packaging shall contain any combination of the following percentage content, as defined in Table 12.3.

- From a source certified by the Forest Stewardship Council (FSC) Program for the Endorsement of Forest Certification Schemes (PEFC), or that is certified to a national forest certification system that has been endorsed by PEFC (e.g. Sustainable Forestry Initiative (SFI) program, CSA Sustainable Forest Management Program, and CERFLOR Forest Certification Program). The manufacturer shall provide documentation to demonstrate that the chosen certification includes both chain-of-custody certification and chain-of-custody documentation for the material.
- Produced from non-wood fiber-based material including but not limited to bagasse, bamboo, hemp, kenaf, mushroom, and straw.

Note: A specified weight of packaging material may be claimed as either sustainably forested or biobased material, not both. For this criterion, the percent of virgin material is for the total of the fiber packaging that is not required to contain recycled content per criterion 12.5.1. Additives or fillers are not considered recycled fiber, except in the case where the additive or filler is derived from a recycled feedstock.

Table 12.3
Environmentally Preferable Virgin Fiber-Based Packaging:
Sustainably Sourced and Non-Wood Fiber-based Material

Requirement	Range	Points Awarded – POS Packaging
Weight % of total virgin fiber-based materials of FSC, SFI, or PEFC virgin fiber and/or content produced from non-wood fiber-based material.	> 75%	2

Point value: maximum 2

12.6.2 Optional – Environmentally preferable fiber-based printed materials

The total combined fiber-based material used in the printed materials (e.g., user manuals, info booklets, etc.) shipped with the product shall include recycled content, and/or be from a source certified by the Forest Stewardship Council (FSC) Program for the Endorsement of Forest Certification Schemes (PEFC), or that is certified to a national forest certification system that has been endorsed by PEFC (e.g. Sustainable Forestry Initiative (SFI) program, CSA Sustainable Forest Management Program, and CERFLOR Forest Certification Program) and/or shall be produced from a non-wood fiber-based material (including bagasse, bamboo, hemp, kenaf, mushroom, and straw), according to Table 12.4. For the purpose of this criterion, biobased material does not include biobased plastic.

Note: A specified weight of packaging material may be claimed as either sustainably forested or from non-wood fiber, not both.

Point value: 1

Table 12.4
Environmentally Preferable Fibre-Based Printed Materials

Requirement	Range	Points Awarded – Printed Content
Weight % of total combined post-consumer recycled content, and/or FSC, FSC Controlled Wood, SFI, or PEFC virgin fiber-based material, and/or content produced from a non-wood fiber-based material.	> 60%	1

12.7 Restriction of chlorine in packaging materials

12.7.1 Required – Restriction of chlorine in packaging materials

Elemental chlorine shall not have been used as a bleaching agent to bleach virgin or recovered content in any fiber-based packaging. Inks are exempt. The manufacturer shall provide supplier letter(s) declaring elemental chlorine was not used in the processing of this packaging.

The requirements of this criterion are met if the manufacturer requires elemental chlorine free (ECF), total chlorine free (TCF) or process chlorine free (PCF) of its product packaging suppliers for fiber-based packaging.

Note: Fiber-based recycled material that was previously bleached with chlorine is acceptable.

12.8 Heavy metal restrictions in packaging

12.8.1 Required – Heavy metal restrictions in packaging

The sum of the concentrations of lead, cadmium, mercury, and hexavalent chromium in any packaging component shall not exceed 100 ppm by weight, with the exception of packaging components that qualify for the recycled content exemption.

Recycled content exemption: Packaging and packaging components that would not exceed the maximum contaminant levels, but for the addition of recycled materials provided that the packages and packaging components do not exceed a maximum concentration limit of 200 ppm for the sum of the four regulated metals. This exemption does not apply to use of the metals when they have already been recovered and separated for use as a metal or metallic compound. (Toxics in Packaging Clearing House: Model Toxics in Packaging Legislation.)

12.9 Improve packaging efficiency

12.9.1 Optional – Improve packaging efficiency

The ratio of the total volume of the product and user guide to volume of outer POS packaging shall be greater than or equal to the ratio values in Table 12.5. Volumes shall be calculated as the sum of the simple rectangular volumes that encompass the shape of each of the objects being measured. For the volume of the POS packaging, the outer dimensions of the outer packaging shall be used; if the outer packaging is not rectangular, a simple rectangular shape that encompasses the outer box shall serve as the basis for the POS packaging volume calculation.

Point value: maximum 2

Table 12.5
Improve Packaging Efficiency

Ratio	Points Awarded
≥ 0.3	1
≥ 0.5	2

CORPORATE PRACTICES

13 Corporate Sustainability (CS)

13.1 Corporate sustainability (CS) reporting

13.1.1 Required – Corporate sustainability (CS) reporting (Corporate criterion)

The manufacturer shall publish a Corporate Sustainability (CS) report or equivalent information, on at least an every other year basis. The publication shall be in accordance with the core reporting requirements of the GRI Sustainability Reporting Standards (GRI Standards) that are in effect at the time, or in accordance with an equivalent reporting framework [e.g. CDP, Electronic Industry Citizenship Coalition (EICC), International Integrated Reporting Council (IIRC), or Sustainability Accounting Standards Board (SASB)]. The information shall be publicly available on the manufacturer's website.

The reporting shall include:

- a) Statement of scope and boundaries.
- b) Statement of manufacturer's governance, commitments, and engagement including stakeholder engagement and external initiatives.
- c) Topics determined to be material by the manufacturer which may include the following:
 - 1) Environmental: Materials, Energy, Water, Biodiversity, Emissions Effluents, Waste, Products and Services, Compliance, and Transport.
 - 2) Human Rights: Investment and Procurement, Non-Discrimination, Freedom of Association and Collective Bargaining, Child Labor, Forced and Compulsory Labor.
 - 3) Labor Practices and Decent Work: Employment, Labor/Management Relations, Occupational Health and Safety, Training and Education, Diversity and Equal Opportunity.
 - 4) Society: Community, Corruption, Public Policy, Compliance.
 - 5) Product Responsibility: Customer Health and Safety, Product and Service Labeling, Marketing and Communications, Compliance.

13.2 Corporate sustainability (CS) reporting in the supply chain

13.2.1 Optional – Corporate sustainability (CS) reporting in the supply chain (Corporate criterion)

The manufacturer shall demonstrate that at least three suppliers publish disclosures for the supplier operations that include the mobile phone operations for the selected GRI topics listed in Table 13.1, on at least an every other year basis, in accordance with the GRI Standards that are in effect at the time the disclosures are made. The disclosures shall be made publicly available and readily accessible on the manufacturer's or supplier's website. The three supplier(s) selected shall provide components or assemblies to the manufacturer from one or more of the following categories:

- Printed circuit board assemblies
- Integrated circuits
- Printed circuit boards
- Display assembly or flat panel display
- Batteries

It is acceptable for the supplier to provide the disclosure, or for the manufacturer to include the suppliers' disclosures in the manufacturer's own reporting. If the manufacturer provides the disclosures, the data can either be separate for each supplier, or aggregated together.

Table 13.1
GRI Topics for Supplier's Operation

G4 Indicators	GRI Standards
Energy	
EN3 – Direct energy consumption by primary energy source	302-1 – Energy consumption within the organization
EN5 – Energy intensity	302-3 – Energy intensity
Water	
EN8 – Total water withdrawal by source	303-1 – Total water withdrawal by source
EN10 – Percentage and total volume of water recycled and reused	303-3 – Percentage and total volume of water recycled and reused
Emissions, Effluents, and Waste	
EN15 – Total direct GHG emissions by weight	305-1 – Direct GHG emissions (Scope 1)
EN16 – Total indirect GHG emissions by weight	305-2 – Energy indirect GHG emissions (Scope 2)
EN21 – NO, SO, and other significant air emission by type and weight	305-7 – NO, SO, and other significant air emission
EN23 – Total weight of waste by type and disposal method	306-2 – Waste by type and disposal method
EN24 – Total number and volume of significant spills	306-3 – Total number and volume of significant spills
Human Rights	
HR4 – Freedom of association and collective bargaining	407-1 – Freedom of association and collective bargaining
HR5 – Child labor	408-1 – Child labor
HR6 – Forced or compulsory labor	409-1 – Forced or compulsory labor

Points will be allocated such that each of the three suppliers shall report on the topics in Table 13.1:

- At least 4 of the topics: 1 point
- 5 – 8 topics: 2 points

- 9 or more topics: 3 points

Point value: maximum 3

Note: This criterion applies to any supplier of the listed components and assemblies that are contained in the product, regardless of whether the supplier directly contracts with the manufacturer or the manufacturer's contract facility.

13.3 Third party assurance of corporate sustainability (CS) reporting

13.3.1 Optional – Third party assurance of corporate sustainability (CS) reporting (Corporate criterion)

The manufacturer shall obtain an independent third party assurance (e.g. external assurance in accordance with the GRI Sustainability Reporting Standards, International Standards of Supreme Audit Institutions (ISSAI) 3000 Standards and guidelines for performance auditing based on INTOSAI's Auditing Standards and practical experience, or other) of the data associated with a minimum of 5 topics as chosen by the manufacturer from the reporting specified in 13.1.1. The 5 topics may be global or specific to a region or country.

Point value: 1

14 Life Cycle Assessment

14.1 Conducting a life cycle assessment

14.1.1 Optional – Conducting a life cycle assessment

Within 3 months of declaration of conformity to this criterion, the manufacturer shall demonstrate that a Life Cycle Assessment (LCA) has been conducted on the product in accordance with the methodologies and calculations in ISO 14040 Environmental management – Life cycle assessment – Principles and framework, and ISO 14044 Environmental management – Life cycle assessment – Requirements and guidelines.

The manufacturer shall demonstrate that the LCA conducted applies to the product by including in the scope of the assessment all the model numbers or other unique identifiers for the products to which the assessment applies. If the manufacturer seeks this credit for products not included in the LCA, the manufacturer must demonstrate how the product differs from those evaluated in the assessment, and how and whether those differences affect the outcome of the assessment.

Impacts shall be reported for the environmental impacts that are based on an evaluation of the product and existing industry practices and shall be done in accordance with ISO 14044. The assessment must include impact categories that reflect a comprehensive set of environmental issues related to the product system being studied, taking the goal and scope into consideration. Possible impacts may include:

- a) Global Warming;
- b) Acidification;
- c) Eutrophication;
- d) Ozone Depletion;
- e) Photochemical Smog Formation;

- f) Primary Energy Demand;
- g) Eco-system Toxicity;
- h) Human Health Toxicity;
- i) Water Use;
- j) Waste Generation; and
- k) Resource Depletion.

Point value: 6

14.2 Product LCA third-party verification or making LCA publicly available

14.2.1 Optional – Product LCA third-party verification or making LCA publicly available

Within 3 months of the manufacturer declaring the product to conform to this standard, manufacturer shall either:

- Have a third-party verify the results of the criterion in 14.1.1, or
- Make the summary of results of the LCA from 14.1.1 publicly available.

Manufacturer shall declare whether they obtained third-party verification or made the summary of results of the LCA publicly available. These shall be demonstrated by the following:

- a) Documentation of the assessment.
- b) One of the following:
 - 1) If third-party verification was conducted, a document confirming that the process used to determine results of LCA conducted under 14.1.1 were verified by an independent third party in conformance with ISO 14040 and ISO 14044, or another method referenced in one of the standards referenced in 14.1.1 (ISO14040/14044). The document shall include credentials and contact information of third-party verifier. Or,
 - 2) If the summary of results of the LCA were made publicly available:
 - i) Documentation of where the summary of results is publicly available. Examples include, but are not limited to: manufacturer website, manufacturer annual sustainability report, industry sustainability index database if one is developed, public disclosure initiatives.
 - ii) The summary shall include, but not be limited to,
 - Summary of environmental impact categories, in accordance with 14.1.1, considered in the assessment.
 - Results of the impact assessment in each of the covered categories.

- Relative contribution of the various life cycle stages to the environmental impacts in each category (e.g. resource extraction, manufacturing, use, disposal).
- Relative contributions of key components of the device (e.g. printed circuit boards, display assembly(ies), housings, etc.) to the overall environmental impact.

Point value: 3

MANUFACTURING AND OPERATIONS

15 Supply Chain Impacts

15.1 Supplier responsibility

15.1.1 Optional – Supplier responsibility (Corporate criterion)

The manufacturer shall have a process in place, which uses a risk-based approach to determine the appropriate application of one or more of the programs listed below. The process shall include suppliers of materials, parts, assemblies, and the final assemblers of the product. The risk-based approach shall also include:

- a) An evaluation of risk of the suppliers based on one or more of the programs listed below. Item 1 or 3 is required for identified high risk suppliers
 - 1) Certification to SAI SA8000, or
 - 2) Desk Review(s) performed by manufacturer or third party, that is consistent with the requirements of either the EICC Code of Conduct, SAI SA8000, ETI (Ethical Trading Initiative), SMETA (SEDEX Members Ethical Trading Audit), or equivalent, or
 - 3) On-site Audit(s) performed by a third party under a manufacturer, EICC, or other program that is consistent with the requirements of either the EICC Code of Conduct, SAI SA8000, ETI (Ethical Trading Initiative), SMETA (SEDEX Members Ethical Trading Audit), or equivalent.
- b) A procedure to refresh information at a frequency in accordance with the requirements of the program.
- c) Procedures to institute corrective action with a supplier for relevant non-conformities; and to re-audit suppliers regularly as needed, based on the manufacturer's evaluation of risk within the supply chain.

Point value: 5

Note: Desk review means using an evaluation methodology such as surveys, questionnaires, etc. to identify the level of inherent risk of the supplier.

15.2 Manufacturing facilities environmental management systems (EMS)

15.2.1 Required – Final assembly facilities environmental management system (Corporate criterion)

The manufacturing facilities used in the final assembly of the mobile phone (manufacturer owned and contract facilities) shall be third-party certified to either ISO 14001, or the European Union Eco-Management & Audit Scheme (EMAS).

15.2.2 Optional – Supplier production facilities environmental management system

The manufacturer shall demonstrate that the suppliers' production facilities are third-party certified to either ISO 14001 or EMAS with points being awarded according to Table 15.1. Multiple suppliers within each component category are permitted. If the supplier produces the component for the manufacturer in multiple facilities, each facility must meet this requirement. The suppliers selected shall provide components or assemblies to the manufacturer from one or more of the following categories:

- Printed circuit board assemblies
- Integrated circuits
- Camera
- Printed circuit boards
- Display assembly or flat panel display
- Housing
- Batteries

Table 15.1
Suppliers with Production Facilities Third-Party Certified to Either ISO 14001 or EMAS

Number of Suppliers	Points Awarded
3 – 4	2
5 – 6	4
> 6	6

Point value: maximum 6

Note: This criterion applies to any supplier of the listed components and assemblies that are contained in the product, regardless of whether the supplier directly contracts with the manufacturer or the manufacturer's contract facility.

15.3 3TG minerals

15.3.1 Required – 3TG minerals public disclosure (Corporate criterion)

Manufacturer shall provide a public disclosure relevant to the due diligence that was performed in accordance with an internationally recognized standard to determine whether the supply chain for the product contains 3TG minerals necessary to the functionality or production of their products. If so, the manufacturer shall:

- a) Prepare disclosures on the use and sources of these minerals and applicable due diligence measures performed in conformance with the U.S. Securities and Exchange Commission (SEC) Conflict Minerals Rule pursuant to Section 1502 of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Section 1502, and the Securities and Exchange Commission Rule [e.g. U.S. SEC Form SD (Specialized Disclosure), or manufacturer Conflict Minerals Report (CMR)], or
- b) Make disclosures publicly available and accessible in accordance with Step 5 of Annex I in the most current version of the OECD Due Diligence Guidance for Responsible Supply Chains of Minerals from Conflict-Affected and High-Risk Areas (OECD Guidance).

These requirements apply to all manufacturers declaring to conform to this standard, regardless of whether they are SEC registrants.

Note: In instances where the manufacturer is not required to be a registrant with the U.S. SEC, the U.S. administrative requirements (e.g. IRS employer identification number) of the disclosure are not required.

15.3.2 Optional – 3TG minerals sourcing (Corporate criterion)

Where a 3TG mineral(s) is sourced in the supply chain for products covered by this standard, the manufacturer shall demonstrate one or more of the following for each 3TG mineral it is sourcing:

- a) Recycled or scrap sources; or
- b) 90% of smelters and/or refiners which meet one or more of the following:
 - 1) Appear on the list of validated smelters and refiners from the Responsible Minerals Initiative (RMI), Responsible Jewellery Council (RJC), London Bullion Market Association (LBMA), or equivalent; or
 - 2) Independently verified by a third-party that the manufacturer, or a relevant industry or other association has conducted a Reasonable Country of Origin Inquiry (RCOI) regarding the source and chain of custody of the 3TG mineral and implemented the OECD due diligence guidance, where appropriate; or
 - 3) Not sourcing 3TG minerals from a conflict-affected region as determined through an RCOI, including review of the chain of custody of the mineral and due diligence, where appropriate.

Points shall be awarded based on the number of 3TG minerals covered by this criterion that are addressed as listed in Table 15.2.

Table 15.2
Number of Minerals Addressed Among the 3TG Minerals

Number	Points Awarded
1	2
2	4
3	5
4	6

Due diligence measures implemented by the manufacturer shall include a review and update to the list of sources of 3TG minerals in the product, based on risk, at least annually.

This criterion is not applicable for instances where 3TG minerals are not necessary for the functionality or manufacture of the product.

Point value: maximum 6

15.3.3 Optional – Participation in 3TG mineral responsible sourcing program (Corporate criterion)

Manufacturer shall participate in at least one in-region responsible sourcing of 3TG minerals program that is validating and/or sourcing minerals from certified conflict free sources and meets the following criteria:

- Multi-stakeholder participation (i.e., more than just one organization).
- Is endorsed, recognized, funded, or contracted by the International Conference of the Great Lakes Region (ICGLR), European Union, OECD, United Nations or U.S. government agency/stakeholder (USAID, state department).
- Increases the supply of 3TG or reduces human rights abuses associated with mineral extraction.
- Has a system of oversight and public reporting.
- Does not allow donation, participation or activities by a manufacturer's foundation to meet requirements.

Examples of programs that meet this requirement include Public Private Alliance for Responsible Mineral Trade and European Partnership for Responsible Minerals (EPRM). "Participation in" may include, but is not limited to, providing in-kind personnel services or other resources to an in-region conflict-free sourcing program.

Note: "In-region" is from within one of the covered countries defined in the U.S. Securities and Exchange Commission (SEC) Conflict Minerals Rule pursuant to Section 1502 of the U.S. Dodd-Frank Wall Street Reform and Consumer Protection Act of 2010, Section 1502, and the Securities and Exchange Commission Rule. This criterion is not applicable to manufacturers for whom 3TG minerals are not necessary for the functionality or manufacture of the product.

Point value: 4

15.4 Reduce fluorinated gas emissions resulting from flat panel display manufacturing

15.4.1 Optional – Reduce fluorinated gas emissions resulting from flat panel display manufacturing

The manufacturer shall demonstrate that their supplier operations associated with at least 75% of spend (annual or fiscal) for flat panel displays used in products under this standard shall reduce, recover or destroy on an annual basis at least 90 percent of the fluorinated greenhouse gases used in manufacturing and ancillary operations, such as chamber cleaning, related to the manufacture of flat panel displays (e.g., TFT-LCDs). The reduction, recovery, or destruction may be achieved via any combination of alternatives, including process optimization, installation of abatement technology, gas recycling, utilization of a lower emissions gas (as compared with NF₃), or any other methods. Chemicals covered are PFCs (including CF₄, C₂F₆, C₃F₈, C-C₄F₈, C₄F₈O), HFCs (including CHF₃), Nitrogen Trifluoride (NF₃), and Sulfur Hexafluoride (SF₆). It is acceptable for this reduction to be demonstrated for any combination of the relevant portion of the fab (e.g., specific line(s)), the entire fab, or for all fabs that produce flat panel displays for the covered product or the covered product type.

For instances where abatement technology is employed, the manufacturer shall obtain a letter from the supplier declaring:

- Appropriate technologies for F-GHG emission control are installed, operated, and maintained in accordance with the control technology supplier's specifications.
- How the F-GHG emission control device performance has been measured. Suppliers may determine success in recovery, destruction, or removal of 90% of the F-GHGs by using the U.S. EPA Protocol for Measuring Destruction or Removal Efficiency (DRE) of Fluorinated Greenhouse Gas Abatement Equipment in Electronics Manufacturing or another nationally acceptable method that has been demonstrated to produce results equivalent to or exceeding the accuracy and precision of EPA's DRE Protocol, where the relative error of true fraction emitted does not exceed 5 percent. Where suppliers are using other abatement systems, such as centralized abatement systems, measurements can be performed using a nationally acceptable method that has been demonstrated to produce results where the relative error of true fraction emitted does not exceed 5 percent.
- The extent of fab operation(s) are covered (e.g. all fabs that produce flat panel displays for the covered product type (i.e. smartphone), or only the portion of fab operations that produce flat panel displays for the covered product). If performance is demonstrated for a portion of fab operations, the manufacturer shall provide an explanation on how the relevant portions of the impacted fab(s) have been addressed, while excluding the non-relevant portions (e.g. allocation of F-GHGs used in manufacturing the flat panel displays for the covered product or product type vs. other products).

In instances when emissions are reduced with something other than abatement technology, demonstration of calculation, supplier declarations, comparisons of gases, and other means shall be used to demonstrate how 90% was achieved. (Not necessary if only abatement technology was used.)

Point value: 4

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INNOVATION

16 Innovation

16.1 This Section allows the product to receive credit for innovative actions, programs, or policies that achieve exceptional environmental performance across the product's life cycle by significantly exceeding existing criteria or that achieve superior environmental performance in ways that are currently not reflected in existing criteria within this Standard. Examples may include, but are not limited to, significant waste reductions associated with manufacturing operations, novel or exceptional use of renewable energy in manufacturing facilities, significant reductions in water usage, etc.

16.2 Declaration of conformity to this standard that includes innovation points shall include a publicly available description on the manufacturer's website, on the organization making a declaration of conformity's website, or on another public website. The description will identify the technology associated with the innovation, or provide a high level description of the nature of the innovation.

16.3 To be eligible for innovation points, the manufacturer shall provide:

- 1) A description of the innovation.
- 2) Sufficient information and data to support the claim that the innovation will result in measurable and meaningful improvement to environmental performance of the product, including data showing that the innovation is relevant to the product.
- 3) Evidence of differentiation from other criteria within the requirements (or above and beyond those criteria), and calculations quantifying the improved product environmental performance.
- 4) Documentation that attests to the overall scale and impact of the claimed innovation for the current product.

If the claim is found to not be innovative or the claimed environmental/societal benefits cannot be quantified and/or verified, then points will not be awarded under this section of the standard.

16.4 The certifying/verifying organization(s) shall be responsible for assessing innovation point applications through the establishment of an Innovation Review Committee which consists of at least three members. The members of the committee shall be without conflict of interest, have sufficient understanding of the product, associated technologies, and the existing standard in order to judge the relative importance of the innovation within the context of the standard. If the innovation committee does not have the required expertise to evaluate the submission, members shall consult with knowledgeable individuals outside the committee to establish the relevance and importance of the innovation in the context of the standard and sustainability.

16.5 Upon completion of the review the Innovation Review Committee shall write a statement of the quantified environmental benefit, the method for determining the benefit and the points awarded. The manufacturer shall attest to meeting the requirements of the FTC Green Guide when published in the U.S. or the equivalent rules for the jurisdiction where the certification is valid.

Note: The results of the review should be held by the certifying/verifying body and available to the committee for use in future deliberations in order to encourage consistency of the awarding of innovation points.

16.6 A maximum of 8 points are available for innovations that are awarded per this section:

- 1) 4 points awarded per innovation with a maximum of 2 innovations (no partial awards are allowed).
- 2) Determination of points for an innovation shall be made by comparing the quantified benefits provided by the innovation to the quantified benefits for existing, similar or related criteria.
- 3) Innovation for areas already addressed under existing criteria in Sections 1 – 15 shall not earn innovation points unless significant additional benefits/improvements beyond the relevant existing criterion/criteria is achieved.
- 4) Innovation points, once achieved, are retained for the duration of the certification or registration period for the product.

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