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| **RESOLUTION GSC-17/08: (Plenary) ICT and the Environment (Revised)** |

The 17th Global Standards Collaboration meeting (Jeju, 13 – 16 May 2013)

**Recognizing:**

1. that the impact of Information and Communications Technologies (ICTs) on the environment is far-reaching, with both positive and negative effects;
2. that among the positive impacts of ICTs are their use in improving environmental monitoring, reducing energy consumption and alleviating air pollution; however, included among the negative effects, related to the ongoing growth of the Internet and rapidly increasing rates of digital adoption, are the creation, deployment and proper disposal of ICTs;
3. that key environmental challenges facing society include energy consumption and measures to enhance efficiency, recycling harmonization, as well as climate change;
4. that the ICT industry supports sustainable solutions in which its environmental responsibility, societal obligations, and economic viability must be considered on balance;
5. that climate change is a concern for all of humanity and requires efforts on the part of all sectors of society, including the ICT sector; and
6. that deployment of such sustainable solutions are needed to be encouraged through e.g. smart sustainable cities and market instrument.

**Considering:**

1. that in Kyoto, in December 1997, the world took concrete steps to mitigate global warming with an international agreement to limit and reduce greenhouse gas (GHG) emissions; and the Conference of the Parties of the UN Framework Convention on Climate Change (UNFCCC) will hold its next meeting, COP-19, in Warsaw, Poland from 11 to 12 November , 2013;
2. that the United Nations Intergovernmental Panel on Climate Change (IPCC) estimated GHG emission had risen by more than 70% since 1970, and this is having a global effect in warming the planet, causing changing weather patterns, rising sea-levels, desertification, shrinking ice cover and other worrying long-term effects. It also foresees a further rise in average global temperatures of between 1.4 and 5.8° Centigrade by 2100;
3. that a series of ITU Symposia on ICTs, the Environment and Climate Change have been held since 2008 and the most recent was 17 to 21 September 2012 in Paris, France;
4. that the World Telecommunication Standardization Assembly (Dubai, 2012) adopted Resolution 2 (Dubai, 2012) which calls upon ITU-T Study Group 5, to take a leading role for studying ICT environmental aspects of electromagnetic phenomena and climate change.
5. that the World Telecommunication Standardization Assembly created Resolution 79 (Dubai, 2012) entitled “*The role of telecommunications/information and communication technologies in handling and controlling e-waste from telecommunication and information technology equipment and methods of treating it”* and ITU WCIT-12: Final Acts (Dubai, 2012) Article 8A entitled *“Energy efficiency/e-waste”* which emphasized the need to address the handling and controlling of e-waste and to contribute to global efforts in dealing with e-waste
6. Resolution 73 (Dubai, 2012) entitled *Information and communication technologies, the environment and climate change*, which highlighted the need to increase awareness and promote information sharing on the role of ICTs in tackling environmental challenges, in particular by promoting use of ICTs as cross-cutting tool to assess and reduce GHG emissions, optimize energy and water consumption, minimize e-waste and improve its management, and which supports studies on, inter alia, green data centers, smart buildings, green ICT procurement, cloud computing, energy efficiency, smart transportation, smart logistics, smart grids, water management, adaptation to climate change and disaster preparedness, and reduction of GHG emissions;
7. that the ITU World Telecommunication Policy Forum (Lisbon, 2009) adopted an Opinion entitled *ICT and the Environment*, which underlined the importance of work associated with climate change in its many facets including the global problems of the distribution of food, as well as the need for study on environmentally safe disposal and recycling of discarded ICT equipment;
8. that there are many more significant ICT and the Environment related events that have occurred and are planned per attached Event list; ;
9. that Resolution 182 (Guadalajara, 2010) calls upon the ITU to continue to promote awareness of the environmental issues surrounding ICT equipment and encouraging energy efficiency in the design and manufacture of such equipment to promote a clean and safe environment;
10. that there has been significant sustainability related standards work completed by Participating Standards Organizations (PSOs) as reflected in the attached Reference list;
11. that there are ongoing standardization activities in the PSOs addressing the standardization aspects of ICT and the Environment;
12. that the need for continuing studies on the impact of ICT and the environment, the safe disposal and recycling of discarded ICT equipment and environmentally sound management of e-waste were highlighted in Resolution 79 (Dubai, 2012);
13. that Universal Power Adapter standardization to reduce the electronic wastes caused by the inability to reuse a power adapter has been undertaken by ITU-T Study Group 5 on Recommendation L.1000 (L.adaptor): “Universal power adapter and charger solution for mobile terminals and other hand-held ICT devices”, by IEC on Micro USB battery charger interface and also by IEEE Standards Association. In addition, PSOs are also active in this area;
14. that power feeding systems using High Voltage Alternating and Direct Current (HVAC and HVDC) could result in a high system effectiveness, and could lower energy consumption;
15. that the standardization of Smart Grid and Cloud Computing, which are expected to contribute to reducing energy consumption, is making progress in the PSOs/Fora as well as the ITU-T;
16. that the use of ICTs can be a key component of energy-efficient standardization work methods could include the reduction of emissions through paperless meetings, virtual conferencing and tele-working, which in turn would be beneficial in terms of reducing the need to travel;
17. that ICTs can assist in mitigating climate change including through the reduction of GHG emissions in other industry sectors, the introduction and development of energy efficient devices, applications and networks, as well as their environmentally sound disposal;
18. that GSC Members are leading several different initiatives on Smart Cities that analyze ICT solutions and projects that promote environmental sustainability in cities and to identify best practices which could facilitate the implementation of such solutions
19. that the ICT sector contributes in the range of 2-4% to the production of global CO2 emissions, and that the ICT sector has taken clear steps with ICT specific Life-Cycle Assessment (LCA) standards in order to provide basis for assessing its own emissions;
20. that standardization of the methodologies for the analysis, evaluation and quantification of the GHG reductions that may be achieved through the use of ICTs are important, and note the recent progress with the ITU-T Recommendation L.1430 on *Methodology for energy consumption and greenhouse gas emissions impact assessment of Information and Communication Technologies (ICT) in projects,* L.1420 on *Methodology for energy consumption and greenhouse gas emissions impact assessment of Information and Communication Technologies (ICT) in organizations* which standardizes the requirements that an organization should comply with when assessing energy consumption and greenhouse gas emissions and ITU-T L.1410 on *Methodology for environmental impacts of Information and Communication Technologies (ICT) goods, networks and services* which provides a standardised way to assess the direct environmental impact of ICT goods, networks and services, as well as their indirect impact on the greenhouse gas emissions of non-ICT industry sectors; and also note the ETSI LCA Standard on LCA Goods, Networks and Services, which provide methodological guidance on assessment and TTC downstream activity to create JT1410 to be published in May 2013.;
21. that active standardization work in ITU (both in T and R Sectors) and PSOs include studies on a host of solutions to include RFID and electronic sensors, which can help reduce consumption of energies by, for example, switching on lights only when necessary, or by adjusting heating requirements in buildings, and enabling retailers to reduce the need for warehousing or outlets which consume energy and materials;
22. that ITU-R, playing a vital role in the global management of the radio-frequency spectrum, and the national regulators will provide the necessary radio-frequency spectrum for climate monitoring, disaster prediction, detection and relief;
23. that ITU-R and PSOs are studying, not only on increasing service quality and the efficient use of the radio spectrum, but also on energy saving such as a reduction in the number of transmitters and of their transmitted power resulting from the transfer from analogue to digital techniques;
24. that new digital television transmitters consume almost 1/10 the energy of existing analogue versions and require 1/4-1/6 of spectrum per TV program;
25. that cooperative Intelligent Transport Systems (ITS) currently being standardized by PSOs provide an important tool to improve traffic management and traffic efficiency which will strongly contribute to reduced vehicle fuel consumption. ITS has therefore a high priority on the political environmental agenda;
26. that the ITU-T APSC TELEMOV provide global forums for the PSOs and others to discuss ITS standards issues;
27. that the implementation of Next Generation Networks (NGN) may result in significant energy savings;
28. that enhanced collaboration and cooperation is encouraged on existing and planned “Green” initiatives and activities being undertaken by the PSOs, including ATIS, ETSI, TIA, and others;
29. that the World Resources Institute (WRI) and the World Business Council for Sustainable Development (WBCSD) establishes standardization of GHG Protocol Initiative Scope 3, which provides requirements and guidance for companies and other organizations to prepare and publicly report a GHG emissions inventory that includes indirect emissions resulting from value chain activities;
30. that International Electrotechnical Commission (IEC) TC 111 is aiming for standardization of quantification methodology of GHG emissions for electrical and electronic products and systems in 2012; and
31. that International Organization for Standardization (ISO) TC 207 is aiming for standardization of ISO 14067: Carbon footprint (CFP) of products -- Requirements and guidelines for quantification and communication.

**Resolves:**

1. to encourage ongoing cooperation and collaboration among national, regional and international activities that relate to standardization in the field of ICT and the Environment, including issues relating to energy consumption and measures to enhance efficiency, recycling, as well as climate change;
2. to support “ICT and the Environment” as a High Interest Subject of GSC;
3. to continue to provide general support in the efforts related to the development of ICT standards for sustainability
4. to encourage PSOs and ITU-T to share their views and experiences with all groups dealing with ICTs and the environment; and
5. to bring a spirit of collaboration and mutual support to the development of ICTs by taking the environmental aspects into consideration, and in particular addressing:

- awareness of the changing environment, impacts of ICTs and the need for sustainable solutions,

- energy-saving definitions, reference models, gap analysis, measurement methods, quantification methods, and requirements in a harmonized way,

- development of ICT standardization that can have a positive impact on the environment,

- electronic working methods and its tools,

- use of ICTs (e.g. USN, RFIDs etc.) for monitoring and measuring climate change, and

- the study of e-waste including environmentally safe disposal and recycling of discarded ICT equipment.

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**Attachment A**

**List of references for RESOLUTION GSC-17/08: (Plenary) ICT and the Environment**

**ATIS**

* ATIS-0600015.2009, February 2009, Energy Efficiency for Telecommunication Equipment: Methodology for Measurement and Reporting – General Requirements
* ATIS-0600015.01.2009, February 2009, Energy Efficiency for Telecommunication Equipment: Methodology for Measurement and Reporting -- Server Requirements
* ATIS-0600015.02.2009, February 2009, Energy Efficiency for Telecommunication Equipment: Methodology for Measurement and Reporting – Transport Requirements
* ATIS-0600015.03.2009, July 2009, Energy Efficiency for Telecommunications Equipment: Methodology for Measurement and Reporting for Router and Ethernet Switch Products
* ATIS-0600015.04.2010, January 2010, Energy Efficiency for Telecommunication Equipment: Methodology for Measurement and Reporting DC Power Plant – Rectifier Requirements
* ATIS-0600015.05, April 2010, Energy Efficiency for Telecommunication Equipment: Methodology for Measurement and Reporting Facility Energy Efficiency
* ATIS-0600010.03.2011, May, 2011, Heat Dissipation Requirements for Network Telecommunications Equipment
* ATIS-0600009.2007, May, 2007, RoHS-Compliant Plating Standard for Structural Metals, Bus Bars, and Fasteners
* ATIS-0600020.2010, January, 2010, Test Requirements for Pb-Free Circuit Packs
* ATIS-0600019.2009, January, 2009, Test Requirements for Pb-free Subassembly Modules

**ETSI**

- ETSI SR 002 959 V.1.1.1 “Electronic Working Tools; Roadmap including recommendations for the deployment and usage of electronic working tools in the ETSI standardization process”

Published in August 2011;

This is a Special Report;

Source: ETSI Board

- ETSI TR 102 489 V.1.2.1 ”Environmental Engineering (EE); European telecommunications standard for equipment practice; Thermal Management Guidance for equipment and its deployment”

Published in February 2010;

This is a Technical Report;

Source: EE

- ETSI TR 102 530 V.1.2.1 ”Environmental Engineering (EE) The reduction of energy consumption in telecommunications equipment and related infrastructure”

Published in July 2011;

New version includes methods to reduce diesel running time by using batteries;

This is a Technical Report;

Source: EE

- ETSI TS 102 706 V.1.2.1 ”Environmental Engineering (EE) Energy Efficiency of Wireless Access Network Equipment”

In publication process (Approved in August 2011); it defines the test method and the performance indicators for the energy efficiency of radio base stations;

This is a Technical Specification;

Source: EE

- ETSI ES 202 336-x: “Infrastructure equipment control and monitoring system interface” series

This ETSI Standard is subdivided in 10 subparts for each specific interface/application (different AC power distribution systems, DC power distributions systems, air conditioning systems etc.). The control processes defined in these publications reduce the energy consumption by optimizing equipment settings (e.g. cooling systems). Furthermore, the remote monitoring and setting reduce the CO2 emissions (less on-site interventions).

The published parts are:

“1” General interface . . . . . . . . . . published in July 2011 (new version)

“2” DC power systems . . . . . . . . . published in March 2009

“3” AC-UPS power systems . . . . . published in October 2009

“5” AC-diesel backup generators . published in April 2010

“7” Other utilities . . . . . . . . . . . . . published in December 2009

“8” Remote power feeding . . . . . . published in September 2009

“10” Inverter power systems . . . . . published in July 2011;

Source: EE

- ETSI TS 103 199 “Life Cycle Assessment (LCA) of ICT Equipment, Networks and Services: General methodology and common requirements”

Finalized and approved by ETSI TC EE;

Good collaboration with ITU-T;

The purpose of this TS is to harmonize the LCA of ICT: Equipment, Networks and Services;

The equivalent ITU-T Recommendations are well aligned;

In publication process;

Source: EE

- ETSI ES 203 215 “Environmental Engineering (EE); Measurement method and limits for energy consumption in broadband telecommunications equipment”

Finalized and approved;

This is an ETSI Standard;

This publication is based on the work already done for the TS 102 533 and adds further new Access technologies (e.g. GPON) that are part of the latest version of the European Code of Conduct;

It will replace the TS102533;

In publication process;

Source: EE

- ETSI ES 202 874-1 and TS 102 874-2,..-5 “External Common Power Supply for Customer Premises Network and Access Equipment” series

This ETSI Standard addresses the functional requirements and implementation and operational aspects of the External Common Power Supply (CPS) for Customer Premises Network and Access Equipment. This ETSI Standard is part 1 of a multi-part deliverable covering the External Common Power Supply (CPS) for Customer Premises Network and Access Equipment. The multi-part deliverable represents a set of cohesive interwoven technical information that has jointly evolved to define solution of most efficient equipment, as defined below:

- ES 202 874-1 defines functional requirements for four different categories of CPS.

- TS 102 874-2 [i.1] defines detailed implementation and operational aspects for CPS Type 2.a.

- TS 102 874-3 [i.2] defines detailed implementation and operational aspects for CPS Type 1.

- TS 102 874-4 [i.3] defines detailed implementation and operational aspects for CPS Type 2.b.

- TS 102 874-5 [i.4]: defines detailed implementation and operational aspects for CPS Type 2.c.

Published: October 2010-May 2011;

The intended applications of these CPS categories are specified in this ETSI Standard;

Source: ATTM

- ETSI EN 301 489-34 ”Electromagnetic compatibility and Radio spectrum Matters (ERM); ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 34: Specific conditions for External Power Supply (EPS) for mobile phones”

Published in October 2010;

Revised version under approval;

This is a European Standard, telecommunications series (EN);

Source: ERM

- ETSI TR 102 877: “Access Terminals, Transmission and Multiplexing (ATTM); Energy Efficiency of Energy Using Products (EuPs) with regards to their Ecodesign Requirements Part 1: Network Apparatus and Customer Premises Equipment relating to Cable Network Operator's Services”

Published in May 2011;

This is a Technical Report;

Source: ATTM AT3

**3GPP Features and Studies**

Completed Studies in 3GPP Release 10:

- TR 32.826 Study on Telecommunication Management; Energy Savings Management. (3GPP TSG SA WG5);

- TR 25.927 Study on Solutions for energy saving within UTRA Node B (3GPP TSG RAN WG1, WG3);

- TR 36.927 Study on Potential solutions for energy saving for E-UTRAN (3GPP TSG RAN WG3 & WG2)

Completed Features in 3GPP Release 10:

- OAM aspects of Energy Saving in Radio Networks (3GPP TSG SA WG5)

Studies in 3GPP Release 11:

- Completed: Study on impacts on UE-Core Network signaling from Energy Saving (3GPP TSG CT WG1)

**ITU-T**

- L.1400 February 2011 “Overview and general principles of methodologies for assessing the environmental impact of ICT”

- L.1410 March 2012 “Methodology for environmental impact assessment of ICT goods, networks and services”

- L.1420 February 2012 “Methodology for energy consumption and greenhouse gas emissions impact assessment of ICTs in organizations”

* L.1430 February 2013 (Consented) “Methodology for energy consumption and greenhouse gas emissions impact assessment of ICTs in projects”

**TIA**

* TIA-942-A, Telecommunications Infrastructure Standard for Data Centers , August 2012
* TIA-942-A-1, Telecommunications Infrastructure Standard for Data Centers, Addendum 1 - Cabling Guidelines for Data Center Fabrics, March 2013
* TIA-4964, cdma2000® RAN Management, July 2012
* TSB-473, Green Revised Energy Efficient Network (GREEN) Study", February 2012
* TIA-222-G-4, Structural Standards for Steel Antenna Towers and Antenna Supporting Structures- Addendum 4 (under development)
* TIA-4994, Standard for Sustainable Information Communications Technology (under development)

**TTA**

**TTC**

* JT.1410 May 2013 “Methodology for environmental impact assessment of ICT goods, networks and services in Japanese version”

**Attachment B**

**List of events related to RESOLUTION GSC-17/08: (Plenary) ICT and Environment**

**ATIS**

- Normal ATIS schedule for sustainability related standards development in ATIS-STEP (Sustainability in Telecom: Energy and Protection) Committee focusing on ICT energy efficiency and reduction of hazardous material in ICT.

**ETSI**

- ETSI GREEN AGENDA Seminar, 26th November 2009, Cannes, France.

**ITU**

- 7th Symposium on ICTs, the environment and climate change, Montreal, Canada, 29-31 May, 2012

[ITU/UNEP session on Environmentally Sound Management of E-Waste @ WSIS Forum 2013](http://www.itu.int/en/ITU-T/climatechange/CC-WSIS/201305/Pages/default.aspx), Geneva, Switzerland, 14 May 2013

* [ITU Workshop on Environmentally Sound Management of E-waste](http://www.itu.int/en/ITU-T/Workshops-and-Seminars/sound-mgmt/201307/Pages/default.aspx)  9 July 2013, Durban, South Africa
* [ITU Workshop on Building a Sustainable Future Through Green ICT Standards](http://www.itu.int/en/ITU-T/Workshops-and-Seminars/green-ict-standards/201305/Pages/default.aspx) 15-16 July 2013, Ouagadougou, Burkina Faso
* [ITU Workshop on Smart Sustainable Cities in Latin America](http://www.itu.int/en/ITU-T/Workshops-and-Seminars/ssc-la/201307/Pages/default.aspx) 22 July 2013, Montevideo, Uruguay
* [Information Session on Green ICT Standards](http://www.itu.int/en/ITU-T/Workshops-and-Seminars/greenict/201307/Pages/default.aspx) 26 July 2013, Montevideo, Uruguay
* [ITU Workshop on E-waste](http://www.itu.int/en/ITU-T/Workshops-and-Seminars/gsw/201309/Pages/default.aspx)
  + 13-14 August, Quito, Ecuador
* [3rd ITU Green Standards Week](http://www.itu.int/en/ITU-T/Workshops-and-Seminars/gsw/201309/Pages/default.aspx),16-20 September 2013, Madrid, Spain

**UN**

UN Conference on Sustainable Development, Rio de Janeiro, Brazil, 4-6 June, 2012. The Conference should include recognition by Rio+20 of ICTs as key drivers in the green economy and tools to achieve sustainable development.

**TIA**

* TIA 2013: The Future of the Network, (Track 5: Sustainability and ICT), October 8-10, 2013 in Washington, D.C., USA

**TTA**

**TTC**

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