ETSI TS 105 174-8 V1.2.1 (2019-12)

Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 8: Implementation of WEEE practices for ICT equipment during maintenance and at end-of-life

Reference

RTS/ATTM-0251

Keywords

broadband, energy management, e-waste management, ICT, waste management

ETSI

650 Route des Lucioles
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - NAF 742 C
Association à but non lucratif enregistrée à la
Sous-Préfecture de Grasse (06) N° 7803/88

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Foreword

This Technical Specification (TS) has been produced by ETSI Technical Committee Access, Terminals, Transmission and Multiplexing (ATTM).

The present document is part 8 of a multi-part deliverable. Full details of the entire series can be found in part 1 [i.1].

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**need not**", "**will**", "**will not**", "**can**" and "**cannot**" are to be interpreted as described in clause 3.2 of the ETSI Drafting Rules (Verbal forms for the expression of provisions).

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Introduction

There is a permanent and exponential growth in the amount of ICT equipment due to the deployment of new generations of networks to support Cloud technologies, Big Data and Artificial Intelligence concepts. The ICT market has to consider the consequences of, and anticipate the impact of, this trend.

The reality is that many ICT users will have to continually change or upgrade a large part of their ICT equipment estate. It is therefore critical to consider the end-of-life (EoL) management of the ICT equipment, including components and subassemblies replaced during maintenance, especially in terms of sustainability.

The purpose of the present document is to provide help to ICT users and companies involved in treatment of Waste Electrical and Electronic Equipment (WEEE) for the ICT sector which is, as described in ETSI EN 305 174-8 [9], composed of different types of ICT sites (Operator Sites (OS), Network Data Centres (NDC), and Network Distribution Nodes (NDN). Each ICT site accommodates ICT equipment in the form of Information Technology Equipment (ITE) or Network Telecommunications Equipment (NTE).

All ICT equipment is considered as Electrical and Electronic Equipment (EEE) and will follow the same rules and standards concerning their maintenance process and their EoL.

ICT sites normally accommodate equipment for power supply and distribution, environmental control and other security systems. This ancillary equipment is outside the scope of the present document.

The present document supports ETSI EN 305 174-8 [9] and provides guidance for the collection, storage, transport, treatment, recovery, refurbishing operations, including eco-design requirements to facilitate EoL treatment. In addition, it provides guidance for the management of maintenance operations during the use phase of the ICT equipment.

Overall, the goal of the present document is to contribute to the "4 R" strategy: that is "Re-use, Repair, Refurbish and Recycle" as described in Figure 1.

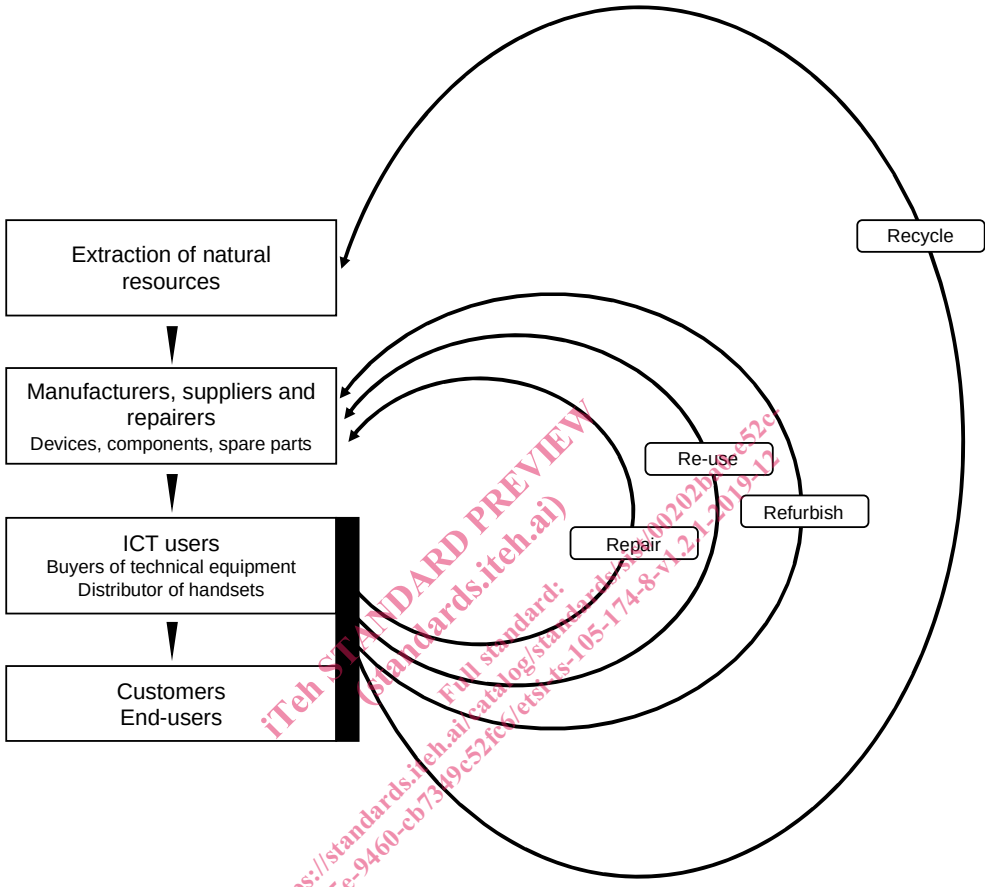


Figure 1: Lifecycle for equipment

The following three levels are considered:

- operational: during the operational period of the ICT equipment, the main concern is the monitoring of energy efficiency;
- maintenance: addressing evolution of components or sub-assemblies within the ICT equipment (new generation, new release, upgrade, etc.) or the intervention of a maintenance company in the case of hardware or software issue;
- EoL: ICT equipment to be re-used or repaired if possible, or refurbished or dismantled/disassembled in order to be recycled where no other solution exists.

ETSI EN 305 174-8 [9] has defined a set of KPIs to measure the following parameters (see clause 9):

- collection rate of WEEE;
- re-use rate of materials;
- valorisation and recovery rate.

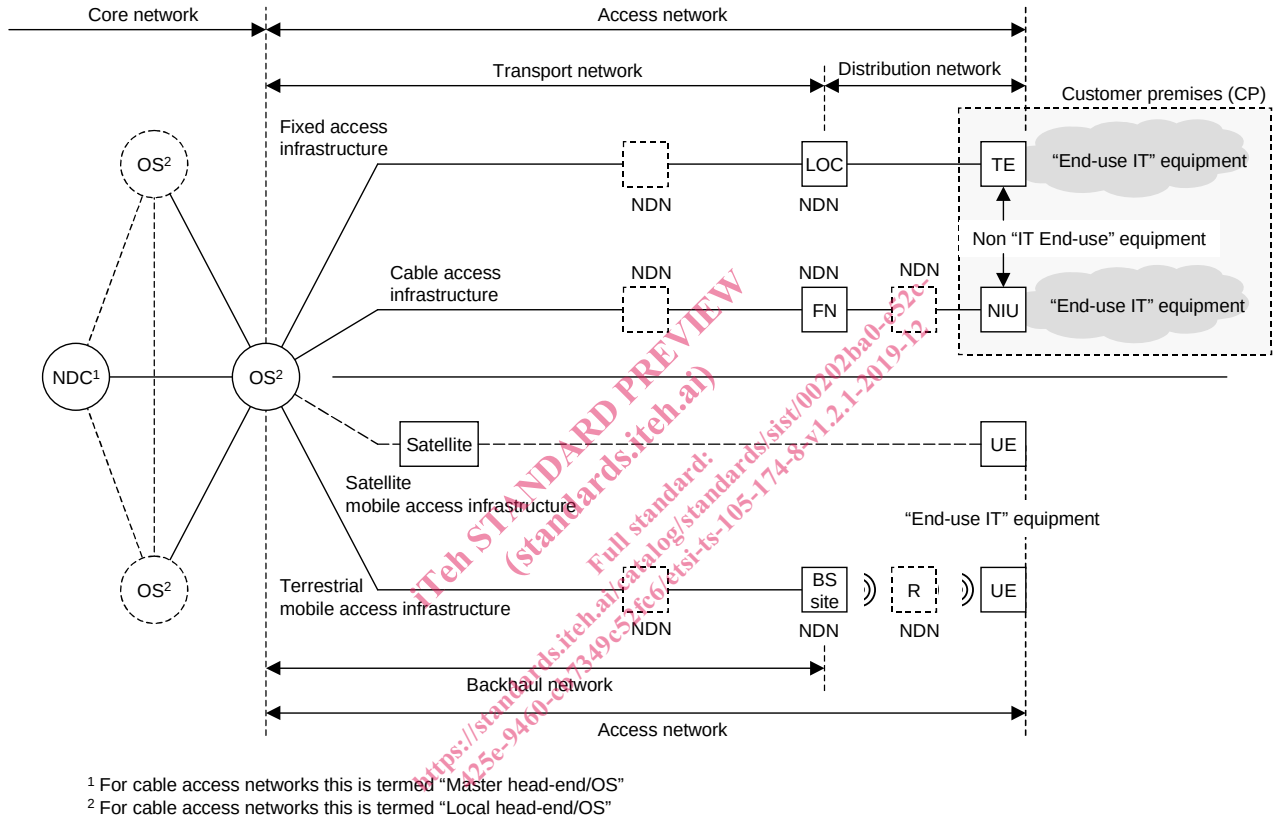
Forthcoming innovations in the ICT domain, including 5G, network virtualization and large-scale IoT deployment are expected to increase the volume of ICT equipment employed and the associated impact on EoL actions.

1 Scope

The present document supports the requirements of ETSI EN 305 174-8 [9] providing a framework for, and detailing, the necessary implementation procedures.

The present document specifically extends the end-of-life aspects of ICT equipment to the treatment of components and sub-assemblies replaced during maintenance procedures.

With reference to Figure 2 (from ETSI EN 305 174-8 [9]), which is a schematic representation of the different broadband networks implemented by telecommunications operators, the ICT equipment covered comprises the ITE and NTE in ICT sites together with the Terminal Equipment (TE) and Network Interface Unit (NIU) at the Customer Premises (CP) together with other User Equipment (UE) such as mobile telephones and other devices.



[1] For cable access networks this is termed "Master head-end/OS"
[2] For cable access networks this is termed "Local head-end/OS"

Figure 2: Schematic of fixed and mobile communication networks

Annex A details all actions in terms of treatment of e-waste, in accordance with the standards, from the perspective of recycler.

2 References

2.1 Normative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

Referenced documents which are not found to be publicly available in the expected location might be found at https://docbox.etsi.org/Reference.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are necessary for the application of the present document.

[1] CENELEC EN 50614: "Requirements for the preparing for re-use of waste electrical and electronic equipment".

[2] CENELEC EN 50625-1: "Collection, logistics & Treatment requirements for WEEE - Part 1: General treatment requirements".

[3] CENELEC EN 50625-2-1: "Collection, logistics & Treatment requirements for WEEE - Part 2-1: Treatment requirements for lamps".

[4] CENELEC EN 50625-2-2: "Collection, logistics & Treatment requirements for WEEE - Part 2-2: Treatment requirements for WEEE containing CRTs and flat panel displays".

[5] CENELEC EN 50625-2-3: "Collection, logistics & Treatment requirements for WEEE - Part 2-3: Treatment requirements for temperature exchange equipment and other WEEE containing VFC and/or VHC".

[6] CENELEC CLC/TS 50625-3-1: "Collection, logistics & Treatment requirements for WEEE - Part 3-1: Specification for de-pollution - General".

[7] CENELEC CLC/TS 50625-3-2: "Collection, logistics & Treatment requirements for WEEE - Part 3-2: Technical specification for de-pollution - Lamps".

[8] Directive 2012/19/EU of the European Parliament and of the Council of 4 July 2012 on waste electrical and electronic equipment (WEEE).

[9] ETSI EN 305 174-8: "Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Lifecycle Resource Management; Part 8: Management of end of life of ICT equipment (ICT waste/end of life)".

2.2 Informative references

References are either specific (identified by date of publication and/or edition number or version number) or non-specific. For specific references, only the cited version applies. For non-specific references, the latest version of the referenced document (including any amendments) applies.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

The following referenced documents are not necessary for the application of the present document but they assist the user with regard to a particular subject area.

[i.1] ETSI TS 105 174-1: "Access, Terminals, Transmission and Multiplexing (ATTM); Broadband Deployment and Energy Management; Part 1: Overview, common and generic aspects".

[i.2] CENELEC CLC/TS 50625-3-3: "Collection, logistics & treatment requirements for WEEE. Technical Specification for de-pollution. WEEE containing CRTs and flat panel displays".

[i.3] CENELEC TS 50625-4: "Collection, logistics & treatment requirements for WEEE - Technical Specification for the collection and logistics associated with WEEE".

[i.4] CENELEC TS 50625-5: "Collection, logistics & Treatment requirements for WEEE - Technical Specification for the final treatment of WEEE fractions - Copper and precious metals".

[i.5] CENELEC EN 50625-2-4: "Collection, logistics & Treatment requirements for WEEE. Treatment requirements for photovoltaic panels".

[i.6] CENELEC CLC/TS 50625-3-4: "Collection, logistics & treatment requirements for WEEE. Technical Specification for de-pollution. Temperature exchange equipment".

[i.7] CENELEC CLC/TS 50625-3-5: "Collection, logistics & Treatment requirements for WEEE. Technical specification for de-pollution - Photovoltaic panels".

[i.8] CENELEC CLC/TS 50625-6: "Collection, logistics & treatment requirements for WEEE - Report on the alignment between Directive 2012/19/EU and EN 50625 series standards and EN 50614".

3 Definition of terms, symbols and abbreviations

3.1 Terms

For the purposes of the present document, the terms given in ETSI EN 305 174-8 [9] apply.

NOTE: ETSI EN 305 174-8 [9] uses the terms "reuse" and "re-use" as synonyms whereas the present document adopts the sole use of the term "re-use".

3.2 Symbols

For the purposes of the present document, the symbols given in ETSI EN 305 174-8 [9] apply.

3.3 Abbreviations

For the purposes of the present document, the abbreviations given in ETSI EN 305 174-8 [9] and the following apply:

VFC Volatile FlouroCarbons
VHC Volatile HydroCarbons

4 EoL process involvement

4.1 General

When looking at the whole process from equipment delivery to the ICT user to the EoL and the recycling of all the components and materials, several actors are involved and all actors shall respect the rules and the standards applying to the sustainable management of ICT.

The level of involvement of each actor is not the same level but all actors has responsibilities for the storage and transport of WEEE. Obviously, the recyclers, who are the last link of the EoL chain have the greatest involvement.

As shown schematically in Figure 3, the main actors involved in the lifecycle of an ICT equipment are:

- the Manufacturer (see clause 4.2);
- the Vendor (see clause 4.2);
- the ICT user (see clause 4.3);
- the Maintenance Company during the lifecycle of the equipment (see clause 4.4);
- the Recycler: responsible for the equipment EoL (see clause 4.5).