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Low Throughput Networks (LTN); Protocols and Interfaces

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Foreword

This Group Specification (GS) has been produced by ETSI Industry Specification Group (ISG) Low Throughput Networks (LTN).

Modal verbs terminology

In the present document "**shall**", "**shall not**", "**should**", "**should not**", "**may**", "**may not**", "**need**", "**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

Low Throughput Network (LTN) is a technology of wide area wireless network with some specific characteristics compared to existing networks:

- LTN enables long-range data transmission (distances up to 40 km in open field) and/or communication with buried underground equipment.
- LTN operates with minimal power consumption in the device modems that allows operation on several years even with standard batteries.
- LTN implements low throughput along with advanced signal processing that provides effective protection against interferences.

As a consequence, LTN is particularly well suited for low throughput machine to machine (M2M) communication where data volume is limited and latency is not a strong requirement.

LTN could also cooperate with cellular networks to address use cases where redundancy, complementary or alternative connectivity is needed.

The objective of the present document is to provide a description of protocols and interfaces that are implemented in networks using LTN technology.

The elements provided in the document will contribute to standardize LTN protocols and interfaces in order to ensure interoperability of devices, modems, network elements and software solutions from various vendors, integrators and operators.

The present document defines the protocols and interfaces of LTN technology. It is organized as follows:

- Clause 4 gives an overview of the LTN architecture.
- Clause 5 describes the radio interface A.
- Clauses 6-10 describe LTN infrastructure interfaces.
- Clauses 11-13 briefly cover interfaces A', C' and F' that are out of scope of the present document.

1 Scope

The present document aims to define the protocols and interfaces of LTN systems. It goes along with the document GS LTN 002 [5] on LTN functional architecture.

The present document is intended for an audience with a technical perspective, whereas the use case document GS LTN 001 [i.2] addresses more business-oriented views on LTN.

2 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 http://docbox.etsi.org/Reference.

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2.1 Normative references

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

[1] FCC CFR 47 Part 15: "Telecommunication: Radio Frequency Devices".

[2] ETSI EN 300-220 (Parts 1 & 2): "Electromagnetic compatibility and Radio spectrum Matters (ERM); Short Range Devices (SRD); Radio equipment to be used in the 25 MHz to 1 000 MHz frequency range with power levels ranging up to 500 mW".

[3] GB/T 15629.15-2010: "Information technology - Telecommunications and information exchange between systems local and metropolitan area networks - Specific requirements - Part 15.4: Wireless medium access control and physical layer (PHY) specification for low rate wireless personal area networks".

NOTE: Available at http://www.sac.gov.cn/sac_en/.

[4] ARIB STD-T96 (2010.07.15) (H22.7.15) (Version 1.1): "950 MHz-Band Telemeter, Telecontrol and Data Transmission Radio Equipment for Specified Low Power Radio Station".

[5] ETSI GS LTN 002: "Low Throughput Networks (LTN); Functional Architecture".

[6] ETSI TS 102 690: "Machine-to-Machine communications (M2M); Functional architecture".

[7] ETSI TS 102 921: "Machine-to-Machine communications (M2M); mIa, dIa and mId interfaces".

2.2 Informative references

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] IEEE 802.15.4-2011: "IEEE Standard for Local and metropolitan area networks - Part 15.4: Low-Rate Wireless Personal Area Networks (LR-WPANs)".

[i.2] ETSI GS LTN 001: "Low Throughput Networks (LTN); Use Cases for Low Throughput Networks".