TECHNICAL SPECIFICATION

SPÉCIFICATION TECHNIQUE

TECHNISCHE SPEZIFIKATION

CLC/TS 52056-8-5

April 2015

ICS 35.240.60; 91.140.50

English Version

Electricity metering data exchange - The DLMS/COSEM suite - Part 8-5: Narrow-band OFDM G3-PLC communication profile for neighbourhood networks

This Technical Specification was approved by CENELEC on 2014-11-11.

CENELEC members are required to announce the existence of this TS in the same way as for an EN and to make the TS available promptly at national level in an appropriate form. It is permissible to keep conflicting national standards in force.

CENELEC members are the national electrotechnical committees of Austria, Belgium, Bulgaria, Croatia, Cyprus, the Czech Republic, Denmark, Estonia, Finland, Former Yugoslav Republic of Macedonia, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, the Netherlands, Norway, Poland, Portugal, Romania, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

European Committee for Electrotechnical Standardization
Comité Européen de Normalisation Electrotechnique
Europäisches Komitee für Elektrotechnische Normung

CEN-CENELEC Management Centre: Avenue Marnix 17, B-1000 Brussels

Ref. No. CLC/TS 52056-8-5:2015 E

CONTENTS

List of Figures

List of tables

Foreword

This document (CLC/TS 52056-8-5:2015) has been prepared by CLC/TC 13, "Electrical energy measurement and control".

The following date is fixed:

- latest date by which the existence of this document has to be announced at national level (doa) 2015-07-24

Attention is drawn to the possibility that some of the elements of this document may be the subject of patent rights. CENELEC [and/or CEN] shall not be held responsible for identifying any or all such patent rights.

This document has been prepared under a mandate given to CENELEC by the European Commission and the European Free Trade Association.

Introduction

This Technical Specification is based on the results of the European OPEN Meter project, Topic Energy 2008.7.1.1, Project no.: 226369, www.openmeter.com, and prepared by G3 Alliance, www.g3-plc.com.

1 Scope

This Technical Specification specifies the EN 62056 DLMS/COSEM communication profile for metering purposes based on the Recommendations ITU-T G.9901: *Narrowband Orthogonal Frequency Division Multiplexing Power Line Communication Transceivers – Power Spectral Density Specification* and ITU-T G.9903 *Narrow-band orthogonal frequency division multiplexing power line communication transceivers for G3-PLC networks*, an Orthogonal Frequency Division Multiplexing (OFDM) Power Line Communications (PLC) protocol.

The physical layer provides a modulation technique that efficiently utilizes the allowed bandwidth within the CENELEC A band (3 kHz – 95 kHz) (although ITU-T G.9903 defines the protocol for CENELEC B, ARIB and FCC bands as well), thereby allowing the use of advanced channel coding techniques. This combination enables a very robust communication in the presence of narrowband interference, impulsive noise, and frequency selective attenuation.

The medium access control (MAC) layer allows the transmission of MAC frames through the use of the power line physical channel. It provides data services, frame validation control, node association and secure services.

The 6LoWPAN adaptation sublayer enables an efficient interaction between the MAC and the IPv6 network layers. The IPv6 network protocol; the latest generation of IP (Internet Protocol), widely opens the range of potential applications and services for metering purposes (but not limited to metering purposes).

The transport layer, the application layer and the data model are as specified in the EN 62056 DLMS/COSEM suite.

2 Normative references

The following documents, in whole or in part, are normatively referenced in this document and are indispensable for its application. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

FprEN 62056-4-7:2014, *Electricity metering data exchange - The DLMS/COSEM suite – Part 4-7: DLMS/COSEM transport layer for IP networks (IEC 62056-4-7:2015)*

EN 62056-5-3, *Electricity metering data exchange – The DLMS/COSEM suite – Part 5-3: DLMS/COSEM application layer (IEC 62056-5-3)*

EN 62056-6-1, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-1: Object identification system (OBIS) (IEC 62056-6-1)*

EN 62056-6-2, *Electricity metering data exchange – The DLMS/COSEM suite – Part 6-2: COSEM interface classes (IEC 62056-6-2)*

EN 62056-9-7:2013, *Electricity metering data exchange – The DLMS/COSEM suite – Part 9-7: Communication profile for TCP-UDP/IP networks (IEC 62056-9-7:2013)*

Recommendation ITU-T G.9901 (2014) *Narrowband Orthogonal Frequency Division Multiplexing Power Line Communication Transceivers – Power Spectral Density Specification* – available at http://www.itu.int/rec/T-REC-G.9901/en

Recommendation ITU-T G.9903 (2014) *Narrowband Orthogonal Frequency Division Multiplexing Power Line Communication Transceivers for G3-PLC Networks available at http://www.itu.int/rec/T-REC-G.9903/en*

IETF RFC 768: *User Datagram Protocol. Edited by J. Postel. August 1980. Available from http://www.ietf.org/rfc/rfc768.txt*

IETF RFC 2460: *Internet Protocol, Version 6 (IPv6) Specification. Edited by S. Deering, R. Hinden. December 1998. Available from http://www.ietf.org/rfc/rfc2460.txt*

IETF RFC 4193: *Unique Local IPv6 Unicast Addresses. Edited by R. Hinden, B. Haberman. October 2005. Available from http://www.ietf.org/rfc/rfc4193.txt*

IETF RFC 4291: *IP Version 6 Addressing Architecture. Edited by R. Hinden, S. Deering. February 2006. Available from http://www.ietf.org/rfc/rfc4291.txt*

IETF RFC 4944: *Transmission of IPv6 Packets over IEEE 802.15.4 Networks. Available from http://www.ietf.org/rfc/rfc2460.txt*

IETF RFC 6282: *Compression Format for IPv6 Datagrams over IEEE 802.15.4-Based Networks. Available from http://www.ietf.org/rfc/rfc2460.txt*

3 Abbreviations

6LoWPAN	IPv6 over Low power Wireless Personal Area Networks
CENELEC	European Committee for Electrotechnical Standardization
DLMS	Device Language Message Specification
EAP	Extensible Authentication Protocol
IEC	International Electrotechnical Commission
IP	Internet Protocol
ITU-T	International Telecommunication Union-Telecommunication
LBA	LoWPAN Bootstrapping Agent
LBP	LoWPAN Bootstrapping Protocol
MAC	Media Access Control
NNAP	Neighbourhood Network Access Point
OFDM	Orthogonal Frequency Division Multiplexing
OSI	Open System Interconnection
PAN	Personal Area Network
PLC	Power Line Communication
PSK	Pre-Shared Key
TCP	Transmission Control Protocol
UDP	User Datagram Protocol

Furthermore, the abbreviations given in Clause 4 of ITU-T G.9903 apply also.

4 Conventions

Through the document, the applicability of each provision from the reference documents is given using the following convention:

- I = "Informative". The statements of the reference document are provided for information only;
- N = “Normative”: The statements of the reference document apply without modifications or remarks;