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Electricity metering data exchange - Lower layer PLC profile using Adaptive Multi Carrier Spread-Spectrum (AMC-SS) modulation

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Foreword

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1 Scope

This Technical Specification specifies the physical layer, medium access control layer and logical link control layer for communication on an electrical distribution network between a master node and one or more slave nodes using a compatibly extendable form (CX1) of Adaptive Multi-Carrier Spread Spectrum (AMC-SS) technique. The adaptive cellular communication network technology provided in this specification may be used for automated meter reading as well as for other distribution network applications.

The[GK1] physical layer provides a modulation technique that efficiently utilizes the allowed bandwidth within the CENELEC A band (3 kHz – 95 kHz), offering a very robust communication in the presence of narrowband interference, impulsive noise, and frequency selective attenuation. The physical layer of AMC-SS is defined in Clause 5 of CLC/TS 50590:2015[GK2].

The data link (DL) layer consists of three parts, the ‘Medium Access Control’ (MAC) sub-layer, the Logical Link Control (LLC) sub-layer and the ‘Convergence’ sub-layer. The data link layer allows the transmission of data frames through the use of the power line physical channel. It provides data services, frame integrity control, routing, registration, multiple access, and cell change functionality. The MAC sub-layer and the LLC sub-layer of AMC-SS are defined in Clause 6 of CLC/TS 50590:2015. The Convergence sub-layer is defined in this document.

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.

EN 50065-1, *Signaling on low-voltage electrical installations in the frequency range 3 kHz to 148,5 kHz – Part 1: General requirements, frequency bands and electromagnetic disturbances*

DIN 43863–5:2012-04, *Identification number for measuring devices applying for all manufacturers*

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