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I.S. EN 50617-1:2015

Railway applications - Technical parameters of train detection systems for the interoperability of the trans-European railway system - Part 1: Track circuits

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Railway applications - Technical parameters of train detection systems for the interoperability of the trans-European railway system - Part 1: Track circuits

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Bahnanwendungen - Technische Parameter von Gleisfreimeldesystemen - Teil 1: Gleisstromkreisen

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Foreword

This document (EN 50617-1:2015) has been prepared by CLC/SC 9XA "Communication, signalling and processing systems" of CLC/TC 9X "Electrical and electronic applications for railways".

The following dates are fixed:

- latest date by which this document has to be implemented at national level by publication of an identical national standard or by endorsement (dop) 2016-03-09
- latest date by which the national standards conflicting with this document have to be withdrawn (dow) 2018-03-09

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, and supports essential requirements of EU Directive(s).

For relationship with EU Directive 2008/57/EC amended by Commission Directive 2011/18/EU, see informative Annex ZZ, which is an integral part of this document.

EN 50617, *Railway applications – Technical parameters of train detection systems*, will consist of

- Part 1: Track circuits;
- Part 2: Axle counters.

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Introduction

The working group SC9XA WGA4-2 has developed the limits for electromagnetic compatibility between rolling stock and train detection systems, specifically track circuits and axle counter systems and correspondingly published two technical specifications CLC/TS 50238-2 and CLC/TS 50238-3. These limits and associated measurement methods are based on preferred existing systems (as defined in CLC/TS 50238-2 and CLC/TS 50238-3) which are well established and still put forward for signalling renewals by infrastructure managers.

To meet the requirements for compatibility between train detection systems and rolling stock in the future and to achieve interoperability and free movement within the European Union, it is necessary to define a “Frequency management” including the complete set of interface requirements.

The train detection systems, track circuits and axle counters, are an integral part of the CCS trackside subsystem in the context of the Rail Interoperability Directive. The relevant technical parameters are enumerated in the CCS and LOC&PAS TSI and specified in the mandatory Specification (index 77 of CCS TSI). This standard refers whenever needed to this document. Although the demand for FrM is driven by Interoperability requirements, it is independent from the drive to introduce systems like ERTMS level 3 or level 2.

This standard is based on the current understanding of the railway experts represented at WGA4-2 that track circuits and axle counter systems will continue to be the essential two train detection systems for the foreseeable future.

The published specifications CLC/TS 50238-2 and CLC/TS 50238-3 can be used in the interim period, to ascertain conformity of individual train detection systems to the requirements of the Frequency Management. The published specifications CLC/TS 50238-2 and CLC/TS 50238-3 can be used to ascertain conformity of individual train detection systems to the requirements of the TSIs, that will be in place for the parameters still declared “open points” in index 77 of CCS TSI.

The Frequency Management requirements presented in this standard are informative at this stage until introduced in document Index 77 of CCS TSI.

In this European Standard, the defined parameters are structured and allocated according to their basic references as follows:

- track circuit system parameters;
- train based parameters;
- track based parameters;
- environmental and other parameters.

Where possible, the parameters as defined are consistent with other European Standards.

Each parameter is defined by a short general description, the definition of the requirement, the relation to other standards and a procedure to show the fulfilment of the requirement as far as necessary. An overview of the safety relevance of each parameter is given – in the context of this European Standard – in a separate table.

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1 Scope

This European Standard specifies the technical parameters of track circuits associated with the disturbing current emissions limits for RST in the context of interoperability defined in the form of Frequency Management. The limits for compatibility between rolling stock and track circuits currently proposed in this standard allow provision for known interference phenomena linked to traction power supply and associated protection (over voltage, short-circuit current and basic transient effects like in-rush current and power cut-off). These effects are assessed using modelling tools that have been verified by the past European research project RAILCOM.

This European Standard is intended to be used to assess compliance of track circuits equipment and other forms of train detection systems using the rails as part of their detection principles, in the context of the European Directive on the interoperability of the trans-European railway system and the associated technical specification for interoperability relating to the control-command and signalling track-side subsystems.

The European Standard describes technical parameters to consider for achieving the compatibility of the track circuit with the emissions limits defined in the frequency management for rolling stock. These parameters are structured and allocated according to their basic references as follows:

- Technical track circuit parameters;
- Train based parameters;
- Track based parameters;
- Environmental and other parameters including EMC.

Each parameter is defined by a short general description, the definition of the requirement, the relation to other standards and a procedure to show the fulfilment of the requirement as far as necessary. An overview of the safety relevance of each parameter is given – in the context of this European Standard – in a separate table.

NOTE The allocated bands for track circuits and emission limits for rolling stock defined in the Frequency Management are currently used as input information to define mandatory requirements to be stated in index 77 of CCS TSI. The evaluation is conducted by the European Railway Agency.

The immunity limits of the track circuits installed on non-interoperable lines, or on interoperable lines built before the publication date of this document, are not defined in this European Standard and remain the responsibility of individual infrastructure managers, NSAs and/or suppliers of train detection systems. In this case, the limits for compatibility are usually given in the infrastructure registers and/or the notified national rules.

This European Standard is applicable to track circuits installed on all traction power supply lines, including non-electrified lines. However, for track circuits intended to be installed only on non-electrified lines, some parameters may be not applicable.

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 13146-5, *Railway applications — Track — Test methods for fastening systems — Part 5: Determination of electrical resistance*

EN 50121-4, *Railway applications — Electromagnetic compatibility — Part 4: Emission and immunity of the signalling and telecommunications apparatus*

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