

English Version

**Public transport - Communication between contactless
readers and fare media - Part 1: Implementation
requirements for ISO/IEC 14443**

Transport Public - Système billettique interopérable -
Communication entre terminaux et objets sans contact
- Partie 1: Exigences d'implémentation pour l'ISO/IEC
14443

Öffentlicher Verkehr - Kommunikation zwischen
berührungslosen Lesegeräten und Fahrscheinmedien -
Teil 1: Implementierungsanforderungen zur ISO/IEC
14443

This Technical Specification (CEN/TS) was approved by CEN on 17 June 2019 for provisional application.

The period of validity of this CEN/TS is limited initially to three years. After two years the members of CEN will be requested to submit their comments, particularly on the question whether the CEN/TS can be converted into a European Standard.

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European foreword

This document (CEN/TS 16794-1:2019) has been prepared by Technical Committee CEN/TC 278 “Intelligent transport systems”, the secretariat of which is held by NEN.

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

This document supersedes CEN/TS 16794-1:2017.

This edition updates the requirements applicable to the contactless interface of PT readers and objects to introduce interoperability with NFC mobile devices compliant to NFC Forum specifications.

According to the CEN/CENELEC Internal Regulations, the national standards organizations of the following countries are bound to announce this Technical Specification: Austria, Belgium, Bulgaria, Croatia, Cyprus, Czech Republic, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Malta, Netherlands, Norway, Poland, Portugal, Republic of North Macedonia, Romania, Serbia, Slovakia, Slovenia, Spain, Sweden, Switzerland, Turkey and the United Kingdom.

1 Scope

This document constitutes the 3rd edition of CEN/TS 16794-1. It sets out the technical requirements to be met by contactless Public Transport (PT) devices in order to be able to interface together using the ISO/IEC 14443 series (ISO/IEC 14443-1, ISO/IEC 14443-2, ISO/IEC 14443-3 and ISO/IEC 14443-4) contactless communications protocol.

This document applies to PT devices:

- PT readers which are contactless fare management system terminals acting as a PCD contactless reader based on the ISO/IEC 14443 series;
- PT objects which are contactless fare media acting as a PICC contactless object based on the ISO/IEC 14443 series.

This edition addresses interoperability of consumer-market NFC mobile devices, compliant to NFC Forum specifications, with above mentioned PT devices, aligns with the 4th edition of the ISO/IEC 14443 series and maintains the possibility for PT readers to comply with the requirements from EMV Contactless Interface Specification and the present document.

An interface-oriented test approach is used to evaluate the conformity of PT devices and is defined in CEN/TS 16794-2.

Application-to-application exchanges executed once contactless communication has been established at RF level fall outside the scope of this document. In line with the rules on independence between OSI protocol layers, this document works on the assumption that application-to-application exchanges are not contingent on the type of contactless communication established or the parameters used for the low-level protocol layers that serve as the platform for these application-to-application exchanges.

2 Normative references

The following documents are referred to in the text in such a way that some or all of their content constitutes requirements of this document. For dated references, only the edition cited applies. For undated references, the latest edition of the referenced document (including any amendments) applies.

CEN/TS 16794-2, *Public transport — Communication between contactless readers and fare media — Part 2: Test plan for ISO/IEC 14443*

ISO/IEC 10373-6, *Identification cards — Test methods — Part 6: Proximity cards*

ISO/IEC 14443 (all parts), *Cards and security devices for personal identification — Contactless proximity objects*

EMV Level 1 Specifications for Payment Systems — EMV Contactless Interface Specification — Version 3.0 March 2018

NFC Forum™ - NFC Analog Specification, Technical Specification - NFC Forum™- ANALOG 2.1 – NFC Forum-TS-Analog-2.1 – August 2018 (or later)

NFC Forum™ - NFC Digital Specification, Technical Specification - NFC Forum™ - DIGITAL 2.1 – NFC Forum-TS-Digital-2.1 – September 2018(or later)

NFC Forum™ - NFC Activity Specification, Technical Specification - NFC Forum™ - ACTIVITY 2.0 - NFC Forum-TS-Activity-2.0 – April 2017 (or later)

3 Terms and definitions

For the purposes of this document, the terms and definitions given in ISO/IEC 14443-1, ISO/IEC 14443-2, ISO/IEC 14443-3, ISO/IEC 14443-4, ISO/IEC 10373-6 and the following apply.

ISO and IEC maintain terminological databases for use in standardization at the following addresses:

- ISO Online browsing platform: available at <http://www.iso.org/obp>
- IEC Electropedia: available at <http://www.electropedia.org/>

3.1
Common reader
PT reader used in interoperable fare management system terminals with reduced performance requirements

Note 1 to entry: See 8.2.

3.2
IFM reader
PT reader used in interoperable fare management system terminals

Note 1 to entry: See 8.2.

3.3
NFC mobile device
mobile device capable of near field communication that is offered in the consumer market and is used by PT customers as a contactless object or a contactless reader

3.4
NFC mobile device in card emulation mode
mobile device used as a PT object

3.5
NFC mobile device in reader/writer mode
mobile device used as a PT reader

3.6
non ISO/IEC 14443-3 frame coding
frame using either:

- ISO/IEC 14443-2 Type A modulation, with coding different from REQA or WUPA; or
- ISO/IEC 14443-2 Type B modulation, with coding different from REQB or WUPB; or
- ISO/IEC 18092 modulation; or
- ISO/IEC 15693-2 modulation

3.7
PT device
PT reader or PT object