

<b>STN</b>	<b>Inteligentné dopravné systémy (ITS) LTE-V2X a NR-V2X</b> <b>Špecifikácia prístupovej vrstvy pre inteligentné transportné systémy pracujúce vo frekvenčnom pásme 5 GHz</b> <b>Vydanie 2</b>	<b>STN EN 303 798 V2.1.1</b>  87 3798
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Intelligent Transport Systems (ITS); LTE-V2X and NR-V2X Access layer specification for Intelligent Transport Systems operating in the 5 GHz frequency band; Release 2  
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Táto norma obsahuje anglickú verziu európskej normy.  
This standard includes the English version of the European Standard.

Táto norma bola oznámená vo Vestníku ÚNMS SR č. 11/24

Obsahuje: EN 303 798 V2.1.1:2024

139476



Úrad pre normalizáciu, metrológiu a skúšobníctvo Slovenskej republiky, 2024  
Slovenská technická norma a technická normalizačná informácia je chránená zákonom č. 60/2018 Z. z. o technickej normalizácii v znení neskorších predpisov.

# ETSI EN 303 798 V2.1.1 (2024-08)



**Intelligent Transport Systems (ITS);  
LTE-V2X and NR-V2X Access layer specification  
for Intelligent Transport Systems operating  
in the 5 GHz frequency band;  
Release 2**

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**Reference**

REN/ITS-00446

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**Keywords**

5G, ITS, layer 1, layer 2, LTE, MAC, radio

**ETSI**

650 Route des Lucioles  
F-06921 Sophia Antipolis Cedex - FRANCE

Tel.: +33 4 92 94 42 00 Fax: +33 4 93 65 47 16

Siret N° 348 623 562 00017 - APE 7112B  
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## Foreword

This European Standard (EN) has been produced by ETSI Technical Committee Intelligent Transport Systems (ITS).

National transposition dates	
Date of adoption of this EN:	12 August 2024
Date of latest announcement of this EN (doa):	30 November 2024
Date of latest publication of new National Standard or endorsement of this EN (dop/e):	31 May 2025
Date of withdrawal of any conflicting National Standard (dow):	31 May 2025

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## Modal verbs terminology

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

The present document outlines the access layer of the Sidelink (PC5 interface) of cellular based Vehicle to Everything communication technology specified in ETSI TS 138 300 [21], which can be operated in the 5,9 GHz frequency band allocated in Europe. NR-V2X and LTE-V2X access layers consist of RRC layer, PDCP layer, RLC layer, MAC layer and Physical layer. A NAS layer is also introduced as part of the access layer in the present document for the provision of control. The present document includes requirements for congestion control and for CEN DSRC protection.

The present document does not override regional regulations. The regional regulations apply.

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# 1 Scope

The present document defines the physical layer, the data link layer and radio resource configuration, grouped into the access layer of the ITS station reference architecture ETSI TS 103 898 [i.2]. The access layer technology that is specified in the present document refers to what is known as the sidelink or PC5 interface of cellular V2X for the following frequency bands:

- Operation in frequency band dedicated to ITS for safety related applications in the frequency range 5,875 GHz to 5,925 GHz.
- Operation in frequency bands dedicated to ITS non-safety applications in the frequency range 5,855 GHz to 5,875 GHz.

The present document is a revision of ETSI EN 303 613 [i.1], and extends the LTE-V2X access layer specification to include NR-V2X.

Whether LTE-V2X or NR-V2X is used for message transmission in an ITS channel is determined by a system level configuration and outside the scope of the present document.

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## 2 References

### 2.1 Normative 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.

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

- [1] [ETSI TS 136 331](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Resource Control (RRC); Protocol specification (3GPP TS 36.331 Release 16)".
- [2] [ETSI TS 136 300](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA) and Evolved Universal Terrestrial Radio Access Network (E-UTRAN); Overall description; Stage 2 (3GPP TS 36.300 Release 16)".
- [3] [ETSI TS 136 321](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Medium Access Control (MAC) protocol specification (3GPP TS 36.321 Release 16)".
- [4] [ETSI TS 136 322](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Radio Link Control (RLC) protocol specification (3GPP TS 36.322 Release 16)".
- [5] [ETSI TS 136 323](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Packet Data Convergence Protocol (PDCP) specification (3GPP TS 36.323 Release 16)".
- [6] [ETSI TS 136 211](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical channels and modulation (3GPP TS 36.211 Release 16)".
- [7] [ETSI TS 136 212](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Multiplexing and channel coding (3GPP TS 36.212 Release 16)".
- [8] [ETSI TS 136 213](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer procedures (3GPP TS 36.213 Release 16)".

- [9] [ETSI TS 136 214](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Physical layer; Measurements (3GPP TS 36.214 Release 16)".
- [10] [ETSI TS 123 285](#): "Universal Mobile Telecommunications System (UMTS); LTE; Architecture enhancements for V2X services (3GPP TS 23.285 Release 16)".
- [11] [ETSI TS 124 385](#): "LTE; V2X services Management Object (MO) (3GPP TS 24.385 Release 16)".
- [12] [ETSI TS 124 386](#): "LTE; User Equipment (UE) to V2X control function; protocol aspects; Stage 3 (3GPP TS 24.386 Release 16)".
- [13] [ETSI TS 136 101](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); User Equipment (UE) radio transmission and reception (3GPP TS 36.101 Release 16)".
- [14] [ETSI TS 136 133](#): "LTE; Evolved Universal Terrestrial Radio Access (E-UTRA); Requirements for support of radio resource management (3GPP TS 36.133 Release 16)".
- [15] [ETSI TS 124 301](#): "Universal Mobile Telecommunications System (UMTS); LTE; 5G; Non-Access-Stratum (NAS) protocol for Evolved Packet System (EPS); Stage 3 (3GPP TS 24.301 Release 16)".
- [16] [ETSI TS 136 413](#): "LTE; Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 Application Protocol (S1AP) (3GPP TS 36.413 Release 16)".
- [17] [ETSI TS 136 414](#): "LTE; Evolved Universal Terrestrial Radio Access Network (E-UTRAN); S1 data transport (3GPP TS 36.414 Release 16)".
- [18] [ETSI TS 102 792](#): "Intelligent Transport Systems (ITS); Mitigation techniques to avoid interference between European CEN Dedicated Short Range Communication (CEN DSRC) equipment and Intelligent Transport Systems (ITS) operating in the 5 GHz frequency range".
- [19] [ETSI TS 103 574](#): "Intelligent Transport Systems (ITS); Congestion Control Mechanisms for C-V2X PC5 interface; Access layer part; Release 2".
- [20] [ETSI TS 138 331](#): "5G; NR; Radio Resource Control (RRC); Protocol specification (3GPP TS 38.331 Release 16)".
- [21] [ETSI TS 138 300](#): "5G; NR; NR and NG-RAN Overall description; Stage-2 (3GPP TS 38.300 Release 16)".
- [22] [ETSI TS 138 321](#): "5G; NR; Medium Access Control (MAC) protocol specification (3GPP TS 38.321 Release 16)".
- [23] [ETSI TS 138 322](#): "5G ; NR; Radio Link Control (RLC) protocol specification (3GPP TS 38.322 Release 16)".
- [24] [ETSI TS 138 323](#): "5G; NR; Packet Data Convergence Protocol (PDCP) specification (3GPP TS 38.323 Release 16)".
- [25] [ETSI TS 138 211](#): "5G ; NR; Physical channels and modulation (3GPP TS 38.211 Release 16)".
- [26] [ETSI TS 138 212](#): "5G; NR; Multiplexing and channel coding (3GPP TS 38.212 Release 16)".
- [27] [ETSI TS 138 213](#): "5G; NR; Physical layer procedures for control (3GPP TS 38.213 Release 16)".
- [28] [ETSI TS 138 214](#): "5G; NR; Physical layer procedures for data (3GPP TS 38.214 Release 16)".
- [29] [ETSI TS 138 215](#): "5G; NR; Physical layer measurements (3GPP TS 38.215 Release 16)".
- [30] [ETSI TS 138 101-1](#): "5G; NR; User Equipment (UE) radio transmission and reception; Part 1: Range 1 Standalone (3GPP TS 38.101-1 Release 16)".
- [31] [ETSI TS 138 133](#): "5G; NR; Requirements for support of radio resource management (3GPP TS 38.133 Release 16)".
- [32] [ETSI TS 124 501](#): "5G; Non-Access-Stratum (NAS) protocol for 5G System (5GS); Stage 3 (3GPP TS 24.501 Release 16)".



- [33] [ETSI TS 138 413](#): "5G; NG-RAN; NG Application Protocol (NGAP) (3GPP TS 38.413 Release 16)".
- [34] [ETSI TS 138 414](#): "5G; NG-RAN; NG data transport (3GPP TS 38.414 Release 16)".
- [35] [ETSI TS 103 723](#): "Intelligent Transport Systems (ITS); Profile for LTE-V2X Direct Communication".
- [36] [ETSI TS 123 287](#): "5G; Architecture enhancements for 5G System (5GS) to support Vehicle-to-Everything (V2X) services (3GPP TS 23.287 Release 16)".
- [37] [ETSI TS 103 836-4-3](#): "Intelligent Transport Systems (ITS); Vehicular Communications; GeoNetworking; Part 4: Geographical addressing and forwarding for point-to-point and point-to-multipoint communications; Sub-part 3: Media-dependent functionalities for NR-V2X PC5 and LTE-V2X PC5; Release 2".

## 2.2 Informative 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.

NOTE: While any hyperlinks included in this clause were valid at the time of publication, ETSI cannot guarantee their long term validity.

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] ETSI EN 303 613: "Intelligent Transport Systems (ITS); LTE-V2X Access layer specification for Intelligent Transport Systems operating in the 5 GHz frequency band".
- [i.2] ETSI TS 103 898: "Intelligent Transport Systems (ITS); Communications Architecture; Release 2".
- [i.3] ETSI EN 302 571: "Intelligent Transport Systems (ITS); Radiocommunications equipment operating in the 5 855 MHz to 5 925 MHz frequency band; Harmonised Standard covering the essential requirements of article 3.2 of Directive 2014/53/EU".
- [i.4] [Commission Implementing Decision \(EU\) 2020/1426 of 7 October 2020](#) on the harmonised use of radio spectrum in the 5 875-5 935 MHz frequency band for safety-related applications of intelligent transport systems (ITS) and repealing Decision 2008/671/EC.
- [i.5] [ECC/DEC/\(08\)01](#): "The harmonised use of Safety-Related Intelligent Transport Systems (ITS) in the 5875-5935 MHz frequency band". Approved 14 March 2008. Latest updated 18 November 2022.
- [i.6] [ECC Recommendation \(08\)01](#): "Use of the band 5855-5875 MHz for Intelligent Transport Systems (ITS)". Approved 21 February 2008. Amended 3 July 2015.

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