

ICS 33.060.30
CCS M 30

YD

**INDUSTRY STANDARD OF THE
PEOPLE'S REPUBLIC OF CHINA**

YD/T 3709-2020

**Technical requirements of message layer of LTE-based
vehicular communication
(English Translation)**

Issued on: April 16, 2020

Implemented on: July 1, 2020

Issued by: Ministry of Industry and Information Technology of PRC

Table of Contents

Foreword...	3
1 Scope...	4
2 Normative references...	4
3 Terms, definitions, abbreviations...	5
3.1 Terms and definitions...	5
3.2 Abbreviations...	5
4 Message layer of LTE-based vehicular communication technology.....	6
4.1 System introduction...	6
4.2 Architecture of message layer...	7
5 Technical requirements for the message layer.....	8
5.1 Basic introduction and requirements of the message layer...	8
5.2 Definition of data set of message layer...	8

1 Scope

This standard specifies the technical requirements for the message layer of

LTE-based vehicular communication technology, which specifically includes the structure of the data set at message layer AND specific data definitions and coding methods.

This standard applies to the message layer of the LTE-based wireless communication technology for vehicular internet.

2 Normative references

The following documents are essential to the application of this document. For the dated documents, only the versions with the dates indicated are applicable to this document; for the undated documents, only the latest version (including all the amendments) is applicable to this standard.

GB 2312-1980 Code of Chinese graphic character set for information interchange - Primary set

GB 5768.2-2009 Road traffic signs and markings - Part 2.Road traffic signs

GB 14886 Specifications for road traffic signal setting and installation

GB/T 27967-2011 Format of weather forecast on highway traffic

GB/T 29100-2012 Road traffic information service - Traffic event classification and coding

YD/T 3340-2018 Technical requirements of air interface of LTE-based vehicular communication

YD/T 3400-2018 General technical requirements of LTE-based vehicular communication

3.1 Terms and definitions

The following terms and definitions apply to this document.

3.1.1 Vehicle to everything, V2X

The communication, BETWEEN the on-board unit AND other devices, which includes, but is not limited to, the communication between the on-board units, the communication between the on-board unit and the roadside unit, the communication between the on-board unit and the pedestrian equipment, the communication between the on-board unit and the network.

3.2 Abbreviations

The following abbreviations apply to this document.

ASN.1. Abstract Syntax Notation One

BSM. Basic Safety Message

DE. Data Element

DF. Data Frame

DSM. Dedicated Short Message

4.1 System introduction

The LTE-based vehicular communication technology realizes the information interaction, BETWEEN the different subsystems of the intelligent transportation system, thereby realizing different applications such as road safety, traffic efficiency, information services.

4.2 Architecture of message layer

The framework of the message layer of the LTE-based vehicular communication technology is as shown in Figure 3. The message layer is located inside the application layer, which connects with the data sublayer of the network layer downwards, AND supports specific user applications upwards.

The message layer can support various data transmissions, which are defined by the network layer of the LTE-based vehicular communication technology.

5.1 Basic introduction and requirements of the message layer

The data set at message layer is defined by the ASN.1 standard. It is formulated according to the layered nesting logic of "message frame - message body - data frame - data element".

5.2 Definition of data set of message layer

The data set of message layer, which is defined in this standard, mainly consists of 1 message frame format, 5 most basic message bodies, corresponding data frames and data elements, as shown in Figure 4.

5.2.1 Message frame

The message frame is a unified packaging format of a single application layer message. It is the only operation object for data encoding and decoding. The message frame is composed of different types of message bodies; it supports expansion.

5.2.3 Data Frame

The data frame is composed of other data units or data types. It has a specific practical meaning AND is a component of the message body.

5.2.3.1 DF_AccelerationSet4Way

[Definition]

It defines the four-axis acceleration of the vehicle.

5.2.3.36 DF_Position_-LL-28B

[Definition]

The 28-bit relative latitude and longitude position, which indicates the latitude and longitude deviation of the current position point, with respect to the reference position point. It is composed of two 14-bit longitude and latitude deviation values.

5.2.3.37 DF_Position-LL-32B

[Definition]

The 32-bit relative latitude and longitude position, which indicates the latitude and longitude deviation of the current position point, with respect to the reference position point. It consists of two 16-bit longitude and latitude deviation values.

5.2.3.38 DF_Position-LL-36B

[Definition]

The 36-bit relative longitude and latitude position, which indicates the latitude and longitude deviation of the current position point, with respect to the reference position point. It is composed of two 18-bit longitude and latitude deviation values.

[ASN.1 code]

5.2.4.70 DE_SpeedLimitType

[Definition]

Define the speed limit type; indicate the reference type corresponding to the given speed limit size.

[ASN.1 code]

5.2.4.71 DE_StabilityControlStatus

[Definition]

Define the state of the vehicle's dynamic stability control system.

Unavailable. The system is not equipped or unavailable.

Off. The system is off.

On. The system is on, but not triggered.

Engaged. The system is triggered and is active.

[ASN.1 code]

5.2.4.72 DE_SteeringWheelAngle

[Definition]

Define the steering wheel angle of the vehicle. To the right is positive; to the left is negative.

The resolution is 1.5???. The value 127 is invalid value.

[ASN.1 code]

5.2.4.73 DE_SteeringWheelAngleConfidence

[Definition]

Describe the accuracy of the vehicle steering wheel angle, at the 95% confidence level, in numerical value.