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**NATIONAL STANDARD OF THE
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**Technical requirements and test methods of vehicular
information interactive systems based on LTE-V2X direct
communication**

基于LTE-V2X直连通信的车载信息交互系统技术要求及试验方法

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1 Scope

This document specifies the system description, vehicle environment requirements, positioning and timing requirements, functional requirements, communication performance requirements, test methods of the vehicular information interaction system based on long-term evolution vehicle wireless communication technology (LTE-V2X) supporting direct communication.

This document is applicable to Class M and Class N vehicles.

Note: In the absence of ambiguity, this document will refer to the vehicular information interaction system based on LTE-V2X direct communication, abbreviated as LTE-V2X system.

2 Normative references

GB/T 28046.2-2019

GB/T 28046.3-2011

GB/T 28046.4-2011

GB/T 30038-2013

GB 34660-2017

5.3.5 High temperature operation

Perform the test in accordance with 9.1.3.4; the functional status of the LTE-V2X system shall meet the requirements of 5.1 Level A.

5.3.6 Temperature gradient

Perform the test in accordance with 9.1.3.5; the functional status of the LTE-V2X system shall meet the requirements of 5.1 Level A.

5.3.7 Rapid temperature change with specified switching time

Perform the test in accordance with 9.1.3.6; the functional status of the LTE-V2X system shall meet the requirements of 5.1 Level B.

5.3.8 Temperature cycling with specified change rate

Perform the test in accordance with 9.1.3.7; the functional status of the LTE-V2X system shall meet the requirements of 5.1 Level A.

5.3.9 Damp heat cycling

Perform the test in accordance with 9.1.3.8; the functional status of the LTE-V2X system shall meet the requirements of 5.1 Level A.

5.3.10 Steady-state damp heat

Perform the test in accordance with 9.1.3.9; the functional status of the LTE-V2X system shall meet the requirements of 5.1 Level A.

5.3.11 Salt spray resistance

Perform the test in accordance with 9.1.3.10, to check the appearance of the LTE-V2X system. It shall be sealed intact; the sign and label shall be clearly visible; its functional status shall meet the requirements of 5.1 Level B.

5.4 Shell protection

Perform the test in accordance with 9.1.4 according to the requirements of Table A.1 of GB/T 28046.4-2011. The LTE-V2X system function shall meet the requirements of 5.1 Level B.

5.5.1 Mechanical vibration

Perform the test in accordance with 9.1.5.1. The LTE-V2X system shall not have physical damage; its functional status shall meet the requirements of 5.1 Level A.

5.5.2 Mechanical shock

Perform the test in accordance with 9.1.5.2. The LTE-V2X system shall not have physical damage; its functional status shall meet the requirements of 5.1 Level A.

5.5.3 Free fall

The LTE-V2X system shall not have invisible damage, when tested in accordance with 9.1.5.3. Minor damage to the outer shell is allowed without affecting the performance of the LTE-V2X system. Its functional status shall meet the requirements of 5.1 Level B.

5.6 Durability

The LTE-V2X system shall not have physical damage when tested in accordance with 9.1.6. Its service life shall not be less than 10 years.

5.7.1.1 Broadband radiated emission

The vehicle shall meet the requirements of 4.2 of GB 34660-2017, when tested in accordance with 9.1.7.1.4.1.

5.7.1.2 Narrowband radiated emission

The vehicle shall meet the requirements of 4.3 of GB 34660-2017, when tested in accordance with 9.1.7.1.4.2.

5.7.1.3 Immunity to electromagnetic radiation

Perform the test in accordance with 9.1.7.1.4.3. During and after the test, the number of BSM data packets received by the V2X PC5 message receiving instrument, within the continuous test time t (in seconds) of the vehicle, shall not be less than round $(tx10 \times 95\%)$.
Note: round means integer.

5.7.2 System electromagnetic compatibility

The electromagnetic compatibility requirements of the LTE-V2X system are shown in

Appendix A Appendix A

the corresponding UTC time each time it outputs a position.

7.1.1 General requirements for PC5 interface

The system shall set the pre-configured parameters to the corresponding values in Table A.1, Table A.2, Table A.3, Table A.4 of YD/T 3756-2024.

If the LTE-V2X system is pre-configured with synchronization offset indication 1 (syncOffsetIndicator1-r14), synchronization offset indication 2 (syncOffsetIndicator2-r14) or synchronization offset indication 3 (syncOffsetIndicator3-r14) in YD/T 3340- 2018, these three parameters shall not take effect.

7.1.2 PC5 interface transmitter requirements

7.1.2.1 The LTE-V2X system shall use broadcast mode to send service data.

7.1.2.2 The LTE-V2X system shall support data transmission using transmission mode

4. When sending service data, it should use a resource selection method of perception plus semi-persistent scheduling.

Note: Transmission mode 4 refers to the autonomous resource selection of the terminal (user equipment); the terminal perceives the occupation of PC5 resources by listening.

7.1.2.3 The 3-bit SDU (service data unit) type of the PDCP header shall be set to 011; a 16-bit PDCP SN shall be used. The PGK (proximity service group key) identifier, PTK (proximity service key) identifier and PDCP SN shall be set to 0.

7.1.2.4 When the LTE-V2X system uses PC5 to send service data, RLC UM

(unacknowledged mode) shall be used; a 5-bit RLC SN shall be used.

7.1.2.5 The 4-bit V field of the MAC header shall be set to 0011.

7.2.1 PC5 interface transmitter requirements

The packet transmission behavior shall meet the following requirements.

a) The adaptation layer randomly generates and maintains the 24 bit Source_Layer-

2 ID within the range of [0x010001, 0xFFFFFE]. If the Application