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**Road vehicles - Local Interconnect Network(LIN) - Part 7:
Electrical Physical Layer (EPL) conformance test specification**

道路车辆 局域互联网络 (LIN) 第7部分: 电气物理层 (EPL) 一致性测试规范
(English Translation)

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Foreword

This Document was drafted in accordance with the rules in GB/T 1.1-2020 Directives for Standardization - Part 1: Rules for the Structure and Drafting of Standardizing Documents.

This Document is Part 7 of GB/T 42691 Road Vehicles - Local Interconnect Network (LIN).

GB/T 42691 has published the following parts:

- Part 1: General Information and Use Case Definition;
- Part 2: Transport Protocol and Network Layer Services;
- Part 3: Protocol Specification;
- Part 4: Electrical Physical Layer (EPL) Specification 12V/24V;
- Part 5: Application Programmers Interface (API);
- Part 6: Protocol Conformance Test Specification;
- Part 7: Electrical Physical Layer (EPL) Conformance Test Specification;
- Part 8: Electrical Physical Layer (EPL) Specification: LIN over DC Powerline (DC-LIN).

This Document equivalently adopts ISO 17987-7:2016 Road Vehicles - Local Interconnect Network (LIN) - Part 7: Electrical Physical Layer (EPL) Conformance Test Specification.

Please note some contents of this Document may involve patents. The issuing agency of this

Document shall not assume the responsibility to identify these patents.

This Document was proposed by the Ministry of Industry and Information Technology of the PRC.

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Ltd.; and SAIC-GM-Wuling Automobile Co., Ltd.

Road Vehicles - Local Interconnect Network (LIN) - Part 7:

Electrical Physical Layer (EPL) Conformance Test Specification

1 Scope

This Document specifies the conformance test for the electrical physical layer (EPL) of the LIN

communications system. It is part of this Document to define a test that considers ISO 9646 and ISO 17987-4.

The purpose of this Document is to provide a standardized way to verify whether a LIN bus driver is compliant to ISO 17987-4. The primary motivation is to ensure a level of interoperability of LIN bus drivers from different sources in a system environment.

This document provides all the necessary technical information to ensure that test results are

consistent even on different test systems, provided that the particular test suite and the test system are compliant to the content of this document.

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

Document.

GB/T 42691.4-2023 Road vehicles - Local Interconnect Network (LIN) - Part 4: Electrical

physical layer (EPL) specification 12 V/24 V (ISO 17987-4:2016, IDT)

ISO 17987-6 Road vehicles - Local Interconnect Network - Part 6: Protocol conformance test specification

NOTE: GB/T 42691.6-2023 Road vehicles - Local Internet Network (LIN) - Part 6: Protocol conformance test specification (ISO 17987-6:2016, IDT)

3.1 Terms and definitions

For the purposes of this document, the terms and definitions in ISO 17987-4 and ISO 17987-

For class C devices (e.g., microcontrollers with integrated transceiver or SBCs with integrated

UART and transceiver), a test application is required.

The type of test application depends on the type of integrated device.

6.2.4.2 IUT class C device as slave

This device type only supports slave applications.

For conformance testing, the IUT class C device as slave is supplied with a test application which shall support the following test schemes:

- Application can adapt to all bit rates supported by the device;
- Checksum model: Enhanced checksum.

The communication between the test system and the IUT shall be implemented as follows:

- 1) Counter = 0;
- 2) Test System as master: Transmit a frame header (ID 0116), followed by response of one data byte (counter [00]) and checksum;
- 3) IUT as slave: If frame is received without errors, store received counter and set transmit flag;
- 4) Test System as master: Transmit frame header (ID 0216);
- 5) IUT as slave: If transmit flag is set, respond with one data byte (stored counter [00]) and check sum, and clear transmit flag;
- 6) Test System as master: If IUT as slave has answered without errors and received counter