



GM Controller Area Network (CAN) Single Electronic Unit Validation Test Requirement

1 Introduction

Note: Nothing in this standard supercedes applicable laws and regulations.

Note: In the event of conflict between the English and domestic language, the English language shall take precedence.

1.1 Purpose. The purpose of this standard is to specify the GM specific physical layer and protocol layer requirement test procedures that are required for component level validation testing.

1.2 Applicability. This standard applies to all Electronic Control Units (ECU) that are required to meet GM physical layer and protocol layer requirements for Controller Area Network (CAN) bus devices connected to the in vehicle CAN networks of Global B architecture vehicles.

1.3 Remarks. This test shall be performed by the ECU Supplier and shall be audited by General Motors. ECU Supplier could mean the company that provides the ECU hardware or the company that provides the ECU software, depending on the intended test. Defining who performs each test is out of the scope of this test standard.

2 References

Note: Only the latest approved standards are applicable unless otherwise specified.

2.1 External Standards/Specifications.

ISO 11898-1	ISO 15765-2	ISO 16845-2
ISO 11898-2	ISO 16845-1	

2.2 GM Standards/Specifications.

GMW3097	GMW3172
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2.3 Additional References.

- CG3877 GM CAN Physical Layer and Communication Validation Procedure: Component Level
- ECU-specific Initial Automotive Open System Architecture (AUTOSAR or ASR) ECUC Automotive Open System Architecture Extensible Markup Language (ARXML) file (LD)
- ECU specific Subsystem Technical Specification (SSTS), Component Technical Specification (CTS) or Component Technical Requirements Specification (CTRS) from the Statement of Requirements (SOR)
- GB5200 Communication Strategy Specification (LD)
- GB5201 CAN Software Implementation Specification (LD)
- GB5210 CAN Private Network Communication Strategy Specification (LD)
- GB528X-GB529X CAN Communication System Deployment Specification (LD)
- GB6000 Unified Diagnostic Services Specification (LD) which includes references to ISO 15765-2
- GB6001 Diagnostic Infrastructure Specification (LD)
- GB6003 Diagnostic Software Implementation Specification (LD)
- GB720x CAN Physical Layer 500 kbps Specification (LD) which includes references to ISO 11898-1, ISO 11898-2, ISO 16845-1, and ISO 16845-2
- GB722x CAN Flexible Data (FD) Physical Layer 500 kbps Specification (LD)

- GB7240 CAN FD Physical Layer Diagnostic Specification (LD)
- GB725X CAN Physical Layer Private Specification (LD)
- GM Supply Power at <https://gmsupplypower.covisint.com/>, "Collaborate", "Secure File Exchange (SFX)"
- Statement of Requirements (SOR)
- Vector Group at <https://www.vector.com/>

(LD) = This document has limited distribution. Contact the GM Design Release Engineer (DRE), Component Validation Engineer (CVE), or Diagnostic Validation Engineer to obtain a copy via Point to Point (P2P) File Exchange.

3 Resources

3.1 Facilities. At the ECU Supplier laboratory, a bench that allows diagnostic communication between the test tool and the ECU being tested.

3.1.1 Calibration. The test facilities and equipment shall be in good working order and shall have a valid calibration label.

3.1.2 Alternatives. Alternative test facilities and equipment may also be used. However, all measuring variables as specified in this standard shall be determined correctly with respect to their physical definition.

3.2 Equipment.

3.2.1 Direct Current (DC) power supply with 60 A minimum capability.

3.2.2 GM-recommended automated scripts for CANoe, software tool for test, development and analysis from Vector Group at <https://www.vector.com/>, according to validation tool requirements, as outlined in the respective Statement of Requirements (SOR).

3.2.3 CANoe software from Vector Group and required hardware.

3.2.4 Additional real and/or simulated loads as part of the ECU Supplier bench setup.

3.2.5 Measurement and plotting equipment for voltage and current.

3.2.6 A computer capable of running the GM recommended automated test scripts and CANoe.

3.2.7 Rest of the Bus Simulation (RBS) configuration and required hardware.

3.3 Test Vehicle/Test Piece. ECUs required to meet GM physical layer and protocol layer requirements for CAN bus devices connected to the in vehicle CAN networks of Global B architecture vehicles.

3.4 Test Time. CG3877 GM CAN Physical Layer and Communication Validation Procedure: Component Level

Calendar time:	25 d
Test time:	180 h
Coordination time:	20 h

3.5 Test Required Information. The following documents have limited distribution. Contact the GM Design Release Engineer (DRE), Component Validation Engineer (CVE), or Diagnostic Validation Engineer to obtain a copy via Point to Point (P2P) File Exchange.

- ECU-specific Initial Automotive Open System Architecture (AUTOSAR or ASR) ECUC Automotive Open System Architecture Extensible Markup Language (ARXML) file
- ECU specific Subsystem Technical Specification (SSTS), Component Technical Specification (CTS) or Component Technical Requirements Specification (CTRS) from the Statement of Requirements (SOR)
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