GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17729

Bluetooth Low Energy (BLE) Car Sharing Function Test

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. This procedure is intended to test a fleet vehicle for Bluetooth Low Energy (BLE) Virtual Key Car Sharing Subsystem/Feature that allows the customer to enter and start a vehicle, and operate other features (door locking/unlocking, remote start, etc.) using their personal smartphone and allows a user to "reserve" a vehicle remotely (via smartphone application), then use their smartphone as a virtual key while the reservation is valid (no physical keys need to be exchanged).

1.2 Applicability. This test procedure applies to model year 2019 and beyond Generation 2 BLE Key Pass Global A electrical architecture based programs. This test can be performed in subsystem level or vehicle level.

1.3 Remarks. This procedure tests the electrical functions that support the Global A Key Pass 2.0 Subsystem Technical Specification (SSTS). Global A Passive Entry Passive Start (PEPS) SSTS can be used to understand PEPS functionality for Virtual Key Module (VKM).

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW3110

2.3 Additional References.

- CG4756 Global A BLE Car Sharing Subsystem Test Procedure.
- Global A Key Pass 2.0 Subsystem Technical Specification (SSTS).
- Global A Passive Entry Passive Start (PEPS) SSTS.

3 Resources

3.1 Facilities. This procedure should be performed on a Global A electrical architecture subsystem bench and or a vehicle.

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 A serial data interface and supporting Personal Computer (PC) application software to monitor General Motors Local Area Network (GMLAN) and Local Interconnect Network (LIN) signals.

3.2.2 A stop watch to measure timing and latency.

3.3 Test Vehicle/Test Piece. A system bench or vehicle with the following.

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3.3.1 Body Control Module (BCM) with desired/correct software.

3.3.2 Smartphone with 2.0 Key Pass Application with BLE.

3.3.3 Environment/Setup for Backup Office.

3.3.4 OnStar® Module.

3.3.5 Virtual Key Module (VKM) and Virtual Key Sensor (VKS).

3.4 Test Time.

Calendar time:	8 days
Test hours:	56 h
Coordination hours:	8 h

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. A Subsystem Test Engineer with the following:

3.6.1 Knowledge of GMLAN serial data and LIN including the ability to transmit serial data messages both functional and physical serial data messages.

3.6.2 Knowledge of the Global A Key Pass 2.0 Subsystem Technical Specification (SSTS).

3.6.3 Knowledge of Smartphone Mobile Application Key Pass 2.0.

3.6.4 Understanding of PEPS subsystem and communication between VKM to PEPS.

3.6.5 Basic understanding of Global A BCM and PEPS calibration structure/implementation.

3.6.5 Knowledge and understanding of GMW3110, General Motors Local Area Network Enhanced Diagnostic Test Mode Specification.

4 Procedure

4.1 Preparation. All components involved must have the latest production intent hardware, software, and production intent calibrations. Document the hardware and software.

4.2 Conditions. The full test procedure should be performed at a system voltage of 13.0 Volts Direct Current (VDC). Normal functionality should be tested at a system bench voltage of (9.0 to 16.0) VDC ± 0.1 VDC.

4.2.1 Environmental Conditions. Test at room temperature. Temperature inputs will be varied as a part of the test procedure.

4.2.2 Test Conditions. Deviations from the requirements of this standard shall have been agreed upon. Such requirements shall be specified on component drawings, test certificates, reports, etc.

4.3 Instructions. For each BLE Car Feature (VKM) available for a given vehicle program, perform the applicable tests in CG4756. The supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

5 Data

5.1 Calculations. Not applicable.

5.2 Interpretation of Results.

- **Meets Requirement:** Indicates that the test has been completed and the system is working as intended.
- **Does Not Meet Requirements:** Indicates that the test has been completed, but the system is not working as intended.
- **Not Tested:** Indicates that the test applies and has been delivered, but has not been completed.
- **Not applicable:** Indicates that the test does not apply.
- **Not Delivered:** Indicates that the test applies, but the function that allows completion of this test has not been implemented/calibrated-on yet.
- **Not Calibrated On:** Indicates that the calibration required for test is not turned on.
- **Preparation (Prep) Step:** Indicates that the step is used to create the necessary condition in which to test.

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