GM	WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17221

Electronic Brake Control Module (EBCM) System Level Fault Insertion Test (FIT) Procedure

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 procedure is to test the Electronic Brake Control Module (EBCM) on a vehicle and bench for mitigation against induced errors that could occur spuriously at the subsystem level or connected interfaces. This test procedure examines safety critical functionality covered in the Global A Brake Subsystem Technical Specification (SSTS) and program specific specifications.

1.2 Applicability. Passenger cars and light trucks equipped with an EBCM having Vehicle Program Initiation (VPI) dates of April 2012 or later.

1.3 Remarks. This specification validates EBCM safety requirements contained within the Brake SSTS using a Fault Insertion Test (FIT) method. This is a vehicle-level procedure to be used in demonstration of Brake Preliminary Hazard Analysis (PHA) safety goals.

2 References

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

2.1 External Standards/Specifications.

FMVSS 105 FMVSS 135

2.2 GM Standards/Specifications.

None

2.3 Additional References.

- Active Wheel Speed Sensor (WSS) Component Technical Specification (CTS)
- Brake Apply Sensor (BASS) CTS Version 4.0 or later
- Brake PHA
- CG3387 Electronic Brake Control Module Vehicle Level Fault Insertion Test Specification Supplement for GMW17221
- dSPACE MicroAutoBox breakout box available at Uniform Resource Locator (URL): http://www.dspace.com/en/pub/home/products/hw/micautob.cfm
- EBCM CTS Version 3.3 or later
- ECBM Test Specification Version 1.1 or later
- Global A Body Control Module (BCM) CTS
- Global A Brake SSTS Version 6.4 or later
- Global A Electric Park Brake (EPB) SSTS Version 6.4 or later
- Global A Serial Data Dictionary (DD) System Report Version 6.4.0 or later
- Inertia Measurement Unit (IMU) CTS Version 2.0 or later
- Intrepid Control Systems NeoVI FIRE hardware with Vehicle Spy software available at URL: http://www.intrepidcs.com/

© Copyright 2014 General Motors Company All Rights Reserved

Documents
Document Sharing Hub

Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW17221 2014

- ONIX Holdings Vertical Bench available at URL: http://www.onyx-holdings.co.uk/onyx-south-wales/ (for bench test).
- Steering Angle Sensor (SAS) CTS Version 2.0 or later

3 Resources

3.1 Facilities. Suitable dry, clean and smooth asphalt track with ability to restrict access during the test. Track shall be capable of supporting straight ahead and continuous turning radius (0.15G to 0.2G) maneuvers for extended periods under various speeds.

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 Breakout box. Consult the GM Requesting Safety Engineer, EBCM Supplier Resident or EBCM Design Release Engineer (DRE) for details. See CG3387.

3.2.2 dSPACE MicroAutoBox breakout box available at URL: http://www.dspace.com/en/pub/home/products/hw/micautob.cfm

3.2.3 Laptop with Vehicle Spy available at URL: http://www.intrepidcs.com/

3.2.4 NeoVI FIRE available at URL: http://www.intrepidcs.com/

3.2.5 ONIX Vertical Bench (for bench test) available at URL: http://www.onyx-holdings.co.uk/onyx-south-wales/.

3.3 Test Vehicle/Test Piece. Production intent vehicle or representative vehicle level bench with ECBM and all interfacing modules/sensors. All components involved must have the latest production intent released hardware, software and production intent calibrations.

3.4 Test Time.

Calendar time:	15 days
Test hours:	100 hours
Coordination hours:	20 hours

3.5 Test Required Information. See CG3387. Possible sources or requirements include:

- Active Wheel Speed Sensor (WSS) Component Technical Specification (CTS)
- Brake Apply Sensor (BASS) CTS Version 4.0 or later
- Brake PHA
- EBCM CTS Version 3.3 or later
- ECBM Test Specification Version 1.1 or later
- Global A Brake Apply Sensor (BCM) CTS
- Global A Brake SSTS Version 6.4 or later
- Global A Electric Park Brake (EPB) SSTS Version 6.4 or later
- Global A Serial Data Dictionary (DD) System Report Version 6.4.0 or later
- Inertia Measurement Unit (IMU) CTS Version 2.0 or later
- Steering Angle Sensor (SAS) CTS Version 2.0 or later

3.6 Personnel/Skills. Vehicle Validation Engineer.

4 Procedure

4.1 Preparation. Instrument the test vehicle per CG3387 or as requested by the GM Requesting Safety Engineer.

© Copyright 2014 General Motors Company All Rights Reserved

Documents
Document Sharing Hub

Copyright General Motors Company
Provided by IHS Markit under license with General Motors Company
Reproduction, distribution or publication of these standards is expressly prohib
Licensee=/, User=,
Not for Resale,
Full document details: GMW GMW17221 2014