



EBCM Stability Margin Vehicle Speed Limiting Validation

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 evaluates the Electronic Brake Command Module (EBCM) speed limiting the vehicle when the Electronic Stability Control (ESC) system is faulted.

1.2 Applicability. This procedure is applicable to vehicles with stability margin of < 0.2 .

1.3 Remarks. Any questions concerning this procedure can be directed to the Vehicle Performance Owner (VPO) – Stability or the VPO – Deceleration.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

None

2.3 Additional References.

- Canalyzer software tool available at vector.com/vi_canalyzer_en.html
- CG190 Evaluation Report (ID)
- CG5481 EBCM Stability Margin Vehicle Speed Limiting Validation

(ID) This document is limited to internal use within General Motors and shall not be accessed outside this company. Contact the GM Lead Engineer for further instructions.

3 Resources

3.1 Facilities. See 3.1.3.

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.

3.1.3 Road Test Surface. Vehicle test shall be conducted on road where vehicle can be accelerated to > 30 mph and have designated area(s) where vehicle can be stopped to review serial data information from the test vehicle.

3.2 Equipment.

3.2.1 Vehicle serial data monitor device such as Canalyzer (see 2.3).

3.3 Test Vehicle/Test Piece.

3.3.1 Test vehicle shall have latest EBCM software and shall be set up to create an ESC fault by electrically disconnecting a wheel speed sensor.

3.4 Test Time.

Calendar time: 1 d

Test time: 4 h

Coordination time: 4 h

3.5 Test Required Information.

Not applicable.

3.6 Personnel/Skills.

The Chassis Controls Engineer shall conduct testing along with the eBoost supplier calibration engineer.

4 Procedure

4.1 Preparation.

4.1.1 The Chassis Controls Engineer along with eBoost supplier calibration engineer shall be able to create an ESC fault by electrically disconnected a wheel speed sensor.

4.2 Conditions.

4.2.1 Environmental Conditions. Not applicable.

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. Follow the instructions and record vehicle reactions per CG5481.

5 Data

5.1 Calculations. Where applicable, instructions are provided in CG5481.

5.2 Interpretation of Results. Results of vehicle reactions from testing and any comments are recorded in CG5481.

5.3 Test Documentation. Results can be inserted into the comments section of the test procedures sheets within CG5481. The tables within the CG5481 sheets can then be inserted into CG190 or the author can use another format of preference (the supplier shall work with the GM Design Responsible Engineer to comprehend this requirement). The expectation for the completion of CG190 is corrective action to any test issue has been resolved prior to final testing. The supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

6 Safety

This standard may involve hazardous materials, operations, and equipment. This standard does not propose to address all the safety problems associated with its use. It is the responsibility of the user of this standard to establish appropriate safety and health practices and determine the applicability of regulatory limitations prior to use.

In general, a risk assessment needs to be performed for every driving instruction prior to executing this standard. (**Note:** National law needs to be considered while performing a risk assessment.) The required rating of risk by exposure probability and possible violation will be done in a separate document. Every identified risk must be named inside the risk assessment for the relevant driving instruction in order to announce that risk to employees. Within the risk assessment, the vehicle equipment and different vehicle build stages have to be considered. After performing a risk assessment, non-acceptable risk needs to be mitigated by appropriate countermeasures. Here technical measures are preferred because these are independent from attendant circumstances. In case technical measures are not appropriate, organizational and/or personal measures will apply. This includes training, wearing of Personal Protection Equipment, or arrangement of idle time.

6.1 Safety Precautions.

6.1.1 Instrumentation and other test equipment must be securely mounted in accordance with proving grounds traffic safety guidelines for mounting and usage of in-vehicle instrumentation.

6.1.2 All running lights and vehicle safety features must be operational according to proving grounds rules for running lights and power windows. Exterior lights must not be obscured by styling add-ons, covers or camouflage packages. The horn may be disabled because of steer angle transducer installation.