GM WORLDWIDE ENGINEERING STANDARDS	Test Procedure	GMW17754

EBCM Trailer Sway Control Undesired Activation Robustness

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 Electronic Brake Command Module (EBCM) Electronic Stability Control (ESC) based Trailer Sway Control (TSC) system detects the vehicle dynamic characteristics associated with trailer sway and then actuates the vehicle's brakes and/or reduces engine torque in order to dampen or eliminate trailer oscillations. The purpose of this standard is to verify that the TSC entrance criteria is not tuned to be excessively sensitive such that a properly loaded tow vehicle and trailer combination induces TSC activations while operating a series of defined maneuvers. These maneuvers were developed to put the combination just below the limit where TSC activations would be expected.

1.2 Applicability. This standard is applicable for vehicles equipped with EBCM Trailer Sway Control.

1.3 Remarks. None.

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.

CG4750 EBCM Trailer Sway Control Undesired Activation Robustness

3 Resources

3.1 Facilities. Dry asphalt test surfaces such as those located on the Milford Proving Ground (MPG) Vehicle Dynamics Test Area (VDTA) or equivalent. Facility should have sufficient room to safety run all maneuvers at all test 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. Production representative vehicle with up to date EBCM software and calibration. Required vehicle serial data bus signals are provided in CG4750.

3.3 Test Vehicle/Test Piece. Refer to 4.1.1.

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3.4 Test Time.

Calendar time:	3 days
Instrumentation time:	2 days
Test time:	1 day
Coordination time:	1 day

3.5 Test Required Information. Calibration values described in CG4750.

3.6 Personnel/Skills. Chassis controls engineer certified to run braking tests.

4 Procedure

4.1 Preparation.

4.1.1 Build, instrument and verify the test vehicle with functioning EBCM Trailer Sway Control. The vehicle to be tested must be in safe operating condition. Condition of tire, brake and suspension components should be inspected carefully. All vehicle safety equipment must be in proper operating condition.

4.2 Conditions.

4.2.1 Environmental Conditions. Wind speed should be less than 32 km/h (20 mph), it should not be raining.

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 provided by, and record results according to CG4750.

5 Data

5.1 Calculations. See calculations outlined in CG4750.

5.2 Interpretation of Results. Results of vehicle reactions from testing and any comments are recorded in CG4750.

5.3 Test Documentation. The vehicle information, test information and test results shall be published following GM corporate protocol using the Evaluation Report template and the approved engineering document management system/repository.

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.

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