



Tire Coverage Compliance Test Procedure and Documentation Standard

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 standard describes the procedure to validate and document the compliancy of GM products to ADR 42-04:2016, GB 7063-2011, GOST R 52853-2007, IS 13943:1994 and R (EU) No. 1009/2010, in terms of tire coverage.

1.2 Applicability. This specification applies to all passenger cars, light-duty/heavy-duty trucks and multipurpose passenger vehicles. Exceptions (e.g., for single export markets) must be listed in any of the references in 2.3.

1.3 Remarks. Compliance is demonstrated using Computer Aided Design (CAD) math data.

2 References

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

2.1 External Standards/Specifications.

ADR 42-04:2016 GOST R 52853-2007 IS 13943:1994 R (EU) No. 1009/2010
GB 7063-2011

2.2 GM Standards/Specifications.

None

2.3 Additional References.

- Best Practice (E2ks/Auros STUENG-1).
- CG4775 Tire Coverage Evaluation Report Template.
- Siemens NX software available at www.plm.automation.siemens.com/en_us/products/nx.
- Siemens Product Lifecycle Management (PLM) Software, Incorporated, Plano, Texas (www.plm.automation.siemens.com).

3 Parametric Definitions

Not applicable.

4 Process

4.1 Analysis, Development and Validation (A/D/V) Plan. Evaluations must be conducted at all vehicle architecture peer reviews, Verified Data Release (VDR), and Integration Vehicle Engineering Release (IVER) (P2 Math Release). Evaluations are reported out using Assessment Sheets (Peer Reviews and VDR) and Evaluation Reports (IVER).

4.2 Test Flows. Not applicable.

4.3 Peer Review. Compliancy of each program must be reviewed in the Peer Review by the respective architecture department.

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5 Requirements

5.1 Regulatory Requirements. Regulatory Requirements are ADR 42-04:2016, GB 7063-2011, GOST R 52853-2007, IS 13943:1994 and R (EU) No. 1009/2010.

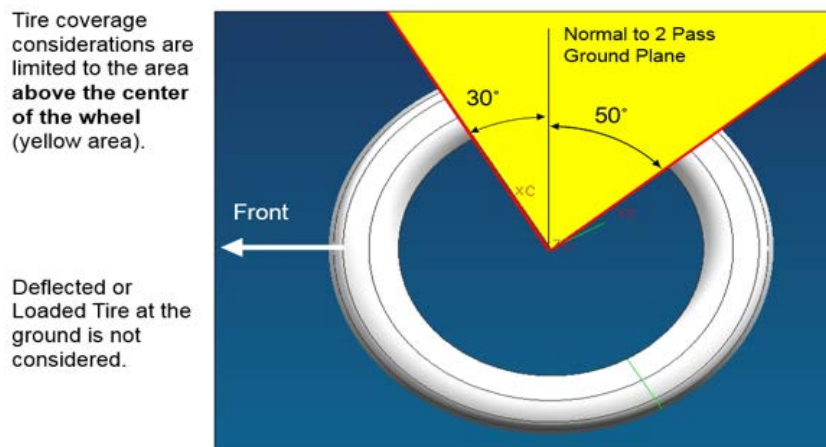
6 Functional Verification

Not applicable.

7 Analysis

7.1 Tire Coverage Zone. A Tire Coverage Zone is created to ensure production vehicle compliancy and to be inclusive of all tolerances and variations influencing the result. The Tire Coverage Zone has a side view Triangular, or Pizza Pie, Shape, extends to 2 times the Static Loaded Radius (SLR) from the centerline of tire, and a cross-vehicle thickness representative of the expected build tolerance. A separate Tire Coverage Zone is to be created for the front and the rear tires. Based upon historical data, all vehicles are to use a 5.0 mm cross-car build tolerance unless a specific Dimensional Engineering Report has been produced indicating a more precise build tolerance value. Forward edge of the Tire Coverage Zone is 30 degrees forward to the plane normal to 2 Pass groundline passing through the center of the nominal tire as shown in Figure 1. Rear edge of the Tire Coverage Zone is 50 degrees rearward to the plane normal to 2 Pass groundline passing through the center of the nominal tire as shown in Figure 1. The exterior surface of the vehicle, including any attached moldings, must extend outboard of the Tire Coverage Zone and continuously extend throughout the entire zone, from the forward edge to the rear edge. Any violations must be reviewed in the Tire Flop/Coverage Product Development Team (PDT). Advance Vehicle Development (AVD) Executive Director, Vehicle Chief Engineer, and the AVD Director(s) of the region in which the vehicle is to be sold must approve non-compliances.

Figure 1: Tire Coverage Zone 30 degrees/0 degrees/50 degrees



7.2 Gather Reference Files. Identify 2 Pass groundline and nominal tire files to be considered for tire coverage compliancy check. Validate correct wheel center position and orientation (for camber, toe-in) of nominal tire to nominal ground line files. Identify studio fender/quarter panel surface or part files for respective evaluations. Check Best Practice (E2ks/Auros STUENG-1), the supplier shall work with the GM Design Responsible Engineer to comprehend this requirement.

7.3 Create Criteria.

- Create a new working file in NX (Siemens NX software, see 2.3).
- Launch NX Tire Coverage Tool.
- Define ground line part file and select nominal tires.
- Input construction definition and build variation values to construct the height and thickness of tire coverage criteria envelope, 5 mm cross car build variation shall be included.

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