



Tire Modeling Test Definition – SWIFT and FTIRE

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 describe the tire test content required for both Swift-Tyre (SWIFT) ride models and Flexible Ring Tire Model (FTIRE) load prediction modeling needs, as well as the general process of making these test selections in the Global Tire-Wheel Test System (GTWTS) test system.

1.2 Applicability. It is applicable to controlled laboratory tests on passenger and light truck tires. This GMW describes the tests currently requested at the Tire-Wheel Systems (TWS) lab, in order to fulfil the data requirements of the SWIFT and FTIRE tire models. This procedure does not discuss the alternate approach to lab testing for tire modeling needs that is currently being implemented at the National Tire Research Center (NTRC). The NTRC tire modeling testing approach is documented separately in GMW17360.

2 References

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

2.1 External Standards/Specifications.

None

2.2 GM Standards/Specifications.

GMW14997	GMW14999	GMW15205	GMW17302
GMW14998	GMW15204	GMW15208	GMW17360

2.3 Additional References.

National Tire Research Center (NTRC), Alton, Virginia

3 Resources

3.1 Facilities. Any test facility (General Motors or outside) that is providing tire modeling data to GM. Any outside testing facilities must have demonstrated an acceptable correlation with GM on any tire modeling test, prior to submitting Data into the test system.

3.2 Equipment. There is no equipment required for tire modeling test definition. The individual tests that are required for tire modeling, each will have their own GMW, which list the equipment required within their own procedure.

3.3 Test Vehicle/Test Piece. One tire/wheel assembly is provided for the purpose of all of the nondestructive tire modeling tests, on a given construction. The nondestructive tests are any of the tests identified in this GMW with the exception of braking traction and force and moment. Braking traction and force and moment need their own tires, as described in the Braking Traction (GMW15208) and Force and Moment (GMW15204) GMWs.

3.4 Test Time. Varies per test procedure used. Refer to individual GMW.

3.5 Test Required Information. Not applicable.

3.6 Personnel/Skills. Test operator should have adequate training and be familiar with the local operator's procedure.

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4 Procedure

4.1 Preparation.

4.1.1 The engineer will write a tire test request using one of the templates listed in Table 1. With these templates, the test request generated will have the selections for all of the individual tests required for the desired tire modeling.

Table 1: Modeling Templates

Template	Requirement
SWIFT	All required tests for SWIFT
FTIRE-1	All except the Six (6) Degree Dimensions Test, required for FTIRE
FTIRE-2	Six (6) Degree Dimensions Test, require for FTIRE
FTIRE and SWIFT-1	SWIFT, FTIRE-1 and FTIRE-2 requirements, except Six (6) Degree Dimensions Test
FTIRE and SWIFT-2	Six (6) Degree Dimensions Test, require for FTIRE

4.1.2 Table 2 documents the required tire tests for the purpose of SWIFT and FTIRE tire modeling.

Table 2: Required GMW Tests for SWIFT and FTIRE Modeling

GMW	Test Description	SWIFT	FTIRE	SWIFT and FTIRE
GMW14998	Mass – Tire and Wheel	X	X	X
GMW15205	Inertia	X		X
	Footprint, Flat only – 0 degree camber	X	X	X
	Footprint, Flat only – 6 degree camber		X	X
GMW14997	Load Deflection, Flat – 0 degree camber	X		X
	Load Deflection, Flat – 6 degree camber		X	X
	Load Deflection, Pothole – 6 degree camber		X	X
	Cleat Test	X	X	X
GMW17302	Tire Effective Loaded Radius	X		X
	Deflect to Rim, Flat – 0 degree only		X	X
	Deflect to Rim, Pothole – 0 degree only		X	X
GMW15208	Braking Traction Test – Dry		X	X
GMW14999	Rotation per Kilometer (RPK)		X	X
GMW15204	Force and Moment		X	X

4.1.3 The test request system will provide feedback to the requester, as to the tests that are usually requested for SWIFT and/or FTIRE Tire Modeling, and which ones have not yet been chosen for the particular test request. Based on that information, the requester can make any changes necessary.

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