

# **Model Comparison - Test Specification Report**

**Gianvincenzo Daddabbo, Gaetano Gallo, Alberto  
Ruggeri, Martina Tedesco, Alessandro Toschi**

16-Apr-2021 16:21:26

# Table of Contents

<a href="#">1. Comparison Tests</a> .....	2
---	---

---

## 1. Comparison Tests

### Test Details

Releases	Current (2019b)
Description	<p>This report aims to check congruences and differences between two vehicle models: Dynamic model and Kinematic model.</p> <p>In all the comparisons, our Dynamic model is considered as the baseline. For the tests purposes we have not included Equivalence Criteria, indeed this will be a qualitative analysis.</p> <p>The only parameter we have set up is the relative tolerance, assigning to it a value of 1% in order to ignore the negligible offsets between the Dynamic and the Kinematic model.</p>

### External Inputs for Simulation 1

Name	File Path	Status
Free_evolution.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Free_evolution.mat	Successfully mapped inputs.
Only_throttle.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Only_throttle.mat	Successfully mapped inputs.
Constant_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Constant_steering.mat	Successfully mapped inputs.

## 1. Comparison Tests

Name	File Path	Status
Ramp_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Ramp_steering.mat	Successfully mapped inputs.
Small_sinusoidal_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Small_sinusoidal_steering.mat	Successfully mapped inputs.
Big_sinusoidal_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Big_sinusoidal_steering.mat	Successfully mapped inputs.
Combined1.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Combined1.mat	Successfully mapped inputs.
Combined2.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Combined2.mat	Successfully mapped inputs.

## External Inputs for Simulation 2

Name	File Path	Status
Free_evolution.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Free_evolution.mat	Successfully mapped inputs.
Only_throttle.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Only_throttle.mat	Successfully mapped inputs.
Constant_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Constant_steering.mat	Successfully mapped inputs.
Ramp_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Ramp_steering.mat	Successfully mapped inputs.

## 1. Comparison Tests

Name	File Path	Status
Small_sinusoidal_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Small_sinusoidal_steering.mat	Successfully mapped inputs.
Big_sinusoidal_steering.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Big_sinusoidal_steering.mat	Successfully mapped inputs.
Combined1.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Combined1.mat	Successfully mapped inputs.
Combined2.mat	D:\Documenti\GitHub\dynamic-obstacle-avoidance\Code\Files\Model Comparison Tests\Combined2.mat	Successfully mapped inputs.

## Iterations

Name	Description	Details		
Free evolution	<b>Free Evolution</b>  Test performed starting from an initial condition with input equal to 0			
		<b>Parameter Name</b>	<b>Value</b>	<b>Simulation Index</b>
		External Inputs	Free_evolution.mat	1
		Parameter Set	Free_evolution.mat	2
Only throttle	<b>Only throttle</b>  Test performed keeping the steering			
		<b>Parameter Name</b>	<b>Value</b>	<b>Simulation Index</b>
		External Inputs	Only_throttle.mat	1

## 1. Comparison Tests

Name	Description	Details		
	ng angle equal to 0 and varying the throttle	Parameter Name	Value	Simulation Index
		Parameter Set	Only_throttle.mat	2
Constant steering	<b>Constant steering</b>  Test performed keeping the throttle equal to 0 and giving a constant steering angle value	Parameter Name	Value	Simulation Index
		External Inputs	Constant_steering.mat	1
		Parameter Set	Constant_steering.mat	2
Ramp steering	<b>Ramp steering</b>  Test performed keeping the throttle equal to 0 and giving a ramp steering angle signal (from 0° to 36°)	Parameter Name	Value	Simulation Index
		External Inputs	Ramp_steering.mat	1
		Parameter Set	Ramp_steering.mat	2

## 1. Comparison Tests

Name	Description	Details		
Small sinusoidal steering	<b>Small sinusoidal steering</b> Test performed keeping the throttle equal to 0 and giving a sinusoidal steering angle signal with frequency 0.2-Hz and amplitude 5°			
		<b>Parameter Name</b>	<b>Value</b>	<b>Simulation Index</b>
		External Inputs	Small_sinusoidal_steering.-mat	1
Big sinusoidal steering	<b>Big sinusoidal steering</b> Test performed keeping the throttle equal to 0 and giving a sinusoidal steering angle signal with frequency 0.2-Hz and amplitude 15°	Parameter Set	Small_sinusoidal_steering.-mat	2
Big sinusoidal steering	<b>Big sinusoidal steering</b> Test performed keeping the throttle equal to 0 and giving a sinusoidal steering angle signal with frequency 0.2-Hz and amplitude 15°			
		<b>Parameter Name</b>	<b>Value</b>	<b>Simulation Index</b>
		External Inputs	Big_sinusoidal_steering.-mat	1
		Parameter Set	Big_sinusoidal_steering.-mat	2

## 1. Comparison Tests

Name	Description	Details		
Combined 1	<b>Combined 1</b>  Throttle signal with a predefined shape and constant steering angle	<b>Parameter Name</b>	<b>Value</b>	<b>Simulation Index</b>
		External Inputs	Combined1.mat	1
		Parameter Set	Combined1.mat	2
Combined 2	<b>Combined 2</b>  Ramp steering angle signal with a constant throttle	<b>Parameter Name</b>	<b>Value</b>	<b>Simulation Index</b>
		External Inputs	Combined2.mat	1
		Parameter Set	Combined2.mat	2