# Report Generated by Test Manager

**Title:** **Model Comparison - Test**
**Author:** **Gianvincenzo Daddabbo, Gaetano Gallo, Alberto Ruggeri, Martina Te desco, Alessandro Toschi**
**Date:** **16-Apr-2021 16:31:13**

## Test Environment

Platform:    PCWIN64
MATLAB:    (R2019b)

# Summary

| Name | Outcome | Duration (Seconds) |
|---|---|---|
| Results: 2021-Apr-16 16:10:17 | 2 ✅ 6❌ | 116.697 |
| 📄 Comparison Tests | 2 ✅ 6❌ | 116.698 |
| 🔳 Free evolution | ✅ | 75.187 |
| 🔳 Only throttle | ✅ | 7.786 |
| 🔳 Constant steering | ❌ | 7.309 |
| 🔳 Ramp steering | ❌ | 5.082 |
| 🔳 Small sinusoidal steering | ❌ | 5.392 |
| 🔳 Big sinusoidal steering | ❌ | 5.236 |
| 🔳 Combined 1 | ❌ | 5.166 |
| 🔳 Combined 2 | ❌ | 5.222 |

# Results: 2021-Apr-16 16:10:17

Result Type:          Result Set
Parent:               None
Start Time:           16-Apr-2021 16:10:20
End Time:             16-Apr-2021 16:12:16
Outcome:              Total: 8, Passed: 2, Failed: 6
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## Comparison Tests

### Test Result Information

Result Type:          Test Case Result
Parent:               Results: 2021-Apr-16 16:10:17
Start Time:           16-Apr-2021 16:10:20
End Time:             16-Apr-2021 16:12:16
Outcome:              Failed
Cause of Failure:     Test failed as iteration failed


**Description:**
This report aims to check congruences and differences between two vehicle models: Dynamic model and Kinematic model.
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.

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.

### Test Case Information

Name:                 Comparison Tests
Type:                 Equivalence Test

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## Free evolution

### Test Result Information

Result Type:          Test Iteration Result
Parent:               Comparison Tests
Start Time:           16-Apr-2021 16:10:19

End Time:           16-Apr-2021 16:11:35
Outcome:            Passed
Description:

## Free Evolution

Test performed starting from an initial condition with input equal to 0

### Test Case Information

Name:              Free evolution
Type:              Equivalence Test
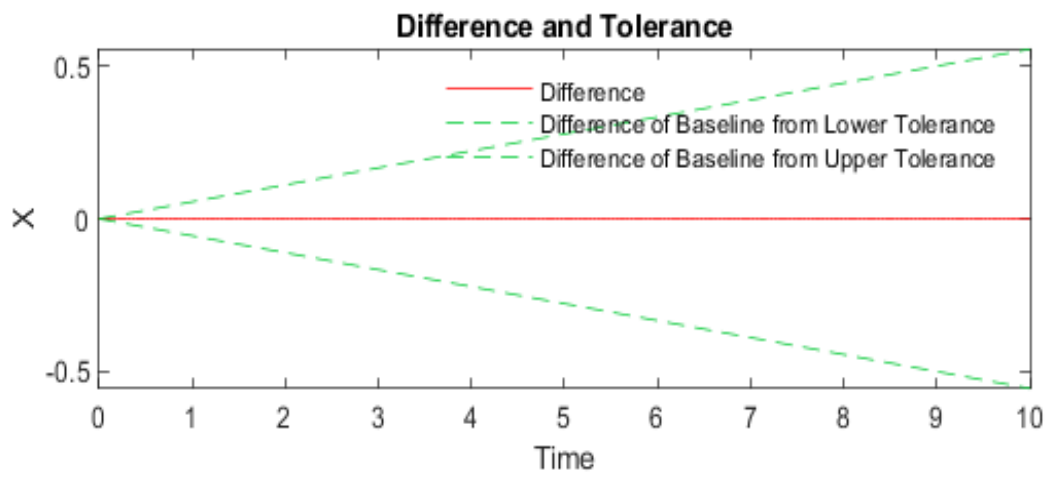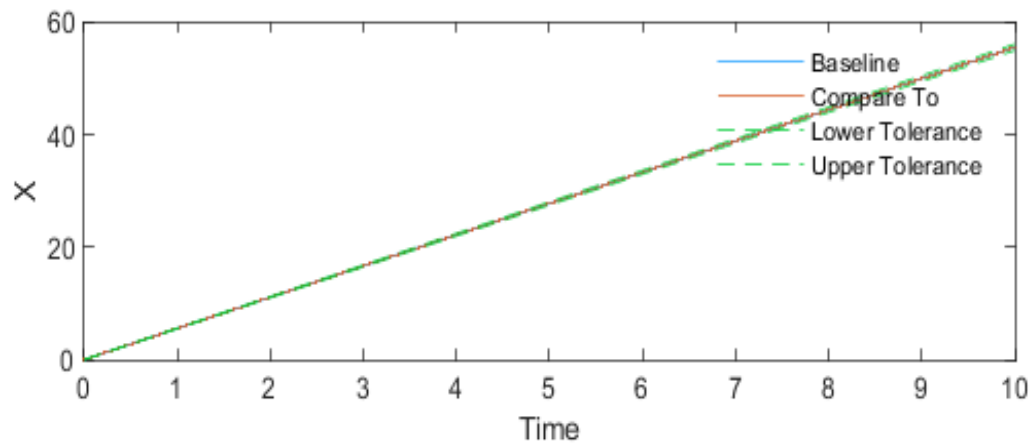
### Iteration Settings

#### Test Overrides

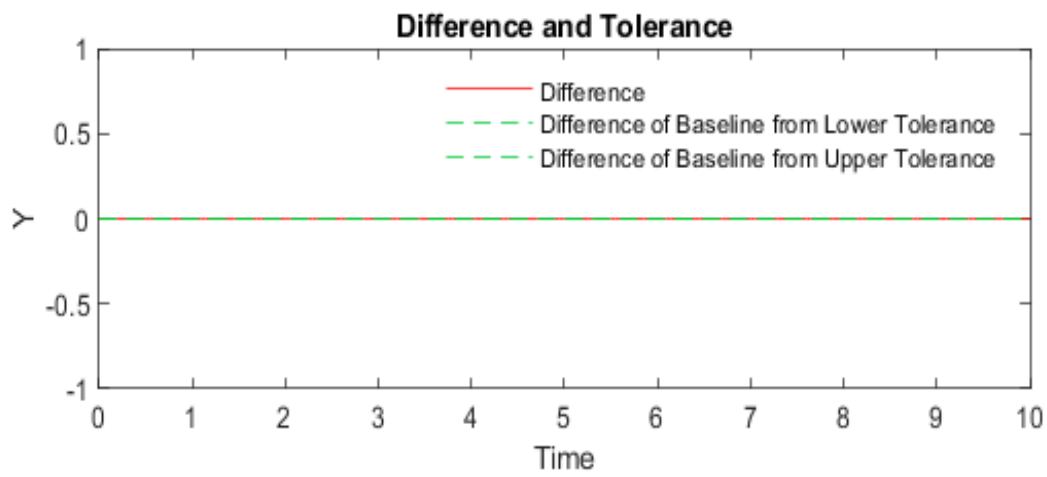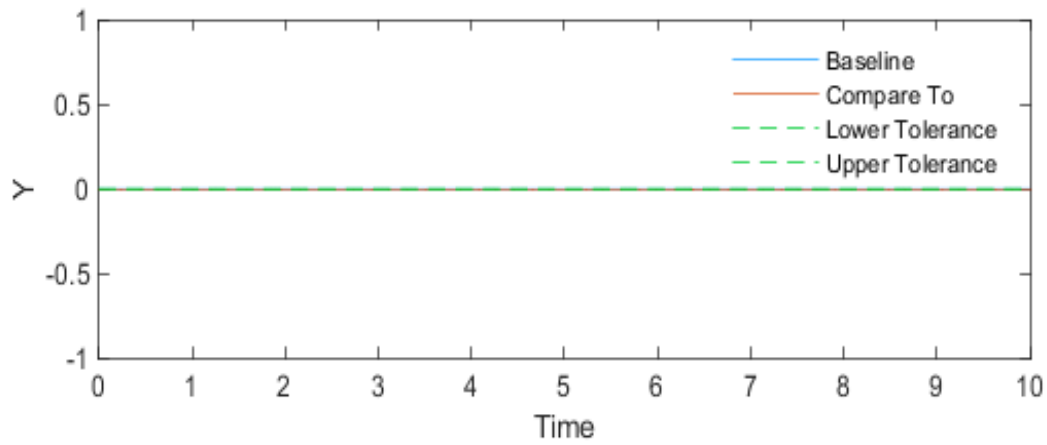| Parameter Name | Value | Simulation Index |
|---|---|---|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Free_evolution.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Free_evolution.mat | 2 |

### Equivalence Comparison

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ X | 0 | 0.01 | 0 | 0 | 4.34e-19 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ Y | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ yaw | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ X | 0 | 0.01 | 0 | 0 | 4.34e-19 | double | | Continuous | double | | 0.001 | linear | union |

## Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✓ Y | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ✅ yaw | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

## Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

## Input Data 1

### Input Information

| | |
|---|---|
| External Input Name: | Free_evolution.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Free_evolution.mat |

## Input Data 2

### Input Information

| | |
|---|---|
| External Input Name: | Free_evolution.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Free_evolution.mat |

## Simulation 1

### System Under Test Information

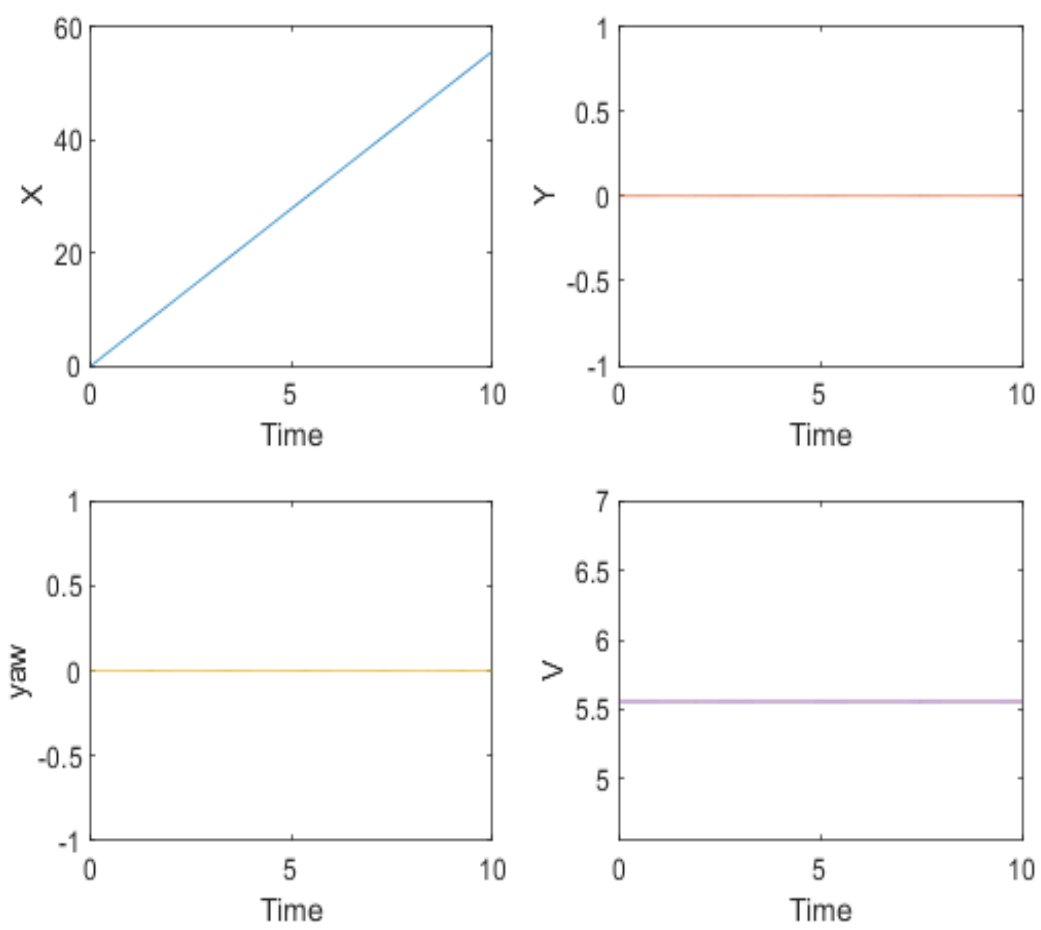| | |
|---|---|
| Model: | Model_compare_SLX |
| Harness: | Model_comparison_dynamic |
| Harness Owner: | Model_compare_SLX/Dynamic_model |
| Simulation Mode: | normal |
| Override SIL or PIL Mode: | 0 |
| Configuration Set: | Configuration1 |
| External Input Name: | Free_evolution.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Free_evolution.mat |
| Start Time: | 0 |
| Stop Time: | 10 |
| Checksum: | 4152128412 1859814811 142259360 3035885348 |

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |

## Simulation 2

### System Under Test Information
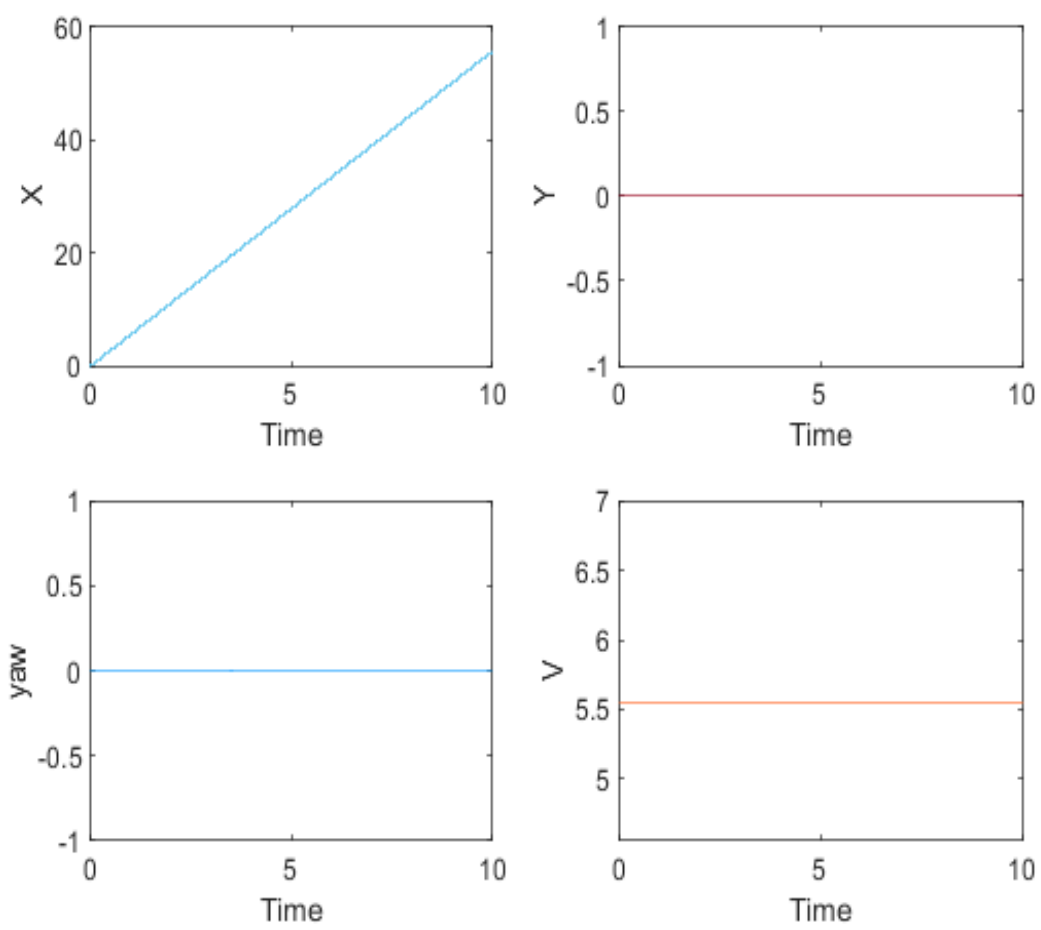
Model:                Model_compare_SLX
Harness:              Model_comparison_kinematic

Harness Owner:          Model_compare_SLX/Kinematic_model
Simulation Mode:      normal
Override SIL or PIL Mode: 0

Configuration Set:      Configuration1
External Input Name:   Free_evolution.mat
External Input File:     C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Free_evolution.mat
Start Time:           0
Stop Time:          10
Checksum:          2799456273 4233424247 1463475084 743274136
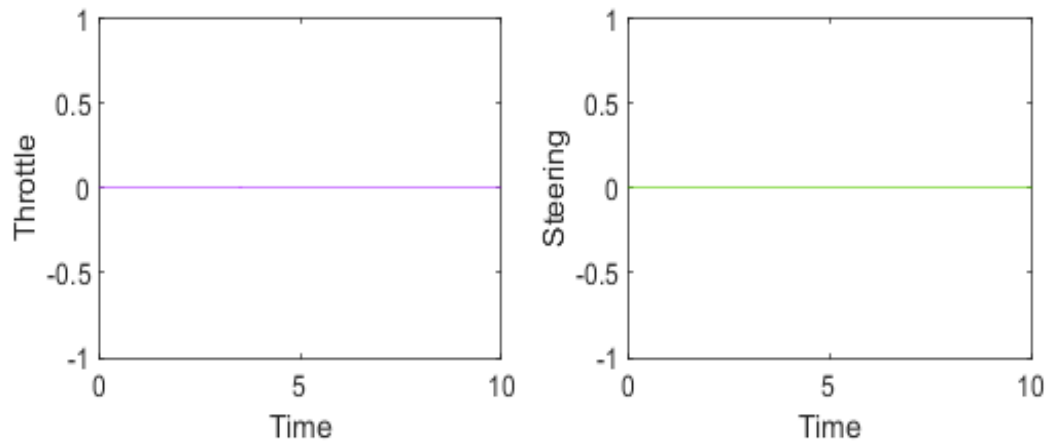
## Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |

# Only throttle

## Test Result Information

| | |
|------|------|
| Result Type: | Test Iteration Result |
| Parent: | Comparison Tests |
| Start Time: | 16-Apr-2021 16:11:35 |

End Time:         16-Apr-2021 16:11:42
Outcome:        Passed
Description:

### Only throttle

Test performed keeping the steering angle equal to 0 and varying the throttle

### Test Case Information

Name:         Only throttle
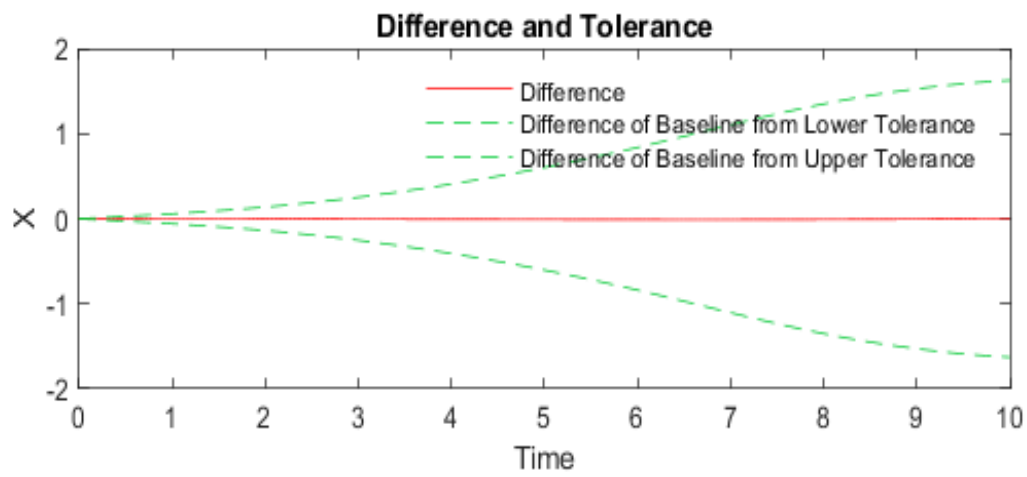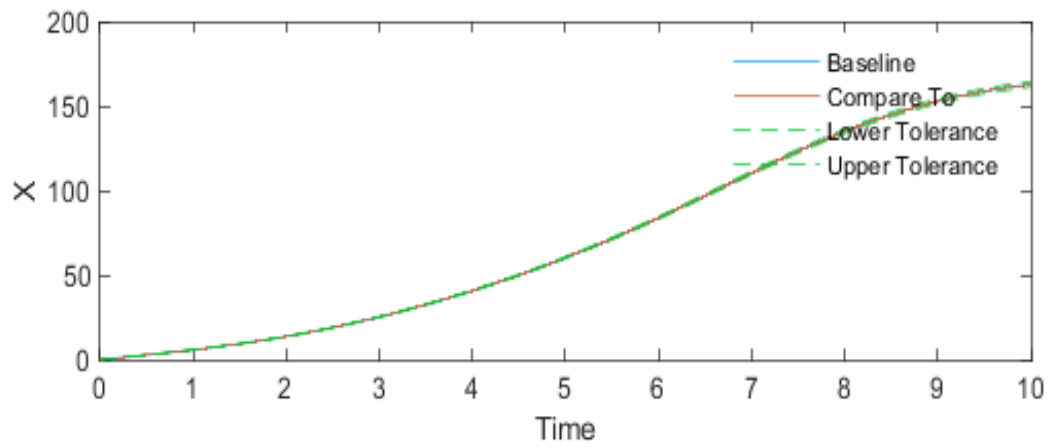Type:         Equivalence Test

### Iteration Settings

#### Test Overrides

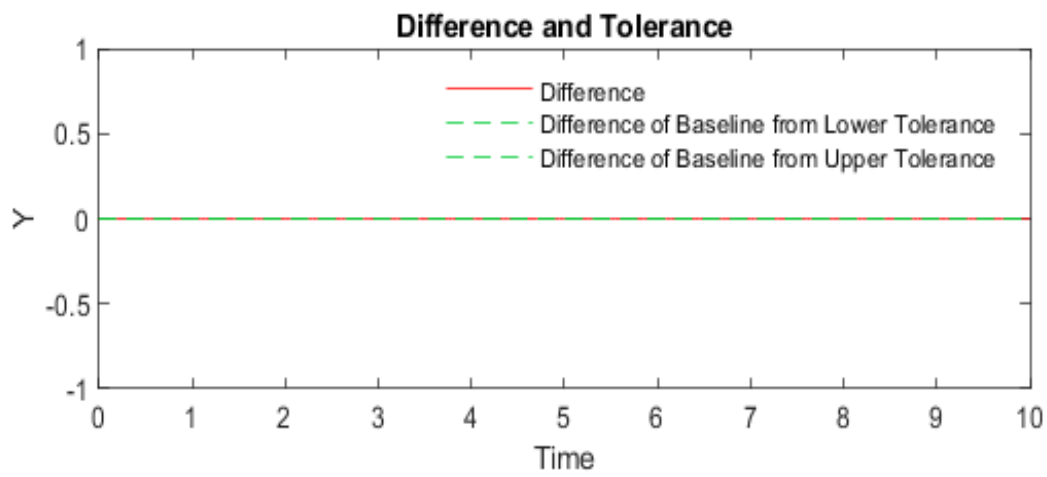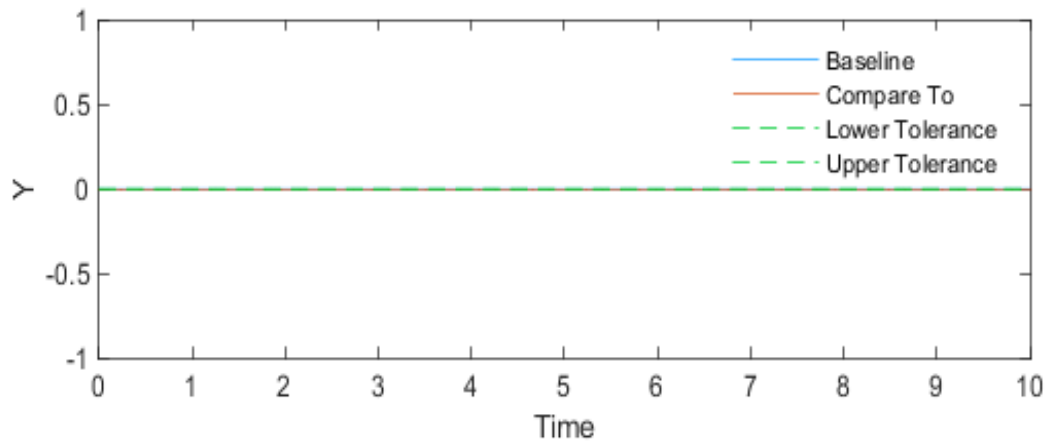| Parameter Name | Value | Simulation Index |
|---|---|---|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Only_throttle.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Only_throttle.mat | 2 |

### Equivalence Comparison

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ X | 0 | 0.01 | 0 | 0 | 0.0107 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ Y | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ yaw | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |

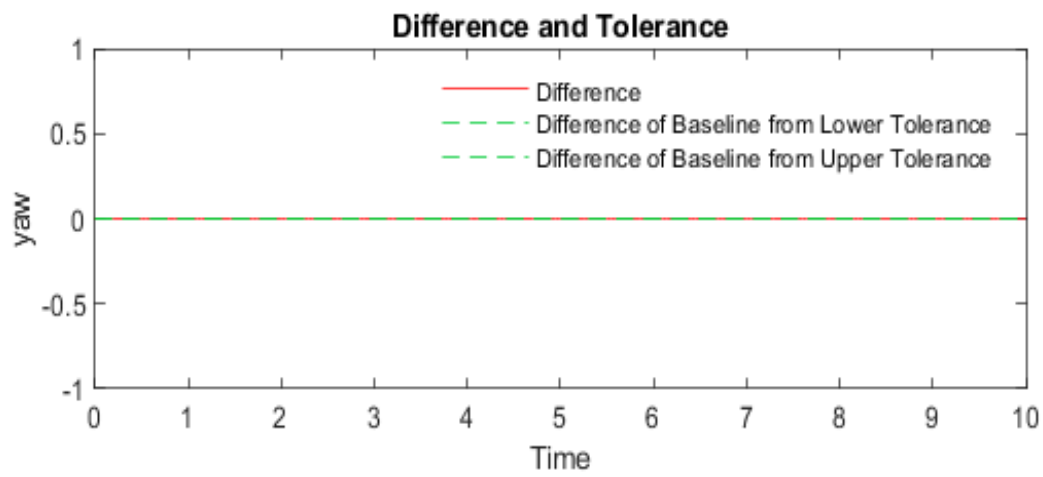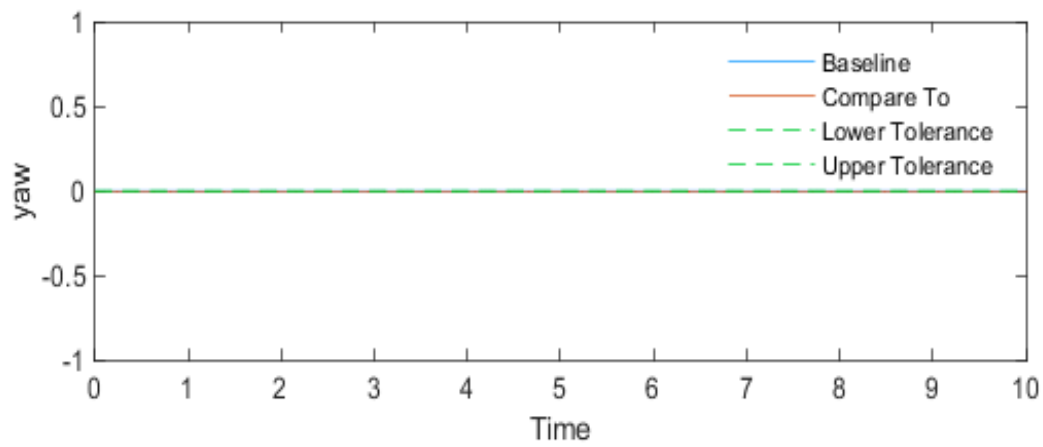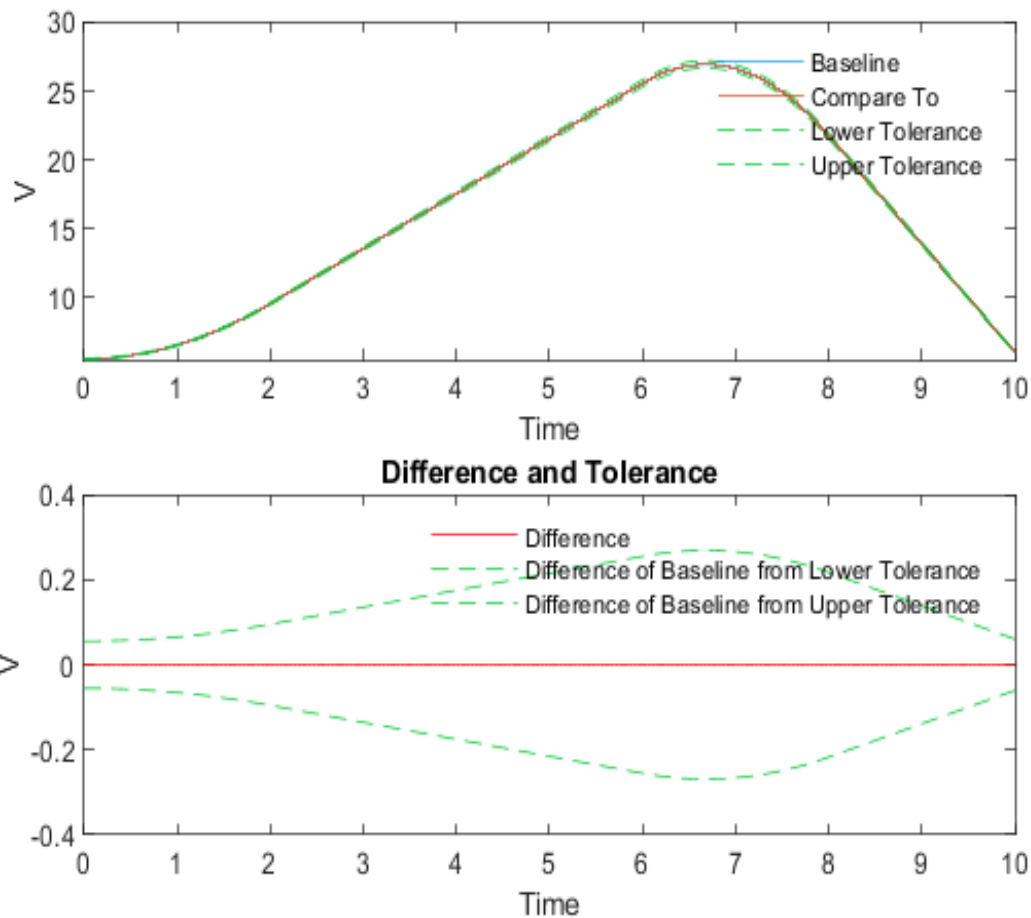| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ X | 0 | 0.01 | 0 | 0 | 0.0107 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**



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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ Y | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

## Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ✅ yaw | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

## Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

Difference and Tolerance

## Input Data 1

### Input Information

| | |
|---|---|
| External Input Name: | Only_throttle.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Only_throttle.mat |

## Input Data 2

### Input Information

External Input Na  Only_throttle.mat
me:
External Input File: C:\Users\gianv\Documents\GitHub\Compliance_t
               est\Matlab scripts\SimulinkModels\Only_throttle.
               mat

## Simulation 1

### System Under Test Information

Model:                  Model_compare_SLX
Harness:                Model_comparison_dynamic
Harness Owner:          Model_compare_SLX/Dynamic_model
Simulation Mode:        normal
Override SIL or PIL Mod 0
e:
Configuration Set:      Configuration1
External Input Name:    Only_throttle.mat
External Input File:    C:\Users\gianv\Documents\GitHub\Compliance_t
                        est\Matlab scripts\SimulinkModels\Only_throttle.
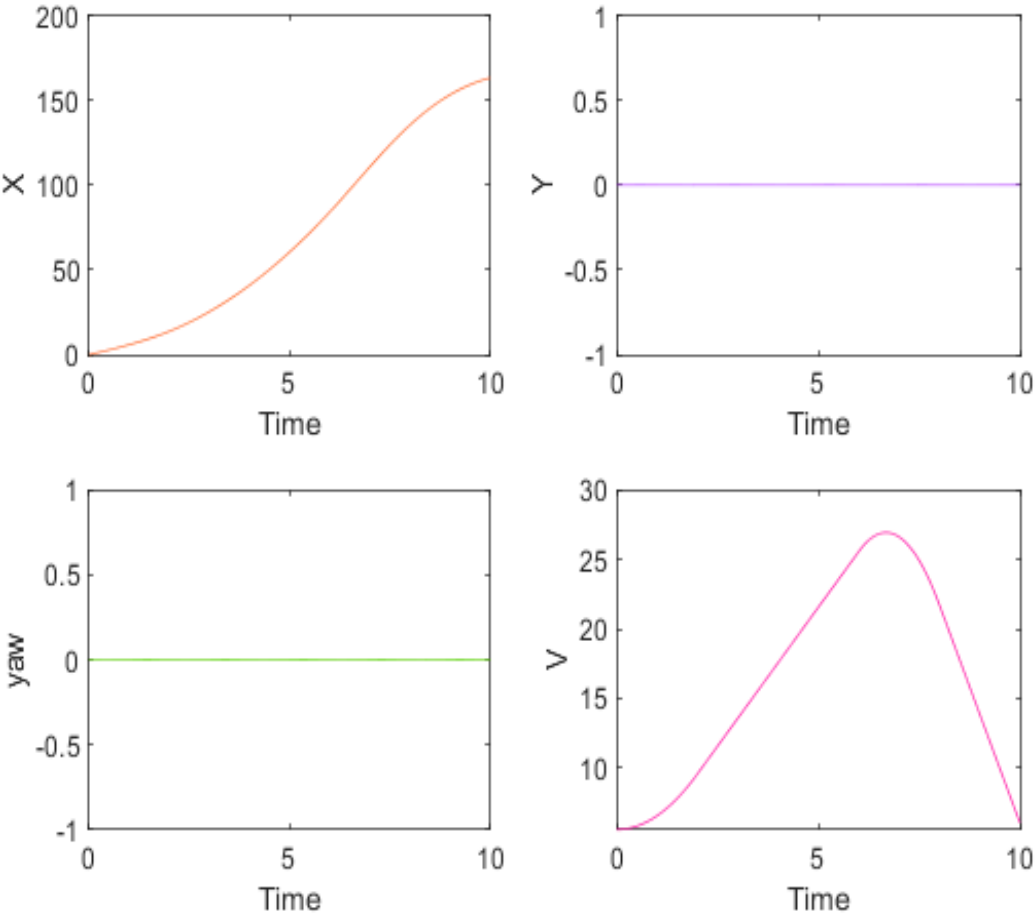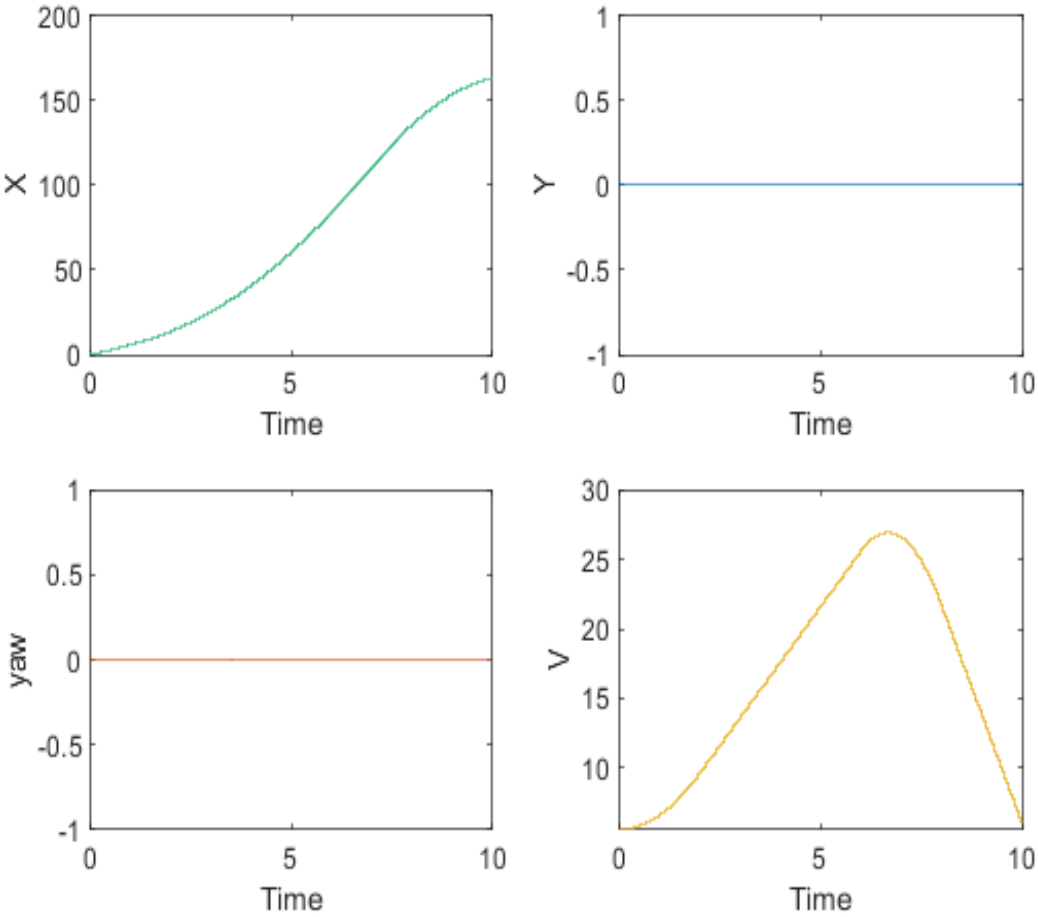                        mat
Start Time:             0
Stop Time:              10
Checksum:               4152128412 1859814811 142259360 3035885348

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|------|-----------|-------|-------------|--------|------|--------------|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |

## Simulation 2

### System Under Test Information

Model:                      Model_compare_SLX
Harness:                    Model_comparison_kinematic

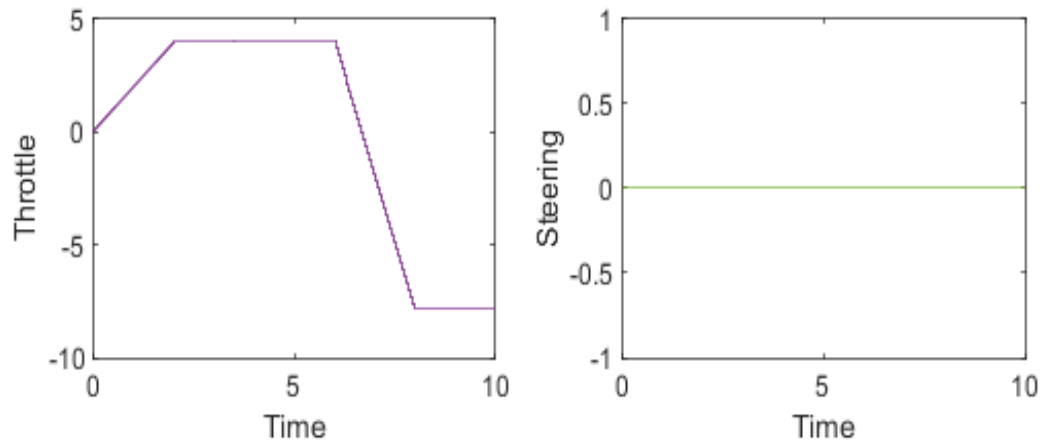| Harness Owner: | Model_compare_SLX/Kinematic_model |
|---|---|
| Simulation Mode: | normal |
| Override SIL or PIL Mode: | 0 |
| Configuration Set: | Configuration1 |
| External Input Name: | Only_throttle.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Only_throttle.mat |
| Start Time: | 0 |
| Stop Time: | 10 |
| Checksum: | 2799456273 4233424247 1463475084 743274136 |

## Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|--------|-----------|-------|-------------|--------|-------|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |



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| Name | Data Type | Units | Sample Time | Interp | Sync |
|:---:|:---:|:---:|:---:|:---:|:---:|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |

# Constant steering

## Test Result Information

| | |
|:---|:---|
| Result Type: | Test Iteration Result |
| Parent: | Comparison Tests |
| Start Time: | 16-Apr-2021 16:11:43 |

End Time:          16-Apr-2021 16:11:50
Outcome:           Failed
Cause of Failure:   Failed criteria: Equivalence
Description:

## Constant steering

Test performed keeping the throttle equal to 0 and giving a constant steering angle value

### Test Case Information

Name:           Constant steering
Type:           Equivalence Test

### Iteration Settings

#### Test Overrides

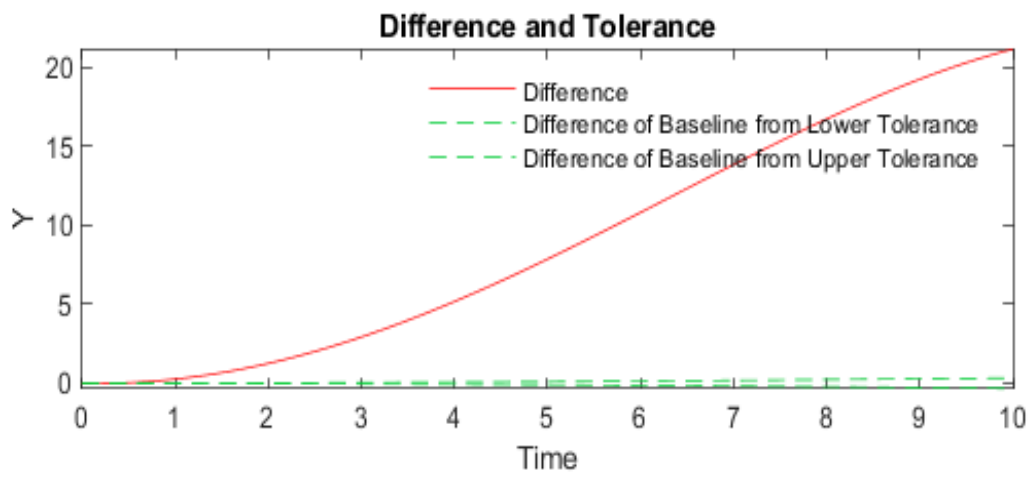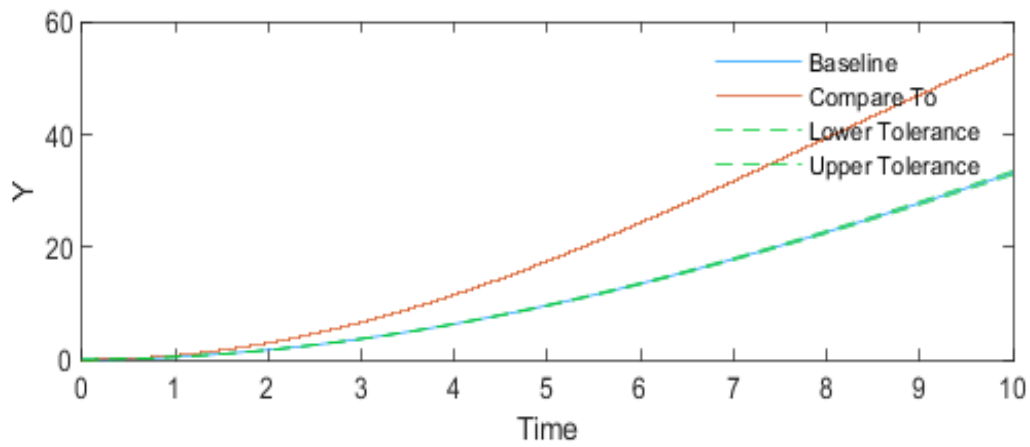| Parameter Name | Value | Simulation Index |
|---|---|---|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Constant_steering.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Constant_steering.mat | 2 |

### Equivalence Comparison

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ X | 0 | 0.01 | 0 | 0 | 27.8 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ Y | 0 | 0.01 | 0 | 0 | 21.2 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ yaw | 0 | 0.01 | 0 | 0 | 0.683 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |

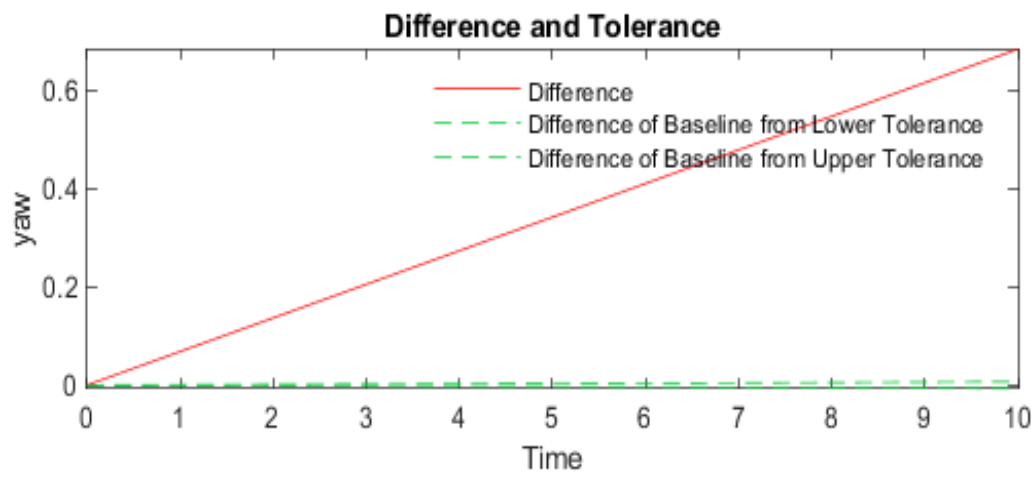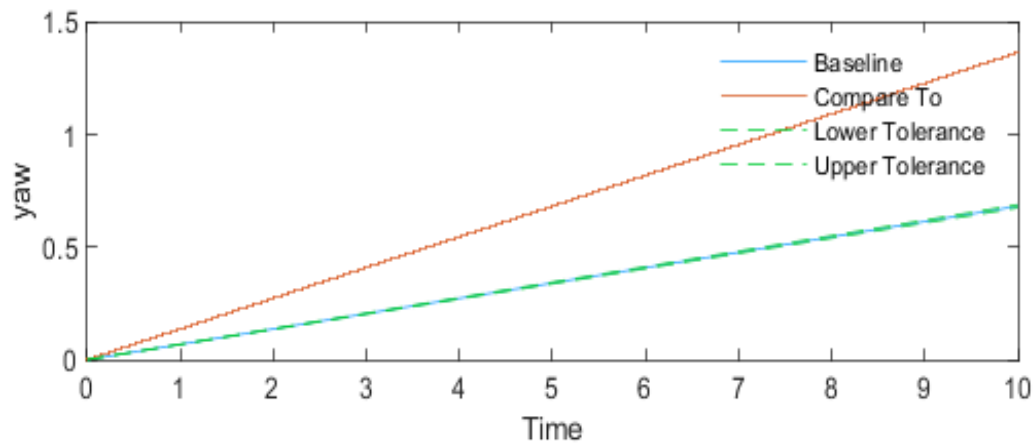| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ❌ X | 0 | 0.01 | 0 | 0 | 27.8 | double | | Continuous | double | | 0.001 | linear | union |
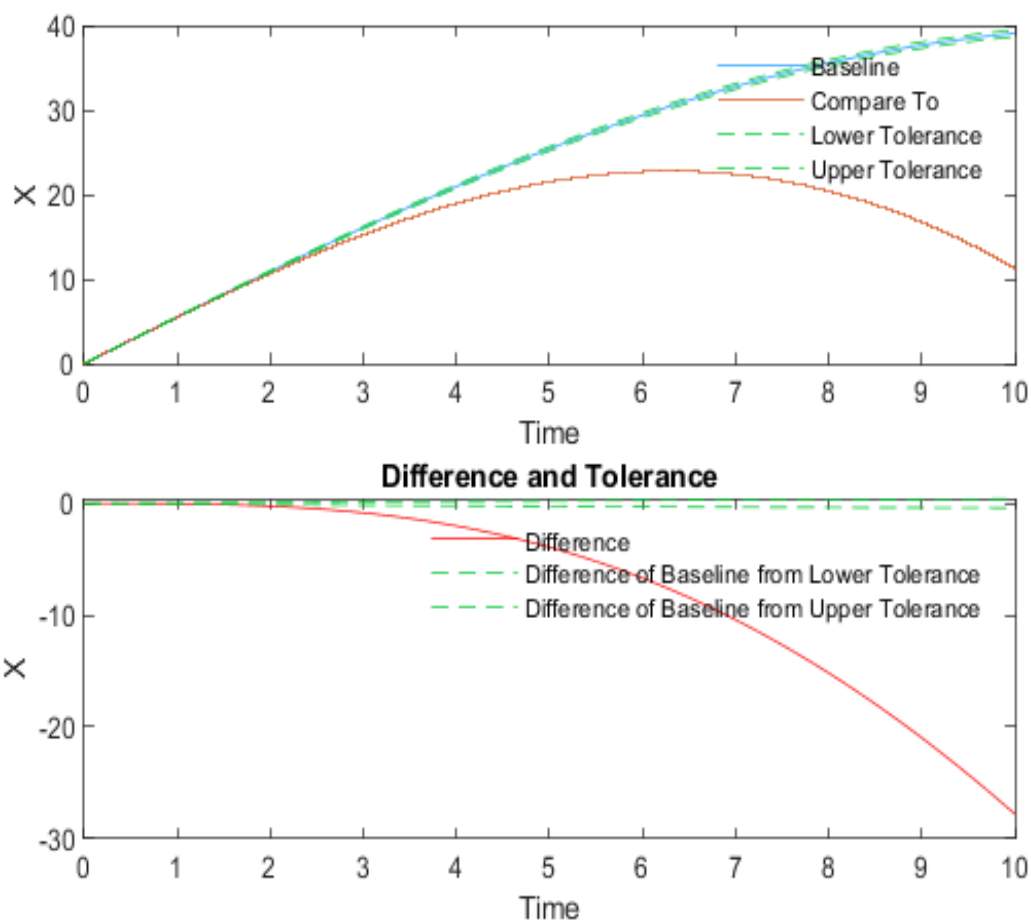


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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ❌ Y | 0 | 0.01 | 0 | 0 | 21.2 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ yaw | 0 | 0.01 | 0 | 0 | 0.683 | double | | Continuous | double | | 0.001 | linear | union |

### Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

## Input Data 1

### Input Information

| External Input Name: | Constant_steering.mat |
|---|---|
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Constant_steering.mat |

## Input Data 2

### Input Information

External Input Name: Constant_steering.mat

External Input File: C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Constant_steering.mat

## Simulation 1

### System Under Test Information

Model:                     Model_compare_SLX
Harness:                   Model_comparison_dynamic
Harness Owner:             Model_compare_SLX/Dynamic_model
Simulation Mode:           normal
Override SIL or PIL Mode:  0
Configuration Set:         Configuration1
External Input Name:       Constant_steering.mat
External Input File:       C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Constant_steering.mat
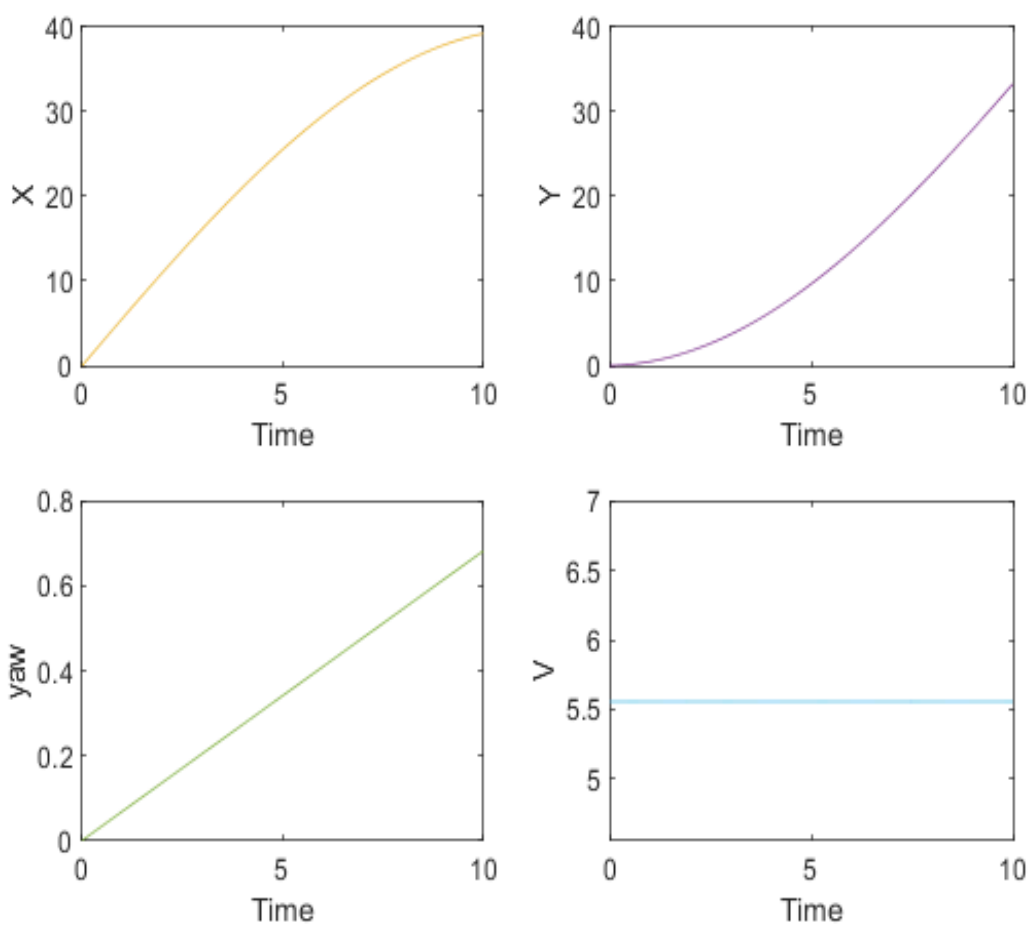Start Time:                0
Stop Time:                 10
Checksum:                  4152128412 1859814811 142259360 3035885348

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|------|-----------|-------|-------------|--------|------|--------------|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |

## Simulation 2

### System Under Test Information
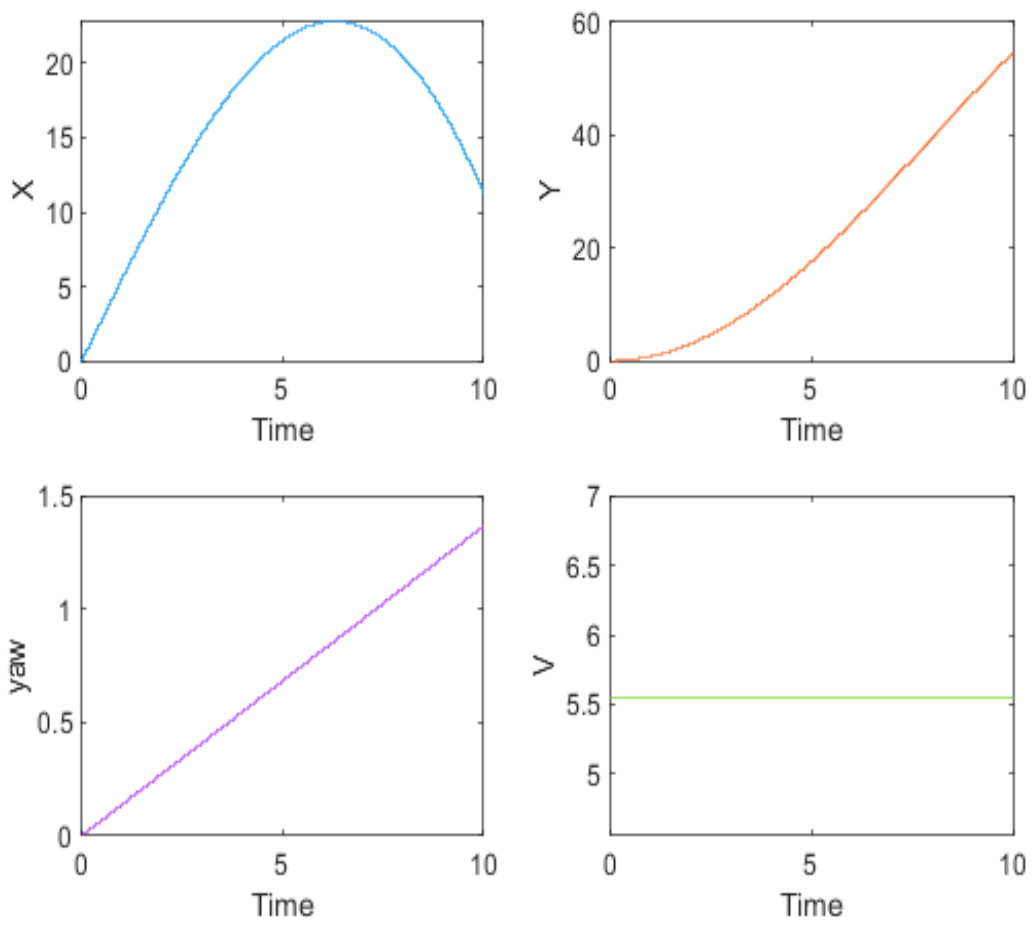
Model:                      Model_compare_SLX
Harness:                    Model_comparison_kinematic

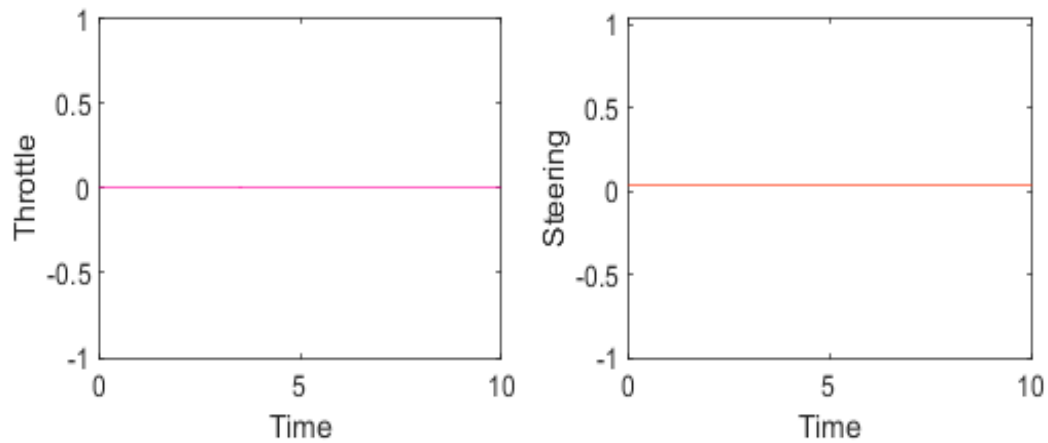| Harness Owner: | Model_compare_SLX/Kinematic_model |
| Simulation Mode: | normal |
| Override SIL or PIL Mode: | 0 |
| Configuration Set: | Configuration1 |
| External Input Name: | Constant_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Constant_steering.mat |
| Start Time: | 0 |
| Stop Time: | 10 |
| Checksum: | 2799456273 4233424247 1463475084 743274136 |

**Simulation Output**

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |



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| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |

# Ramp steering

## Test Result Information

| | |
|---|---|
| Result Type: | Test Iteration Result |
| Parent: | Comparison Tests |
| Start Time: | 16-Apr-2021 16:11:50 |

End Time:           16-Apr-2021 16:11:55
Outcome:           Failed
Cause of Failure:      Failed criteria: Equivalence
Description:

### Ramp steering

Test performed keeping the throttle equal to 0 and giving a ramp steering angle signal (from 0° to 36°)

### Test Case Information

Name:           Ramp steering
Type:            Equivalence Test

### Iteration Settings

#### Test Overrides

| Parameter Name | Value | Simulation Index |
|---|---|---|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Ramp_steering.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Ramp_steering.mat | 2 |

### Equivalence Comparison

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ X | 0 | 0.01 | 0 | 0 | 26.1 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ Y | 0 | 0.01 | 0 | 0 | 28.3 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ yaw | 0 | 0.01 | 0 | 0 | 7.88 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |

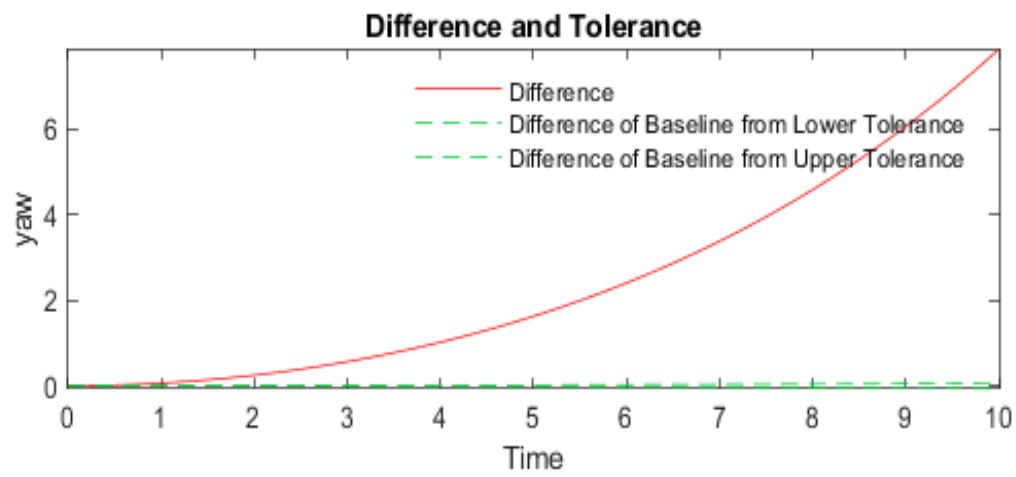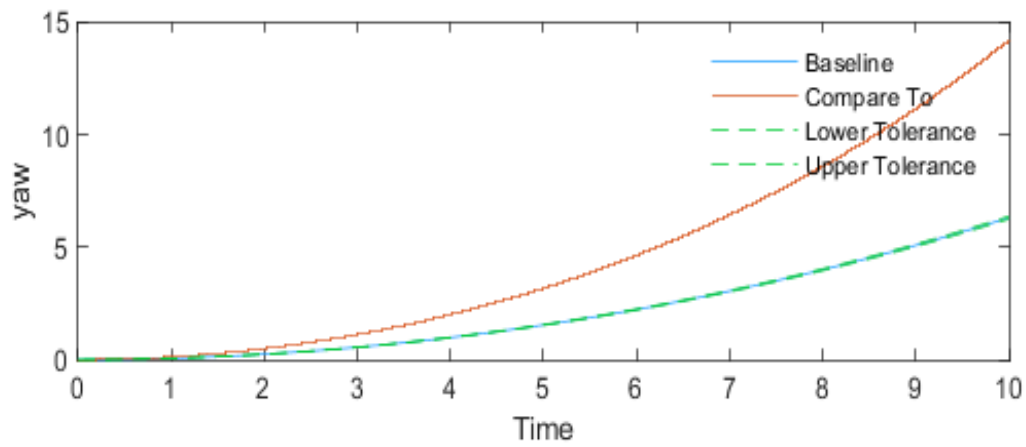| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ X | 0 | 0.01 | 0 | 0 | 26.1 | double | | Continuous | double | | 0.001 | linear | union |
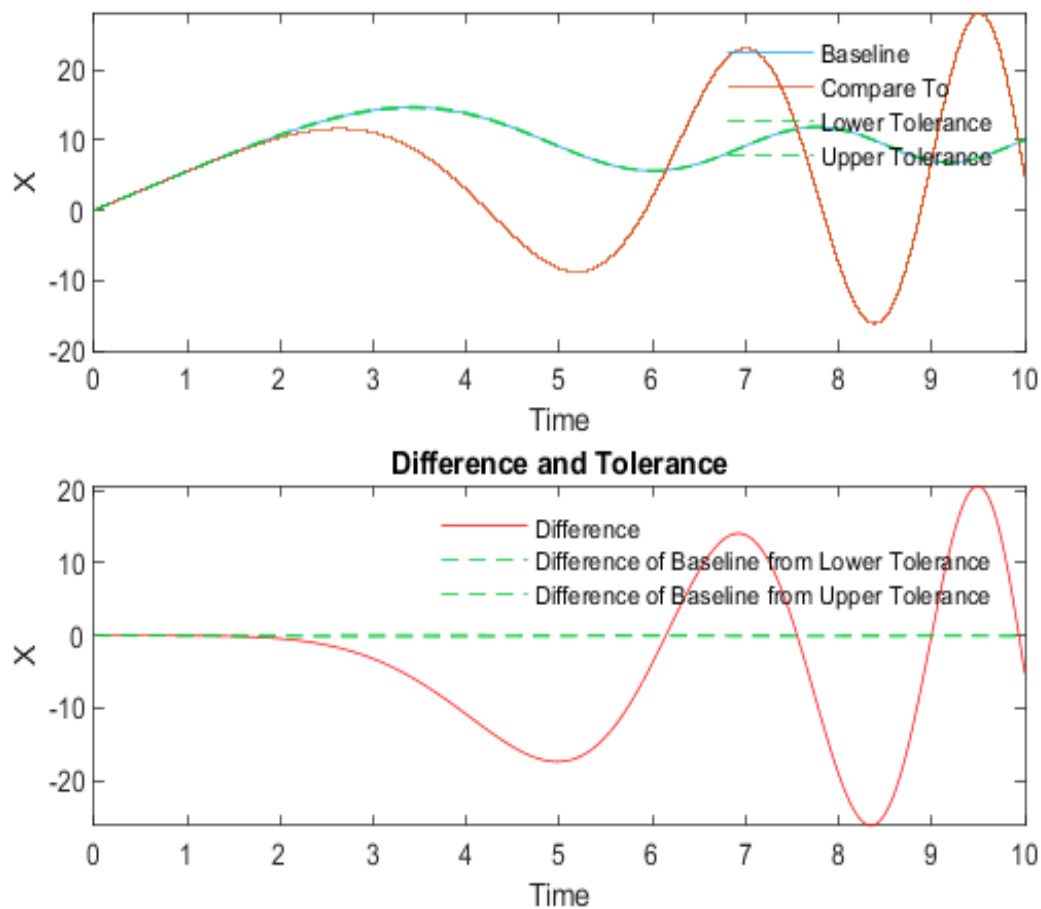


**Difference and Tolerance**



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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ Y | 0 | 0.01 | 0 | 0 | 28.3 | double | | Continuous | double | | 0.001 | linear | union |
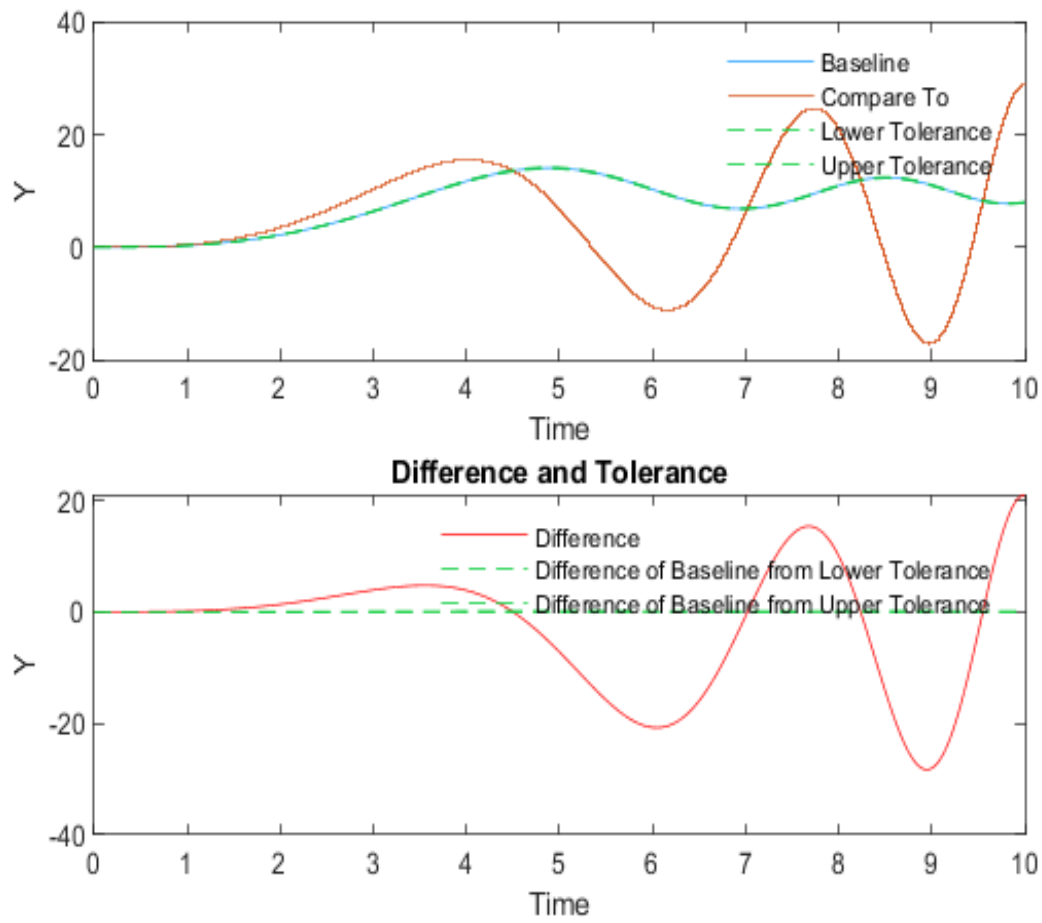
### Difference and Tolerance

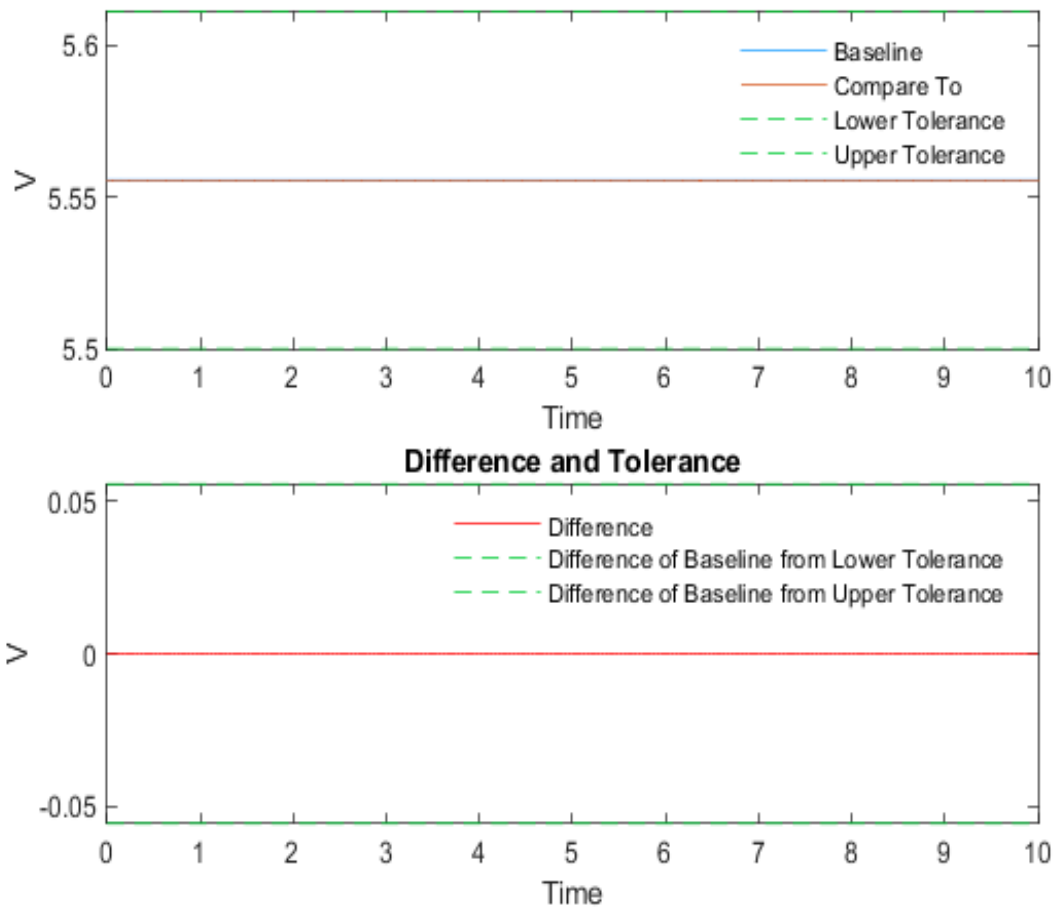| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ yaw | 0 | 0.01 | 0 | 0 | 7.88 | double | | Continuous | double | | 0.001 | linear | union |

Difference and Tolerance

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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

## Input Data 1

### Input Information

| | |
|---|---|
| External Input Name: | Ramp_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Ramp_steering.mat |

## Input Data 2

### Input Information

| | |
|---|---|
| External Input Name: | Ramp_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Ramp_steering.mat |

## Simulation 1

### System Under Test Information

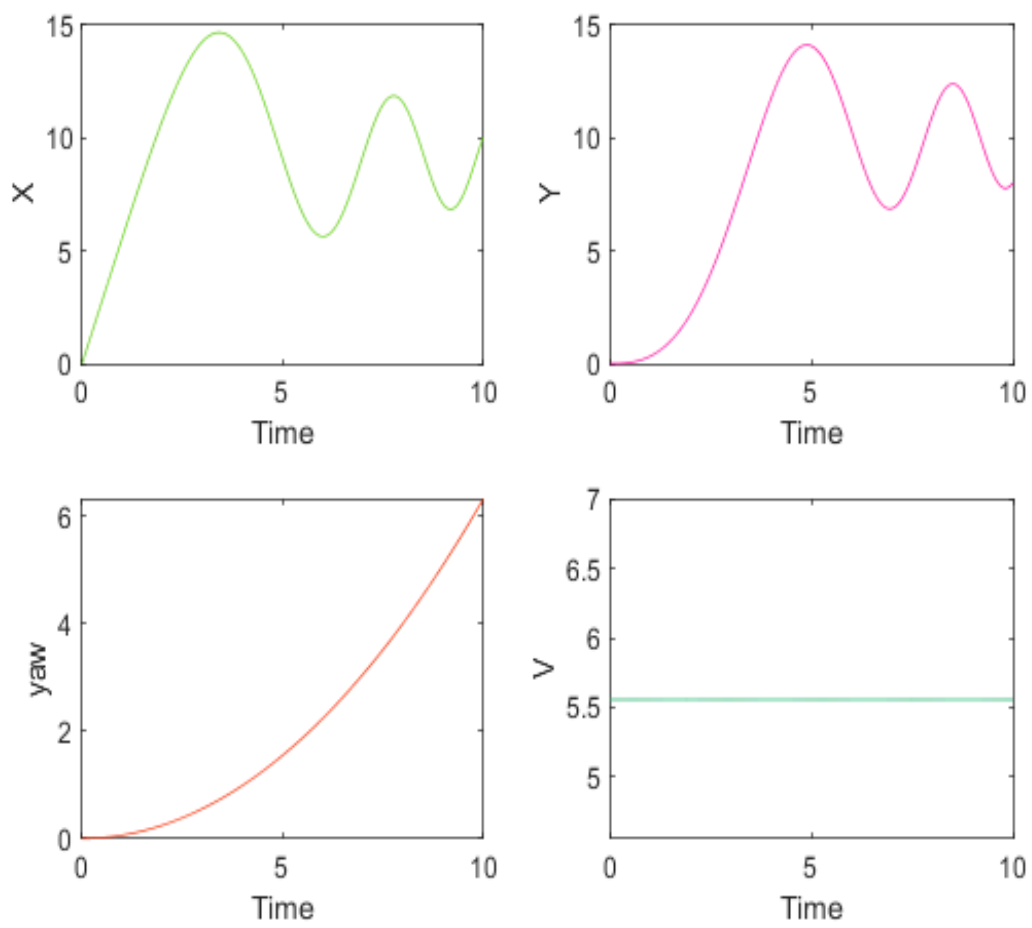| | |
|---|---|
| Model: | Model_compare_SLX |
| Harness: | Model_comparison_dynamic |
| Harness Owner: | Model_compare_SLX/Dynamic_model |
| Simulation Mode: | normal |
| Override SIL or PIL Mode: | 0 |
| Configuration Set: | Configuration1 |
| External Input Name: | Ramp_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Ramp_steering.mat |
| Start Time: | 0 |
| Stop Time: | 10 |
| Checksum: | 4152128412 1859814811 142259360 3035885348 |

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|---|---|---|---|---|---|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |



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## Simulation 2

### System Under Test Information
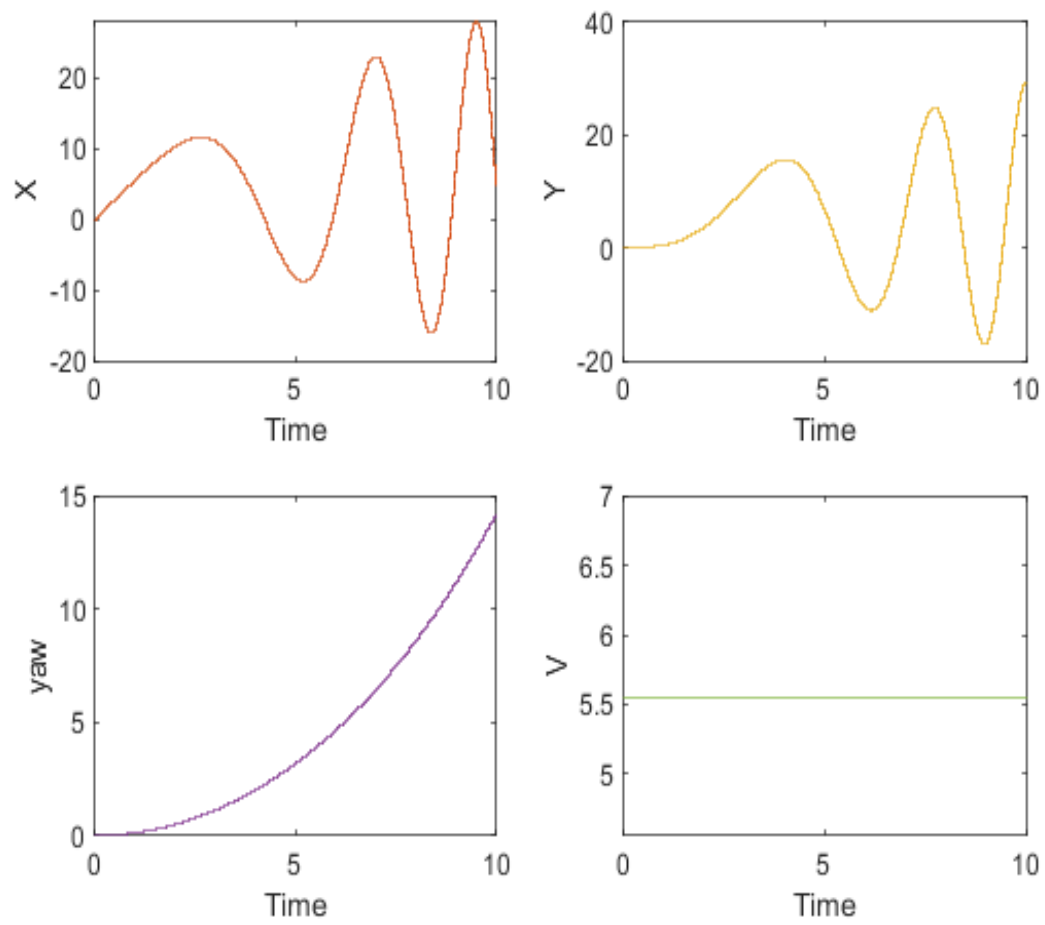
Model:                          Model_compare_SLX
Harness:                   Model_comparison_kinematic

Harness Owner:          Model_compare_SLX/Kinematic_model
Simulation Mode:      normal
Override SIL or PIL Mode: 0

Configuration Set:     Configuration1
External Input Name:  Ramp_steering.mat
External Input File:    C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Ramp_steering.mat
Start Time:           0
Stop Time:           10
Checksum:          2799456273 4233424247 1463475084 743274136
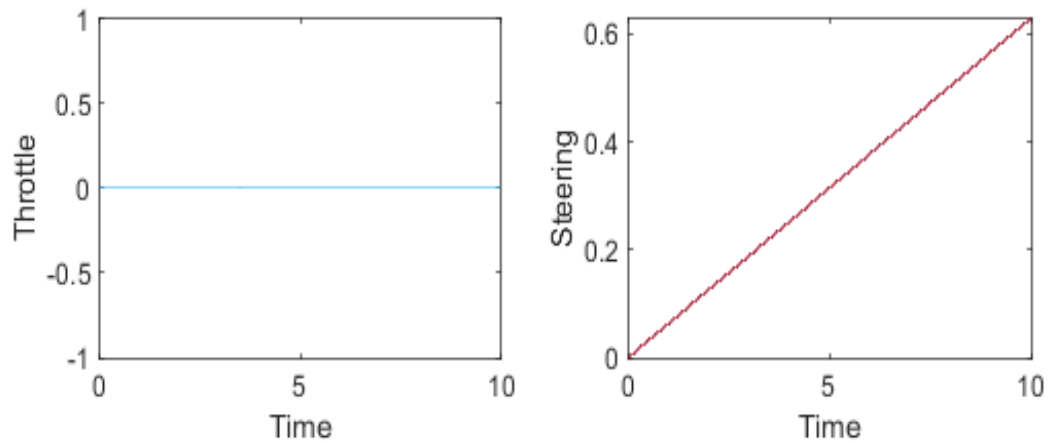
## Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|------|-----------|-------|-------------|--------|------|--------------|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |



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| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |

# Small sinusoidal steering

## Test Result Information

| | |
|---|---|
| Result Type: | Test Iteration Result |
| Parent: | Comparison Tests |
| Start Time: | 16-Apr-2021 16:11:55 |

End Time:              16-Apr-2021 16:12:00
Outcome:               Failed
Cause of Failure:      Failed criteria: Equivalence
Description:

**Small sinusoidal steering** Test performed keeping the throttle equal to 0 and
giving a sinusoidal steering angle signal with frequency 0.2Hz and amplitude
5°

## Test Case Information

Name:              Small sinusoidal steering
Type:              Equivalence Test

### Iteration Settings

#### Test Overrides

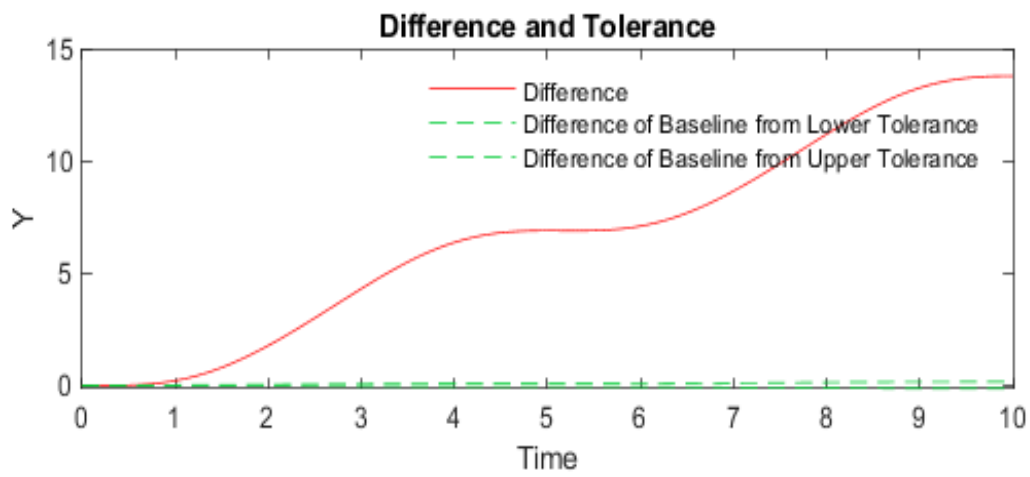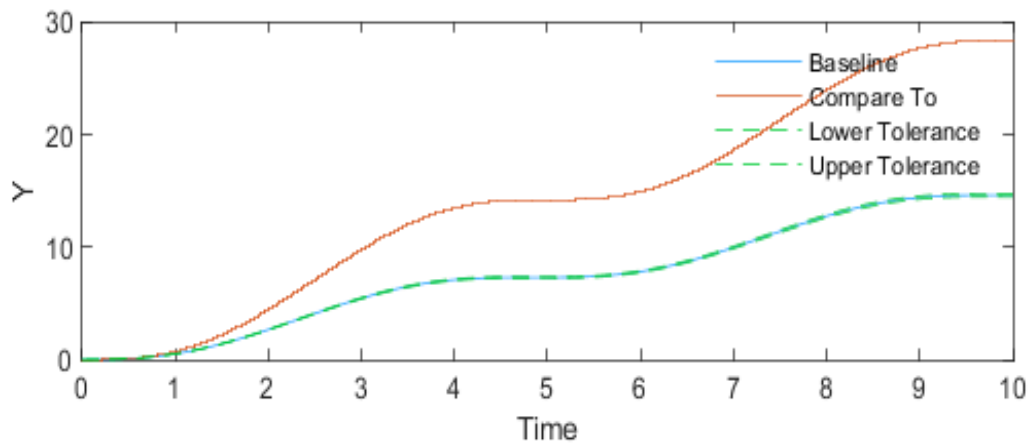| Parameter Name | Value | Simulation Index |
|---|---|---|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Small_sinusoidal_steering.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Small_sinusoidal_steering.mat | 2 |

### Equivalence Comparison

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ X | 0 | 0.01 | 0 | 0 | 5.94 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ Y | 0 | 0.01 | 0 | 0 | 13.8 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ yaw | 0 | 0.01 | 0 | 0 | 0.273 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |

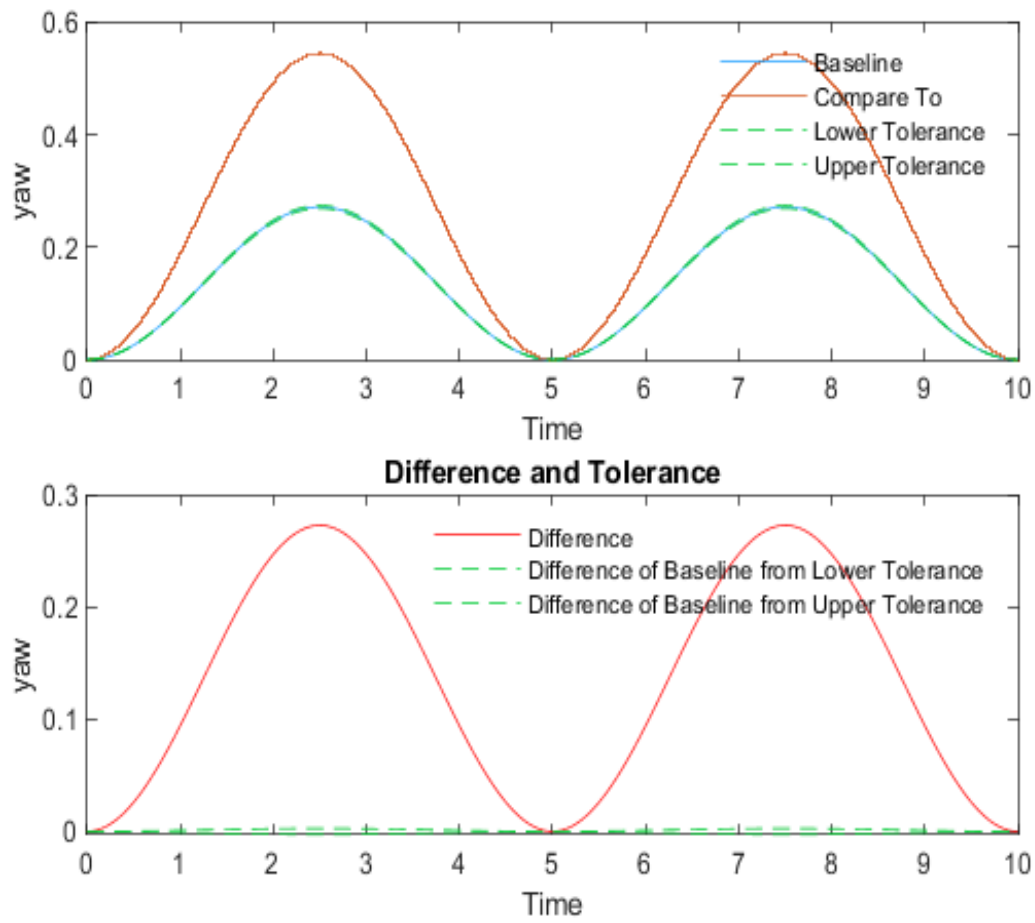| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ❌ X | 0 | 0.01 | 0 | 0 | 5.94 | double | | Continuous | double | | 0.001 | linear | union |
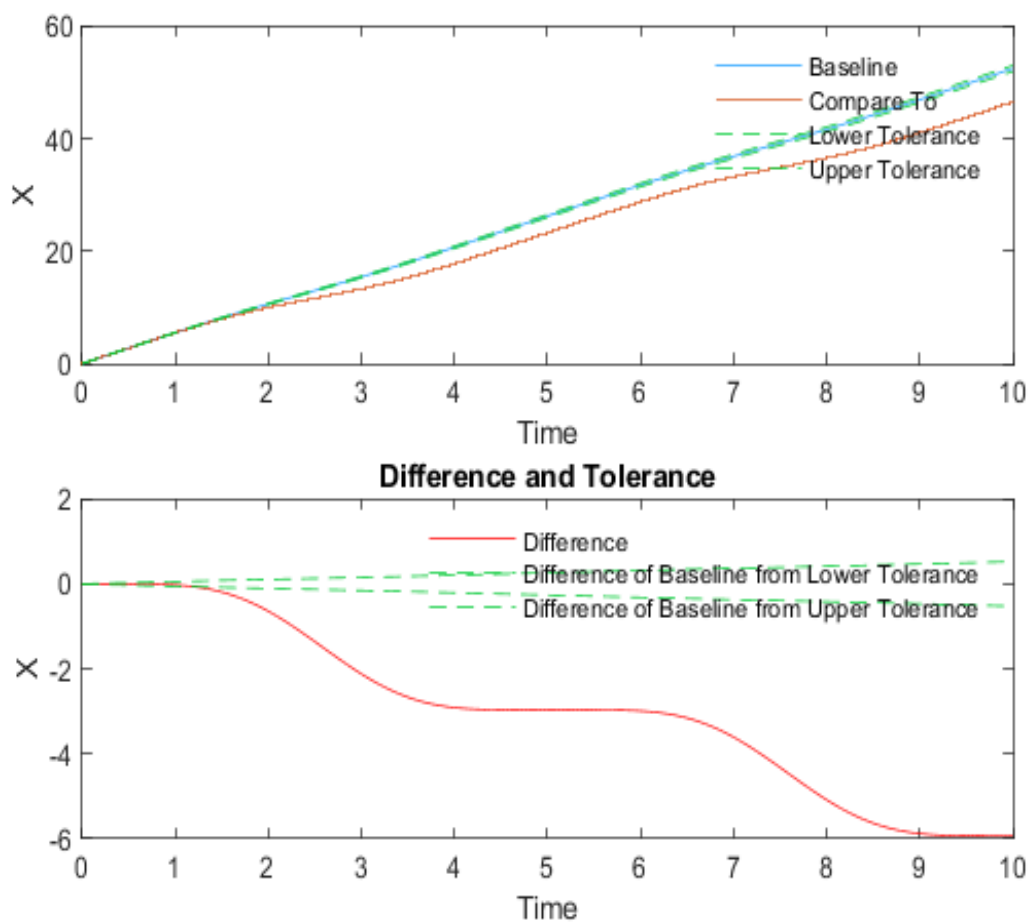




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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ❌ Y | 0 | 0.01 | 0 | 0 | 13.8 | double | | Continuous | double | | 0.001 | linear | union |

## Difference and Tolerance

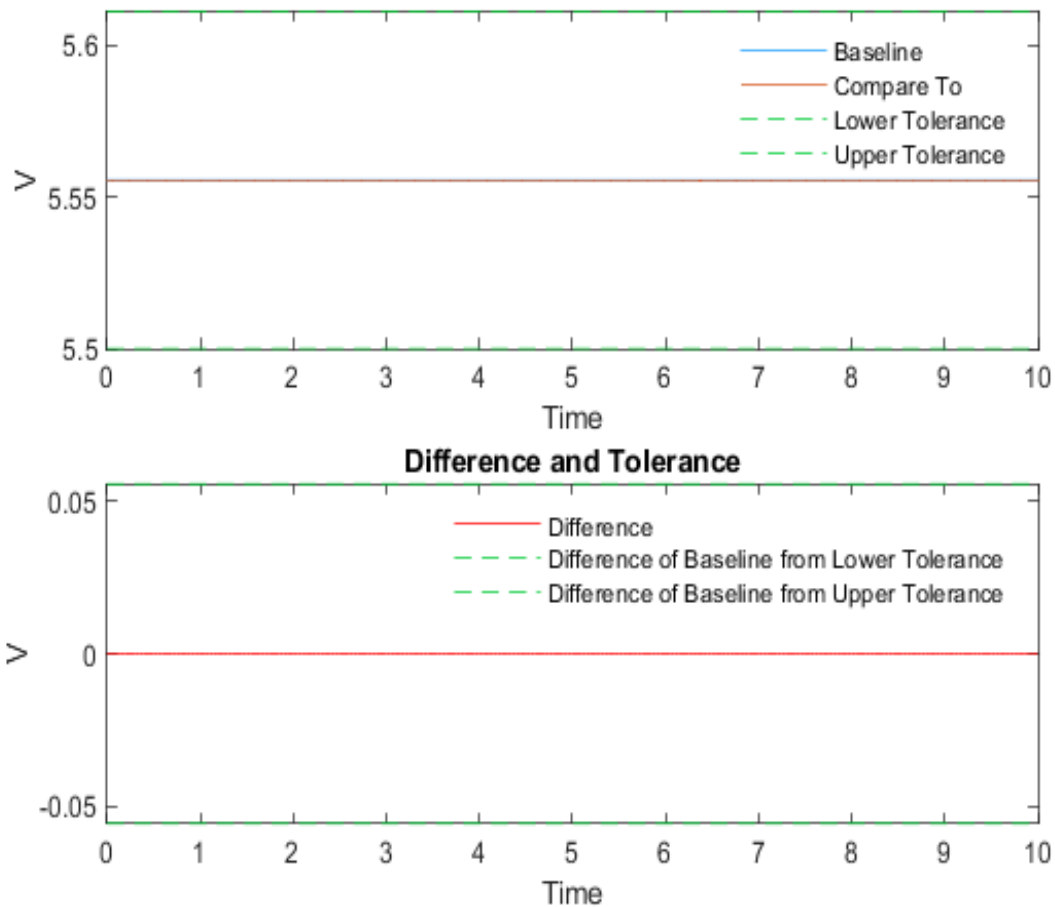| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ yaw | 0 | 0.01 | 0 | 0 | 0.273 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**



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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

## Input Data 1

### Input Information

External Input Name: Small_sinusoidal_steering.mat

External Input File: C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Small_sinusoidal_steering.mat

## Input Data 2

### Input Information

External Input Na
me:
Small_sinusoidal_steering.mat

External Input File: C:\Users\gianv\Documents\GitHub\Compliance_te
st\Matlab scripts\SimulinkModels\Small_sinusoid
al_steering.mat

## Simulation 1

### System Under Test Information

Model:                      Model_compare_SLX
Harness:                    Model_comparison_dynamic
Harness Owner:              Model_compare_SLX/Dynamic_model
Simulation Mode:            normal
Override SIL or PIL Mod     0
e:
Configuration Set:          Configuration1
External Input Name:        Small_sinusoidal_steering.mat
External Input File:        C:\Users\gianv\Documents\GitHub\Compliance_te
st\Matlab scripts\SimulinkModels\Small_sinusoid
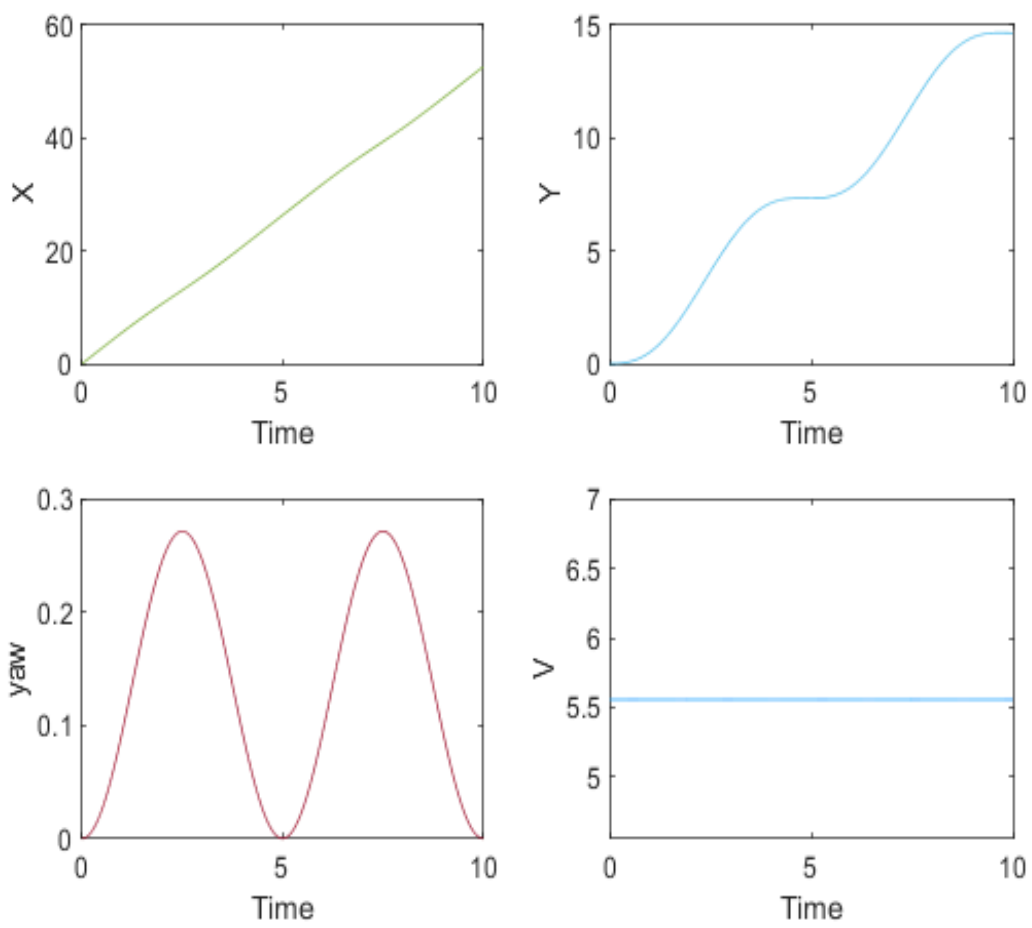al_steering.mat
Start Time:                 0
Stop Time:                  10
Checksum:                   4152128412 1859814811 142259360 3035885348

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|------|-----------|-------|-------------|--------|------|--------------|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |



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## Simulation 2

### System Under Test Information
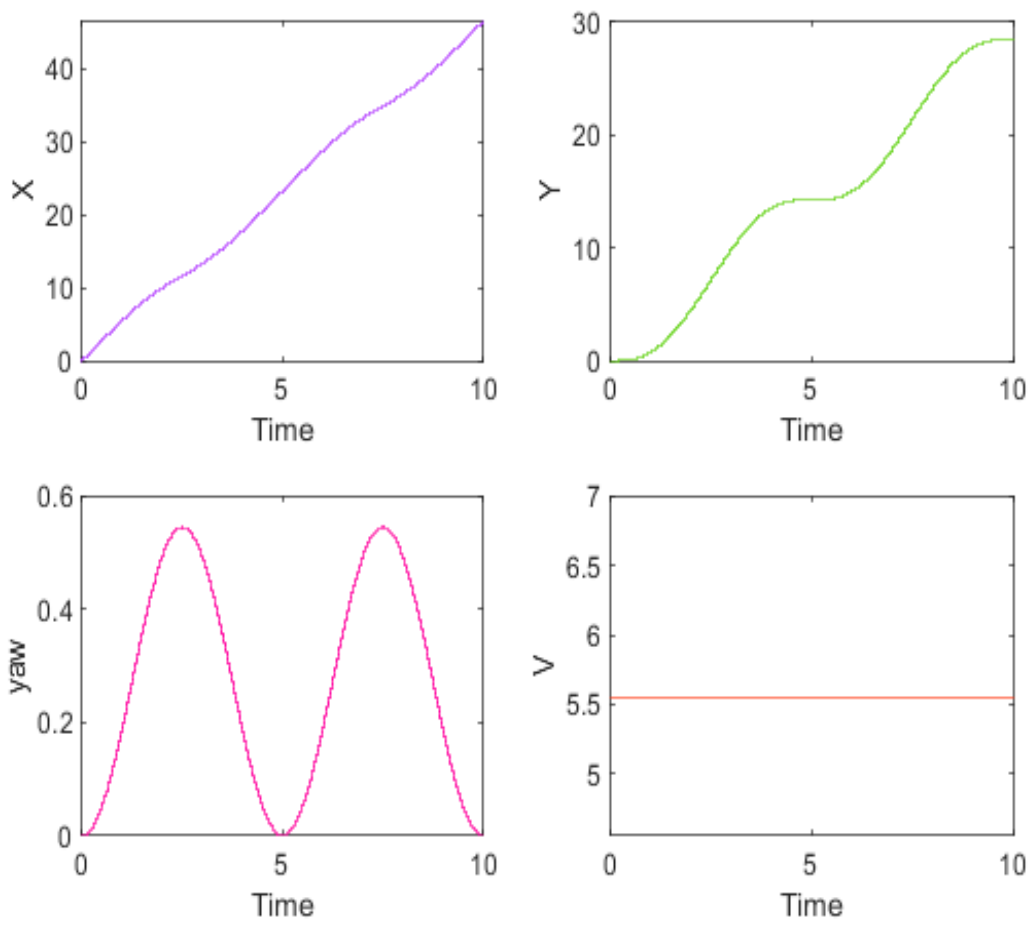
Model:                              Model_compare_SLX
Harness:                           Model_comparison_kinematic

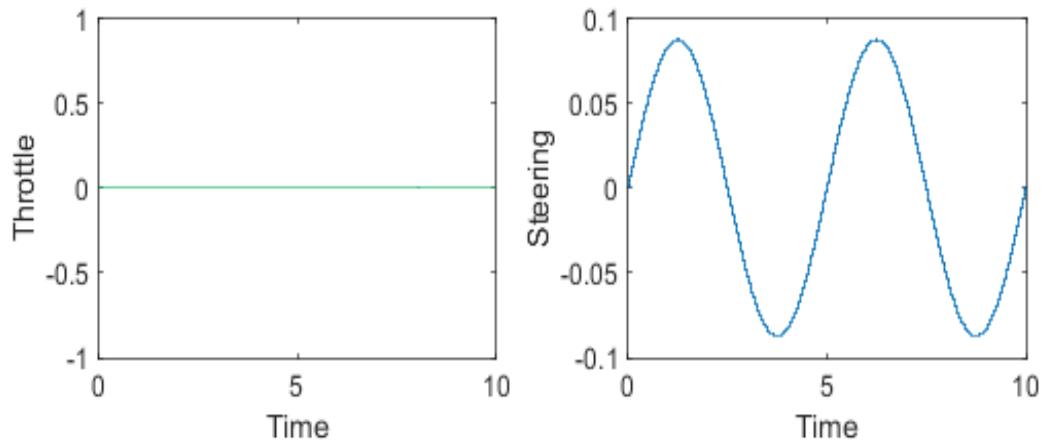| Harness Owner: | Model_compare_SLX/Kinematic_model |
| Simulation Mode: | normal |
| Override SIL or PIL Mode: | 0 |
| Configuration Set: | Configuration1 |
| External Input Name: | Small_sinusoidal_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Small_sinusoidal_steering.mat |
| Start Time: | 0 |
| Stop Time: | 10 |
| Checksum: | 2799456273 4233424247 1463475084 743274136 |

## Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |



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| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |

# Big sinusoidal steering

## Test Result Information

| | |
|---|---|
| Result Type: | Test Iteration Result |
| Parent: | Comparison Tests |
| Start Time: | 16-Apr-2021 16:12:00 |

End Time:              16-Apr-2021 16:12:06
Outcome:               Failed
Cause of Failure:      Failed criteria: Equivalence
Description:

**Big sinusoidal steering** Test performed keeping the throttle equal to 0 and giving a sinusoidal steering angle signal with frequency 0.2Hz and amplitude 15°

## Test Case Information

Name:              Big sinusoidal steering
Type:              Equivalence Test

### Iteration Settings

#### Test Overrides

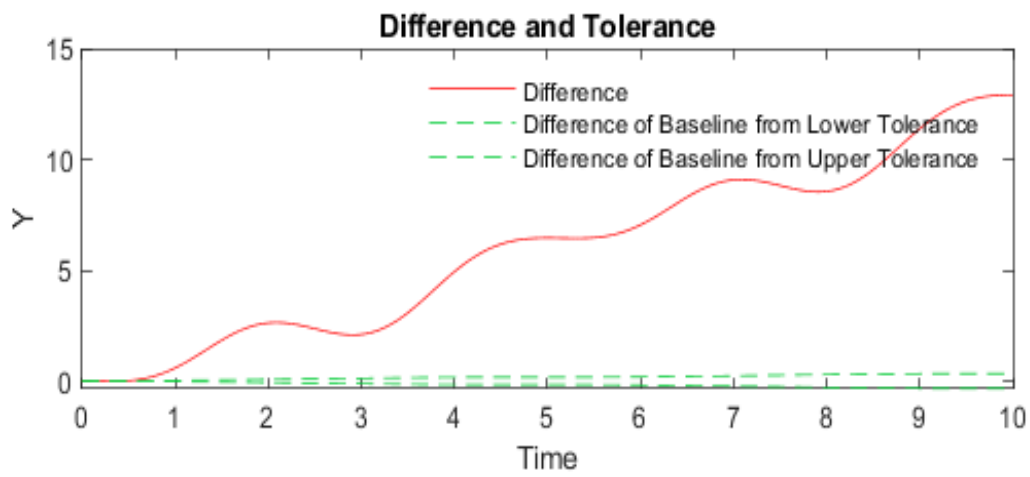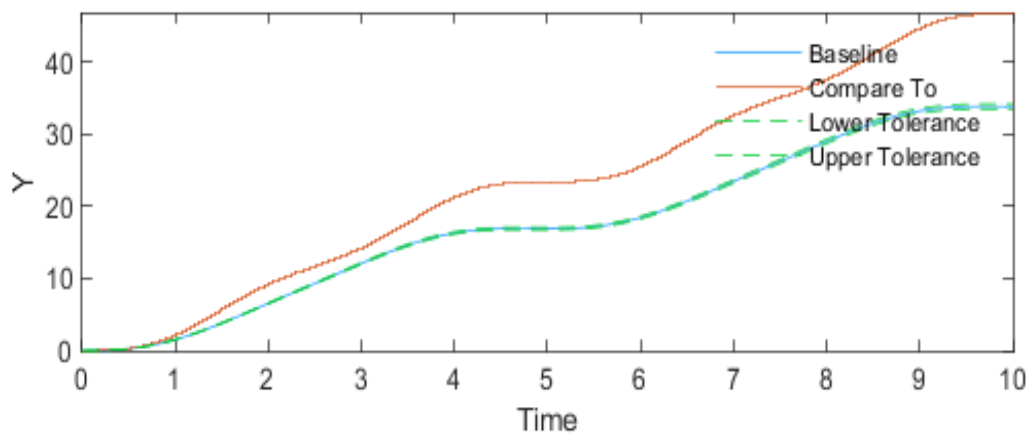| Parameter Name | Value | Simulation Index |
|---|---|---|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Big_sinusoidal_steering.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Big_sinusoidal_steering.mat | 2 |

### Equivalence Comparison

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ X | 0 | 0.01 | 0 | 0 | 41.7 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ Y | 0 | 0.01 | 0 | 0 | 12.9 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ yaw | 0 | 0.01 | 0 | 0 | 0.86 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |

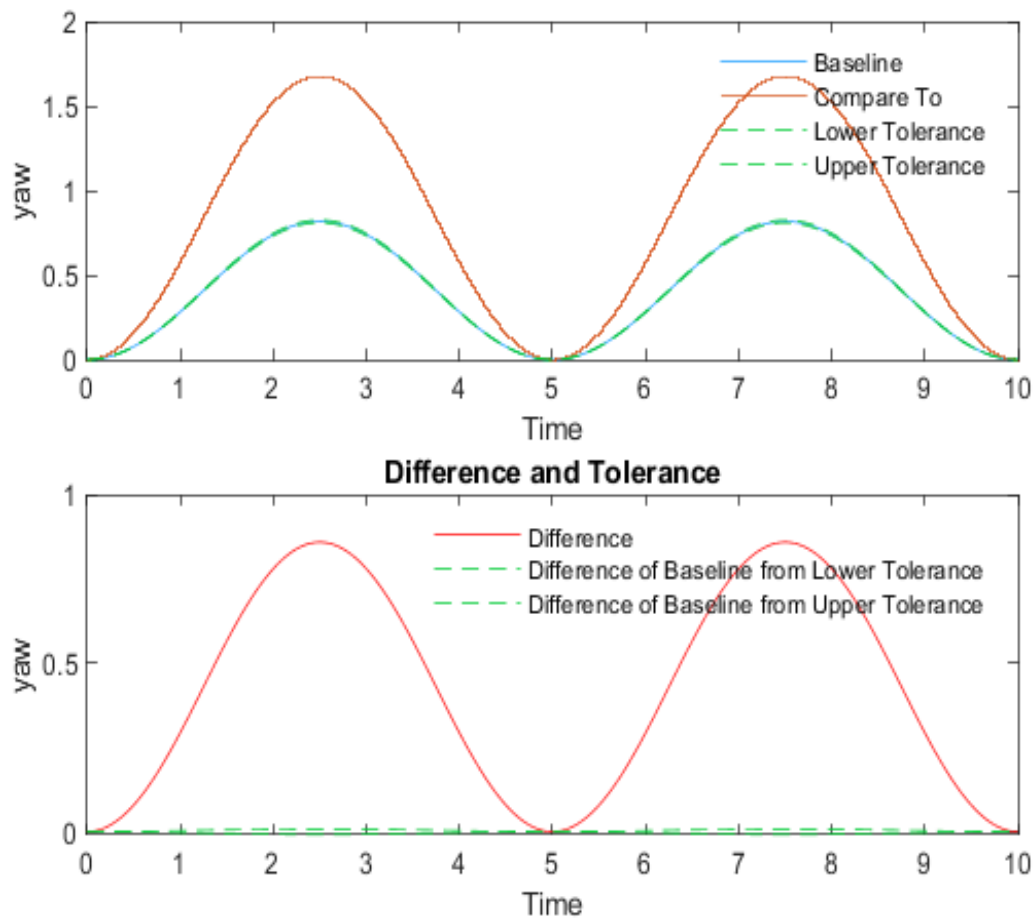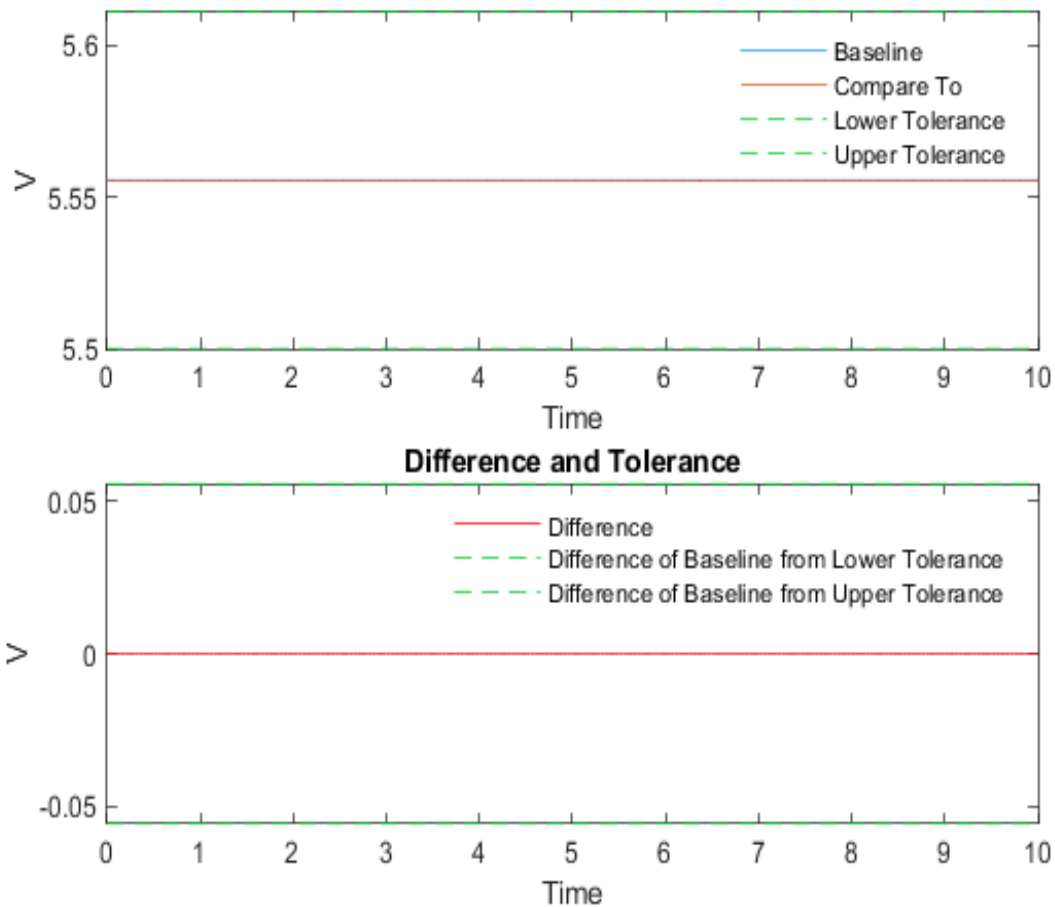| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ X | 0 | 0.01 | 0 | 0 | 41.7 | double | | Continuous | double | | 0.001 | linear | union |
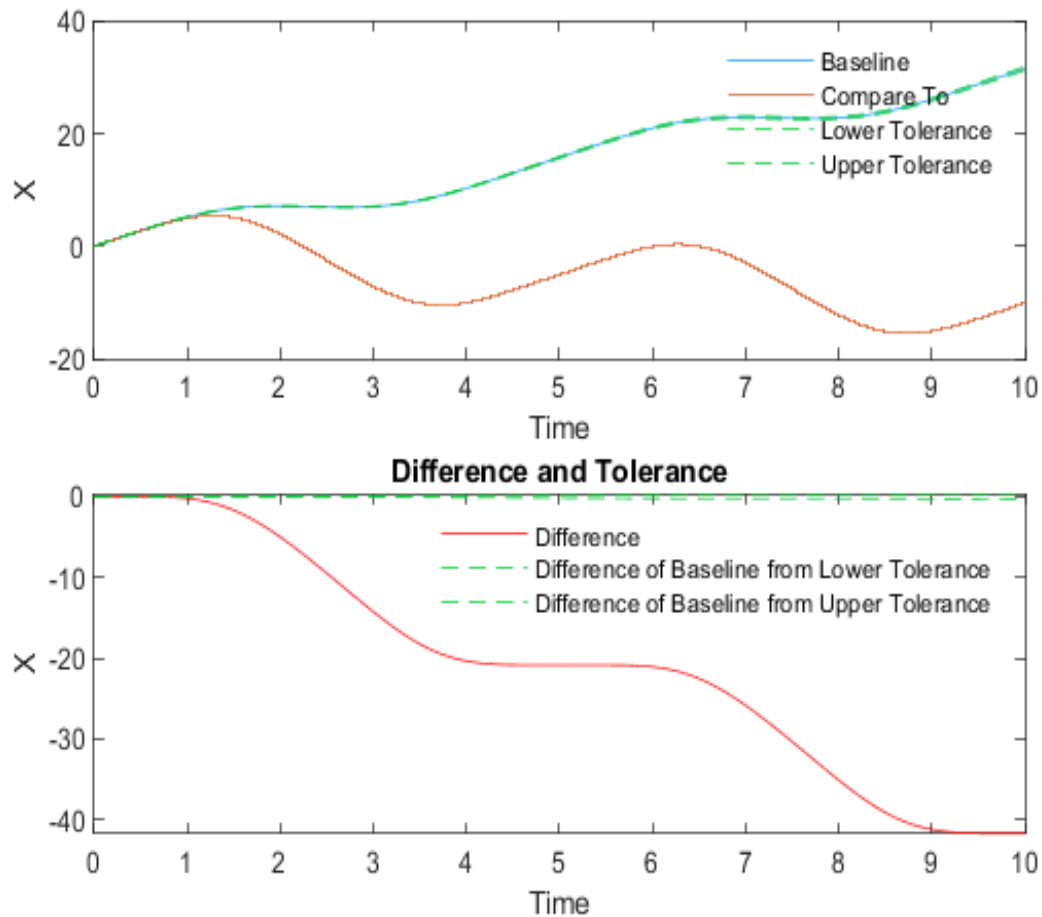


**Difference and Tolerance**



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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ Y | 0 | 0.01 | 0 | 0 | 12.9 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ yaw | 0 | 0.01 | 0 | 0 | 0.86 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

**Difference and Tolerance**

## Input Data 1

### Input Information

| | |
|---|---|
| External Input Name: | Big_sinusoidal_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Big_sinusoidal_steering.mat |

## Input Data 2

### Input Information

External Input Na    Big_sinusoidal_steering.mat
me:
External Input File: C:\Users\gianv\Documents\GitHub\Compliance_te
st\Matlab scripts\SimulinkModels\Big_sinusoidal_
steering.mat

## Simulation 1

### System Under Test Information

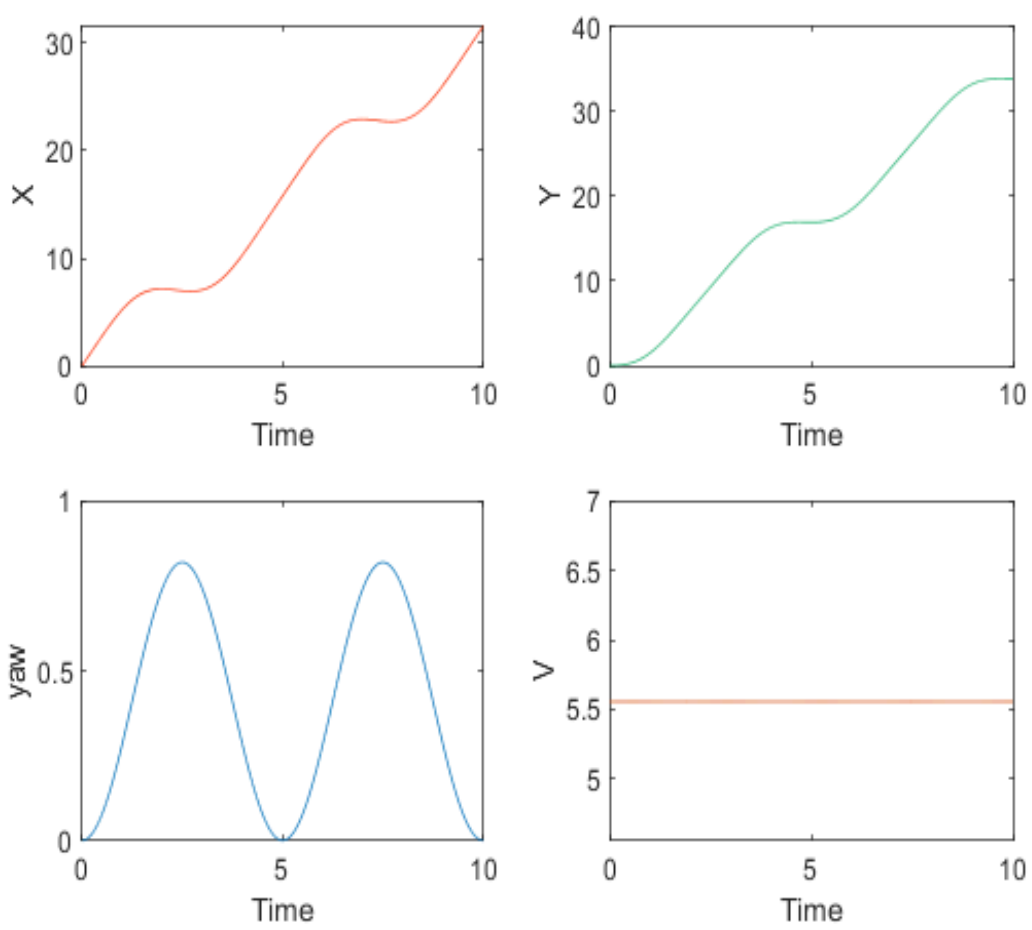| | |
|---|---|
| Model: | Model_compare_SLX |
| Harness: | Model_comparison_dynamic |
| Harness Owner: | Model_compare_SLX/Dynamic_model |
| Simulation Mode: | normal |
| Override SIL or PIL Mod e: | 0 |
| Configuration Set: | Configuration1 |
| External Input Name: | Big_sinusoidal_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_te st\Matlab scripts\SimulinkModels\Big_sinusoidal_ steering.mat |
| Start Time: | 0 |
| Stop Time: | 10 |
| Checksum: | 4152128412 1859814811 142259360 3035885348 |

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |

## Simulation 2

### System Under Test Information

| | |
|---|---|
| Model: | Model_compare_SLX |
| Harness: | Model_comparison_kinematic |

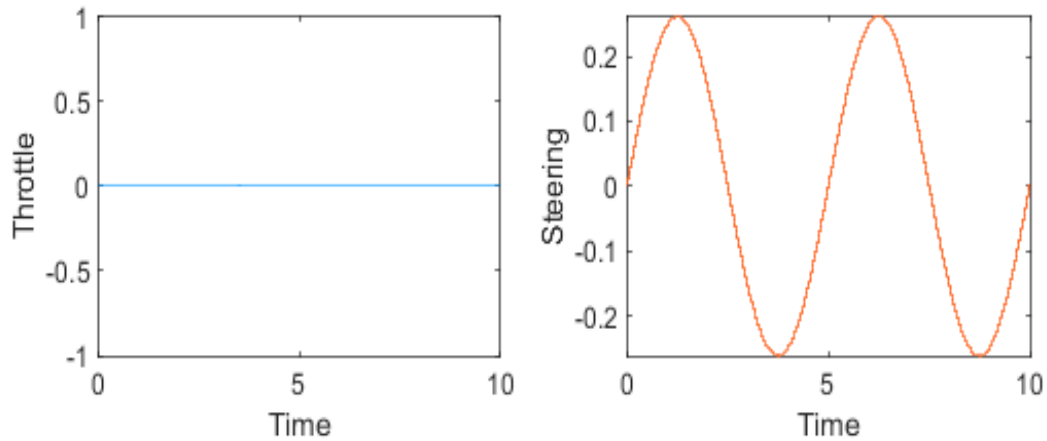| | |
|---|---|
| Harness Owner: | Model_compare_SLX/Kinematic_model |
| Simulation Mode: | normal |
| Override SIL or PIL Mode: | 0 |
| Configuration Set: | Configuration1 |
| External Input Name: | Big_sinusoidal_steering.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Big_sinusoidal_steering.mat |
| Start Time: | 0 |
| Stop Time: | 10 |
| Checksum: | 2799456273 4233424247 1463475084 743274136 |

**Simulation Output**

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |

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| Name | Data Type | Units | Sample Time | Interp | Sync |
|:---:|:---:|:---:|:---:|:---:|:---:|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |

# Combined 1

## Test Result Information

| | |
|---|---|
| Result Type: | Test Iteration Result |
| Parent: | Comparison Tests |
| Start Time: | 16-Apr-2021 16:12:06 |

| End Time: | 16-Apr-2021 16:12:11 |
| Outcome: | Failed |
| Cause of Failure: | Failed criteria: Equivalence |
| Description: | |

## Combined 1

Throttle signal with a predefined shape and constant steering angle

### Test Case Information

| Name: | Combined 1 |
| Type: | Equivalence Test |

### Iteration Settings

#### Test Overrides

| Parameter Name | Value | Simulation Index |
|---|---|---|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Combined1.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Combined1.mat | 2 |

### Equivalence Comparison

| | Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ | X | 0 | 0.01 | 0 | 0 | 126 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ | Y | 0 | 0.01 | 0 | 0 | 191 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ | yaw | 0 | 0.01 | 0 | 0 | 2.01 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ | V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union | Link |

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ X | 0 | 0.01 | 0 | 0 | 126 | double | | Continuous | double | | 0.001 | linear | union |
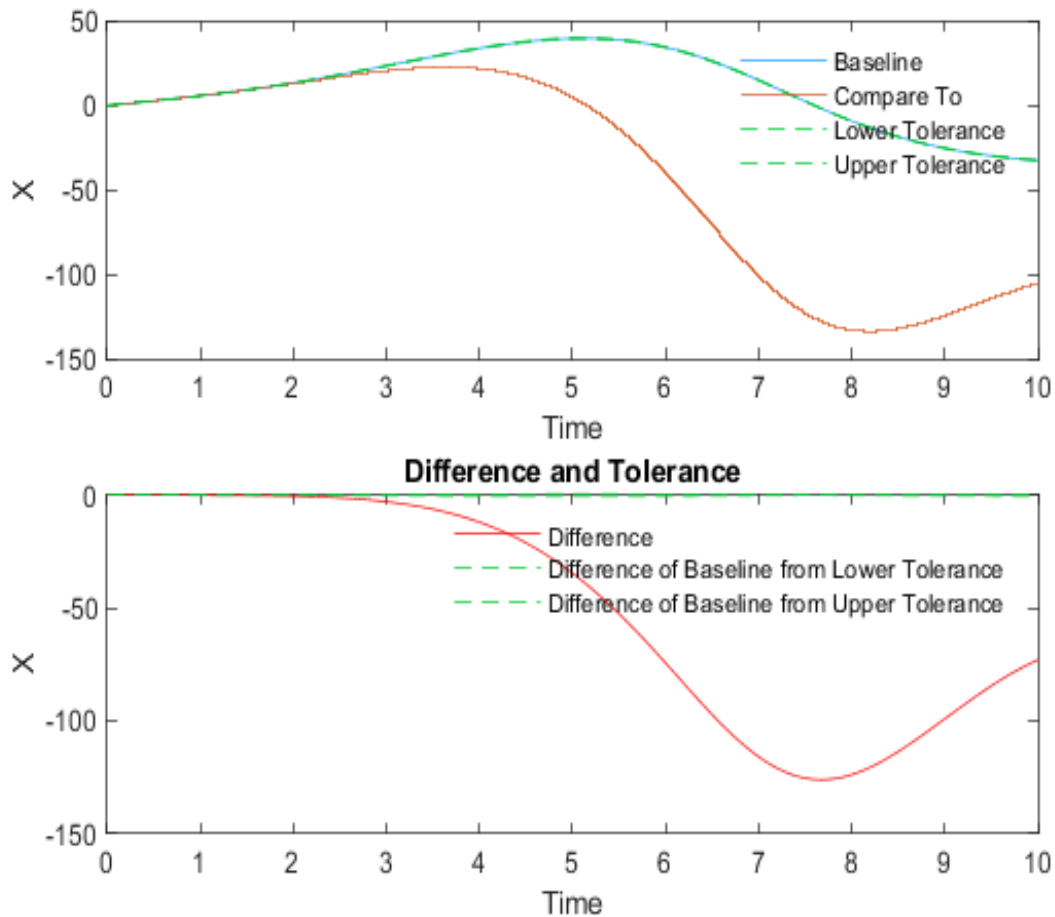




Difference and Tolerance

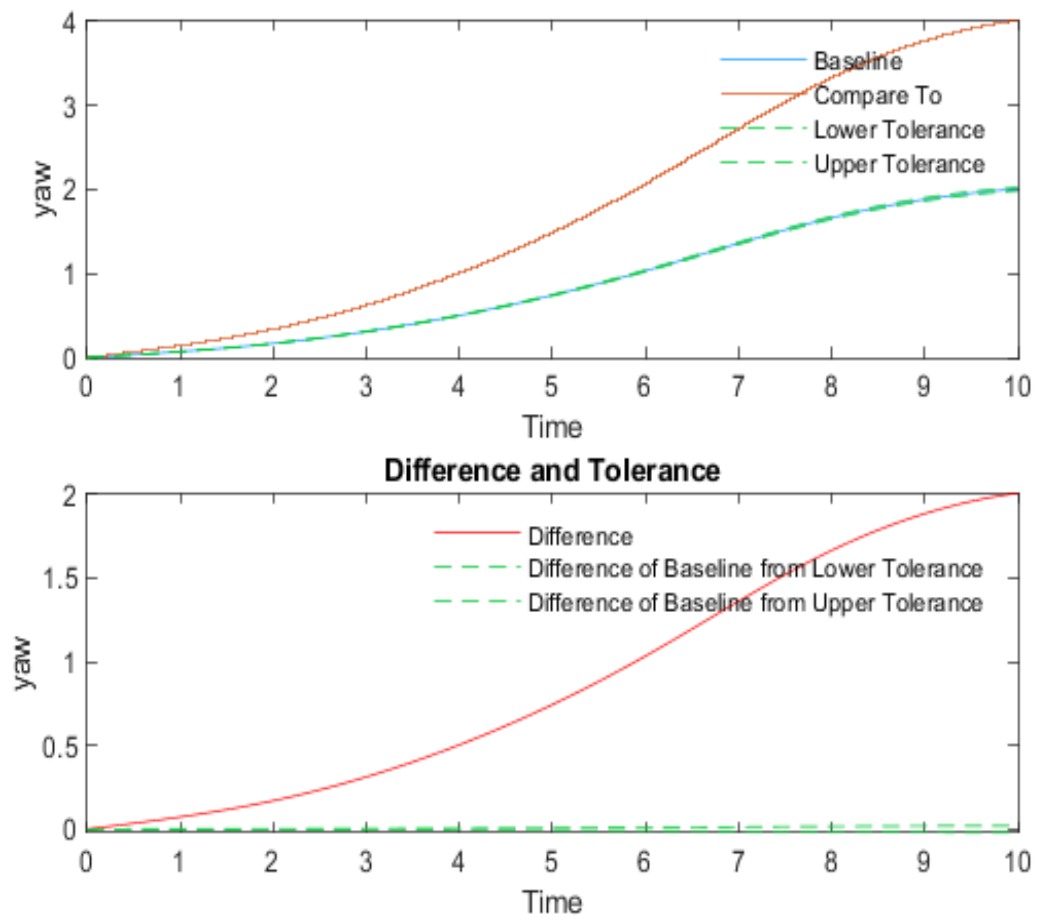[Back to Report Summary](#)[Back to Criteria Results](#)

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ Y | 0 | 0.01 | 0 | 0 | 191 | double | | Continuous | double | | 0.001 | linear | union |
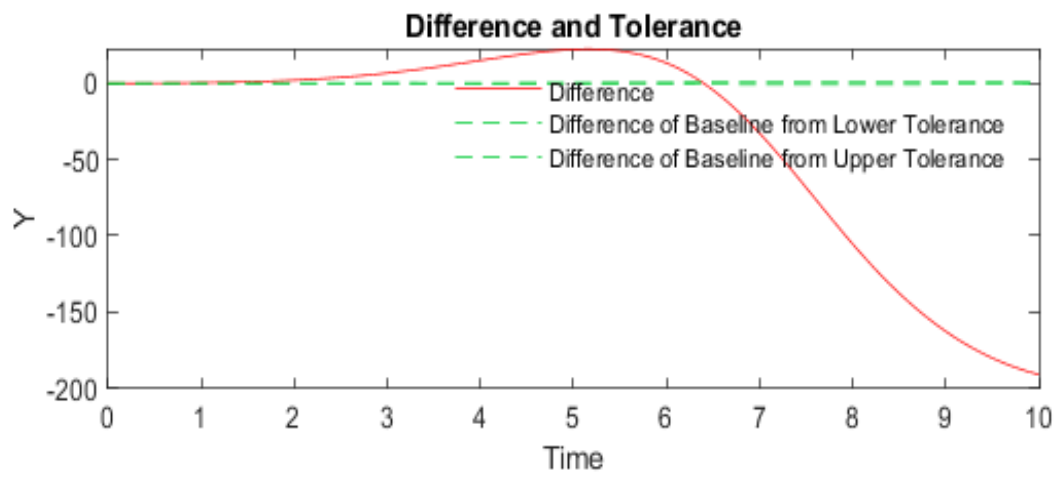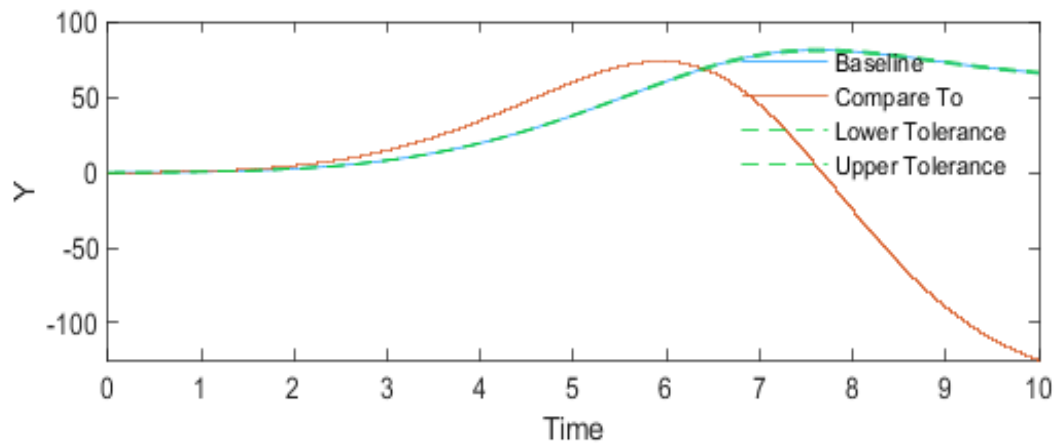
### Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ❌ yaw | 0 | 0.01 | 0 | 0 | 2.01 | double | | Continuous | double | | 0.001 | linear | union |

### Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ✅ V | 0 | 0.01 | 0 | 0 | 0 | double | | Continuous | double | | 0.001 | linear | union |

## Input Data 1

### Input Information

| | |
|---|---|
| External Input Name: | Combined1.mat |
| External Input File: | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Combined1.mat |

## Input Data 2

### Input Information

External Input Na   Combined1.mat
me:
External Input File: C:\Users\gianv\Documents\GitHub\Compliance_t
            est\Matlab scripts\SimulinkModels\Combined1.m
            at

## Simulation 1

### System Under Test Information

Model:                  Model_compare_SLX
Harness:                Model_comparison_dynamic
Harness Owner:          Model_compare_SLX/Dynamic_model
Simulation Mode:        normal
Override SIL or PIL Mod 0
e:
Configuration Set:      Configuration1
External Input Name:    Combined1.mat
External Input File:    C:\Users\gianv\Documents\GitHub\Compliance_t
                        est\Matlab scripts\SimulinkModels\Combined1.m
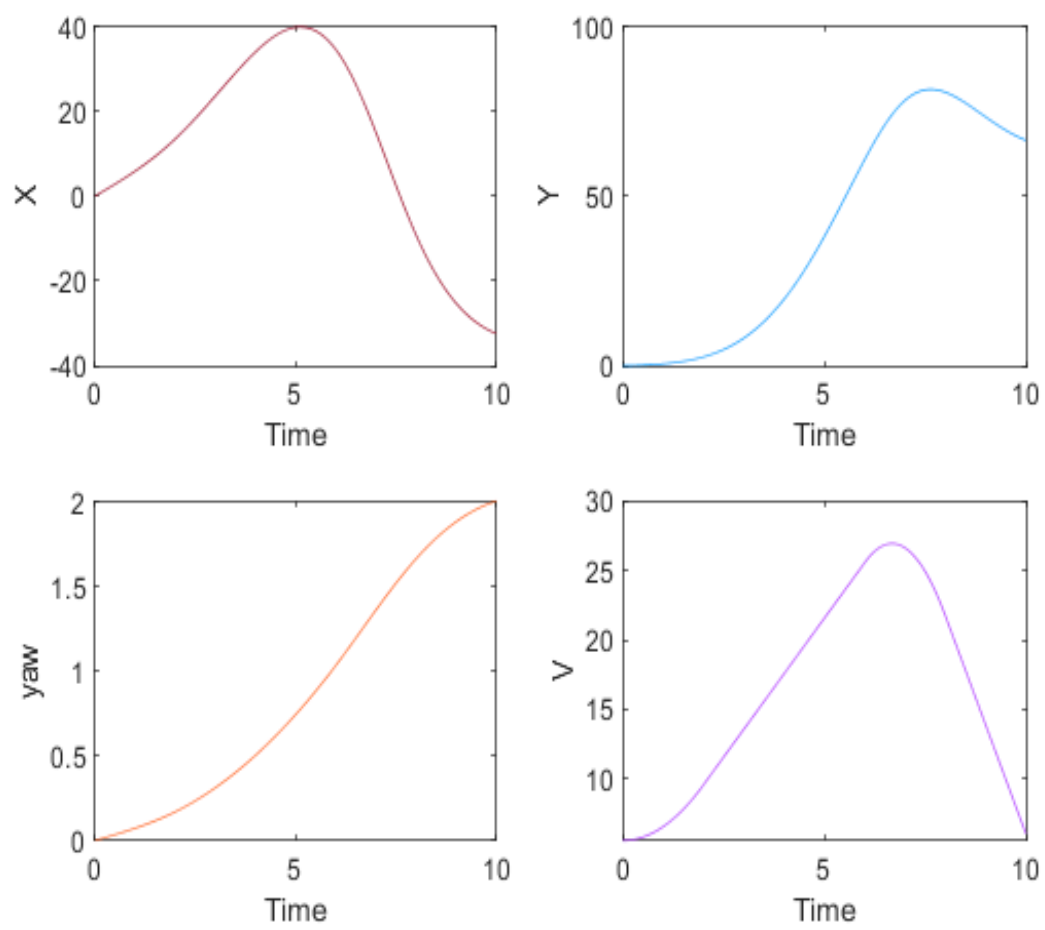                        at
Start Time:             0
Stop Time:              10
Checksum:               4152128412 1859814811 142259360 3035885348

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|------|-----------|-------|-------------|--------|------|--------------|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |

## Simulation 2

### System Under Test Information
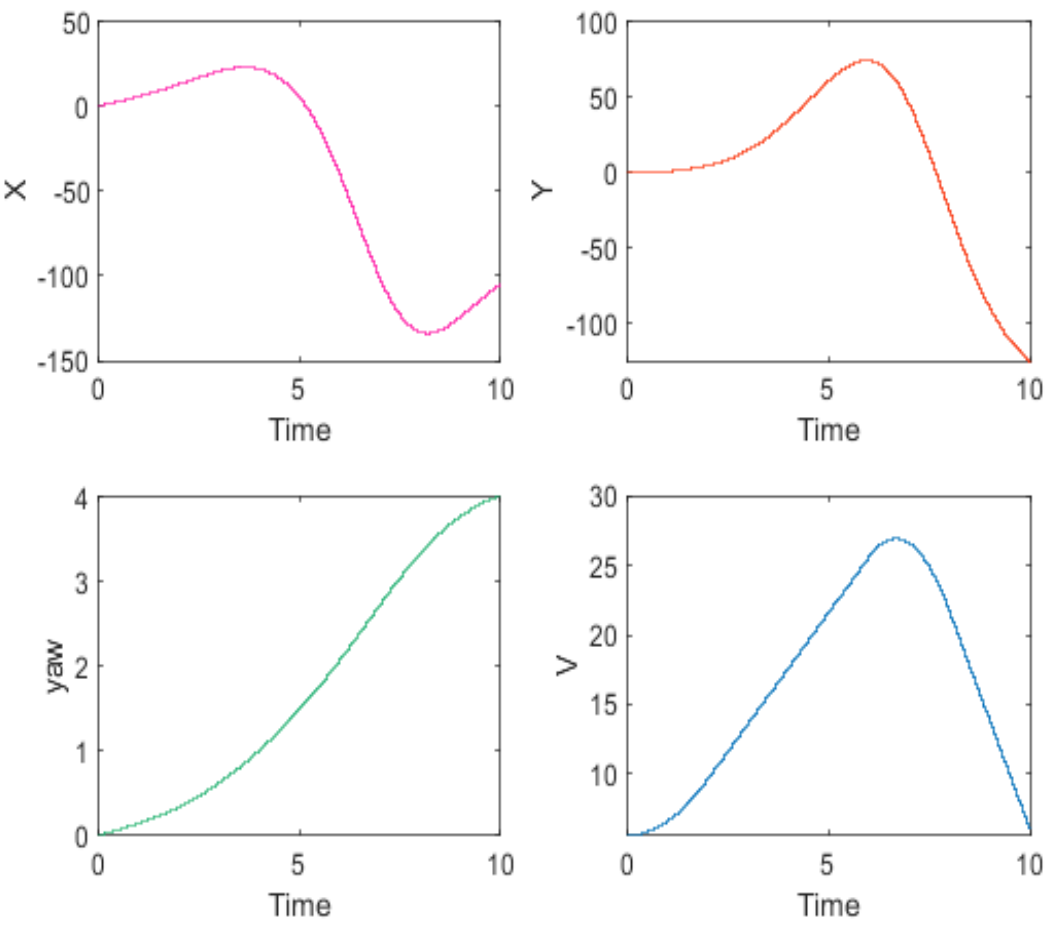
Model:                    Model_compare_SLX
Harness:                  Model_comparison_kinematic

Harness Owner:         Model_compare_SLX/Kinematic_model
Simulation Mode:       normal
Override SIL or PIL Mode: 0
Configuration Set:     Configuration1
External Input Name:   Combined1.mat
External Input File:   C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Combined1.mat
Start Time:            0
Stop Time:             10
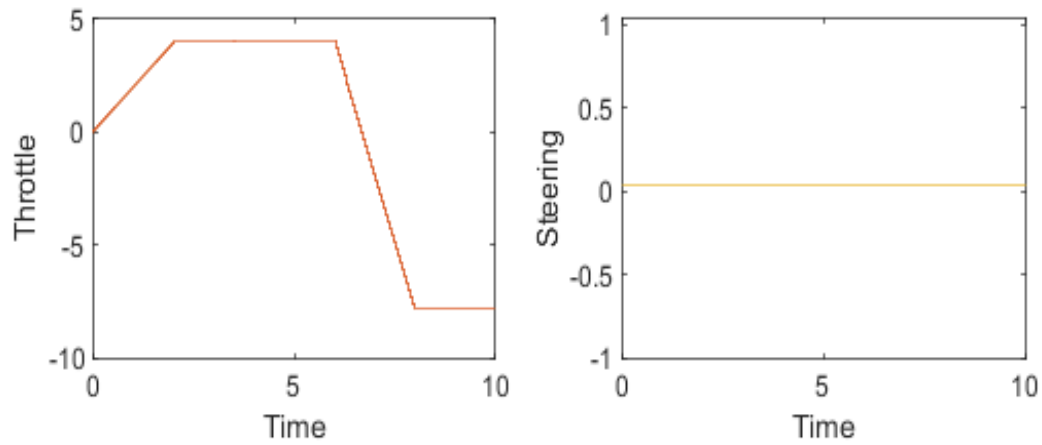Checksum:              2799456273 4233424247 1463475084 743274136

## Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|------|-----------|-------|-------------|--------|------|--------------|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |



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| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |

## Combined 2

### Test Result Information

| | |
|---|---|
| Result Type: | Test Iteration Result |
| Parent: | Comparison Tests |
| Start Time: | 16-Apr-2021 16:12:11 |

End Time:          16-Apr-2021 16:12:16
Outcome:           Failed
Cause of Failure:  Failed criteria: Equivalence
Description:

## Combined 2

Ramp steering angle signal with a constant throttle

### Test Case Information

Name:              Combined 2
Type:              Equivalence Test

### Iteration Settings

#### Test Overrides

| Parameter Name | Value | Simulation Index |
|----------------|-------|------------------|
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Combined2.mat | 1 |
| ExternalInput | C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\Simulink Models\Combined2.mat | 2 |

### Equivalence Comparison

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync | Link to Plot |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|--------------|
| ❌ X | 0 | 0.01 | 0 | 0 | 34.9 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ Y | 0 | 0.01 | 0 | 0 | 36.9 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ❌ yaw | 0 | 0.01 | 0 | 0 | 9.86 | double | | Continuous | double | | 0.001 | linear | union | Link |
| ✅ V | 0 | 0.01 | 0 | 0 | 8.88e-16 | double | | Continuous | double | | 0.001 | linear | union | Link |

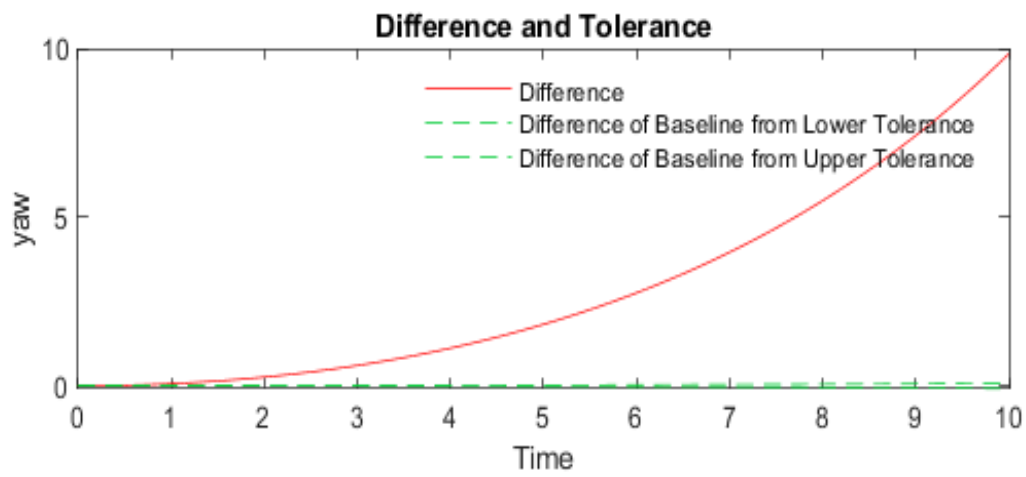| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ❌ X | 0 | 0.01 | 0 | 0 | 34.9 | double | | Continuous | double | | 0.001 | linear | union |
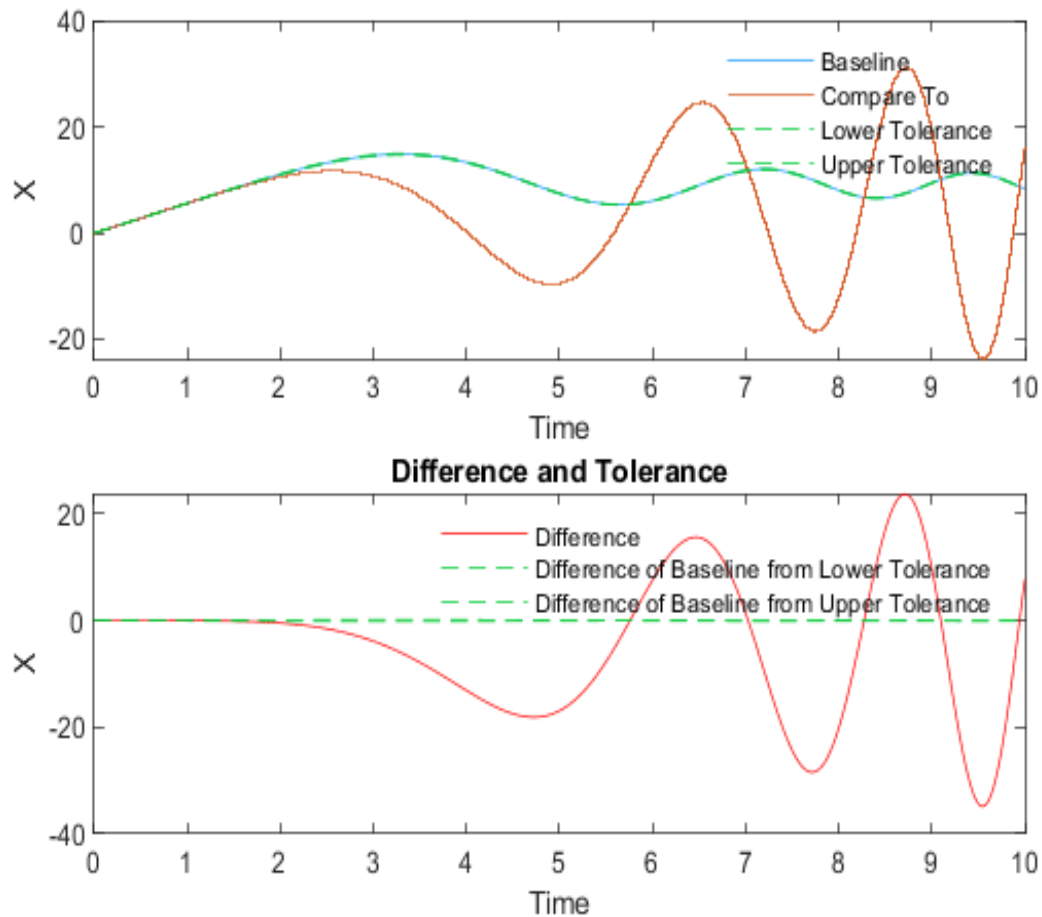




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| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ❌ Y | 0 | 0.01 | 0 | 0 | 36.9 | double | | Continuous | double | | 0.001 | linear | union |
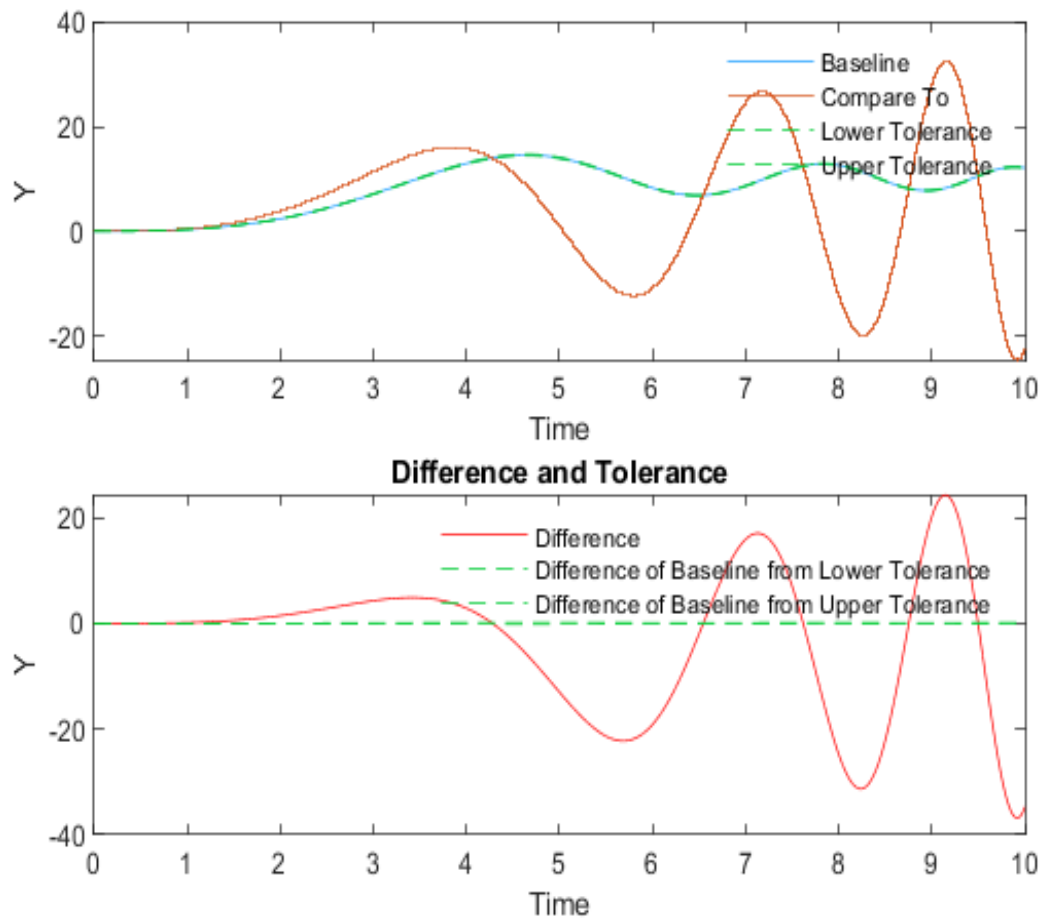
### Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|------|---------|---------|----------|---------|----------|-------------|---------|---------------|-------------|---------|---------------|--------|------|
| ❌ yaw | 0 | 0.01 | 0 | 0 | 9.86 | double | | Continuous | double | | 0.001 | linear | union |
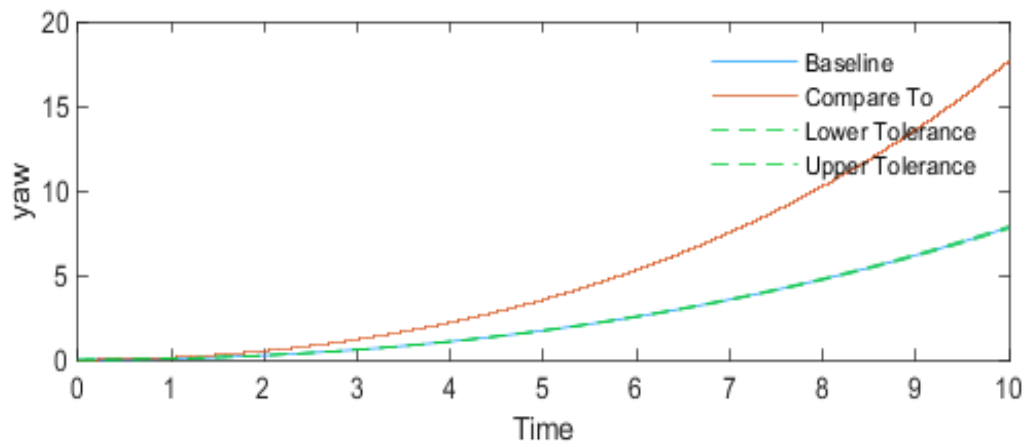
Difference and Tolerance

| Name | Abs Tol | Rel Tol | Lead Tol | Lag Tol | Max Diff | Data Type 1 | Units 1 | Sample Time 1 | Data Type 2 | Units 2 | Sample Time 2 | Interp | Sync |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| ✅ V | 0 | 0.01 | 0 | 0 | 8.88e-16 | double | | Continuous | double | | 0.001 | linear | union |
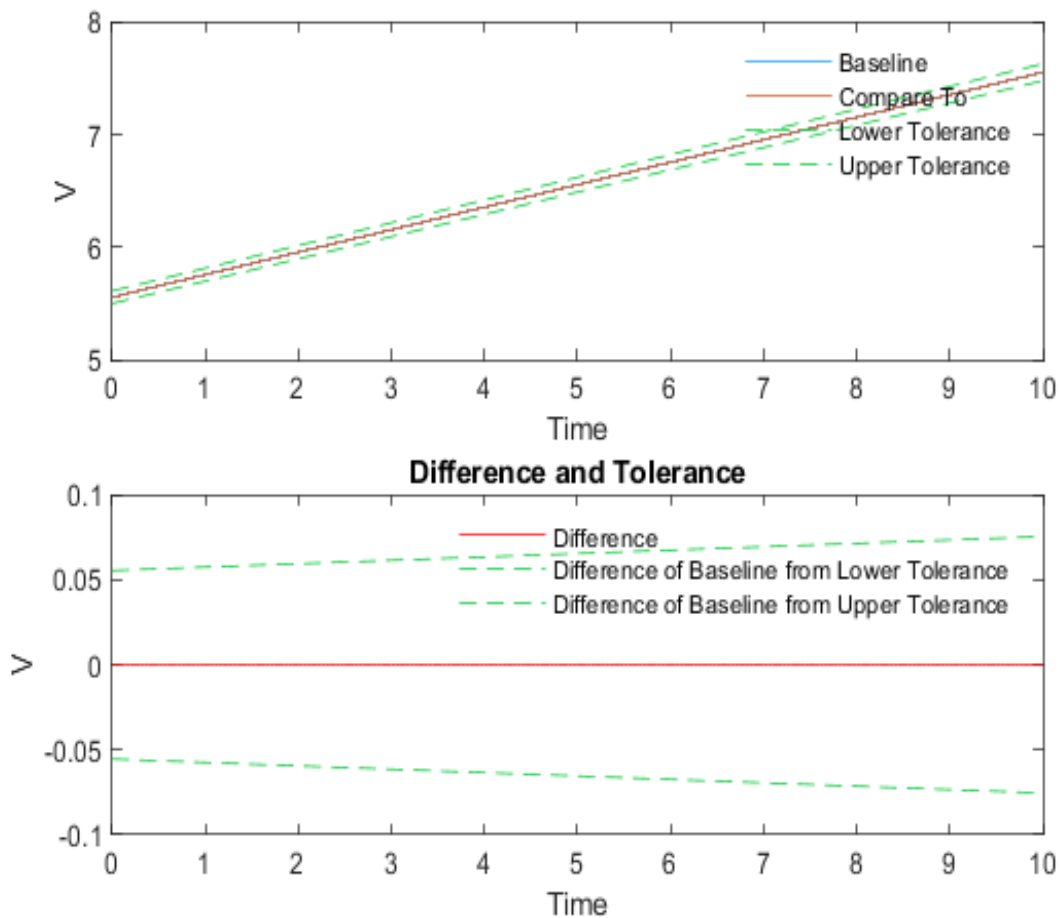
## Difference and Tolerance

## Input Data 1

### Input Information

External Input Na   Combined2.mat
me:

External Input File: C:\Users\gianv\Documents\GitHub\Compliance_t
est\Matlab scripts\SimulinkModels\Combined2.m
at

## Input Data 2

### Input Information

External Input Name: Combined2.mat

External Input File: C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Combined2.mat

## Simulation 1

### System Under Test Information

Model:                      Model_compare_SLX
Harness:                    Model_comparison_dynamic
Harness Owner:              Model_compare_SLX/Dynamic_model
Simulation Mode:            normal
Override SIL or PIL Mode:   0
Configuration Set:          Configuration1
External Input Name:        Combined2.mat
External Input File:        C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Combined2.mat
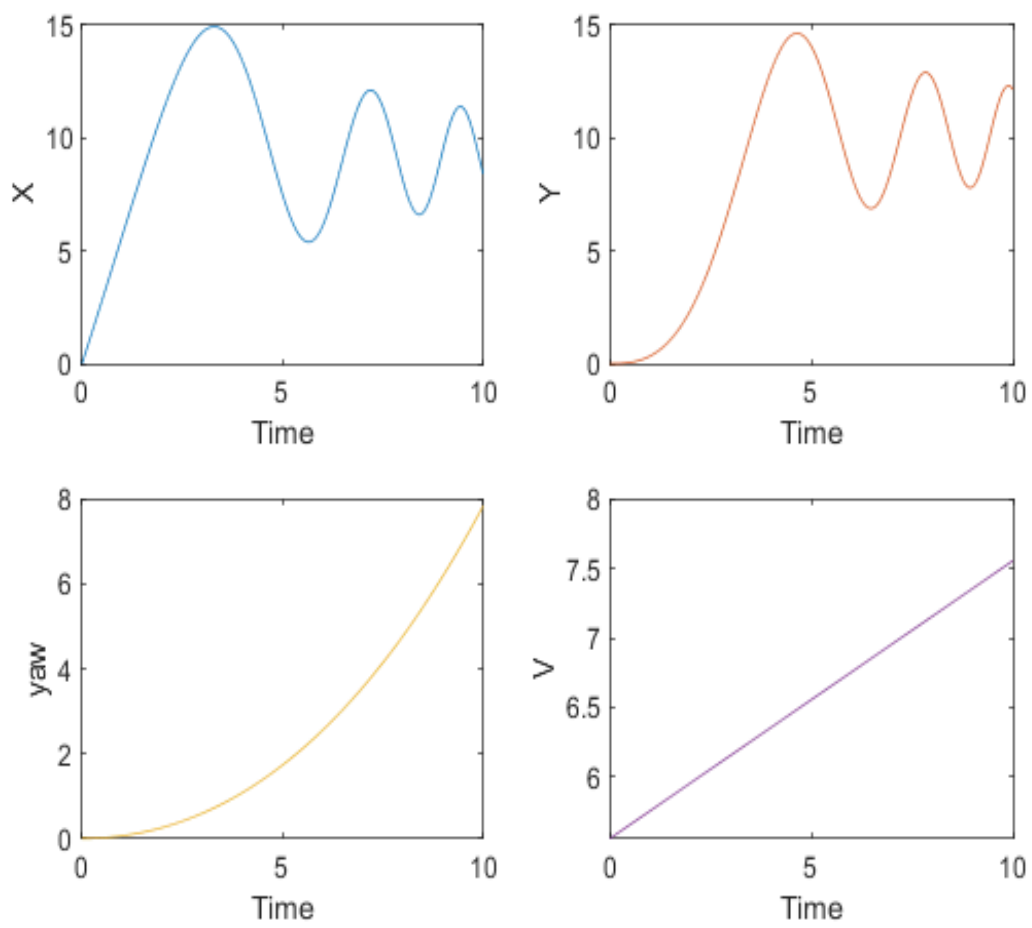Start Time:                 0
Stop Time:                  10
Checksum:                   4152128412 1859814811 142259360 3035885348

### Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|------|-----------|-------|-------------|--------|------|--------------|
| X | double | | Continuous | linear | union | Link |
| Y | double | | Continuous | linear | union | Link |
| yaw | double | | Continuous | linear | union | Link |
| V | double | | Continuous | linear | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | Continuous | linear | union |
| Y | double | | Continuous | linear | union |
| yaw | double | | Continuous | linear | union |
| V | double | | Continuous | linear | union |

## Simulation 2

### System Under Test Information
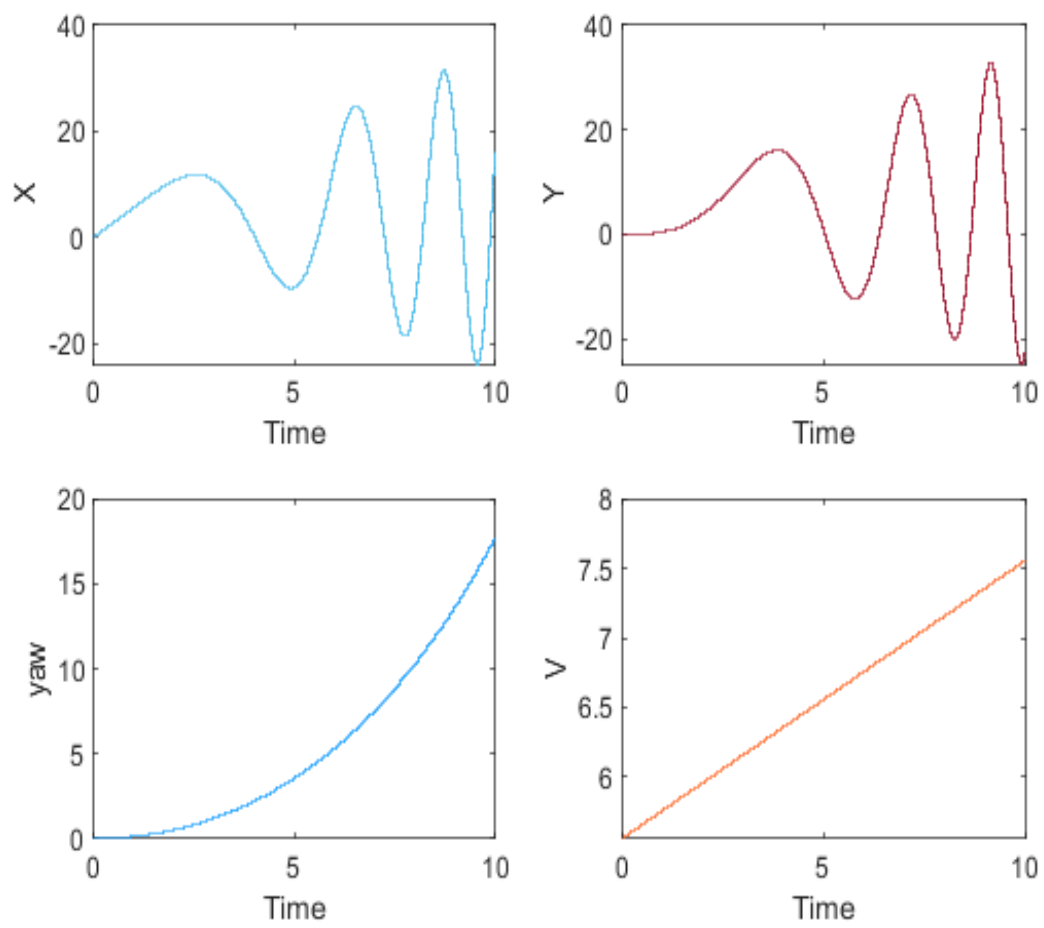
Model:                        Model_compare_SLX
Harness:                      Model_comparison_kinematic

Harness Owner:               Model_compare_SLX/Kinematic_model
Simulation Mode:         normal
Override SIL or PIL Mode: 0

Configuration Set:        Configuration1
External Input Name:    Combined2.mat
External Input File:      C:\Users\gianv\Documents\GitHub\Compliance_test\Matlab scripts\SimulinkModels\Combined2.mat
Start Time:              0
Stop Time:              10
Checksum:              2799456273 4233424247 1463475084 743274136
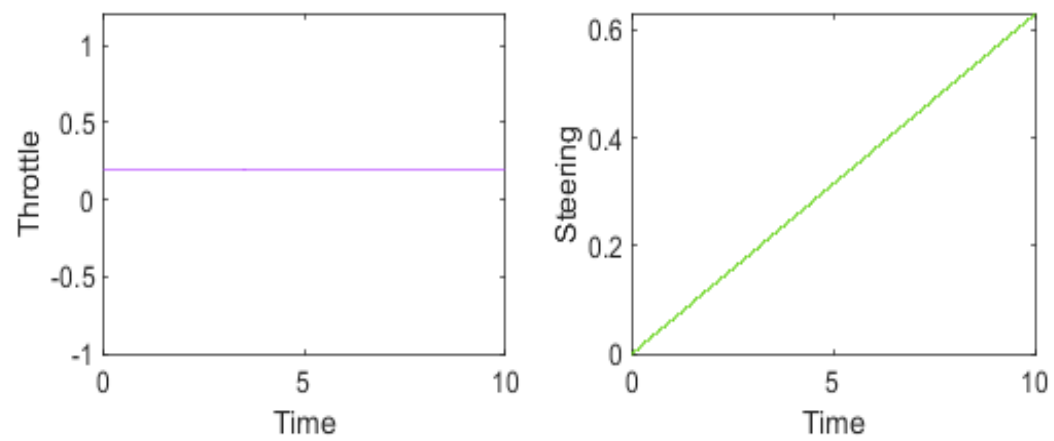
## Simulation Output

| Name | Data Type | Units | Sample Time | Interp | Sync | Link to Plot |
|---|---|---|---|---|---|---|
| X | double | | 0.001 | zoh | union | Link |
| Y | double | | 0.001 | zoh | union | Link |
| yaw | double | | 0.001 | zoh | union | Link |
| V | double | | 0.001 | zoh | union | Link |
| Throttle | double | | 0.001 | zoh | union | Link |
| Steering | double | | 0.001 | zoh | union | Link |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|------|-----------|-------|-------------|--------|------|
| X | double | | 0.001 | zoh | union |
| Y | double | | 0.001 | zoh | union |
| yaw | double | | 0.001 | zoh | union |
| V | double | | 0.001 | zoh | union |

| Name | Data Type | Units | Sample Time | Interp | Sync |
|---|---|---|---|---|---|
| Throttle | double | | 0.001 | zoh | union |
| Steering | double | | 0.001 | zoh | union |



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