

# Model Advisor Report - Eas\_Integrated.slx

Simulink version: 10.3

Model version: 1.16

System: Eas\_Integrated/Eas\_Subsystem

Current run: 24-Jul-2022 14:25:16

Treat as Referenced Model: off

## Run Summary

Pass	Fail	Warning	Not Run	Total
✓ 131	✗ 0	⚠ 13	⠼ 0	144

## Modeling Standards for MAB

### 1 Naming Conventions ✓ 20 ✗ 0 ⚠ 0 ⌂ 0

#### 1.1 General ✓ 4 ✗ 0 ⚠ 0 ⌂ 0

##### Check file names

Check the model file name to ensure that the name complies with the recommended guidelines.

###### Passed

All files have correct names.

##### Check folder names

Check the folder name to ensure that the name complies with the recommended guidelines.

###### Passed

All folders have correct names.

##### Check length of model file name

Check length of model file name

###### Passed

Model name is valid.

##### Check length of folder name at every level of model path

The model file name is: [Eas\\_Integrated/Eas\\_Subsystem](#)

###### Passed

Folder names are valid.

### 1.2 Content ✓ 16 ✗ 0 ⚠ 0 ⌂ 0

##### Check subsystem names

Identify subsystem names with incorrect characters.

## **Passed**

All the subsystem names use correct characters.

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### **✓ Check port block names**

Identify Import or Outport block names with incorrect characters.

## **Passed**

All the Import or Outport block names use correct characters.

---

### **✓ Check character usage in block names**

Identify block names with incorrect characters.

## **Passed**

All the block names use correct characters.

---

### **✓ Check length of subsystem names**

Check length of subsystem names

## **Passed**

All subsystem names are valid.

---

### **✓ Check length of block names**

Check length of block names

## **Passed**

All block names are valid.

---

### **✓ Check length of Import and Outport names**

Check length of Import and Outport names

## **Passed**

All Import and Outport names are valid.

---

### **✓ Check character usage in signal names and bus names**

Identify signal and bus names with invalid characters.

## **Passed**

No invalid characters are used in signal and bus names.

---

### **✓ Check character usage in parameter names**

Identify parameter names with invalid characters.

## **Passed**

No invalid characters are used in parameter names.

---

### **✓ Check length of signal and bus names**

Check length of signal and bus names

## **Passed**

All signal and bus names are valid.

---

### **✓ Check length of parameter names**

Check length of parameter names

## **Passed**

All parameter names are valid.

---

### **✓ Check character usage in Stateflow data names**

Identify Stateflow data names with invalid characters.

## **Passed**

No invalid characters are used in Stateflow data names.

---

### **✓ Check length of Stateflow data name**

Check if the length of Stateflow data names are within limit.

## **Passed**

All Stateflow data names are valid.

---

### **✓ Check duplication of Simulink Data names**

Simulink Data names should be unique across base workspace, model workspace and data dictionary.

## **Passed**

All Simulink Data names are unique.

---

### **✓ Check unused data in Simulink Model**

Identify unused data in model workspace and data dictionary.

## **Passed**

No unused data found in model workspace and/or data dictionary.

---

### **✓ Check for unused data in Stateflow Charts**

Checks if the model parameter 'Unused data, events, messages and functions' is not set to 'none'.

## **Passed**

All constraints on model configuration parameters have been met.

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Status	Parameter	Current Value	Recommended Values
Pass	<a href="#">Unused data, events, messages and functions (SFUnusedDataAndEventsDiag)</a>	warning	error, warning

---

### **✓ Check usage of restricted variable names**

Checks whether variable names used in MATLAB Function blocks are reserved for C/C++/MATLAB keywords

## Passed

No variable names conflict with reserved keywords

☒ 2 Simulink    ✓ 50 ✗ 0 ⚠ 13 ⏺ 0

☒ 2.1 Configuration Parameters    ✓ 4 ✗ 0 ⚠ 0 ⏺ 0

### ✓ Check Implement logic signals as Boolean data (vs. double)

Identify whether **Implement logic signals as Boolean data (vs. double)** is selected.

#### Passed

**Implement logic signals as Boolean data (vs. double)** is selected.

### ✓ Check Signed Integer Division Rounding mode

jc\_0642: Integer rounding mode setting

Identifies blocks with block parameter 'Integer Rounding Mode' set to 'Simplest' when the configuration parameter 'Signed integer division rounds to' is set to 'Undefined'.

#### Passed

Configuration parameter 'Signed integer division rounds to' is not set to 'Undefined'.

### ✓ Check diagnostic settings for incorrect calculation results

Identify data validity diagnostic settings which detect incorrect calculation results.

#### Passed

All constraints on model configuration parameters have been met.

Status	Parameter	Current Value	Recommended Values
Pass	<a href="#">Division by singular matrix (CheckMatrixSingularityMsg)</a>	error	error
Pass	<a href="#">Inf or NaN block output (SignalInfNanChecking)</a>	error	error
Pass	<a href="#">Wrap on overflow (IntegerOverflowMsg)</a>	error	error
Pass	<a href="#">Saturate on overflow (IntegerSaturationMsg)</a>	error	error

### ✓ Check model diagnostic parameters

Identify diagnostic parameters that are set to **none**.

#### Passed

All of the diagnostic parameters are set to **error** or **warning**.

☒ 2.2 Diagram Appearance    ✓ 12 ✗ 0 ⚠ 5 ⏺ 0

### ⚠ Check for Simulink diagrams using nonstandard display attributes

Identify nonstandard display attributes in Simulink diagrams.

---

### **Check format settings**

Identify incorrect model-level format options.

#### **Passed**

The format options are correct.

---

### **Check block colors**

Identify blocks using nonstandard colors.

#### **Passed**

All blocks use standard colors.

---

### **Check canvas colors**

Identify canvases that are not white.

#### **Passed**

All diagrams use a white canvas.

---

### **Check diagram zoom**

Identify diagrams that do not have zoom factor set to 100 %.

Note: Zoom factors can differ for each instance of a model diagram opened in Simulink Editor

#### **Warning**

The following diagrams do not have zoom factor set to 100 percent:

- [Eas\\_Integrated/Eas\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Regn\\_Display\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Service\\_Regeneration](#)
- [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2](#)

#### **Recommended Action**

For each listed diagram, select **Modeling > Environment > Zoom > Normal View (100%)**.

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### **Check Model font settings**

Identify blocks and charts with different font settings from input parameters.

#### **Passed**

Font settings of the blocks and charts and input parameters are same.

---

### **Check whether block names appear below blocks**

Identify blocks where the name is not displayed below the block.

#### **Passed**

All blocks have names displayed below the block.

---

### **Check the display attributes of block names**

Identify whether to display block names.

## Check for missing block names

Identify block names that are hidden but should be displayed to show a descriptive name.

### Passed

All displayed names provide descriptive information.

## Check for blocks with hidden names and obvious function

Identify block names that are displayed but can be hidden due to obvious behavior.

### Warning

The following block names can be hidden:

- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Divide](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Product](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Product1](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Product2](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2/Switch2](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/AND](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/AND2](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_Indication/Relational\\_Operator1](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_Indication/Switch](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_Indication/AND](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_Indication/Relational\\_Operator](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_Indication/Relational\\_Operator1](#)
- ..../[Scr\\_Regeneration\\_Parameter/Scr\\_temp\\_Indication/Relational\\_Operator](#)
- ..../[Scr\\_Regeneration\\_Parameter/Scr\\_temp\\_Indication/Switch](#)

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### Recommended Action

Hide the block name by selecting (**Format > Auto Name > Hide Automatic Block Name**).

---

## Check for non-descriptive displayed block names

Identify block names that are displayed but should be hidden due to a lack of a descriptive name.

### Warning

The following blocks have a name displayed, however, the name is not descriptive:

- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Constant](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Constant1](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Constant2](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Constant3](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Enable](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Gain](#)
- ..../[Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Gain1](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_Indication/Constant](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_Indication/Constant1](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_Indication/Constant2](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_Indication/Constant](#)
- ..../[Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_Indication/Constant1](#)
- ..../[Scr\\_Regeneration\\_Parameter/Scr\\_temp\\_Indication/Constant1](#)
- ..../[Scr\\_Regeneration\\_Parameter/Scr\\_temp\\_Indication/Constant2](#)

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### Recommended Action

Modify the block name to provide descriptive information, or hide the block name by selecting (**Format > Auto Name > Hide Automatic Block Name**).

---

## Check for nondefault block attributes

Identify blocks that use and fail to display nondefault values.

### Passed

Model displays all block parameter values that are not default values.

## Check Model Description

Identify layers in the model having inconsistent description format.

### Warning

Following layers do not have model descriptions:

- [Eas\\_Integrated/Eas\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem](#)
- [..../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter](#)
- [..../Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_indication](#)
- [..../Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_indication](#)
- [..../SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/Scr\\_temp\\_indication](#)

### Recommended Action

Consider adding model description for all the layers.

---

Identify layers in the model having inconsistent description format.

### Warning

Following layers do not have consistent model description format:

- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Manual\\_Regn\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Regn\\_Display\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Service\\_Regeneration](#)
- [..../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System](#)
- [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2](#)

### Recommended Action

Consider having a consistent format for the model description

Example: If description tags are 'Input:', 'Description:', and 'Output:' then format should be as following:

Input: add input information here

Description: add model description here

Output: add output information here

---

## Check if blocks are shaded in the model

Check if blocks are shaded in the model

### Passed

Blocks in the model are not shaded.

---

## Check for unconnected signal lines and blocks

Identify unconnected signal lines, subsystems and basic blocks.

### Passed

All signal lines and blocks in the model are connected.

---

## Check signal line connections

### Check signal overlaps

### Warning

The following signals overlap with other signals in the diagram:

- [Eas\\_Integrated/Eas\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem](#)

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#### Recommended Action

Reposition the above listed signals to avoid signal overlaps.

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#### Check signal flow in model

Identify subsystems which do not have a signal flow from left to right.

##### Passed

No subsystems found with inappropriate signal flow.

---

#### Check usage of tunable parameters in blocks

Identify tunable parameters used to specify expressions, data type conversions, or indexing operations.

##### Passed

Tunable parameters are not used in the model.

---

#### Check connections between structural subsystems

Identify connections between structural subsystems.

##### Passed

All connections to structural subsystems adhere to the guideline.

---

#### Check for consistency in model element names

Check if model elements connected to a signal are following consistent naming.

##### Passed

Model elements connected to a signal are following consistent names.

---

#### Check trigger signal names

Identify trigger blocks where the origin of the trigger signal and the destination have dissimilar names.

##### Passed

No violation of the guideline for use of trigger signal names.

---

#### Check for mixing basic blocks and subsystems

Identify levels in the model that include basic blocks and subsystems. Each level of a model must be designed with blocks of the same level (for example, only subsystems or only basic blocks).

##### Warning

The following level(s) in the model include basic blocks and subsystems:

System	Block path
<a href="#">..../Scr_Regeneration_Parameter</a>	<a href="#">..../Scr_Regeneration_Parameter/AND</a>
<a href="#">..../Scr_Regeneration_Parameter</a>	<a href="#">..../Scr_Regeneration_Parameter/AND2</a>

#### Recommended Action

If possible, replace blocks at the identified level of the model hierarchy with basic blocks. Move nonvirtual blocks into the identified subsystem.

### Check for avoiding algebraic loops between subsystems

jc\_0653: Delay block layout in feedback loops

Identify delay blocks usage in feedback loops.

#### Passed

No delay blocks in feedback loops violate the guidelines for avoiding algebraic loops between subsystems.

### Check for prohibited sink blocks

Identify sink blocks that must be removed prior to code generation.

#### Passed

There are no prohibited blocks in the subsystem.

 **2.3 Signal**     2  0  4 

### Check usage of vector and bus signals

#### Check bus signals treated as vectors

##### Warning

The following configuration parameters are set inappropriately:

Parameter	Current Value	Recommended Values
<a href="#">Bus signal treated as vector (StrictBusMsg)</a>	ErrorLevel1	ErrorOnBusTreatedAsVector

#### Recommended Action

Consider setting the configuration parameters to the recommended value.

### Check definition of signal labels

Identify blocks that require labeled signals. A subset of source and destination blocks require labeled signals.

#### Check source block labels

##### Warning

The following signals have no label:

- [Eas\\_Integrated/Eas\\_Subsystem/](#)
- [Eas\\_Integrated/Eas\\_Subsystem/](#)
- [Eas\\_Integrated/Eas\\_Subsystem/](#)

- [Eas\\_Integrated/Eas\\_Subsystem/](#)
  - [Eas\\_Integrated/Eas\\_Subsystem/](#)
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  - [Eas\\_Integrated/Eas\\_Subsystem/](#)
  - [Eas\\_Integrated/Eas\\_Subsystem/](#)
  - [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/](#)
  - [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/](#)

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## **Recommended Action**

Add a new or propagated label to the signal line.

Identify blocks that require labeled signals. A subset of source and destination blocks require labeled signals.

## **Check destination block labels**

## Warning

The following signals have no label:

- [Eas Integrated/Eas Subsystem/Adblue Injection Time/](#)
  - [Eas Integrated/Eas Subsystem/Adblue level display/](#)

## **Recommended Action**

Add a new or propagated label to the signal line.

## Check Signal name propagation

Identify incorrect signal propagation.

**Passed**

All subsystems and connection blocks display propagated signals.

**⚠ Check position of signal labels**

## **Check overlap of signal labels**

## Warning

**Warning** The following signals have labels which overlap other objects:

- ## • Eas Integrated/Eas Subsystem/SCR Regeneration Subsystem/Adblue Injection System

## **Recommended Action**

Consider placing the signal label so that it is readable.

## Check signal line labels

Identify blocks that require labeled signals. A subset of source and destination blocks require labeled signals.

## Check source block labels

## Warning

The following signals have no label:

- [Eas\\_Integrated/Eas\\_Subsystem/](#)
- [Eas\\_Integrated/Eas\\_Subsystem/](#)
- [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/](#)
- [Eas\\_Integrated/Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/](#)

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#### Recommended Action

Add a new or propagated label to the signal line.

---

Identify blocks that require labeled signals. A subset of source and destination blocks require labeled signals.

#### Check destination block labels

##### Warning

The following signals have no label:

- [Eas\\_Integrated/Eas\\_Subsystem/Adblue\\_Injection\\_Time/](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Adblue\\_Level\\_Display/](#)

#### Recommended Action

Add a new or propagated label to the signal line.

---

### Check for propagated signal labels

Identify propagated labels on signal lines.

#### Passed

All inputs and outputs to the subsystems and blocks have labels and display propagated signals.

## 2.4 Block Consistency    6 0 0

### Check Indexing Mode

Identify blocks and charts with inconsistent Indexing mode.

#### Passed

No inconsistent Indexing mode used in the model.

---

### Check block orientation

Identify blocks which are rotated or reversed.

#### Passed

No blocks found with rotated or reversed orientation

---

### Check if tunable block parameters are defined as named constants

Check if tunable block parameters are defined as named constants

#### Passed

All tunable block parameters are defined as named constants

---

### Check for sample time setting

Check if sample time property of a block is set to -1 (inherited).

## Passed

All permitted blocks have sample time set to -1 (inherited).

---

### ✓ Check usage of fixed-point data type with non-zero bias

jc\_0643: Fixed-point setting

Identify blocks with a fixed-point data type whose bias is not zero.

## Passed

No blocks found with the Data Type Assistant mode set to "Fixed point" and a bias value other than zero

---

### ✓ Check type setting by data objects

jc\_0644: Type setting

Identify blocks that violate signal data type setting if signal objects are used.

## Passed

No blocks found that violate signal data type setting if signal objects are used.

## ☒ 2.5 Conditional Subsystem relations

✓4 ✘0 ⚠1 📄0

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### ⚠ Check position of conditional blocks and iterator blocks

Block layout in conditional subsystem

## Warning

The following conditional blocks are not located at the top of the subsystem diagram:

- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Manual\\_Regn\\_Subsystem/Enable](#)

## Recommended Action

Reposition the conditional blocks listed above to the top of the subsystem diagram.

---

### ✓ Check undefined initial output for conditional subsystems

Identify undefined initial output for Outports/Merge blocks in conditional subsystems

## Passed

The initial output setting for all Conditional Subsystems are valid.

---

### ✓ Check usage of Merge block

jc\_0659: Usage restrictions of signal lines input to Merge blocks

There must not be any block between a Conditional Subsystem block and a Merge block.

## Passed

No Merge block found.

---

### ✓ Check logical expressions in If blocks

Checks If blocks for complex usage of primary expressions within a logical expression

## Passed

Logical expressions inside If blocks are simple

---

## ✓ Check default/else case in Switch Case blocks and If blocks

Check if default/else case in Switch Case blocks and If blocks are set to 'on'

### Passed

Conditional Control blocks are valid.

---

## ☒ 2.6 Operation Blocks    ✓13 ✘0 ⚠2 📄0

## ⚠ Check fundamental logical and numerical operations

Check input data types of blocks meant for numerical operations

### Warning

The following numerical operation blocks have boolean data type as input:

- [..../Eas\\_Subsystem/DPF\\_Subsystem/Manual\\_Regn\\_Subsystem/Relational\\_Operator](#)
- [..../Eas\\_Subsystem/DPF\\_Subsystem/Manual\\_Regn\\_Subsystem/Relational\\_Operator1](#)
- [..../Eas\\_Subsystem/DPF\\_Subsystem/Manual\\_Regn\\_Subsystem/Relational\\_Operator2](#)
- [..../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2/Relational\\_Operator1](#)

### Recommended Action

Consider having non-boolean inputs for the numerical operation blocks.

---

## ✓ Check usage of Sum blocks

Identify Sum block usage that can affect readability.

### Passed

No violations of the guideline found with the usage of the Sum block.

---

## ✓ Check operator order of Product blocks

Operator order for Product blocks.

### Passed

All Product blocks have valid operator order.

---

## ✓ Check signs of input signals in product blocks

jc\_0611: Input sign for multiplication and division blocks

Identify blocks that perform division whose inputs have different sign bit.

### Passed

No product block with division of different sign bits found.

---

## ✓ Check for parentheses in Fcn block expressions

Identify order of parentheses in Fcn block expressions.

### Passed

All Fcn blocks use parentheses to mark operator precedence.

---

## ✓ Check icon shape of Logical Operator blocks

Icon shape of Logical Operator blocks.

**Passed**

All Logical Operator blocks have consistent icon shape.

---

 **Check usage of Relational Operator blocks**

Identify Relational Operator blocks that connect to constants with the first (upper) input value.

**Passed**

All Relational Operator blocks with constant input values are configured correct.

---

 **Check comparison of floating point types in Simulink**

jc\_0800: Comparing floating-point types in Simulink

Equivalence comparison should not be used for floating point numbers.

**Passed**

No Equivalence comparison done on floating point numbers.

---

 **Check usage of Lookup Tables**

Check usage of recommended settings for Lookup Table blocks to prevent unexpected results.

**Passed**

All Lookup Table blocks have recommended settings.

---

 **Check usage of Memory and Unit Delay blocks**

**Identify Memory blocks not using a continuous sample time**

**Passed**

No Memory blocks found with inappropriate sample time

---

**Identify Unit Delay blocks with non-discrete sample time**

**Passed**

No Unit Delay blocks found with non-discrete sample time

---

 **Check for cascaded Unit Delay blocks**

**Identify cascaded and tapped pattern of Unit Delay blocks.**

**Passed**

No cascaded Unit Delay blocks found that can be changed to Tapped Delay/Delay block.

---

 **Check usage of Discrete-Time Integrator block**

Check usage of recommended settings for Discrete-Time Integrator blocks to prevent unexpected results.

**Passed**

All Discrete-Time Integrator blocks have recommended settings.

---

 **Check usage of the Saturation blocks**

## jc\_0628: Usage of Saturation blocks

Identify the Saturation and Saturation Dynamic blocks that perform type casting.

### Passed

No Saturation and/or Saturation Dynamic blocks perform type casting

---

### ⚠ Check output data type of operation blocks

jc\_0651: Implementing a type conversion

Identify operation blocks that specify output data type.

#### Warning

Following operation blocks explicitly specify output data type:

- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/AND](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/AND1](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/AND2](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/AND3](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/Relational\\_Operator](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/Relational\\_Operator1](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/Relational\\_Operator2](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/Relational\\_Operator3](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Auto\\_Regeneration/Relational\\_Operator4](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Manual\\_Regn\\_Subsystem/AND](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/AND](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/AND1](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/AND2](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/AND3](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator1](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator2](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator3](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator4](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator5](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator6](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Post\\_Regn\\_Subsystem/Relational\\_Operator7](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Regn\\_Display\\_Subsystem/AND](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Regn\\_Display\\_Subsystem/Relational\\_Operator](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Regn\\_Display\\_Subsystem/Relational\\_Operator1](#)
- [.../Eas\\_Subsystem/DPF\\_Subsystem/Service\\_Regeneration/Relational\\_Operator3](#)
- [.../SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Adblue\\_Injection\\_Time](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Gain](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Injection\\_System/Nox\\_Sensor](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2/Adblue\\_Level\\_Indn](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2/Adblue\\_level\\_display](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2/Enumerated\\_Constant](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2/Enumerated\\_Constant1](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_Level2/Relational\\_Operator1](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/AND](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/AND2](#)
- [.../SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/Adblue\\_Level](#)
- [.../SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_Indn](#)
- [.../Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_indication/Adblue\\_Level](#)
- [.../Scr\\_Regeneration\\_Parameter/Adblue\\_Level\\_indication/Relational\\_Operator1](#)
- [.../Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_indication/AND](#)
- [.../Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_indication/Adblue\\_Quality](#)
- [.../Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_indication/Relational\\_Operator](#)
- [.../Scr\\_Regeneration\\_Parameter/Adblue\\_Quality\\_indication/Relational\\_Operator1](#)
- [.../Scr\\_Regeneration\\_Parameter/Scr\\_Regeneration\\_Start](#)
- [.../SCR\\_Regeneration\\_Subsystem/Scr\\_Regeneration\\_Parameter/Scr\\_Temp\\_Sensor](#)
- [.../Scr\\_Regeneration\\_Parameter/Scr\\_temp\\_indication/Relational\\_Operator](#)

- [..../Scr\\_Regeneration\\_Parameter/Scr\\_temp\\_indication/Scr\\_Temp\\_Sensor](#)

^ Less

#### Recommended Action

Instead of explicitly specifying output data type on operation blocks, use 'Data Type Conversion' block when changing the data type of the block output signal.

### ✓ Check for division by zero in Simulink

Identify division operations in Simulink resulting in divide-by-zero error.

#### Passed

No division operations found resulting in divide-by-zero error.

## ✗ 2.7 Other blocks

✓ 9 ✘ 0 ⚠ 1 ⌂ 0

### ⚠ Check position of Import and Outport blocks

#### Check positions of Import blocks

##### Warning

The following Import blocks are not placed to the extreme left side of the diagram:

- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Break\\_Pedal](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Accelerator\\_Pedal](#)
- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Clutch\\_Pedal](#)

#### Recommended Action

Move the Import blocks identified to the left of all other blocks in the diagram.

It is acceptable to move the Import block to the right only to prevent signal crossings.

#### Check positions of Outport blocks

##### Warning

The following Outport blocks are not placed to the extreme right side of the diagram:

- [Eas\\_Integrated/Eas\\_Subsystem/DPF\\_Subsystem/Manual\\_Regeneration\\_Start](#)
- [.../Eas\\_Subsystem/SCR\\_Regeneration\\_Subsystem/Adblue\\_level\\_display](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Auto\\_Regeneration\\_ON](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Press\\_Regeneration\\_Button](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Manual\\_Regeneration\\_Start](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Post\\_Injector2](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Post\\_Injector1](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Post\\_Injector4](#)
- [Eas\\_Integrated/Eas\\_Subsystem/Adblue\\_Injection\\_Time](#)

#### Recommended Action

Move the Outport blocks identified to the right of all other blocks in the diagram.

It is acceptable to move the Outport block to the left only to prevent signal crossings.

### ✓ Check display for port blocks

Identify Import and Outport blocks that do not specify Port number for the **Icon display** block parameter.

#### Passed

All port blocks display the port number.

### ✓ Check scope of From and Goto blocks

Identify incorrect scoping of From and Goto blocks. For signal flows, From and Goto blocks must use local scope. Control flow can use global scope.

**Passed**

All From and Goto blocks are used correctly.

---

**Check for usage of Data Store Memory blocks**

Identify the usage of Data Store Memory blocks.

**Passed**

Usage of Data Store Memory blocks is correct.

---

**Check usage of Switch blocks**

Identify Switch blocks that do not use Boolean inputs for the switch condition (input 2), and do not use  $u2 \approx 0$  for the **Criteria for passing first input** block parameter.

---

**Check Switch block parameters**

Identify Switch blocks with the parameter **Criteria for passing first input** not set to  $u2 \approx 0$ .

**Passed**

The block parameter **Criteria for passing first input** is correctly configured.

---

**Check for Boolean switch condition**

Identify blocks that do not use Boolean signal switch conditions (input 2).

**Passed**

The switch condition is a Boolean signal.

---

**Check input and output datatype for Switch blocks**

Identify Switch blocks with mismatched input and output data types.

**Passed**

No Switch blocks found with mismatched input and output data types

---

**Check settings for data ports in Multiport Switch blocks**

Identify Multiport Switch blocks that violate data port settings.

**Passed**

No Multiport Switch blocks found with inappropriate data port settings.

---

**Check for missing ports in Variant Subsystems**

Check for number of inputs/outputs to a Variant Subsystem.

**Passed**

No Variant Subsystems found having different number of inputs/outputs in the Variant Subsystem choices.

---

**Check use of default variants**

na\_0036: Default variant

Identify variant subsystems that do not use default variants.

**Passed**

All variant subsystems in the model use default variants

---

**Check use of single variable variant conditionals**

Identify variant subsystems which use multi-variable compound conditions.

**Passed**

No variant subsystems with multiple variable compound conditions found

**3 Stateflow**    52 0 0 0

**3.1 Block/Data/Events**    7 0 0 0

---

**Check for Strong Data Typing with Simulink I/O**

Check whether labeled input and output signals are strongly typed.

**Passed**

No Stateflow charts have **Use Strong Data Typing with Simulink I/O** cleared.

---

**Check for names of Stateflow ports and associated signals**

Identify mismatches between names of Stateflow ports and the associated signals.

**Passed**

No Stateflow charts were found.

---

**Check execution timing for default transition path**

'Execute (enter) Chart At Initialization' should be set to OFF.

**Passed**

All Stateflow Charts pass the check.

---

**Check definition of Stateflow data**

Identify the Scope value set on Stateflow data defined at machine level.

**Passed**

All Stateflow data at machine level has been defined as per guideline.

---

**Check usable number for first index**

Identify usage of first index of Stateflow data.

**Passed**

All Stateflow data first index values are uniform.

---

**Check scope of data in parallel states**

jc\_0722: Local data definition in parallel states

The scope of local variables should be restricted to one parallel state unless it is being used by other parallel states.

#### Passed

No Stateflow States were found.

### ✓ Check definition of Stateflow events

Stateflow events should be defined at the smallest possible scope of usage.

#### Passed

All Stateflow events are defined at their smallest scope.

### ☒ 3.2 Diagram    14 0 0 0

### ✓ Check for unconnected objects in Stateflow Charts

Identify dangling transitions and unconnected Stateflow States and Junctions in Stateflow Charts.

#### Passed

No unconnected transitions, states or junctions found in Stateflow Charts.

### ✓ Check for exclusive states in state machines

Identify states which are the only sub-state within a state with OR(exclusive) type decomposition.

#### Passed

All states with OR(exclusive) type decomposition have more than one sub-state.

### ✓ Check usage of parallel states

Substates of parallel states should not be parallel states.

#### Passed

All Stateflow Charts pass the check.

### ✓ Check Stateflow transition appearance

Identify Stateflow transitions visually overlapping other Stateflow objects.

#### Passed

No transition violates the guidelines for Stateflow transition appearance.

### ✓ Check default transition placement in Stateflow charts

jc\_0531: Default transition

Identify all groupings of states that do not have a default transition or do not have the default state as the top-most state.

#### Passed

No Stateflow transitions and states found that violate the guidelines for default transition placement in Stateflow charts.

## Check usage of transitions to external states

Identify transitions ending on external child states.

**Passed**

No direct transitions found from external state to child state.

---

## Check for unexpected backtracking in state transitions

Identify configuration parameter settings which identify unexpected backtracking in state transitions.

**Passed**

All constraints on model configuration parameters have been met.

Status	Parameter	Current Value	Recommended Values
Pass	<a href="#">Unexpected backtracking (SFUnexpectedBacktrackingDiag)</a>	error	error

---

## Check usage of internal transition

Internal transition lines should start from the left edge of the state.

**Passed**

No Stateflow transitions found that violate the guidelines for starting point of internal transition in Stateflow.

---

## Check usage of internal transitions in Stateflow states

Identify Stateflow states using multiple internal transitions.

**Passed**

No Stateflow states found with multiple internal transitions

---

## Check prohibited combination of state action and flow chart

State actions and flow charts should not be combined in states.

**Passed**

No Stateflow states were found that combine state action and flow chart.

---

## Check transitions in Stateflow flow charts

Identify transitions in Stateflow flow charts that are drawn incorrectly.

**Passed**

All Stateflow transitions in flow charts are drawn correctly.

---

## Check usage of unconditional transitions in flow charts

Identify unconditional transitions in flow charts.

**Passed**

All unconditional transitions adhere to the guideline.

---

## Check terminal junctions in Stateflow

Identify usage of terminal junctions in flow charts.

**Passed**

Multiple terminal junctions were not found.

---

## Check usage of Stateflow comments

Identify comments that are nested or contain newline(s) in the middle in Stateflow for action language 'C'.

**Passed**

No comments found that are either nested or contain newline(s) in the middle.

---

## 3.3 Condition Transition/Action

 17  0  0 

---

## Check Stateflow chart action language

Check if the action language of Stateflow charts is set to 'C'.

**Passed**

All Stateflow Charts have action language set to 'C'.

---

## Check usage of numeric literals in Stateflow

Identify use of numeric literals in Stateflow states and transitions.

**Passed**

No numeric literals found in Stateflow charts.

---

## Check for pointers in Stateflow charts

Identify pointer operations on custom code variables.

**Note:** This check applies only to Stateflow charts that use C as the action language.

**Passed**

No pointer operations were found.

---

## Check usage of events in Stateflow charts

Identify undirected event broadcasts in Stateflow.

**Passed**

No instances of undirected event broadcast were found.

---

## Check order of state action types

Identify out of order state action types in Stateflow states.

**Passed**

No Stateflow states found with out of order state action types

---

## Check repetition of Action types

jc\_0734: Number of state action types  
Identifies repeated action types in a Stateflow State.

**Passed**

No Stateflow States were found.

---

**✓ Check if state action type 'exit' is used in the model**

Check if state action type 'exit' is used in the model.

**Passed**

State action type 'exit' is not used in the model.

---

**✓ Check updates to variables used in state transition conditions**

jc\_0741: Timing to update data used in state chart transition conditions

Variables used in state transition conditions must not perform an update by "during" state action type.

**Passed**

No Stateflow states found that violate the guidelines for updating the variables used in state transition conditions.

---

**✓ Check usage of transition conditions in Stateflow transitions**

Identify unconditional Stateflow transitions with higher priority than conditional transitions.

**Passed**

No unconditional Stateflow transitions found with higher priority than conditional transitions

---

**✓ Check condition actions and transition actions in Stateflow**

Identify usage of transition actions in Stateflow.

**Passed**

No Stateflow charts have transition actions.

---

**✓ Check for MATLAB expressions in Stateflow blocks**

Identify MATLAB expressions that are not suitable for code generation in Stateflow blocks.

**Passed**

No Stateflow objects found using MATLAB expressions unsuitable for code generation.

---

**✓ Check usage of floating-point expressions in Stateflow charts**

Identify equality or inequality operations ( $==$ ,  $\sim=$ ,  $!=$ ) in expressions involving floating-point variables or constants.

**Passed**

No equality or inequality to operations in expressions where at least one side of the expression is a floating-point variable or constant were found.

---

**✓ Check Stateflow operators**

Identify the usage of operators in Stateflow.

### **Passed**

No Stateflow blocks found with incorrect operator usage.

---

#### **✓ Check prohibited comparison operation of logical type signals**

Identify boolean variables in Stateflow charts using comparison operations.

### **Passed**

No boolean variables use comparison operations of logical type in the model.

---

#### **✓ Check usage of unary minus operations in Stateflow charts**

Identify unary minus operations applied to unsigned integers in Stateflow objects.

### **Passed**

No unary minus operations applied to unsigned integers in Stateflow objects were found.

---

#### **✓ Check for implicit type casting in Stateflow**

Identify implicit type casting in Stateflow.

### **Passed**

No instances of implicit type casting found.

---

#### **✓ Check usage of graphical functions in Stateflow**

Check for calls between graphical functions.

### **Passed**

No calls between graphical functions were found.

---

#### **☒ 3.4 Label Description**

✓ 10 ✘ 0 ⚠ 0 📄 0

#### **✓ Check uniqueness of Stateflow State and Data names**

jc\_0732: Distinction between state names, data names, and event names

Identify Stateflow State and Stateflow Data that have identical names in a given chart.

### **Passed**

No Stateflow charts were found.

---

#### **✓ Check uniqueness of State names**

jc\_0730: Unique state name in Stateflow blocks

Identifies identical State names within a Stateflow Chart.

### **Passed**

No Stateflow charts were found.

---

#### **✓ Check usage of State names**

jc\_0731: State name format

Identify state names with '/' at its end.

## **Passed**

No Stateflow states were found.

---

### **✓ Check entry formatting in State blocks in Stateflow charts**

Identify missing line breaks between entry action (en), during action (du), and exit action (ex) entries in states.  
Identify missing line breaks after semicolons (;) in statements.

## **Passed**

All state entries found are correctly formatted.

---

### **✓ Check indentation of code in Stateflow states**

Identify non-uniform indentation in Stateflow blocks.

## **Passed**

All Stateflow blocks have uniform indentation.

---

### **✓ Check for usage of text inside states**

Identify Stateflow states with text exceeding the boundary of the state.

## **Passed**

No Stateflow states found with text exceeding the boundary of the state.

---

### **✓ Check position of label string in Stateflow transition**

Identify placement of label string in Stateflow transition.

## **Passed**

All Stateflow transitions are placed uniformly.

---

### **✓ Check position of comments in transition labels**

Identify comments in transition labels that are not positioned uniformly.

## **Passed**

Comments in transition labels are positioned uniformly.

---

### **✓ Check usage of parentheses in Stateflow transitions**

jc\_0752: Condition action in transition label

Start new line before and after parentheses for condition actions in Stateflow transitions.

## **Passed**

No Stateflow Transitions found that violate the requirement for new line for condition actions.

---

### **✓ Check for comments in unconditional transitions**

Identify comments in unconditional transitions without action statements.

## **Passed**

All unconditional transitions without action statements have comments.

## 3.5 Miscellaneous

✓4 ✘0 ⚠0 ⌂0

### ✓ Check return value assignments in Stateflow graphical functions

Identify graphical functions with multiple assignments of return values in Stateflow charts.

**Passed**

No Stateflow charts were found.

### ✓ Check uniqueness of Stateflow State and Data names

jc\_0732: Distinction between state names, data names, and event names

Identify Stateflow State and Stateflow Data that have identical names in a given chart.

**Passed**

No Stateflow charts were found.

### ✓ Check usage of Simulink functions in Stateflow

Usage of Simulink Functions in Stateflow.

**Passed**

All Simulink Functions in Stateflow are defined according to the guideline.

### ✓ Check use of Simulink in Stateflow charts

na\_0039: Limitation on Simulink functions in Chart blocks

Check use of Stateflow charts nested inside Simulink functions used in Stateflow.

**Passed**

No Stateflow charts found nested inside Simulink functions used in Stateflow.

## 4 MATLAB

✓9 ✘0 ⚠0 ⌂0

### 4.1 Data and Operations

✓3 ✘0 ⚠0 ⌂0

#### ✓ Check MATLAB code for global variables

Check for global variables in MATLAB code

Check for global variables in MATLAB code used in MATLAB Function blocks

**Passed**

No MATLAB Function blocks found

Check for global variables in MATLAB functions defined in Stateflow charts

**Passed**

No MATLAB functions defined in Stateflow charts found

Check for global variables in called MATLAB functions

**Passed**

No external MATLAB functions found

---

**Check usage of enumerated values**

Identify enumeration classes used in the model with no default value specification.

**Passed**

No enumeration classes found without default value specifications.

---

**Check input and output settings of MATLAB Functions**

Identify MATLAB Functions that have inputs, outputs, or parameters with inherited complexity, data type, or size properties.

**Passed**

No MATLAB Functions found in the model or subsystem.

---

**4.2 Usage**    6 0 0 0

**Check lines of code in MATLAB Functions**

Identify MATLAB Functions with high number of effective lines of code.

**Passed**

No MATLAB Function found with high number of effective lines of code.

---

**Check the number of function calls in MATLAB Function blocks**

Checks whether number of function calls in MATLAB Function blocks is less than 3.

**Passed**

Number of function calls in MATLAB Function blocks is less than 3.

---

**Check nested conditions in MATLAB Functions**

Identify nested if/else and case statements in MATLAB Functions.

**Passed**

No MATLAB Function found with deeply nested if/else and case statements.

---

**Check usage of character vector inside MATLAB Function block**

Checks whether character vectors are being used inside MATLAB Function blocks

**Passed**

No character vectors found in MATLAB Function block

---

**Check usage of recommended patterns for Switch/Case statements**

Checks whether non-constant variables are used in Switch/Case arguments.

**Passed**

Non-constant variables are not used as Switch/Case arguments

---

 **Check for use of C-style comment symbols**

Identify usage of C-style comments in CGT Files and MPT Objects.

**Passed**

C-style comments are not used in CGT Files and MPT Objects.