

# DO Qualification Kit 1

## Qualify Simulink and PolySpace verification tools to DO-178

DO Qualification Kit provides documentation, test cases, and procedures that let you qualify Simulink® or PolySpace® software verification tools for projects based on the DO-178 standard. The kit contains tool qualification plans, tool operational requirements, and additional materials required for qualifying software verification tools. With the kit, you can streamline certification of your embedded systems developed using Simulink or PolySpace products.

Specific versions of both the Simulink verification, validation, and test tools and the PolySpace code verification tools have qualification kits for the DO-178 standard. For each version of tools supported, DO Qualification Kit contains artifacts needed to qualify the tools with the standard. You can modify these artifacts as needed for your project and submit them to your certification authority as part of your DO-178 certification package.

### What is DO-178?

DO-178 is the de facto international safety standard used to certify commercial avionic system software; it is increasingly used in other sectors and applications. DO-178B is the current version; an effort is underway to update the document to DO-178C.

Any software verification tool used in your avionic system development must be qualified if its output is not verified. DO-178B, Section 12.2, defines a software verification tool as a tool that does not introduce errors but might fail to detect errors that already exist in a product.

The tool user (not the tool vendor) is responsible for this qualification, and tool qualification must be done for each certification project. DO Qualification Kit provides resources for qualifying MathWorks software verification tools.

### KEY FEATURES

- Tool Qualification Plan and Tool Operational Requirements documents
- Test case models and code, test procedures, and expected results
- Traceability tables mapping test cases to requirements
- Qualification materials for Simulink verification, validation, and test tools
- Qualification materials for PolySpace code verification tools



Plans



Test Cases



Requirements

DO Qualification Kit contents, including certification artifacts and workflow guidance for projects using Model-Based Design or PolySpace code verification.

## Working with DO Qualification Kit

DO Qualification Kit implements the tool qualification approach specified in DO-178B. To use DO Qualification Kit, follow these steps:

1. Provide certification authorities with a tool qualification plan.
2. Document tool operational requirements.
3. Verify that the tool satisfies tool operational requirements, and then define limitations and restrictions of the tool.
4. Provide certification authorities with tool qualification results, including limitations and restrictions.

DO Qualification Kit provides guidance and information for the above steps and includes the document templates, test cases, and test procedures that you need to qualify the supported MathWorks software verification tools.

Supported MathWorks software verification tools and associated features include:

- Simulink Verification and Validation™ (DO-178B checks)
- SystemTest™ (Limit Check Element)
- PolySpace Client™ for C/C++
- PolySpace Server™ for C/C++

For the products listed above, DO Qualification Kit includes these artifacts:

- Tool Qualification Plan
- Tool Operational Requirements
- Test Cases, Procedures, and Results (with supporting documentation)

You need to execute the test cases and procedures from DO Qualification Kit in your MATLAB® or PolySpace installation environment. You should then compare your generated test results with the expected results from the kit and work to eliminate any differences. Simulink Report Generator™ is required for qualifying Simulink Verification and Validation.

*Note: Use of DO-178-qualified tools does not ensure the safety of the software or the system under consideration.*

## Required Products

**MATLAB®** (for the MATLAB and Simulink® product families)

**PolySpace Client™ for C/C++™** (for PolySpace® products)

## Related Products

### IEC Certification Kit

Certify embedded systems developed using Simulink and PolySpace products to IEC 61508

### Real-Time Workshop Embedded Coder™

Generate C and C++ code optimized for embedded systems

### Simulink Report Generator™

Generate documentation for Simulink and Stateflow models

### Simulink Verification and Validation™

Trace requirements, enforce modeling standards, and measure model coverage

### SystemTest™

Manage tests and analyze results for system verification and validation

## Platform and System Requirements

For platform and system requirements, visit [www.mathworks.com/products/do-178](http://www.mathworks.com/products/do-178). ■

## Learn More

[www.mathworks.com/products/do-178](http://www.mathworks.com/products/do-178)

## Resources

### VISIT

[www.mathworks.com](http://www.mathworks.com)

### TECHNICAL SUPPORT

[www.mathworks.com/support](http://www.mathworks.com/support)

### ONLINE USER COMMUNITY

[www.mathworks.com/matlabcentral](http://www.mathworks.com/matlabcentral)

### DEMOS

[www.mathworks.com/demos](http://www.mathworks.com/demos)

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