RapiDaemon Tool Qualification for DO-178C

Tool qualification is essential in the development of critical embedded systems and should be a key consideration from the earliest stages of DO-178C projects.

Our tool qualification solution for Rapi**Daemons** provides the resources and expertise you need to qualify Rapi**Daemons** for use in DO-178C projects. Adopting our approach to qualification early on in your development process means you benefit from:

- Early access to our expertise and experience as you communicate with your certification authority.

- Comprehensive documentation and support that allows you to refine your qualification workflows and evidence ahead of time, as well as coordinate with your certification authority to reduce potential delivery delays.

- A flexible, collaborative approach to qualification that works for your project and organization and reduces costs and effort.

For background information on DO-178C and its objectives, see *About DO-178C and tool qualification*.

Qualification Kit

- Tool Qualification Overview (TQO)
- Tool Qualification Plan (TQP)
- Tool Qualification Scope (TQS)
- Tool Operation Requirements (TOR)
- Test Case Design (TCD)
- Tool Verification Record (TVR)
- Tool Accomplishment Summary (TAS)
- Template Integration Qualification Report (IQR)

Figure 1: Qualification Kit document templates

Qualification Kit

We can support the qualification of Rapi**Daemons** running on your test hardware as an interference simulation platform. This provides tool qualification data that you can use in your submission for approval. The qualification results show that, by using appropriate configurations of Rapi**Daemons**, you are able to impose specific high levels of interference and measure their effects with known accuracy.

Rapi**Daemon** Qualification Kits include qualification documentation templates (Figure 1) and requirements, test cases, test procedures and expected results for Rapi**Daemon** behavior on a specific multicore platform. After running the included tests on your platform to produce results and checking them against expected results, complete qualification documents can be generated to provide evidence that Rapi**Daemons** meet the guidance given in DO-330 for commercial off-the-shelf (COTS) products (Figure 2 on the next page).

The documentation and processes we use to produce our Rapi**Daemons** Qualification Kits follow the guidance in DO-330 for a TQL-5 COTS tool. DO-330 complements DO-178C by providing specific guidance for tool qualification, and defines Tool Qualification Levels (TQL) 1-5.

RapiDaemon Qualification Service

We provide services to support the generation of a complete set of DO-330 qualification documents for Rapi**Daemons** (Figure 2 on the next page). This includes services to do the following:

- Run tests on the multicore platform to produce test results (this requires that our engineers be given access to your platform)

- Check test results against expected results to yield verified test results

- Collate test results and template DO-330 qualification documents into complete DO-330 qualification documents and review these documents

Our Rapi**Daemon** Qualification Service is delivered by Rapita Field Application and Software Quality Assurance experts.
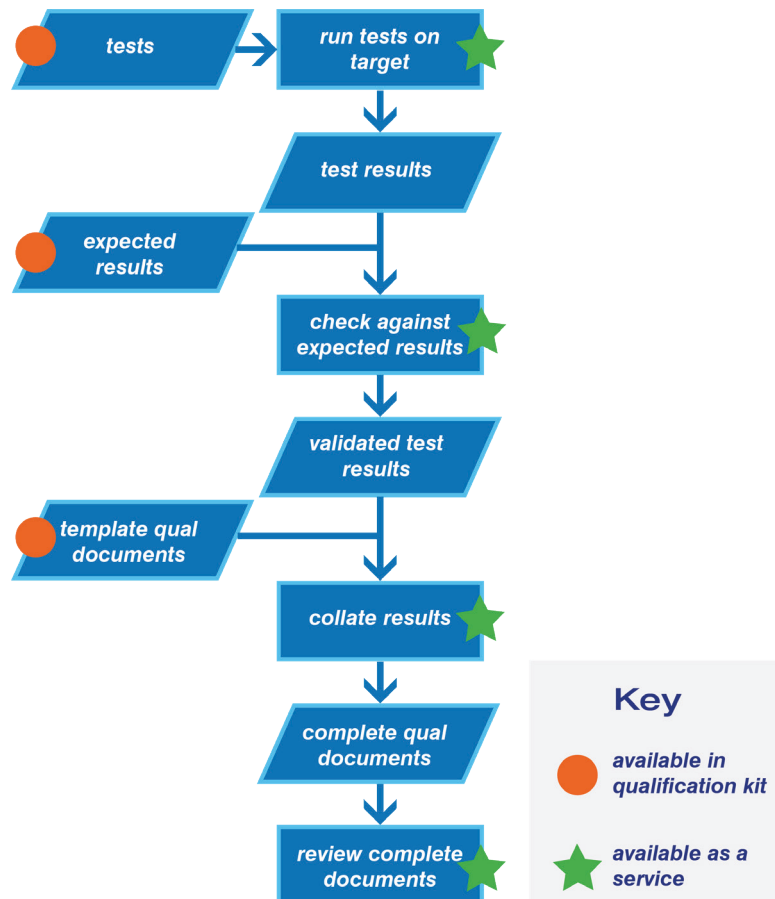
Figure 2: RapiDaemon qualification workflow

About DO-178C and tool qualification

DO-178C contains guidelines that deal with safety-critical software in airborne systems. Certification authorities (including the FAA in the US, and EASA in Europe) use DO-178C to assess these software systems.

According to DO-178C, you must qualify the software tools used in your project if:

- The tool could potentially insert an error or fail to detect an existing error.

- The tool's output will not be verified or confirmed by another verification activity.

- Processes necessary for certification are eliminated, reduced or automated by the tool.

You are responsible for qualifying the software tools you use in DO-178C projects. This means you have to provide detailed evidence not only that the tools meet their functional and robustness requirements, but also that they have been correctly integrated into your development and target environment.

Key features

Clear qualification guidance

Our Rapi**Daemon** qualification kits include clear guidance on what to do during your tool qualification, including a qualification timeline.

Streamlined qualification material

The documentation, requirements and tests included in our qualification kits are custom depending on your specific target environment and the Rapi**Daemons** you are using, helping you minimize your review effort.

Compliance checklists

Checklists in our qualification kits help you check your compliance progress.

Assurance issue notifications

We notify you when we discover any assurance issues that might cause false positive results or introduce functional changes to your software. We keep you updated with the status of assurance issues regularly.