



DAFCA System Validation Solutions

DAFCA's ClearBlue software suite offers a complete framework for the design and implementation of complex on-chip, at-speed, in-system, hardware-software validation tests. ClearBlue shrinks system validation time by automating the creation and application of IP compliance tests, performance monitoring and analysis, fault injection, device certification, environmental stress and accelerated life tests.

We provide at-speed visibility, transaction control, and stimulus with a library of compact reprogrammable instruments. Our technology moves seamlessly between simulation, emulation, and FPGA-prototype environments – in addition to final silicon – without special pins or cell libraries. ClearBlue extends across the entire design implementation – from RTL to first silicon, and from first silicon to production release.

On-chip instruments are seamlessly inserted pre-silicon and are configured, operated, and dynamically controlled post-silicon with a comprehensive set of visualization, stimulus, and analysis tools.

ClearBlue extends pre-silicon verification to post-silicon validation. Additionally, ClearBlue includes a unique feedback mechanism – a verification-validation bridge – that enables at-speed, on-chip data to inform simulation and emulation, even *post silicon*. ClearBlue Silicon Validation Studio runs identical validation scripts on simulation or emulation platforms, including FPGAs, as well as the actual SoC.

DAFCA on-chip instrumentation provides direct access to key interface and control signals so validation teams can write smaller, more directed tests and generate complex conditions

and events, such as corner cases and deep state anomalies. Moreover, ClearBlue brings low-level diagnostic techniques into the system and software environments. It supports simultaneous validation threads using a combination of logic analysis, signal manipulation, transaction stimulus, and protocol monitoring, all of which can be incorporated into regressions for complex multi-core systems.

Our hardware-software validation tools also provide embedded, cycle-accurate software observability and control of any signal or interconnect, like those found in complex power management, reset, and interrupt subsystems. With our tools, creating rare events is reduced to writing a few lines of code that can be checked pre-silicon. Of course, exactly the same tests can then be injected dynamically into silicon during diagnostic, shakeout, and normal operation. In fact, this “bridge” is bidirectional: for even better observability of complex or unexpected behaviors, tests can be created in silicon, and re-applied in simulation or on the emulation platform.

Concurrent development of hardware and software systems requires several “touch points” where stakeholder teams can validate system software on the actual physical device. DAFCA automates this difficult process. Perhaps the most important benefit is the multi-threaded visualization the ClearBlue solution provides at many levels of abstraction. This not only allows individuals to gain a better understanding of complex interactions within the device, but also allows diverse teams to exchange more insightful data when problem solving and working through normal, yet time-consuming, hardware, software and system validation efforts.