

SEGGER's emRun Runtime Library Licensed by SiFive for Superior Code Size and Performance Improvements

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The SEGGER emRun runtime library is available as part of the recently announced SiFive 21G1 release. SiFive's focus on toolchain and library support enables key market requirements, including reduced code size and lower memory footprints. To support this goal, SiFive has licensed emRun as part of the SiFive Freedom Tools and Freedom-E-SDK packages. This integration enables chip designers to easily achieve optimum performance, while reducing code size by up to 25% ^{[1][2]}.

The SEGGER [emRun](#) runtime library enables SiFive customers to use the substantial new capabilities of the faster, more efficient, more capable than ever SiFive Core IP portfolio.

emRun is a complete C runtime library for use with any toolchain. It is used in SEGGER's [Embedded Studio](#) IDE and has proven its value for years. emRun has been designed and written from the ground up for embedded devices to deliver high performance with a small footprint. Time-critical routines are written in assembly language. In many cases, reduced code size makes it possible to use a smaller microcontroller with less on-chip

memory. This can result in significant cost savings, especially for devices built in large quantities for the mass market. In some cases, this code-size saving may make the difference between being able to fit the microcontroller's on-chip memory or not.

"The continued support from SEGGER is a great asset to the RISC-V ecosystem," said Drew Barbier, Senior Director of Product Marketing, SiFive. "SEGGER has supported SiFive RISC-V Core IP since 2017 and the emRun library represents superb added value for embedded developers working with SiFive IP. We look forward to continued co-operation as the RISC-V ecosystem continues to grow and evolve."

"For microcontroller applications it is important to use memory efficiently," says SEGGER CEO Ivo Geilenbrügge. "With the licensing of emRun, SiFive now enables its customers to achieve minimum code sizes and thus to reduce their costs for expensive memory."

A key component of emRun is [emFloat](#), a highly optimized, IEEE 754 compliant floating-point library, designed from the ground up for embedded systems. Very fast





and very small, it delivers FPU-like performance in pure software. Even where an FPU is available emFloat boosts the FPU's performance for complex mathematical functions. emFloat is configurable for small code size or increased execution speed or a combination, with calculated results identical in all modes.

For more information about emRun, please visit:

<https://www.segger.com/products/development-tools/runtime-library/>

[1] SiFive internal code size comparison of SiFive 21G1 release vs. previous SiFive 20G1 release.

[2] See Linley Group Microprocessor Report, "SiFive 21G1 Update Boosts Hash Rates", 5/10/21 (subscription required):

https://www.linleygroup.com/newsletters/newsletter_detail.php?num=6307.

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About SEGGER

SEGGER Microcontroller has over twenty-eight years of experience in Embedded Computer Systems, producing state-of-the-art software libraries, and offering a full set of hardware tools (for development and production) and software tools.

SEGGER provides an RTOS plus a complete spectrum of software libraries including communication, security, data compression and storage, user interface software and more. Using SEGGER software libraries gives developers a head start, benefiting from decades of experience in the industry.

SEGGER's professional software libraries and tools for Embedded System development are designed for simple usage and are optimized for the requirements imposed by resource-constrained embedded systems. The company also supports the entire development process with affordable, high-quality, flexible, easy-to-use tools.

The company was founded by Rolf Segger in 1992, is privately held, and is growing steadily. SEGGER also has a U.S. office in the Boston area and branch operations in Silicon Valley, Shanghai and the UK, plus distributors on most continents, making SEGGER's full product range available worldwide.



Why SEGGER?

In short, SEGGER has a full set of tools for embedded systems, offers support through the entire development process, and has decades of experience as the Embedded Experts.

In addition, SEGGER software is not covered by an open-source or required-attribution license and can be integrated in any commercial or proprietary product, without the obligation to disclose the combined source.

Finally, SEGGER offers stability in an often volatile industry making SEGGER a very reliable partner for long-term relationships.

For additional information please visit: www.segger.com

About SiFive

SiFive is the leading provider of processor cores, AI accelerators, and SoC IP to enable domain-specific designs based on the open RISC-V instruction set architecture specification. SiFive offers scalable, configurable processor cores pre-integrated with security, trace, and debug features for workload-specific accelerator designs. Founded by the inventors of RISC-V, SiFive has design centers worldwide and backing from Sutter Hill Ventures, SK hynix, Qualcomm Ventures, Western Digital, Intel Capital, Spark Capital, Osage University Partners, and Prosperity7 Ventures.

For more information, please visit www.sifive.com.

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