



Bluetooth[®] Real-Time Locating Library 5.1.4.0 GA

Gecko SDK Suite 4.2

January 24, 2024

Silicon Labs is a leading vendor in Bluetooth hardware and software technologies, used in products such as sports and fitness, consumer electronics, beacons, and smart home applications.

The Real-Time Locating (RTL) library contains features for Angle of Arrival estimation and spatial positioning. The software library comes with a C-programming language API for Windows (x86_64) and Linux (ARM Cortex A, x86_64) hosts.



KEY FEATURES

- Targeted quality improvements and bug fixes.

The RTL Library is released with the Bluetooth SDK. These release notes cover the following version(s):

- Real-Time Locating Library 5.1.4.0 in Bluetooth SDK 5.1.4.0 released on January 24, 2024 (underlying code changes only)
- Real-Time Locating Library 5.1.3.0 in Bluetooth SDK 5.1.3.0 released on August 16, 2023 (underlying code changes only)
- Real-Time Locating Library 5.1.2.0 in Bluetooth SDK 5.1.2.0 released on May 3, 2023 (underlying code changes only)
- Real-Time Locating Library 5.1.1.0 in Bluetooth SDK 5.1.1.0 released on March 8, 2023 (underlying code changes only)
- Real-Time Locating Library 5.1.0.0 in Bluetooth SDK 5.1.0.0 released on February 1, 2023 (underlying code changes only)
- Real-Time Locating Library 5.0.0.0 in Bluetooth SDK 5.0.0.0 released on December 14, 2022

Contents

- 1 New Items2
- 2 Improvements..... 3
- 3 Fixed Issues 4
- 4 Known Issues in the Current Release 5
- 5 Deprecated Items 6
- 6 Removed Items 7
- 7 Using This Release..... 8
 - 7.1 Installation and Use..... 8
 - 7.2 Support..... 8

1 New Items

None

2 Improvements

RTL library variants `libaox_static_linux_x86_64.a` and `libaox_static_darwin_x86_64.a` are now compiled with Position Independent Code flags. Variants `libaox_static_armv7l.a`, `libaox_static_linux_aarch64.a` and `libaox_static_windows_x86_64.a` are unchanged.

3 Fixed Issues

Fixed in release 5.1.4.0

ID #	Description
1151846	Fixed the API documentation of function <code>sl_rtl_util_rssi2distance</code> by removing an extra line referring to a library item, which the function does not have as an input parameter.

Fixed in release 5.0.0.0

ID #	Description
845889	Fixed an issue where elevation estimate could get stuck at 0-20 degrees and also high elevations above 80 degrees when using radiation pattern compensation on BRD4191A.
1070610	CoreHW Gen3 4x4 URA antenna had one setting swapped between two elements in the RTL library, which caused slightly less accurate angle estimates. This is now fixed.
1068579	Polarization estimate for BRD4191A antenna board was not working correctly. The estimation is used for antenna radiation pattern compensation and therefore it was not using the intended values for compensation. This is now fixed.
1058501	When using a BRD4191A dual polarized antenna board and specifying a custom antenna switching pattern for it, the RTL library's IQ sample QA was not using the whole available data for its analysis but a subset of it. It is now fixed.

4 Known Issues in the Current Release

Issues in bold were added since the previous release.

ID #	Description	Workaround
375152	In heavy multipath conditions, the line-of-sight signal is not always detected correctly. In some cases this may mean large errors in both azimuth and elevation readings.	None

5 Deprecated Items

None

6 Removed Items

None

7 Using This Release

7.1 Installation and Use

For instructions on developing with the RTL library, see *AN1296: Application Development with Silicon Labs' RTL Library* and the API reference included with the documentation installed through Simplicity Studio in the Bluetooth SDK.

7.2 Support

Development Kit customers are eligible for training and technical support. Use the [Silicon Labs Bluetooth LE web page](#) to obtain information about all Silicon Labs Bluetooth products and services, and to sign up for product support.

Contact Silicon Laboratories support at <http://www.silabs.com/support> or through links on the Simplicity Studio Welcome page.

Simplicity Studio

One-click access to MCU and wireless tools, documentation, software, source code libraries & more. Available for Windows, Mac and Linux!



IoT Portfolio
www.silabs.com/IoT



SW/HW
www.silabs.com/simplicity



Quality
www.silabs.com/quality



Support & Community
www.silabs.com/community

Disclaimer

Silicon Labs intends to provide customers with the latest, accurate, and in-depth documentation of all peripherals and modules available for system and software implementers using or intending to use the Silicon Labs products. Characterization data, available modules and peripherals, memory sizes and memory addresses refer to each specific device, and "Typical" parameters provided can and do vary in different applications. Application examples described herein are for illustrative purposes only. Silicon Labs reserves the right to make changes without further notice to the product information, specifications, and descriptions herein, and does not give warranties as to the accuracy or completeness of the included information. Without prior notification, Silicon Labs may update product firmware during the manufacturing process for security or reliability reasons. Such changes will not alter the specifications or the performance of the product. Silicon Labs shall have no liability for the consequences of use of the information supplied in this document. This document does not imply or expressly grant any license to design or fabricate any integrated circuits. The products are not designed or authorized to be used within any FDA Class III devices, applications for which FDA premarket approval is required or Life Support Systems without the specific written consent of Silicon Labs. A "Life Support System" is any product or system intended to support or sustain life and/or health, which, if it fails, can be reasonably expected to result in significant personal injury or death. Silicon Labs products are not designed or authorized for military applications. Silicon Labs products shall under no circumstances be used in weapons of mass destruction including (but not limited to) nuclear, biological or chemical weapons, or missiles capable of delivering such weapons. Silicon Labs disclaims all express and implied warranties and shall not be responsible or liable for any injuries or damages related to use of a Silicon Labs product in such unauthorized applications.

Note: This content may contain offensive terminology that is now obsolete. Silicon Labs is replacing these terms with inclusive language wherever possible. For more information, visit www.silabs.com/about-us/inclusive-lexicon-project

Trademark Information

Silicon Laboratories Inc.[®], Silicon Laboratories[®], Silicon Labs[®], SiLabs[®] and the Silicon Labs logo[®], Bluegiga[®], Bluegiga Logo[®], EFM[®], EFM32[®], EFR, Ember[®], Energy Micro, Energy Micro logo and combinations thereof, "the world's most energy friendly microcontrollers", Redpine Signals[®], WiSeConnect, n-Link, ThreadArch[®], EZLink[®], EZRadio[®], EZRadioPRO[®], Gecko[®], Gecko OS, Gecko OS Studio, Precision32[®], Simplicity Studio[®], Telegesis, the Telegesis Logo[®], USBXpress[®], Zentri, the Zentri logo and Zentri DMS, Z-Wave[®], and others are trademarks or registered trademarks of Silicon Labs. ARM, CORTEX, Cortex-M3 and THUMB are trademarks or registered trademarks of ARM Holdings. Keil is a registered trademark of ARM Limited. Wi-Fi is a registered trademark of the Wi-Fi Alliance. All other products or brand names mentioned herein are trademarks of their respective holders.



Silicon Laboratories Inc.
400 West Cesar Chavez
Austin, TX 78701
USA

www.silabs.com