Bluetooth® Real-Time Locating Library 3.3.0.0 GA
Gecko SDK Suite 4.0
December 15, 2021

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.

Bluetooth

KEY FEATURES

- Support for additional hardware platforms and operating systems

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

Real-Time Locating Library 3.3.0.0 in Bluetooth SDK 3.3.0.0 released on December 15, 2021

Contents

1 New Items

Added in release 3.3.0.0

Support for multiple tags per locating library instance

RTL library's locating library object now supports an unlimited number of tags (previously it supported only one - a new instance was required for each tag). A new API was added to support adding / removing tags, and separate API functions were added to provide measurements and calculate results for a particular tag. The existing API will still function unchanged, so this change does not require any modifications in the application, but it adds another way to design the architecture and to reduce the resource consumption.

Support for obtaining angle calculation pseudospectrum

Added functions for obtaining the pseudospectrum of the last calculated angle from the estimator. The pseudospectrum describes the probability of each angle in the search range being the true angle.

Trilateration support

Added trilateration support in the RTL library. Trilateration is a method for calculating the position based on the distances from multiple locators.

2 Improvements

Changed in release 3.3.0.0

Improvements to supported platforms

The RTL library is now supported on Windows (x86_64), Linux (x86_64, ARM Cortex-A72, ARM Cortex-A53) and macOS (x86_64) hosts. Officially supported and tested operating systems are Windows 10, Ubuntu 20.04 LTS, macOS Catalina 10.15.7 and Raspberry Pi OS (32-bit). Hardware testing coverage also includes Raspberry Pi 3, Raspberry Pi 4, AWS EC2 and Intel NUC.

In addition, the naming convention of the library files has changed and now the library files are named libaox_static_<os>_<platform>.a and all files are now found under aox/lib/gcc/release instead of platform-specific subdirectories.

Multiple tag support per locating library instance

New APIs were added to support adding multiple tracked tags in a single locating library instance to reduce memory consumption by sharing resources between the estimators. The following commands now allow configuring and using the library instance per tag:

- sl_rtl_loc_add_tag: Add a new tag into the locating library instance. The function outputs the tag ID.
- sl_rtl_loc_remove_tag: Remove the tag by tag ID from the instance.
- sl_rtl_loc_set_target_parameter_tag: Set target parameters by tag ID or for all tags in the instance.
- sl_rtl_loc_clear_measurements_tag: Clear the recent measurements by tag ID or for all tags in the instance.
- sl_rtl_loc_set_locator_measurement_tag: Set the measurements by locator and by tag ID.
- sl_rtl_loc_process_tag: Process the measurements by tag ID or for all tags in the instance.
- sl_rtl_loc_get_result_tag: Get the recent results by tag ID.
- sl_rtl_loc_get_measurement_in_system_coordinates_tag: Get the measurement converted into system coordinates by tag ID.
- sl_rtl_loc_get_expected_direction_tag: Get the expected direction of an asset by tag ID.
- sl_rtl_loc_get_expected_deviation_tag: Get the deviation values for expected direction by tag ID.
- sl_rtl_loc_get_number_disabled_tag: Get the number of disabled locators by tag ID.

3   Fixed Issues

None

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
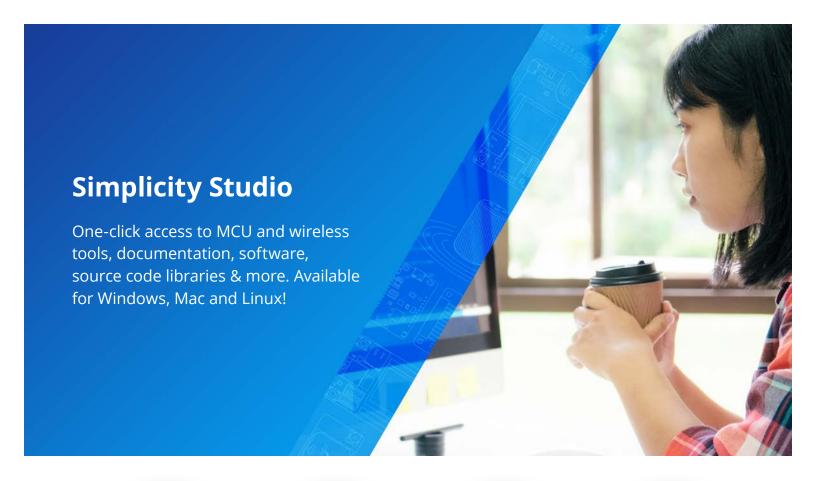
None

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.

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