NEW in RSS 2.0

New Profiles for all Services

All services will get a common set of new profiles. There will be five profiles and the profiles will determine the pulse length and thus the energy transmitted from the sensor to make a measurement. Default profile will be profile 2 for all services. This profile is similar to the old max SNR profile for the envelope service.

Application that have used the maximize depth resolution for envelope should instead use the new profile 1.

Applications that use the sparse service should select the new profile 3 to work the same way as in the old API.

New Repetition Mode “on demand”

The “max frequency” repetition mode is replaced by a new on demand repetition mode. Repetition mode on demand will be the new default repetition mode.

Automatic Noise Level Normalization

Envelope, IQ, and Power Bins output is now per default scaled to achieve a common noise floor level between sensors. This will make it easier to use fixed thresholds in applications.

Applications that use thresholds related to the output data amplitude levels may need to be adapted to handle the new output amplitude in the radar data.

More Strict Check of Configuration Parameters

The function acc_service_create will now fail when configuration is not valid. No correction of configuration parameters is done.

Update power save mode names

A -> OFF

B -> SLEEP

C -> READY

D -> ACTIVE

IAR Compiler Support

In addition to our ordinary libraries that are built with the gcc toolchain we will from now also provide libraries built with an ARM compiler from IAR Systems. Initially we will provide libraries compiler for ARM Cortex M4 that are intended to be used together with IAR Embedded Workbench 8.x.

Relaxed Limits on Start Configuration

The range restrictions for services and detectors will be relaxed. Ranges from -0.7 meters will be allowed for all services except the IQ service where the new minimum range start is 0.06 m

This will also affect detectors. Applications that use the distance detector in fixed threshold mode and start measurements at 0 m will have to be updated as they now will get detections caused by the direct leakage.

Module Server Protocol

The module server protocol and the module register map is updated. Applications that use the module server protocol are affected.

Merged Libraries

The libraries libacc_service.a, libacconeer.a, and libacconeer_sensor.a are now unified to a single library called libacconeer.a.

Sweep Configuration Renamed

Sweep_configuration is renamed to base_configuration. The header files and function names have new names, but the configuration parameters are the same.

Changed Power Bins Output Format

The power bins service will now output results in uint16_t format instead of float. As a result, the processing complexity is reduced. The magnitude of output data amplitudes has increased. Applications that use thresholds that depend on amplitude levels in the power bin data have to be updated.

RSS API Clean-up

We have done several minor updates to the RSS C API that destroy backwards compatibility.

List of changes:

- The function rss_activate_with_hal has been renamed rss_activate
- Type of iq_data parameter in acc_service_iq_get_next changed to void
- Type of iq_data parameter in acc_service_iq_execute_once changed to void
- acc_service_iq_int16_get_next removed, use acc_service_iq_get_next instead
- acc_service_iq_int16_execute_once removed, use acc_service_iq_execute_once instead
- Default data type for IQ data is now int16 complex
- New names for power save modes
- RSS version removed

- Integration API broken out from acc_defintitions.h to acc_hal_definitions.h

RSS in Single Thread

The possibility to configure RSS to run in multi-threaded mode is removed. It will still be possible to integrate RSS in an OS that has support from multiple threads or processes. RSS is not (and has never been) thread safe so all calls to the RSS API must be done from a single thread.

Service data is obtained using the services' get next functions. Obtaining radar data in callback functions is not supported.

HAL Integration API Updates

- RSS does not require threading. Multiple threads are handled by the application.
- The HAL integration API and the HAL struct is now declared in the file acc_hal_definitions.h
- The OS function gettime has a new signature and should now return time in milliseconds.
- The following OS functions are removed from the integration API: get_thread_id, mutex_create, mutex_destroy, mutex_lock, mutex_unlock, thread_create, thread_exit, thread_cleanup, semaphore_create, semaphore_destroy, semaphore_wait, semaphore_signal, and semaphore_signal_from_interrupt.

Other

- The distance between samples is in metadata
- module protocol is updated, new version of exploration tool needed
- Simplified example programs
- Running average removed from IQ service
- Float complex not supported in module server
- Stitch count now in metadata
- Applications that before used the direct leakage profile for the envelope service should new select profile 1 and enable the configuration setting "Maximize signal attenuation"