

# ANT\_S212\_nrf52832\_4.0.5 release notes

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## ANT\_S212\_nrf52832\_4.0.5

The ANT\_S212\_nrf52832\_4.0.5 Softdevice is a maintenance release of the S212 for the nRF52 platform.

### SoftDevice Properties

- The SoftDevice Specification for the S212 is available on the [ANT website](#)
- This version of the SoftDevice contains the Master Boot Record (MBR) version 2.1.1
  - The changes from the previous version are header file modifications only.
- The combined MBR and SoftDevice memory requirements for this version is as follows:
  - Flash: **72kB** (0x12000 bytes)
  - RAM: **2.56kB** (0xA80 bytes)

### Changes

- **SoftDevice**
  - It is now possible to set RCOSC accuracy to 500 ppm or 250 ppm when calling `sd_softdevice_enable` and using `nrf_clock_lf_cfg_t::source=NRF_CLOCK_LF_SRC_RC`. `nrf_clock_lf_cfg_t::xtal_accuracy` can be configured to `NRF_CLOCK_LF_XTAL_ACCURACY_250_PPM` or `NRF_CLOCK_LF_XTAL_ACCURACY_500_PPM` (DRGN-8838). All other values for `xtal_accuracy` will default to 500 ppm.
  - Interrupt priority 5 is now available to the application (DRGN-8853).

### Bug fixes

- **SoftDevice**
  - Fixed an issue where the SoftDevice might assert in some cases if the application delayed pulling of SoftDevice events (DRGN-8823).
- **ANT**
  - Fixed an issue where synchronous channels would be erroneously blocked while running high duty search in a dense environment.

### Limitations

- **SoftDevice**
  - If Radio Notifications are enabled, flash write and flash erase operations initiated through the SoftDevice API will be notified to the application as Radio Events (FORT-809).
  - Synthesized low frequency clock source is not tested or intended for use with the ANT stack.
  - Internal RC oscillator clock source is not tested or intended for use with the ANT stack.
  - Applications must not modify the SEVONPEND flag in the SCR register when running in priority levels higher than 6 (priority level numerical values lower than 6) as this can lead to undefined behavior.
  - Flash write operations may exceed the timeout provided when performed with certain protocol operations (e.g. ANT Continuous Scan).

## ANT\_S212\_nrf52832\_4.0.2

The ANT\_S212\_nrf52832\_4.0.2 SoftDevice is the third production release of the S212 for the nRF52 platform.

### SoftDevice Properties

- The SoftDevice Specification for the S212 is available on the [ANT website](#)
- This version of the SoftDevice contains the Master Boot Record (MBR) version 2.1.0
  - The changes from the previous version are header file modifications only.
- The combined MBR and SoftDevice memory requirements for this version is as follows:
  - Flash: **72kB** (0x12000 bytes)
  - RAM: **2.56kB** (0xA80 bytes)

### New functionality

- **SoftDevice**
  - The SoftDevice now supports sleep clock accuracy values less than 20 ppm as a peripheral (DRGN-8158).
- **ANT**
  - A new API function, `sd_ant_channel_open_with_offset`, has been added to allow the start time of the channel to be configured. When used, the channel will start at a specified offset from the time of the API call instead of a fixed offset relative to existing channels. This can be used to manage spacing between multiple master channels on the same device in use cases where channel diversity is required for high traffic environments.
  - A new API function, `sd_ant_channel_radio_crc_mode_set`, has been added that allows the CRC to be configured to three bytes instead of the default two. This change reduces the reception of invalid packets in noisy environments. This mode is incompatible with existing devices using the default two byte CRC mode.
  - ANT channels can now run at a faster rate. This can also improve performance in some multi-channel use cases.

|                        | V 2.0.1 | V 4.0.2 |
|------------------------|---------|---------|
| Master Channel         | 224 Hz  | 270 Hz  |
| Master Tx Only Channel | 442 Hz  | 1129 Hz |

### Changes

- **SoftDevice**
  - `SWI3` is no longer reserved for use by the SoftDevice and is available for the application (DRGN-8367).

- The `sd_power_ramon_set()`, `sd_power_ramon_clr()`, and `sd_power_ramon_get()` SoftDevice APIs have been replaced with `sd_power_ram_power_set()`, `sd_power_ram_power_clr()`, and `sd_power_ram_power_get()`, so the application now has access to the registers `RAM[x].POWER` instead of the deprecated `RAMON/RAMONB` (DRGN-8117).
- **ANT**
  - When receiving acknowledged messages, if the previous message has not been handled the ANT stack will no longer acknowledge the message and generate an event message for the application (`EVENT_RX_DATA_OVERFLOW`). Bug fixes
- **SoftDevice**
  - `sd_softdevice_enable()` now returns an error code if called with `fault_handler` set to `NULL` or to an invalid function pointer. If the application returns from the `fault_handler` function, the SoftDevice will do an `NVIC_SystemReset()` (DRGN-7122).
  - It is no longer required to clear `INTENSET` for `TIMER0` before the timeslot ends, if the application uses `TIMER0` inside a timeslot scheduled with the Radio Timeslot API (DRGN-7776).
  - The `SVCALL` macro can now be used with the GCC C++ compiler as well (DRGN-8028).
  - The `sd_power_pof_threshold_set` API has been fixed to support all the new levels that were introduced in nRF52 (DRGN-8348).
- **ANT**
  - Fixed an issue that caused `sd_softdevice_disable` to block for an extended period of time if there were ANT channels running.
  - Fixed an issue that caused a divide by zero fault if the channel period is set to 0. `sd_ant_channel_period_set` will now return an error when called with a channel period of zero.
  - Fixed an issue where an encryption session could be desynchronized if a second encrypted master channel is started on the same device.
  - Fixed an issue where encryption negotiation would complete erroneously if acknowledged messages are sent or received on other channels.
  - Fixed an issue where high duty search could cause an assert in certain scenarios.
  - Fixed an issue where `sd_ant_enable()` could return success if memory size provided was insufficient for the channel configuration in certain scenarios.

## Limitations

- **SoftDevice**
  - If Radio Notifications are enabled, flash write and flash erase operations initiated through the SoftDevice API will be notified to the application as Radio Events (FORT-809).
  - Synthesized low frequency clock source is not tested or intended for use with the ANT stack.
  - Internal RC oscillator clock source is not tested or intended for use with the ANT stack.

- Applications must not modify the `SEVONPEND` flag in the `SCR` register when running in priority level 2 or 3 as this can lead to undefined behavior.
- Flash write operations may exceed the timeout provided when performed with certain protocol operations (e.g. ANT Continuous Scan).