

# ANT\_S212\_nrf52\_7.0.1 release notes

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## ANT\_S212\_nrf52\_7.0.1

The ANT\_S212\_nrf52\_7.0.1 SoftDevice is a production release for nRF52 platforms.

### Notes

- This S212 release has changed the Application Programming Interface (API) and/or memory requirements from the previous S212 production release (ANT\_S212\_nRF52810\_nrf52832\_6.1.1). This requires applications to be recompiled.

### SoftDevice Properties

- This SoftDevice variant is compatible with nRF52805, nRF52810, nRF52811, nRF52820, nRF52832, nRF52833 and nRF52840
- This version of the SoftDevice contains the Master Boot Record (MBR) version 2.4.1 (DRGN-10680). This MBR version is compatible with previous MBR versions.
- The combined MBR and SoftDevice memory requirements for this version is as follows:
  - Flash: **72kB** (0x12000 bytes)
  - RAM: **2.94kB** (0xB80 bytes)
  - Call stack: The SoftDevice uses a call stack combined with the application. The worst-case stack usage for the SoftDevice is **1.75 kB** (0x700 bytes). Application writers should ensure that enough stack space is reserved to cover the worst-case SoftDevice call stack usage combined with the worst-case application call stack usage.
- The Firmware ID of this SoftDevice is 0xEE

### Changes

- **ANT**
  - PA/LNA support extended to GPIOs on Port 1 for supported devices.
  - Maximum Tx Output Power of 8 dBm enabled for supported devices.
- **SoftDevice**
  - References to Errata are added to the documentation of all the events and APIs which report RSSI and should be observed if using RSSI measurements.
  - Removed macros defining PPI channels and groups available to the application (DRGN-10382).

### Bug Fixes

- **ANT**
  - Fixed an issue where Slave Shared Channels would not send an uplink reply in specific cases where the shared address matched.
  - Fixed an issue where Timestamp of a received message would be invalid on initial channel acquisition.
- **SoftDevice**
  - Fixed an issue where the application would be blocked when requesting an earliest possible Radio Timeslot (DRGN-10402).

## Limitations

- **ANT**
  - Internal RC oscillator clock source is not tested or intended for use with the ANT stack.
- **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.
  - 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).

## Known Issues

- **MBR**
  - When copying the Bootloader on the nRF52811 using the `SD_MBR_COMMAND_COPY_BL` MBR command, the MBR will not write-protect itself. This does not change the behavior of the MBR or DFU process as the MBR cannot be configured to overwrite itself (DRGN-11287).
- **SoftDevice**
  - When running on nRF52811, using `sd_power_usb*` APIs can lead to undefined behaviour.
  - When running on nRF52811, using `sd_protected_register_write` API can lead to undefined behaviour.
  - The MWU protection may become disabled in certain cases if application ISR is interrupted by SoftDevice ISR (DRGN-10361).
  - A memory access fault (`NRF_FAULT_ID_APP_MEMACC`) can occur in `sd_nvic_critical_region_exit()` if a high priority SoftDevice interrupt occurs during a critical section, for example due to radio traffic (DRGN-10613). This issue was present also in previous releases. It can be fixed by editing `_NRF_NVIC_SD_IRQS_1` in `nrf_nvic.h` so that it becomes:

```
#define _NRF_NVIC_SD_IRQS_1 ((uint32_t)(1U << (MWU_IRQn - 32)))
```

## ANT\_S212\_nrf52810\_nrf52832\_6.1.1

The ANT\_S212\_nrf52810\_nrf52832\_6.1.1 SoftDevice is a production release for the **nRF52810 & nRF52832** platforms.

### Notes

- This S212 release has changed the Application Programming Interface (API) and/or memory requirements from the previous S212 production release (ANT\_S212\_nrf52832\_5.0.0). This requires applications to be recompiled.

### SoftDevice Properties

- This version of the SoftDevice contains the Master Boot Record (MBR) version 2.4.1 (DRGN-10680). This MBR version is compatible with previous MBR versions.
- The combined MBR and SoftDevice memory requirements for this version is as follows:
  - Flash: **72kB** (0x12000 bytes)
  - RAM: **2.94kB** (0xB80 bytes)
- The Firmware ID of this SoftDevice is 0xBC

### New functionality

- **SoftDevice**
  - SoftDevice can now use external low-swing and full-swing low-frequency (32.768kHz) clocks.

### Changes

- **SoftDevice**
  - The MBR 2.4.1 is a minor backward compatible configuration update of the MBR for this release. There were no bugs resolved in this update, only minor build configuration option changes (DRGN-10680)

### Bug Fixes

- **ANT**
  - Fixed an issue where synchronous channels would be erroneously blocked while running high duty search in a dense environment.
  - Fixed an issue where the ANT stack would stall while running an ANT master channel, ANT high duty search, and BLE activity at the same time.

### 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).

## Known Issues

- **SoftDevice**
  - The MWU protection may become disabled in certain cases if application ISR is interrupted by SoftDevice ISR (DRGN-10361).
  - If the application requests an earliest possible Radio Timeslot and the timeslot is blocked, the SoftDevice will repeat the same request until it times out, thereby blocking the main context and the lower application interrupt priority levels. A workaround is to increase the timeout of the Radio Timeslot request to make it able to fit after the event that is blocking the request (DRGN-10402).

## ANT\_S212\_nrf52832\_5.0.0

The ANT\_S212\_nrf52832\_5.0.0 Softdevice is the fourth 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 2.2.0
  - This version of the MBR is compatible with the previous versions.
- The combined MBR and SoftDevice memory requirements for this version is as follows:
  - Flash: **72kB** (0x12000 bytes)
  - RAM: **2.94kB** (0xB80 bytes)

### New functionality

- **SoftDevice**
  - The RC oscillator accuracy can now be set to any of the defined NRF\_CLOCK\_LF\_ACCURACY values, and there is no default anymore. In other words, the nrf\_clock\_lf\_cfg\_t::accuracy parameter now has the same functionality when used with the RCOSC clock source as with the XTAL clock source (DRGN-8666).

### 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).
  - Added definitions for timing constraints that must be taken into account when using the NRF\_RADIO\_SIGNAL\_CALLBACK\_ACTION\_EXTEND action with the Radio Timeslot API (DRGN-8931).

### Bug fixes

- **SoftDevice**
  - Fixed an issue where the SoftDevice might assert in some cases if the application delayed pulling of SoftDevice events (DRGN-8823).
  - Fixed an issue where the SoftDevice could trigger a BusFault when forwarding a HardFault to the application (DRGN-8604).

## 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).

## Known Issues

- **SoftDevice**
  - When the SoftDevice is enabled the IRQ priorities of SD\_EVT\_IRQn and RADIO\_NOTIFICATION\_IRQn (SWI2\_IRQn and SWI1\_IRQn respectively) are set to a default of 6. This differs from previous versions of the SoftDevice, as well as what is specified in the SoftDevice Specification. It is suggested to explicitly set these priorities in the application after the SoftDevice is enabled.