

IN no.: **IN-150 rev 1.0**

 Date: **2021-10-11**

 Device affected: **nRF52820-QDAA**

 Device version / Build Code: **C00**

 Data sheet references:
N/A

 Agreement reference:
N/A

 Customers reference:
N/A

Description of change:

The nRF52820 revision 3 (build code Dx0) introduces four changes to the product.

1. Behavioral changes and new/modified registers to the access port protection.
2. New (optional) filter coefficients for pulse shaping of the transmitted signal.
3. Improved wideband blocking.
4. The pin DEC5 is no longer connected.

All new registers and changes in functionality for revision 3 are documented in the nRF52820 product specification rev 1.2 and the errata document.

Customers who want to take advantage of the changes introduced in revision 3 will need to place orders via the separate ordering code nRF52820-QDAA-D. Production of revision 2 (build code C00) is maintained and is ordered using the existing ordering code nRF52820-QDAA.

Impact: Does the change affect **product**:

- | | | |
|---------------------------|--|--|
| 1. Form | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes – describe: |
| 2. Fit | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes – describe: |
| 3. Function | <input type="checkbox"/> No | <input checked="" type="checkbox"/> Yes – describe: See description below. |
| 4. Quality or Reliability | <input checked="" type="checkbox"/> No | <input type="checkbox"/> Yes – describe: |

Reason for change:

Changes to the access port protection:

Informational Notice 133 (IN-133) identifies a fault injection technique that may cause failure of the access port protection mechanisms on the nRF52 Series. The introduced changes to revision 3 seek to mitigate this known fault injection technique.

Added filter coefficients for pulse shaping of the transmitted signal:

The filter has been added to improve margins with respect to section TP/154/PHY24/TRANSMIT-05 of the ZigBee IEEE 802.15.4 Test Specification when using the nRF52820 in a system with the nRF21540 (or other power amplifiers) with high output power (above 14 dBm).

Improved wideband blocking:

The update improves the wideband blocking performance margins with respect to the ETSI EMC immunity requirement. It also improves reception in noisy environments. This improvement is particularly important when using an external LNA.

Changes to the pinout:

This is to reduce the number of external components. The nRF52820 revision 3 requires one less decoupling capacitor.

Consequences of change:*Access port protection:*

In factory state, the nRF52820 comes with the access port protection enabled. An ERASEALL command via control access port (CTRL-AP) is required to enable access.

In order to lock the device debug port, execute the following steps to enable the access port protection:

1. Start with a CTRL-AP ERASEALL operation.
2. Program code compiled with MDK 8.40.2 or later, with ENABLE_APPROTECT defined.
3. Write Enabled (0x00) to UICR.APPROTECT
4. Perform a hard reset to protect the device. The programmed code from step 2 will write APPROTECT.FORCEPROTECT to Force (0x00).

To unlock device debug port (for debugging etc.), execute the following steps to disable the access port protection:

1. Start with a CTRL-AP ERASEALL operation.
2. Program code compiled with MDK 8.40.2 or later, without ENABLE_APPROTECT defined.
3. Write HwDisabled (0x5A) to UICR.APPROTECT
4. Perform any reset to run the code. The programmed code from step 2 will open access port by writing to APPROTECT.DISABLE during startup.

If an nRF52820 revision 3 is programmed with software compiled with earlier versions of the MDK than 8.40.2, the debug port will be locked. However, the APPROTECT.FORCEPROTECT will not be written to Force (0x0) and the errata workarounds implemented in the MDK may not be applied to revision 3. Thus, it is required to upgrade to the latest MDK (version 8.40.2 or later) to ensure correct behavior.

Added filter coefficients for pulse shaping of the transmitted signal:

No consequence unless the filter is activated as described in FTPAN-254. If the filter is activated, it reduces the power emitted in adjacent RF channels when transmitting in IEEE802.15.4 mode.

Improved wide band blocking:

The blocking performance improvement will be in the order of 10-15 dB for frequency offsets of 50-300 MHz from the carrier frequency compared to previous nRF52820 revisions.

Changes to pin-out:

Existing PCB designs for the nRF52820 (rev. 2) are compatible with the nRF52820 rev. 3 without performance degradation. For new designs an updated bill of material for the reference schematic is available in the product specification rev. 1.2 or later. The new bill of material requires one less decoupling capacitor.

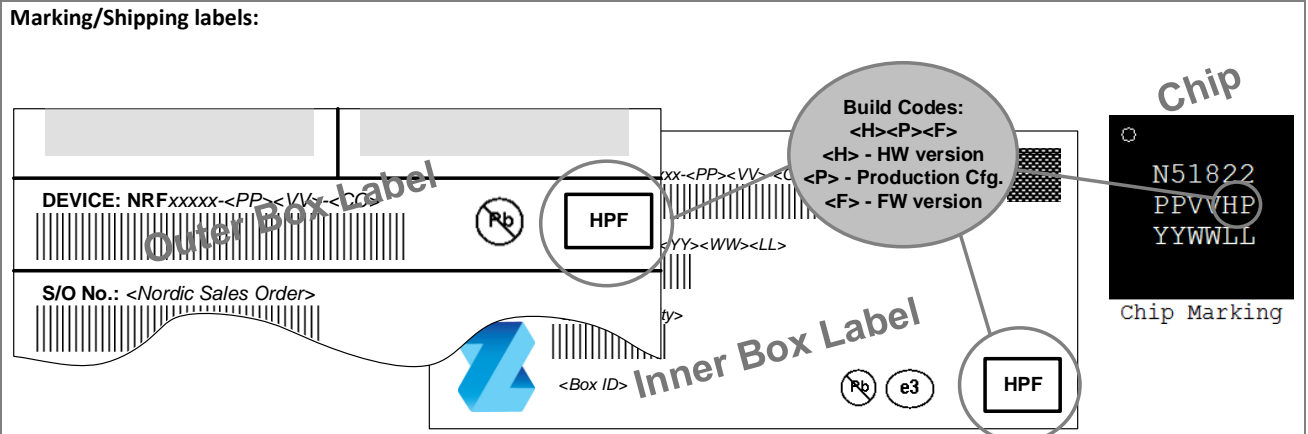
Teleregulatory and Bluetooth certification:

The new revision has no impact on ETSI, FCC or Bluetooth certifications unless the new pulse shaping filter is enabled.

Verification of change:

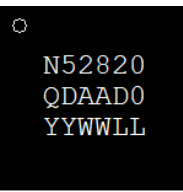
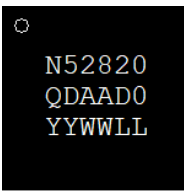
The new revision was qualified according to Nordic Semiconductor's standard product approval and quality procedures.

Marking/Shipping labels:



Build Codes:
 <H><P><F>
 <H> - HW version
 <P> - Production Cfg.
 <F> - FW version

Chips:

 N52820 QDAAD0 YYWWLL Build: D00	 N52820 QDAAD0 YYWWLL Build: D10
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Labels:

D00	D10
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Change active from (date):
 Orders can be placed now.


Change active from (lot no/date code/build code):
 Build code – Dx0


Samples Available (date/build code):
 2021-10-11 / D00

Attachments: No Yes – describe:

Technical contact at Nordic Semiconductor:
www.nordicsemi.com, "Support"
Authorization for Nordic Semiconductor

Commercial contact at Nordic Semiconductor:
www.nordicsemi.com, "Contact Us"

Product Manager: Pär Håkansson Date: 2021-10-11 Sign: 

Quality Director: Ebbe Rømcke Date: 2021-10-11 Sign: 

Please note that all last time buy orders are non-cancellable and non-returnable.

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