Nordic Semiconductor ASA
Tel.: +47 72 89 89 00
Fax: +47 72 89 89 89
Reg. nr./VAT no.: 966011726

Product Anomaly Notification (PAN)

Device affected (product name):	**Active device version(s)**:
nRF24AP2-1CH nRF24AP2-8CH	Build code D and M Build code D and M
Date (YYYY-MM-DD): 2011-02-01	**PAN no.:** PAN-022
Nordic Semiconductor reference: Thomas Embla Bonnerud	**Document version**: 2.0

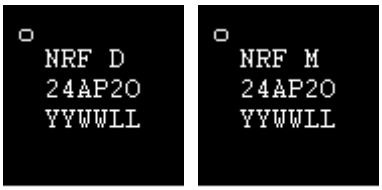
Anomalies in active device version(s)

Summary:

1. The chip fails to reset and return to IDLE state from DEEP SLEEP
2. Suspend does not enter low power mode when SUSPEND line is held low and SLEEP is high

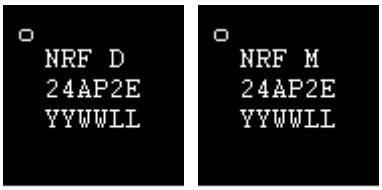
Marking / tracing:

nRF24AP2-1CH



Build: D Build: M

nRF24AP2-8CH



Build: D Build: M

Where the letters on the last line of the chip marking means:

- Y = Year assembly marking, e.g. YY=11
- W = Week assembly marking, e.g. WW=35
- L = Wafer lot, step letters for each lot, e.g. LL={AA, AB,…,AZ, BA,…,ZZ, AA, AB,…}

Authorization for Nordic Semiconductor

Product Manager Date: 2011-02-01 Sign:

Thomas Embla Bonnerud

Anomaly #1:	**Device version(s) affected**: Build code D and M

Symptoms:

The chip fails to reset and return to IDLE state from DEEP SLEEP. The DEEP SLEEP state may be entered into by sending the SLEEP serial message (0xC5) followed by the assertion of the SLEEP signal.

Conditions:

Not all devices are affected by this anomaly. Testing indicates that between 10 to 30% are affected and if it is affected the anomaly have no dependence on external conditions like supply voltage or temperature. Even if the device is affected it may reset and return to IDLE state from DEEP SLEEP, but sooner or later it will fail.

Consequences:

The chips that fail to reset and return to IDLE state from DEEP SLEEP will remain in the low power state until reset by reset pin or power on reset.

Workaround:
There are two possible workarounds:

1. Use IDLE state (SLEEP and SUSPEND) instead of DEEP SLEEP state. The consequence of this workaround is an increase in power consumption of 1.5uA in low power state.

2. If DEEP SLEEP state is used, the host MCU must reset the nRF24AP2 by using reset pin or power on reset to return to IDLE state.

Anomaly #2	**Device version(s) affected**: Build code A, B, D and M

Symptoms:

Suspend does not enter low power mode (LPM) when SUSPEND line is held low and SLEEP is high, instead the active current is drawn. LPM is entered when SUSPEND returns to high, provided SLEEP is still high.

Conditions:

All

Consequences:

Active current draw when a low power mode is expected.

Workaround:

Pulse SUSPEND line low instead of holding it low. Device will still reset all ANT channels and will then draw the expected low current.

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Anomalies in older versions (fixed in active device versions)

Summary:

3. ANT channel performance degrades to sporadic messaging that is difficult to track. The anomaly occur for some devices in a 10mV to 50mV supply voltage window between 2.5 and 3.6V

Marking / tracing:

nRF24AP2-1CH

Build: B

nRF24AP2-8CH

Build: B

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Anomaly #3

Device version(s) affected:
Build B

Symptoms:

Within a narrow supply voltage window channels between devices may become difficult or impossible to maintain as one device's timing becomes seriously affected, resulting in sporadic transmission or reception of data packets. It may be difficult or impossible to establish or maintain a stable link between the affected device and another. Searches and possibly search timeouts are expected to appear on the slave side of the link.

Conditions:

The symptoms may be visible for a supply voltage window of 10mV to 50mV which will vary in size and position between 2.5 to 3.6V from device to device and operating temperature.

Consequences:

The current devices are not recommended for volume production in applications where the supply voltage can be in the 2.5 to 3.6V window, for example when the device is supplied directly from a CR2032 coin cell battery.

The current devices can be used in volume production in applications where the supply voltage is regulated below 2.5V, for example using an external voltage regulator to supply the device.

The current devices can be used for development, prototyping and FCC/ETSI qualification.

Workaround:
For volume production use a regulated supply below 2.5V or use an active version where this is fixed.