Product Anomaly Notification (PAN)

Device affected (product name)*:* nRF24LU1P-F16Q32 nRF24LU1P-F32Q32	**Device version(s) affected***:* Build code AX and A
Date (YYYY-MM-DD): 2008-10-17	**PAN n** 011
Nordic Semiconductor reference: Thomas Embla Bonnerud	**Document version***:* 1.0

Summary

Anomalies:

1. Flash memory read back via SPI hold time violated
2. USB data corruption for certain use cases

Marking / tracing:

Affected devices:

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Authorization for Nordic Semiconductor

Product Manager	Date	Sign:
Thomas Embla Bonnerud	2008.10.17	

Detailed Description

Anomaly #1
Symptoms: When verifying Flash content, the specified hold time is violated for the last bit in each byte. This bit will only be held for a short time after the positive edge of SSCK, not until the negative edge as specified. The hold time after the positive edge of SSCK is typically in the order of 20-40ns.
Conditions: Will happen for any Flash SPI READ command, which requires too long hold time.
Consequences: Bit 0 of spidata read may be corrupted.
Workaround: External SPI masters should have minimal SMISO hold time versus posedge SSCK requirement. A value of < 15ns will be acceptable for small loads on SMISO, for larger loads larger hold times are accepted.

Anomaly #2

Symptoms:

Sporadic corruption in data from host to USB when host and device MCU try to read from USB endpoint buffer at the same time

Conditions:

Observed when host sends data to nRF24LU1P via a hub, while device MCU reads from endpoint 0 buffer, but will generally occur any time colliding read accesses to an USB endpoint buffer may happen

Consequences:
Corrupted data byte when such colliding access occur.

Workaround:
In nRF24LU1P firmware, set SFR 0x8E CKCON to value 2 (value 1 is default). This will generally extend all MCU read and write to external memory with one clock cycle, but for write to flash memory it will imply writing twice, which takes double time and may violate the "max 2 times write to a flash byte" rule.
Therfore there is 4 alternatives of doing this:

1) Set CKCON = 2 once at start of the program.
   Max simplicity, but major impact for flash write access - minor impact for other code
   Recommended for programs with no flash write access.

2) Set CKCON = 2 at start of program, change to 1 just before any flash write and back to 1 just afterwards
   Quite simple - no impact for flash update - minor impact for other code
   Recommended for programs with USB functionality and little flash write.

3) Set CKCON = 2 just before any access to USB and back to 1 just afterwards.
   More complicated - no impact for flash write - no impact for other code
   Recommended for programs with little USB functionality.

4) For programs which do not read any USB endpoint buffer at all, no workaraound is needed.
   Default CKCON = 1 applies.

Product: nRF24LU1P   Date:2008-10-17   Page 3 of 3