BlueNRG-LPS device limitations

Silicon identification

This errata sheet applies to the following STMicroelectronics BlueNRG-LPS devices:

Table 1. Ordering information

Order code	Package	Identification information of the device(1)	Device cut
BlueNRG-332A	QFN32	0x120	2.0
BlueNRG-332A	QFN32	0x121	2.1
BlueNRG-332A	QFN32	0x121	2.2(2)
BlueNRG-332V	WLCSP36	0x120	2.0
BlueNRG-332V	WLCSP36	0x121	2.1
BlueNRG-332V	WLCSP36	0x121	2.2(2)

1. *Value as read from the register system controller (SYSCFG) - DIE_ID register (0x40000000).*
2. *Cut 2.2 and cut 2.1 have the same identification information from register read, they can be distinguished through the marking information printed on the package.*

Note: For each device limitation the following information is provided:

- *Part number affected: which part number and cut is affected by the limitation (the part numbers and cuts not reported are not affected by the limitation)*
- *Description: limitation description*
- *Impact: limitation impact*
- *Workaround: possible workaround if any*

1 Limitations

The following sections describe the errata of the applicable devices with Arm® core and provide workarounds if available.

arm

Note: Arm is a registered trademark of Arm Limited (or its subsidiaries) in the US and/or elsewhere.

1.1 RTC alarm is not able to internally wake up the device from DEEPSTOP

Part numbers affected: BlueNRG-332A cut 2.0, BlueNRG-332A cut 2.1, BlueNRG-332A cut 2.2, BlueNRG-332V cut 2.0, BlueNRG-332V cut 2.1 and BlueNRG-332V cut 2.2.

Description: The RTC is able to run in DEEPSTOP mode but it cannot generate an internal RTC alarm wake-up event.

Impact: RTC alarm cannot be used as an internal wake-up source when the device is in DEEPSTOP.
Workaround: A software workaround consists of outputting the RTC alarm on PA8 and using this pin as a wake-up pin from DEEPSTOP.

1.2 RTC interrupt not triggered in RUN mode

Part numbers affected: BlueNRG-332A cut 2.0, BlueNRG-332A cut 2.1, BlueNRG-332A cut 2.2, BlueNRG-332V cut 2.0, BlueNRG-332V cut 2.1 and BlueNRG-332V cut 2.2.

Description: The RTC interrupts could get lost in RUN mode when the selected RTC clock source is LSI or LSE. The problem does not occur when the RTC clock source is CLK_16MHz/512.

Impact: RTC interrupts cannot be reliably used for real-time control functions, since some occurrences of RTC interrupts could be missed.

Workaround: While in RUN mode, don't use RTC interrupts and use polling on RTC_ISR register. Other possible options consist of outputting the RTC alarm or wakeup on PA8 or PA9 and using one of these pins as I/O interrupt pin.

Note: Wakeup from DEEPSTOP mode is not affected and RTC interrupt is always reliable in DEEPSTOP mode.

1.3 Activity on some GPIOs may affect the RF performance

Part numbers affected: BlueNRG-332A cut 2.0, BlueNRG-332A cut 2.1, BlueNRG-332A cut 2.2, BlueNRG-332V cut 2.0, BlueNRG-332V cut 2.1 and BlueNRG-332V cut 2.2.

Description: RF performance can be degraded, in presence of one of the following conditions:

- QFN32 package only: toggling activity on PB14 and PB15 during RF communication
- QFN32 and WLCSP36 packages: GPIOs tracks are routed close to OSCIN/OSCOUT pins and toggling activity on those GPIOs during RF communications.

Impact: The users can experience high packet error rate during RF communications.

Workaround:

- QFN32 package only: avoid toggling PB14/15 (input or output) during RF communications
- QFN32 and WLCSP36 packages: avoid routing GPIO tracks close to OSCIN/OSCOUT tracks, if they are toggling during RF communications.

1.4 Possible RX lock when receiving connectionless AoA/AoD packet

Part numbers affected: BlueNRG-332A cut 2.0, BlueNRG-332A cut 2.1, BlueNRG-332A cut 2.2, BlueNRG-332V cut 2.0, BlueNRG-332V cut 2.1 and BlueNRG-332V cut 2.2.

Description:

In some specific conditions, when it is receiving an advertising packet with CTE extension, the digital radio can become stuck in the RX state. Typically, an extended advertising packet including a CTE extension includes at least 3 bytes of payload. If the packet is malformed or corrupted over the air, and if it is understood by the digital radio with a payload length of either 1 or 2 byte(s), it locks the de-framing process of the digital radio, which stays in RX state.

Impact:

The digital radio stays in the RX state, and never reports any interrupt to the software about the completion of the reception. This occurs using either the LE_1M or the LE_2M phy.

Workaround:

When the software is preparing to receive an extended advertising packet with CTE (setting TxRxPack.CTEAndSamplingEnable = 1 and TxRxPack.Advertise = 1), it must assume that the radio can be locked and never terminate the operation autonomously.

It may set a parallel timer watchdog with a duration of the maximum expected payload and CTE information. If the watchdog timer expires without receiving any interruption, it should abort the current receive operation.

Revision history

Table 2. **Document revision history**

Date	Version	Changes
14-Apr-2022	1	Initial release.
23-Aug-2022	2	Updated Table 1. Ordering information. Added Section 1.3 Activity on some GPIOs may affect the RF performance and the affected part numbers on the limitation description.
16-Dec-2022	3	Added Section 1.4 Possible RX lock when receiving connectionless AoA/AoD packet.
27-Feb-2023	4	Updated: • Table 1. Ordering information • Part numbers affected in Section 1 Limitations.