BlueNRG, BlueNRG-MS Errata sheet

BlueNRG/BlueNRG-MS device limitations

Silicon identification

This errata sheet applies to the STMicroelectronics BlueNRG and BlueNRG-MS devices.

The full list of part numbers is shown in *Table 1*.

Table 1: Device summary

Order code	HCI_Revision(1)	Marking	Package
BLUENRGQTR	0x30xx	BLUENRG	QFN32
BLUENRGCSP	0x30xx	BLUENRG	WLCSP34
BLUENRG-MSQTR	0x31xx	BLUENRG-	QFN32
BLUENRG-MSCSP	0x31xx	BLUENRG-	WLCSP34

Notes:

(1)As returned by HCI_READ_LOCAL_VERSION_INFORMATION.

1 Limitations

1.1 SPI_CSN wakeup occurring at same time as sleep command issued

1.1.1 Part numbers affected

BLUENRGQTR and BLUENRGCSP.

1.1.2 Description

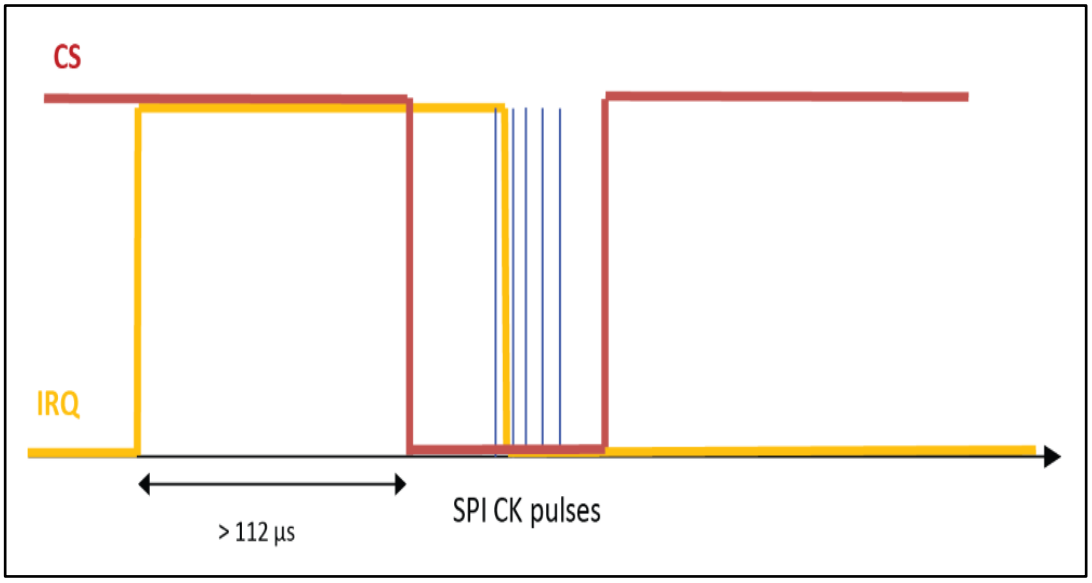
If SPI CSN is asserted while BlueNRG is going to sleep, the device can enter a lock state and no longer reply to SPI commands. The only way to recover the device is to perform a hardware reset. A software workaround is available to eliminate the problem.

1.1.3 Workaround

The workaround involves using the IRQ signal to indicate that the external microcontroller is going to access the SPI. The details are:

- Use BlueNRG firmware 6.3 or later.
- Before asserting CS line (CS low), IRQ line must be driven high by the MCU at least 112 µs. IRQ line should be set again as an input (with pull-down) after the first byte is on the SPI bus (See *Figure 1: "SPI access timing diagram"*).

Figure 1: SPI access timing diagram



1.2 Device hanging during wakeup

1.2.1 Part numbers affected

BLUENRGQTR and BLUENRGCSP.

1.2.2 Description

In extremely rare conditions, BlueNRG may hang during a wakeup sequence. The symptoms of the problem are: VDD1V2=0.4-0.5V, the device no longer replies to SPI commands. The only way to recover the device is to perform a hardware reset. The problem is not present when using a 32 MHz high-speed crystal.

1.2.3 Workaround

Use 32 MHz XTAL.

1.3 External 32 kHz switched off when TX power is set to maximum level

1.3.1 Part numbers affected

BLUENRGQTR, BLUENRGCSP, BLUENRG-MSQTR, BLUENRG-MSCSP.

1.3.2 Description

When the device switch on the power amplifier to perform a transmission, there could be an unwanted effect on the external 32 kHz XTAL that stops oscillating. The problem depends on mutual induction between the RF tracks and the XTAL tracks. The problem can be detected monitoring the 32 kHz XTAL while switching on the power amplifier.

1.3.3 Workaround

Different actions can be taken to limit or prevent the problem:

- It is recommended to place the RF tracks, and the XTAL tracks as far as possible from each other and in different layers.
- Place an inductor of 2 nH between 32 kHz XTAL tuning capacitors and ground to filter 2.4 GHz noise.
- Setting PA Level to a value less than 7 in BLUEHCI_HAL_SET_TX_POWER_LEVEL.
- Using the internal ring oscillator.

2 Revision history

Table 2: Document revision history

Date	Revision	Changes
06-Nov-2014	1	Initial release.
31-Mar-2015	2	The document has been adapted to refer to both BlueNRG and BlueNRG-MS devices.
20-Jan-2017	3	Correct inductor value on *Section 1.3.3: "Workaround"*.
17-Feb-2017	4	Correct list of devices on *Section 1.3.1: "Part numbers affected"*. Minor text revision.

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