RELEASE NOTES
JN5189/QN9090/K32W061
ROM Patch Update V5

NXP Semiconductors

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update_rom_patch_v5.bin

1. Supported Hardware Products

This software release supports the following hardware products:

Chips		Modules	Evaluation Kits
JN5188HN	JN5188THN	JN5189-M10	JN5189-DK006 (OM15076-JN5189)
JN5189HN	JN5189THN	JN5189-M16	QN9090-DK006 (OM15076-QN9090)
QN9030HN	QN9030THN	QN9090-M10	OM15080-JN5189
QN9090HN	QN9090THN	QN9090-M16	OM15080-QN9090
K32W061	K32W041	K32W061-M10	IOTZTB-DK006

2. Overview

Occasionally the bootloader inside the device needs updating. Generally, this is to:

- Improve boot speed performance
- Improve security
- Improve and extend OTA or flash programming support

This is achieved by applying ROM patches to the device. The ROM patches are provided as applications that can be programmed into the device. Once run, the application will update the bootloader.

This version supports updating of ROM patches on devices with the following bootloader checksums:

- 0x00000000 (No ROM patch installed)
- 0x8c26c747
- 0x399af700
- 0xe2f5168f
- 0x2db975f7
- 0x60934228
- 0xf14140ca

The latest ROM patch has the following details:

- Bootloader checksum = 0x64b5cd8f
- size = 1252 bytes
- Internal version number = 0xcc000014

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3. Release Details

3.1 New Features and Changes

List of tickets for the new features and changes:

MCUZIGBEE-1777	Warm start with OTA'd image causes crash
MCB-1030	ISP Flash Write clears all previous internal Flash contents per customer request when in ISP level Write Only secure or non-secure (2 or 3). Incidental Unlock issue found when returning to ISP level Unrestricted mode (0), fixed in this patch. Force SWD disabling as soon as configuration is read, if it says so.
MCB-1173	Resolved bit errors observed in pFlash after update under some circumstances

CAUTION: It is mandatory to reinstall this patch after unlock pFlash is applied before applying any ISP restriction. Failing to do so may brick the device at the next unlock procedure.

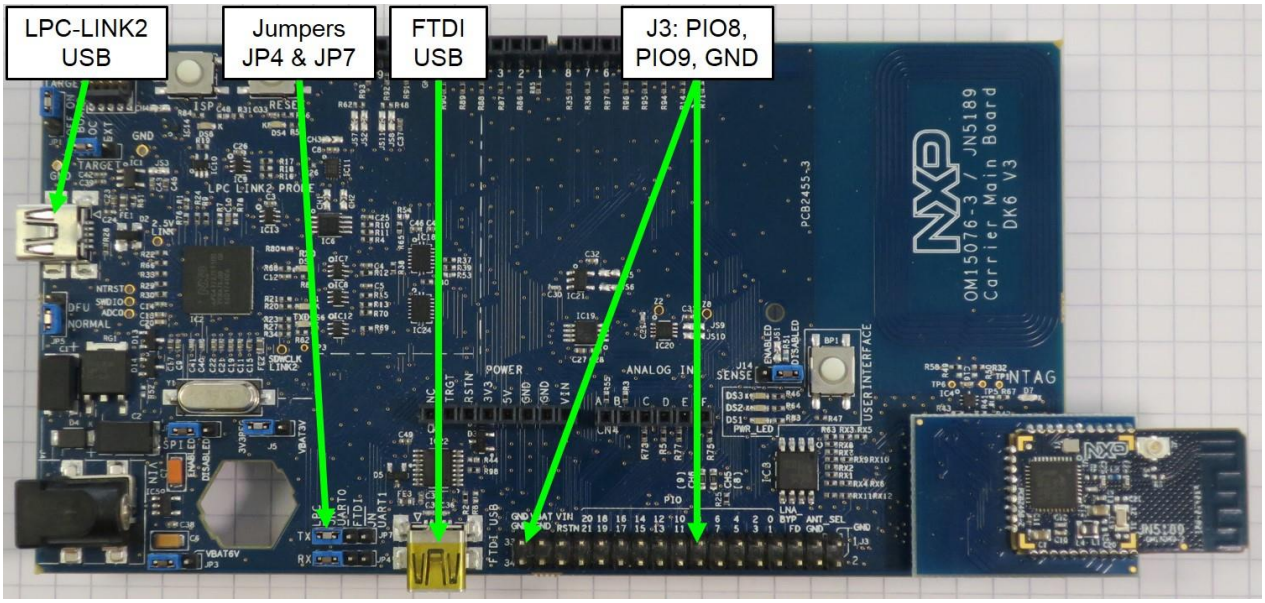
3.2 Flash Programmer Known Issues

Flashing at 1M baud rate is supported, but not through the LPC-LINK2 USB connection. For example, when running the following command:

```
DK6Programmer.exe -s COMx -P 1000000 -p binary.bin
```

- If the COM port (COMx) used is connected to the LPC-LINK2, the command may fail to flash the binary
- If the COM port (COMx) used is connected to the FTDI USB or to a USB-UART serial converter connected to PIO8 & 9, the command shall always succeed

The picture below shows the various connection options for UART0 on the DK6 carrier board. The table beneath summarizes the baud rates supported on the connectors.



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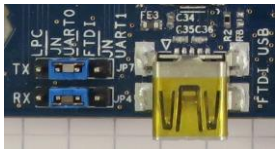
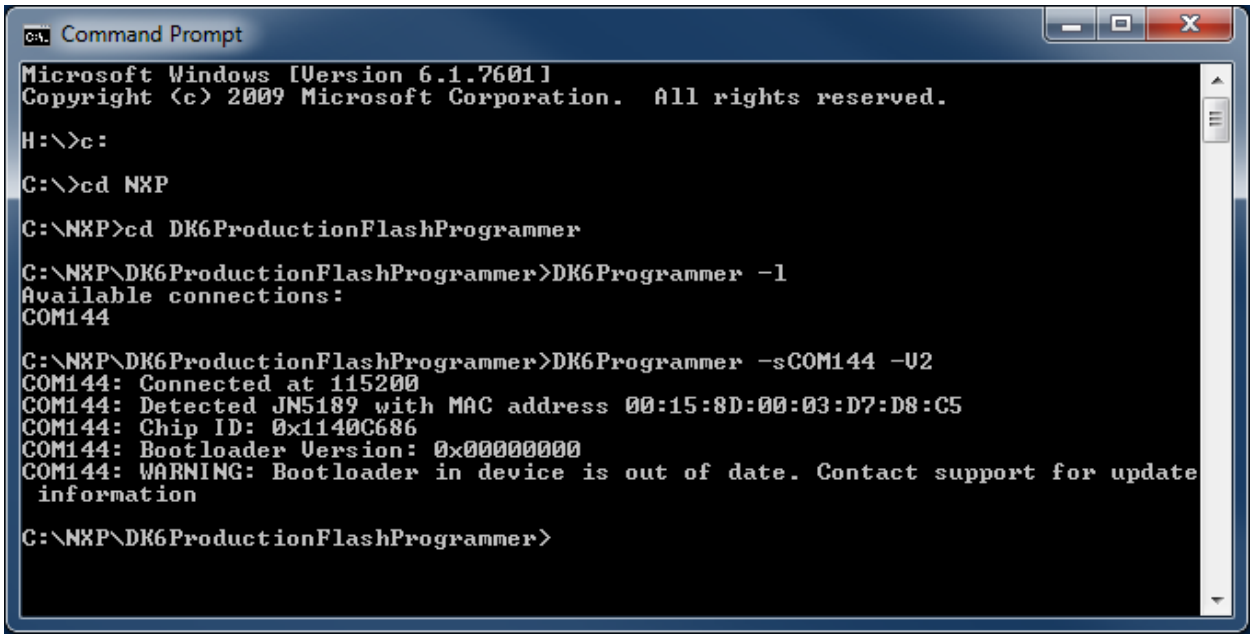
UART connection	1M baud rate support?	Comments
LPC-LINK2 USB connector	No	In this configuration the jumpers JP4 & JP7 (close to the FTDI USB connection) shall be in the **leftmost position** as shown in the picture above
FTDI USB connector	Yes	In this configuration the jumpers JP4 & JP7 (close to the FTDI USB connection) shall be in the **middle**, as shown here: 
J3 debug connector (PIO8 & PIO9)	Yes	Use USB to UART serial converter supporting rates up to 1M. For instance, the Prolific USB-to-Serial converter is supported. It is available at: https://www.olimex.com/Products/Components/Cables/USB-Serial-Cable/USB-Serial-Cable-F/

4. Checking That The Bootloader Is Up-To-Date

1) Download and install the latest DK6 Flash programmer (JN-SW-4407) from www.nxp.com
2) Open a command prompt.
3) Change folder to C:\NXP\DK6ProductionFlashProgrammer
4) Type `DK6Programmer -l` to find the COM port
5) Type `DK6Programmer -sCOM??? -V2`. If the bootloader is out of date, then a warning will be given: See below



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5. How To Install The Latest ROM Patch

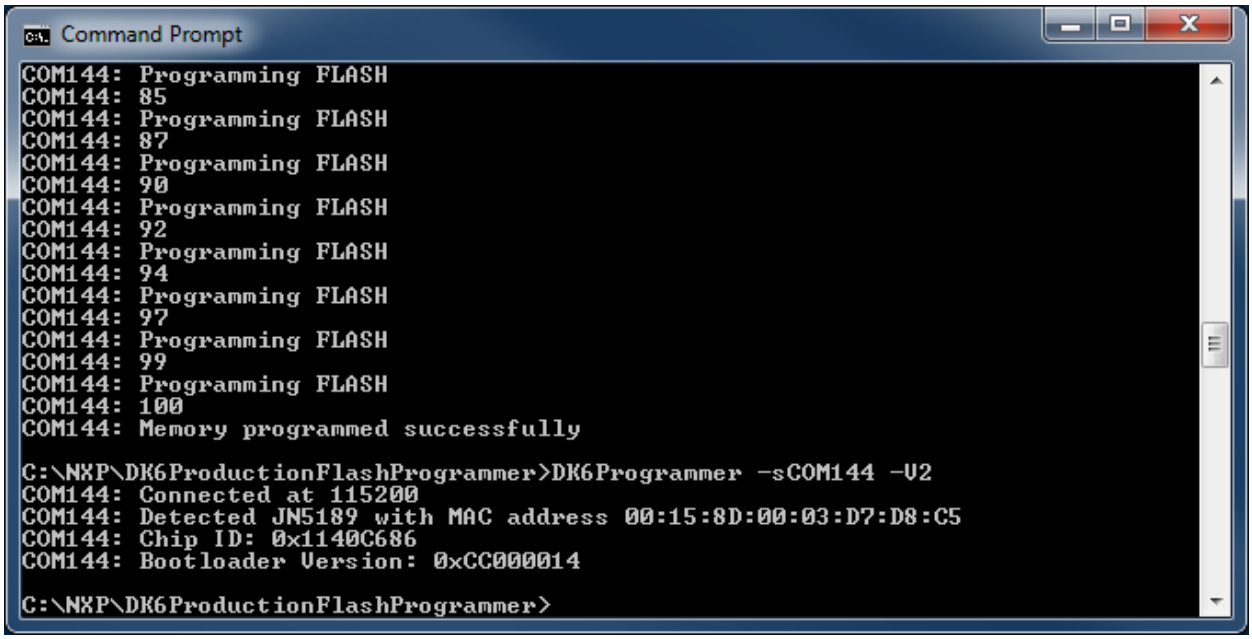
5.1 Non-Interactive Version

1. Use DK6Programmer and type following command:

```
DK6Programmer -s <COMPORT> -V2 -p update_rom_patch_v5.bin
```

2. Wait 10 seconds
3. Retest the bootloader version

```
DK6Programmer -s<COMPORT> -V2
```



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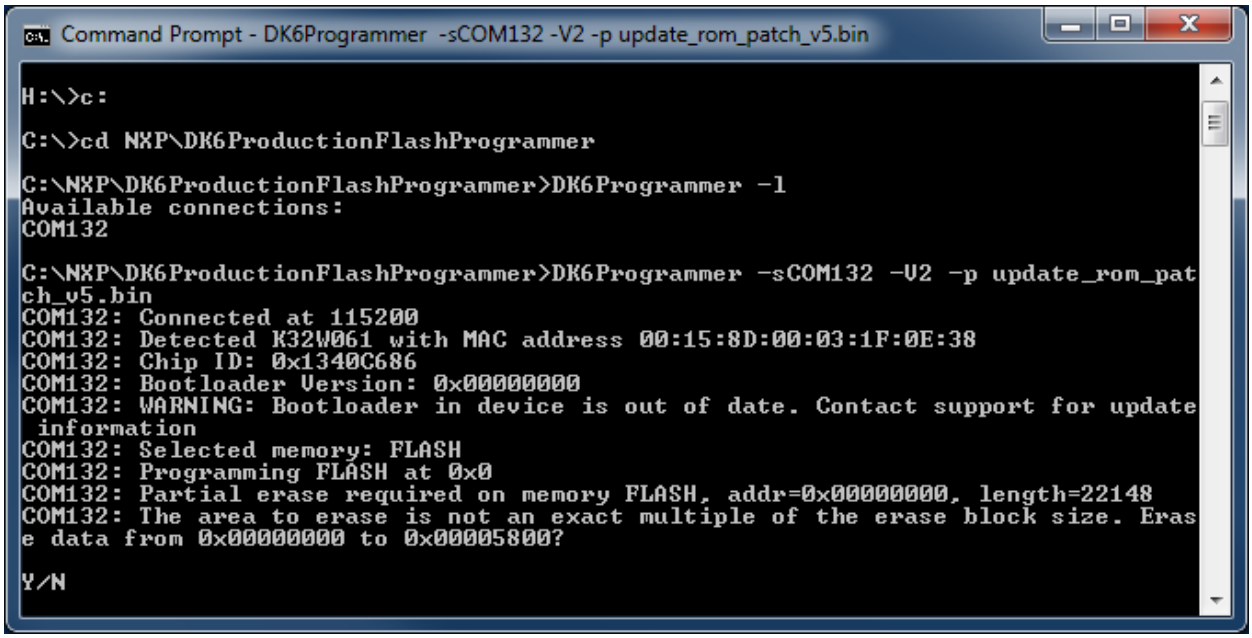
5.2 Interactive Version

This version allows you to validate the bootloader update using a terminal application such as TeraTerm

1. Use DK6Programmer and type following command:

```
DK6Programmer -s <COMPORT> -V2 -N -p update_rom_patch_v5.bin
```

The -N will not generate any resets to the device, so it will not put the device into programming mode. This must be done manually by pressing the ISP and RESET switches on the DK6 board and will not restart the device at the end of programming



2. Start TeraTerm and connect to the serial port at 115200 baud and then reset the board

4. You shall then see following log:

```
 Rom patch update STARTED!
CAUTION: Do not unplug board until rom patch update completion!!!
```

If the update is successful, if you get the "Rom patch update COMPLETED!" message with no "FAIL" message in the previous log. See sections 5.2.1 to 5.2.3 for further information.

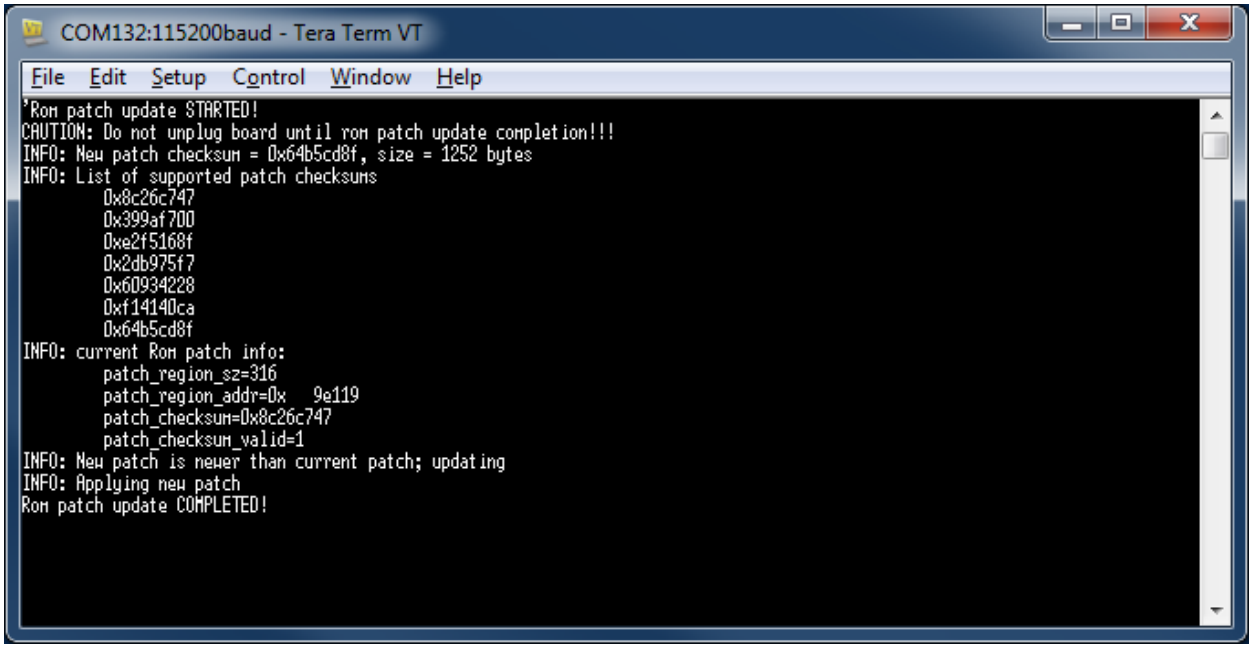
5.2.1 A device with no existing patch

You will get the following display:

```
Rom patch update STARTED!
```

```
CAUTION: Do not unplug board until rom patch update
completion!!!
INFO: New patch checksum = 0x64b5cd8f, size = 1252 bytes
INFO: List of supported patch checksums
          0x8c26c747
          0x399af700
          0xe2f5168f
          0x2db975f7
          0x60934228
          0xf14140ca
          0x64b5cd8f
INFO: current Rom patch info:
          patch_region_sz=0
          patch_region_addr=0x0
          patch_checksum=0x0
          patch_checksum_valid=0
INFO: No existing patch found
INFO: Applying new patch
Rom patch update COMPLETED!
```

(Only if checksum is 0x0)



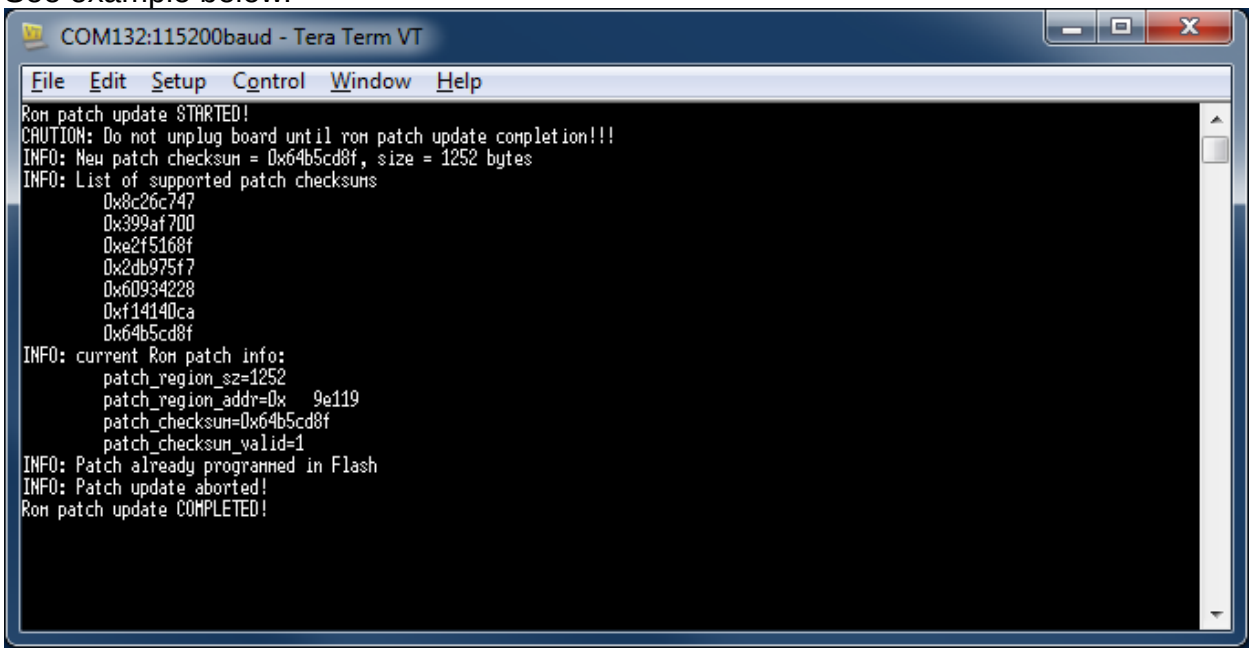
5.2.2 The patch is already programmed

You get the following display:

```
Rom patch update STARTED!
CAUTION: Do not unplug board until rom patch update
completion!!!
INFO: New patch checksum = 0x64b5cd8f, size = 1252 bytes
INFO: List of supported patch checksums
          0x8c26c747
```

```
          0x399af700
          0xe2f5168f
          0x2db975f7
          0x60934228
          0xf14140ca
          0x64b5cd8f
INFO: current Rom patch info:
          patch_region_sz=1252
          patch_region_addr=0x9e119
          patch_checksum=0x64b5cd8f
          patch_checksum_valid=1
INFO: Patch already programmed in Flash
INFO: Patch update aborted!
Rom patch update COMPLETED!
```

See example below:



5.2.3 The update fails

You get a "FAIL" message explaining the reason for the failure:

```
CAUTION: Do not unplug board until rom patch update
completion!!!
INFO: New patch checksum = 0x64b5cd8f, size = 1252 bytes
INFO: List of supported patch checksums
          0x8c26c747
          0x399af700
          0xe2f5168f
          0x2db975f7
          0x60934228
          0xf14140ca
```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```
         0x64b5cd8f
INFO: current Rom patch info:
         patch_region_sz=920
         patch_region_addr=0x   9e119
         patch_checksum=0x213b05f7
         patch_checksum_valid=1
FAIL: Current patch checksum not found in list!
INFO: Patch update aborted!
Rom patch update COMPLETED!
```

6. Possible Failures

Failure Description	Action
FAIL: could not read RomPatchInfo from Flash! FAIL: current patch checksum does not match RomPatchInfo in pFlash!	Report issue to support team
FAIL: New patch checksum not found in list or new patch older than current patch	You are trying to update to an older version of patch. Please make sure you are using the latest version of the ROM patch installer.
FAIL: Current patch checksum not found in list!	You are trying to use a ROM patch installer that does not support the current device (current checksum not supported). Please make you are using the latest version of the ROM patch installer.

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Date of release: 04/2020

Document identifier: JN-AN-1263