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XBee RR Zigbee 3.0 Release Notes

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Version 1014 - (January 31, 2025)

INTRODUCTION

These release notes document changes made to the Zigbee firmware on the XBee RR RF modules

- Product Information
- Documentation
- Support

SUPPORTED PRODUCTS

- XBRR-24 - XBee RR 2.4 GHz radio module
  - Micro (MMT)
  - Surface Mount (SMT)
  - Through Hole (THT)

KNOWN ISSUES

1. Issuing a self-addressed remote AT command (0x17 frame type) will output a duplicate 0x97 command response frame that always indicates a 0x04 Tx Failure status. *[XBHAWKZB-1525]*

2. The first wake period when using cyclic sleep with pin wake will be 500ms longer than subsequent wake periods. *[XBHAWKZB-1043]*

3. While performing intensive file system operations, there is a chance that incoming RF data will be lost. *[XBHAWK-473]*

4. When using pins **P5** and/or **P6** for digital outputs the sleep current will be an additional ~15 uA for each of the pins configured an output. *[XBHAWK-926]*

5. When a remote AT command is sent to a module that is blocked from output to the serial port due to RTS flow control, the blocked module will not respond to the remote AT command, nor will it even acknowledge reception of the packet. As a result, remote AT commands will not work under these conditions. *[XBHAWKZB-1859]* Workaround: Unblock serial port output on the remote module by

asserting RTS or by disabling RTS flow control (setting *D6* to 0)

BLE:

5. If the XBee's serial UART buffer is full (CTS has deasserted), the BLE interface will be unresponsive. *[XBHAWKZB-1296]*

OTA(over-the-air) Firmware Updates:

6. Performing a self-addressed OTA firmware update may be unreliable. Retries are needed even though no RF traffic involved. It's recommended to perform local firmware updates using the serial interface (via invoking the bootloader). *[XBHAWKZB-763] [XBHAWK-337]*

7. When performing a self-addressed OTA firmware update, TxStatus messages are not emitted. *[XBHAWKZB-779]*

UPDATE CONSIDERATIONS

XCTU (XBee Configuration and Test Utility) is recommended for updating the firmware of your radio module to the latest firmware version: www.digi.com/xctu

Enabling the High RAM concentrator mode on the target node during an OTA firmware update has proven to show an improvement in the duration of the upgrade. This can be performed by setting **DO** to **0x40** and **AR** to **0x00** on the target node after the network is formed to transmit a Many-to-one route request and then initiate the upgrade. Once the update is successfully completed, set **AR** to the default value of **0xFF** to disable the high RAM concentrator mode on the target node and return to normal operation.

Firmware updates use the same storage space as the file system. Initiating an OTA or serial firmware update will erase the file system of the target device.

The file system will need to be formatted after a firmware update before it can be utilized.

The following files are included in XBee RR RF firmware releases:

- Firmware
  - GBL: Firmware image for gateways and OEM serial updates
  - OTA: Firmware image for OTA firmware updates
  - OTB: Firmware + bootloader image for OTA updates
  - EHX: Encrypted firmware for Legacy X-CTU
  - EHX2: Encrypted firmware for XCTU-NG
- Configuration
  - MXI: Legacy X-CTU configuration file
  - XML: XCTU-NG configuration file

UPDATE BEST PRACTICES

Digi recommends the following best practices:

1. Test the new release in a controlled environment with your application before you update production

devices.
2. Unless otherwise noted, apply updates in the following order:
    1. Device firmware
    2. Modem firmware
    3. Configuration
    4. Application

Digi recommends Digi Remote Manager for automated device updates. For more information, go to https://www.digi.com/products/iot-platform/digi-remote-manager.
If you prefer manually updating one device at a time, follow these steps:

Serial firmware updates:
Invoke the bootloader using one of two methods:

- Issue the **%P** AT Command
- Using hardware flow control lines

Interface with the bootloader at 115200 baud and transfer a bootloader or firmware image as per the user guide.

An XBee MultiProgrammer is available for serial firmware updates in a production environment.

OTA firmware/file system updates:
Refer to the user guide for information on performing an OTA firmware and file system update.
The OTA firmware update process for XBee RR is the same across all supported RF firmwares and utilizes ZCL frames. To perform an OTA bootloader update, use the supplied *.OTB file, which is a combined firmware + bootloader image. The *.OTA file is just the firmware.

GPM OTA firmware updates:
Refer to the user guide for information on performing an OTA firmware update with GPM commands. This feature provides an alternate method to update the module over-the-air where the update is initiated and facilitated by the the server module in contrast to ZCL updates where the client manages the update.

The XBee Network Assistant can be used to manage your network and optimize it's configuration prior to performing an OTA update.

TECHNICAL SUPPORT

Get the help you need via our Technical Support team and online resources. Digi offers multiple support levels and professional services to meet your needs. All Digi customers have access to product documentation. firmware, drivers, knowledge base and peer-to-peer support forums.

Visit us at https://www.digi.com/support to find out more.

CHANGE LOG

1014 - Digi XBee RR Zigbee 3.0 (January 31, 2025)

- This is a optional/recommended/required release
- Zigbee Stack: EmberZNet 7.2.0.0
- Bootloader version: 1.11.5
- MMT Hardware revision: C
- SMT Hardware revision: A
- TH Hardware revision: A

NEW FEATURES

- N/A

ENHANCEMENTS

- N/A

SECURITY FIXES

1. Fixed a security issue that makes an end device vulnerable to DoS attacks. *[XBHAWKZB-1963]*

BUG FIXES

1. Fixed issue where a sleepy device can wakeup without asserting CTS properly. *[XBHAWKZB-1969]*
2. Applied a fix that prevents task switching while the stack is processing RF transmissions which caused errors in transmissions when interrupted. *[XBHAWK-1020]*
3. Fixed source routing MTOR where it was being sent after a reset and when joining the network. *[XBHAWKZB-1979]*
4. Fixed source routing issue where S2C module doesn't switch to High Ram concentrator mode when the Xbee3 is the concentrator. *[XBHAWKZB-1977]*

1013 - Digi XBee RR Zigbee 3.0 (December 15, 2023)

- This is a recommended release
- Zigbee Stack: EmberZNet 7.2.0.0
- Bootloader version: 1.11.5
- Hardware revisions
  - XBRR-24Z8CM, XBRR-24Z8PS-J, XBRR-24Z8RM, XBRR-24Z8RS-J, XBRR-24Z8US-J
    - Rev C
  - XBRR-24Z8CM-J, XBRR-24Z8RM-J, XBRR-24Z8UM
    - Rev D
  - XBRR-24Z8PS, XBRR-24Z8RS, XBRR-24Z8US
    - Rev B
  - XBRR-24Z8UM-J
    - Rev F

NEW FEATURES

- N/A

ENHANCEMENTS

- N/A

SECURITY FIXES

- N/A

BUG FIXES

1. Fixed pin sleep issue on the through-hole module where slave select is not properly waking/sleeping the module *[XBHAWK-1011]*
2. Fixed an issue where advertisements returned by calling `gap_scan()` in MicroPython would always appear connectable even if those devices were configured to be non-connectable. *[XBBLE-96]*
3. Fixed a network watchdog issue where the module would intermittently report multiple joined network modem statuses when the coordinator drops off then back onto the network. *[XBHAWKZB-1934]*
4. Fixed an issue when a new task is scheduled to run interrupting the main task it causes RF transmissions to be locked out due to a stack bug. *[XBHAWK-1020]*

1012 - Digi XBee RR Zigbee 3.0 (May 19,2023)

- This is a recommended release
- Zigbee Stack: EmberZNet 7.2.0.0
- Bootloader version: 1.11.5
- MMT Hardware revision: C
- SMT Hardware revision: A
- TH Hardware revision: A

NEW FEATURES

1. Added support for General Purpose Memory allowing users to use GPM commands to read and write to flash memory as well as perform firmware updates serially and over the air.
2. Added support for resuming a ZCL OTA update after loss of power or a reset occurred.

ENHANCEMENTS

- N/A

SECURITY FIXES

- N/A

BUG FIXES

1. Fixed network watchdog issue where the RF and serial communications become unresponsive when the coordinator drops in and out of range of the network. *[XBHAWKZB-1880]*
2. Fixed RS485 mode when coming out of sleep so that CTS is only asserted during transmission. **[XBHAWKDM-957]**

1011 - Digi XBee RR Zigbee 3.0 (September 30, 2022)

- This is an optional release
- Zigbee Stack: EmberZNet 6.7.6.0 Zigbee 3.0 stack

- Bootloader version: 1.11.5
- MMT Hardware revision: C
- SMT Hardware revision: A
- TH Hardware revision: A

NEW FEATURES

- Add support for the RR Through-Hole variant.

ENHANCEMENTS

- N/A

SECURITY FIXES

- N/A

BUG FIXES

- Fixed an issue that would prevent the module from sleeping when SSEL is configured as the wakeup pin and the UART is being used as the communication port. *[XBHAWK-953]*

1010 - Digi XBee RR Zigbee 3.0 (August 12, 2022)

- This is a recommended release
- Zigbee Stack: EmberZNet 6.7.6.0 Zigbee 3.0 stack
- Bootloader version: 1.11.5
- MMT Hardware revision: B

NEW FEATURES

- N/A

ENHANCEMENTS

1. The over-voltage detection limit is set for 3.85 volts which will output an API 0x8A Modem status of 0x0D value when the voltage limit is exceeded. *[XBHAWK-924]* Note: Xbee3 Zigbee product has an over-voltage limit of 3.7 volts.

2. Added logic to reject source routes on the coordinator when the nodeID is zero as source route addressing information is being added to the RF transmission address lookup table. *[XBHAWKZB-1828]*

SECURITY FIXES

- N/A

BUG FIXES

1. The XML function set has been updated to match the correct product name i.e., “Digi XBee RR Zigbee 3.0” to ensure that it is displayed the same way on the firmware selection dialog on XCTU

2. The default BLE advertisement has been updated to display the correct product name i.e., “XBee RR Zigbee”

3. D1 and P1 commands have been updated to return ERROR as expected since XBee RR doesn’t support

MicroPython and cannot be erroneously set to [6]I2C SCL and [6]I2C SDA respectively

4. The default values for PR and PD commands have been changed to match the pins that are available on the XBee RR variant

5. Fixed **DC** bit 6 Many-To-One response issue to properly send to the network manager when the network is setup as an encrypted distributed trust center. *[XBHAWKZB-1828]*

6. Fixed source routing issue causing a watchdog reset due to deleting a source route entry incorrectly which corrupted the source route table. *[XBZBS2C-838]*

100F - XBee RR Zigbee 3.0 (March 15, 2022)

- This is a recommended release
- Zigbee Stack: EmberZNet 6.7.6.0 Zigbee 3.0 stack
- Bootloader version: 1.11.5
- MMT Hardware revision: A

NEW FEATURES

- N/A

ENHANCEMENTS

- N/A

SECURITY FIXES

- N/A

BUG FIXES

1. Metadata files for this release have been updated to reflect the correct minimum XCTU and bootloader versions compatible with this release.

2. Fixed an issue where the radio could fail to join a network after PanID change when the router does a power cycle.

3. Fixed a potential bug that could cause failures while performing multiple flash operations (eg. BLE operations, the **WR** command, and/or OTA firmware updates) concurrently.

100E - XBee RR Zigbee 3.0 (January 6, 2022)

- This is the initial release
- Zigbee Stack: EmberZNet 6.7.6.0 Zigbee 3.0 stack
- Bootloader version: 1.11.5
- MMT Hardware revision: Pre-production samples only

NEW FEATURES

1. Implemented a new option **DC** bit 6 Many-To-One response for remote devices to send an updated route record to the concentrator when the **AR** interval occurs. The route record responses are staggered over the remote node **NT** time period.

ENHANCEMENTS

1. The Concentrator (**AR** setting is less 0xFF) will send an IEEE broadcast for a given node to respond with an updated route record when route repair request occurs due to a broken route.

SECURITY FIXES

- N/A

BUG FIXES

- N/A

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