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XBee RR 802.15.4 Release Notes

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Version 2010 - August 12, 2022

INTRODUCTION

These release notes document changes made to the 802.15.4 firmware on the XBee RR RF modules.

- Product Information
- Documentation
- Support

SUPPORTED PRODUCTS

- XBRR-24 - XBee RR 2.4 GHz radio module
  - Micro (MMT)

KNOWN ISSUES

1. If a remote radio's buffer is full due to RTS holding off incoming data, TX status responses will continue to indicate success and remote AT commands to this node will fail to generate a remote AT Command response. *[XBHAWKDP-247]*. Both of these problems can be overcome by setting *RR* to a value of 1 or greater. (i.e. discarded data gives a network ACK failure and remote AT commands give a transmission failure.)

2. Self-addressed OTA updates may be unreliable. When updating a local device, the serial firmware update process should be used. *[XBHAWK-337]*

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

4. If a packet is sent to the loopback cluster with a payload too large for the target device to send (for example, if the original packet is sent with 16-bit addressing but the response is sent with 64-bit addressing, 6 fewer bytes will be available for the payload), then the loopback response will not be sent. It is recommended to keep the payload size for loopback packets to at least 6 less than the value given by the NP command. *[XBHAWKDP-863]*

5. When two nodes are in the same 802.15.4 network (PANID and channel are the same), and one radio sends to XBRR using the broadcast PANID, XBRR will not detect nor indicate that the message was sent to the broadcast PANID in the options of field of the API frame. This applies to all types of receive frames (0x80, 0x81, 0x90, and 0x91). Note that under most conditions (when the broadcast PANID is used to distribute a message to multiple networks with different PANIDs), this problem is not seen. *[XBHAWKDP-859]*

6. If a particular channel is experiencing heavy beacon traffic(20+), there is a chance that an end device will not receive the beacon for the desired network resulting in either a delayed or failed association. *[XBHAWKDP-865]*

7. When a sleeping end device wakes up and polls the coordinator and receives data it will stay awake for ST time to receive any further messages from the coordinator. But, if it receives an I/O sample, it goes to sleep after receiving that sample rather than waiting for ST time. *[XBHAWKDP-868]*

8. When XBee RR is configured with SSEL as a wakeup from sleep and the UART is used as the serial port (rather than the SPI), the module does not sleep, but CTS toggles on and off. The only workaroud is to use DTR/SleepRq as a wakeup pin rather than SSEL when using the UART. (Configure *ATD81*, which is the default configuration). *[XBHAWK-953]*

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

OTA firmware updates use the same storage space as the file system. Initiating an OTA 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. If a serial firmware update was performed, the file system and bundled code on the device is retained but can only be accessed by the version of firmware that was active at the time it was formatted.

Example: If the file system was formatted for version 2005, it would not be accessible after a serial firmware update to 2006. To make use of the file system, it should be formatted for version 2006. If instead the file system is left untouched and the firmware is serially downgraded back to 2005, the file system from before the firmware update would be accessible.

The following files are included in XBee RR 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
- 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.

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

2010 - XBee RR 802.15.4 (August 12, 2022)

- This is the initial release
- Bootloader version: 1.11.5
- Hardware revision A

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. Note: for comparison, The Xbee 3 802.15.4 module has an over-voltage limit of 3.7 volts.

SECURITY FIXES

- N/A

BUG FIXES

- N/A