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# XBee SX900 Release Notes

**XBee SX900**

**Version 900A - TBD**

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## INTRODUCTION

These release notes document changes made to the XBee SX900 firmware.

- Product Information
- Documentation
- Support

## SUPPORTED PRODUCTS

- XBee-PRO SX
  - XBP9X
- XBee SX
  - XB9X

## KNOWN ISSUES

1. There is some bit jitter at low serial data rates (9600 baud and below) which may be incompatible with some host UARTs. If serial data loss is encountered, increasing the baud rate of the radio and host to 19200 baud or higher will provide a more stable interface. *[XTCL-176]*

2. When the UART parity of the module is configured differently than the UART parity of the host, unpredictable output may occur on the serial port. This is easily resolved by setting the parity the same on the host and the module. *[XBX-253]*

3. The associate LED may not blink at the correct rate while transmitting or receiving with the over-the-air baud rate at its lowest setting (ie when **BR** is 0). *[XBX-154]*

4. For certain operations that take significant time, (e.g. changing **BR**), applying changes does not complete until some time after a successful response to the AT command. As a result, there is a race condition that can occur if a transmission is attempted too soon the response to the AT command. *[XBX-337]*. Likewise, in AT command mode, a transmission immediately after an **RE, CN** sequence can also result in not receiving a TX status frame for that transmission *[XBXSX868-215]*.

The workaround for both of these and related problems is to issue an **AC** command after the parameter change so that the changes are completely applied prior to any subsequent transmission attempt.

5. If an attempt is made to transmit from a radio at the wrong OTA baud rate and this action is followed by correcting the baud rate on the receiver from **BR0** to the correct baud rate, whether it be 110kbps or 250kbps, there is an intermittent MAC ACK failure that occurs. But this problem quickly goes away thereafter. *[XBX-337]*

6. When executing AT commands (0x08) or AT Command Queue Register value (0x09) API frame types recommend waiting for the command response (0x88) frame type before continuing the command sequence; otherwise, when streaming commands the application can intermittently drop the command packet. In this case the setting will not be applied *[XBSX868-263]*.

# 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

The following files are included in XBee SX 900 firmware releases:

- Firmware
  - EBIN: Firmware image for serial updates
- Configuration
  - MXI: Legacy X-CTU configuration file

### Downgrading from 9007+

The 9007 firmware release introduced the KZ command for password-protecting remote AT commands. In order to maintain the security of this feature, devices protected with a password cannot be downgraded. Version 9007 blocks all downgrades, but a module with 9007 installed can still be downgraded by first updating to a newer version.

As of version 9009, downgrades are allowed as long as KZ is at its default value (0, meaning no password is set). To downgrade a module running version 9007, upgrade to version 9009 or newer, ensure KZ is at its default value, then load the target firmware. Note that this method only allows downgrading to version 9x04 or 9x03, older versions cannot be supported due to hardware compatibility concerns.

# 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

# 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

## 900A (USA,MEX,CAN), 920A(AUS), 930A (BRA), 960A (NZL) - XBee SX900 (April 30, 2021)

### ENHANCEMENTS

1. Updated region variants to reach parity with 900A (USA,MEX,CAN) version. See previous release entries for features, enhancements, and bug fixes.

### BUG FIXES

1. Fixed an issue where the serial DMA buffers were getting overran when doing a flash write causing the module not to process valid serial data properly. In addition when updating the encryption Nonce the last four RF channels would become unusable. *[XBXSX868-245]*

## 9009 (USA,MEX,CAN) - XBee SX900 (October 30, 2020)

### NEW FEATURES

1. Added support for counter mode encryption. CBC mode is still supported by default.

2. Added support for sleep immediate to allow user to save battery by sleeping the network after it is known that needed traffic has completed.

3. Added Synch pulse on DIO9 (aka OnSleep) pin when configured for special function 6 (D9 6). This allows DIO9 to toggle at the same time on all radios in the network.

### ENHANCEMENTS

1. Expanded sleepy end device I/O sampling capability, when **IF** is set to zero allows I/O samples to be sent before the device sleeps and occurring thereafter every wake cycle specified by **IR** sample rate. *[XBHAWKDM-829]*

2. Added randomized I/O sampling option for synchronous sleep networks with setting **SO** bit 10 and setting **IR** to zero. This will randomize the I/O sample over the **ST** time period. The **IR** I/O sampling option can be used in conjunction with this option where the first sample is randomized and thereafter I/O samples will occur on the **IR* interval sending x samples or x samples - 1. *[XBX-314]*

3. Pending commands (commands that don't give immediate results e.g. *ND*), no longer need to be completed before a non-pending command can execute, provided that non-pending command is *not* entered from command mode. This means that it is either an API AT command or a remote AT command. The purpose of this enhancement is to improve the performance of gateway software, especially in a synchronously sleeping network. *[XBX-316]*

### SECURITY FIXES

- N/A

**BUG FIXES**

1. Eliminated incorrect overriding sync messages in a synchronous sleep network. *[XBX-271]*

2. Disabled API 0xFE diagnostic frame which will no longer be emitted. *[XBX-324]*

3. Fixed issue when operating the modules with **BR** set to zero where the **TO** transmit option was using DigiMesh instead of point to multi-point transmit packet option. *[XBX-315]*

4. Fixed an issue where if a sync sleep coordinator left the network sometimes a sleeping node would become the new sleep coordinator instead of a sleep support node *[XBX-255]*

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## 9007 (USA,MEX,CAN) - XBee SX900 (June 6, 2018)

### NEW FEATURES

1. Added support for secure remote AT commands. Note that **loading and running this code on a module will prevent the user from downgrading to a previous version of the software without support for secure remote AT commands.**

### BUG FIXES

1. Fixed a memory corruption issue caused by entering more than 64 characters on some commands in AT command mode.

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## 9004 (USA,MEX,CAN), 9204 (AUS), 9304 (BRA), 9604 (NZL) - XBee SX900 (February 14, 2017)

### NEW FEATURES

1. Added support for the RX LED on DIO12 (option 6)

### BUG FIXES

1. Resolved an issue where the CM (channel mask) was being reset to default when the module was reset rather than using the user saved value.

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## 9603 (NZL) - XBee SX900 (July 28, 2016)

### NEW FEATURES

1. Initial release for New Zealand. Only the non-PRO variant is supported in this region.

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## 9003 (USA,MEX,CAN), 9203 (AUS), 9303 (BRA) - XBee SX900 (June 3, 2016)

### BUG FIXES

1. Hardware compatibility was improperly set, causing firmware updates to fail.

2. MXI File Changes: CM command has correct default value

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## 9002 (USA,MEX,CAN), 9201 (AUS), 9301 (BRA) - XBee SX900 (March 24, 2016)

### NEW FEATURES

1. Initial release of Australia and Brazil firmware.

2. AT commands AF, MF, and CM now change based on the AT BR value.

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## 9001 (USA,MEX,CAN) - XBee SX900 (November 20, 2015)

### NEW FEATURES

1. Initial release

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