Release Notes
RM186_PE and RM191_PE

RM186_PE_EU Version 110.6.1.0, RM191_PE_US Version 111.6.1.0, RM191_PE_AU Version 112.6.1.0 and RM191_PE_AS 113.6.1.0

This document provides release notes for RM186_PE_EU firmware version 110.6.1.0, RM191_PE_US firmware version 111.6.1.0, RM186_PE_AU firmware version 112.6.1.0 and RM191_PE_AS 113.6.1.0.

Release notes are a summary of new and enhanced features, resolved issues, and known issues that are not resolved in this version. Consult the User's Guide for details on the features of this software release.

- Firmware Version 110.6.1.0 (RM186_PE_EU), 111.6.1.0 (RM191_PE_US), 112.6.1.0 (RM191_PE_AU) and 113.6.1.0 (RM191_PE_AS)
- Firmware Version 110.5.0.7 (RM186_PE_EU), 111.5.0.7 (RM191_PE_US), and 112.5.0.7 (RM191_PE_AU)
- Firmware Version 18.17.1.0 (RM186_PE) AND 17.17.1.0 (RM191_PE)
- Firmware Version 18.17.0.1 (RM186_PE) AND 17.17.0.1 (RM191_PE)

FIRMWARE VERSION 110.6.1.0 (RM186_EU), 111.6.1.0 (RM191_US), 112.6.1.0 (RM191_AU) AND 113.6.1.0 (RM191_AS)

Released October 2017

Third-party software:
- Nordic SoftDevice version: S110 7.3.0
- LoRa Stack version: STACKFORCE Release version 4.4.0

Updates

The following changes/bug fixes have been made for this release:

- Updated stack to the release version 4.4.0 (12052)
- Addition of AS region (11638)
- Fixed bug to ensure all SIO pins function with GpioAssignEvent (11213)
- Removed all calls to RunAssert() (11754)
- Return empty service notification instead of invalid handle error when scanning empty GATT table (11718)
- Pass any errors returned from a call to the LoRaMacJoinReq() API back to the smartBASIC application (11749)
- Fixed bug where the EVLORAMACNEXTTX event wasn’t thrown when joining using personalization (11845)
- Fixed bug where configuring the AppEui, DevEui and AppKey using the LoramacSetOption only works when these values are already set using another method, ie at+cfgex 1010 etc (11848)
- Modified the stack to ensure that, in EU mode, a JoinRequest is only attempted eight times before throwing the Rxtimeout event. Previously there were 48 attempts (11838)
- When using personalization, the module now keeps track of the uplink and downlink counter values over a power cycle (10358)
- EVLORAMACADR event is modified; it now returns the packet type and frame pending parameters (11955)
- EVLORAMACTXDRPAYLOADSIZEERROR event added to monitor when a loaded packet becomes too big during the resend process when the datarate reduces (11927 & 12064).
- Maximum size of smartBASIC app is now reduced to 21K.

Known Issues

- There is a potential glitch in the pwm output when pwm is 0 and then a non-zero value is written. The non-zero value should not be less than N where n is dependent on the resolution value that was set in the GpioPwmConfig function.
- When debug is enabled the sf output value is not the spreading factor. It is actually the datarate.

FIRMWARE VERSION 110.5.0.7 (RM186_PE_EU), 111.5.0.7 (RM191_PE_US) AND 112.5.0.7 (RM191_PE_AU)

Released June 2017

Third-party software:

- Nordic SoftDevice version: S110 7.3.0
- LoRa Stack version: STACKFORCE development version 4.4.0

Updates

The following changes have been made for this release:

- Updated Semtech stack to 4.4.0. (11226)
- Fixed the bug that caused the NwkSKey and the AppSKey to be swapped internally.
- Missing error codes are now reported in UwTerminalX.
- Changed product ID – EU changed from 18 to 110, US changed from 17 to 111, and added AU version 112.
- Class C can now be selected. (9946)
- You can now set the channel plan by means of selecting a sub-band. This is only relevant in the RM191_US and RM191_AU modules. (11265)
- The new stack handles retrying the JoinRequests in a different way. Rather than continually trying to Join with the same packet, the stack now sends an RxTimeout event after a certain number of failures. In US and AU mode, this defaults to 2. This is now configurable. (11213)
- Modified the code to confirm which SIO pin caused an interrupt to be thrown. (11213)
- SIO 3 can now be set as an analogue input pin. (11328)
- A call to LoRaMacGetOption (LORAMAC_OPT_TX_POWER) now returns the actual Tx power used and not the one set by the user. This covers instances when the power is clipped or the server has changed it via an ADR command. (10435)
- CTS/RTS is only set if UART handshaking is enabled. (11339)
- Fixed bug where UART hardware flow control doesn’t work properly at high data rates. (10810)
- In deepsleep mode, the current could be higher than expected because SIO 5 defaulted to the wrong configuration. (11247)
- Added in access to the stack’s LoRaMacQueryTxPossible function. Users are now able to use this functionality to determine the maximum possible size of any packet transmitted to the gateway. (11480)
- Fixed bug where the code could fall into an infinite loop when using a GPIO pin to wake up from deep sleep (11443)
- Added EVLORAMACNEXTX event to AU and US code. (11480)
- Updated EVORAMACRXERROR to also report an error in the RX1 window. (11498)
- Ati11 now returns the major and minor version numbers. (11499)
- EVLORAMACNEXTX now returned whenever it is likely that a user wants to send a packet. So now sent after joining. (11505)
- EVLORAMACJOINFAIL now returned in case of a mic error in the JoinAccept packet. (11510)
- PacketType and FramePending information added to the LORAMACRxData smartBASIC API. (11500 and 11503)
- Added new event, EVLORAMACSEQUENCECOMPLETE, which is returned when the Uplink/Downlink sequence is complete. As part of this event, the final event that has caused it to be raised is returned as an integer value. See the user guide for details. Also returned is the time to the EVLORAMACNEXTX which is the event that indicates you can send the next packet and it is transmitted immediately. For US and AU regions this is always 0. (11511, 11545 and 11550)
- AppEui, DevEui and AppKey can now be set through a smartBASIC app. (11612)
- Fixed bug where the AppKey value was output via the LoraMacGetOption command. (11562)
- Fixed bug where the two different DevEuis were output from the wrong LoraMacGet commands. (11615)
- The new version numbers (100, 101, 102, 110, 111 and 112) are now output via the smartBASIC sysinfo(1010) command. (11587)
- Added new smartBASIC API, LoramacStartCW(), to trigger the carrier wave needed for the new CW test. This test can only be accessed via command from port 224. (11643)
- New event EVLORAMACFRAMESLOSS to report when the downlink sequence number gets out of sync. (11723)

Known Issues

- In certain circumstances, the code fails to send a sequence complete event when a mic error has occurred. This bug can take many hours to appear. A possible solution is to send a new packet to the stack; the code then seems to start working normally (although there may be duty cycle issues in the EU modules and so it may take a few minutes before the packet is actually transmitted).

**FIRMWARE VERSION 18.17.1.0 (RM186_PE) AND 17.17.1.0 (RM191_PE)**

Released January 2017

**Third-party software:**

- Nordic SoftDevice version: S110 7.3.0
Updates

The following changes have been made for this release:

- GATT server code is now enabled.
- Hardware vSP is now functional. Firmware now uses the correct SIO pins to control the vSP and autorun pins.
- Fixed the bug that caused the NwkSKey and the AppAKsy to be swapped over internally.
- Missing error codes are now reported in UwTerminalX.

Known Issues

- Initial reading from analog GPIO input is incorrect. (9121)
- When using Personalisation, the first downlink packet doesn’t appear to contain any payload data if the server is set up to reflect any received data. This is due to the incorrect handling of the sequence counter.

FIRMWARE VERSION 18.17.0.1 (RM186_PE) AND 17.17.0.1 (RM191_PE)

Released December 2016

Third-party software:

- Nordic SoftDevice version: S110 7.3.0
- LoRa Stack version: STACKFORCE 4.3.0

Initial Release

This is the initial firmware release for the RM1xx radios. The following features are part of this release:

- LoRaWAN support for Class A devices – Version 1.0.1
- Bluetooth v4.0

Known Issues

- Initial reading from analog GPIO input is incorrect. (9121)