Bluetooth Firmware Version 6.15 Release Notes

Description of change
6.15 is a major update to the Bluetooth firmware. 6.15 will become the standard release, replacing 4.77 and 6.11. Firmware version 6.15 is built from the 6.11 code base and maintains level compatibility with 4.77 installed base.

6.15 Enhancements:

- Command-level compatibility with 4.77
- Merges the SPP (Serial Port Profile) and HID (Human Interface Device) profile into a single firmware
- Support Simple Secure Pairing
- Android support for setting UUID
- Pin code hiding
- RSSI display on Inquiry Scan
- Show MAC of last connect device

Table 1. Products affected by this change:

Microchip Part Number	
RN41-I/RM	RN42-I/RM
RN41N-I/RM	RN42N-I/RM
RN41XVC-I/RM	RN42XVP-I/RM
RN41XVU-I/RM	RN42XVU-I/RM

Note: Dev tools are always shipped with the latest firmware version

Reason for change
Version 4.77 has been the standard SPP firmware that was shipped with RN41 and RN42 modules since 2009. Firmware version 6.11 was introduced in 2011 to support HID profile on the RN41HID and RN42HID modules.

6.15 is an upgrade to 4.77. It supports both SPP and HID profiles, adds new features, and fixes some issues in 6.11. With the release of 6.15, customers can configure their module in either SPP or HID mode. All new designs should use 6.15.

Effective May 15th, 2013

- **All Bluetooth modules will be shipped with firmware 6.15 unless otherwise specified by part number.**
- **RN41HID-I/RM and RN42HID-I/RM part numbers are still valid and will ship with 6.11 firmware due to command differences with 6.15.**

Table 2.Bluetooth Firmware in Roving Product:

Firmware Version	Release Date	Status	Ordering Part Number	Features	Notes
6.15	2013-04-18	Latest Production **(May 15, 2013)**	RN41-I/RM RN41N-I/RM RN42-I/RM RN42N-I/RM	SPP/HID, 4.77 compatibility,	Standard firmware
6.12	2013-01-31	Not recommended for new designs	RN41-I/RM612 RN41N-I/RM612 RN42-I/RM612 RN42N-I/RM612	SPP/HID, 4.77 compatibility, pin code hiding, RSSI inquiry scan	Limited release, N/A for special order
6.11	2012-02-17	Not recommended for new designs	RN41HID-I/RM611 RN41NHID-I/RM611 RN42HID-I/RM611 RN42NHID-I/RM611	SPP, HID	Order using part numbers: RN41-I/RM611 RN41N-I/RM611 RN42-I/RM611 RN42N-I/RM611
4.77	2009-05-12	Not recommended for new designs	RN41-I/RM477 RN41N-I/RM477 RN42-I/RM477 RN42N-I/RM477	SPP	May also order with part number:

Firmware 4.77 is not recommended for new designs. 6.15 is suitable for both SPP and HID applications. It is compatible with 4.77 command set.

RN41HID-I/RM and RN42HID-I/RM modules are still available with firmware 6.11. Customers migrating from to 6.11 to 6.15 should review table 3 & 4 to ensure there is not impact on existing applications that use 6.11.

Firmware version 4.77 is available by special order. To order version 4.77, append "477" on the part number you have ordered in the past. Refer to above table.

NOTE: Bluetooth modules are not field-upgradable. Customers using 4.77 should verify and validate 6.15 with their application or order the 4.77 part number.

This change does not affect RN41HID-I/RM, RN42HID-I/RM, RN42APL-I/RM, RN41APL-I/RM, RN-240, RN-270, RN-220 serial adapters.

<u>**New Features**</u>

1. **PIN Code Hiding**

   The PIN Code hiding feature hides the current 4-digit PIN code (aka pairing code) used for legacy pairing mode. The Pin code hiding feature is enabled by the action command "J" from command mode. While Pin code hiding is enabled, the "GP", "D","X" commands will NOT show the pin code. The only way to disable the PIN code hiding is 1) "SP" to set a new pin code, or 2) "SF,1" followed by "R,1" to restore factory defaults.

2. **Inquiry Scan with RSSI**

   RSSI inquiry scan is an extension to the current Inquiry Scan command. It scans the current area for Bluetooth devices in pairing mode, and returns the RSSI, receive signal strength indicator, which an indication of signal quality for remote devices with respect to device that initiated the inquiry scan. This feature can be used by MCU software to select the nearest device for proximity

3. **GF command (show address of most recently connected device)**

   GF Command would always show "000000000000" as the last connected devices. This has been fixed in 6.15. Keep in mind that GF is read only, unlike GR which can be change with SR.

4. **Support for Simple Secure Pairing (SSP)**

   Bluetooth 2.1 SSP allows pairing without supplying the pin code

Backward Compatibility with 4.77 and 6.11

Customer upgrading to from 4.77 to 6.15 should not see any difference since 6.15 commands are backward compatible with 4.77. Customers upgrading from 6.11 should consult the <u>user manual</u> for minor differences in the command syntax as summarized in the table below:

<u>Table 3. Commands in 6.11 and 6.15</u>

Command	6.11	6.15
L	Returns error.	Displays min,max RSSI at 5 sec interval when connected.
Q **Q,<value>**	Takes arguments (0,1,2) for various quiet modes. In 6.11, "Q" without arguments return current quiet mode.	Q enters quiet mode (same as 4.77) invoking same function as "Q,1" in 6.11. Q,? returns current mode as "Q
SE,<value>	Set the extended UUID of RFCOMM channel, used for Android SPP connections, value is ascii hex byte string or characters 'C','I','S'	In 4.77, "SE,0" and "SE,1" enabled or disabled encryption. In 6.15, encryption is always enabled. "SE,0" and "SE,1" have no effect in 6.15. "SE,<value>" is used to set UUID.
SA,<value>	0 disables authentication, 1 enables Keyboard I/O mode authentication	In 4.77, SA,0, and SA,1 enabled/disabled PIN code authentication. **In 6.15, SA,1 enables SSP keyboard I/O. If device does not support this mode, it reverts to PIN code authentication.**
W	"W" returns error in 6.11. Use "Q,0" command to wake up module	"W" functions exactly as "Q,0" and does not return error.

Table 4. Default values in 6.11 and 6.15

Feature	6.11	6.15
SPP MDM & GPIO11	When using SPP MDM profile "S~,3", GPIO11 is used as RTS. If "SH,0200" enabled, module will enter HID profile on start up.	GPIO11 HID profile switching has been disabled for SPP MDM profile.
Pairing Mode	6.11 defaults to DTR mode, "SM,4"	6.15 Defaults to Slave Mode "SM,0" as is in 4.77.
Inquiry and Page Window Defaults	6.11 defaults to 0x0060 for I and Q values.	6.15 sets the default values to 0x0100 as they were in 4.77.

Known Issues

- When pairing two modules running firmware version 6.15 or pairing a module running version 4.77 to a module running version 6.15, you need to explicitly set the authentication mode to PIN code mode on the module(s) running version 6.15 for the two modules to establish a Bluetooth connection. This can be done using the SA,4 command on the module running version 6.15. This is required as the default authentication mode in version 6.15 is Keyboard I/O mode (SA,1), which is not compatible with the modules.
- Simple Secure Pairing mode does not work for outgoing connections (connections initiated on the module). Current workaround is to use legacy PIN code pairing (SA,4) or open mode (SA,0).
- Android™ devices only connect when paired in keyboard I/O mode (SA,1).
- Legacy pairing using PIN CODE (SA,4) pairs with Broadcom® BT hosts without prompting for PIN code
- The HID firmware has difficulty maintaining a connection with the first generation iPad® running iOS version 4.4; you must upgrade to iOS version 5 to use the iPad with the HID firmware
- The HID profile does not work with BlueSoleil stack.

Further Information Contact Sources:

Technical Support: http://support.microchip.com
Pre & Existing Sales: http://www.microchipdirect.com