

PMB 8753

BlueMoon UniCellular

Release Notes

System HW2.04 – FW 8.2 – P7

COM



N e v e r s t o p t h i n k i n g .

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1 Introduction

This is the System Release Notes for product PMB8753 V2.04. For more information about PMB8753 see the product specification T8753-XV10T9-7600.

1.1 Release components

1.1.1 Release summary

The package contains the PMB8753 V2.04 with firmware 8.2. PMB8753 V2.04 shall be used with downloaded patch file, the name of the patch file for this release is:

- PMB8753_HW204_FW82_07.pbn

System verification is done with patch file downloaded.

1.1.2 Release details

Documents:

System Release Notes Document (this file): T8753-SYS-V2_04-P7-R1-7600.pdf

Patch binary:

The name of the patch file is PMB8753_HW204_FW82_07.pbn.

Revision marking on package:

8753S (initial marking independent of fusing)
V2.04

Chip revision:

(Parameters from HCI_Infineon_Read_HW_Version)
HW-Variant: 0x03
HW-Revision: 0x21

ROM Firmware version without patch:

(Parameters from HCI_Infineon_Read_Version, before patch is applied)

HW-Variant: 0x03
HW-Revision: 0x21
Firmware variant: 0x01

Firmware revision: 0x82
Firmware build: 0x590701
Patch version: 0x00

ROM Firmware version with patch:

(Parameters from HCI_Infineon_Read_Version after patch is applied)

HW-Variant: 0x03
HW-Revision: 0x21
Firmware variant: 0x01
Firmware revision: 0x82
Firmware build: 0x590701
Patch version: 0x07

LMP & HCI version (Parameters from HCI_Read_Local_Version_Information)

LMP_Subversion: 0x5939
HCI_Revision: 0x5939

1.1.3 Fuse information

The default setting for fuses are “J fused”. The different fuse options are listed below.

- PMB8753 A A-fuse and J-fuse
- PMB8753 J J-fuse
- PMB8753 S Standard fusing

Note: All Engineering samples will have the same label independent of which fuses that are blown (8753S). To find out the fuse setting for engineering samples, please see below.

Both A- and J-fused chip

Both A and J fuses are blown if Infineon_Memory_Read (address BE00004C) returns 0x0120 and Infineon_Memory_Read (address BE000050) returns 0x01

Command and Event in hex format:

C: 0x018dfc064c0000be0002
E: 0x040e0a018dfc004c0000be2001
C: 0x018dfc06500000be0001

E: 0x040e09018dfc00500000be01

J-fused chip

J fuse is blown if Infineon_Memory_Read (address BE00004C) returns 0x0120 and Infineon_Memory_Read (address BE000050) returns 0x00

Command and Event in hex format:

C: 0x018dfc064c0000be0002

E: 0x040e0a018dfc004c0000be2001

C: 0x018dfc06500000be0001

E: 0x040e09018dfc00500000be00

Standard fuses are blown

Standard fuses are blown if Infineon_Memory_Read (address BE00004C) returns 0x0020 and Infineon_Memory_Read (address BE000050) returns 0x00

Command and Event in hex format:

C: 0x018dfc064c0000be0002

E: 0x040e0a018dfc004c0000be2000

C: 0x018dfc06500000be0001

E: 0x040e09018dfc00500000be00

1.1.4 Initialization string (BD_Data)

The initialization can be done after activating manufacturer mode.

The following initialization string is shown in hexadecimal as a reference:

```
01 2F FC 3A XX XX XX XX XX XX 00 00 80 20 80 BA 8C 01 FF FF 8F FE 9B F9
00 00 80 FA 12 18 80 00 03 04 05 06 44 0C 10 02 04 00 01 08 48 04 F2 F8 FE 04
00 00 06 00 00 00 00 00 00 00 00 00
```

XX XX XX XX XX XX is the BD_Address.

Size	Parameter	Recommended value (Hex)
6	BD_ADDR	XX XX XX XX XX XX
2	Channel_Word_Offset	00 00
1	Clk_Conf	80

1	EEPROM_Size	20
4	Input_Freq	80 BA 8C 01
8	LMP_Features	FF FF 8F FE 9B F9 00 00
1	LPM_Conf	80
1	LPM_Drift	FA
1	LPM_Treshold	12
1	ULPM_Treshold	18
2	PMU_Conf	80 00
4	RF_Psel_D	03 04 05 06
1	RF_Psel_Conf	44
1	RSSI_Min	0C
1	RSSI_Max	10
1	DDC_TL_Conf	02
1	UART_Baudrate	04
1	UART_Invert	00
1	UART_Pulls	01
1	OSC_Settle	08
1	BB_Conf	48
1	RF_Conf	04
1	TX_Power_Ref0	F2
1	TX_Power_Ref1	8F
1	TX_Power_Ref2	FE
1	TX_Power_Ref3	04
2	OSC_Trim	00 00
1	Three-Whire_ARQ_Timeout	06
9	Reserved	00 00 00 00 00 00 00 00 00

Table 1-1: Recommended BD_Data

2 Changes in Product Specification since last release

This section describes the major changes in the product specification between the two latest versions of the product spec, T8753-XV10T9-7600.pdf and T8753-XV10T8-7600.pdf. The last column in the table indicates if a change is included in the 2.04 release.

Section	Description	Comment	In 2.04
1	SLEEPX moved from P1.6 (VDDPM) to P0.15 (VDDUART)	-	Yes
2.3.1	Section updated to show currently offered fuse options	A and J fused samples are available	Yes
3.3	WLAN coexistence interface description updated with simplified mode, data type signaling and link prioritization	-	No
3.1.2.2	Improved description of 4w LPM	No FW changes. Only updated description in product spec	N/A
6.1	Support for all commands in Manufacturer mode removed	Not all commands are allowed to be use in Manufacturer mode, commands marked with (M) requires that the device is in Manufacturer mode	Yes
6.1.2	Infineon_Coexistence_Enable updated	The enable command has been updated with two modes "simplified three-wire (0x11)" and standard "three-wire with data type signaling (0x13)"	No
6.1.2	Infineon_Coexistence_Set_Link_Prio added	New command for COEX	No
6.1.3.2	FW-Variant parameter returns 0x01 for BlueMoon UniCellular in Infineon_Read_Version.	Parameter changed in product spec, return value has always been 0x01	Yes
6.1.3.9	Infineon_Write_BD_DATA: - RSSI_Min default values changed	RSSI_Min default value has been changes from 0x0A to 0x0C.	No

Changes in Product Specification since last release

6.1.3.9	Infineon_Write_BD_DATA: - RSSI_Max default values changed	RSSI_Max default value has been changes from 0x0F to 0x10.	No
6.1.3.9	Infineon_Write_BD_DATA: - RF_Conf:Ext_PA_control changed to always zero	Support for analog PA control removed	Yes
6.1.3.19	Bit added for configuration of PLC usage on packets with CRC errors in the ConfigBits_AIR2AUDIO parameter of Infineon_Signal_Proc_Config	Bit 10 in ConfigBits_AIR2AUDIO added	Yes
7	Electrical Characteristics - Protection Circuits description has been updated	Added section	Yes
7	Electrical Characteristics - Pull-up and pull-down values have been updated	Table updated	Yes
7	Electrical Characteristics - Information added about CLKIN and CLK32 inputs and requirements	Added section	N/A
7	Electrical Characteristics - VDD, VDDUART and VDDPCM pads maximum supply voltage raised to 3.63V	VDD 2.8, VDDUART 3.6, VDDPCM 3.0	Yes
7.5.1	Voltage level for I2DA restricted	Max voltage limited to the voltage of VDD.	Yes
7.5.1	Voltage level for PSEL1, I2CL and UARTRXD restricted	Max voltage limited to the voltage of the internal voltage domain.	Yes
8	Package Information section has been restructured. Information about package marking, land pattern and solder profile has been added.		N/A

Table 2-1: Changes in product specification

For a description of all changes, please see T8753-XV10T9-7600.pdf at page 4. Please note that these are changes in the product specification, the last column describes if a change has been included in the 2.04 release. For information that is more detailed, please read sections:

Changes in Product Specification since last release

- Release changes since 2.03
- System Errata
- FW Errata
- Delta overview
- Patch Information

3 Release changes since 2.03

This section lists the changes since the PMB 8753 V2.03 release documentation.

3.1 SLEEPX

SLEEPX is moved from pin C1 (P1.6, VDDPM) to pin F8 (P0.15, VDDUART)

3.2 PLC instead of packets with CRC errors

Possibility added for configuration of PLC usage on packets with CRC errors, bit added in the ConfigBits_AIR2AUDIO parameter of Infineon_Signal_Proc_Config.

3.3 VDD, VDDUART and VDDPCM

VDD, VDDUART and VDDPCM pads maximum supply voltage raised to 3.63V

3.4 BD_Data

Changes in recommendation of BD_Data

RF_Conf

RF_Conf changed from 0x08 to 0x04 (maximum output power typical 4 dBm)

TX_Power_Ref

Updated value, 0xF2F8FE04 is recommended to be used instead of 0x00000000

ARC_tmo

It is recommended to use 0x03 to 0x06

3.5 Solved errata in V2.04

The errata mentioned in the V2.03 release documentation and major errata found since that release that have solved for the V2.04 release are listed below.

The errata that are solved by a patch (marked with (P)) can also be found under solved errata 7.1 in the patch information.

Solved Errata

SMS00086010	Certain frame synch and PCM clock timing may produce disturbances
SMS00093841	Controller enters and exits LPM during Hold mode
SMS00095818	More than one stop bit in RX direction when using 3.25 Mbaud
SMS00107422	Pad leakage on ResetN

SMS00094705	Start up using internal crystal oscillator not possible
SMS00091499	Compliance test against a tester EV3, 2-EV5 and 3-EV5
SMS00134353	Fails to connect to BT 1.1 after using EDR packets for a 2.0 connection
SMS00121795	Port Setting not available after SW reset (P)
SMS00104898	Sniff and AFH must be aligned if (e)SCO is established (P)
SMS00102106	Lower throughput after disabling and enabling EDR packets (P)
SMS00106637	Wrong synch window length can cause disconnection (P)
SMS00107589	Audio latency, PCM-BMU-BMU-PCM (P)
SMS00106260	Role Switch interoperability issue (P)
SMS00133014	Fuses are not taken in consideration when configuring SLEEPX-pin (P)
SMS00102107	SLEEPX shall be defined as an output not an input (P)
SMS00132610	Automatic Flush Timeout prevents continues L2CAP data (P)

Table 3-1: Solved errata since the 2.03 release

4 Delta overview

The section below describes the current feature delta for the PMB8753 V2.04 release T8753-XV10T9-7600.

4.1 HCI Three-Wire interface

The HCI Three-Wire interface is implemented and verified by functional tests (all UART speeds), throughput measurements (UART speed up to 921kBaud) and limited stability tests.

4.2 Sniff and Park limitations

The Sniff interval has an upper limit of 20s

Park has in point to point scenarios a lower limit of 86 slots (53,75ms)

4.3 HCI_Loopback_Mode

Remote Loopback not implemented for HCI_Loopback_Mode.

4.4 BD_Data

Recommended BD_Data can be found under 1.1.4 Initialization string (BD_Data).

RSSI

Recommended values are, RSSI min 0x0C, RSSI max 0x10 (default values are 0x0A and 0x0F as given in the specification).

RF_Conf

Recommended value is 0x04 (default value is 0x08)

ARC_tmo

Recommended value is 0x06 (default value is 0x03)

OSC Set

The ULPM_threshold value needs to be configured when setting the OSC_settle value in BD_Data, see formulas below.

OSC Settle:

With internal LPO: Delay = OSC_Settle \times 125us

With external LPO: Delay = OSC_Settle \times 122, 1us

ULPM Threshold:

Internal LPO: ULPM_Threshold \geq (OSC_Settle \times 122,1us+18 \times 122,1us+5ms)/625us

External LPO: ULPM_Threshold \geq (OSC_Settle \times 125us+18 \times 125us+5ms)/625us

4.5 HCl_Read_Clock

Pico-net clock accuracy calculation is not implemented (HCl_read_clock, Pico-net parameter). Unknown accuracy is always returned.

4.6 COEX Interface

COEX interface not part of this release.

4.7 EEPROM

Only 2 bytes addressing of the EEPROM is supported by the BMU.

5 System Errata

5.1 SMS00110703 Power-Up sequence

Precondition:

-

Erratum:

Sample with A-fuse blown:

VDD must be supplied before or at the same time as VDDSUP

Sample with A-fuse not blown:

VDD must be supplied before or at the same time as VDDPM

6 FW Errata

The section below describes the FW errata for 2.04 with patch P7 downloaded.

6.1 SMS00107777 Interrupted sound in Scatter-net with ACL Data

Precondition:

Scatter-net with one HV3 link and one ACL link with maximum data transfer

Erratum:

The voice link is distorted.

6.2 SMS00132834 Multiple (e)SCO in scatternet

Precondition:

Scatternet with two voice links

Erratum:

Voice quality is good in 3 out of 4 directions, nothing can be heard in the fourth direction.

6.3 SMS00097104/SMS00091513/SMS00102660 Exit Park can cause a disconnection

Precondition:

ACL link

Erratum:

Disconnection can occur when issuing unpark after repeatedly trying to enter/exit Park.

6.4 SMS00097614/SMS00097116 Remote Name Request for Parked link

Precondition:

ACL link

Erratum:

A Remote Name Request for a Parked link will return command disallowed but unpark the link anyway, a debug event can be received.

6.5 SMS00091600 Disconnection reason when supervision unpark fails

Precondition:

Link in Park state

Erratum:

When an attempt to unpark fails and leads to a supervision time out, wrong reason for the disconnection is receive "Connection Terminated By Local Host".

6.6 SMS00129223 Short supervision unpark interval

Precondition:

Link in Park state

Erratum:

The time interval for supervision unpark is to short compared to the link supervision time out.

6.7 SMS00110151 Quality of Service Setup Command not supported

Precondition:

Existing ACL link

Erratum:

Command disallowed is returned when issuing the QoS Setup command (BT 1.1)

Note:

Flow Specification (BT 1.2 and 2.0) can be used to reach the same result.

6.8 SMS00110154 Infineon enable PCM loopback

Precondition:

-

Erratum:

External Loopback:

Command Succeeded is returned both when only an ACL link is available and when a (e)SCO link is available, the (e)SCO data is however only looped when an (e)SCO link is available.

Signal Processing Loopback:

Works both with and without an (e)SCO link.

6.9 SMS00133159 Local loopback executes commands that shall be looped**Precondition:**

Local Loopback enabled

Erratum:

The BMU should return the command in an event, only a few commands shall be executed. Several commands have been identified to be executed instead of looped back. Write inquiry mode is one example of such a command.

6.10 SMS00133420 HCI_Flow_Specification together with Inquiry**Precondition:**

ACL link with a certain required bandwidth together with an Inquiry (Page). UART speed of at least 921kBaud and 5-slot packets shall be allowed.

Erratum:

The BMU is not able to guarantee the bandwidth given in the command and promised in the complete event. For example if 400 kbit is requested only 300 kbit/s is reached when an inquiry is performed.

Note:

Page has the same problem but a connection attempt is in general not as long as the inquiry.

By requesting more bandwidth than needed the necessary bandwidth can be achieved.

6.11 SMS00131529 Flow Specification, negotiation failure**Precondition:**

ACL link with Flow Specification command issued

Erratum:

When sending a Flow Specification command with requirements that cannot be met, the BMU shall respond with recommended parameters. This works fine, however:

When using the parameters recommended by the BMU, the BMU responds with Unsupported LMP parameter value.

6.12 SMS00132758 Infineon test Mode (Rx Burst Mode)

Precondition:

Devices with J fuse blown (All devices with default J-fuse blown)

Erratum:

The TST3 pin and the SLEEPX pin is shared for a J-Fused sample, when using the Infineon Test Mode the SLEEPX function will be lost and it's not possible to request the clock.

Note:

The TST3 pin is active during reception of the burst in Rx burst Mode.

For test purpose, Rx Burst Mode can be used if the reference clock is present

6.13 SMS00106286 Continuous Scan not continuous

Precondition:

Scan interval set to the same value as scan Window

Erratum:

Inquiry Scan interval set to 0x0012, Scan window set to 0x0011, results in a scan interval twice as long as the interval setting.

6.14 SMS00110134 Leave Manufacturer Mode and enable incorrect patches

Precondition:

Device in manufacturer mode with incorrect patches downloaded.

Erratum:

When leaving Manufacturer mode and trying to enable incorrect patches two Command Complete events are received and Manufacturer mode is left.

Note:

Make sure to use correct patches.

6.15 SMS00106769 Role switch/AFH Hop Sequence collision problem

Precondition:

BMU in Slave role. Connection is established (but not during connection establishment) and BMU requests a Master Slave role switch.

Erratum:

The system provokes simultaneously MSRS and a Switch of the Hop Sequence Instant. The BMU will after the Master Slave Role Switch use the wrong channels for the hop sequence.

Note:

Do the MSRS during connection setup or wait until the hop sequence instant switch is finished.

6.16 SMS00134016 Data rate for EDR

Precondition:

ACL connection 3-DH5 packets enabled and UART speed of 3.25Mbaud

Erratum:

Around 1800kbit (80% of max) is reached for simplex data transfer.

Note:

This is only for Simplex data transfer of 3-DH5, Duplex data transmission and other packet types works.

7 Patch Information

This section describes the patch “PMB8753_HW204_FW82_07.pbn” for the PMB 8753 V2.04.

Binary:

PMB8753_HW204_FW82_07.pbn (patch file)

ROM revision (HW/FW revision)

(Parameters from HCI_Infineon_Read_Version, before patch is applied)

HW-Variant: 0x03

HW-Revision: 0x21

Firmware variant: 0x01

Firmware revision: 0x82

Firmware build: 0x590701

Patch version: 0x00

Patch version

(Parameters from HCI_Infineon_Read_Version after patch is applied)

HW-Variant: 0x03

HW-Revision: 0x21

Firmware variant: 0x01

Firmware revision: 0x82

Firmware build: 0x590701

Patch version: 0x07

Patch information

Number of used patch vectors: 29/32

Consumed Patch RAM: 7184/8192 Byte

7.1 Solved Errata

This section describes the UTPs solved by patch P7.

7.1.1 SMS00121795 Port Setting not available after SW reset

Precondition:

Configured GPIOs

Erratum:

The configuration done with Infineon_Write_Ports is not available after a SW reset.

7.1.2 SMS00104898 Sniff and AFH must be aligned if (e)SCO is established

Precondition:

(e)SCO connection with ACL connection in Sniff mode

Erratum:

If the AFH instances are not aligned with the Sniff interval more time is required to pass over the channel information.

7.1.3 SMS00102106 Lower throughput after switching from BDR to EDR

Precondition:

ACL link with only EDR packets enabled

Erratum:

When repeatedly switching between EDR and BDR the EDR speed will after 7 seconds be limited to DM1 packets.

7.1.4 SMS00106637 Wrong synchwindow length can cause disconnection

Precondition:

ACL link in any of the Bluetooth low power mode (Hold, Park or Sniff)

Erratum:

Wrong accuracy of the Low power oscillator is assumed (20ppm instead of 250ppm).

Wrong length of the synch window is used, only one frame is possible to use.

7.1.5 SMS00107589 Audio delay PCM-BMU-BMU-PCM

Precondition:

(e)SCO link established

Erratum:

The latency between the PCM interfaces is too long, for example, a HV3 link will have a latency of around 24ms. The latency can also vary during a connection.

Note:

The latency is for a HV3 link 16ms.

7.1.6 SMS00106260 Role Switch interoperability issue

Precondition:

BMU in Slave role

Erratum:

Remote side sends a L2CAP flow stop before initiating A MSRS, L2CAP flow go is not send from any side after the MSRS is finished

Note:

This is an interoperability issue to solve an unexpected behavior of a remote device.

7.1.7 SMS00133014 Fuses are not checked when configuring SLEEPX-pin

Precondition:

J-fused sample

Erratum:

The SLEEPX functionality is not available at P0.15 after FW has started, the ports need to be reconfigured.

7.1.8 SMS00102107 SLEEPX shall be defined as an output

Precondition:

-

Errata Description:

SLEEX is defined as an input and not as an output.

7.1.9 SMS00132610 Automatic Flush Timeout prevents continues L2CAP data

Precondition:

ACL link with a flush time out set to more than 159ms

Erratum:

BMU stops working when using a continuous L2CAP data chunk.