

## IN – Information Note

<b>Topic:</b>	<b>TOBY-L100 and MPC1-L100 Release of version 02S to Initial Production</b>
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<b>Date:</b>	8-Apr-2016

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### 1 Affected Products

Product Name	Order Number	Type No	Firmware Version	Remarks
TOBY-L100	TOBY-L100-02S	TOBY-L100-02S-00	G0.V.01.00.05R	Status: Initial Production
MPC1-L100	MPC1-L100-02S	MPC1-L100-02S-00	G0.V.01.00.05R	Status: Initial Production

### 2 Type of Change

- Hardware modification
- Firmware update
- Documentation update
- Design status changed from "Engineering Samples" to "Initial Production"

### 3 Description of Change

Release to Initial Production of the TOBY-L100 and MPC1-L100 modules; firmware version is G0.V.01.00.05R. The following documents have been updated:

- TOBY-L1 Data sheet [1]
- MPC1-L1 Data sheet [2]
- AT command manual [3]
- System Integration Manual [4]

Newly implemented features and known limitations are listed in Annex A.

### 4 Schedule

This information is effective as of 6 April, 2016.

### 5 Customer Impact and Recommended Action

Customers are recommended to upgrade deployed units to this firmware version at their earliest convenience. Please contact u-blox technical support for assistance.

### 6 Reference Documents

- [1] TOBY-L100 Data-sheet, u-blox document UBX-13000868
- [2] MPC1-L100 Data-sheet, u-blox document UBX-14001412
- [3] TOBY-L1/MPC1-L1 AT-commands Manual, u-blox document UBX-13002211
- [4] TOBY-L1/MPC1-L1 System Integration Manual, u-blox document UBX-13001482

## A Description of Changes

### A.1 Hardware

No changes since last HW version.

### A.2 Firmware

#### A.2.1 New Features added after the last released production version (G0.V.01.00.03)

None.

#### A.2.2 Changes and Bugs fixed after the last released production version (G0.V.01.00.03)

##### Protocol

- Modify USIM deactivation flow: avoid deactivation of USIM while in CFUN=4 (flight mode) in order to avoid reactivation flow when moving to CFUN1 mode.

##### SIM

- Fix Issue: SIM card removal in out-of-service zone. SIM card removal while UE is registered and in out of coverage zone allows re-registration without SIM card when back into coverage zone
- Fix description: prevent modem re-registration after USIM removal when coming back from out-of-coverage

##### Data Retry

- Fix issue: The ATTACH reject which is sent from R&S consist of a part which we are unable to decode, When new optional fields were added to NAS messages (in R&S test equipment) which were not decoded and mistakenly thought as mandatory info  
Description: EMM message decoder return failure to decode mandatory information if it was unable to decode all fields, this cause issues of forward compatibility - for example when new optional fields will be added to NAS messages  
Solution: Return invalid mandatory information only in cases which the mandatory info was indeed missing. (Ignore the optional missing parts and will not send the wrong EMM STATUS.)  
Note: This issue was found when running Data retry test on R&S test equipment. The test passed on Anite test equipment without this fix.

##### SMS-PP

Description: Support for SMS-PP added

##### NAND partition

- LTE modem FW uses a dedicated partition on NAND flash. Current partition size is sufficient and aligned to 4.5.6.10.x modem FW footprint. Future LTE modem FW versions with enhanced feature set (to accommodate transition to modem FW version 5.0.x which supports B4 roaming and other features) introduce larger footprint which is marginal for currently used partition size (considering potential NAND flash bad blocks). To enable future upgrades this version includes increased partition size for LTE modem FW. Partition size is defined in uboot stage which is isolated code and is not part of the functional LTE modem SW.

Implications of this change are on the upgrade process only.

1. Upgrading the image must be performed in two stages. First the u-boot is upgraded and the u-boot environment is deleted. After a reboot of the device, the kernel root file system and modem FW can be

upgraded. This sequence is required in order to allow all the images to be flashed to their correct partitions.

2. Customers who have a custom u-boot environment which they have prepared themselves must create the custom u-boot environment again using the new default environment as base in order to apply the partition change correctly. Customers using Altair default u-boot environment can follow the procedure described above in 1.

### Mobile Terminated SMS messages were not deliverable to the Device in the Irvine market

Issue description:

SMS GW details (address) were taken from "From" header (field) in incoming SIP MESSAGE delivered by NW (IMS server or core NW). Only on specific market (Irvine) SMS GW details were missing in this header and as a result SMS delivery failed.

In all Verizon Wireless' markets this address exists in "P-Asserted-Identity" header.

Fix:

A fix was created to retrieve SMS GW address from "P-Asserted-Identity" header of SMS over IMS message received during IMS registration (based on the 3GPP2 X.S0048-0 3GPP2 Short message service over IMS section 7.3.2.4 and TS 24.341 3GPP Support for SMS over IP network section 5.3.2.4).

### UICC

Fix: USIM activation fail

Problem: Terminal response for Channel data length might have wrong coding of the length value in the TLV (length which is greater than 0x7F should be 2 bytes).

In our code the 2 bytes length is only for cases that the length is greater than 0x81 (meaning there is an issue when the length is 0x80 and 0x81)

Solution: Fix the coding of terminal response for channel data length to be 2 bytes when it is greater than 0x7F and not only greater than 0x81 (as per spec)

Spec definition:

Length	Byte 1	Byte 2
0-127	length ('00' to '7F')	not present
128-255	'81'	length ('80' to 'FF')

### ASN.1 forward compatibility issue

Description:

Future compatibility problem in RRC ASN.1 decoder, which did not ignore incomprehensible CHIOICE or ENUMERATED types extensions for future release specification.

Problem applies only to extensible CHIOICE and ENUMERATED ASN.1 message types.

In addition the UE fails to attach to eNodeBs that use REL 10 Carrier Aggregation extension IE measCycleSCell-r10 in RRC\_Reconfiguration message, because the UE had wrong handling implementation of future extension (...) in ASN.1 RRC message SEQUENCE definition.

Solution:

The fix is only in the ASN.1 decoder implementation: Skip future RRC ASN.1 release specification extensions for SEQUENCE, CHIOICE or ENUMERATED types without affecting the handling of the other parts of the message. This fix has no functional or performance impact.

### SRS transmission

Description:

In case NS07 signaling was activated in the network - configuration of SRS transmission was faulty.

SW logic which is responsible for configuring the SRS function extracted wrong data from the configuration transmitted in SIB2.

As a result, SRS transmission was not aligned to what was expected by the eNodeB.

Solution:

Fix internal flow responsible for configuring SRS transmission.

Fix will take effect only in case of NS07 activation - without NS07 signaling – the problem is irrelevant, therefore the fix has no impact.

### **PLMN mismatch**

Description:

Protocol test cases (6.1.1.1b and 6.1.1.2a) define multiple cells with different PLMN IDs operating on a single frequency.

During the test flow, the UE performs cell re-selection to a PLMN ID which is different from the NAS selected PLMN (PLMN mismatch).

In this case, the UE should have performed a new PLMN selection procedure.

Instead, the UE tries to revert back the cell re-selection and return the previous cell.

This causes the test to fail since the previous is no longer available and not compliant to the test expected flow.

Solution:

In case of PLMN mismatch, perform a new PLMN selection procedure.

## **A.2.3 Known Limitations**

**The following features are not implemented:**

- FOTA

**Issues with AT Commands:**

The following issues have been noted with AT commands:

- +COPS=0 causes device to hang
- +CLAC, u-blox AT commands are missing
- +CGPADDR not returning correct info from Test and Action commands when more than 1 APN is active
- +COPS=4 returns ERROR and device does not function properly
- +COPS=1 only supports numeric <oper>
- Some %GETCFG commands return ERROR
- +CGCONTRDP returns the response in IPV4 format
- +CGDSCONT doesn't work as specified
- +CPWD="PN" accepts password length less than 8 characters
- +CPAS returns wrong value
- Device response to ATI inquiries while in test mode:

Due to device configuration, when the device is in commercial (DEFAULT) mode, it will respond to an ATI, AT+CGMR or similar inquiry AT command with the u-blox software version; however, when configured for test mode (e.g. GCF\_PROT, GCF\_RF or similar) the device responds with the chipset supplier firmware version. After configuring the device back to commercial (DEFAULT) mode, the device will again return the u-blox software version.

**Verizon waivers:**

- Waiver # 10378: Protocol TC 7.1.3.2
- Waiver # 10381: Protocol TC 9.2.1.1.1a
- Waiver # 10376: LTE Data Retry TC 2.5
- Waiver # 10382: LTE B13 Data Throughput TC 3.4.2.9, TC 3.6.2.1, TC 3.7.3.4, TC 3.7.3.5
- Waiver # 10379: USAT TC 4.65
- Waiver # 10930: UICC TC 4.16, 4.17, 4.18, 4.20.

**Device Configuration:**

The device has predefined configurations for setting up a PDN connection. Verizon IMS and Admin PDN will be automatically set up if the device registers to the network. The Internet PDN which is used for on-demand PDN is not set up automatically.

Workaround: To enable the Internet PDN execute the following AT command to get the connection.

- a. Get Command: AT%DPDNaCT?
- b. Set Command: AT%DPDNaCT=1

**SMS in Text mode:**

TOBY\_L100-370: In Text mode inbound SMSes from a 3GPP carrier do not get converted to ASCII; the SMSes remain in HEX, whereas SMSes from a 3GPP2 carrier are fully converted to ASCII.

Workaround: The module shall be operated in SMS PDU mode only.