

Product Change Note

Topic TOBY-L210-03A firmware update and hardware modification
 UBX-19012118
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1 Affected Products

Product Name	Order Code	Type No (Old)	Type No (New)
TOBY-L210	TOBY-L210-03A	TOBY-L210-03A-00	TOBY-L210-03A-01

2 Type of Change

- Hardware modification
- Firmware update
- Documentation update
- Others

3 Description of Change

Component suppliers have announced end of life (EOL) for specific components currently used in TOBY-L2 products (Power Amplifier operating on Band 20 and memory component). We have introduced changes with new product type numbers to ensure TOBY-L210 product availability. The product with new type number includes new firmware and hardware version.

Old type number	New type number	Description of HW changes
TOBY-L210-03A-00	TOBY-L210-03A-01	Single band power amplifier LTE FDD B20 replaced with another PA electrically equivalent System memory replaced with another equivalent memory component Copper balance introduced to improve PCB coplanarity

Table 1: Description of the hardware changes

The firmware of the module has been updated in order to support the alternative components. The firmware appropriately configures and controls the components in order to ensure full compatibility in the general operations of module. The version of firmware can be identified according to the type number as follows:

Old type number	Current firmware version	New type number	New firmware version
TOBY-L210-03A-00	Modem: 15.63 Application: A01.60	TOBY-L210-03A-01	Modem: 16.19 Application: A01.02

Table 2: Description of the firmware changes

For full details of changes contained in this new version, see Annex A.

The modem and application version can be polled from the module by sending AT+GMR and AT+I9 commands. See u-blox AT commands manual [1] for details.

4 Schedule


Estimated First Shipment Date

19-Apr-2020

5 Customer Impact and Recommended Action

u-blox has taken utmost care to ensure full backward compatibility to the previous versions. The successor product is pin-to-pin compatible to its predecessor.

Modules with the old type number can be upgraded with new firmware version as outlined in Table 2 above. New Firmware can be downloaded to the TOBY-L2 module using serial interface USB/ UART or over the Air (FOTA).

 After old type numbers have been upgraded with the new firmware version, downgrading to old firmware is no longer possible.

Certifications and approvals available for predecessor products (with old type numbers) have also been also achieved for the successor products (new type numbers) [A.2].

PTCRB / GCF certification grants have been updated. Customers shall align their products to the updated versions. For example, on the PTCRB/GCF website, the customer shall select the new listed version of the u-blox module and submit a request; no testing is expected.

For country approvals, u-blox recommends that the customer contacts their preferred certification body to verify if any action is needed. For example, FCC and ISED approvals have been updated but maintain the same IDs; no action is needed if the same module ID is re-used. RED customers shall update their technical documentation using data relevant for the new type number.

Operator approvals have been updated. Please check with your operator contact to find out what is needed to align to the updated versions; no testing is expected.

6 Known bugs and limitations

See TOBY-L210-03A IP Information Note [2].

7 Reference Documents

- [1] u-blox AT Commands Manual ([UBX-13002752](#))
- [2] TOBY-L210-03A IP IN ([UBX-18010749](#))
- [3] TOBY-L2 series System Integration Manual ([UBX-13004618](#))
- [4] TOBY-L210 automotive Data Sheet ([UBX-17011587](#))

Annex

A Description of changes

A.1 Firmware

A.1.1 New features

- [CA-038135]: Enable DHCP in bridge mode
 - AT command update: +UBMCONF (<networking_mode>=2)
- [FEAT-54] Security features
 - Password protected storage
 - Firmware and Firmware signature encryption
 - New AT command: +USECCFG
 - Transport Layer Security - TLS 1.2
 - Certificate pinning with parameters configuration, random IV generation and additional AES cyphering algorithm
 - New AT command: AT+USECPRF=<pid>,12,<srv_cert>,<pinning_level>
 - HTTPS for FOTA
 - Ciphering - ECDHE-RSA-AES128-GCM-SHA256

A.1.2 Changes and issues fixed¹ implemented on application level

- [CA-038557 / u-blox ID 2-2838] If triggered and failed due to entrance into out of service, the EPS bearer deactivation required by +CGACT is not effective in NAS despite it is confirmed at AT interface.
- [CA-038915 / u-blox ID 2-2840] The +COLP URC is not meaningful when the connected line identity is not available (e.g. due to interworking or presentation restrictions).
- [CA-040298 , CA-039773 / u-blox ID 2-2948] RNDIS may not work if linux Kernel version is higher than v.4.8 and RNDIS driver optimization is enabled via AT+UDCONF=67,1.
- [CA-034663 / u-blox ID 2-2823] The flow control might not work correctly with clients slowly processing downlink data coming from Direct Link.
- [CA-040611 / u-blox ID 2-2701] UDP packet might not be sent out with TOBY-L210.
- [CA-042115 / u-blox ID 2-2859] Error sending stored SMS to international number using +CMSS.
- [CA-033918, CA-015312 / u-blox ID 2-2467] new feature AT+UDCONF=9,2: disable uplink packet filter in Bridge mode.
- [CA-040785 / u-blox ID 2-2857] in case of multiple EPS bearers/PDP context with different DNS, it might not be possible to resolve a hostname via DNS.
- [CA-042913 / u-blox ID 2-2875, 1-2476] After sending AT+CMGL=0, the module resets if the SMS are listed in more than 20 s due to e.g. their large number.
- [CA-042841 / u-blox ID 2-2872] If there is no PDP context active, the action command AT+CGCONTRDP blocks the AT interface for 5 minutes.
- [CA-048725 / u-blox ID 2-3035] The module can reset when removing antenna due to wrong handling of system information message at service recovery.

¹ For each change and bug, the external and the internal references are reported with this notation [external reference / u-blox reference]

- [CA-055879 / u-blox ID 2-3082] DCS value in +CMGR in text format is wrong for UCS2 encoded messages. (CL1 is OK).
- [CA-042553 / u-blox ID 2-2990, 2-3064, 2-3065, 2-3259] Unexpected behavior of the module TOBY-L210 in P3 testing (M2M_009, M2M_011, M2M_012, M2M_068, M2M_072)
- [CA-058962 / u-blox ID 2- 2701] The +USOCO AT command might return an error result code.

A.1.3 Known limitations

- [u-blox ID 2-2163] After the +CFUN=19/1 cycle, the +UUICC read command returns "SIM not inserted" until the SIM is initialized.
- [u-blox ID 2-728] All the MUX ports shall be opened simultaneously.

A.2 Certifications

FCC and ISED certification numbers remain unchanged between old and new type number.

Two additional certifications have been achieved:

- TOBY-L210-03A-01 is certified by Deutsche Telekom – operator certification

Overview of certification scheme for new type number.

Certification Scheme	TOBY-L210-03A-01
GCF (Global Certification Forum)	•
PTCRB (PCS Type Certification Review Board)	•
CE (Conformité Européenne)	•
FCC (United States Federal Communications Commission)	•
FCC identification number	XPYTOBYL210
ISED (Innovation, Science and Economic Development Canada)	•
ISED certification number	8595A-TOBYL210
DT (Deutsche Telekom)	New *

* - New certifications achieved with TOBY-L210-03A-01



Note: KCC certifications on TOBY-L210 are not renewed.

A.3 AT commands update

- +CEER: extended the <type> parameter "EMM cause".
- D (dial command): the sub-address feature is now supported.
- +URPM (Radio Policy Manager (RPM) activation) / +URPMCONF (Radio Policy Manager (RPM) configuration): Radio Policy Manager Feature supported.
- +UDCONF=66 (IPv6 configuration) – extended the <IPv6_conf> parameter to 2 (IPv6 support enabled; IPv6 stateless address auto-configuration is available for every RAT (the Router Solicitation is transmitted at PDP context/EPS bearer activation)).
- +UFWINSTALL (Firmware installation) - the download of the FOTA file can be performed also by means of +UHTTTPC AT command (HTTP command, <http_command>=100).
- +UFWINSTALL (Firmware installation with signature verification) – New AT command for the Firmware installation with signature verification.

- +UAPT (Audio parameters tuning) – added <op_code>=11 to enable/disable parameters range check.
- +USECMNG (SSL/TLS certificates and private keys manager) – extended the AT command in order to import of the following client private key formats:
 - PKCS1 RSA formatted encrypted private key
 - PKCS8 unencrypted private key
 - PKCS8 encrypted private key
- +USECMNG (SSL/TLS certificates and private keys manager) – extended the AT command in order to manage this types of the security data:
 - "SC": server certificate
 - "VC": signature verification certificate
 - "PU": signature verification public key
- The imported certificates and private keys are:
 - PERSISTED after the module FW is upgraded using +UFWINSTALL, +UFWINSTALL or +UFWUPD AT commands.
- +USECPRF (SSL/TLS security layer profile manager) – Extended the AT command in order to:
 - Manage the client private key password (<op_code>=7)
 - Support SNI (Server Name Indication) (<op_code>=10)
 - Manage the server certificate pinning (<op_code>=12)
 - Manage the cipher suite selection using IANA enumeration (<op_code>=99)
- +USECCFG (Data encryption configuration) – New AT command in order to configure the data encryption.
- +UBMCONF (Change the boot mode configuration) – added the bridge mode configuration (<networking_mode>=2).
- +UWMP (Maximum allowed output power configuration) – updated <max_output_power> range to [4-17].