

Product Change Note

Topic TOBY/MPCI-L201-02S, TOBY-L200-03S, TOBY-L210-03S, TOBY-L280-03S
UBX-19000820

Author Drazen Drinic

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1 Affected Products

Product Name	Order Code	Type No (Old)	Type No (New)
TOBY-L201	TOBY-L201-02S	TOBY-L201-02S-00	TOBY-L201-02S-01
TOBY-L200	TOBY-L200-03S	TOBY-L200-03S-00	TOBY-L200-03S-01
TOBY-L210	TOBY-L210-03S	TOBY-L210-03S-00	TOBY-L210-03S-01
TOBY-L280	TOBY-L280-03S	TOBY-L280-03S-00	TOBY-L280-03S-01
MPCI-L201	MPCI-L201-02S	MPCI-L201-02S-00	MPCI-L201-02S-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 17, Band 20 and memory component). We have introduced changes with new product type numbers to ensure TOBY-L2 product availability. The products with new type numbers include new firmware and hardware versions.

Description of the hardware changes in each type number:

Old type number	New type number	Description of HW changes
TOBY-L201-02S-00	TOBY-L201-02S-01	Single band power amplifier LTE FDD B17 replaced with another PA electrically equivalent System memory replaced with another equivalent memory component Copper balance introduced to improve PCB coplanarity
TOBY-L200-03S-00	TOBY-L200-03S-01	Single band power amplifier LTE FDD B17 replaced with another PA electrically equivalent System memory replaced with another equivalent memory component Copper balance introduced to improve PCB coplanarity
TOBY-L210-03S-00	TOBY-L210-03S-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
TOBY-L280-03S-00	TOBY-L280-03S-01	System memory replaced with another equivalent memory component Copper balance introduced to improve PCB coplanarity
MPCI-L201-02S-00	MPCI-L201-02S-01	Single band power amplifier LTE FDD B17 replaced with another PA electrically equivalent System memory replaced with another equivalent memory component

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-L201-02S-00	For AT&T: Modem: 09.93 Application: A02.50 For VZW: Modem: 09.94 Application: A01.02	TOBY-L201-02S-01	For AT&T: Modem: 20.03 Application: A01.02 For VZW: Modem: 20.03 Application: A01.02
TOBY-L200-03S-00	Modem: 15.90 Application: A01.50	TOBY-L200-03S-01	Modem: 16.19 Application: A01.02
TOBY-L210-03S-00	Modem: 15.63 Application: A01.50	TOBY-L210-03S-01	Modem: 16.19 Application: A01.02
TOBY-L280-03S-00	Modem: 15.63 Application: A01.50	TOBY-L280-03S-01	Modem: 16.19 Application: A01.02
MPCI-L201-02S-00	For AT&T: Modem: 09.93 Application: A02.50 For VZW: Modem: 09.94 Application: A01.02	MPCI-L201-02S-01	For AT&T: Modem: 20.03 Application: A01.02 For VZW: Modem: 20.03 Application: A01.02

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 ATI9 commands. See u-blox AT commands manual [1] for details.

4 Schedule


Estimated First Shipment Date

23. Dec 2019

5 Customer Impact and Recommended Action

u-blox has taken utmost care to ensure full backward compatibility to the previous versions. Successor products are pin-to-pin compatible to its predecessor.

Modules with the old type number can be upgraded with new firmware version. 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) are 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 request; no testing is expected.

For country approvals, u-blox recommends that customers contact their preferred certification body to verify if any action is needed. For example FCC and ISED 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 contact at the operator to find out what is needed to align to the updated versions; no testing is expected.

 Note that any new operator certification shall be initiated using the latest type number.

6 Known bugs and limitations

See TOBY-L201-02S IP Information Note [2], TOBY-L200/210/280-03S IP Information Note [3].

7 Reference Documents

- [1] u-blox AT Commands Manual (UBX-13002752)
- [2] TOBY-L201-02S IP IN (UBX-17013932)
- [3] TOBY-L200-03S / TOBY-L210-03S / TOBY-L280-03S IP IN (UBX-17022983)
- [4] TOBY-L2 series System Integration Manual (UBX-13004618)
- [5] TOBY-L2 series Data Sheet (UBX-13004573)
- [6] TOBY-L200-03S, TOBY-L201-02S, TOBY-L210-03S, TOBY-L280-03S, MPC1-L201-02S ES Sample Delivery Note (UBX-19004176)

Annex

A Description of changes

A.1 Firmware

A.1.1 New features

- [CA-038135]: Enable DHCP in bridge mode¹
 - 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
- [u-blox ID 1-2457] TOBY/MPCI-L201 - certified against Dec 2018 Verizon requirements
 - IMS roaming, new Class 6 and Class 7 APN requirements, Class 1 APN network set to IMS, OMA DM nodes to be persistent after power cycle, data retry test cases 2.1 fixed on latest test script on R&S
- TOBY-L200, TOBY-L201 - certified against AT&T requirements
 - [u-blox ID 1-2547] enabled IPv6 support
 - [u-blox ID 1-2542] enabled BIP support on TOBY-L201 (aligned to TOBY-L200)
- [u-blox ID 1-2379] Enabled automatic NITZ update of system clock on TOBY-L201

¹ Not applicable to TOBY/MPCI-L201

A.1.2 Changes and issues fixed² 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, 1-2606] 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 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.
- [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-050538 / u-blox ID 1-2628] The module can reset when VZW +UMNOCNF configuration is changed (e.g. from IMS test mode to default one).
- [CA-058962 / u-blox ID 2- 2701] The +USOCO AT command might return an error result code.
- [u-blox ID 1-2031] In VZW configuration: use AT+CFUN=16 in case of IMS registration issues, use AT+CFUN=1,1 instead of AT+CFUN=1 to exit the airplane mode.
- [u-blox ID 1-2123] In VZW configuration: the IMS client is not properly restarted after a SIM refresh (the first time a new SIM is inserted) SMS over IMS will not work.
- [u-blox ID 1-2391] The sequence AT+CFUN=19/ AT+CFUN=1 shall not be used when in +COPS: 2.

² For each change and bug, the external and the internal references are reported with this notation [external reference / u-blox reference]

A.1.3 Known limitations

- [u-blox ID 1-2402] AT+CFUN=4,1 causes IMS to not restart. Workaround: send the command: AT+UIMSCONF="KEY_UIMSRESET",1 which triggers IMS to start back and also resets the +CIREG URC status to 0.
- [u-blox ID 1-2390] The "operation not allowed" error result code is sometimes returned as "Operation not allowed", they are the same error.
- [u-blox ID 2-2163 / u-blox ID 1-2226] After the +CFUN=19/1 cycle, the +UUICC read command returns "SIM not inserted" until the SIM is initialized.
- [u-blox ID 1-2105] In VZW configuration +UMNOCONF: 3,7, the following settings are not stored in NVM after SW reset +CGSMS and "KEY_MO_SMS_FORMAT" (+UIMSCONF AT commands key).
- [u-blox ID 1-2078] In VZW configuration: when a SMS is stored in "SM" memory in text mode (AT+CMGF=1), the <scts> field does not contain the value of the service center time stamp. Workaround: use the PDU mode (AT+CMGF=0).
- [u-blox ID 1-2076] Do not close the MUX ports immediately after the termination of a dial-up. It is recommended to wait 3 s.
- [u-blox ID 2-728 / u-blox ID 1-1920] All the MUX ports shall be opened simultaneously.
- [u-blox ID 1-2030] During PPP startup some unexpected strings may be sent by the module. Workaround: ignore these strings.
- [u-blox ID 1-1996] The preferred operator list command (+CPOL) is not available in +COPS: 2.
- [u-blox ID 1-1980] In +UCGED the LTE indicators <mmeGrId> and <mmeCode> may be wrong.
- [u-blox ID 1-1928] Use +CESQ for RSSi level indication in LTE RAT instead of +CIEV.
- [u-blox ID 1-1911] Wrong +UUSORF indication when there are more packets to read available. The URC notifies only the size of next available packet to read.
- [u-blox ID 1-1906] Downloading a file in the file system at high baudrate (921600 b/s) can lead to data corruption. Workaround: decrease the UART baudrate to 115200 b/s.
- [u-blox ID 1-1870] The +CMGW and +CMSS AT commands shall not be used on VZW network. Workaround: use +CMGS instead.
- [u-blox ID 1-1188] After deleting a PDP context with +CGDEL, if the context is later re-defined, all previously existing associated data (QoS profiles, TFTs) will reappear.
- [u-blox ID 1-804] The +URAT preferred values are not always respected when the setting is done with the sequence +COPS=2, +URAT, +COPS=0. Workaround: use the sequence +CFUN=4, +URAT, +CFUN=1.

A.2 Certifications

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

Two additional certifications are achieved:

- TOBY-L200-03S-01 is certified by Mexico/IFTEL - regulatory certification
- TOBY-L210-03S-01 is certified by Deutsche Telekom – operator certification

Overview of certification scheme for new type number.

Certification Scheme	TOBY-L200-03S-01	TOBY-L201-02S-01	TOBY-L210-03S-01	TOBY-L280-03S-01
GCF	•	•	•	•
PTCRB	•	•	•	•
CE Europe	•		•	•
FCC United States	•	•	•	•
FCC identification number	XPYTOBYL200	XPYTOBYL201	XPYTOBYL210	XPYTOBYL280
ISED Canada	•	•	•	•
ISED certification number	8595A-TOBYL200	8595A-TOBYL201	8595A-TOBYL210	8595A-TOBYL280
ANATEL Brazil	•			•
RCM Australia			•	•
NCC Taiwan			•	•
IFT Mexico	X			
AT&T	•	•		
Verizon		•		
Deutsche Telekom			X	
Rogers	•			

X - New certifications achieved with TOBY-L200-03S-01 and TOBY-L210-03S-01

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

MPCI-L201-02S-01 certifications are: GCF, FCC, ISED, Verizon.

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) - On TOBY-L200-03S-00 the factory-programmed value of <IPv6_conf> parameter is 0.
- +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).
- +UFWSINSTALL (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, +UFWSINSTALL or +UFWUPD AT commands.
- +USECPRF (SSL/TLS security layer profile manager) – Extended the AT commands 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 the <max_output_power> range to [4-17].
- IPv6 support is enabled in AT&T configuration (see <PDP_type> variable) for TOBY-L200 / TOBY-L201.