

## Product change note

**Topic** SARA-R412M-02B firmware update  
UBX-20058105 C1-Public  
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**Date** 05-Mar-2021

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### 1 Affected products

Product name	Ordering code	Type number (OLD)	Type number (NEW)	Remarks
SARA-R412M	SARA-R412M-02B	SARA-R412M-02B-01	SARA-R412M-02B-03	
SARA-R412M	SARA-R412M-02B	SARA-R412M-02B-02	SARA-R412M-02B-03	

### 2 Type

- |  |  |
|--|--|
| <input type="checkbox"/> Product status change               | <input checked="" type="checkbox"/> Documentation update |
| <input type="checkbox"/> Hardware/component change           | <input type="checkbox"/> Certification information       |
| <input checked="" type="checkbox"/> Firmware/software update | <input type="checkbox"/> Security advisory               |
| <input type="checkbox"/> Label change                        | <input type="checkbox"/> Other                           |

### 3 Description

u-blox has released a new firmware for the above listed products. The new firmware includes improved robustness and reliability as well as new features like CellLocate<sup>®</sup>, Backup&Restore, and SNI.

For more details, see appendix A.

The modem version as well as the application version will change as indicated in the table below:

Old type number	Current firmware version	New type number	New firmware version
SARA-R412M-02B-01	Modem: M0.10.00 Application: A.02.14	SARA-R412M-02B-03	Modem: M0.12.00 Application: A.02.19
SARA-R412M-02B-02	Modem: M0.11.01 Application: A.02.17	SARA-R412M-02B-03	Modem: M0.12.00 Application: A.02.19

The modem and application version can be polled from the module by sending AT+I9 commands.

For more details, see the u-blox SARA-R4 series AT commands manual [\[1\]](#).

The firmware is fully tested and has passed all the u-blox release tests.

The new firmware will be applied in production according to the schedule below.

## 4 Schedule

Product type number (new)	Sample availability date	Estimated first shipment date <sup>1</sup>
SARA-R412M-02B-03	25 <sup>th</sup> February 2021	July 2021

## 5 Certifications

Regulatory certifications remain unchanged and valid:

Certification scheme	SARA-R412M-02B-03
CE (Europe)	•
FCC (USA)	•
Contains FCC ID	XPYUBX18ZO01
ISED (Canada)	•
Contains IC	8595A-UBX18ZO01
ANATEL (Brazil)	•

While only the following MNOs, conformance and regulatory certifications have been updated:

Certification scheme	SARA-R412M-02B-03
AT&T (USA)	•
Deutsche Telekom (Germany)	• (in-progress)
PTCRB (Conformance)	•
RCM (Australia) (Regulatory)	• (in-progress)

## 6 Customer impact and recommended action

u-blox has taken utmost care to ensure full backward compatibility to the previous versions. The product with the new firmware is functionally equivalent to the previous version.

However, a system check before deployment in production is recommended.

### 6.1 Certification impact:

- **Country regulatory approvals:**
  - Country regulatory approvals of the modules remain valid.
  - u-blox recommends that integrators check with their preferred certification body to find out if any action is needed for the regulatory approvals of the host product. For example, FCC US and ISED Canada IDs remain unchanged: no action is needed if the module ID is re-used.

<sup>1</sup> The estimated first shipment date is the forecasted date when a customer may expect to receive the changed product with the new type number. This is determined by the estimated date of inventory depletion on the PCN issue date. This may be affected by fluctuations in supply and demand. Consequently, although customers should be prepared to receive the changed product on this date, u-blox will continue to ship the pre-changed product until the inventory has been depleted. This may result in the pre-changed product being shipped to customers after this forecasted date.

- **Conformance approvals:**
  - u-blox recommends that integrators of SARA-R412M modules, which have the PTCRB approval in place for the host product, to execute the PTCRB ECO request process due to the change in the product
- **Mobile Network Operators (MNO) approvals:**
  - AT&T mobile network approvals of the modules have been updated
  - D-Telekom approvals are in-progress
  - u-blox recommends that integrators, which have the above mentioned MNO approvals in place for the host product, notify the related mobile network operator of the change in the product

## 7 Firmware update

- Old modules, this means modules running previous firmware revisions (before than M0.12.00), can be upgraded to SARA-R412M-02B-03 firmware ONLY by using the u-blox EasyFlash tool. It is NOT possible to upgrade those modules over-the-air using FOTA or via FOAT methods.
- New SARA-R412M-02B-03 modules, this means modules with M0.12.00 firmware revision, support future firmware upgrades via all usual update methods (EasyFlash, FOTA and FOAT). For this reason we are providing also the FOTA test packages (see 7.1 for details).
- For details on the hardware requirements to perform the firmware update over USB using the u-blox EasyFlash tool, see section 2.6.2 of the u-blox SARA-R4 series system integration manual [3].

### 7.1 Firmware update packages and md5 signature

Product / delivery	Filename	md5sum
<b>SARA-R412M-02B</b>		
EasyFlash	SARA-R412M-02B-03-M0.12.00_A.02.19_IP.dof	2a13c5925e0f9976b67b30384f314c59
FOTA (test IP to X) uFOTA ID: 1059	SARA-R412M-02B-03_M0.12.00_A.02.19_IP_SARA-R412M-02B-03_M9.12.00_A.02.19_IP.bin	8c095dda89ff6661e60e6f7c9fe12ca2
FOTA (test X to IP) uFOTA ID: 1060	SARA-R412M-02B-03_M9.12.00_A.02.19_IP_SARA-R412M-02B-03_M0.12.00_A.02.19_IP.bin	2f7c5395793204c254cab03b1d4d6e43

## 8 Tools

- m-center v02.03.00 – Download from the u-blox.com website via this page: [m-center](#)
- EasyFlash 12.10 – Download from the u-blox.com website via this link: [EasyFlash 12-10](#)

## 9 Related documentation

- [1] SARA-R4 series AT commands manual, [UBX-17003787](#)
- [2] SARA-R4 series data sheet, [UBX-16024152](#)
- [3] SARA-R4 series system integration manual, [UBX-16029218](#)
- [4] SARA-R412M-02B IP IN, [UBX-19004091](#)
- [5] SARA-R412M-02B-01 PCN, [UBX-19016568](#)
- [6] SARA-R412M-02B-02 PCN, [UBX-20031249](#)
- [7] SARA-R4 series application development application note, [UBX-18019856](#)
- [8] SARA-R4 series LwM2M objects and commands application note, [UBX-18068860](#)
- [9] SARA-R4 series firmware update application note, [UBX-17049154](#)

## Appendix

### A Description of change

#### A.1 Hardware

No changes.

#### A.2 Firmware

##### A.2.1 New features

In addition to the features available in the previous SARA-R412M product, the following new features have been added:

- **CellLocate®**  
Enables the estimation of device position based on the parameters of the mobile network cells visible to the specific device based on the CellLocate® database. CellLocate® is available via a set of AT commands for CellLocate® service configuration and position request.
- **BackUp & Restore:**  
This feature allows the modules to autonomously restore the flash file system using the last backup stored on the module itself.
- **Server name indication (SNI) in TLS authentication**  
Extension of SSL/TLS which allows the server to present different certificates for different base URL's pointing at the same IP address.
- **New LwM2M client** compliant with the latest requirements from MNOs.

##### A.2.2 Fixes included in this release

###### UNET/USOCK/Secure sockets/DUN

- [u-blox ID X1M-531/ CA-069325]: Extension of the HTTP path to 2048 characters from current 128 characters.
- [u-blox ID X1M-124/CA-073471]: Wrong source port reported in the +USORF AT command when using more than one UDP listening socket and packets are not immediately read.

- [u-blox ID X1M-148/ u-blox ID 4270/CA-071804]: Implement +UPSD (required for DNS resolution with PDP type IPv6) AT command.
- [u-blox ID X1M-211]: Add support for two concurrent DUN (PPP) calls.
- [u-blox ID X1M-241/ CA-091868]: The AT interface becomes unresponsive when the network detaches the device during a PPP.
- [u-blox ID X1M-714/ CA-101472]: No data / ping on 1st PPP after 2nd PP connection established.

### **LWM2M client**

- [u-blox ID X1M-145]: +ODIS AT command support in +UMNOPROF:2 AT&T profile added.
- [u-blox ID X1M-170]: Support SMS over CoAP to update bootstrap server.
- [u-blox ID X1M-176]: Verizon Class 3 APN update and storage.
- [u-blox ID X1M-193]: Support "XLWM2M" tag for +URDBLOCK, +UDELFIL, +ULSTFILE AT commands.
- [u-blox ID X1M-338]: Implement Client Initiated Bootstrap Logic.
- [u-blox ID X1M-388]: Need to add default AT&T PSK to bootstrap.lua for upgrades in field.

### **AT commands**

- [u-blox ID X1M-254/ CA-091868]: USIM OTA and Proactive Refresh from SIM - SIM REFRESH (reset) to be reported by +USIMSTAT.
- [u-blox ID X1M-119]: The +CEDRXS AT command shall not allow '3' as <AcT> parameter.
- [u-blox ID X1M-1015/ CA-091314/CA-098963/CA-112725]: The UMACQOSTMR AT command can enable/disable & configure MAC QOS timer, which in the enable state can potentially avoid missing inbound data calls from a server or inbound SMS from network side. For more details on the command usage and the typical setting, see the SARA-R4 application development application note [7].

### **Cellular modem**

- [u-blox ID X1M-434]: AT&T Requests PSM off by default in AT&T and Firstnet profiles. (eDRX should be disabled manually for AT&T conformance testing)
- Improvements in PTCRB RF, RRM, protocol LTE Cat M1, USAT required by renewals of conformance testing.

## B Known limitations

Known limitations identified as [u-blox id]:

- [u-blox id 3724] Incorrect response reading a stored SMS with all GSM 7 bit characters.
- [u-blox ID 4537]: After a while, the +CMGL AT command may start returning the "+CMS ERROR: Resources unavailable, unspecified" error result code. Workaround: set the storage setting again by means of the AT+CPMS="ME","ME","ME" command.
- [u-blox ID 5257]: No inbound SMS URC are received when the +CMUX AT command is used.
- [u-blox ID 573]: On direct link, the ON->OFF transition on DTR line does not disconnect the device from data mode when AT&D1 is applied. Workaround: use AT&D2.
- [u-blox id 2052]: The +USORD AT command fails to read pending bytes when the socket is in closed state. To avoid the AT command interface hanging, it is recommended to use async socket close, e.g. AT+USOCL=0,1 (the +UUSOCL URC response will take 120 s in this case but will not block the AT interface).
- [u-blox id 3142] Data being received via a UDP socket can be read in a maximum of 2 chunks by the +USORF AT command.
- [u-blox id 3466] Intermittently AT+UHTTP=0 can take up to ~120 s to respond.
- [u-blox ID 3889]: Without HW flow control the DUT crashes with Direct Link when upload buffer gets full due to constraint on radio UL speed.
- [u-blox ID 4113]: Sending more than 10 kB of data via +USOWR AT command over TCP will lead to a crash if TX buffers should reach full.
- [u-blox ID 4494]: For UDP sockets, the maximum size of the UDP single payload is 1024 bytes.
- [u-blox ID 4886]: Send a file to the FTP server using the direct link mode (AT+UFTPC=7) takes 30 s to disconnect.
- [u-blox ID 5237]: The Carrier Detect line is not getting de-asserted after a +USODL or +UFTPC=6 operation is finished.
- [u-blox ID 5366]: The AT+USOCTL=<socket>,11 command returns an error result code on the secure socket.
- [u-blox ID 5396]: When the UL radio link is lost, the +USOWR AT command returns an error result code even after partial data queued in TCP protocol stack.
- [u-blox id 3036] When too many MQTT messages are in the RX queue (around 800 characters) and not read by the MCU, some characters might get lost. Suggested workaround: read MQTT messages as soon as they are received and in any case before, they reach the above mentioned number.
- [u-blox id 3869] MQTTS does not function properly.