Product change note

Topic **SARA-R412M-02B firmware update**
UBX-22005058 C1-Public

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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-03	SARA-R412M-02B-04	

2 Type

- ☐ Product status change
- ☐ Hardware/component change
- ☒ Firmware/software update
- ☐ Label change
- ☒ Documentation update
- ☐ Certification information
- ☐ Security advisory
- ☐ Other

3 Description

u-blox has released a new firmware for the above listed products. The new firmware includes improved robustness and reliability. For more details, see appendix A.

The modem version will remain unchanged while 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-03	Modem: M0.12.00 Application: A.02.19	SARA-R412M-02B-04	Modem: M0.12.00 Application: A.02.21

The modem and application version can be polled from the module by sending ATI9 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[1]
SARA-R412M-02B-04	21st April 2022	August 2022

[1] 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.

5 Certifications

Regulatory certifications remain unchanged and valid:

Certification scheme	SARA-R412M-02B-03
RED (Europe)	•
FCC (USA) FCC ID	• XPYUBX18ZO01
ISED (Canada) ISED certification number	• 8595A-UBX18ZO01
ANATEL (Brazil) Certificate number	• 07927-19-05903
RCM ACMA (Australia)	•

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

Certification scheme	SARA-R412M-02B-03
PTCRB (conformance)	•
AT&T (USA)	•
Deutsche Telekom (Germany)	•

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 and ISED IDs remain unchanged: no action is needed if the module ID is re-used.
- **Conformance approvals**
  - u-blox recommends that integrators, which have the PTCRB approval in place for the host product, execute the PTCRB ECO request process due to the change in the product
- **Mobile Network Operators (MNO) approvals**
  - AT&T mobile network approval of the modules has been updated
  - Deutsche Telekom approval is 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 SARA-R412M-02B modules running previous firmware revisions (before 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.
- SARA-R412M-02B-03 modules can be upgraded to SARA-R412M-02B-04 firmware by using the u-blox EasyFlash tool and over-the-air using FOTA or via FOAT methods. For details, see section 7.1.
- For hardware requirements to perform a firmware update over USB with 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
SARA-R412M-02B		
EasyFlash	SARA-R412M-02B-04-P1-M01200A0221-000K00.dof	02b47e6a440fa026994c52025a4c41c0
FOTA (from SARA-R412M-02B-03 to SARA-R412M-02B-04) uFOTA ID: 1459	SARA-R412M-02B-03-IP-M01200A0219-000K00_SARA-R412M-02B-04-P1-M01200A0221-000K00.upd	12e8502443f230a537a27e952a67ad01
FOTA (from SARA-R412M-02B-04 to SARA-R412M-02B-03) uFOTA ID: 1460	SARA-R412M-02B-04-P1-M01200A0221-000K00_SARA-R412M-02B-03-IP-M01200A0219-000K00.upd	1c29b43005851faac669c540878e5935
FOTA (test IP to X) uFOTA ID: 1508	SARA-R412M-02B-04-P1-M01200A0221-000K00_SARA-R412M-02B-04-P1-M91200A0221-000K00.upd	e389b95f84f62a2ece68022468b7e71b
FOTA (test X to IP) uFOTA ID: 1509	SARA-R412M-02B-04-P1-M91200A0221-000K00_SARA-R412M-02B-04-P1-M01200A0221-000K00.upd	887bd95468ef28365829ee88c46d519a

8 Tools

- m-center v02.06.00 – Download from the u-blox.com website via this page: m-center
- EasyFlash 13.03 – Download from the u-blox.com website via this link: EasyFlash 13.03

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 information note, UBX-20031249
[7] SARA-R412M-02B-03 PCN, UBX-20058105
[8] SARA-R4 series application development application note, UBX-18019856
[9] SARA-R4 series LwM2M objects and commands application note, UBX-18068860
[10] 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

No changes.

A.2.2 Fixes included in this release

Networking and IP based applications fixes

- [u-blox ID R412-7/CA-129321] Multiple SSL socket data issue: in stress test with multiple secure sockets used in parallel to receive data sometimes one socket gets stuck.
- [u-blox ID R412-14/CA-129867] Generic +USOER error code after socket closure.
- [u-blox ID R412-17] DNS is not assigned to PPP host via LCP for the second dialup connection established.

Positioning AT commands fixes

- [u-blox ID R412-11/CA-119171] The longitude returned by +ULOC is wrong when the real value is between (-0.99999 and 0.00000).

Memory and serial drivers fixes and improvements

- [u-blox ID R412-12] EFS backup/restore: feature optimization.
- [u-blox ID R412-13/CA-126269] +UDWNFILE file data appears to be rearranged on occasion.

Configuration and diagnostic AT commands improvements

- [u-blox ID R412-27] Modification of AT&T profile in NVM to enable network MTU negotiation via PCO. Negotiation via RA is already supported.
- [u-blox ID R412-20] +CEREG: 3 URC added for EMM cause #19 (ESM Failure).
- [u-blox ID R412-18] +UHPPLMN command for configuration of Higher Priority PLMN scan timings.
- [u-blox ID R412-8] +UCPSMS and +CEREG are formatted in order to allow understand if PSM has been granted on not by the network.

LWM2M improvements

- [u-blox ID R412-9] Configure CoAP tolerance to transmission delays to increase uFOTA reliability in slow NB-IoT networks.
- [u-blox ID R412-59] LwM2M client starts procedures when UICC is detected and ready.
- [u-blox ID R412-2-1] LwM2M database has been protected where simultaneous access requests are not allowed.
- [u-blox ID R412-2-2] Improved handing of IPv6 to IPv4 fallback.
- [u-blox ID R412-2-3] Extended+ULWM2M AT command extended with NVM storage.

B Known limitations

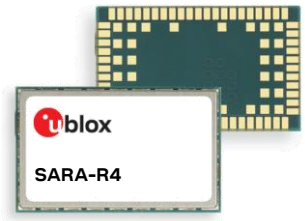
Known limitations identified as [u-blox id]:

- [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 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 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.

SARA-R4 series

Multi-band LTE-M / NB-IoT / EGPRS modules

Data sheet



Abstract

Technical data sheet describing the size-optimized SARA-R4 series LTE-M / NB-IoT / EGPRS cellular modules, which are a complete and cost-efficient solution offering multi band data transmissions for Low Power Wide Area solutions in a compact form factor.

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