Product change note

Topic	**SARA-R422-01B / SARA-R422S-01B / SARA-R422M10S-01B Firmware update** UBX-23006496 C1-Public
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1   Affected products

Product name	Ordering code	Type number (old)	Firmware (old)	Type number (new)	Firmware (new)
SARA-R422	SARA-R422-01B	SARA-R422-01B-00	01.24, A01.00	SARA-R422-01B-01	01.24, A01.10
SARA-R422S	SARA-R422S-01B	SARA-R422S-01B-00	01.24, A01.00	SARA-R422S-01B-01	01.24, A01.10
SARA-R422M10S	SARA-R422M10S-01B	SARA-R422M10S-01B-00	01.24, A01.00	SARA-R422M10S-01B-01	01.24, A01.10

2   Type

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

3   Description

A new firmware is available for the above listed products. See Appendix A for new features and improvements. The new firmware will be applied in production according to the schedule below.

4   Schedule

Product type number (old)	Last-time-buy date	Last shipping date
All products listed above	29-Sep-2023	29-Dec-2023

Product type number (new)	Sample availability date	Estimated first shipment date[1]
All products listed above	25-Jul-2023	2023 CW34

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[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 production capacity and may be affected by fluctuations in supply and demand. Please get in touch with your sales representative for detailed shipment planning.

5 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.

5.1 Customer host device certifications impact and recommended action

The FW changes do not affect RF / EMC properties of the modem.

- Country regulatory approvals:
  - o Country regulatory approvals of the modules remain valid.
- Conformance approvals:
  - o PTCRB certifications have been updated from the "01B-00" product versions.
  - o u-blox recommends integrators having the PTCRB approval in place for the host product to execute the PTCRB ECO certification process due to change of the FW version of the module in the host product (no testing is expected, paperwork only).
- Mobile Network Operators (MNO) approvals:
  - o AT&T and Verizon MNO approvals have been updated from the "01B-00" product versions. u-blox recommends integrators having such MNO approval in place for the host product to notify related mobile network operator due to the use of the new FW version of the module in the host product (no testing is expected, paperwork only).
  - o Other MNO approvals of the modules remain valid.

6 Firmware update

SARA-R422-01B-00, SARA-R422S-01B-00, SARA-R422M10S-01B-00 (01.24, A01.00) units can be updated to this PCN firmware.

For FOTA/FOAT procedures, the update can be performed in one step or two steps. The two-step update is faster as an intermediate small package is installed first, which improves performance of the update agent (UA) of the module.

- **Single step update**: Use file `FOTA/FOAT 01.24, A01.00 to 01.24, A01.10.` Expected installation time around around 32 minutes.
- **Two-step uddate:**
  1. Use file `FOTA/FOAT 01.24, A01.00, to upgrade the update agent (UA) only.` Expected installation time around 20 secs.
  2. Use file `FOTA/FOAT 01.24, A01.00 to 01.24, A01.10.` Expected installation time around 2 to 3 minutes.

6.1 Firmware update packages and md5 signature

Product / delivery	Filename	md5sum
SARA-R422-01B		
EasyFlash	`SARA-R422-01B-01-IP-0124A0110-006K00.dof`	`44944190bff5595bd62392666ccd1915`
FOTA/FOAT 01.24, A01.00 to upgrade the Update Agent (UA) only uFOTA ID: 2114	`SARA-R422-01B-00-IP-0124A0100-006K00_SARA-R422-01B-01-ES-0124A0103-006K00_UA-ONLY.upd`	`2261cd774067673872da9f469ff7d66c`

Product / delivery	Filename	md5sum
FOTA/FOAT 01.24, A01.00 to 01.24, A01.10 uFOTA ID: 2139	SARA-R422-01B-00-IP-0124A0100-006K00_SARA-R422-01B-01-IP-0124A0110-006K00.upd	7d772e05e0698c40d1cb9456cb7eeb68
FOTA test 01.24, A01.10 to 01.24_ENG1099, A01.10 uFOTA ID: 2142	SARA-R422-01B-01-IP-0124A0110-006K00_SARA-R422-01B-01-XX-0124ENG1099A0110-006K00.upd	585712178010841ff583f25d9f1a3d52
FOTA test 01.24_ENG1099, A01.10 to 01.24, A01.10 uFOTA ID: 2143	SARA-R422-01B-01-XX-0124ENG1099A0103-006K00_SARA-R422-01B-01-IP-0124A0110-006K00.upd	4b1804802ea55d1747dbf7fecb808ebc
SARA-R422S-01B		
EasyFlash	SARA-R422S-01B-01-IP-0124A0110-007K00.dof	d8067d756bc396c0eb46c575d775ed01
FOTA/FOAT 01.24, A01.00 to upgrade the Update Agent (UA) only uFOTA ID: 2118	SARA-R422S-01B-00-IP-0124A0100-007K00_SARA-R422S-01B-01-ES-0124A0103-007K00_UA-ONLY.upd	4e731e63452943919080df21202ebb3a
FOTA/FOAT 01.24, A01.00 to 01.24, A01.10 uFOTA ID: 2133	SARA-R422S-01B-00-IP-0124A0100-007K00_SARA-R422S-01B-01-IP-0124A0110-007K00.upd	2ca2ee976588f4c0f40b55c61e47df7f
FOTA test 01.24, A01.10 to 01.24_ENG1099, A01.10 uFOTA ID: 2136	SARA-R422S-01B-01-IP-0124A0110-007K00_SARA-R422S-01B-01-XX-0124ENG1099A0110-007K00.upd	5428c26b54569b03f8f5ecfb85652e75
FOTA test 01.24_ENG1099, A01.10 to 01.24, A01.10 uFOTA ID: 2137	SARA-R422S-01B-01-XX-0124ENG1099A0110-007K00_SARA-R422S-01B-01-IP-0124A0110-007K00.upd	897acc1f159cd5b20a736b671a79fd58
SARA-R422M10S-01B		
EasyFlash	SARA-R422M10S-01B-01-IP-0124A0110-005K00.dof	777f432abc222c1d031aaaf72c4fdbce
FOTA/FOAT 01.24, A01.00 to upgrade the Update Agent (UA) only uFOTA ID: 2116	SARA-R422M10S-01B-00-IP-0124A0100-005K00_SARA-R422M10S-01B-01-ES-0124A0103-005K00_UA-ONLY.upd	5e060e57ef2a024f52f8ff664cc262fb
FOTA/FOAT 01.24, A01.00 to 01.24, A01.10 uFOTA ID: 2127	SARA-R422M10S-01B-00-IP-0124A0100-005K00_SARA-R422M10S-01B-01-IP-0124A0110-005K00.upd	84b518eb3465a1ce63afec177b637b2b
FOTA test 01.24, A01.10 to 01.24_ENG1099, A01.10 uFOTA ID: 2130	SARA-R422M10S-01B-01-IP-0124A0110-005K00_SARA-R422M10S-01B-01-XX-0124ENG1099A0110-005K00.upd	c5ff7419124da509a665d80013e43774

Product / delivery	Filename	md5sum
FOTA test 01.24_ENG1099, A01.10 to 01.24, A01.10 uFOTA ID: 2131	`SARA-R422M10S-01B-01-XX-0124ENG1099A0110-005K00_SARA-R422M10S-01B-01-IP-0124A0110-005K00.upd`	`54eb27b9e2436e497738c3257b37a99f`

Download the EasyFlash FW packages from SARA-R4 series documentation & resources [6], under 'Firmware update'.

For the FOTA/FOAT FW packages, contact u-blox technical support, www.u-blox.com/support.

For more details of FW update, see SARA-R4 series FW update application note [5]

7 Tools

- u-blox m-center evaluation tool v02.08.00 for Windows
- u-blox EasyFlash firmware update tool v13.09 for Windows
- u-blox USB driver of the modules for Windows

8 Related documentation

[1]   u-blox SARA-R4 series AT commands manual, UBX-17003787
[2]   u-blox SARA-R4 series data sheet, UBX-16024152
[3]   u-blox SARA-R4 series system integration manual, UBX-16029218
[4]   u-blox SARA-R42 series application development guide, UBX-20050829
[5]   u-blox SARA-R4 FW update application note, UBX-17049154
[6]   u-blox SARA-R4 series documentation & resources

Appendix

A Improvements and features added compared to "01B-00" type number

Local Connectivity and drivers

- [u-blox ID 927-3] Customer application can configure the truth table of the dynamic antenna tuner.
- [u-blox ID 868-3] Allow PPPv4 to work also over a PDP context activated as dual IP (IPV4V6).
- [u-blox ID 785-3] Added second parameter to +UPSV=3 command to buffer data if DTR and RTS are deasserted.
- [u-blox ID 938-3] Fixed occasional MUX header frame error with +UPSV=3 configuration.
- [u-blox ID 1212-3] Fixed: In MUX mode, AT interface becomes unresponsive after over 1000 URCs have been issued from last module reboot.
- [u-blox ID 1127-3] Fixed: In MUX mode, AT+USOWR command could become unresponsive due to URCs wrong processing.

Internet suite

- [u-blox ID 1070-3] Optimized the module behaviour after the FTP suspend procedure.
- [u-blox ID 972-3] Improvements in the FTP procedures for downloading the FW update image.
- [u-blox ID 1058-3] Applied a better handling of the socket close procedures in congested data traffic scenarios and in out-of-coverage situations.
- [u-blox ID 912-3] Allow parallel use of USOCK and UPING without restrictions.
- [u-blox ID 863-3] Synchronization loss occasionally experienced in CDRX due to late exit from low power mode with +UPSV=3 and +UPSV=4 configuration. Fix: cellular modem wake-up anticipated of few milliseconds. Impact: none.
- [u-blox ID 892-3] UDP listening supports connections with multiple IP servers.
- [u-blox ID 917-3] Added +UPSD=0,4 and +UPSD=0,5 to configure DNS in case of missing configuration by the network e.g. on private APNs.
- [u-blox ID 965-3 ID 1019-3] Improvement of socket handling during intensive use of u-blox secure sockets.
- [u-blox ID 1284-3] Added a new feature based on AT+UDCONF=18,2 to apply the +USOWR buffering mode in the data traffic at TCP/IP level.
- [u-blox ID 1247-3] Improved command response time to synchronous +USOCO in out-of-coverage condition.
- [u-blox ID 1117-3] New feature: added Application Layer Protocol Negotiation (ALPN) TLS extension in authentication procedures.

Monitoring services

- [u-blox ID 814-3] New feature: +USCANSTAT command enables URCs displayed at start and stop of PLMN scan procedures.
- [u-blox ID 916-3] Improved the AT+CGACT command behaviour to avoid responding "+CGACT:1,1" if the module is not registered.

Cellular Modem

- [u-blox ID 992-3] New requirement: On-Site Private Verizon Network support: added specific ICCID to Verizon MNO profile.
- [u-blox ID 394-3] Improvement: RTC-aware handling of NAS backoff timers. +CCLK info is retrieved at boot or runtime to update backoff timers value.

Positioning

- [u-blox ID 1182-3] Implemented AssistNow Offline for Galileo and Beidou
- [u-blox ID 1069-3] Optimized AT+UGGSV command when passing data to the AT interface
- [u-blox ID 1180-3, ID 1102-3 and ID 1169-3] Applied a fix to the location aiding state-machine to improve the interaction with CellLocate and AssistNow Online servers. Enhanced the interaction between the CellLocate request and the related DNS resolution when occurring the same data call.

File system

- [u-blox ID 950-3] New feature: FOTA extended with URC on the stored/total bytes and with access to its partition via AT+ULSTFILE command
- [u-blox ID 951-3] Improved the AT+UDWNFILE command in append mode.

Diagnostic AT commands and URCs

- [u-blox ID 907-3] +CSCON: 0 URC is now issued at RRC connection release after mobile originated LTE detach.
- [u-blox ID 897-3] Fixed: Cell identifier sometimes is not updated in +CREG and +CGREG URCs after 2G cell reselection.
- [u-blox ID 157-3] +CIEV: 12 URC (SIM indication) is now issued when the SIM is removed and inserted again.
- [u-blox ID 66-3] Extended +URINGCFG to control RING line at URCs.

System features

- [u-blox ID 924-3] AT+UTEMP in read mode will now display the <unit> param.
- [u-blox ID 933-3] New feature: Enabled the module tracing through the UART interface.

Firmware update

- [u-blox ID 958-3] Reduced installation time of delta firmware file for FOTA updates, when updating the FW version to future ones.
- [u-blox ID 929-3] New feature: uFOTA download can be paused and resumed.

B Known limitations

Internet suite

- [u-blox ID 84_3] The +UDCONF=10 AT command does not work.
- [u-blox ID 2114_2] If linger time is not set, the +USOCL AT command answers after 30 s.

Monitoring services

- [u-blox ID 103_3] When the jamming level is close to the threshold level, redundant and toggled jamming indications can be issued because the jamming condition is periodically cleared. If the jamming level is high, the indications of jamming detection are more consistent.
- [u-blox ID 155_3] The AT+COPS=1 does not return a final result code if issued in airplane mode (+CFUN: 0 or 4).
- [u-blox ID 867_2] +CGEV URC are discarded in +CGEREP: 1,1 when AT commands are pending for contexts activation/deactivation. Workaround: issue AT+CGEREP=2,1.
- [u-blox ID 139_3] +CEINFO read command stuck after passing from LTE Cat. M1/NB1 to GSM.

System features

- [u-blox ID 1293_2] UDP packets are not sent when the last gasp feature is triggered on 2G RAT. A PDP context shall be activated before.

SMS

- [u-blox ID 1200-3] The AT+CMGL command, if there is an error, replies with a generic "Error" instead of "CMS Error".

File system

- [u-blox ID 325_3] Maximum user file system size shall be limited to 640 kB.

Positioning

- [u-blox ID 153_3] With a multi-hypothesis response (<response_type>=2), the +UULOC URC is not correctly formatted.
- [u-blox ID 1280_3] +ULOC might fail with server error when the UE reports FFFF CellId. This can occur if the RRC connection is released while this request is pending, due to the need to re-read the SIB.

C Usage notes

USEC features

- For new modules shipped with FW 01.24, A01.10, the default setting of USEC features suite is disabled (+USECMODE=0).
- USEC suite has no effect on the availability and use of secure internet protocols and is recommended to be disabled, if not used.
- USEC suite has no effect on device security features such as secure boot and secure updates, which are active and operate independently from USEC.
- Firmware update of SARA-R422x-01B modules to FW 01.24, A01.10 has no effect on the current setting of USEC feature in the module at the time of update.

File system

- Now +UDWNFILE with the "FOAT" tag starts in append mode: to download a FW update package, check filenames available in the FOAT file system by the +ULSTFILE command.
  If the filename already presents and the append mode is not needed, apply a +UDELFILE command to avoid downloading the FW package in append mode and then start the download procedure from scratch.