

Product Change Note

Topic SARA-R412M-02B Product Change
UBX-19016568

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1 Affected Products

Product Name	Order Code	Type No (Old)	Type No (New)	Remarks
SARA-R412M	SARA-R412M-02B	SARA-R412M-02B-00	SARA-R412M-02B-01	

2 Type of Change

- Hardware modification
- Firmware update
- Documentation update
- Other, Certification update

3 Description of Change

A new firmware release will be applied to the affected product in production according to the schedule below.

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
SARA-R412M-02B-00	M0.09.00 App version 02.11	SARA-R412M-02B-01	M0.10.00 App version 02.14

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

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

4 Schedule

Estimated First Shipment Date	07 June 2019
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5 Customer Impact and Recommended Action

- The previous version may still be ordered by customers during the transition period to the new version. The transition period ends three months after the schedule date listed above. After the transition period, only the new SARA-R412M-02B-01 version may be ordered.
- Latest firmware version is required for new devices entering certification labs.
- It is recommended to use the Initial Production modules for certification activities.

- It is possible to upgrade SARA-R412M-02B units to the new firmware version.
- Backward compatibility between new type number and its predecessor is ensured.
- It is recommended to configure the module to the applicable MNO profile, RAT, and LTE bands intended for the application device and within regulatory compliance. The module is not intended be used in the factory default setting (+UMNOPROF=0: SW Default).

6 Reference Documents

- [1] SARA-R4 series AT Commands Manual, u-blox Document [UBX-17003787](#)
- [2] SARA-R4 series Data Sheet, u-blox Document [UBX-16024152](#)
- [3] SARA-R4 series System Integration Manual, u-blox Document [UBX-16029218](#)
- [4] SARA-R412M-02B – IN Information Note, u-blox Document [UBX-19004091](#)

Annex A

A Description of Changes

A.1 Hardware

No changes.

A.2 Firmware

- Advanced the chipset supplier release version.
- Fixes included in this release are as described in Section A.5.
- The following LTE Cat M1 and LTE Cat NB1 bands are available as roaming bands through band selection (+UBANDMASK): bands 26, 28
- Updates to MNO profile version:

MNO	Version	System Selection	LTE Bands	PSM	eDRX	URAT	UBANDMASK
AT&T	v 7.2	M1->2G	2, 4, 5, 12	yes	no	yes	yes
Deutsche Telekom	v 7.1	M1->NB1->2G	3, 8, 20	yes	yes	yes	yes
Standard Europe	v 7.1	M1->NB1->2G	3, 8, 20	yes	yes	yes	yes
T-Mobile USA	v 7.1	NB1->2G	2, 4, 5, 12	no	no	yes	yes
Vodafone	v 7.1	NB1->2G->M1	3, 8, 20	yes	no	yes	yes
SW default	N/A	M1->NB1->2G	2, 3, 4, 5, 8, 12, 20	no	no	no	no

A.3 Certification

The following certifications are achieved for the new type number:

Certification (country)	Status
RED	Complete (LTE Cat M1, NB1 bands 3, 8, 20 and 2G)
FCC (US)	Complete (LTE Cat M1, NB1 bands 2, 4, 5, 12, 13 and 2G)
ISED (Canada)	Complete (LTE Cat M1, NB1 bands 2, 4, 5, 12, 13 and 2G)
AT&T	Complete (LTE M1 bands 2, 4, 5, 12)
T-Mobile USA*	Complete (LTE NB1 bands 2, 4, 5, 12)
PTCRB	Complete (LTE M1, NB1 bands 2, 4, 5, 12)

- RED grants already achieved for SARA-R412M-02B-00 also remain valid for new product type number SARA-R412M-02B-01.
- For customer products using SARA-R412M-02B-00 and already certified by RED, there is no need to perform new product re-certification using SARA-R412M-02B-01.
- FCC grant and ISED grant are newly achieved.
- PTCRB and AT&T grant are newly achieved for the new firmware version.
- *T-Mobile USA grant for the new firmware version is expected by 14 June 2019

A.4 Certification compliance

The SARA-R412M-02B module includes the ability to configure the device in the following ways:

- Mobile Network Operator Profile (+UMNOPROF AT command)
- Radio Access Technology (+URAT AT command)
- LTE band selection (+UBANDMASK AT command)

As these configuration decisions are made, u-blox reminds customers that the end device regulatory compliance shall be verified with an accredited laboratory. If the end device enables bands that are not within the country specific module approved configuration, then the customer will incur additional measurements that were not covered by the module certification.

The certification of the application device that integrates a SARA-R4 module and the compliance of the application device with all the applicable certification schemes, directives and standards are the sole responsibility of the application device manufacturer.

A.5 Fixes included in this release

- [u-blox id 3814] LWM2M client allows PSM after client shuts down.
- [u-blox id 3799] Improvements to TIS performance
- [u-blox id 3895] Corrections to default TLS cipher suite list
- [u-blox id 3783] TLS data transmission reports +USOWR:0,0 and upon retry server receives double additional data
- [u-blox id 3831] Ciphers and file size failures : Post to AWS ELB SSL
- [u-blox id 3743] Optimize LWM2M CoAP timer values for RAT
- [u-blox id 3623] CSODCP command fails with CFUN=0/1
- [u-blox id 3604] When configuring LTE bands by means of the +UBANDMASK AT command an error code will result if attempting to enable a band that is not calibrated on the device.
- [u-blox id 3581] USOCTL=0,2 USOCTL=0,3 resets on listening socket
- [u-blox id 3575] Improvements to TIS performance
- [u-blox id 3551] UUSORD, UUSORF is missing in certain condition
- [u-blox id 3545] UUSORD URC seen when data is sent to modem while a USOWR is in progress.
- [u-blox id 3537] SSL data transmission issue using USOWR
- [u-blox id 3517] COPS=4 (manual selection) triggers and enables 2G
- [u-blox id 3514] COPS=2 then COPS=0 will ignore RAT acquisition order
- [u-blox id 3142] Data being received via a UDP socket can be read in a maximum of 2 chunks by +USORF

A.6 Known Limitations

The following are known limitations:

- For PSM, the works-as-designed behavior is that there may be times when the Data or LTE timers may wake up the module before the expected PSM wakeup time.
- When the device is ready to go into PSM it does not gracefully shutdown TCP sockets, therefore the remote end is unaware of the client socket state. The remote server should implement a timeout or have keep alive probes enabled to check on the connection at regular intervals.
- The RxAGC value provided with the +UTEST: 2 information text response may have an approximate -3 dB inaccuracy.

- [u-blox id 3869] For MQTTS (secure), ciphering needs to be manually specified.
- [u-blox id 3586] When eDRX is enabled, during PPP connection there is a long delay in obtaining IP address. Workaround is to disable eDRX with PPP.
- [u-blox id 3557] Connection to MQTT Microsoft Azure results in error code.
- [u-blox id 3517] Higher current consumption observed after MQTT login. Suggest to keep login session short.
- [u-blox id 3502] It is not possible to exit from Direct Link Mode when the baud rate is 460800 b/s and sending 10 MB file. Use a lower baud rate of 115200 b/s.
- [u-blox id 3466] Intermittently +UHTTP=0 can take up to ~120s to respond. Workaround by sending dummy byte to UART.
- [u-blox id 3423] The CEREG AT command shows the device still registered after deregistered with AT+COPS=0 or AT+CFUN=0. This is caused by a mismatch in service domain settings (PS-only, CS-only, Combined Attach) between network and device. Set the device service domain via +USVCDOMAIN or by selecting operator profile via +UMNOPROF. The 'Standard Europe' Profile enables PS-only.
- [u-blox id 3168] When connecting to MQTT server, SSL negotiations can fail due to large TCP packets, which can be triggered by large certificate files.
- [u-blox id 3117] AT &K hardware flow control setting is not saved to Profile.
- [u-blox id 3094] Incorrect response reading a stored SMS with all GSM 7 bit characters.
- [u-blox id 3036] When inbound subscribed MQTT messages pile up without being read, there are too many messages for the module to handle. When this pile of messages is read, not all the message characters are read out as some of the messages are "chopped off" from the output. Suggested workaround: Read messages as soon as they come in. Do not let too many messages go unread and pile up. Issue observed around 800 char and above.
- [u-blox id 2611] uTEST=2 RX and uTEST=3 not giving consistent readings unless Reset applied between test. Suggested workarounds:
 - Avoid using continuous mode for uTEST=3. Instead, use non-continuous mode.
 - After issuing uTEST=3 in continuous mode, then issue same uTEST=3 TX test but in non-continuous mode to clear a flag causing issue.
- [u-blox id 2573] Sometimes the modem reaches a state where MQTT publish and MQTT publish from file returns a success code, but the MQTT message URC is never seen from the same modem (which is also subscribed to the MQTT Topic of the message).
- [u-blox id 2494] Not getting <+UULOCIND> URC indication of +ULOC request complete while turning on GPS after requesting localization info.
- [u-blox id 2324] A DUN call fails when a LWM2M data call is active. Workaround: retry the call.
- [u-blox id 2136] PKCS8 client key format is not supported for FTPS.
- [u-blox id 2135] In TX test mode (AT+UTEST=3 command) the maximum output power is 17 dBm even when set to greater values.
- [u-blox id 2068] The +USORD and +USORF information text responses add extra characters. The host application should disregard any extraneous <S3> and <S4> bytes.
- [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).