

Information Note

Topic SARA-R412M-02B certification and initial production
UBX-19004091

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1 Affected Products

Product name	Ordering code	Type number	Firmware	Remarks
SARA-R412M	SARA-R412M-02B	SARA-R412M-02B-00	M0.09.00 App version 02.11	Initial Production

2 Type of Change

- Hardware modification
- Firmware update
- Documentation update
- Other, certifications achieved and Initial Production status reached

3 Description of Change

The changes include updates to certification status and Initial Production status for modules with firmware version M.0.09.00 app version 02.11.

MNO profile version:

MNO	Version
AT&T	v 6.5
China Telecom	v 6.1
Deutsche Telekom	v 6.3
Standard Europe	v 6.0
Telstra	v 6.2
TELUS	v 6.2
T-Mobile USA	v 6.2
Vodafone	v 6.2
Verizon	v 6.2
SW default	N/A

Related documentation updates are available. Known limitations are disclosed in Annex A.

3.1 Certification update

The following certifications are achieved for the product:

Certification (country)	Status
RED (EU)	Complete (LTE Cat M1, NB1 bands 3, 8, 20 and 2G quad-band)

3.2 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.

4 Schedule

First production parts will be available in calendar week 8 of calendar year 2019.

5 Customer Impact and Recommended Action

- ES modules can be updated to the IP firmware by contacting u-blox Customer Support.
- It is recommended to use the Initial Production modules for certification activities.
- It is strongly 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/N4 series AT Commands Manual (UBX-17003787)
- [2] SARA-R4/N4 series Data Sheet (UBX-16024152)
- [3] SARA-R4/N4 series System Integration Manual (UBX-16029218)

Annex

A Known bugs and limitations

The following are known limitations:

- For PSM, it is expected that there will be times when the data or LTE timers may wake up the module before the expected PSM wake-up time.
- When the PSM is enabled while the USB is connected, the device may appear to be in PSM state; however the application processor is not in PSM state.
- When the DUT is ready to go into the PSM mode it does not gracefully shut down TCP sockets and causes the remote end to be unaware of the client socket state. Fixing this behavior will have a contra effect on the PSM. The remote server should implement a timeout or have a keep alive probes enabled to check on the connection at regular intervals.
- The RxAGC value provided with the AT+UATEST=2 information text response may have an approximate -3 dB inaccuracy.
- [u-blox id 3514] The +URAT order set by the user is not followed issuing the AT+COPS=2 / AT+COPS=0 cycle. This cycle will trigger its own RAT scan sequence. Example: if the AT+URAT=9,8,7 command is set, by executing the +COPS command it will scan 8 first. It is recommended to use the AT+CFUN=4 (or AT+CFUN=0) then AT+CFUN=1.
- [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 AT+UHTTP=0 can take up to ~120 s to respond.
- [u-blox id 3438] The +CSODCP AT command includes a Release Assistance parameter but RA is not implemented in this version.
- [u-blox id 3423] The CEREAT 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 3253] The +UUSORF URC is issued (instead of the +UUSORD URC) when write some data to UDP socket via +USOWR and then having it echo back.
- [u-blox id 3168] When the module tries to connect MQTT server, SSL negotiations can fail due to large TCP packets, which can be triggered by large certificate files.
- [u-blox id 3142] Limitation that data being received via a UDP socket can be read in a maximum of 2 chunks by +USORF.
- [u-blox id 3117] AT commands cannot disable hardware flow control with AT&K0.
- [u-blox id 3114] In hex mode, the +USOWR AT command used with the "Binary extended syntax" only accepts HEX value, and not other binary values. This behavior is different than other u-blox modules.
- [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. Read messages as soon as they come in. Do not let too many messages go unread and pile up. They may see issues around 800 characters and above.

- [u-blox id 3029] The network scan (AT+COPS=?) may cause the module to hang. Abort the command with a carriage return.
- [u-blox id 2991] Unexpected "Od Od Oa" characters added in the +UUFTPCD URC.
- [u-blox id 2965] Sometimes the +UMNOPROF read command will return empty profiles. Set the +UMNOPROF AT command to carrier profile and then reset with AT+CFUN=15 to restore.
- [u-blox id 2918] MQTT messages can be lost if they are sent from the MQTT broker in a group as opposed to one at a time.
- [u-blox id 2910] The Carrier Detect is not getting de-asserted after an operation in Direct Link mode (by means of the +USODL or +UFTPC=6 AT commands) is finished.
- [u-blox id 2862] The maximum input for the +UTEST AT command is -25 dBm instead of -20 dBm.
- [u-blox id 2766] Setting the UART baud rate to 9600 b/s may experience some data loss for very large data transfers.
- [u-blox id 2741] The timeout for for <op_code>= 4, 5, 6 , 7 and 13 of +UFTPC AT command can take up to 30 s longer due to TCP inactivity time.
- [u-blox id 2736] The +UMQTTTER AT command will always show the last error result code even after a successful operation.
- [u-blox id 2733] Data loss can occur when sending Direct Link TCP data in poor signal conditions with no triggers enabled.
- [u-blox id 2611] AT+UTEST=2 and AT+UTEST=3 commands do not give consistent readings unless a module reset is applied between tests. Suggested workarounds:
 - Use the non-continuous mode during TX tests (AT+UTEST=3 command) instead of continuous mode.
 - After having issued a TX test (AT+UTEST=3 command) in continuous mode, issue the same TX test but in non-continuous mode to clear a flag causing the issue.
- [u-blox id 2573] The module does not issue the URC even if the module has reached a state where MQTT publish and MQTT publish from file returns a success code.
- [u-blox id 2494] The +UULOCIND URC to notify that the +ULOC request is complete is not issued; hence the GPS cannot be switched on.
- [u-blox id 2379] The +IPR AT command is now persistent through resets and power cycles. This is not the same behavior as other u-blox modules where it can be just stored in profiles.
- [u-blox id 2324] A DUN call fails when a LWM2M data call is active. Workaround: retry the call.
- [u-blox id 2264] The +CIEV: 12,0 URC is not issued unless the +CIND read command is issued. (+CIEV: 12,1 is displayed only after having issued the AT+UGPIOC=42,7 command).
- [u-blox id 2135] In TX test mode (AT+UTEST=3 command) the power cannot reach over 17 dB even if it is set to greater values.
- [u-blox id 2125] The +CNUM AT command returns the error result code 27 when the SIM has no MSISDN.