

| LTE-M Module Verification | | Quectel BG96 | SierraWireless WP7702 | UBLOX SARA-R410M-02B |
|---|--|---|---|--|
| Notes | | | | |
| Known issues | | | | The U-Blox SARRA R410 module provided with the tested firmware version applies a default MTU size of 68 bytes when connected to the KPN LTE-M network. This small MTU size is currently not supported for UDP when a device is using a NAT-ed IP address. U-Blox will set the default MTU size to 1500 bytes in future firmware versions. This will solve the issue. |
| Configuration & Documentation | | | | |
| Used Firmware | BG96MAR02A05M1G | SWI9X06Y_02.16.06 | SARA-R410M-02B_L0.0.00.00.05.06 [Feb 03 2018 13:00:41] | |
| Used Board | Quectel_UMTS<E_EVB | MangOH Green DevKit | EVK-R4 SARA-R4 series Cellular Evaluation Kits | |
| Used Specs | see https://www.quectel.com/product/bg96.htm Quectel_QFlash_User_Guide_V2.3 Quectel_BG96_AT_Commands_Manual_V2.1 Quectel_BG96_DFOA_User_Guide_V1.0 | see https://source.sierrawireless.com/devices/wp-series/wp7702/4118047_WP5xx-76xx-77xx_AT_Command_Reference_r5 41111420 AirPrime WP77XX Product Specification r2 WP77xx-CRN-Release_9.1-R01.04 | see https://www.u-blox.com/en/product-resources/EVK-R4_User_Guide SARA-R410M-02B_IN_ReleaseNotes_(UBX-18018049) SARA-R4-SARA-N4_ATCommands_(UBX-17003787) SARA-R410M-02B_FW_update_guideline(L0.0.00.00.05.02_PT) | |
| Used Software | see https://www.quectel.com/product/bg96.htm QFlash_V4.7 (for firmware update via USB) Qnavigator_V1.6.8 (evaluation software) Quectel_BG96_Windows_USB_Driver_V1.0 | see https://source.sierrawireless.com/devices/wp-series/wp7702/WP77xx_Release9.1_PTCRB_GCF_EXE (for firmware update) GenericDriverSetup | see https://www.u-blox.com/en/product-resources/EasyFlash_07.01 m-center-01.11.00 (evaluation software) SARA-R4 USB Windows Driver, version 1.1 | |
| Used APN | Item.webtrial.m2m and Item.internet.m2m | Item.webtrial.m2m and Item.internet.m2m | Item.webtrial.m2m and Item.internet.m2m | |
| Tested Functionality | | | | |
| Basic Configuration: AT commands used to configure device for KPN network | /* Set band configuration to 900 Mhz for GSM (1), band 20/800 Mhz for CAT-M1/NB-IoT (80000) */ AT+QCFG="band",1,80000,80000,1 /* Set iot-operation mode to LTE-M (0) only */ AT+QCFG="iotopmode",0,1 /* Set scan-sequence to LTE-M (02) only */ AT+QCFG="nwscanseq",020202,1 /* Set scan-mode to LTE (3) only */ AT+QCFG="nwscanmode",3,1 /* Configure PDP Context 1 */ at+cgdcont=1,"IP","Item.internet.m2m","0.0.0.0",0,0,0,0 | /* Turn-on, set to full functionalities */ AT+CFUN=1 /* Set RAT to LTE-only*/ AT+KSRAT=0 ATISELRAT=06 * Set band configuration to All bands*/ AT!BAND=09 /* Configure PDP Context 1 */ at+cgdcont=1,"IP","Item.internet.m2m","0.0.0.0",0,0,0,0 | /* configure device for full functionalities */ AT+CFUN=1 /* Set band configuration band 20/800 Mhz for CAT-M1/NB-IoT (0x80000) */ AT+UBANDMASK=0,524290,1,524290 /* Set iot-operation mode to LTE-M (0) only */ AT+URAT=7 /* Configure PDP Context 1 */ at+cgdcont=1,"IP","Item.internet.m2m","0.0.0.0",0,0,0,0 | |
| Basic Connection Setup | ✓ | ✓ | ✓ | |
| Deviceconfiguration and succesfull connection with good coverage | ✓ | ✓ | ✓ | |
| Uplink/downlink data | ✓ | ✓ | ✓ | |
| Uplink dowlink sms | ✓ | ✓ | ✓ | |
| Configure PSM with AT commands | /* Sample command to turn-on PSM with T3412=310 hrs, T3324=2 sec. AT+CPSMS=1,,,"01011111","00000001" | /* Sample command to turn-on PSM with T3412=310 hrs, T3324=2 sec. AT+CPSMS=1,,,"01011111","00000001" | /* Sample command to turn-on PSM with T3412=310 hrs, T3324=2 sec. AT+CPSMS=1,,,"01011111","00000001" | |
| Device entered PSM & wake-up after T3412 expiry | ✓ | Not tested yet. | ✓ | |
| Device entered PSM & wake-up for MO Data | Quectel EVB can only wake-up BG96 module by pressing reset button (manually) | By pressing reset button of DevKit | ✓ | |
| 2G - Basic Connection Setup | ✓ | Not tested yet. | ✗ | |
| Edrx (not yet available) | Not tested yet. | Not tested yet. | Not tested yet. | |
| Firmware Update via USB | ✓ | ✓ | ✓ | |
| Firmware Update Over The Air (FOTA) | Not tested yet. Delta Firmware Update Over The Air process described in specs. Requires setup of HTTPS server with the Delta Firmware on it. Delta Firmware is to be provided by Quectel. | Not tested yet. | Not tested yet. Firmware Update Over The Air process described in AT command specification. Requires setup of server with the Firmware on it. "Customers can future-proof their solutions by means of Over-The-Air firmware updates, thanks to the uFOTA client/server solution that utilizes LWM2M, a light and compact protocol ideal for IoT applications." | |
| Enhanced Coverage Mode A | ✓ | Not tested yet. | Not tested yet. | |