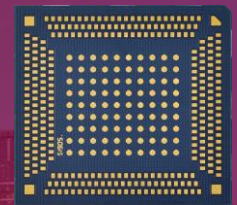


Quectel RG500Q Series

IIoT/M2M-optimized

5G Sub-6 GHz LGA Module



RG500Q-EA-AA

Release Notes

5G Module Series

Rev. RG500Q-EA-AA_Firmware_Release_Notes_V1106_01.001.01.001

Date: 2021-09-29

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1. Release Content

This document provides the Release Notes for RG500Q-EA-AA. The current release includes the firmware package.

| Package | Version |
|----------|-----------------------------------|
| Firmware | RG500QEAAAR11A06M4G_01.001.01.001 |

2. Matters Needing Attention

| SN | Item |
|-----|--|
| [1] | SA MBIM dialing is supported in Windows 10 1903 and above versions. |
| [2] | 5G CA and VoNR are not supported. |
| [3] | RG500QEAAAR01XXX firmware version can be upgraded to RG500QEAAAR11XXX firmware version; RG500QEAAAR11XXX firmware version cannot be upgraded to RG500QEAAAR01XXX firmware version. RG500QEAAAR10XXX firmware version can be upgraded to RG500QEAAAR11XXX firmware version; RG500QEAAAR11XXX firmware version cannot be upgraded to RG500QEAAAR10XXX firmware version. |
| [4] | It is necessary to keep the power supply connected when upgrading the firmware version. |

3. Release History

3.1. Firmware Release History

| Firmware Version | Description |
|-----------------------------------|-----------------|
| RG500QEAAAR11A06M4G_01.001.01.001 | Mass production |
| RG500QEAAAR11A05M4G_01.001.01.001 | Mass production |
| RG500QEAAAR11A04M4G_01.001.01.001 | Mass production |
| RG500QEAAAR11A03M4G_01.001.01.001 | Mass production |
| RG500QEAAAR11A02M4G_01.001.01.001 | Mass production |
| RG500QEAAAR11A01M4G_01.001.01.001 | Mass production |

3.2. New Features

| RG500QEAAAR11A06M4G_01.001.01.001 | |
|-----------------------------------|---|
| Item | Brief Description |
| NETWORK | Added QNWCFG="nr5g_pref_freq_list" to configure the preference frequency list of NR5G. |
| NETWORK | Added AT+QNWCFG="used_algo" to obtain the current encryption algorithm and integrity algorithm. |
| NETWORK | Added AT+QNWCFG="nr5g_earfcn_lock" to lock NR5G EARFCN. |
| NETWORK | Added AT+QNWCFG="data_roaming" to control data roaming. |
| NETWORK | Added AT+QNWCFG="encryp_alg_support" and AT+QNWCFG="integ_alg_support" to obtain supported encryption algorithms and integrity algorithms respectively. |
| SLIC | Added AT+QAUDCFG="slic_gain" to adjust the UL and DL gain of SLIC SI32185. |
| SLIC | Added New Zealand standard tone to the dial tone. |
| AUDIO | Added AT+QAUDCFG="slic_vts" and AT+QAUDCFG="txdtmfmute" to send SI3218x SLIC VTS and control TX DTMF mute function respectively. |

| | |
|---------|---|
| GENERAL | Added AT+QCFG="clat" to control clat_enabled. |
| GENERAL | Added "110", "120" and "119" to the emergency number list of China Mobile, China Telecom, and Unicom when you queried EEC numbers with AT+QECCNUM? . |
| GENERAL | Enabled UL LTE 256QAM in ENDC for Commercial-SKT MBN. |
| GENERAL | Enabled TCP Keepalive. |
| GENERAL | Added a special URC to notify the host that the module received the SMS that changed the APN when the IMS was enabled. |
| GENERAL | Added AT+QESMINFO and AT+QEMMINFO to query ESM and EMM error codes. |
| GENERAL | Added FSK caller ID, and added AT+QAUDCFG="slic_cid_cfg" to switch between DTMF and FSK. |

RG500QEAAAR11A05M4G_01.001.01.001

| Item | Brief Description |
|------------|---|
| Voice Call | Supported voice over PCIe. |
| NETWORK | Added AT+QNWCFG="nr5g_meas_info" to display 5G neighboring cell information. |
| MBIM | Supported automatic deletion of read messages when the message space was full. |
| RGMII | Supported RTL8363 PHY. |
| PCIE | Added AT+QPCIE="id" to query PCIe ID information. |
| SLIC | Supported to configure the regions of SI3218x through AT+QSLIC . |
| AUDIO | Added AT+QAUDCFG="toneswitch" to turn on local ring tones. |
| DFOTA | Supported DFOTA upgrade while RMNET was running. |
| GENERAL | Supported firmware upgrade through RGMII in recovery mode and this feature was disabled by default. |
| GENERAL | Added AT+CSVM to set the voice mailbox number. |
| GENERAL | Supported 8021Q in VLAN. |
| GENERAL | Supported uplink 256-QAM. |
| GENERAL | Added AT+QNWCFG="lte_time_advance" to read the value of time advance. |

RG500QEAAAR11A04M4G_01.001.01.001

| Item | Brief Description |
|------|-------------------|
|------|-------------------|

| | |
|------------|--|
| Voice Call | Supported voice over ttyUSB feature. |
| SLIC | Added AT+QAUDVFG="slic_cid" to support display caller ID. |
| GENERAL | Added AT+QNWCFG="wcdma_cqi" to get the CQI value. |
| GENERAL | Added AT+QCFG="ResetFactory" to restore factory settings. |
| GENERAL | Supported HTTP(S) protocol. |

RG500QEAAAR11A03M4G_01.001.01.001

| Item | Brief Description |
|--------------------|---|
| NETWORK | Enabled DSS by default. |
| NETWORK | Added AT+QNWCFG="NR5G_uIMCS" to obtain network parameters. |
| Thermal Mitigation | Added AT+QCFG="thermal5g/mdm" to configure the MDM temperature control of thermal mitigation strategy. |
| 5G | Supported to query EN-DC NR band information through AT+QENG . |
| GENERAL | Added AT+QCFG="USBCFG" to dynamically control UAC function. |
| GENERAL | Added AT+QGETCAPABILITY to query the band capabilities supported by the module. |
| GENERAL | Incorporated the Qualcomm patch so that the maximum size of the data aggregation can be set to 31 KB. |
| GENERAL | Added AT+QMAP="MAC_bind" to support configuring static address when using RGMII. |

RG500QEAAAR11A02M4G_01.001.01.001

| Item | Brief Description |
|---------|---|
| NETWORK | Added AT+QNWCFG="dss_enable" to control the DSS function. |
| USB | Added AT+QCFG="usbsspeed" to switch between USB 2.0 and USB 3.0 interface protocols. |
| RmNet | Added AT+QNETDEVSTATUS? to query link connection status. |
| 5G | Added AT+QNWCFG="nr5g_cdrx" to control 5G_CDRX. |
| GENERAL | Added AT+QGDNRCNT? to count NR5G packet data. |
| GENERAL | Added AT+QCFG="netmaskset" to configure the subnet mask of the host. |
| GENERAL | Added RTL8168 driver. |

RG500QEAAAR11A01M4G_01.001.01.001

| Item | Brief Description |
|---------|--|
| GENERAL | Extended AT+CPOL? to check whether the SIM card supported NR5G. |
| GENERAL | Added AT+QMAP="lan" to configure QCMAP LAN IP. |
| GENERAL | Added AT+QSINR and AT+QSRQ to query the signal-to-noise ratio and received signal value. |
| NETWORK | Added AT+QNWPREFCFG="nr5g_disable_mode" to configure 5G network mode. |

3.3. Improved Features

| RG500QEAAAR11A06M4G_01.001.01.001 | |
|-----------------------------------|--|
| Item | Brief Description |
| SMS | Solved the problem that there was no SMS push to receive messages after the SMS space was full. |
| NETWORK | Solved the problem of incorrect service provider name returned by AT+QSPN . |
| NETWORK | Modified AT+QCAINFO by replacing the value of <SINR> with <RSSNR> . |
| NETWORK | Solved the problem of URC +CREG and +CEREG report error if you queried network status when the module was in weak or no signal strength. |
| SLIC | Optimized the startup time of SI32185 SLIC. |
| GENERAL | Solved the problem that the return value of AT+QENG="neighbourcell" was incorrect under LTE. |
| GENERAL | Solve the problem that Windows OS could not display the 5G icon after the module successfully registered the 5G NSA under Verizon. |
| GENERAL | Extended AT+QSCAN to support querying cell ID and tracking area code. |
| GENERAL | Optimized AT+QMBNCFG="Select" so that it can query the currently selected MBN information. |
| GENERAL | Solved the problem of network access failure in some scenarios (such as roaming) after AT&T 3G sunset. |
| GENERAL | Solved the following problems: <ol style="list-style-type: none"> 1. Solved the problem that the maximum UL and DL rate issued by the base station to the module could not be obtained; 2. Solved the problem that ACQ_DB was not saved probabilistically when using China Telecom SIM card to search the network. |
| GENERAL | Solved the problem of <eps_mobile_identity> error in the return value of AT+QIMSCFG="qirep" . |

| | |
|------|---|
| GNSS | Fixed the problem of incomplete GSV sentences obtained by AT+QGPSGNMEA="GSV" . |
| GNSS | Upgraded NMEA sentences to comply with 0183 v4.11 protocol. |
| USB | Extended AT+QCFG="usbspeed" and added the switch between USB3.1 Gen1 and Gen2. |

RG500QEAAAR11A05M4G_01.001.01.001

| Item | Brief Description |
|---------|--|
| NETWORK | Optimized AT+QNWCFG="lte_cdrx" to control the length of the DRX cycle. |
| NETWORK | Solved the problem that the PLMN of the LTE cell returned by AT+QSCAN under SA was empty. |
| NETWORK | Optimized AT+QNWCFG="nr5g_csi" to solve the problem that the value of <ri> returned incorrectly. |
| NETWORK | Solved the problem that AT+QENG="servingcell" kept displaying "SEARCH" when making a call under NSA with the China Unicom SIM card. |
| NETWORK | Extended AT+CPOL to support the selection of NG-RAN access technology. |
| NETWORK | Optimized AT+QNWCFG="LTE_tx_pwr" to support querying PUCCH, PRACH, SRS and PUSCH TX power. |
| USB | Solved the problem that USB3.1 port could not be enumerated normally in some scenarios in Linux. |
| MBIM | Solved the problem of abnormal signal value displayed on the interface after Windows 10 1903 woke up from sleep. |
| AUDIO | Modified the way of controlling tone playback in AT+QLTONE from the number of times to the duration of play time. |
| GENERAL | Updated AT+QSINR to solve the problem of incorrect calculation of SINR value. |
| GENERAL | Optimized the return value format of AT+QCFG="usb/maxpower" . |
| GENERAL | Solved the problem that the Windows interface abnormally showed no signal after registering for 5G SA with NDIS dial-up under Win10. |

RG500QEAAAR11A04M4G_01.001.01.001

| Item | Brief Description |
|---------|--|
| NETWORK | Updated AT+QCSQ to solved the problem of incorrect calculation of SINR value. |
| NETWORK | Updated AT+QCAINFO and AT+QNETINFO to complete the return value. |
| GENERAL | Updated to support LTE uplink 256-QAM. |
| GENERAL | Updated AT+QSCAN for scanning LTE and 5G cell information. |
| GENERAL | Solved the problem that the configuration of AT+C5GREG did not take effect |

after module rebooting.

GENERAL

Solved the problem of network registration in WCDMA weak signal registration.

RG500QEAAAR11A03M4G_01.001.01.001

| Item | Brief Description |
|-----------|---|
| NETWORK | Expanded AT+QSRP to support returning the current network standard. |
| RF TX FTM | Updated the LTE/WCDMA Tx/Rx process to solve the problem that RX2 such as B42/B7/B3/B1 could not receive signals. |
| LowPower | Solved the problem that the hibernation time of the module was too long. |
| LowPower | Solved the problem that the module could not enter low power mode under USB 3.0. |
| 5G | Supported querying downlink bandwidth information through AT+QENG="servingcell" under NSA network. |
| GENERAL | Solved the problem that module reboot occurred when plenty of neighboring cells were obtained by executing AT+QENG="neighbourcell" . |
| GENERAL | Solved the problem that RI pin did not jump between 0 and 1 when URC +CDS was reported. |
| GENERAL | Solved the problem that there was an extra "CMCC" displayed in the carrier name searched by AT+COPS? under China mobile NR5G SA. |

RG500QEAAAR11A02M4G_01.001.01.001

| Item | Brief Description |
|--------------------|---|
| NETWORK | Solved the problem that the response time of AT+QENG="neighbourcell" was too long to could not work normally. |
| NETWORK | Solved the problem of incorrect PLMN information returned by AT+QENG="servingcell" when sharing base stations. |
| NETWORK | Solved the problem that when the module registered to SA, <cellID> returned by AT+QENG="servingcell" was incorrect. |
| DFOTA | Solved the problem of abnormal URC report in DFOTA upgrade caused by USB configuration. |
| LowPower | Solved the problem that the module could not go to sleep after restarting when USB hibernation and AT+QSCLK=1,1 are configured under Linux and Windows. |
| LowPower | Solved the problem that when the module did not answer the call until it was hung up after the timeout and then hibernated, the power consumption was too high. |
| Thermal Mitigation | Optimized PA thermal mitigation strategy. |
| 5G | Solved the problem that AT+QRFTESTNR5G could not effectively perform TX at any frequency of 5G. |

| 5G | Solved the problem that AT+QNWLOCK="common/5g" did not take effect after module restart. |
|-----------------------------------|--|
| GENERAL | Solved the problem of IMS registration failure. |
| GENERAL | Solved the problem that there was no URC +QIND: SMS DONE report at module restart. |
| RG500QEAAAR11A01M4G_01.001.01.001 | |
| Item | Brief Description |
| GENERAL | Solved the problem that the module could not work normally when you sent files via AT+QFUPL . |
| Thermal Mitigation | Optimized thermal mitigation mechanism. |
| GENERAL | Solved the problem of AT+QTLS reporting error when the SIM card was not inserted. |
| GENERAL | Solved the problem that the module kept restarting after switching to a Telecom card after downloading the version and activating the China mobile or Unicom SIM card. |
| GENERAL | Solved the problem that no corresponding URC was reported after enabling automatic time zone report and then executing AT+CTZR=1 or AT+CTZR=2 . |
| GENERAL | Solved the problem that the value of <CQI> returned by AT+QENG in LTE mode was incorrect. |
| GENERAL | Solved the problem of NSA band display error. |
| GENERAL | Solved the problem that the AT port of the module could not work normally during the test. |
| GENERAL | Solved the problem that no result was returned with AT+QIMSCFG="user_agent" . |
| GENERAL | Solved the problem that the return value queried by AT+CGREG was incorrect. |
| GENERAL | Solved the problem that emergency call information could not be found via AT+CLCC when making an emergency call. |
| GNSS | Solved the problem of incorrect latitude and longitude information returned by AT+QGPSLOC . |
| NETWORK | Fixed the problem that the RSRP values of RX2 and RX3 of WCDMA and LTE returned by AT+QSRP were incorrect. |

3.4. Known Issues

| Item | Bug Description |
|--------------|--|
| RGMII | In cross-baseline DFOTA upgrade, when upgrading the module from LE1.0 baseline to LE1.2 baseline, after enabling RGMII, the local network on the PC shows that it is not connected and cannot be pinged. |
| DFOTA | Firmware lower than the current version will reboot one more time when performing DFOTA upgrade. |

NOTE

Verification Environment is shown below. For more details, please contact Quectel technical support.

For Windows,

USB Driver: Quectel_LTE&5G_Windows_USB_Driver_V2.2.4.zip

Qflash Tool: QFlash_V5.3

For Linux,

QMI_WWAN Driver: Quectel_Linux&Android_QMI_WWAN_Driver_V1.2.0.23.zip

GobiNet Driver: Quectel_Linux&Android_GobiNet_Driver_V1.6.2.15.zip

PCIE Driver: Quectel_Linux_PCIE_MHI_Driver_V1.3.0.17.zip

QFirehose Tool: Quectel_LTE&5G_QFirehose_Linux&Android_V1.4.zip

Quectel-CM Tool: Quectel_QConnectManager_Linux_V1.6.0.26.zip

QLog Tool: Quectel_QLog_Linux&Android_V1.5.zip

For IPQ,

IPQ Driver: Quectel_Linux_PCIE_MHI_Driver_V1.3.0.18.zip

Qualcomm IPQ driver: spf11.3

4. Functions List

| Category | Item | Supported Version(Since) | Note |
|--------------------|------------|---------------------------------------|------|
| Basic Function | SMS | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | Voice Call | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | VoLTE | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | NETWORK | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| File Function | UFS | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | RAM | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| Protocol Function | QMI | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | NITZ | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| Interface Function | USB | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | MBIM | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | RmNet | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | PCIE | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | RGMII | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | ECM | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | AGPS | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| Upgrade Function | DFOTA | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| Audio Function | Slic | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | Audio | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | DTMF | RG500QEAAAR11A01M4G | / |

| | | | |
|------------------|--------------------|---------------------------------------|---|
| | | _01.001.01.001 | |
| SIM Function | (U)SIM Detection | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | DSSS | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| Special Function | RF RX FTM | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | RF TX FTM | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | LowPower | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| | Thermal Mitigation | RG500QEAAAR11A01M4G _01.001.01.001 | / |
| 5G Function | 5G | RG500QEAAAR11A01M4G _01.001.01.001 | / |

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