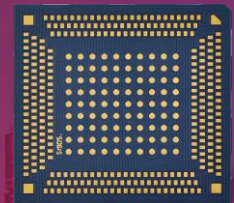


Quectel RG502Q-EA

IoT/M2M-optimized

5G Sub-6 GHz LGA Module



RG502Q-EA-AA

Release Notes

5G Module Series

Rev. RG502Q-EA-AA_Firmware_Release_Notes_V1107_01.001.01.001

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Contents

Contents	2
1. Release Content	3
2. Matters Needing Attention	3
3. Release History	4
3.1. Firmware Release History	4
3.2. New Features	4
3.3. Improved Features	7
3.4. Known Issues	13
4. Functions List.....	14

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1. Release Content

This document provides the Release Notes for RG502Q-EA-AA. The current release includes the firmware package.

Package	Version
Firmware	RG502QEAAAR11A07M4G_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]	It is necessary to keep the power supply connected when upgrading the firmware version.

3. Release History

3.1. Firmware Release History

Firmware	Description
RG502QEAAAR11A07M4G_01.001.01.001	Mass production
RG502QEAAAR11A06M4G_01.001.01.001	Mass production
RG502QEAAAR11A05M4G_01.001.01.001	Mass production
RG502QEAAAR11A04M4G_01.001.01.001	Mass production
RG502QEAAAR11A03M4G_01.001.01.001	Mass production
RG502QEAAAR11A02M4G_01.001.01.001	Mass production
RG502QEAAAR11A01M4G_01.001.01.001	Mass production

3.2. New Features

RG502QEAAAR11A07M4G_01.001.01.001	
Item	Brief Description
DFOTA	Added the function of reporting DFOTA upgrade progress on the Debug port.
GENERAL	Added AT+QCFG="gatewayset" to set gateway address of the module.
GENERAL	Added AT+QMAP="sfe" to control the software acceleration functionality.
NETWORK	Added AT+QNWCFG="lte_ulMCS" to query LTE uplink modulation type.
SIMCARD	Added AT+QSIMCFG="bip_status" to obtain BIP status.
SLIC	Supported USSD functionality.
Thermal Mitigation	Added AT+QTHERMAL to increase the URC reporting function of the thermal mitigation levels.
RG502QEAAAR11A06M4G_01.001.01.001	

Item	Brief Description
SLIC	Added AT+QAUDCFG="slic_IndRep" and corresponding URCs.
SLIC	Added the FLASH button function to SLIC function.
GENERAL	Added AT+QNWCFG="rrc_state" to query the RRC state.
RG502QEAAAR11A05M4G_01.001.01.001	
Item	Brief Description
NETWORK	Set the default value of <mode_pref> in AT+QNWPREFCFG="mode_pref" to AUTO to support LTE and 5G NR.
NETWORK	Added AT+QNWCFG="dis_rplmn" and AT+QNWCFG="dis_rplmnact" to control RPLMN and RPLMNACT respectively.
NETWORK	Added AT+QNWCFG="LTE_AMBR" and AT+QNWCFG="NR5G_AMBR" to obtain the AMBR information of all activated APNs under LTE and 5G NR.
NETWORK	Added AT+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.
MBIM	Supported automatic deletion of read messages when the message space was full.
PCIE	Added AT+QPCIE="id" to query PCIe ID information.
SLIC	Added AT+QAUDCFG="slic_gain" to adjust the UL and DL gain of SLIC SI32185.
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="dsci_control" to enable the DSCI loop report of incoming calls.
GENERAL	Added AT+QCFG="clat" to control clat_enabled.
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.
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RG502QEAAAR11A04M4G_01.001.01.001

Item	Brief Description
VOICE CALL	Supported voice over ttyUSB feature.
VOICE CALL	Supported voice over PCIE function.
NETWORK	Added AT+QNWCFG="nr5g_meas_info" to display 5G neighboring cell information.
RGMII	Supported RTL8363 PHY.
SLIC	Supported to configure the regions of SI3218x through AT+QSLIC .
SLIC	Added AT+QAUDVFG="slic_cid" to support display caller ID.
AUDIO	Added the end code +QAUDPLAY: 0 to report after playing the wav file with AT+QAUDPLAY .
AUDIO	Added AT+QAUDCFG="toneswitch" to turn on local ring tones.
GENERAL	Supported LTE uplink 256-QAM.
GENERAL	Added AT+QNWCFG="wcdma_cqi" to get the CQI value.
GENERAL	Added AT+QCFG="ResetFactory" to restore factory settings.
GENERAL	Added AT+CSVM to set the voice mailbox number.
GENERAL	Supported 8021Q in VLAN.

RG502QEAAAR11A03M4G_01.001.01.001

Item	Brief Description
NETWORK	Added AT+QNWCFG="NR5G_ul_MCS" 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	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.

RG502QEAAAR11A02M4G_01.001.01.001

Item	Brief Description
NETWORK	Added AT+QNWCFG="dss_enable" to control the DSS function.
USB	Added AT+QCFG="usbspeed" to switch between USB 2.0 and USB 3.0 interface protocols.
RmNet	Added AT+QNETDEVSTATUS to query link connection status.
RF TX FTM	Added AT+QNWCFG="lte_dl_tx_mode" to query the LTE downlink transmission mode.
5G	Added AT+QNWCFG="nr5g_cdrx" to control 5G_CDRX.
GENERAL	Added AT+QCFG="netmaskset" to configure the subnet mask of the host.
GENERAL	Added RTL8168 driver.

RG502QEAAAR11A01M4G_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 .
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.
GENERAL	Added AT+QGDNRCNT to count NR5G packet data.
NETWORK	Added AT+QNWPREFCFG="nr5g_disable_mode" to configure 5G network mode.

3.3. Improved Features

RG502QEAAAR11A07M4G_01.001.01.001

Item	Brief Description
GENERAL	Solved the problem that LwM2M-related URC reporting was not configured by AT+QURCCFG .
GENERAL	Solved the problem that USSD functionality could not be used.
GENERAL	Solved the problem that the return value of AT+QSINR was incorrect.
GENERAL	Solved the problem of incorrect results queried by AT+QGDNRCNT in some cases.
GENERAL	Solved the problem that <stat> of the currently registered operator in the

	returned result of AT+COPS=? was incorrect when the module was registered on 5G SA.
GENERAL	Optimized AT+QMAP="LANIP" to make it take effect immediately.
GENERAL	Optimized MPDN so that the MPDN functionality could be used normally when the VLAN ID was 0.
GENERAL	Optimized AT+QPING to coexist with external data call.
GENERAL	Solved the problem that AT+QCFG="CLAT" could not set provision mode.
GENERAL	Solved the problem that AT+QNWCFG="clr_rplmn" could not clear RPLMN when you used certain SIM cards.
GNSS	Solved the problem of no NMEA sentence output when AT+QGPS=2 was entered in the situation that the return value <plane> of AT+QGPSCFG="plane" was 0.
NETWORK	Extended AT+QCAINFO by adding <UL_configured>, <UL_bandwidth> and <UL_EARFCN> to obtain the uplink bandwidth and EARFCN of CA.
NETWORK	Optimized AT+QSRP by returning -32768 to indicate an invalid value.
SIMCARD	Solved the problem that AT+CGLA could not return long data.
SIMCARD	Solved the problem that the data returned by AT+CGLA was too large.
SIMCARD	Updated AT+QSIMLOCK to support querying the current lock status and remaining unlocking times.
SLIC	Optimized the FSK caller ID function to support time information display, and for French standard, when the caller ID was hidden, the character "P" would be used instead of the caller ID.

RG502QEAAAR11A06M4G_01.001.01.001

Item	Brief Description
NETWORK	Displayed AT+QSCAN to support querying LTE cell bandwidth information and 5G cell SSB SCS information.
NETWORK	Solved the problem that the frequency band information of "TDD NR5G" and "FDD NR5G" returned by AT+QNWINFO was inconsistent with the actual information.
GENERAL	Optimized AT+QCFG="CLAT" to support the configuration setting of CLAT.
GENERAL	Solved the problem that the module could not respond correctly to C-APDU requests.

RG502QEAAAR11A05M4G_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	Optimized AT+QNWCFG="LTE_tx_pwr" to support querying PUCCH, PRACH, SRS and PUSCH TX power.
NETWORK	Solved the problem of incorrect TX power returned by AT+QNWCFG="nr5g_tx_pwr" .
NETWORK	Solved the problem of insufficient display bit width of the NR 5G cell ID queried by AT+QENG="servingcell" .
USB	Solved the problem that USB3.1 port could not be enumerated normally in some scenarios in Linux.
USB	Extended AT+QCFG="usbspeed" and added the switch between USB3.1 Gen1 and Gen2.
MBIM	Solved the problem of abnormal signal value displayed on the interface after Windows 10 1903 woke up from sleep.
SLIC	Optimized the parameter configuration of AT+QAUDCFG="slic_hook_time" to be saved after the module was powered off.
SLIC	Optimized the startup time of SI32185 SLIC.
RF RX FTM	Optimized AT+QRFTESTNR5G="RX" to support testing other level signals other than -50 dbm.
GENERAL	Modified default MTU of AT&T to 1430 and default MTU of FirstNet to 1342.
GENERAL	Optimized +CREG/+CGREG/+CEREG/+C5GREG URC report logic to ensure that there were empty lines between URCs.
GENERAL	Solved the problem that the Windows interface abnormally showed no signal after registering for 5G SA with NDIS dial-up under Win10.
GENERAL	Solved the problem that the return value of AT+QENG="neighbourcell" was incorrect under LTE.
GENERAL	Solved the problem that AT+QCFG="ims" could not query the IMS registration status under SA network.
GENERAL	Optimized AT+QMBNCFG="Select" so that it can query the currently selected MBN information.
GNSS	Fixed the problem of incomplete GSV sentences obtained by AT+QGPSGNMEA="GSV" .
GNSS	Upgraded NMEA sentences to comply with 0183 v4.11 protocol.

RG502QEAAAR11A04M4G_01.001.01.001

Item	Brief Description
NETWORK	Updated AT+QCAINFO and AT+QNETINFO to complete the return value.
NETWORK	Optimized AT+QNWPREFCFG="rat_acq_order" to solve the problem that an extra NR5G was returned.
NETWORK	Optimized AT+QLTS to solve the problem that the return value was incorrect when the time was not obtained.

NETWORK	Updated AT+QCSQ to solved the problem of incorrect calculation of SINR value.
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.
USB	Optimized the query logic of MBIM devices on Android.
DFOTA	Solved the problem of no URC +QIND: "FOTA","START" reported when upgrading the firmware via DFOTA.
SLIC	Extended DTMF waveform under SI3218x caller ID function to 100 ms.
AUDIO	Added AT+QTONEPLAY to play tones in SI3218x in a loop and stop playing by AT+QTONEPLAY=0 .
DTMF	Updated the corresponding problem when sending DTMF tones with AT+VTS .
GENERAL	Updated AT+QSCAN for scanning LTE and 5G cell information.
GENERAL	Optimized the Wi-Fi and LTE coexistence scheme.
GENERAL	Solved the problem that the configuration of AT+QNWPREFCFG="srv_domain" did not take effect after module reboot.
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.
GENERAL	Optimized AT+QENG="servingcell" to solve the problem of incorrect cell ID queried.
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" .
GNSS	Optimized AT+QGPSCFG="appidname" to solve the problem that the parameter configuration did not take effect.
GNSS	Optimized AT+QGPSGNMEA to solve the problem of incorrect return value format.

RG502QEAAAR11A03M4G_01.001.01.001

Item	Brief Description
NETWORK	Expanded AT+QRSRP to support returning the current network standard.
NETWORK	Solved the problem of missing CA information.
NETWORK	Solved the problem of inaccurate value of <DL_bandwidth> queried by AT+QENG="SERVINGCELL" .

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.
NETWORK	Enabled DSS by default.

RG502QEAAAR11A02M4G_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.
RF TX FTM	Optimized AT+QRFTESTNR5G to support full band TX from 3.3 G to 4.2 G in N41/N77/N78/N79.
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.

RG502QEAAAR11A01M4G_01.001.01.001

Item	Brief Description
MBIM	Solved the problem that there is no notification report on the host after configuring SMS with AT+CNMI and AT+CSMP .
Thermal Mitigation	Optimized thermal mitigation mechanism.
GENERAL	Solved the problem of AT+QTL 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	Extended AT+CPOL to check whether the SIM card supported NR5G.
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_V5.5

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_V1.4.5.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	RG502QEAAAR11A01M4G _01.001.01.001	/
	Voice Call	RG502QEAAAR11A01M4G _01.001.01.001	/
	VoLTE	RG502QEAAAR11A01M4G _01.001.01.001	/
	NETWORK	RG502QEAAAR11A01M4G _01.001.01.001	/
File Function	UFS	RG502QEAAAR11A01M4G _01.001.01.001	/
	RAM	RG502QEAAAR11A01M4G _01.001.01.001	/
Protocol Function	NITZ	RG502QEAAAR11A01M4G _01.001.01.001	/
	QMI	RG502QEAAAR11A01M4G _01.001.01.001	/
Interface Function	USB	RG502QEAAAR11A01M4G _01.001.01.001	/
	MBIM	RG502QEAAAR11A01M4G _01.001.01.001	/
	RmNet	RG502QEAAAR11A01M4G _01.001.01.001	/
	PCIE	RG502QEAAAR11A01M4G _01.001.01.001	/
	ECM	RG502QEAAAR11A01M4G _01.001.01.001	/
	RGMII	RG502QEAAAR11A01M4G _01.001.01.001	/
Locate Function	AGPS	RG502QEAAAR11A01M4G _01.001.01.001	/
Upgrade Function	DFOTA	RG502QEAAAR11A01M4G _01.001.01.001	/
Audio Function	Slic	RG502QEAAAR11A04M4G _01.001.01.001	/
	Audio	RG502QEAAAR11A01M4G _01.001.01.001	/
	DTMF	RG502QEAAAR11A01M4G	/

		_01.001.01.001	
SIM Function	DSSS	RG502QEAAAR11A01M4G _01.001.01.001	/
	(U)SIM Detection	RG502QEAAAR11A01M4G _01.001.01.001	/
Special Function	RF RX FTM	RG502QEAAAR11A01M4G _01.001.01.001	/
	RF TX FTM	RG502QEAAAR11A01M4G _01.001.01.001	/
	LowPower	RG502QEAAAR11A01M4G _01.001.01.001	/
	SAR	RG502QEAAAR11A04M4G _01.001.01.001	/
	Thermal Mitigation	RG502QEAAAR11A01M4G _01.001.01.001	/
5G Function	5G	RG502QEAAAR11A01M4G _01.001.01.001	/

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