

# Quectel RM520N-GL

IoT/eMBB-Optimized

5G Sub-6 GHz M.2 Module



# RM520N-GL-AA

## Release Notes

### 5G Module Series

Rev. RM520N-GL-AA\_Firmware\_Release\_Notes\_V0108\_01.202.01.202

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## 1. Release Content

This document provides the Release Notes for RM520N-GL-AA. The current release includes the firmware package.

Package	Firmware Version	Configuration Version
Firmware	RM520NGLAAR01A08M4G	01.202.01.202

## 2. Matters Needing Attention

SN	Item
[1]	The firmware version earlier than R01A05 needs to be upgraded to the R01A05 or later version through USB Firehose, and cannot be upgraded to A05 through FOTA; R01A05 and later versions can be directly upgraded through FOTA.
[2]	The new firmware version cannot be downgraded to versions released before RM520NGLAAR01A07M4G_01.200.01.200, otherwise the module will not be able to work normally.
[3]	To extend the service life of flash, it is recommended that the total number of operations related to powering on/off the module, CFUN switching, SIM card hot swapping, dual-SIM switching, or repeated execution of NVM commands should not exceed 30 times per day.
[4]	It is not recommended to directly modify the pre-set APN profiles. Please create an APN profile after the existed CID number. Suppose you modify the APN profile of IMS, SOS, etc. with added specific attributes, these attributes are hidden after modification, causing the profile to still be unavailable.
[5]	During the FOTA upgrade process, it is necessary to ensure the stable power supply of the module. If the power is disconnected during the upgrade, there is a small probability that the flash will be damaged.
[6]	M.2 module is encapsulated without SPI, and SLIC cannot be mounted on the module.

### 3. Release History

#### 3.1. Firmware Release History

Firmware Version	Configuration Version	Description
RM520NGLAAR01A08M4G	01.202.01.202	Mass production
RM520NGLAAR01A08M4G	01.201.01.201	Mass production
RM520NGLAAR01A08M4G	01.200.01.200	Mass production
RM520NGLAAR01A07M4G	01.203.01.203	Mass production
RM520NGLAAR01A07M4G	01.202.01.202	Mass production
RM520NGLAAR01A07M4G	01.201.01.201	Mass production
RM520NGLAAR01A07M4G	01.200.01.200	Mass production
RM520NGLAAR01A06M4G	01.001.01.001	Mass production
RM520NGLAAR01A05M4G	01.001.01.001	Only for sample
RM520NGLAAR01A04M4G	01.001.01.001	Only for sample
RM520NGLAAR01A03M4G	01.001.01.001	Only for sample

#### 3.2. New Features

##### RM520NGLAAR01A08M4G\_01.202.01.202

Item	Brief Description
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##### RM520NGLAAR01A08M4G\_01.201.01.201

Item	Brief Description
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<b>GENERAL</b>	Added <b>AT+QRSSI</b> to obtain the RSSI of the current service network of the module.
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##### RM520NGLAAR01A08M4G\_01.200.01.200

Item	Brief Description
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RM520NGLAAR01A07M4G_01.203.01.203	
Item	Brief Description
/	/
RM520NGLAAR01A07M4G_01.202.01.202	
Item	Brief Description
	Added the following AT commands:
GENERAL	<ul style="list-style-type: none"> <li>● <b>AT+QNWCFG="nr5g_mimo_info"</b> to control whether to list 5G DL and UL MIMO information.</li> </ul>
RM520NGLAAR01A07M4G_01.201.01.201	
Item	Brief Description
	Added the following AT commands:
GENERAL	<ul style="list-style-type: none"> <li>● <b>AT+QNWCFG="ledmode"</b> to set the blinking mode of the network light.</li> <li>● <b>AT+QWDSCFG="operator_reserved_pco"</b> to configure PCO.</li> <li>● <b>AT+QNWCFG="nitz_ons"</b> to query PLMN long name and short name from NITZ.</li> <li>● <b>AT+QAUDRDY</b> to query the status of the Audio service on AP side.</li> </ul>
RM520NGLAAR01A07M4G_01.200.01.200	
Item	Brief Description
NETWORK	Relevant technical controls have been carried out to restrict normal network registration in regions such as RUS and IRN, thus ensuring that the module can be used only for civilian applications.
GENERAL	The new firmware version cannot be downgraded to previous versions, otherwise the module will not be able to work normally.
GENERAL	Supported the feature of routing behind mobile station.
GENERAL	Added <b>AT+QXQCN</b> to configure and query RF parameters of the module and import QXCN file.
RM520NGLAAR01A06M4G_01.001.01.001	
Item	Brief Description
GENERAL	Supported AQR113C.
GENERAL	Supported URC reporting of PIN-related information (modification, activation, and verification of PIN).

Added the following AT commands:

- **AT+QUPTIME** to get the system power-up time.
- **AT+QFOTAPID** to configure the Profile ID used in FOTA upgrade.
- **AT+QSIMCFG="dual\_slot\_status"** to query related information of the SIM cards when dual SIM cards were both inserted.
- **AT+QSIMCFG="sim\_recovery"** to support SIM card recovery and automatic detection.
- **AT+QNWCFG="nr5g\_pathloss"** to query NR5G pathloss information.
- **AT+QPCIE="pcie\_gen"** to query PCIe GEN in PCIe RC mode.
- **AT+QNWCFG="cops\_auto\_mode"** to configure whether the mode preference is controlled by **AT+COPS**.
- **AT+QNWCFG="nr5g\_ulbw"** to query NR5G uplink bandwidth.
- **AT+QNWCFG="lte\_ulMCS"** to query LTE uplink MCS and modulation type.
- **AT+QTHERMAL="lte\_ul\_throttle"** to control the uplink rate of Level 1 in LTE PA mechanism.
- **AT+QTHERMAL="nr\_ul\_throttle"** to configure the uplink rate of Level 1 in NR5G PA mechanism.
- **AT+QTHERMAL="lte\_mtpl\_backoff"** to control the reduced power value of Level 2 in LTE PA mechanism.
- **AT+QTHERMAL="nr\_mtpl\_backoff"** to control the reduced power value of the level 2 in NR5G PA mechanism.
- **AT+QCALLCFG="ussd\_format"** to configure the report format of +CUSD to be hexadecimal or ASCII.
- **AT+QSIMCFG="slot\_features"** to support whether to skip the detection of service130 and service133.

## GENERAL

RM520NGLAAR01A05M4G\_01.001.01.001

Item	Brief Description
GENERAL	Configured the project as data-only.
GENERAL	Configured Commercial-TMO MBN as data-only.

RM520NGLAAR01A04M4G\_01.001.01.001

Item	Brief Description
Thermal Mitigation	Added <b>AT+QTHERMAL</b> to expand related configurations of thermal management.
GENERAL	Added <b>AT+QDPRSAR</b> to set a DPR scheme.

RM520NGLAAR01A03M4G\_01.001.01.001

Item	Brief Description
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### 3.3. Improved Features

RM520NGLAAR01A08M4G_01.202.01.202	
Item	Brief Description
NETWORK	Optimized the logic of <b>AT+QENDC</b> so that <b>AT+QENDC</b> can also be executed when a data only SIM card is inserted.
NETWORK	Solved the problem that the invalid <b>&lt;TAC&gt;</b> did not appear as "-" after the execution of <b>AT+QENG</b> .
NETWORK	Solved the problem that the operator name could not be returned after the execution of <b>AT+COPS?</b> when a SIM card of China Broadcast Network Co., Ltd was inserted.
NETWORK	Integrated the patch to fix the problem of network disconnection in the case of unstable 5G network.
GENERAL	Fixed the CVE-2023-33042/33043/33044 security vulnerabilities.
RM520NGLAAR01A08M4G_01.201.01.201	
Item	Brief Description
DATA CALL	Solved the problem that RTL8367 did not support fixed rates of 100 Mbps or 10 Mbps.
DATA CALL	Solved the problem of <b>AT+QPING</b> exception.
GNSS	Solved the problem that SBAS satellite information was not displayed in GPGLSV sentence after SBAS was enabled.
NETWORK	Solved the problem that there was a probability that the band information obtained by <b>AT+QENG="servingcell"</b> in the limited service status was abnormal.
NETWORK	Solved the problem that the module might be unable to work properly due to the execution of <b>AT+QENG="neighbourcell"</b> .
NETWORK	Solved the problem that an incorrect PLMN was returned in some cases after the execution of <b>AT+QSCAN</b> .
NETWORK	Solved the problem that the SINR value returned by <b>AT+QENG</b> was incorrect.
NETWORK	Solved the problem that <b>AT+QSRQ</b> was unavailable under NSA network.
NETWORK	Solved the problem that an error was reported when the length of parameter <b>&lt;APN&gt;</b> in <b>AT+QICSGP</b> was 63 bytes.
SAR	Optimized <b>AT+QSAR</b> to solve the problem that the switching of index under WCDMA network could not take effect immediately.
RM520NGLAAR01A08M4G_01.200.01.200	
Item	Brief Description

**GENERAL** Updated the Verizon ENDC whitelist as required by Verizon.

#### RM520NGLAAR01A07M4G\_01.203.01.203

Item	Brief Description
<b>GENERAL</b>	Fixed DFIT#1 issue to make module acquire 3LTE+1NR when working under Samsung n77 Infra for Verizon MBN.
<b>GENERAL</b>	Fixed Motive issue on TC2.08 for Verizon MBN.
<b>GENERAL</b>	Hard code 5G Stand Alone was disabled in SW and not allowed to use AT command to enable or disable SA for Verizon MBN.
<b>GENERAL</b>	Disabled 2CC on N77 for non-contiguous carriers for Verizon MBN.

#### RM520NGLAAR01A07M4G\_01.202.01.202

Item	Brief Description
<b>NETWORK</b>	Extended <b>AT+QNWCFG="ssb_beam_id"</b> to add <b>&lt;RSRQ&gt;</b> and <b>&lt;PCID&gt;</b> in the return value of the command and to query all SSB beam information that have been measured currently.
<b>NETWORK</b>	Modified the value of <b>&lt;SRS_tx_pwr&gt;</b> in the return result of <b>AT+QNWCFG="lte_tx_pwr"</b> .
<b>RF TX FTM</b>	Extended <b>AT+QTXFTMEX</b> to add <b>&lt;nr_srs&gt;</b> parameter.
<b>RmNet</b>	Solved the probabilistic problem that RmNet data call failed in some special cases.
<b>GENERAL</b>	Solved the problem that the module probabilistically did not forward IPV6 NS packets to LAN device in bridge mode.

#### RM520NGLAAR01A07M4G\_01.201.01.201

Item	Brief Description
<b>DFOTA</b>	Added judgment to limit FOTA URL length to 512 bytes.
<b>MBIM</b>	Solved the problem of incorrect signal grids of Windows OS.
<b>RF TX FTM</b>	Solved the problem of error reported when n41 was tested with <b>AT+QTXFTMSRS</b> .
<b>GENERAL</b>	Optimized cw2017 driver to solve the problem that the module might not be available in some scenarios.
<b>GENERAL</b>	Solved the problem that URC could only be sent through the USB AT port, USB modem port and UART1 because the URC reporting ports were limited.
<b>GENERAL</b>	<p>Solved the following problems related to <b>AT+CLCC</b>:</p> <ul style="list-style-type: none"> <li>An error was reported when <b>AT+CLCC</b> was executed during EPSFB process.</li> <li>The voice call status queried through <b>AT+CLCC</b> was abnormal after the data call ended.</li> </ul>

## RM520NGLAAR01A07M4G\_01.200.01.200

Item	Brief Description
GENERAL	Extended <b>AT+QSINR</b> to obtain the SINR value in NSA.
GENERAL	Solved the problem that the RSRP and RSRQ values returned by <b>AT+QSCAN</b> in some cases were null.

## RM520NGLAAR01A06M4G\_01.001.01.001

Item	Brief Description
NETWORK	Extended <b>AT+QNWCFG="ledmode"</b> to support turning off all lights.
USB	Optimized <b>AT+QCFG="usbcfg"</b> to support disabling or enabling QDL and QDSS.
GENERAL	Solved the problem that the bandwidth value returned by <b>AT+QENG="servingcell"</b> did not match the actual value.
GENERAL	Optimized the MBN exception recovery mechanism.
GENERAL	Optimized the verification mechanism of DFOTA and ABFOTA for the file name of upgrade firmware package.
GENERAL	Optimized <b>AT+QCAINFO</b> to add restrictions and judgments on the network so that the parameters were returned after connecting to the network.
GENERAL	Extended <b>AT+QSCAN</b> to add <b>&lt;scan_LTE_band&gt;</b> and <b>&lt;scan_NR5G_band&gt;</b> .
GENERAL	Solved the problem of not supporting the query of the uplink frequency of LTE under NSA with <b>AT+QNWCFG="freq_info"</b> .
GENERAL	Optimized <b>AT+QIMSCFG="service"</b> for parameter configuration to take effect immediately.
GENERAL	Extended <b>AT+QENDC</b> to add parameter and to support URC reporting.
GENERAL	Forbade to execute <b>AT+CFUN=0</b> or <b>AT+CFUN=1</b> when #W_DISABLE1 was in low level.
GENERAL	Modified the URC default report port to All Port.

## RM520NGLAAR01A05M4G\_01.001.01.001

Item	Brief Description
NETWORK	Extended <b>AT+QNWCFG="rrc_state"</b> to support URC reporting.
GENERAL	Solved the problem that the AT port could not work properly after configuring to report the URC through all ports.
GENERAL	Extended <b>AT+QGPAPN</b> to support querying IPv4 addresses.
GENERAL	Extended <b>AT+QRSRP</b> to support querying NSA information.
GENERAL	Modified <b>AT+QGPAPN</b> to adapt it to NSA.

<b>GENERAL</b>	Optimized the reporting logic of URC +C5GREG.
<b>GENERAL</b>	Solved the problem that only one APN could be queried through <b>AT+QGPAPN</b> after multiple data call under SA.
RM520NGLAAR01A04M4G_01.001.01.001	
Item	Brief Description
<b>NETWORK</b>	Extended <b>AT+QCAINFO</b> to support querying CA information under NSA and SA.
<b>NETWORK</b>	Solved the problem that after disabling NSA, you can still query the NSA information with <b>AT+QENG</b> .
<b>GENERAL</b>	Updated the command set and the response format of <b>AT+QMAP</b> .
RM520NGLAAR01A03M4G_01.001.01.001	
Item	Brief Description
/	/

### 3.4. Known Issues

Item	Bug Description
/	/

#### NOTE

Verification Environment is shown below. For more details, please contact Quectel Technical Support.

For Windows:

USB Driver: Quectel\_Windows\_USB\_Driver(Q)\_NDIS\_V2.4.6.zip

Qflash Tool: QFlash\_V6.0.zip

For Linux:

QMI\_WWAN Driver: Quectel\_Linux\_QMI\_WWAN\_Driver\_V1.2.1.zip

GobiNet Driver: Quectel\_Linux&Android\_GobiNet\_Driver\_V1.6.3.zip

PCIE Driver: Quectel\_Linux\_PCIE\_MHI\_Driver\_V1.3.1.zip

QFirehose Tool: Quectel\_LTE&5G\_QFirehose\_Linux&Android\_V1.4.10.zip

Quectel-CM Tool: Quectel\_QConnectManager\_Linux\_V1.6.1.zip

QLog Tool: Quectel\_QLog\_Linux&Android\_V1.5.14.zip

For IPQ:

Quectel PCIE Driver: Quectel\_Linux\_PCIE\_MHI\_Driver\_V1.3.1.zip

## 4. Functions List

Category	Item	Supported Version (Since)	Note
Basic Function	SMS	RM520NGLAAR01A03M4G _01.001.01.001	/
	Network	RM520NGLAAR01A03M4G _01.001.01.001	/
File Function	UFS	RM520NGLAAR01A03M4G _01.001.01.001	/
Protocol Function	QMI	RM520NGLAAR01A03M4G _01.001.01.001	/
	NITZ	RM520NGLAAR01A03M4G _01.001.01.001	/
	LwM2M	RM520NGLAAR01A06M4G _01.001.01.001	/
Interface Function	USB	RM520NGLAAR01A03M4G _01.001.01.001	/
	MBIM	RM520NGLAAR01A03M4G _01.001.01.001	/
	RmNet	RM520NGLAAR01A03M4G _01.001.01.001	/
	PCIE	RM520NGLAAR01A03M4G _01.001.01.001	/
Locate Function	AGPS	RM520NGLAAR01A03M4G _01.001.01.001	/
Upgrade Function	FOTA	RM520NGLAAR01A05M4G _01.001.01.001	/
SIM Function	DSSS	RM520NGLAAR01A03M4G _01.001.01.001	/
	(U)SIM Detection	RM520NGLAAR01A03M4G _01.001.01.001	/
	ESIM	RM520NGLAAR01A06M4G _01.001.01.001	/
Special Function	Wi-Fi 6	RM520NGLAAR01A04M4G _01.001.01.001	/
	Low Power	RM520NGLAAR01A04M4G _01.001.01.001	/
	RF RX FTM	RM520NGLAAR01A03M4G _01.001.01.001	/
	RF TX FTM	RM520NGLAAR01A03M4G	/

		_01.001.01.001	
	SAR	RM520NGLAAR01A04M4G _01.001.01.001	/
	Thermal Mitigation	RM520NGLAAR01A04M4G _01.001.01.001	/
Security Function	Secure boot	RM520NGLAAR01A06M4G _01.001.01.001	/
5G Function	5G	RM520NGLAAR01A03M4G _01.001.01.001	/

## About Quectel

Quectel Wireless Solutions is the leading global supplier of cellular and GNSS modules, with a broad product portfolio covering the most recent wireless technologies of 5G, LTE/LTE-A, NB-IoT/LTE-M, UMTS/HSPA(+), GSM/GPRS and GNSS. As a professional IoT (Internet of Things) technology developer and cellular module supplier, Quectel is able to provide one-stop services for IoT cellular modules. Quectel products have been widely applied in IoT/M2M fields including smart payment, telematics and transport, smart energy, smart cities, security, wireless gateways, industry, healthcare, agriculture, and environment monitoring.

