

# 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\_V0303\_01.201.01.201

Date: 2024-03-28

**Our aim is to provide customers with timely and comprehensive service. For any assistance, please contact our company headquarters:**

**Quectel Wireless Solutions Co., Ltd.**

Building 5, Shanghai Business Park Phase III (Area B), No.1016 Tianlin Road, Minhang District, Shanghai 200233, China

Tel: +86 21 5108 6236

Email: [info@quectel.com](mailto:info@quectel.com)

**Or our local office. For more information, please visit:**

<http://www.quectel.com/support/sales.htm>.

**For technical support, or to report documentation errors, please visit:**

<http://www.quectel.com/support/technical.htm>

Or email to [support@quectel.com](mailto:support@quectel.com).

**Disclaimer**

While Quectel has made efforts to assure the accuracy of this document, unless otherwise provided by valid agreement, Quectel assumes no liability resulting from any inaccuracies or omissions in this document, or from use of the information obtained herein. Quectel reserves the right to make changes to any contents described herein and reserves the right to revise this document and to make changes from time to time in content hereof with no obligation to notify any person of revisions or changes. Before using any updated software, please read this statement carefully. By accessing or using the said software you irrevocably and unconditionally accept and confirm that you agree to be bound by this statement. In the event you disagree with any provision hereof and would not like to be bound by this statement you shall cease use of the said software immediately.

**Duty of Confidentiality**

The Receiving Party shall keep confidential all documentation and information provided by Quectel, except when the specific permission has been granted by Quectel. The Receiving Party shall not access or use Quectel's documentation and information for any purpose except as expressly provided herein. Furthermore, the Receiving Party shall not disclose any of the Quectel's documentation and information to any third party without the prior written consent by Quectel. For any noncompliance to the above requirements, unauthorized use, or other illegal or malicious use of the documentation and information, Quectel will reserve the right to take legal action.

**Copyright**

The information contained here is proprietary technical information of Quectel Wireless Solutions Co., Ltd. Transmitting, reproducing, disseminating and editing this document as well as using the content without permission are forbidden. Offenders will be held liable for payment of damages. All rights are reserved in the event of a patent grant or registration of a utility model or design.

***Copyright © Quectel Wireless Solutions Co., Ltd. 2024. All rights reserved.***

## 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 .....	8
3.4. Known Issues .....	12
4. Functions List.....	13

Quectel  
Confidential

## 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	RM520NGLAAR03A03M4G	01.201.01.201

## 2. Matters Needing Attention

SN	Item
[1]	The firmware version lower than R01A05 needs to be upgraded to the R01A05 version through USB Firehose, and cannot be upgraded to A05 through FOTA; R01A05 and above the firmware 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
RM520NGLAAR03A03M4G	01.201.01.201	Mass production
RM520NGLAAR03A03M4G	01.200.01.200	Mass production
RM520NGLAAR03A01M4G	01.202.01.202	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

RM520NGLAAR03A03M4G_01.201.01.201	
Item	Brief Description
<b>SERVICE</b>	Disabled the output of low-level log of the tftp_server process.
RM520NGLAAR03A03M4G_01.200.01.200	
Item	Brief Description
<b>GENERAL</b>	Added <b>AT+QDPGDCNT</b> to read the data traffic of each PDP context profile and

reset or save the data traffic information.

#### RM520NGLAAR03A01M4G\_01.202.01.202

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

#### GENERAL

Added the following AT commands:

- **AT+QNWPREFCFG="rf\_band"** to query the RF band supported by the module by default.
- **AT+QNWPREFCFG="restore\_band"** to restore the default band configured in the module.

#### RM520NGLAAR01A08M4G\_01.200.01.200

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

/	/
---	---

#### RM520NGLAAR01A07M4G\_01.203.01.203

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

/	/
---	---

#### RM520NGLAAR01A07M4G\_01.202.01.202

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

#### GENERAL

Added the following AT commands:

- **AT+QNWCFG="nr5g\_mimo\_info"** to control whether to list 5G DL and UL MIMO information.

#### RM520NGLAAR01A07M4G\_01.201.01.201

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

#### GENERAL

Added the following AT commands:

- **AT+QNWCFG="ledmode"** to set the blinking mode of the network light.
- **AT+QWDSCFG="operator\_reserved\_pco"** to configure PCO.
- **AT+QNWCFG="nitz\_ons"** to query PLMN long name and short name from NITZ.
- **AT+QAUDRDY** to query the status of the Audio service on AP side.

#### 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.

<b>GENERAL</b>	Supported the feature of routing behind mobile station.
<b>GENERAL</b>	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
<b>GENERAL</b>	Supported AQR113C.
<b>GENERAL</b>	Supported URC reporting of PIN-related information (modification, activation, and verification of PIN).
<b>GENERAL</b>	<p>Added the following AT commands:</p> <ul style="list-style-type: none"> <li>● <b>AT+QUPTIME</b> to get the system power-up time.</li> <li>● <b>AT+QFOTAPID</b> to configure the Profile ID used in FOTA upgrade.</li> <li>● <b>AT+QSIMCFG="dual_slot_status"</b> to query related information of the SIM cards when dual SIM cards were both inserted.</li> <li>● <b>AT+QSIMCFG="sim_recovery"</b> to support SIM card recovery and automatic detection.</li> <li>● <b>AT+QNWCFG="nr5g_pathloss"</b> to query NR5G pathloss information.</li> <li>● <b>AT+QPCIE="pcie_gen"</b> to query PCIe GEN in PCIe RC mode.</li> <li>● <b>AT+QNWCFG="cops_auto_mode"</b> to configure whether the mode preference is controlled by <b>AT+COPS</b>.</li> <li>● <b>AT+QNWCFG="nr5g_ulbw"</b> to query NR5G uplink bandwidth.</li> <li>● <b>AT+QNWCFG="lte_ulMCS"</b> to query LTE uplink MCS and modulation type.</li> <li>● <b>AT+QTHERMAL="lte_ul_throttle"</b> to control the uplink rate of Level 1 in LTE PA mechanism.</li> <li>● <b>AT+QTHERMAL="nr_ul_throttle"</b> to configure the uplink rate of Level 1 in NR5G PA mechanism.</li> <li>● <b>AT+QTHERMAL="lte_mtpl_backoff"</b> to control the reduced power value of Level 2 in LTE PA mechanism.</li> <li>● <b>AT+QTHERMAL="nr_mtpl_backoff"</b> to control the reduced power value of the level 2 in NR5G PA mechanism.</li> <li>● <b>AT+QCALLCFG="ussd_format"</b> to configure the report format of +CUSD to be hexadecimal or ASCII.</li> <li>● <b>AT+QSIMCFG="slot_features"</b> to support whether to skip the detection of service130 and service133.</li> </ul>
RM520NGLAAR01A05M4G_01.001.01.001	
Item	Brief Description
<b>GENERAL</b>	Configured the project as data-only.
<b>GENERAL</b>	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
/	/

Quectel  
Confidential



### 3.3. Improved Features

RM520NGLAAR03A03M4G_01.201.01.201	
Item	Brief Description
ESIM	Configured terminal_capacity to adapt to the eSIMs provided by some manufacturers.
MBIM	Solved the problem of MBIM dial-up failure after the Windows MBIM version was updated to version 4.0.
NETWORK	Solved the problem that an error was reported when <b>AT+QNWCFG="lte_band_priority",0</b> was executed to remove the band priority after the band priority was set through <b>AT+QNWCFG="lte_band_priority"</b> .
NETWORK	Updated the range of <b>&lt;profileID&gt;</b> in <b>AT+QPRFMODE="override_home_pdp_type"</b> from 1–4 to 1–8.
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	<p>Solved the following problems related to <b>AT+QENG</b>:</p> <ul style="list-style-type: none"> <li>● The invalid <b>&lt;TAC&gt;</b> did not appear as "-" after the execution of <b>AT+QENG</b>.</li> <li>● There was a probability that the band information obtained by <b>AT+QENG="servingcell"</b> in the limited service status was abnormal.</li> <li>● The module might be unable to work properly due to the execution of <b>AT+QENG="neighbourcell"</b>.</li> <li>● The SINR value queried with <b>AT+QENG="servingcell"</b> was not displayed correctly.</li> </ul>
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 <b>AT+QSRQ</b> was unavailable under NSA network.
NETWORK	Updated the format of the return result of <b>AT+QNWCFG="nr5g_mimo_info"</b> to solve the problem that the returned result of <b>AT+QNWCFG="nr5g_mimo_info"</b> was incorrect.
THERMAL MANAGEMENT	Extended <b>AT+QTHERMAL="thermal_level"</b> to support the query of mmw0_dsc and mmw_ific_dsc mechanisms.
GENERAL	Not allowed to disable SA functionality through <b>AT+QNWPRECFG="nr5g_disable_mode"</b> on Verizon network.
RM520NGLAAR03A03M4G_01.200.01.200	
Item	Brief Description
ESIM	Solved the problem that an error might be reported when <b>AT+QESIM="profile"</b> was executed to switch profile.

<b>NETWORK</b>	Solved the problem that <b>AT+QNWCFG="nr5g_mimo_info"</b> did not take effect after the module was rebooted.
<b>NETWORK</b>	Solved the problem that the return values were not updated when <b>AT+QNWCFG="lte_ambr"</b> was executed in some scenarios.
<b>NETWORK</b>	Solved the problem that module might not work properly due to the execution of <b>AT+QGETMAXRATE</b> .
<b>GENERAL</b>	Solved the probabilistic problem that <b>ERROR</b> was returned when <b>AT+QGDNRCNT?</b> was executed.

**RM520NGLAAR03A01M4G\_01.202.01.202**

<b>Item</b>	<b>Brief Description</b>
<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>NETWORK</b>	Solved the problem that NR5G NSA bandwidth returned by <b>AT+QENG="servingcell"</b> and <b>AT+QCAINFO</b> was inconsistent with that under the actual circumstance.
<b>NETWORK</b>	Solved the problem that ANR did not work in ENDC.
<b>RF TX FTM</b>	Extended <b>AT+QTXFTMEX</b> to add <b>&lt;nr_srs&gt;</b> parameter.
<b>GENERAL</b>	Solved the problem that there was a sudden change in the Rx traffic value queried by <b>AT+QGDNRCNT</b> when the dial-up was disconnected.
<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.

**RM520NGLAAR01A08M4G\_01.200.01.200**

<b>Item</b>	<b>Brief Description</b>
<b>GENERAL</b>	Updated the Verizon ENDC whitelist as required by Verizon.

**RM520NGLAAR01A07M4G\_01.203.01.203**

<b>Item</b>	<b>Brief Description</b>
<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**

<b>Item</b>	<b>Brief Description</b>
-------------	--------------------------

<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
<b>GENERAL</b>	Extended <b>AT+QSINR</b> to obtain the SINR value in NSA.
<b>GENERAL</b>	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
<b>NETWORK</b>	Extended <b>AT+QNWCFG="ledmode"</b> to support turning off all lights.
<b>USB</b>	Optimized <b>AT+QCFG="usbcfg"</b> to support disabling or enabling QDL and QDSS.
<b>GENERAL</b>	Solved the problem that the bandwidth value returned by <b>AT+QENG="servingcell"</b> did not match the actual value.
<b>GENERAL</b>	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 <scan_LTE_band> and <scan_NR5G_band>.
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+QSRP</b> to support querying NSA information.
GENERAL	Modified <b>AT+QGPAPN</b> to adapt it to NSA.
GENERAL	Optimized the reporting logic of URC <b>+C5GREG</b> .
GENERAL	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
NETWORK	Extended <b>AT+QCAINFO</b> to support querying CA information under NSA and SA.
NETWORK	Solved the problem that after disabling NSA, you can still query the NSA information with <b>AT+QENG</b> .
GENERAL	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\_V6.1.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\_V1.3.5.zip

QFirehose Tool: Quectel\_LTE&5G\_QFirehose\_Linux&Android\_V1.4.17.zip

Quectel-CM Tool: Quectel\_QConnectManager\_Linux\_V1.6.5.zip

QLog Tool: Quectel\_QLog\_Linux&Android\_V1.5.11.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	DFOTA	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	/

Quectel  
Confidential

## About Quectel

Quectel's passion for a smarter world drives us to accelerate IoT innovation. As a highly customer-centric organization, we are a global IoT solution provider backed by outstanding support and services. Our growing global team of 5,900 professionals sets the pace for innovation in cellular, automotive, smart, GNSS, satellite, Wi-Fi and Bluetooth modules as well as antennas and services.

With regional offices and support across the globe, our international leadership is devoted to advancing IoT and building a smarter world.

