

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_01.204.01.204

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1. Release Content

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

Package	Firmware Version	Configuration Version
Firmware	RM520NGLAAR03A03M4G	01.204.01.204

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.
[7]	The firmware version whose description is “only for sample” is only used for debugging, and is prohibited from mass production, certification or any other purposes.

3. Release History

3.1. Firmware Release History

Firmware Version	Configuration Version	Description
RM520NGLAAR03A03M4G	01.204.01.204	Mass production
RM520NGLAAR03A03M4G	01.203.01.203	Mass production
RM520NGLAAR03A03M4G	01.202.01.202	Mass production
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_01.204.01.204

Item	Brief Description
NETWORK	Enabled the L2NR PS HO feature for Docomo operator.

RM520NGLAAR03A03M4G_01.203.01.203

Item	Brief Description
NETWORK	Enabled DSS feature under FirstNet network.
NETWORK	Supported N41 with 70 MHz bandwidth.
GENERAL	Added MCC and MNC configuration 46020 – 46029 for CMCC, and updated the date of MBN to 202408281.
GENERAL	Added MCC-MNC:310-950 to ATT MBN.
GENERAL	<p>Added the following AT commands:</p> <ul style="list-style-type: none"> ● AT+QGPSCFG="1pps_mode" to turn on/off GPS 1PPS signal. ● AT+QGPSCFG="1pps_offset" to specify the GPS receiver chain fixed bias to be added to the timed output signal. ● AT+QSMSCFG="mms_receive" to configure whether to store WAP Push messages. ● AT+QNWCFG="reg_time_info" to get network registration attempt count and network connection time.

RM520NGLAAR03A03M4G_01.202.01.202

Item	Brief Description
NETWORK	Added EHPLMNs 310240/312250/310260 to TMO MBN.
NETWORK	Enabled the split_drb_with_ul_both_mcg_scg for ROW MBN.

RM520NGLAAR03A03M4G_01.201.01.201

Item	Brief Description
SERVICE	Disabled the output of low-level log of the tftp_server process.

RM520NGLAAR03A03M4G_01.200.01.200

Item	Brief Description
GENERAL	Added AT+QDPGDCNT 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	<p>Added the following AT commands:</p> <ul style="list-style-type: none"> ● 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
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RM520NGLAAR01A07M4G_01.203.01.203

Item	Brief Description
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RM520NGLAAR01A07M4G_01.202.01.202

Item	Brief Description
GENERAL	<p>Added the following AT commands:</p> <ul style="list-style-type: none"> ● 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	<p>Added the following AT commands:</p> <ul style="list-style-type: none"> ● 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.
GENERAL	Supported the feature of routing behind mobile station.

GENERAL	Added AT+QXQCN to configure and query RF parameters of the module and import QXCN file.
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RM520NGLAAR01A06M4G_01.001.01.001

Item	Brief Description
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GENERAL	Supported AQR113C.
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GENERAL	Supported URC reporting of PIN-related information (modification, activation, and verification of PIN).
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GENERAL	<p>Added the following AT commands:</p> <ul style="list-style-type: none"> ● 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.
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RM520NGLAAR01A05M4G_01.001.01.001

Item	Brief Description
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GENERAL	Configured the project as data-only.
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GENERAL	Configured Commercial-TMO MBN as data-only.
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RM520NGLAAR01A04M4G_01.001.01.001

Item	Brief Description
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Thermal Mitigation

Added **AT+QTHERMAL** to expand related configurations of thermal management.

GENERAL

Added **AT+QDPRSAR** to set a DPR scheme.

RM520NGLAAR01A03M4G_01.001.01.001

Item
Brief Description

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3.3. Improved Features

RM520NGLAAR03A03M4G_01.204.01.204	
Item	Brief Description
GENERAL	Optimized Verizon class 3 APN logic.
GENERAL	Solved the problem of inconsistency between the 5G network time and the GNSS time.
RM520NGLAAR03A03M4G_01.203.01.203	
Item	Brief Description
DATA CALL	Solved the problem that certain special packets were dropped when CLAT feature was enabled.
NETWORK	Solved the problem that the operator name could not be obtained after the execution of AT+COPS? .
NETWORK	Added <PUSCH_PHR> , <PUCCH_PHR> and <SRS_PHR> to AT+QNWCFG="nr5g_tx_pwr" .
NETWORK	Solved the problem that the module could not connect to the N1 SA/NSA 25 MHz bandwidth channel.
NETWORK	Solved the problem of incorrect <band> values for N12 and N25 frequency bands returned by AT+QENG .
TIME SERVICE	Solved the problem that an error was reported when AT+QTIMESYNC="enable" was executed.
(U)SIM	Optimized AT+CPWD so that it could be used to change the PIN password using the original password when PIN was locked.
GENERAL	Solved the problem that the module entered CFUN 7 state with a very low probability in frequent power-on/power-off scenarios.
GENERAL	Merged the patch of chip manufacturer to solved the problem of GNSS abnormalities caused by coexistence interference between B13/B14 and GNSS.
RM520NGLAAR03A03M4G_01.202.01.202	
Item	Brief Description
NETWORK	Optimized AT+QNWCFG="used_algo" to return the LTE network encryption information under NSA network.
NETWORK	Solved the problem that there was a probability that no result was returned when searching for a single frequency band by AT+QSCAN .
NETWORK	Updated the PLMN list of the TS 25 operator.
NETWORK	Solved the problem that an incorrect <RSRP> was returned by AT+QENG="servingcell" in some scenarios.

NETWORK	Solved the problem that the module did not report URC +C5GREG: 1 after a China Telecom SIM card was inserted and the network mode was switched from LTE to AUTO.
NETWORK	Solved the problem that the latest AMBR configuration could not be obtained via AT+QNWCFG="nr5g_ambr" under NR5G network when the PDU_SESSION_MODIFICATION_COMMAND message issued by the network contained an AMBR message.
(U)SIM	Solved the problem that +CME ERROR: 13 was returned after the execution of AT+COPS when SIM refresh occurred.
(U)SIM	Solved the problem of 5G network registration failure caused by the failure to obtain the SUCI of the SIM card.
(U)SIM	Solved the problem that an error was reported after the execution of AT+CGLA caused by the long return time of SIM APDU.
GENERAL	Optimized the bad block detection logic of multi_fota tool.
GENERAL	Merged the patch of chip manufacturer to solve the problem that the test in the ENDC B39(B34) + N41 bands was abnormal when conducting road tests at specific locations.
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 AT+QNWCFG="lte_band_priority",0 was executed to remove the band priority after the band priority was set through AT+QNWCFG="lte_band_priority" .
NETWORK	Updated the range of <profileID> in AT+QPRFMODE="override_home_pdp_type" from 1–4 to 1–8.
NETWORK	Solved the problem that the operator name could not be returned after the execution of AT+COPS? when a SIM card of China Broadcast Network Co., Ltd was inserted.
NETWORK	<p>Solved the following problems related to AT+QENG:</p> <ul style="list-style-type: none"> ● The invalid <TAC> did not appear as "-" after the execution of AT+QENG. ● There was a probability that the band information obtained by AT+QENG="servingcell" in the limited service status was abnormal. ● The module might be unable to work properly due to the execution of AT+QENG="neighbourcell". ● The SINR value queried with AT+QENG="servingcell" was not displayed correctly.
NETWORK	Solved the problem that an incorrect PLMN was returned in some cases after the execution of AT+QSCAN .

NETWORK	Solved the problem that AT+QSRQ was unavailable under NSA network.
NETWORK	Updated the format of the return result of AT+QNWCFG="nr5g_mimo_info" to solve the problem that the returned result of AT+QNWCFG="nr5g_mimo_info" was incorrect.
THERMAL MANAGEMENT	Extended AT+QTHERMAL="thermal_level" to support the query of mmw0_dsc and mmw_ific_dsc mechanisms.
GENERAL	Not allowed to disable SA functionality through AT+QNWPRECFG="nr5g_disable_mode" on Verizon network.

RM520NGLAAR03A03M4G_01.200.01.200

Item	Brief Description
ESIM	Solved the problem that an error might be reported when AT+QESIM="profile" was executed to switch profile.
NETWORK	Solved the problem that AT+QNWCFG="nr5g_mimo_info" did not take effect after the module was rebooted.
NETWORK	Solved the problem that the return values were not updated when AT+QNWCFG="lte_ambr" was executed in some scenarios.
NETWORK	Solved the problem that module might not work properly due to the execution of AT+QGETMAXRATE .
GENERAL	Solved the probabilistic problem that ERROR was returned when AT+QGDNRCNT? was executed.

RM520NGLAAR03A01M4G_01.202.01.202

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

Item	Brief Description
GENERAL	Updated the Verizon ENDC whitelist as required by Verizon.

RM520NGLAAR01A07M4G_01.203.01.203

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

RM520NGLAAR01A07M4G_01.202.01.202

Item	Brief Description
NETWORK	Extended AT+QNWCFG="ssb_beam_id" to add <RSRQ> and <PCID> in the return value of the command and to query all SSB beam information that have been measured currently.
NETWORK	Modified the value of <SRS_tx_pwr> in the return result of AT+QNWCFG="lte_tx_pwr" .
RF TX FTM	Extended AT+QTXFTMEX to add <nr_srs> parameter.
RmNet	Solved the probabilistic problem that RmNet data call failed in some special cases.
GENERAL	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
DFOTA	Added judgment to limit FOTA URL length to 512 bytes.
MBIM	Solved the problem of incorrect signal grids of Windows OS.
RF TX FTM	Solved the problem of error reported when n41 was tested with AT+QTXFTMSRS .
GENERAL	Optimized cw2017 driver to solve the problem that the module might not be available in some scenarios.
GENERAL	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.
GENERAL	<p>Solved the following problems related to AT+CLCC:</p> <ul style="list-style-type: none"> ● An error was reported when AT+CLCC was executed during EPSFB process. ● The voice call status queried through AT+CLCC was abnormal after the data call ended.

RM520NGLAAR01A07M4G_01.200.01.200

Item	Brief Description
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GENERAL	Extended AT+QSINR to obtain the SINR value in NSA.
GENERAL	Solved the problem that the RSRP and RSRQ values returned by AT+QSCAN in some cases were null.
RM520NGLAAR01A06M4G_01.001.01.001	
Item	Brief Description
NETWORK	Extended AT+QNWCFG="ledmode" to support turning off all lights.
USB	Optimized AT+QCFG="usbcfg" to support disabling or enabling QDL and QDSS.
GENERAL	Solved the problem that the bandwidth value returned by AT+QENG="servingcell" 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 AT+QCAINFO to add restrictions and judgments on the network so that the parameters were returned after connecting to the network.
GENERAL	Extended AT+QSCAN 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 AT+QNWCFG="freq_info" .
GENERAL	Optimized AT+QIMSCFG="service" for parameter configuration to take effect immediately.
GENERAL	Extended AT+QENDC to add <5G_UWB> parameter and to support URC reporting.
GENERAL	Forbade to execute AT+CFUN=0 or AT+CFUN=1 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 AT+QNWCFG="rrc_state" 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 AT+QGPAPN to support querying IPv4 addresses.
GENERAL	Extended AT+QRSRP to support querying NSA information.
GENERAL	Modified AT+QGPAPN to adapt it to NSA.
GENERAL	Optimized the reporting logic of URC +C5GREG .

GENERAL	Solved the problem that only one APN could be queried through AT+QGPAPN after multiple data call under SA.
RM520NGLAAR01A04M4G_01.001.01.001	
Item	Brief Description
NETWORK	Extended AT+QCAINFO 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 AT+QENG .
GENERAL	Updated the command set and the response format of AT+QMAP .
RM520NGLAAR01A03M4G_01.001.01.001	
Item	Brief Description
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3.4. Known Issues

Item	Bug Description
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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_V6.8.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_V1.5.17.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	/

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