BC66-NA Release Notes

NB-IoT Module Series

Rev. BC66-NA _Firmware_Release_Notes_V0201_01.002.01.002

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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

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1. Preamble

This document provides the Release Notes for BC66-NA firmware version **BC66NADAR02A01_01.002.01.002**. It describes major changes compared to BC66-NA firmware version **BC66NADAR02A01_01.001.01.001**.

2. Matters Needing Attention

SN	Brief Description
1	Need special downloading tool (contact Quectel to retrieve) to upgrade the module firmware from **BC66NADAR01A01** to **BC66NADAR02A01_01.00x.01.00x**.
2	Not support DFOTA between **BC66NADAR01A01** and **BC66NADAR02A01_01.00x.01.00x**.
3	Due to the limitation of testing environment, only the basic NIDD data exchange is supported and verified, not recommend to mass production integration.
4	Due to the limitation of testing environment, **AT+QBANDPC** is only tested the basic function, need to be verified in the actual real network.
5	Not support carrier certification.

3. New Features

Item /Category	Brief Description	Since
GENERAL	Added Module PIN 8 as deep sleep indication GPIO in Standard Firmware Mode.	R01A01
GENERAL	Added **AT+QPOWD=2** to reset the module after **OK** is returned.	R01A01
GENERAL	Added **AT+QPOWD=1** to force module power down.	R01A01
GENERAL	Added **AT+QADC** command for ADC sampling via ADC0 channel.	R01A01
GENERAL	Added **AT+QVBATT** command for UNDER VOLTAGE/OVER VOLTAGE warning and protection.	R01A01
GENERAL	Added **AT+QCFG="vbattimes"** command to configure the measurement interval of **AT+QVBATT**.	R01A01
GENERAL	Added **AT+QCFG="activetimer"** command to configure whether to use the value of active timer (T3324).	R01A01
GENERAL	Added URC RI mask option to **AT+QCFG** command.	R01A01

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GENERAL	Optimized DNS feature. Put the DNS resolution result to RETSRAM and the DNS resolution will not be restarted until the TTL expires.	R01A01
NETWORK	Added **AT+QBANDSL** command for band priority selection.	R01A01
NETWORK	Added combine attach/up/upopt/multidrb options to **AT+QCFG** command.	R01A01
NETWORK	Added **AT+QIPADDR** command to query the whole module IP addresses.	R01A01
QuecOpen	Added **Ql_PowerDown** API for power down the module in QuecOpen.	R01A01
QuecOpen	Added **Ql_vsprintf** and **Ql_vsnprintf** API for flexibility format control.	R01A01
QuecOpen	Added FreeRTOS API in QuecOpen.	R01A01
QuecOpen	Added TCP/UDP Socket API in QuecOpen.	R01A01
QuecOpen	Added SSL/TLS support in QuecOpen.	R01A01
QuecOpen	Added **Ql_GetPowerVol** API in QuecOpen for obtain current power supply voltage.	R01A01
QuecOpen	Added API in QuecOpen for deep sleep event callback register.	R01A01
QuecOpen	Added Hardware flow for UART1 in QuecOpen.	R01A01
LwM2M	Added the DTLS Resumption function. The goal of this feature is to reduce the amount of data interaction between the module and server after the deep sleep wakes up and to be more protocol compliant.	R01A01
LwM2M	Added a mechanism that module will automatically register to **T-Mobile** LwM2M server when the module use **T-Mobile**'s USIM card for **T-Mobile** certification.	R01A01
LwM2M	Added **AT+QLWCFG="lifetime_enable"** command to enable/disable automatic lifetime update (enabled in default).	R01A01
LwM2M	Added **AT+QLWCFG="dtls_mode",<mode> command** to configure the DTLS scheme(DTLS resumption scheme is used in default).	R01A01
LwM2M	Added **AT+QLWCFG="recovery_mode",<mode>** command to control whether the module automatically recovers from deep sleep. The **AT+QLWRECOVER** command is used to trigger module's recovery logic when the manual recover mode is enabled.	R01A01
LwM2M	Added **AT+QLWCFG="dtls_version",<version>** command to configure the DTLS version to be used (negotiate with the server adaptively in default).	R01A01

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LwM2M	Added the URC of **+QLWURC: "lw_event"** to indicate whether the module received the server RST message of LwM2M.	R01A01
LwM2M	Added **AT+QLWCFG="retransmit_mode"** command to configure the retransmission policy (interval double/ interval consistent).	R01A01
LwM2M	Changed the range value of the **retrans_max_times** parameter of **AT+QLWCFG="retransmit"** command (0-8), and there will be no retransmission for CON data when it set to 0.	R01A01
SSL/TLS	Supported SSL 3.0.	R01A01
SSL/TLS	Added **AT+QSSLCFG=(1-3),(0-5),"sslversion"** command to support module protocol version selection.	R01A01
MQTT	Added MQTT over IPV6.	R01A01
TCP(IP)	Added ping over IPV6 via **AT+QPING**.	R01A01
GENERAL	Upgrade the chip code version to the newest baseline. (1) Optimized the performance of SMS. (2) Optimized the performance of NIDD. (3) Optimized the band searching mechanism for searching the best suitable cell to camp on. (4) Optimized the performance of R14 features. (5) Improved the stability of PPP feature.	R02A01_01.001.01.001
GENERAL	Added query mode for **AT+QNBIOTEVENT** command to query the current PSM indication setting.	R02A01_01.001.01.001
NETWORK	Added **AT+QEMMTIMER** command to enable/disable the URC reporting of back-off timer.	R02A01_01.001.01.001
NETWORK	Added **AT+QBANDPC** command to control the transmitter power class.	R02A01_01.001.01.001
NETWORK	Added **AT+QENG=3** command to query the current PLMN information.	R02A01_01.001.01.001
NETWORK	Added **AT+QLOCKF=2** command to set preferred EARFCN list.	R02A01_01.001.01.001
NETWORK	Added basic NIDD(Non-IP Data Delivery) data exchange AT commands.	R02A01_01.001.01.001
QuecOpen	Added more power on reason information for **Ql_GetPowerOnReason** API.	R02A01_01.001.01.001
QuecOpen	Added force power off and reset option for **Ql_PowerDown** API.	R02A01_01.001.01.001
TCP	Added support for **TCP LISTENER** feature.	R02A01_01.001.01.001
UDP	Added support for **UDP SERVER** feature.	R02A01_01.001.01.001
LwM2M	Added the default instance response data format configuration option for **AT+QLWCFG="def_inst_rsp_data_format"** command.	R02A01_01.001.01.001

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LwM2M	Added support for Object 3 resource 14(**3/0/14**) which can read/write UTC offset and resource 15(**3/0/15**) which can read/write timezone feature.	R02A01_01.001.01.001
SSL/TLS	Added **AT+QSSLCFG=<contextID>,<connectID>,"sni"** to support server name indication feature.	R02A01_01.001.01.001
COAP	Added feature of CoAP and CoAPS.	R02A01_01.002.01.002
DFOTA	Added support for HTTPS DFOTA.	R02A01_01.002.01.002
DFOTA	Added IPv6 support for **AT+QFOTADL** command.	R02A01_01.002.01.002
HTTP/HTTPS	Added feature of HTTP and HTTPS.	R02A01_01.002.01.002
LwM2M	Added configurable support for OMA object-instance-resource(3/0/3) via **AT+QLWCFG="CR"** command.	R02A01_01.002.01.002
LwM2M	Added **AT+QLWCFG="dtls_lifetime"** command to set the elapse time for the next DTLS re-handshake to reduce the impact of NAT port mapping on DTLS connection.	R02A01_01.002.01.002
LwM2M	Added the TLS_PSK_WITH_AES_128_CCM_8 cipher suite for LwM2M DTLS connection.	R02A01_01.002.01.002
NETWORK	Added **AT+QOOSAIND** command to enable/disable the OOS URC indication report.	R02A01_01.002.01.002
GENERAL	Added **AT+QFLASHR** command to read flash data from FOTA temp area.	R02A01_01.002.01.002

4. Improved Features

Item/Category	Brief Description	Since
LwM2M	Fixed the bug that observed option count can't be incremented after entering deep sleep.	R01A01
LwM2M	Fixed the bug that the command result of **AT+QLWCONFIG?** displays an incorrectly formatted issue.	R01A01
LwM2M	Optimized the LwM2M NVDM management mechanism to reduce the erase frequency of LwM2M operations.	R01A01
LwM2M	Decreased the maximum number of observe information that module can save from 20 to 10.	R01A01
GENERAL	Fixed the bug that NETLIGHT blink frequency is not accurate.	R01A01
GENERAL	Optimized the implementation of **AT+QSCLK=1** to release all the known AP locks for quick sleep control.	R01A01

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GENERAL	Fixed the bug that ADC sampling is not accurate when the divider resistor is too high.	R01A01
GENERAL	Fixed the bug that RI pin abnormal hopping when module power on, reboot or deep sleep wakeup.	R01A01
GENERAL	Optimized DNS resolution retransmission interval and times.	R01A01
GENERAL	Optimized the default configuration of DNS server.	R01A01
NTP	Fixed the bug that NTP port is always fixed to 123 and can't configure issue.	R01A01
MQTTS	Fixed the bug that module will low probability abnormal reboot when the SSL/TLS session is closed by the remote MQTTs server.	R01A01
MQTT	Fixed the bug that module will low probability crash when perform MQTT connect operation frequently.	R01A01
TCP(IP)	Fixed the bug that TCP/UDP over IPV6 domain mode can't work properly via **AT+QIOPEN**.	R01A01
TCP(IP)	Fixed the bug that DNS query result is displayed blank or wrong format via **AT+QIDNSCFG=1**.	R01A01
TCP(IP)	Fixed the bug that the port dedicated by **AT+QIOPEN** is not corresponding to the actually sending port in UDP IPV6 mode.	R01A01
SSL/TLS	Fixed the bug that the sending data will be truncated when HEX 0x00 is contained in the payload.	R01A01
SSL/TLS	Fixed the bug that the module will low probability crash when close the SSL/TLS session for multitask synchronization issue.	R01A01
SSL/TLS	Fixed the bug that **AT+QSSLCFG?** return wrong result when multiple sockets are established.	R01A01
SSL/TLS	Optimized the implementation of **AT+QSSLSEND**, And it is recommended that MCU post-input data in 500ms delay after '**>**' is received.	R01A01
NETWORK	Fixed the bug that module is abnormal wakeup which is triggered by poll interval mechanism in eSIM.	R01A01
NETWORK	Fixed the bug that module is abnormal wakeup due to bug in "periodic attempts may be postponed while the MS is in power saving mode".	R01A01
NETWORK	Fixed the bug that abnormal TAU is triggered after module exit PSM mode.	R01A01
NETWORK	Fixed the bug that SIM initialization fails when binary record length is exceeds 255 bytes which cause module can't register to network.	R01A01
NETWORK	Fixed the bug that PAP authentication failed in real network.	R01A01
QuecOpen	Changed the support ADC sampling channels from 4chs to 3chs.	R01A01
QuecOpen	Fixed the bug that GPIO input level is reverse in input mode when set to pull-up or pull-down.	R01A01

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QuecOpen	Fixed the bug that module will low possibility stuck when executes **AT+CGATT** command.	R01A01
QuecOpen	Optimized timer management implementation.	R01A01
QuecOpen	Fixed the bug that the **DFOTA** result URC will low probability not reported to **APP**.	R01A01
GENERAL	Fixed the bug that the URC RI hopping is abnormal in light sleep scenario.	R02A01_01.001.01.001
GENERAL	Fixed the bug that when the module is in the connected state and execute **AT+COPS** command to trigger the manual search, the module will get stuck and cannot process subsequent AT commands.	R02A01_01.001.01.001
QuecOpen	Fixed the bug that the URC low probability can't reported when executing MQTT CLOSE and DISC operation via RIL API.	R02A01_01.001.01.001
QuecOpen	Fixed the bug that CS line is abnormal released to high state in the last clock cycle during hardware SPI data processing.	R02A01_01.001.01.001
NETWORK	Fixed the bug that module will crash when illegal EPS NAS Security Context exists in SIM.	R02A01_01.001.01.001
NETWORK	Optimize the logic upon receiving Cause Code #17 in EMM procedure.	R02A01_01.001.01.001
NETWORK	Fixed the bug that module will crash when validity check of GUTI failed.	R02A01_01.001.01.001
NETWORK	Fixed the bug that the CEL value keeps same even network coverage changed in IDLE mode.	R02A01_01.001.01.001
NETWORK	Fixed the bug that the query result of **AT+CGATT?** is zero when module successfully registers to the network in combined attach mode.	R02A01_01.001.01.001
NETWORK	Fixed the bug that the module would not send TAU again upon receiving Paging when the timer T3346 is running.	R02A01_01.001.01.001
NETWORK	Optimized EARFCN storing mechanism. Module will save the EARFCN with PLMN information when entering ILDE mode after registered the network.	R02A01_01.001.01.001
NETWORK	Fixed the bug that module low probability can't initiate network searching process after deep sleep wakeup.	R02A01_01.001.01.001
NETWORK	Fixed the bug that data uplink failed when TAU reject event occurs.	R02A01_01.001.01.001
NETWORK	Fixed the bug that module low probability crash when performing attach procedure.	R02A01_01.001.01.001
LwM2M	Fixed the bug that wrong query status returned via **AT+QLWSTATUS?** after the module wakes up from deep sleep.	R02A01_01.001.01.001
LwM2M	Optimized the number of observed resources from 10 to 6 after wake up from deep sleep.	R02A01_01.001.01.001
LwM2M	Fixed the bug that the module performs the update operation during the de-registration process, which will cause the underlying	R02A01_01.001.01.001

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	LwM2M status becomes abnormal.	
LwM2M	Fixed the bug that the module doesn't send registration packet after the DNS resolution is successful in the IPv6 domain mode, connecting to a non-encrypted server scenario.	R02A01_01.001.01.001
LwM2M	Fixed the bug that module can't enter deep sleep quickly when the automatic update fail after wake up from deep sleep.	R02A01_01.001.01.001
DNS	Optimized DNS resolution mechanism in reboot/deep sleep wakeup/retransmission phase.	R02A01_01.001.01.001
UDP	Fixed the bug that the configuration UDP port via **AT+QIOPEN** command is not take effect in IPv6 scenario and deep sleep wakeup scenario.	R02A01_01.001.01.001
UDP	Fixed the bug that UDP session becomes invalid when wake up from deep sleep mode in IPv6 scenario.	R02A01_01.001.01.001
MQTT	Fixed the bug that downlink data is lost when the total length of URC string exceeds 1400 bytes. Now changed to multiple packets reporting via URC.	R02A01_01.001.01.001
MQTT	Fixed the bug that JSON format data is not supported by **AT+QMTCFG** command.	R02A01_01.001.01.001
MQTT	Enlarged the receive buffer from 2KB to 6KB to fix the bug that module can't process data which is larger than 2KB.	R02A01_01.001.01.001
SSL/TLS	Enlarged the SSL RX buffer size to 16KB to fix the bug that module can't buffer the certification completely due to a small RX buffer.	R02A01_01.001.01.001
DFOTA	Fixed the bug that the module has probability auto-establish an unexpected PDN session after deepsleep wakeup.	R02A01_01.002.01.002
GENERAL	Fixed the bug that the module will crash when file size of EPSLOCI in SIM card is not in accordance with the spec.	R02A01_01.002.01.002
MQTT	Fixed the bug that module crash occurs when received data payload exceeds 3K bytes in hex mode.	R02A01_01.002.01.002
MQTT	Fixed the bug that module will low probability crash due to the overflow of TCP buffer in poor network condition.	R02A01_01.002.01.002
MQTT	Fixed the bug that the module failed to connect to the Azure IoT platform by using the unauthenticated encryption mode.	R02A01_01.002.01.002
MQTT	Fixed the bug that module will low probability send two MQTT keep-alive packets at the same time which will result in the disconnection of currently MQTT session.	R02A01_01.002.01.002
NETWORK	Fixed the bug that the RAI behavior is not work as expected due to VZW required logic, now change the logic binding to VZW SIM.	R02A01_01.002.01.002
NETWORK	Removed the instantly URC reports of +CEREG: 2 after the module wakes up from PSM.	R02A01_01.002.01.002
NETWORK	Fixed the bug that the module does not perform the attach procedure after the back-off timer is timeout.	R02A01_01.002.01.002
NETWORK	Fixed the bug that ERROR is returned when executing **AT+CPSMS** command to disable T3412_EXT timer.	R02A01_01.002.01.002

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NETWORK	Fixed the bug that the module will crash when **AT+COPS=2** command is executed in PSM mode due to the conflict of PSM wakeup searching and manual de-register procedure.	R02A01_01.002.01.002
QuecOpen	Fixed the bug that the RIL interface cannot receive "OK" return code in data mode.	R02A01_01.002.01.002
QuecOpen	Fixed the bug that the asynchronous result codes can not report to QuecOPEN layer when MQTT/SSL RIL APIs are used.	R02A01_01.002.01.002
QuecOpen	Fixed the bug that module will low possibility stuck when executes **AT+CGATT** command in QuecOpen.	R02A01_01.002.01.002
QuecOpen	Fixed the bug that the Ql_IIC_Write_Read interface can't read multiple bytes in one shot.	R02A01_01.002.01.002
SSL/TLS	Fixed the bug that module can not read all received data out in one shot in subcontracting scenario.	R02A01_01.002.01.002
TCPUDP	Fixed the bug that wrong TCP acked result returned by using **AT+QISEND=0,0** command in IPv6 scenario.	R02A01_01.002.01.002
TCPUDP	Fixed the bug that the inputted data with "1A" character ending can't be echoed in the data mode.	R02A01_01.002.01.002
TCPUDP	Fixed the bug that module will probability fail to establish an TCP session after reboot due to same local port is used internally.	R02A01_01.002.01.002

5. Known Issues

Item/Category	Brief Description
/	/

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6. Functions

Basic Function

Protocol Function								
TCP/UDP	NITZ	PING	NTP	LwM2M	MQTT	MQTTS	SSL/TLS	CoAP
Y	Y	Y	Y	Y	Y	Y	Y	Y
CoAPS	HTTP	HTTPS						
Y	Y	Y						

Special Function		
DFOTA	PSM	QuecOpen®
Y	Y	Y

NOTES

1. Y means the firmware supports this function.
2. N means the firmware does not support this function.

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