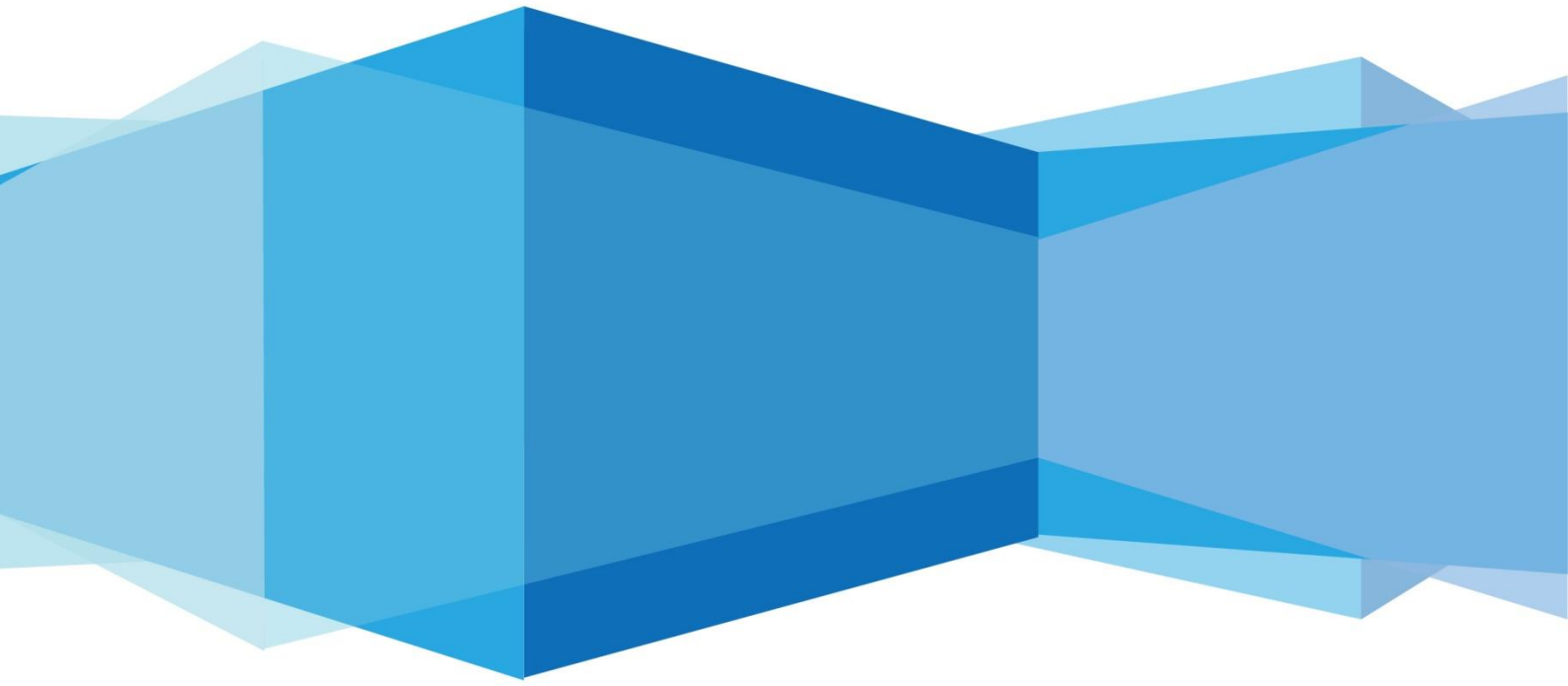
lierda 利尔达科技集团 | 证券代码 832149

Lierda NB Module V150

固件版本更新说明

版本：Rev1.2

日期：2018-08-20



利尔达科技集团股份有限公司
LIERDA SCIENCE & TECHNOLOGY GROUP CO.,LTD

法律声明

文件修订历史

版本	修订日期	修订日志
1.0	2017-12-08	新建文档
1.1	2018-02-09	更新文档格式
1.2	2018-08-20	增加B300SP2

适用模块型号

序号	模块型号	模块简介
1	NB86-G	全频段版本，20×16×2.2（mm）
2		
3		
4		
5		
6		

安全须知

用户有责任遵循其他国家关于无线通信模块及设备的相关规定和具体的使用环境法规。通过遵循以下安全原则，可确保个人安全并有助于保护产品和工作环境免遭潜在损坏。我司不承担因客户未能遵循这些规定导致的相关损失。

	道路行驶安全第一！当您开车时，请勿使用手持移动终端设备，除非其有免提功能。请停车，再打电话！
	登机前请关闭移动终端设备。移动终端的无线功能在飞机上禁止开启用以防止对飞机通讯系统的干扰。忽略该提示项可能会导致飞行安全，甚至触犯法律。
	当在医院或健康看护场所，注意是否有移动终端设备使用限制。RF 干扰会导致医疗设备运行失常，因此可能需要关闭移动终端设备。
	移动终端设备并不保障任何情况下都能进行有效连接，例如在移动终端设备没有花费或 SIM 无效。当您在紧急情况下遇见以上情况，请记住使用紧急呼叫，同时保证您的设备开机并且处于信号强度足够的区域。
	您的移动终端设备在开机时会接收和发射射频信号，当靠近电视，收音机电脑或者其它电子设备时都会产生射频干扰。
	请将移动终端设备远离易燃气体。当您靠近加油站，油库，化工厂或爆炸作业场所，请关闭移动终端设备。在任何有潜在爆炸危险场所操作电子设备都有安全隐患。

目录

1. Product Overview

This software release enables the Hi2115 chip to operate NB-IoT functionality for technology trials and evaluations. The integrated stack takes care of all communication with the network, packetizing the data presented on the AT Interface as well as interpreting profile events and negotiating it's communication with the network.

2. Application requirements

2.1. Hardware requirements

The board must have a USIM inserted.

2.2. Software requirements

- Requires UEUpdater v 3.22 and above.
- Requires UEMonitor v 3.22 and above.
- If the SSB on the running device is older than B200SP1, it is recommend to update the SSB to B200SP1 by UEUpdater / SsbLoader tools.

3. Limitations and Restrictions

- The maximum FOTA diff package shouldn't exceed 184KB on B300SP2 version, else FOTA cannot upgrade successfully. This is due to the limitation of internal flash
- The available flash for application core is 352KB code size and 8KB NV space, which should can be used by SDK/RDK/APP USER together.
- If AT UART disconnect to MCU, user should pull up with a 2M Ohm resistance on the AT UART RX pin to prevent electric leakage.

4. Important incompatible CR

The following CRs are incompatible. UE user need align the implement of these CRs of instrument or network equipment. Otherwise, UE can't access the network.

CR	UE Version	Notes
R1-1703964 NPBCH symbol rotation for interference randomization in NB-IoT	V150R100C10B120	
R1-1703913 Correction on the scrambling of NPDSCH carrying the BCCH	V150R100C10B120	
R1-1704069 NPDCCH scheduling of conflicted NSIB	V150R100C10B120	
R2-1702128 the procedure to compute Hashed ID of eDRX	V150R100C10B120	
R2-1714000 Correction to UE-Capability-NB extension	V150R100C20B300	
R2-1803799 Correction of RRCConnectionReestablishment message	V150R100C20B300SP2	

5. New version features and exception fixes（SDK）

5.1. V150R100C10B300SP2

5.1.1. New Functionality

None

5.1.2. Modified Functionality

None

5.1.3. Bug Fixes

Neul Ref	Summary	Notes
IOT-11177	Fix the occasional watchdog during the stress test in case VBAT input is higher than 3.8V	

5.1.4. Known Issues

Neul Ref	Summary	Notes
IOT-10470	PSM cannot be disabled when protocol is power-off.	+CPSMS=0 doesn't take effect when +CFUN=0, but it can work when protocol is power-on.

5.2. V150R100C10B300SP1

5.2.1. New Functionality

Neul Ref	Summary	Notes
IOT-10015	R14 36.331 CR 3223 Correction to RRC Connection Reestablishment message	Correct the ASN.1 so dl-NAS-MAC is OPTIONAL. RRC Connection Reestablishment for control plane require BTS support this CR.
IOT-9463	Added AT command to allow calibration	+NCALTEMPSENSOR can be

	of internal temperature sensor by specifying the known ambient temperature.	used to calibrate the internal temperature sensor.

5.2.2. Modified Functionality

Neul Ref	Summary	Notes
IOT-10910	Optimize the transmit power in strong interference environment	UE will set the transmit power in CC1/CC2 caused by interference the same as CC0, not maximum power.
IOT-10650	Increase the number of words given to the app task stack by 10	Make the stack size to be more reasonable for Multi-PDN with IPv4v6 type
IOT-10382	When UE establish TCP connection with remote server, UE can't notice the connection has been closed when the server close the connection initiative	During the TCP initial connection process, UE will report TCP_CONNECTION_CLOSED if remote server close the connection
IOT-9884	Further reduce the power consumption in DRX/eDRX case	

5.2.3. Bug Fixes

Neul Ref	Summary	Notes
IOT-10809	Correct the typo of the response of 'AT+NCPCDPR=?'	The prefix of the response should be +NCPCDPR, not +NCPCNPR.
IOT-10796	The IO rail R1 is disabled when the chip goes into deep sleep and enabled when it wakes up	This allows the TCXO to be powered from the R1 rail, which can save power consumption.
IOT-10785	Wakeup time from PSM becomes 4 seconds longer after 1-2 days	Remove the redundant MIB/SIB1 reading after entering PSM more than 24 hours.
IOT-10767	Clear the back off timer remainder after reading it, and save the rest of back off timer when +NRB executed	This can make the back off timer of attach be more reasonable, which can avoid UE cannot attach when the back off timer is longer than the timer MCU set to wait for attach.

IOT-10684	Correct the PMU VDD IO setting cannot work.	After this correction, Bank R2 can support to be powered externally.
IOT-10562	Use time zone in universal time when local time zone is not exist	When local time zone is not available in EMM INFO, then try to use the universal time.
IOT-10543	Notice the MCU when UE receive CRTDCP data	To notice MCU when receive NONIP DL data by GPIO.
IOT-10515	Remove SNR limitation of 20db reported in the log	
IOT-10393	If sending DL NONIP data when CRTDCP is disable, UE cannot receive DL NONIP data report even CRTDCP is enable.	Correct the NONIP DL data report bug when CRTDCP change from disable to enable

5.2.4. Known Issues

Neul Ref	Summary	Notes
IOT-10470	PSM cannot be disabled when protocol is power-off.	+CPSMS=0 doesn't take effect when +CFUN=0, but it can work when protocol is power-on.

5.3. V150R100C10B300

5.3.1. New Functionality

Neul Ref	Summary	Notes
IOT-10249	Clean stored PLMN EARFCN MAPPING for +NCSEARFCN	This AT command used to reset the stored EARFCN. User can use it if UE cannot camp on a cell for a long time. This AT command just can be use after AT+CFUN=0.
IOT-9603	Add R14 Release Assistant Indication	It require BTS and Core Network to support this function. If user want to enable this function, please set

		+NCONFIG, RAI, true.
IOT-9565	Implement R14 Multi-PRB	This feature only support to test.
IOT-9469	R14 36.331 CR 3113 Correction to UE-Capability-NB extension and provision for late rel-13 corrections	This is a incompatible CR which is required for all the R14 features.
IOT-9457	Implement +CGCONTRDP to get DNS sever address	It can be called by application to get DNS server. Please reference the related RDK for how to use the DNS server.
IOT-9416	Support backtrace for application core	The backtrace can be used to debug watchdog issues. But it is disable in SDK by default. User can enable it as needed.
IOT-9260	Implement TFT for control plane	Add for V3.69 GCF test
IOT-9032	Add RoHC for control plane	This feature only support to test.
IOT-8950	Support to set APN with user name and password by +CGAUTH	The detailed operation please see NL-002734-UG-11-HI2115 AT Command Set.
IOT-8904	Integrate the new firmware packager (YML+DSL) in the Build System	It is available to distinguish internal and external key value.
IOT-8701	Implement Rel-14 Extended TB Size	This function can be tested after set +NCONFIG RELEASE_VERSION to 14 and NB_CATEGORY to 2.
IOT-8374	Implement R13 Multi-PRB	
IOT-8838	Implement R14 connection re-establishment	This feature only support to test.
IOT-7876	Support Rel-14 Power Class 14dBm	This function can be tested after setting +NCONFIG RELEASE_VERSION to 14 and setting +NPOWERCLASS to 6.
IOT-7767	Support Radio Policy Manager	This function can be used after setting the +NCONFIG RPM to

		true.
IOT-7621	Support Rel-14 OTDOA	This function can be tested after setting +NCONFIG RELEASE_VERSION to 14

5.3.2. Modified Functionality

Neul Ref	Summary	Notes
IOT-10188	Optimize cell search process under inter frequency network.	Fix the inter frequency deployment issue in field test
IOT-9864	Add the interface to support time query in millisecond precision based on SIB16	Add get_current_time_ms() in SDK to provide millisecond precision.
IOT-9863	Remove the user privacy information by MACRO	Use USER_DEBUG_ENABLE to control the user privacy information log. If customer have to debug with user privacy information, it require to notice Hisilicon to provide interim version.
IOT-9666	Set 20000 port as default for BIP when BIP was enabled	
IOT-9546	Add message service failure result code +CMS ERROR	
IOT-9173	Implement hardware flow control for UARTs	
IOT-9154	Support to send and receive data on Multi-PDN	The operation can reference NL-002724-UG-5-Hi2115 EVK User Guide
IOT-9108	Time synchronization from SIB16	
IOT-9105	Store flash allocation to KV store	Store application flash allocation by KV, which can be set in merged_memory_config.json.
IOT-8638	Implement DAC drivers with the new interface	
IOT-8447	Add adc_trim driver function	Add ADC calibration function
IOT-8252	Provide an interface to handle the	The timer for waiting IPv6 prefix can

	timeout of getting ipv6 prefix during attach process	be set by +NCONFIG: IPV6_GET_PREFIX_TIME

5.3.3. Bug Fixes

Neul Ref	Summary	Notes
IOT-10245	Downlin NON-IP data cannot send to application sometimes.	Fix the second received NON-IP data notification problem.
IOT-10167	UE can't process SMS service status, which lead to attach fail	Fix the attach failure issue in case of attach accept with SMS service status option.
IOT-10094	EMM don’t handle unknown IEI Hash MME in Security Mode command	Fix the attach failure issue in case of authentication with Hash MME
IOT-9925	Protocol panic when TCP/UDP get downlink data size over 1732	Fix the panic when UE receive too large downlink packets.
IOT-9924	The temperature/voltage value of +NCHIPINFO is fluctuant from 21 to 32 while RF is working	Fix the AIO confliction when RF is working.
IOT-9920	UE receive paging fail occasionally in case of XXX CN enable the precision paging function.	
IOT-9825	After user create a socket and send TCP data and close this socket. It may fail to re-create a socket with the same TCP port.	Fix this issue by using port option. Please reference the NL-002724-UG-5-Hi2115 EVK User Guide
IOT-9824	If send TCP data to server which is abnormal, it will send failure. Then if close the socket and recreate the same socket, it will return ERROR:4	Fix it by adding TCP socket close reason.
IOT-9626	Protocol panic occur occasionally if running AT+NUESTATS=xxx to query UE status for a long time.	Fix the memory corruption issue.
IOT-9598	UE_NVCONFIG_PLMN_SEARCH_CONFIG cannot be edited by UEConfigurationEditor	

IOT-9361	After AT+CFUN=0, there is a 30s glitch because a timer is running	To improve the power consumption.
IOT-7860	Remove NAS SIM UICC buffers from stack	Fix the updating the SMSP file failure in case the format in SIM is not binary.

5.4. V150R100C10B200SP1

5.4.1. New Functionality

Neul Ref	Summary	Notes
IOT-8654	Adjust the Flash region of Apps core.	The available code side of Apps Core can reach up to 352KB. And the maximum of FOTA diff package change to 184KB.

5.4.2. Modified Functionality

Neul Ref	Summary	Notes
IOT-8960	Add log for DL UDP data receiving indication	Make it more convenient to observe the DL throughput of IP Layer. The new log is LWIP_UDP_DL_DATA_IND
IOT-8837	Forbid to response to the downlink data from unused Port	Forbid to reply on unsafe ports which may bring up unknown security problem.
IOT-8752	Disable the protocol logs during writing flash in FOTA process	In order to optimize the speed of flash writing and FOTA process
IOT-8745	Optimize the performance for Snow3G integrity.	Optimize the throughput in case of Snow3G integrity.
IOT-8450	TCP data sending status indication	Add the TCP packets sending status indication. The detailed usage can reference to NL-002724-UG EVK User Guide

5.4.3. Bug Fixes

Neul Ref	Summary	Notes
IOT-9093	Some rag may appear in low power mode in some abnormal release case.	To solve the rag problem in low power mode if the UE released abnormally with low possibility.
IOT-9020	UE Crash occasionally during send UL TCP data packets	To solve the crash problem in case of the TCP socket id exceed the maximum socket id.
IOT-8985	Correct the UL frequency of Band 2	In order to solve the attach failure issue in Band 2.
IOT-8961	In case of enable unsolicited result code +NPSMR, after send +CFUN=0, the PSM status may not change, but the +NPSMR still reported.	To remove unnecessary +NPSMR report if the PSM status don’t change.
IOT-8847	After UE enter PSM mode and pull out the SIM card, if UE receive AT+CFUN=0, the average current is 1.66mA	UE cannot enter low power mode in this case, and this bug have fixed on B200SP1.
IOT-8663	Codeloader loading security core images that use the last page fails	SSB recommend to update to B200SP1, else the last page of security core cannot use.
IOT-8627	Correct the I2C receiving data with error	In case UE is master, there may be some error when receive data from slave. This fix solved this problem.
IOT-8625	RM1.2 Tx IBE low margin	Increase the margin of Tx IBE to improve the RF performance.
IOT-8618	The PCI is wrong in the log RRC_DBG_CELL_S_CRITERIA	Correct the PCI in the log
IOT-8536	NAS fails to manage wraps in security counter and becomes unrecoverable	To solve the issue found in DT test. If the security counter become unrecoverable, UE should go into stuck.

IOT-8483	MAC does not cancel RACH when getting UL grant from BTS	To solve the access issue during testing with other eNB in Coverage Lever 2.

5.5. V150R100C10B200

5.5.1. New Functionality

Neul Ref	Summary	Notes
IOT-8143	AT UART support baud rate 230400/460800	User can set high baud rate in UL peak throughput test. But AT UART cannot enter lower power in these two baud rate.
IOT-7867	Support TCP data transmission	The operation of TCP data transmission can reference to NL-002724-UG EVK User Guide
IOT-7836	Add indication to user when UL UDP data send out in air interface	The user guide please reference to NL-002724-UG EVK User Guide
IOT-7832	upport BIP	Support standard BIP procedure
IOT-7830	upport Background PLMN Search	
IOT-7825	llow RDK to register AT command	Please reference the code in RDK.
IOT-7791	Add the SSB Upgrade by UART port	Support SSB update by UART port. The process please reference to NL-002760-UG SSB Loader User Guide
IOT-7106	Verify digital signature when FOTA update	Support FOTA security updating
IOT-6857	Allow rules for signing and secure boot	Support security boot, which need user to sign all the images.

IOT-5635	Support IPv6k	Support data transmission over IPv6. Please reference to NL-002724-UG EVK User Guide

5.5.2. Modified Functionality

Neul Ref	Summary	Notes
IOT-8354	Implement DAC & ADC drivers with the new interface	To improve the ADC accuracy
IOT-8133	Implement new throughput calculation method	Print RLC/MAC throughput in PROTO_UE_STATS_TPUT_BLE
IOT-8111	Add PWM clock enable	Support PWM
IOT-8051	Improve the performance of SNOW3G handling in protocol stack	To improve the performance in the throughput test
IOT-8021	Support to update KV by FOTA	The process of updating KV by FOTA reference to NL- 002759-UG
IOT-7933	AT+CGMR Show SSB version	
IOT-7765	Retrieve Die ID	
IOT-5316	Modify existing AIO drivers to use AIO manager	Optimize existing AIO drivers

5.5.3. Bug Fixes

Neul Ref	Summary	Notes
IOT-8593	For AT+COPS command, the parameter AcT should support 9 other than 7	As spec, AcT=7 means E-UTRAN, Act=9 means NB-S1
IOT-8571	When active the second PDP with CGACT command, UE reboot due to protocol watchdog	Add protection for NULL pointer

IOT-8453	The 'PDP_TYPE' in CGDCONT setting of the 0 cid will be restore to 'IP' after UE attach success	
IOT-8410	amping power is 3dB lower in high temperature test.	Optimize the Radio configuration.
IOT-8396	ncrease codeloader major version and fix B180/B200 compatibility	
IOT-8245	ulti-APN establishment fails. The contents of the UE packet does not carry the corresponding APN Name.	
IOT-8171	Change for BIP Customization	Support BIP with dedicated SIM
IOT-7928	After UE received TAU REJ with emmcause #9 , Send AT+CGATT=1, after the UE finish the attach procedure, UE send TAU request again	
IOT-7461	Incorrect DMRS base sequence	Make it compatible with the default multi-tone configuration in Ericsson Base Station.

6. New version features and exception fixes（RDK）

6.1. 150R100C20B300SP2-RDK

6.1.1. Function Changes

Change Type	Change Description	Change Impact

NEW	新增AT命令用于打开或者屏蔽 LWM2M模块，命令如下：AT+MLWM2MENABLE	如果不打开该功能，或导致无法注册到IOT平台
CHANGE	AT+MLWULDATA命令增加发送NON消息，且携带RELEASE_AFTER_REPLY释放辅	原来的版本不支持发送NON消息，且携带RELEASE_AFTER_REPLY释放辅助指示模式

6.1.2. Delete Feature

None

6.1.3. Resolved Issues

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Change Type	Change Description	Change Impact
CHANGE	开机立即创建UDP socket，模组概率性注册平台失败	开机完成之前就去创建UDP，会导致模组注册平台失败，影响本次业务
CHANGE	模组在不需要注册到平台，只通过UDP socket进行数据交互的场景下，导致PnP引导注册失败。后面的版本可以通过AT命令AT+MLWM2MENABLE打开或者屏蔽LWM2M模块。	PNP流程和UDP流程存在耦合，客户只使用UDP场景下，如果没有在IOT平台注册成功，会触发模组重启，影响本次业务通讯
CHANGE	FOTA升级完成重启之后，在收到503取消订阅之前，用AT重启模组，那么此次FOTA升级任务不会向串口打印update over消息	影响FOTA升级成功率

6.1.4. Known Issues

None

6.2. 150R100C20B300SP1-RDK

6.2.1. Function Changes

Change Type	Change Description	Change Impact
NEW	新增AT命令用于打开或者屏蔽 LWM2M模块，命令如下：AT+MLWM2MENABLE	如果不打开该功能，或导致无法注册到IOT平台

CHANGE	AT+MLWULDATA 命令增加发送 NON 消息，且携带 RELEASE_AFTER_REPLY 释放辅	原来的版本不支持发送 NON 消息，且携带 RELEASE_AFTER_REPLY 释放辅助指示模式

6.2.2. Delete Feature

None

6.2.3. Resolved Issues

Change Type	Change Description	Change Impact
CHANGE	开机立即创建 UDP socket，模组概率性注册平台失败	开机完成之前就去创建 UDP，会导致模组注册平台失败，影响本次业务
CHANGE	模组在不需要注册到平台，只通过 UDP socket 进行数据交互的场景下，导致 PnP 引导注册失败。后面的版本可以通过 AT 命令 AT+MLWM2MENABLE 打开或者屏蔽 LWM2M 模块。	PNP 流程和 UDP 流程存在耦合，客户只使用 UDP 场景下，如果没有在 IOT 平台注册成功， 会触发模组重启，影响本次业务通讯
CHANGE	FOTA 升级完成重启之后，在收到 503 取消订阅之前，用 AT 重启模组，那么此次 FOTA 升级任务不会向串口打印 update over 消息	影响 FOTA 升级成功率

6.2.4. Known Issues

None

6.3. 150R100C20B300-RDK

6.3.1. Function Changes

Change Type	Change Description	Change Impact

CHANGE	1. 支持 PNP 特性，支持 LWM2M Bootstrap Sequence 注册流程，支持 Client init 和 Server init 获取 IOT 平台地址 2.DTLS 支持服务器模式，支持作为 Server 模式与 BS 服务器 DTLS 握手和 数据交互 3.支持从 IOT 平台与 BS 服务器进行	【V150】DTLS、PNP、远程配置合入
CHANGE	LWM2M COAP 数据发送接收支持 socket 接口，LWM2M 初始化会占用一个 socket 号	LWM2M COAP 收发数据采用 socket 接口
CHANGE	1.支持 DNS 特性，支持地址域名解析 IP 地址，同时支持 IP 地址 2. DNS client 实现缓存机制 3. 支持 DNS Server 地址配置	【CIoT-Device V150 芯片_RDK】【DNS】DNS 功能实现
CHANGE	1.AT+NSECSWT 命令删除老参数 <renegotiation time>，新增 <NAT type> 2.支持由终端设置是否需要重新建立 DTLS 连接，新增命令： +MRESETDTLS 3.支持终端查询 DTLS 状态，新增命令：+MDTLSSTAT 4.DTLS 协商完成后主动通知终端 5.DTLS 模式下数据发送失败要给终端特定错误码	【V150_DTLS 架构优化】针对DTLS 软件解耦和DTLS 商用化的代码

6.3.2. Delete Feature

None

6.3.3. Resolved Issues

None

6.3.4. Known Issues

None

6.4. 150R100C20B200SP1-RDK

6.4.1. Function Changes

Change Type	Change Description	Change Impact
CHANGE	AT+NMGS\AT+MLWULDATA\AT+MLWULDATAEX 命令新增[,<seq_num>]序列号可选参数，在打开NSMI 的条件下，通过+NSMI:<status>[,<seq_num>]回显消息通知终端数据是否被协议核发送成功。	1、终端通过 AT+NMGS\AT+MLWULDATA\AT+MLWULDATAEX 命令发送CoAP 数据； 2、+NSMI:<status>[,<seq_num>]回显消息。 关于NSMI 回显配置，详见AT 命令手册。

6.4.2. Delete Feature

None

6.4.3. Resolved Issues

None

6.4.4. Known Issues

None

6.5. 150R100C20B200-RDK

6.5.1. Function Changes

Change Type	Change Description	Change Impact

NEW	V150 RDK 兼容V120 RDK 发送、接收CoAP 数据相关的AT 命令，详见 AT 命令手册。	3、 新增+NMGS、+NMGR、+NNMI、+NSMI、+NQMGR、+NQMGS、+NMSTATUS 命令。 4、如果NB 模组处于未注册状态，终端通过模 组发送CoAP 数据只会触发注册并将CoAP 数据丢弃。 5、如果终端通过NB 模组发送CoAP 数据，模 组收到NB-IoT 平台响应的RST 响应，终端 再次发送下一条 CoAP 数据时只会触发注册并把CoAP 数据丢弃。
CHANGE	模组收到 CoAP 数据下行 后，将通知终端的消息AT+MLWDLDATA=<length>,<data>改为+NNMI:<length>,<data>	1、不再支持 AT+MLWDLDATA=<length>,<data>通知消息。 2、NNMI 默认模式为1，即收到下行CoAP 数 据后， 主动通知终端并将数据发给终端。
NEW	支持DTLS PSK 远程更新	1、PSK 远程更新需要对接NB-IoT 1.5 平台。 2、 DTLS 特性只有打开的状态下，并且通过NB-IoT 平台下发的0/0/5 资源远程配置模组 DTLS PSK。 3、如果模组处于PSM 态，只有向NB-IoT 平 台发送 CoAP 数据才能接收到平台下发的新PSK。 4、模组收到PSK 更新1 分钟后，会自动复位，并使用新的PSK 向NB-IoT 平台发起握手。 5、不支持远程打开或关闭DTLS 特性。 6、 不支持并行执行远程FOTA 升级任务和PSK 更新任务。

6.5.2. Delete Feature

None

6.5.3. Resolved Issues

None

6.5.4. Known Issues

None

7. Reference

[1] NL-002760-UG-9-Hi2115 SSB Loader User Guide
[2] NL-002499-TM-1-OPEN SOURCE SOFTWARE NOTICE
[3] NL-002724-UG-4-Hi2115 EVK User Guide
[4] NL-002759-UG-6-Hi2115 On Chip Firmware Upgrade
[5] NL-002875-UG-1-Security Restriction Setting User Guide