

BC66&BC66-NA

Application Design Note

LPWA Module Series

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About the Document

History

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1 Introduction

This document mainly introduces how to design customer applications easily with Quectel BC66 and BC66-NA modules, through providing recommended software designs for some typical application scenarios.

2 Recommended Design

2.1. Power Consumption Sensitive Scenario

For power consumption sensitive application scenarios, it is recommended to enable the use of PSM and eDRX.

NOTES

1. The module enables the use of PSM and eDRX by default.
2. The configurations of PSM and eDRX are results of negotiation between the module and the network.

2.1.1. Recommended Software Design

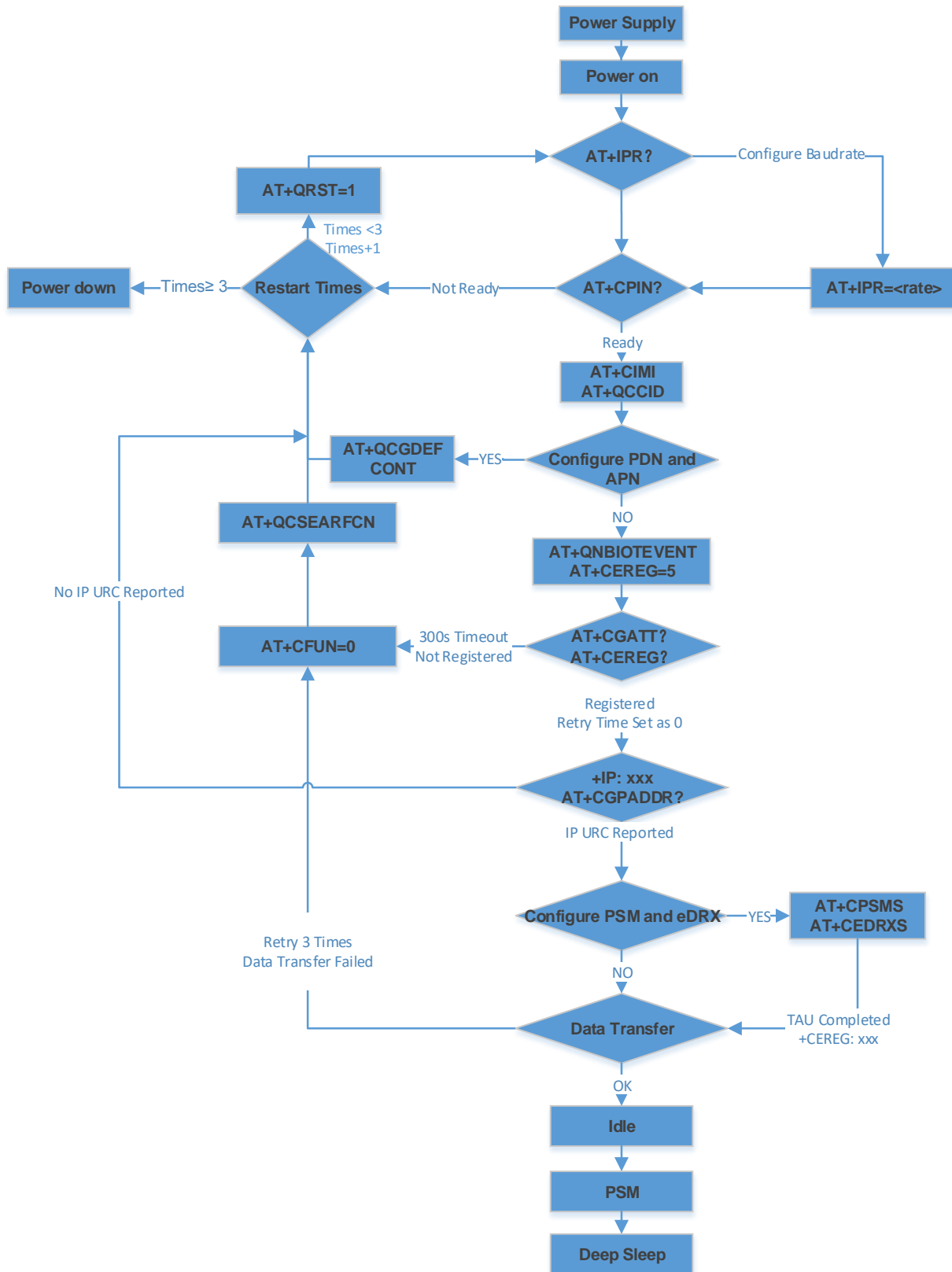


Figure 1: Recommended Software Design (Power Consumption Sensitive)

2.1.2. Description of Software Design

Table 1: Description of Software Design (Power Consumption Sensitive)

S.N.	Brief Introduction	Description
1	Power Supply	Supply power to the module.
2	Power on	Pull down PWRKEY for at least 500ms to turn on the module.
3	AT+IPR?	The module is in auto-baud rate mode by default. The MCU has to send AT to synchronize communication baud rate with the module or send AT+IPR=<rate> to set a fixed baud rate. It is recommended for the MCU to query the current baud rate setting before executing the AT+IPR=<rate> command.
4	AT+CPIN?	Used to check the current USIM state.
5	AT+CIMI AT+QCCID	Used to query the IMSI and ICCID of USIM.
6	AT+QCGDEFCONT	Used to configure the APN and PDN type for the default PDN connection (<cid>=1). The command settings take effect after module rebooting.
7	AT+QNBIOTEVENT AT+CEREG=5	Used to enable the URC reporting for PSM event and EPS network registration status.
8	AT+CGATT? AT+CEREG?	Used to query the current PS attachment state and EPS network registration status.
9	AT+CGPADDR?	Used to query the IP address which is allocated by the network.
10	+IP: xxx	The URC is reported when the PDP context is successfully associated with a specified PDN link. The MCU cannot perform any data transfer before this URC.
11	AT+CPSMS	Used to set the requested extended T3412 and T3324. Network provided value can be verified by AT+CEREG? .
12	AT+CEDRXS	Used to set the requested eDRX period. Network provided value can be verified by AT+CEDRXRDP .
13	AT+CFUN=0	Set the module to minimum functionality mode when the module cannot register to network for a long period of time (>300s) or when data transfer has failed for multiple times.
14	AT+QCSEARFCN	Used to clear the stored EARFCN list for the module.
15	AT+QRST=1	Used to reset the module.
16	Power down	Switch off the power supply for the module.

2.2. Power Consumption Non-Sensitive Scenario

For power consumption non-sensitive application scenarios, it is recommended to disable PSM and eDRX so as to achieve lower data interaction latency.

2.2.1. Recommended Software Design

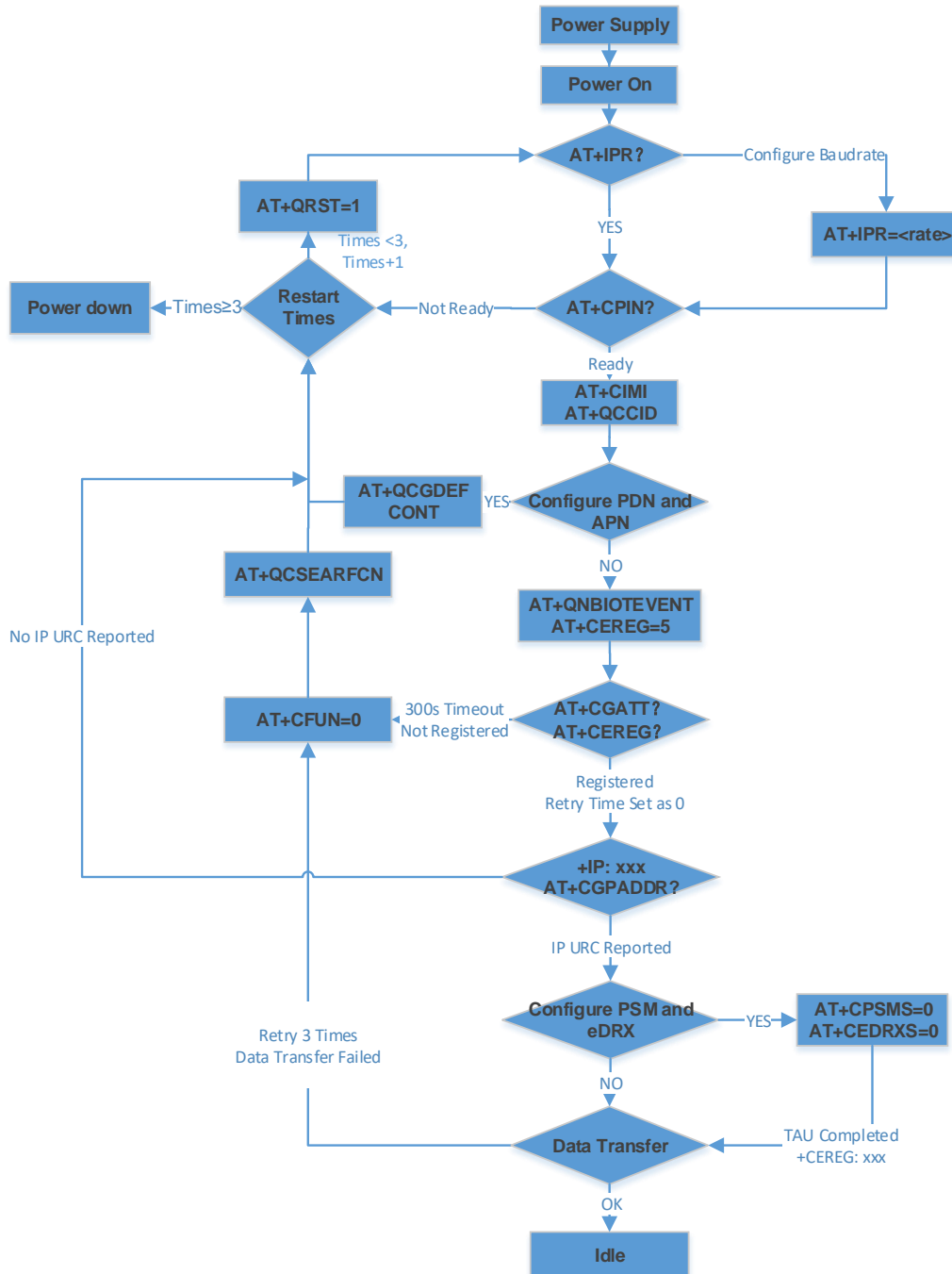


Figure 2: Recommended Software Design (Power Consumption Non-Sensitive)

2.2.2. Descriptions of Software Design

Table 2: Description of Software Design (Power Consumption Non-Sensitive)

S.N.	Brief Introduction	Description
1	Power Supply	Supply power to the module.
2	Power on	Pull down PWRKEY for at least 500ms to turn on the module.
3	AT+IPR?	The module is in auto-baud rate mode by default. The MCU has to send AT to synchronize communication baud rate with the module or send AT+IPR=<rate> to set a fixed baud rate. It is recommended for the MCU to query the current baud rate setting before executing the AT+IPR=<rate> command.
4	AT+CPIN?	Used to check the current USIM state.
5	AT+CIMI AT+QCCID	Used to query the IMSI and ICCID of USIM.
6	AT+QCGDEFCONT	Used to configure the APN and PDN type for the default PDN connection (<cid>=1). The command settings take effect after module rebooting.
7	AT+CGATT? AT+CREG?	Used to query the current PS attachment state and EPS network registration status.
8	AT+QNBIOTEVENT AT+CREG=5	Used to enable the URC reporting for PSM event and EPS network registration status.
9	AT+CGPADDR?	Used to query the IP address which is allocated by the network.
10	+IP: xxx	The URC is reported when the PDP context is successfully associated with a specified PDN link. The MCU cannot perform any data transfer before this URC.
11	AT+CPSMS=0	Used to disable the use of PSM.
12	AT+CEDRXS=0	Used to disable the use of eDRX.
13	AT+CFUN=0	Set the module to minimum functionality mode when the module cannot register to network for a long period of time (>300s) or when data transfer has failed for multiple times.
14	AT+QCSEARFCN	Used to clear the stored EARFCN list for the module.
15	AT+QRST=1	Used to reset the module.
16	POWER DOWN	Switch off the power supply for the module.

3 Appendix A References

Table 3: Related Documents

SN	Document Name	Remark
[1]	Quectel_BC66&BC66-NA_AT_Commands_Manual	AT commands manual for BC66/BC66-NA
[2]	Quectel_BC66_Network_Searching_Scheme_Introduction	Network searching scheme of BC66/BC66-NA

Table 4: Terms and Abbreviations

Abbreviations	Document Name
APN	Access Point Name
EARFCN	E-UTRAN Absolute Radio Frequency Channel Number
eDRX	Extended Discontinuous Reception
EPS	Evolved Packet System
ICCID	Integrated Circuit Card Identification
IMSI	International Mobile Subscriber Identity
MCU	Media Control Unit
PDN	Public Data Network
PDP	Packet Data Protocol
PS	Packet Service/Packet Switch
PSM	Power Saving Mode
USIM	Universal Subscriber Identity Module
URC	Unsolicited Result Code