BC66 Application Design Note

LPWA Module Series

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GENERAL NOTES

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About the Document

History

Revision	Date	Author	Description
1.0	2019-06-23	Jacobi RAO	Initial

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1 Introduction

This document is mainly described for easily application software design, including some typical scenarios introduction and corresponding recommended software design flow, which is applicable to following Quectel modules:

- BC66NB
- BC66-NA

2 Recommended Design

2.1. Power-Sensitive Scenario

For power-sensitive scenario, we recommend to enable PSM and eDRX mode.

NOTE

1. PSM and eDRX are enabled in default.
2. The configuration for PSM and eDRX should be negotiated with network provider.

2.1.1. Recommended Software Design

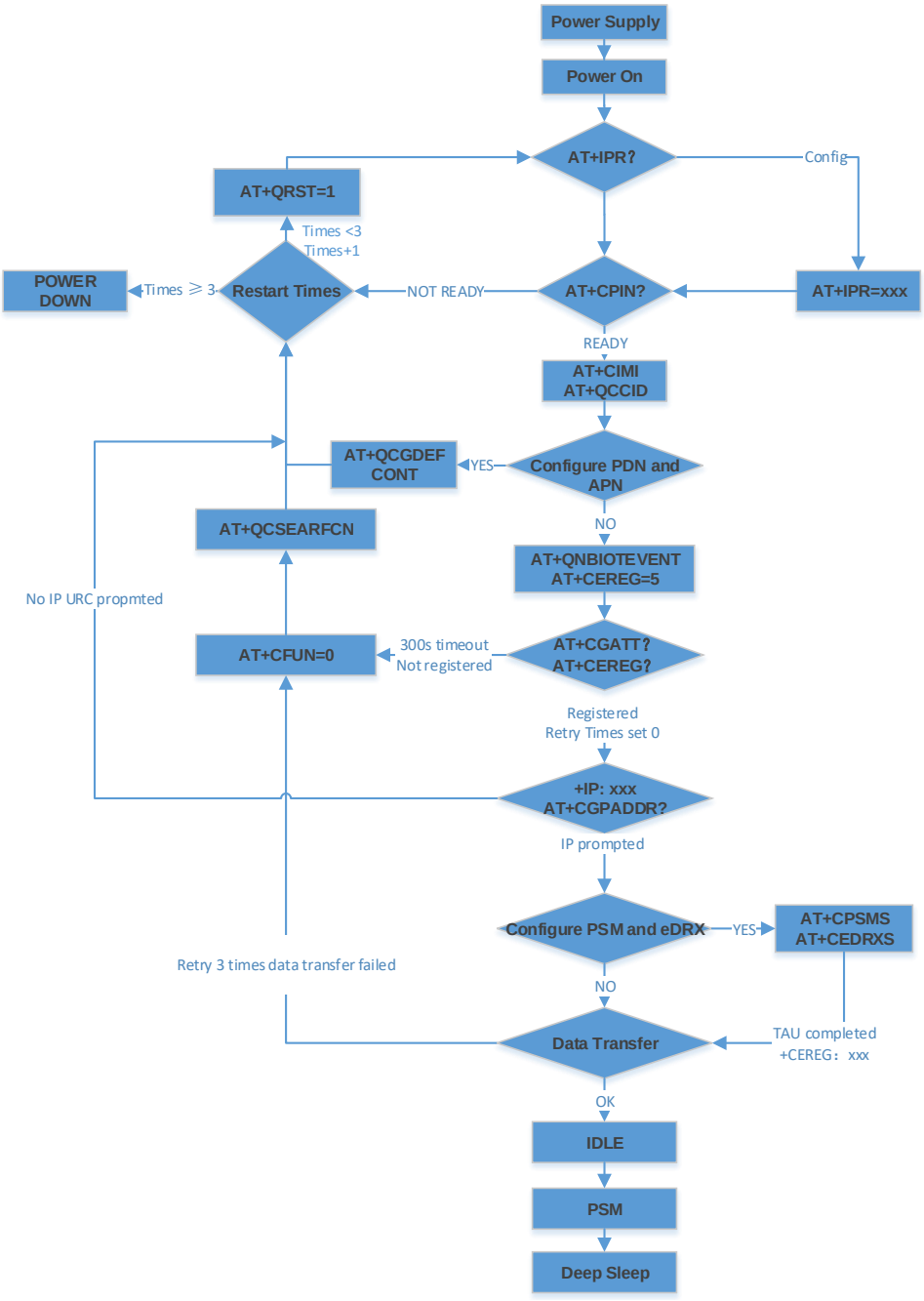

Figure 1: Procedure of Power-Sensitive Scenario

2.1.2. Descriptions of Power Sensitive Scenario

Table 1: Descriptions of Power Sensitive Scenario

Steps	Brief Introduction	Description
1	**Power Supply**	Supply the power to module.
2	**Power On**	Pull down power key for at least 500ms.
3	**AT+IPR?**	Module is in auto-baud mode in default. MCU needs to send **"AT"** to synchronize the communication baud rate with module or send **"AT+IPR=XXX"** to fixed the baudrate. In order to avoid frequently wiping the flash , please use AT command **"AT+ipr?"** to querry the baudrate setting currentty.
4	**AT+CPIN?**	Used to check the current SIM state.
5	**AT+CIMI** **AT+QCCID**	Used to query the IMSI&ICCID of SIM.
6	**AT+QCGDEFCONT**	Used to configure the APN and PDN TYPE for default PDN which is indicated by CID <1>. Need to reboot the module to take effect the configuration.
7	**AT+QNBIOTEVENT** **AT+CEREG=5**	Used to enable the URC presentation for PSM event &EPS network registration status.
8	**AT+CGATT?** **AT+CEREG?**	Used to query current PS attach states & EPS network registration status. Although we recommend the waithing time of network registration is 300s, it usually complete the procedure within 10s. So please query the status every 10s to ensure it can go to the next step on time.
9	**AT+CGPADDR?**	Used to query the IP address which is allocated by network.
10	**+IP: xxx**	This URC is prompted when PDP context is successfully associated with specified PDN link. MCU can't 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**	Used to switch off the modem when module can't register to network for a long time (> 300s).
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**	Cut off the power supply of module

2.2. Power Non-Sensitive Scenario.

For power non-sensitive scenario, we recommend to disable PSM and eDRX mode for low latency.

2.2.1. Recommended Software Design

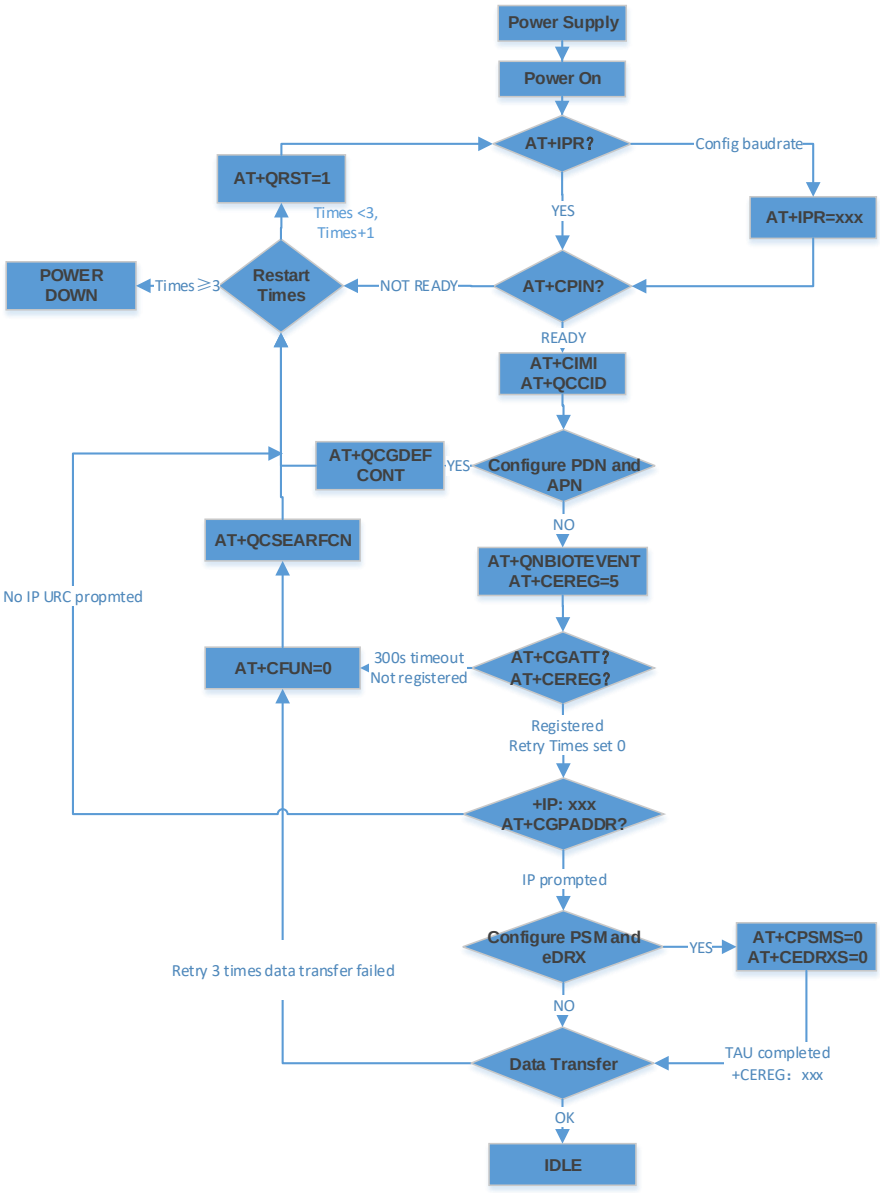

Figure 2: Procedure of power-insensitive scenario

2.2.2. Descriptions of Power Non-Sensitive Scenario

Table 2: Descriptions of Power Non-Sensitive Scenario

Steps	Brief Introduction	Description
1	**Power Supply**	Supply the power to module.

2	**Power On**	Pull down power key for at least 500ms.
3	**AT+IPR?**	Module is in auto-baud mode in default. MCU needs to send **"AT"** to synchronize the communication baud rate with module or send **"AT+IPR=XXX"** to fixed the baudrate. In order to avoid frequently wiping the flash , please use AT command **"AT+ipr?"** to querry the baudrate setting currentty.
4	**AT+CPIN?**	Used to check the current SIM state.
5	**AT+CIMI** **AT+QCCID**	Used to query the IMSI&CCID of SIM.
6	**AT+QCGDEFCONT**	Used to configure the APN and PDN TYPE for default PDN which is indicated by CID <1>. Need to reboot the module to take effect the configuration.
7	**AT+CGATT?** **AT+CEREG?**	Used to query current PS attach states & EPS network registration status. Although we recommend the waithing time of network registration is 300s, it usually complete the procedure within 10s. So please query the status every 10s to ensure it can go to the next step on time.
8	**AT+QNBIOTEVENT** **AT+CEREG=5**	Used to enable the URC presentation for PSM event &EPS network registration status.
9	**AT+CGPADDR?**	Used to query the IP address which is allocated by network.
10	**+IP: xxx**	This URC is prompted when PDP context is successfully associated with specified PDN link. MCU can't perform any data transfer before this URC.
11	**AT+CPSMS=0**	Used to disable PSM function.
12	**AT+CEDRXS=0**	Used to set the disable eDRX function.
13	**AT+CFUN=0**	Used to switch off the modem when module can't register to network for a long time.
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**	Cut off the power supply of module

3 Appendix

Table 3: References

SN	Document Name
[1]	Quectel_BC66_AT_Commands_Manual
[2]	Quectel_BC66_Network_Searching_Scheme_Introduction

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
(U)SIM	(Universal) Subscriber Identity Module
URC	Unsolicited Result Code