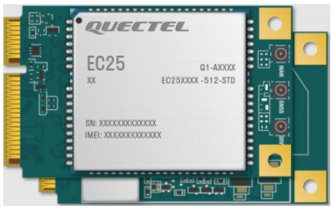

QUECTEL EC2x LTE Standard Module Software User Guide

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About the Document

Revision History

Introduction

This document describes the AT commands related to the software thermal mitigation policy on Quectel LTE Standard EC2x, EG9x, EG2x and EM05 family modules. When the temperature reaches a specific threshold, the thermal mitigation policy is implemented to cool down the module.

Applicable Modules

Table 1: Applicable Modules

Module Family	Module
EC2x	EC25 series
	EC21 s
	EC20-CE
EG9x	EG95 series
	EG91 series
EG2x	EG25-G
	EG25-GL
	EG21-G
	EG21-GL
EM05	EM05 series

AT Command Description

AT Command Introduction

Definitions

- Carriage return character.
- Line feed character.
- <…> Parameter name. Angle brackets do not appear on the command line.
- […] Optional parameter of a command or an optional part of TA information response. Square brackets do not appear on the command line. When an optional parameter is not given in a command, the new value equals its previous value or the default settings, unless otherwise specified.
- Underline Default setting of a parameter.

AT Command Syntax

All command lines must start with AT or at and end with . Information responses and result codes always start and end with a carriage return character and a line feed character: . In tables presenting commands and responses throughout this document, only the commands and responses are presented, and and are deliberately omitted.

Table 2: Types of AT Command

Command Type	Syntax	Description
Test Command	AT+=?	Test the existence of the corresponding command and return information about t he type, value, or range of its parameter .
Read Command	AT+?	Check the current parameter value of th e corresponding command.
Write Command	AT+=[,[,[…]]]	Set user-definable parameter value
Execution Command	AT+	Return a specific information parameter or perform a specific action.

Declaration of AT Command Examples

The AT command examples in this document are provided to help you learn about the use of the AT commands introduced herein. The examples, however, should not be taken as Quectel's recommendations or suggestions about how to design a program flow or what status to set the module into. Sometimes multiple examples may be provided for one AT command. However, this does not mean that there is a correlation among these examples, or that they should be executed in a given sequence.

AT+QTEMP Query Module Temperature

This command queries module temperature.

AT+QTEMP Query Module Temperature	
Test Command**AT+QTEMP=?**	Response**OK**
Execution Command**AT+QTEMP**	Response**+QTEMP: <bb_temp>,<XO_temp>,<PA_temp>** **OK**Or**ERROR**
Maximum Response Time	300 ms
Characteristics	/

Parameter

- Integer type. Baseband temperature. Unit: Degree Celsius. Integer type.
- XO temperature. Unit: Degree Celsius. Integer type.
- PA temperature. Unit: Degree Celsius.

Example

AT+QTEMP //Query module temperature.
+QTEMP: 30,28,27
OK

AT+QCFG="thermal/modem" Set Thermal Mitigation Policy

This command sets the thermal mitigation policy. The configured policy will be triggered by the highest

temperature value queried by AT+QTEMP.

AT+QCFG=”thermal/modem”	**Set Thermal Mitigation Policy**
Write Command**AT+QCFG=”thermal/modem”[,<level>,<trig>,<clr>]**	ResponseIf the optional parameters are omitted, query the current setting: **+QCFG: “thermal/modem”,1,<trig>,<clr>+QCFG: “thermal/modem”,2,<trig>,<clr>+QCFG: “thermal/modem”,3,<trig>,<clr>**
	OK
	If the optional parameters are specified, set the thermal mitigation level: **OK**Or**ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted.The configurations will be saved automatically.

Parameter

Integer type. Thermal mitigation level. Each level corresponds to a set of and .

1. Level 1 – uplink data rate is limited (See Chapter 3.1.1)
2. Level 2 – downlink data rate is limited based on level 1(See Chapter 3.1.2)
3. Level 3 – module enters Limited-Service Mode. In Limited-Service Mode, data calls are not allowed. UE only allows emergency voice calls. (See Chapter 3.3)

Integer type. Temperature threshold of triggering. When the module temperature reaches the threshold, thermal mitigation policy of the corresponding level () will be triggered. Unit: 0.001 ºC.

If =1, is the temperature threshold for reducing uplink data rate. Default value: 100000.

If =2, is the temperature threshold for reducing downlink data rate. Default value: 105000.

If =3, is the temperature threshold for entering Limited-Service Mode. Default value: 115000

Integer type. Terminating threshold. When the temperature is lower than the threshold, thermal mitigation policy of the corresponding level () will be cancelled. Unit: 0.001 ºC.

If =1, is the temperature threshold for cancelling uplink data rate reduction. Default value: 95000.

If =2, is the temperature threshold for cancelling downlink data rate reduction. Default value: 100000.

If =3, is the temperature threshold for exiting Limited-Service Mode. Default value: 105000.

Example

AT+QCFG=”thermal/modem”,1,100000,95000

Cool down the device by limiting uplink data rate at Level 1. If the temperature reaches 100 ºC, the device starts limiting the uplink data rate; if the temperature drops below 95 ºC, it stops limiting uplink data rate and exits Level

1.

OK

AT+QCFG=”thermal/modem” //Query thermal mitigation level.

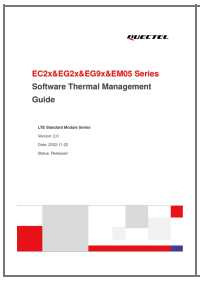
- **+QCFG:** “thermal/modem”,1,100000,95000
- **+QCFG:** “thermal/modem”,2,105000,100000
- **+QCFG:** “thermal/modem”,3,115000,105000

AT+QCFG=”thermal/txpwrlmt” Control Transmit Power

This command controls the thermal mitigation policy.

AT+QCFG=”thermal/modem”　Set Thermal Mitigation Policy	
Write Command**AT+QCFG=”thermal/modem”[,<level>,<trig>,<clr>]**	ResponseIf the optional parameters are omitted, query the current setting: **+QCFG: “thermal/modem”,1,<trig>,<clr>+QCFG: “thermal/modem”,2,<trig>,<clr>+QCFG: “thermal/modem”,3,<trig>,<clr>**
	OK
	If the optional parameters are specified, set the thermal mitigation level: **OK**Or**ERROR**
Maximum Response Time	300 ms
Characteristics	The command takes effect after the module is rebooted.The configurations will be saved automatically.

Documents / Resources

	QUECTEL EC2x LTE Standard Module Software [pdf] User Guide EC2x, EG2x, EG9x, EM05 Series, EC2x LTE Standard Module Software, EC2x, LTE Standard Module Software, Standard Module Software, Module Software, Software

References

- User Manual