A76XX Series_ CNETCl_Application Note

LTE Module

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About Document

Version History

Version	Date	Owner	What is new
V1.00	2020.09.02	Liyue.liu	New version
V1.01	2023.01.05	Sijin.zhou	Add CNETCISRVINFO and <index>,and delete NOTE
	2023.01.11	Zeming.li	Add parameters pci and earfcn for CNETCI

Scope

Based on module AT command manual, this document will introduce CNETCI application process. Developers could understand and develop application quickly and efficiently based on this document. This document applies to ASR1603 Series ,ASR1601 Series , ASR1803 Series,ASR1803 Series .

Contents

1 Introduction

1.1 Purpose of the document

This document describes how to use the CNETCI service to update the firmware on CAT1 modules of A76XX Series.

1.2 Related documents

[1] A76XX Series_AT Command Manual

1.3 Conventions and abbreviations

In this document, the GSM engines are referred to as following term:
ME (Mobile Equipment);
MS (Mobile Station);
TA (Terminal Adapter);
DCE (Data Communication Equipment) or facsimile DCE (FAX modem, FAX board);

In application, controlling device controls the GSM engine by sending AT Command via its serial interface.
The controlling device at the other end of the serial line is referred to as following term:
TE (Terminal Equipment);
DTE (Data Terminal Equipment) or plainly "the application" which is running on an embedded system;

Other Conventions:
PDP (Packet Data Protocol);
FTP (File Transfer Protocol);
SSL (Secure Sockets Layer);
TLS (Transport Layer Security);
CNETCI (Firmware Over The Air)

1.4 The process of Using CNETCI AT Commands

Step 1: Confirm that the network status is OK

Step 2: Configure CNETCI mode.

Step 3: Query information using AT+CNETCI?

2 AT Command for CNETCI

2.1 Overview of AT Command for CNETCI

Command	Description
AT+CNETCI	Query the same frequency and different frequency cell information,

2.1.1 AT+CNETCI   Query the same frequency and different frequency cell information

This command can query the same frequency different frequency neighborhood information.

Read command return the same frequency different frequency neighborhood information, CNETCISR VINFO returns the information of serving cell, CNETCIINTRAINFO returns the same frequency cell i nformation , CNETCINONINFO returns heterofrequency cell information , GSMCIINFO returns GSM neighborhood cell information .Write instruction input CNETCI mode.

AT+CNETCI Query the same frequency and different frequency cell information	
Read Command **AT+CNETCI?**	Response 1) **<+CNETCISRVINFO:** **MCC-MNC :\<plmn>,TAC :\<tac>,cellid :\<cellid>,rsrp :\<rsrp>,rsrq :** **\<rsrq>, pci :\< phyCellId>, earfcn :\< euArfcn>>** **[+CNETCIINTRAINFO :** **\<index>,MCC-MNC :\<plmn>,TAC :\<tac>,cellid :\<cellid>,rsrp :\<rsr** **p>,rsrq :\<rsrq>, pci :\< phyCellId>, earfcn :\< euArfcn>]** **[+CNETCINONINFO :** **\<index>,MCC-MNC :\<plmn>,TAC :\<tac>,cellid :\<cellid>,rsrp :\<rsr** **p>,rsrq :\<rsrq>, pci :\< phyCellId>, earfcn :\< euArfcn>]** **[+GSMCIINFO :** **\<index>,MCC-MNC :\<plmn>,LAC :\<lac>,cellid :\<cellid>,rxSigLev** **el :\<rxSigLevel>, earfcn :\< euArfcn>]** **+CNETCI: \<n>** **OK**

	2) **ERROR** 3) **+CME ERROR: \<err>**
Write Command **AT+CNETCI=\<n>**	Response 1) **OK** 2) **ERROR** 3) **+CME ERROR: \<err>**
Parameter Saving Mode	NO_SAVE
Max Response Time	9S
Reference	3GPP TS 36.133

Defined Values

\<n>	0 – Oneshot gets information, which may be incomplete or unreachable, and responds quickly. 1 – must decode system info to get Ncell, but in the end, may still not get NCELL, The response is slow.
\<index>	integer type,the order number of cell list
\<plmn>	PLMN code
\<tac>	Tracing Area Code
\<cellid>	Cell ID
\<rsrp>	integer type, reference signal received power (see 3GPP TS 36.133 [96] subclause 9.1.4). 0 rsrp < -140 dBm 1 -140 dBm < rsrp < -139 dBm 2 -139 dBm < rsrp < -138 dBm 95 -46 dBm < rsrp < -45 dBm 96 -45 dBm < rsrp < -44 dBm 97 -44 dBm < rsrp 255 not known or not detectable
\<rsrq>	integer type, reference signal received quality (see 3GPP TS 36.133 [96] subclause 9.1.7). 0 rsrq < -19.5 dB 1 -19.5 dB < rsrq < -19 dB 2 -19 dB < rsrq < -18.5 dB 32 -4 dB < rsrq < -3.5 dB 33 -3.5 dB < rsrq < -3 dB 34 -3 dB < rsrq

	255 not known or not detectable
<lac>	Location area code
<rxSigLevel>	Receive signal level
phyCellId	Physical Cell ID
euArfcn	Radio frequency channel number

▰▰ 3 Example

Before all CNETCI related operations, we should ensure the following:

Ensure network is available:

AT+CGREG?
+CGREG: 0,1

OK
AT+CPSI?
+CPSI: LTE,Online,460-00,0x333C,39589680,308,EUTRAN-BAND3,1350,5,0,0,54,0,22

OK
at+CNETCI=1
OK
at+CNETCI?
AT+CNETCI?
+CNETCISRVINFO: MCC-MNC: 460-00,TAC: 13116,cellid: 60660547,rsrp: 35,rsrq: 22, pci: 403,earfcn: 40936

+CNETCINONINFO: 0,MCC-MNC: 460-00,TAC: 13116,cellid: 60789825,rsrp: 25,rsrq: 22,pci: 180,earfcn: 38950

+CNETCINONINFO: 1,MCC-MNC: 460-00,TAC: 13116,cellid: 39589680,rsrp: 30,rsrq: 21,pci: 308,earfcn: 1350

+CNETCI: 1

OK