

Getting started with the current consumption measurement

1. Introduction

This document describes the different means to measure the current consumption of the SAGEM Modules in Off mode and in Sleep mode

2. Reference documents

- Modules specification document
- AT Command Set document

3. Simplified procedure to go in the sleep mode

The sleep mode is a power saving mode and is set by software (AT command) and in certain cases, by additional hardware signals (MOXXX and XSXXX).

To go on sleep mode the module need de be supplied and switch on (Pulse PWON or POK_IN to ground)

The sleep mode is done with the “AT+KSLEEP” command (refer to the AT Command Set document).

AT+KSLEEP=<mngt>

Response
OK

Parameters
<mngt>:

- 0: The module doesn't go in sleep mode as long as DTR is set to active level
- 1: The module decides by itself (internal timing) when it goes in sleep mode
- 2: The DTE handles by hardware signals when the DCE is allowed to go in sleep mode (**see §3.1**)

Note: Be very careful when selecting value 2 for <mngt>, as if the module is not properly wired it may reboot.

⇒ **So, the most simple and common case is to let the module manage by itself the sleep mode, by sending the “AT+KSLEEP=1” command to the module.**

The software routine let the module go to sleep after a certain time, only if no priority task is running (for example: scanning the network). This 'go_to_sleep' timer, from ACTIVE MODE to SLEEP MODE, is around 30 seconds and is not adjustable.

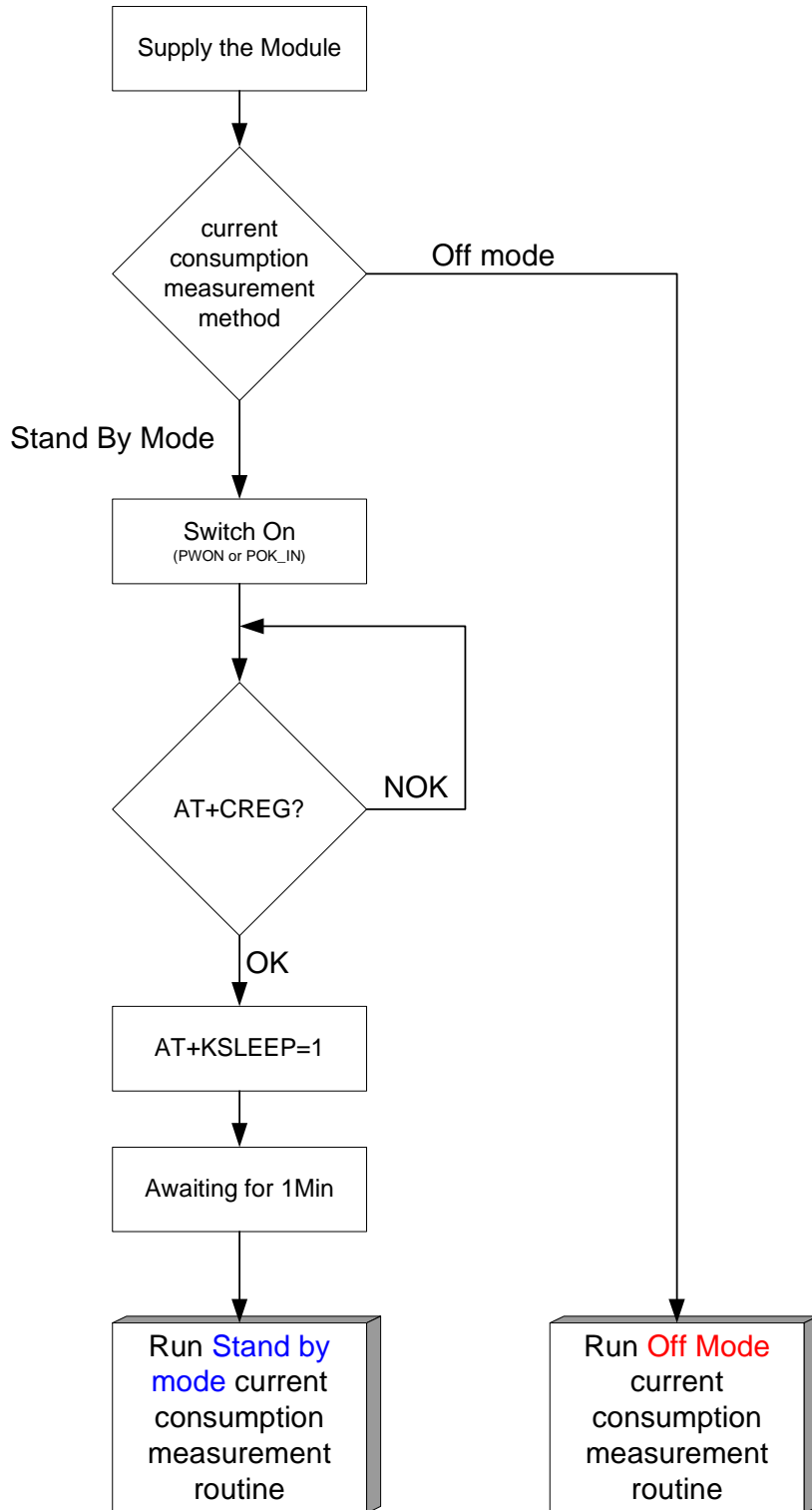
In sleep mode, the external serial link is switched off, and the module is attached to the GSM network.

Any interrupt will wake the module up as well as the external serial link.

So the module can be waken up by a call, for example, by software (AT command in that case the first command is lost) and/or hardware control.

4. Current consumption measurement synopsis

4.1. Choosing mode synopsis : Off mode or Stand by Mode



4.2. Current consumption measurement in Off Mode

In Off mode the current consumption is stable so the value could be measured in D.C. current with ammeter or current probe

The value measured should be around some μA

4.3. Current consumption measurement in Stand by Mode

In Stand by mode the current consumption is unstable because the module is attached to the GSM network.

So the current consumption value can't be measured in D.C. current with a simple ammeter. The required materials could be a programmable power supply or a current probe.

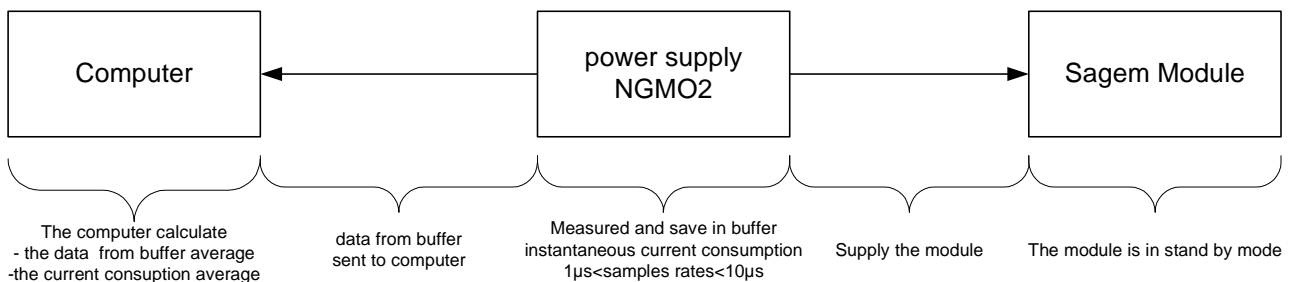
The method below is the Sagem procedure to measure the current consumption in stand by mode

4.3.1. Sagem Procedure

Firstly the power supply needs to be connected to a computer to exchange measured data and to make average measurement

Then the samples rate need to be set up on the power supply between $1\mu\text{s}$ and $10\mu\text{s}$

The buffer size must be able to save at least 5000 measured values



An average value is calculated from data buffer and saved; this operation is repeated during 10 minutes

The current consumption is calculated by making the average of all the saved values.

Test time is set to 10 minutes to have a precise estimated current consumption. The precision depend of the materials measurement

The value calculated should be around some mA

4.3.2. Current consumption measurement routine synopsis

