

I Overview of operating modes

I Mode :

I Normal operation

Function	Description
GSM/GPRS SLEEP	Module will automatically go into sleep mode if the conditions of sleep mode are enabling and there is no on air and no hardware interrupt (such as GPIO interrupt or data on serial port). In this case, the current consumption of module will reduce to the minimal level . In sleep mode, the module can still receive paging message and SMS .
GSM IDLE	Software is active. Module is registered to the GSM network, and the module is ready to communicate.
GSM TALK	Connection between two subscribers is in progress. In this case, the power consumption depends on network settings such as DTX off/on, FR/EFR/HR, hopping sequences, antenna
GPRS STANDBY	Module is ready for GPRS data transfer, but no data is currently sent or received. In this case, power consumption depends on network settings and GPRS configuration .
GPRS DATA	There is GPRS data transfer (PPP or TCP or UDP) in progress. In this case, power consumption is related with network settings (e.g. power control level); uplink/downlink data rates and GPRS configuration (e.g. used multi-slot settings)

I Power down

Normal power down by sending AT command "AT+CPOWD=1" or using the PWRKEY. **The power management unit shuts down the power supply for the baseband part of the module, and only the power supply for the RTC is remained. Software is not active. The serial port is not accessible. Power supply (connected to VBAT) remains applied.

I Minimum functionality mode

AT command "AT+CFUN" can be used to set the module to a **minimum functionality mode without removing the power supply**. *In this mode, the RF part of the module will not work or the SIM card will not be accessible, or both RF part and SIM card will be closed, and the serial port is still accessible.*

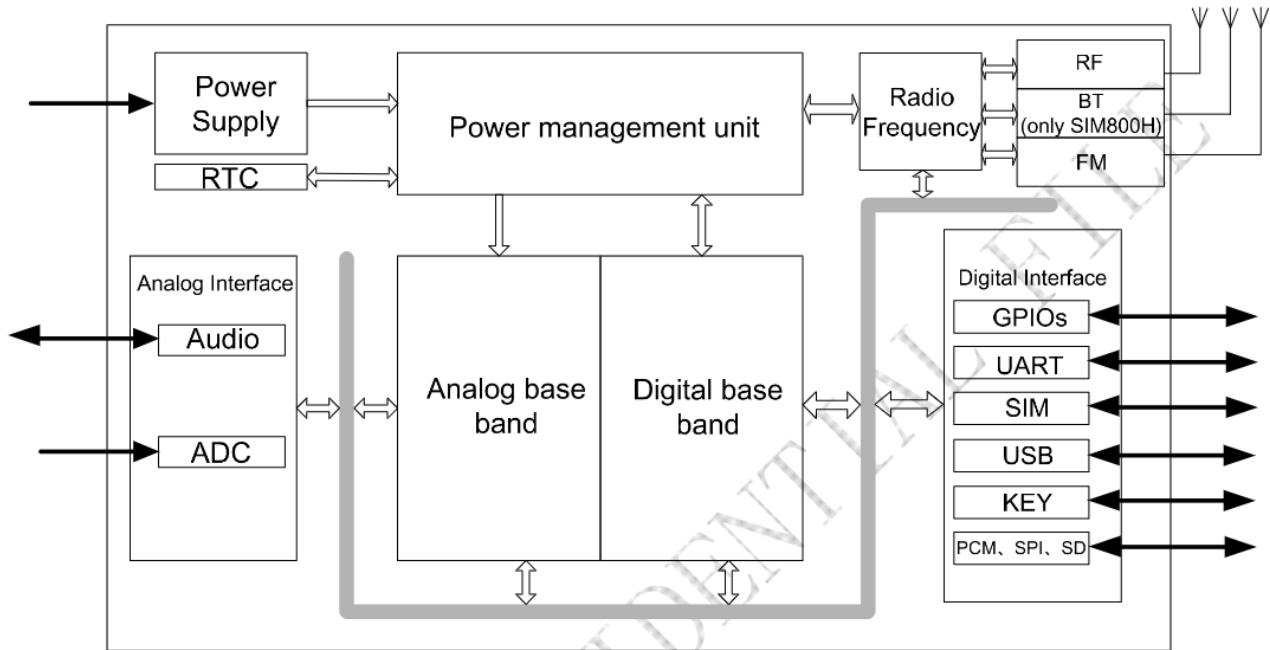
**The power consumption in this mode is lower than normal mode.

I Functional Diagram

The following figure shows a functional diagram of SIM800H&SIM800L:

- GSM baseband
- GSM RF
- Antenna interface

- Other interface



Power saving mode

SIM800H&SIM800L has two power saving modes: Minimum functionality mode and sleep mode.

- AT command "AT+CSCLK=1" can be used to set SIM800H&SIM800L into sleep mode.
- AT command "AT+CFUN=>fun>" can be used to set SIM800H&SIM800L into minimum functionality.

When SIM800H&SIM800L is in sleep mode and minimum functionality mode, the current of module is lowest.

Minimum Functionality Mode

There are **three functionality modes**, which could be set by AT command "AT+CFUN=>fun>". The command provides the choice of the functionality levels >fun>=0,1,4.

- AT+CFUN=0: Minimum functionality.
- AT+CFUN=1: Full functionality (default).
- AT+CFUN=4: Flight mode (disable RF function).

>fun>	Current consumption(mA) (sleep mode)
0	0.83
1	1.04
4	0.92

Minimum functionality mode minimizes the current consumption to the lowest level. If SIM800H&SIM800L is set to minimum functionality by "AT+CFUN=0", **the RF function and SIM card function will be disabled**. In this case, **the serial port is still accessible, but all AT commands correlative to RF function and SIM card function will not be accessible**.

Sleep Mode 1 (AT+CSCLK=1)

Customer can control SIM800H&SIM800L module to enter or exit the sleep mode (AT+CSCLK=1) by DTR signal. When DTR is in high level and without interrupt (on air and hardware such as GPIO interrupt or data in serial port), SIM800H&SIM800L will enter sleep mode automatically. In this mode, SIM800H&SIM800L can still receive paging or SMS from network but the serial port is not accessible.

(There are a part about the "Wake up" from this mode in the file 'SIM800L-SIMCom.pdf' at page 27, part 4.3.3)

■ Sleep Mode 2 (AT+CSCLK=2)

In this mode, SIM800H&SIM800L will continuously monitor the serial port data signal. When there is no data transfer over 5 seconds on the RXD signal and there is no on air and hardware interrupts (such as GPIO interrupt), SIM800H&SIM800L will enter sleep mode 2 automatically. In this mode, SIM800H/L can still receive paging or SMS from network.

(There are a part about the "Wake up" from this mode in the file 'SIM800L-SIMCom.pdf' at page 27, part 4.3.5)

■ Current Consumption (VBAT=3.8V)

Symbol	Parameter	Conditions	Min	Typ	Max	Unit
VBAT	Voltage		3.4	4.0	4.4	V
	Power drop	PCL=5			350	mV
	Voltage ripple	PCL=5			50	mV
		@ f<200kHz @ f>200kHz			2.0	mV
I _{VBAT}	Average current	Power down mode		150	200	uA
		Sleep mode (AT+CFUN=1):				
		(BS-PA-MFRMS=9)		1.04		mA
		(BS-PA-MFRMS=5)		1.14		mA
		(BS-PA-MFRMS=2)		1.57		mA
		Idle mode (AT+CFUN=1):				
		GSM850		17.38		mA
		EGSM900		17.38		mA
		DCS1800		17.38		mA
		PCS1900		17.38		mA
		Voice call (PCL=5):				
		GSM850		221.11		mA
		EGSM900		238.44		mA
		DCS1800		157.48		mA
		PCS1900		159.22		mA
		Data mode GPRS (1Rx,4Tx):				
		GSM850		491.79		mA
		EGSM900		529.84		mA
		DCS1800		333.16		mA
		PCS1900		336.28		mA
		Data mode GPRS (3Rx,2Tx):				
		GSM850		359.75		mA
		EGSM900		385.73		mA
		DCS1800		250.54		mA
		PCS1900		251.30		mA
		Data mode GPRS (4Rx,1Tx):				
		GSM850		233.87		mA
		EGSM900		249.85		mA
		DCS1800		174.13		mA
		PCS1900		174.94		mA
I _{MAX}	Peak current	During Tx burst			2.0	A

Note: In above table the current consumption value is the typical one of the module tested in laboratory. In the mass production stage, there may be differences among each individual.