



# SIMCOM WCDMA Wireless Module

## **SIM5xxx\_Waking\_up\_Application\_Note**



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## Version history

Date	Version	Description of change	Author
2010-04-06	01.00	Origin	3G team
2010-07-09	01.02	Add Change DTR wake up	Libing
2010-07-19	01.03	Modify the depiction of DTR's awakening function	Aaron
2011-08-16	01.04	Add SIM5320 description.	Libing

## 1 Introduction

SIM5XXX can enter to sleeping mode for power saving. When SIM5XXX receiving SMS or calling, it will announce the host. SIM5XXX provides a waking up function to meet the requirements above. This document describes that how the host wake up SIM5XXX and how SIM5XXX wake up the host.

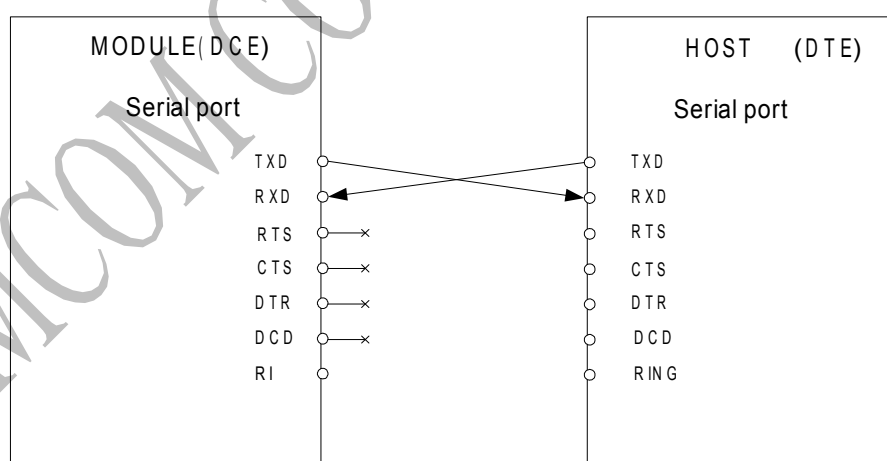
## 2 Scope of the document

This document is intended for the following versions of the SIMCOM modules

- SIM5215
- SIM5216
- SIM5218
- SIM5320

## 3 Null modem mode of UART

SIM5XXX provides an AT command to support Null modem. Null modem mode uses three lines (RXD, TXD GND) to setup communication between devices. The line connection is shown as below.

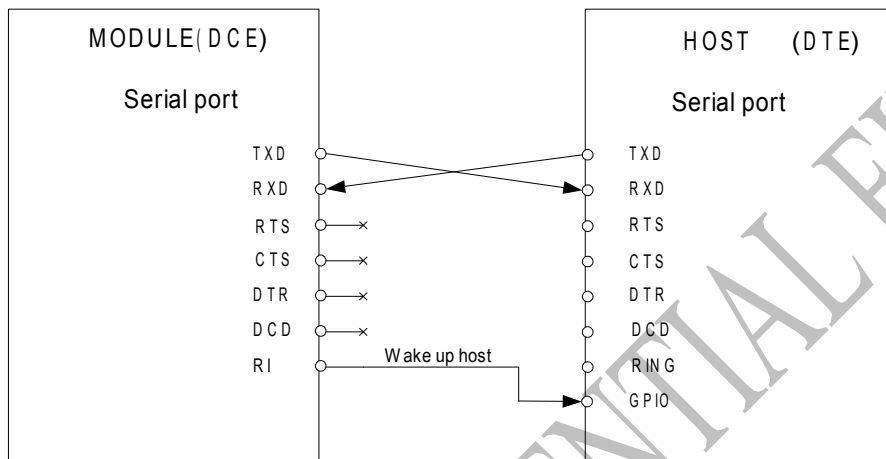


**Figure 1: Null modem mode of serial ports**

## 3 SIM5XXX wake up host (RI pin)

RI pin can be used to announce or wake up host. UART of SIM5XXX has 2 modes:

If serial port is used in Null Modem, the pin “RI” can be used as an interrupt pin. Normally it will stay high but in certain condition such as SMS receiving, incoming voice (CSD, video) call or URC reported, the pin “RI” will be set low to inform the master, and it will stay low until the master clear this interrupt with AT command (AT+CRIRS). If using five lines to setup communication between devices, the pin “RI” is different. First it stays high, when a voice (CSD) call coming, the pin “RI” is set to low for about 5900ms, then it is set high again about 100ms. The situation will repeat until that the call is answered or hung up. After the call is answered or hung up, the pin “RI” is set high.



**Figure 2: SIM5XXX wake up host (RI pin)**

#### 4 Host wake up SIM5XXX (DTR pin)

DTR pin can be used for host to wake up SIM5XXX. If serial port is used in Null Modem mode, the pin “DTR” can be used as an interrupt pin to wake up SIM5XXX. The host can connect a GPIO to DTR of SIM5XXX.

Normally DTR will stay high but in certain condition. When host wants to wake up SIM5XXX, it can pull down DTR for about 12ms (since SIM5XXX has a debounce time of 10ms for mistaken interrupt checking). Then DTR will trigger an interrupt which will finally cause SIM5XXX to be waken up from sleep mode.

**Note:** One can enable/disable such function by AT+CDTRISRS, also One can configure the DTR's trigger condition by AT+CDTRISRM (only level trigger condition has debounce time). Currently the function is enabled by default and the trigger condition is low level.

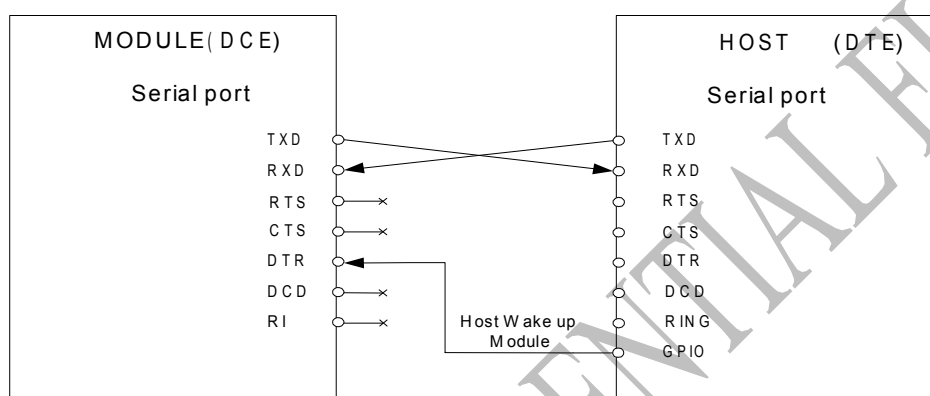
**WARNING!!!:** when DTR has been pulled down/up long enough to trigger the interrupt one must recover DTR to original status or the interrupt will be triggered all the time and SIM5XXX may crash.

Example:

If one wants to use DTR interrupt (level, low) to wake up SIM5XXX, then the following steps can be referred.

1. AT+CDTRISRMD=0, 0 //low level triggered interrupt
2. AT+CDTRISRS=1 //enable such function
- when one needs to wake up SIM5XXX
3. pull DTR down for about 12ms.
- SIM5XXX gets DTR interrupt
4. recover DTR to high state.
- SIM5XXX has been awakened

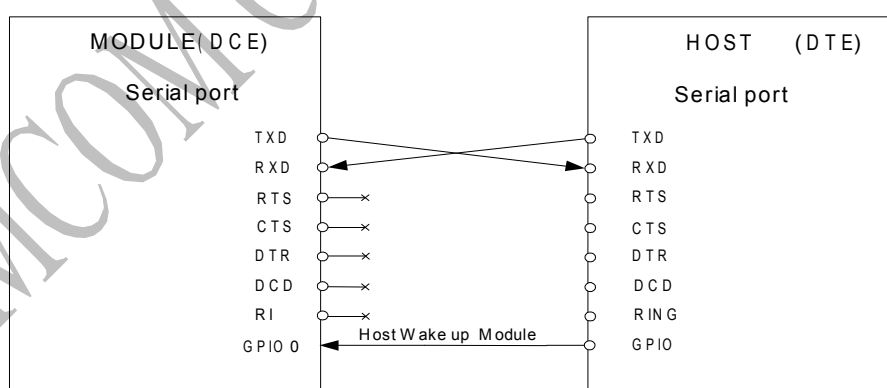
**Note: This operation is usable for SIM5215/SIM5216/SIM5218.**



**Figure 3: Host wake up SIM5XXX (DTR pin)**

## 5 Host wake up SIM5XXX (GPIO0 pin)

Except DTR, Host can wake up SIM5XXX by GPIO0. In the mode, GPIO0 should be configured as an interrupt input, not a PCM pin.



**Figure 4: Host wake up SIM5XXX (GPIO0 pin)**



## **6 Host wake up SIM5XXX (USB/UART)**

If there are data receiving of SIM5XXX on USB or UART, the SIM5XXX can wake up also.

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