SIMCOM WCDMA Wireless Module
SIM5360_Sleep_Mode_Application_Note

Revision Note

FAQ

Application Note

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Version history

Date	Version	Description of change	Author
2014-02-17	0.1	New	huangzhichong

1 Introduction

SIM5360 can enter into sleep mode automatically to conserve power when some condition satisfied. From working mode to sleeping mode, the module takes about 15 to 20 seconds. During sleeping mode, SIM5360 can still receive paging, SMS and voice call from network.

This document describes what conditions are required to make the module enter into sleep mode and how to wakeup the module or how to wakeup the host by module.

2 Scope of the document

This document intends to describe the following SIM5360 module.

3 Sleep condition

Several hardware and software conditions must be satisfied together in order to let SIM5360 enter into sleep mode:

1. UART condition
2. USB condition
3. Software condition

3.1 UART condition

Even one does not use UART interface, one must take care of this condition yet, one can use DTR pin as UART sleep indicator.

DTR as sleep indicator

Host device can use DTR as an indicator to let SIM5360 enter into sleep mode or wakeup from sleep mode.

UART will ready to enter into sleep mode if DTR pin is pulled up.

UART will ready to exit from sleep mode if DTR pin is pulled down.

Since this is not the default function, one can use the command: AT+CGFUNC=18, 1 to enable this function.

NOTE:

1. If DTR is pulled up for more than 100ms but less than 200ms, SIMCOM module will regard this event as a DATA/COMMAND switch condition (like +++). For more detail about DTR please refer to the document "SIM5360_UART_Application_note.doc"

3.2 USB condition

If one uses USB interface one must take care of this condition, otherwise just let this interface unconnected.

If host CPU supports USB suspend mode, there has noting to do, since the USB controller will send suspend command to module if the BUS is idle for some time.

If host CPU doesn't support USB suspend mode, host needs to cut off USB_VBUS line in order to let module enter into sleep mode. One can use a host GPIO to control an analog switch on/off.

3.3 Software condition

SIM5360 must in idle mode (no data transmission, no audio playing, no other at command running and so on) in order to let SIM5360 enter into sleep mode.

4 wakeup condition

4.1 wakeup SIM5360

SIM5360 can exit from sleep mode automatically when the following events are happened:

    1. SMS received

    2. Incoming call happened

SIM5360 can exit from sleep mode manually when the following events are happened:

    1. UART event

    DTR keeps low if DTR is used as sleep indicator.

    In null modem DTR has another function named "WAKEUP_ME "which specially used to wakeup SIM5360 even if DTR is not used as sleep indicator. This pin acts as an interrupt source when in this mode; one can configure the trigger condition.

    Example for WAKEUP_ME mode:

        AT+CDTRISRMD=0, 1   //set high level trigger condition

        AT+CGFUNC=2, 1   //enable the WAKEUP_ME mode

    2. USB event

    Host sends command to module when in suspend mode or Host connects the USB interface when host cuts off the USB_VBUS line.

4.2 wakeup host

In UART SIM5360 uses RI pin to wake up the host only when incoming call happened, SMS received, and URC reported.

RI pin has three patterns to wakeup the host

RI pin will stay high normally, when URC reported this pin will set to low about 60ms to inform host and then reset to high automatically. When SMS received this pin will set to low about 120ms to inform host and then reset to high automatically. When incoming call happened this pin will set to low to inform host, and it will stay low until the host reset this pin with AT command (AT+CRIRS).
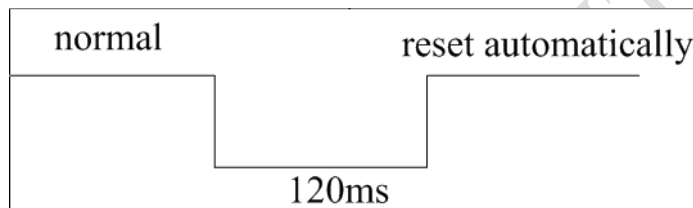*NOTE:*

1 *If user set the AT + CFGRI =0(Default setting), the pin "RI" will be set low by receiving SMS , incoming voice (CSD, video) call and any URC report.*
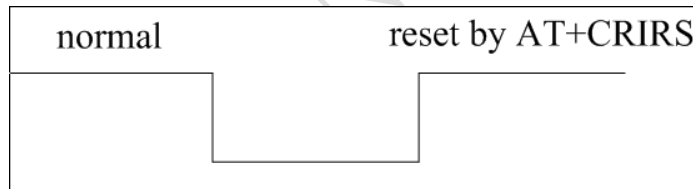
2 *If user set the AT + CFGRI =1, the pin "RI" will be set low by receiving SMS and incoming voice (CSD, video) call only.*
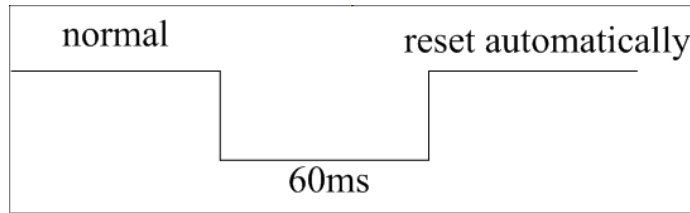
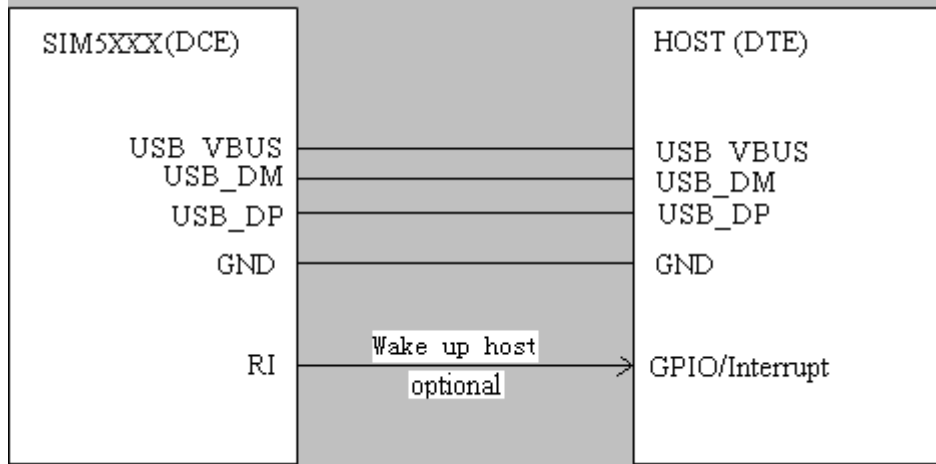**Figure 7: UART RI behavior when URC reported (Null Modem)**

Figure 8: UART RI behavior when SMS received (Null Modem)

Figure 9: UART RI behavior when incoming call happened (Null Modem)
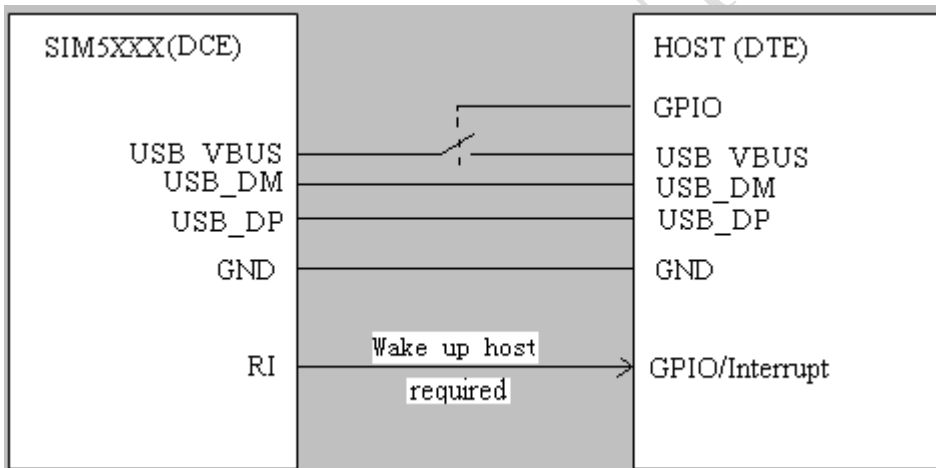
5 Design guide

Figure 10 below is the reference circuit of the USB suspend mode interface.

Figure 10: USB suspend mode interface connection

NOTE: We can provide technical support about USB suspend on Windows mobile, WIN-CE and Linux for customer.

Figure 11 below is the reference circuit of no USB suspend mode interface.

Figure 11: No USB suspend mode interface connection

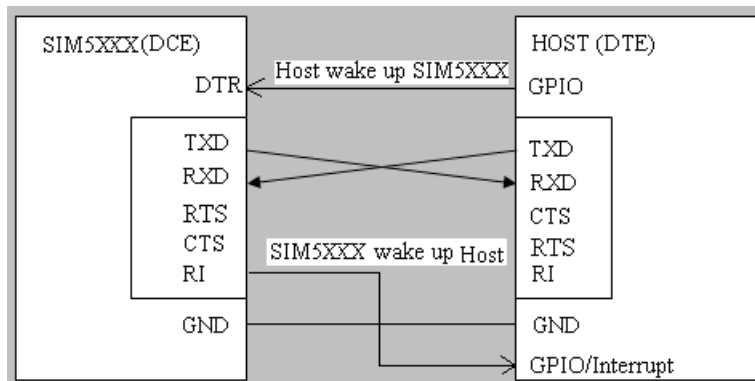One can use SIM5360 RI pin to wake up host on module side and use DTR to wake up SIM5360 on host side. Figure 12 below is the reference circuit.

Figure 12: Wake up each other

Contact us:
Shanghai SIMCom Wireless Solutions Ltd.
Add: Building A，SIM Technology Building，No.633，Jinzhong Road，Changning District, Shanghai,P. R. China 200335
Tel: +86 21 3235 3300
Fax: +86 21 3235 3301
URL: www.sim.com/wm