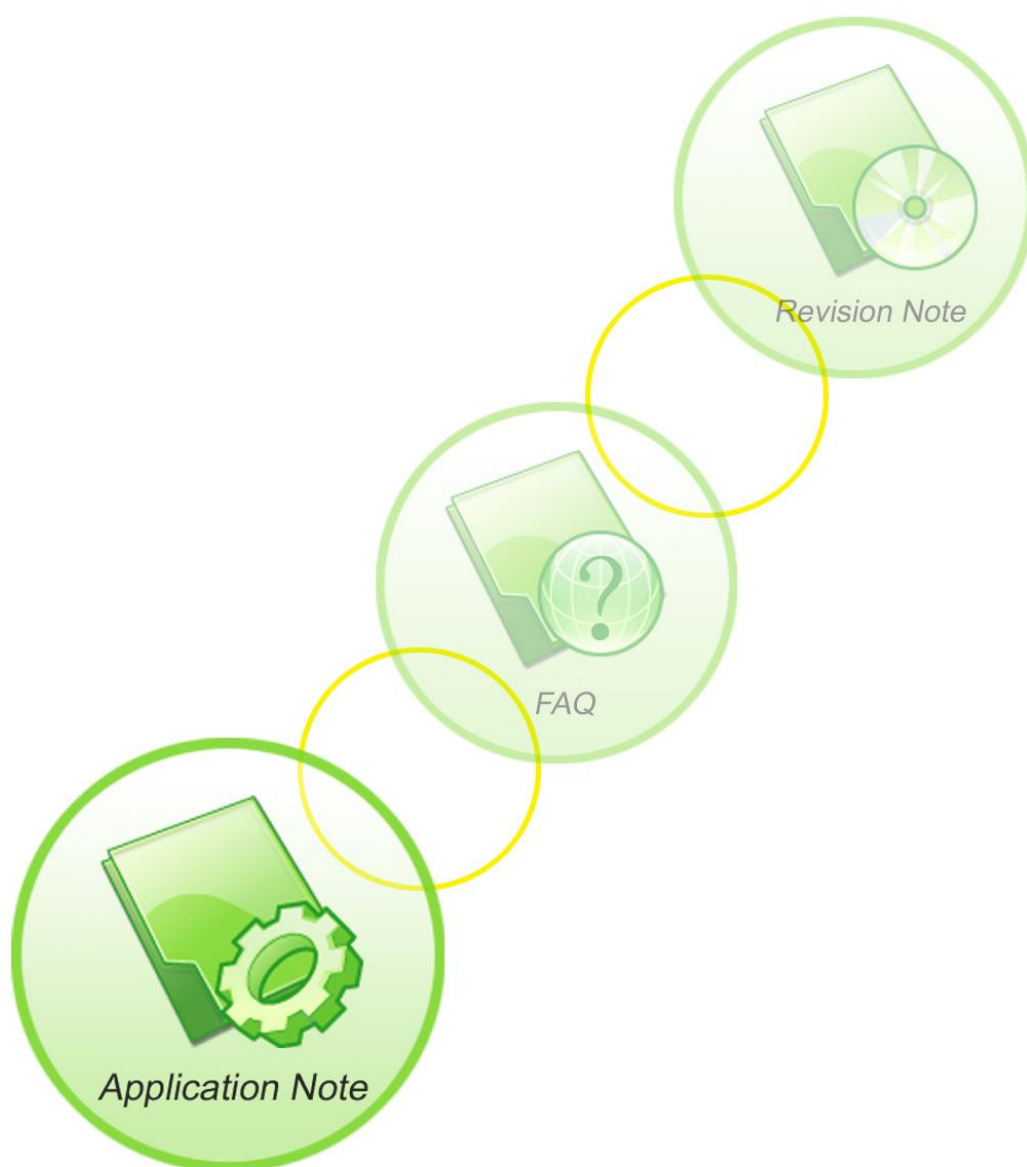




SIM800H

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B. 术语和缩写.....	错误!未定义书签。

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Scope

1. Bluetooth Function

1.1. Bluetooth Introduction

Bluetooth is a wireless technology standard for exchanging data over short distances (using short-wavelength radio transmissions in the ISM band from 2400–2480 MHz) from fixed and mobile devices, creating personal area networks (PANs) with high levels of security.

Bluetooth was standardized as IEEE 802.15.1

1.2. Bluetooth Profile

To use Bluetooth wireless technology, a device has to be able to interpret certain Bluetooth profiles, which are definitions of possible applications and specify general behaviors that Bluetooth enabled devices use to communicate with other Bluetooth devices. These profiles include settings to parametrize and to control the communication from start. Adherence to profiles saves the time for transmitting the parameters anew before the bi-directional link becomes effective. There are a wide range of Bluetooth profiles that describe many different types of applications or use cases for devices

Besides of all profiles, there have four basic ones, they are GAP/SDAP/SPP/GOEP Profile.

1.3. Bluetooth Device address

The Bluetooth device address stores the network address of a *Bluetooth*-enabled device. It is used to identify a particular device during operations such as connecting to, pairing with, or activating the device.

A *Bluetooth*-enabled device address is a unique, 48-bit address containing the following three fields:

- LAP field: lower part of the address containing 24 bits.
- UAP field: upper part of the address containing 8 bits.
- NAP field: non-significant part of the address containing 16 bits.

The LAP and the UAP represent the significant address part (SAP) of the *Bluetooth* device address.

1.4. AT interface for Bluetooth function

As module solution, we provide series of AT interface to operate Bluetooth function, including pairing, bonding, pushing or receiving file.

Also including interface for SPP service, which could communicate between Bluetooth device and others via serial port.

2. AT Interface

Commands	Description
AT+BTHOST	Inquiry and set host device name
AT+BTSTATUS	Inquiry current BT device status
AT+BTPOWER	Power On or power off BT Radio
AT+BTPAIR	Pair BT device
AT+BTSCAN	Scan surrounding BT device
AT+BTUNPAIR	Unpair BT device
AT+BTCONNECT	Connect paired BT device
AT+BTDISCONN	Disconnect BT device
AT+BTGETPROF	Get profile provided by paired device
AT+BTACPT	Accept connecting request
AT+BTOPPACPT	Accept OPP service
AT+BTOPPPUSH	Push OPP object to paired device
AT+BTSPPESEND	Send data to BT serial port as client based on SPP service
AT+BTSPPEGET	Get data from BT serial port as client based on SPP service

2.1. AT+BTHOST Inquiry and set host device name

AT+BTHOST	
Test Command AT+BTHOST=?	Response +BTHOST: (1,max length of the device <name>)
	OK
Read Command AT+BTHOST?	Parameters See Write Command
	Response +BTHOST: <name>, <address>
Write Command AT+BTHOST=<name>	OK
	Parameters

	<name>	Device description
	<address>	Device address

2.2. AT+BTSTATUS Inquiry current BT device status

AT+BTSTATUS	
Test Command AT+BTSTATUS=?	Response OK
	Parameters See Write Command
Read Command AT+BTSTATUS?	Response +BTSTATUS: <status> P: <paired id>, <name> <address> C: <connected id>,<name>,<address>,<profile> OK
	Parameters <status> 0 Initial 5 Idel 6 Inquiring 7 Inquiry_Res_Ind 9 Bonding 12 Connecting 26 SDC Refreshing others <paired id> Paired Device ID <connected id> Connected device ID <name> BT device name <address> BT device address <profile> Profile service

2.3. AT+BTPOWER Power On/off BT radio

AT+BTPOWER	
Test Command AT+BTPOWER=?	Response +BTPOWER: (list of supported <n>s) OK
	Parameter See Write Command
Read Command AT+BTPOWER?	Response OK

	Parameter See Write Command
Write Command AT+BTPOWER= <n>	Response OK Parameter <n> <u>0</u> power off BT module 1 power on BT module

2.4. AT+BTPAIR Pair BT device

AT+BTPAIR	
Test Command AT+BTPAIR=?	Response +BTPAIR: 0,(list of supported <device ID>s) +BTPAIR: 1,(list of supported <confirm>s) OK Parameter See Write Command
Write Command 1) Host: AT+BTPAIR=0, <device ID>	Response OK If responds request, report result URC: +BTPAIR: <id>,<name>,<address>
2) Slave: AT+BTPAIR=1, <confirm>	Parameter <device ID> <u>Device ID</u> <confirm> 1 accept 0 Reject <id> 0 Paired failure >1 Paired device ID <name> Device name <address> Device address

2.5. AT+BTUNPAIR Unpair BT device

AT+ BTUNPAIR	
Test Command AT+BTUNPAIR =?	Response +BTUNPAIR: (list of supported <device ID>s) OK Parameter See Write Command
Write Command AT+BTUNPAIR	Response OK

=<device ID>	
	Parameter <device ID> Paired Device ID

2.6. AT+BTSCAN Scan surrounding BT device

AT+ BTSCAN	
Test Command AT+BTSCAN=?	Response +BTSCAN: (list of supported <switch>s), (list of supported <Timer>s) OK
	Parameter See Write Command
Write Command AT+BTSCAN=<switch>,<Timer> >	Response OK +BTSCAN: <status> , <device ID> , <name> , <address>
	Parameter < switch > 1 Scanning 0 Terminate <status> 0 Valid 1 Timeout 2 Terminated < Timer > scanning duration,10-60s <device ID> Device ID viewed <name> Device name <address> Device address

2.7. AT+BTCONNECT Connect paired BT device

AT+ BTCONNECT	
Test Command AT+BTCONNECT=?	Response +BTCONNECT: (list of supported <device ID>s), (list of supported <profile ID>s) OK
	Parameter See Write Command
Write Command AT+BTCONNECT=<device ID> T=<device ID>	Response OK +BTCONNECT: <id> , <name> , <address>

ID>, <profile ID>	Parameter
ID>	<device ID> Paired Device ID < profile ID> Profile ID <id> 0 Connect fail >0 Connected Device ID <name> Device name <address> Device address

2.8. AT+BTDISCONN Disconnect BT device

AT+ BTDISCONN	
Test Command AT+BTDISCONN=?	Response +BTCONNECT: (list of supported <device ID> s) OK
	Parameter See Write Command
Write Command AT+BTDISCONN=<device ID>	Response OK +BTDISCONN: <name> , <address>
	Parameter <device ID> Connected Device ID <name> Device name <address> Device address

2.9. AT+BTGETPROF Get profile provided by paired Device

AT+ BTGETPROF	
Test Command AT+BTGETPROF=?	Response +BTGETPROF: (list of supported <device ID> s) OK
	Parameter See Write Command
Write Command AT+BTGETPROF=<device ID>	Response OK +BTGETPROF: <profile ID> , <name>
	Parameter <device ID> Paired Device ID <profile ID> profile ID

	<name> Profile service

2.10. AT+BTACPT Accept connecting request

AT+ BTACPT	
Test Command AT+BTACPT=?	Response +BTACPT: (list of supported <confirm>s) OK Parameter See Write Command
Write Command AT+BTACPT=<confirm>	Response OK Parameter <confirm> 1 Accept 0 Reject
Reference	When there has an incoming request, URC will be: +BTCONNECTING: <device ID>, <profile ID>

2.11. AT+BTOPPACPT Accept OPP service

AT+ BTOPPACPT	
Test Command AT+BTOPPACPT=?	Response +BTOPPACPT: (list of supported <confirm>s) OK Parameter See Write Command
Write Command AT+BTOPPACPT=<confirm>	Response OK Parameter <confirm> 1 Accept 0 Reject

2.12. AT+BTOPPPUSH Push OPP object to paired device

AT+ BTOPPPUSH	
Test Command AT+BTOPPPUS	Response +BTOPPPUSH: (list of supported <device ID>s), (length of

H=?	supported <string>s)
	OK
	Parameter See Write Command
Write Command AT+BTOPPPUS HT= <device ID >,<string>	Response OK
	+BTOPPPUSH: <para>
	Parameter <device ID> Paired Device ID <string> complete path for file, lenght (4-259) <para> 0 Send successfully 1 Send failed 2 Server issue

2.13. AT+BTSPPGET Get data from BT serial port as client based on SPP service

AT+ BTSPPGET	
Test Command AT+BTSPPGET=?	Response +BTSPPGET: (list of supported <command>s)
	OK
	Parameter See Write Command
Read Command AT+BTSPPGET?	Response +BTSPPGET: <command>
	OK
	Parameter See Write Command
Write Command AT+BTSPPGET =<command>[, <reqLength>][, <showWithHex>]	Response +BTSPPDATA: <port ID>,<cnfLen>,<data string>
	OK
	or +BTSPPGET: <port ID>,<cnfLen>,<data string>
	OK

	<p>Autonomous mode, the header will be +BTSPPDATA, manual mode, the header will be +BTSPPGET.</p> <p>Parameter</p> <p><command> 0 Autonomous mode. Data will be output in decimal system</p> <p>1 manual mode. There will be an indication when first package arrived</p> <p>2 Inquiry data length under manual mode</p> <p>3 Get data under manual mode</p> <p><reqLength> 1-1024 , the length of data requested, only valid under manual mode</p> <p><showWithHex> 1, displayed with HEX, only valid under manual mode</p> <p><port ID> Serial port ID</p> <p><cnfLen> 1-1024, the length to be printed</p> <p><data string> string received</p>
Reference	<ol style="list-style-type: none"> Under manual mode, the URC is +BTSPPGET: 1 for first incoming message Print data under automatic mode

2.14. AT+BTSPSEND Send data to BT serial port as client based on SPP service

AT+ BTSPSEND	
<p>Set Command</p> <p>AT+BTSPSEND</p> <p>=<length></p>	<p>Response</p> <p>></p> <p>If successful,</p> <p>SEND OK</p> <p>Or if failed,</p> <p>SEND FAIL</p>
	<p>Parameter</p> <p><length> 1-1024, the length of data will be sent.</p> <p>When the length of inputing data is up to <length> specified, the package will be sent out automatically. ESC key is used to quit in the middle of process.</p>
<p>Execute Command</p> <p>AT+BTSPSEND</p> <p>D</p>	<p>Response</p> <p>></p> <p>If successful,</p> <p>SEND OK</p> <p>Or failed,</p> <p>SEND FAIL</p>

Under this mode, <Ctrl+z> will submit the package, ESC will quit the process.

3. Examples

Following are some examples for BT application.

Here, black AT interface in left and blue response for clear understanding.

3.1. Accept request from other BT device

Command	Description
AT+BTPOWER=1 OK	Power on BT radio
+BTPAIRING: "PC-NS130100361",34:c7:31:aa:37:5b,763191	Incoming request from other BT device
AT+BTPAIR=1,1 OK	Accept pairing request, and paired successfully
+BTPAIR: 1, "PC-NS130100361",34:c7:31:aa:37:5b	

3.2. Send pairing request to other BT device

Command	Description
AT+BTPOWER=1 OK	Power on BT radio
AT+BTSCAN=1,20 OK	Inquiring surrounding BT device
+BTSCAN: 1,"PC-NS130100361",34:c7:31:aa:37:5b	
+BTSCAN: 2,"ADMIN-9A6E040AC",68:5d:43:ec:fe:72	
+BTSCAN: 3,"LIB-PC",c8:f7:33:43:48:e6	
+BTSCAN: 4,"MK-FUJIANJUN",88:53:2e:e8:9d:0f	
+BTSCAN: 5,"MTKBTDEVICE",45:8c:96:3e:66:01	
+BTSCAN: 6,"MK-ZHANZHIMIN",00:1a:7d:da:71:10	

+BTSCAN: 1	
AT+BTPAIR=0,6 OK	Try to pair the sixth BT device in the view list
+BTPAIRING: "MK-ZHANZHIMIN",00:1a:7d:da:71:10,76319 1 AT+BTPAIR=1,1 OK	Responds the pairing
+BTPAIR: 1, "MK-ZHANZHIMIN",00:1a:7d:da:71:10	

3.3. Get the profile provided by paired device

Command	Description
	configure based on example 3.2
AT+BTGETPROF=1 +BTGETPROF: 1,"ADVANCED_AUDIO" +BTGETPROF: 2,"OPP" +BTGETPROF: 3,"SPP" +BTGETPROF: 4,"HF" +BTGETPROF: 5,"HS" OK	Get the profile of first paired device in list

3.4. Connect service

Command	Description
	Get Profile based on example 3.3
AT+BTCONNECT=1,4 OK +BTCONNECT: 1, "MK-ZHANZHIMIN",00:1a:7d:da:71:10,"HF"	Request the forth profile service "HF" of first paired device

3.5. Accept file from paired device

Command	Description
	Pairing device based on example 3.2
+BTOPPPUSHING: "MK-ZHANZHIMIN","link.txt"	incoming opp pushing service from paired device
AT+BTOPPACPT=1	Accept file

OK

3.6. Send file to other paired BT device

Command	Description
	Pairing device based on example 3.2
AT+BTOPPPUSH=6, c:\slink.txt OK +BTOPPPUSH: 0	Sending file and waiting for response

3.7. Get data from BT serial port as client based on SPP service

Command	Description
AT+BTCONNECT=1,3,1 OK	Based on example 3.3, supposed BT device address is 34:c7:31:aa:37:5b
AT+BTSPPGET=0 OK AT+BTSPPGET? +BTSPPGET: 0 OK +BTSPPDATA: 19,10,1234567890	auto report Module received data 1234567890 from server
AT+BTSPPGET=1 OK +BTSPPGET: 1 AT+BTSPPGET=2 +BTSPPGET: 10 OK AT+BTSPPGET=3,3 +BTSPPGET:19,3,123 OK AT+BTSPPGET=3,10,1 +BTSPPGET: 19,7,34353637383930 OK	manual mode server send data 1234567890 to module; there has no further indication if there has data in received buffer Get 3 bytes Get 10 bytes, print as HEX Only get 7 bytes left

+BTSPGET: 1	There has new incoming data from server
AT+BTSPGET=? +BTSPGET: (0-3),(1-1024),1 OK	

3.8. Send data to BT serial port as client based on SPP service

Command	Description
AT+BTSPSEND=10 >1234567890 SEND OK	When prompt ">" comes, feed given length data 1234567890 This is fix-length solution
AT+BTSPSEND >abcdefg SEND OK	Ctrl+Z to send data

3.9. BT module as Server

Command	Description
	Based on example 3.2
+BTCONNECTING: "MK-ZHANZHIMIN",00:1a:7d:da:71:10,"SPP"	SPP request from remote
AT+BTACPT=1 OK +BTCONNECT: 1, "MK-ZHANZHIMIN",00:1a:7d:da:71:10,"SPP"	Accept bonding request, module is server.

Appendix

A. Reference

ID	Document	Remark
[1]	SIM800 Series AT Command Manual	

B. Glossary and Abbreviation

Abbr.	Description
EVB	Evaluate board
BT	Bluetooth
PROFILE	Bluetooth function protocol
URC	Unsolicited Result Code
TE	Terminal Equipment
TA	Terminal Adapter
DTE	Data Terminal Equipment
DCE	Data Communication Equipment
ME	Mobile Equipment
MS	Mobile station

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 3252 3300

Fax: +86 21 3252 3301

URL: www.sim.com/wm

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