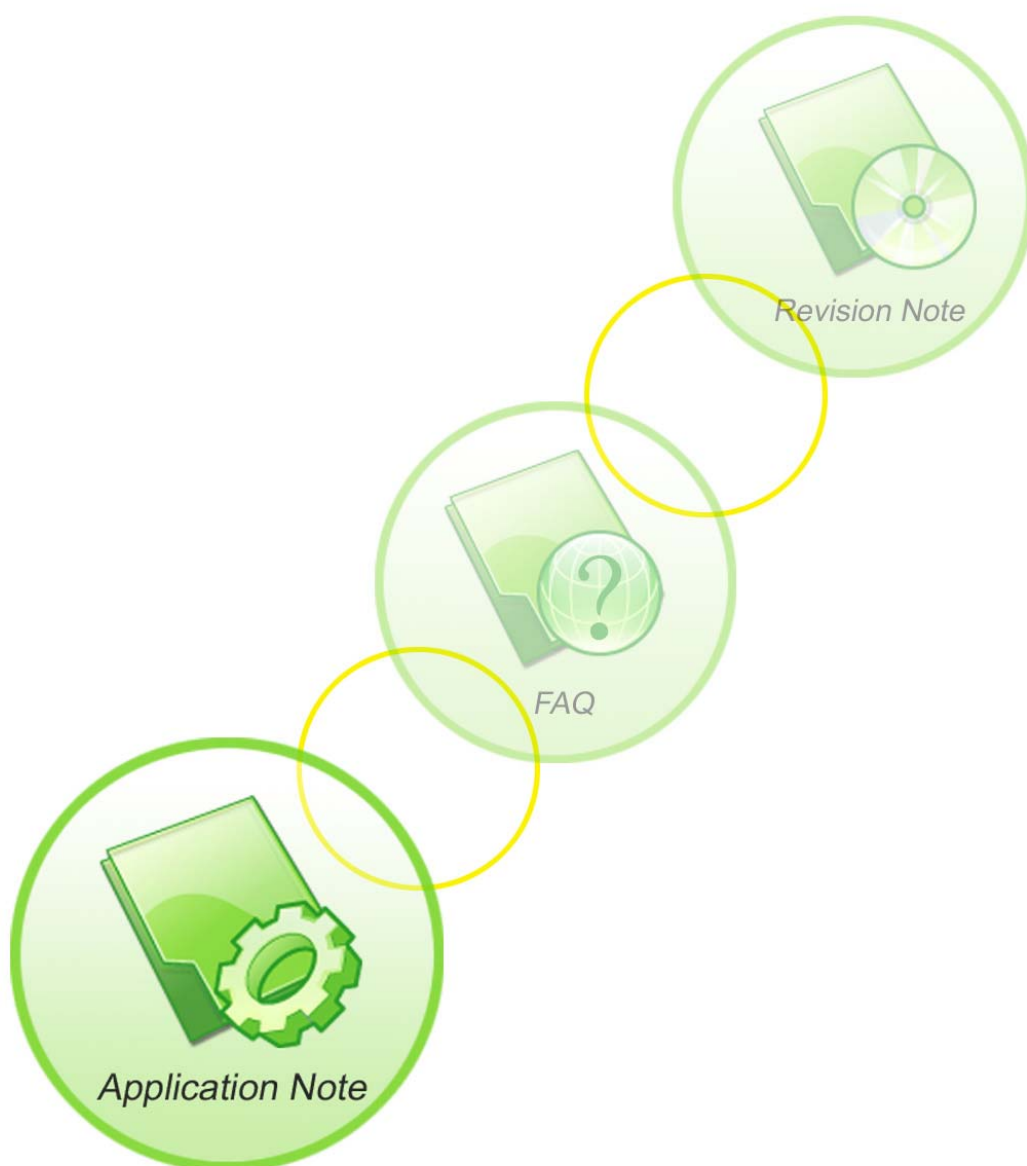




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Scope

This document describes how to use the AT command about Bluetooth and some application note. The document can apply to “1308B01SIM800H32_BT” version.

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 bits 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 Command

Command	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
AT+BTATA	Answer incoming call
AT+BTATDL	Redial last number
AT+BTATH	Hung up voice call
AT+BTVGS	Configure voice volume
AT+BTVGM	Configure MIC volume
AT+BTATD	Dial up a voice call
AT+BTRSSI	Get RSSI of connected device

2.1. AT+BTHOST Inquiry and set host device name

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

	Parameters See Write Command
Write command AT+BTHOST=<name>	Response OK
	Parameter <name> device name <address> device address
Note	Max length of <name> is 18 bytes, and display in UTF-8 code.

2.2. AT+BTSTATUS Inquiry current BT device status

AT+BTSTATUS	
Test Command AT+BTSTATUS=?	Response OK
	Parameters See Read Command
Read Command AT+BTSTATUS?	<p>Response</p> <p>If unpaired before: +BTSTATUS: <status></p> <p>If paired before but unconnected: +BTSTATUS: <status> P: <paired id>, <name> <address></p> <p>If paired and connected: +BTSTATUS: <status> P: <paired id>, <name> <address> C: <connected id>, <name>, <address>, <profile name></p> <p>OK</p> <p>Parameter</p> <p><status></p> <ul style="list-style-type: none"> 0 Initial 1 Disactivating 2 Activating 5 Idle 6 Scanning 7 Inquiry_Res_Ind 8 stopping scanning 9 Bonding 12 Connecting 13 Unpairing 14 Deleting paired device 15 Deleting all paired device 16 Disconnecting 19 Pairing confirm 20 Waiting for remote confirm

	25 Accepting connection 26 SDC Refreshing 29 Setting host name 30 Releasing all connection 31 Releasing connection 36 Activating service <paired id> paired device ID <connected id> connected device ID <name> device name <address> device address <profile name> profile
Note	Max length of <name> is 18 bytes, 18 bytes in UTF-8 code

2.3. AT+BTPOWER Power on/off BT radio

AT+BTPOWER	
Test Command AT+BTPOWER=?	Response +BTPOWER: (list of supported <n>s) OK
	Parameters See Write Command
Write Command AT+BTPOWER=<n>	Response OK
	parameter <n> 0 power off BT radio 1 power on BT radio
Note	After power off BT radio, should wait 25s at least to re-power on BT radio.

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) +BTPAIR: 2,(length of supported <passkey>s) OK
	Parameters See Write Command
Write Command 1) active AT+BTPAIR=0,	Response OK

<p><device ID></p> <p>2) passive with digital key request AT+BTPAIR=1, <confirm></p> <p>3) passive with passkey request AT+BTPAIR=2, <passkey></p>	<p>If digital key exchanged +BTPAIRING: <name>,<address>,<passcode></p> <p>If passkey exchanged: +BTPAIRING: <name>,<address></p> <p>If passive mode with success: +BTPAIR: <id>,<name>,<address></p> <p>If passive mode with failure: +BTPAIR: 0</p> <p>Parameter</p> <table border="1"> <tr><td><device ID></td><td>BT device ID</td></tr> <tr><td><confirm></td><td>1 accept 0 reject</td></tr> <tr><td><passkey></td><td>passkey, length is (4-16)</td></tr> <tr><td><id></td><td>0 paired failed ≥1 paired device ID</td></tr> <tr><td><name></td><td>BT device name</td></tr> <tr><td><address></td><td>BT device address</td></tr> <tr><td><passcode></td><td>Digital password</td></tr> </table> <p>URC</p> <p>If there is incoming request: +BTPAIRING: <name>,<address>,<passcode></p> <p>or +BTPAIRING: <name>,<address></p> <p>Parameter</p> <table border="1"> <tr><td><name></td><td>device name</td></tr> <tr><td><address></td><td>device address</td></tr> <tr><td><passcode></td><td>digital password</td></tr> </table>	<device ID>	BT device ID	<confirm>	1 accept 0 reject	<passkey>	passkey, length is (4-16)	<id>	0 paired failed ≥1 paired device ID	<name>	BT device name	<address>	BT device address	<passcode>	Digital password	<name>	device name	<address>	device address	<passcode>	digital password
<device ID>	BT device ID																				
<confirm>	1 accept 0 reject																				
<passkey>	passkey, length is (4-16)																				
<id>	0 paired failed ≥1 paired device ID																				
<name>	BT device name																				
<address>	BT device address																				
<passcode>	Digital password																				
<name>	device name																				
<address>	device address																				
<passcode>	digital password																				
<p>Note</p>	<p>1. Max length of <name> is 18 bytes, 18 bytes in UTF-8 code</p> <p>2. Pairing timeout is around 15s each side</p>																				

2.5. AT+BTUNPAIR Unpair BT device

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

	<p><device ID> Paired Device ID.</p> <p>0 delete all the paired device</p> <p>1 delete the the paired device corresponding to ID</p>
--	---

2.6. AT+BTSCAN Scan surrounding BT device

AT+BTSCAN	
Test Command AT+BTSCAN=?	<p>Response</p> <p>+BTSCAN: (list of supported <switch>s), (list of supported <Timer>s)</p> <p>OK</p> <p>Parameter</p> <p>See Write Command</p>
Write Command AT+BTSCAN=<switch>[,<Timer>]	<p>Response</p> <p>OK</p> <p>If BT device scanned: +BTSCAN: <status>,<device ID>,<name>,<address></p> <p>If terminate: +BTSCAN: <status></p> <p>Parameter</p> <p><switch> 1 start 0 stop</p> <p><status> 0 BT device found 1 scanning finished 2 scanning stop 3 scanning failed</p> <p><Timer> scanning time 10-60s</p> <p><device ID> BT device ID scanned</p> <p><name> BT device name</p> <p><address> BT device address</p>
Note	<p>1. Max length of <name> is 18 bytes, 18 bytes in UTF-8 code</p> <p>2. If <timer> omitted, the default value is 30s</p>

2.7. AT+BTCONNECT Connect paired BT device

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

Write Command AT+BTCONNE CT=<device ID>,<profile ID>	<p>Response</p> <p>OK</p> <p>If OK: +BTCONNECT: <id>,<name>,<address>,<profile name></p> <p>If failed: +BTCONNECT: 0</p> <p>Parameter</p> <p><device ID> ID of paired BT device < profile ID> BT profile ID <id> ID of connected BT device <name> BT device name <address> BT device adress <profile name> BT device service name</p>
Note	<p>1. Max length of <name> is 18 bytes, 18 bytes in UTF-8 code</p> <p>2. Connection timeout is around 20s</p> <p>3. if incoming request, there will be URC +BTCONNECTING: <address>,<profile name></p>

2.8. AT+BTDISCONN Disconnect BT connection

AT+BTDISCONN	
Test Command AT+BTDISCON N=?	<p>Response</p> <p>+BTDISCONN: (list of supported <device ID>s)</p> <p>OK</p> <p>Parameter</p> <p>See Write Command</p>
Write Command AT+BTDISCON N=<device ID>	<p>Response</p> <p>OK</p> <p>+BTDISCONN: <name>,<address>,<profile name></p> <p>Parameter</p> <p><device ID> connected device ID <name> device name <address> devie address <profile name> profile service</p>
Note	<p>1. Max length of <name> is 18 bytes, 18 bytes in UTF-8 code</p> <p>2. If disconnected by remote, there still be URC: +BTDISCONN</p>

2.9. AT+BTGETPROF Get profile provided by paired device

AT+BTGETPROF	
Test Command AT+BTGETPRO	<p>Response</p> <p>+BTGETPROF: (list of supported <device ID>s)</p>

F=?	OK
	Parameter See Write Command
Write Command AT+BTGETPRO F=<device ID>	Response OK +BTGETPROF: <profile ID>,<name>
	Parameter <device ID> Paired Device ID <profile ID> profile ID <name> profile name

2.10. AT+BTACPT Accept connecting request

AT+BTACPT	
Test Command AT+BTACPT=?	Response +BTACPT: (list of supported <confirm>s) OK
Write Command AT+BTACPT=<confirm>	Response OK If connected successfully, then will report: +BTCONNECT: <id>,<name>,<address>,<profile name> If connecting failed: + BTDISCONN: <name>,<address>,<profile name>
	Parameter <confirm> 1 accept 0 reject <id> >0 connected device ID <name> device name <address> device address <profile name> profile name
	URC If incoming connecting request: +BTCONNECTING: <address>,<profile name>
	Parameter <address> device address <profile name> profile name

Note	Max length of <name> is 18 bytes, 18 bytes in UTF-8 code
------	--

2.11. AT+BTOPPACPT Accept OPP service

AT+BTOPPACPT	
Test Command AT+BTOPPACPT=?	Response +BTOPPACPT: (list of supported <confirm>s),(list of supported<drv>) OK
Write Command AT+BTOPPACPT=< confirm>[,<drv>]	Response OK +BTOPPPUSH: <status> Parameter <div> <confirm> 1 Accept 0 Reject <drv> 0 internal flash memory 1 external memory card <status> 0 failed 1 successful </div> URC: If there has an incoming opp file, there will be a URC report. +BTOPPPUSHING: <name>, <file name> Parameter <name> device name <file name> file name
Note	1. Max length of <name> is 18 bytes, 18 bytes in UTF-8 code 2. File is stored in path: C:\User\BtReceived\ for internal memory card, D:\BtReceived\ for external memory card. At the first time to use SD card, customer must execute “AT+SD2PCM=0” and “AT&W”, then reboot the module.

2.12. AT+BTOPPPUSH Push OPP object to paired device

AT+BTOPPPUSH	
Test Command AT+BTOPPPUSH=?	Response +BTOPPPUSH: (list of supported <device ID>s), (length of 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> file name include complete path, lenght (4-259) <para> 0 Send failed 1 Send successfully 2 Server issue
Note	

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>][,<s howWithHex>]	Response OK or Error If command value is 2,return format: +BTSPPGET: <port ID>,<cnfLen1> OK If command value is 3,return format: +BTSPPDATA: <port ID>,<repLength>,<data string> OK Automatic mode, the header will be +BTSPPDATA, manual mode, the header will be +BTSPPGET.

	<p>Parameter</p> <p><command> 0 Automatic mode. Data will be output in decimal system 1 manual mode. There will be an indication when first package arrived 2 Inquiry data length under manual mode 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><cnfLen1> 1-1024, character length</p> <p><data string> string printed</p>
Note	<p>URC</p> <p>When module receive SPP data,there will be UCR report:</p> <ol style="list-style-type: none"> Automatic mode +BTSPPDATA: <port ID>,<cnfLen2>,<data string> Manual mode +BTSPPMAN: <port ID> <p>Parameter</p> <p><cnfLen2> 1-1024, length of printed character</p>

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

AT+BTSPPSSEND	
Write Command AT+BTSPPSEND=<length>	<p>Response</p> <p>></p> <p>If successful, SEND OK</p> <p>Or if failed, 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>
Execute Command AT+BTSPPSEND	<p>Response</p> <p>></p> <p>If successful, SEND OK</p> <p>Or failed, SEND FAIL</p>

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

2.15. AT+BTATA Answer incoming call

AT+BTATA	
Execute Command AT+BTATA	Response OK
Note	When module connected with smartphone as an earphone, if here comes incoming call, the call would be answered through this command

2.16. AT+BTATDL Redial last number

AT+BTATDL	
Execute Command AT+BTATDL	Response OK
Note	When module connected with smartphone as an earphone, would redial last number through this command

2.17. AT+BTATH Hung up voice call

AT+BTATH	
Execute Command AT+BTATH	Response OK
Note	When module connected with smartphone as an earphone, the incoming call would be hung up through this command

2.18. AT+BTVGS Configure voice volume

AT+BTVGS	
Test Command AT+BTVGS=?	Response +BTVGS: (<gain> range)
	OK
	Module is Earphone mode
Read Command AT+BTVGS?	Response +BTVGS: <gain>
	OK
Write Command AT+BTVGS=<gain>	Response OK
	Parameter <gain> volume
	This command is used to configure call volume when the module is

	connected with smartphone as an earphone
Note	For some smartphone,after connected with BT earphone,the current call volume may not be transmitted to earphone,thus the return value of the read command may be 0.But after setting once,the value would be correct.

2.19. AT+BTVGM Configure MIC gain level

AT+BTVGM	
Test Command AT+BTVGM=?	Response +BTVGM: (<gain> range) OK
Read Command AT+BTVGM?	Response +BTVGM: <gain> OK
Write Command AT+BTVGM=<gain>	Response OK Parameter <gain> MIC gain level This command is used set MIC volume when the module is connected with smartphone as an earphone
Note	For some smartphone,after connected with BT earphone,the current MIC volume may not be transmitted to earphone,thus the return value of the read command may be 0.But after setting once,the value would be correct.

2.20. AT+BTATD Dial voice call

AT+BTATD	
Test Command AT+BTATD=?	Response +BTATD: (<number> length range) OK
Write Command AT+BTATD=<number>	Response OK Parameter <number> phone number Module as earphone connected to smartphone, this command could make an outgoing call
Note	

2.21. AT+BTRSSI Get RSSI of connected BT device

AT+BTRSSI	
Test Command AT+BTRSSI=?	Response +BTRSSI: (<device ID>)
	OK
Write Command AT+BTRSSI=<device ID>	Response +BTRSSI: <rss>
	OK
	Parameter <device ID> Connected Device ID <rss> -122...0 RSSI value of BT device
Note	RSSI value is negative, the smaller value represents the worse signal

3. CME Error Code

+CME ERROR: <err>

Code	Description
1000	Return fail
1002	Not power on
1003	State not idle
1004	Malloc error
1010	Scan fail
1011	scan return error
1020	Out of scanning count
1021	Out of profile id count
1025	Out of pairing count
1026	Bond error
1027	Device has Bonded
1030	Debond error
1031	Get device info error
1032	Service refresh error
1033	Profile connect error
1040	OPP handle error
1041	OPP send error
1045	OPP send error by server
1046	Get index by profile error
1047	Connect not support
1048	Disconnect not support
1049	Active or address error
1050	Only connect one device
1055	Spp is not connect
1099	BTAUD attach error

4 Examples

There are some examples to explain how to use these commands.

In the “Grammar” columns of following tables, input of AT commands are in black, module return values are in blue.

4.1 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 digital key request from other BT device
AT+BTPAIR=1,1 OK +BTPAIR: 1,"PC-NS130100361",34:c7:31:aa:37:5b	Accept pairing request, and paired successfully
+BTPAIRING: "Jabra BT160",00:16:8f:0d:65:82	Incoming passkey request from other BT device
AT+BTPAIR=2,0000 OK +BTPAIR: 2,"LBH505",50:5b:0b:0a:10:32	Accept pairing request, and paired successfully.Default passkey of other BT device is 0000.If not, please change this value according to other device's passkey.

4.2 Send pairing request to other BT device

Command	Description
AT+BTPOWER=1 OK	Power on BT radio
AT+BTSCAN=1,20 OK +BTSCAN: 0,1,"PC-NS130100361",34:c7:31:aa:37:5b +BTSCAN: 0,2,"ADMIN-9A6E040AC",68:5d:43:ec:fe:72 +BTSCAN: 0,3,"LIB-PC",c8:f7:33:43:48:e6 +BTSCAN:	Inquiring surrounding BT device

0,4,"MK-FUJIANJUN",88:53:2e:e8:9d:0f +BTSCAN: 0,5,"MTKBTDEVICE",45:8c:96:3e:66:01 +BTSCAN: 0,6,"MK-ZHANZHIMIN",00:1a:7d:da:71:10 +BTSCAN: 0,7,"Jabra BT160",00:16:8f:0d:65:82 +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 +BTPAIR: 1,"MK-ZHANZHIMIN",00:1a:7d:da:71:10	Answer to the pairing request in digital key mode
AT+BTPAIR=0,7 OK	Try to pair the seventh BT device in the view list
+BTPAIRING: "Jabra BT160",00:16:8f:0d:65:82 AT+BTPAIR =2,0000 OK +BTPAIR: 2,"Jabra BT160",00:16:8f:0d:65:82	Answer to the pairing request in passkey mode

4.3 Get the profile provided by paired device

Command	Description
	Configure based on example 4.2
AT+BTGETPROF=1 +BTGETPROF: 1,"A2DP(Source)" +BTGETPROF: 2,"HFP(AG)" +BTGETPROF: 8,"AVRCP(Target)" +BTGETPROF: 3,"A2DP" +BTGETPROF: 4,"SPP" +BTGETPROF: 6,"HFP" +BTGETPROF: 5,"HSP" OK	Get the profile of first paired device in list

4.4 Connect service

Command	Description
	Get Profile based on example 4.3
AT+BTCONNECT=1,2 OK +BTCONNECT: 1,"MK-ZHANZHIMIN",00:1a:7d:da:71:10,"HFP(AG)"	Connect with the second profile service of first paired device,"HFP(AG)"

4.5 Accept file from paired device

Command	Description
	Pairing device based on example 4.2
+BTOPPPUSHING: "MK-ZHANZHIMIN","link.txt"	Incoming opp pushing service from paired device
AT+BTOPPACPT=1 OK +BTOPPPUSH: 1	Accept file(stored in internal memory card by default,input "AT+BTOPPACPT=1,1" if want it stored in external memory

4.6 Send file to other paired BT device

Command	Description
	Pairing device based on example 4.2
AT+BTOPPPUSH=1,c:\User\BtReceived\link.txt OK +BTOPPPUSH: 1	Sending file and waiting for response

4.7 AT Channel mode, Module as client

SPP service has two kinds of connection. One is client mode via AT command channel (shorted as AT channel mode following), another is peer to peer mode to exchange data (shorted as exchanged mode following).

This section is for AT channel mode as client.

Command	Description
	Based on example 4.3, get profile. Supposed local device ID is 34:c7:31:aa:37:5b, another remote device ID is 12:34:56:78:90:12, name is BTOTHER, unconnected.

AT+BTSPPGET=0 OK AT+BTCONNECT=1,4 OK +BTCONNECT: 1," BTOTHER",12:34:56:78:90:12,"SPP" AT+BTSPPSSEND >AT+CREG? SEND OK +BTSPPDATA: 19,1,A +BTSPPDATA: 19,3,T+C +BTSPPDATA: 19,25,REG? +CREG: 0,0 OK	Set report-auto mode Connect server Report automatically once ok Send data here when get propomt ">", and then the input characters and the response will output here Input characters Response
---	--

4.8 AT Channel mode, module as server

Command	Description
	Supposed module acts as serve, connection is available, but first data package is not "SIMCOMSPPFORAPP"
AT+BTSPPSSEND=10 ERROR	At this moment, data can not be sent

4.9 Exchanged mode setup

Command	Description
	Based on example 4.3, get profile. Supposed local device ID is 34:c7:31:aa:37:5b, another remote device ID is 12:34:56:78:90:12, name is BTOTHER, unconnected.
AT+BTSPPGET=0 OK AT+BTCONNECT=1,4	Set auto-report mode\ Connect remote pear

<pre> OK +BTCONNECT: 1," BTOTHER",12:34:56:78:90:12,"SPP" AT+BTSPGET? +BTSPGET: 0 OK AT+BTSPSEND > SIMCOMSPFORAPP +BTSPDATA: 19,10,1234567890 AT OK AT+BTSPGET=1 ERROR </pre>	<p>Report automatically once ready</p> <p>Get SPP report mode</p> <p>After connected, receiving mode can not be configured</p>
<pre> AT+BTSPGET=1 OK AT+BTCONNECT=1,4 OK +BTCONNECT: 1," BTOTHER",12:34:56:78:90:12,"SPP" AT+BTSPSEND > SIMCOMSPFORAPP +BTSPMAN: 19 AT OK AT+BTSPGET=2 +BTSPGET: 19,10 OK AT+BTSPGET=3,3 +BTSPGET:19,3,123 OK AT+BTSPGET=3,10,1 +BTSPGET: 19,7,34353637383930 </pre>	<p>Supposed manual mode ok</p> <p>connect</p> <p>Inquiry data length</p> <p>Read 3 bytes</p> <p>Read 10 bytes and display in hex</p>

OK

+BTSPPMAN: 19

AT+BTSPPGET=?

+BTSPPGET: (0-3)

OK

4.10 Data Exchanged

Command	Description
AT+BTSPPSSEND=10 >1234567890 SEND OK	
AT+BTSPPSSEND >abcdefg SEND OK	

4.11 Module as SPP server

This SPP connection is launched by remote BT device,module will play a role as BT serial server after accept this connection request.Then remote device can access the moduel's AT serial port with AT interchange though the established serial channel.

Command	Description
	Based on example 4.2
+BTCONNECTING: 00:1a:7d:da:71:10,"SPP"	SPP Request from remote device
AT+BTACPT=1 OK +BTCONNECT: 1, "MK-ZHANZHIMIN",00:1a:7d:da:71:10,"SPP"	Accept request,module as serial server,remote device can access module's AT port through the BT connection

Appendix

A. Reference

ID	Document	Remark
[1]	SIM800 Series AT Command Manual	

B. Profile

Profile	Introduction
SPP	Abbreviation of Serial Port Profile, to implement BT serial port function. Module can transmit data to connected BT device through AT+BTSPSEND after successfully applying this profile. The module will receive data report +BTSPDATA in automatic mode, and +BTSPPMAN in manual mode.
OPP	Abbreviation of OPP Object Push Profile, to implement pushing BT object. This function is used between the two paired BT devices, AT+BTOPPPUSH to push file, AT+OPACPT to receive the pushed file.
HFP/HSP	Abbreviation of Handsfree Profile/Headset Profile, i.e. BT earphone function. HFP is the enhanced version of HSP, so even if the other BT device just supports HSP, SIM800H still can connect the BT device with HFP. Module's call voice would be displayed from BT earphone after this profile being connected. When the module plays a role as smart phone, BT earphone could control the call operation (e.g. hang up, answer, redial).
A2DP	Abbreviation of Advanced Audio Distribution Profile, which is an advanced protocol for audio frequency distribution. Earphone will activate AVRCP connection after the profile being connected. It is mainly used for BT earphone to transmit Hi-Q audio frequency. If suffixed with source, it means this device is audio frequency source, i.e. plays a role as smartphone.
AVRCP	Abbreviation of Audio Video Remote Control Profile, is AV remote control protocol. This profile depends on A2DP and only could be connected after the A2DP connection is established. It is mainly used for BT earphone to control the media function of smartphone. If suffixed with target, it means this device is controlling target, i.e. plays a role as smart phone.
HFP(AG)	This profile is HFP, i.e. plays a role as BT earphone. After the module connected with smartphone, the call voice of smartphone could be displayed by the module's audio channel. Also the call operation of smartphone can be controlled by those commands such as AT+BTATD, AT+BTATH, AT+BTATA.
HFG	This profile is HFP, but plays a role as smartphone at this moment. After the

module connected with smartphone, there will display such information indicates profile being connected successfully. If the module plays a role of earphone, then the information displayed after connection will be HFP(AG).

C. Glossary and Abbreviation

Glossary	Discription
EVB	Evaluation Board
BT	Blue tooth
PROFILE	Bluetooth function protocol
SPP	Serial Port Profile
OPP	OPP Object Push Profile
A2DP	Advanced Audio Distribution Profile
AVRCP	Audio Video Remote Control Profile
HSP	BT handset protocol
HFP	HandFree application 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

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