



BT1038 programming user guide

Release 1.0

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Chapter 1

Introduction

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1.1 Description

This design guide is suitable for engineers to develop FSC-BT1038 series Bluetooth modules

1.2 Module Default Settings

Name	FSC-BT1038A-XXXX
LE-Name	FSC-BT1038A-LE-XXXX
Pin Code	0000
Secure Simple Pairing Mode	ON
UART Baudrate	115200/8/N/1

Hardware Description

FSC-BT1038A as an example:



2.2 Pin Description

Pin	Pin Name	Type	Pin Descriptions
4	I2S_CLK	I/O	I2S BCLK
5	I2S_IN	I	I2S DATA IN
6	I2S_OUT	O	I2S DATA OUT
7	I2S_WS	I/O	I2S SYNC
8	RESET	I	External reset input: active Low
13	UART_TX	O	UART TX
14	UART_RX	I	UART RX
15	UART_CTS	I/O	UART CTS
16	UART_RTS	I/O	UART RTS(default: PA mute pin)
17	LED0	I/O	Output square wave in pairing mode, output high level when bluetooth is connected
18	LED1	I/O	BIS is not connected to output low level, connected to output high level
32	GND	GND	GND
33	VDD	VDD	Power supply for I/O ports, DC 3.3V
34	VREG_IN	I	Typically connected to an ON/OFF push button
36	VDD_IO	I	pio supply
43	MIC_LP	Audio	MIC0/Line_IN differential L input, positive
44	MIC_LN	Audio	MIC0/Line_IN differential L input, negative
45	MIC_BIAS	Audio	MIC Power Supplies
46	SPK_RN	Audio	Headphone/speaker differential R output, negative
47	SPK_RP	Audio	Headphone/speaker differential R output, positive
48	SPK_LN	Audio	Headphone/speaker differential L output, negative
49	SPK_LP	Audio	Headphone/speaker differential L output, positive
51	EXT_ANT	ANT	Change the 0 ohm resistance near the antenna, you can connect an external Bluetooth antenna

2.3 Hardware Design Notes

- The simple test of the module only needs to connect VDD/VDD_IO/VREG_IN/GND/UART_RX/UART_TX to use
- After drawing the schematic diagram, please send it to Feasycom for review,so as to avoid the Bluetooth distance not reaching the best effect

Shenzhen Feasycom Technology Co.,Ltd.

Chapter 3

Function Description

3.1 Compare related products

Module	BT1038A	BT1038B	BT6038	BT1026B	BT1026C	BT1026D	BT1026E	BT1035	BT806A	BT806B	BT1006A
Chip	QCC3083	QCC3084	QCC3086	QCC3031	QCC3024	QCC3034	QCC5125	QCC3056	CSR8670	CSR8675	QCC3007
TX&RX	RX	RX	TX	RX	RX	RX	RX	TX	TX&RX	TX&RX	RX
APTX	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	x
APTX-HD	✓	✓	✓	✓	x	✓	✓	✓	✓	✓	x
APTX-LL	x	x	x	✓	x	✓	✓	✓	✓	✓	x
APTX-AD	✓	✓	✓	x	x	x	✓	✓	x	x	x
LDAC	x	x	x	x	x	x	✓	x	x	x	x
LEA-BIS	✓	✓	✓	x	x	x	x	x	x	x	x
LEA-CIS	✓	✓	✓	x	x	x	x	x	x	x	x
CVC	HandsFree	Headset	x	HandsFree	Headset	Headset	HandsFree	x	HandsFree	HandsFree	HandsFree
Upgrade	OTA/UART	OTA/UART	OTA/UART	OTA/UART	OTA/UART	OTA/UART	OTA/UART	OTA/UART	UART	UART	UART
Version	5.4	5.4	5.4	5.1	5.1	5.1	5.1	5.2	5.0	5.0	5.0

Note

- BT1006 series modules have been discontinued. Corresponding replacement modules:BT1026
- BT1026B, BT1026D APTX-LL need to purchase license, the default firmware does not support. If you want to test APTX-LL, please contact Feasycom.
- BT1026E aptx series decoding and cvc need to purchase license
- BT1038A APTX-AD、CVC need to purchase license
- BT1038B APTX-AD need to purchase license
- BT1035 need to purchase license

3.2 Profiles & Features

- SPP (Serial Port Profile)
- GATTS (Generic Attribute Profile LE-Peripheral role)
- GATTC (Generic Attribute Profile LE-Central role)
- HFP-HF (Hands-Free Profile)
- HFP-AG (Hands-Free-AG Profile)
- A2DP-Sink (Advanced Audio Distribution Profile)
- A2DP-Source (Advanced Audio Distribution Profile)
- AVRCP-Controller (Audio/Video remote controller Profile)
- AVRCP-Target (Audio/Video remote controller Profile)
- HID-DEVICE (Human Interface Profile)
- PBAP (Phonebook Access Profile)
- MAP (Message Access Profile)
- LEA (LE Audio)

3.3 GATT Default service and characteristic

Type	UUID	Characteristic	Description
Service	0xFFF0		throughput services
Write	0xFFF2	Write, Write Without Response	app send to module
Notify	0xFFF1	Notify	module send to app

Chapter 4

Command Description

4.1 Terms

- Throughout this specification:
- Content between { } is optional
- Content behind << represents a COMMAND from Host
- Content behind >> represents a RESPONSE/EVENT to Host

4.2 Command Format

AT+Command{=Param1{,Param2{,Param3...}}}<CR><LF>

- All commands start with “AT” , end with <CR><LF>
- <CR> means “carriage return” , corresponds to hex value 0x0D
- <LF> means “line feed” , corresponds to hex value 0x0A
- If Command has Parameter, Parameter follows behind ‘=’
- If Command has multiple Parameters, Parameter must be separated by ‘,’
- If Command has Response, Response starts with <CR><LF>, ends with <CR><LF>
- Module will always report command’ s execution result by using “OK” for success or “ERROR” for failure

Example: Read module's BR/EDR local name

<< AT+NAME

>> +NAME=FSC-BT1038A-XXXX

>> OK

Example: Pick up an incoming call when no call incoming actually

<< AT+HFPANSW

>> ERROR

4.3 Event Format

<CR><LF>+Indication{=Param1{,Param2{,Param3...}}}<CR><LF>

- All Events start with <CR><LF>, end with <CR><LF>
- If Event has Parameter, Parameter follow behind '='
- If Event has multiple Parameters, Parameter must be separated by ','

Example: Received "1234567890" from mobile phone via SPP profile

>> +SPPDATA=10,1234567890

Example: Dial number "10086" using a mobile phone when HFP connected

>> +HFPSTAT=4

>> +HFPAUDIO=1

>> +HFPCID=10086

>> +HFPSTAT=6

Chapter 5

Commands Table

5.1 General Commands

5.1.1 AT+HELP - Firmware Function/Command Summary

Command	AT+HELP
Response	<FIRMWARE FUNCTION: appropriate working scenario > <OTA PATH: latest suitable firmware path on server for upgrade On-The-Air> <ENABLED PROFILES: LINKS: ON/OFF> <COMMAND SUMMARY: DESCRIPTION: PROFILE CATEGORY>
Description	Using help command to get the basic summary information

5.1.2 AT+VER - Get Firmware Version

Command	AT+VER
Response	+VER=Param1,Param2,Param3
Param1	Module type
Param2	Firmware version
Param3	Firmware Compile time

Example:

```
<< AT+VER
```

```
>> +VER=BT1038A,V1.0.1,20231105
```

```
>> OK
```

5.1.3 AT+BAUD - Get/Set Uart Baudrate

Command	AT+BAUD{=Param}
Param	9600/19200/38400/57600/115200(default)/230400/460800/921600
Response	+BAUD=Param
Description	Module will change baudrate to target value immediately or after reboot depending on firmware

Example:Read module' s baudrate

```
<< AT+BAUD
```

```
>> +BAUD=115200
```

```
>> OK
```

```
<< AT+BAUD=921600
```

```
>> OK
```


Module switch baudrate to 921600 immediately, host change baudrate as well, query module' s name at new baudrate

<< AT+NAME

>> +NAME=FSC-BT1038A-1F26

>> OK

5.1.4 AT+I2SCFG - Get/Set I2S Settings

Command	AT+I2SCFG{=Param}
Param	A base-10 representation of a bit field, default:0, for each bit
BIT[0]	0:disable; 1:enable
BIT[1]	0:master; 1:slave
BIT[2]	0:FS=48000Hz;1:FS=44100Hz
BIT[3]	0:left justified; 1:right justified
BIT[4]	0:data 1 bit delay; 1:data no delay
BIT[5-6]	00: bit depth=16bits 01: bit depth=24bits 10: bit depth=32bits
BIT[7]	0:WS at high level, SD data is right channel 1:WS at high level, SD data is left channel
Response	+I2SCFG=Param
Note	BIT[4] is valid only at the condition of BIT[3]=0. BIT[7] Partial firmware support

Example:usual configuration and description

1	I2S Master; Sample rate=48000Hz; Resolution=16bits; Bit clock=48000*16*2ch=1.536Mhz
3	I2S Slave; Sample rate=48000Hz; Resolution=16bits; Bit clock=48000*16*2ch=1.536Mhz
65	I2S Master; Sample rate=48000Hz; Resolution=32bits; Bit clock=48000*32*2ch=3.072Mhz
67	I2S Slave; Sample rate=48000Hz; Resolution=32bits; Bit clock=48000*32*2ch=3.072Mhz

5.1.5 AT+SPDIFCFG - SPDIF Format Configuration

Command	AT+SPDIFCFG{=Param}
Param	0-Disable SPDIF for audio output 1-Enable SPDIF for audio output
Description	SPDIF output only support: BT1038A、BT1038B、BT806、BT1026A、BT1026B、BT1026E If the audio output is spdif, the I2S configuration is invalid.

5.1.6 AT+SPKVOL - Get/Set Analog Output Volume

Command	AT+SPKVOL{=Param}
Param	Volume ('+' / '-' / 0-15, default:15)
Description	Adjust Output volume, Adjust A2DP volume when play music,adjust HFP volume when talking

5.1.7 AT+REBOOT - Soft Reboot

Command	AT+REBOOT
Response	OK
Description	Module release all Bluetooth connections with remote device then re-boot

5.1.8 AT+RESTORE - Restore Factory Settings

Command	AT+RESTORE
Response	OK
Description	Module restore all factory settings then reboot

5.1.9 AT+BTEN - Bluetooth On/Off

Command	AT+BTEN{=Param}
Param	0-Power off 1-Power on

5.1.10 AT+PROFILE - Bluetooth Profile Selection

Command	AT+PROFILE{=Param}
Param	A base-10 representation of a bit field, for each bit:
BIT[0]	SPP (Serial Port Profile)
BIT[1]	GATT Server (Generic Attribute Profile)
BIT[2]	GATT Client (Generic Attribute Profile)
BIT[3]	HFP-HF (Hands-Free Profile Handsfree)
BIT[4]	HFP-AG (Hands-Free Profile Audio Gateway)
BIT[5]	A2DP Sink (Advanced Audio Distribution Profile)
BIT[6]	A2DP Source (Advanced Audio Distribution Profile)
BIT[7]	AVRCP Controller (Audio/Video remote controller Profile)
BIT[8]	AVRCP Target (Audio/Video remote controller Profile)
BIT[9]	HID Keyboard (Human Interface Profile)
BIT[10]	PBAP Server (Phonebook Access Profile)
BIT[11]	Map Server (Message Access Profile)
BIT[12]	Bis Sink (Le audio broadcast sink)
BIT[13]	Cis Sink (Le audio unicast sink)
Response	+PROFILE=Param
Description	GATT Server and Client, HFP Sink and Source, A2DP Sink and Source, AVRCP Controller and Target cannot be enabled simultaneously because of mutual exclusion.

Example:Read current profile selection

```
<< AT+PROFILE
```

```
>> +PROFILE=12459
```

Example:Enable SPP, GATT Server, HFP Source, A2DP Source profile, disable the others

```
<< AT+PROFILE=83
```

```
>> OK
```

Example:Enable SPP, A2DP Sink, disable the others

<< AT+PROFILE=33

>> OK

5.1.11 AT+AUTOCONN - Turn On/Off Power On Auto Reconnect

Command	AT+AUTOCONN{=Param}
Param	(0~15, default:3) (0) Turn Off (1-15) Turn on and reconnect times
Response	+AUTOCONN=Param
Description	Module will attempt to connect last device after power on if set.

5.1.12 AT+STAT - Get All Profile State

Command	AT+STAT
Response	+STAT=Param1, Param2, Param3...
Param1	DEVSTAT
Param2	SPPSTAT
Param3	GATTSTAT
Param4	HFPSTAT
Param5	A2DPSTAT
Param6	AVRCPSTAT
Param7	CISSTAT
Param8	PBSTAT
Param9	BISSTAT

5.1.13 AT+DEVSTAT - Read Device State

Command	AT+DEVSTAT
Response	+DEVSTAT=Param
Param	A base-10 representation of a bit field, for each bit:
BIT[0]	0: Power Off; 1: Power On
BIT[1]	0: BR/EDR Not Discoverable; 1: BR/EDR Discoverable
BIT[2]	0: BLE Not Advertising; 1: BLE Advertising
BIT[3]	0: BR/EDR Not Scanning; 1: BR/EDR Scanning
BIT[4]	0: BLE Not Scanning; 1: BLE Scanning

Example:usual combination and description

0	Device power off
1	Device power on
3	Device power on, BR/EDR Discoverable
5	Device power on, BR/EDR Not Discoverable, BLE Advertising
7	Device power on, BR/EDR Discoverable, BLE Advertising
13	Device power on, BR/EDR Not Discoverable, BLE Advertising, Scanning nearby BR/EDR devices

5.1.14 AT+ADDR - Get BR/EDR MAC Address

Command	AT+ADDR
Response	+ADDR=Param
Param	Module' s BR/EDR MAC address (12 Bytes ASCII)

Example:

<< AT+ADDR

>> +ADDR=DC0D30010203

>> OK

5.1.15 AT+LEADDR - Get BLE MAC Address

Command	AT+LEADDR
Response	+LEADDR=Param
Param	Module' s LE MAC address (12 Bytes ASCII)

5.1.16 AT+NAME - Get/Set BR/EDR Local Name

Command	AT+NAME{=Param1{,Param2}}
Param1	BR/EDR local name(1~31 Bytes ASCII)
Param2	MAC address suffix(0/1,default:1) 0: Disable suffix 1: Enable suffix “-XXXX” (lower 4 bytes of MAC address) after local name
Response	+NAME=Param
Description	Write local name if parameter exist, otherwise read current local name

Example:Read current BR/EDR local name

```
<< AT+NAME
>> +NAME=FSC-BT1038A-XXXX
>> OK
```

Example:Change module' s BR/EDR local name to “ABC” ,and disable suffix

```
<< AT+NAME=ABC,0
>> OK
```

Example:Change module' s BR/EDR local name to “ABC” and enable suffix

```
<< AT+NAME=ABC,1
>> OK
```

5.1.17 AT+LENAM - Get/Set BLE Local Name

Command	AT+LENAM{=Param1{,Param2}}
Param1	BLE local name(1~25 Bytes ASCII)
Param2	MAC address suffix(0/1,default:1) 0-Disable suffix 1-Enable suffix “-XXXX” (lower 4 bytes of MAC address) after local name
Response	+LENAM=Param

5.1.18 AT+SSP - Get/Set BR/EDR Pairing Mode

Command	AT+SSP{=Param}
Param	Pairing mode (0~1, default:0) (0) Secure simple pairing, auto pairing (1) Secure simple pairing, display yes/no in pairing
Response	+SSP=Param
Note	need reboot.

5.1.19 AT+COD: Get/Set Device Class

Command	AT+COD=Param
Param	Class of device(6 bytes ASCII, default:240408 Handsfree device)
Response	+COD=Param

Related configuration reference: [COD](#).

5.1.20 AT+PAIR: Get/Set BR/EDR/BLE Visibility

Command	AT+PAIR=Param
Param	Mode(0-1) 0: Leave BR/EDR/BLE discoverable mode (stop advertising/broadcasting) 1: Enter BR/EDR/BLE discoverable mode (start advertising/broadcasting)
Description	Module will always be discoverable if no device connected (BR/EDR or BLE), and be undiscoverable if connected with remote device, unless received this command

5.1.21 AT+PLIST - Get/Delete Paired List

Command	AT+PLIST{=Param}
Param	(0/1~6/12 Bytes MAC address) (0) Clear all paired record (1~6) Clear specific paired record with index (MAC) Clear specific paired record with MAC address
Response1	+PLIST=Param1, Param2, Param3{,Param4}
Param1	(1~6) Paired device' s index
Param2	(MAC) Paired device' s MAC address
Param3	(UTF8) Paired device' s name
Response2	+PLIST=E End of the paired record

Example:Read module' s paired record

```
<< AT+PLIST
```

```
>> +PLIST=1,1C5CF226D773, iPhone12
```

```
+PLIST=2, A0BC30075421, Samsung S8
```

```
+PLIST=E
```

```
>> OK
```

Example:Clear module' s paired record

```
<< AT+PLIST=0
```

```
>> OK
```

5.1.22 AT+DSCA - Release All Connections

Command	AT+DSCA
Description	Module release all Bluetooth connections with remote device

5.1.23 AT+TPMODE - Turn On/Off Throughput Mode

Command	AT+TPMODE{=Param}
Param	Throughput mode(0~1, default:0) 0: Turn Off 1: Turn On
Response	+TPMODE=Param
Description	When SPP/GATT profile connected and throughput mode is on, the AT command will be de-active, every byte received via physical UART will be sent to air, vice visa

5.1.24 AT+AUXCFG - Audio Input Mode Configuration

Command	AT+AUXCFG=Param1
Param1	mode(0-3,default:) 0: BT Mode 1: LineIn Mode 2: Spdif Mode 3: I2S Mode 4: USB Mode
Description	This command is used to configure the input mode of the module, BT1006A, BT1026C, BT1026D do not support spdif After BT1026A, BT1026B, are set to spdif, PA_MUTE pin will be modified to 20 pin BT1038 V1.0.1 does not support spdif, I2S input

Example: Set LineIn mode input

<< AT+AUXCFG=1

>> OK

Some old firmware use AT+LINECFG=1 command to set

5.1.25 AT+MUTEPIO - Set PA_MUTE pin

Command	AT+MUTEPIO{=Param}
Param	PIO(0-63, 1038A default:PIO23, BT1038A BT1038B default:PIO2)

5.1.26 AT+LINEPIO - Set LineIn Pin

Command	AT+LINEPIO{=Param}
Param	PIO(0-63, BT1038A BT1038B default:PIO26)
Description	Active low

5.1.27 AT+MICMUTE - mute MIC

Command	AT+MICMUTE=Param
Param	0-unmute 1-mute
Description	mute mic when call active

5.1.28 AT+SPKMUTE - mute Speaker

Command	AT+MICMUTE=Param
Param	0-unmute 1-mute

5.2 HFP Commands

5.2.1 AT+HFPSTAT - Read HFP State

Command	AT+HFPSTAT
Response	+HFPSTAT=Param
Description	Format description reference: +HFPSTAT - HFP State

5.2.2 AT+HFPRES - Get/Set HFP Sample Rate

Command	AT+HFPRES{=Param}
Param	Sample rate (Hz) for HFP voice call, 0:16k 1-48K
Response	+HFPRES=Param
Note	BT1038 V1.0.1 does not support this command function

5.2.3 AT+HFPCONN - Establish HFP Connection

Command	AT+HFPCONN{=Param}
Param	MAC address of target device (12 Bytes ASCII)
Description	Reconnect to last HFP device if parameter not exist

Example: Connect to last HFP device

```
<< AT+HFPCONN
```

```
>> OK
```

Example: Connect to specific HFP device with MAC address

```
<< AT+HFPCONN=1C5CF226D773
```

```
>> OK
```

5.2.4 AT+HFPDISC - Release HFP Connection

Command	AT+HFPDISC
Description	Release current HFP connection with remote device

5.2.5 AT+HFPDIAL - Dial/Redial Phone Number

Command	AT+HFPDIAL{=Param}
Param	Phone number (1~25 Bytes ASCII)
Description	Dial specific number if parameter exist, otherwise redial

Example:Redial

<< AT+HFPDIAL

>> OK

Example:Dial number “075527924639”

<< AT+HFPDIAL=075527924639

>> OK

5.2.6 AT+HFPDTMF - Send DTMF code

Command	AT+HFPDTMF{=Param}
Param	DTMF (0~9/#/*)

Example:Send DTMF code “#” while talking

<< AT+HFPDTMF=#

>> OK

5.2.7 AT+HFPANSW - Pick Up Incoming Call

Command	AT+HFPANSW
Description	Pick up an incoming call

5.2.8 AT+HFPCHUP - Reject/Hung up Call

Command	AT+HFPCHUP
Description	Reject incoming call or hung up outgoing/active call

5.2.9 AT+HFPADTS - Transfer Voice Audio Between Local and Remote Device

Command	AT+HFPADTS=Param
Param	0: Transfer voice audio from module to remote device 1: Transfer voice audio from remote device to module
Description	Transfer voice audio between module and remote device by default if no parameter set

5.2.10 AT+HFPVR - Start/Stop Voice Recognition of Remote Device

Command	AT+HFPVR=Param
Param	0-Stop 1-Start
Description	Start/Stop Voice Recognition of Remote Device (such as Siri for iOS devices)

5.2.11 AT+HFPSCO - HFP SCO Configuration

Command	AT+HFPSCO=Param
Param	0-default 1-always to HF 2-always to AG

5.2.12 AT+HFPBATT - Send device battery level

Command	AT+HFPBATT=Param
Param	level(0-9)

5.3 A2DP/AVRCP Commands

5.3.1 AT+A2DPSTAT - Read A2DP State

Command	AT+A2DPSTAT
Response	+A2DPSTAT=Param
Description	Format description reference: +A2DPSTAT - A2DP State

5.3.2 AT+A2DPCONN - Establish A2DP Connection

Command	AT+A2DPCONN{=Param}
Param	MAC address of target device (12 Bytes ASCII)
Description	Reconnect to last A2DP device if parameter not exist

5.3.3 AT+A2DPDISC - Release A2DP Connection

Command	AT+A2DPDISC
Description	Release current A2DP connection with remote device

5.3.4 AT+A2DPCFG - Read/Write A2DP Configuration

Command	AT+A2DPCFG=Param
Param	A base-10 representation of a bit field, for each bit
BIT[0]	0: Disable AAC Codec 1: Enable AAC Codec
BIT[1]	0: Disable APTX Codec 1: Enable APTX Codec
BIT[2]	0: Disable APTX-LL Codec 1: Enable APTX-LL Codec
BIT[3]	0: Disable APTX-HD Codec 1: Enable APTX-HD Codec
BIT[4]	0: Disable APTX-AD Codec 1: Enable APTX-AD Codec
BIT[5]	0: Disable LDAC Codec 1: Enable LDAC Codec

Example:Read current A2DP configuration

```
<< AT+A2DPCFG
```

```
>> +A2DPCFG=0
```

```
>> OK
```

Example::Set A2DP configuration to: Only enable AAC Codec

```
<< AT+A2DPCFG=1
```

```
>> OK
```

5.3.5 AT+A2DPDEC - Read A2DP Decoder

Command	AT+A2DPDEC
Response	+A2DPDEC=Param
Param	1:SBC 2:AAC 3:APTX 4:APTX-HD 5:APTX-AD

5.3.6 AT+A2DPRES - The resampling function is enabled

Command	AT+A2DPRES
Response	+A2DPRES=Param
Param	0:disable 1:enable

This command is used to set the I2S audio output to fix the LRCLK to 44.1K or 48K output

5.3.7 AT+AVRCPSTAT - Read AVRCP State

Command	AT+AVRCPSTAT
Response	+AVRCPSTAT=Param
Description	Format description reference: +AVRCPSTAT - AVRCP State

5.3.8 AT+AVRCPCFG - Get/Set AVRCP Configuration

Command	AT+AVRCPCFG{=Param}
Param	A base-10 representation of a bit field, default:3, for each bit:
BIT[0]	Auto get track ID3 information (title, artist, album) on track changed.default:1
BIT[1-3]	Auto get track play progress if value > 0. default:5 second

Example: Read AVRCP configuration

```
<< AT+AVRCPCFG
```

```
>> +AVRCPCFG=1
```

```
OK
```

Example: Get track play progress every 1 second

```
<< AT+AVRCPCFG=3
```

```
>> OK
```

5.3.9 AT+PLAYPAUSE - Track Play/Pause

Command	AT+PLAYPAUSE
Description	Send play or pause command to remote media player according to current play status

5.3.10 AT+PLAY - Track Play

Command	AT+PLAY
Description	Send play command to remote media player

5.3.11 AT+PAUSE - Track Pause

Command	AT+PAUSE
Description	Send pause command to remote media player

5.3.12 AT+STOP - Track Stop

Command	AT+STOP
Description	Send stop command to remote media player

5.3.13 AT+FORWARD - Track Forward

Command	AT+FORWARD
Description	Send forward command to remote media player

5.3.14 AT+BACKWARD - Track Backward

Command	AT+BACKWARD
Description	Send backward command to remote media player

5.3.15 AT+FFWD - Track FastForward

Command	AT+FFWD=Param
Param	0-Fast Forward Release, 1-Fast Forward Press
Description	Send fast forward command to remote media player

5.3.16 AT+RWD - Track Rewind

Command	AT+RWD=Param
Param	0-Rewind Release, 1-Rewind Press
Description	Send rewind command to remote media player

5.4 PBAP Commands

5.4.1 AT+PBSTAT - Read PBAP state

Command	AT+PBSTAT
Response	+PBATAT=Param
Description	Format description reference: +PBSTAT - PBAP State

5.4.2 AT+PBCONN - Establish PBAP Connection

Command	AT+PBCONN{=Param}
Param	MAC address of target device (12 Bytes ASCII)
Description	Module will use current HFP device' MAC address if parameter not exist For some firmware release, module will establish PBAP connection automatically on received command AT+PBDOWN

5.4.3 AT+PBDISC - Release PBAP Connection

Command	AT+PBDISC
Description	Release current PBAP connection with remote device

5.4.4 AT+PBDOWN - Download Phonebook

Command	Param1{,Param2}
Param1	Phonebook type(0-5) (0) Phonebook (SIM Storage) (1) Phonebook (Phone Storage) (2) Received call log (3) Dialed call log (4) Missed call log (5) All call log
Param2	Max items (1~65535, default:3000 for phonebook; 50 for call log)
Description	For some phones (e.g. iPhone), the contact download permission must be turned on in phone' s Bluetooth setting refer to application note for more description: Phonebook downloading

5.5 SPP Commands

5.5.1 AT+SPPSTAT - Read SPP State

Command	AT+SPPSTAT
Response	+SPPATAT=Param
Description	Format description reference: <i>+SPPSTAT - SPP State</i>

5.5.2 AT+SPPCONN - Establish SPP Connection

Command	AT+SPPCONN{=Param}
Param	MAC address of target device (12 Bytes ASCII)
Note	BT1038 V1.0.1 does not support this command function

5.5.3 AT+SPPDISC - Release SPP Connection

Command	AT+SPPDISC
Description	Release current SPP connection with remote device

5.5.4 AT+SPPSEND - Send Data Via SPP

Command	AT+SPPSEND=Param1,Param2
Param1	Payload length (1~492)
Param2	Payload (1~492 Bytes)
Description	If throughput mode is on, this command is de-active

Example: Send data “1234567890” to remote device via SPP

```
<< AT+SPPSEND=10,1234567890
```

```
>> OK
```

5.6 GATT Commands

5.6.1 AT+GATTSTAT - Read GATT State

Command	AT+GATTSTAT
Response	+GATTSTAT=Param
Description	Format description reference: <i>+GATTSTAT - GATT State</i>

5.6.2 AT+GATTDISC - Release GATT Connection

Command	AT+GATTDISC
Description	Release current GATT connection with remote device

5.6.3 AT+GATTSEND - Send Data Via GATT

Command	AT+GATTSEND=Param1,Param2
Param1	Payload length (1~492)
Param2	Payload (1~492 Bytes)
Description	If throughput mode is on, this command is de-active

Example: Send data “1234567890” to remote device via GATT

<< AT+GATTSEND=10,1234567890

>> OK

5.7 BIS Commands

5.7.1 AT+BISSTAT - Read BIS State

Command	AT+BISSTAT
Response	+BISATAT=Param
Description	Format description reference: +BISSTAT - BIS State

5.7.2 AT+BISSCAN - Scan BIS-Source devices

Command	AT+BISSCAN{=Param}
Param	Scan timeout

Example: AT+BISSCAN = 10. Set the scanning duration unit to:S

+BISSTAT=2

+BIS=1,-55,15,9,DC0D30000009,FSC-BP410-0009

+BIS=2,-64,15,98,DC0D30000062,FSC-BP410-0062

+BIS=3,-50,15,43356,00025B00FF0E,FSC-BP415-ff0e

+SCAN=E

5.7.3 AT+BISADD - Add a synchronous broadcast source

Command	AT+BISID{=Param1,Param2}
Param1	adv_sid
Param2	broadcast_id

Example: AT+BISADD=15,62640 Add a synchronous broadcast source.

+BISADD=15,62640

OK

5.7.4 AT+BISREMOVE - BIS Remove broadcast source

Format	AT+BISREMOVE
Param1	NULL

5.7.5 AT+BISPLAYPAUSE - BIS Play pause control

Format	AT+BISPLAYPAUSE=Param1
Param1	NULL

5.7.6 AT+BISPLAY - BIS play

Format	AT+BISPLAY=Param1
Param1	NULL

5.7.7 AT+BISPAUSE - BIS pause

Format	AT+BISPAUSE=Param1
Param1	NULL

5.8 CIS Commands

5.8.1 AT+CISSTAT - Read CIS State

Command	AT+CISSTAT
Response	+CISSTAT=Param
Description	Format description reference: +BISSTAT - BIS State

5.9 GAME Command

5.9.1 AT+GAMEENABLE - Game mode enabled

Format	AT+GAMEENABLE=Param
Param	NULL

At present, the game mode only supports the classic Bluetooth mode to open this mode
AAC,SBC corresponding encoding format delay

Get a better gaming experience with dynamic latency set to a fixed 100ms low latency state

5.9.2 AT+GAMEDISABLE - disable

Format	AT+GAMEDISABLE=Param
Param	NULL

Chapter 6

Events Table

6.1 General Events

6.1.1 +PAIRED - Pair Result

Format	+PAIRED=Param
Param	MAC address (12 Bytes ASCII) of current pairing device

6.2 HFP Events

6.2.1 +HFPSTAT - HFP State

Format	+HFPSTAT=Param
Param1	(0~6) (0) Unsupported (1) Standby (2) Connecting (3) Connected (4) Outgoing call (5) Incoming call (6) Active call

6.2.2 +HFPDEV - HFP Remote Device Information

Format	+HFPDEV=Param1{,Param2}
Param1	(12 Bytes ASCII), Remote MAC address of current HFP connection
Param2	(UTF8), Remote device name of current HFP connection

Example: HFP connect success with device

>> +HFPDEV=1C5CF226D774, iPhone

6.2.3 +HFPCID - Incoming/Outgoing Call Number

Format	+HFPCID=Param
Param	(1~25 Bytes ASCII), Call number

Example: Dial number 10086

```
<< AT+HFPDIAL=10086
>> +HFPSTAT=4
>> +HFPCID=10086
>> +HFPCIE=China Mobile
>> +HFPAUDIO=1
```

Example: Incoming call with number 13265463800

```
>> +HFPSTAT=5
>> +HFPCID=13265463800
>> +HFPCIE=Jerry
>> +HFPAUDIO=1
```

6.2.4 +HFPCIE - Incoming/Outgoing Call Name

Format	+HFPCIE=Param
Param	(UTF8), Call name
Note	This event is supported by IOS mobile phones, but not supported by most Android phones

6.2.5 +HFPAUDIO - HFP Voice Audio State

Format	+HFPAUDIO=Param
Param	(0) HFP voice audio disconnected, audio input/output routed to remote device (1) HFP voice audio connected, audio input/output routed to module

6.2.6 +HFPSIG - HFP Remote Device Network Signal Strength

Format	+HFPSIG=Param
Param	(0~5)Network signal strength of remote device

6.2.7 +HFPROAM - HFP Remote Device Roaming State

Format	+HFPROAM=Param
Param	(0/1) Roaming state of remote device

6.2.8 +HFPBATT - HFP Remote Device Battery Level

Format	+HFPBATT=Param
Param	(0~5) Battery level of remote device

6.2.9 +HFPNET - HFP Remote Device Network Operator Selection

Format	+HFPNET=Param
Param	(UTF8) Network operator selection of remote device

6.2.10 +HFPMANU - HFP Remote Device Manufacture

Format	+HFPMANU=Param
Param	(UTF8) Manufacture name of remote device

6.2.11 +HFPNUM - HFP Remote Device Phone Subscriber Number

Format	+HFPNUM=Param
Param	(ASCII)Phone subscriber number of remote device

6.2.12 +HFPIBR - HFP Remote Device In-band-ring Support

Format	+HFPIBR=Param
Param	(0/1) In-band-ring support
Description	Report whether the current connected phone support in-band-ring

6.3 A2DP/AVRCP Events

6.3.1 +A2DPSTAT - A2DP State

Format	+A2DPSTAT=Param
Param	(0) Unsupported (1) Standby (2) Connecting (3) Connected (4) Paused (5) Streaming

6.3.2 +A2DPDEV - A2DP Remote Device Information

Format	+A2DPDEV=Param1{,Param2}
Param1	(12 Bytes ASCII), Remote device' s MAC address of current A2DP connection
Param2	(UTF8), Remote device' s name of current A2DP connection

6.3.3 +AVRCPSTAT - AVRCP State

Format	+AVRCPSTAT=Param
Param	(0) Unsupported (1) Standby (2) Connecting (3) Connected

6.3.4 +PLAYSTAT - Media Player State

Format	+PLAYSTAT=Param
Param	(0) Stopped (1) Playing (2) Paused (3) Fast Forwarding (4) Fast Rewinding

6.3.5 +TRACKSTAT - Media Player Play Progress

Format	+TRACKSTAT=Param1,Param2,Param3
Param1	(0~4), Media Player State, see +PLAYSTAT
Param2	(Decimal ASCII),Elapsed time of current track in millisecond
Param3	(Decimal ASCII),Total time of current track in millisecond

Example: Read media player play progress every 1s

>> +TRACKSTAT=1,54000,322000

>> +TRACKSTAT=1,55000,322000

>> +TRACKSTAT=1,56000,322000

6.3.6 +TRACKINFO - Media Track Information

Format	+TRACKINFO=Param1,Param2,Param3
Param1	title
Param2	artist
Param3	album

Example: Phone playing song “Creep-Radio Head”

>> +TRACKINFO=Creep , Radiohead , Pablo Honey

6.4 Phonebook Access Events

6.4.1 +PBSTAT - PBAP State

Format	+PBSTAT=Param
Param	(0) Unsupported (1) Standby (2) Connecting (3) Connected (4) Downloading

6.4.2 +PBCNT - Phonebook Entries of Remote Device

Format	+PBCNT=Param
Param	Phonebook entries of remote device

6.4.3 +PBDATA - Phonebook Data

Format1	+PBDATA=Param1<FF>Param2<FF>Param3{<FF>Param4}
Param1	Type (0) Phonebook (SIM Storage) (1) Phonebook (Phone Storage) (2) Received call log (3) Dialed call log (4) Missed call log
Param2	Name
Param3	Number
Param4	(15 Bytes ASCII), Call time if current download type is call log Format: Year(4Bytes) Month(2Bytes) Day(2Bytes) T(1Byte) Hour(2Bytes) Minute(2Bytes) Second(2Bytes). e.g. 20161012T152826 represents 2016/10/12/15/28/26
Format2	+PBDATA=E: Download complete
Description	Call time may not exist for some mobile phones

Example: Download all phonebook

```
<< AT+PBDOWN=1
```

```
>> +PBCNT=234
```

```
+PBDATA=1,Jack,18219146201
```

```
+PBDATA=1,kenan,8613771972680
```

```
.....
```

```
+PBDATA=E
```

Example: Download 10 dialed call log

```
<< AT+PBDOWN=3,10
```

```
>> +PBDATA=3,China Mobile,10086,20171013T103516
```

```
+PBDATA=3,Jerry,18688967507,20171012T152826
```

```
.....
```

```
+PBDATA=E
```

6.5 SPP Events

6.5.1 +SPPSTAT - SPP State

Format	+SPPSTAT=Param
Param	(0) Unsupported (1) Standby (2) Connecting (3) Connected

6.5.2 +SPPDATA - SPP Received Incoming Data

Format	+SPPDATA=Param1,Param2
Param1	Payload length
Param2	Payload

Example: Received data “1234567890” from remote device via SPP

```
<< +SPPDATA=10,1234567890
```

6.6 GATT Events

6.6.1 +GATTSTAT - GATT State

Format	+GATTSTAT=Param
Param	(0) Unsupported (1) Standby (2) Connecting (3) Connected

6.6.2 +GATTDATA - GATT Received Incoming Data

Format	+GATTDATA=Param1,Param2
Param1	Payload length
Param2	Payload

Example: Received data “1234567890” from remote device via GATT

<< +GATTDATA=10,1234567890

6.7 BIS Events

6.7.1 +BISSTAT - BIS State

Format	+BISSTAT=Param
Param	(0) Unsupported (1) Standby (2) Scanning (3) Connected (4) Paused (5) Streaming

6.7.2 +BIS - BIS The scanning result

Format	+BIS=Param1,Param2,Param3,Param4,Param5,Param6
Param1	index value
Param2	RSSI
Param3	broadcast sid
Param4	broadcast id
Param5	mac address
Param6	device name

6.8 CIS Events

6.8.1 +CISSTAT - CIS State

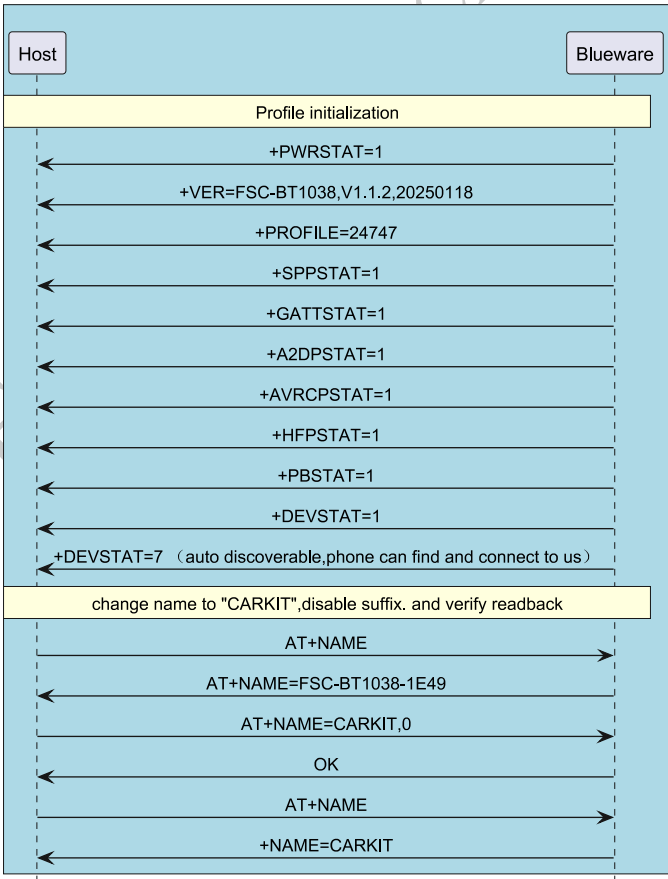
Format	+BISSTAT=Param
Param	(0) Unsupported (1) LeaUnicasSink_idle (2) LeaUnicasSink_disconnected (3) LeaUnicasSink_ase_enabling (4) LeaUnicasSink_ase_streamming

Chapter 7

Application scenarios

7.1 profiles initializing and change parameter

The following figure shows Profile initialization and name modification



MCU change device name CARKIT reference code:


```

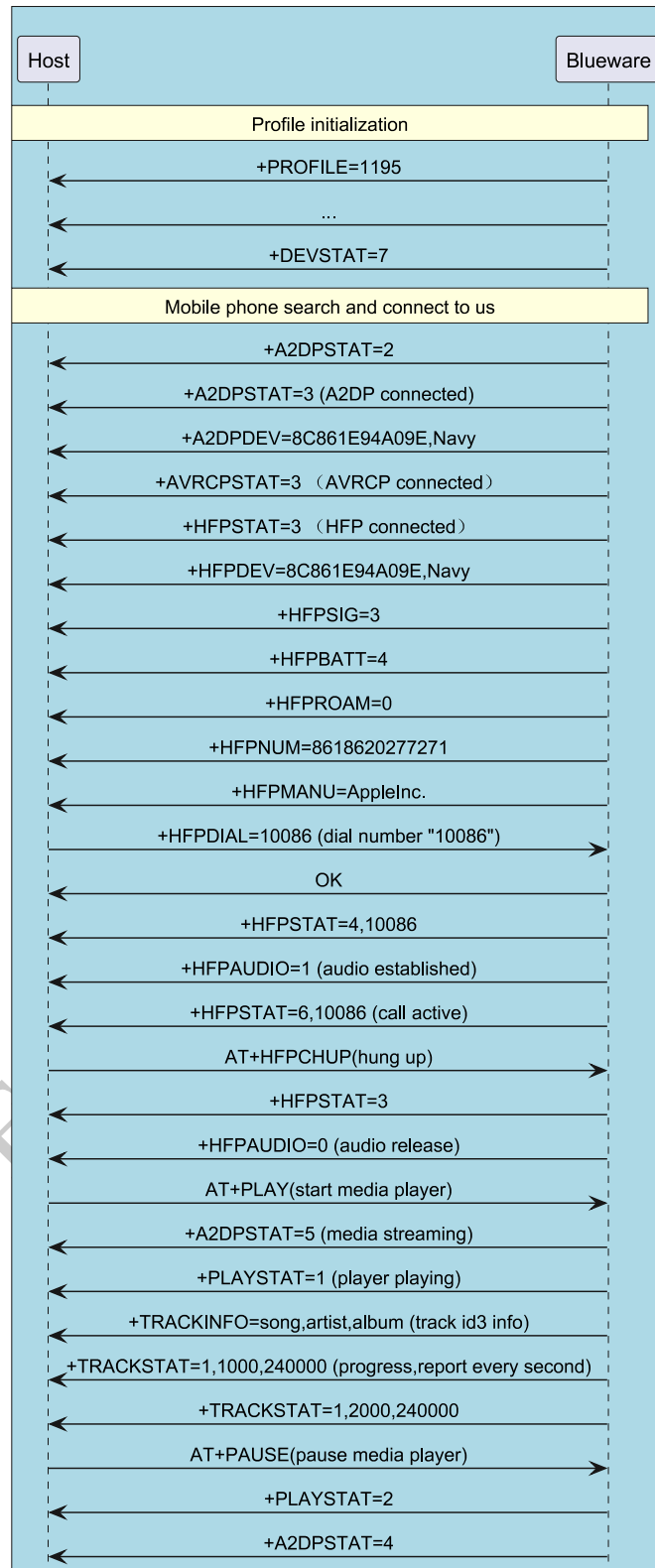
1 void change_name(void)
2 {
3     uart_send("AT+NAME\r\n");
4     if(uart_read("+NAME",name_buf))
5     {
6         if(memcmp(name_buf,"CARKIT",6))
7         {
8             uart_send("AT+NAME=CARKIT,0\r\n");           //defalut_
9             ↪disable MAC address suffix
10            uart_send("AT+NAME\r\n"); // read bt name
11            if(uart_read("+NAME",name_buf))
12            {
13                if(memcmp(name_buf,"CARKIT",6))
14                {
15                    //change name fail
16                }
17                else
18                {
19                    //change name success
20                }
21            }
22        }
23    }

```

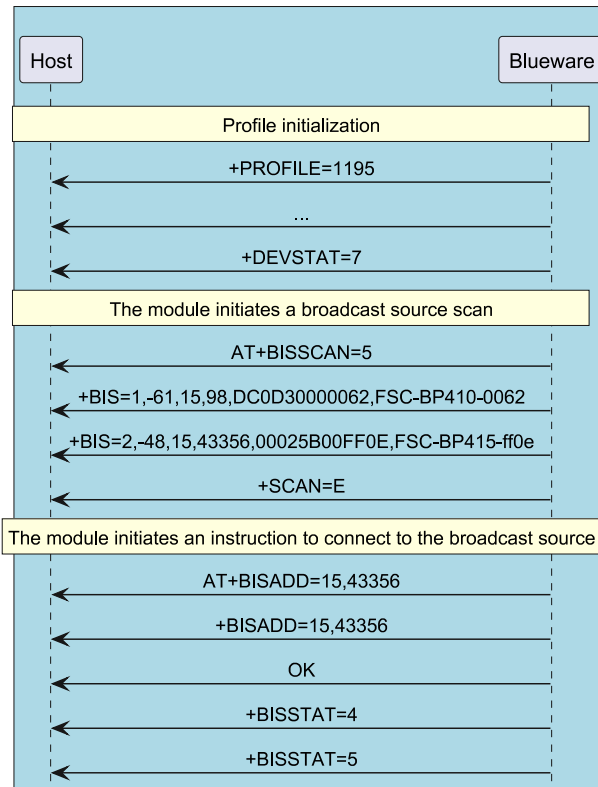
Note

modify any parameters, it is recommended to query first and then modify the final verification

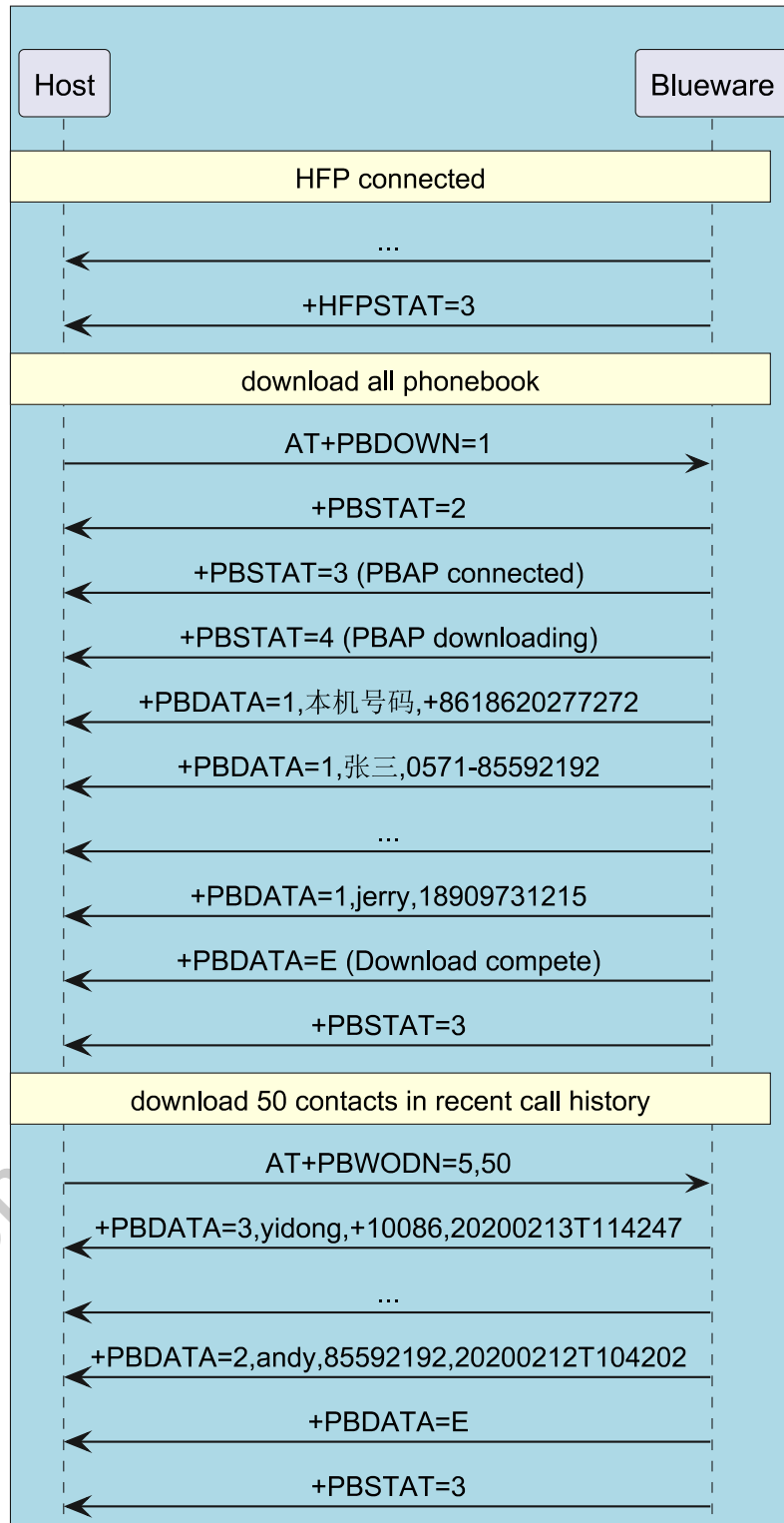
7.2 Classic BT Receive mode connection



7.3 LE Audio Broadcast Scan connection



7.4 Phonebook downloading



Chapter 8

Appendix

8.1 Download PDF Document

Download PDF Document