



FSC-BT1026x User Guide

Feasycom

1.0

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This guide is applicable to the **FSC-BT1026x** series Bluetooth audio module, include:

- FSC-BT1026A
- FSC-BT1026B
- FSC-BT1026C
- FSC-BT1026D
- FSC-BT1026E
- FSC-BT1026F

This guide consists of the following parts:

Chapter 1

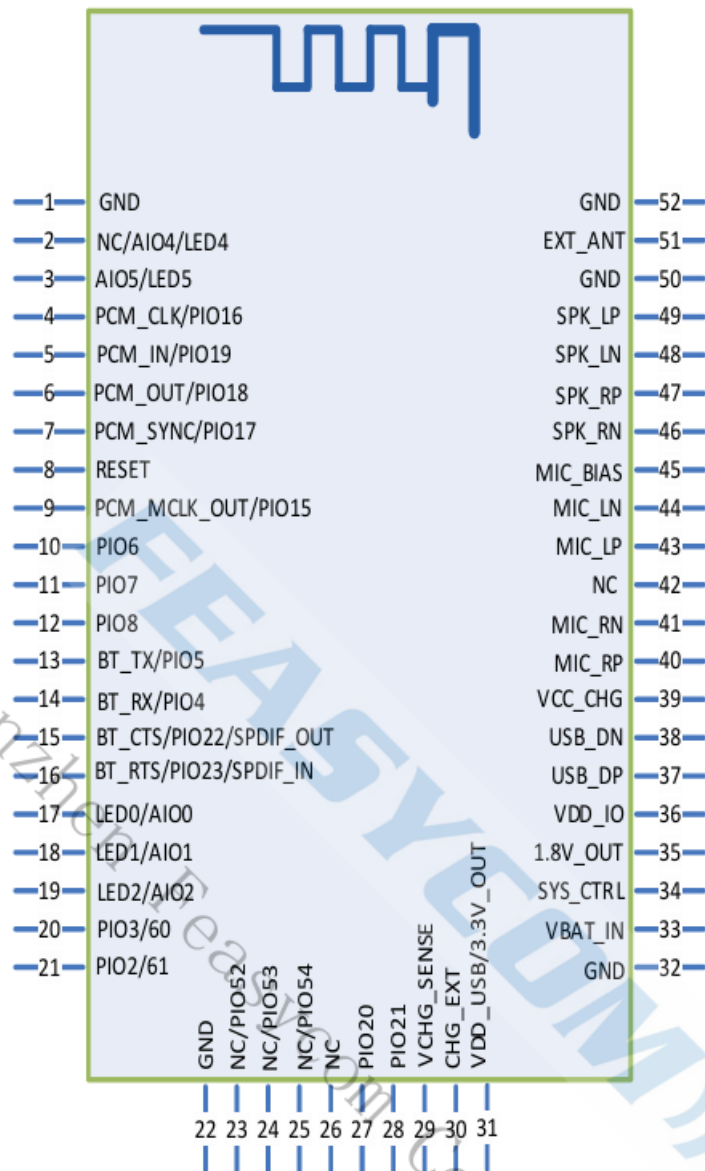
Hardware Design

[中文版]

1.1 Module Pin Diagram

Taking FSC-BT1026C as an example:

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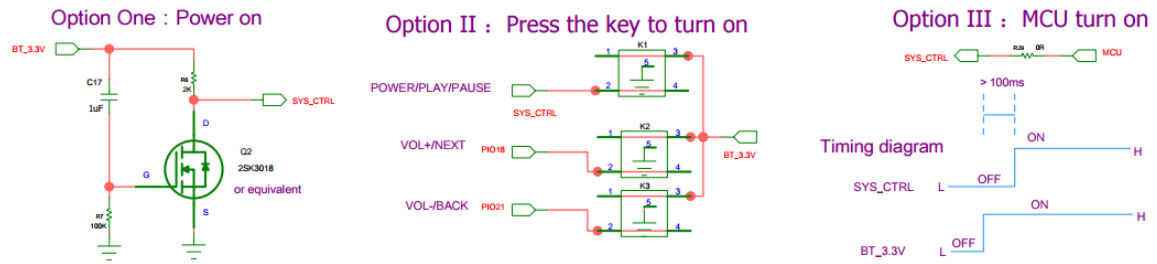
1.2 Pin Description

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	Low level reset
13	UART_TX	O	UART_TX
14	UART_RX	I	UART_RX
15	UART_CTS	I/O	UART flow control pin (not required by default)
16	UART_RTS	I/O	default as power amplifier control pin
17	LED0	I/O	General-purpose analog/digital input or output.
18	LED1	I/O	General-purpose analog/digital input or output
32	GND	GND	GND
33	VDD	VDD	3.3V power supply, it is recommended to use LDO
34	SYS_CTRL	I	Power on/off pin
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	External antenna connect pin

1.3 Power-on Circuit Design

The FSC-BT1026X module has three options for power on, which are: delayed power on circuit, button on/off circuit, and MCU controlled power on/off circuit. As shown in the following figure:

Power-on circuit



1.4 Hardware Design Note

- simple testing environment, just connect **VDD / VDD_IO / SYS_CTRL / GND / UART_RX / UART_TX**.
- SYS_CTRL defaults to key on/off mode. Power on: Short press for 1 second Power off: Press and hold for 3 seconds.
- If the button on/off mode is not used, power on delay of 100ms and then raise SYS_CTRL.
- After drawing the PCB circuit schematic, please send it to [Feasycom](#) for review to avoid suboptimal Bluetooth distance.

Chapter 2

Functional Description

[中文版]

2.1 Default Configuration

Name	FSC-BT1026-XXXX
LE-Name	FSC-BT1026-LE-XXXX
Pin Code	0000
Secure Simple Pairing Mode	On
UART Baudrate	115200/8/N/1

2.2 Audio Algorithm Support Instructions

model	chip	SBC	AAC	aptX	aptX-HD	aptX-LL	aptX-AD	aptX-LossLess	LDAC	CVC
BT1026	QCC302	√	√	√	√	li-cense	×	×	×	√
BT1026	QCC302	√	√	li-cense	×	×	×	×	×	√
BT1026	QCC302	√	√	√	√	li-cense	×	×	×	√
BT1026	QCC512	√	√	li-cense	license	li-cense	li-cense	×	√	li-cense
BT1026	QCC512	√	√	li-cense	license	li-cense	li-cense	×	×	li-cense

- **FSC-BT1026B & FSC-BT1026D** : APTX-LL requires the purchase of a license, which is not supported by the default program. If you need to test APTX-LL, please contact Feasycom.
- **FSC-BT1026E** : The APTX series decoding (including APTX, APTX-HD, APTX-LL, APTX-AD) and CVC all require authorization licenses.

2.3 Supported Profiles

- SPP (Serial Port Profile)
- GATTs (Generic Attribute Profile LE-Peripheral role)
- HFP-HF (Hands-Free Profile)
- A2DP-Sink (Advanced Audio Distribution Profile)
- AVRCP-Controller (Audio/Video remote controller Profile)
- HID-DEVICE (Human Interface Profile)
- PBAP (Phonebook Access Profile)

2.4 GATT Service

Type	UUID	Operation	Description
Service	0xFFF0		Throughput transmission service
Write	0xFFF2	Write,Write Without Response	APP sends data to module
Notify	0xFFF1	Notify	App notification

Chapter 3

Quick Development Kit

[中文版]

3.1 Datasheet

- FSC-BT1026x Datasheet

3.2 Evaluation Board

- FSC-DB200 : Feasycom Bluetooth audio application development board, compatible with FSC-BT1026x series modules.

3.3 AT Commands Set

- FSC-BT1026x General Audio AT Commands Set
- FSC-BT1026x TWS AT Commands Set

3.4 Serial Port Tool

- Feasycom Serial Port Tool : A serial port communication analysis tool based on Windows PC.

3.5 APP&SDK

- **FeasyBlue** : Feasycom App & SDK resource supporting Android and iOS, which enables functions such as Bluetooth BLE & SPP data communication test, Feasycom module firmware version reading, and parameter configuration and OTA AT commands etc.

3.6 Firmware Upgrade

3.6.1 OTA Upgrade

- **FeasyOTA App** (Based on Mobile Application)
- User Guide: Please refer to **FSC-BT1026x - OTA Upgrade**

3.6.2 UART Upgrade

- **FSC-BT1038x Upgrade Tool** (Based on Windows PC)
- User Guide: Please refer to **FSC-BT1026x - UART Upgrade** .

Chapter 4

Quick Start

[中文版]

4.1 What you need

4.1.1 Required Hardware

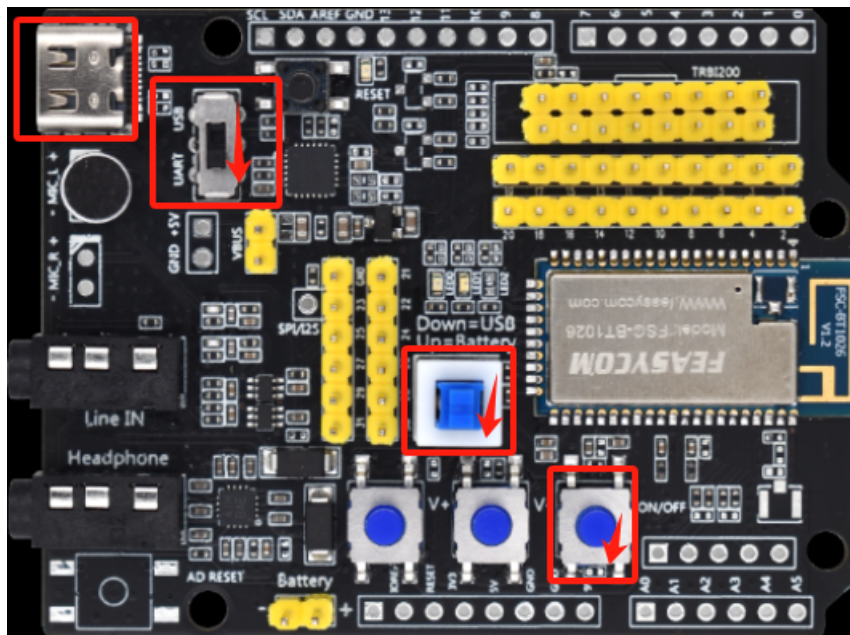
- 1 x FSC-DB200-BT1026C Rapid Development Kit : FSC-DB200 Rapid Development Kit pre-integrated with the FSC-BT1026C Bluetooth Audio Module
- 1 x PC (Windows)

4.1.2 Software and Setup

- Feasycom Serial Port Tool : A serial port communication analysis tool based on Windows PC.
- Communication Interface : UART
- UART Configuration: 115200/8/N/1

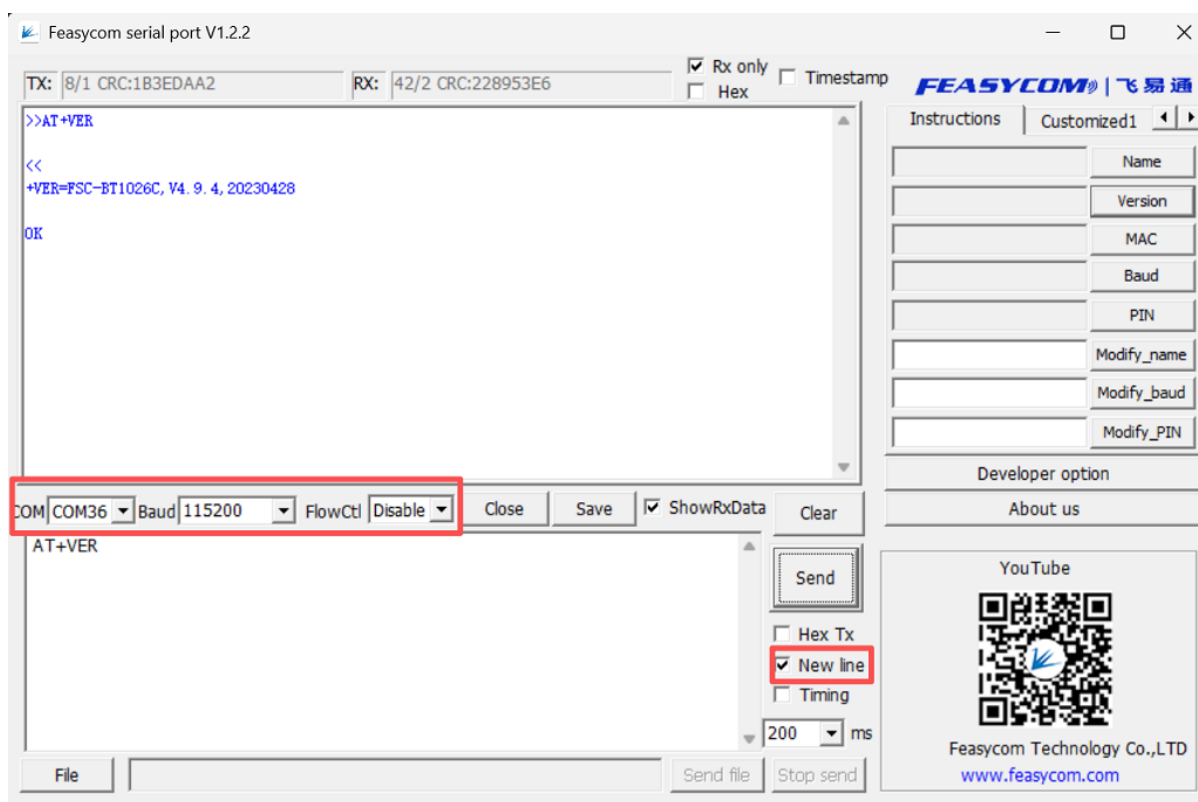
4.2 Hardware Access

1. Connect FSC-DB200-BT1026C to PC via USB To Type-C cable, switch the **UART/USB toggle** to UART, Press the USB/battery **power option button** to switch to USB power supply, Press and hold the **ON/OFF button** for 3 seconds to turn on the device, and the PC will automatically recognize the serial port and generate a virtual COMx port.



- ▼ DESKTOP-2K6955F
 - > Jungo Connectivity
 - > USB 连接器管理器
 - > WSD 打印提供程序
 - > 处理器
 - > 磁盘驱动器
 - > 存储控制器
 - > 打印队列
 - > 打印机
 - > 电池
 - ▼ 端口 (COM 和 LPT)
 - ▼ Silicon Labs CP210x USB to UART Bridge (COM11) ↗
 - > 固件
 - > 计算机
 - > 监视器
 - > 键盘
 - > 蓝牙
 - > 内存技术设备
 - > 人机接口设备
 - > 软件设备
 - > 软件组件
 - > 生物识别设备
 - > 声音、视频和游戏控制器
 - > 鼠标和其他指针设备
 - > 通用串行总线控制器

2. Run the Feasycom Serial Port Tool on the PC, set the correct **COM** and **Baud**, and check the **New Line**.



4.3 Communication Test

The following are several basic general AT command test examples.

For more AT commands, please refer to [FSC-BT1026x General Audio AT Commands Set](#).

4.3.1 AT - UART Communication Test

Com-mand	AT\r\n
Response	\r\nOK\r\n
Descrip-tion	Test the UART communication between HOST and Module after power on, baudrate changed, etc.

Example:

```
Send:      >>AT\r\n
Response:  <<\r\nOK\r\n    //Successfully connected.
```

4.3.2 AT+NAME - Read/Write Local BR/EDR Name

Example:

```
Send:      >>AT+NAME\r\n
Response: <<\r\n+NAME=FSC-BT1026C\r\n      //Example, please refer_
↳to the actual reading
Response: <<\r\nOK\r\n
```

4.3.3 AT+LENAM - Read/Write Local BLE Name

Example:

```
Send:      >>AT+LENAM\r\n
Response: <<\r\n+LENAM=FSC-BT1026C-LE\r\n    //Example, please_
↳refer to the actual reading
Response: <<\r\nOK\r\n
```

4.3.4 AT+VER - Read the Current Firmware Version

Example:

```
Send:      >>AT+VER\r\n
Response: <<\r\n+VER=FSC-BT1026C,V4.9.4\r\n    //Example, please_
↳refer to the actual reading result
Response: <<\r\nOK\r\n
```

Chapter 5

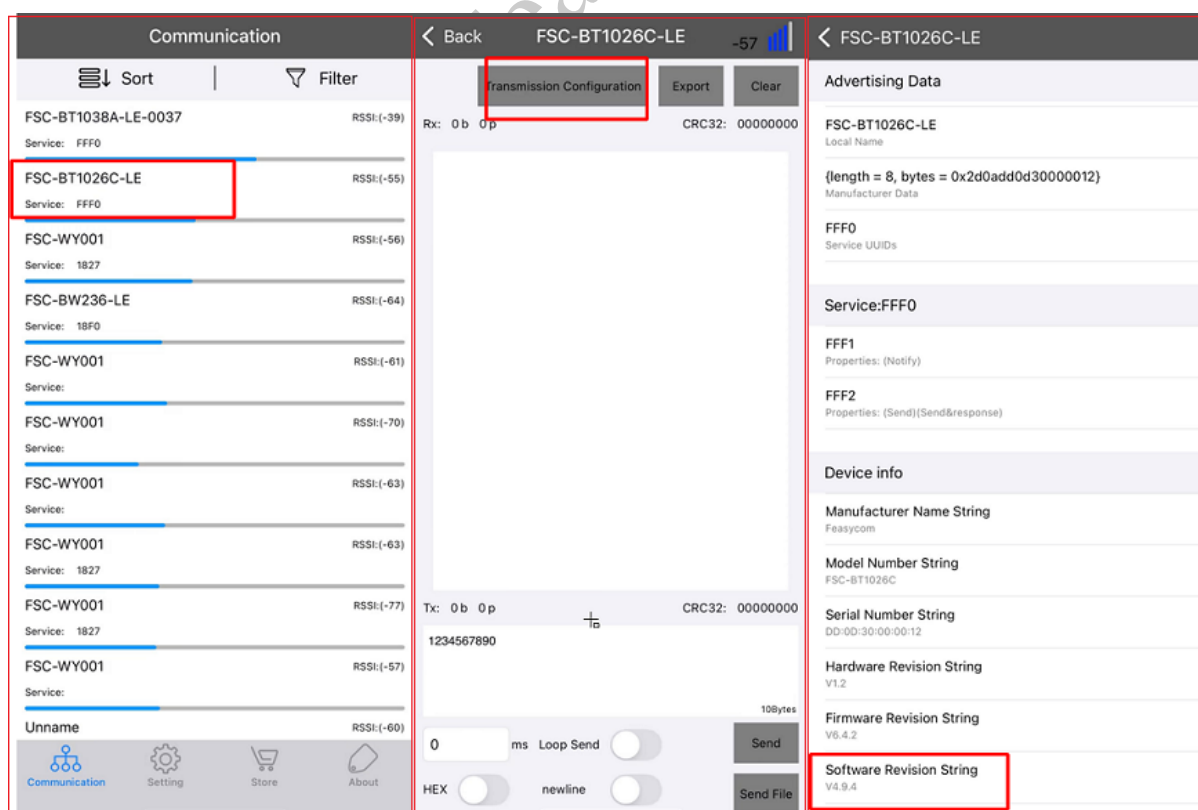
Obtain Firmware Version

[中文版]

5.1 FeasyBlue APP

After establishing BLE connection with the FSC-BT1026x through [FeasyBlue APP](#), check the firmware version information on the **Transmission Configuration** function interface.

Warning: The profile of the Bluetooth module needs to enable BLE (GATT) function



5.2 UART AT Command

Send the **AT+VER** command through UART to obtain firmware version information.

The example of AT command operation and response events is as follows:

Send: >>AT+VER

Response: << +VER=FSC-BT1026C,V4.9.4 //Example, please refer to
→the actual reading result

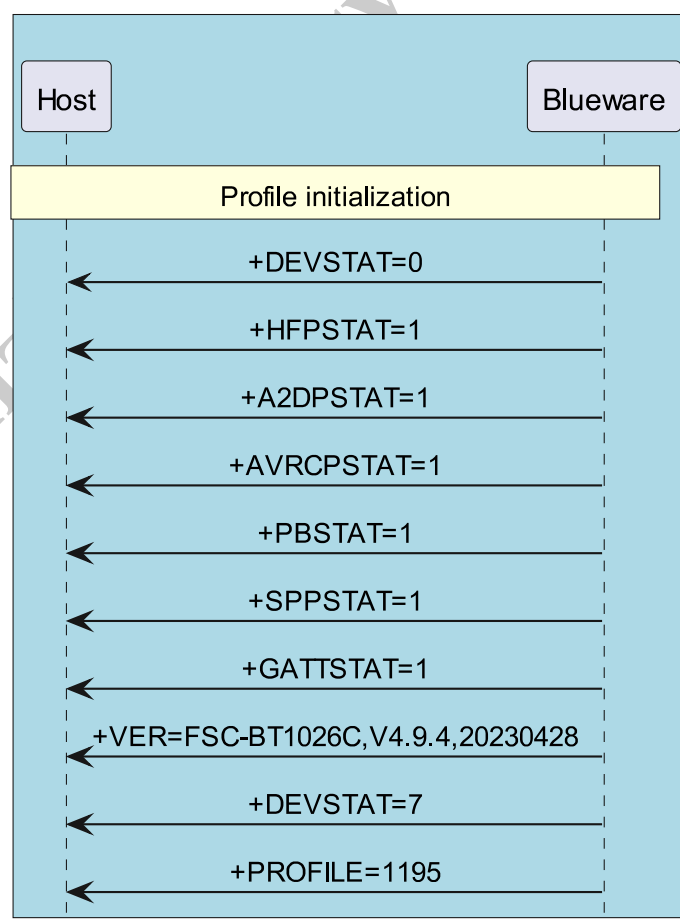
Chapter 6

Development Examples

[中文版]

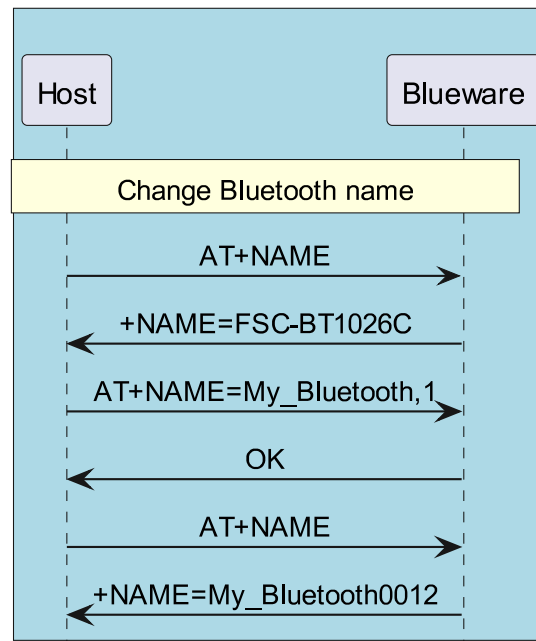
6.1 Profile Initialization

Module Profile initialization, response event examples are as follows:



6.2 Parameter Modification

6.2.1 Modify Bluetooth Name



Before the MCU modifies any parameters, it is recommended to first query, then modify, and finally verify. For the MCU to modify the device name to CARKIT, the reference code example is as follows:

```

void change_name(void)
{

    uart_send("AT+NAME\r\n");
    if(uart_read("+NAME", name_buf))
    {
        if(memcmp(name_buf, "CARKIT", 6))
        {
            uart_send("AT+NAME=CARKIT,0\r\n"); //defalut disable_
            ↪MAC address suffix
            uart_send("AT+NAME\r\n"); // read bt name
            if(uart_read("+NAME", name_buf))
            {
                if(memcmp(name_buf, "CARKIT", 6))
                {

```

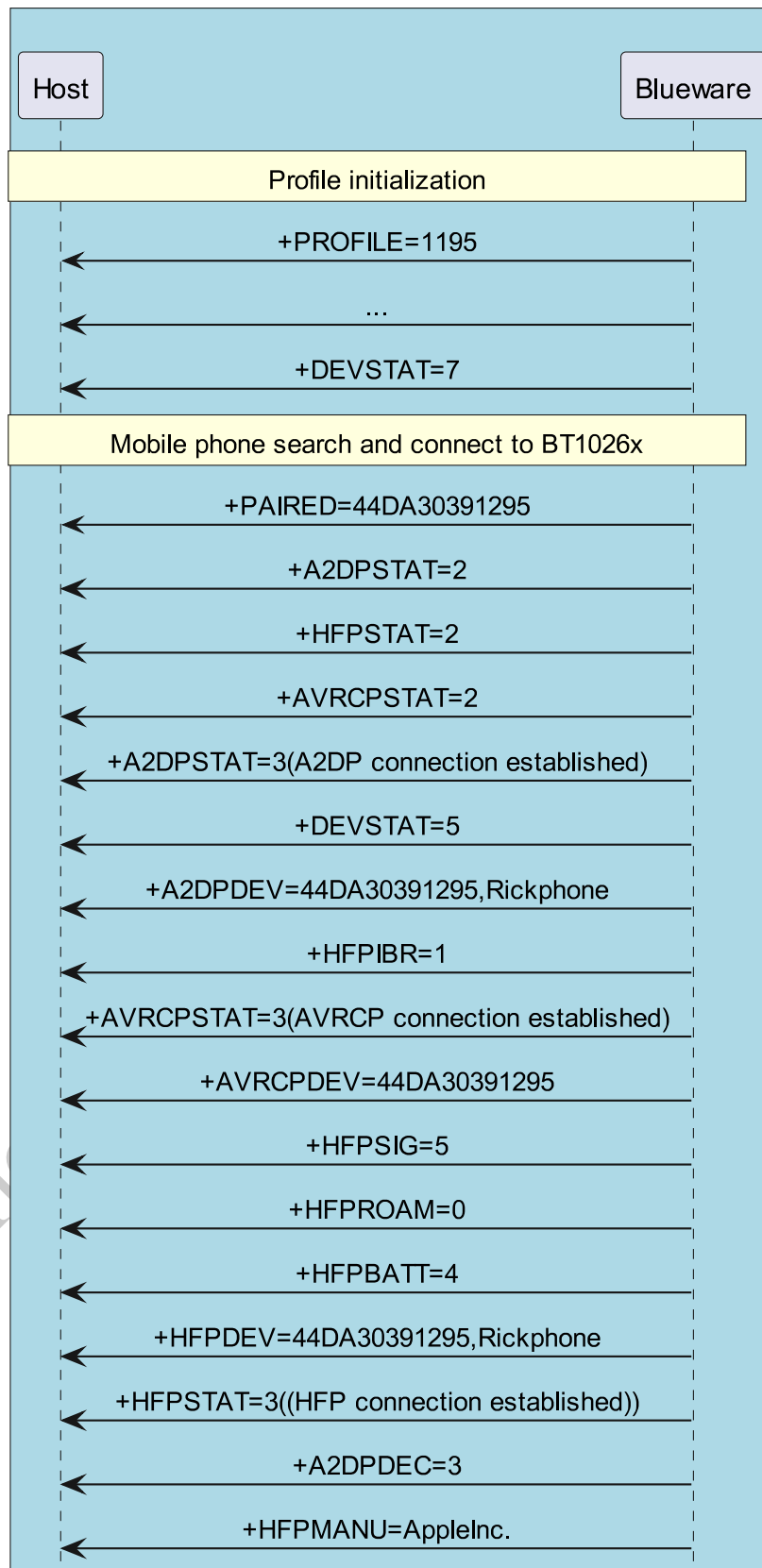
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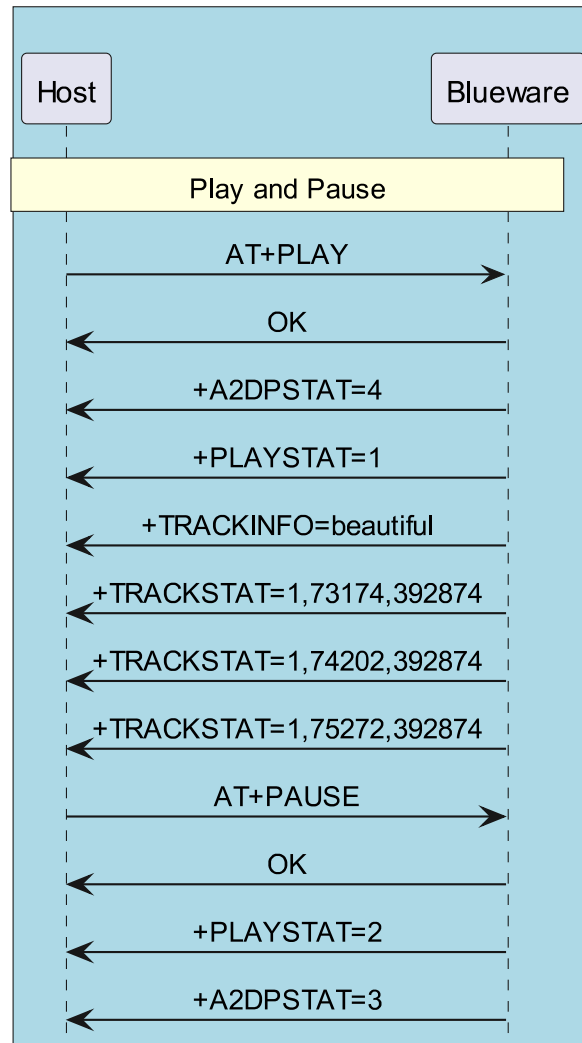
```
        //change name fail
    }
    else
    {
        //change name success
    }
}
}
}
```

6.3 Audio Sink Mode Application

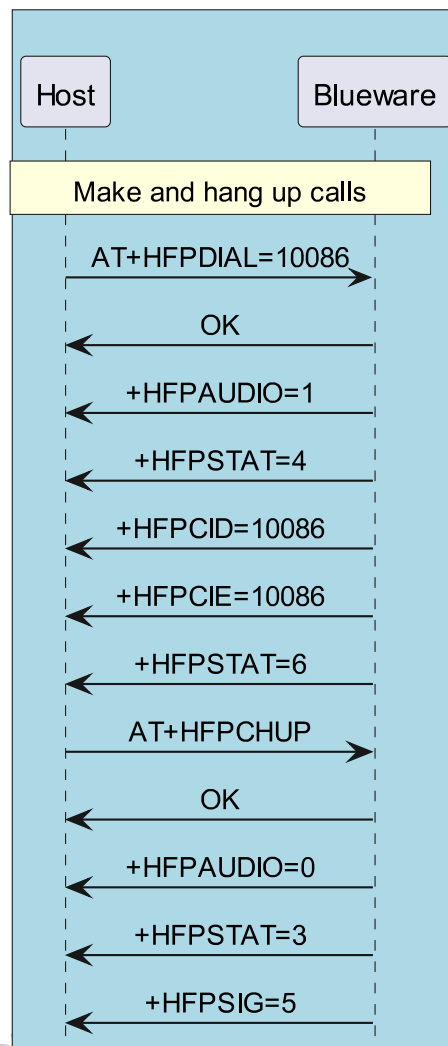
6.3.1 Profile Connection



6.3.2 Play and Pause Music



6.3.3 Take and Hang up Call



6.4 Phonebook Download

Application Process Operation Examples:

6.4.1 HFP connection has been established

```

Response: <<+PWRSTAT=1
Response: <<+VER=FSC-BT1026C,V4.9.4,20230428      // Example, please
↳refer to the actual version
Response: <<+PROFILE=1195                        // General default, enable SPP,
↳GATT Server, HFP-HF, A2DP Sink, AVRCP Controller, PBAP Server
↳profiles
  
```

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```

Response: <<+SPPSTAT=1
Response: <<+GATTSTAT=1
Response: <<+A2DPSTAT=1
Response: <<+AVRCPSTAT=1
Response: <<+HFPSTAT=1
Response: <<+AVRCPSTAT=1
Response: <<+PBSTAT=1
Response: <<+DEVSTAT=1
Response: <<+DEVSTAT=7           // Enables device discoverability;
➔mobile phones can find this Bluetooth device and establish a
➔connection

```

6.4.2 Download all phonebooks

```

Send :>>AT+PBDOWN=1
Response: <<OK
Response: <<+PBSTAT=2
Response: <<+PBSTAT=3           // PBAP connected
Response: <<+PBSTAT=4           // PBAP downloading
Response: <<+PBDATA=1<FF>Local Number<FF>+8618620277272
Response: <<+PBDATA=1<FF>Zhang San<FF>0571-85592192
...
Response: <<+PBDATA=1<FF>Jerry<FF>18909731215
Response: <<+PBDATA=E           // Download completed
Response: <<+PBSTAT=3

```

6.4.3 Download 50 call records

```

Send: >>AT+PBWODN=5,50
Response: <<ok
Response: <<+PBDATA=3<FF>yidong<FF>+10086<FF>20200213T114247
...
Response: <<+PBDATA=2<FF>andy<FF>85592192<FF>20200212T104202
Response: <<+PBDATA=E           // Download completed
Response: <<+PBSTAT=3

```

Chapter 7

Firmware Upgrade

[中文版]

FSC-BT1026x series Bluetooth audio module now supports : **Over the air upgrade (OTA)** and **Uart upgrade**.

7.1 OTA Upgrade

7.1.1 Tool

- FeasyOTA APP (Based on Android)

7.1.2 User Guide

- 1.Run **FeasyOTA APP**. On the home screen, select the **BT1026x Upgrade (Universal Version)** function module. After entering, you will be navigated to the device search interface.
- 2.Search for and find the name of the Bluetooth module that needs upgrading (e.g., FSC-BT1026C). Selecting the device will automatically initiate Bluetooth pairing and connection. If **Disconnect** is displayed in the top-right corner of the screen, it indicates that the device is fully connected. If **Connect** is displayed, it means the device is not fully connected; please click **Connect** in the top-right corner to ensure a complete connection.
- 3.On the successfully connected screen, the **Upgrade** button will be displayed and clickable.
- 4.Click the **Upgrade** button. In the pop-up **OTA Upgrade** interface, load the firmware upgrade file in one of the following ways:
 - Via **Select Firmware**: Choose the firmware upgrade file stored in the mobile phone's local storage (provided by Feasycom).

- **Via Get Firmware:** Enter the **DFU Name** to download the firmware file from the Feasycom cloud server for upgrade. The DFU Name is in a path format similar to /BT1026C/audrx/test (example, please refer to the actual information provided by Feasycom).

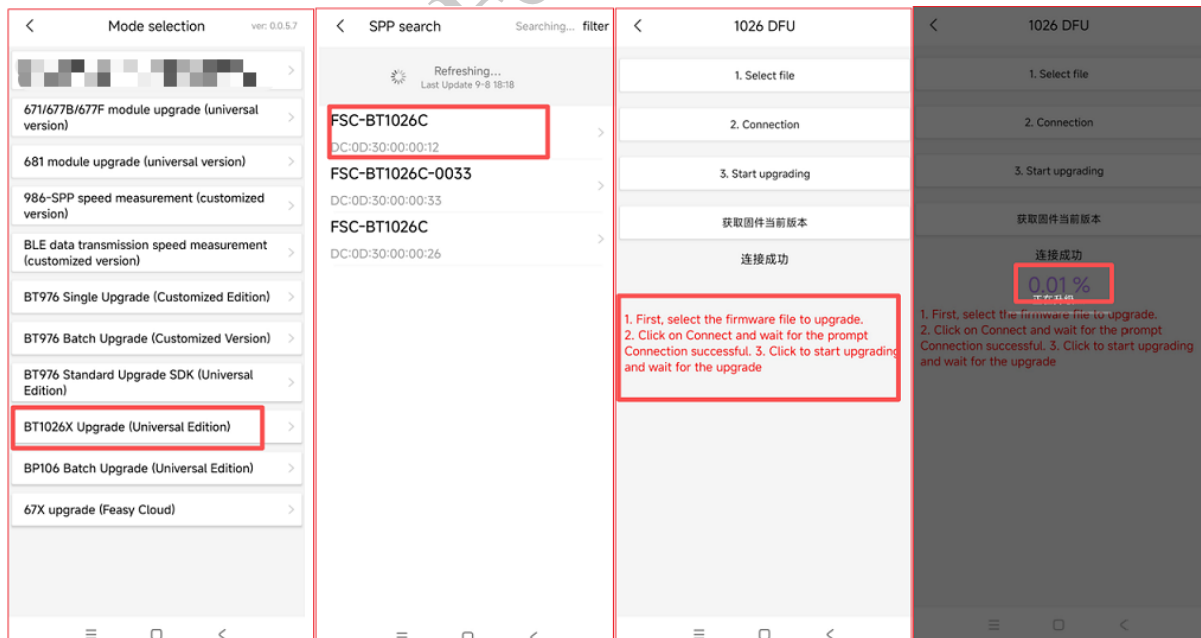
5. After the firmware file is successfully loaded, click the **Start Upgrade** button. The interface will display the upgrade progress and “**Upgrading**”, indicating that the upgrade mode is successfully entered and the upgrade is in progress.

6. Wait for the upgrade progress bar to complete. When “**Upgrade Completed**” is displayed, the upgrade is finished.

Warning:

1. When installing and running **FeasyOTA App**, please allow the app to obtain permissions such as **nearby devices**, **location information**, **media and file access**, otherwise it may not be able to find nearby Bluetooth devices or load firmware files;
2. If enter **DFU name** to obtain upgrade files, you need to pay attention to the phone's access to the Internet and ensure that the DFU name is entered correctly (case sensitive), otherwise an error **network or file error** will be reported;
3. Do not turn off the power during the upgrade process

7.1.3 OTA Upgrade Example



7.2 UART Upgrade

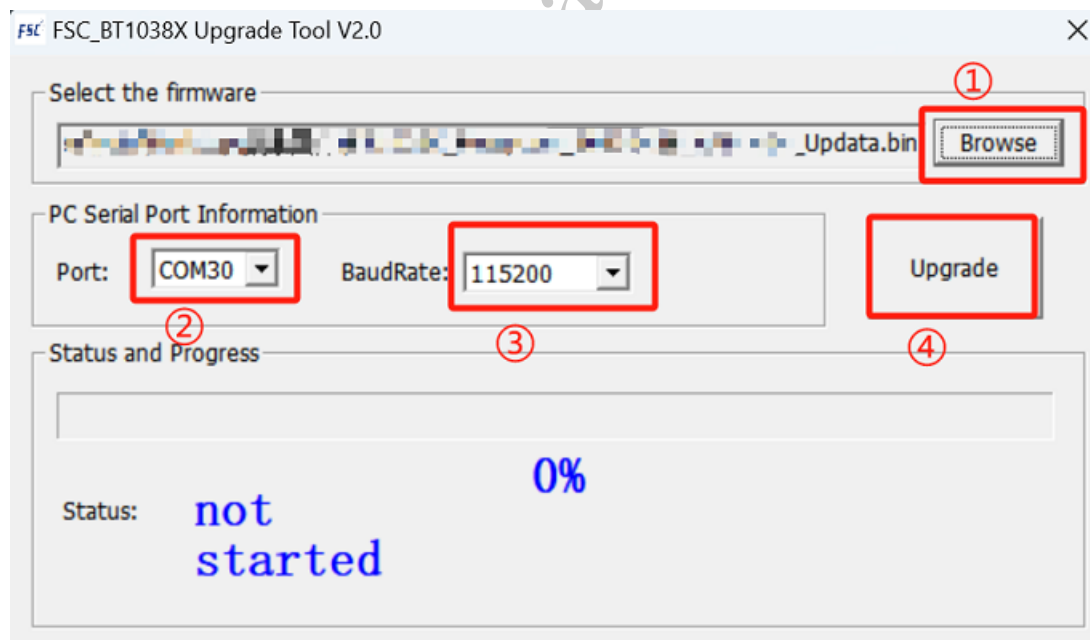
7.2.1 Tool

- FSC-BT1038x Upgrade Tool 2.1 (Based on Windows PC)

7.2.2 User Guide

1. This example uses the Feasycom **FSC-DB200** development board.
2. Connect the FSC-DB200-BT1026C to the PC via a USB to Type-C data cable. Toggle the **UART/USB switch** to UART, press the **USB/Battery Power Option button** to switch to **USB**, and press and hold the **Power (ON/OFF) button** for 2-3 seconds to power on. The PC will automatically recognize the serial port and generate a virtual COMx port.
3. Open FSC-BT1038x Upgrade Tool. Click **Browse** to select the firmware upgrade file stored locally on the PC to load the firmware file.
4. After loading the firmware file, select the corresponding COMx for the **Port**, and select the current baud rate of the module for the **BaudRate** (the default baud rate for general is 115200). Once the configurations are confirmed to be correct, click **Upgrade** to start the upgrade and enter upgrade mode. Wait until the “Status and Progress” bar is complete.

7.2.3 UART Upgrade Example



7.3 FAQs

Q: What should I do if there is an exception during the upgrade process, such as an upgrade interruption? After the upgrade is completed, but the module has not been successfully upgraded

A: You can try powering on again and repeating the upgrade operation to confirm if you can enter the upgrade mode normally. If not, please contact the Feasycom support team.

Q: How to achieve firmware upgrade of FSC-BT1026x through MCU UART?

A: Customers are required to integrate the upgrade protocol into the MCU. If you have this requirement, please contact the Feasycom support team (email: Feasycom@support.com)

Chapter 8

Contact Information

Shenzhen Feasycom Co.,Ltd.

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Sales Service : sales@feasycom.com

Home Page : www.feasycom.com

Support Forum : forum.feasycom.com

Chapter 9

Appendix

9.1 PDF Dowload

PDF download

Shenzhen Feasycom Co., Ltd.