FSC-BW236

Programming User Guide

Version 4.0

Revision History

Version	Date	Notes	Author
3.0	2021/2/24	First Release	Younger
4.0	2021/4/10	Add Flow Chart	Younger

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Contents

1. Introduction

This specification presents design guidelines for software engineers that use FSC-BW236 series modules for Bluetooth and Wi-Fi connectivity requirements.

1.1 Hardware Interface

- GPIO
- PWM
- UART
- SPI Slave
- I2C Master/Slave
- Analog Input/Output

1.2 Supported Bluetooth Profile

- GATT Server (Generic Attribute Profile)
- GATT Client (Generic Attribute Profile)

1.3 Supported Wi-Fi Protocol

- TCP (Transmission Control Protocol)
- UDP (User Datagram Protocol)
- HTTP (Hypertext Transfer Protocol)
- MQTT(Message Queuing Telemetry Transport)
- WEB SOCKET

1.4 Command Format

- All commands start with "AT", end with<CR><LF>
- <CR> stands for " carriage return", corresponding hex is 0x0D
- <LF> stands for "line feed", corresponding hex is 0x0A
- If command has parameter, parameter keep behind"="
- If command has multiple parameters, parameter must be separated by","
- If command has response, response start with <CR><LF>, end with <CR><LF>

1.5 Module Default Settings

Wi-Fi Default Settings

Wi-Fi Mode	STA Mode
Local AP SSID	FSC-BW236-AP
Local AP Password	12345678
Local AP IP Address	192.168.1.1

UART Default Settings	
Baudrate	115200bps
Data Bits	8
Parity	None
Stop Bits	1

2. Command Table

2.1 General Commands

2.1.1 UART Communication Test

Command	AT
Response	OK
Example	<< AT >> OK

2.1.2 AT+VER-Read Firmware Version

Command	AT+VER
Response	+VER=<Firmware version(ASCII)> OK
Example	<< AT+VER >> +VER=1.0.1, FSC-BW236 >> OK

2.1.3 AT+BAUD- Read/Write UART Baudrate

Command	Read Command AT+BAUD	Write Command AT+BAUD=<Param>
Response	+BAUD=Param OK	OK
Example	<< AT+BAUD >> +BAUD=115200 >> OK	<< AT+BAUD=115200 >> OK

Description	Reboot the module to take effect after setting completed

2.1.4 AT+TPMODE-Turn On/Off Throughput Mode

Command	Read Command AT+TPMODE	Write Command AT+TPMODE=<Param> Param:1 Turn On Throughput Mode Param:0 Turn Off Throughput Mode
Response	+TPMODE=Param OK	OK
Example	<< AT+TPMODE >> +TPMODE=1 >> OK	<< AT+TPMODE=1 >> OK
Description	When TP mode is on, module will receive data from remote device and send data to remote device directly by UART; When TP mode is off, in any state, module will deal with the data in command, and the data received by the module from remote will be output in the command format.	

2.1.5 AT+LPM-Enter Depth Dormant

Command	AT+LPM
Response	OK
Example	<< AT+LPM >> OK
Description	All the function will stop when the module enters into low power mode, Current is about 10mA. Wake up by giving high level to PIN4.

2.1.6 AT+SCAN-Scan Nearby Devices

Command	AT+SCAN=5 (Scan the surrounding hotspots AT+SCAN=0 (Stop scanning nearby hotspots)	AT+SCAN=1 (Scan nearby Bluetooth devices) AT+SCAN=0 (Stop scanning nearby Bluetooth devices) AT+SCAN=1,<Param1>(Specify the scan duration, Param1 is the scan duration, it will stop automatically after timeout) AT+SCAN=1,<Param1>,<Param2>(Specify the scan duration and device name, Param1 is the scan duration, Param2 is the Bluetooth device name, it will automatically stop after timeout)
Response	+SCAN=Param1,Param2,Param3,Param4,Param5,Param6 Param1: Scan serial number Param2: fixed value to 5, represents scanning hotspots Param3: Address of hotspot Param4: Signal value between module and hotspot Param5: length of SSID Param6: Hotspots SSID	+SCAN=Param1,Param2,Param3,Param4 Param1: Scan serial number Param2: Bluetooth device address type Param3: Address of Bluetooth device Param4: Signal value between module and Bluetooth device Param5: length of Bluetooth device name Param6: Bluetooth device name

Example	`<< AT+SCAN=5`
	
	`>> +SCAN=1,5,F0B4292428F0,-42,18,Feasycom_D710_2.4G`
	
	`>> +SCAN=2,5,F0B4292428F1,-44,16,Feasycom_D710_5G`
	
	`>> +SCAN=3,5,98BB991F6B45,-48,14,GOCLOUD_1F6B46`
		`<< AT+SCAN=1`
		
		`>>+SCAN=1,0,DC0D94B9105C,-92,8,Feasycom`
		
		`+SCAN=2,1,27AD5E8F09D6,-66,9,Feasycom1`
		
		`+SCAN=3,0,DC0D300005B4,-82,9,Feasycom2`
		
		`+SCAN=4,0,DC0D1EDA2008,-92,9,Feasycom3`

Description	When scanning the surrounding hotspots, the module needs to be in STA mode, +ROLE=1 When scanning for Bluetooth devices, the module needs to be in GATT client mode, +MODE=1	

2.1.7 AT+CLOSE-Close All Connections

Command	AT+CLOSE
Response	OK
Example	`<< AT+CLOSE` `>> OK`
Description	Module release all connections with remote device, include GATT, TCP, SSL connections

2.1.8 REBOOT-Soft Reboot

Command	AT+REBOOT

Response	OK
Example	<< AT+REBOOT >> OK
Description	Module release all connections with remote device then reboot

2.1.9　AT+RESTORE-Restore Factory Settings

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

2.1.10 AT+STAT-Read Module States

Command	AT+STAT
Response	+STAT=Param1,Param2,Param3,Param4,Param5 OK Param1:Connection status in GATT server mode Param2: Connection status between the module and the hotspot Param3:Connection status of the module as a TCP server Param4:Connection status of the module as a TCP client Param5:Connection status of the module as a SSL client
Example	<< AT+STAT=1,3,3,1,0 >> OK

Descript ion	0: Uninitialized 1: Standby 2: Connecting 3: Connected

2.1.11 AT+BTEN-Turn On/Off Bluetooth Function

Command	AT+BTEN=<Param> 1:Turn On Bluetooth Function 0:Turn Off Bluetooth Function
Response	OK
Example	<< AT+BTEN=1 >> OK
Descript ion	Turn On/Off Bluetooth takes effect immediately and does not affect other states of the module.

2.2 Bluetooth Commands

2.2.1 AT+ADDR-Read MAC Address

Command	AT+ADDR
Response	+ADDR=Param OK
Example	<< AT+ADDR >> +ADDR=DC0D30600001 >> OK
Descript ion	MAC Address can only be Read, Cannot write.

2.2.2 AT+NAME- Read/Write Bluetooth Name

Command	Read Command AT+NAME	Write Command AT+NAME=<Param>
Response	+NAME=Param OK	OK
Example	<< AT+NAME >> +NAME=FSC-BW236-LE >> OK	<< AT+NAME=FSC-BW236-LE >> OK
Description	When setting device name, an optional parameter can be added : AT+NAME=FSC-BW236-LE,<Param> Param: 1 The last four digits of mac address will be added behind device name, eg: FSC-BW236-LE-0001 Param:0 No suffix behind device name	

2.2.3 AT+GATTSEND- Send BLE Data in GATT server mode

Command	AT+GATTSEND=<Param1>,<Param2> Param1: Payload Length Param2: Payload
Response	OK: Send completed ERR002: The parameter or format is incorrect ERR003: Bluetooth is not connected
Example	<< AT+GATTSEND=10,1234567890 >> OK
Description	Length should be less than 1000

2.2.4 AT+MODE- Read/Write Bluetooth Mode

Command	Read Command AT+MODE	Write Command AT+MODE=\<Param\> Param:1 GATT Client Mode Param:0 GATT Server Mode
Response	+MODE=Param OK	OK
Example	<< AT+MODE >> +MODE=0 >> OK	<< AT+MODE=1 >> OK
Description	Module will reboot automatically after setting has completed	

2.2.5 AT+LECONN- Connect to Remote Device (GATT Client Mode)

Command	AT+LECONN=\<Param1\>,\<Param2\> Param1: Remote Device Address Type (0:public,1:random) Param2: Remote Device Mac Address
Response	OK
Example	<< AT+LECONN=0,DC0D30600002 >> OK
Description	Command takes effect in GATT client mode

2.2.6 AT+GATTAC- Read/Write Auto-Connect in master mode

Command	Read Command AT+GATTAC	Write Command AT+MODE=\<Param> Param:1 Turn on auto-connect after power on Param:0 Turn off auto-connect after power on
Response	+GATTAC=Param OK	OK
Example	<< AT+GATTAC >> +GATTAC=0 >> OK	<< AT+GATTAC=1 >> OK
Description	Reboot to take effect after the setting is completed	

2.2.7 AT+LESEND- Send BLE Data in GATT Client Mode

Command	AT+LESEND=\<Param> Param: Send data payload
Response	OK: Send completed ERR003:Bluetooth is not connected, sending failed
Example	<< AT+LESEND=1234567890 >> OK
Description	Data length should be less than 1000

2.3 Wi-Fi Commands

2.3.1 AT+ROLE-Read/Write Wi-Fi Mode

Command	Read Command AT+ROLE	Write Command AT+ROLE=<Param> Param:1 STA Mode Param:2 AP Mode Param:3 Coexistence Mode
Response	+ROLE=Param OK	OK
Example	<< AT+ROLE >> +ROLE=1 >> OK	<< AT+ROLE=2 >> OK
Description	Module will reboot automatically after setting has completed	

2.3.2 AT+RAP- Connect to Hotspot/Router

Command	AT+RAP=<Param1>,<Param2> Param1:The name of the hotspot (or router) (SSID) Param2: The password of the hotspot
Response	OK
Example	<< AT+RAP=Feasycom,12345678 >> OK

Description	1. The command needs to be sent in STA mode or coexistence mode, +ROLE=1 or 3 2. The module connects to the hotspot with WPA2 encryption by default 3. If need to connect to a hotspot whose encryption method is OPEN, just set the first parameter, such as AT+RAP=Feasycom 4. Send AT+RAP to read the hotspot name and password

2.3.3 AT+LIP-Read Module IP address

Command	AT+LIP
Response	+LIP=Param OK
Example	<< AT+LIP=192.168.1.100 >> OK
Description	When the module is successfully connected to the hotspot, a valid IP address will be distributed to module, otherwise Local IP address is always set to "0.0.0.0" which is invalid

2.3.4 AT+DHCP- Read/Write IP Distribution Mode

Command	Read Command AT+DHCP	Write Command AT+DHCP=<Param> Param:1 Use dynamic IP Param:0 Use static IP
Response	+DHCP=Param OK	OK
Example	<< AT+DHCP >> +DHCP=1 >> OK	<< AT+DHCP=0 >> OK

Description ion	Module will reboot automatically after setting has completed

2.3.5 AT+SIP- Read/Write Static IP

Command	Read Command AT+SIP	Write Command AT+SIP=<Param>
Response	+SIP=Param OK	OK
Example	<< AT+SIP >> +SIP=192.168.1.200 >> OK	<< AT+SIP=192.168.1.200 >> OK
Description ion	It needs to be set before connecting to the hotspot, and it will take effect under static IP mode (+DHCP=0)	

2.3.6 AT+GW- Read/Write Gateway

Command	Read Command AT+GW	Write Command AT+GW=<Param>
Response	+GW=Param OK	OK
Example	<< AT+GW >> +GW=192.168.1.1 >> OK	<< AT+GW=192.168.1.1 >> OK
Description ion	It needs to be set before connecting to the hotspot, and it will take effect under static IP mode (+DHCP=0)	

2.3.7 AT+MASK-Read/Write Subnet Mask

Command	Read Command AT+MASK	Write Command AT+MASK=<Param>
Response	+MASK=Param OK	OK
Example	<< AT+MASK >> +MASK=255.255.255.0 >> OK	<< AT+MASK=255.255.255.0 >> OK
Description	It needs to be set before connecting to the hotspot, and it will take effect under static IP mode (+DHCP=0)	

2.3.8 AT+APAC-Read/Write Automatically Connect to Hotspots

Command	Read Command AT+APAC	Write Command AT+APAC=<Param> Param:0 Turn off auto-connect to hotspots after power on Param:1 Turn on auto-connect to hotspots after power on
Response	+APAC=Param OK	OK
Example	<< AT+APAC >> +APAC=1 >> OK	<< AT+APAC=0 >> OK
Description	This command is activated after local STA connected to remote AP	

2.3.9 AT+RSSI- Read Signal Strength

Command	AT+RSSI
Response	+RSSI=Param(-99~0) OK
Example	<< AT+RSSI >> +RSSI=-55 >> OK
Description	When the hotspot is not connected, the RSSI Read result is 0

2.3.10 AT+MAC- Read Wi-Fi MAC Address

Command	AT+MAC
Response	+MAC=Param OK
Example	<< AT+MAC >> +MAC=DC0D80600001 >> OK
Description	Wi-Fi MAC Address can only be Read, cannot write.

2.3.11 AT+SCFG-Simple Config

Command	AT+SCFG=Param Param:1 Start Simple Config Param:2 Start Air-Kiss Config Param:0 Stop Simple Config
Response	OK

Example	<< AT+SCFG=1 >> OK
Description ion	Requires use with FeasyWiFi and Air-Kiss APP respectively

2.3.12 AT+LAP-Read/Write AP mode parameters

Command	Read Command AT+LAP	Write Command AT+LAP=<Param1>,<Param2>,<Param3> Param1: The SSID of the module as a hotspot Param2: The password of the module as a hotspot Param3: The IP of the module as a hotspot
Response	+LAP=Param1,Param2,Param3 OK	OK
Example	<< AT+LAP >>+LAP=FSC-BW236- AP,12345678,192.168.1.1 >> OK	<<AT+LAP=FSC-BW236- AP,12345678,192.168.1.1 >> OK
Description ion	If the module is configured as a hotspot with OPEN encryption, no need to set the param2, such as AT+LAP=FSC-BW236-AP,192.168.1.1	

2.3.13 AT+EAPMETHOD- Read/Write Enterprise Routing

Connection Method

Command	Read Command AT+EAPMETHOD	Write Command AT+EAPMETHOD=\<Param> Param: Connection method 1: tls 2: peap 3: ttls
Response	+EAPMETHOD=2 OK	OK
Example	<< AT+EAPMETHOD >> +EAPMETHOD=2 >> OK	<< AT+EAPMETHOD=2 >> OK
Description	Module connect in different way depend on the configuration of enterprise routing	

2.3.14 AT+EAPCFG- Read/Write Enterprise Router Parameters

Command	Read Command AT+EAPCFG	Write Command AT+EAPCFG=\<Param1>,\<Param2>, \<Param3> Param1: SSID Param2: password Param3: identify
Response	+EAPCFG=Param1,Param2,Param3 OK	OK
Example	<< AT+EAPCFG >>+EAPMETHOD=DD,feasycom,Adm inistrator >> OK	<<AT+EAPMETHOD=DD,feasycom,A dministrator >> OK

Description ion		

TCP Commands

2.3.15 AT+SOCK- Read/Write SOCKET（TCP，UDP）

Command	Read Command AT+SOCK	Write Command AT+SOCK=<Param1>,<Param2>,<Param3>,<Param4> Param1:Protocol type（TCP,UDP,SSL） Param2: Local port Param3: Remote IP address Param4: Remote port
Response	+SOCK=Param1,Param2,Param3,Param4 OK	OK
Example	<< AT+SOCK >> +SOCK=TCPS,9100,0.0.0.0,0 >> OK	1. Module sets to be TCP Client << AT+SOCK=TCPC,9100,192.168.1.100,8080 >> OK 2.Module sets to be TCP Server << AT+SOCK=TCPS,9100 >> OK 3.The module starts UDP << AT+SOCK=UDP,4000,192.168.1.200,8000 >> OK
Description ion	1. Module default setting to be TCP server after power on 2. When the module is set to TCP Server, PARAM3 and PARAM4 can be ignored.	

2.3.16 AT+WLANC- Create (start) Socket

Command	AT+WLANC=3
Response	OK
Example	<< AT+WLANC=3 >> OK
Description	Use with AT+SOCK command. After setting the socket parameters, send this command to start the current socket.

2.3.17 AT+MAXCON-Read/Write Max Connections As TCP Server

Command	Read Command AT+MAXCON	Write Command AT+MAXCON=<Param> Param: Maximum number of connections (1~6)
Response	+MAXCON=Param OK	OK
Example	<< AT+MAXCON >> +MAXCON=3 >> OK	<< AT+MAXCON=6 >> OK
Description	Default max connections of the module is 3 when set to be TCP server	

2.3.18 AT+WFSEND- Receive Data From Remote Device

Command	AT+WFSEND=<Param1>,<Param2>,<Param3> Param1: ID of TCP/UDP connection Param2: Payload Length Param3: Payload
Response	OK
Example	<< AT+WFSEND=0,3,abc >> OK
Description	When the module is used as TCP server, it can be connected by 3 remote clients and ID of the connection ID is 0,1,2; when the module is used as TCP client, the ID is 3; When module is UDP, the ID is 4. 2. The connection ID will vary with the "maxcon" set value, such as the "maxcon" is 6, the ID number of TCP Server is 0 ~ 5, and the ID number of the TCP Client is 6, ID is 7 when as the UDP.

HTTP Commands

2.3.19 AT+HTTP(S)- Access http(s)server

Command	HTTP(S) GET: AT+HTTP(S)=GET,<Param1>,<Param2> Param1: host Param2: URI	HTTP(S) POST: AT+HTTP(S)=POST,<Param1>,<Param2>,<Param3> Param1: host Param2: URI Param3: post data
Response	OK < Data content >	OK < Data content >

Example	access: http://httpbin.org << AT+HTTP(S)=GET,httpbin.org,/ >> OK >> …	POST param1=test_data1&param2=test_data2 to http://httpbin.org/post << AT+HTTP(S)=POST,httpbin.org,/post,param1=test_data1&param2=test_data2 >> OK >> …
Description	Use HTTP access, send AT+HTTP Use HTTPS access, send AT+HTTPS	

MQTT Commands

2.3.20 AT+BROKER- Read/Write MQTT Broker Address

Command	Read Command AT+BROKER	Write Command AT+BROKER=<Param>
Response	+BROKER=Param OK	OK
Example	<< AT+BROKER >> +BROKER=gpssensor.ddns.net >> OK	<< AT+BROKER=gpssensor.ddns.net >> OK
Description		

2.3.21 AT+CLIENTID - Read/Write MQTT Client ID

Command	Read Command AT+CLIENTID	Write Command AT+CLIENTID=<Param>
Response	+CLIENTID=Param OK	OK
Example	<< AT+CLIENTID >> +CLIENTID=BW236 >> OK	<< AT+CLIENTID=BW236 >> OK
Description		

2.3.22 AT+USERNAME- Read/Write MQTT Username

Command	Read Command AT+USERNAME	Write Command AT+USERNAME=<Param>
Response	+USERNAME=Param OK	OK
Example	<< AT+USERNAME >> +USERNAME=test >> OK	<< AT+USERNAME=test >> OK
Description		

2.3.23 AT+MQTTPWD- Read/Write MQTT Password

Command	Read Command AT+MQTTPWD	Write Command AT+MQTTPWD=<Param>

Response	+MQTTPWD=Param OK	OK
Example	<< AT+MQTTPWD >> +MQTTPWD=12345678 >> OK	<< AT+MQTTPWD=12345678 >> OK
Description		

2.3.24 AT+SUBTPC- Subscribe to Topics

Command	AT+SUBTPC=<Param1>,<Param2> Param1: topic Param2: QoS
Response	OK
Example	<< AT+SUBTPC= fsc/bw236/down,0 >> OK
Description	

2.3.25 AT+UNSUBTPC- Unsubscribe Topic

Command	AT+UNSUBTPC=<Param>
Response	OK
Example	<< AT+UNSUBTPC= fsc/bw236/down >> OK
Description	

2.3.26 AT+MQTTSEND- Send MQTT Data

Command	AT+MQTTSEND=\<Param1\>,\<Param2\>,\<Param3\> Param1: Theme of publish Param2: QoS(0,1,2) Param3: Data content
Response	OK
Example	<< AT+MQTTSEND= fsc/bw236/up,0,3,abc >> OK
Description	

2.3.27 AT+MQTTMODE- Read/Write MQTT Mode

Command	Read Command AT+MQTTMODE	Write Command AT+MQTTMODE=\<Param\> Param: 0 Connect to a normal MQTT server Param: 1 Connect to Alibaba Cloud platform Param: 2 Connect to Tencent Cloud Platform
Response	+MQTTMODE=Param OK	OK
Example	<< AT+MQTTMODE >> +MQTTMODE=0 >> OK	<< AT+MQTTMODE=1 >> OK
Description	Module connects to different cloud platforms in MQTT by switching to different modes	

Cloud platform (triad) Commands

2.3.28 AT+DEVNAME-Read/Write Device Name

Command	Read Command AT+DEVNAME	Write Command AT+DEVNAME=\<Param\>
Response	+DEVNAME=Param OK	OK
Example	<< AT+DEVNAME >> +DEVNAME=printer >> OK	<< AT+DEVNAME=printer >> OK
Description		

2.3.29 AT+PROKEY- Read/Write Product Key

Command	Read Command AT+PROKEY	Write Command AT+PROKEY=\<Param\>
Response	+PROKEY=Param OK	OK
Example	<< AT+PROKEY >> +PROKEY=a1jdkjfuh >> OK	<< AT+PROKEY=a1jdkjfuh >> OK
Description		

2.3.30 AT+DEVSECRET- Read/Write Device Secret

Command	Read Command AT+DEVSECRET	Write Command AT+DEVSECRET=\<Param\>
Response	+DEVSECRET=Param OK	OK
Example	<< AT+DEVSECRET >> +DEVSECRET=15kjdfydfhnflh >> OK	<< AT+DEVSECRET=15kjdfydfhnflh >> OK
Description		

2.3.31 AT+WLANC- Connect to The Cloud Platform

Command	AT+WLANC=4
Response	OK
Example	<< AT+WLANC=4 >> OK
Description	Only valid when connected to the cloud platform

3.AT command usage example and flowc hart

3.1 TCP Server Application

Scenarios：
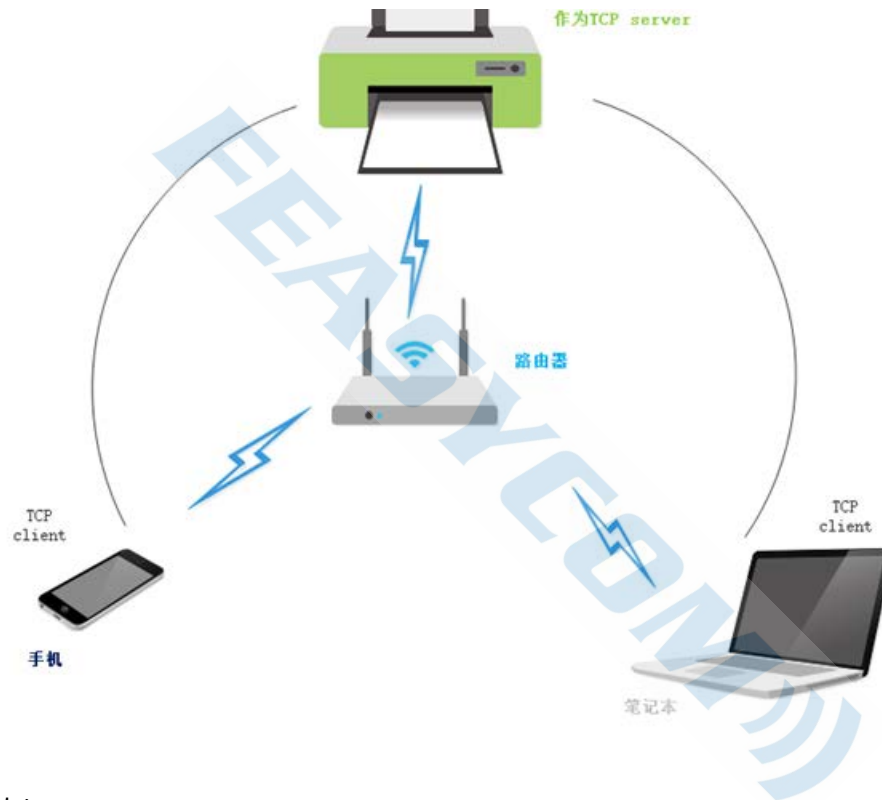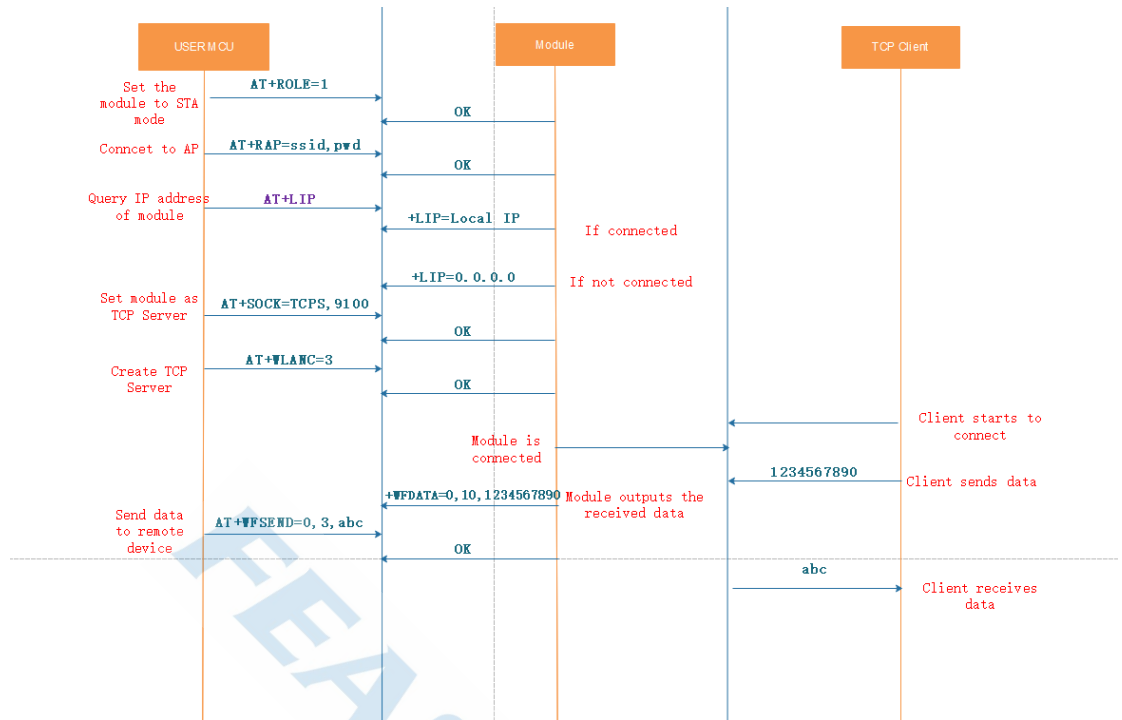
Flow chart:：

1. Set Wi-Fi Mode

```
AT+ROLE=1
```

Response：

```
OK
```

2. Connect to hotspot：

```
AT+RAP=ssid,password
```

Response：

```
OK
```

3. Read Module IP Address：

```
AT+LIP
```

Response：

```
+LIP=192.168.0.97
```

```
OK
```

4. Set the module to TCP server, the port number is 9100

```
AT+SOCK=TCPS,9100
```

Response：

```
OK
```

5. Module creates TCP server

```
AT+WLANC=3
```

Response：

```
OK
```

6. Connect the PC and the module to the same hotspot, use network debugging tool on the PC, to be TCP client and connect with the module
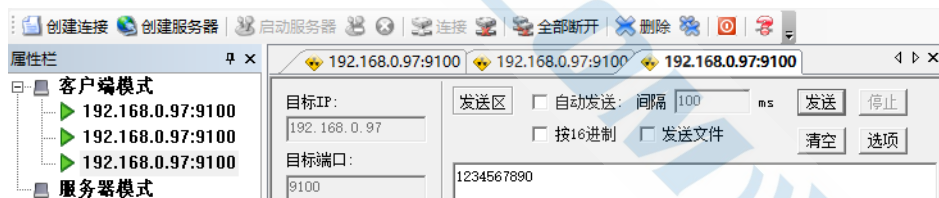
7. Receive data

```
+WFDATA=0,10,1234567890

+WFDATA=1,10,1234567890

+WFDATA=2,10,1234567890
```
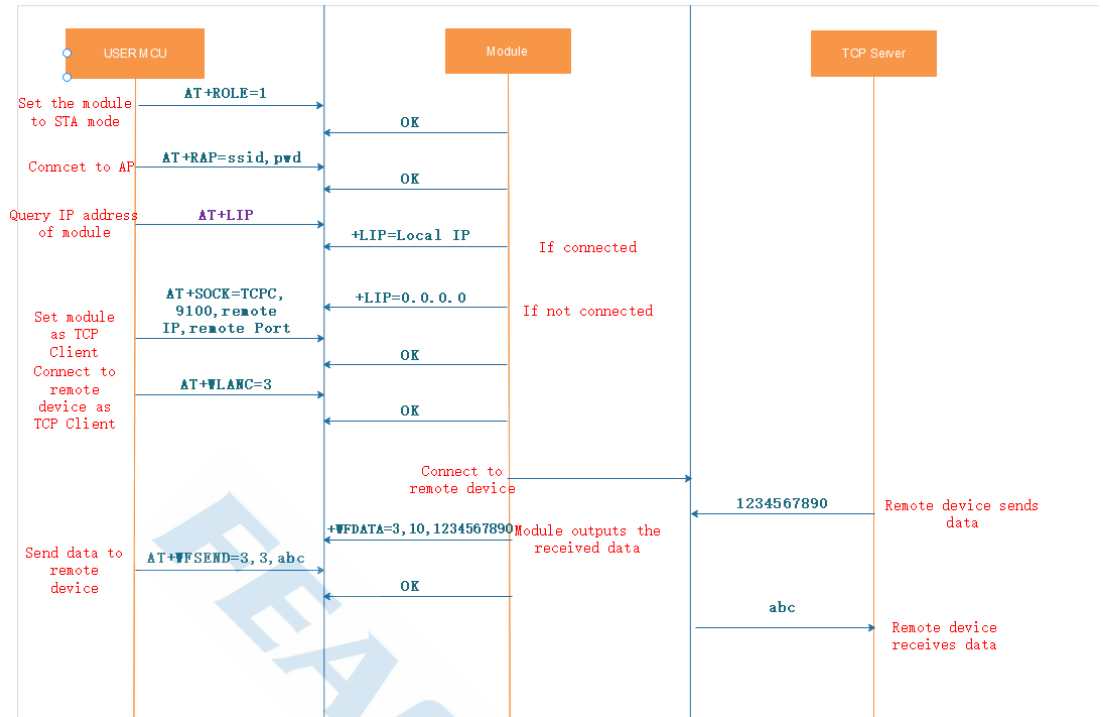
8. Send data

```
AT+WFSEND=0,3,abc
```

Response：

OK

Description: To use data throughtput, send AT+TPMODE=1 before setting Wi-Fi mode.

3.2 TCP Client Application

Scenarios：
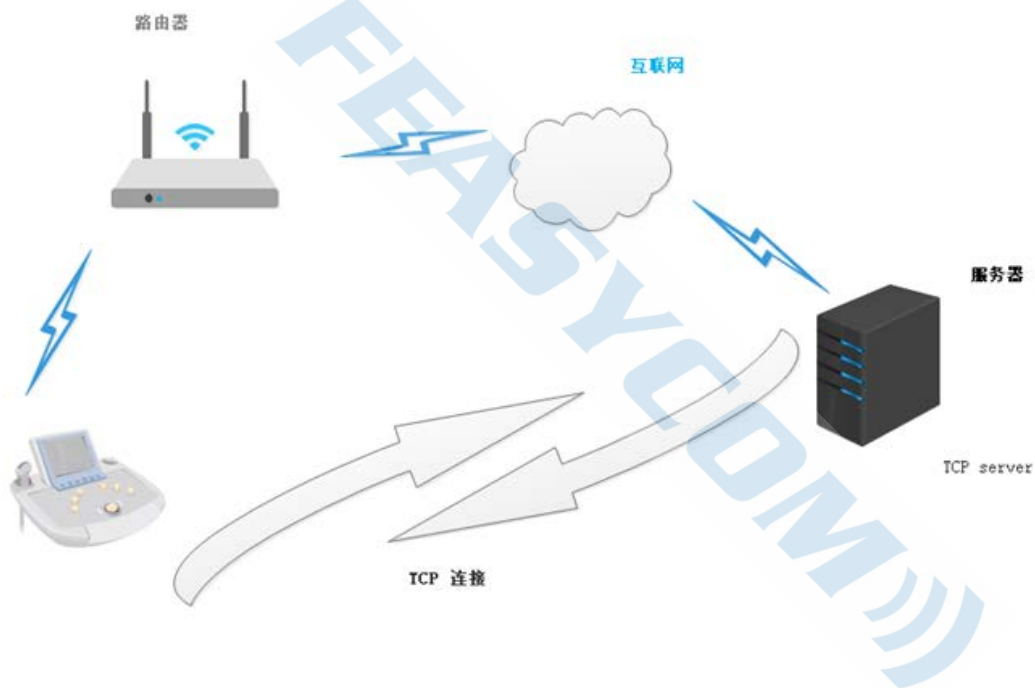
Flow chart:：

1. Set Wi-Fi Mode

```
AT+ROLE=1
```

Response：

```
OK
```

2. Connect to hotspot：

```
AT+RAP=ssid,password
```

Response：

```
OK
```

3. Read Module IP Address：

```
AT+LIP
```

Response：

```
+LIP=192.168.0.97
```

```
OK
```

4. Connect the PC and module to the same hotspot, use the network debugging tool on the PC to create a TCP server, for example, the IP is 192.168.0.79, and the port number is: 8080

5. Set the module as a TCP client, and configure the remote IP and port number

```
AT+SOCK=TCPC,9100,192.168.0.79,8080
```

Response：

```
OK
```

6. The module set as a TCP client to initiate a connection to the remote

```
AT+WLANC=3
```

Response：

```
OK
```

7. Receive data
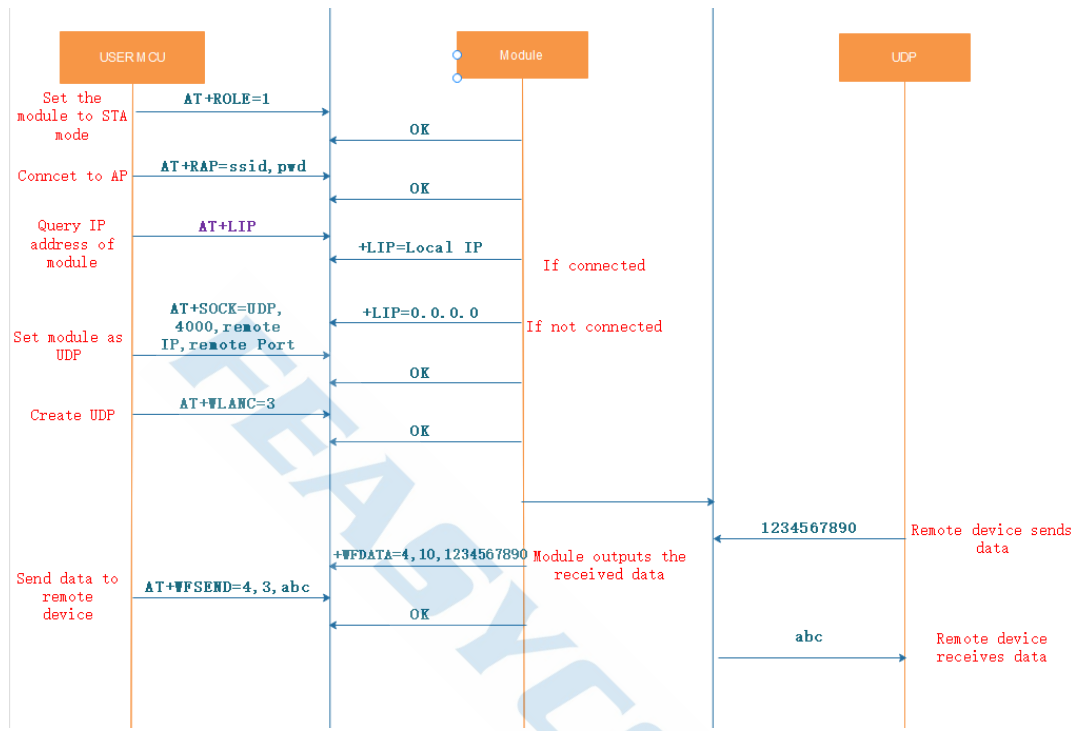
```
+WFDATA=3,10,1234567890
```

8. Send data

```
AT+WFSEND=3,3,abc
```

Response：

```
OK
```

Description: To use data throughtput, send AT+TPMODE=1 before setting Wi-Fi mode.

3.3 UDP Application

1. Set Wi-Fi Mode

```
AT+ROLE=1
```

Response：

```
OK
```

2. Connect to hotspot：

```
AT+RAP=ssid,password
```

Response：

```
OK
```

3. Read Module IP Address：

```
AT+LIP
```

Response：

```
+LIP=192.168.0.97
```

```
OK
```

4. Connect the PC and module to the same hotspot, use the network debugging tool on the PC to create UDP, for example, the IP is 192.168.0.79, and the port number is: 8080

5. Set the module as UDP, and configure the remote IP and port number

```
AT+SOCK=UDP,4000,192.168.0.79,8080
```

Response：

```
OK
```

6. Module start UDP

```
AT+WLANC=3
```

Response：

```
OK
```

7. Receive data
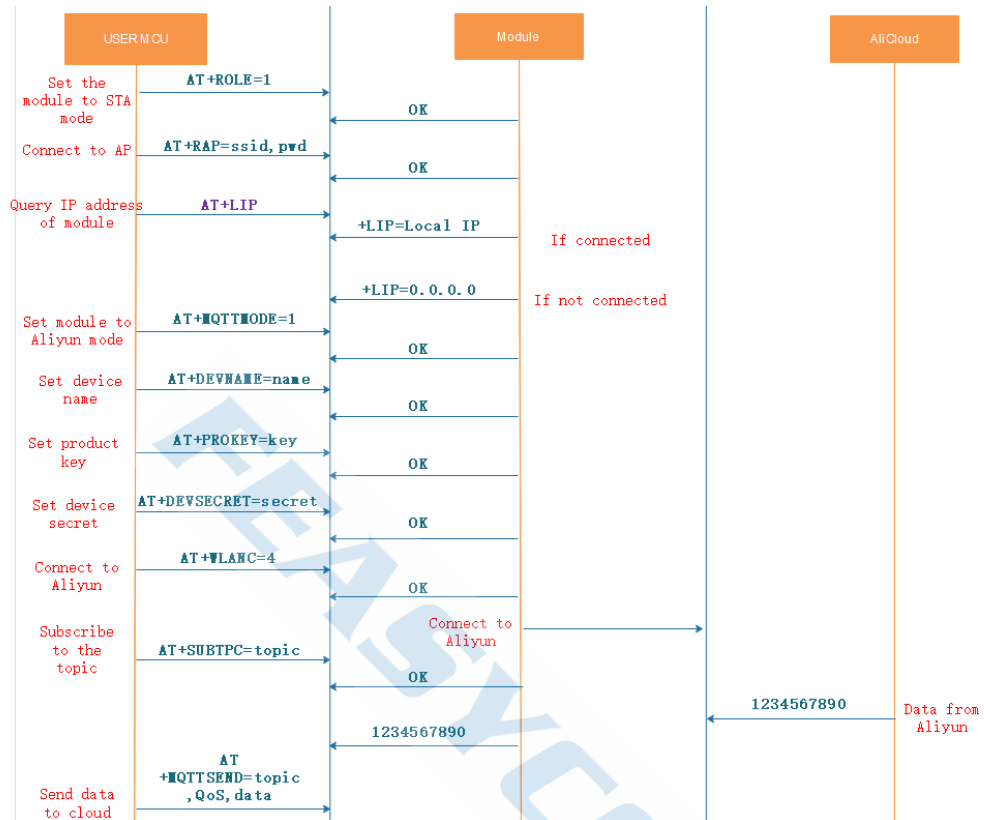
```
+WFDATA=4,10,1234567890
```

8. Send data

```
AT+WFSEND=4,3,abc
```

Response：

```
OK
```

Description: To use data throughtput, send AT+TPMODE=1 before setting Wi-Fi mode.

3.4 Alibaba Cloud Platform Application

1. Set Wi-Fi Mode

```
AT+ROLE=1
```

Response：

```
OK
```

2. Connect to hotspot：

```
AT+RAP=ssid,password
```

Response：

```
OK
```

3. Read Module IP Address：

```
AT+LIP
```

Response：

```
+LIP=192.168.0.97
```

```
OK
```

4. Set MQTTMODE to 1

```
AT+MQTTMODE=1
```

Response：

```
OK
```

5. Set Device Name

```
AT+DEVNAME=printer
```

Response：

```
OK
```

6. Set Product Key

```
AT+PROKEY=a1JK0xBtGYW
```

Response：

```
OK
```

7. Set Device Secret

```
AT+DEVSECRET=15WwVf3CrcVClTYvL4kxl1E4fumUPwcE
```

Response：

```
OK
```

8. Connect to Ali cloud

```
AT+WLANC=4
```

Response：

```
OK
```

9. Subscribe to topics

```
AT+SUBTPC=/a1JKOxBtGYW/printer/user/get
```

Response：

```
OK
```

10. Receive data from the cloud platform

```
1234567890
```

11. Send data to the cloud platform

```
AT+MQTTSEND=/a1JKOxBtGYW/printer/user/get,0,abc
```

Response：

```
OK
```

3.5 Enterprise router application

1. Enterprise router setting method

```
AT+EAPMETHOD=2
```

Response：

```
OK
```

2. Set router information

```
AT+EAPCFG=DD,feasycom,Administrator
```

Response：

```
OK
```

3. Set Wi-Fi Mode

```
AT+ROLE=1
```

Response：

```
OK
```

4. Read Module IP Address：

```
AT+LIP
```

Response：

```
+LIP=192.168.0.97
```

```
OK
```

3.6 Distribution network and air upgrade

UART sending command mode

1. Set Wi-Fi Mode

```
AT+ROLE=1
```

Response：

```
OK
```

2. Connect to hotspot：

```
AT+RAP=ssid,password
```

Response：

```
OK
```

3. Read Module IP Address：

```
AT+LIP
```

Response：

```
+LIP=192.168.0.97
```

```
OK
```

4. Start to upgrade

```
AT+OTA=Feasycom_V555(Firmware name)
```

```
Description: The firmware is on a specific server and is bound to
the module. The server address can be changed according to customer
needs.
```
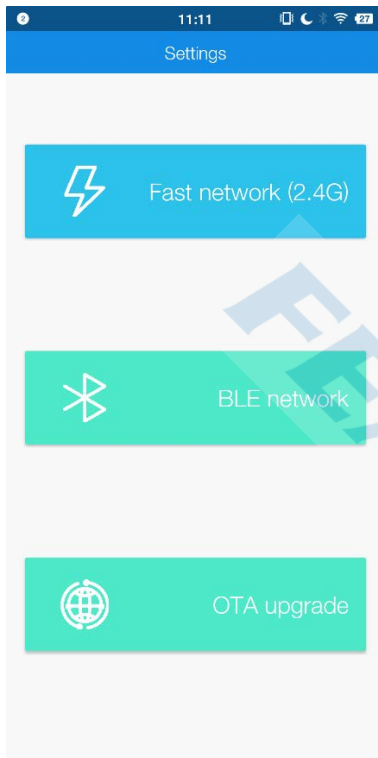
Response：

```
OK
```

Response：

```
$OTA=1    upgrade successfully
```

```
$OTA=0    upgrade failed
```
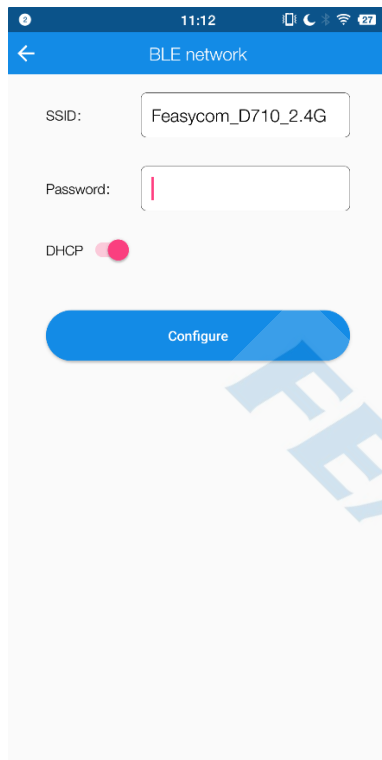
Application method

1. Download "FeasyWiFi" from Google Play

2. Open it


3. Click "BLE network" Button

4. Connect the device to be upgraded

5. After entering the router and password to be connected, click "Configure" button.

6. After the network configuration is successful, back to home page and click the "OTA upgrade " button.
7. Connect the device to be upgraded.
8. After entering the name of the firmware to be upgraded, click the "Upgrade" button.
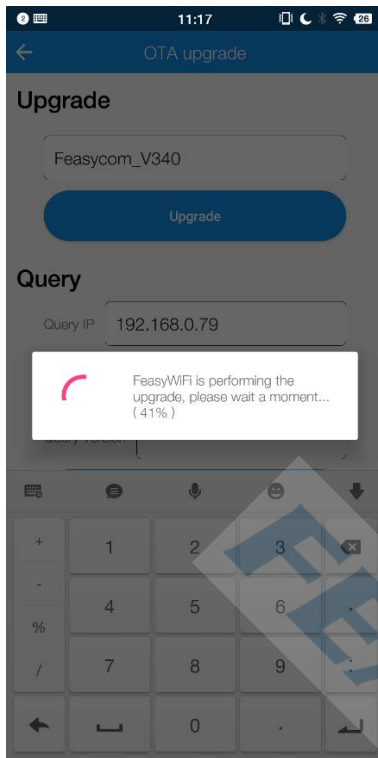
9.   Upgrade successfully
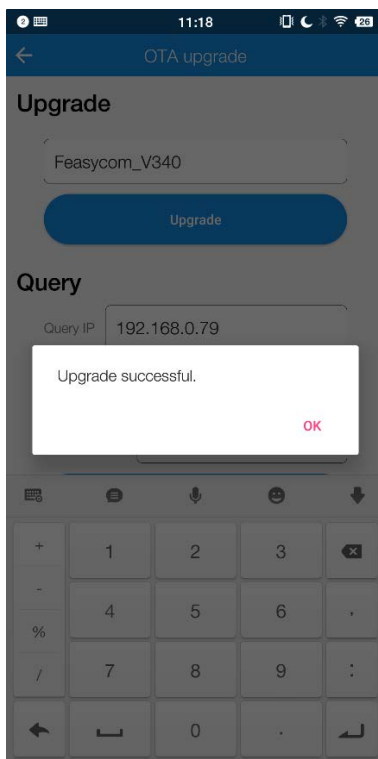
3.7 Settings static IP

1. Set Wi-Fi Mode

```
AT+ROLE=1
```

Response：

```
OK
```

2. Turn off dynamic IP mode

```
AT+DHCP=0
```

Response：

```
OK
```

3. Set static IP Address

```
AT+SIP=192.168.0.222
```

Response：

```
OK
```

4. Connect to hotspot：

```
AT+RAP=ssid,password
```

Response：

```
OK
```

5. Read Module IP Address：

```
AT+LIP
```

Response：

```
+LIP=192.168.0.222

OK
```

3.8 Switch from Throughput Mode to Command Mode

Scenario: When the module has established a Bluetooth or TCP connection and is in Throughput Mode, it needs to switch to command mode to read and write related parameters

1. UART sends the string "+++" to the module

```
+++
```

Response：

```
a
```

2. After receiving the module reply "a", send "a"

```
a
```

Response：

```
+ok
```

3. Received the module reply "+ok", the module has exited the Throughput Mode

4. Indication

4.1 GPIO Indications

4.1.1 Bluetooth Pin

Pin 32 (Out put)
Low level	Disconnected
High level	Connected

4.1.2 Wi-Fi Pin

Pin 33 (Out put)
Low level	Disconnected
High level	Connected