

Ai-WB2 series module establishes an SPP connection to the mobile phone and transmits data in UART-Bluetooth LE transmission mode

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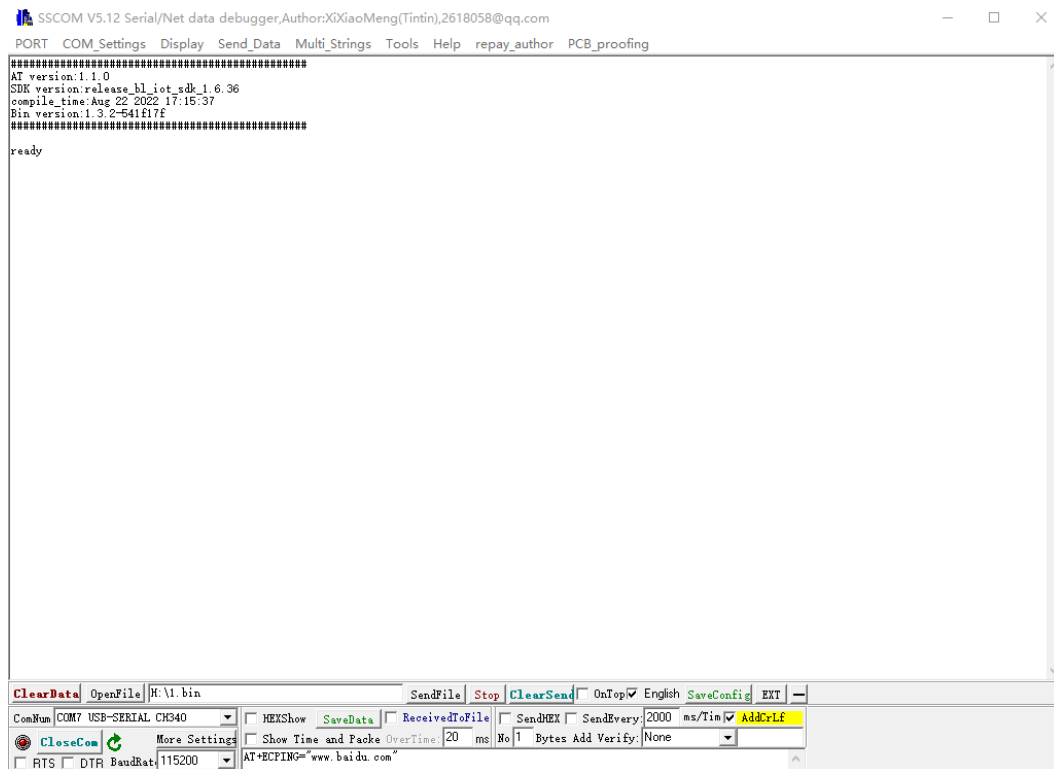
1. Preparation of hardware and software

Hardware and software that need to be prepared: Ai-WB2 series module or development board, Type-C data cable, Mobile side downloads Bluetooth debug tool, download link is <https://pan.baidu.com/s/1hQeigKrC7tkB5bp1OALzfg?pwd=1234>

Password: 1234

2. Create a Bluetooth service and broadcast it

1. First ensure the module or the development board power on and to print ready information, as shown below:



2. Send below commands

```
AT+BLEINIT=2
```

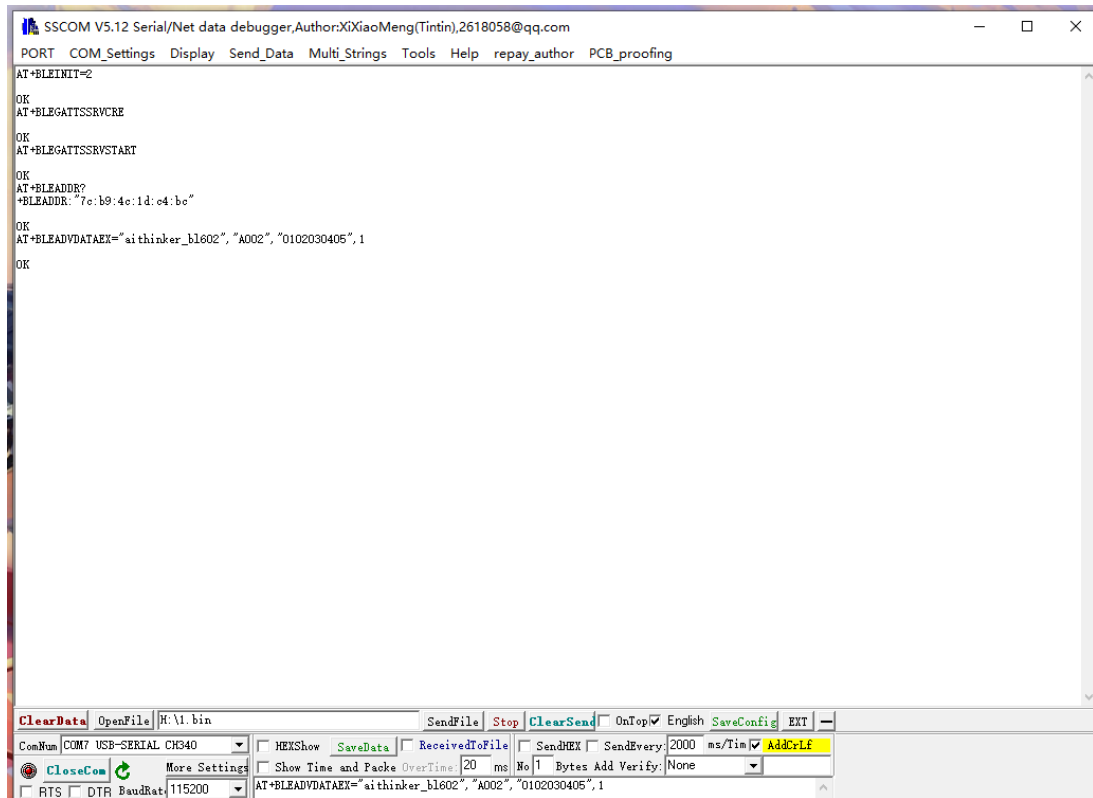
```
AT+BLEGATTSSRVCRE
```

```
AT+BLEGATTSSRVSTART
```

```
AT+BLEADDR?
```

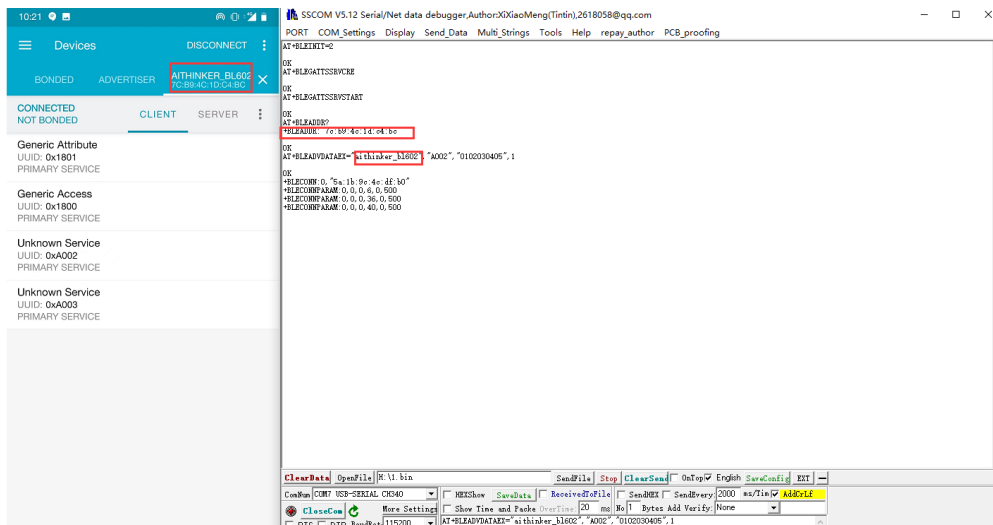
```
AT+BLEADVDATAEX="aithinker_b1602", "A002", "0102030405", 1
```

As shown below ,



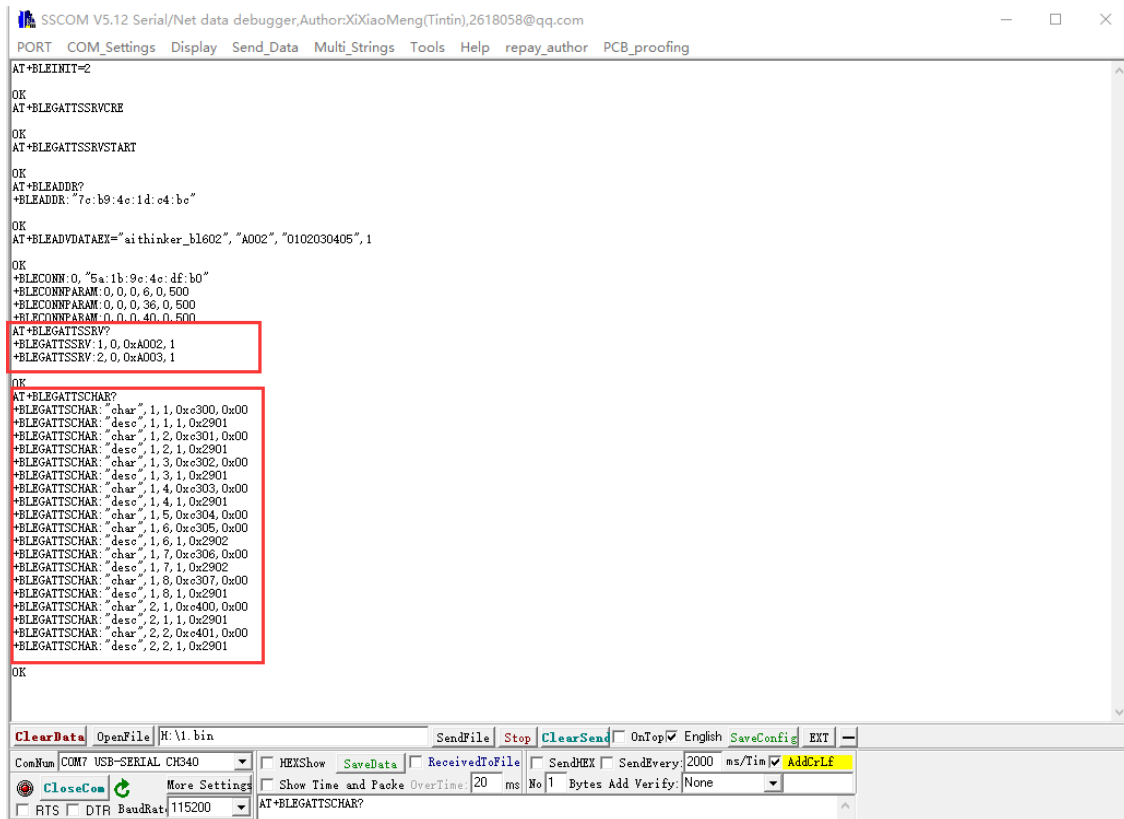
3. Create a BLE connection

Open the nrfConnect debugging assistant on the mobile APP, click SCAN to scan, find the MAC address of the Bluetooth LE server, and click CONNECT to connect. At this time, the UART port should print the log information similar to + BLECONN: 0 and "60:51:42: fe: 98: aa", which means that the Bluetooth LE connection has been established, as shown below,



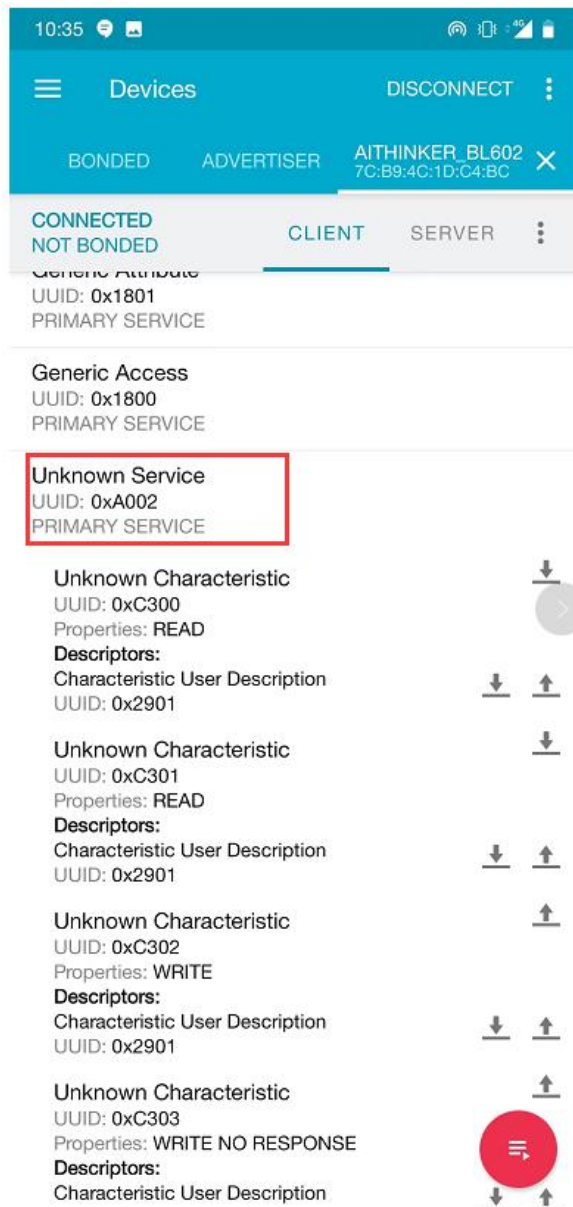
4. BLE Bluetooth server query service and discovery features

Send AT+BLEGATTSSRV? And AT+BLEGATTSSCHAR? to query and discover the properties, as shown below,

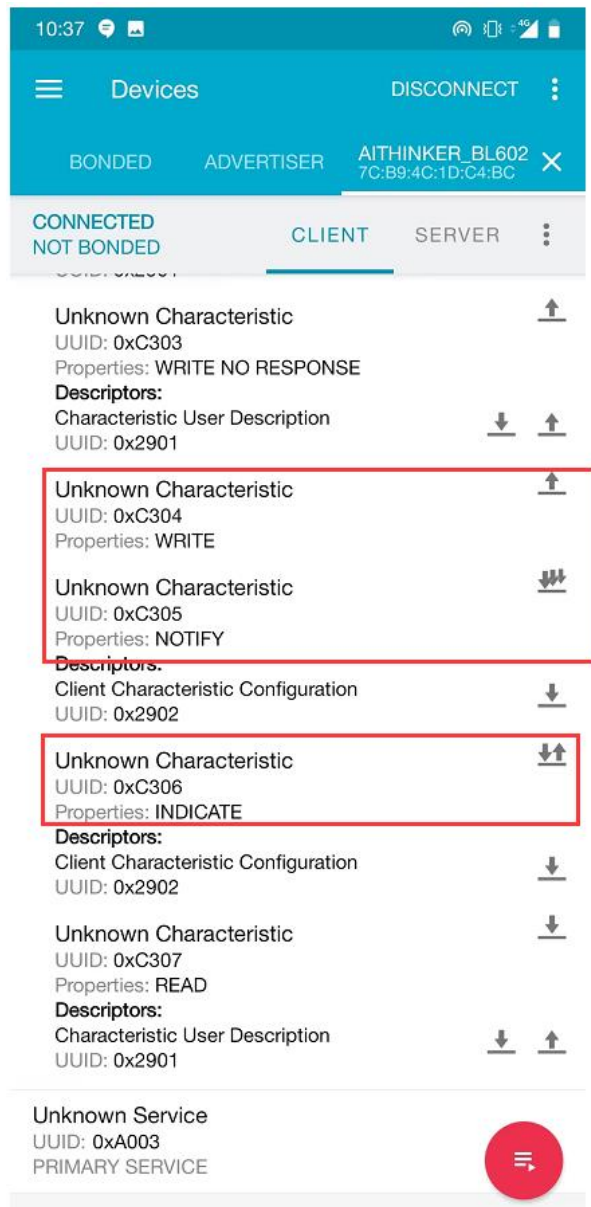


5. BLE client discovery services and service features

1. Click the UnKnown Service of UUID: 0xA002 in the mobile nRF debugging assistant client, as shown below:



At this point, in the next level option of the UUID: 0xA002, click the right button of the service feature where Properties is NOTIFY or INDICATE (where ESP-AT default Properties is NOTIFY or INDICATE is 0xC305 and 0xC306), Start listening for service features of Propertie is NOTIFY or INDICATE, as shown below,



6. BLE server configuration and enables BLE APP

1. Select characteristic that is supporting notify or indicate as the write channel to send data, and select characteristic supporting writing operation as the read channel to receive data. The instruction is:

```
AT+BLESPPCFG=1,1,7,1,5
```

```
AT+BLESPP
```

As show below:

SSCOM V5.12 Serial/Net data debugger, Author: XixiaoMeng(Tintin), 2618058@qq.com

PORT: COM7 Settings Display Send_Data Multi_Strings Tools Help repay_author PCB_proofing

AT+BLEGATSSRV?E
OK
AT+BLEGATSSRVSTART
OK
AT+BLEADDR?
+BLEADDR: "7c:10:4e:1d:e4:1b"
OK
AT+BLEADDATAE="aithinker_b1602", "A002", "0100030406", 1
OK
+BLEADDR 0, "5a:1b:9e:4e:df:10"
+BLECONFASAM 0, 0, 0, 0, 0, 500
+BLECONFASAM 0, 0, 0, 36, 0, 500
+BLECONFASAM 0, 0, 0, 40, 0, 500
AT+BLEGATSSRV?
+BLEGATSSRV 1, 0, 0x4002, 1
+BLEGATSSRV 2, 0, 0x4003, 1
OK
AT+BLEGATTSCHAR?
+BLEGATTSCHAR: "char", 1, 1, 0xc300, 0x00
+BLEGATTSCHAR: "desc", 1, 1, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 2, 0xc301, 0x00
+BLEGATTSCHAR: "desc", 1, 2, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 3, 0xc302, 0x00
+BLEGATTSCHAR: "desc", 1, 3, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 4, 0xc303, 0x00
+BLEGATTSCHAR: "desc", 1, 4, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 5, 0xc304, 0x00
+BLEGATTSCHAR: "desc", 1, 5, 0xc305, 0x00
+BLEGATTSCHAR: "char", 1, 6, 0xc306, 0x00
+BLEGATTSCHAR: "desc", 1, 6, 1, 0x2902
+BLEGATTSCHAR: "char", 1, 7, 0xc306, 0x00
+BLEGATTSCHAR: "desc", 1, 7, 1, 0x2902
+BLEGATTSCHAR: "char", 1, 8, 0xc307, 0x00
+BLEGATTSCHAR: "desc", 1, 8, 1, 0x2901
+BLEGATTSCHAR: "char", 2, 1, 0xc400, 0x00
+BLEGATTSCHAR: "desc", 2, 1, 1, 0x2901
+BLEGATTSCHAR: "char", 2, 2, 0xc401, 0x00
+BLEGATTSCHAR: "desc", 2, 2, 1, 0x2901
OK
AT+BLESPFCF=1, 1, 7, 1, 5
OK
AT+BLESPFF
OK

Unknown Characteristic
UUID: 0xC303
Properties: WRITE NO RESPONSE
Descriptors:
Characteristic User Description
UUID: 0x2901

Unknown Characteristic
UUID: 0xC304
Properties: WRITE

Unknown Characteristic
UUID: 0xC305
Properties: NOTIFY

Client Characteristic Configuration
UUID: 0x2902
Value: Notifications enabled

Unknown Characteristic
UUID: 0xC306
Properties: INDICATE
Descriptors:
Client Characteristic Configuration
UUID: 0x2902

Unknown Characteristic
UUID: 0xC307
Properties: READ
Descriptors:
Characteristic User Description
UUID: 0x2901

Open NOTIFY

NOTIFY config

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PORT: COM7 Settings Display Send_Data Multi_Strings Tools Help repay_author PCB_proofing

AT+BLEGATTSCHAR?
+BLEGATTSCHAR: "char", 1, 1, 0xc300, 0x00
+BLEGATTSCHAR: "desc", 1, 1, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 2, 0xc301, 0x00
+BLEGATTSCHAR: "desc", 1, 2, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 3, 0xc302, 0x00
+BLEGATTSCHAR: "desc", 1, 3, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 4, 0xc303, 0x00
+BLEGATTSCHAR: "desc", 1, 4, 1, 0x2901
+BLEGATTSCHAR: "char", 1, 5, 0xc304, 0x00
+BLEGATTSCHAR: "desc", 1, 5, 0xc305, 0x00
+BLEGATTSCHAR: "char", 1, 6, 0xc305, 0x00
+BLEGATTSCHAR: "desc", 1, 6, 1, 0x2902
+BLEGATTSCHAR: "char", 1, 7, 0xc306, 0x00
+BLEGATTSCHAR: "desc", 1, 7, 1, 0x2902
+BLEGATTSCHAR: "char", 1, 8, 0xc307, 0x00
+BLEGATTSCHAR: "desc", 1, 8, 1, 0x2901
+BLEGATTSCHAR: "char", 2, 1, 0xc400, 0x00
+BLEGATTSCHAR: "desc", 2, 1, 1, 0x2901
+BLEGATTSCHAR: "char", 2, 2, 0xc401, 0x00
+BLEGATTSCHAR: "desc", 2, 2, 1, 0x2901
OK
AT+BLESPFCF=1, 1, 7, 1, 5
OK
AT+BLESPFF
OK

Unknown Characteristic
UUID: 0xC303
Properties: WRITE NO RESPONSE
Descriptors:
Characteristic User Description
UUID: 0x2901

Unknown Characteristic
UUID: 0xC304
Properties: WRITE
Value: (0x) 42-4C-36-30-32, "BL602"

Unknown Characteristic
UUID: 0xC305
Properties: NOTIFY

Client Characteristic Configuration
UUID: 0x2902
Value: Notifications enabled

Unknown Characteristic
UUID: 0xC306
Properties: INDICATE
Value: (0x) 61-69-74-68-69-6E-6B-65-72, "aithinker"

Unknown Characteristic
UUID: 0xC307
Properties: READ

App send data

App receive data

receive data

Send data