

Lierda IC610 BT 应用指导

产品名称：ST-A35-IC610 工业核心板

产品型号：L-IDMIM0-AA185

版本：Rev1.0

日期：25/03/15

状态：受控版本

法律声明

若接收利尔达科技集团股份有限公司(以下称为“利尔达”)的此份文档,即表示您已经同意以下条款。若不同意以下条款,请停止使用本文档。

本文档版权归利尔达科技集团股份有限公司所有,保留任何未在本文档中明示授予的权利。文档中涉及利尔达的专有信息。未经利尔达事先书面许可,任何单位和个人不得复制、传递、分发、使用和泄漏该文档以及该文档包含的任何图片、表格、数据及其他信息。

本产品符合有关环境保护和人身安全方面的设计要求,产品的存放、使用和弃置应遵照产品手册、相关合同或者相关法律、法规的要求进行。

本公司保留在不预先通知的情况下,对此手册中描述的产品进行修改和改进的权利;同时保留随时修订或收回本手册的权利。



文件修订历史

文档版本	变更日期	修订人	审核人	变更内容
Rev1.0	25-03-15	YQA		初始版本

Lierda
利 尔 达

目录

法律声明	1
文件修订历史	2
目录	3
1 引言	4
2 BT 驱动开发	5
3 用户层操作	9



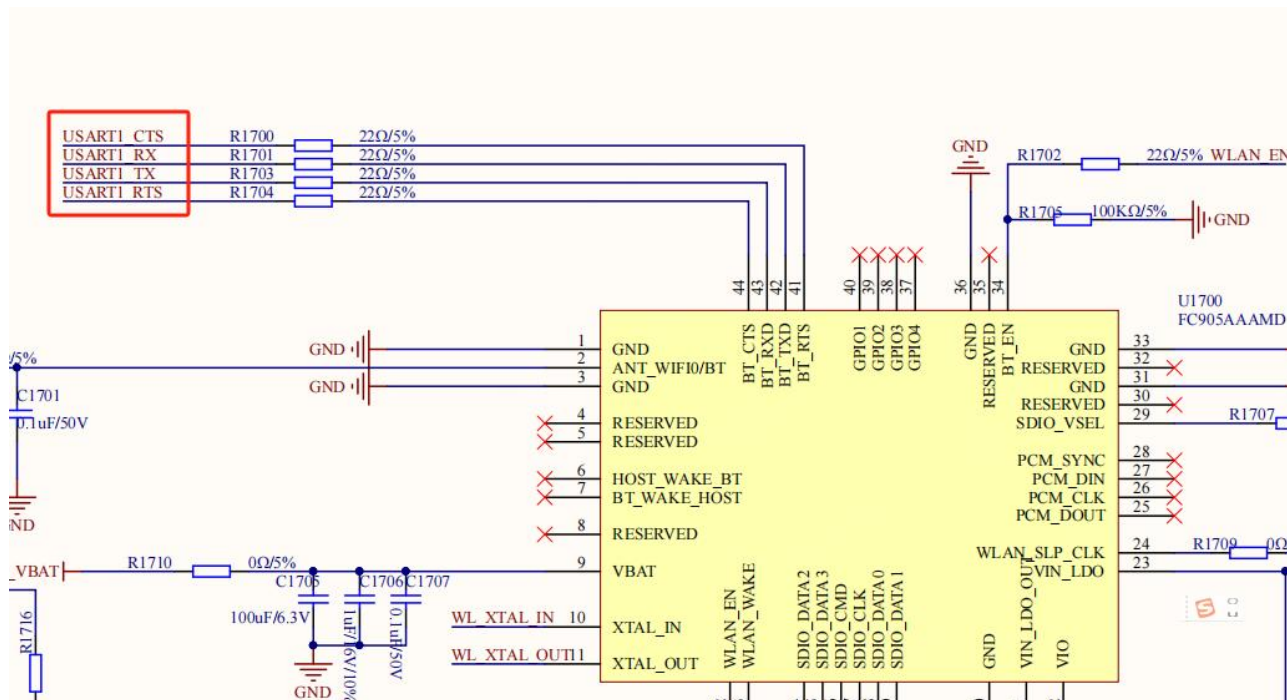
1 引言

本文档依托 IC610 evk，旨在使用 CUBEMX 构建以太网设备树及配置 phy 驱动，及用户层对以太网相关测试等。

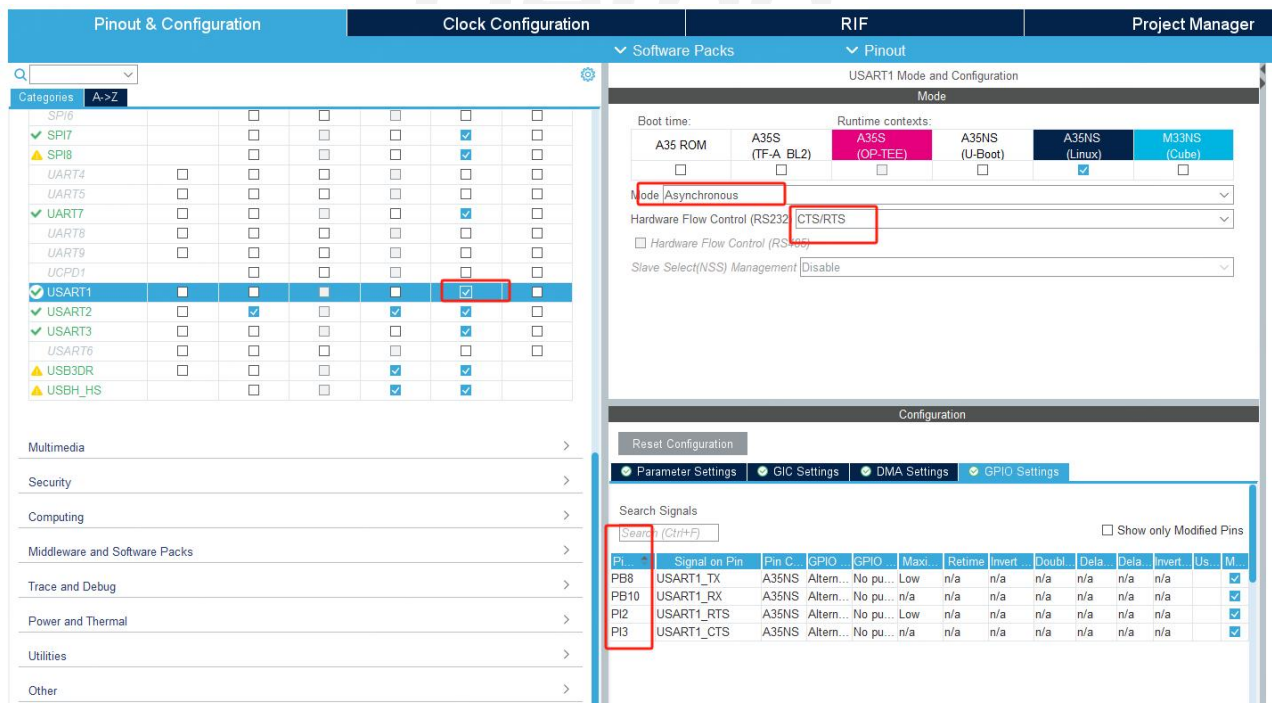


2 BT 驱动开发

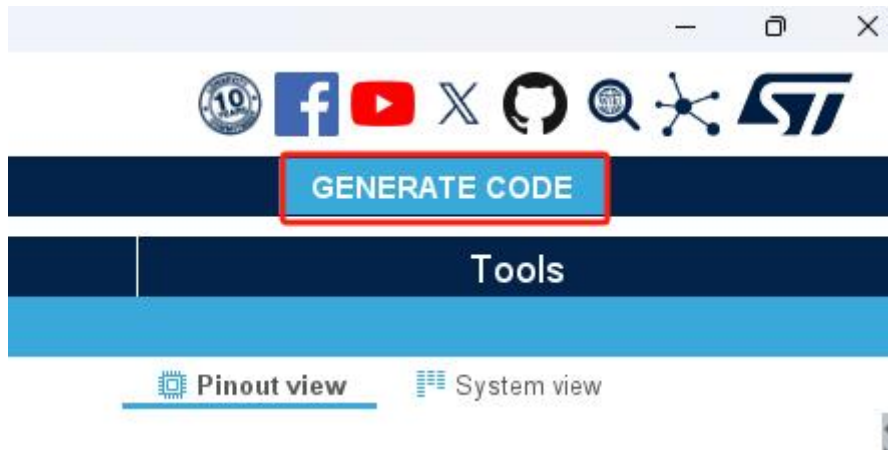
Cubemx6.14 打开 ic610.ioc, 本 evk 的蓝牙接口为 uart, 故需要先使能硬件串口。



根据硬件连接选择对应的串口、流控、及对应的实际 gpio。



Gpio 配置完成后点击 GENERATE CODE, 即可更新 dts。



代码生成完成后，自动更新

```
ic610\CA35\DeviceTree\ic610\kernel\stm32mp255d-ic610-mx.dts
```

自动生成 gpio 复用

Lierda
利 尔 达

```
};

usart1_pins_mx: usart1_mx-0 {
    pins1 {
        pinmux = <STM32_PINMUX('B', 10, AF6)>, /* USART1_RX */
        <STM32_PINMUX('I', 3, AF6)>; /* USART1_CTS */
        bias-disable;
        drive-push-pull;
    };
    pins2 {
        pinmux = <STM32_PINMUX('B', 8, AF6)>, /* USART1_TX */
        <STM32_PINMUX('I', 2, AF6)>; /* USART1_RTS */
        bias-disable;
        drive-push-pull;
        slew-rate = <0>;
    };
};

usart1_idle_pins_mx: usart1_idle_mx-0 {
    pins1 {
        pinmux = <STM32_PINMUX('B', 10, AF6)>; /* USART1_RX */
        bias-disable;
        drive-push-pull;
    };
    pins2 {
        pinmux = <STM32_PINMUX('B', 8, ANALOG)>, /* USART1_TX */
        <STM32_PINMUX('I', 3, ANALOG)>; /* USART1_CTS */
    };
    pins3 {
        pinmux = <STM32_PINMUX('I', 2, AF6)>; /* USART1_RTS */
        bias-disable;
        drive-push-pull;
        slew-rate = <0>;
    };
};
```

及 usart1 节点，在 USER CODE 区域内添加相关配置信息即可。

```
&usart1 {
    pinctrl-names = "default", "idle", "sleep";
    pinctrl-0 = <&usart1_pins_mx>;
    pinctrl-1 = <&usart1_idle_pins_mx>;
    pinctrl-2 = <&usart1_sleep_pins_mx>;
```



```
status = "okay";

/* USER CODE BEGIN usart1 */
uart-has-rtsscts;
/* USER CODE END usart1 */
};
```

User code 注释区域添加 uart-has-rtsscts;此处根据硬件设计修改，若自选蓝牙无流控，此处可不添加。



3 用户层操作

将模组原厂提供的模组固件添加到文件系统下，如下

```
root@stm32mp2:~# ls /ap6256/
```

```
AP6256.hcd    ap6256.sh    bcmhdhd.ko    config.txt    fw_bcm43456c5_ag.bin
```

```
fw_bcm43456c5_ag_apsta.bin  hostapd.conf  nvram_ap6256.txt
```

ap6256.sh 为驱动加载脚本

```
insmod /ap6256/bcmhdhd.ko firmware_path=/ap6256/fw_bcm43456c5_ag_apsta.bin
nvram_path=/ap6256/nvram_ap6256.txt
```

```
sleep 10
```

```
#ble
```

```
i2cset -f -y 0 0x51 0x0d 0x80 b
```

```
sleep 1
```

```
brcm_patchram_plus -d --enable_hci --no2bytes --tosleep 200000 --baudrate 1000000
--patchram /ap6256/AP6256.hcd /dev/ttySTM3 &
```

```
sleep 20
```

```
hciconfig hci0 up
```

驱动开机启动加载脚本：

```
/ap6256/ap6256.sh
```

开机后

```
root@stm32mp2:~# hciconfig
```

```
root@stm32mp2:~#
root@stm32mp2:~# hciconfig
hci0:    Type: Primary   Bus: UART
        BD Address: 9C:B8:B4:35:D2:59  ACL MTU: 1021:8  SCO MTU: 64:1
        DOWN
        RX bytes:740 acl:0 sco:0 events:42 errors:0
        TX bytes:463 acl:0 sco:0 commands:42 errors:0
root@stm32mp2:~#
```

```
root@stm32mp2:~# bluetoothctl
```

```
[bluetooth]# power on
```

Changing power on succeeded

[bluetooth]# scan on

Discovery started

[NEW] Device 1C:C9:92:E7:8E:31 sttest

[bluetooth]# pair 1C:C9:92:E7:8E:31

Attempting to pair with 1C:C9:92:E7:8E:31

[CHG] Device 1C:C9:92:E7:8E:31 Connected: yes

Request confirmation

[agent] Confirm passkey 079880 (yes/no): yes

手机端确认配对

```
[bluetooth]# pair 1C:C9:92:E7:8E:31
Attempting to pair with 1C:C9:92:E7:8E:31
[00CHG00] Device 1C:C9:92:E7:8E:31 Connected: yes
Request confirmation
[agent] Confirm passkey 079880 (yes/no): yes
[00CHG00] Device 1C:C9:92:E7:8E:31 Bonded: yes
[00CHG00] Device 1C:C9:92:E7:8E:31 Modalias: bluetooth:v09c6p107Ed1436
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 0000046a-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001105-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 0000110a-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 0000110c-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 0000110e-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001112-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001115-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001116-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 0000111f-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 0000112f-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001132-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001200-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001800-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001801-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 00001855-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 0000fe35-0000-1000-8000-00805f9b34fb
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 11c8b310-80e4-4276-afc0-f81590b2177f
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 8ce255c0-200a-11e0-ac64-0800200c9a66
[00CHG00] Device 1C:C9:92:E7:8E:31 UUIDs: 9664aa26-d76c-43ad-9775-d310f253a408
[00CHG00] Device 1C:C9:92:E7:8E:31 ServicesResolved: yes
[00CHG00] Device 1C:C9:92:E7:8E:31 Paired: yes
Pairing successful
[00CHG00] Device 1C:C9:92:E7:8E:31 ServicesResolved: no
[00CHG00] Device 1C:C9:92:E7:8E:31 Connected: no
[00DEL00] Device 58:2D:34:4C:03:FE ClearGrass Temp RH Barometer
[00CHG00] Device 30:1B:97:AE:7E:D3 Name: LierdaBeacon
[00CHG00] Device 30:1B:97:AE:7E:D3 Alias: LierdaBeacon
[00CHG00] Device 30:1B:97:AE:7E:D3 UUIDs: 0000feaa-0000-1000-8000-00805f9b34fb
[00CHG00] Device 30:1B:97:AE:7E:D3 UUIDs: 00001b30-0000-1000-8000-00805f9b34fb
[00CHG00] Device 30:1B:97:AE:7E:D3 UUIDs: 0000ae97-0000-1000-8000-00805f9b34fb
[00CHG00] Device 30:1B:97:AE:7E:D3 UUIDs: 0000d37e-0000-1000-8000-00805f9b34fb
[00CHG00] Device 30:1B:97:AE:7E:D3 ServiceData Key: 0000feaa-0000-1000-8000-00805f9b34fb
[00CHG00] Device 30:1B:97:AE:7E:D3 ServiceData Value:
00 ca 11 22 33 44 55 66 77 88 99 00 aa bb cc dd ... "3Dufw.....
ee ff
[00NEW00] Device 5B:4F:3F:D4:E6:53 5B-4F-3F-D4-E6-53
[00NEW00] Device 75:D0:D5:62:38:4D 75-D0-D5-62-38-4D
[00DEL00] Device 30:89:4A:82:00:A9 DESKTOP-V09JILB
[00DEL00] Device 90:F0:52:9A:6A:91 MEIZU 21 Pro
[00NEW00] Device 30:89:4A:82:00:A9 DESKTOP-V09JILB
```

[bluetooth]# trust 1C:C9:92:E7:8E:31

```
[bluetooth]# trust 1C:C9:92:E7:8E:31
[00CHG00] Device 1C:C9:92:E7:8E:31 Trusted: yes
Changing 1C:C9:92:E7:8E:31 trust succeeded
[00DEL00] Device D4:54:8B:E3:B2:9F HZ-005238
[00NEW00] Device D4:54:8B:E3:B2:9F HZ-005238
[00NEW00] Device 90:F0:52:9A:6A:91 MEIZU 21 Pro
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00001105-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 0000110a-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 0000110c-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 0000110e-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00001112-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00001115-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00001116-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 0000111f-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 0000112d-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 0000112f-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00001200-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00001132-0000-1000-8000-00805f9b34fb
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00000000-0000-0000-0000-000000000000
```

[bluetooth]# connect 1C:C9:92:E7:8E:31

```
[00CHG00] Device 90:F0:52:9A:6A:91 UUIDs: 00000000-0000-0000-0000-000000000000
[bluetooth]# connect 1C:C9:92:E7:8E:31
Attempting to connect to 1C:C9:92:E7:8E:31
[00CHG00] Device 1C:C9:92:E7:8E:31 connected: yes
[00NEW00] Endpoint /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/sep1
[00NEW00] Endpoint /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/sep2
[00NEW00] Endpoint /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/sep3
[00NEW00] Endpoint /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/sep4
[00NEW00] Endpoint /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/sep5
[00NEW00] Transport /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/sep2/fd0
Connection successful
[00NEW00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 [default]
[00CHG00] Device 1C:C9:92:E7:8E:31 ServicesResolved: yes
[00CHG00] Transport /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/sep2/fd0 volume: 0x003c (60)
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Equalizer: off
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Repeat: off
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Shuffle: off
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Scan: off
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Type: Audio
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Subtype: None
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Status: paused
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Name: Bluetooth Player
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Title: Not Provided
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 TrackNumber: 0x00000001 (1)
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 NumberOfTracks: 0x00000001 (1)
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Duration: 0x00000000 (0)
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Position: 0x00000000 (0)
[00CHG00] Player /org/bluez/hci0/dev_1C_C9_92_E7_8E_31/player0 Position: 0x00000000 (0)
[00DEL00] Device AC:23:3F:21:50:FB AC-23-3F-21-50-FB
[00NEW00] Device AC:23:3F:21:50:FB AC-23-3F-21-50-FB
[stttest]# quit
```

[stttest]# quit

l2ping 1C:C9:92:E7:8E:31

```
^C0 sent, 0 received, 0% loss
root@stm32mp2:~# l2ping 1C:C9:92:E7:8E:31
Ping: 1C:C9:92:E7:8E:31 from 9C:B8:B4:35:D2:6B (data size 44) ...
44 bytes from 1C:C9:92:E7:8E:31 id 0 time 6.30ms
44 bytes from 1C:C9:92:E7:8E:31 id 1 time 74.91ms
44 bytes from 1C:C9:92:E7:8E:31 id 2 time 12.32ms
44 bytes from 1C:C9:92:E7:8E:31 id 3 time 34.88ms
44 bytes from 1C:C9:92:E7:8E:31 id 4 time 13.60ms
44 bytes from 1C:C9:92:E7:8E:31 id 5 time 14.85ms
^C6 sent, 6 received, 0% loss
root@stm32mp2:~#
```