A brief introduction of update program Over The Air

Step 1: install this application

Step 2: open this app in your mobile phone:

In this figure ,you can see 5 modules each with a number on it :

Number 1 : target "*.bin" file

Description: choose the path contains the target "*.bin" file you want to update .

Number 2 : the blue tooth device list

Description: you can choose the idea device from this list which all the blue tooth device in advertising state are listed in this list .

Number 3 : Update list

Description: you can update the blue tooth device in advertising state after click this button.

Number 4 : begin OTA(Over the Air) transferring

Description: click this button will trigger OTA(Over the Air) transferring event.

Number 5 : show log

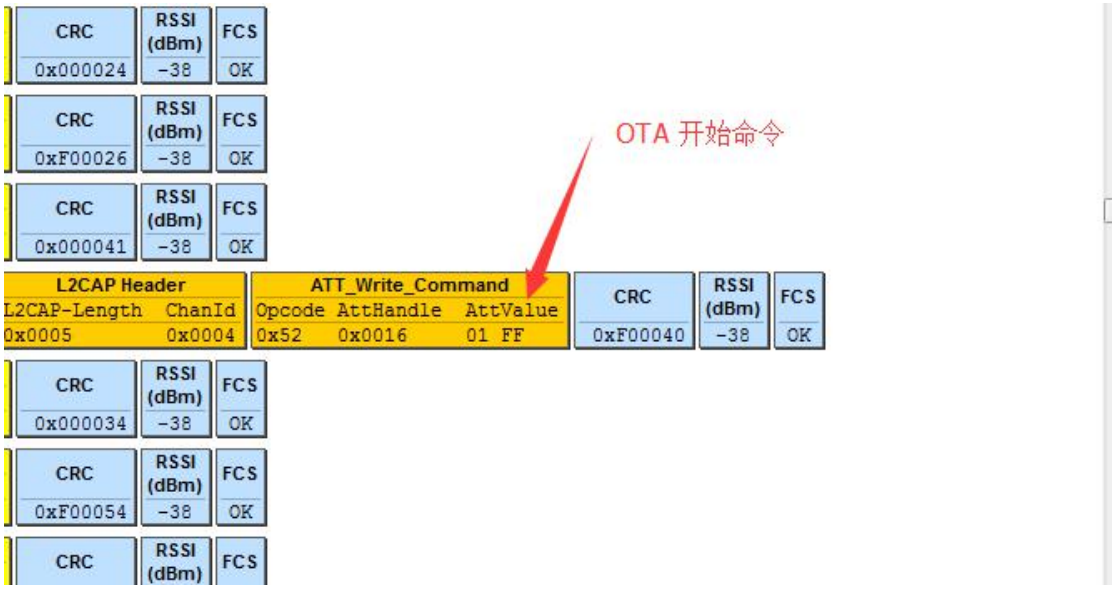
Description: this part shows the procedure and rate of process during OTA event .

Details :

1 . to use the OTA attribute ,you have to enable it in the attribute list below ,and you have to make sure you are compiling and loading the **_flash.bin into the chip .

```
/******************************************************************
                    OTA (Services)
******************************************************************/
#if(OTA_ENABLE)
    {4,2,16,        (u8*)(&my_primaryServiceUUID),  (u8*)(&ota_service_uuid)},
    {0,2,1,     (u8*)(&my_characterUUID),       (u8*)(&PROP_READ_WRITE_NORSP_NOTIFY)},          //prop
    {0,16,20,   (u8*)(&ota_write_char_uuid),            ota_data},      //value
    {0,2,2, (u8*)(&clientCharacterCfgUUID),     (u8*)(generalValInCCC)},  //value
#endif
};
```

2.The OTA app will start the OTA process by sending " 0xff01" to the device which support the OTA service.

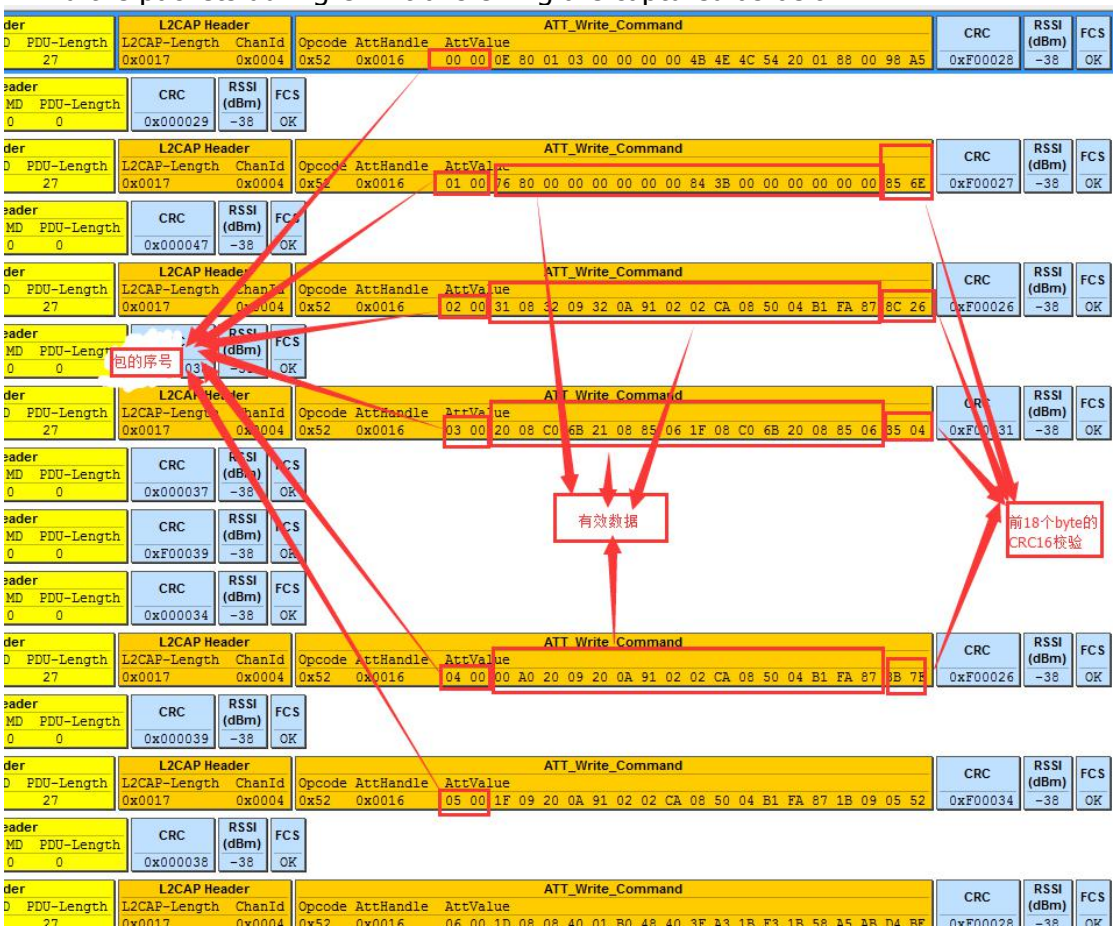


3.APP send target bin file through the ATT_OP_WRITE_CMD （0x52）, the data structure is list below:

DataArray [23]	Description
0~1	SerialNumber(start from 0x0000)
2~17	16byte data of new bin file
18~19	CRC Value of previous 18 bytes

20~22	Reserved

4. And the packets during OTA transferring are captured as below :



5.The OTA app will stop the OTA process by sending " 0xff02" to the device.

1.After Slave receives the OTA_END command,slave Run Ota_boot.bin to reboot, MCU will flash 0x00000 address of the Old_firmware.bin in the previous part of the command moved to SRAM from the beginning of the 0x808000, run old_ Firmware.bin

CSTARTUP.S. The corresponding boot code, which detects the value of the Boot_flag on the Flash 0x73000, and discovers that the value is 0xA5, which is no longer running the corresponding normal old_ Firmware.bin code, but will move 0x72000~0x72600 area 1.5K Ota_boot.bin from flash to the SRAM 0x808000~0x808600 place, after removal, reset MCU (reset Just let the MCU start from the SRAM 0x808000 address, it will not move code from flash to SRAM. At this time, the MCU from 0x808000 to start again, the equivalent of running the ota_boot.bin function.

7. ota_boot update code, reboot ota_boot.bin after running, from the beginning of the Flash 0x20000 read new_firmware.bin content, and write to the beginning of the flash 0x00000 corresponding address, the equivalent of New_ Firmware.bin is fully updated to the 0 address of Flash . After the update is completed, set the value of the Boot_flag on the Flash 0x73000 to 0x00,and reboot MCU.

8) New_firmware.bin normal operation MCU will reboot once again , from the Flash 0 beginning address move to the of the SRAM 0x808000, and detect the Boot_flag value is not 0xa5, start the normal slave function, the new_firmware.bin similar to the previous old_ Firmware.bin, also has OTA function, can start OTA mode update code again (the latest code to be downloaded to the Ota_master Flash 0x20000 address).