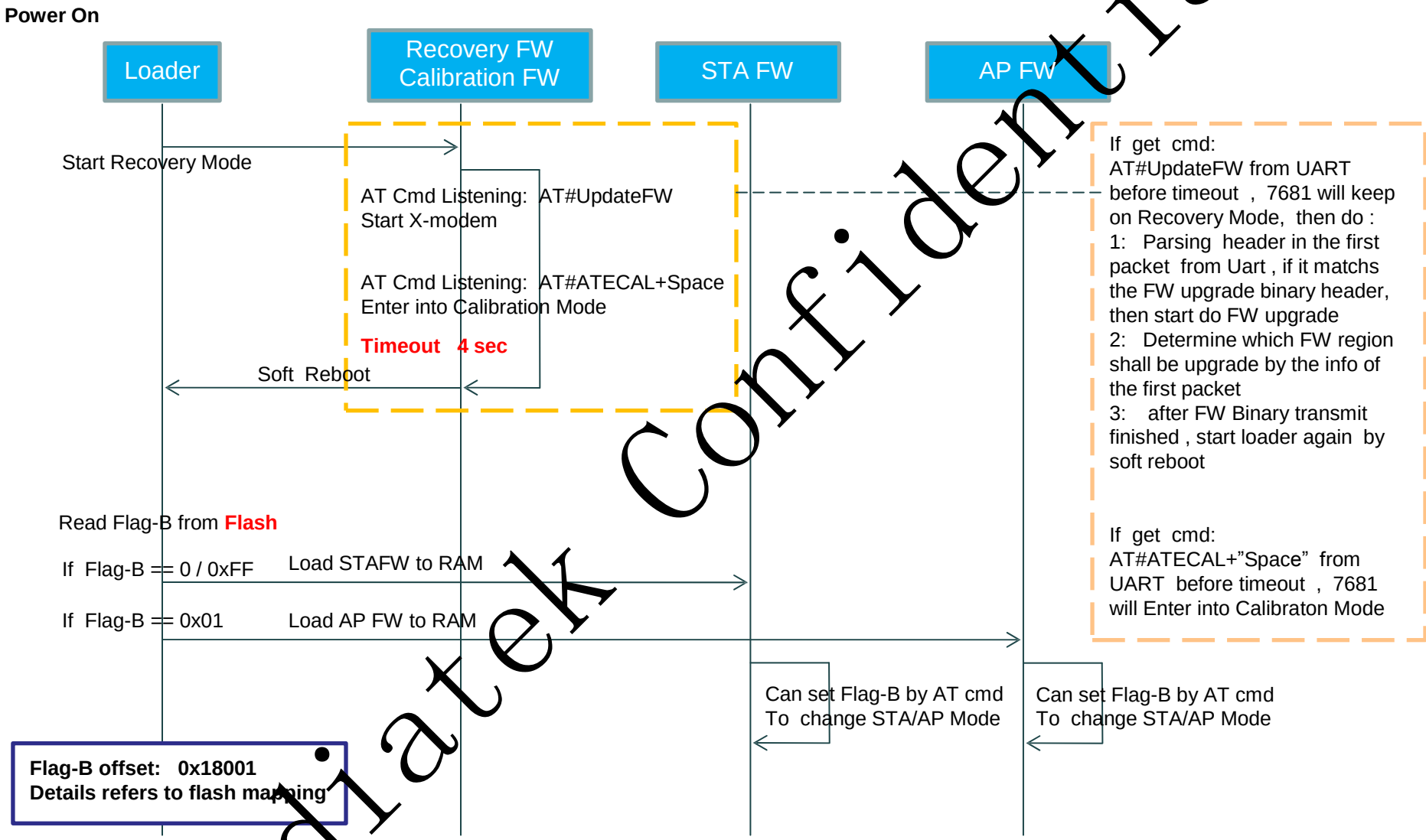
MT7681 Uart Firmware Upgrade SOP

V0.06

Jinchuan

20140517

Uart FW Upgrade Flow



Flash Layout

N

N is UART Update Type, This number shall be included in the update binary
To indicate which region of the Flash this binary shall be updated to

	Flash Layout				
	Offest	Section	Size (KB)	HEX (Byte)	DEC Offset
1	0x0000	Loader	20	0x5000	0
	0x5000	reserved 1	4	0x1000	20480
2	0x6000	Recovery Mode FW	64	0x10000	24576
	0x16000	reserved 2	4	0x1000	90112
3	0x17000	EEPROM	4	0x1000	94208
	0x18000	Common config	4	0x1000	98304
	0x19000	Station Mode Config	4	0x1000	102400
	0x1A000	AP Mode Config	4	0x1000	106496
	0x1B000	User Config	4	0x1000	110592
	0x1C000	reserved 3	12	0x3000	114688
4	0x1F000	STA Mode FW	64	0x10000	126976
	0x2F000	reserved 4	4	0x1000	192512
	0x30000	STA Mode-XIP FW	60	0xF000	196608
	0x3F000	STA Mode-OVL FW	60	0xF000	258048
	0x4E000	reserved 5	4	0x1000	319488
6	0x4F000	AP Mode FW	64	0x10000	323584
	0x5F000	reserved 6	4	0x1000	389120
	0x60000	AP Mode-XIP FW	60	0xF000	393216
	0x6F000	AP Mode-OVL FW	60	0xF000	454656
	0x7E000	reserved 7	4	0x1000	516096
	0x7F000	Flash Write Buffer	4	0x1000	520192
	0x80000	reserved 8	0	0x0	524288

Store Loader program → loader.bin

Store Recovery Mode Program → MT7681_recovery_.bin

Store Calibration Settings → MT7681E2_EEPROM layout.bin

Store Station Mode Program → MT7681_sta.bin

Store AP Mode Program → MT7681_ap.bin

Flash Write时 的Data中转，以减少RAM Buf Size

Precondition

- As description on the chart of "FW Boot Flow"

  FW Upgrade by Uart is implemented by Recovery FW,

  so FW Upgrade by Uart is only available while Loader + Recovery FW existed in Flash

Update Binary Structure

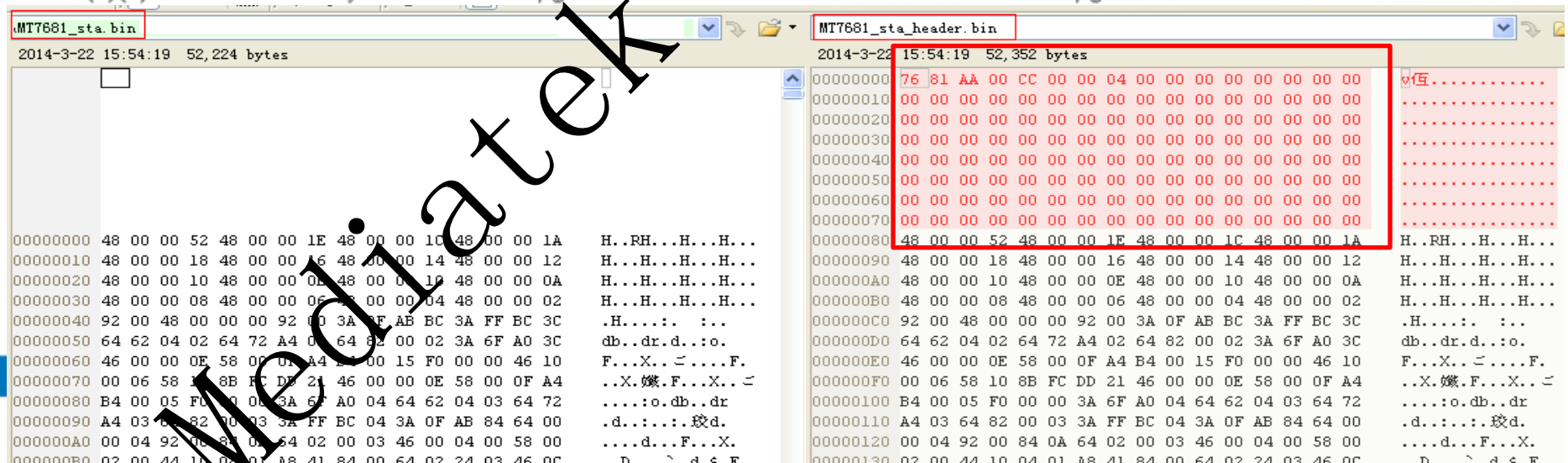
- After source code compiled, Two types of binary files shall be generated, one is include upgrade header, the other is not include upgrade header.

  etc: MT7681_sta.bin MT7681_sta_header.bin

  MT7681_sta.bin : is clean binary whose all content shall be written to STA Region of the flash if we use flash writer to update Flash , please use this file to merge target Binary with loader.bin , EEPROM.bin and Recovery.bin

  MT7681_sta_header.bin : contains all content of the MT7681_sta.bin, and include upgrade header if we use Uart to update Flash , please use this file

- ~~If the XIP feature is enabled, four binary files shall be generated~~
  ~~(1)MT7681_sta_ram.bin, (2)MT7681_sta_ram_header.bin,~~
  ~~(3)MT7681_sta_xip.bin, (4) MT7681_sta_xip_header.bin~~
  ~~(1)(3) : are clean binary files used for flash writer FW upgrade~~
  ~~(2)(4) : are the binary files include upgrade header which are used for Uart FW upgrade~~



Uart FW upgrade step

- **Step 1: MT7681 Power On**

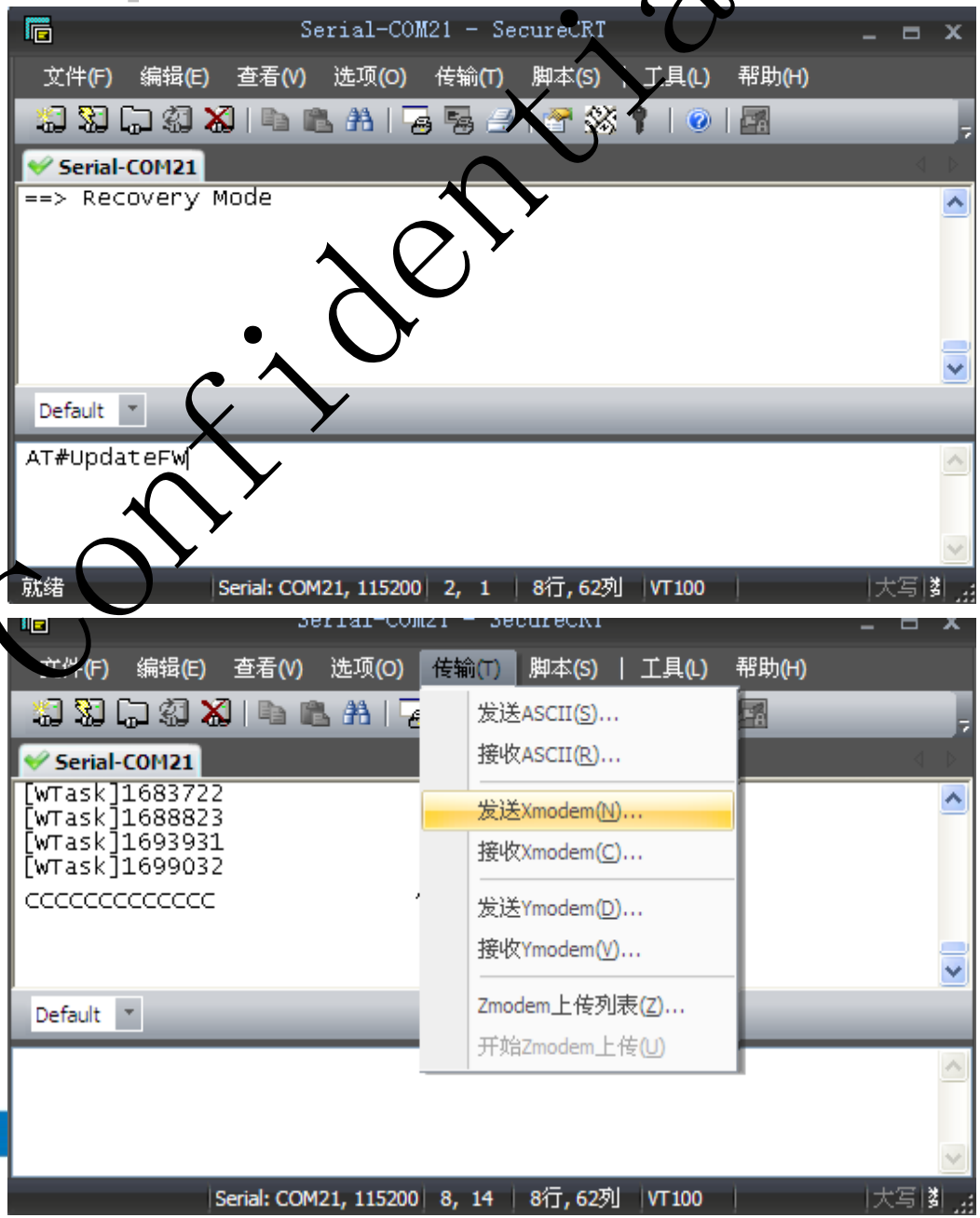
  while string“==> Recovery Mode” showing input cmd **AT#UpdateFW** within 4 sec

  then ‘c’ shall be printed with 1sec interval it means MT7681 start X-modem, and ready to receive binary file from uart

- **Step2: Start X-modem on PC**

  see picture as right

  Notice: MT7681 only support X-modem 128Byte Mode

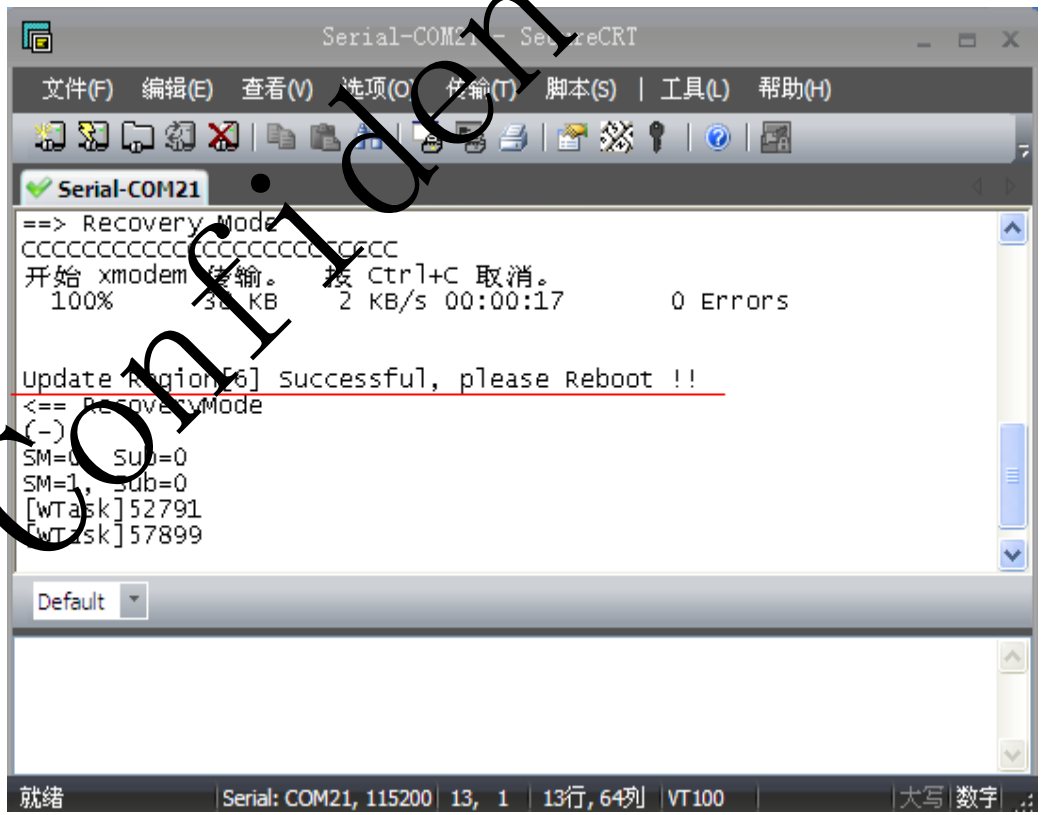


Uart FW upgrade step

- **Step 3: while Binary transmit finished**

  Show "update Region[N] Successful, please Reboot! "

if upgrade fail, it will show msg
like this : "**Err : 205** "
it could be caused by flash write fail
or transmitted FW has an illegal header



Notice:

* If upgrade STA/AP FW or EEPROM fail, you can use Uart to update it again
* if upgrade Loader/Recovery fail, you need update the image by flash writer

~~* if XIP feature is enabled, you need implement above steps twice,~~
~~one is to upgrade "MT7681_ram_header.bin", the other is to upgrade "MT7681_sta_xip_header.bin"~~

How to change STA/AP mode

Step1：Flash the MT7681_all_v1.20.bin via 'Flash Writer' to Flash

Step2：Power on, the message show below as STA Mode:

==> Recovery Mode

<== RecoveryMode

(-)

SM=0, Sub=0

SM=1, Sub=0

[WTask]9811

Step3: Read BootIndex value of 0x18001 via AT#Flash command

AT#FLASH -r98305

[0x18001]=[0x00] means Boot as STA mode, [0x18001]=[0x01] means Boot as AP mode

Step4：Modify BootIndex value of 0x18001 via AT#Flash command to 1

AT#FLASH -s98305 -v1

Step5：Power on MT7681 again,it will boot in AP mode，the SSID in APmode is "MT7681_Softap", and support Support Open Mode

the **LOG at the beginning of AP Mode:**

==> Recovery Mode

<== RecoveryMode

(-)

APStartUp ok

Start AP ...

[WTask]9318

[WTask]14322

If smart phone connect MT7681 at the moment ,it will show message below :

Assoc request sanity success

i = 5, j = 0

client ip addr: 192.168.81.2

[WTask]39372

[WTask]44373