line_num 0:

0x7f 0x6 0x5d 0x1a 0x33 0x13 0x7e //按顺序对应充电芯片寄存器 REG00~REG06
Corresponds to the charging chip register in order REG00~REG06

0x89 0x3 0x44 0xbf 0x97 0x0 0x52 //按顺序对应充电芯片寄存器 REG07~REG0D
Corresponds to the charging chip register in order REG07~REG0D

0x3e 0x44 0x52 0xdc 0x1 0x3f 0x5d //按顺序对应充电芯片寄存器 REG0E~REG14
Corresponds to the charging chip register in order REG0E~REG14

read vol:0xdd8 0x1068 0xbb8 0xc

mode:0x4 status:0x2 V:0xdd8 V_p:0x2e ele 0x32 otg:0x0 usb:0x1 fast_id:0x0
//
mode: 适配器模式 **adapter pattern**
status: 充电状态 **charging state**
V: 充电电压（mV）**charging voltage**
V_p: 电压百分比 ele
Voltage percentage
充电电流（mA） otg:
charge current
otg 标志
usb: USB_Id 输入电平 **input level**
fast_id: 快充引脚输入电平 Quick charge pin input level

充电模式和充电状态可详细参考 REG0B
Charging mode and charging state can refer to REG0B for details

Table 20. REG0B

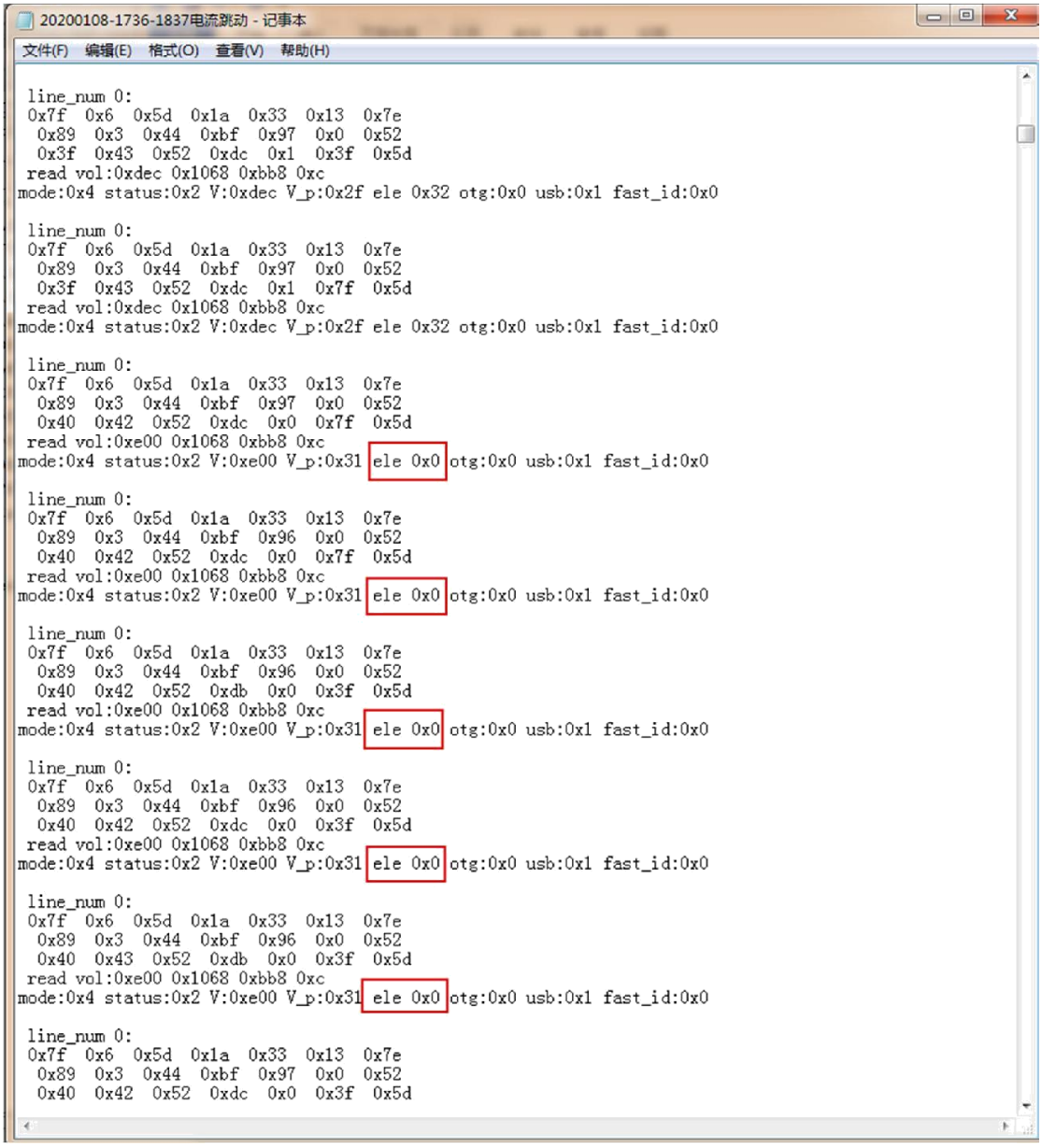
Bit	Field	Type	Reset	Description
7	VBUS_STAT[2]	R	N/A	VBUS Status register bq25890 000: No Input 001: USB Host SDP 010: USB CDP (1.5A) 011: USB DCP (3.25A) 100: Adjustable High Voltage DCP (MaxCharge) (1.5A) 101: Unknown Adapter (500mA) 110: Non-Standard Adapter (1A/2A/2.1A/2.4A) 111: OTG bq25892 000: No Input 001: USB Host SDP 010: Adapter (3.25A) 111: OTG Note: Software current limit is reported in IINLIM register
6	VBUS_STAT[1]	R	N/A	
5	VBUS_STAT[0]	R	N/A	
4	CHRG_STAT[1]	R	N/A	Charging Status 00 – Not Charging 01 – Pre-charge (< $V_{BATLOWV}$) 10 – Fast Charging 11 – Charge Termination Done
3	CHRG_STAT[0]	R	N/A	
2	PG_STAT	R	N/A	Power Good Status 0 – Not Power Good 1 – Power Good
1	Reserved			Reserved: Always reads 0
0	VSYS_STAT	R	N/A	VSYS Regulation Status 0 – Not in VSYSMIN regulation (BAT > VSYSMIN) 1 – In VSYSMIN regulation (BAT < VSYSMIN)

电池规格：电压 3.7V，容量 10200mAh，电芯类型：18650 3400mAh；电芯用量：3PCS

Battery specification: voltage 3.7v battery capacity 10200mAh Types of batteries, 18650 3400mAh Dosage of batteries 3PCS

问题 1：电池电压为 3.3V 左右开始充电，快充阶段，充电电流跳动，从充电芯片 I2C 打印的信息中可见大量的 ele 0x0，如下图所示

Problem 1: the battery voltage is about 3.3v, and the charging current starts to jump during the quick charging phase. A large number of ele 0x0 can be seen from the information printed by the charging chip I2C, as shown in the figure below

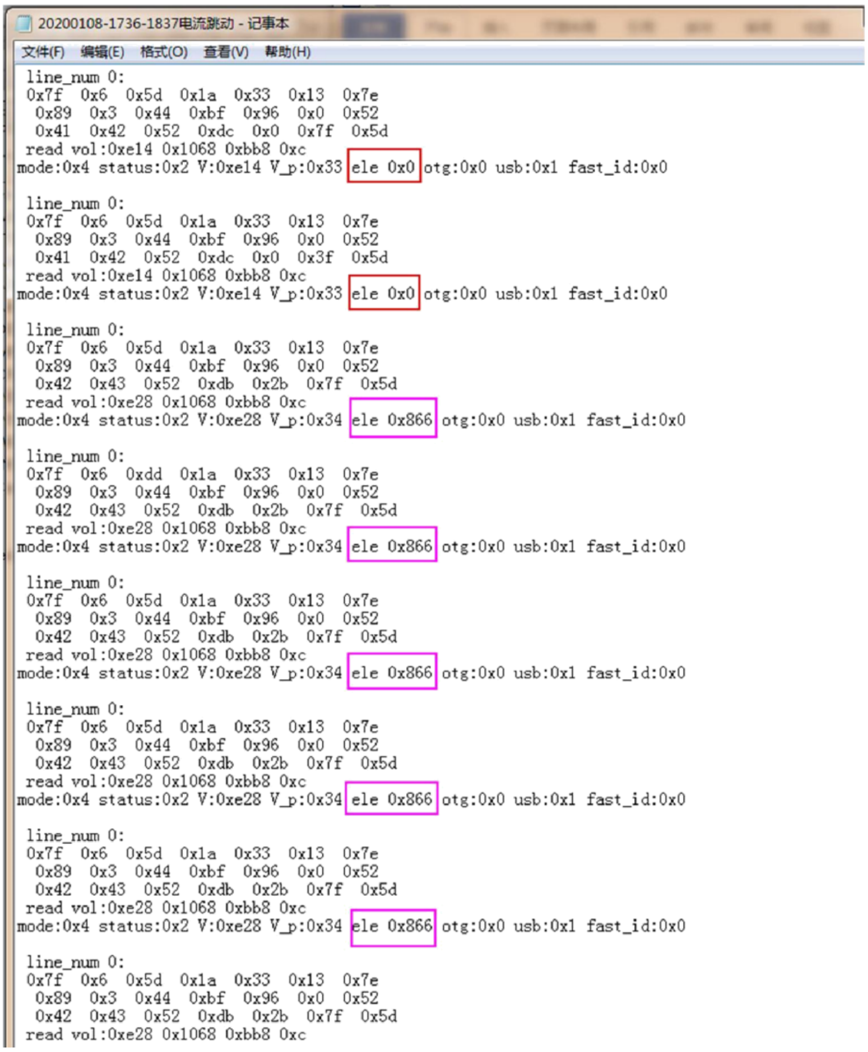


充电过程中使用 USB Safety Tester 监测充电电压及电流，发现电流为 0.04A~0.8A 间跳动。适配器电压为 12V

During the charging process, USB Safety Tester was used to monitor the charging voltage and current, and the current was found to jump between 0.04a and 0.8a.The adapter voltage is 12V

后续恢复正常后充电电流又恢复正常，如下图所示：

The charging current returned to normal after the subsequent recovery, as shown in the figure below:



20200108-1736-1837电流跳动 - 记事本

文件(F) 编辑(E) 格式(O) 查看(V) 帮助(H)

```
line_num 0:
0x7f  0x6  0x5d  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x41  0x42  0x52  0xdc  0x0  0x7f  0x5d
read vol:0xe14 0x1068 0xbb8 0xc
mode:0x4 status:0x2 V:0xe14 V_p:0x33 ele 0x0 otg:0x0 usb:0x1 fast_id:0x0

line_num 0:
0x7f  0x6  0x5d  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x41  0x42  0x52  0xdc  0x0  0x3f  0x5d
read vol:0xe14 0x1068 0xbb8 0xc
mode:0x4 status:0x2 V:0xe14 V_p:0x33 ele 0x0 otg:0x0 usb:0x1 fast_id:0x0

line_num 0:
0x7f  0x6  0x5d  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x42  0x43  0x52  0xdb  0x2b  0x7f  0x5d
read vol:0xe28 0x1068 0xbb8 0xc
mode:0x4 status:0x2 V:0xe28 V_p:0x34 ele 0x866 otg:0x0 usb:0x1 fast_id:0x0

line_num 0:
0x7f  0x6  0xdd  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x42  0x43  0x52  0xdb  0x2b  0x7f  0x5d
read vol:0xe28 0x1068 0xbb8 0xc
mode:0x4 status:0x2 V:0xe28 V_p:0x34 ele 0x866 otg:0x0 usb:0x1 fast_id:0x0

line_num 0:
0x7f  0x6  0x5d  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x42  0x43  0x52  0xdb  0x2b  0x7f  0x5d
read vol:0xe28 0x1068 0xbb8 0xc
mode:0x4 status:0x2 V:0xe28 V_p:0x34 ele 0x866 otg:0x0 usb:0x1 fast_id:0x0

line_num 0:
0x7f  0x6  0x5d  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x42  0x43  0x52  0xdb  0x2b  0x7f  0x5d
read vol:0xe28 0x1068 0xbb8 0xc
mode:0x4 status:0x2 V:0xe28 V_p:0x34 ele 0x866 otg:0x0 usb:0x1 fast_id:0x0

line_num 0:
0x7f  0x6  0x5d  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x42  0x43  0x52  0xdb  0x2b  0x7f  0x5d
read vol:0xe28 0x1068 0xbb8 0xc
mode:0x4 status:0x2 V:0xe28 V_p:0x34 ele 0x866 otg:0x0 usb:0x1 fast_id:0x0

line_num 0:
0x7f  0x6  0x5d  0x1a  0x33  0x13  0x7e
 0x89  0x3  0x44  0xbf  0x96  0x0  0x52
 0x42  0x43  0x52  0xdb  0x2b  0x7f  0x5d
read vol:0xe28 0x1068 0xbb8 0xc
```

充电过程中使用 USB Safety Tester 监测充电电压及电流，适配器输出的电流稳定在 0.8A。适配器电压为 12V

USB Safety Tester was used to monitor the charging voltage and current during the charging process. The output current of the adapter was stable at 0.8a.The adapter voltage is 12V

并不是每次充电都会出现电流跳动，但发生的概率较大，也比较容易复现
相关存储器等数据详见文档：《20200108-1736-1837 电流跳动》

It is not that the current jump will occur in every charge, but it is more likely to happen, and it is easier to reproduce relevant data such as relevant memory. Please see the document for details: "20200108-1736-1837 current jump".

问题 2：充电一段时间之后停止充电，充电指示灯灭，电池电压远低于 4.2V，
充电状态为 0 (Not Charging)，
拔插数次之后可恢复正常充电，可充满。

Problem 2: after charging for a period of time, the charging stops, the charging indicator light goes off, and the battery voltage is far lower than 4.2v.

It's Not Charging,After the plug and plug several times can resume normal charging, can be full.

该问题出现的次数相对较少，但造成的影响最大，相关证据和数据还在收集，故暂时未提供相关数据

This problem occurred relatively few times, but caused the biggest impact. Relevant evidence and data are still being collected, so relevant data are not provided for the time being