MediaTek Inc.

Mediatek HW Fuel Gauge User

GM3.0_ Fuel Gauge Test Flow

NO.	Version	Date	Author	Comments
1	V1.0	2017/6/6	Xiaoyong.Li	1st version for customer.
2	V1.1	2017/7/17	Xiaoyong.Li	Modify “2.1 Input the command as follow”
3				
4				

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GM3.0_Fuel Gauge Test Flow

1. Preparatory Work

- **SW：** eng version
- **HW：** Fuel Gauge car tune value calibration

  Please refer to the file of ***GM3.0 Customized Setting Flow*** to get how to do.

2. Get valid log

2.1 Input the command as follow

Step1. adb root

Step2. adb shell

Step3. setprop persist.mediatek.fg.log.enable 1

Step4. chmod 666 /dev/kmsg

Step5. setenforce 0

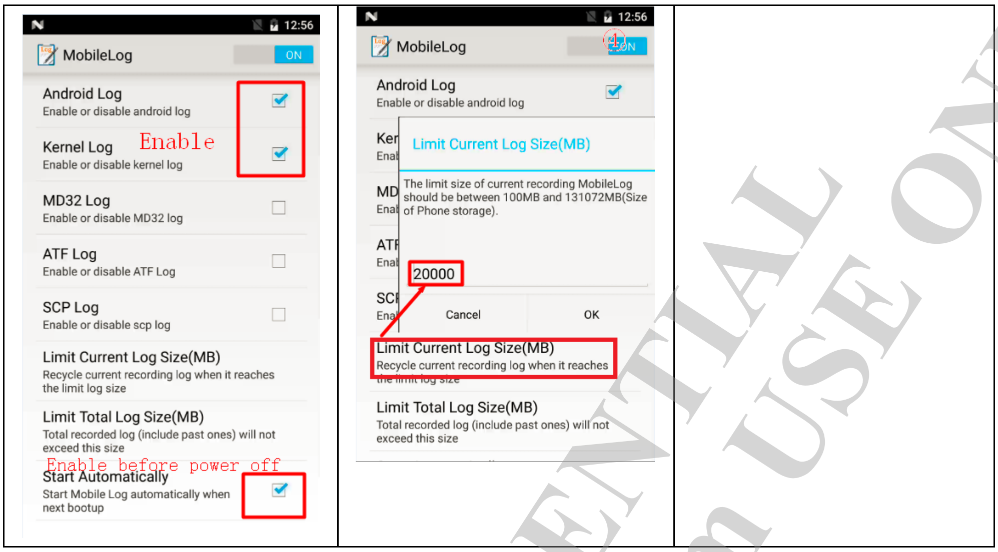
Step6. exit

2.2 MTK log Setting

Step1. Open mobile log，and disable others

Step2. Enable Android log & kernel log in mobile log，and setting auto run in next power on

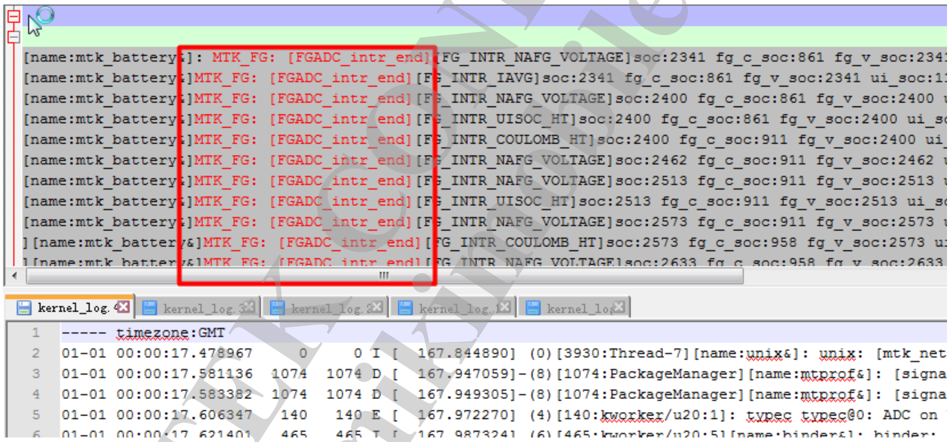
Step3. Setting the max capacity to 5000M



3. Check whether GM3.0 log is enable

Open kernel log and search key words: MTK_FG: [FGADC_intr_end]

If there's MTK_FG: *[FGADC_intr_end]*, the GM3.0 log is enable.



4. D0 precision test

Step1. Enable mobile log, and setting auto run in next power on

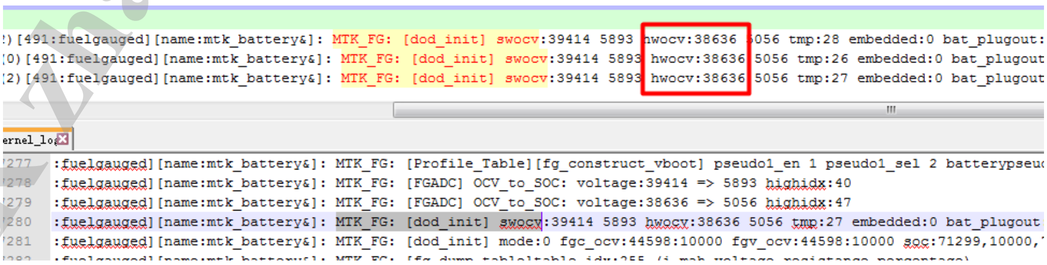
Step2. Disconnect the phone and the battery, and waiting 30minutes

Step3. Test the OCV （Open Circuit Voltage）of battery: V0

Step4. Connect the Battery and the phone and power on

Step5. Waiting 1min after power on, and stop MTK log. Then setting mobile log to auto run in next power on for next step using

Step6. Open the log and search the key words: MTK_FG: [dod_init] swocv



[name:mtk_battery&]: MTK_FG: [dod_init] swocv:39414 5893 hwocv:38636 5056

Note：HW OCV （defined as V1）is the voltage sensing by the phone，and for example, the V1=3863.6mV.

Please test the battery voltage and get HW OCV in log successively，and judge the error in spec of 5mV.

NO.	Battery OCV/mV	HW OCV/mV	Error /mV	Pass/Fail
1	4300			
2	4200			
3	4100			
4	4000			
5	3900			
6	3850			
7	3800			
8	3750			
9	3700			
10	3650			
11	3600			
12	3500			
13	3450			

5. Discharge test

Step1. Enable mobile log，and setting auto run in next power on
Step2. Charge full
Step3. Power off and disconnect the battery and the phone
Step4. wait for 30min
Step5. Connect the Battery and the phone , and Enable the LCM always on in Engineer mode
Step6. Discharge in the loading of repeat playing Video or the customer loading method until power off
Step7. Put out the MTK log
Step8. Search the keyword as bellow，and search all information
MTK_FG: [FGADC_intr_end][FG_INTR_COULOMB_**LT**]

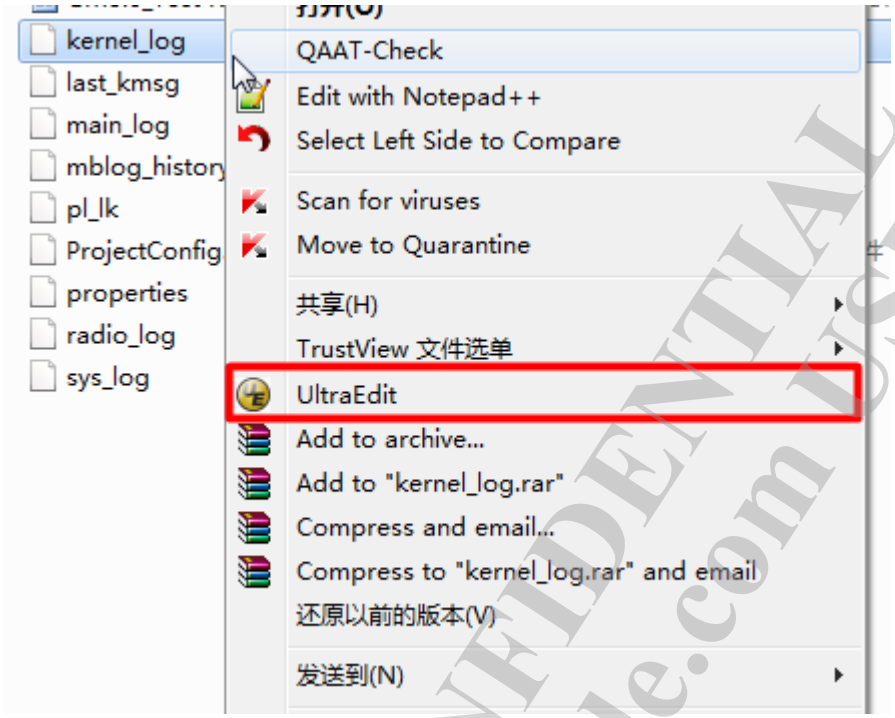
6. Charge test

Step1. Enable mobile log，and setting auto run in next power on.
Step2. Discharge the Battery until the Voltage ＜3.4V after 30min
Step3. Connect the Battery and the phone，and input AC Adaptor
Step4. Waiting until Charge full
Step5. Put out the MTK log
Step6. Search the keyword as bellow，and search all information
MTK_FG: [FGADC_intr_end][FG_INTR_COULOMB_HT]

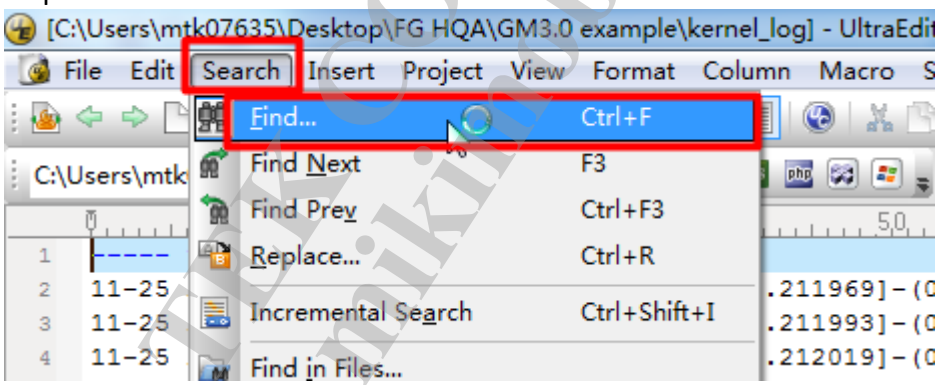
7. **How to draw the UISOC &VBAT Curve**

   The example is base on discharge by using UltraEdit， and the charge is the same operation

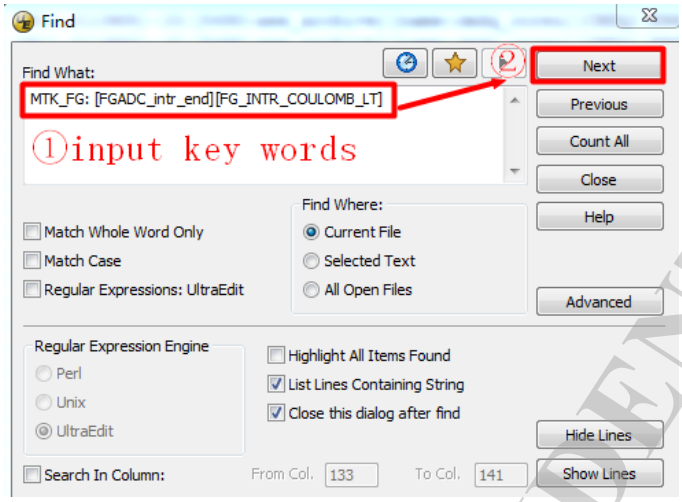
Step1. Open the kernel log with UltraEdit

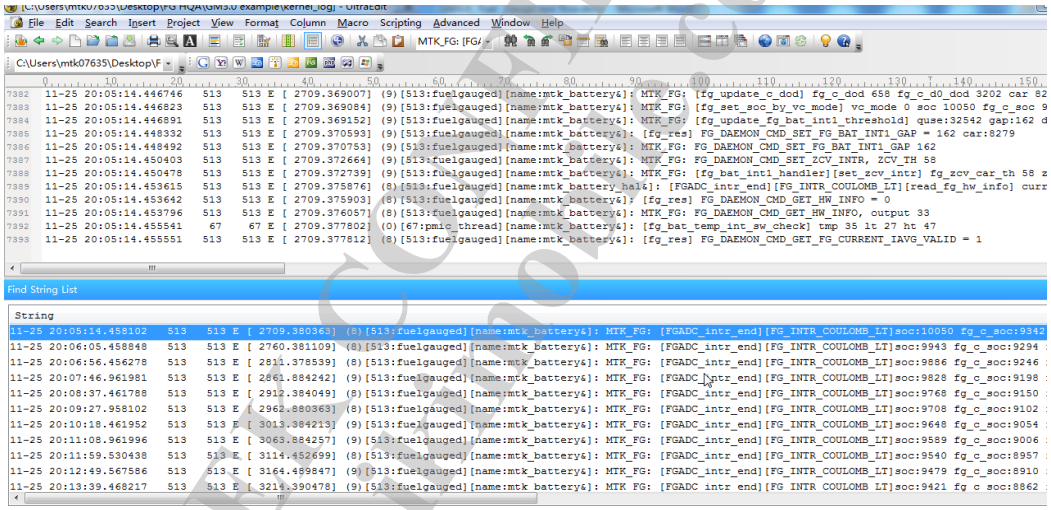


Step2. Search（Ctrl+F）

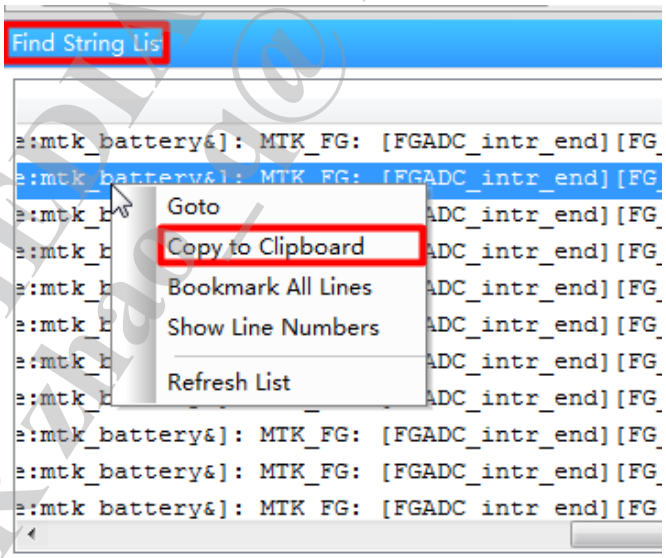


Step3. Input keywords: *MTK_FG:[FGADC_intr_end]: [FG_INTR_COULOMB_LT]*and search in all files

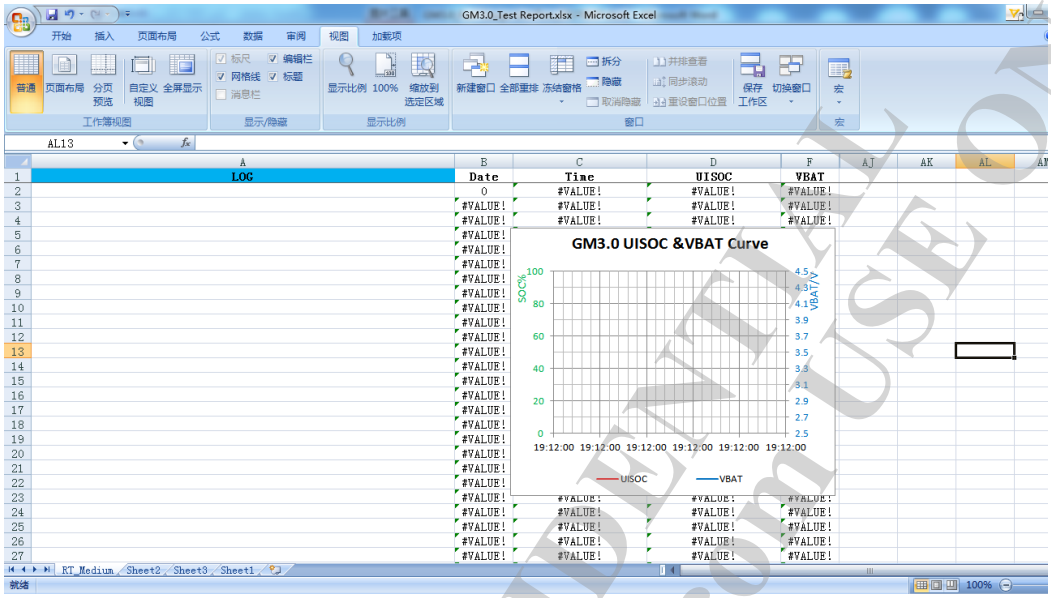




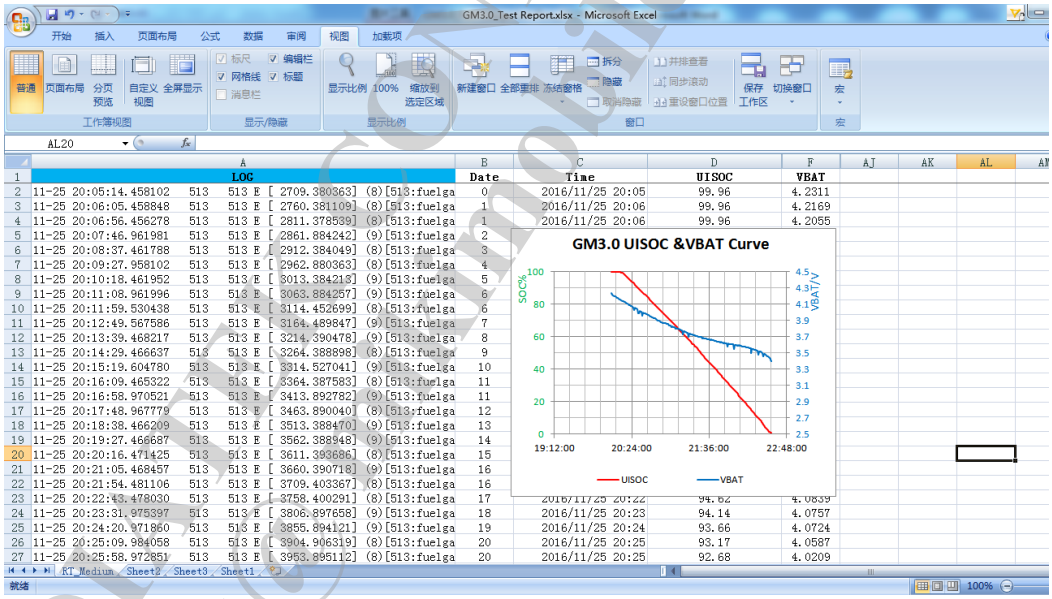
Step4. Select all and save it in text file

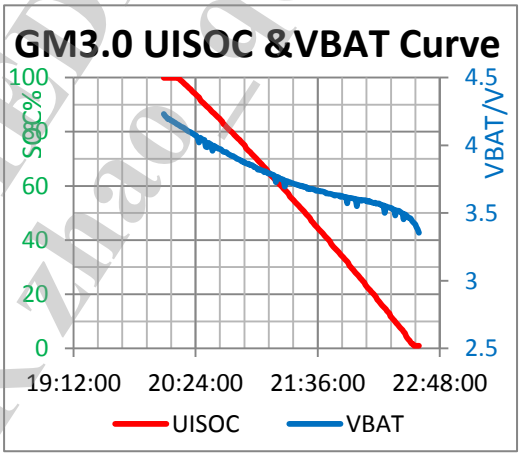


Step5. Open GM3.0_Test Report.xlsx

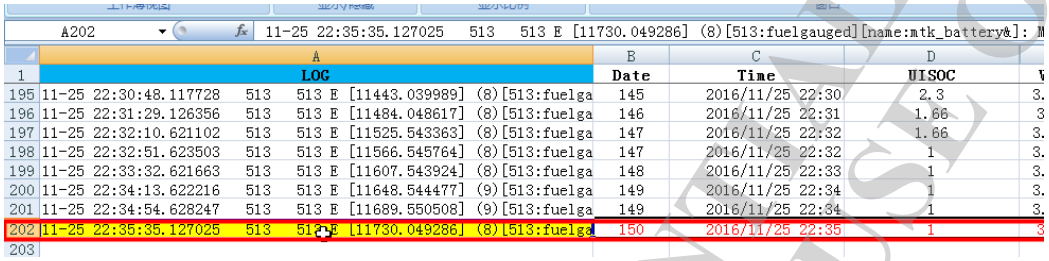


Step6. Paste the log in log column





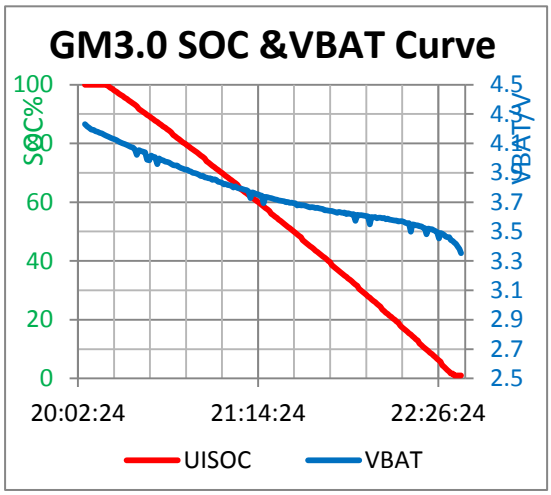
Step7. Keep the number of log column with other B~F column consistently, and delete redundant data, otherwise，the UISOC and VBAT data maybe not showed integrallty.For example， the A~F column is all 202.



A202 | 11-25 22:35:35.127025 513 513 E [11730.049286] (8)[513:fuelgauged][name:mtk_battery&]: M

	A	B	C	D
1	LOG	Date	Time	UISOC
195	11-25 22:30:48.117728 513 513 E [11443.039989] (8)[513:fuelga	145	2016/11/25 22:30	2.3
196	11-25 22:31:29.126356 513 513 E [11484.048617] (8)[513:fuelga	146	2016/11/25 22:31	1.66
197	11-25 22:32:10.621102 513 513 E [11525.543363] (8)[513:fuelga	147	2016/11/25 22:32	1.66
198	11-25 22:32:51.623503 513 513 E [11566.545764] (8)[513:fuelga	147	2016/11/25 22:32	1
199	11-25 22:33:32.621663 513 513 E [11607.543924] (8)[513:fuelga	148	2016/11/25 22:33	1
200	11-25 22:34:13.622216 513 513 E [11648.544477] (9)[513:fuelga	149	2016/11/25 22:34	1
201	11-25 22:34:54.628247 513 513 E [11689.550508] (9)[513:fuelga	149	2016/11/25 22:34	1
202	11-25 22:35:35.127025 513 513 E [11730.049286] (8)[513:fuelga	150	2016/11/25 22:35	1
203				

Step8. Get the UISOC&VABT Curve by using some excel setting， as follow



8. Whether Fuel Gauge pass is base on UISOC & AvgVbat

1） UISOC is smoothness， monotonic and no saltus

2） The last UISOC is 1% for discharge

3） The last AvgVbat is less than 3400mV for discharge

4） The maximum UISOC is 100% for charge