

Errata Report - For TI

Phenomenon + Some Facts

1. Once the PCB is ready, it immediately enters NORMAL MODE instead of waiting in SHIP MODE to be woken up by TS1
2. Neither the charging nor the discharging switch is conducting
3. Protections exist: SCD, XREADY, UV. After being cleared via IIC, all three are immediately set to 1 again
4. The temperature sensor does not respond, and the value read by IIC remains unchanged, even when heated to 70°C with a hot air gun.
5. Try to enter SHIP MODE via IIC, and exit immediately after entering.

Collect data

E2E

1 2 3 4 5

From post: <https://e2e.ti.com/support/power-management-group/power-management/f/power-management-forum/1632917/bq76930-chip-malfunction>

Cause Analysis

XREADY Protection

1. Group power supply (VC5X/BAT) lost/unstable
2. CAP1/CAP2 capacitor pin voltage loss/instability
3. TS1/TS2 ground resistance has a cold solder joint or is unstable

SCD Protection

1. REGSRC/REGOUT voltage loss/instability

Errata Step 1

1. The oscilloscope verifies the DCV and ACV of VC5X/BAT under static and charging conditions respectively

2. The oscilloscope verifies the DCV and ACV of CAP1/CAP2 under static and charging conditions respectively
3. The oscilloscope verifies the DCV and ACV of TS1/TS2 under static and charging conditions respectively

Errata Phenomenon 1

Step 1 for errata checking

Static measurement, VC5X/BAT voltage is accurate, waveform is stable



Static DC measurement



Static AC measurement

After connecting the charger and powering on, there is jitter on the BAT pin relative to ground, which disappears after a period of time. At this time, the stable voltage of BAT is slightly lower than that before power-on.



Charger connection jitter



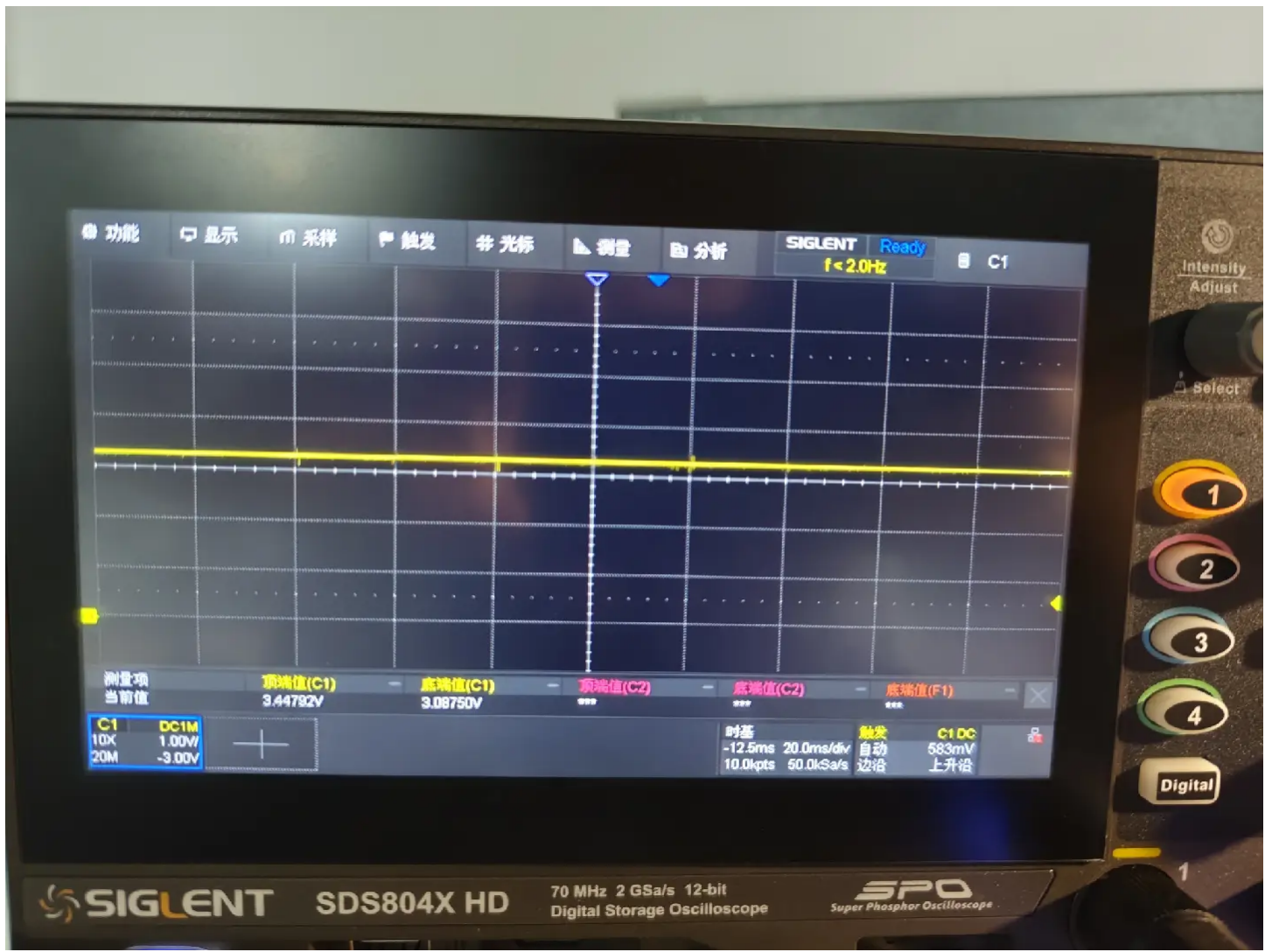
Stabilization after jitter



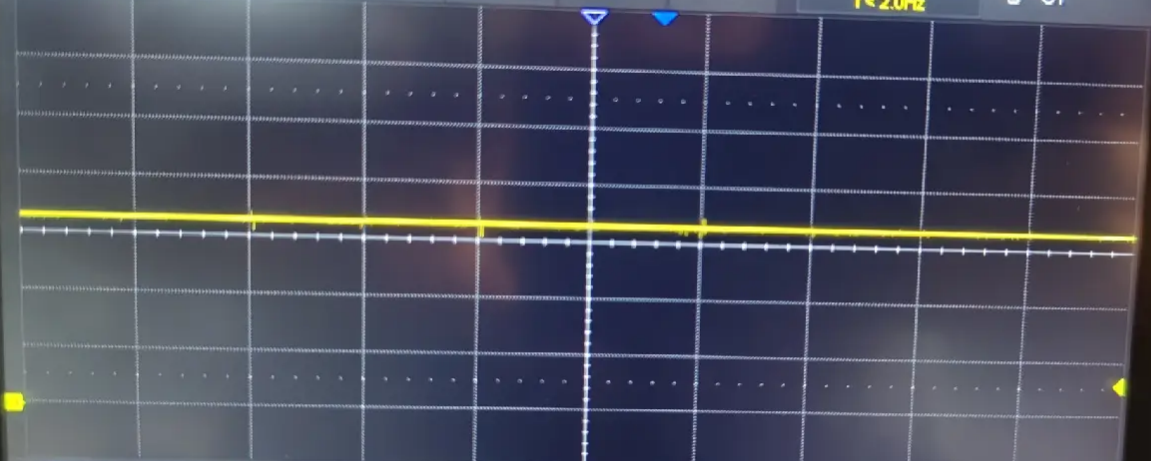
AC amplification during shaking

Corrective Step 2

The DC stability of the CAP2 network is OK, stabilized at 3V3. The AC stability is OK after the charger is powered on.



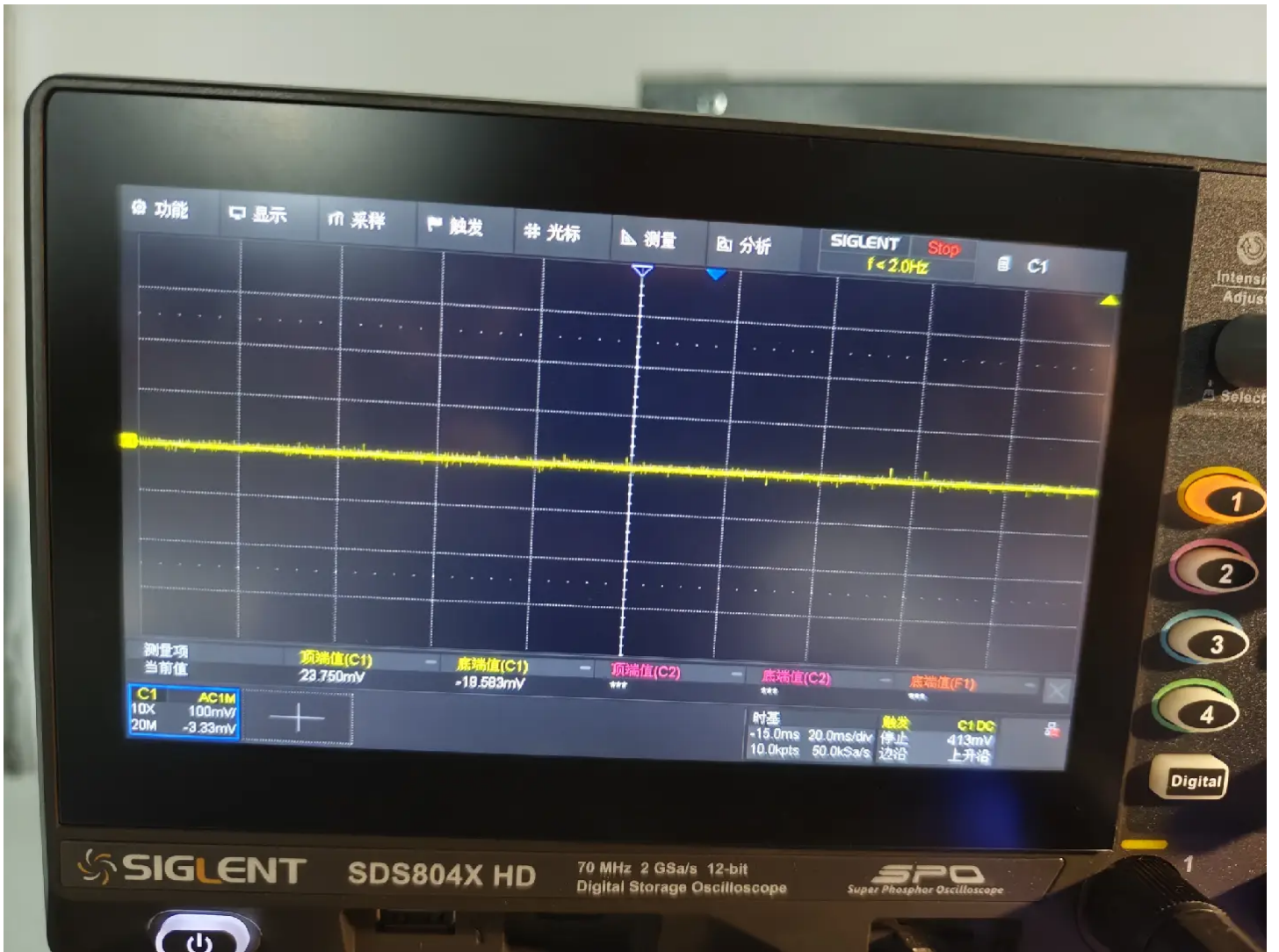
功能 显示 采样 触发 光标 测量 分析 SIGLENT Ready f < 2.0Hz C1

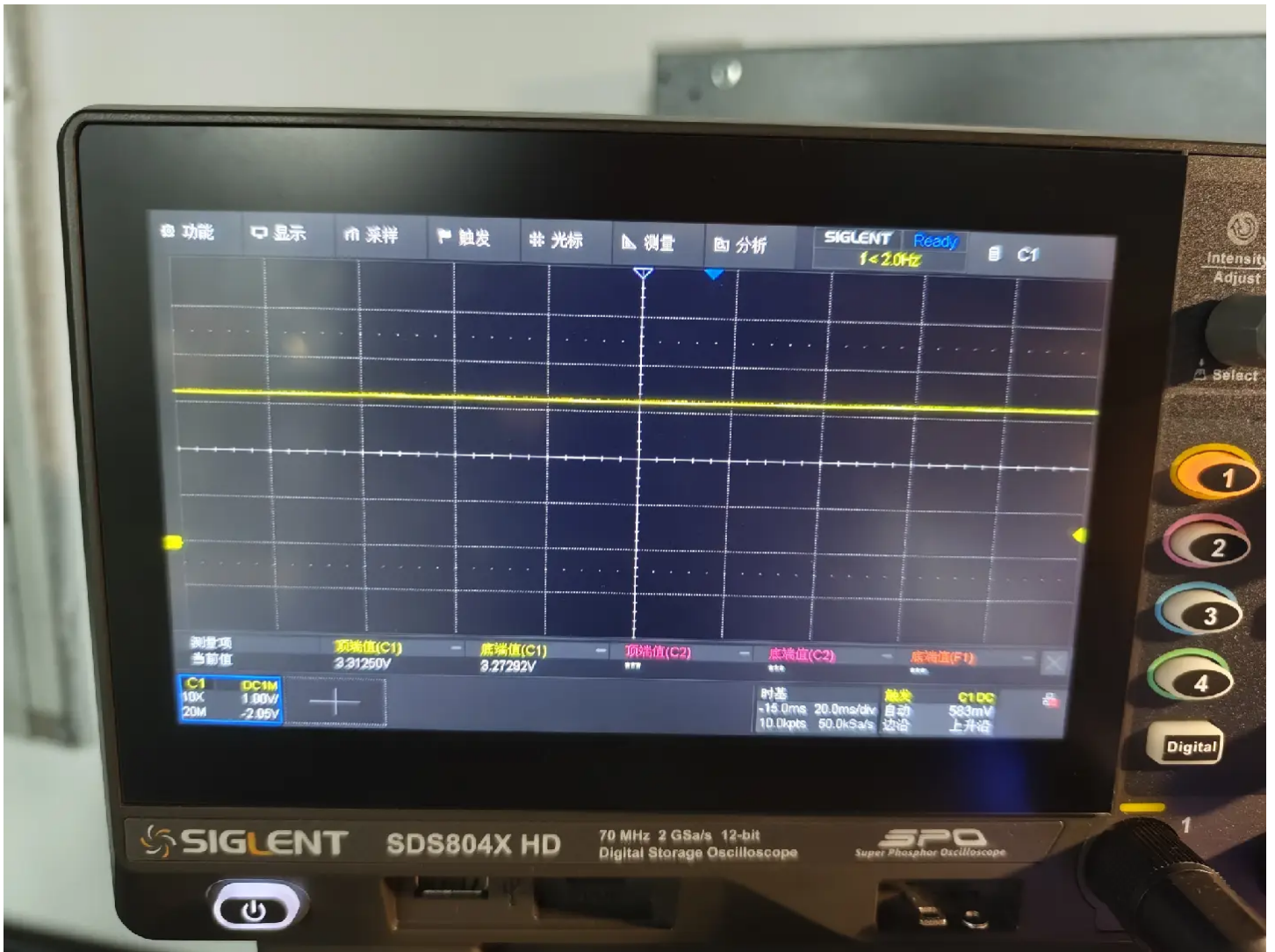


测量项	顶端值(C1)	底端值(C1)	顶端值(C2)	底端值(C2)	底端值(F1)
当前值	3.44792V	3.08750V	***	***	***

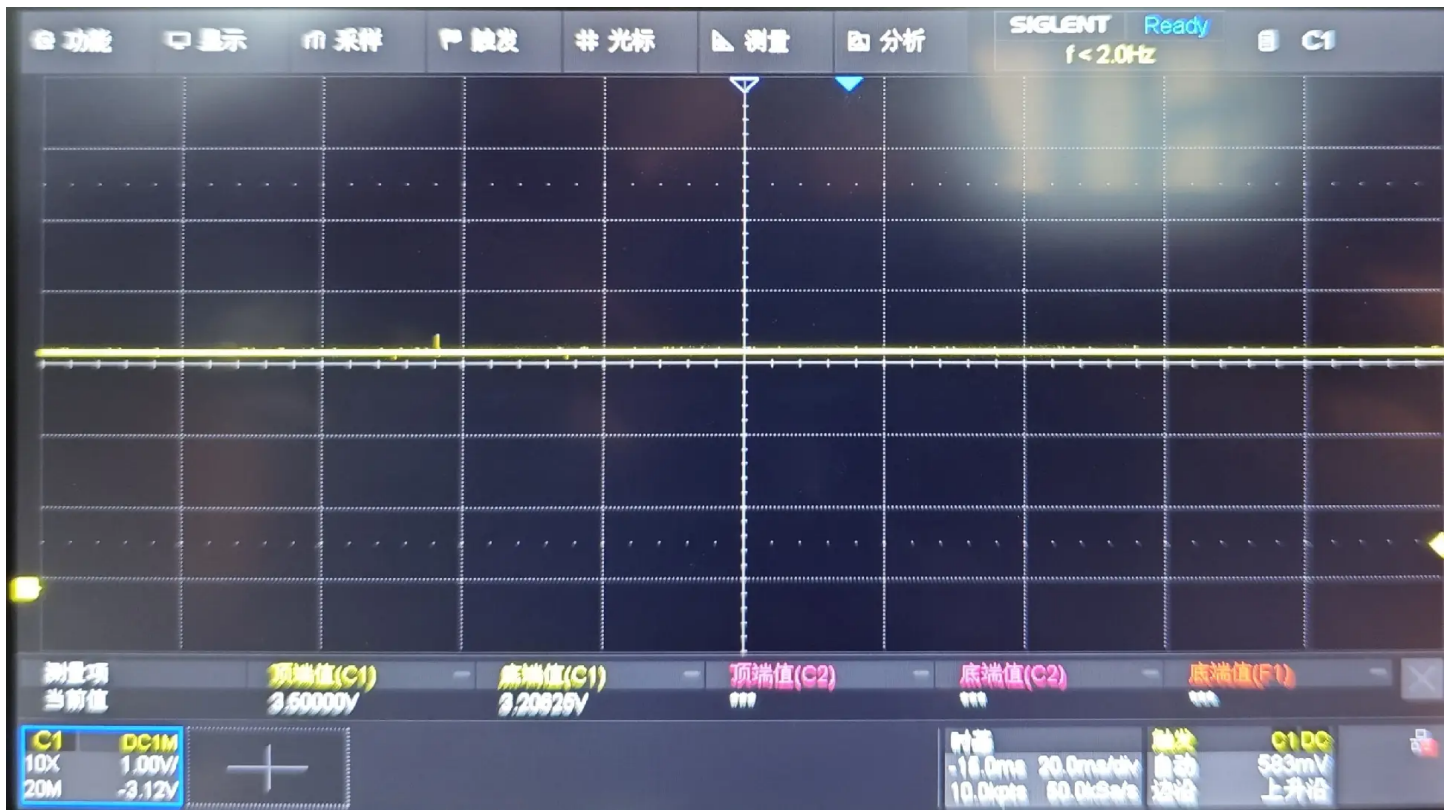
C1	DC1M		时基	触发	C1 DC
10X	1.00V		-12.5ms	自动	583mV
20M	-3.00V		10.0kpts	边沿	上升沿

SIGLENT SDS804X HD 70 MHz 2 GSa/s 12-bit Digital Storage Oscilloscope SPO Super Phosphor Oscilloscope



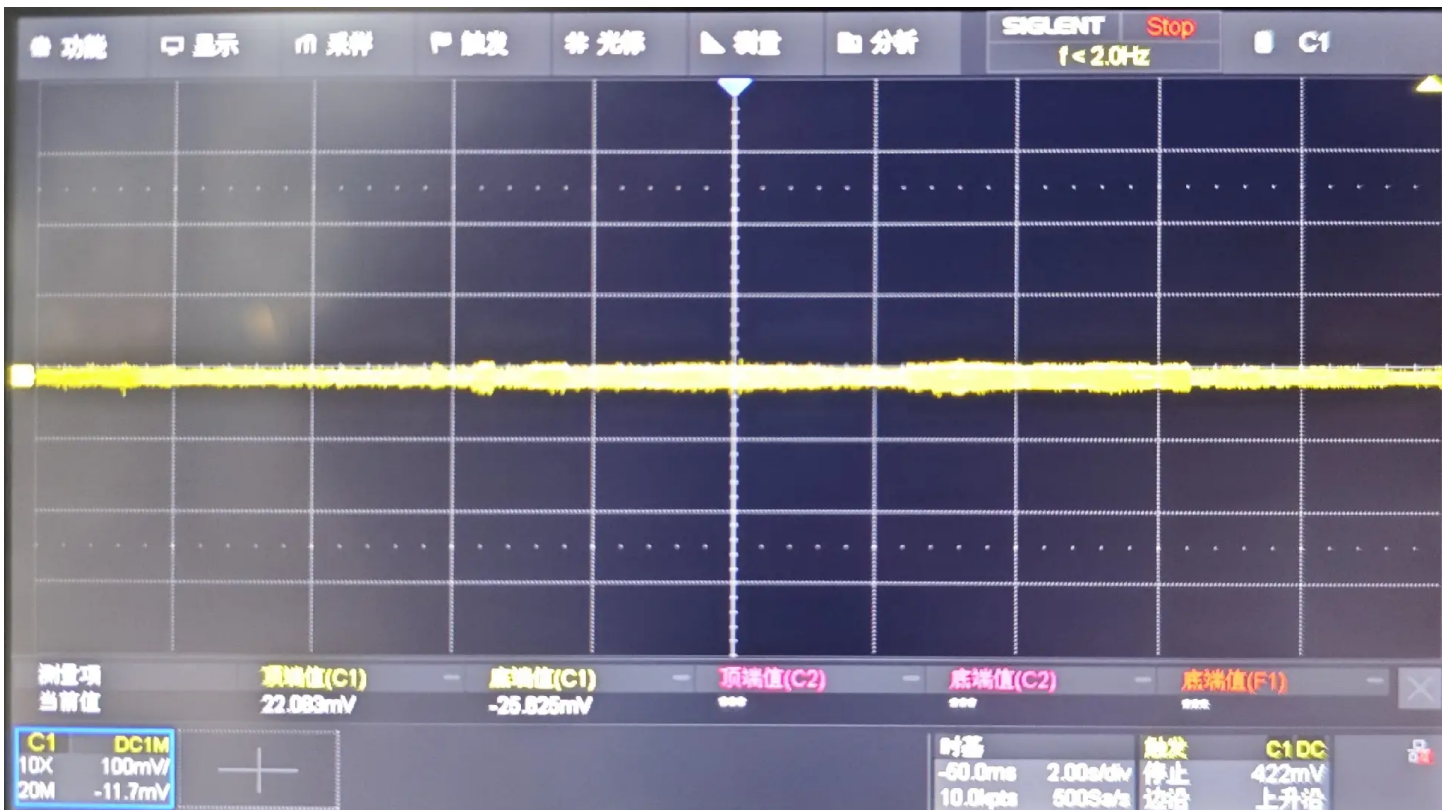


The DC stability of the CAP1 network is OK, remaining stable at 3V3. After the charger is powered on, there are small spikes in AC stability, and these small spikes do not disappear after the charger is removed.

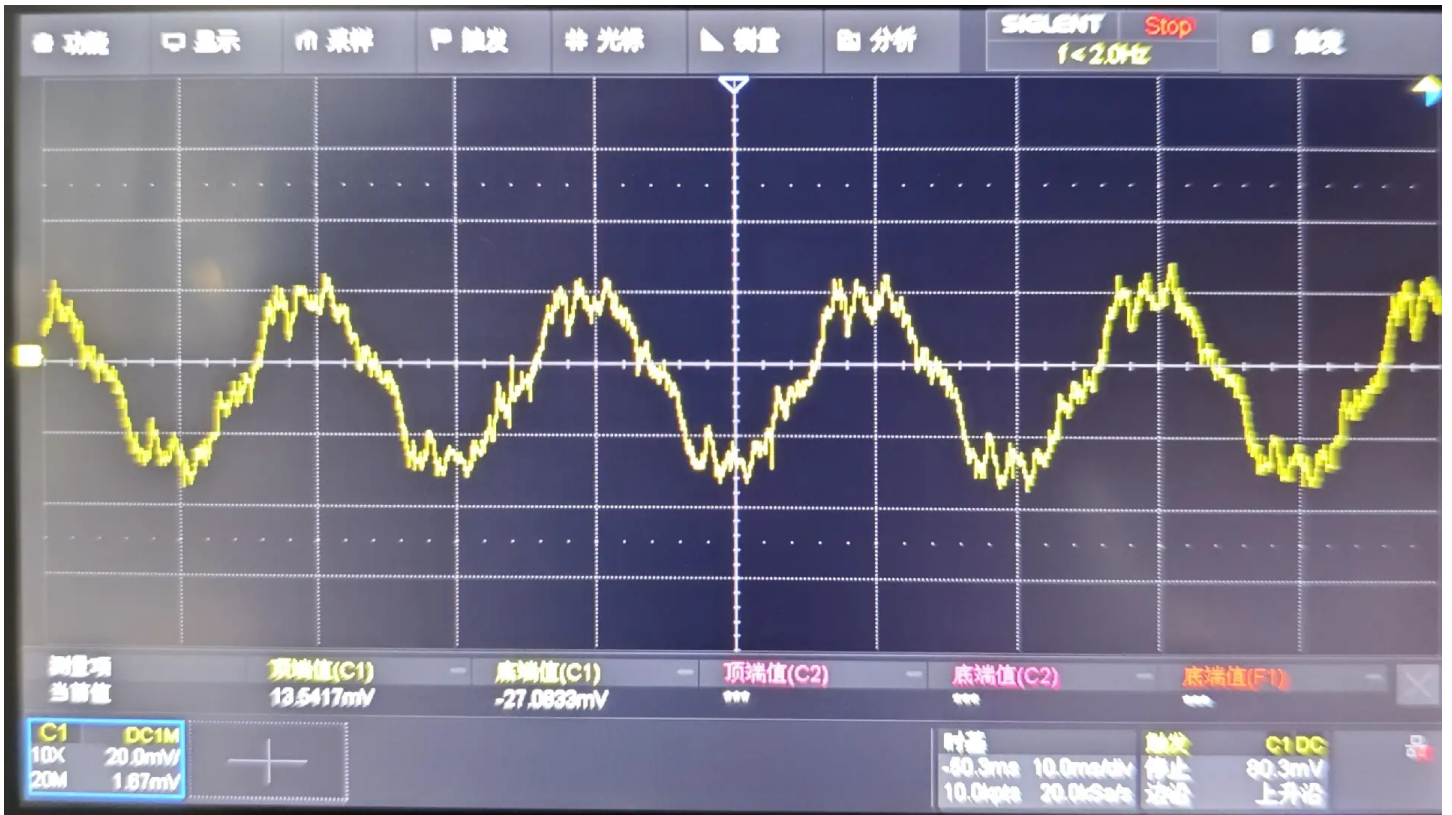




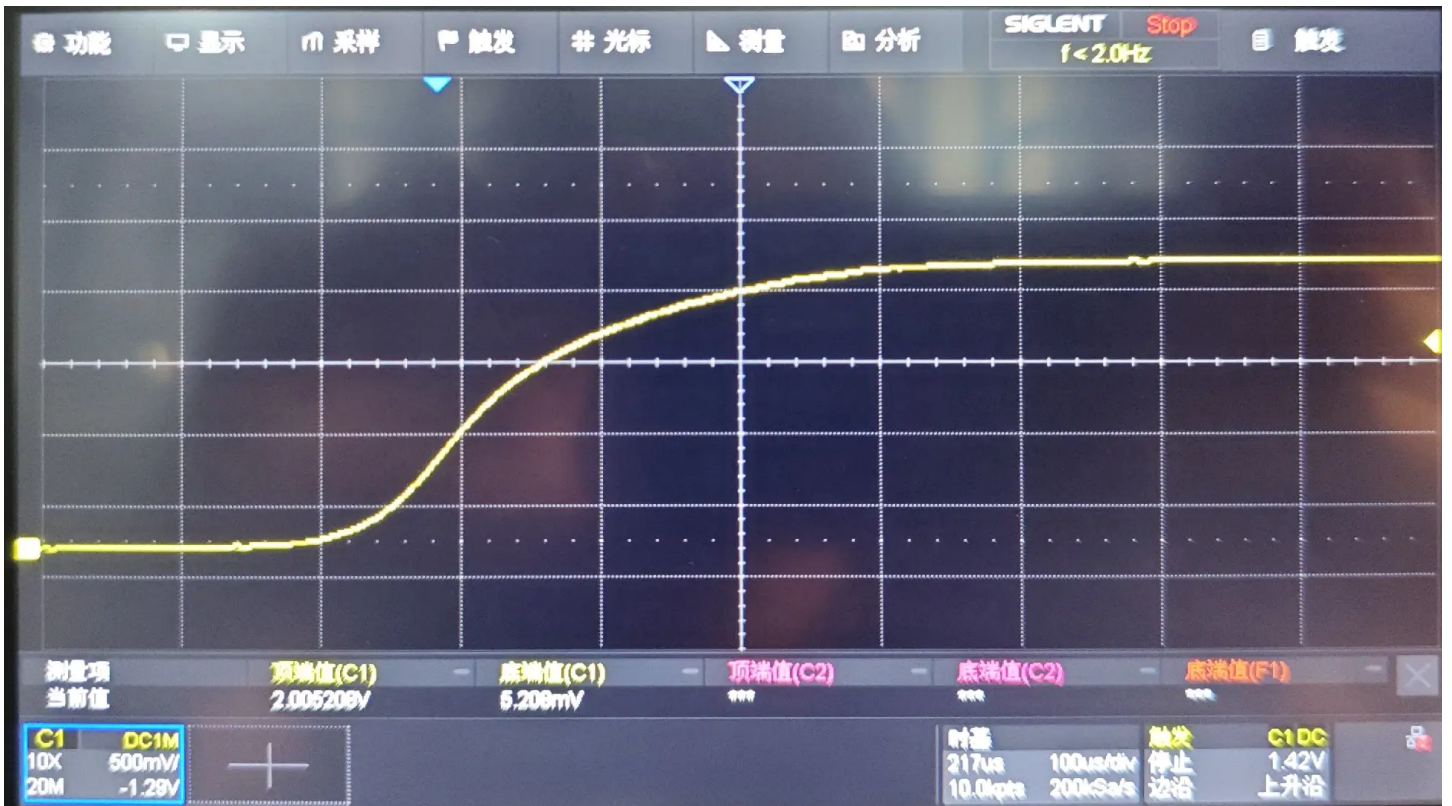
Check and correct step 3



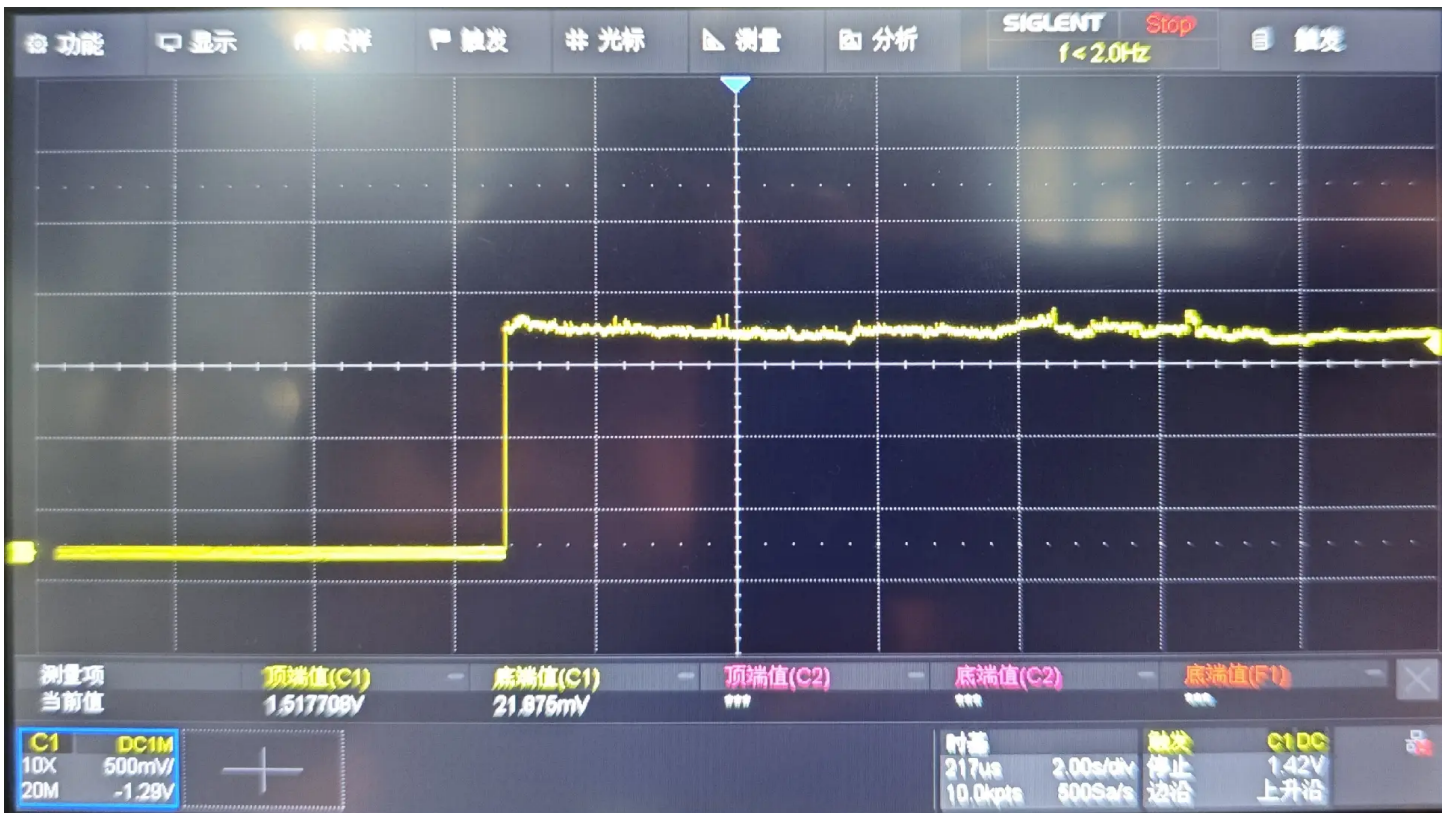
TS1 static long-term voltage waveform



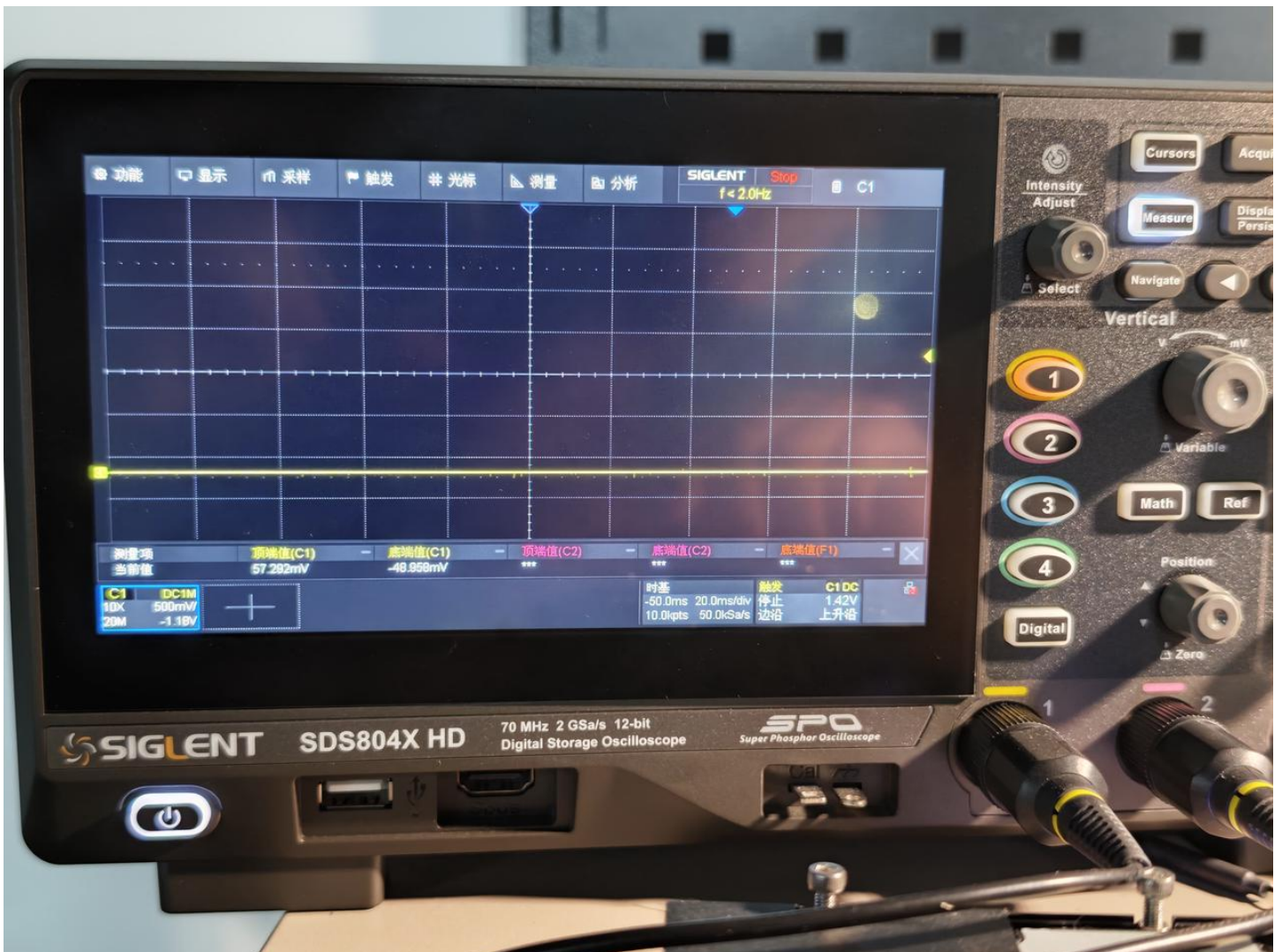
T1 static AC waveform, triangular wave frequency amplitude constant



Charger output instant TS1 rising edge



TS1 rising edge after long tracking



Curve of TS2 before charger output

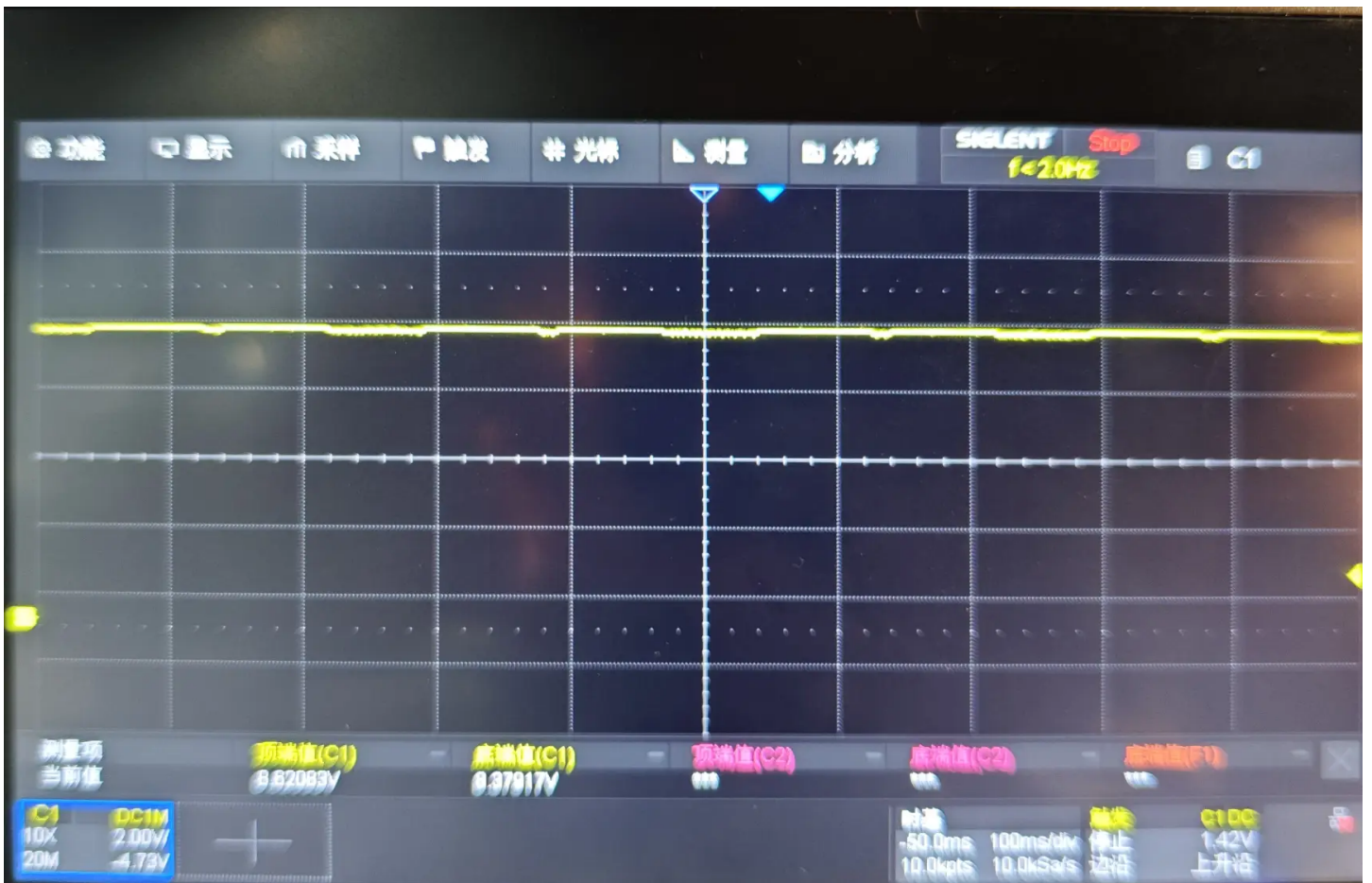


Curve of TS2 after charger output

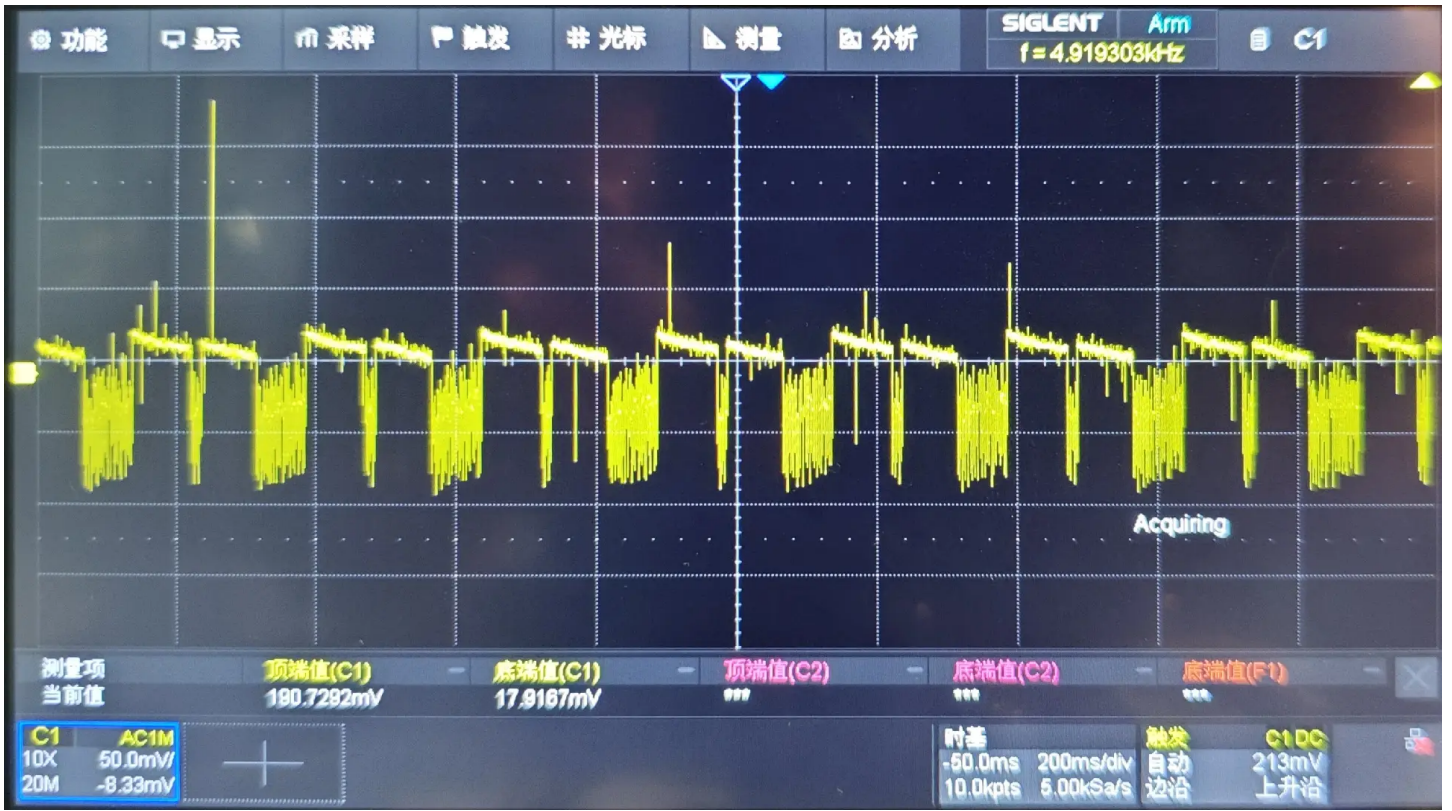
Check and correct step 4



REGSRC at rest



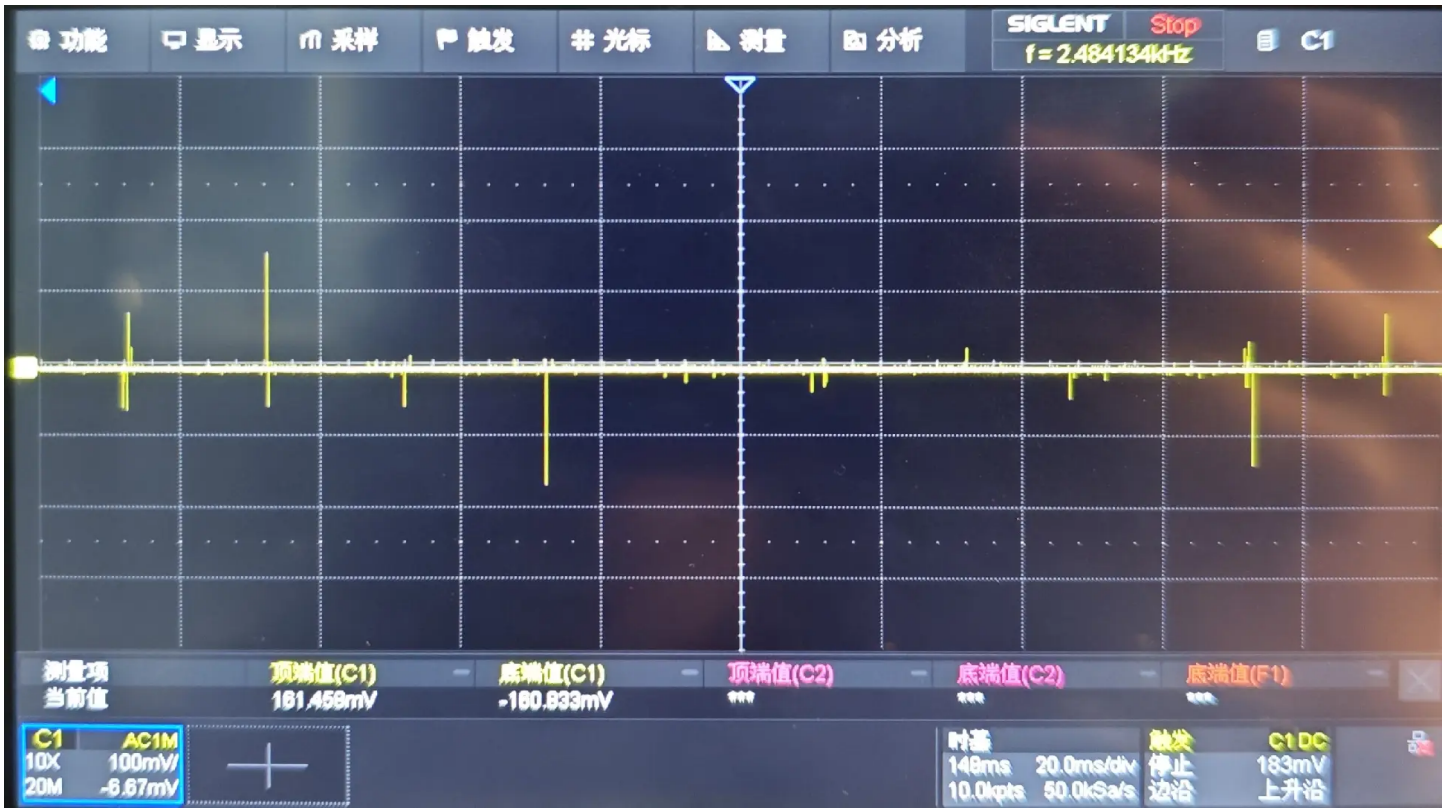
REGSRC at charger output



AC of REGSRC when the charger outputs



REGOUT at rest



REGSRC at charger output

Analysis of the Reason for Errata 1

For TI



