TPS54325PWPR output
with momentary power interruption

The issue :

When the momentary power interruption occurs between 10ms and 13ms,
the output voltage did not return. It occurred 7 or 8 times with 10 times trial.
There is no this issue with the interruption less than 10ms and longer than 15ms.

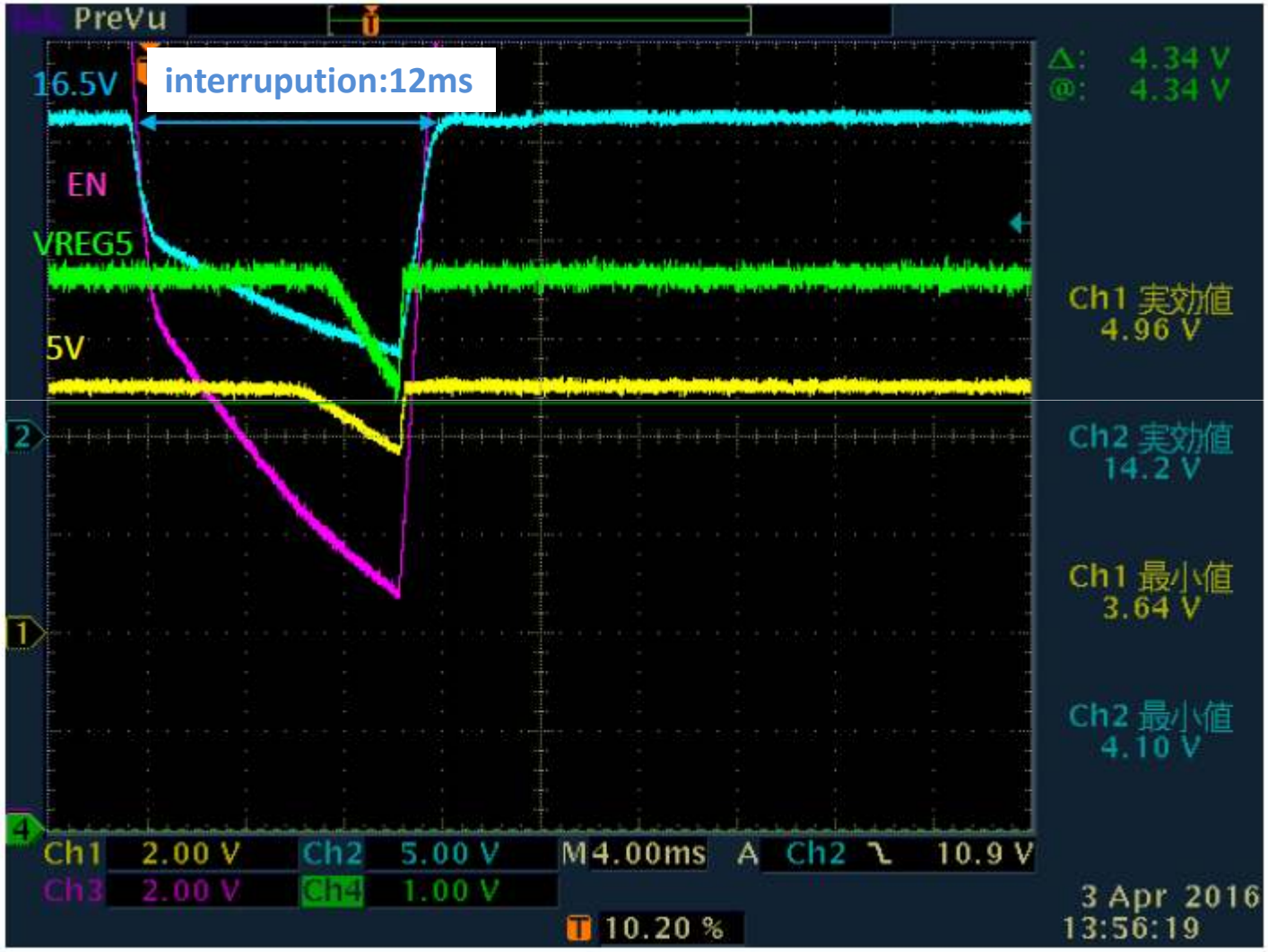
Condition:
Vin=15V (16.5V for test)
Vout=5V
Iout=0.7A

Request:
please see waveforms and circuit and my guess as follows and give us your opinion.

TPS54325PWPR output with momentary power interruption

OK1

Vin:16.5V
Vout:5V
EN:15V



Ch1 average
4.96V

Ch2 average
14.2V

Ch1 minimum
3.64V

Ch2 minimum
4.10V

* EN is generated by a LDO from Vin

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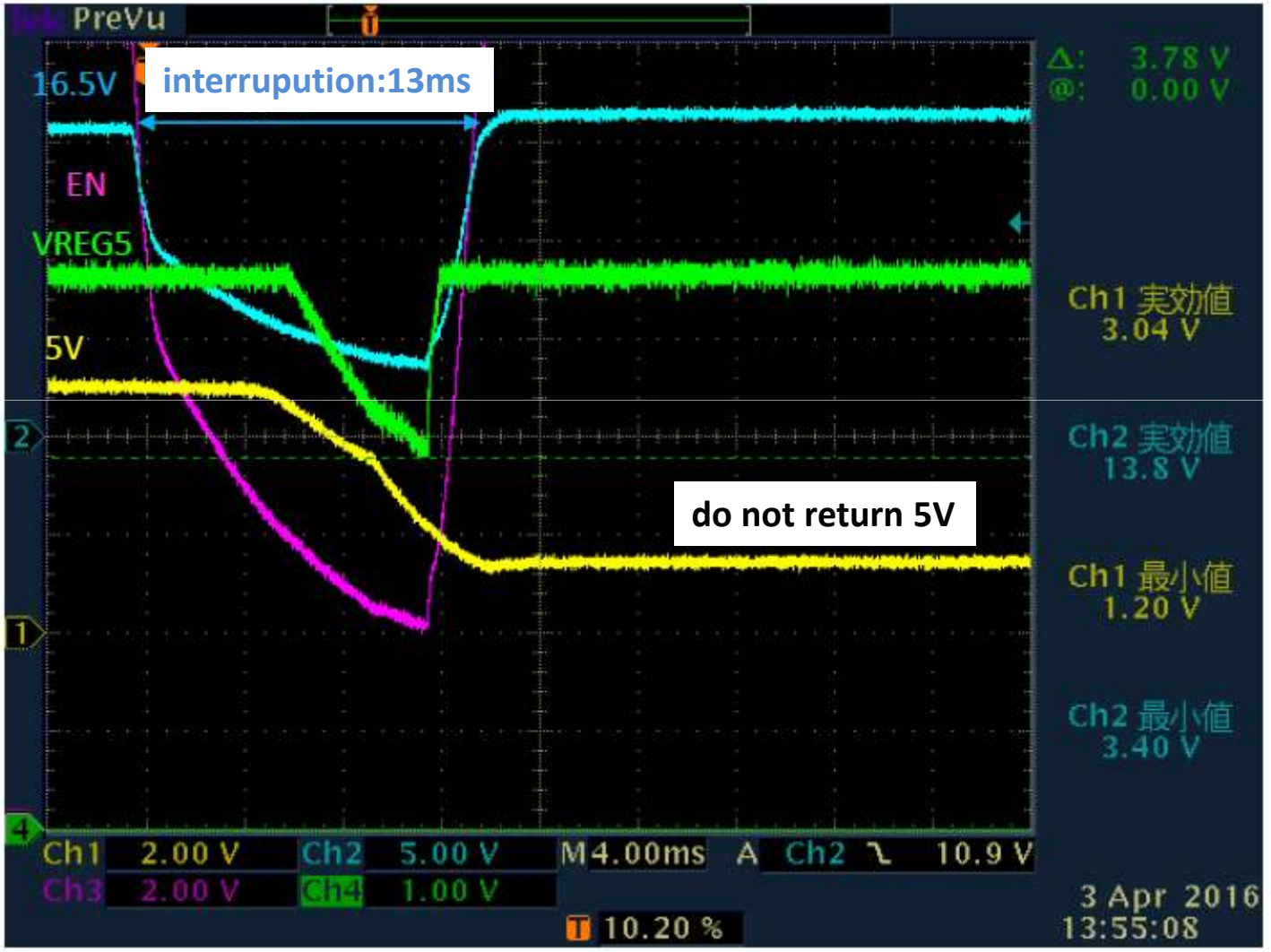
NG1

Vin:16.5V
Vout:5V
EN:15V



Ch1 average
3.04V

Ch2 average
13.8V

Ch1 minimum
1.20V

Ch2 minimum
3.40V

* EN is generated by a LDO from Vin

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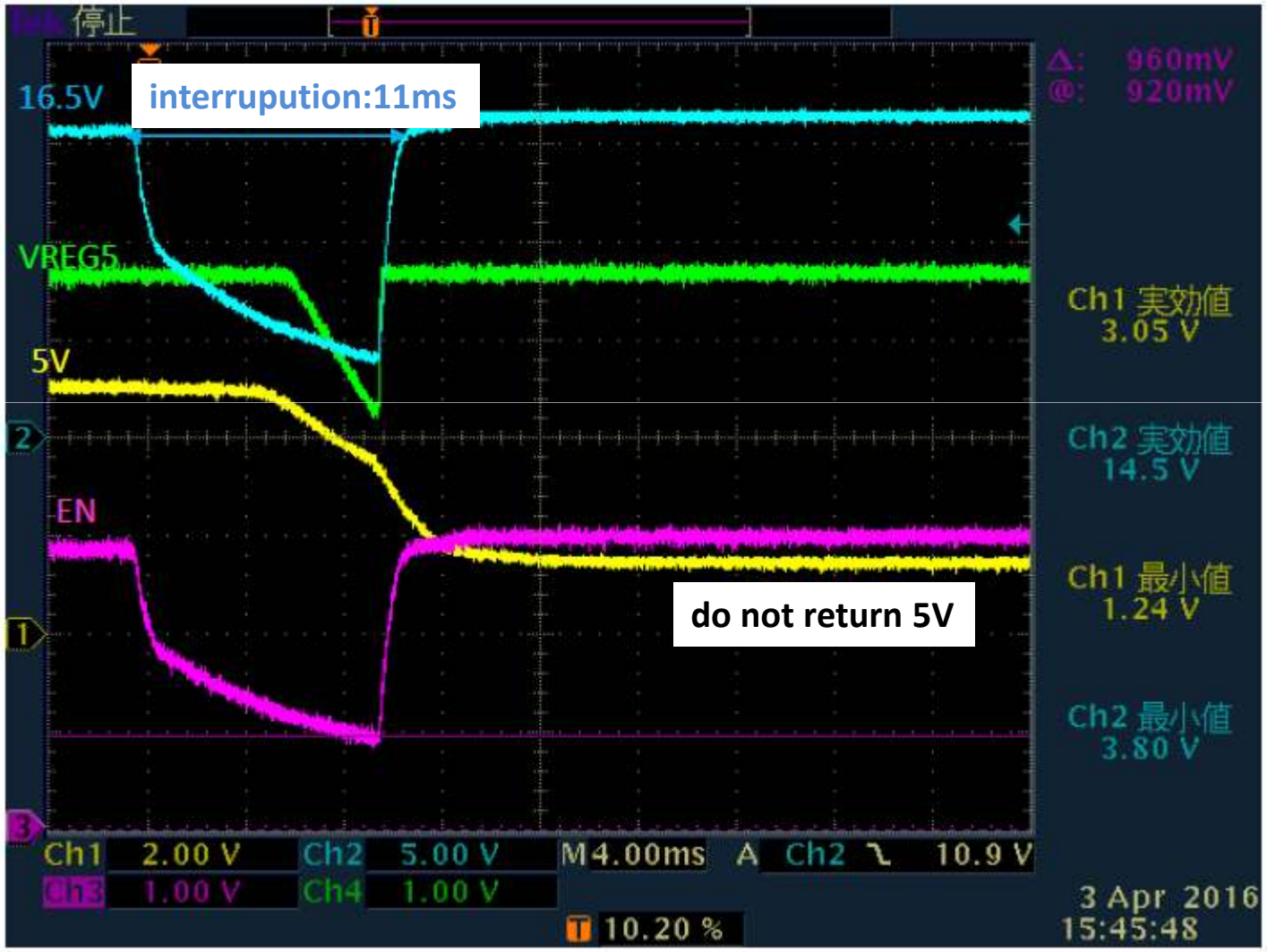
NG2

Vin:16.5V
Vout:5V
EN:2.9V



Ch1 average
3.05V

Ch2 average
14.5V

Ch1 minimum
1.24V

Ch2 minimum
3.80V

* EN is generated by a LDO from Vin

TPS54325PWPR output
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NG2

Vin:16.5V
Vout:5V

with
SW waveform

Ch1 average
3.07V

Ch2 average
14.5V

Ch1 minimum
1.24V

Ch2 minimum
3.8V

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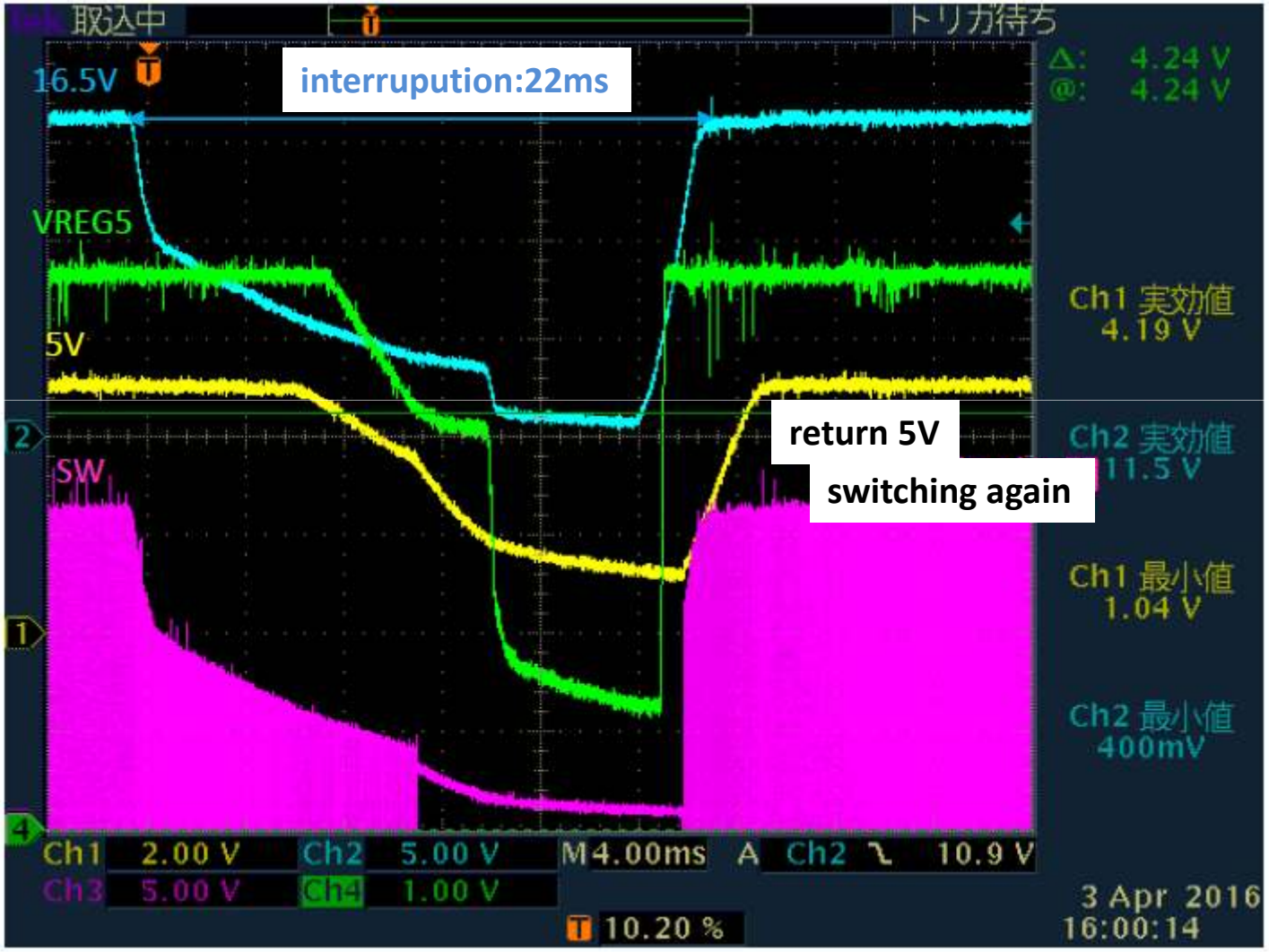
OK2

Vin:16.5V
Vout:5V

with
SW waveform



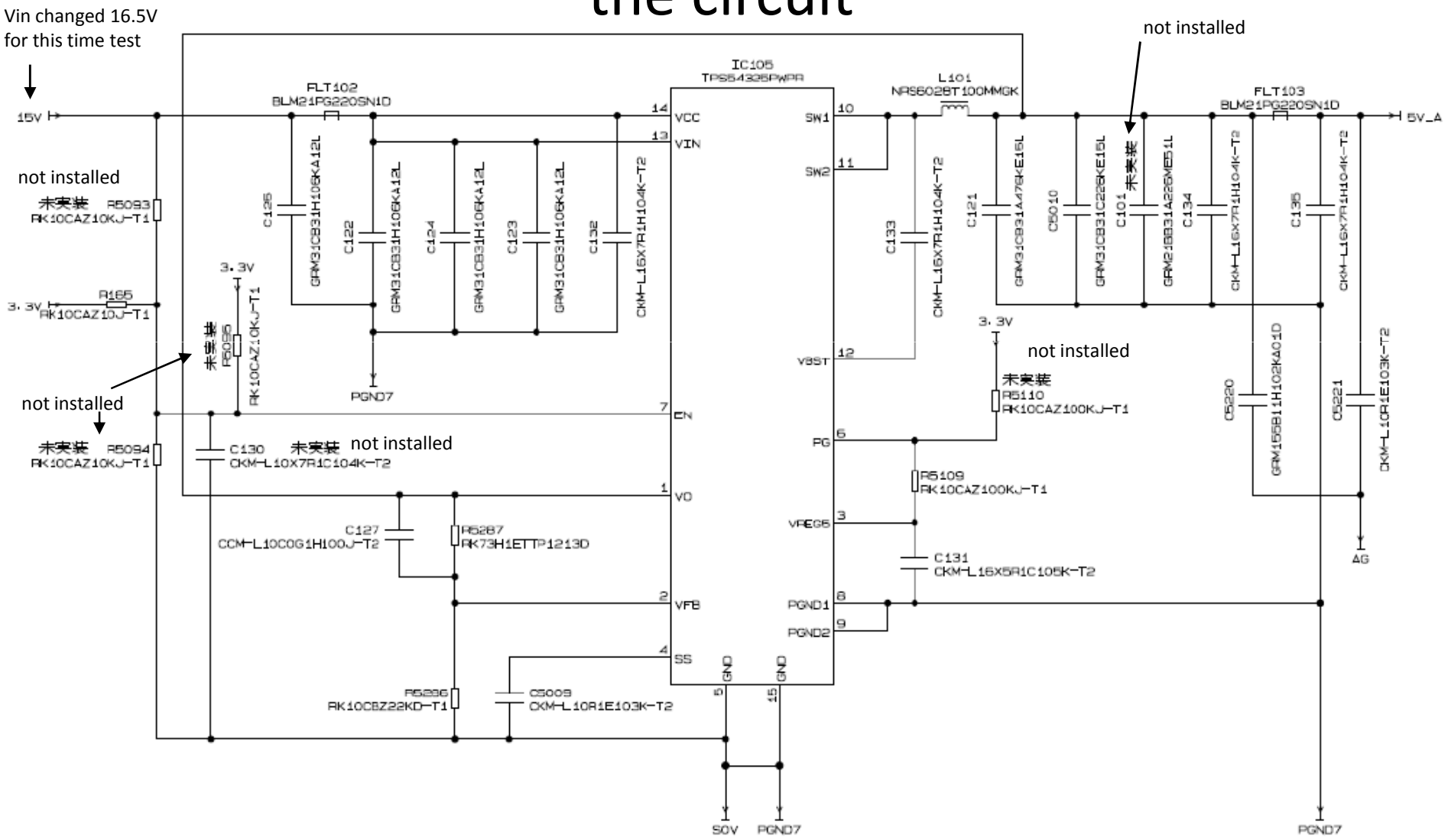
Ch1 average
4.19V

Ch2 average
11.5V

Ch1 minimum
1.04V

Ch2 minimum
400mV

TPS54325PWPR output with momentary power interruption the circuit



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My guess :

When the Vout goes lower than UVP threshold(in this case 3.5V),
VREG5 has to be reset (take low and then take high) to get 5V output again.

If this guess is correct, the issue is not failure and cannot avoid it and the workaround is to reset the device with interval maybe 20ms or longer.

If this is wrong, please tell us why the issue had occurred and how to avoid it.

Thank you.