

Parameters

- Strain gauges:
 - 1-RY11-3/120 from HBM
 - Half bridge (bending) → SG1 on top, SG2 on bottom
- Evaluation board:
 - ADS124S08EVM from TI

Parameters

- ADS124S08EVM parameters:

Address	Value
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0x02	0x89
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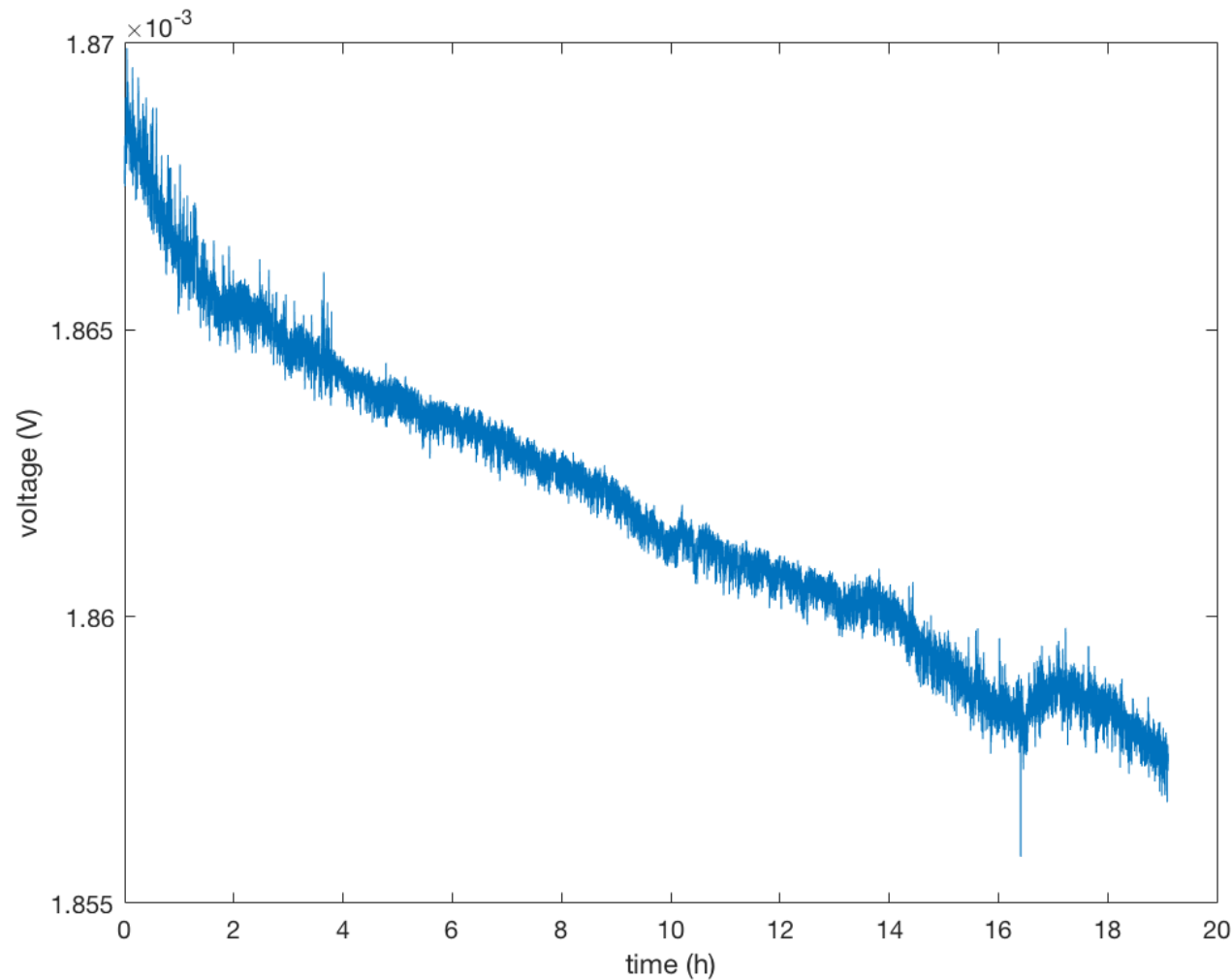
0x03	0x0F
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0x04	0x10
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0x05	0x32
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Everything else as default

Drift: SG in half bridge (20h)

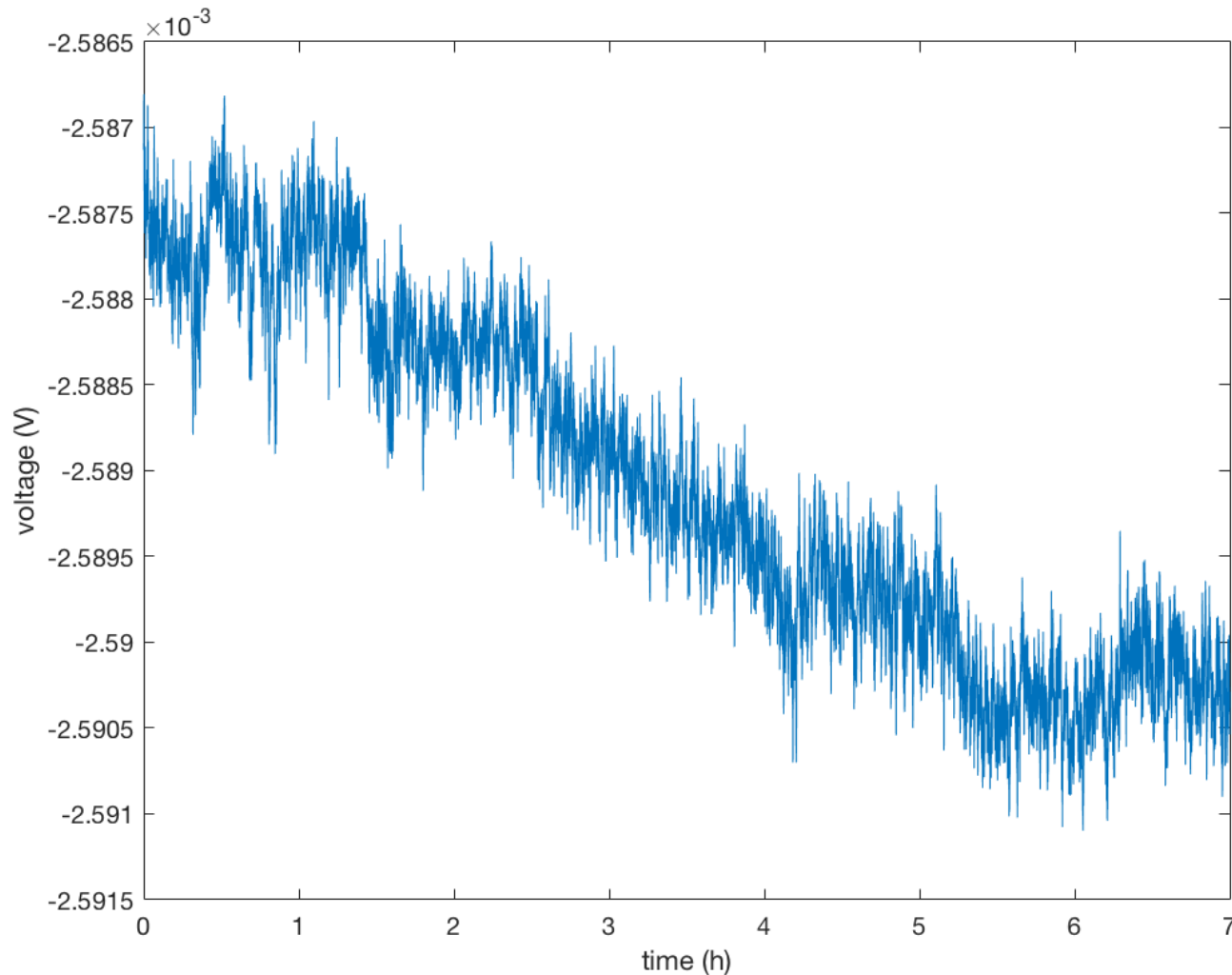


Half bridge with 120 ohm SG

2.5 V supply from TI EVM

Drift = 10 μ V in 19 hours

Drift: Resistances in bridge circuit (7h)



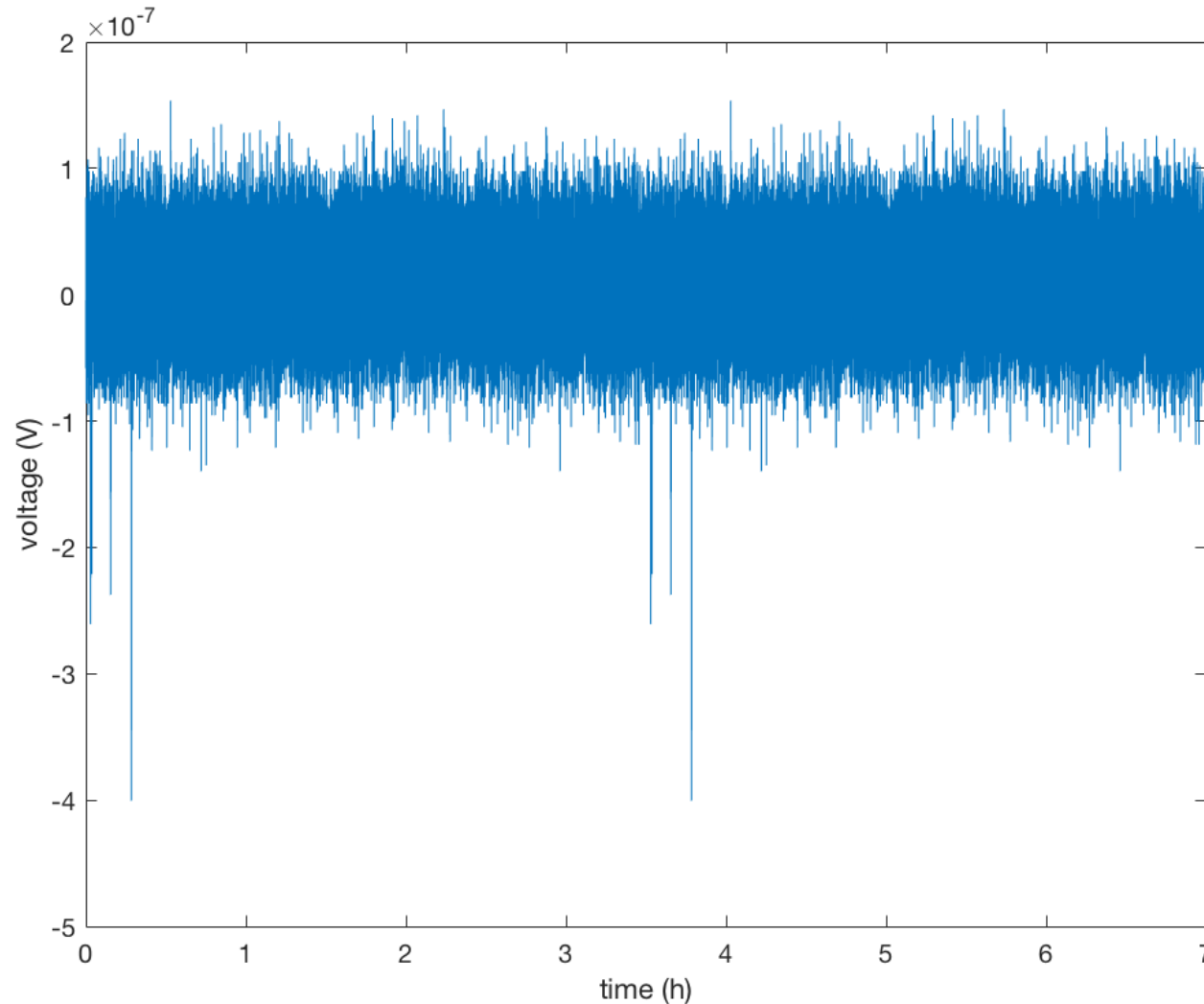
Four 120 ohm resistance in
bridge circuit

2.5 V supply from TI EVM

Drift = 3 μ V in 7 hours

→ Similar drift as with SG

TI suggestion: baseline

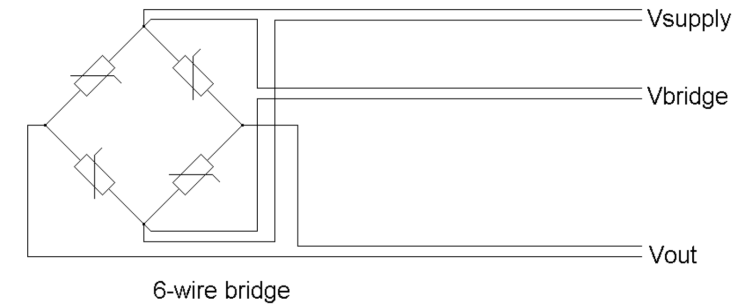
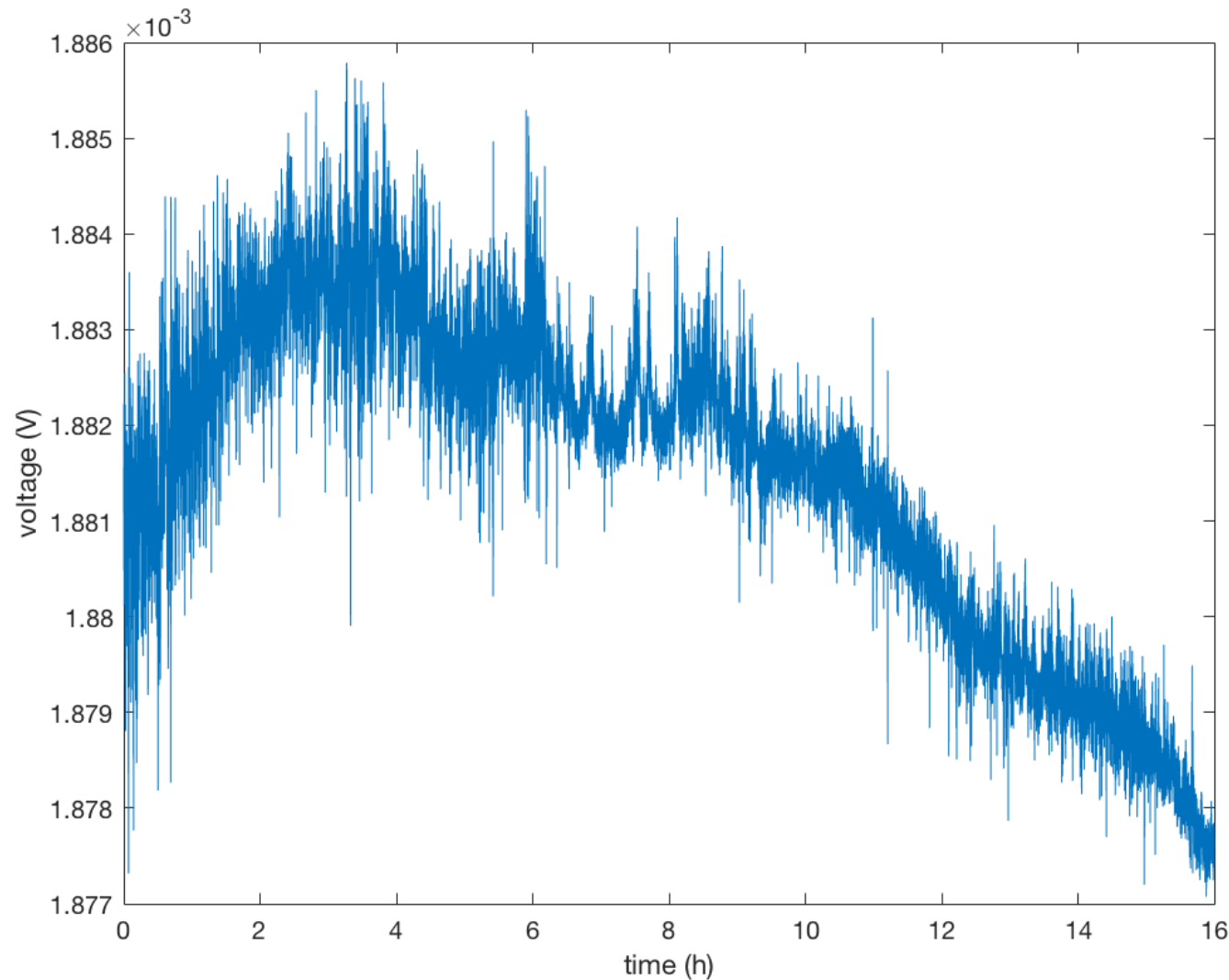


Shorted signal pins connected to bias voltage at mid AVDD voltage

Mid AVDD voltage through voltage divider

→ No drift

TI suggestion: 6-wire bridge



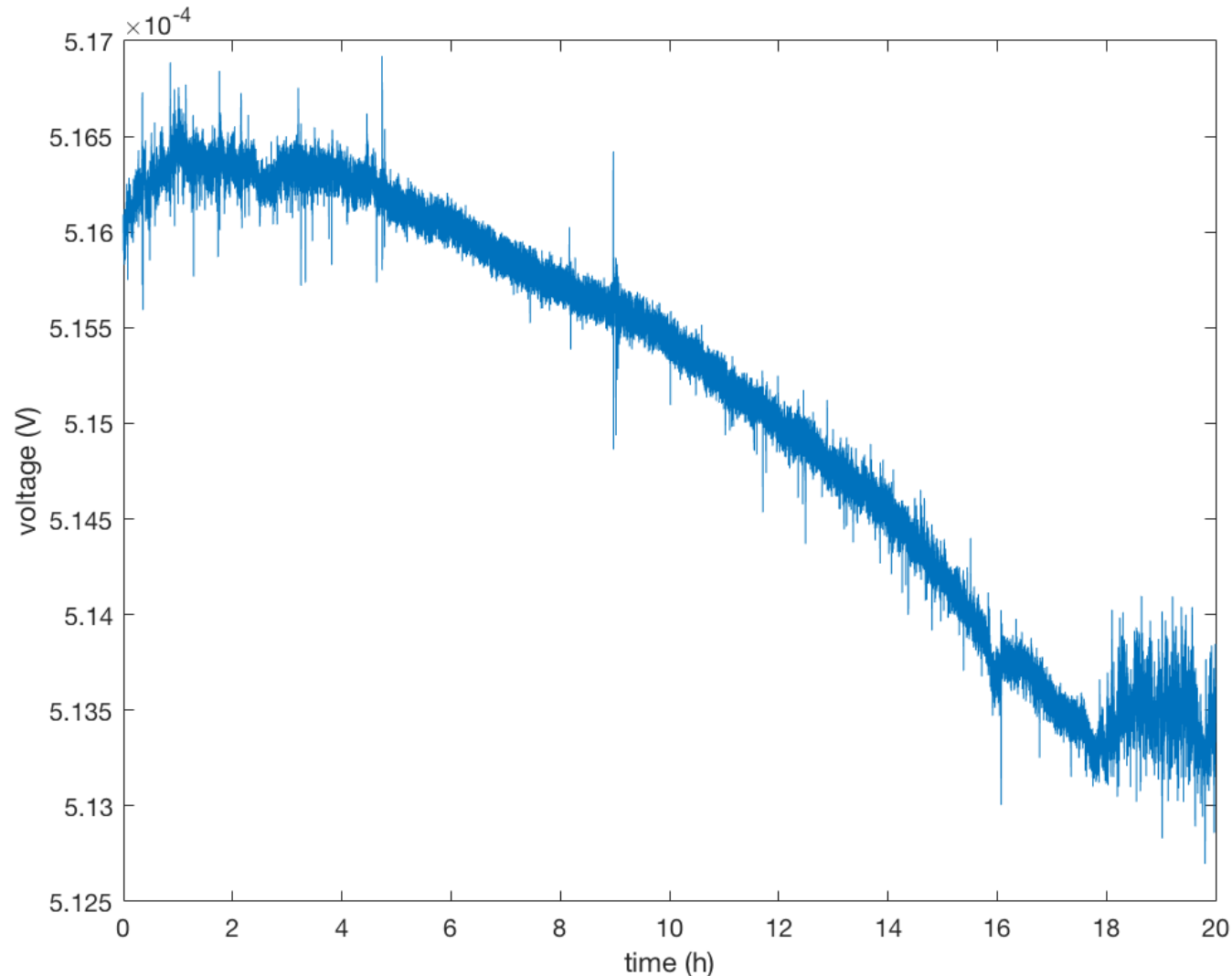
6-wire bridge connection (as in figure above)

Half bridge with 120 ohm SG

1 V from external power supply

$$V_{\max} - V_{\text{initial}} = 3 \mu\text{V}$$

Resistor on JP8 → Limiting current



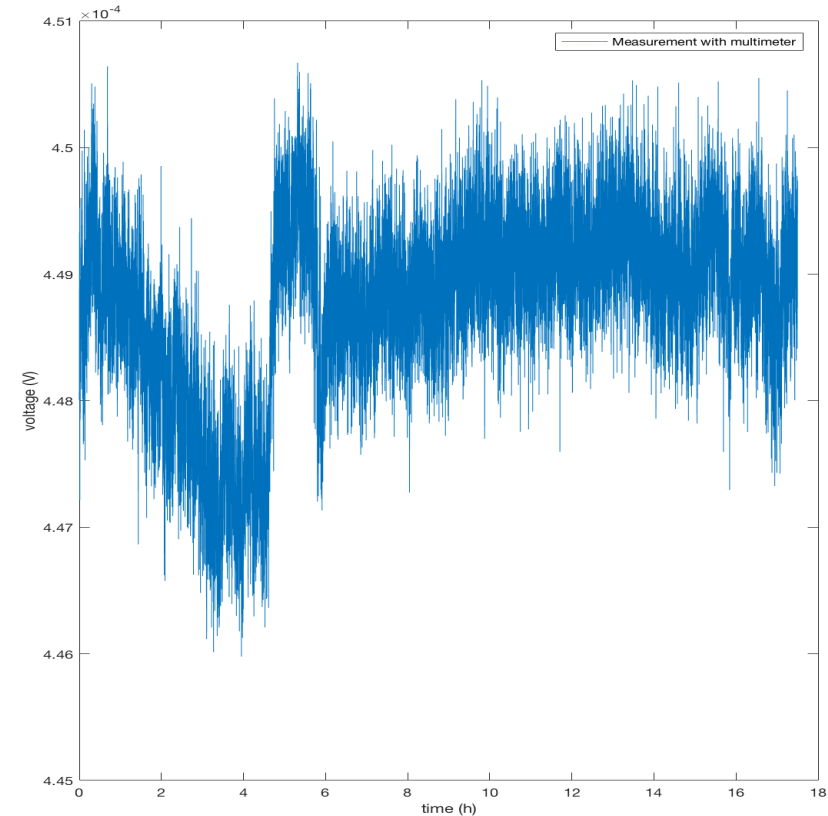
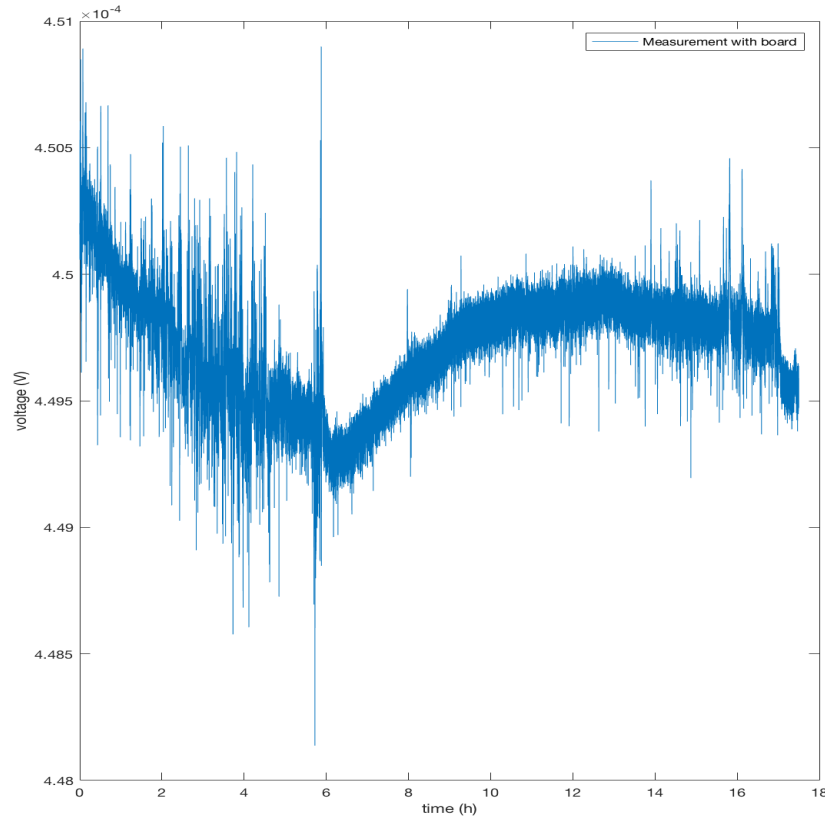
470 ohm resistor on JP8 in order to increase overall resistance and reduce voltage on bridge circuit to approx 0.67 V, therefore limiting also the current

3.3 V AVDD power supply

Drift: 3 μ V in 20 hours

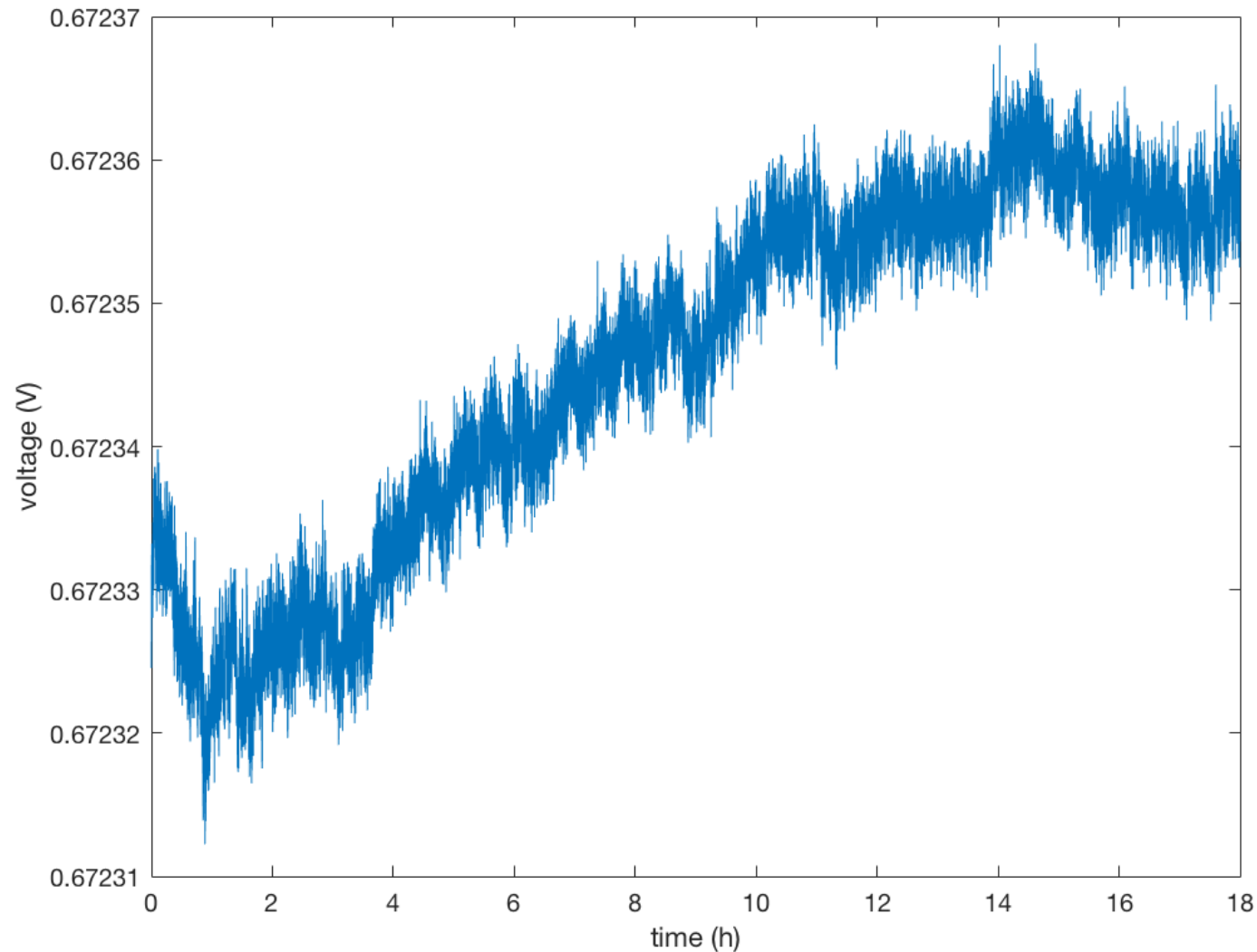
Contemporary measurement (board & multimeter)

Setup with resistor on JP8 (as slide before)



Similar plots. However still drift/fluctuations over time.

Drift of supply voltage



470 ohm resistor on JP8 in order to reduce voltage on bridge circuit

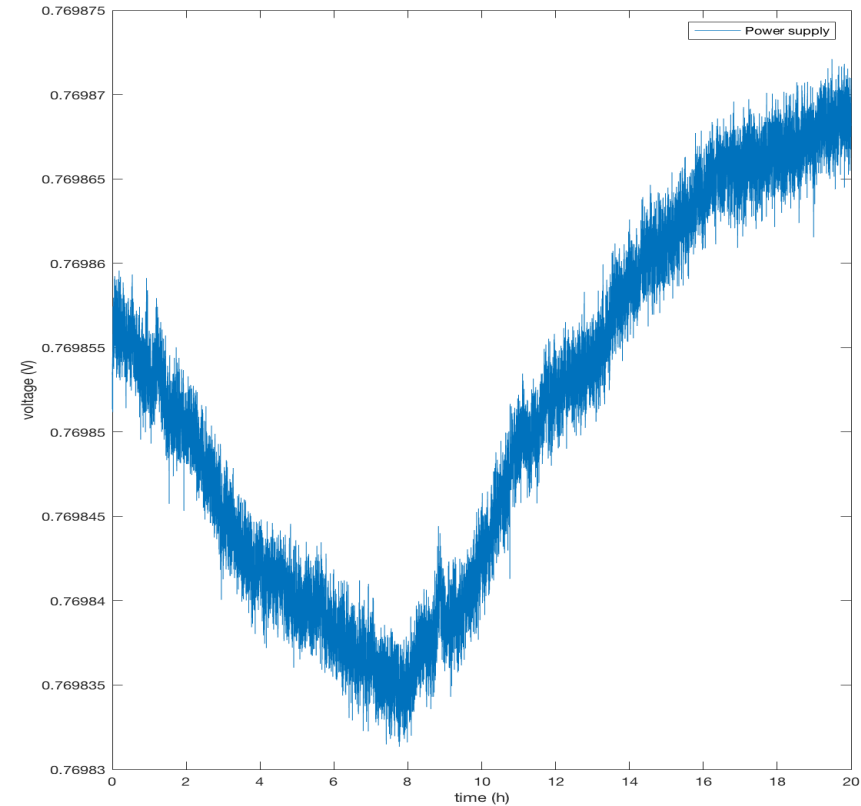
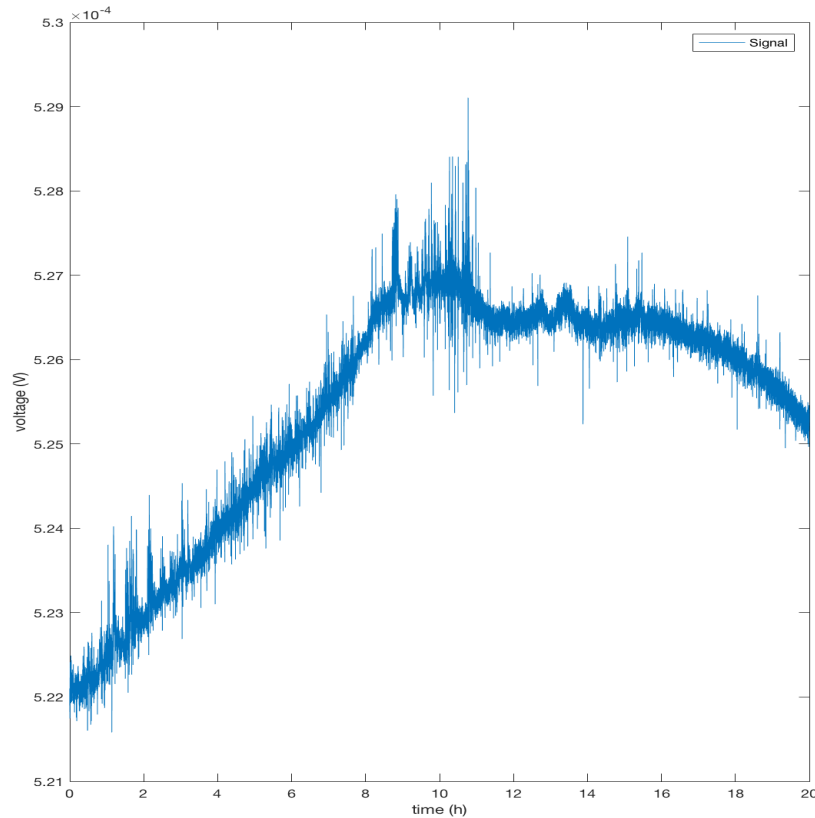
3.3 V AVDD power supply

Measurement of supply voltage using a 34411A multimeter

Drift: 30 μV in 18 hours

Contemporary measurement (signal & supply)

Setup with 270 ohm resistor on JP13 (2.5 V VREF on AICOM) → 5 wire bridge



Fluctuation/drift on both signals