

Diplomová práce

Reflektometr v časové oblasti

ČVUT FEL EK, Elektronika

Petr Polášek

2020-02-01

Struktura obhajoby

Princip funkce

Navržený hardware

Firmware v zařízení

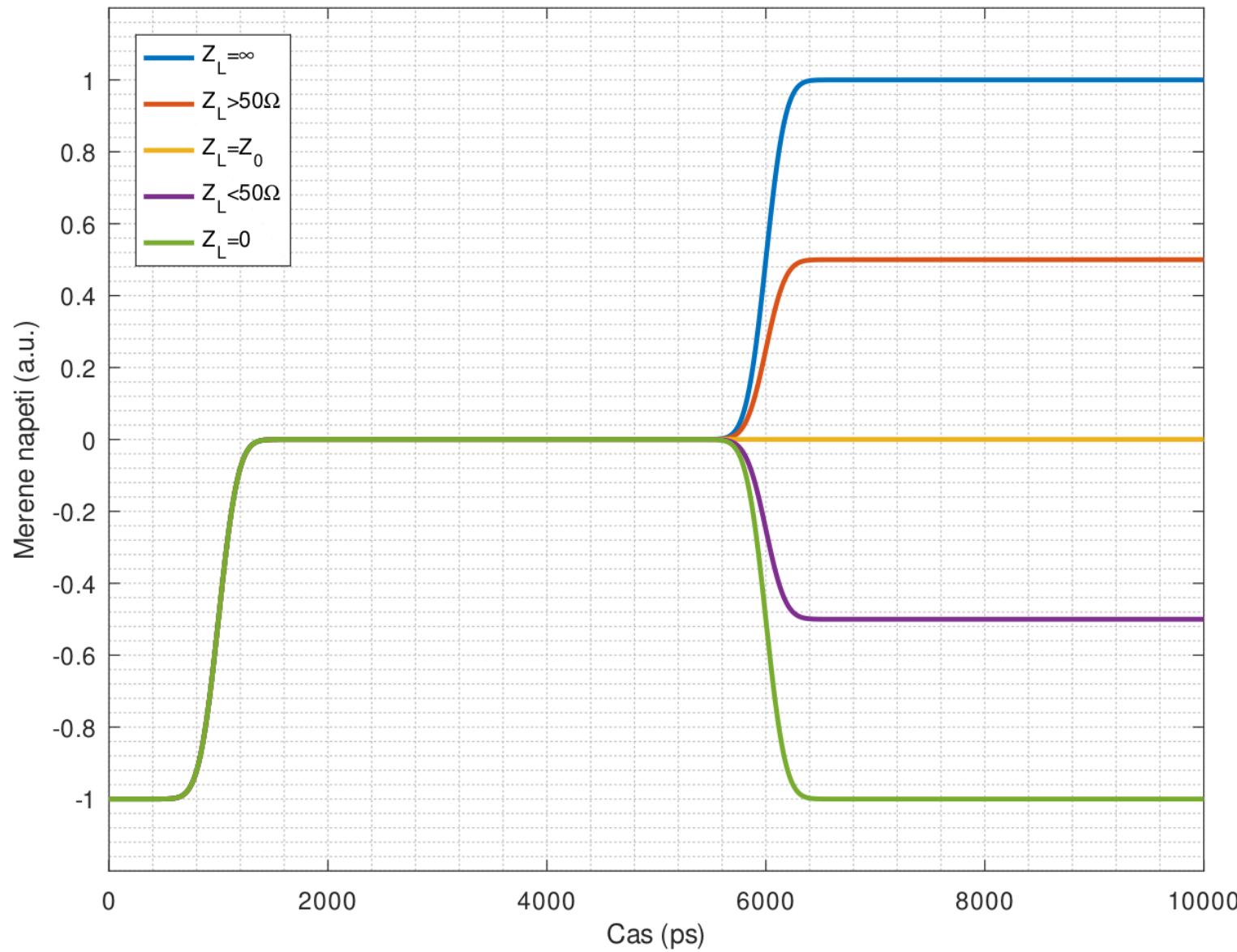
Software pro PC

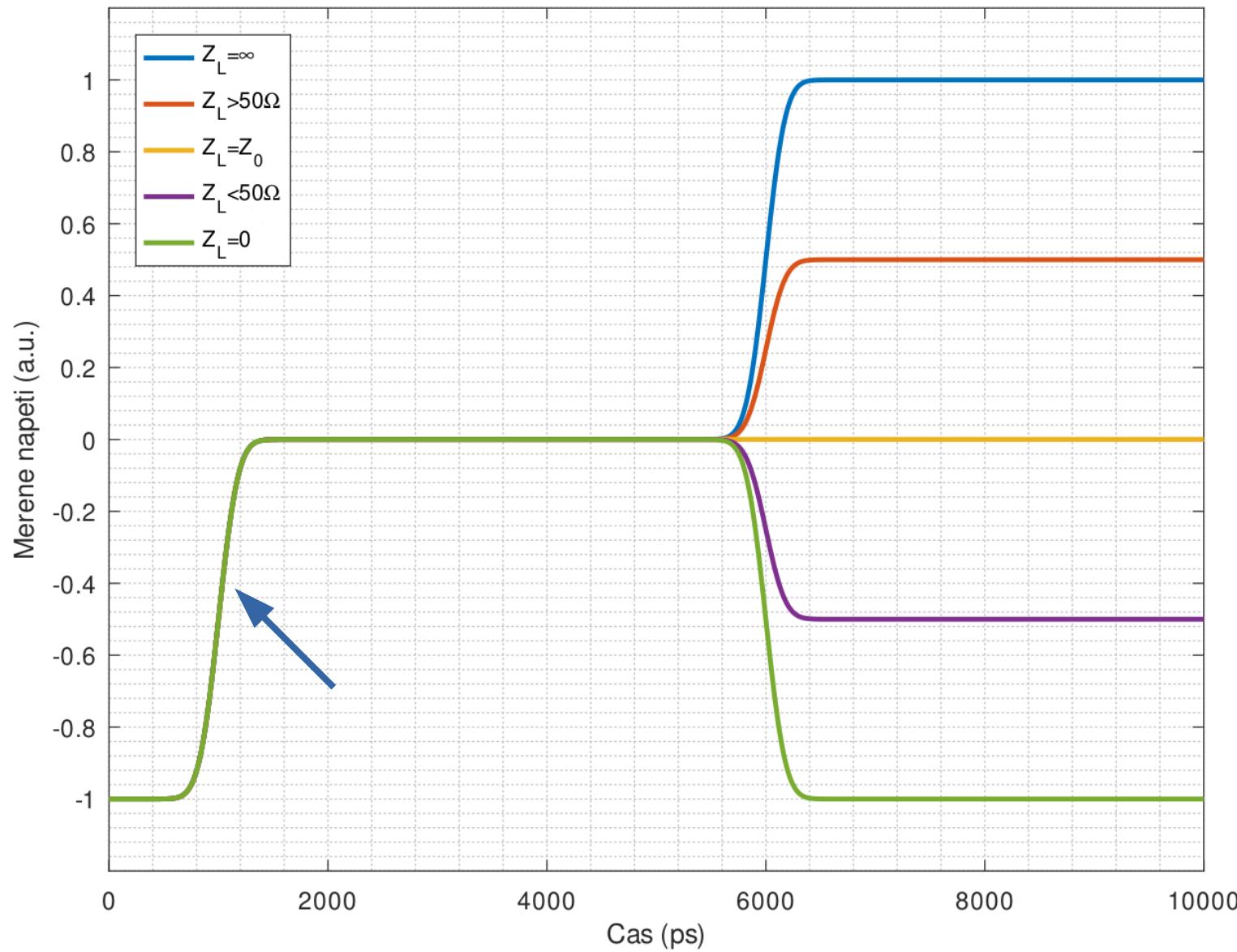
SOL kalibrace

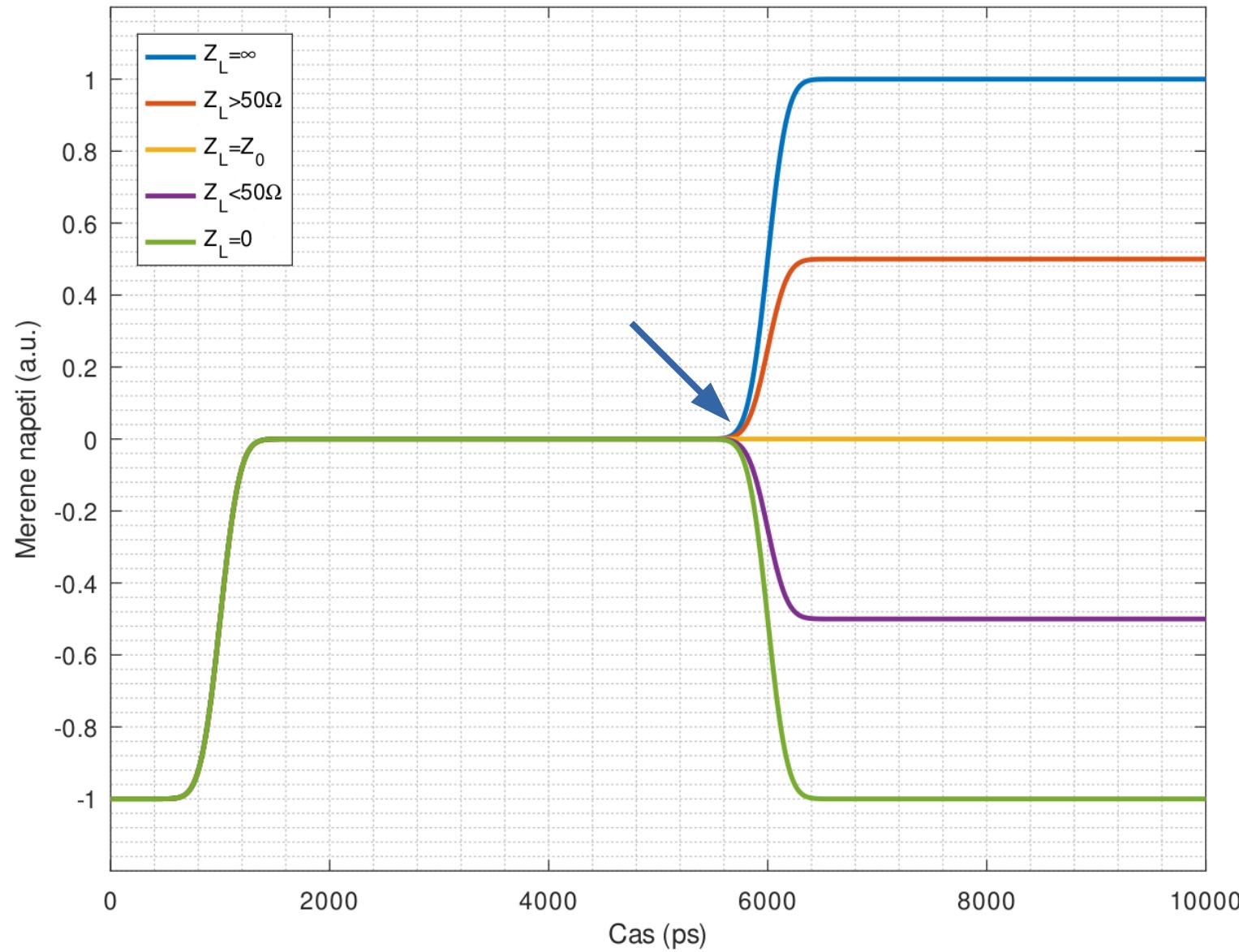
Potlačení šumu

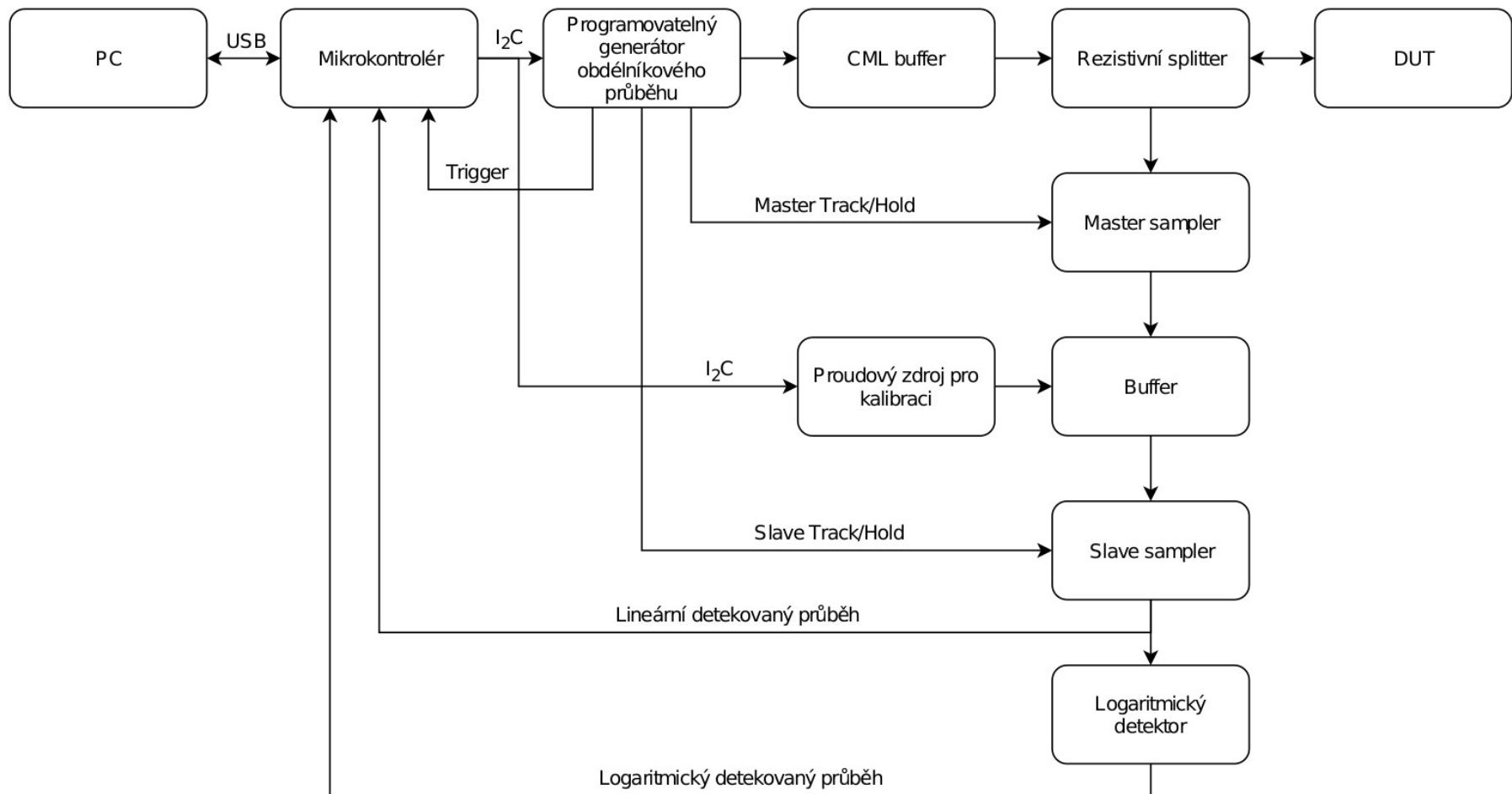
Změřené parametry

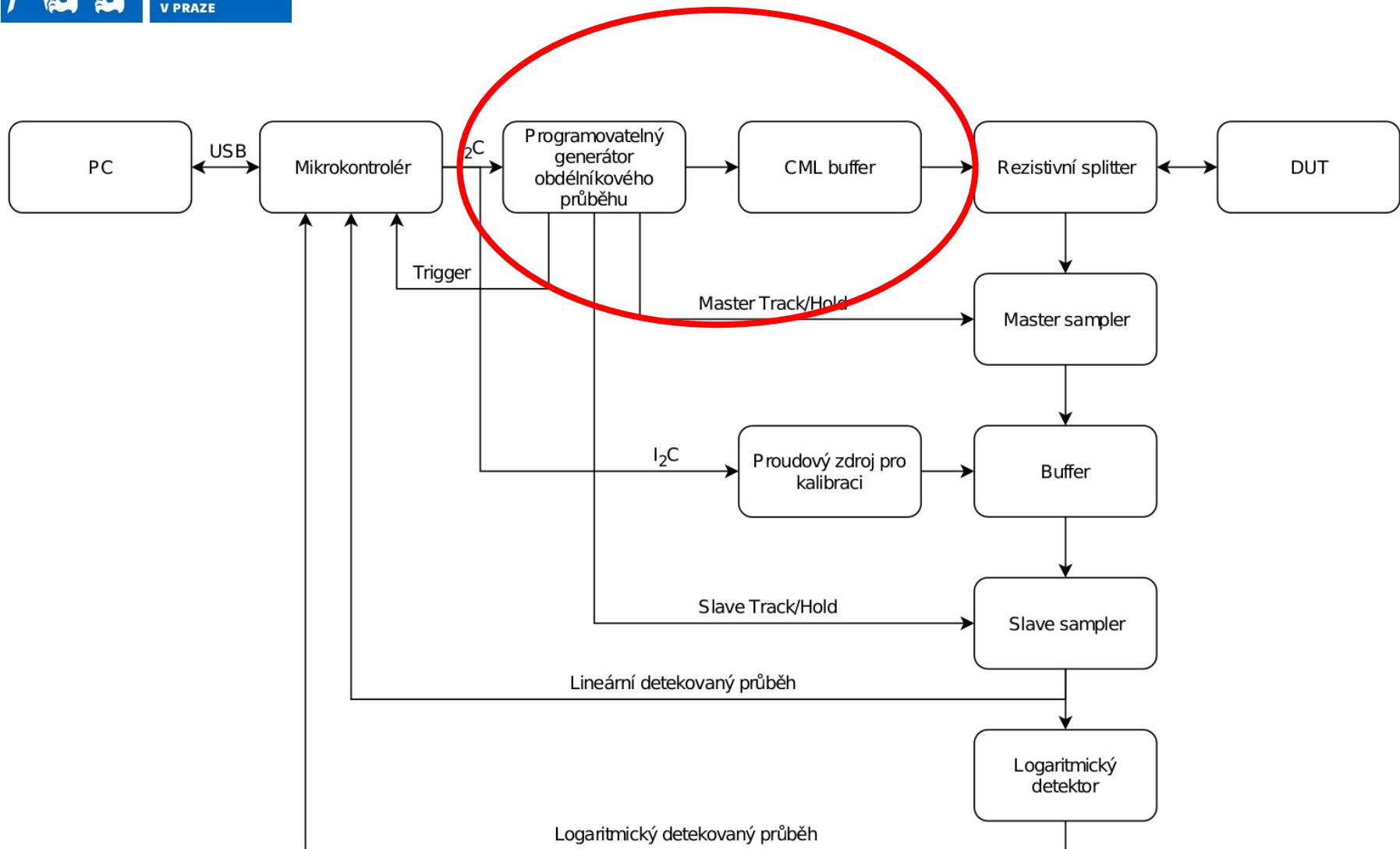
Princip funkce

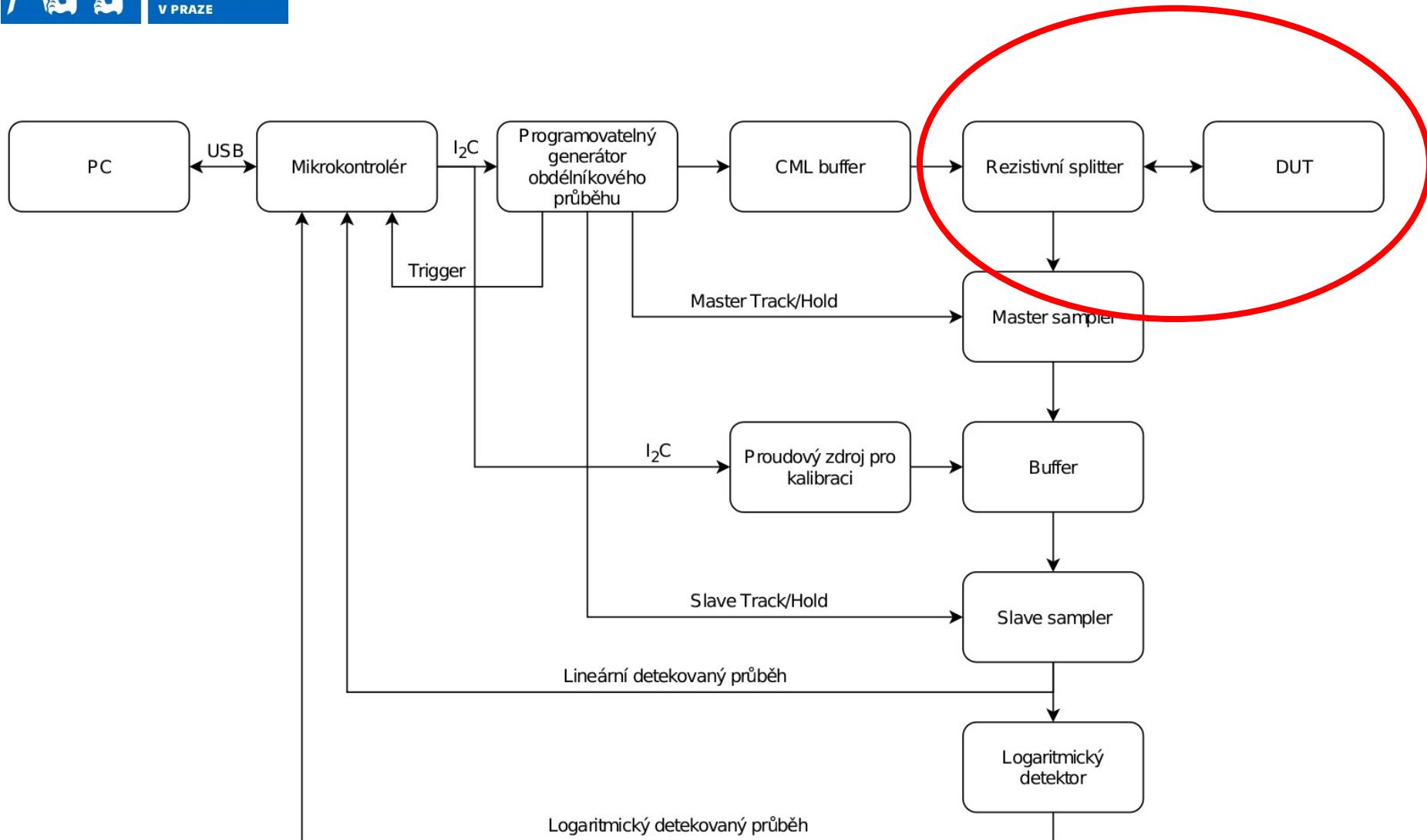


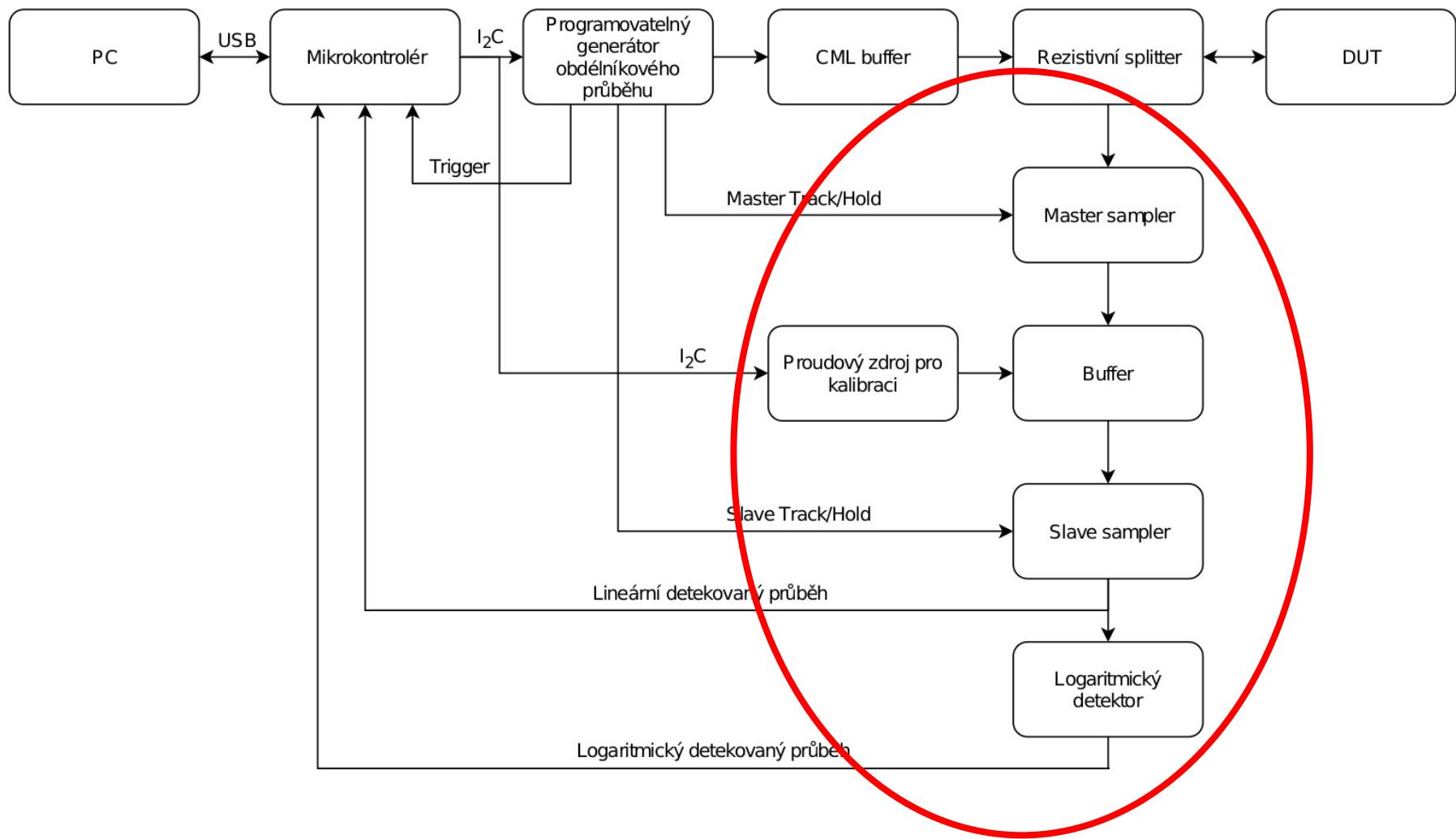


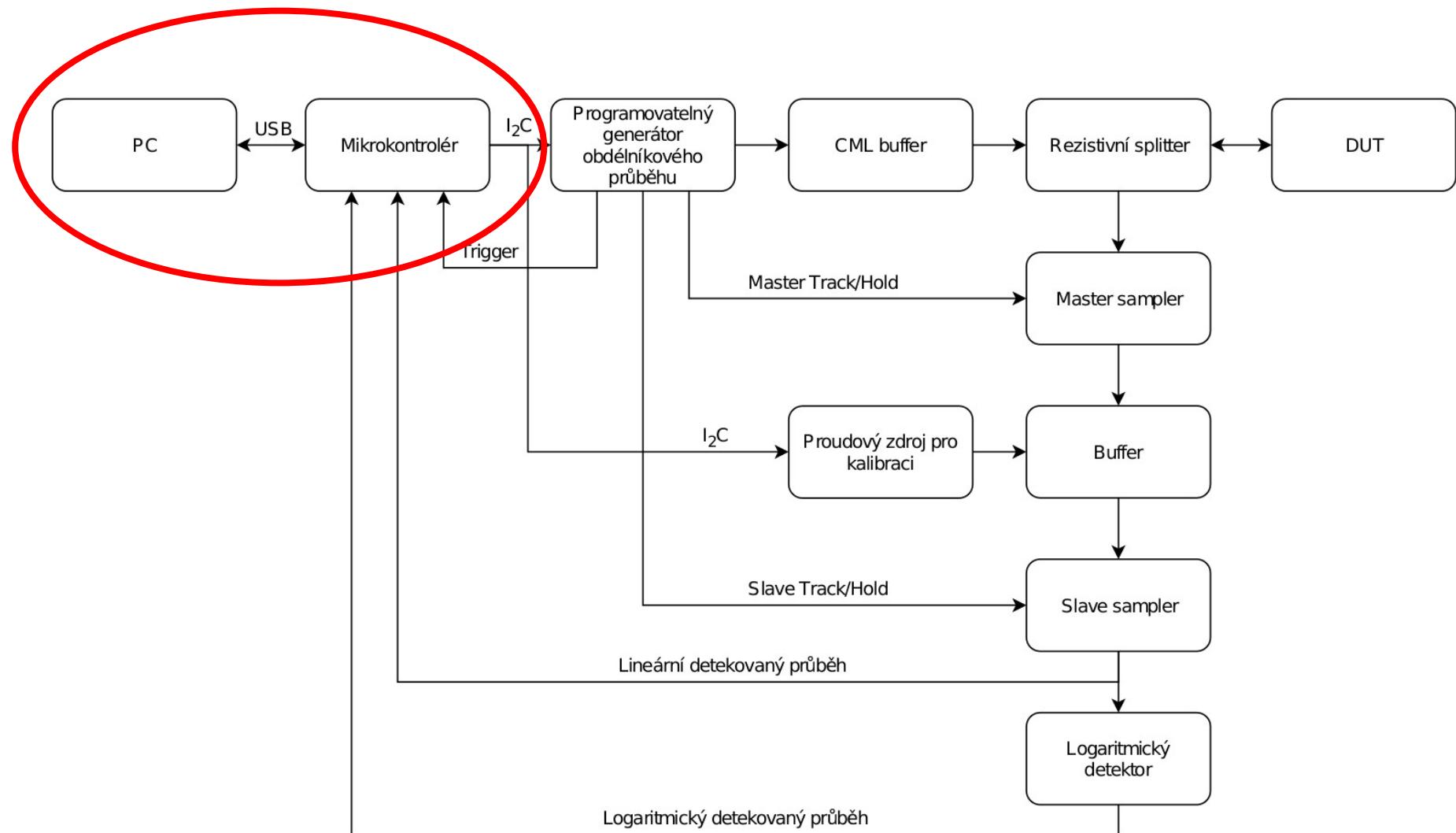




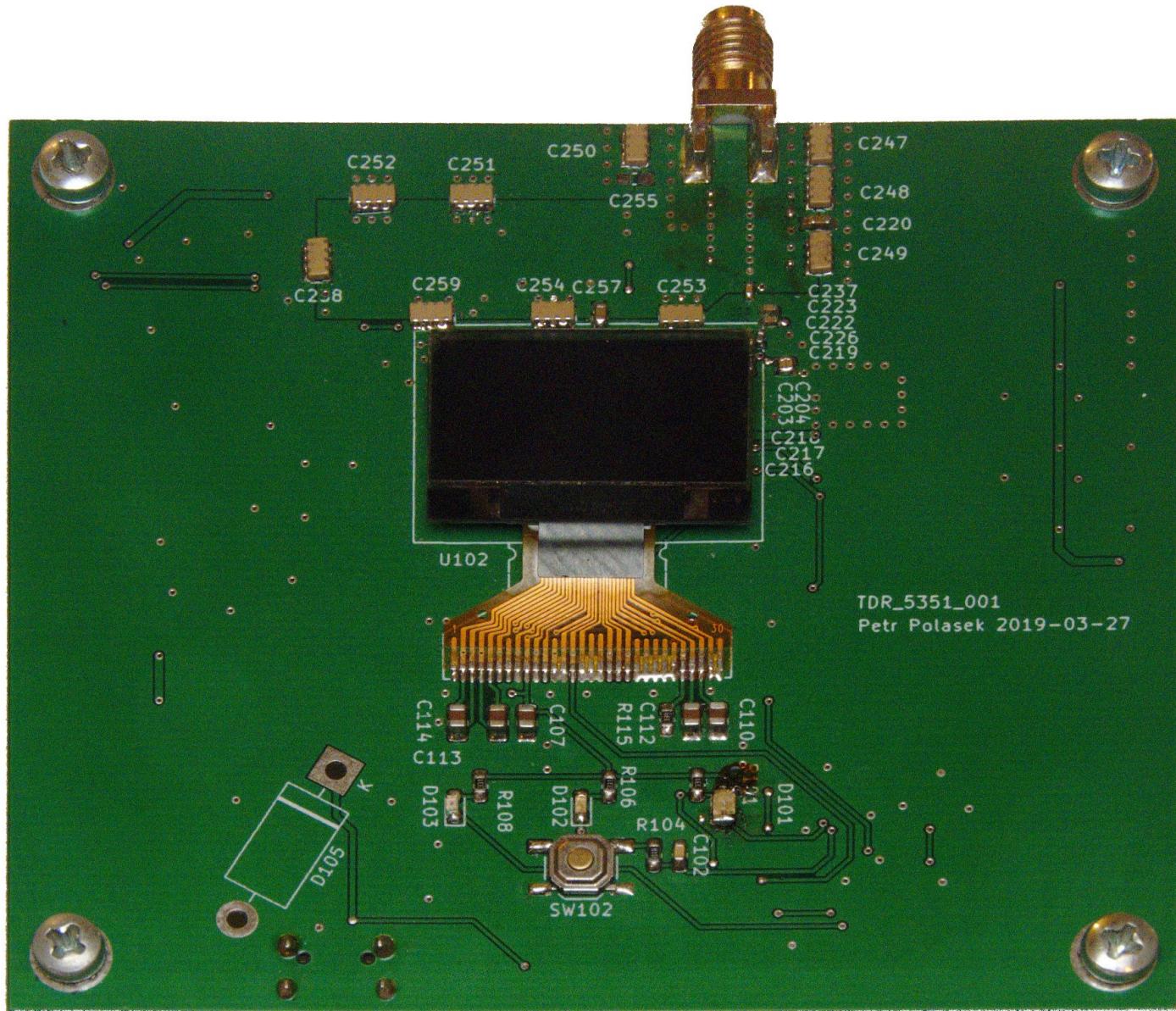


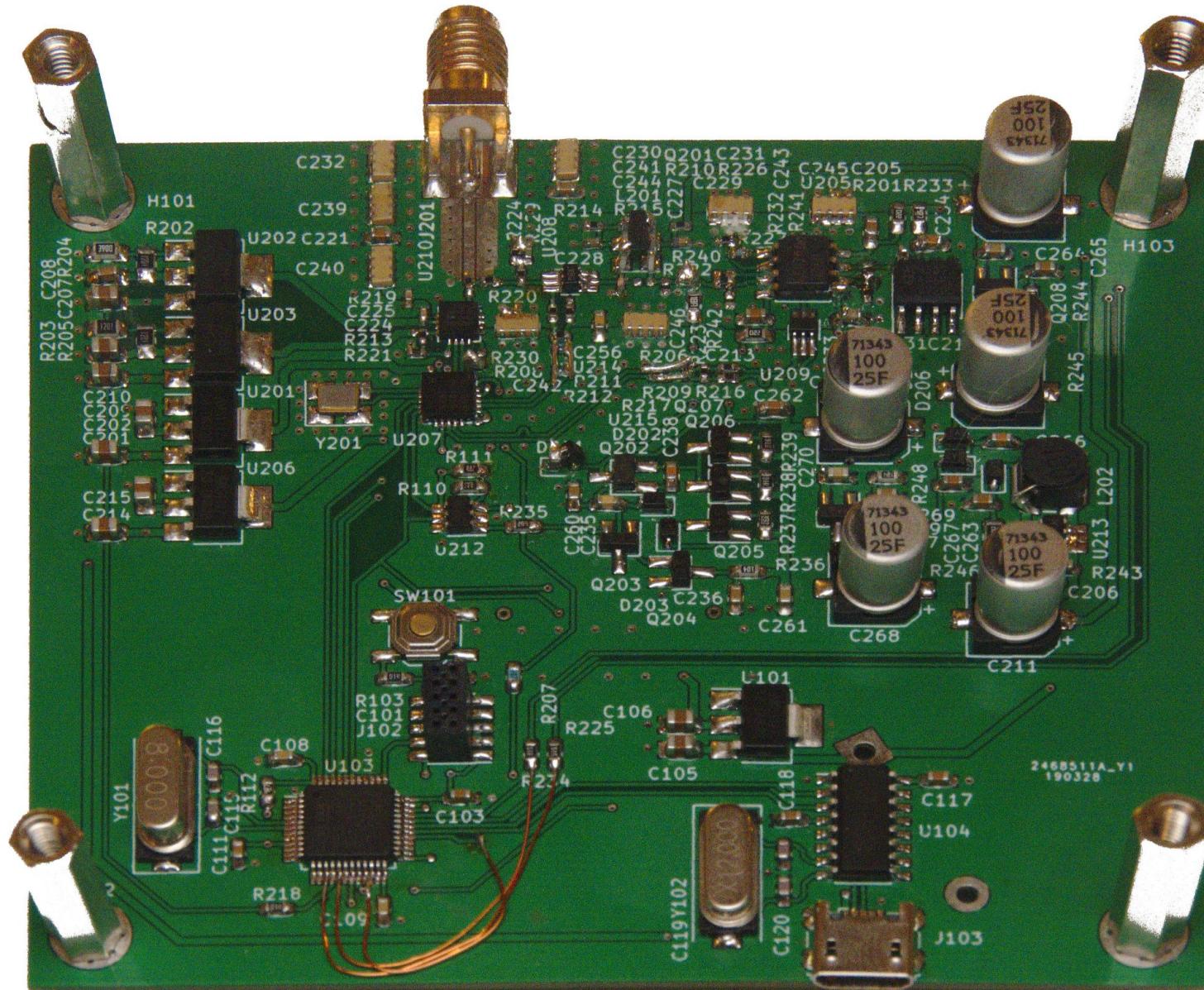


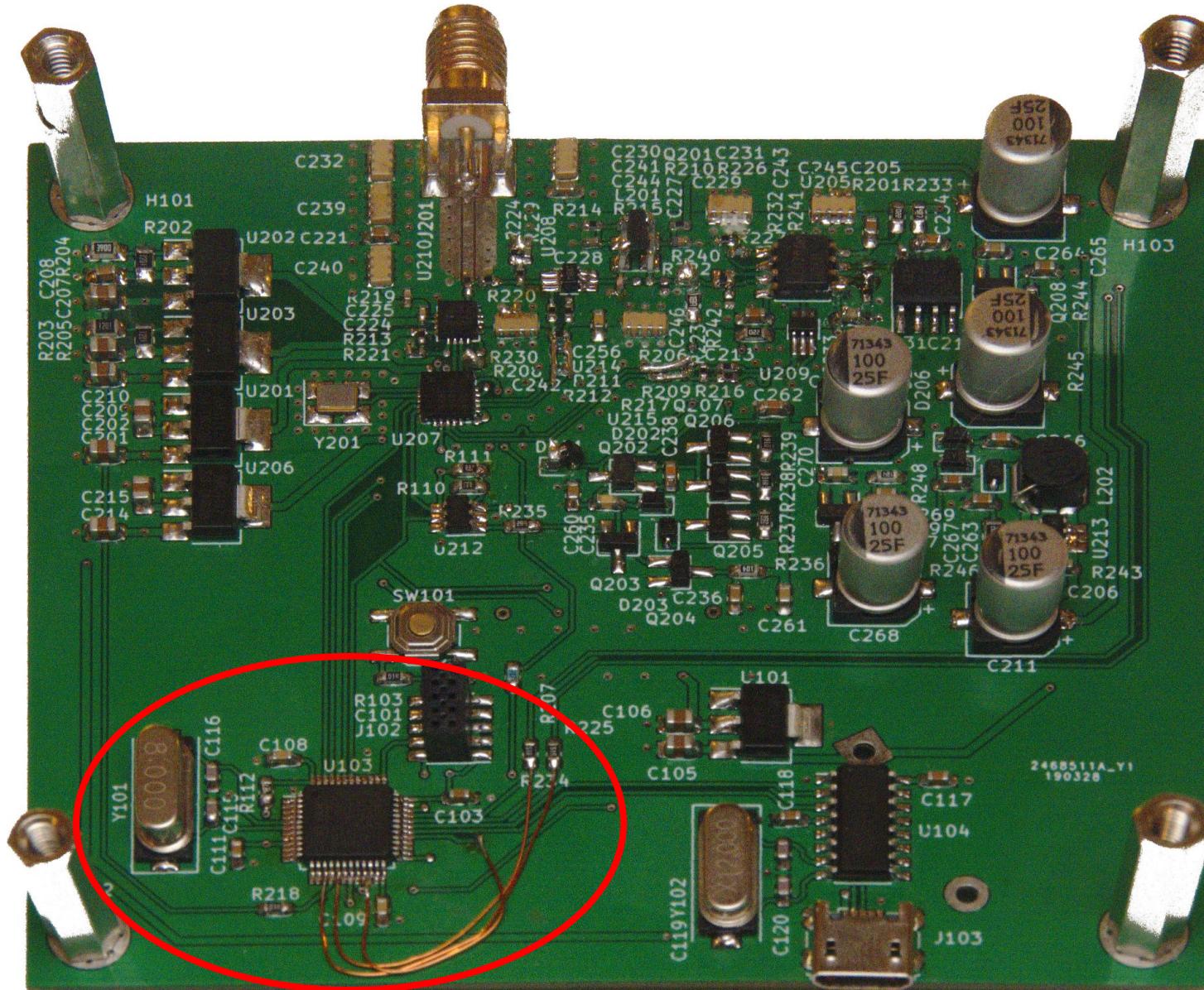


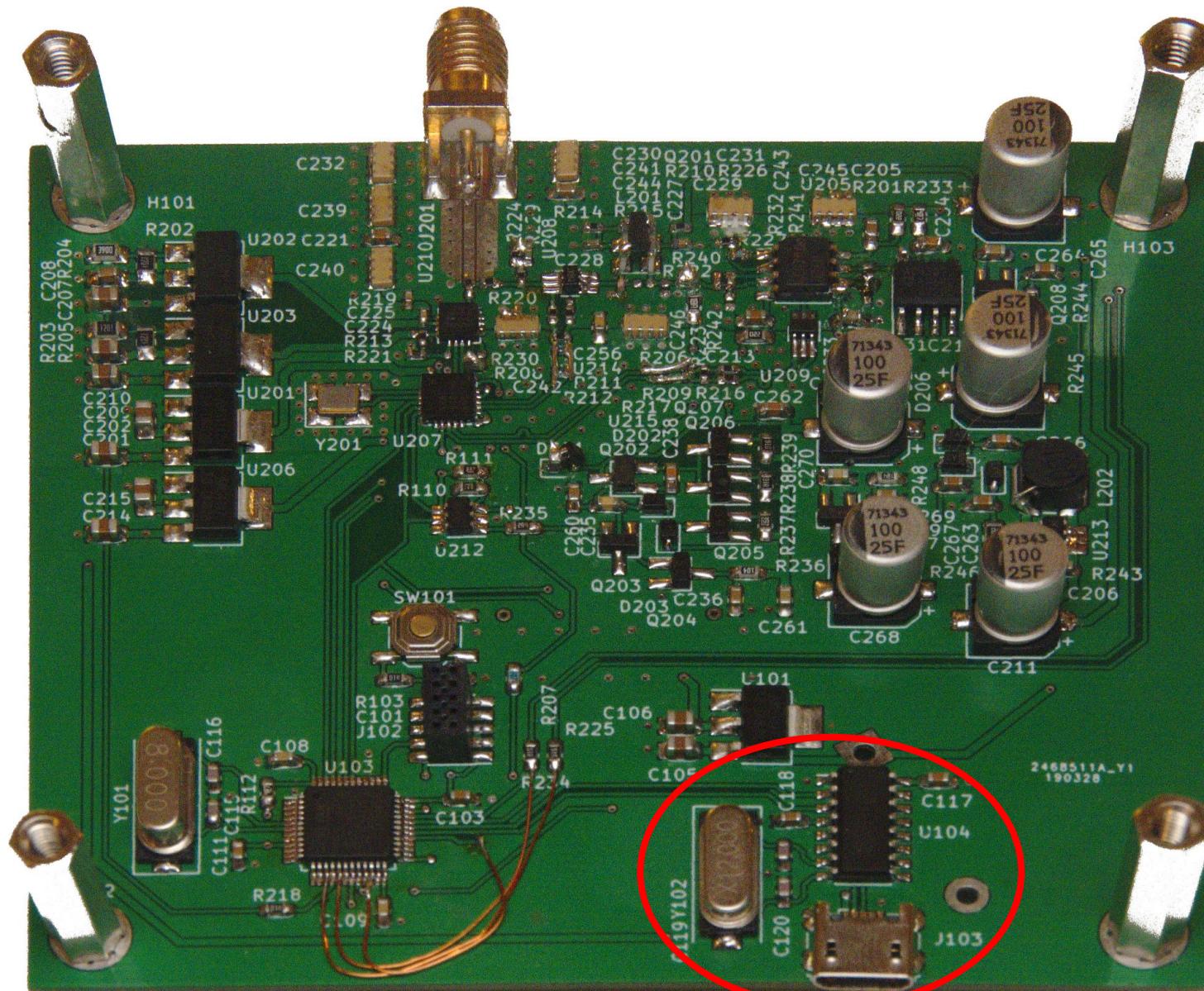


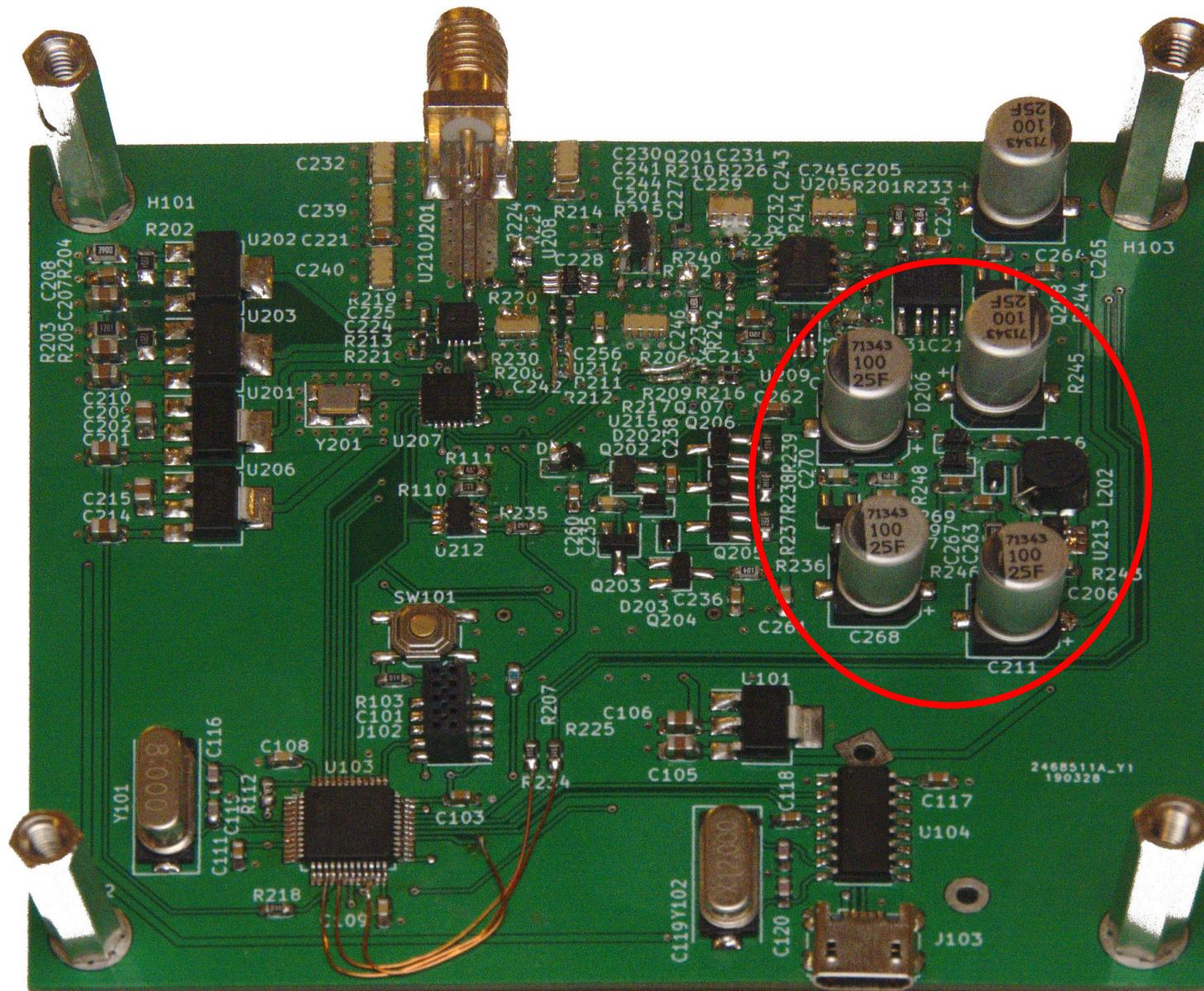
Navržený hardware

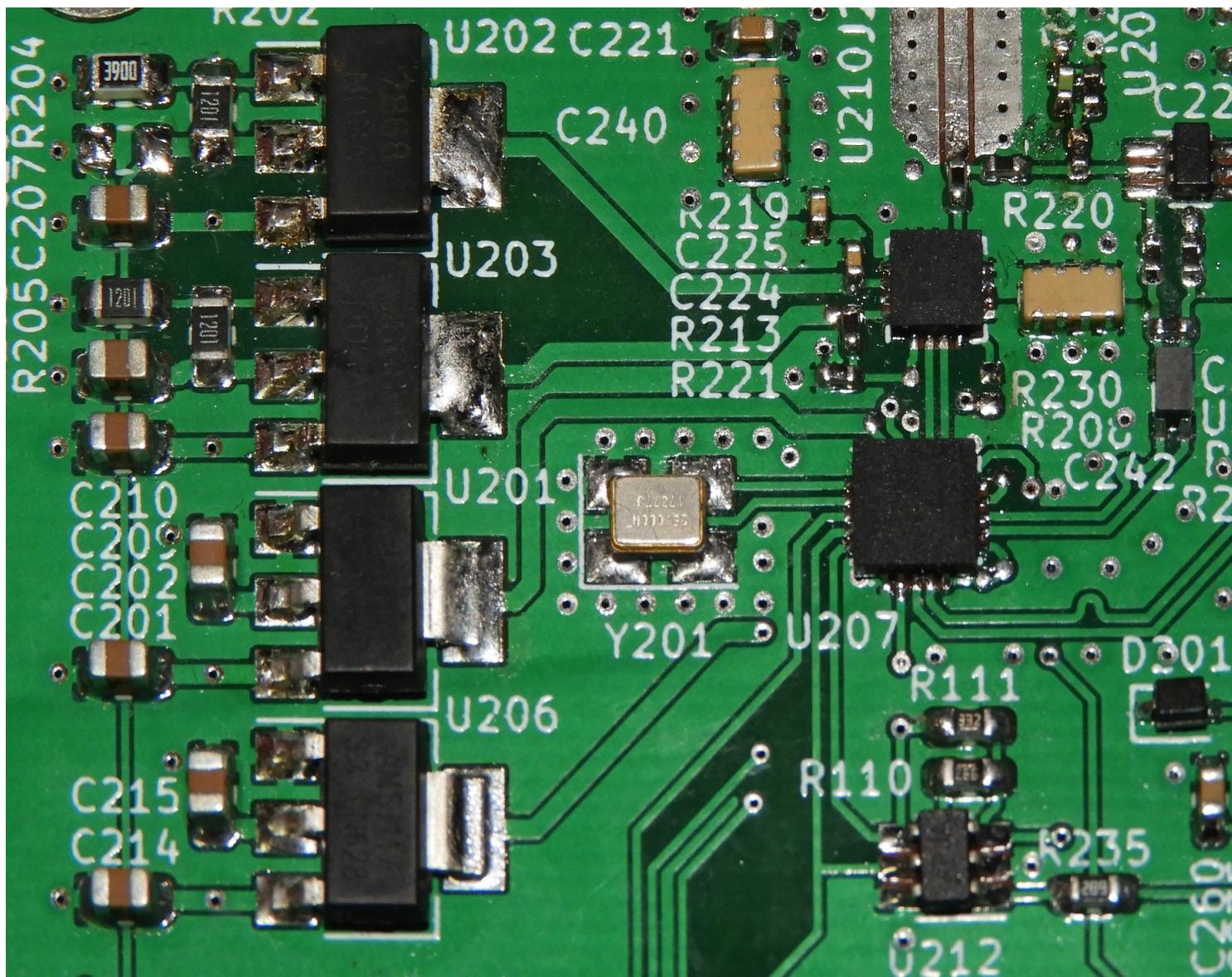


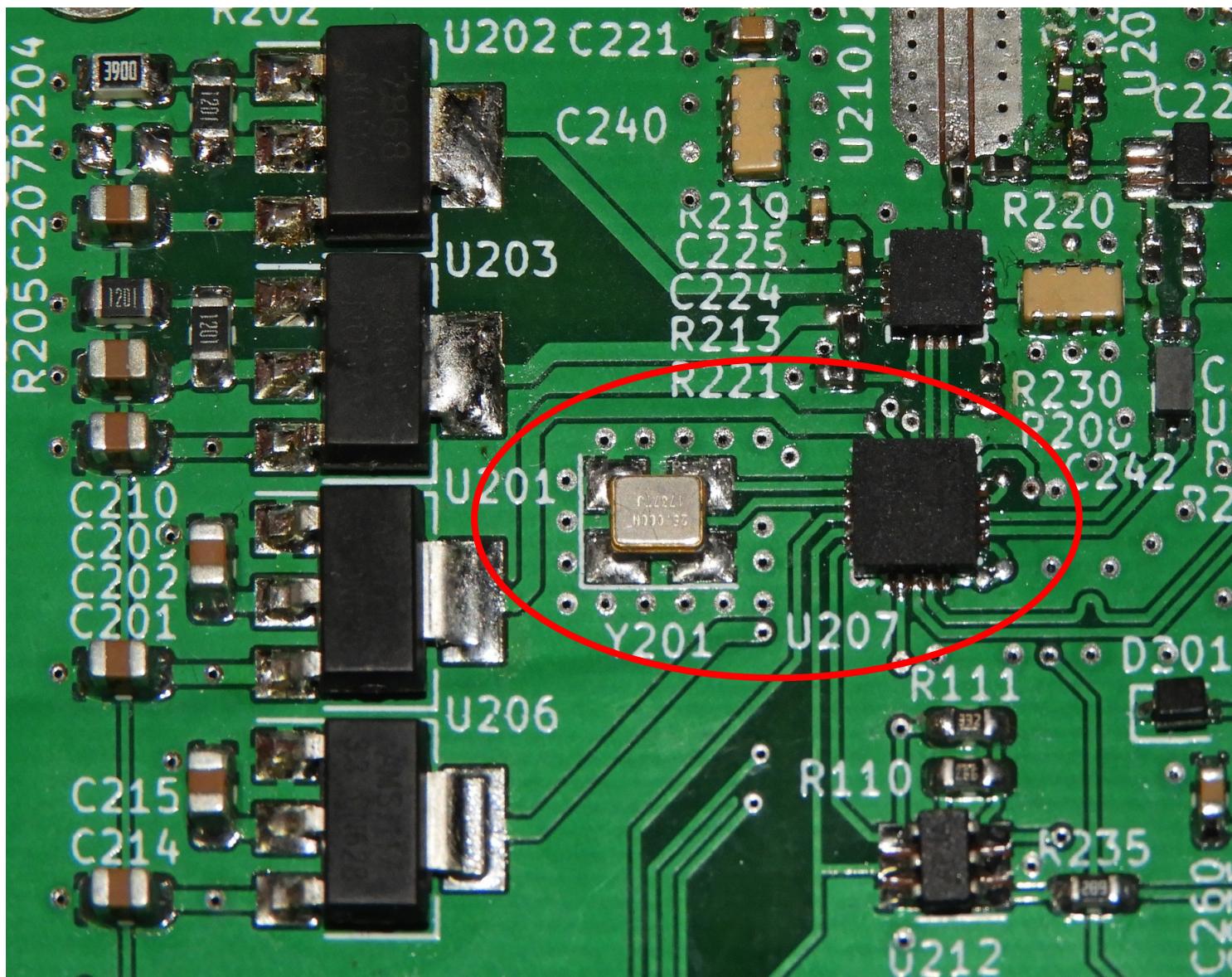


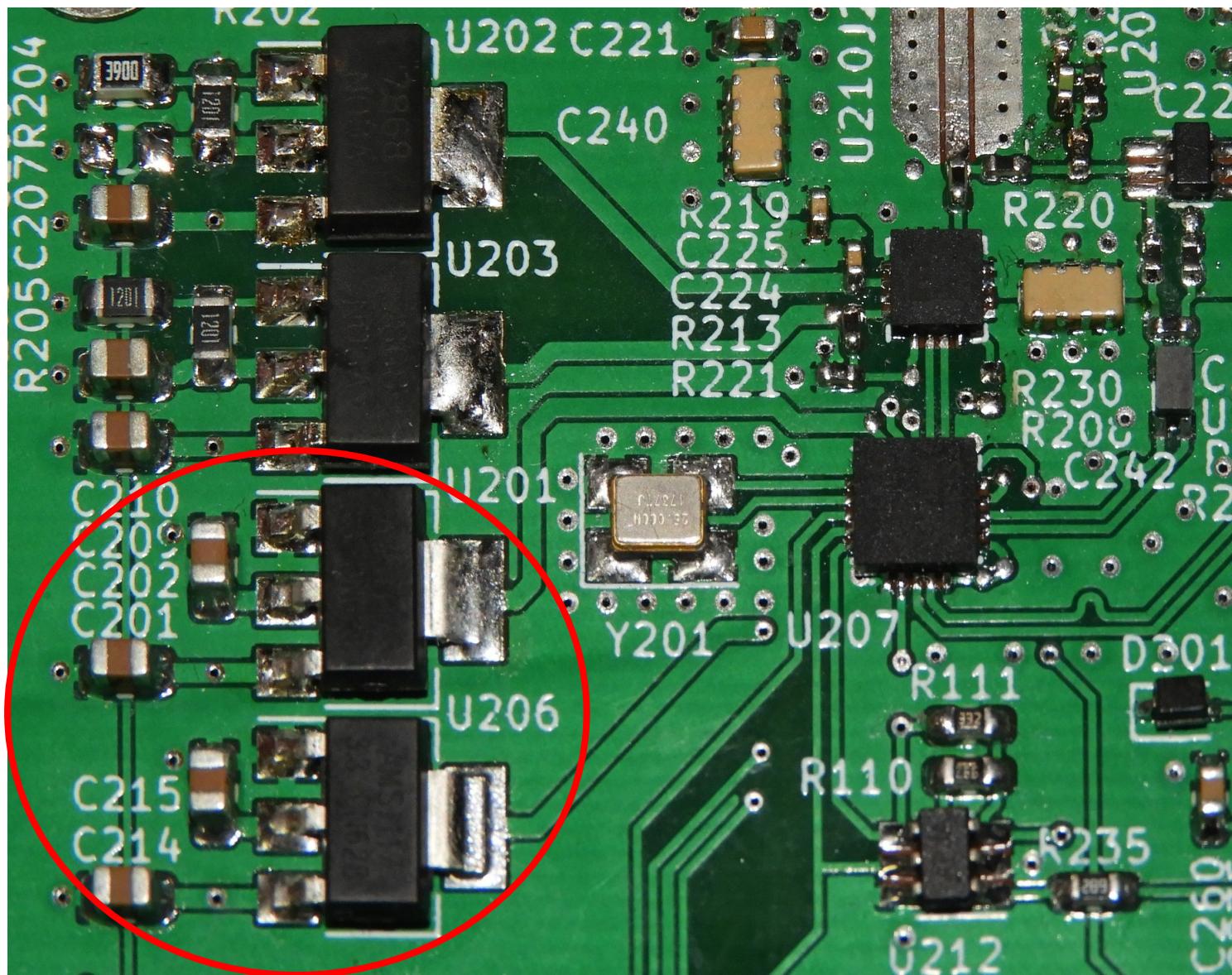


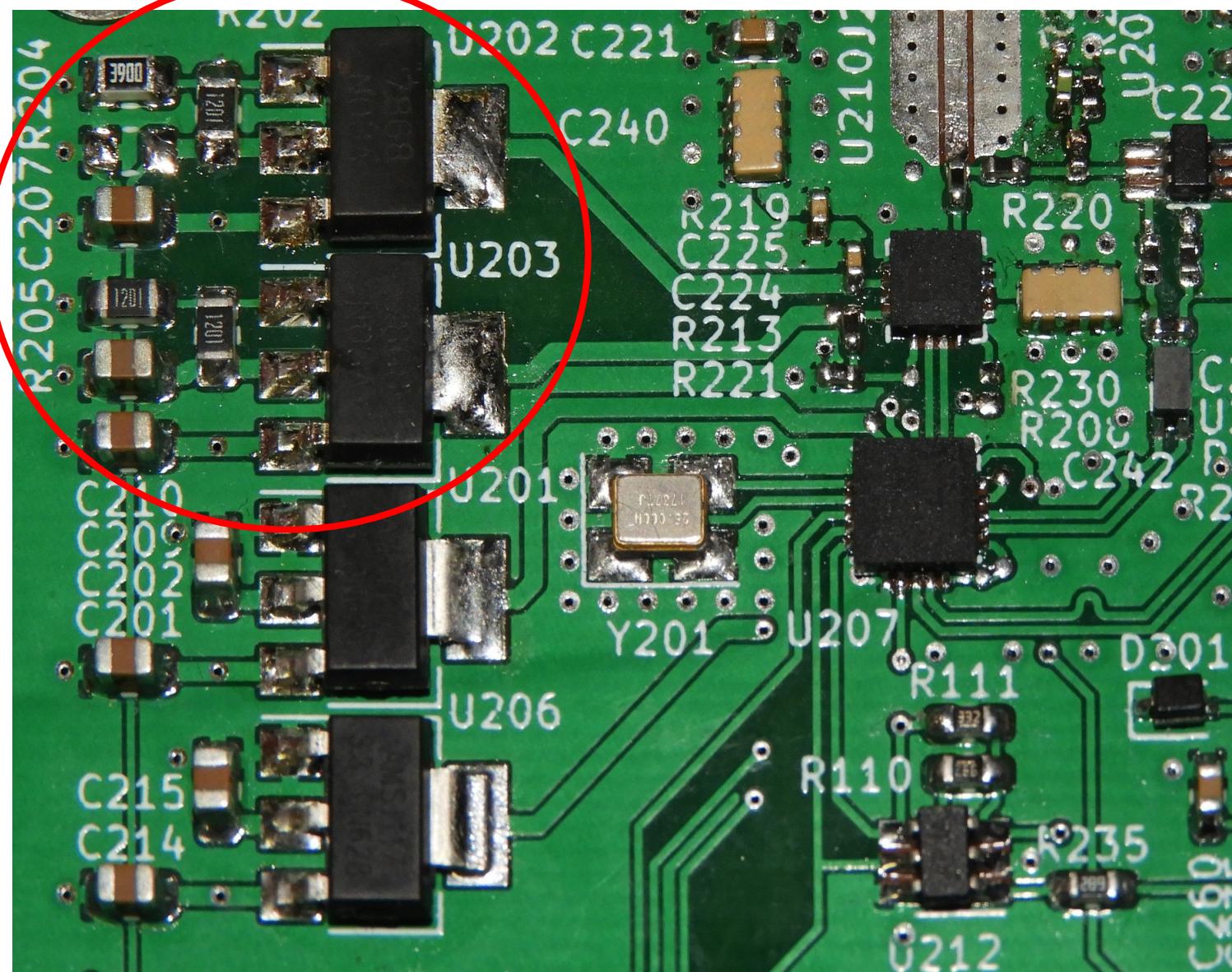


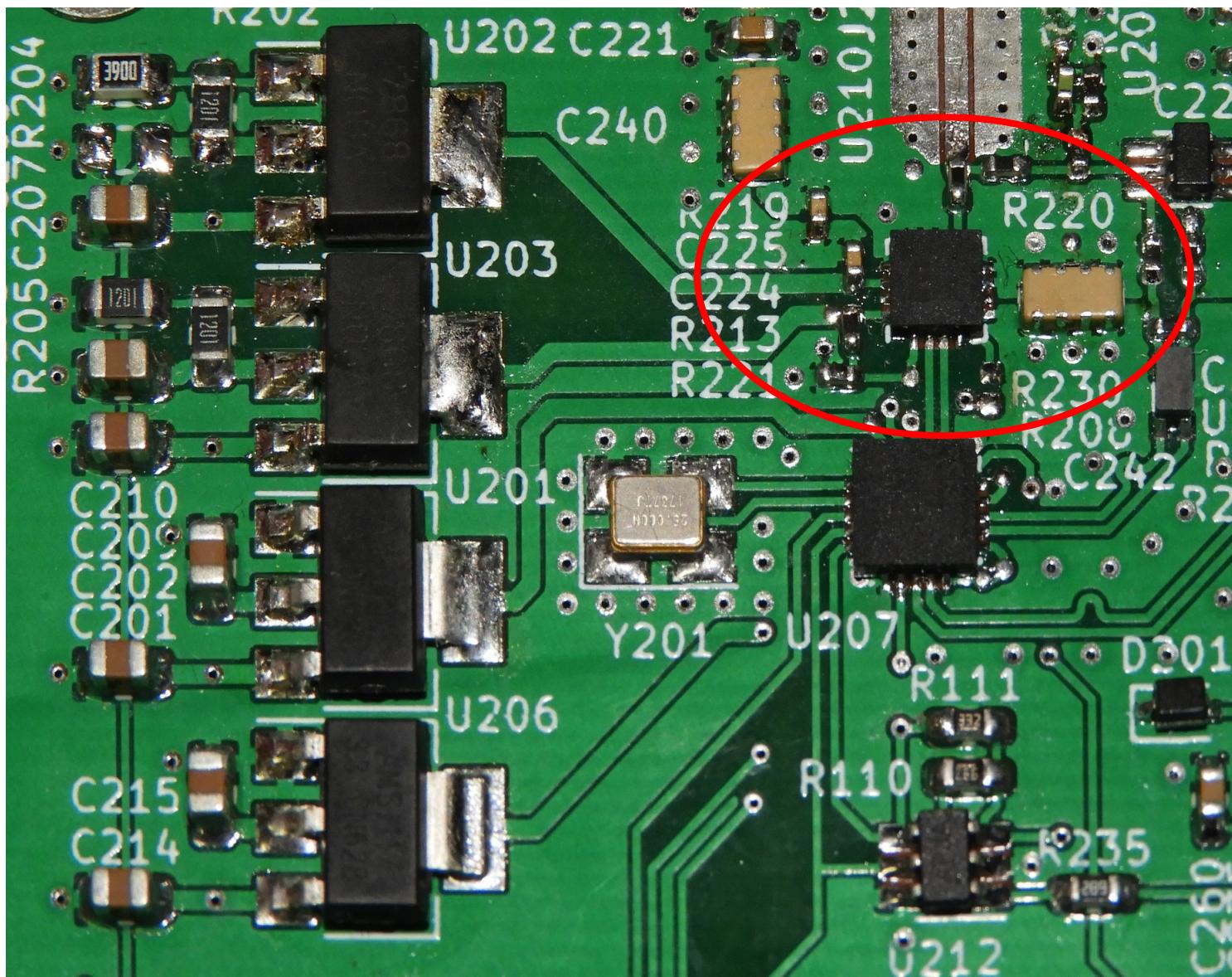


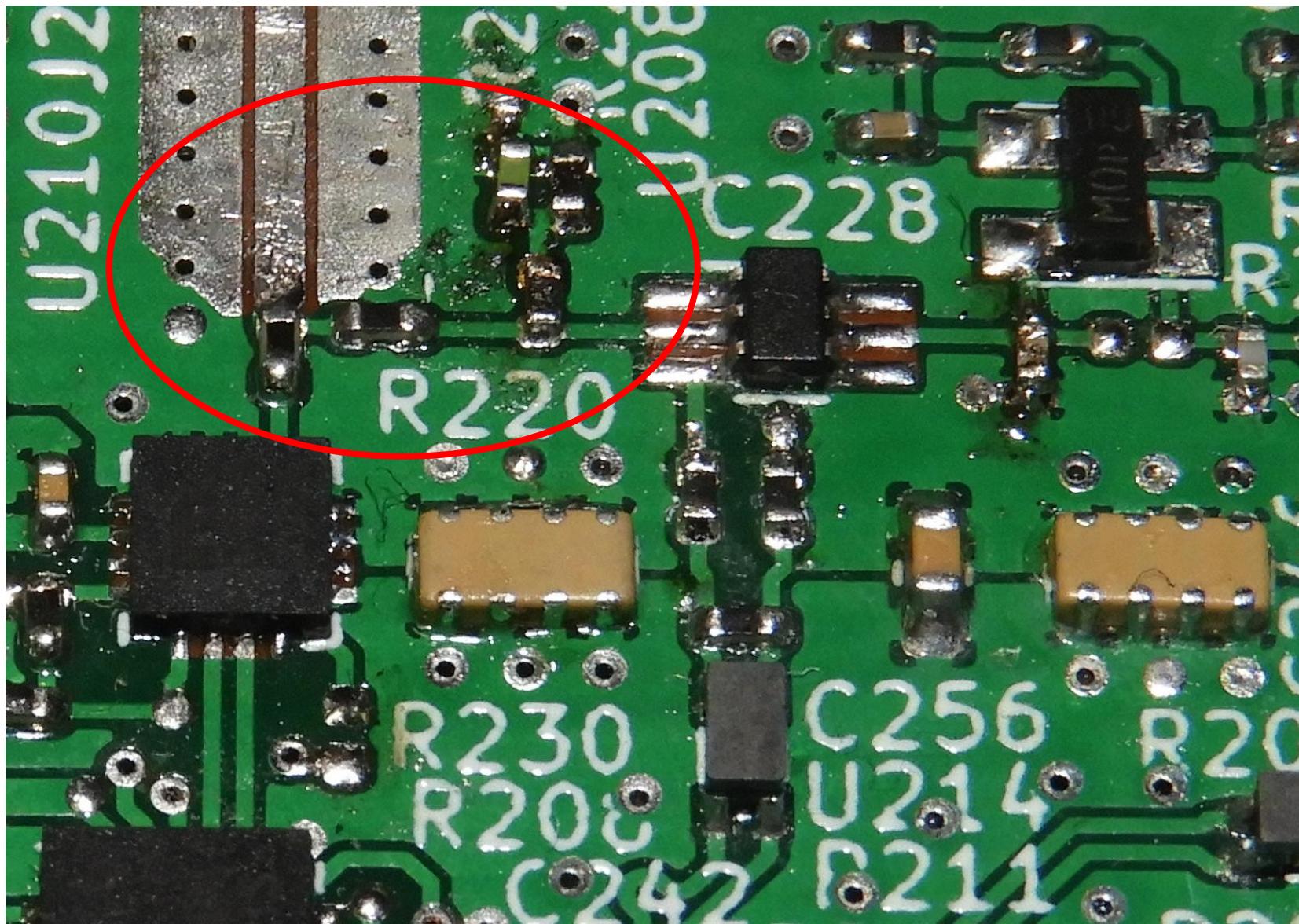


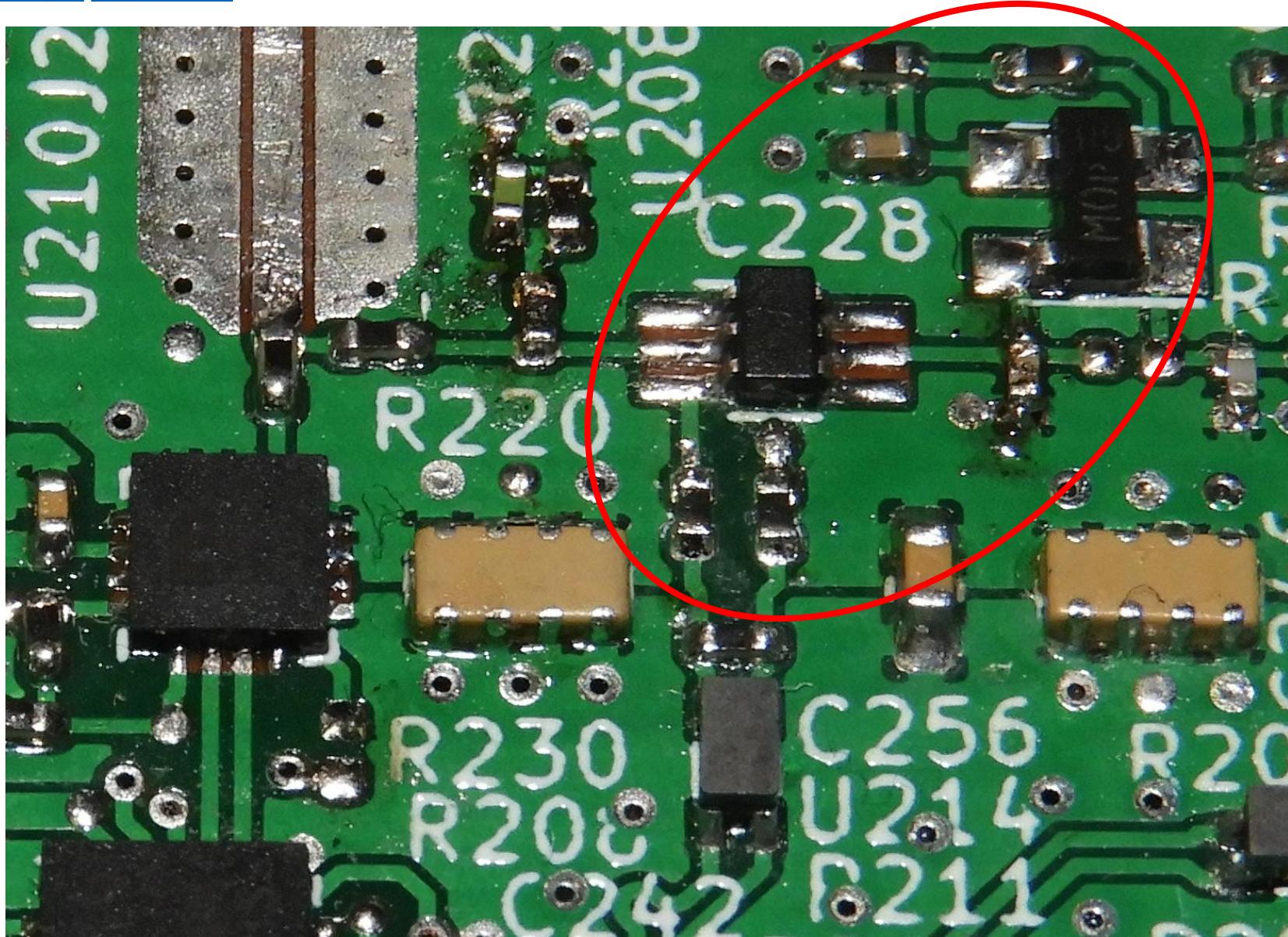


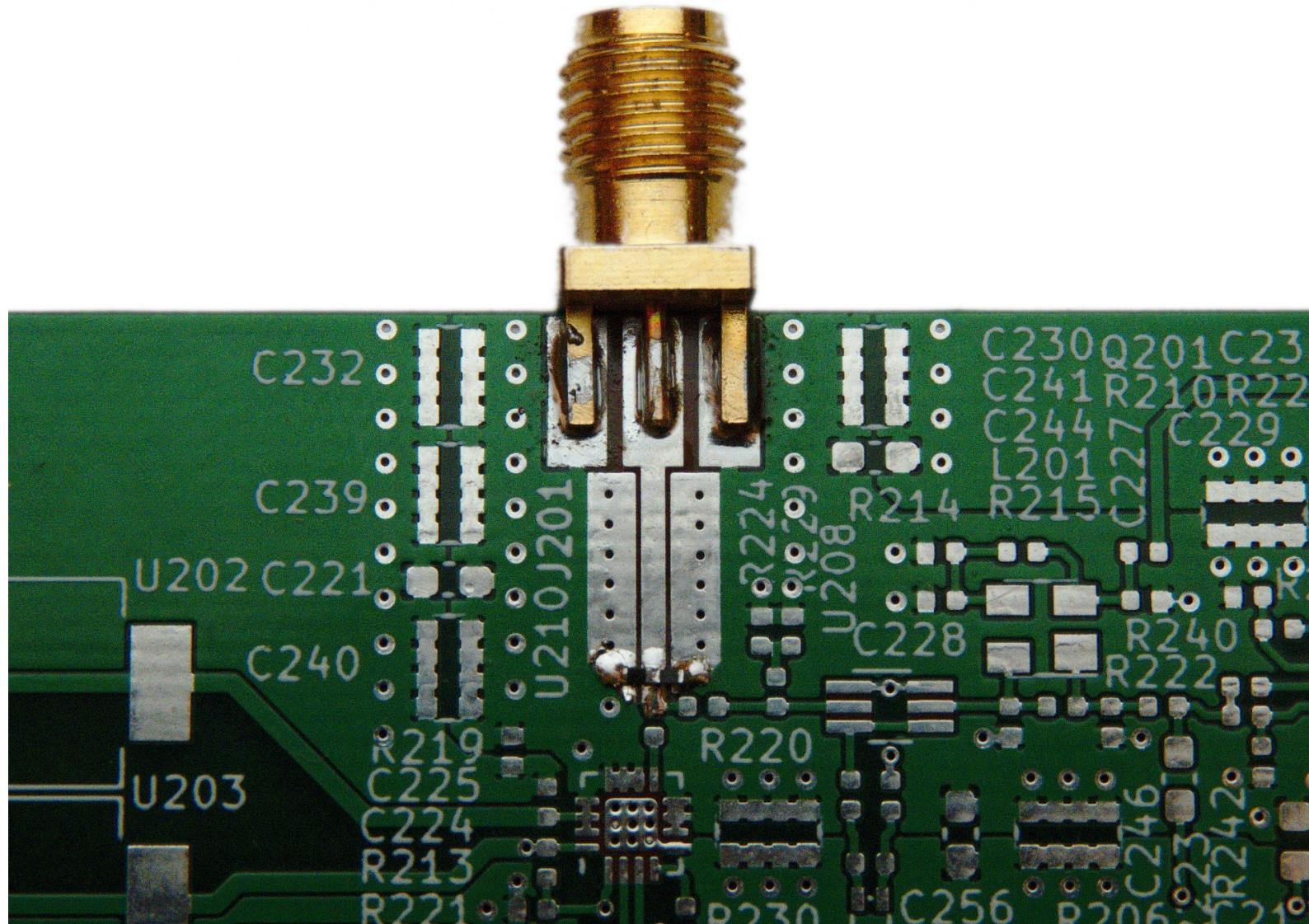












Firmware v zařízení

TDR v1.0

Initialising

Dec 8 2019 21:50:57



Please connect open
standard directly
to test port.

Press button



Calibrating edge
Position.

Please wait



Please connect DUT

Press button









Discontinuity # 1
Refl. coeff. 1.094

Type of reflection:

OPEN

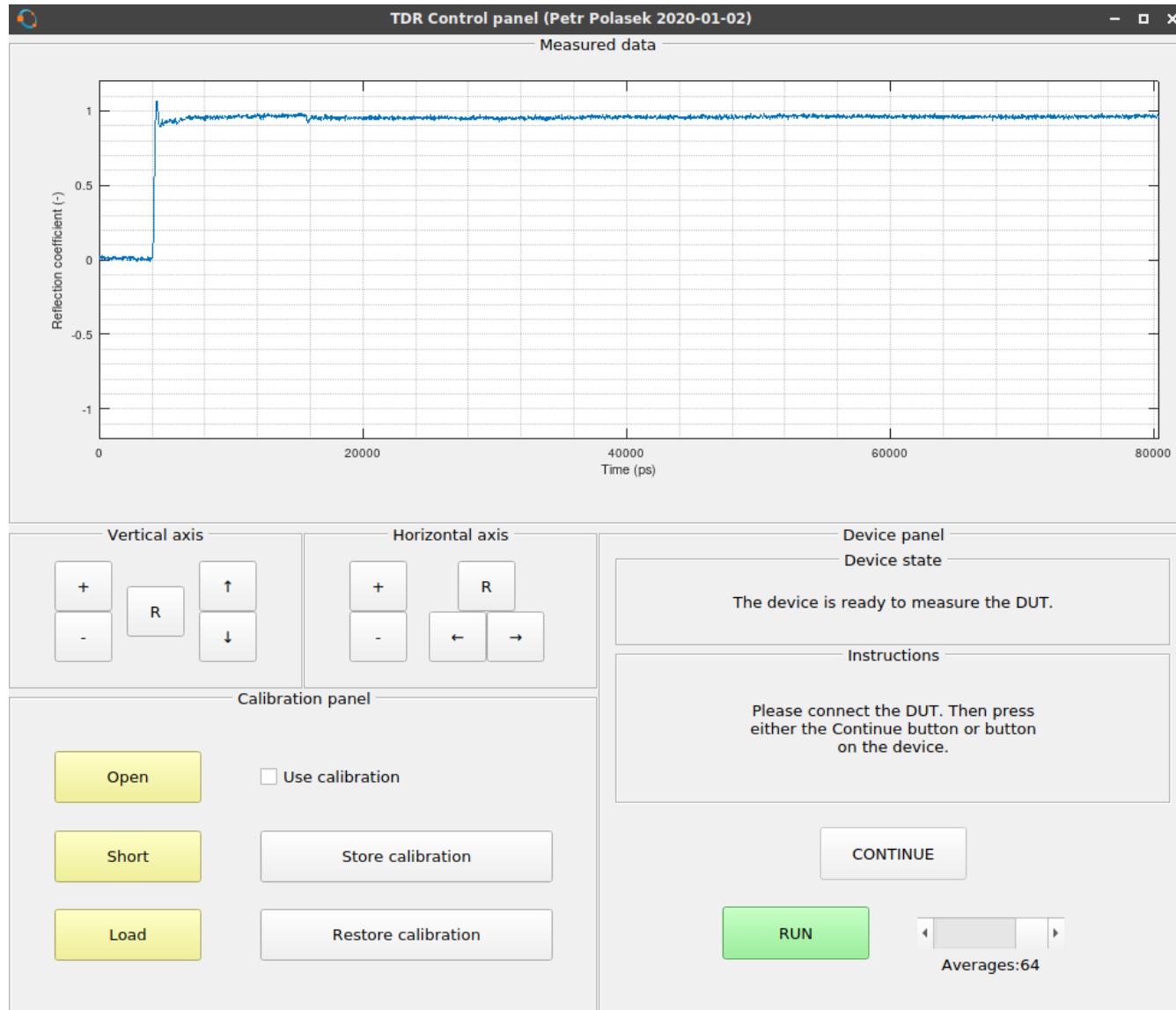
Position: 300 ps

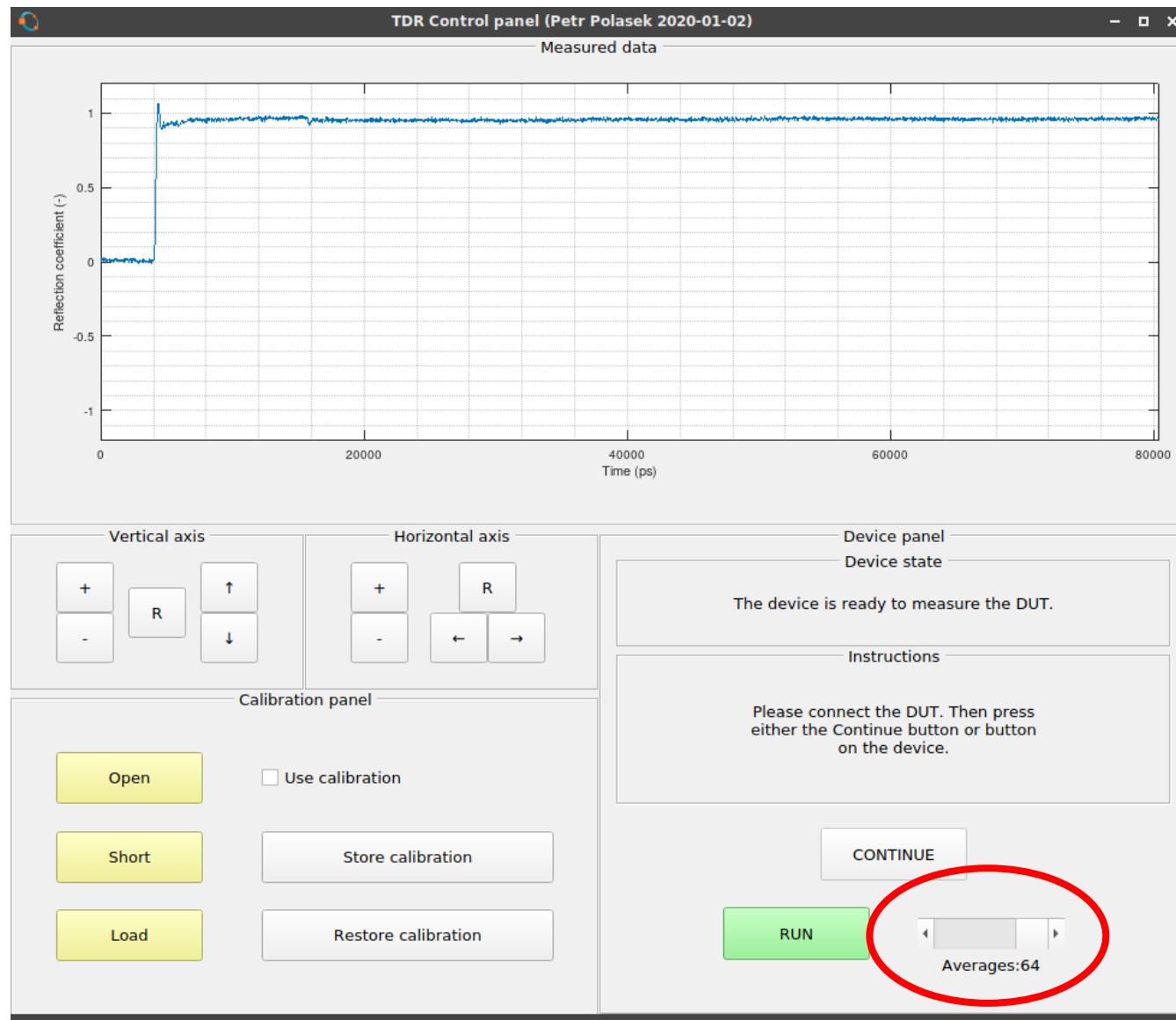
Press button

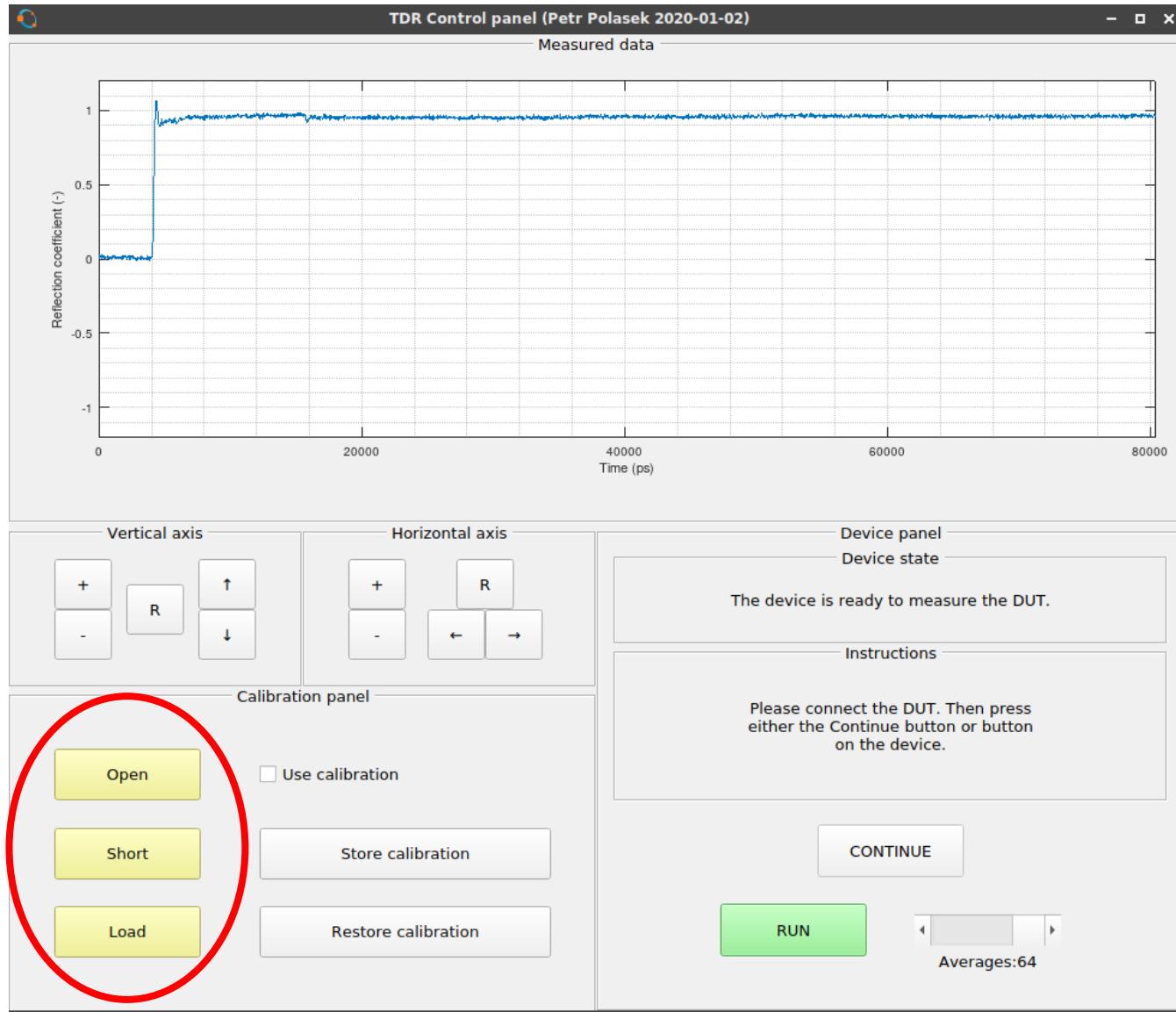
All discontinuities
shown!

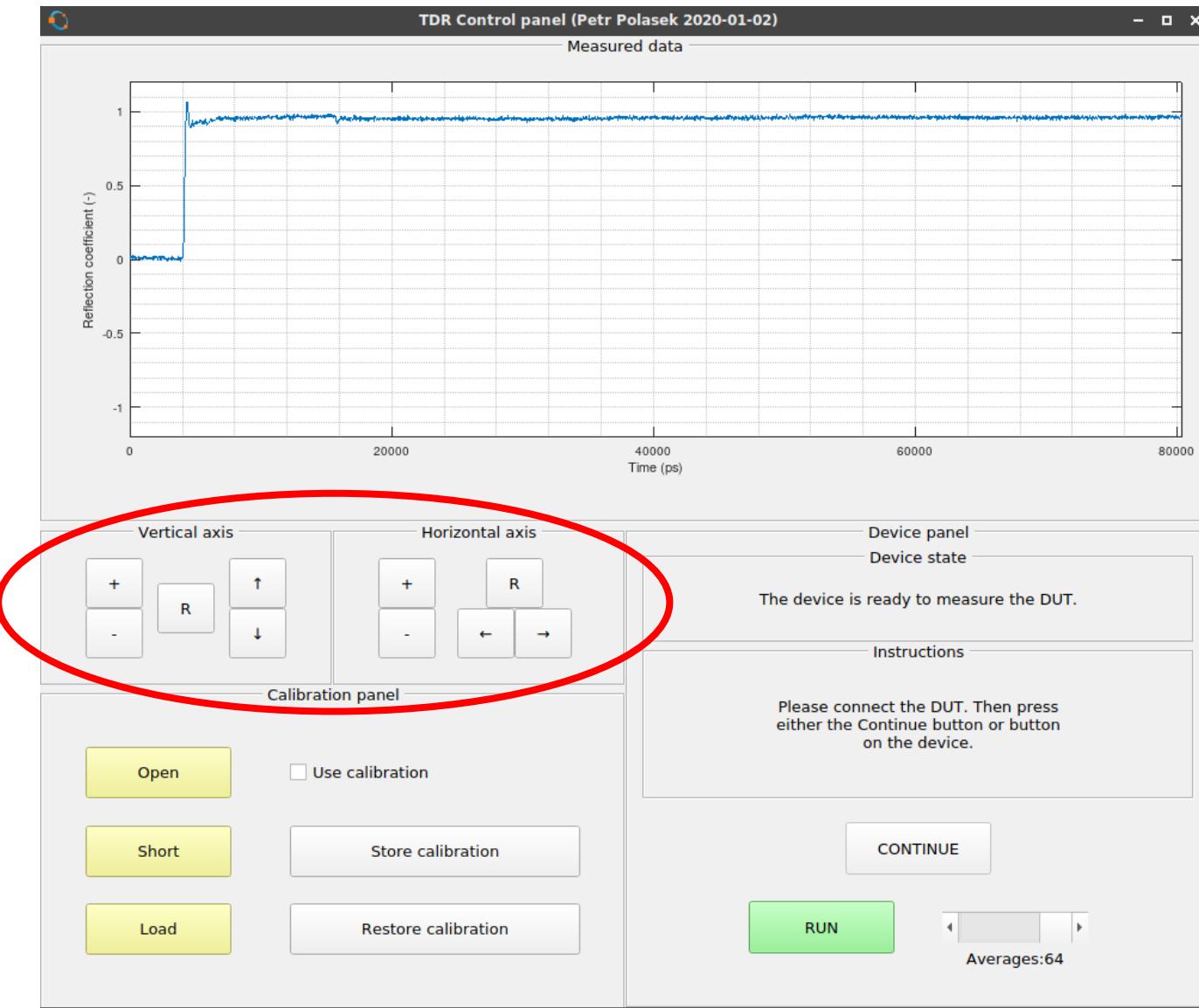
Press button

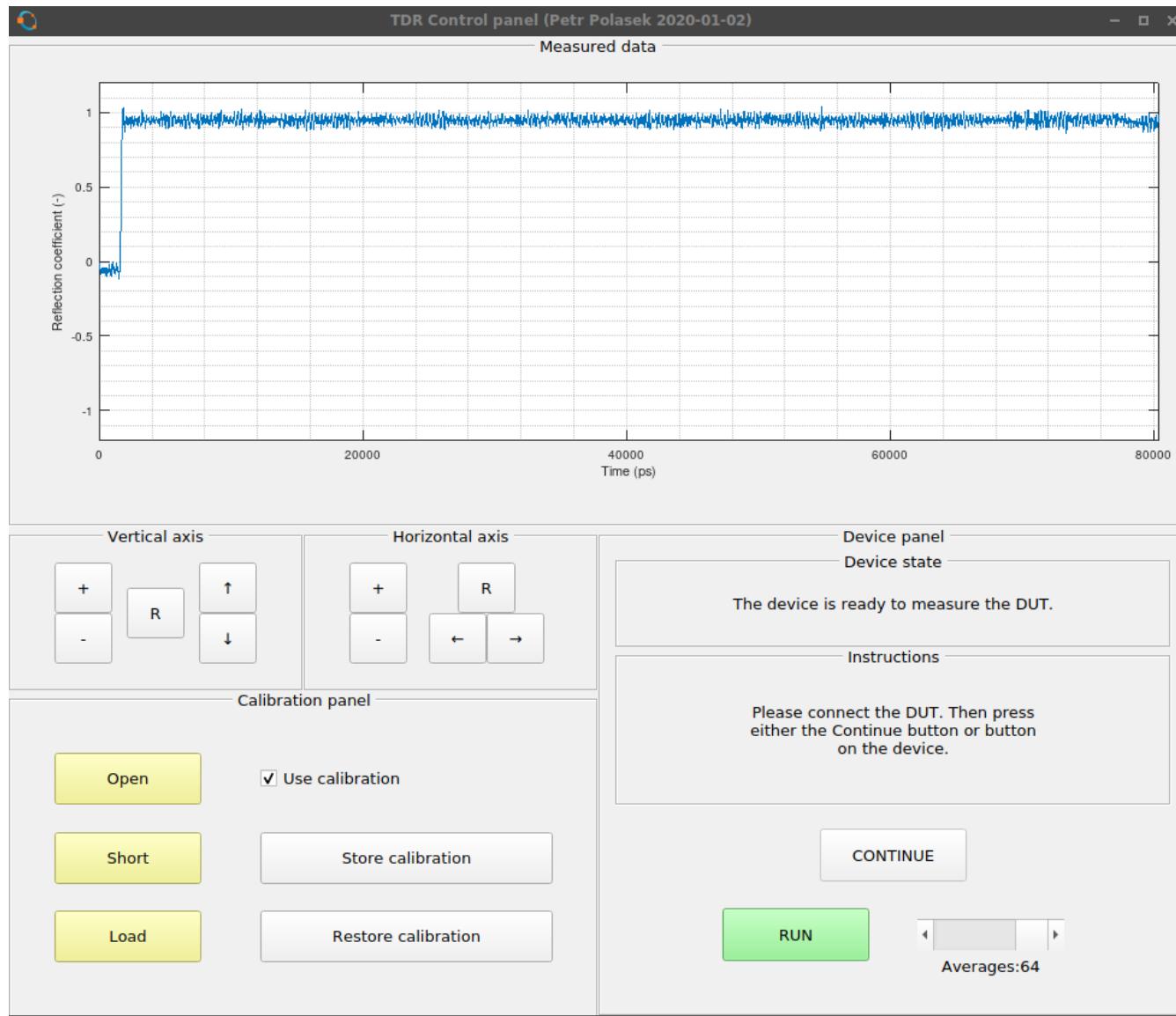
Software pro PC

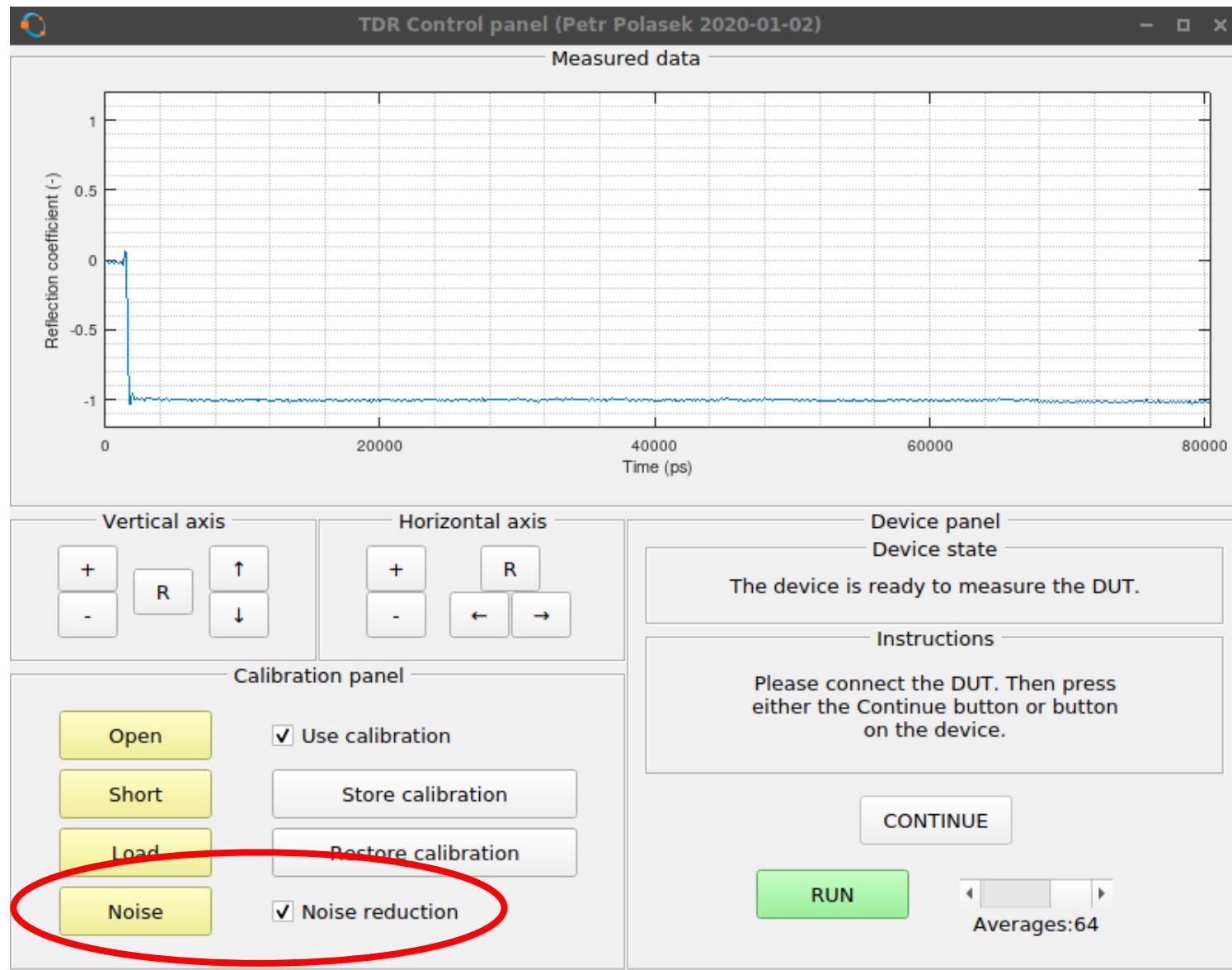






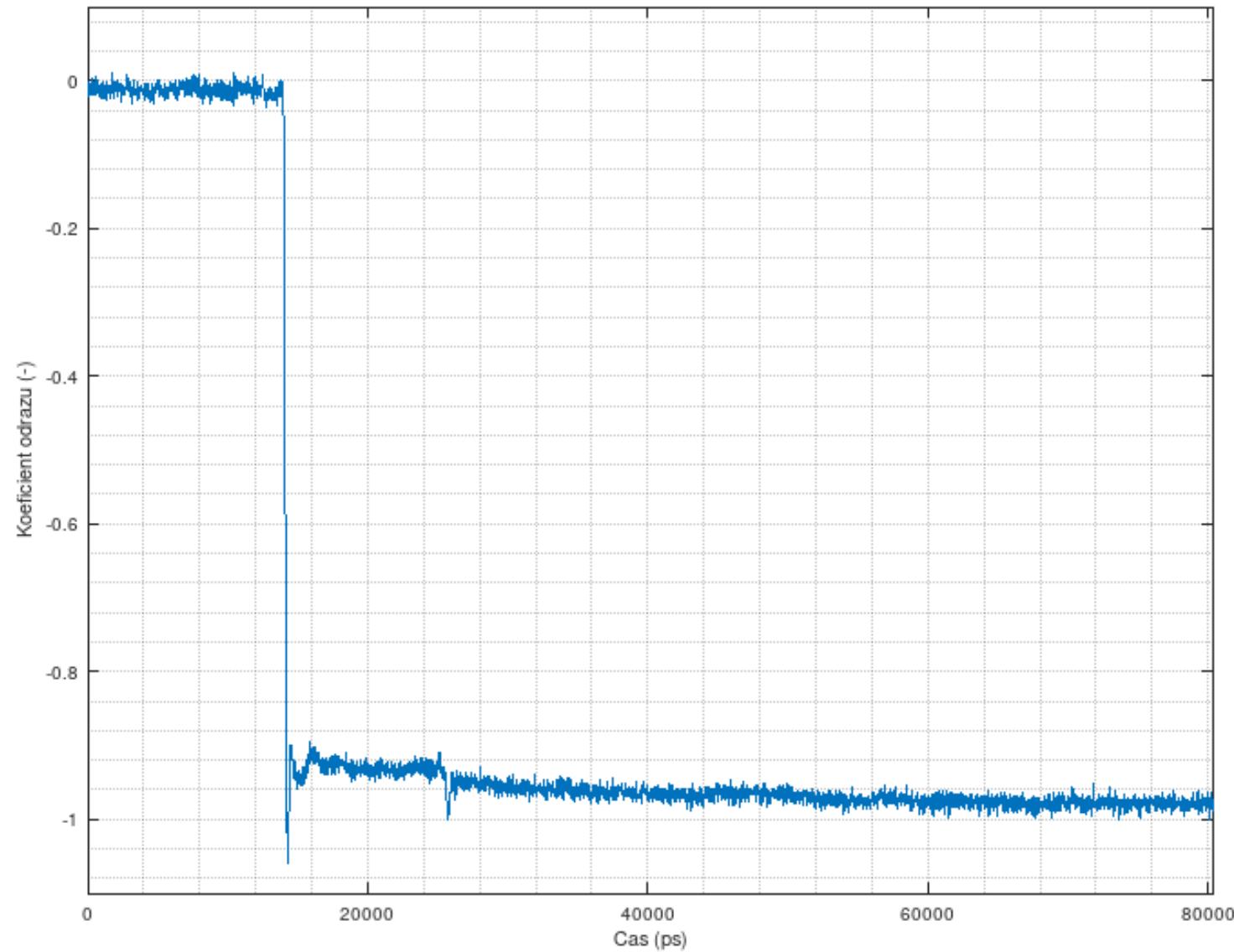




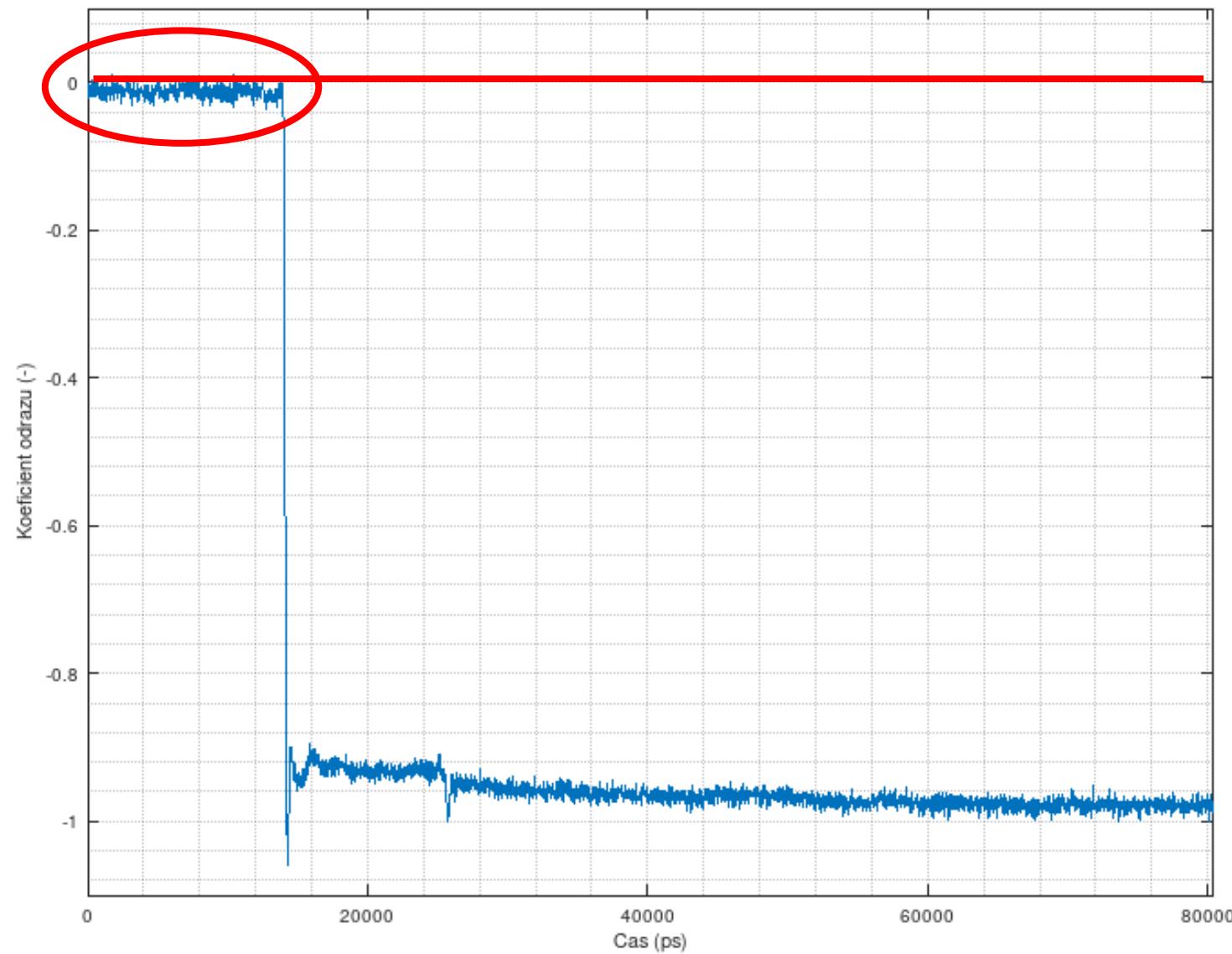


SOL kalibrace

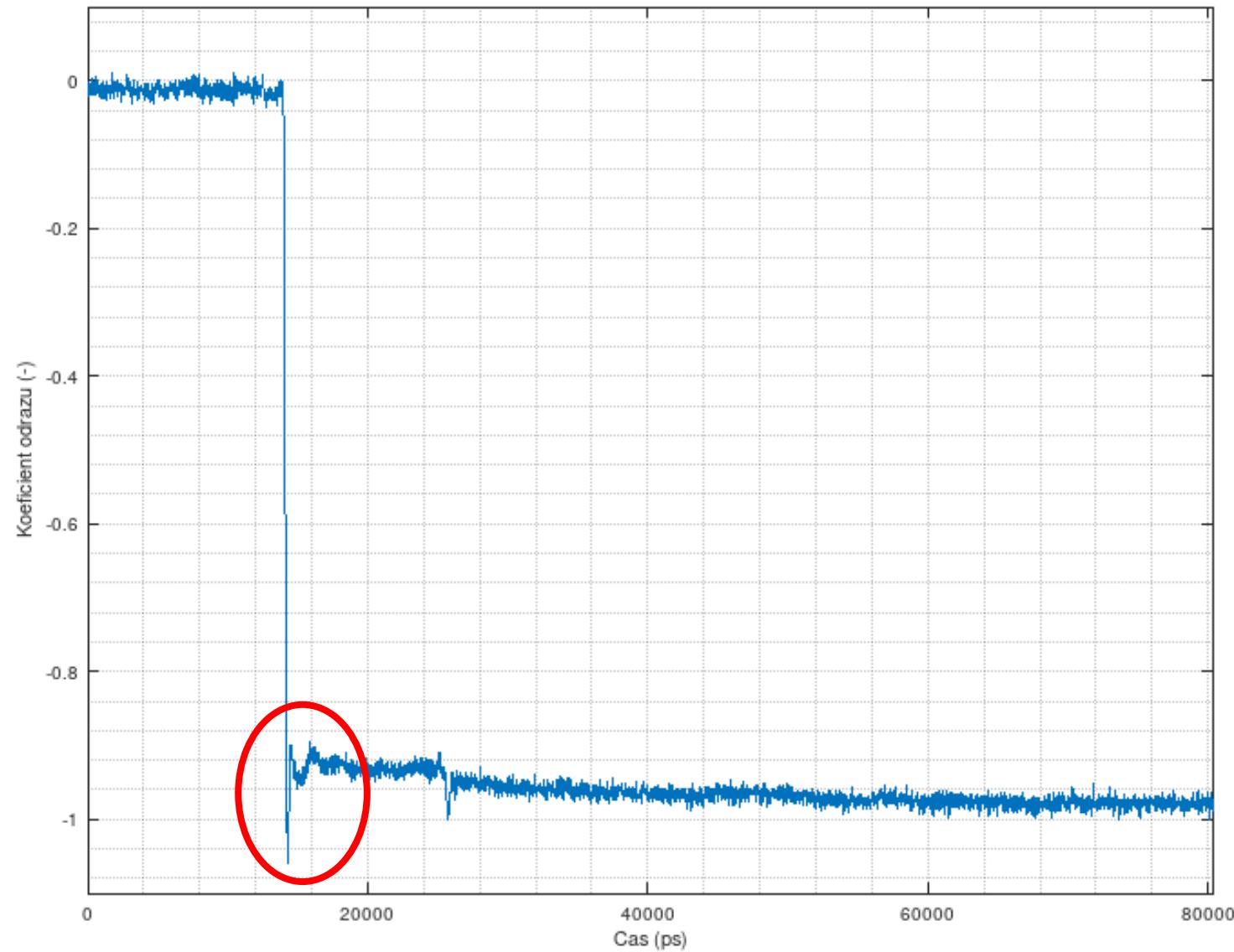
Semicalibrated measurement response



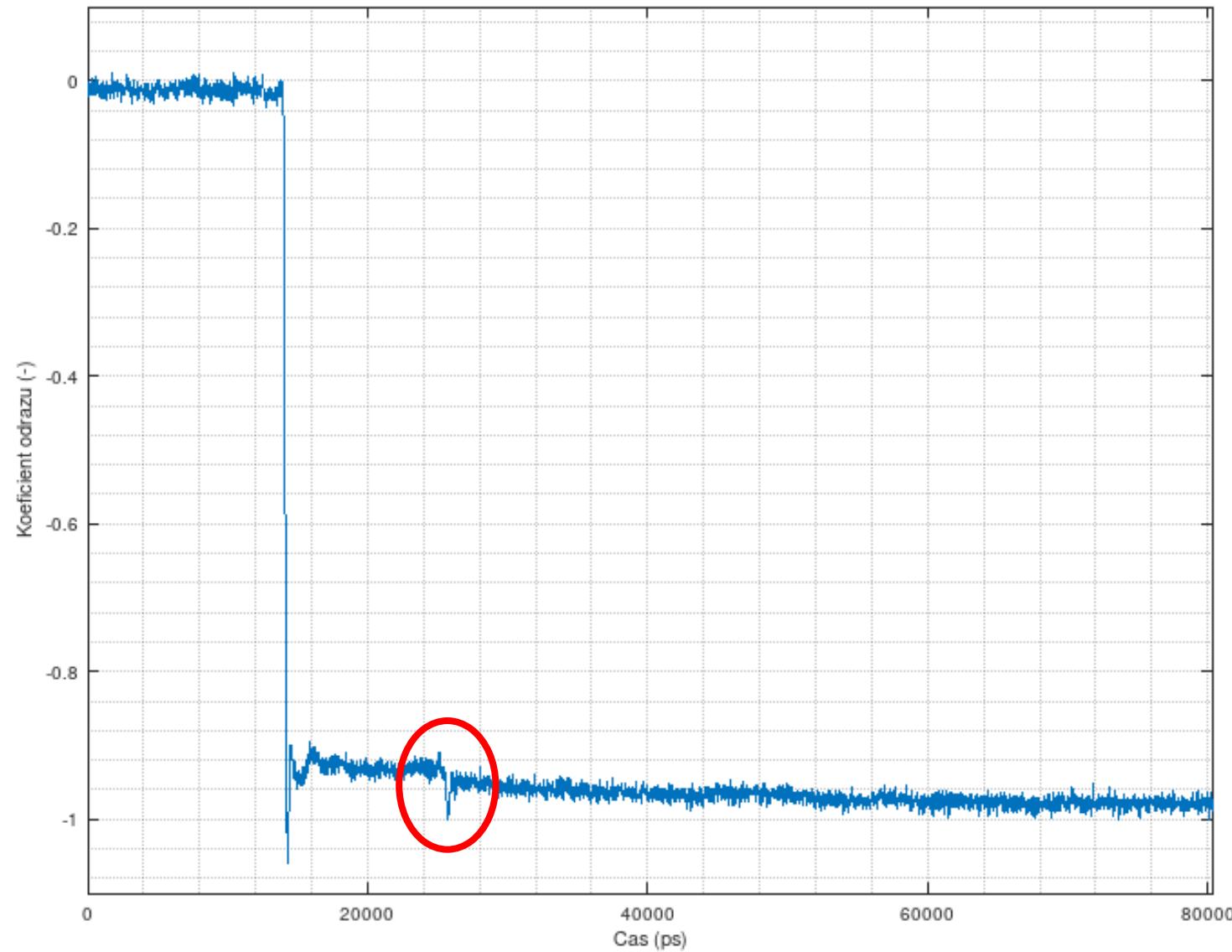
Semicalibrated measurement response



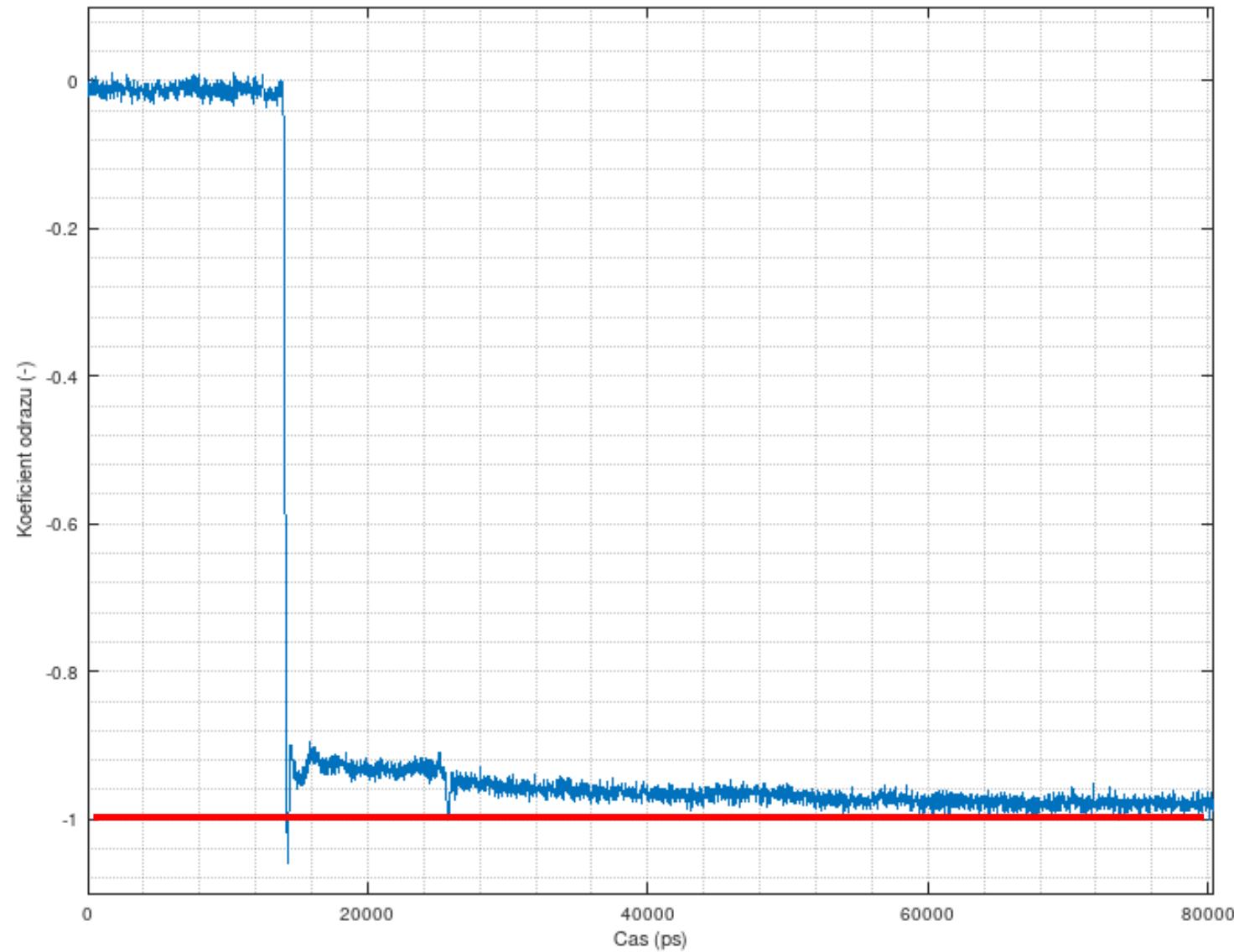
Semicalibrated measurement response



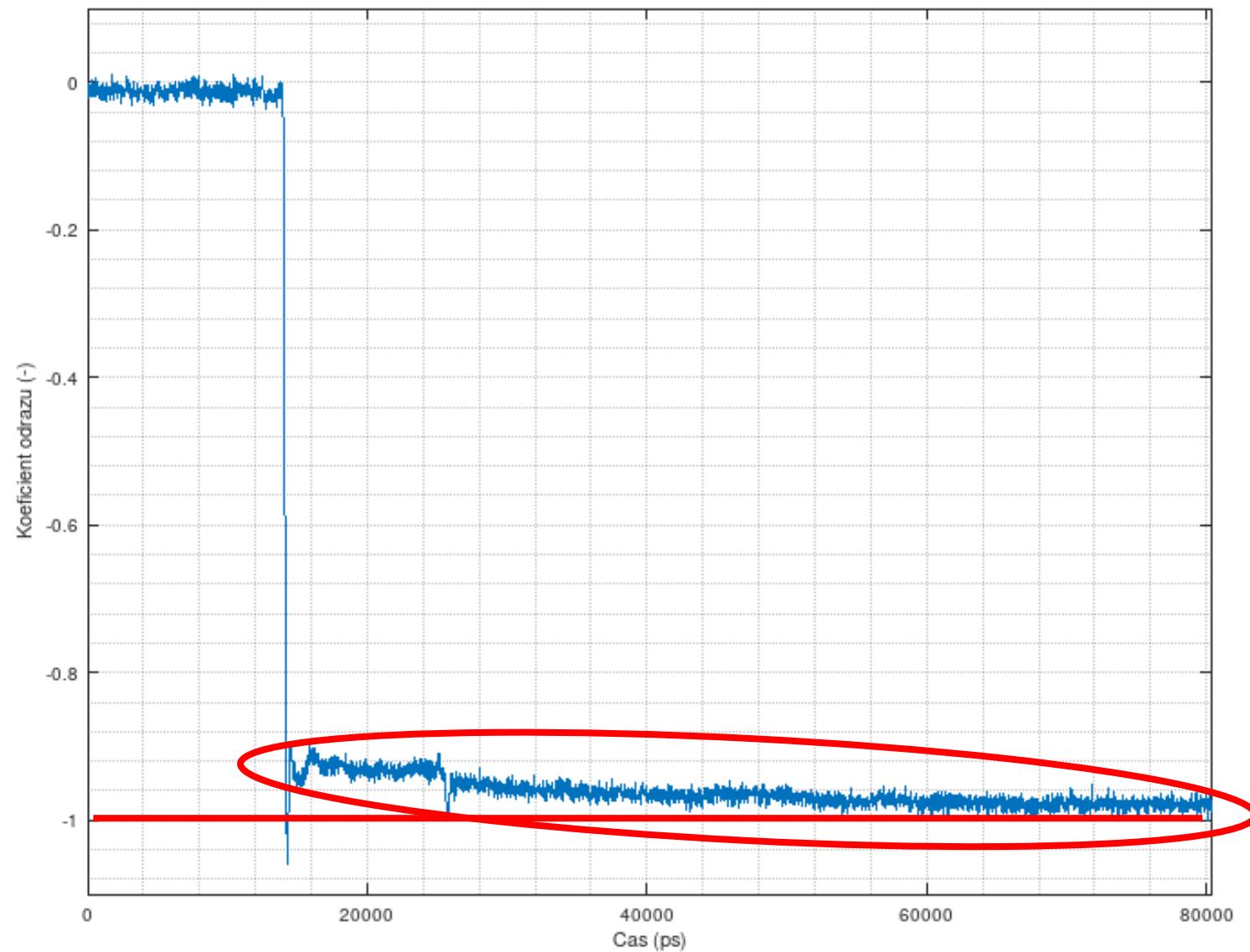
Semicalibrated measurement response



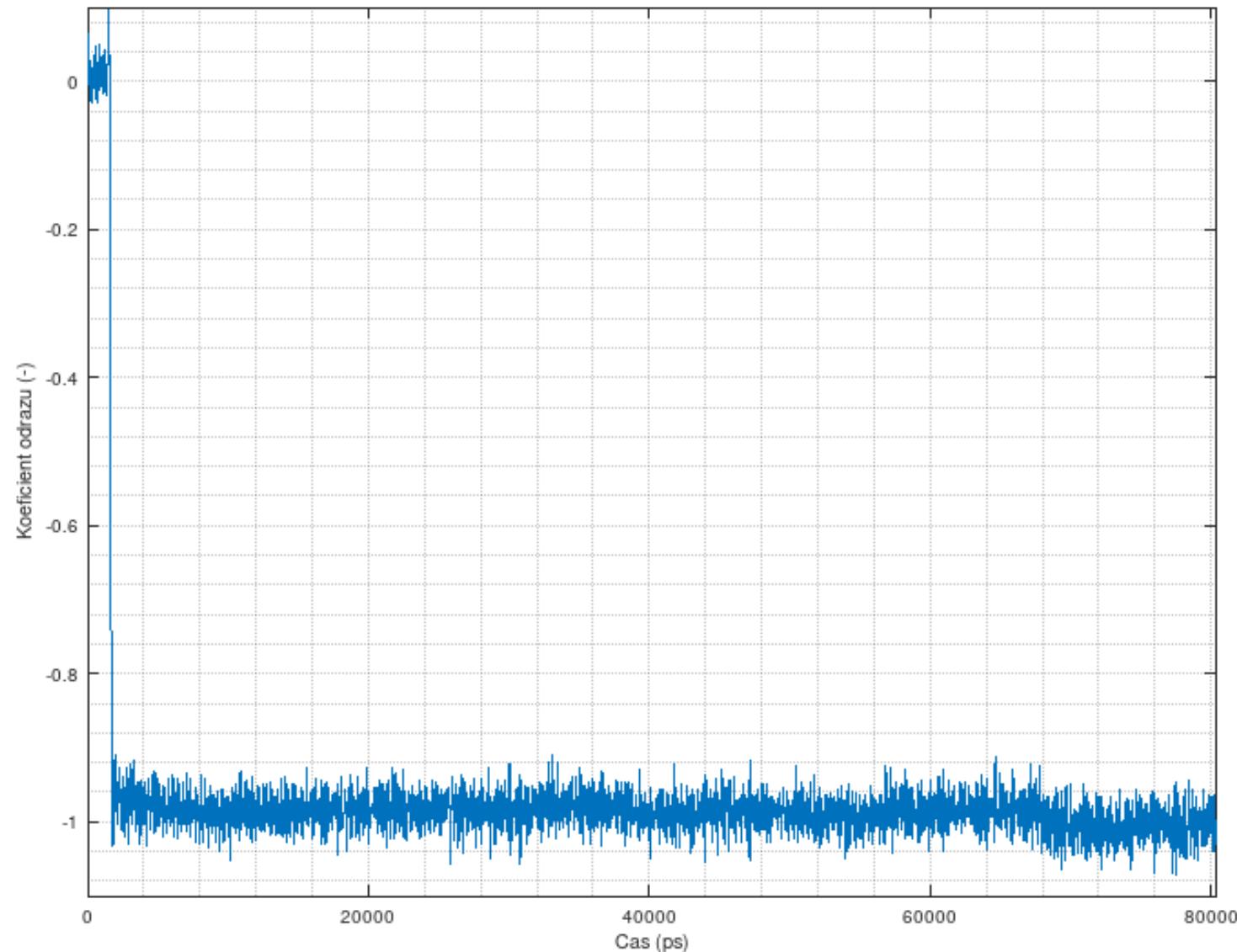
Semicalibrated measurement response



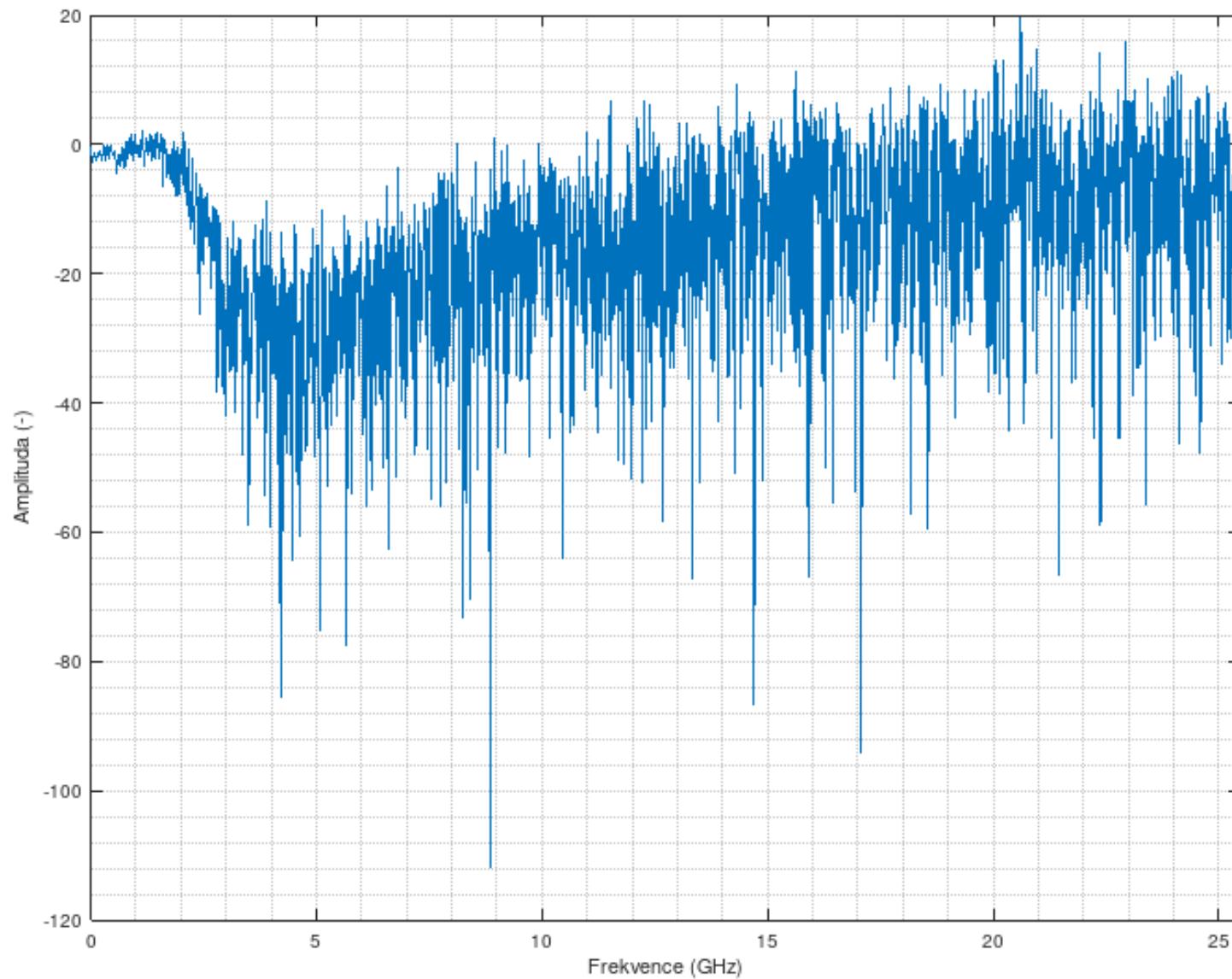
Semicalibrated measurement response



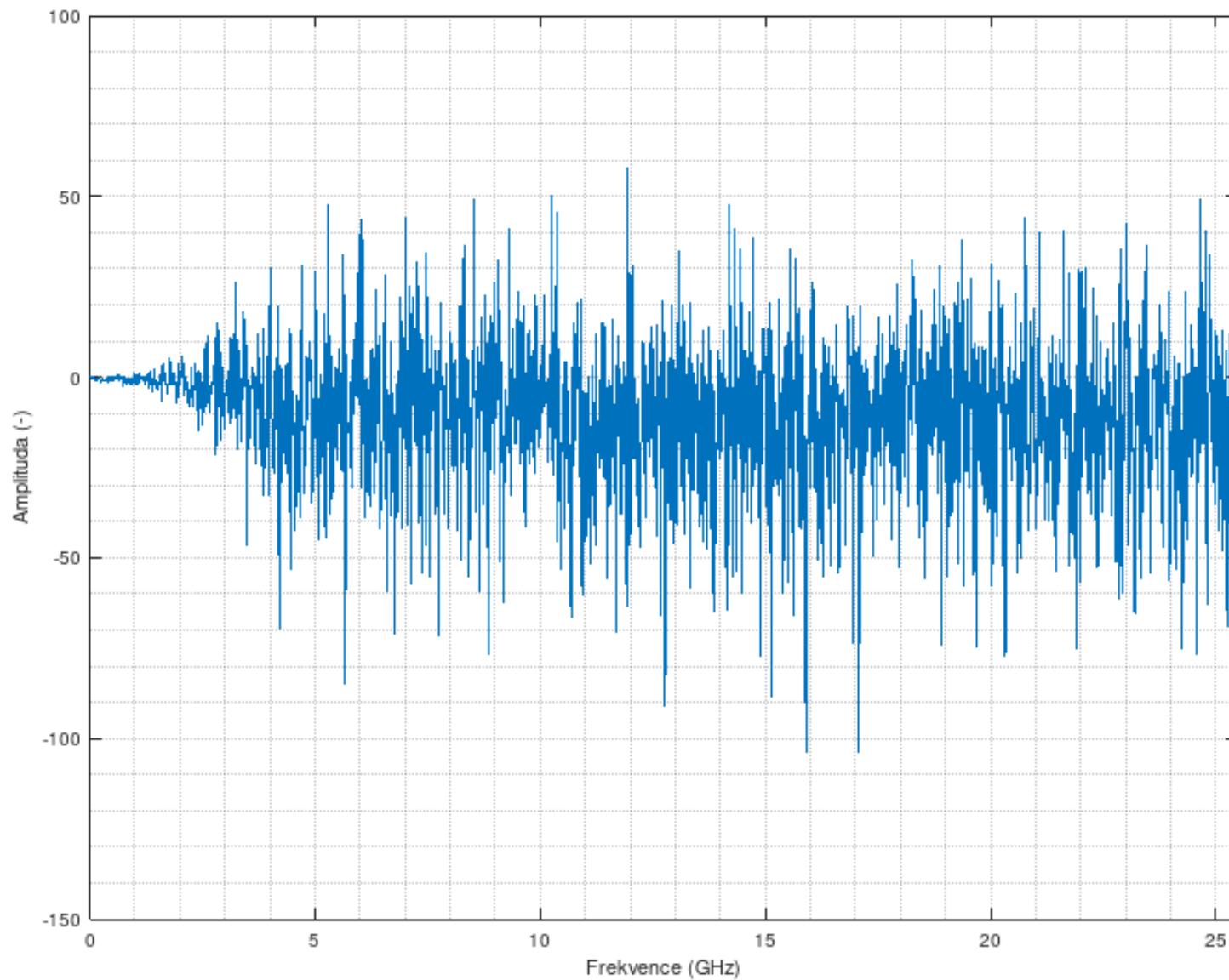
Fully calibrated measurement response



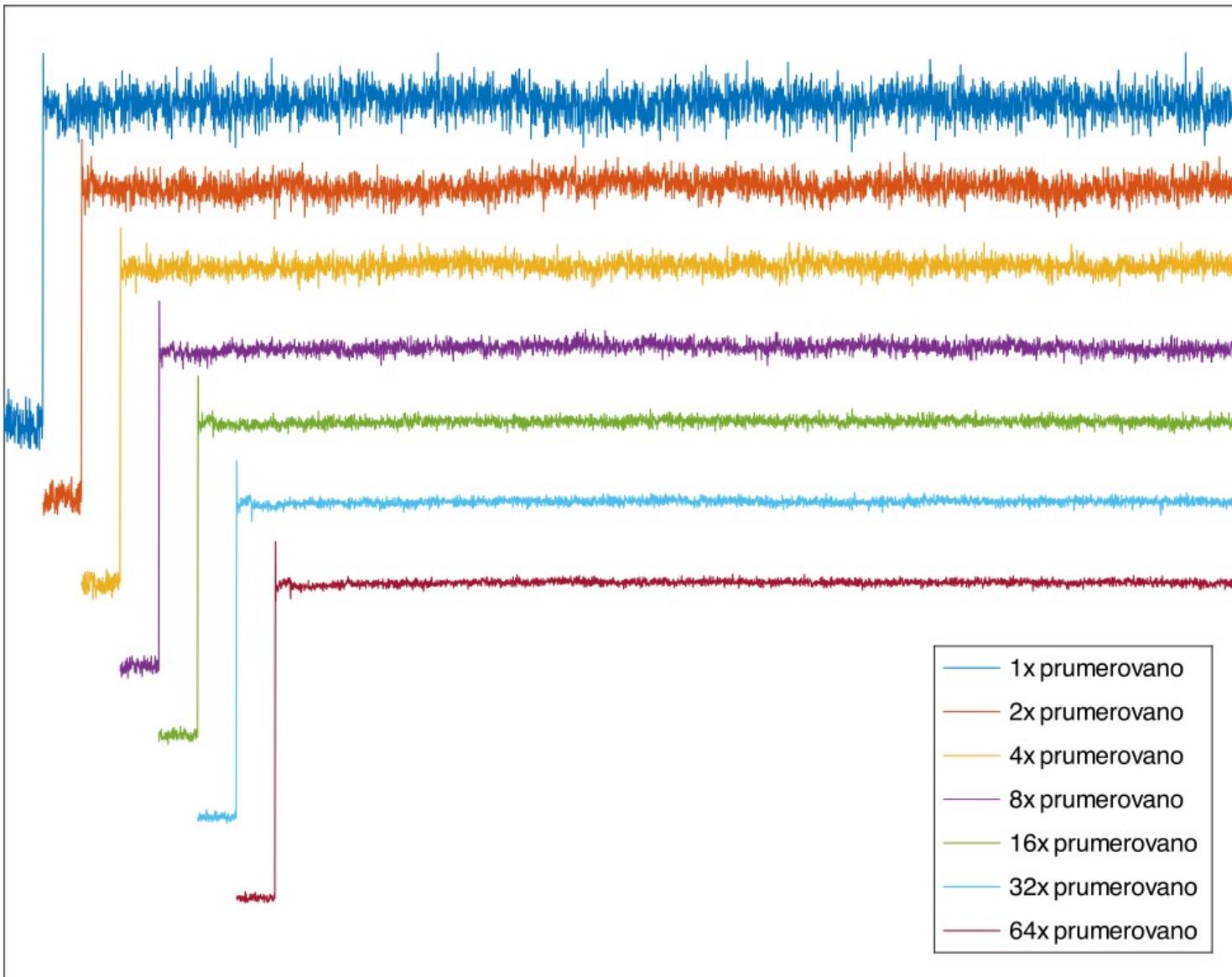
Semicalibrated measurement spectrum



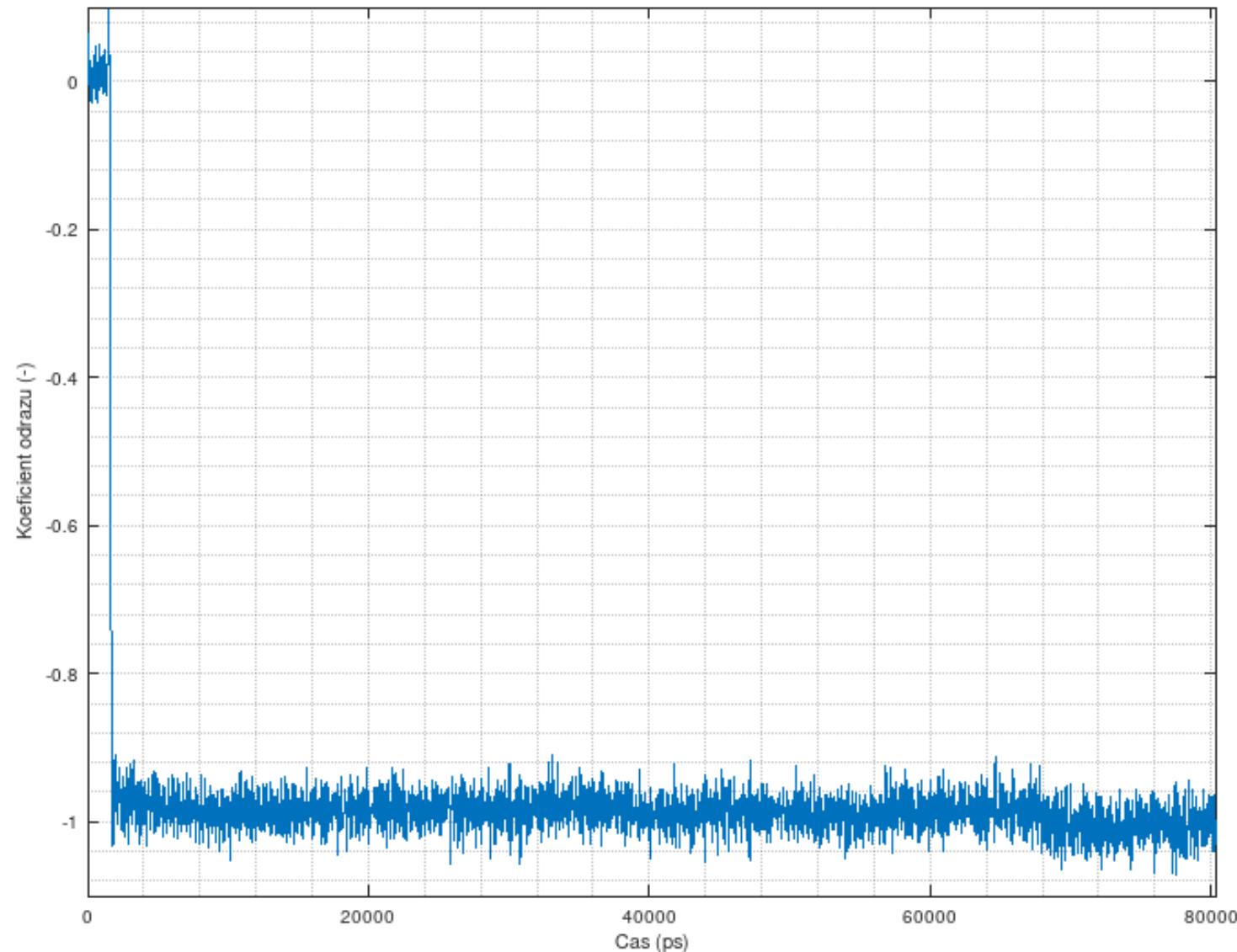
Fully calibrated measurement spectrum



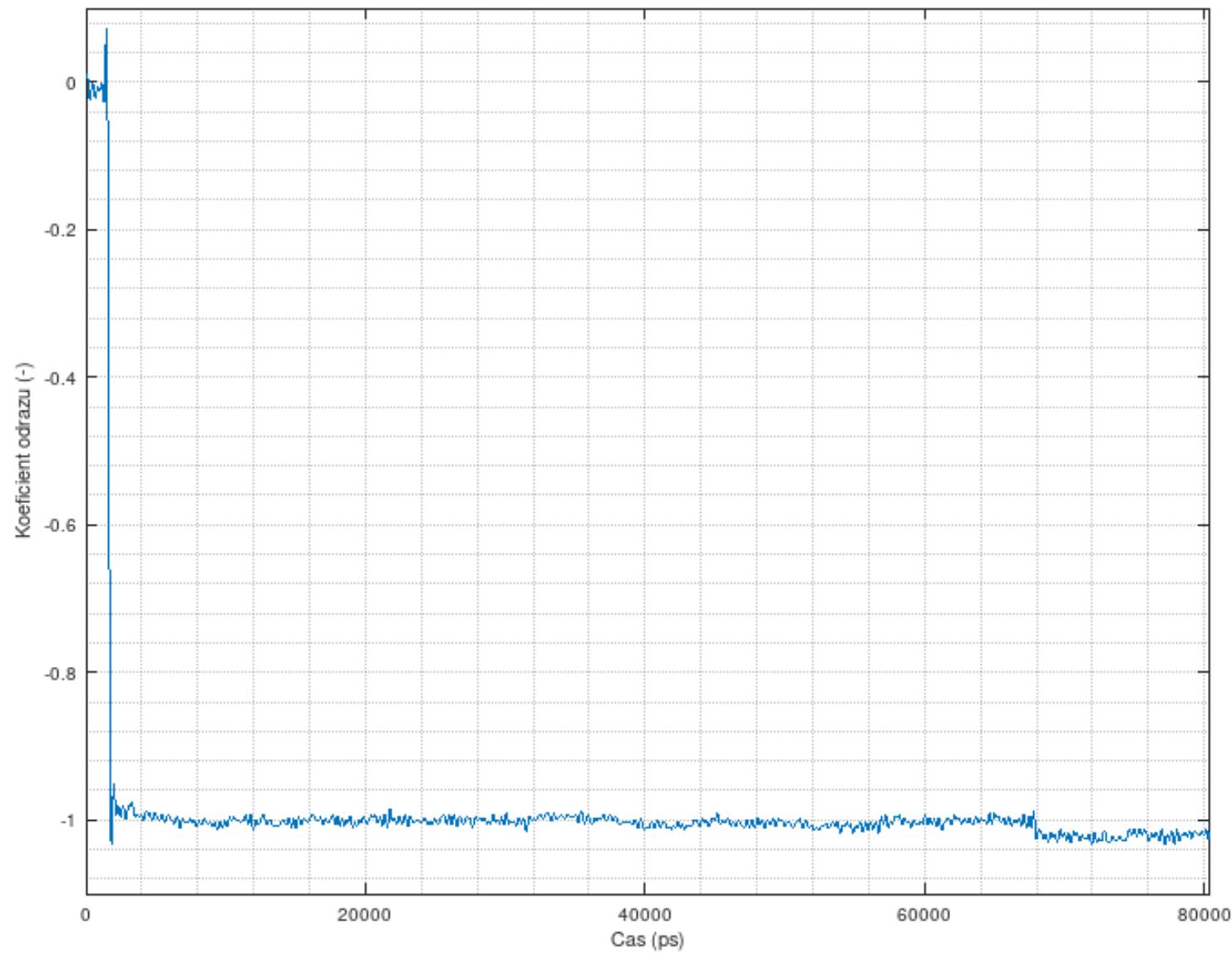
Potlačení šumu



Fully calibrated measurement response

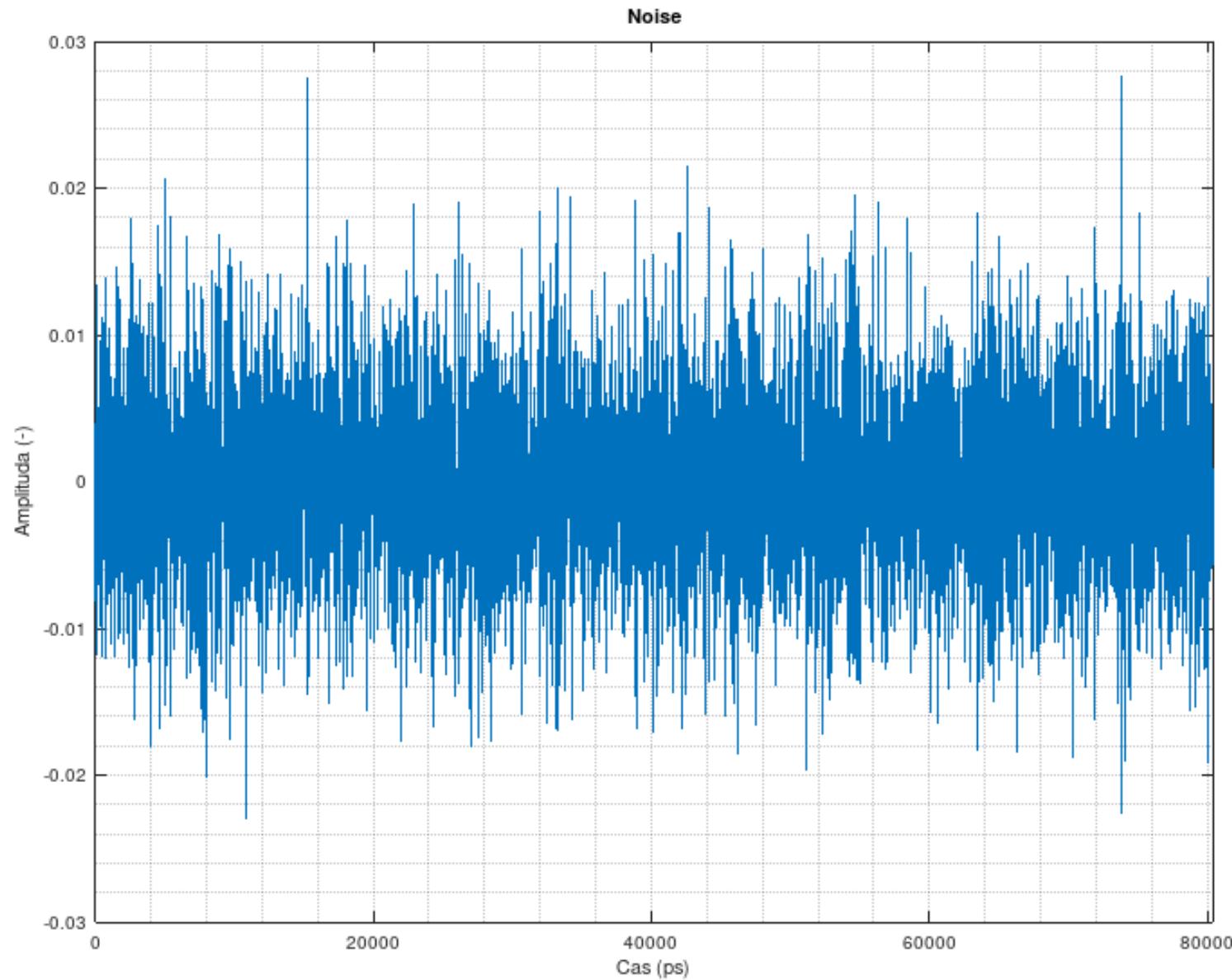


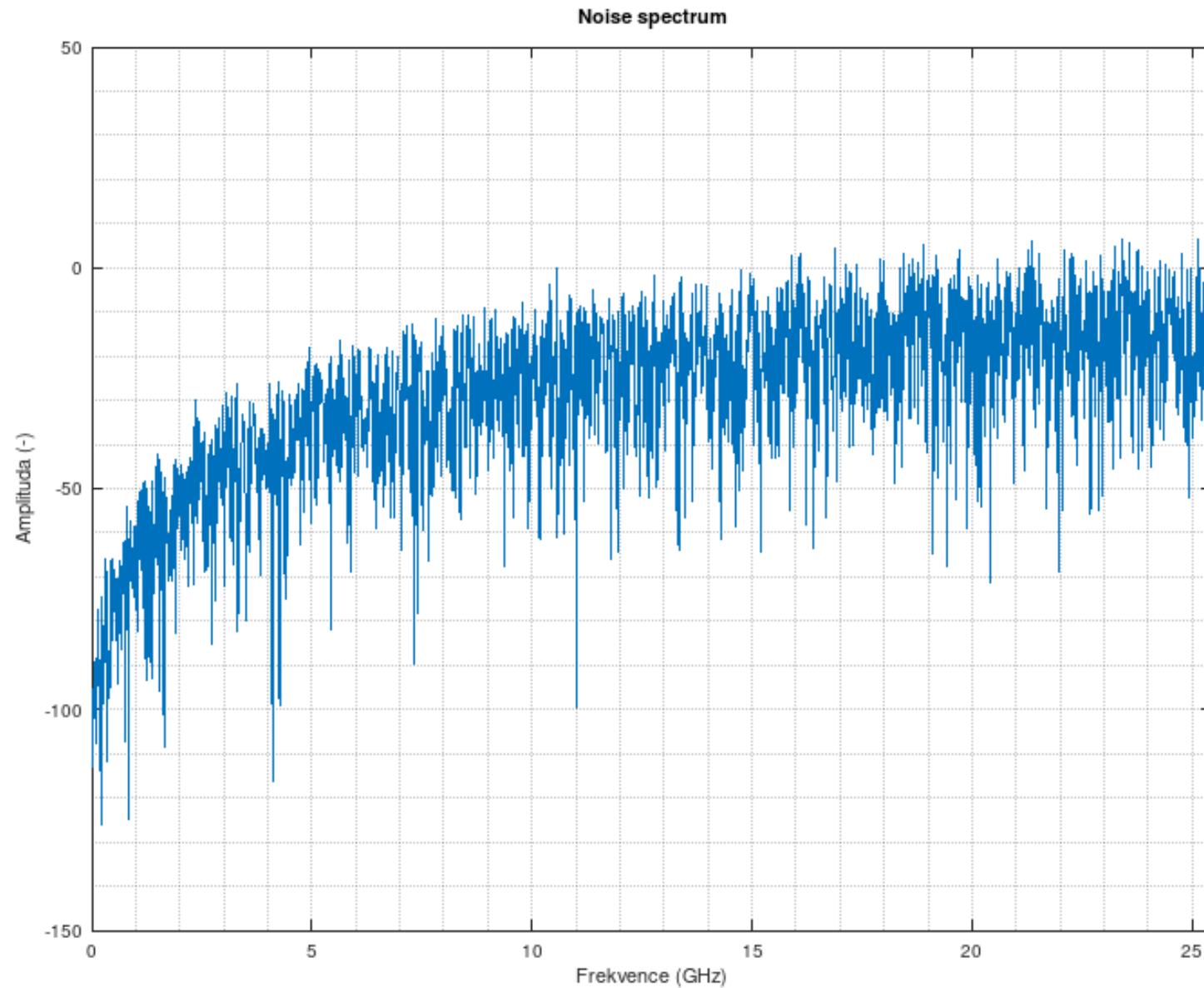
Noise compensated waveform

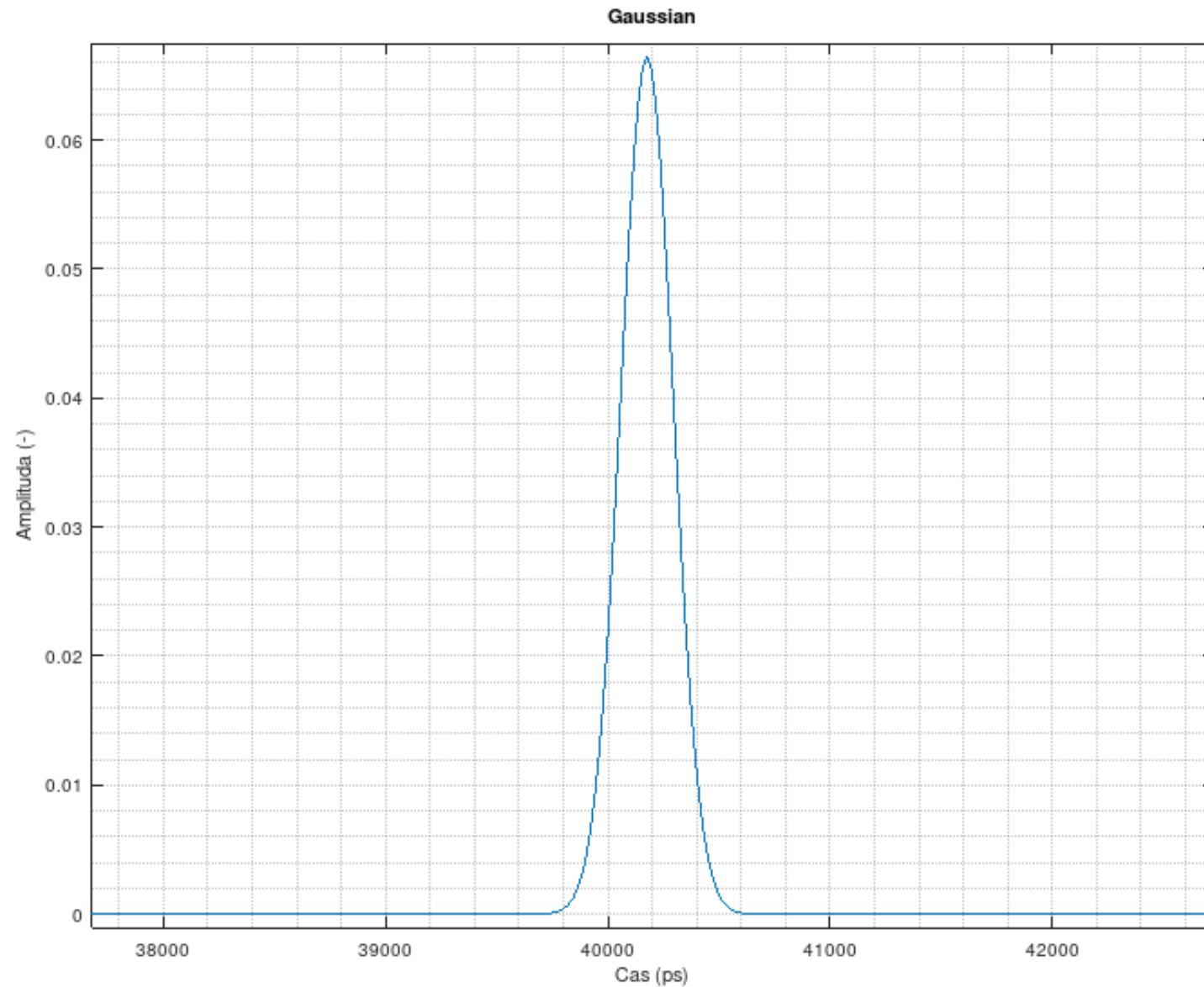


Wienerova dekonvoluce

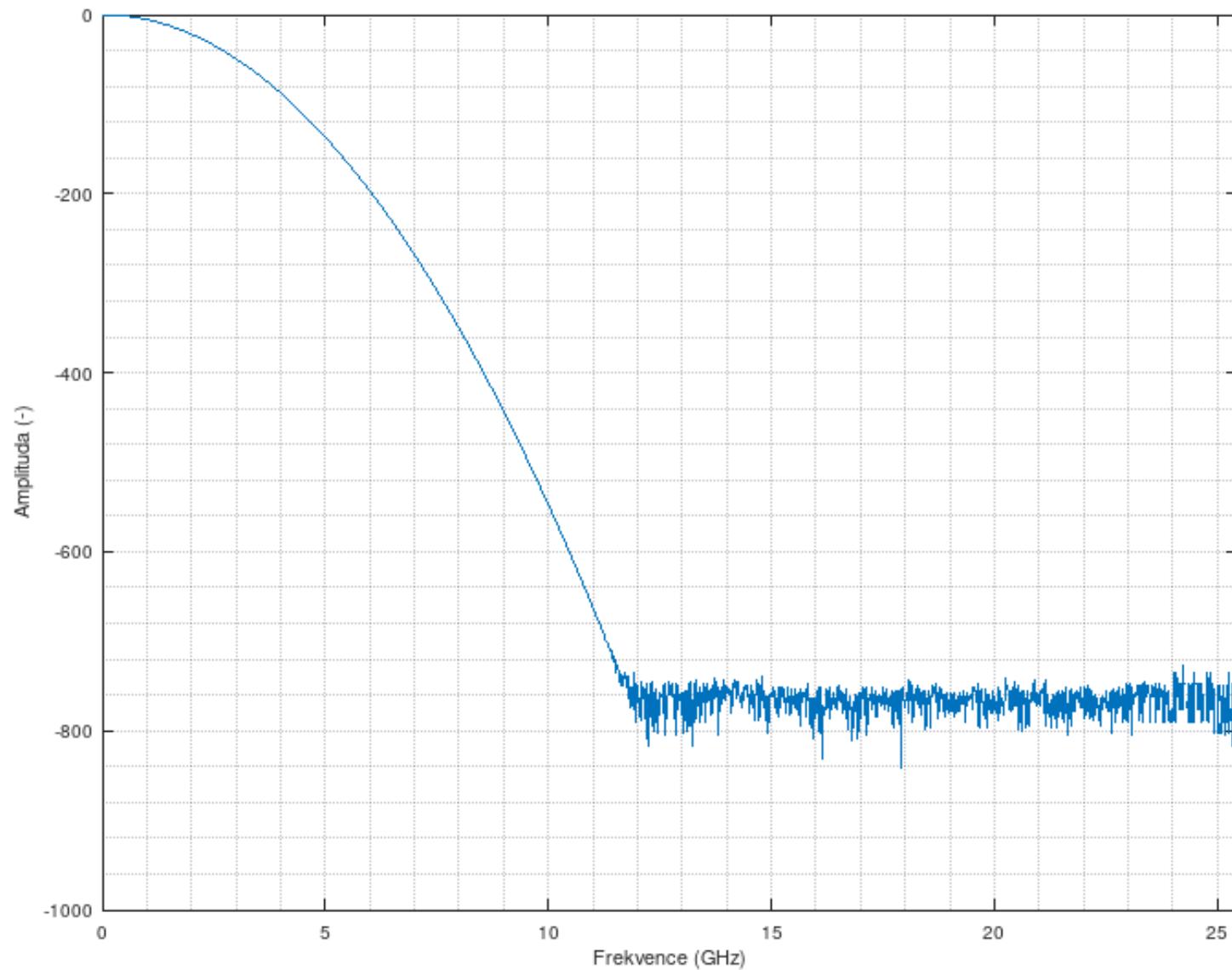
$$H_{NR}(f) = H(f) \frac{1}{1 + \frac{1}{SNR(f)}}$$

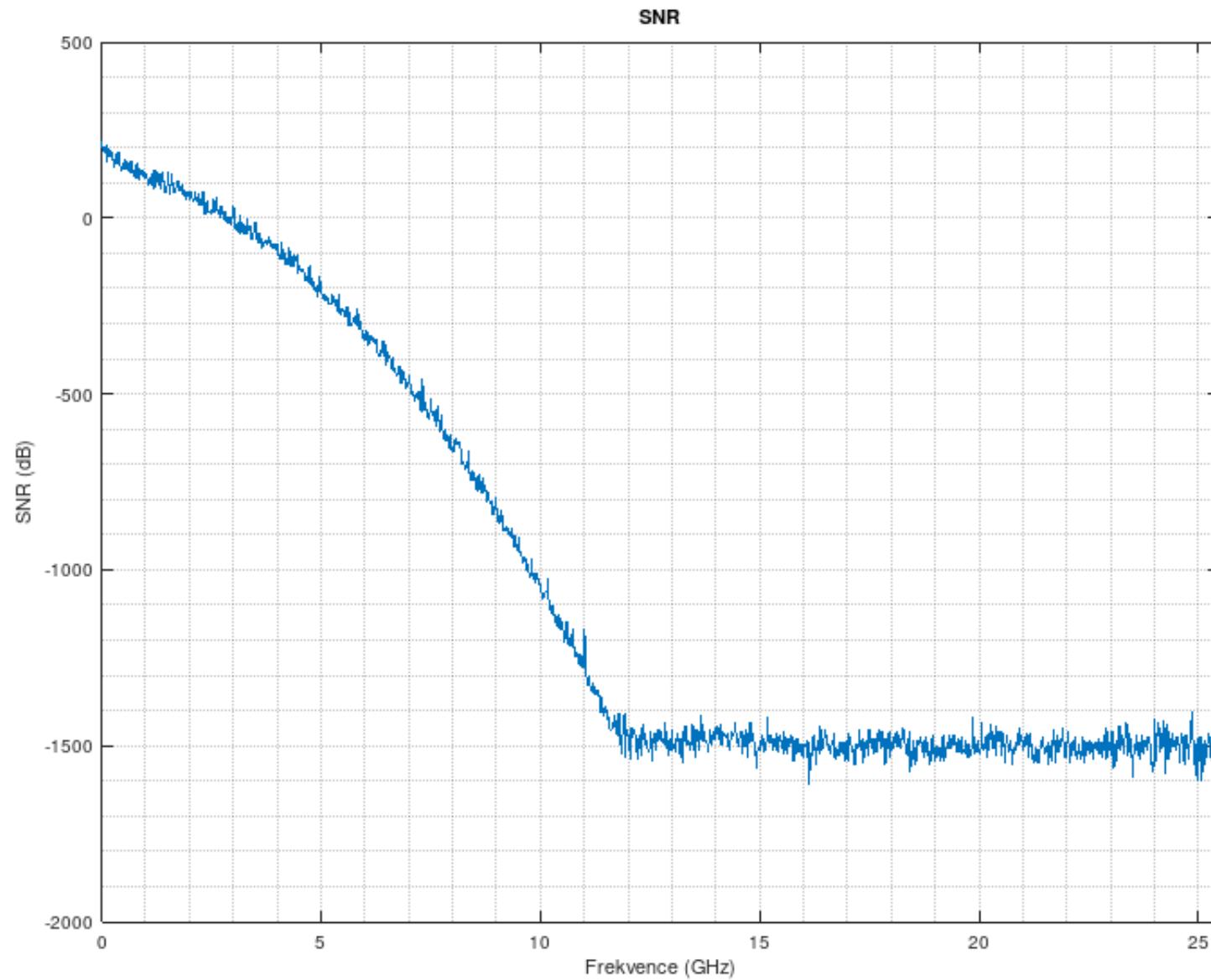


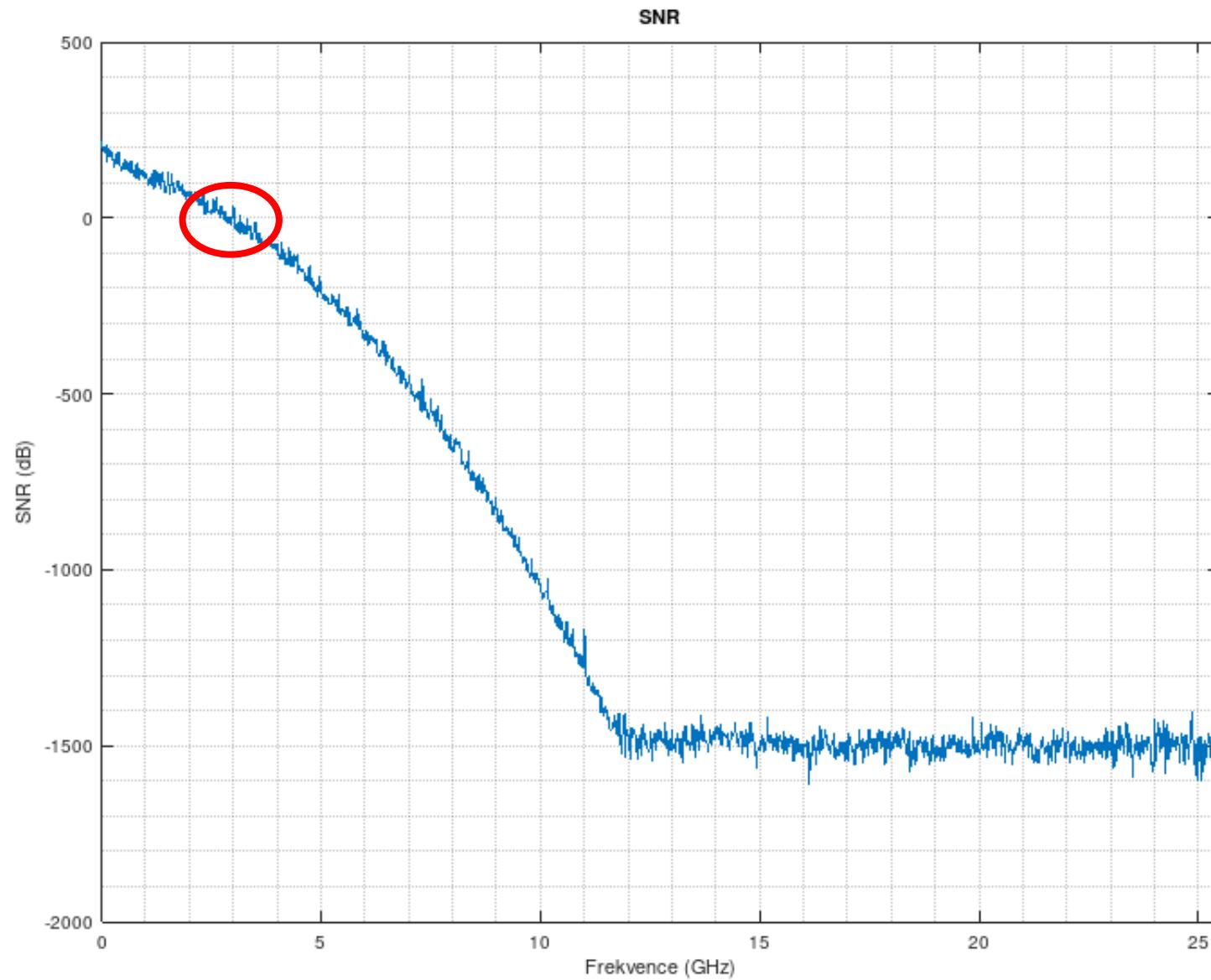


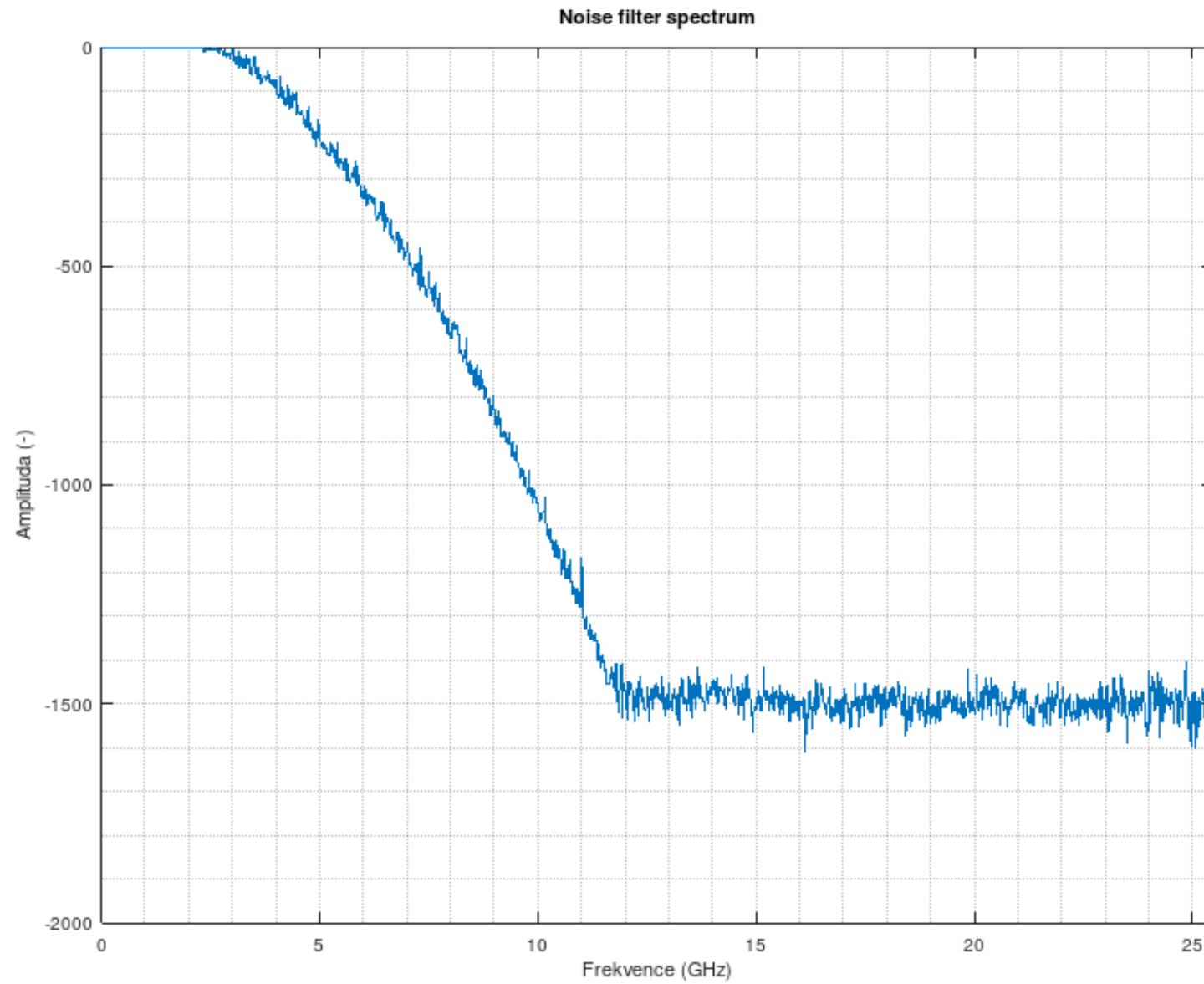


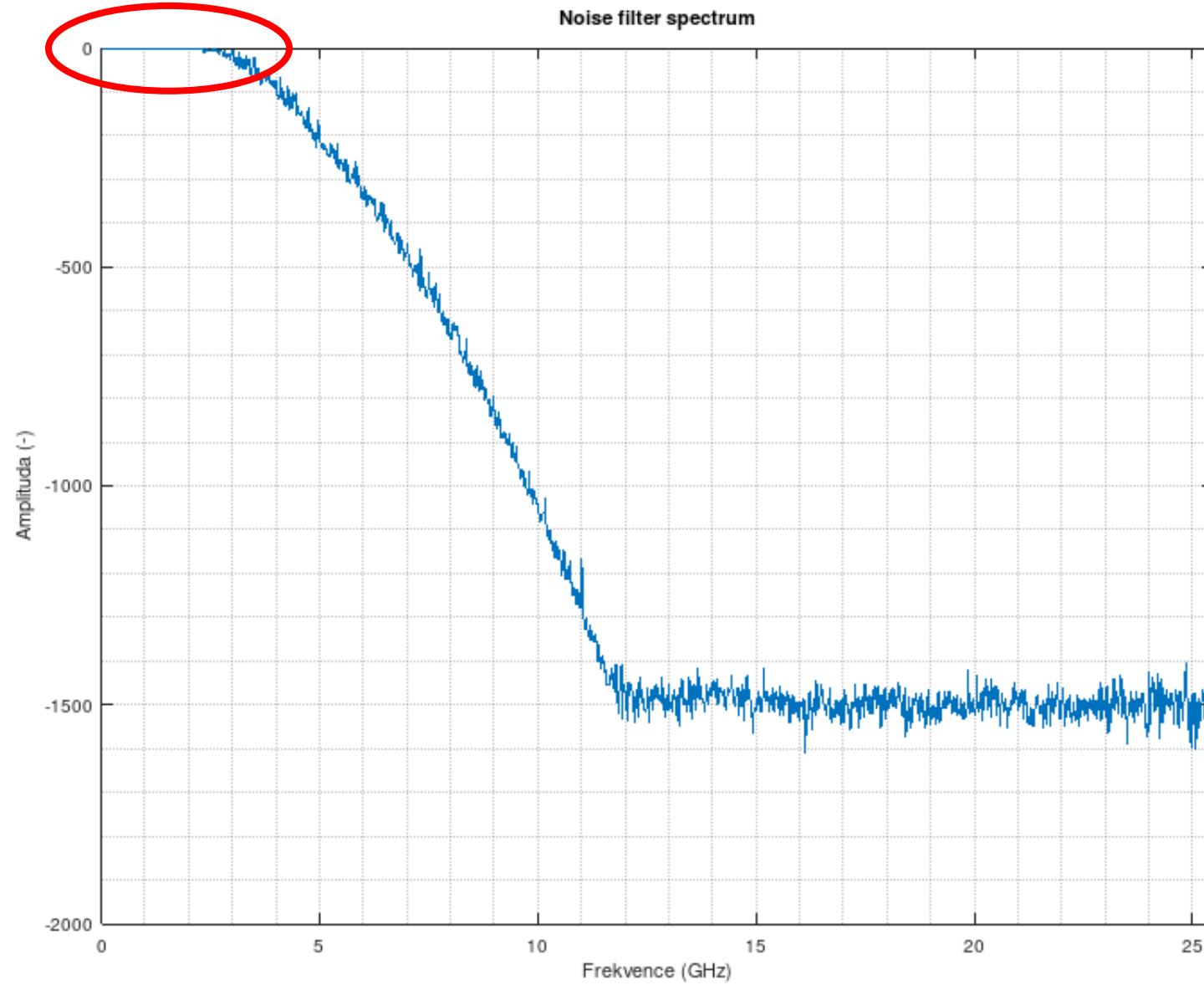
Gaussian spectrum



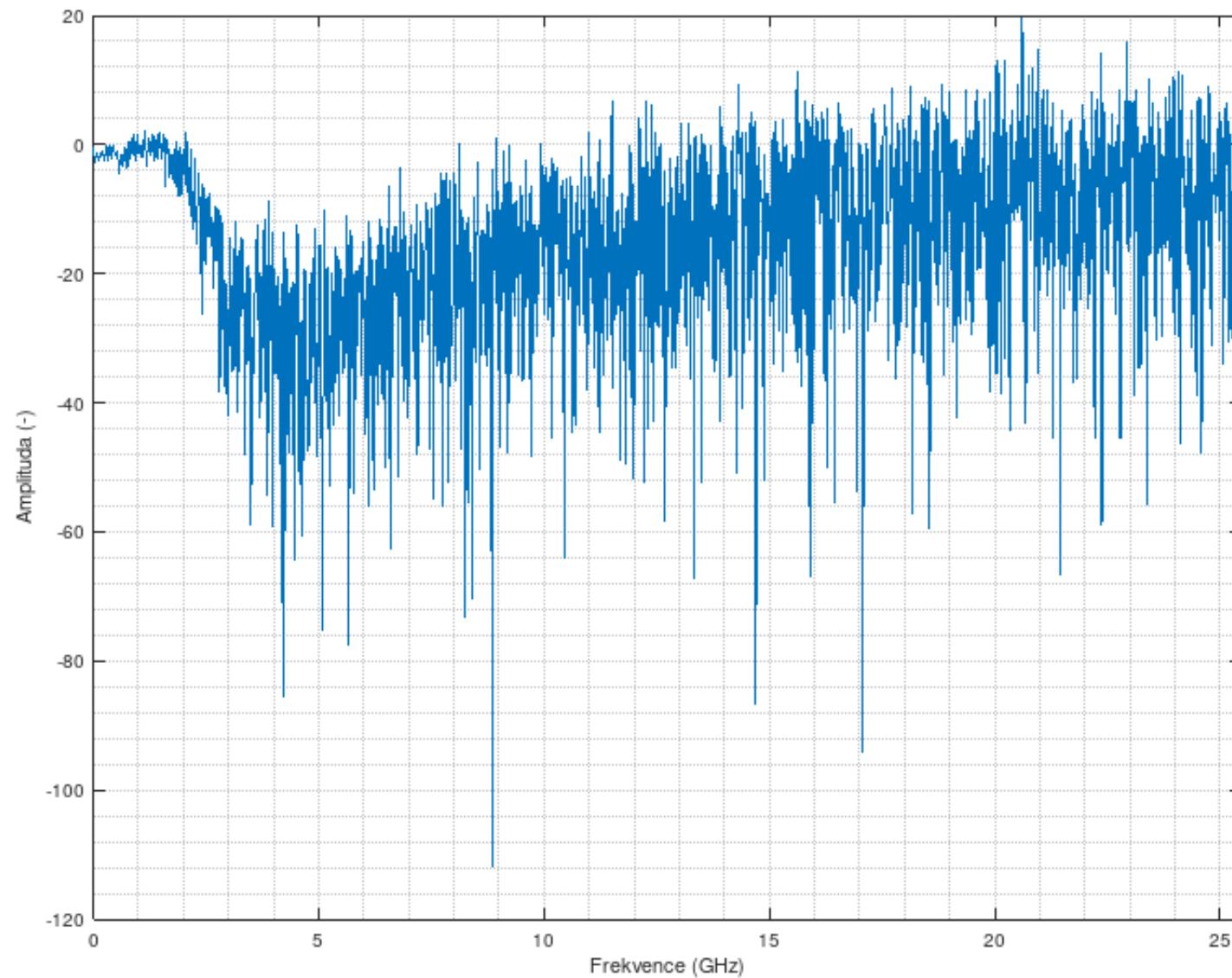


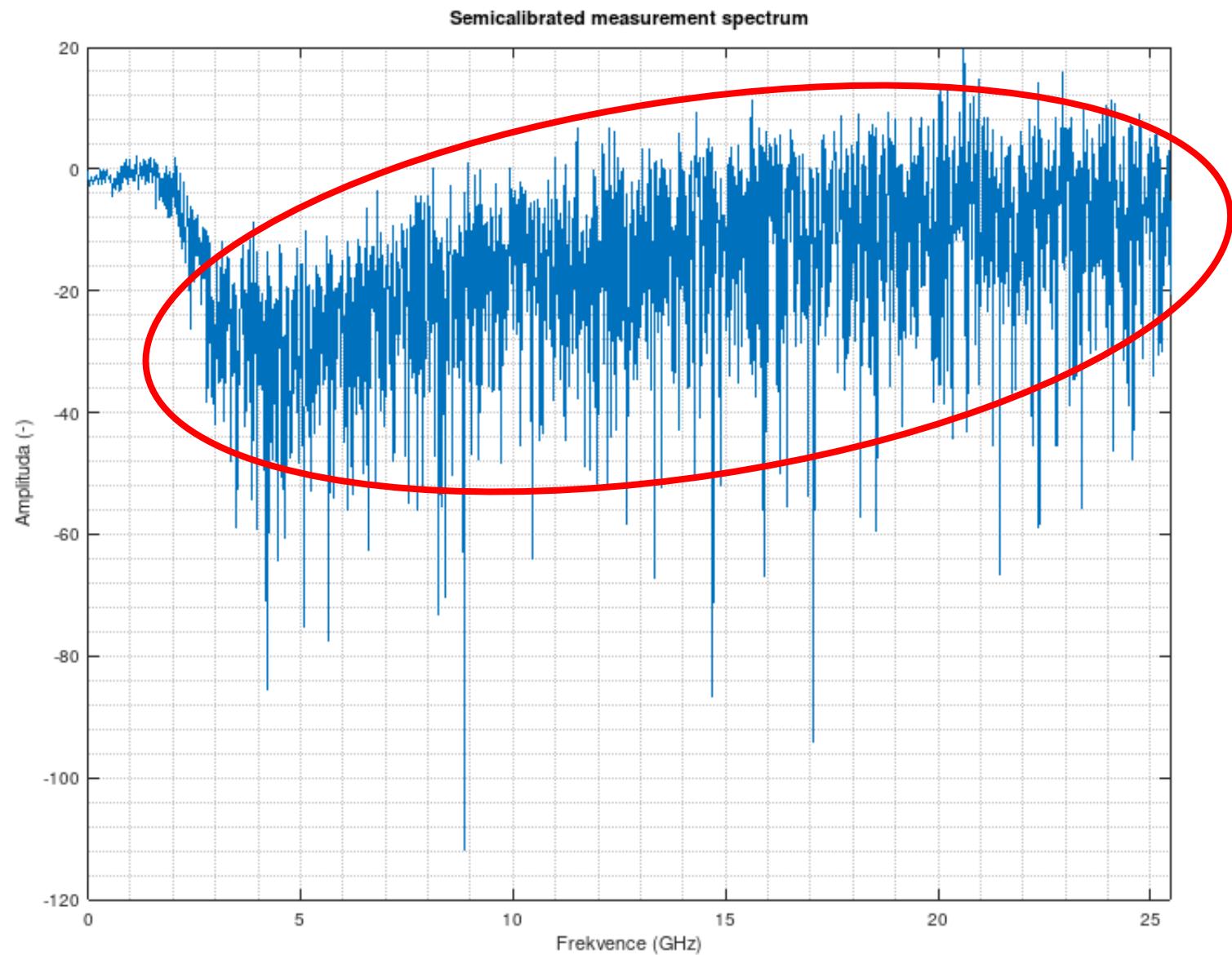


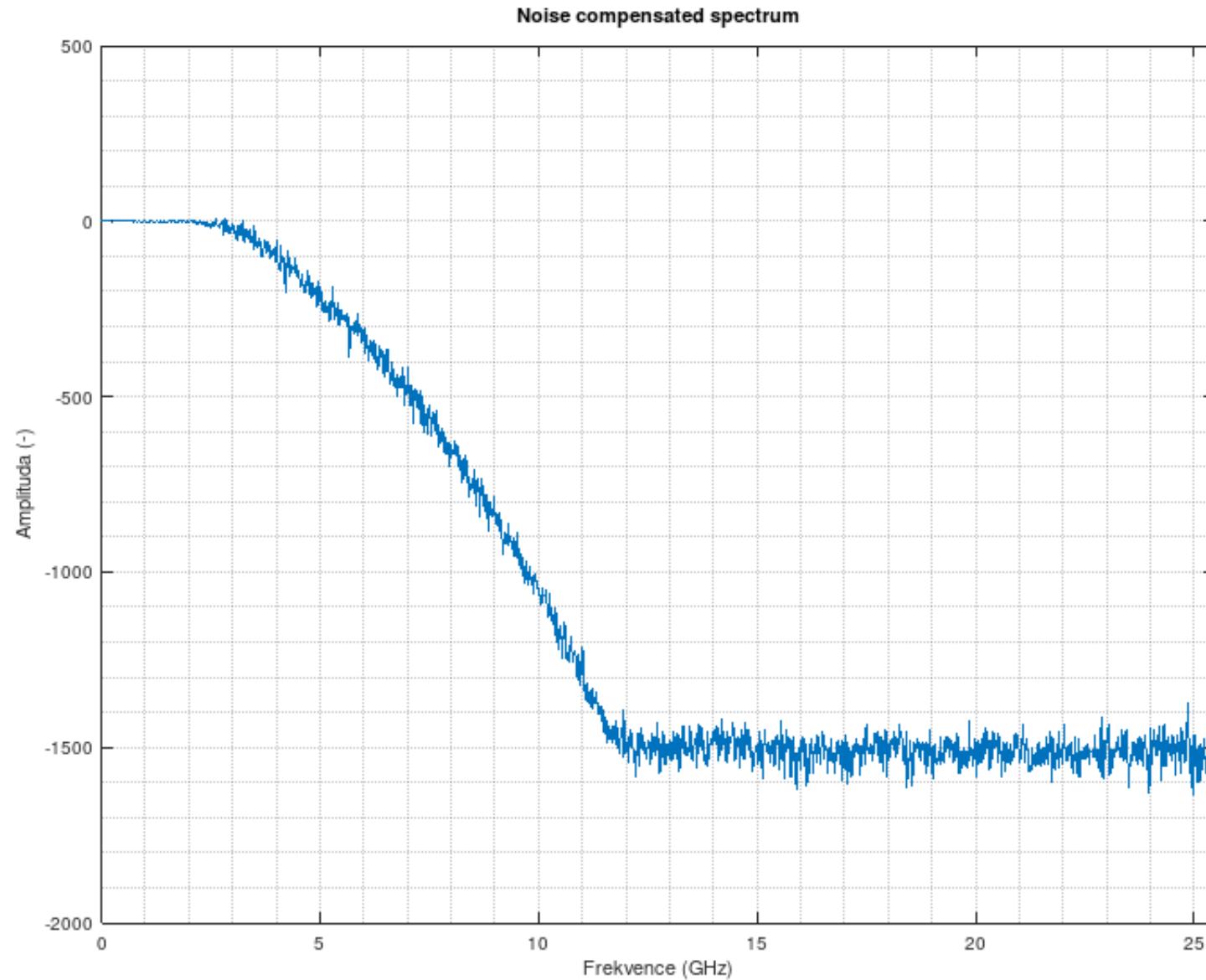


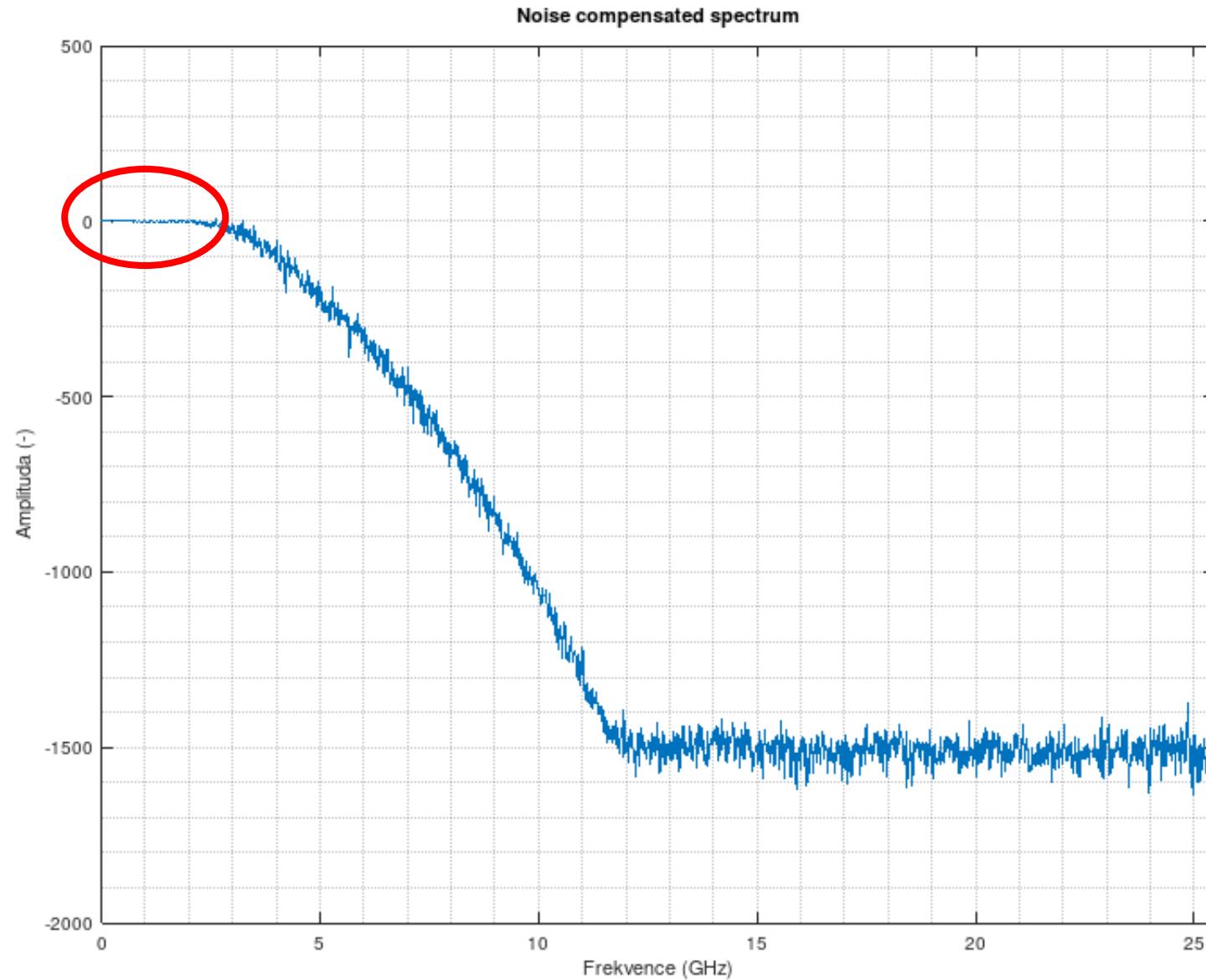


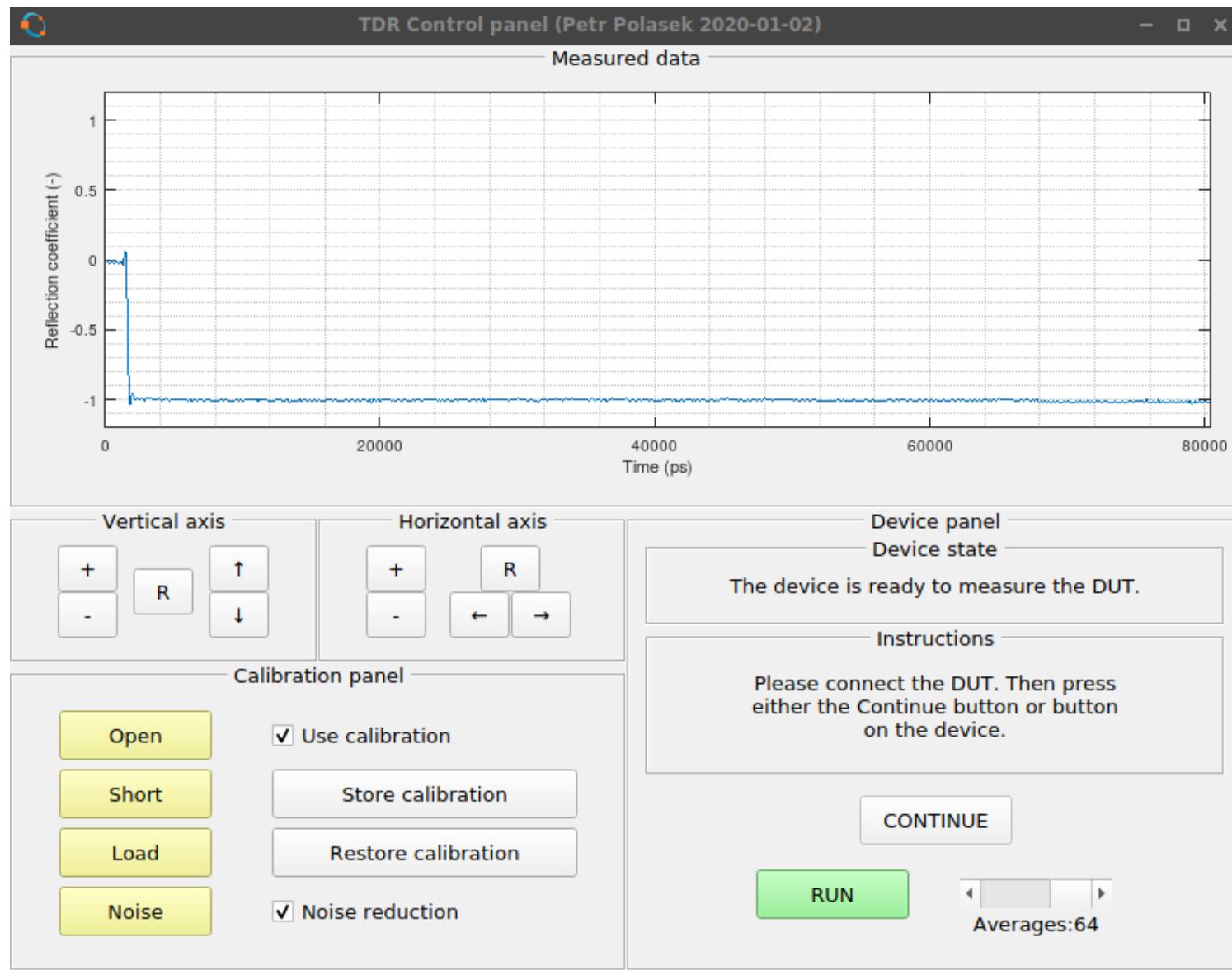
Semicalibrated measurement spectrum





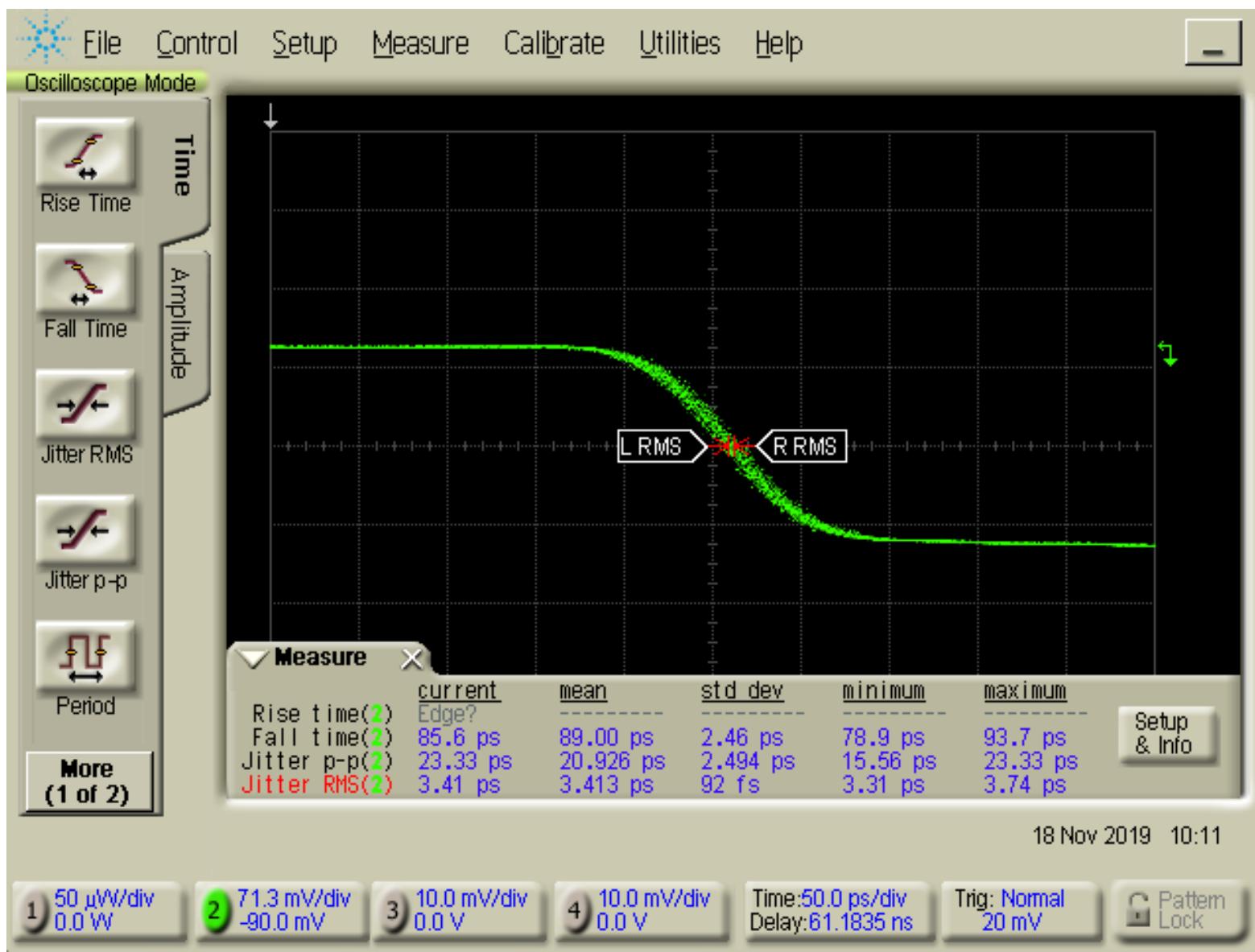






Změřené parametry

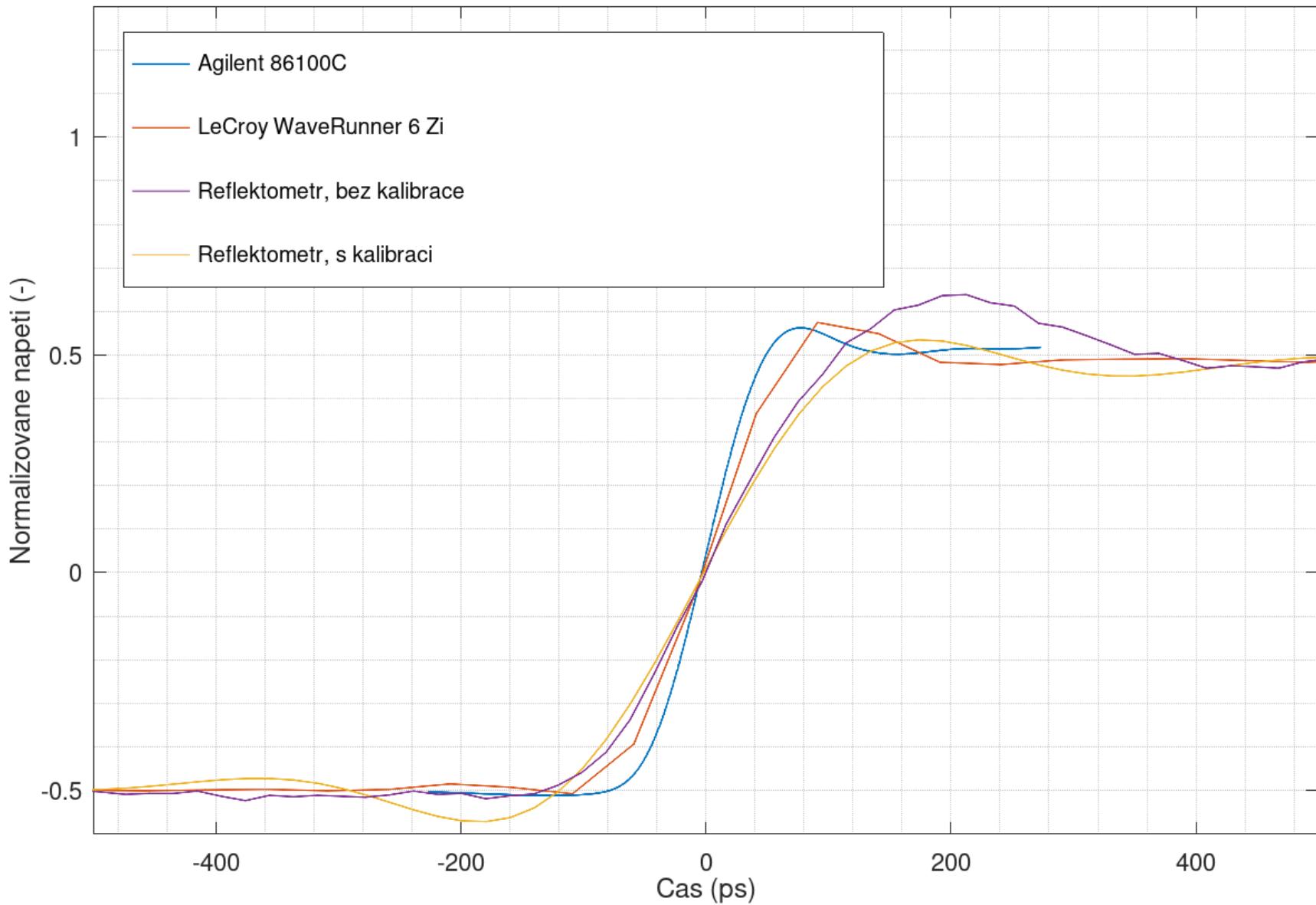
$$t_r = 89 \text{ ps}, t_{j-pp} = 21 \text{ ps}, t_{j-RMS} = 3.4 \text{ ps}$$



18 Nov 2019 10:11

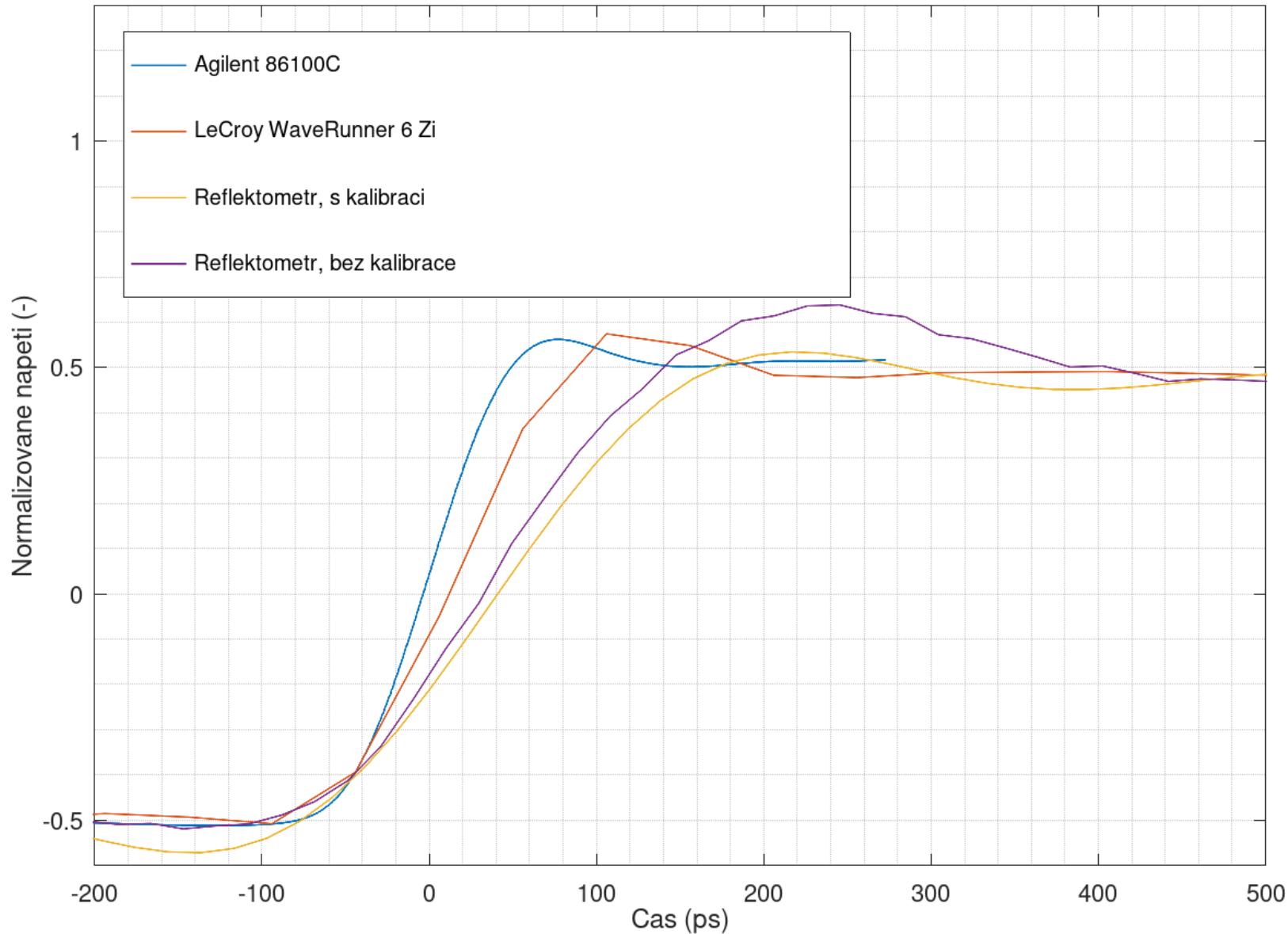
$t_r = 220 \text{ ps}$

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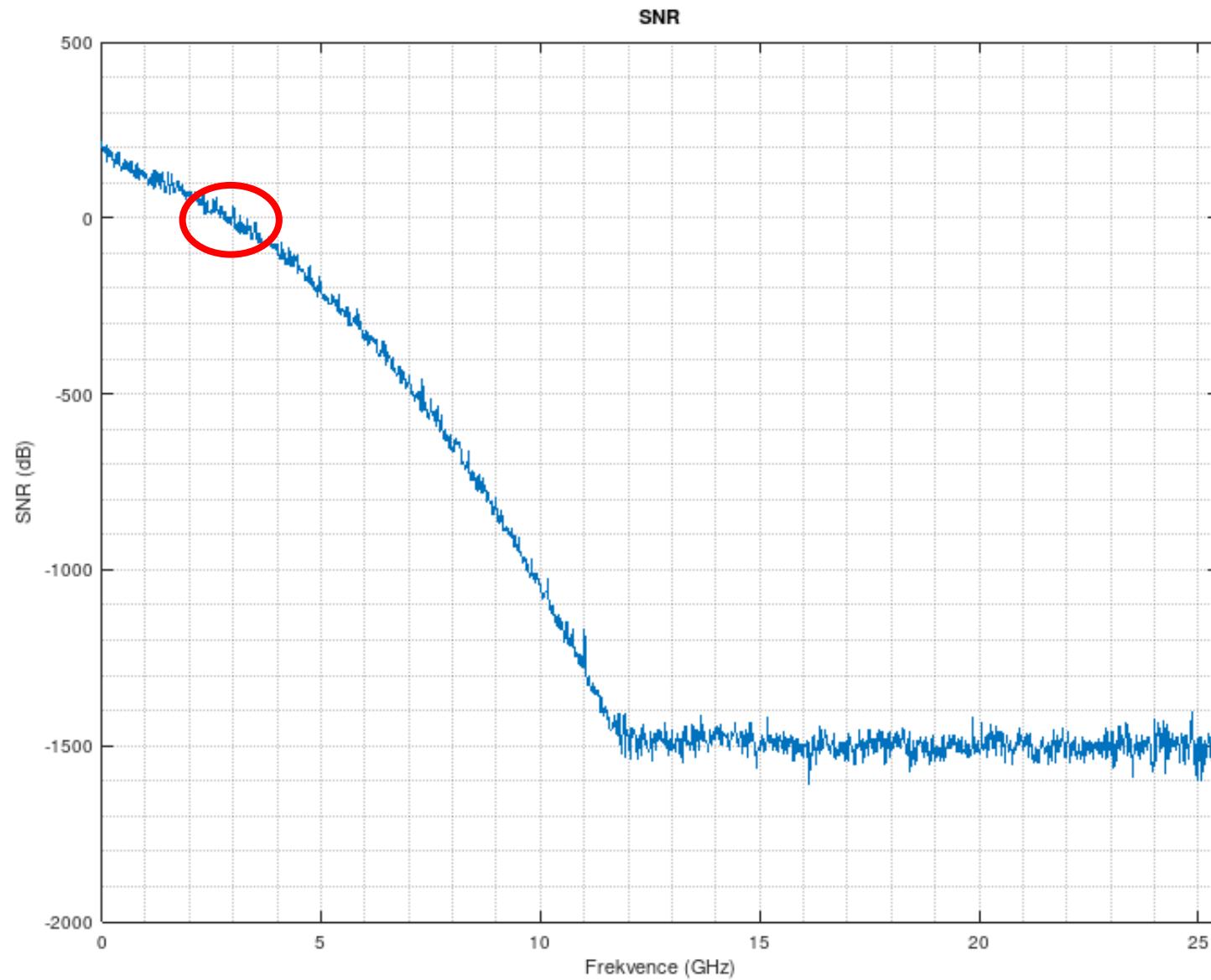


$t_r = 220 \text{ ps}$

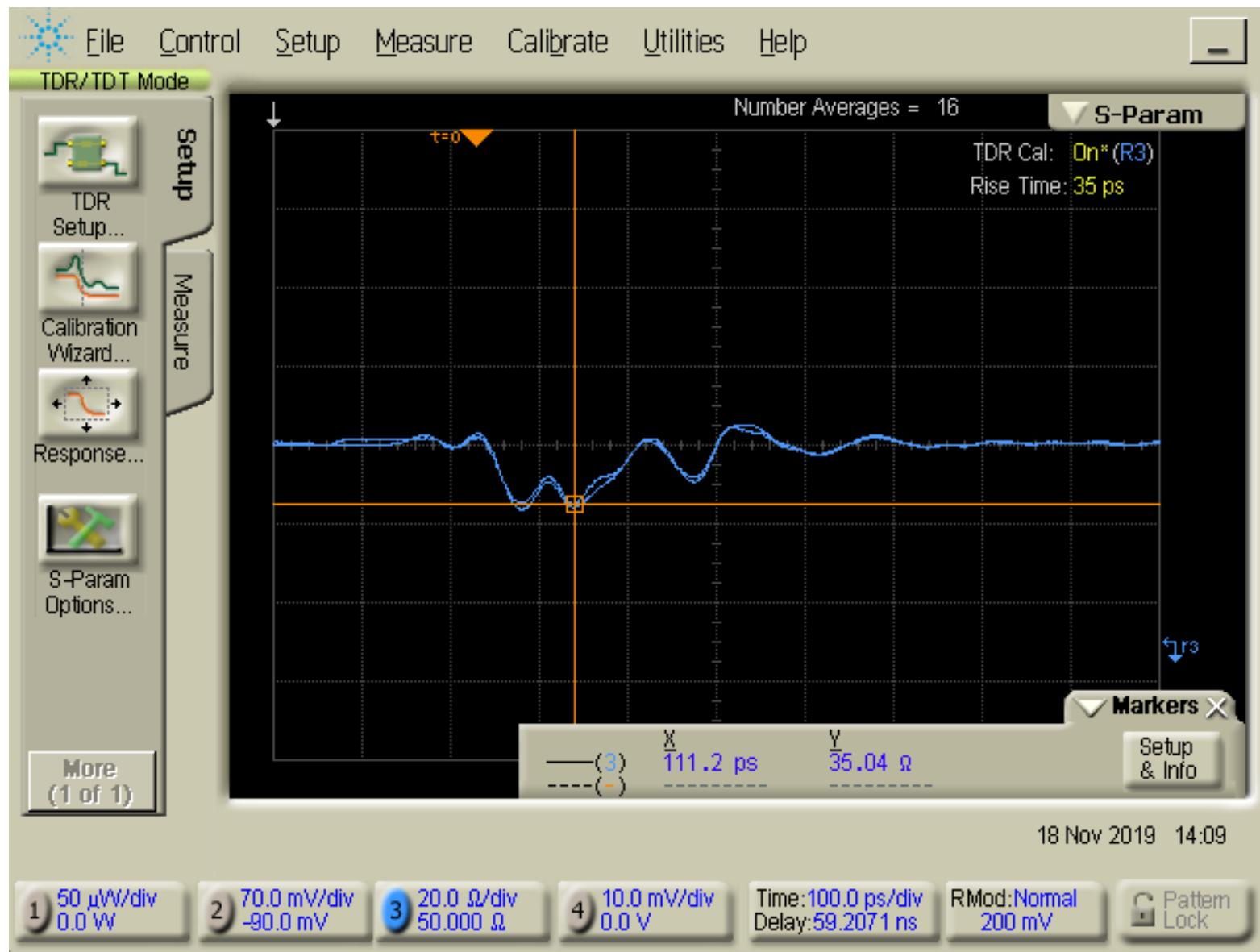
74/78



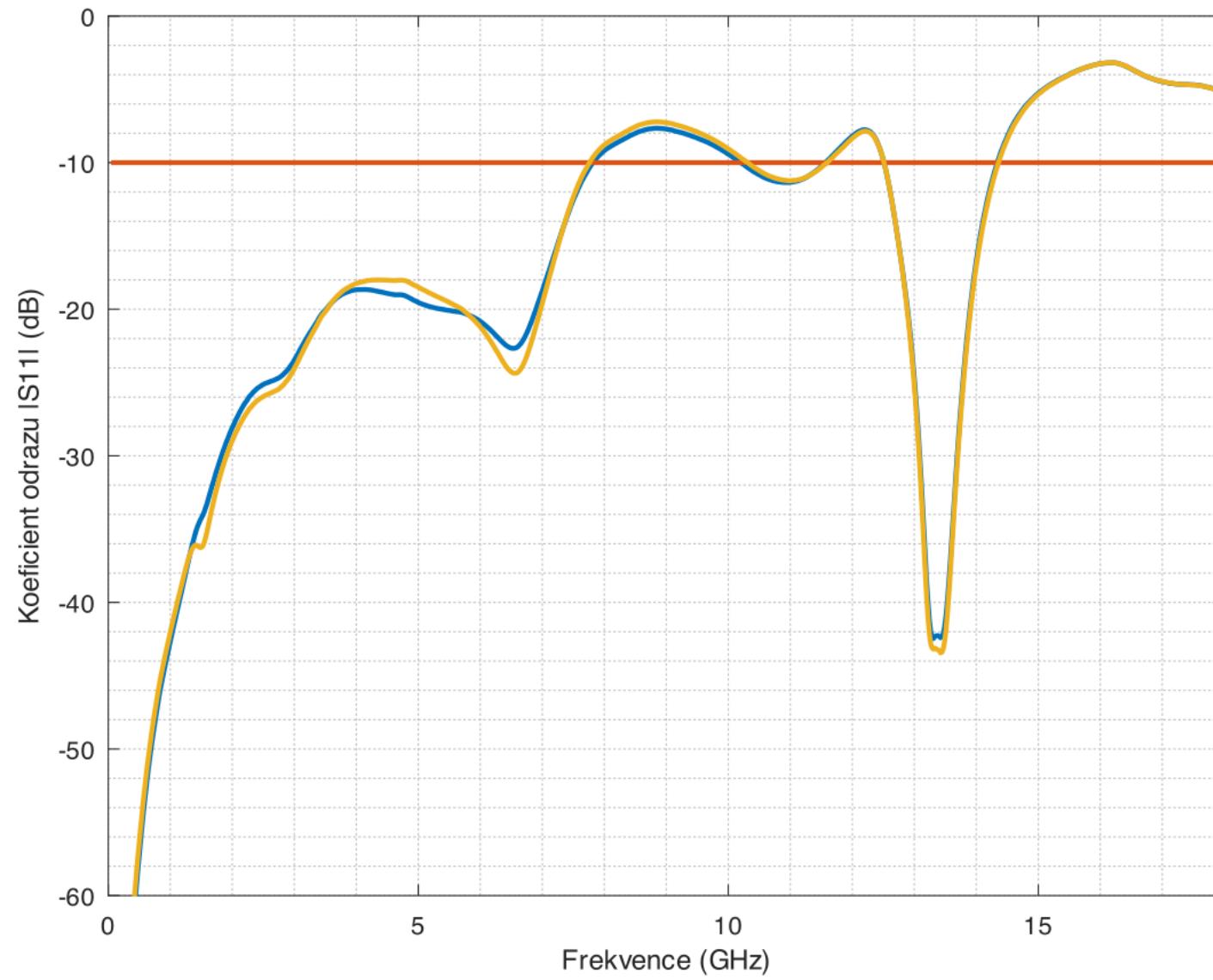
$$f_{MAX} \approx 2.5 \text{ GHz}$$



$Z_{in} > 35 \Omega$



$$|S_{11}| < -24 \text{ dB}, f < 3 \text{ GHz}$$



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