Modified Input Stage - frequency response measurement – 2nd Part

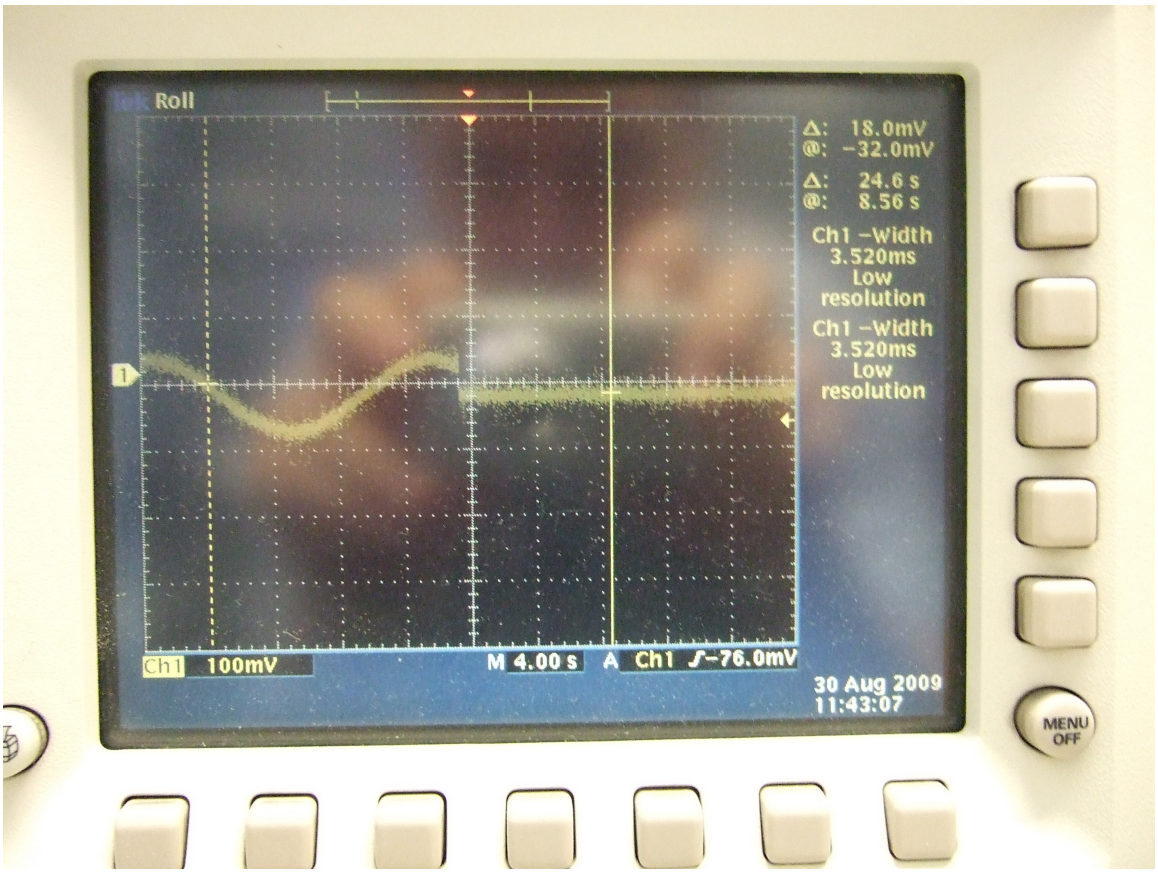
by: WMarton
DUT: Ch.1 on WELEC W2024A, FW: 1.2.OS.091

Measurement equipment: Signal Generator HP8642B, Oscilloscope TDS3034

Target - Recheck Frequency Response of OPA657 input circuit
- deactivate input voltage divider to exclude ev. additional (LP) frequency influence

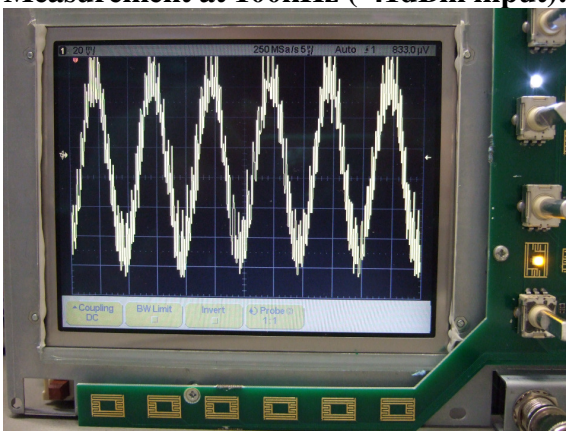
Evaluation: W2024 and TDS3034 on pin8 of U10 in parallel, input of MAX4704 (pin12) disconnected

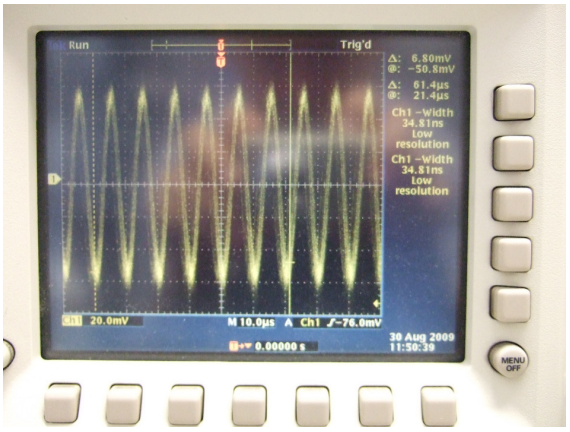
Observation – very low frequency (~0,05Hz) oscillation when open input (toggling 50 Ohm on the input stops it):



VLF instability on open input

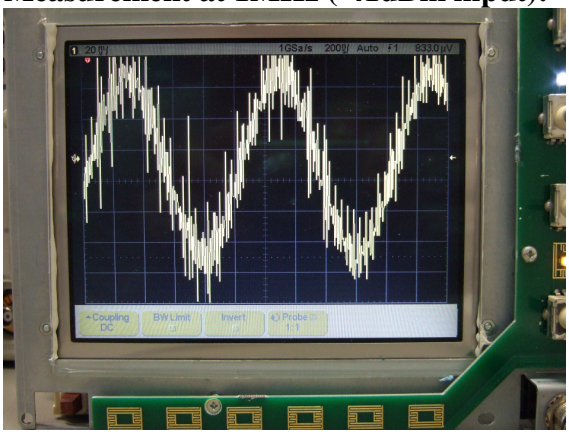
Measurement at 100kHz (-41dBm input):

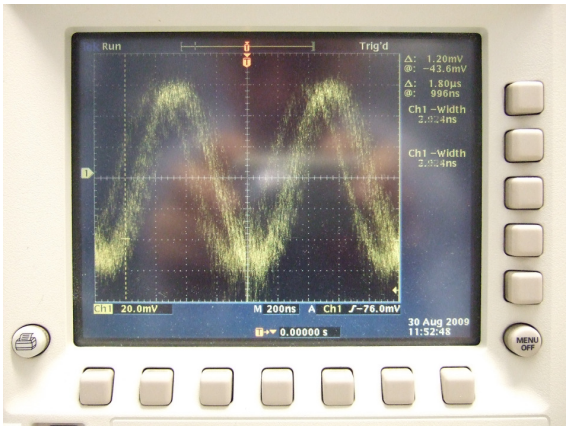




Amplitude readout: 6div on W2024 6div on TEK

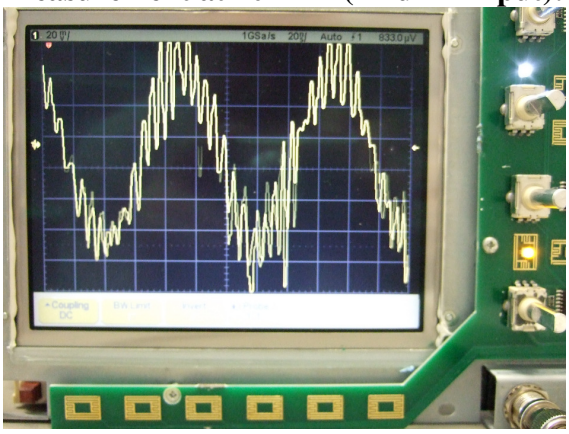
Measurement at 1MHz (-41dBm input):

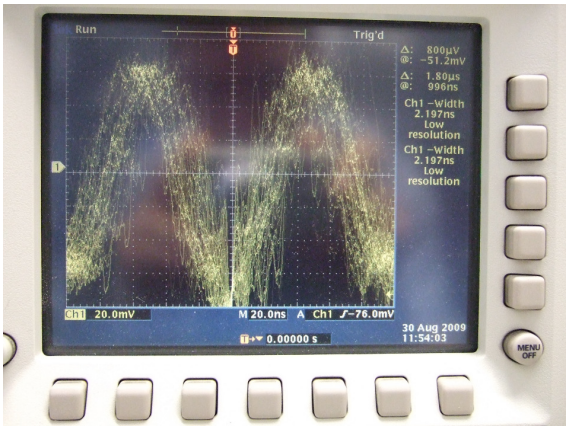




Amplitude readout: 6div on W2024 6div on TEK

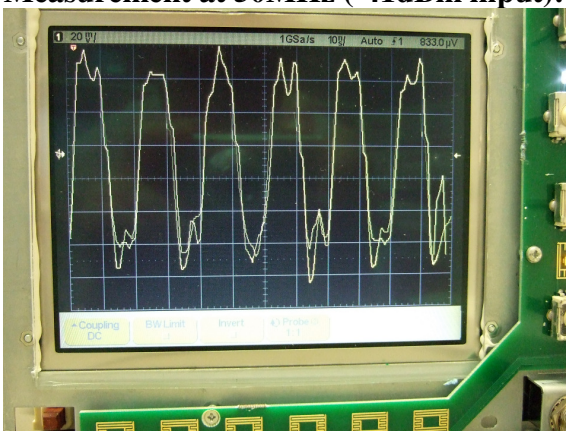
Measurement at 10MHz (-41dBm input):

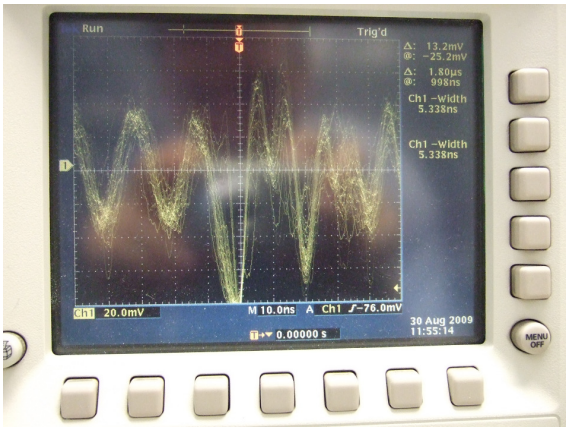




Amplitude readout: 6div on W2024 6div on TEK

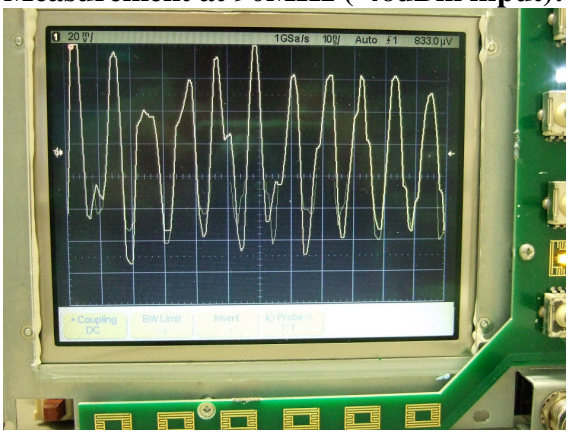
Measurement at 50MHz (-41dBm input):

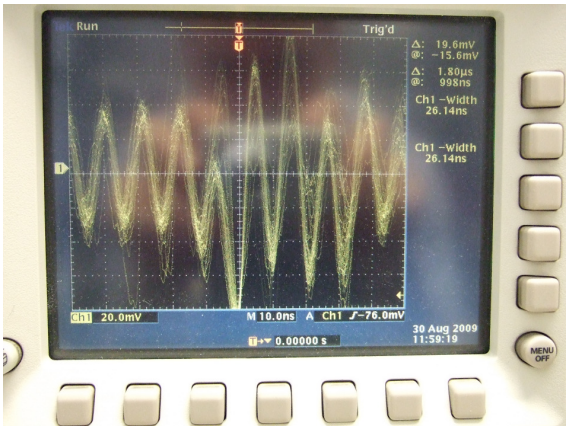




Amplitude readout: 6div on W2024 3,5div on TEK ≈ -4,5dB total

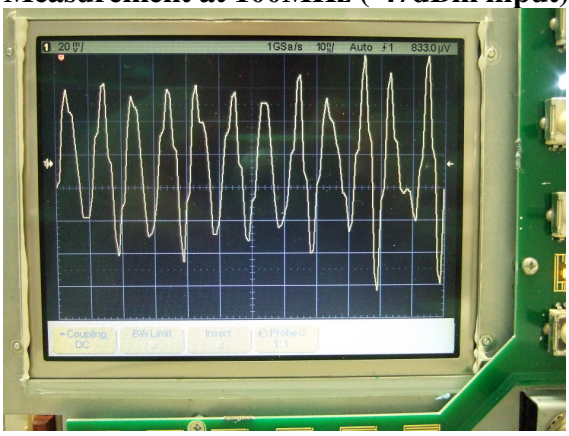
Measurement at 90MHz (-46dBm input):

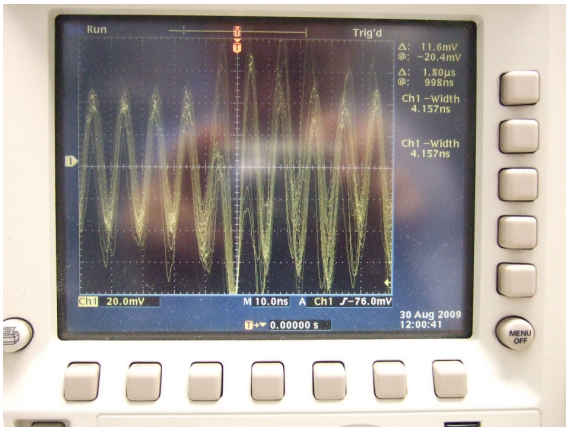




Amplitude readout: 5div on W2024 ≈ 3,5dB 3,5div on TEK ≈ 0,5dB total

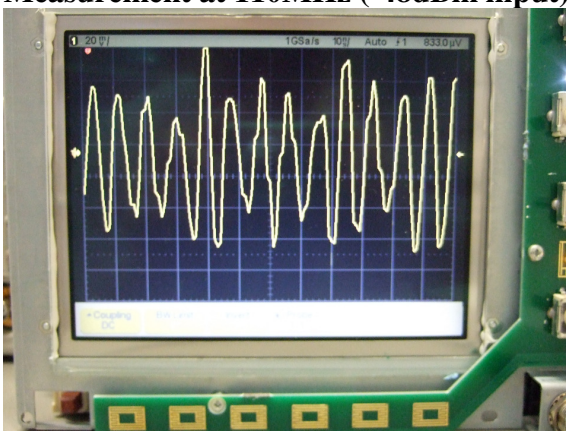
Measurement at 100MHz (-47dBm input):

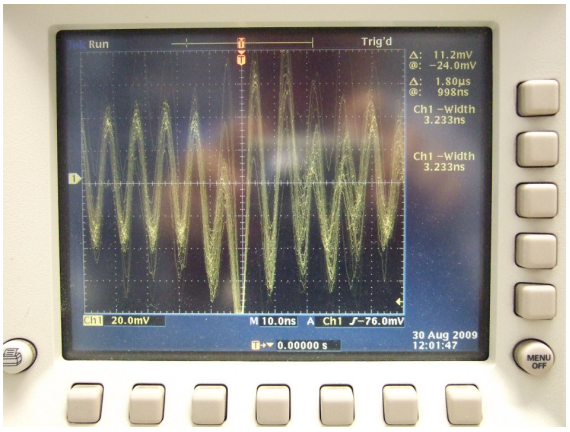




Amplitude readout: 4,5div on W2024 ≈ 3,5dB 3,5div on TEK ≈ 1,5dB total

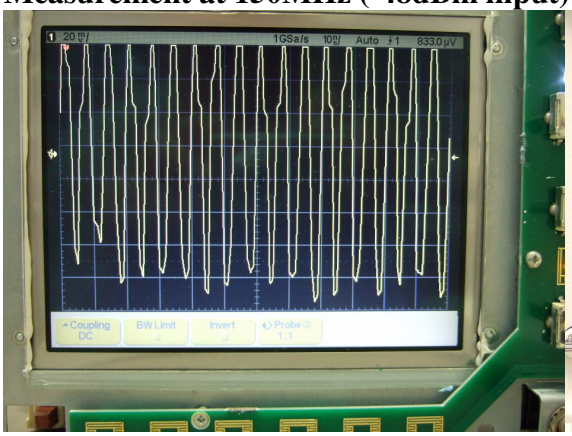
Measurement at 110MHz (-48dBm input):

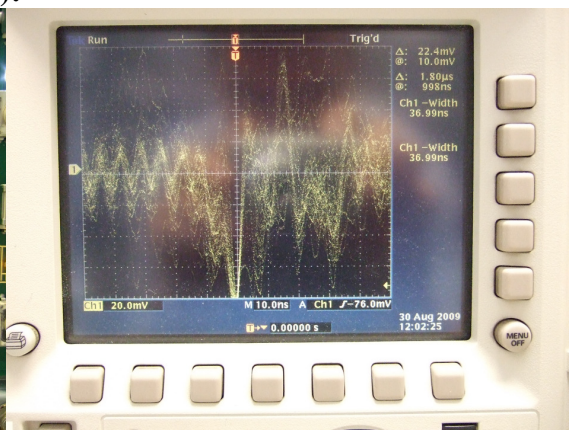




Amplitude readout: 3,5div on W2024 ≈ 2,5dB 3,5div on TEK ≈ 2,5dB total

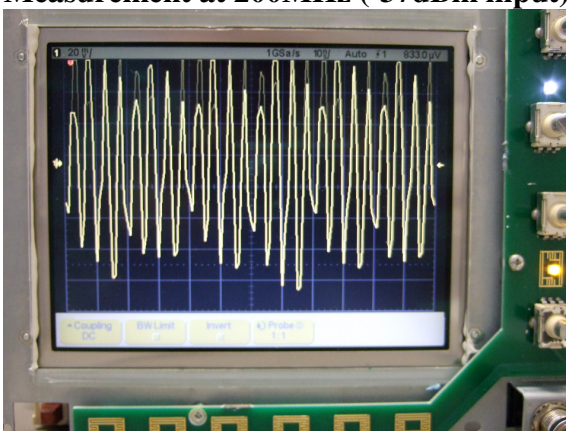
Measurement at 150MHz (-48dBm input):

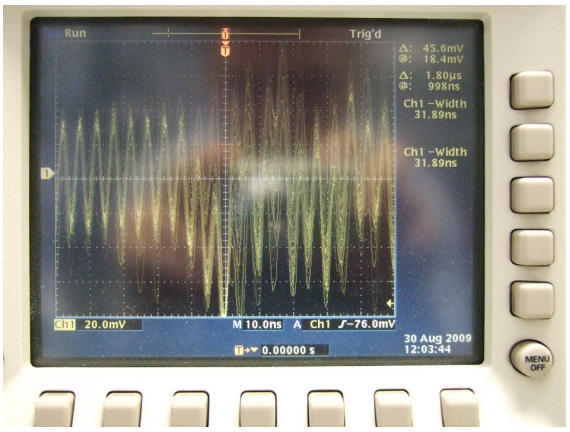




Amplitude readout: 7,5div on W2024 ≈ 10dB 2div on TEK ≈ -2,5dB total

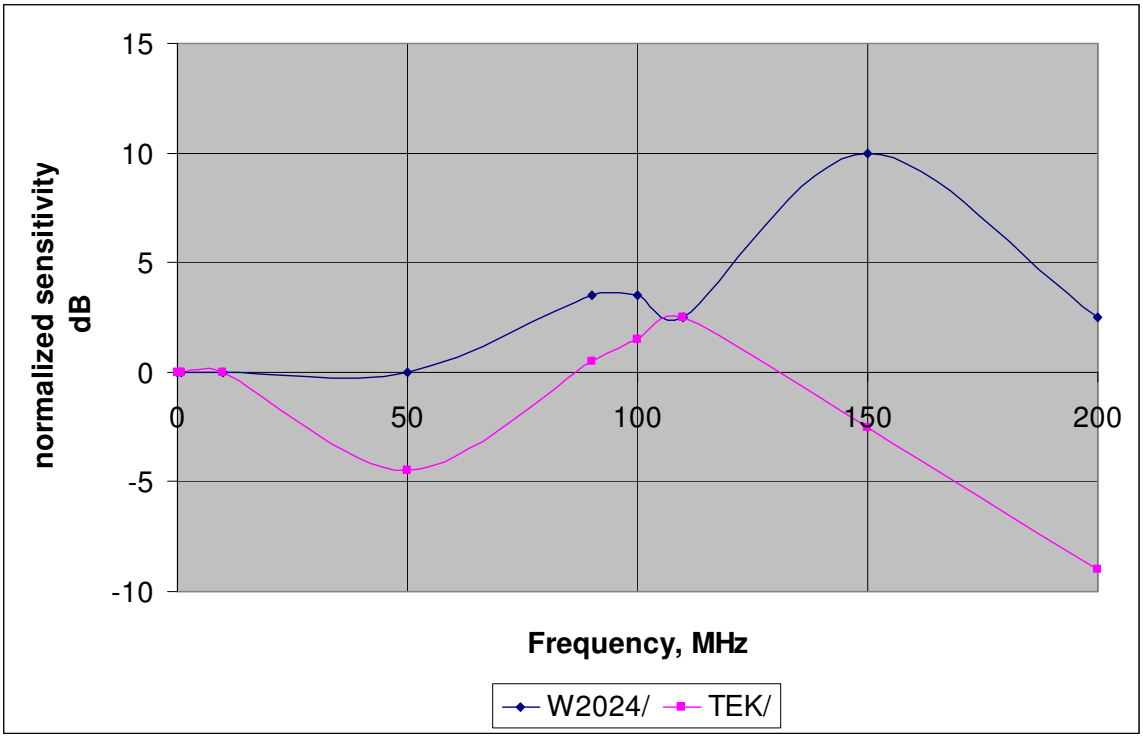
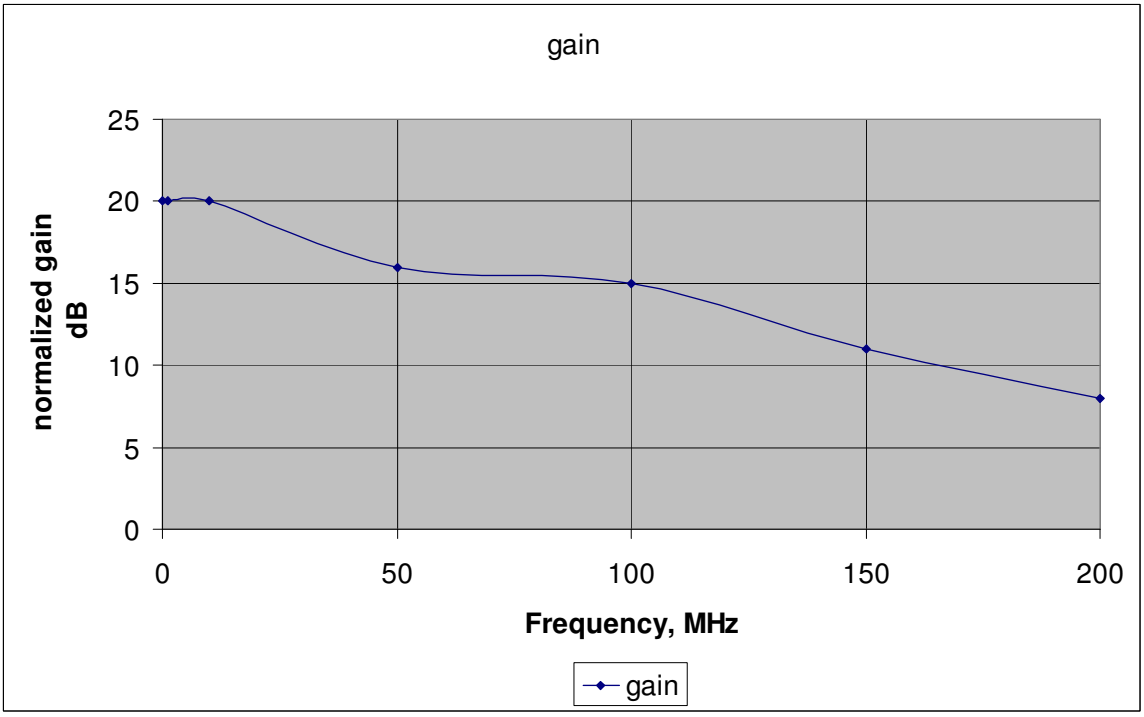
Measurement at 200MHz (-37dBm input):





Amplitude readout: 5div on W2024 ≈ 2,5dB 3div on TEK ≈ -9dB total

Due to strong disturbances and injected noise, the readouts are far away from being precise, but believed at least indicative for the measured frequency responses:



There is most likely some measurement mismatch to be neglected as the small drop of the blue curve (W2024) slightly above 100MHz.
Comparing the red curve (TEK, the gain of the inserted OPA657) with the results of the foregoing measurement series (below), there are similarities on the pole-frequencies at ~50MHz and ~100MHz and a difference in the behavior above 50MHz, which could be a result of a TP function of the input voltage divider.