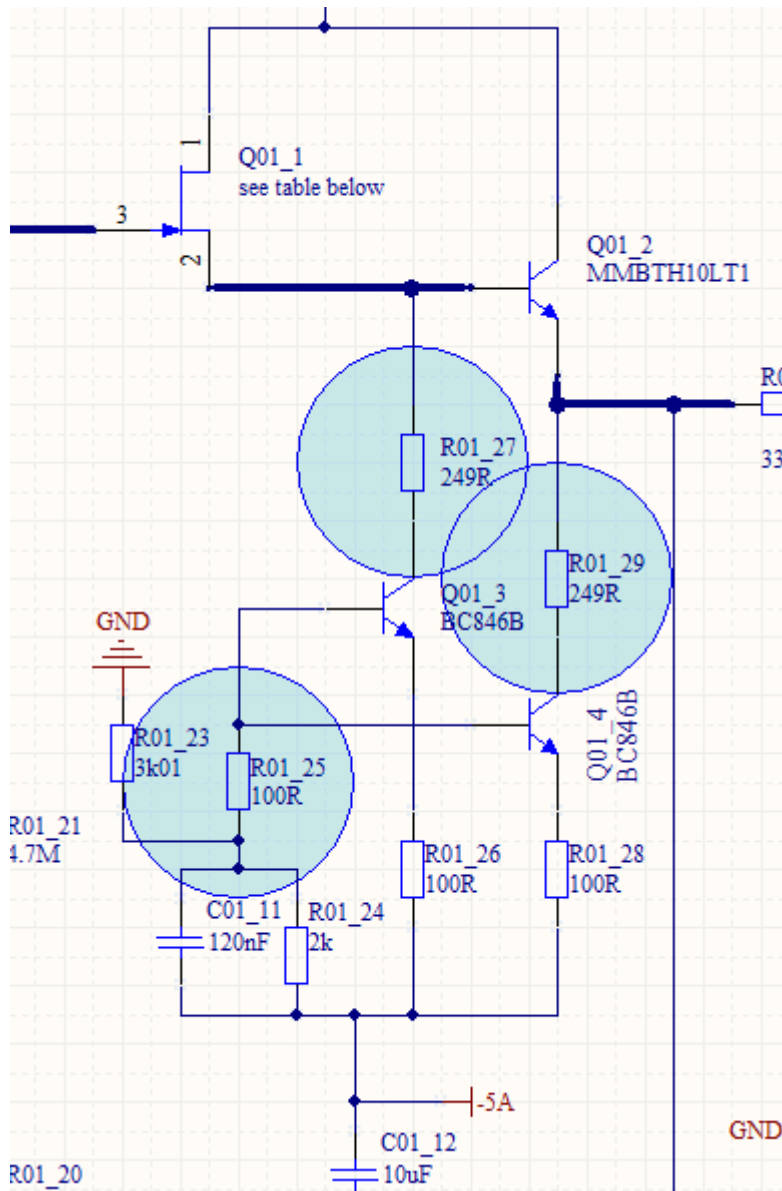
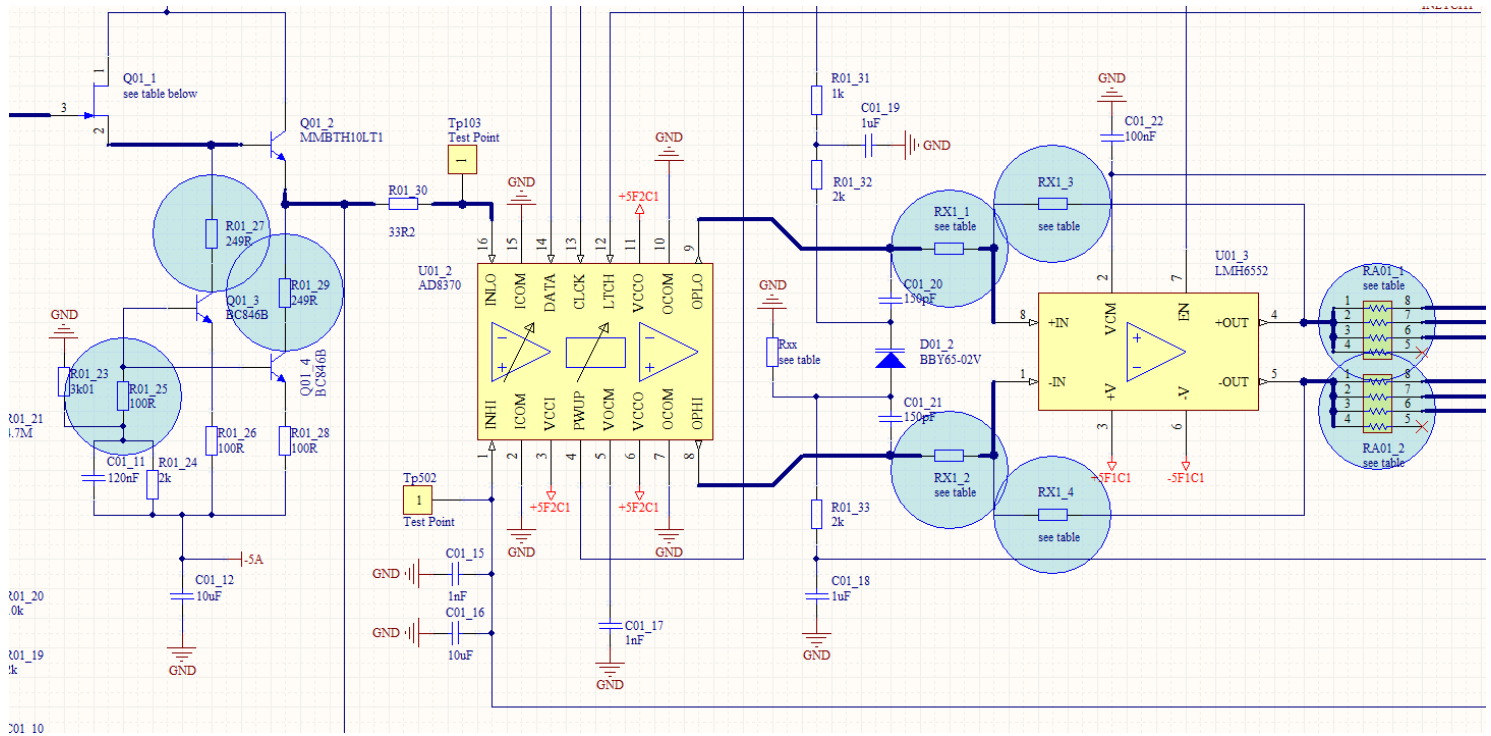


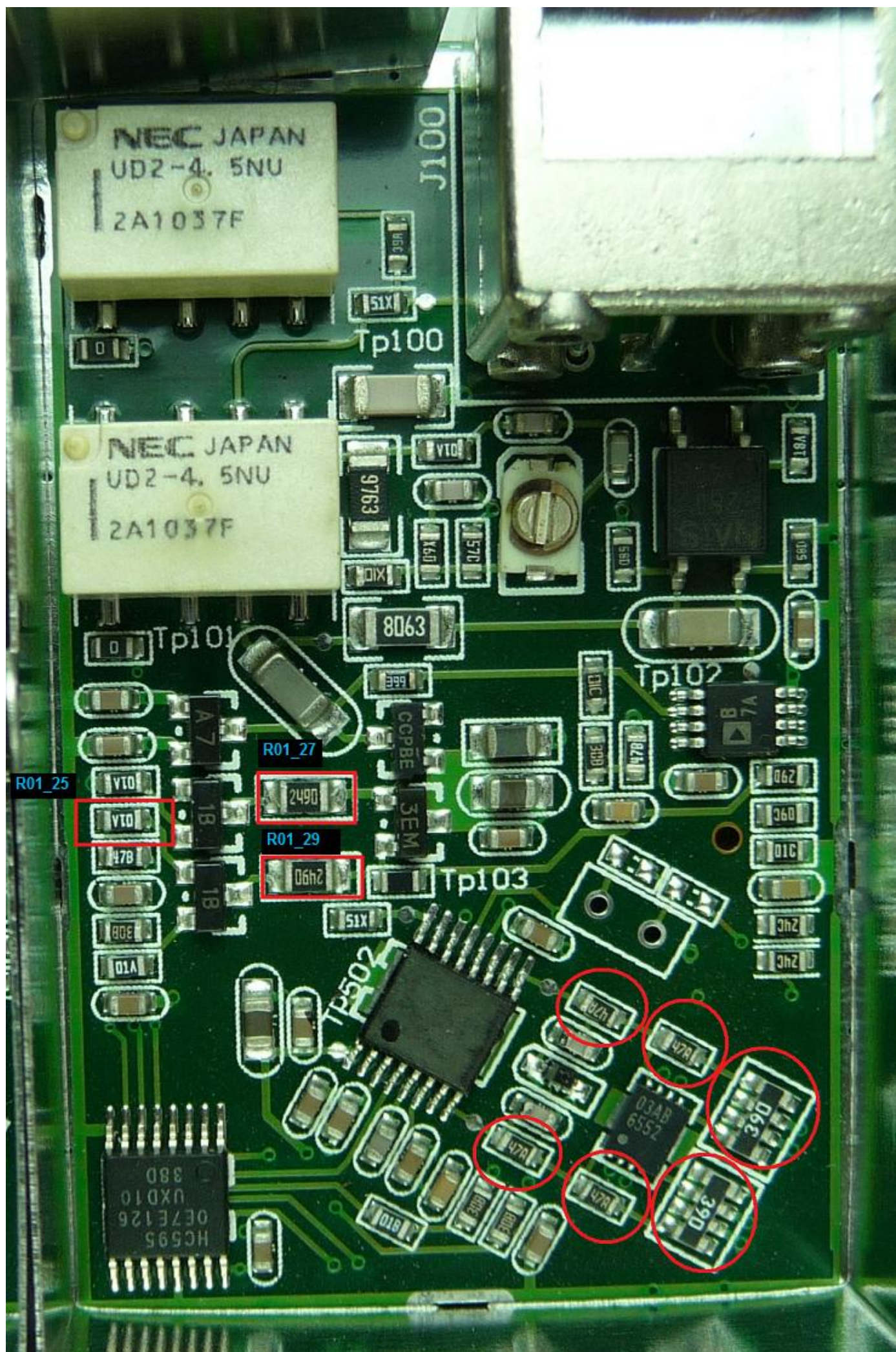
Tekway DST1062B/DST1102B, Hantek DSO5062B/DSO5102B, Voltcraft DSO1062D/DSO3062C modifications.

After 200MHz bandwidth hack all blue marked parts need to be replaced to allow proper frequency and pulse response.



ArnoR tweak
(as proposed by user "ArnoR" on microcontroller.net forum)

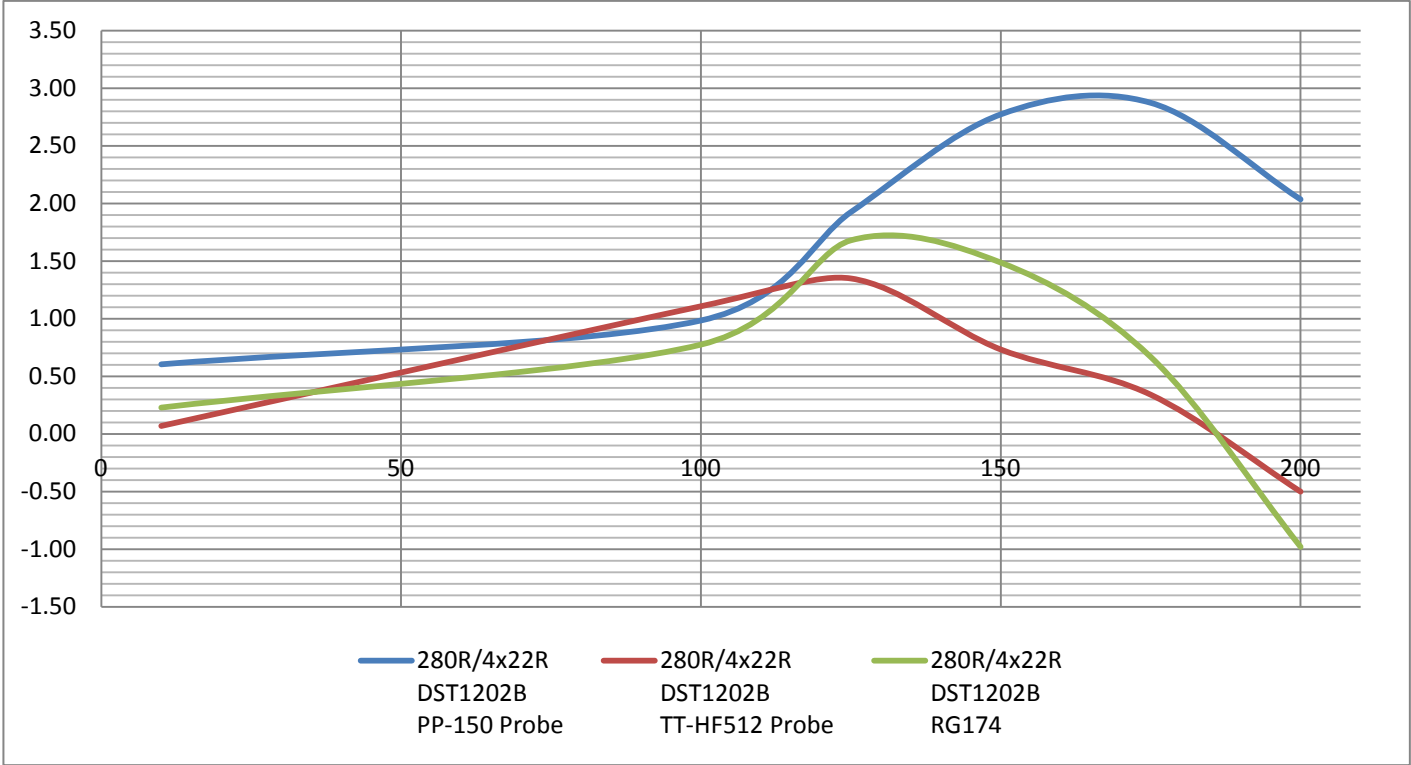
R01_27 – change to 125R
R01_29 – change to 0R
R01_25 – change to 0R
(or 24R4, or 50R <- to achieve best result see below in text)

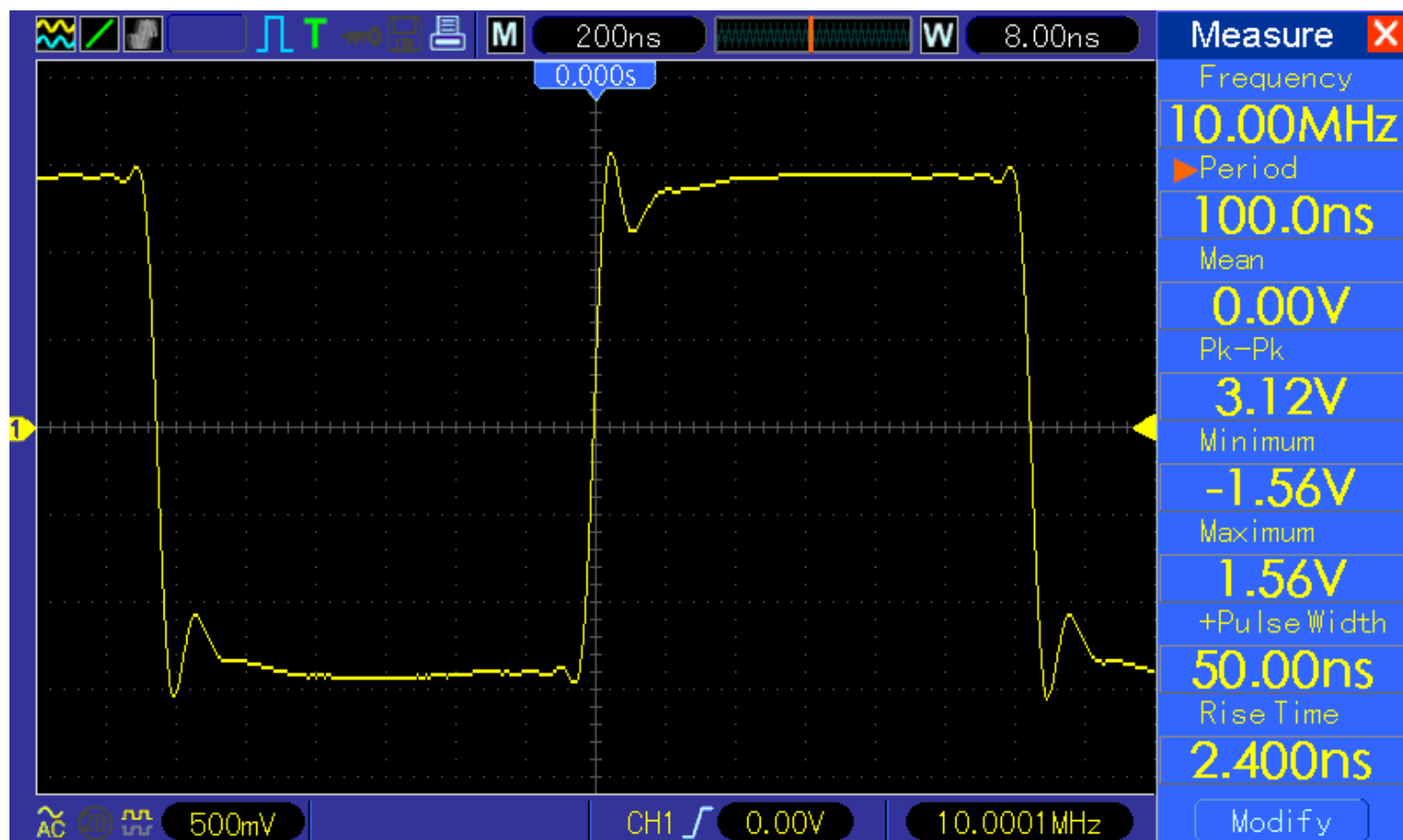
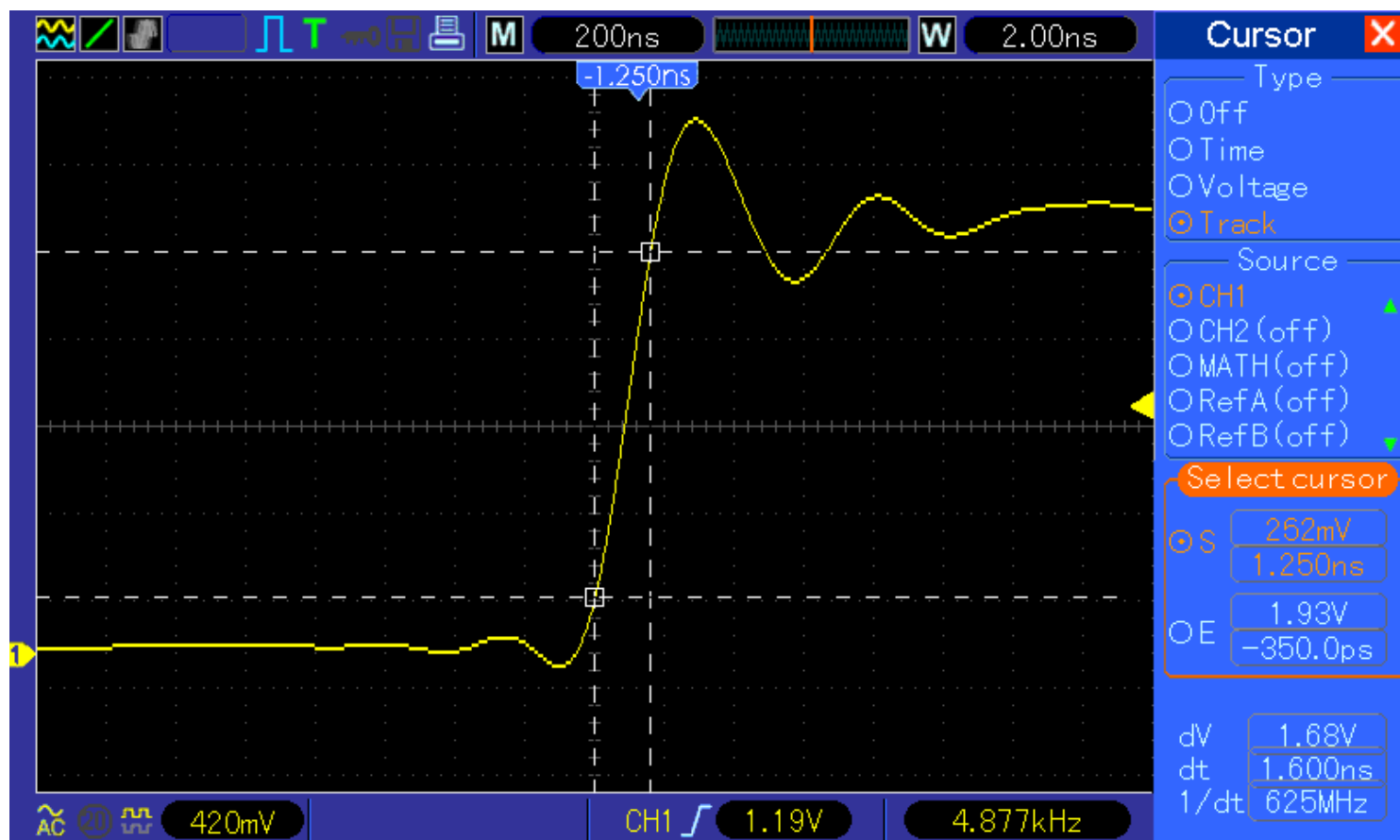


Original hw1007 input stage:

RX1=RX2=RX3=RX4= 280R
RA1=RA2= 4 x 22R array

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.68	239.70	0.60	280R/4x22R DST1202B PP-150 Probe
100	2.8	250.43	0.98	
125	3.12	279.05	1.92	
150	3.44	307.67	2.77	
175	3.48	311.25	2.87	
200	3.16	282.63	2.03	
10	2.52	225.39	0.07	280R/4x22R DST1202B TT-HF512 Probe
100	2.84	254.01	1.11	
125	2.92	261.16	1.35	
150	2.72	243.28	0.73	
175	2.6	232.54	0.34	
200	2.36	211.08	-0.50	
10	3.08	229.56	0.23	280R/4x22R DST1202B RG174
100	3.28	244.47	0.78	
125	3.64	271.30	1.68	
150	3.56	265.34	1.49	
175	3.24	241.49	0.67	
200	2.68	199.75	-0.98	

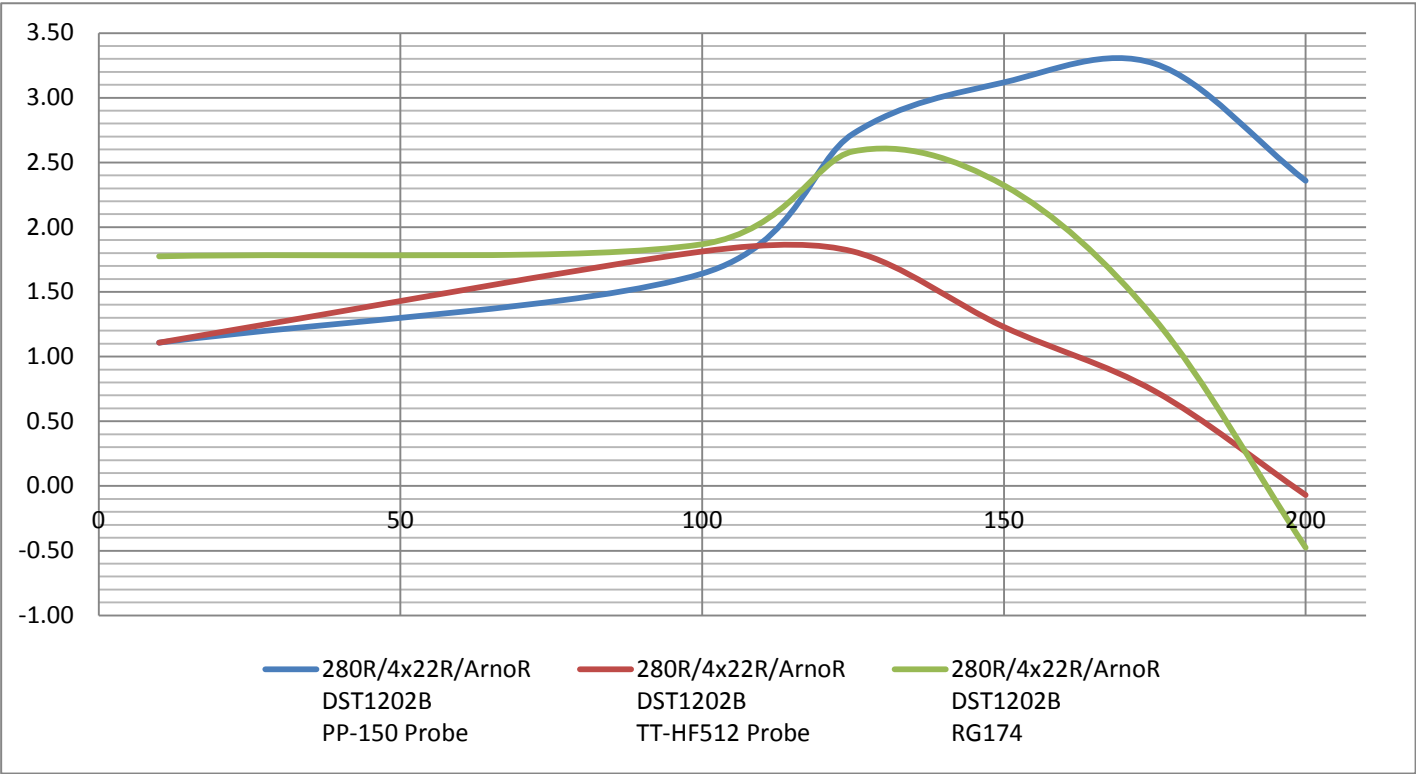


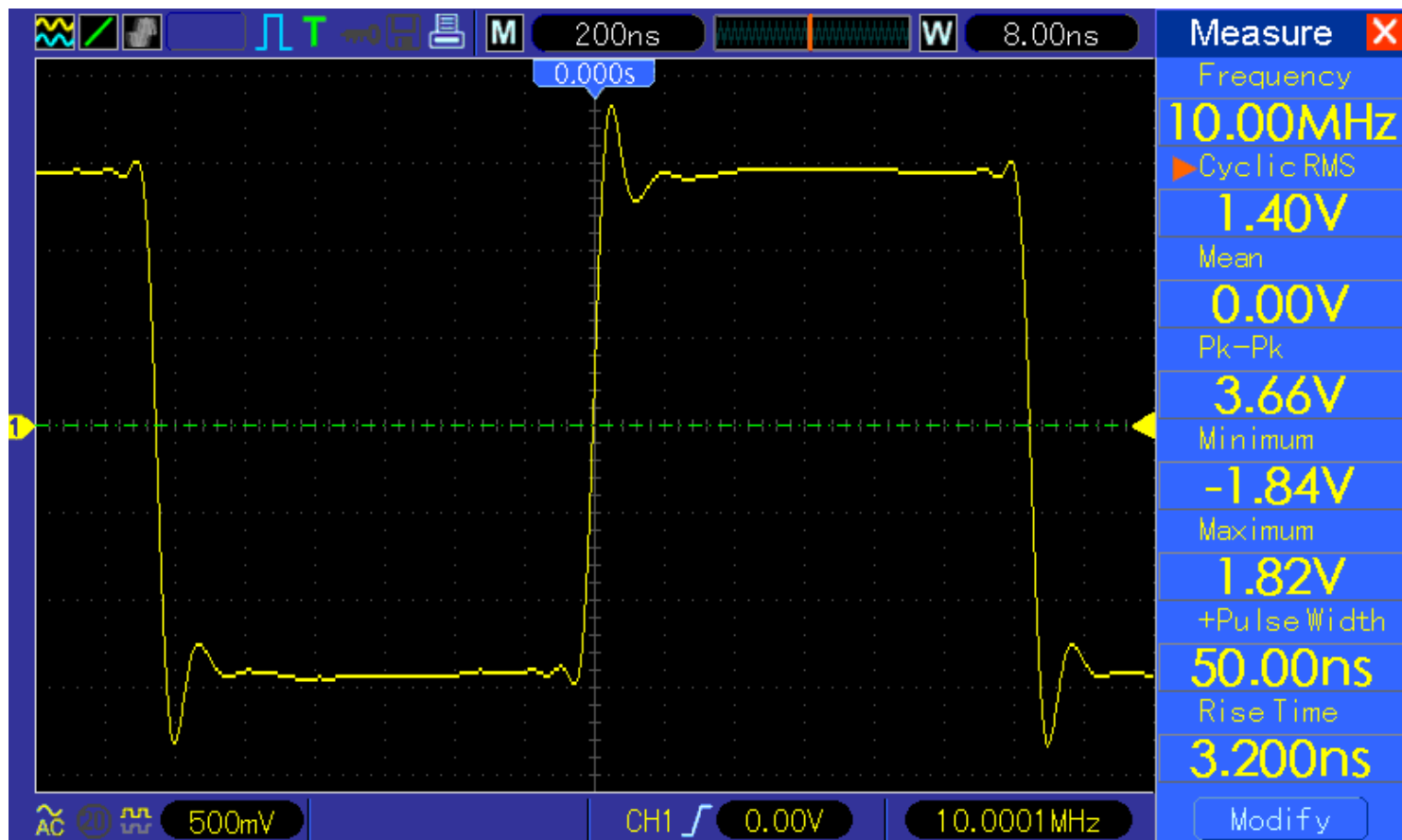
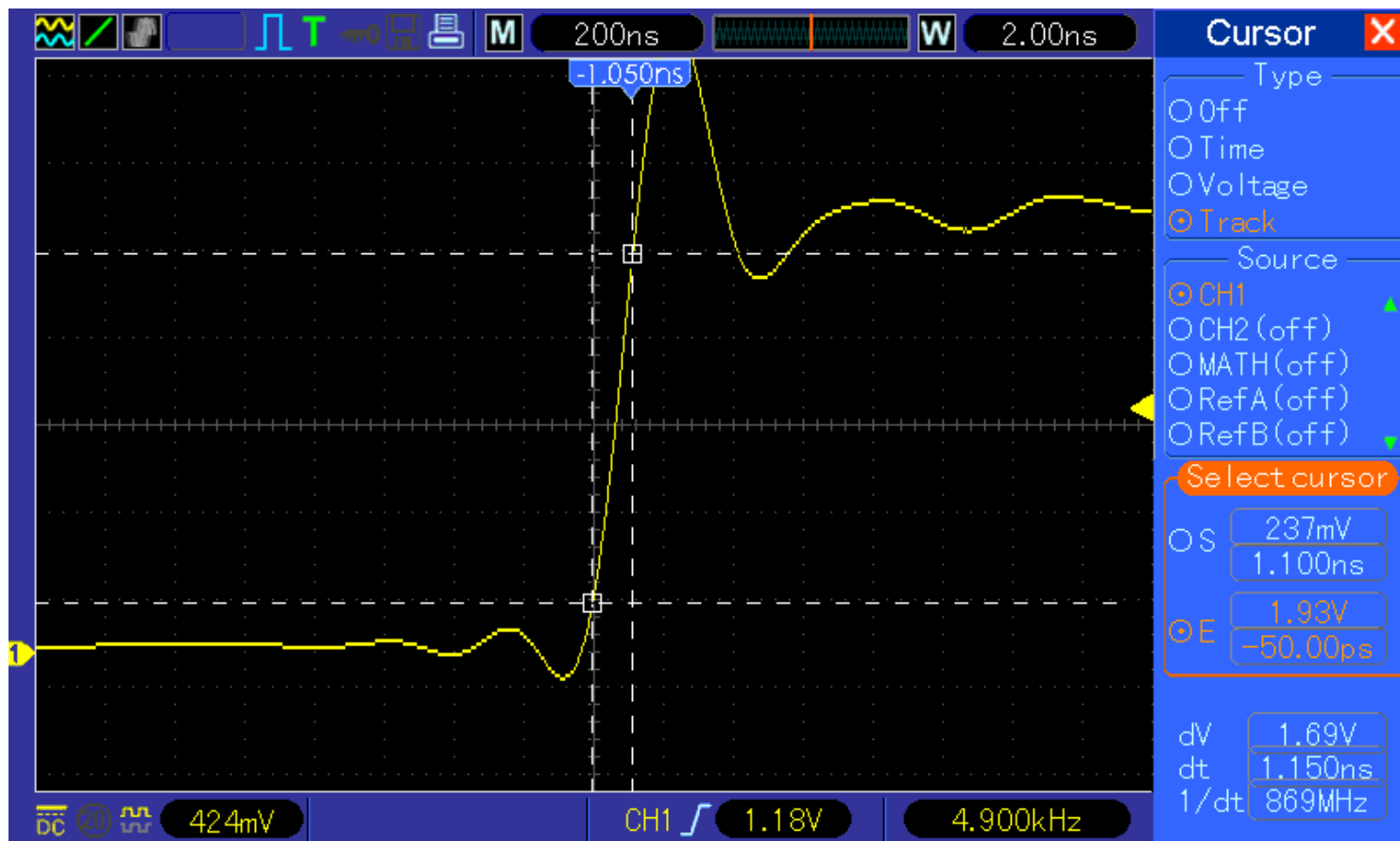


Modified hw1007 input stage (ArnoR tweak):

RX1=RX2=RX3=RX4= 280R
RA1=RA2= 4 x 22R array
R01/2_27 = 125R
R01/2_29 = 0R
R01/2_25 = 0R

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.84	254.01	1.11	280R/4x22R/ArnoR DST1202B PP-150 Probe
100	3.02	270.11	1.64	
125	3.42	305.88	2.72	
150	3.58	320.20	3.12	
175	3.64	325.56	3.26	
200	3.28	293.36	2.36	
10	2.84	254.01	1.11	280R/4x22R/ArnoR DST1202B TT-HF512 Probe
100	3.08	275.48	1.81	
125	3.08	275.48	1.81	
150	2.88	257.59	1.23	
175	2.72	243.28	0.73	
200	2.48	221.81	-0.07	
10	3.68	274.28	1.77	280R/4x22R/ArnoR DST1202B RG174
100	3.72	277.26	1.87	
125	4.04	301.12	2.59	
150	3.92	292.17	2.32	
175	3.48	259.38	1.29	
200	2.84	211.67	-0.48	





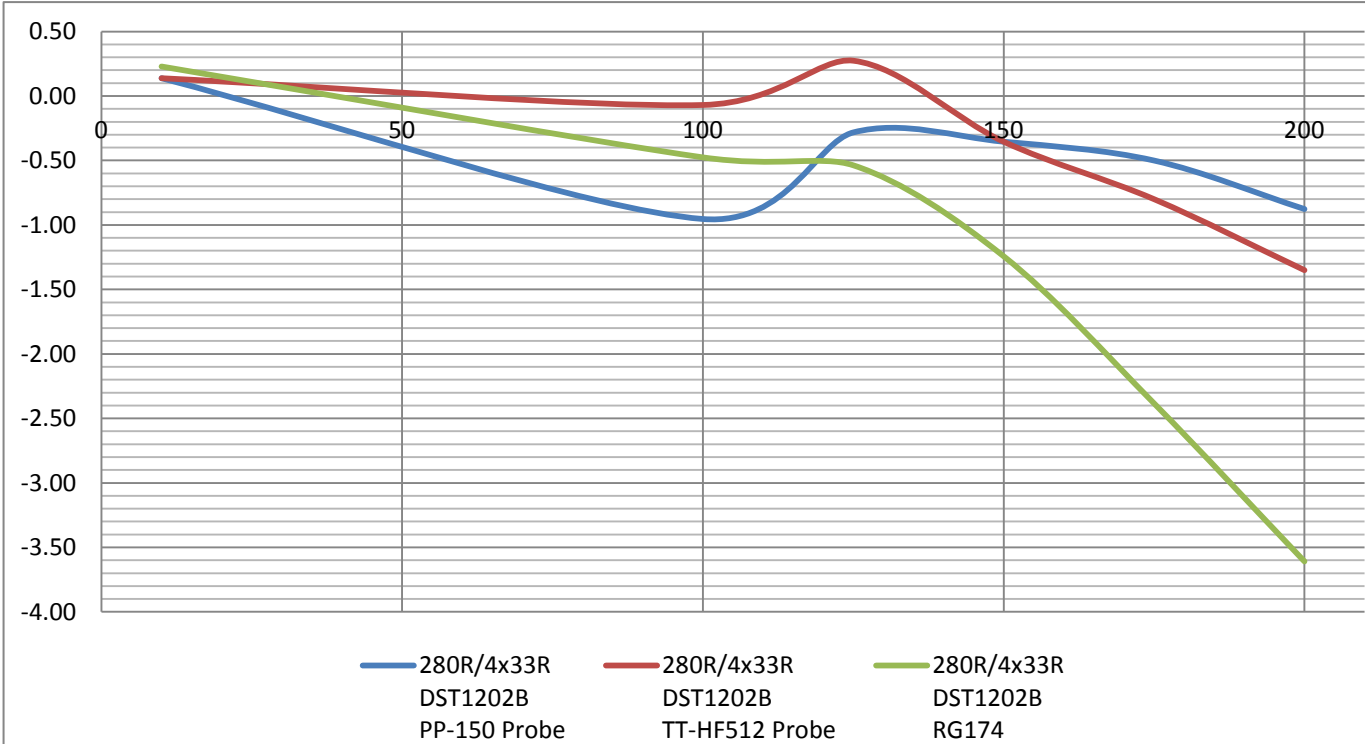
Modified hw1007 input stage:

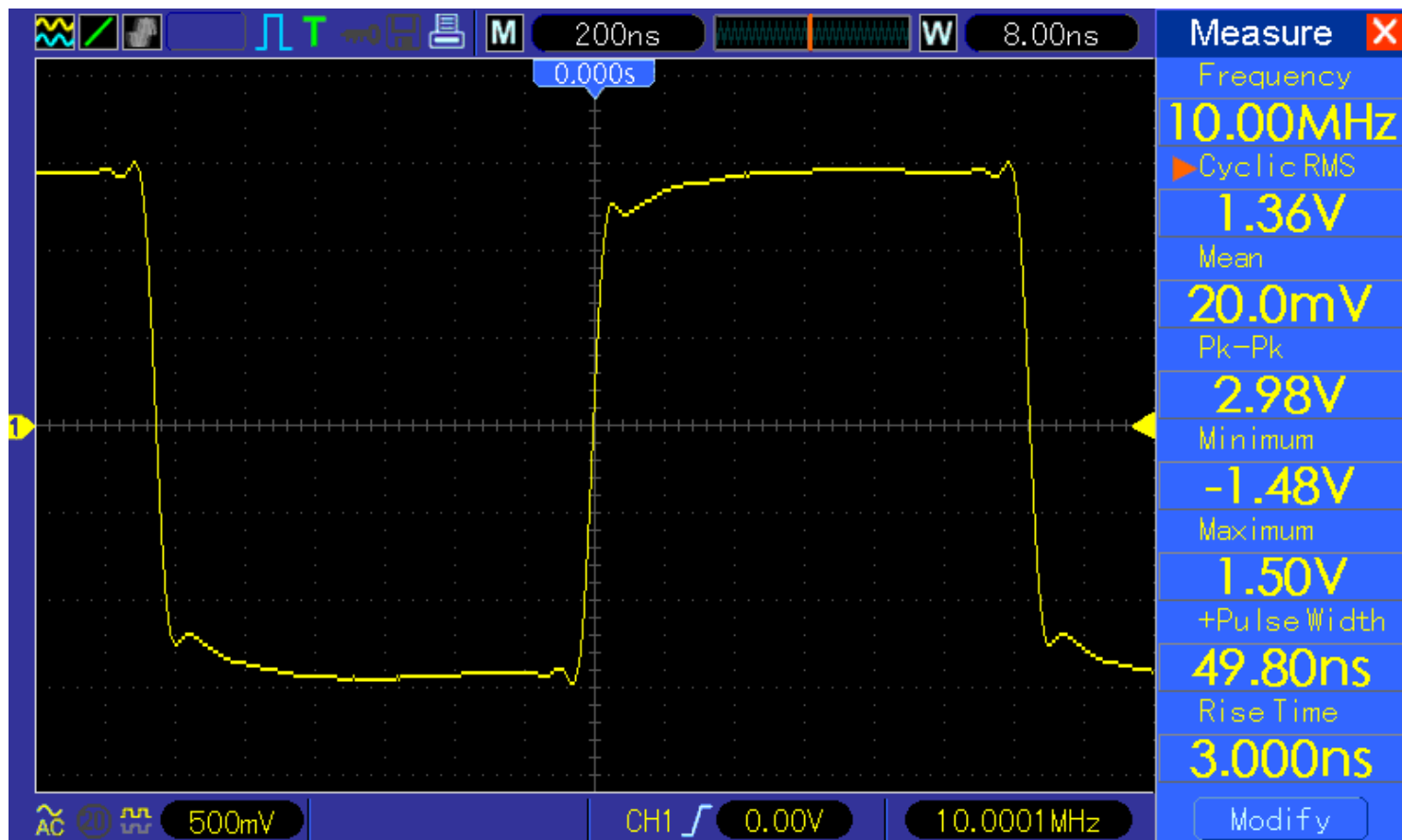
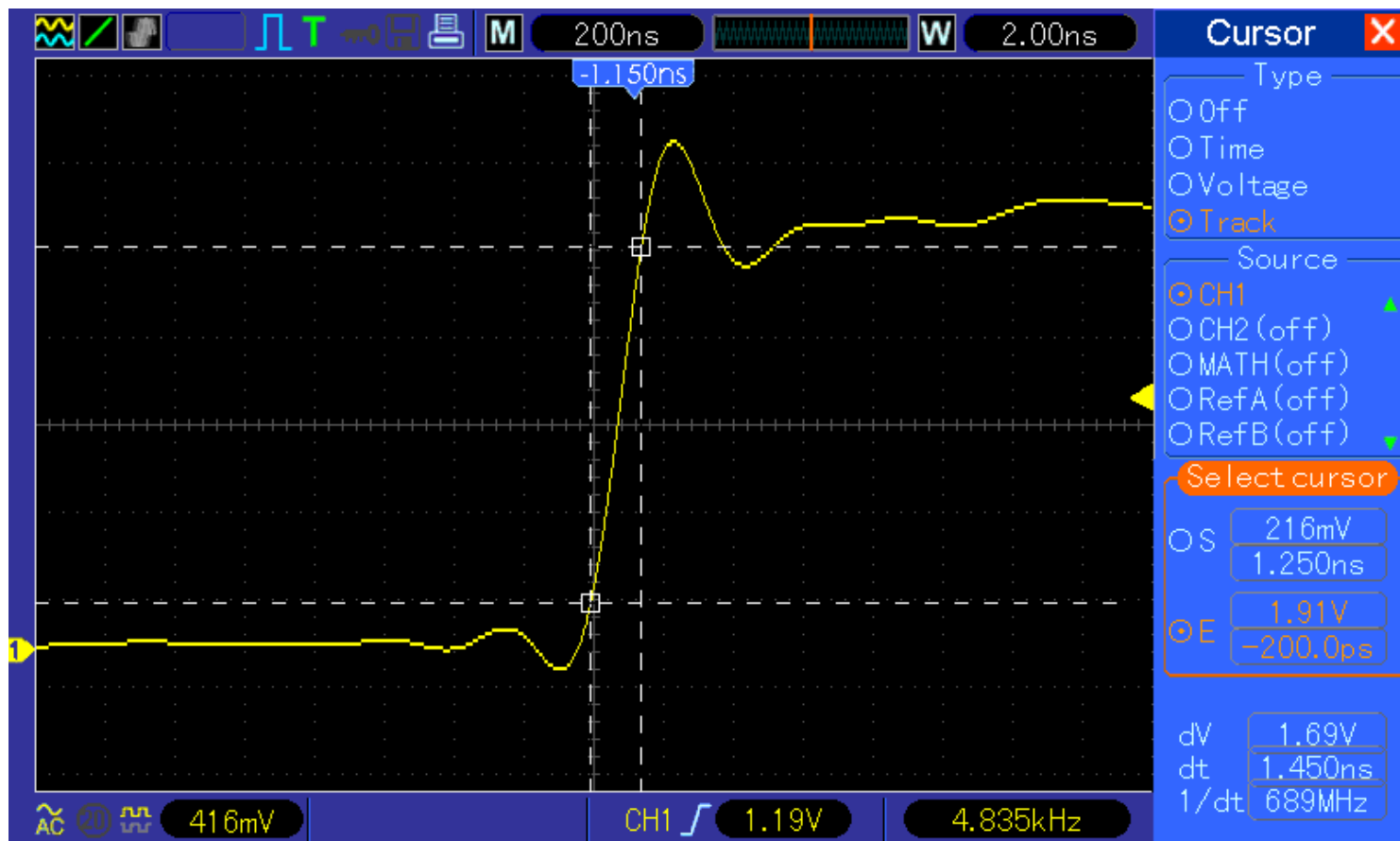
RX1=RX2=RX3=RX4= 280R

RA1=RA2= 4 x 33R array

hw0, hw1005 and early hw1007 original 200MHz DSO was like that

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.54	227.18	0.14	280R/4x33R DST1202B PP-150 Probe
100	2.24	200.35	-0.95	
125	2.42	216.44	-0.28	
150	2.4	214.66	-0.35	
175	2.36	211.08	-0.50	
200	2.26	202.13	-0.88	
10	2.54	227.18	0.14	280R/4x33R DST1202B TT-HF512 Probe
100	2.48	221.81	-0.07	
125	2.58	230.76	0.27	
150	2.4	214.66	-0.35	
175	2.28	203.92	-0.80	
200	2.14	191.40	-1.35	
10	3.08	229.56	0.23	280R/4x33R DST1202B RG174
100	2.84	211.67	-0.48	
125	2.82	210.18	-0.54	
150	2.6	193.79	-1.24	
175	2.28	169.94	-2.38	
200	1.98	147.58	-3.61	

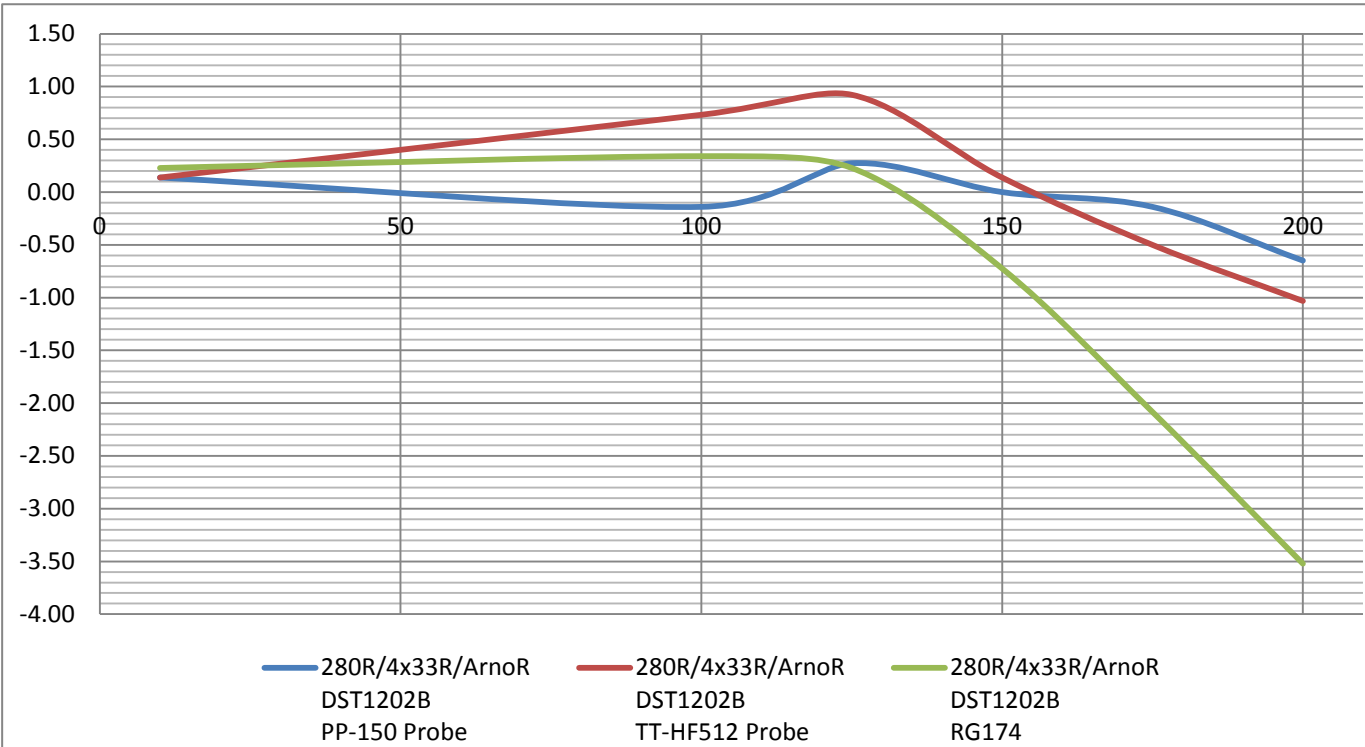


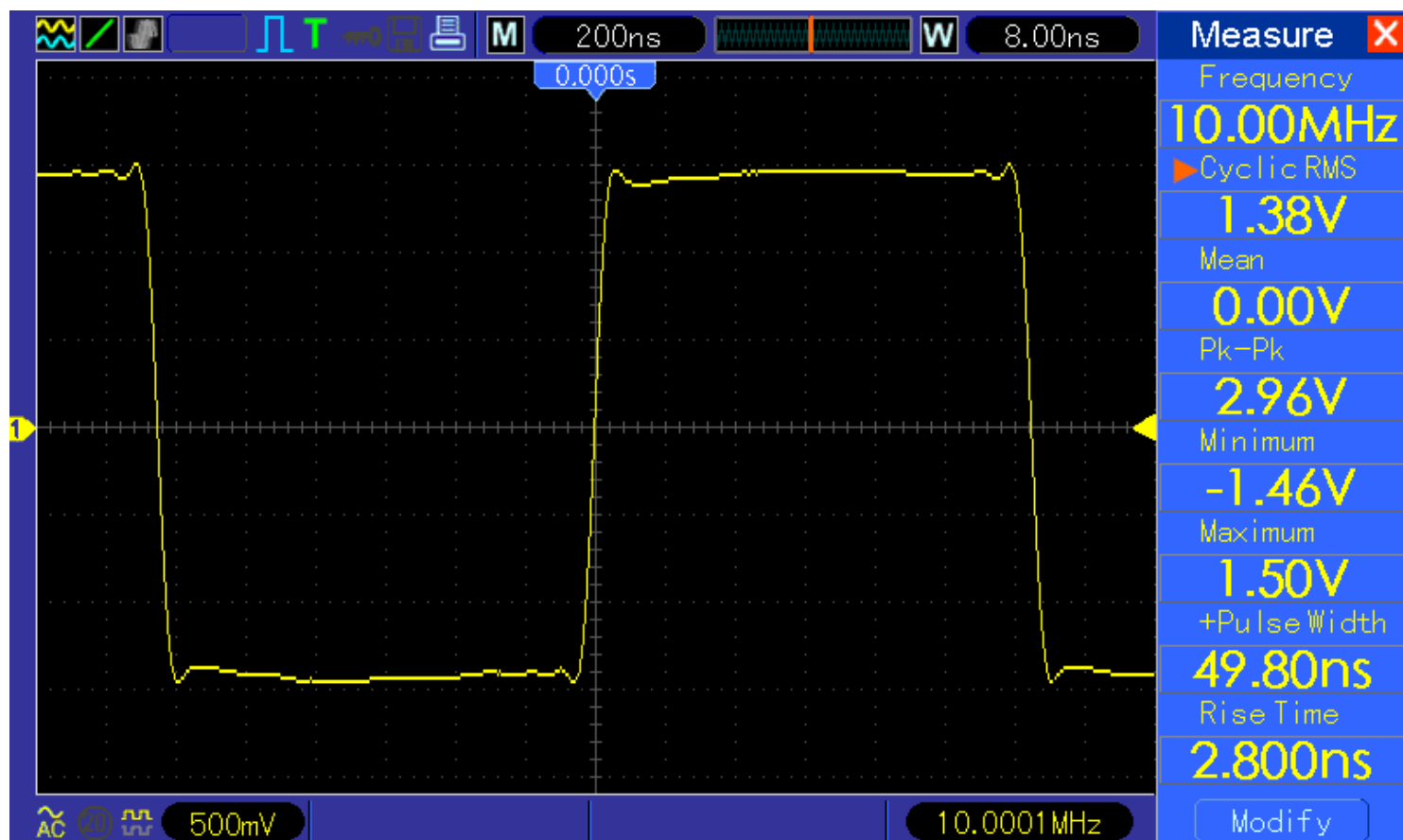
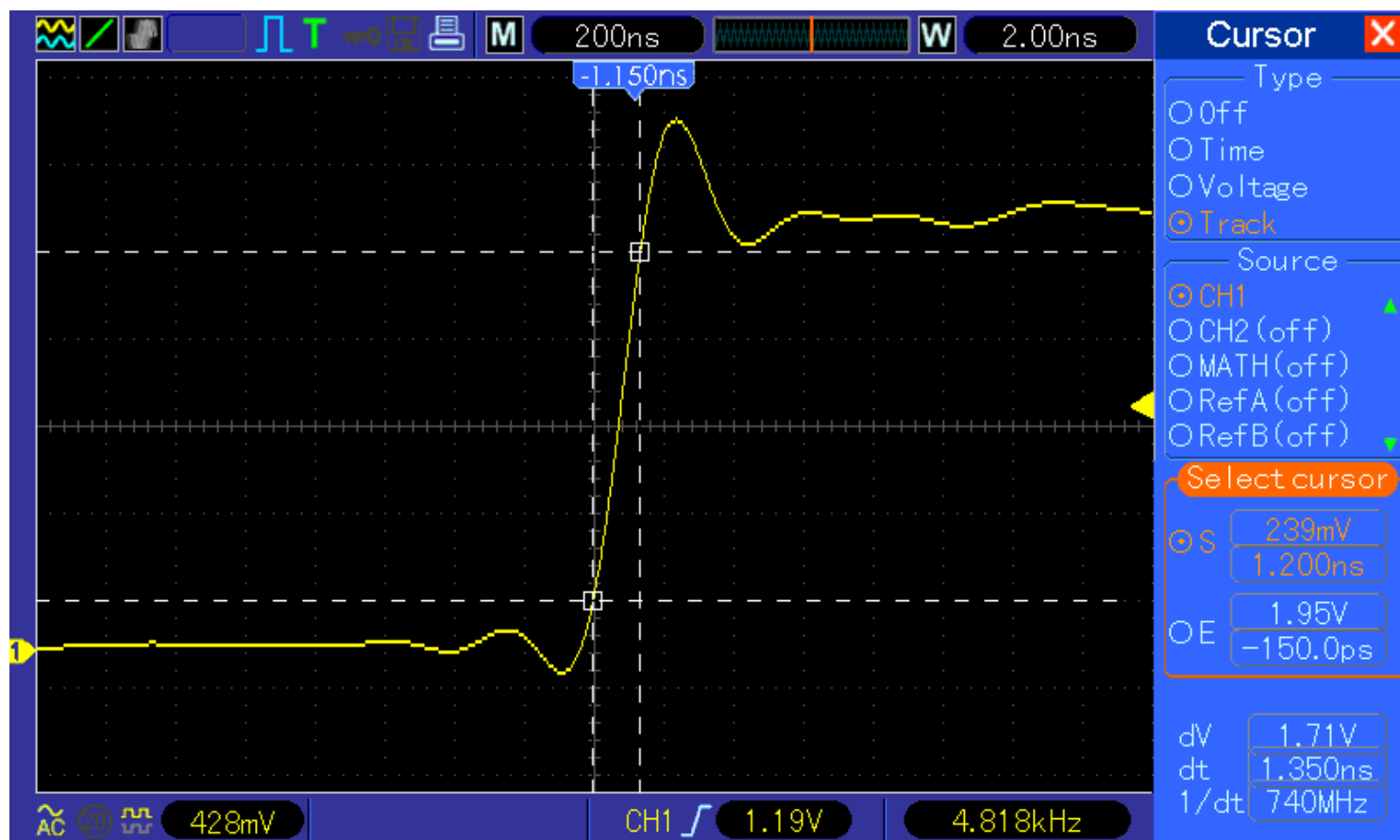


Modified hw1007 input stage (ArnoR tweak):

RX1=RX2=RX3=RX4= 280R
RA1=RA2= 4 x 33R array
R01/2_27 = 125R
R01/2_29 = 0R
R01/2_25 = 0R

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.54	227.18	0.14	280R/4x33R/ArnoR DST1202B PP-150 Probe
100	2.46	220.02	-0.14	
125	2.58	230.76	0.27	
150	2.5	223.60	0.00	
175	2.46	220.02	-0.14	
200	2.32	207.50	-0.65	
10	2.54	227.18	0.14	280R/4x33R/ArnoR DST1202B TT-HF512 Probe
100	2.72	243.28	0.73	
125	2.78	248.64	0.92	
150	2.54	227.18	0.14	
175	2.36	211.08	-0.50	
200	2.22	198.56	-1.03	
10	3.08	229.56	0.23	280R/4x33R/ArnoR DST1202B RG174
100	3.12	232.54	0.34	
125	3.08	229.56	0.23	
150	2.76	205.71	-0.72	
175	2.36	175.90	-2.08	
200	2	149.07	-3.52	

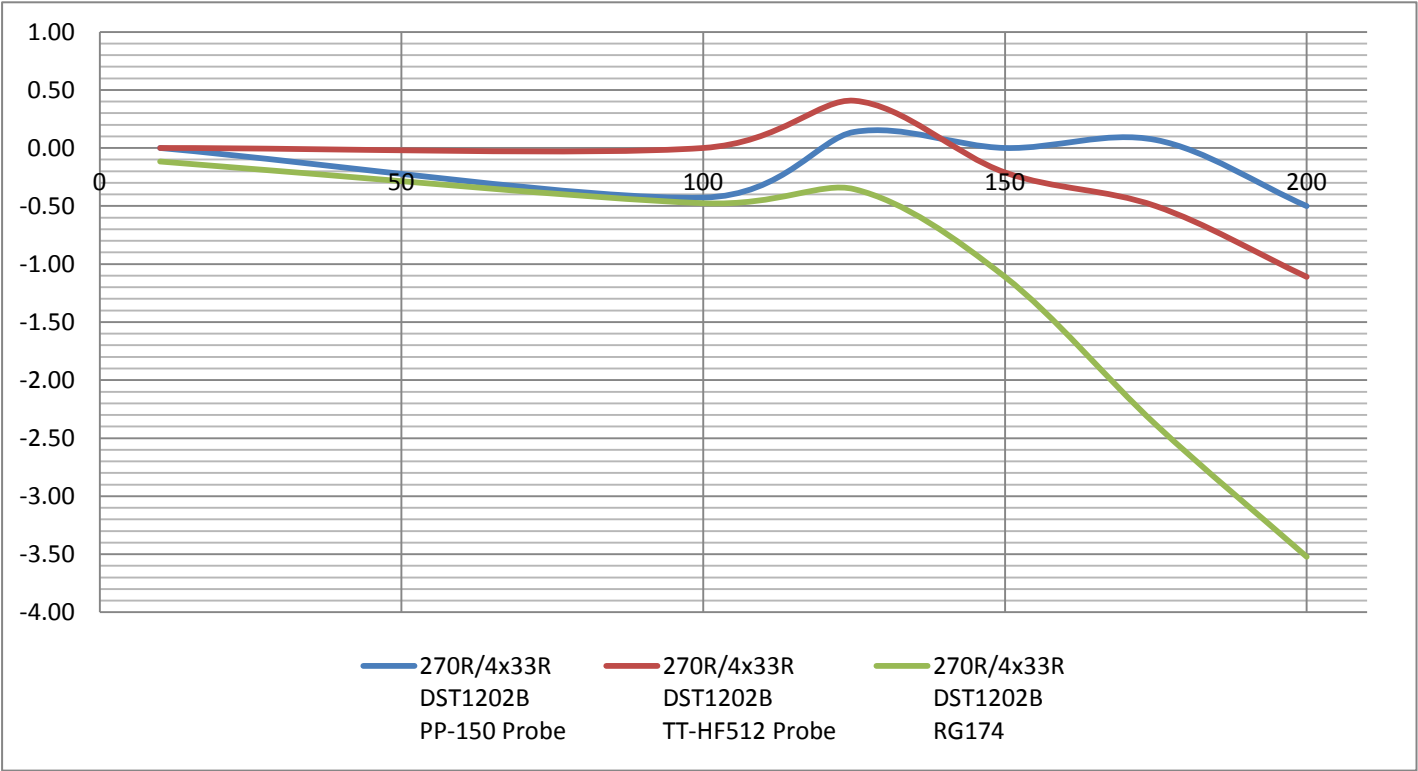


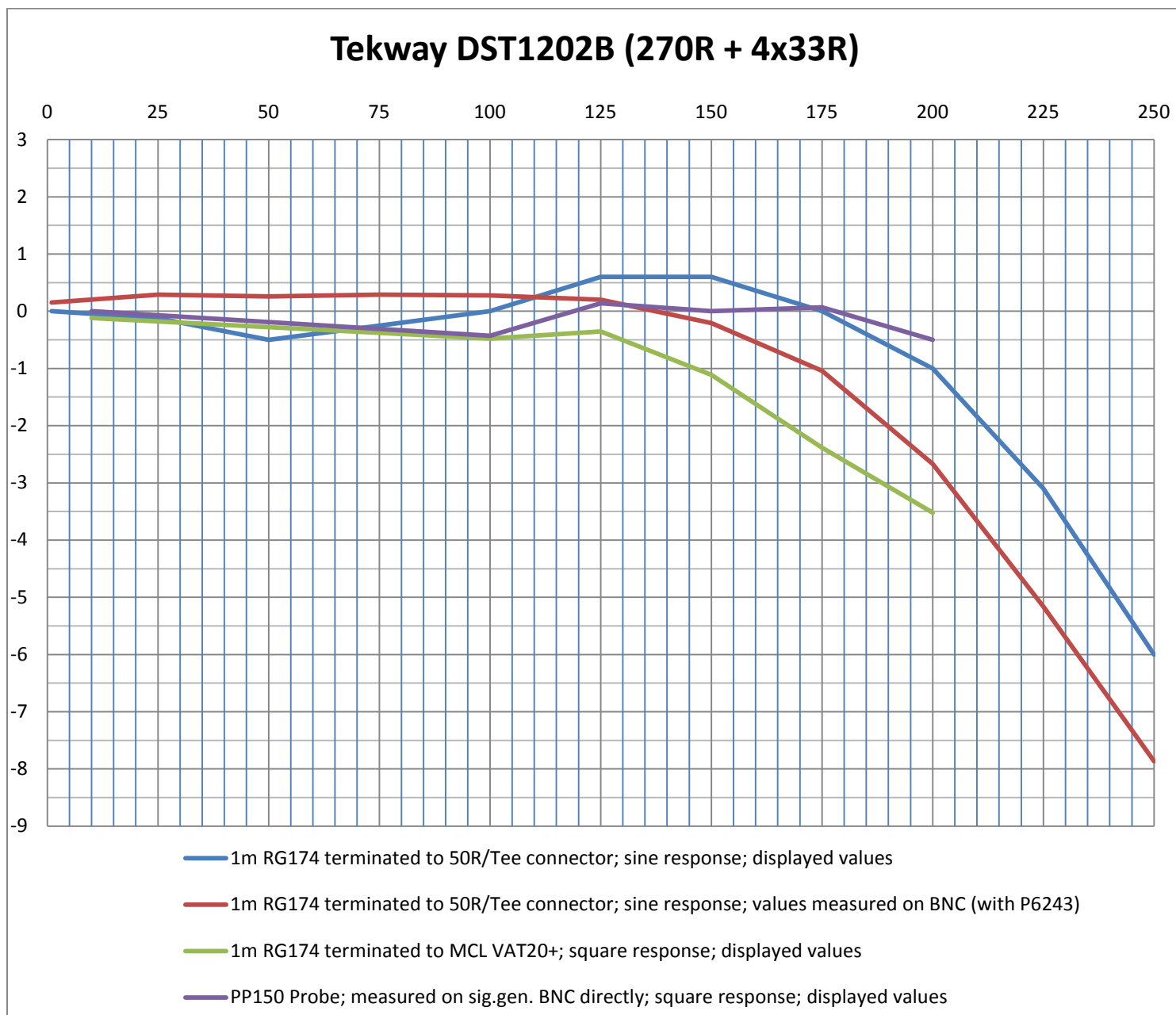


Modified hw1007 input stage:

RX1=RX2=RX3=RX4= 270R
RA1=RA2= 4 x 33R array

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.5	223.60	0.00	270R/4x33R DST1202B PP-150 Probe
100	2.38	212.87	-0.43	
125	2.54	227.18	0.14	
150	2.5	223.60	0.00	
175	2.52	225.39	0.07	
200	2.36	211.08	-0.50	
10	2.5	223.60	0.00	270R/4x33R DST1202B TT-HF512 Probe
100	2.5	223.60	0.00	
125	2.62	234.33	0.41	
150	2.44	218.23	-0.21	
175	2.36	211.08	-0.50	
200	2.2	196.77	-1.11	
10	2.96	220.62	-0.12	270R/4x33R DST1202B RG174
100	2.84	211.67	-0.48	
125	2.88	214.66	-0.35	
150	2.64	196.77	-1.11	
175	2.28	169.94	-2.38	
200	2	149.07	-3.52	

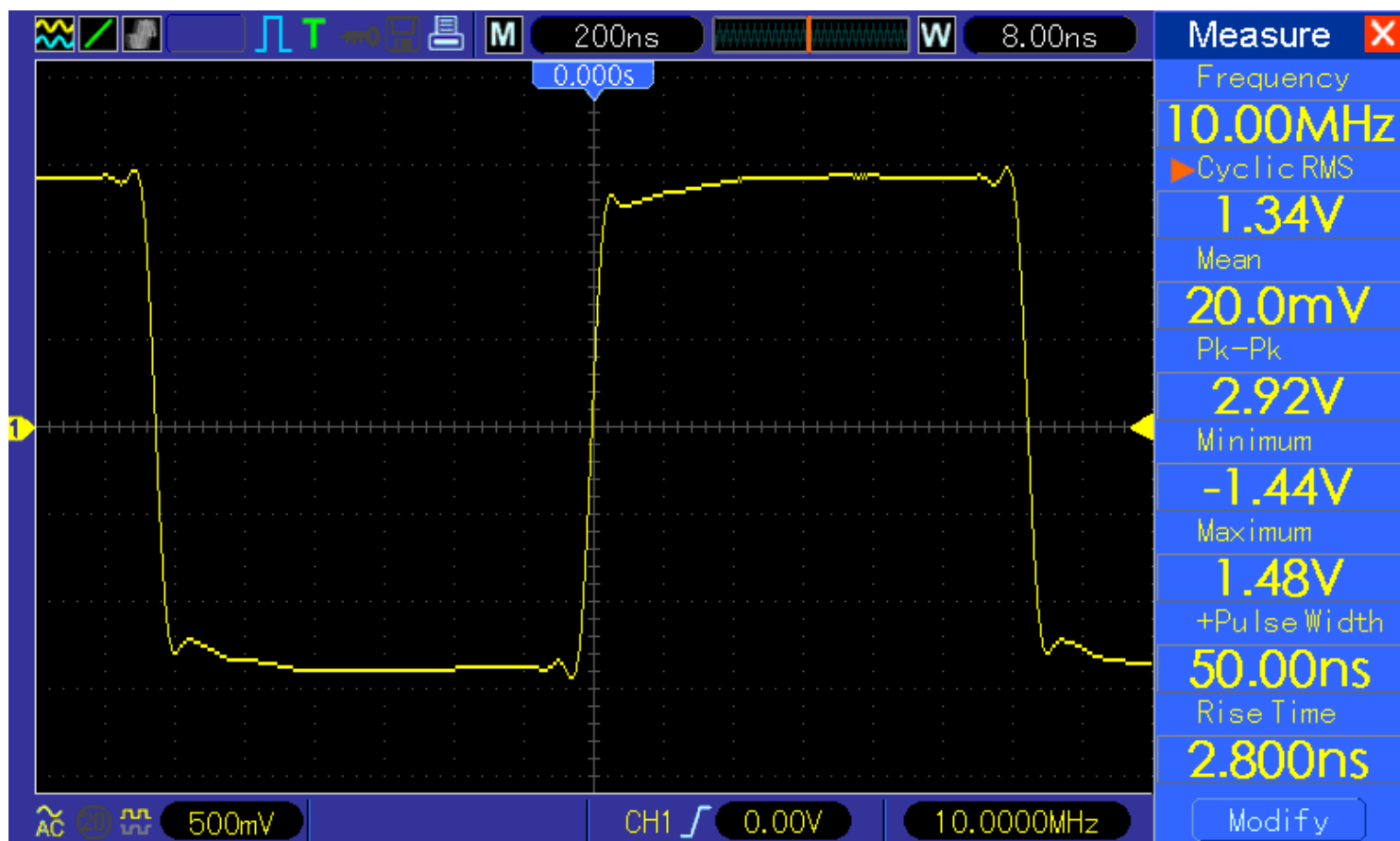
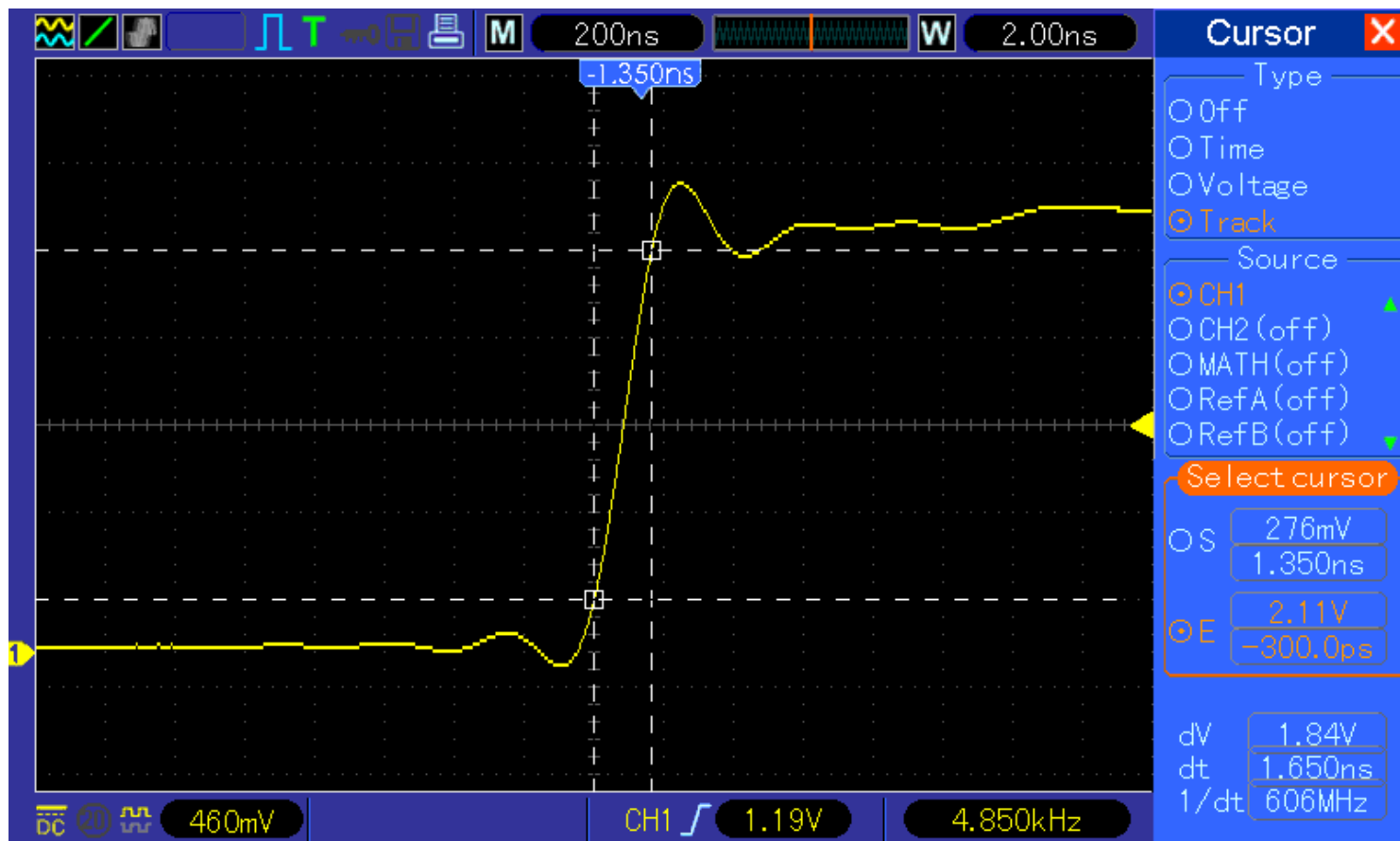




This is actually what I use on daily basis. It is slightly modified Tekway DST1202B (280R replaced by 270R). The reason why I like this component combination is the max $\pm 0.6\text{dB}$ response deviation when terminated to 50R (over tee connector), which I need for the DIY probes*

Probably – need further investigation on 50R response – I will use the “ArnoR” tweak as well, however the “base 50R version” <- see below in text.

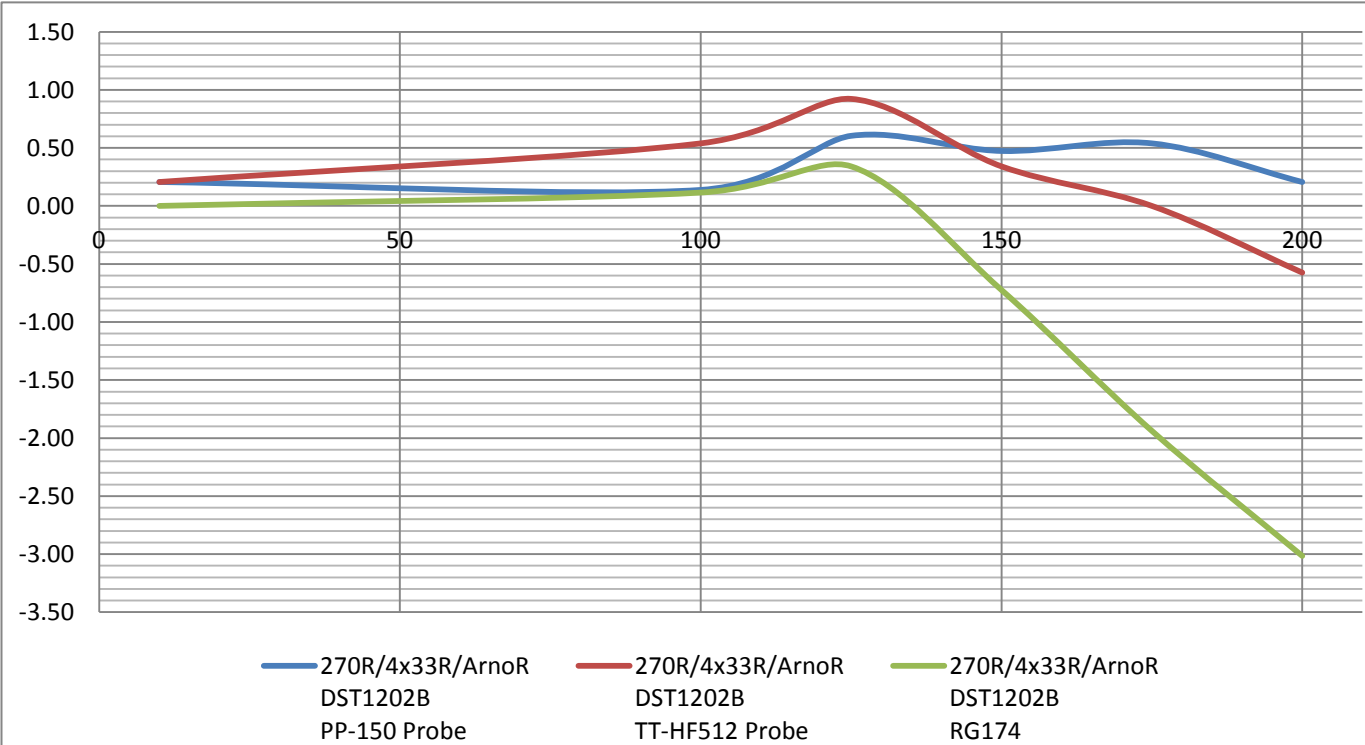
*- http://welecw2000a.sourceforge.net/docs/Hardware/Aktiver_Tastkopf_mit_OPA659.pdf

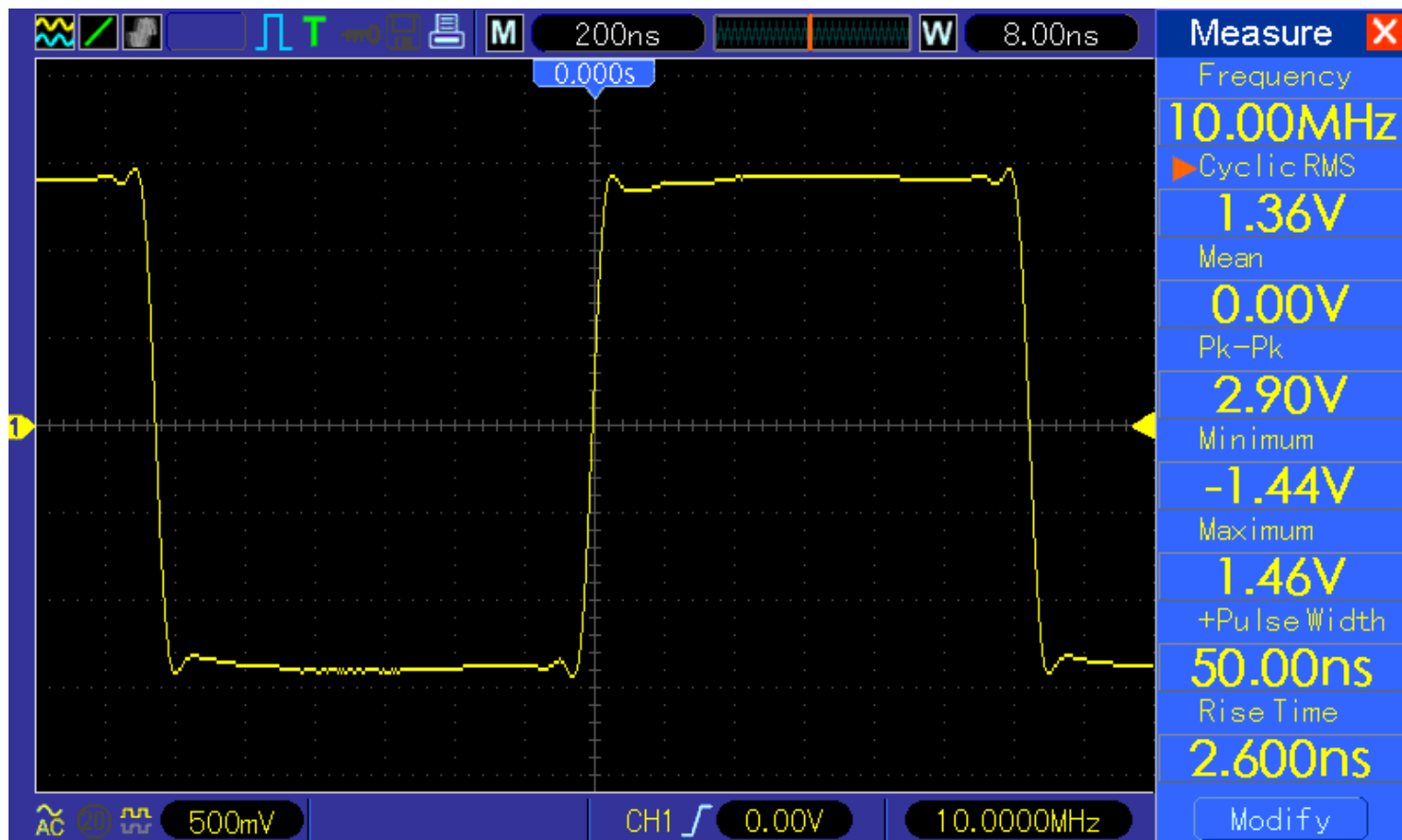
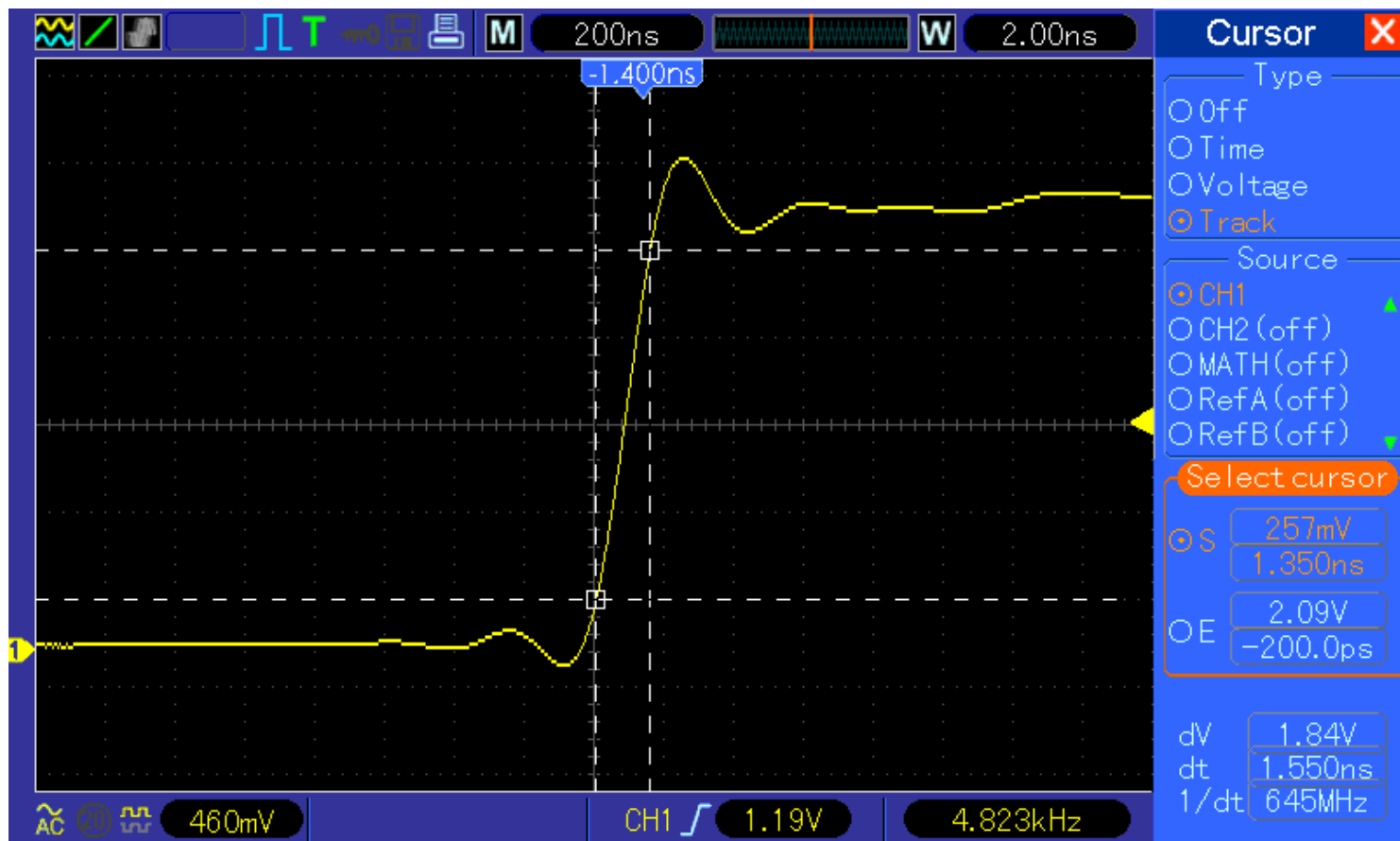


Modified hw1007 input stage (ArnoR tweak):

RX1=RX2=RX3=RX4= 270R
RA1=RA2= 4 x 33R array
R01/2_27 = 125R
R01/2_29 = 0R
R01/2_25 = 0R

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.56	228.97	0.21	270R/4x33R/ArnoR DST1202B PP-150 Probe
100	2.54	227.18	0.14	
125	2.68	239.70	0.60	
150	2.64	236.12	0.47	
175	2.66	237.91	0.54	
200	2.56	228.97	0.21	
10	2.56	228.97	0.21	270R/4x33R/ArnoR DST1202B TT-HF512 Probe
100	2.66	237.91	0.54	
125	2.78	248.64	0.92	
150	2.6	232.54	0.34	
175	2.5	223.60	0.00	
200	2.34	209.29	-0.57	
10	3	223.60	0.00	270R/4x33R/ArnoR DST1202B RG174
100	3.04	226.58	0.12	
125	3.12	232.54	0.34	
150	2.76	205.71	-0.72	
175	2.4	178.88	-1.94	
200	2.12	158.01	-3.02	

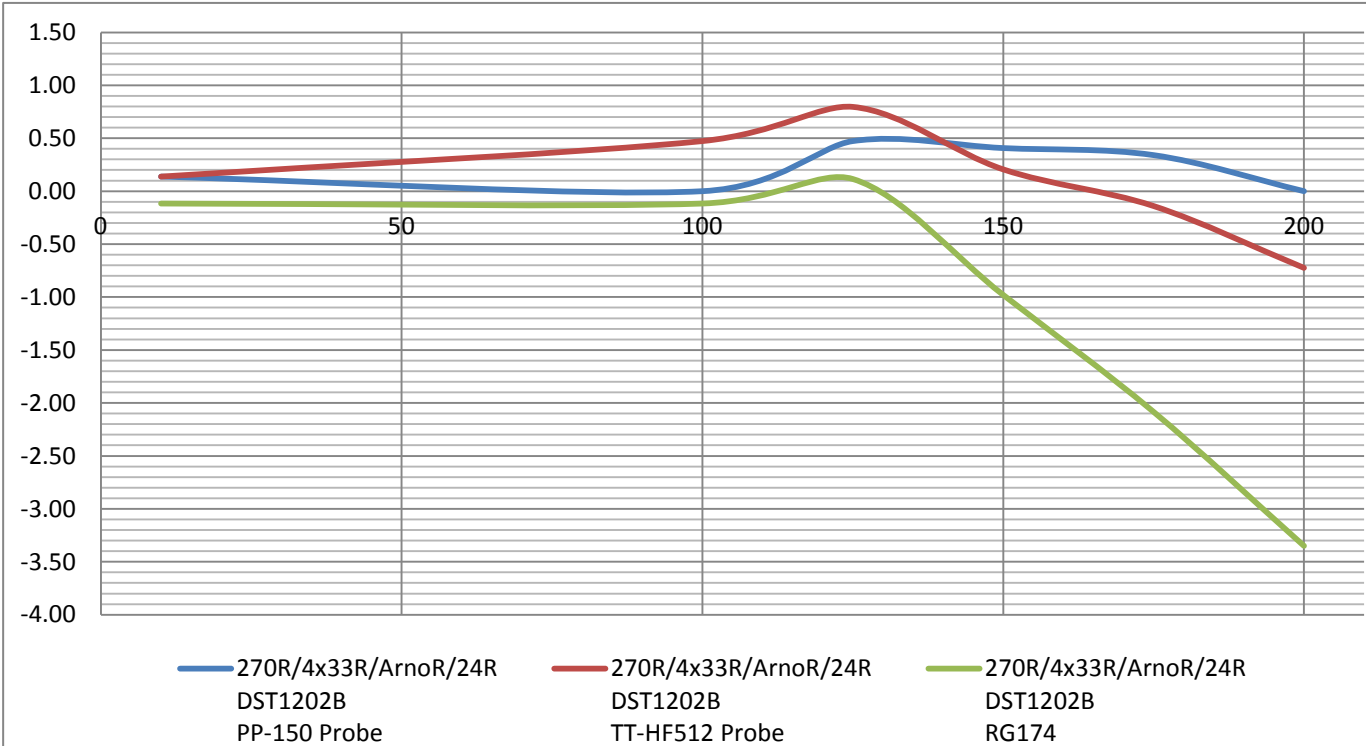


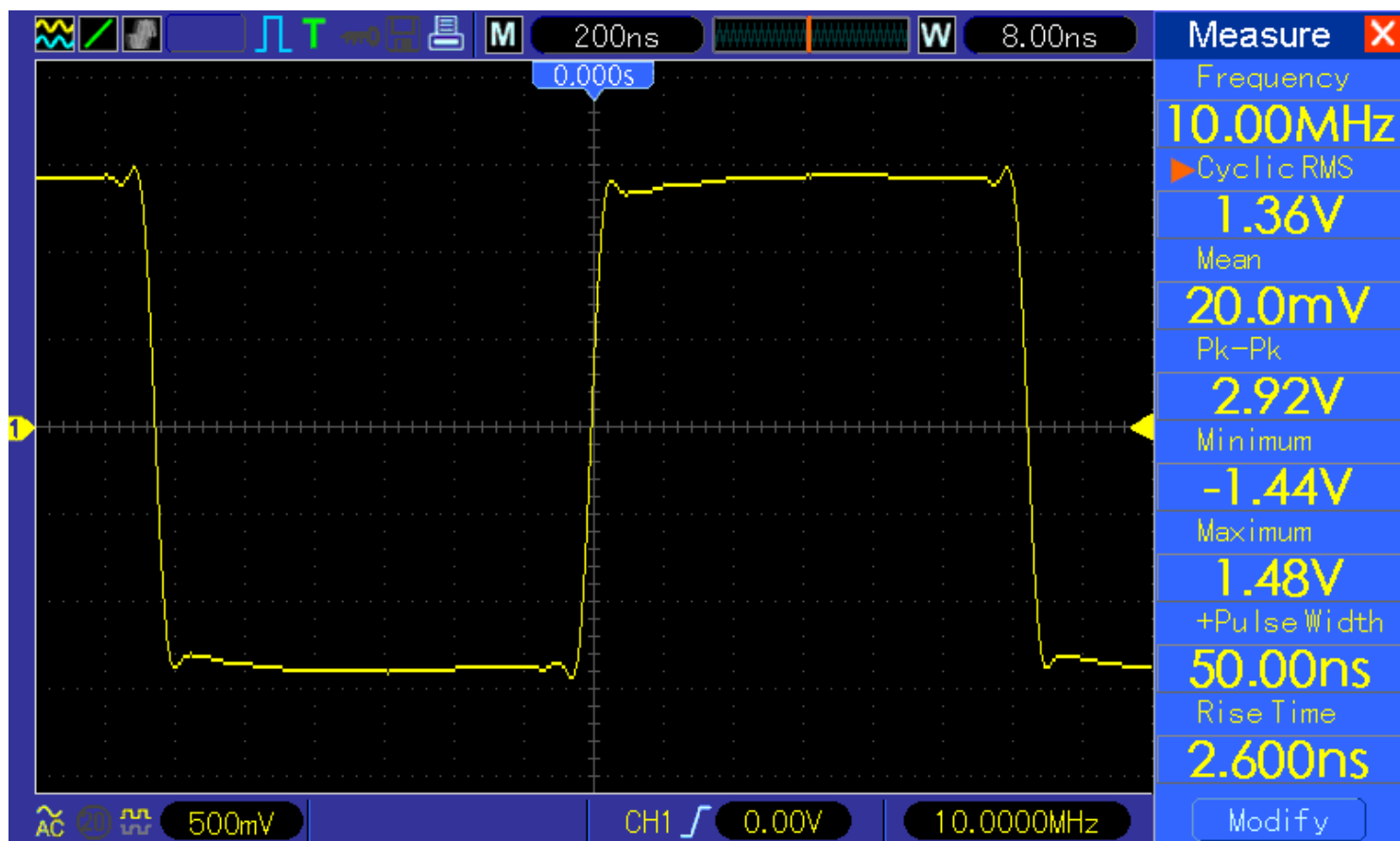
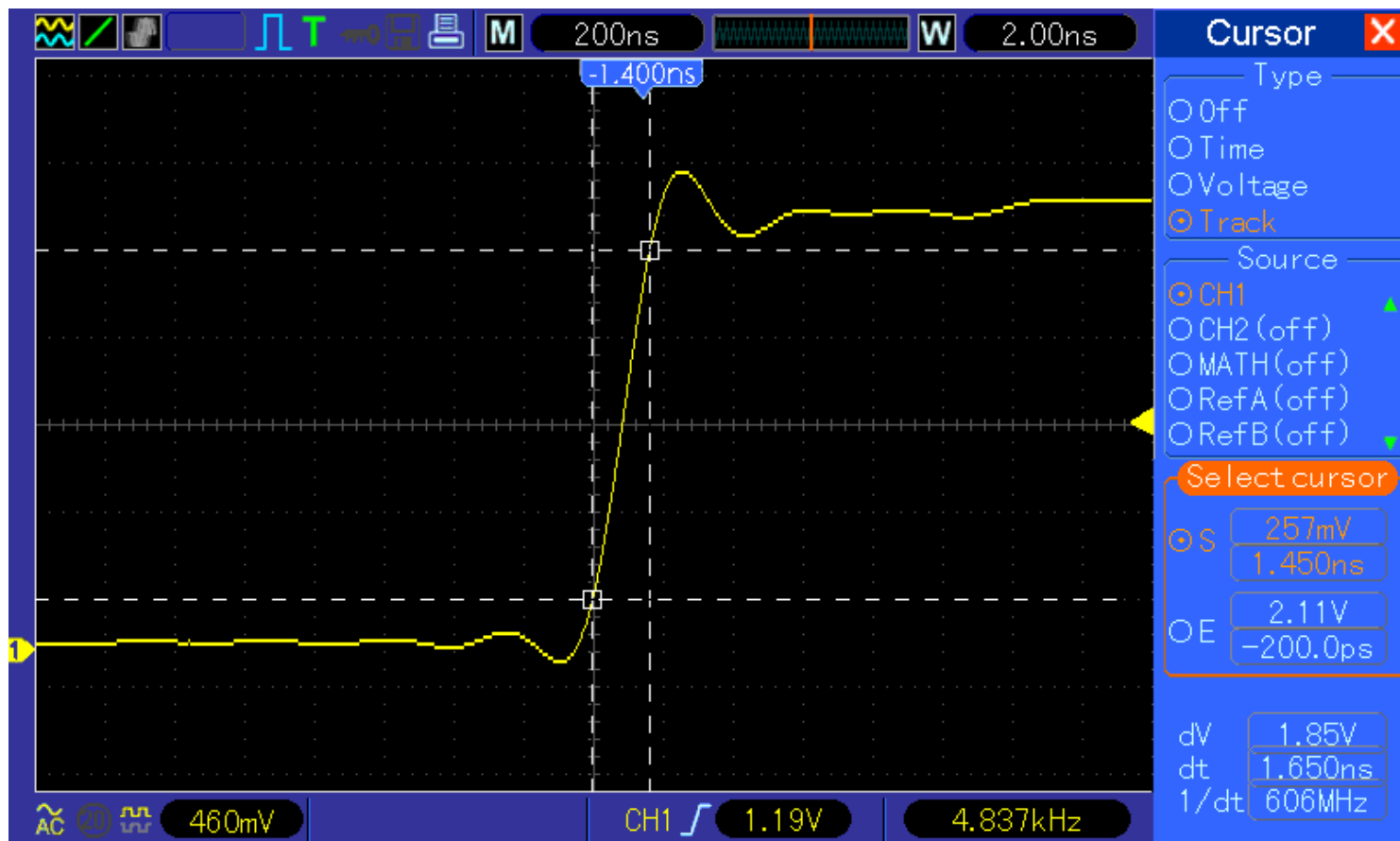


Modified hw1007 input stage (ArnoR tweak + 24R3 base resistor):

RX1=RX2=RX3=RX4= 270R
RA1=RA2= 4 x 33R array
R01/2_27 = 125R
R01/2_29 = 0R
R01/2_25 = 24R3

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.54	227.18	0.14	270R/4x33R/ArnoR/24R DST1202B PP-150 Probe
100	2.5	223.60	0.00	
125	2.64	236.12	0.47	
150	2.62	234.33	0.41	
175	2.6	232.54	0.34	
200	2.5	223.60	0.00	
10	2.54	227.18	0.14	270R/4x33R/ArnoR/24R DST1202B TT-HF512 Probe
100	2.64	236.12	0.47	
125	2.74	245.07	0.80	
150	2.56	228.97	0.21	
175	2.46	220.02	-0.14	
200	2.3	205.71	-0.72	
10	2.96	220.62	-0.12	270R/4x33R/ArnoR/24R DST1202B RG174
100	2.96	220.62	-0.12	
125	3.04	226.58	0.12	
150	2.68	199.75	-0.98	
175	2.36	175.90	-2.08	
200	2.04	152.05	-3.35	





Modified hw1007 input stage (ArnoR tweak + 50R base resistor):

RX1=RX2=RX3=RX4= 270R
RA1=RA2= 4 x 33R array
R01/2_27 = 125R
R01/2_29 = 0R
R01/2_25 = 50R

This is “probably” what I will use in the future; need to double check the 50R response (with the DIY active probes) before I decide. The response of org. passive probes looks not bad, the “hard to compensate” HF512 is not really what I would expect from 100EUR probe, but yeah, I’m not using it anyway for HF anymore (active probes are better).

MHz	mV	norm. mV	dBm	DSO type/setup
10	2.52	225.39	0.07	270R/4x33R/ArnoR/50R DST1202B PP-150 Probe
100	2.48	221.81	-0.07	
125	2.6	232.54	0.34	
150	2.58	230.76	0.27	
175	2.58	230.76	0.27	
200	2.48	221.81	-0.07	
10	2.52	225.39	0.07	270R/4x33R/ArnoR/50R DST1202B TT-HF512 Probe
100	2.6	232.54	0.34	
125	2.7	241.49	0.67	
150	2.52	225.39	0.07	
175	2.42	216.44	-0.28	
200	2.28	203.92	-0.80	
10	2.96	220.62	-0.12	270R/4x33R/ArnoR/50R DST1202B RG174
100	2.96	220.62	-0.12	
125	2.96	220.62	-0.12	
150	2.68	199.75	-0.98	
175	2.32	172.92	-2.23	
200	2.02	150.56	-3.44	

