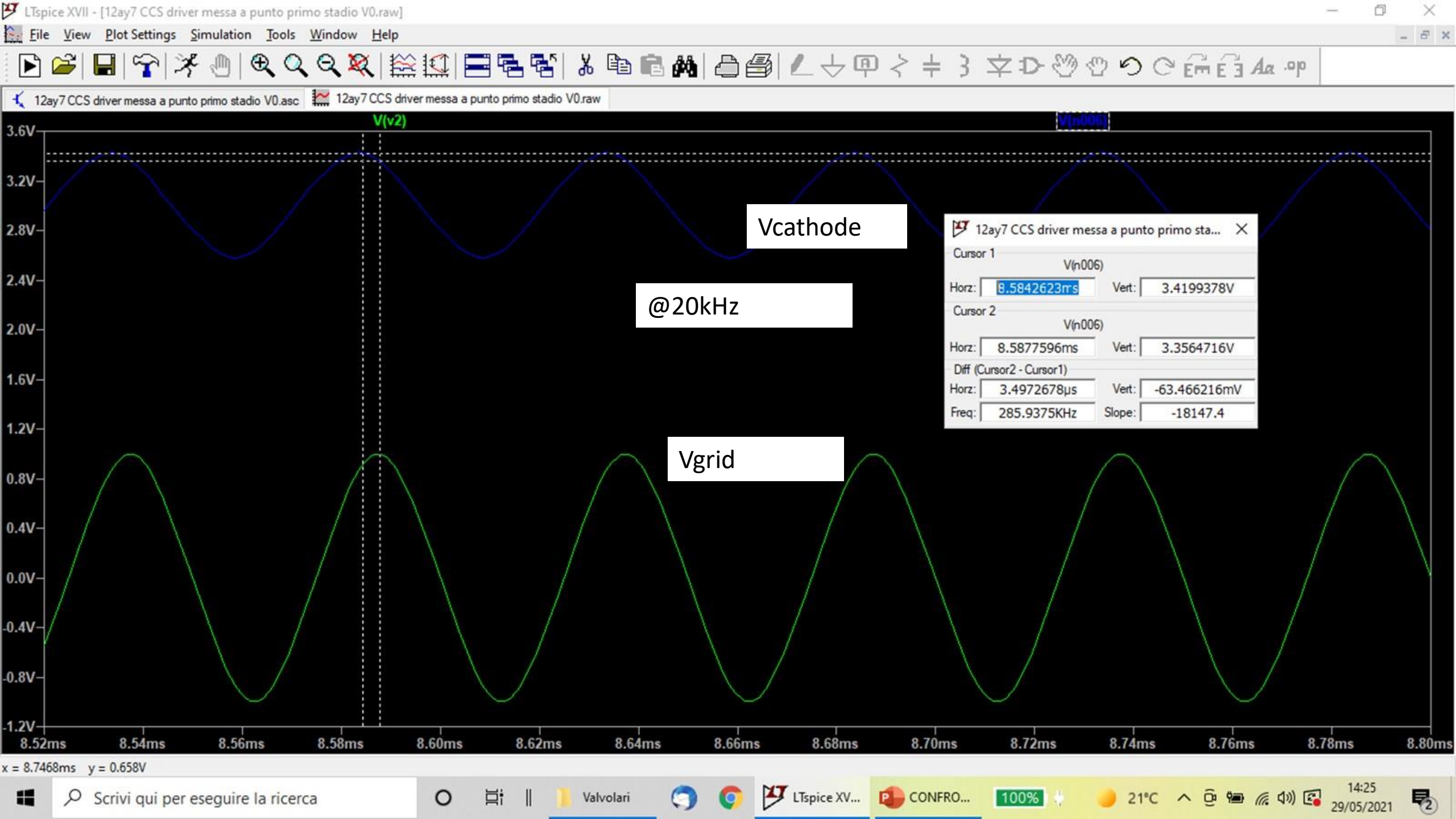
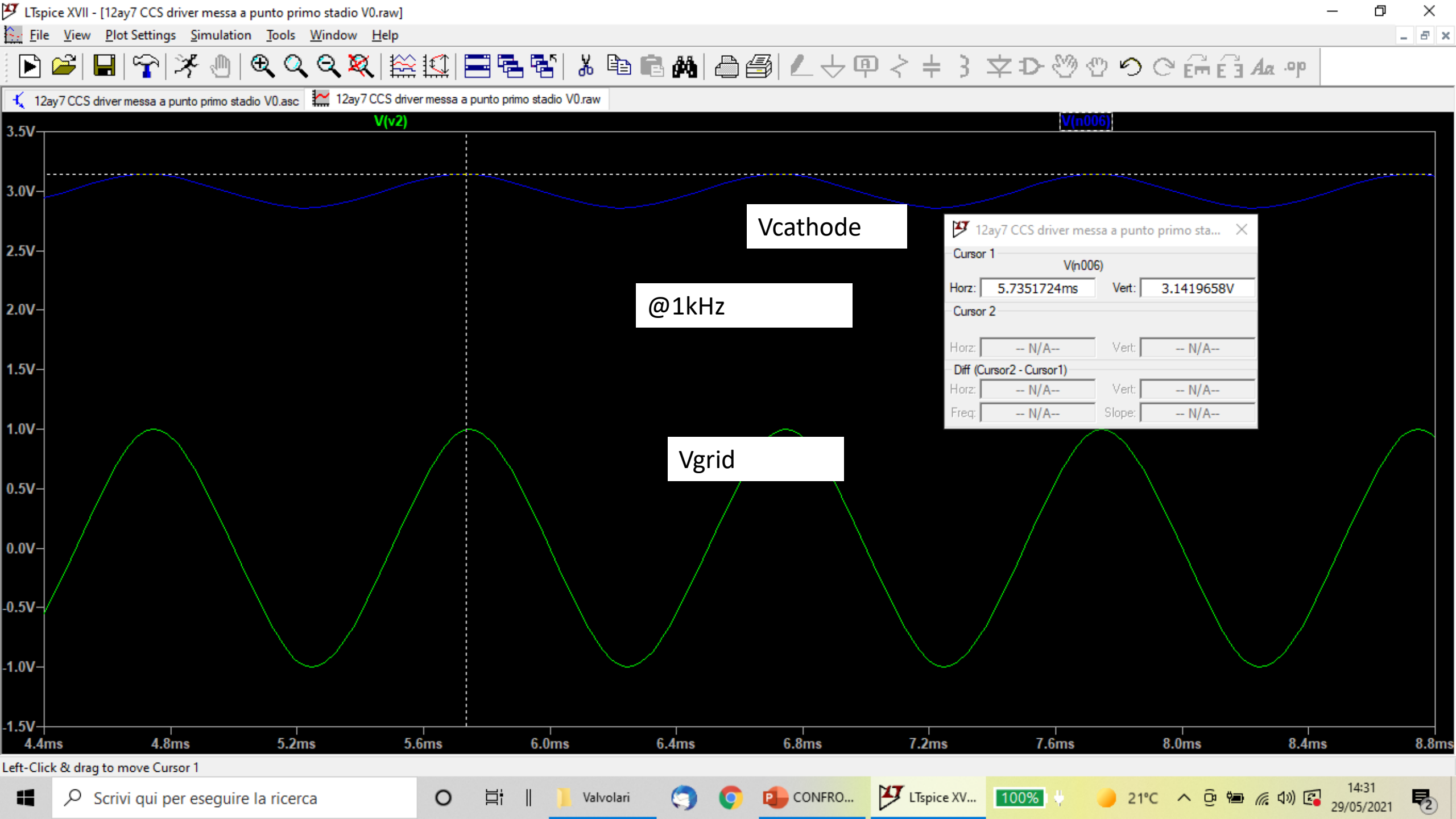


# Simulated values

Tube	Vgk	Ia (mA)	Rload	Vin (V)	Vout@1kHz	Vout@20kHz	Ratio (dB)
12ay7	-3	4.2	160k	1	31	20	-3.8
12ay7	-3	4.2	50k	1	20.2	16.2	-1.9
12ay7	-3	4.2	30k	1	15.2	13.3	-1.2
12au7	-3	4.2	160k	1	14	12.5	-1
12ay7	-3	4.2	100k	1	27	19	-3
12au7	-3	4.2	100k	1	13.1	12	-0.8



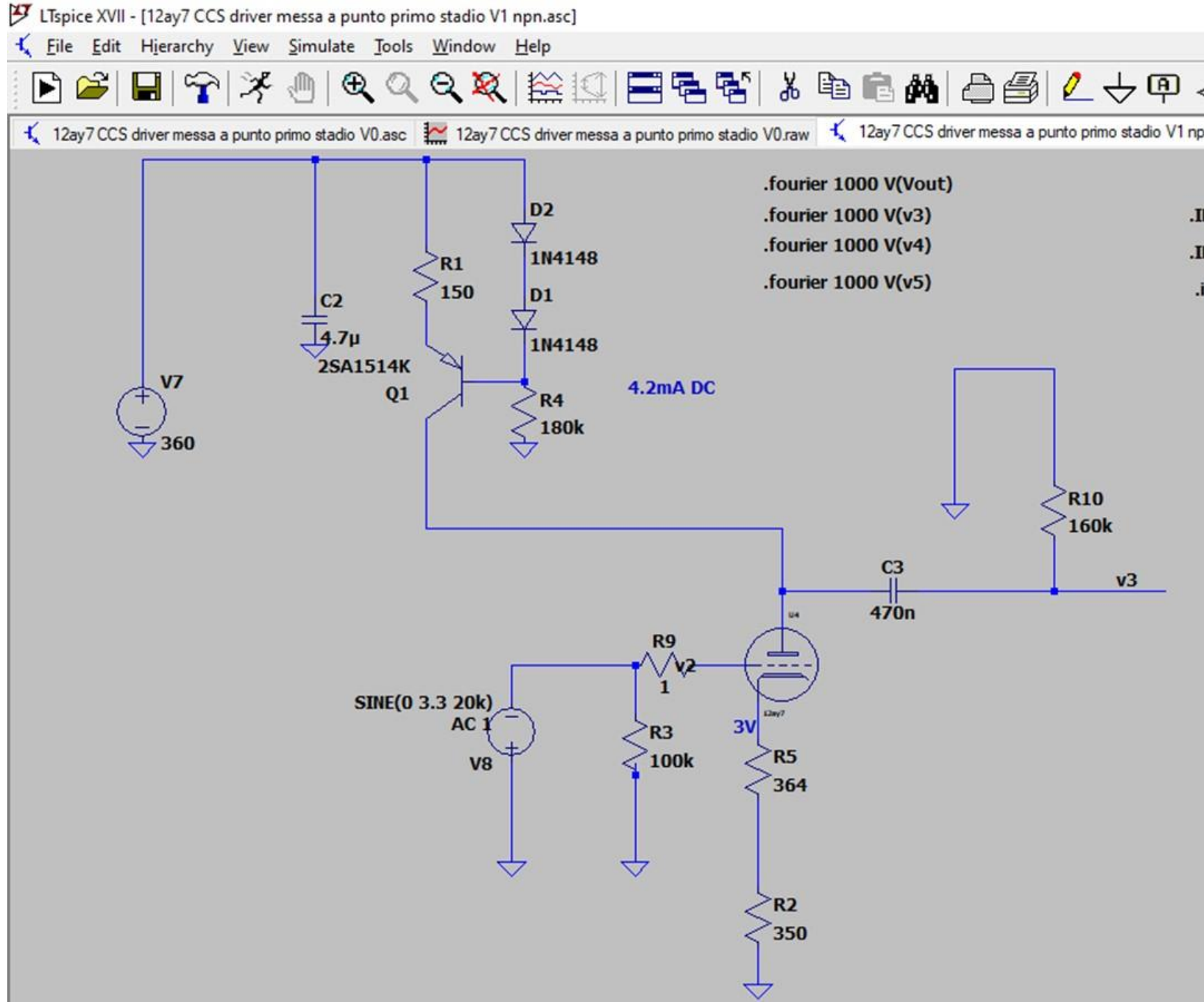


### Simulated values

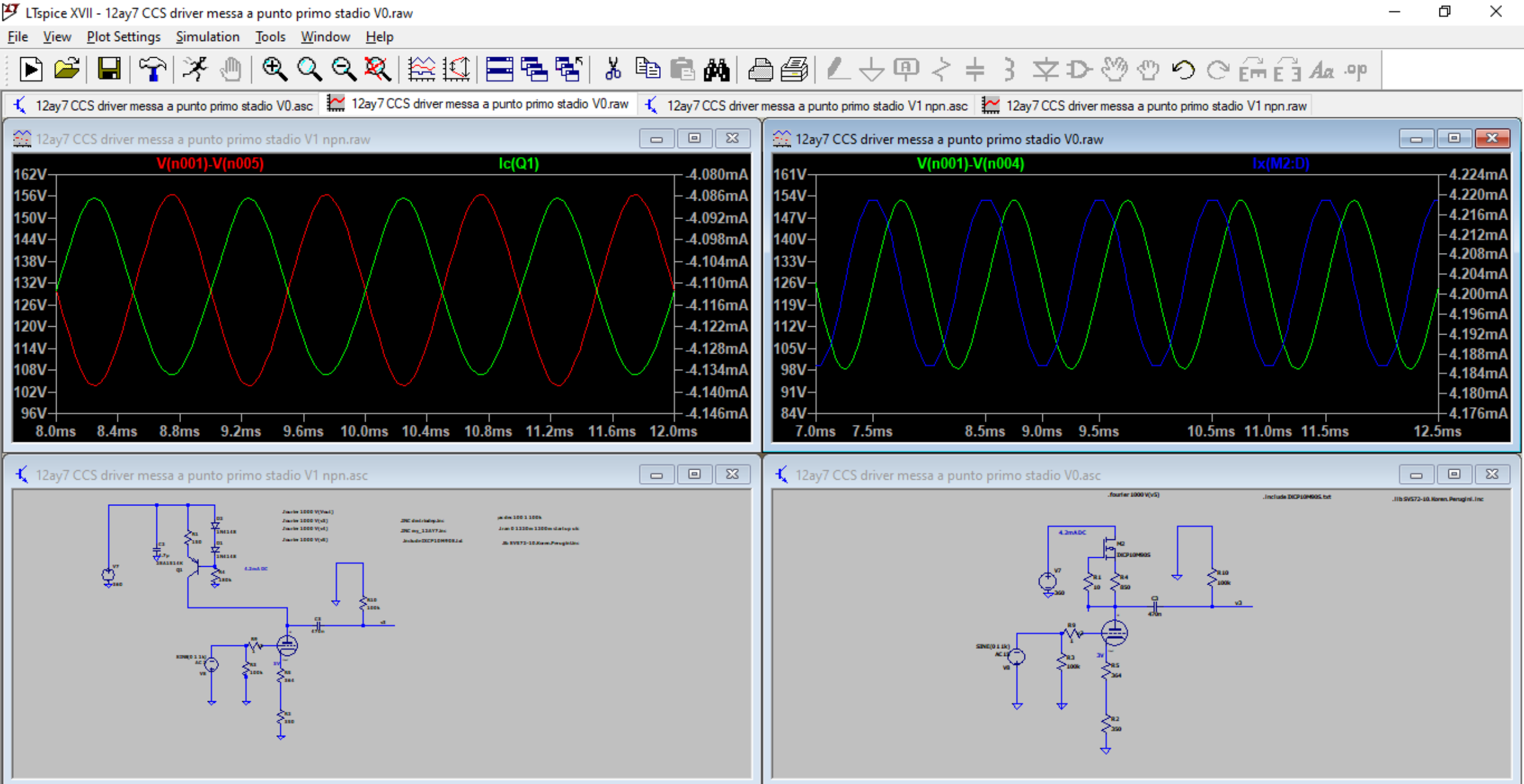
Tube	Vgk	Ia (mA)	Rload	Vin (V)	Vout@1kHz	Vout@20kHz	Ratio (dB)
12ay7	-3	4.2	100k	1	27	19	-3
12au7	-3	4.2	100k	1	13.1	12	-0.8

### Really measured values

Tube	Vgk	Ia (mA)	Rload	Vin (V)	Vout@1kHz	Vout@20kHz	Ratio (dB)
12ay7	-3	4.2	100k	1	27.8	16.2	-4.7
12au7	-3	4.2	100k	1	14.6	8.8	-4.4

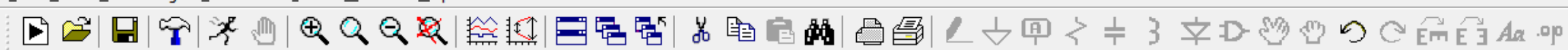


With a PNP CCS,  
voltage across it and  
current through it are  
«in phase» ( $180^\circ$ )



Right-Click to manually enter Horizontal Axis Limits

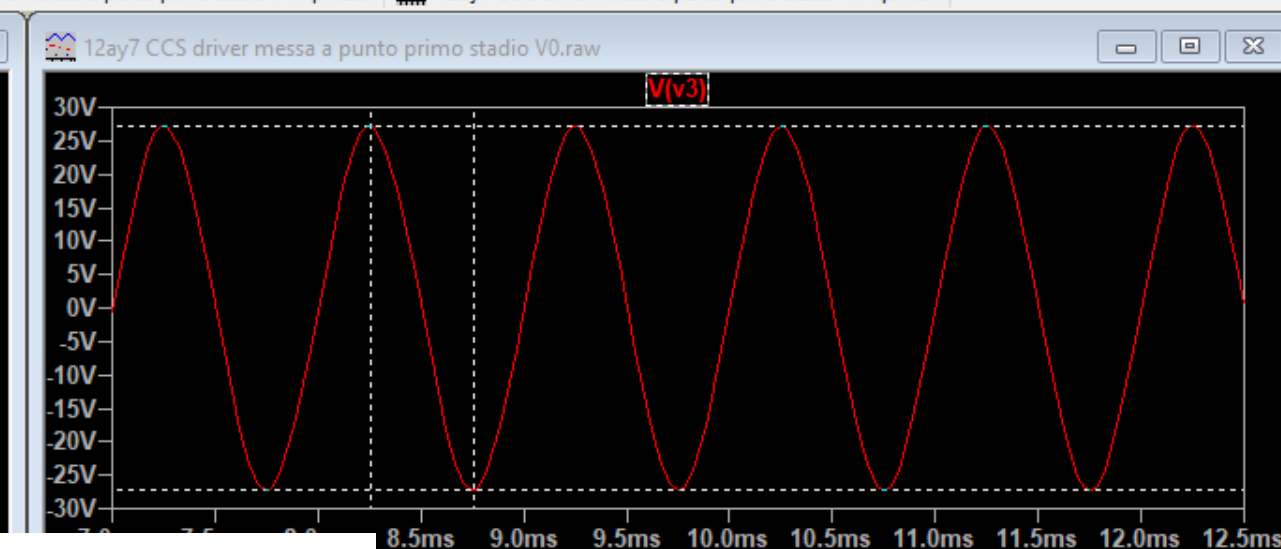
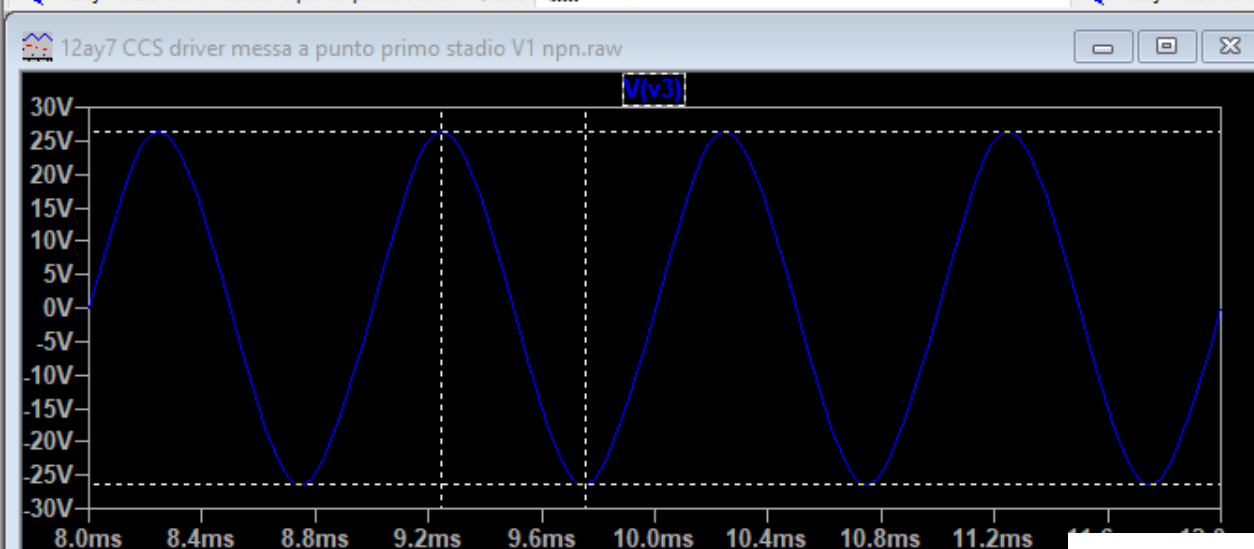




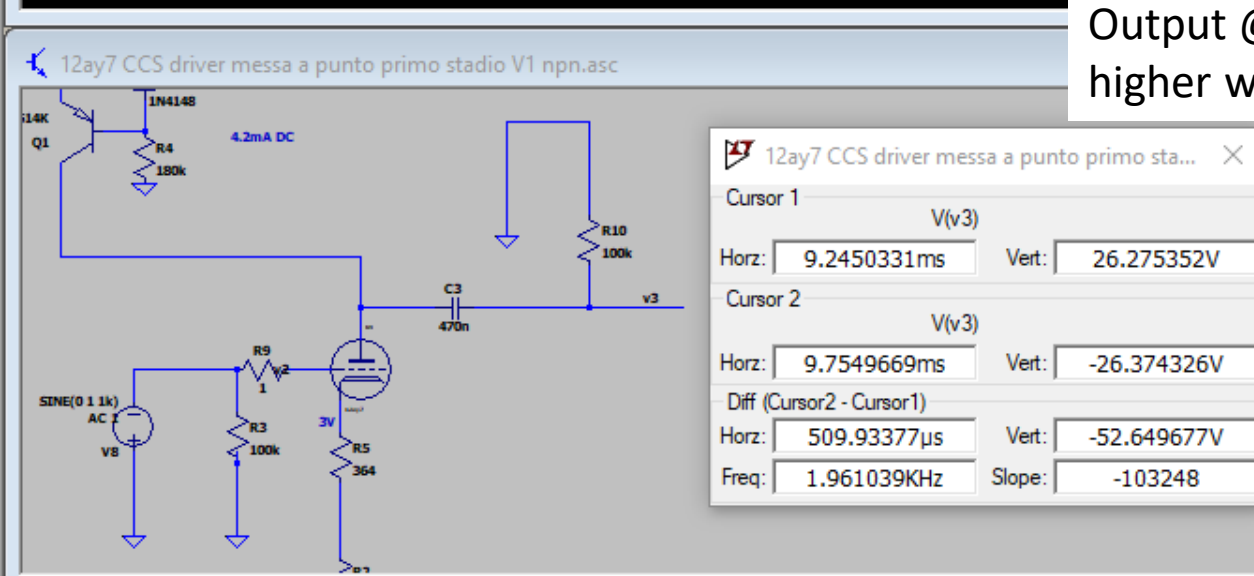
12ay7 CCS driver messa a punto primo stadio V0.raw

12ay7 CCS driver messa a punto primo stadio V1 npn.asc

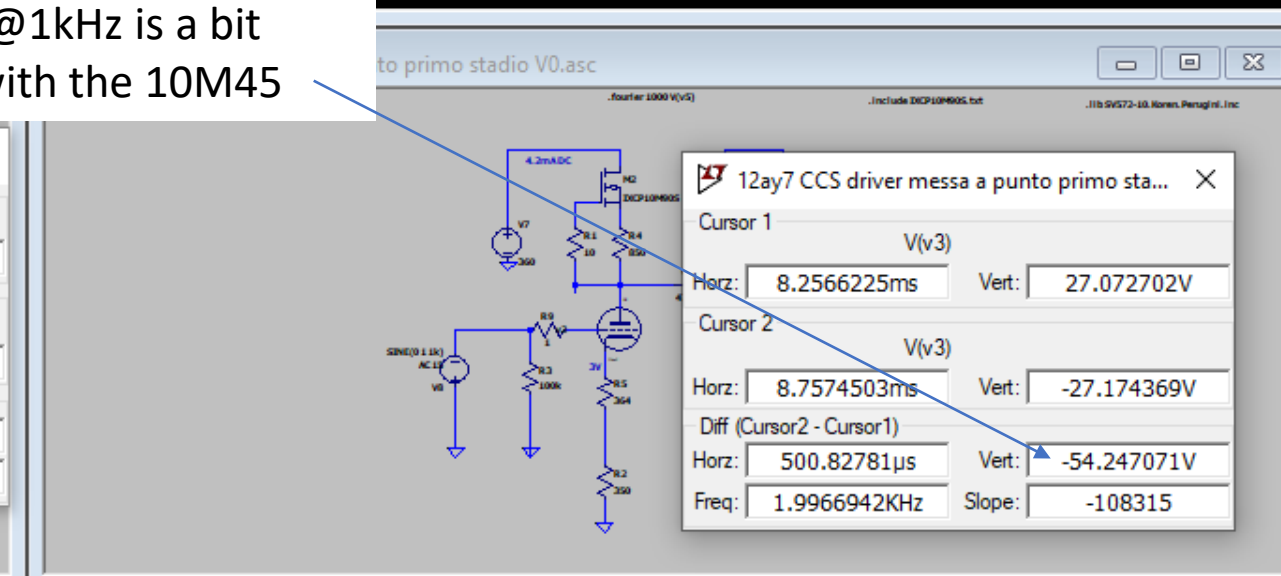
12ay7 CCS driver messa a punto primo stadio V1 npn.raw



Output @1kHz is a bit higher with the 10M45



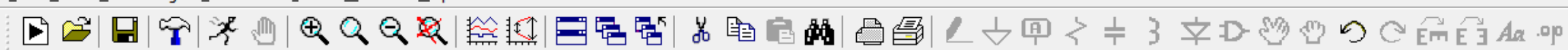
Cursor 1	
Horz:	9.2450331ms
Vert:	26.275352V
Cursor 2	
Horz:	9.7549669ms
Vert:	-26.374326V
Diff (Cursor2 - Cursor1)	
Horz:	509.93377μs
Vert:	-52.649677V
Freq:	1.961039KHz
Slope:	-103248



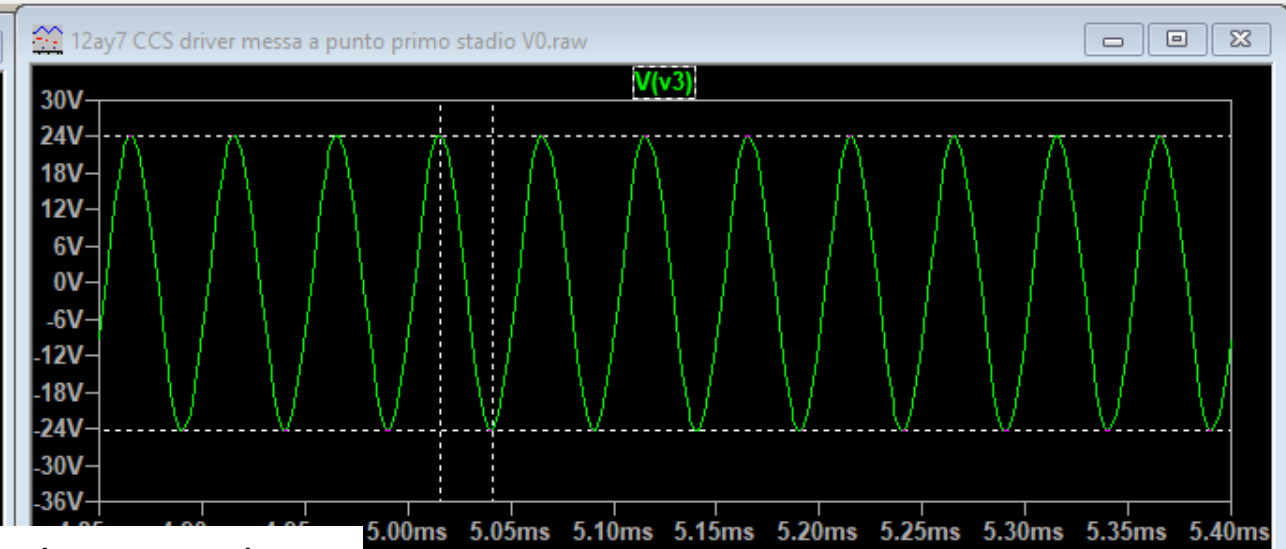
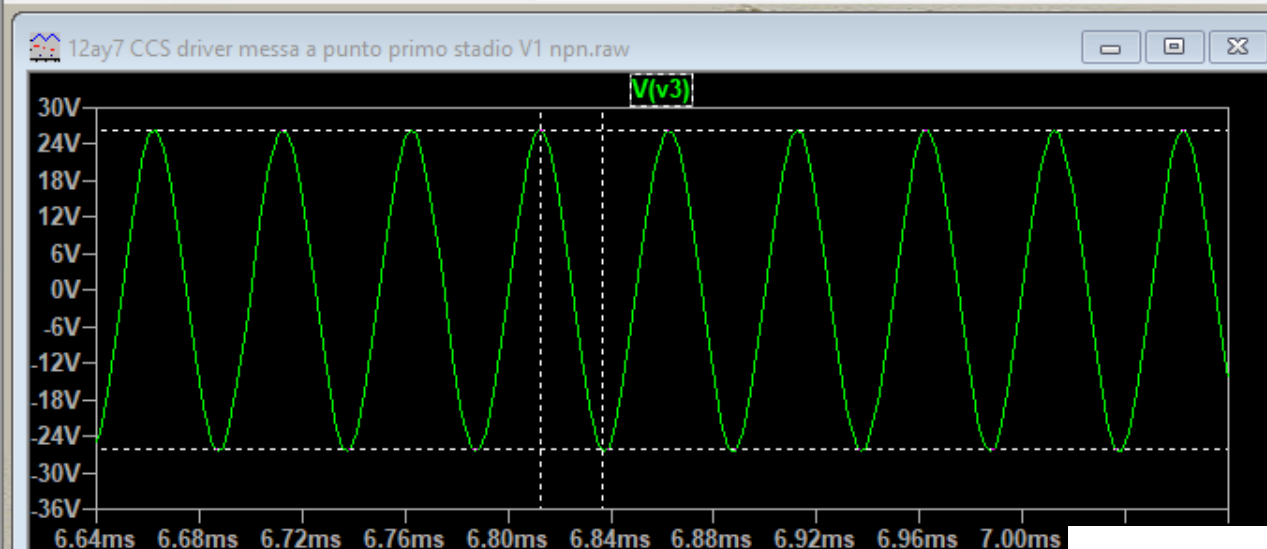
Cursor 1	
Horz:	8.2566225ms
Vert:	27.072702V
Cursor 2	
Horz:	8.7574503ms
Vert:	-27.174369V
Diff (Cursor2 - Cursor1)	
Horz:	500.82781μs
Vert:	-54.247071V
Freq:	1.9966942KHz
Slope:	-108315

Right-Click to manually enter Horizontal Axis Limits





12ay7 CCS driver messa a punto primo stadio V0.raw 12ay7 CCS driver messa a punto primo stadio V1 npn.asc 12ay7 CCS driver messa a punto primo stadio V1 npn.raw



Output @1kHz is nicely higher with the PNP

