EVALUATION OF G5 OUTPUT TRANSFORMERS

Tests procedure:

input signal: +/- 300mV (sound card generator).
préamp set-up: neutral (trebble 0; bass 0; medium max)
8ohm / 50W Dummy load.

OT TT:

EL34 95mA / 250V at idle

To get the 2.5K load, the anode must be connect to the second 40% tap, ie blue-yellow wire. With the constructor datasheet the load is **only 1.7K.**

Primary : brown / blue-yellow
Secondary : white / black

OT ESO:

EL34 95mA / 253V at idle

2.5K

OT Hammond

EL34 97mA / 257V at idle

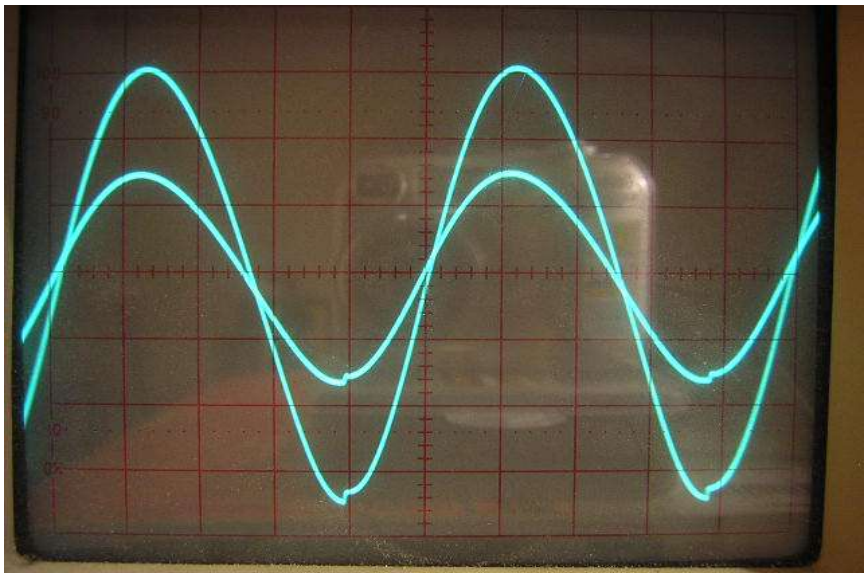
2.5k

All graphs except annexes shows anode voltage and dummy load voltage for different frequences.
Curves with **smaller swing is dummy load.**

Measurements realized by Franck Davot – G5 Team – November 2006

100Hz (the break is due to generator limit) scales 20V / 2V

TT



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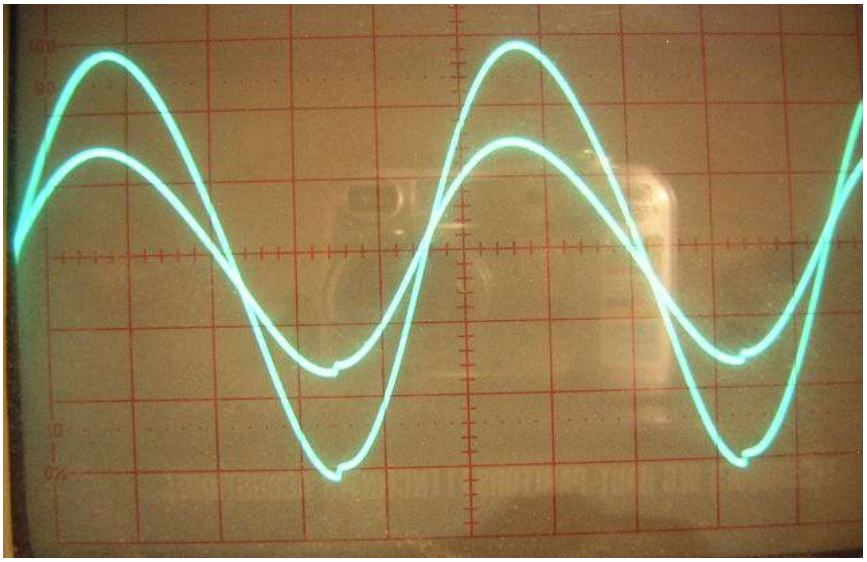
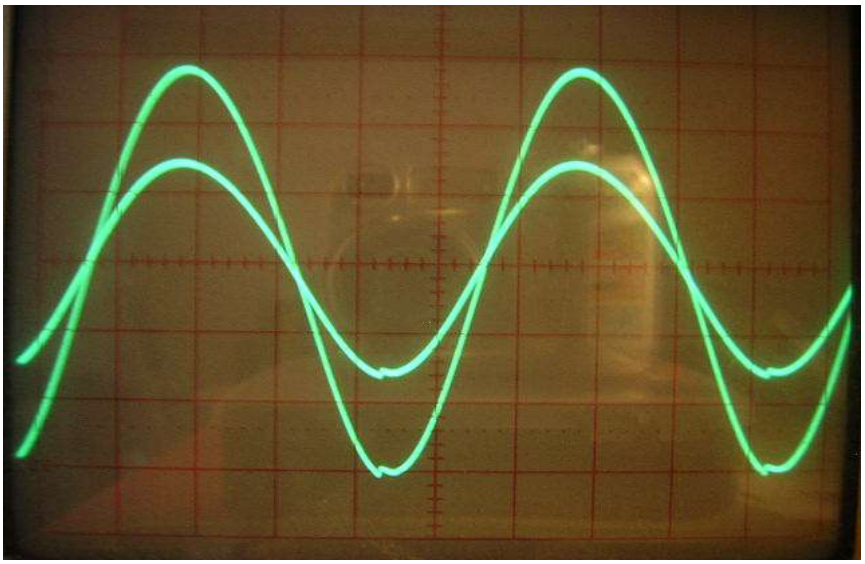
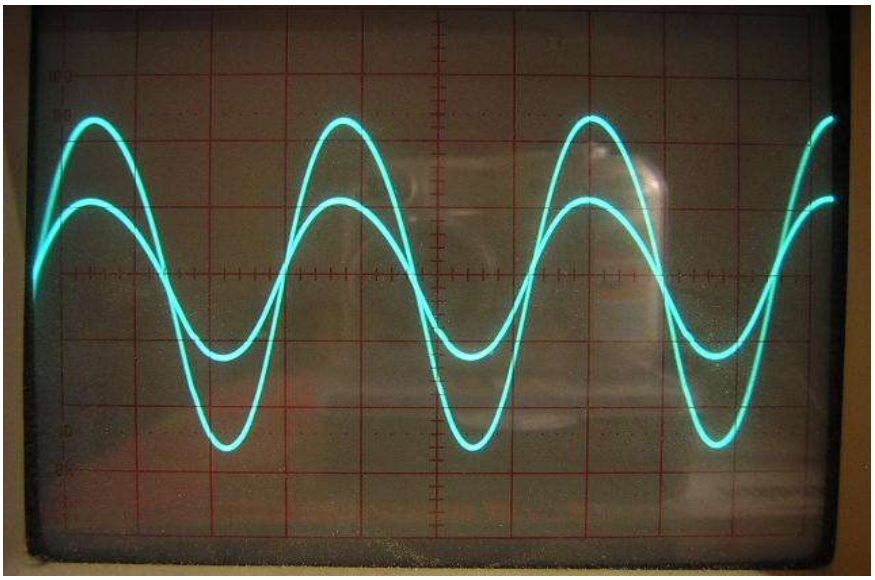


Hammond



300Hz scales 50V / 5V

TT



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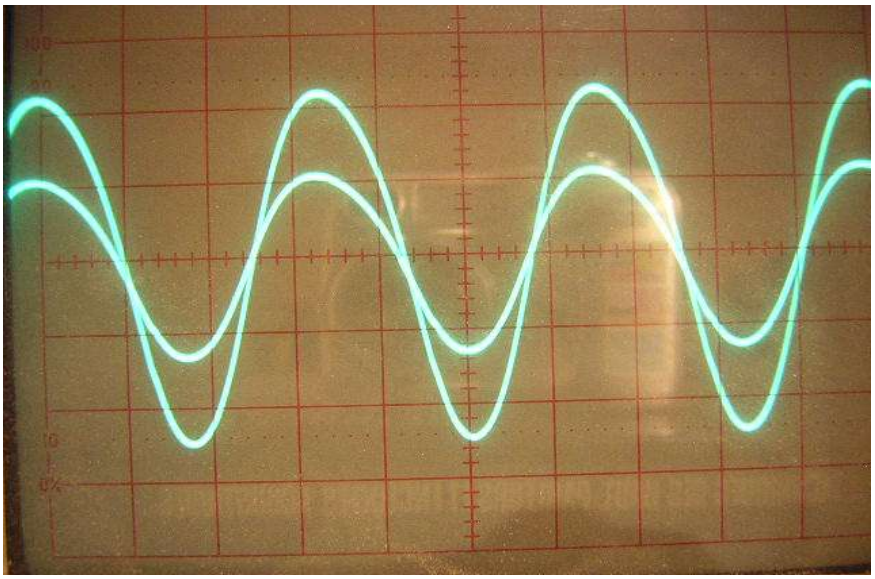
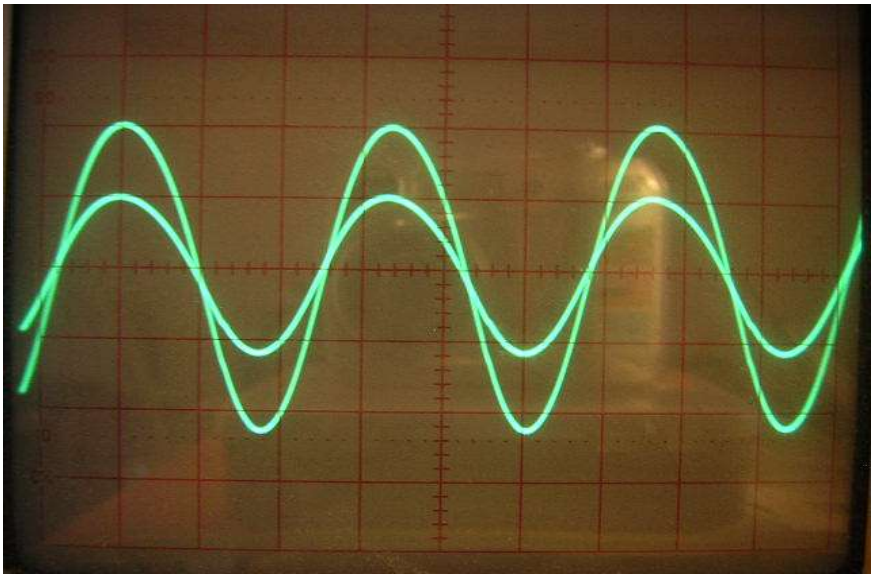


Hammond



500Hz scales 50V / 5V

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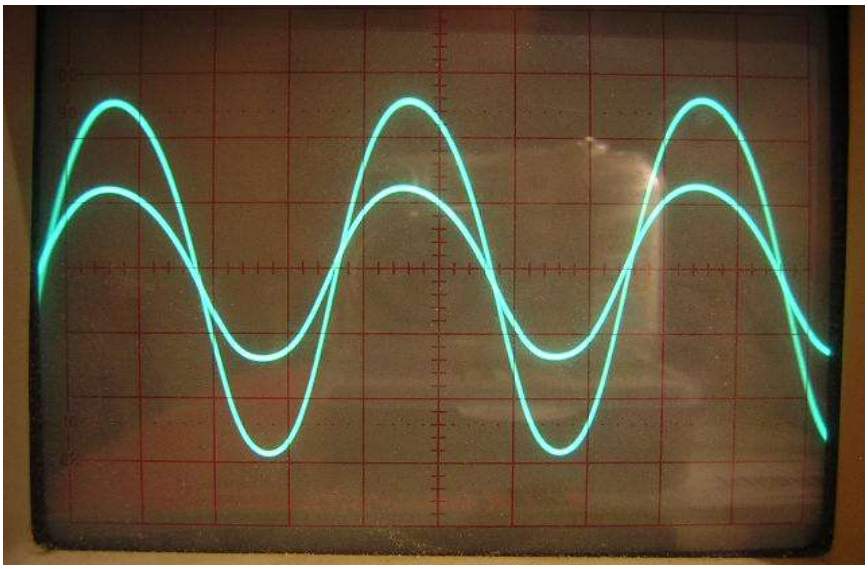

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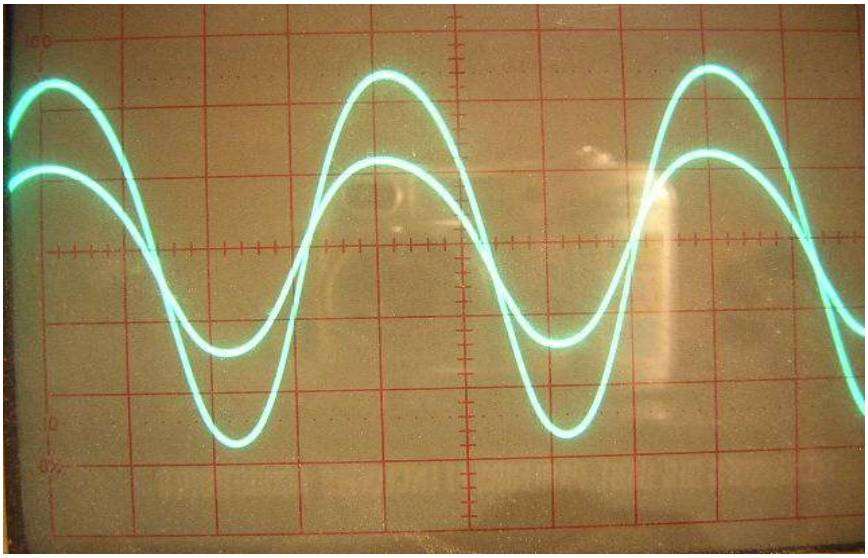
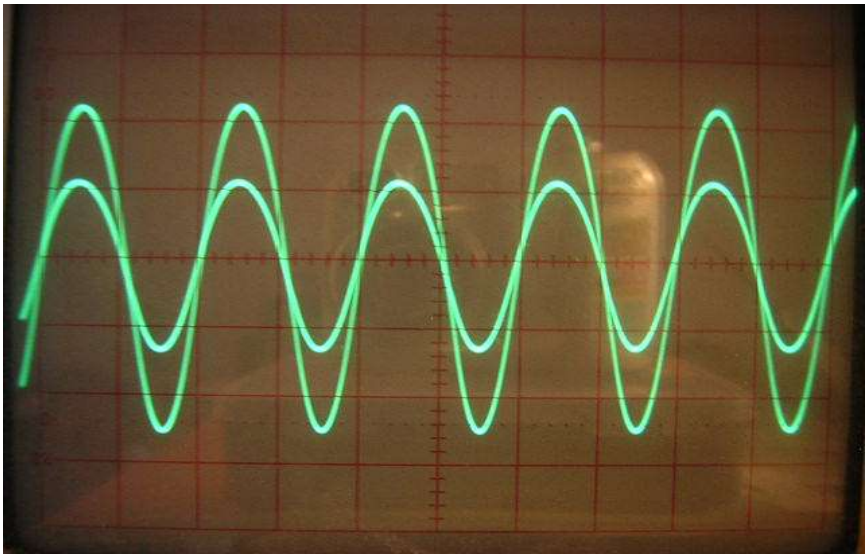
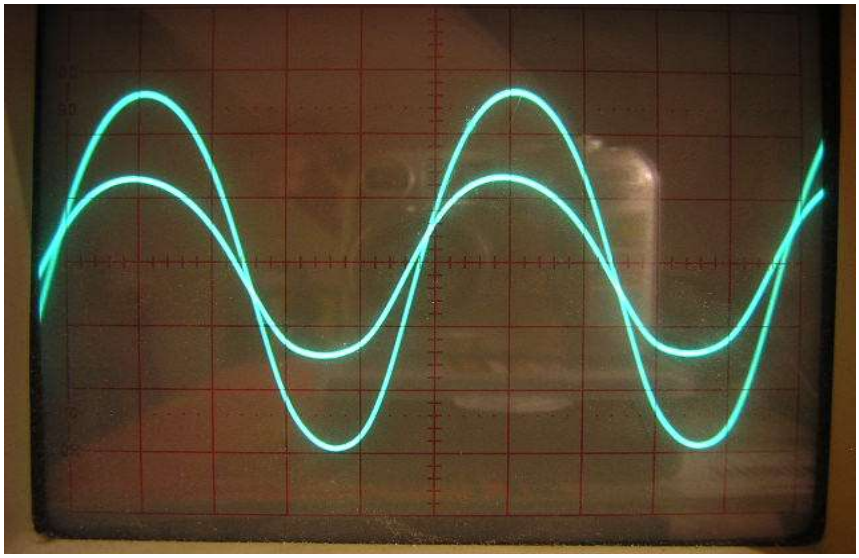


Hammond



1000Hz scales 50V / 5V

TT



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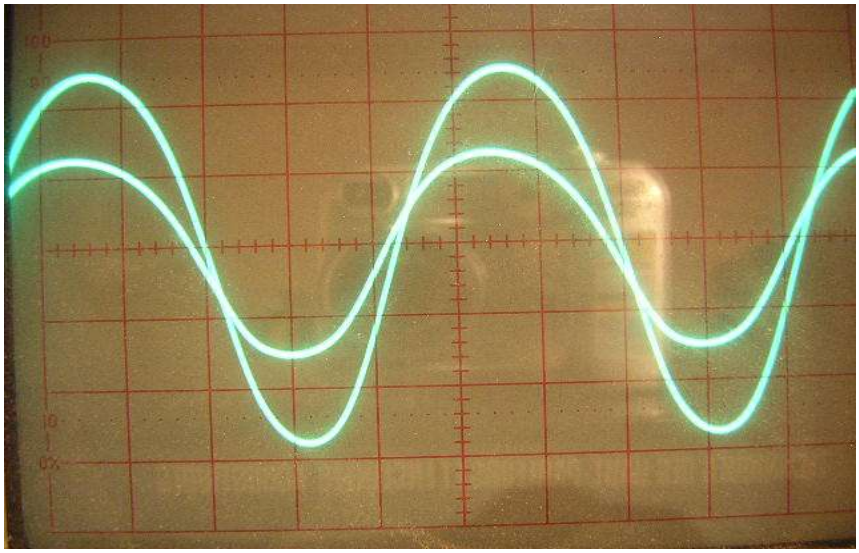

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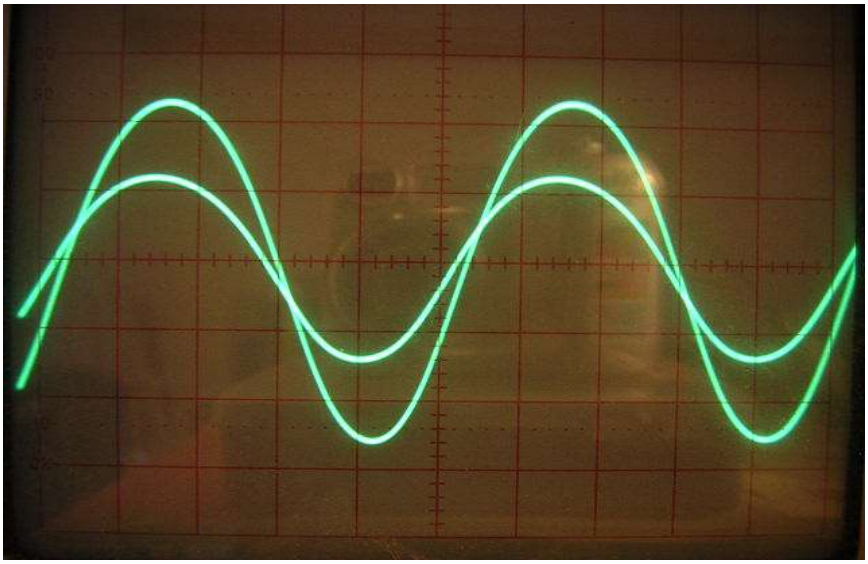
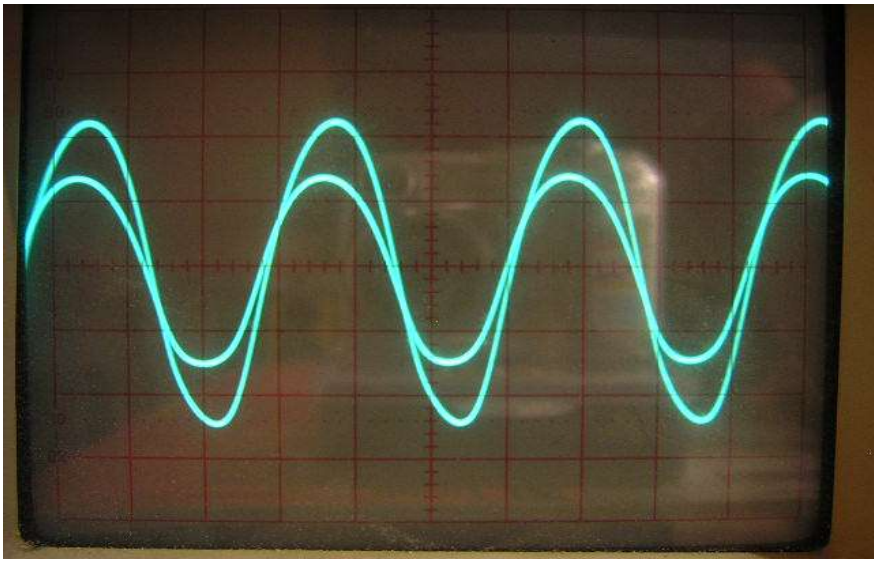


3000Hz scales 50V / 5V

TT



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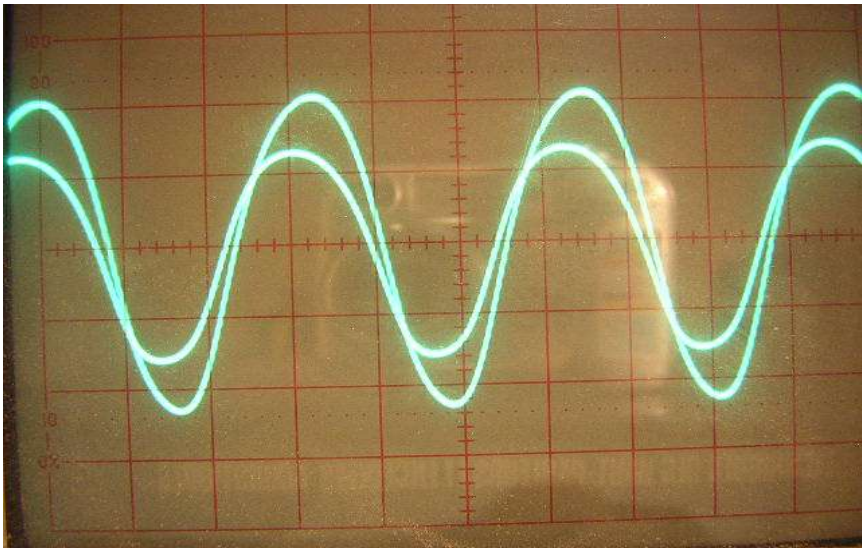

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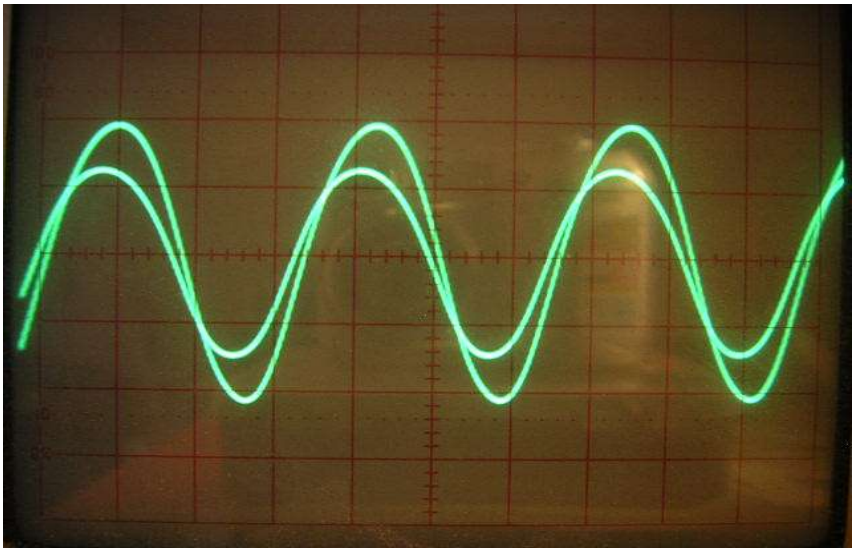

5000Hz scales 50V / 5V

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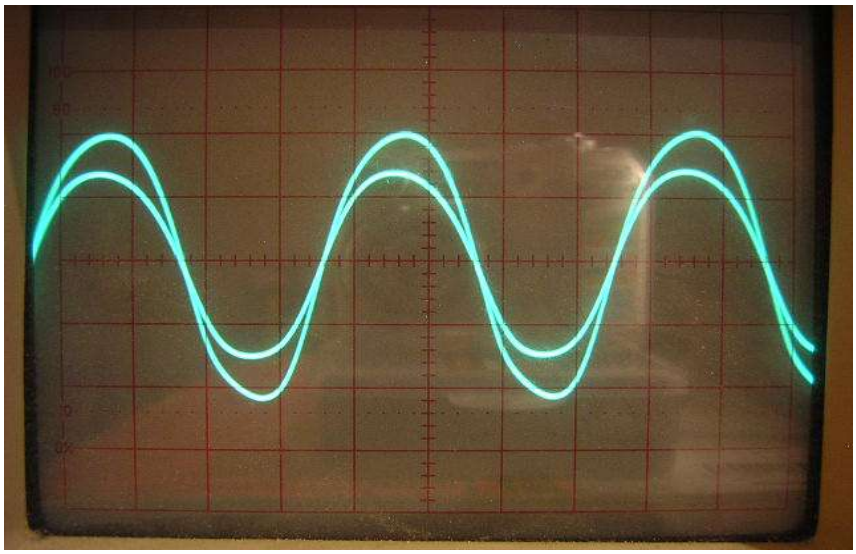

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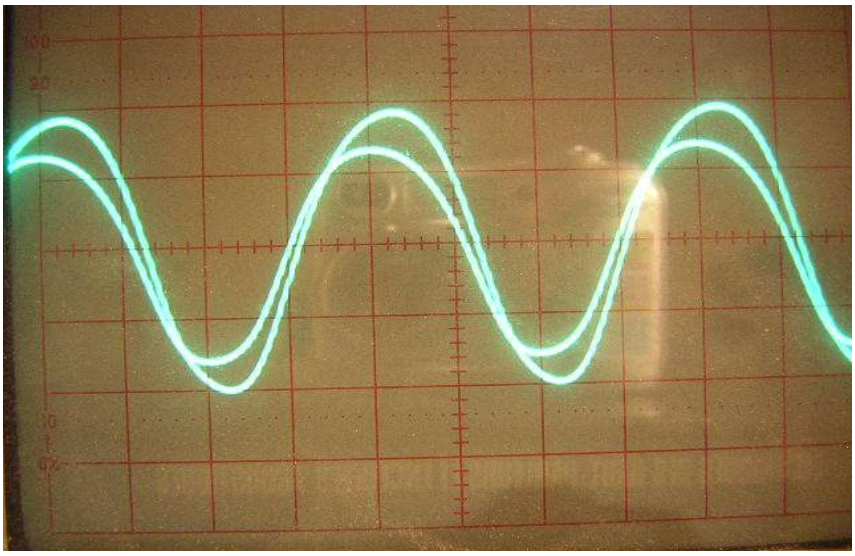

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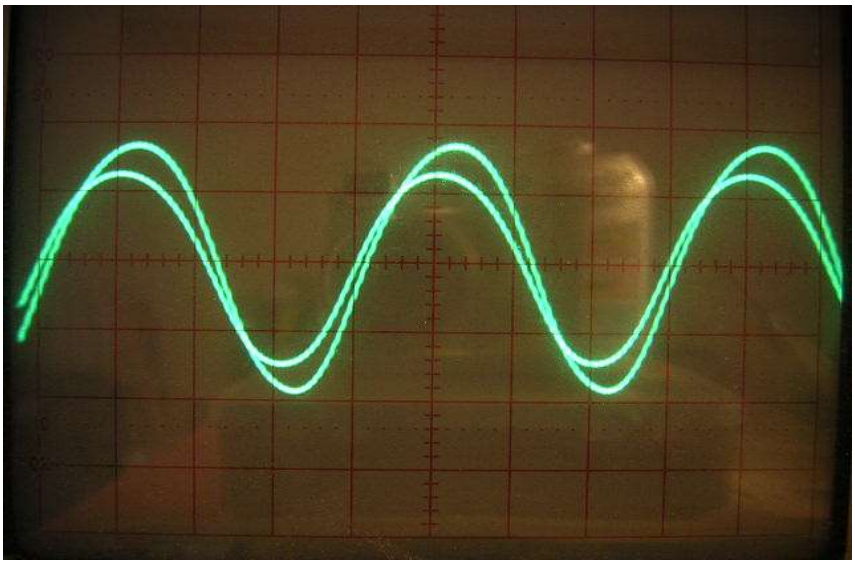
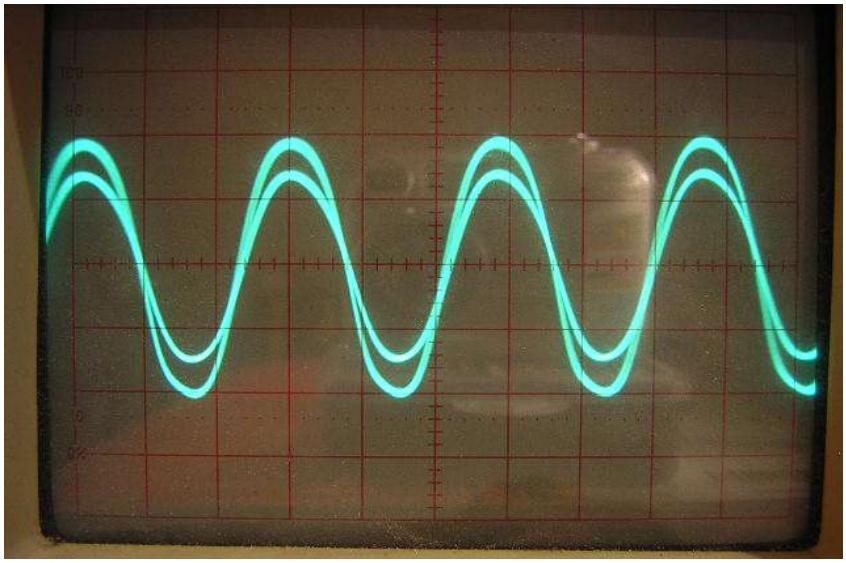


7000Hz scales 50V / 5V

TT



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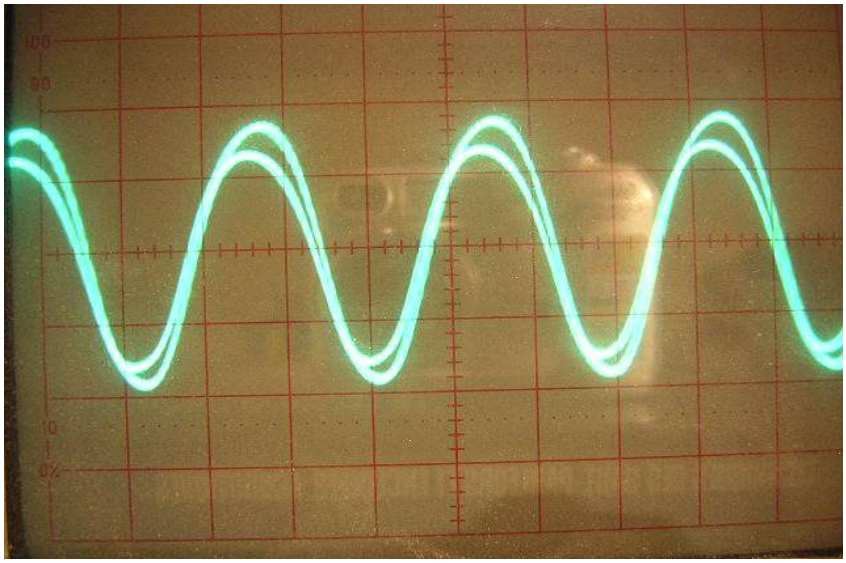

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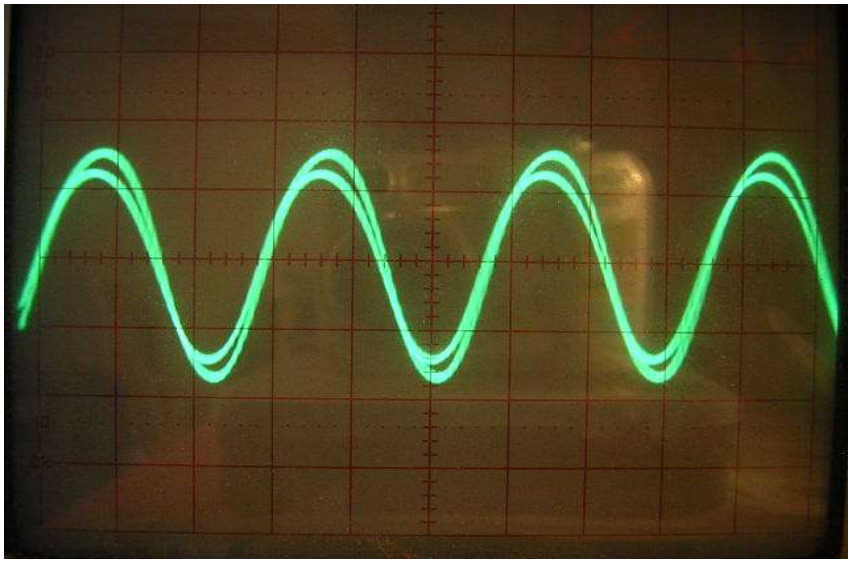
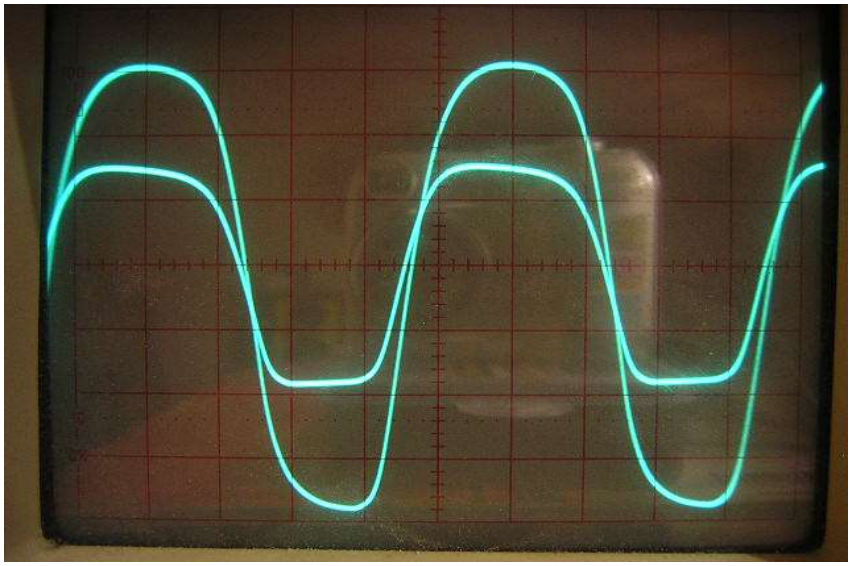


1000Hz Gain at 10 o'clock

TT



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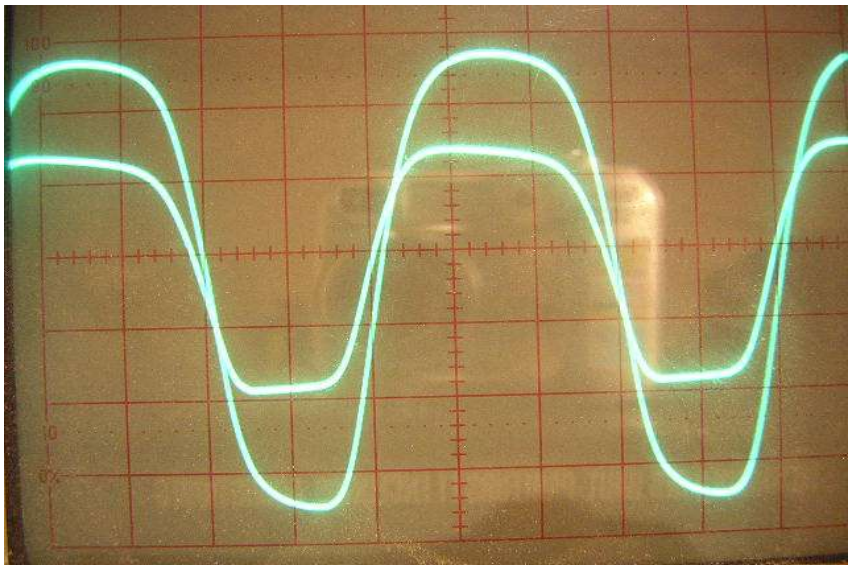

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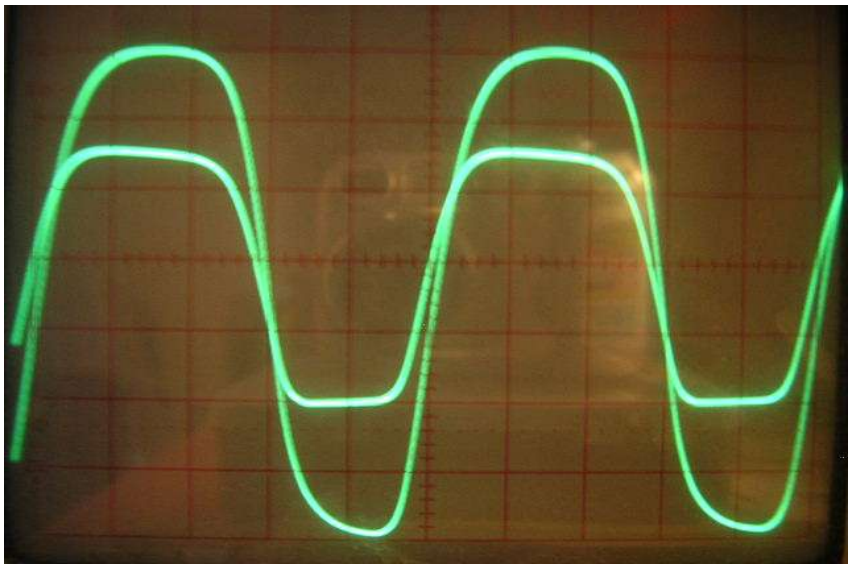
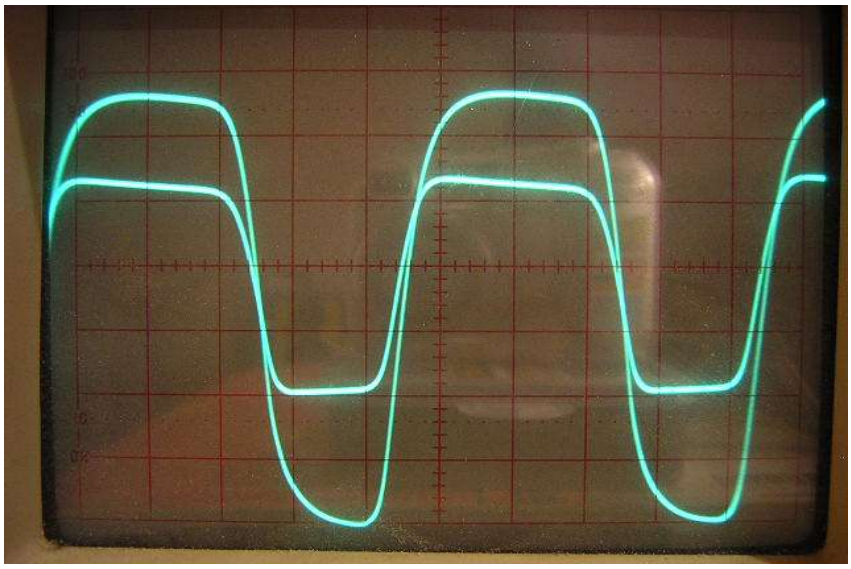


1000Hz Gain at 12 o'clock

TT



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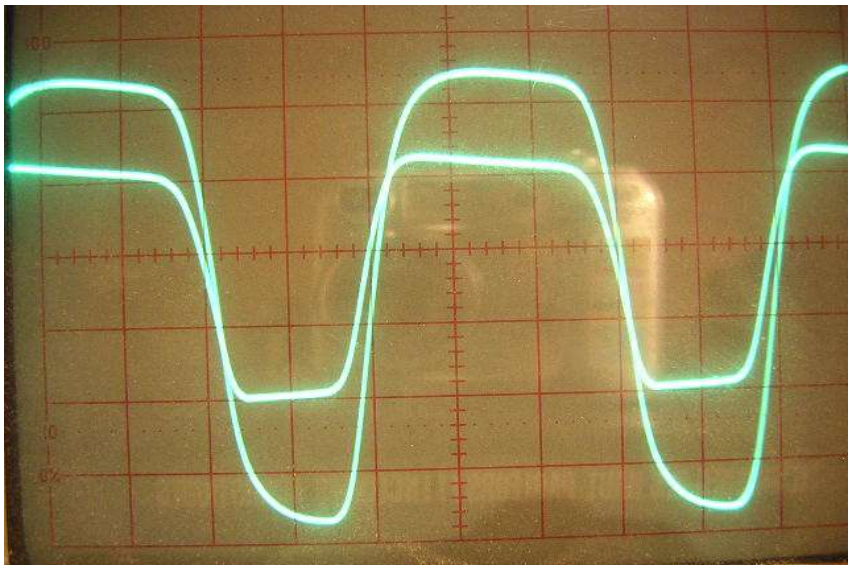

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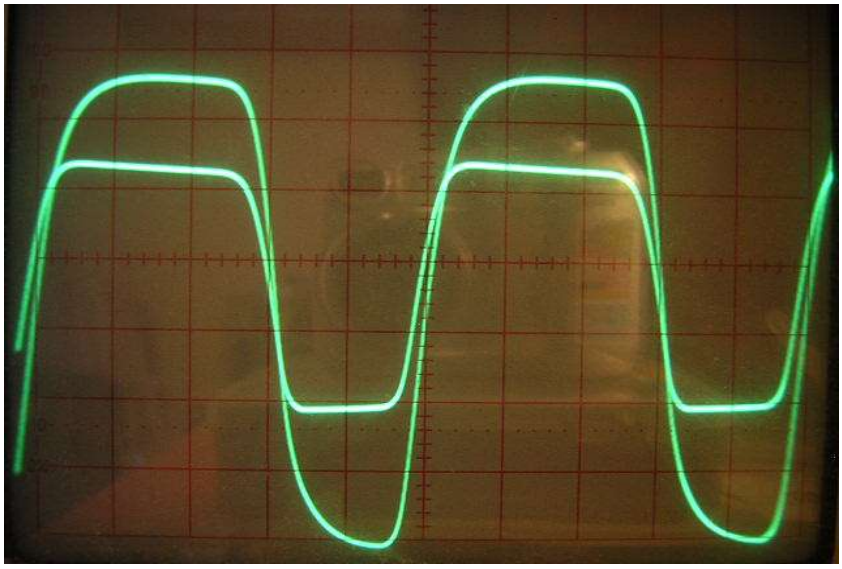
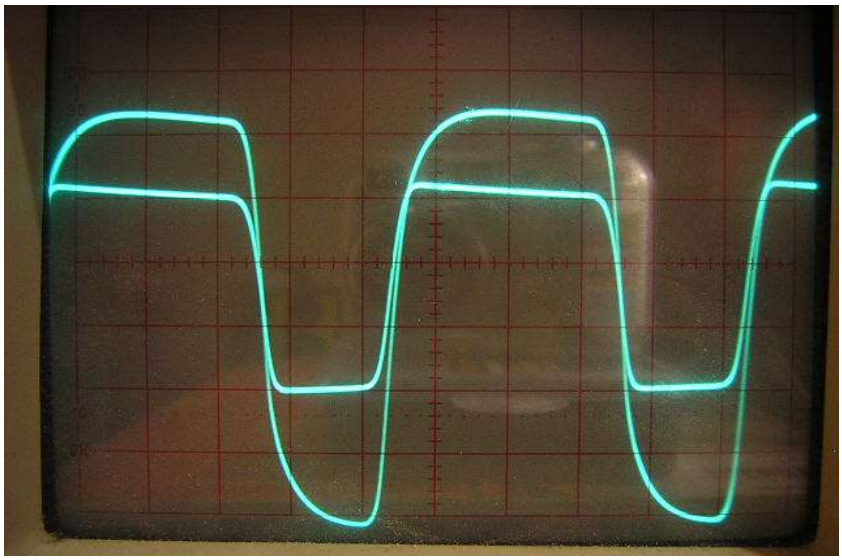


1000Hz Gain at 14 o'clock

TT



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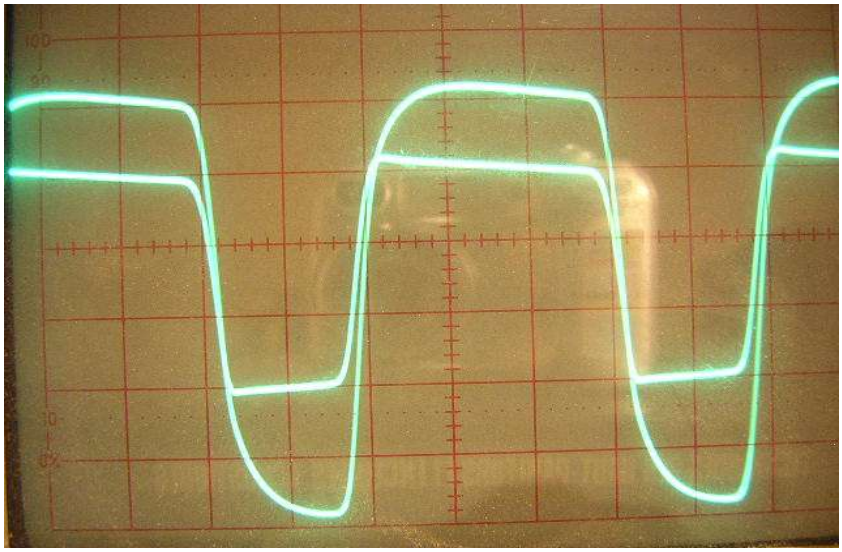

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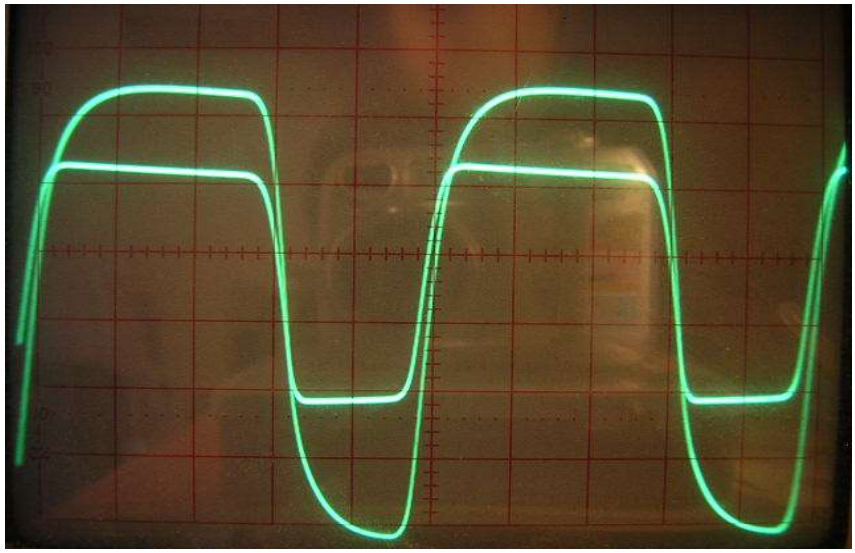
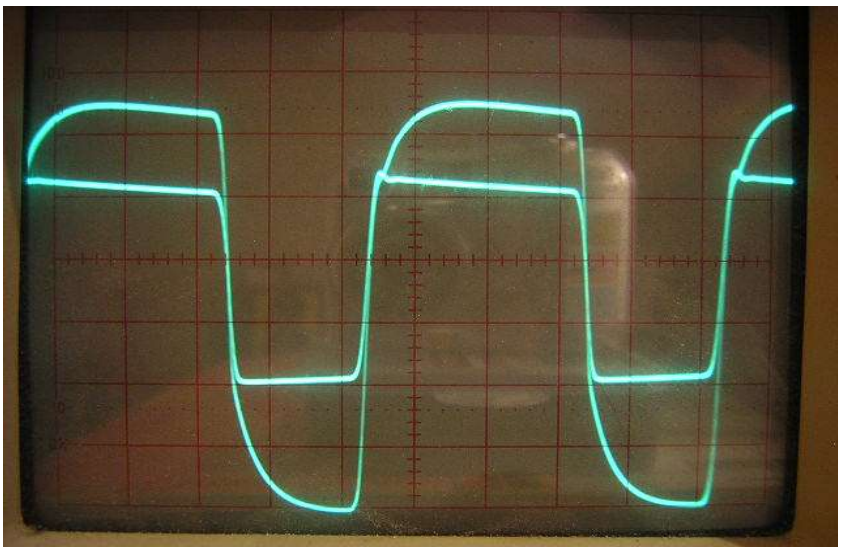


1000Hz Gain at 15 o'clock (oscillation appers in dummy load at front of wave)

TT



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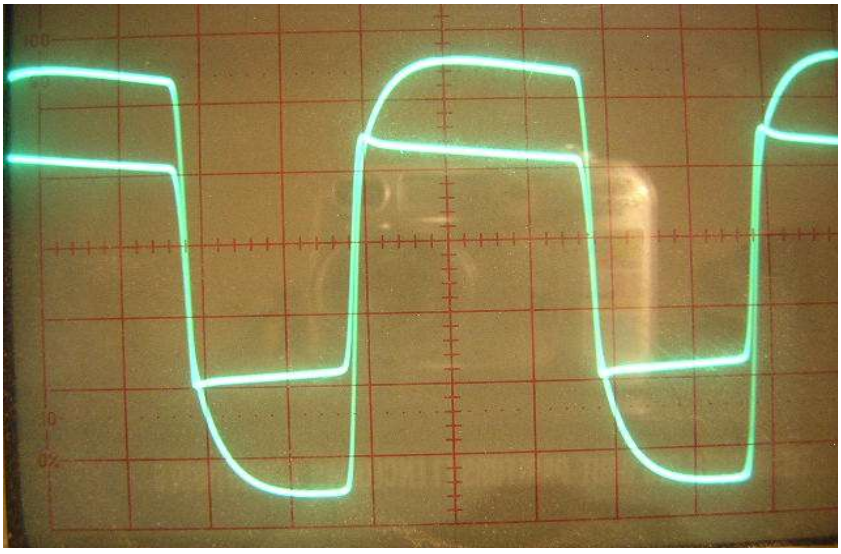

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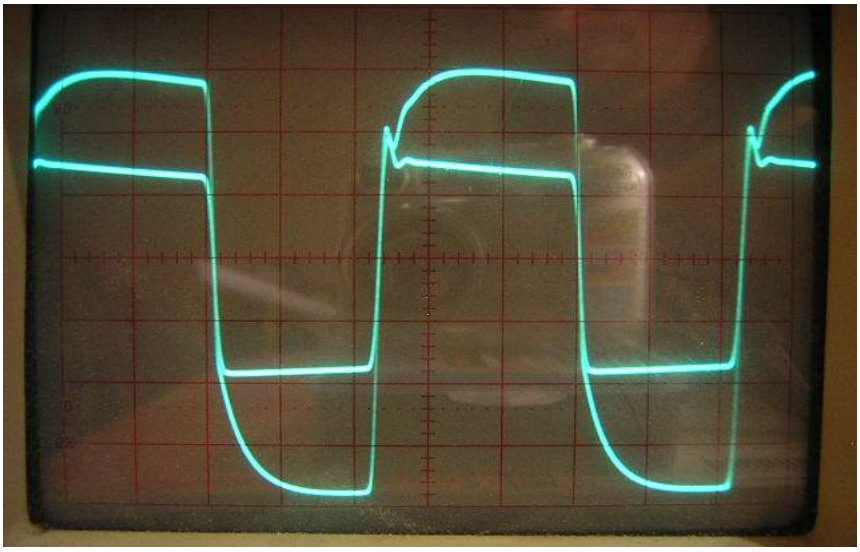
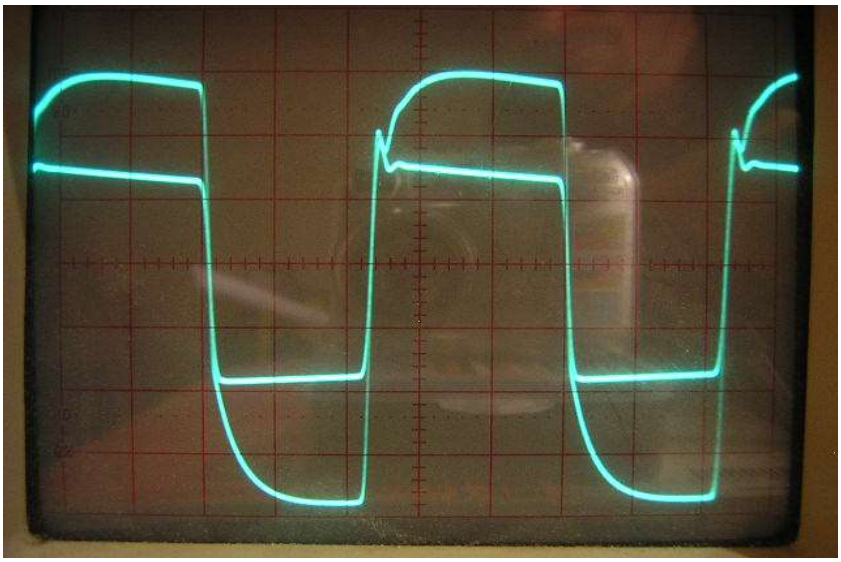


1000Hz Gain at Max

TT



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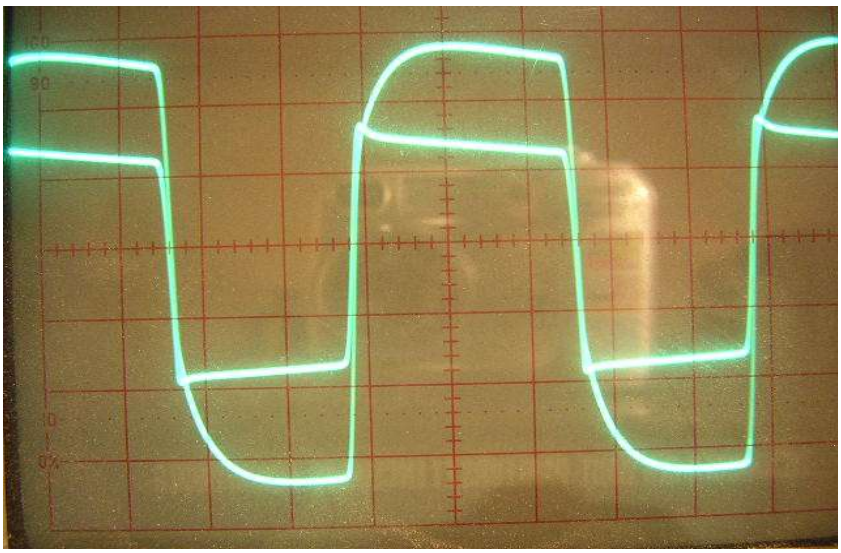
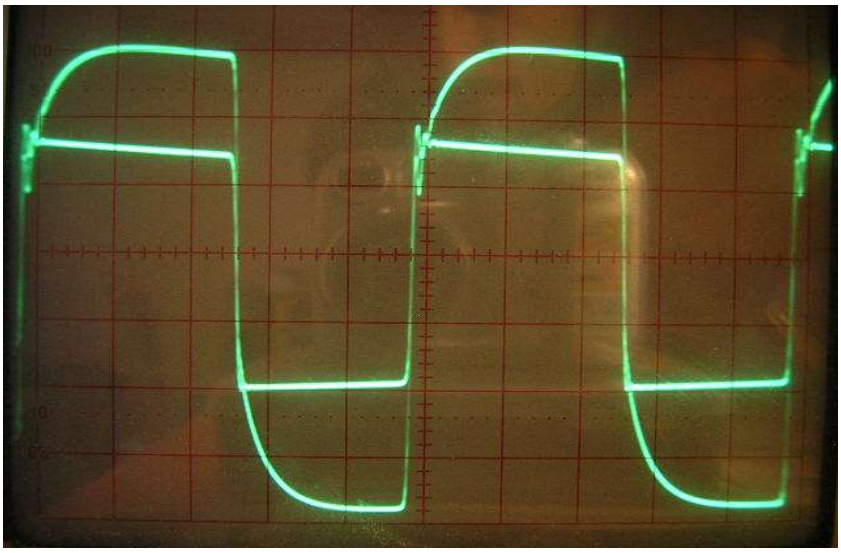
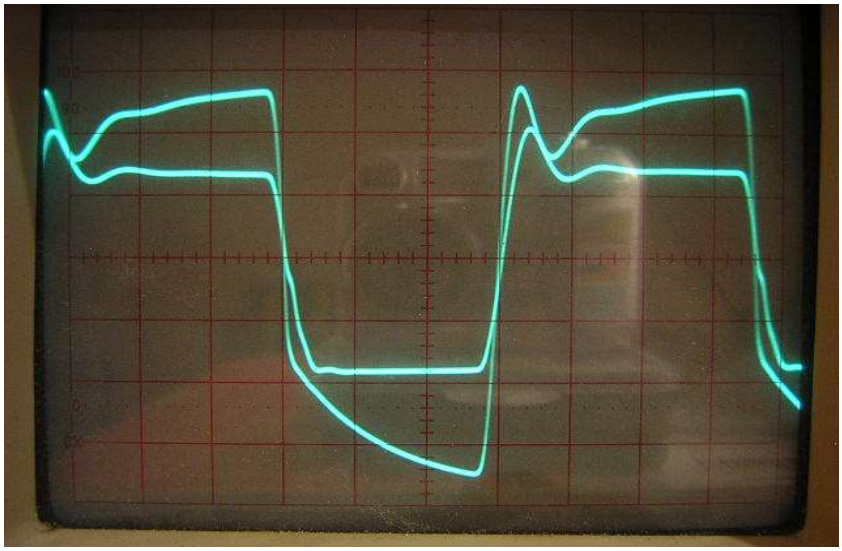


Hammond



Gain at Max at 3000Hz: oscillation grows with frequences.

TT



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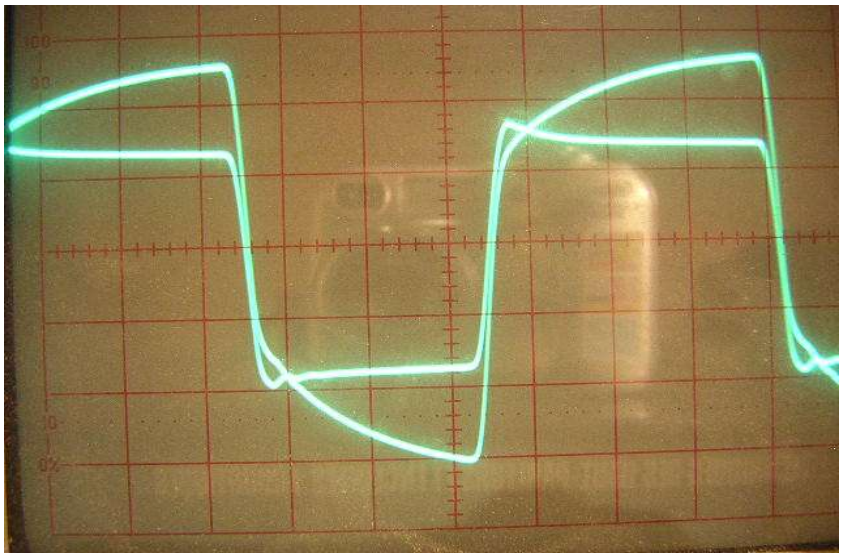
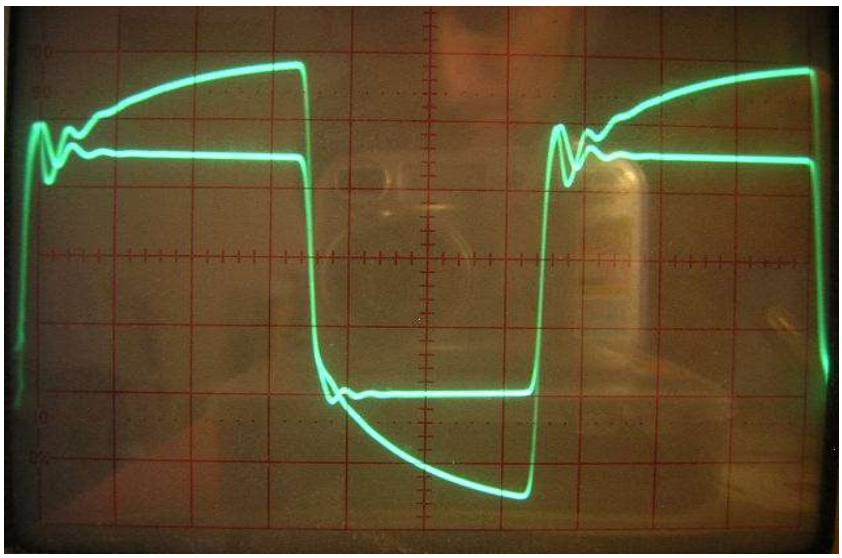


Hammond



Bandwith data:

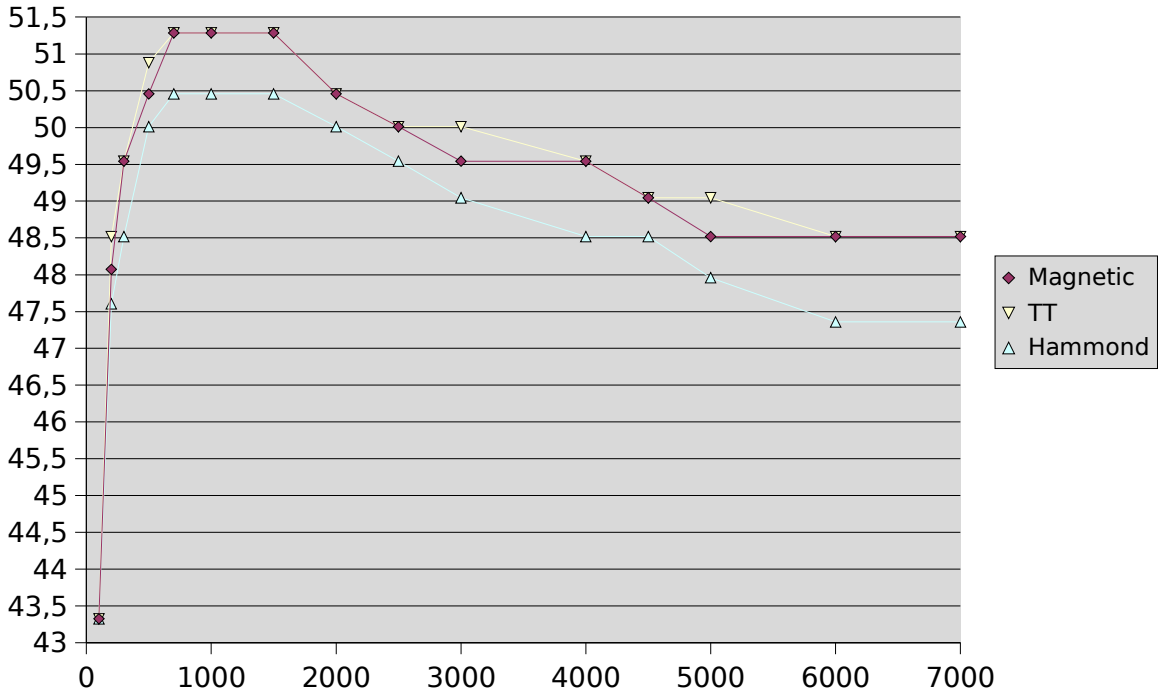
Va = Voltage at anode ; Vout = voltage at Dummy; Vin = Vinput

20log(Ua/Uin)			
Hz	Magnetic	TT	Hammond
100	43,33	43,33	43,33
200	48,07	48,52	47,6
300	49,54	49,54	48,52
500	50,46	50,88	50,01
700	51,29	51,29	50,46
1000	51,29	51,29	50,46
1500	51,29	51,29	50,46
2000	50,46	50,46	50,01
2500	50,01	50,01	49,54
3000	49,54	50,01	49,05
4000	49,54	49,54	48,52
4500	49,05	49,05	48,52
5000	48,52	49,05	47,96
6000	48,52	48,52	47,36
7000	48,52	48,52	47,36

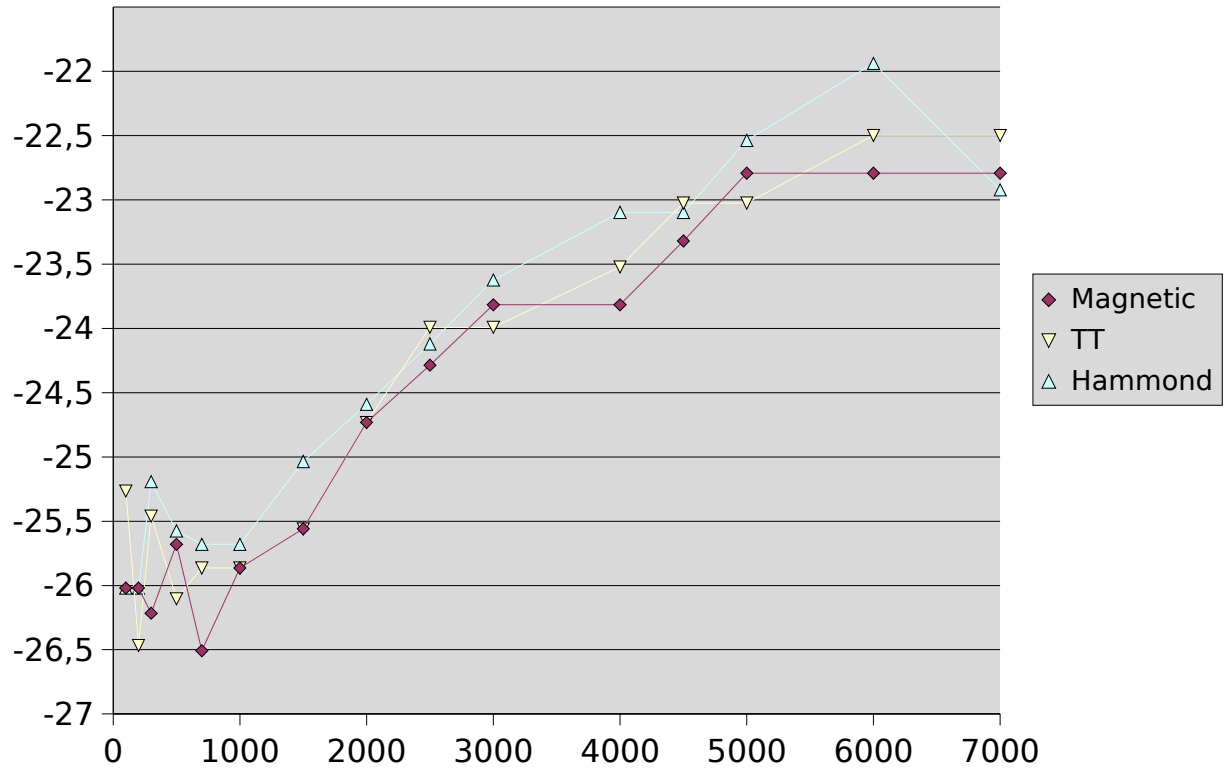
20log(Uout/Ua)			
Hz	Magnetic	TT	Hammond
100	-26,02	-25,26	-26,02
200	-26,02	-26,47	-26,02
300	-26,22	-25,46	-25,19
500	-25,68	-26,1	-25,58
700	-26,51	-25,86	-25,68
1000	-25,86	-25,86	-25,68
1500	-25,56	-25,56	-25,04
2000	-24,73	-24,73	-24,59
2500	-24,29	-23,99	-24,12
3000	-23,82	-23,99	-23,62
4000	-23,82	-23,52	-23,1
4500	-23,32	-23,03	-23,1
5000	-22,79	-23,03	-22,54
6000	-22,79	-22,5	-21,94
7000	-22,79	-22,5	-22,92

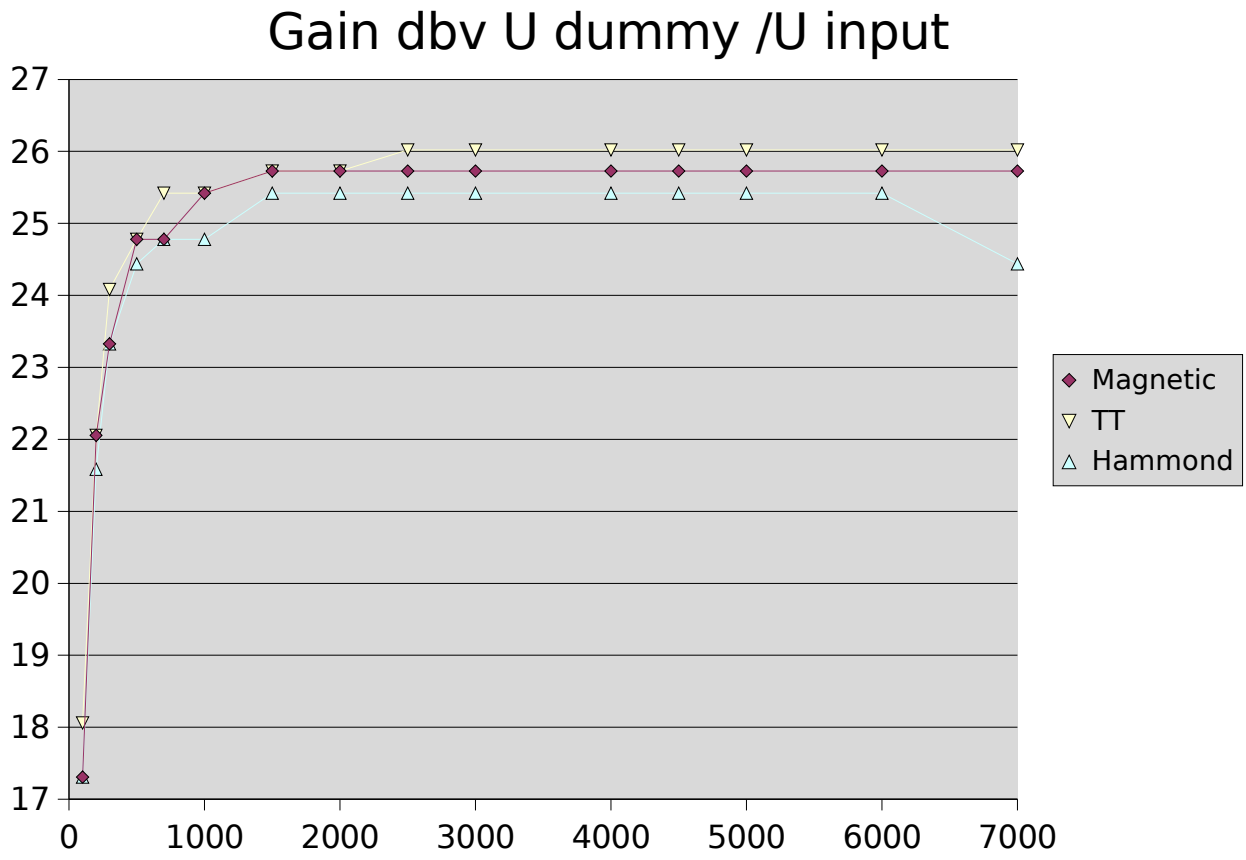
20log(Uout/Uin)			
Hz	Magnetic	TT	Hammond
100	17,31	18,06	17,31
200	22,05	22,05	21,58
300	23,33	24,08	23,33
500	24,78	24,78	24,44
700	24,78	25,42	24,78
1000	25,42	25,42	24,78
1500	25,73	25,73	25,42
2000	25,73	25,73	25,42
2500	25,73	26,02	25,42
3000	25,73	26,02	25,42
4000	25,73	26,02	25,42
4500	25,73	26,02	25,42
5000	25,73	26,02	25,42
6000	25,73	26,02	25,42
7000	25,73	26,02	24,44

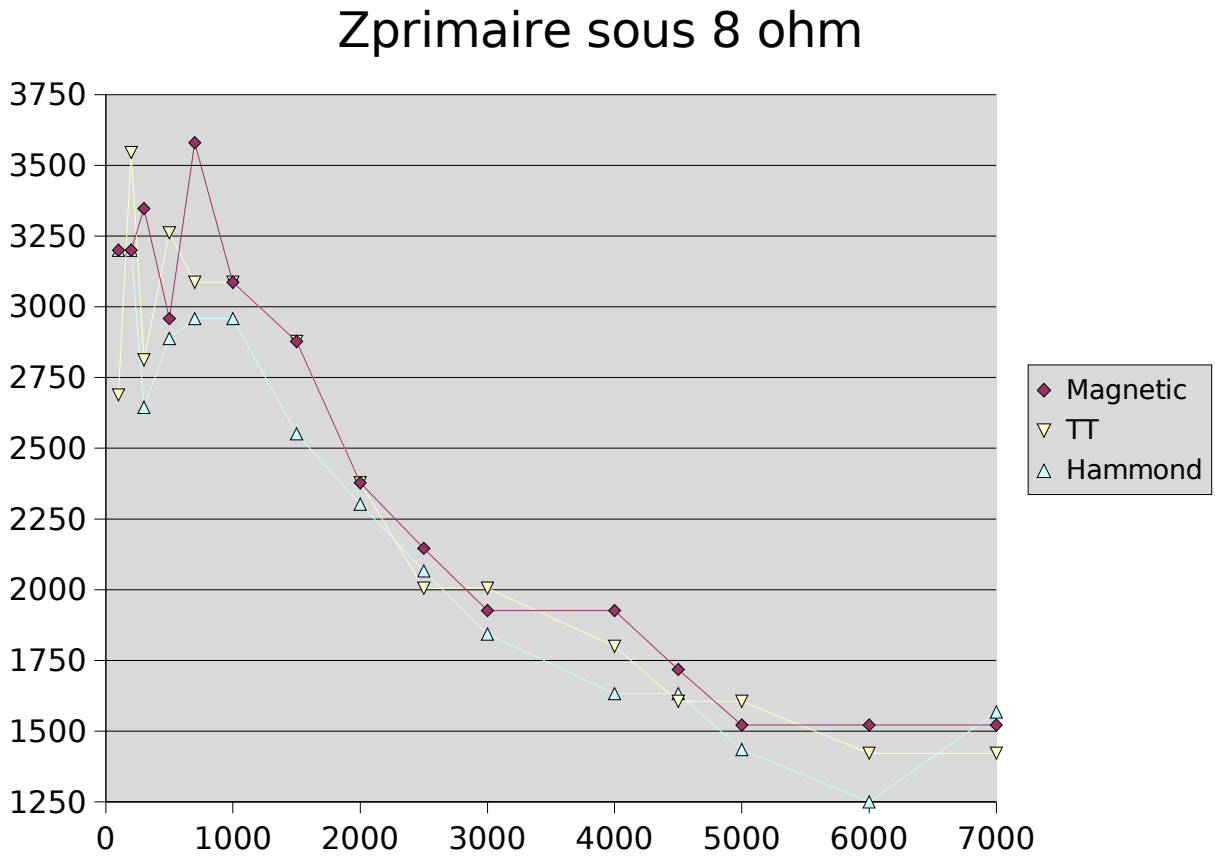
Gain dbv Uanode / U input



Gain dbv U dummy / Uanode

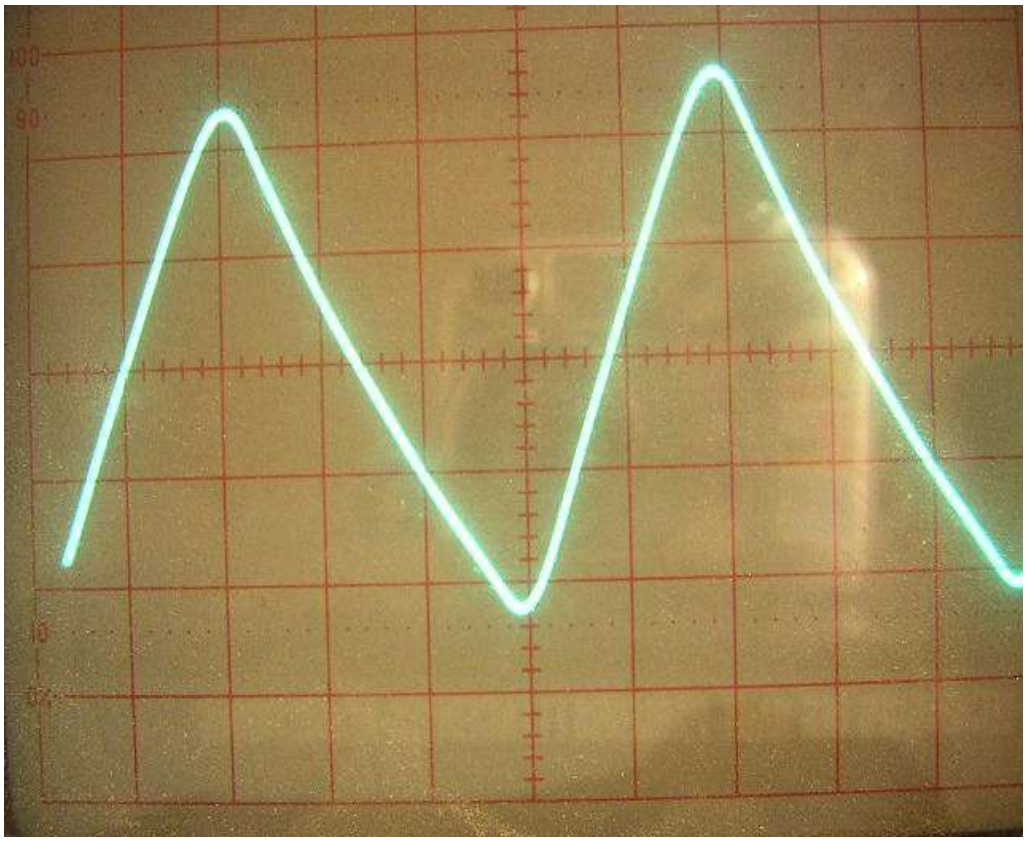



Gain dbv U dummy /U input
27
26
25
24
23
22
21
20
19
18
17
0
1000
2000
3000
4000
5000
6000
7000
Magnetic
TT
Hammond

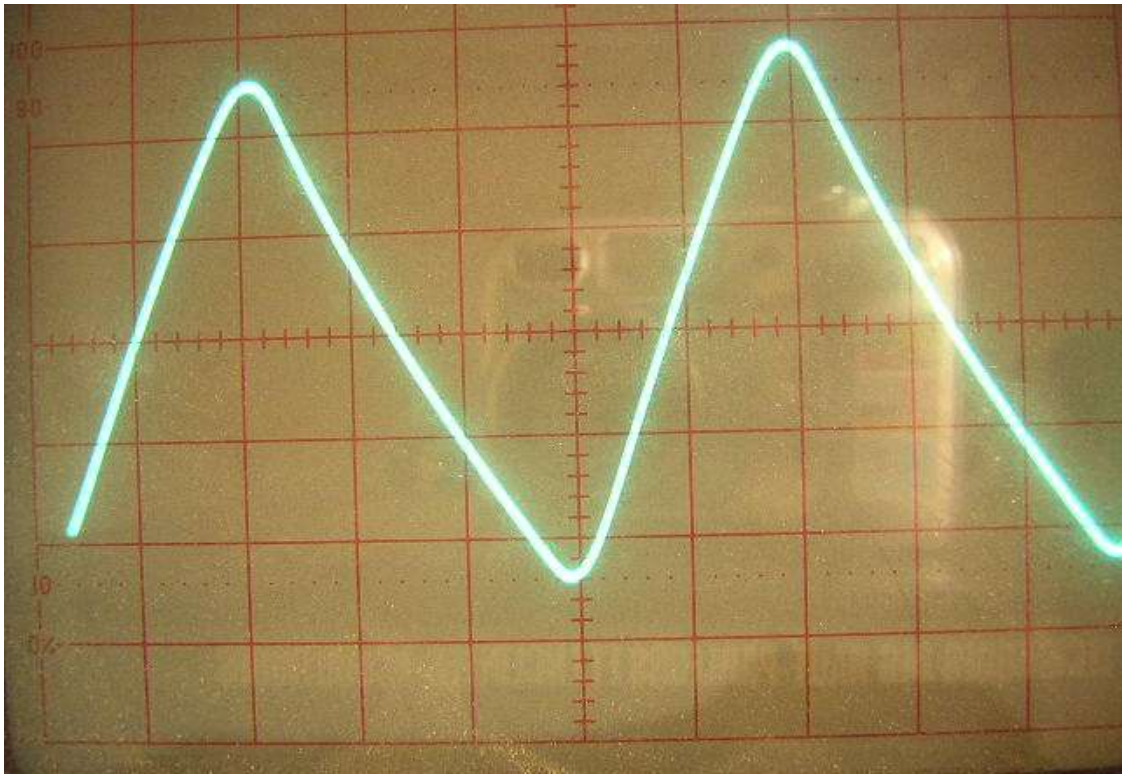

Zprimaire sous 8 ohm
3750
3500
3250
3000
2750
2500
2250
2000
1750
1500
1250
0
1000
2000
3000
4000
5000
6000
7000
Magnetic
TT
Hammond

Annexe 1:

Voltage at first cap with 0 signal



Voltage at first cap with gain at max



Annexe 2:

The following graphs shows grid signal and anode voltage for growing gain (low to max) to show impact of preamp on power stage. It shows that even with high gain output preamp signal is slightly distorted.