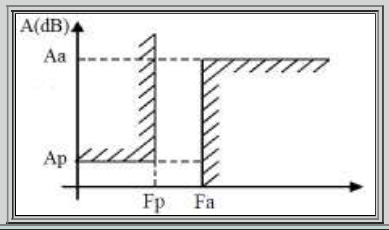
Credits

SUMMARY OF FILTER

by Analog Filter Pro

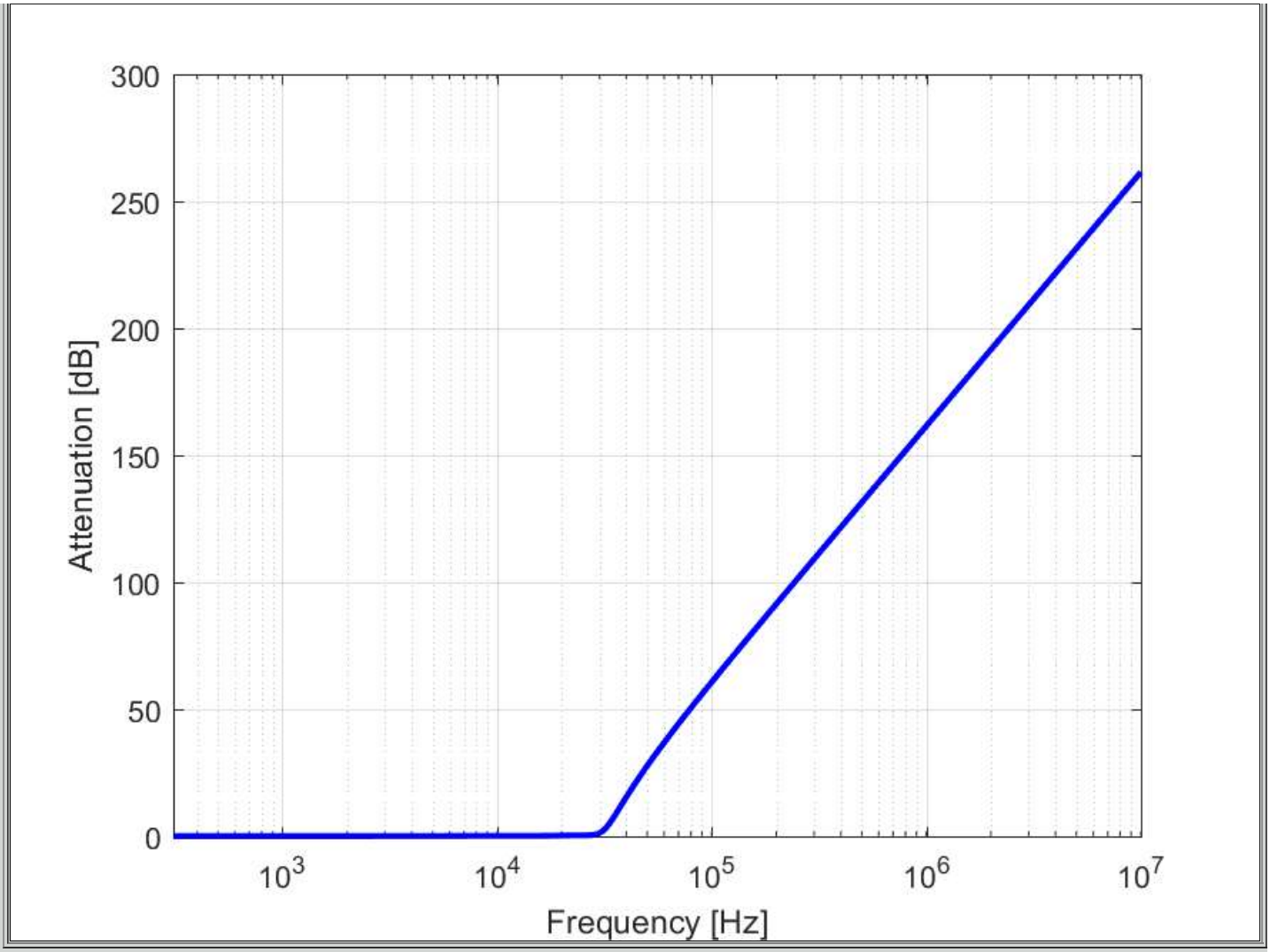
Lowpass Legendre

Filter Characteristics

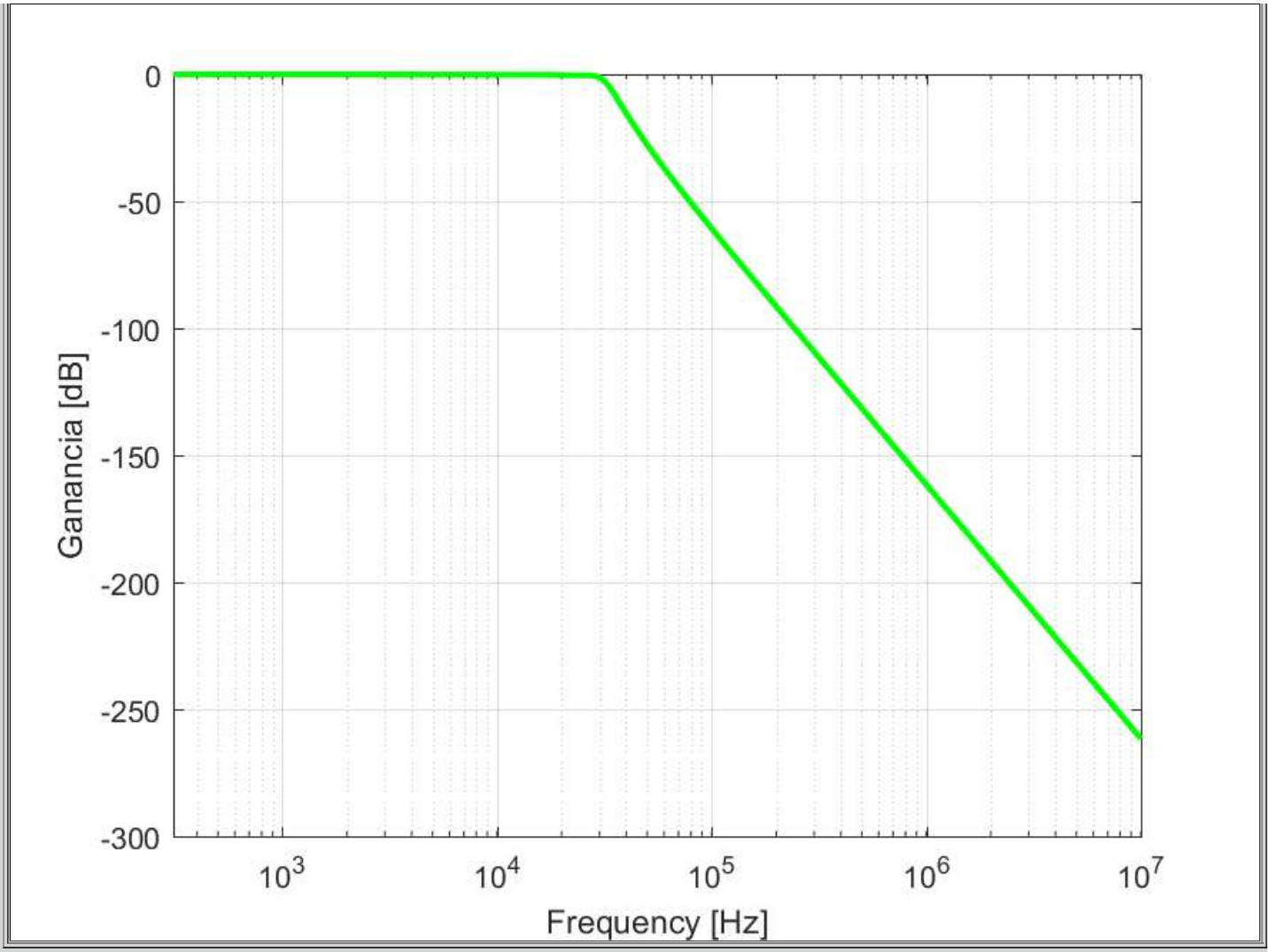


Filter Properties					
Gain [dB]	Fp [Hz]	Fa [Hz]	Ap [dB]	Aa [dB]	Order
0	31k	100k	2	60	5

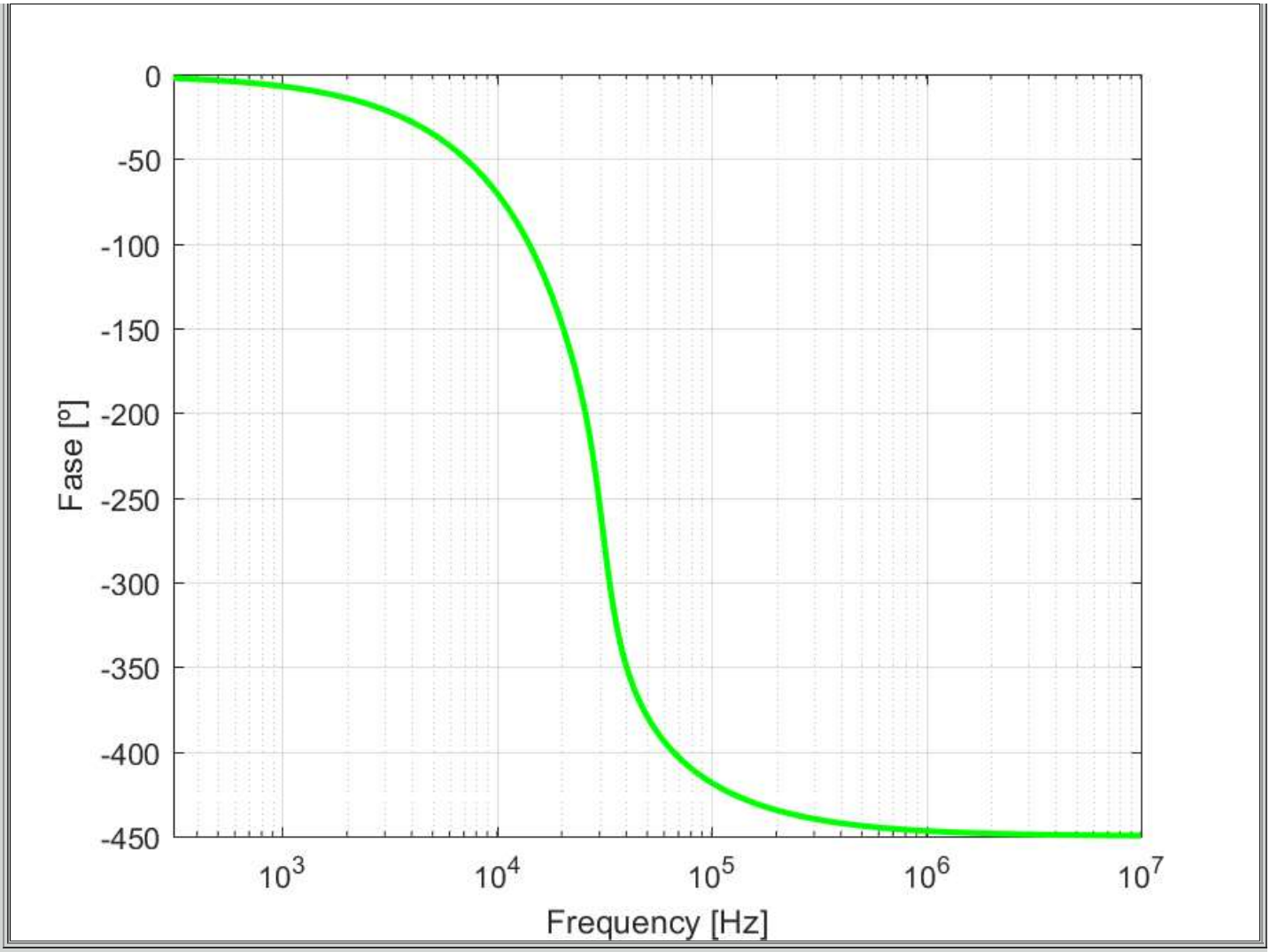
Attenuation Plot:


300
250
200
150
100
50
0
Attenuation [dB]
10^3
10^4
10^5
10^6
10^7
Frequency [Hz]

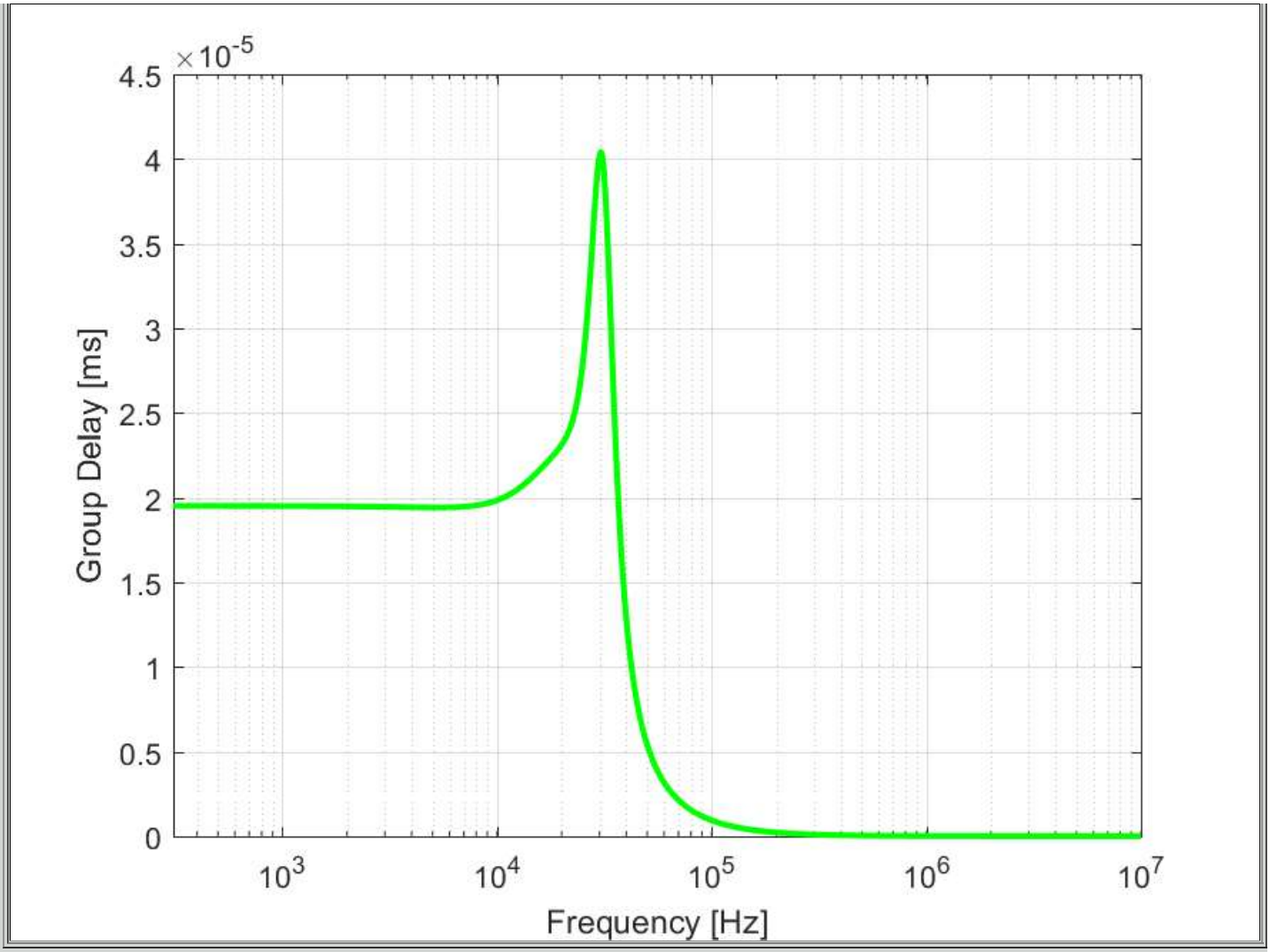
Gain Plot:


0
-50
-100
-150
-200
-250
-300
Ganancia [dB]
10^3
10^4
10^5
10^6
10^7
Frequency [Hz]

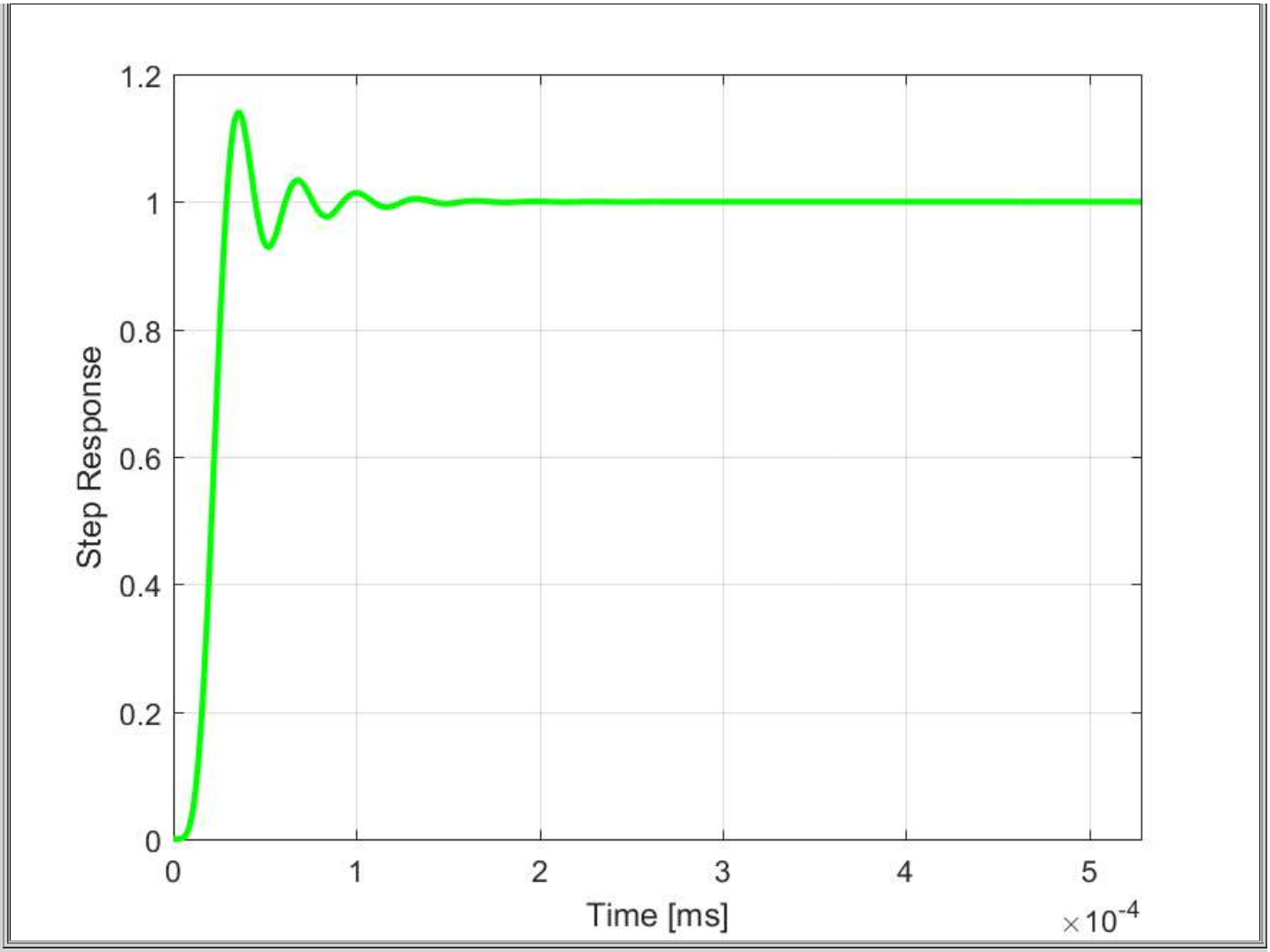
Phase Plot:


0
-50
-100
-150
-200
-250
-300
-350
-400
-450
Fase [º]
10^3
10^4
10^5
10^6
10^7
Frequency [Hz]

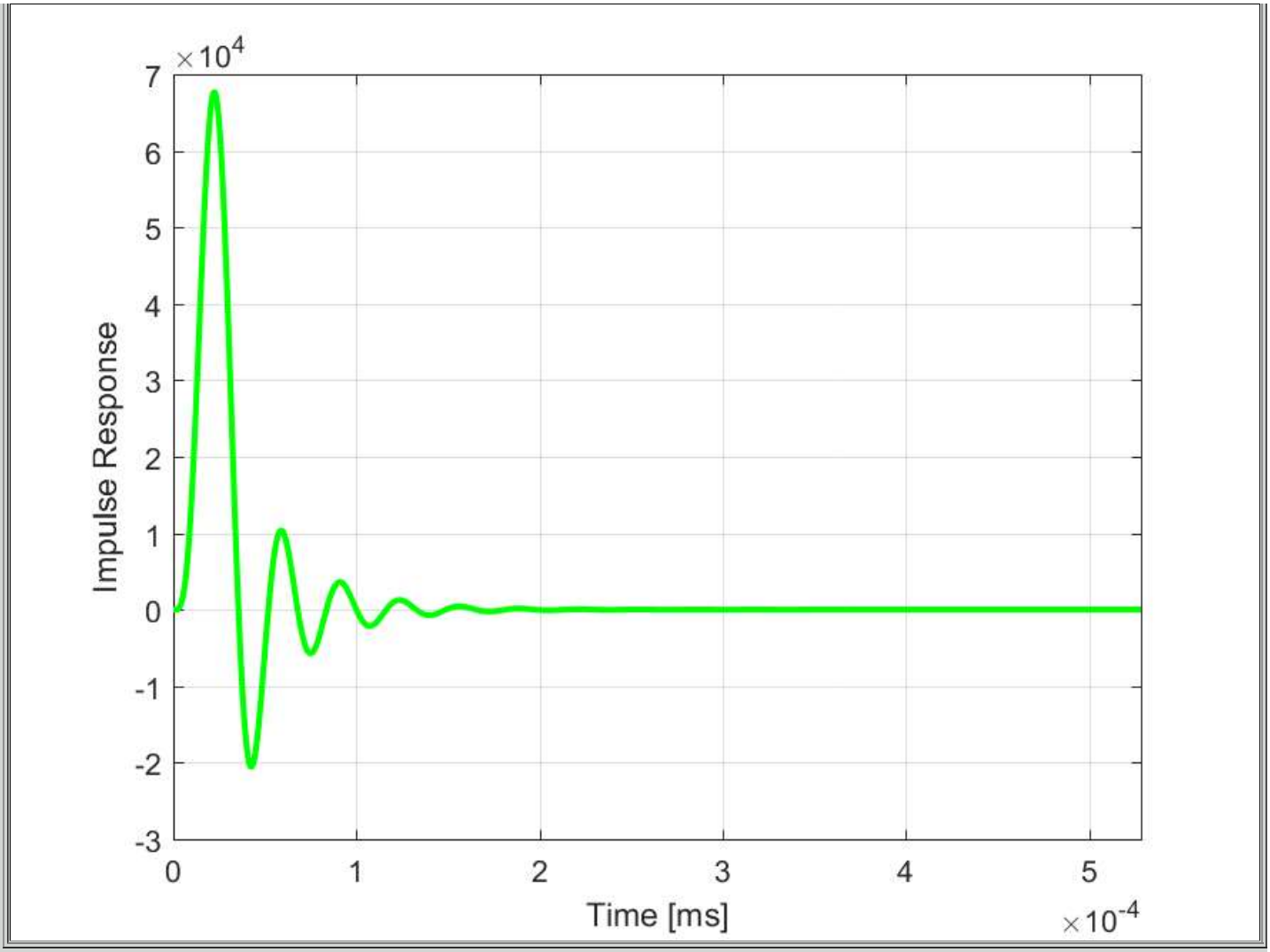
Group Delay:



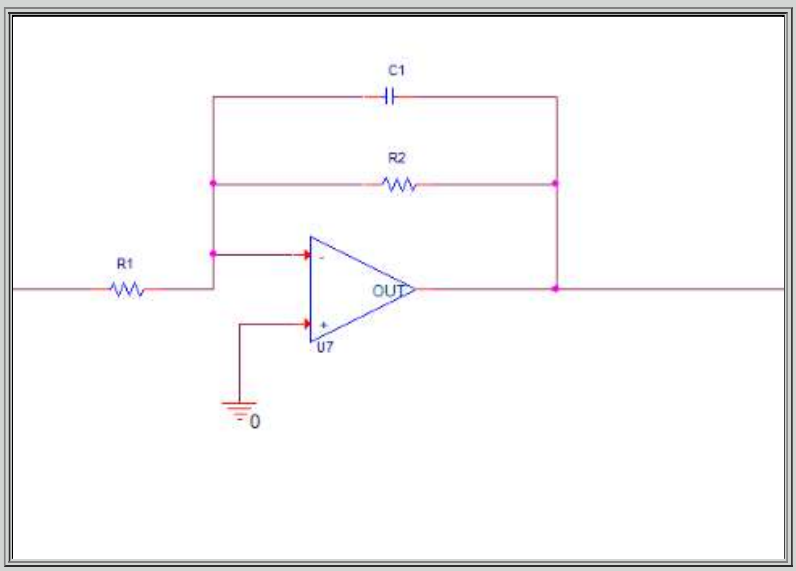
Step Response:



Impulse Response:

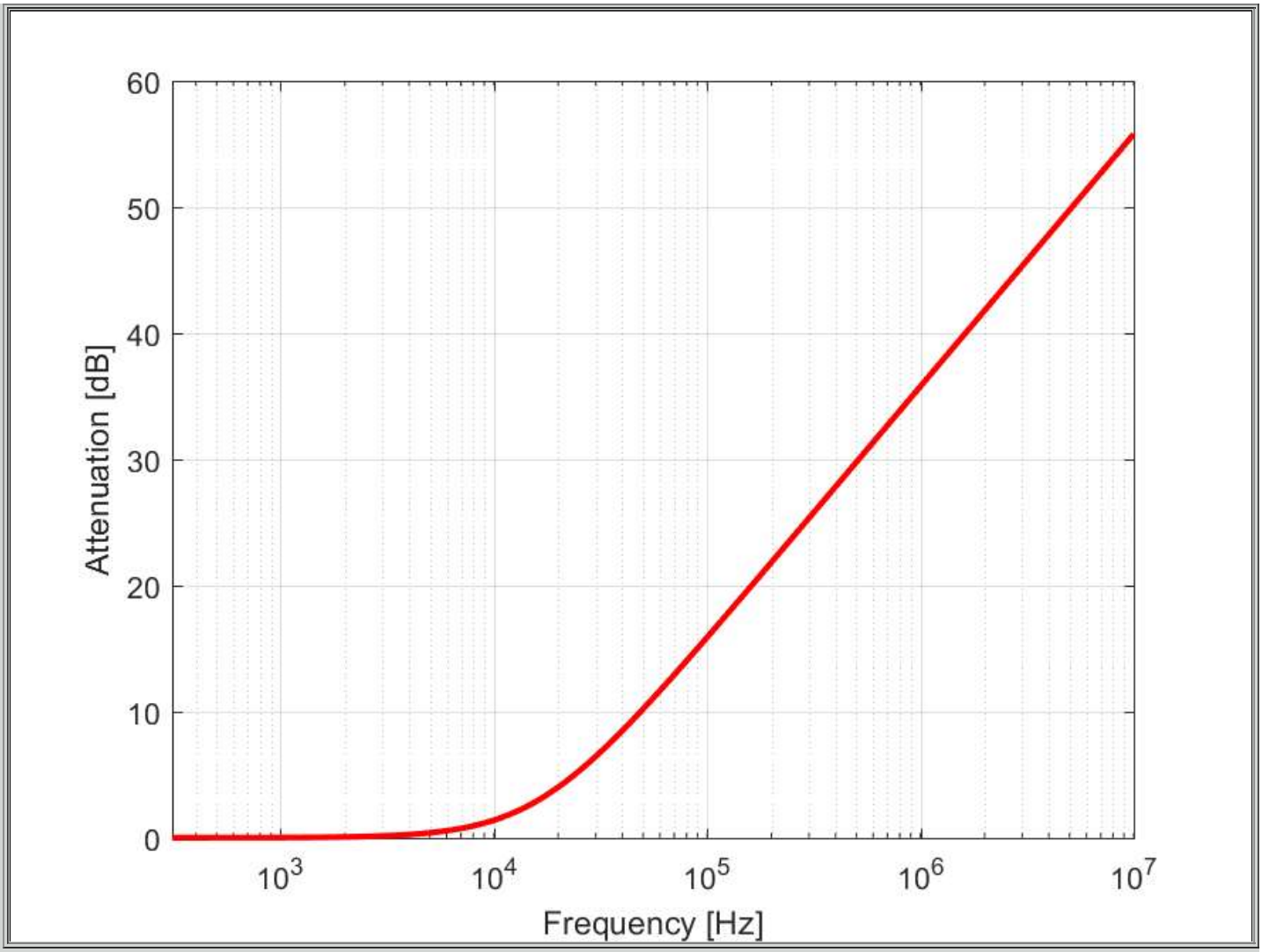


Stage N°1: Inverting Integrator



Stage Properties				
Type	Order	f_0 [Hz]	Gain [dB]	Dinamic Range [dB]
LowPass	1	1.623224e+04	1	2.0

Stage Attenuation:



Calculated components for the specified filter:

Components		
Resistor [Ω]		Capacitor [F]
R_1	R_2	C_1
50k	50k	196.1p

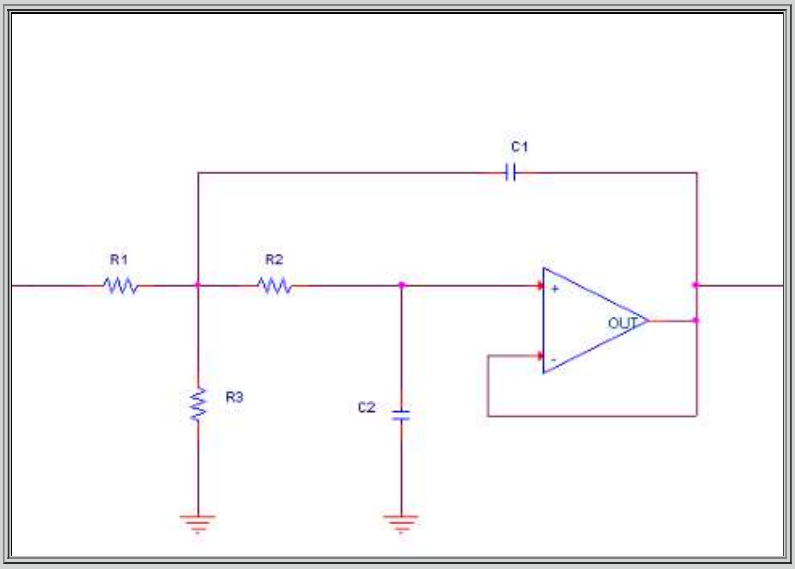
Approximation of the components with commercial values:

Components with commercial values				
		Combination	Result	Error
Resistor	R_1	100kΩ // 100kΩ	50kΩ	0.0%
	R_2	100kΩ // 100kΩ	50kΩ	<0,1%
Capacitor	C_1	220pF + 1.8nF	196.04pF	<0,1%

Sensitivity of each component:

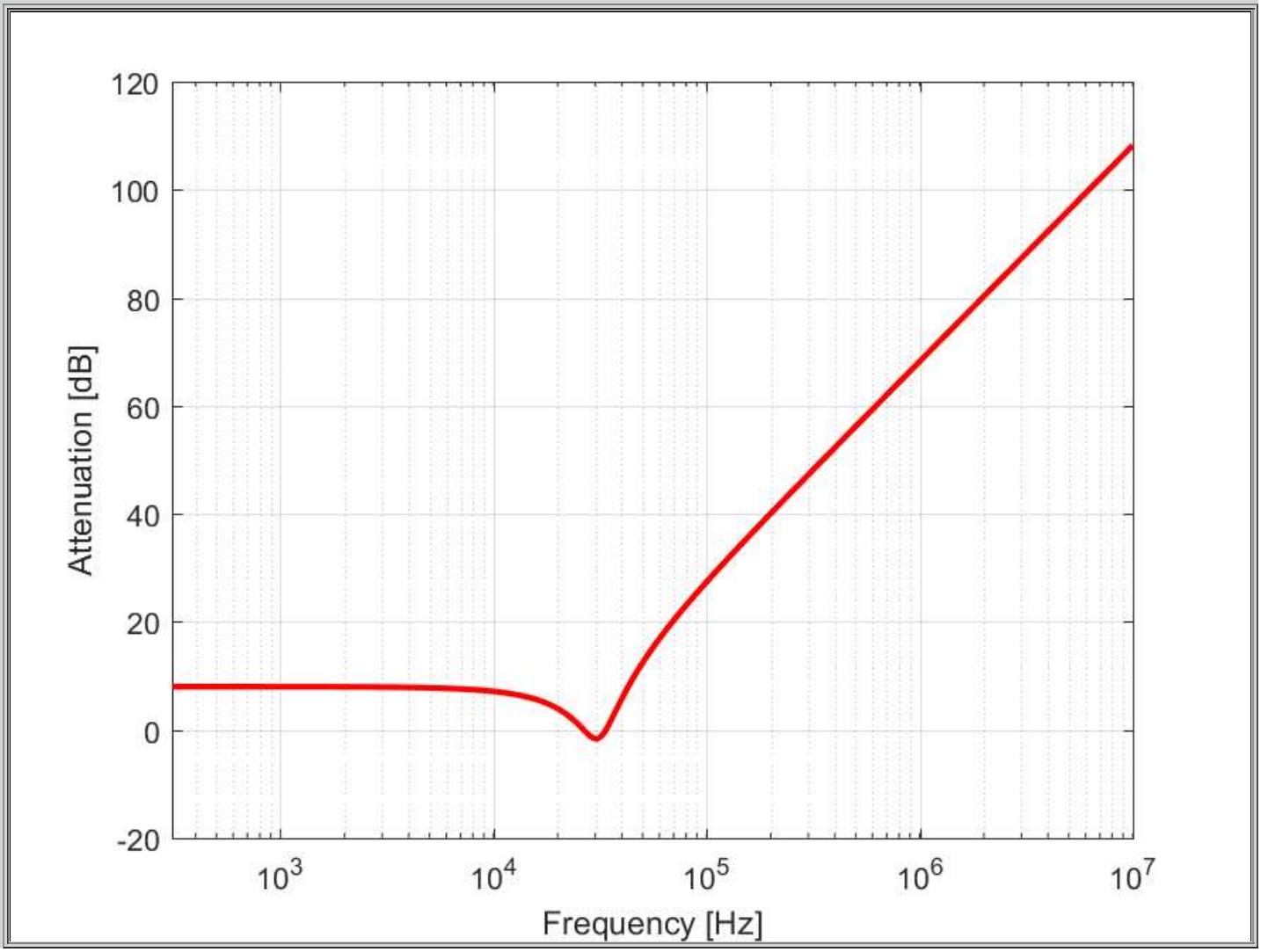
Sensitivities		
	S_X^G	S_X^{Wp}
R_1	-1.00	0.00
R_2	1.00	-1.00
C_1	0.00	-1.00

Stage N°2: SK Low Pass



Stage Properties					
Type	Order	f_0 [Hz]	Gain [dB]	Q	Dinamic Range [dB]
LowPass	2	31.2k	0.4	2.99	-1.0

Stage Attenuation:



Calculated components for the specified filter:

Components				
Resistor [Ω]			Capacitor [F]	
R_1	R_2	R_3	C_1	C_2
21.43k	8.53k	14.17k	3.58n	100p

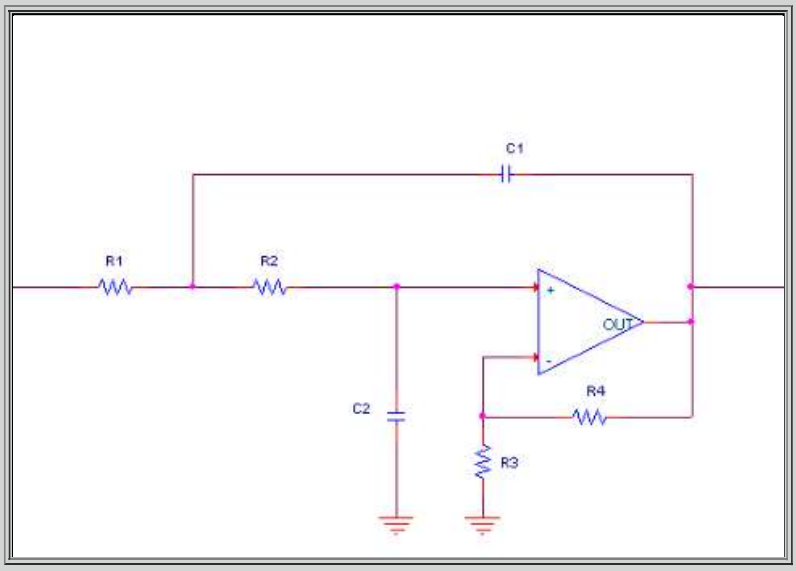
Approximation of the components with commercial values:

Components with commercial values				
		Combination	Result	Error
Resistor	R_1	22kΩ // 820kΩ	21.43kΩ	<0,1%
	R_2	330Ω + 8.2kΩ	8.53kΩ	<0,1%
	R_3	2.2kΩ + 12kΩ	14.2kΩ	0.2%
Capacitor	C_1	4.7nF + 15nF	3.58nF	<0,1%
	C_2	100pF	100pF	0.0%

Sensitivity of each component:

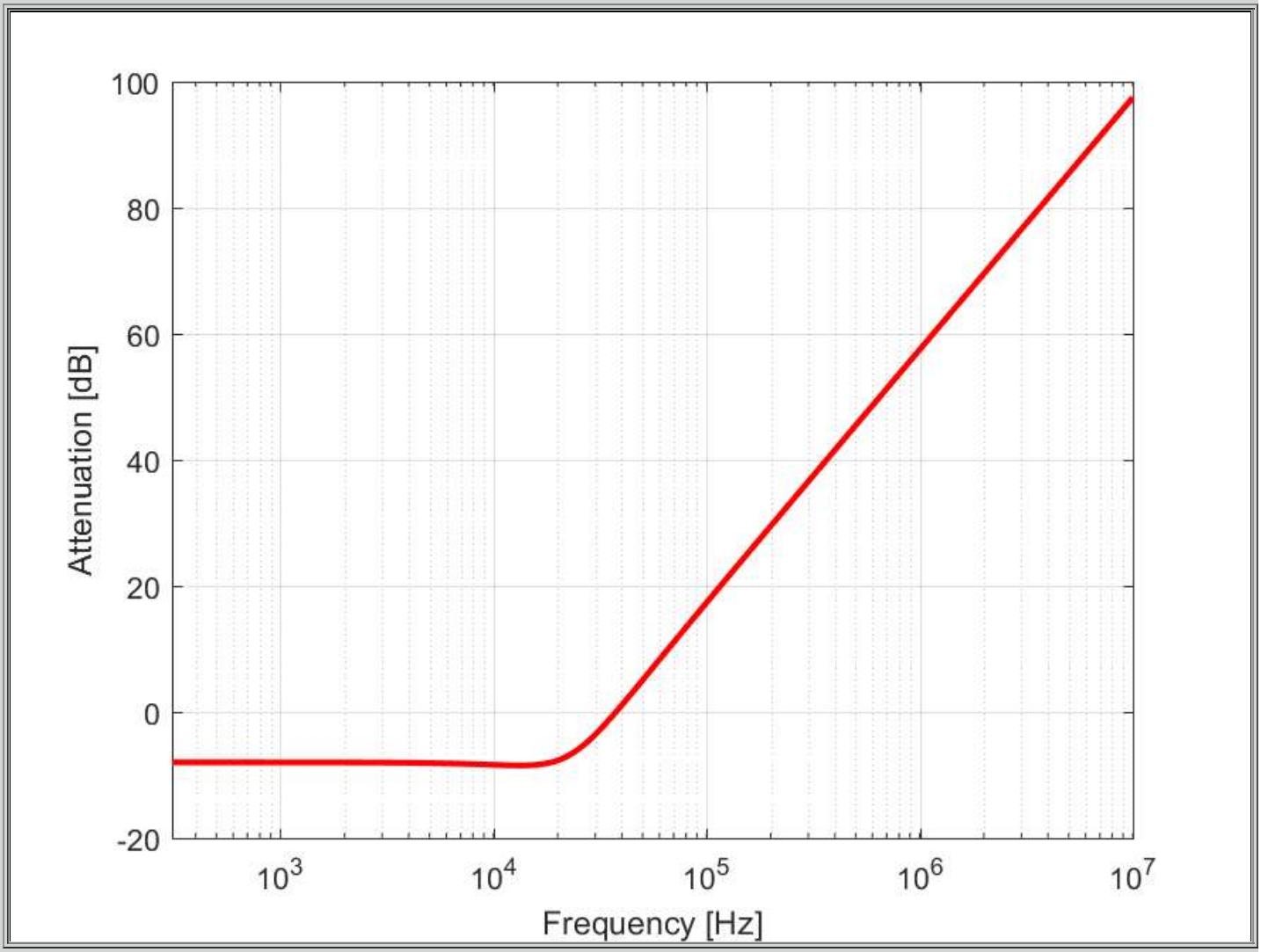
Sensitivities			
	S_X^G	S_X^Q	S_X^{Wp}
R_1	-0.60	0.00	-0.20
R_2	0.00	0.00	-0.50
R_3	0.60	0.00	-0.30
C_1	0.00	0.50	-0.50
C_2	0.00	-0.50	-0.50

Stage N°3: SK Low Pass



Stage Properties					
Type	Order	f_0 [Hz]	Gain [dB]	Q	Dinamic Range [dB]
LowPass	2	23k	3	0.86	3.2

Stage Attenuation:



Calculated components for the specified filter:

Components					
Resistor [Ω]				Capacitor [F]	
R_1	R_2	R_3	R_4	C_1	C_2
57.31k	57.31k	1k	1.51k	100p	145.38p

Approximation of the components with commercial values:

Components with commercial values				
		Combination	Result	Error
Resistor	R_1	1.2kΩ + 56kΩ	57.2kΩ	0.2%
	R_2	1.2kΩ + 56kΩ	57.2kΩ	0.2%
	R_3	1kΩ	1kΩ	0.0%
	R_4	12Ω + 1.5kΩ	1.51kΩ	<0,1%
Capacitor	C_1	100pF	100pF	0.0%
	C_2	150pF + 4.7nF	145.36pF	<0,1%

Sensitivity of each component:

Sensitivities			

	S_X^G	S_X^Q	S_X^{Wp}
R_1	0.00	0.54	-0.50
R_2	0.00	-0.54	-0.50
R_3	-0.60	-1.08	0.00
R_4	0.60	1.08	0.00
C_1	0.00	1.58	-0.50
C_2	0.00	-1.58	-0.50