



## Filter Wizard

Filter Wizard Design

Created on 05/20/2024



# Filter Wizard Design Report

Filter Requirements for Band-Pass, 8th order Butterworth

Specifications: Optimize: Power; +Vs: 5; -Vs: -5

Gain: 0 dB

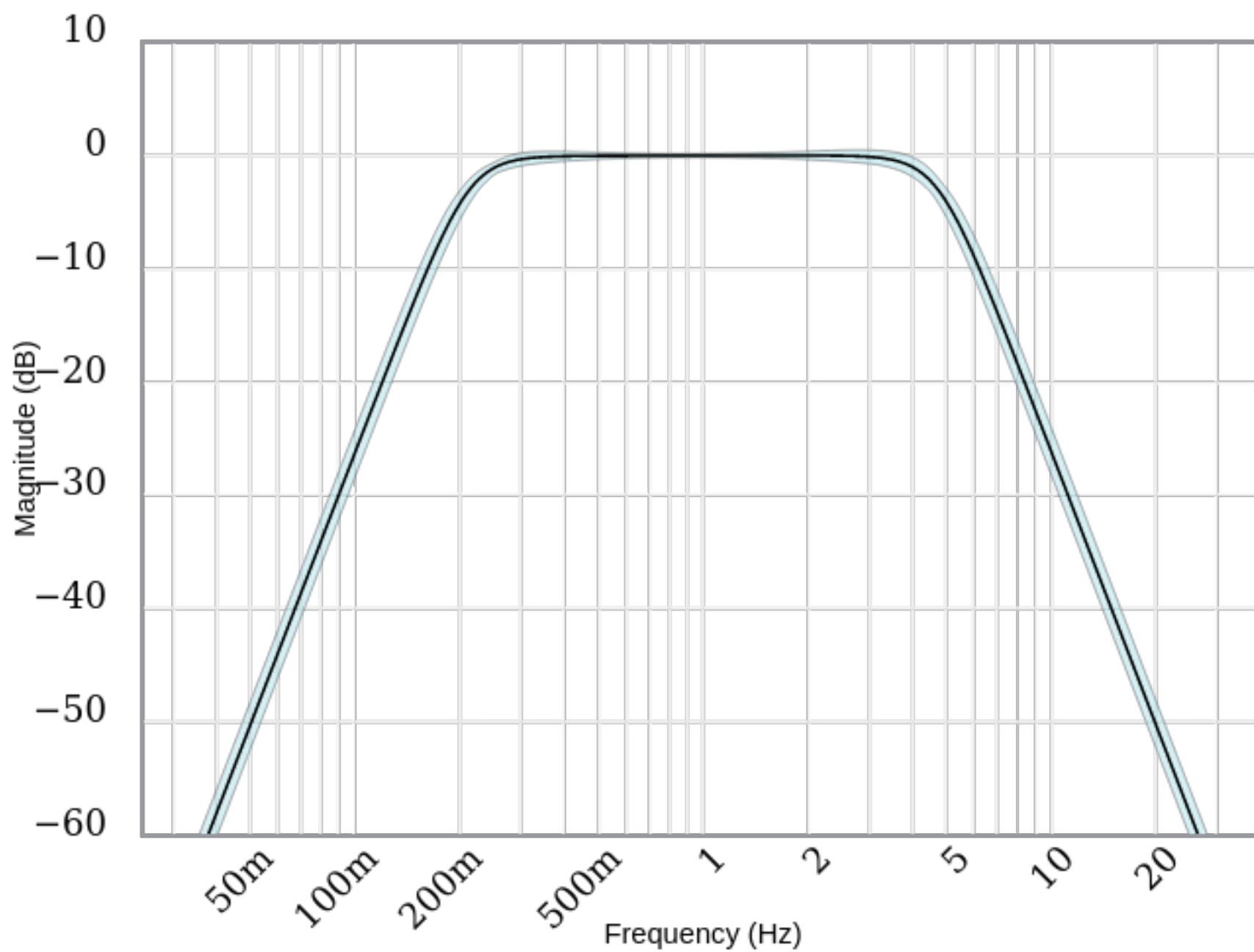
Passband: -5dB at 5Hz

Stopband: -40dB at 20Hz

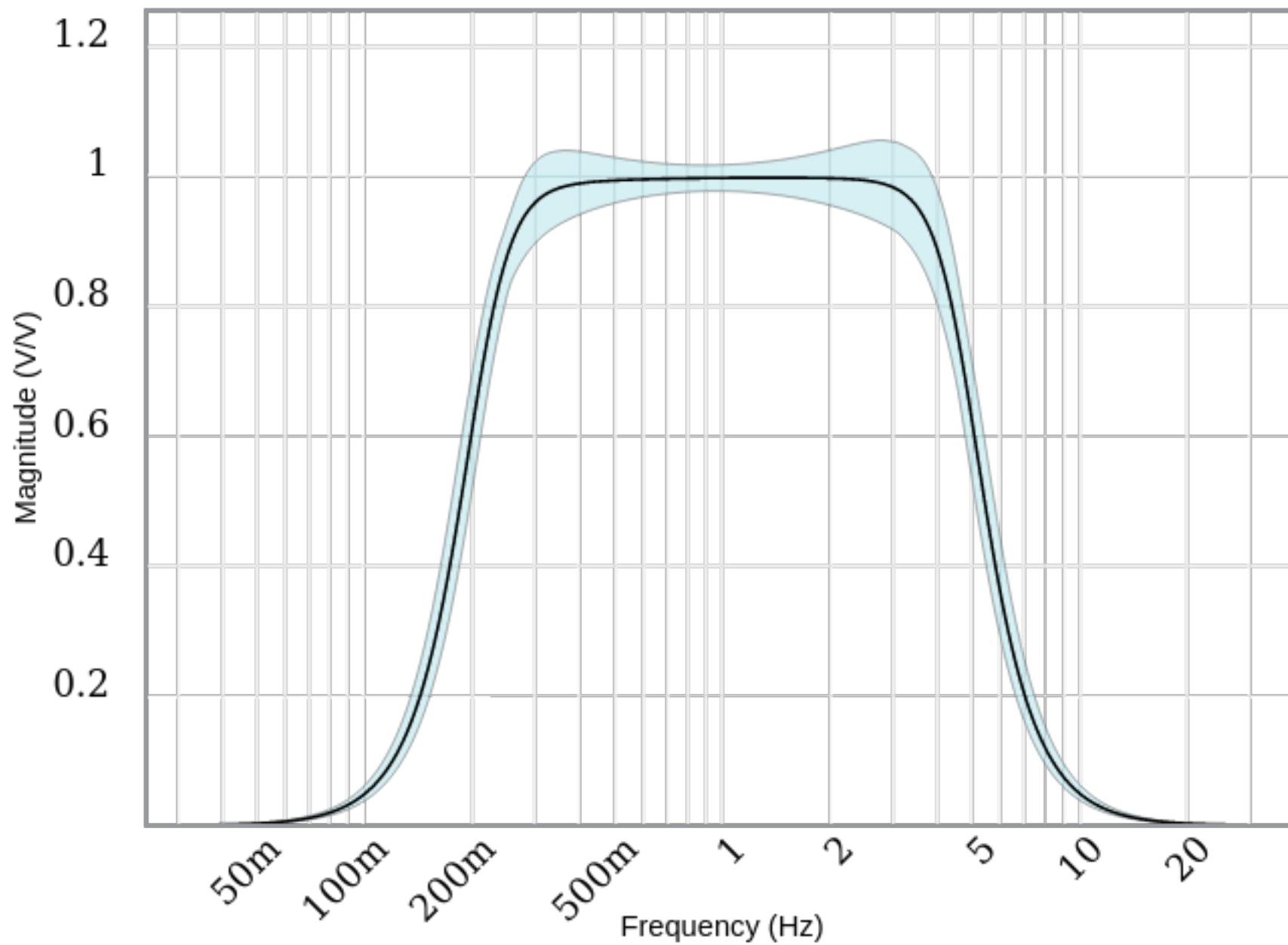
Component Tolerances: Capacitor = 5%; Resistor = 1%; Inductor = 5%; Op Amp GBW = 20%

BOM: refer to BOM.csv file

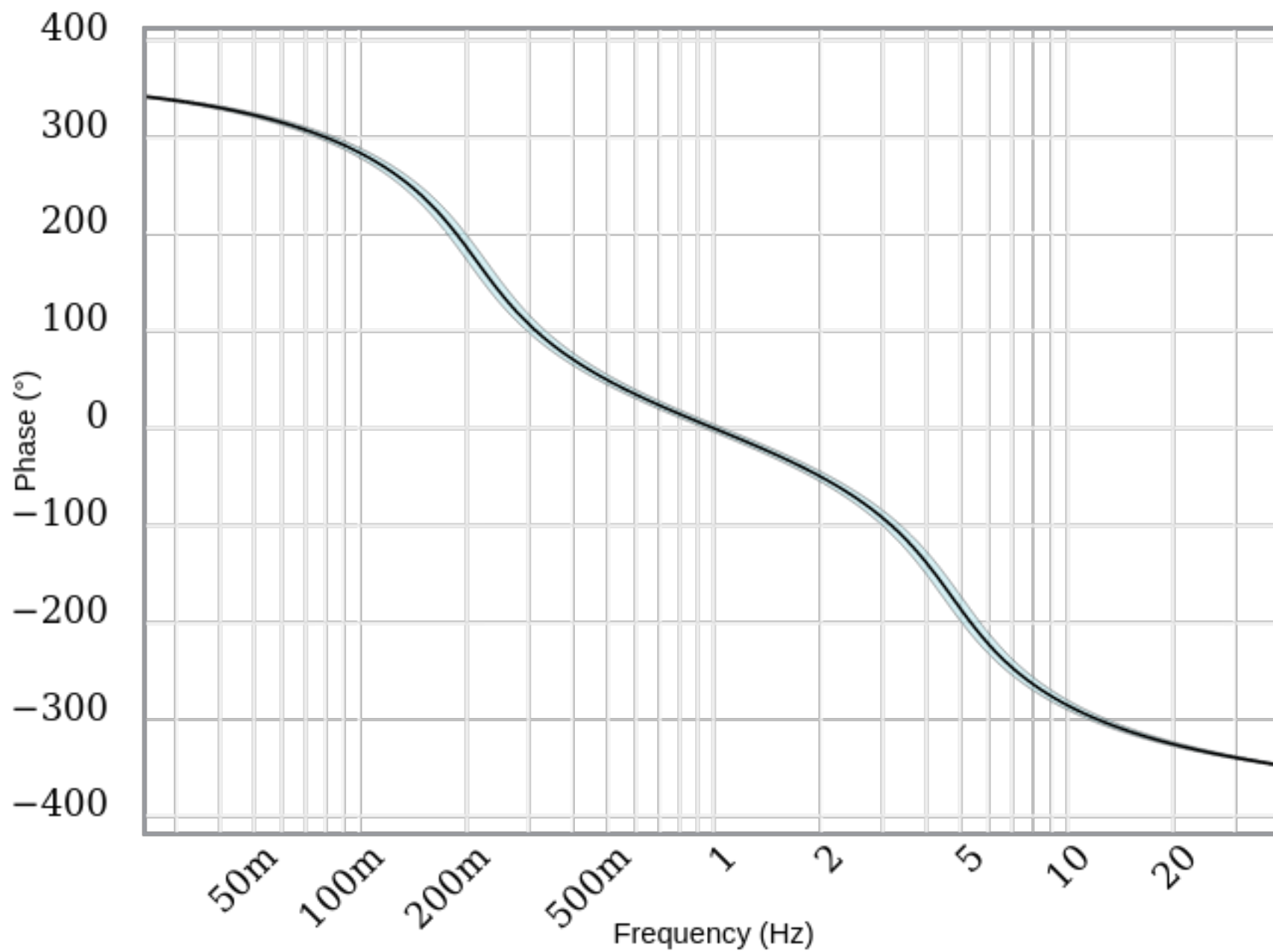
Magnitude(dB)



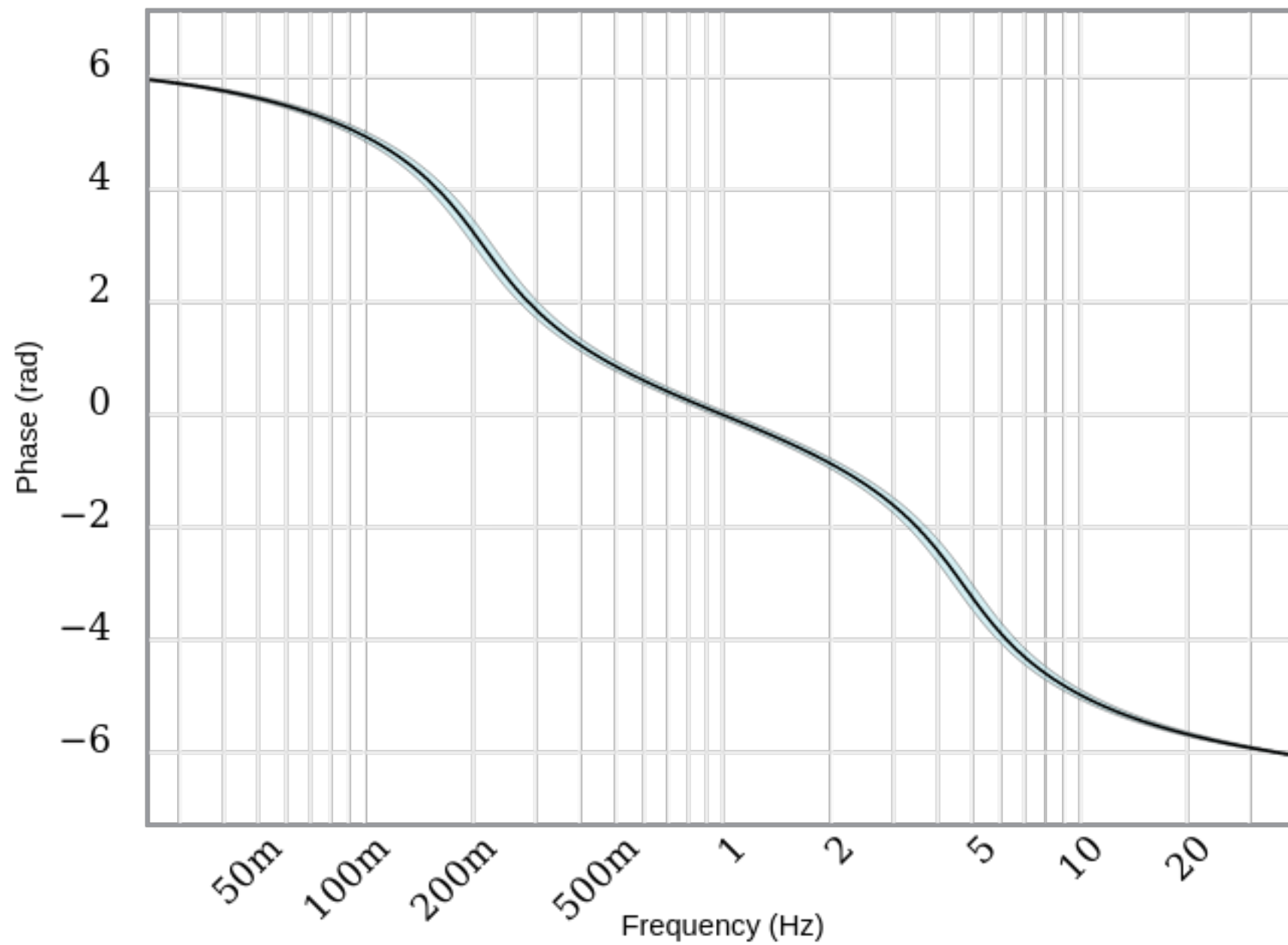
Magnitude(Volts per Volt)



Phase(degrees)

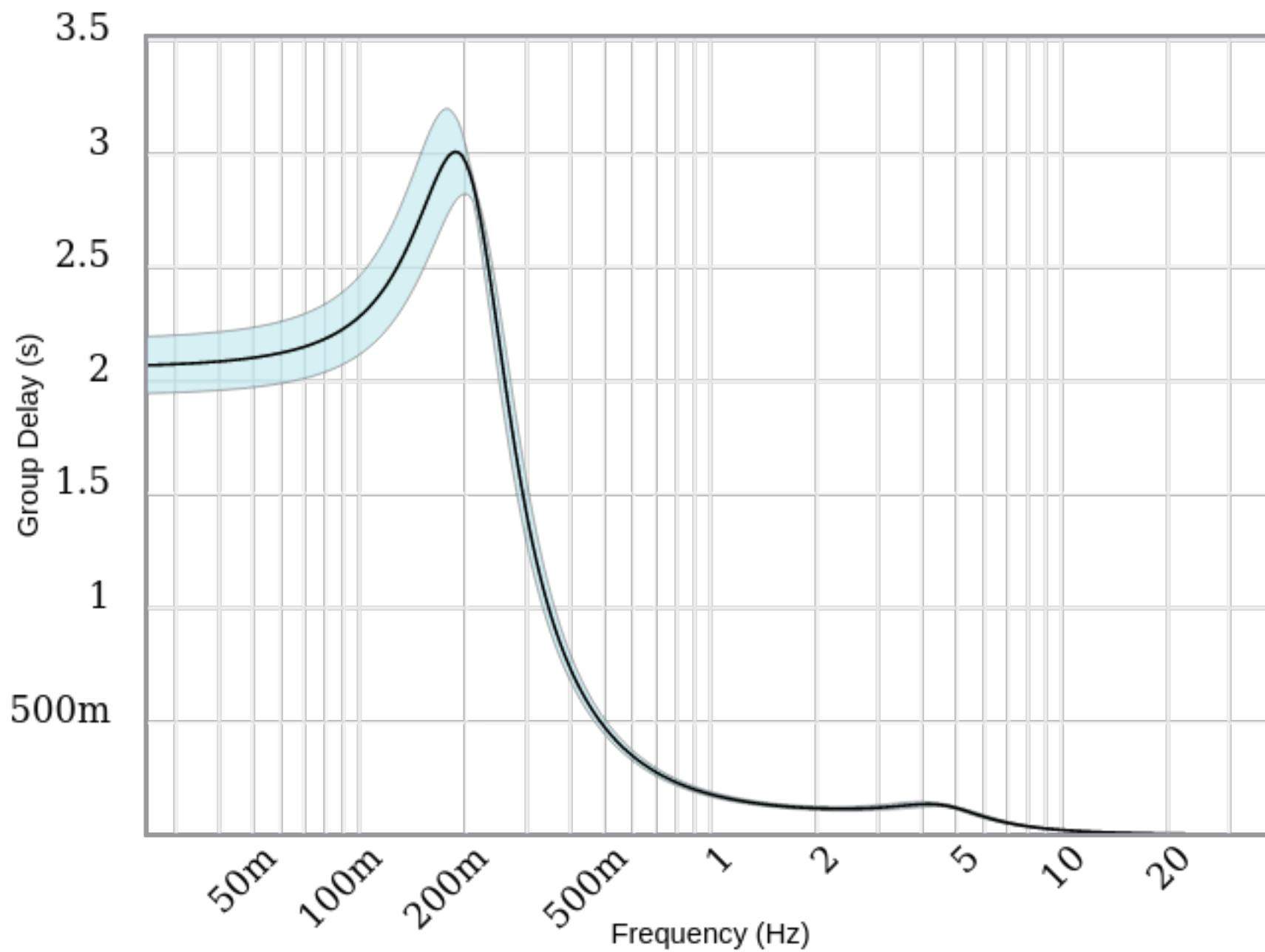


Phase(radians)

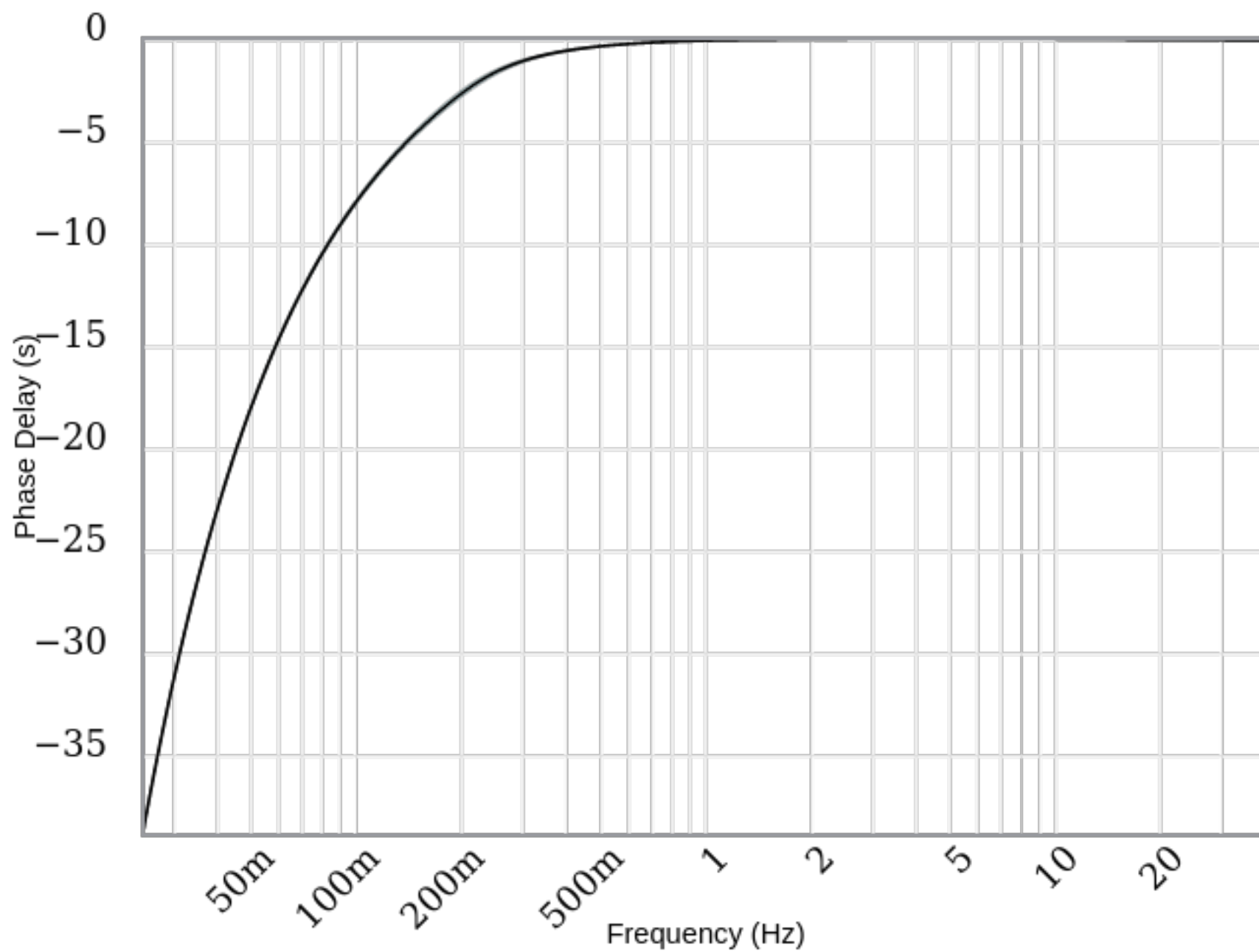




Group Delay

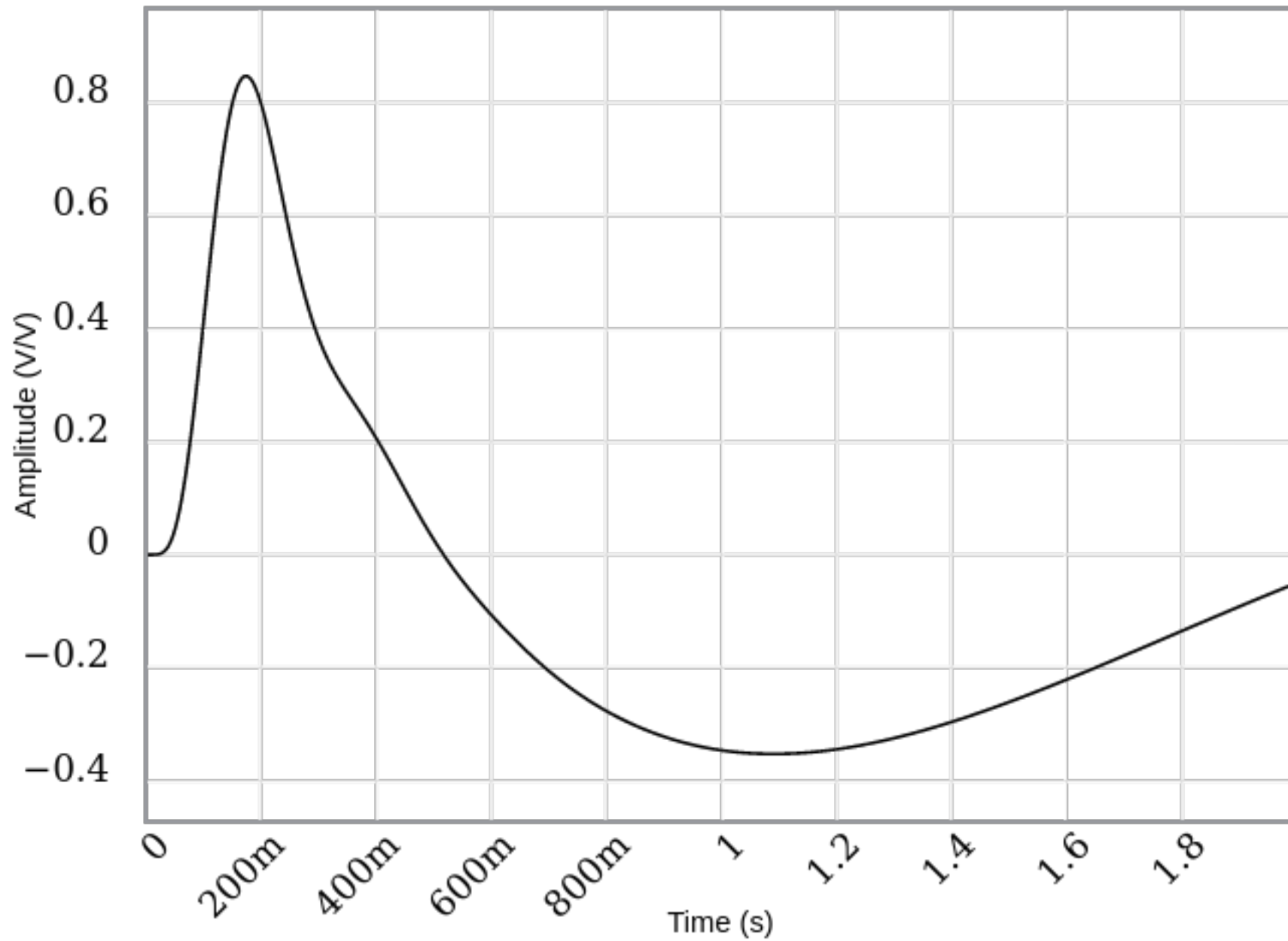


Phase Delay

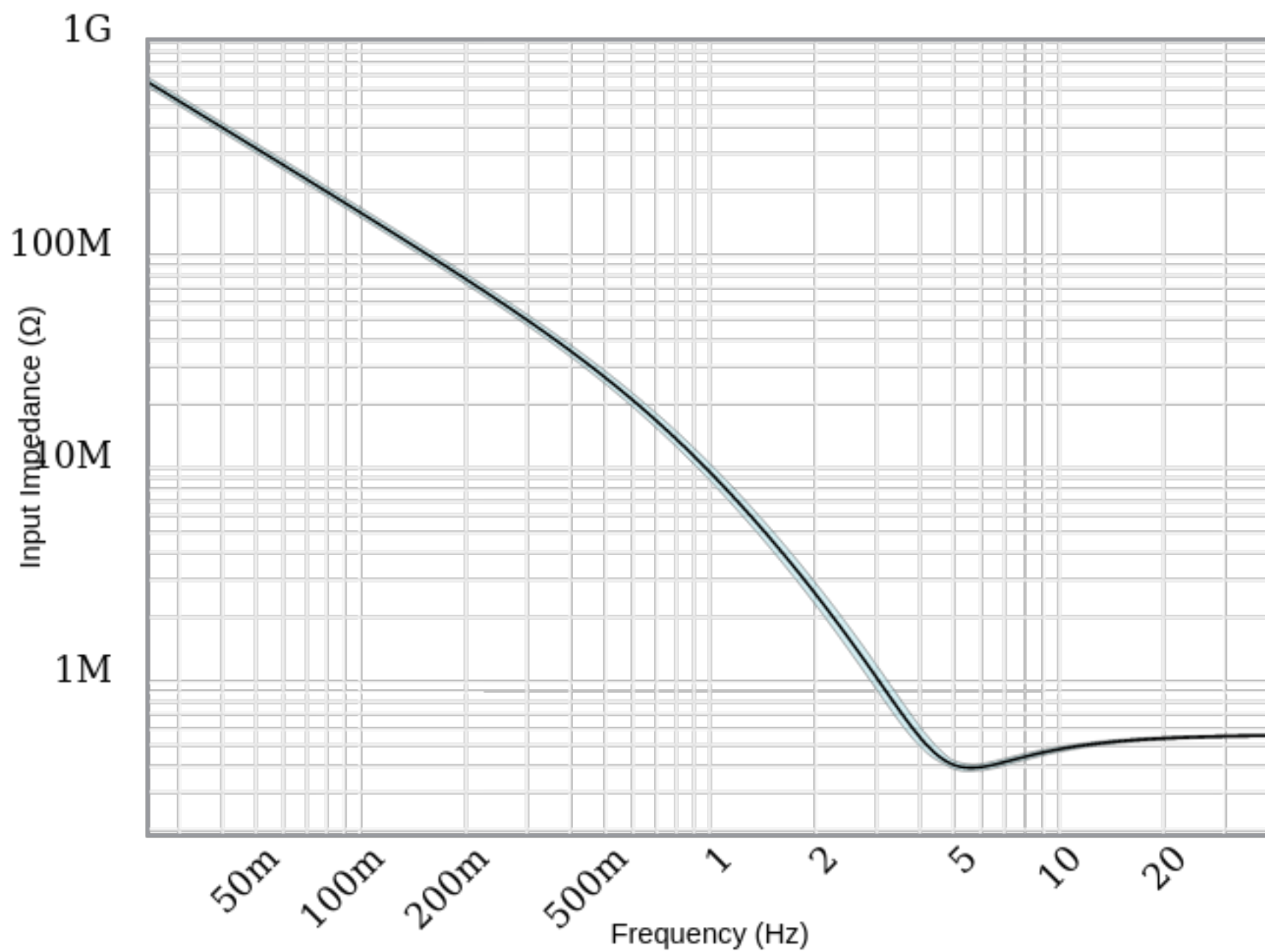




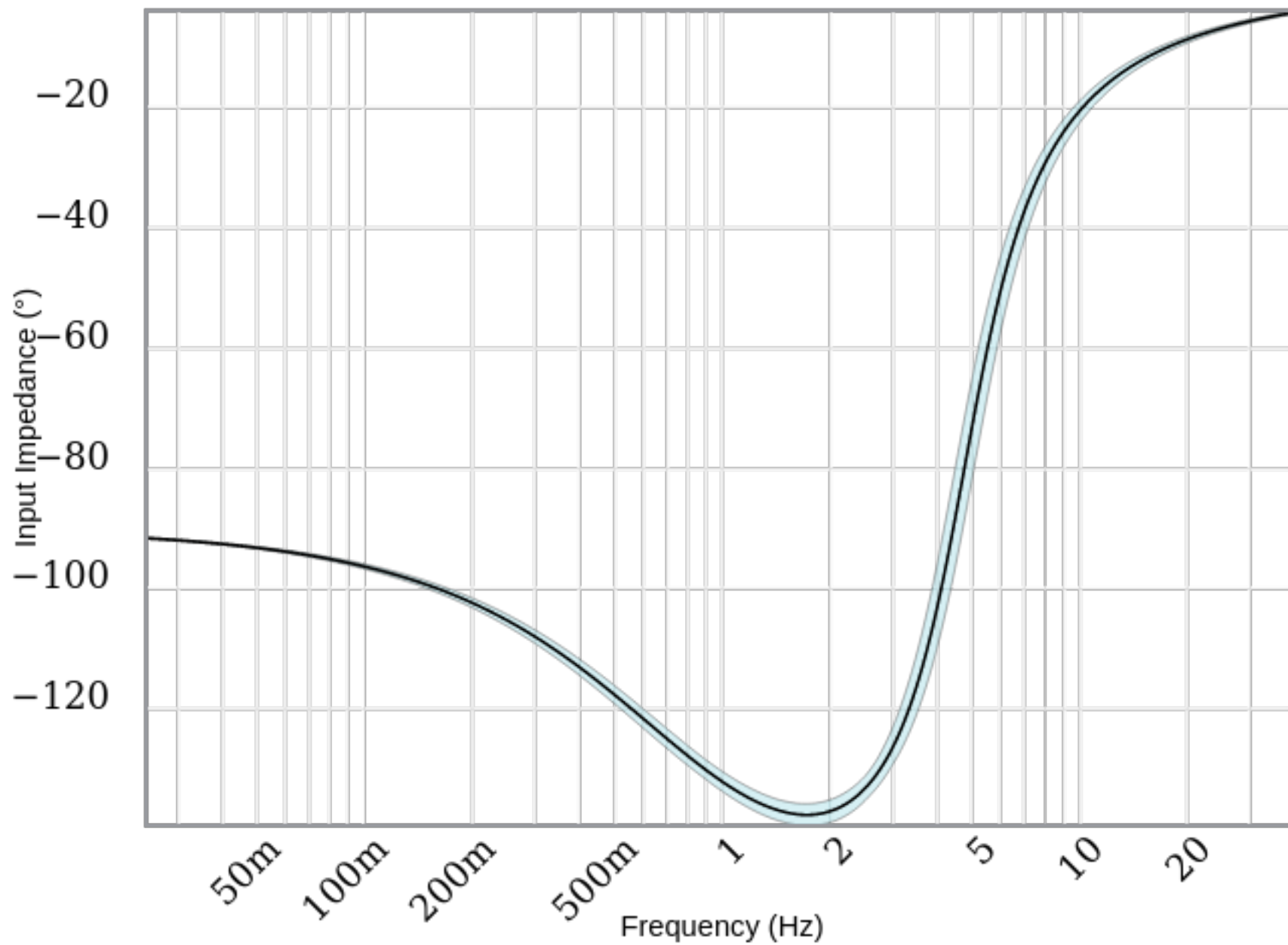
Step Response



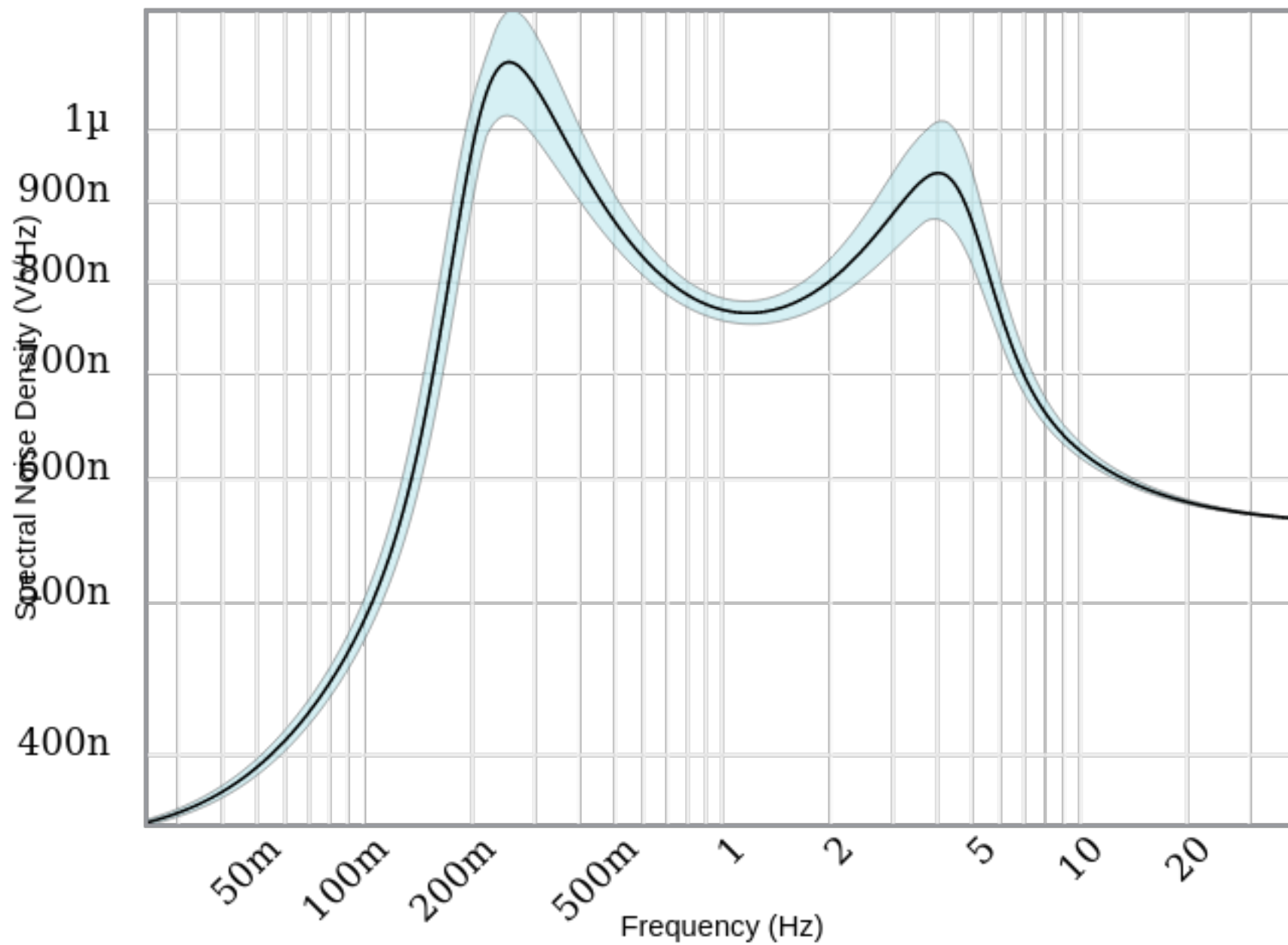
Input Impedance Magnitude



Input Impedance Phase



# Noise



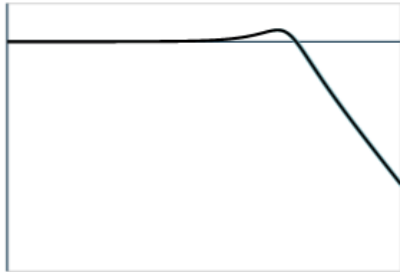
# Stages

Your filter requires 4 op amp stage(s) with the following characteristics



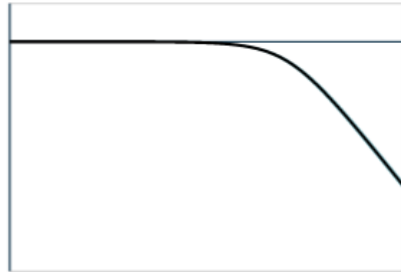
**2nd order  
Low-Pass  
Sallen Key**

	Target	Simulated
Gain (V/V):	1	1 to 1
$f_p$ (Hz):	4.71	4.47 to 5.04
Q:	1.31	1.24 to 1.39



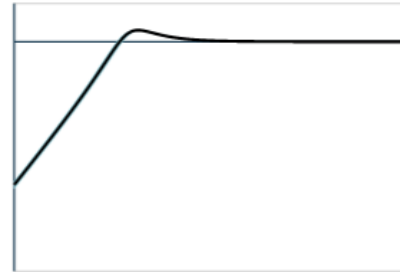
**2nd order  
Low-Pass  
Sallen Key**

	Target	Simulated
Gain (V/V):	1	1 to 1
$f_p$ (Hz):	4.71	4.41 to 4.97
Q:	541m	514m to 572m



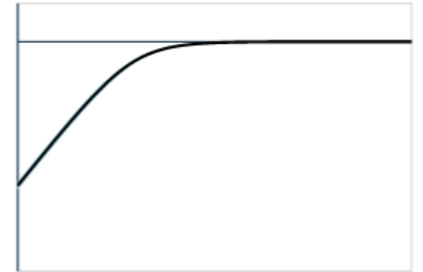
**2nd order  
High-Pass  
Sallen Key**

	Target	Simulated
Gain (V/V):	1	1 to 1
$f_p$ (Hz):	212m	200m to 226m
Q:	1.31	1.29 to 1.32

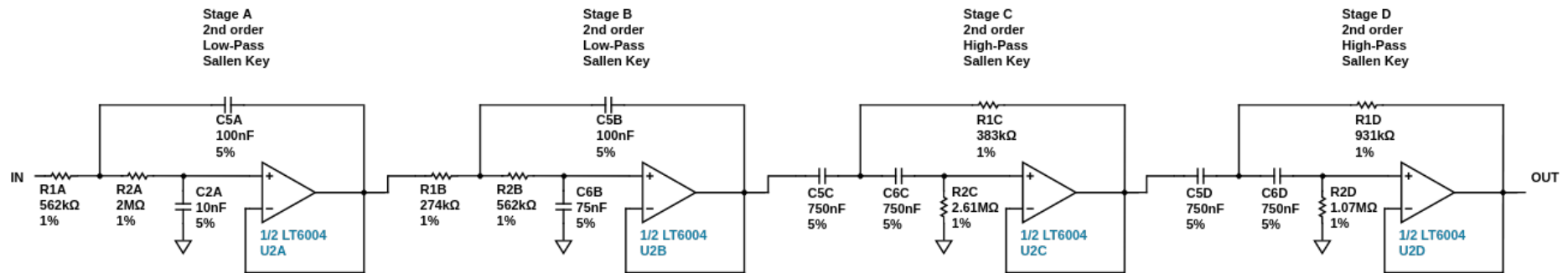


**2nd order  
High-Pass  
Sallen Key**

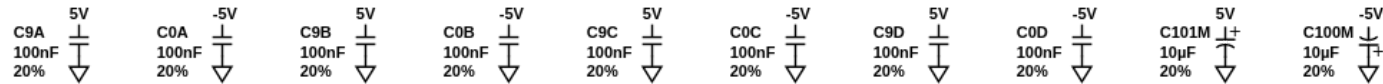
	Target	Simulated
Gain (V/V):	1	1 to 1
$f_p$ (Hz):	212m	201m to 226m
Q:	541m	530m to 542m



# Circuit



## BYPASS CAPACITORS



## SPARES [Why The Spares?](#)

