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function [ spl, t ] = Compute_Fast_Time_Weighting_44p1_kHz( pA )
% This function computes sound pressure level with fast time weighting
% Time weighting for fs = 44.1 kHz

fs = 44100;

Tau = 125 / 1000; % 125 mili-seconds

N = 10; % Number of Taus that are included in averaging
Ntau = fs * Tau; % Number of sample points in one Tau, used as scaling factor
time4Window = 0 : 1 / fs : N * Tau; % Time for the window
weight = exp( -time4Window / Tau ); % Time window

pref2 = ( 20e-6 )^2;

% pA = A-weighted pressure; it is the input to this function
% B = weight, by definition time weighting applied to pressure squared
% fftfilt = To convolve in the time domain, multiply in the frequency
% domain, i.e. use fftflit. The greater the number of samples in "weight",
% the greater the result will be. Therefore, scale by Ntau.
pAFastAvg = fftfilt( weight, pA.^2 ) / Ntau;

% Data should not be negative (squared real)
% Replace 0 with smallest possible increment
pAFastAvg( pAFastAvg <= 0 ) = eps(0);

spl = 10 * log10( pAFastAvg ) - 10 * log10 ( pref2 );

t = ( 0 : length( spl ) - 1 ) / fs;
```