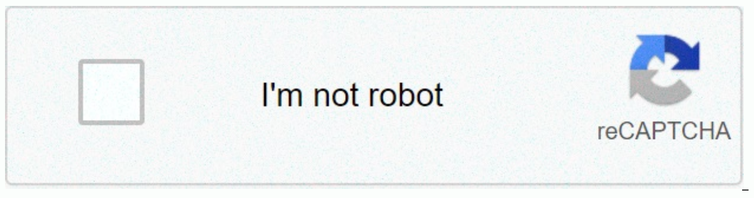

Continue

10 band eq frequencies

A graphic EQ typically consists of a bank of slider controls that are used to boost or cut fixed frequency bands. A well-designed graphic EQ creates an output frequency response that corresponds as closely as possible to the curve displayed graphically by the sliders. Designers of analog EQs must carefully select the filter bandwidth and decide how the bandwidth should vary with amplification and how the filters are summarized or overlapped. In general, narrower bandwidth means a more accurate EQ. In general, most graphic EQs have between 7 and 31 bands. Professional audio-enhancing graphic EQs generally have 31 bands, and the midsequence of each band is distributed 1/3 by an octave away from the center frequency of the adjacent bands, so that three bands (three sliders on the front panel) cover a combined bandwidth of an octave. Graphic EDDs with half as many bands per octave are often used when less precision is needed. You'll often find this 2/3-octave design on monaural, 15-band (or fewer) graphic EQs in guitar amplifiers, bass amplifiers, and some stompboxes. In traditional graphic EQ designs, the center frequency of each band is fixed. Graphic EQs are best used to fine-tune the total mixture for a particular room. For example, if you mix in a dead room, you can increase high frequencies and roll some of the lows. If you mix in a living room, you may need to lower the high midrange and highest frequencies. In general, you should not make drastic amplitude adjustments to certain frequency bands. Instead, make smaller, incremental adjustments across a wider spectrum to round out your final mix. Because of this, you will generally find graphic EQs as post-fader inserts on modern digital consoles. For example, StudioLive Series III mixers offer eight mono 31-band EQs that can be inserted on any blend. To help you with these adjustments, here's an overview of which frequencies affect different audio properties: Sub-Bass (16 Hz to 60 Hz). These very low bass frequencies are felt, rather than heard, as with highway rumbling or an earthquake. These frequencies give your mixture a sense of power, even when they only occur occasionally. However, overemphasizing frequencies in this area will result in a muddy mix. Bass (60 Hz to 250 Hz). Since this interval contains the basic notes in the rhythm section, any EQ changes will affect the balance of your mix, making it fat or thin. Too much weight will make for a boomy mix. Low midrange (250 Hz to 2 kHz). In general, you will want to emphasize the lower part of this area and deemphasize the upper part. Increase the range from 250 Hz to 500 Hz will accent atmosphere in the studio and will add clarity to bass and lower frequency instruments. The range between 500 Hz and 2 kHz can make midrange instruments (guitar, snare, saxophone, etc.) honky, and too much lifting between 1 kHz and 2 kHz can make your mixing sound thin or tinny. High Midrange (2 to 4 kHz). The attack part of the and rhythm instruments occur in this area. High mids are also responsible for the projection of midrange instruments. Presence (4 kHz to 6 kHz). This frequency range is partly responsible for the clarity of a mixture and provides a measure of control over the perception of distance. If you increase this frequency range, the mixture will be perceived as closer to the listener. Dimming around 5 kHz will make the mix sound farther away, but also more transparent. Gloss (6 kHz to 16 kHz). While this area controls the shine and clarity of your blend, increasing it too much can cause some haircut, so keep an eye out for your main meter. This is some code that I wrote for GNU Octave that calculates the lower cutoff, center frequency, and upper cutoff. From what I understand it must be close or identical to code that would run in MATLAB. Basically a notes perceived pitch is directly proportional to the logarithm of the frequency. The idea is to select frequencies so that the difference between the logarithms for two adjacent frequencies is constant throughout the spectrum you want to equalize. It's pretty well commented on, so even if you don't know Octave you should be able to pick it up. Edit: I went ahead and made an account but can't comment in response to n00dles because some kind of reputation thing. You're nearby, n00dles. The difference is my code wants the entire frequency range you want to equalize, while the nominal frequency of 20Hz and 20kHz are the center frequencies of the lowest band and the highest band. So since each band is 1/3 of an octave wide, it means the -3dB cutoff of each band is 1/6 of an octave from the center frequency. So the low frequency cutoff for the 20Hz band is 2^ (-1/6) * 20Hz = 17.818Hz and the top cutoff frequency is 2^ (1/6)* 20kHz = 22.449kHz. So to reproduce ISO 31 band frequencies, use log_eq_bands(17.818, 22449, 31). Yes that means a 31 band equalizer is to equalize sounds you can't hear. By placing the mid-frequencies at the edges of the audible area, you can have a flat response over the audible area. A filter has -3db at cutoff frequency, so if this cutoff frequency was at 20Hz, you would have as much attenuation by the time you reached the bottom of the audible spectrum. I'll go ahead and list the frequencies. Note There seems to be some floating point round off errors occurring after the fourth significant number, so I'll give 5. It's still more than what they put on equalisers. 19.999, 25.170, 31.687, 39.893, 50.224, 63.229, 79.603, 100.22, 126.17 158.84, 1.9997, 251.76, 316.95, 399.03, 502.36, 632.46, 796.23, 1002.4, 1262.0, 1588.8, 2000.3, 2518.2, 3170.4, 3991.3, 5024.9, 6326.2, 7964.4, 10027, 12623, 15892, 20008. As you can see these numbers fit really well when you round them. There is a 0.04% error on both 20Hz, and 20kHz bands, which I assume we know with absolute precision. So I would feel comfortable trusting that these figures are accurate within 0.1%. That's 0.1442% of a or 1.73% of a half step on chromatic scale. I release this code under the WTFPL license. If you want to credit someone, call me balls. ##This function is used to design a sound equalizer. The user decides which ##frequency area they want the equalizer to handle and how many bands they want the ##the equalizer to have. The function then calculates the upper and lower cut-off ##frequency for each band as well as the middle, alias nominal frequency. ##The lower limit for the frequencies that the user wants the equalizer to handle is ##given in the lowerFreq parameter, and the upper limit is also specified in the ##upperFreq parameter. The number of bands you want is specified in the ##numBands parameter. These must all be real positive scales. numBands will be cast as a 32- ##bit integer if it's not already an integer, because fractional tape doesn't make sense ##The output is a three-row array and a number of columns similar to numBands ##bands(1.:) is the list of lower cut frequencies. ##bands(2.:) is the list of nominal(middle) frequencies ##bands(3.:) is the list of upper cut-off frequencies ##This function is intended to be used to design equalizers for sound use, so the ##equalizer bands are selected so that the mid-frequencies sound like the difference ##in pitch is constant. This means ##diff(log(bands(1.:))) == diff(log(band(2.:))) == diff(log(band(3.:))) == K ##where K is a constant, where the top cut-off rate of a band corresponds to the ##lower the cut-off frequency of the band above it. 1) == band(3.n) ##as as long as n is an integer, so that numBands > n > 0 ##the cut frequencies are designed to sound as if they have a pitch in the center ##of the seats on the nominal frequencies next to them ##ex: (log(band(2.n)) + log(bands(2, n+1))) / 2 == log())ribbon(3,n)= == log(band(1,n)) function band = log_eq_bands(lowerFreq, upperFreq and numBands band = 0; ##check for valid entries if(nargin() != 3) print_usage (get_equalizer_bands(start_freq , end_freq, numBands)) elseif(!(isreal (lowerFreq) & isscalar(lowerFreq))) print_usage(lowerFreq must be a real positive scale numeric.); elseif(!(isreal(upperFreq) && isscalar(upperFreq))) print_usage(upperFreq must be a real positive scale numerically.); elseif(!(isscalar (numBands) &isreal(numBands) &numBands > 0)) print_usage(numBands must be a real positive scale numeric.); elseif(lowerFreq >= upperFreq) usage(upperFreq must be greater than lowerFreq.); elseif(lowerFreq <= 0) use(lowerFreq must be a positive scalar numeric.); otherwise #cast numBands as an integer if it is not already one if(!isinteger(numBands)) numBands = cast(numBands, int32); endif ##cast frequencies that double, so we know what precision the following calculations ##are will be lowerFreq = cast (lowerFreq, double); upperFreq = cast(upperFreq, double); # #create a lot of frequencies that are distributed # #since each band has a lower, center, and upper frequency and divides the top top lower with the adjacent band, then we need 3 frequencies for the first band ##and 2 for each additional band frequencies = logspace(log10(lowerFreq), log10 (upperFreq), (numBands*2 + 1)); ##assign every other frequency to a lower cut-off frequency output band(1, 1:numBands) = frequencies(1:2:(columns(frequencies) - 2)); ##assign every two freuquency to a nominal frequency output after skipping the first bands(2, 1:numBands) = frequencies(2:2:(columns(frequencies) - 1)); ##assign every second frequency to an upper cut-off frequency output after ##skipping the first two bands(3, 1:numBands) = frequencies(3:2:(columns(frequencies))); endif endfunction endfunction

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