

-----  
K-Meter

=====

Implementation of a K-System meter according to Bob Katz' specifications

Copyright (c) 2010-2011 Martin Zuther (<http://www.mzuther.de/>)

This program is free software: you can redistribute it and/or modify it under the terms of the GNU General Public License as published by the Free Software Foundation, either version 3 of the License, or (at your option) any later version.

This program is distributed in the hope that it will be useful, but WITHOUT ANY WARRANTY; without even the implied warranty of MERCHANTABILITY or FITNESS FOR A PARTICULAR PURPOSE. See the GNU General Public License for more details.

You should have received a copy of the GNU General Public License along with this program. If not, see [<http://www.gnu.org/licenses/>](http://www.gnu.org/licenses/).

Thank you for using free software!

-----

FLAC-compressed wave file (96 kHz, 24 bit)

=====

Please verify correctness of K-System meter values programmatically while making sure that peak and average readouts match for sine waves.

Please notice that K-System meter readings may deviate from the true value at very low frequencies (fluctuations due to meter ballistics and audio chunk size) and very high frequencies (aliasing in the wave file).

00:00 - 00:03 silence  
00:03 - 01:03 sine sweep (10 Hz to 48 kHz, -4.00 dBFS peak, logarithmic)  
  
[check peak and average meter, see above]  
00:57 [check peak meter for RMS filter cutoff @21 kHz]  
  
01:03 - 01:06 silence  
01:06 - 01:26 sine sweep (20 kHz to 24 kHz, -4.00 dBFS peak, linear)  
  
[check peak and average meter, see above]  
01:11 [check peak meter for RMS filter cutoff @21 kHz]  
  
01:26 - 01:29 silence  
01:29 - 01:49 triangular sweep (20 Hz to 20 kHz, -4.00 dBFS peak, logarithmic)  
  
[check peak and average meter, see above]  
  
01:49 - 01:52 silence  
01:52 - 02:12 square sweep (20 Hz to 20 kHz, -4.00 dBFS peak, logarithmic)  
  
[check peak and average meter, see above]  
  
02:12 - 02:15 silence

## Validation settings

=====

File: rms\_sweeps.flac  
Host SR: 96 000 Hz  
Channel: All  
Display: [x] Average meter level  
          [x] Peak meter level  
          [ ] Maximum peak level  
          [ ] Stereo meter value  
          [ ] Phase correlation

## RMS correction of K-System meter (sine wave, -4.00 dBFS peak)

=====

$\text{RMS} = A / \sqrt{2}$   
 $\text{RMS} / A = \sqrt{2} = +3.01 \text{ dB}$   
 $+3.01 \text{ dB} + (-4.00 \text{ dB}) = -0.99 \text{ dB}$

$\text{K-20} = 20.00 \text{ dB} + (-0.99 \text{ dB}) = 19.01 \text{ dB}$   
 $\text{K-14} = 14.00 \text{ dB} + (-0.99 \text{ dB}) = 13.01 \text{ dB}$   
 $\text{K-12} = 12.00 \text{ dB} + (-0.99 \text{ dB}) = 11.01 \text{ dB}$   
 $\text{Norm} = 0.00 \text{ dB} + (-0.99 \text{ dB}) = -0.99 \text{ dB}$

## Sine wave (-4.00 dBFS peak)

=====

$\text{RMS} = A / \sqrt{2}$   
 $A / \text{RMS} = 1/\sqrt{2} = -3.01 \text{ dB}$

$\text{K-20} = 19.01 \text{ dB} + (-3.01 \text{ dB}) = 16.00 \text{ dB}$   
 $\text{K-14} = 13.01 \text{ dB} + (-3.01 \text{ dB}) = 10.00 \text{ dB}$   
 $\text{K-12} = 11.01 \text{ dB} + (-3.01 \text{ dB}) = 8.00 \text{ dB}$   
 $\text{Norm} = -0.99 \text{ dB} + (-3.01 \text{ dB}) = -4.00 \text{ dB}$

## Triangular or sawtooth wave (-4.00 dBFS peak)

=====

$\text{RMS} = A / \sqrt{3}$   
 $A / \text{RMS} = 1/\sqrt{3} = -4.77 \text{ dB}$

$\text{K-20} = 19.01 \text{ dB} + (-4.77 \text{ dB}) = 14.24 \text{ dB}$   
 $\text{K-14} = 13.01 \text{ dB} + (-4.77 \text{ dB}) = 8.24 \text{ dB}$   
 $\text{K-12} = 11.01 \text{ dB} + (-4.77 \text{ dB}) = 6.24 \text{ dB}$   
 $\text{Norm} = -0.99 \text{ dB} + (-4.77 \text{ dB}) = -5.76 \text{ dB}$

## Square wave (-4.00 dBFS peak)

=====

$\text{RMS} = A$   
 $A / \text{RMS} = 1 = 0.00 \text{ dB}$

$\text{K-20} = 19.01 \text{ dB} + (0.00 \text{ dB}) = 19.01 \text{ dB}$   
 $\text{K-14} = 13.01 \text{ dB} + (0.00 \text{ dB}) = 13.01 \text{ dB}$   
 $\text{K-12} = 11.01 \text{ dB} + (0.00 \text{ dB}) = 11.01 \text{ dB}$   
 $\text{Norm} = -0.99 \text{ dB} + (0.00 \text{ dB}) = -0.99 \text{ dB}$