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

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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, 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, 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, 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, logarithmic)

               [check peak and average meter, see above]

02:12 - 02:15  silence
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Validation settings
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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)
========================================================
RMS = A / sqrt(2)
RMS / A  = sqrt(2) = +3.01 dB
+3.01 dB + (-4.00 dB) = -0.99 dB

K-20 = 20.00 dB + (-0.99 dB) = 19.01 dB
K-14 = 14.00 dB + (-0.99 dB) = 13.01 dB
K-12 = 12.00 dB + (-0.99 dB) = 11.01 dB
Norm =  0.00 dB + (-0.99 dB) = -0.99 dB


Sine wave (-4.00 dBFS)
======================
RMS = A / sqrt(2)
A / RMS = 1/sqrt(2) = -3.01 dB

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


Triangular or sawtooth wave (-4.00 dBFS)
========================================
RMS = A / sqrt(3)
A / RMS = 1/sqrt(3) = -4.77 dB

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


Square wave (-4.00 dBFS)
========================
RMS = A
A / RMS = 1 = 0.00 dB

K-20 = 19.01 dB + ( 0.00 dB) = 19.01 dB
K-14 = 13.01 dB + ( 0.00 dB) = 13.01 dB
K-12 = 11.01 dB + ( 0.00 dB) = 11.01 dB
Norm = -0.99 dB + ( 0.00 dB) = -0.99 dB
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