

**”True-peak” interpolation filter comparison**  
**ITU-R BS.1770-3 example vs DK-Technologies**  
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If the following is analyzed, the DK-Technologies implementation of true-peak interpolation related to audio level measurement, described in the ITU-R BS.1770-3 recommendation. The DK-Technologies interpolation filter is compared to the filter example found in ITU-R BS.1770-3.

The ITU example filter is having a length of 48 taps, whereas the DK-Technologies filter is having the length of 128 taps. For comparison, the ITU example filter is zero padded to have a similar length of 128 taps.

On the plots below is shown the comparison of the two interpolation filters.

**Conclusion**

The bandwidth of the two filters are similar, having a -3dB frequency of about 22.9kHz.

The inband gain of the DK-Technologies filter is seen to be closer to the target of 12.04dB than the ITU filter example. The inband gain of the DK-Technologies filter is 12.04dB +/- 0.015dB at 20Hz to 20kHz and the inband gain of the ITU filter example is 12.04dB +/- 0.11dB at 20 to 20kHz.

Furthermore the stop band attenuation of the DK-Technologies filter is better than for the ITU filter example.

The better performance of the DK-Technologies filter with respect to inband ripple and stop band attenuation is possible due to a higher filter order.

Though the difference of the frequency response between the two filters is small, differences can occur when passing a signal having content at the transition frequency band. However, since the transition frequency band is very close to the Nyquist frequency, it is not likely to have much signal content at these frequencies in real audio signals.



