

# Challenging Loudness

TV Bay  
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**N**umerous definitions of the word loudness exist but to understand the relevance of the word in relation to the world of broadcast sound perhaps the statement that loudness is “our perceived impression of the intensity, frequency, and duration of a sound” fits closest. We all watch TV with the remote control close at hand; not just to change channel but more often than not, to ride the volume control because programme and commercial loudness varies from show to show, channel to channel.

Simply put, the difference between peak and loudness is that a peak reading indicates the maximum level present in a signal whereas loudness is the sum of the audible energy within that signal, as perceived by the human ear. By manipulating the dynamic range of audio to maximise loudness energy without affecting peak levels, commercial producers have been able to ensure that their advertisements are louder than the TV programmes they interrupt.

On December 2nd 2010 in the US, the C.A.L.M. (Commercial Advertisement Loudness Mitigation) Act was passed by the US Senate; it will become law 12 months after the Act is signed by President Obama. With an ATSC Committee advising the Federal Government on the detail of the legislation in conjunction with the production of its own set of practices “Techniques for Establishing and Maintaining Audio Loudness for Digital Television” or A/85 for short, it appears that America will be one of the first nations to be subject to regulation.

On this side of the Atlantic, the EBU has set up a similar taskforce (P/LOUD) whose R128 document sets out to provide a blueprint of recommended practices for “Loudness in Broadcasting”. The ATSC and EBU committees have set out to reach the same fundamental goal with their respective conclusions, both adopting the ITU-R BS1770 loudness algorithm as the agreed standard for measurement.

In practical terms, the new regulations and ITU-R BS1770 mean significant changes to the way audio is measured throughout the broadcast infrastructure. Measuring loudness instead of peak level is a sea change in the way the sound

engineer at the front end of the broadcast signal chain works. Whilst continuing to monitor levels using traditional metering solutions at the mixing console, the engineer now needs to keep one eye on a continuous readout of average programme loudness. Of course this is a very simple summarisation of a complicated scenario where the ‘deliverable’ in real terms may include alternative mixes for international customers (with different loudness delivery criteria), stereo versions, clean mixes, etc. Add to that the fact that encoding to Dolby E or delivering discrete multichannel audio with metadata means that target loudness, dialogue normalisation, downmix and dynamic range control parameters must all co-exist and comply for the audio to reach its final destination in the form in which it is intended.

Advisory bodies such as the DTV Audio Group strongly suggest that broadcasters ensure that programme content is acquired, edited and delivered with compliant loudness settings. This isn’t something that can be achieved overnight and certainly the expectation that audio professionals learn to mix to a target number rather than a meter can only be achieved with training and investment in the proper tools to perform the job.

Legacy content, library material and programmes from unregulated sources will not necessarily meet with nationally or self-regulated loudness criteria. A degree of processing is unavoidable when considering the latter but ideally this will not be performed at the point of transmission. Older material alongside current project work can be processed in the file-based domain using one of a number of Loudness correcting software applications now available to Video and Audio Post Producers.

Over time, as older programmes undergo loudness processing and digitisation, and with new content meeting either ATSC or EBU recommendations, the aspiration for the global community is that the worldwide library of broadcast content will become ‘standardised’ with only subtle variations. In the meantime it is incumbent upon systems integrators, manufacturers and broadcasters alike to embrace good loudness practice, to educate one another and to ease the transition from the disparate model of old to common and consistent broadcast sound, worldwide.