

Non-Broadcast Applications for Loudness Monitoring as it Relates to the U.S. CALM Act

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On December 15, 2010, President Obama signed the CALM Act ("Commercial Advertisement Loudness Mitigation Act"), which affects the United States and, specifically, broadcast stations and networks. However, the CALM act also suggests that the new rules will apply to "cable operators and other multichannel video programming distributors (MVPDs)." The relevance to broadcasters is that programs are carried by or originate from other businesses that can contribute (or at least alter) the audio program levels and, therefore, affect the loudness.

The CALM Act purposely impacts the top four U.S. networks first. They will become a "test bed" for future compliance regulations, and their compliance requirements will be defined by the end of calendar year 2011. It is interesting that the current legislation addresses "commercials," as this implies there will be no impact to "non-commercial" entities. With this in mind, we need to take a deeper, real-world look at the impact of this upcoming legislation.

The burning issue — and the cause for this U.S. legislation — relates to the fact that certain program components or segments within a broadcast day contain audio that is not of a consistent loudness level. This means that when viewing a particular network, the audio levels change enough that the viewer at home becomes uncomfortable with the loudness of a program segment. The viewer then reacts by adjusting the listening level of the receiver in use to a more "comfortable" level for this new program component/segment. This reaction usually has a negative impact if the adjustment was only required during the program insert, such as a commercial or public service announcement. When the program content returns, the viewer usually needs to re-adjust the listening level to the value previously set.

It's important to note that the CALM Act does not address the shifts in loudness consistency that can also occur from one program to the next. A listener may have to adjust the listening level for a new program, and then adjust again on each commercial insertion, etc. The fact that the viewer is aware of these inconsistencies and needs to react to loudness changes is causing the implementation of loudness legislation in the U.S., as well as other countries.

It is very simple to understand the issue of loudness changes from program to program, and from program to program insert. However, the next level of loudness consistency relates to the overall channel loudness. In this case, a viewer at home is switching from one network (channel) to another and detects loudness changes. Channel loudness is the highest level of loudness inconsistency. With so many variables in loudness, it is very difficult for a viewer to comfortably enjoy the program content. The constant variations in loudness become a distraction and, in some cases, the viewer may actually change channels in an attempt to reduce the distraction of inconsistent loudness levels. This is something every network operator, station owner and program distributor wants to avoid. Although the audio levels may have been "enhanced" in order to get the viewer to pay attention to a particular commercial or program segment, this enhancement of the loudness could be the exact reason a viewer moves to another program source. Therefore, the enhancement has exactly the opposite effect for which it was designed.

In some countries, legislation is being introduced that precedes the technology. In Italy, for example, there is legislation in place to force the terrestrial and satellite broadcast distributors to monitor and adjust the segment, program and channel loudness. The mandate to monitor "program loudness" is difficult, as it requires monitoring the program from start to finish — a requirement that the monitoring device know (understand) when a program starts and ends, and then log the loudness value for future compliance audits. Today, Harris products do have this ability, through the integration of a loudness monitoring device and automation system. However, two years ago when the Italian legislation went into place, there were no solutions, and engineers needed to make manual measurements and log entries.

The U.S. CALM Act may cause a dilemma as well. Program creators have very exact technical and artistic requirements for their content. Consider, for example, a commercial for a new product using a voiceover and background music from a popular rock and roll band — this is a basic "formula" that many marketers use in order to attract a particular demographic to their commercial. The program producers spend an enormous amount of money hiring particular engineers and talent to get a "look and feel" consistent with their brand. The last thing any producer wants is someone making an adjustment (taking artistic license) to these program elements, particularly the sound for the images contained in the programming. A program could have a completely different impact on viewers if the dynamics of the audio track are changed inconsistently with the brand and artistic value of the content.

Imagine a commercial using a pop music track that has been modified to reduce the low-frequency energy that sonically defines the genre of the music. The demographic population for which the commercial's soundtrack was designed would not receive the impact of the music, and therefore, would probably ignore the presentation and message for which the producer intended. The result is that the program or commercial would fail, negatively affecting the producer's business. And this would all be due to someone (or a machine) using technical innovation to modify the artistic values of content.

This is relevant to U.S. terrestrial broadcasters and networks in that a large majority of their content is supplied by third-party producers (independents) or by programming distributors (syndicators). Assuming the program distributors and producers do not want the broadcaster to make any significant changes to their content, they will need to monitor the loudness of programming delivered to the broadcaster to ensure the loudness values are consistent with compliance regulations, while meeting the artistic values required of the work.

Some independent producers may take the position that ultimately the regulations are in the broadcaster's hands and are not their responsibility. Yes, but at a cost of the unknown. How will the content be modified by the broadcaster? Will it meet the business objectives? Will it attract the viewers that it was designed to? Assuming the producers want their product to air as they dictate, the responsibility will lie in their hands to provide programming with compliant loudness.

Cable and satellite distributors will also be impacted by the CALM Act. These businesses need to carry broadcast channels to their viewers through their distribution networks. Just as the FCC mandate will dictate loudness compliance to the broadcaster, the broadcaster will dictate loudness compliance to the distributor.

Cable and satellite entities need to be able to verify that they are not modifying the loudness values of programming when audited by the broadcaster. Keep in mind that these distributors are permitted, through license agreements with the broadcaster, to insert local commercials and public service announcements, which generate revenue to the distributor. All inserts need to comply with regulations; if they do not, the broadcaster will be fined. The broadcaster's legal team will obviously turn to the entity making the modifications and take appropriate action.

In closing, loudness compliance truly has a direct business-to-business impact. One business (in this case, broadcast stations and cable or satellite operators) is regulated. Other businesses — either supplying a product (program producers, networks) or distributing the product (syndicators) — need to comply with the same regulations as the broadcaster in order to do business with them, even though they are not directly regulated by the legislation.

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