NAVIGATING
the CALM Act
## SOLUTIONS FOR THE HOUSE OF WORSHIP INDUSTRY

by Thomas Lund

Loudness control is not necessarily a new issue, but the regulations of and guidelines for it are. Broadcasters, including those in the House of Worship industry, have long been the target of public outcry against the loudness discrepancies of commercials during television programming. As a result, the pro-audio industry is quickly trying to adopt and adapt to new methods of loudness management; determining what the measurement standards should be, how this audio should be measured and then what the desired average level should be for the average listener. This current shift from the traditional peak metering of audio is a result of new standards and recommendations, such as the Commercial Advertisement Loudness Mitigation (CALM) Act.

Passed in December of 2010 by the United States Congress, the CALM act requires the FCC to adopt the ATSC A/85 guidelines by 2012. These guidelines were developed by the broadcast industry itself as a way to self-regulate loudness across the board. While originally approved by the ATSC (Advanced Television Systems Committee) in 2009, the A/85 guidelines were recently updated this past May. The main goal of these guidelines is to make it easier for broadcasters to comply, by requiring them to correct or set the loudness as early on as possible in the production chain. This has become quite the challenge for audio engineers, used to working with older metering instruments to find and implement the best solutions.

While the House of Worship market is not governed by the CALM Act as the major broadcasters are, the importance of loudness and the measurement and correction of loudness is equally important for both industries. If a House of Worship is providing programming, whether it is via local cable access or a commercial television station, it is still a production environment, working through the same processes and striving to deliver to its audience the same level of quality as a major broadcaster. Those in this industry need to think
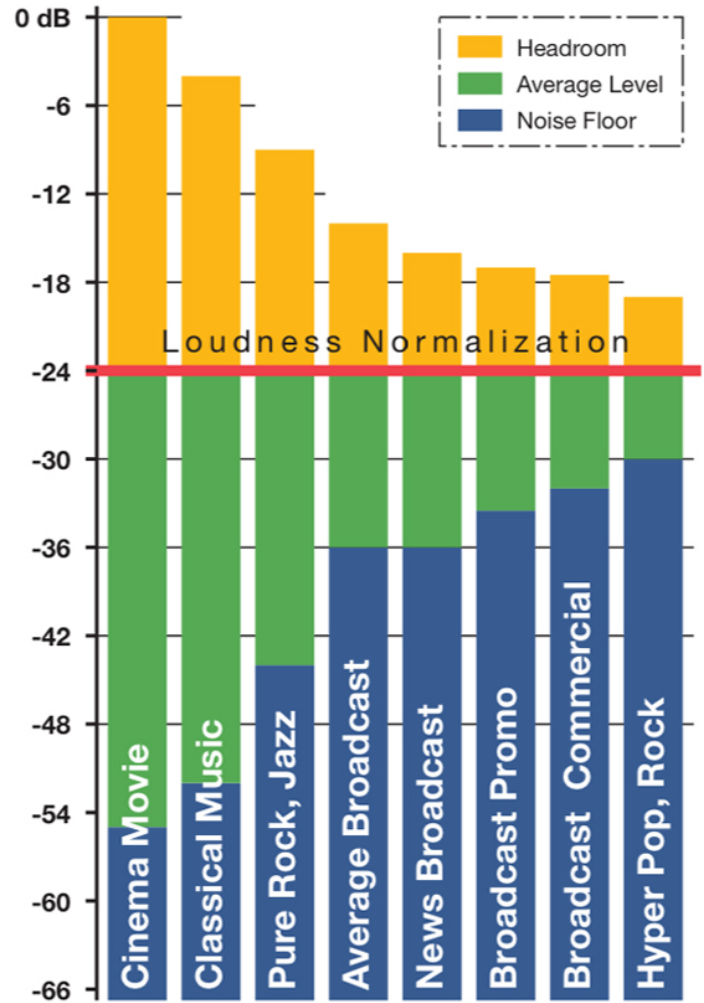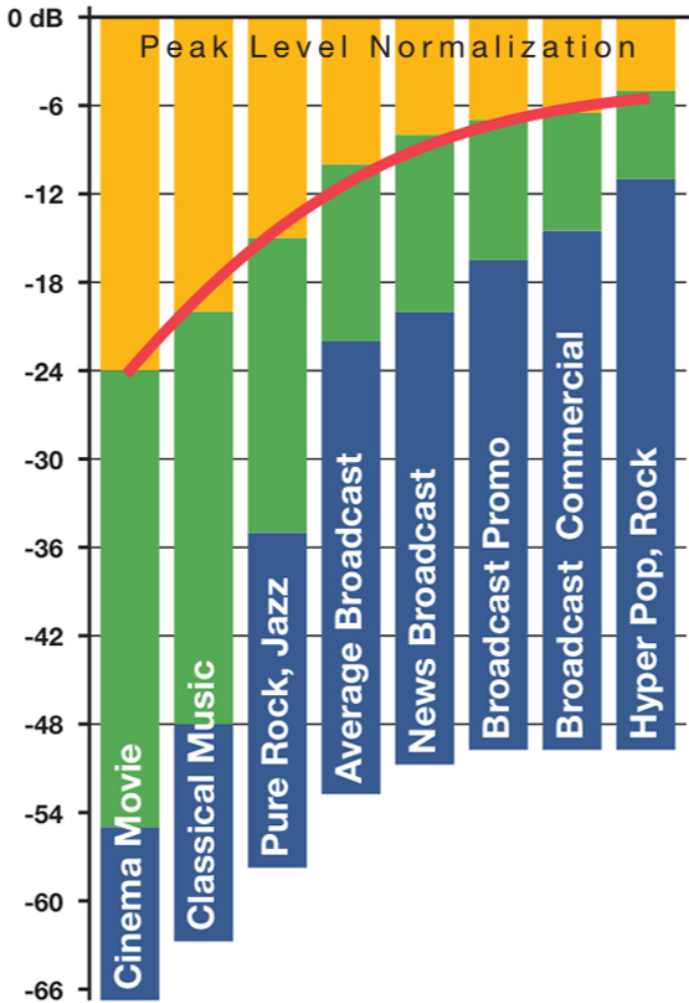
Peak vs. Loudness normalization
The governing principle of BS.1770 and A/85 is to abandon peak level normalization, favoring narrow loudness range programs, and to use loudness normalization instead. This minimizes level jumps between, for instance, regular broadcast and commercials.

about how they can make their programming adhere to these new broadcast standards. In turn, this will help them supply audiences at home with the best possible quality content, as well as to keep the levels in the HOW content consistent with levels of other broadcast programs.

In order to achieve this, more and more pro audio consultants and broadcast engineers are being hired in HOW settings, and the industry is realizing how important it is to keep up with and purchase the latest technology and equipment. Taking early steps to control loudness ensures that the content being delivered does not need to be tweaked in order to comply with the CALM Act later on.

As a solution, it is important to get the loudness corrected as early in the chain as possible, which would be in production. By using meters that comply with these standards, based on algorithms to measure audio program loudness and true-peak audio levels; overall loudness, dynamic range, and peak levels of produced content. These meters particularly come in handy for the HOW market for recordings that combine speech, silence, choir singing, music and other similar elements. As content may be re-purposed for other broadcasts, such as web/podcasts or for release as

DVD, having these tools to determine loudness and dynamic range is especially important to treat this material correctly for many alternative delivery mediums.

Generally there is a processor in the transmission path that uses the same measurement tools available as well as criteria for correction. So, if the material is produced to the broadcast standard, the processor won't touch it. However, if program material becomes much too soft or loud, then the processor will raise or lower the levels accordingly. That way, if you are looking at it from the production studio's point of view, they can meter using program levels and know if they are within the specifications to insure that the processor downstream won't alter the desired program audio and the content will sound the same at home as it did in the control room.

If an engineer at the HOW creates content that is very loud, or very quiet, it could be corrected to meet broadcast loudness standards at the TV station, using transmission broadcast processors. The TV station will soon (if not already) be logging incoming and outgoing material, utilizing the same standard loudness measurements. The TV station can adjust for no processing being used if the content being

delivered to them is already at the correct levels. They also monitor the content and advise providers to deliver it at the correct levels. If the HOW is using these same meters, and delivering content at correct levels, nothing will be altered, and the artistic vision of the HOW can be realized by all viewing at home, or via the Internet with a webcast and any other delivery formats.

Some of these meters can also be automated. If you have a facility server where you have audio and video, and typically all the program materials including promos and commercials are fed/ingested into the server, it's very easy to correct the programs offline and get the average level correct. This has become a lot easier now with metering equipment because they can effectively control all content, reducing the need for skilled audio engineers.

Some of the meters can help set levels correctly in a file based enviroment specifically designed for this. They can show you the average loudness per program, or you can attach them to a computer to get the full detailed overview. When used to help ingest material to a server, some meters can also offset a program, so you can use it as a measurement and see if the program is too soft or loud, and the meter can use the appropriate level offset to get the program automatically on target. You can also create a log of the revised program material for future reference, which means that an operator with little experience will be given a road map to follow and eliminate the problems.

There are also processors equipped with presets that enable HOWs to create audio that would be consistent with a standard TV broadcast, and even podcast or webcast that will still appeal to their markets correctly. By using these presets it makes life easier, even for less experienced engineers. The audio will pass through them and the processors will take action (or not) in order to make it appropriate for whatever medium it is intended for.

A dynamic range is set that is appropriate for that particular environment (podcast, webcast, broadcast) and then the algorithms of compression and expansion and limiting are implemented. These are all traditional things that production people have used for years but they used them in a very special way to maximize how a program sounds without being too loud. In addition, they are being set to a standard so that when a HOW has its content sent out to a broadcaster, the broadcaster in turn will not have to start tweaking it, as it already will be compliant.

Of course, as we inch closer to the 2012 deadline for adherence to the CALM Act, there are still changes to the ATSC A-85 guidelines being made and updates will most likely soon be available. However, knowing the solutions available to the HOW industry puts this market one step closer to working more in sync with broadcasters around the world and communicating their messsage in the most professional and entertaining way. ◆

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