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- **Understanding How CALM Affects You**
- **Taking the Mystery Out of CALM Compliance**

Understanding How CALM Affects You

Recently, the US Congress passed the CALM Act (47 USC; H.R. 1084/§2847) to mandate loudness processing in accordance with ATSC A/85 as its Recommended Practice (RP), and additionally establishes practices for certifying compliance by the use of Spot Checking records to measure and record loudness in a consistent, scientifically objective method described in ATSC A/85 and ITU BS.1770. Note that most of the technical basis cited in CALM specifically references ATSC A/85 for guidance and measurement standardization.

All digital TV broadcasters, digital cable operators, and MVPDs are required to be in compliance with CALM effective December 13, 2012. Our sales professionals can get you CALM compliant while helping to avoid guesswork or hassles.

"A television broadcast station that installs, utilizes, and maintains in a commercially reasonable manner the equipment and associated software to comply with ATSC A/85...a television broadcast station must...
*(i) install, maintain and utilize equipment to properly **measure the loudness** of the content and to ensure that the dialnorm metadata value correctly matches the loudness of the content when encoding the audio into AC-3 for transmitting the content to the consumer;*
*(ii) **provide records** showing the consistent and ongoing use of this equipment in the regular course of business and demonstrating that the equipment has undergone commercially reasonable periodic maintenance and testing to ensure its continued proper operation..."*

FCC 11-182, §73.682, "TV Transmission Standards"

Taking the Mystery Out of CALM Compliance – Loudness Processing and Loudness Records

As stated in the quote to the right, essentially CALM compliance involves two imporatant concepts – Loudness Processing (compliance with ATSC A/85) and Loudness Records (measuring and then logging of these measurement to provide loudness records).

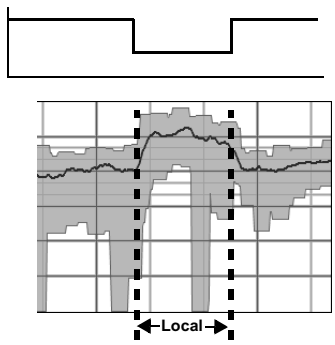
Loudness Processing – Getting the Dialnorm and Levels Right

Loudness Processing means providing consistent loudness with coinciding dialnorm across all programming and commercial spots. Whether applied to all program material and channels emanating from the facility for transmission (or selectively applied to only local insertion/production) all material should exhibit a consistent loudness and coinciding dialnorm as specified in ATSC A/85.

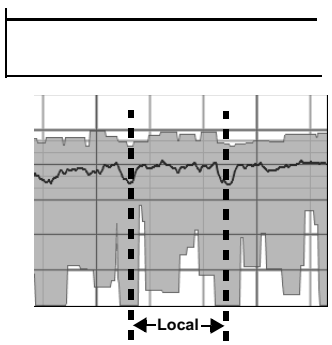
Because digital television typically encodes audio data using the AC-3 codec, dialnorm consistency and coincidence with the program material loundess is vitally important. Typically, material in which dialnorm correctly tracks with loudness will result in a consistent level when received at the viewer's home. Conversely, any system which cannot assure coincidence between these two elements will likely result in CALM complaints.

Depending on where in the chain loundess processing is performed, several methods are suitable, which each method having advantages in certain applications. Basically, all methods anchor around either of these tenets:

- All material is loudness processed at the same LKFS target and consistently uses the same fixed dialnorm. This is consistent with ATSC A/85 where real-time loudness processing is used.
- Where upstream material is certified as being loudness processed (for example, a network feed from IRD), local insertion (at the baseband level) can have its target loudness set to match that of the upstream material. In this manner, the local insertion will always match the upstream material loudness and its dialnorm. (See "Safe Harbor" on next page)



Local insertion loudness processed for default -24 LKFS target (with dialnorm also shifted to -24) complies with ATSC A/85. Insertion loudness at receiver will coincide with network program loudness.



Local insertion loudness processed with adaptive loudness processing target set to match that of program material (in this example, -27 LKFS). Since the insertion loudness matches the program, the coinciding fixed program dialnorm remains applicable for the local insertion. Insertion loudness at receiver will coincide with program loudness.

Safe Harbor – Leveraging From Network Content

Easily incorporated by network affiliates deriving its programming from network feeds (where the network feed is already loudness-processed), network material's controlled loudness and dialnorm (consisting of both programming material and "embedded" network commercial advertisements) can serve as the "safe harbor" for any any local insertion. In this environment, only the local insertion requires loudness processing. Essentially, loudness compliance is attained by simply making certain the local insertion target loudness matches that of the safe harbor material.

Safe Harbor

"For the embedded commercials that stations and MVPDs pass through from programmers, we also establish a "safe harbor" to demonstrate compliance through certifications and periodic testing...we will establish a safe harbor for stations and MVPDs with respect to embedded commercials that does not require real-time processing.

MVPDs will be considered compliant with this requirement so long as the processes used for transmitting to subscribers the information contained in the transmissions of digital program networks correctly maintains the relative loudness of network commercials and long-form content consistent with the RP.

...a station or MVPD should be deemed in compliance for these inserted commercials when it uses the equipment in the ordinary course of business to properly measure the loudness of the content and to ensure that the dialnorm metadata value correctly matches the loudness of the content when encoding the audio into AC-3 for transmitting the content to the consumer."

FCC 11-182 "MB Docket No. 11-93 Report & Order"

Loudness Records – Documenting Compliance and Finding Trouble Spots

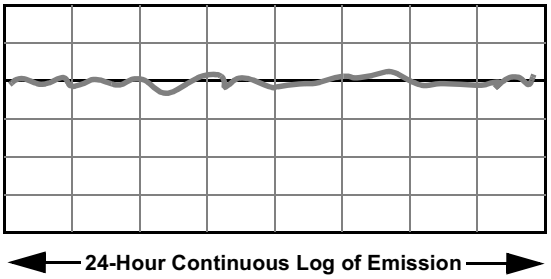
Loudness processing by itself does not meet CALM mandates – documentation of compliance using spot check records is also required. Loudness Records means providing an organized system of logged data documenting ATSC A/85 compliance, as well as ready access to records should a complaint arise. Thorough documentation can also demonstrate compliance should a baseless complaint be submitted.

Depending on several factors such as the CALM conformity of upstream ingest ("safe harbor" utilization/availability) and whether or not local real-time loudness processing is required in maintaining overall loudness control, loudness records vary primarily in the frequency and duration of when material is to be loudness-measured and logged.

At a minimum, an annual record of a random, continuous 24-hour period should be measured and documentated. Note that the 24-hour period can be segmented across various programming in cases where programming is not derived from a single source. FCC 11-182 additionally stipulates various sampling percentages for non-certified material depending on the operation size (primarily directed towards MVPDs).

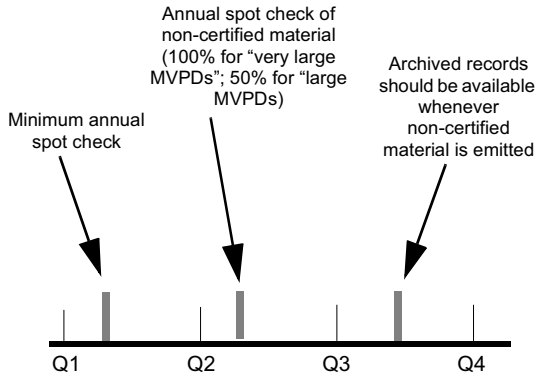
Definition of Spot Check

"A 'spot check' requires monitoring 24 uninterrupted hours of programming with an audio loudness meter employing the measurement technique specified in the RP, and reviewing the records from that monitoring to detect any commercials transmitted in violation of the RP..."
(FCC 11-182A1 ¶ 38)



Frequency of Spot Checks

A minimum of one (1) randomly conducted annual spot check is required, with the documentation available no later than December 13, 2013. Other checks may be required depending on programming, safe harbor utilization, size/type of facility, and other factors. Refer to FCC -11-182 for more information.



Disclaimer

All descriptions and statements herein are for information puposes only. The CALM Act mandates, as it applies to a television media operation, various operational requirements that are a function of the type and size of the operation. The descriptions herein comprise basic explanations of terminology and methodology cited in the Act. The descriptions herein do not constitute, nor are implied to represent, a legal definition.