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Standards for Audio

As I write this article, I am on my way to the Annual Technical Conference in Hollywood, celebrating the SMPTE Centennial. As I think back to the beginnings of the Society, 100 years ago, the founders were concerned about motion images, with the advent of picture and sound together in the theaters a decade or more away. As far back as 1885, Thomas Edison was trying to get his phonograph working together with his kinoscope. Over the last 100 years there has been a steady progression of technologies developed to improve audience experience in both picture and sound. This year, as always, I anticipate a number of excellent papers being presented at the conference on various aspects of audio, in both cinema and television. This month I want to update you on progress on the standards that are being developed to enhance the audio experience in cinema and in television.

Technology committee TC-25CSS (Cinema Sound Systems) have several current projects aimed at improving the quality of sound in conventional movie theaters, as well as standardization of new immersive 3D systems.

One project group is developing a set of recommended practices that codifies and expands currently practiced measurement methodology using today's technology

and analyzers into step-by-step procedure(s) for measuring and calibrating the frequency response and sound pressure levels of the B-chain sound system in indoor theater spaces. Most of the measurement and calibration work has been done and document drafting is now in full swing. The group is drafting three documents:

- Recommended Practice on baseline calibration
- Recommended Practice on maintenance calibration
- Engineering Guideline capturing the work done in this group as a knowledge document

Another project group has recently completed a "Calibration Reference Wideband Pink Noise Signal and Test File standard" to be used in applications including theater testing. ST 2095-1 has been published and includes the specification for the Pink Noise signal as well as .wav files for the noise signal. There is work under way to create a Digital Cinema Package containing the reference calibration noise signal to enable testing in various theaters.

TC-25CSS also has a Working Group on Interoperability of Immersive Sound Systems in Digital Cinema (D-Cinema). This working group has identified several areas of the D-Cinema architecture that require standardization to achieve interoperability of audio for systems with capability greater than 7.1. It is creating a suite of engineering documents (with the root document

number 2098), including standardizing a single object-based distribution file format and related protocols for interoperable playback into a variety of theatrical speaker configurations. Drafting work is complete on a standard for metadata definitions; however, this document is being held, pending the completion of two additional tasks. One group is drafting a standard for an Immersive Sound Model and Bitstream. Another group is drafting an Engineering Guideline for Immersive Audio Renderer Behavior, and a Recommended Practice for Immersive Audio Renderer Testing.

Through all of these activities, SMPTE has been working closely with the Audio Engineering Society (AES) in order to gather additional expertise and to avoid overlap and duplication in the respective standards activities. One of these areas is interoperability testing of the new SMPTE ST 2059 time and synchronization standard and AES 67. Another area of collaboration with AES is work being done in TC-32NF (Network Facilities/Architecture) on ST 2110, a suite of standards specifying the carriage, synchronization, and description of separate elementary essence streams over IP for the purposes of live production. Until IBC this year, the focus was on streaming video essence. However, since this year's IBC, TC-32NF has begun work in earnest on ways to carry both compressed and uncompressed audio.

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