



ATSC Audio Summit



Advanced Television Systems Committee

The Advanced Television Systems Committee (ATSC) is organizing a half-day seminar on audio technology to take place on February 19 in association with the Hollywood Post Alliance Technology Retreat in Palm Springs, Calif. The "ATSC Audio Summit" will be an opportunity for members of the media production and

broadcasting communities to hear informative presentations, discussions and demonstrations on audio for digital television, in particular relating to loudness, lip-sync and Dolby Digital audio. Presenters are all professionals who are active in the industry and very familiar with the work the ATSC has accomplished for digital broadcast sound. The program includes discussions of broadcast audio challenges in the real world, ranging from production and mix room monitoring and measurement techniques through the distribution chain and AC-3 audio encoding to the consumer in the home.

The program schedule is given below.

Tuesday, 19 February 2008		
11:30 a.m. – 5:00 p.m.	Registration Open	
1:00 p.m.	Welcome and Overview of ATSC Activities	Jerry Whitaker, ATSC
	This presentation will set the stage for the program with introductory remarks and an overview of current ATSC projects.	
1:15 p.m.	Broadcast Audio: Challenges and Opportunities	Patrick Waddell, Harmonic, Chair ATSC TSG/S6
	An overview of the work within ATSC relating to audio issues. This presentation will serve as an introduction to the papers on audio loudness that follow. In addition, ongoing work relating to lip-sync will be reported.	
1:45 p.m.	SMPTE Work Relating to Audio Issues	Graham Jones, NAB, Chair ATSC Planning Committee, and Steve Lyman, Dolby
	This presentation will outline work currently underway in SMPTE relating to audio issues, focusing on audio/video synchronization...	
2:15 p.m.	An Overview and Background of the Loudness Issue	Tomlinson Holman, USC, and Craig Todd, Dolby Labs
	This presentation will provide a complete review of NTSC and ATSC loudness issues—how we got here, plus myths and folklore.	
2:45 p.m.	Audio in the Real World	Ken Hunold, Dolby Labs
	This presentation will report on Dolby's off-air measurement results, along with a series of demonstration clips providing insight into how much of a problem uneven loudness really is in the field.	
3:15 p.m.	Mix Room Monitoring and Measurement	Tomlinson Holman, USC
	This presentation will focus on mixing room monitor requirements and what happens if you don't meet the established guidelines.	
3:45 p.m.	Coffee Break	
4:00 p.m.	Panel Discussion: Production	Jim DeFilippis, Fox, Sean Richardson, Starz, Mike Abbott, audio consultant and engineer, Robert Seidel, CBS, and other representatives from the

	Challenges	networks and production community Ken Hunold, Dolby Labs, moderator
		This panel will examine the various elements of the loudness problem that relate to production issues.
4:45 p.m.	Panel Discussion: Distribution Issues	Jim Starzynski, NBC Universal, Ira Goldstone Tribune, and other representatives from the television industry Graham Jones, NAB, moderator
		This panel will examine the elements of the loudness problem that relate to station issues.
5:30 p.m.	Demonstrations	Planned live demonstrations of “by the book dialnorm”, both agile and fixed as well as the use of modern dynamics processors that work in conjunction with or without dialnorm. (Invited demos)
6:00 p.m.		End of Session

The Hollywood Post Alliance is the trade association representing the professional community of businesses and individuals who provide expertise, support, tools, and the infrastructure for the creation and finishing of motion pictures, television, commercials, digital media, and other dynamic media content. The event will be held at the Rancho Las Palmas Resort and Spa, Rancho Mirage, CA. Additional information and registration details can be found on the HPA Web site; see <http://www.hpaonline.com/>.

Jerry Whitaker, ATSC Vice President of Standards Development, has contributed to the following information on related ATSC activities.

Current ATSC Work Relating to Audio Issues

During last year’s revision of the ATSC’s strategic plan; the organization observed that DTV audio implementation continues to be problematic, particularly citing wide loudness variations and inaccurate time synchronization with video. Noting that these issues can only be corrected with a cross-industry effort, the ATSC began a study by establishing two groups within the Specialist Group on Video and Audio Coding (TSG/S6). They are the:

- Audio Loudness Group (S6-3), led by Jim Starzynski of NBC Universal
- Audio Synchronization Group (S6-4), led by John Henderson of CEA

The first order of business for each group was to identify the scope of the problem and what issues in the signal chain from the studio to the receiver in the consumer’s home are causing trouble.

Loudness

It is important for the digital television system to provide uniform subjective loudness for all audio content. Consumers find it annoying when audio levels vary when channel changing and when watching a single channel. Dialog, the spoken word, has been identified as the element that audiences adjust their volume to. Achieving an approximate level match for average dialogue level from all content is a desirable goal. While the AC-3 audio specifications in ATSC Standard A/52 provide syntax that makes this goal achievable, system implementation in the real world has proven more difficult than expected.

The digital audio-coding system is greatly different than analog’s and can provide a significant increase in dynamic range with no technical reason for dialogue to be encoded near 100 percent, a common NTSC practice. Even so, there is no assurance that all digital program channels, or all content on a given DTV channel, will have dialogue encoded at the same (or even a similar) level. Without a uniform loudness level for dialogue, or the proper use of DTV’s audio metadata component, there will be inevitable audio-level fluctuations between channels across the dial and between program and commercials on a single channel.

Addressing the loudness issue encompasses a number of elements that include mixing, monitoring and proper encoding of local and network programs, commercials, promos and all other content. The S6-3 study group continues to explore all facets of DTV loudness. The group’s goal is to identify problem areas and recommend practical solutions.

Lip Sync

It is critically important that digital television deliver audio and video in proper synchronization to the viewer so that lip sync is maintained. However, the end-to-end DTV audio-video production, distribution, and broadcast system consists of a complex array of digital processing, compression, decompression, and storage devices. Many components in the system impose latency on the signals flowing through them and unequal delays can be imposed on the audio and/or video signals respectively, thus compromising audio-video synchronization. The overall audio-video synchronization error is the algebraic sum of the individual synchronization errors encountered in the chain. While a given synchronization error may cause either a positive or negative differential shift in audio-video timing, the video signal is typically subjected to greater delay than the audio signal, and the tendency is therefore toward video lagging behind audio.

The end-to-end DTV system may be divided into general segments, including:

- Production and Acquisition
- Post Production
- Broadcast network release
- Local Station, including ATSC encoding and transmission
- Reception, and for many viewers, also:
- Cable or satellite distribution

The challenge in dealing with lip sync is the large number of potential variables involved. The S6-4 group is working to identify where the largest potential errors lie and to recommend practical solutions, concentrating on the areas of ATSC encoding, transmission and receivers.

For more information *ATSC Standard A/52* describes the AC-3 audio system. *ATSC Standard A/53* describes how the AC-3 system is used in the digital television system. *ATSC Recommended Practice A/54* provides implementation guidance on the DTV system, including audio issues. These documents are available from the ATSC Standards Page on the ATSC Web site, see <http://www.atsc.org>.

NAB Provides Members with Energy Consulting to Lower Their Expenses

The APPI Savings Solution Program is a National Association of Broadcasters member-only benefit that manages and reduces member's rising energy costs. Members who utilize this program will benefit from APPI's extensive knowledge of and expertise in electricity and natural gas markets across the U.S. APPI analyzes, negotiates, and structures individual and aggregation supply solutions for NAB members in deregulated states. There are no upfront fees and compensation is results based. As energy costs continue to rise and decrease your bottom line, contacting APPI is a wise business decision. Contact APPI at (800) 520-6685 or e-mail info@appienergy.com and be sure to mention you are an NAB member or visit the APPI Web site at www.appienergy.com.

ATSC Digital VSB Measurements Seminar

Monday, March 10, 2008
Great Lakes Broadcasting Conference
Grand Rapids, Mich.

A one-day seminar on the ATSC's digital television (DTV) vestigial sideband (VSB) transmission system measurement methodologies will be presented on March 10 in Grand Rapids, Mich. Presented by DTV transmission engineer, Gary Sgrignoli, the seminar identifies and describes the pieces of test equipment needed for VSB testing in the laboratory, at transmitter sites and at remote field sites.

For additional information contact Gary Sgrignoli, Meintel, Sgrignoli & Wallace at (847) 259-3352 or Gary.Sgrignoli@IEEE.org.

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