

## DTV Audio Update

From Dolby Laboratories | September 2006 | Vol. 7 No. 4

Beginning with this edition, *DTV Audio Update* is changing its former bimonthly schedule to a quarterly newsletter edition. The newsletter will also increase its focus on technical audio advancements in the field of digital television, as well as other issues facing professionals in the rapidly changing terrain of high-definition broadcasting. Future issues of the *DTV Audio Update* will feature more in-depth case studies and other articles providing specific information on Dolby products and technologies of interest to the television broadcast community, in addition to bringing you general industry-related news.

### Fixing Cross-Network Loudness Level Problems with the Dolby LM100



A year ago, Sky Italia, Italy's largest pay-TV satellite provider, was experiencing problems with perceived loudness. Not only did the loudness level of programming vary between different channels, there were even variances between programs and advertising on the same channel.

Sky Italia broadcasts a wide range of channels on its platform, and many of these channels rely on external production companies to supply their content. Until recently the production companies worked from varying interpretations of Sky Italia's production guidelines (which were based on traditional VU, PPM metering), resulting in slightly different loudness levels across the platform. In addition, some channels used audio processors in play-out and others didn't, making checks and adjustments of audio levels before transmission impossible.

Further complexity stemmed directly from the creation of Sky Italia, the product of a merger of two separate satellite operators, Telepiù and Stream. Each company had its own broadcast station (in Milan and Rome, respectively) and

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used different methods of level metering. Finally, there was the decision to offer dual-language service wherever possible, effectively doubling the number of audio channels broadcast. The result was a hugely ambitious broadcast platform plagued by loudness consistency problems.

Sky Italia and one of its production partners, Fox International Channels Italy, turned the issue over to Alessandro Travaglini, who spent the next year analyzing the problem and developing a solution. In doing so, he painstakingly monitored each channel in turn using a Dolby® LM100 Loudness Meter, meticulously recording his results until he had a complete view of the issues involved.

Once he had an idea of the problem, Travaglini devised an acceptable loudness range compatible with the existing audio specifications. He then drew up a more detailed table that showed acceptable maximum and minimum values, depending on what content was being transmitted: movies, documentaries, music, and so on.

Travaglini also examined the audio setup within each Sky Italia quality control (QC) room, and installed new multiband compressors, multiscale PPM meters, and LM100 units. A training course was developed and administered to ensure that all QC operators knew how to use the LM100 to deliver an optimum loudness setting for each program, and how to use the other equipment to bring the final audio output within the target levels Travaglini had defined.

Now QC operators monitor the incoming programs from tape bypassing compression and using the LM100 to measure the loudness levels. If the measured output exhibits too wide a dynamic range, then the audio is compressed and adjusted to fall within the recommended level range. In the case of interstitial programs such as promos and commercials—which are usually already highly compressed—no compression is added, and the main audio level is decreased a few dBFS. This was a conscious move away from a blind-compression approach, where a preset amount of compression is added to every ingested program automatically. Now every program is individually analyzed and adjusted only if deemed necessary.

Travaglini also turned his attention to the various commercials archived on the network's servers, and he found that their average level exceeded the average level of new programming by 3 dB. The network reingested all the archived commercials, lowering their levels by 3 dB to solve the problem.

According to Travaglini, "All of the channels now have programs and interstitials processed with the loudness control procedures and sound very balanced, with a constant loudness level when passing from program to break or when hopping from channel to channel. There is also a general improvement in audio quality across the network. Our viewers no longer have to reach for the volume control every time they change the channel, or when the program they are watching breaks for commercial, giving them a much more pleasurable TV experience."

Learn more about the [Dolby LM100 Broadcast Loudness Meter](#).

## Voiceover Without a Studio

The 2006 FIFA World Cup Germany™ tournament was a huge success for its organizers, broadcasters, and viewers, and the decision to offer it in HD and Dolby® Digital 5.1 let viewers get more involved in the action than ever before. Across the world, broadcasters rose to the challenge of delivering the event in HD, many of them using the World Cup as the launch event for their new services. But when the second stage of the tournament saw two matches being broadcast at the same time, broadcasters without two HD-ready studios faced a potential crisis.



Premiere, the German pay-TV broadcaster, was taking the clean 5.1 feeds for the World Cup matches provided by the host broadcaster and sending these back to its studios along with a separate clean commentary feed. The commentary was then mixed into the match audio on the Center channel using a 5.1 mixing desk before the completed program was sent for play-out. Because Premiere had never needed to perform two 5.1 mixes simultaneously, it had only one mixing studio available, which created a dilemma during the second stage: how could Premiere maintain its commitment to delivering all the matches in 5.1 without a second desk?

The broadcaster devised an innovative solution using a little-known feature of the DP572 Dolby E Decoder: Voiceover mode. Voiceover mode takes the PCM Input channel and mixes it over the main program audio (rather than replacing the main program audio, as happens in the more commonly used Switched Out mode).

Plazamedia, acting as service provider to Premiere, simply took the incoming Dolby E feed—a 5.1 feed without commentary—from Host Broadcaster Services and decoded it using the DP572. Plazamedia technicians connected the mono commentary feed, which had been made at the stadium and sent via a separate ISDN contribution link, to the PCM Input channel. As the Dolby E signal was decoded, the DP572 mixed the commentary over the clean 5.1 mix. The six PCM channels were then passed directly to a DP571 Dolby E Encoder for delivery through Plazamedia's network, and then on to the encoding and transmission head-end at Astra Platform Services for eventual transmission to the home.

"Results were impressive from such a simple setup, though it did take careful planning and mixing of the commentary at the stadium before it was relayed back," said Johannes Hegele, Head of Audio, Plazamedia. Premiere didn't use the system on the more prominent of the two matches, producing a typical full mix of commentary instead. But the system worked effectively, and there was virtually no discernible difference between the two broadcasts.

Learn more about the [DP572 Dolby E Decoder](#).

## Sound Bytes

### Free 121st AES Convention VIP Exhibits Pass

Dolby will exhibit at the Audio Engineering Society's 121st Convention taking place in San Francisco's Moscone Center October 6–8, 2006. We invite you to visit us in Booth 602, attend our training seminars, experience our product demonstrations, and talk with our staff about your audio requirements for entertainment media.



For more information on our AES activities, and to receive a free exhibit-only registration courtesy of Dolby, [click here](#).

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### Dolby at IBC2006 September 8–12

At this year's IBC exhibition in Amsterdam, Dolby will demonstrate the new DP600 Program Optimizer, a rackmount unit that can automatically monitor and adjust loudness levels on file-based networks. In addition to this European debut, Dolby will also show the Dolby® Media Producer suite of Mac®-based audio tools and Dolby Digital Plus technology for IPTV, with a demonstration running through an Amino consumer set-top box. As in previous years, all of Dolby's broadcast and D-cinema equipment will be displayed, including the new JPEG 2000–capable D-cinema system. Dolby staff will be on hand as well to answer questions and perform demonstrations; you can find us at Stand 2.218.



Click [here](#) for more information.

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### Sound-Related Emmy Nominees for Shows in 5.1

On Saturday, August 19, the Creative Arts Primetime Emmy® ceremony was held at the Shrine Auditorium in Los Angeles. We congratulate the sound teams nominated for television programs produced and presented in Dolby Digital 5.1 sound. They received a total of 17 nominations. Winning shows produced and presented using Dolby Digital 5.1 included *Smallville* (Outstanding Sound Editing for a Series), *Flight 93* (Outstanding Sound Editing for a Miniseries, Movie, or Special), *Boston Legal* (Outstanding Single-Camera Sound Mixing for a Series), and the 78th Annual Academy Awards® (Outstanding Sound Mixing for a Variety or Music Series or Special or Animation, one of two winners in this category).

For a complete list of nominated shows broadcast in 5.1, click [here](#).

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