



# DAC DIGEST

Volume VIII, No. 3

September, 2001

DIGITAL AUDIO CORPORATION  
A DRI COMPANY

"Technology to Make Listening Easier"

## NEWS

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Greetings from the DAC booth at NATIA 2001 in Memphis, TN . . .

**DAC PRODUCTS  
ARE  
AVAILABLE  
THROUGH  
GSA ADVANTAGE!**

**#GS-03F-4062B**

**GSA★Advantage!**

### DAC DIGEST

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### NEW PRODUCTS DEBUT AT NATIA

**D**AC unveiled four new products at the recent NATIA 2001 Technology Exhibition in Memphis, TN. Showing for the first time were:

- ◆ SSABR – DAC's new covert digital recorder
- ◆ QuickEnhance – Our simplified tape enhancement system
- ◆ UltraScope – Ultrasonic spectrum analyzer for TSCM applications
- ◆ ProbeAmp – Combination multi-meter/high-gain amplifier for TSCM applications

Customer response to these new products was overwhelmingly favorable! Of particular interest were the features and price position of the SSABR recorder, as well as the easy-to-use concept for the QuickEnhance system.

In addition to these new offerings, legacy DAC products were on display for customer demonstration. MiniDAC, first introduced as a concept prototype at NATIA 2000, was presented as a completed product. MiniDAC combines the filter capabilities of our PicoDAC product with a digital recorder and is suitable for use as a standalone unit or as a replacement for Marantz PMD series recorders in wireless receiver kits.

SpotMic, DAC's high-gain, electronically steerable microphone array processor, met with rave reviews as listeners were invited to hear how SpotMic virtually steers up to 3 beams through the sound field created by a fixed array of microphones. SpotMic is a great addition to a surveillance platform and can be used with 2 to 96 microphones.


For those of you that stopped by the DAC booth at NATIA – thank you! If you missed the show or want more information about these and other DAC audio products, please contact the DAC office today.

## SOUND BYTES


### New Faces

**D**AC is pleased to welcome to our staff David Chappell and Trampas Stern. David is our new Senior Research Engineer and holds a Ph.D. in Electrical Engineering from Duke University. Trampas is our DSP Engineer, coming to us from BOPS. Both will make valuable contributions to DAC's versatility and productivity. 


### DAC Products Cover Floor at NATIA

**D**AC products were on display in a record number of booths at NATIA 2001 including IST, LEA, ProTech Sales, Sytech, and ESA/HarrisTech. Thank you to our colleagues in helping make the NATIA 2001 technology show a great success! 


### New on GSA

**A**ttention Federal Government DAC equipment users! The following products are now available on DAC's GSA Schedule: SSABR-3 and SSABR-6 covert digital recorders; PE-200 Portable Enhancement Kit; SR-200 Portable Recorder Kit; and the CAS and CSP kits for TSCM applications. For more complete descriptions of these products, see our listing on GSA Advantage or go to the DAC website [www.dacaudio.com](http://www.dacaudio.com). 

### TSE Australia Top Dealer in 2Q 2001

**C**ongratulations to Bruce and Shaun Maddison of Technical Support Equipment in Kings Langley, Australia. TSE earned DAC's top international dealer award for the 2nd quarter of 2001. Bruce and Shaun are DAC dealers of long standing. They have shown what accounts for TSE's longevity in providing audio solutions to the Australian security market. 

### IntelliDAC Product Discontinued

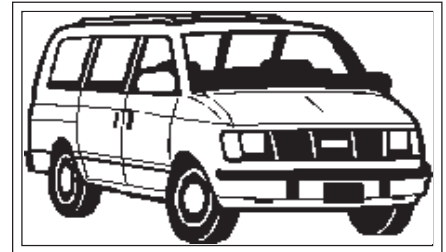
**E**ffective immediately, DAC has discontinued sales of its IntelliDAC product. For information about DAC's available audio enhancement solutions, please contact the DAC office today. 


## PRODUCT UPDATES

### Hit the Road, DAC!

**D**id you know that DAC audio enhancement and collection products are the perfect complement for surveillance van platforms? Most DAC products are designed to fit in standard 19" equipment racks and can be easily mounted with other listening and recording gear in the van. Many customers are using the following DAC products for their mobile (and fixed) listening post operations:

- ◆ Noise Cancellation – MCAP, PCAP II, MicroDAC IV, and PicoDAC
- ◆ Recording – MiniDAC
- ◆ Collection Support – SpotMic



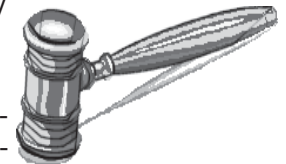
Since DAC products are all available on GSA schedule, they can be purchased after the fact or easily added to your integrated order from any van manufacturer. The next time you order a surveillance van platform, be sure to specify only genuine DAC products for your audio collection and enhancement requirements! 

### LOOK FOR DAC AT THESE SHOWS:


- **ASIS OCTOBER 1-4, SAN ANTONIO, TX**
- **IACP OCTOBER 27 - 31, TORONTO, CANADA**
- **NATIONAL PARK RANGERS TRADE SHOW, OCTOBER 30 - NOVEMBER 1, JACKSON HOLE, WY**

### DAC in Action

**R**ecent events in a California courtroom proved again the effectiveness of DAC enhancement equipment. In two unsuccessful trials of gangland murders, Pasadena Detectives did not submit evidence in the form of taped witness interviews because of the poor quality of the audio on the tapes. Upon the advice of the District Attorney, Pasadena enlisted the help of the Technical Operational Unit of the Los Angeles County Sheriff's Office. Using DAC equipment, the techs successfully enhanced the witness tapes and the verdict for the third trial was a resounding "Guilty!"



Further down the coast, Pat Gay of the San Diego District Attorney's Office achieved outstanding results using a PCAP II on an undercover tape in a drug case. When Pat, the Investigative Technician, received the tape, he heard 80% static and 20% intelligible conversation. After processing the recording with his PCAP II, the percentages were reversed: 80% intelligible conversation and 20% static! In fact, the tape had so much intelligible audio that 22 pages of transcript were generated.

If you want more specific information on the cases mentioned above, email [sales@dacaudio.com](mailto:sales@dacaudio.com). DAC would also appreciate any success stories you might like to share with us. 

## Playback and Pre-equalization: Underrated, Yet Vital Tools...

The simplest things can make the biggest difference, especially when enhancing the worst recordings. Consider the typical law-enforcement microcassette recording, which often has the following characteristics:

- ◆ Very limited bandwidth (generally < 4kHz)
- ◆ Muffled audio due to concealment
- ◆ Severe background noises and/or reverberation

Obviously, the background noises and reverberation may need to be attacked using powerful signal processing, such as that provided by DAC's **PCAP** and **MCAP** products. However, the bandwidth limitations and muffling can often be overcome without major effort, making the recording more readily intelligible.


The first step in enhancing any recording has to be proper playback, particularly with analog recordings and ESPECIALLY with microcassettes. ORIGINAL, not duplicate, microcassette recordings must be played back on a high-quality machine, such as the Daniel Technology RMP-9 or the JBR stereo microcassette playback unit. Both of these machines provide the user with the capability to adjust the AZIMUTH, or alignment, of the playback head with respect to the tape. *This is an absolutely critical feature*, as proper playback head alignment maximizes high-frequency response, thereby maximizing signal bandwidth and voice intelligibility.

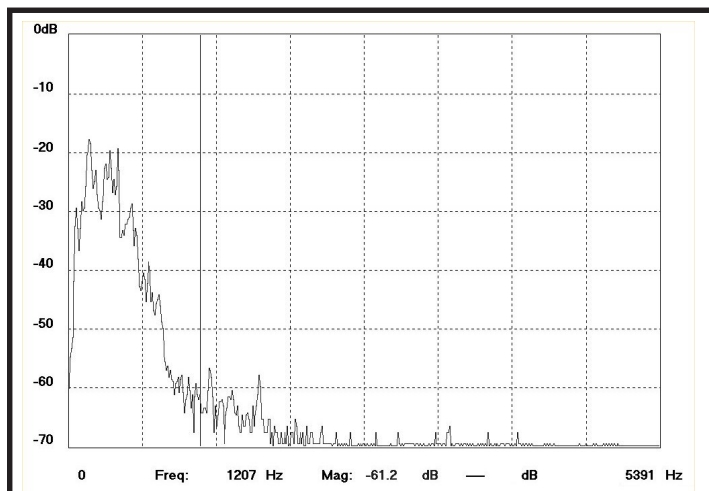
Once proper playback has been achieved, the audio often remains quite muffled. Pre-equalization of the signal spectrum is therefore an essential step for making the voices intelligible. An excellent tool for pre-equalization is

the Hi-Res Graphic Filter, which is available on all DAC **PCAP** and **MCAP** systems.

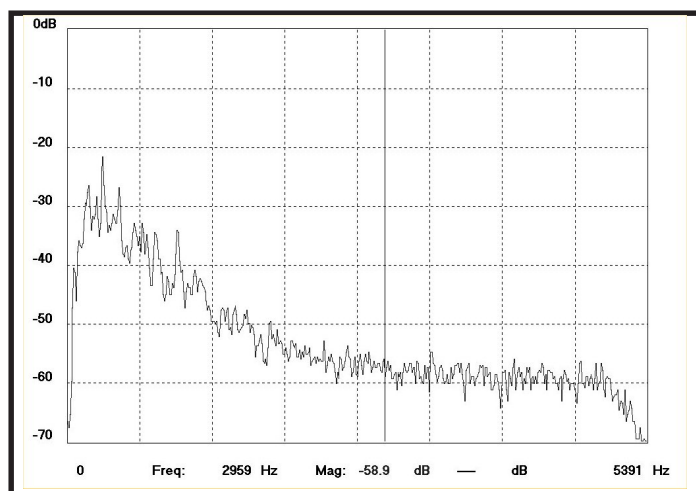
When enhancing microcassettes using a **PCAP** or **MCAP**, it is often a good idea to use a Hi-Res Graphic Filter as the very first stage. This helps any subsequent stages do a better job, if they are needed. This filter is extremely easy to use; simply "mouse draw" the desired equalization curve, which can be determined either empirically by listening, or analytically using the built-in Spectrum Analyzer.

The general idea is to "flatten" the signal spectrum as much as possible, such that all high and low frequencies are approximately at the same level, as viewed on the Spectrum Analyzer (see figure). For further, more precise equalization, consider following with a Spectral Inverse Filter. Not only will this filter allow precise flattening of the spectrum, it will also apply make-up gain to the signal, reduce any strong noise "peaks" that are present, and reshape the flat spectrum to one that sounds more natural. Once proper playback and pre-equalization have been achieved, additional processing stages can then be applied to combat any remaining severe noises and reverberations that are impacting intelligibility.

Forensic audio enhancement is a deliberate, methodical process, with the success of each step depending upon all previous steps having been done properly. As a result, the earliest steps in the process will have the biggest impact on the end product. Again, the simplest things DO make the biggest difference. 



**Muffled spectrum from microcassette recording. Note that most of the signal is concentrated at the low end of the spectrum.**



**Pre-equalized microcassette spectrum. Note that the higher-frequency signals have been boosted, which generally improves intelligibility.**

## ***Craig's Corner***

*Craig Scates, General Manager*

I couldn't get out of Memphis fast enough. You heard me. Now, don't get me wrong – NATIA 2001 was one of the best NATIA conferences yet. And Memphis is a decent enough place (99 degree weather notwithstanding). I had to leave town to avoid a clinical addiction to barbecue. They say that if you can stick with something at least 14 times it can become a habit. After six days in Memphis, I found myself just two meals away from becoming a BBQ junkie. And if the barbecue didn't get me, the French fries were determined to finish me off!

It was great to see all of our friends in Memphis. Thank you for stopping by the DAC booth to see the new products or just say "Hello!" We received a very positive reception for our new offerings - SSABR, QuickEnhance, ProbeAmp, and UltraScope –

as well as our existing solutions. If nothing else, I hope you noticed the expansion of our product base to include new audio collection, audio enhancement, and audio countermeasures equipment. We've also increased our assortment of specialty kits, pre-configured for easy transport and field use. More great things are on the way in the second half of this year and in 2002.

Thank you again to Brian Beauchamp of ITS Consultants-Canada and Shaun Maddison of TSE-Australia for their outstanding DAC Dealer performance in the first and



second quarters of 2001, respectively. We are fortunate to have such accomplished and trusted partners representing our products around the world!

*Craig, Shaun, Brian, and Bill . . .*



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