

## An Introduction to DVE Professional



Extron is pleased and excited to announce the arrival of the Digital Video Essentials Professional version. For many of you who have waited patiently for its completion, the wait is more than offset by the technical achievement behind this truly unique video production.

Extron's relationship with Joe Kane spans many of the A/V industry growth years. In reality, our goals and his goals are very similar; we both believe that knowledge is a fundamental and indispensable component of any product, system or installation. Personally, I have always held Joe's standards to be among the most critical and demanding in the industry. Throughout the entire time I have known Joe, he has demonstrated an unceasing drive toward improvement and getting the most out of any format, standard or technology.

DVE Pro is not just another video test program. It represents years of design, trial, and challenge to the capabilities of existing video standards and reproductive mediums. It also represents valuable progress toward better performance among those in the industry that responded to the technical challenges put before them. The industry is better for it.

We, at Extron, saw an opportunity to assist Joe in the long process of bringing you an uncompromising product of real value. We are proud of what Joe has accomplished and are confident that you will find DVE Pro to be the best resource for video systems design and performance evaluation in existence today and throughout the continuing growth of high definition television.

*Steve Somers*

Vice President of Engineering  
Extron Electronics

## DVE Professional DVD

by Joe Kane

With Extron Electronics as corporate sponsor, Joe Kane Productions (JKP) has assembled a six disc set of the Professional version of Digital Video Essentials. The set provides audio and visual test and demonstration materials in standard definitions and high definition that will be useful to the design, engineering, manufacturing, program production, and A/V system installation community. It will have on-going support and updates on the JKP web site for registered users of the program.

### Background

The initial idea for a Professional version of DVE came from Extron in conversations about the test patterns found in Video Essentials. In that 1997 DVD program we had included a number of patterns aimed at the professional market, all of which confused consumers. In planning the Digital Video Essentials program it was decided that a Professional version was in order. Our original plan was to get the Professional version out prior to the consumer version.

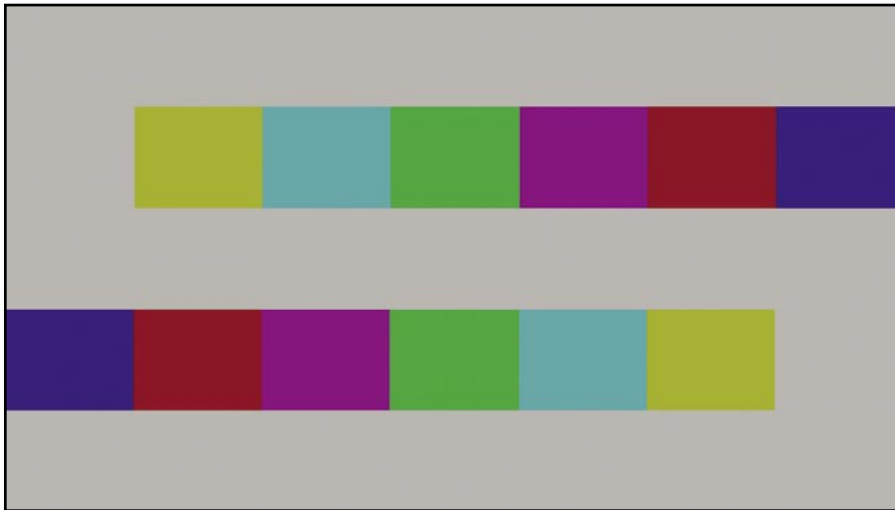
Creating the master for DVE in 1080p HD helped us understand that the Professional version needed to include high definition test and demonstration materials, which ultimately put it behind the standard definition release of the consumer version. We experimented with the D-Theater format but found it difficult to use so we went looking elsewhere. What we found was Windows Media Video.

Since the Professional version was going to be independent, and would come after the consumer version, we spent time with Microsoft® in getting the encodes of our test materials to a level of being a proof of performance for the system. In the meantime, the test signals were used extensively in our consulting work. We had the opportunity to make sure they served a useful purpose and refined several of them from field experience.

### Quality Experience

Part of the experience of DVE-Pro is the high definition demonstration materials. As much as these materials have been made available before, we've managed to improve the quality of that delivery. The resolution of the images goes right out to the limit of the system at full amplitude. We are presenting true 1920 by 1080 images where specific parts of the image test the system's capability.





Universal Color Bar Pattern

In watching the images we discovered shortcomings of various parts of the video system. From that we designed test patterns that would make these flaws easily observed. These test patterns helped us point out system problems such as what we were seeing in WMV playback. Many of these problems had to be solved prior to making the discs available. Creating the program helped establish WMV encoding procedures for the entire industry. As with all of the test programs we've assembled in the past, this one has helped define program production capability.

On the other side of that issue, had we waited for everything to be solved the discs might still be on hold. We did leave a path open for purchasers of the program to obtain updates, so registering your purchase on the DVE web site is important. DVE-Pro provides a ROM update path. Access to it can be found on the PAL test pattern disc. Instructions are included with the package about how to register.

### Full Compliment of Materials

What does the Professional version of DVE offer that is important to the specialist video world? One of the most important things it brings is continuity in test patterns across the NTSC, PAL and HD 720p and 1080p formats. While the majority of test patterns have been assembled

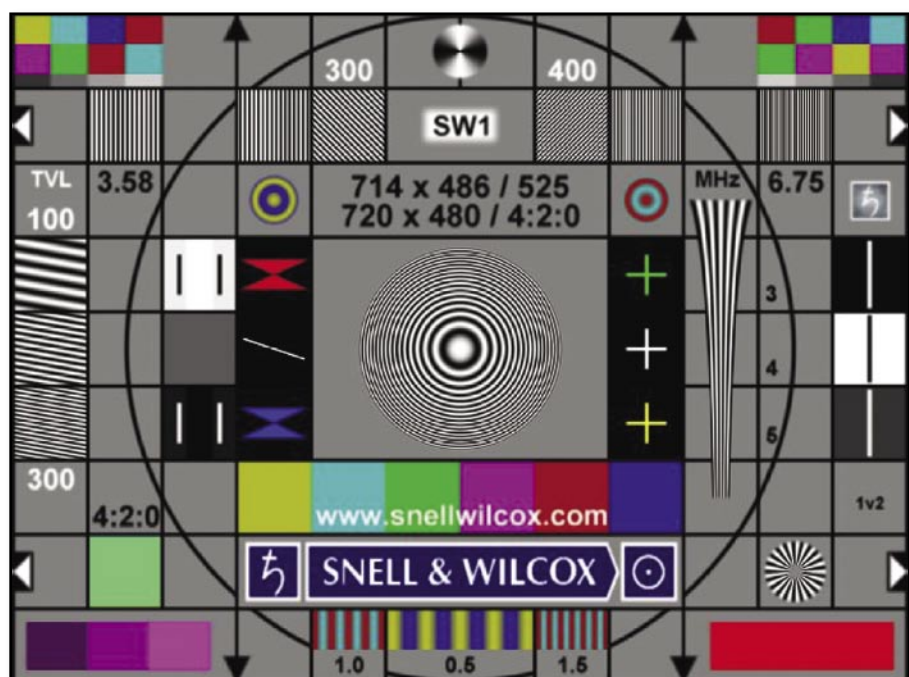
for each format, the parameters being tested, and the method of use are the same among the formats. No longer do you find yourself having to learn a separate set of patterns for each format.

In high definition, materials are encoded in both the ITU Recommended Broadcast Television formats of 601 and 709. The difference between these two formats is not well understood in the consumer product manufacturing industry and

therefore occupies a significant position in our testing capability.

The two documents, ITU-R-BT601-5, and ITU-R-BT709-3 in part describe how gamma and color corrected red, green and blue signals get converted to Y Cb and Cr digital component digital video. The 601 specification provides the formula for standard definition signals and the 709 specification is for high definition signals. The two are different and much of the consumer display industry has missed this point in building receivers. Most of them have continued to use the standard definition formula for high definition. Because of this we've provided high definition signals encoded to the standard definition format. More important, we've provided split field test signals and demonstration materials in both formats to make inspection for decoding much easier to accomplish.

As much as we are trying to encourage proper decoding of video signals, the error of decoding HD, using a 601 decoder, has been going on for at least seven years. We therefore felt it was necessary to provide a full complement of 601 encoded HD materials so that an accurate assessment could be made of existing



Detecting the Chroma Bug

circuits. This is not an endorsement of the error but an accommodation of an existing set of circumstances. Our hope is to make this error obvious enough so that it will be fixed in future products.

**Find System Errors Quickly**

There is to another important purpose of DVE-Pro: make system errors obvious and more easily understood. The 601 versus 709 encoding and decoding is just one issue. The issue of the chroma bug in MPEG decoding has existed since the format came out in 1997. While it's difficult to detect in normal program material it makes a difference in day to day viewing. Fixing the chroma bug is like removing noise from the picture, it's much easier to watch when it's gone. We've found a way to make the chroma bug obvious so that no manufacturer will miss it.

We've become concerned with overscan issues, especially in high definition. These new pat-

terns help us easily spot what's happening and attach numbers to what's going on.

**Updates Available**


In the ROM update we've already posted a number of 25 Hz test signals in Windows Media Video, both 720p and 1080p, for the PAL HD formats. There will be updates to WMV encode capability, where you'll be able to see where progress has been made with their capability. We also hope to represent H.264 capability in the near future with the same source materials. This support will be ongoing for the existing product for registered users of DVE-Pro.

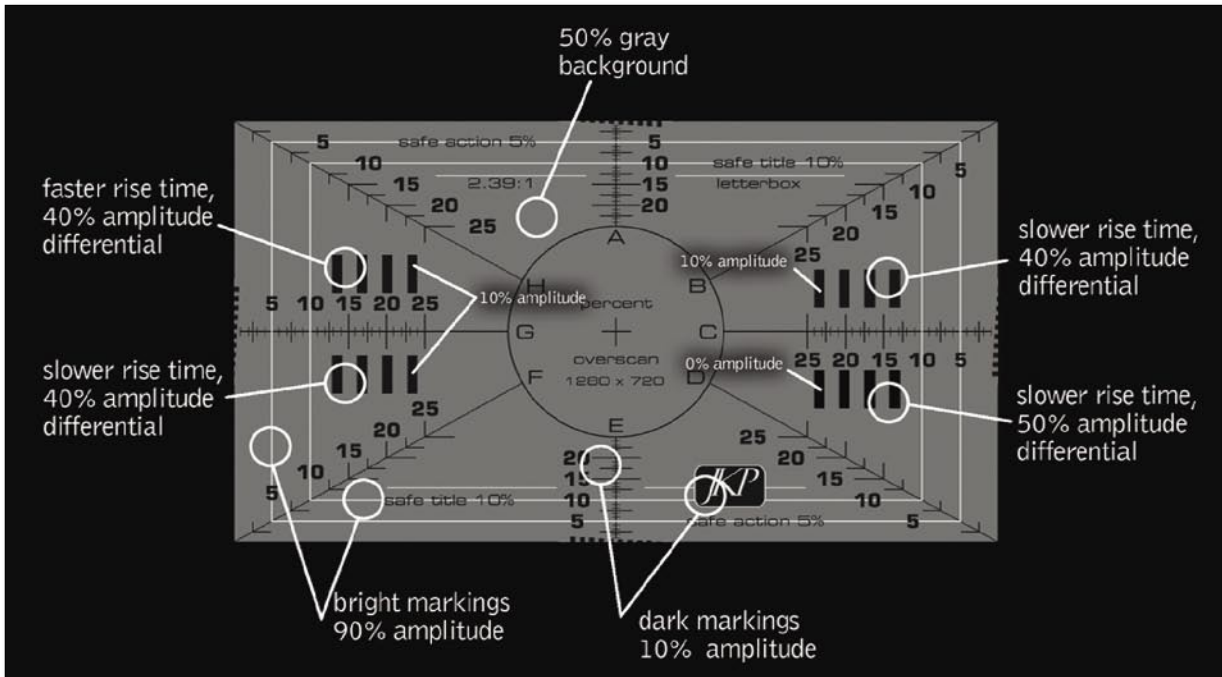
**Wide Range of Test Patterns**

The test patterns in the six disc set are designed for a number of video applications. These include materials that are specific to video signal path analysis, video processing and conversion from one format to another, and analysis of display capability.

MPEG-2 encoding issues are being explored in the two standard definition test signal discs. We've included patterns that show obvious encoding errors to help with an understanding of what can go wrong. We have hopes that it will help with expectations of current high end encode capability such as H.264 and Windows Media Video.

**Essential for All Video Techs**

The intended audience for the Professional version of Digital Video Essentials is video equipment manufacturers, system installers, people responsible for analyzing the quality of video products, codec systems analysis, computer video playback applications, and those interested in learning lots of details about video. Its content has already been used to design and develop several unique display products currently on the market. It is currently being used in the design of new media players, including future DVD players. 



Elements in the Overscan Test Pattern

*Joe Kane brings more than three decades of experience to video display engineering, production, and operations. His career is distinguished by the success of several educational programs and developments of products in the consumer and professional electronics industries. Mr. Kane was nominated for an Emmy, for his contributions to the DVD Video format. Mr. Kane's formal education is in Electronics, Communications. He spent several years working in telephone, data, and RF communications before making the transition to video technology in the research and development facilities at Eastman Kodak.*



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