AVIA Professional

A multi-disc calibration, set-up and test suite

Developed by: Ovation Multimedia, Inc.

July, 2003
AVIA Professional
General Information

What is AVIA Professional?
AVIA Professional (AVIA Pro) is a multi-disc test suite developed by Ovation Multimedia designed to be an all-inclusive product for the calibration of video and audio systems. The suite consists of five DVDs, a CD and user manual. AVIA Pro is the most technologically advanced product for use in the home theater and professional environments.

When will AVIA Pro be available?
AVIA Pro is scheduled for release during the 4th quarter, 2003.

How much will AVIA Pro cost?
The retail price for AVIA Pro is $400.00 and will be available through direct sales via the Internet at www.ovationsw.com and via phone at 1-800-572-3917.

What are the contents of AVIA Pro?
The contents include state-of-the-art audio and video test signals from Ovation Multimedia, as well as industry standards from Consumer Electronics Association (CEA), Room Optimizer and Room Sizer Software from RPG, and other materials from SMPTE. Faroudja-Genesis Microchip will also provide information regarding various test patterns to optimize microchip technology. The printed manual provides necessary instructions for the use of each disc.

The Ovation Multimedia video test DVD* is an extensive set of video setup, calibration and evaluation signals with over 1,000 new test patterns and approximately 3,000 variations. Despite this large number of test patterns, ease of use is maintained through menus, direct access to specific patterns and grouping of patterns into task suites. Virtually all the test signals will improve upon “traditional” signals or permit functions never before possible. The variation of patterns available allows the user to select the signal best suited for the job, which results in a customized test pattern generator for each project. During development, special emphasis was placed on testing and adjusting widescreen and newer technology, fixed panel display technologies such as LCD, DLP, LCOS, SXRD and Plasma. AVIA Pro provides the video / home theater professional or enthusiast unprecedented flexibility and new capabilities. (*More details regarding the video test DVD are available in the attached document.)

Ovation’s audio test disc in AVIA Pro will include over 100 DVD home theater audio sound tones specifically for Dolby, DTS and surround sound up to 7.1.

The Consumer Electronics Association (CEA) has published a standard that specifies a method for measuring and reporting the performance of NTSC-based DVD-Video players. This standard is CEA-896-A, Standard Method of Measurement for DVD-Video Players, December 2002. The CEA disc contains the suite of test signals that are defined in CEA-896-A. A summary of these signals is included in the Avia Pro manual.
The SMPTE portion of AVIA Pro provides assorted video scenes useful for subjective evaluation of system performance. The scenes were derived from original and restored D-1 format component videotapes and have been made available in DVD format. Please note that the original scenes were very high quality component video format and have been compressed to fit on this DVD format. Some quality will have been traded off, however, the scenes should be very useful for these new applications.

RPG has developed two computer programs for Windows entitled Room Sizer and Room Optimizer to optimize the low frequency response of rectangular critical listening rooms. The Room Sizer is used to determine optimal room dimensions, within input minimum and maximum ranges for the length, width and height. It evaluates the uniformity of the actual predicted modal response, as opposed to modal spacing based on simple spreadsheet formulations used in the past. Hence, it more accurately approximates what we hear. Once these dimensions are determined, the Room Optimizer automatically determines the optimal placement of the listener and an unlimited number of loudspeakers, within available areas in the room. The Room Optimizer simultaneously minimizes the standard deviation of the speaker-boundary interference and the modal response to provide the flattest low frequency response. With these two programs the low frequency of critical rooms can be optimized without the need for additional room treatment. RPG also offers Modex, low frequency modal absorbers tuned to 40, 50, 63, 80 and 100 Hz to treat any remaining problems. Also, RPG provides a comprehensive white paper describing all of the potential problems in critical listening rooms and the available solutions and their real world limitations. The Room Optimizer also provides information on the optimal placement of sound absorption and sound diffusion, to optimize the mid and high frequency response as well. The programs can be used for recording control rooms, home theaters and any critical listening room.

Genesis Microchip and Faroudja, a division of Genesis Microchip, provide information regarding various video test patterns to optimize microchip performance and help achieve life-like visibly better images.

**How does AVIA Pro work?**

Despite the large number of test patterns and sound tones, ease of use is maintained through menus, direct access capabilities and grouping into task suites.

**Will updates be incorporated into AVIA Pro?**

As changes in technology occur, updates to AVIA Pro can be made easily and in a timely manner. With the 3-ring binder format, the library of discs can expand by simply adding DVD carrier sleeves, while the manual design allows for text pages to be added or removed when necessary.

**Where can I find technical support for AVIA Pro?**

The technical support staff for the Ovation Multimedia and RPG materials can be accessed online at tech@ovationmultimedia.com. Any technical questions regarding CEA’s DVD-Video Test Disc should be directed to Consumer Electronic Association, Technology & Standards Department, 2500 Wilson Boulevard, Arlington, VA 22201 or standards@ce.org. Questions regarding SMPTE material should be directed to
SMPTE’s Director of Engineering at eng@smpte.org. Questions concerning Genesis Microchip’s test patterns should be directed to branding@genesis-microchip.com, attn. Robert Haefling.

**Will AVIA Pro work on PAL Video Systems?**
No. AVIA Pro is an NTSC test signal set.

**How accurate are AVIA Pro’s test signals?**
AVIA Pro was produced directly in 480P with 8 bit/channel. The signals were then prepared with custom mpeg2 compressors with a typical bit level error under 1 bit count.

**Does AVIA Pro use copy protection signals?**
AVIA Pro had deCSS enabled, but not Macrovision.

**What region code is AVIA Pro?**
AVIA Pro is not region limited.
AVIA Professional Video Test DVD
(Details)

AVIA Professional (AVIA Pro) is a multi-disc calibration, set-up, and test suite from Ovation Multimedia. The suite includes audio and video test signals from Ovation Multimedia, SMPTE, Consumer Electronics Association, and RPG, all organizations interested in audio and video testing, and optimization. This document highlights only one disc of the suite.

AVIA Pro Video Test DVD
Is an extensive set of video setup, calibration, and evaluation signals from Ovation Multimedia. Over 1,000 new test signals (and approx. 3,000 variations) give the video and home theater professional unprecedented flexibility and new capabilities. Virtually all the test signals in AVIA Pro improve upon traditional signals or permit functions never before possible. Special emphasis was placed on testing and adjusting widescreen and newer technology, fixed panel display technologies such as LCD, DLP, LCOS, SXRD, and Plasma.

Reference Level Accuracy and Resolution
AVIA Pro achieves reference level signal accuracy by starting as directly digitally generated 480P 2/3 pull-down, 4:4:4 test signals in native DVD resolution. This avoided any signal level shifts or resolution changes which might have occurred with analog signal acquisition or HDTV downconversion. The pattern masters were compressed with custom MPEG2 encoders whose signal accuracy and quality were optimized through close collaboration between Ovation and the encoder manufacturer.

Even Familiar Looking Patterns are Improved
Thoughtful details are evident throughout AVIA Pro’s test patterns. For instance, a common problem during grayscale calibration is drift of the level for black. AVIA Pro’s grayscale calibration patterns include features, which permit continuous rechecking of black level without switching patterns. Those same patterns even include features for testing edge enhancement problems and clipping of white levels. That type of helpful detail is characteristic of this disc’s test patterns.

One Size Doesn’t Fit All
Sometimes, commonly available test patterns are not ideal. AVIA Pro includes variations of patterns to allow selection of one just right for the job. For instance, instead of only being able to check black level stability at the one supplied APL or using the wrong spaced, crosshatch pattern, the AVIA Pro user can often choose a variation, which is better suited. Virtually a customizable test pattern generator is the result.

New Tests for Displays, Screens, Scalers, DVD Players, and More
AVIA Pro doesn’t just improve on old test patterns. It also provides new testing capabilities. For each test, separate, new patterns or pattern features needed to be created. It is not possible to detail the new material in this short document, but a flavor of what is included can be gained by looking through the partial list of new tests and signals below.
**AVIA Pro – Partial test list**

Some tests will seem unfamiliar, but all are documented in *AVIA Pro’s* accompanying manual. As an example of what a “new test” can mean, a short summary regarding *Color Gamut Test* follows this list.

- Temporal Dither and Color Separation Artifact Detection
- Display Panel Uniformity
- Display Contrast (On/Off, ANSI, Multi-check, etc.)
- Light output
- Panel Response Lag Time
- Color Gamut Test
- Color Wheel Speed Measurement
- DVD Player Layer Change Delay Measurement
- Color Upscale Error Test
- RGB Legal, Y/Cb/Cr Bowties for Delay Measurements
- Luma and Chroma Moving Zone Plates in Video and Film Motion.
- Chroma Sweeps & Multipulses (Including Polyphasic sweeps to Nyquist Limit)
- Luma Sweeps & Multipulses (Including Polyphasic sweeps to Nyquist Limit)
- Variable Intensity Color Bars
- Vectorscope Grid Test
- Above White Signal Handling
- Below-Black Signal Handling
- Black and White Clipping Tests Built into Multiple Patterns
- Black Level Checks built into Gray Windows
- Monotonicity Tests to Single Bit Count
- Color Decoder Accuracy Checks
- DVD Player Pixel Cropping
- Gamma Response and Linearity to Light Test
- Grayscale Banding
- Grayscale Windows from 2.5 to 107.5 IRE
- Automated Grayscale Measurement (when used with compatible instrument)
- High Resolution Focus Patterns
- Saturation and Hue Checkerboard
- Scaler Light Linearity
- Scaler Pixel Mapping
- Screen Hotspotting Check
- Tinted, Multicolored, or Variable Sized Hatches for RGB convergence
- Variable APL DC Restoration
- Variable Count Checkerboards
- Checkerboards with Deep and Shallow Ramps
- Variable Size Circlehatches
Color Gamut Test

The range of colors reproducible by a display is known as its gamut. A wide gamut is desirable, but color accuracy requires not only a wide enough range of colors but accurate reproduction of each color specified in a video signal. AVIA Pro includes the ability to perform extensive color accuracy testing throughout the display gamut. For the manufacturer, this is a tool for ensuring designs produce accurate coloration (flesh tones, greens, blues etc are all the correct shade of color). For the equipment reviewer, AVIA Pro provides an objective means of quantifying and comparing coloration errors in displays. For the equipment installer, this is an aid for recommending displays or hiding a given display’s color gamut problems.

The phosphor characteristics of CRT displays permitted reasonably acceptable color rendition if grayscale and color signal processing (saturation and hue) were correctly set. Today’s digital display devices can have markedly non-standard primaries, gamma curves, and signal processing quirks. Despite being correctly set up using gray windows and color bars, displays with non-standard primaries and poor color signal processing can still produce a be puzzlingly, incorrectly colored picture.

AVIA Pro includes test signals for characterizing a display’s color performance throughout its color range rather than just its primaries and secondaries. Color accuracy is measured using multiple color windows during the Gamut test. This can be carried out manually with a spectrophotometer, but AVIA Pro incorporates features to allow automation of the entire process.

Summary

AVIA Professional delivers an extensive set of powerful, new test signals for setup, testing, verification, and review of video displays, screens, processors, and disc players. Despite its large number of test patterns, ease of use is maintained though use of menus, direct access to specific patterns, and grouping of patterns into task suites.

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July 2003