



1916 - 2016

Society of Motion Picture and Television Engineers®

FACT SHEET

Winner of an Oscar® and multiple Emmy® Awards, the Society of Motion Picture and Television Engineers® (SMPTE®) is a global leader in advancing the art, science, and craft of the image, sound, and metadata ecosystem. A professional membership association that is internationally recognized and accredited, SMPTE advances moving-imagery education and engineering across the communications, technology, media, and entertainment industries. For a century, SMPTE has published the SMPTE Motion Imaging Journal and developed more than 800 standards, recommended practices, and engineering guidelines.

Nearly 7,000 members — motion-imaging executives, engineers, creative and technology professionals, researchers, scientists, educators, and students — who meet in Sections worldwide, sustain the Society. Through the Society's partnership with the Hollywood Professional Association (HPA®), this membership is complemented by the professional community of businesses and individuals who provide the expertise, support, tools, and infrastructure for the creation and finishing of motion pictures, television programs, commercials, digital media, and other dynamic media content. Information on joining SMPTE is available at www.smpte.org/join.



SMPTE strives toward its goal through its Three Pillars:

MEMBERSHIP

Promoting networking and interaction

STANDARDS

Developing industry standards

EDUCATION

Enhancing expertise through the *Motion Imaging Journal*, conferences, seminars, webcasts, and Section meetings

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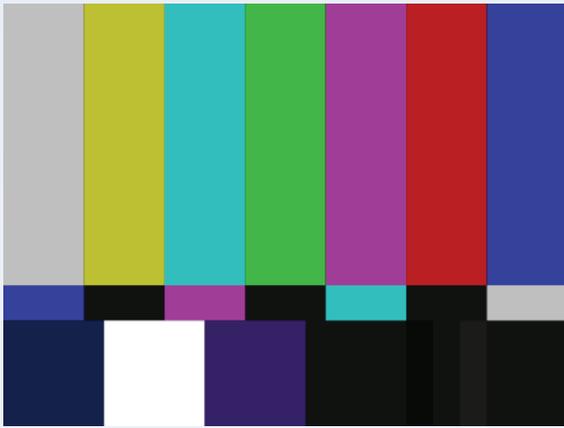
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MOBILE APP AVAILABLE FOR iOS, ANDROID, AND KINDLE:

smpte.mobapp.at

VIRTUAL PRESS KIT:

www.smpte.org/media



Whether you're watching on a TV at home, video online, in a theatre, or on a smart device, SMPTE is there!

When You See High-Quality Motion-Imaging Content, You See SMPTE®

Have you ever seen the color bars television test pattern? Watched a live sports broadcast in high-definition, or a movie in 3D? Downloaded or streamed content your device? Attended a live sporting or music event? Or, used closed captioning?

Then you have seen the Oscar® and Emmy® Award-winning Society of Motion Picture Television Engineers® (SMPTE®) in action!

SMPTE standards touch nearly every piece of motion-imaging content consumed by billions of viewers around the world, ensuring that content is seen and heard in the highest possible quality on any display screen. Our standards also enable repeatable workflows and profitable business models for content creators and distributors as well as the manufacturers who support them.

With 100 years of motion-imaging standards leadership, SMPTE is the innovator of some of the most iconic standards for high-quality content, as well as those that are facilitating the transition to an IP-based multiscreen world.

SMPTE Standards are recognized around the world. SMPTE is accredited by the American National Standards Institute (ANSI) and recognized by the International Standards Organization (ISO). Among its many roles on the international stage, SMPTE is the Secretariat for the ISO Technical Committee on Cinematography, TC-36.

SMPTE: 800 Standards, 64 Countries, and 7,000 Members Strong

Since its founding in 1916, SMPTE has developed more than 800 standards (ST), recommended practices (RP), engineering guidelines (EG), and registered

disclosure documents (RDD) that are currently in force. The Society continues to innovate at a rapid clip, generating an average of 50 new standards for film, digital cinema, television, and Internet video annually.

By providing structure, organization, and interoperability, SMPTE has helped advance the motion-imaging industry through all of the major transitions, from the advent and integration of sound and color to the shift from celluloid and analog to digital formats, including digital cinema, high-definition television (HDTV), and 3D TV.

In addition to thousands of individual professionals globally, 250 organizations from around the world support SMPTE, with sustaining members representing leaders across the media and entertainment industry.

SMPTE Diamond-Level Sustaining Members include Apple, Amazon, Blackmagic Design, CBS, Deluxe Technicolor, Disney/ABC/ESPN, Dolby Laboratories, DTS, Ericsson, Fox Entertainment Group, Google, Microsoft, NBC Universal, Netflix, Nokia, Paramount Pictures, Ross Video, SONY Electronics, Technicolor, Telstra, Turner, and Warner Bros.



Individual membership worldwide is nearly 7,000, with 64 countries represented. Student membership is on the rise, and currently represents almost 15% of the membership. The Society reaches students through its more than 20 SMPTE Student Chapters worldwide; along with scholarships, Student Paper Award, SMPTE-HPA Student Film Festival, and networking opportunities.

Enabling the IP-Based Content Revolution

Massive change is sweeping across the motion-imaging industry, driven by the proliferation of IP-based video, video-capable consumer display devices, and exciting new bandwidth-hungry display technologies, such as ultra-high-definition (UHDTV).

The rapid pace of change introduces the potential for standards development to fragment across multiple organizations, corporations, and individual efforts. Never before has SMPTE's standards work been more vital. SMPTE standards are empowering members of the motion-imaging industry to achieve interoperability, accelerate time-to-market, and pursue new revenue streams with confidence.

It would take more than 6 million years to watch the amount of video that will cross global IP networks each month in 2016.



- Annual global IP traffic will reach 1.3 zettabytes (10 to the 21st power or 1,000,000,000,000,000,000) per year or 110.3 exabytes per month (10 to the 18th power or 1,000,000,000,000,000,000).
- The gigabyte equivalent of all movies ever made will cross global IP networks every three minutes.
- The number of devices connected to IP networks will be nearly three times as high as the global population.

Cisco Visual Networking Index: Forecast and Methodology, 2011-2016

SMPTE Innovation

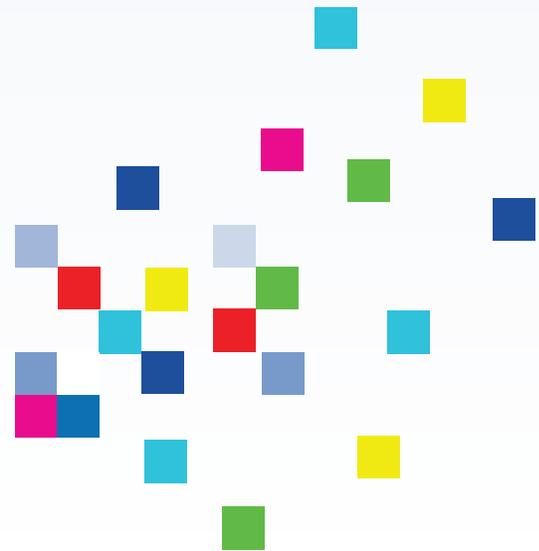
The Society of Motion Picture Engineers (SMPE) was officially created in 1916 under the leadership of C. Francis Jenkins, an inventor from Washington, D.C., who had developed a motion picture projector in 1895, as well as an underwater camera and a panoramic camera for aerial views. (The "T" in "SMPTE" was added in 1950 to embrace the emerging television industry.) In 2015, SMPTE consolidated with the Hollywood Professional Association (HPA), formerly known as the Hollywood Post Alliance, an alignment that further supports SMPTE's evolution as it brings together the creative and technical communities.

Cinema Standards

SMPTE maintains a multitude of standards for film gauges, from 8mm to 70mm, covering all these parameters plus many others such as Edge Coding, analog and digital sound. SMPTE film standards continue to form the industry's foundation and set the benchmark for digital cinema performance.

SMPTE Digital Cinema Standards: Digital cinema has been SMPTE's ongoing opportunity to play a vital role in the reinvention of a 100-year-old industry. Early digital projectors proved the concept while revealing a tremendous gap between the norms of existing electronic imagery and the demands of cinematographers. Lengthy investigations and tests sponsored by The Entertainment Technology Center at the University of Southern California (ETC@USC) and Digital Cinema Initiatives (DCI) supported developments in the SMPTE D-Cinema Technology Committee. This committee represented all industry sectors and included participants from more than 20 countries and associated arts and sciences experts.

The committee gave rise to a suite of more than 30 SMPTE standards and engineering guidelines that enabled the rapid, successful deployment of digital cinema, providing a more engaging cinematic experience. When interest in 3D peaked, SMPTE D-Cinema standards were ready to support it. These standards have subsequently been enhanced to support higher frame rates (HFR), as used in the Hobbit movies, and added support for immersive sound systems is underway.



SMPTE's Cinema Sound Systems Technology Committee (TC-25CSS) is charged with creating SMPTE standards and recommended practices that address the opportunities created by the many technical advances in cinema sound since these standards last were created, nearly 30 years ago. Through this work, the committee is striving to improve the quality and consistency of cinema sound, so that no matter where a film is screened the experience is as close as possible to that of the mixing stage.

SMPTE Digital Cinema Packaging (DCP): The cinema industry is currently in a transitional stage. The current DCI Specification, version 1.2, recommends utilization of SMPTE-DCP, particularly regarding captioning, object-based audio, stereoscopic 3D, and higher frame rates (HFR). The SMPTE-DCP also supports higher bitrates, dynamic 3D subtitles, Material eXchange Format (MXF), fully encrypted subtitles, and auxiliary data.

Video Related Standards

SMPTE has created video standards for many years, initially for North America, with other countries adopting similar standards. In the 1980s, following close cooperation with SMPTE on the development of the first international digital standards, the European Broadcast Union (EBU) decided to look to SMPTE to publish global standards. SMPTE has progressed in both analog and digital formats, and many of its standards have been used as the basis for ITU Recommendations. In the mid-2000s, Japan's National Broadcaster, NHK, asked SMPTE to standardize the basic parameters of a family of ultra-high-definition television (UHDTV) formats to provide a consistent basis for those developing the field.

SMPTE Color Bars® Television Test Patterns have set the consistent reference point to ensure color is calibrated correctly and displayed beautifully on broadcast monitors, programs, and video cameras for more than four decades. Using color bars allows video, RGB, LCD, and plasma screens, as well as duplication, television and webcast facilities, to maintain intended Chroma and luminance levels. The development of this test pattern was awarded a National Academy of Television Arts & Sciences (NATAS) Engineering Emmy®.



SMPTÉ Time Code® gives every frame of video a unique identifying number, makes digital editing possible, and enables data association to enhance audio and video meaning, accuracy, and repeatability, whether in postproduction for a major studio release, in hard news environments or live sports production. It even synchronizes music and is often used to automate lighting, pyrotechnics, video, and other effects in live event production.

SMPTÉ Timed Text® is accelerating the transition of broadcast content to the Internet, making it more readily available to tens of millions of people in the U.S. within the disability community. SMPTÉ Timed Text is also the basis for subtitles and captions in the Digital Entertainment Content Ecosystem's UltraViolet™ format for commercial movie and television content and is used by several video services and Internet video players. SMPTÉ has been honored with an Emmy statuette for its work on "Standardization and Pioneering Development of Non-Live Broadband Captioning" at the 67th Annual Technology and Engineering Emmy Awards administered by NATAS.



In 2012, the FCC declared the SMPTÉ Timed Text standard a safe harbor interchange and delivery format. As a result, captioned video content distributed via the

Internet that uses the standard will comply with the 21st Century Communications and Video Accessibility Act, a landmark U.S. law designed to ensure the accessibility, usability, and affordability of broadband, wireless, and Internet technologies for people with disabilities.

"Better Pixels" Projects: There is growing recognition that the next step beyond HDTV requires improvement in more than just pixel count. Providing a wider color gamut (WCG), a higher dynamic range (HDR), higher frame rates (HFR), and better electro-optical transfer functions (EOTF) all contribute to the improved viewing experience. SMPTÉ ST-2084, an EOTF standard, provides for HDR/WGC content, along with SMPTÉ ST-2036-1, a UHDTV standard, which includes 100 and 120 FPS, have been recently published standards.

Serial Digital Interface (SDI and HD-SDI), a well-established standard in the broadcasting industry, is a family of digital video interfaces used for broadcast-grade video. High-Definition SDI (HD-SDI) is used to transfer uncompressed high-definition video. These standards are used for transmission of uncompressed, unencrypted digital video signals (optionally including embedded audio and time code) within television facilities. SMPTÉ was awarded an Emmy® statuette for HD-SDI in 2013. HD-SDI is a 1.5 Gb/s interface. SMPTÉ has published a 3 Gb/s version already, and the committee is close to completing the 6 Gb/s and 12 Gb/s versions needed for UHDTV and other advanced imaging applications.

Interoperable Master Format (IMF): Did you know that a single film may have more than 35,000 possible versions? This includes all cinematic exhibition, home viewing, broadcast, cable, in-flight, languages, aspect ratios, and Internet distribution options. IMF is being deployed to solve this issue. With IMF, rather than storing a vast number of versions, all the assets (such as the various possible video elements, as well as the various audio and subtitle tracks) are stored individually, and represent the relevant inventory to produce any required version. For each version, an extensible markup language (XML) composition playlist (CPL) specifies how the appropriate segments of each asset should be assembled to create the required program version. Automated systems can invoke the CPL to assemble any version on demand. A new version may be created at any time by writing a new CPL.

Material eXchange Format (MXF) is a very flexible file transfer format defined by a number of SMPTÉ Standards. It permits interoperability of content among various applications used in the television production chain and enhances operational efficiency and creative freedom. It has become the universal solution for file-based television operations and has also been adopted as the foundation for D-Cinema distribution.



SMPTÉ Transport of High Bit Rate Media Signals over IP Networks

creates a standardized framework for video transport over Internet Protocols (IP) networks. This structure is vital for future-proofing content creation and distribution infrastructures as the media and entertainment industries undergo massive transitions to the IP-based enterprises that facilitate multipoint transmission, a critical enabler in monetizing content and advertising in new ways across multiple screens, such as computers and smart devices.

Compression Systems: SMPTÉ has standardized five video compression (VC) standards, VC-1 to VC-5, to provide well-reviewed documentation and enhanced interoperability. The latest of these is the VC-5 standard family that provides documentation and reference software for the video compression used in GoPro systems and workflows. SMPTÉ also has a new project to document the Apple ProRes codec.

Coding of Tactile Essence: Want to feel the roar of the engine while watching a car race? Tactile essence will make this possible! Tactile, haptic, or motion enabled broadcasts and transmissions can be described as an end-to-end use of technology to capture, insert, and/or encode into the broadcast or transmission the tactile “feeling” of a live event and so that a remote viewer can experience not only audio and video, but also the impact of that event, regardless of the transmission means—whether it is cable, satellite, over-the-air, or Verizon FiOS®.

Participating in the SMPTÉ Standards Process

Interested participants are welcome to join the SMPTÉ standards community. Detailed reports from SMPTÉ Standards meetings and more information about participating are available here:

www.smpte.org/standards/engineering-committees.



Cross-Industry Standards

SMPTÉ standards are developed principally to meet the needs of the media industry. However, modern technology allows much wider utilities, as exemplified by Time Code being embraced by the live production and the music industries, among others.

Archive Exchange Format (AXF) is an IT-centric file container that can encapsulate any number and type of files in an entirely self-contained and self-describing package. AXF supports interoperability among disparate data storage systems and ensures long-term availability of data, no matter how storage or file system technologies evolve. The nature of AXF makes it possible for equipment manufacturers and content owners to move content from their current archive systems into the AXF domain in a strategic way that does not require abandoning existing hardware unless or until they are ready to do so. In enabling the recovery of archived content in the absence of the systems that created the archives, AXF also offers a valuable means of protecting users’ investment in content. AXF already has been employed around the world to help businesses store, protect, preserve, and transport many petabytes of file-based content, and the format is proving fundamental to many of the cloud-based storage, preservation, and IP-based transport services available today. Participation by bodies such as the Library of Congress and by major storage companies has helped to ensure that AXF will provide a compelling solution for any critical archiving requirement.

Media Device Control over IP: Today’s media storage, playback, control and effects devices lack a standardized means of exposing control functions to operators and software applications. Standardized simple machine control functions such as PLAY, STOP, PAUSE, LIST, SEARCH, and JOG, along with the ability to query storage devices, would allow users to choose components and applications from various manufacturers. These would easily work together to provide control, similar to the capabilities provided by older serial and parallel control technologies.



Industry Awards and Honors: Oscar® and Emmy® Awards

■ Academy of Motion Picture Arts and Sciences (AMPAS) Oscar® statuette

for contributions to the advancement of the motion picture industry (1957).

■ NATAS Citation

for Outstanding Achievement in Engineering Development for the technical development of the Universal Video Tape Time Code. (1974-1975).

■ Academy of Television Arts and Sciences (ATAS) Citation

for Outstanding Achievement in Engineering Development for expeditiously achieving the difficult task of obtaining industry agreement on the One-Inch Type C Continuous Field (1977-1978).

■ NATAS Honor

for Outstanding Achievement in Engineering Development for the standards work associated with the compatible One-Inch Type C Videotape Format (1978-1979).

■ NATAS Emmy® Award

for Outstanding Achievement in Engineering Development for early recognition of the need for a digital video studio standard, acceptance of the EBU (European Broadcast Union) proposed component requirement, and development of the hierarchy and line lock 13.5 MHz demonstration specifications, which provided the basis for a world standard (1982-1983).

■ NATAS Emmy® Award

for Outstanding Achievement in Engineering Development for early recognition of the need for a component digital video tape recording standard, development of a recording system based on the worldwide standard for digital component sampling, and coordination with the EBU to provide the basis for a world standard for digital component video tape recording (1986-1987).

■ AMPAS Board of Governors Special Commendation

for the contributions of the members of the engineering committees of SMPTE: "By establishing standards, they have greatly contributed to making film a primary form of international communication" (1989).

■ NATAS Emmy® Award

in Technology and Engineering, for development and standardization of digital serial interconnection (SDI) technology for television (1992-1993).

■ NATAS Emmy® Award

in Technology and Engineering, for development and standardization of MXF open file formats for the interchange of video and audio material (2007-2008).

■ NATAS Emmy® Award

in Technology and Engineering, for pioneering development and deployment of Active Format system technology and system local cable ad insertion technology — digital standards for local cable advertising (2010-2011).

■ NATAS Emmy® Award

for Technology and Engineering in recognition of the Society's work on the development, and standardization of the High-Definition Serial Digital Interface (HD-SDI) standard (2013-2014).

■ Philo T. Farnsworth Award

The Television Academy recognized SMPTE at 66th Primetime Emmy® Engineering Award Ceremony for its significant impact on television technology and engineering (2015).

■ NATAS Emmy® Award

for standardization and Pioneering Development of Non-Live Broadband Captioning (2016).

■ AMPAS Special Award

plaque with the citation, "For one hundred years, the Society's members have nurtured technology, provided essential standards, and offered the expertise, support, tools and infrastructure for the creation and post-production of motion pictures (2016).



SMPTTE 2016 Event Highlights

NAB Show's The Future of Cinema Conference, produced in partnership with SMPTE

Join SMPTE, plus numerous industry experts and creatives, on 16-17 April, as we consider the next 100 years of motion pictures and how content makers will thrive with technology over the next century. Featuring explorations and panels on future challenges and methods for making theatrical content and beyond, The Future of Cinema Conference will gather the brightest industry minds to discuss how to ensure our work is preserved in its highest form for generations to come.

Entertainment Technology in the Connected Age (ETCA 2016)

Join technical and creative experts 27-28 June for a two-day event in the heart of Silicon Valley. Explore how the connected world is innovating entertainment and build an actionable understanding of technology and application trends. A must-attend for engineers, creatives, and researchers focused on the future of connected entertainment! www.etca2016.org

HPA Tech Retreat UK, presented by SMPTE LTD.

In July, SMPTE will work with the HPA to bring its preeminent event, the HPA Tech Retreat, to the UK. The HPA Tech Retreat UK is the first example of an HPA global focus enabled by its affiliation with SMPTE. The event will take place at Heythrop Park Resort in Oxfordshire Wednesday and Thursday, 13-14. Further information on the HPA Tech Retreat UK is available at www.hpatechretreatuk.org.

SMPTE 2016 Symposium

Preceding the SMPTE 2016 Annual Technical Conference & Exhibition, this one-day focused event covers crucial technologies impacting content creation, aggregation and distribution. It will be held 24 October in Hollywood, California. www.smpite2016.org

SMPTE 2016 Annual Technical Conference & Exhibition

The preeminent gathering of motion-imaging scientists, researchers, engineers, and business decision makers designed to accelerate standards development, industry expansion, technology advancements and business success. This will be held 24 - 28 October in Hollywood, California www.smpite2016.org

SMPTE 2016 Honors & Awards Ceremony

These prestigious industry awards are presented annually in conjunction with the SMPTE Annual Technical Conference & Exhibition. SMPTE highlights the outstanding leaders that advance the industry on 24 October in Hollywood, California.

www.smpite2016.org

SMPTE Centennial Gala

On Friday, 28 October SMPTE will hold its Centennial Gala to commemorate its 100th anniversary. The event will take place in the Ray Dolby Ballroom, and more than 500 SMPTE members, honorees and guests will be in attendance. The event will honor SMPTE's founding and its past and present accomplishments and continuing contributions to the industry, as well as celebrate its future. The exciting evening will include selected awards, live entertainment, and an after party.

www.smpite100.org

Annual HPA Awards

Honoring excellence in post-production to foster awareness, promote creative and technical excellence in the field, and recognize the achievement of talent. The Annual HPA Awards will be held 17 November at Skirball Cultural Center in Los Angeles, California.

www.hollywoodprofessionalassociation.com/?page_id=523

SMPTE Webcasts

Presented by industry-recognized subject matter experts, SMPTE's webcasts cover a range of topics, including the latest on technologies that are currently being deployed. Webcasts include specific tracks on SMPTE Standards updates, Executive Strategy Briefings and Emerging Technologies.

www.smpite.org/webcasts

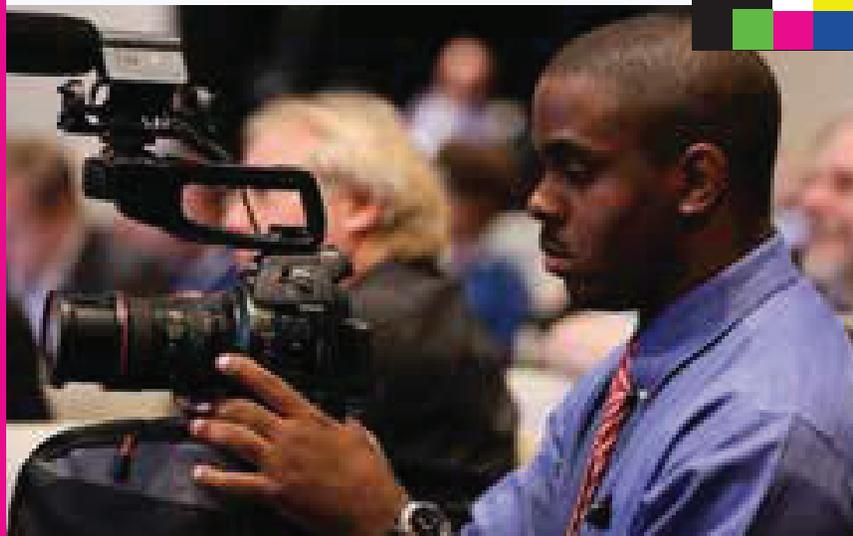
SMPTE Virtual Classroom

Through the Virtual Classroom, we offer learning opportunities to individuals around the world.

www.smpite.org/education/courses

2017 HPA Tech Retreat - Palm Springs

Save the date: 20-24 February 2017



SMPTE Digital Library

The SMPTE Digital Library has now been incorporated into the IEEE Xplore® Digital Library. This is a single platform for all SMPTE intellectual property, including all conference papers, standards, and issues of the peer-reviewed SMPTE Motion Imaging Journal, including the first 1916 editions. The SMPTE Digital Library on IEEE Xplore includes more than 800 in force standards documents and proceedings from SMPTE conferences — more than 20,000 documents in total. SMPTE members benefit from complimentary access to the full Journal collection.

library.smpte.org

SMPTE Test Charts

SMPTE CamWhite Pocket Chart

The SMPTE CamWhite pocket chart is a consistent and reliable neutral white reference with a sturdy laminated surface. Enabling users to white-balance cameras to a scene's primary light source with precision, CamWhite charts are a versatile tool for improving the production value of images, saving both time and money in post.

www.smpte.org/store/product/smp-te-camwhite-pocket-chart

SMPTE OneShot™ and OneShot™ Plus Pocket Charts

Offered in a SMPTE-branded protective case, the DSC Labs OneShot™ pocket chart provides all of the color and luminance information necessary to match and reproduce color in dailies footage. Printed with a matte surface that reduces glare, the OneShot chart can be incorporated into a shot with minimal reconfiguration of cameras and lighting. This pocket tool provides users a fast means of maintaining the right look and feel for motion images, even in high-pressure, time-sensitive shooting environments. Available in matte or gloss.

www.smpte.org/store/product/smp-te-oneshot-™-pocket-chart

SMPTE CamBook® 3

The SMPTE-branded book has three charts in one. It features a number of popular DSC test elements, including the CamAlign™ color bar/grayscale with "SpectroGray" patented spectrophotometrically neutral grayscale, a 12-chip color bar with four standard skin tones, resolution trumpets, and both 16:9 and 4:3 framing lines. Additional DSC test elements include three "matte" reference chips as well as a DSC Back Focus Pattern, all of which were previously unavailable in any CamBook.

www.smpte.org/store/product/smp-te-cambook®-3

35mm Test Materials

35-PA Test Film

Designed to facilitate quantitative measurements of projector alignment. It is produced as a camera original on black-and-white, high-resolution, 35mm stock. It is intended to test various elements, including overall focus, image resolution, projector alignment, image unsteadiness, and screen image size.

www.smpte.org/store/test-films-and-charts

35-BT-200 – Photographic (Optical) Sound Buzz-Track Test Film

Designed to facilitate the adjustment of the lateral position of the scanning light beam of 35mm photographic soundtrack projectors and reproducers. This film is produced as a variable area track so that the standard soundtrack area is opaque (no sound). While the areas immediately adjacent to the soundtrack area are modulated with square wave signals, the square wave signals allow you to adjust the scanning beam to its proper position.

www.smpte.org/store/product/p35-bt-200

Digital Cinema Test Materials

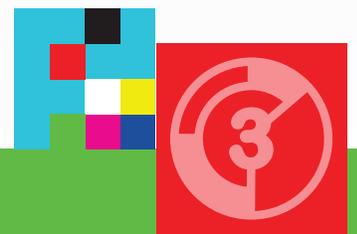
DPROVE

Digital PROjection VERifier is a set of D-Cinema Packages (DCPs) primarily intended for use in theaters as a digital projector performance, alignment, and picture-sound synchronization check. DPROVE is derived from SMPTE RP 428-6:2009. The RP428-6 sequences include traditional countdown numerals in front of a "clock arm" that rotates with the position incremented on each frame. The background image contains a large number of elements to aid in verifying projection performance and alignment. These features include center and crop markers, focus stars, gradients for detecting contouring, gamma check, black and white references, precision color patches (saturated and desaturated), human faces for flesh tones, and left-right indicators for stereo (3D) imagery.

www.smpte.org/sites/default/files/SMPTE_Digital_Leader_Form.pdf

Standardized Evaluation Material (StEM)

This test material is designed to evaluate the performance of digital projectors and other elements of digital cinema systems. The material is presented as a short uncompressed digital movie available in 4K, 2K, and HD TIFF file formats. The evaluation material was produced by the American Society of Cinematographers (ASC) and the Digital Cinema Initiative (DCI) and is distributed exclusively through SMPTE. www.smpte.org/store/stem-materials



SMPTE Digital Leader

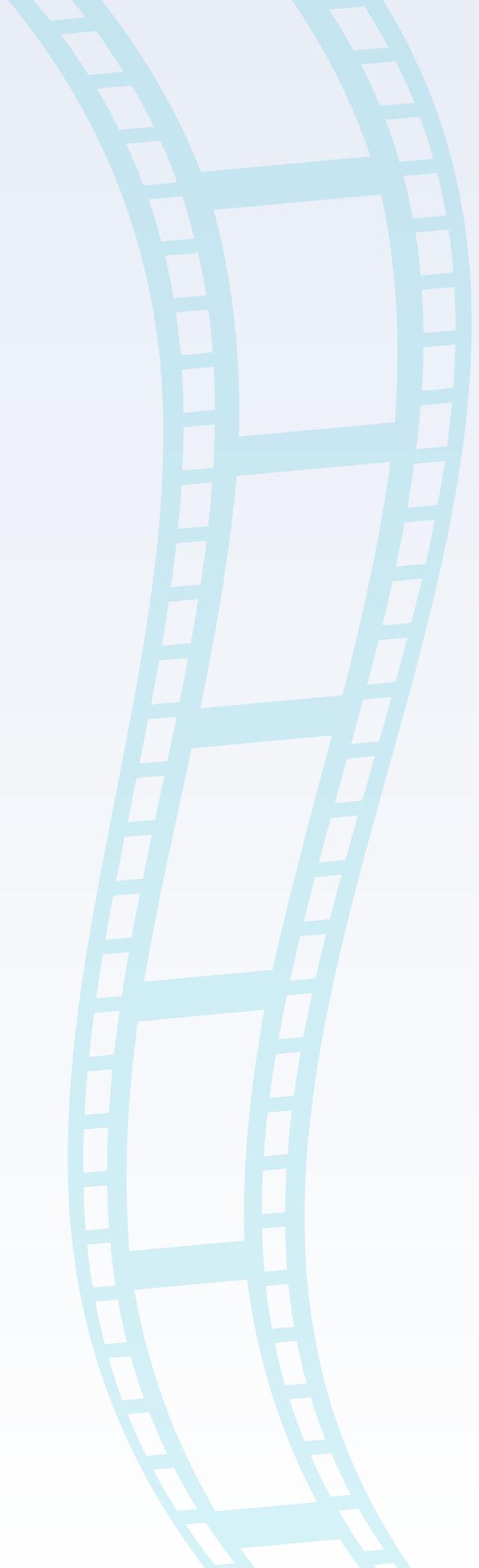
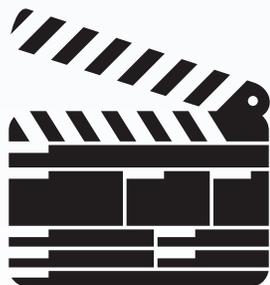
The SMPTE D-Cinema Digital Leader and DPROVE are both derived from SMPTE RP 428-6:2009. Both contain 8-second leader sequences; the Digital Leader package also includes a 4-second “foot leader” that may be used if required. Both products contain sequences for aspect ratios of 1.85:1, 1.896:1 (maximum projection extent), and 2.39:1 at both 2k and 4k resolutions. The sequences are provided at 24, 25, 30, 48, 50, and 60 FPS, and in flat (2D) and stereo (3D) versions where applicable. Each product includes all versions currently defined in SMPTE Standards. The RP428-6 sequences include traditional countdown numerals in front of a “clock arm” that rotates with the position incremented on each frame. The background image contains a large number of elements to aid in verifying projection performance and alignment. These elements include center and crop markers, focus stars, gradients for detecting con-touring, gamma check, black and white references, precision color patches (saturated and desaturated), human faces for flesh tones, and left-right indicators for stereo (3D) imagery. Audio “pops” are included to assist in verifying picture-sound synchronization. The Digital Leader product is primarily intended for postproduction facilities, to permit the addition of leaders and/or “foot leaders” to DCDM reels in designed for conversion to encrypted DCPs. The product delivery includes numbered sets of TIFF and WAV files for each of the standardized variants.

www.smpte.org/store/product/digital-leader

SMPTE Registration Authority, LLC (SMPTE-RA)

SMPTE-RA provides a variety of registration and repository services for the industry and is authorized by the International Organization for Standardization (ISO) to register MPEG-2 format identifiers per ISO/IEC 13818-1:2000. Many SMPTE Standards incorporate tables of values or identifiers that may be updated from time to time (usually by the addition of new values). SMPTE-RA also serves as the repository for all such tables, providing timely updates without re-publication of the underlying document. SMPTE-RA provides the repository for the SMPTE Metadata Dictionary and now offers registration organization nodes in the Dictionary, and for SMPTE and MPEG Identifiers.

smp-te-ra.org





SMPTÉ Leadership:

A Who's Who of the Media, Entertainment, and IT Industries

SMPTÉ leadership represents the world's best-known media, entertainment, and IT businesses, Fortune 100 brands, and industry-leading companies. Current Executive Committee leadership includes:

- Robert P. Seidel, President, **CBS Television Network**
- Wendy Aylsworth, Past President, **Warner Bros.** (retired)
- Matthew Goldman, Executive Vice President, **Ericsson**
- Peter Wharton, Secretary/Treasurer, **BroadStream Solutions, LLC**
- Paul Michael Stechly, Finance Vice President, **Applied Electronics, Ltd.**
- Alan Lambshead, Standards Vice President, **Evertz** (retired)
- Patrick Griffis, Education Vice President, **Dolby Laboratories**
- William C. Miller, Membership Vice President, **Miltag Media Technology, LLC**
- Barbara Lange, Executive Director, **SMPTÉ**

The SMPTÉ Board of Governors is composed of representatives from across the IT, motion picture, and television industries. Current Governors include:

- Merrick Ackermans, Southern Region Governor, **MVA Consulting**
- Stephen M. Beres, Hollywood Region Governor, **HBO**
- Dan Burnett, Southern Region Governor, **Ericsson Television, Inc.**
- Randy Conrod, Canadian Region Governor, **Imagine Communications**
- Angelo D'Alessio, EMEA, Central and South America Region Governor, **CineDesign Group**
- Bruce Devlin, UK Region Governor, **Dalet**
- John Ferder, New York Region Governor, **CBS**
- Christopher Fetner, Governor-at-Large, **Netflix, Inc.**
- Siegfried Foessel, EMEA, Central and South America Region Governor, **Fraunhofer IIS**
- William T. Hayes, Central Region Governor, **Iowa Public Television**
- Sara J. Kudrle, Western Region Governor, **Grass Valley, a Belden Brand**
- Karl J. Kuhn, Eastern Region Governor, **Tektronix, Inc.**
- Kwok-Luen Lam, Asia/Australia Region Governor, **Hong Kong Cable TV Ltd** (retired)
- John Luff, Eastern Region Governor, **HD Consulting**
- Patricia Keighley, Hollywood Region Governor, **IMAX**
- John Maizels, Asia/Australia Region Governor, **Entropy Enterprises and Productions**
- Pierre Marion, Canadian Region Governor, **CBC/Radio-Canada** (retired)
- John McCoskey, Eastern Region Governor, **Eagle Hill Consulting**
- Mark Narveson, Western Region Governor, **Artegis Law Group, LLP**
- Andrew G. Setos, Hollywood Region Governor, **BLACKSTAR Engineering, Inc.**
- Douglas I. Sheer, New York Region Governor, **DIS Consulting Corp.**
- Leon Silverman, Governor-at-Large, **The Walt Disney Studios**

SMPTÉ Directors are appointed by the Standards, Education and Membership Vice-Presidents:

- V. Michael Bove, Education Director, **MIT Media Laboratory**
- Michael DeValue, Education Director, **The Walt Disney Studios**
- Al Kovalick, Education Director, **Media Systems Consulting**
- Pete Putman, Education Director, **ROAM Consulting, LLC**
- Karl J. Kuhn, North American Membership Director, **Tektronix, Inc.**
- Peter Weitzel, International Membership Director, **Weitzel.tv**
- Bruce Follmer, Student Chapter Director, **ABC Television**
- Dave Schnuelle, Standards Director, **Dolby Laboratories**
- Bob Edge, Standards Director, **Bob Edge TV Consulting**
- Paul Treleven, Standards Director, **IABM**



Requests for interviews with SMPTÉ leadership should be submitted to aimeericca@smpte.org