
ABSTRACTS OF PAPERS FROM OTHER JOURNALS

NBC Ku-Band Satellite — A Progress Report, R. J. Butler and R. H. Edmondson, *RCA Engineer*, 29:43, July/August 1984.

The history and planning effort leading to NBC's satellite distribution system for network television are described. The Ku-band is being used. The entire system of 180 ground stations is expected to be operational in January 1985. The system will offer a more efficient and economical way to distribute the television signal. The Satellite Network Management System (SNMS) that NBC developed jointly with Comsat General provides central control of traffic through control points known as "Skypath Control" in Burbank and in New York.

Sound Synthesis by Fractional Waveshaping, Giovanni de Poli, *Journal of the Audio Engineering Society*, 32:849, November 1984.

A nonlinear sound synthesis technique that uses a sinusoidal input signal and a rational shaping function is described. Complex spectrum evolutions are easily obtainable by varying different parameters. The global spectrum shape is essentially defined by only two parameters, those controlling the bandwidth and the formant position. Multiplication by a carrier allows harmonic and inharmonic spectra to be obtained.

Digital Audio Modulation in the PAL and NTSC Optical Video Disk Coding Formats, Kees A. Schouhamer Immink, Ad H. Hoogendijk, and Joost A. Kahlman, *Journal of the Audio Engineering Society*, 32:883, November 1984.

An extension of the current optical video disk format that includes a digital audio signal is presented. The feasibility of a combined digital audio signal according to the compact disk digital audio format, and the current analog audio signals in the NTSC video format is described, which permits the realization of a compatible system. For the PAL and SECAM video formats, the feasibility of digital audio is shown, but it cannot be combined with the analog audio carriers.

Design Factors in a Programmable Distortion Measurement System, Richard C. Cabot, *Journal of the Audio Engineering Society*, 32:964, December 1984.

The advent of microprocessors in the control of audio testing has brought both increased accuracy and ease of use. Obtaining the performance levels needed for testing today's state-of-the-art equipment

requires many new techniques for signal generation and measurement. These are described and the required tradeoffs are discussed.

A Pulse and Subcarrier Distribution System for a Large Television Station, Alan Glenny and Ken Sheppard, *International Broadcast Engineer*, 15:77, September 1984.

The degree of pulse and subcarrier timing precision required in a broadcast quality color television system is not always fully appreciated even among otherwise well-informed engineers. The presence of correctly timed and synchronous sources is often taken for granted and techniques used to monitor synchronism are often inadequate.

The increased use of more and more sophisticated editing techniques has highlighted the subtlety of the PAL-encoded signal and placed much more stringent demands on the pulse distribution system and the associated operational engineering techniques. It is essential, therefore, that the sync pulse and carrier distribution in a color television system employing several video sources include methods of maintaining pulse and video signal synchronism to ensure minimal timing differences between signals reaching a mixing point.

Changing Role of the Engineer in the Electronics Industry, W. Gosling, *IEE Proceedings-A*, 131:665, December 1984.

The growth of the electronics industry from small beginnings to its present major status is reviewed; growth accompanied by radical change in the way the industry works. The knowledge base for professional practice has been transformed, and the expansion in the volume of relevant knowledge inevitably forces the evolution of new disciplines, with an unavoidable tendency for once coherent specialisms to split, including, in its turn, electronic engineering. Inevitably this process will continue, and both educators and accreditation authorities must adopt a forward-looking and flexible view if they are not to impede the further development of what bids to be the world's largest single industry.

Future Trends in Telecommunications Transmission — A Personal View, P. Cochrane, *IEE Proceedings-F*, 131:669, December 1984.

After briefly tracing transmission system development to the present day, the paper considers the likely progression of

both services and technology in the future. To provide a clear focus for the discussion, a number of "end point" developments and targets are postulated as the ultimate objectives of the transmission engineer. The latest technology developments are then cited as being capable of providing the means to achieve these objectives, which would then lead to a continuing exponential growth in both traffic and services. It is concluded that future traffic and service demands will ultimately rely upon optical fiber systems as the major point-to-point carrier, with radio and satellite devoted to mobile, broadcast, rapid-response and "outback" applications.

Application of Surface-Acoustic-Wave Technology to Burst-Format, Spread-Spectrum Communications, M. Kowatsch, *IEE Proceedings-F*, 131:734, December 1984.

A hybrid direct-sequence/frequency-hopping spread-spectrum communication modem for burst-format transmission of digital data has been developed. A burst consists of a short synchronization preamble and the data packet. Data modulation is accomplished by assignment of pairs of pseudo-noise sequences with low cross correlation for message ones and zeros. The spreading code chip pattern is changed from bit to bit in both the preamble and the message portion of a burst.

Receiver signal processing is based on the application of surface-acoustic-wave (SAW) elastic convolvers to programmable matched filtering. The performance of the system in an additive white Gaussian noise channel is analyzed, measures of performance being the probability of burst loss and the bit error probability in the case of ideal synchronization. Evaluations for a particular design are presented and some experimental results obtained with a test system are shown for comparison.

Evaluation of Proprietary Optical Fiber Transmission Systems, F. G. Harrison, *The Radio and Electronic Engineer*, 54:406, October 1984.

This paper describes a comprehensive evaluation program being carried out on optical fiber transmission systems, both in a field environment and under controlled conditions in the laboratory. The work is providing detailed information on the performance of optical fiber systems from a number of commercial sources, in particular by monitoring the overall error performance and by measuring variations of parameters incorporated in the optical

It works the way you do.

FUJINON's new 17X

studio zoom will per-

manently change the

studio zoom, revolution-

ary, greater

will.

ated. For

to applica-

of

zoom

incorporates more

"FUJINON firsts" than

any lens in our history.

For example, you can

of 80

and

revolutionary zoom lens.



Ampex Listened When You Described Your Ideal VTR.

CONSOLE WITH OVERHEAD
PICTURE MONITOR—ONE OF
6 CONFIGURATIONS
AVAILABLE

HI FI SPEAKERS LET YOU
APPRECIATE SUPERIOR AUDIO
QUALITY OF VPR-6 WITH
EXCELLENT STEREO PHASE
RESPONSE.

HANDLES SPOT TO 2 HOUR
REELS WITH EQUAL PRECISION
AND GENTLENESS

BRUSHLESS DC SCANNER
MOTOR AND INDIVIDUALLY
REPLACEABLE HEADS

LOGICAL, EFFICIENT CONTROL
PANEL—ALL OPERATOR
CONTROLS UP FRONT

DUAL NUMERIC READOUTS—
ONE FOR TAPE TIME/TIME
CODE; ONE FOR CUE POINTS,
DIAGNOSTIC CODES, TAPE
SPEED, SETUP CODES

TBC-6 WITH 32 LINE MEMORY
AND 28 LINE CORRECTION
WINDOW; PERFORMANCE
MATCHED TO VPR-6.

Now, Here It Is. The New VPR-6.

When hundreds of users worldwide told us what they wanted in a one-inch VTR, we listened closely and then designed and built it. It's our new VPR-6, the easiest VTR to operate, service and maintain of any in its class. And it's in the price/performance ratio that most users want.

Smart, yes. Complicated, no.

Intelligent but not intimidating, the new VPR-6 offers features that allow you to get the job done more productively. For example, virtually all machine setup procedures can be done at the highly efficient control panel. Most board-edge controls typically found in VTR's have been eliminated.

You insisted on fast but gentle tape handling... the VPR-6 shuttles tape at speeds approaching 500 ips and handles all reel sizes from spot to 2 hours with equal precision and gentleness. The servo microprocessor senses when the end of the tape is near and slows down the reels and scanner and unthreads the tape gently.

You asked for power-down memory... so we built in a long-life battery to protect setups, edit and cue points and all editor configuration parameters.

"Make it easier to troubleshoot," you said, and we built in an extensive diagnostics system that constantly monitors many system conditions and warns you if a fault occurs. You can even run from the control panel a diagnostic routine using a logic probe to test every IC in direct communication with the two microprocessors.

A tried and true transport

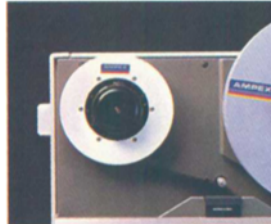
You demanded reliability. Not wanting to tamper with success, we borrowed the tape transport and mechanical

printed wiring boards and backplane connectors throughout. The modular package allows convenient access to any part of the VTR for easy maintenance.



A TBC to Match

Because you wanted play speeds from -1 to 3X normal and picture in shuttle, we also developed the new TBC-6 digital time base corrector, performance-matched to the VPR-6. Its 32-line memory and 28-line correction window are the largest in any TBC appropriate for a VTR of this type.



State of the art editing

So much for recording and playback, how about editing? The VPR-6 has all the capabilities you asked for, including

split audio-video auto edit and auto tag. RS-422 serial communications capability lets VPR-6 function efficiently in a state-of-the-art editing system with the Ampex ACE and other edit controllers.

First-rate audio

"Make audio better," you said, and we did. The VPR-6 has audio (as well as video) confidence playback. The audio system also offers high quality stereo phase and an optional fourth audio channel for EBU systems.

Selection of styles

Most users may agree on capabilities, but you prefer a variety of configurations to choose from. So, we offer the VPR-6/TBC-6 in four console styles as well as tabletop and rackmount versions. Many Ampex video accessories work with it, including some you may now own.

In production now

The VPR-6 is too good to wait for, so it's already in factory production. Ask your Ampex video sales engineer



design of our reliable and proven VPR-80. We also eliminated most wire harnesses in favor of more reliable

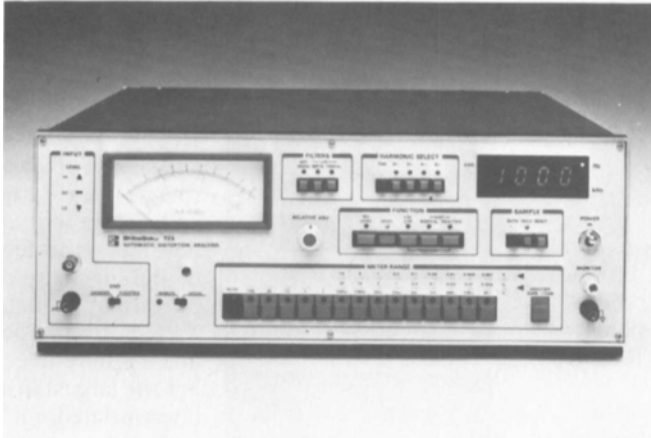
to quote price and delivery for any model in any world standard, and watch his face light up!

AMPEX

Ampex Corporation • One of The Signal Companies

Atlanta 404/491-7112 • Chicago 312/593-6000 • Dallas 214/960-1162 • Dayton 513/254-6101 • Los Angeles 818/240-5000 • New York/New Jersey 201/825-9600 • Salt Lake City 801/487-8181 • San Francisco 415/367-2296 • Seattle 206/575-0156 • Washington, DC 301/530-8800
Canada, Toronto 416/821-8840

THE TRUE MEASURE OF PERFORMANCE



ASACA/SHIBASOKU 725 Automatic Distortion Analyzer

This versatile instrument works both as a distortion analyzer and as a high performance distortion meter. You can use it to measure distortion ratios as low as .0001% (-120 dB) and analyze the 2nd to 5th harmonic distortion.

The 725 extracts only the harmonic components from various measured signals, including noise. By obtaining fundamental frequency rejection characteristics of more than 120 dB, it measures the small distortion which noise usually covers.

Input level adjustment, selection of measuring range and tuning of measured frequency are all automatic. The 725 connects to a general purpose interface bus (IEEE-488) and may be expanded into a fully automated instrumentation system.

- Harmonic analysis circuit measures 2nd to 5th harmonic distortion, including THD.
- Wide band distortion ratio measurement (5 Hz-110 kHz fundamental wave frequency).
- Distortion meter has 5 Hz-500 kHz frequency range and 30 μ V (-90 dB) full scale.
- All functions are remote controlled.

Measure your performance with the best.
ASACA/SHIBASOKU 725. Tests lower with higher accuracy.

For complete specifications, write:

ASACA

ASACA/SHIBASOKU CORP. OF AMERICA
12509 Beatrice Street, Los Angeles, California 90066
Sales, Service: (800) 423-6347 • (213) 827-7144

power budget. A data logging arrangement, which collects information from operational systems, and the laboratory test schedule are described. An overview of the results is given.

A Second-Generation SCPC System for Business Satellite Communications, D. McGovern and R. J. Kernot, *The Radio and Electronic Engineer*, 54:424, October 1984.

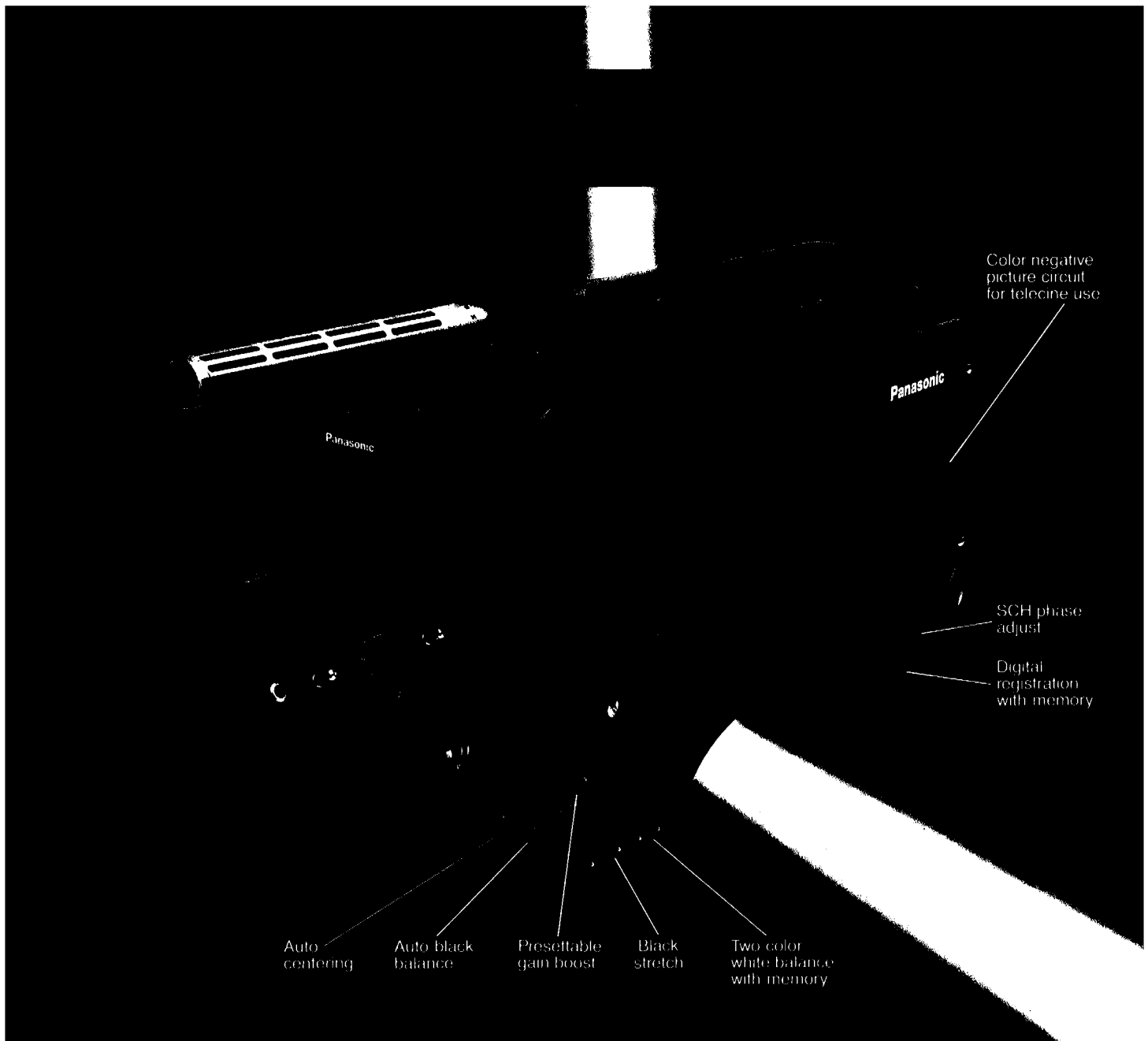
The European Telecommunications Administrations are planning to offer business satellite services from the beginning of 1985. Designed under the auspices of EUTELSAT, the Satellite Multiservice System (SMS) operates in the 14/12.5-GHz bands and will use two satellites — the European communications satellite (ECS), and capacity leased on the French domestic satellite, Telecom 1. This paper describes the ECS SMS and, in particular, the single channel per carrier (SCPC) access system. This system operates over a range of data rates from 64 Kbit/sec to 2 Mbit/sec and incorporates several novel features including satellite-link encryption, the use of soft-decision error correction, and full support of terrestrial interface standards.

Object Identification from Images of Variable Scale, Martin J. Lahart, *Optical Engineering*, 23:710, November/December 1984.

When objects must be identified from distorted imagery, a choice must be made between feature sets that are invariant to the distortion and those that are not. Sets of invariants almost always contain less information, resulting in classification error rates that are higher under distortion-free conditions, but which are no larger when distortion is present. The choice can be evaluated by calculating error rates as a function of the eigenvalues of the coVrelatation matrix, noise, number of classes, and a distortion parameter. An example of this evaluation is given by comparing identification of ships by using a subtraction correlator and moment features. The distortion parameter is scale, to which the correlator is sensitive and the moment comparison is invariant.

Optical Implementation of the Hotelling Trace Criterion for Image Classification, Zu-Han Gu and Sing H. Lee, *Optical Engineering*, 23:727, November/December 1984.

The Hotelling trace criterion (HTC) is useful for feature extraction so that multi-classes of statistical images can be separated by maximizing the between-class differences while minimizing the within-class variations. Optical implementation of the HTC has been successful by utilizing computer-generated spatial filters and a coded-phase processor. A simplified method of calculating the HTC discriminant functions from large-dimensional



You bet it can. In fact, when you compare picture quality, automatic features and price, you'll discover the Panasonic AK-30 is far and away your best bet.

Compare pictures. You'll notice the AK-30 produces a superrefined video image. The kind of image broadcasters love to see. But that's not surprising with these kinds of specifications: Horizontal resolution is 650 lines center. S/N is a very quiet 62dB (-6dB gain), the highest ratio in the industry. Digital registration is 0.05%, 0.1% and 0.25%. And illumination is a mere 24 lux at f1.4 (+18dB gain).

This high level of performance is achieved with a unique combination of image-enhancing circuitry and high-focus-field Plumbicon* tubes.

You'll also appreciate the AK-30's automatic circuits. Like auto-white balance with memory for setting 2 color temperatures. Presettable black stretcher. Auto-black balance, and a knee circuit for variable dynamic range.

Together, they let you customize the image you're shooting for.

Still, the AK-30 has plenty more going for it. Consider its dual outputs. One works with standard NTSC. The other lets you set new standards because it's compatible with component recording. That means you can use it as part of our famous M-format Recam system.

The Panasonic AK-30. Compare it to the world's bestselling broadcast camera. And see why it stands out far ahead.

For more information call your nearest Panasonic regional office: Northeast: (201) 348-7336. Southeast: (404) 925-6772. Central: (317) 852-5973. West: (619) 941-3387. In Canada call: (416) 624-5010.

*Plumbicon is a registered trademark of N.V. Philips for TV camera tubes.

Panasonic
Broadcast Systems

SEE US AT NAB BOOTH 1019.

images by a small computer is also described. This method is useful when the within-class variation can be approximated by a covariance matrix of low rank.

Tracking the Fiber Markets, David Hardwick, *Photonics Spectra*, 18:61, December 1984.

There are three major markets for fiber optics — telecommunications, government and military, and data communications. Each exploits different benefits offered by optical fibers. Whereas telecommunications systems benefit from the high bandwidth and low loss, military users like the easy deployability resulting from low weight and secure communications aspects arising from the dielectric medium. Data communications take advantage of the low-cost installation and freedom from EMI.

Matrixing for VideoDisc, D. F. Hakala and D. J. Wierschke, *RCA Engineer*, 29:47, March/April 1984.

The initial master copy is recorded on a plated copper substrate produced in the Matrix Dept. After recording, nickel electroforming is used to replicate this copy to make press tooling in a fan-out process. The processing steps required to do this are described, along with material and process control requirements.

Shadow-Mask Etching for Data-Display Tubes, E. E. Doerschuk, J. J. Moscony, and D. M. Weber, *RCA Engineer*, 29:67, March/April 1984.

The masks for RCA Video Component and Display Div.'s high-resolution data-display tubes differ from the conventional entertainment-type masks in critical ways outlined in this article. The manufacturing process had to be altered to meet the greater demands posed by this new mask. The authors cover metallurgical considerations, modifications to the etching process, geometric considerations and more, in an effort to compare the conventional manufacturing parameters and the newly developed parameters for the data-display-tube application.

Organic Materials and Lithography Research at RCA Laboratories., Aaron W. Levine, Tamara Slawny, and Kazimiera D. Tomczek, *RCA Engineer*, 29:30, September/October 1984.

RCA Corp. uses a wide variety of organic and polymeric materials, including commodity items such as moldable vinyls for records, structural plastics for cabinet materials, specialties such as photoresists, encapsulants, adhesives, and many others. The Organic Materials and Lithography Research Group, a part of the Materials and Processing Research Laboratory, has

multi-disciplinary representation and undertakes research in the areas of organic chemistry and polymer science with particular emphasis on applications to imaging. This paper explores the role of the organic materials sciences within RCA, and discusses several recent applications.

Fluorescent and Phosphorescent Minerals, M. A. Robbins, *RCA Engineer*, 29:82, September/October 1984.

The author discusses the collection and display of fluorescent minerals. Also discussed is the chemistry of fluorescence and phosphorescence — why these phenomena occur naturally and how they are created artificially for such applications as color TV picture tubes.

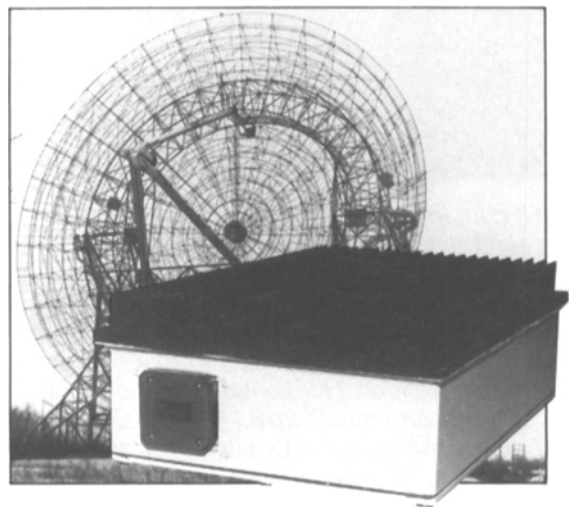
Calculation of Photographic Image Color Reproduction from Motion-Picture Film Characteristics, L. L. Polosin, E. A. Sorry, and E. F. Shkuto, *Tekhnika Kino i Televidenya*, 7, August 1984.

This paper describes an engineering procedure for calculating positive photographic image chromaticity coordinates from the negative-positive process actual characteristics. The calculational accuracy of this procedure is shown to be sufficient for analyzing color reproduction in cinematographic and telecine reproduction processes.

More DB's Per Dollar!

R.F. Technology, Inc. introduces the new Powerline series of solid state, weatherproof RF Power Amplifiers. When the broadcaster wants microwave RF power . . . R.F. Technology is the company to turn to. The new Powerline series really delivers: 10 watts at 7GHz is commonplace for us!

But, there's much more to R.F. Technology than amplifiers. We manufacture a complete range of fixed and portable broadcast microwave equipment. With our good delivery times and our excellent service, come to the company that gives more DB's per dollar!



RF

TECHNOLOGY, INC.
A CONTINENTAL MICROWAVE PLC COMPANY

145 WOODWARD AVENUE, SOUTH NORWALK, CT 06854
PHONE: (203) 866-4283 TELEX: 3722030 RFTECH

“Ikegami’s HL-79E gets me through with flying colors—every time!”

— Bill Napier, Director of Engineering WBTV, Charlotte, North Carolina

The HL-79E camera is adding another dimension to the phrase “The Great Outdoors” as more users discover that the world’s best ENG camera is also the best for EFP.

And with over 5,000 HL-79 cameras sold, the legend continues to soar.

On or off your shoulder, the Ikegami HL-79E is still the unchallenged leader with features that include Dynamic Detail Correction, Chroma Aperture Correction, Highlight Aperture Correction and Auto Contrast Compression. Plus, the HL-79E offers superior contrast range, S:N ratio, registration accuracy, resolution, viewfinder performance and more.

As an EFP camera, the HL-79E can be used in various systems configurations, and controlled remotely by the MA-79 Multicore Adapter through multicore cable (up to 300 meters), or by the TA-79E Triax Adapter through triax cable (up to 2,000 meters). Available viewfinders include 1 1/2, 4 1/2 and 3 inch.

The camera can be set-up using conventional manual techniques or an optional microprocessor assist.

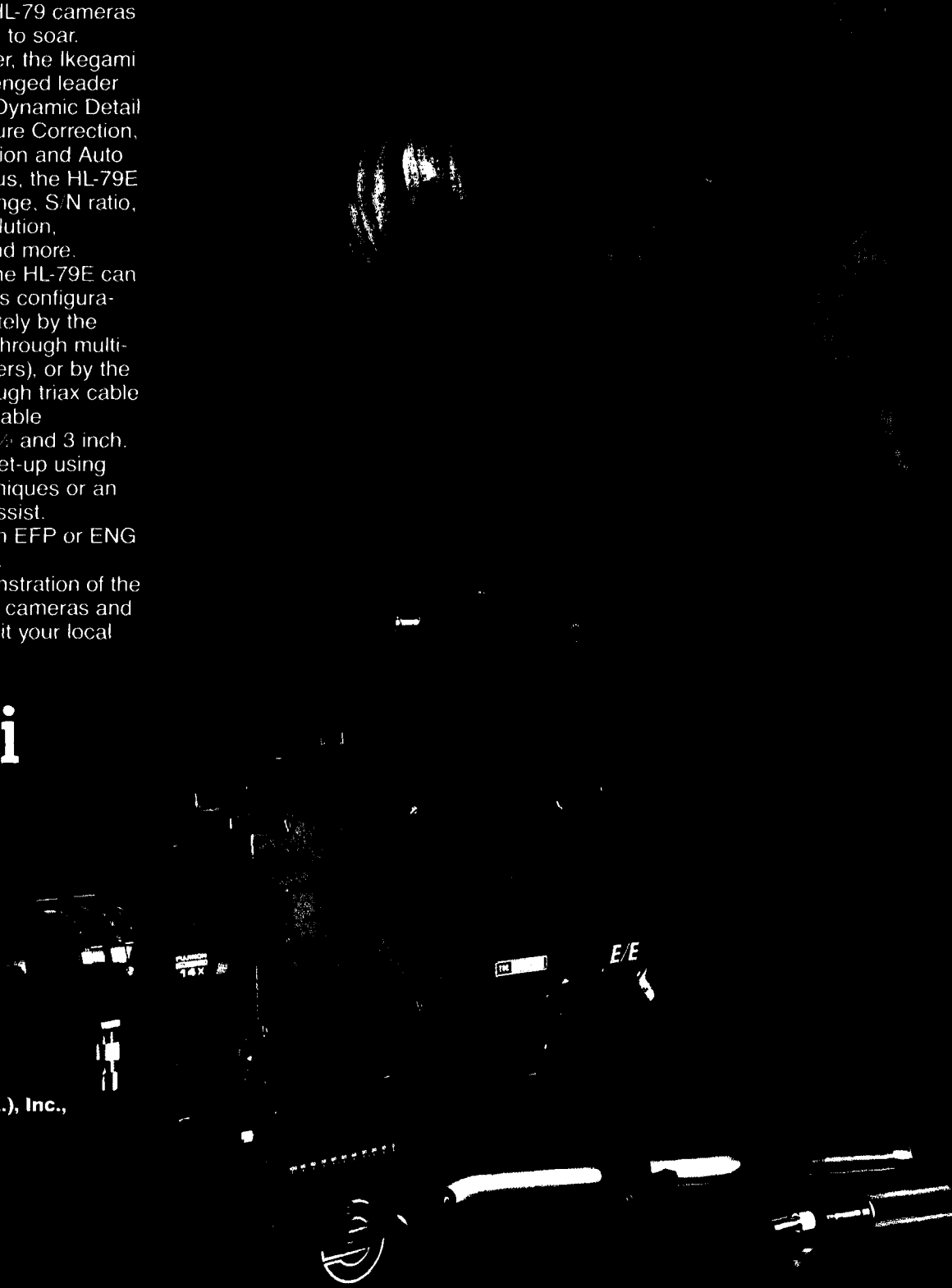
With the HL-79E as an EFP or ENG camera, the sky’s the limit.

For a complete demonstration of the HL-79E and other Ikegami cameras and monitors, contact us or visit your local Ikegami dealer.

Ikegami

Ikegami Electronics (U.S.A.), Inc.,
37 Brook Avenue,
Maywood, NJ 07607

- East Coast: (201) 368-9171
- West Coast: (213) 534-0050
- Southeast: (813) 884-2046
- Southwest: (214) 233-2844
- Midwest: (312) 834-9774



STANTRON
Unit of Zero Corporation

VIDEO CENTER

MODULAR DESK CONSOLES • VTR/VCR RACKS
CABINET CONSOLES • DUBBING RACKS • **ALL NEW**

for VIDEO PRODUCTION • POST-PRODUCTION • EDITING • ENG • EFP •

The STANTRON VIDEO CENTER series modular "add-on" features allow for maximum flexibility in designing console arrangements for professional, educational, industrial and communication VIDEO CENTERS.

For a FREE copy of the "ALL-NEW" STANTRON VIDEO CENTER CATALOG #200, please write or call **STANTRON**

mailing address:
P.O. Box 9158VC
No. Hollywood, CA 91609 U.S.A.

Toll Free: 1-800-821-0019
No. Calif. Toll Free: 1-800-821-0020
So. Calif. please call: 1-213-875-0800
TWX: 910-499-2177

factory:
6900-6918 Beck Ave., No. Hollywood, CA 91605



ALL NEW

STANTRON
Unit of Zero Corporation

VIDEO CENTER

CABINET CONSOLES • VTR/VCR RACKS
MODULAR DESK CONSOLES • DUBBING RACKS •

for • VIDEO PRODUCTION • POST-PRODUCTION • EDITING • ENG • EFP •

"ALL-NEW" STANTRON VIDEO CENTER, designed to complement YOUR VIDEO EQUIPMENT. Modular "add-on" features allow maximum flexibility and versatility in creating console arrangements. Write or call for FREE STANTRON VIDEO CENTER CATALOG #200.

mailing address: P.O. Box 9158VC
No. Hollywood, CA 91609 U.S.A.

Toll Free: 1-800-821-0019
No. Calif. Toll Free: 1-800-821-0020
So. Calif. please call 1-213-875-0800
TWX: 910-499-2177

STANTRON
Unit of Zero Corporation

factory: 6900-6918 Beck Ave., No. Hollywood, CA 91605



The Influence of Hydroxy-Ethyl-Cellulose on the Quality of Separate Color Release Print Sound Track Processing, R. S. Zueva and T. V. Konstantinova, *Tekhnika Kino i Televideniya*, 31, August 1984.

The use of hydroxy-ethyl-cellulose (HEC) in the developer formula for re-processing sound tracks on color positive motion-picture films has been studied. The paper shows that replacing carboxymethyl cellulose by HEC in the viscous developer formula enables better quality of color release print sound tracks and makes easier the labor-consuming process of developing solution preparation.

Prospects in the Development of Motion-Picture Technique, Yu. A. Vasilevsky, V. G. Komar, V. G. Chernov, and A. M. Chesnokov, *Tekhnika Kino i Televideniya*, 3, September 1984.

This paper presents data on the basic results of activities in the field of domestic cinematography covering the 1960-1982 period on the basis of which the trends in the development of motion-picture technique and film production during the XII Five-Year Plan and the ensuing years have been analyzed. The tasks to be accomplished, and the problems to be solved in the next few years are formulated.

Magnetic Sound and Video Synchronizing Device, A. K. Yermolin, *Tekhnika Kino i Televideniya*, 13, September 1984.

This paper deals with the requirements placed upon an up-to-date computer-based video and sound synchronizing system. The operation of the unit interfacing the videotape recorder with the unified perforated tape sound equipment system using SMPTE/EBU time code is considered.

An Automatic ENG Camera Setup System, V. V. Meister and Ya. B. Rozval, *Tekhnika Kino i Televideniya*, 24, September 1984.

Analyzing some methods of automatic TV camera setup, the authors have determined the requirements and the optimum choice of automatic controls for ENG cameras. The paper considers automatic centering and balance systems, an iris drive subsystem, and the operational procedures for these systems. Technical specifications are given.

High-Power, Wideband Curtain Antenna, Radio and Television of the People's Republic of China, *ABU Technical Review*, 95:3, November 1984.

This paper deals with the special demands on and solutions to high-power wideband curtain antennas with respect to bandwidth and power capacity. Some solutions and experiences are provided to cope with component parts in the antenna system that can easily get out of order.



The electronic magic of the new CHYRON IV is at your fingertips: 512 color choices...animation ...multi-color characters...independent background graphics...advanced camera font compose...digital drawing tablet...special effects...as well as the widest assortment of font styles and sizes available. And you don't have to be a magician to work the magic. CHYRON IV is still easy to use, totally versatile, and provides unsurpassed resolution. Perhaps best of all, earlier models of CHYRON IV

can be retrofitted to provide all of the features of the new CHYRON IV.

So, isn't it time to bring a little magic into your television production? Call or write for all the details on today's most sophisticated and versatile electronic graphics system. CHYRON IV. The magician's choice.

Follow the Leaders with
CHYRON
TELESYSTEMS

A DIVISION OF CHYRON CORPORATION
 265 Spagnoli Road, Melville, New York 11747
 • 516-249-3296 • Telex. 144522 Chyron Melv
 Ampex International is exclusive distributor for
 Chyron Graphics Systems outside the U.S.A.