

NAB 1988 Convention & Engineering Conference

PREVIEW

Las Vegas, NV 8-12 April

NAB Show Returns to Vegas

by David Hughes

Las Vegas NV ... After two years in Dallas, the NAB show heads for the bright lights of Las Vegas this year.

The 66th Annual NAB Convention and International Exposition will take place 9 to 12 April at the Las Vegas Convention Center.

The show will feature more than 670 exhibitors occupying over 380,000 square feet of floor space. As in 1985, when the convention was last held in Las Vegas, the Hilton Center will be used for overflow exhibits.

More than 40,000 people are expected to attend the show, according to NAB spokesperson Susan Kraus.

NAB Engineer Ed Williams, who organized the engineering program, said that 27 technical sessions and over 150 papers are on tap this year. There will also be four panels and four workshops.

Engineering sessions

On the radio side, two sessions will tackle the topic of AM improvement with reports on the NRSC pre/deemphasis standard, revising FCC technical standards, and the unveiling of new antenna designs. The second AM improvement

session features a panel discussion on electrical interference.

There will also be sessions on Radio New Technology, Radio Engineering, the Digital Radio Studio, Radio Production and Audio Processing, AM/FM Allocations, as well as Alternate Power and Grounding Systems.

Several joint radio/TV sessions, as well as the traditional evening workshops and the FCC Engineers Forum are also planned, along with a host of sessions on management and programming, not to mention TV.

Williams pointed out that while many of the session titles are the same as in previous years' shows, many of the papers cover new topics. One totally new session, a joint radio/TV event, will look at how broadcast engineers can use personal computers.

As in 1985, the last time the NAB show was held in Las Vegas, the engineering sessions will be held in the large conference rooms on the southwest side of the convention center. However, unlike 1985, the evening workshops will be held in the nearby Hilton, rather than in the



The Las Vegas Convention Center, site of the 1988 NAB Engineering Conference.

convention center.

"This will be the biggest conference we've ever had," Williams remarked. "I am expecting a turnout of between 100 and 400 people per session."

As in previous years, the engineering sessions will get underway Friday, 8 April, one day before the show officially opens, according to Williams. The events

will wind up with the traditional FCC question-and-answer session Tuesday, 12 April.

The annual Daytimers Forum, sure to be an interesting event with all the FCC activities expanding daytimers' night operations, will be held Saturday, 9 April, at 11 AM. (For details on the session topics, see the related article in this issue of RW.)

In other engineering news at the show, Richard Kirby, director of the International Radio Consultative Committee (CCIR) in Geneva, Switzerland, will be the luncheon speaker at the broadcast engineering conference 9 April.

During the luncheon, Kirby will present the NAB's engineering award to Jules Cohen of Washington DC-based Jules Cohen and Associates.

Exhibit floor

As of late February, 670 companies were scheduled to exhibit their wares at the convention—in a total of 380,000 square feet of space, according to NAB Exhibits Manager Rick Dobson. The to-

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Sessions Schedule

Las Vegas NV ... Field tests of the NRSC pre/deemphasis standard, the latest on the development of anti-skywave AM antennas as well as the FMX system will be the hot topics during the five days of sessions at the NAB's spring show.

The following is a rundown of what to expect, current as of late February. The NAB stresses that changes may be made in the line-up. Consult your convention guide at the show for the final engineering conference program.

Friday, 3 April

AM Improvement I kicks off the sessions Friday morning at 9:30. After remarks from the chairman of the session, Art Suberbielle, of KANE; Harrison Klein, of Hammet and Edison will discuss revising FCC technical standards for AM improvement.

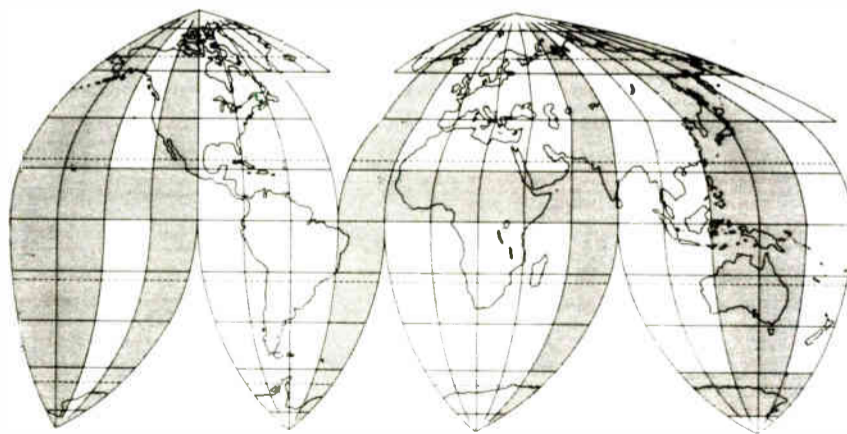
Other papers in this session include First Media's Tom McGinley discussing NRSC field tests, and John Marino of NewCity Communications on proposed RF emission limits for AM.

The **AM Improvement II** session follows at 1:30 PM. Chaired by Charles Morgan of Susquehanna Broadcasting, the session begins with a team from Pinzone Communications discussing their

(continued on page B-5)

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Circle Reader Service 65 on Page B-30

1988 NAB Convention

AM Designs Lead Antenna Gear

by David Hughes

Las Vegas NV . . . One hot topic at this year's show, antenna-wise, will be new designs in anti-skywave antennas.

While the firm did not have too much to say about its new product before the show, Pinzone Communications did confirm that it will show its new Corum anti-skywave, anti-fading AM antenna at the NAB show.

The Corum antenna is a low profile structure—30' to 50' in height—which yields a pattern nearly equal to that of a 190° tower (835' at 620 kHz). The firm said it will release more information at the show.

There will also be a variety of new AM and FM antenna designs at the show, not to mention accessory gear.

For example, Jampro Antennas plans to show two new products—the new JBBP broadband FM antenna and the JSCP penetrator series. The firm will also show its line of FM antennas—both standard side mount and panel/cavity type.

Tenneplex Systems will unveil its new Alpha high-powered multi-station combiner, as well as its new Omega full-band multi-station FM antenna. The firm will also show its established line of FM an-

tenna installations for both single and combined stations, as well as its FM combiners.

Shively Labs will introduce super-power RF filters, which allow inputs of up to 75 kW. Other new products from Shively include improved balanced combiner cavities and all stainless steel tower mounts. The company will also show its full line of antennas, transmission lines, combiners and other transmission support gear.

Central Tower plans to unveil its new Studio Relay tower—a line of self-supporting studio link towers featuring solid round members and all welded sections. The company will also show its existing line of guyed towers and self-supporting towers.

Kline Towers will highlight its line of guyed towers, self-supporting towers, platform towers, multi-array towers, space frame structures and special type antenna structures.

Flash Technology plans to show its new SC-110 controller at the show. The firm will also feature its new custom manufactured installation cable, as well as a medium intensity beacon and a high intensity beacon.

Stainless Inc. will feature its guyed

and self-supporting towers for broadcast and microwave applications. The company's display will feature information about towers to 2000', complete with elevators. The firm also offers its guy "snubber" system for control of low frequency (galloping) guy vibrations.

SWR Inc. plans to exhibit its full line of FM antennas, as well as FM transmission line and RF switches at the show.

Cablewave Systems plans to feature its new FM antenna at the show, along with a new rigid coax transmission line.

Lightning Eliminators and Consultants will show its dissipation array systems

which prevent lightning strikes to towers and other objects. The firm will also feature its rechargeable Chem-Rod grounding electrodes which minimize ground resistance through continuous soil conditioning.

Micro Communications will feature its coax switches, as well as its FM panel antennas, which reduce downward radiation and have multi-station capability custom patterns.

United Ropeworks will show its electrically transparent, maintenance free tower guys and specially designed systems for high power applications.

Comtech Antenna says it will display its 3.5 meter Ku antenna system in its booth.

For booth numbers see complete booth listings at the end of this section.

Convention Highlights

(continued from page B-1)

total footage is up 85,000 square feet from last year's show in Dallas.

Approximately 20,000 square feet of outdoor space is being assigned, and several improvements are planned for the outdoor exhibit, including carpeted aisles, an overhead canopy, and full outdoor food service and restroom facilities.

The outdoor exhibits will be sandwiched between the convention center and the Hilton Center, which will be used for indoor exhibit overflow, Dobson said.

In an attempt to increase traffic to both the outdoor and Hilton Center exhibits, both will open a half hour earlier each day (8:30 AM) than the main exhibit floor (9 AM).

Fifty Las Vegas hotels are being used by the NAB to house convention-goers. As usual, the NAB will provide an extensive network of shuttle buses between the hotels and the convention center.

FCC Chairman Dennis Patrick will be

the keynote speaker at the first ever All-Industry Luncheon, slated for Tuesday, 12 April.

Former FCC Chairman Mark Fowler, now with the Washington DC communications law firm of Latham and Watkins, will be presented with the NAB's Distinguished Service Award. The event will take place during Saturday's opening session.

On Monday, the "master of mimicry," Rich Little will perform during the NAB's Radio Luncheon.

The annual Ham Radio Operators reception, will take place Monday evening, 11 April, in the Hilton Hotel.

On the entertainment side, Frankie Valli and The Four Seasons, along with The Four Tops, will entertain during the closing ceremonies Tuesday evening.

Lucille Ball and Milton Berle will be inducted into the NAB's Broadcasting Hall of Fame, along with Roy Acuff and the late William B. Williams.

For complete details about the convention, contact Bob Hallahan at the NAB: 202-429-5350.

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Circle Reader Service 83 on Page B-30

1988 NAB Convention

New Dial-Up Remote Products on Display

by David Hughes

Las Vegas NV ... In 1987 the FCC took another look at its dial-up remote control transmitter rules and said that broadcasters can use the new technology. Judging by the new product offerings at the 1988 NAB show, this segment of the industry seems to be growing.

For example, Advanced Micro-Dynamics will introduce the ARC-16, a new 16 channel remote control system with both dial-up and full-time studio control. The unit dials out to report alarms using easy-to-understand electronic speech.

The firm will also show its established line of products including the TC-8 remote control system, which can be used at smaller stations. Both systems feature noise-cancelling modems, built-in sub-carrier generators and optional telephone speech units and computer interface modules.

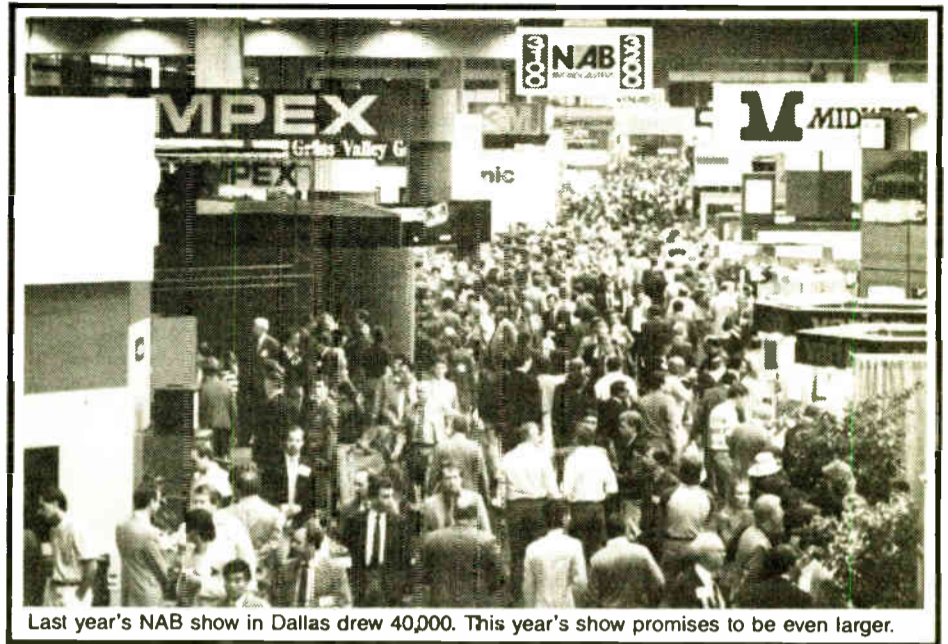
Hallikainen and Friends will debut its

new production version of the T10177 Intelligent Transmitter Operator. The unit features programmable automatic logging and control of transmitter sites using the Moseley TRC 15A remote control.

The firm will also show its established products including the DRC190 programmable, multisite transmitter control system. Hallikainen will also show the TVA series audio mixers and TEL series digital metering update kits for Moseley remote controls.

Gentner plans to unveil several new products at this year's show including the EFT-3000 multiple line, two-way frequency extension system using digital signal processing techniques. The firm will also show the EFT-100 single-line, two-way frequency extender that works in conjunction with the user's telephone hybrid.

The firm will also show two single-line, two-way frequency extender units—the EFT-900A and the EFT-1000A. In addition Gentner will show its al-



Last year's NAB show in Dallas drew 40,000. This year's show promises to be even larger.

ready established line including its remote dial-up transmitter control and its digital hybrid.

CAT Systems will feature computerized remote control systems for broadcast, cable and satellite transmission facilities.

In addition to the remote control transmitter gear, there will also be lots of new

phone-related equipment at the show.

Allied Broadcast Equipment plans to feature the Contest Computer from DSI. The unit automatically answers all contest calls and routes the winning call to the air talent.

Bradley Broadcast Sales will feature the Telos 100 second generation digital telephone hybrid system from Telos Systems. The firm will also show Sound Space, a multi-channel digital audio recording and editing system from RD Systems.

Symetrix will feature its 104 multi-line telephone interface, a four-line telephone system with control console. The firm also has a 108 multi-line interface and the TI-101 single line interface.

PAS plans to show the new TalkBack Too telephone hybrid. The unit is a "hybridless" hybrid that the company says does not cause loss problems in normal telephone interfaces.

Comrex will show frequency extenders, telephone couplers and hybrids, as well as RF cue systems.

For booth numbers see complete booth listings at the end of this section.

Acoustic Materials for Studios

by Alex Zavistovich

Las Vegas NV ... Stations looking to modernize their studios with new acoustical materials, storage systems or synchronized clocks will have a range of new products to choose from at this year's NAB show.

A number of well-known manufacturers of soundproofing materials will have their products available for inspection at the exhibit. And broadcasters looking into rack gear and other studio-related products will have much to examine as well.

Acoustic Systems will feature its line of soundproofing and other accessories. Acoustic doors, air transfer silencers and floor cable portals will be featured, as will a range of prefabricated acoustic enclosures for broadcast, recording and production purposes.

The company will also display its Acoustic Modular Enclosure System (AMES), a flexible system of panels which allows design of enclosures to the users' specifications.

The Audio Broadcast Group will show the Rolling Radio, a self-contained, year-round complete mobile studio van which the company says was designed for "high visibility, high mobility and turnkey operation."

Other products expected from Audio Broadcast include an "on air" radio studio system with studio cabinetry, console, CD, cart machines, reel-to-reel recorder and various support equipment.

Industrial Acoustics Company plans to have its full line of acoustic structures for preassembled or custom-designed studios for broadcasting.

Alpha Audio will also show acoustic products. The company plans to show its standard line of soundproofing materials, including Sonex and Sonex 1 acoustic wall coverings. Soundtex and

Acoustilead will also be featured by the company.

Morton Hi-Tek will unveil custom and standard rack equipment enclosures for TV, radio and the computer industry. The gear is made of tubular steel and covered with the customer's choice of laminate color and wood trim.


On display at Status Cabinetry's booths will be a range of video and audio technical furniture, cabinets, consoles and equipment racks. Examples of systems engineering, layouts and installations will be provided by Status, as will examples

of studio and post-production construction undertaken by the company.

Storeel will show its high density static and mobile storage units and setup trucks for all tape formats, including its CD units, which have a capacity of storing 160 to 640 disks in a 27" wide area.

In addition to studio enclosures and storage equipment, at least one company will exhibit a range of synchronized clocks for studio applications. Kinometrics/TrueTime will show the OM-DC Omega clock, which keeps worldwide UTC time true to ± 5 milliseconds.

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April 9-12

1988 NAB Convention

FMX Promotion Slated for NAB

by Alan Carter

Greenwich CT . . . Emil Torick is planning to take full advantage of the more than 40,000 broadcasters in Las Vegas at the 1988 NAB Convention to promote FMX noise reduction technology for FM radio.

While not having finalized plans, Torick, developer of the technology, said he wants to be on-air with FMX, similar to demonstrations he conducted at the January Consumer Electronics Show (CES).

"With 40,000 broadcasters, we have to do something a little different," Torick noted. "We haven't decided how to get the maximum use because you need FMX receivers."

Twelve manufacturers displayed FMX-capable prototypes at CES, and Torick expects them to be at NAB. Some will have the "same ones" while others will have "more advanced" models, Torick said.

Torick also will present a technical paper on the "practical application" of FMX, which he co-created with NAB Chief Scientist Tom Keller. His presen-

tation will include "how to go on the air" with the FM extension system.

While some radio stations are still testing FMX, WDRC in Hartford, CT, has been on-air with FMX since August, according to Chief Engineer Wayne Mulligan.

"In the tests that we conducted," Mulligan said, "we surprisingly found it made quite a difference." What he noted with interest at WDRC is FMX had an effect on the station's high-density, solid-gold format. The system has been promoted as most beneficial for classical

or formats which use little or no processing, Mulligan explained.

Listeners have not reported poor reception since WDRC has been transmitting with FMX, Mulligan said. He said that the use of FMX did not affect multipath, which had been the problem when the system was first tested.

"At no time did I find a problem that didn't exist before," Mulligan said.

In Stamford, CT, WJAZ is testing FMX. According to Chief Engineer Chris Tobin, results are "very positive" for compatibility with existing receivers.

He said the station has some "bugs" to work out on internal level control but otherwise testing is successful.

During the six months the station has been experimenting with the technology, Tobin noted the station has made other improvements to its audio chain.

"It brings out a lot of things that people took for granted in their stereo transmission," Tobin said. For example, he said WJAZ is transmitting with greater stereo separation and less noise because of the method in tuning the transmitter.

The station broadcasts 90% of its daily programming from compact disc, and they can now reap the full benefit of using a digital source, he noted.

(FMX) brings out a lot of things that people took for granted in their stereo transmission.

Tobin called FMX a "technology that still needs some time" because of unknown aspects. "But that's to be expected," he said.

On FMX generator development, some manufacturers continue to move cautiously, but at least one is waiting to take purchase orders.

Inovonics is "definitely in production and taking orders," said President Jim Wood. He added that no one has yet placed an order but said the company has received inquiries on the generator.

Wood is positive about FMX and said "the thing works like a champ" and the tests were "very successful."

Another manufacturer, Aphex, is "holding fast" on its stereo generator with other projects taking a higher priority, according to Product Manager Jon Sanserino.

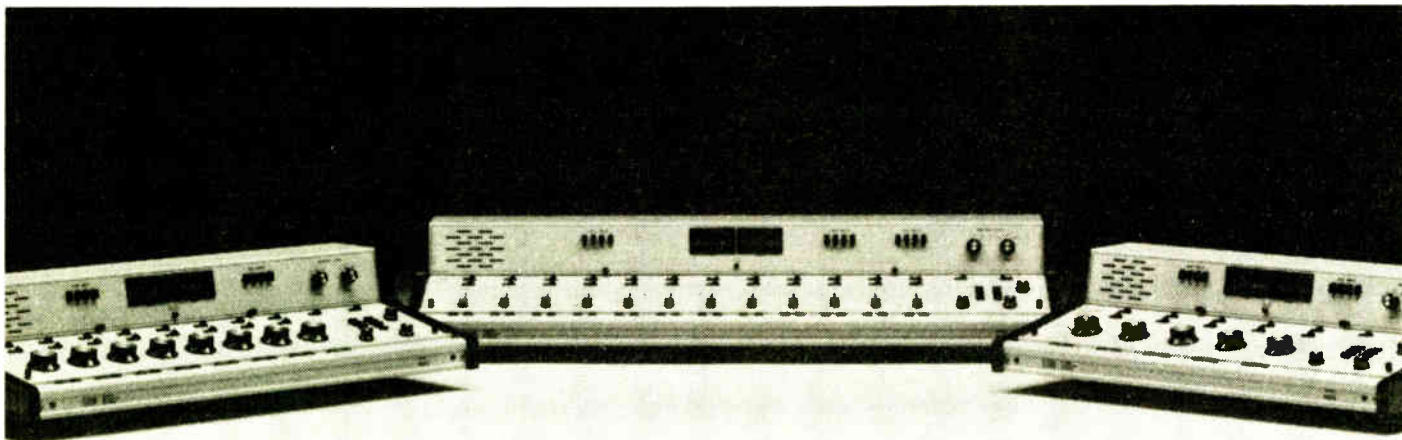
Aphex still is not convinced that problems with FMX have been ironed out, he said, but the company is leaving a port on its stereo generator open so it can be added as an option or included in production.

"I think people would like to have it definitely—if it works," Sanserino said.

At Orban Associates, additional on-air tests are finding "some things that we need to change" in the generator, said Sales Manager Howard Mullinack. The tests are underway in the San Francisco area, but Mullinack declined to name the station.

CRL, a fourth manufacturer involved in FMX generator development, previously reported its equipment has 80% of the FMX technology included, and the company could easily have product on the market soon.

Contact Emil Torick at 203-622-2643 for information on FMX.



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Engineering Sessions

(continued from page B-1)

investigations into a low profile anti-skywave AM antenna.

Kurt Gorman, of Vector Technology, will deliver a paper on how toroid impedance matching transformers improve AM fidelity, followed by Oliver Richards of Sprague Electric on a low-cost, high performance noise blanker for AM.

The session concludes with an "Electrical Interference Panel" featuring Michael Rau, of the NAB, and Richard Smith, chief of the FCC Field Operations Bureau.

Saturday, 9 April

Saturday's sessions begin at 9 AM with **Radio New Technology**. Following remarks from session chairman John Furr, of Clear Channel Communications, minimizing FM multipath problems will be discussed by Lloyd Berg of WDAE/WUSA.

Dean Sargent, of W. Sargent Broadcast Service, talks about the design and installation considerations for multi-station FM antennas. Emil Torick, of Broadcast Technology Partners, will provide an update on his FMIX system.

Geoffrey Mendenhall, of Broadcast Electronics, will unveil the latest techniques for measuring synchronous AM noise in FM transmitters. Charles Kelly Jr., of 3M/ITC, talks about how a smart audio switcher solves programming and routing problems.

The session concludes with Guenther Urbanek discussing a state-of-the-art microprocessor-controlled analog audio routing switcher and Bert Goldman of KUDL on how FM boosters can improve coverage.

Sunday, 10 April

Sunday's sessions begin at 9 AM with **Radio Engineering**. John Marino will provide an update of the work of the NAB's FM Transmission Subcommittee and Grant Bingeman, of Continental Electronics, will discuss how a grounded guy antenna reduces static arcing and improves bandwidth.

Bert Goldman, of KUDL, discusses the use of diversity transmit antennas to overcome signal fades. The relationship between currents in AM towers and field parameters affecting DA array adjustment and dealing with the proximity effect is the subject of a paper scheduled to be delivered by James Hatfield of Hatfield and Dawson.

John Kean, of Moffett, Larson and Johnson, will talk about using circularly polarized FM receive antennas to reduce the effects of multipath propagation. Karl Lahm, of Karl Lahm and Associates, will deliver an assessment of factors affecting the stability of AM antenna patterns.

The session will wind up with Ogden Prestholdt, of Prestholdt Consulting Engineers, discussing the optimum use of tall FM structures as an AM radiator, and Edward Schober, of Radiotechniques, talking about FM multipath and distortion reduction through RF amplified optimization.

Another joint session, **Studio Construction and Acoustics**, will begin at 1:40 PM. Papers will cover CAD drawing standards, acoustical troubleshooting, trends in TV studio design and the latest in project management techniques.

At 4 PM Sunday, a panel discussion on

Personal Computers for Broadcast Engineers will be held. Topics to be covered include scheduling, tracking projects, budgeting, inventory and reporting, automatic testing and drafting. At press time, the names of panel members were not available.

Engineering workshops are scheduled to begin 7 PM Sunday. The workshops will deal with RF radiation regulation compliance, contract engineering, studio acoustics and AM antenna systems.

Monday, 11 April

Kicking off the Monday schedule is a session on **AM/FM Allocations** which starts at 8:30 AM. Bill Hassinger, of the FCC's Mass Media Bureau, will discuss the latest radio allocation issues at the Commission.

Other scheduled talks include John Kean discussing the use of directional antennas by FM stations to permit reduced distance separations and Robert Hunsucker, of the University of Alaska, on medium frequency skywave propagation at high latitudes.

Digital Radio Studio is the title of a session due to start at 9 AM. Guy McNally of Digital Audio Research will discuss advanced editing features from direct access disc-based research. Steven Cunningham, of Waveframe Corp., will deliver a paper on a digital audio workstation that uses fixed rate sampling and digital audio bus.

On Monday at 10 AM a session entitled the **Environmental Concerns of Broadcasters** is scheduled. Topics include RF radiation concerns, lightning problems, lighting requirements and PCB clean-up.

Another joint session, **Radio and TV Satellite Systems**, is slated to begin at 1:30 PM. Satellite news vehicles, how to set-up equipment, and designing and installing Ku-band receive facilities will be discussed.

At 1:45 Monday, a session on **Radio Production and Audio Processing** will be held. Jerry Whitaker of *Broadcast Engineering* magazine will talk about "tracking the state of the art." Richard Burden of Richard Burden Associates will discuss the latest on audio level monitoring.

Ralph Beaver will talk about cablecasting a morning radio show. William Ryan of KVIL discusses a mobile radio production facility for the space age. James Carpenter of Broadcast Electronics talks about a microprocessor performance optimizer for all tape formulations and Skip Pizzi, of NPR, will discuss processing audio from remote sources.

Tuesday, 12 April

Sessions get an early start Tuesday with an 8:15 AM session on **Alternate Power and Grounding Systems**. Following remarks from the session chairman Gerald Plemmons, of Outlet Communications, Sanford Cohen, of KIHx, will discuss "America's first solar powered FM radio station."

Larry Katz, of Kay Industries, discusses "applications and performance of rotary phase converters as an alternative to utility supplied three-phase power." John Schneider, of RF Specialties will discuss surge protection and grounding methods for AM transmitter sites.

Jerry Whitaker discusses the design and maintenance of a ground system. Barry Epstein of Current Technology talks about power conditioning. Wyatt

Radio World

NAB 1988 Engineering Conference Planning Guide

Friday, 8 April	
9:30 AM:	AM Improvement I
1:30 PM:	AM Improvement II
Exhibit Hours:	Closed
Saturday, 9 April	
9:00 AM:	Radio New Technology
12:15 PM:	Engineering Luncheon
2:30 PM:	Convention Opening Ceremony
Exhibit Hours:	Hilton Center, 8:30 AM to 6 PM; Main Hall, 9 AM to 6 PM.
Sunday, 10 April	
9:00 AM:	Radio Engineering
9:00 AM:	Broadcast Auxiliary
1:40 PM:	Studio Construction & Acoustics
4:00 PM:	Personal Computers for Broadcast Engineers
7:00 PM:	Engineering Workshops
Exhibit Hours:	Hilton Center, 8:30 AM to 6 PM; Main Hall, 9 AM to 6 PM.
Monday, 11 April	
8:30 AM:	AM/FM Allocations
9:00 AM:	Digital Radio Studio
10:00 AM:	Environmental Concerns of Broadcasters
1:30 PM:	Radio & TV Satellite Systems
1:45 PM:	Radio Production and Audio Processing
Exhibit Hours:	Hilton Center, 8:30 AM to 6 PM; Main Hall, 9 AM to 6 PM.
Tuesday, 12 April	
8:15 AM:	Alternate Power and Grounding Systems
9:00 AM:	Fiber Optics and Digital Transmission
11:00 AM:	FCC Engineers Forum
Exhibit Hours:	Hilton Center, 8:30 AM to 4 PM; Main Hall, 9 AM to 4 PM.

Note: Schedule is subject to change. Check official NAB program guide at the convention.

McDaniel, of Outlet Communications, talks about uninterruptable power supplies for broadcasters.

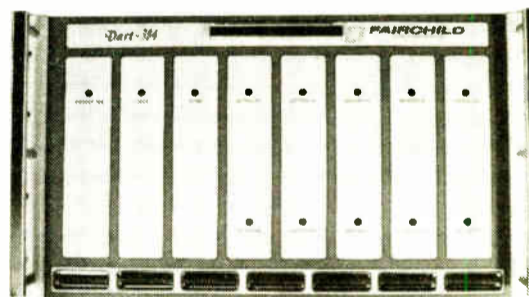
At 11 AM Tuesday, the NAB will host an **FCC Engineers Forum**, featuring

MMB Chief Alex Felker, Dr. Thomas Stanley of the Commission's Science and Technology department, Bill Hassinger and Richard Smith of the FCC Field Operations Bureau.

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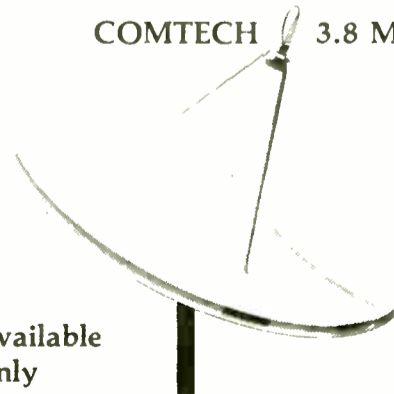
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1988 NAB Convention

NRSC to Discuss RF Mask Issue

by Alan Carter

Washington DC ... The National Radio Systems Committee (NRSC) may have a revised RF emission mask proposal to consider at its meeting just prior to the 1988 NAB Convention this April in Las Vegas.

At press time the NRSC AM Technical Subgroup, scheduled to meet in late February, was expected to finalize a proposed revision to the RF mask, according to NRSC Coordinator Michael Rau.

The NRSC approved a draft voluntary

standard in September. The draft includes the same 10 kHz cutoff point as the preemphasis standard, which took effect in January. In addition, it provides a peak specification for spectrum beyond the 10 kHz cutoff, including program material and all ancillary or data communications.

Details

Under the proposed RF mask the signal of a station complying with the NRSC standard should be 25 dB down from 10 to 20 kHz, 35 dB down from 20

to 30 kHz, 35 dB plus 1 dB/kHz down from 30 to 75 kHz, and 80 dB down above 75 kHz, according to the draft standard.

The RF mask was designed to address emissions, especially those of older transmitters, that may cause a station's signal to exceed the NRSC standard at the point of transmission.

The standard is tighter than FCC regulations and has been drafted with an eye toward the future. The -80 dB beyond 75 kHz was included to accommodate new transmitters of the future which will give

cleaner signals.

As of an early January subgroup meeting, three AM transmitter manufacturers had filed comments on the draft. The deadline was March 11.

Continental Electronics commented that tests of two of its AM transmitters showed they complied with the RF mask.

Nautel indicated that it has reservations about the specifications beyond 75 kHz, which it pointed out is more stringent than the FCC requires for low-powered transmitters (below 5 kW). "This less stringent specification recognizes the reduced tendency to cause interference at lower power levels," Nautel noted.

Harris commented that it should not be difficult for any transmitter at any power level to meet the specs using the USASI pulsed test signal. "However, it has been observed that CD sourced mu-

“ The standard is tighter than FCC regulations and has been drafted with an eye toward the future. **”**

sic occupies a significantly larger 'envelope' than the pulsed test signal," the company added.

Harris also agreed with Nautel on the issue of specifications beyond 75 kHz. "This lowest limit for greater than 75 kHz should be scaled to the carrier power, just as the present FCC curve is," Harris stated.

As a solution, the company suggested that the mask be modified to be -80 dB or $43+10\log P_c$ (whichever is less) for frequencies beyond 75 kHz.

Certification mark

In addition to the RF mask, the subgroup will continue its discussion on a certification mark for AM receivers.

Receiver manufacturers have indicated they do not want the designation to include AM stereo. Rau did not care to speculate on their reasoning except to say manufacturers may want a separate mark for stereo. "It may still be an optional standard," he added.

AM stereo is not the only issue of concern to broadcasters, Rau said. "There are a lot of possibilities here, and they really haven't been decided on." He listed several options the certification mark could incorporate: stereo, NRSC standard and continuous tuning.

In other news from the NRSC, Rau reported that as of mid-February, 587 stations have reported to the NAB that they are voluntarily using the NRSC standard. The NAB has asked the FCC to make the standard mandatory.

Comments on the NAB's petition have been filed with a preponderance of them supporting the NAB's position.

For information on the NRSC, contact Michael Rau at the NAB: 202-429-5346.

RADIO Classics

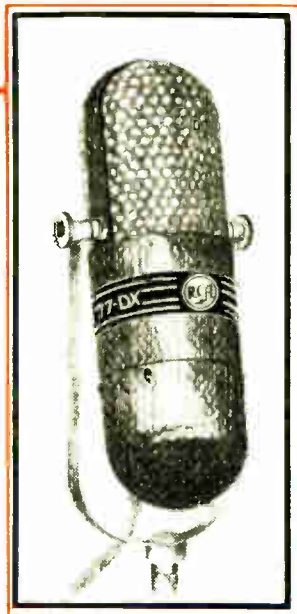
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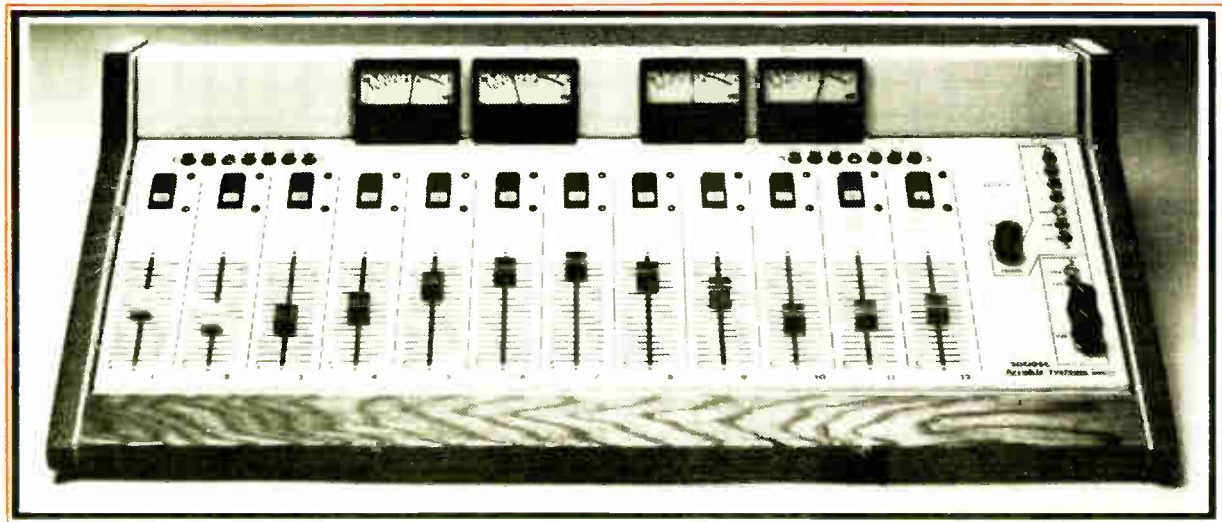


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1988 NAB Convention

Innovations in Processing Gear

by Alan Carter

Las Vegas NV ... The competition between manufacturers of stereo spatial image enhancers will be heating up with new introductions at the 1988 NAB Convention.

Orban will exhibit its new 222A Stereo Spatial Enhancer. It detects and enhances psychoacoustic directional cues that are present in all stereo program material. The 222A is said to increase spatial definition, brightness, clarity and transient definition.

Orban also will show the new ACC-024 Composite Isolation Transformer. The ACC-024 is designed to improve SNR and prevent ground loop between the stereo generator. Installed at the exciter, the product presents the stereo generator composite output with a balanced floating load.

The company that offered the first stereo spatial enhancer, Modulation Sciences, will show its StereoMaxx. It is suitable for all FM stereo stations, is mono-compatible and usable with all existing audio processors.

Modulation Sciences also will introduce the new FM ModMinder, an FM radio version of the television ModMinder audio modulation status panel, which works with any demodulator or high quality FM receiver.

Other processors

From Circuit Research Labs, on display will be existing products including the third generation 800 Series of FM Processors featuring the CRL building-block approach to audio processing. In the series is a stereo gain controller, a stereo modulation processor and a stereo generator.

Eventide will introduce the H3000 Ultra-Harmonizer Pitch Change and Effects Processor. Features include a stereo pitch change, diatonic pitch change, full, high-end signal processor capabilities, complete MIDI implementations and user convenience features. This is an updated version of the Harmonizer H910.

Inovonics will show the latest production version of the FMX plug-in option for Model 705 stereo generator for FM stations. Also the company will present its latest mag-film "insert" recording electronics for studio film recording.

Aphex Systems will introduce the Model 602 Expander/Gate/Ducker. The 602 is a 2-channel unit. Controls include attack, hold, release, ratio and depth.

Also new from Aphex will be the Model 124 "10-4" Audio Level Interface. It converts -10 unbalanced lines to servo-balanced +4 or +8 outputs, and back again, fully buffered in both directions.

The company will also show its existing line including the Compellor and the Dominator.

Other processing

Delta Electronics will show the new AMP-2 Tri-Band AM Stereo Audio Processor.

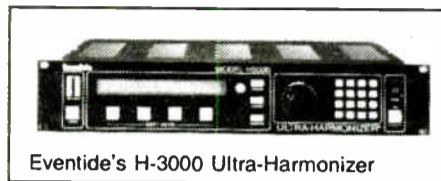
From Dolby Labs, new products on exhibit will be the Model 365, 2-channel in-

terface for either stereo or Dolby A-type; the 280 Spectral Recording module for use in a 360-series and M-series frames and the 431 Spectral Recording module for multi-track applications.

Yamaha plans to introduce new products including the REX50 Digital Effects Processor and the REV5 Digital Reverberator.

The REX50 comes with 30 factory pre-set programs, each with user adjustable parameters and 60 user-programmable memories. The REX50 offers a series of 10 distortion effects. Yamaha's REV5 is a

third generation digital reverb with an LSI (Large Scale Integration) circuit to utilize new enhanced reverb algorithms



Eventide's H-3000 Ultra-Harmonizer

and increased bandwidth.

Yamaha also will show the new FMC1 Digital Format Converter, the DMP7 Digital Mixing Processor and the Sound

Reinforcement Handbook.

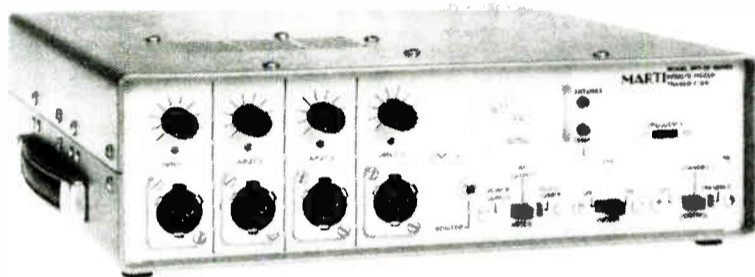
Midwest Communications will introduce new digital processing equipment.

In other processing news, AKG Acoustics will exhibit the new ADR 68K Digital Reverb version 4.0 software. The update features an expanded audio memory of IM words (32 seconds of 16 bit samples), new reverb program, expanded system functions and expanded MIDI features.

For booth numbers see complete booth listings at the end of this section.

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1988 NAB Convention

Digital Sound Makes Inroads

by Alex Zavistovich

Las Vegas, NV ... With the increasing attention being paid to R-DAT as a broadcast medium, a large number of companies are introducing professional models for studio use, and others are unveiling digital station automation gear, and even digital music beds for production and other uses.

Tascam will be among the companies

to debut several pieces of new digital audio gear. The company will show a professional R-DAT machine, the Pro-Dat model DA-50. Company spokespersons anticipate the unit to be ready for delivery in April.

Also new from Tascam for this year is a prototype CD player, the PD2. The company will also show the model 238 8-track cassette deck for in-house production. The player is rack-

mountable, with a 3 $\frac{3}{4}$ ips production speed.

What's more, at least one book publisher plans to have a technical guide to digital audio available. Focal Press has released *The Art of Digital Audio*, by John Watkinson, which will be on display.

Other companies also anticipate exhibiting new digital products during the convention.

Sharp Electronics will demonstrate the

new SX-D100 R-DAT tape recorder. The Sharp R-DAT unit is designed for professional recording, production and broadcast applications.

From International Music Co. the DR-1200 PCM digital 12-track recorder will be unveiled. The unit has a 17 minute recording time on a 90-minute 8mm cassette tape format. The DR-1200 uses a 16-bit linear format, with sampling rates of 44.1 kHz and 48 kHz.

A number of 12-bit digital samplers will also be shown by the company, such as the S-900, which has 32 sample points, and the X-7000, which has 16 samples and a 61-note keyboard.

A professional compact CD player is slated to be shown by Shure Brothers. The rack-mountable PDP1000 CD player includes an auto cue feature which locates the actual start of audio for a desired track and can be controlled remotely from the studio mixing board.

New England Digital Corp. plans to show its Direct to Disk Multitracks, hard disk-based digital audio recorders which offer 16 bit, 100 kHz fidelity with maximum continuous recording times of over three hours. The units are available in 4, 8, 16, and 32-track configurations.

The Synclavier computer-based workstation will also be demonstrated by New England Digital.

Broadcast Supply West will show a range of audio products from a number of different companies. Among the gear on hand at BSW's display will be the Sony Professional DAT recorder, the new Orban 222A spatial enhancer, and the Otari MX55 2-track reel-to-reel.

Other products available from the company will be Technics' SLP1200X CD player, the Moseley PCL600 STL system and the QEI 695 exciter.

Digital audio peripherals and software enhancements will be in evidence at the Sony Communications Products Co. The DAL-1000 digital audio limiter, the DMU-30 digital remote meter and new software for the PCM-3324 will be displayed.

Another broadcast supply house, Bradley Broadcast Sales, will show RD Systems' Sound Space, a multi-channel digital audio recording and editing system.

Audio Control Real Time Analyzers and Tannoy Monitors will also be featured at the Bradley booth, as will the Telos 100, a second generation digital telephone hybrid system from Telos Systems.

Pacific Recorders & Engineering Corporation will demonstrate its adaption of the Spectral Recording system (developed by Dolby) designed for use with broadcast cartridge machines. According to the company, the product "provides audio performance equal to or better than that of 16-bit PCM digital recording."

The full line of audio mixing consoles, cart machines, and peripheral audio products will also be shown by Pacific Recorders.

CompuSonics will also have digital recording equipment on display. The company plans to exhibit the DSP1000 audio computer, which uses a 5" optical disk.

The DSP1500, also on display by CompuSonics, operates on 5 $\frac{1}{4}$ " super floppy disks.

ITC/3M will show its digital cart machine, unveiled last year, and its audio switcher.

(continued on page B-10)

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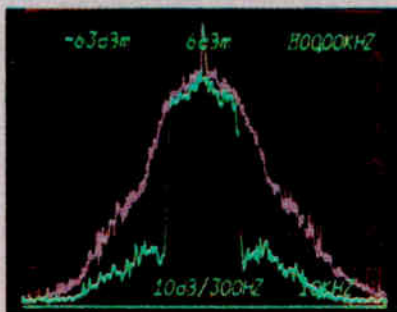
10 SEGMENT LED INPUT INDICATOR FOR PRECISE ADJUSTMENT — 28 dB range from -20 to +8.

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Typical transmitted response of PMC 400A, NRSC output filter.

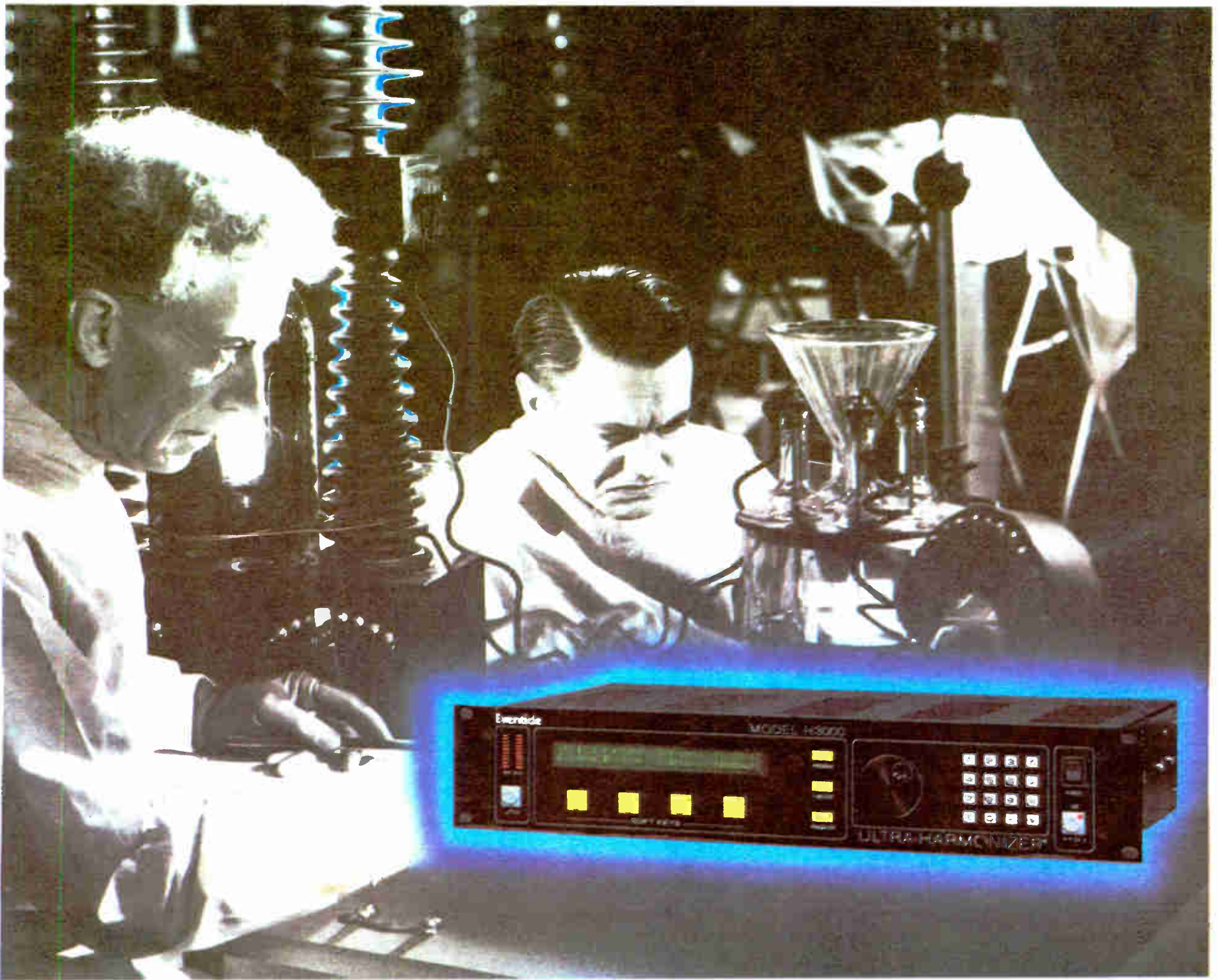
Typical transmitted response of PMC 300A.

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And the H3000's incredible Diatonic Pitch Change program does what no other pitch changer ever could—it generates musically correct harmony lines at any interval. You specify the key; the H3000 takes your single input and turns it into the correct triad chord. Neat, huh?

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Circle Reader Service 96 on Page B-30

World Radio History

1988 NAB Convention

New Broadcast Consoles Emerge

by Alan Carter

Las Vegas NV ... Companies exhibiting at the 1988 NAB Convention will offer a large number of new consoles—especially those targeted at the intermediate market in a mid-price range.

Exhibitors also will introduce a variety of new support equipment including mics and limiters.

One of the new consoles is the RS-12, a 12-channel linear broadcast console presented by Radio Systems. It features three output busses, total machine interface and remote control, and internal talk-back circuitry.

Radio Systems also will exhibit the RS-6, six channel, and RS-18, 18 channel, versions. Other new products that the company will display include low-cost modular furniture.

Harrison Systems will show its new AIR-790 on-air production console, based on the Harrison Air/Pro 7 Series. Along with Penny & Giles 3000 series 104mm linear faders and CMOS switching for assignment busses, standard features include two main stereo outputs, two separately-derived main mono outputs, an auxiliary send with level trim and clean-feed buss. It will support two tape machines with control logic following A/B input selection.

For the smaller radio stations and news/production, Wheatstone will exhibit its A-20a on-air radio console. It is available in a 10-input model, employ-

ing plug-in input modules.

Available modules include mono/mic stereo line, control room, studio and full function machine modules. Other standard features include program and audition meters, digital timer, remote starts and external input controls.

Broadcast Electronics will show its new console, the MixTrak 90.

Ram Broadcasting Systems will bring its new SX-18 on-air console to the show. Also at its exhibit will be the PS-1000 Ram Phasescope.

Other consoles

Soundcraft will present the 6000 Console with split-buss architecture. It can handle up to 24 busses and is expandable to 32-track monitoring. Among its other products on display will be the SAC 200 stereo on-air and post production console.

R-DAT, Digital Automation Featured

(continued from page B-8)

Not all tape innovations will be digital, however. Audi-Cord will demonstrate its DL Series analog cart machines. The S Series and TDS Series cart machines will also be on display.

Fidelipac will debut enhancements and improvements to the Dynamax cartridge machine product line. The CTR100 Series will include a vari-speed full function remote control.

Ward-Beck Systems will display the WBS RP2200 production radio audio console series.

From Fostex, on exhibit will be the 1240 mixer, a 12-input, four-buss, two-stereo out console. Features include four auxiliary sends, parametric EQ, PFL and phantom power on each channel. It also has an independent mono mix section, 4011 character inserter and VITC reader/generator.

Allen & Heath Brenell will introduce a new series of 16-buss consoles for recording and production applications. The company also will return with the Sigma series and Studio 12 production console. Also introduced will be the MBI broadcast line of products.

Howe Technologies will exhibit a new addition to the 2300 Phase Chaser series. The 2300A corrects for missing channel errors, corrects inadvertent "polarity er-

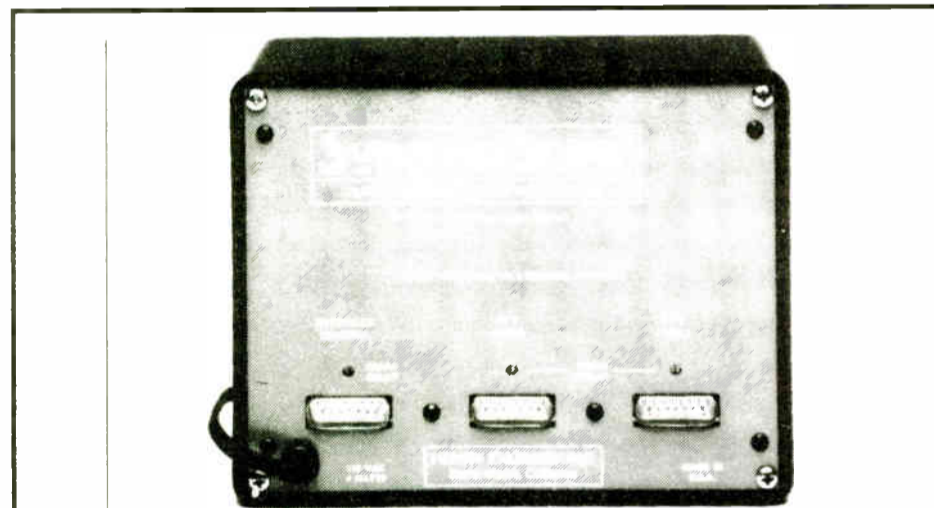


Harrison's AIR-790 On-Air Console

rors" and corrects inter-channel time delay errors. Applications include FM, AM and MTS broadcast. The company will exhibit its full line of consoles.

Among the standard products from Pacific Recorders will be the company's audio mixing consoles, including the Newsmixer and Stereomixer, cartridge machines and peripheral audio products. Also shown will be studio cabinets and fully-functional production and on-air studio systems.

Autogram will have its regular con-
(continued on page B-13)



No More False Starts

The Henry SynchroStart makes the chore of dubbing records onto carts a one button operation. The SynchroStart mutes the turntable audio until a stable playing speed is reached. Then, at the moment the correct point is beneath the stylus, audio is smoothly turned on and your cart recorder is started. The result is perfectly cued carts, time after time. The SynchroStart can also be used to dub CD's to cart.

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At the Broadcast Electronics booth the Phase Trak Record/Playback phase-correcting cart machine will be shown. The machine features "tape learn" mode.

Other gear at the Broadcast Electronics display will be the SAT-16 and Control 16x program automation systems.

Automation

Studio automation products will also be well-represented at the NAB show. IGM Communications plans to debut enhancements to the IGM-SC automation controller, including all-day walkaway from Transtar programming.

The IGM EC program automation controller will also be featured by the company, as will the IGM CD-240, a random access CD "jukebox" which can hold up to 240 disks.

Paul Schafer's company, Schafer Digital, will show his automation system which uses Sony consumer Beta videocassettes to record entire music libraries and automate them along with the rest of a station's audio sources.

Concept Productions will have on hand the CAPS I computer-assisted programming system, featuring R-DAT tape decks. The CAPS I system allows full random access of all audio selections, music and commercials for live-assist and fully-automated systems.

Allied Broadcast Systems will exhibit a complete studio package, including automation systems from SMC and the Audiometrics 100 CD player.

The company will also show its full line of other products, including the Denon CD cart player.

Media Touch will show the Touchstone automation system and will also demonstrate Southern Broadcasting's DAMS, which stands for Digital Audio Mass Storage System, a hard-disk system for audio.

Broadcast Automation will show the BAI-108 Live Assist Controller. The BAI-108 feature eight input sources with 24 events of programming and full automation control features such as silence sense and close loop control.

The latest compact disc and random access digital automation systems from Schafer World Communications Corp

will be integrated to the full line of Schafer program automation products. The systems will be available as standalone or self-supporting units.

Schafer World Communications' established products on hand at the show will include the third generation of Schafer 7000 and Schafer 7000-GLS program automation systems.

Systemation will show its line of automation gear including systems designed for use with 8mm and R-DAT.

CAT Systems will show its range of computerized remote control systems for broadcast, cable and satellite transmission facilities. In particular, the company will introduce a 12-site satellite control system presently in use across Canada.

Accessories, ancillary gear

Tape recorder accessories, as well as some production products such as music libraries will also be shown in the NAB's exhibit area.

Among those companies displaying their wares will be Saki Magnetics which will debut its line of long-life replacement heads for "in-cassette" duplicators such as Telex, Pentagon and Wollensak.

The company also has plans to show its record and playback replacement heads for Ampex, MCI, Mincom, Otari and Studer machines.

Sprague Magnetics will exhibit tape heads for audio, film, instrumentation, and duplication, manufactured by AMC, Nortronics, and PMS.

At the Broadcast Programming booth LaserClassics will be unveiled. The product is a completely automated voiced Classical format entirely from compact discs, played from multiplex CD machines and controlled by the Sentry Systems Format Controller.

Century 21 will show its line of music formats on CD along with its other products.

Omnimusic will unveil its Professional Broadcast Series. The series is a collection of production music beds, featuring, 59, 29 and 10-second edits of a wide variety of musical styles, available only on compact disc.

For booth numbers see complete booth listings at the end of this section.

1988 NAB Convention

Solid State Leads the Way in RF

by David Hughes

Las Vegas NV ... New solid state design AM transmitters, sure to be hot product for 1988, will be on display on the exhibit floor at the NAB show. There will also be an addition to the digital transmitter line unveiled by Harris last year.

Nautel plans to highlight its new 10 kW AM transmitter, the AMPFET ND-10, which features solid state design. The firm will also feature its series of other solid state, modular transmitters from 400 W to 50 kW.

Also on the solid state front, Broadcast Electronics will show its 30 W to 300 W FM transmitters, as well as one-tube transmitters from 1500 W to 35 kW. The firm will also feature a C-QUAM AM stereo exciter and companion modulation monitor.

Harris will unveil its new 20 kW and 30 kW FM transmitters, along with an enhancement to its 25 kW FM transmitter. On the AM side, the firm will introduce the DX-25, digital solid state 25 kW transmitter.

Harris will also show its existing line of transmitters including the DX-10 10 kW digital, solid state AM transmitter.

Elcom Bauer will feature its model 6100A and model 6300A 100/300 W solid state transmitters, as well as its low power battery operated direct re-broadcast satellite system.

AEG Bayly will show solid state transmitters, plus professional reel-to-reel and audio tape recorders in its NAB booth.

Other new designs

Lots of other new transmitter designs will be shown on the exhibit floor.

For example, LDL Communications will show its new FMT-30L 30 kW FM Larcen transmitter which features a single tube design that has a new driver using FET semiconductors. It also features microprocessor control and a simplified cavity.

The new Pulse Power series of AM transmitters will be shown by Marcom including the A125T, the A1000T and the A5000T. Transmitters in the line can provide output from 50 to 5000 W nominal with a 20% reserve above each level.

QEI will feature its new FMQ series of FM transmitters. The firm will display FMQ series models with power levels of 30 kW, 10 kW and 3.5 kW. QEI will also have its 150 W, 300 W and 500 W FM broadcast transmitters on display in its NAB booth.

While it was not willing to disclose a list of new products, Continental Electronics said it would show its established line of AM and FM transmitters including a 1 kW solid state AM model. The firm also has AM transmitters from 10 kW to 50 kW, and FM models from 3.8 kW to 60 kW.

In addition to its new line of FM transmitters, plus its existing line of AM phasing equipment and RF components, Vector Technology will show its new AM transmitter matching transformer.

Television Technology Corp. plans to unveil its new FM-300J 300 W FM transmitter. It will also show its existing FM products including a transmitter exciter and translator.

RF Technology plans to show its new RF-203B ultra portable transmitter to operate in the 1.7 to 2.7 GHz band. It features audio with line/mic switching and 500 mW RF output.

Exciters, SCA gear

In the exciter category, Micro Controls will feature its new 88 to 108 FM retro-dyne exciter, in addition to other new products which include an FM subcarrier pager system, a 57 kHz data subcarrier system and a pager phone interface system.

Motorola plans to show its new C-QUAM AM stereo exciter model 1400, along with its line of existing C-QUAM exciters and modulation monitors.

Kahn Communications will have its AM stereo products plus new products like the Powerside, the Flatterer and Good 'N Loud.

As for SCA gear, Emergency Alert Receiver Inc. will show its new SCA receivers which are available in 67 and 92 kHz versions. The units are also available with special decoders for private listening.

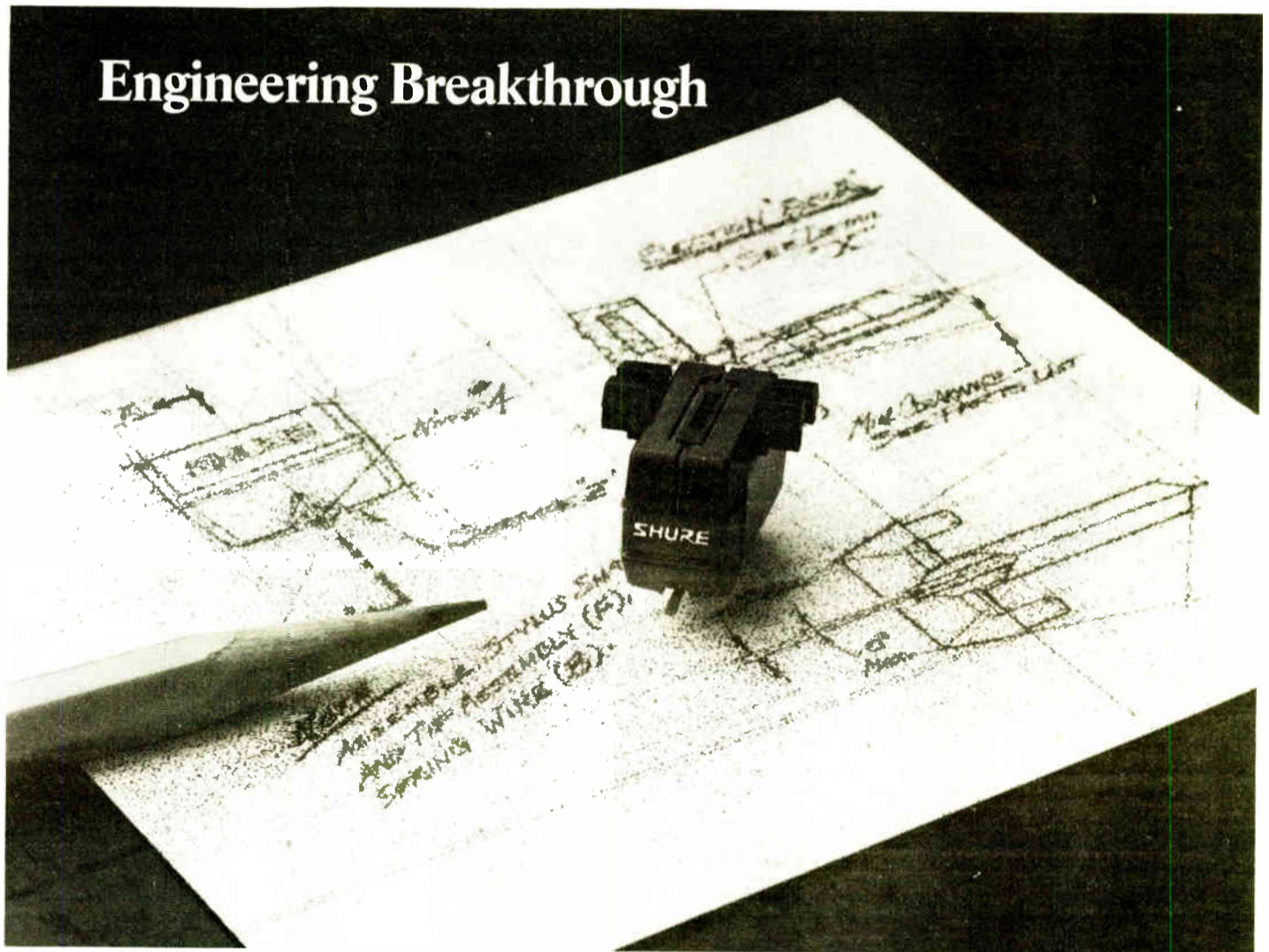
Marti Electronics will feature two new subcarrier products, the model SCG-10 subcarrier generator and the model SCD-10 subcarrier demodulator, as well as its line of remote gear.

Standard Communications plans to unveil a line of audio subcarrier demodulators for matrix, 15 kHz and 7.5 kHz discrete audio/stereo. The new units on display include the CFR800, the CST-800 and the CAD800.

Other gear

Lots of other transmission-related equipment will be shown.

TFT will have a number of new products at the show including the *(continued on page B-19)*



Finally, a great-sounding cartridge that holds up under broadcast use. The Shure Broadcast Cartridge.

Every component in Shure's three new phonograph cartridges is designed to resist strains that ordinary broadcast cartridges can't take ...without sacrificing great sound.

Our revolutionary Cue Guard™ design helps prevent the stylus from bending backward or breaking during backcuing. Our heavy-duty shank resists snapping or bending, without sacrificing high frequency response.

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our exclusive MASAR™ polished tip reduces surface noise and stylus and record wear from the first play.

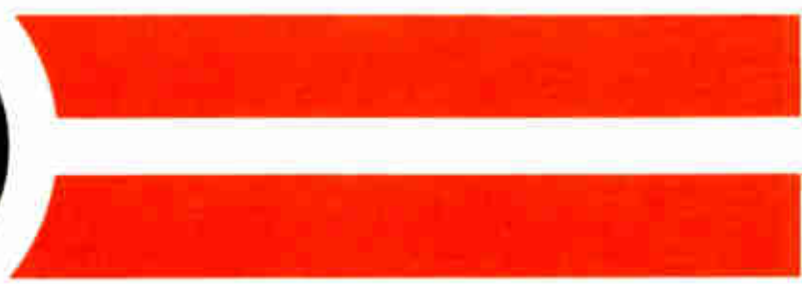
Shure's new broadcast cartridge line consists of the BC70 spherical tip, ½" mount; BC80 elliptical tip, P-mount; and BC90 elliptical tip, ½" mount. Each delivers the ruggedness, reliability and sound performance you've come to expect from Shure.

For more information, call or write: Shure Brothers Inc., 222 Hartrey Avenue, Evanston, IL 60202-3696 (312) 866-2553.

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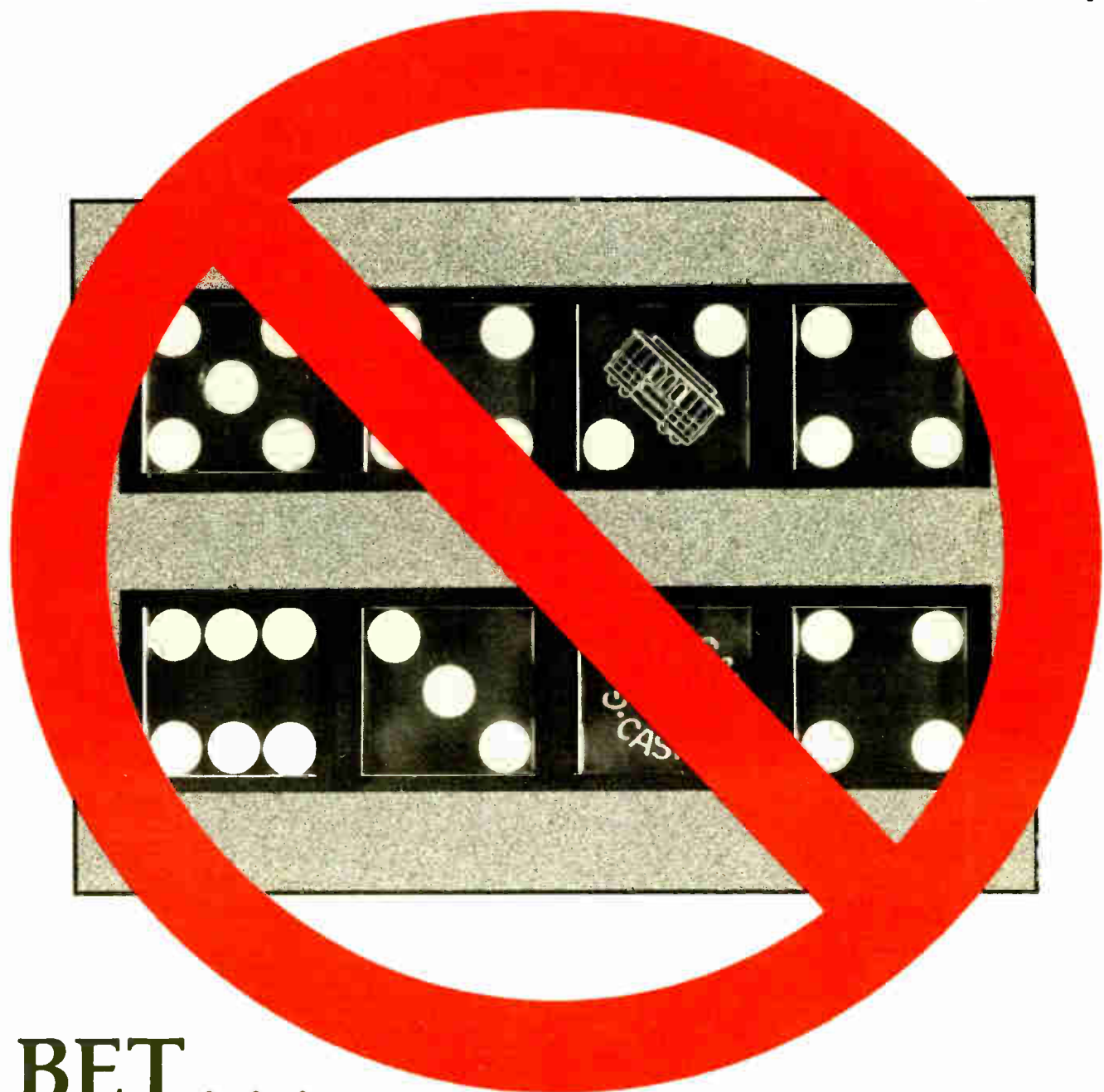
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DALLAS, TEXAS
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SEATTLE, WASHINGTON
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USED EQUIPMENT DIVISION
317-962-1471

BROADCAST SYSTEMS DIVISION
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1988 NAB Convention

Consoles, Loudspeakers on Tap

(continued from page B-10)

soles including the AC-6, six-pot rotary; the AC-8, eight-pot rotary; the IC-10, 10-pot rotary and the LC-10, 10-pot slide pot console.

Other consoles will be displayed by Logitek. The company will have the Perfectionist audio consoles, including the workhorse 8-mixer and 12-mixer. Also, Logitek will show its Stereorack audio console in a compact rack-mountable package.

Dorrough Electronics will show the audio console Model 700, with dual channel, mono, stereo, seven position, 15-line inputs and three microphone inputs. It is available with the company's Loudness Meters.

Regular products Dorrough will show include its Loudness Meter Model 40-A, featuring the dual functions of average and peak on the same LED scale.

Other displays by Dorrough will include the Discriminate Audio Processor Model 610, a tri-band processor, and the Stereo Generator Model 80-D, an FM stereo generator with soft clipping.

Audio peripherals

UREI will present the new 7110 compressor/limiter with complete user control over threshold, attack, release time and output level in a single rack space unit. From its established product line, the company will have the JBL/UREI On-Air Broadcast consoles, the UREI time align studio monitors and the JBL/UREI power amplifiers and signal processing units.

Among the new products from Audio Technologies Inc. (ATI) will be the Micro-Matchers, tiny connector-mounted amplifiers to retrofit and upgrade existing equipment. They are fully shielded and derive their operating power from the



Shure's SM 84 Supercardioid Lavalier Mic

equipment in which they are installed. They are available for use on bipolar and unipolar supplies.

ATI also will present Micro-Meters for visually monitoring many audio lines simultaneously. The Micro-Meters display one, two, three or four stereo signal pairs (eight channels) on two-color vacuum fluorescent bar-graph indicators with peak storage. Balanced adjustable gain inputs prevent distortion.

ATI will also show its line of consoles including the Vanguard series.

New stereo line inputs will be offered by AMEK/TAC for the TAC Scorpion recording console. The company will exhibit other audio consoles including the APC assignable production console, the G2520 master recording console, the classic series broadcast production console, the BCII multipurpose broadcast console and the TAC recording console.

AKG Acoustics will introduce the K280 parabolic headphones, and the K55 headphones. The company also will present the C410 PB9 microphone/boom

combination with power supply, the C1000S condenser microphones, the D90S and D95S dynamic mics, and the C747 miniature pen-type condenser microphones.

Other new microphones and headphones will be shown by Beyer. Its microphone listing includes the M58 ENG/EFP news and sport interview mic; the MCE 86 short shotgun; the MCE10 miniature hypercardioid and the MPC40 acoustical boundary mic.

Electro-Voice will introduce the new RE45N/D N/DYM dynamic shotgun microphone for field interview applications. The company also will have its full line of broadcast and production microphones, speaker systems and field production electronics on display.

Tannoy North America will be showing two new speakers, the PBM 6.5 and the PBM 8. Tannoy also will have two new amplifiers, the SR-140, with 150 W per channel, and the SR-740, with 400 W per channel.

In speakers, Anchor Audio will present the AN-1000S rack mountable powered monitor speaker with five front panel selectable inputs. The company



Wheatstone's A-20 On-Air Radio Console

also will display the new Liberty Series of portable sound systems featuring 75 W AC, 50 W battery, optional high band wireless mic receiver installed and phantom powered XLR mic inputs.

JBL Professional will highlight the Control 5, the newest member of the Control series line of speakers. The firm also will display existing products including the JBL studio monitors/loudspeakers with titanium dome tweeter, the JBL Bi-Radial studio moni-

tors and the JBL Control monitors and mounting accessories.

A new full line of professional headphones will be introduced by Stanton Magnetics. The company also will present a new disco starter kit and a turntable mat. From its established product line, the company will exhibit turntable cartridges, earphones, phono preamplifiers/equalizers and record care products.

For booth numbers see complete booth listings at the end of this section.

Advancements in Monitoring

by Alex Zavistovich

Las Vegas NV ... For attendees interested in test equipment, a number of companies are planning to exhibit signal generators, monitors and other audio testing devices on the NAB show floor.

In addition, several manufacturers also plan to exhibit other measurement devices to test different broadcast-related variables, such as electric and magnetic fields.

Other companies are expected to show studio accessories, including racks, patch bays and amplifiers.

Test equipment

Delta Electronics will show the AM splatter monitor, a unit based on requirements specified by the National Radio Systems Committee. The company will also show the TCA Junior low-power RF ammeter and the AMP-1 tri-band AM stereo audio processor.

Other products on hand at the Delta display will be an AM stereo exciter/monitor, a range of remote control systems, power and modulation controllers, impedance bridges and coaxial transfer switches.

Belar Electronics plans to feature the FMM-4, an FM digital frequency monitor. The company will also display a range of AM, FM and FM stereo frequency modulation monitors.

Sescom will show the TEST-1, an all-in-one piece of audio test equipment. The unit includes an audio oscillator, DMM with frequency counter, an automatic distortion analyzer and three-inch oscilloscope.

Four small console-type mixers for audio and video production will be at the Sescom booth, as will a line level active combiner and monitor amp with speaker, which are rack-mountable for studio applications.

Avcom will feature its STA-70D single channel per carrier test analyzer, with frequency coverage of 50 to 110 MHz and maximum input power level of +15 dBm. The PSA-35A portable spectrum analyzer will also be exhibited, along with accessories such as the SSC-70 signal sampler/calibrator and TISH-40 terrestrial interference survey horn, to be used with the PSA-35A for site surveys.

Microwave sweep generators for various bandwidths between 50 and 1750 MHz and for 3.7 to 4.2 GHz will also be featured by Avcom.

Avcom also will show the SCS-200 tunable satellite audio receiver. The unit is a complete wideband receiver with a high-stability microwave downconverter, and has preset tuning for selection of up to four different demodulators.

On display in Anritsu America's booths will be a microwave spectrum analyzer and microwave power meter. The company's optical power meter and a variety of measuring receivers will also be shown.

Also in the realm of audio test equipment (continued on page B-14)

DIAL-UP

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Circle Reader Service 100 on Page B-30

1988 NAB Convention

Spotlight on Audio Test Gear

(continued from page B-13)

ment, Audio Precision will present the System One audio test system, as well as the SWR-122 family of switchers and the DCX-127 multifunction module.

Trade show plans for Potomac Instruments include a display of the AT-51 audio test system, the QA-100 program audio analyzer, and the SMR-11 synthesized AM monitor receiver.

The AM-19 directional array antenna monitor and the MPC-11 modulation and power controller will also be on exhibit.

Wireworks will have the TE-3 microphone cable tester, a "pocket-sized" unit with a battery life of over one thousand cable tests. The device conducts a number of tests—open, case short, conductor short and cross wire (out-of-phase) for each conductor.

Wireworks will also display its "T Series" products, including mic splitter boxes, direct boxes, amp input boxes and rack adapters.

Other test gear

Electric and magnetic field radiation measuring equipment will be featured in Holaday Industries' booth. On display will be the Model HI-5000-SX, which measures both magnetic and electric fields and provides ANSI standard time-averaged values in real time. The com-

pany also plans to have on hand its line of isotropic broadband field strength meters.

Kintek will feature the KT-904/Plus 2 mono to stereo converter with Monogard and audio phase meter. The KT-960 Monogard reversed-polarity automatic corrector will also be displayed, as will the KT-932 audio phase meter.

Amber Electro Design's display will include the Total Solution Audio Measurement package. The package consists of the Model 5500 programmable audio measurement system, the AudioCheck software package and the PC8000 AT-compatible instrument controller.

The Amber package can fully automate a complete audio checkout procedure on tape machines, studio equipment, transmitters and transmission links. The instrument controller includes a built-in high resolution monitor, two shock-mounted disk drives, and serial and parallel ports.

Boonton Electronics will have the Model 1110 audio oscillator and the Model 1130 distortion analyzer. Other products available from Boonton will be the Model 2520 RF calibrator and the Model 2510 DC range calibrator.

A variety of other gear will be featured by Boonton, such as power meters, RF/RMS voltmeters, impedance measuring instruments and modulation meters.

New for this year from B & B Systems will be the AM-2HR, with X/Y CRT display which gives a complete "picture" of the stereo audio signal. Graticule calibration allows accurate determination of signal level and can verify the percentage of an out-of-phase signal condition.

The entire line of B & B stereo audio phase monitors will be on display. The line includes the AM-1B for post production, the AM-2/2B/2HR for 2-channel stereo and the MP-4 audio level meters.

Selco will exhibit full-spectrum VU and peak program meters, as well as audio level indicators and accessories such as caps, pointers, dials and nut covers. Industrial analog and digital panel meters and fuseholders will also be shown.

Racks, patch bays, DAs

New from Farrtronic will be a range of economically-priced audio patch-fields, stereo and audio distribution amplifiers and a small intercom system packaged for radio.

The company's Econo-patch Series M850 is available in mono or stereo jack format, with rear terminals of either turret lug or amp barrel type.

Farrtronic's established line of audio patch fields in mono and stereo will also be shown, as will a variety of other custom audio products.

ROH, a division of Anchor Audio, will exhibit the Series 7000 audio routing switcher. According to the company, the unit's summing crossbar design and unique control functions are "ideal" for medium to large scale routing, monitoring, communications and control systems.

Other products expected from ROH include the Series 190 Audio Line Monitors with built-in bridging switchers and selectable VU or peak metering. The Series 200 modular audio systems will also be on hand.

ROH will also demonstrate the field-proven Series 300 intercom systems with IFB and control and interface capabilities.

Varian's Microwave Equipment Division will show the VSTAR terminal amplifier, a 300 W single drawer amplifier and the power combined medium-power amplifier.

ADC Telecommunications plans to display the ICON—Integrated Cable Organization Network.

A range of prewired patch panels will be shown by Audio Accessories. The company also plans to exhibit telephone jacks, patch cords and patch cord holders.

Patch Bay Designation Company will show PatchPrints, its line of easy to read custom labeling for all brands of audio and video patch bays, control panels, racks and other field designation areas.

For booth numbers see complete booth listings at the end of this section.

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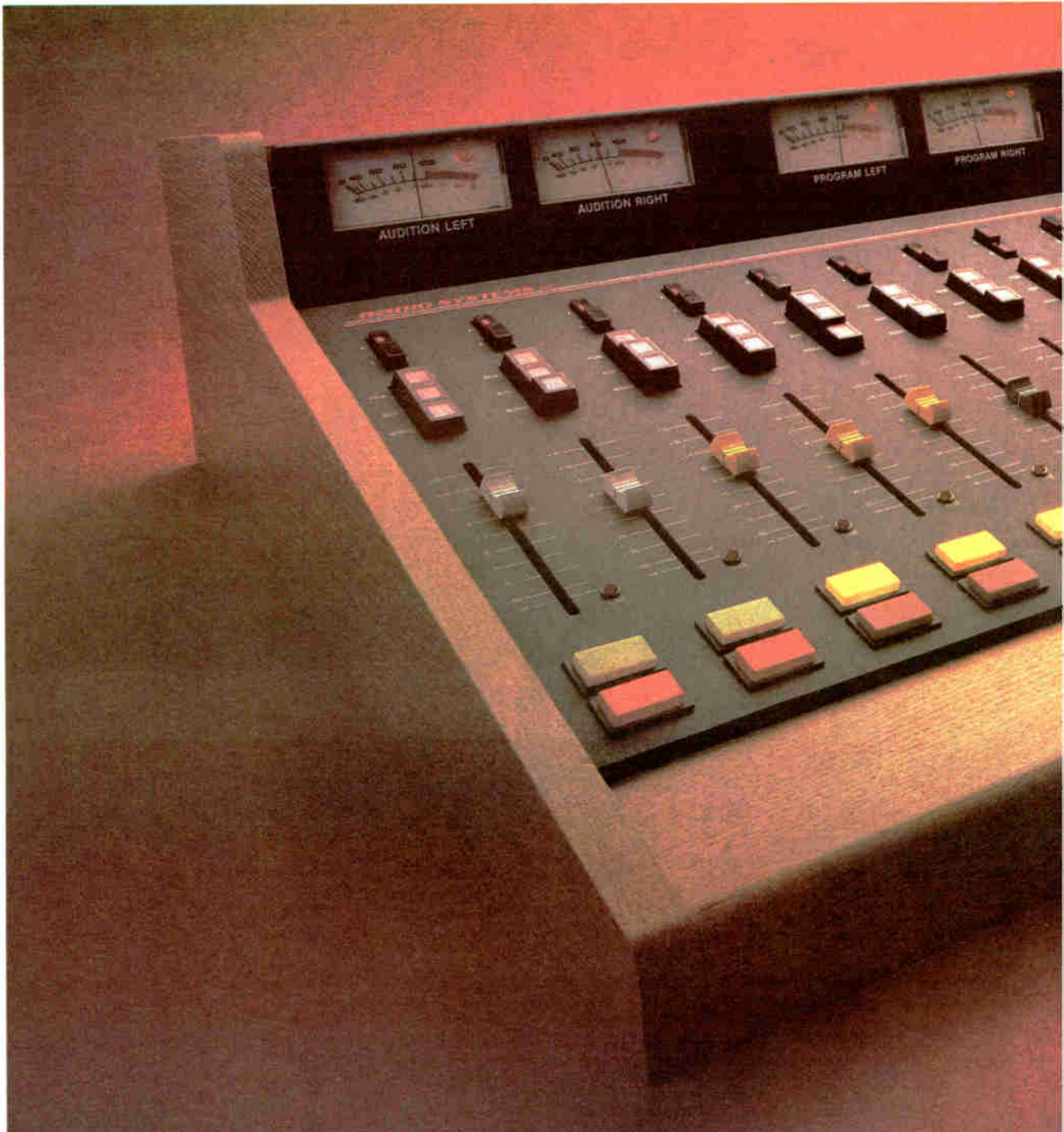
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OPERATIONAL FEATURES

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 - Remote channel on/off control, standard
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 - External tally-lamp control (*)
- (*) optional equipment

TECHNICAL FEATURES

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Differentially balanced instrumentation amplifiers with gain set jumpers and selectable input attenuators.

Jumper selectable gain settings to accommodate nominal input levels from -60 dBm to +10 dBm. Maximum input level; +22 dBm

20K ohm or jumper selectable

22 dBm at any level

Active Balanced

Adjustable OdBm to +10dBm, maximum output +22 dBm

330 ohm balanced

.02% nominal, .05% maximum, 20 Hz to 20 KHz, PGM, AUD, and Mono outputs

88dB (or better) below +4 dBm output with 0 dBv input level, 20 KHz bandwidth, 600 ohm source impedance (line to line).

70 dB (or better) below +4 dBm output with - 50 dBv input level, 20 KHz bandwidth, 150 ohm source impedance (mic to line).

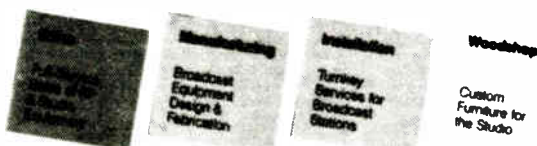
1 volt RMS nominal, 10 volts RMS maximum into 600 ohm headphone

50 ohm to front panel jack, 330 ohm to prefader output

1 volt RMS nominal, 10 volts RMS maximum, unbalanced

2 years parts and service, parts delivery guaranteed next business day.

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1988 NAB Convention

Computer Systems Aid Stations

by David Hughes

Las Vegas NV ... In addition to many new hardware and software products for radio stations, computer and other services will be featured at the NAB show.

Dataworld plans to feature its detailed coverage maps, its 2400 baud and Teletype Network access and advanced plotting services in its NAB show booth. The firm will also have its AM and FM directories, allocation and interference studies, AM groundwave calculations and more.

Film House will provide details on its production of TV marketing campaigns for radio stations. The firm says that it produces TV campaigns designed to "achieve the unique objectives of each station."

Lots of new computer systems will be displayed at the show to help broadcasters deal with billing, bookkeeping, music and program logs, the news department and even scheduling employers' work hours.

Register Data Systems will show its RDS System which includes complete logging, billing, co-op, bookkeeping and accounting functions in single and multi-user configurations.

Media Computing will demonstrate its TEN—The Electronic Newsroom—software for the assignment desk, archives, production rundowns, wire management and script production.

Jefferson-Pilot Data Services will unveil Auto Select III, a flexible PC-based computer software system for managing the music library. It will also show the JDS-750, a sales, traffic and billing system for radio stations with two or three users.

Computer Concepts Corp. will show its line of software for a variety of uses such as traffic, billing and receivables, accounting, word processing, data base

management, music management, station automation and desktop publishing.

Columbine Systems will demonstrate new enhancements made to its sales, traffic and billing software. It will also show the new Salmon Sales Management System for local and national sales, a preview of new software for financial management, and enhancements to music inventory and rotation software.

Custom Business Systems Inc. (CBSI) plans to show its new Automation System Interfaces that allow complete loading of a program automation system by the CBSI traffic computer.

Basys will introduce a new line of integrated newsroom products and software that includes the Touchstone Con-

trol System for news directors, program directors, continuity, traffic and billing departments.

The firm will also feature its Angis election system as well as Timeslot personnel scheduling software which keeps track of personnel schedules.

Automated Business Concept will feature its combined music and broadcast logs. The firm's software now runs on the IBM-AT and IBM compatibles.

The April weather in Las Vegas is frequently in the 80s and sunny. But no matter what the weather is outside the convention center, there will be plenty of weather-related products for radio broadcasters on display on the exhibit floor.

Accu-Weather Inc. plans to introduce an advanced version of the Front Door 750, an IBM PC compatible base system for receiving, displaying and archiving Accu-Weather satellite delivered graphic images.

WSI Corp. will unveil its new Astrodatsat satellite delivered weather data system. The system offers data from the National Weather Service circuits, and others. It also offers audible weather warnings, and has an automatic print function.

Alden Electronics will show its C2000M color weather radar unit which is designed for radio station operations.

For booth numbers see complete booth listings at the end of this section.

Transmission Products Shown

(continued from page B-11)

models 886 and 887 AM and FM EBS systems, which are microprocessor controlled with clocks to notify time left to next transmission or reception of alerts. TFT will also feature its new remote pickup units and its 450 MHz STL.

Kintronic Labs plans to feature its new low power RF contactor for AM low power switching operations. It will also have its new MP-TCA meter plug and model SER series of standard equipment racks on hand in its booth.

Bird Electronic will show its line of instruments and components for RF power measurement including RF directional Thru-line wattmeters and 2 kW to 80 kW air-cooled and self-contained heat exchanger loads.

Delta Electronics will feature its TCA-RFR metering system to meet ANSI exposure guidelines for 50 kW stations.

Dielectric plans to show its RF product line including coaxial and waveguide

components including high-power switches, filters, combiners, directional couplers, antenna systems and more.

The new Fiberway 802.3 bridge will be one of the new products shown in the Artel Communications booth. Other products include the SL3000 series frequency-modulated fiber optic system.

Coaxial Dynamics will unveil its new line of 4 1/6 and 6 1/8 rigid line directional wattmeters and plug-in elements.

Catel Telecommunications will show its new multichannel FDM, bidirectional single mode fiber optic system.

Peter Dahl Co. will highlight its new, completely pre-wired line transient suppression assemblies using selected, fast acting selenium and high energy MOVs.

Lemo USA will show its circular connectors for audio applications. The connectors are available in coax, triax, multipin and mixed sizes and configurations.

Microdyne plans to feature its new 1100 TIM Ku-band SCPC ID channel modulator and the 1100 TDC Ku-band SCPC tracking disconnecter.

The Richardson Electronics booth will have new Siemens power tubes on display as well as information on all the other lines it handles.

Reach Electronics/Vetronix will show its new liason dial access paging terminal, along with its SCA tone/voice and tone only pagers.

EEV will highlight its broadcast tetrodes for AM/FM transmitters including 15 kW air cooled tetrode type.

Electro Impulse Laboratory plans to feature its new dry, forced air-cooled FM dummy load, along with its existing line of RF calorimeters, wattmeters and attenuators.

Andrew Corporation plans to show its new 2 1/4" air dielectric Heliac cable with 3 1/8" EIA connector for Class B 25 kW FM stations.

Altronic Research will show its new Omegaline model 6735, an addition to the air cooled dummy load series which increases the power rating to 35 kW.

Belden Wire and Cable will feature its conformable coax, fiber optics cables and mic cables.

Canare Cable plans to show its new 9S-4 mini coax instrument cable.

Current Technology will feature its new power server distribution system and Econco Broadcast Service plans too feature its rebuilt power transmitting tubes at the show.

For booth numbers see complete booth listings at the end of this section.

Another success story



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Circle Reader Service 79 on Page B-30

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Circle Reader Service 60 on Page B-30

NAB EXHIBITORS DIRECTORY

Legend

The 1988 NAB Exhibitors Directory is a listing of information provided by exhibitors who responded to a NAB Radio questionnaire survey. Past and potential NAB exhibitors were asked about new and established radio products scheduled to be shown at the NAB this year.

The questionnaires were mailed to vendors in January 1988. Those returned by Deadline are included in this Directory.

Company Booth

A

Accu-Weather Inc. 4151

Intro: An advanced version of the Front Door 750™, an IBM PC, or compatible, base system for receiving, displaying & archiving Accu-Weather satellite-delivered graphic images.

Also: Offering over 1200 weather graphics per day including the revolutionary RadarPlus™; WeatherBreak™ & WeatherShow™.

Acoustic Systems 5224

Intro: Acoustic doors, air transfer silencers, floor cable portals.

Also: Prefabricated, acoustic enclosures for broadcast, recording & audio/video/film production.

ADC Telecommunications 3480

Intro: ICON, Integrated Cable Organization Network, an audio cable management system; S-9 SMPTE 9-pin patching system.

Also: Pro Patch patchbays, professional audio patchbays, video patching products.

ADM Technology Inc. 4369

Intro: IFB/Mix-Minus to multiple remote sites with individual control of each; rack mount audio mixer for SNG, ENG & EFP vehicles as well as news assembly & off-line editing suites.

Also: Stereo audio consoles including the BCS-PC Series, the S/TV Series & the ST Series.

Advanced Designs Corp. 4278

Intro: Graphics/Weather Data System, interactive graphics, accurate automatic map generation, sequencing, looping, optional NWS RRWDS, data service access, LPATS & LLP compatibility.

Advanced Micro-Dynamics 5829

Intro: The ARC-16, a new 16 chnl remote control system with both dial-up & full time studio control, it dials out to report alarms using easy to understand electronic speech and also provides a constant link to the xmtr, parameters are always in view & may be quickly & easily adjusted.

Also: For smaller stations, the Model TC-8 remote control system for simplicity, convenience & reliability.

Contact: Peter Burk
7 Lomar Drive
Pepperell MA 01463
800-255-8090.

AEG Bayly Inc. 719

Intro: Radio data system encodes digital information on the SCA channel of FM bdct xmtr.

Also: Solid State FM xmtrs, professional R-R audio tape recorders.

AKG Acoustics Inc. 1245

Intro: ADR 68K digital reverb version 4.0 software, K280 parabolic headphones, K55 headphones, K21TV headphones, C410 PB9

mic/boom combination w/a power supply, C1000S condenser mic, D90S & D95S dynamic mics & C747 miniature pen-type condenser mic.

Alan Gordon Enterprises 2538

Intro: Sonic mic boom family; Sonic 312 & 307 mic boom; Sonic mic boom holder; Argus compact dolly w/mini-jib; Revpod, product shot turntable; Acrylic special effects.

Alden Electronics Inc. 4566

On Display: Alden Model C2000M color weather radar designed for radio station operations.

Allen & Heath Brenell USA Ltd 5016

Intro: A new series of moderate priced 16 buss consoles for recording & production applications.

Also: Our line of recording & production consoles including the Sigma series & Studio 12 production console.

Allied Broadcast Equipment 557

Intro: The Contest Computer from DSI. When conducting contest & soliciting your operator need only set up the thumb wheels for that caller & wait until that number shows up. The Contest Computer automatically & courteously answers each call & routes the winning call, only, to the air talent.

Also: The Denon Cart Machine®; the Audio Metrics CD Multiplay; the most extensive line up of compact disc storage; Telemix & Telnox telephone systems & factory representatives will be available; the world's foremost authority on the cleaning & care of black vinyl discs will be available for consultation.

Contact: Dave Burns
3712 National Road West
Richmond IN 47375
317-962-8596.

Allied Broadcast Systems 419

On Display: Complete studio package, including automation systems from SMC & Audiometrics 100 disc CD player.

Alpha Audio 2256

On Display: Acoustical materials including Sonex, Soundtex, Acoustilead and Sonex 1.



Altronic Research Inc. 1250

Intro: Omegaline Model 6735, an addition to the air cooled dummy load series, increased power rating to 35kW.

Also: Omegaline RF coaxial load resistors from 5 kW to 200 kW, air & water cooled models & high power non-reactive cermet resistors from 1W to 250 kW, air & water cooled models.

Contact: Tim Roper
POB 249
Yellville AR 72687
501-449-4093.

Amber Electro Design 1201

Intro: New measurement features for the Model 5500 system & new features & enhancements for the AudioCheck™ Software package.

Also: The Total Solution Audio Measurement package; the Amber AT Instrument Controller, displayed in a working environment running actual tests on typical broadcast equipment; also the Model 3501 Portable Audio Measurement System.

LAZER™ From TEXAR.

The Monopoly Is Over.

Until now, when you wanted to buy an FM limiter/stereo generator, there was only one choice. We even contributed to the situation with the TEXAR RCF-1, which allowed you to plug additional power into a box we didn't make. At the St. Louis SBE convention, we demonstrated the TEXAR RCF-2, which had even more power. Now the power and technology of the RCF-2 are available in a totally-TEXAR product... LAZER™.

LAZER has the clean power to go toe-to-toe with any system made and a digitally-synthesized stereo generator with laboratory-like specs. Delivery begins in 3rd quarter, but you can hear it now in Booth 5415 (Hilton Annex) at the Las Vegas NAB Convention.

TEXAR FOUR FM

616 Beatty Rd. • Monroeville, PA U.S.A. 15146-1502 • 412-856-4276 • Telex 910-240-9185 • Fax 412-856-4656

NAB EXHIBITORS DIRECTORY

Amek/Tac US Operations 145

Intro: Stereo line inputs for the Tac Scorpion recording console.

Also: Audio mixing consoles; APC assignable production console; G2520 master recording console; Classic Series broadcast production console; BCII multipurpose broadcast console & Tac Scorpion recording console.

Amperex Electronic Corp. 2541

Intro: YK1270 air cooled klystron; 9021 tetrodes for UHF, VHF & FM bdctg.

Also: XQ1520, XQ1523/25, XQ3410, XQ3415, XQ3430; YK1233 & YK1263 high efficiency Klystrons & 9018/YL1631 tetrode & cavity for TV, AM/FM bdctg.

AMS/Calrec 3373

Anchor Audio Inc. 2234

Intro: AN-1000S rack mountable powered monitor speaker with five front panel selectable inputs. New Liberty Series portable sound systems, 75 watts AC, 50 watts battery, optional high band wireless mic receiver installed, phantom powered XLR mic inputs.

Also: AN-1000 & AN-200M powered monitor speakers; AN-1400 powered monitor speaker with shielded magnet designed to fit in Tektronix rack mount, unpowered monitor speakers, portable sound systems.

Andrew Corp. 1811

Intro: New 2-1/4" Air-Dielectric Heliac® cable with 3-1/8" EIA connector ideal for Class B 25 kW FM stations; new grounding straps for all Heliac® products.

Also: Medium & high power transmission line products.

Anritsu America Inc. 5002

Intro: Spectrum analyzer, network analyzer.

Also: Microwave spectrum analyzer, microwave power meter, DS-3 analyzer, DTDR, optical power meter, measuring receivers.

Anton/Bauer Inc. 2239

Intro: Anton/Bauer Lifesaver microprocessor 4 & 8 position chargers; Probe, programmed battery evaluator; Anton/Bauer Logic Series batteries; Anton/Bauer new Gold Mount system.

Also: Complete line of accessories & professional battery systems; Anton/Bauer Lifesaver® chargers.

Aphex Systems Ltd. 870

Intro: The Model 602 2 channel expander/gate/ducker; the Model 124 10/4 audio level interface.

Also: The Model 300 compellor, intelligent AGC/compressor/peak limiter; the Model 700 dominator, multi-band peak limiter; the Model 103 aural exciter, psychoacoustic audio enhancer.

Contact: Jon Sanserino
13340 Saticoy St.
N Hollywood CA 91605
818-765-2212.

Arrakis Systems Inc. 465

Contact: Mike Palmer
2609 Riverbend Court
Fort Collins CO 80525
303-224-2248.

Artel Comm. Corp. 2077

Intro: T3080 & WDM; FiberWay 802.3 bridge.

Also: SL3000 Series, frequency modulated fiber optic systems; CG203, fiber optic computer graphics modems.

Associated Production Music 2216

Intro: Broadcast One CD music library.

Also: Music libraries KPM, Bruton, Conroy,

Themes, Shepherds Bush Coombe library of re-recorded hits.

Audico Inc. 1830

On Display: Audio cassette tape loaders, re-winder, length verifier, exerciser. Broadcast Cart & Nagra reel winders. Pressure-sensitive cassette label sheets for audio, Umatic, VHS & Beta. Professional impulsor.

Audi-Cord Corp. 615

Intro: The new DL Series, offering the lowest price ever for quality & capability in analog cartridge machines.

Also: S & TDS Series cartridge machines.

Audio Accessories Inc. 5729

On Display: Pre-wired patch panels, telephone jacks, patch cords, patch cord holders.

Contact: Timothy Symonds
Mill Street
Marlow NH 03456
603-446-3335.

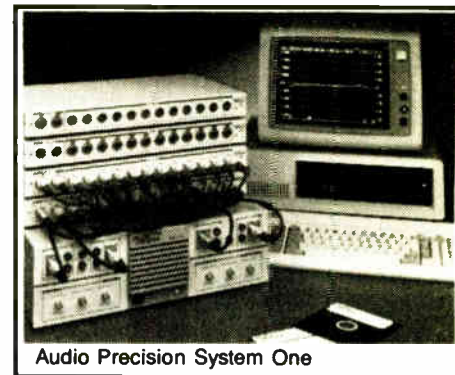
Audio Broadcast Group 1033

Intro: Rolling Radio™, a self-contained, year-round complete mobile studio, designed for high visibility, high mobility & turnkey operation.

Also: Human-engineered On-Air radio studio system with cabinetry, console, CD, cart machines, R-R recorder & support equipment.

Audio Developments Ltd. 2330

On Display: ENG portable & studio mixers. The AD 160 & 260 mono/stereo ENG mixers are rugged units intended for field use. The Pico AD 145 series is configured for both on-location & studio use with multiple line & mic inputs. The AD 066 series of Port-A-Flex boxes offers quick solutions to numerous audio problems in the studio & field. Also will be on the 062 studio mixing consoles.



Audio Precision System One

Audio Precision Inc. 1030

Intro: New computer interface & new software.

Also: System One Audio Test System; SWR-122 family of switchers; DCX-127 multifunction module; demonstrations of FM stereo proofs for split-site stations & automated alignment of tape recorders.

Audio-Technica U.S. 665

Intro: The 40 Series capacitor mics, including AT4071 & AT4073 transformerless line mics. Other new direct-coupled-output models include the AT4049 omnidirectional, AT4051 cardioid & AT4053 hypercardioid mics. Also new is the AT8506 48V phantom power supply.

Also: The AT4462 portable stereo ENG/EPF mixer with MODU-COMM, a unique IFB system.

Auditronics Inc. 453

Contact: Steve Sage
3750 Old Getwell Rd
Memphis TN 38118
901-362-1350.

TEXAR PHOENIX™

High Fidelity Comes To AM!

Only one audio processor combines four-band, digital control with the NRSC standard. The TEXAR PHOENIX™ packs a clean, powerful wallop in one very small package. For monaural AM, you can't buy more processing power for less money anywhere. Comparing in performance and features with units costing nearly *twice as much*, the TEXAR PHOENIX™ features variable asymmetry, a voice phase-rotator to insure maximum modulation, and a low-frequency tilt-corrector that can compensate for some weaknesses in plate-modulated transmitters.

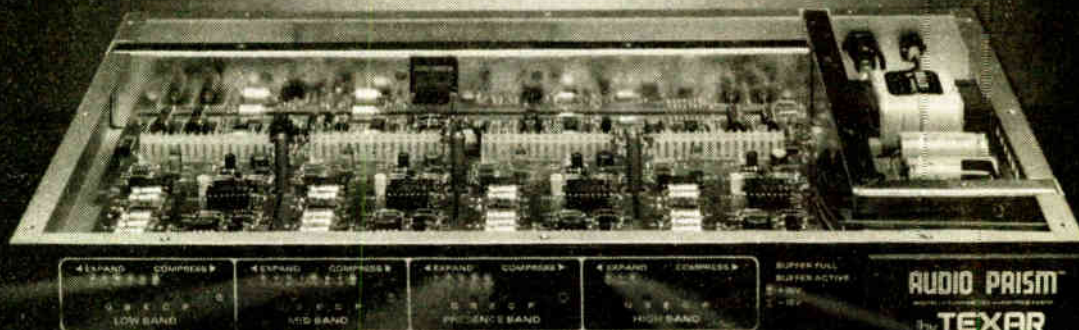
The PHOENIX™ also includes features you don't get with the competition, like the clean, powerful sound of digital control and individual gating of bands, so record fades don't "swish up". But high technology doesn't mean complicated installation. A simple AC voltmeter (like a Simpson 260 or a Potomac Instruments AA-51) is the only test equipment required for set-up. Simply set six voltage readings to equal the recommended values for your situation. The Users' Manual's table of time-proven set-up values insures you get immediate results. The PHOENIX™'s open-

architecture design means repairs or upgrades are only a card-swap away. (PC boards in some other processors are soldered in.)

Compare features. Compare performance. Compare ease of customer use. We think you'll choose the TEXAR PHOENIX™. At \$4,000.00, the PHOENIX™ would be a

good deal. At \$2,745.00, it's a steal! Financing is available.

You can listen to the PHOENIX™ in Booth 5415 (Hilton Annex) of the Las Vegas NAB Convention. See Barry Honel in the booth, or see your favorite equipment distributor to arrange for a 10-day demo to insure that the PHOENIX™ is right for your needs.



TEXAR For AM

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NAB EXHIBITORS DIRECTORY

B

ATI Inc. 359

Intro: Micro-Matchers, tiny connector mounted amplifiers to retrofit & upgrade existing equipment. The BLI-100, BLO-100, BSO-100, BSO-100, BMI-100, SHB-100 & MHB-100, are fully shielded & derive their operating power from the equipment in which they are installed. Available for use on both bipolar & unipolar supplies. Also Micro-Meters, VU200, VU400, VU600 & VU800 for visually monitoring many audio lines simultaneously.

Also: Vanguard Series 8 & 12 mixer consoles. MicroAmp Series audio DAs, mike, line, turntable & monitor amps. Encore Series low cost DAs & turntable amp. Match-Maker & Disc-Patcher IHF to PRO interface systems. Emph'A Sizer mike processor.

Contact: Ed Mullin
328 Maple Ave.
Horsham PA 19044
215-443-0330.

Autogram Corp. 124

On Display: AC-6, 6 pot; AC-8, 8 pot; IC-10, 10 pot rotary consoles; LC-10, 10 pot, R/TV-12, 12 pot & R/TV-20, 20 pot slide pot consoles.

Automated Business Concepts 1651

Intro: Combined music & broadcast logs. Our software now runs on the IBM-AT & IBM compatibles.

Also: Radio business computer system which includes traffic, accounts receivable, accounts payable, general ledger, payroll, music rotation, billing & asset depreciation.

Contact: Catherine Haag
10650 Treana St, Ste 201
San Diego CA 92131
619-566-8920. 'TB'

Avcom of Virginia Inc. 5331

Intro: SCS-200 tunable satellite audio receiver; Weathersat/Inmarsat satellite downconverters.

Also: PSA-35A portable spectrum analyzer; STA-70D SCPC test analyzer; SCPC-2000E single channel per carrier receiver; COM-96 Ku & C-band receiver; COM-66T satellite receiver; SCPC-500-70 downconverter; SCPC-600 high stability/low noise converter; PSA-35A accessories including SSC-70 signal sampler/calibrator & TISH-40 terrestrial interference survey horn; microwave accessories including power dividers, microwave sweep generator for various bandwidths.

B & B Systems Inc. 2473

Intro: AM-2HR, its X/Y CRT display gives a complete picture of the stereo audio signal. The unique graticule calibration allows accurate determination of signal level & can verify the percentage of an out-of-phase signal condition. It includes a built-in audio power amplifier with front panel input select switch for left plus right or stereo signals with power amplifier output via the front panel headphone jack or rear panel speaker outputs.

[Also: The entire line of stereo audio phase monitors including AM-1B; AM-2/2B/2HR; AM-3/3B; IM-1 & MP-4.

Barrett Associates Inc. 156

Intro: Energy-Onix transmitters, Carvin consoles, Emerald satellite link & temperature sensor.

Also: Reconditioned & guaranteed mixing consoles, recording systems cartridge, R-R, cassette machines, exciter, transmitters, audio processors automation systems, microwave systems, modulation monitors. Complete product lines for audio & RF systems.

Contact: Barrett Mayer
3205 Production Ave.
Oceanside CA 92054
619-433-5600.

Basys 3884

On Display: A new line of integrated newsroom products & software including Touchstone, touchscreen control systems; Angis election system & character generator interface; Cueword teleprompting system; Timeslot personnel scheduling software; Archive 1 fully integrated multi-user newsroom archiving software; Release 9 newsroom system software enhancements & B.I.T. Function, specially produced stand-alone Beta cart control system.

BCS The Broad Cast Store 6116

Intro: Used AM, FM, VHF, UHF & satellite transmitters, audio consoles 24 trk recorders.

Also: Full range of used broadcast & industrial equipment for TV, radio & professional recording industries.

Belar Electronics Lab 553

Intro: FMM-4 FM digital frequency monitor.

Also: AM, FM, FM stereo frequency & modulation monitors.

Belden Wire & Cable 1224

On Display: Conformable coax; fiber optics; brilliance microphone cables; video cables; broadcast cables.

Benchmark Media Systems 4288

Contact: Allen Burdick
3817 Brewerton Rd.
N Syracuse NY 13212
315-452-0400.

Beyer Dynamic Inc.

Intro: M58 ENG/EFP news & sports interview microphone; MCE 86 short shotgun mic; MCE 10 miniature hypercardioid mic; DT770 & DT990



Beyer Dynamic DT 990 Studio Headphone

studio monitoring headphones; MPC40 acoustical boundary mic.

Bird Electronic Corp. 635

On Display: Quality instruments & components for RF power measurement; RF directional Thruline® wattmeters; 2W to 80 kW air-cooled & self-contained heat-exchanger loads; economical series of field-repairable water-cooled loads & air cooled line terminations; digital calorimeters; RF Power Analyst® wattmeters for TV, FM, SSB to 250 kW; 1, 10, 25 & 50 kW calorimetric self-cooled load system; reject loads for dual transmitter systems.

Boonton Electronics Corp. 1128

Intro: Model 1110 audio oscillator; Model 1130 distortion analyzer; Model 2520 RF calibrator; Model 2510 DC range calibrator; Model 7600 1 MHz automatic capacitance bridge.

Also: Power meters, RF/RMS voltmeters, impedance measuring instruments, audio test instruments, modulation meters & analyzers, signal generators, calibrators & IEEE-488 interface & accessories.

Bradley Broadcast Sales 140

Intro: The Telos 100 second generation digital telephone hybrid systems from Telos Systems; Sound Space, a multi-channel digital audio recording & editing system from RD Systems; Audio control real time analyzers & Tannoy monitors.

Also: Complete line of audio & broadcast gear.

Contact: Neil Glassman
8101 Cessna Ave.
Gaithersburg MD 20879
800-732-7665.

Broadcast Audio Corp. 139

Broadcast Automation Inc. 5824

Intro: Model BAI-108 live assist controller, 8 input sources with 24 events of programming & full automation control features.

Also: Remanufactured radio broadcast automation controller with remanufactured Carousel, R-R tape deck & CD player.

Contact: Earl Bullock
4125 Keller Springs Ste 122
Dallas TX 75244
214-380-6800.

Broadcast Electronics Inc. 303

Intro: Revolutionary Phase Trak 90 record/playback cartridge machine with exclusive tape learn mode feature. Mix Trak 90 modular audio console designed especially for on-air operation by people who know ratio. Both 12 mixer & 18 mixer frame models, one fully operational in a live studio setting.

Also: Solid State 30 watt to 300 watt FM transmitters. One tube FM xmtrs 1500 watts to 35 kW. C-QUAM AM stereo exciter & companion modulation monitor. Model TZ-30 TV stereo generator. SAT-16 & control 16x program automation systems. Complete line of single deck, three deck & five deck cartridge machines. Rotary stereo audio consoles from 4 mixer models to deluxe 10 mixer model 10S250A. Ten mixer vertical stereo console model 10S350A.

Contact: Curtis Kring
PO Box 3606
Quincy IL 62305
217-224-9600.

Broadcasters Gen'l Store 6021

Broadcast Programming 415

Intro: LaserClassics, completely automated voiced classical format entirely from CDs, played from multi-play CD machines & controlled by Sentry Systems Format Controller.

Broadcast Video Systems 2226

Brystonvermont Ltd. 1305

On Display: Amplifiers & preamplifiers for audio.

BSW 239

Intro: Sony professional DAT recorder; Orban 222A spatial enhancer; Orban 787A mic processor; Otari MX55 2 trk R-R.

Also: Technics SLP1200X CD; Moseley PCL600 STL system; QEI 695 exciter; Radix phono pre-amp, distribution amplifier, studio timer, telephone interface.

Contact: Tim Schwiager
7012 27th St West
Tacoma WA 98466
1-800-426-8434.

C

Cablewave Systems 2614

Intro: FM antenna; rigid coaxial transmission line.

Cal Switch 5008

Caizone Case Co. 1852

On Display: Escort, case providing maximum protection & exceeds the ATA requirements for a flight case, exterior available in a rainbow of colors; Proline, manufactured for regional & local transport, lighter duty version of the escort case, exterior available in either a black or gray polytolene laminate; Convoy, 1/8" ABS plastic molded case for lightweight transport.

Catel Telecommunications 1252

Intro: Multichannel FDM, bidirectional single mode fiber optic system.

Also: Broadband audio distribution system.

Contact: Carey Medina
4050 Technology Place
Fremont CA 94537
415-659-8988.



High performance at affordable prices.

- 15, 20, 30 and 80 W exciters.
- 100, 200, 250, 400, 500, 1000 and 2000 W amplifiers.
- All front panel programmable, broadband, solid state.
- 2 and 20 W programmable STLs.
- 800, 3500 and 6000 W tube amplifiers
- 24 Hr. technical support on call.

Bext, Inc.
619-239-8462
739 Fifth Avenue
San Diego, CA 92101
TLX 229882
FAX: 619-239-8474

Circle Reader Service 61 on Page B-30

For the FINEST Tape Recording Heads and the ULTIMATE in Relapping Services.

We stock a full line of direct replacement heads from mono to 24 track.

We also provide precision relapping and optical alignment of all magnetic recording heads and assemblies.

If you need optimum performance from your tape recording equipment, you need our services. Call or write:

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The audio magnetic professionals with the track record to prove it.
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Greendell, NJ 07839
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Circle Reader Service 81 on Page B-30

We'll keep your reels turnin'...

- Motor rebuilding... all makes, all models
- Ultra close tolerance custom machining
- Deck modification and restoration
- New and rebuilt replacement motors
- In stock... Atac 8 and Atac 2 bearings

...Guaranteed Motor Maintenance and Rebuilding for Professional Tape Recorders

PrecisionMotorWorks

MDI / Precision Motor Works 241 White Pond Rd. Hudson Massachusetts 01749 617 • 562 • 4420

Circle Reader Service 76 on Page B-30

NAB EXHIBITORS DIRECTORY

Cat Systems Inc. 1861

Intro: Mode 12 site satellite control system, presently in use across Canada. Animated control page uses satellites for communication.

Also: Computerized remote control systems for broadcast, cable & satellite transmission facilities. Hi-resolution RGB operator pane, light pen control, no keyboard, multi-site multiple control points. Broadcast, cable satellite function can be combined in one system.

Canare Cable Inc. 4556

Intro: 9S-4, mini coax, instrument cable.

Also: Star Quad mic cable; cable reels; speaker cable; snake systems; connectors; 75 ohm video coax; camera remote cable.

CBSI-Custom Business Systems 653

Intro: Automation system interfaces that allow complete loading of a program automation system by the CBSI traffic computer; also an enhancement package.

Also: Business computer systems for radio stations, complete traffic, accounting & financial management software for stations of all sizes, inventory control, music library & concert music library systems; complete on site training, frequent enhancements & upgrades & toll free telephone numbers for ongoing support.

sales, traffic & billing software since the first component of the Unified System was released; Salmon Sales Management System for local & national sales; new software for financial management & enhancements to music inventory & rotation software.

Comad Communications 5104

Contact: Emil Adamyk
1435 Bonhill Rd, Unit 34
Mississauga, Ont L5T 1M1
Canada
416-676-9171.

CompuSonics Corp. 5521

On Display: DSP1000, DSP1500 audio computers, machines are designed for professional broadcasting.

Contact: Jill Meloney
2345 Yale St.
Palo Alto CA 94306
415-494-1184.

Network. Software for traffic, billing, receivables; accounting; wordmaster word processing; datamaster data base management; music management system; total station automation; co-operator co-op management system.

Comrex Corp. 753

On Display: Frequency extenders, telephone couplers & hybrids, RF cue systems.

Contact: Lynn Distler
65 Nonset Path
Acton MA 01720
617-263-1800.

Computer Concepts Corp. 759

On Display: Hardware including Wang 2200, IBM PC/XT, IBM AT, IBM compatibles & Novell

Why record on Cart Disks?

"Because the audio quality is what I expect from digital. Also, it's practical and affordable for our radio stations."

- Andy Laird

Vice President

Director of Engineering, Radio Group
Heritage Media Corporation

**The CompuSonics DSP 1500:
reproduces, records, edits.**

Central Tower inc. 5524

Intro: Studio relay tower, a new line of self-supporting studio link towers featuring solid round members, all welded sections. This line offers minimum erection time, 2 hours, & the 10 year warranty.

Also: Antenna support structures, guyed towers & self supporting towers.

Contact: David Davies
PO Box 530
Newburgh IN 47630
812-853-0595.

Century 21 Programming 821

Contact: Richie Allen
4340 Beltwood Pkwy
Dallas TX 75234
214-934-2121.

Cetec Vega 1127

Intro: Pro 2 wireless mic system; Ranger 2 wireless mic system; Q Plus full-duplex wireless intercom system; R-33 miniature portable wireless mic receiver for ENG, etc.

Also: A wide variety of wireless mic systems; full-duplex wireless-intercom systems.

Chester Cable 5325

On display: Cost-effective multiple pair audio cables, audio/video composite, control cables & a full range of broadcast cable products.

Circuit Research Labs 133

Intro: Broadcast Audio Processor, BAP 2000, designed for mono TV & LPTV applications a mono version of the SMP 850 with some additional features.

Also: Third Generator 800 Series of FM processors featuring the CRL building block approach to audio processing; the Stereo Gain Controller, SGC 800, featuring wide-band AGC followed by a dual band compressor & dynafex noise reduction, S/N of 80db distortion less than .15%; the Spectral Energy Compressor, SEC 800, gated four band compressor; the Stereo Modulation Processor, SMP 850, dual band limiter with transfer function pre-emphasis limiter; AM Systems including SGC 800, SEC 800 stereo, SEC 400 mono, SMP 900a. A new peak modulation controller, PMC 400a & subcarrier generator, SCA 300B.

Contact: Bob Richards
2522 W Geneva Dr.
Tempe AZ 85282
800-535-7648.

Clear-Com Intercom Systems 4526

Intro: Wireless intercom & Station ISO system.

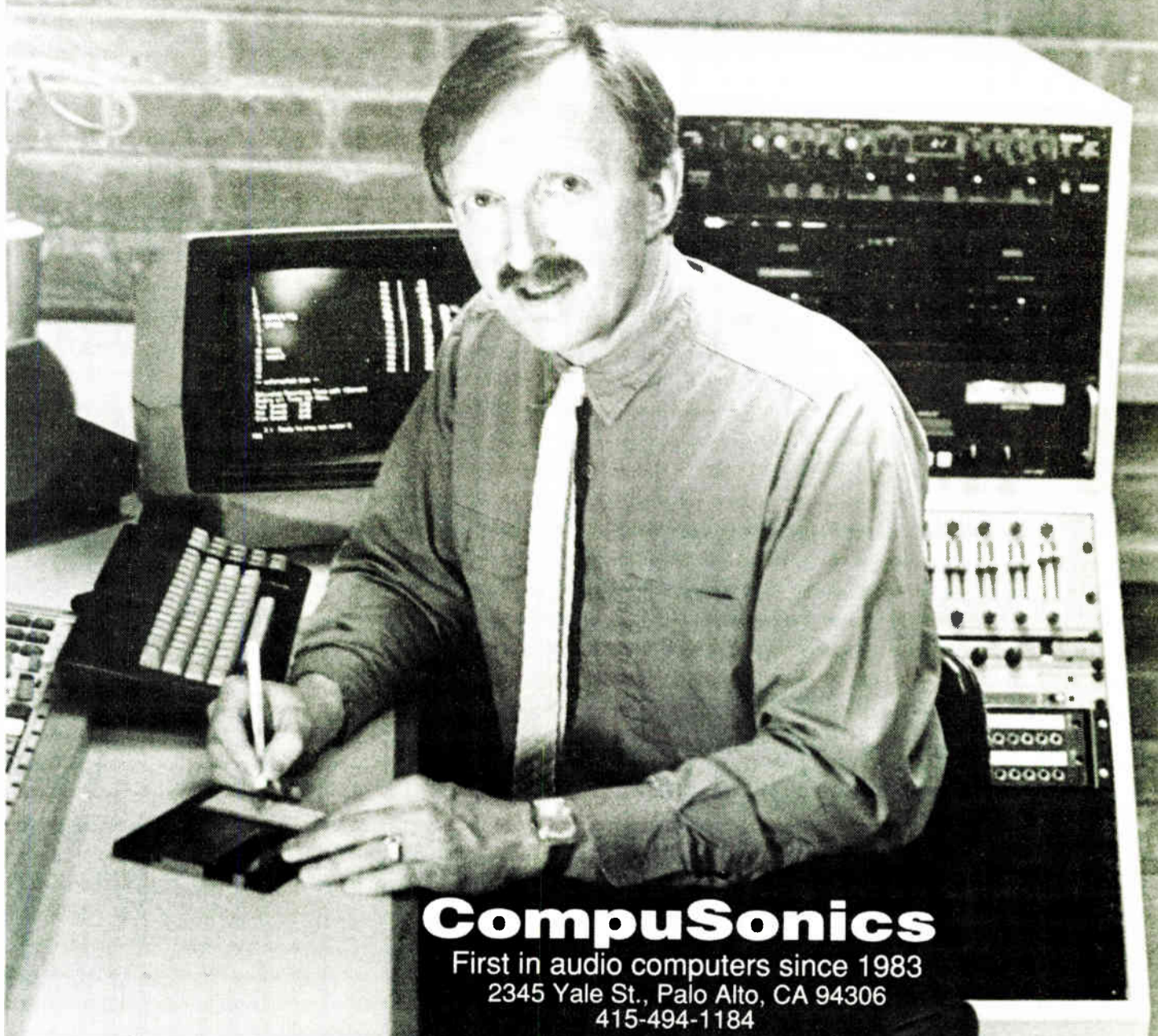
Also: A complete line of professional wired & wireless intercom systems available in portable, rack-mount & wall mount configurations. 2, 4, & 8 channel equipment available including 2 channel belt-packs on single mic cable. Complete IFB, talent cue, systems.

Coaxial Dynamics Inc. 1112

On Display: New line of 4-1/6 & 6-1/8 rigid line RF directional wattmeters & plug-in elements.

Columbine Systems Inc. 3274

On Display: New enhancements made to



CompuSonics

First in audio computers since 1983

2345 Yale St., Palo Alto, CA 94306

415-494-1184

NAB EXHIBITORS DIRECTORY

COMTECH

Comtech Antenna 1202
On Display: Comtech's 3.5 meter Ku antenna system.
Contact: Tom Christy
3100 Communications Rd.
St Cloud FL 32769
305-892-6111.

Concept Productions 833
On Display: Caps I, computer assisted programming system; new radio formats available on DAT; formats for automated or live-assist radio stations.



Continental Electronics 324
On Display: Complete line of AM & FM transmitters. 1kW solid state AM, 5kW AM, 10kW AM, 50kW AM, 2.5kW FM, 3.8kW FM, 5kW FM, 20kW FM, 35kW FM (operating), 60kW FM, & the coaxial transfer switch.
Contact: Steve Claterbaugh
PO Box 270879
Dallas TX 75227
214-381-7161.

Cortana Corp. 6007
Contact: Ron Nott
4001 La Plata Hwy
Farmington NM 87401
505-325-5336.

Crown Int'l Inc. 845
CSI Mktg Inc. 239
Current Technology 6110
Intro: Power Server distribution system.

Dataworld 165
Intro: Detailed coverage maps; 2400 baud &

Telenet Network access; advanced plotting services.

Also: AM & FM directories; allocation & interference studies; Flag service of FCC releases; terrain elevation retrieval programs; FM area-to-locate studies on map overlay and much more.
dbx 1225

Delta Electronics Inc. 134
Intro: AM splatter monitor; TCA junior low-power RF Ammeter, AMP-1 tri-band AM stereo audio processor.
Also: AM stereo exciter/monitor; remote control systems; antenna metering & monitoring; audio processor; power & modulation controllers; impedance bridges; receiver/generator; coaxial transfer switches.
Contact: John Bisset
5730 General Washington Dr.
Alexandria VA 22312
703-354-3350.

DeWolfe Music Library 1844
Intro: Compact Disc Series.

Also: Over 1,000 albums of a wide variety of music styles. Over 50 albums of new material are produced each year, as of 1/1/88 we have 30 compact discs of music. Also offered is a 26 album SFX collection.

Dielectric Communications 4334

On Display: The RF product line, coaxial & waveguide components including high-power switches, filters, combiners, directional couplers, antenna systems, high power matrix switching system, FM antennas UHF & VHF antennas & multiplexers.

Digital Creations Corp. 5929

On Display: Diskmix moving faders automation system; the Video Interface Computer, VIC.

Dimension Music & Sound Effects 5333

Dolby Labs 2380

Intro: Model 365 two channel interface for either SR or Dolby A-type; Cat. 280 spectral recording module for use in 360-Series & M-Series frames; Cat. 431 spectral recording module for multi-track applications.

Dorrough Electronics 458

Intro: Audio console model 700, dual channel, mono, seven position, 15 line inputs, three microphone inputs, available with loudness meters.

Also: Loudness meter model 40-A, featuring the dual functions of average & peak on the same LED scale; Discriminate audio processor model 610, a tri-band audio processor for AM, FM or TV, digitally designed to produce an open & clean signal through a broadcast transmitter; Stereo generator model 80-B, an FM stereo generator with soft clipping.

Contact: Kay Dorrough
5221 Collier Place
Woodland Hills CA 91364
818-999-1132.

Econco Broadcast Service 771

Intro: 4CX3500A, now available.

Also: Rebuilt power transmitting tubes.

Contact: W.R. Barkley
1318 Commerce Ave.
Woodland CA 95695
800-532-6626.

EEV Inc. 3384

On Display: Broadcast tetrodes for AM/FM transmitters including 15kW air cooled tetrode type 4CX15,000A; 35kW air cooled tetrode type 4CX35,000A.

EG&G Inc. 2220

Elcom Bauer 631

On Display: Model 6100A; Model 6300A 100/300 watt solid state transmitters, updated; Model 601C 100 watt; Model 605C 500 watt, low power, 100w/300w, battery operated direct re-broadcast satellite system.

Contact: Paul Gregg
6199 Warehouse Way
Sacramento CA 95826
916-381-3750.

In Las Vegas,
all that glitters isn't on the strip.

THERE'S MORE ACTION IN
ORBAN'S BOOTH 725

NEW PRODUCTS

Short-Wave Broadcast Transmission:

NEW 9105A OPTIMOD-HF Audio Processing System

Audio processing specifically designed for international short-wave broadcast (both conventional AM and SSB) to help punch through noise and interference.

Studio Audio Processing:

NEW 222A Stereo Spatial Enhancer

Detects and enhances psychoacoustic directional cues present in all stereo program material—increases spatial definition, brightness, clarity, and transient definition. The hot new box for FM and AM stereo. Now shipping!

NEW 787A Programmable Mic Processor

For programmable DJ mic processing, TV personality processing, and video post-production chores: Parametric EQ, compressor, de-esser, noise and compressor gates—integrated into a compact, powerful system that stores up to 99 complete control setups in memory for instantaneous recall.

NEW 642B Parametric Equalizer/Notch Filter

Orban's third-generation parametric equalizer, now with "Automatic Sliding Besselworth"™ low-pass filter, high-pass filter, and infinite-depth frequency notching with vernier. Ultra low-noise and distortion. Now shipping!

NEW 764B Programmable Parametric Equalizer/Notch Filter

A fully programmable version of Orban's new, third generation 642B Parametric Equalizer. Stores 99 complete control setups in memory for instantaneous recall.

orban

Orban Associates Inc.

645 Bryant Street, San Francisco, CA 94107 USA
(800) 227-4498 or (415) 957-1067 Telex: 17-1480 FAX (415) 957-1070

Circle Reader Service 82 on Page B-30

NAB EXHIBITORS DIRECTORY

Electro Impulse Labs 413
Intro: New, improved, dry, forced air cooled FM dummy load models DPTC-25KFM & DPTC-50KFM; new model DPTC-75KFM replaces our old model DPTC-65KFM.
Also: Dry, forced air cooled FM dummy loads; RF calorimeters; wattmeters; attenuators.
Electronic Research Inc. 1327

Electro-Voice Inc. 730
Intro: RE45 N/D N/DYM dynamic shotgun microphone for field interview applications.
Also: Full line of broadcast & production microphones; Sentry monitor speaker systems & field production electronics & speaker systems.
Contact: Ivan Schwartz
600 Cecil St.
Buchanan MI 49107
616-695-6831.

Emergency Alert Receiver Inc. 1352
Intro: SCA receivers available in 67 MHz or 92 MHz, also available with special decoders for private listening.
Also: EBS receivers that are activated by the alerting signal tones of AM, FM or TV stations. Made specifically for consumer, industrial & institutional use.

Eventide
the next step

Eventide, Inc. 871
Intro: H3000 Ultra-Harmonizer® pitch change & effects processor; full stereo harmonizer w/mono compatibility; five pitch shift programs; reverb, flange, chorus & multitap delay programs; G2 factory programs; G5 user storable presets.
Also: BD980 broadcast obscenity delay line, 10 second stereo broadcast delay with dump, wait & exit, ramp to zero entry & exit modes; PD860 precision delay line, stereo 5 Hz to 20 kHz bandwidth delay with one micro second resolution for AM synchronous transmission.
Contact: Jeanne Meade
One Alsan Way
Little Ferry NJ 07643
201-641-1200.

Farrtronics Ltd. 4538
Intro: New audio patchfields, stereo audio distribution amplifiers, small intercom system priced & packaged for radio.
Also: Audio patch fields, mono & stereo; intercom systems; audio distribution amplifiers, mono, stereo; custom audio products.
Fiberbilt Cases Inc. 4004
Intro: Concorde carrying case, a new high-tech design.
Also: Carrying & shipping cases.

DYNAMAX
BROADCAST PRODUCTS BY FIDELIPAC

Fidelipac Corp. 515
Intro: Enhancements & improvements to the Dynamax cartridge machine product line including a Vari-speed full function remote control for the CTR100 Series.
Also: Dynamax CTR100, CTR10 & CTR30 Series cartridge machines & ESD10 eraser/splice detector; Dynamax Cobalt NAB tape cartridge. Master Cart model 300 & model 350 tape cartridges. Cartridge storage racks. On air & recording studio warning lights. Hand held & table top bulk tape erasers. Dynamax standard, extended life & cobalt back-lubricated 1/4" recording tape. Fidelipac accessories.
Contact: Arthur Constantine
PO Box 808
Moorestown NJ 08057
609-235-3900.

Film House Inc. 815
Focal Press 1450
Intro: Two new books, Radio Programming-Consultancy & Formatics by Michael Keith; The

Art of Digital Audio by John Watkins.
Also: Technical books on methods and techniques for professionals in the broadcast industry.
For-A Corp. 3169
Flash Technology Corp. 4125
Intro: SC-110 controller; PN-3360 & PN-6340 custom manufactured installation cables.
Also: FTB-301 medium & FTB-205 high intensity beacons; SC-110 controller; OL-205 optical control link.
Fort Worth Tower 3066
Fostex 4252
Intro: 1240 mixer, 12 input 4 buss out, 2 stereo out console with 4 aux sends, parametric EQ, PFL, phantom power on each channel.
Also: Full line of 2, 4, 8, 16 track recorders, consoles, speakers, mics; Synchronizers for audio/video lockup, time code generators/senders, SMPTE to Midi converter/autolocator.
Future Productions 5830

G

Gentner Electronics Corp. 265
Intro: New from the RF Div: VRC-1000 firmware, Version 3.0 and accessories including DC amplifier, antenna monitor interface & more; our new telephone interface equipment includes EFT Series of remote broadcast equipment; coming from our audio products are a Silence Sensor, Studio Timer, Routing DA, Versa Mixer, Remotable Power Amp, & Headset amplifier; and new in patch panels are the Flexiblock model FB-100, the Versapatch/FB-1 & the EasyTerm/FB-1.
Contact: Elaine Jones
540 West 3560 South
Salt Lake City UT 84115
801-268-1117.

Gorman Redlich Mfg. Co. 1200
On Display: NOAA weather radio emergency broadcast service encoders, decoders and encoder-decoders.
Contact: Jim Gorman
257 W Union St.
Athens OH 54701
614-593-3150.

Gotham Audio Corp. 2330
On Display: The EMT 448 digital sound storage system; the EMT 266/277 program limiters for AM/FM/TV & the complete line of NTP program and correlation meters. In addition products from Studer Revox, Klein & Hummel and Audio Developments as well as Gotham cable.

WATTS UP?

3.5KW — 5KW — 10KW

When-and-if you're ready to UP your transmitting power, will your FM transmitter be ready too? If it's one of the QEI "New Reliables" FMQ series, the answer is YES!

Our new 3.5KW, 5KW and 10KW transmitters were designed to give you a clear upgrade path to higher power. In just a few hours, your 3.5KW or 5KW QEI FM transmitter can be upgraded to a factory-equivalent 5KW or 10KW unit, right in the field. QEI's unique modular solid state drivers and interchangeable P.A. assembly make these power upgrades easy...and very economical.

If you're shopping for a 10KW unit in the first place, the QEI FMQ-10000 has lots to recommend it. No other FM transmitter packs this much power, reliability and performance into a single 24" wide rack cabinet. And the FMQ-10000 is designed to operate on single-phase power, so there's no need to pay for installing new three-phase electric service.

What's more, for upgrades to power levels beyond 10KW, each of these FMQ series transmitters can serve as the driver section for QEI's 20, 30 or 60KW transmitters, again resulting in major cost savings.

Every QEI "New Reliables" FM transmitter is built to deliver ultra-dependability and performance. So—whether your station is thinking of upping its power down the road, or if the power you start with is the power you stay with—you'll be glad you chose QEI. Call us toll-free at (800) 334-9154 for the full story.

QEI CORPORATION

The New Reliables
One Airport Drive, P.O. Box D
Williamstown, NJ, 08094 (609) 728-2020

NAB EXHIBITORS DIRECTORY

H

Hallikainen & Friends

Hallikainen & Friends, Inc. 308
Intro: Production version of the ITO177 intelligent transmitter operator, low cost unit allows programmable automatic logging & control of xmtr sites using the Moseley TRC-15A remote control.
Also: DRC190 programmable multisite xmtr control system, can be linked over dedicated wire line, radio or microwave subcarrier or packet switched on a P channel using an internal UHF transceiver; also the TVA series audio mixers & the TEL series digital metering update kits for Moseley remote controls.
Contact: Harold Hallikainen
141 Suburban Road
San Luis Obispo CA 93401-7590
805-541-0200.

HARRIS

Harris Corp. 503
Intro: 20 & 30 kilowatt FM transmitters; enhancements to the 25 kilowatt FM transmitter; In AM the DX-25, digital solid state 25 kW transmitter.
Also: DX-10, 10 kilowatt digital solid-state AM transmitter; SX-A Series 5 kilowatt single phase AM transmitter; SX-A Series 1 kilowatt AM transmitter; Gold Medalist 12-channel dual stereo audio console; FM antennas; FM-3.5K, 3.5 kilowatt FM transmitter; FM-35K, 35 kilowatt FM transmitter.
Contact: Martha B. Rapp
PO Box 4290
Quincy IL 62305-4290
217-222-8200 Ext. 3577.

Harrison Systems, Inc 125
Intro: Pro-790 edit suite production console; AIR-790 on-air console.
Also: Series Ten, automated mixing console, MR-4 multitrack production & post-production console.
Contact: Brad Harrison
PO Box 290157
Nashville TN 37229
615-834-1184.

Holiday Industries 1114
Intro: Model HI-3600 VDT radiation survey meter for measuring both electric & magnetic field radiation from video display terminals & television sets.
Also: Complete RF radiation exposure measurement system, Model HI-5000-SX; Isotropic broadband field strength meters for measurement of hazardous fields in the vicinity of broadcast facilities.
Contact: Burton Gran
14825 Martin Drive
Eden Prairie MN 55344
612-934-4920.

Howe Technologies Corp. 153
Intro: The Howe 2300 A Phase Chaser, corrects for missing channel errors, corrects inadvertent polarity errors in a stereo pair & corrects inter-channel time delay errors.
Also: Howe broadcast on-air/production consoles; the low profile modular 10000 series custom console; the expandable 9000 series on-air console & the 12 channel slide fader on-air 7500 series console.



Harrison PRO-790 Production Console

IGM Communications Inc. 619
Intro: IGM CD-240 random access CD jukebox that holds 240 disks; enhancements to IGM-SC automation controller including all day walkaway from Transtar programming.

Industrial Acoustics Co. 1026
On Display: Acoustic structures for pre-assembled or custom-designed studios for broadcasting.
Contact: Zachary Jaquett
1160 Commerce Ave
Bronx NY 10462
212-931-8000 X293

Inovonics, Inc. 770
Intro: Production version of FMXTM plug-in option for Model 705 stereo generator in an on-air demo/display.
Also: PWM-mode audio processing equipment for AM/FM/TV broadcast; NRSC Post Processor for easiest implementation of NRSC spec; FM/FMX™ stereo generator compatible with any audio processing; magnetic recording electronics for studio recorders & film machines; TVU on-screen video display of audio levels, VU/PPM switchable.
Contact: Jim Wood
1305 Fair Ave.
Santa Cruz CA 95060
408-458-0552.

International Music Co. 5728
Intro: DR-1200, PCM digital 12 trk recorder; Akai digital patchbay system.
Also: S-900 digital sampler; S-700 digital sampler; X-7000 digital sampler.
Itelco S.P.A. 3188

Jampro Antennas, Inc. 531
Intro: JSCP penetrator Series; JBBP new concept of broadband FM antennas.
Also: Complete line of FM antennas, both standard side mount & panel/cavity type.
Contact: Liz Perchevitch
6939 Power Inn Rd.
Sacramento CA 95828
916-383-1177.

JBL Professional 4377
Intro: Control 5™, newest member of the Control Series™ line of studio monitors.
Also: JBL studio monitors/loudspeakers with titanium dome tweeter; JBL Bi-Radial™ studio monitors; JBL Control™ monitors & mounting accessories.
Contact: Rita Veix
8500 Balboa Blvd.
Northridge CA 91329
818-893-8411.

Jefferson-Pilot Data Services 1821
Intro: AutoSelect III, a flexible PC-based computer software system for managing the music library; JDS 750 a powerful sales, traffic, billing system for radio stations with two or three users.

Also: JDS 750, 1000, & ENP, newsroom, computer systems.
Johnson Electronics 1300

K

Kahn Communications 739
Kalamusic 5625
On Display: Today's Easy Listening; Hot Country Hits; Jon Holiday's Big Bands; Kalamusic Lite Contemporary; Kalamusic Adult Contemporary; Soft Passages; KalaKlassic Gold, available on R-R tape cartridge or R-DAT.
Kay Industries Inc. 728
Kinometrics/TrueTime 4015
Intro: OM-DC Omega synchronized clock; GPS-DC global positioning system synchronized clock; Model VTIM video insertion module.

Also: Digital clocks synchronized to the National Bureau of Standards & the US Naval Observatory; digital & analog remote displays; universal clock driver option & frequency comparators.
Kintek, Inc. 1611
On Display: KT-904/Plus 2 mono-to-stereo converter with Monogard & audio phase meter; KT-904P post production mono to stereo converter; KT-932 audio phase meter; KT-960 monogard.

Kintronic Labs Inc. 1040
Intro: Model MP-TCA meter plug for Delta electronics meter system; Model SER Series of standard equipment racks to match Kintronics phasor cabinet paint & trim; new low power RF contactor for AM low power switching operations.
Also: AM directional antenna; state-of-the-art phasor cabinet; custom transmitter & pattern changing controller; weatherproof antenna tuning unit; Model 80-30-2 DPDT RF contactor; Model PS-1 pre-sunrise/post-sunset RF attenuator; patch panels & rigid transmission line components; fixed & variable inductors; tower lighting choke in weatherproof housing.
Contact: Tom King
Box 845
Bristol TN 37621
615-878-3141.

Kline Towers 1015
On Display: Information on designs, fabricating & erecting guyed towers, self-supporting towers, platform towers, multi-array towers, space frame structures & special type antenna structures; tower engineering, inspection & maintenance services.

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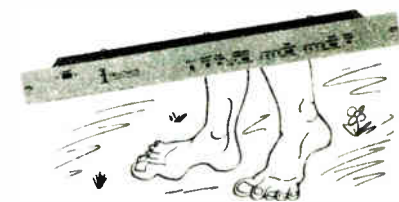
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Inovonics' "NRSC Box" works with your existing AM processing chain or without!
The built-in Feedforward/PWM Limiter (defeatable) features a "floating platform" function to yield high average modulation in addition to tight peak control for superb stand-alone performance.
Easy to install,* simply connect the unit in-line with the audio feed to your transmitter for total modulation control, "adaptive" (protected) preemphasis, and overshoot-controlled lowpass filtering to the NRSC spec.
And the best part: all this for a paltry \$520.
Call for full info or see your distributor for a demo.

*Typical installation/setup time:
Chief or Asst. Engineer - 5 min.
Corporate V.P. of Engineering - 10 min.

Inovonics Inc.
1305 Fair Ave., Santa Cruz, CA 95060
(408) 458-0552



NAB EXHIBITORS DIRECTORY

L

LAKE

Lake Systems Corp. 1039
 Contact: Edward Herlihy
 287 Grove St.
 Newton MA 02166
 617-244-6881.

LDL Communications 2175
 Intro: 30kW FM Larcen transmitter, model FMT-30L, single tube design.

Also: FM panel antenna with spearhead dipoles; FM combiner with capability of combining (3) FM transmitters into a single antenna; towers guyed & self-supporting.

Lemo USA, Inc. 4022
 On Display: High quality, precision engineered circular connectors for audio & video applications, available in coax, triax, multipin & mixed sizes & configurations.

Lenco Electronics 3956

Lexicon Inc. 1209

Lightning Eliminators & Consult. 1025

On Display: LEC's dissipation array systems; rechargeable chem-rod grounding electrodes; & consulting services.

Logitek

Logitek 825
 On Display: Perfectionist audio consoles, workhorse 8 mixer & 12 mixer consoles with outstanding audio performance, simple operation & rugged construction; Stereorack audio console, high performance stereo audio in a compact rackmountable package.
 Contact: Scott Hochberg
 3320 Bering Dr.
 Houston TX 77057
 713-782-4592.

LPB, Inc. 639
 Intro: S-24 audio console; AM-60P AM transmitter; AM-90P AM transmitter.

Also: Signature II Series audio consoles; Citation Series audio consoles; low power AM transmitters; carrier current transmitters.

M

Magnum Towers, Inc. 714

On Display: Radio, TV & Microwave towers.

Marcom 103

Intro: Pulse Power Series of AM xmtrs, they can provide output from 50-5000W nominal with a 20% reserve above each level, modulated capabilities are to 160% & are AM stereo compatible, each xmtr is fully metered & VSWR protected.

Also: Marcom Model 701-00M mod monitor modification kit.

Marconi Electronics 2515

MARTI

Marti Electronics Inc. 525
 Intro: SCG-10 subcarrier generator; SCD-10 subcarrier demodulator.

Also: Narrow band & standard bandwidth aural stereo STL systems, remote pickup broadcast systems, including Mobile repeater, fixed automatic repeater, 30 watt TSL data link, data link for 925-960 MHz.

Contact: M.E. McLanahan
 PO Box 661
 Cleburne TX 76031
 817-645-9163.

McCurdy Radio Industries 1849

On Display: CS9400+ digital intercom system; CS9500 digital intercom system; S Series console; SS8800 Series console; ADS-500 audio distribution system; ADA-700 audio distribution amplifier; ATS-100 audio test set.

McMartin Industries 514

Media Computing, Inc. 4275-76

On Display: The Electronic Newsroom software for assignment desk, archives, production rundowns, wire management & script production. Available as a package or as individual software programs, allows radio stations to gradually automate their news operations at a reasonable cost.

Media Gen'l Bdct Services, Inc. 3251

Intro: Lazer Production Library on compact disc.

Also: Production Libraries on Vinyl.

Micro Communications, Inc. 4166

On Display: Coax switches, local/remote switching of two transmitter between antenna & load; FM panel antennas reduces downward radiation, multi-station capability custom patterns; FM switching combiners, local/remote control combines two transmitters to single output or allows either transmitter to feed antenna while the other goes to a test load; Directional couplers; FM multiplexers; Radiation studies.

Contact: Dennis Heymans
 PO Box 4365
 Manchester NH 03108
 603-624-4351.

Micro Controls Inc. 102

Intro: FM Sub-carrier pager system; 57 kHz data sub-carrier system; pager phone interface system; 88 to 108 FM heterodyne exciter.

Also: 950 mHz STL's; remote control systems; sub-carrier equipment.

Microdyne Corp. 1016

Intro: 110 TIM Ku-band SCPC ID channel modulator; 1100 TDC Ku-band SCPC tracking downconverter for narrow band voice, music or data.

Also: 1100 FFC(X1)RDC-L crystal controlled 4 GHz SCPC downconverter; 1100 PCDR(5) frequency agile SCPC demodulator; antennas; CIM 8511 addressable data modem; 1100 DS(RT) single channel per carrier transmit/receive modem.

Midwest Communications 4342

Intro: S-23F mobile satellite communications system, incorporating the electronics of the S-1 fly-away, providing the user with either a satellite communications vehicle or a complete transportable fly-away system; the portable Ikegami microwave system; the new digital processing equipment.

Also: S-23 & S-18 mobile satellite communications systems; S-1 transportable fly-away satellite communications system; M-30 mobile production unit.

Contact: Pete Rightmire
 One Sperti Dr
 Edgewood KY 41017
 606-331-8990.

Mitsubishi Pro Audio Group 1519

Modulation Sciences Inc. 4544

Intro: StereoMaxx™ spatial image enlarger which dramatically enhances and enlarges the stereo image; ModMinder™ TV audio modulation status panel which works with wideband TV demodulators to give highly accurate at a glance readings of total modulation, peak indicator and status of all subcarriers; FM ModMinder FM radio version of ModMinder works with any demodulator or high quality FM receiver.

Also: The FM Sidekick & Data Sidekick SCA generating system; CLD composite distribution system & CP 803 composite processor.

Contact: Eric Small
 115 Myrtle Ave
 Brooklyn NY 10010
 718-625-7333.

Morton Hi-Tek 210

On Display: Custom and standard rack equipment enclosures, for TV, radio and computer industry. Manufactured from tubular steel for strength and covered with customer choice of laminate color and wood trim, customers can design their own style and shape, with our planning department, to their exacting specifications.

Moseley Associates Inc. 2315

Contact: Patricia Eckles
 111 Castillian Dr.
 Santa Barbara CA 93117
 805-968-9621.

Broadcast Automation Announces

Something New . . .

A powerful new assistant for live DJ's, presented in an efficient and extremely cost effective package.

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 4125 Keller Spring, Suite 122
 Dallas, Texas 75244
 (214) 380-6800

MOTOROLA

Motorola AM Stereo 117

Intro: New C-QUAM AM stereo exciter model 1400.

Also: C-QUAM AM stereo exciters & modulation monitors; new C-QUAM AM stereo receivers.

Contact: Steve Kravitz
 1216 Remington Rd.
 Schaumburg IL 60173
 312-576-0554.

N

nautel

Nautel 765

Intro: 10 kW AM transmitter, the Ampfet ND10.

Also: Ampfet Series, totally solid state, modular AM broadcast transmitters, 400 watts to 50,000 watts.

Contact: J.B. Jensen
 201 Target Industrial Circle
 Bangor ME 04401
 207-947-8200.

NEC America, Inc. 2747

Neotek Corp. 5530

On Display: The Essence, designed to increase efficiency & productivity of multitrack effects layout, ADR, Foley recording, post production assembly, synthesizer sampling & assembly.

Network Production Music 353

On Display: Network Production Music Library, contains 65 compact audio discs or WhisperDisc stereo albums of contemporary music adaptable to commercials, feature films, industrial & educational films & various other multimedia productions. The Network Sound Effects Library currently consists of more than 3500 sound effects on 44 compact audio discs.

New England Digital Corp. 5227

Intro: The Direct-to-Disk® Multitracks are hard disk-based digital audio recorders.

Also: The Synclavier® a computer-based workstation for audio recording, editing, synthesis, production & post-production.

Nortronics Co. 2618

On Display: Magnetic tape heads for R-R, studio & cartridge recorders.



Noble Broadcast Group

WANTED

DIRECTOR OF ENGINEERING
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REWARD

Excellent compensation and career path opportunity with the fastest growing radio group in the country.

Contact: Dennis Ciapura
 VP, Tech Ops

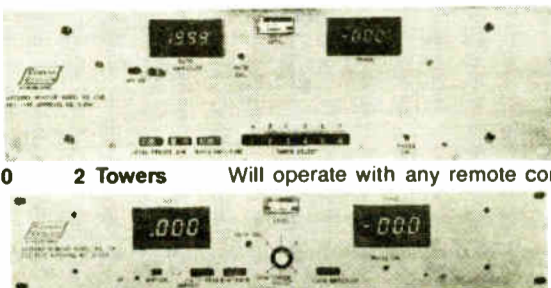
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Price \$2,150.00 2 Towers Will operate with any remote control equipment.

Price \$1,590.00 2 Towers For AM directionals with studio located at transmitter site.

These monitors are state-of-the-art instruments of unequalled accuracy (.5% or better on ratio and 5° or better on phase) and stability. With typical modulation the true ratio readout of these monitors is a factor of 10 more stable than instruments that measure normalized amplitude, and their phase readouts are rock solid. Phase sign is automatic, no extra operation. In addition to the analog DC outputs for remote control the Model CMR has a multiplexed BCD digital output which can be used to drive the Remote Indicator Model CMR-1 RF inputs have dual protection. Gas discharge tubes across the sample line terminations plus relay protection.

GORMAN REDLICH MFG. CO

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See Us At NAB Booth 1017

Circle Reader Service 70 on Page B-30

Circle Reader Service 87 on Page B-30

Circle Reader Service 97 on Page B-30

NAB EXHIBITORS DIRECTORY

O

Omicron Video 1870
On Display: Model 240 Series audio DA; Model 500 Series routing switcher.

Omnimusic 0118
Intro: Professional Broadcast Series, a new collection of production music beds specifically for broadcast use, available exclusively on compact disc & under an annual license agreement, styles include news, action, mellow, specialty and others.

Also: Omnimusic production music library, 27 compact discs of full length music beds in a variety of styles suitable for broadcast production work.

Optical Disc Corp. 5321
Intro: New disc and encoding technologies to enhance product quality to broadcast standards.

Also: Videodisc recording system and recordable laser videodiscs (RLV); support products for coding and evaluating videodiscs and compact discs.

orban

Orban Associates 725

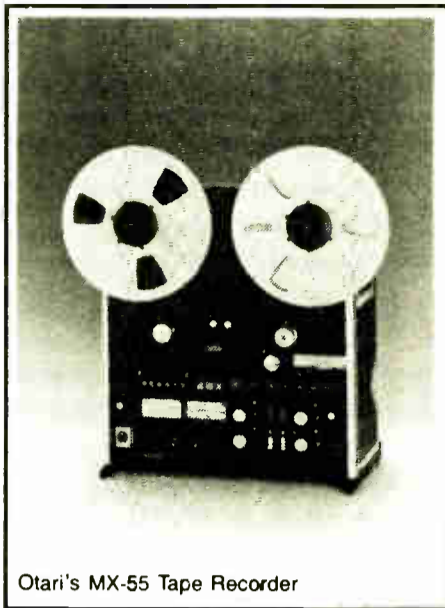
Intro: The new 9105A Optimod-SW audio processing system; the ACC-024 composite isolation transformer; the 222A stereo spatial enhancer; the 642B parametric EQ/Notch filter; 764B programmable parametric EQ/Notch filter; 787A programmable mic processor.

Also: The 9100B Optimod-AM audio processor; 8100A/1 Optimod-FM audio processor/stereo generator; 8100A/XT2 six-band limiter accessory for Optimod-FM; 275A automatic stereo synthesizer; 412A compressor/limiter; 464A co-operator level control system; 424A compressor/limiter/de-esser; 674A parametric EQ; 536A dynamic sibilance controller.

Contact: Howard Mullinack
645 Bryant St
San Francisco CA 94107
415-957-1067.

Otari Corp. 312

Contact: Wende West
2 Davis Drive
Belmont CA 94002
415-592-8311.



Otari's MX-55 Tape Recorder

P

Pacific Recorders & Engineering Corp. 339

Intro: Our new Spectral Recording System, designed for use with broadcast cartridge machines, it provides audio performance equal to or better than that of 16-bit PCM digital recording, while still allowing broadcasters to utilize existing cart equipment.

Also: Our full line of audio mixing consoles, cartridge machines & peripheral audio products, along with a broad range of studio cabinetry & many fully-functional production & on-air studio systems, one of the featured products will be the full-function compact Stereomixer™, designed for TV & radio applications.

Panasonic Industrial Co. 2938
PAS 116

Intro: TalkBack Too, a new concept in telephone interface, a hybridless hybrid that doesn't cause the loss problems that occur in telephone hybrids.

Also: Complete broadcast supply service, from the mic to the antenna.

Patch Bay Designation Co. 4178
On Display: PatchPrints, quality, easy-to-read custom labeling for all brands of audio & video patch bays, control panels, racks, mixing boards, rear-illuminated button switches & all other field designation areas.

Penny & Giles Inc. 1020

Intro: Pre-wired audio jackfields.
Also: Penny & Giles range of studio faders; Mosses & Mitchell jacks & jackfields.

Pep, Inc. 2701

On Display: Full line of premium after-market high performance ENG batteries, chargers & battery care equipment.

Peter W Dahl Co., Inc. 865

Intro: Complete pre-wired line transient suppression assemblies using a specially selected combination of fast acting Selenium & high energy MOV's for maximum safety & protection of your equipment.

Also: High level mod transformers & reactors for 1 & 5 kW xmtrs including dry & oil-filled types; single & three phase plate transformers; three phase high voltage full wave bridge rectifier assemblies.

Pinzone Communications 1119

Intro: The Corum Anti-Skywave/Anti-Fading AM broadcast antenna; Microtek's newest addition to the Timeslot family, the timeslot facilities scheduler; & the latest version of Microtek's personnel schedule program, Timeslot.

Potomac Instruments, Inc. 1108

On Display: AM-19 dir. array antenna mon.; AT-51 audio test system; RC-16 auto remote control system; SD-31/RX-31 freq synth & coherent detector; FIM-21/FIM-41 medium wave field strength meters; FIM-71 VHF & FIM-72 UHF field strength meters; MPC-11 mod & power controller; SMR-11 synth AM mon receiver; QA-100 program audio analyzer; 1500-PC programmable xmtr controller.

Contact: David Harry
932 Philadelphia Ave
Silver Spring MD 20910
301-589-2662.

Q



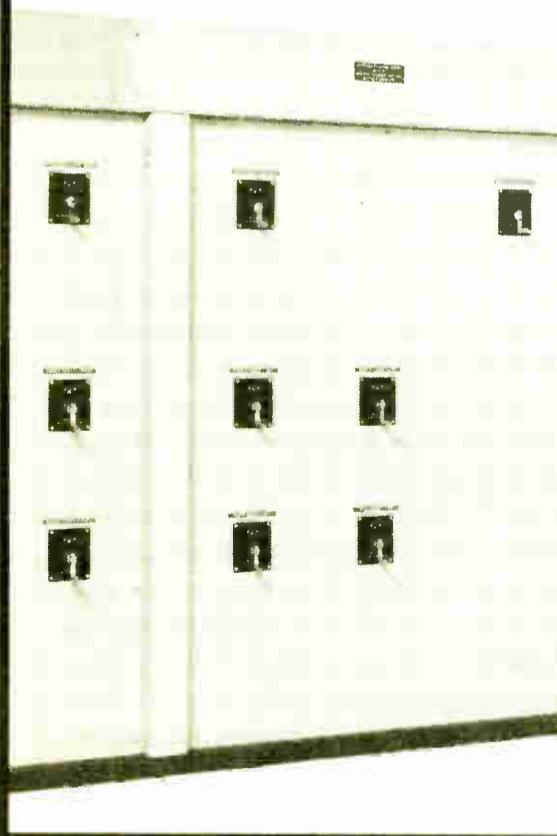
QEI Corp. 247

Intro: FMQ-Series FM transmitters, with power levels of 30 kW, 10 kW & 3.5 kW.

Also: 150 W, 300 W & 500 W FM broadcast transmitters; the Model 691 tunable stereo modulation monitor & FM test set; the Model 695 FM broadcast exciter.

Contact: Bill Hoelzel
One Airport Drive
Williamstown NJ 08094
609-728-2020.

ASK THE ENGINEER WHO OWNS ONE



For 25 years we have supplied the finest in RF transmission equipment for AM - Phasing Systems, Antenna Tuning Units, Diplexers, Transmitter Combiners, Filters, Traps and Dummy Loads. Our equipment can be found worldwide and at all power levels. Our customers get unequalled quality and workmanship plus custom engineering and design using RF components made by us. Our equipment features broad power range, wide tuning range and broad band design for excellent stereo.

We are so confident of what we manufacture that we offer an exclusive five year warranty.

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Vector Technology, Inc.

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R

Radio Systems Inc. 159

Intro: RS-12, 12 channel linear broadcast console, featuring 3 output busses, total machine interface & remote control, internal talk-back circuitry, superb specification. Other models include the RS-6, 6 channel & RS-18, 18 channel versions. Also featured is a new line of low cost, modular furniture.

Also: ESA-10, 10 channel broadcast console; PA-1 stereo phono pre-amp; PA-8 & DA-16 audio distribution amps; LED metering systems; DCX modular amplifiers.

Contact: Daniel Braverman
5113 West Chester Pike
Edgemont PA 19028
215-356-4700.

Ram Broadcast Systems 0170

Intro: SX-18 audio console.
Also: PS-1000 Ram Phasescope.
Contact: Ron Mitchell
346 West Colfax St.
Palatine IL 60067
312-358-3330.

R-Columbia Prod. Co. 2267

Intro: Base station interfaces wired and wireless intercom headphones; Selectable 5 channel FM wireless intercom headphones; ENG/IFM telephone with selectable tone/pulse dialing.

Reach Electronics 4180

Intro: Liaison dial access paging terminal now capable of voice storage and digital formats.

Also: SCA tone and voice & tone only pagers, VHF conventional tone and voice pagers, manual paging encoders, dial access paging terminals, mobile encoders & decoders, phone patch, I.D. Systems.

Register Data Systems 659

On Display: The RDS System, includes complete logging, billing, co-op, bookkeeping & accounting functions in single and multi-user configurations.

RF Technology Inc. 4243

Intro: RF-203B new ultra portable xmtr; Faraday a complete line of aliasing filters, delay lines, etc.; RF-101B/104B 950 MHz diversity wireless mic system specially designed for field use; RF-SCP, low profile antennas; RF-FLP, colinear omni directional antennas; RF-CD, automatic tracking antenna systems; RF-200LC an ultra portable low cost receiver.

Richardson Electronics, Ltd. 2561

Intro: Siemens power tubes.
Also: Eimac power tubes, sockets & accessories; RF transistors; Jennings® vacuum capacitors.
Contact: David Ross
40 W 267 Keslinger Rd.
LaFox IL 60147
312-232-6400.

ROH/Anchor Audio, Inc. 2235

Intro: The Series 7000 audio routing switcher, its summing crossbar design & unique control functions are ideal for medium to large scale routing, monitoring, communications & control systems.

Also: Series 190 audio line monitors with built-in bridging switchers; Series 200 modular audio systems; Series 300 intercom systems with party line, IFB and control and interface capabilities.

Rohn 4013

RTS Systems 4330

Intro: BP317 & BP325 headset user stations; 848A intercom station; 2524 audio summing amp; DC848 data concentrator; CC62/CPK62 intercom user station mini circuit card/assembly.

Also: Series 800 Intercom; TW Intercom System; Series 4000 IFB System; Series 400 modular amps; Series 2500 amp system.
Contact: Kim E. Murphy
1100 West Chestnut St.
Burbank CA 91506
818-840-7119.

NAB EXHIBITORS DIRECTORY

S

Saki Magnetics, Inc. 671
Intro: Long life ferrite replacement heads for In-Cassette duplicators such as Telex, Pentagon, Wollensak, etc., 1" play back heads for Otari MX70, Ampex MM1200 24TR record & playback heads, MTR 10 4TR 1/2" with playback head optimized for 3-3/4" IPS to make master tapes for high speed duplicators. Otari MX5050-12QXHD 4T 1/2" 24TR 2" metal replacement heads for Ampex MM1200 & Ampex ATR124.
Satellite Music Network 6015

Schafer Digital NA
Contact: Paul Schafer
5801 Soledad Mtn Rd
La Jolla CA 92037
619-456-8000

Schafer World Comm. 539
Intro: The latest CD & random access digital automation systems integrated to the Schafer full line of program automation products & as stand alone or self supporting units.
Also: 8000 & 2000 Series audio consoles. Third generation of Schafer 7000 & Schafer 7000-GLS program automation systems. Ready Spot, random access cartridge playback.
Contact: Bob Dix
PO Box 31
Marion VA 24354
703-783-2001.

Selco/Sifam 863
On Display: Full Spec. Vu and peak program meters as well as audio level indicators, control collet & push-on knobs with accessories such as caps, pointers, dials & nut covers, industrial analog & digital panel meters, fuseholders.

Sennheiser 152
Sescom, Inc. 2206

Intro: Our new model TEST-1 which has an audio oscillator, DMM including freq counter, volts DC & AC, ohms & dB's, dist. analyzer that is automatic & reads to 0.1% & 3" oscilloscope with all necessary interconnections made with switches to make testing convenient; also introducing four small mini-console type mixers for audio & video production studios; five new mic-line drivers; three new rack products for studio applications.

Sharp Electronics Corp. 4316
Intro: SX-D100 R-Dat digital audio tape recorder; QA-50 professional LCD computer projection panel.

Shively Labs 109
Intro: Super power RF filters, allowing inputs of up to 75 kW. Improved balanced combiner cavities. All-stainless steel tower mounts for antennas.
Also: Circularly polarized FM broadcast antennas, panel antennas, horizontal-only antennas, rigid coaxial transmission line & coax components, branched & balanced FM combiners, RF patch panels, AM/FM isocouplers, hybrid power combiners, harmonic filters, directional couplers, pressurization equipment, FCC directional pattern & omni directional pattern studies, VSWR monitoring, display & protection systems.
Contact: Jonathan Clark
71 Harrison Rd.
Bridgton ME 04009
207-647-3327.

Shure Brothers Inc. 203
Intro: PDP1000 professional compact disc player for broadcast; FP51 gated compressor/mixer; SM84 supercardioid condenser alvalier mic; SM15 unidirectional headworn mic.
Also: SM89 shotgun condenser mic; Shure wireless mic systems; automatic microphone system (AMS); Shure's full line of professional mics for bdct; BC Series bdct phonograph cartridges; circuitry products.
Contact: Davida Rochman
222 Hartrey Ave.
Evanston IL 60202
312-866-2200.

Singer Products Inc. 715
Sono-Mag Corp. 419
Sony Comm. Products Co. 2902
On Display: For the Professional Audio Div.: the DAL-1000 digital audio limiter, the DMU-30 digital remote meter & the RM-KIT3310 software for the PCM-3324; also the latest introductions in mics will be shown for the first time.

Soundcraft 4377
Intro: 6000 Console, split buss architecture, capable of up to 24 busses & expandable up to 32 trk monitoring; TS12 automation system, exclusive to the TS12 console; 200BVE, 8 input version of Series 200B console created to work with a video editor; SAC200 stereo on-air & post production console.

Also: Soundcraft Series 200 consoles; Soundcraft TS-24 multi-track production console.

Sound Ideas 2605
Intro: Sound Ideas production music library on compact discs, a new collection of original music themes crafted for audio visuals, broadcast, film & commercial productions.

Also: The Sound Ideas Sound Effects Library, offers two distinct sound effects collections, the Series 1000 & the Series 2000.

Sound Technology 2479

Sprague Magnetics, Inc. 255
Intro: Long life heads for audio, film & instrumentation applications including JH110A/B 2T 1/2 & 1/4 long life heads.

Also: Tape heads audio, 2 trk 24T; tape heads film, 1S 8S; duplicator; AMC, Nortronic, Woelke, PMS disc heads; Geneva recorder care products.
Contact: John Austin jr.
15720 Stagg St.
Van Nuys CA 91406
818-994-6602.

Stainless, Inc. 2553
On Display: Guyed & self-supporting towers for bdct & microwave applications. Towers up to 2000' complete w/elevators. Multiple antenna tower designs available. Stainless guy snubber system for control of low freq. guy vibrations.

Standard Communications Corp. 1048
Intro: CRF800/CST-800/CAD800 audio sub-carrier demodulators for matrix, 15kHz & 7.5kHz discrete audio/stereo.

Also: Complete line of video & audio satellite receivers.

Stanton Magnetics Inc. 849
Intro: New full line of professional headphones, Stanton Disco Starter Kit & Turntable Mat.

Also: Turntable cartridges, still, professional headphones, earphone turntable mats, phono preamplifier/EQ; record care products.



Shure FP51 Compressor/Mixer

Star Case Mfg. Co., Inc. 2487
Intro: Two new colors to their case line, Bordeaux & turquoise; also the new Star Parts hardward display system.

Also: Full line of shipping cases; Carry-Star surface transportation cases; ATA-Star flight cases; Super-Star delux ATA flight cases & Ultra-Star heavy duty delux flight cases; racks, shock protected racks, monitor cases, camera cases, computer cases, tool cases in all colors.

Status Cabinetry 5731
On Display: Video & audio technical furniture, cabinets, consoles & equipment racks, including examples of systems engineering, layouts, installations & facilities, as well as construction of studios, post production, video/audio duplication.

Storeel Corp. 2653
Intro: CD storage, 160 to 640 discs in minimal of amount of space.

Also: High density mobile & static storage units for all sizes of cartridges & cassettes.

Strata Marketing 1419

STUDER REVOX

Studer Revox America 545
Contact: Charles Conti
1425 Elm Hill Pike
Nashville TN 37210
615-254-5651.

Studio Technologies, Inc. 1633
On Display: The Mic-PreEminence a high performance 2-chnl mic preamp; the AN-2 stereo simulator a versatile sound processor.

SWR Inc 4001
On Display: High power FM transmission line, FM antennas, RF switches.

Systemation 1152
Symetrix Inc. NA
On Display: The 104 & 108 Multi-line tele-

phone interfaces & the TI-101 telephone interface.

T

Tannoy North America 6109
Intro: The PBM 6.5 & PBM 6 speakers; The SR140, 150 watts per channel & SR-740, 400 watts per channel amplifiers.
Tapscan Inc. 521

TASCAM

Tascam 2183
Contact: Sue Osborne
7733 Telegraph Road
Montebello CA 90640
213-726-0303.

Television Equipment Assoc. 2601
On Display: Racal headsets for intercom, sports commentator, air traffic reporting; rugged, durable, reliable; highest quality for broadcast.

Television Technology Corp. 1801
Intro: FM 300J, 300 W FM transmitter.
Also: FM10000J, 10 kW Fm transmitter; 8090SX FM exciter; XL10FM FM translator.
Contact: Alexander De Lay
2360 Industrial Lane
Broomfield CO 80020-8385
303-465-4141.

Telex Communications 4113
On Display: Cassette copiers; R-R/cassette duplicators; Audiocom intercom system; headphones/headsets; wired & wireless mics; IFM & ENG electronics; sound slide projectors.

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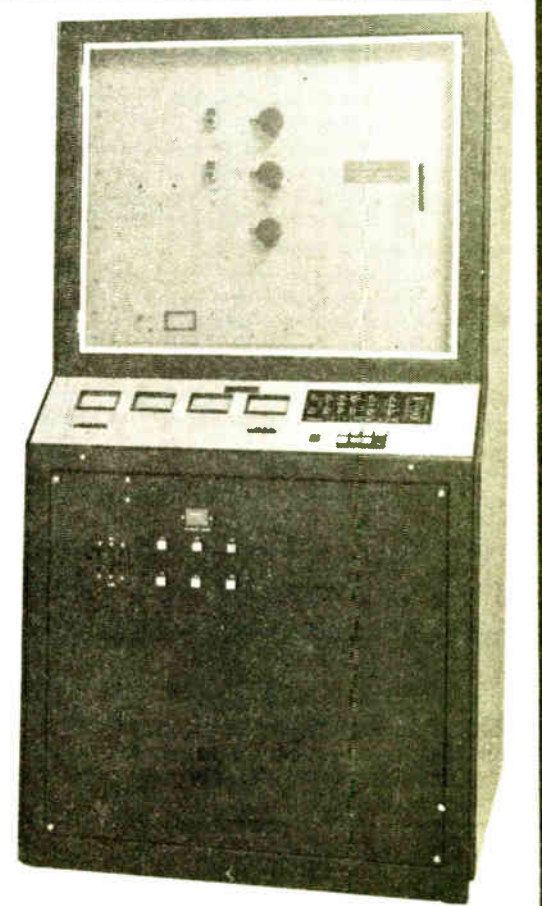
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Vector Technology, Inc.

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NAB EXHIBITORS DIRECTORY

Tennaplex Systems Ltd. 1814
Intro: Alpha high-powered multi-station combiner; Omega full-band multi-station FM antenna.
Also: Tennaplex TV & FM antenna installations for both single & combined stations; TV & FM multi-station combiners.

Tentel 4017
On Display: Tape tension gauges Tentelometer® for measuring take up & hold back tension on R-R & broadcast audio cartridges.
Contact: Wayne Graham
1506 Dell Ave
Campbell CA 95008
408-379-1881.

Texar Inc. 5415
Contact: Glen Clark
616 Beatty Rd.
Monroeville PA 15146
412-856-4276.

TFT, Inc. 1109
Intro: Models 886 & 887, AM & FM EBS Systems, microprocessor controlled with clocks to notify time left to next transmission or reception of alerts; remote pickup units (RPU) with DTMF, frequency synthesized, 2 watts, 40 watts; 450 MHz transmitter-studio link (TSL) with multiplex capabilities.
Also: Model 753 AM modulation monitor; Model 844 single-package preselector, base-band stereo aural modulation monitor; complete line of 950 Mhz aural STL systems, composite or discrete; remote control systems for any size AM or FM facility.
Contact: Jesse Maxenchs
3090 Oakmead Village Drive
Santa Clara CA 95051
408-727-7272.

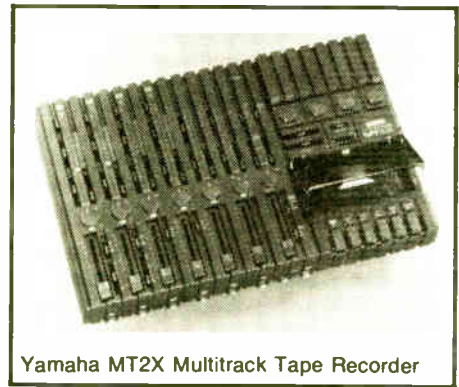
The Will-Burt Co. 3688
Intro: Model TMD-6-30-357/367 30' mast assembly.
Also: Model TMD-7-42-357/367 42' mast assembly; Model TMD-6-27-157/167 27' mast assembly; mobile pneumatic telescoping masts to position communications & broadcast antennas to various heights from 20' to 134'.
Transmission Structures 841
Trident Audio USA 1008
Trimm Inc. 5432

On Display: Telecommunication equipment including audio & video jacks, plugs, patch panels, patch cords, terminal blocks, fuse panels, connectorized patch panels & terminal blocks, front facing blocks, DSX jacks.

TWR Lighting, Inc. 5524
Intro: TWR medium intensity strobe.
Also: 300 MM code beacon, double & single obstruction lights; controllers; junction boxes.
Contact: Beth Malek
PO Box 55606
Houston TX 77255
713-973-6904.

United Ropeworks, U.S.A. Inc. 0724
On Display: Phillystran HPTG, electrically transparent, maintenance free tower guys & specially designed systems for high power applications.
UREI 4377
Intro: 7110 compressor/limiters, complete user control over threshold, attack, release time & output level in a single rack space unit.
Also: JBL/UREI on-air broadcast consoles; UREI Time Align® studio monitors; JBL/UREI power amplifiers & signal processing.
Utility Tower Co. 733

Valentino Inc. 2612
On Display: Compact disc production music & sound effects libraries for radio programming.
Valley International, Inc. 104
Intro: The Micro FX product line.
Also: The Model 400 microphone processor-device; model 440 limiter/compressor/dynamic



sibilance processor; model 610 dual compressor/expander.

Valmont Industries Inc. 5833
On Display: Antenna support structures poles to 250' freestanding; freestanding towers to 400'; guyed towers to 1000'.
Varian Microwave Equip. Div. 324
On Display: VSTAR terminal amplifier; 300 watt single drawer amplifier; power combined medium power amplifier; GEN II Ku band klystron high power amplifier.
Veam 5532
On Display: Electrical multipin quick disconnect cylindrical connectors with fiber optic, pneumatic & hybrid capabilities.

Vector Technology 5421
Intro: 3, 12, 25, 40 FM transmitters; AM transmitting matching transformer.
Also: AM phasing equipment; RF components.
Contact: Mel Lieberman
203 Airport Rd.
Doylestown PA 18901
215-348-4100.

Video Design Pro 6114
On Display: AutoCAD versions of VidCAD & AudCAD, improved autoCAD menuing system speeds video & audio facilities design. VidCAD & AudCAD are now exclusively integrated to AutoCAD release 9/10 for ease of use & drawing speed.

Ward-Beck Systems Ltd. 3876
Intro: WBS RP2200 production radio audio console series.
Also: WBS radio consoles, including the R600, R1000, R1400 & R2200 models; M7000B series standard intercom systems & panels; audio distribution amps, including D8212, M605A, M608, M609, & M612A.

Wegener Comm. 1133
Intro: SDM 2000 Dolby™ digital audio transmission system; Series 1800 low-cost broadcast audio & data receiver.
Also: Panda II audio subcarrier equipment for satellite, terrestrial microwave & optical fiber; full line of data communications products including modems, multiplexers & demultiplexers.
Contact: Ken Leffingwell
11350 Technology Ct
Duluth GA 30136
404-623-0096.

Westlake Audio Inc. 6019

Wheatstone Corp. 110
Intro: A-20 Radio/Air/News workstation console (midmarker, 10 inputs).
Also: A500a on-air console, 10-22 inputs, 3 stereo outputs, 1 mono-output; SP-5, SP-6 stereo production consoles.
Contact: Pattye Bagshaw
6720 VIP Parkway
Syracuse NY 13211
315-455-7740.

Whirlwind 4169
Intro: New line of U.S. audio products, low power amplifier, headphone systems & rack mount mixers.
Also: Audio & video cable & related products, cable reels, multi-pair cable, transformers, impedance matching products, bulk connectors 7 cable. Complete turn-key design & fabrication for studio & mobile installs.

William Bal Corp. 2611
On Display: Specialized reuseable molded shipping cases & custom carrying cases.

Wireworks Corp. 1810
Intro: T Series products including individual mic splitter boxes, direct boxes, amplifier input boxes, & rack adaptor to allow rack mounting of all T Series products.

Also: Audio & audio/video multicable assemblies, components, & accessories including multipin disconnectible stageboxes, trunks, tails, transformer isolated splitters, etc., also hardwired microphone multicables.

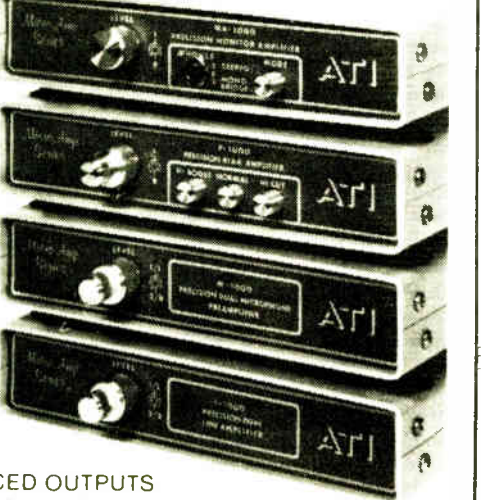
World Tower Co. Inc. 1301
WSI Corp. 4171

Intro: The new Astrodata™ system, the most complete satellite-delivered weather dfata system on the market; also the Preview™ & Softfax™, two new options for WSI Astrographics users, valuplus pricing will also be featured.
Also: Astro-WX; Astrographics & Astrofax.

Yamaha Music Corp. 5213
Intro: FMC1 digital format converter; The Sound Reinforcement Handbook; DMP7 digital mixing processor; REX50 digital effects processor; REV5 digital reverberator; DEQ7 programmable digital EQ; MZ204 dynamic mic; MZ205Be dynamic mic; MZ203Be dynamic vocal mic; MZ106S dynamic mic; EM Series mono power mixers; MC Series stereo consoles; Club Series speakers; NS40M close field; & the MV422 multi-source mixer.
Also: Professional equipment for broadcast, recording & sound reinforcement from mic to speaker, including digital audio mixer, effects, EQs & reverberators.

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World Radio History

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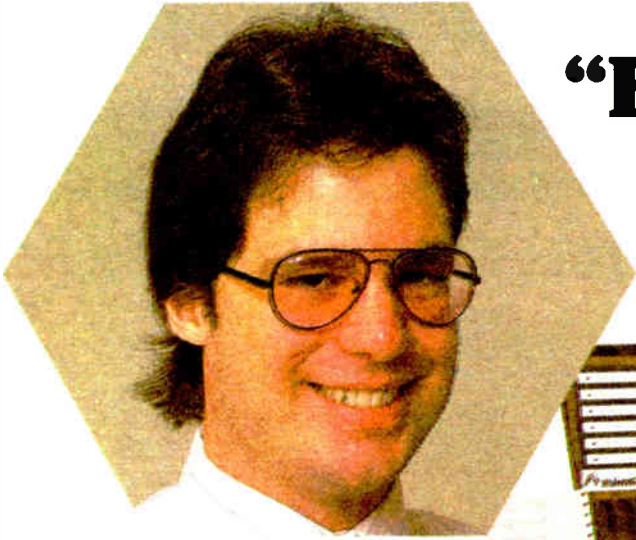
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World Radio History



Robert Lankton, Chief Engineer
WDUV/WBRD in Bradenton, Florida

“Features and specs sold us on Auditronics 200 consoles.”

“Their performance and reliability keep us sold.”



“We wanted a console flexible enough to use in master control, production and news. We shopped for features and specs, but we also looked for ease-of-use and reliability. We got just what we wanted in our four Auditronics 200s.”

Features

“I insisted on outboard power supplies and no monitor amps in the console for noise reasons. I was impressed with Auditronics’ VCA technology, which at the time was not available elsewhere. We wanted the self-contained clock and timer. We needed the switching logic to interface between the A and B inputs, (a neat concept most other consoles don’t offer). And we needed a lot of extra line inputs to support our satellite feeds. We needed a first-rate telephone interface. Auditronics beat its competitor hands-down on this. And, of course, modular design was a must for serviceability. We got it all in the Auditronics 200.”

Specifications

“We go for the widest dynamic range we can get because much of our programming originates on CD. So the 200’s 3dB better S/N is really important. Everything on the Auditronics 200 tests out better than the specs they publish, and you can’t ask for more than that.”

Ease of Operation

“I found the 200 logically laid out and very easy to train our people to use. The jocks like them and can easily under-

stand them, which is very important to management.”

Reliability

“We’re just ecstatic about the Auditronics consoles. They’ve run 24-hours, 7-days since turn-on without a failure. What’s more, they’ve held their specs, which I check every month to audiophile standards.”

“Would I buy Auditronics again?”

“At WDUV/WBRD everybody is happy with both the Auditronics consoles and the support we’ve received from the company. We look forward to doing business with them again.” If you’d like to know more about why Rob Lankton swears by Auditronics consoles, call 1-800-638-0977 or contact



auditronics inc.

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