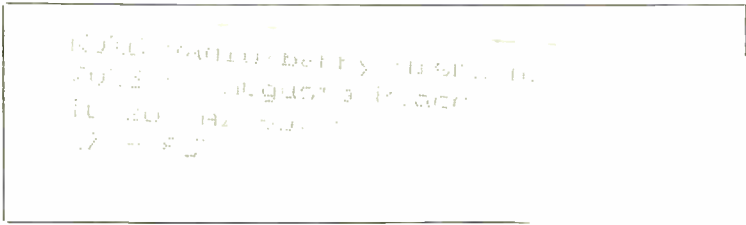
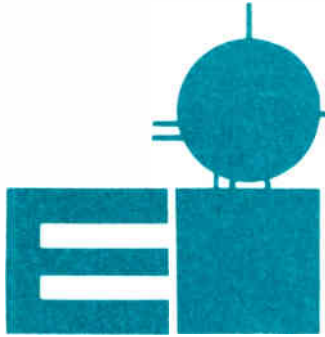


Aug. 1989



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FCC Okays Power Increase For Some Class A FM's

The FCC has increased the maximum effective radiated power for Class A FM broadcast stations from 3000 to 6000 watts. The FCC concluded that the power increase will serve the public interest by expanding the potential audience for Class A FM stations and by enabling these stations to provide better service to their listeners.

Of the seven classes of FM stations, Class A stations are the most numerous (there are more than 2000), and have the smallest service areas. Generally, Class A stations provide local service to smaller communities. The FCC noted that the small communities to which Class A channels were originally allotted have grown over the years while the coverage of Class A FM stations has remained unchanged.

To reduce any adverse effect the power increase might have on the service of existing FM stations, the FCC adopted rules to implement the increase on a selective basis rather than as an across-the-board or "blanket" increase. Also, the FCC revised the distances by which Class A stations must be separated from other FM stations in order to maintain the current level of protection for the service of all classes of FM stations. Existing stations at locations that do not meet one or more of the revised distance separation requirements will be "grandfathered." Modifications and relocations of these stations will be permitted under the previous power limit and separation requirements or under

technical conditions that present no greater potential for interference than the previous limit.

The FCC action was "welcomed news on at least three fronts," NAB President Eddie Fritts said in a prepared statement. "First of all, we're very pleased the FCC authorized the doubling of power to many FM operations.

"Secondly, the FCC wisely recognized that general across-the-board increases could do serious harm to the integrity of the FM spectrum. The commission's case-by-case consideration of additional power increase applications may alleviate any other interference problems that may be presented.

Wally Johnson, president of the ABES, which represents AM and FM stations of all classes, concurred with Fritts. "Our position was that the FCC should not implement it on a blanket basis, but on a selective basis that would protect existing stations, and that's where they ended up."

The new rules were adopted unanimously by the three FCC commissioners at last Thursday's open meeting July 13. Each said the action represented a balancing of the desire to improve the coverage of Class A stations and the need to protect the higher power FM stations from interference and the integrity of the band. "We have done all we can to put Class A stations in possession of the power and latitude they need," said FCC Chairman Dennis Patrick.

According to FCC staff engineer Jay Jackson, assuming uniform

terrain, a Class A station with 3 kw of power and antenna 328 feet high would broadcast a "satisfactory" signal (one millivolt) 15 miles out. Upping the power to 6 kw, he said, would increase the reach to more than 17 miles and increase total coverage by around 40%. To permit the increased power ceiling, the FCC came up with a new mileage-separation table increasing the distances between co-channel and adjacent-channel stations to avoid interference. Mass Media Bureau Chief Lex Felker said the new table is a "slight refinement" of one proposed by ABES.

According to Felker and FCC staff engineer Jay Jackson, the FCC will produce in November a list of some 500 Class A stations that, according to its computer calculation, are already far enough apart to meet the new mileage separations. Those stations on the list would be allowed to increase power to 6 kw after Dec. 1 as long as the increase could be accomplished without making changes that would expose the public to RF radiation in excess of federal limits. The stations would be obliged to notify the FCC within 10 days of the power increase.

Felker said up to 800 additional Class A stations—newly short-spaced because of the adoption of the new mileage separations—could increase power, but would first have to comply with the new mileage separations by either relocating their antenna sites or by employing directional antennas. The broadcasters would have to apply

(cont. to pg. 3)

Editor's Notebook



I had the chance to attend the Wisconsin Broadcaster's Association summer meeting on July 18.

This year, for the first time, there were separate sessions held for engineers plus a period set aside for visiting the exhibit area from 4-6:30 p.m.

I attended the engineering seminars which were held on July 18 from 1-4, preceded by a Dutch Treat lunch hosted by the Fox Valley Chapter of the Society of Broadcast Engineers.

All of the speakers were well qualified to speak on the particular topics that they presented. A run-down of the speakers and their subjects looks like this:

"Transmitters for the 1990's, Billy Emery, Varian Continental Electronics; "Tips on the Business Side of Engineering", Cliff Groth, Goetz Broadcasting; "Tower Maintenance Tips", John Crooks, Broadcast Communications Systems, Inc.; "FM Engineering Issues", Jay Jackson, FCC Staff Engineer, Washington; "The EPA and Your Station", Ralph Evans, Consulting Engineer; "What's Going On With AM Radio", Garrett Lysiak, Owl Engineering; "The Future of Broadcast Engineering", Terry Baun, WEZW & WFMR, Milwaukee Board of Directors, National SBE; "Update on Satellite Technology", Rick Honea, TRANSTAR, Colorado Springs.

As you can see there are several names that are quite well known in the broadcast business in general and certainly the broadcast engineering community in particular.

All in all things went off pretty well for a first try and hopefully this was only the first in a series.

About the only criticism I have is that I expected more managers to show up at the exhibits. While there were a fair number of management people who came through by and large most of the people in and around the exhibits were engineers.

I know a number of other states broadcast organizations have tried this type of format where engineering and management people are getting together at this type of function on both a professional and social level. Certainly this has to help narrow a gap between the two groups that has existed too long and I think this "togetherness is especially important at this time in the drive to save AM broadcasting from extinction.

If the broadcast industry sits back and allows AM radio to go the way of the dinosaur it should hang its head in shame.

One thing is for certain, though, if AM is to survive it is going to take the combined efforts of everyone in the

broadcast industry. No single group will be able to turn things around on its own.

What can we do, you ask? Well, there are several things.

Install AM Stereo and NRSC 1 transmission equipment. You are going to have to comply with NRSC 2 eventually anyway so why not now? True, this is not going to be cheap but in the long run I believe it will be worth it.

Write to your senators and representatives urging them to support the radio improvements bills that have been introduced.

Get involved in the various organizations that are available to broadcasters, such as, NAB, state broadcast associations and SBE chapters.

A group or groups together can make more noise than individually, but however you choose to do it get behind the efforts to save AM and improve broadcasting in general.

Model CTM-10 Series Cartridge Recorder/Reproducers

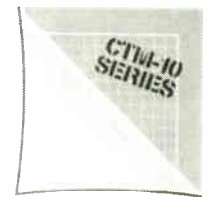
The CTM-10 series NAB audio cartridge players and recorders are designed for broadcast and audio post-production professionals. The microprocessor-controlled CTM-10 cartridge players offer the high performance, outstanding features and workhorse reliability for which Otari products are known.

The series consists of three models: the CTM-10SR stereo record/play deck, and the CTM-10MR mono record/play deck, to which recording capability is a simple conversion. Three CTM-10 series decks may be rack mounted side-by-side in only 5 1/4" of 19" rack space. The record electronics unit, housed in a separate chassis, is the same size as the playback unit.

The tape speed of CTM-10 transports may be user-converted to 15, 7.5 or 3.5 ips by means of internal jumpers.

The CTM-10 record electronics unit uses Dolby HX-Pro™ bias optimization circuitry. HX-Pro increases the CTM-10's high frequency dynamic headroom, to yield high frequency performance at 3.75 ips which is equivalent to non-HX performance at 7.5 ips and likewise 7.5 ips is equivalent to non-HX performance at 15 ips. HX-Pro is not noise reduction so it needs no decoding, thus the benefits of HX-Pro recording will be evident in playback on all cart machines.

For audio post-production applications, the CTM-10 includes minutes/seconds display and parallel I/O control port for easy interface to SMPTE EBU time-code based synchronizers, and 9600 Hz frequency controlled capstan speed control in addition to conventional cue tones, the cue track on CTM-10 machines may be used for time-code or other automation data.



CTM-10 Record Electronics Module

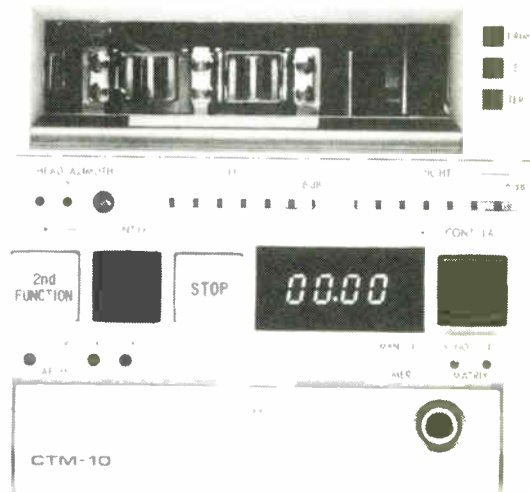
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(cont'd from pg. 1)

for and receive FCC approval before making such changes.

The newly short-spaced stations would be grandfathered—that is, they would not be required to comply with the new mileage separations if they had no interest in increasing power.

Left out at least for the time being are about 100 stations that were “grandfathered” as short-spaced stations under the old mileage-separation table and around 450 stations along the Mexican and Canadian borders. Some 150 stations along the borders would be able to increase power to 6 kw, said Jackson, but it would require that stations seek FCC approval and that the FCC reclassify them as Class B stations for purposes of international coordination.

To allow many Class FM stations to increase power without unnecessary delay, the Commission said it would publish a list of existing Class A stations at locations that meet the new separation requirements. (The Commission estimated that approximately 500 stations fall into this category.) Licensees of those listed stations that can increase power through certain simple technical means will be allowed to do so on or after December 1, 1989, provided that such increases would not cause exposure of workers or the general public to levels of radio frequency energy radiation in excess of the American National Standard Safety Levels (ANSI C95.1-1982). These licensees will be required to file FCC Form 302 within ten days of increasing station power. Licensees of other Class A stations desiring to take advantage of the new power limit will be required to file FCC Form 301 and obtain FCC approval before increasing power.

FCC Grants Capital Cities/ABC Cross-Ownership of Radio/TV

Capital Cities/ABC won permission from the FCC last Wednesday to keep both its television and radio stations in four of the five largest U.S. markets, after the recent loosening of federal rules concerning station cross-ownership.

Without the permanent FCC waiver, Cap Cities would have been forced to sell either its TV or radio stations in New York, Chicago, Los Angeles and San Francisco. Those stations include: WABC-TV, WABC (AM) and WPLJ (FM) in New York; WLS-TV, WLS (AM) and WYTZ (FM) in Chicago; KABC-TV, KABC

(AM) and KLOS (FM) in Los Angeles; and KGO-TV and KGO (AM) in San Francisco.

The ruling comes after the modification of the FCC's long-standing “one to a market” rule earlier this year and reflects the current Commission's deregulatory philosophy. The earlier Commission stated that requests for waivers in major cities that have at least 30 separately owned and operated TV or radio stations would be given favorable consideration.

The conflict with the old FCC rules resulted from the 1986 merger of Cap Cities and ABC.

Boosting Night Signals of Daytimers Major Goal of AM Antenna Project

Construction has begun on NAB's experimental AM antenna project. If successful, AM stations using directional antennas could use this technology to achieve improved nighttime signal coverage. The tower is being built near Washington, DC. Completion is expected in about six weeks.

The antenna is designed to produce a zero signal in the skywave pattern of a broadcast signal in a given direction by providing separate control over the skywave and groundwave emissions. This technology could enable AM broadcasters to substantially increase their nighttime power in a single direction and improve nighttime coverage. NAB will conduct tests to determine the antenna's ability to separately control skywave and groundwave radiation.

NAB also plans to do general research into the behavior of medium-wave AM signals as well as a test of a novel antenna grounding system that, if successful, could save AM broadcasters thousands of dollars on installation costs.

The antenna was designed by Ogden Prestholdt, a renowned consulting engineer with more than 50 years of experience in the design and construction of broadcast facilities. The ground system was developed by Al Christman and Rogers Radcliff of Ohio University. LDL Communications of Laurel, MD, is building the antenna.

NAB Numbers

Longtime attendees of National Association of Broadcasters convention have noted shrinking ratio of broadcasters to nonbroadcasters. NAB's internal breakout of 1988 registrants confirms that observation. Nearly 47,000 attended convention. Of some 27,000 who recorded affiliation, according to NAB figures, only 7,616 were with broadcast stations or networks. Employees of production facilities were second largest group at 6,493. Equipment manufacturers and distributors totaled 3,384. Other large groups: audio recording studios (990), government agencies (840), television programming companies (671), trade press/news media (490), foreign broadcasters (448) and military (365).

SHURE'S 1989 REBATE

RECEIVE UP TO \$15 BACK

ON PURCHASE OF SELECTED SHURE MICROPHONES!

You can earn a valuable rebate on Shure SM58's, SM57's, and SM48's you purchase between July 1 and August 31, 1989. We'll send you:

- a \$15 rebate on your purchase of a Shure SM58!
- a \$10 rebate on your purchase of a Shure SM57!
- or a \$5 rebate on your purchase of a Shure SM48!

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Telephone Technology Generates Broadcast Income

"Info Line," a new technology from the Systemation Company, is a computerized call-handling system whereby callers can ask for specific information by using their touch-tone telephones. A recorded voice answers the call and informs the caller of the choices available.

WDZ in Decatur, IL offers nine services on Info Line: weather; time and temperature; lottery results; movies; top 10 videos; sports; concerts; community announcements; and a "school line" for menus, sports scores and events. Other services like airline schedules, soap opera updates, TV listings, or whatever a sponsor wants can be easily added.

Each service message is accompanied by a six-second commercial. Sponsorships are \$250 per month plus a line lease charge of \$65 per month. The commercial can be updated as often as the sponsor wants.

Businesses wishing to update their own messages pay just the \$65 lease charge. They are given a code to use when calling in the message change. The computer has a built-in counter to track the calls to each message and measure the results.

For more information, contact The Systemation Company, 337 North Water Street, Decatur IL 62523 or call (217) 428-7101.

Innovation in EBS Technology

TFT, Inc., unveiled its new EBS Systems at the 1989 NAB convention. The Models 886 (AM) and 887 (FM) EBS Systems both have two LED displays; one counts the days since the last transmission and the other counts the days since the last reception of an attention test. When the clocks reach 12 days, they flash. This alarm can be connected to an audible alert system, so remedial action can be taken.

The systems also have two LED bargraphs; one for audio and the other for RF, indicating that the receivers are actually experiencing activity from the regional primary station. Each occupies one rack unit and is frequency agile.

The suggested list price for the 886 or the 887 is \$1,920. TFT has a rebate program wherein an existing 760 EBS System can be turned in for a \$250 payment after the purchaser takes delivery of a new EBS System.

For more information, contact Perry Kirk, TFT, 3090 Oakmead Village Dr., P.O. Box 58088, Santa Clara, CA 95952-8088 or (408) 727-7272.

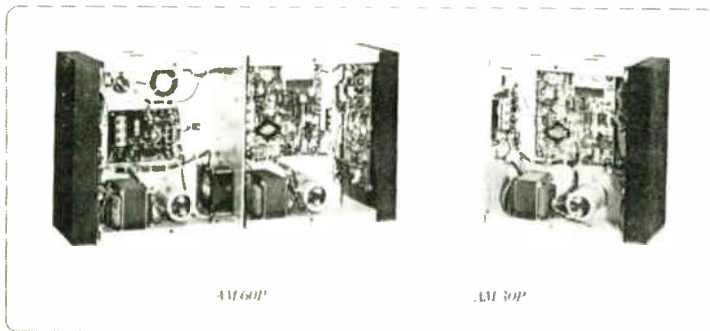
Automatic Weather Forecasting System

A new technology for automatically delivering up-to-date weather information to radio stations has been developed by The Systemation Company in conjunction with WeatherBank, a Salt Lake City weather service.

The new weather system, called "Compucast," is being offered as an option to Systemation's "Informer" interactive telephone system. Compucast uses innovative technology to deliver a live-sounding weather forecast to a station without taking up staff time. The audio report is accessed through the station's Informer telephone system and is available to Informer callers for use on the air, either automated or live.

The Compucast system is a set of specially-selected, specially-recorded phrases which cover every conceivable weather condition. These phrases are stored as digital audio and assemble into live-sounding fore-

(cont. to pg. 5)



Since 1960, LPB has been the internationally recognized leader in low power AM broadcasting. LPB uses the very latest RF technology to provide the most rugged and economical transmitter for low power commercial applications, travelers' information and carrier current systems.

LPB transmitters are completely solid-state. The crystal oscillator operates at six times the carrier frequency with digital countdown circuitry. A high-stability oscillator circuit is used for FCC Part 73 applications. A modular design using a pair of balanced emitter output transistors provide up to 30 watts of RF power that can withstand any output mismatch or short circuit condition. The 60 watt transmitter uses two 30 watt modules with dual power supplies and an RF power combiner. A computer designed elliptical function output filter provides the highest degree of RF harmonic suppression.

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The AM-30 and AM-60 series transmitters use an internal meter to monitor modulation level and RF power output. Modulation level on the AM-5 is indicated by a quick response LED peak flasher set to illuminate at 100% peak modulation. This indicates true peak modulation of the transmitter and provides a means of maintaining maximum undistorted modulation of the signal. RF power on the AM-5 is monitored by a second LED that also serves as a "power on" indicator. RF output power is continuously variable on all transmitters so that a precise setting can be chosen by the user.

All LPB low power transmitters are designed for universal application including AM stereo. With a 50 ohm unbalanced RF output, any transmitter can readily interface with direct radiating systems using impedance matched radiators. The companion TCU-30 Transmitter Coupling Unit is used for carrier current installations and other applications utilizing non-standard radiating elements.

(cont'd from pg. 4)

casts no matter how they are combined.

Compucast weather reports are compiled by WeatherBank meteorologists and transmitted as computer codes corresponding to the specific phrases used. Systemation decoding equipment assembles the coded phrases into a finished audio forecast.

For more information, contact The Systemation Company, 337 North Water Street, Decatur, IL 62523 or call (217) 428-7101. For a Compucast demonstration, call (217) 429-1050, then press 993.

NAB Accepts Children's TV Bill

Acknowledging the obligation television licenses have to serve the children in their communities, the president of the National Association of Broadcasters told Congress that NAB would accept a children's television bill, S. 707, that embodies the compromise reached in a similar bill last year. However, he urged a Senate subcommittee to reject another children's TV bill on which the hearing was based, S. 1215, which he termed "unwise and unworkable."

Testifying before the Senate

Commerce Communications Subcommittee, Edward O. Fritts, NAB president and CEO, said s. 707 "reaffirms and codifies our industry's long-standing obligations to provide programming for children. It also recognizes that advertising is needed to support that programming, while ensuring that such programs are not overcommercialized. It acknowledges that Congress should not attempt to directly regulate program content."

Fritts pointed out that S. 707 is the same bill which members of Congress, public interest groups and NAB worked hard to develop last year. "It is a fair and reasonable compromise on which each side found the middle ground."

Fritts said the children's televisions marketplace has changed in recent years, and free over-the-air television is longer the only source of programming for young people. He said both pay and basic cable and video cassettes have provided numerous additional sources of programming choice, "alternatives which are not regulated as we are."

He pointed out that broadcasters face a marketplace "where their audience share has declined for children's programming, while production costs and competition from unregulated media have increased. Further restrictions and more string-

ent programming requirements run the risk of knocking the children's television marketplace even further out of balance." He also submitted a study detailing the rapidly expanding diversity and complexity of today's children's programming.

Fritts noted that S. 707 would cap the overall amount of advertising in children's programming (10.5 minutes per hour on weekends, 12 minutes per hour on weekdays) and would codify our obligations to serve the educational and informational needs of young people. However, he said that S. 1215, which also has an advertising cap (9.5 minutes on weekends, 12 minutes on weekdays) and license review provisions, "goes well beyond the compromise provisions of S. 707. It attempts to specifically legislate content, which we believe clearly violates the First Amendment."

He criticized S. 1215's requirements that the Federal Communications Commission consider whether a license has provided programming especially created for children, both pre-school and school-aged -- a requirement that "ignores the totality of programming which broadcasters provide to family audiences."

Fritts said the requirement that stations identify -- both in program guides and on the screen immediately prior to the program itself--programs which meet these standards, is an unnecessary burden on stations.

In addition, he opposed the way the bill defines "commercial matter" which could force licensees and their program suppliers to open up their books on all children's programming. "These sections," he said, "add onerous regulatory burdens on both television stations and program syndicators."

He also said it would be totally impossible to predict how the FCC would decide what compensation is fair or unfair in barter programming.

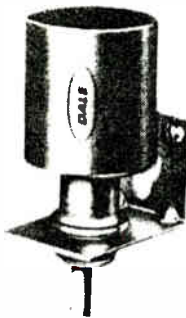
Thanks, Radio!

When a Pennsylvania woman was injured in Bakersfield, CA, and needed blood fast, her sister called KPMC/Bakersfield, CA President-/GM Dan Speare, who aired her plea for donors. The woman, Sheree Goldflies, said the responses helped save her sister's life.

"I've learned something I've known for years, "Goldflies wrote Speare, "that radio is powerful, persuasive, personal and immediate! And that wonderful people work in that wonderful medium!"

Electronic Industries

DALE SERIES SPA

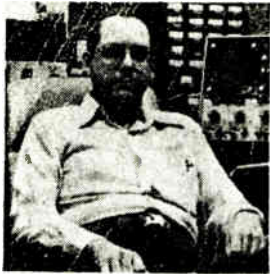


Secondary Power Arresters

Dale SPA secondary power arresters, when connected across an AC power line, limit surge voltages caused by lightning and other transients. They provide excellent protection for wiring, appliances, electrical and electronic equipment of all kinds. These arresters use the Dale rotating arc spark gap which has the capability to withstand multiple lightning strokes. In addition, SPA arresters provide protection from extreme surge amplitudes. Power-follow current is limited and extinguished within one-half cycle. Pre-ionizing of the spark gap yields protection during the fast-rising wavefront of the transient. The arresters are hermetically sealed in a strong steel case and completely contain the surge discharge. High reliability and long life make these arresters especially suitable for isolated or remote installations.

3 Models From 110V to 480V

MEMO FROM METZ



by
David L. Metz

A NOAA Alarm Tone Decoder

Last month we built an outdoor antenna for a NOAA 162 MHz receiver. This month we'll tackle the alarm decoder for those who have a receiver that does not have the decoder section. The NOAA severe weather alarm signal is a 1,050 Hz tone that lasts for several seconds. This circuit detects that tone. Note that you can use this circuit to very reliably decode single tones of almost any frequency.

My first thought on building a decoder was to use the 567 phase locked loop IC. Then I got thinking about a miserable experience I had years before using 567's. The free running oscillator in the 567 drifted all over the place. The darn things never decoded the same frequency twice in a row!

Thinking about another problem got me on the right road. You have to put some kind of band pass filtering

in front of most simple decoder circuits to prevent voice peak falsing. So why not just use a narrow filter feeding into a detector stage? Well, it worked! I've used it for three years now without having to readjust its center frequency!

The decoder is built around a single polarity power supply quad op-amp, the National LM3900. Two sections work as the bandpass filter to reject all audio frequencies but 1,050 Hz. Tuning is done with a single ten turn PC mount trim pot. The third section amplifies the audio output of the filter.

The audio output of the third stage is rectified and charges a capacitor. The fourth stage compares the voltage in the time delay circuit to a reference voltage. When the capacitor's voltage equals the reference voltage going into the comparator, the comparators output pin switches from V_{cc} to zero volts.

As an after thought I added a SCR from my junk box (a sensitive gate type 50 PIV, 200 MA.) as a memory alarm indicator. An alarm lights a front panel LED that stays lit till a reset button is pressed. This will let you know the circuit has functioned when you're not monitoring.

The only thing to watch is the tolerance of the frequency range determining resistors and capacitors.

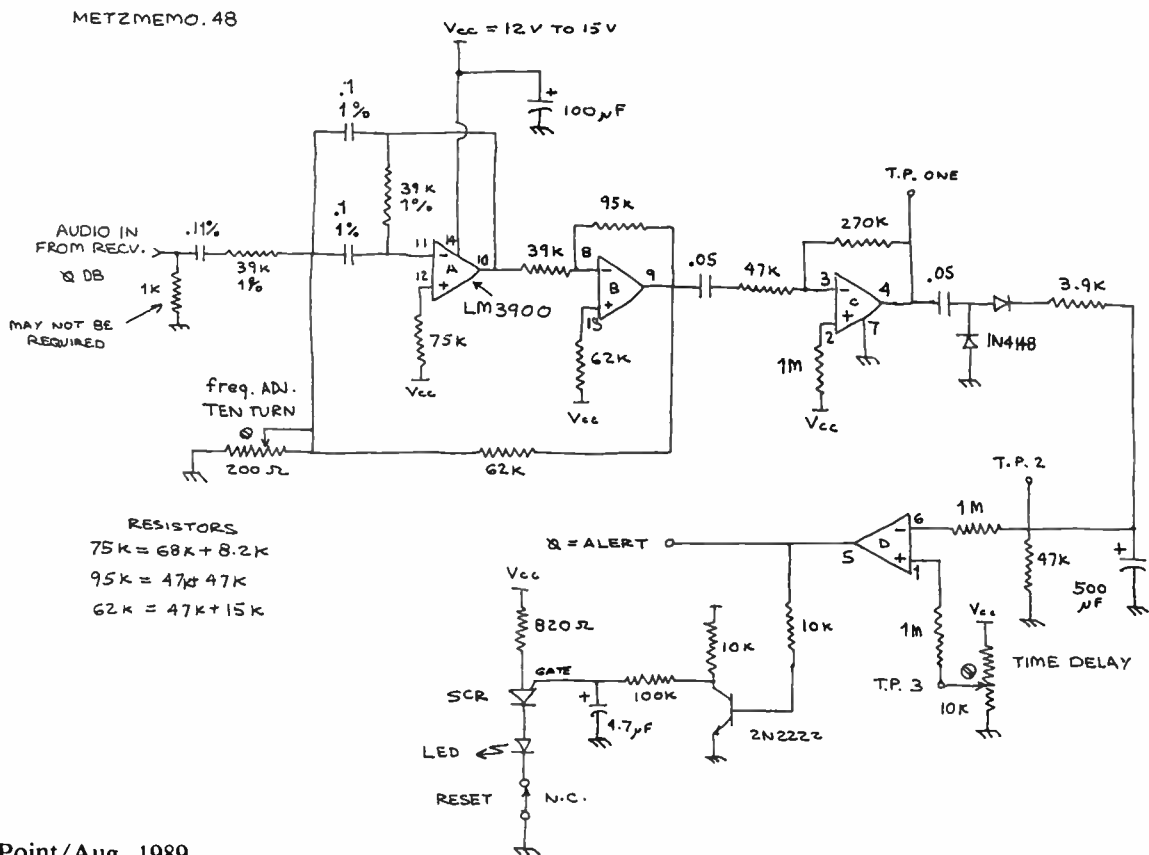
The ones marked 1% in the diagram must be 1%! But not to worry, a easy way to get one percent parts is to select out the right values from your junk box using a digital volt ohm meter and a digital capacitor meter.

I made the 39K resistors by placing small values in series with 39K units that were below tolerance. The capacitors are high quality mylars or polyesters selected from a bag full I had.

Adjustment requires a audio oscillator and a frequency counter to insure that you are exactly on 1,050 Hz. Inject a -10DB signal into the input while monitoring the voltage at test point one with a A.C. voltmeter. Tune the ten turn frequency adjust pot till you get a peak. Then check the D.C. voltage on test point two. It should be several volts.

Shut off the test tone and set the voltage at test point three to two volts D.C. by adjusting the time delay pot. Two volts should give a 5 second delay before the comparator output goes low. If you need a high (logic one) output just invert the inputs to comparator stage.

Next month we'll look at some things we can do with this alarm now that we've detected it.



ATSC Executive Committee Adopts Advanced Television Definitions

The United States Advanced Television Systems Committee has observed considerable confusion both in the private sector and in government agencies concerning the use of various terms related to Advanced Television work. Therefore, on July 11, 1989, the ATSC Executive Committee approved the attached definitions.

Approval of these definitions by the Executive Committee was unanimous with one exception. Zenith would not have specified a wide aspect ratio for HDTV.

Definition of Advanced Television (ATV) Terms

In order to provide a constant basis of comparison, the following ATV definitions describe some of the major steps in the process of evolution of NTSC towards emitted HDTV:

IDTV - Improved Definition Television

The term Improved Definition Television refers to improvements to NTSC television which remain within the general parameters of NTSC emission standards and, as such, would require little or no FCC action. Improvements may be made at the source and/or at the television receiver and many include improvements in encoding, filtering, ghost cancellation, and other parameters that may be transmitted and received as standard NTSC in a 4:3 aspect ratio.¹

EDTV - Extended Definition Television

The term Extended Definition Television refers to a number of different improvements that modify NTSC emissions but that are NTSC receiver-compatible (as either standard 4:3 for "letter-box" format). These changes may include one or more of the following:

1. Wide aspect ratio
2. Extended picture definition at a level less than twice the horizontal and vertical emitted resolution of standard NTSC.
3. Any applicable improvements of IDTV.¹

For purposes of identification, EDTV transmitted as 4:3 is referred to as EDTV, and when transmitted in a wider aspect ratio, as EDTV-Wide.

If the EDTV transmission requires additional spectrum for augmentation beyond a standard NTSC channel, then it will be referred to as EDTV-Augmented.

HDTV - High Definition Television

The term High Definition Television refers to television

systems with approximately twice the horizontal and vertical emitted resolution of standard NTSC. HDTV systems are wide aspect ratio systems and may include applicable improvements from IDTV and EDTV.¹

Terrestrial HDTV systems must be NTSC receiver-compatible.² This may be achieved through simulcasting or through the use of an NTSC-compatible main channel accompanied by an augmentation channel.

1. Improvements in audio may be incorporated in IDTV, EDTV, and HDTV, and so are not described.

2. The FCC has issued preliminary findings concluding that terrestrial ATV broadcasts in the United States must be a receiver-compatible format (Docket 87-268.)

Radio Board Adopts Goals To Revitalize AM Radio

The National Association of Broadcasters' Radio Board of Directors has adopted a wide-ranging agenda for the revitalization of AM radio. It was drawn from recommendations drafted by broadcasters at the NAB AM Futures Retreat in March which focused on technical improvements.

The agenda provides direction to the Association's staff to work for improvements in transmission and reception, and reductions in man-made interference. The agenda:

Transmission: Implement National Radio Systems Committee (NRSC) standards*; pursue the feasibility of further Federal Communications Commission action on the selection of an AM stereo standard; redouble encouragement to AM broadcasters to convert to stereo; explore with manufacturers continuous-tuning AM-FM receivers; seek a law to require all stereo receivers to include AM stereo; complete testing of improved AM antennas; petition the FCC to hold special meetings on AM technical matters.

Interference: Oppose the FCC proposal for the sale of "interference rights" between stations; ask the FCC to allow co-channel and adjacent channel facilities applications only by waiver following determination that the grant would not increase interference; gain permission for homesteading of daytimers on the expanded AM band with five-year authority to simulcast on their old frequencies, which would then not be reassigned; seek tighter controls on radio frequency emissions from non-broadcast sources.

Reception: Establish an NAB broadcaster task force to work with receiver manufacturers; seek and

promote a narrowly defined certification mark for NRSC receivers; develop, with manufacturers, minimum technical standards for receivers; produce and market NAB's "radio for the future"; exhibit that radio at the Consumer Electronics Show; promote the value of quality receivers and the AM band to manufacturers, broadcasters and the public via a "super AM" campaign; promote external steerable AM antennas and AM antenna jacks on receivers.

*NRSC standards improve radio transmission and reception quality and reduce interference between stations.

NAB Offering Five-Day Course For Satellite Uplink Operators

The National Association of Broadcasters is offering an intensive, five-day training course for satellite uplink operators September 25-29 at the Tyson's Corner Marriott, which is located outside Washington, D.C.

The course is designed to emphasize safety and interference management and includes all forms of satellite services. It will cover both C and Ku band and fixed and portable uplinks. A full day of hands-on training with a transportable satellite earth station and a tour of a satellite operations facility are included in the week's training.

It will be taught by Norman Weinhouse of the consulting firm Norman Weinhouse Associates, Woodland Hills, CA. He has over 30 years of experience in the telecommunications field and has worked for Motorola, Inc., Rantac Corporation and Hughes Aircraft. The course is endorsed by the Society of Broadcast Engineers (SBE) and the Satellite Operators and Users Technical Committee.

The fee is \$845 for NAB and SBE members and \$1,145 for non-members. This includes five days of instruction, a 300-page course textbook, continental breakfasts and lunches.

PRE-INVENTORY SPECIALS

		Price Each
4	Fidelipac 400 bulk erasers	\$ 109.40
3	Fidelipac 395 bulk erasers	61.25
8	EFI DPI 153	74.50
3	Sony TCM 5000EV cassette recorders	450.00
5	Computemps	59.95
6	Astrolite sportscaster type headphones	199.95
3	Radio Systems TM-2	170.00
2	Radio Systems PA-1 phono preamps	215.00
1	Zercom Maxitel	995.00
1	Tellabs 4424/4425 repeat coil	81.40
4	Henry Matchboxes	170.65
3	Henry Mix-Minus Plus	182.80
1	Henry Telecart	170.65
1	Henry Superelay	170.65
1	Henry Synchrostart	170.65
2	Gentner EFT 900	795.00
1	Gentner EFT 100	495.00
1	VRC Internal Modem	995.00
1	Microtrak 6411 turntable preamp	187.50
3	Marantz Superscope EC-12B condenser tie-clasp mike	45.00
9	ATP 12T tone arms	191.50
12	ATP 857QM unipoint mikes	172.25
8	Marantz PMD 221 cassette recorders	269.95
14	Marantz PMD 201 cassette recorders	229.95
10	Stanton RC5 disc cleaning kits	9.50
10	Stanton SC4 stylus cleaning kits	4.95
2	Stanton 310B stereo phono preamps	231.25
2	Telex PH94	157.50
3	Telex PH91	138.75
1	Telex PH21 headset	81.95
4	R.B. Annis Handimag head demagnetizers	31.00
1	Gorman-Redlich CRW Weather receiver	495.00
1	Digimax LDC 1000	181.25
3	Digimax AC12 adapter	8.95
1	Digimax D510 counter	168.75
1	Shure M64A stereo preamp	79.95
1	Shure SM7 microphone	399.95
1	Electro-Voice ELX-1 mixer	340.20
10	Siemon S66M1-25 punch blocks	8.05
10	Siemon S66M1-50 punch blocks	7.30
6	Luxo LM-1 mike arms	28.35

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Pennsylvania station, Delco and Ford to study FM interference

Beginning July 28, WAEB-FM Allentown, PA., will participate in a research project to study FM radio multipath interference in conjunction with Delco Electronics and Ford Audio, along with electronics Research Inc. and Continental Electronics.

Harry Simons, technical coordinator for the project and the station's chief engineer, said the project is a result of a meeting of the National Radio Systems Committee's FM Committee. "The problem of multipath interference kept coming to the top of the list of problems we had to address," he said, "and so we invited Ed Schober of RadioTechniques, who is considered an expert in the field, to address the committee on this issue."

Simons said that a few weeks after the meeting, he received a call from Delco Electronics, the manufacturer of radios for General Motor's cars, volunteering for the project. A few weeks later, he received a call from Ford Audio.

Simons explained that the project will focus on 11 different areas of

multipath interference and the results will be presented to the NRSC and the FCC. The bulk of the project will consist of driving test vans to locations in the WAEB-FM coverage area and measuring signal reception on predetermined paths using spectrum analyzers, charts recorders and distortion analyzers. The station will then make adjustments to the transmitter to modify the signal, and the measuring process will be repeated. The measuring process will be repeated. The results will be fed to a computer and recorded on digital tape for analysis.

Simons said: "WAEB-FM has submitted a request to the FCC for field testing authorization, and we have invited the commission to participate." Simons added that "the results will be used to provide manufacturers with information they can use to build better receivers, transmitters and other equipment."

Multipath interference is defined by Simons as "a phenomenon that occurs when an FM radio station's main line-of-sight signal and its signal reflected off mountains or buildings cross each other to produce a distortion that sounds like spitting."

FCC Asked Not to Implement Amended FM Interference Rules

June 30, 1989 -- The National Association of Broadcasters agrees with another industry group that there are flaws in the Federal Communications Commission's proposal to amend rules governing FM intermediate frequency (IF) interference. If implemented, the changes until additional studies can be conducted.

In its filing in support of the Association for Broadcast Engineering Standards (ABES), NAB backed the organization's call for the FCC to set aside the changes until additional studies can be conducted.

ABES noted that at least four technical studies have shown that FM receivers can suffer from IF interference. The group pointed out that one of the studies conducted by the Commission failed to consider all types of FM receivers, especially portable and personal types.

NAB said that further studies should include participation by the receiver industry.



The more you look at our Discrete STL System, the less you'll look elsewhere.

MORE FEATURES

Designed for either single channel or dual monaural operation, our 8600 STL system is loaded with features: a built-in subcarrier generator and demodulator for voice and data linking; spurious-free power amplifier; front panel mic input (transmitter) and headphone jack (receiver) and built-in capability to properly match phase and gain between dual links for either AM or FM stereo applications.

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From our extensive experience with STL's we have used the latest design techniques and components to create a superlative sounding system. Because the design is derived from our world-respected 8300 Composite STL, you can also expect the same caliber of stable performance.

MORE COMPANY

Because TET is behind all of its products, so is the full two year STL warranty with service if you need it: 24 hours a day, 7 days a week.

For more than 10 years, this is the kind of back-up support we've provided to broadcasters who have relied on our legendary 8300 and 7700B Composite STL's.

MORE RELIABILITY

Each of our STL systems, including the 8600, goes through nine quality assurance steps . . . and a 7 day burn-in at 50°C. If it breaks, we want it to break here!

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So, stop looking and contact us or your favorite TET dealer today for full technical information.

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Photo shows 8600 STL System (Model 8600) Transmitter as a single link with redundant receivers (Model 8600) x 2.

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<u>CARTRIDGE</u>	<u>E.I. PRICE</u>	<u>LIST</u>	<u>STYLUS</u>	<u>E.I. PRICE</u>	<u>LIST</u>
500 (a11)			D5127 (78 rpm)	11.95	19.60
500A	NA		D5107A	7.95	12.00
500A MkII	13.95	37.50	D50A MkII	7.95	12.00
500AL	15.95	53.00	D5107AL	7.95	12.00
			DP5107AL (3 Pak)	20.25	30.00
500E MkII	13.95	50.00	D50E MkII	8.25	15.00
500EE MkII	16.95	55.00	D50EE MkII	10.95	20.00
600A	NA		D6071A	12.95	20.25
680/681(a11)			D6810(mono)	17.95	30.00
680/681(a11)			D6827(78 rpm)	17.95	30.00
680EE	36.95	83.00	D680	18.95	31.25
680EL(w/2 styli)	57.95	106.00	D6800EL	18.95	30.00
			DP6800EL(3 pak)	49.95	90.00
681A	54.95	101.50	D6897A	20.95	32.40
681EE	NA		D6800EE	24.95	39.00
681EEE MkIIs	64.95	120.00	D6800EEE IIs	27.95	45.00
681SE	59.95	110.00	D6800SE	24.95	39.00
Stanton derivative cartridges			D51	10.95	23.50
Stanton deratitive cartridges			D65-2	19.95	33.00
L727E	23.50	83.00	D72E	12.95	24.50
981 MkII(Hz/Lz)	98.75	250.00	D98IIs	62.95	90.00
L500AL P-mount	15.95	53.00			
			<u>SHURE</u>		
M3D	NA		N3D	8.95	20.95
M44-C	19.95	54.95	N44-C	11.95	24.95
M44-E	24.95	61.95	N44-E	14.95	27.95
M44-3	NA		N44-3(78 rpm)	11.95	24.95
M44-7	21.95	54.95	N44-7	11.95	24.95
M70-B	NA		N70B	6.95	16.95
M78E	NA		N78E	18.95	34.95
SC25C	36.95	48.50	SS35C	13.95	18.50
SC39B	51.95	68.00	SS39B	20.95	27.80
SC39EJ	57.95	76.00	SS39EJ	25.95	34.90
BC70(w/3 styli)	62.95	90.00	SS70(4 pak)	57.95	82.00
BC80(w/3 styli)	87.95	126.00	SS80(4 pak)	80.95	114.00
BC90(w/3 styli)	87.95	126.00	SS90(4 pak)	80.95	114.00

AUDIO-TECHNICA

ATP-1	29.95	45.00	ATP-N1	16.95	25.00
ATP-2	37.95	60.00	ATP-N2	23.95	35.00
ATP-2XN (w/2 styli)	53.95	90.00			
ATP-3	48.95	80.00	ATP-N3	30.95	50.00

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**Fidelipac Professional NAB
Endless Loop Tape Cartridges**
carton lots of 10 only

Time	Price
10 Sec.	3.60
20 Sec.	3.60
40 Sec.	3.60
70 Sec.	3.60
90 Sec.	3.60
100 Sec.	3.60
2 Min.	4.08
2.5 Min.	4.08
3 Min.	4.08
3.5 Min.	4.08
4 Min.	4.08
4.5 Min.	4.08
5 Min.	4.50
5.5 Min.	4.50
6 Min.	4.50
6.5 Min.	4.50
7.5 Min.	4.50
8 Min.	4.93
10 Min.	4.93
10.5 Min.	4.93

**Master Cart (NAB Type AA - Red Base)
Loaded with Dynamax Series 400x
Standard Tape**

Time	Price
10 Sec.	4.55
20 Sec.	4.55
40 Sec.	4.55
70 Sec.	4.55
90 Sec.	4.55
100 Sec.	4.55
2 Min.	4.98
2.5 Min.	4.98
3 Min.	4.98
3.5 Min.	4.98
4 Min.	4.98
4.5 Min.	4.98
5 Min.	5.39
5.5 Min.	5.39
6.0 Min.	5.39
6.5 Min.	5.39
7.5 Min.	5.36
8 Min.	5.86
10 Min.	5.86
10.5 Min.	5.86

**Dynamax Cobalt
(NAB Type AA - Charcoal Base, Smoke
Grey Cover)
Loaded with Dynamax DYN-1000X Cobalt
Tape**

Time	Price
10 Sec.	5.05
20 Sec.	5.05
40 Sec.	5.05
70 Sec.	5.05
90 Sec.	5.05
100 Sec.	5.05
2 Min.	5.63
2.5 Min.	5.63
3 Min.	5.63
3.5 Min.	5.63
4 Min.	5.63
4.5 Min.	5.63
5 Min.	6.10
5.5 Min.	6.10
6.0 Min.	6.10
6.5 Min.	6.10
7.5 Min.	6.10
8 Min.	6.56
10 Min.	6.56
10.5 Min.	6.56

**Audio Pak
A-2 BROADCAST CARTRIDGES**
carton lots of 24 only

Time	Price
10 Sec.	3.40
20 Sec.	3.40
35 Sec.	3.40
40 Sec.	3.40
50 Sec.	3.40
65 Sec.	3.40
70 Sec.	3.40
90 Sec.	3.40
100 Sec.	3.40
140 Sec.	3.75
2.5 Sec.	3.75
3.0 Sec.	3.75
3.5 Sec.	3.75
4.0 Min.	3.75
4.5 Min.	3.75
5.0 Min.	4.25
5.5 Min.	4.25
6.0 Min.	4.25
6.5 Min.	4.25
7.5 Min.	4.25
8.5 Min.	4.25
10.5 Min.	4.25

AA-3 BROADCAST CARTRIDGES
carton lots of 24 only

Time	Price
10 Sec.	4.45
20 Sec.	4.45
35 Sec.	4.45
40 Sec.	4.45
50 Sec.	4.45
65 Sec.	4.45
70 Sec.	4.45
90 Sec.	4.45
100 Sec.	4.45
140 Sec.	4.95
2.5 Sec.	4.95
3.0 Sec.	4.95
3.5 Sec.	4.95
4.0 Min.	4.95
4.5 Min.	4.95
5.0 Min.	5.75
5.5 Min.	5.75
6.0 Min.	5.75
6.5 Min.	5.75
7.5 Min.	5.75
8.5 Min.	5.75
10.5 Min.	5.75

AA-4 BROADCAST CARTRIDGES
carton lots of 24 only

Time	Price
10 Sec.	4.90
20 Sec.	4.90
35 Sec.	4.90
40 Sec.	4.90
50 Sec.	4.90
65 Sec.	4.90
70 Sec.	4.90
90 Sec.	4.90
100 Sec.	4.90
140 Sec.	5.40
2.5 Min.	5.40
3.0 Min.	5.40
3.5 Min.	5.40
4.0 Min.	5.40
4.5 Min.	5.40
5.0 Min.	6.55
5.5 Min.	6.55
6.0 Min.	6.55
6.5 Min.	6.55
7.5 Min.	6.55
8.5 Min.	6.55
9.5 Min.	6.55
10.5 Min.	6.55

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The PR99 MKIII reflects the same engineering expertise that has made Studer Revox the world standard for excellence in audio recording.

Compare these MKIII features with the competition:

- a solid die-cast aluminum transport chassis and head block
- record and playback heads machined to the same tolerances as the heads for Studer multi-track recorders
- easily accessible modular electronics for tough, reliable broadcast performance
- a true Autolocator with digital counter in hours, minutes and seconds
- speed configurations of 3 1/2 - 7 1/2 ips & 7 1/2 - 15 ips
- rack mounts standard.

In whatever terrain you operate—in radio production or on-air work—the PR99 MKIII is a no-nonsense machine that gets you where you want to go. Before you buy, check out the MKIII for value and performance. Over the long haul, the Revox PR99 MKIII leaves the competition in the dust.

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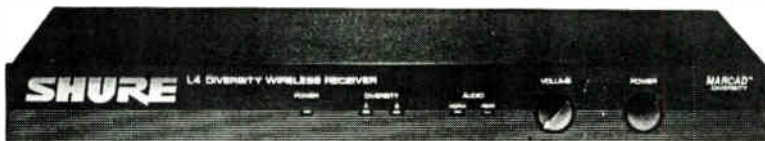
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WIRELESS MICROPHONE SYSTEMS

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- **Features**
- **Value**
- **Profit**

Model	Description	User Price
LS13	Body-pack system (L1, L3, and WA300 Instrument Cable)	\$360.00
LS13/839	Body-pack lavalier system (L1, L3, and 839W)	445.00
LS14	MARCAD™ Diversity body-pack system (L1, L4, and WA300 Instrument Cable)	495.00
LS14/839	MARCAD™ Diversity body-pack lavalier system (L1, L4, and 839W)	580.00



L SERIES COMPONENTS

Four L Series systems are available – diversity and non-diversity lavalier microphone systems, and diversity and non-diversity instrument systems. All systems draw from the following components:

L4 DIVERSITY RECEIVER

The L4 features Shure's exclusive new MARCAD™ (Maximum Ratio Combining Audio Diversity) circuitry – a true breakthrough in wireless receiver design. Like other "true diversity" systems, MARCAD™ provides the benefits of two independent RF sections. But with MARCAD™ the two signals are *combined* for improved signal-to-noise ratio. Shure accomplished this innovation by developing "intelligent" circuitry that constantly monitors both radio signals, combining them when both are usable. The result is a *significant increase in RF gain and outstanding reception.*

L3 RECEIVER

The rack-mountable L3 has everything it takes for exceptional performance. Double-tuned RF stages with high-gain, low-noise MOSFETs mean sensitive, interference-free operation. A high-fidelity quadrature detector provides low distortion and superior ultimate quieting. A three-pole Chebyshev audio low-pass filter removes undesirable high-frequency hiss. The flexible, insulated, one-piece quarter-wave antenna (which may be removed and placed in a remote location) ensures freedom from contact noise. And that's just the beginning.



839W LAVALIER MICROPHONE

The 839W's wide-range frequency response is specially tailored for lavalier applications. An acoustically-generated high-frequency boost and 12 dB/octave rolloff below 100 Hz provide extraordinarily natural sound while minimizing pickup of room noise. The side-exit cable and special tie-bar mounting accessory make the 839W very unobtrusive. And the attached thin, strong cable may be detached from the transmitter at the equipment end, making the 839W completely field serviceable and the transmitter usable for other applications.

L1 BODY-PACK TRANSMITTER

Versatility, reliability, and value are the hallmarks of the L1 Body-Pack Transmitter. When you use it with the Shure 839W Lavalier Microphone, you'll enjoy trouble-free performance with remarkable freedom from audio/RF interference, thanks to the L1's special shielding and circuitry designs. And the L1's standard 4-pin "Tiny QG" connector lets you detach the lavalier microphone and use the L1 for a variety of other applications. Special adapter cables are available to let you plug in both electronic musical instruments and hand-held microphones, or other miniature microphones.



Marconi Radio Awards Chosen As Name For New NAB Recognition Program

The National Association of Broadcasters' new nationwide awards to recognize outstanding stations and personalities in the radio industry will be named the Marconi Radio Awards.

The awards will be presented at NAB's Radio '89 convention. The management, programming, sales/marketing, promotion and engineering convention will be held September 13-16 at the New Orleans Convention Center. The engineering meeting begins September 12.

Awards will be presented for: stations outstanding in their format, station of the year, air personality (or team) of the year, network/syndicated personality of the year, and legendary station.

Radio '89 Steering Committee Chairman Jeffrey H. Smulyan said, "Marconi is a most appropriate name as it is universally symbolic of the radio industry. It will lend great weight to the prestige of these awards." Smulyan is president and chairman of the board, Emmis Broadcasting Corp., Indianapolis, IN.

Gioia Marconi Braga, Guglielmo Marconi's daughter, said she is "very pleased to have my father's name remembered" and noted that the awards will be "recognizing deserving people in the very field that he created."

The winning name was submitted by Michael Bettelli, program director at KOMO-AM, Seattle, WA, in a contest among NAB members and associate members. More than 300 names were received and the Steering Committee made the final selection. Forty-one of the entries suggested that the awards be called Marconi. Since Bettelli's entry was the first one received to mention Marconi, NAB will provide him with free registration and transportation to Radio '89, according to contest rules.

Otari Corporation Purchases Sound Workshop And Digital Creations Corporation

Otari Corporation, the U.S. subsidiary company Otari Inc. of Japan, has announced that effective June 26, 1989 all assets inventories, and interests of Sound Workshop Professional Audio Products Inc., Sound Workshop Inc., and Digital Creations Corp. have been purchased from Michael Tapes and Paul Galburt for an undisclosed amount. According to Jack Soma, President of Otari Corporation, "We had been

actively pursuing a diversification strategy for Otari and we saw a mixing console product line as a natural addition to our tape recorders. Otari is now capable of providing complete studio packages under our own name."

Otari Corporation will direct worldwide sales and marketing from their California offices, while the design and manufacturing will continue at the existing Plainview, New York facilities. All personnel have been retained and will work out of Otari's newly formed Console Products Group and Digital Creations Products department. John Carey, Marketing Manager for Otari Corporation, indicated that the current trends in digital audio workstations are integrating the recorder and console functions into a single system.

NAB Continues Efforts To Improve Questionnaire On 'Economic Life' Of Broadcast Equipment

The National Association of Broadcasters is continuing its efforts to improve the procedures by which the U.S. Treasury Department will survey the "economic life" of broadcast equipment. The 1986 Tax Reform Act requires the collection of such information on equipment used in all industries.

Instead of just determining how long the average broadcast equipment lasts, the Treasury staff must determine how the value of that equipment declines while the station owns the equipment. From that information, they will then assign a "tax life" that will closely approximate the decline in value of the asset.

In 1988, NAB established the Task Force on Depreciation to work with the Treasury Department to minimize the response burden on broadcasters and to ensure that the requested information will be provided. The task force consists of broadcast financial and tax personnel familiar with this issue.

On a randomly selected basis, Treasury will ask 150 television and 250 radio stations to participate in the survey. Voluntary questionnaires are expected to be sent this fall.

Improvements have been made in the original survey outline but NAB still is concerned that the reporting burden will be greater than the estimated 60 hours.

NAB also believes that even 60 hours may be overly burdensome and that some stations may choose not to respond to the voluntary

questionnaire. If that occurs, NAB points out, the department would not initially receive its desired 75 percent response rate, and may send questionnaires to the entire industry -- a move that NAB would strongly object to since it would be an unnecessary burden on the industry and the results would be the same as in a smaller survey.

FM Transmitter Monitoring System

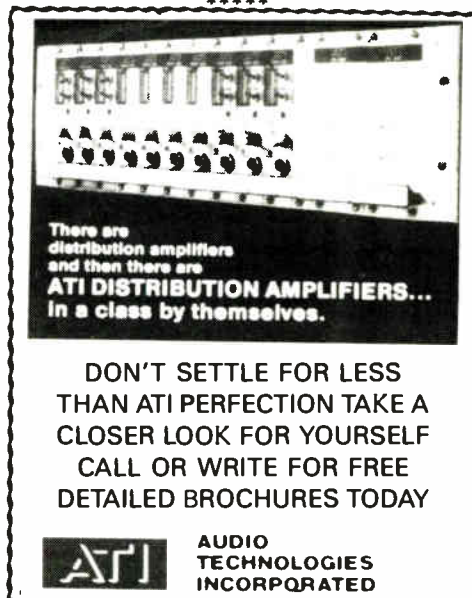
Continental Electronics, a division of Varian Associates, has introduced a new FM transmitter computerized control and remote monitoring system. The FMDATATRAX system is specially designed to help FM radio stations gain the highest possible performance from its Continental FM transmitters.

The FMDATATRAX is programmable, allowing the station to set limits and alarms for their transmitter. Transmitter functions—power up/down and the antenna heater controller—can be pre-programmed up to 12 months in advance.

Basic transmitter performance, such as power amplifier voltage and current, reflected and calculated power, VSWR, screen voltage and current, inlet and outlet temperatures and other parameters are all monitored. Transmitter and support system status is also monitored.

Performance data is measured from milliseconds to days and months for trend analysis and can be transferred via modem to an IBM PC or compatible for further analysis.

For more information, contact Walter Rice, Continental Electronics, P.O. Box 270879, Dallas, TX 75227 or call (214) 381-7161.



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EI Classifieds are free to the readers of Common Point Magazine. To place an ad, simply write it on the Acknowledgement Card that comes with each issue and mail card.
WANTED TO SELL

ATTENTION

We have had a problem with reading the writing of ads sent in for the classified section, therefore we will **only** accept typed written copy.

WANTED TO SELL: 10 channel Omega audio console. Good shape, complete set of spare PC boards, asking \$4500. WPRS Radio, P.O. 367, Paris, IL 61944.

FOR SALE: 1 EA Qrk 5 channel mono console complete; 1 EA Sparta 5 channel mono console minus power supply; 1 Dumont color TV monitor. Best offer...you pay shipping. Bill Croghan KCEE/KWFM, 602-628-2148.

WANTED: Basic A "Brain" (IGM); basic A extender cards (IGM); all or parts for IGM basic A systems. Earle or Barb, KAZMARK KAXX FM, P.O. Box 1369, Deer Park, WA 99006. (509) 276-8816.

USED TRANSMITTER FOR SALE: Gates BC500-G transmitter in mint condition with spare modulation transformer and 3 spare 833A tubes. Priced to sell. Call 913-243-2872.

TALKBACK

Libby, MT -- I am interested in forming a Schaffer/Cetec/Schaffer World System 7000/GLS 7000 users group. There are a good number of these machines in operation. Anyone interested, send description of SYMPTOMS AND SOLUTIONS to problems you've encountered. We will attempt to compile them so that quick solutions to problems will be accessible with a phone call to 7000 users. If your interested in participating send SYMPTOMS AND SOLUTIONS to me. It will only work well if all 7000 users participate.

COLUMBUS, OH -- In your May '89 issue a subscriber asked the question as to why the 33, 45 and 78 RPM standards. Let me reply by revealing my age and some information I've gleaned over the years in the "old" broadcasting days.

The turntable standards have arisen from some fundamental factors of physics rather than an ad agency's fertile mind. Basically it comes down to gear drives. A four pole synchronous motor - to begin with - powered by a 60 C/S service line will rotate at 1,800 R.P.M. Early, and even late - late being up to the 60's - professional turntables in the broadcasting and recording industry were gear driven machines. In line with that philosophy at 54:1 step-down gear ratio from an 1800 RPM motor will result in a 33.33 RPM turntable speed. Similarly a 23:1 ratio equates to 78.26 RPM, and a 40:1 ratio equals 45 RPM.

When originally set forth in the early 30's, the 78 RPM speed was established for phonograph records (for home consumption), and 33 for broadcast transcriptions. The choice between these two speeds relates to the playing time obtainable with a given record size. Decreasing linear groove speed - as the stylus approaches the center of the disc - results in both a loss of high frequency response and an increase of non-linear distortion. A minimum diameter of 8" was frequently chosen for 33 1/2 RPM records so as to keep the high frequency losses tolerable. At 79 RPM the same groove speed can be obtained down to as small as 3.42" of diameter.

Up until the mid 50's all disc recordings were engraved "cold" stylus. That 50's era saw the remarkable improvement in disc recording employing "hot stylus" engraving. This single advent had a far-reaching and profound effect. It dramatically lowered the surface noise in the cutting process to almost the vanishing point, and all but eliminated the requirement of "variable diameter equalization" heretofore necessary to make up for the slower disc surface speed.

Perhaps this will help explain to your readers the "why" for the seemingly arbitrary choice of speeds.
Sincerely yours,
John D. Harmer

WICHITA, KS--Thanks much for great work.

OLIVIA, MN--Really appreciate. Look forward to tech articles.

KLAMATH FALLS, OR--Of all the broadcast related newsletters and magazines & other periodicals, C.P. is the one that I look forward to every month.

Iron Mountain, MI -- My first job as a pidi has been an eye opener. Your publication also has helped me see clearer with the many interesting and informative articles on Radio. Thank you.

TFT's Full Feature FM Modulation Monitor



Model 844 Features:

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 - Frequency agile pre-selector
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- Peak modulation indicators and counter.
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SMP-950 Tri-Band AM Stereo Matrix Processor



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SPF-300 Standard Pre-Emphasis/Filter for AM Broadcast Transmission



The CRL Standard Pre-Emphasis/Filter contains all the functions necessary to convert virtually any monaural audio processing chain to meet the NRSC (National Radio Systems Committee) Voluntary National Standard of January 10, 1987. This transmission standard defines specific pre-emphasis and filtering requirements which are intended to help solve many of the technical concerns in AM broadcasting. The pre-emphasis curve was developed to allow receiver manufacturers to employ a complementary de-emphasis characteristic in wideband radios while improving the frequency response of narrower and medium-bandwidth radios. The filter specification, which limits transmitted audio bandwidth to 10 kHz, is intended to greatly reduce much of the interference between stations by reducing the conditions that cause "splatter" effects.

MDF-400/800 De-Emphasis/Filter for AM Monitors



The CRL Monitor De-Emphasis/Filter provides all the functions required to update any AM modulation monitor or wideband monitor receiver for the recently approved voluntary transmission standard. This allows easier setup of audio processing equipment by emulating the audio characteristic of the best-possible commercially produced radios. Additionally, the unit has features which can reduce interference typically heard in the station air monitor.

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