IEEE NEWSLETTER

ELECTROMAGNETIC COMPATIBILITY GROUP

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ISSUE NO. 56 DECEMBER 1968

Contents

Systems and Situations

AT&T EASES POLICY ON PHONE ATTACHMENTS

A news item with the above title appeared in the Sept. 12, 1968 issue of Electronic Design. Excerpts are as follows:

For years the American Telephone and Telegraph Co. has frowned on the use of modems and other customer-owned terminal devices in conjunction with its telephone network. Now, however, they have filed a new tariff with the FCC that would permit a variety of devices to be connected to the telephone lines. The new provisions would permit

"Direct electrical connection of data equipment, such as computers, to the telephone system through a protective device that would be supplied by the telephone company and leased to the customer.

Acoustic or inductive coupling to the network of any voice or data transmitting or receiving device.

Connection of private mobile radiotelephone systems to the network via the customer's own connecting devices.

Direct electrical connection of customer-provided voice transmitting or receiving equipment through a connection arranged by the telephone company."

Satellite overcomes low frequency barrier

A three page news article written by Charles D. LaFond with the above title appeared in the August 15, 1968 issue of Electronic Design. The first 6 paragraphs are extracted as follows:

"An intense solar flare leaps outward from the sun's corona. Minutes later streams of electrons approach the earth's ionosphere. The result: Low frequency radio communications may be disrupted for hours on earth.

Such sunspot disturbances reach their high point every 11 years. Yet the phenomena are not fully understood by scientists.

Early in July a massive solar flare occurred, producing heavy magnetic storms about the earth and blacking out for short periods radio transmissions from 10 to 104 MHz. Several days later a second large flare caused radio blackouts from 3 to 30 MHz.

To the public, a side effect was the view of a red glow on the horizon, or Northern Lights in the upper latitudes of the world.

To learn more of the effect and interaction of these and other space emissions, the National Aeronautics and Space Administration launched an unusual radio-listening satellite into orbit around the earth on July 4. Called the Radio Astronomy Explorer (RAE-1), or Explorer 38, the spacecraft is instrumented to collect continuous radio emissions from space, as well as from earth in the low-frequency range. It will monitor radio burst signals from the sun, Jupiter and other cosmic sources.

It may, once and for all, provide a complete study of these emanations, previously not obtainable on earth by conventional means because of the shielding effect of the ionosphere".

A Message From Your EDITOR

Don't be Missed, Re-enlist

I recall that every morning when the Flight Instructor read the orders of the day, he would recite the phrase, "Don't be missed, re-enlist". Thus, each day of the first three months of my tour of duty was started with a droning awareness of the service's emphasis on re-enlistment.

The IEEE is not a military organization nor does it recruit in a similar manner. When we examine the name of our organization, The Institute of Electrical and Electronic Engineers, we should note the use of the word of instead of the word for. The Institute is an association of professionally oriented engineers who willingly join together to share in their technological appreciation.

The Group on Electromagnetic Compatibility represents one area of technology in which approximately 1700 individuals have chosen to "enlist" during 1968. Some are also members of other professional organizations, and other IEEE Groups. It seems appropriate at the year's end to reflect back over the past 12 months and to review the highlights shared by the IEEE EMC community.

Throughout the year, each member received direct and early notification of nearly all open and many closed EMC related activities whether they were local, national or international. He also received periodic issues of the Newsletter containing reports on the latest events, papers, meetings, and including reports from various EMC Committees. The EMC Transactions which every member received, were prepared by leading world authorities and include invaluable collection of material on the state-of-the-art of shielding and filtering, available nowhere else in the world. To the approximately 400 people who attended, the July EMC Symposium in Seattle was the highlight event of the year. It featured two concurrent paper sessions for a period of nearly 3 days, an assembly of over 40 vendor displays of EMC components, equipment and systems, and included the luncheon, social hour and banquet in the price of registration. As a result of the successful symposium, not only did each paid registrant receive copy of the Symposium record (containing full papers), but each member who could not attend was also mailed a copy. Consistent with the recent upsurgence of EMC awareness, the Group initiated the publication of Information Retrieval Abstracts, which scans the issues of over 90 publications and assembles a reference file of current EMC related printed material. Every member has and will continue to receive the abstracts on a periodic basis.

Even if he could not attend the local G-EMC Chapter meetings in his area, each member was afforded the opportunity to share and to keep pace in the wealth of spiraling technological material. The events and publications were made available through the unselfish efforts and contributions of individuals who have chosen to be members of the IEEE EMC Group.

The basic IEEE membership program without group affiliation provided additional benefits, such as Group Life and Health Insurance, reduced rates at meetings, a subscription to the Spectrum, etc. But to some, these are considered to be fringes, such as those offered by a large employers. To others, they are the main reasons for joining.

We are now looking forward to a new calendar year, filled with promises and ambitions. Five newly elected members will take their places on the 15 man EMC Administrative Committee, while we as individuals are confronted with the task of re-submitting our membership dues. As we do so, we should reflect upon the opportunities of the past, the promise of the future, and our individual desire to support and associate with our contemporari

It has not been the practice of the G-EMC Newsletter editor to editorialize. However, in light of the new Government legislati recently passed and still pending, the recent updating, consolidation and issuance of new military EMI control specifications, the potential spectrum utilization and side effects crisis, and the growing awareness and acceptance of EMC throughout the industry and community, the present and potential responsibility of the EMC specialist is reaching new horizons. The ability of the EMC engineer will meet new challenges, and his reputation is at stake. In my opinion, IEEE G-EMC membership provides opportunities through which the needed professional and technological growth can be obtained.

Bob Goldblum

Got a story you'd like to tell

Good.
We'd like to publish it.

chapter chatter

Ira M. Berman
Associate Editor for Chapter News

For those of you who have had articles, documents, or other writings published, you know what an exhilarating feeling it is having your name as a by-line, particularly for the first time. It doesn't take much effort to feel the responsibility that goes along with the exhilaration, however. I will try to fulfill these responsibilities and make Chapter Chatter the column that readers will turn to first.

Following the promise made in the September issue, we are working to publicize Chapter News as completely as possible. Each Chapter Chairman has been individually contacted and requested to let us know before the Newsletter deadline, a considerable amount of information about his particular Chapter. The results have been very gratifying: we have received information from nine of the fifteen Chapters across the country. In most cases the information has been excellent: details, names, places, plans--everything an editorial staff could hope for. Just glancing over the various Chapter functions and activities as I received the returns, I could not help but be impressed with the breadth of these activities. Several Chapters hold meetings monthly and seem to find a sufficient number of topics to make this meeting frequency worthwhile.

Let's touch base in each Chapter and see what's happening:

ATLANTA

The Atlanta Chapter's report is brief even though we had a glowing report in the September Newsletter.

Date	Speaker	Affiliation	Topic
Sept.19,68	Ray Howland	Scientific-Atlanta	Microwave Receivers

Attendance: 23

We would certainly like to hear more from the Atlanta Chapter.

BOSTON

Here's a moving Chapter. Variety is the spice of life along Route 128, and just look at this variety of activities:

Date	Speaker	Affiliation	Topic
Oct 23,68	A. DiMarzio	---	Panel: An ad-lib on
	O. Haszard	---	Shielding
	G. Roessler	---	

Attendance: 37

CONTINUED

Their next meeting seems to push the state of the art a bit:

Date	Speaker	Affiliation	Topic
Nov 26, 68	--	Hewlett-Packard	Application of Spectrum Analyzers to EMI Measurements

On February 10, 1969, a Student's Night is planned. (First word we've had on an EMC Students' Night, by the way.) Members of the Boston area IEEE Student Chapters are invited to a free dinner and a general presentation of EMC and its impact on the profession. This sounds like a great idea that all Chapters might do well to consider. The Chairman, Mr. A. DiMarzio, and the Vice-Chairman, Mr. S. Birnbach, are on the Papers Review Committee for the 1969 Symposium, and Mr. Di Marzio has written a paper, "Graphical Solution to Harmonic Analysis," published in the September 1968 issue of the IEEE-AES Transactions. There are a total of 50 members in the Chapter, and their average attendance is 25 per meeting, including 10 guests! That guest attendance is quite important, not only because it attracts new members, but because it helps to spread the EMC "gospel" to groups other than our own.

CHICAGO

The members in the Second City sent along word of one meeting, and I'll bet it was a good one

Date	Speaker	Affiliation	Topic
Sept. 17, '68	Fred Nichols	Lectro Magnetics, Inc.	Simplified RF Electromagnetic Shielding

Attendance 29

LOS ANGELES

The L.A. Chapter right now appears to be ankle deep in the 1970 Symposium planning. They still manage to have monthly meetings, though, consistently showing a wide range of interest:

Date	Speaker	Affiliation	Topic
Sept. 26, '68	Don Clark	U.S. Civil Engrg Lab - Port Hueneme, Calif.	A critical Review of MIL-STD-220A
Attendance: 95			
Oct. 17, '68	Dr. & Mrs. Don Lebell	Lebell Consultants	What It's Like; experiences of an engineer and his family in Chile.
Attendance: 75 (Ladies' Night)			

The ladies may not care about MIL-E-6051D or tin-copper-steel mesh, but the program can surely be stretched a bit to provide an occasional social evening. For the next few months, the Los Angeles Chapter will again mix business and pleasure:

Date	Speaker	Affiliation	Topic
Nov. 21,'68	Joe Fisher Herb Mertel Bill Lash Ed Kavanaugh	-----	A Panel Review of MIL-STD-461

Dec. 13,'68 Pre-Christmas Social: Dinner and Dance

Plans for 1969 include a Student Night (there you go again!), a Spectrum Engineering Panel, EMI Considerations of the Stanford Linear Accelerator, Spectrum Analyzer EMC Instrumentation Techniques, and an EMC Specialist Workshop. Five months, five real meaty subjects. No one to blame but yourself if you're in LA and don't take advantage of that program!

MOHAWK VALLEY (Rome, N.Y., area)

The members upstate New York continue to be active.

The subjects covered at their meetings seem aimed toward the propagation aspect of EMC:

Date	Speaker	Affiliation	Topic
Oct. 15, '68	Jose Pemini	-----	TV Transmitting Antennas

Attendance 24

One future meeting has been scheduled:

Date	Speaker	Affiliation	Topic
Jan. 1969	To be announced		Adjacent Channel ference Parameter

One additional meeting is planned before June 1969. This s like a group that's going to grow in the future as EMC beco a more important factor in the propagation of energy.

NEW JERSEY COAST

The group that centers around the Army Signal Labs at Fort will be our hosts for the 1969 Symposium next June. They p total of seven meetings for the 68-69 season. The first ed the findings of a recently completed comprehensive, four study on the use of the r-f spectrum:

Date	Speaker	Affiliation	Topic
Oct. 8, '68	Samuel A. Scharff	Riverside Research Inst.	Spectrum --The Ke Progress

Attendance 52

Many of these are luncheon meetings, using the Laboratory f The future program is still somewhat undefined, but the fol dates are set:

Date	Speaker	Affiliation	Topic
Nov. 12, '68	William Swift	Hewlett-Packard Co.	Using the Analyzer f Measuremer

Dec. 17, '68 Second Annual Holiday Social Meeting

Jan. 21, '69 Joint Technical Meeting with the New York Cha

Mar, 11, '69 Technical Luncheon Meetings
Apr. 8, 1969 " " "

May 13, 1969 - 1969 Symposium Briefing

The Symposium dates are June 17-19, 1969, at Asbury Park, Jersey. More on that will appear elsewhere in the various of the Newsletter. There are 58 Chapter members, with an average attendance of 40 members and 10 guests per meeting.

PHILADELPHIA

The Philadelphia Chapter has spent the last several years ing its scope and is starting to show great promise. Six ings per season are now scheduled, with the first two alre completed and very well attended.

Date	Speaker	Affiliation	Topic
9/6/68	George W. Haydon	NBS, Boulder, Co.	The Sil Screams

Attendance 58 (Joining Meeting with Philadelphia IEEE

CONT

10/3/68 Rexford Daniels Consultant Man, Nature and EMC

Attendance 26

Mr. Daniel's address in October was an expanded version of his presentation at the IEEE Meeting in New York City last March. The examples he provided of "natural" EMI surrounding us at all times left the audience literally spellbound (your Editorial Staff included).

Philadelphia has four meetings yet to go this season

Date	Speaker	Affiliation	Topic
12/10/68	Herman Garlan	Chief of RF Devices FCC	The FCC and EMC
1/15/69	Joint Meeting with I & M Chapter		
2/5/69	To be announced		
3/15/69	Joint meeting with AES and I&M Chapters		

Philly members such as Conrad Fowler and Frank Hamell, are also active in 1969 Symposium. Frank will head up a Special Working Group on Computers at the Technical Advisory Committee meeting in Asbury Park. His topics will include: Grounding, Specifications, Standards, and Planning Ahead for 1975. Connie is an advisor to the steering committee.

SAN FRANCISCO

The Chapter officers out on the Peninsula sent a comprehensive report of their activities. It makes you feel as if you were right at the meetings. Their October meeting featured a panel of high-powered people:

Date	Speaker	Affiliation	Topic
10/21/68	A. Roderick Carlson (Moderator)	Hewlett-Packard Co.	The EMC Engineer vs the Design Engineer, a Communications problem
	Robert VanDick	Fairchild Semiconductor	
	Robert Hood	Fairchild Semiconductor	
	James R. Dawley	Lockheed Missiles & Space Co.	
	William P. Lohner	IBM	
	Bobby J. Smith	IBM	

Attendance: 22 (with 7 guests)

The panel discussed six rather involved questions regarding Design Engineers and EMC. In the report, several factors kept reappearing: EMC Discipline, EMC Education, EMC Measurements, EMC Motivation. Mr. Fred Nichols Ad Com Vice Chairman, attended and contributed greatly toward the lively discussion.

The future meetings sound just as good:

Date	Speaker	Affiliation	Topic
11/18/68	Guy L. Otlinger	Lockheed Missile and Space Co.	The applicabilit of EMI Specification
1/ /69	Fred Nichols	Lectromagnetics, Inc.	Shielded Room Problems
2/ /69	Panel Discussion		
4/ /69	To be announced		
5/ /69	" " "		

Bill Swift authored a Hewlett-Packard Applications Note entitled "Modern EMI Measurements" in October 1968. There are 65 in the Chapter, with an average member attendance of 21 and average guest attendance of 7. Sure looks as if a lot of the Members could be taking advantage of a good thing.

SEATTLE

Last, but far, far from the least, is the Seattle Chapter. Those o us fortunate to attend the 1968 Symposium look back on Seattle with the pleasantest of memories. As of this writing, Seattle has five meetings planned for the 68-69 year, and has completed one of them. From the titles of the first two presentations, they are not resting on their Symposium laurels, but are plugging away at more education for their members.

Date	Speaker	Affiliation	Topic
9/25/68	Dr. William W. Cooley	Seattle University	Interference and Susceptibility Problems of a Leaky Rectangular Enclosure

Attendance: 16

ECAC will visit Seattle this November.

Date	Speaker	Affiliation	Topic
11/20/68	Cdr. H.E. Winter,USN	ECAC	The Department of Defense EMC Program

1969 meetings are planned for January 29, March 26, and May 21. The topics for these meetings have not been chosen.

Seattle's Chapter has 45 members, but the attendance only averaged 16 members and 3 guests per meeting. Some people just don't know what they're missing!

For general information, Al Echersley of Seattle informs me that he has no way of knowing what (if anything) the members may publish - or, for that matter, if they make an EMC related address or presentation outside the IEEE. The Newsletter staff won't know either, unless the member himself lets someone know. Drop a line to your Chapter Chairman, or to Bob Goldblum or myself, and sure enough! national recognition in front of 1700 of your peers.

See you all next issue.

Design and Analysis

Logic Circuits for high-noise environments

A four page article written by Lloyd Maul, of Motorola Semiconductor, Phoenix,Arizona appeared in the September 1968 issue of Electronic Products. The first four paragraphs are extracted as follows:

"Several schemes are employed to reduce the effects of electrical noise, both internal and external, on a system using IC's.

Shielding IC's and associated wiring prevents external electromagnetic radiation from inducing noise into the circuitry. Special buffering circuits may be employed between the electronic circuits and signal leads dependent on external sources. These signal leads in many cases require special routing considerations and special shielding. Extra filtering of the power supply leads may be required.

Internal noise generation may require special spacing and routing considerations as well as maintaining a short lead lengths. In some cases, the power supply may have to be bypassed at several points.

The cost of additional components and equipment necessary to protect IC's from electrical noise can reach a point where it is preferable to seek other methods. It would be advantageous to have an integrated-circuit family with a high degree of inherent noise immunity".

Slip Rings

A five page article with the above title appeared in the July 1968 issue of the System Designer's Handbook (Electromechanical Design). The article edited by Donald D. French, Product Engineer, Foxboro Co., Foxboro, Mass. provides good coverage of slip ring redesigns and applications. Since the entire article should be of interest to EMC engineers, it is difficult to select which paragraph to excerpt. Thus, in addition to extracting the following paragraph, section titles are also presented. Reprints of the article are available, and may be obtained by writing to Mr. Arthur O'Sullivan, Associate Editor, Electro-mechanical Design, 167 Corey Road, Brookline, Mass. 02146.

Electrical Noise

"When the slip ring is rotated with a known dc current flowing through the circuit, noise is usually read as the peak-to-peak voltage fluctuation on an oscilloscope connected across the brush ring contacts. Electrical noise increases with surface speed, and decreases with higher brush pressures. It is also influenced by vibration, the material and finish of rings and brushes, and ring concentricity. Under normal operation, noise generally increases with wear until eventually it interferes with the transmitted signal. Electrical noise, primarily the result of resistance changes between a ring/brush contact, is caused by minute variations in contact area and pressure as the ring rotates. Thermal, junction, piezoelectric and sliding contact effects also generate noise."

Section Titles

Assembly Design Considerations
Insulation Resistance
Materials
Dielectric Strength
Electrical Noise

Section Titles (Cont'd)

Cross Talk
High Frequency
Radio Frequency Noise
High-Frequency Design
Shielding
Insulating Materials
Mechanically Initiated Noise

The Author has informed us of his plans to write additional articles on slip rings, emphasizing static and dynamic contac theory. These articles may appear in the April and October, issues of Electromechanical Design.

Capacity of Shielded Wires

A one page article with the above title appeared in the September 2, 1968 issue of EDN. The first two paragraphs are extracted as follows:

"The capacitance per foot of shielded and coaxial wires can calculated quickly by using this set of curves. The curve applicable for a variety of wire sizes and insulation thickne The basic data are derived from the formula:

$$C = \frac{7.36K}{\log_{10}\frac{D}{d}}$$

where

C = capacity in picofarads

K = dielectric constant

D = overall diameter (inside shield)

d = conductor diameter

Actual measurements and MIL-C-17B (coaxial cables) data indic that the formula was about 10 percent high. Therefore, this correction factor was applied to the formula to produce these curves. The accuracy of the curves was checked against the published capacity per MIL-C-17B on 39 coaxial cables that co four different types of insulation. Using the dielectric con as given in the table attached to the curve, 25 cables checke within 1 pf/ftand all but two checked within 5 percent. Actu capacity measurements were taken on nine cables (4-ft lengths Eight of these were within 1 pf of the computed capacity."

Eliminate contact bounce in your IC system

An idea for design with the above title appeared in the Sept 1968 issue of Electronic Design. It was written by Hy Dreks Group Leader, Grumman Aircraft, Bethpage, L.I. The text is and to the point, and includes four figures showing circuit matics and wave shapes. The first two paragraphs of the fou paragraph text is as follows:

CONTINUE

Measuring Oscillator Noise - With Repeatability

An article with the above title written by Robert D. Compton, Midwest Editor, appeared in the September 2, 1968 issue of EDN. The first two paragraphs are extracted as follows:

"The contact bounce of a momentary switch used with ICs (Figs.a and b) can cause intermittent outputs. A simple circuit (Fig. c) eliminates this problem. But before we describe its operation, let's take a look at the causes of the problem.

DTL and TTL ICs respond to ground commands, so a ground is fed into the gate. R is used for noise suppression, since without it there is the impedance of a back-biased diode during the switch-off condition."

"Testing the noise content of a high-stability sinusoidal oscillator is not an easy task. In particular, measuring crystal-oscillator noise taxes even the best test equipment, making it virtually impossible to compare results produced by two different test set-ups. This causes many problems, particularly in the specifying, production testing and acceptance testing of oscillators. To resolve this, a method for testing spectral purity of oscillators has been developed that gives accurate, reproducible results. In addition, it provides exceptional sensitivity and is not dependent on operator skill.

The technique is based on feeding two oscillators into a double balanced mixer, which cancels their fundamental frequencies. The balanced-mixer output is the difference between the two input signals. Thus, when both oscillators have the same frequency, the only mixer output is the sum of their noise. This noise component then can be measured over small bandwidths by using a wave analyzer preceded by a high-gain preamp."

AdCom meeting

The next meeting of the G-EMC Administrative Committee has been scheduled for December 2, 1968 aboard a research vessel of the Lightning and Transients Research Institute (LTRI) at Miami Beach, Florida. The LTRI research vessel will be located at 168 Mac Arthur Causeway. The Lightning and Transients Symposium will be held December 3-5 at the Symposium headquarters hotel, The Deauville.

Standing Committee meetings which have not been held prior to the Ad Com meeting, will be held in the monring of December 2nd. The Ad Com meeting will start at 2:30 in the afternoon and will be limited to a duration of approximately two hours. The LTRI will provide a demonstration on-board the research vessel from 2-2:30 PM. Ad Com meetings are open to all who wish to attend.

Air Waves and Regulations

NAE forms Committee on Telecommunications

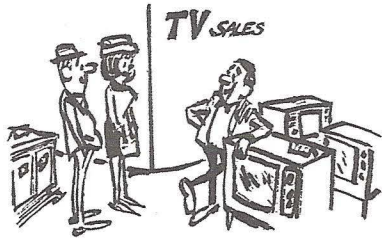
The National Academy of Engineering (NAE) announced the formation of a Committee on Telecommunications to conduct a study of developments in communications technology through 1980. The 15-member committee is chaired by William L. Everitt, Dean of the College of Engineering of the University of Illinois. The committee will advise both the President's Task Force on Communications Policy, created in August 1967 to review the nation's domestic and international policies in communications, and the Department of Housing and Urban Development, which is funding the study in connection with its long-range program of research toward improved urban life.

The committee will first analyze data collected by the Task Force on current and anticipated developments in telecommunications technology to determine the extent to which such information provides a basis for policy judgments. It will then prepare descriptions of developments in telecommunications technology that are considered reasonably likely to be available by 1980, in order to provide policy makers with a framework of technological options.

The committee will examine long-distance transmission modes such as satellites, cables, and guided laser beams. It will also consider the problem of distribution of radio, television, telephone and data signals within cities and the types of terminal equipment that may be available for business and personal use, such as receivers, vidéo-phones, and data input consoles.

Timely Cartoon

The Wall Street Journal carried a very timely cartoon in the July 22, 1968 edition while the IEEE International G-EMC Symposium was in session. It pictured a TV salesman in a store addressing a young couple with the following caption "This set has a feature you'll really enjoy -- it interferes with your neighbor's power tools." (My thanks to Mrs. Phil Andress for her awareness and submitting this cartoor to the Newsletter).



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"Radiation Control for Health and Safety Act of 1968"

Congress passed and the President signed into law, a radiation hazards bill titled "Radiation Control for Health and Safety Act of 1968". The bill was identified in the House of Representatives as H.R. 10790 and in the Senate as S.3211, and is now designated as Public Law 90-602, approved October 18, 1968.

Public Law 90-602 amends Part F of Title III of the Public Health Service Act (42 USC 262-263a) by adding a new Subpart 3 - Electronic Product Radiation Control. The opening section which defines the purpose of the Act reads:

> "Sec. 354. The Congress hereby declares that the public health and safety must be protected from the dangers of electronic product radiation. Thus, it is the purpose of this subpart to provide for the establishment by the Secretary of an electronic product radiation control program which shall include the development and administration of performance standards to control the emission of electronic product radiation from electronic products and the undertaking by public and private organizations of research and investigation into the effects and control of such radiation emissions". (Secretary means the Secretary of Health, Education and Wealfare).

It is interesting to note the electronic product radiation definition:

> "The term electronic product radiation means
>
> A - any ionizing or non-ionizing electromagnetic or particulate radiation, or
> B - any sonic, infrasonic, or ultrasonic wave which is emitted from an electronic product as the result of operation of an electronic circuit n such product."

"Internal Transient Control for Solid State Power Suppliers"

The Electronic Industries Association (EIA) General Equipment Specifications (G-32) Committee is currently reviewing a proposed MIL-STD-1281 (EL) with the above title. It is understood that this new Standard has been developed by the Army Electronics Command in an effort to improve the overall reliability of solid state power supplies whether they are procured singly or as part of an electronic equipment or system. It is further understood that when Army coordination is complete, Tri-Service Coordination will follow. The Forward of this Standard is extracted as follows:

"The intent of this document is to establish internal transient control for static solid state power supplies and static solid state power supply systems of military electronic equipment.

Conformance to the requirements and tests of this standard insures adequate design and engineering of static solid state power supplies relative to safe operation of semiconductor components under the stress of internal transients. It shall be the responsibility of the power supply designer or manufacturer, or both, or the equipment designer or fabricator, or both, to provide for conformance to this standard."

MIL-STD-463 to be revised

The EIA has distributed copies of MIL-STD-463 dated 9 June 1966 to members of its G-46 Committee for review and comment. The standard has been scheduled for revision in order to update, improve, and extend its range of definitions pertinent to MIL-STD-461, MIL-STD-462, and MIL-STD-469. The following is quoted from the FORWARD of MIL-STD-463:

"The electromagnetic interference and compatibility language will undoubtedly continue to expand. It is, therefore, important that the constructive suggestions be made by all users of this document. No particular format is prescribed. For new items, a complete definition should be provided, together with a sufficient explanation of the item for the benefit of the editorial staff. If definitions are quoted from any source, the source must be identified. Copyright material cannot be included in this standard. The active participation of individuals, organizations and agencies in submitting changes, corrections, and additions is essential to the continued usefulness of this standard and is encouraged."

Since MIL-STD-463 is a published document, copies should be obtainable through normal channels. Mr. Steven C. Garcia, Philco-Ford Corp., 4700 Wissahickon Ave., Phila., Pa. 19144 is presently consolidating all suggestions, and they should be submitted to him by 15 December 1968. The EIA plans to forward the recommendations to the preparing activity, U.S. Army Electronics Command, Fort Monmouth, N.J. prior to 1 January 1969.

THE CASE FOR THE LEAD-LINED JOCK STRAP

An editorial written by Creig Marcott, Editor with the above title appeared in the August 1968 issue of Electronic Products. Excerpts from the editorial are as follows:

> "What are the long-term effects on your emotions, tissue, nerves, ability to reproduce yourself when you are exposed to electromagnetic radiation, magnetic storms, laser beams or ultrasonic vibrations?"
>
> "Some effects are well documented: for instance, microwaves can induce eye cataracts; your body can store electrostatic charges up to thousands of volts; current of certain magnitude causes wasting of nerve tissue; electric shock can relieve mental depression; rhythmic voltages can induce sleep."
>
> "The exact effects of laser beams are under exhaustive study in Massachusetts and California by the Dept. of Health, Education and Welfare. Over 10,000 workers in industry are regularly exposed to laser reflections, and the Government estimates that 60% face potential damage to skin or eyes.
>
> In another study, psychologists are trying to determine whether there are effects on unborn children when expectant mothers sit near TV. And the X-radiation from color TV sets is suspected as a cause of sterilization.
>
> In framing legislation to control radiation, Congress has singled out these probable sources, klystrons, CRT's, microwave ovens, radar, lasers, computers, sonar, ultrasonic cleaners and high-voltage vacuum tubes."
>
> "Current cooperative activity involving the medical profession with electronic engineering is, fortunately, opening the door to systematic study of the problem. The findings could be dramatic."

VOICING THE CASE FOR SSB

A letter to the editor with the above title written by Peter Laakmann of Hughes Aircraft Co. appeared in the September 2, 1968 issue of Electronics. Excerpts from the letter are as follows:

"It is difficult to comprehend why a natural resource like spectrum space is wasted by the proliferation of f-m voice communication. Man, as he harnesses the higher frequencies, finds progressively more inefficient methods of using them."

"Anybody who listens to f-m broadcasts while driving far from the transmitter or in mountainous terrain can testify to the deficiency of f-m under marginal conditions. It is true that near the transmitter, f-m quality is excellent and ssb would always suffer from some small amount of flutter. However, when it comes to transmitting intelligence by means of voice, flutter is preferable to the typical dropouts and locks on other stations so typical of f-m. Ssb offers approximately 10 times more channels per megacycle than f-m. It gives a minimum of interference because of the intermittent nature of the mode. At least 200,000 radio amateurs operating ssb in no more than .2Mhz of spectrum space on the h-f bands can testify to the very high load factor possible with ssb.

In view of the limited amount of spectrum space available, I'd urge that both a-m and f-m be phased out for all person-to-person voice transmission. The technology to do this is here."

CONTINUED

NEW REPORT HIGHLIGHTS FUTURE NEEDS AND USES OF THE RADIO SPECTRUM

Waste of valuable engineering effort and company finances because of a lack of single appropriate entity to properly coordinate advance review of projected developments requiring radio spectrum allocation, was revealed today in a report just published by the Joint Technical Advisory Committee of the Institute of Electrical and Electronics Engineers and the Electronic Industries Association.

This new report contains the results of a comprehensive industry survey which sought to determine, to the degree possible, what demands would be made for spectrum allocations in the near term (less than 5 years) and long term (beyond 5 years). Because of an excellent industry response -- over 200 questionnaires returned -- a good cross section of demand was obtained.

The results reported make it abundantly clear that the spectrum cannot accommodate many of the proposed industry-sponsored developments.

The conclusions drawn by the JTAC as a result of this survey further substantiates those developed in its recently published report SPECTRUM ENGINEERING--THE KEY TO PROGRESS. In this report, FUTURE NEEDS AND USERS OF THE SPECTRUM, the JTAC recommends that a new Spectrum Engineering Entity be established to cope with the burgeoning demands for more frequencies and the increased complexity in engineering effort required to meet these demands. The JTAC further recommends that the new Spectrum Engineering Entity be charged with the additional responsibility of providing an advance confidential review of prospective new developments to assure spectrum availability for those successfully completed.

The Joint Technical Advisory Committee was established in 1948 to act as an advisory body to the FCC and other government organizations in matters involving radio spectrum engineering. It is jointly sponsored by The Institute of Electrical and Electronics Engineers and the Electronic Industries Association. The report FUTURE NEEDS AND USES OF THE SPECTRUM can be obtained from the IEEE, 345 East 47th Street, New York, N.Y. 10017 and $2 to members of IEEE and EIA; $3 to Public Libraries, Government Agencies and Colleges; and $4 for others.

Frequency Spectrum Chart

A frequency spectrum chart covering the frequency range of .001 Hz to 10^{14} GHz has been published. The 40 by 15 inch chart, which has been given wide publicity by Rex Daniels in his paper "Nature, The New Interface in Electronics", has an expanded scale over the frequency range of 3MHz to 300 GHz containing identification of man's use and natural phenomena. It was expanded by Luther Monell, member of JTAC 63.1.4, from his frequency chart prepared for the Space Division of North American Rockwell Corporation. Free copies are available for writing to Mr. Luther Monell, 3433 West 59th Place, Los Angeles, Calif. 90043, on company letter head. Mr. Monell is presently expanding the chart and may include more detail on the infared, light spectrum, etc. in the future. Therefore, it is requested that you include the reasons why you desire the chart, in order to assist him in his endeavors.

New Products and Brochures

NEW PRODUCTS

ACTIVE FILTER: MOS IC NONOLITHIC STRUCTURE

A news item with the above title appeared in the June 1968 issue of the Electronic Engineer. Excerpts from the item are as follows:

These monolithic IC active filters can replace passive filters at frequencies below 100 KHz. The circuit is made up of three completely compensated differential amplifiers on a 70 x 90 mil silicon chip. The WML-5 is a building block for more complex functions. For example, a 4-pole pair bandpass filter could have a relative bandwidth of from less than 1% to more than 100%. Additional information can be obtained from Western Microwave Laboratories, Semiconductor Products, 1045 Di Giulio St., Santa Clara, Calif. 95050 (408) 246-4500.

Rad Haz Test Probe

The following item appeared in the New Products section of the September 1968 issue of Microwaves. The text read as follows:

"Radiation test probe, Microlite 287, uses a pre-ignited neon glow tube to indicate unsafe radiation leakage levels from microwave ovens. Calibrated at 2450 MHz, the unit will indicate leakage as low as 6-7 mW/cm^2 by a faint glow in the neon tube, while fields of 10+2mW/cm^2 produce a bright blue glow over its full length. Probe is completely self-contained, operates from 115 Vac, 60-Hz line and may be pre-calibrated for frequencies other than 2450 MHz."

Brochure Available

"Modern EMI Measurements"

A new application note 63E entitled "Modern EMI Measurements" written by Bill Swift, applications engineer, has been issued by the Hewlett-Packard Company. This application note describes the use of the spectrum analyzer for interference measurement. It begins with an introduction of the compatibility concept and examples of the compatibility problem. It continues describing the general method of EMI measurement. A handbook "The EMI Measurement Procedure" is also available. This handbook contains step-by-step operating instructions on how to make EMI measurements with the spectrum analyzer. Both the application note and the measurement procedure are available upon request from the Hewlett-Packard Co., 1501 Page Mill Road, Palo Alto, Calif. 94304.

New Series of Automatic Measurement Systems

A brochure describing a new series of manual, semi and automatic RFI/EMI receiver and measurement systems has been issued by White Electromagnetics, Inc. (WEI). The brochure states that "The WEI 160 Receivers represents the latest advanced state-of-the-art in Spectrum Display and Signal Recognition Systems." The frequency range from 20 Hz to 20 GHz is covered with three functionally complete, calibrated receivers. The brochure, which is dated July 1968, carries a complete description of the receivers, and may be obtained from WEI, 670 Lofstrand Lane, Rockville, Md. 20850 (301) 424-2900.

CONTINUED

Absolute Transient Protection

A new brochure with the above title has been released by Transtector Systems, 3025 West Mission Road, Alhambra, California 91803. The brochure describes a transient protection device called a TRANSTECTOR and its various applications. The first three paragraphs of the brochure are as follows:

"What is a TRANSTECTOR?

A transtector is a solid state device which protects circuitry and systems from transients of voltage and current.

The device is composed of a Sense Amplifier, Control Logic and Power Circuit in one module, as shown in its functional block diagram below.

Its' circuitry allows the transtector to be a high speed, high current switching device with an overall response time of $\leq$ 500 nanoseconds. The Sense Amplifier senses the approaching transient and fires at a predetermined voltage or current level. Its control drives the Power Circuitry to short and absorb the transient. During this absorbing period a fuse or circuit breaker is opened."

Copies of the brochure are available from Transtector Systems.

SPRAGUE PAPERS AVAILABLE

--Over eighty (80) technical papers, thirty-five (35) of them printed within the last year, are available at no charge from the Technical Literature Service of Sprague Electric Company, Marshall Street, North Adams, Mass.

With authors drawn from the Sprague R & D Center and the company's many electronic component operations, the papers cover semiconductors, integrated circuits, capacitors, resistors, hybrid circuits, and their applications.

A Title-Author Index of these papers is available by writing to the company. Papers which may be of specific interest to the EMC community are extracted from the list as follows:

No.	Title and Author
TP-68-5	High Frequency Capacitors by Walter C. Lamphier
TP-67-5	A New Metallized Tantalum Capacitor by H. F. Puppolo, E. N. Urfer, and R. J. Millard
TP-67-6	Susceptibility of Active Filters by David S. Miller
TP-67-9	Measuring Filter Insertion Losses Under Rated Load Conditions at Extended Frequencies by Howard S. Prye and Roger C. Follett
TP-67-10	Amplifier Designs Using Repetitive Stabilized Gain Elements by George W. Haines and Bruce Amazeen
TP-67-15	A Better Understanding of Ceramic Capacitors by John H. Burton and Edmund A. Bolton
TP-67-19	Energy Storage Capacitors 1967 by Jerold D. Kowalsky
TP-67-21	A Monolithic Limiter and Balanced Discriminator for FM and TV Receivers by A. Bilotti and R.S. Pepper

No.	Title and Author
TP-66-4	Design of Integrable Desensitized Frequency Selective Amplifiers by Dr. A. A. Gaash, and Dr. Robert S. Pepper
TP-64-2	A Common-Sense Approach to RFI Filter Reliability by Charles M. Hewison and Harvey Goodell
TP-62-3	Magnetic Circuitry and Applications by Edward C. Geissler
TP-60-2	Rejection Filters with Distributed R and C by Alan Smith

FINGER GASKETS WITH SELF-ADHESIVE BACKING

A new four-page brochure describing the company's recently introduced beryllium copper finger contact strips with pressure sensitive backing has just been published by Instrument Specialties Co., Inc.

To install, a protective paper is easily peeled from the underside of the strip ... and the strip is firmly pressed into position. The adhesive bond actually cures and strengthens with age to keep Sticky Fingers permanently in place even after thousands of closures.

The catalog contains detailed performance specifications, installation instructions and typical applications, together with complete ordering information.

For a copy of this new brochure, write to Harvey Roberson, Instrument Specialties Company, Inc., Little Falls, N.J. 07424.

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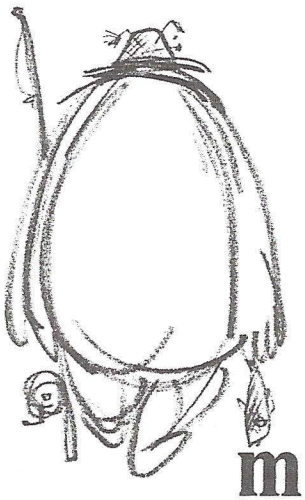


miscellaney...

.... is a rose, is a rose, is a rose"

The Institute has a good name for its general publication, the IEEE SPECTRUM. However, Newsletter, Bulletin, or News Bulletin is common among Section or Group publications. Some IEEE Sections have adopted distinctive publication titles, such as:

Boston	REFLECTOR
Connecticut	CONNECTOR
Long Island	PULSE
Mohawk Valley	ECHOES
New Jersey Coast	SCANNER
New York	MONITOR
Princeton	The P.S.
Philadelphia	ALMANACK
Atlanta	ATLANTA CIRCUIT
Canaveral	IMPULSE
Evansville-Owensboro	TRANSMITTER
Fort Walton	COURIER
South Carolina	SOUTHERN CORONA
Cedar Rapids	CORONA
Central Indiana	REPORTER
Chicago	IEEE SCANFAX
Fort Wayne	ANNOUNCER
South Bend	NUCLEUS
Twin Cities	RADIATOR
Central Texas	ANALOG
Dallas	DIRECTION
Houston	SCOPE
Saint Louis	The Mighty MHO
Albuquerque	BLAST
Portland	BEEP
San Francisco	GRID
Seattle	DATA LINK
Montreal	Current PHASE Courante

Among newspapers we find such titles as TRANSCRIPT, POST, HERALD, CHRONICLE, TIMES, TRAVELER, ADVOCATE, TRIBUNE, RECORD, AND OZONE among many others.

Industrial Electronics and Control Instrumentation Group

letters

The editor would like to invite all interested persons to air their views in the Newsletter through letters to the editor. Each responsible letter received will be carefully considered. Publication of the letter will depend upon its timeliness, interest to the EMC community and on space available. The autjor's name may be witheld upon request.

To the Editor:

I would like to thank all members of the group who supported me in winning election to the Administrative Committee for the period January 1, 1969 to December 31, 1971.

I have talked to many IEEE members, in and out of our group, and am aware of their attitude towards committees and their accomplishments. I would like to take the opportunity to invite any group member to convey to me their particular viewpoints and proposals. I promise to evaluate their recommendations, answer their correspondence and take appropriate action. My address and telephone number is:

Anthony G. Zimbalatti , EMC Group Head
RF Engineering, Plant 14
GRUMMAN AIRCRAFT ENGINEERING CORPORATION
Bethpage, L. I., New York 11714

516 LR 5-2493

Very truly yours,

Anthony G. Zimbalatti

Out of the past

Prior to editing the IEEE Newsletter, Rex Daniels published an independent newsletter which he called Quasies and Peaks. The following editorial has been extracted from the December 1954 issue.

We must admit that we were totally unprepared for the acceptance of the first issue of"Quasies and Peaks" by those in the interference reduction field. We thought an issue of fifty copies would more than take care of companies and individuals. Up to the present time, we are in our second reprinting of fifty copies each and it looks as if we might have to have a third reprinting.

With this issue, we have gone to a lighter weight paper in order to save postage and try to keep up with the material which has been sent in. We cannot print it all and still get under the 3¢ limit.

The interference "underground" must be very extensive and active, as we have been receiving requests for copies - and to be placed on our mailing list - from many we never suspected would be even remotely interested. We are glad to include them and to know that the interest is wider spread than we had any idea of.

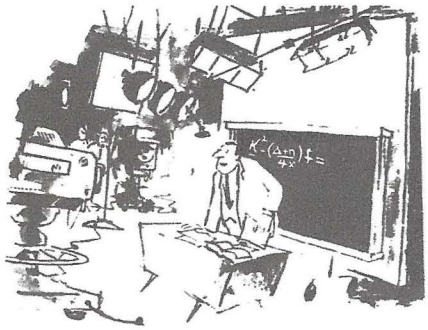
From comments in many of the letters received, it would appear that there is some very interesting material on its way - as the authors begged for more time in which to prepare it. Also, there will have to be official permission obtained to mention certain new products and developments.

Several requests came in for material which would be of interest to management; such as details of the savings in cost as a result of proper design; what are going to be the future policies of the Armed Services in requiring "proof of performance" in bids as regards interference reduction engineering and test facilities; are there any rough formulas to assist Purchasing Agents in figuring on interference reduction costs, etc. If anyone has any answers, we would be very glad to print them.

Newspaper clippings describing instances of interference would be greatly appreciated. These are often most helpful in educating the uninitiated and an supply the answers to puzzling situations.

AdCom news & views

message from our chairman



Wither Goest Thou?

As chairman of the G-EMC Administrative Committee, I am concerned with our ability to incorporate new technical areas. Two areas that have arisen in the past include radiation hazard effects and spectrum utilization. One area that is now on the horizon is, to include EMC considerations in an evaluation of system effectiveness or cost effectiveness. In my opinion, this new area has tremendous partent for G-EMC members. If it is possible for us to arrive at a quantitetive number for EMC as related to system effectiveness, we as a group would be in a much better position to compare different systems on a technological basis. In other words, we could present to design engineers in other fields, a measure of the advantages of their designs in respect to EMC. And furthermore, a quantitative measurement of this nature would permit us to present to management a factual basis for deciding where dollars should be spent. Thus, a quantitative measurement of EMC in system effectiveness would permit us to converse intelligently with both technology oriented and management oriented people. The question is, "How do we incorporate new areas such as this within the EMC framework?"

Richard B. Schulz

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Chapter Chairmen 68-69

Atlanta James C. Toler 1022 Reeder Circle, N.E. Atlanta, Georgia 30306	**Huntsville** (Inactive) Glenn R. Rowe IBM Dept. 215 150 Sparkman Drive Huntsville, Alabama 35805	**New York, Long Island, North Jersey** Herbert G. Bostron Washington Valley Road Morristown, N.J. 07960
Boston A. W. DiMarzio 46 Barlett Street Malden, Mass. 02148	**Los Angeles** James A. Spagen TRW Systems One Space Park Redondo Beach, Calif. 90278	**Philadelphia** Steven C. Garcia Philco-Ford 4700 Wissahickon Avenue Philadelphia, Pa. 19144
Canaveral D. W. Montgomery 2020 N. Atlantic Avenue Apartment 212-S Cocoa Beach, Florida 32931	**Mohawk Valley** Frank E. Ferrante 20 Evergreen Drive Rome, New York 13440	**San Francisco** William G. Cue Post Office Box 1383 San Carlos, Calif. 94070
Central Texas Walter C. Dolle 542 Lakeview Blvd. New Braunfels, Texas 78130	**New Jersey Coast** Warren A. Kesselman 31 Hope Road Eatontown, New Jersey 07724	**Seattle** Alford Eckersley 616-166th Avenue, N.E. Bellevue, Washington 98044
Chicago Joseph Nasca Lincoln, Div. of Illinois Tool Works 6615 West Irving Park Road Chicago, Ill. 60634	**New Orleans** John C. Hughes Chrysler Corp., Space Division P. O. Box 2920 New Orleans, La. 70116	**Washington, D.C.** Clarance J. Saunders NBS R-109 Bldg. 224 Washington, D. C. 20234

Call for papers Meetings Events

CALL FOR PAPERS

1969 IEEE INTERNATIONAL SYMPOSIUM ON ELECTROMAGNETIC COMPATABILITY

You are invited to submit an abstract of a technical paper for consideration by the Technical Program Committee of the 1969 Symposium on Electromagnetic Compatibility. Selected papers will be presented during the technical sessions on June 17-19 at the Berkeley-Carteret Hotel, Asbury Park, New Jersey. These sessions will cover the following general topics:

- Interference Measurement
- Interference Attenuation by Shielding
- Interference Fixes, Other Methods
- Interference Prevention
- Interference Management
- Interference Sources
- Interference Propagation
- Interference Prediction

Each abstract should contain a concise, specific description of the nature of the work described in the paper and the conclusions reached. Abstracts and papers must be unclassified and releasable to foreign nationals. Proprietary information should be avoided. The title and author(s) of each paper, as intended for publication in the program, should be furnished with the abstract.

In order to be considered by the selection committee, all abstracts must be received by Charles D. Joly, Chairman, Technical Program Committee, P. O. Box 1969, Eatontown, N.J. 07724, not later than 31 December 1968.

Call for Papers - NAECON

NAECON - The National Aerospace and Electronics Conference, is the oldest and best known specialized national forum for exchange of information on Aerospace Electronics. The 1969 NAECON will be held in Dayton, Ohio on May 19, 20, 21 at the Sheraton-Dayton Hotel. Contributed papers on work not previously presented are solicited in the following subject areas:

- Avionic Communications
- Aerial Reconnaissance
- Bionics-Cybernetics
- Navigation and Guidance
- R & D Planning and Evaluation
- Vistol Aircraft Systems
- Integrated Electronics
- Fluidics
- *Electromagnetic Compatibility
- Laser Applications
- Computers and Data Processors
- Secondary Power Systems

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Results of Ad Com Elections

A total of 524 ballots were cast in the election of five new members to the EMC Administrative committee. The gentlemen elected to start three year terms beginning in 1969 are:

J. F. Chappell
Fort Monmouth, N.J.

Charles E. Seth
Wright Patterson AFB

J. F. Fischer
Genisco Technology Corp.

Anthony Zimbalatti
Grumman Aircraft Eng. Corp.

James C. Senn
Lectromagnetics, Inc.

(It is interesting to note that a proposed change to the EMC by-laws has been considered for increasing the membership from 15 to 18. This would require the election of 6 members each year in the future. The Ad Com is scheduled to act on this and other By-Law revisions at the December meeting.)

The entire vote count for all sixteen candidates is available upon request from Mr. L. Thomas, Secretary, EMC Ad Com, 1604 Buchanan St., N.E., Wash. D.C. 20017.

People

Dr. Cooley to head Education Committee

Richard B. Schulz, chairman of the IEEE GEMC Administrative Committee, has announced his appointment of Dr. William W. Cooley as chairman of the Education Committee. He is replacing C. W. North who was Chairman of the Committee until the time of his retirement. The scope of activities of this committee as described in the By-laws of the EMC Group is as follows:

a. Ascertain the needs for education of the overall Group membership in the areas covered by the Group's field of interest as set forth in Article II, Section 1 of the Group Constitution.

b. Promote such programs, in cooperation with other committees of the Group EMC, as appropriate, to fulfill these needs."

DR. SHOWERS IS NEW CHAIRMAN OF C63

A news item with the above title appeared in the September 1968 issue of the Magazine of Standards, (published by USASI). Excerpts from the news item are as follows:

Dr. Ralph M. Showers, professor of electrical engineering at the Moore School of Electrical Engineering, University of Pennsylvania, has been appointed chairman of USA Standards Committee C63, Radio-Electrical Coordination. He replaces Mr. W. E. Pakala, who has been semi-retired from the Westinghouse Electric Corporation for two years, and who resigned as chairman last May. Mr. Pakala will remain active in the work of C63, however, as he has been appointed to fill Dr. Shower's former position of vice-chairman.

Dr. Showers has been active in professional society work since 1948. He was the first chairman of the Institute of Radio Engineers Committee 27 on Radio Frequency Interference and chairman of the Administrative Committee of the Institute of Electrical and Electronics Engineers Group on Electro-Magnetic Compatibility. He is a Fellow of IEEE.

Active in the work of the International Special Committee on Radio Interference (CISPR), Dr. Showers has been chairman of its Subcommittee on Measurements since 1962, a member of the Steering Committee, and chairman of the Working Group on Interference Measuring Equipment since 1964.

Mr. Pakala has had forty years experience in engineering and research, including work on radio interference from electrical apparatus, and corona studies on high voltage transmission lines and high voltage apparatus. Most recently he has been involved in radio interference problems of power apparatus and transmission lines and in radio noise instrumentation.

He is a Fellow of the Institute of Electrical and Electronics Engineers, chairman of the National Electrical Manufacturers Association's Power and Communications Coordination Committee, and a member of the U.S. National Committee of the International Electrotechnical Commisssion.

Allen to receive International Communication Award

Mr. Edward W. Allen, Jr. former Chief Engineer of the FCC, will receive the 1968 IEEE award given for outstanding contributions in the field of international communications, the award will contain the following citation:

"For work in the development of international communication systems, particularly satellite communications".

Mr. Allen was the guest of honor at the November 21, 1968 meeting of the Washington GEMC Chapter, and will be honored by the Washington section at their Annual Awards Banquet on February 14, 1969. The formal presentation of the award will be made at the International Conference on communications in Boulder, Colorado June 9, 11, 1969.

In 1935 Mr. Allen joined the engineering staff of the FCC and became Chief Engineer in 1951. He held this position until his retirement in 1965.

Mr. Allen served on delegations to sixteen international meetings of the UN, ITU, CCIR, AND URSI in radio matters, the latter of which involved color television and satellite communications. He served as delegation chairman to six of these meetings and as vice-chairman of four of them.

Other citations and awards which he has received are as follows: IEEE Fellow; Tau Beta Pi Honorary Engineering Society; Harry Diamond Award (IRE): Certificate of Appreciation (FCC); Scroll of Appreciation (Dept. of State); Engineering Achievement Award (IVAB): Exceptional Service Award (FCC).

H. L. NICOL JOINS IEEE EDUCATIONAL SERVICES DEPARTMENT

New York, N.Y. --- H. Lee Nicol has been appointed Manager, Public Relations and Promotion at IEEE Headquarters. He will be working with Mr. J. M. Kinn, Director, Educational Services, on coordination of public relations and promotion activities and on special projects and enlargement of services in these areas.

The Educational Services Department is assigned responsibility for programs dealing with communication of electrical and electronics engineering knowledge. These programs include student affairs, continuing education, and career guidance. In addition to Public Relations, the Department also has responsibility for other activities within IEEE --- Awards, Internal Communications, Intersociety Relations, the Joint Technical Advisory Committee (JTAC) and Professional Relations.

*Electromagnetic Compatibility - Of primary interest are papers dealing with the effects and impact of system environment and characteristics upon avionics design. Aspects for emphasis include electrical power quality, high level RF signals, cabling, bonding, grounding, signal parameters and prediction techniques.

Abstracts and Biographical data on authors are required by December 1, 1968 and should be sent to Mr. James E. Singer, Chairman, Technical Program, 5705 Coach & Four Drive East, Kettering, Ohio 45440. The three hundred word unclassified abstract must be submitted in triplicate. Complete papers are due on March 1, 1969.

IES 15th ANNUAL MEETING - CALL FOR PAPERS

The Institute of Environmental Sciences (IES) has completed its solicitation of papers for its 15th Annual Technical Meeting to be held at Anaheim, California in April 20-23, 1969. The primary purpose of this technical meeting and equipment exposition is to provide a situation that will stimulate a creative and meaningful exchange of information on new advances in the Environmental Sciences. IES takes the broadest possible view of man's environment and in its study of man in his environment, includes the problems inherent in man's use of the electromagnetic energy, namely, the problems of electromagnetic compatibility. Papers will be concerned with recent achievements or research development, application and management advances in Environmental Simulation. The meeting will be held at the Disneyland Hotel in Anaheim.

CALL FOR PAPERS
1969 CONFERENCE ON TRUNK TELECOMMUNICATIONS BY GUIDED WAVES
TO BE HELD SEPTEMBER 15-17, 1969 --- LONDON, ENGLAND

A Conference on Trunk Telecommunications by Guided Waves will be held in London, England from 15th to 17th September 1969, and is being sponsored by The Institution of Electrical Engineers (Electronics Division), The Institution of Electronic and Radio Engineers and The Institute of Electrical and Electrtonics Engineers, (United Kingdom and Republic of Ireland Section).

The aim of the conference is to examine and assess current achievements, problems and prospects in the development of trunk telecommunication systems by guided waves at millimetric and optical frequencies, with special reference to the following aspects.

(a) Systems aspects and modulation and multiplexing techniques.

(b) Guiding structures including transmission imperfections and fabrication and installation.

(c) Terminal and repeater equipment.

(d) Measurement techniques.

(e) Components.

Offers of contributions of approximately 2,000 words are invited for inclusion in the conference programme, and synopses of about 250 words should be sent to the Conference Department, The Institution of Electrical Engineers, Savoy Place, London W.C. 2 England by not later than 5th January 1969. Manuscripts will be required for consideration by 1st May 1969.

CALL FOR PAPERS
1969 ELECTRICAL AND ELECTRONIC MEASUREMENT AND TEST INSTRUMENT CONFERENCE (EEMTIC & IM)

TO BE HELD MAY 5-7, 1969 --- OTTAWA, CANADA

The 1969 Electrical and Electronic Measurement and Test Instrument Conference will be held May 5, 6, and 7, 1969, at the Skyline Hotel, Ottawa, Canada. This is the first I & M symposium to be held in conjunction with the Electrical and Electronic Measurement and Test Instrument Conference.

The aim of the symposium is the advancement of electromagnetic measurements and instrumentation broadly useful in engineering application. Test and calibration instrumentation in the d-c, l-f h-f, and microwave regions forms the core of the symposium. Measurements and instruments directed toward the solution of the technical aspects of broad social problems will be emphasized.

Original papers on measurement techniques, instrumentation, and calibration techniques, in the following areas, will be considered.

(1) Automated Systems at d-c, l-f, h-f, and microwave frequencies.

(2) Applications to studying earth resources (land, ocean, or atmosphere).

(3) New measurements and techniques

(4) General test and evaluation applications.

Papers should be submitted to the Chairman of the Technical Program Committee, Dr. George E. Schafer, Institute for Basic Standards, National Bureau of Standards, Boulder, Colorado 80302.

Six copies of an abstract and summary of each contributed paper should be included. The abstract should contain no more than 200 words. The abstracts of accepted papers will be used for publicity and program purposes. Corrections will be accepted prior to printing deadlines in late February 1969. The summary should be limited to 500-1000 words and be designed to assist the Technical Program Committee in selecting suitable papers for the conference. Summaries will be used only for selection purposes. The deadline for receipt of abstracts and summaries is January 15, 1969. It is planned to publish conference papers in a special issue of the IEEE Transactions on Instrumentation and Measurement. Three copies of the complete manuscript, including original illustrations, must be submitted to the Conference Editor before or during the conference for normal review and possible publication in this issue. General questions concerning the conference should be addressed to Mr. W. J. M. Moore, Conference Chairman, 797 Dunloe Avenue, Ottawa 7, Ontario, Canada.

Briefing in Spectrum Engineering

The Joint Technical Advisory Committee Chairman, Mr. Richard P. Gifford, gave EIA Members a special briefing of the SPECTRUM ENGINEERING - THE KEY TO PROGRESS - JTAC REPORT. This briefing was held on Tuesday, October 8, 1968 at the Fairmont Hotel in San Francisco.

The format of this briefing followed the presentation given all commissioners of the FCC, the Director of Telecommunications Management, and the principal members of their staffs. Since the FCC and OTM already have initiated action to implement the recommendations of the report, its impact on industry is expected to become increasingly apparent in the years ahead.

WESCON - EMC SESSION

During the recent 1968 WESCON show in Los Angeles, a Electromagnetic Compatibility session was conducted (session 19) during which four papers were presented. The papers titles and authors were as follows:

19/1 Problems Related to the Testing of Equipments to MIL-STD-704A-Stephen A. Jensen, Genisco Technology Corp.

19/2 A New Approach to Electromagnetic Field Strength Measurements in Shielded Enclosures - Horacio A. Mendez, IBM Corp.

19/3 Interface Standardization for Functional and Electromagnetic Compatibility - D.W. Matthias, Lockheed

19/4 Nuclear Electromagnetic Pulse (NEMP) Protection for Communications Facilities and Equipment - S. B. Clark and H.A. Lasitter, U.S. Naval Civil Engineering Laboratory.

SAE COMMITTEE AE-4, ELECTROMAGNETIC COMPATIBILITY OCTOBER MEETING

The SAE Committee AE-4, Electromagnetic Compatibility has just concluded its Fall meeting in Atlanta, Georgia, at the Cabana Motel on October 9, 1968. The three day meeting was initiated by a closed session of the Executive Committee on the first day, followed by a two day open agenda including sub-committee meetings and reports, films provided by Lockheed-Georgia, and a panel discussion on MIL-STD-461/2/3. The meeting was attended by over 70 members and guests, who represented a broad cross-section of the EMC community.

A highlight of this meeting was the nomination and election of the AE-4 Chairman for 1968-1971 term. Congratulations were offered to Mr. Walter McKerchar, of Electromagnetic Science Co., who was re-elected for his second consecutive term. Walt has been chairman of this committee since its formation over three years ago. It is interesting to note that as a standard procedure, all past officers, task managers, and committee chairman offered their resignation in order to allow the newly elected chairman complete freedom in appointing the officers of his administration.

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Two short films were provided by meeting host, Lockheed-Georgia. One described their facilities and accomplishments, and the other was a documentary of the first flight of the C-5A aircraft with the pilot as the commentator. The films were followed by a verbal presentation of the Lockheed-Georgia EMC Program and Organization.

The final item on the agenda was a panel discussion on the methods and procedures associated with MIL-STD-461/2/3 EMI Testing. The discussion was quite lively, with considerable attention given to the accuracy of calibration factors for the conical antennas, the definition of broadband interference, and the cost impact of the literal application of the specification on complex programs. It was stated that a MIL-STD-461A has been issued which would answer some of the questions presented.

As additional attractions, a ladies program was prepared during the second day of the meeting and a hospitality hour was furnished that same evening by the seventeen sponsors.

The next meeting of the AE-4 committee will be held at the Grand Hotel in Anaheim, California on May 22-23, 1969.

SAE Committee AE-4 Electromagnetic Compatibility to Meet

The next meeting of the SAE Electromagnetic Compatibility Committee will be held on May 22-23, 1969 at the Grand Hotel in Anaheim, California. Anyone interested in obtaining an agenda and registration information may contact either of the following two gentlemen:

Mr. Walter D. McKerchar
EMC Science Center
1616 Victory Blvd.
Glendale, California 91201
(213) 245-1024

Mr. John G. Lippert
Aeronautical Staff Engr.
Society of Automotive Engrs. Inc
Two Pennsylvania Plaza
New York, N.Y. 10001
(212) 594-5700

1968 IEEE VEHICULAR TECHNOLOGY CONFERENCE TO BE HELD DECEMBER 3-4, 1968

San Francisco is preparing for the 1968 IEEE Vehicular Technology Conference December 3-4 to be held in the Hilton Hotel.

Registration cards and advance programs will be mailed from IEEE Headquarters to all members of the IEEE Vehicular Technology Group. In addition, the package will be mailed to all IEEE Communication Technology Group members located in the San Francisco, Los Angeles, and Portland areas respectively. Others interested in receiving an advance program and registration card may contact any member of the Conference Committee, or in general to the Conference Publicity hairman, Mr. R. B. Pearce, Room 530, 225 Bush Street, San Francisco, California 94120.

There will be more than 20 exhibitors. The banquet speaker December 3 will be General Andrew R. Lolli, Director, Department of General Services, State of California. At the luncheon on December 4, Dr. Daniel E. Noble, Vice Chairman of the Board and Group Executive, Technical Divisions, Motorola, Inc., will give the address. Between 400 and 500 conferees are expected to attend. Everyone is invited, says Mr. R.H. Moore, Conference Chairman.

INDUSTRIAL USES OF RADIATION

Course 106/Fee $200

Schedule and Location:
October 17-18, 1968 The Summit Hotel, New York City
December 12-13, 1968, The International Hotel, Los Angeles

in brief... Although twenty years have been spent in searching for industrial applications of intense radiation fields, only recently have several applications become commercially useful. The technology for manufacturing high voltage machines and radioisotope sources has developed to the point where their use and cost are practical. This seminar will describe those applications of intense radiation fields that have already become commercially feasible, particularly in the fields of agriculture, sterilization of medical supplies and chemical synthesis and modification. The basic principles involved, the technology, and economics will be described and the upcoming applications of this new field will be fully explored.

Seminar on Industrial Uses of Radiation

The Technology Forcasting Institute, Inc. (TFI) offers intensive seminars conducted by scientists and engineers from throughout the world. These seminars are presented for the design engineer, advanced engineer, product planner, and RFD manager, in or to bring them up-to-date on the current state-of-the-art. The courses or seminars are designed to provide a maximum interchange of information between the seminar leaders and attendees. Visual aids and other handout material is provided. Registration and other information may be obtained from Technology Forcasting Institute, Inc. a subsidiary of Gordon and Breach, Science Publishers, Inc., 150 Fifth Avenue, New York, N.Y. 10011. Phone (212) 989-1120.

A seminar which may be of particular interest to some EMC engineers was noted in the Fall/Winter 1968 TFI Seminars Catalog. Part of the notice is extracted as follows:

ACKNOWLEDGMENTS

The editor would like to thank the following individuals for their contributions to this issue of the Newsletter.

Donald R.J. White	WEI
Richard B. Schulz	Boeing, Commercial Airplane Div.
Herman Garlan	Chief RF Devices, FCC
Fred J. Nichols	Lectromagnetics, Inc.
James S. Hill	Genesco Technology Corp.
John Moore	General Electric Co. (SSO)
Charles Seth	WPAFB

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ELECTROMAGNETIC COMPATIBILITY GROUP

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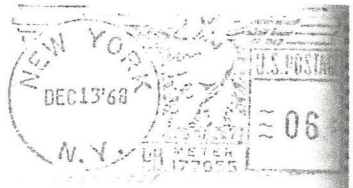
IEEE International Convention and Exhibition Mar 24-27, 1969



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