IEEE Professional Technical Group on ELECTROMAGNETIC COMPATIBILITY

Number 30 October 1963

Ninth Tri-Service Conference on Electromagnetic Compatibility

Advance Program

Illinois Institute of Technology Research Institute in cooperation with PTG for Electromagnetic Compatibility of the IEEE.

Except as noted, conference sessions will be held in the Museum of Science and Industry: "A" sessions in the Main Auditorium, and "B" sessions in the Little Theatre.

Tuesday, October 15, 1963

8:00 AM Registration

10:00 AM Session I - General Main Auditorium

1. Welcome - J. E. Bridges, Conference Chairman, IIT Res. Inst. Chicago, Ill.
2. The Western ElectricCompany - Wide Program for Compliance With Part 18 of the Rules and Regulations of the Federal Communications Commission
   R. A. Kay
   Western Electric Co.
   Chicago, Ill.
3. RFI/EMI at the Crossroads
   F. J. Nichols
   Genistron, Inc.
   Los Angeles, Calif.

12:00 Luncheon Imperial Room of theDel Prado Hotel

Chairman- Col. C. C. Woolwine
Electromagnetic Compatibility Analysis Center,
Annapolis, Maryland

Address- Teamwork in Spectrum Conservation, James D. O'Connell
Lt. Gen. USA (ret.)
Chairman, Joint Technical Advisory Committee of IEEE-EIA
Los Altos, Calif.

2:30 PM Session IIA - Analysis I

Chairman - Z. V. Grobowski
Jansky and Bailey
Washington, D. C.

1. The Behavior of Nonlinear Mixing
   R. D. Trammell, Jr. and E. W. Wood, Georgia Inst. of Tech.
   Atlanta, Ga.
2. Mixer Analysis and Design
   R. W. Long
   Hughes Aircraft Co.
   Fullerton, Calif.
3. Off-Tuning Effects Produced by Interference
   R. J. Mayher
   Electromagnetic Compatibility Analysis Center
   Annapolis, Maryland
4. Radio Frequency Interference in Digital Two-Phase Coherent Communication Systems
   A. Krinitz, Adcom Inc.
   Cambridge, Mass.

2:30 PM Session IIB - Cables and Grounding

Chairman - Dr. J. H. Vogelman
Capehart Corp.
Richmond Hill, N. Y.

1. Low-Pass Transmission Lines for RFI Protection
   H. G. Tobin and L. J. Greenstein
   IIT Research Institute
   Chicago, Ill.
2. Realization of Compatible Structure Grounding Systems
   H. W. Ervin and D. R. Lightner
   White Electromagnetics, Inc.
   Bethesda, Maryland

   R. Powers
   Rome Air Development Center
   Griffiss AFB, New York
3. Electromagnetic Coupling Between Coaxial, single-Wire, Two-Wire, and Shielded Twisted Pair Cables
   M. Kablit
   University of Pennsylvania
   Philadelphia, Penna.
4. Achieving Electromagnetic Compatibility by the Control of the Wiring Installation
   G. J. King
   Douglas Aircraft Company
   Long Beach, Calif.

Wednesday, October 16

9:00 AM Session IIIA - Modeling and Synthesis"

Chairman - Q. Porter
Rome Air Development Center
Griffiss AFB, New York

1. Compatibility Analysis Sensitivity
   H. M. Sachs and T. N. Truske
   Electromagnetic Compatibility Analysis Center, Annapolis, Maryland
2. The Analysis and Synthesis of Radar Emission Spectrums by Digital Computer Methods
   R. B. Marcus
   HRB-Singer, Inc.
   State College, Penna.
3. Advanced Receiver Model Systems
   D. H. Cook, J. L. Pierzga, and F. N. Leahy, Electromagnetic Compatibility Analysis Center, Annapolis, Md.
4. Computer Processing of Antenna Patterns
   H. Kritikos and M. R. Dresp
   University of Pennsylvania
   Philadelphia, Penna.

9:00 AM Session IIIB - Instrumentation I

Chairman - W. A. Kesselman
U. S. Army Electronics Research and Development Lab.
Fort Monmouth, New Jersey

1. The Use of Directional Couplers as Harmonic Pads
   L. Young
   Stanford Research Institute
   Menlo Park, Calif.
2. A Standard Response Indicator for Pulsed Systems
   W. R. Free
   Sperry Microwave Electronics Co.
   Clearwater, Fla.

3. RI/FI Instrumentation to 21 Gc.
S. Abrams and B. Leibowitz
Polarad Electronic Instruments
Long Island City, N. Y.

4. Tracking Notch Filter for the Rejection of CW Interference
W. B. Warren, Jr.
Georgia Institute of Technology
Atlanta, Ga.

2:00 PM **Session IVA - Analysis II**
Chairman - C. R. Miller
Rome Air Development Center
Griffiss AFB, N. Y.

1. Comparison of Transmitter Spectrum Signature Data and Radiated Field Strength Data for Transmitter Emissions
P. F. Chen and C. E. Blakely
Bell Aerosystems Co.
Tucson, Arizona

2. Analyses of Airborne Radio Frequency Interference Problems
R. E. Haydon
Federal Aviation Agency
Washington, D. C.
T. F. Barone, L. J. Grady, and T. E. Selby
HRB-Singer, Inc.
State College, Penna.

3. Mutual Gain of Radar Search Antennas
R. C. Johnson
Georgia Institute of Technology
Atlanta, Georgia

4. Probability of Interference From Randomly Dispersed Sources
P. Christopher
Electromagnetic Compatibility Analysis Center, Annapolis, Md.

2:00 PM **Session IVB - Design for Interference Control**
Chairman - M. M. Morris
U. S. Army Electronics Res. & Dev. Lab.
Forth Monmouth, N. J.

1. Analysis and Evaluation of Electromagnetic Compatibility Tests
Dr. W. B. McIntosh
U. S. Army Electronic Proving Ground
Fort Huachuca, Arizona

2. A Wide-Stop-Band Filter for a High Power S-Band Radar J. P. Rooney
General Electric Co.
Palo Alto, Calif.
F. P. Ventolieri
Rome Air Material Area
Griffiss AFB, N. Y.

3. X-20 (Dyna-Soar) Communications and Tracking Subsystem RFI Control Program
R. C. Follett and J. F. Manley
Sprague Electric Co.
North Adams, Mass.

4. A Technique for Determination of Filter Insertion Loss as a Function of Arbitrary Generator and Load Impedance
S. M. Vakil
The Boeing Co.
Seattle, Wash.

7:30 PM **Session IVC - ECAC Interference Prediction Model**
(This session will be held in the Crystal Ballroom of the Del Prado Hotel.)
Chairman - S. I. Cohn

1. ECAC MSS - 2 Interference Prediction Program - General
J. A. Zoellner

2. ECAC MSS - 2 Interference PredictionProgram - Cull Model - J. B. Scott

3. Automatic Terrain Information Processing System
J. Iseli

4. A Propagation Model for Compatibility Analysis
D. Anderson and W. Frazier

5. Synthesis of Equipment Characteristics
F. C. Pethel, R. W. Fleck, and J. W. Marini

All session personnel are IIT Research Institute staff members at the Electromagnetic Compatibility Analysis Center, Annapolis, Maryland.

Thursday, October 17

9:00 AM **Session VA - Shielding**
Chairman R. F. Ficcki
Radio Corp. of America
Camden, N. J.

1. The Application of Absorption and Scattering Coefficients for Concentric Spheres to the Problem of EMI-Free Enclosures
R. A. Eldred, H. A. Lasitter, and J. Roberts, U. S. Naval Civil Engineering Lab., Port Hueneme, Calif.

2. Shielding Theory and Practice
R. B. Schulz
The Boeing Co.
Seattle, Wash.

3. Shielding a Flight Vehicle Against Electromagnetic Interference During Test
R. O. Lange
General Dynamics/ Astronautics
San Diego, Calif.

4. Propagation in Absorbent-Material-Lined Cavities
J, W. Wright and W. E. White
U. S. Naval Res. Lab.
Washington, D. C.

9:00 AM **Session VB - Classified** (IIT Student Union Auditorium
Chairman - Cdr. R. H. Lee
Bureau of Ships
Washington, D. C.

1. Identifying Submarine Electromagnetic Noise by Correlation Techniques
P. M. Hahn
University of Pennsylvania
Philadelphia, Penna.

2. Mobile Spectrum Surveillance System
J. H. Kress
Pan American World Airways, Inc.
Patrick AFB, Fla.
R. H. Sugarman, A. Ryesky, and W. K. Brown, American Electronics Labs., Inc
Colmar, Penna.

3. UHF Interference in the Southeast U. S.
E. R. Freeman
Electromagnetic Compatibility Analysis Center, Annapolis, Maryland

4. Steerable Null Array
V. L. Boaz and L. E. Kearns
U. S. Army Electronic Research and Dev. Lab., Fort Monmouth, N. J.

5. Modification of an FSK Converter for Interference Reduction
R. H. Thompson and D. R. Ludwig
General Electronic Labs.
Cambridge, Mass.

2:00 PM **Session VIA - Instrumentation II**
Chairman - H. M. Bartman
Aeronautical Systems Div.
Wright-Patterson AFB, Ohio

1. A Spectrum Analyzer with 2 Gc. Display
A. Fong
Hewlett-Packard Co.
Palo Alto, Calif.

2. Interference Spectrum Analyzer with Automatic Frequency Scanning and Data Recording
L. Valcik, J. E. Batz, and J. Farone
IIT Research Institute
Chicago, Ill.
H. Cheadle
Aeronautical Systems Division
Wright-Patterson AFB, Ohio

3. Measurement Techniques with a Spectrum Signature Monitor

R. Sandstrom and M. Feigenbaum
Polarad Electronic Instruments
Long Island City, N. Y.

4. Electromagnetic Compatibility Program for the McDonnell RF-4C, Phantom II Aircraft
W. D. McKerchar
McDonnell Aircraft Corp.
St. Louis, Missouri

2:00PM Session VIB - Measurement Techniques
Chairman - J. Roman
Bureau of Ships, Washington, D. C.

1. A Method for Performing Transient Susceptibility Tests on Primary Power Leads
R. F. Kantner
Westinghouse Electric Corp.
Baltimore, Md.

2. MIL-E-6051 Electromagnetic Compatibility Testing Concepts and Techniques
W. A. Taylor
Northrup/Nortronics
Hawthorne, Calif.

3. Analysis of the High Impedance Field in Susceptibility Tests
W. A. Stirrat
U. S. Army Electronics Res. & Dev. Lab.
Fort Monmouth, N. J.

4. Radio Noise Considered for Extra High Voltage Power Transmission, 345-1000 Kilovolts
E. R. Taylor and W. E. Pakala
Westinghouse Electric Corp.
Pittsburgh, Penna.

Nominations for PTG-EMC Administrative Committee Membership:

The PTG-EMC Nominations Committee hereby notifies the membership that nominating petitions for the election of five (5) members to the PTG-EMC Administrative Committee for a three-year term commencing July 1, 1964 will be accepted up until January 1, 1964. The by-laws concerning these nominations are as follows:

ARTICLE VI

Section 1: On or before December 1 of each year all members of the Professional Technical Group on Electromagnetic Compatibility shall be notified that nominations for members of the Administrative Committee are open. This shall be done either by notice in a Newsletter or by direct notification of each member by post card or letter.

Section 2: Nominations shall be made by petition. The nominating petition for each nomination submitted shall contain at least 15 PTG-EMC members' signatures together with a short (not more than 100 words) biography listing the affiliation and background of the individual nominated. All nominations must be in the hands of the Nominations Committee by January 1 of each year. If the Nominations Committee receives less than 10 names (two for each vacancy) or if the Nominations Committee sees fit to make nominations in addition to those received from the members, it shall be within the authority of the Nominations Committee to do so. Not less than 2 names for each vacancy shall be submitted by the Nominations Committee.

Section 3: On or before February 1 of the year a ballot containing the names of all members nominated for vacancies on the Administrative Committee and their biographies shall be sent to all members of the PTG-EMC. The marked ballots shall be returned to the Nominations Committee on or before March 1. The candidates receiving the highest numbers of votes shall be deemed to have been elected to the Administrative Committee. In case of a tie for any vacancy the names of the candidates receiving the same number of votes shall be put in a container and the name drawn from the container shall be deemed to have been elected to the Administrative Committee. The names of the elected members shall be transmitted to the Chairman of the Committee of Professional Technical Groups and through him to the IEEE Executive Committee. Unless disapproval of such elected members is received within 60 days of such transmittal, the elections shall become final.

Each nominating petition (signed by at least 15 PTG-EMC members and accompanied by a biographical sketch of not more than 100 words should be sent before January 1, 1964 to the Chairman of the Nominations Committee:

Harold E. Dinger, Code 5416
Naval Research Laboratory
Washington 25, D. C. 20390

The members of the Administrative Committee, whose term of office expires on June 30, 1964, are:
Samuel J. Burruano, Z. V. Brobowski, W. E. Pakala, Henry Randall and Ralph M. Showers.

The above notice in this Newsletter complies with the requirements in Section 1 and will be the only notification for 1964 nominations which will be sent to members by the PTG-EMC Group.

CHAPTER ACTIVITIES

Seattle Chapter

Officers for the new 1963-64 year are:

Chairman	A. E. Dorband
Vice-Chairman	H. H. Judson
Secretary-Treas.	V. C. Plantz

Appointed committee chairmen are:

Papers and Meetings	V. L. Carlson
Arrangements	J. W. Trumbo
Membership	H. K. Mertel

Meetings are planned bi-monthly for odd-numbered months on third Wednesdays, subject to availability of speakers. The first meeting of the season was held on August 19 with Dr. H. M. Schlick as the speaker. His subject was "New Concepts in RFI Filters."

PTG-EMC Redefines Its Areas-of- Interest

TO: R. M. Emberson, PTG Secretary
FROM: Herman Garland, Chairman PTG-EMC (1962-63)
SUBJECT: Areas-of-Interest
Reference: Your Memo dated May 27, 1963

1) Pursuant to your request (paragraph 2 of Reference) the Administrative Committee for PTG-EMC reviewed the Area of Activity Survey revised to May 20, 1963. Our Committee felt that the listing shown for PTG-EMC did not adequately describe our areas-of-interest.

2) Will you, therefore, please revise the listing for PTG EMC (G-27) to show the following:

1st Priority	Electronic Systems
2nd	Communications
3rd	Instrumentation
4th	Industry & Industrial Applicati
5th	Power
6th	Basic Science and Techniques
7th	Computers and Data Processir

3) Notwithstanding the specific enumeration of seven area of activity above, it must be understood that our Group has an activ interest in each of the areas of "materials, components, productio process" and "bio-medical electronics" to the extent that RFI is cr ated or must be controlled and EMC must be achieved. While the area of "professional activities" (number 10), is not our major are of activity, it is an area in which we are active - particularly with respect to educating both the remainder of the engineering professi as well as management as to the importance of controlling RFI and p ducing compatible electrical/electronic equipment.

Results of PTG-EMC Post Card Questionnaire:

The following is a tabulation of the first hundred replies to the p card questionnaire, sent out by our Chairman, on "What Should PT EMC Do to Be More Helpful To The EMC Community"? The top twelve respon ses are:

(1) Continue sponsorship of EMC workshop (standardiza tion; coordinate CCIR, CISPR, AIA, ASA, EIA, SAE, RESA) (9 replie

(2) Press for a Standard Tri-Service Interference Speci fication (7 replies)

(3) Encourage members to present EMC papers outside of PTG-EMC, Armour, and March IEEE Conference (5 replies)

(4) Improve standards for evaluating papers presented in the IEEE Transactions on PTG-EMC to eliminate reprints and rehash (3 replies)

(5) Encourage training aids programs to be conducted by EMC personnel to ensure compatibility between systems (3 replies)

(6) Provide or disseminate solutions of actual model problems of complex systems rather than generalities or rough criteria (3 replies)

(7) Push for basic education program for new members coming into EMC (3 replies)

(8) Solicit papers from systems engineers on interference techniques being incorporated in modern design (3 replies)

(9) Encourage further development of RI meters and standardization of technical characteristic (2 replies)

(10) Establish trading-post or similar column in Proceedings so that EMC control ideas may be shared among companies (2 replies)

(11) Develop a criteria primarily for management for dealing with EMC program and funding (2 replies)

(12) Develop a design guide to EMC control (2 replies)

All other replies were singular in number.

As only 7% of our membership responded, our Chairman would like to have the rest send in their post cards as soon as possible so that the ideas of a good cross-section can be obtained. Your editor echoes this appeal and will publish the results as they come in.

Isolating the Causes of Common-Mode Noise:

Under the above title, R. B. Fradella, Senior Design Engineer, Ginaninni Controls Corp., Duarte, Calif., has written a three-page article in the August 30, 1063 issue of Electronic Design. The sub-head states:

"Differential systems are becoming increasingly popular in military or industri _ instrumentation because of their ability to transmit millivolt signals in the face of hundreds of volts of area noise. Here is an approach to pinpointing the two causes of common-mode noise in such systems."

Influence of Natural Radio Noise Upon Antenna Performance:

Albert R. Giddis, Engineering Specialist, Antenna Systems Lab. Philco Corp., 3825 Fabian Way, Palo Alto, Calif., gave a paper before the First International Conference Exhibit on Aerospace Support under the title "Influence of Natural Noise Upon Antenna Systems Performance." Mr. Giddis informs your editor that a version of his paper will appear in the October and/or November issues of Microwaves magazine. It will also appear in the Transactions of the Conference and in a near-future issue of the IEEE Transactions on Communications and Electronics. Avail.upon request, however, is a limited supply of his report titled "Effect of the Sun upon Antenna Temperature", Philco Technical Report WDL-TR-E320, which he will be glad to send to inquirers while they last.

Naval Medical Research Institute Report on RFI:

A Research Report No. MR/005. 09-1401. 04 under the title "Interference and Its Elimination" has been prepared for the Naval Medical Research Institute, Bethesda, Maryland, by Myron L. Wolbarsht, Physicist. The Report consists of 15 pages and covers many problems connected with electromagnetic incompatibility in medical equipment, medical tests, recording instrumentation, and grounding, shielding, filtering, etc. An interesting section is devoted to mechanical interference where mechanical shocks on electrical components and test procedures give erroneous results. Copies may be obtained, until the supply is exhausted, by writing to John R. Seal, Captain, MC, USN, Commanding Officer.

Conducting Glass Has. Other Uses:

Windshields for jet planes that withstand the impact of a bird at 400 and more miles per hour employ conducting glass to keep the resin layer in the glasssandwich soft and resilient

Instrumentation Requirements to Measure and Define RF Fields:

A paper, under the above title, was delivered to the Institute of Environmental Sciences, April 17-19, 1963, at Los Angeles, Calif. by G. P. Rothhammer, Staff Engineer, Stoddart Aircraft Co., Inc., 6644 Santa Monica Boulevard, Hollywood 38, Calif. Copies of the paper may be obtained by writing to Mr. Rothhammer at the above address.

Permission has kindly been given to reproduce Fig. 4 of the above paper for the use of PTG-EMC members.

INTERFERENCE MEASUREMENT TERMS				
TYPE OF INTERFERENCE	MIL-I-16910A (Ships)	MIL-I-6181B	MIL-I-11748B (Sig C)	MIL-I-6181D MIL-I-28600 (USAF)
CONDUCTED NARROWBAND	Microvolts	Microvolts	db above one Microvolt	db above one Microvolt db above one Microampere
ANTENNA CONDUCTED NARROWBAND	dbm or Micromicrowatts	Microvolts	Micromicrowatts	db above one Microvolt
RADIATED NARROWBAND	Microvolts-per-Meter	Antenna Induced Microvolts	db above one Microvolt	db above one Microvolt Antenna Induced
CONDUCTED BROADBAND	Microvolts-per-Kilocycle	Microvolts-per-Kilocycle	db above one Microvolt-per Megacycle	db above one Microampere-per-Megacycle db above one Microvolt-per-Megacycle
RADIATED BROADBAND	Microvolts-per-Meter-per-Kilocycle	Antenna Induced Microvolts-per-Kilocycle	db above one Microvolt-per-Megacycle	db above one Microvolt-per-Megacycle Antenna Induced

FIGURE 4. INTERFERENCE MEASUREMENT TERMS

Missile Tracking Studies Aimed at Ground Clutter:

Electronic News, September 2, 1963, has a page article under the above title. A paragraph of interest is as follows:

"Until now one danger has been that ground clutter at the horizon would so distort the radar return signal that the radar system could not get an accurate fix on the rising missile. When the vehicle did come into good radar view, the radar antenna might have been considerably off the trajectory. And, by the time the antenna could be locked on to the target, it could be gone - especially in the case of a fast rising missile."

Designing Input Circuits With Lowest Possible Noise:

John J. Rado, Precision Instrument Co., Palo Alto, Calif., has a 4-page article in the August 2, 1963 issue of Electronics under the above title, The sub-title and editorial box state:

"Getting lowest possible noise means juggling input transistor types, source and impedance levels, and other factors. Field-effect transistors, for example, come into their own when source impedance levels are high."

"Until all amplifier design is completely analyzed and computer programmed, the circuit designer will have to do some blind flying. Call it the art of engineering. Rules like keeping source impedance low to minimize noise and pickup are vital, but sometimes basic rules have exceptions. Even if amplifier design could be done by computer, there would still be times when it might be simpler to do it yourself."

Low-Frequency Electromagnetic Radiation Under Study:

Naval Research Reviews, July 1963, has the following article under the above title:

"Low-frequency electromagnetic radiation will be the subject of a North Atlantic Treaty Organization Advanced Study Institute scheduled for July 22 through August 2 in Bad Homburg, Germany.

"The Institute will bring together top scientists in this field for a review and discussion of the current knowledge of the theory, measurement, and instrumentation of low-frequency electromagnetic radiation. Supported by NATO, the Institute is jointly sponsored by the U.S. Naval Ordnance Laboratory, White Oak, Maryland, and the London Branch Office of the Office of Naval Research.

"The basic purpose of the Institute is to stimulate new, basic research on low-frequency electromagnetic radiation. Of particular interest is that radiation in the frequency range of zero to 3000 cycles per second which emanates from the earth's ionosphere as a result of bombarding high-energy particles from the sun. Limited research on this subject has been conducted in the past.

"Advanced research on this radiation will tell scientists much about inter-solar plasma and radiation belts resulting from solar activity. It will also increase knowledge about the ionosphere and the disturbances in the earth's magnetic field which are caused by low-frequency electromagnetic radiation. One particularly important result which such advanced research could provide is the level of the background noise caused by this radiation.

"Interest in low-frequency electromagnetic radiation has increased in recent years as the result of the observation of phenomena related to it. These phenomena include micro-pulsations, magnetic storms, high-altitude nuclear explosions, and fluctuations in the earth's magnetic field. Another observable phenomenon related to this radiation is 'the conjugate point effect' in which a disturbance generated at one of the earth's magnetic poles is propagated along a line of the magnetic field and felt at the other pole. Probably the most dramatic phenomenon associated with the low-frequency electromagnetic radiation is the Aurora Borealis.

"Dr. David F. Bleil, Associate Director for Research at the Naval Ordnance Laboratory, organized the Institute and is one of its two directors. His co-director is Dr. I. Estermann, Director of Research of the London Branch Office of the Office of Naval Research

NEW PRODUCTS

New Transparent RFI Shielding:

The Sierracin Corp., 903 N Victory Blvd., Burbank, Calif., has developed a new metallic conductive material which can be deposited onto the surface of glass and plastics, and is marketed under the name of Sierracote. Its electrical resistance is 9 ohms per square and will provide a transparent shield permitting approximately 75% to 80% light transmission. Engineering test reports are available showing that the lowest shielding effectiveness measured was 60DB throughout both the electric and plane wave fields. Additional information may be obtained by writing to W. H. Lawson, Jr. Market Development Engineer, and asking for Technical Bulletin, No. 506, titled Sierracote Engineering Handbook, and Bulletin No. 510, titled Applications in Sierracin.

Tecknit Brings Out New Data Sheet on Air Cooling Panels:

Technical Wire Products, Inc. 129 Dermody St., Cranford, N. J., has brought out a new RFI Shield-Air Coding Panel Brochure, Data Sheet RF-300. It covers the design parameters to be considered in the dual problem of RFI shielding with forced air cooling, including both electrical and mechanical aspects.

Solar Electronics Brings Out Two RFI Products:

Solar Electronics Co., 5909 Melrose Ave., Hollywood 38, Calif. has brought out an RFI Transient Generator for conducted transient susceptibility testing and an Audio Isolation Transformer for audio frequency susceptibility testing. The Model 6254-1 RFI Transient Generator is capable of providing up to 275 volts peak. The Isolatior Transformer is capable of handling up to fifty watts of audio power into its primary over the frequency range 50 cps to 15 kc.

Ferroxcube Corporation Develops Noiseless Rheostat:

An LDR lamp assembly has been developed by the Ferroxcube Corp. of America, Box 359, Saugerties, N. Y., and acts as a noiseless rheostat of infinte resolution. It is designed as a plug-in unit which incorporates a standard seven-pin miniature socket male connection.

The varying light intensity from the lamp falls on a cadmium sulfide cell connected across the output circuit. As the light increases, the resistance of the cell decreases from a minimum resistance of 10 megohms to a maximum of 500 ohms with 6 volts across the lamp

Noise Reduction Unit from Micromega:

Electronic News, August 19, 1963, has a page story with a schematic included. The first two paragraphs of the article state:

"Micromega Corp. 4134 Del Ray Ave, Venice, Calif., has developed a 400 megacycle monopulse parametric amplifier subsystem that reduces noise to 1.2 db, believed by the company to be the lowest noise figure currently offered by such equipment.

"Other subsystem performance characteristics were said to be 30 db gain, 5 mc bandwidth, and gainstability of less tha 1 db for 24 hours. Differential phase stability is typically 2^{O} per 8 hours, Micr mega, officials said."

Brush Lightbeam Recorder Eliminates RFI with Silent Light:

Brush Instruments, Division of Clevite, 37th and Perkins, Cleveland 14, Ohio has brought out a unique incandescent optical system for this new direct-print oscillograph which is claimed to completely eliminate confused data caused by generation of RF interference into associated equipment. It meets RFI Specs MIL-I-26600 and MIL-I-6181D.

EDITORIAL NOTE:

Your editor has received several comments from members of PTG-EMC that we are not doing enough to separate the hard facts from their empirical applications. As a result, the subjects of RFI and EMC are still being treated as an art and not as good engineering practices. It is, therefore, suggested that we publicize our good engineering practices so as to increasingly minimize the personal element. In other words we want to become recognized more as a branch of engineering rather than a grouping of magicians.

Rexford Daniels, Editor
PTG-EMC Newsletter
Monument Street
Concord, Massachusetts.