

standard frequency sources. The very best sources are known to 1 part in 109.

The third is attenuation which, although not a fundamental quantity, is very useful and in some way or another enters into almost all RFI measurements. The accuracy of attenuators can be better than that of calorimeters because attenuation is a relative quantity.

It is becoming apparent that all significant RFI measurements must be related in one way or another to these three quantities.

Calibration techniques usually refer to specific components in a test setup; for example, RFI meters, attenuators, power meters and SWR meters. These items can be calibrated individually and in some cases as groups. The calibration techniques usually require ideal conditions, but the instruments are used under conditions that are far from ideal. It can hardly be expected that the measurement accuracy will be the same as the calibration accuracy.

To further compound the calibration problems, there are virtually no available standards for comparison. The best present approach

to standard for comparison is a calorimeter used with a standing wave meter. However, measurements of this type cannot be performed in a simple manner. Either a double substitution method is required to calibrate the RFI meter or many extremely sharp filters are required. Further, if the measurements are to be made of anything other than average power, a great deal must be known of detailed waveform characteristics. Obviously, it is not easy to obtain this information without making the basic measurements of power, time, and in some cases, attenuation.

The limitations of radio-frequency interference type measurements in the microwave region are primarily due to the lack of understanding of basic measurements techniques and the scarcity of standards for calibration. However, because of the present requirements for data, as reliable and accurate as possible, and because the precision of component instruments is adequate for a reasonably good job, it is imperative that an RFI specialist plan the tests, perform the measurements and calibrations, and at least supervise the subsequent reduction of data. For, only to an RFI specialist are the peculiarities of these operations apparent.

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Historical Documents - Compliments of Milton Kant

Daniel David Hoolihan, Chair, History Committee, EMC Society

Introduction

Milton Kant is one of the Founders of the Professional Group of Radio Frequency Interference (PGRFI) of the Institute of Radio Engineers (IRE) and he was active as an officer of the Administrative Committee (AdCom) of the PGRFI. In some recent e-mail exchanges with Milton relative to the passing of another Founder, James McNaul (see the Completed Careers Column of this magazine), he mentioned that he had historical records on the early beginnings of the "Group" that he wanted to send to me. I, of course, graciously accepted his offer and a few days later the "package" of historical records arrived at my home as you can see from the accompanying photo.

Contents of the "Package"

There were three folders in the package:

1. The first folder was labelled "Radio Interference Committee and G-EMC (RFI) Organizing Correspondence". It contained numerous letters and other correspondence relative to the founding of the PGRFI of the IRE.
2. The second folder was labelled "IEEE G-EMC Correspondence - 1957 -1967." This folder contained letters, reports, and other documentation primarily from the AdCom of the PGRFI.
3. The third folder was labelled "IEEE G-EMC AdCom Minutes - 1957 - 1965." This folder contained all the Minutes from the AdCom meetings from 1957 -1964 plus the minutes from the 28 June 1965 AdCom meeting.

First Folder

The first folder contained information on the organizing committee "for an organization in this area of the people actively interested in RF interference." The letter announcing the meeting to be held on Wednesday, April 10, 1957 at 8:00 PM in the Conference Room of the Willkie Memorial Building, 20 West 40th Street, New York, NY was signed by Harold Schwenk and Milton Kant. (NOTE - The rental for the room was \$10 and had to be paid in advance!!)

The letter was sent to interested individuals primarily on the East Coast of the USA. Thirty-four positive responses were received for the meeting along with about ten 'not able to attend' responses. Company responses indicating attendance included: Filtron Company, Inc., Interference Measurement Laboratory, Inc., Remington Rand, Engineering & Machine Co., Inc., Jansky & Baily, Inc., Federal Communications Commission, Hazeltine Electronics Division - Hazeltine Corporation, Dunlap and Associates, Inc., Radio Corporation of America, All-Tronics, Inc., Dynamic Electronics - New York, Inc., U. S. Army Signal Engineering Labs - Fort Monmouth, NJ, American Bosch Arma Corporation, International Electronics Engineering, Inc., ARK Engineering Company, Empire Products Sales Corp., The W. L. Maxson Corporation, Interference Testing and Research Laboratory, Inc., Sprague Electric Company, Federal Telecommunication Laboratories - a Division of International Telephone and Telegraph Corporation, and Material Laboratory - New York Naval Shipyard.

Second Folder

The second folder included copies of correspondence and other records from and to Milton Kant in the time-frame of 1957 - 1967. Some of the material included the latest Constitution and By-Laws of the Professional Group on RFI. It also included letters concerning the first Symposium and the formation of various committees of the PGRFI. Frequent recipients and addresses of Milton Kant's correspondence include Ralph Showers, Herman Garlan, Gene B. Duffy, Bernard Schenker, Rexford Daniels, Albert R. Kall, Harold Schwenk, James McNaull, R.W. Fairweather, L. G. Cumming, Harold E. Dinger, W. E. Pakala, and Herman Garlan.

Third Folder

This folder held the Minutes of the AdCom meetings from 1957 -1965.

It also contained the Minutes from a "Meeting of Committee on Scope and Formation: Proposed IRE Professional Group on Radio Frequency Interference" held at IRE Headquarters on 2 May 1957. The "Committee" had been nominated for this purpose at the earlier organizational meeting of approximately 60 interested persons which was held on April 10th at the Willkie Memorial Building, 20 West 40th Street, New York City, with Mr. Harold Schwenk presiding. Members of the "Committee" included R. W. Fairweather, Z. V. Grobowski, A. R. Kall, Milton Kant, James P. McNaull, Leonard Milton, H. R. Schwenk, and Ralph M. Showers.

The "Committee" was joined by Mr. Laurence G. Cumming (Technical Secretary of the IRE) and Mrs. G. B. Duffy (Assistant to Mr. Cumming) who rendered valuable service in guiding the "Committee's" efforts to accord with established IRE procedures on formation of new professional groups.

(Associate Editor's Note: This same Mr. Laurence G. Cumming is the man that our Society's "Cumming Award" is named in honor of.)

The remainder of the "Committee's" meeting was devoted to developing a Scope for the proposed IRE Professional Group, approving a Formal Title for the Group, and appointing the first members of the Administrative Committee.

The SCOPE of the Group was proposed to be:

Radio Frequency Interference, including:

1. **Methods of measurement and control.**
2. **Systems considerations, such as:**
 - a. **Susceptibility**
 - b. **Vulnerability**
 - c. **Compatibility**
 - d. **Spectrum Utilization**
 - e. **Related Propagation Effects**
 - f. **Subjective Effects**
3. **Studies of the origin of interference, both man-made and natural, and their classification**
4. **Cooperation with other Professional Groups, committees and**

other organizations through joint meetings and activities, and by other appropriate means.

The new Group will bring together all those concerned with radio frequency interference problems, and provide means which do not now exist of disseminating technical information.

The Formal Title for the Group was discussed and agreed to be: Radio Frequency Interference.

The first members of the AdCom were:

- 1-Year Term – Messrs. Fairweather, Schwenk, L. Milton, and B. Schenker
- 2-Year Term – Messrs. S. Burruano, McNaull, Kall, and W. Pakala
- 3-Year Term – Messrs. W. Crichlow, Grobowski, Kant, and Showers

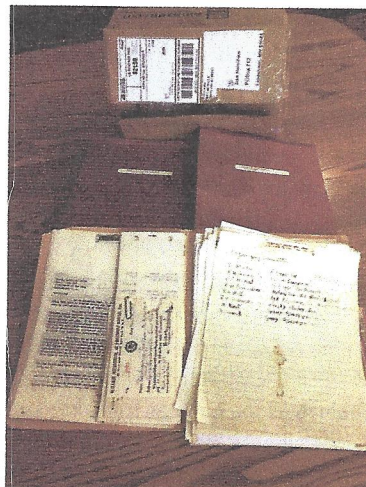
The Minutes of the meeting were taken by Albert R. Kall, Acting Secretary.

On October 10th, 1957, the IRE executive committee approved the petition for the formation of a Professional Group on Radio Frequency Interference. See the accompanying copy of the letter from the IRE to Harold Schwenk.

The first meeting of the Administrative Committee of the Institute of Radio Engineers Professional Group on Radio Frequency Interference was held on November 20, 1957. The AdCom elected the following officers: Chairman – Harold R. Schwenk, Vice-Chairman – Leonard Milton, Secretary – Albert R. Kall, and Treasurer Lt. J. P. McNaull.

Additional Minutes of the Administrative Committee in the Folder included:

- 1958 – March, June, and October
- 1959 – January, March, June, and October
- 1960 – January, March, and October
- 1961 – March and June
- 1962 – March, June, and October
- 1963 – March, June, and October
- 1964 – March, June, and November
- 1965 - June



Milton Kant, one of the Founders of the Professional Group of Radio Frequency Interference (PGRFI) of the Institute of Radio Engineers (IRE), sent a collection of documents from the early days of the "Group" to Dan Hoolihan, EMC Society History Chair.

EMC

M. KANT



THE INSTITUTE OF RADIO ENGINEERS

INCORPORATED

1 EAST 79 STREET
NEW YORK 21, N.Y.

LEHIGH 5-5100

October 11, 1957

Mr. Harold R. Schwenk, Organizer
IRE PG on Radio Frequency Interference
Mineola, L.I., New York

Dear Mr. Schwenk:

We are pleased to advise you that the IRE Executive Committee, at its meeting held on October 10, approved the petition for the formation of a Professional Group on Radio Frequency Interference. The Chairman of the Professional Groups Committee has some reservations in regard to the scope as stated in the petition...and feels that item 2 - "Systems Considerations" should either be deleted from the scope or rewritten. Items 1, 3 and 4 in the scope have been approved as stated. I would suggest that your Administrative Committee consider this suggestion when preparing your constitution.

The IRE Executive Committee wishes to call your attention to the existence of the FCC Cooperative Interference Committees and to suggest that the PGRFI cooperate closely with these committees right from the beginning inasmuch as the CICs have already been established.

By a copy of this letter we are confirming the appointment of the members of your proposed Administrative Committee for the terms as outlined in the petition.

You will no doubt wish to call a meeting of the Administrative Committee in the near future to hold an election of officers and appoint the standing committee chairmen, as outlined in the Professional Groups Manual, a copy of which is being forwarded to all members of the Administrative Committee. From the manual you will note that the constitution and bylaws should be submitted within six months.

Please call on us for any assistance you may need.

Sincerely yours,

L. G. Cumming
Technical Secretary

enc.
d:m

cc: All members of PGRFI
Administrative Committee

On October 10th, 1957, the IRE executive committee approved the petition for the formation of a Professional Group on Radio Frequency Interference in this letter from the IRE to Harold Schwenk.