

10 APRIL 1961



# THE INSTITUTE OF RADIO ENGINEERS

INCORPORATED

SECTION CORRESPONDENCE

PLEASE ADDRESS  
REPLY TO

Mr. R. J. Farber  
59-25 Little Neck Pkwy.  
Little Neck 62, L. I.

April 10, 1961  
8209-61-R3149

Mr. Vincent J. Mancino, Chairman  
Subcommittee 27.4  
34 William Street  
South Dartmouth, Massachusetts

Dear Vince,

This will acknowledge receipt of the proposed Standard 61 IRE 27.4 PS1 draft by your subcommittee. I have not yet had the opportunity to go through it and so my comments are not directed toward the standard draft itself but toward the procedure which you appear to be following. Has this standard proposal now been approved by your subcommittee? The normal path for such a draft should be from 27.4 through 27 and then to the Standards Committee with other interested committees having a chance to comment during the Standards Committee consideration process. I can understand that you would be concerned about comments from the Radio Transmitters Committee and can appreciate that their comments with regard to this document will be valuable. The thing I am trying to determine is where the proposal stands with respect to the regular Committee 27 procedures since it must enter the Standards Committee via Committee 27 and the document I received in the mail was the first indication that I have had that matters have proceeded as far as they apparently have.

Will you please straighten me out on this. Thank you for your cooperation.

Sincerely yours,

  
R. J. Farber, Chairman  
Committee 27

cc - S. I. Kahn

RADIO CORPORATION OF AMERICA

DEFENSE ELECTRONIC PRODUCTS

LAMONT H. NEW JERSEY



April 18, 1961

Mr. V. J. Mancino  
Cornell Dubilier Electronics  
1605 Rodney French Blvd.  
New Bedford, Mass.

Dear Vince:

Subject: Proposed Standard on R.F.I. Methods of Measurement of Spurious  
Transmitter Output.

On page 17 of the March 17, 1961 copy of the Standard there is a formula for Broadband Spurious Output that has disturbed me since it was first proposed. The point of the matter is whether "Broadband" RFI is to be treated as impulsive or random noise, then we all know that it is not likely to be strictly either.

If it is treated as impulsive, the factor should be  $-20 \log_{10}$  (impulse BW, in MC). If it is treated as random, the factor should be  $-10 \log_{10}$  (random noise BW, in MC).

The preponderance of opinion seems to be to treat all broadband noise as impulsive. For example:

- (1) Empire Devices converts DBMC to  $\mu\text{V}/\text{KC}$  using 60 db. (i.e. 60 DBMC =  $1 \mu\text{V}/\text{KC}$ )
- (2) MIL-I-6181B, para. 4.1.4.3, prescribes measurement of broadband RFI using an impulse generator substitution. Also in para. 6.4.9 use of impulse BW is prescribed and use of random noise BW prohibited in measuring broadband RFI, and in para. 6.4.6 all broadband noise is to be considered impulsive.

Also, in the same area, there appears to be a typographical error in that the spurious output level is indicated as in db above 1  $\mu\text{A}$  per MC.

Sincerely,

R. V. Paris  
Building 1-6-5

dd

cc: V. R. Monshaw

GENERAL  ELECTRIC  
COMPANY

INDUSTRIAL ELECTRONICS

DIVISION

COMMUNICATION PRODUCTS DEPARTMENT

MOUNTAIN VIEW ROAD LYNCHBURG, VIRGINIA TELEPHONE VICTOR 6-7311

April 21, 1961

Mr. Vincent J. Marcino  
34 William Street  
South Dartmouth, Mass.

Dear Mr. Marcino:

As a member of IRE Subcommittee 27.7, I received a copy from Mr. J. F. Chappell, of the "Proposed IRE Standards on Radio Frequency Interference: Methods of Measurement of Spurious Transmitter Output". I would like to make the following comments on this standard:

3.1 Sources of Spurious Output

Two important sources of spurious output were omitted i.e. Transmitter noise spectrum and intermodulation products due to multiple transmitter origin.

4.2.6 Carrier Rejection Filter

Carrier rejection filters, as they are normally used, do not provide adequate selectivity to measure transmitter noise. We have found that bandpass filters are better suited to make various types of spurious measurements.

Attached is a copy of EIA Standard RS-237, which gives measurement procedures for at least three types of transmitters spurious outputs which I believe are not adequately covered in the proposed IRE Standard. Although RS-237 may be considered as a standard, covering a special type of transmitting equipment, it should be pointed out that the majority of transmitters, excluding military-tactical, operating in the 25-470 Mc frequency range are land-mobile.

Paragraph 13 of RS-237 describes those test procedures which, I believe, are not adequately covered in the proposed IRE Standard.

I don't suggest that the proposed IRE Standard should include those measurement procedures as described in RS-237, but I do propose that the IRE Standard should be revised to insure the measurement procedures will be adequate to accurately measure the following:

Mr. Vincent J. Marcino, April 21, 1961 - page 2

1. Radiation of Discrete Frequencies having a multiple transmitter origin.
2. Modulation Spectrum.
3. Noise Spectrum.

Yours truly,

*N. H. Shepherd*

N. H. Shepherd  
Advance Engineering  
Room 1301

NHS/eds

# Westinghouse

ELECTRIC CORPORATION



ELECTRONICS DIVISION

PHONE SOUTHFIELD 1-1000  
FRIENDSHIP INTL AIRPORT  
BOX 1897, BALTIMORE 3, MD.

May 3, 1961

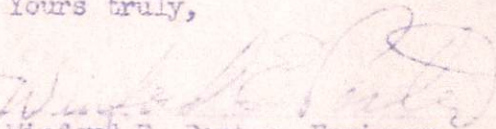
Mr. Vincent J. Mancino  
34 William Street  
South Dartmouth, Massachusetts

Dear Sir:

It would seem advisable to add to the proposed IRE Standard Radio Frequency Interference, a definition between CW and Broadband. MIL-I-16910A (ships) defines Broadband to be when the Quasi Peak is greater than 1.8 times the RMS reading. In addition in paragraphs 5.3.1.5.2, 5.3.2.5.2, and 6.3.1.5.2 the Broadband level is defined as db above 1 uv per mc yet the calculation method shows a subtraction of  $10 \log_{10}$  (Bandwidth in mc). Since db above 1 uv per mc should equal  $20 \log_{10}$  u volts/Bandwidth or  $20 \log_{10}$  u volts -  $20 \log_{10}$  Bandwidth, this  $10 \log_{10}$  should be changed to  $20 \log_{10}$ .

Thank you.

Yours truly,

  
Winford E. Porter, Engineer  
Interference Laboratory  
Electronics Division - 850

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R. V. Beckett, Manager  
Materials & Standards Engrg

cng

cc: J. Singel, Comm & Control

7 MAY 1961

**GENERAL  ELECTRIC  
COMPANY**

COMMUNICATION  
PRODUCTS  
DEPARTMENT

MOUNTAIN VIEW ROAD, LYNCHBURG, VIRGINIA... TELEPHONE VICTOR 6-7311

May 4, 1961

Mr. V. J. Mancino  
34 William Street  
South Dartmouth, Massachusetts

Dear Mr. Mancino:

In reference to your request for comments on Proposed IRE Standards on Radio Frequency Interference, I would like to submit the following:

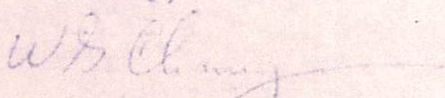
2.3 - Pocket transmitters are now available and should be considered in the wording of the definitions. They differ from mobile and base transmitters in that the antenna can be and generally is a physical part of the transmitter. For these transmitters, radiated spurious includes that energy radiated from the antenna as well as any radiated from internal circuitry. I suggest that the following phrase be added to the note.

...unless the antenna is an integral part of the transmitter housing as in the case of a portable or personal transmitter.

6.1 through 6.3.3.10 - This method of measurement should also accommodate the testing of transmitters having an integral antenna. The TR-8.1 Subcommittee on Land Mobile Transmitters has prepared a proposed standard for Portable/Personal Transmitters. Section 4 covers Radiated Spurious Emission. A copy is attached for your reference. While the methods are essentially in agreement, TR-8.1 goes into more detail on the procedure and provides results that meet FCC requirements for licensing in the various land mobile services.

I appreciate the opportunity to review the Proposed Standard.

Sincerely,



W. G. Chaney, Manager  
Personal Communications Unit  
Standard Mobile Design Engineering  
COMMUNICATIONS PRODUCTS DEPARTMENT



# THE INSTITUTE OF RADIO ENGINEERS

INCORPORATED

SECTION CORRESPONDENCE

May 1, 1961

PLEASE ADDRESS  
REPLY TO

Mr. Vincent J. Mancino  
34 Williams Street  
South Dartmouth, Massachusetts

Dear Mr. Mancino:

I have sent the proposed standard on Transmitter Spurious Output to several people in our division who have interest in such work. If they have comments they are supposed to send them directly to you. Unfortunately, these comments may be a little late in getting to you because I had misplaced the document and only recently found it and sent it to these people.

In the quick look I took, I received two impressions. First, the repetitive of the test equipment list (or other repetitions of that nature). This may be good or bad, but I will have to study it some more when I get the document back. Second, in mounting the equipment for test in a manner same as for final operation, sounds like a good way to avoid spelling out, in lengthy detail, setting up arrangements, which could be troublesome, but does this really make this part of the document useful? Will two different individuals setting up the same equipment arrive at the same answer? I'll have to study this question and the document at greater length when I get it back.

At this time my intentions are to send you a reply. However, if you don't get it in time, don't change your procedure by waiting for it.

Very truly yours,

J.B. Singel, Chairman  
Sub-Committee 15.5

/bws



# THE INSTITUTE OF RADIO ENGINEERS

INCORPORATED

SECTION CORRESPONDENCE

16 May 1961

PLEASE ADDRESS  
REPLY TO

114 Forrest Avenue  
Fair Haven, N. J.

Mr. V. J. Mancino  
34 William Street  
South Dartmouth, Mass.

Dear Mr. Mancino:

Since mobile communications transmitters represent a large segment of the transmitter industry, Subcommittee 27.7 is very much interested in the proposed Standard titled, "Methods of Measurement of Spurious Transmitter Output", which is under preparation by Subcommittee 27.4. It is anticipated that the mobile communications equipment industry and the mobile communications equipment users will use the proposed Standard extensively.

The full membership of Subcommittee 27.7 has not yet had an opportunity to review and comment on the proposed Standard, however, it is intended that this be accomplished at an early date. It is suggested that it may be desirable to hold a joint meeting of 27.4 and 27.7 at some appropriate time prior to the Grand Tour of the proposed Standard. Several members of 27.7 are also members of EIA Committee TR-8 which has already issued EIA Standards pertinent to spurious emissions from mobile communications transmitters.

Attached hereto are comments on your proposed standard based on a preliminary study by myself and Mr. Neil Shepard of 27.7. It will be noted that some of the comments will require spelling out additional testing techniques. In this regard the membership of 27.7 will be happy to assist your Subcommittee.

Yours truly,

*J. F. Chappell*  
J. F. CHAPPELL  
Chairman, Subcommittee 27.7  
114 Forrest Avenue  
Fair Haven, N. J.

1 Incl  
Comments

CC: S. Cohn  
N. Shepard



COMMENTS ON PROPOSED STANDARDS ON RADIO FREQUENCY INTERFERENCE:

METHODS OF MEASUREMENT OF SPURIOUS TRANSMITTER OUTPUT

1. Paragraph 3.1 Sources of Spurious Output.

3.1 (d) It is considered that the term "Intermodulation Products" is too broad. Suggest replacing term with "Extra Band Modulation Products" and then add the following additional sources:

- (f) Multiple Oscillator Intermodulation Products
- (g) Signals Having Multiple Transmitter Origin
- (h) Extra Band Noise

2. Paragraph 3.2 Modulation Conditions. It is suggested that "Modulation Conditions" be spelled out in greater detail. For example, it is suggested that a statement be included listing modulation of conditions encountered for most classes of equipment such as single channel voice, multi-channel voice, video, TTY, data transmission, etc.

3. Paragraph 3.3 Measuring Instruments.

It is suggested that the term RMS be replaced by average (or average envelope) which is generally more descriptive of the actual signal parameter being measured.

MARCO