MR490

AUTHORS: Burrows DC, Van Allen JA:

DATE: 1973

TITLE: Facial burns from a microwave oven?

SOURCE: In Letters to the Editor. Microwaves 12(10):86 only, 1973

MAIN SUBJECT HEADING:

AN	HU	AT	IH	M
ANALYTICS	HUMAN EFFECTS	ANIMAL TOXICITY	WORKPLACE PRACTICES-ENGINEERING CONTROLS	MISCELLANEOUS

SECONDARY SUBJECT HEADINGS: AN HU AT IH M

- Physical/Chemical Properties
- Review
- Animal Toxicology
- ✓ Non-occupational Human Exposure
- Occupational Exposure
- Epidemiology
- Standards
- Manufacturing
- Uses
- Reactions
- Sampling/Analytical Methods
- Reported Ambient Levels
- Measured Methods
- Work Practices
- Engineering Controls
- Biological Monitoring
- Methods of Analysis
- Treatment
- Transportation/Handling/Storage/Labelling

letters

Facial burns from a microwave oven?

To The Editor:

I read with interest your news article, "Microwave Oven Controversy Sizzles," MicroWaves, May, 1973 pg. 9, and I would like to take issue with your statement implying that there have been no injuries due to microwave oven use.

My wife and I received an MCA oven as a wedding gift, and she suffered corneal and facial burns from looking through the window too often. She was unable to see for several days.

I checked the oven for leakage using a microwave field intensity meter, and I also had the FDA run a check on the oven. In both cases, the leakage was below the permissible level. This would seem to substantiate CU's concern over the BRH permissible level standards.

Donald C. Burrows
2016 N. Adams Street
Apt. No. 801
Arlington, VA 22201

Editor's note: Due to the rather unusual circumstances described, a copy of Mr. Burrow's letter was sent to Dr. James Van Allen of the Department of Physics at the University of Iowa. His reply is as follows:

To The Editor:

Mr. Burrows' allegation is totally contrary to the comprehensive study that I have made of the safety of household microwave ovens that are currently on the market.

I consider it exceedingly unlikely that the allegation is true. Nonetheless, it is of sufficiently serious nature that it deserves investigation.

I am referring your letter and that of Mr. Burrows to Mr. Richard Foerstner of the Amana Refrigeration Company. Mr. Foerstner has extensive contacts within the home appliance industry and the Bureau of Radiological Health and may well wish to initiate an appropriate investigation through either or both of these channels.

J. A. Van Allen
Department of Physics and Astronomy
The University of Iowa
Iowa City, IA 52242

CAD programs available

To The Editor:

In your article on CAD programs, August, 1973, MicroWaves, pg. 9, you failed to mention the program, "Magic" or University Computing Company, the company that markets it.

Magic is available in all major United States cities and is capable of optimizing up to 50 circuit elements. The other programs you mentioned: COMPAC and OPTINET do a maximum of 15, SPEEDY does 8, and BAMP will not optimize any. In-house versions of Magic can be leased.

Magic has a total capability for both microwave and conventional circuits. It will optimize any measurable circuit responses, do constrained optimization (with an upper and lower bound on any or all element sizes) and display any or all circuit responses either in tabular or graphical form. In addition, Magic does circuit stability analysis, sensitivity analysis, statistical (Monte Carlo) analysis and worst case analysis. Magic has an extensive capability for direct input of measured data and requires no active device modeling.

John D. Trudel
President
Scientific System Technology, Inc.
603 Business Parkway
Richardson, TX 75080.

To The Editor:

Optinet, a trademark and program of Dean Hall Associates, was mentioned without discussion in your August issue as microwave CAD programs.

Optinet provides analysis, sensivity, optimization and worst case analysis for amplifiers, switches, parametric amplifiers, mixers, filters and a wide range of other microwave networks. It handles active, passive, distributed and lumped constant circuits in any combination.

Data on HP transistors is prestored in the program and available to users and commercial data storage is available to other manufacturers. User's problems can be stored at intermediate points for later resumption. The program will also estimate the computing costs before the problem is run, thus providing cost control as well as cost reporting.

Optinet is typically used by engineers dealing with modeling, manufacturing and design problems having significant performance or cost impact on overall system effectiveness. The program is supported also by RRC International, Inc., (Dr. A. Armstrong) 1124 Peoples Avenue, Troy, NY, (518) 274-8100. Complete technical consultation and support services are available.

Robert D. Hall
President
Dean Hall Associates, Inc.
200 Third Street
Los Altos, CA 94022.

Boost switch isolation by 6 dB

To The Editor:

I would like to point out some errors in the article "Simplify Switch Design" by Charles Bosomworth, August, 1973 pp 56-59. The use of multiple shunt PIN diodes spaced a quarterwave apart provides more isolation than is indicated, i.e. multiplying the dB isolation of a single diode by the number of diodes. There is an additional isolation of approximately 6 dB per diode.

The equation relating power dissipated to power input (Eq. 14) should read

$$\frac{P_{in}}{P_{DISS}} = \frac{Z_o}{4R_F}\left(\frac{2R_F}{Z_o} + 1\right)^2$$

The following equations, (15) and (16), are correct because the term in error is small and was neglected.

Although not mentioned, it is interesting to note that series PIN diode switches can handle four times as much power as shunt switches. It is well known that double throw shunt diode switches can also handle four times as much power as single throw shunt diode switches. These relationships will be explored in an HP application note to be published.

Jack H. Lepoff
Applications Engineer
Hewlett-Packard
640 Page Mill Road
Palo Alto, CA 94304.

Author's reply:

Mr. Lepoff's observation that an additional 6 dB of isolation is available with an additional diode is correct, and I was remiss in not clearly stating it.

Equation (14) was simply a rewrite of the incident power vs. transmitted power equation. As such it is correct as printed. I have made the tacit assumption that all power incident is dissipated in the diode. Perhaps Mr. Lepoff has made different assumptions in obtaining his equation. In either case, the "working equations" (15) and (16) are a satisfactory simplification. I also noticed a minor error on the graph (p. 57). The 0.01 on the Forward Resistance Axis should read 0.1; likewise the 0.001 should read 0.01.

Charles Bosomworth
Bosomworth Associates
55 Newbury Neck Road
Newbury, MA 01950.