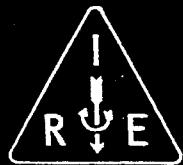


# Transactions



of the I.R.E

Professional Group on

**Microwave Theory and Techniques**

April, 1954

Volume MTT-2 Number 1

## TABLE OF CONTENTS

*The papers in this issue were presented at the Microwave Radio Relay Systems Symposium, New York, N. Y., November 5-6, 1953 and will appear also in the Transactions of the I.R.E. Professional Group on Communications Systems, Vol. CS-2, No. 2, July, 1954.*

The Microwave System of the Michigan-Wisconsin Pipeline Company	W. P. Maginnis and H. Place	1
Microwave Site Selection in Undeveloped Country.....	R. D. Pynn	9
Microwave Repeater Site Planning and Development.....	R. D. Chapman	16
Remote Control of Standby Engine Generator Sets over a Microwave System	Robert L. Halvorson	32
Application of Companders to FM Radio Systems with Frequency Division Multiplexing.....	M. C. Harp, M. H. Kebby, and E. J. Rudisuhle	36
A Double Side-Band Amplitude-Modulated Multiplex System for Use over Microwave Radio .....	Nelson B. Tharp	41
A Microwave System for Trunk Service .....	J. J. Lenehan	50
A Microwave Radio System for Pipeline Use (Abstract) .....	Ed Dyke	60
Microwave and VHF Radio Installation for the Union Electric System	George W. Fox	63
Microwave Radio Relay Link for Military Use .....	Sidney Metzger	84
Transco Microwave System .....	H. A. Rhodes	89
Microwave Testing with Millimicrosecond Pulses .....	A. C. Beck	93
Theoretical Aspects of Microstrip Waveguides (Abstract).....	G. A. Deschamps	100
Considerations in Klystron Design for Microwave Relay Systems.....	R. W. Olthuis	103

**The Institute of Radio Engineers**

## IRE PROFESSIONAL GROUP ON MICROWAVE THEORY AND TECHNIQUES

The Professional Group on Microwave Theory and Techniques is an association of IRE members with professional interest in the field of Microwave Theory and Techniques. All IRE members are eligible for membership and will receive all Group publications upon payment of the prescribed assessment.

Annual Assessment: \$2.00.

### Administrative Committee

A. G. CLAVIER, *Chairman*

W. W. MUMFORD, *Vice-Chairman*

H. F. Engelmann, *Secretary-Treasurer*

HENRY JASIK

C. W. CHANDLER

HARRY B. MARVIN

P. D. COLEMAN

THEODORE S. SAAD

D. D. KING

HARALD SCHUTZ

J. G. McCANN

G. C. SOUTHWORTH

G. A. ROSELLOT

A. C. BECK

L. D. SMULLIN

BEN WARRINER

### TRANSACTIONS of the IRE®

#### Professional Group on Microwave Theory and Techniques

Published by the Institute of Radio Engineers, Inc., for the Professional Group on Microwave Theory and Techniques at 1 East 79th Street, New York 21, New York. Responsibility for the contents rests upon the authors, and not upon the Institute, the Group, or its members. Individual copies available for sale to IRE PGMTT members at \$2.20; to IRE members at \$3.30; and to nonmembers at \$6.60.

---

Copyright, 1954 — THE INSTITUTE OF RADIO ENGINEERS, INC.

All rights, including translations, are reserved by the Institute. Requests for republication privileges should be addressed to the Institute of Radio Engineers, 1 E. 79th St., New York 21, N. Y.