Abstracts

The Regeneration of Binary Microwave Pulses by O. E. DeLange, Bell Telephone Laboratories.

The chief advantage of binary pulse systems resides in the possibility of regenerating such pulses at intervals along the transmission route to prevent the accumulation of distortions due to noise, bandwidth limitations, and other disturbing effects. A very important part of any such transmission system is the regenerative repeater employed. This paper reports the results of experiments performed to determine the possibilities of such a repeater operating in the microwave frequency range.

With maximum economy in mind, a simple device was developed for producing partial regeneration directly at microwave frequencies. To determine the capabilities of such a regenerator, one of them was included in a circulating test loop in which pulse groups were passed through the device a large number of times. Results indicate that even in the presence of serious noise and bandwidth limitations pulses can be regenerated many times without noticeable deterioration.

It was found that for "errorless" transmission through a long chain of such repeaters, the required signal-to-noise ratio is approximately 5 db higher than the theoretical value for an ideal system. Part of this difference is attributable to the fact that only partial regeneration was used and part to other imperfections in the system.

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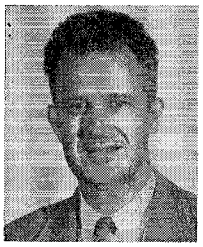
Noise Measurements in the UHF Range by E. Maxwell and B. J. Leon, Massachusetts Institute of Technology.

Comparative noise figure measurements in the 400 mc frequency range have been made using commercial noise diode sources, thermal noise sources, and fluorescent lamps as noise generators. The thermal sources were of two kinds, a high temperature source at about 1,000°K and a low temperature source at 4°K. Measurements made with noise diodes yielded results about 1.0 db higher than those made with the thermal noise sources, from which it is inferred that the diodes are not satisfactory primary standards of noise in this frequency range. The effective noise temperature of a standard 6 w fluorescent tube (coupled to a helical line) was determined to be approximately 12,000°K by comparing its noise output with that of the hot thermal source. This is consistent with the figure of 11,400°K reported by Mumford at 4,000 mc.

Contributors

Frederick J. Altman (S'36–A'40–M'47) was born on March 7, 1915, in New York, N. Y. He received the B.S. and M.S. degrees from Massachusetts Institute of Technology in 1938. From 1940 to 1946 he served as a radar officer with the Army Air Force.



F. J. ALTMAN

In 1946 he joined the Federal Telecommunication Laboratories, a division of International Telephone and Telegraph Corporation, working on doppler radar and other projects. Mr. Altman is currently a senior project engineer in the Radio Communication Laboratory.

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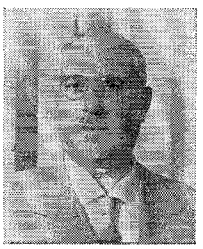
Albino Antinori was born at Canicattì, in Sicily, in 1899. He graduated in mechanical industrial engineering at the Turin Polytechnic in 1921; in 1923 he received a diploma from the Scuola Superiore di Elettrotecnica G. Ferraris, Turin, and in 1925 a degree in physics from Turin University.

From 1923 to 1925 he was Experimental Physics Assistant at the Turin Polytechnic, and from 1925 to 1931 taught Experimental Physics and later Electrical Engineering and Electrical Measurements at the Istituto Industriale Nazionale, Fermo. In 1931 he joined the Specialized Engineering Group of the Italian Ministry of Posts and Telecommunications. Later he held a commission in the Italian Signal Corps. In 1947 he was appointed Inspector General of Telecommunications. Since 1950 he has been Superior Inspector General of Telecommunications.



A. ANTINORI

Mr. Antinori is a member of the Board of Directors of the P.T.T. Administration, of its Superior Technical Council and of the National Research Council. He is a senior member of the Italian Electrotechnical Association and the author of many articles on telephony, telegraphy and radio.

Alfred C. Beck (A'30–SM'46) was born in Granville, N. Y., on July 26, 1905. He received the E.E. degree from Rensselaer Polytechnic Institute in 1927.

A. C. BECK

After two summers in the test department of the New York Edison Company, and a year as instructor in mathematics at Rensselaer, during which he did some graduate work in communications, he became a member of the Technical Staff of Bell Telephone Laboratories in 1928.

Since then he has been in the radio research department, working on antennas, waveguides, and various short-wave, radar, and microwave projects.

At present Mr. Beck is concerned with broad-band communication by means of radio relay and circular electric waveguide systems.

He is a New York state licensed professional engineer, and a member of Sigma Xi.