

The Files

8 April 1959

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Trip Report - IRE Convention

1. The IRE Convention was attended on 24-25 March 1959. The following lectures were attended: A Deleter Adder Unit for TV Vertical Interval Test Signals, Transistorized Video Switching, A New Approach to Low Distortion in a Transistor Power Amplifier, Microwave Detection with Vacuum Diodes, Priming Techniques for Reducing Jitter on Pulsed Reflex Klystrons, and Noise Figure of Receiver Systems Using Parametric Amplifiers.

2. A Deleter Adder Unit for TV Vertical Interval Test Signals:
L. R. Popkin-Curman and F. Davidorf of Telchrome Mfg. Corp.

A discussion of the use of TV vertical interval test signals was presented in this paper. The test signal occurs for two or three horizontal lines per field at the end of the vertical blanking interval. These signals are used to check TV transmission interval characteristics for both color and black and white.

A new device was described that would introduce a different test signal and delete any other test signal present at any point in the TV network. This will facilitate the checking of various portions of a TV network. The deleter adder device is automatic in that it senses the presence of a vertical interval test signal and will control the deletion and/or addition of a local test signal.

3. Transistorized Video Switching: J. W. Wentworth, C. R. Monroe, and A. C. Luther, Jr., of RCA, Camden, N. J.

This paper presented a transistorized device for use by TV broadcasting stations to switch from one picture transmission to another. The unit known as RCA TS40 is comprised of a series of modules. It is possible to have up to 24 inputs and 10 outputs. The actual switching is performed by biasing diodes "on" and "off" by using flip-flops. Picture transition will occur during the vertical blanking interval.

4. A New Approach to Low Distortion in a Transistor Power Amplifier:
H. J. Paz, RCA, Camden, N. J.

A transistor power amplifier has been needed for some time that will give low distortion and high fidelity. The main problem is that the Beta cut-off frequency of most commercially available power transistors is from 6000 - 9000 cycles/sec. Some of the reasons for distortion are (1) Beta mismatch of the output power transistors, (2) variation of

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input impedance with drive signal, and (3) change in Beta with base current drive.

The approach presented in this paper takes into account present power transistor limitations. The dependence for low distortion is shifted from the transistor to the circuit design. This shift is made by employing negative feedback in each stage. Emitter degeneration is used to produce the negative feedback.

The amplifier is designed for use in broadcast studios providing a gain of 104 db using 10 transistors. Temperature stability is provided by the use of a thermistor.

5. Microwave Detection with Vacuum Diodes: N. E. Dye, J. Hassler, Jr., A. J. Knight, R. A. Miesel and C. Papp, IIT Labs

It has been theorized that vacuum tube diodes could be used as microwave detectors. Theoretical calculations using assumed parameters for a resonant type diode indicated that the microwave vacuum diode detector should produce results comparable to that of a standard crystal diode. By experimentation, it was shown that vacuum diodes would detect microwave signals. However, the magnitude of the detected signal was 10 - 100 times smaller than expected. Diode configuration, saturation, and temperature characteristics and possibly a wrong assumption in the calculations were among the reasons for the small output. Further studies are being made.

6. Priming Techniques for Reducing Jitter on Pulsed Reflex Klystrons: Paul A. Grandall

This paper presented a method of eliminating jitter from the pulses of a reflex klystron. This jitter can be in the order of 30 - 100 usec wide depending on the external load and the method of pulsing used.

7. Noise Figure of Receiving Systems Using Parametric Amplifiers: J. Sie and S. Weisbaum, RCA, New York

This paper compares the noise level of two receiving systems using parametric amplifiers. A derivation of the system noise figure F was presented. The two types of amplifiers were (1) a two matched amplifier with 3 db coupler, and (2) circulator amplifier.

In the UHF region the noise levels of the two amplifiers were (1) .8 db and (2) .79 db. The system was at a temperature of 13.5° Kelvin.

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At the present time, the parametric amplifier is still in the experimental state.

The main disadvantage of the parametric amplifier is its operating temperature. An operating temperature below 15° Kelvin is required for low noise operation.



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