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The L3 Coaxial System

Foreword

The articles in this issue are devoted to different phases of the development of a new system for the transmission and utilization of broader frequency bands on existing or new coaxial cables. This new system, which is called the L3 carrier system, represents the latest phase of development activities begun in the late twenties. It permits far more intensive exploitation of the cable medium than its predecessor, affording the option of providing, in each direction on a pair of coaxial tubes, either 1860 telephone channels or 600 telephone channels and a 4.2 megacycle broadcast television channel.

These results have been attained through wide extension of previous art. New electron tubes, transformers, inductors, and other circuit elements have been designed for extreme precision in respect to stability and other performance factors. Statistical quality control techniques are being applied to obtain the benefits of closely controlled distribution of the performance of circuit elements and system units. Fundamental to the program has been the devising of techniques for achieving hitherto unobtainable accuracies in the measurement of impedance, loss, phase and other transmission properties. To provide precise attenuation and delay characteristics over the wide frequency band, new techniques of network synthesis have been developed.

Refined system analysis and circuit design have derived maximum performance from component capabilities. The highest standards of

overall transmission performance and reliability have been adhered to. The new system is now in commercial service and large scale application is planned.

The following articles discuss (1) the over-all systems, together with its fundamental design problems, (2) the methods developed for equalization and regulation, (3) the broadband amplifying techniques, (4) the circuits for transmitting and receiving television, (5) the requirements established for controlling the performance of component elements, and (6) the application of these requirements in manufacturing.

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