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HIGH FREQUENCY SUPERCONDUCTIVITY

Chairman: R. L. Camisa—David Sarnoff Research Center

Session Abstract: The recent discovery of superconducting materials, with transition temperatures above 77°K, has excited the technical community with the possibility of a new class of electronic devices. Of particular interest is the development of ultra small microwave and millimeter wave receivers and transmitters with performance approaching theoretical noise and efficiency limits. Also of interest is the development of high performance components that are not easily realized with conventional hybrid or monolithic integrated circuit technologies such as stable oscillators, filters and low loss delay lines.

In this session material, device and circuit approaches will be briefly reviewed and the impact of this new technology on high performance filters, quantum noise limited mixers, detectors and amplifiers assessed. The microwave characteristics of Y-Ba-Cu O material supplied in bulk disc form will then be presented. Measurements on bulk material from various sources will be described with surface conductivities at X-band of up to ten times that of Au at 35°K. In addition, theoretical papers will discuss the analyses and optimization of superconducting transmission lines and resonators, many of which may also be used to evaluate these new materials.

**8:30 am–10:00 am, May 26, 1988
Jacob Javits Convention Center, Hall 1E
Room 3**