Abstracts

Superconductors and cryogenics for future communication systems

M. Klauda, T. Kasser, B. Mayer, C. Neumann, F. Schnell, B. Aminov, A. Baumfalk, H. Chaloupka, S. Kolesov, H. Piel, N. Klein, S. Schornstein and M. Bareiss. "Superconductors and cryogenics for future communication systems." 2000 Transactions on Microwave Theory and Techniques 48.7 (Jul. 2000, Part II [T-MTT] (Special Issue on Microwave and Communication Applications at Low Temperature)): 1227-1239.

In the framework of a German research program on "superconductors and ceramics for future communication technology", efforts are undertaken to demonstrate the feasibility of cryogenic and high-temperature superconductor technology for applications in communication satellites and base transceiver stations (BTS's) for terrestrial mobile communication. For the receiver front end of C-band satellites, noise reduction filters as well as input-multiplexer channel filters have been developed. A three-channel output multiplexer was composed of dielectric hemisphere filters with elliptic response. Associated encapsulation and cooling issues for spaceborne systems were investigated and an in-orbit demonstration of the complete setup will be performed on the International Space Station. Activities toward applications in terrestrial mobile communication are focused on BTS cryogenic front ends with single preselect filters of superior selectivity, and on reconfigurable front ends allowing some electronically controlled change in the preselection frequency response. A first version of a demonstrator for a cryogenic BTS front end was developed.

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