Abstracts

A Survey of Possible Passive Antenna Applications of High-Temperature Superconductors

R.J. Dinger, D.R. Bowling and A.M. Martin. "A Survey of Possible Passive Antenna Applications of High-Temperature Superconductors." 1991 Transactions on Microwave Theory and Techniques 39.9 (Sep. 1991 [T-MTT] (Special Issue on Microwave Applications of Superconductivity)): 1498-1507.

A survey of possible applications of high-temperature superconductors (HTS's) to antennas and antenna feed networks is presented. The frequency range of consideration is 1 MHz to 100 GHz. Three antenna application areas seem appropriate for HTS material: electrically small antennas and their matching networks; feed and matching networks for compact arrays with enhanced directive gain (superdirective arrays); and feed networks for millimeter-wave arrays. Preliminary experimental results are presented on YBaCnO and TIBaCaCnO 500 MHz half-loop antennas that show an increase in radiation efficiency (compared with a copper antenna at the same temperature) by a factor of 5 for the HTS antennas.

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