Abstracts

Mode Filter for High-Power Microwaves

M. Otsuka and M. Shimizu. "Mode Filter for High-Power Microwaves." 1991 Transactions on Microwave Theory and Techniques 39.9 (Sep. 1991 [T-MTT] (Special Issue on Microwave Applications of Superconductivity)): 1650-1654.

A new type resistive-wall mode filter in which the axisymmetric modes, e.g., the TE/sub 01/ and TE/sub 02/ modes, pass almost without attenuation and the nonaxisymmetric modes, e.g., the TE/sub 11/ and TM/sub 11/ modes, attenuate has been developed for 28 GHz high-power microwaves, Pyrolytic graphite having an anisotropic resistivity was installed in the mode filter so that the normal direction to the deposition surface of the pyrolytic graphite was in the axial direction of the mode filter. The inner diameter of the mode filter was 30 mm and its length, 100 mm. Mode attenuation and return losses in the mode filth- were measured for the TE/sub 01/, TE/sub 02/, TE/sub 11/, and TM/sub 11/ modes using a scalar network analyzer with mode converters that convert from the rectangular TE/sub 10/ mode to the circular modes. Measured attenuation was 2.4±0.3 dB for the TE/sub 11/ mode, 5.5±0.2 dB for the TM/sub 11/ mode, and 0.0+0.2 dB for the TE/sub 01/ and TE/sub 02/ modes at 28 GHz. Return losses were in the range of -20 to -25 dB for each mode.

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