Fabrication and Microwave Properties of Asymmetric Dual－Passband High－Tc Superconducting Filters

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ABSTRACT

In work, Synthesises of symmetric and asymmetric Dual-Passband band-pass filters are presented for the applications of IEEE 802.11b/g (2.4 GHz ~ 2.48 GHz) on the multimode wireless local area networks (WLAN). The high temperature superconducing (HTS) filters were fabricated by pattering YBa2Cu3O7 films double-sided deposited on 20 × 20 mm2 LaAlO3 substrates with an RF sputtering technique and by putting them in copper housings. The synthesis simulation results show the symmetric dual-band feature of two pass bands at 2.45 and 2.49 GHz with an insertion loss of 0.18 and 0.17 dB, and bandwidths of 11 and 24 MHz, respectively.The asymmetric dual-band feature of two pass bands at 2.45 and 2.48 GHz with insertion losses of 0.3 and 0.29 dB, and bandwidths of 20 and 23 MHz, respectively. The temperature-dependent frequency responses can be well described by the modified two-fluid model based formulas, indicating that the frequency shift in HTS BPF is dominated by the temperature dependence of the magnetic penetration depth.

Keywords : Dual-band、asymmetric Dual-Passband Filter、High-Tc superconducting

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