Abstracts

On the performance of HTS microstrip quasi-elliptic function filters for mobile communications application

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The low-loss and high-selective high-temperature superconducting (HTS) bandpass filters can enhance performance of mobile communications systems. In this paper, we summarize a recent progress of novel HTS preselect bandpass filters that have been developed for a European research project. The objective of the project is to construct an HTS-based transceiver for mast-mounted DCS1800 base stations. The HTS preselect receive filters have been designed to have a quasi-elliptic function response in order to provide low insertion loss and very steep rolloff at the filter band edges. The filters cover a 15-MHz sub-band of a receive band, which ranges from 1710 to 1785 MHz. The filters have been fabricated using double-sided YBCO thin films on 03-mm-thick MgO or 0.5-mm-thick LAO substrates. The latest experimental results of the filters, including those encapsulated with a low-noise amplifier in an RF module are presented, showing very promising performance. The issues associated with asymmetric frequency response are investigated to improve the filter performance.

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