Abstracts

Ultra-selective 22-pole 10-transmission zero superconducting bandpass filter surpasses 50-pole Chebyshev filter

S.M.I. Tsuzuki, Shen Ye and S. Berkowitz. "Ultra-selective 22-pole 10-transmission zero superconducting bandpass filter surpasses 50-pole Chebyshev filter." 2002 Transactions on Microwave Theory and Techniques 50.12 (Dec. 2002 [T-MTT] (Special Issue on 2002 International Microwave Symposium)): 2924-2929.

An ultra-selective filter for third-generation (3G) and fourth-generation wireless application is presented. The demonstrated filter consists of 22 resonators and five cross couplings that produce ten transmission zeros. The filter was designed at 1950-MHz center frequency with a 20-MHz bandwidth to meet existing 3G wireless applications. The measured filter data shows excellent selectivity, better than 30-dB/100-kHz skirt slopes, and 90 dB of rejection at 350 kHz from the band edge. This filter performance surpasses the performance of a 50-pole Chebyshev filter. In order to fit a large number of resonators into a limited wafer area, a new compact resonator was developed. The filter was fabricated using a YBCO thin film on a 2-in MgO wafer.

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