

A Novel Approach for Tunable Filters

R. R. Mansour and R. Zhang
University of Waterloo, Canada

The paper presents a new concept to implement tunable lowpass filters by employing slot resonators etched in the ground plane. The tunability is achieved with the use of switches to change the effective length of the slots on the ground. A tuning range of more than 60% has been obtained. The concept is attractive since the Q of the switching elements play a little role in determining the insertion loss of the filter. The structure is useful where the emphasis is on out-of-band interference suppression. The validity of the proposed concept is demonstrated by considering 4-slots and 10-slots lowpass filters. RF MEMS switches are integrated on the ground plane to short circuit the slots. The simulated and measured results of the tunable filters exhibit an excellent agreement with a remarkable insertion loss and tuning range performance.