

## A New Microstrip Diplexer Using Coupled Stepped Impedance Resonators

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**Abstract :** This paper presents a new structure of microstrip band pass filter (BPF) based on coupled stepped impedance resonators. Each filter consists of two coupled stepped impedance resonators connected to microstrip feed lines. The coupled junction is utilized to connect the two BPFs to the antenna. This two band pass filters are designed and simulated to operate for the digital communication system (DCS) and Industrial Scientific and Medical (ISM) bands at 1.8 GHz and 2.45 GHz respectively. The proposed circuit presents good performances with an insertion loss lower than 2.3 dB and isolation between the two channels greater than 21 dB. The prototype of the optimized diplexer have been investigated numerically by using ADS Agilent and verified with CST microwave software.

**Keywords :** band pass filter, coupled junction, coupled stepped impedance resonators, diplexer, insertion loss, isolation

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