Abstracts

Characterization of high-Q resonators for microwave filter applications

R.S. Kwok and Ji-Fuh Liang. "Characterization of high-Q resonators for microwave filter applications." 1999 Transactions on Microwave Theory and Techniques 47.1 (Jan. 1999 [T-MTT]): 111-114.

A one-port reflection technique is developed to measure the unloaded Q and external Q of a microwave resonator. The unique procedure of measuring unloaded Q is outlined in three easy steps. A sample chart is provided to further simplify the process. This method is so simple that even a scalar network analyzer is adequate for the measurement. In addition, a time-delay response around the resonator resonant frequency is also derived and presented. This theoretical result, combined with the advanced capability of modern vector network analyzers, has been proven to be very useful for characterization and tuning of the external Q of a resonator. All the results derived are verified by practical measurement. Finally, this technique is applied to the realization and tuning of a six-pole dielectric loaded cavity filter.

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