Abstracts

Measurement of Short Time Changes of Cavity Q and Resonant Frequency

K.R. Richter. "Measurement of Short Time Changes of Cavity Q and Resonant Frequency." 1969 Transactions on Microwave Theory and Techniques 17.6 (Jun. 1969 [T-MTT]): 339-344.

A method for the determination of short time changes of Q factor and resonance of a cavity has been developed. The method is based on the observation of the change in reflection coefficient. As long as the cavity is coupled undercritically there always exist two frequencies at which no change of the reflection coefficient occurs. The measurement of these frequencies is sufficient for evaluating the changed values of the unloaded Q and the resonant frequency assuming no change of the external Q during perturbation. This assumption can be made in most cases of application. If there also exists a perturbation of the external Q, the value of the changed reflection coefficient must be measured at any additional freqnency preferably at the resonant frequency of the unperturbed cavity. Experimental results demonstrate the applicability of this method.

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