Abstracts

An Improved Method for the Determination of Q of Cavity Resonators

A. Singh. "An Improved Method for the Determination of Q of Cavity Resonators." 1958 Transactions on Microwave Theory and Techniques 6.2 (Apr. 1958 [T-MTT]): 155-160.

The various Q factors and circuit efficiency of a cavity resonator can be evaluated from standing-wave measurements on a transmission line or waveguide coupled to the resonator. In the usual method, measurement errors near the half-power points have an unduly large influence on the result. This paper describes a method in which this type of error is avoided. In the new method, vswr and position of minimum at various frequencies are plotted on a Smith chart and a circle is drawn through the points. This circle is suitably rotated around the center of the chart and a value of equivalent susceptance is read off for each frequency. The graph of susceptance vs frequency is a straight line, whose slope the Q factors are evaluated. The underlying theory of the above method is discussed and typical experimental results are presented. Charts of parameters required in the calculations are given.

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