Abstracts

A Universal Wall-Current Detector

F.C. de Ronde. "A Universal Wall-Current Detector." 1964 Transactions on Microwave Theory and Techniques 12.1 (Jan. 1964 [T-MTT]): 112-117.

A universal X-band waveguide detector has been developed which offers the possibilities of a broad-band untuned detector with a stable frequency characteristic. The wall-current detector is a reflectionless two-port with an insertion loss, less than 0.05 db, no extra phase-shift, a sensitivity of about 10 mv/mw and a frequency characteristic which repeats within ±0.1 db over the 8.2-12.4 Gc band for any 1N26. This performance made it possible to flatten the output of a Hewlett-Packard sweep oscillator (as seen by another wall-current detector) within ±0.15 db over the whole X band. As a result many frequency-dependent measurements can now be done automatically with reasonable precision. Plotters and reflectometers will be simplified, resulting in a higher precision. Circular and ridge waveguide types have also been made. The latter seems very promising for an ultra broad-band detector. A sum detector and a difference detector have been made. They can be used for phase-sensitive detection, zero measurements, etc. The wall-current detector can easily be scaled down to mm waves.

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