Abstracts

Failures in power-combining arrays

D.B. Rutledge, Nai-Shuo Cheng, R.A. York, R.M. Weikle, II and M.P. De Lisio. "Failures in power-combining arrays." 1999 Transactions on Microwave Theory and Techniques 47.7 (Jul. 1999, Part I [T-MTT]): 1077-1082.

We derive a simple formula for the change in output when a device fails in a power-combining structure with identical matched devices. The loss is written in terms of the scattering coefficient of the failed device and reflection coefficient of an input port in the combining network. We apply this formula to several power combiners, including arrays in free space and enclosed waveguide structures. Our simulations indicate the output power degrades gracefully as devices fail, which is in agreement with previously published results.

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