Abstracts

Scattering Parameter Measurements on an Optoelectronic Attenuator

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An optoelectronic attenuator scheme suitable for remotely controlling microwave integrated circuits has been demonstrated. By optically illuminating one of the two gaps between the center and outer conductors of a 50-ohm silicon coplanar waveguide-photoconductive switch, we have demonstrated up to 45 dB of microwave attenuation at 1.7 GHz using only 143 mW of laser diode power. This is the highest level of attenuation reported to date for such an attenuator scheme. In this paper the scalar scattering parameters of the optoelectronic attenuator are presented, which indicate that the attenuation mechanism may be due to classical electromagnetic wave attenuation in an optically induced solid-state plasma.

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