Abstracts

A New Concept to Cancel Insertion Phase Variation in MMIC Amplitude Controller

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This paper presents a new concept able to maintain a very low insertion phase variation in analog MMIC amplitude controller. This new approach, applicable to Dual-Gate FET variable gain amplifiers consists to connect an active variable load to the second-gate of the DGFET. This load makes use of a cold FET (with Vds = 0 v) whose impedance varies dependingly on the amplitude command of the circuit. Then, the cold FET compensates the insertion phase change introduced by the DGFET attenuation control over a wide dynamic range. Based on this principle, a C-band GaAs MMIC attenuator for active antenna application has been designed at ALCATEL ESPACE. The phase variation versus gain is always lower than ± 2° over 20 dB gain/attenuation range.

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