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(54) **VARIABLE GAIN OPTICAL MODULATOR WITH OPEN COLLECTOR DRIVER AMPLIFIER AND METHOD OF OPERATION**

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(57) **ABSTRACT**

A distributed amplifier system comprising an impedance matching network configured to match an input impedance to an output impedance of the signal source, and a DC block configured to block DC components in the input signal. A variable gain amplifier adjusts the gain applied to the input signal based on a gain control signal to generate a gain adjusted signal. An emitter follower circuit receives and processes the gain adjusted signal to introduce gain peaking to create a modified signal. A distributed amplifier receives and amplifies the modified signal from the emitter follower circuit, to create an amplified signal. The distributed amplifier includes a termination network and one or more impedance matching elements configured for gain shaping the amplified signal. The gain peaking introduced by the emitter follower circuit is controlled by a variable current source. The distributed amplifier may be an open collector distributed amplifier.