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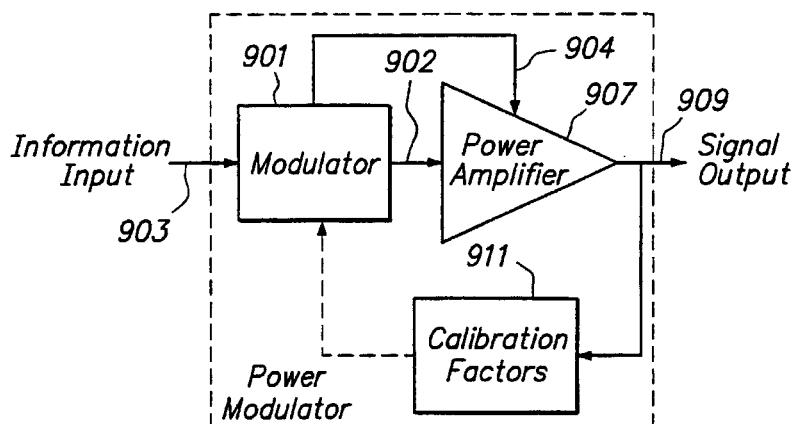
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(54) Title: HIGH-EFFICIENCY POWER MODULATORS



(57) **Abstract:** The present invention, generally speaking, incorporates the power amplifier as a fundamental constituent of a modulator, using polar modulation techniques. Thus, it is possible to achieve the combination of precision signal generation (including envelope variations) along with high energy efficiency in combinations not possible heretofore. In accordance with one embodiment of the invention, a modulated radio (passband) signal generator produces high quality signals of general type, which specifically includes signals with varying envelopes. Signals are generated with high energy efficiency in the conversion of applied DC power to output RF signal power. The result is longer battery life for products such as mobile phone handsets. Dramatically improved efficiency also allows for a dramatic reduction (10 to 1 or greater) in the size of any required heatsink for the radio transmitter, which significantly lowers both cost and size. Furthermore, continuous operation of these radio transmitters is made possible with small temperature rises using small heatsinks, or even without any heatsink components. This provides for high operating reliability, as well as for greater throughput due to the longer operating time allowed. Another aspect of the invention allows the generation of high quality signals with wide bandwidth, without the need for continuous feedback during operation. This further reduces costs by greatly simplifying the design, manufacturing, and complexity of the transmitter circuitry.