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(54) **COMPLEX FILTERING/AGC RADIO RECEIVER ARCHITECTURE FOR LOW-IF OR ZERO-IF**

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(57) **ABSTRACT**

A low power IF strip architecture suitable for Zero-IF (ZIF) or low-IF (LIF) radio receivers for filtering and amplifying a received signal. The apparatus includes a plurality of sequentially connected complex filter/amplifier stages. Each stage includes a complex filter having one or more poles and an automatic gain controlled amplifier (AGC). Each AGC may be feedback or feedforward with fixed minimum and maximum gains. Each stage further includes a control circuit that produces a gain control signal for controlling the amplifier gain within the fixed minimum and maximum gains as a function of a projected amplitude level. The received signal passes through multiple stages of filtering and controlled amplification to attenuate the interfering signal and amplify the desired signal. This is done at a restricted level in each stage such that the circuits in the stages operate at efficient power saving levels. The individual gain control signals from each stage are summed in a received signal strength indicator to provide the overall gain of the apparatus. The overall gain when taken with the amplitude of the apparatus output signal determines the original strength of the desired received signal.

**27 Claims, 7 Drawing Sheets**































