Abstracts

A Channelized-Limiter Approach to Receiver Front-End Protection

C. Rauscher. "A Channelized-Limiter Approach to Receiver Front-End Protection." 1996 Transactions on Microwave Theory and Techniques 44.7 (Jul. 1996, Part I [T-MTT]): 1125-1129.

The receiver protection scheme being presented relies on frequency channelization of incident signals to accomplish +amptitude limiting on a frequency-selective, self-induced, instantaneous basis. A demultiplexer separates signals into contiguous subbands for parallel processing, after which they are reunited by a multiplexer to yield a signal composite of original bandwidth. The scheme's attractiveness lies in its ability to combine the advantages of fast response, broadband, passive limiters with the benefits of narrowband signal rejection techniques that employ frequency-tunable or switched notch filters. The concept is demonstrated with an experimental five-channel modified-logarithmic-periodic limiter prototype circuit, configured as a 7.5- to 12.5-GHz channelized self-limiting amplifier. The measured results confirm the circuit's transparency to small-amplitude signals and illustrate its effectiveness in confining large-signal effects, such as gain compression and intermodulation products, to narrow frequency intervals.

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