Abstracts

Digital microwave receiver technology

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This paper reports the impact of digital signal processing on microwave receiver technology. The majority of modern receiver designs are based on digital technology. Wide-and narrow-band receivers are presented. The wide-band receivers cover approximately 1-GHz instantaneous bandwidth and are used to intercept radar pulses. Current narrow-band receivers cover up to 50-MHz instantaneous bandwidth and are primarily used for receiving communication signals. Two approaches for wide-band receiver design are discussed. One is the conventional digital receiver. The other one is called the monobit receiver, which has slightly inferior performance in some respects, but can be built on a single chip. Narrow-band receivers are best implemented in software because they can more adapt to changes. Two types of receivers are discussed. One is the software Global Positioning System receiver. The other one is called a transform-domain communication system. The object of this system is to avoid interference in a hostile communication environment.

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