

Novel Distributed Direct Conversion Receiver for UWB Systems

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BACKGROUND

Ultra-Wide Band (UWB) wireless broadcasts are capable of carrying huge amounts of data up to 250 feet with extremely little transmit power and high immunity to interference and multipath fading. The spread spectrum characteristics of UWB wireless systems, and the ability of UWB wireless receivers to highly resolve the signal in multi-path fading channels make them a desirable wireless system of choice in a variety of high-rate, short- to medium-range communications. The ability of UWB systems to locate objects to within one inch is highly attractive to applications in the military, law enforcement and rescue agency realms. This UWB system approach is also pertinent to using active sensor networks and collision-avoidance. The circuit techniques that are used in a UWB transceiver are quite different from those used in current narrow bandwidth RF technology thus an incentive to design novel circuit topologies that achieve a gain-for-delay-tradeoff without affecting bandwidth and operating at substantially higher frequencies than conventional circuits.

TECHNOLOGY DESCRIPTION

Few methods have been used to achieve wideband characteristics of RF front-end circuits. The first solution is resistive feedback amplifiers and the second is to extend the narrow band technique to wide band using high order band-pass filtering to achieve the required wideband input matching. These two approaches suffer from a lack of full band coverage and low sensitivity, respectively.

The described invention deploys a distributed approach to achieve wideband characteristics of the front-end and has the advantage of its distributed architecture providing intrinsic wideband characteristics and consequently less sensitivity to the passive elements of component variation seen in process.

APPLICATIONS

UWB wireless communications

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,112,056	02/07/2012	2006-362

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OTHER INFORMATION

CATEGORIZED AS

- » **Communications**
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