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A New Analog Hardware-Efficient Multi-Antenna Receiver Architecture for Spatial Multiplexing, Spatial Diversity and Beamforming

Tech ID: 18749 / UC Case 2007-506-0

BACKGROUND

Multi-antenna communications have demonstrated remarkable performance improvements in wireless systems and hold a promising future for applications that demand higher data rate, enhanced quality of service, and better reliability. However, in systems where multiple transmit and multiple receive antennas (also known as MIMO) are utilized, multiple RF chains, baseband blocks, and analog to digital converters (ADC) in the multi-antenna receiver need to be replicated. This mandates substantial increases in power consumption and chip area, both of which are expensive commodities in densely integrated systems.

TECHNOLOGY DESCRIPTION

University researchers have developed a novel implementation of a MIMO receiver architecture that enables one to receive signals with multiple antenna schemes such as beam-forming, spatial diversity, and spatial multiplexing, and send them through the same RF path all the way to the DSP. This reduces the number of RF and analog blocks and their sizes through sharing different signals paths. This also means a considerable decrease in power consumption and overall size of the system.

APPLICATIONS

Proposed uses include any kind of multiple antenna transceivers that may be built in the industry. This architecture will act as the RF front-end for the overall receiver system. The signals that arrive at the antenna are conveyed from the antenna through the same RF path all the way to the baseband digital processor.

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,265,118	09/11/2012	2007-506

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OTHER INFORMATION

CATEGORIZED AS

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