Abstracts

Digital beamforming for smart antennas

T.W. Nuteson and G.S. Mitchell. "Digital beamforming for smart antennas." 2001 MTT-S International Microwave Symposium Digest 01.1 (2001 Vol. I [MWSYM]): 125-128 vol.1.

An 8-channel digital phased array antenna (PAA) is designed and evaluated for a smart antenna application in the cellular PCS band (1850 MHz to 1990 MHz). Each channel is digitized at the RF carrier frequency using bandpass sampling clocking up to 1.5 Gsps with a 140 MHz bandwidth. The beamforming and additional signal processing is implemented digitally using field programmable gate arrays (FPGAs). This paper characterizes the PAA system for effects on loading analog-to-digital converters (ADCs) including automatic gain control (AGC) techniques and cochannel interference.

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