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Full-Spectrum Capture Receivers in Home Gateways: Circuit and Architecture Challenges

by

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Abstract: Full-Spectrum Capture or Direct-Sampling architectures have emerged as a power-efficient solution in systems where channel bonding or aggregation is the path to increased throughput. While the classic notion of a direct-sampling receiver promises the simplicity of a "direct to bits" signal path and leverages efficient digital signal processing, there are many challenges to a practical implementation. This talk will use the example of a DOCSIS home gateway – a system where Full-Spectrum Capture is now the industry norm – to walk through the system-level requirements and how they impact the IC architecture and implementation.

Eric Fogleman is Senior Director of the RF and Mixed-Signal IC Design Group at MaxLinear in Carlsbad, California. He has been with MaxLinear since 2006, working on four generations of cable front-end chips for DOCSIS set-top boxes, cable modems, and cable gateways. Prior to MaxLinear, he designed data converters and analog circuits for Analog Devices, Silicon Wave, and Broadcom. He received the M.S. and Ph.D. degrees from the University of California, San Diego where he developed signal processing techniques to enable high-resolution analog-to-digital conversion.