



# **Highly Linear Integrated Wideband Amplifiers: Design and Analysis Techniques for Frequencies from Audio to RF (The Springer International Series in Engineering and Computer Science)**

*Henrik Sjöland*

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# Highly Linear Integrated Wideband Amplifiers: Design and Analysis Techniques for Frequencies from Audio to RF (The Springer International Series in Engineering and Computer Science)

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*Highly Linear Integrated Wideband Amplifiers: Design and Analysis Techniques for Frequencies from Audio to RF* deals with the complicated issues involved in the design of high-linearity integrated wideband amplifiers for different operating frequencies. The book demonstrates these principles using a number of high-performance designs. New topologies for high linearity are presented, as well as a novel method for estimating the intermodulation distortion of a wideband signal.

One of the most exciting results presented is an enhanced feedback configuration called feedback boosting that is capable of very low distortion. Also important is a statistical method for relating the intermodulation distortion of a wideband signal to the total harmonic distortion (THD) of a single tone. The THD, as opposed to the intermodulation distortion of the wideband signal, is easy to measure and use as a design parameter. Three different applications where high linearity is needed are identified, namely audio power amplifiers, wideband IF amplifiers and RF power amplifiers. For these applications high-performance integrated amplifier designs using novel topologies are presented together with measurement results. The audio amplifiers are built in CMOS and are capable of driving 8Ω loudspeaker loads directly without using any external components. One of the designs can operate on a supply voltage down to 1.5V. Both bipolar and CMOS wideband IF amplifiers are built; they are fully differential and have linearity from DC to 20 MHz. Finally, an RF power amplifier is built in CMOS, without using inductors, in order to investigate what performance can be achieved without them.

*Highly Linear Integrated Wideband Amplifiers: Design and Analysis Techniques for Frequencies from Audio to RF* is an excellent reference for researchers and designers of integrated amplifiers, and may be used as a text for advanced courses on the topic.

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