

A New And Fast Frequency Response Estimation Technique For Noisysystems

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Summary

Frequency response, and hence transfer function, estimation of systems is of vital importance to several engineering fields such as signal processing, communications, control, system modeling and identification. Any digital frequency response scheme with attractive features such as low cost, high speed, good accuracy and excellent noise and harmonic rejection capabilities will therefore be of great practical benefit to practitioners in the above-mentioned fields. We propose and test a new theory, based on the concept of non-subtractively dithered quantization, that makes such a desirable estimation scheme possible. The theory is tested here on a number of filters and under some stringent conditions characterized by the coarsest possible (1-bit) quantization scheme and very noisy (low SNR) environments. The simulation results substantiate quite well the proposed theory, thus making the VLSI implementation of the proposed 1-bit estimation scheme well worth pursuing in future

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