Novel Measuring-Noise-Suppression and Measurement-Time-Reduction Methodology for ADC/DAC

○菅原 光俊 [*1*2], 松澤 昭 [*2]

Mitsutoshi Sugawara [*1*2], Akira Matsuzawa [*2]

[*1] Consultant コンサルタント, [*2] Tokyo Institute of Technology 東京工業大学

sugawara@ssc.pe.titech.ac.jp

Abstract: Histogram method is one of typical ADC and DAC measurement methodology especially for sensor applications. I have successfully developed 1/22 random noise suppression methodology than histogram method by using same data in a case of 10bit ADC. Or it can reduce measurement points to 1/8, if previous noise level is acceptable.

First, the methodology estimates each physical weight of the ADC/DAC suppressing noises by using statistical calculations. Then it reproduces each noise compressed level of the ADC/DAC, and finally calculates INL and DNL. The estimated physical weight values directly suggest how to calibrate, tweak, or redesign them.