

Hardware in the Loop Simulation of Arbitrary Magnitude Shaped Correlated Radar Clutter

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Abstract:

This paper describes a simple process for the generation of arbitrary probability distributions of complex data with correlation from sample to sample, optimized for hardware in the loop radar environment simulation. Measured radar clutter is used to evaluate the accuracy of the method, as well as the degradation in accuracy for both the clutter magnitude probability distribution and Doppler spectrum due to the quantization effects encountered when implementing statistical clutter generation algorithms on a hardware platform.

Keywords—Radar, Land Clutter, Measurement, Environment, Simulation, Arbitrary Distribution, Wideband, DRFM, Real-time, Hardware in the Loop, Doppler.