

Realtime generation of K-Distributed sea clutter for hardware in the loop radar

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Abstract

This paper proposes a practical implementation for the generation of real-time K-Distributed correlated sea-clutter in firmware. The method uses a dual cumulative distribution function (CDF) based look-up method to transpose a complex uniformly distributed random variable (RV) to the required RV. The clutter is correlated by means of a filter process before translation, and it is shown that this technique produces an amplitude distribution that is sufficiently accurate for Hardware in the Loop (HIL) simulation on digital radio-frequency memory (DRFM) platforms. The output of a DRFM was recorded using an oscilloscope to verify the realtime implementation of the algorithm.