Abstract

In general, GNSS receivers perform many signal processing functions such as; signal acquisition, signal tracking, and data demodulation. Signal acquisition decides either the presence or the absence of the signal under test and provides a rough estimation of the code delay and of the Doppler frequency of the incoming signal. In this paper, we study the acquisition operation of AltBOC E5 Galileo GNSS signal in statistical context, that we develop detection and false alarm probability formulation in cases of constant and adaptive threshold for non coherent acquisition scheme. To obtain an adaptive threshold we propose a Cell Averaging Constant False Alarm Rate (CA-CFAR) detector on pilot channel than in case of both pilot and data channels. The detection performances in Rayleigh fading channel are studied and analyzed. The obtained theoretical results are validated by Monte-Carlo simulations