

Variable vs. Fixed Window Width Code Correlation Reference Waveform Receivers for Multipath Mitigation in Global Navigation Satellite Systems with Binary Offset Carrier and Multiplexed Binary Offset Carrier Signals

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Abstract : This paper compares the multipath mitigation performance of code correlation reference waveform receivers with variable and fixed window width, for binary offset carrier and multiplexed binary offset carrier signals typically used in global navigation satellite systems. In the variable window width method, such width is iteratively reduced until the distortion on the discriminator with multipath is eliminated. This distortion is measured as the Euclidean distance between the actual discriminator (obtained with the incoming signal), and the local discriminator (generated with a local copy of the signal). The variable window width have shown better performance compared to the fixed window width. In particular, the former yields zero error for all delays for the BOC and MBOC signals considered, while the latter gives rather large nonzero errors for small delays in all cases. Due to its computational simplicity, the variable window width method is perfectly suitable for implementation in low-cost receivers.

Keywords : correlation reference waveform receivers, binary offset carrier, multiplexed binary offset carrier, global navigation satellite systems

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