

# On Improvement of the ICI Canceller for OFDM Mobile DTV Receiver

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**Abstract**—In mobile environment, the performance of OFDM mobile receiver is degraded severely because of Inter-Carrier-Interference (ICI) caused by Doppler Spread. Therefore, ICI canceller is an important task for the OFDM mobile receivers. [1] and [2] proposed an efficient method to reduce ICI. The main idea of this method is to linearly approximate time varying channel within one OFDM symbol. Then a big ICI matrix equation is given. However, in [1] and [2], the estimated values of the channel transfer function—the diagonal of the ICI matrix is corrupted by ICI. Consequently, the equalized signal still is distorted. In this paper, we proposed an iterative method to improve performance of the original method. We implemented Jacobi iteration method with low complexity to solve the big ICI matrix equation. Next, at second iteration of Jacobi method, we improve the diagonal by removing ICI from pilot symbols and re-estimating the channel transfer function. Simulation results for ISDB-T mode 3 demonstrated our method doubled performance of the original method under TU-6 channel and Doppler Spread. The improvement is better for two paths and one path Doppler channel.

**Keyword**—Inter-Carrier-Interference, Jacobi Iteration, Orthogonal Frequency-Division Multiplexing



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