论文

OFDM系统中限幅非线性失真迭代对消法性能分析

雷 霞, 赵 颖, 唐友喜, 李少谦

电子科技大学通信抗干扰技术国家级重点实验室 成都 610054

摘要
限幅技术常用于正交频分复用系统中以抑制高峰值平均功率比，为抑制限幅造成的带内失真和带外辐射，可以在接收端进行限幅噪声的迭代估计和对消。该文提出对限幅带来的非线性失真进行迭代估计和对消的效果要比仅对限幅噪声进行估计对消好。前者在理想情况下能完全恢复出发端未限幅前的信号，但后者将始终受到由限幅带来的信号衰减的影响。理论分析和仿真结果验证了该结论及性能，同时数字结果表明，该算法能有效改进系统性能。在归一化限幅门限为1.2时，只通过一次迭代就能提高2dB。

关键词　　正交频分复用　　峰值平均功率比　　限幅　　迭代估计和对消

分类号　　TN929.5

Analysis of the Performance of Iterative Estimation and Cancellation of Clipping Distortion in OFDM

Lei Xia, ZhaoYing, Tang You-xi, Li Shao-qian

National Key Lab of Communication, UEST of China, Chengdu 610054, China

Abstract
Clipping is usually applied to decrease the high peak-to-average power ratio caused by OFDM with interference both inside and outside the signal bandwidth. To resolve this problem, an iterative estimation and cancellation of clipping non-linear distortion scheme is proposed. This paper presents that the performance of estimation and cancellation of clipping non-linear is better than that of clipping noise. The method of iterative estimation and cancellation of clipping non-linear distortion can resume the signal before clipping perfectly with the ideal a priori information. However, if receiver only estimate and cancel the clipping noise the signal will still be influenced by the attenuation caused by clipping. Analysis and simulation results prove the conclusion. And it is shown by numerical simulation results that system performance can be improved evidently. When the clipping threshold is 1.2, the performance is improved about 2 dB with only one iterative estimation and cancellation.

Key words　　Orthogonal Frequency Division Multiplexing(OFDM)　Peak-to-Average Power Ratio(PAPR)　Clipping　Iterative estimation and cancellation

DOI :

通讯作者

作者个人主页　　雷 霞; 赵 颖; 唐友喜; 李少谦

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