

通信与网络

并行组合扩频非等概超宽带系统误码性能研究

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摘要:

基于并行组合扩频的超宽带通信系统, 结合了并行组合扩频通信系统的高效通信能力和超宽带通信系统的良好保密性能, 可以同时满足通信系统对高效性和安全性的要求。该系统中的并行组合扩频部分输出的信号具有非等概出现的特点, 推导了在非等概情况下超宽带系统跳时M进制 $[CD*2]$ 脉冲幅度调制 (time hopping M ary pulse amplitude modulation, TH M PAM) 方式的解调差错概率, 并通过仿真验证了公式推导的正确性。在加性高斯白噪声信道条件下, 建立系统仿真模型, 对系统整体性能进行仿真。仿真结果表明, 基于并行组合扩频的超宽带通信系统具有良好的误码性能, 并且优于常规超宽带通信系统和基于连续波调制的并行组合扩频通信系统。

关键词: 并行组合扩频 非等概 超宽带 数据映射 M进制脉冲幅度调制

BER performance study of non equal probability UWB system based on parallel combinatory spread spectrum

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Abstract:

This paper gives an ultra wideband (UWB) communication system based on parallel combinatory spread spectrum, which composites the advantages of the security and the high efficiency of UWB communication system and parallel combinatory spread spectrum communication system. So the new system can possess the high efficiency and the fine security simultaneously. In the new system the signal output from the part of the parallel combinatory spread spectrum has the property of non equal probability. And the error probability of demodulation is presented for non equal probability time hopping M ary pulse amplitude modulation (TH M PAM), and the equation is proved to be correct by means of simulation. Under the background of the additive white Gaussian noise, the paper gives the simulation of the bit error rate (BER) performance of the system. The results show that the new system is better than the normal parallel combinatory spread spectrum system and normal UWB communication system of the BER performance.

Keywords: parallel combinatory spread spectrum non equal probability ultra wideband data map M ary pulse amplitude modulation (M PAM)

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