

论文

## 新颖的超宽带SSCI合成脉冲信号的最佳设计方法

张陆勇,王小钰,周正

北京邮电大学电信工程学院 北京 100876

收稿日期 2004-3-9 修回日期 2004-6-2 网络版发布日期 2008-4-14 接受日期

摘要

超宽带CI脉冲是由多个相干载波合成的窄脉冲信号. 该文在此基础上, 提出了扩频CI合成窄脉冲技术. 由此降低了功率谱密度, 提高了频带使用效率和便于多址应用. 通过对每个相干载波信号CI扩频且合成, 其效果很好. 在信道传播上拥有超宽带信号的抗多径高分辨率性能, 同时又能对扩频相干副载波进行相关接收, 这样大大地提高了相关接收增益, 减少了码间串扰. 该文运用信号最佳设计方法, 将超宽带SSCI信号设计成符合FCC标准和ETSI标准的最佳信号, 减少与其他无线系统的相互干扰. 文中给出了理论分析、设计方法和计算机模拟仿真结果. 该设计方法对于提高UWB通信系统的性能有很重要的意义.

关键词 [超宽带通信](#) [UWB信号设计](#) [SSCI信号合成UWB波形](#) [信号最佳设计](#)

分类号 [TN911](#)

### Optimal Design of Novel UWB SSCI Synthesis Pulse Signal

Zhang Lu-yong, Wang Xiao-yu, Zhou Zheng

Beijing University of Posts and Telecommunication Engineering College of Telecommunication Beijing 100876 China

Abstract

A Spread Spectrum CI(SSCI) synthesized narrow pulse technique is put forward based on UWB CI pulse, a narrow pulse signal synthesized by several coherent carriers. The power spectrum density is decreased, the frequency usage efficiency is improved and the multi-access application is allowed. Through CI spectrum spreading of each coherent carrier and synthesizing them together, good results can be obtained. The narrow pulse signal synthesized by several SS subcarriers features good signal waveform and anti-multipath high resolution performance of UWB signal. Meanwhile, it is capable of correlative receiving the SS coherent subcarriers, so that the correlative receiving gain is improved and the intersymbol cross-interference is decreased. This study, the ultra-wide band SSCI signal is design to an optimal signal conforming to FCC and ETSI standards by signal optimizing design method, which can reduce the interference with other wireless systems. The paper gives theoretical analysis, design method and computer simulation results. This design method is significant to improve the performance of UWB communication system.

Key words [Ultra-Wide Band \(UWB\) communication](#) [UWB signal design](#) [UWB SSCI signal synthesis](#) [Optimizing design of UWB signal waveform](#)

DOI:

通讯作者

作者个人主页

张陆勇;王小钰;周正

#### 扩展功能

本文信息

- ▶ [Supporting info](#)
- ▶ [PDF\(1087KB\)](#)
- ▶ [\[HTML全文\]\(0KB\)](#)
- ▶ [参考文献\[PDF\]](#)
- ▶ [参考文献](#)

服务与反馈

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [复制索引](#)
- ▶ [Email Alert](#)
- ▶ [文章反馈](#)
- ▶ [浏览反馈信息](#)

相关信息

- ▶ [本刊中 包含“超宽带通信”的 相关文章](#)
- ▶ 本文作者相关文章

- [张陆勇](#)
- [王小钰](#)
- [周正](#)