基于 DDS 与 PLL 混合的频率合成改进方法研究

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摘　要：电子系统对频率源的精度、频率分辨率、转换时间和频谱纯度等指标提出了越来越高的要求.锁相频率合成技术具有体积小、电路简洁、杂散抑制度高，具有窄带跟踪滤波能力的特点，得到了广泛应用，但其存在频率步进与转换时间的相互制约的缺点.而 DDS 具有极高的分辨率，极快的频率转换速度，输出频率上限不高.两种常用的方法有各自的优势和不足，因此可以采用 DDS+PLL 技术方案，既能保持锁相环路的优点，又弥补了锁相环路的不足.本文正是基于这一思想提出了混合频率合成方法的改进方案.

关键词：DDS；PLL；频率合成；转换时间

A Research on Frequency Synthesis Improvement Based on DDS Mixed PLL

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Abstract: The development of electronic system brings more demands to the accuracy of frequency source, frequency resolution, conversion time and frequency spectrum purity. Phase-locked frequency synthesis technology has small volume, simple circuit and high stray inhibition degree. It has narrow-band filtering capability, so it is used widely. But there is a disadvantage between the frequency step and conversion time constraints. DDS has a very high frequency resolution, extremely fast frequency converting. But its upper limit of output frequency is not high. The two methods have their own advantages and disadvantages. So use DDS + PLL technology solutions which can both retain the advantages of the phase lock loop, and make up for the inadequacy of the phase locked loop. Based on the idea of mixed frequency synthesis method is this paper proposes the improvements.

Key words: DDS; PLL; frequency synthesis; conversion time

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