

网络与通信

一种广播数据系统数据帧同步快速算法

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摘要 广播数据系统接收机在开机后或者经过长时间信号衰减后必须迅速获得同步。传统的标准算法利用接收到的数据序列与校验矩阵相乘来验证是否同步, 速度较慢。提出了一种基于查表法的数据帧同步快速算法, 将接收到的二进制数据序列与校验矩阵的乘积(模二)问题转化为3字节求余式问题, 通过查余式表判断接收机是否达到同步, 较大地提高了速度, 并显著降低了所需的存储空间。仿真结果表明了该算法的快速性和有效性。

Abstract After the first switched on or after a prolonged signal-fade, the receiver of Radio Data System (RDS) must achieve synchronization quickly. The standard algorithm, which calculates the product (modulo-two) of the received binary sequence multiplied by the parity-check matrix to check whether the receiver has achieved synchronization, is very slow. A data frame synchronous fast algorithm based on look-up table was proposed in this paper. The standard algorithm was simplified into the problem of solving three bytes remainder for the received binary sequence. Whether the receiver is synchronized can be determined by checking the remainder table. The fast algorithm improved the operating speed and reduced the demanding memory space. Simulation result indicated the validity and efficiency of the proposed algorithm.

关键词 [广播数据系统](#) [查表法](#) [数据帧同步](#) [生成多项式](#) [余式表](#)

Key words radio data system; look-up table; data frame synchronous; generator polynomial; remainder table

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