

网络、通信、安全

## 基于丢包统计的蓝牙信道质量估计和自适应分组策略

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**摘要** 分析了蓝牙2.0协议的数据传输性能, 给出了在不同的信道质量(接收信噪比)下所能达到的平均最大吞吐量, 以及根据信道质量自适应选择分组的策略。提出了一种新的利用丢包统计估计信道质量的方法。根据最近发送的一定数目的分组的丢包情况求出这些分组的吞吐量, 与已知的分组选择信噪比拐点的平均吞吐量进行比较, 从而判断出信道质量所在的区段以及最适合传输的数据分组。从仿真结果来看, 当判决所用的数据分组的数目 $N$ 在30左右时, 该方法达到的吞吐量十分接近平均最大吞吐量。该方法的软硬件开销极小, 判决过程简单快速, 可用于任何主控芯片的蓝牙系统。同时, 该方法可在较短时间内(40 ms~180 ms左右)跟踪信道质量的变化, 非常适合用于低速运动的蓝牙系统和蓝牙个人区域网。

**关键词** [蓝牙](#) [数据分组](#) [吞吐量](#) [丢包率](#)

分类号

## Bluetooth channel quality estimation and adaptive packet selection strategy based on packets loss statistics

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### Abstract

The transmission performances of Bluetooth 2.0+EDR specification are analyzed, including average maximum throughput under different channel quality. The adaptive packet selection strategy according to the channel quality is presented. A new channel quality estimation method based on the packet error statistics is suggested. The throughput of the last packets is found out. Comparing it with the average throughput in the SNR corner point of packet selection, the area of channel quality and the preferred packet can be determined. The simulation results show that when the number of the packets used to determine is about 30, the throughput is greatly close to the average maximum throughput. The strategy takes little overhead of the hardware and software. The decision procedure is simple and quick and can follow the track of channel quality in very short time (about 100 ms). The strategy can be used in the Bluetooth system which has any control unit. Furthermore, the method can trace the variance of channel quality in a very short time (40 ms~180 ms). It is very appropriate for the Bluetooth systems moved slowly and Bluetooth wireless personal area networks.

**Key words** [Bluetooth](#) [packet](#) [throughput](#) [packet error rate](#)

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