

摘要

有效性、可靠性、适应性、标准性是判断系统性能的四个方面，有效性和可靠性是我们用来评判的两个最主要方面，但是可靠性与有效性是相互对立的，可靠性主要指所传输的信号质量方面的问题；对于数字通信系统来说，可靠性就是体现在信号传输速率和差错率上面，从差错率来讲就是可靠性具体体现传输的错误率。眼图简单来说就是将一组信号波形按照一定的规则在一个画面中进行信号波形的叠加然后显示出来的波形，这个图形是整个传输信号的综合也就是说在通信系统中经过的所有问题都可以体现出来，也就是将整个数字通信系统中所有产生的干扰噪声影响都综合体现出来了，从而可以用眼图来估计通信系统的性能，因而眼图分析是通信系统传输评判的重要一环。

信号眼图的设计与仿真是本次毕设的主体，我们从用于衡量基带眼图通信系统的性能优劣改变噪声大小类型、调制方式和接收滤波器的数据得到不同眼图可知信号调制和滤波器对于抑制噪声的作用，从而判断这几个方面对于信号码间干扰的影响，通过眼图的展开情况判断码间串扰及波形失真的大小。

关键词：眼图；MATLAB；码间串扰；通信系统

Abstract

For the communication system, its performance indicators mainly include: effectiveness, reliability, adaptability, standardization, etc., but considering from the perspective of signal transmission research, the reliability and effectiveness of the communication system are the opposite two can not be improved at the same time, reliability mainly refers to the signal quality of the transmitted signal; for the digital communication system, Reliability is reflected in the signal transmission rate and error rate. From the perspective of error rate, it is specifically reflected in the transmission error rate. Eye chart is a kind of eye like figure which shows a series of digital signals accumulated on the oscilloscope. Therefore, it reflects the overall characteristics of digital signals after transmission system, and can be used to estimate the performance of the system. Therefore, eye chart analysis is the core of signal integrity analysis of high-speed interconnection system. From the eye chart, we can observe the interference pairs such as code crosstalk and noise Impact on communication system.

In this paper, the simulation design and application of MATLAB's signal eye graph in signal and system are mainly studied. We can get different eye graphs from the performance of baseband eye graph communication system, which is used to measure the performance of baseband eye graph communication system, change the noise size type, modulation mode and the data of receiving filter. We can know the effect of signal modulation and filter on noise suppression, so as to judge the influence of these aspects on inter symbol interference Ring, judge the crosstalk between codes and the size of waveform distortion through the expansion of eye chart.

keyword: eye chart; MATLAB; experimental simulation; communication system

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