# 摘要

本课题主要探究在RS-232标准下实现简单的通用异步接收发送机（UART）进行通信传输，同时通过对UART以及RS-232的简要了解，分析其在通信传输中的利弊以及具体的应用场景。

在本课题中，将使用Multisim仿真，通过简单信号的并行传入到串行输出来验证此通信的可行性。其中的字信号发生器作为信号源，输出的并行信号将通过并行输入/串行输出的移位寄存器转换为串行数据，MAX3222将被使用来实现RS-232的简要串行通信，最后使用逻辑分析仪判断输出数据是否正确。由于此课题只是简要研究UART的传输原理，因而忽视UART传输过程中使用到的输入输出缓冲寄存器，控制寄存器以及状态寄存器等管理判断大量数据的器件。

**关键词**：UART，RS-232，MAX3222，Multisim，串行到并行数据转换器

# Abstract

The research aims at studying how the Universal Synchronous Asynchronous Receiver Transmitter (UART) transmit the data through RS-232, and after getting a brief overview of the UART and RS-232, advantages and disadvantages as well as application scene will be given in the research report.

In this research, Multisim will be employed to simulate the circuit, and a simple simulation by paralleling simple signals into serial outputs can verify the feasibility of this communication. Word generator in the software will serve as a signal source. The output parallel signal will be converted into serial data by the parallel input / serial output shift register. Then MAX3222 will be used to implement RS-232 brief serial communication. Eventually, use a logic analyzer to determine whether the output data is correct. Since this topic only briefly studies the transmission principle of UART, the input and output buffer registers, control registers, and status registers used in the UART transmission process to manage and judge large amounts of data are ignored.

**Keywords**: UART, RS-232, MAX3222, Multisim, Serial-to-Parallel-Data Converter