

星载SpaceWire路由器的研究与设计

毛春静^① 关永^① David Jungwirth^{②*}

^①(首都师范大学信息工程学院 北京 100048)

^②(维也纳工业大学 维也纳 奥地利 A-1040)

Research and Design of on-Board Dynamic SpaceWire Router

Mao Chun-jing^① Guan Yong^① David Jungwirth^{②*}

^①(College of Information Engineering, Capital Normal University, Beijing 100048, China)

^②(Vienna University of Technology, Karlsplatz 13 | A-1040 Vienna, Austria)

摘要

参考文献

相关文章

Download: PDF (328KB) [HTML](#) 1KB Export: BibTeX or EndNote (RIS) [Supporting Info](#)

摘要 为满足航天器有效载荷间高速数据多路传输的未来发展需求, 该文研究提出了基于SpaceWire的星载数据路由的设计方案。在SpaceWire总线标准网络层分析的基础上, 结合虫孔路由原理构建路由器内部结构, 提出了采用无阻断交差开关的SpaceWire路由器设计方案。在Simulink环境下建立了路由器仿真模型, 并通过BWR解决了虫孔路由阻塞机制带来的刹车问题, 使路由器的满负荷通信下的平均丢包率减少了70%。

关键词: 卫星通信 空间辐照 SpaceWire 虫孔路由 带缓冲的虫洞路由

Abstract: In order to satisfy the requirement of aircraft's multi- transmission for further development, this paper leads to a resolution about on-board SpaceWire routing technology. Based on the network level analysis of SpaceWire standard, it built the architecture of router with wormhole routing theory and non-blocking switch mechanism. A simulation model of router had been set to verify the design, and braking-problem from wormhole routing-blocking had been solved with BWR (Buffered Wormhole Routing), it reduces 70% average packet-losing ratio on full load communication.

Keywords: Satellite communication Space radiation SpaceWire Wormhole routing BWR (Buffered Wormhole Routing)

Received 2009-04-02;

本文基金:

国家自然科学基金 (60873006) 和北京市自然科学基金 (4082009) 资助课题

通讯作者: 毛春静 Email: mcjing@163.net

引用本文:

毛春静, 关永, David Jungwirth.星载SpaceWire路由器的研究与设计[J] 电子与信息学报, 2010,V32(8): 1904-1909

Mao Chun-Jing, Guan Yong, David Jungwirth.Research and Design of on-Board Dynamic SpaceWire Router[J] , 2010,V32(8): 1904-1909

链接本文:

<http://jeit.ie.ac.cn/CN/10.3724/SP.J.1146.2009.00464> 或 <http://jeit.ie.ac.cn/CN/Y2010/V32/I8/1904>

Service

- ▶ [把本文推荐给朋友](#)
- ▶ [加入我的书架](#)
- ▶ [加入引用管理器](#)
- ▶ [Email Alert](#)
- ▶ [RSS](#)

作者相关文章

- ▶ [毛春静](#)
- ▶ [关永](#)
- ▶ [David Jungwirth](#)