

# Synopsys and Parade Technologies

Parade Technologies Successfully Tapes Out USB4 Retimer DUT with VC Verification IP for USB4, Verdi and VCS

*“Synopsys’ verification solutions were critical to our success – allowing us to get up and running within hours, enabling us to find bugs quickly, and supporting us with custom enhancements per our DUT.”*

~George Qian, Director, Parade Technologies



## Business

Parade Technologies, Ltd. is a leading supplier of mixed-signal ICs for a variety of popular display and high-speed interface standards such as USB, DisplayPort™, HDMI™ and PCIe®. Parade’s portfolio of IC products serves the growing demand for USB Type-C® devices, including port configuration switches with integrated redriver, retimer, and port controller functions.

## Challenges

- Acquire a verification solution to meet an aggressive design schedule and deliver high-performance server systems-on-chips (SoCs)
- Custom support specific to DUT requirements
- Easy to integrate end-to-end VIP solution with exhaustive debug, log and trace files

## Synopsys Verification Solutions

- VC Verification IP (VIP) for USB4
- VCS® Simulator
- Verdi® Debug

## Benefits

- Ease-of-use enabled delivery against an aggressive time-to-market schedule
- Seamless integration of VIP with Verdi and VCS accelerated verification environment setup
- Enabled a scalable and reusable UVM verification environment
- First design bugs were flagged within an hour of connecting the VIP
- Customer was able to tape out their first USB4™ retimer DUT design in a span of less than one year

## Overview

Parade Technology leverages close relationships with market leading Tier-1 OEMs to develop ICs that provide unique system capabilities. Parade ICs have been designed into products offered by nearly every leading computer and display vendor worldwide.

Parade approached Synopsys, interested in using the VIP for USB4 host and device router as part of their USB4 retimer DUT verification. Parade's stringent design requirements prompted them to select a high-quality, high-performance verification IP solution that supports custom requirements. Synopsys Verdi and VIP for HDMI and USB were already being used by Parade, so they knew Synopsys was a trusted provider. With Synopsys' VIP for USB4, Parade was able to achieve first-test success in less than an hour and tape out their first USB4 retimer DUT in less than one year.

## Industry-Leading Verification Solutions

Parade's project timeline for verification closure was tight. Since USB4 was an emerging protocol, there were some challenges in the deployment, like specification ambiguity, but all challenges were resolved by consulting closely with the USB consortium working group.

The customer verification topology included host router and device router configured as VIP on either side of the USB4 retimer DUT in Serial mode.



The seamless integration of Synopsys solutions and the ability to integrate with third-party tools enabled Parade to quickly setup their verification environment and achieve first test pass within hours. Synopsys VIP integration with Verdi debug was also essential for finding bugs quickly. The rich set of protocol and timing checks with detailed error messages reduced development time considerably and enabled the ability to introduce delays and error injection within the VIP model to exhaust any latent issues.

## Expert and Responsive Technical Support

To meet an aggressive time-to-market schedule, tapeout first USB4 retimer DUT design, and handle a changing specification, Parade relied on Synopsys' expert verification support team. The success at Parade proves the quality, maturity, and robustness of Synopsys Verification IP, VCS, and Verdi.