

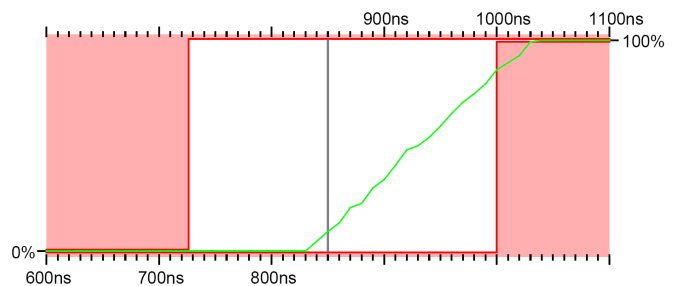
Product brief

4Links are uniquely placed to offer definitive validation of SpaceWire products:

- 4Links test equipment has detected bugs and non-compliance with the ECSS SpaceWire standard, in many SpaceWire designs, that have remained undetected in months of simulation and test;
- No bug has been reported in 4Links SpaceWire design since 2003, demonstrating a maturity unequalled by any other SpaceWire design;
- 4Links staff have a longer experience of designs for IEEE 1355 and SpaceWire than any other design team, and consequently are familiar with pitfalls that may escape conventional test techniques;
- 4Links do not build flight equipment, so are able to offer a truly independent service.

Questions that the service answers include:

- Does its logical function comply with the SpaceWire standard?
- Does it operate in corner cases that are permitted by the standard but which may not have been considered by the designers?
- Does it respond correctly to errors?
- When set to run at a particular speed, with what tolerance does it run with respect to the set speed?
- Is the startup behaviour correct?
- Is the disconnection timeout always within the range specified in the standard? (for example see figure)
- What is the maximum speed that the receiver operates?
- What is the latency in the absence of contention?
- Is the buffering working correctly?
- Can it be made to lock up, for example if it receives high-frequency noise?
- Is the flow-control behaviour correct (under normal and likely fault conditions)?
- Is there a receive data rate such that it interacts with internal clocks to produce malfunction?
- Is a routing switch's arbitration fair, or could it starve one or more input ports?
- Does a routing switch arbitrate correctly between simultaneously arriving packets?



What we will test?

- Any product interfaced by SpaceWire, from silicon to system.

Who will use the service?

- Designers of SpaceWire products, to save the cost and delay of re-spins of silicon or PCBs, and to be able to advertise "SpaceWire independently validated by 4Links";
- Buyers of SpaceWire products, to avoid the system problems, costs and delays of having to cope with avoidable bugs and incompatibilities from choosing the wrong SpaceWire product.

Additionally ...

- We are able to undertake design reviews, using our experience to help avoid potential problems.

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