

# SAS-2 10-Meter Cable Specification Issues (06-499r0)



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# Existing External Cable Specification (for 1.5 and 3Gbps)



| Requirement <sup>a, b</sup>                           | Units | 1,5 Gbps   | 3 Gbps |
|---|-------|------------|--------|
| <b>Bulk cable: <sup>c, d</sup></b>                    |       |            |        |
| Differential impedance                                | ohm   | 100 ± 5    |        |
| Maximum differential impedance imbalance <sup>e</sup> | ohm   | 5          |        |
| Common-mode impedance                                 | ohm   | 32,5 ± 7,5 |        |
| <b>Mated connectors:</b>                              |       |            |        |
| Differential impedance <sup>f, d</sup>                | ohm   | 100 ± 10   |        |
| <b>Cable assembly: <sup>g</sup></b>                   |       |            |        |
| Maximum insertion loss                                |       | See 5.3.3  |        |
| Maximum rise time <sup>h, i</sup>                     | ps    | 150        |        |
| Maximum ISI <sup>j</sup>                              | ps    | 60         |        |
| Maximum intra-pair skew <sup>h, k</sup>               | ps    | 50         |        |

Note: 10m cable budgets were not defined for SAS1.1 (1.5 & 3Gbps)

# Issues for Discussion

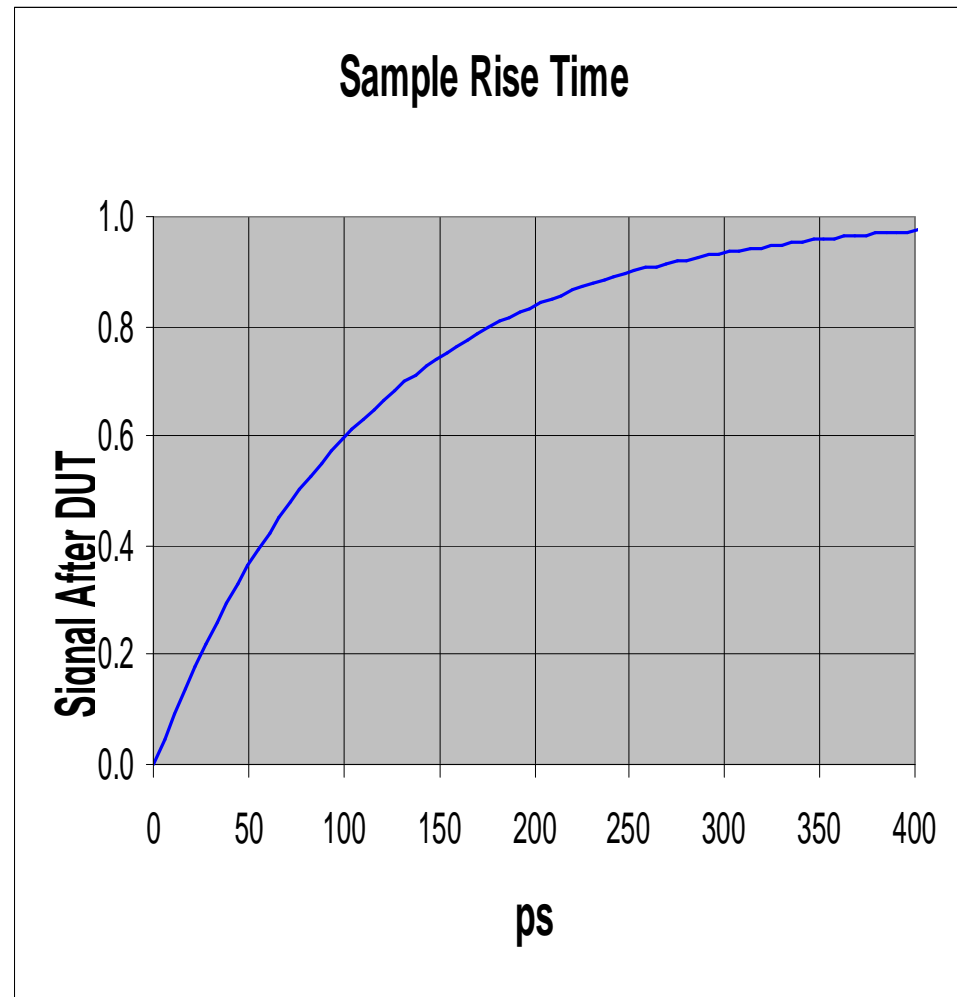


- The original intent of TCTF was a test load definition and not an insertion loss mask. Insertion loss mask specifications are problematic because they either disqualify designs with adequate margin or if specified too leniently, pass designs which are prone to interoperability issues due to insufficient margin.
- Intra-skew spec is difficult to meet on longer cables. The significance of intra-pair skew needs to be proven. Don't expect a common mode conversion specification to be any easier to meet.

# Issues for Discussion (continued)



- Applying the rise time test to long cables results in an output waveform that is very exponential. Precise measurements become very difficult.
- Furthermore, what significance does signal amplitude have a 2 or 3UI compared to 1UI?



# Wrap-up



- Modeling and simulation may prove that we are focusing on parameters that are of minimal importance.
- Do we need to consider a channel based specification for cables too?

