# 802.3cb Test Points Proposal

SEAGATE

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# Supporters

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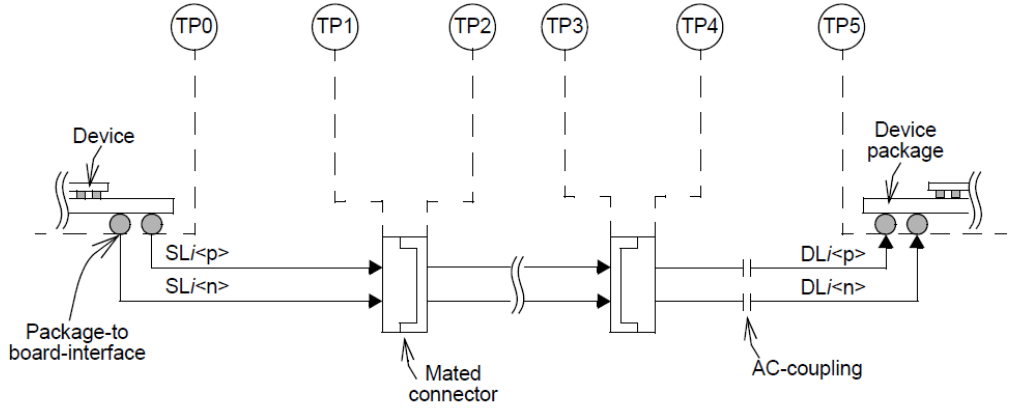
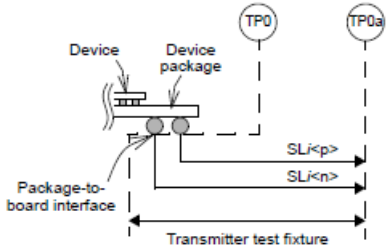
# Introduction

- The goal is to adopt a baseline for test point definition
  - These will be used as a baseline reference to build upon. The loss budgets and tests associated with each test point will be based on these test points.
- There are two different models shown in the presentation that use 802.3bj as a starting point
  - A backplane reference model that is a generic model that could be a closed and/or proprietary system in which the only loss budget is ball-to-ball
  - A storage reference model that is more focused and allows for insertion loss budgeting of the HDD since it's an external interface
  - The ball-to-ball budgets are equivalent between the two models

# Chip Spec

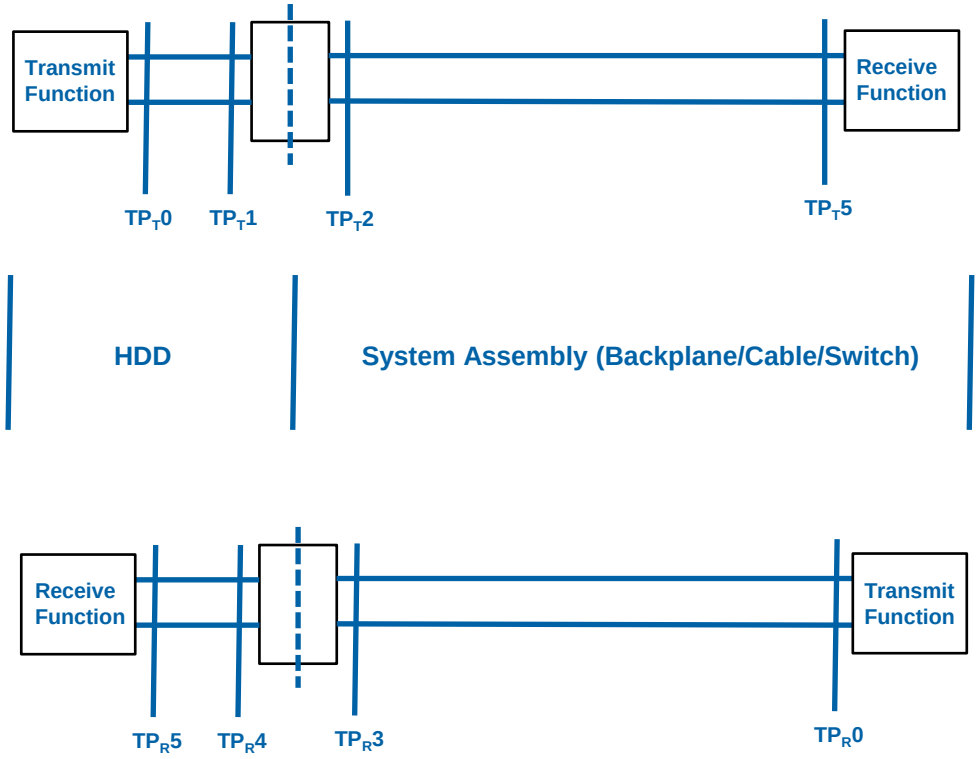
- Channel is measured from TP0 to TP5
  - Package ball to package ball
- Device Tx is measured at TP0a
  - TP0 is not observable in an implemented system
- Device Rx is measured at TP5a
  - TP5 is not observable in an implemented system
- Receiver Interference Tolerance Test is calibrated at TP5



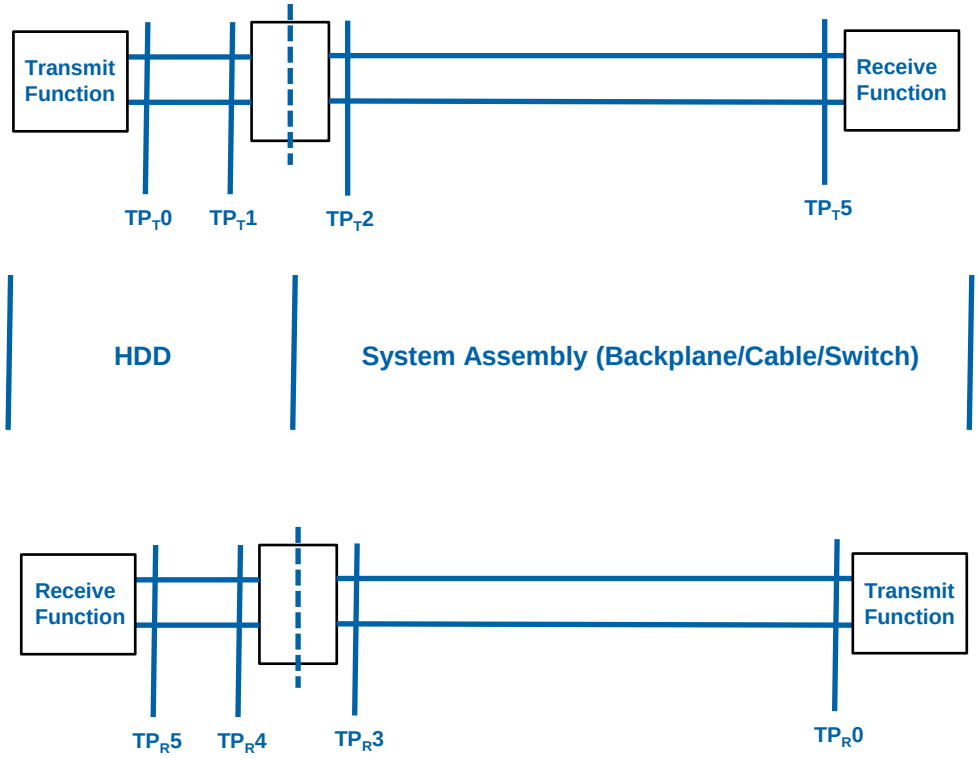
# Storage Device Spec

- For the storage application, it's important to budget the drive loss since it's an external component.
- The rest of the "box" is vender specific and can be any combination of cable and backplane
- This implies a Storage Reference Model with an asymmetric loss budget
  - Informative insertion loss would be the same as in the backplane reference model
- For storage device (HDD)
  - Tx is measured at $TP_T2$, after the mated connecter
  - Receiver Interference Tolerance Test is calibrated at $TP_T4$
- For host chip
  - Use pin to pin spec for compliance
  - Tx is measured at TP0a
  - Receiver Interference Tolerance Test is calibrated at TP5



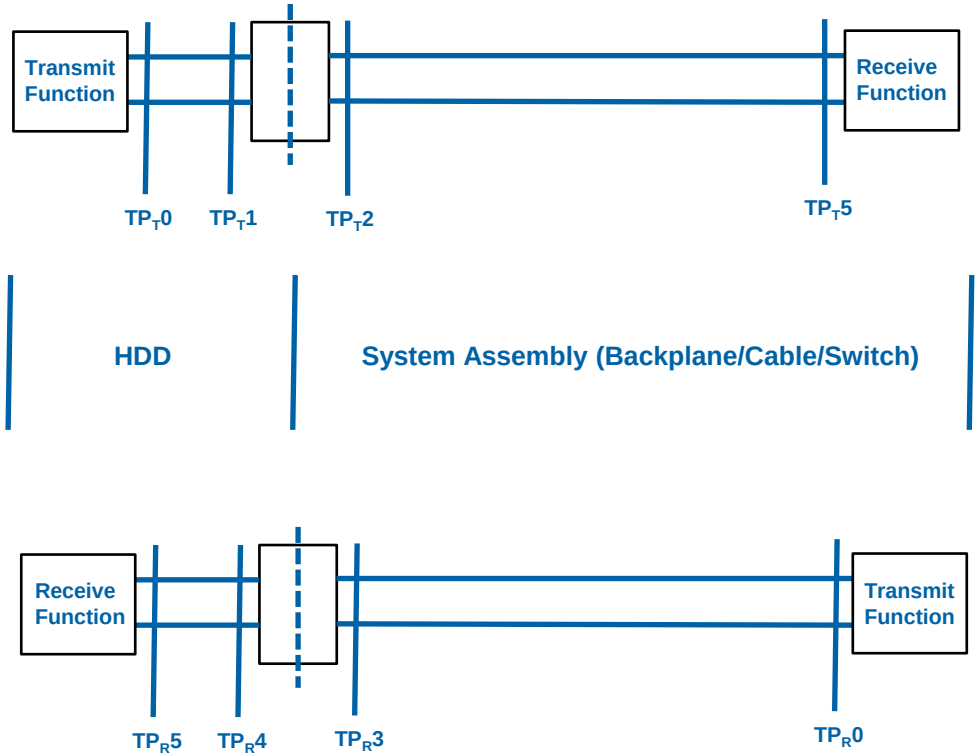
# Storage Device Spec Cont'd

- Channel
  - Informative storage device loss from $TP_T0$ to $TP_T1$ and $TP_R4$ to $TP_R5$
  - Informative system loss from $TP_T1$ to $TP_T5$ and $TP_R0$ to $TP_R4$
  - Channel is measured from $TP_T1$ to $TP_T5$ and $TP_R0$ to $TP_R4$
  - Channel loss is extrapolated from $TP_T1$ to $TP_T0$ and from $TP_R4$ to $TP_R5$ using COM



# Storage Device Test Point Definitions

- $TP_T0$ to $TP_T5$ and $TP_R0$ to $TP_R5$
  - The channel including all insertion loss between package balls
  - This includes the HDD and system loss
  - This loss would be equivalent to the chip spec loss
- $TP_T1$ to $TP_T5$ and $TP_R0$ to $TP_R4$
  - Measurement of storage system is done between these points.
- $TP_T0$ to $TP_T1$ and $TP_R4$ to $TP_R5$
  - Recommended maximum insertion loss of the storage device PCB traces
- $TP_T2$
  - Storage device transmitter compliance point
  - TP0a is not applicable to a storage device
  - $TP_T2$ is observable in an implemented storage device
- $TP_R3$
  - Storage device receiver compliance point
  - TP5a is not applicable to a storage device
  - $TP_R3$ is  observable in an implemented storage device



# Storage Device Test Point Definitions Cont'd

- $TP_R4$
  - Receiver Interference Tolerance Test calibration point
  - The storage device must be compliant with the delivered signal at $TP_R4$
- $TP_R1$ to $TP_T2$ and $TP_R3$ to $TP_R4$
  - Recommended mated connector pair fixture loss