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# **IEEE P802.3bp (RTPGE) PHY Task Force Channel Definitions Ad Hoc Report**

## **Beijing, China March 2014**

**Ad hoc – co-chairs  
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MC Communications/Panduit  
Mehmet Tazebay –  
Broadcom**

# Channel Definitions Ad Hoc

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- Ad Hoc chartered to develop channel definitions
- Initial meeting IEEE Interim May 2012
- Communications via RTPGE reflector
- Follow-on meetings and conference calls to develop consensus on baseline Link Segment specifications
  - February 6,13,20,27 March 4
- Approved baseline text in IEEE P802.3bp™/D0.30, 31 December 2013

# Action items

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- **Optional link segment specifications**
  - **Straw proposal(s):**
    - ✓ **diminico\_3bp\_01\_0114.pdf**
    - ✓ **mueller\_01\_0114\_baseline.pdf**
- **Link segment balance test procedures (Annex)**
  - **Straw proposal: moffit\_3bp\_01\_1113.pdf**
  - **UNH-IOL: Curtis Donahue first draft – Beijing China**
- **Test fixture specifications**
  - **Straw proposal: 802.3bp test points-3-6-14.pdf**
  - **Request to consider 3-port balance measurements - Broadcom**
- **Alien crosstalk topologies and test procedures (Annex)**
  - **Straw proposal(s):**
    - ✓ **moffitt\_3bp\_01\_0713.pdf**
    - ✓ **mueller\_01\_0114\_baseline.pdf**

# Meeting Plan

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- **Meet week of March 16 – IEEE plenary Beijing, China**
- **Next webex meeting April 3 - 8 AM PST**
  - **Meet every two weeks**

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# **Ad hoc review material**

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# 802.3bp test points, test fixtures and parameters

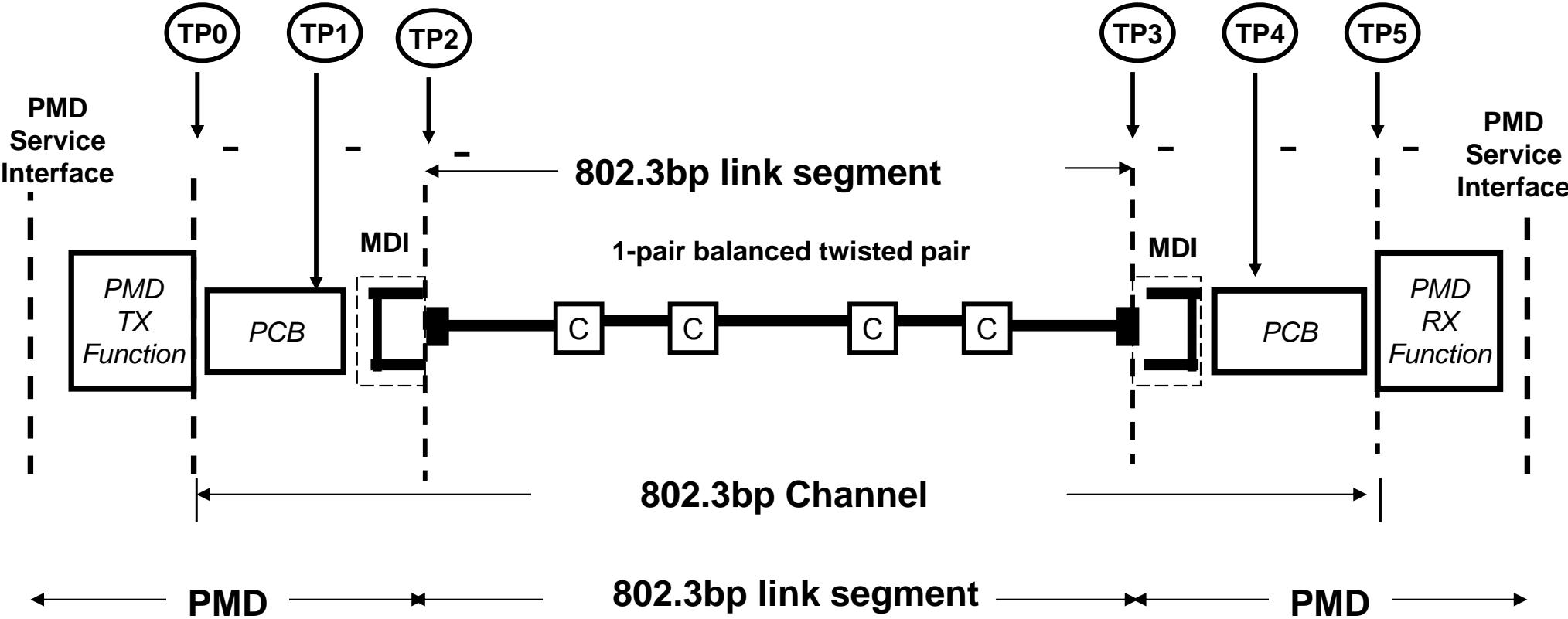
Chris DiMinico  
MC Communications/Panduit  
cdiminico@ieee.org

# Presentation objectives

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- **802.3bp test points, test fixtures and parameters**

# 802.3bp test points



1000BASE-Tx link (one direction is illustrated)

\*Material for baseline draft PMD Function

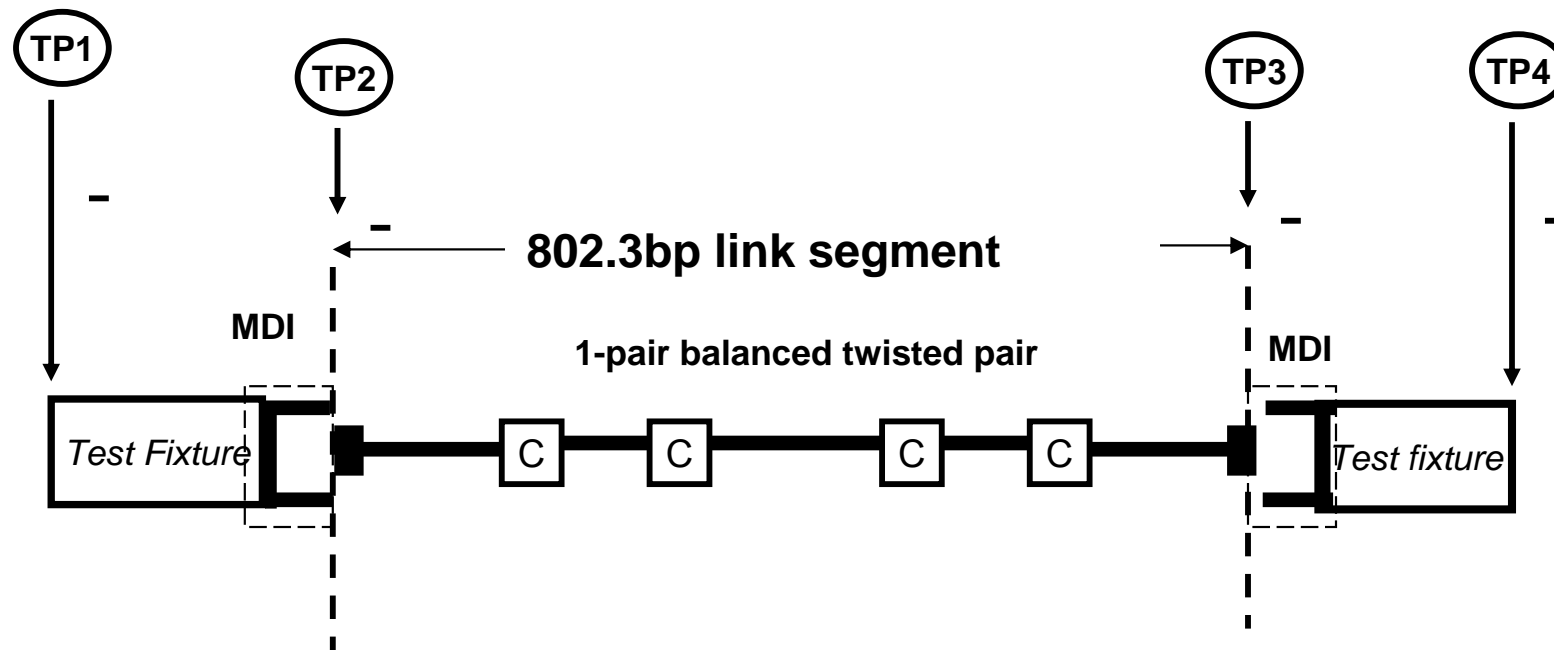


# 1000BASE-Tx test points

Reference	Description
TP0-TP5	The 1000BASE-Tx channel including the transmitter and receiver differential controlled impedance printed circuit board insertion loss, the MDI, and the link segment insertion loss.
TP1-TP4	The test fixture specified in 98(TBD) is required for measuring the link segment specifications in 98.4.4 at TP1 and TP4.
TP2-TP3	The link segment specifications in 98.4.4 are referenced to TP2 and TP3.
TP2	Transmitter measurements defined in 98(TBD) are made at TP2 utilizing the test fixture specified in 98(TBD).
TP3	Transmitter measurements defined in 98(TBD) are made at TP3 utilizing the test fixture specified in 98(TBD).

\*Material for baseline draft PMD Function

# 802.3bp link segment

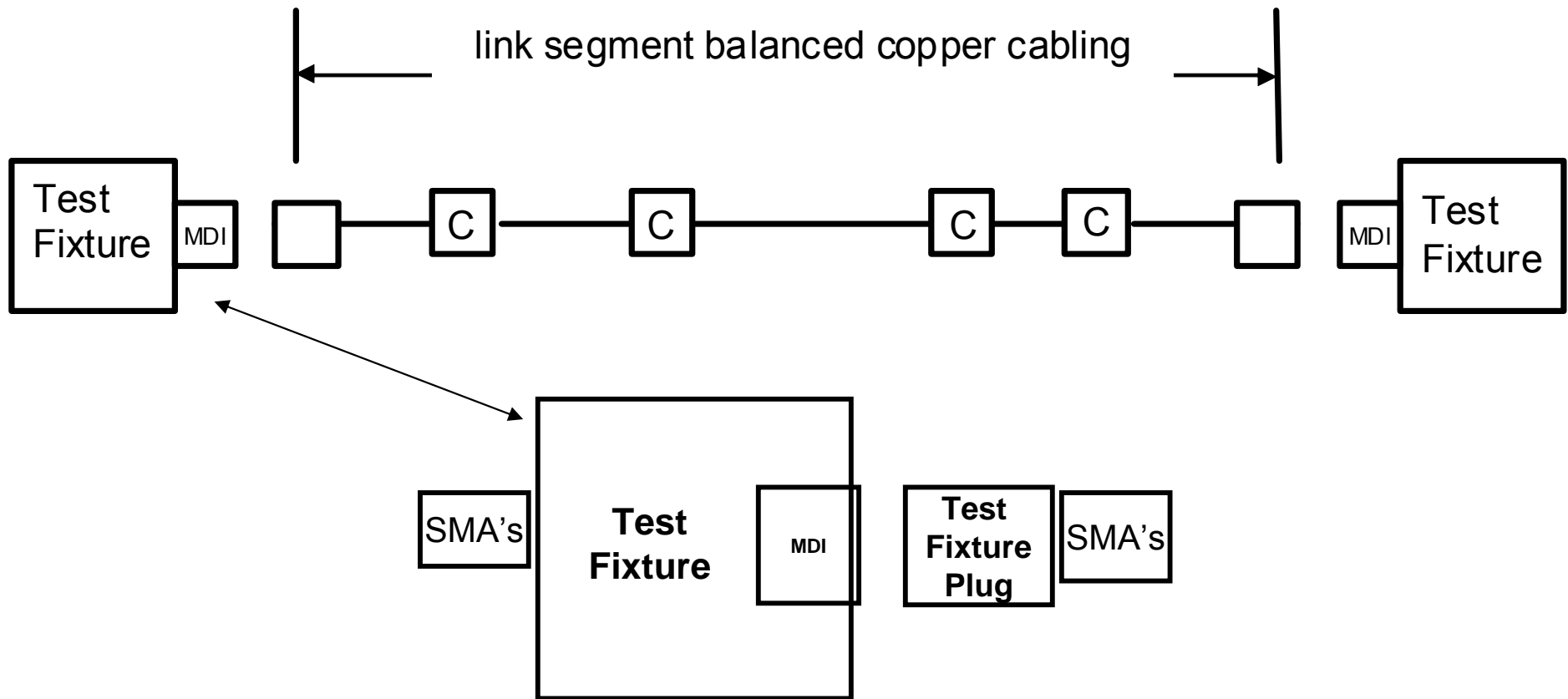


Link segment transmission and coupling parameters – TP2-TP3

- Insertion loss
- Return loss
- Common to differential conversion loss (SDC12/SDC21) (UTP)
- Alien Crosstalk
  - PSANEXT, PSAACRF

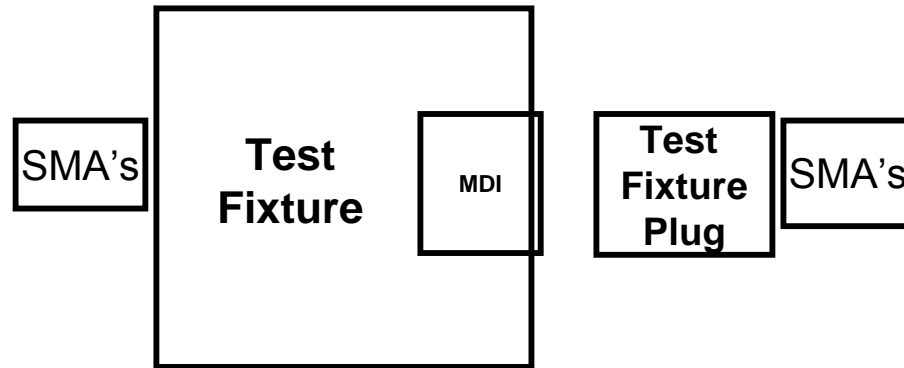
\*Material for baseline test fixture specifications

# RTPGE Test Fixtures



Specified in a mated state

# RTPGE Test Fixtures



## Specified in a mated state

- Insertion loss
- Return loss
- Common to differential conversion loss (SDC12/SDC21)
- Common to differential conversion loss (SDC11/SDC22)
  
- Alien Crosstalk (between MDI's)
  - PSANEXT, PSAFEXT

\*Material for baseline test fixture specifications

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# Backup

# Link segment transmission parameters (UTP)

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## Link segment transmission and coupling parameters (UTP)

- Insertion loss
- Return loss
- Alien Crosstalk
  - PSANEXT, PSAACRF
- Common to differential conversion loss (SDC12/SDC21)

## • Insertion loss

- Amended Motion #2 - Move that The IEEE P802.3bp Task Force affirms the proposed
- Baseline IL Channel Performance for link segment insertion to establish the absolute
- value across the frequency range through 600MHz. (herman\_3bp\_01\_0913.pdf)
- Technical 75%
- Vote
- Y: 25 N: 0 A: 4
- MOTION: Passes

# Link segment transmission parameters (UTP)

## • Alien Crosstalk -PSANEXT, PSAACRF

Motion #8 - Move that The IEEE P802.3bp Task Force affirms the proposed Baseline PSANEXT (in slide 11 in herman\_3bp\_01\_0913.pdf ) and PSAACRF (in slide 13 in herman\_3bp\_01\_0913.pdf) for link segment specification over frequency range 1MHz - 600MHz. (alien crosstalk configuration in

[http://www.ieee802.org/3/bp/public/jul13/moffitt\\_3bp\\_01\\_0713.pdf](http://www.ieee802.org/3/bp/public/jul13/moffitt_3bp_01_0713.pdf))

M: Todd Herman S: Xiaofeng Wang

Technical 75%

Vote

Y: 18 N: 1 A: 10

MOTION: Passes

PSANEXT

from 1 to 100 MHz

$$\text{PSANEXT} := 60 - 10 \cdot \log\left(\frac{f}{100}\right)$$

from 100 to 500 MHz

$$\text{PSANEXT} := 60 - 15 \cdot \log\left(\frac{f}{100}\right) - 6 \cdot \left[\frac{(f - 100)}{400}\right]$$

PSAACRF

$$\text{PSAACRF} := -20 \cdot \log\left(10 \left( \frac{-10 \cdot \log\left(\frac{15}{100}\right) + 38.2 - 20 \cdot \log\left(\frac{f}{100}\right)}{-20} + 4 \cdot 10 \frac{67 - 20 \cdot \log\left(\frac{f}{100}\right)}{-20} \right)\right)$$

where

f:= frequency\_in\_MHz

# Link segment transmission parameters (UTP)

## •Return Loss

Frequency range	Requirement
1-10 MHz	19 dB
10-40 MHz	$24-5\log(f)$ dB
40-130 MHz	16 dB
130-400 MHz	$37-10\log(f)$ dB
400-600 MHz	11 dB

**Motion #2:** Move that the IEEE P802.3bp Task Force affirms that proposed RL specifications for the automotive link segment in herman\_3bp\_01\_1113.pdf for inclusion in the 802.3bp baseline specification.

Moved by: Xiaofeng Wang

Seconded by: Mehmet Tazebay

Technical 75%



# Link segment transmission parameters (UTP)

- Mode conversion

Frequency, MHz

$$- 50_{\text{dB}} \quad 10 < f_{\text{MHz}} < 80$$

$$[ 5 \log_n ( f_{\text{MHz}} ) - 72 ]_{\text{dB}} \quad 80 < f_{\text{MHz}} < 600$$

**Motion #3: Move that The IEEE P802.3bp Task Force affirms the proposed Mode Conversion limit line for the automotive link segment in Slide # 13 of tazebay\_3bp\_01a\_0913.pdf for inclusion in 802.3bp baseline specification.**

**Moved by: Mehmet Tazebay**

**Seconded by: Gary Yurko**

**Technical 75%**

**Y: 33 N: 0 A: 5**

**MOTION: Passes**