CORNING

Optical PHY proposal for NGAUTO

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An optical PHY objective is proposed

- A 10G link standard targeted for automotive use is needed
  - To address emerging use cases
    - 50% of OEMs survey respondents said they would consider using optical cable
  - 10GBASE-SR is not optimized for this application
  - Optical fiber complements copper by providing exceptional bandwidth, light weight, low power consumption, electromagnetic immunity, and harsh environment resistance

Several contributions made in support of an optical objective

- Contributions supporting optical fiber have been made at every meeting
  - whelan_3NGAUTO_01b_0117.pdf
  - choudhury_3NGAUTO_01_0117.pdf
  - yadlowsky_umnov_NGAUTO_01a_0217.pdf
  - kropp_NGAUTO_0317.pdf
  - swanson_NGAUTO_01a_0317.pdf
  - king_3NGAUTO_01_0517.pdf
  - swanson_NGAUTO_01_0717.pdf

Straw polls have been conducted showing increased support

- January 2017
  - Do you support glass optical fiber objective at this time?
    - Yes: 9
    - No:12
    - Abstain: 17
  - Would you support glass optical fiber objective in the future based on additional contributions/data?
    - Yes: 16
    - No:3
    - Abstain: 16
- March 2017
  - Would you support the adoption of the objective defined in swanson_NGAUTO_01a_0317.pdf
    - Yes: 11
    - No: 0
    - Need more information: 26

We have addressed the CSDs

- Broad market potential
  - Automotive networking is evolving rapidly with multiple use cases for bandwidth ≥ 1 Gb/s
  - Glass fiber media option would complement copper media in automotive applications by providing high bandwidth, light weight, low power consumption, electromagnetic immunity, and harsh environment resistance
- Technical feasibility
  - Optical fiber technologies are mature with proven reliability and are widely used in harsh environments
- Distinct from 10GBASE-SR
  - Due to short link length, significant trade-offs are possible for all link components that will reduce complexity

We have addressed the known needs for automotive

OEMs are willing to use optical fiber	✓
Support maximum data rate of 10Gbps	✓
Support maximum temperature of 105°C	✓
Support maximum delay of 1ms	✓
Startup must be achieved within 100ms	✓
Support 15m link length	✓
Support 4 in-line connectors	✓
Support low power consumption	✓
Minimize EMI	✓
Minimize weight	✓

An optical PHY objective is proposed

- To address emerging use cases
- A single Optical PHY would allow multiple physical implementations
- Similar wording to copper PHYs
- Optical fiber complements copper interconnect by providing exceptional bandwidth, light weight, low power consumption, electromagnetic immunity, and harsh environment resistance

"Define the performance characteristics of an automotive link segment and an optical PHY to support 10 Gb/s point-to-point operation over this link segment supporting up to 4 inline connectors and up to at least 15m on automotive cabling"

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