Proposals to improve link (segment) definition

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Agenda

- Remarks on IL

- Definitions of links

- Attenuation definitions from 11801-9903

- Proposal to improve the motion formula

- Summary proposal

- Discussion

Remarks on link performance

- The channel is usually defined by:

$$4{,}05 \times \left(1{,}82\sqrt{f} + 0{,}0091 \times f + \frac{0{,}25}{\sqrt{f}} \right) + 5 \times 0{,}02\sqrt{f}$$

1   2   3   4

- Cable IL/100m (2) + number of connectors and respective losses (3, 4)
- The upfront factor (1) describes the length and the derating of the cords and the respective length

Remarks on link performance

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1   2   3   4

1,82 describes the general attenuation (copper losses)

0,091 the medium frequency shape (dielectric losses)

0,25 describes the low frequency attenuation (mismatch)

Remarks on link performance last meeting

1. Cable should be hidden, it is not IEEE802.3 to specify

   1. From the coefficients it is very difficult to get cable construction.

2. Backward compatibility to other 802.3 standards is not IEEE802.3 to specify

   1. We do not think that this is true, if yes IEEE802.3 would create just island standards (what is happening nowadays).

Definitions of links

Link segment definition as defined as defined by IEEE tutorial.
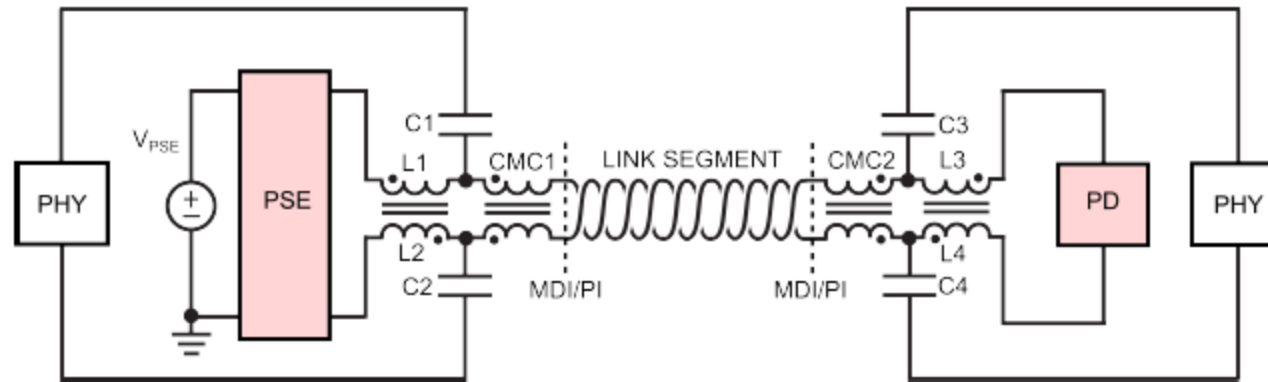
Source: https://www.ieee802.org/802_tutorials/2015-11/PoDL_tutorial_1115.pdf

A unique definition for **link** does not exists and was not presented in IEEE P802.3 dg neither.

Attenuation definitions from 11801-9903

- Attenuation
  - general term to indicate diminishing of signal strength
- Insertion loss
  - attenuation or loss caused by a two-port inserted into a system
  - The operational attenuation is not length scalable
- Image, wave attenuation
  - attenuation when a two-port is terminated by its input and output characteristic impedances with no reflections at input and output
  - For cables is length scalable.

Proposals to improve the link formula

1. Find a useful definition
   1. Best for Phy development
      1. Just looking at the differences shielded-unshielded there will not be a single definition for the complete transmitter to receiver link.
      2. Who takes responsibility for the MDI?
   2. Possible to apply for channel definition (length scalable)
      1. The non-length scalability error is reduced by allowing low margins to RL and impedance
   3. Useful for planning and installations

Summary proposal

- Define IEEE link segment as ISO channel as done in 10GBASE-T

- For cabling that is sufficient, but would be good practice to ask SC 46C if such cables can be built

- For PHY development additionally:
  - Define max limits specially temperature
  - Define MDI set up on both sides

Discussion