

Open issues on the 1000m link specification Draft 0.3

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- 802.3 cg long link in draft 0.3 was published shortly after the presentation to the ad hoc October 25.
 - it was changed to reflect this draft

Return loss 146.7.1.3s

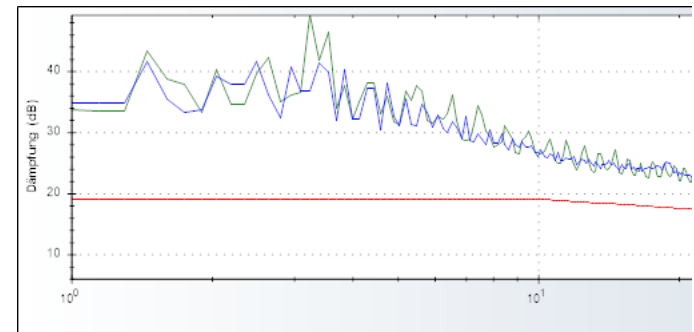
Return loss was presented first time mid 2016 by Fritsche Schicketanz

At the meantime measurements were done and most show that at 20 MHz the limit does not follow measurements (450m AWG18 cable 6m cord).

It is therefore proposed to relax the RI values at 20 MHz. It would match also most other IEEE links and cabling channels.

Add to equation 146-3

- $10 < f \leq 20$ MHz
- $RI(f) = 24 - 5\log(f)$



Return loss of installed base cablings

As cables used nowadays in low bitrate industrial communications were usually designed with a resultant impedance much lower than the specification proposed now.

They will fail the return loss requirements.

Additionally due to higher insertion loss they will not meet the IL at 1000m length but some shorter length.

It was discussed with Steffen Graber and there could be a possibility to trade-off return loss for insertion loss.

It is proposed to add this as a formula after 146-3. If link insertion loss is lower than 10 dB at 3,75 MHz return loss from 1 MHz to 4 MHz could go down to 12 dB. TBD

Delay 146.7.1.3

- No value proposed in current draft therefore if needed it would be proposed to use:
- **at 3.75 MHz delay less than 5 500 ns**

This would correspond to a cable of 1000m with an NVP of 0.6. The 10 connectors do not need to be specified separately, because of the long link length.

Electromagnetic classification 146.7.1.5

Table 146-8 only means something if relevant parameters point to it.

ISO/IEC 11801 specifies for E1 to E3

- TCL and ELTCTL for unshielded links
- coupling attenuation for shielded links

Either refer to ISO/IEC 11801-1 or copy the relevant limits

Electromagnetic environment III example

TCL: E1 to E3 as an example from ISO/IEC 11801-1

E_A	$1 \leq f \leq 30$	$53 - 15 \times \lg f$, 40 max.	$63 - 15 \times \lg f$, 40 max.	$73 - 15 \times \lg f$, 40 max.
	$30 < f \leq 500^b$	$60,3 - 20 \times \lg f$	$70,3 - 20 \times \lg f$, 40 max.	$80,3 - 20 \times \lg f$, 40 max.

The 40 dB max is just for measurements , for systems the equation applies.
Other classes show similar values

Alien FEXT 146.7.2.3

- Eq. 146-7 : The limit looks like a PSAACRF limit line .
- **Change 146-7 to**
- $PSAACRF(f) = PSAFEXT(f) - IL = 38 - 18 \log_{10}(F/20)$
 - Where IL is the insertion loss of the disturbed link
 - A reference of 100 m should be taken like in Insertion loss where the 1000m are specified as 10 times 100m

Thank you