

# Considerations on overload for 100GBASE-FR1

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# Introduction

- In item 3 of [mazzini\\_3cu\\_adhoc\\_101519\\_v2](#) it was proposed to eliminate the 0.3 dB of minimum loss required to enable interoperability between a 100GBASE-LR1 transmitter and a 100GBASE-FR1 receiver. This is currently specified in new subclause 140.10b.
- Effectively this proposal implies to raise the overload (maximum average power into the receiver) of the 100GBASE-FR1 receiver by 0.3 dB.
- As discussed during the cu ad hoc call on 15 October, it would be important to understand the difficulty (and associated cost) of raising the overload of the 100GBASE-FR1 receiver.
- The overload of 4.5 dBm currently specified in D1.0 is however already 0.5 dB higher than strictly needed for the 100GBASE-FR1 specification, where the transmitter average launch power (max) is specified as 4 dBm.
- So the appropriate reference point for this discussion should be a minimum loss of 0.8 dB (associated with an overload of 4 dBm).

# Considerations

- A desire to have a common overload between various interface specifications makes sense because it would make the engineering in the field much easier.
- Generally that should be a choice of the implementer and not be a requirement from the standard, unless .....
- The overload can be raised to desired levels easily without any incremental cost.
- If this is either not possible or sufficiently clear, it would not be advised to make it a requirement.
- Also, in cu draft 1.0, a common overload is not required between 400GBASE-FR4 and 400GBASE-LR4, where the difference is 2.1 dB.
- Is a difference of 0.8 dB sufficiently small to try to eliminate it?
- Thus further information will be required on achievability of overload levels for 100GBASE-FR1.

# Proposals

- Unless it's demonstrated that an overload of 4.8 dBm is pretty easy to achieve for the 100GBASE-FR1 receiver at minimum cost increase over 4 dBm, it is proposed to lower the 100GBASE-FR1 Receiver Average receive power (max) by 0.5 dB to 4 dBm.
- Additionally:
  - Lower the 100GBASE-FR1 damage threshold by 0.5 dB to 5 dBm.
  - Increase the 100GBASE-LR1 transmitter to 100GBASE-FR1 receiver minimum loss in Table 140-16 from 0.3 dB to 0.8 dB.
  - Make other related changes to D1.0 (currently not yet identified)
- According comments will be submitted to TF review of D1.0.

Thanks!