

Comparison of power budget methodology

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Mike Dudek

Supporters.

- **Jonathan King**
 - **David Lewis**
 - **Jon Anderson**
- Finisar**
- JDSU**
- Opnext**

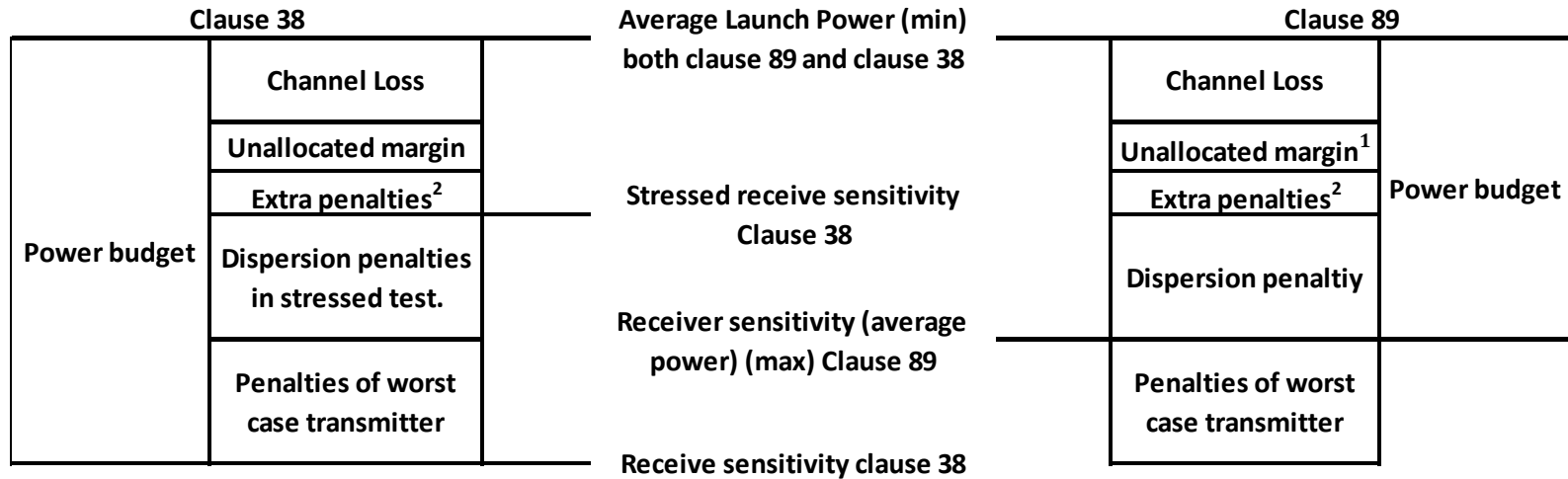
- **Because it is looking for maximum commonality with the ITU-T G.693 VSR2000-3R2, 802.3bg is using a different budgeting methodology than has been used for other 802.3 clauses.**
- **This results in the use of the name “receiver sensitivity” in this clause with a different meaning than that of a very similar term used for in other clauses (eg clause 38, 52, 86, 87, 88 and more,).**
- **This presentation shows the difference in the methodology and presents a subclause for inclusion in 802.3bg to show the differences. Clauses 38 and 52 are used for comparison because they are also serial clauses. Clauses 86, and 87 are used for comparison because they are also 40 Gb/s.**

- **To produce an inter-operable budget every source of loss and possible impairments should be evaluated. These impairments must be accounted for in the combination of the following.**
 - Tx specifications
 - Rx specifications
 - Channel specifications
 - Additional margin in the budget
- **Apparent differences in specifications/methodology/ can be due to**
 - Not discussing impairments that are negligible for that system
 - Using different names
 - Combining various impairments together under a single category

Key difference between 802.3bg and other 802.3 clauses

- **Other 802.3 optical PMD clauses (eg clause 38 which uses the exact names below) have used two different methods of receiver specification.**
 - **“Stressed receive sensitivity”** - The receiver sensitivity measured with a specific signal that is intended to include the vast majority of the transmitter and channel degradations.
 - **“Receive sensitivity”** - The receiver sensitivity with a very fast rise-time transmitter with no other transmitter or channel impairments.
- **802.3bg uses “Receiver sensitivity (average power) (max)”** - The receiver sensitivity measured with a worst case transmitter but without the dispersion penalty.

Budget methodology comparison with Clause 38



1. For Clause 89 Unallocated margin is zero and is not mentioned in the rest of this clause.
2. For Clause 38 extra penalties are any penalties that are not included in the stressed test while for Clause 89 extra penalties are any path penalties that are not included in the dispersion penalty test.

Other differences and clause comparisons

- **Clause 38. Both sensitivity and stressed sensitivity are normative. Uses Average Power with a relatively high minimum extinction ratio.**
- **Clauses 52, 87 and 88. Stressed sensitivity is normative. Sensitivity is informative. Uses OMA.**
- **Clauses 86, Stressed sensitivity is normative. Sensitivity is not included. Uses OMA.**

- **Clause 89. Uses just the different version of sensitivity. Uses Average Power with a relatively high minimum extinction ratio**

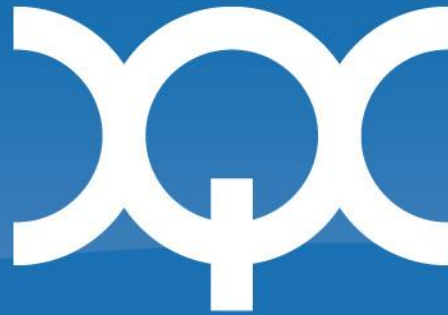
Note that the use of average power or OMA is an independent decision from the choice of the stress level for the receiver sensitivity test.

- **Add new section**

 - 89.6.4 Comparison of power budget methodology**

 - This clause uses the budgeting methodology that is used for application VSR2000-3R2 in ITU-T G.693 [Bx1] which is different from the methodology used in other clauses of this standard (e.g., clause 38, clause 52, clause 86, clause 87, clause 88) . Figure new (same as slide 6) compares the terminology used in this clause with clause 38. Receiver sensitivity in this clause is specified with a worst-case transmitter input whereas in the other clauses it is specified with a perfect signal without penalties. Stressed receiver sensitivity is not specified in this clause but is specified as the key requirement in the other clauses with a signal that includes both transmitter and link penalties.

- **Add to end of footnote b Table 89-7. “This is a different definition of receiver sensitivity from that used in other clauses (e.g., that in Clause 38). See 89.6.4 for a comparison”**
- **Add to end of footnote a Table 89-8. “See 89.6.4.**



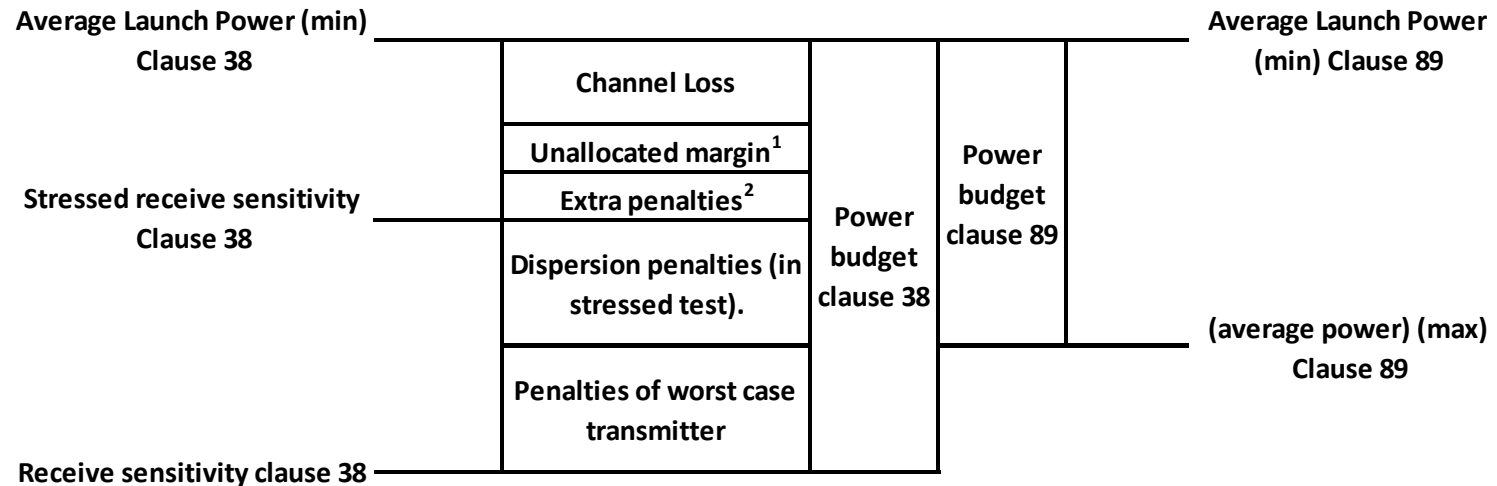
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89.6.4 Comparison of power budget methodology

This clause uses the budgeting methodology that is used for application VSR2000-3R2 in ITU-T G.693 [Bx1] which is different from the methodology used in other clauses of this standard. Figure new (same as slide 6) shows the key difference and the terminology used in this clause compared to clause 38. The most important difference is that receiver sensitivity in this clause is specified with a worst-case transmitter input whereas in other clauses it is specified with a perfect signal without penalties.

Budget methodology comparison with Clause 38 alternate version (backup)



1. The Unallocated margin is zero in clause 89.
2. Extra penalties are any penalties that are not included in the stressed test.