

GOH Power Tolerance Test

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1 Introduction

The power supply to the GOH is nominally 2.5 V, however due to the addition of the transistor power switch it is likely that about 200 mV will be dropped. In order to test that this does not affect the performance of the link a test was set up in order to measure the word error rate (WER), using the frame error flag on the deserialiser, while decreasing the voltage supplied to the GOH.

A GOH evaluation board was modified so that the power to the GOH was fed from a different source from the rest of the board. The voltage powering the GOH was decreased from 2.5 V to 1.8 V in steps of 0.1 V while WER measurements were made and the eye diagram monitored. Three different GOH were tested in this way, GOHs 5CH, 5AC and 5A.

2 Amplitude Penalty

With decreasing voltage the amplitude of the signal decreases. This will have the effect of reducing the amount of margin available in the link (fig. 1). A reduction in the power to the GOH of 200 mV would result in a decrease in margin of the order of 0.25 dB. The GOH will be able to operate down to a supply voltage of 1.8 V however this introduces a penalty of up to 2 dB.

3 BER

Any additional penalty added to the link, other than that caused by a loss of amplitude, can be observed using the WER test. Figures 2, 3 and 4 show very little variation in the form or position of the WER with received amplitude. This indicates that the optical quality and functionality of the GOL are not affected by a drop in supply voltage.

4 Conclusions

Three GOH were tested to find how much penalty is added to the optical link when the supply voltage was lowered below the specified level. The results of a

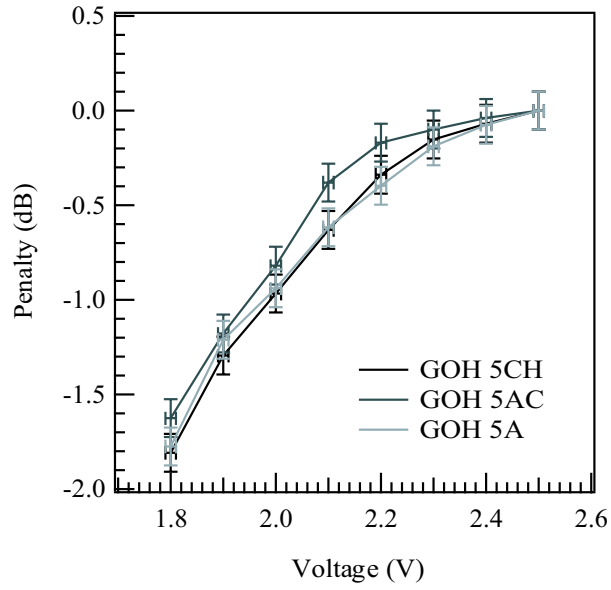


Figure 1: The penalty added to the optical link with a decreasing supply voltage for 3 GOHs

WER test indicate that the optical quality and functionality of the GOL do not vary. The only penalty added is due to a loss in amplitude which, under the predicted operating conditions will remove approximately 0.25 dB of margin.

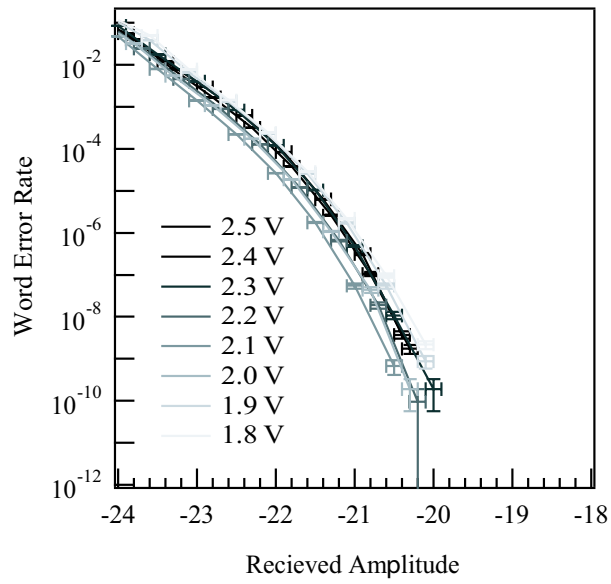


Figure 2: The error rate for different supply voltages to GOH 5CH.

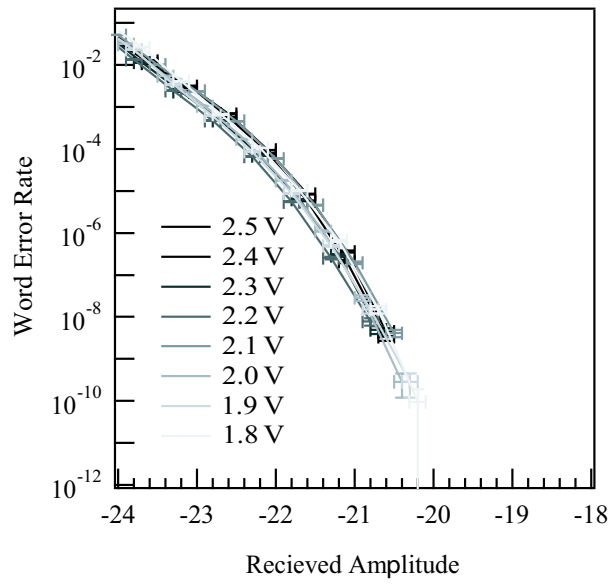


Figure 3: The error rate for different supply voltages to GOH 5AC.

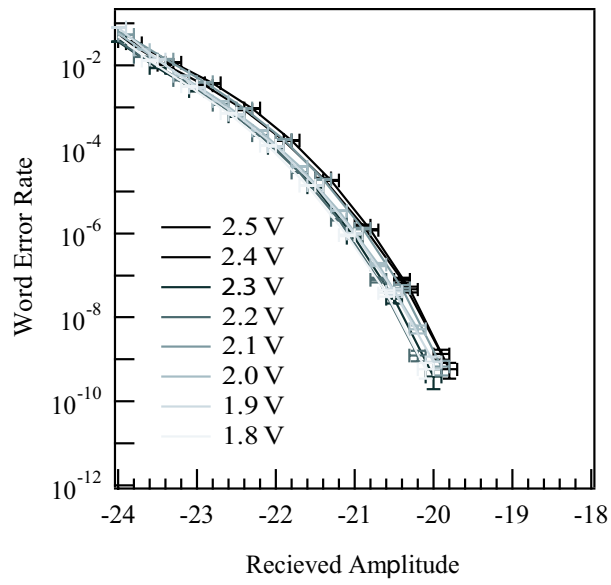


Figure 4: The error rate for different supply voltages to GOH 5A.