

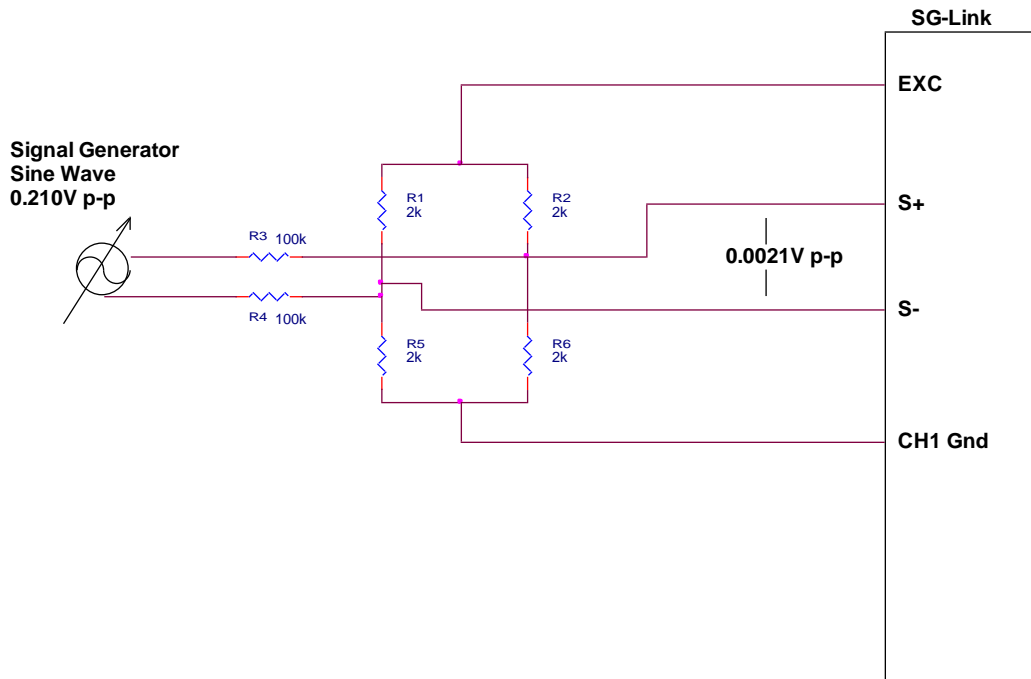
## SG-Link<sup>®</sup>-LXRS<sup>®</sup>

### Differential Analog Input Frequency Response Testing

#### Overview

A full bridge attenuator with 100:1 divider ratio must be connected to the input and a 100-200mV peak to peak sine wave signal applied. Frequency is varied from 1 Hz to the Nyquist frequency at  $\frac{1}{2}$  the sample rate and A/D counts recorded and plotted at a number of frequency points. The highest output in the result is determined and the frequency at which the output drops to 70.7% of that highest output is the -3 dB point.

An example diagram of the test setup is shown below in Figure 1.



**Figure 1:** Circuit Diagram for Differential Input Frequency Response Testing

This particular test was accomplished with a LORD MicroStrain<sup>®</sup> SG-Link<sup>®</sup>-LXRS<sup>®</sup> wireless 2 channel analog input sensor node. Using the above input (as shown in the circuit diagram) and a signal generator creating a sinusoidal input, amplitudes were measured with the SG-Link<sup>®</sup>-LXRS<sup>®</sup> in pure analog to digital counts. The peak to peak amplitudes were associated with signal generator input frequency to produce a BODE plot as shown in Figure 2.

A BODE plot is typically used in this manner to show frequency response of a system of measurement with an input filter. In a case where the user is concerned with aliased data, appropriate filter settings are important to understand. Improper filter settings can introduce aliasing and may invalidate test data.

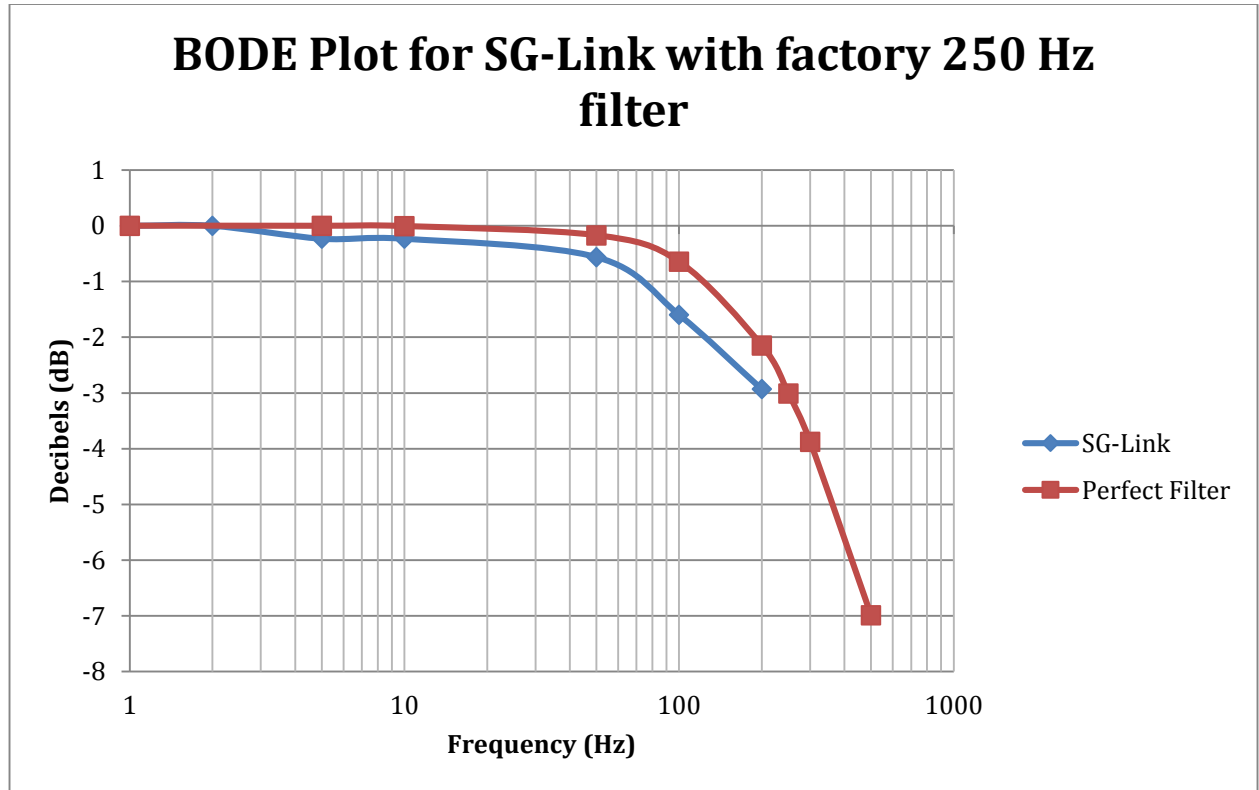


Figure 2: BODE plot for SG-Link with 250Hz differential input filter

## Support

LORD MicroStrain® support engineers are always available to expand on this subject and support you in any way we can.

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