Cri/oFlex® Case Study

Scaling up SNSPD read-out

Test results

The first important aspect to consider was the transmission quality. In Figure 3, a comparison is shown between the traditional semi-rigid coax lines and Cri/oFlex® lines. The measurement was performed by connecting a short coaxial cable between the in- and output lines, and measuring transmission from room-temperature, down to 4 K and back.

In the required bandwidth up to 3 GHz, Cri/oFlex® lines were comparable to the semi-rigid lines with the largest difference being increased noise characteristics on the order of 1 dB. As such, all electrical requirements were met.

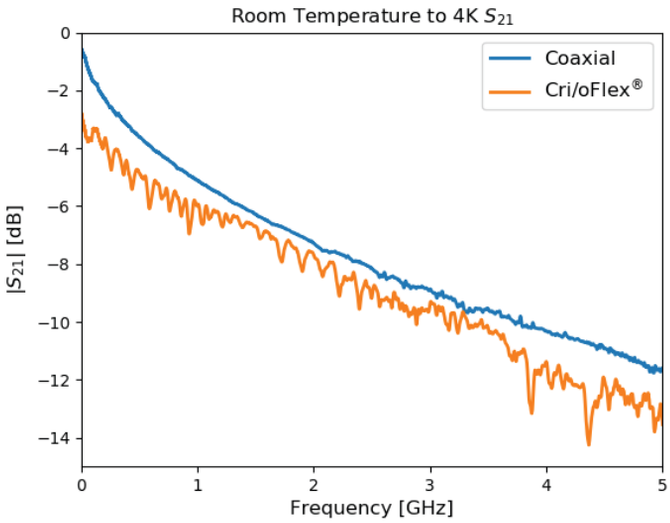

Figure 3: Comparison of transmission between coaxial wiring scheme (blue) and Cri/oFlex® (orange) wiring scheme.

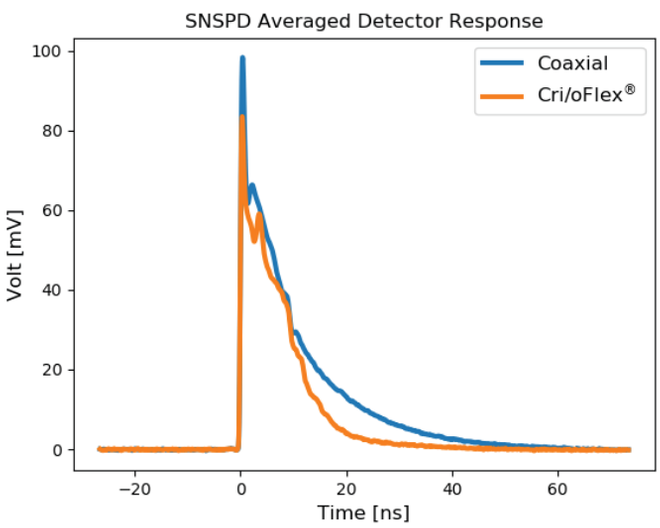

Figure 4: SNSPD voltage response upon detecting a photon. The voltage response was measured with both coaxial lines (blue) as well as Cri/oFlex® channels (orange).

Next, the Primary Field Lab also performed their detector array measurements by measuring the voltage response upon sending a photon to the detector. In Figure 4, we show plots of a 1000 trace-averaged detector measurements for 8 µA biased SNSPDs at 3.4 K for both Cri/oFlex® and semi-rigid.

The averaged plots indicate similar performance for Cri/oFlex® and the semi-rigid lines. Especially the visibility of the rising edge and the absolute height of the pulse show perfect suitability for SNSPD applications.

For the proof-of-concept phase of this project, we and our partners believe that the first field test of multi-channel Cri/oFlex was a definitive success. Interested in **joining the Primary Field Lab program**? Ask one of our engineers how Cri/oFlex® cabling can improve your setup!