General Comments

The paper presents an experimental method to assess the performance of the depolarization channels newly installed on the CRL lidar instrument at Eureka, Nunavut. It gives a nice overview of the upgrades performed on the CRL and of the efforts required to fully characterize the newly installed depolarization channels. This paper would be helpful for lidar groups that are working on adding depolarization channels to existing lidar instruments since part of the techniques have a general applicability.

The updated version of the paper covers many new key points required for a hardware orientated paper. Also, the new structure of the paper is much easier to follow, giving a clearer overview of the intended aim. Still, I have a feeling that the concluding remarks could be improved. Since the paper is focused on the experimental perspective, more weight should be given to the upgrades and techniques used in the study. The current conclusions could be considered as part of the discussions since values for specific parameters (like Mueller parameters, k) are provided in this section and discussions on these values are also given. I would suggest shifting part of the conclusions to the discussions sections and give a more general touch to the conclusions.

As an example: the conclusions should also cover a description on how was the depolarization channel calibrated, what were the methods used to calibrate – with focus on the new particularities used for the CRL, strengths and weaknesses of the methods used to calibrate the depolarization, problems and limitations encountered during the study and the methods used to overcome them, what are the optical components that mainly influence the depolarization (partially covered but more information could be given covering all the optical components), what is the accuracy of your measurements (already covered but more weight should be given to this), the performance of the lidar depolarization channels after this study (how did the study improved the collected depolarization products).

It would be nice to see this paper published since it makes use of original methods to calibrate the depolarization channels – methods that would also be helpful for other lidar groups.