LIGO HANFORD OBSERVATORY

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# MEMORANDUM

DATE: November 8, 2018

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| TO: | ISC team |
| FROM: | Daniel Sigg |
| SUBJECT: | Modifications to the CM board (REFL SERVO) |
| Refer to: | LIGO-E1800000-v1 |

The common mode servo of the interferometer suffers from noise in the DAQ readbacks that are due to large high frequency signals. There is also a lack of boost filters to squash the low frequency noise below 100Hz. Capacitors need to be NP0/COG or metal film.

Change 1:

Change the first 2 boost stages to 10/500Hz.

C118 → 1 µF

R72 → 15 kΩ

R77 → 332 Ω

C119 → 1 µF

R74 → 15 kΩ

R78 → 332 Ω

Change 2:

Add two ~15 kHz low pass to the error signal DAQ readback.

C78 → 1 nF

C79 → 3.3 nF

Change 3:

Add a 500 Hz low pass to the slow DAQ readback.

C243 → 10 nF

Change 4:

Add a 15 kHz low pass to the fast DAQ readback.

C295 → 330 pF