



*MEMORANDUM*

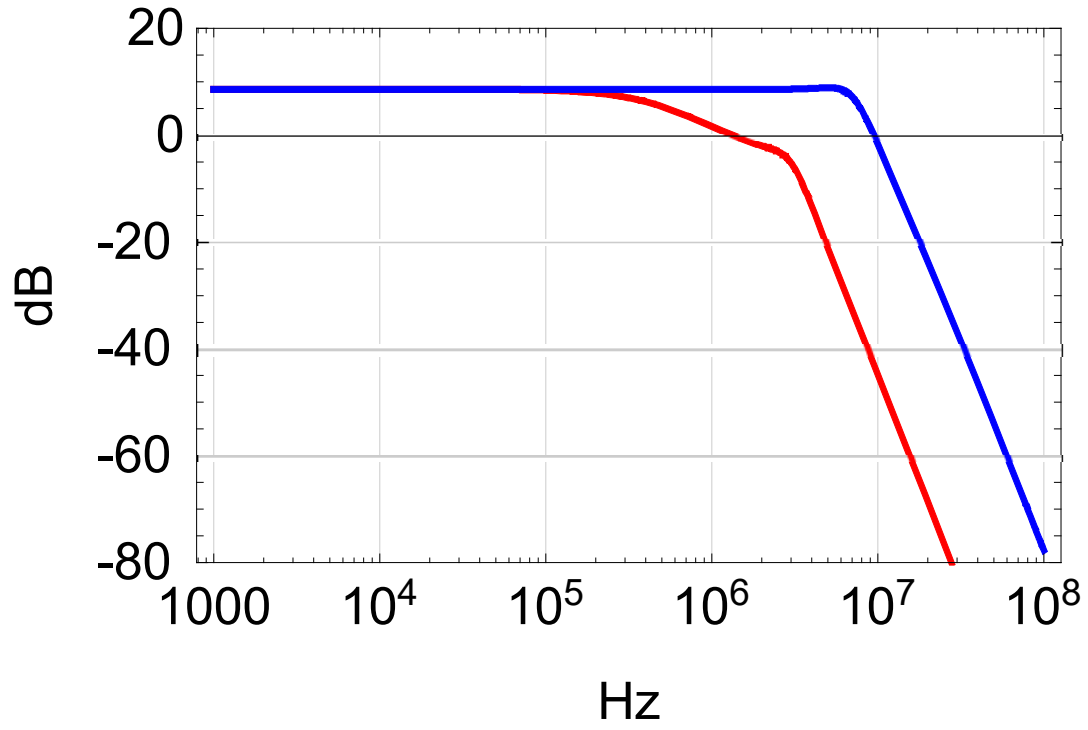
DATE: March 15, 2017

TO: ISC  
 FROM: Daniel Sigg  
 SUBJECT: Phase Frequency Discriminator Modifications  
 Refer to: LIGO-E1700100-v1

The table-top frequency stabilization servo (TTFSS) is using the phase frequency discriminator (PFD) for laser locking. The standard circuit board variant has a bandwidth of no more than 500 kHz. For laser locking an overall bandwidth around 1 MHz is desirable and we require the PFD to introduce no more than 20° of phase at 1 MHz. The schematics can be found under [D1002471](#).

Parameters	Standard	High Frequency	Unit
Pole frequency (Q)	0.46 3.0 (1.5) 3.0 (1.5) 5.3	5.7 7.1 (1.4) 7.1 (1.4) 17	MHz
Phase at 0.1 0.5 1.0 2.0 MHz	-15 -59 -90 -135	-2 -10 -19 -38	°
3-dB bandwidth	0.48	7.7	MHz
Capacitor C15	150	47	pF
Capacitor C16	1000	47	pF
Capacitors C26 & C43	15	4.7	pF

# Magnitude



# Phase

