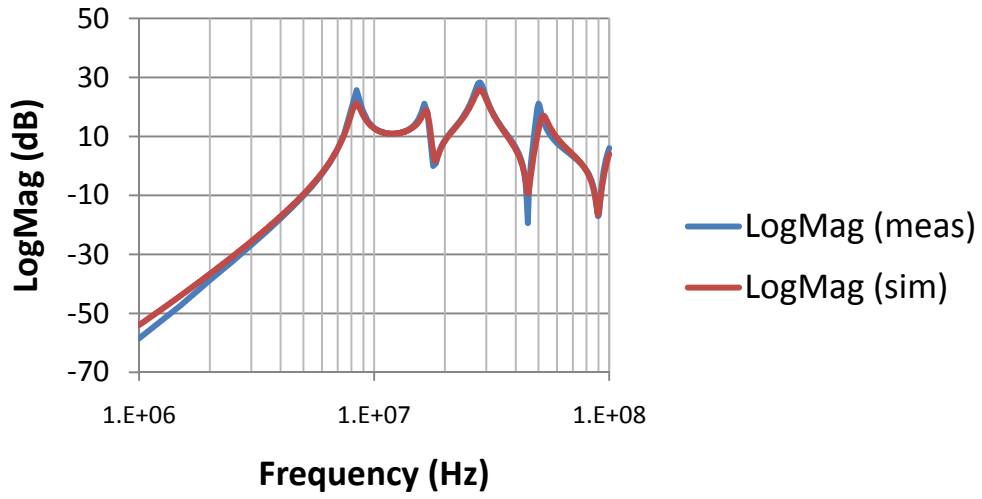


aLIGO ISC 9 and 45 MHz LSC Diode Design Check
LIGO-T1000694-v1
R. Abbott
19 November, 2010

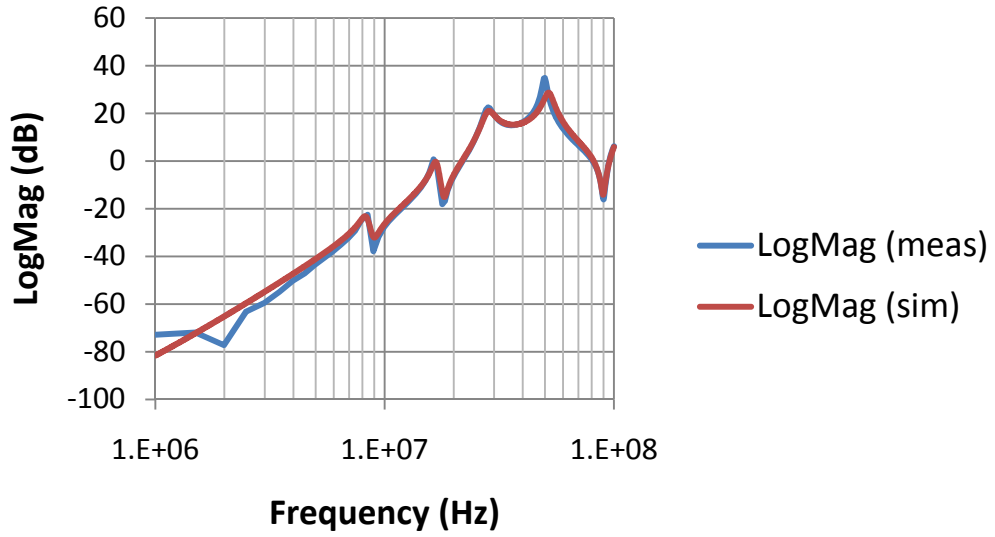
1. **Overview** – The critical measured parameters associated with the baseline 9 and 45 MHz LSC photodetector assembly
2. **Specs for Photodetector Assembly** –

Measured Parameter	Value
9 MHz Shot Noise Limited Sensitivity	2.2mA Photocurrent
45 MHz Shot Noise Limited Sensitivity	2.2mA Photocurrent
9 MHz Output Referred Dark Noise	-145.7dBm/Hz or 11.6nV/ $\sqrt{\text{Hz}}$
9MHz Opamp Input Referred Noise (calculated by gain of 5)	2.3 nV/ $\sqrt{\text{Hz}}$
45 MHz Output Referred Dark Noise	-145.5dBm/Hz or 11.9nV/ $\sqrt{\text{Hz}}$
45MHz Opamp Input Referred Noise (calculated by gain of 5)	2.4 nV/ $\sqrt{\text{Hz}}$
9MHz Nominal Transimpedance at Opamp Input	104 Ω
Measured 18 MHz Rejection Relative to 9 MHz	-19.3dB
45 MHz Nominal Transimpedance at Opamp Input	108 Ω
Measured 90 MHz Rejection Relative to 45 MHz	-37.5dB

Test Input to 9MHz Output



Test Input to 45MHz RF Output



Test Input to Test Output

