**aLIGO ISC 9 and 45 MHz LSC Diode Design Check**

**LIGO-T1000694-v1**

**R. Abbott**

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

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| **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/√Hz |
| 9MHz Opamp Input Referred Noise (calculated by gain of 5) | 2.3 nV/√Hz |
| 45 MHz Output Referred Dark Noise | -145.5dBm/Hz or 11.9nV/√Hz |
| 45MHz Opamp Input Referred Noise (calculated by gain of 5) | 2.4 nV/√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 |

