**LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY**

**-LIGO-**

**CALIFORNIA INSTITUTE OF TECHNOLOGY**

**MASSACHUSETTS INSTITUTE OF TECHNOLOGY**

|  |  |  |
| --- | --- | --- |
| Document TypeTest Procedure | DCC Number **T1500238**-v1 | May 14, 2015 |
| **TMDS Electrometer Pod Test Procedure** |
| B. Abbott |

Distribution of this draft:

This is an internal working note of the LIGO Laboratory

 **California Institute of Technology Massachusetts Institute of Technology**

 **LIGO Project – MS 18-33 LIGO Project – MS 20B-145**

 **Pasadena, CA 91125 Cambridge, MA 01239**

 Phone (626) 395-2129 Phone (617) 253-4824

 Fax (626) 304-9834 Fax (617) 253-7014

 E-mail: info@ligo.caltech.edu E-mail: info@ligo.mit.edu

 <http://www.ligo.caltech.edu/>

Performed by:\_\_\_\_\_\_\_\_\_\_\_\_

Date:\_\_\_\_\_\_\_\_\_\_\_\_\_

Board Serial Number: \_\_\_\_\_\_\_\_\_\_\_\_\_

1. **Overview**

TMDS Electrometer pod houses an electrometer circuit that reads the free ions in the TMDS Ionizer (D1400331)

1. **Test Equipment**
	1. TMDS Ionizer
	2. TMDS Interface Chassis (D1500152)
	3. OR +/- 10V signal generator, 4KV Step up transformer, and 0-110 Variable Transformer
	4. 2 Oscilloscopes
	5. Baratron Readout Box
	6. Digital Multimeter
	7. Clean Air supply with regulator and flowmeter.
2. **Preliminaries**
	1. Perform visual inspection of the pod to make sure nothing looks overtly broken.
	2. Power the box, either by a power supply set to +/- 15 Volts, or by hooking it up to the TMDS Interface.
	3. Read the current on the front panel lcd, or by hooking up a multimeter to TP8, to GND.
	4. Watch the current monitor on an oscilloscope to make sure it doesn’t go into wild discharge mode.
3. **Functional Test:** Set the system up to match the parameters below, and look at the electrometer output square wave on an oscilloscope. Any untrue results fails the pod.
	1. **Set the Signal Generator for +/- 10V (into HiZ) square wave with a frequency of 200mHz**
	2. **Turn on the vacuum pump, and adjust the air pressure until you read a flow of 50 on the flowmeter glass (39 l/min).**
	3. **Adjust the high voltage until you read 0.407Volts on TP8.**
	4. **Results:**

**At this flow rate the pressure read by the Baratron should be somewhere between 55 and 70 Torr.**

**Baratron Reading:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_Torr**

**If the above parameters are true, the electrometer should be reading between +5.0 to +5.5 Volts positive, and -5.2 to -5.7V negative.**

**Electrometer Reading:**

**Positive:\_+\_\_\_\_\_\_V**

**Negative: -\_\_\_\_\_\_\_\_V**