*LIGO Laboratory / LIGO Scientific Collaboration*

LIGO- E1100597-v1 *Advanced LIGO* 3 October 2011

Test Procedure for the N-N Balun Isolation Transformer

Daniel Sigg

Distribution of this document:

LIGO Scientific Collaboration

This is an internal working note

of the LIGO Laboratory.

|  |  |
| --- | --- |
| **California Institute of Technology**  **LIGO Project – MS 18-34**  **1200 E. California Blvd.**  **Pasadena, CA 91125**  Phone (626) 395-2129  Fax (626) 304-9834  E-mail: info@ligo.caltech.edu | **Massachusetts Institute of Technology**  **LIGO Project – NW22-295**  **185 Albany St**  **Cambridge, MA 02139**  Phone (617) 253-4824  Fax (617) 253-7014  E-mail: info@ligo.mit.edu |
| **LIGO Hanford Observatory**  **P.O. Box 1970**  **Richland WA 99352**  Phone 509-372-8106  Fax 509-372-8137 | **LIGO Livingston Observatory**  **P.O. Box 940**  **Livingston, LA 70754**  Phone 225-686-3100  Fax 225-686-7189 |

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

# Overview

A balun isolation transformer blocks DC signals in an RF transmission line, [D1101077-v1](https://dcc.ligo.org/public/0062/D1101077/001/D1101077-v1.pdf). It is typically used to break ground loops between two remote rack locations. The test consists of measuring the transfer function of the DUT and verifying that the insertion loss is below a certain level.

# Test Equipment

* Agilent network analyzer 4395A
* Power splitter, e.g., Mini-Circuits
* Coaxial cables

# Testing

Measure a reference transfer function by using a barrel instead of the balun. Save both magnitude and phase.

Measure the transfer function of the balun and save both magnitude and phase.

Take the ratio between the two traces and determine the insertion loss and delay. Verify that

|  |  |
| --- | --- |
| **Test** | **Pass/Fail** |
| Insertion loss between 200kHz and 100MHz is below 3dB |  |
| Phase is 0° ± 5° between 200kHz and 100MHz |  |