



LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

LIGO Laboratory / LIGO Scientific Collaboration

LIGO-E1500008-v2

LIGO

March 13, 2015

ISC Output Mode Cleaner: Acceptance Documentation

K. Arai, P. Fritschel

Distribution of this document:
LIGO Scientific Collaboration

This is an internal working note
of the LIGO Laboratory.

California Institute of Technology
LIGO Project

Massachusetts Institute of Technology
LIGO Project

LIGO Hanford Observatory

LIGO Livingston Observatory

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

1 Requirements documentation

There is no separate requirements document for the Output Mode Cleaner (OMC); the design document ([LIGO-T1000276](#)) describes the requirement based on the conceptual design ([LIGO-T070247](#)).

2 Design overview and detailed design documentation

Design documentation is in the aLIGO DCC tree, starting at: [LIGO-E1200200](#): aLIGO, ISC, OMC

a) Final Design Document (FDD):

[LIGO-T1000276](#)

b) Review reports:

The OMC design was reviewed as a part of the ISC Final Design Review (FDR). The review report of the ISC FDR is found as [LIGO-T1000334](#).

c) Supporting design documents: models, analyses, specifications, etc.

None.

d) Drawings: cite the top level assembly drawing for each major assembly or subsystem.

All optical, mechanical, and electrical components are linked from the tree [LIGO-E1200200](#).

e) Bill(s) of Materials (BOM): cite any collected BOMs. If the BOMs are only to be found on the Assembly and Sub-Assembly drawing sheets, then state so.

BOMs are found in the assembly drawings for the mechanical and electrical components. List of the optics is found [LIGO-C1107192](#).

f) Interface control: cite any documents (such as RODAs) with interface definition/control and/or cite the relevant sections of the DRD and FDD.

None.

g) Software: cite any software design description documentation.

[LIGO-E1500161](#) covers the descriptions of the realtime code for the OMC.

h) Design source data:

- Confirm that all mechanical design CAD models are in the SolidWorks/PDMWorks vault, or explain what is not and why.

- Confirm that all electronics design CAD models (schematics and PWB layouts) are backed up and available on LIGO Lab archives, or explain what is not and why.

The mechanical CAD design tree for the OMC was inspected. The completeness and consistency of the SolidWorks vault were assessed. SYS group was notified about the issue list and are being addressed.

The electronics design files are included in the DCC entries.

3 Materials and fabrication specification

Any special materials, or treatment of materials including preparation for in-vacuum use; this may be integrated into the Design documentation.

All glass, PEEK, PZT and cable materials are treated as standard CLASS A materials.

4 Parts and in-process spares inventoried

The ICS entry for the OMC #1 to #3 are found in the ICS as

[ASSY-D1201439-1](#) / [ASSY-D1201439-002](#) / [ASSY-D1201439-3_2](#)

There is no completed spare OMC unit.

5 Assembly procedures

Assembly and installation procedures are covered in the following document: [LIGO-E1300201](#)

6 Installation procedures

Assembly and installation procedures are covered in the following document [LIGO-E1300201](#)

7 Test documents

Test documents are to be found in each of the following links

[LIGO-E1300522 aLIGO, ISC, OMC, L1](#)

[LIGO-E1300523 aLIGO, ISC, OMC, H1](#)

[LIGO-E1500007 aLIGO, ISC, OMC, 3IFO](#)

A comprehensive test document should be prepared. This is on the way.

8 User interface software

User interface software, and the test routines indicating proper functioning of the software, must be described in words and have code under configuration control (SVN). Watchdog and Guardian routines must also be treated in this way.

[LIGO-E1500161](#) covers the descriptions of the realtime code (RCG code) and the main MEDM screens for the OMC. All of the codes and screens are under control of the common SVN repository.

9 Operation Manual

A manual appropriate for operators, written in accordance with M1200366, covering setup/initialization, check-out, operating instructions, calibration, maintenance, operations spares plan, storage/transport and troubleshooting. It must be accessible from standard user screens.

[LIGO-E1500161](#) covers the descriptions of the main MEDM screens. This provides some explanation how the parameters for the realtime code can be changed from the MEDM screens.

10 Safety

The following safety documents shall be referenced for any maintenance or repairs:

OMC Assembly and Installation Hazard Analysis: [LIGO-E1300152](#)

AdvLIGO OMC Hazard Analysis: LIGO-E0900042