



LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

*LIGO Laboratory / LIGO Scientific Collaboration*

LIGO-E1400395-v1

*LIGO*

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*ISC Optics Tables (ISCT): Acceptance Documentation*

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P. Fritschel

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## 1 Requirements documentation

This acceptance package covers the in-air ISC optics tables: ISCT1 (next to HAM1); ISCT6 (next to HAM6); ISCTEX & ISCTEY (End stations). There are no requirements documents for these tables.

## 2 Design overview and detailed design documentation

Design documentation is in the aLIGO DCC tree, starting at:

[LIGO-E1200198](#): aLIGO, ISC, Opto-Mechanical Layouts

This entry has links to ISCT1, ISCT6, ISCT End (HAM's are reviewed separately).

*a) Final Design Document (FDD):* Design documents are found in the DCC tree. Associated with each table type (ISCT1, e.g.) is the following design documentation:

- Optics table layout drawings. There is one file card for each type (ISCT1, e.g.), which contains files for both the H1 and L1 as-built layouts.
- Enclosure drawing
- Enclosure feedthrough panel design
- Mode matching design

*b) Review reports:*

There was no review of the ISC in-air optics tables.

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

All in the DCC tree, see a) above.

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

There are no assembly drawings that integrate the optics table, enclosure, table components, etc.

*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.*

There are no complete bills of materials for these tables. The table layout drawings include the basic properties of the optics (lens focal lengths; beam splitter ratios, e.g.); labels on the optic mounts give the complete vendor part designation. [LIGO-T1100416](#) includes a BOM for the table enclosures.

*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.*

No software.

*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.

N/A.

### **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.*

No special materials.

### **4 Parts and in-process spares inventoried**

The components for the ISC in-air optics tables are not inventoried in ICS. Most of the components (optics and opto-mechanical) are recycled from initial LIGO.

### **5 Assembly procedures**

[LIGO-T1100416](#) includes assembly procedures for the table enclosures.

### **6 Installation procedures**

None.

### **7 Test documents**

The RF photodetectors on the ISC tables are typically tested in-situ using a laser diode source ([LIGO-T1200396](#)), and results are posted in the aLog.

### **8 User interface software**

None.

### **9 Operation Manual**

None.

### **10 Safety**

*Safety documentation must be in the DCC for all phases of the subsystem development, including any needed for normal use or foreseen maintenance/repair scenarios.*

N/A