LASER INTERFEROMETER GRAVITATIONAL WAVE OBSERVATORY

LIGO Laboratory / LIGO Scientific Collaboration

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ISC Demodulators and Phase-Frequency Discriminators: Acceptance Documentation

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This is an internal working note
of the LIGO Laboratory.

California Institute of Technology
LIGO Project

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LIGO Project

LIGO Hanford Observatory

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

1 Requirements documentation

The requirements for the RF demodulators and phase-frequency discriminators are included in the overall design documentation; see below.

2 Design overview and detailed design documentation

a) Final Design Document (FDD):

Type	DCC	aLIGO Wiki page: https://awiki.ligo-wa.caltech.edu/aLIGO/
4-channel I/Q demodulator	LIGO-T1000044	IQ_Demodulator
2-channel I/Q demodulator	LIGO-E1100044	IQ_Demodulator_2-chn
Phase-frequency discriminator	LIGO-E1000450	PhaseFrequencyDiscriminator

b) Review reports:

- FDR report: LIGO-L1000094-v1
- Response to FDR report: included as attached file in the above.

c) Supporting design documents: Everything is in the DCC tree, under the nodes:

aLIGO Document Tree > aLIGO, ISC > aLIGO, ISC, Electronics > aLIGO, ISC, Electronics, RF System:

- E1200112 (4-ch I/Q)
- E1200113 (2-ch I/Q)
- E1200114 (PFD)

d) Drawings: Schematics and assembly drawings are all linked in the DCC tree.

e) Bill(s) of Materials (BOM): The assembly file card for each module type includes the bill of materials.

f) Interface control: none

g) Software: not relevant

h) Design source data: Altium project files are included in the DCC file card for each board.

3 Materials and fabrication specification

No special materials.

4 Parts and in-process spares inventoried

All modules are entered in ICS. Quantities:

Module	Qty in ICS	Needed for 3 IFO	Spares
4-ch I/Q: D0902796	66	45	21
2-ch I/Q: D1000181	20	12	8
PFD: D1002476	15	9	6

5 Assembly procedures

Chassis assembly procedure for I/Q demods: LIGO-T1000453

Modifications for 2-ch units: LIGO-E1100044

PFD assembly: LIGO-D1002476

6 Installation procedures

None.

7 Test documents

Test procedures:

I/Q demods: LIGO-T1100062

2-ch version: LIGO-E1100114

PFD: LIGO-E1100102

Test reports:

4-ch I/Q demods: test reports are filed in the S-number file card for each serial number (using form F1100004).

2-ch I/Q demod (all units): LIGO-E1200074

PFD (all units): LIGO-E1100977

8 User interface software

Not applicable.

9 Operation Manual

Not applicable.

10 Safety

All ISC electronics is in conformance with the LIGO EEIP (Electrical Equipment Inspection Program). This program was implemented to protect personnel from electrical hazards.