Advanced LIGO Engineering Change Request (ECR)

ECR Title: ECR:

Frequency Counter for PLL error signal

DCC No: E1200936-v1

Date: 9/17/2012

Requester:

Daniel Sigg

Impacted Subsystem(s):

ISC

Description of Proposed Change(s):

Add frequency counter capability to the PLL error signal. Since the timing system already has a frequency counter, this request only covers an additional preamplifier in the PLL error signal. The design of the preamplifier can be found here.

Reason for Change(s):

When the ALS laser frequency is far away from the fiber reference, we typically use a local spectrum analyzer to roughly adjust the NPRO temperature before trying to engage the PLL. To automate this process for day-by-day operations, we like to replace the local spectrum analyzer with a remote-readout frequency counter.

Estimated Cost: 8 units at a cost of $1.5k each, total $12k

Schedule Impact Estimate:

None.

Nature of Change (check all that apply):

- ☐ **Safety**
- ☐ **Correct Hardware**
- ☐ **Correct Documentation**
- ☒ **Improve Hardware**
- ☐ **Improve/clarify Documentation**
- ☐ **Change Interface**
- ☐ **Change Requirement**

Importance:

- ☐ **Desirable for ease of use, maintenance, safety**
- ☐ **Desirable for improved performance, reliability**
- ☒ **Essential for performance, reliability**
- ☐ **Essential for function**
- ☐ **Essential for safety**

Urgency:

- ☐ **no urgency**
- ☐ **desirable by date/event: _Feb 2013____**
- ☐ **Essential by date/event: _____**
- ☐ **Immediately (ASAP)**

Impacted Hardware (select all that apply):

- ☐ **Repair/modify. List part & SNs: _____**
- ☐ **Scrap & Replace. List part & SNs:_____**
- ☐ **Installed units? List IFO, part & SNs: _____**
- ☐ **Future units to be built**

Impacted Documentation (list all dwgs, design reports, test reports, specifications, etc.):

D1002803, D1001423, D1100670, E1200146

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Disposition (to be completed by Systems Engineering):

☐ **TRB**
☐ **CCB**
☒ **Approved**

☐ **Additional information required. Define:**

[Requester re-submits with new information with the same DCC E-number for the ECR but the next version number.]

Concurrence by Project Management: (Acknowledged Electronically in DCC)

Project Systems Engineer: Dennis Coyne	**Project Systems Scientist**: Peter Fritschel