

Advanced LIGO Engineering Change Request (ECR)

ECR Title: Move the 79.2MHz doubler to ISC-R4

DCC No: E1400413-v1

Date: 10/19/2014

Requester: Daniel Sigg

Impacted Subsystem(s): ISC

Description of Proposed Change(s): Move the doubler which drives the ALS fiber distribution box from rack ISC-R1 to ISC-R4. This reduces the electronics crosstalk between this unit and the PSL VCO. We will also use a different RF patch panel in ISC-R2. The RF power levels have been re-measured, possibly requiring to change the attenuator at the ALS fiber distribution chassis input. This is [integration tracking issue 714](#).

Reason for Change(s): We pinned down the wandering peak in the IMC error signal. It was a beat note between the fixed frequency 79.2MHz and the IMC VCO. Moving the IMC VCO frequency (using the tune offset) moves it, it disappears when the 79.2MHz is off. It becomes very small when the cable from the RF patch panel in R1 to the doubler for the fiber distribution is disconnected from the patch panel, and can be small when the cable is connected at the patch panel but not at the input to the doubler, perhaps depending on where the cable is. Disconnecting the output of the doubler has no impact. It seems like a purely electrical RF crosstalk problem.

Estimated Cost: \$200 for material (new cabling).

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: _____
- 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.):

D1200666, E1200408, D1101904, D1001460, E1100591

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Disposition of the proposed change(s):

The disposition of this proposed engineering change request is to be completed by Systems Engineering and indicated in the “Notes and Changes” metadata field in the DCC entry for this ECR. The typical dispositions are as follows:

- **Additional Information Required:** in which case the additional information requested is defined. The ECR requester then re-submits the ECR with the new information using the same DCC number for the ECR but with the next version number.
- **Rejected:** in which case the reason(s) for the rejection are to be given
- **Approved**
- **Approved with Caveat(s):** in which case the caveat(s) are listed
- **TRB:** the ECR is referred to an ad-hoc Technical Review Board for further evaluation and recommendation. It is the System Engineer’s (or designee’s) responsibility to organize the TRB. The System Engineer (or designee) then makes a technical decision based on the TRB’s recommendation. Links to the TRB’s documentation (charge, memos, final report, etc.) are to be added to the “Related Documents” field for this ECR.
- **CCB:** a change request for approval of additional funds or schedule impact is to be submitted to the Configuration Control Board. Links to the CCB’s documentation (CR, etc.) are to be added to the “Related Documents” field for this ECR.

Concurrence by Project Management:

Acknowledgement/acceptance/approval of the disposition is to be indicated by the electronic “signature” feature in the DCC entry for this ECR, by one the following personnel:

- Systems Scientist
- Systems Engineer
- Deputy Systems Engineer