STEREO IMPACT

PR Numbers: 1xxx=UCB, 2xxx=Caltech/JPL, 3xxx=UMd, 4xxx=GSFC/SEP, 5xxx=GSFC/Mag, 6xxx=CESR, 7xxx=Keil, 8xxx=ESTEC, 9xxx=MPAe

Assembly : SEP LVPS FM1	**SubAssembly :** SEP Middle
Component/Part Number: SEP Middle	**Serial Number:** FM1
Originator: Selda Heavner	**Organization:** UC Berkeley
Phone : 510 643-8640	**Email :** selda@ssl.berkeley.edu

Failure Occurred During (Check one √)

√ Functional test □ Qualification test □ S/C Integration □ Launch operations

Environment when failure occurred:

√ Ambient □ Vibration □ Shock □ Acoustic
□ Thermal □ Vacuum □ Thermal-Vacuum □ EMI/EMC

Problem Description

SEP LVPS FM1 was disassembled to troubleshoot the noise problem on 2.6V and 5.3V outputs. During troubleshooting, it was observed that Q22 and Q15 (FETs) drain waveforms were not the expected waveforms. The output voltages were still within the expected value. The output of U21 the triple 3-input NAND (54AC10) gate was always high.
The SEPT-NS 2.6V was oscillating. The ripple was about 0.4V. The noise problem was intermittent. The tuning capacitor of LTC 1877 was not sufficient.

Analyses Performed to Determine Cause

Initially visual inspection was performed to see if there were any foreign objects on the pcb. The signals at the pins were checked using an oscilloscope. The resistance of each pin at 54AC10 to ground and the resistance between the pins were checked. The signal from the flip-flop U27 (54AC109) was absent. The DRIVE A and DRIVE B signals were jumped due to a lay out error (see rework document dated 4/02/04). The U27 was removed and we found that pin 6 of the flip-flop was missing. Due to damage caused by probing U21 had to be changed as well. The damage to the U27 could have been caused by pulling on the wires while separating the middle and top board.

1. The issues found during the troubleshooting for the noise problem (U27 and then U21) were most likely caused when the boards were disassembled. (Reference the corrective actions steps 1 – 4 below). This fix only applies to FM1.
2. The noise problem required a change in the tuning capacitor for the LTC1877. (Reference corrective action step 5.) This fix is required on both flight units.

Corrective Action/ Resolution

√ Rework (Step 1-4) √ Repair (Step 5) □ Use As Is □ Scrap

1- Removed and replaced the flip-flop U27
2- Removed and replaced the triple 3-input NAND gate U21.
3- Connected U27 pin 6 to U21pin 5; connect U27 pin 7 to U21 pin 9. (Note: they must be twisted together per rework document dated 4/02/04)
4- Staked the wires using Uralane 5753. (Added more staking to the wires to protect this connection)
5- Changed C32 to 390pF capacitor to eliminate the unstable output at 2.6V. The drawings were updated to reflect this change. (This fix applies to both flight units.)

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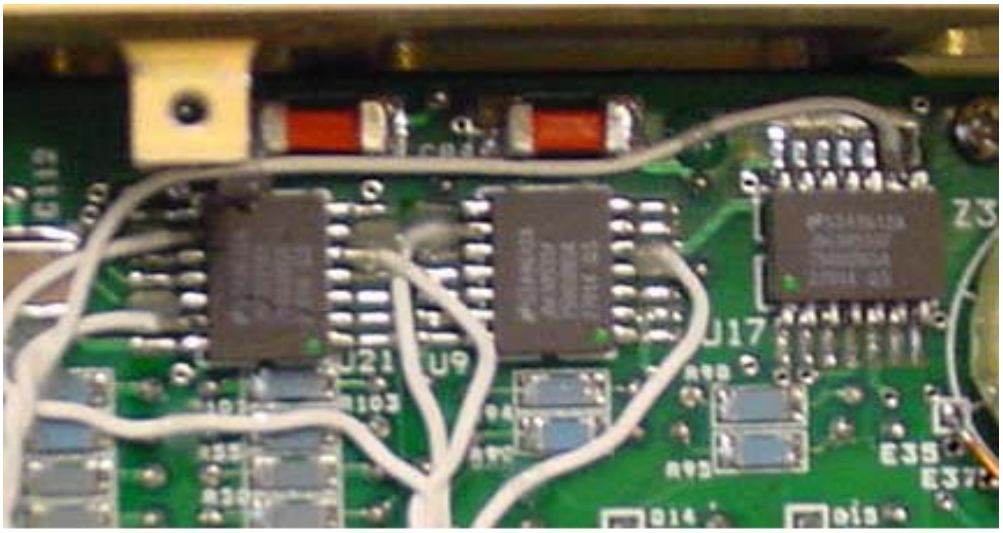
Date Action Taken: __August 2, 2004_____ **Retest Results**: Board level and box level tests on both FM1 and FM2 were successful.

Corrective Action Required/Performed on other Units √ Serial Number(s): ___FM2*__

***** Only item 5 in Corrective Actions section was closed on FM2 to eliminate the noise problem.

Closure Approvals

Subsystem Lead:	_____	Date:_____
IMPACT Project Manager:	_____	Date _____
IMPACT QA:	_____	Date:_____
NASA IMPACT Instrument Manager:	_____	Date:_____



U21 Repair

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U27 Repair