PFR-69 Title: FM1 ESA Current Ripple on S/C 28V

Assembly : Instruments	**SubAssembly : IDPU**	
Component : LVPS	**Units Affected:**	**Units fixed:**
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Organization: UCB	**Date: 5/JUN/05**	
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Failure Occurred During (Check one √)

x Functional test □ Qualification test □ S/C Integration □ Launch operations □ Other (Flight Assy)

Environment when failure occurred:

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

Problem Description

During Instrument suite thermal vacuum on FM1 running the ESA HV Test it was discovered that there was a 10mA ripple at 300Hz on the S/C 28V line. When the ESA was powered off the ripple went away. At the time only the ESA low voltage supply was powered. The problem occurred at ambient temperature.

Analyses Performed to Determine Cause

The 28V ESA (IDPU P28V) power supply on LVPS FM3 was tested for stability at light loads (half load) and varied line voltage (22V-35V). Oscillations were discovered beginning at 33V input voltage.
Removing the capacitor 150pF (C221) on the collector of Q37 stabilized the gate drives of Q31 and Q35.
Different values were placed for C221 and tested for instability at gate drives of Q31 and Q35.

Corrective Action/ Resolution

Removing C221 (LVPS FM3) was resulted in stable operation for different loads and varied input voltage line. Therefore, C221 is made a select at test component. The best value for ESA stability will be chosen during LVPS testing.
Note: FM1 LVPS was still connected in thermal vacuum. Therefore the tests were performed on THEMIS LVPS FM3.
Engineering Change Order (ECO) 0007 is generated to correct instability at ESA. ECO 0007 is added to the Assembly Instructions. ECO 0007 will be performed before LVPS testing occurs.

Retest date (FM3): June 8, 2005
Results: Success

Acceptance:

MAM: Ron Jackson_____; MSE: Ellen Taylor_____

PM: Peter Harvey_____; Cognizant Engineer_____

Date of Closure_____