

STEREO IMPACT

PROBLEM REPORT

PR-1042

FM2 IDPU EMC

2005-06-02

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

Assembly : IMPACT IDPU	SubAssembly : LVPS
Component/Part Number:	Serial Number: FM2
Originator: David Curtis	Organization: U.C. Berkeley
Phone : 510-642-5998	Email : dwc@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

During the IMPACT FM2 boom suite EMC acceptance test (CE only) the IDPU was found to have excessive common mode noise at power converter harmonics (up to 20dB over spec going all the way out to 40MHz, at least 15dB above FM1 IDPU measurements). Some of this noise was also picked up on the MAG heater circuit at high frequencies.

Analyses Performed to Determine Cause

The unit was disassembled and diagnosed. The common mode filter was found to be installed incorrectly (as a differential mode choke instead of a common mode choke). This only effects the common mode emissions. Disassembly was limited to removal of 6 box screws to allow access to the IDPU LVPS.

Corrective Action/ Resolution

Rework Repair Use As Is Scrap

The wires from the choke were not able to reach the correct pads, so a new choke was wound, tested, installed, staked, and inspected. The unit was then reassembled and functionally tested OK. Then the EMC test was repeated, and the results now look like FM1, with only a few exceedances at power converter harmonics. The IDPU screws that were removed were re-torqued and staked.

The instrument was subjected to a 1-axis workmanship vibration and 4 cycles of thermal cycling (with an additional 5C margin added to the operational soak temperatures over the temperatures used previously for thermal vac, cold starts on the first and last cycles and CPTs at each plateau). All tests passed. The bakeout was not repeated.

Date Action Taken: 5/31/2005 Retest Results: Success

Corrective Action Required/Performed on other Units Serial Number(s): None

Closure Approvals

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

STEREO IMPACT

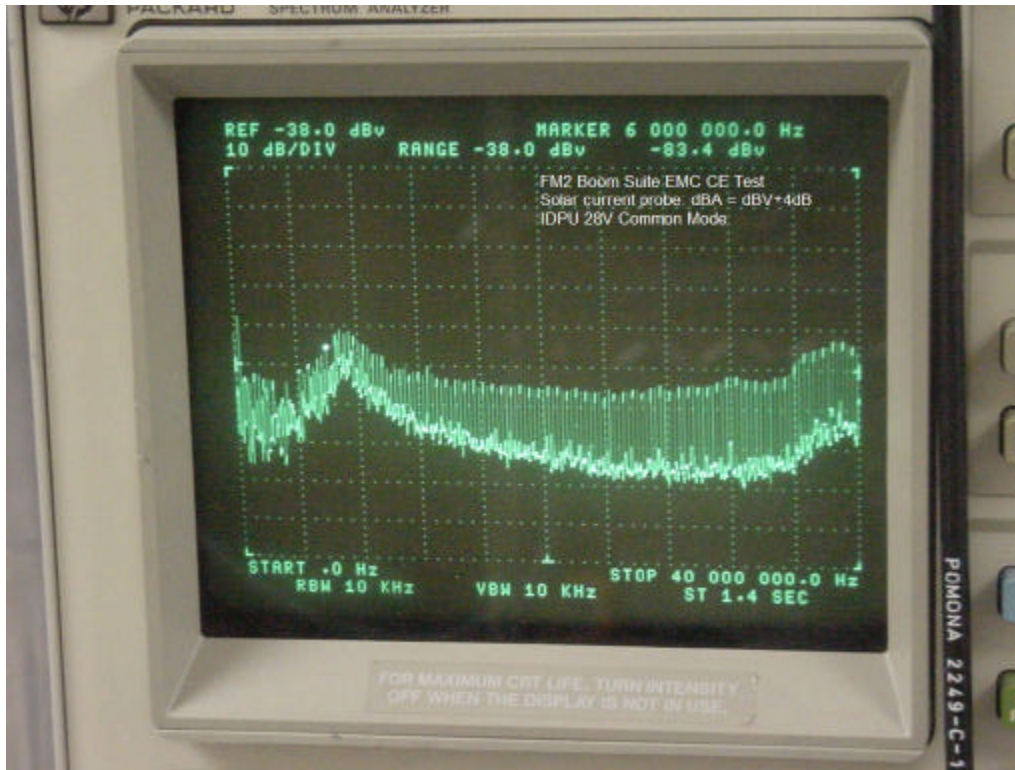
PROBLEM REPORT

PR-1042

FM2 IDPU EMC

2005-06-02

FM2 IDPU Common Mode Conducted Emissions before fix



FM2 IDPU Common Mode Conducted Emissions after fix

