XMM Optical Monitor

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DEM magnetic and EMC test plan

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CHANGE RECORD

ISSUE	DATE	PAGES CHANGED	COMMENTS
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1 Sandia Facilities

Sandia, at present, does not have the facilities to conduct all of the tests required to demonstrate compliance with Section 5.9 of the XMM Experiment Interface Document Part A. In particular, Sandia does not have the facilities required to perform tests related to radiated emissions or radiated susceptibility. Other tests requiring spectrum analyzers (conducted emissions tests) or signal generators (conducted susceptibility) can be adequately performed at Sandia.

2 Test Plan

Because Sandia does not have adequate facilities to perform all required tests, an outside contract will be required. Several companies have been identified that are equiped to perform testing in accordance with military standards such as MIL-STD-461/462, as well as U.S. FCC, German VDE, Canadian CSA, U.K. BSI, CISPR, ANSI, and other multinational commercial standards. These companies are located in Texas and in California and can be reached from Sandia within a day.

Companies having the necessary capabilities (nominally three) will be sent RFQ (request for quote) packages that will contain our testing requirements. Our requirements will include section 9.5.4 of the EID Part A and a requirement for a detailed written report at the conclusion of the test. Responses will be evaluated based on cost, schedule, and capability, and a contract will be awarded.

At a mutually agreed upon time, the XMM DEM boxes plus ground support equipment will be transported by Sandia personnel to the testing facility. Sandia personnel will support testing activities by operating the DEM boxes and noting anomalous behavior during susceptibility testing.

The tests to be performed are as follows:

1. Conducted Emission per EID-A Section 5.9.4.1
2. Conducted Susceptibility per EID-A Section 5.9.4.2
3. Radiated Emissions (Magnetic and Electric Field) per EID-A Section 5.9.4.3
4. Radiated Susceptibility (Magnetic and Electric Field) per EID-A Section 5.9.4.4
5. Electrostatic Discharge per EID-A Section 5.9.4.5

During each of the tests, the XMM DEM boxes will be connected to ground support equipment that will simulate the detector and spacecraft interfaces. The DEM boxes will be operated in a normal operating mode that will exercise all major functions.

Tests to demonstrate compliance with EID-A Sections 5.9.3.1 (Grounding and Isolation), 5.9.3.2 (Electrical Bonding and Case Shielding), and 5.9.3.3 (Cable Shielding and Separation), which require relatively simple resistance and impedance measuments, will be performed at Sandia.