XMM-Newton CCF Release Note

XMM-CCF-REL-296

EPIC MOS Fixed Offset Tables

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1 CCF Components

Name of CCF	VALDATE	EVALDATE	Blocks Changed	CAL Version	XSCS Flag
EMOS1_DARKFRAME _0034.CCF	2013-01-21T06:31:40		OFFSET_CCD4		NO

2 Changes

Following the suspected MOS1 impact event of revolution 2382, in which CCD3 was extensively damaged, other CCDs also showed defects in the form of hot or dead pixels. CCD4 was most affected, with several column and row segments of hot or saturated pixels. In cases where the segments are extended, the entire row or column is essentially rendered unusable for valid data collection. Moreover, the associated large increase in detected noise events leads to secondary effects in on-board data processing, necessitating the vetoing of the respective rows and columns through changes in the uploaded offset table. This CCF reflects the current uploaded MOS1 fixed offset table.

3 Scientific Impact and Estimated Quality

Note that the values in the OFFSET extensions of the DARKFRAME CCFs are not used to determine the E1 event energies; this is already done on board in the EDU. The main reason for reflecting the on board offset values in the DARKFRAME CCFs is correctly to determine the reconstructed event energies, for which knowledge of the contemporary on board offsets is required.

4   Expected Updates

As analysis of the effects of the CCD damage continues, other MOS1 offset values may require modification.

Additionally, the background of all CCDs changes in time and will need to be compensated through changes of the fixed offsets.

5   Test Procedures and Results

Correct functionality tested with `cifbuild` and `emproc` (SAS version 12.0.1). Reducing data with mismatched uploaded fixed offsets and DARKFRAME CCF issue may result in SAS warnings
`** emevents:  (spGatti11), reconstructed energy larger than 4095`.
As expected, use of the CCFs in this release result in correct reconstructed energies and no such warnings are issued.